GEOTECHNICAL BORING LOG

MACTEC

MACTEC PROJECT NO.: 6468-06-1472	COUNTY Louisa, VA	GEOLOGIST S. Nicely	
SITE DESCRIPTION NORTH ANNA COL			GROUND WATER (ft)
BORING NO. B-915	DRILL METHOD: Mud Rotary/Core	SAMPLE METHODS: SPT/CORE	0 HR. 6.6
COLLAR ELEV. 301.8 ft (NAVD88)	NORTHING 3,909,877 US ft (NAD83)	EASTING 11,686,089 US ft (NAD83)	24 HR. 27.5
TOTAL DEPTH 112.8 ft	DRILL MACHINE CME 55 Truck	DRILLER: H. Meyerson	HAMMER TYPE 140 lbs Auto
DATE STARTED 8/23/06	COMPLETED 8/31/06	CORE BARREL TYPE: HQ 3 triple tube-wireline	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 20 40 60 80 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
301.8					Ground Surface				301.8 — 0.0
300.3	1.5								Silty, fine to coarse SAND (SM), strong brown (7.5YR 5/8), brownish yellow (10YR 6/8), pale yellow (5Y 7/4), and light bluish gray (GLEY2 7/10B), moist, medium dense to very dense (Residual Soil)
298.3	3.5	6	6	6	12	915-1			
295.8	6.0	5	5	5	10	915-2			
293.3	8.5	4	6	5	11	915-3			
290.7	11.1	9	10	6	16	915-4			
288.3	13.5	7	13	12	25	915-5			
283.4	18.4	7	41	33	74	915-6			284.8 — 17.0
		50/0.1				915-7			Weathered Rock: No recovery-BIOTITE-QUARTZ GNEISS
279.5	22.3	50/0.1				915-8			279.5 — 22.3
									Hard Rock: Light gray, moderately weathered to fresh, very close to wide fracturing, hard to very hard, BIOTITE-QUARTZ GNEISS
									253.8 — 48.0
									Weathered Rock: Yellowish gray, severely weathered, very close to close fracturing, soft, BIOTITE-QUARTZ GNEISS with muscovite
									248.0 — 53.8
									Hard Rock: Olive gray, and light to dark gray with red and brown, moderately severely weathered to fresh, very close to close fracturing, moderately hard to very hard, BIOTITE-QUARTZ GNEISS

NORTH ANNA COL CORE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07

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TOTAL DEPTH 112.8 ft	DRILL MACHINE CME 55 Truck	DRILLER: H. Meyerson	HAMMER TYPE 140 lbs Auto
DATE STARTED 8/23/06	COMPLETED 8/31/06	CORE BARREL TYPE: HQ 3 triple tube-wireline	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 20 40 60 80 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
227.0					Continued from previous page				
									Hard Rock: Olive gray, and light to dark gray with red and brown, moderately severely weathered to fresh, very close to close fracturing, moderately hard to very hard, BIOTITE-QUARTZ GNEISS *(continued)*
									189.0 — 112.8
									Boring and coring terminated at 112.8 ft in Hard Rock: Very hard, BIOTITE-QUARTZ GNEISS Boring terminated before planned depth of 150ft due to difficulties with coring/core recovery at the direction of Bechtel-Dominion.

GEOTECHNICAL CORING LOG

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MACTEC PROJECT NO.: 6468-06-1472	**COUNTY** Louisa, VA	**GEOLOGIST** S. Nicely
SITE DESCRIPTION NORTH ANNA COL		**GROUND WATER (ft)**
BORING NO. B-915	**DRILL METHOD:** Mud Rotary/Core	**SAMPLE METHODS:** SPT/CORE
COLLAR ELEV. 301.8 ft **(NAVD88)**	**NORTHING** 3,909,877 **US ft (NAD83)**	**EASTING** 11,686,089 **US ft (NAD83)**
TOTAL DEPTH 112.8 ft	**DRILL MACHINE** CME 55 Truck	**DRILLER:** H. Meyerson
DATE STARTED 8/23/06	**COMPLETED** 8/31/06	**CORE BARREL TYPE:** HQ 3 triple tube-wireline
CORE SIZE HQ3	**TOTAL RUN** 90.5 ft	

GROUND WATER (ft)	
0 HR.	6.6
24 HR.	27.5

HAMMER TYPE 140 lbs Auto

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
										Begin Coring @ 22.4 ft
279.4	22.4	3.3	1:32 1:58 3:22	(3.3) 100%	(3.0) 91%	1				Hard Rock: Light gray, moderately weathered to fresh, very close to wide fracturing, hard to very hard, BIOTITE-QUARTZ GNEISS *(continued)* (3 joints at 10-20° with Fe stain; 2 joints at 20-30° weathered)
276.1	25.7	5.0	1:11/0.3 3:31 3:07 3:49 2:40 5:06	(5.0) 100%	(4.1) 82%	2				(3 joints at 30-40° with some Fe stain and weathering; 2 joints at 60-70° with Fe and Mn staining)
271.1	30.7	5.0	7:26 8:14 11:49 17:25 21:57	(4.4) 88%	(4.4) 88%	3				-No joints
266.1	35.7	0.8	30:35/0.8	(0.8) 100%	(0.8) 100%	4				-No joints
265.3	36.5	3.6	6:42 3:56 4:24 25:28/0.6	(3.6) 100%	(3.6) 100%	5				(2 joints at 20-30° with Fe and Mn staining; 1 joint at 70-80° with Fe and Mn staining)
261.7	40.1	0.2	11:31/0.2	(0.2) 100%	(0.0) 0%	6				(2 joints at 60-70° with Fe and Mn staining)
261.5	40.3	4.7	1:55/0.7 4:14 3:11 3:08 3:35	(4.4) 94%	(4.2) 89%	7				
256.8	45.0	3.0	2:11 2:30 2:28	(3.0) 100%	(2.0) 67%	8				(2 joints at 50-60°, 1 joint at 70°, and 1 joint at 20°-all with Fe and Mn stain; severely weathered fracture zone from 47.6-48.0 ft)
253.8	48.0	2.0	0:41 0:27	(0.6) 30%	(0.0) 0%	9				Weathered Rock: Yellowish gray, severely weathered, very close to close fracturing, soft, BIOTITE-QUARTZ GNEISS with muscovite -Highly fractured throughout run with clay
251.8	50.0	3.8	0:47 1:05 1:09 0:52/0.8	(1.3) 34%	(0.0) 0%	10				-Highly fractured throughout run with clay
248.0	53.8	4.9	1:32 1:20 3:53 3:16 5:43/0.9	(3.5) 71%	(1.0) 20%	11				Hard Rock: Olive gray, and light to dark gray with red and brown, moderately severely weathered to fresh, very close to close fracturing, moderately hard to very hard, BIOTITE-QUARTZ GNEISS -Highly fractured throughout run
243.1	58.7	0.2	9:05/0.2	(0.2) 100%	(0.0) 0%	12				-Highly fractured throughout run with clay
242.9	58.9	4.5	4:07 4:59 3:05 5:30 2:33/0.5	(3.2) 71%	(0.6) 13%	13				
238.4	63.4	5.0	3:34 3:28 3:29 3:17 3:23	(5.0) 100%	(2.7) 54%	14				(8 joints at 20-30° and 6 joints at 50-60° with Fe stain and trace clay)
233.4	68.4	5.1	2:40 3:00 3:12 3:35 4:25/1.1	(5.1) 100%	(4.3) 84%	15				(6 joints at 20-30°, 5 joints at 60-70°, and 1 joint at 90°-all with Fe and Mn stain)
228.3	73.5	5.0	2:53 3:22 2:05 2:07 3:40	(4.9) 98%	(2.9) 58%	16				(7 joints at 20-30°, 2 joints at 10-20°, 5 joints at 50-60°, and 1 joint at 90° -all with Fe staining)
223.3	78.5	5.0	4:09 4:27 3:42 4:39 7:05	(5.0) 100%	(4.5) 90%	17				(3 joints at 50-60° with clay, 2 joints at 0-10°, 1 joint at 30°, and 1 joint at 80° with Mn stain, all with Fe staining)
218.3	83.5	5.0	6:36 9:26 8:57 6:49 15:28	(5.0) 100%	(2.4) 48%	18				-highly fractured throughout run; 1 joint at 90° with Fe and Mn staining and clay; quartz vein at 83.6 ft and 87.8-88.2 ft
213.3	88.5	5.0	2:57 3:12 2:49 2:42 4:31	(4.8) 96%	(4.3) 86%	19				(2 joints at 60-70°, 1 joint at 30°, 3 joints at 10-20° -all with Fe staining)
208.3	93.5	4.9	5:04 6:55 6:38	(5.1) 104%	(1.5) 31%	20				-Highly fractured throughout entire run. many high angle joints with Fe stain and clay

253.8 — 48.0

248.0 — 53.8

NORTH ANNA COL_CORE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07

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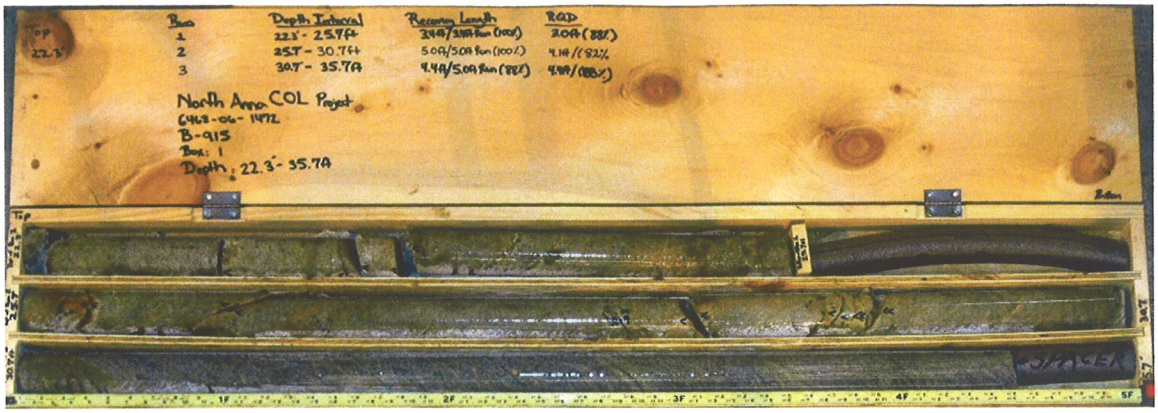
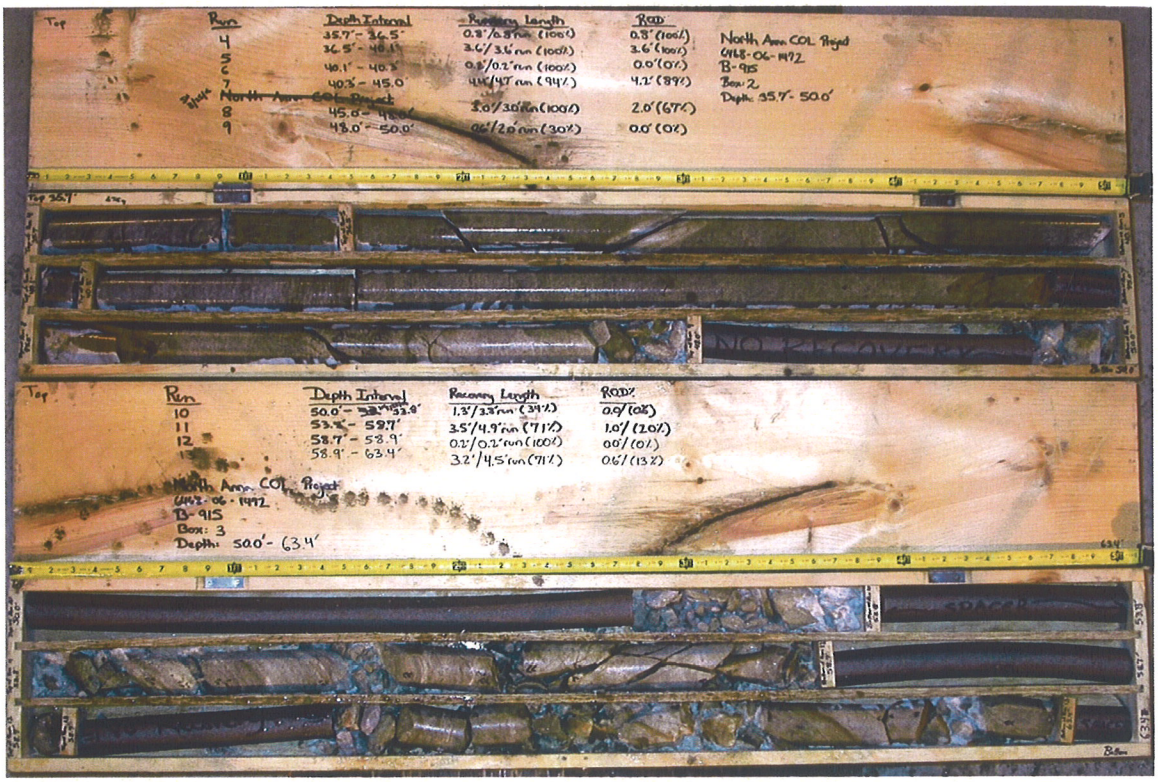
COLLAR ELEV. 301.8 ft (NAVD88)	NORTHING 3,909,877 US ft (NAD83)	EASTING 11,686,089 US ft (NAD83)	24 HR. 27.5
TOTAL DEPTH 112.8 ft	DRILL MACHINE CME 55 Truck	DRILLER: H. Meyerson	HAMMER TYPE 140 lbs Auto
DATE STARTED 8/23/06	COMPLETED 8/31/06	CORE BARREL TYPE: HQ 3 triple tube-wireline	
CORE SIZE HQ3	TOTAL RUN 90.5 ft		

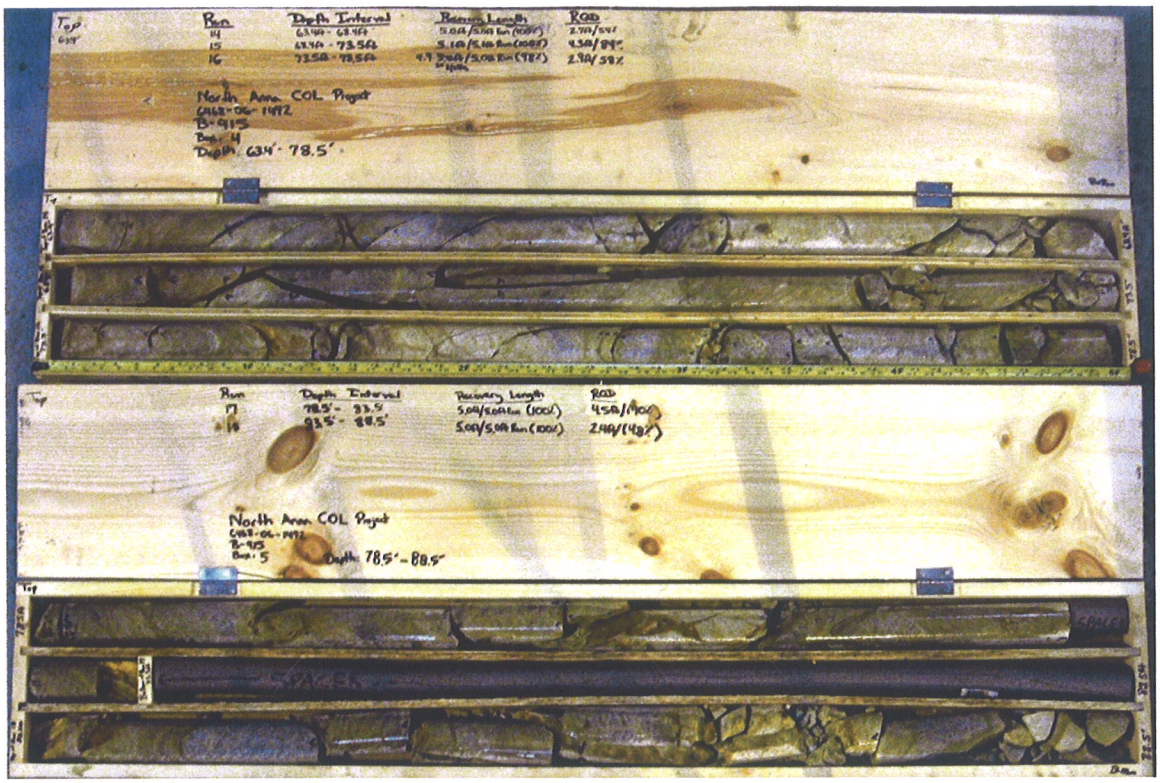
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
										Continued from previous page
203.4	98.4		8:04							Hard Rock: Olive gray, and light to dark gray with red and brown, moderately severely weathered to fresh, very close to close fracturing, moderately hard to very hard, BIOTITE-QUARTZ GNEISS *(continued)*
		4.5	10:27/0.9	(3.4) 76%	(0.7) 16%	21				
			6:57							
			7:46							
			10:08							
			15:49							
198.9	102.9		9:15/0.5							-Highly fractured throughout entire run with Fe stain and clay; quartz vein from 99.3-99.4 ft
198.8	103.0	0.1	ND/0.1	(0.0) 0%	(0.0) 0%	22				-Highly fractured throughout entire run, many high angle joints with Fe stain and clay
196.3	105.5	2.5	5:37			23				
			7:03	(2.3) 92%	(0.3) 12%					-Highly fractured throughout entire run, many high angle joints with Fe stain and clay
		4.9	3:16/0.5			24				
			9:15							-Highly fractured throughout entire run, many high angle joints with Fe stain and clay
			6:15	(1.4) 29%	(0.5) 10%					
			7:57							
191.4	110.4		8:48							
		2.4	11:42/0.9	(1.7) 71%	(0.0) 0%	25				-Highly fractured throughout entire run, many high angle joints with Fe stain and clay
189.0	112.8		14:51							189.0 112.8
			29:37							Coring terminated at 112.8 ft in Hard Rock: Very hard, BIOTITE-QUARTZ GNEISS
			5:19/0.4							Boring terminated before planned depth of 150 ft-due to difficulties with coring/core recovery-at the direction of Bechtel-Dominion.



B-915 – Box 1



B-915 – Box 2
B-915 – Box 3



B-915 – Box 4
B-915 – Box 5

B-915 – Box 6
B-915 – Box 7