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NRC-005J

December 21, 2009

Mr. Richard Baker
Project Manager
Bechtel Power Corporation
5275 Westview Drive
Frederick, MD 21703-8306

Subject: **Final Data Report Transmittal, Revision 0
Geotechnical Exploration and Testing, Supplement 2
Dominion Power
North Anna 3 Project
Mineral, Louisa County, Virginia
MACTEC Project No. 6468-09-2473**

Dear Mr. Baker:

MACTEC Engineering and Consulting, Inc., is pleased to submit this Final Data Report Revision 0, for Geotechnical Exploration and Laboratory Testing, Supplement 2, associated with the North Anna 3 Project located in Louisa County, Virginia.

Please do not hesitate to contact us if you have any questions or if we may be of further service.

Sincerely,

MACTEC Engineering and Consulting, Inc.

Stephen J. Criscenzo
Project Manager

D. Steven Copley, PE
Project Principal Engineer
Virginia Registration No. 019387



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COVER SHEET

**FINAL DATA REPORT
Revision 0**

**GEOTECHNICAL EXPLORATION AND TESTING
SUPPLEMENT 2
DOMINION POWER
NORTH ANNA NUCLEAR POWER STATION
NORTH ANNA 3 PROJECT
MINERAL, LOUISA COUNTY, VIRGINIA**

December 16, 2009

Prepared By:

**MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA**

MACTEC PROJECT No. 6468-09-2473

Prepared For:

**Bechtel Power Corporation
Subcontract No. 25161-500-HC4-CY00-00001**

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Revision 0**

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SUPPLEMENT 2
DOMINION POWER
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VOLUME 1

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SECTION 1 OVERVIEW

1.1 Introduction

In 2006, MACTEC Engineering and Consulting, Inc. (MACTEC) was retained by Dominion Nuclear North Anna, LLC (Dominion) to obtain information on subsurface materials and conditions for use in the preparation of the Combined Operating License (COL) Application for North Anna Unit 3. The results from this previous investigation work scope were included in a report titled: Data Report - Geotechnical Exploration and Testing, Revision 0, dated January 23, 2007 (referenced as 2007 Data Report). In 2009, MACTEC was retained by Bechtel Power Corporation (Bechtel) to obtain supplemental information on subsurface materials and conditions for use in the preparation of a potential COL Application for North Anna Unit 3. The COL Application, to be prepared by others, will be submitted to the U.S. Nuclear Regulatory Commission (NRC) for approval to locate a future nuclear electric power generation facility at the existing North Anna Power Station.

This report provides results for activities associated with the authorized scope of work designated by Bechtel as: Subsurface Investigation and Laboratory Testing (Nuclear Safety Related), executed on August 23, 2009.

A site location map for this phase of the project is included as Figure 1.

MACTEC executed its services in accordance with Bechtel Subcontract Number 25161-500-HC4-CY00-00001. The field work covered by this supplemental report commenced on September 1, 2009 and was completed on October 2, 2009. The Scope of Work was defined in Exhibit D of MACTEC Subcontract with Bechtel, and is briefly described below:

- Preparing and submitting a Quality Assurance Project Document, Health and Safety Plan, and detailed Work Plan;
- Obtain permits necessary for performing the work;
- Furnishing all the supervision, labor, equipment, tools, supplies, and materials necessary to perform the specified work at the locations specified by Bechtel;
- Providing geotechnical engineers and/or geologists in the field under the direction of qualified geotechnical engineers and/or geologists with the experience in geotechnical investigations to oversee and log the investigation work;
- Providing a site manager responsible for oversight of all required field activities;
- Providing Quality Assurance (QA) observation of the field and laboratory work activities and submitting QA records;
- Locating work items by survey methods;
- Providing water to work areas for drilling and testing;
- Performing Standard Penetration Tests (SPT) and obtaining samples using a split-barrel sampler;
- Performing SPT energy measurements;
- Obtaining rock cores using “H” and “N” size rotary coring methods;
- Collecting, labeling and transporting soil samples and rock cores to a designated sample storage area;
- Transporting designated samples to appropriate laboratories for testing purposes;
- Backfilling drilled holes with cement/bentonite grout using the tremie method;

- Performing down-hole geophysical logging;
- Performing down-hole acoustic televiewer logging;
- Performing Suspension P-S logging;
- Restoring the work areas;
- Performing laboratory testing on soil and rock samples;
- Preparing Draft and Final Data Reports containing the data generated by the subsurface investigation and laboratory testing activities;
- Performing all work under MACTEC's approved Health and Safety Program.

Sampling and testing related to the geotechnical exploration are considered to be tasks that could affect design, construction or operation of safety-related systems, structures and components. This work was performed under a Quality Assurance program that meets the requirements of 10 CFR Part 50 Appendix B and 10 CFR 21(Reporting of Defects and Noncompliance).

1.2 Personnel

MACTEC completed field work for this project under the direction of Bechtel's Site Coordinator, Mr. Thomas Cameron and Dominion's Site Coordinator, Mr. Raj Harnal. Dominion NSS personnel provided utility clearance at boring locations and other site support. Technical support was provided Mr. John Davie (Bechtel) and Mr. Sammy Jabbour (Bechtel). Primary MACTEC personnel and their responsibilities were as follows:

Stephen J. Criscenzo	Project Manager
Scott Auger	Project Coordinator
D. Steven Copley, P.E.	Principal Professional
J. Allan Tice, P.E.	Principal Professional
J. Shane Johnson	Site Manager, Report Preparation
Michael P. Lear	Lead Geologist, Site Safety, Report Preparation
Rodney Clark	Rig Geologist
Kristen Lloyd	Rig Geologist
Chris Baldwin	Rig Geologist
Bill Mabie	Rig Geologist
Adam Mwembeshi	Rig Geologist
Floyd Cox	Drilling Coordinator
R. Keith Pendley	Drilling Coordinator
Mitch Conner	Laboratory Services Manager (MACTEC Raleigh Lab)
Mike Hamlett	Laboratory Services Manager (MACTEC Charlotte Lab)
John Martin	Quality Assurance Representative

The organizations that conducted on-site work or laboratory testing of samples as part of this effort are listed in Table 1.

1.3 Organization of Report

This report and its appendices are organized in the following sequence: the transmittal letter; table of contents, which includes lists of tables and figures; text; tables; and figures. The data are in Appendices and are as follows:

Appendix A – Survey Data

Appendix B – Geotechnical Field Data

- Boring Logs
- SPT Energy Measurement Reports

Appendix C – Geophysical Test Data

Appendix D – Laboratory Test Data

- Soil Index Test Data
- Strength Test Data (Rock)

1.4 Quality Assurance

Quality-related activities conducted by MACTEC and its subcontractors during the work presented in this report were in accordance with the MACTEC Quality Assurance Manual and the MACTEC Quality Assurance Project Document. The MACTEC QA program complies with NQA-1-1994, including Subpart 2.20, and the requirements of 10 CFR 50 Appendix B.

SECTION 2 TEST METHODS

2.1 Surveying

The surveying for the project was conducted in two phases by MACTEC's contract surveyor, McKim & Creed of Raleigh, North Carolina. The initial phase was to stake preliminary test locations based on initial coordinates provided on the Bechtel Boring Plan (Drawing No. 500-CY-0010-00001), Rev 0. Boring locations were staked using RTK-GPS when possible. When tree canopy or other obstructions occurred, coordinate traverse points were established using RTK-GPS. Conventional survey was then used to stake planned boring locations from the established traverse points. Wood stakes tied with flagging were used to mark the surveyed locations. After completing an initial assessment of test locations and potential utility and access conflicts, some borings were relocated with concurrence of Bechtel and Dominion personnel.

The second phase of surveying was conducted after completion of the field testing. The surveyor (McKim & Creed) returned to the site and determined locations and elevations of the actual exploration points. The RTK-GPS and conventional survey using a Trimble 5603 DR200+ total station was used to locate the as-drilled boring locations from the traverse points established during the initial phase.

The final survey was performed by Dennis Batzel and Nick Thames and reviewed by William J. Egan, Jr., Land Surveyor, Virginia License No. 002548 of the Raleigh Office of McKim & Creed, P.A. The survey was performed using a Trimble 5700 L1/L2 Real Time Kinematic (RTK) GPS system and Trimble 5603 DR200+ total station. Data was collected and reviewed in Trimble Survey Controller (GPS) and TDS Ranger (total station) data collectors analyzed using Trimble Geomatics Office and Autodesk Land Desktop software. Field notes of occupations and differential leveling were kept as a backup of the data collectors. The equipment was tested prior to and following the survey to ensure the equipment was functioning within the required parameters.

The origin for the as-drilled survey was Control Monument No. 7, a brass disk embedded in concrete. The horizontal positions and vertical values for this point were determined from the submission of 10.5 hours of static GPS observation data to the National Geodetic Survey's (NGS) Online Positioning User Service (OPUS). The static data was collected using the GPS RTK base receiver operating on Control Monument No. 7 from 29 to 30 November 2006. After the OPUS solutions were converted to US Feet (1 meter = 39.37 inches), the position and vertical values for both days were averaged to determine the horizontal position of Control Monument No. 7 within the Virginia State Plane Coordinate System (VSPCS), South Zone, NAD 83 (CORS 96) (EPOCH 2002) and its orthometric height (elevation) relative to NAVD 88 (GEOID 83).

The as-drilled survey locations were provided to Bechtel for their use in creating an as-built drawing of the exploration. The as-built survey locations were also used as input to final boring logs and other tables reporting locations. A complete copy of the surveyor's report can be found in Appendix A. This report includes as-drilled survey data for the Supplement 2 boring locations.

2.2 Utility Location

Representatives of MACTEC used preliminary survey locations and physical features to mark the locations planned for borings. These preliminary locations were provided to Dominion personnel for utility clearance.

Dominion’s process for location of underground utilities included notifying Virginia Miss Utility at least 48 hours prior to drilling. After the required 48 hours, Dominion personnel conducted a scan for underground utilities in the vicinity of the staked boring location. Dominion personnel used electromagnetic and ground-penetrating radar methods to check the planned exploration locations for the presence of underground utilities. The planned locations were adjusted as required by Dominion to provide the necessary utility clearances.

After Dominion’s scan for utilities was complete, “soft dig” techniques were utilized to assure that there were no utilities present in the top eight feet. Dominion personnel used an air driven probe and a vacuum truck to extend a hole a nominal depth of eight feet below (or to refusal if it occurred above eight feet) existing grades. After completion of the “soft dig” excavation, Dominion personnel signed off utility clearance. The “soft dig” excavation was backfilled with soil cuttings and marked with a wood stake. This method precluded soil sampling to the depth of the “soft dig” hole.

2.3 Drilling Equipment/Methods

MACTEC utilized the following drilling equipment to complete the specified work:

Rig Serial Number	Hammer Serial Number	Owner	Drill Rig	Carrier Type	Driller	Auto Hammer	Rock Core Sizes
269354	MEC-12	MACTEC	CME-45c Track (RAL)	Track	D. Rhodes	Y	NQ
163745	MEC-21	MACTEC	CME-55 Track (RAL)	Track	T. Hahn / F. Cox	Y	HQ
337153	MEC-05	MACTEC	CME-550x (ATL)	ATV	R. Landeros	Y	NQ
331145	MEC-02	MACTEC	CME-55LC Track (RAL)	Track	D. White	Y	HQ
72425	MEC-425	MACTEC	CME-55 Trailer Rig (RAL)	Trailer	P. Pitts	Y	NQ

Table 2.1 summarizes information about the borings. Borings were advanced in soil using rotary wash-drilling techniques until encountering SPT refusal (defined as the physical inability to advance the hole using wash-drilling techniques or 50 blows for one inch or less of penetration, whichever occurred first). Bits used to advance borings to SPT refusal were 2-7/8” or 3-7/8” diameter tricone roller bits with a side discharge. Soil samples from the geotechnical borings were obtained at 2.5-foot and 5-foot intervals as described in Section 2.5. Once SPT refusal was encountered, a steel casing was set, and the holes were advanced using wire-line rock coring equipment and procedures described in ASTM D 2113-08. Rock coring was accomplished utilizing either “HQ” or “NQ” sized core barrels with a split triple tube. Four-inch-diameter casing was used to stabilize the upper portions of the “HQ” sized borings as necessary. Three-inch-diameter casing was used to stabilize the upper portion of the “NQ” sized borings as

necessary. The water introduced into the borehole during drilling and coring was obtained from Lake Anna.

Specific equipment used at each borehole is included on the boring logs included in Appendix B.1

The boreholes were backfilled with a cement-bentonite grout prior to demobilizing from the site. As required in Technical Scope of Work Section 3.13, the grout was placed by pumping through a tremie pipe inserted to the bottom of the borehole. The drillers used the grout mixture specified in Technical Scope of Work Section 3.13 (8 gallons of water and 2.5 pounds of bentonite per 94-pound sack of cement). A stake or other marker was placed at each completed boring location for later survey use. The as-drilled horizontal coordinates and elevations for each boring are included on Table 2.1, in Appendix A and on the boring logs in Appendix B.1.

2.4 SPT Energy Measurements

The drill rigs utilized on this project used automatic hammers for performing SPT testing. SPT energy measurements were conducted for each of the drill rigs performing SPT soil sampling. Energy measurements were recorded during SPT sampling at the depth intervals shown in Appendix B.2. The length of the drill rod string, including the instrumented drill rod insert for each sample, was generally four feet longer than the depth of the sample being collected.

The energy measurements were performed with a Pile Driving Analyzer (PDA) Model PAK and calibrated accelerometers and strain gauges. A section of drill rod, two feet long and of the same diameter as the drill rod used to advance the boring and instrumented with dedicated strain gauges, was inserted at the top of the drill rod string immediately below the SPT automatic hammer. The inserted rod was also instrumented with two piezoresistive accelerometers that were bolted to the outside of the rod.

The work was conducted in general accordance with ASTM D 4633-05. The strain and acceleration signals were converted to force and velocity by the PDA, and the data were interpreted by the PDA according to the Case Method equation. The EFV method of energy calculation is recommended in ASTM D 4633-05. The maximum energy transmitted to the drill rod string (as measured at the location of the strain gauges and accelerometers) was calculated by the PDA using the following EFV method equation:

$$EFV = \int F(t) * V(t) * dt$$

Where: EFV = Transferred energy (EFV equation), or Energy of FV
F(t) = Calculated force at time t
V(t) = Calculated velocity at time t
dt = time differential (integral taken with respect to time)

The EFV equation, integrated over the complete wave event, measures the total energy content of the event using both force and velocity measurements. The EFV values associated with each blow analyzed were tabulated and averaged to obtain the average measured energy at each depth tested. The ratio of the average measured energy to the theoretical potential energy of the SPT system (140 lb. weight with the specified 30-inch fall) is the energy transfer ratio (ETR).

The average ETR measured for each rig ranged from 81.0% to 87.4% of the theoretical potential energy. These ETR values are within the range of typical values for automatic hammers. The ETR values (as a percent of the theoretical value) are shown in Appendix B.2.

2.5 Sampling in Geotechnical Borings

2.5.1 Standard Penetration Test Sampling

SPT sampling in the geotechnical borings was generally conducted on 2.5-foot centers from the ground surface to a depth of 15 feet. The SPT sampling interval below 15 feet was 5 feet to the depth of boring termination or to SPT refusal. No sampling was done in the zone where the “soft dig” utility clearance method, as described in Section 2.2, was performed. The sampling equipment and methods are described in ASTM D 1586-08a. Automatic hammers were used to perform the SPT tests. The split-barrel sampler was typically driven 18 inches in soil with blows recorded for each six-inch interval of penetration. The weight of the hammers used at the site ranged from 138.6 to 139.5 pounds, meeting ASTM requirements. In very hard soils or weathered rock, driving was terminated after 50 blows and the actual penetration was recorded, (e.g., 50 blows/0.3 feet). At selected locations where low penetration was encountered, the sampler was over-driven to collect additional sample.

The split-barrel sampler was opened at the drill site and the recovered materials were visually described, classified, and photographed by MACTEC’s rig geologist or engineer. A selected portion of the sample was placed in a glass sample jar with a moisture-proof lid. Sample jars were labeled, placed in cardboard boxes, and transported to the on-site secure sample storage facility at the end of each work day.

2.5.2 Rock Core Sampling

The Technical Scope of Work defined SPT refusal as 50 blows for 6 inches or less of penetration. For purposes of determining the depth at which to begin rock coring procedures, refusal to soil drilling was defined as physical inability to advance the hole using wash drilling procedures. In practice, the sampler was typically struck with 50 blows and the actual penetration measured and recorded on the boring logs. Rock coring was completed in accordance with ASTM D 2113-08.

Rock recovered by the coring process was carefully removed from the inner barrel and placed in wooden core boxes with wooden blocks used to mark ends of runs. When core recovery was less than 100%, the rig geologist placed foam, PVC, or wood spacers in the core box to stabilize the core laterally. Filled core boxes were taken to the on-site secure sample storage facility. Photographs of the cores were taken in the field.

The rig geologist visually described the core and noted the presence of joints and fractures, distinguishing mechanical breaks from natural breaks where possible. The rig geologist also calculated percent recovery and Rock Quality Designation (RQD) prior to moving the core from the drill site. Field boring logs and photographs were used to document the drilling operations and recovered materials, and are retained in the MACTEC Document Control Center (DCC).

2.5.3 Intact Soil Sampling

No intact soil samples were obtained during the specified scope of work.

2.6 Boring Logs

The soil descriptions on the boring logs in Appendix B.1 are based on the field descriptions (ASTM D 2488-09a) by the rig geologist or engineer modified according to ASTM 2487-06e1 where lab tests results are available. The rock core descriptions on the boring logs in Appendix B.1 are based on the rig geologist's or rig engineer's description. In addition to classification and logging of the bedrock lithology, rock discontinuities were described and logged, and the Rock Quality Designation (RQD) was measured and recorded for each core run according to ASTM D 6032-08. The water depths on the boring logs are from observations during drilling. Because water was introduced during rotary and core drilling, the water depths on the boring logs may not represent the stabilized water depths. The boring logs in Appendix B.1 were prepared using Version 8 of the computer program "gINT".

2.7 Sampling in Geotechnical Test Pits

No test pits were completed during the specified scope of work.

2.8 Cone Penetrometer Testing

No cone penetrometer testing was completed during the specified scope of work.

2.9 Field Electrical Resistivity Testing

No field resistivity testing was completed during the specified scope of work.

2.10 Geophysical Down-hole Testing

Down-hole geophysical and televiewer logging was performed in two borings (M-10 (DH) and M-30 (DH)) as indicated on the Bechtel Boring Location Plan (Drawing No. 500-CY-0010-00001, Rev 0). P-S suspension logging was conducted in the same boreholes. GEOVision, a MACTEC subcontractor, conducted the down-hole geophysical logging in accordance with ASTM D 5753-05. The results are found in the report from GEOVision contained in Appendix C.1. The GEOVision report consists of two volumes – a text and graphical volume presented in Appendix C.1, and an electronic set of data and charts presented only on DVD and not included in paper copies of this Geotechnical Data Report. The down-hole geophysical logs performed in the selected borings are described below.

2.10.1 Natural Gamma

Gamma logs record the amount of natural gamma radiation emitted by the soil and rocks surrounding the boring.

2.10.2 Long and Short Normal Resistivity

Normal-resistivity logs record the electrical resistivity of the borehole environment and surrounding soil, rocks and water as measured by variably spaced potential electrodes on the logging probe. Typical spacing for potential electrodes is 16 inches for short-normal resistivity and 64 inches for long normal resistivity. Normal resistivity logs are affected by bed thickness, borehole diameter and borehole fluid, and can only be collected in water or mud filled open holes.

2.10.3 Three Arm Caliper

Caliper logs record borehole diameter. Changes in borehole diameter are related to boring construction, such as casing or drilling bit size, and to fracturing or caving along the borehole wall. Because borehole diameter commonly affects log response, the caliper log may be useful in the analysis of other geophysical logs.

2.10.4 Borehole Acoustic Televierer Logging

Televierer logging was conducted in accordance with GEOVison procedures as included in the MACTEC Work Plan. The acoustic televierer measures amplitude and travel time of the reflected acoustic signal and produces a magnetically oriented photographic image of the acoustic reflectivity of the boring wall. The acoustic televierer is limited to open boreholes filled with water or drilling mud.

2.10.5 Suspension P-S Velocity Logging

Suspension P-S velocity logging was conducted in borings M-10 (DH) and M-30 (DH) in accordance with GEOVison procedures as contained in the MACTEC Work Plan. Measurements of compression (P) and shear (S) wave velocity were made at 1-meter intervals or less.

SECTION 3 SAMPLE STORAGE

Consistent with MACTEC's QAPD Requirements, a temporary on-site secure sample storage facility was established. The storage facility was a lockable climate controlled trailer. The trailer was a ground supported 20-foot-long by 8-foot wide Mobile-Mini Open Bay Security Office with high security door system and exterior security bars over each window.

Samples were transported daily from the field to the temporary on-site secure sample storage facility by the rig geologists/engineers. The SPT samples were transported in accordance with ASTM D 4220-95(2007) for Group B samples. The SPT samples were transported in their compartmentalized cardboard box each labeled to show the contents therein. The rock cores were transported in their wooden core boxes, kept horizontal and each labeled to show the contents. A sample inventory log was kept at the temporary on-site secure sample storage facility. All samples entering the temporary on-site secure sample storage facility were logged in by the Rig Geologist/Engineer or Site Manager/ Lead Geologist.

Samples were reviewed by the Lead Geologist and transported from the temporary on-site secure sample storage facility to the long term on-site sample storage facility located at the plant's warehouse. The long term sample storage facility was located within the "A Level" area of the plant's warehouse facility. The "A Level" has limited access and is climate controlled. Samples were stored in either a 12-foot square area surrounded by a 6-foot high chain link fence, or in an adjacent "fixed" secured area provided by the plant. Locking gates were provided in both areas.

A MACTEC Chain-Of-Custody form was completed for all samples removed from the temporary on-site secure sample storage facility. A Dominion representative received samples at the long term on-site sample storage facility on November 2, 2009.

SECTION 4 LABORATORY TESTING – GEOTECHNICAL

Laboratory testing was conducted on disturbed soil samples and on rock cores obtained during the subsurface investigation. All testing was performed in accordance with the current ASTM standards or other standards where applicable. Selection of the samples to be tested and the tests to be performed on the samples was done by Bechtel engineers. Bechtel provided a Geotechnical Laboratory Test Assignment Sheet (Assignment 01) dated September 21, 2009 for geotechnical soil and rock laboratory testing.

Some of the rock cores on which tests were assigned contained fractures or geometric characteristics that made them unsuitable to test. This information was reported to the Bechtel on-site Technical Representative. A representative of MACTEC and the Bechtel on-site Technical Representative determined the rock core interval closest to the assigned depth interval suitable for testing. Replacement rock core test intervals were assigned by Bechtel. A revised copy of the Geotechnical Laboratory Assignment Sheet (Assignment 01, Rev 1) dated September 28, 2009 showing revised rock core depths is included in Appendix D.

Testing of soil samples and rock core were conducted in MACTEC's laboratories in Raleigh and Charlotte, North Carolina, respectively.

The following tests were assigned and performed:

4.1 Index Tests - Soil

- Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass - ASTM D 2216-05
- Particle-Size Analysis of Soils - ASTM D 422-63(2007) (for analysis including hydrometer)
- Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis - ASTM D 6913-(2004)e1 (for analysis not including hydrometer)
- Liquid Limit, Plastic Limit, and Plasticity Index of Soils - ASTM D 4318-05
- Classification of Soils for Engineering Purposes (Unified Soil Classification System) – ASTM D 2487-06e1
- Description and Identification of Soils (Visual-Manual Procedure) – ASTM D 2488-09a

4.2 Strength Tests - Rock

- Specimen Preparation – ASTM D 4543-08
- Compressive Strength – ASTM D 7012-07e1

4.3 Reporting

The geotechnical laboratory test reports, consisting of individual test data and results sheets as required by the testing standard, are contained in Appendix D. Summaries of the test results in Appendix D are shown in Table 3.1 for soil and Table 4.1 for rock.

SECTION 5
WATER SAMPLING, FIELD AND LABORATORY TESTING

No water sampling or testing was completed during the specified scope of work.

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SUPPLEMENT 2
DOMINION POWER
NORTH ANNA NUCLEAR POWER STATION
NORTH ANNA 3 PROJECT
MINERAL, LOUISA COUNTY, VIRGINIA

December 16, 2009

VOLUME 1

TABLES

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MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

MACTEC PROJECT No. 6468-09-2473

Prepared For:

Bechtel Power Corporation
Subcontractor No. 25161-500-HC4-CY00-00001

TABLE 1.1
ORGANIZATIONS PERFORMING WORK AT THE SITE OR IN THE LABORATORY

Organization	Function
MACTEC Engineering and Consulting, Inc.	<ul style="list-style-type: none">• Underground Utility Clearance (Not Used)• Geotechnical Borings with SPT Tests and Rock Coring• SPT Energy Measurement on Drill Rigs• Logging of Geotechnical Borings• Undisturbed Sampling (Not Used)• Bulk Sampling (Not Used)• Boring Abandonment• Site Coordination• Geotechnical Laboratory Testing for Soil Samples and Rock Core
GEOVision	<ul style="list-style-type: none">• Down-hole Geophysical Logging• P-S Suspension Logging
McKim&Creed, P.A.	<ul style="list-style-type: none">• Surveying of Boring Locations

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**TABLE 2.1
TESTING SUMMARY - BORINGS
North Anna 3 Project, Supplement 2
MACTEC Project Number 6468-09-2473**

Boring Number	Boring Type			Equipment		Depth		As-Built Coordinates/Elevations			In-Situ Testing					
	SPT	Core	UD Tubes	Drill Rig	Hammer ID	Proposed (ft)	Actual (ft)	Northing (US ft)	Easting (US ft)	Ground Surface Elevation (ft)	P-S Suspension	Televiwer and Deviation	Natural Gamma	Resistivity	Caliper	Spontaneous Potential
M-1	X	X	NA	CME 550X (ATL)	MEC-05	150	151.1	3,909,611.0	11,685,483.5	314.1	NA	NA	NA	NA	NA	NA
M-2	X	X	NA	CME 550X (ATL)	MEC-05	150	153.4	3,909,531.0	11,685,586.0	315.3	NA	NA	NA	NA	NA	NA
M-3	X	X	NA	CME 55LC Track (RAL)	MEC-02	150	152.6	3,909,538.5	11,685,678.5	313.9	NA	NA	NA	NA	NA	NA
M-4	X	X	NA	CME 550X (ATL)	MEC-05	150	154.0	3,909,456.0	11,685,694.5	321.8	NA	NA	NA	NA	NA	NA
M-6	X	X	NA	CME 55 Track (RAL)	MEC-21	150	150.4	3,909,401.0	11,685,759.5	327.8	NA	NA	NA	NA	NA	NA
M-7	X	X	NA	CME 55 Trailer (RAL)	MEC-425	150	151.5	3,909,504.0	11,685,835.5	326.0	NA	NA	NA	NA	NA	NA
M-8	X	X	NA	CME 45C Track (RAL)	MEC-12	150	150.6	3,909,413.5	11,685,847.0	329.3	NA	NA	NA	NA	NA	NA
M-9	X	X	NA	CME 550X (ATL)	MEC-05	150	153.6	3,909,333.5	11,685,946.0	327.3	NA	NA	NA	NA	NA	NA
M-10 (DH)	X	X	NA	CME 55LC Track (RAL)	MEC-02	200	201.9	3,909,243.5	11,685,962.0	323.6	X	X	X	X	X	X
M-11	X	NA	NA	CME 55 Trailer (RAL)	MEC-425	150	148.7	3,909,351.5	11,686,038.5	325.9	NA	NA	NA	NA	NA	NA
M-12	X	X	NA	CME 45C Track (RAL)	MEC-12	150	151.2	3,909,723.0	11,685,560.0	307.0	NA	NA	NA	NA	NA	NA
M-13	X	X	NA	CME 55LC Track (RAL)	MEC-02	150	151.6	3,909,519.5	11,686,025.0	326.8	NA	NA	NA	NA	NA	NA
M-14	X	NA	NA	CME 55LC Track (RAL)	MEC-02	60	60.3	3,909,451.5	11,686,111.0	323.8	NA	NA	NA	NA	NA	NA
M-15	X	NA	NA	CME 45C Track (RAL)	MEC-12	60	60.0	3,909,531.0	11,686,166.0	311.3	NA	NA	NA	NA	NA	NA
M-16	X	X	NA	CME 55 Track (RAL)	MEC-21	60	61.9	3,909,989.5	11,685,801.5	284.6	NA	NA	NA	NA	NA	NA
M-17	X	X	NA	CME 55 Trailer (RAL)	MEC-425	150	151.9	3,909,775.0	11,686,213.5	306.2	NA	NA	NA	NA	NA	NA
M-18	X	NA	NA	CME 45C Track (RAL)	MEC-12	60	60.4	3,909,608.0	11,686,213.5	304.2	NA	NA	NA	NA	NA	NA
M-19	X	X	NA	CME 550X (ATL)	MEC-05	150	151.4	3,910,052.5	11,685,855.5	280.4	NA	NA	NA	NA	NA	NA
M-20	X	X	NA	CME 45C Track (RAL)	MEC-12	150	151.0	3,909,793.5	11,686,067.5	302.6	NA	NA	NA	NA	NA	NA
M-21	X	X	NA	CME 55 Track (RAL)	MEC-21	150	151.8	3,909,811.0	11,686,269.5	303.9	NA	NA	NA	NA	NA	NA
M-27	X	X	NA	CME 55 Trailer (RAL)	MEC-425	150	151.4	3,909,426.0	11,685,937.5	330.2	NA	NA	NA	NA	NA	NA
M-28	X	X	NA	CME 45C Track (RAL)	MEC-12	150	150.0	3,909,635.5	11,685,672.0	308.2	NA	NA	NA	NA	NA	NA
M-29	X	X	NA	CME 550X (ATL)	MEC-05	150	151.2	3,909,710.5	11,685,460.0	309.3	NA	NA	NA	NA	NA	NA
M-30(DH)	X	X	NA	CME 55 Track (RAL)	MEC-21	200	201.7	3,909,695.0	11,685,381.5	313.3	X	X	X	X	X	X
M-31	X	X	NA	CME 55 Track (RAL)	MEC-21	150	151.5	3,909,799.0	11,685,459.5	306.9	NA	NA	NA	NA	NA	NA
M-32	X	X	NA	CME 55 Track (RAL)	MEC-21	60	62.2	3,909,875.5	11,685,526.5	313.2	NA	NA	NA	NA	NA	NA
M-33	X	NA	NA	CME 55LC Track (RAL)	MEC-02	60	64.9	3,909,983.5	11,685,614.5	303.8	NA	NA	NA	NA	NA	NA
M-34	X	X	NA	CME 55LC Track (RAL)	MEC-02	60	63.0	3,910,122.0	11,685,736.0	280.9	NA	NA	NA	NA	NA	NA

NOTES:

NA = Not Applicable

ft bgs = feet below ground surface

Horizontal Coordinates (Northing and Easting) = NAD83 (2007), Virginia State Plane Coordinate System (VSPCS) South Zone, NAD 83 (CORS 96), (EPOCH 2002), U.S. Survey Feet

Elevations = North American Vertical Datum of 1988 (NAVD88), U.S. Survey Feet

Original Prepared by: JSJ (Rev 0)

Original Checked by: DSC (Rev 0)

TABLE 3.1
SUMMARY OF SOIL INDEX TEST RESULTS
SPLIT-BARREL SAMPLES
NORTH ANNA 3 PROJECT, SUPPLEMENT 2
MACTEC PROJECT NO. 6468-09-2473

Original Prepared By: JSJ (Rev 0)
Original Checked By: DSC (Rev 0)

Boring Number	Sample Number	Depth (ft)	Gravel (%)	Sand (%)	Fines (%)	Silt (%)	0.005 mm Clay (%)	USCS Symbol	Natural Moisture (%)	LL (%)	PI (%)	G _s
M-10 (DH)	SS-2	11.7-13.2	0.0	57.5	42.5	30.2	12.3	SM	48.5	59	9	
M-10 (DH)	SS-4	19.2-20.7	0.0	61.9	38.1	29.4	8.7	SM	35.9	54	6	
M-10 (DH)	SS-5	24.2-25.7	0.0	61.3	38.7	28.4	10.3	SM	53.7	59	12	
M-10 (DH)	SS-6	29.2-30.7	0.0	56.6	43.4	31.9	11.5	SM	66.7	51	7	
M-10 (DH)	SS-8	39.1-40.6	0.0	53.5	46.5	42.4	4.1	SM	30.6	42	6	
M-10 (DH)	SS-10	49.1-50.6	0.0	79.9	20.1			SM ¹	16.4			
M-10 (DH)	SS-12	59.1-60.6	0.7	77.2	22.1			SM ¹	15.1			
M-10 (DH)	SS-15	74.1-75.6	0.0	72.6	27.4			SM ¹	29.9			
M-10 (DH)	SS-17	84.1-85.6	0.0	79.0	21.0			SM ¹	15.1			
M-30 (DH)	SS-1	8.7-10.2	0.6	72.3	27.1			SM ¹	17.0			
M-30 (DH)	SS-3	13.7-15.2	0.0	64.0	36.0			SM ¹	19.8			
M-30 (DH)	SS-5	23.7-25.2	0.0	82.0	18.0			SM ¹	18.5			
M-30 (DH)	SS-7	33.7-35.2	0.0	77.1	22.9			SM ¹	14.8			
<p>1 Classification is based on quantitative and qualitative (visual inspection) information. LL= Liquid Limit, PI = Plasticity Index, G_s = Specific Gravity Test not assigned</p>												

TABLE 4.1
SUMMARY OF LABORATORY TEST RESULTS - ROCK
UNCONFINED COMPRESSIVE STRENGTH TEST RESULTS
NORTH ANNA 3 PROJECT, SUPPLEMENT 2

Orig Prepared By: JSJ (Rev 0)
 Orig Checked By: DSC (Rev 0)

Boring Number	Run Number	Lab Sample ID	Sample Top Depth (feet)	Sample Length (L) (inches)	Sample Diameter (D) (inches)	L/D Ratio	Unit Weight (pcf) ⁽¹⁾	Moisture Content (%)	Type of Break ⁽²⁾	Unconfined Compressive Strength (psi)	Young's Modulus (ksi x1000)	Specific Gravity
M-10 (DH)	R-7	RS-1	117.45	5.15	2.41	2.1	160.1		S	7960		
M-10 (DH)	R-10	RS-2	133.75	5.09	2.41	2.1	161.9		S	19640 ⁽⁴⁾		
M-10 (DH)	R-15	RS-3	153.70	5.08	2.41	2.1	163.5		C	33830 ⁽⁴⁾		
M-10 (DH)	R-20	RS-4	177.60	5.14	2.39	2.2	163.3		S	20880 ⁽⁴⁾		
M-10 (DH) ⁽³⁾	R-24	RS-5	196.70	5.18	2.39	2.2	163.7		C	30780		
M-30 (DH) ⁽³⁾	R-4	RS-6	57.00	5.18	2.40	2.2	162.8		C	28650		
M-30 (DH)	R-18	RS-7	95.40	5.06	2.39	2.1	162.7		C	23700		
M-30 (DH) ⁽³⁾	R-26	RS-8	134.90	5.26	2.39	2.2	163.7		S	26200		
M-30 (DH)	R-34	RS-9	166.90	5.06	2.40	2.1	164.6		C/S	24820		
M-30 (DH)	R-40	RS-10	197.05	5.16	2.40	2.2	162.6		C	33040		

(1) As-tested Wet Unit Weight.
 (2) Types of Breaks: COL=Columnar; C=Cone; S=Shear; C/S=Cone/Shear
 (3) Core samples did not meet the dimensional tolerances for straightness or perpendicularity per ASTM D 4543-08.
 (4) Test duration exceeded 15 minute maximum time as indicated by ASTM D 7012-07e1.
 (5) Shaded cells indicate that information not obtained.
 NA = Not Applicable

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MINERAL, LOUISA COUNTY, VIRGINIA**

December 16, 2009

VOLUME 1

FIGURE

Prepared By:

**MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA**

MACTEC PROJECT No. 6468-09-2473

Prepared For:

**Bechtel Power Corporation
Subcontractor No. 25161-500-HC4-CY00-00001**



LAKE ANNA WEST, VA.

(FORMERLY CONTRARY CREEK)

38077-A7-TF-024

1973

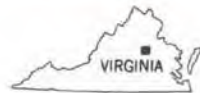
PHOTOREVISED 1983

DMA 5460 III SE-SERIES V834

CONTOUR INTERVAL 10 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

NORTH



QUADRANGLE LOCATION

NOTE: SITE LOCATION IS APPROXIMATE

MACTEC

MACTEC ENGINEERING AND CONSULTING, INC.
3301 ATLANTIC AVENUE
RALEIGH, NORTH CAROLINA

**SITE VICINITY MAP
NORTH ANNA 3 PROJECT
MINERAL, VIRGINIA**

DRAWN:	DATE: November 2009	FIGURE
ENG CHECK:	SCALE: 1" = 2000'	1
APPROVAL:	JOB: 6468-09-2473	

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NORTH ANNA 3 PROJECT
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December 16, 2009

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**APPENDIX A
Survey Report**

Prepared By:

**MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA**

MACTEC PROJECT No. 6468-09-2473

Prepared For:

**Bechtel Power Corporation
Subcontractor No. 25161-500-HC4-CY00-00001**



**DOCUMENTATION OF TECHNICAL REVIEW
SUBCONTRACTOR WORK PRODUCT**

Project Name: NORTH ANNA 3 PROJECT

Project Number: 6468-09-2473

Project Manager: Steve Criscenzo

Project Principals: Al Tice and Steve Copley

The report described below has been prepared by the named subcontractor retained in accordance with the MACTEC QAPD. The work and report have been reviewed by a MACTEC technically qualified person. Comments on the work or report, if any, have been satisfactorily addressed by the subcontractor. The attached report is approved in accordance with section QS-7 of MACTEC's QAPD.

The information and data contained in the attached report are hereby released by MACTEC for project use.

REPORT: Surveyor's Report for 29 Soil Borings, As-Drilled Location Survey – North Anna Nuclear Power Plant, dated October 23, 2009, Revised November 19, 2009

SUBCONTRACTOR: McKin & Creed, P.A.

DATE OF ACCEPTANCE: November 23, 2009

TECHNICAL REVIEWER:
D. Steven Copley, P.E., Principal Professional

PRINCIPAL PROFESSIONAL:
D. Steven Copley 11-23-09

DCN - NAP 295





ENGINEERS
 SURVEYORS
 PLANNERS

October 23, 2009
 Revised November 19, 2009

Mr. Scott Auger, P.E., PMP
 MACTEC Engineering and Consulting, Inc.
 3301 Atlantic Avenue
 Raleigh, NC 27604

**Ref: Surveyor's Report for 29 Soil Borings, As-Drilled Location Survey –
 North Anna Nuclear Power Plant**

Dear Mr. Auger:

McKim & Creed, P.A. performed an as-drilled survey of 29 soil borings (M1-M4, M6-M21, M25, M27-M34), on the dates of October 6th, 7th and 8th, 2009. The survey was performed in accordance with the specifications stipulated in "Work Order & PO NO 200913023, North Anna 3 Project, MACTEC Project No. 6468092473-12", dated August 24, 2009 including the QA requirements in Section 2.0 of the Bechtel Technical Specification, and Attachment 1 – Survey Controls from the MACTEC Geotechnical Work Plan. As required by the Bechtel Technical Specification, Section 2.2, as-drilled boring locations shown in this report have a horizontal accuracy to the nearest 0.5 foot and a vertical accuracy to the nearest 0.1 foot.

The survey was performed using a Trimble 5700 L1/L2 Real Time Kinematic (RTK) GPS system and Trimble 5603 DR200+ total station. Data was collected and reviewed in Trimble Survey Controller (GPS) and TDS Ranger (total station) data collectors analyzed using Trimble Geomatics Office and Autodesk Land Desktop softwares. Hard copy field notes of occupations and results were kept as a backup of the data collectors. The equipment was tested for functionality prior to and following conducting the survey to ensure the equipment was functioning within the required parameters.

The origin for the stakeout survey was Control Monument No. 7, a brass disk embedded in concrete. The horizontal positions and vertical values for this point were determined from the submission of 10.5 total hours of static GPS observation data to the National Geodetic Survey's (NGS) Online Positioning User Service (OPUS). The static data was collected using the GPS RTK base receiver operating on Control Monument No. 7 from 29 through 30 November

Venture IV Building
 Suite 500
 1730 Varsity Drive
 Raleigh, NC 27606
 919.233.8091
 Fax 919.233.8031

2006. After the OPUS solutions were converted to US Feet (1 meter = 39.37 inches), the position and vertical values for both days were averaged to determine the horizontal position of Control Monument No. 7 within the Virginia State Plane Coordinate System (VSPCS), South Zone, NAD 83 (CORS 96) (EPOCH 2002) and its orthometric height (elevation) relative to NAVD 88 (GEOID 03). Final coordinates:

Monument 7	Jan 07 OPUS Position
Northing	3,909,874.97 usft
Easting	11,685,943.52 usft
Orthometric Height	303.76 usft

The base station for the RTK system was positioned on Monument No. 7 during all RTK sessions. An additional 5 hours of static data was collected in August 2009 to verify the location of monument 7 and ensure that it had remained stable since the original observations. RTK checks were made on the existing monuments A and B using coordinate values provided on Boring Location Plan 9-CY-0010-00001. Checks were performed in the morning and afternoon of each survey session. Fixed height poles were used with all the GPS units to ensure vertical accuracy. Checks were performed in the morning and the afternoon. Additionally, over four hours of static GPS observations were made on GPS Control Point 105 as a check on the integrity of the overall control network. Final coordinates:

Point 105	Oct 09 NAD83 Position
Northing	3,910,088.59 usft
Easting	11,685,845.35 usft
Orthometric Height	279.45 usft

Also, RTK GPS observations to existing monuments A and B were performed. Their positions in the coordinate system established for this survey are:

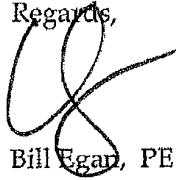
Monument A	Oct 09 NAD83 Position
Northing	3,909,133.04 usft
Easting	11,686,566.77 usft
Orthometric Height	327.68 usft
Monument B	Oct 09 NAD83 Position
Northing	3,909,594.84 usft
Easting	11,686,608.38 usft
Orthometric Height	329.08 usft

All points located conventionally by the total station were set from RTK 3-minute observed control points. Every occupation of RTK control points with the total station was checked using the backsight confirmation routine of the data collector. The backsights were taken in the direct and reversed position. This ensured accurate instrument and target/prism pole height and relative accuracy between points. Elevations of the as-drilled positions were measured from natural ground at the drill site.

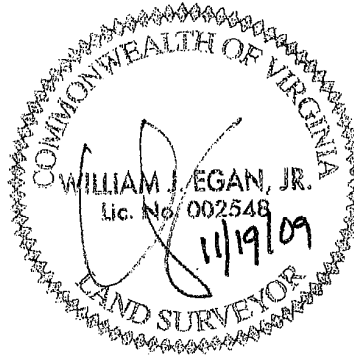
A closed level loop was run through the control points to provide additional validation of elevations.

Based upon the methods employed and the quality of the data collected, the undersigned certifies that the relative accuracy of the data set resulting from this survey meets the accuracy requirements stipulated by MACTEC, Inc. and Bechtel Corp. for the final horizontal location of exploration points.

Regards,



Bill Egan, PE LS
Project Manager



Encl:

- 1 - Tabular As-Drilled Position Data

- 2 - OPUS solution (Point 105)

As-Drilled Boring Locations
North Anna Nuclear Power Plant

Borehole Designation	Drilled Northing (Y)	Drilled Easting (X)	Ground Elev.
M-01	3909611.0	11685483.5	314.1
M-02	3909531.0	11685586.0	315.3
M-03	3909538.5	11685678.5	313.9
M-04	3909456.0	11685694.5	321.8
M-06	3909401.0	11685759.5	327.8
M-07	3909504.0	11685835.5	326.0
M-08	3909413.5	11685847.0	329.3
M-09	3909333.5	11685946.0	327.3
M-10 (DH)	3909243.5	11685962.0	323.6
M-11	3909351.5	11686038.5	325.9
M-12	3909723.0	11685560.0	307.0
M-13	3909519.5	11686025.0	326.8
M-14	3909451.5	11686111.0	323.8
M-15	3909531.0	11686166.0	311.3
M-16	3909989.5	11685801.5	284.6
M-17	3909775.0	11686213.5	306.2
M-18	3909608.0	11686213.5	304.2
M-19	3910052.5	11685855.5	280.4
M-20	3909793.5	11686067.5	302.6
M-21	3909811.0	11686269.5	303.9
M-25	***M-25 NOT BORED		
M-27	3909426.0	11685937.5	330.2
M-28	3909635.5	11685672.0	308.2
M-29	3909710.5	11685460.0	309.3
M-30 (DH)	3909695.0	11685381.5	313.3
M-31	3909799.0	11685459.5	306.9
M-32	3909875.5	11685526.5	313.2
M-33	3909983.5	11685614.5	303.8
M-34	3910122.0	11685736.0	280.9

Note: All locations based on VA State Plane Coordinates NAD83 (CORS96 Epoch 2002)
Zone 4502 South (US Feet) horizontal and NAVD88 (Geoid03) vertical.

DCN# NAP296

△ 105

FILE: 75812803.DAT 000129896

NGS OPUS SOLUTION REPORT

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: www.ngs.noaa.gov/OPUS/Using_OPUS.html#accuracy

USER: dclark@mckimcreed.com
RINEX FILE: 7581280t.09o

DATE: October 16, 2009
TIME: 12:05:14 UTC

SOFTWARE: page5 0909.08 master28.pl 081023 START: 2009/10/07 19:45:00
EPHEMERIS: igr15523.eph [rapid] STOP: 2009/10/07 21:51:00
NAV FILE: brdc2800.09n OBS USED: 5200 / 5260 : 99%
ANT NAME: TRM41249.00 # FIXED AMB: 28 / 32 : 88%
ARP HEIGHT: 2 OVERALL RMS: 0.017 (m)

REF FRAME: NAD_83(CORS96) (EPOCH:2002.0000) ITRF00 (EPOCH:2009.7668)

X: 1063036.293 (m) 0.101 (m) 1063035.560 (m) 0.101 (m)
Y: -4914753.745 (m) 0.115 (m) -4914752.290 (m) 0.115 (m)
Z: 3910676.131 (m) 0.106 (m) 3910676.007 (m) 0.106 (m)

LAT: 38 3 34.09066 0.079 (m) 38 3 34.11903 0.079 (m)
E LON: 282 12 17.19696 0.076 (m) 282 12 17.18019 0.076 (m)
W LON: 77 47 42.80304 0.076 (m) 77 47 42.81981 0.076 (m)
EL HGT: 52.964 (m) 0.163 (m) 51.645 (m) 0.163 (m)
ORTHO HGT: 85.291 (m) 0.171 (m) [NAVD88 (Computed using GEOID03)]

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 18)	SPC (4502 VA S)
Northing (Y) [meters]	4216102.812	1191797.409
Easting (X) [meters]	254761.637	3561852.824
Convergence [degrees]	-1.72405501	0.42774663
Point Scale	1.00034078	1.00001825
Combined Factor	1.00033247	1.00000994

US NATIONAL GRID DESIGNATOR: 18STH5476116102(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE (m)
DH7954	LOY8 LOYOLA 8 COOP CORS ARP	N381658.691	W0772709.468	38944.9
AJ2122	CORB CORBIN CORS ARP	N381207.828	W0772224.571	40226.0
DL2310	LOYO LOYOLA O CORS ARP	N380300.626	W0772051.173	39304.8

NEAREST NGS PUBLISHED CONTROL POINT

DF6890	BOGGS AZ	N380441.006	W0774624.011	2821.5
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

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MINERAL, LOUISA COUNTY, VIRGINIA**

December 16, 2009

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**APPENDIX B
Geotechnical Field Data**

Prepared By:

**MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA**

MACTEC PROJECT No. 6468-09-2473

Prepared For:

**Bechtel Power Corporation
Subcontractor No. 25161-500-HC4-CY00-00001**

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NORTH ANNA 3 PROJECT
MINERAL, LOUISA COUNTY, VIRGINIA**

December 16, 2009

VOLUME 1

**APPENDIX B.1
Geotechnical Boring Logs**

Prepared By:

**MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA**

MACTEC PROJECT No. 6468-09-2473

Prepared For:

**Bechtel Power Corporation
Subcontractor No. 25161-500-HC4-CY00-00001**

KEY TO CLASSIFICATION AND SYMBOLS

SOILS

Soils classified under the Unified Soil Classification System (USCS) and in accordance with ASTM D 2488-08

CORRELATION OF SPT RESISTANCE WITH RELATIVE DENSITY-CONSISTENCY				MOISTURE CONTENT	MODIFIERS	
GRANULAR MATERIAL		SILTS AND CLAYS		DRY-Absence of moisture	Approximate %	Modifiers
RELATIVE DENSITY	SPT N Value (blows/ft)	CONSISTENCY	SPT N Value (blows/ft)	MOIST-Damp/no visible H ₂ O	<5%	TRACE
VERY LOOSE	0 - 4	VERY SOFT	0 - 2	WET-Visible free water	5 to 10%	FEW
LOOSE	5 - 10	SOFT	3 - 4		15 to 25%	LITTLE
MEDIUM DENSE	11 - 30	MEDIUM - STIFF	5 - 8	<u>HCl Reaction</u>	30 to 45%	SOME
DENSE	31 - 50	STIFF	9 - 15	NONE - No visible reaction	50 to 100%	MOSTLY
VERY DENSE	> 50	VERY STIFF	16 - 30	WEAK - Some reaction/slow	Modifiers provide an estimate of the percentages of gravel, sand, and fines (silt or clay size particles) or other material such as organics, mica, mineral components, etc.	
		HARD	> 30	STRONG - Violent reaction		
COLOR of Soil/Rock: see Munsell Soil Color Charts				SPT Sample Numbering: SS-1, SS-2, SS-3, etc.		
Particle Size Range for Sand: Fine, Medium, Coarse				Tested Rock Sample Numbering: RS-1, RS-2, etc.		
Particle Size Range for Gravel: Fine or Coarse				Example Soil Description: Silty SAND (SM), light gray (10Y7/1), medium dense, wet, fine to coarse sand, little mica, relict rock fabric		
Measurements: Horizontal measurements are rounded to nearest foot. Vertical measurements, such as SPT sample recovery or penetration, sample depths, core run depth, core run length, core recovery, core RQD, etc. are rounded to nearest tenth of a foot (0.1 ft).				Coordinate System and Datum Reference Information: Horizontal - Virginia State Plane Coordinate System, South Zone, NAD 83 (CORS96)(EPOCH 2002); Elevation - NAVD88 (Geoid03)		
▽ Borehole fluid level at time of drilling completion				▽ Borehole fluid level 24 hours after drilling completion		

ROCK

In general, the North Anna Site is composed of moderately to strongly metamorphosed rock of granitic composition commonly described as quartz gneiss and biotite gneiss (or a combination of these); locally zones of schist and/or pegmatitic zones may be encountered.










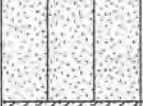
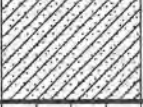




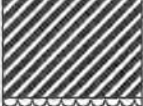
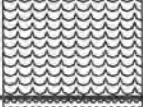

Example Rock Core Run Description: Light gray with trace orange staining, slightly weathered, moderately close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS with trace magnetite (2 Joints at 45°, tight with trace orange staining; 2 joints at 60°, open with clay)

WEATHERING DESCRIPTION		FRACTURE SPACING		ROCK HARDNESS DESCRIPTION	
SEVERE	Rock except quartz discolored or stained; severe loss in strength; some fragments of strong rock remain	VERY CLOSE	< 0.15 ft (2")	VERY SOFT	Can be carved with knife; pieces >1" can be broken by finger pressure; crumbles easily
MODERATELY SEVERE	Rock except quartz discolored or stained; crystals dull, show clay alteration; thud sound when struck by hammer	CLOSE	0.15 ft (2") to 1 foot	SOFT	Can be gouged/grooved with knife; small thin pieces broken by finger pressure
MODERATE	Significant portions show discoloration and weathering effects; crystals dull; dull sound under hammer blows	MODERATELY CLOSE	1 to 3 feet	MEDIUM HARD	Can be gouged/grooved by knife with firm pressure; easily broken by hammer
SLIGHT	Rock generally fresh; joints stained; discoloration extends into rock, may contain clay, some crystals dull	WIDE	>3 feet	MODERATELY HARD	Can be scratched by knife or steel pick; moderate hammer blows to break sample
VERY SLIGHT	Rock generally fresh; joints stained, may show thin clay coatings; crystals bright; rock rings under hammer blows	JOINT DESCRIPTION	Tight-Core pieces fit tightly together; no gaps	HARD	Rock core rings when struck with a hammer; Can be scratched by knife or steel pick only with difficulty
FRESH	Rock fresh, crystals bright, few joints may show slight staining, rock rings under hammer blows		Open-Core pieces fit loosely together; has gaps	VERY HARD	Rock core rings when struck with a hammer; Cannot be scratched by knife or steel pick

Core Terms-Abbreviations	EXPLANATION
DRILL RATE	Time in minutes it takes to core one foot, for each foot or partial foot of a core run. (1:32; 0:54/0.7 ft)
CORE RUN; RUN LENGTH	Cored Interval; Total distance of core run measured to nearest 0.1 ft. Core runs are not to exceed 5 feet.
CORE RECOVERY (REC.)	Total length of recovered core, measured to nearest 0.1 ft, divided by the core run length, and expressed as a percentage.
CORE RQD (RQD)	Rock Quality Designation. Sum of intact core pieces greater than 4 inches in length, measured to the nearest 0.1 ft, divided by the core run length, and expressed as a percentage.

Legend-NORTH ANNA 3, Rev 0

SOIL AND ROCK SYMBOLS AND DESCRIPTIONS

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS		
			GRAPH	LETTER			
ROCK				WR	WEATHERED ROCK		
				HR-WR	HARD ROCK - WEATHERED ROCK		
				HR	HARD ROCK		
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS <small>(LITTLE OR NO FINES)</small>		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES		
		GRAVELS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES		
		GRAVELS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES		
		GRAVELS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES		
	SAND AND SANDY SOILS	CLEAN SANDS <small>(LITTLE OR NO FINES)</small>		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES		
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES		
		SANDS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		SM	SILTY SANDS, SAND - SILT MIXTURES		
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES		
			SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				LIQUID LIMIT LESS THAN 50		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
LIQUID LIMIT LESS THAN 50		OL		ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY			
SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS			
	LIQUID LIMIT GREATER THAN 50		CH	INORGANIC CLAYS OF HIGH PLASTICITY			
	LIQUID LIMIT GREATER THAN 50		OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS			
HIGHLY ORGANIC SOILS				PT	MUCK, PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS		

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS



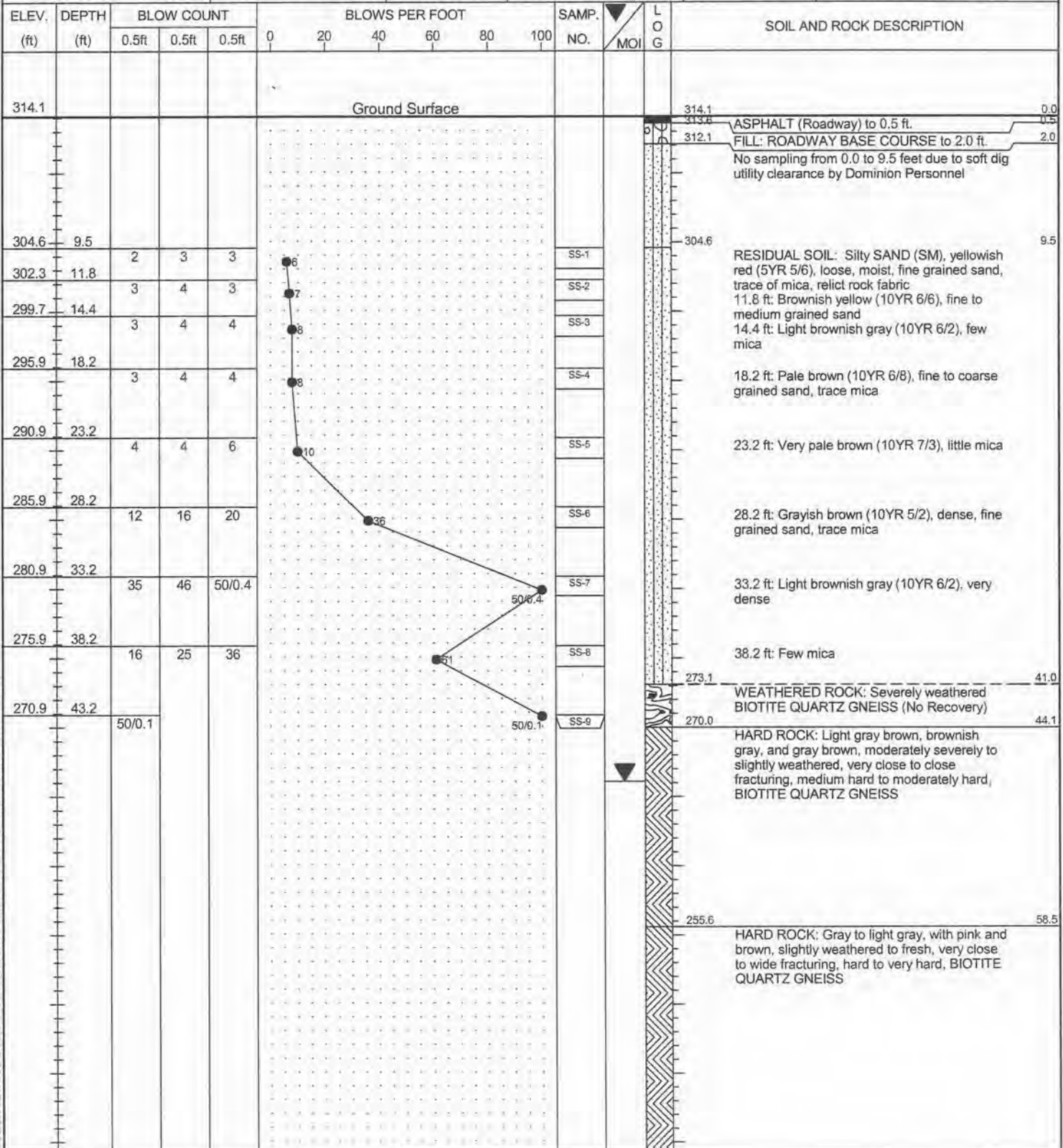
GEOTECHNICAL BORING LOG

Prepared By JJJ Date 12/16/09

Checked By MAN Date 12/16/09

SHEET 1 OF 3

BECHTEL PROJECT NO.: 25161	MACTEC PROJECT NO.: 6468-09-2473	COUNTY: Louisa, VA	GEOLOGIST: A. Mwembeshi
SITE DESCRIPTION: North Anna 3 Project Supplement 2		DRILLER: R. Landeros/D. Reneau	FLUID LEVEL (ft)
BORING NO.: M-1	DRILL METHOD: Mud Rotary/Rock Core	DRILL MACHINE: CME-550X (ATL)	0 HR. NA
GROUND ELEV.: 314.1 ft (NAVD88)	NORTHING: 3,909,611 US ft (NAD83)	EASTING: 11,685,484 US ft (NAD83)	24 HR. 48.0
TOTAL DEPTH: 151.1 ft	SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08	ROD TYPE: AWJ	HAMMER (ID): 140-lb. Auto (MEC-05)
DATE STARTED: 9/16/09	COMPLETED: 9/18/09	HOLE DIA.: 3"	CASING DEPTH: 43.2 ft
		CORE SIZE: NQ3	BITS USED: 2-7/8" Tri-Cone



NORTH ANNA 3 BORE, NORTH ANNA 3 PROJECT.GPJ, NORTH ANNA 3.GDT, 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi						
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)						
BORING NO.: M-1		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA						
GROUND ELEV.: 314.1 ft (NAVD88)		NORTHING: 3,909,611 US ft (NAD83)		EASTING: 11,685,484 US ft (NAD83)		24 HR. 48.0						
TOTAL DEPTH: 151.1 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-05)						
DATE STARTED: 9/16/09		COMPLETED: 9/18/09		HOLE DIA.: 3"		CASING DEPTH: 43.2 ft						
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone						
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION
		0.5ft	0.5ft	0.5ft	0	20	40	60	80			
239.3					Continued from previous page							
												HARD ROCK: Gray to light gray, with pink and brown, slightly weathered to fresh, very close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS (continued)
												129.0 ft: Loss of drill fluid circulation to 132.5 ft
												133.5 ft: Loss of drill fluid circulation to 136.8 ft
												137.5 ft: Complete loss of drill fluid circulation for remainder of boring

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi							
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)							
BORING NO.: M-1		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA							
GROUND ELEV.: 314.1 ft (NAVD88)		NORTHING: 3,909,611 US ft (NAD83)		EASTING: 11,685,484 US ft (NAD83)		24 HR. 48.0							
TOTAL DEPTH: 151.1 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-05)							
DATE STARTED: 9/16/09		COMPLETED: 9/18/09		HOLE DIA.: 3"		CASING DEPTH: 43.2 ft							
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
164.5					Continued from previous page								
												163.0	151.1
												Boring and coring terminated at 151.1 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/18/2009 prior to drilling. Borehole was at a depth of 136.8 feet.	

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GIDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)	
BORING NO.: M-1		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA	
GROUND ELEV.: 314.1 ft (NAVD88)		NORTHING: 3,909,611 US ft (NAD83)		EASTING: 11,685,484 US ft (NAD83)		24 HR. 48.0	
TOTAL DEPTH: 151.1 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-05)	
DATE STARTED: 9/16/09		COMPLETED: 9/18/09		CASING DEPTH: 43.2 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 & 8 bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (%)	RQD (%)		REC. (%)	RQD (%)		
										Begin Coring @ 43.2 ft
270.9	43.2	5.0	N=50/0.7 0:43 2:17 2:01 1:57 2:15	(4.1) 82%	(4.1) 82%	RUN 1	(0.0) 0%	(0.0) 0%		270.0 WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (No Recovery) (continued)
265.9	48.2						(10.0) 69%	(7.8) 54%		HARD ROCK: Light gray brown, brownish gray, and gray brown, moderately severely to slightly weathered, very close to close fracturing, medium hard to moderately hard, BIOTITE QUARTZ GNEISS
265.6	48.5	0.3	0:49/0.3	(0.2) 67%	(0.0) 0%	RUN 2				(1 joint at 75°, open with brown staining)
		5.0	0:39 0:49 1:30 2:04 2:02	(1.9) 38%	(0.4) 8%	RUN 3				(Quartz Vein) (Quartz vein)
260.6	53.5									(1 joint at 30°, open with black staining; 2 joints at 45°, open with orange staining)
		5.0	1:19 2:27 1:09 2:03 3:01	(3.8) 76%	(3.3) 66%	RUN 4				
255.6	58.5									255.6
254.6	59.5	1.0	6:25	(1.0) 100%	(1.0) 100%	RUN 5	(91.7) 99%	(85.6) 92%		HARD ROCK: Gray to light gray, with pink and brown, slightly weathered to fresh, very close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS
		4.0	1:25 1:38 1:33 2:38	(4.0) 100%	(3.6) 90%	RUN 6				(2 joints at 30°, open with black staining; 1 joint at 45°, open; 1 joint at 75°, open)
250.6	63.5									(2 joints at 0-10°, open with orange staining; 3 joints at 30°, open with orange staining)
		5.0	2:27 1:38 2:00 2:47 3:08	(4.5) 90%	(4.1) 82%	RUN 7				
245.6	68.5									(3 joints at 45°, open with orange staining; 3 joints at 75°, open with orange staining)
		5.0	2:15 2:16 2:24 2:13 2:20	(5.0) 100%	(4.4) 88%	RUN 8				
240.6	73.5									(1 joint at 45°, open with orange staining)
		5.0	3:16 2:50 2:39 2:45 2:50	(5.0) 100%	(5.0) 100%	RUN 9				
235.6	78.5									(No joints)
		5.0	4:02 3:30 5:41 5:44 6:20	(5.0) 100%	(5.0) 100%	RUN 10				
230.6	83.5									(1 joint at 30°, open with trace mica; 1 joint at 45°, open with trace brown staining)
		5.0	1:35 2:46 3:39 4:36 5:22	(4.8) 96%	(4.5) 90%	RUN 11				
225.6	88.5									(1 joint at 0-10°, open with orange staining; 5 joints at 45°, open with trace mica and orange staining)
		5.0	8:17 6:13 2:20 1:35 3:16	(5.0) 100%	(4.5) 90%	RUN 12				
220.6	93.5									(1 joint at 45°, open with trace brown staining)
		5.0	8:01 5:55 5:35 5:04 5:10	(5.0) 100%	(5.0) 100%	RUN 13				
215.6	98.5									(1 joint at 45°, open with orange staining)
		5.0	7:16 8:24 3:05 2:58 3:24	(5.0) 100%	(5.0) 100%	RUN 14				
210.6	103.5									(2 joints at 15°, open with trace orange staining; 2 joints at 45°, open with orange staining)
		5.0	3:21 2:11 2:21 4:20 3:55	(4.0) 80%	(4.5) 90%	RUN 15				
205.6	108.5									(1 joint at 15°, open with brown and black staining; 4 joints at 45°, open with orange-brown staining)
		5.0	5:14 4:49 3:47 2:41 1:59	(4.8) 96%	(3.8) 76%	RUN 16				
200.6	113.5									(1 joint at 0-10°, open with trace orange staining; 9 joints at 45°, open with trace orange and black staining)
		5.0	2:40 3:04 3:13 3:31	(5.0) 100%	(4.3) 86%	RUN 17				

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/16/09



BECHTEL PROJECT NO.: 25161	MACTEC PROJECT NO.: 6468-09-2473	COUNTY: Louisa, VA	GEOLOGIST: A. Mwembeshi
SITE DESCRIPTION: North Anna 3 Project Supplement 2		DRILLER: R. Landeros/D. Reneau	FLUID LEVEL (ft)
BORING NO.: M-1	DRILL METHOD: Mud Rotary/Rock Core	DRILL MACHINE: CME-550X (ATL)	0 HR. NA
GROUND ELEV.: 314.1 ft (NAVD88)	NORTHING: 3,909,611 US ft (NAD83)	EASTING: 11,685,484 US ft (NAD83)	24 HR. 48.0
TOTAL DEPTH: 151.1 ft	SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		HAMMER (ID): 140-lb. Auto (MEC-05)
DATE STARTED: 9/16/09	COMPLETED: 9/18/09	CASING DEPTH: 43.2 ft	CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 & 8 bits

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
										Continued from previous page
195.6	118.5	5.0	3:36 3:00 3:03 2:57 3:04 1:28	(5.0) 100%	(4.7) 94%	RUN 18				HARD ROCK: Gray to light gray, with pink and brown, slightly weathered to fresh, very close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS (continued) (1 joint at 30°, open with orange staining; 2 joints at 45°, open with orange staining; 1 joint at 75°, open with orange-brown staining; 0.1 ft thick quartz vein at 119.5 ft and 0.8 ft thick quartz vein at 122.5 ft) (1 joint at 75°, open with orange staining)
190.6	123.5	5.0	3:30 5:10 5:50 4:20 3:36	(5.0) 100%	(5.0) 100%	RUN 19				(2 joints at 0-10°, open with orange staining; 2 joints at 45°, open with orange staining; 1 joint at 90°, open with orange and black staining) 129.0 ft: Loss of drill fluid circulation to 132.5 ft
185.6	128.5	5.0	3:15 3:44 3:19 5:19 4:22	(5.0) 100%	(4.5) 90%	RUN 20				133.5 ft: Loss of drill fluid circulation to 136.8 ft (1 joint at 45°, open with trace orange staining; quartz vein from 136.2-136.8 ft)
180.6	133.5	3.3	5:51 6:36 4:32	(3.3) 100%	(3.3) 100%	RUN 21				(No joints) 137.5 ft: Complete loss of drill fluid circulation for remainder of boring
177.3	136.8	0.7	0:56/0.3	(0.7)	(0.7)	RUN 22				(No joints)
176.6	137.5	6.29/0.7	6:29/0.7	100%	100%	RUN 23				(3 joints at 40-50°, open with orange staining; 1 joint at 75°, tight; 0.1 ft thick quartz vein at 140.0 feet)
175.6	138.5	1.0	2:45	(1.0)	(1.0)	RUN 24				(7 joints at 50-60°, open with orange staining; 4 joints at 60-90°, tight)
170.6	143.5	5.0	2:36 3:48 3:23 3:58 3:17	(5.0) 100%	(5.0) 100%	RUN 25				(1 joint at 45°, open with orange staining; 2 joints at 75-90°, tight to open with brown staining)
165.6	148.5	2.6	4:12 4:37 4:25 5:26 5:36	(2.6) 100%	(2.6) 100%	RUN 26				Boring and coring terminated at 151.1 feet.
163.0	151.1	7:01/0.6	8:30 7:32 7:01/0.6	(2.6) 100%	(2.6) 100%				163.0	Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/18/2009 prior to drilling. Borehole was at a depth of 136.8 feet.

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/16/09



M-1 – Box 1



M-1 – Box 2



M-1 – Box 3



M-1 – Box 4



M-1 - Box 5



M-1 - Box 6



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)	
BORING NO.: M-2		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA	
GROUND ELEV.: 315.3 ft (NAVD88)		NORTHING: 3,909,531 US ft (NAD83)		EASTING: 11,685,586 US ft (NAD83)		24 HR. 20.0	
TOTAL DEPTH: 153.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID):140-lb. Auto (MEC-05)	
DATE STARTED: 9/8/09		COMPLETED: 9/10/09		HOLE DIA.: 3"		CASING DEPTH: 46.0 ft	
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100		
315.3												Ground Surface	315.3	0.0	
															No sampling from 0.0 to 8.6 feet due to soft dig utility clearance by Dominion Personnel.
306.7	8.6	3	5	5									306.7	8.6	RESIDUAL SOIL: Silty SAND (SM), very pale brown (10YR 7/4), loose, moist, fine grained sand, relict rock fabric
304.0	11.3	5	6	7											11.3 ft: Brown (10YR 4/3), medium dense, little mica
301.7	13.6	7	8	11											13.6 ft: Few mica
297.5	17.8	6	6	9											17.8 ft: Some mica
292.5	22.8	6	10	14											
287.5	27.8	9	12	20											27.8 ft: Dense, fine to medium grained sand, few mica
282.5	32.8	50	50/0.1										283.3	32.0	WEATHERED ROCK: Severely weathered QUARTZ GNEISS (Sampled as Silty SAND (SM), light gray (10YR 7/1), very dense, moist, fine to medium grained sand, few rock fragments)
277.5	37.8	8	11	24									280.3	35.0	RESIDUAL SOIL: Silty SAND (SM), light gray (10YR 7/1), dense, moist, fine to medium grained sand, few mica, trace rock fragments
272.5	42.8	50/0.2											274.3	41.0	WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (Sampled as Silty SAND (SM), yellowish brown (10YR 5/4), very dense, moist, fine to medium grained sand, few mica, few rock fragments)
267.5	47.8	50/0.1											267.5	47.8	WEATHERED ROCK and HARD ROCK: Light gray to pink with orange staining, severely to slightly weathered, very close to close fracturing, moderately hard, BIOTITE QUARTZ GNEISS
													251.4	63.9	HARD ROCK: Light gray, light pinkish gray, and gray-brown, with trace orange staining, moderately to very slightly weathered, very close to wide fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi							
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)							
BORING NO.: M-2		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA							
GROUND ELEV.: 315.3 ft (NAVD88)		NORTHING: 3,909,531 US ft (NAD83)		EASTING: 11,685,586 US ft (NAD83)		24 HR. 20.0							
TOTAL DEPTH: 153.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-05)							
DATE STARTED: 9/8/09		COMPLETED: 9/10/09		HOLE DIA.: 3"		CASING DEPTH: 46.0 ft							
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
240.5					Continued from previous page								
													HARD ROCK: Light gray, light pinkish gray, and gray-brown, with trace orange staining, moderately to very slightly weathered, very close to wide fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS (continued)

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi								
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)								
BORING NO.: M-2		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA								
GROUND ELEV.: 315.3 ft (NAVD88)		NORTHING: 3,909,531 US ft (NAD83)		EASTING: 11,685,586 US ft (NAD83)		24 HR. 20.0								
TOTAL DEPTH: 153.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-05)								
DATE STARTED: 9/8/09		COMPLETED: 9/10/09		HOLE DIA.: 3"		CASING DEPTH: 46.0 ft								
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone								
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
165.7					Continued from previous page									
												161.9	153.4	Boring and coring terminated at 151.1 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/10/2009 prior to drilling. Borehole was at a depth of 83.4 feet.

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)	
BORING NO.: M-2		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA	
GROUND ELEV.: 315.3 ft (NAVD88)		NORTHING: 3,909,531 US ft (NAD83)		EASTING: 11,685,586 US ft (NAD83)		24 HR. 20.0	
TOTAL DEPTH: 153.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-05)	
DATE STARTED: 9/8/09		COMPLETED: 9/10/09		CASING DEPTH: 46.0 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 & 8 bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (%)	RQD (%)		REC. (%)	RQD (%)		
										Begin Coring @ 47.8 ft
267.5	47.8	0.6	N=50/0.1 1:32/0.6	(0.6)	(0.0)	RUN 1	(7.2)	(1.7)		WEATHERED ROCK and HARD ROCK: Light gray to pink with orange staining, severely to slightly weathered, very close to close fracturing, moderately hard, BIOTITE QUARTZ GNEISS (2 joints at 45°, open with trace clay; 2 joints at 75°, open with orange staining) (6 joints at 45°, open with orange staining and trace clay; 3 joints at 75°, open with orange staining) (Several joints/fractures, severely weathered, open with orange staining) HARD ROCK: Light gray, light pinkish gray, and gray-brown, with trace orange staining, moderately to very slightly weathered, very close to wide fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS (6 joints at 45°, light with orange staining) (5 joints at 45°, open with orange staining; Note: recovered 0.5 ft of RUN 6 with RUN 7) (3 joints at 30°, open with trace orange staining) (3 joints at 75°, open with clay; 1 joint at 90°, open with clay) (2 joints at 45°, open with clay; 2 joints at 90°, open with clay) (3 joints at 45°, light with trace orange staining; 1 joint at 75°, open with trace clay) (4 joints at 45°, open with orange staining; 1 joint at 75°, open with clay; 0.2 ft thick quartz vein at 92.4 ft) (3 joints at 30°, open with orange staining; 1 joint at 90°, open with orange staining) (3 joints at 30°, open with orange staining; 1 joint at 75°, open with orange staining and clay) (6 joints at 45°, open with orange staining; 1 joint at 75°, open with orange staining) (3 joints at 30°, open trace orange staining; 1 joint at 75°, open with orange staining; 0.1 ft thick quartz vein at 112.4 ft) (3 joints at 30°, open with trace orange staining; 1 joint at 75°, open with trace orange staining) (2 joints at 0-10°, light; 1 joint at 45°, open with orange staining; 1 joint at 60°, open with orange staining)
266.9	48.4	5.0	1:20 4:00 2:10 2:25 3:02	100%	0%	RUN 2	45%	11%		
261.9	53.4	5.0	2:00 2:22 2:00 0:53 2:32	(2.7)	(1.0)	RUN 3				
256.9	58.4	5.0	3:40 5:40 2:35 3:05 4:00	(2.4)	(0.0)	RUN 4				
251.9	63.4	5.0	2:00 3:05 2:15 2:00 2:02	(4.5)	(4.1)	RUN 5	(88.4)	(76.0)		
246.9	68.4	3.5	2:56 2:04 2:14	(3.3)	(1.2)	RUN 6				
243.4	71.9	1.5	1:34/0.5	(1.5)	(1.2)	RUN 7				
241.9	73.4	5.0	2:00/0.5 2:45	100%	80%	RUN 8				
236.9	78.4	5.0	1:53 2:30 1:50 2:50 2:22	(5.0)	(4.7)	RUN 9				
231.9	83.4	5.0	1:18 1:42 2:03 2:05 2:21	(5.0)	(3.9)	RUN 10				
226.9	88.4	5.0	3:30 3:14 2:59 3:20 3:37	(4.7)	(4.7)	RUN 11				
221.9	93.4	5.0	3:00 2:59 2:10 2:47 2:41	(5.0)	(2.9)	RUN 12				
216.9	98.4	5.0	2:50 2:03 2:17 2:03 2:07	(4.9)	(4.1)	RUN 13				
211.9	103.4	5.0	4:04 3:43 3:11 3:28 3:30	(5.0)	(4.6)	RUN 14				
206.9	108.4	5.0	2:45 2:03 1:57 2:03 1:49	(5.0)	(4.4)	RUN 15				
201.9	113.4	5.0	2:25 1:50 2:47 1:57 2:01	(5.0)	(4.8)	RUN 16				
196.9	118.4	5.0	2:15 1:30 1:28 1:35 2:50	(4.8)	(4.7)	RUN 17				
			1:56 1:37 1:40 1:31	(5.0)	(4.7)	RUN 17				

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161	MACTEC PROJECT NO.: 6468-09-2473	COUNTY: Louisa, VA	GEOLOGIST: A. Mwembeshi
SITE DESCRIPTION: North Anna 3 Project Supplement 2		DRILLER: R. Landeros/D. Reneau	FLUID LEVEL (ft)
BORING NO.: M-2	DRILL METHOD: Mud Rotary/Rock Core	DRILL MACHINE: CME-550X (ATL)	0 HR. NA
GROUND ELEV.: 315.3 ft (NAVD88)	NORTHING: 3,909,531 US ft (NAD83)	EASTING: 11,685,586 US ft (NAD83)	24 HR. 20.0
TOTAL DEPTH: 153.4 ft	SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		HAMMER (ID): 140-lb. Auto (MEC-05)
DATE STARTED: 9/8/09	COMPLETED: 9/10/09	CASING DEPTH: 46.0 ft	CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 & 8 bits

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
										Continued from previous page
191.9	123.4	5.0	1:53 1:01 1:15 1:23 2:03 1:38	(4.9) 98%	(4.8) 96%	RUN 18				HARD ROCK: Light gray, light pinkish gray, and gray-brown, with trace orange staining, moderately to very slightly weathered, very close to wide fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS (continued) (2 joints at 30°, open with orange staining; 2 joints at 60°. light)
186.9	128.4	5.0	1:25 1:44 1:53 1:48 1:20	(4.8) 96%	(4.4) 88%	RUN 19				(2 joints at 30°, open with trace orange staining; 2 joints at 60°, open with orange staining)
181.9	133.4	5.0	3:19 2:11 2:44 2:46 2:30	(5.0) 100%	(3.4) 68%	RUN 20				(3 joints at 30°, open with orange staining; 10 joints at 45°, open with clay; Moderately severely weathered, medium hard, BIOTITE GNEISS from 134.9-138.4 ft)
176.9	138.4	5.0	2:38 1:48 1:50 1:44 2:00	(5.0) 100%	(4.5) 90%	RUN 21				(Several joints at 45°, open with clay; 1 joint at 75°, open with orange staining and clay; moderately severely weathered, medium hard, BIOTITE GNEISS from 138.4-138.8 feet and from 142.4-143.4 feet)
171.9	143.4	5.0	2:24 2:02 3:02 2:20 2:03	(5.0) 100%	(4.1) 82%	RUN 22				(5 joints at 45°, open with clay; 3 joints at 75°, open with orange staining; moderately severely weathered, medium hard, BIOTITE GNEISS from 143.4-146.4 feet)
166.9	148.4	5.0	2:14 3:03 3:28 3:49 4:15	(5.0) 100%	(4.8) 96%	RUN 23				(2 joints at 45°, open with trace clay)
161.9	153.4									Boring and coring terminated at 151.1 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/10/2009 prior to drilling. Borehole was at a depth of 83.4 feet.

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



M-2 - Box 1



M-2 - Box 2



M-2 - Box 3



M-2 - Box 4



M-2 - Box 5



M-2 - Box 6



GEOTECHNICAL BORING LOG

Prepared By JSS Date 12/16/09

Checked By MAL Date 12/16/09

SHEET 1 OF 3

BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: K. Lloyd							
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. White/O. Smith		FLUID LEVEL (ft)							
BORING NO.: M-3		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55LC Track (RAL)		0 HR. NA							
GROUND ELEV.: 313.9 ft (NAVD88)		NORTHING: 3,909,539 US ft (NAD83)		EASTING: 11,685,679 US ft (NAD83)		24 HR. 17.7							
TOTAL DEPTH: 152.6 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-02)							
DATE STARTED: 9/9/09		COMPLETED: 9/14/09		HOLE DIA.: 4"		CASING DEPTH: 28.2 ft							
CORE SIZE: HQ3		BITS USED: 3-7/8" Tri-Cone											
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
313.9					Ground Surface							313.9 0.0	
													No samples from 0.0 to 9.3 feet due to soft dig utility clearance by Dominion Personnel.
305.6	8.3	12	25	31							SS-1		RESIDUAL SOIL: Silty SAND (SM), very pale brown (10YR 8/3), very dense, dry, fine to coarse grained sand, few to little feldspar and quartz fragments, relict rock fabric
303.1	10.8	17	16	9							SS-2		10.8 ft: Medium dense
299.1	14.8	19	25	33							SS-3		14.8 ft: Very pale brown (10YR 8/2), very dense, few to little weathered rock fragments
294.8	19.1	47	53/0.2								SS-4		WEATHERED ROCK: Severely weathered QUARTZ GNEISS (Sampled as Silty SAND (SM), white (10YR 8/1), very pale brown (10YR 8/3), and yellow (10YR 7/8), very dense, moist, trace mica, few to little rock fragments)
289.6	24.3	50/0.3									SS-5		
284.8	29.1	50/0.2									SS-6		
279.8	34.1	50/0.0									SS-7		34.1 ft: SPT Refusal with no penetration, very hard drilling from 34.1 to 39.1 feet.
274.8	39.1	50/0.0									SS-8		39.1 ft: SPT Refusal with no penetration
													HARD ROCK: Yellowish brown to yellowish gray, with orange staining throughout, moderately severely to moderately weathered, very close to moderately close fracturing, medium hard to hard, BIOTITE QUARTZ GNEISS

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/16/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: K. Lloyd							
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. White/O. Smith		FLUID LEVEL (ft)							
BORING NO.: M-3		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55LC Track (RAL)		0 HR. NA							
GROUND ELEV.: 313.9 ft (NAVD88)		NORTHING: 3,909,539 US ft (NAD83)		EASTING: 11,685,679 US ft (NAD83)		24 HR. 17.7							
TOTAL DEPTH: 152.6 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-02)							
DATE STARTED: 9/9/09		COMPLETED: 9/14/09		HOLE DIA.: 4"		CASING DEPTH: 28.2 ft							
CORE SIZE: HQ3		BITS USED: 3-7/8" Tri-Cone											
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
239.1					Continued from previous page								
												238.2 75.7	HARD ROCK: Dark gray-brown to black, moderately severely to moderately weathered, close to moderately close fracturing, medium hard to moderately hard, BIOTITE GNEISS
												232.3 81.6	HARD ROCK: Light gray with orange staining, slightly weathered, close to moderately close fracturing, hard, QUARTZ GNEISS
												223.3 90.6	HARD ROCK: Yellowish brown, yellowish gray, and gray to light gray, with orange staining, slightly to very slightly weathered, moderately close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS
												201.3 112.6	HARD ROCK: Yellowish brown to yellowish gray, with orange staining, moderately severe to slightly weathered, close to moderately close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS
												171.3 142.6	HARD ROCK: Yellowish brown with orange staining, slightly weathered, moderately close fracturing, hard, BIOTITE QUARTZ GNEISS

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/16/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: K. Lloyd								
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. White/O. Smith		FLUID LEVEL (ft)								
BORING NO.: M-3		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55LC Track (RAL)		0 HR. NA								
GROUND ELEV.: 313.9 ft (NAVD88)		NORTHING: 3,909,539 US ft (NAD83)		EASTING: 11,685,679 US ft (NAD83)		24 HR. 17.7								
TOTAL DEPTH: 152.6 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-02)								
DATE STARTED: 9/9/09		COMPLETED: 9/14/09		HOLE DIA.: 4"		CASING DEPTH: 28.2 ft								
				CORE SIZE: HQ3		BITS USED: 3-7/8" Tri-Cone								
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
164.3					Continued from previous page									
												161.3	152.6	Boring and coring terminated at 152.6 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/14/2009 prior to drilling. Borehole was at a depth of 117.6 feet.

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/16/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: K. Lloyd	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. White/O. Smith		FLUID LEVEL (ft)	
BORING NO.: M-3		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55LC Track (RAL)		0 HR. NA	
GROUND ELEV.: 313.9 ft (NAVD88)		NORTHING: 3,909,539 US ft (NAD83)		EASTING: 11,685,679 US ft (NAD83)		24 HR. 17.7	
TOTAL DEPTH: 152.6 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-02)	
DATE STARTED: 9/9/09		COMPLETED: 9/14/09		CASING DEPTH: 28.2 ft		CORE BARREL TYPE: Wireline HQ3 Triple Tube, series 6 & 10 bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
										Begin Coring @ 39.1 ft
274.8	39.1	3.5	N=50/0.0 2:59 4:17 4:40	(3.3) 94%	(2.0) 57%	RUN 1	(34.2) 93%	(23.9) 65%		HARD ROCK: Yellowish brown to yellowish gray, with orange staining throughout, moderately severely to moderately weathered, very close to moderately close fracturing, medium hard to hard, BIOTITE QUARTZ GNEISS (3 joints at 40°, tight; 2 joints at 70°, tight to open with trace clay) (6 joints at 40°, tight; 1 joint at 80-90°, open with clay and orange staining)
271.3	42.6	5.0	1:12/0.5	(5.0) 100%	(3.4) 68%	RUN 2				(5 joints at 50-60°, tight)
266.3	47.6	5.0	3:55 3:55 3:17 5:18 3:18	(5.0) 100%	(4.8) 96%	RUN 3				(5 joints at 30°, tight; severely weathered zone with partial recovery from 54.7-56.4 ft)
261.3	52.6	5.0	4:08 4:54 4:18 3:45 3:39	(3.6) 72%	(2.1) 42%	RUN 4				(4 joints at 30°, tight)
256.3	57.6	5.0	2:32 2:02 1:52 3:27 3:36	(5.0) 100%	(3.7) 74%	RUN 5				(4 joints at 30°, tight to open)
251.3	62.6	5.0	5:08 3:32 2:59 2:50 2:20	(4.8) 96%	(3.0) 60%	RUN 6				(6 joints at 30°, tight to open)
246.3	67.6	5.0	6:28 8:54 7:48 4:24 2:57	(4.4) 88%	(2.4) 48%	RUN 7				(4 joints at 30°, tight to open)
241.3	72.6	5.0	7:44 9:34 3:08 4:45 3:45	(3.8) 76%	(2.5) 50%	RUN 8				(4 joints at 30°, tight to open)
236.3	77.6	5.0	5:00 4:04 9:10 10:15 2:51	(3.0) 60%	(2.2) 44%	RUN 9	(2.7) 46%	(1.2) 20%		HARD ROCK: Dark gray-brown to black, moderately severely to moderately weathered, close to moderately close fracturing, medium hard to moderately hard, BIOTITE GNEISS (3 joints at 30°, tight to open)
231.3	82.6	5.0	3:34 3:40 4:40 7:06 14:15	(5.0) 100%	(3.2) 64%	RUN 10	(9.0) 100%	(6.3) 70%		HARD ROCK: Light gray with orange staining, slightly weathered, close to moderately close fracturing, hard, QUARTZ GNEISS (3 joints at 30°, tight; 3 joints at 40-50°, open with trace clay)
226.3	87.6	5.0	3:45 3:01 3:11 3:04 2:04	(5.0) 100%	(2.6) 52%	RUN 11				(4 joints at 30°, tight)
221.3	92.6	5.0	3:08 3:38 2:39 3:45 5:41	(2.0) 100%	(16.3) 74%	RUN 12	(22.0) 100%	(16.3) 74%		HARD ROCK: Yellowish brown, yellowish gray, and gray to light gray, with orange staining, slightly to very slightly weathered, moderately close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS (3 joints at 30°, tight; 2 joints at 60-70°, tight with trace clay)
216.3	97.6	5.0	4:21 3:37 5:31 4:06 2:50	(5.0) 100%	(4.0) 80%	RUN 13				(2 joints at 10°, open; 2 joints at 45°, tight)
211.3	102.6	5.0	4:13 4:30 4:12 5:55 6:00	(5.0) 100%	(4.1) 82%	RUN 14				(5 joints at 30-40°, tight)
206.3	107.6	5.0	3:23 3:11 3:08 3:38 3:03	(5.0) 100%	(3.9) 78%	RUN 15				(2 joints at 30°, tight; 1 joint at 60°, tight with trace clay; 1 joint at 75°, open with clay and orange staining)
201.3	112.6	5.0	4:55 3:49 3:08 3:52 4:32	(4.8) 100%	(2.3)	RUN 16	(27.2) 100%	(19.4)		

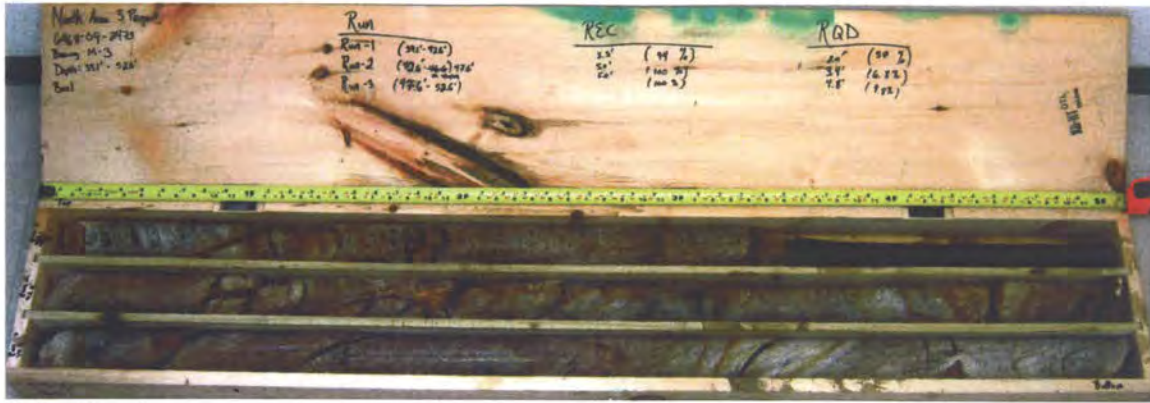
NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161	MACTEC PROJECT NO.: 6468-09-2473	COUNTY: Louisa, VA	GEOLOGIST: K. Lloyd
SITE DESCRIPTION: North Anna 3 Project Supplement 2		DRILLER: D. White/O. Smith	FLUID LEVEL (ft)
BORING NO.: M-3	DRILL METHOD: Mud Rotary/Rock Core	DRILL MACHINE: CME-55LC Track (RAL)	0 HR. NA
GROUND ELEV.: 313.9 ft (NAVD88)	NORTHING: 3,909,539 US ft (NAD83)	EASTING: 11,685,679 US ft (NAD83)	24 HR. 17.7
TOTAL DEPTH: 152.6 ft	SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		HAMMER (ID): 140-lb. Auto (MEC-02)
DATE STARTED: 9/9/09	COMPLETED: 9/14/09	CASING DEPTH: 28.2 ft	CORE BARREL TYPE: Wireline HQ3 Triple Tube, series 6 & 10 bits

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS		
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %				
										Continued from previous page		
196.3	117.6	5.0	2:58 3:19 5:50 5:23	96%	46%	RUN 17	91%	65%		HARD ROCK: Yellowish brown to yellowish gray, with orange staining, moderately severe to slightly weathered, close to moderately close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS (continued) (3 joints at 30°, tight to open; 1 joint at 80-90°, open with clay; no recovery in severely weathered zone from 117.4-120.2 ft)		
			9:23 8:11 9:32 6:14 3:45	(2.4) 48%	(2.0) 40%					(2 joints at 30°, open with trace clay; many mechanical fractures)		
191.3	122.6	2.0	4:28 3:47	(2.0) 100%	(1.8) 90%	RUN 18				(3 joints at 10-20°, tight; quartz vein from 125.7-126.1 ft)		
189.3	124.6	3.0	4:05 6:05 4:02	(3.0) 100%	(2.0) 67%	RUN 19				(2 joints at 15°, tight; 1 joint at 70°, open with trace clay)		
186.3	127.6	5.0	4:17 4:05 4:05 5:24 5:57	(5.0) 100%	(3.9) 78%	RUN 20				(2 joints at 30°, open)		
181.3	132.6	5.0	3:24 2:28 2:09 3:03 4:16	(5.0) 100%	(4.7) 94%	RUN 21				(8 joints at 10-20°, tight; 1 joint at 30°, tight; 2 joints at 50-60°, open with trace clay)		
176.3	137.6	5.0	3:11 3:30 4:54 4:03 3:28	(5.0) 100%	(2.7) 54%	RUN 22						
171.3	142.6	5.0	4:00 4:32 4:01 4:05 3:50	(5.0) 100%	(4.6) 92%	RUN 23	(10.0) 100%	(9.5) 95%		171.3	HARD ROCK: Yellowish brown with orange staining, slightly weathered, moderately close fracturing, hard, BIOTITE QUARTZ GNEISS (4 joints at 30°, tight; 2 joints at 90°, tight)	
166.3	147.6	5.0	3:13 3:25 2:54 3:01 3:09	(5.0) 100%	(4.9) 98%	RUN 24				142.6	(2 joints at 30°, tight; 1 joint at 50°, open with trace clay; quartz + feldspar vein at 45° from 151.9-152.1 ft)	
161.3	152.6									161.3	152.6	Boring and coring terminated at 152.6 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/14/2009 prior to drilling. Borehole was at a depth of 117.6 feet.

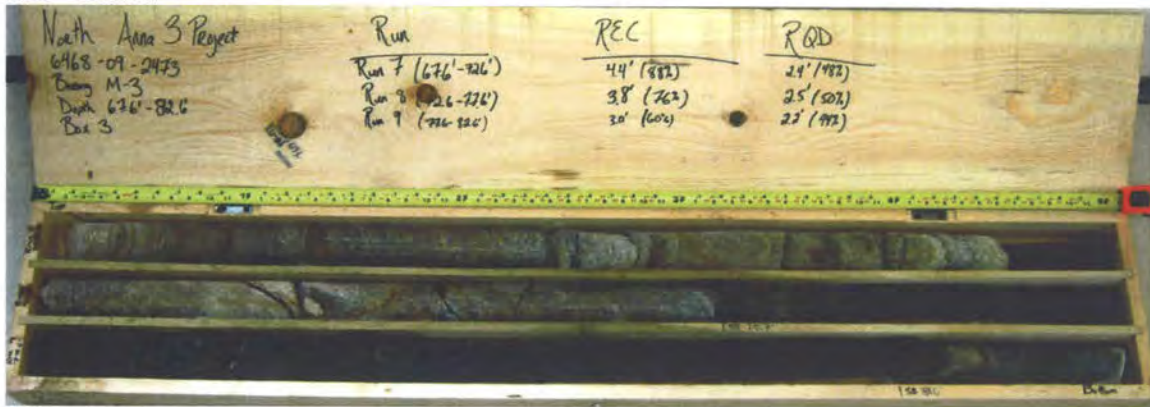
NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



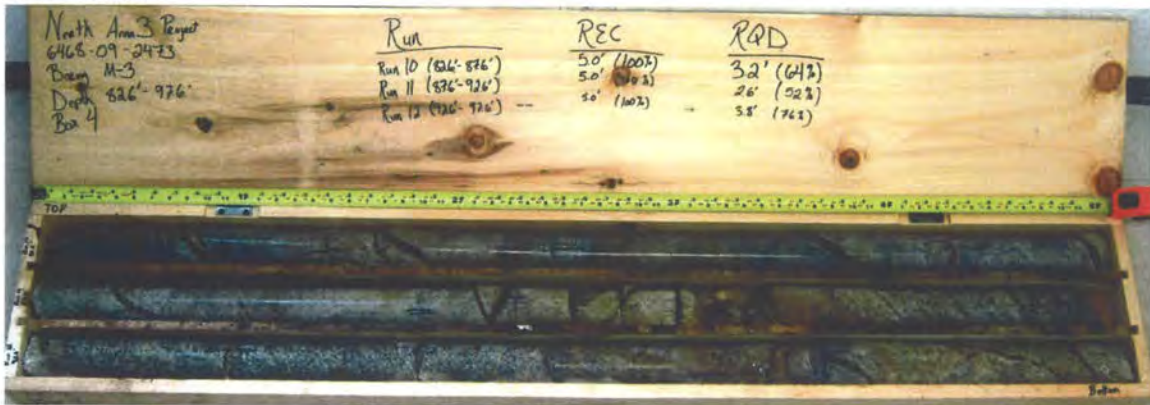
M-3 - Box 1



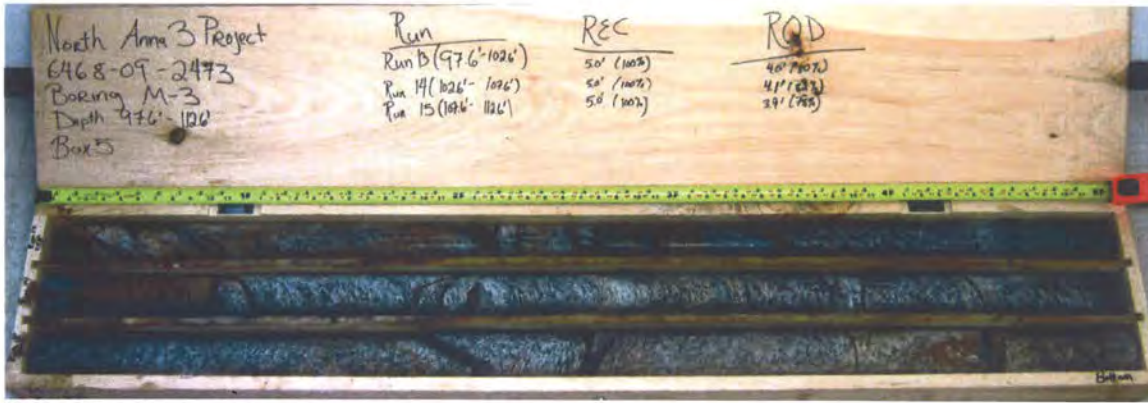
M-3 - Box 2



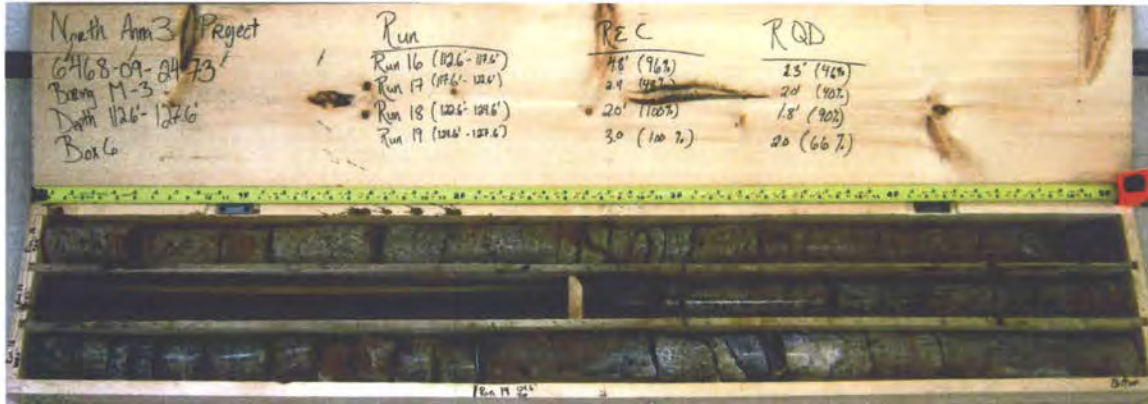
M-3 - Box 3



M-3 - Box 4



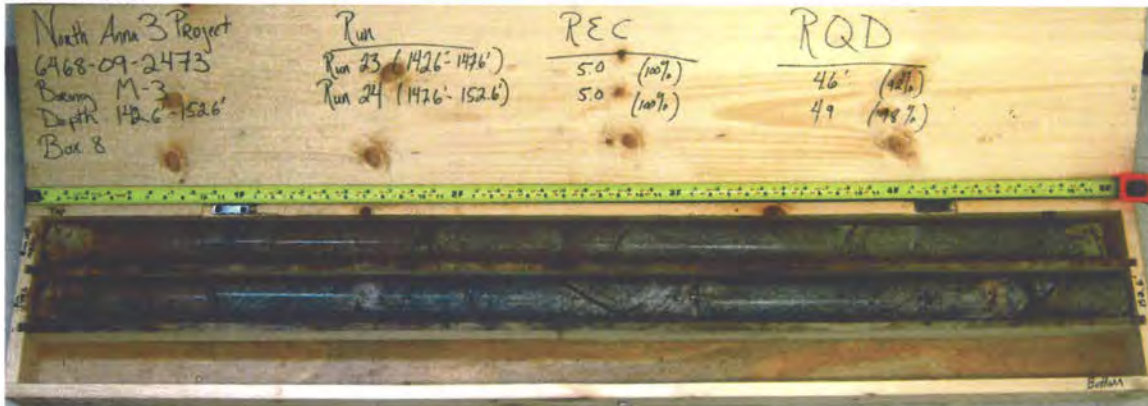
M-3 - Box 5



M-3 - Box 6



M-3 - Box 7



M-3 - Box 8



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi								
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)								
BORING NO.: M-4		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA								
GROUND ELEV.: 321.8 ft (NAVD88)		NORTHING: 3,909,456 US ft (NAD83)		EASTING: 11,685,695 US ft (NAD83)		24 HR. 25.0								
TOTAL DEPTH: 154.0 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID):140-lb. Auto (MEC-05)								
DATE STARTED: 9/11/09		COMPLETED: 9/15/09		HOLE DIA.: 3"		CASING DEPTH: 44.0 ft								
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone								
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
247.0					Continued from previous page									
												HARD ROCK: Gray brown, moderately severely weathered, very close to close fracturing, medium hard, BIOTITE QUARTZ GNEISS (continued)		
												237.8	WEATHERED ROCK: Gray to dark gray, severely weathered, very close fracturing, soft, BIOTITE QUARTZ GNEISS (Poor Recovery)	84.0
												232.8	HARD ROCK: Light to dark gray, moderately to very slightly weathered, very close to wide fracturing, medium hard to hard, BIOTITE GNEISS	89.0

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)	
BORING NO.: M-4		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA	
GROUND ELEV.: 321.8 ft (NAVD88)		NORTHING: 3,909,456 US ft (NAD83)		EASTING: 11,685,695 US ft (NAD83)		24 HR. 25.0	
TOTAL DEPTH: 154.0 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-05)	
DATE STARTED: 9/11/09		COMPLETED: 9/15/09		CASING DEPTH: 44.0 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 bit	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
										Begin Coring @ 44.1 ft
277.7	44.1	4.9	1:59 1:25 1:55 2:11	(0.0) 0%	(0.0) 0%	RUN 1	(0.0) 0%	(0.0) 0%		WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (Sampled as Silty SAND (SM), very pale brown (10YR 7/3), very dense, moist, fine to coarse grained sand, few mica, some rock fragments) (continued) (No Recovery)
272.8	49.0	5.0	1:41/0.9 N=50/0.0 1:45 1:18 0:57 1:05 2:00	(0.0) 0%	(0.0) 0%	RUN 2				(No Recovery)
267.8	54.0	5.0	N=50/0.0 2:45 2:00 2:03 1:29 1:58	(0.9) 18%	(0.5) 10%	RUN 3	(2.4) 16%	(1.0) 7%	267.8	WEATHERED ROCK and HARD ROCK: Gray brown, severely to moderately severely weathered, very close to close fracturing, medium hard, BIOTITE QUARTZ GNEISS (Poor Recovery) (2 joints at 45°, open)
262.8	59.0	5.0	0:50 1:02 1:03 1:54 1:08	(1.1) 22%	(0.5) 10%	RUN 4				(2 joints at 45°, open)
257.8	64.0	5.0	0:49 1:25 0:36 0:54 0:47	(0.4) 8%	(0.0) 0%	RUN 5				
252.8	69.0	5.0	0:51 0:59 0:39 0:40 0:52	(3.5) 70%	(2.6) 52%	RUN 6	(11.5) 77%	(10.0) 67%	252.8	HARD ROCK: Gray brown, moderately severely weathered, very close to close fracturing, medium hard, BIOTITE QUARTZ GNEISS (2 joints at 45°, open)
247.8	74.0	5.0	1:34 0:45 1:34 1:38 1:09	(3.5) 70%	(3.4) 68%	RUN 7				(3 joints at 45°, open; 1 joint at 75°, open)
242.8	79.0	5.0	0:30 0:58 0:51 0:50 0:54	(4.5) 90%	(4.0) 80%	RUN 8				(3 joints at 45°, open)
237.8	84.0	5.0	0:30 1:02 1:10 0:58 1:19	(1.0) 20%	(0.0) 0%	RUN 9	(1.0) 20%	(0.0) 0%	237.8	WEATHERED ROCK: Gray to dark gray, severely weathered, very close fracturing, soft, BIOTITE QUARTZ GNEISS (Poor Recovery)
232.8	89.0	5.0	1:48 2:57 2:27 1:13 1:32	(4.9) 98%	(4.6) 92%	RUN 10	(58.6) 90%	(48.0) 74%	232.8	HARD ROCK: Light to dark gray, moderately to very slightly weathered, very close to wide fracturing, medium hard to hard, BIOTITE GNEISS (6 joints at 30°, open with trace clay and epidote)
227.8	94.0	5.0	1:31 1:35 1:34 2:03 1:34	(4.5) 90%	(2.7) 54%	RUN 11				(4 joints at 30°, open with trace orange staining and epidote)
222.8	99.0	5.0	1:13 1:32 1:19 1:56 2:18	(2.1) 42%	(1.0) 20%	RUN 12				(0.4 ft thick quartz + feldspar vein)
217.8	104.0	5.0	1:46 1:44 1:47 1:57 1:56	(4.6) 92%	(4.3) 86%	RUN 13				(3 joints at 45°, open with orange staining)
212.8	109.0	5.0	1:25 1:31 1:04 1:43 2:10	(4.2) 84%	(2.3) 46%	RUN 14				(1 joint at 75°, open with brown staining; few severely weathered zones)
207.8	114.0	5.0	2:51 2:04 1:21 1:31 3:31	(5.0) 100%	(4.3) 86%	RUN 15				(4 joints at 45°, open with trace brown staining; 1 joint at 75°, open with trace brown staining)
202.8	119.0									

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



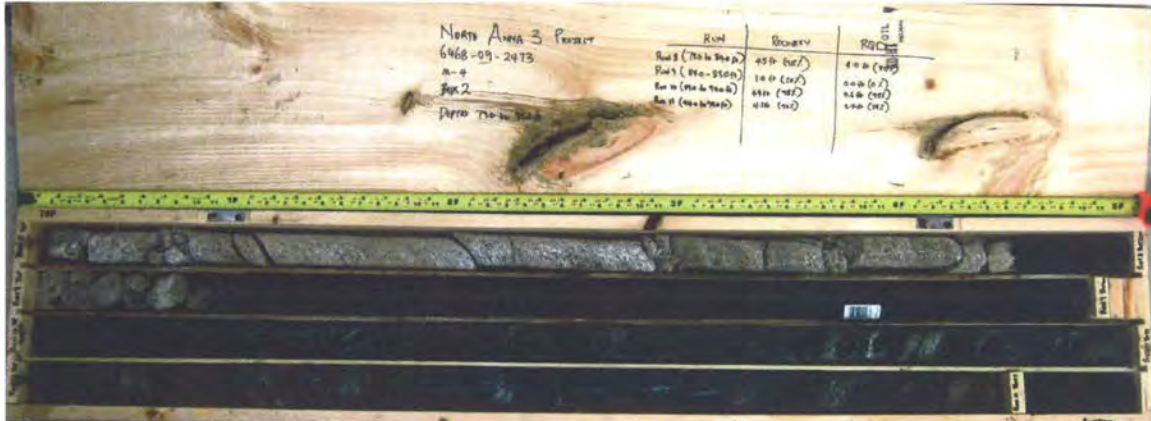
BECHTEL PROJECT NO.: 25161	MACTEC PROJECT NO.: 6468-09-2473	COUNTY: Louisa, VA	GEOLOGIST: A. Mwembeshi
SITE DESCRIPTION: North Anna 3 Project Supplement 2		DRILLER: R. Landeros/D. Reneau	FLUID LEVEL (ft)
BORING NO.: M-4	DRILL METHOD: Mud Rotary/Rock Core	DRILL MACHINE: CME-550X (ATL)	0 HR. NA
GROUND ELEV.: 321.8 ft (NAVD88)	NORTHING: 3,909,456 US ft (NAD83)	EASTING: 11,685,695 US ft (NAD83)	24 HR. 25.0
TOTAL DEPTH: 154.0 ft	SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		HAMMER (ID): 140-lb. Auto (MEC-05)
DATE STARTED: 9/11/09	COMPLETED: 9/15/09	CASING DEPTH: 44.0 ft	CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 bit

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %			
										Continued from previous page	
197.8	124.0	5.0	2:22 1:32 1:23 1:34 1:22	(5.0) 100%	(4.6) 92%	RUN 16				HARD ROCK: Light to dark gray, moderately to very slightly weathered, very close to wide fracturing, medium hard to hard, BIOTITE GNEISS (<i>continued</i>) (2 joints at 45°, open with trace staining; 2 joints at 60°, open with trace orange staining)	
192.8	129.0	5.0	1:30 1:54 1:35 1:42 3:22	(4.8) 96%	(4.8) 96%	RUN 17				(1 joint at 45°, open; 2 joints at 60°, open; 0.4 ft thick quartz vein between 128.0 and 129.0 feet)	
187.8	134.0	5.0	2:17 2:23 0:00 1:57 2:36	(3.9) 78%	(2.6) 52%	RUN 18				(3 joints at 45°, open; severely weathered, very soft zone from 130.0-131.0 ft)	
182.8	139.0	5.0	2:31 2:09 3:05 1:33 1:33	(5.0) 100%	(4.8) 96%	RUN 19				(2 joints at 45°, open with trace weathered rock; 1 joint at 75°, open with trace orange staining)	
177.8	144.0	5.0	1:28 1:43 1:57 1:47 1:37	(5.0) 100%	(5.0) 100%	RUN 20				(2 joints at 45°, light; several mechanical fractures)	
172.8	149.0	5.0	2:35 2:04 2:12 2:20 1:35	(5.0) 100%	(5.0) 100%	RUN 21				(fractures are mechanical)	
167.8	154.0	5.0	1:57 2:03 2:15 2:04 2:30	(4.6) 92%	(2.0) 40%	RUN 22				(8 joints at 45°, open with trace weathered rock; 0.8 ft thick severely weathered, very soft zone from 151.0 to 152.0 feet)	
									167.8	154.0	Boring and coring terminated at 154.0 feet.
											Boring closed by tremie method with cement-bentonite grout.
											24 hour water level measured on 9/15/2009 prior to drilling. Borehole was at a depth of 119.0 feet.

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



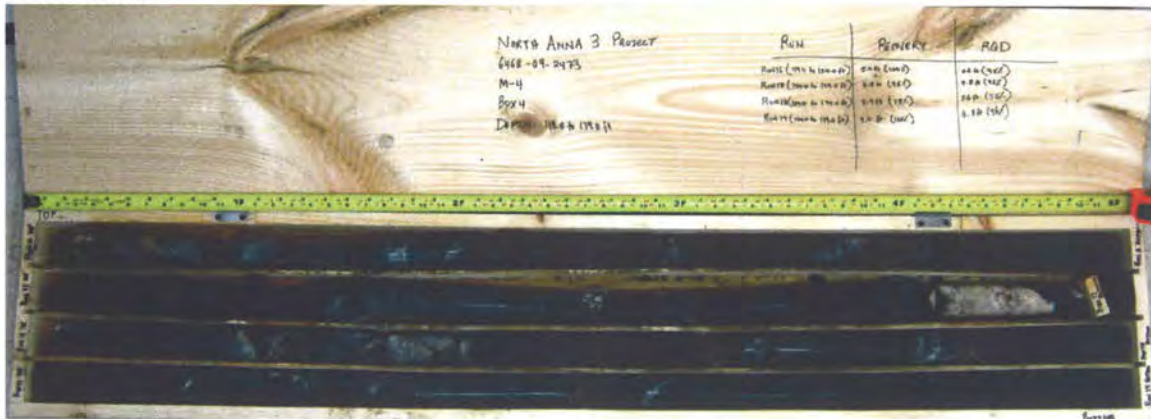
M-4 - Box 1



M-4 - Box 2



M-4 - Box 3



M-4 - Box 4



M-4 - Box 5



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: R. Clark										
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: T. Hahn/R. Hall		FLUID LEVEL (ft)										
BORING NO.: M-6		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Track (RAL)		0 HR.	22.5									
GROUND ELEV.: 327.8 ft (NAVD88)		NORTHING: 3,909,401 US ft (NAD83)		EASTING: 11,685,760 US ft (NAD83)		24 HR.	26.5									
TOTAL DEPTH: 150.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID):140-lb. Auto (MEC-21)										
DATE STARTED: 9/16/09		COMPLETED: 9/21/09		HOLE DIA.: 4"		CASING DEPTH: 79.2 ft										
ELEV. (ft)		BLOW COUNT			BLOWS PER FOOT					SAMP. NO.		LOG		SOIL AND ROCK DESCRIPTION		
		0.5ft 0.5ft 0.5ft			0 20 40 60 80 100					MOI		L O G				
327.8					Ground Surface									327.8	0.0	
																No sampling from 0.0 to 9.1 feet due to soft dig utility clearance by Dominion Personnel.
318.7	9.1													318.7	9.1	RESIDUAL SOIL: Sandy SILT (ML), very pale brown (10YR 7/4), very stiff, moist, trace angular rock fragments, relict rock fabric
317.2	10.6	8	8	11												
314.9	12.9	8	9	9												
311.7	16.1	6	5	10												12.9 ft: Brown (10YR 5/3), stiff, fine grained sand, some mica, trace organics
308.7	19.1	5	5	7												RESIDUAL SOIL: Silty SAND (SM), yellowish brown (10YR 5/4), medium dense, moist, fine grained sand, some mica, relict rock fabric
303.7	24.1	6	6	8												19.1 ft: Light olive brown (2.5Y 5/3)
298.7	29.1	4	5	7												
293.7	34.1	12	18	22												29.1 ft: Strong brown (7.5YR 5/6), dense
288.7	39.1	14	18	19												34.1 ft: Light olive brown (2.5Y 7/3)
283.7	44.1	7	10	15												39.1 ft: Yellowish brown (10YR 5/4), medium dense
278.7	49.1	16	17	26												44.1 ft: Light olive brown (2.5Y 7/3), dense,
273.7	54.1	6	12	23												RESIDUAL SOIL: Sandy SILT (ML), Reddish yellow (7.5YR 6/6), hard, moist, fine grained sand, trace mica, relict rock fabric
268.7	59.1	19	26	45												RESIDUAL SOIL: Silty SAND (SM), Light olive brown (2.5Y 7/3), very dense, moist, fine grained sand, some mica, relict rock fabric
263.7	64.1	13	15	19												59.1 ft: Dense, wet
258.7	69.1	15	34	50/0.3												64.1 ft: Yellowish brown (10YR 5/4), very dense, fine to medium grained sand
253.7	74.1	28	50/0.2													WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (Sampled as Silty SAND (SM), light yellowish brown (10YR 6/4), very dense, wet, fine to medium grained sand and angular rock fragments, some mica)

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: R. Clark								
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: T. Hahn/R. Hall		FLUID LEVEL (ft)								
BORING NO.: M-6		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Track (RAL)		0 HR. 22.5								
GROUND ELEV.: 327.8 ft (NAVD88)		NORTHING: 3,909,401 US ft (NAD83)		EASTING: 11,685,760 US ft (NAD83)		24 HR. 26.5								
TOTAL DEPTH: 150.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID):140-lb. Auto (MEC-21)								
DATE STARTED: 9/16/09		COMPLETED: 9/21/09		HOLE DIA.: 4"		CASING DEPTH: 79.2 ft								
				CORE SIZE: HQ3		BITS USED: 3-7/8" Tri-Cone								
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
253.0					Continued from previous page									
248.7	79.1	50/0.1								SS-16		248.6	79.2	HARD ROCK: Light gray with orange and reddish brown staining, moderately severely to moderately weathered, close to moderately close fracturing, soft to medium hard, BIOTITE QUARTZ GNEISS with trace magnetite
		50/0.1								SS-17		216.4	111.4	HARD ROCK: Light gray and black, with reddish brown staining, moderately weathered, close to moderately close fracturing, medium hard to moderately hard, QUARTZ BIOTITE GNEISS with trace hornblende
												201.4	126.4	HARD ROCK: Gray to light gray, trace pink, fresh, close to wide fracturing, very hard, BIOTITE QUARTZ GNEISS with trace magnetite

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473			COUNTY: Louisa, VA		GEOLOGIST: R. Clark							
SITE DESCRIPTION: North Anna 3 Project Supplement 2					DRILLER: T. Hahn/R. Hall		FLUID LEVEL (ft)							
BORING NO.: M-6		DRILL METHOD: Mud Rotary/Rock Core			DRILL MACHINE: CME-55 Track (RAL)		0 HR. 22.5							
GROUND ELEV.: 327.8 ft (NAVD88)		NORTHING: 3,909,401 US ft (NAD83)		EASTING: 11,685,760 US ft (NAD83)		24 HR. 26.5								
TOTAL DEPTH: 150.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08			ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-21)							
DATE STARTED: 9/16/09		COMPLETED: 9/21/09		HOLE DIA.: 4"	CASING DEPTH: 79.2 ft	CORE SIZE: HQ3	BITS USED: 3-7/8" Tri-Cone							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
176.2					Continued from previous page									
												177.4	150.4	Boring and coring terminated at 150.4 feet. Boring closed by tremie method with cement-bentonite grout

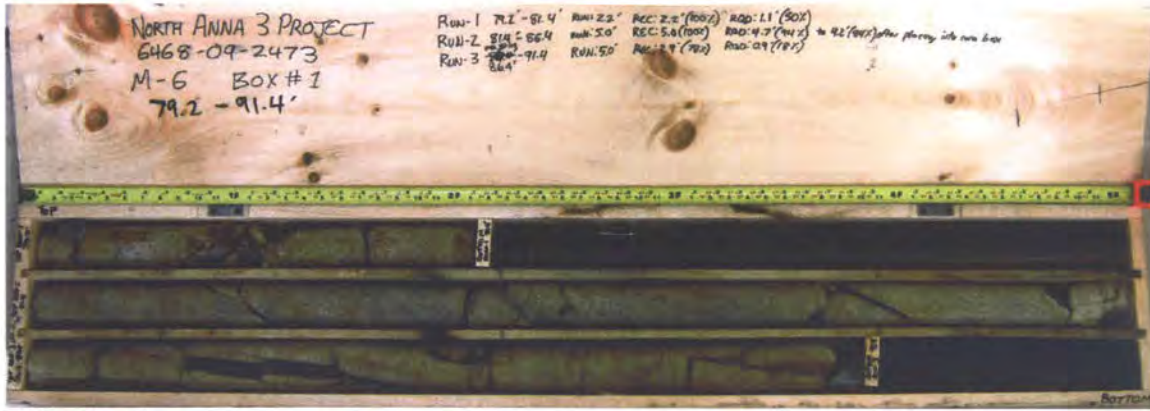
NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: R. Clark	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: T. Hahn/R. Hall		FLUID LEVEL (ft)	
BORING NO.: M-6		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Track (RAL)		0 HR. 22.5	
GROUND ELEV.: 327.8 ft (NAVD88)		NORTHING: 3,909,401 US ft (NAD83)		EASTING: 11,685,760 US ft (NAD83)		24 HR. 26.5	
TOTAL DEPTH: 150.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-21)	
DATE STARTED: 9/16/09		COMPLETED: 9/21/09		CASING DEPTH: 79.2 ft		CORE BARREL TYPE: Wireline HQ3 Triple Tube, series 6 & 10 bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	
				REC. (%)	RQD (%)		REC. (%)	RQD (%)			
										Begin Coring @ 79.2 ft	
248.6	79.2	2.2	1:15	(2.2)	(1.1)	RUN 1	(25.8)	(18.0)		248.6 HARD ROCK: Light gray with orange and reddish brown staining, moderately severely to moderately weathered, close to moderately close fracturing, soft to medium hard, BIOTITE QUARTZ GNEISS with trace magnetite (3 joints at 0-10°, open; quartz vein at 60° from 80.1-80.3 ft) (2 joints at 45°, tight)	
246.4	81.4	5.0	0:18/0:2	(5.0)	(4.7)	RUN 2	80%	56%			
			1:11	100%	50%						
			1:03	100%	94%						
241.4	86.4	5.0	0:45	(3.9)	(0.9)	RUN 3					
			0:55	78%	18%						
			0:58								
			1:08								
236.4	91.4	5.0	0:59	(2.6)	(1.5)	RUN 4					
			0:58	52%	30%						
			1:02								
			1:04								
231.4	96.4	5.0	1:28	(4.7)	(2.7)	RUN 5					
			1:31	94%	54%						
			1:28								
			1:26								
			1:35								
226.4	101.4	5.0	1:25	(2.6)	(2.6)	RUN 6					
			1:33	52%	52%						
			1:24								
			1:21								
			1:12								
221.4	106.4	5.0	1:21	(4.8)	(4.5)	RUN 7					
			1:02	96%	90%						
			1:03								
			1:05								
			1:08								
216.4	111.4	5.0	1:11	(4.1)	(3.3)	RUN 8	(14.1)	(11.7)			
			1:14	82%	66%		94%	78%			
			1:26								
			1:28								
			1:31								
211.4	116.4	5.0	1:11	(5.0)	(4.2)	RUN 9					
			1:45	100%	84%						
			1:45								
			1:52								
			1:37								
206.4	121.4	2.0	5:02	(2.0)	(1.6)	RUN 10					
			5:06	100%	80%						
204.4	123.4	3.0	4:49	(3.0)	(2.6)	RUN 11					
			3:17	100%	87%						
			3:43								
201.4	126.4	5.0	3:42	(5.0)	(5.0)	RUN 12	(23.8)	(23.1)			
			4:12	100%	100%		99%	96%			
			7:18								
			8:45								
			8:04								
196.4	131.4	5.0	5:26	(5.0)	(5.0)	RUN 13					
			5:16	100%	100%						
			5:22								
			5:15								
			5:28								
191.4	136.4	5.0	5:15	(5.0)	(4.5)	RUN 14					
			6:19	100%	90%						
			7:20								
			6:28								
			7:17								
186.4	141.4	5.0	7:29	(4.9)	(4.7)	RUN 15					
			7:12	98%	94%						
			6:25								
			6:48								
			6:33								
181.4	146.4	4.0	9:34	(3.9)	(3.9)	RUN 16					
			11:25	98%	98%						
			8:11								
			12:08								
177.4	150.4									177.4	150.4
										Boring and coring terminated at 150.4 feet.	
										Boring closed by tremie method with cement-bentonite grout.	

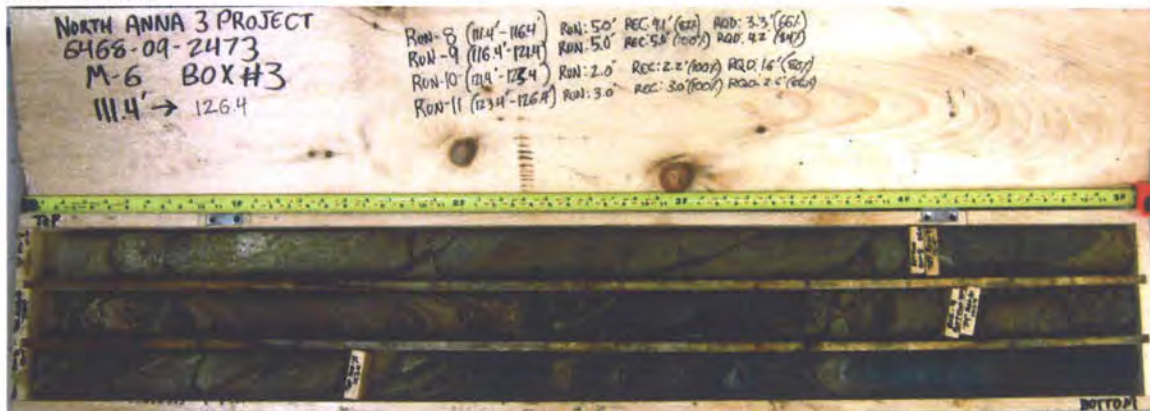
NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



M-6 - Box 1



M-6 - Box 2



M-6 - Box 3



M-6 - Box 4



M-6 – Box 5



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: C. Baldwin								
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: P. Pitts/J. Tucker		FLUID LEVEL (ft)								
BORING NO.: M-7		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Trailer (RAL)		0 HR. NA								
GROUND ELEV.: 326.0 ft (NAVD88)		NORTHING: 3,909,504 US ft (NAD83)		EASTING: 11,685,836 US ft (NAD83)		24 HR. 35.3								
TOTAL DEPTH: 151.5 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID):140-lb. Auto (MEC-425)								
DATE STARTED: 9/8/09		COMPLETED: 9/11/09		HOLE DIA.: 3"		CASING DEPTH: 58.7 ft								
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone								
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
251.2					Continued from previous page									
												246.0	80.0	HARD ROCK: Gray and light gray, moderately severely to moderately weathered, very close to moderately close fracturing, medium hard to hard. BIOTITE QUARTZ GNEISS (continued)
												236.7	89.3	WEATHERED ROCK: Grayish brown with orange staining, severely weathered, very close to close fracturing, very soft, QUARTZ BIOTITE GNEISS
												227.0	99.0	HARD ROCK: Gray to grayish brown with orange staining, moderately severely to moderately weathered, very close to close fracturing, medium hard, QUARTZ BIOTITE GNEISS
												222.0	104.0	WEATHERED ROCK: Severely weathered, QUARTZ BIOTITE GNEISS (No Recovery)
												219.7	106.3	HARD ROCK: Orange brown to greenish gray with orange staining, moderately severely to moderately weathered, very close to close fracturing, medium hard to moderately hard, QUARTZ BIOTITE GNEISS (2 joints at 20°, open with clay; 2 joints at 40°, tight; 1 joint at 70°, open)
												209.7	116.3	HARD ROCK: Gray with trace orange staining, slightly weathered, very close to moderately close fracturing, moderately hard, QUARTZ BIOTITE GNEISS
												184.7	141.3	HARD ROCK: Gray to light gray and grayish brown, with orange staining, moderately to slightly weathered, very close to close fracturing, moderately hard, BIOTITE QUARTZ GNEISS
														HARD ROCK: White, pink, and gray to light gray, very slightly weathered, close fracturing, hard, BIOTITE QUARTZ GNEISS and pegmatitic, graphic quartz + feldspar vein with trace garnet and magnetite

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: C. Baldwin								
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: P. Pitts/J. Tucker		FLUID LEVEL (ft)								
BORING NO.: M-7		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Trailer (RAL)		0 HR. NA								
GROUND ELEV.: 326.0 ft (NAVD88)		NORTHING: 3,909,504 US ft (NAD83)		EASTING: 11,685,836 US ft (NAD83)		24 HR. 35.3								
TOTAL DEPTH: 151.5 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-425)								
DATE STARTED: 9/8/09		COMPLETED: 9/11/09		HOLE DIA.: 3"		CASING DEPTH: 58.7 ft								
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone								
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
176.4					Continued from previous page									
												174.5	151.5	Boring and coring terminated at 151.5 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/11/2009 prior to drilling. Borehole was at a depth of 136.3 feet.

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: C. Baldwin	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: P. Pitts/J. Tucker		FLUID LEVEL (ft)	
BORING NO.: M-7		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Trailer (RAL)		0 HR.	NA
GROUND ELEV.: 326.0 ft (NAVD88)		NORTHING: 3,909,504 US ft (NAD83)		EASTING: 11,685,836 US ft (NAD83)		24 HR.	35.3
TOTAL DEPTH: 151.5 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-425)	
DATE STARTED: 9/8/09		COMPLETED: 9/11/09		CASING DEPTH: 58.7 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 bit	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (%)	RQD (%)		REC. (%)	RQD (%)		
										Begin Coring @ 59.2 ft
266.8	59.2	2.1	0:50/1.1	(0.4)	(0.0)	RUN 1	(0.4)	(0.0)		WEATHERED ROCK: Brown and gray, with orange staining, severely weathered, very close fracturing, soft, BIOTITE QUARTZ GNEISS (1 joint at 0°, open) (No Recovery) (No Recovery)
264.7	61.3		1:03	19%	0%		4%	0%		
264.2	61.8	0.5	0:23/0.5	(0.0)	(0.0)	RUN 2				
		5.0	1:35 1:57 2:14 2:00 2:15	(0.0)	(0.0)	RUN 3				
259.2	66.8			(0.0)	(0.0)					
		4.5	2:17 1:45 1:54 4:51	(1.0)	(0.0)	RUN 4				HARD ROCK: Gray and light gray, moderately severely to moderately weathered, very close to moderately close fracturing, medium hard to hard, BIOTITE QUARTZ GNEISS (4 joints at 0°, open; 3 joints at 70-80°, tight) (3 joints at 0°, tight; 2 joints at 60°, tight; 2 joints at 80°, tight)
254.7	71.3	5.0	4:00/0.5	(4.8)	(3.6)	RUN 5	(9.5)	(5.7)		
			3:53 3:44 3:15 3:09 3:09	96%	72%		98%	59%		
249.7	76.3	5.0	3:20 3:30 3:30 3:00 3:58	(3.7)	(2.1)	RUN 6				(4 joints at 0°, open; 2 joints at 45°, tight; 2 joints at 60-70°, tight)
244.7	81.3	5.0	2:40 2:10 2:07 2:00 3:32	(0.2)	(0.0)	RUN 7	(0.2)	(0.0)		
			2:37 2:43 2:32 3:37 3:28	4%	0%		2%	0%		
239.7	86.3	5.0	2:37 2:43 2:32 3:37 3:28	(2.0)	(0.8)	RUN 8				WEATHERED ROCK: Grayish brown with orange staining, severely weathered, very close to close fracturing, very soft, QUARTZ BIOTITE GNEISS (1 joint at 40°, open with clay; poor recovery)
234.7	91.3	5.0	3:09 3:30 4:20 3:53 3:36	(3.5)	(0.4)	RUN 9	(8.2)	(2.4)		
			3:20 3:08 3:20 2:50 1:35	40%	16%		85%	25%		
229.7	96.3	5.0	3:09 3:30 4:20 3:53 3:36	(2.7)	(1.2)	RUN 10				(4 joints at 10°, tight; 2 joints at 50°, tight; 1 joint at 90°, tight)
224.7	101.3	5.0	2:55 2:14 4:30 3:17 3:28	(2.3)	(1.7)	RUN 11	(0.0)	(0.0)		
			3:54 3:32 3:55 3:55 3:43	46%	34%		0%	0%		
219.7	106.3	5.0	3:54 3:32 3:55 3:55 3:43	(4.8)	(4.4)	RUN 12	(2.3)	(1.7)		HARD ROCK: Orange brown to greenish gray with orange staining, moderately severely to moderately weathered, very close to close fracturing, medium hard to moderately hard, QUARTZ BIOTITE GNEISS (2 joints at 20°, open with clay; 2 joints at 40°, tight; 1 joint at 70°, open) HARD ROCK: Gray with trace orange staining, slightly weathered, very close to moderately close fracturing, moderately hard, QUARTZ BIOTITE GNEISS (2 joints at 40°, tight; 1 joint at 70°, tight) (5 joints at 20-30°, tight; 6 joints at 40-50°, tight)
214.7	111.3	5.0	4:25 4:14 3:57 4:16 4:30	(5.0)	(4.7)	RUN 13	(9.8)	(9.1)		
			4:58 4:38 4:40 4:00 2:53	96%	88%		100%	74%		
209.7	116.3	5.0	4:58 4:38 4:40 4:00 2:53	(4.7)	(3.4)	RUN 14	(24.7)	(18.5)		HARD ROCK: Gray to light gray and grayish brown, with orange staining, moderately to slightly weathered, very close to close fracturing, moderately hard, BIOTITE QUARTZ GNEISS (1 joint at 20°, tight; 3 joints at 50°, tight; 1 joint at 90°, tight) (3 joints at 0-10°, tight to open; 5 joints at 20-30°, tight; 1 joint at 80°, tight)
204.7	121.3	5.0	2:40 2:22 2:15 2:19 2:27	(5.0)	(3.7)	RUN 15				
			2:40 2:22 2:15 2:19 2:27	100%	74%					
199.7	126.3	5.0	2:40 2:27 3:42 3:35 3:33	(5.0)	(3.4)	RUN 16				(5 joints at 0-10°, tight; 3 joints at 20-30°, tight; 2 joints at 40-50°, tight; 1 joint at 70°, tight)
194.7	131.3	5.0	3:37 3:34	(5.0)	(4.7)	RUN 17				
			3:37 3:34	100%	94%					

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



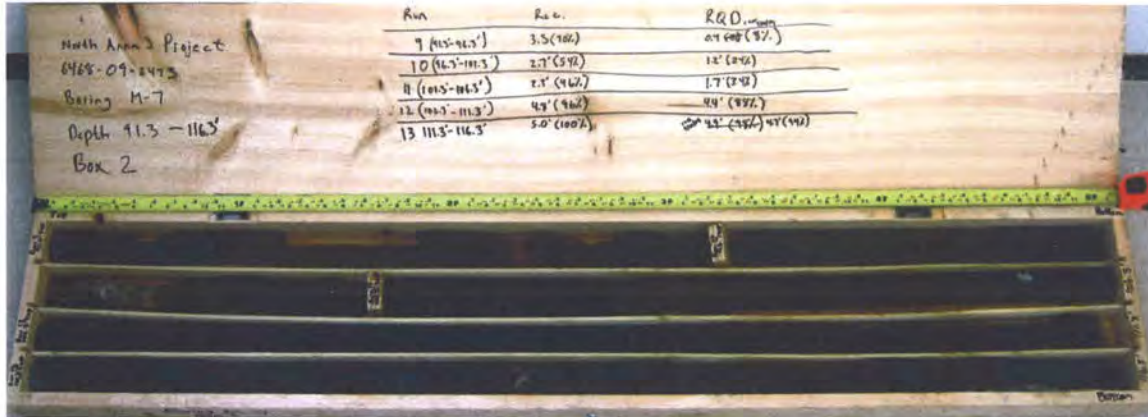
BECHTEL PROJECT NO.: 25161	MACTEC PROJECT NO.: 6468-09-2473	COUNTY: Louisa, VA	GEOLOGIST: C. Baldwin
SITE DESCRIPTION: North Anna 3 Project Supplement 2		DRILLER: P. Pitts/J. Tucker	FLUID LEVEL (ft)
BORING NO.: M-7	DRILL METHOD: Mud Rotary/Rock Core	DRILL MACHINE: CME-55 Trailer (RAL)	0 HR. NA
GROUND ELEV.: 326.0 ft (NAV88)	NORTHING: 3,909,504 US ft (NAD83)	EASTING: 11,685,836 US ft (NAD83)	24 HR. 35.3
TOTAL DEPTH: 151.5 ft	SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		HAMMER (ID): 140-lb. Auto (MEC-425)
DATE STARTED: 9/8/09	COMPLETED: 9/11/09	CASING DEPTH: 58.7 ft	CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 bit

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
										Continued from previous page
189.7	136.3	5.0	3:50 3:47 3:18	(5.0) 100%	(3.3) 66%	RUN 18				HARD ROCK: Gray to light gray and grayish brown, with orange staining, moderately to slightly weathered, very close to close fracturing, moderately hard, BIOTITE QUARTZ GNEISS (continued) (7 joints at 10-20°, tight to open; 4 joints at 30-40°, tight; 1 joint at 70°, tight)
184.7	141.3	5.2	6:00 5:30 5:45 6:05 8:00	(5.2) 100%	(4.6) 88%	RUN 19	(10.2) 100%	(9.2) 90%		HARD ROCK: White, pink, and gray to light gray, very slightly weathered, close fracturing, hard, BIOTITE QUARTZ GNEISS and pegmatitic, graphic quartz + feldspar vein with trace garnet and magnetite (4 joints at 0-10°, tight; 4 joints at 20-30°, tight)
179.5	146.5	5.0	10:40 9:05 8:36 10:43 14:25/1.2	(5.0) 100%	(4.6) 92%	RUN 20				(1 joint at 0°, tight; 3 joints at 20-30°, tight; 3 joints at 40-50°, tight)
174.5	151.5		16:05 11:38 8:52 5:15 10:00							Boring and coring terminated at 151.5 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/11/2009 prior to drilling. Borehole was at a depth of 136.3 feet.

NORTH ANNA 3 CORE, NORTH ANNA 3 PROJECT.GPJ, NORTH ANNA 3.GDT, 12/4/09



M-7 - Box 1



M-7 - Box 2



M-7 - Box 3



M-7 - Box 4



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: B. Mabie	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)	
BORING NO.: M-8		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-45C Track (RAL)		0 HR. NA	
GROUND ELEV.: 329.3 ft (NAVD88)		NORTHING: 3,909,414 US ft (NAD83)		EASTING: 11,685,847 US ft (NAD83)		24 HR. 33.0	
TOTAL DEPTH: 150.6 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-12)	
DATE STARTED: 9/1/09		COMPLETED: 9/9/09		HOLE DIA.: 3"		CASING DEPTH: 76.0 ft	
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION					
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100				
329.3													Ground Surface	329.3	0.0		
																	No sampling from 0.0 to 8.1 feet due to soft dig utility clearance by Dominion Personnel
321.2	8.1																8.1
318.6	10.7	3	5	5												SS-1	RESIDUAL SOIL: Silty SAND (SM), red (2.5YR 5/8), loose, moist, fine to coarse grained sand, trace mica, relict rock fabric
315.6	13.7	4	5	6												SS-2	RESIDUAL SOIL: Clayey SAND (SC), reddish yellow (5YR 7/8), medium dense, moist, fine to coarse grained sand, trace mica, relict rock fabric
310.6	18.7	5	6	9												SS-3	RESIDUAL SOIL: Silty SAND (SM), reddish yellowish (5YR 7/6), medium dense, moist, fine to coarse grained sand, trace mica, relict rock fabric
305.6	23.7	14	15	16												SS-4	RESIDUAL SOIL: Well graded SAND (SW), brownish yellow (10YR 6/6), dense, moist, fine to coarse grained sand, relict rock fabric
300.6	28.7	19	17	16												SS-5	23.7 ft: Trace mica
295.6	33.7	4	6	11												SS-6	RESIDUAL SOIL: Silty SAND (SM), yellowish brown (10YR 5/6), medium dense, moist, fine grained sand, some mica, green and black staining, relict rock fabric
290.6	38.7	4	7	7												SS-7	33.7 ft: Dark yellowish brown (10YR 4/4)
285.6	43.7	5	8	11												SS-8	43.7 ft: Dark greenish gray (10Y 4/1), trace mica
280.6	48.7	13	14	15												SS-9	48.7 ft: Dense, fine to medium grained sand, some mica
275.6	53.7	14	21	25												SS-10	53.7 ft: Very dense, little mica, black staining
270.6	58.7	17	31	50												SS-11	56.0
265.6	63.7	61	39/0.2													SS-12	WEATHERED ROCK: Severely weathered BIOTITE GNEISS (Sampled as Silty SAND (SM), dark grayish brown (10YR 4/2), very dense, moist, fine to medium grained sand, little mica)
260.6	68.7	16	22	50												SS-13	RESIDUAL SOIL: Silty SAND (SM), dark grayish brown (10YR 4/2), very dense, moist, fine to medium grained sand, some mica, relict rock fabric
255.6	73.7	37	31	41												SS-14	68.7 ft: Yellowish brown (10YR 5/8), fine grained sand
		50/0.4														SS-15	71.0

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473			COUNTY: Louisa, VA		GEOLOGIST: B. Mabie							
SITE DESCRIPTION: North Anna 3 Project Supplement 2					DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)							
BORING NO.: M-8		DRILL METHOD: Mud Rotary/Rock Core			DRILL MACHINE: CME-45C Track (RAL)		0 HR. NA							
GROUND ELEV.: 329.3 ft (NAVD88)		NORTHING: 3,909,414 US ft (NAD83)		EASTING: 11,685,847 US ft (NAD83)		24 HR. 33.0								
TOTAL DEPTH: 150.6 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08			ROD TYPE: AWJ	HAMMER (ID):140-lb. Auto (MEC-12)								
DATE STARTED: 9/1/09		COMPLETED: 9/9/09	HOLE DIA.: 3"	CASING DEPTH: 76.0 ft	CORE SIZE: NQ3	BITS USED: 2-7/8" Tri-Cone								
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
179.7					Continued from previous page									
												178.7	150.6	Boring and coring terminated at 150.3 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/09/2009 prior to drilling. Borehole was at a depth of 136.2 feet.

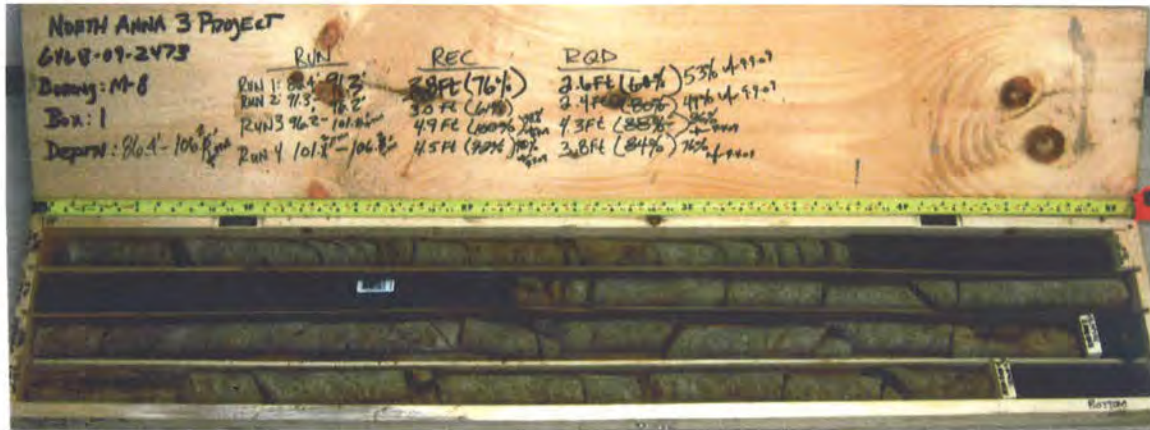
NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: B. Mabie	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)	
BORING NO.: M-8		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-45C Track (RAL)		0 HR. NA	
GROUND ELEV.: 329.3 ft (NAVD88)		NORTHING: 3,909,414 US ft (NAD83)		EASTING: 11,685,847 US ft (NAD83)		24 HR. 33.0	
TOTAL DEPTH: 150.6 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-12)	
DATE STARTED: 9/1/09		COMPLETED: 9/9/09		CASING DEPTH: 76.0 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 bit	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (%)	RQD (%)		REC. (%)	RQD (%)		
										Begin Coring @ 86.4 ft
242.9	86.4	4.9	N=50/0.0 3:35 3:12 3:26 3:01 1:48/0.9	(3.8) 78%	(2.6) 53%	RUN 1	(3.8) 100%	(2.6) 68%		HARD ROCK: Light gray with orange staining, moderately severe to moderately weathered, close fracturing, medium hard, BIOTITE QUARTZ GNEISS (12 joints at 40-50°, open)
238.0	91.3	4.9	1:49 2:28 2:08 2:24 2:30/0.9	(3.0) 61%	(2.4) 49%	RUN 2	(0.0) 0%	(0.0) 0%		WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (No Recovery)
233.1	96.2	5.0	2:36 2:46 2:21 2:39 2:59	(4.9) 98%	(4.3) 86%	RUN 3	(19.1) 96%	(15.9) 80%		HARD ROCK: Light gray, brown, tan, and light brown, with orange staining, moderately to slightly weathered, close fracturing, medium hard to moderately hard, BIOTITE QUARTZ GNEISS (1 joint at 60°, open; 3 at 90°, open) (9 joints at 20-50°, tight)
228.1	101.2	5.0	2:30 2:35 2:13 2:33 2:41	(4.5) 90%	(3.8) 76%	RUN 4				(7 joints at 20-30°, tight to open; 1 joint at 90°, tight)
218.1	111.2	5.0	2:38 2:46 2:15 2:26 2:29	(4.9) 98%	(4.0) 80%	RUN 5				(10 joints at 0-40°, open to tight)
213.1	116.2	5.0	2:37 2:18 1:50 2:12 2:35	(1.8) 36%	(1.4) 28%	RUN 6	(0.0) 0%	(0.0) 0%		(3 joints at 0-40°, open)
208.1	121.2	5.0	2:06 1:53 1:57 2:22 2:50	(4.8) 96%	(3.7) 74%	RUN 7	(6.3) 97%	(5.0) 77%		HARD ROCK: Light brown to tan and gray, with orange staining, moderately to slightly weathered, close fracturing, moderately hard, BIOTITE QUARTZ GNEISS (several joints at 90°, open)
203.1	126.2	5.0	2:32 2:29 2:36 3:16 4:17	(1.5) 30%	(1.3) 26%	RUN 8	(0.0) 0%	(0.0) 0%		(1 joint at 20°, open)
199.9	129.4	3.2	3:40 4:01 3:01	(3.1) 97%	(1.8) 56%	RUN 9	(21.8) 89%	(17.0) 70%		HARD ROCK: Light brown, gray, and light gray, with orange staining, moderately severe to moderately weathered, close fracturing, medium hard to hard, BIOTITE QUARTZ GNEISS
198.1	131.2	1.8	1:48/0.2 2:08/0.8 2:47	(1.7) 94%	(1.3) 72%	RUN 10				(11 joints at 0-90°, open; quartz vein from 126.2-127.8 ft)
193.1	136.2	5.0	2:51 2:46 2:33 2:49 2:55	(5.0) 100%	(5.0) 100%	RUN 11				(4 joints at 0-30°, tight to open) (2 joints at 20-30°, tight; 3 joints at 80°, tight)
188.1	141.2	5.0	3:01 2:44 2:39 3:03 3:26	(4.8) 96%	(3.8) 76%	RUN 12				(6 joints at 20-30°, open; 2 joints at 80-90°, open)
184.7	144.6	3.4	2:43 2:46 2:33	(2.8) 82%	(2.1) 62%	RUN 13				(2 joints at 0-20°, open; 2 joints at 80°, open)
183.1	146.2	1.6	1:28/0.4 2:02/0.6 2:13	(1.6) 100%	(1.4) 88%	RUN 14				(4 joints at 20-40°, tight to open)
178.7	150.6	4.4	2:42 2:54 3:26 4:12 1:33/0.4	(2.8) 64%	(1.6) 36%	RUN 15				(7 joints at 20-60°, open)
										Boring and coring terminated at 150.3 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/09/2009 prior to drilling. Borehole was at a depth of 136.2 feet.

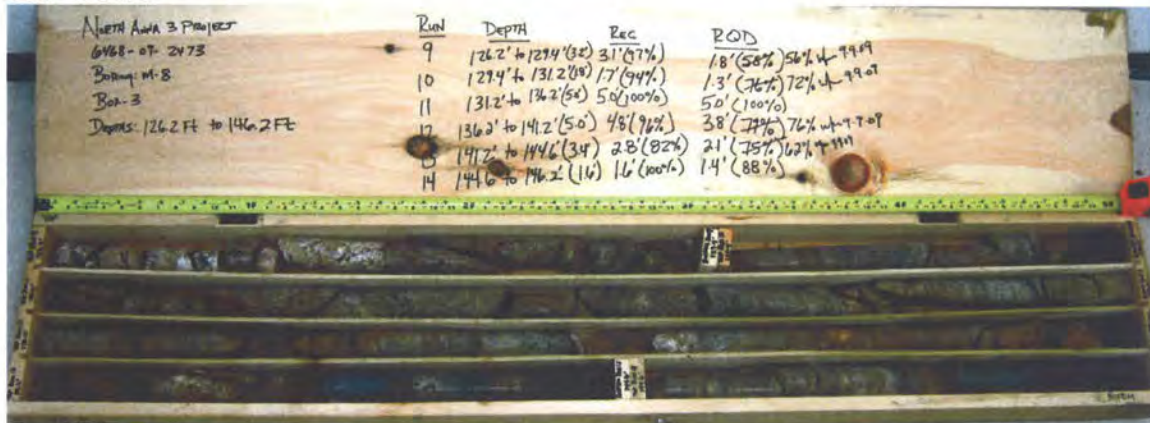
NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



M-8 - Box 1



M-8 - Box 2



M-8 - Box 3



M-8 - Box 4



GEOTECHNICAL BORING LOG

Prepared By JJJ Date 12/16/09

Checked By mm Date 12/16/09

SHEET 1 OF 3

BECHTEL PROJECT NO.: 25161			MACTEC PROJECT NO.: 6468-09-2473			COUNTY: Louisa, VA			GEOLOGIST: A. Mwembeshi						
SITE DESCRIPTION: North Anna 3 Project Supplement 2						DRILLER: R. Landeros/D. Reneau			FLUID LEVEL (ft)						
BORING NO.: M-9			DRILL METHOD: Mud Rotary/Rock Core			DRILL MACHINE: CME-550X (ATL)			0 HR. NA						
GROUND ELEV.: 327.3 ft (NAVD88)			NORTHING: 3,909,334 US ft (NAD83)			EASTING: 11,685,946 US ft (NAD83)			24 HR. 4.0						
TOTAL DEPTH: 153.6 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-05)							
DATE STARTED: 9/1/09		COMPLETED: 9/4/09		HOLE DIA.: 3"		CASING DEPTH: 105.0 ft		CORE SIZE: NQ3		BITS USED: 2-7/8" Drag					
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100		
327.3					Ground Surface							327.3	0.0		
319.2	8.1														
316.8	10.5	5	4	5							SS-1				
314.4	12.9	3	2	5							SS-2				
311.9	15.4	5	6	5							SS-3				
309.4	17.9	4	5	4							SS-4				
304.4	22.9	5	6	6							SS-5				
299.5	27.8	5	6	6							SS-6				
294.5	32.8	5	7	7							SS-7				
288.6	38.7	8	9	9							SS-8				
283.6	43.7	8	9	9							SS-9				
279.5	47.8	8	9	9							SS-10				
274.6	52.7	5	11	23							SS-11				
269.6	57.7	15	18	22							SS-12				
264.6	62.7	16	19	20							SS-13				
259.6	67.7	27	40	43							SS-14				
254.6	72.7	20	26	45							SS-15				
		49	50/0.3								SS-16				

NORTH ANNA 3 BORE, NORTH ANNA 3 PROJECT.GPJ, NORTH ANNA 3.GDT, 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi							
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)							
BORING NO.: M-9		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA							
GROUND ELEV.: 327.3 ft (NAVD88)		NORTHING: 3,909,334 US ft (NAD83)		EASTING: 11,685,946 US ft (NAD83)		24 HR. 4.0							
TOTAL DEPTH: 153.6 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-05)							
DATE STARTED: 9/1/09		COMPLETED: 9/4/09		HOLE DIA.: 3"		CASING DEPTH: 105.0 ft							
CORE SIZE: NQ3		BITS USED: 2-7/8" Drag											
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
252.5					Continued from previous page								
249.6	77.7	39	50/0.4							50/0.4	SS-17	WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (Sampled as Silty SAND (SM), very pale brown (10YR 8/3 & 10YR 7/3), very dense, moist, medium grained sand, trace mica, few to little rock fragments) (continued)	
244.6	82.7		50/0.4							50/0.4	SS-18		
239.6	87.7		50/0.4							50/0.4	SS-19		
234.6	92.7		50/0.4							50/0.4	SS-20		
229.6	97.7		50/0.2							50/0.2	SS-21		
223.2	104.1		50/0.1							50/0.1	SS-22		
219.5	107.8		50/0.2							50/0.2	SS-23		107.8 ft: Grayish brown (10YR 5/2)
214.5	112.8		50/0.2							50/0.2	SS-24		112.8 ft: Pale yellow (2.5YR 7/4)
209.4	117.9	35	50/0.4							50/0.4	SS-25		117.9 ft: Brown (10YR 5/3)
205.4	121.9		50/0.0							50/0.0	SS-26		121.9 ft: Bit Refusal; SPT refusal with no penetration HARD ROCK: Light to dark gray, slightly weathered to fresh, very close to wide fracturing, medium hard to hard, BIOTITE QUARTZ GNEISS

NORTH ANNA 3 BORE, NORTH ANNA 3 PROJECT.GPJ, NORTH ANNA 3.GDT, 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)	
BORING NO.: M-9		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA	
GROUND ELEV.: 327.3 ft (NAVD88)		NORTHING: 3,909,334 US ft (NAD83)		EASTING: 11,685,946 US ft (NAD83)		24 HR. 4.0	
TOTAL DEPTH: 153.6 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-05)	
DATE STARTED: 9/1/09		COMPLETED: 9/4/09		HOLE DIA.: 3"		CASING DEPTH: 105.0 ft	
				CORE SIZE: NQ3		BITS USED: 2-7/8" Drag	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION
		0.5ft	0.5ft	0.5ft	0	20	40	60	80			
177.7					Continued from previous page							
												Boring and coring terminated at 153.6 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/04/2009 prior to drilling. Borehole was at a depth of 121.9 feet.

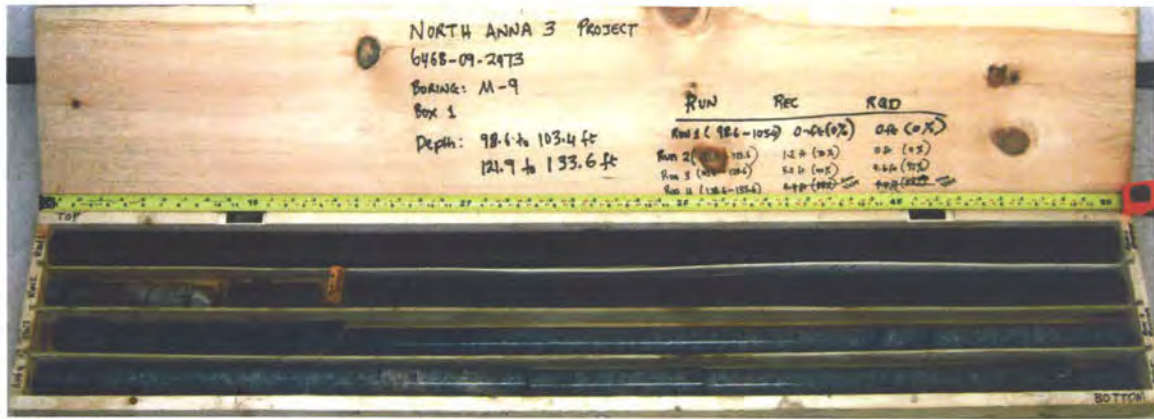
NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)	
BORING NO.: M-9		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA	
GROUND ELEV.: 327.3 ft (NAVD88)		NORTHING: 3,909,334 US ft (NAD83)		EASTING: 11,685,946 US ft (NAD83)		24 HR. 4.0	
TOTAL DEPTH: 153.6 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-05)	
DATE STARTED: 9/1/09		COMPLETED: 9/4/09		CASING DEPTH: 105.0 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 bit	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
										Begin Coring @ 98.6 ft
228.7	98.6	4.8	0:39 0:47 0:33 0:39 0:37	(0.0) 0%	(0.0) 0%	RUN 1	(0.0) 0%	(0.0) 0%		WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (Sampled as Silty SAND (SM), very pale brown (10YR 8/3 & 10YR 7/3), very dense, moist, medium grained sand, trace mica, few to little rock fragments) (continued) (No Core Recovery - cont. boring with mud rotary and SPT sampling to bit refusal)
223.9	103.4		N=50/0.1			SS-22				107.8 ft: Grayish brown (10YR 5/2)
			N=50/0.2			SS-23				112.8 ft: Pale yellow (2.5YR 7/4)
			N=50/0.2			SS-24				117.9 ft: Brown (10YR 5/3)
			N=50/0.4			SS-25				121.9 ft: Bit Refusal; SPT refusal with no penetration
205.4	121.9	1.7	N=50/0.0 3:09	(1.2) 71%	(0.0) 0%	RUN 2	(31.2) 98%	(28.4) 90%		HARD ROCK: Light to dark gray, slightly weathered to fresh, very close to wide fracturing, medium hard to hard, BIOTITE QUARTZ GNEISS (2 joints at 30°, tight) (3 joints at 45°, tight)
203.7	123.6	5.0	1:41/0.7 1:41 1:52 3:28 3:01 4:23	(5.0) 100%	(4.6) 92%	RUN 3				(3 joints at 90°, open; several mechanical fractures)
198.7	128.6	5.0	5:15 8:34 5:43 5:57 12:12	(5.0) 100%	(5.0) 100%	RUN 4				(3 joints at 30°, open with trace clay; 1 joint at 45°)
193.7	133.6	5.0	1:17 1:47 2:02 0:45 1:46	(5.0) 100%	(4.2) 84%	RUN 5				(1 joint at 30°, tight with trace orange staining)
188.7	138.6	5.0	1:51 1:35 2:04 2:47 4:29	(5.0) 100%	(5.0) 100%	RUN 6				(3 joints at 15°, tight with trace brown-orange staining)
183.7	143.6	5.0	2:45 4:05 2:43 2:12 3:08	(5.0) 100%	(4.7) 94%	RUN 8				(2 joints at 45°, tight; several mechanical fractures; quartz vein with trace feldspar, calcite, and muscovite from 151.6 to 153.6 feet)
178.7	148.6	5.0	1:43 2:11 2:09 2:50 2:54	(5.0) 100%	(4.9) 98%	RUN 9				Boring and coring terminated at 153.6 feet.
173.7	153.6									Boring closed by tremie method with cement-bentonite grout.
										24 hour water level measured on 9/04/2009 prior to drilling. Borehole was at a depth of 121.9 feet.

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



M-9 - Box 1



M-9 - Box 2



BECHTEL PROJECT NO.: 25161	MACTEC PROJECT NO.: 6468-09-2473	COUNTY: Louisa, VA	GEOLOGIST: K. Lloyd
SITE DESCRIPTION: North Anna 3 Project Supplement 2		DRILLER: D. White/O. Smith	FLUID LEVEL (ft) 0 HR. NA
BORING NO.: M-10 (DH)	DRILL METHOD: Mud Rotary/Rock Core	DRILL MACHINE: CME-55LC Track (RAL)	24 HR. 26.0
GROUND ELEV.: 323.6 ft (NAVD88)	NORTHING: 3,909,244 US ft (NAD83)	EASTING: 11,685,962 US ft (NAD83)	
TOTAL DEPTH: 201.9 ft	SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08	ROD TYPE: AWJ	HAMMER (ID): 140-lb. Auto (MEC-02)
DATE STARTED: 9/1/09	COMPLETED: 9/9/09	HOLE DIA.: 4"	CASING DEPTH: 89.8 ft
		CORE SIZE: HQ3	BITS USED: 3-7/8" Tri-Cone

ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION
		0.5ft	0.5ft	0.5ft	0	20	40	60	80			
323.6					Ground Surface							323.6 0.0
												No sampling from 0.0 to 8.8 feet due to soft dig utility clearance by Dominion Personnel.
314.8	8.8	6	5	5							SS-1	314.8 8.8
311.9	11.7	3	4	5							SS-2	RESIDUAL SOIL: Silty SAND (SM), yellowish red (5YR 5/6), loose, moist, trace to few black stains, relict rock fabric
309.3	14.3	4	3	5							SS-3	11.7 ft: Red (2.5YR 4/8), little to some mica
304.4	19.2	4	4	5							SS-4	14.3 ft: Dark red (2.5YR 3/6), trace black stains
299.4	24.2	2	3	4							SS-5	19.2 ft: Strong brown (7.5YR 4/6)
294.4	29.2	2	3	5							SS-6	29.2 ft: Dark yellowish brown (10YR 4/6)
289.5	34.1	2	8	11							SS-7	34.1 ft: Brownish yellow (10YR 6/8), medium dense
284.5	39.1	7	3	5							SS-8	39.1 ft: Yellowish brown (10YR 5/6), loose, fine to coarse grained sand, trace to few black stains
279.5	44.1	3	3	7							SS-9	44.1 ft: Light yellowish brown (10YR 6/4)
274.5	49.1	13	15	17							SS-10	49.1 ft: Very pale brown (10YR 7/3), dense
269.5	54.1	15	15	17							SS-11	
264.5	59.1	20	25	36							SS-12	59.1 ft: Very pale brown (10YR 8/2), very dense, coarse grained sand, trace mica
259.5	64.1	46	50/0.5								SS-13	260.6 63.0
254.5	69.1	6	20	36							SS-14	256.6 67.0
249.5	74.1											WEATHERED ROCK: Severely weathered QUARTZ GNEISS (Sampled as Silty SAND (SM), very pale brown (10YR 8/2), very dense, moist, coarse grained sand, trace mica, few to little rock fragments)
												RESIDUAL SOIL: Silty SAND (SM), brownish yellow (10YR 6/6), very dense, moist, little to some mica, fine grained sand, relict rock fabric

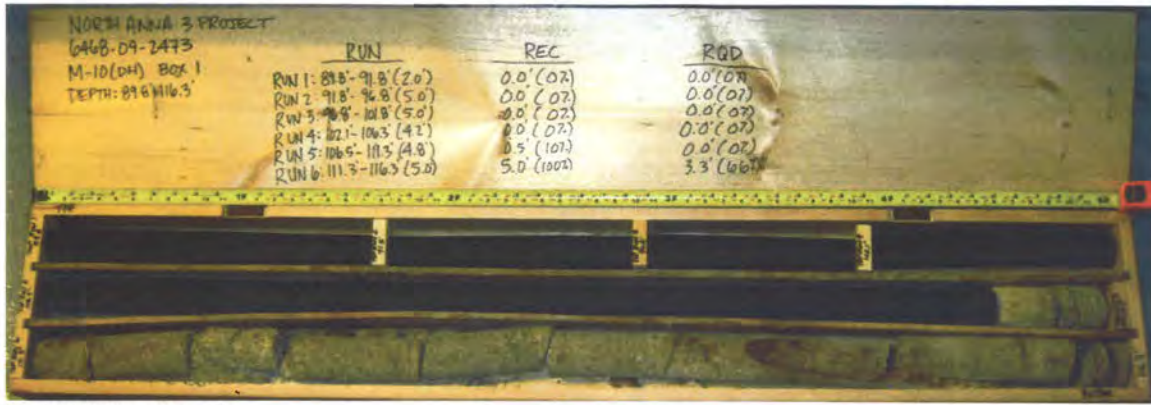
NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



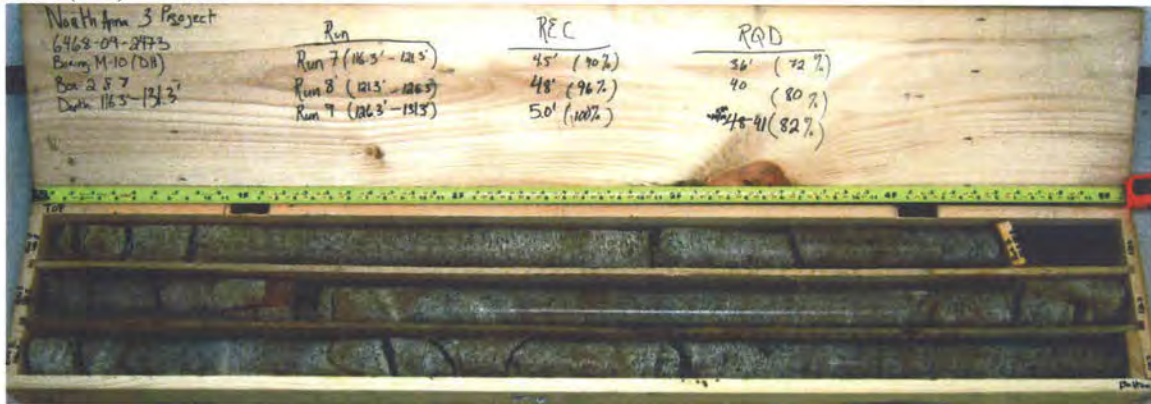
BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: K. Lloyd	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. White/O. Smith		FLUID LEVEL (ft)	
BORING NO.: M-10 (DH)		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55LC Track (RAL)		0 HR. NA	
GROUND ELEV.: 323.6 ft (NAVD88)		NORTHING: 3,909,244 US ft (NAD83)		EASTING: 11,685,962 US ft (NAD83)		24 HR. 26.0	
TOTAL DEPTH: 201.9 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-02)	
DATE STARTED: 9/1/09		COMPLETED: 9/9/09		CASING DEPTH: 89.8 ft		CORE BARREL TYPE: Wireline HQ3 Triple Tube, series 6 & 10 bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
										Continued from previous page
157.0	166.6	5.0	3:58 3:18			RUN 18				HARD ROCK: Light gray to gray, slightly weathered to fresh, close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS (continued) (1 joint at 30°, open with trace clay)
152.0	171.6	5.0	4:32 6:20 7:15 11:34 10:45	(5.0) 100%	(5.0) 100%	RUN 19				(2 joints at 10-20°, tight with trace orange stain)
147.0	176.6	5.0	3:38 4:45 6:08 10:32 8:02	(5.0) 100%	(5.0) 100%	RUN 20 RS-4				(3 joints at 10-20°, tight to open with trace clay and orange stain)
142.0	181.6	5.0	4:21 6:05 5:52 8:42 10:45	(5.0) 100%	(4.8) 96%	RUN 21				(2 joints at 10-20°, tight)
137.0	186.6	5.0	4:02 6:42 3:16 3:29 2:40	(4.7) 94%	(4.7) 94%	RUN 22				(No joints)
132.0	191.6	5.0	3:15 3:45 4:17 4:12 4:17	(5.0) 100%	(5.0) 100%	RUN 23				(No joints)
127.0	196.6	2.3	4:56 5:43 4:54 5:17 4:18	(4.8) 96%	(4.8) 96%	RUN 24				(No joints)
124.7	198.9	3.0	3:16 3:10 3:25/0.3	(2.0) 87%	(2.0) 87%	RUN 25 RS-5				(No joints)
121.7	201.9	3.0	3:37 3:37 2:52	(3.0) 100%	(2.8) 93%		(3.0) 100%	(2.8) 93%		HARD ROCK: Dark gray, very slightly weathered, close to moderately close fracturing, very hard, QUARTZ BIOTITE GNEISS (2 joints at 20-30°, tight) Boring and coring terminated at 201.9 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/09/2009 prior to drilling. Borehole was at a depth of 196.6 feet.

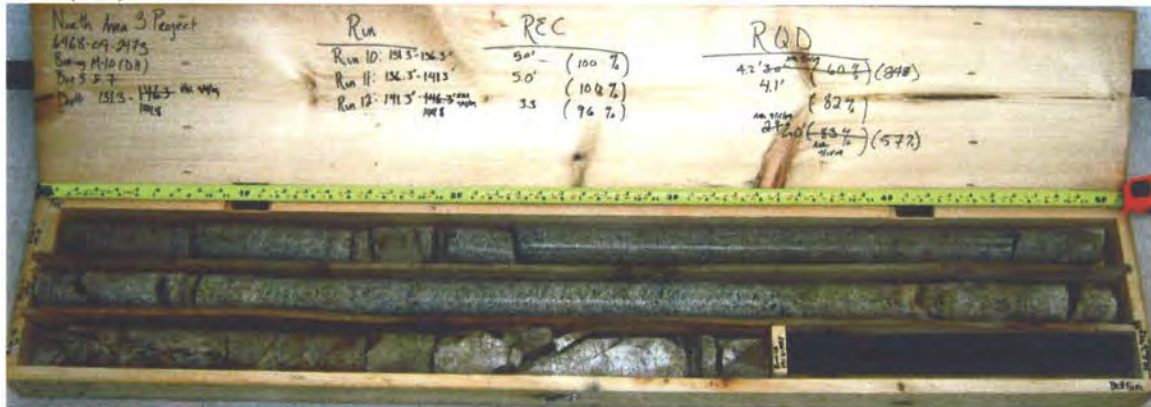
NORTH ANNA 3 CORE_NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



M-10(DH) - Box 1



M-10(DH) - Box 2



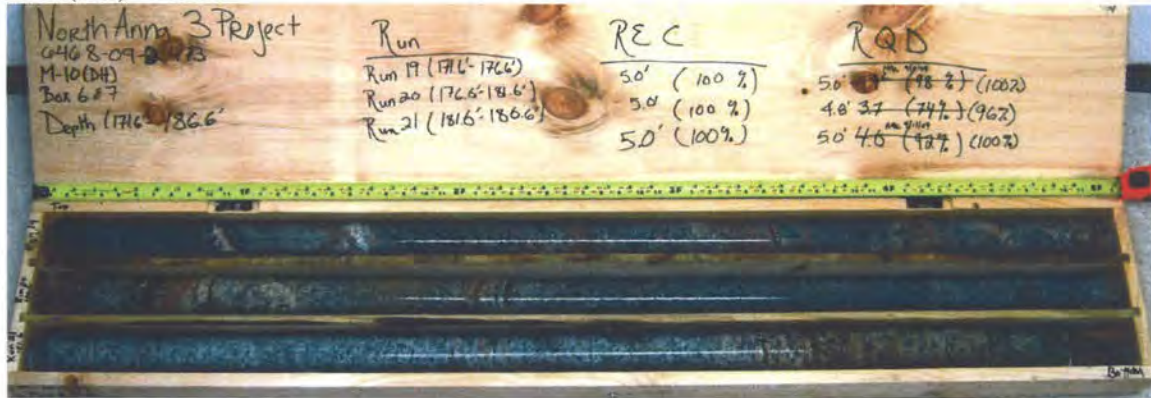
M-10(DH) - Box 3



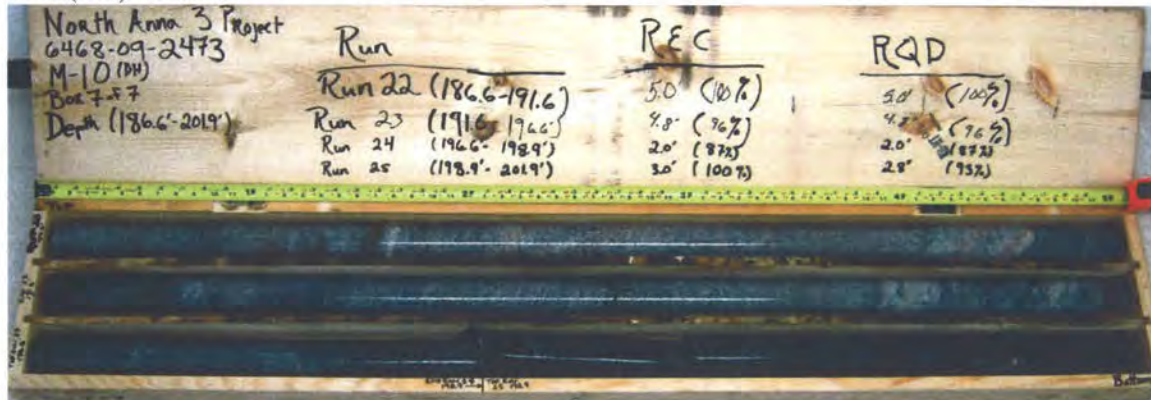
M-10(DH) - Box 4



M-10(DH) - Box 5



M-10(DH) - Box 6



M-10(DH) - Box 7



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: C. Baldwin										
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: P. Pitts/J. Tucker		FLUID LEVEL (ft)										
BORING NO.: M-11		DRILL METHOD: Mud Rotary		DRILL MACHINE: CME-55 Trailer (RAL)		0 HR. ND										
GROUND ELEV.: 325.9 ft (NAVD88)		NORTHING: 3,909,352 US ft (NAD83)		EASTING: 11,686,039 US ft (NAD83)		24 HR. ND										
TOTAL DEPTH: 148.7 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-425)										
DATE STARTED: 9/1/09		COMPLETED: 9/4/09		HOLE DIA.: 3"		CASING DEPTH: 8.4 ft										
CORE SIZE: NA		BITS USED: 2-7/8" Tri-Cone														
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION			
		0.5ft	0.5ft	0.5ft	0	20	40	60	80					100		
325.9					Ground Surface								325.9	0.0		
															No sampling from 0.0 to 8.4 feet due to soft dig utility clearance by Dominion Personnel.	
	8.4	4	5	6											317.5	8.4
	10.9	4	5	5											RESIDUAL SOIL: Silty SAND (SM), reddish yellow (7.5YR 7/6), medium dense, moist, fine to medium grained sand, little mica, relict rock fabric.	
	13.4	4	6	5											10.9 ft: Loose	
	15.9	5	6	6											13.4 ft: Medium dense	
	18.5	4	6	6											15.9 ft: Yellow (10YR 8/6), fine to coarse grained sand	
	23.9	6	8	8												
	28.9	6	11	12												
	33.9	5	6	6											33.9 ft: Reddish yellow (7.5YR 7/6)	
	38.9	4	7	8												
	43.9	6	7	8												
	48.6	8	7	6											48.6 ft: Reddish yellow (5YR 7/6)	
	53.6	8	14	13												
	58.6	11	13	17											58.6 ft: Very pale brown (10YR 7/3)	
	63.6	12	23	25											63.6 ft: Reddish yellow (7.5YR 6/6), dense	
	68.6	14	21	19											68.6 ft: Pale yellow (5Y 8/3)	
	73.6	9	11	24												

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: C. Baldwin						
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: P. Pitts/J. Tucker		FLUID LEVEL (ft)						
BORING NO.: M-11		DRILL METHOD: Mud Rotary		DRILL MACHINE: CME-55 Trailer (RAL)		0 HR. ND						
GROUND ELEV.: 325.9 ft (NAVD88)		NORTHING: 3,909,352 US ft (NAD83)		EASTING: 11,686,039 US ft (NAD83)		24 HR. ND						
TOTAL DEPTH: 148.7 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID):140-lb. Auto (MEC-425)						
DATE STARTED: 9/1/09		COMPLETED: 9/4/09		HOLE DIA.: 3"		CASING DEPTH: 8.4 ft						
				CORE SIZE: NA		BITS USED: 2-7/8" Tri-Cone						
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION
		0.5ft	0.5ft	0.5ft	0	20	40	60	80			
251.1					Continued from previous page							
247.3	78.6	11	16	20							SS-17	73.6 ft: Pale yellow (2.5YR 7/3) RESIDUAL SOIL: Silty SAND (SM), reddish yellow (7.5YR 7/6), medium dense, moist, fine to medium grained sand. little mica. relict rock fabric (continued)
242.3	83.6	9	10	19							SS-18	83.6 ft: Yellow (10YR 8/6), medium dense
237.3	88.6	10	11	14							SS-19	
232.3	93.6	15	27	26							SS-20	93.6 ft: Very pale brown (10YR 7/3), very dense
227.3	98.6	9	21	36							SS-21	98.6 ft: Light brownish gray (10YR 6/2), some mica
222.3	103.6	37	48	52/0.3					100/0.8		SS-22	WEATHERED ROCK: Severely weathered BIOTITE GNEISS (Sampled as Silty SAND (SM), dark yellowish brown (10YR 4/4), very dense, fine to medium grained sand, some mica, few to little rock fragments)
217.3	108.6	44	56/0.2						100/0.7		SS-23	108.6 ft: Dark olive gray (5Y 3/2)
212.3	113.6	50/0.1							50/0.1		SS-24	
207.3	118.6	50/0.2							50/0.2		SS-25	118.6 ft: Light olive brown (2.5Y 5/4)
202.3	123.6	50/0.2							50/0.2		SS-26	
197.3	128.6	50/0.1							50/0.1		SS-27	
192.3	133.6	50/0.1							50/0.1		SS-28	133.6 ft: No recovery
187.3	138.6	50/0.1							50/0.1		SS-29	138.6 ft: No recovery
182.3	143.6	100/0.1							100/0.1		SS-30	143.6 ft: No recovery
177.3	148.6	50/0.1							50/0.1		SS-31	

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: C. Baldwin								
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: P. Pitts/J. Tucker		FLUID LEVEL (ft)								
BORING NO.: M-11		DRILL METHOD: Mud Rotary		DRILL MACHINE: CME-55 Trailer (RAL)		0 HR. ND								
GROUND ELEV.: 325.9 ft (NAVD88)		NORTHING: 3,909,352 US ft (NAD83)		EASTING: 11,686,039 US ft (NAD83)		24 HR. ND								
TOTAL DEPTH: 148.7 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-425)								
DATE STARTED: 9/1/09		COMPLETED: 9/4/09		HOLE DIA.: 3"		CASING DEPTH: 8.4 ft								
				CORE SIZE: NA		BITS USED: 2-7/8" Tri-Cone								
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80					100
176.3														Continued from previous page
														148.6 ft: No recovery Boring terminated at 148.7 feet.
														Boring closed by tremie method with cement-bentonite grout.
														Note: Boring terminated prior to 150 depth was reached after discussion with Bechtel Site Representative.

NORTH ANNA 3 BORE. NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: B. Mabie	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)	
BORING NO.: M-12		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-45C Track (RAL)		0 HR. NA	
GROUND ELEV.: 307.0 ft (NAVD88)		NORTHING: 3,909,723 US ft (NAD83)		EASTING: 11,685,560 US ft (NAD83)		24 HR. 27.0	
TOTAL DEPTH: 151.2 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-12)	
DATE STARTED: 9/16/09		COMPLETED: 9/21/09		HOLE DIA.: 3"		CASING DEPTH: 46.2 ft	
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
307.0					Ground Surface							307.0 0.0		
												306.5 0.5	ASPHALT (Roadway) to 0.5 ft.	
												305.0 2.0	FILL: ROADWAY BASE COURSE to 2.0 ft. No sampling from 0.0 to 7.6 feet due to soft dig utility clearance by Dominion Personnel.	
299.4	7.6	5	5	7								299.4 7.6	RESIDUAL SOIL: Clayey SAND (SC), reddish brown (2.5YR 4/6), medium dense, moist, fine to coarse grained sand, trace mica, relict rock fabric	
296.9	10.1	6	5	5								297.9 9.1	RESIDUAL SOIL: Silty SAND (SM), Yellowish red (5YR 4/6), Loose, moist, fine to coarse grained sand, trace of mica, relict rock fabric	
293.5	13.5	4	4	5									13.5 ft: Brownish yellow (10YR 6/6)	
288.5	18.5	6	6	7									18.5 ft: Medium dense	
283.5	23.5	6	6	10										
278.5	28.5	11	8	9									28.5 ft: Reddish yellow (5YR 6/6)	
273.5	33.5	13	17	16									33.5 ft: Brownish yellow (10YR 6/6), dense	
268.5	38.5	23	45	50/0.3									WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (Sampled as Silty SAND (SM), brownish yellow (10YR 6/6) to yellow (10YR 7/6), very dense, moist, fine to coarse grained sand)	
263.5	43.5	50/0.3												
260.6	46.4	50/0.1											46.5 ft: No Core recovery	
255.7	51.3	30	70/0.4											
251.5	55.5	50/0.0											55.5 ft: Brown with black staining, severely weathered, very close fracturing, very soft to soft, BIOTITE QUARTZ GNEISS (Poor Recovery)	
													243.1 63.9	HARD ROCK: Brown to gray, moderately severe to very slightly weathered, close fracturing, medium hard to hard, BIOTITE QUARTZ GNEISS (6 joints 0-70°, open with orange staining)
													240.8 66.2	HARD ROCK: Gray with orange staining, slightly to very slightly weathered, very close to moderately close fracturing, hard to very hard, BIOTITE QUARTZ GNEISS

NORTH ANNA 3 BORE, NORTH ANNA 3 PROJECT.GPJ, NORTH ANNA 3.GDT, 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: B. Mabie							
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)							
BORING NO.: M-12		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-45C Track (RAL)		0 HR. NA							
GROUND ELEV.: 307.0 ft (NAVD88)		NORTHING: 3,909,723 US ft (NAD83)		EASTING: 11,685,560 US ft (NAD83)		24 HR. 27.0							
TOTAL DEPTH: 151.2 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-12)							
DATE STARTED: 9/16/09		COMPLETED: 9/21/09		HOLE DIA.: 3"		CASING DEPTH: 46.2 ft							
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
157.4					Continued from previous page								
												155.8	151.2
												Boring and coring terminated at 151.2 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/21/2009 prior to drilling. Borehole was at a depth of 146.2 feet.	

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: B. Mabie	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)	
BORING NO.: M-12		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-45C Track (RAL)		0 HR. NA	
GROUND ELEV.: 307.0 ft (NAVD88)		NORTHING: 3,909,723 US ft (NAD83)		EASTING: 11,685,560 US ft (NAD83)		24 HR. 27.0	
TOTAL DEPTH: 151.2 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-12)	
DATE STARTED: 9/16/09		COMPLETED: 9/21/09		CASING DEPTH: 46.2 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 & 10 bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	
				REC (%)	RQD (%)		REC (%)	RQD (%)			
										Begin Coring @ 46.5 ft	
260.5	46.5	4.8	1:11 1:34 1:16 0:35	(0.0) 0%	(0.0) 0%	RUN 1	(0.4) 3%	(0.0) 0%		WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (Sampled as Silty SAND (SM), brownish yellow (10YR 6/6) to yellow (10YR 7/6), very dense, moist, fine to coarse grained sand) (continued) 46.5 ft: No Core recovery	
255.7	51.3		0:31/0.8 N=100/0.9			SS-11					
251.5	55.5	0.7	N=50/0.0	(0.2)	(0.0)	RUN 2				55.5 ft: Brown with black staining, severely weathered, very close fracturing, very soft to soft, BIOTITE QUARTZ GNEISS (Poor Recovery)	
250.8	56.2	5.0	0:55/0.7 1:26 1:20 1:12 1:09 0:48	(0.2) 29%	(0.0) 0%	RUN 3					
245.8	61.2	5.0	2:14 2:25 2:34 3:03 3:20	(2.3) 46%	(1.4) 28%	RUN 4				(No recovery to 63.9 ft)	
240.8	66.2						(2.3) 100%	(1.4) 61%		243.1 240.8	63.9 66.2
235.8	71.2	5.0	2:40 3:02 2:59 4:04 3:48	(5.0) 100%	(4.2) 84%	RUN 5	(59.3) 99%	(53.9) 90%		HARD ROCK: Gray with orange staining, slightly to very slightly weathered, very close to moderately close fracturing, hard to very hard, BIOTITE QUARTZ GNEISS (8 joints at 30-60°, tight to open) (5 joints at 40-50°, tight to open)	
230.8	76.2	5.0	3:13 2:48 2:37 3:00 3:47	(5.0) 100%	(4.9) 98%	RUN 6				(3 joints at 30-50°, tight to open; 2 joints at 80°, tight; trace hornblende)	
225.8	81.2	5.0	2:58 3:03 3:06 5:38 2:47	(5.0) 100%	(4.8) 96%	RUN 7				(6 joints at 30-60°, tight to open with trace staining; trace hornblende)	
220.8	86.2	5.0	2:31 1:58 2:01 2:30 2:58	(5.0) 100%	(5.0) 100%	RUN 8				(5 joints at 0-40°, open with orange staining; 2 joints at 80°, open)	
215.8	91.2	5.0	2:44 2:15 2:03 2:18 3:02	(4.7) 94%	(4.1) 82%	RUN 9				(2 joints at 0°, open; 2 joints at 80°, tight)	
214.4	92.6	1.4	2:07 3:50/0.4	(1.4) 100%	(1.3) 93%	RUN 10				(3 joints at 0°, tight to open with trace orange staining; 1 joint at 70°)	
210.8	96.2	3.6	1:36/0.6 2:49 3:03 3:23	(3.5) 97%	(3.1) 86%	RUN 11				(1 joint at 30°, open with trace orange staining; 4 joints at 50-60°, open with trace orange staining)	
207.5	99.5	3.3	3:05 2:49 3:59	(3.3) 100%	(2.9) 88%	RUN 12				(3 joints at 20-30°, tight with trace orange staining)	
205.8	101.2	1.7	0:48/0.3 1:49/0.7	(1.7) 100%	(1.5) 88%	RUN 13				(8 joints at 50-60°, tight to open with orange staining)	
200.8	106.2	5.0	2:30 3:06 3:02 3:13 3:03 3:13	(5.0) 100%	(4.5) 90%	RUN 14				(3 joints at 0°, tight; 4 joints at 40-70°, open)	
195.8	111.2	5.0	4:07 3:45 3:26 3:43 3:58	(5.0) 100%	(4.5) 90%	RUN 15				(3 joints at 0°, tight to open; 6 joints at 60-70°, open)	
190.8	116.2	4.2	2:52 2:51 2:09 2:15 2:48	(5.0) 100%	(4.2) 84%	RUN 16				(4 joints at 10-30°, open; 3 joints at 60-70° open)	
186.6	120.4		2:40 2:46 2:37 3:05 2:28/0.2	(4.0) 95%	(3.4) 81%	RUN 17					
						RUN 18					

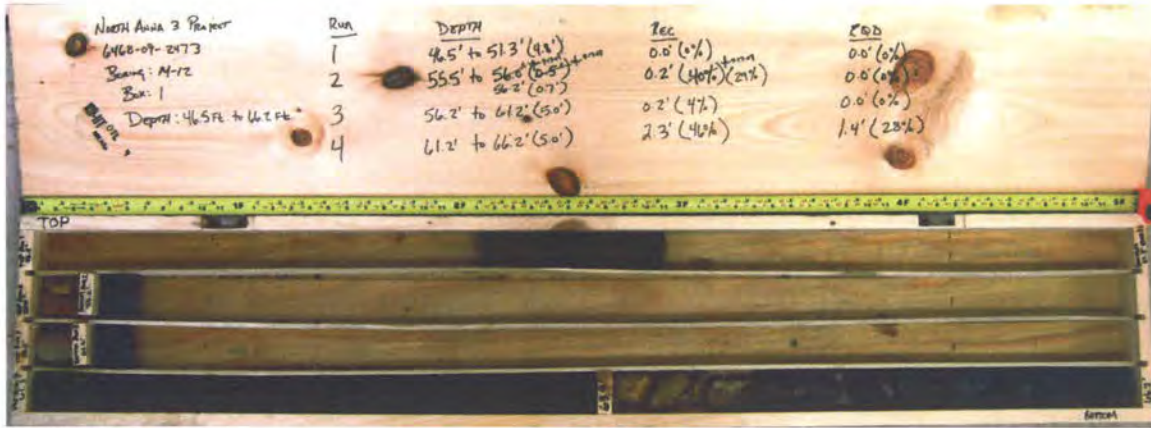
NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



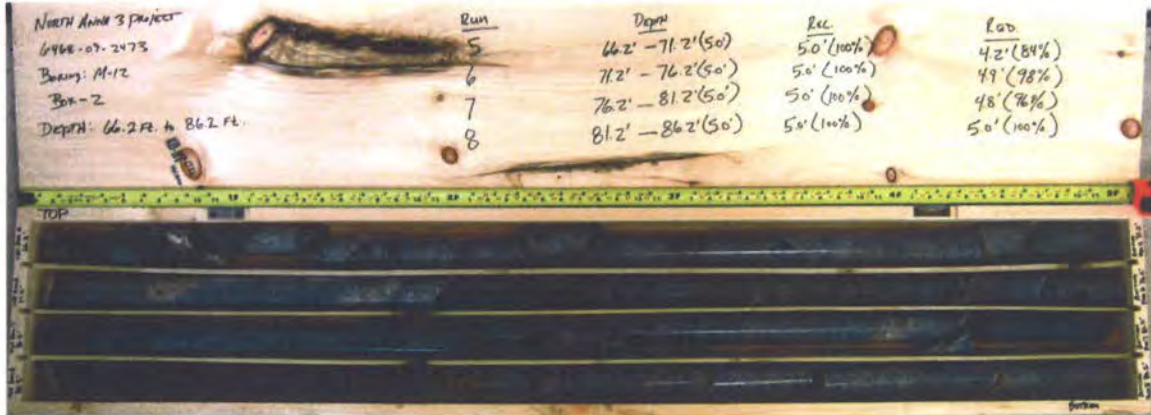
BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: B. Mabie	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)	
BORING NO.: M-12		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-45C Track (RAL)		0 HR. NA	
GROUND ELEV.: 307.0 ft (NAVD88)		NORTHING: 3,909,723 US ft (NAD83)		EASTING: 11,685,560 US ft (NAD83)		24 HR. 27.0	
TOTAL DEPTH: 151.2 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-12)	
DATE STARTED: 9/16/09		COMPLETED: 9/21/09		CASING DEPTH: 46.2 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 & 10 bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC (ft) %	RQD (ft) %		REC (ft) %	RQD (ft) %		
Continued from previous page										
185.8	121.2	0.8	1:44/0.8	(0.7)	(0.7)	RUN 19				(1 joint at 60°, tight)
		5.0	2:49	88%	88%					(3 joints at 0°, tight; 4 joints at 70-80°, tight)
180.8	126.2		3:02	(5.0)	(4.8)					HARD ROCK: Gray with orange staining, slightly to very slightly weathered, very close to moderately close fracturing, hard to very hard, BIOTITE QUARTZ GNEISS (continued)
		5.0	2:48	100%	96%					
			3:21							
			3:38							
			3:26	(5.0)	(5.0)	RUN 20	(24.8)	(22.7)		HARD ROCK: Gray with trace orange staining, slightly weathered to fresh, very close to moderately close fracturing, hard to very hard, BIOTITE QUARTZ GNEISS
			3:31	100%	100%					
			3:06							
175.8	131.2		3:59							(3 joints at 20°, tight; 1 joint at 50°, tight)
			3:40							(3 joints at 40-50°, tight to open; 1 joint at 90°, tight)
			3:58	(4.3)	(4.0)	RUN 21				
			2:52	100%	93%					
			3:16							
			3:08							
171.5	135.5		1:38/0.3	(0.7)	(0.7)	RUN 22				(1 joint at 70°, tight)
170.8	136.2	0.7	2:11/0.7	100%	100%	RUN 23				(1 joint at 0°, open; 11 joints at 50-60°, tight to open; 1 joint at 90°, open)
		3.2	3:00							
			2:20	(3.2)	(2.0)					
167.6	139.4		2:45	100%	63%	RUN 24				(1 joint at 40°, tight)
165.8	141.2	1.8	1:08/0.2	(1.6)	(1.6)	RUN 25				(1 joint at 0°, open; 2 joints at 20-30°, open; 1 joint at 70°, tight)
		5.0	2:03/0.8	89%	89%					
			2:17							
			2:27	(5.0)	(4.4)					
			2:08	100%	88%					
160.8	146.2		2:42							
			3:08							
			2:58	(5.0)	(5.0)	RUN 26				(3 joints at 0-10°, tight; 1 joint at 40°, tight)
		5.0	3:34	100%	100%					
			2:57							
			3:06							
			3:19							
155.8	151.2		3:07							
Boring and coring terminated at 151.2 feet.										
Boring closed by tremie method with cement-bentonite grout.										
24 hour water level measured on 9/21/2009 prior to drilling. Borehole was at a depth of 146.2 feet.										

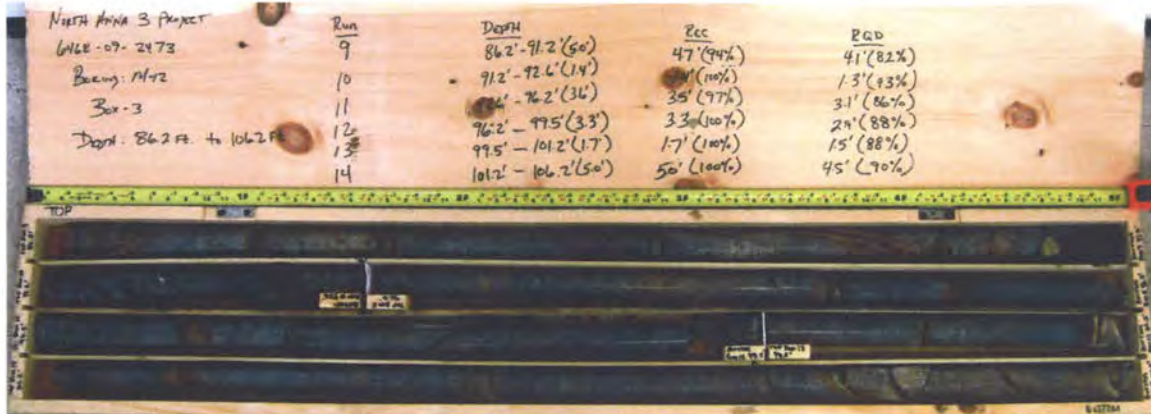
NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



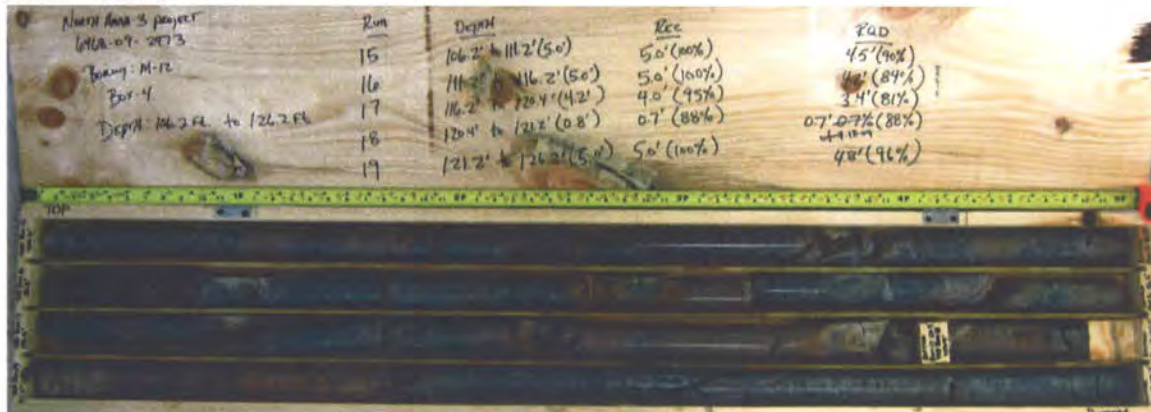
M-12 - Box 1



M-12 - Box 2



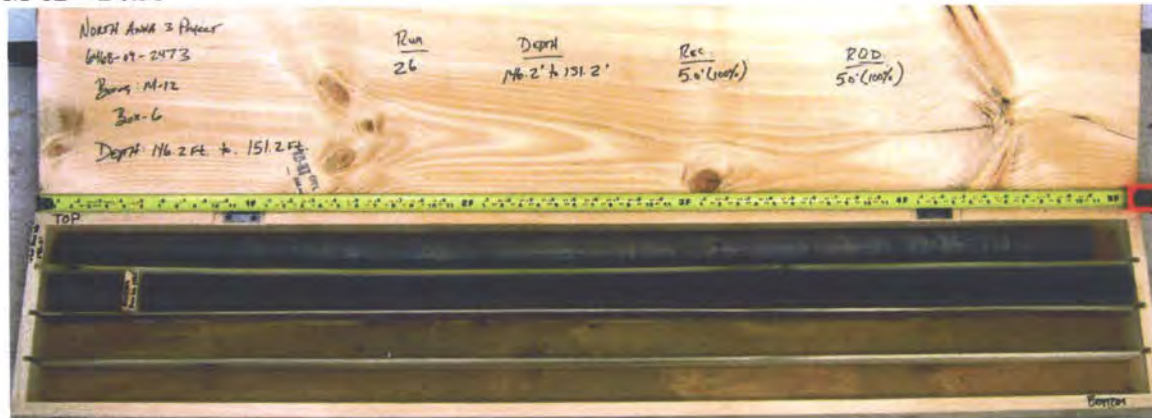
M-12 - Box 3



M-12 - Box 4



M-12 - Box 5



M-12 - Box 6



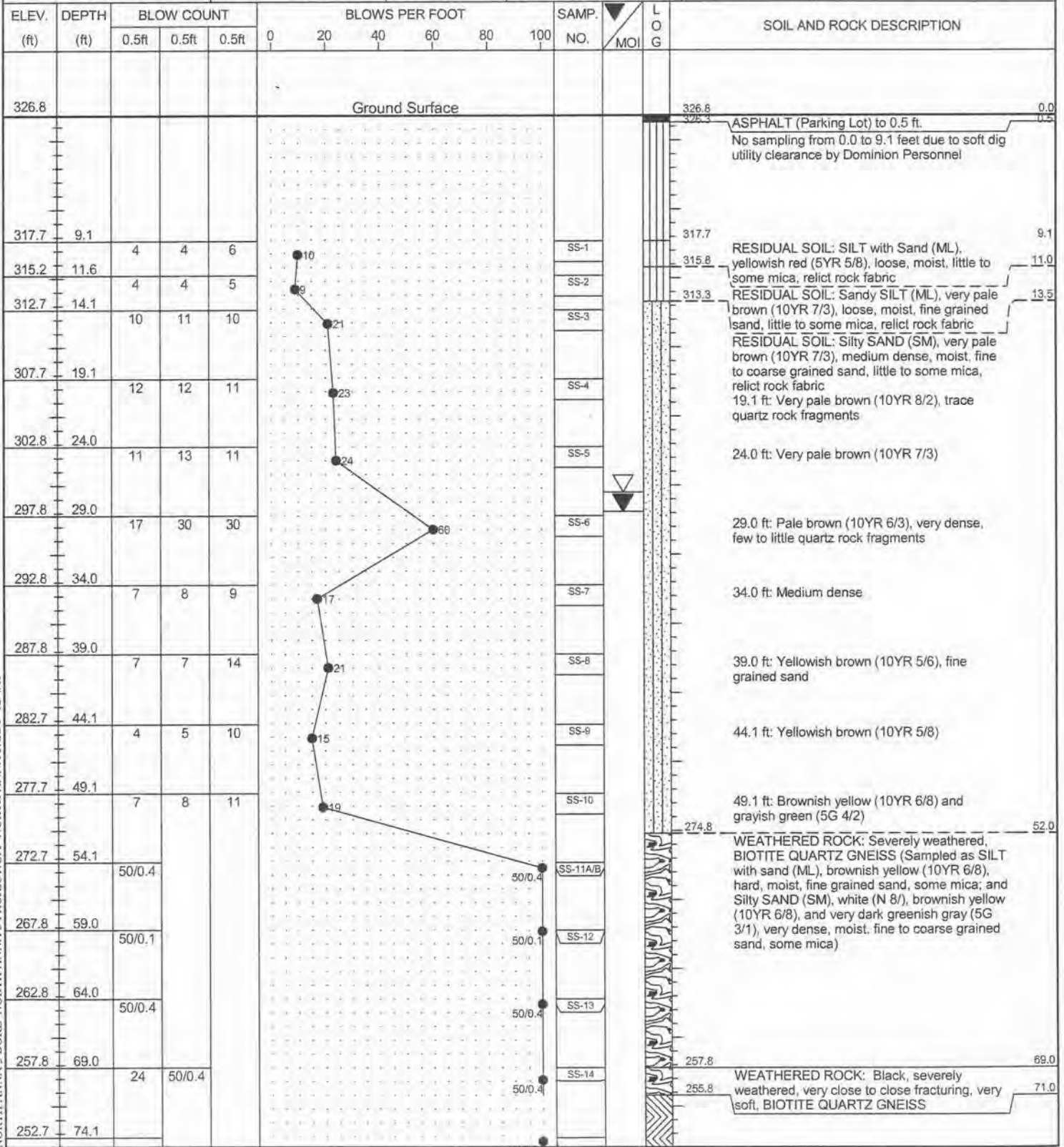
GEOTECHNICAL BORING LOG

Prepared By JST Date 12/16/09

Checked By MAN Date 12/16/09

SHEET 1 OF 3

BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: K. Lloyd	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. White/O. Smith		FLUID LEVEL (ft)	
BORING NO.: M-13		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55LC Track (RAL)		0 HR.	27.3
GROUND ELEV.: 326.8 ft (NAVD88)		NORTHING: 3,909,520 US ft (NAD83)		EASTING: 11,686,025 US ft (NAD83)		24 HR.	28.7
TOTAL DEPTH: 151.6 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				ROD TYPE: AWJ	HAMMER (ID): 140-lb. Auto (MEC-02)
DATE STARTED: 9/18/09		COMPLETED: 9/23/09	HOLE DIA.: 4"	CASING DEPTH: 68.1 ft		CORE SIZE: HQ3	BITS USED: 3-7/8" Tri-Cone



NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: K. Lloyd	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. White/O. Smith		FLUID LEVEL (ft)	
BORING NO.: M-13		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55LC Track (RAL)		0 HR. 27.3	
GROUND ELEV.: 326.8 ft (NAVD88)		NORTHING: 3,909,520 US ft (NAD83)		EASTING: 11,686,025 US ft (NAD83)		24 HR. 28.7	
TOTAL DEPTH: 151.6 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-02)	
DATE STARTED: 9/18/09		COMPLETED: 9/23/09		HOLE DIA.: 4"		CASING DEPTH: 68.1 ft	
				CORE SIZE: HQ3		BITS USED: 3-7/8" Tri-Cone	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
252.0					Continued from previous page									
247.8	79.0	50/0.3								SS-15		HARD ROCK: Yellowish brown (10YR 5/4 to 10YR 5/6), with orange staining, moderately severe to moderately weathered, close to moderately close fracturing, medium hard to moderately hard, BIOTITE QUARTZ GNEISS (continued)		
		50/0.1								SS-16				
242.8	84.0	50/0.1								SS-17				
												233.0	93.8	WEATHERED ROCK: Severely weathered, BIOTITE QUARTZ GNEISS (No Recovery)
												227.7	99.1	HARD ROCK: Yellowish brown to grayish brown and gray, with orange staining, moderately severe to moderately weathered, close to moderately close fracturing, medium hard to moderately hard, BIOTITE QUARTZ GNEISS
														109.6 ft: Complete loss of drill fluid circulation for remainder of boring.
												186.7	140.1	WEATHERED ROCK: Severely weathered, BIOTITE QUARTZ GNEISS (No Recovery)
												182.7	144.1	HARD ROCK: Gray with orange staining, moderately to slightly weathered, close to moderately close fracturing, hard, BIOTITE QUARTZ GNEISS

NORTH ANNA 3 BORE, NORTH ANNA 3 PROJECT.GPJ, NORTH ANNA 3.GDT, 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473			COUNTY: Louisa, VA		GEOLOGIST: K. Lloyd							
SITE DESCRIPTION: North Anna 3 Project Supplement 2					DRILLER: D. White/O. Smith			FLUID LEVEL (ft)						
BORING NO.: M-13		DRILL METHOD: Mud Rotary/Rock Core			DRILL MACHINE: CME-55LC Track (RAL)			0 HR.	27.3					
GROUND ELEV.: 326.8 ft (NAVD88)		NORTHING: 3,909,520 US ft (NAD83)		EASTING: 11,686,025 US ft (NAD83)		24 HR.		28.7						
TOTAL DEPTH: 151.6 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08			ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-02)							
DATE STARTED: 9/18/09		COMPLETED: 9/23/09		HOLE DIA.: 4"	CASING DEPTH: 68.1 ft	CORE SIZE: HQ3	BITS USED: 3-7/8" Tri-Cone							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
177.2					Continued from previous page									
												175.2	151.6	Boring and coring terminated at 151.6 feet. Boring closed by tremie method with cement-bentonite grout. NOTE: After boring was advanced to 84.0 ft by mud rotary methods, casing was advanced to 69.0 ft and rock coring began. It is apparent that the roller cone had "walked off" advancing to 84.0 ft, most likely along a high angle joint/fracture or zone of weakness at approximately 68.0 feet. Core recovery of solid, undisturbed HARD ROCK indicates top of rock at 71.0 ft. SPT samples collected between 71.0 to 84.0 feet are in agreement with this conclusion.

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: K. Lloyd	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. White/O. Smith		FLUID LEVEL (ft)	
BORING NO.: M-13		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55LC Track (RAL)		0 HR.	27.3
GROUND ELEV.: 326.8 ft (NAVD88)		NORTHING: 3,909,520 US ft (NAD83)		EASTING: 11,686,025 US ft (NAD83)		24 HR.	28.7
TOTAL DEPTH: 151.6 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-02)	
DATE STARTED: 9/18/09		COMPLETED: 9/23/09		CASING DEPTH: 68.1 ft		CORE BARREL TYPE: Wireline HQ3 Triple Tube, series 6 bit	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (%)	ROD (%)		REC. (%)	ROD (%)		
										Begin Coring @ 69.0 ft
257.8	69.0	2.6	N=50/0.4 1:14	(1.1)	(0.6)	RUN 1	(0.5)	(0.0)		WEATHERED ROCK: Black, severely weathered, very close to close fracturing, very soft, BIOTITE QUARTZ GNEISS
255.2	71.6	5.0	1:33 1:32/0.6	42%	23%		50%	0%		(2 joints at 60°, tight)
		5.0	1:14 1:46 1:44	(4.3)	(3.2)	RUN 2	(22.0)	(19.8)		HARD ROCK: Yellowish brown (10YR 5/4 to 10YR 5/6), with orange staining, moderately severe to moderately weathered, close to moderately close fracturing, medium hard to moderately hard, BIOTITE QUARTZ GNEISS
250.2	76.6	5.0	N=50/0.3 1:52	86%	64%	SS-15	96%	87%		(1 joint at 0-10°, tight)
		5.0	1:59	(5.0)	(5.0)	RUN 3				(1 joint at 30°, tight; 3 joints at 60-70°, tight)
245.2	81.6	5.0	2:00 1:39 1:32	100%	100%	SS-16				(4 joints at 30-40°, open with trace clay and iron staining; 1 joint at 70°, tight with trace clay and iron staining)
		5.0	N=50/0.1 1:16	(4.9)	(4.9)	RUN 4				(3 joints at 50-60°, tight with trace clay and iron staining)
240.2	86.6	5.0	1:32 1:38 1:42 1:14	98%	98%	SS-17				
		5.0	N=50/0.1 1:30 1:09	(5.0)	(3.9)	RUN 5				(1 joint at 70°, tight with trace clay and iron stain; 3 joints at 80-90°, tight with trace clay and iron staining)
235.2	91.6	5.0	1:39 2:09 1:29 1:18 1:08	100%	78%					
		5.0	1:20 1:24 1:30 1:21 1:14	(2.2)	(2.2)	RUN 6				(1 joint at 10-20°, open with little iron staining)
230.2	96.6	5.0		44%	44%		(0.0)	(0.0)		WEATHERED ROCK: Severely weathered, BIOTITE QUARTZ GNEISS (No Recovery)
		5.0	1:08 1:25 1:24 1:36 1:32	(3.5)	(3.0)	RUN 7				
225.2	101.6	5.0		70%	60%		(39.6)	(31.8)		HARD ROCK: Yellowish brown to grayish brown and gray, with orange staining, moderately severe to moderately weathered, close to moderately close fracturing, medium hard to moderately hard, BIOTITE QUARTZ GNEISS
		5.0	1:35 1:44 1:51 2:03 1:56	(4.8)	(4.4)	RUN 8				(1 joint at 0-10°, tight with trace clay; 2 joints at 60-70°, open with clay)
220.2	106.6	5.0		96%	88%					(1 joint at 50-60°, tight with trace iron stain)
		5.0	1:48 1:59 2:36 3:05 2:25	(5.0)	(4.3)	RUN 9				(2 joints at 20-30°, open with iron staining; 1 joint at 70°, open with clay and iron staining)
215.2	111.6	5.0		100%	86%					109.6 ft: Complete loss of drill fluid circulation for remainder of boring.
		5.0	1:34 1:48 1:32 2:06 1:42	(5.0)	(4.4)	RUN 10				(4 joints at 0-10°, open with iron staining; 2 joints at 70°, tight with trace clay and iron stain)
210.2	116.6	5.0		100%	88%					
		5.0	1:54 1:54 1:24 1:32 1:47	(4.7)	(4.0)	RUN 11				(3 joints at 0-15°, open with iron staining; 3 joints at 70°, tight with trace clay and iron staining)
205.2	121.6	5.0		94%	80%					
		5.0	1:24 1:32 1:47	(4.1)	(2.7)	RUN 12				(3 joints at 30-40°, open with clay and iron staining; 3 joints at 60-70°, tight with trace clay and iron staining; trace magnetite)
200.2	126.6	5.0		82%	54%					
		5.0	2:03 3:00 1:56 1:54 2:24	(5.0)	(4.6)	RUN 13				(3 joints at 0-10°, open with iron staining; 2 joints at 30°, open with clay and iron staining; 1 joint at 80°, tight with trace clay and iron staining)
195.2	131.6	5.0		100%	92%					
		5.0	2:38 2:57 2:43 2:05 2:26	(4.0)	(2.7)	RUN 14				(7 joints at 30-40°, open with iron staining)
190.2	136.6	5.0		80%	54%					
		5.0	1:42 2:06 2:36 2:42 2:47	(4.0)	(2.7)	RUN 14				(7 joints at 30-40°, open with iron staining)
185.2	141.6	5.0		80%	54%					
		5.0	2:56 2:15 2:32 2:52 1:49	(3.5)	(1.7)	RUN 15				(8 joints at 0-10°, tight to open with clay and iron staining)
		5.0	1:51 1:21	(2.5)	(1.6)	RUN 16	(0.0)	(0.0)		WEATHERED ROCK: Severely weathered, BIOTITE QUARTZ GNEISS (No Recovery)

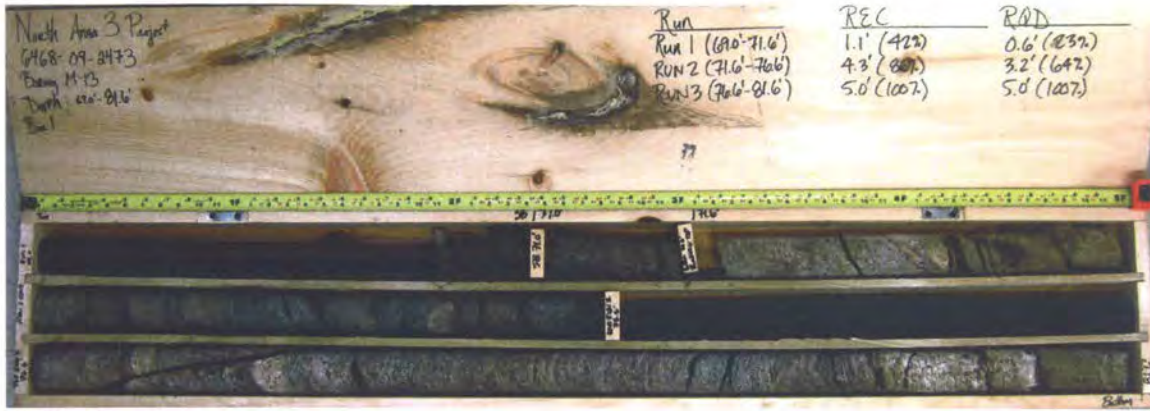
NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA	GEOLOGIST: K. Lloyd	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. White/O. Smith		FLUID LEVEL (ft)
BORING NO.: M-13		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55LC Track (RAL)		0 HR. 27.3
GROUND ELEV.: 326.8 ft (NAVD88)		NORTHING: 3,909,520 US ft (NAD83)		EASTING: 11,686,025 US ft (NAD83)		24 HR. 28.7
TOTAL DEPTH: 151.6 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08			HAMMER (ID): 140-lb. Auto (MEC-02)	
DATE STARTED: 9/18/09		COMPLETED: 9/23/09		CASING DEPTH: 68.1 ft		CORE BARREL TYPE: Wireline HQ3 Triple Tube, series 6 bit

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
										Continued from previous page
180.2	146.6		1:29 2:06 1:35				(7.5) 100%	(6.2) 83%		HARD ROCK: Gray with orange staining, moderately to slightly weathered, close to moderately close fracturing, hard, BIOTITE QUARTZ GNEISS
		5.0	2:51 2:49 2:36 2:37 2:10	(5.0) 100%	(4.6) 92%	RUN 17				(4 joints at 0-10°, tight to open with iron staining; 1 joint at 90°, tight with trace clay and iron stain) (3 joints at 10-20°, tight to open with clay and iron staining; 1 joint at 90°, tight with trace clay and orange staining)
175.2	151.6									Boring and coring terminated at 151.6 feet. Boring closed by tremie method with cement-bentonite grout. NOTE: After boring was advanced to 84.0 ft by mud rotary methods, casing was advanced to 69.0 ft and rock coring began. It is apparent that the roller cone had "walked off" advancing to 84.0 ft, most likely along a high angle joint/fracture or zone of weakness at approximately 68.0 feet. Core recovery of solid, undisturbed HARD ROCK indicates top of rock at 71.0 ft. SPT samples collected between 71.0 to 84.0 feet are in agreement with this conclusion.

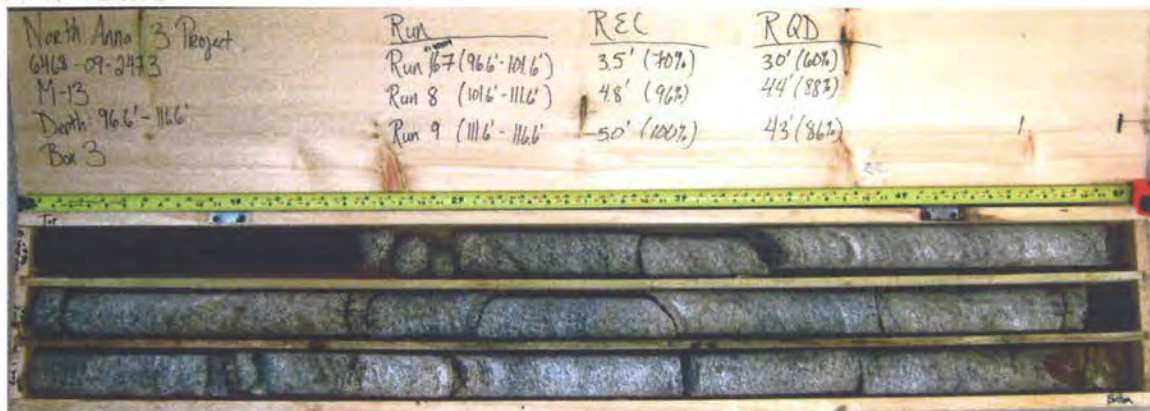
NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



M-13 - Box 1



M-13 - Box 2



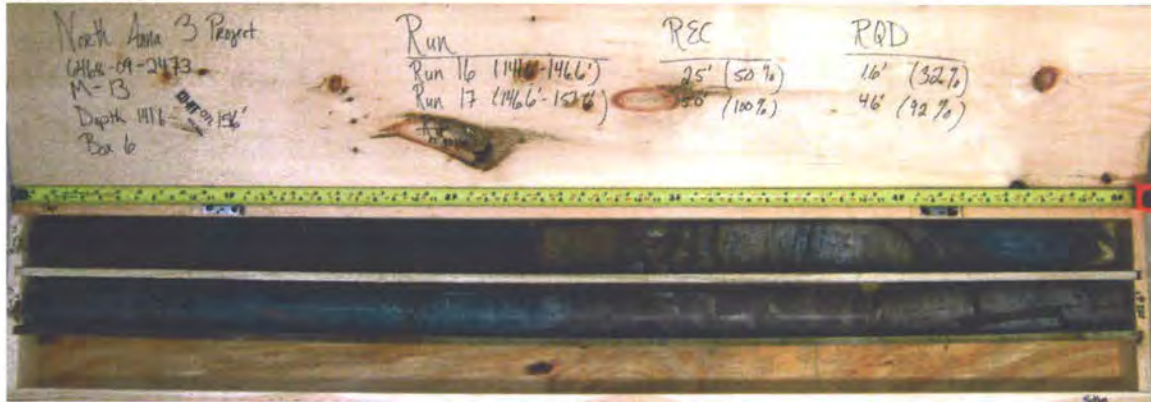
M-13 - Box 3



M-13 - Box 4



M-13 - Box 5



M-13 - Box 6



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: K. Lloyd								
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. White/O. Smith		FLUID LEVEL (ft)								
BORING NO.: M-14		DRILL METHOD: Mud Rotary		DRILL MACHINE: CME-55LC Track (RAL)		0 HR. ND								
GROUND ELEV.: 323.8 ft (NAVD88)		NORTHING: 3,909,452 US ft (NAD83)		EASTING: 11,686,111 US ft (NAD83)		24 HR. ND								
TOTAL DEPTH: 60.3 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-02)								
DATE STARTED: 9/24/09		COMPLETED: 9/24/09		HOLE DIA.: 3"		CASING DEPTH: 8.6 ft								
CORE SIZE: NA		BITS USED: 2-7/8" Tri-Cone												
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
323.8					Ground Surface							323.8	0.0	
														No sampling from 0.0 to 8.9 feet due to soft dig utility clearance by Dominion Personnel
314.9	8.9	5	5	5						SS-1		314.9	8.9	RESIDUAL SOIL: Silty SAND (SM), brownish yellow (10YR 6/8), loose, moist, fine to coarse grained sand, little mica, few quartz rock fragments, relict rock fabric
312.5	11.3	4	5	6						SS-2				11.3 ft: Medium dense
309.9	13.9	4	4	6						SS-3				13.9 ft: Light yellowish brown (10YR 6/4), loose
304.9	18.9	5	8	9						SS-4				18.9 ft: Brownish yellow (10YR 6/8), medium dense, few to little mica
300.0	23.8	7	7	7						SS-5				23.8 ft: Brownish yellow (10YR 6/6), trace to few mica
295.0	28.8	7	11	13						SS-6				28.8 ft: Brownish yellow (10YR 6/8)
290.0	33.8	4	5	6						SS-7				33.8 ft: Light brownish gray (10YR 6/2), fine grained sand
285.0	38.8	6	8	7						SS-8				38.8 ft: Light brownish gray (10YR 6/2) and grayish brown (10YR 5/2), little to some mica
280.0	43.8	4	6	7						SS-9				43.8 ft: Grayish brown (10YR 5/2)
275.0	48.8	5	6	9						SS-10				48.8 ft: Yellowish brown (10YR 5/6)
270.0	53.8	3	6	18						SS-11				53.8 ft: Brownish yellow (10YR 6/8), fine to coarse grained sand
265.0	58.8	13	40	50						SS-12				58.8 ft: Grayish brown (10YR 5/2), very dense, some mica, little quartz rock fragments Boring terminated at 60.3 feet.
														Boring closed by tremie method with cement-bentonite grout. No 24 HR fluid level because boring grouted same day boring drilled.

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: B. Mabie										
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)										
BORING NO.: M-15		DRILL METHOD: Mud Rotary		DRILL MACHINE: CME-45C Track (RAL)		0 HR.	13.4									
GROUND ELEV.: 311.3 ft (NAVD88)		NORTHING: 3,909,531 US ft (NAD83)		EASTING: 11,686,166 US ft (NAD83)		24 HR.	NA									
TOTAL DEPTH: 60.0 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-12)										
DATE STARTED: 9/28/09		COMPLETED: 9/28/09		HOLE DIA.: 3"		CASING DEPTH: 9.0 ft										
CORE SIZE: NA		BITS USED: 2-7/8" Tri-Cone														
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION				
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100			
311.3					Ground Surface							311.3	0.0			
														No sampling from 0.0 to 8.5 feet due to soft dig utility clearance by Dominion Personnel		
302.8	8.5	2	2	3										302.8	8.5	RESIDUAL SOIL: Silty SAND (SM), pale brown (10YR 6/3), loose, moist, fine to coarse grained sand, few mica, relict rock fabric
300.7	10.6	2	3	3						SS-1						
298.6	12.7	2	3	4						SS-2						
296.1	15.2	2	3	4						SS-3						
292.8	18.5	3	3	3						SS-4						18.5 ft: Medium dense
287.8	23.5	5	4	7						SS-5						
282.8	28.5	8	7	8						SS-6						23.5 ft: Very pale brown (10YR 7/4), trace mica
277.8	33.5	7	8	10						SS-7						
272.8	38.5	13	10	12						SS-8						33.5 ft: Light yellowish brown (10YR 6/4)
267.8	43.5	13	16	13						SS-9						38.5 ft: Yellowish brown (10YR 5/6)
262.8	48.5	31	35	30						SS-10						43.5 ft: Very dense
257.8	53.5	48	52/0.4							SS-11				264.3	47.0	WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (Sampled as Well Graded SAND with Silt (SW-SM), yellowish brown (10YR 5/6), very dense, moist, fine to coarse grained sand, trace mica)
252.8	58.5	38	44	45						SS-12				259.3	52.0	RESIDUAL SOIL: Silty SAND (SM), yellowish brown (10YR 5/6), very dense, moist, fine to coarse grained sand, trace mica, relict rock fabric
		23	24	36						SS-13				251.3	60.0	Boring terminated at 60.0 feet.
																Boring closed by tremie method with cement-bentonite grout.
																No 24 HR fluid level because boring grouted same day boring drilled.

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09




BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: C. Baldwin										
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: P. Pitts/J. Tucker		FLUID LEVEL (ft)										
BORING NO.: M-16		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Track (RAL)		0 HR. 18.0										
GROUND ELEV.: 284.6 ft (NAVD88)		NORTHING: 3,909,990 US ft (NAD83)		EASTING: 11,685,802 US ft (NAD83)		24 HR. NA										
TOTAL DEPTH: 61.9 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-21)										
DATE STARTED: 9/29/09		COMPLETED: 9/30/09		HOLE DIA.: 3"		CASING DEPTH: 8.9 ft										
CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone														
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION				
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100			
284.3					Ground Surface							284.3	0.0	ASPHALT (Roadway) to 0.5 ft. No sampling from 0.0 to 8.9 feet due to soft dig utility clearance by Dominion Personnel		
275.4	8.9	4	5	4									275.4	8.9	RESIDUAL SOIL: Silty SAND (SM), light brown (7.5YR 6/4), loose, moist, fine to coarse grained sand, little mica, relic rock fabric	
272.7	11.6	3	3	5												
270.3	14.0	4	3	3												
265.3	19.0	4	4	7											19.0 ft: Pinkish gray (7.5YR 6/2), medium dense, fine to medium grained sand	
260.3	24.0	5	5	7											24.0 ft: Light brown (7.5YR 6/4)	
255.3	29.0	5	6	6												
250.3	34.0	5	5	5											34.0 ft: Yellowish red (5YR 5/8), loose, fine grained sand, some mica	
245.3	39.0	9	12	13											39.0 ft: Light brown (7.5YR 6/4), medium dense, fine to medium grained sand, little mica	
240.3	44.0	12	19	21											44.0 ft: Very pale brown (10YR 7/4), dense	
235.3	49.0	17	24	27												
230.3	54.0	50/0.4												232.3	52.0	WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (Sampled as Silty SAND (SM), reddish yellow (7.5YR 7/8), very dense, moist, fine to coarse grained sand, little mica)
225.3	59.0	50/0.1												224.5	59.8	HARD ROCK: Brown and gray with trace orange staining, moderately weathered, moderately close fracturing, moderately hard, BIOTITE QUARTZ GNEISS Boring and coring terminated at 61.9 feet. Boring closed by tremie method with cement-bentonite grout. No 24 HR fluid level because boring grouted same day boring drilled.
224.3	59.8	100/0.1												222.4	61.9	

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: C. Baldwin	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: P. Pitts/J. Tucker		FLUID LEVEL (ft)	
BORING NO.: M-16		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Track (RAL)		0 HR. 18.0	
GROUND ELEV.: 284.6 ft (NAVD88)		NORTHING: 3,909,990 US ft (NAD83)		EASTING: 11,685,802 US ft (NAD83)		24 HR. NA	
TOTAL DEPTH: 61.9 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-21)	
DATE STARTED: 9/29/09		COMPLETED: 9/30/09		CASING DEPTH: 8.9 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 bit	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
										Begin Coring @ 59.9 ft
224.4	59.9	2.0	3:00	(2.0)	(2.0)	RUN 1	(2.0)	(2.0)		HARD ROCK: Brown and gray with trace orange staining, moderately weathered, moderately close fracturing, moderately hard, BIOTITE QUARTZ GNEISS (continued) (1 joint at 90°, tight with trace clay) Boring and coring terminated at 61.9 feet. Boring closed by tremie method with cement-bentonite grout. No 24 HR fluid level because boring grouted same day boring drilled.
222.4	61.9		3:05	100%	100%		100%	100%		

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



M-16 - Box 1



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: C. Baldwin							
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: P. Pitts/J. Tucker		FLUID LEVEL (ft)							
BORING NO.: M-17		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Trailer (RAL)		0 HR. NA							
GROUND ELEV.: 306.2 ft (NAVD88)		NORTHING: 3,909,775 US ft (NAD83)		EASTING: 11,686,214 US ft (NAD83)		24 HR. 22.0							
TOTAL DEPTH: 151.9 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-425)							
DATE STARTED: 9/21/09		COMPLETED: 9/24/09		HOLE DIA.: 3"		CASING DEPTH: 82.1 ft							
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
231.4					Continued from previous page								
227.1	79.1	38	62/0.3							100/0.8	SS-14	WEATHERED ROCK: Severely weathered QUARTZ BIOTITE GNEISS (Sampled as Silty SAND (SM), reddish yellow (7.5YR 6/6) to light yellowish brown (2.5Y 6/3), very dense, moist, fine to medium grained sand, little mica, trace quartz rock fragments) (continued)	
		50/0.2								50/0.2	SS-15		
222.1	84.1	50/0.2								50/0.2	SS-16		221.9 84.3
												HARD ROCK: Dark gray with orange staining, moderately severe to moderately weathered, very close to close fracturing, medium hard to hard, QUARTZ BIOTITE GNEISS	
												214.3 91.9	HARD ROCK: Light to dark gray with orange staining, moderately weathered, very close to moderately close fracturing, moderately hard, QUARTZ BIOTITE GNEISS
												199.3 106.9	HARD ROCK: Dark gray, moderately to very slightly weathered, very close to moderately close fracturing, hard, QUARTZ BIOTITE GNEISS
												169.3 136.9	HARD ROCK: Dark gray, moderately severe to slightly weathered, very close to close fracturing, medium hard to hard, QUARTZ BIOTITE GNEISS
												164.3 141.9	HARD ROCK: Dark gray, very slightly weathered, close to wide fracturing, hard, QUARTZ BIOTITE GNEISS

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473			COUNTY: Louisa, VA		GEOLOGIST: C. Baldwin							
SITE DESCRIPTION: North Anna 3 Project Supplement 2					DRILLER: P. Pitts/J. Tucker			FLUID LEVEL (ft)						
BORING NO.: M-17		DRILL METHOD: Mud Rotary/Rock Core			DRILL MACHINE: CME-55 Trailer (RAL)			0 HR. NA						
GROUND ELEV.: 306.2 ft (NAVD88)		NORTHING: 3,909,775 US ft (NAD83)		EASTING: 11,686,214 US ft (NAD83)			24 HR. 22.0							
TOTAL DEPTH: 151.9 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08			ROD TYPE: AWJ		HAMMER (ID):140-lb. Auto (MEC-425)							
DATE STARTED: 9/21/09		COMPLETED: 9/24/09		HOLE DIA.: 3"		CASING DEPTH: 82.1 ft		CORE SIZE: NQ3 BITS USED: 2-7/8" Tri-Cone						
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
156.6					Continued from previous page									
												154.3	151.9	Boring and coring terminated at 151.9 feet. Boring closed by tremie method with cement-bentonite grout.

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



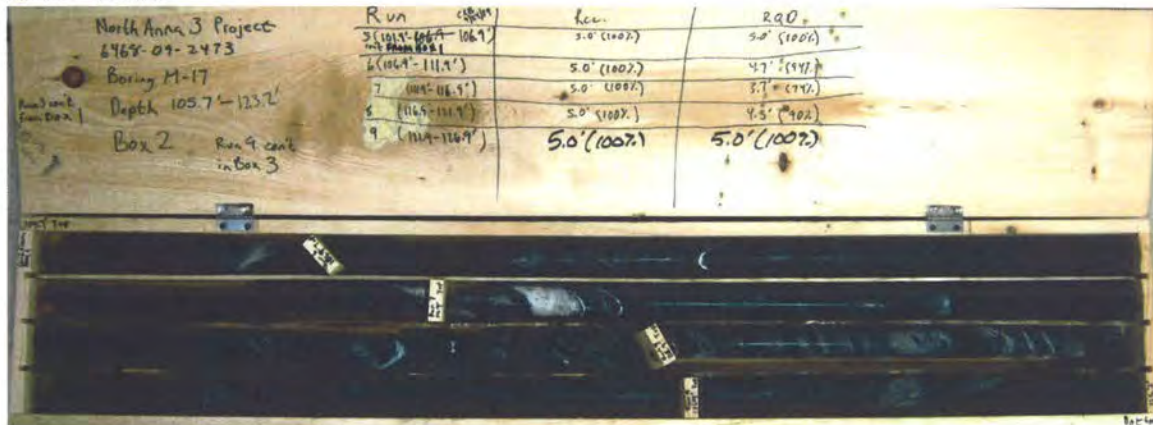
BECHTEL PROJECT NO.: 25161	MACTEC PROJECT NO.: 6468-09-2473	COUNTY: Louisa, VA	GEOLOGIST: C. Baldwin
SITE DESCRIPTION: North Anna 3 Project Supplement 2		DRILLER: P. Pitts/J. Tucker	FLUID LEVEL (ft)
BORING NO.: M-17	DRILL METHOD: Mud Rotary/Rock Core	DRILL MACHINE: CME-55 Trailer (RAL)	0 HR. NA
GROUND ELEV.: 306.2 ft (NAVD88)	NORTHING: 3,909,775 US ft (NAD83)	EASTING: 11,686,214 US ft (NAD83)	24 HR. 22.0
TOTAL DEPTH: 151.9 ft	SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		HAMMER (ID): 140-lb. Auto (MEC-425)
DATE STARTED: 9/21/09	COMPLETED: 9/24/09	CASING DEPTH: 82.1 ft	CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 bit

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (%)	RQD (%)		REC. (%)	RQD (%)		
										Begin Coring @ 84.3 ft
221.9	84.3	2.6	3:45/0.6	(2.6)	(2.0)	RUN 1	(5.6)	(3.7)	221.9	HARD ROCK: Dark gray with orange staining, moderately severe to moderately weathered, very close to close fracturing, medium hard to hard, QUARTZ BIOTITE GNEISS (2 joints at 0°, open with clay; 2 joints at 50°, tight with trace clay) (2 joints at 0°, tight; 3 joints at 30°, tight)
219.3	86.9		5:30 12:53	100%	77%		74%	49%		
		5.0	5:00	(3.0)	(1.7)	RUN 2			214.3	
			3:57 6:20 10:20	60%	34%					
214.3	91.9	5.0	5:45	(5.0)	(3.1)	RUN 3	(14.5)	(11.4)	214.3	HARD ROCK: Light to dark gray with orange staining, moderately weathered, very close to moderately close fracturing, moderately hard, QUARTZ BIOTITE GNEISS (3 joints at 10°, tight to open; 7 joints at 30-40°, tight; 1 joint at 60°, tight) (3 joints at 30-40°, tight; 6 joints at 60-70°, tight to open)
			3:42 3:30 3:13 5:15	100%	62%		97%	76%		
209.3	96.9	5.0	4:09	(4.5)	(3.3)	RUN 4			204.3	(1 joint at 20°, tight; 2 joints at 40°, tight)
			3:20 3:43 2:40 3:22	90%	66%					
204.3	101.9	5.0	3:20	(5.0)	(5.0)	RUN 5			199.3	
			3:05 3:29 2:55 3:40	100%	100%					
199.3	106.9	5.0	3:32	(5.0)	(4.7)	RUN 6	(30.0)	(27.9)	199.3	HARD ROCK: Dark gray, moderately to very slightly weathered, very close to moderately close fracturing, hard, QUARTZ BIOTITE GNEISS (2 joints at 20°, tight; 1 joint at 40°, tight)
			3:05 2:48 2:46 2:38	100%	94%		100%	93%		
194.3	111.9	5.0	3:30	(5.0)	(3.7)	RUN 7			189.3	(1 joint at 0°, tight; 1 joint at 20°, tight; 8 joints at 40-50°, tight)
			3:23 3:50 3:35 4:00	100%	74%					
189.3	116.9	5.0	3:55	(5.0)	(4.5)	RUN 8			184.3	(4 joints at 30°, tight)
			3:15 3:57 3:05 2:30	100%	90%					
184.3	121.9	5.0	3:12	(5.0)	(5.0)	RUN 9			179.3	(1 joint at 60°, tight)
			3:57 2:40 2:54 3:12	100%	100%					
179.3	126.9	5.0	3:00	(5.0)	(5.0)	RUN 10			174.3	(1 joint at 40°, tight)
			3:04 2:55 2:52 2:31	100%	100%					
174.3	131.9	5.0	2:40	(5.0)	(5.0)	RUN 11			169.3	(2 joints at 50°, tight)
			3:00 3:08 3:17 2:56	100%	100%					
169.3	136.9	5.0	3:18	(3.5)	(2.0)	RUN 12	(3.5)	(2.0)	164.3	HARD ROCK: Dark gray, moderately severe to slightly weathered, very close to close fracturing, medium hard to hard, QUARTZ BIOTITE GNEISS (2 joints at 30°, tight; 2 joints at 50°, tight)
			2:32 1:00 2:39 3:33	70%	40%		70%	40%		
164.3	141.9	5.0	3:42	(5.0)	(5.0)	RUN 13	(10.0)	(10.0)	164.3	HARD ROCK: Dark gray, very slightly weathered, close to wide fracturing, hard, QUARTZ BIOTITE GNEISS (1 joint at 30°, tight; 1 joint at 70°, tight)
			3:41 3:20 3:00 2:05	100%	100%		100%	100%		
159.3	146.9	5.0	2:57	(5.0)	(5.0)	RUN 14			154.3	(No Joints)
			3:20 2:53 2:50 2:24	100%	100%					
154.3	151.9								154.3	Boring and coring terminated at 151.9 feet. Boring closed by tremie method with cement-bentonite grout.

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



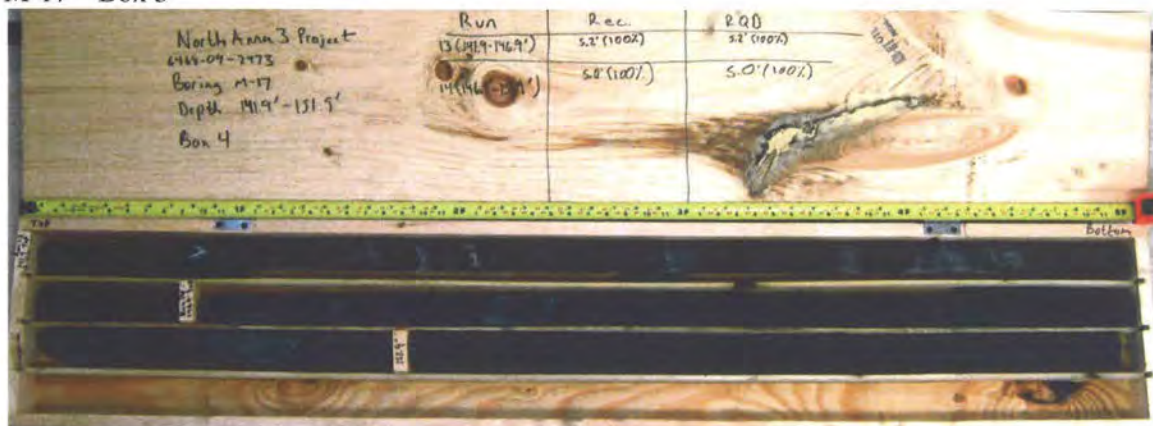
M-17 - Box 1



M-17 - Box 2



M-17 - Box 3



M-17 - Box 4



GEOTECHNICAL BORING LOG

Prepared By JJS Date 12/16/09

Checked By ML Date 12/16/09

SHEET 1 OF 1

BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: B. Mabie								
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)								
BORING NO.: M-18		DRILL METHOD: Mud Rotary		DRILL MACHINE: CME-45C Track (RAL)		0 HR. 16.0								
GROUND ELEV.: 304.2 ft (NAVD88)		NORTHING: 3,909,608 US ft (NAD83)		EASTING: 11,686,214 US ft (NAD83)		24 HR. NA								
TOTAL DEPTH: 60.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-12)								
DATE STARTED: 9/29/09		COMPLETED: 9/29/09		HOLE DIA.: 3"		CASING DEPTH: 9.0 ft								
CORE SIZE: NA		BITS USED: 2-7/8" Tri-Cone												
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
304.2					Ground Surface							304.2	0.0	
														No sampling from 0.0 to 8.7 feet due to soft dig utility clearance by Dominion Personnel
295.5	8.7													
293.5	10.7	2	2	2							SS-1		295.5	RESIDUAL SOIL: SILT (ML), strong brown (7.5YR 4/6), soft, moist, few mica, dark brown and black staining, relict rock fabric
291.4	12.8	2	1	3							SS-2			
288.9	15.3	2	2	2							SS-3			
285.7	18.5	1	2	3							SS-4		15.3 ft: Medium stiff	
280.7	23.5	2	2	3							SS-5		18.5 ft: Pale Yellow (2.5Y 7/4)	
275.7	28.5	2	3	4							SS-6		21.0	RESIDUAL SOIL: Elastic SILT (MH), yellow (2.5Y 7/6), medium stiff, moist, trace mica, orange and brown staining, relict rock fabric
270.7	33.5	2	3	3							SS-7		28.5 ft: Olive yellow (2.5Y 6/6)	
265.7	38.5	2	3	4							SS-8		33.5 ft: Light yellowish brown (2.5Y 6/4), little mica	
260.7	43.5	2	1	2							SS-9		38.5 ft: Soft	
255.7	48.5	3	6	6							SS-10		42.0	RESIDUAL SOIL: Silty SAND (SM), strong brown (7.5YR 5/6), medium dense, moist, fine to coarse grained sand, trace mica, relict rock fabric
250.7	53.5	5	3	4							SS-11		48.5 ft: Brownish yellow (10YR 6/4), loose	
245.7	58.5	4	5	6							SS-12		52.0	RESIDUAL SOIL: Sandy SILT (ML), strong brown (7.5YR 5/6), stiff, moist, trace mica, relict rock fabric
244.0	60.2	78	22/0.1								SS-13		57.0	WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (Sampled as Silty SAND (SM), brownish yellow (10YR 6/4), very dense, moist, fine to coarse grained sand, trace mica)
		50/0.2									SS-14		80.4	SAND (SM), brownish yellow (10YR 6/4), very dense, moist, fine to coarse grained sand, (trace mica)
														Boring terminated at 60.4 feet.
														Boring closed by tremie method with cement-bentonite grout.
														No 24 HR fluid level because boring grouted same day boring drilled.

NORTH ANNA 3 BORE: NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



GEOTECHNICAL BORING LOG

Prepared By JSS Date 12/16/09

Checked By MM Date 12/16/09

SHEET 1 OF 3

BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi										
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)										
BORING NO.: M-19		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA										
GROUND ELEV.: 280.4 ft (NAVD88)		NORTHING: 3,910,053 US ft (NAD83)		EASTING: 11,685,856 US ft (NAD83)		24 HR. 19.0										
TOTAL DEPTH: 151.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID):140-lb. Auto (MEC-05)										
DATE STARTED: 9/23/09		COMPLETED: 9/29/09		HOLE DIA.: 3"		CASING DEPTH: 66.5 ft										
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone										
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION				
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100			
280.4					Ground Surface							280.4	0.0			
														No sampling from 0.0 to 9.8 feet due to soft dig utility clearance by Dominion Personnel		
270.6	9.8													270.6	9.8	RESIDUAL SOIL: Silty SAND (SM), brownish yellow (10YR 6/6), very loose, moist, fine to coarse grained sand, relict rock fabric
268.1	12.3	4	2	2							SS-1					12.5 ft: Wet
265.6	14.8	2	1	3							SS-2					14.8 ft: Very pale brown (10YR 7/3), loose
262.1	18.3	2	2	3							SS-3					18.5 ft: Very loose
257.1	23.3	3	2	2							SS-4					23.3 ft: Very pale brown (10YR 7/4), loose, moist
252.1	28.3	3	3	4							SS-5					28.3 ft: Light brownish gray (10YR 6/2), little mica
247.1	33.3	3	4	6							SS-6					33.3 ft: Very pale brown (10YR 7/3), medium dense
242.1	38.3	4	5	8							SS-7					38.3 ft: Light brownish gray (10YR 6/2), fine to medium grained sand, trace mica
237.1	43.3	6	7	10							SS-8					43.3 ft: Very pale brown (10YR 7/3), fine to coarse grained sand, few quartz rock fragments
232.1	48.3	7	10	15							SS-9					48.3 ft: Very pale brown (10YR 7/4)
227.1	53.3	10	13	17							SS-10					
222.1	58.3	10	12	15							SS-11					58.3 ft: Very dense, little mica
217.1	63.3	19	25	31							SS-12					
212.1	68.3	21	28	37							SS-13					
207.4	73.0	22	50/0.3								SS-14					
		50/0.0									SS-15					
														213.8	66.6	HARD ROCK: Light gray and brown, moderately weathered to fresh, very close to moderately close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS with zones of WEATHERED ROCK: BIOTITE QUARTZ GNEISS

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473			COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi								
SITE DESCRIPTION: North Anna 3 Project Supplement 2					DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)								
BORING NO.: M-19		DRILL METHOD: Mud Rotary/Rock Core			DRILL MACHINE: CME-550X (ATL)		0 HR. NA								
GROUND ELEV.: 280.4 ft (NAVD88)		NORTHING: 3,910,053 US ft (NAD83)		EASTING: 11,685,856 US ft (NAD83)		24 HR. 19.0									
TOTAL DEPTH: 151.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08			ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-05)								
DATE STARTED: 9/23/09		COMPLETED: 9/29/09		HOLE DIA.: 3"	CASING DEPTH: 66.5 ft	CORE SIZE: NQ3	BITS USED: 2-7/8" Tri-Cone								
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100		
205.6					Continued from previous page										
													202.0	78.4	HARD ROCK: Light gray and light brownish gray, slightly weathered to fresh, very close to wide fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)	
BORING NO.: M-19		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA	
GROUND ELEV.: 280.4 ft (NAVD88)		NORTHING: 3,910,053 US ft (NAD83)		EASTING: 11,685,856 US ft (NAD83)		24 HR. 19.0	
TOTAL DEPTH: 151.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-05)	
DATE STARTED: 9/23/09		COMPLETED: 9/29/09		CASING DEPTH: 66.5 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 & 10 bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (%)	RQD (%)		REC. (%)	RQD (%)		
										Begin Coring @ 66.6 ft
213.8	66.6	2.1	4:22/1.1	(2.1)	(2.1)	RUN 1	(11.8)	(10.7)		HARD ROCK: Light gray and brown, moderately weathered to fresh, very close to moderately close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS with zones of WEATHERED ROCK: BIOTITE QUARTZ GNEISS (1 joint at 0°, open with orange staining; 1 joint at 45°, open with orange staining) (12 joints at 15-45°, open, moderately weathered with trace orange staining) Note: Recovered 0.5 ft of RUN 1 with RUN 2 (3 joints at 15-30°, open with trace orange staining; 1 joint at 45°, open) Note: Recovered 0.5 ft of RUN 2 with RUN 3 HARD ROCK: Light gray and light brownish gray, slightly weathered to fresh, very close to wide fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS (7 joints at 15-45°, open with iron staining; 0.5 ft thick quartz vein at 80.7 feet) (9 joints at 30-45°, open with orange staining; 2 joints at 75°, open) (2 joints at 45°, open; 2 joints at 75°, open) (2 joints at 30-45°, open; 0.5 ft thick quartz vein from 93.6-94.1 feet) (3 joints at 30-40°, tight) (1 joint at 45°, tight) (No Joints) Note: Recovered 0.1 ft of RUN 9 with RUN 10 (2 joints at 45°, tight with trace orange staining) (No Joints) Note: Recovered 0.2 ft of RUN 11 with RUN 12 (No Joints) (No Joints) (3 joints at 45-60°, tight) (8 joints at 30-45°, open with orange and black staining; 1 joint at 75°, open with orange and black staining; 0.2 ft thick quartz vein at 141.0 feet)
211.7	68.7	5.0	N=50/0.3	(5.0)	(3.9)	SS-14	100%	91%		
			2:23	100%	78%	RUN 2				
			2:11							
			2:32							
			2:38							
			2:41							
206.7	73.7	4.7	N=50/0.0	(4.7)	(4.7)	SS-15				
			3:51	100%	100%	RUN 3				
			4:22							
			5:01							
			3:47							
202.0	78.4	5.0	5:02/0.7	(5.0)	(3.8)	RUN 4	(73.0)	(70.1)		
			4:40	100%	76%					
			6:01							
			6:26							
			3:56							
			4:02							
197.0	83.4	5.1	4:15	(5.1)	(4.5)	RUN 5				
			4:23	100%	88%					
			4:45							
			4:51							
			7:02/1.1							
191.9	88.5	5.1	3:23	(5.1)	(5.1)	RUN 6				
			3:28	100%	100%					
			3:39							
			3:32							
			3:41/1.1							
186.8	93.6	5.0	3:37	(5.0)	(4.6)	RUN 7				
			2:12	100%	92%					
			2:11							
			2:28							
			2:31							
181.8	98.6	5.0	2:39	(5.0)	(5.0)	RUN 8				
			3:17	100%	100%					
			3:55							
			3:48							
			4:09							
176.8	103.6	5.0	4:27	(5.0)	(5.0)	RUN 9				
			7:28	100%	100%					
			4:58							
			5:20							
			5:23							
171.8	108.6	5.0	3:20	(5.0)	(5.0)	RUN 10				
			2:45	100%	100%					
			3:58							
			3:44							
			4:08							
166.8	113.6	5.0	3:38	(5.0)	(4.9)	RUN 11				
			4:10	100%	98%					
			4:05							
			3:58							
			4:20							
161.8	118.6	5.0	2:25	(5.0)	(5.0)	RUN 12				
			3:02	100%	100%					
			3:55							
			3:45							
			4:02							
156.8	123.6	5.0	4:08	(5.0)	(5.0)	RUN 13				
			6:15	100%	100%					
			6:01							
			6:34							
			6:45							
151.8	128.6	5.0	7:22	(5.0)	(5.0)	RUN 14				
			7:20	100%	100%					
			3:49							
			4:28							
			4:57							
146.8	133.6	5.0	3:00	(5.0)	(5.0)	RUN 15				
			1:55	100%	100%					
			1:59							
			2:46							
			2:57							
141.8	138.6	5.0	2:31	(5.0)	(4.4)	RUN 16				
			2:37	100%	88%					
			3:05							

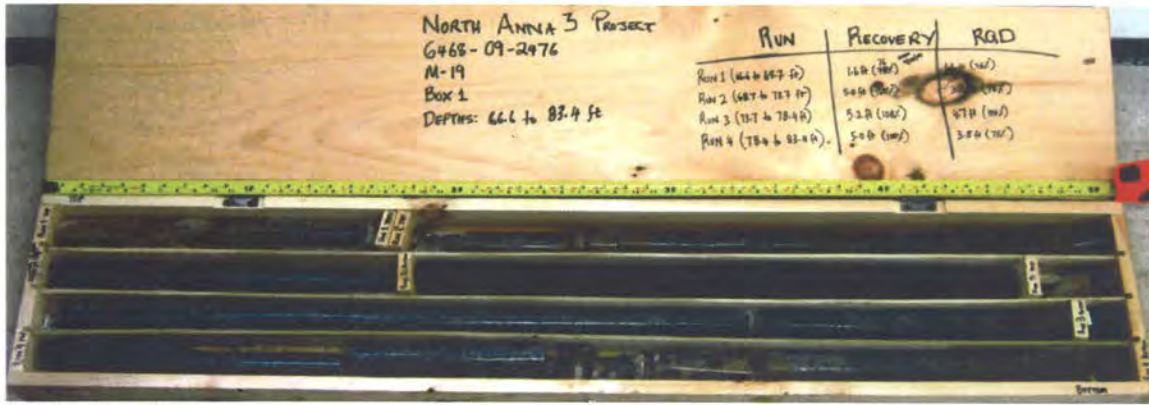
NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)	
BORING NO.: M-19		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA	
GROUND ELEV.: 280.4 ft (NAVD88)		NORTHING: 3,910,053 US ft (NAD83)		EASTING: 11,685,856 US ft (NAD83)		24 HR. 19.0	
TOTAL DEPTH: 151.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-05)	
DATE STARTED: 9/23/09		COMPLETED: 9/29/09		CASING DEPTH: 66.5 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 & 10 bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
			4:26 4:49							Continued from previous page
136.8	143.6	5.0	4:38 5:34 4:12 2:21 2:35	(5.0) 100%	(5.0) 100%	RUN 17				HARD ROCK: Light gray and light brownish gray, slightly weathered to fresh, very close to wide fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS (continued) (2 joints at 45°, open with trace clay)
131.8	148.6	2.8	2:43 3:13 3:10/0.8	(2.8) 100%	(2.8) 100%	RUN 18				(1 joint at 60°, open with trace clay)
129.0	151.4									129.0
<p>Boring and coring terminated at 151.4 feet.</p> <p>Boring closed by tremie method with cement-bentonite grout.</p> <p>24 hour water level measured on 9/29/2009 prior to drilling. Borehole was at a depth of 138.6 feet.</p> <p>NOTE: Began coring at 66.6 ft after boring was advanced by mud rotary to 73.0 ft and casing was set at 66.5 ft. SPT sample SS-14 collected at 68.3 ft indicates the roller cone had "walked off" along a weathered fracture zone, as well as difficulty noted by rig geologist advancing SPT sampler to 73.0 ft for SS-15. Core recovery of HARD ROCK from 66.6 ft to 78.4 was 100%, with weathering noted along fractures/joints supporting this conclusion.</p>										

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



M-19 - Box 1



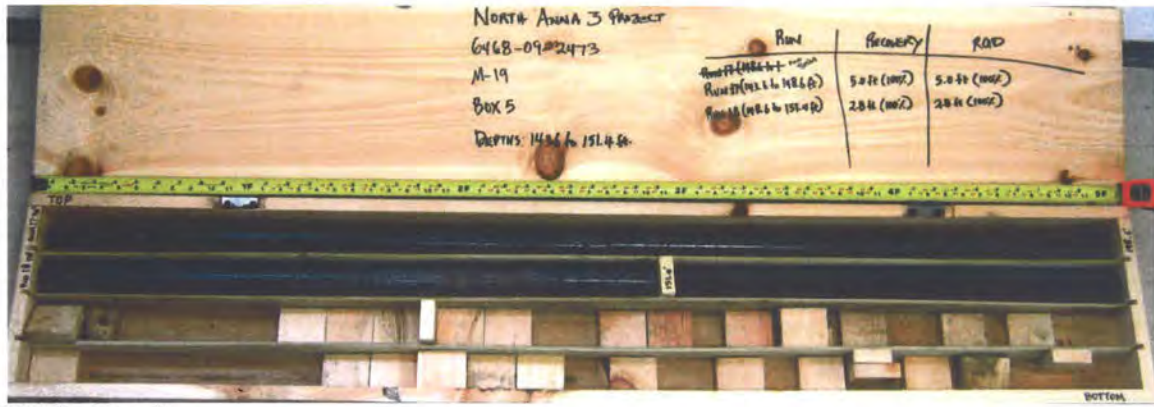
M-19 - Box 2



M-19 - Box 3



M-19 - Box 4



M-19 - Box 5



GEOTECHNICAL BORING LOG

Prepared By JST Date 12/16/09

Checked By MB Date 12/16/09

SHEET 1 OF 3

BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: B. Mabie	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)	
BORING NO.: M-20		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-45C Track (RAL)		0 HR. NA	
GROUND ELEV.: 302.6 ft (NAVD88)		NORTHING: 3,909,794 US ft (NAD83)		EASTING: 11,686,068 US ft (NAD83)		24 HR. 15.5	
TOTAL DEPTH: 151.0 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-12)	
DATE STARTED: 9/21/09		COMPLETED: 9/25/09		HOLE DIA.: 3"		CASING DEPTH: 36.0 ft	
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION
		0.5ft	0.5ft	0.5ft	0	20	40	60	80			
302.6												Ground Surface
302.6												ASPHALT (Roadway) to 0.5 ft
												No sampling from 0.0 to 8.4 feet due to soft dig utility clearance by Dominion Personnel
294.2	8.4											RESIDUAL SOIL: Well Graded SAND with Silt (SW-SM), very pale brown (10YR 7/4), medium dense, dry, fine to coarse grained sand, relict rock fabric
292.2	10.4	6	5	8							SS-1	10.4 ft: Moist
289.2	13.4	5	6	9							SS-2	13.4 ft: Light gray (10YR 7/2)
284.1	18.5	7	7	7							SS-3	RESIDUAL SOIL: Silty SAND (SM), very pale brown (10YR 7/3), medium dense, moist, fine to coarse grained sand, relict rock fabric
279.1	23.5	5	6	8							SS-4	23.5 ft: Wet, trace gravel sized rock fragments, trace mica
274.1	28.5	13	16	20							SS-5	28.5 ft: Light gray (10YR 7/2), dense, moist, orange staining
269.1	33.5	7	8	8							SS-6	33.5 ft: Gray (10YR 6/1), medium dense
264.1	38.5										SS-7	WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (Sampled as Silty SAND (SM), strong brown (7.5YR 5/6), very dense, moist, fine to coarse grained sand, trace mica, trace rock fragments)
263.7	38.9										SS-8	WEATHERED ROCK: Gray to brownish orange, severely weathered, very close fracturing, soft to medium hard, BIOTITE QUARTZ GNEISS
257.9	44.7										SS-9	HARD ROCK and WEATHERED ROCK: Dark brown and gray, with orange staining, severely to moderately severely weathered, very close to close fracturing, soft to medium hard, BIOTITE QUARTZ GNEISS
244.3	58.3											HARD ROCK: Gray with orange staining, moderately to slightly weathered, close fracturing, medium hard to moderately hard, BIOTITE QUARTZ GNEISS

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: B. Mabie	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)	
BORING NO.: M-20		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-45C Track (RAL)		0 HR. NA	
GROUND ELEV.: 302.6 ft (NAVD88)		NORTHING: 3,909,794 US ft (NAD83)		EASTING: 11,686,068 US ft (NAD83)		24 HR. 15.5	
TOTAL DEPTH: 151.0 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID):140-lb. Auto (MEC-12)	
DATE STARTED: 9/21/09		COMPLETED: 9/25/09		HOLE DIA.: 3"		CASING DEPTH: 36.0 ft	
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION			
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100		
227.8													Continued from previous page		
													HARD ROCK: Gray with orange staining, moderately to slightly weathered, close fracturing, medium hard to moderately hard, BIOTITE QUARTZ GNEISS (continued)		
													221.6	HARD ROCK: Gray, brown, and dark brown, with orange staining, moderately severe to moderately weathered, very close to close fracturing, medium hard, BIOTITE QUARTZ GNEISS	81.0
													196.6	HARD ROCK: Gray, slightly weathered to fresh, close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS	106.0

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473			COUNTY: Louisa, VA		GEOLOGIST: B. Mabie							
SITE DESCRIPTION: North Anna 3 Project Supplement 2					DRILLER: D. Rhodes/K. Guy			FLUID LEVEL (ft)						
BORING NO.: M-20		DRILL METHOD: Mud Rotary/Rock Core			DRILL MACHINE: CME-45C Track (RAL)			0 HR. NA						
GROUND ELEV.: 302.6 ft (NAVD88)		NORTHING: 3,909,794 US ft (NAD83)		EASTING: 11,686,068 US ft (NAD83)			24 HR. 15.5							
TOTAL DEPTH: 151.0 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08			ROD TYPE: AWJ		HAMMER (ID):140-lb. Auto (MEC-12)							
DATE STARTED: 9/21/09		COMPLETED: 9/25/09		HOLE DIA.: 3"		CASING DEPTH: 36.0 ft		CORE SIZE: NQ3						
BITS USED: 2-7/8" Tri-Cone														
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
153.0												Continued from previous page		
												151.6	151.0	Boring and coring terminated at 151.0 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/25/2009 prior to drilling. Borehole was at a depth of 126.0 feet.

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: B. Mabie	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)	
BORING NO.: M-20		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-45C Track (RAL)		0 HR. NA	
GROUND ELEV.: 302.6 ft (NAVD88)		NORTHING: 3,909,794 US ft (NAD83)		EASTING: 11,686,068 US ft (NAD83)		24 HR. 15.5	
TOTAL DEPTH: 151.0 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-12)	
DATE STARTED: 9/21/09		COMPLETED: 9/25/09		CASING DEPTH: 36.0 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 & 10 bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
Begin Coring @ 38.9 ft										
263.7	38.9	2.1	N=50/0.0 5:07	(0.5)	(0.0)	RUN 1	(1.2)	(0.0)	263.7	WEATHERED ROCK: Gray to brownish orange, severely weathered, very close fracturing, soft to medium hard, BIOTITE QUARTZ GNEISS
261.6	41.0		2:47	24%	0%		21%	0%		
260.4	42.2	1.2	1:30/0.1	(0.6)	(0.0)	RUN 2				
		2.5	11:29 3:22/0.2	50%	0%	RUN 3				
257.9	44.7		2:01/0.8 2:54	(0.1)	(0.0)				257.9	HARD ROCK and WEATHERED ROCK: Dark brown and gray, with orange staining, severely to moderately severely weathered, very close to close fracturing, soft to medium hard, BIOTITE QUARTZ GNEISS (Many joints/fractures at 0-90°, open)
256.6	46.0	1.3	2:15/0.7	(0.8)	(0.0)	RUN 4	(9.8)	(5.1)		
		5.0	3:35/0.3 4:29	(5.0)	(2.8)	RUN 5	72%	38%		
251.6	51.0		6:19 2:43	100%	56%					
		3.0	2:02 3:21 3:44	(0.7)	(0.0)	RUN 6				(Several fractures/joints)
248.6	54.0		3:50 2:15	(1.0)	(0.5)					(2 joints at 70-80°, open)
246.6	56.0	2.0	2:31	50%	25%	RUN 7				
		2.3	1:25 2:05	(2.3)	(1.8)	RUN 8				(4 joints at 0-10°, open; 2 joints at 40-50°, open)
244.3	58.3		1:52 1:29	100%	78%				244.3	HARD ROCK: Gray with orange staining, moderately to slightly weathered, close fracturing, medium hard to moderately hard, BIOTITE QUARTZ GNEISS (1 joint at 0-10°, open with orange staining; 4 at 70-80°, open with orange staining) (10 joints at 0-40°, open to tight; 5 joints at 70-80°, open)
241.6	61.0	2.7	1:52/0.3	(2.5)	(2.0)	RUN 9	(21.0)	(15.5)		
		5.0	2:42 3:01	(4.8)	(2.5)	RUN 10	93%	68%		
236.6	66.0		2:04 2:10 2:00	(4.1)	(2.9)					(6 joints at 20-40°, open)
		5.0	2:14 2:11	82%	58%	RUN 11				
231.6	71.0		1:41 1:40 1:44 1:34 1:32	(3.5)	(2.9)					(4 joints at 40-50°, open)
		3.8	1:36 1:35 1:31	92%	76%	RUN 12				
227.8	74.8		3:02/0.8	(1.2)	(1.0)					(2 joints at 60-70°, tight)
226.6	76.0	1.2	0:14/0.2	100%	83%	RUN 13				(5 joints at 0-10°, tight to open; 3 joints at 30°, open)
		5.0	2:46	(4.9)	(4.2)	RUN 14				
221.6	81.0		1:44 1:38 1:26 1:55 1:12	98%	84%				221.6	HARD ROCK: Gray, brown, and dark brown, with orange staining, moderately severe to moderately weathered, very close to close fracturing, medium hard, BIOTITE QUARTZ GNEISS (several joints at 0-20°, open)
216.6	86.0	5.0	1:32	(3.1)	(1.0)	RUN 15	(18.2)	(9.3)		
		5.0	1:45 2:43 3:08 1:45	62%	20%	RUN 16	73%	37%		(8 joints at 0-30°, open)
		5.0	1:43 1:28 1:36 2:14 2:24	(3.4)	(2.0)	RUN 17				(5 joints at 0-10°, open; 8 at 30-40°, open)
211.6	91.0		2:54 2:02 2:27 2:52 2:05	(3.3)	(1.7)					(12 joints at 0-20°; 2 joints at 50-60°, open)
206.6	96.0	5.0	1:57 1:21 1:28 2:46 3:58	78%	44%	RUN 18				(14 joints at 0-20°, open; 3 at 20-30°, open)
201.6	101.0		2:38 1:37 1:50 2:01 2:12	(4.5)	(2.4)					
196.6	106.0	5.0	3:01 4:09 4:12	90%	48%	RUN 19	(44.4)	(43.3)		
193.6	109.0	3.0	4:12	100%	67%	RUN 20	99%	96%		HARD ROCK: Gray, slightly weathered to fresh, close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS (3 joints at 0-20°, open; 1 joint at 70°, open)
191.6	111.0	2.0	4:25 6:51	(2.0)	(2.0)	RUN 21				(1 joint at 10-20°, tight)
		5.0	3:51 3:09	100%	100%	RUN 22				(2 joints at 20-30°, tight)

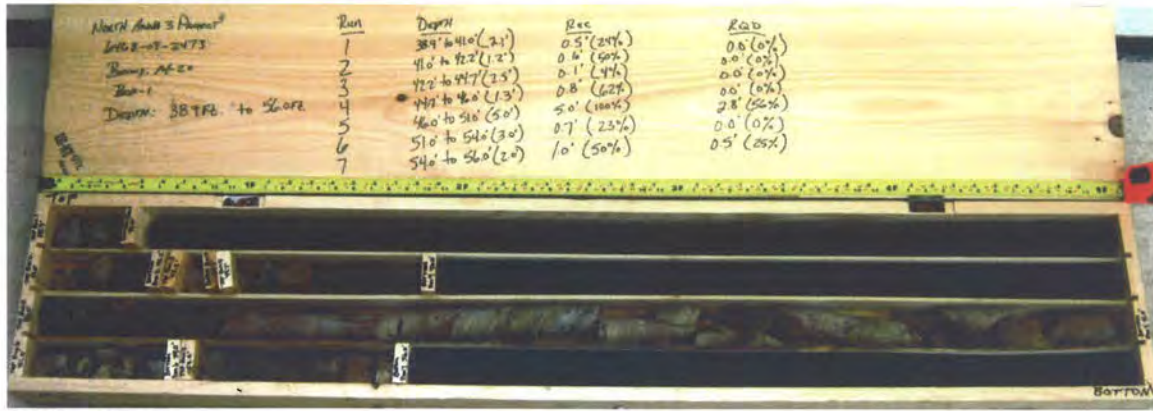
NORTH ANNA_3 CORE_NORTH ANNA_3 PROJECT.GPJ NORTH ANNA_3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: B. Mabie	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)	
BORING NO.: M-20		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-45C Track (RAL)		0 HR. NA	
GROUND ELEV.: 302.6 ft (NAVD88)		NORTHING: 3,909,794 US ft (NAD83)		EASTING: 11,686,068 US ft (NAD83)		24 HR. 15.5	
TOTAL DEPTH: 151.0 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-12)	
DATE STARTED: 9/21/09		COMPLETED: 9/25/09		CASING DEPTH: 36.0 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 & 10 bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %			
										Continued from previous page	
186.6	116.0	5.0	4:16 3:28 3:30	(4.9) 98%	(4.9) 98%	RUN 23				HARD ROCK: Gray, slightly weathered to fresh, close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS (continued) (3 joints at 10-20°, tight)	
181.6	121.0	5.0	4:37 4:01 4:28 4:36 5:10	(5.0) 100%	(5.0) 100%	RUN 24		(4 joints at 0-20°, tight)			
176.6	126.0	5.0	4:55 4:42 4:26 4:48 4:10	(5.0) 100%	(5.0) 100%	RUN 25		(1 joint at 20°, tight; 1 joint at 60-70°, tight)			
171.6	131.0	5.0	2:53 3:01 3:11 3:48 3:19	(4.8) 96%	(4.7) 94%	RUN 26					
166.6	136.0	5.0	3:38 3:37 3:48 4:10 4:30	(4.7) 94%	(4.7) 94%	RUN 27		(1 joint at 70°, tight)			
161.6	141.0	5.0	4:49 4:38 4:50 4:55 5:31	(5.0) 100%	(5.0) 100%	RUN 28		(1 joint at 30°, tight)			
156.6	146.0	5.0	5:26 6:00 7:14 8:01 4:00	(5.0) 100%	(5.0) 100%	RUN 29		(2 joints at 60-70°, tight)			
151.6	151.0		4:07 4:55 4:00 3:29 3:48					151.6		151.0	Boring and coring terminated at 151.0 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/25/2009 prior to drilling. Borehole was at a depth of 126.0 feet.

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



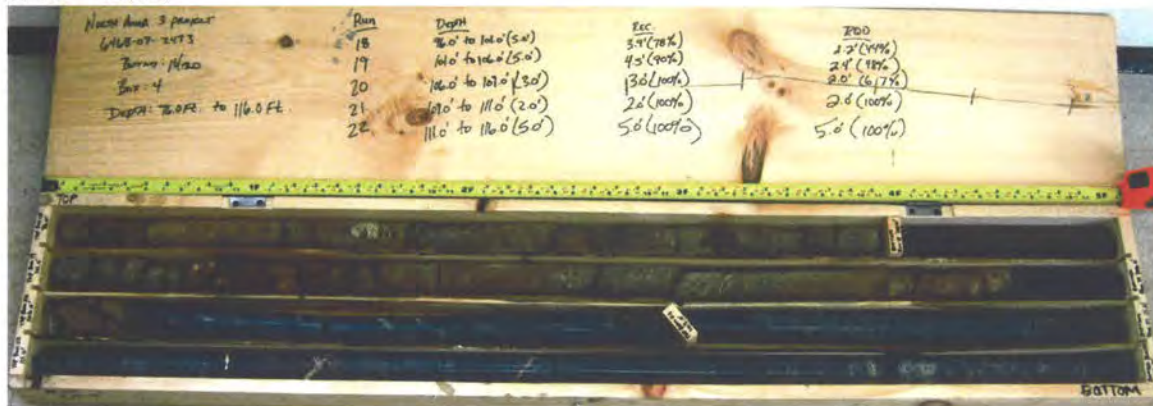
M-20 - Box 1



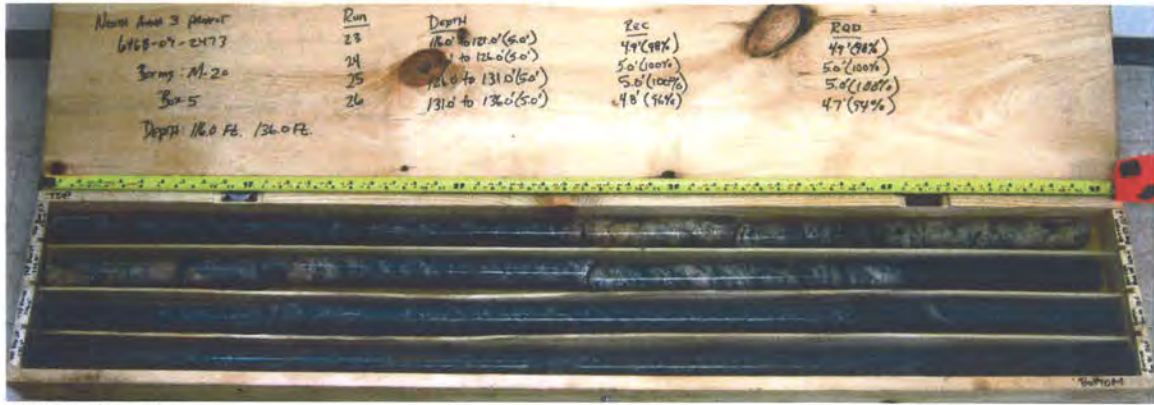
M-20 - Box 2



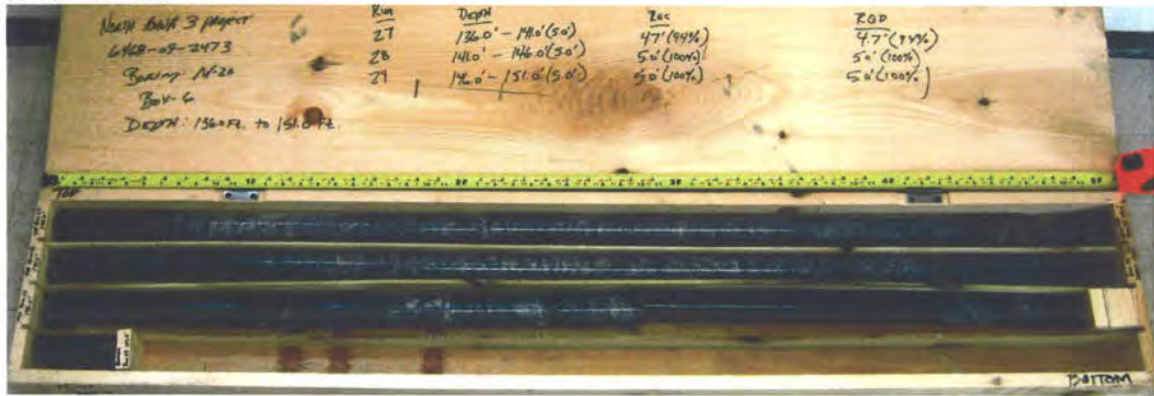
M-20 - Box 3



M-20 - Box 4



M-20 - Box 5



M-20 - Box 6



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473			COUNTY: Louisa, VA		GEOLOGIST: R. Clark						
SITE DESCRIPTION: North Anna 3 Project Supplement 2					DRILLER: F. Cox/R. Hall			FLUID LEVEL (ft)					
BORING NO.: M-21		DRILL METHOD: Mud Rotary/Rock Core			DRILL MACHINE: CME-55 Track (RAL)			0 HR. 10.5					
GROUND ELEV.: 303.9 ft (NAVD88)		NORTHING: 3,909,811 US ft (NAD83)		EASTING: 11,686,270 US ft (NAD83)			24 HR. 29.5						
TOTAL DEPTH: 151.8 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08			ROD TYPE: AWJ		HAMMER (ID):140-lb. Auto (MEC-21)						
DATE STARTED: 9/22/09		COMPLETED: 9/24/09		HOLE DIA.: 4"		CASING DEPTH: 63.8 ft		CORE SIZE: HQ3					
BITS USED: 3-7/8" Tri-Cone													
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI G	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
229.1													Continued from previous page
													227.1 HARD ROCK: Black to light gray, with brown staining, moderately weathered, close fracturing, medium hard, BIOTITE GNEISS 76.8
													224.1 WEATHERED ROCK: Light gray, severely weathered, close fracturing, soft, BIOTITE QUARTZ GNEISS 79.8
													223.1 HARD ROCK: Light gray, moderately weathered, close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS 80.8
													221.4 HARD ROCK: Dark and light gray to black, moderately severe to slightly weathered, close fracturing, soft to hard, BIOTITE GNEISS with hornblende 82.5
													212.1 HARD ROCK: Gray to dark gray, slightly weathered to fresh, moderately close to wide fracturing, hard to very hard, BIOTITE GNEISS to QUARTZ BIOTITE GNEISS 91.8

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: R. Clark							
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: F. Cox/R. Hall		FLUID LEVEL (ft)							
BORING NO.: M-21		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Track (RAL)		0 HR.	10.5						
GROUND ELEV.: 303.9 ft (NAVD88)		NORTHING: 3,909,811 US ft (NAD83)		EASTING: 11,686,270 US ft (NAD83)		24 HR.	29.5						
TOTAL DEPTH: 151.8 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID):140-lb. Auto (MEC-21)							
DATE STARTED: 9/22/09		COMPLETED: 9/24/09		HOLE DIA.: 4"		CASING DEPTH: 63.8 ft							
				CORE SIZE: HQ3		BITS USED: 3-7/8" Tri-Cone							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
154.3													Continued from previous page
													152.1 Boring and coring terminated at 151.8 feet. Boring closed by tremie method with cement-bentonite grout.
													151.8

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09




BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: R. Clark	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: F. Cox/R. Hall		FLUID LEVEL (ft)	
BORING NO.: M-21		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Track (RAL)		0 HR. 10.5	
GROUND ELEV.: 303.9 ft (NAVD88)		NORTHING: 3,909,811 US ft (NAD83)		EASTING: 11,686,270 US ft (NAD83)		24 HR. 29.5	
TOTAL DEPTH: 151.8 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-21)	
DATE STARTED: 9/22/09		COMPLETED: 9/24/09		CASING DEPTH: 63.8 ft		CORE BARREL TYPE: Wireline HQ3 Triple Tube, series 6 & 10 bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (%)	RQD (%)		REC. (%)	RQD (%)		
										Begin Coring @ 63.8 ft
240.1	63.8	3.0	5:34 3:21	(2.0) 67%	(1.1) 37%	RUN 1	(4.5) 82%	(3.2) 58%		240.1 HARD ROCK: Gray to dark gray, with orange staining, moderately severely to moderately weathered, close fracturing, soft to medium hard, BIOTITE QUARTZ GNEISS 63.8
237.1	66.8	4.0	1:38 3:37 3:55 2:42	(2.5) 63%	(2.1) 53%	RUN 2				234.6 (4 joints at 45°, tight; foliation at 45°) (2 joints at 65°, tight; foliation at 65°) 69.3
233.1	70.8	1.0	3:24	(0.0) 0%	(0.0) 0%	RUN 3	(2.4) 32%	(0.0) 0%		WEATHERED ROCK: Brown, reddish brown, and dark gray, severely weathered, close fracturing, very soft to soft, BIOTITE QUARTZ GNEISS and BIOTITE GNEISS
232.1	71.8	2.0	2:28 2:41	(0.5) 25%	(0.0) 0%	RUN 4				
230.1	73.8	5.0	2:27 2:33 2:11	(1.9) 38%	(0.0) 0%	RUN 5				(3 joints at 0-10°, tight with trace iron staining; 5 joints at 45°, tight with trace iron staining; foliation at 45°)
227.1	76.8	4.0	2:33 2:28 3:05 3:14	(2.5) 63%	(0.7) 18%	RUN 6	(1.7) 57%	(0.7) 23%		227.1 HARD ROCK: Black to light gray, with brown staining, moderately weathered, close fracturing, medium hard, BIOTITE GNEISS 76.8
225.1	78.8	1.0	3:59	(1.0) 100%	(0.0) 0%	RUN 7	(0.8) 80%	(0.0) 0%		224.1 (3 joints at 30°, tight; 1 joint at 80°, tight with quartz vein; foliation at 30°) 79.8
223.1	80.8	2.6	5:15 2:27 2:45/0.6	(2.5) 96%	(1.3) 50%	RUN 8	(1.7) 100%	(0.7) 41%		223.1 WEATHERED ROCK: Light gray, severely weathered, close fracturing, soft, BIOTITE QUARTZ GNEISS 80.8
222.1	81.8	2.4	0:36/0.4 5:14 6:58	(2.3) 96%	(1.5) 63%	RUN 9	(9.1) 98%	(4.9) 53%		221.4 HARD ROCK: Light gray, moderately weathered, close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS 82.5
219.5	84.4	5.0	3:25 3:33 4:34 2:54 5:18	(5.0) 100%	(2.8) 56%	RUN 10				HARD ROCK: Dark and light gray to black, moderately severe to slightly weathered, close fracturing, soft to hard, BIOTITE GNEISS with hornblende (2 joints at 60°, tight; foliation at 60°) (5 joints at 0-10°, tight)
217.1	86.8	5.0	5:53 3:23 3:42 3:37 3:11	(5.0) 100%	(3.1) 62%	RUN 11	(59.9) 100%	(57.3) 96%		212.1 HARD ROCK: Gray to dark gray, slightly weathered to fresh, moderately close to wide fracturing, hard to very hard, BIOTITE GNEISS to QUARTZ BIOTITE GNEISS 91.8
212.1	91.8	5.0	5:46 5:48 5:00 3:02 4:50	(5.0) 100%	(4.5) 90%	RUN 12				(7 joints at 30-45°, tight with iron staining)
207.1	96.8	5.0	2:25 2:33 2:46 2:48 3:09	(5.0) 100%	(5.0) 100%	RUN 13				(4 joints at 50-60°, tight with trace chlorite; 2 quartz veins at 60° with trace calcite, chlorite, magnetite, and pyrite)
202.1	101.8	5.0	2:43 2:08 2:11 3:42 1:57	(5.0) 100%	(5.0) 100%	RUN 14				(3 joints at 45°, tight with trace hornblende and iron staining; foliation at 45°)
197.1	106.8	5.0	2:38 2:17 2:02 2:08 2:12	(5.0) 100%	(5.0) 100%	RUN 15				(2 joints at 40°, tight; 1 joint at 60°, tight)
192.1	111.8	5.0	3:49 2:42 2:12 2:30 2:42	(5.0) 100%	(4.8) 96%	RUN 16				(1 joint at 30°, tight)
187.1	116.8	5.0	2:27 2:33 2:35 2:42 2:48	(5.0) 100%	(5.0) 100%	RUN 17				(3 joints at 30°, tight; 1 quartz vein at 70° with trace pyrite)
182.1	121.8	5.0	2:40 2:38 2:48 2:55 2:59	(4.9) 98%	(4.9) 98%	RUN 18				(2 joints at 25°, tight; 1 joint at 45°, tight; trace pyrite)
177.1	126.8	5.0	2:10 2:09 2:02 1:53 1:48	(5.0) 100%	(5.0) 100%	RUN 19				(3 joints at 50°, tight; foliation at 50°)
172.1	131.8	5.0	2:51 2:25	(5.0) 100%	(5.0) 100%	RUN 20				(1 joint at 45°, tight)
167.1	136.8	5.0							(No joints)	

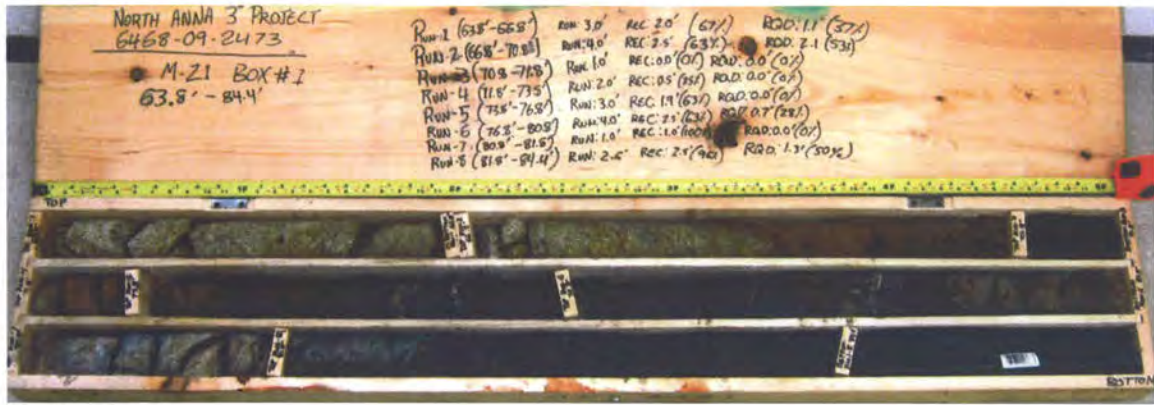
NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: R. Clark	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: F. Cox/R. Hall		FLUID LEVEL (ft)	
BORING NO.: M-21		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Track (RAL)		0 HR. 10.5	
GROUND ELEV.: 303.9 ft (NAVD88)		NORTHING: 3,909,811 US ft (NAD83)		EASTING: 11,686,270 US ft (NAD83)		24 HR. 29.5	
TOTAL DEPTH: 151.8 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-21)	
DATE STARTED: 9/22/09		COMPLETED: 9/24/09		CASING DEPTH: 63.8 ft		CORE BARREL TYPE: Wireline HQ3 Triple Tube, series 6 & 10 bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
										Continued from previous page
162.1	141.8		2:31 1:54 1:48	100%	100%					 <p>HARD ROCK: Gray to dark gray, slightly weathered to fresh, moderately close to wide fracturing, hard to very hard, BIOTITE GNEISS to QUARTZ BIOTITE GNEISS (<i>continued</i>) (1 joint at 55°, tight; foliation at 55°; trace pyrite)</p> <p>(No joints; trace pyrite and hornblende)</p>
		5.0	2:03 2:26 2:06 2:46 2:05	(5.0) 100%	(5.0) 100%	RUN 21				
157.1	146.8		2:08 2:33 2:25 2:11 2:04	(5.0) 100%	(5.0) 100%	RUN 22				
152.1	151.8									152.1
										151.8
										<p>Boring and coring terminated at 151.8 feet.</p> <p>Boring closed by tremie method with cement-bentonite grout.</p>

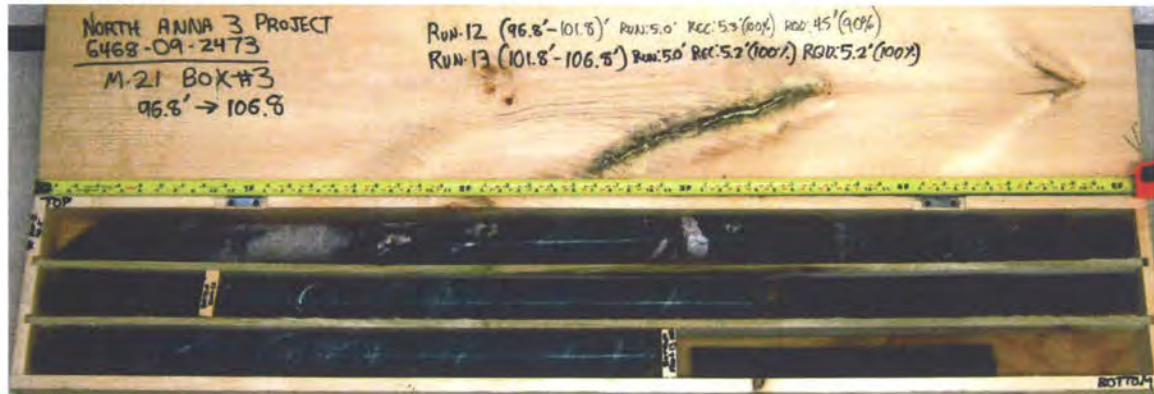
NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



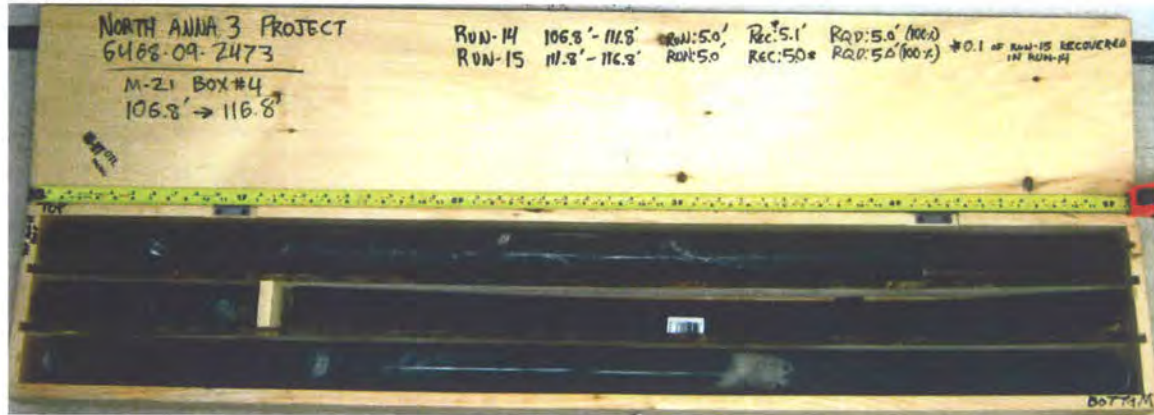
M-21 - Box 1



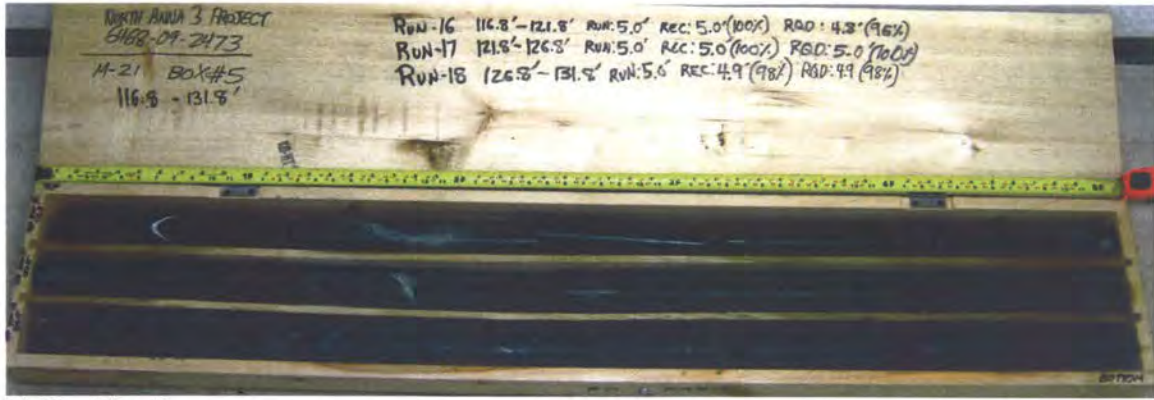
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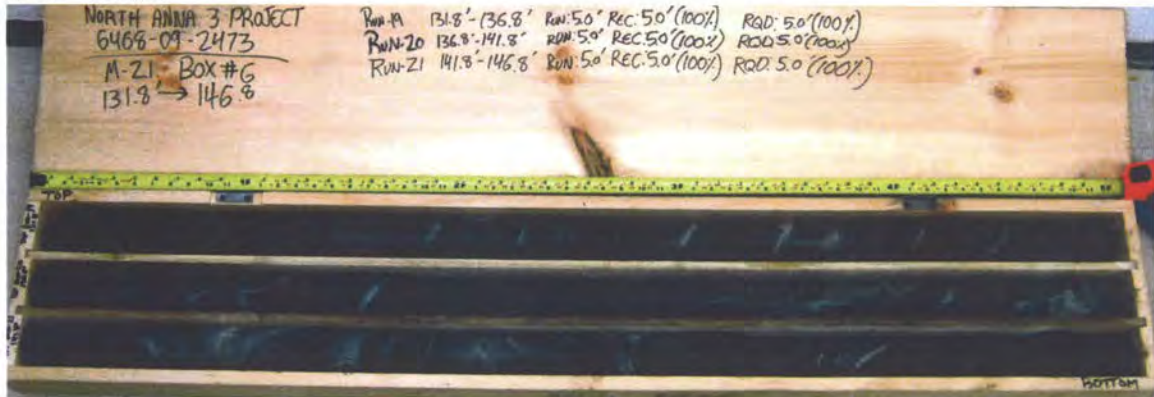
M-21 - Box 3



M-21 - Box 4



M-21 - Box 5



M-21 - Box 6



M-21 - Box 7



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: C. Baldwin									
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: P. Pitts/J. Tucker		FLUID LEVEL (ft)									
BORING NO.: M-27		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Trailer (RAL)		0 HR. NA									
GROUND ELEV.: 330.2 ft (NAVD88)		NORTHING: 3,909,426 US ft (NAD83)		EASTING: 11,685,938 US ft (NAD83)		24 HR. 34.0									
TOTAL DEPTH: 151.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-425)									
DATE STARTED: 9/15/09		COMPLETED: 9/21/09		HOLE DIA.: 3"		CASING DEPTH: 114.6 ft									
CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone													
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100		
330.2					Ground Surface							330.2	0.0	No sampling from 0.0 to 9.0 feet due to soft dig utility clearance by Dominion Personnel	
321.2	9.0	5	4	7									321.2	9.0	RESIDUAL SOIL: Silty SAND (SM), reddish yellow (7.5YR 6/6), medium dense, moist, fine to coarse grained sand, little mica, relict rock fabric
318.5	11.7	5	5	6											11.7 ft: Very pale brown (10YR 7/3), fine to medium grained sand
316.4	13.8	5	4	7											
311.4	18.8	7	8	8											18.8 ft: Light yellowish brown (10YR 6/4), fine to coarse grained sand
306.4	23.8	8	11	11											23.8 ft: Very pale brown (10YR 7/3)
301.4	28.8	10	15	19											28.8 ft: Pale brown (10YR 6/3), dense, fine to medium grained sand
296.5	33.7	12	15	15											33.7 ft: Brownish yellow (10YR 6/6), medium dense, fine to coarse grained sand
291.5	38.7	19	21	25											38.7 ft: Dense
286.5	43.7	22	41	35											43.7 ft: Very pale brown (10YR 7/3), very dense
281.5	48.7	16	26	31											48.7 ft: Light yellowish brown (10YR 6/4)
276.5	53.7	17	21	50											
271.5	58.7	42	58/0.4												WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (Sampled as Silty SAND (SM), light yellowish brown (10YR 6/4), very dense, moist, fine to coarse grained sand, little mica)
266.5	63.7	37	63/0.4												63.7 ft: Yellowish brown (10YR 5/6)
261.5	68.7	50/0.2													
256.5	73.7	50/0.2													

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: C. Baldwin	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: P. Pitts/J. Tucker		FLUID LEVEL (ft)	
BORING NO.: M-27		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Trailer (RAL)		0 HR. NA	
GROUND ELEV.: 330.2 ft (NAVD88)		NORTHING: 3,909,426 US ft (NAD83)		EASTING: 11,685,938 US ft (NAD83)		24 HR. 34.0	
TOTAL DEPTH: 151.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08			ROD TYPE: AWJ		HAMMER (ID):140-lb. Auto (MEC-425)
DATE STARTED: 9/15/09		COMPLETED: 9/21/09		HOLE DIA.: 3"	CASING DEPTH: 114.6 ft	CORE SIZE: NQ3	BITS USED: 2-7/8" Tri-Cone

ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				
255.4													Continued from previous page
251.5	78.7									50/0.1	SS-16		WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (Sampled as Silty SAND (SM), light yellowish brown (10YR 6/4), very dense, moist, fine to coarse grained sand, little mica) (continued)
243.8	86.4									50/0.2	SS-17		86.4 ft: Pale Yellow (2.5YR 7/3)
239.4	90.8									50/0.3	SS-18		
234.4	95.8									50/0.2	SS-19		95.8 ft: Very pale brown (10YR 7/4)
229.4	100.8		41	59/0.5						100/1.0	SS-20		
224.4	105.8									50/0.1	SS-21		
219.4	110.8									50/0.1	SS-22		
214.4	115.8									100/0.0	SS-23		115.0 ft: Hard Drilling/Bit Chatter; SPT Refusal with no penetration at 115.8 ft
													HARD ROCK: Gray and white to light gray, with orange staining, moderately severely to moderately weathered, very close to close fracturing, medium hard to moderately hard, BIOTITE QUARTZ GNEISS
													HARD ROCK: Gray and white with trace orange staining, moderately to slightly weathered, very close to moderately close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS
													HARD ROCK: Gray and white with trace orange staining, moderately to very slightly weathered, close to moderately close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: C. Baldwin							
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: P. Pitts/J. Tucker		FLUID LEVEL (ft)							
BORING NO.: M-27		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Trailer (RAL)		0 HR. NA							
GROUND ELEV.: 330.2 ft (NAVD88)		NORTHING: 3,909,426 US ft (NAD83)		EASTING: 11,685,938 US ft (NAD83)		24 HR. 34.0							
TOTAL DEPTH: 151.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-425)							
DATE STARTED: 9/15/09		COMPLETED: 9/21/09		HOLE DIA.: 3"		CASING DEPTH: 114.6 ft							
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
180.6					Continued from previous page								
												178.8	151.4
												Boring and coring terminated at 151.4 feet.	
												Boring closed by tremie method with cement-bentonite grout.	
												24 hour water level measured on 9/21/2009 prior to drilling. Borehole was at a depth of 146.4 feet.	

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA	GEOLOGIST: C. Baldwin	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: P. Pitts/J. Tucker		FLUID LEVEL (ft)
BORING NO.: M-27		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Trailer (RAL)		0 HR. NA
GROUND ELEV.: 330.2 ft (NAVD88)		NORTHING: 3,909,426 US ft (NAD83)		EASTING: 11,685,938 US ft (NAD83)		24 HR. 34.0
TOTAL DEPTH: 151.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08			HAMMER (ID): 140-lb. Auto (MEC-425)	
DATE STARTED: 9/15/09		COMPLETED: 9/21/09		CASING DEPTH: 114.6 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 bit

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
										Begin Coring @ 78.8 ft
251.4	78.8	2.8	3:57 3:08	(0.0) 0%	(0.0) 0%	RUN 1	(0.0) 0%	(0.0) 0%	[Hand-drawn log pattern]	WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (Sampled as Silty SAND (SM), light yellowish brown (10YR 6/4), very dense, moist, fine to coarse grained sand, little mica) (continued) (No Recovery) (No Recovery)
248.6	81.6	4.8	2:03/0.8 4:40 4:10 2:42 2:30	(0.0) 0%	(0.0) 0%	RUN 2				
243.8	86.4		2:46/0.8 N=50/0.2			SS-17				86.4 ft: Pale Yellow (2.5YR 7/3)
			N=50/0.3			SS-18				
			N=50/0.2			SS-19				95.8 ft: Very pale brown (10YR 7/4)
			N=100/1.0			SS-20				
			N=50/0.1			SS-21				
			N=50/0.1			SS-22				
										115.0 ft: Hard Drilling/Bit Chatter; SPT Refusal with no penetration at 115.8 ft
214.4	115.8	0.6	N=100/0.0	(0.6)	(0.6)	RUN 3	(3.5) 63%	(2.5) 45%	[Hand-drawn log pattern]	HARD ROCK: Gray and white to light gray, with orange staining, moderately severely to moderately weathered, very close to close fracturing, medium hard to moderately hard, BIOTITE QUARTZ GNEISS (5 joints at 0°, tight; 3 joints at 30°, tight)
213.8	116.4	5.0	1:40/0.6 2:38 1:26 3:47 1:20 2:26	100%	100%	RUN 4				
208.8	121.4	5.0	3:20 4:54 1:25 2:13 3:30	(5.0) 100%	(4.8) 96%	RUN 5	(13.4) 89%	(12.7) 85%		HARD ROCK: Gray and white with trace orange staining, moderately to slightly weathered, very close to moderately close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS (1 joint at 30°, tight; 3 joints at 50°, tight)
203.8	126.4	5.0	3:05 3:24 3:14 2:36 2:35	(5.0) 100%	(4.8) 96%	RUN 6				(1 joint at 20°, tight; 1 joint at 60°, tight)
198.8	131.4	5.0	2:41 3:50 2:00 2:20 2:18	(3.4) 68%	(3.1) 62%	RUN 7				(2 joints at 0°, tight to open; 2 joints at 10-20°, tight)
193.8	136.4	5.0	2:44 2:34 3:15 3:19 3:55	(5.0) 100%	(4.0) 80%	RUN 8	(15.0) 100%	(14.0) 93%		HARD ROCK: Gray and white with trace orange staining, moderately to very slightly weathered, close to moderately close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS (9 joints at 40°, tight; 1 joint at 60°, tight)
188.8	141.4	5.0	4:27 4:45 2:08 4:00 3:00	(5.0) 100%	(5.0) 100%	RUN 9				(1 joint at 20°, open)
183.8	146.4	5.0	3:35 4:18 4:45 6:20 5:50	(5.0) 100%	(5.0) 100%	RUN 10				(2 joints at 20-30°, tight)
178.8	151.4									Boring and coring terminated at 151.4 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/21/2009 prior to drilling. Borehole was at a depth of 146.4 feet.

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



M-27 - Box 1



M-27 - Box 2



GEOTECHNICAL BORING LOG

Prepared By JSS Date 12/09/09

Checked By MAN Date 12/16/09

SHEET 1 OF 3

BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: B. Mabie							
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)							
BORING NO.: M-28		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-45C Track (RAL)		0 HR. NA							
GROUND ELEV.: 308.2 ft (NAVD88)		NORTHING: 3,909,636 US ft (NAD83)		EASTING: 11,685,672 US ft (NAD83)		24 HR. 24.5							
TOTAL DEPTH: 150.0 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-12)							
DATE STARTED: 9/10/09		COMPLETED: 9/13/09		HOLE DIA.: 3"		CASING DEPTH: 21.6 ft							
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
308.2					Ground Surface							308.2 0.0	
300.6	7.6											300.6 7.6	No sampling from 0.0 to 7.6 feet due to soft dig utility clearance by Dominion Personnel
298.1	10.1	5	5	4						SS-1		299.1 9.1	RESIDUAL SOIL: Well Graded SAND (SW), yellowish brown (10YR 5/8), loose, wet, fine to coarse grained sand, trace of organic matter, relict rock fabric
295.4	12.8	6	12	18						SS-2			RESIDUAL SOIL: Silty SAND (SM), brownish yellow (10YR 6/6), medium dense, moist, fine to coarse grained sand, trace mica, relict rock fabric 12.8 ft: Very pale brown (10YR 7/3), dense 15.6 ft: Very dense
292.6	15.6	15	19	25						SS-3			
289.4	18.8	25	47	53/0.4						SS-4			
284.4	23.8	12	10	55						SS-5		287.2 21.0	21.0 ft: Hard drilling
284.0	24.2									SS-6		285.2 23.0	WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS - Not sampled
		50/0.0								SS-7		284.0 24.2	23.0 ft: Very hard drilling HARD ROCK and WEATHERED ROCK: BIOTITE QUARTZ GNEISS (SPT Refusal with no penetration)
		50/0.0											HARD ROCK and WEATHERED ROCK: Light gray to light brown, with orange staining, severely to moderately weathered, with slightly weathered zones, very close to moderately close fracturing, medium hard to moderately hard, BIOTITE QUARTZ GNEISS
												265.2 43.0	HARD ROCK: Light gray with orange staining, slightly weathered to fresh, close fracturing, moderately hard to very hard, BIOTITE QUARTZ GNEISS

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: B. Mabie								
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)								
BORING NO.: M-28		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-45C Track (RAL)		0 HR. NA								
GROUND ELEV.: 308.2 ft (NAVD88)		NORTHING: 3,909,636 US ft (NAD83)		EASTING: 11,685,672 US ft (NAD83)		24 HR. 24.5								
TOTAL DEPTH: 150.0 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-12)								
DATE STARTED: 9/10/09		COMPLETED: 9/13/09		HOLE DIA.: 3"		CASING DEPTH: 21.6 ft								
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone								
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
233.4					Continued from previous page									
												233.2	HARD ROCK: Light to dark gray, moderately to slightly weathered, close fracturing, moderately hard, QUARTZ BIOTITE GNEISS	75.0
												223.2	HARD ROCK: Light gray to gray, with orange staining, moderately to slightly weathered, close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS	85.0
												203.2	HARD ROCK: Light gray to gray, with orange staining, moderately to slightly weathered, close to very close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS with zones of WEATHERED ROCK: BIOTITE QUARTZ GNEISS	105.0
												188.2	HARD ROCK: Gray with orange staining, moderately to very slightly weathered, close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS	120.0

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: B. Mabie						
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)						
BORING NO.: M-28		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-45C Track (RAL)		0 HR. NA						
GROUND ELEV.: 308.2 ft (NAVD88)		NORTHING: 3,909,636 US ft (NAD83)		EASTING: 11,685,672 US ft (NAD83)		24 HR. 24.5						
TOTAL DEPTH: 150.0 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-12)						
DATE STARTED: 9/10/09		COMPLETED: 9/13/09		HOLE DIA.: 3"		CASING DEPTH: 21.6 ft						
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone						
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION
		0.5ft	0.5ft	0.5ft	0	20	40	60	80			
158.6					Continued from previous page							

Boring and coring terminated at 150.0 feet.

Boring closed by tremie method with cement-bentonite grout.

24 hour water level measured on 9/13/2009 prior to drilling. Borehole was at a depth of 115.0 feet.

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: B. Mabie	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)	
BORING NO.: M-28		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-45C Track (RAL)		0 HR. NA	
GROUND ELEV.: 308.2 ft (NAV88)		NORTHING: 3,909,636 US ft (NAD83)		EASTING: 11,685,672 US ft (NAD83)		24 HR. 24.5	
TOTAL DEPTH: 150.0 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-12)	
DATE STARTED: 9/10/09		COMPLETED: 9/13/09		CASING DEPTH: 21.6 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 bit	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	
				REC. (%)	RQD (%)		REC. (%)	RQD (%)			
										Begin Coring @ 24.2 ft	
284.0	24.2	0.8	N=50/0.0	(0.8)	(0.8)	RUN 1	(10.6)	(6.9)		284.0	
283.2	25.0	5.0	1:49/0.8	100%	100%	RUN 2	56%	37%		HARD ROCK and WEATHERED ROCK: Light gray to light brown, with orange staining, severely to moderately weathered, with slightly weathered zones, very close to moderately close fracturing, medium hard to moderately hard, BIOTITE QUARTZ GNEISS	24.2
			2:35	(1.9)	(1.6)					(Several fractures at 80-90°, 1 joint at 70°, open)	
278.2	30.0	5.0	1:31	38%	32%					(3 joints at 30-50°, tight; 1 joint at 80°, tight)	
			0:25								
			1:08								
			1:46	(2.6)	(1.9)	RUN 3					
			2:32	52%	38%						
273.2	35.0	5.0	2:03								
			2:02								
			2:39								
			2:48	(3.4)	(1.8)	RUN 4					
			2:06	68%	36%						(Abundant open fractures 20-60° and 80-90°)
			1:58								
268.2	40.0	5.0	2:15								
			2:00								
			2:30	(1.9)	(0.8)	RUN 5					
265.2	43.0	3.0	2:39	63%	27%						(Abundant open fractures 0-90°)
			6:34								
			2:43	(2.0)	(1.9)	RUN 6	(31.6)	(27.6)			
263.2	45.0	2.0	2:56	100%	95%		99%	86%		265.2	
			3:02	(4.9)	(4.0)	RUN 7					
			2:57	98%	80%						
			3:04								
258.2	50.0	5.0	3:07								
			3:36								
			4:38	(4.8)	(4.7)	RUN 8					
			5:16	96%	94%						
			4:49								
253.2	55.0	5.0	5:18								
			5:23								
			3:46	(5.0)	(5.0)	RUN 9					
			3:43	100%	100%						
			3:49								
248.2	60.0	5.0	4:42								
			5:32								
			5:17	(5.0)	(3.0)	RUN 10					
			5:48	100%	60%						
			7:25								
243.2	65.0	5.0	4:48								
			6:32								
			4:13	(5.0)	(4.2)	RUN 11					
			3:45	100%	84%						
			3:48								
238.2	70.0	5.0	3:50								
			4:39								
			4:06	(3.9)	(3.2)	RUN 12					
			3:09	98%	80%						
			3:34								
234.2	74.0	4.0	3:38								
			4:39								
			3:26	(1.0)	(0.8)	RUN 13					
233.2	75.0	1.0	2:50	100%	80%						
			2:40			RUN 14	(9.0)	(8.4)		75.0	
			2:37	(4.0)	(3.6)		90%	84%			
			2:07	80%	72%						
228.2	80.0	5.0	2:24								
			2:31	(5.0)	(4.8)	RUN 15					
			1:48	100%	96%						
			2:04								
223.2	85.0	5.0	2:21								
			2:16								
			2:33	(4.6)	(4.0)	RUN 16	(18.2)	(15.2)			
			2:54	92%	80%		91%	76%			
			3:26								
218.2	90.0	3.0	2:08								
			2:33								
			2:46	(2.9)	(2.1)	RUN 17					
			2:23	97%	70%						
215.2	93.0	2.0	3:18								
			3:06	(2.0)	(2.0)	RUN 18					
			3:20	100%	100%						
213.2	95.0	2.0	3:17			RUN 19					
			2:57	(5.0)	(4.3)						
			2:50	100%	86%						
			3:12								

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDIT 12/16/09



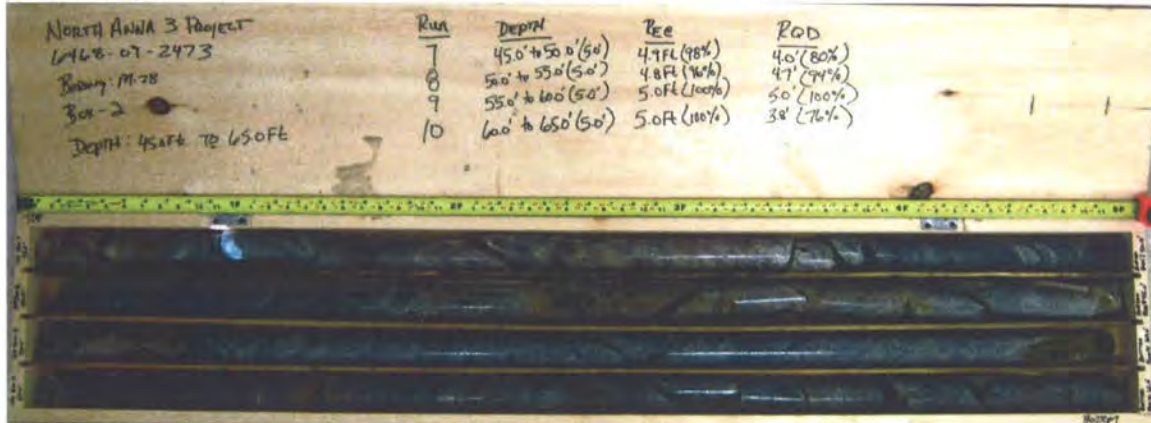
BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: B. Mabie	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. Rhodes/K. Guy		FLUID LEVEL (ft)	
BORING NO.: M-28		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-45C Track (RAL)		0 HR. NA	
GROUND ELEV.: 308.2 ft (NAVD88)		NORTHING: 3,909,636 US ft (NAD83)		EASTING: 11,685,672 US ft (NAD83)		24 HR. 24.5	
TOTAL DEPTH: 150.0 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-12)	
DATE STARTED: 9/10/09		COMPLETED: 9/13/09		CASING DEPTH: 21.6 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 bit	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (%)	RQD (%)		REC. (%)	RQD (%)		
										Continued from previous page
208.2	100.0	5.0	2:37 2:27 2:33 2:11 1:49 2:03	(3.7) 74%	(2.8) 56%	RUN 20				HARD ROCK: Light gray to gray, with orange staining, moderately to slightly weathered, close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS (continued) (6 joints at 50-60°, open)
203.2	105.0	4.6	3:23 2:40 2:35 1:48 3:28/0.6	(2.2) 48%	(1.0) 22%	RUN 21	(7.6) 51%	(3.6) 24%		HARD ROCK: Light gray to gray, with orange staining, moderately to slightly weathered, close to very close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS with zones of WEATHERED ROCK: BIOTITE QUARTZ GNEISS (4 joints at 30-50°, open with trace clay) (6 joints at 30-50°, open)
198.6	109.6	0.4	1:12/0.4	(0.1) 25%	(0.0) 0%	RUN 22				
198.2	110.0	5.0	2:15 1:52 2:33 3:41 4:16	(1.3) 26%	(0.4) 8%	RUN 23				
193.2	115.0	4.0	3:46 3:01 2:37 3:30	(3.5) 88%	(2.2) 55%	RUN 24				(6 joints at 40-50°, tight top open with orange staining and clay; 2 joints at 60°, open with trace clay and orange and brown staining)
189.2	119.0	1.0	3:03	(0.5) 50%	(0.0) 0%	RUN 25				(1 joint at 50°, open with trace orange staining)
188.2	120.0	5.0	2:20 2:55 3:21 3:17 3:12	(4.3) 86%	(3.3) 66%	RUN 26	(29.1) 97%	(26.8) 89%		HARD ROCK: Gray with orange staining, moderately to very slightly weathered, close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS (3 joints at 10-20°, open with trace clay and orange staining; 3 joints at 50-60°, tight to open with clay and orange staining)
183.2	125.0	5.0	2:57 2:41 2:47 2:45 3:23	(4.8) 96%	(4.5) 90%	RUN 27				(3 joints at 10-20°, tight with trace orange staining; 3 joints at 40-50°, tight to open with orange staining; 3 joints at 60-70°, tight to open with trace orange staining)
178.2	130.0	5.0	2:51 3:07 3:17 4:12 3:03	(5.0) 100%	(4.8) 96%	RUN 28				(7 joints at 40-50°, tight to open with trace orange staining)
173.2	135.0	5.0	3:25 3:14 3:23 3:18 3:23	(5.0) 100%	(4.7) 94%	RUN 29				(4 joints at 30-40°, tight to open with orange staining; 2 joints at 60-70°, open to tight with trace clay and brown staining)
168.2	140.0	5.0	3:06 2:56 2:53 2:48 2:45	(5.0) 100%	(4.6) 92%	RUN 30				(5 joints at 20-30°, tight to open with orange staining; 1 joint at 80°, open)
163.2	145.0	5.0	3:03 2:26 3:00 2:49 3:02	(5.0) 100%	(4.9) 98%	RUN 31				(4 joints at 30-40°, tight to open; 2 joints at 80°, tight with trace clay)
158.2	150.0									Boring and coring terminated at 150.0 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/13/2009 prior to drilling. Borehole was at a depth of 115.0 feet.

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/16/09



M-28 - Box 1



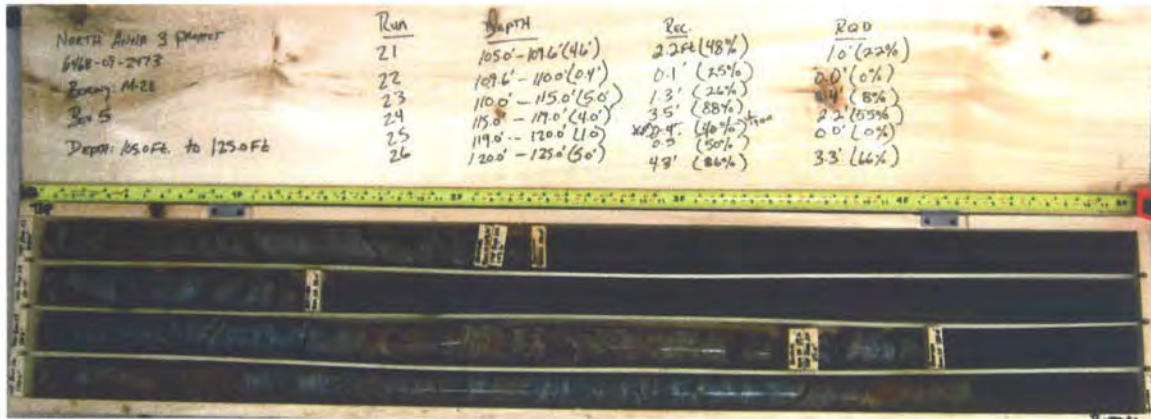
M-28 - Box 2



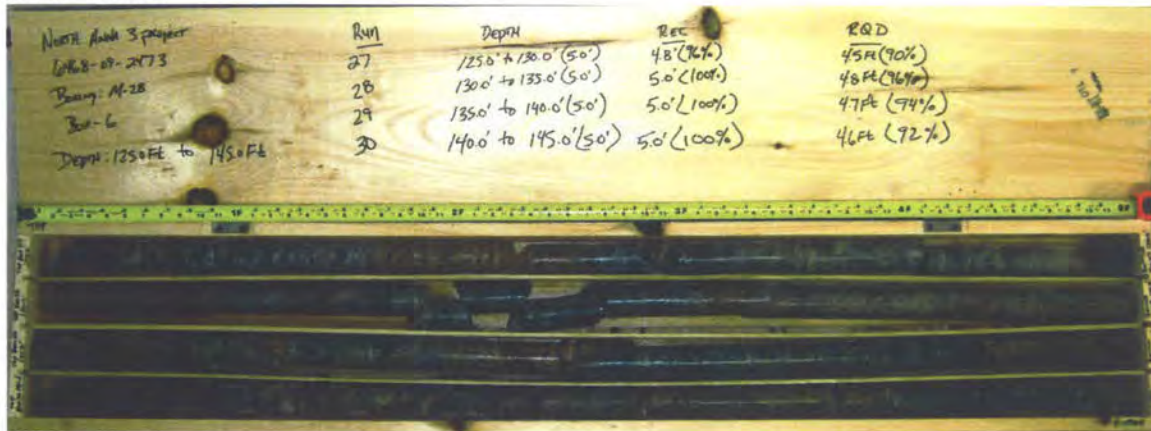
M-28 - Box 3



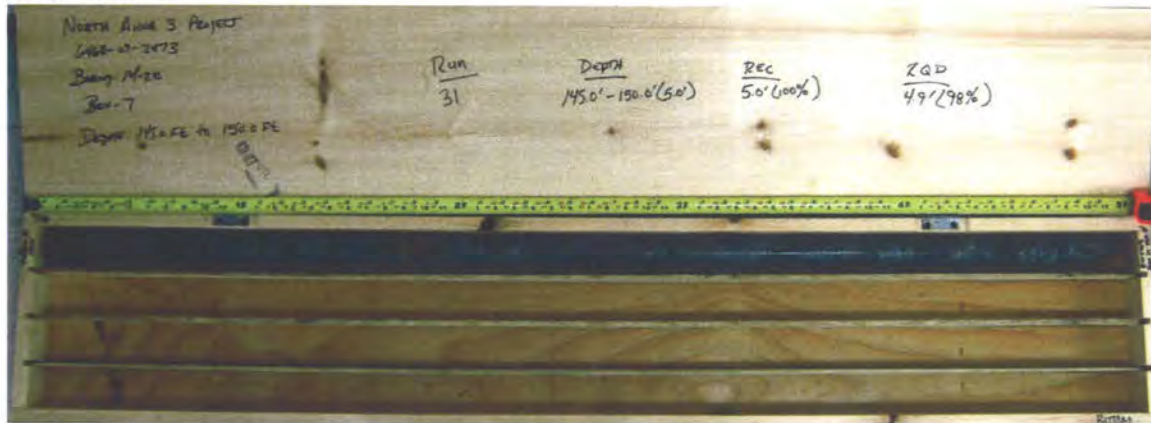
M-28 - Box 4



M-28 - Box 5



M-28 - Box 6



M-28 - Box 7



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi						
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)						
BORING NO.: M-29		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA						
GROUND ELEV.: 309.3 ft (NAVD88)		NORTHING: 3,909,711 US ft (NAD83)		EASTING: 11,685,460 US ft (NAD83)		24 HR. 35.0						
TOTAL DEPTH: 151.2 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID):140-lb. Auto (MEC-05)						
DATE STARTED: 9/21/09		COMPLETED: 9/23/09		HOLE DIA.: 3"		CASING DEPTH: 41.3 ft						
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone						
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION
		0.5ft	0.5ft	0.5ft	0	20	40	60	80			
234.5					Continued from previous page							
												HARD ROCK: Light gray and gray brown, slightly weathered to fresh, close to wide fracturing, moderately hard to very hard, BIOTITE QUARTZ GNEISS with trace magnetite (continued)

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)	
BORING NO.: M-29		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA	
GROUND ELEV.: 309.3 ft (NAVD88)		NORTHING: 3,909,711 US ft (NAD83)		EASTING: 11,685,460 US ft (NAD83)		24 HR. 35.0	
TOTAL DEPTH: 151.2 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-05)	
DATE STARTED: 9/21/09		COMPLETED: 9/23/09		HOLE DIA.: 3"		CASING DEPTH: 41.3 ft	
				CORE SIZE: NQ3		BITS USED: 2-7/8" Tri-Cone	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100		
159.7													Continued from previous page		
													158.1	151.2	Boring and coring terminated at 151.2 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/23/2009 prior to drilling. Borehole was at a depth of 139.2 feet.

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: A. Mwembeshi	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: R. Landeros/D. Reneau		FLUID LEVEL (ft)	
BORING NO.: M-29		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. NA	
GROUND ELEV.: 309.3 ft (NAVD88)		NORTHING: 3,909,711 US ft (NAD83)		EASTING: 11,685,460 US ft (NAD83)		24 HR. 35.0	
TOTAL DEPTH: 151.2 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-05)	
DATE STARTED: 9/21/09		COMPLETED: 9/23/09		CASING DEPTH: 41.3 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 & 10 bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (%)	RQD (%)		REC. (%)	RQD (%)		
										Begin Coring @ 41.3 ft
268.0	41.3	2.9	2:10/0.9 4:03	(2.7) 93%	(2.3) 79%	RUN 1	(12.6) 98%	(11.3) 88%		HARD ROCK: Light gray with brown, moderately to slightly weathered, close to moderately close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS with trace magnetite (continued) (3 joints at 30°, open with trace orange staining; 0.1 ft thick quartz vein with trace pyrite) (4 joints at 30-50°, open with trace clay; 0.4 ft thick quartz vein) (4 joints at 30-50°, open with clay and orange staining) 255.1
265.1	44.2		2:49							
		5.0	3:06 2:24 1:54 2:30 2:29	(4.9) 98%	(4.4) 88%	RUN 2				
260.1	49.2									
		5.0	2:23 2:15 2:09 1:12 2:56	(5.0) 100%	(4.6) 92%	RUN 3				
255.1	54.2									
		5.0	2:13 1:59 2:10 2:18 2:26	(5.0) 100%	(5.0) 100%	RUN 4	(96.7) 100%	(95.8) 99%		
250.1	59.2									
		5.0	3:05 2:59 3:22 3:50 4:30	(4.9) 98%	(4.9) 98%	RUN 5				
245.1	64.2									
		5.0	4:28 4:52 5:45 5:48 8:13	(5.0) 100%	(5.0) 100%	RUN 6				
240.1	69.2									
		5.0	2:52 3:05 3:19 2:20 2:16	(5.0) 100%	(5.0) 100%	RUN 7				
235.1	74.2									
		5.0	2:05 3:18 2:08 2:20 3:18	(5.0) 100%	(5.0) 100%	RUN 8				
230.1	79.2									
		5.0	3:23 4:12 3:04 4:38 3:08	(4.9) 98%	(4.9) 98%	RUN 9				
225.1	84.2									
		5.0	2:04 2:20 2:51 2:58 2:50	(5.0) 100%	(5.0) 100%	RUN 10				
220.1	89.2									
		5.0	3:00 2:12 2:57 1:55 1:54	(5.0) 100%	(4.6) 92%	RUN 11				
215.1	94.2									
		5.0	2:19 2:25 2:14 2:09 2:07	(5.0) 100%	(5.0) 100%	RUN 12				
210.1	99.2									
		5.0	1:50 2:15 2:03 1:59 1:49	(5.0) 100%	(5.0) 100%	RUN 13				
205.1	104.2									
		5.0	1:51 1:30 1:47 2:06 2:18	(5.0) 100%	(5.0) 100%	RUN 14				
200.1	109.2									
		5.0	2:40 2:49 2:40 1:58 2:09	(4.9) 98%	(4.7) 94%	RUN 15				
195.1	114.2									
		5.0	2:46 2:58	(5.0)	(5.0)	RUN 16				

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161	MACTEC PROJECT NO.: 6468-09-2473	COUNTY: Louisa, VA	GEOLOGIST: A. Mwembeshi
SITE DESCRIPTION: North Anna 3 Project Supplement 2		DRILLER: R. Landeros/D. Reneau	FLUID LEVEL (ft)
BORING NO.: M-29	DRILL METHOD: Mud Rotary/Rock Core	DRILL MACHINE: CME-550X (ATL)	0 HR. NA
GROUND ELEV.: 309.3 ft (NAVD88)	NORTHING: 3,909,711 US ft (NAD83)	EASTING: 11,685,460 US ft (NAD83)	24 HR. 35.0
TOTAL DEPTH: 151.2 ft	SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		HAMMER (ID): 140-lb. Auto (MEC-05)
DATE STARTED: 9/21/09	COMPLETED: 9/23/09	CASING DEPTH: 41.3 ft	CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 & 10 bits

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %			
										Continued from previous page	
190.1	119.2		3:57 3:55 3:41	100%	100%					<p>HARD ROCK: Light gray and gray brown, slightly weathered to fresh, close to wide fracturing, moderately hard to very hard, BIOTITE QUARTZ GNEISS with trace magnetite (continued) (0.1 ft thick quartz vein at 121.0 ft)</p> <p>(3 joints at 45°, tight; 0.1 ft thick quartz vein at 127.0 ft)</p> <p>(No Joints)</p> <p>(No Joints)</p> <p>(No Joints)</p> <p>(No Joints)</p> <p>(No Joints)</p> <p>(2 joints at 60-75°, tight with brown staining)</p>	
		5.0	2:20 3:05 2:55 2:18 2:15	(5.0) 100%	(5.0) 100%	RUN 17					
		5.0	2:48 1:46 2:45 3:00 2:45	(5.0) 100%	(5.0) 100%	RUN 18					
		5.0	3:06 5:18 5:29 2:21 2:24	(5.0) 100%	(5.0) 100%	RUN 19					
		5.0	2:37 2:56 4:04 4:56 5:38	(5.0) 100%	(5.0) 100%	RUN 20					
		5.0	7:32 12:18 4:34 3:45 2:20	(5.0) 100%	(5.0) 100%	RUN 21					
		5.0	4:02 3:18 3:55 4:51 5:18	(5.0) 100%	(5.0) 100%	RUN 22					
		2.0	3:30 4:24	(2.0) 100%	(1.7) 85%	RUN 23					
158.1	151.2								158.1		151.2
Boring and coring terminated at 151.2 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/23/2009 prior to drilling. Borehole was at a depth of 139.2 feet.											

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



M-29 - Box 1



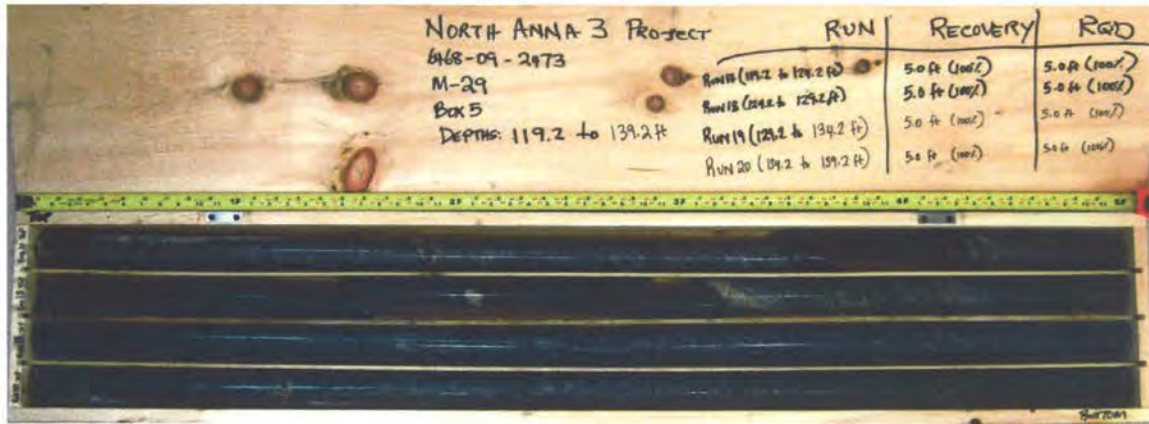
M-29 - Box 2



M-29 - Box 3



M-29 - Box 4



M-29 - Box 5



M-29 - Box 6



BECHTEL PROJECT NO.: 25161	MACTEC PROJECT NO.: 6468-09-2473	COUNTY: Louisa, VA	GEOLOGIST: R. Clark
SITE DESCRIPTION: North Anna 3 Project Supplement 2		DRILLER: T. Hahn/R. Hall	FLUID LEVEL (ft)
BORING NO.: M-30 (DH)	DRILL METHOD: Mud Rotary/Rock Core	DRILL MACHINE: CME-55 Track (RAL)	0 HR. NA
GROUND ELEV.: 313.3 ft (NAVD88)	NORTHING: 3,909,695 US ft (NAD83)	EASTING: 11,685,382 US ft (NAD83)	24 HR. 25.4
TOTAL DEPTH: 201.7 ft	SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08	ROD TYPE: AWJ	HAMMER (ID): 140-lb. Auto (MEC-21)
DATE STARTED: 9/1/09	COMPLETED: 9/9/09	HOLE DIA.: 4"	CASING DEPTH: 42.2 ft
		CORE SIZE: HQ3	BITS USED: 3-7/8" Tri-Cone

ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION
		0.5ft	0.5ft	0.5ft	0	20	40	60	80			
313.3												Ground Surface
304.6	8.7	5	5	5						SS-1		No sampling from 0.0 to 8.7 ft due to soft dig utility clearance by Dominion Personnel
302.2	11.1	4	6	6						SS-2		RESIDUAL SOIL: Silty SAND (SM), yellow (10YR 7/6), loose, moist, fine grained sand, relict rock fabric
299.6	13.7	4	7	7						SS-3		11.1 ft: Reddish yellow (7.5YR 7/6), medium dense 13.7 ft: Yellow (10YR 7/6)
294.6	18.7	6	7	6						SS-4		18.7 ft: Pale yellow (2.5Y 7/4)
289.6	23.7	7	8	10						SS-5		23.7 ft: Fine to coarse grained sand
284.6	28.7	11	14	15						SS-6		28.7 ft: Yellow (10YR 7/6)
279.6	33.7	27	52	49/0.5						SS-7		WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (Sampled as Silty SAND (SM), yellow (10YR 7/6), very dense, moist, fine to coarse grained sand)
274.6	38.7	50/0.5								SS-8		
269.6	43.7	50/0.0								SS-9		43.7 ft: SPT Refusal with no penetration
266.6	46.7									RS-6		HARD ROCK: Light gray, with orange staining, moderately to slightly weathered, close fracturing, hard, BIOTITE QUARTZ GNEISS HARD ROCK: Light gray, with trace pink and white, locally with orange staining, very slightly weathered to fresh, close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS with trace magnetite

NORTH ANNA 3 BORE, NORTH ANNA 3 PROJECT.GPJ, NORTH ANNA 3.GDT, 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: R. Clark	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: T. Hahn/R. Hall		FLUID LEVEL (ft)	
BORING NO.: M-30 (DH)		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Track (RAL)		0 HR. NA	
GROUND ELEV.: 313.3 ft (NAVD88)		NORTHING: 3,909,695 US ft (NAD83)		EASTING: 11,685,382 US ft (NAD83)		24 HR. 25.4	
TOTAL DEPTH: 201.7 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-21)	
DATE STARTED: 9/1/09		COMPLETED: 9/9/09		HOLE DIA.: 4"		CASING DEPTH: 42.2 ft	
				CORE SIZE: HQ3		BITS USED: 3-7/8" Tri-Cone	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION
		0.5ft	0.5ft	0.5ft	0	20	40	60	80			
238.5					Continued from previous page							
												HARD ROCK: Light gray, with trace pink and white, locally with orange staining, very slightly weathered to fresh, close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS with trace magnetite (continued)
											RS-7	
											RS-8	

NORTH ANNA 3 BORE. NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: R. Clark	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: T. Hahn/R. Hall		FLUID LEVEL (ft)	
BORING NO.: M-30 (DH)		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Track (RAL)		0 HR. NA	
GROUND ELEV.: 313.3 ft (NAVD88)		NORTHING: 3,909,695 US ft (NAD83)		EASTING: 11,685,382 US ft (NAD83)		24 HR. 25.4	
TOTAL DEPTH: 201.7 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-21)	
DATE STARTED: 9/1/09		COMPLETED: 9/9/09		CASING DEPTH: 42.2 ft		CORE BARREL TYPE: Wireline HQ3 Triple Tube, series 6 & 10 bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (%)	RQD (%)		REC. (%)	RQD (%)		
										Begin Coring @ 43.7 ft
269.6	43.7	3.0	N=50/0.0 2:01	(3.0) 100%	(1.9) 63%	RUN 1	(3.0) 100%	(1.9) 63%	269.6 266.6	HARD ROCK: Light gray with orange staining, moderately to slightly weathered, close fracturing, hard, BIOTITE QUARTZ GNEISS
266.6	46.7	5.0	2:06 3:12							(5 joints at 0-10°, tight with iron staining; 1 joint at 90°, tight with iron staining)
		5.0	2:26 3:20 3:55 4:19 4:47	(5.0) 100%	(4.7) 94%	RUN 2	(154.2) 99%	(148.9) 96%	269.6 266.6	HARD ROCK: Light gray, with trace pink and white, locally with orange staining, very slightly weathered to fresh, close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS with trace magnetite (1 joint at 0°, tight; 2 joints at 60°, tight with trace iron staining; 1 joint at 90°, tight with iron staining) (2 joints at 10°, tight with trace iron staining; 1 joint at 30°, tight with trace iron staining; 1 joint at 90°, tight with iron staining) (1 joint at 10°, tight with trace mica) Note: RUN 5 to RUN 9 shown together due to short run lengths. Inner core barrel blocking off due to standard size HQ bit installed after RUN 4 completed (mistaken for HQ3 sized bit). Proper sized HQ3 core bit installed after RUN 9 completed. (2 joints at 10°, tight with iron staining; 1 joint at 30°, tight) (3 joints at 30°, tight with trace iron staining) (1 joint at 0°, tight with iron staining) (Coarse grained/pegmatitic zone from 83.4 to 83.7 ft)
261.6	51.7	5.0	5:14 4:24 6:52 5:26 6:57	(5.0) 100%	(4.1) 82%	RUN 3				
		5.0	8:22 8:20 10:41 12:33 15:37	(5.0) 100%	(5.0) 100%	RUN 4 RS-6				
256.6	56.7	5.0								
251.6	61.7	1.3	6:48/0.2 3:09/0.1	(1.3) 100%	(0.0) 0%	RUN 5 RUN 6				
250.3	63.0	3.7	6:24/0.5 4:15/0.2 6:41/0.3	(3.7) 100%	(3.3) 89%	RUN 7 RUN 8 RUN 9				
246.6	66.7	5.0	11:14/0.7 14:29 26:32 31:04	(5.0) 100%	(4.8) 96%	RUN 10 RUN 11				
241.6	71.7	5.0	6:48 4:28 4:22 4:40 2:58	(5.0) 100%	(4.9) 98%	RUN 12				
236.6	76.7	5.0	2:34 2:46 3:11 3:48 2:43	(5.0) 100%	(5.0) 100%	RUN 13				
231.6	81.7	5.0	3:42 3:45 4:58 4:37 4:55	(5.0) 100%	(5.0) 100%	RUN 14				
227.5	85.8	4.1	6:48 10:34 12:19 21:09	(4.1) 100%	(4.1) 100%	RUN 15				
226.6	86.7	0.9	5:58/0.1	(0.8) 89%	(0.8) 89%	RUN 16				
225.2	88.1	1.4	5:25/0.9	(1.4) 100%	(1.4) 100%	RUN 17				
		3.6	12:50 12:34/0.4	(3.6) 100%	(3.6) 100%	RUN 18				
221.6	91.7	5.0	8:05/0.6 4:12 4:31 5:35	(5.0) 100%	(5.0) 100%	RUN 19				
		5.0	2:21 2:35 2:05 1:58 2:35	(5.0) 100%	(5.0) 100%	RS-7				
216.6	96.7	5.0	2:05 2:58 2:32 2:31 2:29	(5.0) 100%	(5.0) 100%	RUN 20				
211.6	101.7	5.0	2:10 2:25 2:31 2:42 3:10	(5.0) 100%	(5.0) 100%	RUN 21				
206.6	106.7	5.0	2:56 2:07 2:54 1:38 1:52	(5.0) 100%	(5.0) 100%	RUN 22				
201.6	111.7	5.0	2:06 2:13 2:32 2:55 2:09	(5.0) 100%	(5.0) 100%	RUN 23				
196.6	116.7	5.0	2:27 2:28	(4.9) (4.9)	(4.9) (4.9)	RUN 23				

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161	MACTEC PROJECT NO.: 6468-09-2473	COUNTY: Louisa, VA	GEOLOGIST: R. Clark
SITE DESCRIPTION: North Anna 3 Project Supplement 2		DRILLER: T. Hahn/R. Hall	FLUID LEVEL (ft)
BORING NO.: M-30 (DH)	DRILL METHOD: Mud Rotary/Rock Core	DRILL MACHINE: CME-55 Track (RAL)	0 HR. NA
GROUND ELEV.: 313.3 ft (NAVD88)	NORTHING: 3,909,695 US ft (NAD83)	EASTING: 11,685,382 US ft (NAD83)	24 HR. 25.4
TOTAL DEPTH: 201.7 ft	SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		HAMMER (ID): 140-lb. Auto (MEC-21)
DATE STARTED: 9/1/09	COMPLETED: 9/9/09	CASING DEPTH: 42.2 ft	CORE BARREL TYPE: Wireline HQ3 Triple Tube, series 6 & 10 bits

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
										Continued from previous page
191.6	121.7		2:35 2:28 2:55	98%	98%					HARD ROCK: Light gray, with trace pink and white, locally with orange staining, very slightly weathered to fresh, close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS with trace magnetite (continued)
		5.0	2:04 3:08 1:19 2:27 1:54	(5.0) 100%	(4.2) 84%	RUN 24				(3 joints at 30°, tight to open with iron staining, moderately weathered zone from 123.7-124.9 ft)
186.6	126.7	5.0	2:28 2:38 2:26 2:38 2:45	(5.0) 100%	(5.0) 100%	RUN 25				(No Joints)
181.6	131.7	5.0	2:38 2:49 3:13 3:13 3:05	(5.0) 100%	(5.0) 100%	RUN 26				(Mechanical Fractures)
176.6	136.7	5.0	3:06 3:22 3:46 4:37 5:01	(5.0) 100%	(5.0) 100%	RUN 27				(1 joint at 45°, tight with trace iron staining; 1 joint at 60°, tight)
171.6	141.7	5.0	7:27 8:37 1:46 2:33 1:42	(4.9) 98%	(4.9) 98%	RUN 28				(1 joint at 75°, tight with trace iron staining)
166.6	146.7	5.0	2:22 2:43 2:45 2:58 2:32	(5.0) 100%	(5.0) 100%	RUN 29				(1 joint at 45°, tight)
161.6	151.7	5.0	3:18 3:12 4:10 5:25 4:41	(5.0) 100%	(4.5) 90%	RUN 30				(2 joints at 80-90°, tight)
156.6	156.7	4.0	2:26 2:38 3:43 5:30	(4.0) 100%	(3.2) 80%	RUN 31				(1 joint at 10°, tight with trace iron staining; 1 joint at 45°, tight)
152.6	160.7	1.0	4:08	(0.6)	(0.6)	RUN 32				(No Joints)
151.6	161.7	5.0	2:57 3:29 3:07 3:29 1:58	60% (4.9) 98%	60% (4.9) 98%	RUN 33				(1 joint at 35°, tight)
146.6	166.7	5.0	2:48 3:18 3:05 2:59 3:28	(5.0) 100%	(4.9) 98%	RUN 34 RS-9				(3 joints at 50°, tight)
141.6	171.7	5.0	2:56 3:22 3:43 4:25 5:13	(5.0) 100%	(5.0) 100%	RUN 35				(No joints; foliation at 45°)
136.6	176.7	5.0	7:22 5:59 6:29 8:07 3:21	(5.0) 100%	(5.0) 100%	RUN 36				(No Joints)
131.6	181.7	5.0	3:08 2:59 3:20 3:34 3:45	(5.0) 100%	(5.0) 100%	RUN 37				(1 joint at 45°, tight with iron staining)
126.6	186.7	5.0	4:01 4:22 4:33 4:46 5:21	(5.0) 100%	(5.0) 100%	RUN 38				(1 joint at 45°, tight with trace iron staining)
121.6	191.7	5.0	4:49	(5.0)	(5.0)	RUN 39				(No Joints)

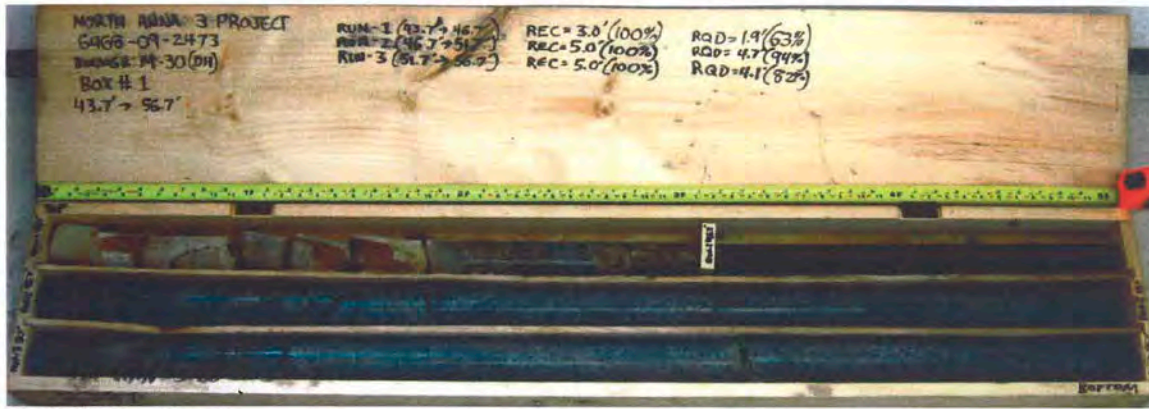
NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



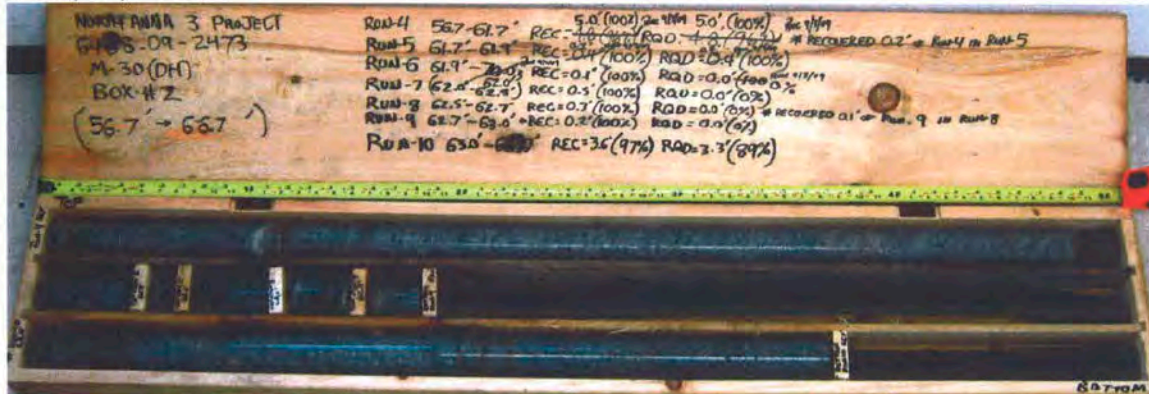
BECHTEL PROJECT NO.: 25161	MACTEC PROJECT NO.: 6468-09-2473	COUNTY: Louisa, VA	GEOLOGIST: R. Clark
SITE DESCRIPTION: North Anna 3 Project Supplement 2		DRILLER: T. Hahn/R. Hall	FLUID LEVEL (ft)
BORING NO.: M-30 (DH)	DRILL METHOD: Mud Rotary/Rock Core	DRILL MACHINE: CME-55 Track (RAL)	0 HR. NA
GROUND ELEV.: 313.3 ft (NAVD88)	NORTHING: 3,909,695 US ft (NAD83)	EASTING: 11,685,382 US ft (NAD83)	24 HR. 25.4
TOTAL DEPTH: 201.7 ft	SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		HAMMER (ID): 140-lb. Auto (MEC-21)
DATE STARTED: 9/1/09	COMPLETED: 9/9/09	CASING DEPTH: 42.2 ft	CORE BARREL TYPE: Wireline HQ3 Triple Tube, series 6 & 10 bits

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
										Continued from previous page
116.6	196.7	5.0	4:52 3:05 3:08 3:28	100%	100%					HARD ROCK: Light gray, with trace pink and white, locally with orange staining, very slightly weathered to fresh, close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS with trace magnetite (continued) (No Joints)
			3:35 2:28 2:36 3:42 3:25	(5.0) 100%	(5.0) 100%	RUN 40 RS-10				
111.6	201.7								111.6	201.7
Boring and coring terminated at 201.7 feet.										
Boring closed by tremie method with cement-bentonite grout.										
24 hour water level measured on 9/09/2009 prior to drilling. Borehole was at a depth of 171.5 feet.										

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



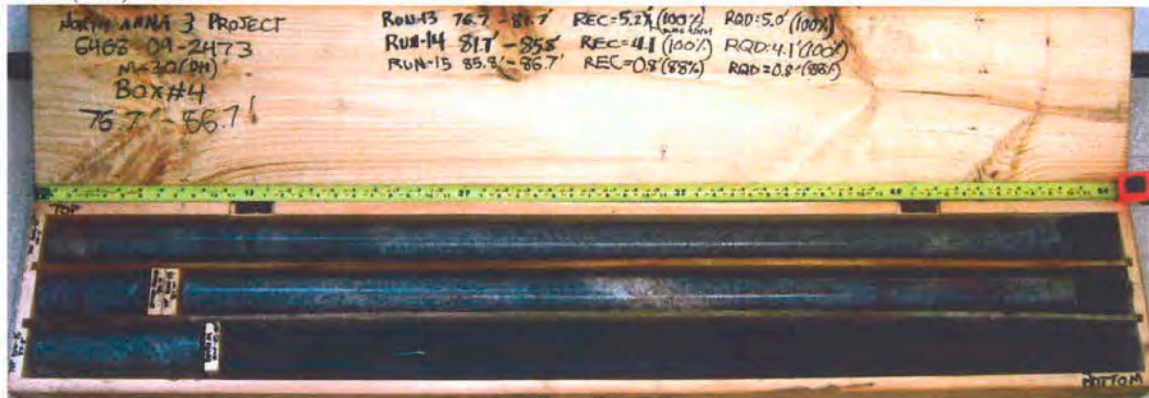
M-30(DH) - Box 1



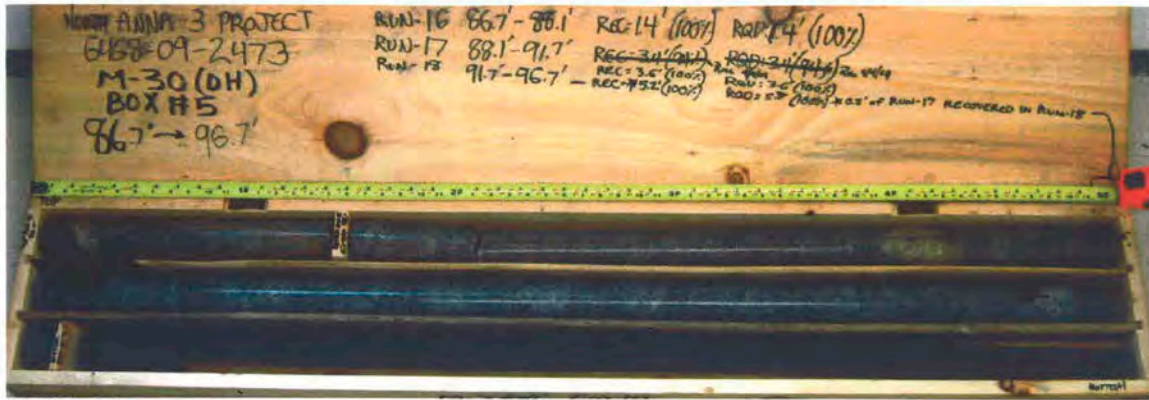
M-30(DH) - Box 2



M-30(DH) - Box 3



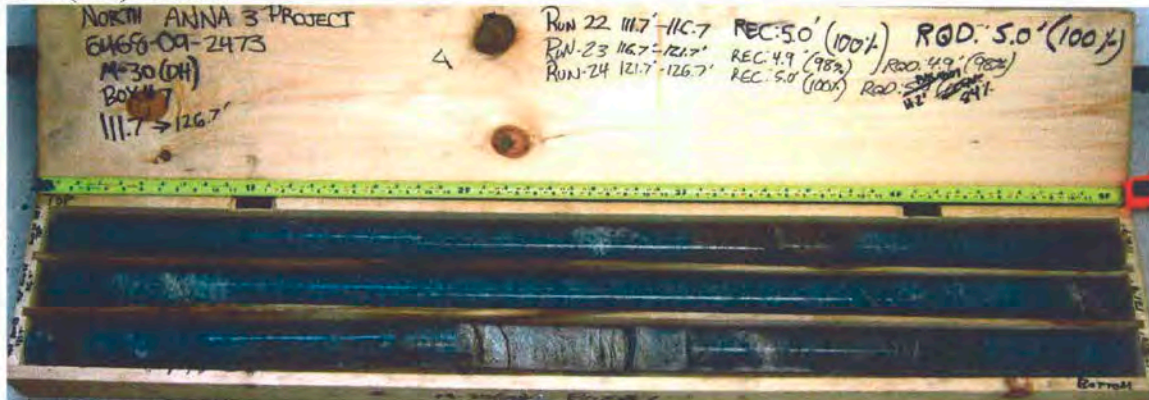
M-30(DH) - Box 4



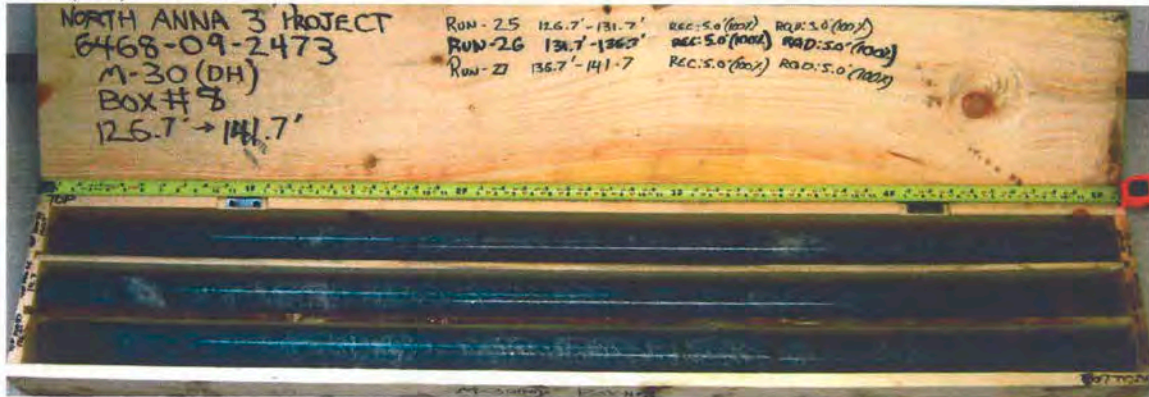
M-30(DH) - Box 5



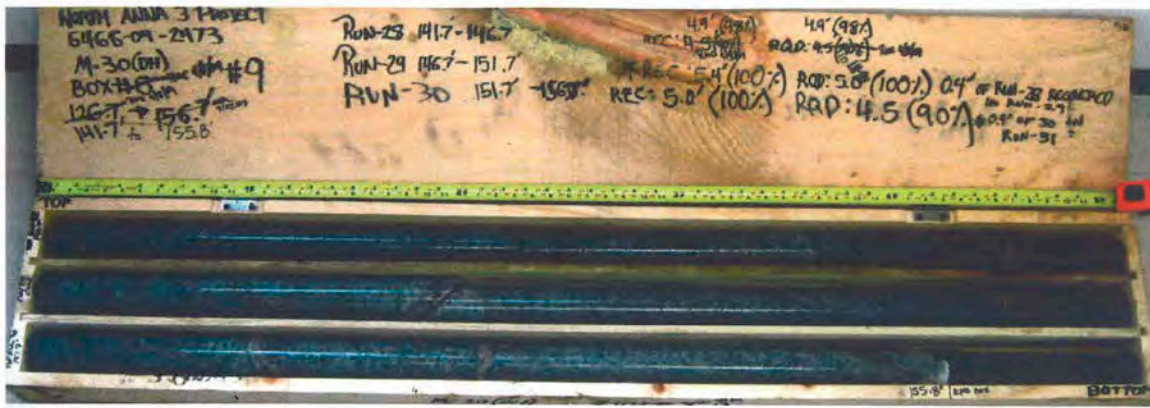
M-30(DH) - Box 6



M-30(DH) - Box 7



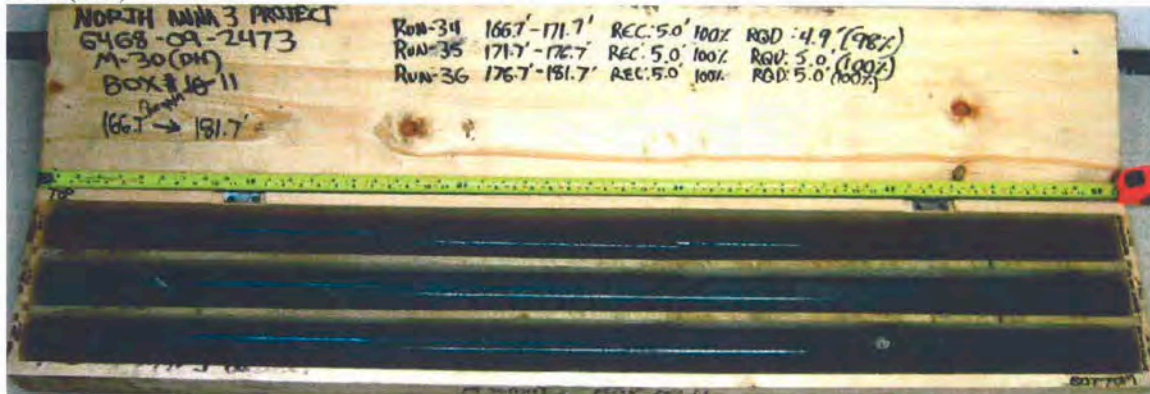
M-30(DH) - Box 8



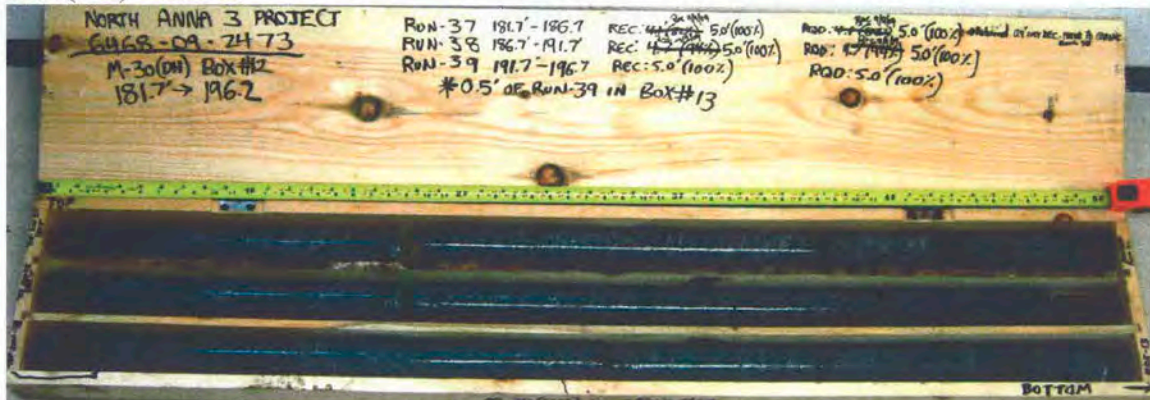
M-30(DH) – Box 9



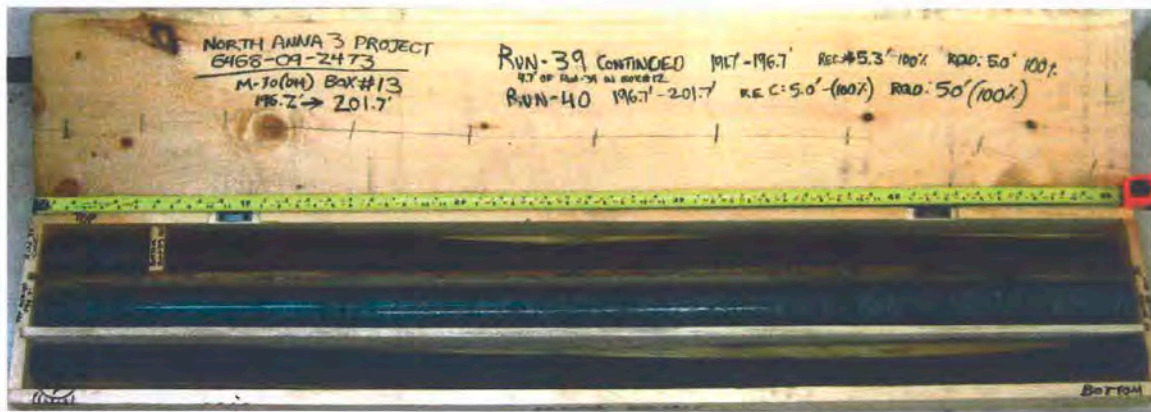
M-30(DH) – Box 10



M-30(DH) – Box 11



M-30(DH) – Box 12



M-30(DH) – Box 13



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: R. Clark							
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: T. Hahn/R. Hall		FLUID LEVEL (ft)							
BORING NO.: M-31		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Track (RAL)		0 HR. NA							
GROUND ELEV.: 306.9 ft (NAVD88)		NORTHING: 3,909,799 US ft (NAD83)		EASTING: 11,685,460 US ft (NAD83)		24 HR. 27.8							
TOTAL DEPTH: 151.5 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-21)							
DATE STARTED: 9/10/09		COMPLETED: 9/16/09		HOLE DIA.: 4"		CASING DEPTH: 59.0 ft							
				CORE SIZE: HQ3		BITS USED: 3-7/8" Tri-Cone							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
232.1					Continued from previous page								
													HARD ROCK: Light gray with trace pink and dark gray, fresh, close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS with trace magnetite (continued)

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473			COUNTY: Louisa, VA		GEOLOGIST: R. Clark							
SITE DESCRIPTION: North Anna 3 Project Supplement 2					DRILLER: T. Hahn/R. Hall			FLUID LEVEL (ft)						
BORING NO.: M-31		DRILL METHOD: Mud Rotary/Rock Core			DRILL MACHINE: CME-55 Track (RAL)			0 HR. NA						
GROUND ELEV.: 306.9 ft (NAVD88)		NORTHING: 3,909,799 US ft (NAD83)		EASTING: 11,685,460 US ft (NAD83)		24 HR. 27.8								
TOTAL DEPTH: 151.5 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08			ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-21)							
DATE STARTED: 9/10/09		COMPLETED: 9/16/09		HOLE DIA.: 4"	CASING DEPTH: 59.0 ft		CORE SIZE: HQ3	BITS USED: 3-7/8" Tri-Cone						
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
157.3					Continued from previous page									
												155.4	151.5	Boring and coring terminated at 151.5 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/16/2009 prior to drilling. Borehole was at a depth of 141.5 feet.

NORTH ANNA 3 BORE, NORTH ANNA 3 PROJECT.GPJ, NORTH ANNA 3.GDT, 12/4/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: R. Clark	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: T. Hahn/R. Hall		FLUID LEVEL (ft)	
BORING NO.: M-31		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Track (RAL)		0 HR. NA	
GROUND ELEV.: 306.9 ft (NAVD88)		NORTHING: 3,909,799 US ft (NAD83)		EASTING: 11,685,460 US ft (NAD83)		24 HR. 27.8	
TOTAL DEPTH: 151.5 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-21)	
DATE STARTED: 9/10/09		COMPLETED: 9/16/09		CASING DEPTH: 59.0 ft		CORE BARREL TYPE: Wireline HQ3 Triple Tube, series 6 & 10 bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (%)	RQD (%)		REC. (%)	RQD (%)		
										Begin Coring @ 59.0 ft
247.9	59.0	2.5	N=50/0.0 3:01 3:21	(2.5) 100%	(1.3) 52%	RUN 1	(7.5) 100%	(6.3) 84%	[Pattern]	HARD ROCK: Light gray with orange staining, slightly to very slightly weathered, moderately close fracturing, moderately hard to hard, BIOTITE QUARTZ GNEISS (continued) (3 joints at 10°, tight with iron staining; 2 joints at 80°, tight) (2 joints at 0°, tight to open with iron staining; 1 joint at 45°, tight)
245.4	61.5	5.0	1:51/0.5 3:02 3:05 4:09 2:23 2:54	(5.0) 100%	(5.0) 100%	RUN 2				
240.4	66.5	2.3	3:49 8:32 421/0.3	(2.3) 100%	(2.3) 100%	RUN 3	(84.6) 100%	(83.0) 98%	[Pattern]	HARD ROCK: Light gray with trace pink and dark gray, fresh, close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS with trace magnetite (No Joints) (No Joints)
238.1	68.8	2.7	3:08/0.7 3:35 3:42	(2.7) 100%	(2.7) 100%	RUN 4			[Pattern]	(1 joint at 15°, tight with trace iron staining)
235.4	71.5	5.0	3:21 3:33 3:28 3:33 2:45	(5.0) 100%	(5.0) 100%	RUN 5			[Pattern]	(No Joints)
230.4	76.5	3.0	3:38 4:14 5:05	(3.0) 100%	(3.0) 100%	RUN 6			[Pattern]	(No Joints)
227.4	79.5	2.0	3:58 4:54	(1.7) 85%	(1.7) 85%	RUN 7			[Pattern]	(2 joints at 30°, tight top open with iron staining)
225.4	81.5	5.0	4:45 5:15 4:15 3:05 4:01	(5.0) 100%	(3.7) 74%	RUN 8			[Pattern]	(2 joints at 0°, tight with iron staining; 2 joints at 90°, tight)
220.4	86.5	5.0	4:17 3:33 3:33 3:41 4:05	(5.0) 100%	(4.7) 94%	RUN 9			[Pattern]	(1 joint at 30°, tight; 1 joint at 45°, open with iron staining; 1 joint at 75°, open with iron staining)
215.4	91.5	5.0	6:12 6:51 3:05 3:11 3:18	(5.0) 100%	(5.0) 100%	RUN 10			[Pattern]	(1 joint at 0°, open)
210.4	96.5	5.0	2:45 3:04 2:55 3:59 4:01	(5.0) 100%	(5.0) 100%	RUN 11			[Pattern]	(1 joint at 90°, tight)
205.4	101.5	5.0	3:04 3:55 3:56 4:27 4:55	(5.0) 100%	(5.0) 100%	RUN 12			[Pattern]	(No Joints)
200.4	106.5	5.0	5:46 7:12 3:52 3:12 3:24	(5.0) 100%	(5.0) 100%	RUN 13			[Pattern]	(Pegmatitic quartz + feldspar vein at 108.5 ft)
195.4	111.5	5.0	2:29 2:33 2:45 3:01 3:08	(5.0) 100%	(5.0) 100%	RUN 14			[Pattern]	(No Joints)
190.4	116.5	5.0	3:05 3:33 4:04 4:18 4:22	(5.0) 100%	(5.0) 100%	RUN 15			[Pattern]	(3 joints at 0°, tight with iron staining and slight weathering)
185.4	121.5	5.0	4:18 4:22 2:35 2:28 2:01	(5.0) 100%	(5.0) 100%	RUN 16			[Pattern]	(2 joints at 0°, tight; 1 joint at 20°, tight; 2 joints at 85-90°, tight with iron staining; pegmatitic quartz + feldspar vein at 30° at end of run)
180.4	126.5	5.0	2:58 3:05 2:02 2:33 2:55	(5.0) 100%	(5.0) 100%	RUN 17			[Pattern]	(No Joints)
175.4	131.5	5.0	2:25 2:33	(5.0) 100%	(5.0) 100%	RUN 18			[Pattern]	(No Joints)

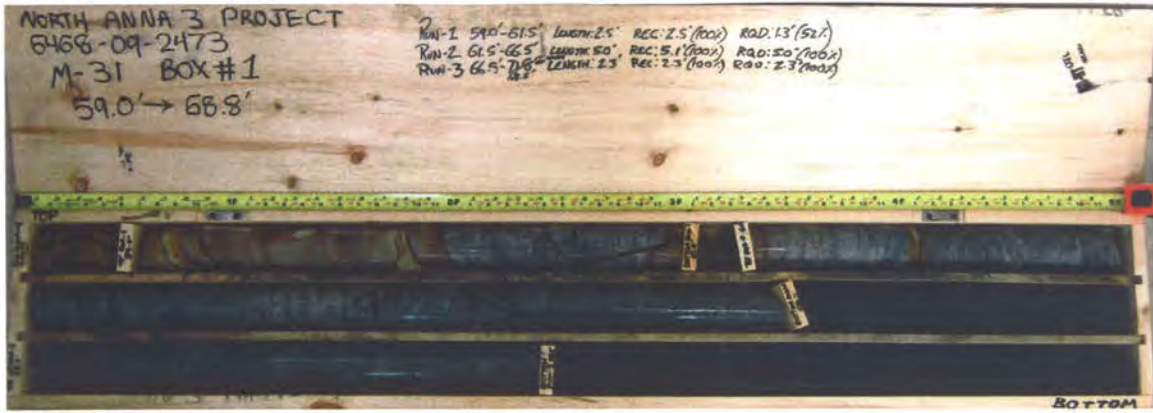
NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



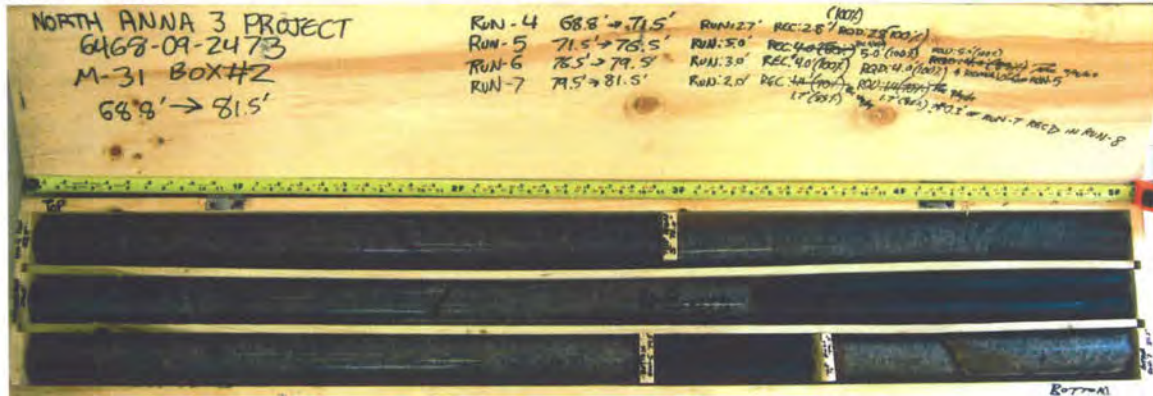
BECHTEL PROJECT NO.: 25161	MACTEC PROJECT NO.: 6468-09-2473	COUNTY: Louisa, VA	GEOLOGIST: R. Clark
SITE DESCRIPTION: North Anna 3 Project Supplement 2		DRILLER: T. Hahn/R. Hall	FLUID LEVEL (ft)
BORING NO.: M-31	DRILL METHOD: Mud Rotary/Rock Core	DRILL MACHINE: CME-55 Track (RAL)	0 HR. NA
GROUND ELEV.: 306.9 ft (NAVD88)	NORTHING: 3,909,799 US ft (NAD83)	EASTING: 11,685,460 US ft (NAD83)	24 HR. 27.8
TOTAL DEPTH: 151.5 ft	SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		HAMMER (ID): 140-lb. Auto (MEC-21)
DATE STARTED: 9/10/09	COMPLETED: 9/16/09	CASING DEPTH: 59.0 ft	CORE BARREL TYPE: Wireline HQ3 Triple Tube, series 6 & 10 bits

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
			3:05 3:30 3:36							Continued from previous page
170.4	136.5	5.0	4:57 2:28 2:45 2:41 2:33	(5.0) 100%	(5.0) 100%	RUN 19				HARD ROCK: Light gray with trace pink and dark gray, fresh, close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS with trace magnetite (continued) (Pegmatitic quartz + feldspar + calcite vein at 137.0 feet)
165.4	141.5	5.0	2:30 2:34 3:02 3:09 3:40	(4.9) 98%	(4.9) 98%	RUN 20				(Quartz vein with pyrite at 45° at top of run)
160.4	146.5	5.0	2:34 2:44 2:50 3:24 3:42	(5.0) 100%	(5.0) 100%	RUN 21				(No Joints)
155.4	151.5									155.4
Boring and coring terminated at 151.5 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/16/2009 prior to drilling. Borehole was at a depth of 141.5 feet.										

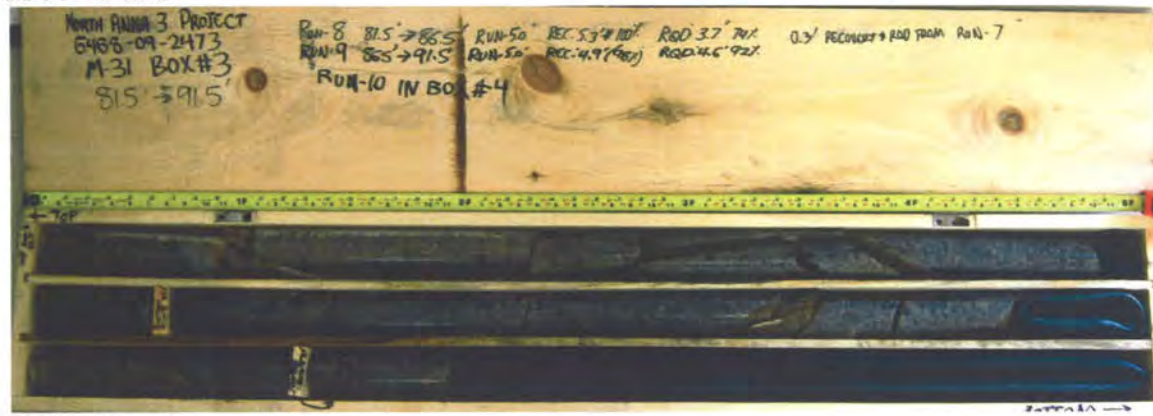
NORTH ANNA 3 CORE, NORTH ANNA 3 PROJECT.GPJ, NORTH ANNA 3.GDT, 12/4/09



M-31 - Box 1



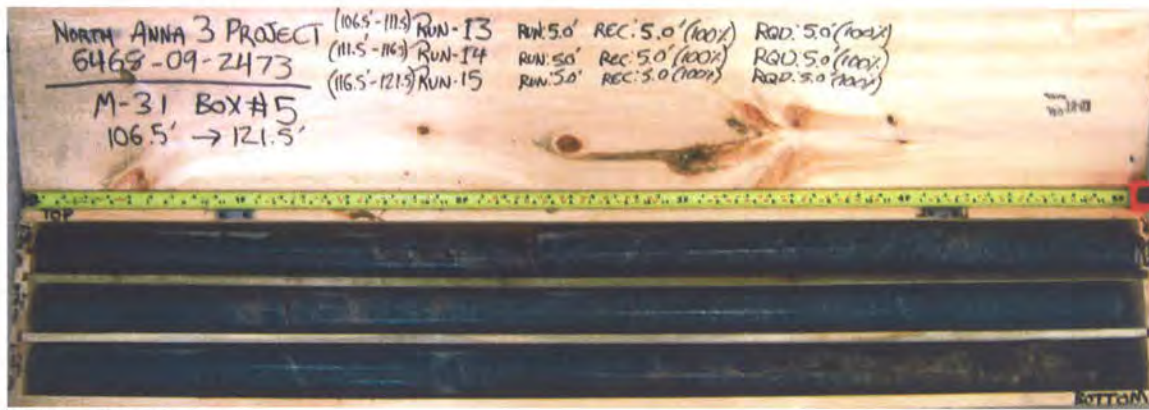
M-31 - Box 2



M-31 - Box 3



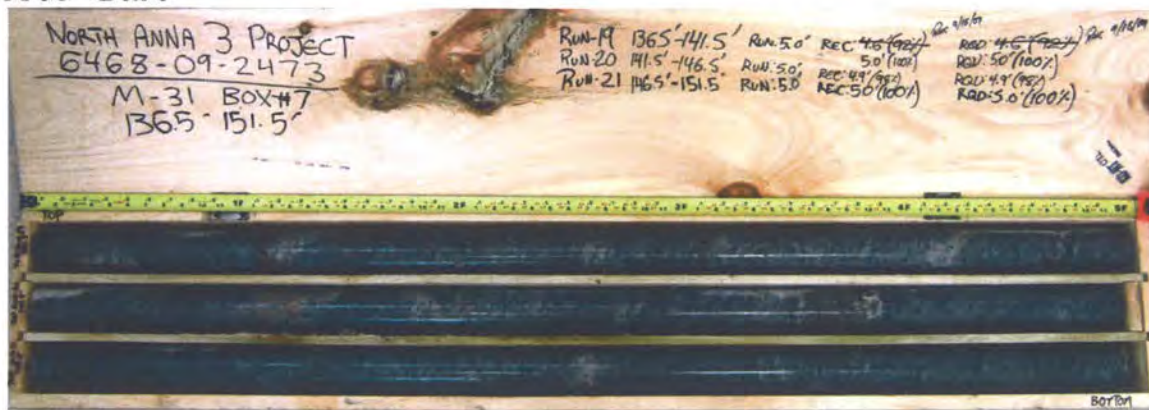
M-31 - Box 4



M-31 - Box 5



M-31 - Box 6



M-31 - Box 7



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: R. Clark										
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: F. Cox/R. Hall		FLUID LEVEL (ft)										
BORING NO.: M-32		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Track (RAL)		0 HR. 25.5										
GROUND ELEV.: 313.2 ft (NAVD88)		NORTHING: 3,909,876 US ft (NAD83)		EASTING: 11,685,527 US ft (NAD83)		24 HR. 32.5										
TOTAL DEPTH: 62.2 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-21)										
DATE STARTED: 9/28/09		COMPLETED: 9/28/09		HOLE DIA.: 4"		CASING DEPTH: 9.6 ft										
CORE SIZE: NQ3		BITS USED: 3-7/8" Tri-Cone														
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION				
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100			
313.2					Ground Surface							313.2	0.0			
														No sampling from 0.0 to 9.6 feet due to soft dig utility clearance by Dominion Personnel		
303.6	9.6													303.6	9.6	RESIDUAL SOIL: Sandy SILT (ML), reddish yellow (5YR 6/6), medium stiff, moist, fine grained sand, some mica, relict rock fabric
301.2	12.0	3	3	3							SS-1					
298.8	14.4	2	2	3							SS-2					
		2	2	4							SS-3					14.4 ft: Yellowish red (5YR 5/8)
294.6	18.6	1	2	3							SS-4					
289.5	23.7	1	2	2							SS-5					23.7 ft: Yellow red (5YR 5/6), soft, few mica
284.6	28.6	2	2	4							SS-6					RESIDUAL SOIL: Silty SAND (SM), yellowish red (5YR 5/6), loose, moist, fine grained sand, some mica, relict rock fabric
279.6	33.6	2	2	3							SS-7					33.6 ft: Wet, few mica
274.6	38.6	2	4	6							SS-8					38.6 ft: Yellowish brown (10YR 5/4) with very dark gray (10YR 3/1) streaks, moist to wet, some mica
269.6	43.6	3	6	8							SS-9					43.6 ft: Olive gray (5Y 5/2), medium dense, wet
264.6	48.6	11	28	50/0.3							SS-10					WEATHERED ROCK: Severely weathered BIOTITE QUARTZ GNEISS (Sampled as Silty SAND (SM), olive gray (5Y 5/2) to olive (5Y 5/3), very dense, wet, fine to medium grained sand, some mica, few quartz fragments)
259.6	53.6			50/0.3							SS-11					
256.0	57.2			50/0.0							SS-12					57.2 ft: SPT Refusal with no penetration HARD ROCK: Light gray, slightly weathered to fresh, moderately close fracturing, very hard, BIOTITE QUARTZ GNEISS
																Boring and coring terminated at 62.2 feet. Boring closed by tremie method with cement-bentonite grout.
																62.2

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: R. Clark	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: F. Cox/R. Hall		FLUID LEVEL (ft)	
BORING NO.: M-32		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-55 Track (RAL)		0 HR. 25.5	
GROUND ELEV.: 313.2 ft (NAVD88)		NORTHING: 3,909,876 US ft (NAD83)		EASTING: 11,685,527 US ft (NAD83)		24 HR. 32.5	
TOTAL DEPTH: 62.2 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-21)	
DATE STARTED: 9/28/09		COMPLETED: 9/28/09		CASING DEPTH: 9.6 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 6 bit	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
										Begin Coring @ 57.2 ft
256.0	57.2	5.0	N=50/0.0 1:20 2:50 3:11 2:36 3:45	(3.9) 78%	(3.7) 74%	RUN 1	(3.9) 78%	(3.7) 74%		256.0 HARD ROCK: Light gray, slightly weathered to fresh, moderately close fracturing, very hard, BIOTITE QUARTZ GNEISS (4 joints at 10°, tight with iron staining) 57.2
251.0	62.2									251.0 Boring and coring terminated at 62.2 feet. 62.2 Boring closed by tremie method with cement-bentonite grout.

NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



M-32 - Box 1



GEOTECHNICAL BORING LOG

Prepared By JSS Date 12/16/09

Checked By MRK Date 12/16/09

SHEET 1 OF 1

BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: K. Lloyd										
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. White/O. Smith		FLUID LEVEL (ft)										
BORING NO.: M-33		DRILL METHOD: Mud Rotary		DRILL MACHINE: CME-55LC Track (RAL)		0 HR. ND										
GROUND ELEV.: 303.8 ft (NAVD88)		NORTHING: 3,909,984 US ft (NAD83)		EASTING: 11,685,615 US ft (NAD83)		24 HR. ND										
TOTAL DEPTH: 64.9 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID): 140-lb. Auto (MEC-02)										
DATE STARTED: 9/28/09		COMPLETED: 9/28/09		HOLE DIA.: 4"		CASING DEPTH: 8.7 ft										
				CORE SIZE: NA		BITS USED: 3-7/8" Tri-Cone										
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION				
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100			
303.8					Ground Surface							303.8	0.0			
														No sampling from 0.0 to 9.1 feet due to soft dig utility clearance by Dominion Personnel		
294.7	9.1	2	3	3										294.7	9.1	RESIDUAL SOIL: SILT with Sand (ML), yellowish red (5YR 5/8), medium stiff, moist, fine grained sand, some mica, little to some black staining, relict rock fabric
292.3	11.5	2	2	3												
289.7	14.1	2	3	3												
284.6	19.2	2	3	5												
279.7	24.1	3	5	6										281.8	22.0	RESIDUAL SOIL: Silty SAND (SM), medium dense, moist, fine grained sand, some mica, relict rock fabric
274.7	29.1	4	5	6										279.0	24.8	RESIDUAL SOIL: SILT with Sand (ML), yellowish red (5YR 5/8), stiff, moist, fine grained sand, some mica, relict rock fabric 29.1 ft: Dark greenish gray (10GY 4/1)
269.7	34.1	5	8	10										271.8	32.0	RESIDUAL SOIL: Sandy SILT (ML), dark greenish gray (10GY 4/1), very stiff, moist, fine grained sand, some mica, relict rock fabric
264.7	39.1	10	13	16												39.1 ft: Very dark greenish gray (5GY 5/1) and dark yellowish brown (10YR 4/6), fine to coarse grained sand
259.7	44.1	28	50/0.5											261.8	42.0	42.0 ft: Hard Drilling WEATHERED ROCK: Severely weathered BIOTITE GNEISS (Sampled as Silty SAND (SM), very dark greenish gray (5GY 3/1), very dense, moist, fine to coarse grained sand, some mica, relict rock fabric)
254.7	49.1	36	50/0.3													49.1 ft: Severely weathered BIOTITE GNEISS (Sampled as Sandy SILT (ML), very dark greenish gray (5GY 3/1), hard, moist, fine to coarse grained sand, some mica, relict rock fabric)
249.7	54.1	41	50/0.3													59.1 ft: Severely weathered BIOTITE GNEISS (Sampled as Silty SAND (SM), black (10YR 2/1), very dense, moist, fine to coarse grained sand, some mica, relict rock fabric)
244.7	59.1	59	41/0.1													
239.7	64.1	44	50/0.3													Boring terminated at 64.9 feet.
																Boring closed by tremie method with cement-bentonite grout.
																No 24 HR fluid level because boring grouted same day boring drilled.

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/4/09



GEOTECHNICAL BORING LOG

Prepared By JSS Date 12/16/09

Checked By MAN Date 12/16/09

SHEET 1 OF 1

BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: K. Lloyd							
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. White/O. Smith		FLUID LEVEL (ft)							
BORING NO.: M-34		DRILL METHOD: Mud Rotary		DRILL MACHINE: CME-55LC Track (RAL)		0 HR. NA							
GROUND ELEV.: 280.9 ft (NAVD88)		NORTHING: 3,910,122 US ft (NAD83)		EASTING: 11,685,736 US ft (NAD83)		24 HR. 13.0							
TOTAL DEPTH: 63.0 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		ROD TYPE: AWJ		HAMMER (ID):140-lb. Auto (MEC-02)							
DATE STARTED: 9/28/09		COMPLETED: 9/29/09		HOLE DIA.: 4"		CASING DEPTH: 8.7 ft							
				CORE SIZE: HQ3		BITS USED: 3-7/8" Tri-Cone							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
280.9					Ground Surface							280.9 0.0	
													No sampling from 0.0 to 11.1 feet due to soft dig utility clearance by Dominion Personnel
269.8	11.1												RESIDUAL SOIL: SILT with Sand (ML), dark yellowish brown (10YR 3/6), stiff, moist, fine to coarse grained sand, some mica, relict rock fabric
267.3	13.6	3	4	5									RESIDUAL SOIL: Sandy SILT with Gravel (ML), brownish yellow (10YR 6/8), medium stiff, moist, fine to coarse grained sand, little gravel sized rock fragments, some mica
262.1	18.8	2	3	4									RESIDUAL SOIL: Sandy SILT (ML), dark yellowish brown (10YR 3/6) and black (10YR 2/1), very stiff, moist, fine grained sand, some mica, relict rock fabric
257.1	23.8	7	9	11									
252.1	28.8	4	6	10									
247.1	33.8	12	25	47									28.8 ft: Dark yellowish brown (10YR 3/6) and very dark greenish gray (10GY 3/1), hard
242.1	38.8	27	50/0.5										WEATHERED ROCK: Severely weathered BIOTITE GNEISS (Sampled as Sandy SILT (ML), very dark greenish gray (10GY 3/1), hard, moist, fine grained sand, some mica, relict rock fabric)
237.0	43.9	25	50/0.4										
		50/0.2											HARD ROCK and WEATHERED ROCK: Black, severely to moderately severely weathered, close fracturing, soft to medium hard, BIOTITE GNEISS
													HARD ROCK: Black, moderately severe to slightly weathered, close to moderately close fracturing, moderately hard to hard, BIOTITE GNEISS
													Boring and coring terminated at 63.0 feet.
													Boring closed by tremie method with cement-bentonite grout.
													24 hour water level measured on 9/29/2009 prior to drilling. Borehole was at a depth of 44.0 feet.

NORTH ANNA 3 BORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/16/09



BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: K. Lloyd	
SITE DESCRIPTION: North Anna 3 Project Supplement 2				DRILLER: D. White/O. Smith		FLUID LEVEL (ft)	
BORING NO.: M-34		DRILL METHOD: Mud Rotary		DRILL MACHINE: CME-55LC Track (RAL)		0 HR. NA	
GROUND ELEV.: 280.9 ft (NAVD88)		NORTHING: 3,910,122 US ft (NAD83)		EASTING: 11,685,736 US ft (NAD83)		24 HR. 13.0	
TOTAL DEPTH: 63.0 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb. Auto (MEC-02)	
DATE STARTED: 9/28/09		COMPLETED: 9/29/09		CASING DEPTH: 8.7 ft		CORE BARREL TYPE: Wireline HQ3 Triple Tube, series 6 bit	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
				REC. (ft) %	ROD (ft) %		REC. (ft) %	ROD (ft) %		
										Begin Coring @ 44.0 ft
236.9	44.0	4.0	0:26 1:30 1:54 1:46	(1.8) 45%	(0.5) 13%	RUN 1	(4.3) 48%	(2.5) 28%		HARD ROCK and WEATHERED ROCK: Black, severely to moderately severely weathered, close fracturing, soft to medium hard, BIOTITE GNEISS (continued) (Several joints at 0-10°, open) (3 joints at 0-10°, open; 1 joint at 20°, open)
232.9	48.0	5.0	1:42 2:15 2:12 2:14 1:30	(2.5) 50%	(2.0) 40%	RUN 2				
227.9	53.0	5.0	2:13 2:39 2:17 2:27 2:06	(4.3) 86%	(3.7) 74%	RUN 3	(9.1) 91%	(7.5) 75%		HARD ROCK: Black, moderately severe to slightly weathered, close to moderately close fracturing, moderately hard to hard, BIOTITE GNEISS (5 joints at 50-60°, tight to open)
222.9	58.0	2.0	4:23 10:41	(1.8) 90%	(1.0) 50%	RUN 4				(1 joint at 60°, open)
220.9	60.0	3.0	2:04 1:58 2:15	(3.0) 100%	(2.8) 93%	RUN 5				(2 joints at 0-10°, open; 1 joint at 70°, tight)
217.9	63.0									Boring and coring terminated at 63.0 feet. Boring closed by tremie method with cement-bentonite grout. 24 hour water level measured on 9/29/2009 prior to drilling. Borehole was at a depth of 44.0 feet.

NORTH ANNA 3 CORE: NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



M-34 – Box 1