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-917 | **DRILL METHOD:** Mud Rotary/Core | **SAMPLE METHODS:** SPT/CORE | **0 HR.** 8.3 |
| **COLLAR ELEV.** 274.9 ft (NAVD88) | **NORTHING** 3,910,161 US ft (NAD83) | **EASTING** 11,686,029 US ft (NAD83) | **24 HR.** 8.7 |
| **TOTAL DEPTH** 150.8 ft | **DRILL MACHINE** CME 55 Truck | **DRILLER:** H. Meyerson | **HAMMER TYPE** 140 lbs Auto |
| **DATE STARTED** 9/25/06 | **COMPLETED** 9/29/06 | **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 |
|---|---|---|---|---|---|---|---|---|---|
| 274.9 | | | | | Ground Surface | | | | 274.9 0.0 |
| 273.5 | 1.4 | | | | | | | | Sandy SILT (ML), yellowish brown (10YR 4/6), moist, very soft, to Silty, medium to coarse SAND (SM), dark gray (10YR 4/1) and yellowish brown (10YR 4/6), moist, medium dense (FILL) 270.5 4.4 |
| 271.1 | 3.8 | 3 | 1 | 1 | 2 | 917-1 | | | Silty, fine to coarse SAND (SM), brownish yellow (10YR 6/8) to yellowish brown (10YR 5/8 and 5/4), moist to wet, medium dense to loose, trace clay (Residual Soil) |
| 268.6 | 6.3 | 25 | 8 | 7 | 15 | 917-2 | | | |
| 266.2 | 8.7 | 2 | 3 | 2 | 5 | 917-3 | | | |
| 263.3 | 11.6 | 2 | 2 | 3 | 5 | 917-4 | | | |
| 261.4 | 13.5 | 2 | 3 | 4 | 7 | 917-5 | | | |
| 256.6 | 18.3 | 2 | 4 | 4 | 8 | 917-6 | | | |
| 251.3 | 23.6 | 4 | 4 | 3 | 7 | 917-7 | | | |
| 246.3 | 28.6 | 3 | 4 | 4 | 8 | 917-8 | | | 248.9 26.0 |
| 241.4 | 33.5 | 6 | 8 | 9 | 17 | 917-9 | | | Silty, fine to coarse SAND (SM), Brownish yellow (10YR 6/6), olive yellow (2.5Y 6/6), and light olive brown (2.5Y 5/4), moist, medium dense to very dense (Residual Soil) |
| 236.4 | 38.5 | 8 | 9 | 9 | 18 | 917-10 | | | |
| 231.4 | 43.5 | 9 | 13 | 14 | 27 | 917-11 | | | |
| 226.4 | 48.5 | 10 | 12 | 12 | 24 | 917-12 | | | |
| 221.4 | 53.5 | 9 | 16 | 23 | 39 | 917-13 | | | |
| 216.4 | 58.5 | 18 | 28 | 31 | 59 | 917-14 | | | 217.9 57.0 |
| 211.4 | 63.5 | 43 | 50/0.3 | | | 917-15 | | | Weathered Rock: Light olive brown (2.5Y 5/4), brown (10YR 4/3), olive yellow (2.5Y 6/6), light yellowish brown (2.5Y 6/4), and brownish yellow (10YR 6/8), moist, very dense, weathered, BIOTITE QUARTZ GNEISS |
| 206.4 | 68.5 | 39 | 50/0.2 | | | 917-16 | | | |
| 201.4 | 73.5 | 50/0.4 | | | | 917-17 | | | |
| | | 50/0.2 | | | | 917-18 | | | |

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| **COLLAR ELEV.** 274.9 ft (NAVD88) | **NORTHING** 3,910,161 US ft (NAD83) | **EASTING** 11,686,029 US ft (NAD83) | **24 HR.** 8.7 |
| **TOTAL DEPTH** 150.8 ft | **DRILL MACHINE** CME 55 Truck | **DRILLER:** H. Meyerson | **HAMMER TYPE** 140 lbs Auto |
| **DATE STARTED** 9/25/06 | **COMPLETED** 9/29/06 | **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 |
|---|---|---|---|---|---|---|---|---|---|
| 200.0 | | | | | Continued from previous page | | | | |
| 196.4 | 78.5 | 50/0.2 | | | | 917-19 | | | Weathered Rock: Light olive brown (2.5Y 5/4), brown (10YR 4/3), olive yellow (2.5Y 6/6), light yellowish brown (2.5Y 6/4), and brownish yellow (10YR 6/8), moist, very dense, weathered, BIOTITE QUARTZ GNEISS *(continued)* |
| 191.4 | 83.5 | 50/0.3 | | | | 917-20 | | | |
| 187.4 | 87.5 | 50/0.3 | | | | 917-21 | | | |
| 187.1 | 87.8 | | | | | | | | Hard Rock: Brownish gray, moderately weathered, very close to close fracturing, hard to very hard, BIOTITE-QUARTZ GNEISS |
| 178.8 | 96.1 | | | | | | | | Hard Rock: Light gray, fresh, very close to very wide fracturing, very hard, BIOTITE-QUARTZ GNEISS |

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| **TOTAL DEPTH** 150.8 ft | **DRILL MACHINE** CME 55 Truck | **DRILLER:** H. Meyerson | **HAMMER TYPE** 140 lbs Auto |
| **DATE STARTED** 9/25/06 | **COMPLETED** 9/29/06 | **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 |
|---|---|---|---|---|---|---|---|---|---|
| 125.2 | | | | | Continued from previous page | | | | |
| | | | | | | | | | 124.1 — 150.8 Boring and coring terminated at 150.8 ft in Hard Rock: Very hard, BIOTITE-QUARTZ GNEISS |

GEOTECHNICAL CORING LOG

MACTEC

SHEET 1 OF 1

| | | | |
|---|---|---|---|
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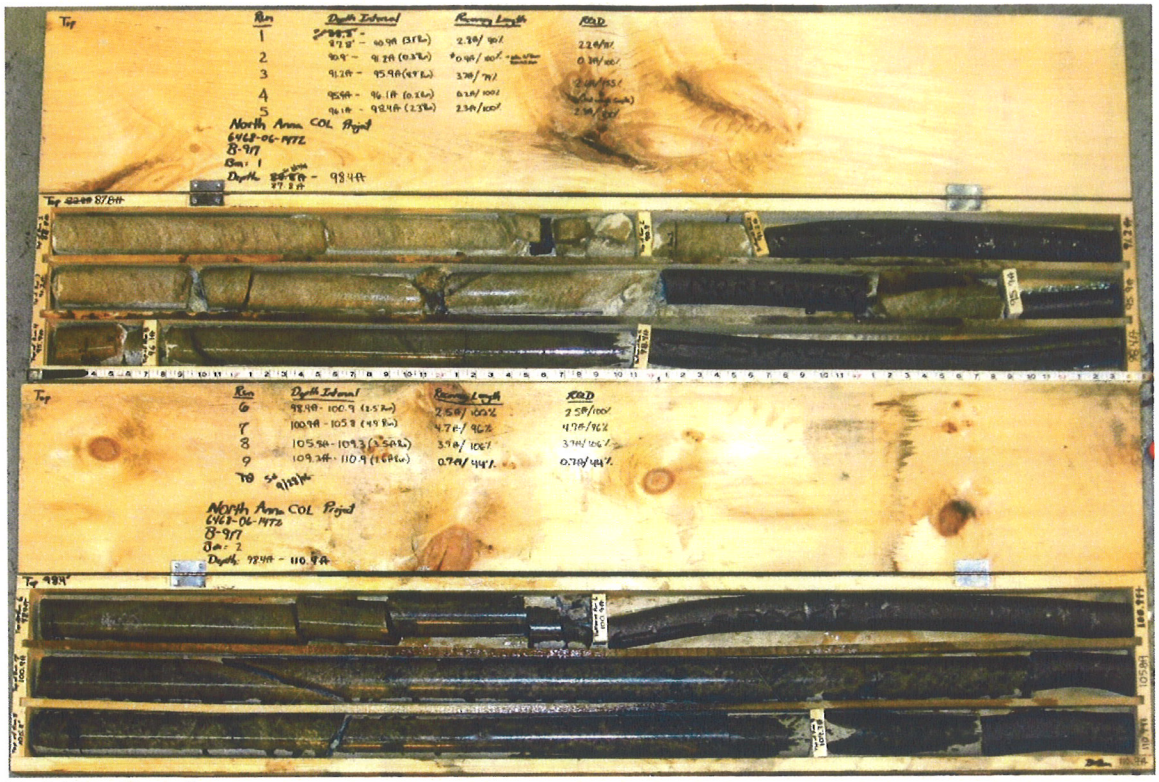
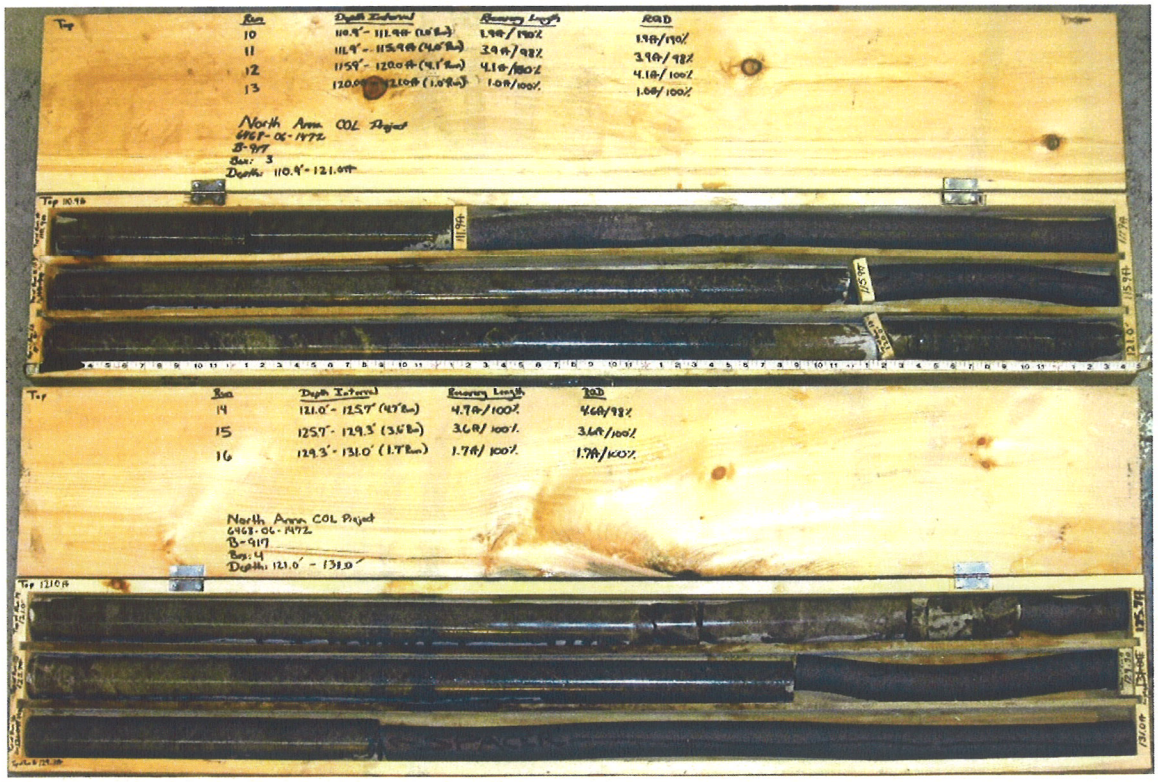
| **BORING NO.** B-917 | **DRILL METHOD:** Mud Rotary/Core | **SAMPLE METHODS:** SPT/CORE | **0 HR.** 8.3 |
| **COLLAR ELEV.** 274.9 ft **(NAVD88)** | **NORTHING** 3,910,161 **US ft (NAD83)** | **EASTING** 11,686,029 **US ft (NAD83)** | **24 HR.** 8.7 |
| **TOTAL DEPTH** 150.8 ft | **DRILL MACHINE** CME 55 Truck | **DRILLER:** H. Meyerson | **HAMMER TYPE** 140 lbs Auto |
| **DATE STARTED** 9/25/06 | **COMPLETED** 9/29/06 | **CORE BARREL TYPE:** HQ 3 triple tube-wireline | |
| **CORE SIZE** HQ3 | **TOTAL RUN** 63.0 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 @ 87.8 ft |
| 187.1 | 87.8 | 3.1 | 2:53<br>2:46<br>2:56 | (2.8)<br>90% | (2.2)<br>71% | 1 | | | 187.1 | Hard Rock: Brownish gray, moderately weathered, very close to close fracturing, hard to very hard, BIOTITE-QUARTZ GNEISS (1 joint at 20° with Fe and Mn stain; 1 joint at 45° with Fe stain) (1 joint at 90°) -Highly fractured zones from 91.3-91.9 ft, 93.0-93.2 ft, and 94.3-95.3 ft |
| 184.0 | 90.9 | | | | | | | | | |
| 183.7 | 91.2 | 0.3 | 2:50/0.1<br>0:12/0.3 | (0.4)<br>133% | (0.3)<br>100% | 2 | | | | |
| | | 4.7 | 2:15<br>1:43<br>0:57 | (3.7)<br>79% | (2.6)<br>55% | 3 | | | | |
| 179.0 | 95.9 | | 2:46/1.7 | | | | | | 178.8 | 96.1 |
| 178.8 | 96.1 | 0.2 | 0:29/0.2 | (0.2) | (NA) | 4 | | | | Hard Rock: Light gray, fresh, very close to very wide fracturing, very hard, BIOTITE-QUARTZ GNEISS |
| 176.5 | 98.4 | 2.3 | 4:55<br>11:05 | 100%<br>(2.3) | (2.3) | 5 | | | | -No Joints |
| | | 2.5 | 15:23/0.3<br>0:37/0.5 | 100%<br>(2.5) | 100%<br>(2.5) | 6 | | | | -No Joints |
| 174.0 | 100.9 | | 8:03 | 100% | 100% | | | | | |
| | | 4.9 | 10:48<br>5:15 | (4.7) | (4.7) | 7 | | | | (1 joint at 65°) |
| | | | 5:43<br>5:22 | 96% | 96% | | | | | |
| 169.1 | 105.8 | | 6:49 | | | | | | | |
| | | 3.5 | 8:53/0.9<br>7:03 | (3.7)<br>106% | (3.7)<br>106% | 8 | | | | -No Joints |
| 165.6 | 109.3 | | 7:46<br>13:35 | | | | | | | |
| 164.0 | 110.9 | 1.6 | 16:31/0.5<br>13:13/0.6 | (0.7)<br>44% | (0.7)<br>44% | 9 | | | | -No Joints |
| 163.0 | 111.9 | 1.0 | 17:48 | | | 10 | | | | -No Joints |
| | | 4.0 | 3:49<br>3:21 | (1.9)<br>190% | (1.9)<br>190% | 11 | | | | -No Joints |
| | | | 4:34<br>4:57 | (3.9)<br>98% | (3.9)<br>98% | | | | | |
| 159.0 | 115.9 | | 5:24 | | | | | | | |
| | | 4.1 | 5:14<br>6:04 | (4.1)<br>100% | (4.1)<br>100% | 12 | | | | (1 joint at 25° with Fe stain) |
| | | | 7:44<br>11:23/1.1 | | | | | | | |
| 154.9 | 120.0 | | | | | | | | | |
| 153.9 | 121.0 | 1.0 | 4:26 | (1.0) | (1.0) | 13 | | | | -No Joints |
| | | 4.7 | 4:47<br>4:25 | 100%<br>(4.7) | 100%<br>(4.6) | 14 | | | | (2 joints at 10-15°; Quartz vein from 123.9-125.7 ft |
| | | | 4:43<br>8:23 | 100% | 98% | | | | | |
| 149.2 | 125.7 | | 14:51/0.7 | | | | | | | |
| | | 3.6 | 7:37<br>8:44 | (3.6)<br>100% | (3.6)<br>100% | 15 | | | | -No Joints; Quartz vein cont. from 125.7-126.0 ft |
| 145.6 | 129.3 | | 11:05<br>11:39/0.6 | | | | | | | |
| 143.9 | 131.0 | 1.7 | 1:53/0.4<br>4:37 | (1.7)<br>100% | (1.7)<br>100% | 16 | | | | -No Joints |
| | | 5.0 | 1:05/0.3<br>5:54 | (5.0)<br>100% | (4.5)<br>90% | 17 | | | | (2 joints at 70-75° with Fe staining; 5 joints at 20-30° with Fe stain, slightly weathered) |
| | | | 5:19<br>4:31 | | | | | | | |
| 138.9 | 136.0 | | 4:47 | | | | | | | |
| | | 2.8 | 6:06<br>6:17 | (2.7)<br>96% | (2.7)<br>96% | 18 | | | | -No Joints |
| 136.1 | 138.8 | | 8:41<br>12:56/0.8 | | | | | | | |
| 134.1 | 140.8 | 2.0 | 0:25/0.2<br>8:56 | (2.1)<br>105% | (2.1)<br>105% | 19 | | | | -No Joints |
| | | 5.1 | 11:37/0.8<br>4:19 | (5.1)<br>100% | (5.1)<br>100% | 20 | | | | -No Joints |
| | | | 4:22<br>4:36 | | | | | | | |
| 129.0 | 145.9 | | 5:23<br>8:46 | | | | | | | |
| | | 4.9 | 1:29/0.1<br>5:07 | (4.9)<br>100% | (4.9)<br>100% | 21 | | | | -No Joints |
| | | | 4:48<br>7:06 | | | | | | | |
| 124.1 | 150.8 | | 6:21<br>9:07/0.9 | | | | | | 124.1 | 150.8 |
| | | | | | | | | | | Coring terminated at 150.8 ft in Hard Rock: Very hard, BIOTITE-QUARTZ GNEISS |

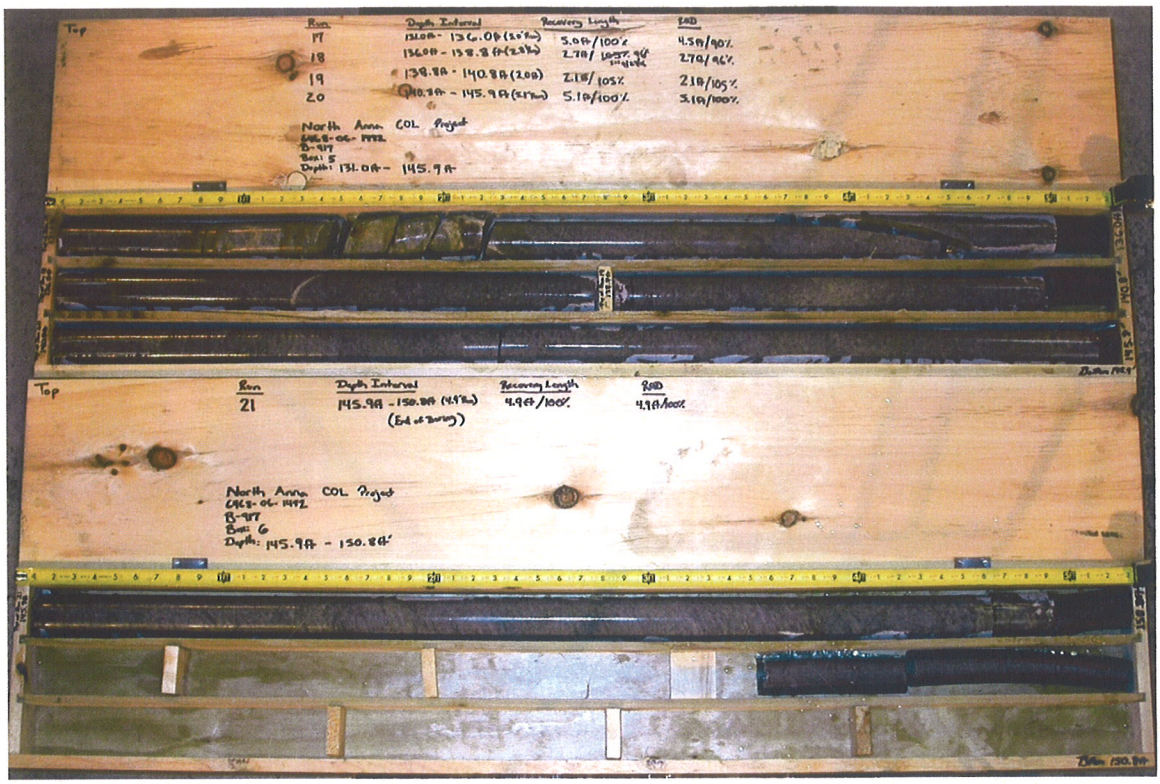
NORTH ANNA COL CORE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07




B-917 – Box 1
B-917 – Box 2




B-917 – Box 3
B-917 – Box 4




B-917 – Box 5
B-917 – Box 6