EXELON VICTORIA - Boring B3252 (29.5'-31' sample)
OP: JNH
Hammer ID: MEC22; Driller: R.LANDERS CME 550X (MACTEC)
Test date: 23-Jan-2009

AR: 1.22 in^2
LE: 35.00 ft
WS: 16,807.9 f/s
SP: 0.492 k/ft3
EM: 30,000 ksi
JC: 0.70

CSX: Max Measured Compr. Stress
TSX: Tension Stress Maximum
VMX: Maximum Velocity
FMX: Maximum Force
FVP: Force/Velocity proportionality
BPM: Blows per Minute
EF2: Energy of F^2
ETR: Energy Transfer Ratio
EMX: Max Transferred Energy

BL#	CSX	TSX	VMX	FMX	FVP	BPM	EF2	ETR	EMX
	ksi	ksi	f/s	kips	[]	**	k-ft	(%)	k-ft
2	22.4	17.8	17.8	27	0.7	1.9	0.304	86.2	0.302
3	22.1	16.3	16.9	27	0.7	48.0	0.303	89.3	0.312
4	22.0	16.1	17.8	27	0.7	48.3	0.309	94.4	0.330
5	21.9	15.9	17.2	27	0.7	48.3	0.308	89.6	0.314
6	21.9	14.9	15.9	27	0.8	48.5	0.300	90.1	0.315
7	22.3	15.5	17.6	27	0.7	48.7	0.302	95.8	0.335
8	21.7	15.8	17.1	26	0.7	48.6	0.300	91.9	0.322
9	21.9	14.9	17.2	27	0.7	48.7	0.296	90.0	0.315
10	22.1	14.8	16.9	27	0.7	48.1	0.303	92.6	0.324
11	21.4	14.2	16.3	26	0.7	48.5	0.296	91.5	0.320
12	21.5	13.1	17.6	26	0.7	48.9	0.298	90.2	0.316
13	21.6	14.0	17.0	26	0.7	48.6	0.295	90.5	0.317
14	22.1	13.1	17.3	27	0.7	48.5	0.302	90.0	0.315
15	21.3	13.0	16.7	26	0.7	48.9	0.300	90.6	0.317
16	21.7	13.2	16.9	26	0.7	48.9	0.291	89.7	0.314
17	21.8	12.6	17.0	27	0.7	48.6	0.295	89.0	0.311
18	21.4	12.7	16.2	26	0.7	48.1	0.295	89.4	0.313
19	22.2	13.0	17.4	27	0.7	48.5	0.301	91.1	0.319
20	22.1	12.7	17.5	27	0.7	48.6	0.298	93.0	0.325
21	22.0	11.8	17.2	27	0.7	48.5	0.299	92.2	0.323
22	20.9	9.8	15.9	26	0.7	49.0	0.288	86.9	0.304
23	20.6	9.9	15.6	25	0.7	48.4	0.286	89.7	0.314
24	21.1	10.3	16.0	26	0.7	48.3	0.299	95.3	0.334
25	20.2	8.9	17.0	25	0.7	49.2	0.279	84.4	0.296
Average	21.7	13.5	16.9	26	0.7	46.6	0.298	90.6	0.317

Total number of blows analyzed: 24

Time Summary

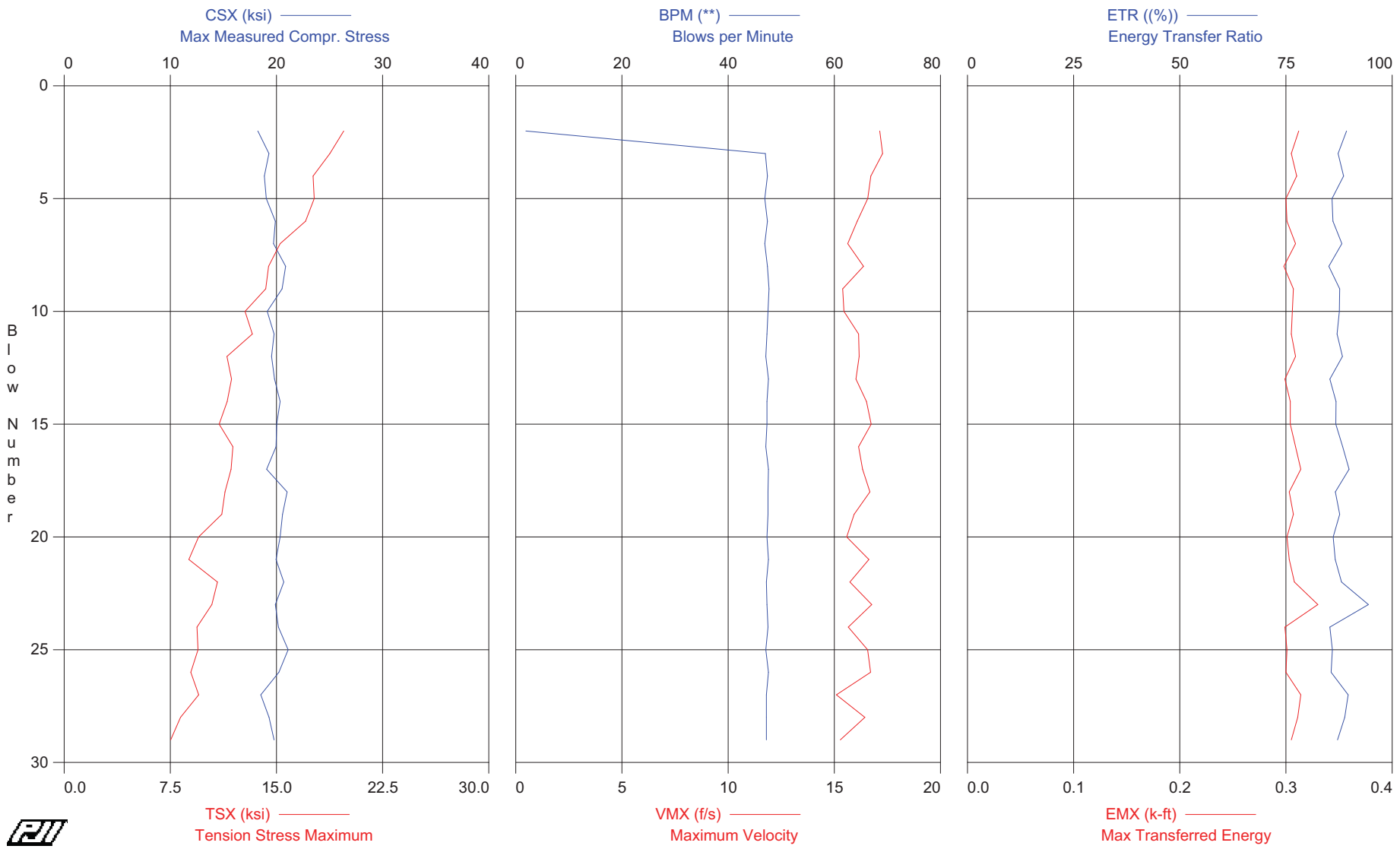
Drive 8 minutes 43 seconds 9:38:59 AM - 9:47:42 AM (1/23/2009) BN 1 - 25

MACTEC Engineering and Consulting, Inc. - Case Method Results

PDIPLOT Ver. 2008.2 - Printed: 2-Mar-2009

Test date: 23-Jan-2009

EXELON VICTORIA - Boring B3252 (34.5'-36' sample)



EXELON VICTORIA - Boring B3252 (34.5'-36' sample)
OP: JNH
Hammer ID: MEC22; Driller: R.LANDERS CME 550X (MACTEC)
Test date: 23-Jan-2009

AR: 1.22 in^2
LE: 40.00 ft
WS: 16,807.9 f/s
SP: 0.492 k/ft3
EM: 30,000 ksi
JC: 0.70

CSX: Max Measured Compr. Stress
TSX: Tension Stress Maximum
VMX: Maximum Velocity
FMX: Maximum Force
FVP: Force/Velocity proportionality
BPM: Blows per Minute
EF2: Energy of F^2
ETR: Energy Transfer Ratio
EMX: Max Transferred Energy

BL#	CSX ksi	TSX ksi	VMX f/s	FMX kips	FVP []	BPM **	EF2 k-ft	ETR (%)	EMX k-ft
2	18.2	19.8	17.1	22	0.6	1.9	0.296	89.3	0.312
3	19.3	18.8	17.3	24	0.6	47.0	0.299	87.3	0.305
4	18.9	17.6	16.7	23	0.6	47.4	0.297	88.6	0.310
5	19.0	17.7	16.6	23	0.6	46.9	0.291	85.8	0.300
6	19.9	17.0	16.1	24	0.7	47.4	0.295	86.1	0.301
7	19.7	15.3	15.6	24	0.7	46.9	0.295	88.2	0.309
8	20.9	14.4	16.4	25	0.7	47.4	0.302	85.1	0.298
9	20.5	14.2	15.4	25	0.8	47.7	0.301	87.7	0.307
10	19.1	12.8	15.5	23	0.7	47.5	0.293	87.6	0.306
11	19.8	13.3	16.1	24	0.7	47.3	0.300	87.0	0.305
12	19.5	11.5	16.2	24	0.7	47.1	0.297	88.3	0.309
13	19.8	11.8	16.0	24	0.7	47.6	0.294	85.3	0.299
14	20.3	11.5	16.5	25	0.7	47.3	0.292	86.8	0.304
15	20.0	11.0	16.7	24	0.7	47.3	0.290	86.7	0.304
16	20.0	11.9	16.1	24	0.7	47.1	0.298	88.4	0.309
17	19.1	11.8	16.3	23	0.7	47.6	0.300	89.8	0.314
18	21.0	11.4	16.7	26	0.7	47.5	0.296	86.6	0.303
19	20.6	11.1	15.9	25	0.7	47.5	0.292	87.7	0.307
20	20.3	9.5	15.6	25	0.7	47.3	0.294	86.1	0.301
21	20.0	8.8	16.6	24	0.7	47.6	0.295	86.6	0.303
22	20.7	10.8	15.7	25	0.7	47.2	0.290	88.1	0.308
23	19.9	10.4	16.8	24	0.7	47.3	0.300	94.4	0.330
24	20.2	9.4	15.7	25	0.7	47.5	0.291	85.3	0.299
25	21.1	9.5	16.6	26	0.7	47.1	0.299	85.9	0.301
26	20.2	8.9	16.7	25	0.7	47.6	0.297	85.6	0.300
27	18.5	9.5	15.1	23	0.7	47.2	0.294	89.6	0.314
28	19.3	8.2	16.4	24	0.7	47.2	0.295	88.8	0.311
29	19.8	7.5	15.3	24	0.7	47.2	0.291	87.1	0.305
Average	19.8	12.3	16.2	24	0.7	45.7	0.296	87.5	0.306

Total number of blows analyzed: 28

Time Summary

Drive		9:54:44 AM - 9:54:44 AM (1/23/2009) BN 1 - 1
Stop	13 minutes 27 seconds	9:54:44 AM - 10:08:11 AM
Drive	34 seconds	10:08:11 AM - 10:08:45 AM BN 2 - 29

Total time [0:14:01] = (Driving [0:00:34] + Stop [0:13:27])

MACTEC

Engineering and constructing a better tomorrow

May 4, 2009

Memorandum to File

From: Jon Honeycutt, Staff Professional JWH

Reviewed By: Steve Kiser, Principal Professional SK

Subject: **Report of SPT Energy – Miller Drilling CME 75 Truck**
Hammer Serial No. 100 Automatic Hammer
WORK INSTRUCTION No. 311 (DCN EXE917)
Exelon Texas COL Project – Supplemental Investigation, Including UHS
Victoria County, Texas
MACTEC Project No. 6468-07-1777

Jonathan Honeycutt, of MACTEC Engineering and Consulting, Inc. (MACTEC), performed energy measurements on the above referenced drill rig at the subject site per the referenced Work Instructions. This memorandum summarizes the field testing activities and presents the results of the energy measurements.

SPT Energy Field Measurements

Energy measurements of this drill rig were made for two different rod sizes used for drilling operations. A summary of the testing for each rod size is below:

AW-J Sized Rods – SPT energy measurements were made on January 28, 2009, during drilling of Boring B3131 (Offset) at the referenced site. The testing was performed by Jonathan Honeycutt from approximately 10:47 AM to 11:56 AM (ET) on January 28 under cloudy skies with a temperature of about 40 degrees Fahrenheit. The boring was drilled with personnel and equipment from Miller Drilling. The drilling equipment consisted of a CME 75 model truck-mounted drill rig with an SPT automatic hammer. The drilling tools consisted of AW-J-sized drilling rods and a 2-foot long split tube sampler. Mud rotary drilling techniques were used to advance the boring. The drill rig operator during sampling was Mr. Jason Cook. Energy measurements were recorded during sampling at the depth intervals shown in Table 3.

The energy measurements were performed with a Pile Driving Analyzer (PDA) model PAX (Serial No. 3622L), and calibrated accelerometers (Serial Nos. K983 and K0686) and strain gages (Serial Nos. AW#75/1 and AW#75/2). A steel drill rod, 2-feet long and instrumented with dedicated strain gages, was inserted at the top of the drill rod string immediately below the SPT hammer. The inserted rod was also instrumented with two piezoresistive accelerometers that were bolted to the outside of the rod. The instrumented rod insert had a cross-sectional area of approximately 1.22 square inches and an outside diameter of approximately 1.75 inches at the

33 Pages Total

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gage location. The drill rods included in the drill rod string were hollow rods in 5 to 10 foot long sections, with an outside and inside diameter of approximately 1.75 and 1.375 inches, respectively. The recommended operation rate of the hammer is not known. Due to the closed hammer system, the hammer lubrication condition and anvil dimensions could not be observed.

NW-J Sized Rods – SPT energy measurements were made on January 24, 25, 26, and 27, 2009, during drilling of Boring B3131 at the referenced site. The testing was performed by Jonathan Honeycutt from approximately 8:40 AM to 10:24 AM (ET) on January 24 under cloudy skies with a temperature of about 60 degrees Fahrenheit, from approximately 10:37 A.M. to 10:45 AM (ET) on January 25 under cloudy skies with a temperature of about 65 degrees Fahrenheit, from approximately 5:49 P.M to 5:56 P.M. (ET) on January 26 under cloudy skies with a temperature of about 60 degrees Fahrenheit, and from approximately 9:54 A.M. to 10:17 A.M (ET) on January 27 under cloudy skies with a temperature of about 65 degrees Fahrenheit . The boring was drilled with personnel and equipment from Miller Drilling. The drilling equipment consisted of a CME 75 model truck-mounted drill rig with an SPT automatic hammer. The drilling tools consisted of NW-J-sized drilling rods and a 2-foot long split tube sampler. Mud rotary drilling techniques were used to advance the boring. The drill rig operator during sampling was Mr. Jason Cook. Energy measurements were recorded during sampling at the depth intervals shown in Table 3.

The energy measurements were performed with a Pile Driving Analyzer (PDA) model PAX (Serial No. 3622L), and calibrated accelerometers (Serial Nos. K990 and K1050) and strain gages (Serial Nos. NW#146/1 and NW#146/2). A steel drill rod, 2-feet long and instrumented with dedicated strain gages, was inserted at the top of the drill rod string immediately below the SPT hammer. The inserted rod was also instrumented with two piezoresistive accelerometers that were bolted to the outside of the rod. The instrumented rod insert had a cross-sectional area of approximately 1.43 square inches and an outside diameter of approximately 2.625 inches at the gage location. The drill rods included in the drill rod string were hollow rods in 5 to 10 foot long sections, with an outside and inside diameter of approximately 2.625 and 2.25 inches, respectively. The recommended operation rate of the hammer is not known. Due to the closed hammer system, the hammer lubrication condition and anvil dimensions could not be observed.

We note that additional energy measurements were recorded on January 26, 2009 during the drilling of Boring B3131. The additional sample depth intervals tested were 378.5 to 380 feet, 388.5 to 390 feet, and 398.5 to 400 feet. During this testing, it was noted by the field engineer that the hammer performance was not consistent and the transferred energy (EFV) was relatively low. Data from these sample intervals was not included in the analysis performed herein. Please refer to the Non-Conformance Report (NCR) No. 33 for additional information on these sample intervals and hammer performance. Testing was resumed at a depth of 400.6 to 402.1 feet after adjustments to the hammer were made, and the energy appeared consistent with other samples.

Calibration Records

The calibration records for all the above are filed in DCN EXE 918.

Calculations for EFV

The work was done in general accordance with ASTM D 4633-05. The strain and acceleration signals were converted to force and velocity by the PDA, and the data was interpreted by the PDA according to the Case Method equation. The maximum energy transmitted to the drill rod string (as measured at the location of the strain gages and accelerometers) was calculated by the PDA using the EFV method equation, as shown below:

$$EFV = \int F(t) * V(t) * dt$$

Where: EFV = Transferred energy (EFV equation), or Energy of FV
F(t) = Calculated force at time t
V(t) = Calculated velocity at time t

The EFV method of energy calculation is recommended in ASTM Standard D4633-05. The EFV equation, integrated over the complete wave event, measures the total energy content of the event using both force and velocity measurements. The EFV values associated with each blow analyzed are tabulated in the attached PDIPLOT tables and are also shown graphically in the PDIPLOT charts.

Calculations for ETR

The ratio of the measured transferred energy (EFV) to the theoretical potential energy of the SPT system (140 lb weight with the specified 30 inch fall) is the ETR. The ETR values (as percent of the theoretical value) are shown in Table 3.

Comparison of ETR to Typical Energy Transfer Ratio Range

Based on a research report published by the Florida Department of Transportation (FDOT) (Report WPI No. 0510859, 1999), the average ETR measured for automatic hammers is 79.6%. The standard deviation was 7.9%; therefore, the range of ETRs within one standard deviation of the average was reported to be 71.7% to 87.5%. This range of ETRs was also consistent with other research that was cited in the FDOT research paper; however, maximum and minimum ETR values of up to 98% and 56%, respectively, were reported in the literature. The ETR values shown in Table 1 are generally within the range of typical values for automatic hammers as reported in the literature.

Discussion

Based on the field testing results, observations from the SPT energy measurements are summarized below:

- The data obtained by the PDA are generally consistent between individual hammer blows and between the sample depths tested. In general, the first and last one (and sometimes two or more) hammer blow records recorded by the PDA produced poor quality data (which is relatively common) and, as such, the record(s) was(were) not used in the data reduction. This may result in more or less blows evaluated for ETR

than what is shown on the boring logs. This may result in more or less blows evaluated for ETR than what is shown on the boring logs.

- The range of average energy transferred from the hammer to the drill rods for each individual depth interval using the EFV method is shown in Table 1 below for each rod size tested. The corresponding energy transfer ratio of the SPT hammer system is also shown.

Table 1: Average Energy Transfer Range for the Depth Intervals Tested

Rod Size	Range of Average Energy Transferred, Per Individual Sample (foot-pounds)	Range of Average Energy Transfer Ratio (ETR)
AW-J	276 to 291	79% to 83%
NW-J	282 to 310	81% to 89%

- The average at each depth interval was calculated as the transferred energy for each analyzed blow of the depth intervals divided by the total number of hammer blows analyzed. The overall average energy transfer of the SPT system (for all the depth intervals tested) is shown in Table 2 below for each rod size tested.

Table 2: Overall Average Energy Testing Results for Each Rod Size

Rod Size	Overall Average Energy Transferred (foot-pounds)	Range of Overall Average Energy Transfer Ratio (ETR)
AW-J	285.2	81.5%
NW-J	296.7	84.8%
Average of All Rod Sizes	292.2	83.5%

Attachments: Page 5 Table 3 - Summary of SPT Energy Measurements – 1 Page
Page 6 Work Instruction No. 311 – DCN EXE917 – 1 Page
Pages 7 –11 Record of SPT Energy Measurement – 5 Pages
Pages 12 – 33 PDIPLOT Output – 22 Pages

TABLE 3
SUMMARY OF SPT ENERGY MEASUREMENTS (ASTM D4633-05)
Exelon Texas COL Project - Supplemental Investigation, Including UHS
Victoria, Texas
MACTEC Project No. 6468-07-1777

Automatic Hammer Serial Number and Rig Model	Rig Owner	Rig Operator	Boring No. Tested	Date Tested	Drill Rod Size	Sample Depth (feet)	SPT Blow Count (blows per six inches)	No. of Blows Analyzed	Average Measured Energy (Average EFV) (ft-lbs)[a]	Energy Transfer Ratio (%)[b] (Average ETR)
100 (CME 75 Truck)	Miller Drilling	Jason Cook	OFFSET B3131	1/28/2009	AW-J	40.5 - 42	7 - 9 - 7	22	276	78.9%
						45.2 - 46.7	5 - 8 - 11	25	288	82.3%
						50.2 - 51.7	11 - 14 - 20	46	283	80.9%
						55.2 - 56.7	12 - 23 - 24	58	291	83.1%
						60.2 - 61.7	7 - 7 - 11	26	281	80.3%
						Average for AW-J Rods:			**285.2**	**81.5%**
			B3131	1/24/2009	NW-J	318 - 319.5	11 - 21 - 25	57	296	84.6%
						328.5 - 329.25	41 - 26/3"	66	287	82.0%
				1/25/2009		338.4 - 339.9	7 - 16 - 24	48	282	80.6%
				1/26/2009		400.6 - 402.1	9 - 15 - 23	45	310	88.6%
				1/27/2009		405.3 - 406.8	16 - 17 - 25	59	310	88.6%
						Average for NW-J Rods:			**296.7**	**84.8%**
						Total Average for Rig:			**292.2**	**83.5%**

[a]Measured Energy is energy based on the EFV method, as outlined in ASTM D4633-05, for each blow recorded by the PDA. In some cases, the initial and final one to two blows produced poor quality data, and were not used to calculate the Average Measured Energy. This may result in more or less blows evaluated for ETR than what is shown on the boring logs.

EFV = EMX * 1000 lbs/kip, where EMX equals the maximum transferred energy measured by the PDA (see attached PDA data).

[b]Energy Transfer Ratio is the Measured Energy divided by the theoretical SPT energy of 350 foot-pounds (140 pound hammer falling 2.5 feet).

The average EFV and ETR values may differ slightly and insignificantly from those in the PDIPLOT tables due to roundoff.

[c]Energy test depth 328.5' - 329.25' concluded prior to completion of SPT due to hammer complications.

Prepared By:	Date: 5/4/09		Checked By:	Date: 5-4-09

Work Instruction No. 311
Exelon COL Victoria Site
MACTEC Engineering and Consulting, Inc.
MACTEC Project 6468-07-1777

DCN 1/2/09

Issued To: ~~Steve Kiser and~~ Jonathan Honeycutt

Issued By: Daniel E Atkinson **Rev. No.** 0

Valid From: 1/12/09 **Date:** 1/12/09

To: 12/31/09

Task Description: Perform SPT Energy Measurements

Applicable Technical Procedures or Plans, or other reference:

1. Geotechnical Work Plan (current revision; available at Site Office), and
2. ASTM D 4633-05 (copy attached.).

Specific Instructions (note attachments where necessary): Perform energy measurements for each drill rig on site in accordance with ASTM D-4633-05. Consult with Site Manager as to schedule for performing the measurements. Hammer weights have been checked by site personnel, and records will be available on site. All rigs are using automatic hammer systems. Confirm that automatic hammer system is being operated within manufacturer's recommendations or in a typical operating fashion as observed from watching one or two SPT measurements prior to measuring energy. Check each drill rig using all hammer/rod combinations that it will be using. Depths for measurements should be coordinated with the Site Manager. See Site Manager for current boring logs of holes drilled and use these to plan most effective field measurement program. Submit copies of calibration records for equipment to Project Principal for review prior to beginning work on site.

Special Instructions (note attachments where necessary): Confirm with Site Manager that approval of equipment calibration records have been received prior to beginning field testing. If unexpected conditions are encountered that affect measurements, contact Site Manager or Project Principal immediately.

Report Format: Prepare standard report in accordance with ASTM D 4633 requirements.

Specific Quality Assurance Procedures Applicable: QAP 20-1; QAP 25-1; QAP for Reporting Nuclear-Related Defects, or Noncompliances, per Federal Regulation 10CFR21 and Section 306 of the Energy Reorganization Act of 1974. Current revisions apply.

Hold Points or Witness Points: None

Records: All records generated shall be considered QA Records.

Reviewed and Approved by: (Note: Only one signature is required for issuance)

Project Manager: _____ Date: _____

Project Principal Engineer: _____ Date: _____

Site Manager/Coordinator: _____ Date: 1/12/09

Pages: 1 plus attachment

Attachments: ASTM D 4633-05

DCN: EXE917

MACTEC

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RECORD OF SPT ENERGY MEASUREMENT

GENERAL INFORMATION	
PROJECT:	Exelon
LOCATION:	Victoria, Texas
PROJECT NO.:	6468-07-1777
DATE:	1/28/2009
WEATHER:	40°F Cloudy
INSPECTOR:	SNH
DRILLING COMPANY:	Miller

DRILL RIG DATA	
MAKE:	CME
MODEL:	75
SERIAL NO.:	100
HAMMER TYPE:	Auto
ROPE CONDITION:	N/A
ROD SIZE:	AWJ
NO. OF SHEAVES:	N/A

BORING DATA	
BORING NUMBER:	CBSE+ B313
DEPTH DRILLED:	Various
TIME DRIVEN:	8:00 AM - 11:00 AM
RIG OPERATOR:	S. Cook
HAMMER OPERATOR:	N/A
PDA PAK SERIAL NO.:	3622L
INSTR. ROD AREA:	1.22 in2
ACCEL. SERIAL NOS.:	#3-K983 #4-K2686
STRAIN SERIAL NOS.:	75 AW 1/2

SAMPLE DEPTH (feet)	SPT N-VALUE (bpf)
40.5 - 42	7-9-7
45.2 - 46.7	5-8-11
50.2 - 51.7	11-14-20
55.2 - 56.7	12-23-24
60.2 - 61.7	7-7-11

REMARKS:

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RECORD OF SPT ENERGY MEASUREMENT

GENERAL INFORMATION		DRILL RIG DATA	
PROJECT:	Exelon	MAKE:	CME
LOCATION:	Victoria, Texas	MODEL:	75
PROJECT NO.:	6468-07-1777	SERIAL NO.:	150
DATE:	1/24/2009	HAMMER TYPE:	Auto
WEATHER:	60°F Cloudy Skies	ROPE CONDITION:	N/A
INSPECTOR:	JNM	ROD SIZE:	NWJ
DRILLING COMPANY:	Miller	NO. OF SHEAVES:	N/A

BORING DATA	
BORING NUMBER:	B 3131
DEPTH DRILLED:	Various
TIME DRIVEN:	7:00 AM - 11:00 AM
RIG OPERATOR:	J. Cook
HAMMER OPERATOR:	N/A
PDA PAK SERIAL NO.:	3622L
INSTR. ROD AREA:	1.43 in^2
ACCEL. SERIAL NOS.:	A3-K990 A4-K1050
STRAIN SERIAL NOS.:	146 NW 1/2

SAMPLE DEPTH (feet)	SPT N-VALUE (bpf)
318 - 319.5	11 - 21 - 25
328.5 - 330 / 329.25	41 - 26/3"

JNM * 4/20/09

REMARKS:

* Sample 328.5' - 330' was Terminated at 9" of Penetration Due to Hammer Problems.

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RECORD OF SPT ENERGY MEASUREMENT

GENERAL INFORMATION		DRILL RIG DATA	
PROJECT:	Exelon	MAKE:	CME
LOCATION:	Victoria, Texas	MODEL:	75
PROJECT NO.:	6468-07-1777	SERIAL NO.:	100
DATE:	1/25/2009	HAMMER TYPE:	Auto
WEATHER:	65°F Cloudy skies	ROPE CONDITION:	N/A
INSPECTOR:	JSH	ROD SIZE:	NWJ
DRILLING COMPANY:	Mactec	NO. OF SHEAVES:	N/A

BORING DATA				
BORING NUMBER:	B313 1			
DEPTH DRILLED:	Various			
TIME DRIVEN:	8:00 am - 9:30 am			
RIG OPERATOR:	J. Cook			
HAMMER OPERATOR:	N/A			
PDA PAK SERIAL NO.:	3622L			
INSTR. ROD AREA:	1.43 in^2			
ACCEL. SERIAL NOS.:	A3-K990 A4- K1050			
STRAIN SERIAL NOS.:	146 NW 1/2			

SAMPLE DEPTH (feet)	SPT N-VALUE (bpf)								
338.4 - 339.9	7-16-24								

REMARKS:

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RECORD OF SPT ENERGY MEASUREMENT

GENERAL INFORMATION	
PROJECT:	Exelon
LOCATION:	Victoria, Texas
PROJECT NO.:	6468-07-1777
DATE:	1/26/2009
WEATHER:	60°F Cloudy
INSPECTOR:	JNH
DRILLING COMPANY:	MACTEC

DRILL RIG DATA	
MAKE:	CME
MODEL:	75
SERIAL NO.:	100
HAMMER TYPE:	Auto
ROPE CONDITION:	N/A
ROD SIZE:	NW 3
NO. OF SHEAVES:	N/A

BORING DATA	
BORING NUMBER:	B3131
DEPTH DRILLED:	Various
TIME DRIVEN:	7:00 am - 5:00 pm
RIG OPERATOR:	J. Cook
HAMMER OPERATOR:	N/A
PDA PAK SERIAL NO.:	3622L
INSTR. ROD AREA:	1.43 in^2
ACCEL. SERIAL NOS.:	43 4990 AH K1050
STRAIN SERIAL NOS.:	196 NW 1/2

	SAMPLE DEPTH (feet)	SPT N-VALUE (bpf)
*	378.5 - 380	19 - 24 - 24
*	388.5 - 390	15 - 20 - 27
*	398.5 - 400	9 - 15 - 25
	400.6 - 402.1	9 - 15 - 23

REMARKS: * DEPTH 378.5 - 400 SHOW LOW ENERGY TRANSFER

MACTEC
2801 YORKMONT ROAD, SUITE 100 ◻ CHARLOTTE, NC 28208
Telephone: (704) 357-8600 / Facsimile: (704) 357-8638

RECORD OF SPT ENERGY MEASUREMENT

GENERAL INFORMATION		DRILL RIG DATA	
PROJECT:	Exelon	MAKE:	CME
LOCATION:	Victoria, Texas	MODEL:	75
PROJECT NO.:	6468-07-1777	SERIAL NO.:	100
DATE:	1/27/2009	HAMMER TYPE:	Auto
WEATHER:	65°F Clear/ SKIES	ROPE CONDITION:	N/A
INSPECTOR:	SHH	ROD SIZE:	NW J
DRILLING COMPANY:	Miller	NO. OF SHEAVES:	N/A

BORING DATA	
BORING NUMBER:	B3131
DEPTH DRILLED:	Various
TIME DRIVEN:	7:30 AM – 9:00 AM
RIG OPERATOR:	S. Cook
HAMMER OPERATOR:	N/A
PDA PAK SERIAL NO.:	3622L
INSTR. ROD AREA:	1.43
ACCEL. SERIAL NOS.:	A3 - K990 A4 - K1150
STRAIN SERIAL NOS.:	146 NW 1/2

SAMPLE DEPTH (feet)	SPT N-VALUE (bpf)
405.3 - 406.8	16-17-25

REMARKS:

MACTEC Engineering and Consulting, Inc. - Case Method Results

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Test date: 28-Jan-2009

EXELON VICTORIA - OFFSET Boring B3131 (40.5'-42' sample)