

EXELON COL VICTORIA - Boring B3224 (64'-65.5' sample)
OP: JNH

Hammer ID: MEC20; Driller: P.PITTS CME 55D (MACTEC)
Test date: 28-Jan-2009

AR: 1.43 in² SP: 0.492 k/ft³
LE: 70.00 ft EM: 30,000 ksi
WS: 16,807.9 f/s 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 F²
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
4	26.8	18.8	13.8	38	1.0	57.1	0.337	79.5	0.278
5	26.7	18.6	13.7	38	0.8	55.7	0.343	81.8	0.286
6	27.5	20.6	14.4	39	0.9	54.9	0.344	80.0	0.280
7	26.9	20.8	14.2	39	1.0	55.3	0.346	82.1	0.287
8	26.3	19.6	13.8	38	1.0	54.9	0.331	78.6	0.275
9	26.1	19.5	13.6	37	1.1	54.8	0.338	80.7	0.282
10	27.7	18.1	14.9	40	1.0	55.4	0.353	85.5	0.299
11	27.2	17.7	14.5	39	0.8	54.1	0.343	83.0	0.290
12	27.0	17.6	14.3	39	0.8	55.2	0.343	83.5	0.292
13	26.7	16.2	14.2	38	1.0	55.5	0.340	83.5	0.292
14	27.3	14.7	14.9	39	0.8	54.5	0.340	82.0	0.287
15	27.3	17.3	14.4	39	0.8	55.5	0.341	83.2	0.291
16	28.1	15.0	14.5	40	1.0	54.9	0.347	81.2	0.284
17	27.8	14.8	14.2	40	0.9	54.8	0.337	81.0	0.284
18	27.9	15.4	14.0	40	0.9	55.0	0.342	81.6	0.286
19	28.6	17.2	14.2	41	1.0	55.2	0.345	81.5	0.285
20	28.0	15.4	13.8	40	1.0	54.9	0.332	78.6	0.275
21	28.8	13.6	14.2	41	0.9	55.1	0.362	83.6	0.292
22	28.3	15.3	14.0	40	0.9	54.5	0.350	83.9	0.294
23	27.7	14.4	13.6	40	0.9	54.6	0.330	78.6	0.275
Average	27.4	17.0	14.2	39	0.9	55.1	0.342	81.7	0.286

Total number of blows analyzed: 20

Time Summary

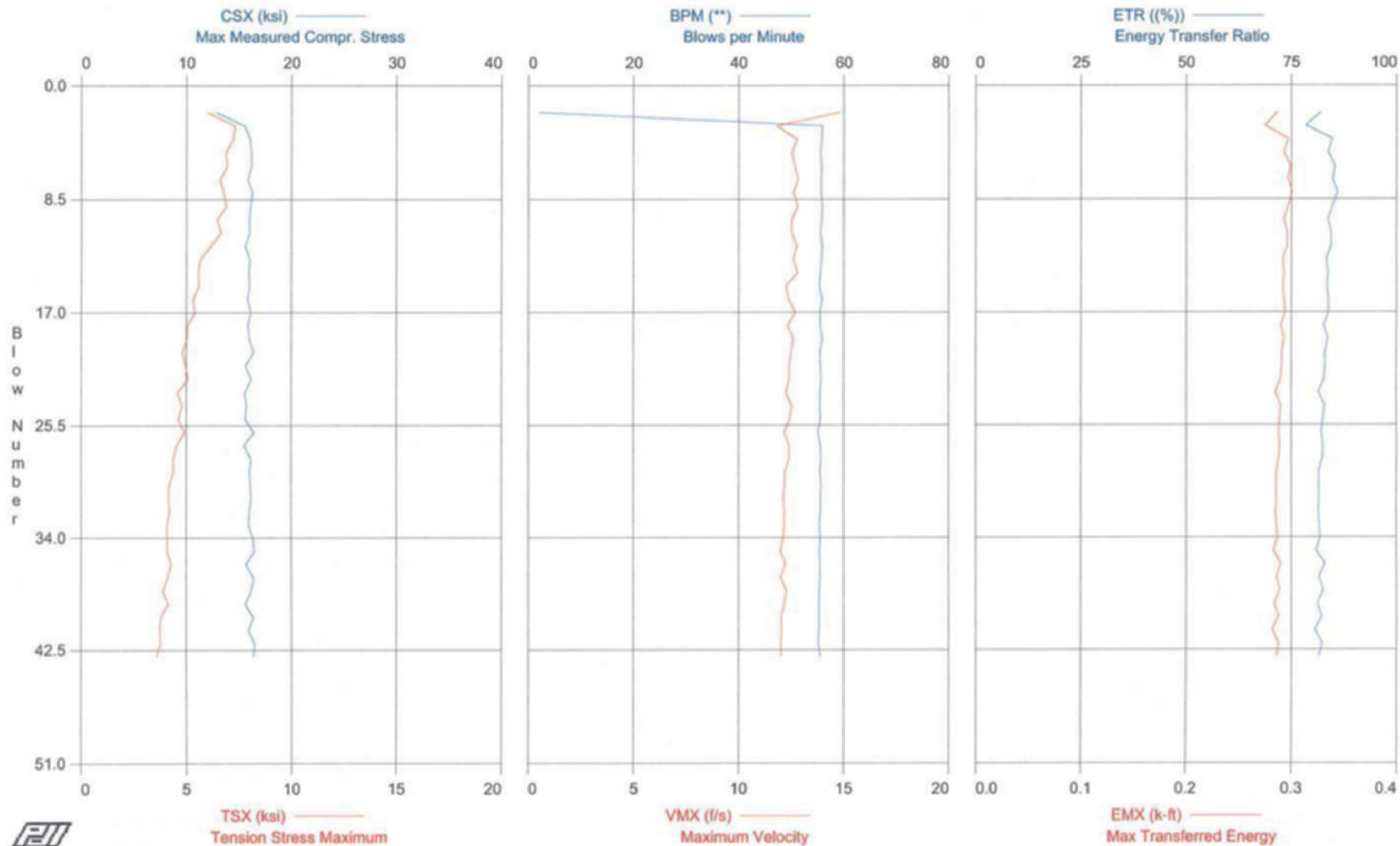
Drive 3:17:44 PM - 3:17:44 PM (1/28/2009) BN 1 - 1
Stop 11 minutes 8 seconds 3:17:44 PM - 3:28:52 PM
Drive 32 seconds 3:28:52 PM - 3:29:24 PM BN 2 - 23
Total time [0:11:40] = (Driving [0:00:32] + Stop [0:11:08])

PDILOT Ver. 2008.2 - Printed: 25-Feb-2009

MACTEC Engineering and Consulting, Inc. - Case Method Results

Test date: 20-Feb-2009

EXELON VICTORIA - Boring B3232 (288.7'-290.2' sample)



EXELON VICTORIA - Boring B3232 (288.7'-290.2' sample)
OP: JNH

Hammer ID: MEC20; Driller: P.PITTS CME55D (MACTEC)
Test date: 20-Feb-2009

AR: 2.27 in²
LE: 303.00 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 F²
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	12.8	6.0	14.8	29	0.3	1.9	0.176	82.1	0.287
3	15.5	7.3	11.8	35	0.7	55.9	0.214	78.5	0.275
4	16.1	7.2	12.8	37	0.7	55.8	0.219	84.7	0.297
5	16.2	6.9	12.5	37	0.7	55.6	0.222	83.8	0.293
6	16.2	6.9	12.7	37	0.7	55.8	0.223	85.4	0.299
7	15.8	6.6	12.8	36	0.7	55.7	0.221	84.8	0.297
8	16.3	6.8	12.6	37	0.7	55.7	0.222	86.0	0.301
9	16.1	6.9	12.8	37	0.7	55.9	0.221	84.8	0.297
10	16.0	6.5	12.5	36	0.7	55.8	0.219	83.7	0.293
11	16.1	6.7	12.5	36	0.7	55.6	0.220	84.5	0.296
12	15.6	6.2	12.8	35	0.6	55.9	0.220	84.5	0.296
13	16.1	5.6	12.6	36	0.7	55.8	0.218	83.3	0.292
14	16.0	5.6	12.8	36	0.7	55.6	0.219	83.7	0.293
15	16.0	5.6	12.3	36	0.7	55.4	0.219	83.5	0.292
16	15.8	5.3	12.4	36	0.7	55.9	0.221	83.8	0.293
17	16.2	5.4	12.7	37	0.7	55.5	0.220	83.9	0.294
18	15.9	5.1	12.3	36	0.7	55.6	0.220	82.8	0.290
19	16.0	5.0	12.6	36	0.7	55.9	0.221	83.7	0.293
20	16.4	4.8	12.5	37	0.7	55.5	0.219	83.0	0.291
21	15.6	5.0	12.4	35	0.7	55.6	0.220	83.1	0.291
22	16.2	5.1	12.4	37	0.7	55.7	0.220	82.8	0.290
23	15.6	4.6	12.3	35	0.7	55.5	0.218	81.5	0.285
24	15.7	4.8	12.5	36	0.7	55.5	0.218	82.9	0.290
25	15.6	4.6	12.4	35	0.7	55.6	0.219	82.6	0.289
26	16.5	4.9	12.2	37	0.7	55.1	0.220	82.2	0.288
27	15.5	4.5	12.4	35	0.7	55.6	0.222	82.6	0.289
28	16.2	4.4	12.4	37	0.7	55.7	0.220	82.4	0.288
29	16.1	4.4	12.2	36	0.7	55.5	0.219	81.6	0.286
30	16.1	4.2	12.2	37	0.7	55.7	0.220	81.6	0.286
31	16.2	4.2	12.1	37	0.7	55.6	0.221	81.6	0.286
32	16.0	4.2	12.2	36	0.7	55.6	0.222	81.5	0.285
33	15.9	4.1	12.2	36	0.7	55.4	0.221	81.7	0.286
34	16.4	4.1	12.1	37	0.7	55.6	0.220	81.9	0.287
35	16.5	4.1	12.0	37	0.7	55.4	0.221	80.9	0.283
36	15.7	4.3	12.2	36	0.7	55.5	0.222	83.0	0.290
37	16.4	4.1	12.0	37	0.7	55.5	0.221	81.6	0.286
38	16.2	3.9	12.3	37	0.7	55.4	0.222	82.6	0.289
39	15.6	4.1	12.2	35	0.7	55.4	0.221	81.2	0.284
40	16.4	3.8	12.0	37	0.7	55.4	0.222	82.3	0.288
41	15.9	3.7	12.1	36	0.7	55.3	0.220	80.6	0.282
42	16.5	3.8	12.0	37	0.7	55.2	0.223	82.4	0.288
43	16.4	3.6	12.1	37	0.7	55.6	0.221	81.6	0.286
Average	16.0	5.1	12.4	36	0.7	54.3	0.219	82.8	0.290

Total number of blows analyzed: 42

Time Summary

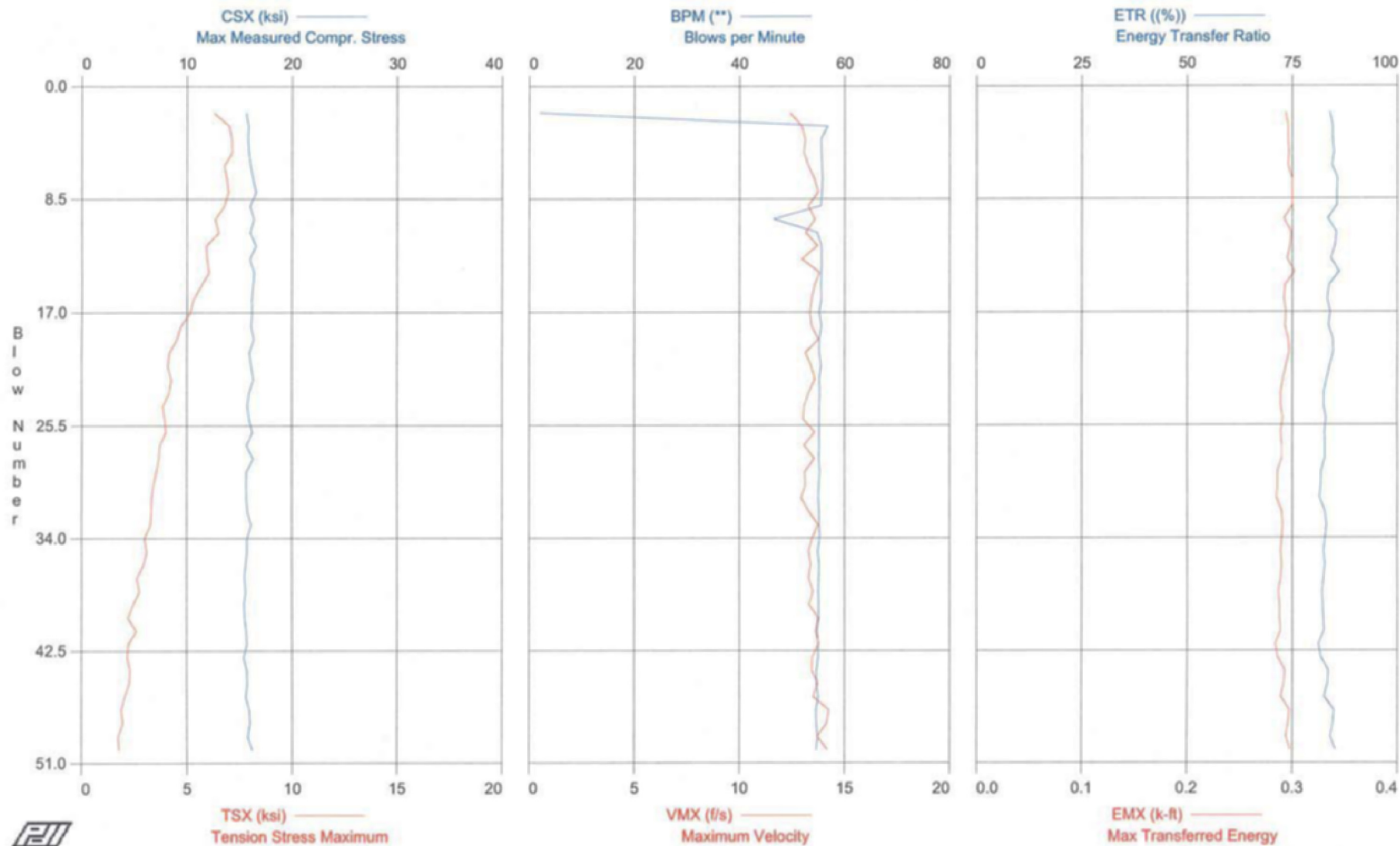
Drive 1:15:38 PM - 1:15:38 PM (2/20/2009) BN 1 - 1
 Stop 1 hour 8 minutes 48 seconds 1:15:38 PM - 2:24:26 PM
 Drive 44 seconds 2:24:26 PM - 2:25:10 PM BN 2 - 43
 Total time [1:09:32] = (Driving [0:00:44] + Stop [1:08:48])

PDILOT Ver. 2008.2 - Printed: 25-Feb-2009

MACTEC Engineering and Consulting, Inc. - Case Method Results

Test date: 20-Feb-2009

EXELON VICTORIA - Boring B3232 (298.4'-299.9' sample)



EXELON VICTORIA - Boring B3232 (298.4'-299.9' sample)
OP: JNH

Hammer ID: MEC20; Driller: P.PITTS CME55D (MACTEC)
Test date: 20-Feb-2009

AR: 2.27 in²
LE: 304.00 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 F²
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	15.6	6.3	12.4	35	0.7	1.9	0.221	84.0	0.294
3	15.9	7.0	13.0	36	0.7	56.8	0.221	84.6	0.296
4	15.8	7.1	13.1	36	0.7	55.5	0.220	84.6	0.296
5	15.9	7.2	13.1	36	0.7	55.6	0.222	84.9	0.297
6	16.1	6.8	13.3	36	0.7	55.7	0.221	84.5	0.296
7	16.3	6.9	13.6	37	0.7	55.8	0.223	85.8	0.300
8	16.6	7.0	13.7	38	0.6	55.7	0.224	85.6	0.300
9	16.0	6.8	13.3	36	0.7	55.5	0.224	85.6	0.300
10	16.4	6.3	13.6	37	0.7	46.5	0.219	83.5	0.292
11	16.0	6.5	13.1	36	0.7	54.8	0.224	85.5	0.299
12	16.6	5.9	13.7	38	0.7	55.6	0.223	85.1	0.298
13	16.0	6.0	13.0	36	0.7	55.6	0.223	84.2	0.295
14	16.4	6.0	13.8	37	0.6	55.6	0.224	86.2	0.302
15	16.3	5.7	13.6	37	0.7	55.5	0.224	83.7	0.293
16	16.2	5.3	13.4	37	0.7	55.6	0.223	83.3	0.292
17	16.2	5.2	13.3	37	0.7	55.2	0.223	84.0	0.294
18	16.1	4.7	13.4	37	0.7	55.6	0.222	83.6	0.293
19	16.4	4.5	13.8	37	0.6	55.2	0.223	84.6	0.296
20	16.0	4.2	13.1	36	0.7	55.2	0.222	84.7	0.297
21	16.1	4.1	13.4	37	0.7	55.5	0.222	83.9	0.294
22	16.3	4.3	13.6	37	0.6	55.2	0.222	83.2	0.291
23	15.9	4.2	13.3	36	0.7	55.3	0.218	82.5	0.289
24	15.8	3.9	13.1	36	0.7	55.2	0.219	82.5	0.289
25	15.9	3.9	13.0	36	0.7	55.2	0.222	83.0	0.291
26	16.2	4.0	13.6	37	0.6	55.2	0.219	82.7	0.289
27	15.7	3.7	13.1	36	0.7	55.2	0.218	82.8	0.290
28	16.3	3.7	13.6	37	0.6	55.1	0.220	82.7	0.290
29	15.7	3.5	13.1	36	0.7	55.3	0.217	81.9	0.286
30	15.6	3.4	13.1	36	0.7	55.1	0.217	81.8	0.286
31	15.7	3.3	12.9	36	0.7	55.0	0.217	81.5	0.285
32	15.8	3.3	13.3	36	0.7	55.2	0.217	82.7	0.290
33	16.1	3.3	13.8	37	0.6	55.2	0.217	83.2	0.291
34	15.7	3.0	13.5	36	0.7	55.3	0.216	82.8	0.290
35	15.7	3.1	13.3	36	0.7	54.9	0.216	82.5	0.289
36	15.6	2.9	13.4	35	0.7	55.2	0.216	82.8	0.290
37	15.5	2.6	13.3	35	0.7	55.1	0.215	82.5	0.289
38	15.6	2.8	13.5	35	0.6	55.0	0.213	82.1	0.287
39	15.4	2.5	13.3	35	0.7	55.1	0.212	82.3	0.288
40	15.5	2.2	13.7	35	0.6	55.1	0.213	82.4	0.288
41	15.6	2.6	13.6	36	0.6	54.8	0.216	82.6	0.289
42	15.7	2.2	13.8	36	0.6	55.0	0.210	81.2	0.284
43	15.4	2.2	13.5	35	0.6	55.0	0.210	81.8	0.286
44	15.7	2.3	13.4	36	0.7	54.7	0.217	83.6	0.293
45	15.7	2.3	13.7	36	0.6	54.7	0.217	83.4	0.292
46	15.6	2.1	13.5	35	0.6	55.0	0.214	82.5	0.289
47	15.9	1.9	14.3	36	0.6	54.6	0.218	84.9	0.297
48	16.0	2.0	14.2	36	0.6	54.7	0.219	84.7	0.296
49	15.8	1.7	13.7	36	0.6	54.9	0.219	84.0	0.294
50	16.2	1.8	14.2	37	0.6	54.7	0.223	85.3	0.298
Average	15.9	4.2	13.4	36	0.7	54.0	0.219	83.5	0.292

Total number of blows analyzed: 49

Time Summary

Drive 9 minutes 5 seconds

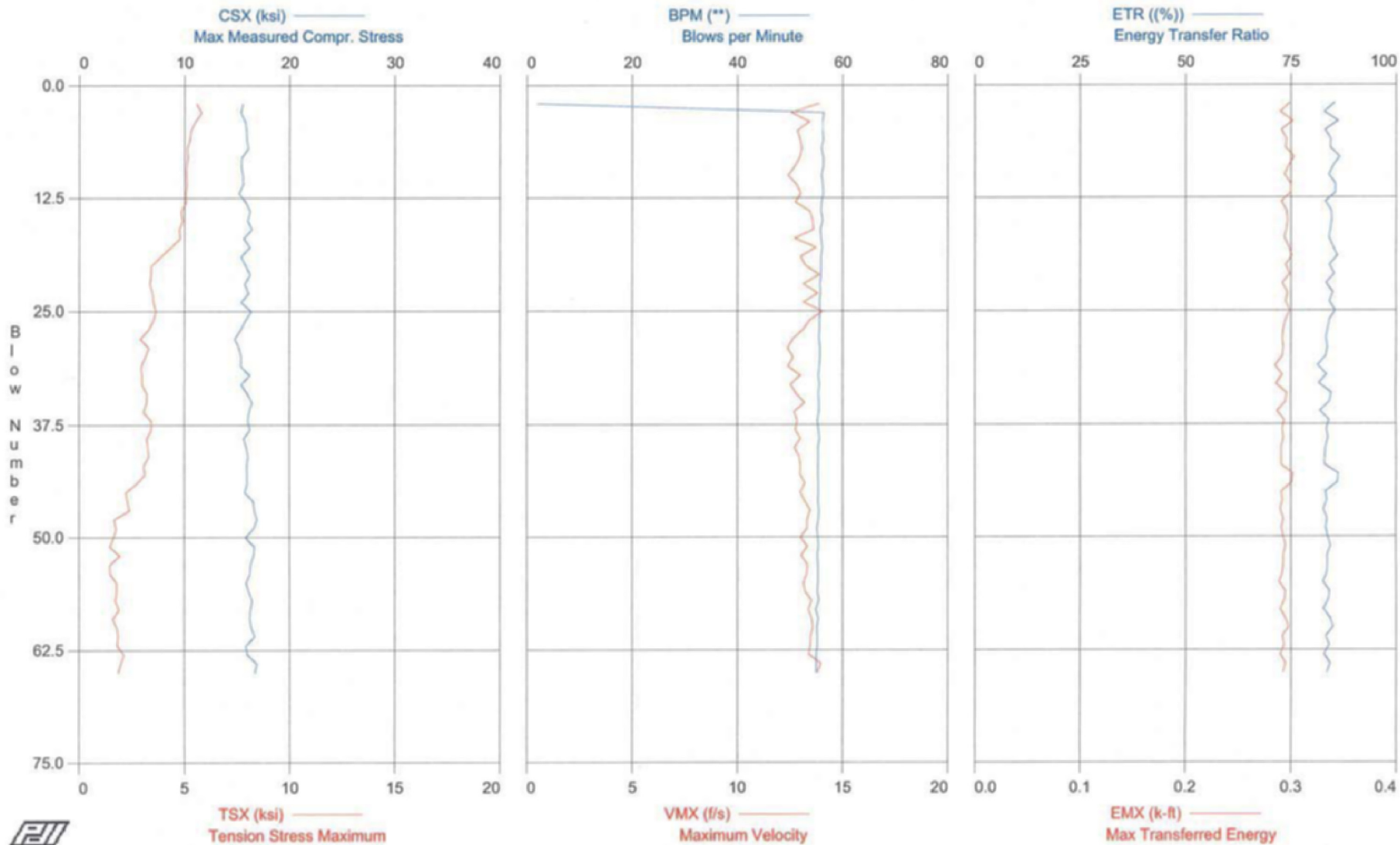
4:11:29 PM - 4:20:34 PM (2/20/2009) BN 1 - 50

PDILOT Ver. 2008.2 - Printed: 25-Feb-2009

MACTEC Engineering and Consulting, Inc. - Case Method Results

Test date: 21-Feb-2009

EXELON VICTORIA - Boring B3232 (308.5'-310' sample)



EXELON VICTORIA - Boring B3232 (308.5'-310' sample)
OP: JNH

Hammer ID: MEC20; Driller: P.PITTS CME55D (MACTEC)
Test date: 21-Feb-2009

AR: 2.27 in²
LE: 314.00 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 F²
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	15.5	5.6	13.8	35	0.6	1.9	0.209	85.4	0.299
3	15.4	5.8	12.6	35	0.7	56.4	0.210	82.9	0.290
4	15.8	5.5	13.4	36	0.6	56.2	0.212	86.3	0.302
5	15.9	5.3	12.8	36	0.6	56.2	0.210	83.1	0.291
6	15.9	5.3	13.0	36	0.6	56.3	0.211	84.5	0.296
7	16.1	5.1	13.1	36	0.6	56.0	0.212	84.4	0.295
8	15.5	5.2	13.0	35	0.6	56.3	0.203	86.6	0.303
9	15.4	5.1	12.7	35	0.7	56.3	0.208	85.1	0.298
10	15.6	5.1	12.4	35	0.7	56.0	0.206	84.0	0.294
11	15.6	5.1	12.8	35	0.6	56.2	0.205	85.6	0.300
12	15.2	5.1	13.0	34	0.7	56.3	0.208	85.7	0.300
13	15.8	5.1	12.8	36	0.7	56.0	0.209	83.2	0.291
14	16.2	4.8	13.4	37	0.6	55.9	0.212	84.6	0.296
15	16.0	4.9	13.6	36	0.6	56.2	0.213	84.8	0.297
16	16.4	4.8	13.6	37	0.6	55.8	0.215	84.5	0.296
17	15.6	4.8	12.7	36	0.7	55.9	0.212	84.1	0.294
18	16.2	4.3	13.7	37	0.6	56.1	0.215	85.0	0.298
19	15.4	3.9	13.0	35	0.7	55.9	0.215	86.1	0.301
20	15.8	3.4	13.2	36	0.7	55.9	0.217	84.2	0.295
21	16.3	3.4	13.9	37	0.6	55.9	0.214	85.4	0.299
22	15.7	3.4	13.1	36	0.6	55.7	0.215	83.4	0.292
23	16.1	3.5	13.8	37	0.6	55.8	0.217	85.0	0.297
24	15.4	3.5	13.1	35	0.6	55.6	0.215	84.2	0.295
25	16.4	3.6	14.0	37	0.6	55.7	0.216	85.5	0.299
26	15.8	3.5	13.4	36	0.6	55.6	0.216	84.2	0.295
27	15.4	3.3	13.1	35	0.6	55.6	0.213	83.8	0.293
28	14.8	2.9	12.6	34	0.6	55.5	0.202	83.3	0.292
29	15.2	3.3	12.4	35	0.7	55.7	0.212	83.7	0.293
30	15.4	3.1	12.6	35	0.7	55.7	0.209	83.3	0.292
31	15.4	2.9	12.4	35	0.7	55.6	0.207	81.4	0.285
32	16.2	3.0	13.0	37	0.7	55.4	0.217	83.6	0.292
33	15.4	3.0	12.5	35	0.7	55.6	0.212	81.7	0.286
34	16.0	3.2	12.8	36	0.7	55.4	0.219	84.7	0.296
35	16.4	3.2	13.2	37	0.7	55.5	0.219	84.2	0.295
36	16.2	3.1	12.7	37	0.7	55.5	0.215	82.0	0.287
37	16.1	3.4	12.8	36	0.7	55.2	0.217	84.1	0.294
38	16.3	3.4	12.7	37	0.7	55.4	0.220	83.5	0.292
39	15.6	3.2	13.0	36	0.7	55.6	0.218	83.8	0.293
40	15.9	3.3	12.7	36	0.7	55.3	0.216	83.3	0.291
41	16.1	3.3	12.9	36	0.7	55.4	0.217	83.1	0.291
42	15.9	3.1	13.0	36	0.7	55.3	0.218	83.0	0.291
43	16.0	3.1	13.0	36	0.7	55.3	0.219	86.3	0.302
44	16.0	2.7	13.2	36	0.7	55.4	0.221	86.1	0.301
45	15.8	2.2	13.0	36	0.7	55.4	0.219	83.3	0.291
46	16.6	2.3	13.2	38	0.6	55.3	0.217	83.6	0.292
47	16.7	2.4	13.5	38	0.6	55.5	0.213	82.7	0.290
48	16.9	1.7	13.3	38	0.6	55.4	0.218	83.6	0.293
49	16.6	1.8	13.3	38	0.6	55.1	0.217	83.3	0.291
50	15.8	1.6	13.0	36	0.7	55.3	0.218	83.8	0.293
51	16.7	1.5	13.3	38	0.6	55.4	0.219	84.4	0.295
52	16.6	1.9	13.0	38	0.7	55.2	0.220	83.7	0.293
53	16.3	1.5	13.3	37	0.7	55.3	0.218	83.7	0.293
54	16.2	1.5	13.3	37	0.7	55.3	0.216	83.6	0.292
55	15.9	1.8	13.1	36	0.7	55.3	0.218	82.7	0.289
56	16.1	1.8	13.2	37	0.7	55.2	0.218	84.2	0.295
57	16.5	1.7	13.5	37	0.7	55.5	0.218	83.9	0.294
58	16.3	1.9	13.4	37	0.7	54.9	0.216	82.7	0.290
59	16.2	1.6	13.5	37	0.6	55.4	0.218	84.4	0.295
60	16.4	1.8	13.6	37	0.7	55.1	0.221	85.0	0.298
61	16.7	1.9	13.5	38	0.7	55.2	0.219	83.3	0.292
62	15.9	1.8	13.5	36	0.7	55.2	0.217	84.1	0.294
63	16.0	2.1	13.4	36	0.7	55.0	0.215	82.9	0.290
64	16.9	2.0	14.0	38	0.6	55.0	0.220	84.4	0.295
65	16.7	1.9	13.8	38	0.6	55.0	0.218	83.6	0.293

EXELON VICTORIA - Boring B3232 (308.5'-310' sample)
OP: JNH

Hammer ID: MEC20; Driller: P.PITTS CME55D (MACTEC)
Test date: 21-Feb-2009

	CSX	TSX	VMX	FMX	FVP	BPM	EF2	ETR	EMX
	ksi	ksi	f/s	kips	□	**	k-ft	(%)	k-ft
Average	16.0	3.3	13.2	36	0.7	54.8	0.215	84.0	0.294

Total number of blows analyzed: 64

Time Summary

Drive		8:37:46 AM - 8:37:46 AM (2/21/2009) BN 1 - 1
Stop	59 minutes 29 seconds	8:37:46 AM - 9:37:15 AM
Drive	1 minute 8 seconds	9:37:15 AM - 9:38:23 AM BN 2 - 65

Total time [1:00:37] = (Driving [0:01:08] + Stop [0:59:29])



Engineering and constructing a better tomorrow

May 4, 2009

Memorandum to File

From: Jon Honeycutt, Staff Professional JNH

Reviewed By: Steve Kiser, Principal Professional SK

Subject: **Report of SPT Energy – MACTEC Raleigh CME 55 Track
Hammer Serial No. MEC-21 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 25, 2009, during drilling of Boring B3228 (Offset) at the referenced site. The testing was performed by Jonathan Honeycutt from approximately 11:40 AM to 12:26 PM (ET) on January 25 under cloudy skies with a temperature of about 65 degrees Fahrenheit. The boring was drilled with personnel and equipment from the MACTEC Raleigh office. The drilling equipment consisted of a CME 55 model track-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. Tommy Hahn. 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

28 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 26, 2009, during drilling of Boring B3228 at the referenced site. The testing was performed by Jonathan Honeycutt from approximately 10:20 AM to 12:30 PM (ET) on January 26 under cloudy skies with a temperature of about 60 degrees Fahrenheit. The boring was drilled with personnel and equipment from the MACTEC Raleigh office. The drilling equipment consisted of a CME 55 model track-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. Tommy Hahn. 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.

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 PDILOT tables and are also shown graphically in the PDILOT 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.
- 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	300 to 310	86% to 89%
NW-J	301 to 318	86% to 91%

- 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	304.1	86.9%
NW-J	309.5	88.4%
Average of All Rod Sizes	307.3	87.8%

Attachments: Page 5 Table 3 - Summary of SPT Energy Measurements – 1 Page
Page 6 Work Instruction No. 311 – DCN EXE917 – 1 Page
Pages 7 –8 Record of SPT Energy Measurement – 2 Pages
Pages 9 – 28 PDILOT Output – 20 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)	
MEC-21 (CME 55 Track)	MACTEC (Raleigh)	Tommy Hahn	B3228 OFFSET	1/25/2009	AW-J	38.5 - 40		4 - 5 - 8	23	307	87.7%
						43.5 - 45		4 - 9 - 12	26	302	86.3%
						48.5 - 50		4 - 7 - 11	24	300	85.7%
						53.5 - 55		5 - 8 - 17	30	300	85.7%
						58.5 - 60		12 - 11 - 13	36	310	88.6%
								Average for AW-J Rods:		304.1	86.9%
			B3228	1/26/2009	NW-J	43.5 - 45		9 - 13 - 15	41	303	86.6%
						48.5 - 50		6 - 9 - 13	30	301	86.0%
						53.5 - 55		5 - 11 - 27	44	309	88.3%
						58.5 - 60		5 - 8 - 10	25	312	89.1%
						63.5 - 63.8		50 / .3'	56	318	90.9%
								Average for NW-J Rods:		309.5	88.4%
					Total Average for Rig:		307.3	87.8%			

^aMeasured 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).

^bEnergy 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 PDILOT tables due to roundoff.

Prepared By: 	Date: 5/4/09	Checked By: 	Date: 5-4-09
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Work Instruction No. 311
Exelon COL Victoria Site
MACTEC Engineering and Consulting, Inc.
MACTEC Project 6468-07-1777

DCN 11/2/09

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: _____

Project Principal Engineer: _____

Site Manager/Coordinator: _____

Pages: 1 plus attachment

Attachments: ASTM D 4633-05

Date: _____

Date: _____

Date: 11/2/09

DCN: EXE917

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:	55
PROJECT NO.:	6468-07-1777	SERIAL NO.:	MEC 21
DATE:	1/25/2009	HAMMER TYPE:	AUTO
WEATHER:	65°F Cloudy SKES	ROPE CONDITION:	N/A
INSPECTOR:	JHL	ROD SIZE:	AW 3
DRILLING COMPANY:	WILCOX	NO. OF SHEAVES:	N/A

BORING DATA	
BORING NUMBER:	offset of B3228
DEPTH DRILLED:	VARIOUS
TIME DRIVEN:	9:00am - 2:00pm
RIG OPERATOR:	T. HAHN
HAMMER OPERATOR:	N/A
PDA PAK SERIAL NO.:	3622L
INSTR. ROD AREA:	1.22 in ²
ACCEL. SERIAL NOS.:	43-K983 44-K0686
STRAIN SERIAL NOS.:	75 AW 1/2
SAMPLE DEPTH (feet)	SPT N-VALUE (bpf)
32.5 - 40	4-5-8
43.5 - 45	4-9-12
48.5 - 50	4-7-11
53.5 - 55	5-8-17
58.5 - 60	12-11-13
REMARKS:	

SPT Energy Testing Form, Rev. 0 1/13/09

Volume 1. Revision 0

Page 661 of 751

DCN# EXE1436



GENERAL INFORMATION		DRILL RIG DATA	
PROJECT:	Exelon	MAKE:	CME
LOCATION:	Victoria, Texas	MODEL:	65
PROJECT NO.:	6488-07-1777	SERIAL NO.:	MEC 21
DATE:	1/26/2009	HAMMER TYPE:	Auto
WEATHER:	60°F Cloudy	ROPE CONDITION:	N/A
INSPECTOR:	SMH	ROD SIZE:	NW3
DRILLING COMPANY:	MWH/ETC	NO. OF SHEAVES:	N/A

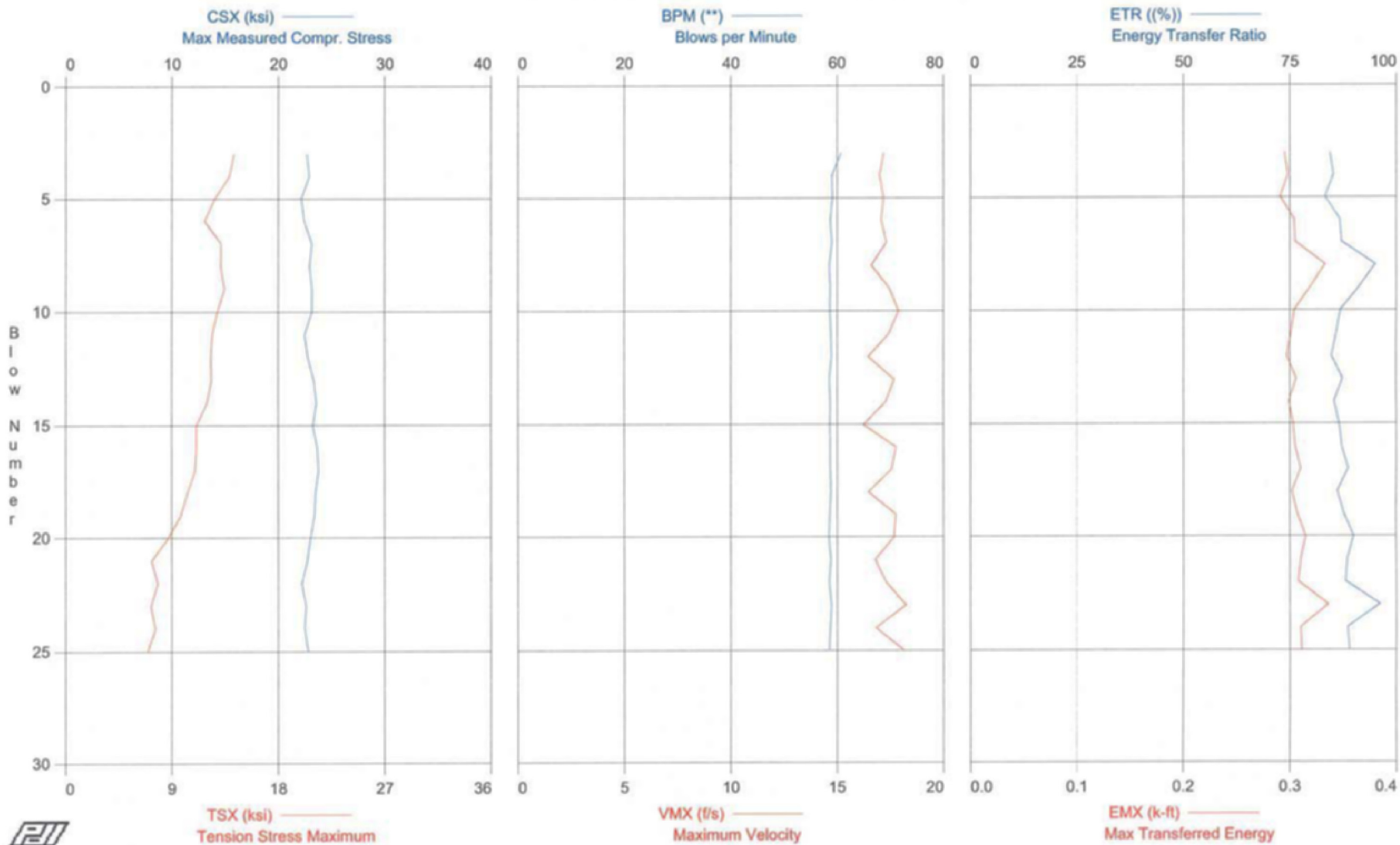
SPT Energy Testing Form, Rev. 0 1/13/09

PDIPLOT Ver. 2008.2 - Printed: 9-Mar-2009

MACTEC Engineering and Consulting, Inc. - Case Method Results

Test date: 25-Jan-2009

EXELON VICTORIA - B3228 OFFSET (38.5'-40' sample)



EXELON VICTORIA - B3228 OFFSET (38.5'-40' sample)
OP: JNH

Hammer ID: MEC21; Driller: T.HAHN CME 55 (MACTEC)
Test date: 25-Jan-2009

AR: 1.22 in² SP: 0.492 k/ft³
LE: 44.00 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.70

CSX: Max Measured Compr. Stress BPM: Blows per Minute
TSX: Tension Stress Maximum EF2: Energy of F²
VMX: Maximum Velocity ETR: Energy Transfer Ratio
FMX: Maximum Force EMX: Max Transferred Energy
FVP: Force/Velocity proportionality

BL#	CSX ksi	TSX ksi	VMX f/s	FMX kips	FVP []	BPM **	EF2 k-ft	ETR (%)	EMX k-ft
3	22.7	14.3	17.2	28	0.7	60.7	0.278	84.4	0.295
4	22.9	13.9	17.0	28	0.8	59.0	0.282	85.2	0.298
5	22.1	12.6	17.2	27	0.7	59.1	0.277	83.2	0.291
6	22.4	11.8	17.1	27	0.7	58.7	0.282	86.7	0.304
7	23.1	13.2	17.3	28	0.8	59.0	0.281	87.1	0.305
8	22.9	13.1	16.6	28	0.7	58.5	0.284	95.0	0.333
9	23.2	13.4	17.4	28	0.7	58.7	0.280	91.2	0.319
10	23.1	12.8	17.9	28	0.7	58.6	0.283	86.8	0.304
11	22.5	12.4	17.4	27	0.7	58.8	0.282	85.9	0.301
12	22.8	12.3	16.5	28	0.8	58.9	0.278	84.8	0.297
13	23.3	12.3	17.7	28	0.7	58.5	0.278	87.3	0.306
14	23.6	12.0	17.3	29	0.8	58.7	0.279	85.3	0.299
15	23.2	11.1	16.2	28	0.8	58.6	0.281	86.5	0.303
16	23.6	11.1	17.8	29	0.8	58.7	0.277	87.1	0.305
17	23.8	11.0	17.6	29	0.8	58.7	0.280	88.7	0.310
18	23.5	10.3	16.5	29	0.8	58.8	0.280	86.2	0.302
19	23.4	9.8	17.8	29	0.7	58.6	0.275	87.6	0.307
20	23.0	8.7	17.7	28	0.7	58.4	0.278	89.9	0.315
21	22.7	7.3	16.8	28	0.8	58.8	0.276	88.5	0.310
22	22.2	7.8	17.3	27	0.7	58.5	0.272	88.0	0.308
23	22.6	7.2	18.2	28	0.7	58.9	0.271	96.1	0.336
24	22.5	7.6	16.8	27	0.7	58.7	0.274	88.5	0.310
25	22.8	7.0	18.1	28	0.7	58.5	0.272	89.0	0.311
Average	23.0	11.0	17.3	28	0.7	58.8	0.278	87.8	0.307

Total number of blows analyzed: 23

Time Summary

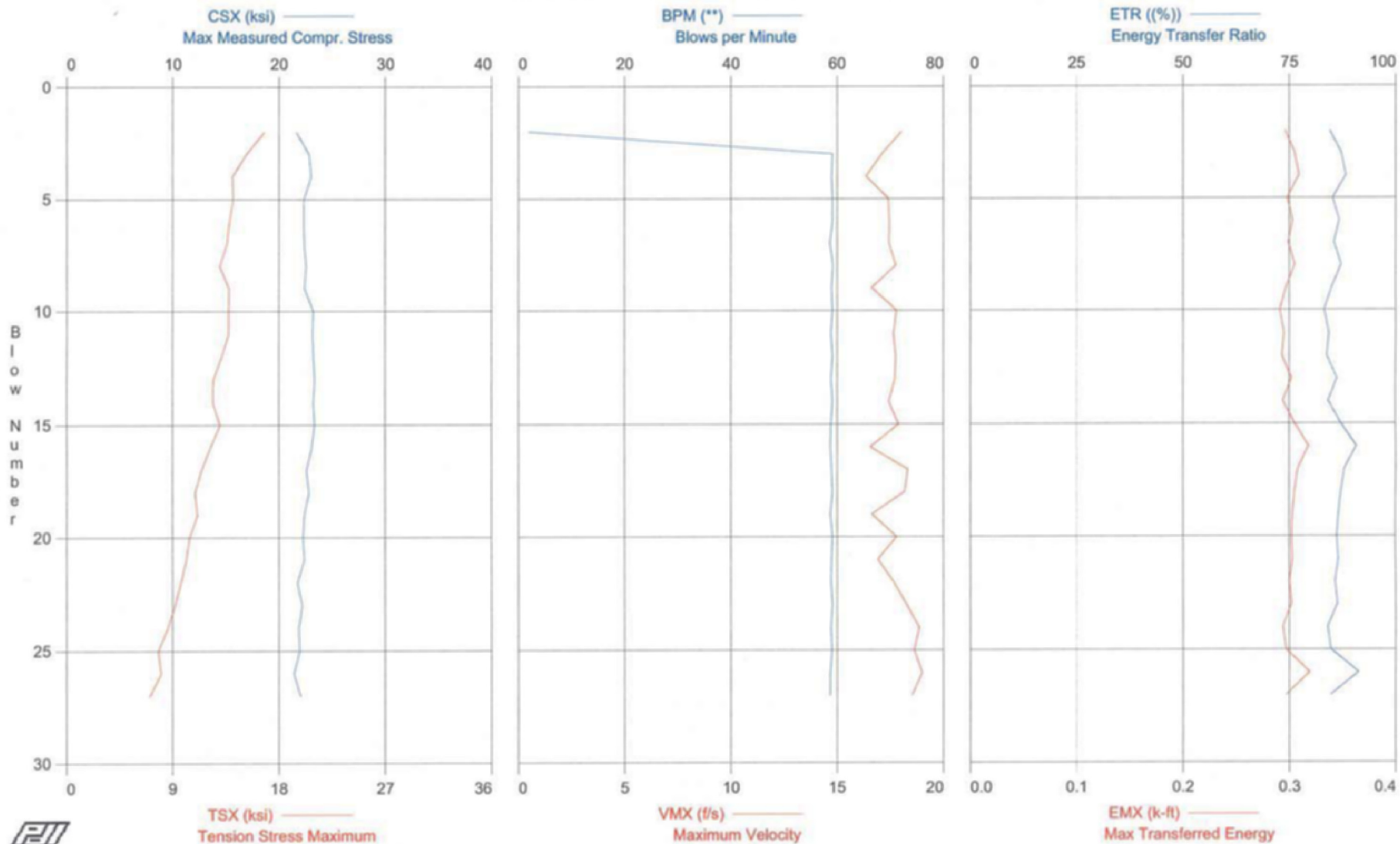
Drive 11:40:56 AM - 11:40:56 AM (1/25/2009) BN 1 - 1
Stop 29 minutes 7 seconds 11:40:56 AM - 12:10:03 PM
Drive 23 seconds 12:10:03 PM - 12:10:26 PM BN 2 - 25
Total time [0:29:30] = (Driving [0:00:23] + Stop [0:29:07])

PDILOT Ver. 2008.2 - Printed: 9-Mar-2009

MACTEC Engineering and Consulting, Inc. - Case Method Results

Test date: 25-Jan-2009

EXELON VICTORIA - B3228 OFFSET (43.5'-45' sample)



EXELON VICTORIA - B3228 OFFSET (43.5'-45' sample)
OP: JNH

Hammer ID: MEC21; Driller: T.HAHN CME 55 (MACTEC)
Test date: 25-Jan-2009

AR: 1.22 in² SP: 0.492 k/ft³
LE: 49.00 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.70

CSX: Max Measured Compr. Stress BPM: Blows per Minute
TSX: Tension Stress Maximum EF2: Energy of F²
VMX: Maximum Velocity ETR: Energy Transfer Ratio
FMX: Maximum Force EMX: Max Transferred Energy
FVP: Force/Velocity proportionality

BL#	CSX ksi	TSX ksi	VMX f/s	FMX kips	FVP []	BPM **	EF2 k-ft	ETR (%)	EMX k-ft
2	21.6	16.8	18.0	26	0.7	1.9	0.267	84.5	0.296
3	22.8	15.2	17.1	28	0.7	59.1	0.276	87.2	0.305
4	23.0	14.1	16.4	28	0.8	58.9	0.279	88.2	0.309
5	22.3	14.1	17.4	27	0.7	59.1	0.276	85.2	0.298
6	22.3	13.8	17.5	27	0.7	59.1	0.274	86.7	0.303
7	22.4	13.6	17.4	27	0.7	58.6	0.275	85.5	0.299
8	22.5	13.0	17.8	28	0.7	59.2	0.273	87.2	0.305
9	22.4	13.8	16.6	27	0.7	58.9	0.274	85.0	0.297
10	23.2	13.7	17.8	28	0.7	59.1	0.275	83.2	0.291
11	23.1	13.7	17.6	28	0.7	58.8	0.275	84.3	0.295
12	23.2	13.1	17.8	28	0.7	59.1	0.273	83.8	0.293
13	23.4	12.4	17.7	28	0.7	58.8	0.274	86.2	0.302
14	23.2	12.4	17.4	28	0.7	59.1	0.273	84.1	0.294
15	23.3	13.0	17.9	28	0.7	58.8	0.273	87.1	0.305
16	23.1	12.2	16.6	28	0.8	58.7	0.275	90.7	0.318
17	22.6	11.4	18.3	28	0.7	58.9	0.268	87.9	0.308
18	22.8	10.9	18.2	28	0.7	59.1	0.271	87.1	0.305
19	22.4	11.1	16.6	27	0.8	58.7	0.277	86.5	0.303
20	22.2	10.4	17.8	27	0.7	59.1	0.269	86.2	0.302
21	22.4	10.1	16.9	27	0.7	58.9	0.270	86.5	0.303
22	21.7	9.7	17.7	27	0.7	58.8	0.269	85.7	0.300
23	22.2	9.2	18.3	27	0.7	59.1	0.273	86.3	0.302
24	21.8	8.6	18.9	27	0.6	58.8	0.269	84.0	0.294
25	21.9	7.8	18.6	27	0.7	59.0	0.270	84.7	0.297
26	21.4	8.0	19.0	26	0.6	58.7	0.268	91.3	0.319
27	22.0	7.0	18.5	27	0.7	58.7	0.269	84.7	0.297
Average	22.5	11.9	17.7	27	0.7	56.7	0.273	86.1	0.302

Total number of blows analyzed: 26

Time Summary

Drive 2 minutes 12 seconds

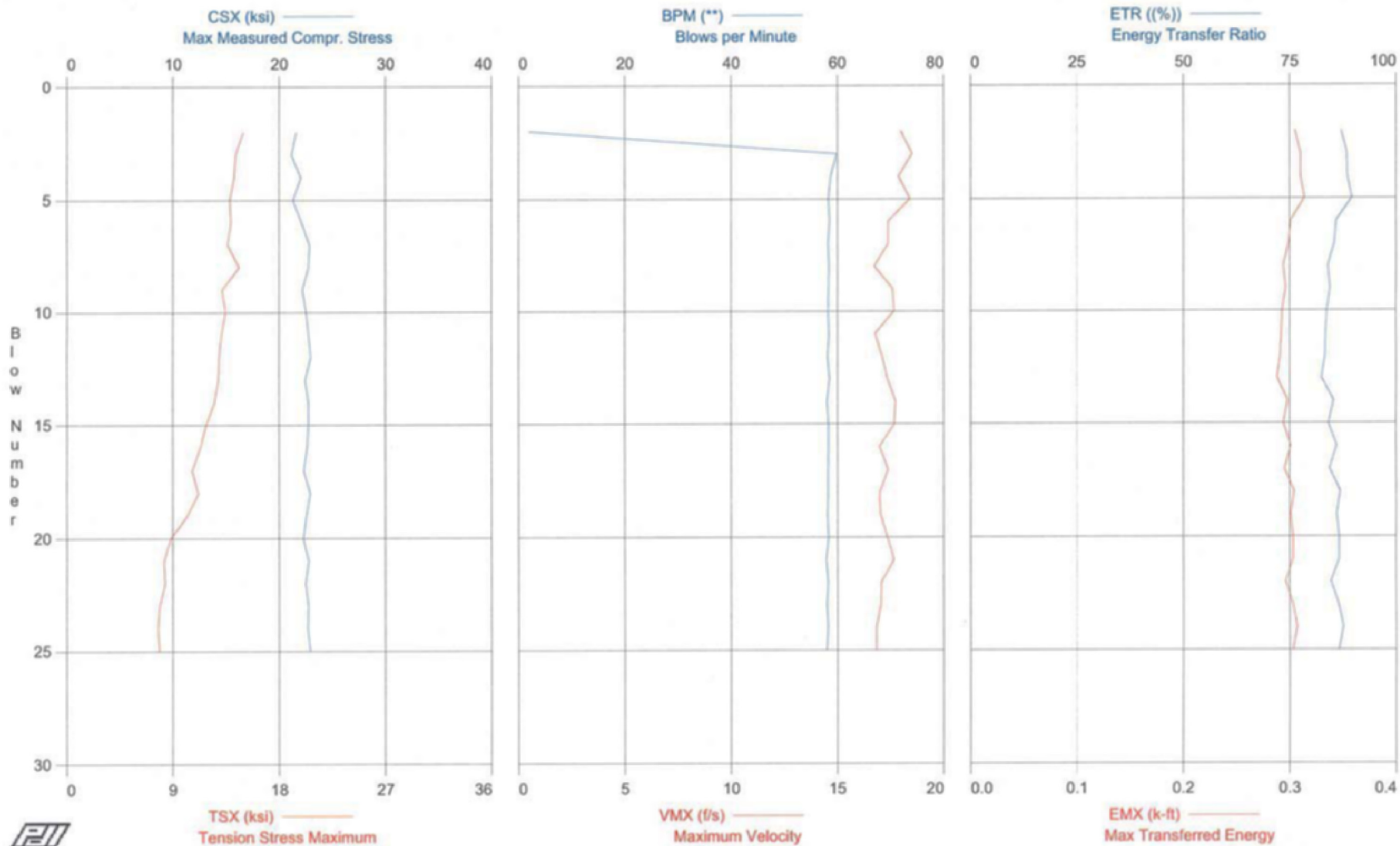
12:25:40 PM - 12:27:52 PM (1/25/2009) BN 1 - 28

PDIPLOT Ver. 2008.2 - Printed: 9-Mar-2009

MACTEC Engineering and Consulting, Inc. - Case Method Results

Test date: 25-Jan-2009

EXELON VICTORIA - B3228 OFFSET (48.5'-50' sample)



EXELON VICTORIA - B3228 OFFSET (48.5'-50' sample)
OP: JNH

Hammer ID: MEC21; Driller: T.HAHN CME 55 (MACTEC)
Test date: 25-Jan-2009

AR: 1.22 in²
LE: 54.00 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 F²
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	21.6	15.0	18.0	26	0.6	1.9	0.284	87.1	0.305
3	21.1	14.3	18.5	26	0.6	59.8	0.283	88.4	0.310
4	22.0	14.2	17.9	27	0.7	58.7	0.284	88.5	0.310
5	21.3	13.8	18.4	26	0.7	58.3	0.283	89.6	0.314
6	22.1	13.9	17.4	27	0.7	58.5	0.285	85.9	0.301
7	22.8	13.6	17.4	28	0.7	58.2	0.289	85.5	0.299
8	22.8	14.6	16.7	28	0.8	58.4	0.287	83.9	0.294
9	22.2	13.2	17.6	27	0.7	58.3	0.290	84.4	0.296
10	22.5	13.5	17.7	27	0.7	58.2	0.287	83.7	0.293
11	22.8	13.1	16.8	28	0.8	58.4	0.282	83.4	0.292
12	23.0	12.9	17.1	28	0.7	58.1	0.287	83.3	0.291
13	22.4	12.8	17.4	27	0.7	58.5	0.293	82.4	0.288
14	22.8	12.5	17.7	28	0.7	58.0	0.287	85.3	0.298
15	22.7	11.8	17.7	28	0.7	58.3	0.286	84.1	0.294
16	22.6	11.3	17.0	28	0.7	58.3	0.283	86.0	0.301
17	22.3	10.6	17.4	27	0.7	58.2	0.284	84.3	0.295
18	22.9	11.2	17.0	28	0.8	58.2	0.285	86.8	0.304
19	22.5	10.2	17.0	28	0.7	58.1	0.285	86.0	0.301
20	22.3	8.8	17.4	27	0.7	58.3	0.281	86.6	0.303
21	22.8	8.3	17.7	28	0.7	57.9	0.285	86.6	0.303
22	22.5	8.3	17.1	27	0.7	58.2	0.289	84.7	0.296
23	22.8	7.9	17.0	28	0.7	58.0	0.280	86.5	0.303
24	22.7	7.7	16.8	28	0.7	58.2	0.281	87.6	0.307
25	22.9	7.9	16.8	28	0.8	58.0	0.282	86.6	0.303
Average	22.4	11.7	17.4	27	0.7	56.0	0.285	85.7	0.300

Total number of blows analyzed: 24

Time Summary

Drive 8 minutes 26 seconds

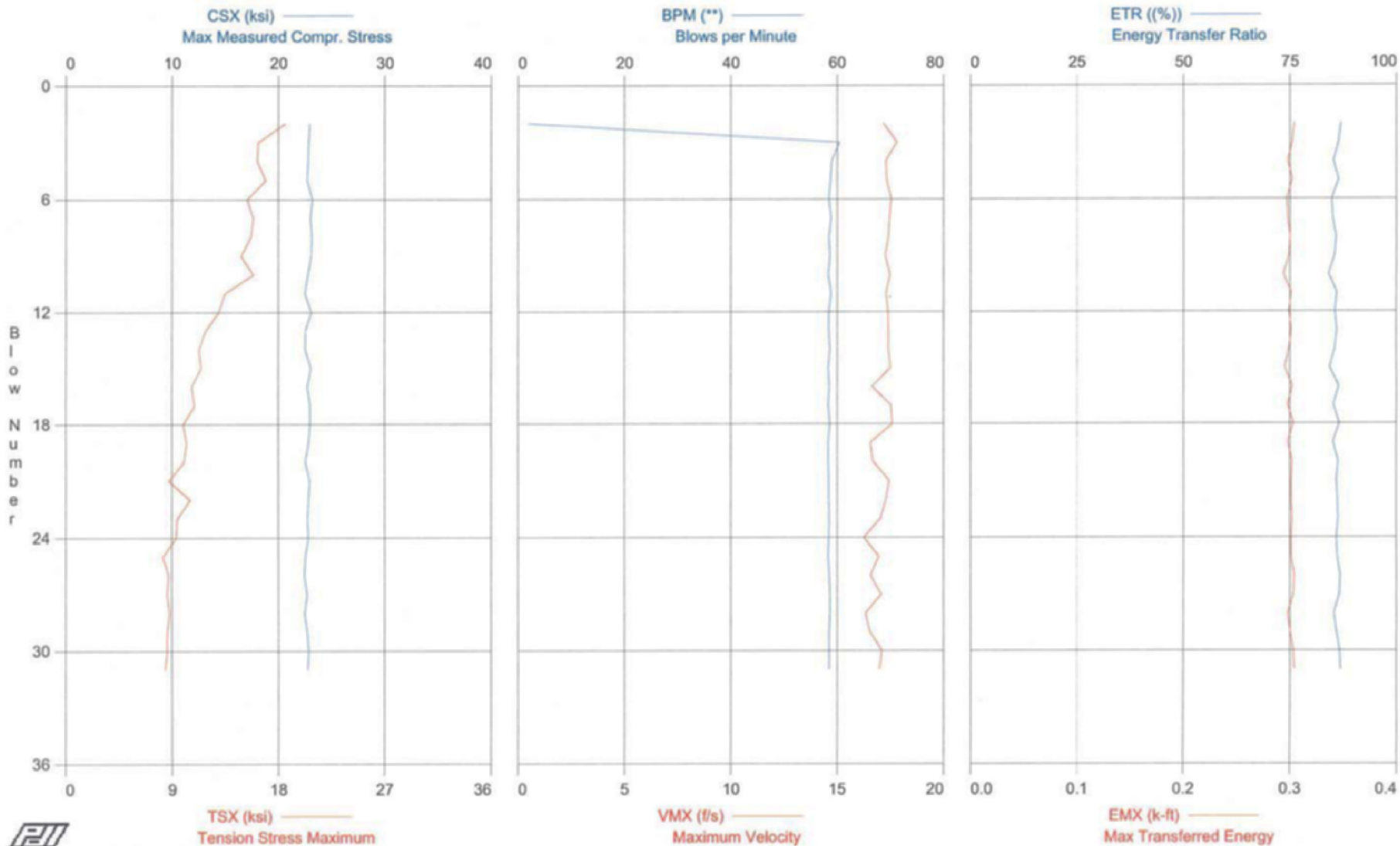
12:32:45 PM - 12:41:11 PM (1/25/2009) BN 1 - 25

PDIPLOT Ver. 2008.2 - Printed: 9-Mar-2009

MACTEC Engineering and Consulting, Inc. - Case Method Results

Test date: 25-Jan-2009

EXELON VICTORIA - B3228 OFFSET (53.5'-55' sample)



EXELON VICTORIA - B3228 OFFSET (53.5'-55' sample)
OP: JNH

Hammer ID: MEC21; Driller: T.HAHN CME 55 (MACTEC)
Test date: 25-Jan-2009

AR: 1.22 in² SP: 0.492 k/ft³
LE: 59.00 ft EM: 30,000 ksi
WS: 16,807.9 f/s 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 F²
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	22.9	18.6	17.2	28	0.7	1.9	0.297	86.9	0.304
3	22.8	16.3	17.8	28	0.7	60.4	0.293	86.4	0.302
4	22.8	16.2	17.3	28	0.7	58.9	0.296	85.2	0.298
5	22.7	16.9	17.3	28	0.7	58.7	0.295	86.4	0.302
6	23.2	15.4	17.5	28	0.7	58.4	0.295	84.8	0.297
7	23.0	15.9	17.5	28	0.7	58.8	0.290	85.0	0.298
8	23.1	15.7	17.4	28	0.7	58.4	0.292	85.8	0.300
9	23.1	14.8	17.3	28	0.7	58.6	0.292	85.5	0.299
10	22.7	15.9	17.5	28	0.7	58.3	0.293	84.0	0.294
11	22.5	13.5	17.3	27	0.7	58.8	0.292	86.0	0.301
12	23.1	12.9	17.4	28	0.7	58.4	0.291	85.5	0.299
13	22.5	11.8	17.4	27	0.7	58.4	0.293	86.0	0.301
14	22.5	11.3	17.4	27	0.7	58.6	0.290	85.5	0.299
15	23.0	11.5	17.5	28	0.7	58.3	0.291	84.3	0.295
16	22.7	10.6	16.6	28	0.7	58.5	0.290	86.4	0.302
17	23.0	10.9	17.5	28	0.7	58.3	0.288	85.2	0.298
18	23.0	10.0	17.6	28	0.7	58.6	0.290	86.5	0.303
19	22.8	10.2	16.6	28	0.8	58.3	0.289	85.1	0.298
20	22.5	10.0	16.7	27	0.7	58.3	0.290	86.3	0.302
21	22.9	8.7	17.4	28	0.7	58.4	0.287	85.9	0.301
22	22.8	10.5	17.3	28	0.7	58.4	0.287	86.1	0.301
23	22.7	9.4	17.0	28	0.7	58.5	0.287	86.2	0.302
24	22.8	9.3	16.3	28	0.8	58.4	0.288	85.9	0.301
25	22.5	8.2	17.0	27	0.7	58.3	0.288	86.0	0.301
26	22.4	8.7	16.6	27	0.7	58.5	0.288	86.8	0.304
27	22.7	8.6	17.1	28	0.7	58.6	0.287	86.6	0.303
28	22.4	8.8	16.3	27	0.7	58.6	0.284	85.3	0.298
29	22.7	8.6	16.5	28	0.8	58.5	0.287	85.9	0.300
30	22.8	8.6	17.1	28	0.7	58.5	0.286	86.6	0.303
31	22.7	8.4	17.0	28	0.8	58.5	0.288	86.8	0.304
Average	22.8	11.9	17.1	28	0.7	56.7	0.290	85.8	0.300

Total number of blows analyzed: 30

Time Summary

Drive 9 minutes 37 seconds

12:43:24 PM - 12:53:01 PM (1/25/2009) BN 1 - 31

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MACTEC Engineering and Consulting, Inc. - Case Method Results

Test date: 25-Jan-2009

EXELON VICTORIA - B3228 OFFSET (58.5'-60' sample)

