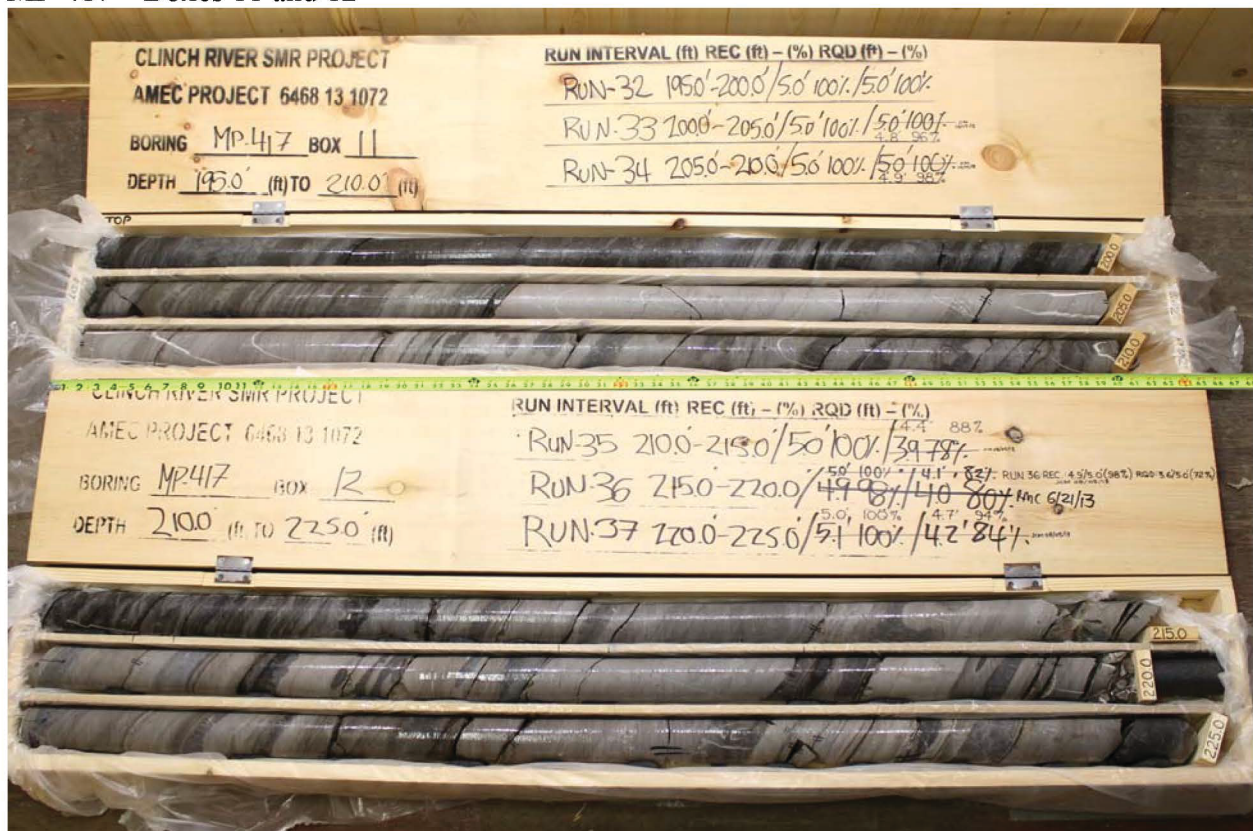


MP-417 – Boxes 9 and 10



MP-417 – Boxes 11 and 12



MP-417 – Boxes 13 and 14



MP-417 – Boxes 15 and 16



MP-417 – Boxes 17 and 18



MP-417 – Box 19





GEOTECHNICAL BORING LOG

Prepared By: MBL Date: 3/5/14Checked By: JCM Date: 3/5/14

SHEET 1 OF 1

BECHTEL NO.: 25847				AMEC PROJECT NO.: 6468-13-1072				COUNTY: Roane, TN		GEOLOGIST: M. Flanik					
SITE DESCRIPTION: Clinch River SMR Project, Roane County, Tennessee								DRILLER: J. Landeros/N. Molinalara			Boring Orientation				
BORING NO.: MP-418				DRILL METHOD: Mud Rotary/Core				DRILL MACHINE: CME-550X (P)			Inclination: Vertical				
GROUND ELEV.: 811.6 ft (NAVD88)				NORTHING: 570,500 US ft (NAD83)				EASTING: 2,447,030 US ft (NAD83)		Azimuth: NA					
TOTAL DEPTH: 87.8 ft		SAMPLE METHODS: ASTM D 1586-11; 2488-09a; 2113-08; 6032-08						ROD TYPE: AWJ		HAMMER (ID): 140-lb Auto (337153)					
DATE STARTED: 6/6/13		COMPLETED: 6/11/13		HOLE DIA.: 4"		CASING DEPTH: 81.8 ft		CORE SIZE: HQ3		BITS USED: 4" Roller Cone					
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL DESCRIPTION AND REMARKS			
		0.5ft	0.5ft	0.5ft	0	20	40	60	80	100					
811.6					Ground Surface										
811.6	0.0	9	8	8						SS-1		811.6	0.0	FILL: SILTY GRAVEL with Sand (GM), light gray (10R 7/1), medium dense, moist, fine to coarse subangular to angular gravel, little medium to coarse sand, little non-plastic fines, strong HCl reaction	
808.1	3.5	8	6	5						SS-2				3.5ft: As above, to reddish gray (2.5YR 6/1), few fine to medium sand	
805.4	6.2	2	4	6						SS-3			805.6	6.0	FILL: Sandy ELASTIC SILT with gravel (MH), reddish brown (2.5YR 5/4), stiff, moist, moderately plastic fines, little fine to medium sand, little fine to coarse angular gravel, strong HCl reaction
803.4	8.2	7	11	20						SS-4			803.6	8.0	FILL: SILTY GRAVEL (GM), gray (5YR 6/1), dense, moist, fine to coarse angular gravel, little non-plastic fines, few fine to coarse sand, strong HCl reaction
799.6	12.0	10	9	10						SS-5					12.0ft: As above, to weak red (10R 5/2), medium dense, subangular to angular gravel, few medium sand
797.6	14.0	5	11	15						SS-6					14.0ft: As above, to weak red (7.5YR 4/2), medium dense, some non-plastic fines, little medium sand
793.0	18.6	10	15	14						SS-7					18.6ft: As above, subangular gravel, some low to moderately plastic fines, little medium to coarse sand
788.0	23.6	10	10	9						SS-8					23.6ft: As above, to weak red (10R 4/3), some non-plastic fines
783.0	28.6	8	18	13						SS-9					RESIDUAL SOIL: Sandy SILT (ML), reddish yellow (7.5YR 6/8), hard, moist, non-plastic fines, some fine to coarse sand, few angular fine gravel, no HCl reaction
778.1	33.5	4	7	11						SS-10			779.6	32.0	RESIDUAL SOIL: FAT CLAY (CH), reddish yellow (5YR 6/8) mottled with light gray (5YR 7/1), very stiff, moist, moderate to high plasticity fines, no HCl reaction
772.8	38.8	3	2	2						SS-11			774.6	37.0	RESIDUAL SOIL: SILT (ML), yellowish brown (10YR 5/6), soft, moist, low plastic fines, no HCl reaction
767.8	43.8	19	50/0.3							SS-12			768.6	43.0	WEATHERED ROCK: LIMESTONE, sampled as CLAYEY GRAVEL (GC) to SILTY GRAVEL (GM), reddish gray (2.5YR 6/1), to gray (10YR 5/1-7.5YR 5/1), very dense, moist, fine to coarse subangular gravel, little moderately to low and non-plastic fines, few to little medium to coarse sand, strong HCl reaction
766.3	45.3	34	50/0.2							SS-13					
764.9	46.7	50/0.1								SS-14			764.8	46.8	Soil drilling halted. Log continues on geotechnical coring log

CLINCH RIVER SMR BORE FINAL CLINCH FINAL LOGS.GPJ CLINCH BORING DATA TEMPLATE.GDT 3/5/14



GEOTECHNICAL CORING LOG

Prepared By: MBL Date: 3/5/14

Checked By: JCM Date: 3/5/14

SHEET 1 OF 1

BECHTEL PROJECT NO.: 25847				AMEC PROJECT NO.: 6468-13-1072				COUNTY: Roane, TN		GEOLOGIST: M. Flanik		
SITE DESCRIPTION: Clinch River SMR Project, Roane County, Tennessee								DRILLER: J. Landeros/N. Molinalara		Boring Orientation		
BORING NO.: MP-418				DRILL METHOD: Mud Rotary/Core				DRILL MACHINE: CME-550X (P)		Inclination: Vertical		
GROUND ELEV.: 811.6 ft		(NAVD88)		NORTHING: 570,500		US ft (NAD83)		EASTING: 2,447,030		US ft (NAD83)		
Azimuth: NA												
TOTAL DEPTH: 87.8 ft		SAMPLE METHODS: ASTM D 1586-11; 2488-09a; 2113-08; 6032-08						HAMMER (ID): 140-lb Auto (337153)				
DATE STARTED: 6/6/13		COMPLETED: 6/11/13		CASING DEPTH: 81.8 ft		CORE BARREL TYPE: HQ3/Diamond Impregnated core bits						
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %		ROD (ft) %	SAMP. NO.	L O G	ROCK DESCRIPTION AND REMARKS			
									Begin Coring @ 46.8 ft			
764.8	46.8	2.2	2:17	(1.8)	(0.0)	Run 1		764.8	LIMESTONE (MICRITE), grayish brown (10YR 5/2), weak, moderately bedded, moderately weathered, trace laminated Calcareous SILTSTONE; trace pits, strong HCl reaction			46.8
762.6	49.0		3:18	82%	0%							
		5.0	1:26/0.2	(1.8)	(0.0)	Run 2		762.2	(Lincolnshire Formation-Eidson Member-Unit A)			49.4
			1:12	36%	0%				46.8-46.9ft: FZ, 25-45°, SR, mechanically broken			
			0:02						47.1-47.2, 47.4-47.6, 47.8-47.9, 48.2-48.3ft: BJ, 20°, PS-US, T-O, D, III			
			0:02						47.1-47.2ft: FZ, 45-10°, SR, MO, H, IV			
			1:04						48.0ft: J, 45°, SR, VW, G, IV			
757.6	54.0		0:28						49.0-49.2ft: FZ, 30°, PR, O, D, III			
		5.0	2:29	(0.6)	(0.0)	Run 3			CAVITIES/VOIDS with WEATHERED ROCK and CLAY, recovered material is LIMESTONE (MICRITE), grayish brown (10YR 5/2) to brown (10YR 5/3), extremely weak to weak, completely weathered to FAT CLAY (CH) with few thin beds of medium strong, moderately weathered rock; strong to weak HCl reaction			
			2:55	12%	0%				50.0ft: Lost drill fluid circulation			
			0:07						50.0-52.0ft: Rod drop/fast drilling			
			0:09						54.4ft: Regained drill fluid circulation			
752.6	59.0		0:02						55.6ft: Lost drill fluid circulation for remainder of boring			
									56.0-59.0ft: Rod drop/fast drilling			
									59.0-60.2ft: Washed out advancing casing			
751.4	60.2	3.7	4:46/0.7	(1.6)	(0.7)	Run 4		751.4	LIMESTONE (MICRITE), gray (5YR 6/1), medium strong, very thinly to moderately bedded, slightly weathered, trace to few very thin to thin chert beds (dark gray to black); trace stylolites, trace to few calcite filled pits and sparry calcite "bird eyes", strong HCl reaction			60.2
			8:12	43%	19%							
			0:47						CAVITY/VOID-No Recovery, soil fill if any washed away during coring			
747.7	63.9		1:14					750.2	61.4-63.5ft: Fast drilling with rod drops			61.4
747.6	64.0	4.9	2:52/0.9	(2.4)	(1.5)	Run 5		748.1	LIMESTONE (MICRITE), as described above			63.5
			9:27	49%	31%				63.9-64.0ft: Washed out advancing casing			
			0:26					746.4	64.0-64.5ft: FZ, 25-45°, US, PO, C, III			65.2
			5:14						CAVITY/VOID-No Recovery, soil fill if any washed away during coring			
742.7	68.9		15:17					743.9	65.2-67.7ft: Fast drilling with rod drops			67.7
		5.1	7:36	(2.5)	(0.9)	Run 6			LIMESTONE (MICRITE), as described above, 68.9-69.0ft: Washed out advancing casing			
742.6	69.0		5:33	49%	18%			741.9	68.7ft: J, 45°, PS, PO, B, III			69.7
			1:12						69.3ft: BJ, 30°, SS, O, B, II			
			0:32					741.1	CAVITY/VOID-No Recovery, soil fill if any washed away during coring			70.5
			1:20/1.1						LIMESTONE (MICRITE), as described above			
737.5	74.1							740.1	CAVITY/VOID-Poor Recovery, recovered material is FAT CLAY (CH), yellowish red (5YR 5/6), with few fragments and lenses of moderately to slightly weathered LIMESTONE (MICRITE)			71.5
		5.0	5:52	(2.5)	(0.0)	Run 7			71.5-74.1ft: Fast drilling with rod drops			
			1:20	50%	0%				75.1-79.1ft: Fast drilling with rod drops			
			0:36									
			2:24									
732.5	79.1	5.0	0:06									
			1:05	(3.1)	(0.0)	Run 8			79.1-81.1ft: Fast drilling with rod drops			
			2:57	62%	0%							
			10:33					730.6	LIMESTONE (MICRITE), as described above			81.0
			10:50									
727.5	84.1	2.5	13:04									
			10:50	(2.4)	(1.5)	Run 9			81.1-83.1ft: FZ, 25-45, PS-PL, C, III			
			13:39	96%	60%				83.3,83.6,84.8ft: J, 45°, SS-UR, B-C, I-III			
725.0	86.6		9:36/0.5						85.2,85.4,85.6,86.3ft: SH, 45°, PL-UL, C, III, with calcite			
		1.2	20:46	(0.0)	(0.0)	Run 10			86.6-87.8ft: NO RECOVERY-drilled thru casing with core barrel, recovered metal pieces.			
723.8	87.8		26:35/0.2	0%	0%			723.8	Boring terminated at final depth drilled and abandoned/backfilled per AMEC and BECHTEL agreement; boring replaced with offset boring MP-418A			87.8
									Boring and coring terminated at 87.8 feet.			
Observed water levels:												
13.8 ft, bgs, AM 6/8/13												
54.1 ft bgs, AM 6/9/13												
54.1 ft bgs, AM 6/10/13												
53.9 ft bgs, AM 6/11/13												

CLINCH RIVER SMR CORE FINAL CLINCH FINAL LOGS.GPJ CLINCH BORING DATA TEMPLATE.GDT 3/5/14