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			
		7	41	33	74	915-6			
283.4	18.4								284.8 — 17.0
		50/0.1				915-7			Weathered Rock: No recovery-BIOTITE-QUARTZ GNEISS
279.5	22.3								279.5 — 22.3
		50/0.1				915-8			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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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.

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	
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
										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	(5.0) 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	5:06 7:26 8:14 11:49 17:25	(4.4) 88%	(4.4) 88%	3				-No joints
266.1	35.7	0.8	21:57 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	(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	25:28/0.6 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	(4.4) 94%	(4.2) 89%	7				
256.8	45.0	3.0	3:35 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									48.0
251.8	50.0	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
248.0	53.8	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									53.8
243.1	58.7	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
242.9	58.9	0.2	9:05/0.2	(0.2) 100%	(0.0) 0%	12				-Highly fractured throughout run with clay
238.4	63.4	4.5	4:07 4:59 3:05 5:30 2:33/0.5	(3.2) 71%	(0.6) 13%	13				
233.4	68.4	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)
228.3	73.5	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)
223.3	78.5	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)
218.3	83.5	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)
213.3	88.5	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
208.3	93.5	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)
		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

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

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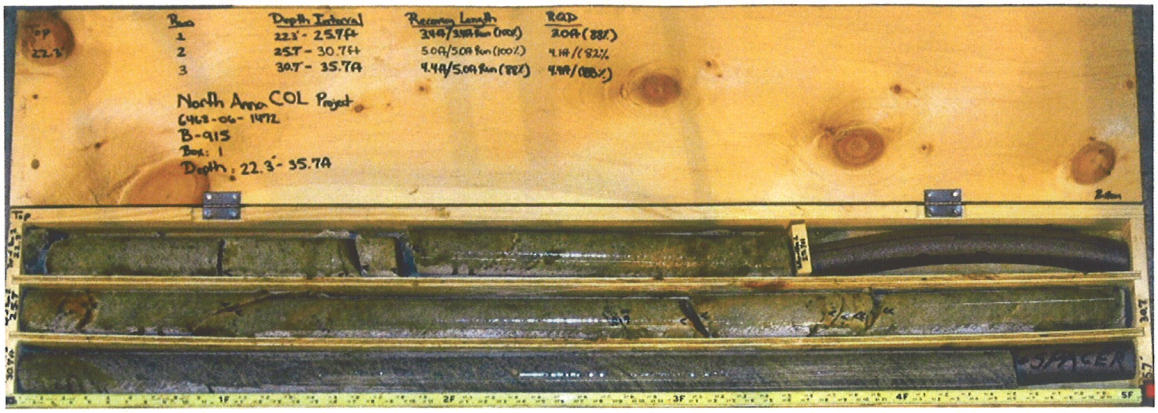
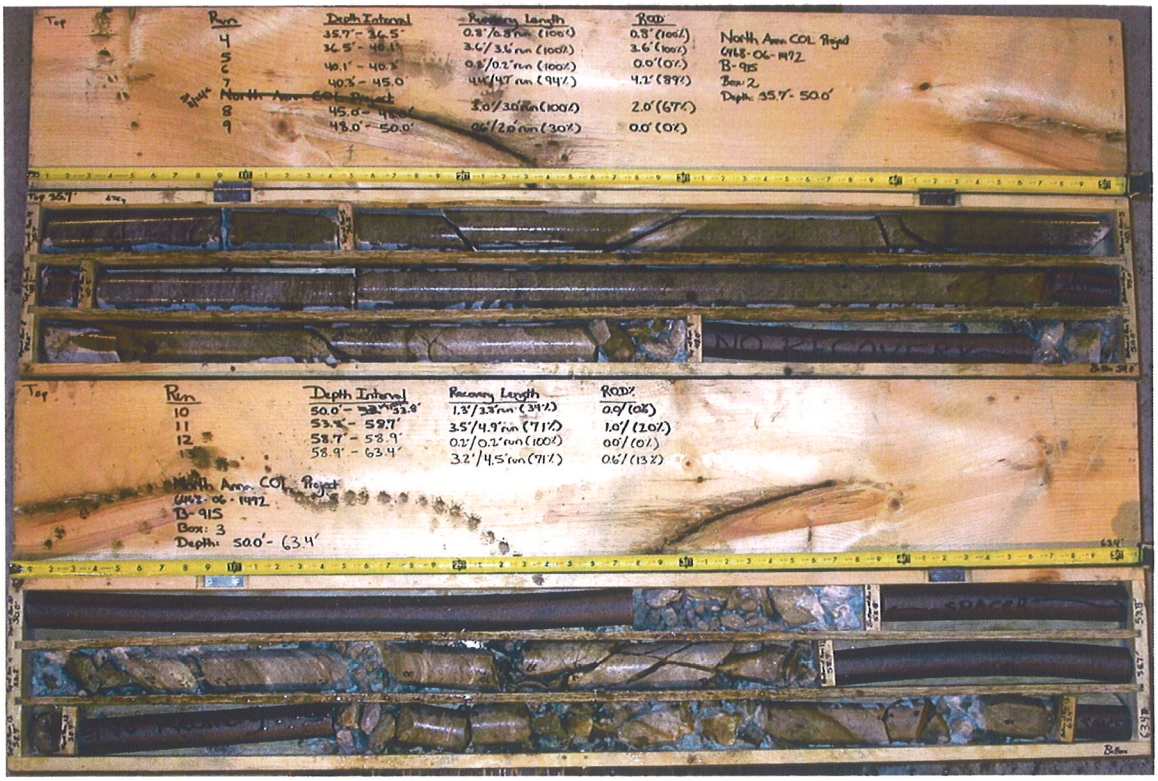
CORE SIZE HQ3	**TOTAL RUN** 90.5 ft		

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)	(0.7)	21				-Highly fractured throughout entire run with Fe stain and clay; quartz vein from 99.3-99.4 ft
			6:57	76%	16%					
			7:46							
			10:08							
			15:49							
198.9	102.9									
198.8	103.0	0.1	9:15/0.5	(0.0)	(0.0)	22				-Highly fractured throughout entire run, many high angle joints with Fe stain and clay
			ND/0.1	0%	0%					
196.3	105.5	2.5	5:37			23				-Highly fractured throughout entire run, many high angle joints with Fe stain and clay
			7:03	(2.3)	(0.3)					
		4.9	3:16/0.5	92%	12%	24				-Highly fractured throughout entire run, many high angle joints with Fe stain and clay
			9:15	(1.4)	(0.5)					
			6:15	29%	10%					
			7:57							
191.4	110.4		8:48							
		2.4	11:42/0.9	(1.7)	(0.0)	25				-Highly fractured throughout entire run, many high angle joints with Fe stain and clay
189.0	112.8		14:51	71%	0%					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.

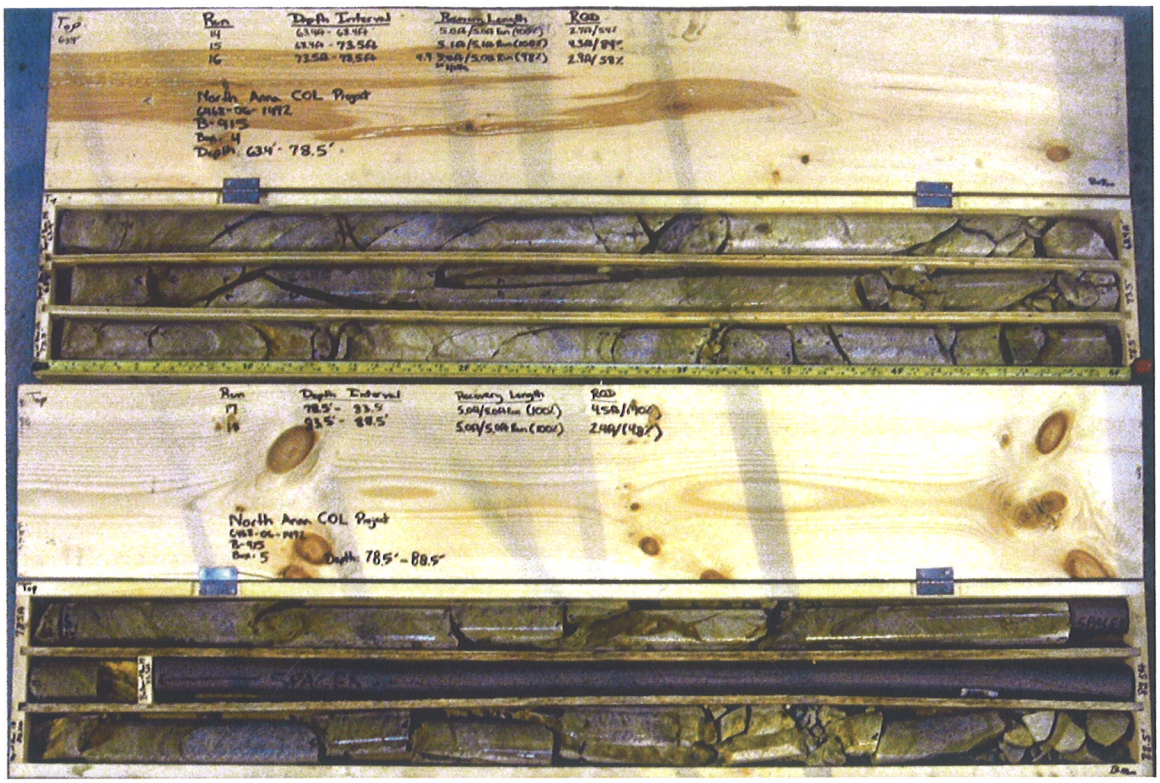
NORTH ANNA COL_CORE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07



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