



GEOTECHNICAL CORING LOG

Prepared By: MBL Date: 3/5/14

Checked By: JCM Date: 3/5/14

SHEET 1 OF 6

BECHTEL PROJECT NO.: 25847		AMEC PROJECT NO.: 6468-13-1072		COUNTY: Roane, TN		GEOLOGIST: R. Clark	
SITE DESCRIPTION: Clinch River SMR Project, Roane County, Tennessee				DRILLER: S. Snow/D. King		Boring Orientation	
BORING NO.: MP-417		DRILL METHOD: Mud Rotary/Core		DRILL MACHINE: CME-55 (TSD)		Inclination: Vertical	
GROUND ELEV.: 772.7 ft (NAVD88)		NORTHING: 569,915 US ft (NAD83)		EASTING: 2,446,630 US ft (NAD83)		Azimuth: NA	
TOTAL DEPTH: 320.1 ft		SAMPLE METHODS: ASTM D 1586-11; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb Auto (373705)	
DATE STARTED: 6/12/13		COMPLETED: 6/23/13		CASING DEPTH: 43.0 ft		CORE BARREL TYPE: HQ3/Diamond Impregnated core bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	LOG	ROCK DESCRIPTION AND REMARKS
				REC. (%)	RQD (%)			
								Begin Coring @ 43.0 ft
729.7	43.0	2.0	3:15	(1.3)	(0.0)	Run 1		729.7 CALCAREOUS SILTSTONE, greenish black (10Y 2.5/1) to very dark greenish gray (10Y 3/1) and dark greenish gray (10Y 4/1), weak to medium strong, laminated to very thinly bedded, moderately to slightly weathered, interbedded with trace to few, laminated to very thinly bedded LIMESTONE (MICRITE); slight to moderate bioturbation, strong HCl reaction (Lincolnshire Formation-Fleanor Member-Unit B)
727.7	45.0	5.0	4:39 2:37 2:26 2:27 1:59	(4.0) 80%	(2.2) 44%	Run 2		43.3,43.7,44.2,44.3ft: BJ, 40°, PS, PO, C, IV 43.3ft: J, 50°, PS, T, C, IV 45.1,45.6,46.1,47.2,47.7ft: BJ, 40°, PS T-PO, C, III 47.5,48.5ft: J, 50°, PS, T, C, III
722.7	50.0	5.0	2:25 2:18 3:15 2:05 2:45	(5.0) 100%	(4.2) 84%	Run 3		51.7ft: J, 50°, PS, T, C, III 51.9-52.1ft: FZ, 0-30°, PR-SR, T-O, C-D, III 52.4,52.5ft: BJ, 30°, PS, T, C, III
717.7	55.0	5.0	2:11 2:15 2:30 2:47 2:52	(5.0) 100%	(3.3) 66%	Run 4		720.0 CALCAREOUS SILTSTONE, dusky red (2.5YR 3/2) to weak red (5R 4/2), weak to medium strong, laminated to very thinly bedded, locally with moderately to thickly bedded appearance, slightly weathered to fresh, interbedded with few to little, laminated to thin LIMESTONE (MICRITE), gray (N 5/) to greenish gray (5BG 6/1) and reddish gray (7.5R 5/1); moderately to strongly bioturbated, trace calcite filled pits, strong HCl reaction
712.7	60.0	5.0	3:04 2:37 2:43 1:59 1:58	(4.9) 98%	(2.3) 46%	Run 5		54.8ft: BJ, 40°, PS, T, C, II 55.2,56.3,57.0,57.5,57.8,58.3,58.7ft: BJ, 30°, PS, PO, C, II 57.0,58.7,58.8,59.4ft: J, 50°, PS, T, C, III
707.7	65.0	5.0	5:53 2:58 2:29 3:34 3:04	(5.0) 100%	(3.1) 62%	Run 6		60.4,60.5,60.8,61.0,61.2,62.1,62.8ft: BJ, 35°,PS, T, C, II 60.4,60.8,62.5,62.8,63.8ft: J, 50-60°, PR, T-PO, B-C, II 61.8-62.3ft: Healed joints spaced at about 0.1' 62.2ft: J, 50°, PS, III 62.8ft: J, 50°, PS, T, C, II
702.7	70.0	5.0	5:05 4:03 3:21 3:41 4:01	(5.0) 100%	(3.2) 64%	Run 7		65.2ft: J, 0°, PS, VT, B 65.5ft: J, 40°, PS, VT, B 66.9,67.2,67.4,67.6,68.0,68.1,68.3,69.0,69.5,69.8ft: BJ, 35°, PS, T-PO, C, II 67.8ft: BJ, 50°, PS, T, C, III
697.7	75.0	5.0	4:51 2:17 1:23 2:56 4:44	(4.6) 92%	(1.2) 24%	Run 8		70.4ft: J, 25°, PS, T, C, II 70.5ft: BJ, 40°, PS, PO, C, II 71.1,71.5ft: BJ, 30°, PS, T-PO, C, II 71.8ft: J, 70°, PS, T, C, III 72.2ft: J, 10°, PS, T, C, II 72.8ft: J, 30°, PS, T, C, II, and BJ, 25°, PR, T, B, II 73.1ft: J, 20°, PR, T-PO, B, II 73.6ft: BJ, 30°, PR, T, D, III 74.2-74.5ft: FZ, 30° and 60°, PR, T, B, II 74.5ft: BJ, 30°, PS, T, C, II 75.4ft: J, 50°, PS, T, C, II 76.0ft: BJ, 30°, PS, T, C, II 77.5ft: J, 70°, SR, PO, C, II 78.2-79.7ft: FZ/BJ, 30°, PS, T, C, II, spaced at 0.1'
692.7	80.0	5.0	5:14 3:30 3:09 2:46 1:45	(5.0) 100%	(3.7) 74%	Run 9		80.3,80.7ft: BJ, 30°, SR, T, C, II 81.2ft: J, 50°, SR, T-PO, C, II 82.0ft: J, 10°, PS, T-PO, C, II 82.6,83.4,83.7,83.9,84.0ft: BJ, 30°, PS, T, C, II-III
687.7	85.0	5.0	1:40 1:37 1:42 1:33 1:47	(5.0) 100%	(3.5) 70%	Run 10		688.7 LIMESTONE (WACKESTONE/GRAINSTONE), reddish gray (7.5R 5/1) to greenish gray (10Y 5/1), strong, laminated to moderately bedded, fresh, with some laminated to thinly bedded, diffuse, Calcareous SILTSTONE interbeds; strong HCl reaction
682.7	90.0	5.0	2:25 1:36	(5.0) 100%	(5.0) 100%	Run 11		683.2 85.0,86.6,86.9,87.5,88.4ft: BJ, 35°, PS, T-PO, C, II 85.8ft: J, 50-60°, VT, A, I, with calcite 86.8,88.0ft: J, 65-70°, PS, T, C, II
								89.6,90.4ft: BJ, 30-35°, PS, T-PO, C, II

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



BECHTEL PROJECT NO.: 25847		AMEC PROJECT NO.: 6468-13-1072		COUNTY: Roane, TN		GEOLOGIST: R. Clark	
SITE DESCRIPTION: Clinch River SMR Project, Roane County, Tennessee				DRILLER: S. Snow/D. King		Boring Orientation	
BORING NO.: MP-417		DRILL METHOD: Mud Rotary/Core		DRILL MACHINE: CME-55 (TSD)		Inclination: Vertical	
GROUND ELEV.: 772.7 ft (NAVD88)		NORTHING: 569,915 US ft (NAD83)		EASTING: 2,446,630 US ft (NAD83)		Azimuth: NA	
TOTAL DEPTH: 320.1 ft		SAMPLE METHODS: ASTM D 1586-11; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb Auto (373705)	
DATE STARTED: 6/12/13		COMPLETED: 6/23/13		CASING DEPTH: 43.0 ft		CORE BARREL TYPE: HQ3/Diamond Impregnated core bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	LOG	ROCK DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %			
								Continued from previous page
677.7	95.0	5.0	1:33 1:42 1:58 2:04 1:28 1:51 1:18 2:30	(5.0) 100%	(4.3) 86%	Run 12		CALCAREOUS SILTSTONE, dusky red (2.5YR 3/2) to weak red (7.5R 4/2), locally with greenish gray (5GY 4/1), weak to medium strong, laminated to very thinly bedded, locally with moderately to thickly bedded appearance, fresh, interbedded with few to little, laminated to thin, locally discontinuous and diffuse LIMESTONE (MICRITE), gray (N 5/) to greenish gray (5BG 6/1); moderately to strongly bioturbated with horizontal and vertical burrows, trace calcite filled pits, strong HCl reaction (continued) 95.1ft: J, 45°, US, T, C, IV 98.6-99.2ft: BJ, 45°, PS, T, C, II, spaced at about 0.1' 99.6ft: BJ, 30-35°, PS, O, C, II
672.7	100.0	5.0	3:30 2:42 2:38 1:47 1:57	(5.0) 100%	(5.0) 100%	Run 13		104.5ft: BJ, 30°, PR, T, B, II
667.7	105.0	5.0	1:48 1:42 2:04 2:10 1:48	(5.0) 100%	(4.6) 92%	Run 14		106.7ft: J, 50°, PS, T, C, II 107.1ft: J, 10°, PR, PO, C, II 109.3ft: BJ, 35°, PS, T, C, II 100.7-110ft: FZ, 50°, PS, T, A, I
662.7	110.0	5.0	5:31 3:02 3:11 3:25 3:33	(5.0) 100%	(5.0) 100%	Run 15		111.1ft: J, 40°, PS, VT, A-B, IV 113.7ft: J, 70°, PR, VT, A, I, mechanically opened
657.7	115.0	5.0	2:05 2:55 3:14 3:08 3:45	(5.0) 100%	(5.0) 100%	Run 16		117.2ft: J, 50°, PR, T, B, II
652.7	120.0	5.0	3:55 3:53 3:01 2:40 3:59	(5.0) 100%	(5.0) 100%	Run 17		121.6,122.0ft: BJ, 35°, BJ/SH, PL, VT, C, II 123.3ft: J, 50°, PS, T, C, II 123.8ft: BJ, 35°, PS, PO, C, II
647.7	125.0	5.0	3:26 3:26 3:18 3:47 2:55	(4.9) 98%	(4.3) 86%	Run 18		127.5ft: BJ, 35°, PS, T, B, II 127.9ft: BJ, 30°, PS, T, C, II 128.1ft: J, 60°, PS, T, C, II 129.1,129.3ft: BJ, 30°, PS, T, C, II
642.7	130.0	4.8	2:32 2:16 2:47 3:05 2:13/0.8	(4.8) 100%	(4.0) 83%	Run 19		130.1,130.3,131.4,131.8ft: BJ, 35°, PS, T, C, II 131.3ft: J, 70°, PS, T, C, II
637.9	134.8	5.0	4:15 2:35 2:32 2:21 3:04	(5.0) 100%	(5.0) 100%	Run 20		137.5ft: BJ, 35°, PR, T-PO, C, II
632.9	139.8							

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



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SITE DESCRIPTION: Clinch River SMR Project, Roane County, Tennessee				DRILLER: S. Snow/D. King		Boring Orientation	
BORING NO.: MP-417		DRILL METHOD: Mud Rotary/Core		DRILL MACHINE: CME-55 (TSD)		Inclination: Vertical	
GROUND ELEV.: 772.7 ft (NAVD88)		NORTHING: 569,915 US ft (NAD83)		EASTING: 2,446,630 US ft (NAD83)		Azimuth: NA	
TOTAL DEPTH: 320.1 ft		SAMPLE METHODS: ASTM D 1586-11; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb Auto (373705)	
DATE STARTED: 6/12/13		COMPLETED: 6/23/13		CASING DEPTH: 43.0 ft		CORE BARREL TYPE: HQ3/Diamond Impregnated core bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	LOG	ROCK DESCRIPTION AND REMARKS
				REC. (%)	RQD (%)			
								Continued from previous page
627.7	145.0	5.2	2:37 2:55 2:13 2:33 2:19	(5.1) 98%	(4.9) 94%	Run 21		CALCAREOUS SILTSTONE, dusky red (2.5YR 3/2) to weak red (7.5R 4/2), locally with greenish gray (5GY 4/1), weak to medium strong, laminated to very thinly bedded, locally with moderately to thickly bedded appearance, fresh, interbedded with few to little, laminated to thin, locally discontinuous and diffuse LIMESTONE (MICRITE), gray (N 5/) to greenish gray (5BG 6/1); moderately to strongly bioturbated with horizontal and vertical burrows, trace calcite filled pits, strong HCl reaction (continued)
		5.0	1:40/0.2 3:17 2:14 2:12 1:48 1:53	(5.0) 100%	(5.0) 100%	Run 22		CALCAREOUS SILTSTONE, greenish black (10Y 2.5/1) to black (N 2.5/), weak to medium strong, laminated to thinly bedded, fresh, with trace laminated LIMESTONE (MICRITE); slight bioturbation, strong HCl reaction 145.0ft: BJ, 30°, PS, T, B, II
622.7	150.0	5.0	2:08 1:20 1:41 1:11 1:22	(5.0) 100%	(5.0) 100%	Run 23		LIMESTONE (MICRITE/WACKESTONE), dark gray (N 4/), medium strong to strong, thinly bedded and nodular, fresh, with little to some irregular interbeds of Calcareous SILTSTONE, dark greenish gray (5G 5/1); strong HCl reaction (Lincolnshire Formation-Eidson Member-Unit A)
617.7	155.0	5.0	2:09 2:08 2:01 2:50 2:55	(5.0) 100%	(5.0) 100%	Run 24		LIMESTONE (MICRITE), argillaceous, gray (N 6/) to dark gray (N 4/ and 5Y 4/1) and dark greenish gray (10Y 4/1), medium strong to strong, laminated to moderately bedded and locally nodular, fresh, interbedded with little to some Calcareous SILTSTONE, very dark gray (N 3/ to 5Y 3/1), very dark greenish gray (10Y 3/1), greenish black (10Y 2.5/1), and black (N 2.5/ to 5Y 2.5/1), locally dark reddish gray (2.5YR 3/1) to reddish black (2.5YR 2.5/1), and trace to few very thin to thin chert beds, lenses, and nodules (greenish gray to dark gray and black, with calcite healed tensional fractures); locally with fossils, slight to moderately bioturbated, trace calcite filled pits and burrows and sparry calcite "bird eyes", strong HCl reaction 153.8ft: BJ, 35°, PS, T, C, II
612.7	160.0	5.0	1:59 1:46 1:57 2:01 1:53	(5.0) 100%	(5.0) 100%	Run 25		163.5ft: J, 45°, PR, T, C, II
607.7	165.0	5.0	2:14 2:39 2:50 3:02 2:20	(5.0) 100%	(5.0) 100%	Run 26		
602.7	170.0	5.0	3:27 2:28 2:34 2:04 2:29	(5.0) 100%	(5.0) 100%	Run 27		
597.7	175.0	5.0	2:20 2:45 1:35 1:54 2:42	(5.0) 100%	(5.0) 100%	Run 28		176.0ft: J, 50°, PR, T, B, II
592.7	180.0	5.0	2:01 1:43 2:06 2:32 2:46	(5.0) 100%	(5.0) 100%	Run 29		180.1ft: SH, 50°, PL, T, B, II 181.3,182.1,182.4,183.1,183.8,183.9ft: BJ/SH, 35°, PL, T, B, II
587.7	185.0	5.0	3:10 2:37 2:24 2:25	(5.0) 100%	(5.0) 100%	Run 30		

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



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SITE DESCRIPTION: Clinch River SMR Project, Roane County, Tennessee				DRILLER: S. Snow/D. King		Boring Orientation	
BORING NO.: MP-417		DRILL METHOD: Mud Rotary/Core		DRILL MACHINE: CME-55 (TSD)		Inclination: Vertical	
GROUND ELEV.: 772.7 ft (NAVD88)		NORTHING: 569,915 US ft (NAD83)		EASTING: 2,446,630 US ft (NAD83)		Azimuth: NA	
TOTAL DEPTH: 320.1 ft		SAMPLE METHODS: ASTM D 1586-11; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb Auto (373705)	
DATE STARTED: 6/12/13		COMPLETED: 6/23/13		CASING DEPTH: 43.0 ft		CORE BARREL TYPE: HQ3/Diamond Impregnated core bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	LOG	ROCK DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %			
								Continued from previous page
582.7	190.0	5.0	2:31 3:23 3:05 2:25 2:00 2:27	(5.0) 100%	(5.0) 100%	Run 31		LIMESTONE (MICRITE), argillaceous, gray (N 6/) to dark gray (N 4/ and 5Y 4/1) and dark greenish gray (10Y 4/1), medium strong to strong, laminated to moderately bedded and locally nodular, fresh, interbedded with little to some Calcareous SILTSTONE, very dark gray (N 3/ to 5Y 3/1), very dark greenish gray (10Y 3/1), greenish black (10Y 2.5/1), and black (N 2.5/ to 5Y 2.5/1), locally dark reddish gray (2.5YR 3/1) to reddish black (2.5YR 2.5/1), and trace to few very thin to thin chert beds, lenses, and nodules (greenish gray to dark gray and black, with calcite healed tensional fractures); locally with fossils, slight to moderately bioturbated, trace calcite filled pits and burrows and sparry calcite "bird eyes", strong HCl reaction (continued)
577.7	195.0	5.0	2:50 2:12 2:15 2:18 2:25	(5.0) 100%	(5.0) 100%	Run 32		191.5ft: J, 50°, PR PO, C, II 198.6ft: BJ, 35°, PS, T, C, II
572.7	200.0	5.0	3:14 3:09 2:24 2:28 2:33	(5.0) 100%	(4.8) 96%	Run 33		200.1ft: J, 50°, PR, T, C, II
567.7	205.0	5.0	3:07 1:56 2:02 2:11 2:15	(5.0) 100%	(4.9) 98%	Run 34		202.1ft: BJ, 45°, PS, T, C, II 202.9ft: J, 50°, PS, T, C, II 205.4,206.5,207.4,207.9,208.6,209.4,209.6ft: BJ, 35°, PS, T, C, II 202.3-211.0ft: J, 70-90°, VT, A, I, with calcite spaced at about 1.0'
562.7	210.0	5.0	3:39 2:39 3:25 3:14 2:42	(5.0) 100%	(4.4) 88%	Run 35		210.0,210.4,212.1,212.4,212.6,214.5,214.6ft: BJ/SH, 35°, PL, T, C, II
557.7	215.0	5.0	4:14 3:01 3:19 2:10 3:28	(4.9) 98%	(3.6) 72%	Run 36		216.9,217.1,218.3,218.6,219.6,219.7ft: BJ, 35-40°, PS-PL, T, C, II
552.7	220.0	5.0	4:16 2:40 3:45 3:05 3:08	(5.0) 100%	(4.7) 94%	Run 37		223.3ft: J, 50°, PS, PO, C, II 224.7ft: BJ, 35°, PL, O, C, II
547.7	225.0	5.0	6:57 3:04 4:08 4:10 2:28	(5.0) 100%	(3.0) 60%	Run 38		225.7,227.2,227.6,228.1ft: BJ, 35°, PS-PL, T, C, II 227.8,228.3,229.5ft: SH/BJ, 35-60°, PL, T, B, II 229.4ft: SH, 65°, PL, T, C, II
542.7	230.0	5.1	7:19 4:40 3:37 4:52 2:39/1.1	(5.1) 100%	(4.5) 88%	Run 39		228.9-229.5ft: SHEAR ZONE, multiple calcite healed shears at 40-65° to core axis 230.2ft: J, 65°, PR, VT, A, I, with calcite 232.2ft: J, 45°, PS, T, C, II 232.8ft: BJ/SH, 35°, PL, T, C, II 233.5-234.0ft: J, 70-90°, VT, A, I 233.2-233.5ft: SHEAR ZONE, multiple calcite healed shears at 20-30° to core axis
537.6	235.1	5.0	4:50 5:06	(5.0) 100%	(5.0) 100%	Run 40		235.2,236.2ft: BJ, 30°, US, T, B, II 235.3-238.0ft: FZ, 90°, VT, A, I, with calcite and spaced at about 0.5' 238.6ft: SH, 30°, VT, A, I, with calcite

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



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SITE DESCRIPTION: Clinch River SMR Project, Roane County, Tennessee				DRILLER: S. Snow/D. King		Boring Orientation	
BORING NO.: MP-417		DRILL METHOD: Mud Rotary/Core		DRILL MACHINE: CME-55 (TSD)		Inclination: Vertical	
GROUND ELEV.: 772.7 ft (NAVD88)		NORTHING: 569,915 US ft (NAD83)		EASTING: 2,446,630 US ft (NAD83)		Azimuth: NA	
TOTAL DEPTH: 320.1 ft		SAMPLE METHODS: ASTM D 1586-11; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb Auto (373705)	
DATE STARTED: 6/12/13		COMPLETED: 6/23/13		CASING DEPTH: 43.0 ft		CORE BARREL TYPE: HQ3/Diamond Impregnated core bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	LOG	ROCK DESCRIPTION AND REMARKS
				REC. (ft) %	RQD (ft) %			
								Continued from previous page
532.6	240.1	5.0	5:29 3:45 4:15 3:35 3:41 3:10 3:10 2:40	(5.0) 100%	(5.0) 100%	Run 41		238.7ft: J, 30°, PR, T, B, II 239.5ft: BJ, 35°, T, B, II LIMESTONE (MICRITE), gray (2.5Y 5/1 to N 5/) to dark gray (2.5Y 4/1 to N 4/), strong, very thinly to moderately bedded, fresh, locally argillaceous, interbedded with few to little laminated to very thin, wavy and discontinuous, locally diffuse Calcareous SILTSTONE, very dark gray (5Y 3/1) to black (N 2.5/), and few to little very thin to thin chert beds, lenses, and irregular nodules (gray to bluish gray and black, with calcite healed tensional fractures orthogonal to bedding); locally with stylolites, trace bioturbation, trace calcite filled pits and burrows, strong HCl reaction (continued) 242.1,243.0ft: BJ/SH, 35°, PL, T, B, II 244.0ft: BJ, 35°, PS, T, C, II 246.8,247.6ft: BJ/SH, 35°, PS, T, C, II 248.7ft: J, 65°, PR, PO, C, III
527.6	245.1	5.0	3:23 3:01 2:50 3:27 2:32	(5.0) 100%	(5.0) 100%	Run 42		249.0-249.3ft: SHEAR ZONE, multiple calcite healed shears at 30-60° to core axis
522.6	250.1	5.0	3:59 3:02 3:15 3:23 2:08	(5.0) 100%	(5.0) 100%	Run 43		250.4ft: J, 50°, PS, VT, A, I
517.6	255.1	5.0	2:36 1:38 2:33 2:55 2:43	(5.0) 100%	(5.0) 100%	Run 44		519.9 CALCAREOUS SILTSTONE, very dark greenish gray (10Y 3/1) to very dark gray (N 3/) and black (N 2.5/1), locally grading to reddish black (2.5YR 2.5/1) and very dusky red (2.5YR 2.5/2) with dark greenish gray (5GY 4/1), weak to medium strong and strong, laminated to very thinly bedded, locally with thickly bedded appearance, fresh, and little to some, laminated to moderately bedded and nodular LIMESTONE (MICRITE/WACKESTONE), gray (N 6/ to N 5/) and bluish gray to dark bluish gray (5PB 6/1 to 4/1), and few very thin to thin chert beds, lenses, and nodules (gray to dark gray and black, few with reddish brown, with calcite healed tensional fractures); bioturbated, trace calcite filled pits and burrows, strong HCl reaction (Upper Blackford Formation-Unit A)
512.6	260.1	5.0	5:45 3:17 3:37 3:39 2:57	(5.0) 100%	(5.0) 100%	Run 45		262.5ft: J/SH, PL, T, C, II 264.5ft: J, 50° and 70°, VT, A, I, intersecting joints with calcite
507.6	265.1	5.0	3:28 2:15 2:10 2:27 1:58	(5.0) 100%	(5.0) 100%	Run 46		265.7ft: SH, 30°, VT, A, I, with calcite
502.6	270.1	5.0	2:40 2:29 2:18 2:36 2:40	(5.0) 100%	(5.0) 100%	Run 47		271.0ft: SH, 50°, PL, T, C, II 272.7,273.2,273.9ft: SH, 35°, PL, T, C, II 273.0ft: J, 35°, PS, VT, A, I 274.3,274.5,274.7ft: J, O-15°, VT, A, I, with calcite 274.4ft: J, 30°, VT, A, I
497.6	275.1	5.0	2:55 3:18 3:39 2:55 2:42	(5.0) 100%	(4.7) 94%	Run 48		275.3,278.2,278.3ft: BJ, 20°, SR, O, B, II, mechanical breaks 275.5ft: J, 10°, VT, A, I, with calcite
492.6	280.1	5.0	4:00 2:53 3:13 2:31 2:14	(5.0) 100%	(5.0) 100%	Run 49		281.9,282.7,283.4ft: BJ, 35°, PS, T-PO, C, II
487.6	285.1	5.0	3:45	(4.9)	(3.6)	Run 50		

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



BECHTEL PROJECT NO.: 25847		AMEC PROJECT NO.: 6468-13-1072		COUNTY: Roane, TN		GEOLOGIST: R. Clark	
SITE DESCRIPTION: Clinch River SMR Project, Roane County, Tennessee				DRILLER: S. Snow/D. King		Boring Orientation	
BORING NO.: MP-417		DRILL METHOD: Mud Rotary/Core		DRILL MACHINE: CME-55 (TSD)		Inclination: Vertical	
GROUND ELEV.: 772.7 ft (NAVD88)		NORTHING: 569,915 US ft (NAD83)		EASTING: 2,446,630 US ft (NAD83)		Azimuth: NA	
TOTAL DEPTH: 320.1 ft		SAMPLE METHODS: ASTM D 1586-11; 2488-09a; 2113-08; 6032-08				HAMMER (ID): 140-lb Auto (373705)	
DATE STARTED: 6/12/13		COMPLETED: 6/23/13		CASING DEPTH: 43.0 ft		CORE BARREL TYPE: HQ3/Diamond Impregnated core bits	

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	LOG	ROCK DESCRIPTION AND REMARKS		
				REC. (%)	RQD (%)					
								Continued from previous page		
482.6	290.1	5.0	3:22 2:35 2:45 2:30	98%	72%	Run 51		CALCAREOUS SILTSTONE, very dark greenish gray (10Y 3/1) to very dark gray (N 3/) and black (N 2.5/1), locally grading to reddish black (2.5YR 2.5/1) and very dusky red (2.5YR 2.5/2) with dark greenish gray (5GY 4/1), weak to medium strong and strong, laminated to very thinly bedded, locally with thickly bedded appearance, fresh, and little to some, laminated to moderately bedded and nodular LIMESTONE (MICRITE/WACKESTONE), gray (N 6/ to N 5/) and bluish gray to dark bluish gray (5PB 6/1 to 4/1), and few very thin to thin chert beds, lenses, and nodules (gray to dark gray and black, few with reddish brown, with calcite healed tensional fractures); bioturbated, trace calcite filled pits and burrows, strong HCl reaction (Upper Blackford Formation-Unit A) (continued) 286.7-288.1ft: J, 50-60°, PR, VT, A, I, with calcite spaced at about 0.1' 287.5ft: SH, 35°, PL, VT, A, I, with calcite 287.7ft: SH, 60°, VT, A, I, with calcite 289.3ft: J, 50°, PR, T-PO, B, II 289.3,289.7ft: BJ, 30°, PR, T-O, B, II, minor core loss at 289.7ft 297.9,298.9ft: J, 50°, PR, T, B, II 300.0ft: J, 50°, PS, T, C, II		
477.6	295.1	5.0	4:32 3:18 2:55 3:18 2:58	(5.0) 100%	(5.0) 100%	Run 52				
472.6	300.1	5.0	3:12 2:39 2:41 2:38 3:05	(5.0) 100%	(5.0) 100%	Run 53				
467.6	305.1	5.0	6:44 6:50 3:35 5:32 3:47	(5.0) 100%	(5.0) 100%	Run 54				
462.6	310.1	4.9	3:26 3:13 3:37 5:05 3:42	(5.0) 100%	(4.3) 86%	Run 55				
457.7	315.0	5.1	3:42/0.9 6:57 4:42 2:35 2:29 2:37/1.1	(5.0) 98%	(5.0) 98%	Run 56				
452.6	320.1								452.6	Boring and coring terminated at 320.1 feet.

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

MP-417 – Boxes 1 and 2



MP-417 – Boxes 3 and 4



MP-417 – Boxes 5 and 6



MP-417 – Boxes 7 and 8

