MACTEC

# GEOTECHNICAL BORING LOG

Prepared By [illegible] Date 7/10/08
Checked By [illegible] Date 7-10-08



| | | | |
|---|---|---|---|
| BECHTEL PROJECT NO.: 25409 | MACTEC PROJECT NO.: 6468-07-1950 | COUNTY: Miami-Dade | GEOLOGIST: L. Bisson |
| SITE DESCRIPTION: Turkey Point COL | DRILL MACHINE: CME-550 (ATL) | DRILLER: L. Carter/ J. Landeros | GROUND WATER (ft) |
| BORING NO.: B-603 | DRILL METHOD: Mud Rotary/ Core | SAMPLE METHODS: SPT/Core | 0 HR. NA |
| GROUND ELEV.: -1.4 ft (NAVD88) | NORTHING: 397,018 US ft (NAD83/90) | EASTING: 876,697 US ft (NAD83/90) | 24 HR. NA |
| TOTAL DEPTH: 151.2 ft | BORING DIAMETER: 4" to 15.0', 3" to 151.2' | CASING DEPTH: 4" to 15.0', 3" to 124.0' | HAMMER (ID):140 lb. Auto (MEC-03) |
| DATE STARTED: 2/14/08 | COMPLETED: 2/21/08 | CORE SIZE: HQ3 | BITS USED: 4 1/4" Drag Bit & 2 15/16" Roller 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 |
|---|---|---|---|---|---|---|---|---|---|
| -1.4 | | | | | Ground Surface | | | | -1.4 0.0 |
| -1.4 / -3.9 | 0.0 / 2.5 | WOH | WOH | WOH | WOH 0 | 603-1 | | | MUCK, light gray (2.5Y7/2), to black (2.5Y2.5/1), very soft, wet, mostly organics, trace roots, trace shell fragments |
| -6.4 | 5.0 | WOH | 3 | 10 | 13 | 603-2A&B | | | -4.7 3.3 LIMESTONE, boundstone, white (2.5Y8.1), very soft, wet, moderately indurated, trace shell fragments (Miami Formation) |
| -8.9 | 7.5 | 10 | 8 | 8 | 16 | 603-3 | | | 5.0ft: oolitic |
| -11.4 | 10.0 | 10 | 7 | 6 | 13 | 603-4 | | | 7.5ft: mottled very dark gray (2.5Y3/1) |
| -13.9 | 12.5 | 5 | 9 | 10 | 19 | 603-5 | | | 10.0ft: pale yellow (2.5Y8/2), to light brownish gray (2.5Y6/2), mottled light olive brown (2.5Y5/4), trace calcareous concretion |
| -16.4 | 15.0 | 5 | 11 | 16 | 27 | 603-6 | | | 12.5ft: pale yellow (2.5Y8/2), to light gray (2.5Y7/2), soft |
| -17.4 | 16.0 | 7 | 50/0.5 | | 57/1.0 | 603-7 | | | 15.0ft: white (2.5Y8/1), mottled light gray (2.5Y7/1), hard, indurated |
| -19.8 | 18.4 | | | | | RUN-1 | | | 16.0ft: Switch sampling method to coring |
| -24.8 | 23.4 | | | | | RUN-2 | | | 16.0ft: light gray (2.5Y7/2), moderately hard, indurated, trace sand, shells, vugs, fossiliferous, locally interconnected vugs<br>18.4ft: trace recrystallized calcite<br>-24.8 23.4 LIMESTONE, boundstone, white (2.5Y8/1), to light brownish gray (2.5Y6/2), moderately hard to hard, indurated, little recrystallized calcite, trace shell fragments, trace to few vugs (Upper Fort Thompson Formation) |
| -29.8 | 28.4 | | | | | RUN-3 | | | |
| -34.8 | 33.4 | | | | | RUN-4 | | | 25.9ft: loss of circulation<br>28.4ft: coralline |
| -39.8 | 38.4 | | | | | RUN-5 | | | 33.4ft: white (2.5Y8/1), hard |
| -44.8 | 43.4 | | | | | RUN-6 | | | |
| -49.8 | 48.4 | | | | | RUN-7 | | | 43.4ft: white (2.5Y8/1) to gray (2.5Y5/1), trace coralline<br>-49.8 48.4 LIMESTONE, boundstone, white (2.5Y8/1), hard, indurated, trace shells (Lower Fort Thompson Formation) |
| -54.8 | 53.4 | | | | | RUN-8 | | | |
| -59.8 | 58.4 | | | | | RUN-9 | | | 53.4ft: medium hard, moderately indurated to friable |
| -64.8 | 63.4 | | | | | RUN-10 | | | 58.4ft: moderately hard, indurated, trace sand |
| -69.8 | 68.4 | | | | | RUN-11 | | | 63.4ft: soft to medium hard, friable to moderately indurated |
| -74.8 | 73.4 | | | | | RUN-12 | | | 68.4ft: moderately hard, indurated |
| | | | | | | RUN-13 | | | 73.4ft: soft to medium hard, friable to moderately indurated, trace coralline |

SEE LEGEND FOR ROCK HARDNESS CRITERIA BASED ON SPT DATA

TURKEY POINT COL BORE TURKEY POINT GPJ TURKEY POINT COL.GDT 7/10/08

MACTEC



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|---|---|---|---|
| BECHTEL PROJECT NO.: 25409 | MACTEC PROJECT NO.: 6468-07-1950 | COUNTY: Miami-Dade | GEOLOGIST: L. Bisson |
| SITE DESCRIPTION: Turkey Point COL | DRILL MACHINE: CME-550 (ATL) | DRILLER: L. Carter/ J. Landeros | GROUND WATER (ft) |
| BORING NO.: B-603 | DRILL METHOD: Mud Rotary/ Core | SAMPLE METHODS: SPT/Core | 0 HR. NA |
| GROUND ELEV.: -1.4 ft (NAVD88) | NORTHING: 397,018 US ft (NAD83/90) | EASTING: 876,697 US ft (NAD83/90) | 24 HR. NA |
| TOTAL DEPTH: 151.2 ft | BORING DIAMETER: 4" to 15.0', 3" to 151.2' | CASING DEPTH: 4" to 15.0', 3" to 124.0' | HAMMER (ID):140 lb. Auto (MEC-03) |
| DATE STARTED: 2/14/08 | COMPLETED: 2/21/08 | CORE SIZE: HQ3 | BITS USED: 4 1/4" Drag Bit & 2 15/16" Roller 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 |
|---|---|---|---|---|---|---|---|---|---|
| -76.2 | | | | | Continued from previous page | | | | |
| -79.8 | 78.4 | | | | | | | | LIMESTONE, boundstone, white (2.5Y8/1), hard, indurated, trace shells (Lower Fort Thompson Formation) *(continued)* |
| -84.8 | 83.4 | | | | | RUN-14 | | | |
| -89.8 | 88.4 | | | | | RUN-15 | | | 83.4ft: moderately hard, indurated |
| -94.8 | 93.4 | | | | | RUN-16 | | | 88.4ft: medium hard |
| -99.8 | 98.4 | | | | | RUN-17 | | | 93.4ft: moderately indurated |
| -104.8 | 103.4 | | | | | RUN-18 | | | 98.4ft: moderately hard, indurated, few shells and shell molds |
| -109.8 | 108.4 | | | | | RUN-19 | | | 103.4ft: hard, indurated |
| -114.8 | 113.4 | | | | | RUN-20 | | | 108.4ft: moderately hard, moderately indurated |
| -116.4 | 115.0 | | | | | RUN-21 | | | Silty SAND (SM), light gray (5Y7/2), medium dense, moist, fine grained sand, little fines (Tamiami Formation) |
| -121.9 | 120.5 | | | | | | | | 120.5ft: Switch sampling method to SPT Sandy SILT (ML), light gray (5Y7/2), very stiff, moist, fine to coarse sand, fine gravel |
| -126.1 | 124.7 | 6 | 12 | 10 | 22 | 603-8 | | | 124.7ft: greenish gray (10Y6/1), trace shells |
| -133.1 | 131.7 | 6 | 12 | 10 | 22 | 603-9 | | | 126.2ft: loss of circulation |
| -133.1 | 131.7 | | | | | | | | Silty SAND (SM), greenish gray (5GY6/1), medium dense, moist, fine to medium grained sand, fine gravel, trace shells |
| -137.8 | 136.4 | 4 | 5 | 6 | 11 | 603-10 | | | 136.4ft: loose, fine to coarse sand |
| -140.9 | 139.5 | 5 | 2 | 5 | 7 | 603-11 | | | 139.5ft: medium dense |
| -146.1 | 144.7 | 12 | 10 | 8 | 18 | 603-12 | | | |
| -151.1 | 149.7 | 7 | 9 | 10 | 19 | 603-13 | | | |

MACTEC



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| BECHTEL PROJECT NO.: 25409 | MACTEC PROJECT NO.: 6468-07-1950 | COUNTY: Miami-Dade | GEOLOGIST: L. Bisson |
| SITE DESCRIPTION: Turkey Point COL | DRILL MACHINE: CME-550 (ATL) | DRILLER: L. Carter/ J. Landeros | GROUND WATER (ft) |
| BORING NO.: B-603 | DRILL METHOD: Mud Rotary/ Core | SAMPLE METHODS: SPT/Core | 0 HR. NA |
| GROUND ELEV.: -1.4 ft (NAVD88) | NORTHING: 397,018 US ft (NAD83/90) | EASTING: 876,697 US ft (NAD83/90) | 24 HR. NA |
| TOTAL DEPTH: 151.2 ft | BORING DIAMETER: 4" to 15.0', 3" to 151.2' | CASING DEPTH: 4" to 15.0', 3" to 124.0' | HAMMER (ID):140 lb. Auto (MEC-03) |
| DATE STARTED: 2/14/08 | COMPLETED: 2/21/08 | CORE SIZE: HQ3 | BITS USED: 4 1/4" Drag Bit & 2 15/16" Roller 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 |
|---|---|---|---|---|---|---|---|---|---|
| -151.0 | | | | | Continued from previous page | | | | |
| | | 5 | 7 | 8 | 15 | 603-14 | | | -152.6 149.7ft: fine grained sand 151.2 |
| | | | | | | | | | Boring Terminated at Elevation -152.6 ft |

TURKEY POINT COL BORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 7/10/08

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|---|---|---|---|
| BECHTEL PROJECT NO.: 25409 | MACTEC PROJECT NO.: 6468-07-1950 | COUNTY: Miami-Dade | GEOLOGIST: L. Bisson |
| SITE DESCRIPTION: Turkey Point COL | DRILL MACHINE: CME-550 (ATL) | DRILLER: L. Carter/ J. Landeros | GROUND WATER (ft) |
| BORING NO.: B-603 | DRILL METHOD: Mud Rotary/ Core | SAMPLE METHODS: SPT/Core | 0 HR. NA |
| GROUND ELEV.: -1.4 ft (NAVD88) | NORTHING: 397,018 US ft (NAD83/90) | EASTING: 876,697 US ft (NAD83/90) | 24 HR. NA |
| TOTAL DEPTH: 151.2 ft | CASING DEPTH: 4" to 15.0', 3" to 124.0' | | HAMMER (ID): 140 lb. Auto (MEC-03) |
| DATE STARTED: 2/14/08 | COMPLETED: 2/21/08 | CORE SIZE: HQ3 | CORE BARREL TYPE: Triple Tube Wireline (Split inner liners) |

| 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 @ 16.0 ft |
| -17.4<br>-19.8 | 16.0<br>18.4 | 2.4 | 0:27<br>0:45<br>0:17/0.4 | (1.6)<br>67% | (0.5)<br>21% | RUN-1 | (4.4)<br>59% | (1.9)<br>26% | | LIMESTONE, boundstone, white (2.5Y8.1), very soft, wet, moderately indurated, trace shell fragments (Miami Formation) *(continued)* |
| -24.8 | 23.4 | 5.0 | 0:06<br>0:52<br>0:22<br>0:13<br>0:13 | (2.8)<br>56% | (1.4)<br>28% | RUN-2 | | | | 16.0ft: light gray (2.5Y7/2), moderately hard, indurated, trace sand, shells, vugs, fossiliferous, locally interconnected vugs<br>18.4ft: trace recrystallized calcite<br>-24.8 23.4 |
| -29.8 | 28.4 | 5.0 | 0:11<br>0:16<br>0:41<br>0:49<br>0:36 | (4.2)<br>84% | (1.1)<br>22% | RUN-3 | (21.6)<br>86% | (14.9)<br>60% | | LIMESTONE, boundstone, white (2.5Y8/1), to light brownish gray (2.5Y6/2), moderately hard to hard, indurated, little recrystallized calcite, trace shell fragments, trace to few vugs (Upper Fort Thompson Formation)<br>25.9ft: loss of circulation |
| -34.8 | 33.4 | 5.0 | 0:11<br>0:16<br>0:16<br>0:11<br>0:26 | (3.3)<br>66% | (0.5)<br>10% | RUN-4 | | | | 28.4ft: coralline |
| -39.8 | 38.4 | 5.0 | 0:36<br>0:34<br>0:38<br>0:35<br>0:38 | (5.0)<br>100% | (4.7)<br>94% | RUN-5 | | | | 33.4ft: white (2.5Y8/1), hard |
| -44.8 | 43.4 | 5.0 | 0:40<br>0:48<br>0:45<br>0:59<br>1:04 | (5.0)<br>100% | (5.0)<br>100% | RUN-6 | | | | |
| -49.8 | 48.4 | 5.0 | 0:10<br>1:02<br>1:16<br>1:08<br>1:47 | (4.1)<br>82% | (3.6)<br>72% | RUN-7 | | | | 43.4ft: white (2.5Y8/1) to gray (2.5Y5/1), trace coralline<br>-49.8 48.4 |
| -54.8 | 53.4 | 5.0 | 1:37<br>1:20<br>1:19<br>0:53<br>0:25 | (5.0)<br>100% | (4.0)<br>80% | RUN-8 | (55.7)<br>84% | (34.5)<br>52% | | LIMESTONE, boundstone, white (2.5Y8/1), hard, indurated, trace shells (Lower Fort Thompson Formation) |
| -59.8 | 58.4 | 5.0 | 0:29<br>0:26<br>0:39<br>0:06<br>0:10 | (3.6)<br>72% | (1.4)<br>28% | RUN-9 | | | | 53.4ft: medium hard, moderately indurated to friable |
| -64.8 | 63.4 | 5.0 | 0:26<br>0:21<br>0:18<br>0:11<br>3:30 | (4.2)<br>84% | (2.2)<br>44% | RUN-10 | | | | 58.4ft: moderately hard, indurated, trace sand |
| -69.8 | 68.4 | 5.0 | 0:47<br>0:24<br>0:38<br>0:49<br>0:14 | (4.3)<br>86% | (2.2)<br>44% | RUN-11 | | | | 63.4ft: soft to medium hard, friable to moderately indurated |
| -74.8 | 73.4 | 5.0 | 0:16<br>0:53<br>0:48<br>2:01<br>1:18 | (3.4)<br>68% | (1.1)<br>22% | RUN-12 | | | | 68.4ft: moderately hard, indurated<br>73.4ft: soft to medium hard, friable to moderately indurated, trace coralline |
| -79.8 | 78.4 | 5.0 | 0:26<br>1:04<br>0:38<br>1:18<br>1:34 | (3.3)<br>66% | (1.6)<br>32% | RUN-13 | | | | |
| -84.8 | 83.4 | 5.0 | 1:09<br>0:58<br>0:28<br>0:44<br>0:38 | (4.0)<br>80% | (2.7)<br>54% | RUN-14 | | | | |
| -89.8 | 88.4 | 5.0 | 0:27<br>0:12<br>0:20<br>0:41<br>0:58 | (4.3)<br>86% | (3.0)<br>60% | RUN-15 | | | | 83.4ft: moderately hard, indurated |
| | | 5.0 | 1:16<br>0:58 | (5.0)<br>100% | (4.2)<br>84% | RUN-16 | | | | 88.4ft: medium hard |

TURKEY POINT COL CORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 7/10/08

MACTEC



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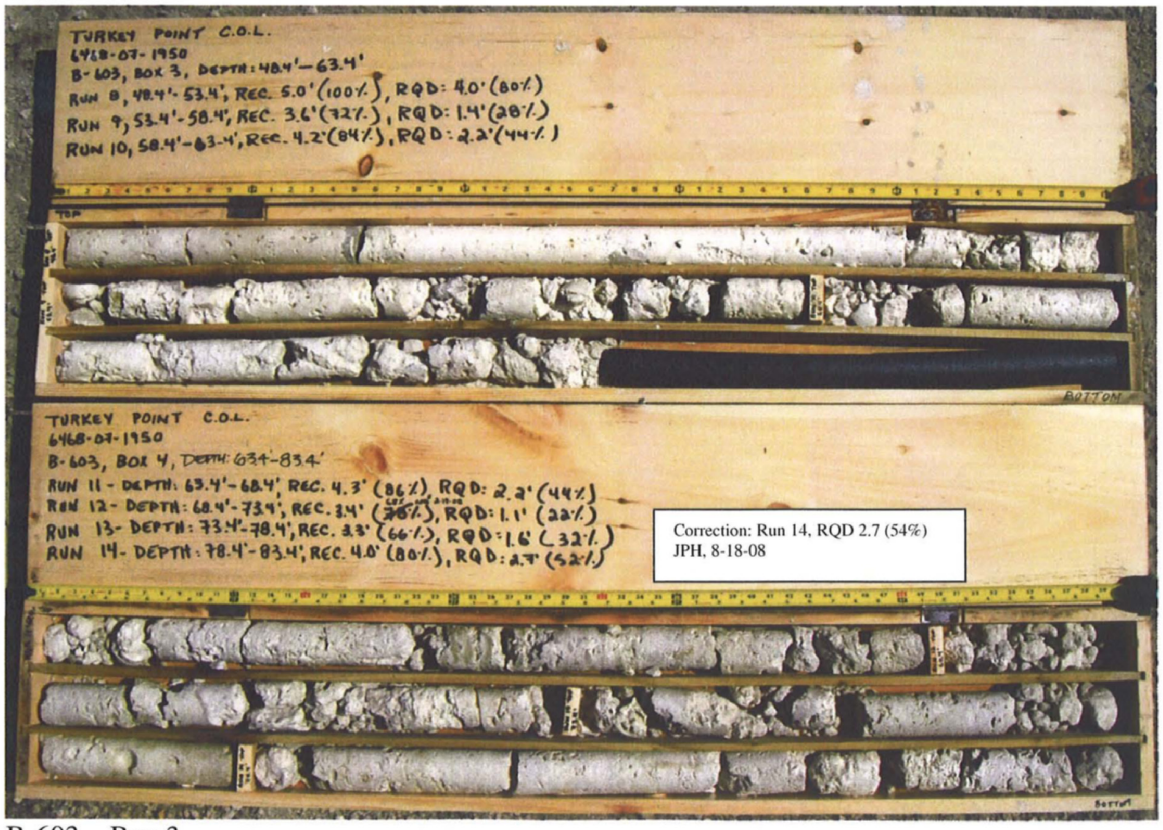
|---|---|---|---|
| BECHTEL PROJECT NO.: 25409 | MACTEC PROJECT NO.: 6468-07-1950 | COUNTY: Miami-Dade | GEOLOGIST: L. Bisson |
| SITE DESCRIPTION: Turkey Point COL | DRILL MACHINE: CME-550 (ATL) | DRILLER: L. Carter/ J. Landeros | GROUND WATER (ft) |
| BORING NO.: B-603 | DRILL METHOD: Mud Rotary/ Core | SAMPLE METHODS: SPT/Core | 0 HR. NA |
| GROUND ELEV.: -1.4 ft (NAVD88) | NORTHING: 397,018 US ft (NAD83/90) | EASTING: 876,697 US ft (NAD83/90) | 24 HR. NA |
| TOTAL DEPTH: 151.2 ft | CASING DEPTH: 4" to 15.0', 3" to 124.0' | | HAMMER (ID): 140 lb. Auto (MEC-03) |
| DATE STARTED: 2/14/08 | COMPLETED: 2/21/08 | CORE SIZE: HQ3 | CORE BARREL TYPE: Triple Tube Wireline (Split inner liners) |

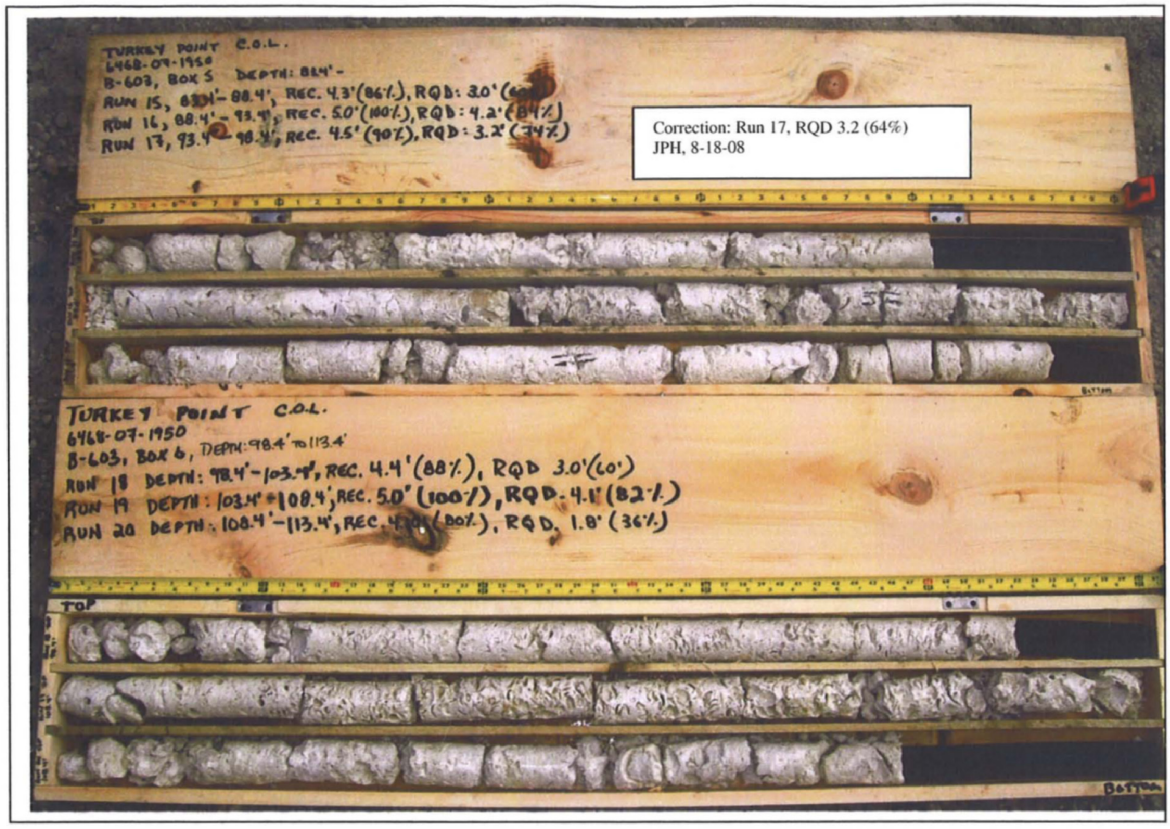
| ELEV. (ft) | DEPTH (ft) | RUN (ft) | DRILL RATE (Min/ft) | RUN REC. (ft) % | RUN RQD (ft) % | SAMP. NO. | STRATA REC. (ft) % | STRATA RQD (ft) % | LOG | DESCRIPTION AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Continued from previous page |
| -94.8 | 93.4 | | 0:52<br>0:44<br>0:22 | | | | | | | LIMESTONE, boundstone, white (2.5Y8/1), hard, indurated, trace shells (Lower Fort Thompson Formation) *(continued)* |
| -99.8 | 98.4 | 5.0 | 0:40<br>0:28<br>0:22<br>0:18<br>0:26 | (4.5)<br>90% | (3.2)<br>64% | RUN-17 | | | | 93.4ft: moderately indurated |
| -104.8 | 103.4 | 5.0 | 0:15<br>0:19<br>0:29<br>0:32<br>0:35 | (4.4)<br>88% | (3.0)<br>60% | RUN-18 | | | | 98.4ft: moderately hard, indurated, few shells and shell molds |
| -109.8 | 108.4 | 5.0 | 0:27<br>0:35<br>0:30<br>0:34<br>0:37 | (5.0)<br>100% | (4.1)<br>82% | RUN-19 | | | | 103.4ft: hard, indurated |
| -114.8 | 113.4 | 5.0 | 0:21<br>0:18<br>1:11<br>0:23<br>0:06 | (4.0)<br>80% | (1.8)<br>36% | RUN-20 | | | | 108.4ft: moderately hard, moderately indurated |
| -119.8 | 118.4 | 5.0 | 0:16<br>0:07<br>0:36<br>0:18<br>0:07 | (1.0)<br>20% | (0.0)<br>0% | RUN-21 | (0.0)<br>0% | (NA) | | -116.4 115.0<br>Silty SAND (SM), light gray (5Y7/2), medium dense, moist, fine grained sand, little fines (Tamiami Formation)<br>-119.8 118.4 |
| | | | | | | | | | | Coring Terminated at Elevation -152.6 |

TURKEY POINT COL CORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 7/10/08

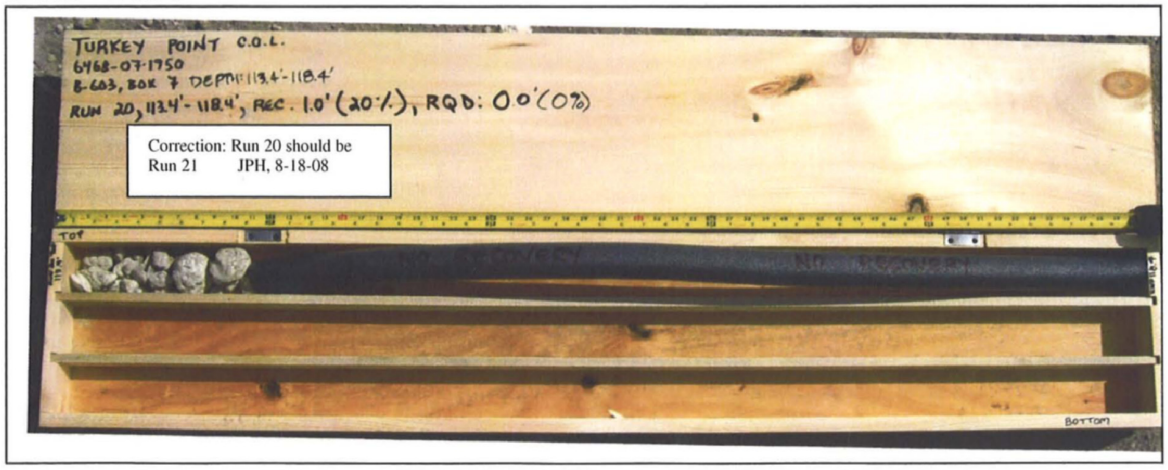
B-603 – Box 1
B-603 – Box 2




B-603 – Box 3
B-603 – Box 4




B-603 – Box 5
B-603 – Box 6




B-603 – Box 7

MACTEC

GEOTECHNICAL BORING LOG

Prepared By [illegible] Date 5-30-08

Checked By [illegible] Date 5-30-08



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|---|---|---|---|
| BECHTEL PROJECT NO.: 25409 | MACTEC PROJECT NO.: 6468-07-1950 | COUNTY: Miami-Dade | GEOLOGIST: S. Woodham |
| SITE DESCRIPTION: Turkey Point COL | DRILL MACHINE: CME-550X (ATL) | DRILLER: P. Pitts/ R. Landeros | GROUND WATER (ft) |
| BORING NO.: B-604(DH) | DRILL METHOD: Mud Rotary/ Core | SAMPLE METHODS: SPT/Core | 0 HR. NA |
| GROUND ELEV.: -1.5 ft (NAVD88) | NORTHING: 396,916 US ft (NAD83/90) | EASTING: 876,592 US ft (NAD83/90) | 24 HR. NA |
| TOTAL DEPTH: 165.0 ft | BORING DIAMETER: 5" to 29.0', 4" to 165.0' | CASING DEPTH: 4" to 29.0' | HAMMER (ID):140 lb. Auto (MEC-05) |
| DATE STARTED: 3/19/08 | COMPLETED: 3/23/08 | CORE SIZE: HQ3 | BITS USED: 4 7/8" & 3 7/8" Roller Cones |

| 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 |
|---|---|---|---|---|---|---|---|---|---|
| -1.5 | | | | | Ground Surface | | | | -1.5 0.0 |
| -1.5 | 0.0 | WOH | WOH | WOH | 0 | 604(DH)-1 | | | MUCK, dark grayish brown (10YR4/2), very soft, moist, organics |
| -5.0 | 3.5 | | | | | | | | -4.5 3.0 |
| -7.5 | 6.0 | 5 | 11 | 13 | 24 SEE LEGEND FOR ROCK HARDNESS CRITERIA BASED ON SPT DATA | 604(DH)-2 | | | LIMESTONE, boundstone, pale yellow (2.5Y8/3), soft, moist, some coarse grained sand, strong HCl reaction, oolitic (Miami Formation) |
| -10.0 | 8.5 | 12 | 10 | 8 | 18 | 604(DH)-3 | | | 6.0ft: very soft |
| -12.0 | 10.5 | 8 | 14 | 19 | 33 | 604(DH)-4 | | | 8.5ft: medium hard, wet |
| -15.0 | 13.5 | 8 | 19 | 50/0.2 | 69/0.7 | 604(DH)-5 | | | 10.5ft: white (10YR8/1), hard, trace coarse grained sand |
| -20.0 | 18.5 | 11 | 28 | 25 | 53 | 604(DH)-6 | | | 13.5ft: moderately hard |
| -25.0 | 23.5 | 5 | 5 | 6 | 11 | 604(DH)-7 | | | 18.5ft: very soft |
| -30.0 | 28.5 | 7 | 9 | 12 | 21 | 604(DH)-8 | | | -26.5 25.0 23.5ft: soft, few coarse grained sand. few shell fragments |
| -35.0 | 33.5 | 5 | 1 | 2 | 3 | 604(DH)-9 | | | LIMESTONE, boundstone, pale yellow (2.5Y8/2), very soft, wet, coarse grained sand, strong HCl reaction (Upper Fort Thompson Formation) 25.0ft: loss of circulation 33.5ft: white (10YR8/1), very dense |
| -35.4 | 33.9 | 50/0.4 | | | 50/0.4 | 604(DH)-10 RUN-1 | | | 33.9ft: Switch sampling method to coring 33.9ft: hard, indurated, strong HCl reaction, fossiliferous, little vugs |
| -40.3 | 38.8 | | | | | RUN-2 | | | 38.8ft: moderately indurated |
| -45.3 | 43.8 | | | | | RUN-3 | | | |
| -50.3 | 48.8 | | | | | RUN-4 604(DH)-CS-01 604(DH)-CS-02 | | | -50.3 48.8 LIMESTONE, boundstone, white (10YR8/1), hard. moderately indurated, trace vugs, fossiliferous, strong HCl reaction (Lower Fort Thompson Formation) |
| -55.3 | 53.8 | | | | | RUN-5 | | | 53.8ft: moderately hard to hard |
| -60.3 | 58.8 | | | | | RUN-6 | | | 58.8ft: moderately hard, indurated |
| -65.3 | 63.8 | | | | | RUN-7 | | | 63.8ft: hard, trace coarse grained sand |
| -70.3 | 68.8 | | | | | RUN-8 | | | |
| -75.3 | 73.8 | | | | | RUN-9 | | | |

TURKEY POINT COL BORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 5/30/08

MACTEC



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|---|---|---|---|
| BECHTEL PROJECT NO.: 25409 | MACTEC PROJECT NO.: 6468-07-1950 | COUNTY: Miami-Dade | GEOLOGIST: S. Woodham |
| SITE DESCRIPTION: Turkey Point COL | DRILL MACHINE: CME-550X (ATL) | DRILLER: P. Pitts/ R. Landeros | GROUND WATER (ft) |
| BORING NO.: B-604(DH) | DRILL METHOD: Mud Rotary/ Core | SAMPLE METHODS: SPT/Core | 0 HR. NA |
| GROUND ELEV.: -1.5 ft (NAVD88) | NORTHING: 396,916 US ft (NAD83/90) | EASTING: 876,592 US ft (NAD83/90) | 24 HR. NA |
| TOTAL DEPTH: 165.0 ft | BORING DIAMETER: 5" to 29.0', 4" to 165.0' | CASING DEPTH: 4" to 29.0' | HAMMER (ID):140 lb. Auto (MEC-05) |
| DATE STARTED: 3/19/08 | COMPLETED: 3/23/08 | CORE SIZE: HQ3 | BITS USED: 4 7/8" & 3 7/8" Roller Cones |

| 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 |
|---|---|---|---|---|---|---|---|---|---|
| -76.3 | | | | | Continued from previous page | | | | |
| -80.3 | 78.8 | | | | | RUN-10 604(DH)-CS-03 | | | LIMESTONE, boundstone, white (10YR8/1), hard, moderately indurated, trace vugs, fossiliferous, strong HCl reaction (Lower Fort Thompson Formation) *(continued)* 78.8 to 79.6ft: sand zone |
| -85.3 | 83.8 | | | | | RUN-11 | | | 83.8 to 86.0ft: sand zone |
| -90.3 | 88.8 | | | | | RUN-12 | | | 88.8ft: trace to few vugs |
| -95.3 | 93.8 | | | | | RUN-13 | | | |
| -100.3 | 98.8 | | | | | RUN-14 | | | 98.8ft: shell molds and casts |
| -105.3 | 103.8 | | | | | RUN-15 | | | |
| -110.3 | 108.8 | | | | | RUN-16 | | | |
| -115.3 | 113.8 | | | | | RUN-17 | | | -116.5 115.0 |
| -120.3 | 118.8 | 4 | 6 | 9 | 15 | 604(DH)-11 | | | Silty SAND (SM), greenish gray (10Y6/1), medium dense, moist, some fines, fine grained sand, strong HCl reaction (Tamiami Formation) 118.8ft: Switch sampling method to SPT; no recovery |
| -130.4 | 128.9 | 3 | 6 | 7 | 13 | 604(DH)-12 | | | 128.9ft: no recovery |
| -140.0 | 138.5 | 7 | 7 | 8 | 15 | 604(DH)-13 | | | 138.5ft: fine to medium grained sand, fine gravel |
| -150.0 | 148.5 | 5 | 7 | 9 | 16 | 604(DH)-14 | | | |

TURKEY POINT COL BORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 5/30/08

MACTEC



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|---|---|---|---|
| BECHTEL PROJECT NO.: 25409 | MACTEC PROJECT NO.: 6468-07-1950 | COUNTY: Miami-Dade | GEOLOGIST: S. Woodham |
| SITE DESCRIPTION: Turkey Point COL | DRILL MACHINE: CME-550X (ATL) | DRILLER: P. Pitts/ R. Landeros | GROUND WATER (ft) |
| BORING NO.: B-604(DH) | DRILL METHOD: Mud Rotary/ Core | SAMPLE METHODS: SPT/Core | 0 HR. NA |
| GROUND ELEV.: -1.5 ft (NAVD88) | NORTHING: 396,916 US ft (NAD83/90) | EASTING: 876,592 US ft (NAD83/90) | 24 HR. NA |
| TOTAL DEPTH: 165.0 ft | BORING DIAMETER: 5" to 29.0', 4" to 165.0' | CASING DEPTH: 4" to 29.0' | HAMMER (ID):140 lb. Auto (MEC-05) |
| DATE STARTED: 3/19/08 | COMPLETED: 3/23/08 | CORE SIZE: HQ3 | BITS USED: 4 7/8" & 3 7/8" Roller Cones |

| 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 |
|---|---|---|---|---|---|---|---|---|---|
| -151.1 | | | | | Continued from previous page | | | | |
| | | | | | | | | | Silty SAND (SM), greenish gray (10Y6/1), medium dense, moist, some fines, fine grained sand, strong HCl reaction (Tamiami Formation) *(continued)* |
| -165.0 | 163.5 | | | | | | | | -165.0 163.5 |
| | | 4 | 6 | 10 | ●16 | 604(DH)-15 | | | -166.5 Sandy SILT (ML), greenish gray (10Y6/1), very stiff, moist, fine grained sand, strong HCl reaction 165.0 |
| | | | | | | | | | Boring Terminated at Elevation -166.5 ft |

TURKEY POINT COL BORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 5/30/08

MACTEC



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|---|---|---|---|
| BECHTEL PROJECT NO.: 25409 | MACTEC PROJECT NO.: 6468-07-1950 | COUNTY: Miami-Dade | GEOLOGIST: S. Woodham |
| SITE DESCRIPTION: Turkey Point COL | DRILL MACHINE: CME-550X (ATL) | DRILLER: P. Pitts/ R. Landeros | GROUND WATER (ft) |
| BORING NO.: B-604(DH) | DRILL METHOD: Mud Rotary/ Core | SAMPLE METHODS: SPT/Core | 0 HR. NA |
| GROUND ELEV.: -1.5 ft (NAVD88) | NORTHING: 396,916 US ft (NAD83/90) | EASTING: 876,592 US ft (NAD83/90) | 24 HR. NA |
| TOTAL DEPTH: 165.0 ft | CASING DEPTH: 4" to 29.0' | | HAMMER (ID): 140 lb. Auto (MEC-05) |
| DATE STARTED: 3/19/08 | COMPLETED: 3/23/08 | CORE SIZE: HQ3 | CORE BARREL TYPE: Triple Tube Wireline (Split inner liners) |

| 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 @ 33.9 ft |
| -35.4 | 33.9 | 4.9 | 0:55<br>1:02<br>1:05<br>1:16<br>1:00/0.9 | (1.5)<br>31% | (1.3)<br>27% | RUN-1 | (3.6)<br>24% | (1.8)<br>12% | | LIMESTONE, boundstone, pale yellow (2.5Y8/2), very soft, wet, coarse grained sand, strong HCl reaction (Upper Fort Thompson Formation)<br><br>25.0ft: loss of circulation *(continued)*<br>33.9ft: hard, indurated, strong HCl reaction, fossiliferous, little vugs<br>38.8ft: moderately indurated |
| -40.3 | 38.8 | 5.0 | 1:02<br>2:05<br>1:55<br>2:12<br>0:50 | (0.4)<br>8% | (0.0)<br>0% | RUN-2 | | | | |
| -45.3 | 43.8 | 5.0 | ND<br>2:03<br>2:53<br>3:39<br>2:30 | (1.7)<br>34% | (0.5)<br>10% | RUN-3 | | | | |
| -50.3 | 48.8 | 5.0 | 0:59<br>1:29<br>1:08<br>0:45<br>0:30 | (4.8)<br>96% | (4.8)<br>96% | RUN-4<br>*604(DH)-CS-01*<br>*604(DH)-CS-02* | (44.9)<br>68% | (27.2)<br>41% | | -50.3 — 48.8<br>LIMESTONE, boundstone, white (10YR8/1), hard, moderately indurated, trace vugs, fossiliferous, strong HCl reaction (Lower Fort Thompson Formation) |
| -55.3 | 53.8 | 5.0 | 0:28<br>0:29<br>0:36<br>0:29<br>0:28 | (4.3)<br>86% | (2.7)<br>54% | RUN-5 | | | | 53.8ft: moderately hard to hard |
| -60.3 | 58.8 | 5.0 | 0:31<br>0:35<br>0:52<br>0:37<br>0:25 | (2.3)<br>46% | (0.3)<br>6% | RUN-6 | | | | 58.8ft: moderately hard, indurated |
| -65.3 | 63.8 | 5.0 | 0:16<br>1:00<br>0:30<br>0:40<br>0:45 | (3.5)<br>70% | (1.8)<br>36% | RUN-7 | | | | 63.8ft: hard, trace coarse grained sand |
| -70.3 | 68.8 | 5.0 | 0:04<br>0:35<br>0:45<br>0:05<br>0:51 | (1.9)<br>38% | (0.4)<br>8% | RUN-8 | | | | |
| -75.3 | 73.8 | 5.0 | 0:15<br>0:07<br>0:11<br>0:36<br>1:35 | (1.8)<br>36% | (0.8)<br>16% | RUN-9 | | | | |
| -80.3 | 78.8 | 5.0 | 2:14<br>1:33<br>0:47<br>0:45<br>1:04 | (3.6)<br>72% | (2.0)<br>40% | RUN-10<br>*604(DH)-CS-03* | | | | 78.8 to 79.6ft: sand zone |
| -85.3 | 83.8 | 5.0 | 0:59<br>0:37<br>1:42<br>1:20<br>2:30 | (2.7)<br>54% | (0.0)<br>0% | RUN-11 | | | | 83.8 to 86.0ft: sand zone |
| -90.3 | 88.8 | 5.0 | 0:04<br>0:21<br>0:43<br>0:59<br>0:22 | (1.7)<br>34% | (0.6)<br>12% | RUN-12 | | | | 88.8ft: trace to few vugs |
| -95.3 | 93.8 | 5.0 | 0:27<br>0:40<br>0:50<br>0:49<br>0:56 | (4.7)<br>94% | (3.4)<br>68% | RUN-13 | | | | |
| -100.3 | 98.8 | 5.0 | 0:52<br>0:53<br>0:44<br>0:58<br>0:50 | (5.0)<br>100% | (4.0)<br>80% | RUN-14 | | | | 98.8ft: shell molds and casts |
| -105.3 | 103.8 | 5.0 | 0:52<br>1:05<br>0:55<br>1:03<br>0:55 | (5.0)<br>100% | (4.4)<br>88% | RUN-15 | | | | |
| -110.3 | 108.8 | | | | | | | | | |

TURKEY POINT COL CORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 5/30/08

MACTEC



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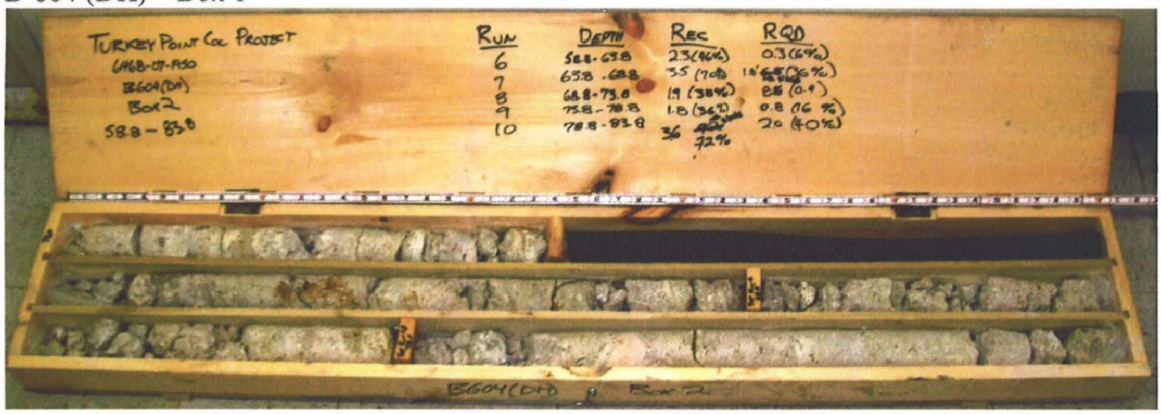
|---|---|---|---|
| BECHTEL PROJECT NO.: 25409 | MACTEC PROJECT NO.: 6468-07-1950 | COUNTY: Miami-Dade | GEOLOGIST: S. Woodham |
| SITE DESCRIPTION: Turkey Point COL | DRILL MACHINE: CME-550X (ATL) | DRILLER: P. Pitts/ R. Landeros | GROUND WATER (ft) |
| BORING NO.: B-604(DH) | DRILL METHOD: Mud Rotary/ Core | SAMPLE METHODS: SPT/Core | 0 HR. NA |
| GROUND ELEV.: -1.5 ft (NAVD88) | NORTHING: 396,916 US ft (NAD83/90) | EASTING: 876,592 US ft (NAD83/90) | 24 HR. NA |
| TOTAL DEPTH: 165.0 ft | CASING DEPTH: 4" to 29.0' | | HAMMER (ID): 140 lb. Auto (MEC-05) |
| DATE STARTED: 3/19/08 | COMPLETED: 3/23/08 | CORE SIZE: HQ3 | CORE BARREL TYPE: Triple Tube Wireline (Split inner liners) |

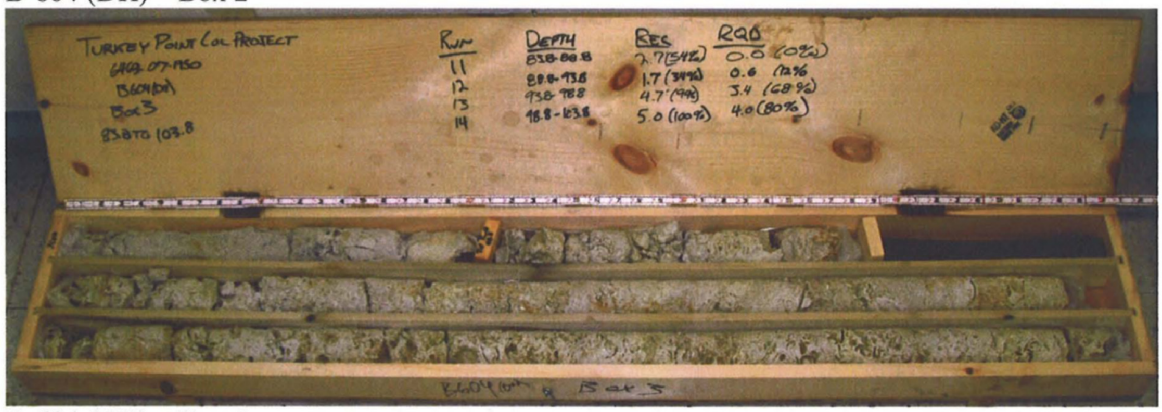
| ELEV. (ft) | DEPTH (ft) | RUN (ft) | DRILL RATE (Min/ft) | RUN REC. (ft) % | RUN RQD (ft) % | SAMP. NO. | STRATA REC. (ft) % | STRATA RQD (ft) % | LOG | DESCRIPTION AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Continued from previous page |
| | | 5.0 | 1:12<br>0:58<br>1:04<br>1:02<br>2:00 | (3.1)<br>62% | (1.5)<br>30% | RUN-16 | | | | LIMESTONE, boundstone, white (10YR8/1), hard, moderately indurated, trace vugs, fossiliferous, strong HCl reaction (Lower Fort Thompson Formation) *(continued)* |
| -115.3 | 113.8 | | | | | | | | | -116.5 115.0 |
| | | 5.0 | 0:54<br>0:57<br>0:49<br>0:46<br>0:18 | (0.5)<br>10% | (0.5)<br>10% | RUN-17 | (0.0)<br>0% | (NA) | | Silty SAND (SM), greenish gray (10Y6/1), medium dense, moist, some fines, fine grained sand, strong HCl reaction (Tamiami Formation) |
| -120.3 | 118.8 | | | | | | | | | -120.3 118.8 |
| | | | | | | | | | | Coring Terminated at Elevation -120.3 |

TURKEY POINT COL CORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 5/30/08

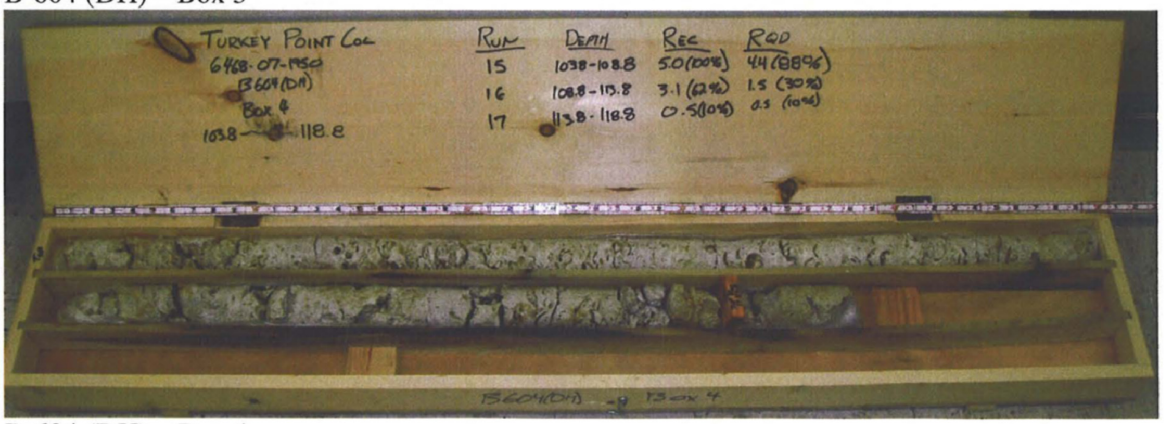
B-604 (DH) – Box 1




B-604 (DH) – Box 2




B-604 (DH) – Box 3




B-604 (DH) – Box 4

MACTEC

# GEOTECHNICAL BORING LOG

Prepared By [illegible] Date 8-19-08
Checked By [illegible] Date 8/19/08



| | | | |
|---|---|---|---|
| BECHTEL PROJECT NO.: 25409 | MACTEC PROJECT NO.: 6468-07-1950 | COUNTY: Miami-Dade | GEOLOGIST: B. Taylor/L. Bisson |
| SITE DESCRIPTION: Turkey Point COL | DRILL MACHINE: CME-550 (ATL) | DRILLER: L. Carter/ J. Landeros | GROUND WATER (ft) |
| BORING NO.: B-605 | DRILL METHOD: Mud Rotary/ Core | SAMPLE METHODS: SPT/Core | 0 HR. NA |
| GROUND ELEV.: -1.7 ft (NAVD88) | NORTHING: 396,917 US ft (NAD83/90) | EASTING: 876,694 US ft (NAD83/90) | 24 HR. NA |
| TOTAL DEPTH: 201.0 ft | BORING DIAMETER: 4" to 36.0', 3" to 201.0' | CASING DEPTH: 4" to 36.0', 3" to 119.9' | HAMMER (ID): 140 lb. Auto (MEC-03) |
| DATE STARTED: 2/23/08 | COMPLETED: 2/27/08 | CORE SIZE: HQ3 | BITS USED: 3 7/8" and 2 15/16" Tricones |

| 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 |
|---|---|---|---|---|---|---|---|---|---|
| -1.7 | | | | | Ground Surface | | | | -1.7 0.0 |
| -1.7 | 0.0 | WOR | WOR | WOR | WOR 0 | 605-1 | | | MUCK, very dark gray (10YR3/1), very soft, moist, mostly organics |
| -4.2 | 2.5 | | | | | | | | -4.2 2.5 |
| | | 2 | 6 | 8 | 14 | 605-2 | | | LIMESTONE, boundstone, very pale brown (10YR8/2), very soft, moist, friable (Miami Formation) |
| -6.7 | 5.0 | | | | SEE LEGEND FOR ROCK HARDNESS CRITERIA BASED ON SPT DATA | | | | |
| | | 7 | 7 | 8 | 15 | 605-3 | | | 5.0ft: white (10YR8/1), medium dense, trace shell fragments, oolitic |
| -9.2 | 7.5 | | | | | | | | |
| | | 3 | 25 | 9 | 34 | 605-4 | | | 7.5ft: light gray (10YR7/2), medium hard |
| -11.7 | 10.0 | | | | | | | | |
| | | 3 | 10 | 5 | 15 | 605-5 | | | 10.0ft: white (10YR8/1), very soft |
| -14.2 | 12.5 | | | | | | | | |
| | | 3 | 6 | 9 | 15 | 605-6 | | | |
| -16.7 | 15.0 | | | | | | | | |
| | | 8 | 13 | 10 | 23 | 605-7 | | | 15.0ft: light gray (10YR7/1), soft |
| -21.7 | 20.0 | | | | | | | | |
| | | 3 | 8 | 8 | 16 | 605-8 | | | 20.0ft: very soft, trace calcite crystals |
| -26.7 | 25.0 | | | | | | | | -25.7 24.0 |
| | | 5 | 22 | 28 | 50 | 605-9 | | | LIMESTONE, boundstone, white (10YR8/1), moderately hard, moist, trace shell fragments (Upper Fort Thompson Formation) |
| -31.7 | 30.0 | | | | | | | | |
| | | 16 | 13 | 4 | 17 | 605-10 | | | 30.0ft: very pale brown (10YR8/2), very soft, coralline |
| -36.7 | 35.0 | | | | | | | | 33.0ft: loss of circulation |
| -37.9 | 36.2 | 11 | 36 | 50/0.2 | 86/0.7 | 605-11 | | | 35.0ft: white (10YR8/1), hard<br>36.2ft: Switch sampling method to coring |
| -39.8 | 38.1 | | | | | RUN-1 | | | 36.2ft: medium hard, moderately indurated, fossiliferous, few vugs |
| | | | | | | RUN-2 | | | |
| -44.8 | 43.1 | | | | | | | | |
| | | | | | | RUN-3 | | | 43.1ft: hard, moderately indurated, recrystallized calcite |
| -49.8 | 48.1 | | | | | | | | -49.8 48.1 |
| | | | | | | RUN-4 | | | LIMESTONE, boundstone, white (10YR8/1), hard, indurated, little vugs, some shells, trace recrystallized calcite in vugs (Lower Fort Thompson Formation) |
| -54.8 | 53.1 | | | | | | | | |
| | | | | | | RUN-5 | | | 53.1ft: medium hard, moderately indurated |
| -59.8 | 58.1 | | | | | | | | |
| | | | | | | RUN-6 | | | |
| -64.8 | 63.1 | | | | | | | | |
| | | | | | | RUN-7 | | | 63.1ft: few vugs |
| -69.8 | 68.1 | | | | | | | | |
| | | | | | | RUN-8 | | | 68.1ft: mottled light gray (10YR7/1), some vugs, interbedded sand |
| -74.8 | 73.1 | | | | | | | | |
| -75.6 | 73.9 | | | | | RUN-9 | | | |
| | | | | | | RUN-10 | | | |

TURKEY POINT COL BORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 8/18/08

MACTEC



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|---|---|---|---|
| BECHTEL PROJECT NO.: 25409 | MACTEC PROJECT NO.: 6468-07-1950 | COUNTY: Miami-Dade | GEOLOGIST: B. Taylor/L. Bisson |
| SITE DESCRIPTION: Turkey Point COL | DRILL MACHINE: CME-550 (ATL) | DRILLER: L. Carter/ J. Landeros | GROUND WATER (ft) |
| BORING NO.: B-605 | DRILL METHOD: Mud Rotary/ Core | SAMPLE METHODS: SPT/Core | 0 HR. NA |
| GROUND ELEV.: -1.7 ft (NAVD88) | NORTHING: 396,917 US ft (NAD83/90) | EASTING: 876,694 US ft (NAD83/90) | 24 HR. NA |
| TOTAL DEPTH: 201.0 ft | BORING DIAMETER: 4" to 36.0', 3" to 201.0' | CASING DEPTH: 4" to 36.0', 3" to 119.9' | HAMMER (ID):140 lb. Auto (MEC-03) |
| DATE STARTED: 2/23/08 | COMPLETED: 2/27/08 | CORE SIZE: HQ3 | BITS USED: 3 7/8" and 2 15/16" Tricones |

| 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 |
|---|---|---|---|---|---|---|---|---|---|
| -76.5 | | | | | Continued from previous page | | | | |
| | | | | | | | | | 73.9ft: hard, indurated, mostly vugs LIMESTONE, boundstone, white (10YR8/1), hard, indurated, little vugs, some shells, trace recrystallized calcite in vugs (Lower Fort Thompson Formation) *(continued)* |
| -80.6 | 78.9 | | | | | | | | |
| | | | | | | RUN-11 | | | |
| -85.6 | 83.9 | | | | | | | | |
| | | | | | | RUN-12 | | | 83.9ft: moderately indurated |
| -90.6 | 88.9 | | | | | | | | |
| | | | | | | RUN-13 | | | 88.9ft: moderately hard, indurated, few vugs |
| -94.6 | 92.9 | | | | | | | | |
| -95.6 | 93.9 | | | | | RUN-14 | | | 92.9ft: trace vugs, trace sand |
| | | | | | | RUN-15 | | | |
| -100.6 | 98.9 | | | | | | | | |
| | | | | | | RUN-16 | | | |
| -105.6 | 103.9 | | | | | | | | |
| | | | | | | RUN-17 | | | 103.9ft: hard, shell molds and casts |
| -110.6 | 108.9 | | | | | | | | |
| | | | | | | RUN-18 | | | 108.9ft: moderately hard |
| -115.6 | 113.9 | | | | | | | | |
| | | | | | | RUN-19 | | | -116.7 113.9ft: light gray (2.5Y7/2), hard 115.0 |
| | | | | | | | | | Sandy SILT (ML), light gray (2.5Y7/1), very stiff, wet, fine to medium grained sand, strong HCl reaction (Tamiami Formation) |
| -121.6 | 119.9 | | | | | | | | |
| | | 9 | 8 | 11 | 19 | 605-12 | | | 119.9ft: Switch sampling method to SPT |
| -126.6 | 124.9 | | | | | | | | -126.2 124.5 |
| | | 4 | 9 | 12 | 21 | 605-13 | | | Silty SAND (SM), greenish gray (10Y5/1), medium dense, fine grained sand, strong HCl reaction |
| -131.6 | 129.9 | | | | | | | | |
| -133.1 | 131.4 | | | | | 605-14 | | | 129.9ft: No sample taken |
| | | 3 | 5 | 8 | 13 | 605-15 | | | 131.4ft: fine to medium grained sand, some loss of circulation |
| -136.6 | 134.9 | | | | | | | | |
| | | 9 | 15 | 22 | 37 | 605-16 | | | 134.9ft: dense, trace shell fragments |
| -141.6 | 139.9 | | | | | | | | |
| | | 8 | 12 | 19 | 31 | 605-17 | | | |
| -146.6 | 144.9 | | | | | | | | |
| | | 7 | 10 | 14 | 24 | 605-18 | | | 144.9ft: medium dense |

TURKEY POINT COL BORE TURKEY POINT GPJ TURKEY POINT COL.GDT 8/18/08