

SHEET 1 OF 2

BECHTEL PROJECT NO.: 25161					MACTEC PROJECT NO.: 6468-09-2473					COUNTY: Louisa, VA					GEOLOGIST: R. Clark				
SITE DESCRIPTION: North Anna Power Station, Unit 3										DRILLER: R. Landeros					FLUID LEVEL (ft)				
BORING NO.: W-5					DRILL METHOD: Mud Rotary/Rock Core					DRILL MACHINE: CME-550X (ATL)					0 HR.		15.0		
GROUND ELEV.: 273.0 ft (NAVD88)					NORTHING: 3,909,979 US ft (NAD83)					EASTING: 11,686,142 US ft (NAD83)					24 HR.		13.0		
TOTAL DEPTH: 100.4 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: 10/28/09			COMPLETED: 10/29/09			HOLE DIA.: 4"		CASING DEPTH: 3.8 ft			CORE SIZE: HQ3		BITS USED: 3-7/8" Tri-Cone						
ELEV.	DEPTH	BLOW COUNT			BLOWS PER FOOT						SAMP.	LOG	SOIL AND ROCK DESCRIPTION						
(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	20	40	60	80	100	NO.							MOI	
273.0					Ground Surface								273.0	0.0					
269.2	3.8												269.5	3.5					
													269.7	3.8					
													263.8	9.2					
			</																



SHEET 2 OF 2

BECHTEL PROJECT NO.: 25161			MACTEC PROJECT NO.: 6468-09-2473			COUNTY: Louisa, VA			GEOLOGIST: R. Clark		
SITE DESCRIPTION: North Anna Power Station, Unit 3						DRILLER: R. Landeros			FLUID LEVEL (ft)		
BORING NO.: W-5			DRILL METHOD: Mud Rotary/Rock Core			DRILL MACHINE: CME-550X (ATL)			0 HR. 15.0		
GROUND ELEV.: 273.0 ft (NAVD88)			NORTHING: 3,909,979 US ft (NAD83)			EASTING: 11,686,142 US ft (NAD83)			24 HR. 13.0		
TOTAL DEPTH: 100.4 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: 10/28/09		COMPLETED: 10/29/09		HOLE DIA.: 4"		CASING DEPTH: 3.8 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								
198.2					Continued from previous page													
													HARD ROCK: Light gray with trace orange staining, fresh to slightly weathered, moderately close to wide fracturing, very hard, BIOTITE QUARTZ GNEISS with trace magnetite (continued)					
																		HARD ROCK: Light gray and light pinkish gray, with trace yellow and red staining, fresh to slightly weathered, very close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS
													173.0 172.8		HARD ROCK: Black, moderately severely weathered, close fracturing, medium hard, BIOTITE GNEISS Boring and coring terminated at 100.4 feet. Boring closed by tremie method with cement-bentonite grout. NOTE: Boring terminated at 100.4 ft at the direction of Bechtel Site Representative.			

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



SHEET 1 OF 2

BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA	GEOLOGIST: R. Clark	
SITE DESCRIPTION: North Anna Power Station, Unit 3				DRILLER: R. Landeros		FLUID LEVEL (ft)
BORING NO.: W-5		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		
GROUND ELEV.: 273.0 ft (NAVD88)		NORTHING: 3,909,979 US ft (NAD83)		EASTING: 11,686,142 US ft (NAD83)		0 HR. 15.0
						24 HR. 13.0
TOTAL DEPTH: 100.4 ft		SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08			HAMMER (ID): 140-lb. Auto (MEC-05)	
DATE STARTED: 10/28/09		COMPLETED: 10/29/09	CASING DEPTH: 3.8 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		L O G	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
										Begin Coring @ 3.9 ft
269.1	3.9	0.3	0:54/0.3	(0.2)	(0.0)	RUN 1	(3.2)	(2.3)		269.1 HARD ROCK: Light gray with trace orange staining, moderately weathered to fresh, moderately close fracturing, medium to very hard, BIOTITE QUARTZ GNEISS (No recovery in weathered rock zone from 5.2-7.2 feet)
268.8	4.2	5.0	3:58 0:59 1:02 3:44 9:05	67% (3.0) 60%	0% (2.3) 46%	RUN 2	60%	43%		268.8 (2 joints at 45°, tight)
263.8	9.2	5.0	5:29 7:54 5:47 4:19 5:13	(4.9) 98%	(4.7) 94%	RUN 3	(74.6) 99%	(66.7) 89%		263.8 HARD ROCK: Light gray with trace orange staining, fresh to slightly weathered, moderately close to wide fracturing, very hard, BIOTITE QUARTZ GNEISS with trace magnetite
258.8	14.2	5.0	6:50 6:58 8:52 7:48 5:55	(5.0) 100%	(3.9) 78%	RUN 4				(2 joints at 10° and 3 joints at 45°, tight)
253.8	19.2	5.0	3:19 3:19 3:04 3:05 3:35	(5.0) 100%	(4.8) 96%	RUN 5				(4 joints at 0-10° and 2 joints at 45°, tight)
248.8	24.2	5.0	4:55 4:00 4:05 4:25 4:33	(5.0) 100%	(3.4) 68%	RUN 6				(2 joints at 10°, 1 joint at 30°, 1 joint at 45°; tight)
243.8	29.2	5.0	5:02 5:05 5:38 5:05 4:59	(5.0) 100%	(4.3) 86%	RUN 7				(1 joint at 10°, 3 joints at 45°, 1 joint at 60°; tight)
238.8	34.2	5.0	7:35 7:00 7:15 3:25 3:32	(5.0) 100%	(5.0) 100%	RUN 8				(1 joint at 0°, 6 joints at 45°; tight)
233.8	39.2	5.0	4:00 3:57 2:33 1:57 1:59	(4.9) 98%	(3.7) 74%	RUN 9				(1 joint at 45°, tight with trace iron staining)
228.8	44.2	5.0	2:15 2:22 1:57 2:02 2:06	(5.0) 100%	(4.3) 86%	RUN 10				(3 joints at 10-20°, 4 joints at 45-60°; tight with trace iron staining)
223.8	49.2	5.0	1:53 1:58 2:02 1:47 3:21	(4.8) 96%	(4.3) 86%	RUN 11				(3 joints at 0-10°, 3 joints at 45°; tight)
218.8	54.2	5.0	1:45 2:55 3:08 2:59 3:08	(5.0) 100%	(4.7) 94%	RUN 12				49.2 ft: Started losing drill fluid circulation
213.8	59.2	5.0	2:55 2:28 2:33 2:37 2:44	(5.0) 100%	(4.0) 80%	RUN 13				(2 joints at 20°, 2 joints at 45°, tight; 1 quartz vein at 20°, 0.1 ft thick)
208.8	64.2	5.0	2:55 3:08 2:33 2:32 2:36	(5.0) 100%	(4.9) 98%	RUN 14				(5 joints at 20-30°, tight)
203.8	69.2	5.0	2:48 2:58 3:02 3:18 2:29	(5.0) 100%	(4.8) 96%	RUN 15				59.2 ft: Complete loss of drill fluid circulation
198.8	74.2	5.0	2:53 3:02 2:46 2:42	(5.0) 100%	(5.0) 100%	RUN 16				(4 joints at 10°, tight; 1.0-foot thick quartz vein from 59.2-60.2 feet)
										(2 joints at 45°, 1 joint at 60°; tight)
										(2 joints at 10°, 1 joint at 45°; tight)
										(2 quartz veins at 45°, <0.1 ft thick)

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

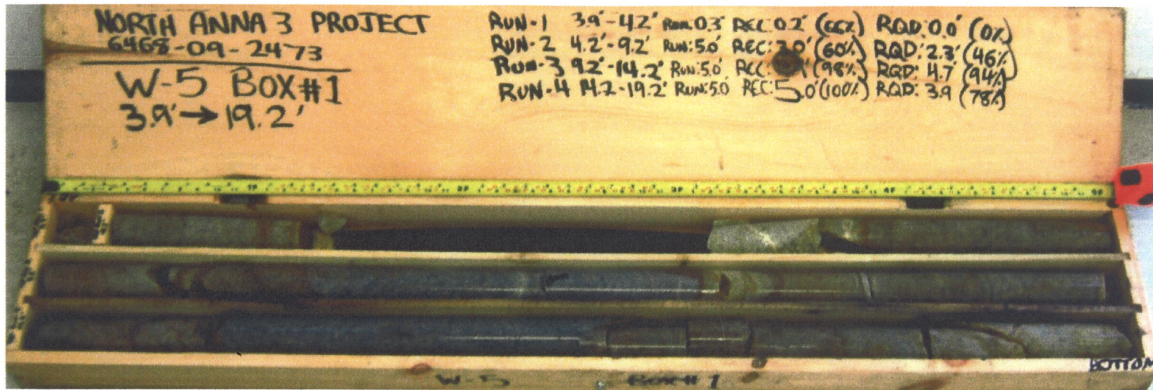


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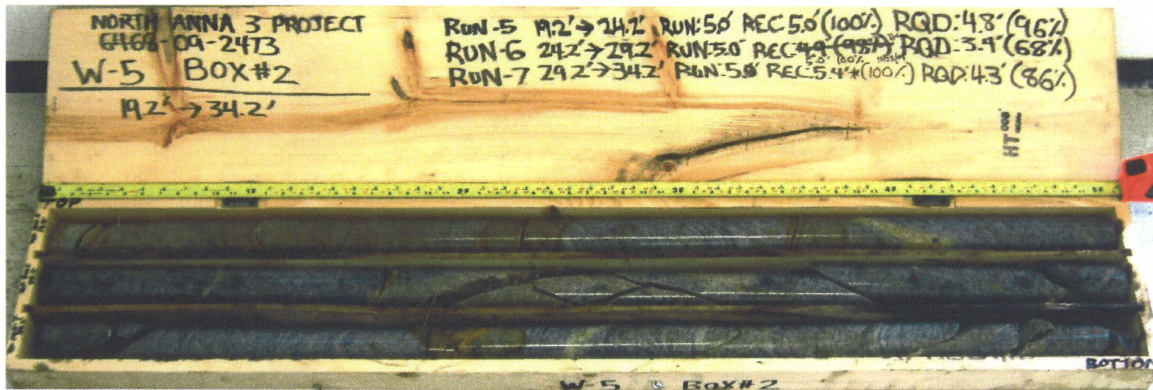
BECHTEL PROJECT NO.: 25161	MACTEC PROJECT NO.: 6468-09-2473	COUNTY: Louisa, VA	GEOLOGIST: R. Clark
SITE DESCRIPTION: North Anna Power Station, Unit 3		DRILLER: R. Landeros	FLUID LEVEL (ft)
BORING NO.: W-5	DRILL METHOD: Mud Rotary/Rock Core	DRILL MACHINE: CME-550X (ATL)	0 HR. 15.0
GROUND ELEV.: 273.0 ft (NAVD88)	NORTHING: 3,909,979 US ft (NAD83)	EASTING: 11,686,142 US ft (NAD83)	24 HR. 13.0
TOTAL DEPTH: 100.4 ft	SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08		HAMMER (ID): 140-lb. Auto (MEC-05)
DATE STARTED: 10/28/09	COMPLETED: 10/29/09	CASING DEPTH: 3.8 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		L O G	DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %		
										Continued from previous page
193.8	79.2	5.0	2:45 2:39 3:01 3:05 2:55 2:07	(5.0) 100%	(4.9) 98%	RUN 17				HARD ROCK: Light gray with trace orange staining, fresh to slightly weathered, moderately close to wide fracturing, very hard, BIOTITE QUARTZ GNEISS with trace magnetite (<i>continued</i>) (1 joint at 35°, tight)
188.8	84.2	5.0	2:45 2:53 2:55 1:36 1:52	(5.0) 100%	(2.2) 44%	RUN 18	(15.5) 98%	(5.6) 35%		HARD ROCK: Light gray and light pinkish gray, with trace yellow and red staining, fresh to slightly weathered, very close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS (3 joints at 45°, 1 joint at 60°, tight; severely fractured zone from 87.5-89.2 ft) (3 quartz veins 0.1-foot thick; severely fractured throughout run)
183.8	89.2	4.5	2:50 2:15 2:59 1:37	(4.2) 93%	(0.7) 16%	RUN 19				(2 joints at 10°, 3 joints at 30-45°, 1 joint at 65°; tight)
179.3	93.7	3.5	1:57/0.5 5:43 4:51 7:10	(3.5) 100%	(2.0) 57%	RUN 20				(2 joints at 10°, 2 joints at 45°; tight)
175.8	97.2	3.2	1:42/0.5 1:30/0.5 2:06/0.5 5:56 3:28/1.2	(3.2) 100%	(0.7) 22%	RUN 21				
172.6	100.4						(0.4) 100%	(0.0) 0%		HARD ROCK: Black, moderately severely weathered, close fracturing, medium hard, BIOTITE GNEISS Boring and coring terminated at 100.4 feet. Boring closed by tremie method with cement-bentonite grout. NOTE: Boring terminated at 100.4 ft at the direction of Bechtel Site Representative.

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



W-5- Box 1



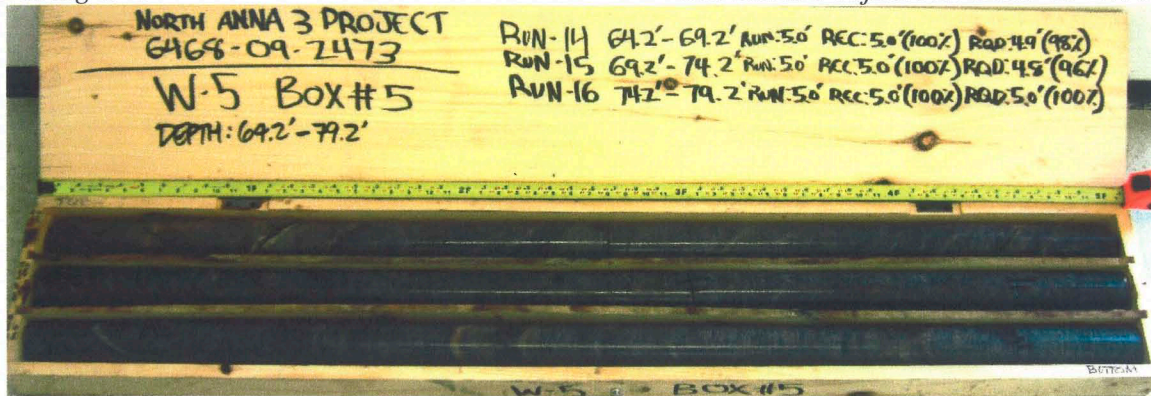
W-5- Box 2



W-5- Box 3



W-5- Box 4



W-5 - Box 5



W-5 - Box 6



W-5 - Box 7



GEOTECHNICAL BORING LOG

Prepared By WRC Date 12/3/09
Checked By DSC Date 12-3-09

SHEET 1 OF 2

BECHTEL PROJECT NO.: 25161		MACTEC PROJECT NO.: 6468-09-2473		COUNTY: Louisa, VA		GEOLOGIST: R. Clark									
SITE DESCRIPTION: North Anna Power Station, Unit 3				DRILLER: R. Landeros		FLUID LEVEL (ft)									
BORING NO.: W-6		DRILL METHOD: Mud Rotary/Rock Core		DRILL MACHINE: CME-550X (ATL)		0 HR. 25.5									
GROUND ELEV.: 301.9 ft (NAVD88)		NORTHING: 3,909,831 US ft (NAD83)		EASTING: 11,686,206 US ft (NAD83)		24 HR. 30.0									
TOTAL DEPTH: 123.9 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: 10/22/09		COMPLETED: 10/27/09		HOLE DIA.: 3"		CASING DEPTH: 83.0 ft									
CORE SIZE: NQ3		BITS USED: 3-7/8" Tri-Cone													
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		
301.9					Ground Surface								301.9 0.0		
													No sampling from 0.0 to 10.8 feet due to soft dig utility clearance by Dominion Personnel		
291.1	10.8	2	7	9						SS-1			291.1 10.8		
288.9	13.0	8	9	11						SS-2			RESIDUAL SOIL: Silty SAND (SM), yellowish brown (10YR 5/6), medium dense, moist, fine grained sand, little mica, relict rock fabric 13.0 ft: Yellowish brown (10YR 5/4), some mica 15.0 ft: Brown (10YR 5/3)		
286.9	15.0	5	8	14						SS-3					
283.2	18.7	7	11	11						SS-4					
278.3	23.6	8	7	11						SS-5			18.7 ft: Yellowish brown (10YR 5/4)		
273.2	28.7	5	5	8						SS-6			23.6 ft: Strong brown (10YR 5/6)		
268.2	33.7	16	17	21						SS-7			28.7 ft: Trace angular, gravel sized quartz fragments		
263.2	38.7	35	60	50/0.1						SS-8			33.7 ft: Strong brown (7.5YR 5/6), dense, moist to wet		
258.2	43.7	50/0.3									SS-9			38.7 ft: Yellowish brown (10YR 5/4), very dense, moist	
253.2	48.7	31	69/0.2									SS-10			262.2 39.7
248.2	53.7	50/0.3									SS-11			WEATHERED ROCK: Severely weathered, BIOTITE QUARTZ GNEISS (Sampled as Silty SAND (SM), brown (7.5YR 5/4), very dense, wet, fine to coarse grained sand and rock fragments, some mica)	
243.2	58.7	50/0.2									SS-12			53.7 ft: Yellowish brown (10YR 5/4)	
238.2	63.7	50/0.2									SS-13			58.7 ft: Light yellowish brown (2.5Y 6/4)	
228.0	73.9										SS-14			63.7 ft: Grayish brown (2.5Y 5/2)	
														73.9 ft: Few angular, gravel sized quartz rock fragments	
														227.6 74.3	

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



SHEET 2 OF 2

BECHTEL PROJECT NO.: 25161			MACTEC PROJECT NO.: 6468-09-2473			COUNTY: Louisa, VA			GEOLOGIST: R. Clark		
SITE DESCRIPTION: North Anna Power Station, Unit 3						DRILLER: R. Landeros			FLUID LEVEL (ft)		
BORING NO.: W-6			DRILL METHOD: Mud Rotary/Rock Core			DRILL MACHINE: CME-550X (ATL)			0 HR. 25.5		
GROUND ELEV.: 301.9 ft (NAVD88)			NORTHING: 3,909,831 US ft (NAD83)			EASTING: 11,686,206 US ft (NAD83)			24 HR. 30.0		
TOTAL DEPTH: 123.9 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: 10/22/09		COMPLETED: 10/27/09		HOLE DIA.: 3"		CASING DEPTH: 83.0 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								
227.1					Continued from previous page													
		50/0.4											WEATHERED ROCK and HARD ROCK: Light gray to light pinkish gray, with orange, yellowish brown, and red staining, severely to moderately weathered, moderately close fracturing, medium to very hard, BIOTITE QUARTZ GNEISS (continued)					
													208.0	HARD ROCK: Light to dark gray, with white and pinkish white and trace red staining, moderately weathered to fresh, moderately close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS				
													178.0					
													123.9	Boring and coring terminated at 123.9 ft. Note: Boring and coring terminated before 150 feet was reached due to broken core tools in hole. 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 Power Station, Unit 3								DRILLER: R. Landeros			FLUID LEVEL (ft)	
BORING NO.: W-6				DRILL METHOD: Mud Rotary/Rock Core				DRILL MACHINE: CME-550X (ATL)			0 HR.	25.5
GROUND ELEV.: 301.9 ft (NAVD88)				NORTHING: 3,909,831 US ft (NAD83)				EASTING: 11,686,206 US ft (NAD83)			24 HR.	30.0
TOTAL DEPTH: 123.9 ft			SAMPLE METHODS: ASTM D 1586-08a; 2488-09a; 2113-08; 6032-08						HAMMER (ID): 140-lb. Auto (MEC-05)			
DATE STARTED: 10/22/09			COMPLETED: 10/27/09		CASING DEPTH: 83.0 ft		CORE BARREL TYPE: Wireline NQ3 Triple Tube, series 2 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 @ 63.9 ft		
238.0	63.9	5.0	1:08 1:05 1:07 1:21 1:20	(0.0) 0%	(0.0) 0%	RUN 1	(0.1) 1%	(0.0) 0%		WEATHERED ROCK: Severely weathered, BIOTITE QUARTZ GNEISS (Sampled as Silty SAND (SM), brown (7.5YR 5/4), very dense, wet, fine to coarse grained sand and rock fragments, some mica) (continued) (No recovery)		
233.0	68.9									(Very poor recovery-quartz vein fragment)		
		5.0	2:54 1:01 1:35 1:06 1:51	(0.1) 2%	(0.0) 0%	RUN 2				73.9 ft: Few angular, gravel sized quartz rock fragments		
228.0	73.9									227.6		
227.6	74.3	4.6	N=50/0.4 0:44/0.6 0:47 1:05 1:08 0:55	(2.9) 63%	(2.0) 43%	SS-14 RUN 3	(6.2) 32%	(4.0) 20%		WEATHERED ROCK and HARD ROCK: Light gray to light pinkish gray, with orange, yellowish brown, and red staining, severely to moderately weathered, moderately close fracturing, medium to very hard, BIOTITE QUARTZ GNEISS (1 joint at 0°, 1 joint at 45°; tight) (No recovery)		
223.0	78.9											
		5.0	1:31 1:33 1:30 1:35 1:23	(0.0) 0%	(0.0) 0%	RUN 4				(No recovery)		
218.0	83.9											
		5.0	1:51 2:27 2:40 1:11 2:22	(1.5) 30%	(0.9) 18%	RUN 5				(2 joints at 0°, 2 joints at 45°; tight)		
213.0	88.9											
		5.0	2:25 2:35 2:01 1:58 0:58	(1.8) 36%	(1.1) 22%	RUN 6				(3 joints at 45°, tight; 1 healed fracture at 45° with trace epidote mineralization)		
208.0	93.9									208.0		
		5.0	1:58 2:02 2:37 3:20 2:37	(4.2) 84%	(3.7) 74%	RUN 7	(22.6) 90%	(17.9) 72%	HARD ROCK: Light to dark gray, with white and pinkish white and trace red staining, moderately weathered to fresh, moderately close to wide fracturing, hard to very hard, BIOTITE QUARTZ GNEISS (3 joints at 10-20°, tight; top 0.4 ft of run soft)			
203.0	98.9											
		5.0	2:06 3:09 2:45 2:33 4:19	(4.9) 98%	(4.5) 90%	RUN 8			(2 joints at 10°, 1 joint at 45°, tight; 0.2 ft thick zone of quartz+feldspar mineralization at top of run)			
198.0	103.9											
		5.0	4:31 5:12 5:44 2:36 1:46	(4.5) 90%	(3.5) 70%	RUN 9			(2 joints at 0°, tight; 1.1 ft thick quartz vein at bottom of run)			
193.0	108.9											
		5.0	1:06 1:40 1:27 1:15 2:03	(4.0) 80%	(1.7) 34%	RUN 10			(12 joints at 20-30°, tight with trace pyrite; 0.4 ft thick zone of quartz + feldspar mineralization near bottom of run)			
188.0	113.9											
		5.0	1:28 2:36 3:14 2:25 2:01	(5.0) 100%	(4.5) 90%	RUN 11			(4 joints at 0°, tight; 4 joints at 30-40°, tight; 0.2 ft thick quartz vein from 117.4-117.6 ft at 40°)			
183.0	118.9											
		5.0	2:45 4:04 5:55 5:26 3:35	(NA) 0%	(NA) 0%	RUN 12			Note: Unable to retrieve core run due to broken tooling, unable to retrieve broken tooling. Boring terminated at 123.9 ft and broken tooling grouted in place. Interpret this interval to be similar to above based on drill rate and field observations made during core run.			
178.0	123.9								178.0	123.9		
										Boring and coring terminated at 123.9 ft. Note: Boring and coring terminated before 150 feet was reached due to broken core tools in hole. Boring closed by tremie method with cement-bentonite grout.		

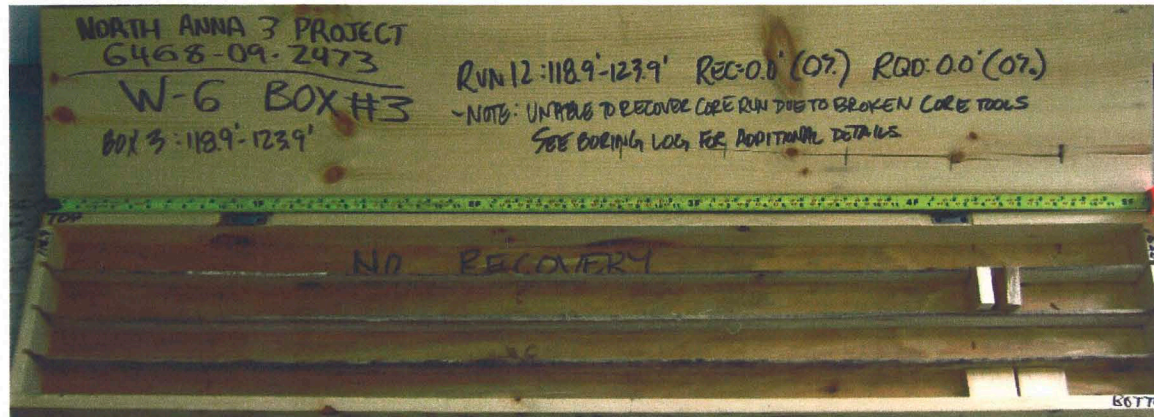
NORTH ANNA 3 CORE NORTH ANNA 3 PROJECT.GPJ NORTH ANNA 3.GDT 12/3/09



W-6- Box 1



W-6- Box 2



W-6- Box 3