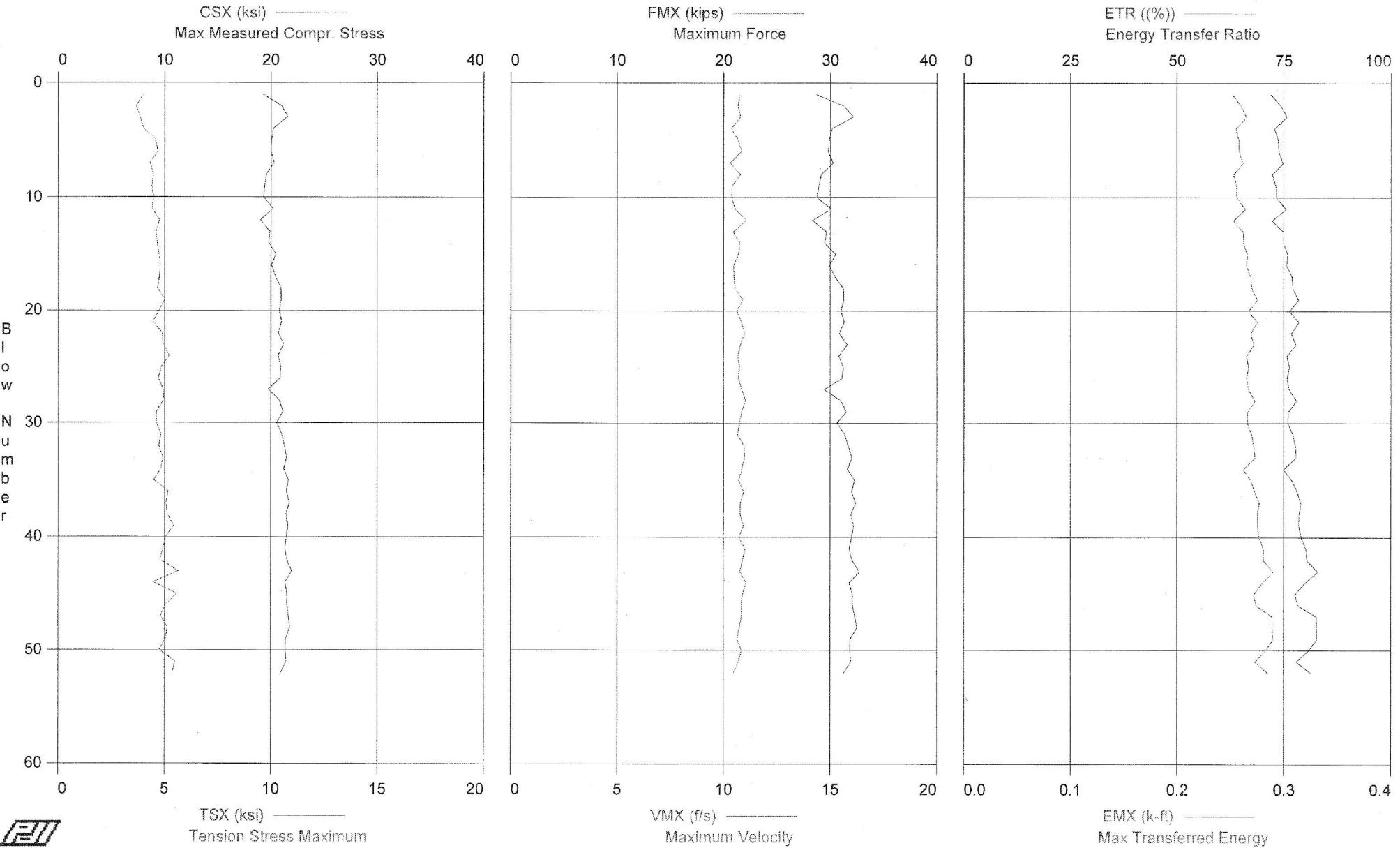


Vogle COL Project - Boring B-3016; 108.5' - 110' Sample



Vogtle COL Project - Boring B-3016; 108.5' - 110' Sample
OP: SEK

Rig Serial No. 211797 (MACTEC Knoxville CME 75)
Test date: 20-Dec-2006

AR: 1.49 in²
LE: 114.00 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000.0 ksi
JC: 0.60

CSX: Max Measured Compr. Stress
TSX: Tension Stress Maximum
FMX: Maximum Force
VMX: Maximum Velocity
DFN: Final Displacement

BPM: Blows per Minute
EF2: Energy of F²
ETR: Energy Transfer Ratio
EMX: Max Transferred Energy

BL#	depth ft	CSX ksi	TSX ksi	FMX kips	VMX f/s	DFN in	BPM **	EF2 k-ft	ETR (%)	EMX k-ft
1	0.00	19.24	4.01	29	10.7	0.18	0.0	0.254	72.0	0.252
2	0.00	21.00	3.66	31	10.7	0.81	44.4	0.263	74.4	0.260
3	0.00	21.58	3.84	32	10.8	0.94	45.5	0.269	75.7	0.265
4	0.00	20.24	4.02	30	10.3	0.75	46.2	0.252	72.8	0.255
5	0.00	20.08	4.56	30	10.7	0.82	46.3	0.257	73.7	0.258
6	0.00	20.01	4.69	30	10.8	0.97	46.7	0.252	73.8	0.258
7	0.00	20.31	4.32	30	10.3	0.75	46.6	0.257	74.8	0.262
8	0.00	19.57	4.48	29	10.8	0.74	46.7	0.244	72.3	0.253
9	0.00	19.42	4.40	29	10.4	0.42	46.9	0.251	73.2	0.256
10	0.00	19.29	4.49	29	10.4	0.76	46.7	0.253	73.3	0.256
11	0.00	20.21	4.41	30	10.5	0.69	46.9	0.259	75.5	0.264
12	0.00	19.02	4.77	28	11.1	0.69	46.9	0.247	72.3	0.253
13	0.00	19.91	4.60	30	10.4	0.84	46.9	0.258	75.0	0.262
14	0.00	19.79	4.66	29	10.8	0.76	46.8	0.253	74.9	0.262
15	0.00	20.47	4.74	31	10.7	0.84	46.9	0.261	75.9	0.266
16	0.00	20.07	4.80	30	10.5	0.26	46.7	0.258	75.7	0.265
17	0.00	20.44	4.75	30	10.5	1.03	46.7	0.262	77.0	0.269
18	0.00	20.96	4.67	31	10.5	1.17	46.8	0.267	77.1	0.270
19	0.00	20.98	5.01	31	10.9	1.52	46.8	0.270	78.4	0.275
20	0.00	20.81	4.75	31	10.6	0.78	46.9	0.265	76.3	0.267
21	0.00	21.02	4.45	31	10.8	0.97	46.9	0.272	78.5	0.275
22	0.00	20.70	4.89	31	11.0	1.19	47.2	0.268	76.8	0.269
23	0.00	21.20	4.92	32	10.8	0.96	46.6	0.270	77.8	0.272
24	0.00	20.67	5.22	31	10.7	0.85	47.1	0.260	75.7	0.265
25	0.00	20.96	4.85	31	10.7	0.94	46.8	0.265	76.3	0.267
26	0.00	20.86	4.71	31	10.7	0.91	46.8	0.261	75.8	0.265
27	0.00	19.75	4.94	29	10.8	1.19	47.1	0.258	76.3	0.267
28	0.00	20.80	4.96	31	11.0	0.70	46.9	0.268	78.0	0.273
29	0.00	21.14	4.62	32	10.8	0.91	46.9	0.269	76.0	0.266
30	0.00	20.54	4.61	31	10.7	1.10	46.7	0.260	75.9	0.266
31	0.00	21.04	4.83	31	10.7	1.74	46.9	0.268	77.1	0.270
32	0.00	21.28	4.73	32	11.0	1.12	47.2	0.274	77.7	0.272
33	0.00	21.51	4.92	32	11.0	1.57	46.9	0.271	77.9	0.273
34	0.00	21.21	4.83	32	10.9	0.69	46.9	0.267	74.9	0.262
35	0.00	21.66	4.50	32	10.7	0.83	47.1	0.276	77.0	0.269
36	0.00	21.47	5.18	32	10.9	1.43	47.2	0.270	78.1	0.273
37	0.00	21.74	5.08	32	10.8	0.90	47.1	0.277	79.0	0.277
38	0.00	21.43	5.14	32	10.8	0.95	47.2	0.269	78.6	0.275
39	0.00	21.61	5.44	32	10.9	0.60	46.9	0.273	78.5	0.275
40	0.00	21.47	5.06	32	10.7	1.70	47.1	0.267	79.1	0.277
41	0.00	21.34	4.94	32	11.0	1.63	47.0	0.276	80.2	0.281
42	0.00	21.48	4.79	32	10.9	1.54	47.1	0.271	80.4	0.281
43	0.00	21.98	5.65	33	10.8	1.56	47.1	0.280	83.0	0.290
44	0.00	21.33	4.47	32	11.1	1.38	47.1	0.274	79.9	0.280
45	0.00	21.54	5.59	32	10.9	1.02	46.8	0.266	77.6	0.272
46	0.00	21.54	5.05	32	10.8	1.11	46.8	0.269	78.3	0.274
47	0.00	21.68	4.83	32	10.8	2.22	47.3	0.272	82.7	0.289
48	0.00	21.82	5.14	33	10.7	1.63	46.7	0.272	82.7	0.289
49	0.00	21.39	5.06	32	10.6	1.50	46.9	0.273	82.7	0.290
50	0.00	21.37	4.74	32	10.8	1.60	46.8	0.269	80.9	0.283
51	0.00	21.44	5.49	32	10.7	1.17	46.8	0.270	77.9	0.273
52	0.00	20.97	5.38	31	10.5	1.52	46.8	0.268	81.4	0.285
Average		20.83	4.78	31	10.7	1.05	46.8	0.265	77.1	0.270

Total number of blows analyzed: 52

Time Summary

Drive 1 minute 5 seconds

1:45:47 PM - 1:46:52 PM (12/20/2006) BN 1 - 52

June 27, 2007

Memorandum to File DCN VGCOL 103

From: Steve Kiser *SK*

Reviewed By: Pieter Depree *PD*

Subject: **Report of SPT Energy – MACTEC Knoxville CME 75 Truck
Hammer Serial No. 200587 Automatic Hammer
WORK INSTRUCTION VGCOL 103**
Vogtle Units 3 & 4 COL Project
Burke County, Georgia
MACTEC Project No. 6141-06-0286

Steve Kiser, of MACTEC Engineering and Consulting, Inc. (MACTEC), performed energy measurements on the 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

SPT energy measurements were made on January 17, 2007, during drilling of Boring B-4014 at the referenced site. The testing was performed from approximately 12:05 to 1:05 PM under partly cloudy skies and breezy conditions, and a temperature of about 42 degrees Fahrenheit. The boring was drilled with personnel and equipment from the Knoxville office of MACTEC. 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 below the depth at which groundwater was encountered at the time of energy testing. The drill rig operator during sampling was Mr. Tony Christian. Energy measurements were recorded during sampling at the depth intervals shown in Table 1.

The energy measurements were performed with a Pile Driving Analyzer (PDA) model PAK (Serial No. 1430), and calibrated accelerometers (Serial Nos. P5953 and P5094) and strain gages (Serial Nos. NW #146/1 and NW#146/2). An NW-sized 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 1.49 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 VGCOL-14.

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 1.

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 consistent between individual hammer blows and between the sample depths tested. In general, the first and last one (and sometimes two) 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.

- The average energy transferred from the hammer to the drill rods for each individual depth interval using the EFV method ranged from 293 foot-pounds to 303 foot-pounds. These average energy transfers correspond to energy transfer ratios (ETR) of 84% to 87% of the theoretical energy (350 foot-pounds) of the SPT hammer.
- 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 weighted average energy transfer of the SPT system (for all the depth intervals tested) was 294.7 foot-pounds, with a weighted average ETR of 84.2%.

Attachments: Page 4 Table 1 - Summary of SPT Energy Measurements – 1 Page
Page 5 Work Instruction – DCN VGCOL 103 – 1 Page
Page 6 Record of SPT Energy Measurement – 1 Page
Pages 7 - 16 PDILOT Output – 10 Pages

TABLE 1
SUMMARY OF SPT ENERGY MEASUREMENTS (ASTM D4633-05)

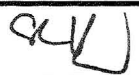
Vogtle Units 3 and 4 COL Project
 Burke County, Georgia
 MACTEC Project No. 6141-06-0286

Rig Serial No.	Rig Owner	Rig Operator	Boring No. Tested	Rod Size	Date Tested	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)
200587 (CME 75 Truck)	MACTEC Knoxville	Tony Christian	B-4014	NW-J	1/17/2007	33.5 - 35.0	5 - 8 - 7	19	295	84.3%
						38.5 - 40.0	2 - 4 - 7	13	303	86.6%
						43.5 - 45.0	3 - 5 - 6	14	296	84.6%
						48.5 - 50.0	4 - 5 - 6	15	296	84.6%
						53.5 - 55.0	3 - 4 - 9	16	293	83.7%
Weighted Average for Rig:							294.7	84.2%		

^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.

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 ETR values may differ slightly and insignificantly from those in the PDILOT tables due to roundoff.

Prepared By: 	Date: 6-27-07	Checked By: 	Date: 7/31/07
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Work Instructions – SPT Energy MACTEC CME-75 (Christian)

(Hammer #200587)

Vogtle COL Project

Project No. 6141-06-0286

Issued To: Steve Kiser

Location: Vogtle COL Project Field Office Date: 12/20/06

Issued By: Matthew F. Cooke, Site Coordinator

Valid From: 12/20/06 To: 12/20/07

Task Description: Measurement of energy transferred to the drill string rods from a Standard Penetration Test (SPT) automatic hammer mounted on a drill rig. Testing will be performed using a Pile Driving Analyzer (PDA) model PAK at various depth intervals below a depth of approximately 10 feet below the ground surface for the above referenced rig drilling SPT borings at the Vogtle COL Site.

Applicable Technical Procedures or Plans, or other reference: ASTM D4633-05 Standard Test Method for Energy Measurement for Dynamic Penetrometers.

Specific Instructions (note attachments where necessary): Obtain energy measurements with the PDA at various depth intervals below a depth of about 10 feet below the ground surface in general accordance with ASTM D4633-05. Perform energy measurement testing for the above referenced drill rig.

Report Format: Written report documenting results of field testing in general accordance with ASTM D4633-05, to include completed Summary of Daily Observations and Testing, Record of SPT Energy Measurement sheet(s), and PDILOT output data.

Specific Quality Assurance Procedures Applicable: None

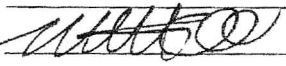
Hold Points or Witness Points: Direction to perform energy measurements received from the Site Coordinator.

Records: All records generated shall be considered QA Records.

Reviewed and Approved By (Note: Only One Signature is Required to Issue):

Project Manager: Date:

Project Principal: Date:

Site Coordinator:  Date: 12/20/06

No. of Pages: 1 DCN: VGCOL 103

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

RECORD OF SPT ENERGY MEASUREMENT

GENERAL INFORMATION		DRILL RIG DATA	
PROJECT:	ALWR Vogtle COL Site	MAKE:	CME 75
LOCATION:	Waynesboro, Georgia	MODEL:	75 TRUCK
PROJECT NO.:	6141-06-0286	SERIAL NO.:	200587
DATE:	1-17-07	HAMMER TYPE:	AUTOMATIC
WEATHER:	PARTLY CLOUDY; BREEZY; COLD 42°	ROPE CONDITION:	N/A
INSPECTOR:	Steve Kiser	ROD SIZE:	NW-J
DRILLING COMPANY:	MARTIN KNOXVILLE	NO. OF SHEAVES:	N/A

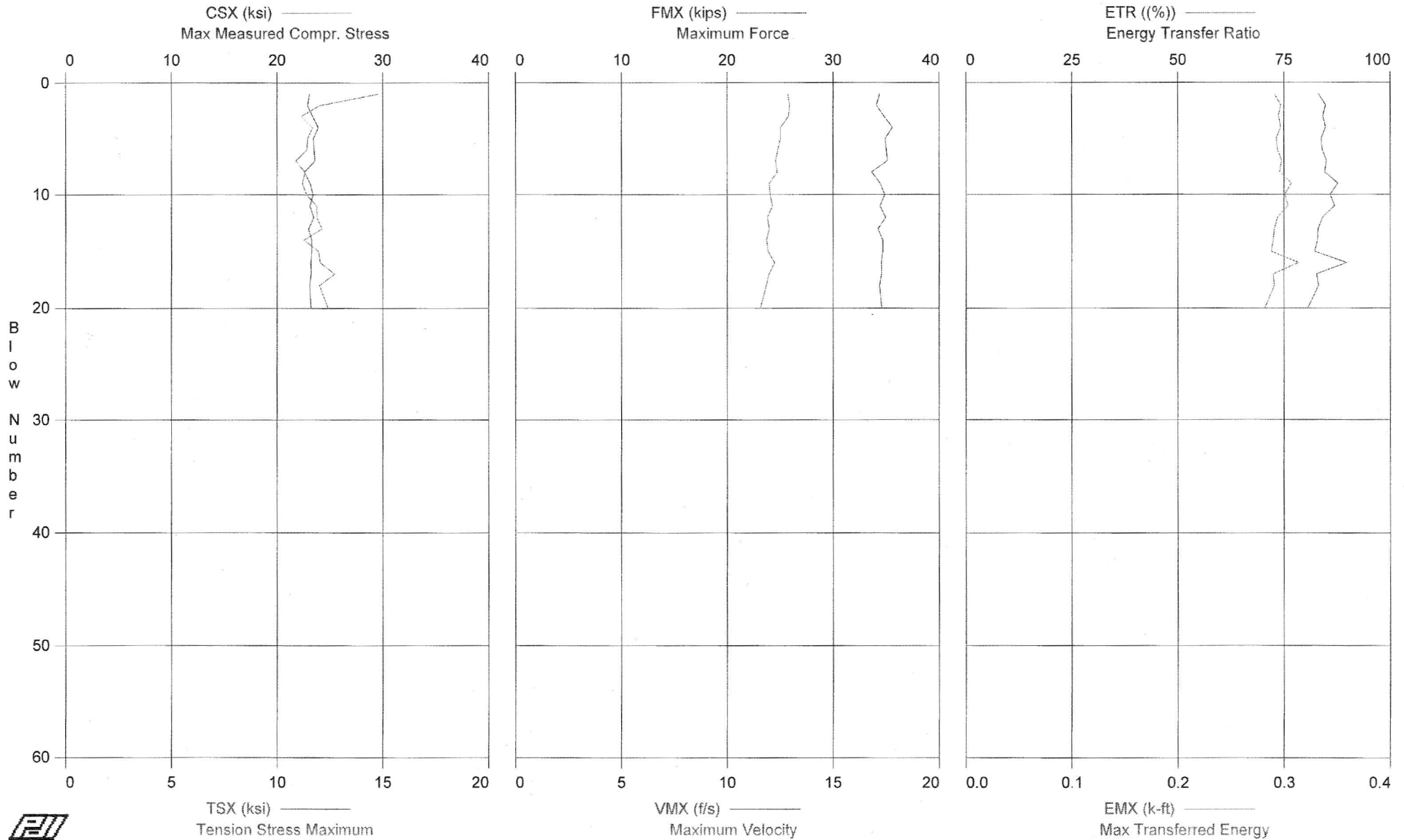
BORING DATA

BORING NUMBER:	B-4014		
DEPTH DRILLED:	100' PLANNED		
TIME DRIVEN:	1:15 PM		
RIG OPERATOR:	TONY CHRISTIAN		
HAMMER OPERATOR:	N.R.		
PDA PAK SERIAL NO.:	1430	1430	1430
INSTR. ROD AREA:	1.49 in ²		
ACCEL. SERIAL NOS.:	P5094 / P5953		
STRAIN SERIAL NOS.:	146 NW #1/2		

[illegible]

REMARKS:

Plant Vogtle COL Project - Boring B-4014; 33.5' - 35' Sample



Plant Vogtle COL Project - Boring B-4014; 33.5' - 35' Sample
OP: SEK

Rig Serial No. 200587 (MACTEC Knoxville CME 75 Truck)
Test date: 17-Jan-2007

AR: 1.49 in²
LE: 39.00 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000.0 ksi
JC: 0.60

CSX: Max Measured Compr. Stress
TSX: Tension Stress Maximum
FMX: Maximum Force
VMX: Maximum Velocity
DFN: Final Displacement

BPM: Blows per Minute
EF2: Energy of F²
ETR: Energy Transfer Ratio
EMX: Max Transferred Energy

BL#	depth ft	CSX ksi	TSX ksi	FMX kips	VMX f/s	DFN in	BPM **	EF2 k-ft	ETR (%)	EMX k-ft
1	0.00	23.08	14.78	34	12.9	1.97	0.0	0.303	83.1	0.291
2	0.00	22.89	12.02	34	12.9	2.41	54.3	0.308	84.8	0.297
3	0.00	23.35	11.14	35	12.9	2.19	54.7	0.308	84.2	0.295
4	0.00	23.89	11.68	36	12.5	2.31	55.7	0.304	84.8	0.297
5	0.00	23.43	11.45	35	12.5	2.45	55.2	0.297	83.8	0.293
6	0.00	23.50	11.41	35	12.4	2.65	55.5	0.298	84.0	0.294
7	0.00	23.58	10.88	35	12.3	2.05	55.1	0.309	85.1	0.298
8	0.00	22.58	11.33	34	12.4	1.98	55.4	0.299	84.6	0.296
9	0.00	23.12	11.20	34	12.0	2.51	55.8	0.301	87.7	0.307
10	0.00	23.41	11.40	35	12.0	2.63	55.4	0.304	85.9	0.301
11	0.00	23.11	11.88	34	12.1	2.73	55.5	0.302	86.9	0.304
12	0.00	23.46	11.89	35	11.9	3.14	55.0	0.305	84.1	0.294
13	0.00	22.98	12.12	34	12.0	2.84	55.4	0.300	83.0	0.291
14	0.00	23.28	11.27	35	11.9	2.89	55.5	0.300	82.9	0.290
15	0.00	23.27	11.96	35	11.9	3.23	55.2	0.296	82.2	0.288
16	0.00	23.19	12.04	35	12.2	3.45	54.9	0.300	89.8	0.314
17	0.00	23.20	12.73	35	12.0	2.93	54.8	0.296	82.7	0.290
18	0.00	23.08	12.00	34	11.8	2.80	55.2	0.296	83.2	0.291
20	0.00	23.21	12.42	35	11.6	2.51	55.7	0.295	80.6	0.282
Average		23.24	11.87	35	12.2	2.61	55.2	0.301	84.4	0.295

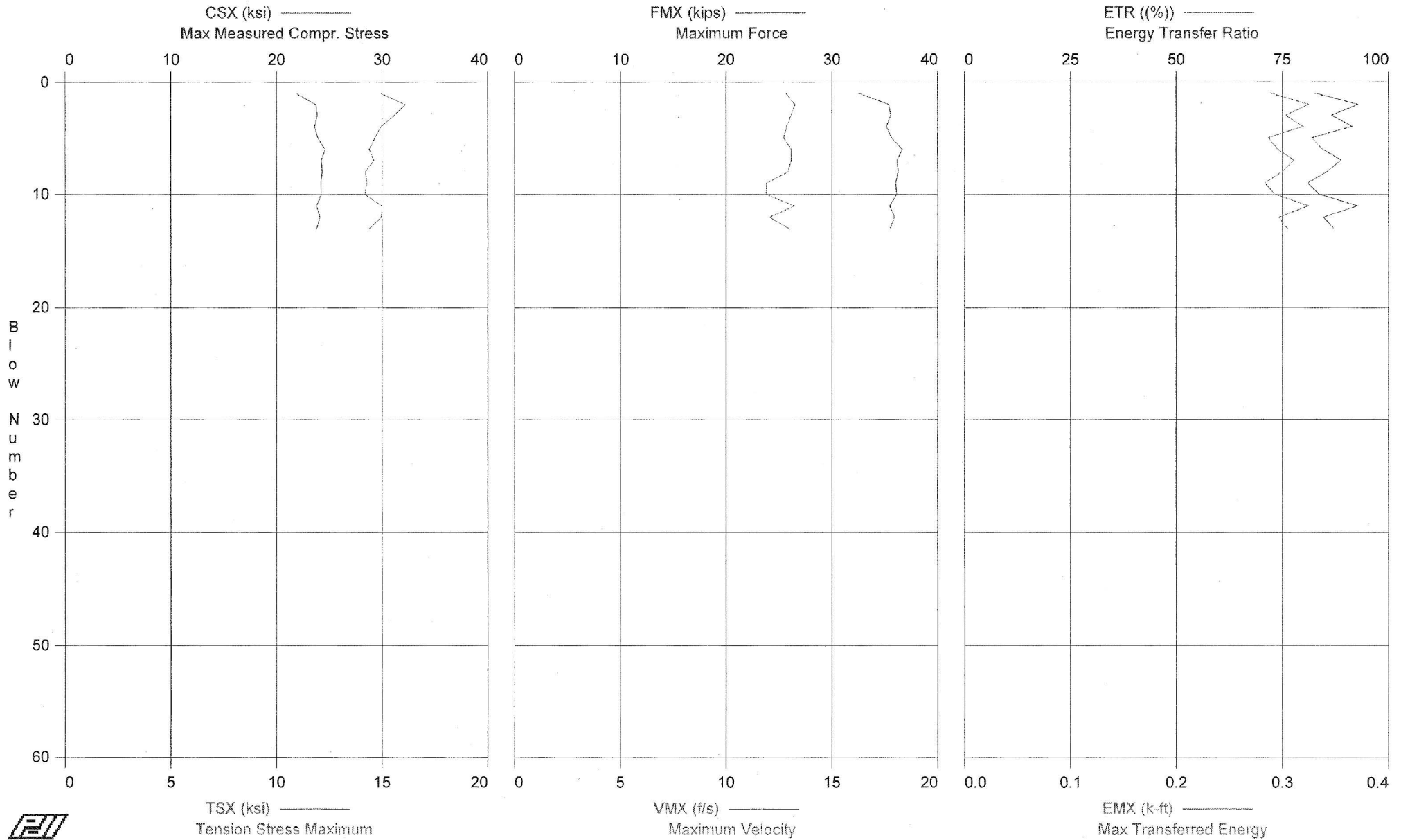
Total number of blows analyzed: 19

Time Summary

Drive 21 seconds

12:08:08 PM - 12:08:29 PM (1/17/2007) BN 1 - 20

Plant Vogtle COL Project - Boring B-4014; 38.5' - 40' Sample



Plant Vogtle COL Project - Boring B-4014; 38.5' - 40' Sample
OP: SEK

Rig Serial No. 200587 (MACTEC Knoxville CME 75 Truck)
Test date: 17-Jan-2007

AR: 1.49 in²
LE: 44.00 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000.0 ksi
JC: 0.60

CSX: Max Measured Compr. Stress
TSX: Tension Stress Maximum
FMX: Maximum Force
VMX: Maximum Velocity
DFN: Final Displacement

BPM: Blows per Minute
EF2: Energy of F²
ETR: Energy Transfer Ratio
EMX: Max Transferred Energy

BL#	depth ft	CSX ksi	TSX ksi	FMX kips	VMX f/s	DFN in	BPM **	EF2 k-ft	ETR (%)	EMX k-ft
1	0.00	21.85	14.94	33	12.8	3.12	0.0	0.316	82.7	0.289
2	0.00	23.75	16.09	35	13.3	3.64	53.8	0.305	92.9	0.325
3	0.00	23.87	15.57	36	13.1	3.54	53.7	0.303	86.7	0.303
4	0.00	23.59	14.93	35	12.9	3.13	54.5	0.321	91.5	0.320
5	0.00	23.93	14.66	36	12.7	2.68	55.6	0.312	82.0	0.287
6	0.00	24.61	14.40	37	13.1	2.98	27.3	0.317	84.6	0.296
7	0.00	24.26	14.62	36	13.1	4.10	54.3	0.315	88.9	0.311
8	0.00	24.34	14.21	36	12.9	4.04	54.4	0.316	85.6	0.300
9	0.00	24.19	14.29	36	11.9	3.08	54.6	0.316	81.0	0.284
10	0.00	24.24	14.19	36	11.9	3.95	55.1	0.315	83.7	0.293
11	0.00	23.81	15.00	35	13.2	5.83	54.7	0.309	92.8	0.325
12	0.00	24.11	14.96	36	12.1	7.26	54.6	0.309	84.8	0.297
13	0.00	23.81	14.39	35	13.0	4.62	54.2	0.306	87.3	0.305
Average		23.87	14.79	36	12.8	4.00	52.2	0.312	86.5	0.303

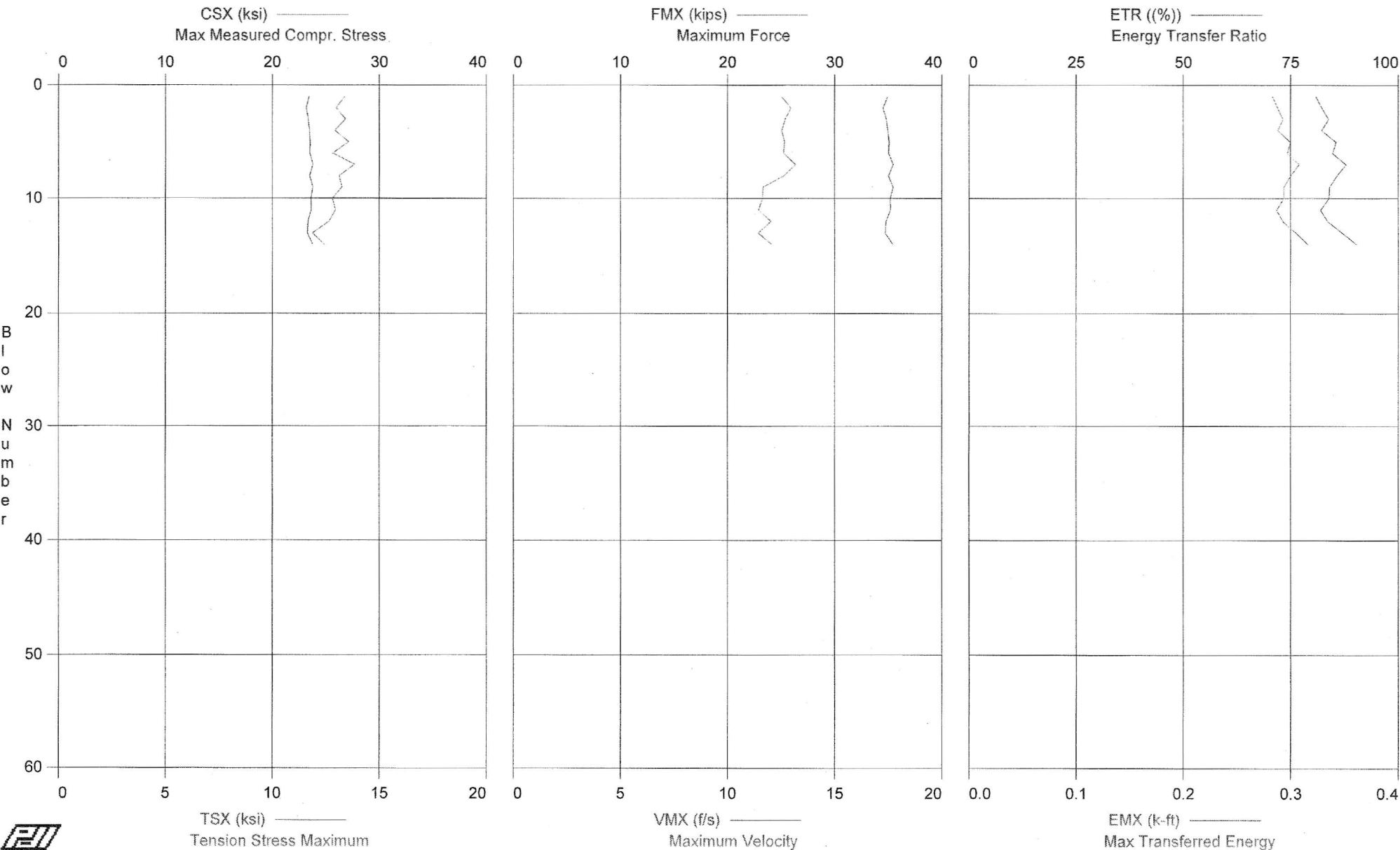
Total number of blows analyzed: 13

Time Summary

Drive 14 seconds

12:23:04 PM - 12:23:18 PM (1/17/2007) BN 1 - 13

Plant Vogtle COL Project - Boring B-4014; 43.5' - 45' Sample



Plant Vogtle COL Project - Boring B-4014; 43.5' - 45' Sample
OP: SEK

Rig Serial No. 200587 (MACTEC Knoxville CME 75 Truck)
Test date: 17-Jan-2007

AR: 1.49 in²
LE: 49.00 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000.0 ksi
JC: 0.60

CSX: Max Measured Compr. Stress
TSX: Tension Stress Maximum
FMX: Maximum Force
VMX: Maximum Velocity
DFN: Final Displacement

BPM: Blows per Minute
EF2: Energy of F²
ETR: Energy Transfer Ratio
EMX: Max Transferred Energy

BL#	depth ft	CSX ksi	TSX ksi	FMX kips	VMX f/s	DFN in	BPM **	EF2 k-ft	ETR (%)	EMX k-ft
1	0.00	23.46	13.40	35	12.5	2.63	0.0	0.302	80.9	0.283
2	0.00	23.17	12.99	35	13.0	3.00	52.8	0.293	82.3	0.288
3	0.00	23.36	13.43	35	12.7	2.55	52.8	0.299	83.8	0.293
4	0.00	23.47	12.93	35	12.5	3.35	54.2	0.297	82.3	0.288
5	0.00	23.54	13.57	35	12.7	2.56	53.9	0.312	85.6	0.300
6	0.00	23.52	12.82	35	12.6	2.44	54.5	0.297	84.8	0.297
7	0.00	23.80	13.86	35	13.2	2.80	53.3	0.314	87.9	0.308
8	0.00	23.51	13.13	35	12.6	3.12	53.8	0.308	85.8	0.300
9	0.00	23.80	13.27	35	11.7	2.85	53.4	0.307	84.1	0.294
10	0.00	23.63	12.82	35	11.6	1.61	53.6	0.308	84.0	0.294
11	0.00	23.64	12.96	35	11.4	5.32	54.5	0.307	82.0	0.287
12	0.00	23.35	12.67	35	12.0	2.39	53.7	0.305	83.6	0.293
13	0.00	23.29	11.87	35	11.4	2.46	54.5	0.306	87.1	0.305
14	0.00	23.76	12.41	35	12.0	2.91	53.0	0.313	90.3	0.316
Average		23.52	13.01	35	12.3	2.86	53.7	0.305	84.6	0.296

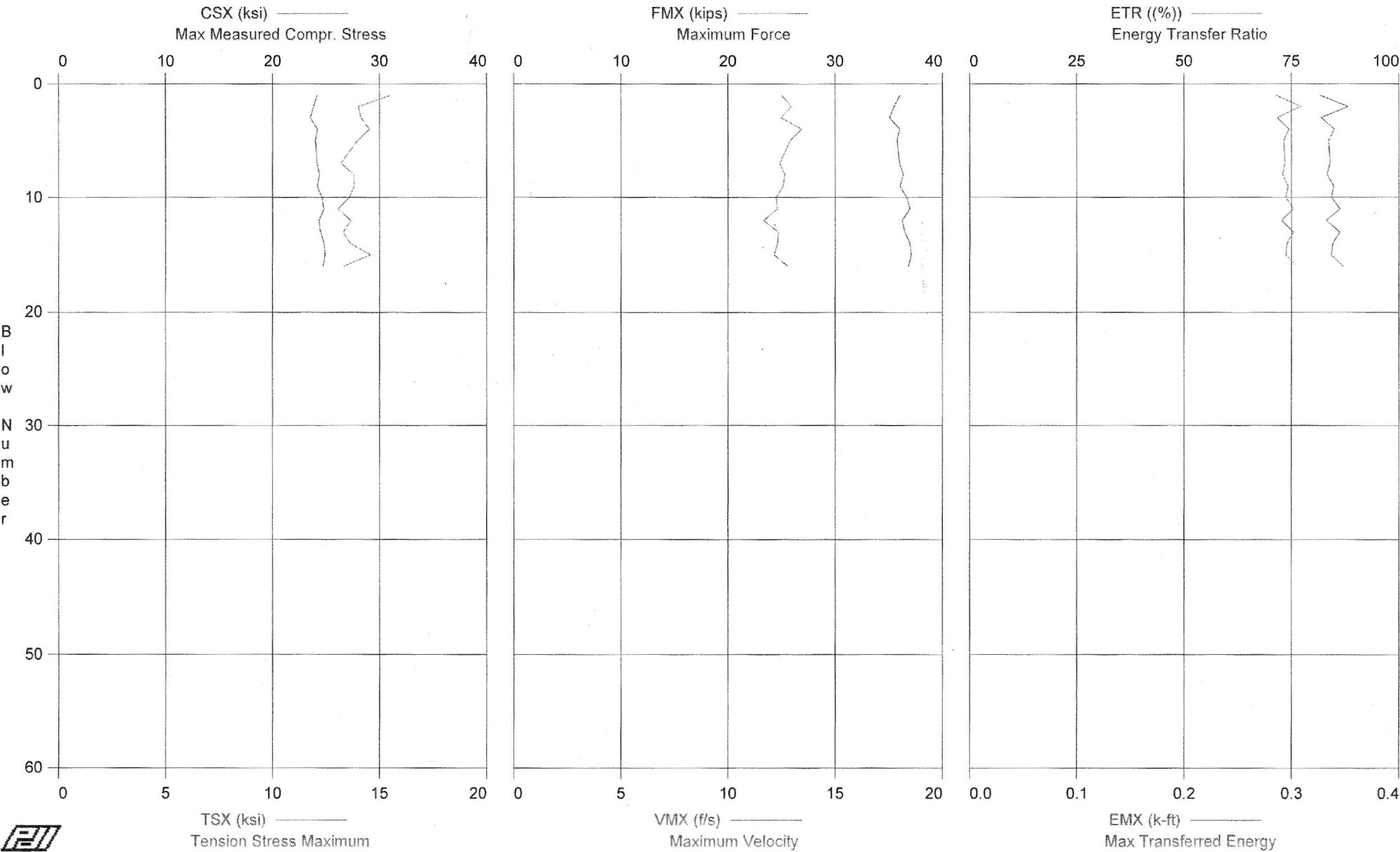
Total number of blows analyzed: 14

Time Summary

Drive 15 seconds

12:36:17 PM - 12:36:32 PM (1/17/2007) BN 1 - 14

Plant Vogtle COL Project - Boring B-4014; 48.5' - 50' Sample



Plant Vogtle COL Project - Boring B-4014; 48.5' - 50' Sample
OP: SEK

Rig Serial No. 200587 (MACTEC Knoxville CME 75 Truck)
Test date: 17-Jan-2007

AR: 1.49 in²
LE: 54.00 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000.0 ksi
JC: 0.60

CSX: Max Measured Compr. Stress
TSX: Tension Stress Maximum
FMX: Maximum Force
VMX: Maximum Velocity
DFN: Final Displacement

BPM: Blows per Minute
EF2: Energy of F²
ETR: Energy Transfer Ratio
EMX: Max Transferred Energy

BL#	depth ft	CSX ksi	TSX ksi	FMX kips	VMX f/s	DFN in	BPM **	EF2 k-ft	ETR (%)	EMX k-ft
1	0.00	24.19	15.51	36	12.5	2.23	0.0	0.311	81.8	0.286
2	0.00	23.82	14.02	35	13.0	2.58	52.6	0.313	88.2	0.309
3	0.00	23.54	14.14	35	12.5	2.85	54.6	0.297	82.0	0.287
4	0.00	24.19	14.54	36	13.4	2.98	52.9	0.308	85.0	0.298
5	0.00	24.01	13.97	36	12.9	2.55	54.1	0.304	83.7	0.293
7	0.00	24.15	13.19	36	12.4	2.89	53.8	0.308	84.0	0.294
8	0.00	24.40	13.81	36	12.7	3.16	54.5	0.306	83.3	0.292
9	0.00	24.18	13.82	36	12.6	2.47	53.9	0.313	84.9	0.297
10	0.00	24.61	13.59	37	12.3	2.43	54.2	0.309	84.3	0.295
11	0.00	24.81	13.06	37	12.3	2.22	53.7	0.318	86.3	0.302
12	0.00	24.34	13.67	36	11.7	1.57	54.6	0.305	83.1	0.291
13	0.00	24.48	13.30	36	12.4	2.38	54.4	0.306	86.3	0.302
14	0.00	24.81	13.63	37	12.3	2.80	53.8	0.309	84.6	0.296
15	0.00	24.90	14.59	37	12.1	2.30	54.2	0.317	84.3	0.295
16	0.00	24.73	13.31	37	12.8	2.86	53.9	0.312	87.1	0.305
Average		24.34	13.88	36	12.5	2.55	53.9	0.309	84.6	0.296

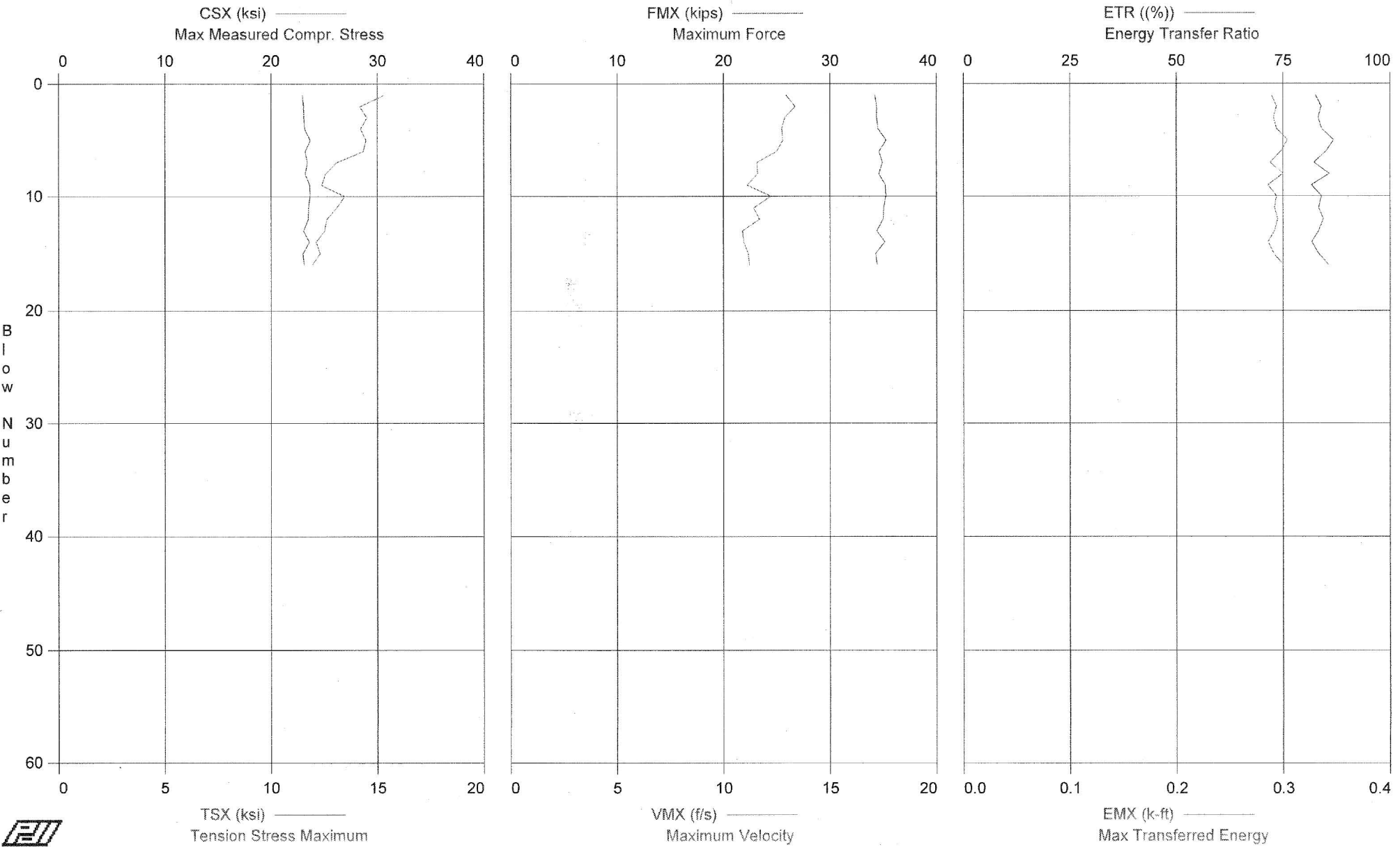
Total number of blows analyzed: 15

Time Summary

Drive 17 seconds

12:50:25 PM - 12:50:42 PM (1/17/2007) BN 1 - 16

Plant Vogtle COL Project - Boring B-4014; 53.5' - 55' Sample



Plant Vogtle COL Project - Boring B-4014; 53.5' - 55' Sample
OP: SEK

Rig Serial No. 200587 (MACTEC Knoxville CME 75 Truck)
Test date: 17-Jan-2007

AR: 1.49 in²
LE: 59.00 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000.0 ksi
JC: 0.60

CSX: Max Measured Compr. Stress
TSX: Tension Stress Maximum
FMX: Maximum Force
VMX: Maximum Velocity
DFN: Final Displacement

BPM: Blows per Minute
EF2: Energy of F²
ETR: Energy Transfer Ratio
EMX: Max Transferred Energy

BL#	depth ft	CSX ksi	TSX ksi	FMX kips	VMX f/s	DFN in	BPM **	EF2 k-ft	ETR (%)	EMX k-ft
1	0.00	22.97	15.30	34	12.9	3.17	0.0	0.304	82.6	0.289
2	0.00	23.08	14.18	34	13.4	3.48	53.1	0.299	83.9	0.294
3	0.00	23.08	14.52	34	12.9	2.99	54.1	0.296	83.2	0.291
4	0.00	23.17	14.21	35	12.7	2.63	54.0	0.299	84.0	0.294
5	0.00	23.68	14.47	35	12.8	2.17	54.0	0.308	86.8	0.304
6	0.00	23.23	14.34	35	12.5	2.91	54.2	0.302	85.0	0.298
7	0.00	23.43	13.07	35	11.6	1.45	54.3	0.304	82.2	0.288
8	0.00	23.21	12.56	35	11.6	2.45	54.5	0.299	85.8	0.300
9	0.00	23.64	12.38	35	11.1	3.50	53.9	0.302	81.7	0.286
10	0.00	23.67	13.48	35	12.2	4.07	54.4	0.300	84.0	0.294
11	0.00	23.51	13.08	35	11.4	2.69	54.2	0.305	83.3	0.292
12	0.00	23.49	12.62	35	11.7	4.03	55.6	0.294	84.4	0.295
13	0.00	23.08	12.53	34	10.9	2.58	53.2	0.305	83.3	0.292
14	0.00	23.59	12.11	35	11.0	2.22	54.2	0.299	81.7	0.286
15	0.00	23.01	12.31	34	11.2	2.15	53.1	0.297	83.2	0.291
16	0.00	23.11	11.93	34	11.2	1.53	54.2	0.298	85.6	0.300
Average		23.31	13.32	35	11.9	2.75	54.1	0.301	83.8	0.293

Total number of blows analyzed: 16

Time Summary

Drive 17 seconds

1:04:10 PM - 1:04:27 PM (1/17/2007) BN 1 - 16

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