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Prepared by
Washington Savannah River Company LLC
Savannah River Site
Aiken, SC 29808

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APPROVALS

	Signature	Date
Preparer Michael D. McHood Geotechnical Engineering	Michael D. McHood	6-2-08
Reviewer Rucker J. Williams Geotechnical Engineering	Rucker J. Williams	6/2/08
Approver Michael R. Lewis Manager, Geotechnical Engineering	M.R. Lewis	6/2/08
Derivative Classifier / Reviewing Official Michael D. McHood Geotechnical Engineering	Michael D. McHood	6-2-08

Description of Revision 1

Revision 0 of this report was written for an earlier concept of the Waste Solidification Building (WSB). The older concept was primarily a steel-framed building containing a smaller reinforced concrete confinement structure. The current concept has the entire WSB structure of reinforced concrete on a mat foundation. This change required additional field investigation and engineering analysis.

For revision 1 the first 5 pages have been changed, but have not been marked using a change-bar. Appendix A has been changed, but has not been marked using a change-bar. Appendix B has had additional log pages added but has not been marked using a change-bar.

Description of Revision 2

For revision 1 of this report, the bearing pressure of the mat foundation was assumed to be 3.0 ksf for the purposes of static settlement calculation. For revision 2, the static settlement computation was revised to reflect the actual building load of 1.35 ksf.

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1.0 Introduction

The Waste Solidification Building (WSB) is part of the Plutonium Disposition Facility complex, consisting of the Plutonium Disassembly and Conversion Facility (PDCF) and the Mixed Oxide Fuel Fabrication Facility (MFFF). The purpose of the WSB is to process waste streams from the PDCF and MFFF. The WSB is located adjacent to the PDCF along the current F-Area perimeter road (Figure 1).

The structure, based on preliminary design, is approximately 165 feet by 190 feet in plan. It will consist of a reinforced concrete confinement structure. The foundation for the WSB is expected to be a reinforced concrete mat. The performance category (PC) for the facility is PC-3. 1

As mentioned above, the WSB will be located adjacent to other facilities included in the Plutonium Disposition complex. As such, the area has been extensively investigated as part of several geotechnical programs (WSRC, 1996; WSRC, 1998a; WSRC, 1999; WSRC, 2001; Law, 2001 and WSRC, 2005) including an exploration completed specifically for the WSB footprint (ARA, 2004). Geotechnical data beneath, and in the immediate vicinity of, the WSB footprint has been used to determine subsurface conditions as well as provide data for engineering analyses. This report summarizes these results and provides engineering soil properties for design as well as foundation and earthwork recommendations for the WSB. Specifically, this report provides the following: 1

- Description of subsurface conditions, including representative subsurface cross sections,
- Estimate of allowable bearing pressures, expected static settlement and modulus of subgrade reaction,
- Evaluation of liquefaction potential and dynamic settlement due to liquefaction and/or partial liquefaction, including an estimate of dynamic settlement due to soft zone compression, and 1
- Development of an appropriate dynamic profile.

1.1 Summary of Previous Investigations

The area surrounding and including the WSB site has been investigated as part of separate, but related, geotechnical programs in the past several years. In 1995, a geotechnical program was initiated to characterize subsurface conditions for the F-area (WSRC, 1996). Following this, a phased geotechnical program for siting several new facilities (Plutonium Disposition complex) northeast of F-area was completed (WSRC, 1998a and WSRC, 2001). Also, a geotechnical exploration program for the Pit Disassembly and Conversion Facility (PDCF) was completed (Law, 2001) in this same area, which includes the WSB footprint. In addition, a field exploration consisting of six 1 1 1

seismic cone penetration test soundings were pushed specifically for the WSB to augment existing data and provide coverage of the current WSB footprint (ARA, 2004). This report includes extensive laboratory testing, and analysis. All of the information referenced above was used for the geotechnical evaluation described herein for the WSB. 1 1

2.0 Field Exploration

Altogether over 200 borings and cone soundings have been drilled and/or pushed in the immediate area of the WSB, broken down for the larger investigations as follows: 1

- 9 standard penetration test (SPT) borings (WSRC, 2001)
- 39 seismic piezocone penetration test (SCPTu) soundings (WSRC, 2001)
- 4 piezocone penetration test (CPT) soundings (WSRC, 2001)
- 48 SPT borings for PDCF, (Law, 2001)
- 61 SCPTu soundings for PDCF, (Law, 2001)
- 39 CPT soundings for PDCF, (Law, 2001)
- 6 new SCPTu soundings added specifically for Revision 1 of this report (ARA, 2004) 1

Figure 2 shows the WSB footprint and the distribution of exploration holes in the immediate vicinity. Geotechnical field data used specifically for the WSB analyses consisted of the following:

- 32 deep seismic piezocone penetration test (SCPTu) soundings
- 3 deep piezocone penetration test (CPTu) soundings 1
- 9 standard penetration test (SPT) soil borings
- 2 undisturbed sample borings

Logs and data sheets from these field tests are contained in Appendix B.

3.0 Subsurface Conditions

The shallow subsurface (surface to about 170 feet deep) has been divided into engineering layers based on interpreted cone penetration test (SCPTu and CPTu) soundings and soil boring data (WSRC, 2007c). The layering system was adopted from the PDCF investigation, which included the exploration points encompassing the WSB footprint. This approach provided a means to directly compare the subsurface conditions and engineering soil properties determined from these previous geotechnical programs (WSRC, 1999 and Law, 2001) and apply them to the WSB. 1

Two subsurface cross-sections were developed through the WSB area and are included in Appendix A. Both the north-south and east-west sections were extended through the WSB footprint and into the PDCF area to demonstrate the continuity of the engineering stratigraphy. Further, the presence of soft sediments, defined as zones with measured 1

cone (CPT, CPTu or SCPTu) tip resistances less than 15 tons per square foot (tsf) and/or SPT N-values less than 5 blows/foot (bpf), were evaluated. Groundwater conditions were determined from nearby monitoring well information, as well as reports regarding the regional water table. 1

3.1 Engineering Stratigraphy

The engineering stratigraphic layering system is based on observed changes in the SCPTu measurements and SPT borings that are correlative between soundings and nearby borings. It is used to differentiate units based on similar engineering characteristics that can be mapped in the investigation area. Typical stratigraphic layering is shown on the subsurface sections included in Appendix A. The layer nomenclature follows an alphanumeric system with layer numbers increasing from top to bottom. Subdivided layers are identified with a letter designation (e.g., TR1A). Figure 3 shows a generalized profile determined from 24 CPTu soundings in the WSB area. For a detailed discussion of the physical attributes used to delineate each layer, refer to the WSB subsurface stratigraphy calculation (WSRC, 2007c), the F-Area Northeast Expansion Report (WSRC, 2001) and the Pit Disassembly and Conversion Facility Geotechnical Report (Law, 2001). 1

Some layer boundaries correspond to geologic formations. Layer TR1 is most probably the Altamaha Formation. In fact, some upper portion of Layer 1A may also be Altamaha. However, due to the similar material properties and an irregular erosional surface, which separates these units, defining the contact between the Altamaha and Tobacco Road formation is difficult. In some parts of the F-Area, the TR1 and TR2 layers have been subdivided to recognize sublayers with distinct soil properties (TR1A, TR2A, and TR2B). As described in the F-Area Geotechnical Characterization Report (WSRC, 1996), the TR3/4 layer was first correlated to the lower portion of the Tobacco Road Formation but based on more recent geologic investigations in the area has been reassigned to the upper portion of the Dry Branch Formation. Layers DB1 through DB3 were combined into a DB1/3 layer because of similar properties. Likewise, layers DB4 and DB5 were combined into a DB4/5 layer. The DB1/3 layer corresponds to the Dry Branch Formation while the DB4/5 layer corresponds to the upper Santee/Tinker Formation. The Santee/Tinker Formation is the most variable layer in the shallow subsurface. It has been further subdivided into the ST1 and ST2 layer where practical, but for the WSB the ST1/ST2 has not been subdivided. The green clay, which is an informal stratigraphic interval at the SRS, is considered the basal unit for the shallow engineering stratigraphy and is labeled as GC. This geologic unit is locally continuous and provides a reliable marker bed. The Green Clay overlays the Congaree Formation which is predominantly a dense silty sand. It is labeled CG. 1

3.2 Soft Zones

Across the SRS the soil between approximately 100 to 250 feet below the ground surface is a marine influenced sediment deposited during the Middle Eocene epoch (35 to 57 million years ago). Often found within these sediments are weak zones interspersed in

stronger matrix materials. These weak zones, which vary in thickness and lateral extent, have been termed "soft zones" and occur within the Santee/Tinker Formation. 1

Historically, soft zones have been characterized by "weight of drilling rods" and occasional "rod drops" in numerous drilling reports for monitoring wells and geotechnical boreholes located in the central part of the SRS. When drilling these zones, the drill rod meets little shear resistance and "rod drops" occur. A complete discussion and summary of the origin, extent and stability of soft zones can be found in WSRC, 1999.

Currently, soft zones are indicated from SPT N-values less than 5 or CPTu tip resistances (q_t) less than 15 tons/square foot (tsf) over a continuous interval of two feet or greater within the Santee/Tinker Formation. Of the 8 SPT borings and 35 CPTu soundings utilized for the WSB soft zone analysis, 3 SPT borings and 12 CPTu soundings indicated soft zones greater than two feet thick (WSRC, 2007e). The soft zones encountered are summarized in Table 4. 1

3.2.1 Soft Zone Geometry

Extensive field testing and sampling of soft zones to characterize and delineate lateral and vertical extent has been completed as part of previous investigations at the SRS and most recently for the PDCF geotechnical investigation (WSRC, 2005). As a result of these previous investigations and analyses, postulated soft zone geometries and properties are provided as input to foundation performance analysis. 1 1

As shown on Figure 2, the WSB covers an area about 165 feet by 190 feet. Three of the 8 investigation locations beneath the WSB have soft zones (FPDCA39, FWSBC4 and FWSBC6). The top of the shallowest soft zone is found at FPDCA39 at around elevation 193 feet, msl. With the proposed bottom of the mat foundation at about elevation 297 feet, msl, the distance between the top of the shallowest soft zone and the foundation level is about 104 feet. 1

Both field exploration (WSRC, 2001 and Law, 2001) and analytical modeling (WSRC, 1995 and 1998a) have shown maximum soft zone widths to be about 50 feet. It is recommended that the WSB Structure be analyzed assuming a soft zone could be anywhere beneath the foundation footprint. For analysis, it is recommended the soft zone geometry be as follows; 1

- 50 feet wide, consistent with previous analysis at SRS
- infinitely long (plane strain analysis)
- 7.6 feet thick (the maximum thickness found under the PDCF Plutonium Processing Building; Law, 2001)

Recent (April 2007) analysis for another facility at SRS (WSRC, 2007f) would indicate that 2D plane strain analysis is very conservative and if sufficient data is available 3D analysis should be performed. For WSB however, we believe it is prudent to utilize the 1

same analysis that was utilized, and ultimately deemed adequate, for the PDCF process building. 1

3.2.2 Soft Zone Properties

The properties of the soft zones have been previously characterized (WSRC, 1999; WSRC, 2005), in particular the compressibility and state of stress. The results of the 2005 soft zone sampling and testing effort (WSRC, 2005) showed that the upper soft zone at the PDCF site was normally consolidated. Thus, upper soft zone compression is a non-issue. The lower soft zone had an over-consolidation ratio of 0.7 (consistent with other results in the General Separations Area) and a compression ratio of 0.2. However, for dynamic soft zone settlement analysis, the following properties are recommended for use for the WSB (upper and lower soft zones); 1

- Compression ratio CR (C_c / 1 + e_0) = 0.24, and
- Overconsolidation ratio (OCR) = 0.7

3.3 Groundwater Conditions

Groundwater data was derived from water table monitoring wells located in various locations around and within F-Area as well as from reports on the regional water table (WSRC, 1998b; Hiergesell and Jones, 2003). Figure 1 shows the regional water table contours developed by Hiergesell and Jones (2003) using long term average water table data. Monitoring well FAC-4 is the nearest to the F-Area Northeast Expansion area. The dominant water table gradient in the F-Area Northeast Expansion area is oriented to the north and is largely controlled by Upper Three Runs Creek located immediately north of the F-Area. For liquefaction analysis, a groundwater elevation of 230 feet, msl was used. 1

4.0 Engineering Properties

The engineering properties of the site soils were based on the extensive testing performed for the PDCF (Law, 2001) investigation, previous investigations in F-Area, empirical relationships, and engineering judgement. A summary of the laboratory tests for PDCF can be found in Law 2001, Table D-2. The attached Table 1, reproduced from Law, 2001, summarizes the engineering properties used for design for the evaluations described herein.

5.0 Engineering Analysis

The objectives of the engineering analyses for the WSB are;

- Estimate allowable bearing pressures, expected static settlement, and modulus of subgrade reaction
- Evaluate the liquefaction potential including an estimate of dynamic settlement

- Develop a WSB-specific dynamic profile (Figure 3, and Tables 2 and 3) for use by the WSRC Structural Mechanics group 1
- Evaluate potential soft zone settlement and the impact on the WSB 1

In addition, provide general earthwork recommendations. As described in Law, 2001, the PDCF site has been extensively characterized. Analyses have been completed and geotechnical recommendations have been made. Where possible, and as appropriate, analyses and recommendations described in Law, 2001 have been utilized. The details of the analysis can be found in WSRC, 2007a through 2007e. 1

5.1 Bearing Capacity, Static Settlement and Modulus of Subgrade Reaction

The allowable bearing pressure was evaluated based on standard methodologies (e.g., Terzaghi, et al., 1996). The analysis took into account the strength of the soil, as related by field and laboratory test data, and predicted settlement of the proposed foundations. The results indicate the site soils provide adequate strength for shallow foundations (footings and mats) up to loads of about 6-kips/square foot (ksf). However, that actual net foundation loads will be much less, 1.35 ksf bearing pressure (WSRC 2008). For this load (i.e., 1.35 ksf), the expected immediate (i.e., elastic) settlement for the WSB mat foundation would be in the range of ¼ to 1 inch, with a differential of approximately ½ inch. 2

A factor of safety equal to 3 was used for static loads, while a safety factor of 2.25 was used for short-term transient or dynamic loads. Figure 4 presents the allowable bearing capacity versus foundation width for smaller foundation sizes at the WSB site. 1

Secondary consolidation, or creep, has been noted in several structures that have been monitored for settlement over time at SRS. The best and most complete settlement data obtained onsite are the data for DWPF. That data indicate that creep should be expected to occur at a rate of ¼ to ½ inch over each log cycle of time (e.g., 1,000 days to 10,000 days) after completion of initial or primary settlement. 1

The vertical coefficient of subgrade reaction (k_{v1}) was evaluated by reviewing the shallow SPT N-values and relating them to k_{v1} using various empirical relationships. The resulting k_{v1} for smaller footings (B≤15ft) ranges between 120 and 250 tons/cubic foot (tcf), with a representative value of about 150 tcf (~ 175 pounds/cubic inch). This value is recommended for a one-foot square plate. For smaller foundations of different sizes, the following equation should be used to determine k_s: 1 1

$$k_s = k_{v1}[(B+1)/2B]^2,$$

Where, k_s is the modulus for a foundation of width B.

For large mat foundations constructed in the General Separations Area (GSA), k_s has been determined based on settlement data. These facilities include the Defense Waste Processing Facility (DWPF), In-Tank Precipitation (ITP), and the Tritium Extraction 1

Facility Remote Handling Building (TEF-RHB). Based on this settlement data, k_s for larger structures falls in the range of 9 to 22 ton / ft^3 (WSRC, 2007a; 2007g). For the WSB mat foundation this same range (k_s = 9 to 22 ton / ft^3) is recommended. This range of k_s is consistent with values back-calculated from the expected elastic settlement of the WSB mat (i.e., ½ to 2¼ inches) and the expected WSB mat bearing pressure (i.e., 3 ksf). 1

5.2 Liquefaction Potential

The liquefaction potential of the PDCF site soils has been evaluated in detail (Law, 2001). The evaluation used three approaches, two of which are quantitative and one of which is qualitative. The quantitative approaches were the standard stress/strain approach and the shear wave velocity approach. The qualitative approach utilized the well-publicized criteria for clayey soils. The results of all three approaches show that for the ground motions analyzed (the factored PC-3, also known as PC-3+, and the Charleston 50th percentile motion) liquefaction is not expected to occur. In addition, several liquefaction susceptibility analyses have been done previously for other facilities in F-Area and they too indicate that liquefaction in F-Area, for the ground motions analyzed, is highly unlikely. 1

For the WSB, the liquefaction potential was evaluated using the methodology (stress method) developed specifically for the soils at SRS and for the same ground motion (PC3+) used for PDCF (Law, 2001). Briefly, that methodology consists of the following; 1

- Determine the soil dynamic strength or Cyclic Resistance Ratio (CRR) using SCPTu normalized tip resistances in conjunction with the1995 SRS site-specific dynamic strength (i.e., CRR) curves. 1
- Utilize a SRS site-specific K_σ relationship and literature Magnitude Scaling Factor (MSF) to correct CRR.
- Determine the induced earthquake demand or Cyclic Stress Ratio (CSR). In this case, an envelope of the values from Law, 2001 was used.
- Determine the factor of safety against liquefaction using;

  $$FS = (CRR \times K_\sigma \times MSF) / CSR,$$

  Where, FS equals the factor of safety, MSF is the magnitude scaling factor and the other symbols are as defined previously.

The results of this analysis for the WSB show that the soils are not susceptible to liquefaction for the ground motion analyzed, with safety factors generally well above 1.15 for magnitudes less than 7.5. For magnitude 7.5 the majority of the soil profile has safety factors above 1.15 with only occasional thin layers (less than 3 feet thick) falling below 1.15. 1

Even though the soils analyzed are not susceptible to liquefaction, it is recognized that dynamic settlement due to the ground motion and partial pore pressure generation 1

(shakedown settlement) will occur even though liquefaction is not triggered. Dynamic settlement is discussed subsequently.

5.3 Dynamic Settlement

It has been recognized and assumed onsite that dynamic settlement may occur in the following two ways: 1) dynamic settlement due to liquefaction/partial liquefaction (shakedown settlement, as described in the preceding section), and 2) settlement of an underconsolidated soft layer (soft zone) at depth due to a seismic event. Each of these two scenarios contributes to the dynamic settlement of the WSB facility, and each is discussed separately below.

The dynamic shakedown settlement has been evaluated using the SRS site-specific relationship between safety factor and volumetric strain (WSRC, 1995) for the Tobacco Road and Dry Branch formations. For the Santee formation, dynamic settlement is estimated assuming recompression of the soils after dissipation of excess pore pressure induced by the ground motion. The details are contained in WSRC, 2007b. The results show that dynamic shakedown settlement is in the range of ¼ to 1¼ inch with the majority of the locations at less than an inch (see Table 5). These results are consistent with results for other facilities in F-Area. Appropriate settlement for design would be less than 1 inch with little differential settlement as the settlements are relatively small and are expected to distribute uniformly across the site due to the depth at which the settlements occur.

Settlement due to underconsolidated soft zones is based on the soft zones eventually realizing the full overburden pressure (going from an OCR of 0.7 to an OCR of 1), and is computed as follows;

$$S = CR \times H \times \text{Log}\,[1/OCR],$$

Where, CR (0.24) is the compression ratio ($C_c/1+e_0$), C_c is the compression index, e_0 is the void ratio, H is the soft zone thickness, and OCR is the overconsolidation ratio (0.7).

The maximum thickness of a soft zone found beneath the WSB is approximately 4.7 feet (in CPTu FWSBC6, at about 129 feet below the WSB foundation), much smaller than the maximum found under the PDCF processing building of 7.6 feet. For the WSB analysis, a conservative soft zone thickness of 7.6 feet (the maximum value found beneath the Plutonium Processing Building [Law, 2001]) will be utilized.

The resulting WSB design settlement profile, deemed adequate for the PDCF project, (DNFSB, 2006) is given below (from Figure 4.7-2 (d) of Law, 2001). Note, this is a conservative estimate for the WSB since the soft zones are thinner (4.7 ft versus 7.6 ft) and the distance from the top of the soft zone to the foundation level is about 89 feet in Figure 4.7-2 (d) as opposed to more than 100 feet for soft zones in the vicinity of the

WSB. Starting at the center of the 50-foot wide soft zone and moving outward, the foundation settlement profile would be as follows; 1

Center	2.8 inch
12 ft	2.7 inch
20.7 ft	2.5 inch
29.9 ft	2.2 inch
35.3 ft	2 inch
42.9 ft	1.7 inch
47.9 ft	1.5 inch
55.8 ft	1.2 inch
61.4 ft	1 inch
71.2 ft	0.7 inch
79.3 ft	0.5 inch
90.2 ft	0.3 inch
97.9 ft	0.2 inch
109.9 ft	0.1 inch

Previous analyses for facilities at the SRS have shown that the amount of settlement that actually reaches the foundation level is some fraction of the settlement computed at depth, about 50 to 75%. For a soft zone thickness of 7 ½ feet, and the properties given previously, the resulting compression of the soft zone at depth would be approximately 3 ¼ inches. The amount of settlement that actually reaches the foundation level (shown above) is computed as about 2.8 inches, or about 80% of the settlement computed at depth, which is on the high side of the 50 to 75% range, however that is conservative.

5.4 Settlement Summary

Settlement of the facility consists of immediate static, long-term static, dynamic shakedown and dynamic soft zone. The settlement summary is as follows;

- Initial static settlement of ¼ to 1 inch 2
- Initial static differential settlement ~ ½ inch
- Long-term creep settlement ~ ¼ inch uniformly distributed (assumes 30 year life) 1
- Dynamic shakedown settlement ~ 1 inch, uniformly distributed across the WSB site
- Dynamic soft zone settlement 0 to ~ 2 ¾ inches
- Dynamic differential settlement ~ 2 ¾ inches (due to soft zone; differential shakedown settlement expected to distribute relatively evenly) 1

6.0 Earthwork Considerations

Backfill (fill) has been placed across the WSB during the construction of F-area and possibly during initial site grading in 1950-1951. The thickness of fill added to the WSB area is indeterminate. However, it is anticipated that 2 to 6 feet of existing soil may have

to be removed and replaced with controlled fill. It is recommended that the excavation to remove this uncontrolled fill and the subgrade preparation be witnessed and evaluated during initial site clearing and grading by a geotechnical engineer. All subsequent fill (structural and common) to be placed shall meet existing SRS requirements for material type and compaction.

7.0 Conclusions

The subsurface conditions for the WSB have been assessed and geotechnical analyses have been performed. The results show that the site is suitable for construction of WSB, with considerations for design described herein. The conditions are very similar to the conditions in F-Area and in particular, conditions at the PDCF.

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Table 1-Summary of Engineering Soil Properties

SOURCE	FILL	TR-1	TR-1A	TR-2A	TR-2B	TR-3/4 SAND	TR-3/4 SILTS and CLAYS	DB-1/3	DB-4/5	ST	GC
SPT N_{60}-value(1)	13	33	38	36	43	27	21	54	39	77	81
SPT $(N_1)_{60}$-value (corrected for overburden)(2)	21	41	38	28	28	14	-	25	15	24	27
Shear wave velocity (ft/sec)	1066	1599	1523	1239	1233	1157	854	1239	1185	1543	1574
Corrected tip resistance (tsf)	51	114	130	153	179	41.2(5)	41.2(5)	190	51	140	76
Friction ratio	3	3	3	1	1	2.7(5)	2.7(5)	1	3	2	2
q_t / N (corrected)	Not Calculated	4.8	3.9	4.3	4.1	2.7	1.9	5.1	5.0	3.0	3.2
Percent fines	Not Tested	18.5	24.6	18.8	12.5(4)	31.2	86.2	13.2	23.1	29.3	42.7
Percent clay	Not Tested	16.8	21.0	18.4	12.6(4)	29.3	68.2	11.2	17.6	17.3	18.8
Plasticity index, PI	Not Tested	23	13	9	10	27	56	10	16	10	14
Liquid limit, LL	Not Tested	49	36	32	32	59	94	36	39	34	45
Dry density (pcf)	Not Tested	98.6	102.6	101.7	105.2	75.4	57.4	81.1	82.8	80.4	95.3
Water content, *w* (%)	Not Tested	14.4	17.5	16.6	16.3	39.3	66.1	28.1	37.6	32.1	30.1
Wet density (pcf)	Not Tested	118.5	121.4	116.8	119.6	100.3	94.9	108.3	105.2	107.9	115.7
Specific gravity	Not Tested	2.68	2.66	2.66	2.67	2.71	2.72	2.66	2.70	2.67	2.62
Void ratio, e_o	Not Tested	0.70	0.65	0.64	0.60	1.33	2.12	1.18	1.06	1.19	0.72
At-rest lat. earth press. coefficient, Ko (NC)	Not Tested	0.46	0.44	0.46	0.47	0.52	0.60	0.48	0.52	0.48	0.46
At-rest lat. earth press. coefficient, Ko (OC)	Not Tested	0.70	0.59	0.62	0.59	0.66	0.80	0.57	0.57	0.51	0.55
Overconsolidation ratio, OCR	Not Tested	2.4	1.8	1.9	1.6	1.6	2.3	1.4	1.2	1.1	1.4
Compression index, C_c	Not Tested	0.18	0.13	0.10	0.08	0.41	1.36 (3)	0.30	0.28	0.26	0.18
Re-compression index, C_r	Not Tested	0.0054	0.0070	0.0086	0.0097	0.0203	0.097 (3)	0.0200	0.0188	0.0188	0.0133
Consolidation coefficient, C_v	Not Tested	3.030	1.608	0.852	1.158	1.470	0.347	1.352	1.336	0.817	1.200
Total cohesion, C (ksf)	Not Tested	-	-	-	-	-	1.85	-	-	-	-
Total friction angle, ϕ	Not Tested	-	-	-	-	-	-	-	-	-	-
Effective cohesion , C' (ksf)	Not Tested	0	0	0	0	0	-	0	0	0	0
Effective friction angle, ϕ'	Not Tested	33	34	33	32	28.5	-	31.5	28.5	31	32.5

(1) N_{60}-value is obtained from field values multiplied by ER factors in section C.2.1.4 of Appendix C.
(2) SPT values corrected for overburden = SPT N60 value*Cn * Cs; Cn = $(1/\sigma_o'$ (tsf))^0.5 Cs = 1.2.
(3) Mean C_c and C_r computed without using lowest value, which is far below range of other values.
(4) 28 samples used to compute average fines content (%), 4 samples used to compute average clay content (%).
(5) Based on whole unit TR-3/4.

Reference:

Law Engineering and Environmental Services, (2001), "PDCF Geotechnical Report, Volume 1," Job No. 50123-0-4059.

Table 2– Recommended G/G_{max} vs Shear Strain

Shearing Strain (%)	Stiff Upland Sands	Tobacco Road and Snapp Sands	Dry Branch, Santee, Warley Hill, and Congaree Sands	Four Mile Sands and any other Unrepresented Shallow Sands	Shallow Clays	Deep Sands	Deep Clays
0.00001	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.0001	0.995	0.998	0.999	0.998	0.999	0.999	1.000
0.0002	0.991	0.995	0.997	0.997	0.999	0.998	0.999
0.0003	0.986	0.993	0.996	0.995	0.998	0.997	0.999
0.0005	0.977	0.989	0.994	0.992	0.997	0.996	0.998
0.001	0.955	0.978	0.987	0.985	0.993	0.991	0.996
0.002	0.913	0.957	0.975	0.971	0.987	0.982	0.991
0.003	0.875	0.936	0.963	0.957	0.980	0.974	0.987
0.005	0.808	0.898	0.939	0.930	0.967	0.957	0.979
0.01	0.677	0.815	0.885	0.868	0.937	0.917	0.958
0.02	0.512	0.688	0.794	0.767	0.881	0.847	0.920
0.03	0.412	0.595	0.720	0.688	0.831	0.787	0.885
0.05	0.296	0.468	0.606	0.569	0.747	0.689	0.821
0.1	0.174	0.306	0.435	0.398	0.597	0.526	0.697
0.2	0.095	0.180	0.278	0.248	0.425	0.357	0.535
0.3	0.065	0.128	0.204	0.180	0.330	0.270	0.434
0.5	0.040	0.081	0.133	0.117	0.228	0.182	0.315
1.0	0.021	0.042	0.071	0.062	0.129	0.100	0.187

Reference:

Lee, R. C., (1996). *Investigations of Nonlinear Dynamic Soil Properties at the Savannah River Site*, WSRC-TR-96-0062, Rev. 0, March 1996.

Table 3 – Recommended Damping Ratio vs Shear Strain

Shearing Strain (%)	Stiff Upland Sands	Tobacco Rd and Snapp Sands	Dry Branch, Santee, Warley Hill, and Congaree Sands	Four Mile Sands and any other Unrepresented Shallow Sands	Shallow Clays	Deep Sands	Deep Clays
0.00001	1.059	0.625	0.825	0.674	1.296	0.489	0.992
0.0001	1.059	0.625	0.825	0.674	1.296	0.489	0.992
0.0002	1.103	0.647	0.835	0.687	1.292	0.497	0.99
0.0003	1.151	0.670	0.846	0.702	1.293	0.505	0.991
0.0005	1.248	0.717	0.871	0.733	1.300	0.524	0.995
0.001	1.493	0.835	0.936	0.811	1.326	0.570	1.013
0.002	1.973	1.070	1.070	0.970	1.389	0.665	1.054
0.003	2.434	1.300	1.205	1.127	1.456	0.759	1.097
0.005	3.302	1.747	1.470	1.435	1.594	0.945	1.186
0.01	5.201	2.790	2.108	2.171	1.938	1.398	1.41
0.02	8.165	4.605	3.281	3.505	2.603	2.251	1.851
0.03	10.407	6.139	4.336	4.686	3.233	3.039	2.276
0.05	13.639	8.614	6.162	6.692	4.392	4.453	3.080
0.1	18.317 *	12.799	9.605	10.363	6.820	7.289	4.856
0.2		17.425 *	13.951	14.825	10.356	11.179	7.671
0.3			16.683 *		12.884	13.799	9.833
0.5					16.317 *	17.210 *	12.995

* Damping ratio greater than 15% not recommend for analysis. At higher strains the applicability of damping ratio as used in equivalent linear analysis becomes questionable.

Reference:

Lee, R. C., (1996). *Investigations of Nonlinear Dynamic Soil Properties at the Savannah River Site*, WSRC-TR-96-0062, Rev. 0, March 1996.

Table 4 – Soft Zone Intervals in the Vicinity of the Waste Solidification Building

1

Location Type	Location ID	Soft Zone Top Elev. (ft msl)	Total Soft Zone Thickness (feet)
CPT	FPDCA11**	196	3.4
CPT	FPDCA14	191	5.3
CPT	FPDCA17	189	9.4
CPT	FPDCA18	197	9.1
CPT	FPDCA19	183	3.5
CPT	FPDCA26	193	5.0
CPT	FPDCA39*	193	2.4
CPT	FPDCF-SZ31	189	2.9
CPT	FPDCF-SZ32	190	3.0
CPT	FPDCF-SZ33	193	3.7
CPT	FWSBC4*	183	3.8
CPT	FWSBC6*	175	4.7
SPT Boring	FPDCBA 16	184	2 to 4
SPT Boring	FB-20/20A**	192	1.5 to 6
SPT Boring	FB-28	175	1.5 to 5

Notes: Table 4 from calculation K-CLC-F-00076 (WSRC, 2007e)
* Location beneath WSB
** Location within 75 feet of WSB
Locations with no asterisk are further than 75 feet from WSB
Sounding FNEC-179 pushed adjacent to FB-20/20A did not indicate the presence of a soft zone although an interval of low tip resistance did correspond to the lost circulation and low N-value

Soft Zone Thickness Criteria:

1. For a CPT to contain a "soft zone" it must have intervals within the Santee/Tinker Formation with corrected tip stress (q_t) less than 15 tsf where the intervals sum to greater than 2 feet thick.
2. For a boring to contain a "soft zone" it must have a weight of rod (WR), weight of hammer (WH), or N-value less than 5 over an interval or intervals greater than 2 feet.
3. Many CPTs have zones with two or more intervals having corrected tip stress (q_t) less than 15 tsf. These zones or intervals are combined to determine total soft zone thickness. In summing these "soft zones" to determine the total thickness, the total of q_t<15tsf material is combined while excluding the thickness of material having a q_t>15tsf. An example of this is as follows.

		Top Elev. = 104.2
1.2 feet thick	q_t < 15 tsf	Elev. = 103.0
5.5 feet thick	q_t > 15 tsf	
1 feet thick	q_t < 15 tsf	Elev. = 97.5
		Bottom Elev. = 96.5

Total Soft Zone thickness is 2.2 feet

Table 5 – Settlement Due to Shakedown (Liquefaction and Partial Liquefaction)

1

Location ID	PC3 x 1.25 Average all Magnitudes Using 100hz Weighting (inch)	PC3 x 1.25 Average all Magnitudes Using 3.33hz Weighting (inch)	PC3 x 1.25 Average all Magnitudes Using 2 hz Weighting (inch)	PC3 x 1.25 Average all Magnitudes Using 1 hz Weighting (inch)	Charleston 50th PGA = 0.11g Mw = 7.3 MSF=1.1 (inch)
FNEC-179	0.63	0.89	0.98	1.05	0.22
FNEC-180	0.41	0.57	0.62	0.67	0.18
FNEC-182	0.45	0.63	0.69	0.75	0.19
FNEC-183	0.34	0.47	0.51	0.55	0.18
FNEC-186	0.46	0.64	0.71	0.76	0.18
FPDC-A11	0.57	0.80	0.89	0.95	0.20
FPDC-A15	0.52	0.72	0.79	0.85	0.18
FPDC-A39	0.57	0.80	0.88	0.95	0.19
FWSBC1	0.31	0.42	0.46	0.49	0.18
FWSBC2	0.40	0.55	0.61	0.65	0.18
FWSBC3	0.45	0.63	0.69	0.74	0.18
FWSBC4	0.79	1.11	1.23	1.32	0.25
FWSBC5	0.50	0.69	0.76	0.82	0.18
FWSBC6	0.50	0.69	0.76	0.82	0.22

Note: settlement is determined by taking a weighted average with weighting based on the hazard contribution from each magnitude. There is some uncertainty regarding what ground motion frequency most strongly influences liquefaction. One study performed for H-Area (WSRC, 1995) suggests that liquefaction is most strongly influenced by the 1 to 3 hz frequency range. Traditionally liquefaction shear stresses have been calculated based on peak ground acceleration (PGA or 100hz). The Charleston 50 percentile earthquake is a deterministic check at Mw of 7.3 (the estimated magnitude of the 1886 event). More detail regarding the liquefaction analysis is contained in calculation K-CLC-F-00059, Rev. 1 (WSRC, 2007b).

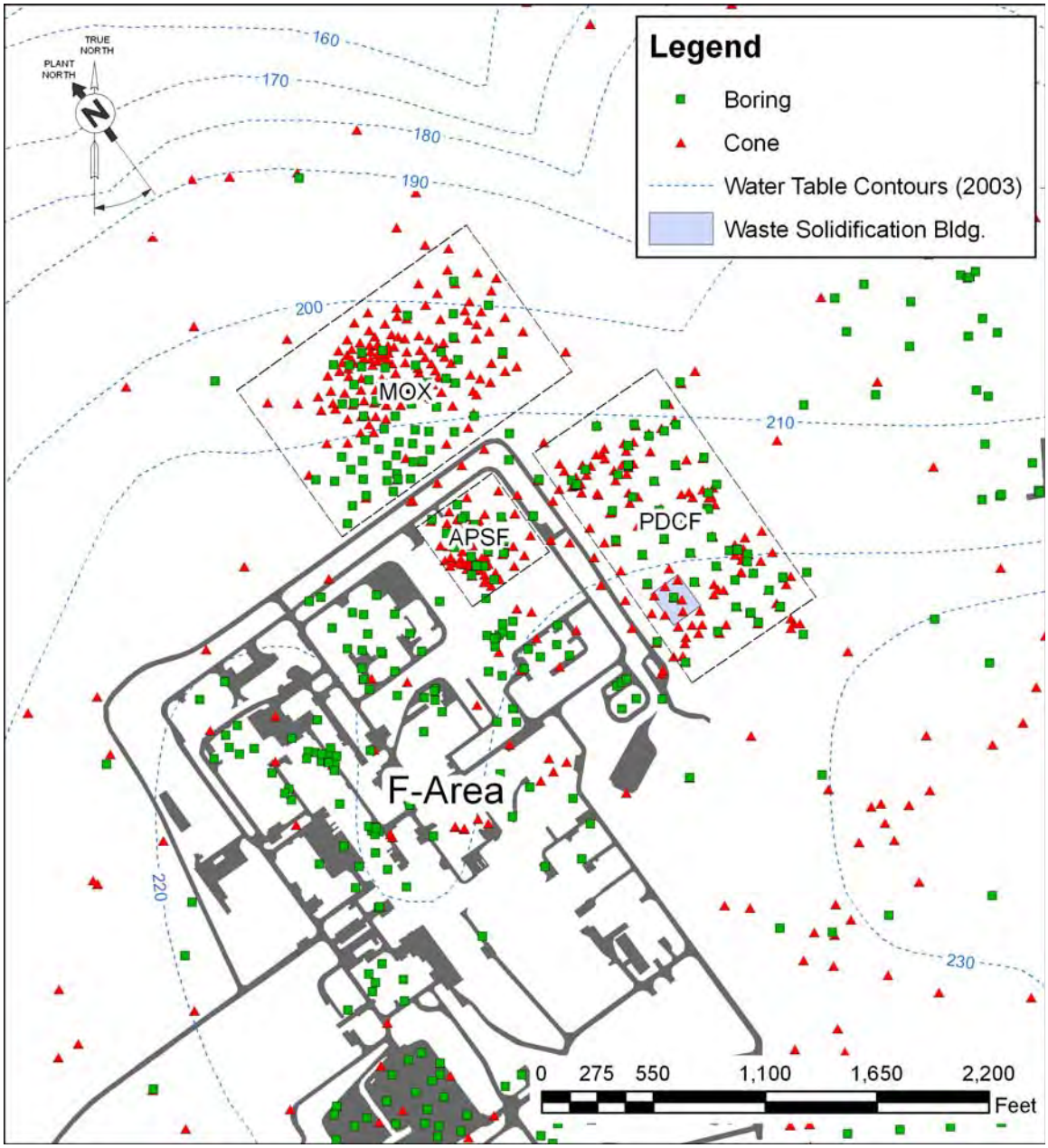


Figure 1. Location of Waste Solidification Building in relation to F-Area along with regional water table from Hiergesell and Jones (2003)

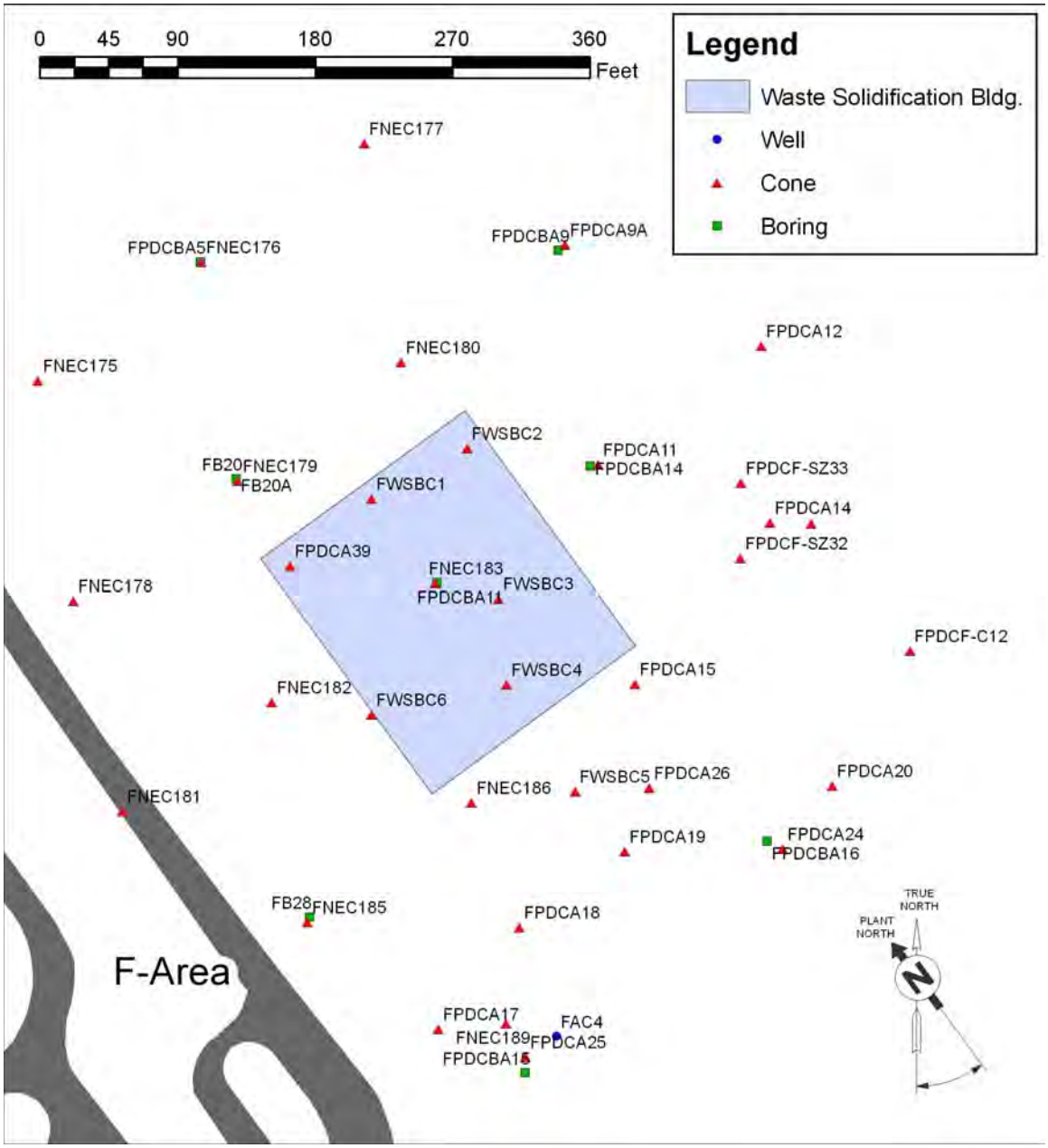


Figure 2. Location of Waste Solidification Building along with geotechnical investigation locations and well FAC-4

		Bottom Elevation (feet MSL)	Poisson's Ratio	Average Shear Wave Velocity (fps)	Recommended Unit Weight (pcf)
	Ground Surface	303.8			
UPLAND FORMATION	TR1	285.3		1,591 ± 247	119
TOBACCO ROAD FORMATION	TR1A	276.7		1,454 ± 260	121
	TR2A	239.9	0.30	1,218 ± 136	117
DRY BRANCH FORMATION	TR2B	W.T.=230 224.3	▽	1,185 ± 138	120
Tan Clay	TR3/TR4	213.2		1027 ± 163	100
DRY BRANCH FORMATION	DB1/DB3	187.1	0.47	1,148 ± 199	108
SANTEE/TINKER FORMATION	DB4/DB5	180.4		1,268 ± 388	107
	ST1/ST2	141.3		1,486 ± 511	108
WARLEY HILL	GC	135.7		1,365 ± 191	116
CONGAREE FORMATION		100.1		1,344 ± 250	122
FOUR MILE FORMATION		64.8		1,489 ± 250	123
SNAPP FORMATION		53.0		1,575 ± 250	123
Clay	(Shallow)	47.0		1,604 ± 250	123
SNAPP FORMATION		39.8		1,628 ± 250	123
LANG SYNE / SAWDUST LANDING FORMATION	(Shallow sand)	9.0		1,692 ± 250	124
Clay	(Shallow)	0.0		1,756 ± 250	124
LANG SYNE / SAWDUST LANDING	(Deep sand)	-7.0		1,781 ± 250	124

Notes:

Water table at elevation 230 ft msl.

Dynamic properties for each geologic formation/unit are provided in Tables 6 and 7.

Mean and standard deviation for Congaree and deeper geologic formations estimated based on deep SRS data.

The ± # indicates standard deviation.

Elevations for upper geologic strata/formations are averages for 24 SCPTu locations correlated with borings.

Elevations for lower geologic formations are based on deep boring P28-TA

Figure 3. Generalized Soil Profile for the Waste Solidification Building Site
(WSRC, 2007d)

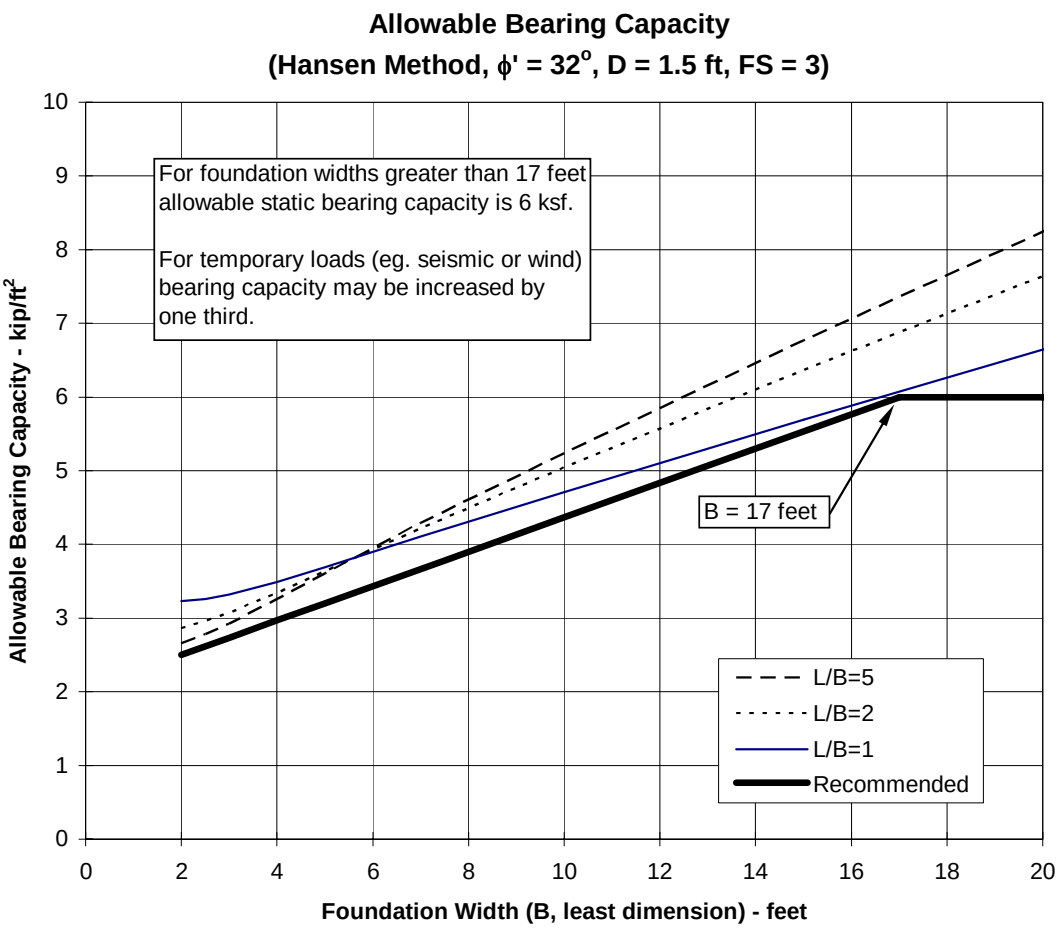
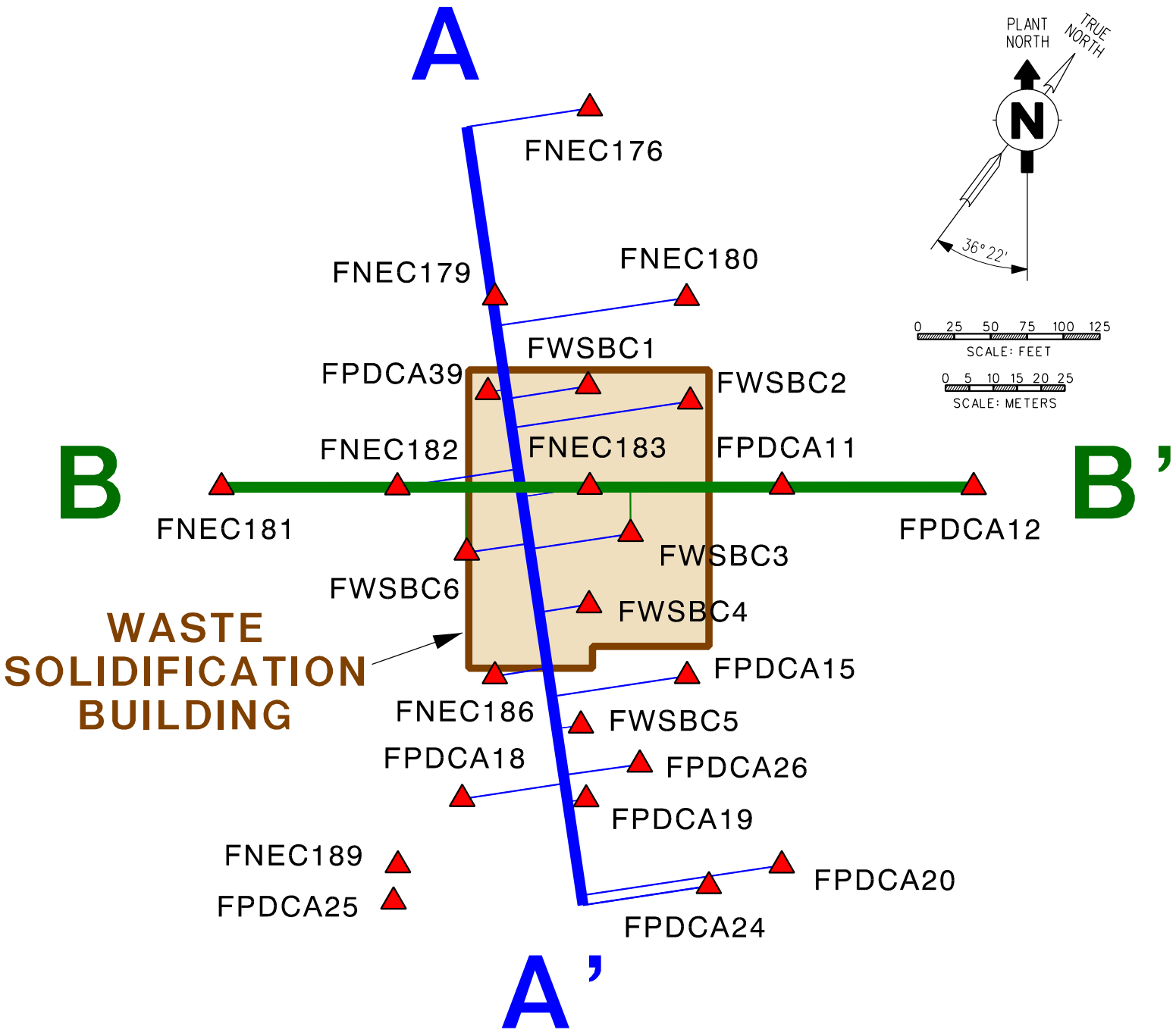


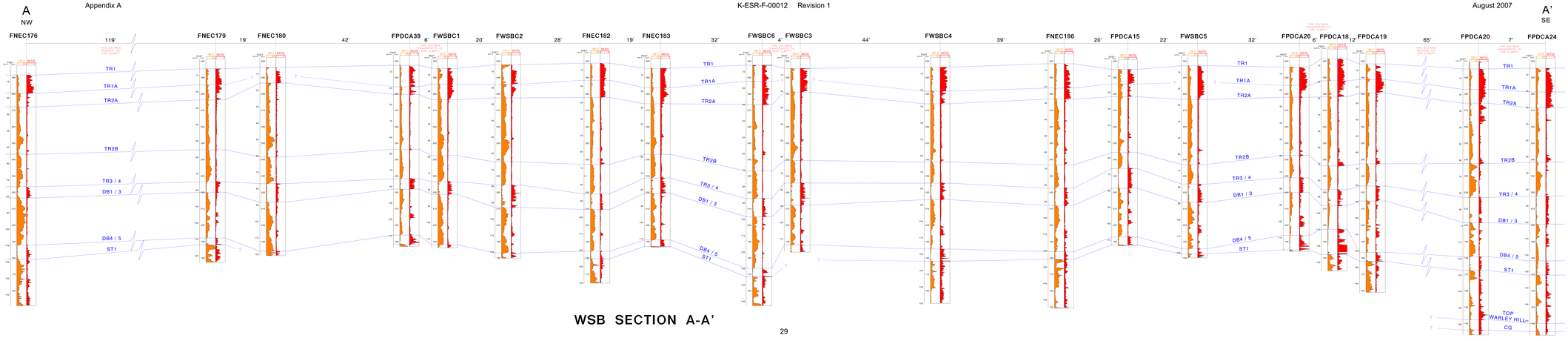
Figure 4. Recommended Allowable Static Bearing Capacity for Waste Solidification Building
(WSRC, 2007a)

Note: This figure is only applicable for foundations placed on naturally deposited soils. The WSB site has 2 to 6 feet of suspect fill that needs to be removed prior to placing foundations.

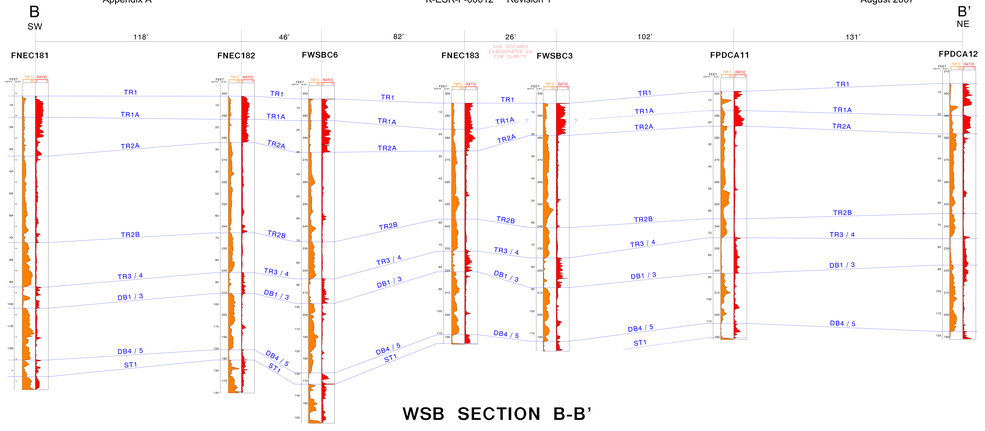
Appendix A



WSB CROSS SECTION AND CPT LOCATION MAP



WSB SECTION A-A'



WSB SECTION B-B'

Appendix B

Original ID	ID	N	E	Ref.
Borings				
FB-20/20A	FB-20/20A	78642	55518	WSRC 2001
FB-28	FB-28	78382	55388	WSRC 2001
BA-5	FPDCBA 5	78770	55583	MACTEC 2003
BA-7A	FPDCBA 7A	75761	55978	MACTEC 2003
BA-9	FPDCBA 9	78639	55776	MACTEC 2003
BA-11	FPDCBA 11	78510	55584	MACTEC 2003
BA-14	FPDCBA 14	78512	55710	MACTEC 2003
BA-15	FPDCBA 15	78217	55442	MACTEC 2003
BA-16	FPDCBA 16	78246	55659	MACTEC 2003
BA-34UD	FPDCBA 34UD	78514	55974	MACTEC 2003
BA-35UD	FPDCBA 35UD	79166	55785	MACTEC 2003
CPTs				
FCPT-C12	FPDCF 12	78300	55845	MACTEC 2003
FCPT-SZ-31	FPDCF-SZ31	78413	55812	MACTEC 2003
FCPT-SZ-32	FPDCF-SZ32	78388	55769	MACTEC 2003
FCPT-SZ-33	FPDCF-SZ33	78438	55769	MACTEC 2003
CPT-A-09A	FPDCA 9a	78639	55782	MACTEC 2003
CPT-A-11	FPDCA 11	78510	55715	MACTEC 2003
CPT-A-12	FPDCA 12	78510	55847	MACTEC 2003
CPT-A-14	FPDCA14	78413	55783	MACTEC 2003
CPT-A-15	FPDCA 15	78380	55650	MACTEC 2003
CPT-A-17	FPDCA 17	78273	55413	MACTEC 2003
CPT-A-18	FPDCA 18	78295	55495	MACTEC 2003
CPT-A-19	FPDCA 19	78295	55580	MACTEC 2003
CPT-A-20	FPDCA 20	78250	55715	MACTEC 2003
CPT-A-24	FPDCA 24	78235	55665	MACTEC 2003
CPT-A-25	FPDCA 25	78225	55448	MACTEC 2003
CPT-A-26	FPDCA 26	78319	55618	MACTEC 2003
CPT-A-39	FPDCA 39	78575	55513	MACTEC 2003
CPT 175	FNEC 175	78770	55451	WSRC 2001
CPT 176	FNEC 176	78770	55583	WSRC 2001
CPT 177	FNEC 177	78770	55715	WSRC 2001
CPT 178	FNEC 178	78640	55385	WSRC 2001
CPT 179	FNEC 179	78640	55518	WSRC 2001
CPT 180	FNEC 180	78640	55650	WSRC 2001
CPT 181	FNEC 181	78510	55330	WSRC 2001
CPT 182	FNEC 182	78510	55451	WSRC 2001
CPT 183	FNEC 183	78510	55583	WSRC 2001
CPT 185	FNEC 185	78380	55385	WSRC 2001
CPT 186	FNEC 186	78380	55518	WSRC 2001
CPT 189	FNEC 189	78250	55451	WSRC 2001
FWSBC-01	FWSBC1	78579	55582	ARA, 2004
FWSBC2	FWSBC2	78569	55652	ARA, 2004
FWSBC3	FWSBC3	78478	55611	ARA, 2004
FWSBC4	FWSBC4	78429	55582	ARA, 2004
FWSBC5	FWSBC5	78346	55577	ARA, 2004
FWSBC-06	FWSBC6	78465	55499	ARA, 2004

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	1 OF 5	BA-5

SITE	COORDINATES	ANGLE FROM HORIZONTAL
PDCF-SRS	N 78770 E 55583	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH
10/23/2000	10/27/2000	Joe Corbitt/Graves	Failing 1500	4.5 inches	140 lbs/30 inches	160.5

GROUND EL.	DEPTH/EL. GROUND WATER	LOGGED BY:
297.7	∇ / ▼ /	Matt Cooke/LAW

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %
20 40 60 80

SAMP. TYPE AND NO.	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		297.7			
AU		295.7		POORLY GRADED SAND (SP); subangular to subrounded, fine to medium grained, QTZ, organics, moist (FILL).	Hand Augered to 6 feet to check for interferences.
		293.7		Same as above, slight silt and clay content, borderline silty clayey sand (FILL).	
		291.7	5	Same as above, grades into red clayey sand at 6 feet; tan mottles, poorly graded, moist, QTZ, subrounded (FILL).	
SS 1	4-8 12-15	289.7		SILTY SAND (SM); red tan; medium dense; moist; subrounded; poorly graded, fine to medium grained, QTZ, tan mottles, -HCL.	Recovery=15"/24" Coastal Plain (natural soil) at 6 feet.
SS 2	10-16 18-22	287.7	10	SILTY SAND (SM); brown, orange, tan; dense; moist; subangular; poorly graded, medium to coarse grained, QTZ, orange red mottles, clayey in places, 1/4" rounded QTZ pebbles, -HCl.	Recovery=17"/24"
SS 3	4-21 24-37	285.7		SILTY SAND WITH CLAY (SM); gray, red, orange; dense; moist; subangular; poorly graded, fine to medium grained, QTZ, gray clay mottles, -HCl.	Recovery=16"/24"
SS 4	9-18 23-27	283.7		Same as above.	Recovery=16"/24"
SS 5	10-17 30-28	281.7	15	Same as above.	Recovery=16"/24"
SS 6	10-14 26-30	279.7		Same as above.	Recovery=17"/24"
SS 7	13-23 29-26	277.7	20	POORLY GRADED SAND WITH CLAY (SP-SC) - red orange; very dense; moist; subangular; poorly graded, medium grained, laminations of white clay, QTZ, trace mica, -HCl.	Recovery=14"/24"
SS 8	12-21 19-18	276.7		Same as above.	Recovery=16.5"/24"
SS 9	3-3 13-15	275.7		SILTY SAND (SM); light tan, poorly graded, subrounded, dense, very fine to fine grained, QTZ, trace mica, moist, -HCl. SILTY SAND (SM); red white tan; medium dense; moist; subrounded; poorly graded, very fine to fine grained, QTZ, trace mica, -HCl.	Recovery=18"/24"
SS 10	8-11 15-15	273.7	25	SILTY SAND (SM); light tan; medium dense; moist; subrounded; poorly graded, very fine grained, QTZ, trace mica, gray clay laminations, -HCl.	Recovery=18"/24"
SS 11	9-11 18-24	271.7		POORLY GRADED SAND WITH SILT (SP-SM); dark red white tan; medium dense; moist; subrounded to subangular; poorly graded, medium grained, QTZ, tan and white banding, -HCl.	Recovery=12"/24"
SS 12	10-15 21-22	269.7		Same as above, tan color, no banding.	Recovery=12"/24"
SS 13	12-15 16-16	267.7	30	SILTY SAND (SM); tan; dense; moist; subrounded to subangular; poorly graded, medium grained, QTZ, -HCl.	Recovery=20"/24"
SS 14	9-16 13-14	265.7		Same as above, stratified tan and red layers, white clay laminations, medium dense.	Recovery=20"/24"
SS	10-14 16-15	263.7		Same as above, fine grained, borderline silty sand.	Recovery=16"/24"

SS = SPLIT SPOON; UD = SHELBY TUBE;
PS = STATIONARY PISTON; AU= HAND AUGER CUTTINGS

SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. BA-5

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	2 OF 5	BA-5

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
15			261.7				
SS 16		23-26 29-30				Same as above, fine to medium grained, very dense.	Recovery=18"/24"
			259.7				
SS 17		21-33 34-29				same as above, clay, white laminations more pervasive.	Recovery=7.5"/24"
			257.7	40			
SS 18		20-21 32-31				POORLY GRADED SAND WITH SILT (SP-SM); red white; very dense; moist; subrounded; poorly graded, medium grained, weak cementation, white laminations, QTZ, trace mica, -HCl	Recovery=10"/24"
			255.7				
SS 19		13-15 22-23				POORLY GRADED SAND WITH CLAY (SP-SC); tan; dense; moist; subrounded; poorly graded, weakly cemented, white clay laminations,	Recovery=15"/24"
			253.7				
SS 20		15-24 39-50/6"	252.7	45		same as above, fine to medium grained.	Recovery=8"/24"
			251.7			POORLY GRADED SAND (SP); subangular, very dense, medium to lower coarse grained, QTZ, moist, -HCl	
SS 21		22-23 31-46				WELL GRADED SAND (SW); red tan; very dense; wet; subangular, fine to lower coarse grained, QTZ, -HCl	Recovery=10"/24"
			249.7				
SS 22		25-41 40-25				same as above, no red color, trace silt.	Recovery=10"/24"
			247.7	50			
SS 23		14-14 21-20				same as above, brown, dense.	Recovery=8"/24"
			245.7				
SS 24		12-9 12-12				WELL GRADED SAND WITH CLAY (SW-SC); brown orange; medium dense; dry; subangular, fine to lower coarse grained, moderate cementation, QTZ, -HCl	Recovery=12"/24"
			243.7				
SS 25		8-9 10-12		55		same as above, gray laminations, fine to medium grained.	Recovery=18"/24"
			241.7				
SS 26		12-15 19-29				same as above, not laminated.	Recovery=10"/24"
			239.7				
SS 27		20-20 24-32				WELL GRADED SAND (SW); red; tan; orange; dense; moist; subrounded to subangular, weakly cemented, QTZ, trace silt, -HCl.	Recovery=9"/24"
			237.7	60			
SS 28		15-14 19-25				same as above, slightly coarser grained.	Recovery=12"/24"
			235.7				
SS 29		18-27 34-40				same as above, cleaner in places, very dense.	Recovery=7"/24"
			233.7				
SS 30		15-18 23-31		65		POORLY GRADED SAND WITH CLAY (SP-SC); tan orange; dense; dry to moist; subrounded to subangular; poorly graded, fine to medium grained, weak cementation, QTZ, -HCl	Recovery=10"/24"
			231.7				
SS 31		22-31 33-40				WELL GRADED SAND (SW); tan; very dense; wet; subrounded to subangular, QTZ, trace clay, -HCl.	Recovery=13"/24"
			229.7				
SS 32		22-34 30-33				same as above, clean, no clay observed.	Recovery=13.5"/24"
			227.7	70			
SS 33		20-15 17-26				same as above, trace silt or clay, dense.	Recovery=7.5"/24"
			225.7				
SS 34		14-15 16-15				POORLY GRADED SAND WITH SILT (SP-SM); tan orange; dense; moist; subrounded to subangular; poorly graded, fine to medium grained, trace coarse sand, QTZ, weak cementation, -HCl	Recovery=11.5"/24"
			223.7				
SS		9-10 12-12				POORLY GRADED SAND WITH CLAY (SP-SC);	Recovery=10"/24"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-5**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	3 OF 5	BA-5

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
35			221.7			gray white tan; medium dense; moist;subrounded to subangular; poorly graded; medium to coarse grained, flattened 1/4" QTZ pebbles, moderate cementation, -HCl.	
SS 36		6-8 12-11	219.7			*ELASTIC SILT (MH) - tan; very stiff; moist; medium plasticity, black stained layers containing medium sand, -HCl.	Recovery=19"/24"
SS 37		3-5 5-7	217.7	80		CLAYEY SAND (SC); tan; loose; moist; subangular; poorly graded, medium grained, moderate cementation, QTZ, black staining, -HCl.	Recovery=21"/24"
SS 38		6-12 19-22	215.7			same as above, stratified with tan fat clay.	Recovery=15.5"/24"
SS 39		10-13 30-34	213.7			same as above, no fat clay strata, dense.	Recovery=10"/24"
SS 40		19-30 31-50/6"	211.7	85		POORLY GRADED SAND (SP); tan; very dense; moist; subrounded; poorly graded, fine grained, QTZ, weak cementation, trace clay, -HCl.	Recovery=12"/24"
SS 41		50/3"-_ -"-	209.7			no recovery.	Recovery=0"/3" Hard Drilling 86 to 90 feet.
SS 42		50/6"-50/5" -"-	207.7	90		no recovery.	Recovery=0"/11"
SS 43		22-35 62/6"-60/3"	205.7			*POORLY GRADED SAND (SP) - tan; very dense; moist; subrounded; fine to lower coarse grained, no cementation, some zones silty, QTZ, -HCl.	Recovery=15"/21"
SS 44		38-49 50/6"-50/4"	203.7			*same as above, wet (possible water bearing zone).	Recovery=11"/22"
SS 45		32-50/3" -"-	201.7	95		*Same as above.	Recovery=4"/9"
SS 46		31-46 49-38	199.7			*same as above, trace silt, fine to medium grained.	Recovery=16"/24"
SS 47		28-35 48-50/4"	197.7	100		*same as above, trace clay, borderline well graded sand with clay (SW-SC).	Recovery=8.5"/22"
SS 48		18-23 23-16	195.7			*POORLY GRADED SAND WITH CLAY (SP-SC) - dark brown white; dense; wet; subangular to subrounded; well graded, fine to lower coarse grained, QTZ, -HCl.	Recovery=21"/24"
SS 49		14-24 38-42	193.7			*same as above, flattened 1/4" qtz pebbles, very dense.	Recovery=15.5"/24" Hard Drilling 102 to 104 feet.
SS 50		27-38 41-40	191.7	105		*POORLY GRADED SAND (SP) - brown gray; very dense; wet; subangular to subrounded, trace clay, QTZ, black Mn splotches, -HCl.	Recovery=16"/24"
SS 51		19-19 23-18	189.7			*POORLY GRADED SAND WITH CLAY (SP-SC) - brown tan; dense; wet; subangular to subrounded, fine to lower coarse, QTZ, black Mn splotches, reddish brown laminations, -HCl.	Recovery=18"/24"
SS 52		16-21 13-9	188.7			*Same as above, gray color.	Recovery=17"/24"
SS 53		6-5 4-6	187.7	110		CLAYEY SAND (SC); white tan; dense; moist; subrounded; poorly graded, medium grained, QTZ, thin black laminations, -HCl. SANDY SILT (ML); white tan; stiff; dry; low plasticity, contains medium sand, silicified chunks at top of spoon, laminated, -HCl.	Recovery=24"/24"
SS 54		4-6 2-3	185.7			same as above, some zones contain brown clayey sand, medium soft.	Recovery=6"/24" Lost approx. 500 gallons drilling fluid from 112 to 118 feet.
SS		2-1 10-14	183.7 182.7			CLAYEY SAND (SC); brown; very loose; wet;	

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-5**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	4 OF 5	BA-5

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %
20 40 60 80

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
55			181.7			subangular; poorly graded; medium to lower coarse grained, silicified chunks, -HCl.	Recovery=8"/24"
SS 56		6-10 1-0	179.7			SILTY SAND (SM); light green, poorly graded, subangular, medium dense, very fine to fine grained, QTZ, silicified chunks, +HCl, moist, calcareous sand.	Recovery=12"/24" Regained circulation at 118 feet.
SS 57		14-12 25-33	177.7	120		same as above (Blow Counts=6,10,1/12") same as above, clayey in places, dense, white.	Recovery=22"/24"
SS 58		7-19 29-36	175.7			same as above.	Recovery=20.5"/24"
SS 59		27-30 24-27	173.7			POORLY GRADED SAND WITH SILT (SP-SM); light green white tan; very dense; wet; subrounded; poorly graded; very fine to fine, calcareous sand, silicified chunks, trace shell hash, QTZ, +HCl.	Recovery=12.5"/24" Hard Drilling 122 to 124.
SS 60		33-33 28-31	171.7	125		same as above, silicified layers, pinkish tinge in lower portion of sample.	Mud level in hole dropped significantly overnight (10/25/00 - 10/26/00)
SS 61		20-27 18-16	169.7			same as above, light green color, medium dense.	Recovery=3.5"/24" Recovery=14"/24"
SS 62		11-11 16-25	167.7	130		same as above, +hcl (weak reaction, only in spots).	Recovery=13"/24"
SS 63		6-32 33-30	165.7			CLAYEY SAND WITH SILT (SC); light green white; very dense; dry; subangular; poorly graded; very fine to fine grained, calcareous sand, silicified chunks, qtz, sandy zones, +hcl.	Recovery=20"/24"
SS 64		14-23 32-38	163.7			POORLY GRADED SAND WITH CLAY (SP-SC); light green white; very dense; moist; subrounded; poorly graded; very fine to fine grained, qtz, calcareous sand, small silicified chunks, +hcl.	Recovery=21"/24"
SS 65		19-20 31-50/6"	161.7	135		same as above.	Recovery=24"/24"
SS 66		19-27 24-30	159.7			same as above, clayey in spots, borderline clayey sand, shell hash.	Recovery=24"/24"
SS 67		13-32 38-45	157.7	140		CLAYEY SAND (SC); light green; very dense; moist; subrounded; poorly graded; very fine to fine grained, qtz, calcareous sand/mud, silicified chunks, +hcl.	Recovery=24"/24"
SS 68		24-43 49-50/5"	155.7			same as above, ssilicified layer in bottom of sample.	Recovery=4"/23"
SS 69		30-38 33-35	153.7			same as above, brown/orange splotches, trace mica.	Recovery=19"/24"
SS 70		20-50/5" -"-	151.7	145		same as above, trace shell hash.	Recovery=11"/11" Hard Drilling 144 to 150 feet.
SS 71		36-50/3" -"-	149.7			same as above, abundant silicified zones containing cemented grains and shell hash.	Recovery=6"/9"
SS 72		50/3"-_ -"-	147.7	150		same as above.	Recovery=1.5"/3"
SS 73		50/2"-_ -"-	145.7			No recovery.	Recovery=0"/2"
SS 74		25-42 50/2"-_	143.7			CLAYEY SAND (SC); green, poorly graded, very dense, fine grained, white shell fragments, black phosphatic shell fragments, dry, +HCl.	Recovery=17"/14"
SS		23-50/6" 50/4"-				CLAYEY SAND (SC); dark green, poorly graded,	Recovery=7"/16"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-5**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	5 OF 5	BA-5

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	20 40 60 80	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
75				141.7			very dense, fine grained, QTZ, mica, subrounded, dry, -HCl ("Green Clay")	"Green Clay" at 154 feet.
SS 76		▲	31-46 49-50/3"				Same as above.	Recovery=17"/21"
SS 77		▲	21-29 36-50/4"	139.7			Same as above, some sandier zones.	Recovery=21"/22"
SS 78		▲	92/6"-_ -_	137.7 137.2	160		No Recovery Boring Terminated at 160.5 feet. Hole abandoned per 3Q5 requirements Hole drilled with bentonite drilling mud. Plastic sample retainer basket used throughout boring.	Recovery=0"/6" Probable Top of Congaree Formation at 160 feet.

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-5**

LAW
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GEOTECHNICAL LOG	PROJECT	JOB NO.	SHEET NO.	HOLE NO.
	PDCF-SRS	50123-0-4059	1 OF 5	BA-7A

SITE	COORDINATES	ANGLE FROM HORIZONTAL
PDCF-SRS	N 78761 E 55978	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH
1/5/2001	1/8/2001	R.Banks/LAW	CME-55	3 7/8 inches	140 lbs/30 inches	160.1

GROUND EL.	DEPTH/EL. GROUND WATER	LOGGED BY:
294.8	▽ / ▼ /	Matt Cooke/LAW

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ WATER CONTENT % + ATT. LIMITS % (20 40 60 80)	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
				294.8	5, 10, 15			
UD 1	■	○ + +		275.3	20		SILTY SAND WITH CLAY (SM) - red, gray, poorly graded, subangular, medium grained, mottled, moist	Gross Recovery=24" Net Recovery=19"
					25, 30			
UD 2	■	○ + +		263.1			SILTY SAND (SM) - tan, white, poorly graded, fine grained, subrounded, QTZ, moist, trace mica.	Gross Recovery=18" Net Recovery=17"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. BA-7A

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG	PROJECT PDCF-SRS	JOB NO. 50123-0-4059	SHEET NO. 2 OF 5	HOLE NO. BA-7A

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ WATER CONTENT % + ATT. LIMITS % (20 40 60 80)	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
					40			
					45			
UD 3		○		242.8	50		SILTY SAND (SM) - red, poorly graded, subangular, QTZ, medium grained, moist.	Gross Recovery=18" Net Recovery=15"
					55			
					60			
UD 4		+ ○ +		228.3	65		*ELASTIC SILT WITH SAND (MH) - tan, high plasticity, dry, QTZ sand, brown staining.	Gross Recovery=28" Net Recovery=26" Sampler penetrated 6" under rod weight. Pushed sampler additional 24".
UD 5		○		224.8	70		*Same as above, moist.	Gross Recovery=27" Net Recovery=24"
UD 6		○ + +		220.8			*SILTY SAND (SM) - tan, poorly graded, fine, subangular, moist, mixed with tan fat clay.	Gross Recovery=27" Net Recovery=24"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. BA-7A

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG	PROJECT	JOB NO.	SHEET NO.	HOLE NO.
	PDCF-SRS	50123-0-4059	3 OF 5	BA-7A

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %
20 40 60 80

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
UD 7			216.8			*Same as above, brown, black staining.	Gross Recovery=26" Net Recovery=24"
				80			
				85			
				90			
				95			
SS 1		15-35 50/5"-_		100		POORLY GRADED SAND (SP) - tan, subrounded to subangular, fine to medium grained, very dense, QTZ, wet, -HCl.	Recovery=8"/17"
SS 2		35-50/5" -_-	192.8			Same as Above	Recovery=6"/11"
SS 3		24-30 36-34	190.8	105		Same as above.	Recovery=8"/24"
SS 4		20-34 25-23	188.8			Same as above, with silt, red, black staining.	Recovery=13"/24"
SS 5		5-2 2-5	186.8			CLAYEY SAND (SC) - brown, poorly graded, subrounded, fine grained, QTZ, black staining, moist, very loose, -HCl.	Recovery=24"/24" Lost circulation at 108 feet.
SS 6		0-0 0-0	184.8	110		Same as above (Blow Counts=WR/24")	Recovery=24"/24"
SS 7		2-3 3-3	182.8 182.7			*ELASTIC SILT WITH SAND (MH) - tan, high plasticity, dry, -HCl	Recovery=24"/24" Still losing drilling fluid at 112 feet.
UD			180.8			CLAYEY SAND (SC) - brown, poorly graded, subrounded, fine grained, QTZ, black staining, moist, -HCl, loose.	Gross Recovery=28"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-7A**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG	PROJECT	JOB NO.	SHEET NO.	HOLE NO.
	PDCF-SRS	50123-0-4059	4 OF 5	BA-7A

▲ N-VALUE (SPT) ○ WATER CONTENT % + ATT. LIMITS %

SAMP. TYPE AND NO.	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
8		178.3		*SILTY SAND (SM) - tan, poorly graded, fine grained, subrounded, dry to moist.	Net Recovery=27" Sampler sank 6" under weight of rods.
SS 8	-14 23-28	176.8		*Same as above, light green-white, poorly graded, very fine, medium dense, subrounded, moist, +HCl.	Recovery=13"/24" Borehole caved to 115.75 feet. Took SPT from 115.75 to 117.75 feet.
SS 9	19-19 27-16	174.8	120	POORLY GRADED SAND WITH SILT (SP-SM) - tan, very fine to fine, dense, subrounded, wet, +HCl.	Recovery=18"/24"
SS 10	7-27 23-17	172.8		Same as above, very dense.	Recovery=20"/24" Lost 360 gallons of drilling fluid between 108 and 120 feet.
UD 9		170.8		SILTY SAND (SM) - tan, very fine to fine,very dense dense, subrounded, wet, +HCl.	Gross Recovery=26" Net Recovery=24"
SS 11	16-21 28-44	168.8	125	*SILTY SAND (SM) - light green-white, poorly graded, very fine, dense, subrounded, moist, trace mica, calcareous sand, silicified/cemented material, +HCl.	Recovery=24"/24" Lost 360 gallons drilling fluid 120 to 126 feet.
SS 12		166.8		*Same as above. Rods slipped through ring and penetrated 24 inches in bottom of hole. No blows taken.	Recovery=24"/24"
SS 13	- 17-43	164.8	130	*Same as above. Rods slipped again at 128 feet. Penetrated 12 inches. Took blows 129-130 feet (Blow Counts=17,43).	Recovery=24"/24"
SS 14	7-12 19-31	162.8		*Same as above, dense.	Recovery=24"/24"
SS 15	2-7 10-19	160.8		*Same as above, medium dense.	Recovery=24"/24"
SS 16	3-5 15-14	158.8	135	*Same as above.	Recovery=24"/24"
SS 17	11-13 14-17	156.8		*Same as above.	Recovery=20"/24"
SS 18	0-15 32-50/4"	154.8	140	*Same as above, trace shell hash, very dense. Rods slipped through ring at 138 feet. Penetrated to 138.5. Took blows 138.5 to 140 feet (Blow Counts=15,32,50/4")	Recovery=24"/24"
SS 19	10-22 36-39	152.8		CLAYEY SAND (SC) - gray, light green, white, poorly graded, very fine, very dense, subrounded, moist, trace mica, calcareous sand, cemented material, trace shell hash, +HCl/	Recovery=24"/24"
SS 20	15-30 50/6"-_	150.8		Same as above.	Recovery=18"/24" Mud depth at 80 feet 1/7/01 0800.
SS 21	29-50/1" -"-	148.8	145	Same as above, cemented zone at top of interval.	Recovery=3"/7"
SS 22	50/3"-_ -"-	146.8		Same as above, recovered mostly cemented carbonate material.	Recovery=1"/3"
SS 23	30-50/4" -"-	144.8	150	Same as above.	Recovery=10"/10"
SS 24	30-50/6" -"-	142.8		Same as above.	Recovery=10"/10"
SS 25	50/1"-_ -"-	140.8		No Recovery.	Recovery=0"/1" "Green Clay" @ 153 feet.
SS	8-21 33-44			*SILTY SAND (SM) - dark green, poorly graded,	Recovery=18"/24"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-7A**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	5 OF 5	BA-7A

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	20 40 60 80	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
26	X			138.8			fine grained, subrounded, very dense, abundant mica, dry, -HCl ("Green Clay")	
SS 27	X		▲ 13-32 50/2"-				*Same as above, medium grained, laminated.	Recovery=14"/14"
				136.8				
SS 28	X		▲ 28-50/4" -				*SILT WITH SAND (ML) - low plasticity, dark green, hard, moist, -HCl.	Recovery=10"/10"
SS 29			▲ 50/1"- -	134.8 134.7	160		No Recovery, top of Congaree Formation likely. Boring Terminated at 160.1 feet. Hole abandoned per 3Q5 Requirements Hole drilled with bentonite drilling mud.	Top of Congaree Formation @ 160 feet. Recovery=0"/1"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-7A**

LAW
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GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	1 OF 5	BA-9

SITE	COORDINATES	ANGLE FROM HORIZONTAL
PDCF-SRS	N 78639 E 55776	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH
11/15/2000	11/28/2000	R. Banks/LAW	CME-55	3 7/8 inches	140 lbs/30 inches	172.7

GROUND EL.	DEPTH/EL. GROUND WATER	LOGGED BY:
306.5	▽ / ▼ /	Jason Suber/LAW

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %
20 40 60 80

SAMP. TYPE AND NO.	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
AU		306.5		SILTY SAND (SM) - orange, brown, fine grained, well graded, subangular, moist, gravel, -HCl (FILL).	Hand Augered to 6 feet to check for interferences.
		300.5	5		
SS 1	3-7 10-9			SILTY SAND (SM) - yellow, red, brown, fine grained, well graded, subangular, medium dense, moist, -HCl (FILL).	Recovery=18"/24"
		298.5			
SS 2	8-9 9-13			Same as above.	Recovery=12"/24"
		296.5	10		
SS 3	8-10 9-8			Same as above.	Recovery=6"/24"
		294.5			Coastal Plain (natural soil) at 12 feet.
SS 4	2-12 23-21			SILTY SAND (SM) - brown, tan, medium grained, well graded, dense, subangular, moist, -HCl.	Recovery=8"/24"
		292.5			
SS 5	11-14 12-24		15	Same as above, medium dense.	Recovery=8"/24"
		290.5			
SS 6	8-11 12-14			SILTY SAND (SM) - yellow, red, brown, fine grained, well graded, subangular, moist, mottled, medium dense, -HCl.	Recovery=19"/24"
		288.5			
SS 7	12-17 25-37			Same as above.	Recovery=18"/24"
		286.5	20		
SS 8	15-30 35-40			SILTY SAND (SM) - orange, tan, coarse grained, well graded, subangular, moist, -HCL.	Recovery=15"/24"
		284.5			
SS 9	25-28 26-28			Same as above.	Recovery=20"/24"
		282.5			
SS 10	11-21 20-24		25	SILTY SAND (SM) - pink, white, tan, fine grained, well graded, subangular, moist, dense, -HCl.	Recovery=24"/24"
		280.5			
SS 11	26-34 40-47			Same as above, very dense.	Recovery=7"/24"
		278.5			
SS 12	19-21 26-35			Same as above, medium grained, orange-tan color, dense.	Recovery=24"/24"
		276.5	30		
SS 13	10-25 28-28			Same as above, laminated, very dense.	Recovery=24"/24"
		274.5			
SS 14	18-17 26-23			Same as above, dense.	Recovery=24"/24"
		272.5			
SS	17-21 24-30			Same as above.	Recovery=15/24"

SS = SPLIT SPOON; UD = SHELBY TUBE;
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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-9**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	2 OF 5	BA-9

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %
20 40 60 80

SAMP. TYPE AND NO.	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
15		270.5			
SS 16	17-18 20-29			Same as above.	Recovery=24"/24"
SS 17	17-20 26-22	268.5		Same as above.	Recovery=24"/24"
SS 18	13-11 16-11	266.5	40	Same as above, medium dense.	Recovery=24"/24"
SS 19	11-14 17-12	264.5		SILTY SAND (SM) - red, yellow, tan, medium grained, subangular, moist, dense, -HCl.	Recovery=24"/24"
SS 20	8-13 16-16	262.5	45	Same as above.	Recovery=24"/24"
SS 21	13-14 17-22	260.5		Same as above.	Recovery=24"/24"
SS 22	13-19 22-26	258.5		Same as above.	Recovery=24"/24"
SS 23	12-25 25-25	256.5	50	Same as above.	Recovery=24"/24"
SS 24	13-21 23-26	254.5		Same as above.	Recovery=24"/24"
SS 25	16-21 32-37	252.5	55	Same as above, very dense.	Recovery=24"/24"
SS 26	22-44 42-38	250.5		Same as above.	Recovery=24"/24"
SS 27	30-35 31-32	248.5		Same as above, dense.	Recovery=16"/24"
SS 28	21-35 48-50/4"	246.5	60	Same as above.	Recovery=7"/22"
SS 29	19-20 20-19	244.5		Same as above.	Recovery=10"/24"
SS 30	12-17 18-19	242.5	65	Same as above.	Recovery=24"/24"
SS 31	11-19 27-26	240.5		Same as above.	Recovery=12"/24"
SS 32	12-33 36-37	238.5		Same as above, very dense.	Recovery=17"/24"
SS 33	17-28 35-31	236.5	70	Same as above.	Recovery=15"/24"
SS 34	25-32 31-35	234.5		Same as above.	Recovery=16"/24"
SS	20-21 20-16	232.5		Same as above, dense.	Recovery=21"/24"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-9**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	3 OF 5	BA-9

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	N-VALUE (SPT) / WATER CONTENT % / ATT. LIMITS % (20 40 60 80)	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
35				230.5				
SS 36			5-6 9-10				*ELASTIC SILT (MH) - red, brown, tan, high plasticity, wet, very stiff.	Recovery=24"/24"
				228.5				
SS 37			5-8 10-8				*Same as above.	Recovery=24"/24"
				226.5	80			
SS 38			6-8 10-15				*Same as above.	Recovery=24"/24"
				224.5				
SS 39			6-10 11-12				*Same as above.	Recovery=24"/24"
				222.5				
SS 40			13-15 11-15		85		*Same as above.	Recovery=24"/24"
				220.5				
SS 41			9-12 12-11				*Same as above.	Recovery=24"/24"
				218.5				
SS 42			7-10 12-13				*Same as above.	Recovery=24"/24"
				216.5	90			
SS 43			9-22 29-25				*SILTY SAND (SM) -poorly graded, subrounded, fine grained, moist, very dense, -HCl.	Recovery=24"/24"
				214.5				
SS 44			3-12 17-29				*Same as above, medium dense.	Recovery=24"/24"
				212.5				
SS 45			11-28 24-26		95		SILTY SAND (SM) - yellow, tan, medium grained, well graded, subangular, wet, very dense, -HCl.	Recovery=24"/24"
				210.5				
SS 46			13-19 20-25				Same as above, dense.	Recovery=24"/24"
				208.5				
SS 47			12-22 26-26				Same as above.	Recovery=24"/24"
				206.5	100			
SS 48			28-30 23-28				Same as above, very dense.	Recovery=24"/24"
				204.5				
SS 49			13-16 20-20				Same as above, dense.	Recovery=19"/24"
				202.5				
SS 50			10-20 20-33		105		Same as above.	Recovery=21"/24"
				200.5				
SS 51			15-16 13-16				Same as above, medium dense.	Recovery=20"/24"
				198.5				
SS 52			6-11 16-18				Same as above.	Recovery=24"/24"
				196.5	110			
SS 53			14-24 25-30				Same as above, dense.	Recovery=18"/24"
				194.5				
SS 54			17-32 39-48				Same as above, very dense.	Recovery=12"/24"
				192.5				
SS			27-33 36-49				Same as above.	Recovery=17"/24"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-9**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	4 OF 5	BA-9

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %
20 40 60 80

SAMP. TYPE AND NO.	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
55		190.5			
SS 56	24-29 30-36			Same as above.	Recovery=21"/24"
		188.5			
SS 57	13-20 16-16			Same as above, dense.	Recovery=24"/24"
		186.5	120		
SS 58	5-8 13-14			SILTY SAND (SM) - yellow, tan, medium grained, medium dense, well graded, subangular, moist, -HCl.	Recovery=24"/24"
		184.5			
SS 59	3-5 20-23			Same as above.	Recovery=24"/24"
		182.5			
SS 60	14-19 24-42		125	Same as above, dense.	Recovery=24"/24"
		180.5			
SS 61	23-49 50/5"-			SILTY SAND (SM) - tan, white, fine grained, well graded, very dense, subangular, moist, shell hash, +HCl.	Recovery=24"/24"
		178.5			
SS 62	44-44 38-30			Same as above.	Recovery=24"/24"
		176.5	130		
SS 63	14-41 45-39			SILTY SAND (SM) - pink, white, fine grained, well graded, subangular, moist, very dense, +HCl.	Recovery=24"/24"
		174.5			
SS 64	17-49 50/5"-			Same as above.	Recovery=9"/17"
		172.5			
SS 65	28-50/5" --		135	Same as above.	Recovery=11"/11"
		170.5			
SS 66	34-36 50/5"-			SILTY SAND (SM) - tan, white, fine grained, well graded, subangular, moist, very dense, +HCl.	Recovery=17"/17"
		168.5			
SS 67	47-37 41-42			Same as above.	Recovery=24"/24"
		166.5	140		
SS 68	18-33 36-50/6"			Same as above.	Recovery=24"/24"
		164.5			
SS 69	14-23 32-42			Same as above.	Recovery=24"/24"
		162.5			
SS 70	17-24 33-50/4"		145	Same as above.	Recovery=22"/22"
		160.5			
SS 71	5-9 15-34			Same as above, medium dense.	Recovery=24"/24"
		158.5			
SS 72	8-15 18-34			Same as above, dense.	Recovery=24"/24"
		156.5	150		
SS 73	10-22 17-21			Same as above.	Recovery=24"/24"
		154.5			
SS 74	5-7 19-19			*SILTY SAND (SM) - yellow, tan, fine, poorly graded, medium dense, subangular, moist, -HCl.	Recovery=24"/24"
		152.5			
SS	6-9 28-50/4"			*Same as above, dense.	Recovery=22"/22"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-9**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	5 OF 5	BA-9

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	20 40 60 80	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
75				150.5				
SS 76			13-50/5" --				*Same as above, very dense	Recovery=1"/11"
				148.5				
SS 77		▲	12-15 18-40				CLAYEY SAND (SC) - tan, orange, brown, fine grained, poorly graded, subrounded, moist, dense, -HCl.	Recovery=24"/24"
				146.5	160			
SS 78		▲	28-28 34-35				Same as above, very dense.	Recovery=24"/24"
				144.5				
SS 79		▲	13-12 15-24				Same as above medium dense.	Recovery=21"/24"
				142.5				
SS 80		▲	7-14 20-25		165		Same as above, dense.	Recovery=24"/24"
				140.5				
SS 81			17-47 50/5"--				No Recovery	Recovery=0"/17"
				138.5				
SS 82			17-50/2" --				No Recovery, but noted dark green clayey sand ("Green Clay") on tip of spoon.	Recovery=0"/8" Top of Green Clay at 169 feet.
				136.5	170			
SS 83		▲	10-41 40-50/4"				SILTY SAND (SM) - dark green, fine grained, well graded, very dense, subangular, moist, -HCl.	Recovery=22"/22"
				134.5				
SS 84			36-50/2 --	133.8			WELL-GRADED SAND (SW) - light gray, coarse, well graded, very dense, subangular, moist, -HCl (Congaree Formation). Boring Terminated at 172.67 feet. Hole abandoned per 3Q5 requirements. Hole drilled with bentonite drilling mud.	Recovery=4"/8" Top of Congaree at 172 feet.

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-9**

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GEOTECHNICAL LOG	PROJECT	JOB NO.	SHEET NO.	HOLE NO.
	PDCF-SRS	50123-0-4059	1 OF 5	BA-11

SITE	COORDINATES	ANGLE FROM HORIZONTAL
PDCF-SRS	N 78510 E 55584	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH
10/18/2000	10/25/2000	R. Banks/LAW	CME-55	3 7/8 inches	140 lbs/30 inches	159.8

GROUND EL.	DEPTH/EL. GROUND WATER	LOGGED BY:
301.7	▽ / ▼ /	Jason Suber/LAW

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %
20 40 60 80

SAMP. TYPE AND NO.	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		301.7			
AU			5	Well Graded Sand (SW) - yellow and tan, medium grained, well graded, subangular, (-HCL)	Hand auger to 6 feet to check for interferences/utilities.
SS 1	13-16 19-21	295.7		Clayey Sand (SC) - red and tan, fine grained, well graded, subangular, dense (-HCL)	Recovery=24"/24"
SS 2	19-21 37-40	293.7		Same as above, very dense.	Recovery=24"/24"
SS 3	24-28 40-49	291.7	10	Same as above.	Recovery=24"/24"
SS 4	13-26 30-32	289.7		Same as above.	Recovery=21"/24"
SS 5	10-18 24-28	287.7	15	Same as above, dense.	Recovery=24"/24"
SS 6	9-17 18-24	285.7		Same as above.	Recovery=24"/24"
SS 7	12-18 24-24	283.7		Silty Sand (SM) - red, tan, and purple, fine grained, well graded, subangular, (-HCL)	Recovery=24"/24"
SS 8	12-15 25-20	281.7	20	Same as above.	Recovery=24"/24"
SS 9	13-21 22-22	279.7		Same as above.	Recovery=21"/24"
SS 10	17-19 20-24	277.7	25	Same as above.	Recovery=18"/24"
SS 11	15-25 25-20	275.7		Same as above.	Recovery=24"/24"
SS 12	12-22 22-24	273.7		Same as above.	Recovery=12"/24"
SS 13	8-20 22-30	271.7	30	Same as above.	Recovery=15"/24"
SS 14	15-20 22-30	269.7		Same as above.	Recovery=12"/24"
SS	12-16 12-18	267.7		Same as above.	Recovery=12"/24"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. BA-11

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GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	2 OF 5	BA-11

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
15			265.7				
SS 16		16-22 18-20				Same as above.	Recovery=18"/24"
			263.7				
SS 17		12-18 16-14				Same as above.	Recovery=24"/24"
			261.7	40			
SS 18		12-20 24-28				Same as above.	Recovery=24"/24"
			259.7				
SS 19		16-18 20-18				Same as above.	Recovery=12"/24"
			257.7				
SS 20		16-20 20-21		45		Same as above.	Recovery=18"/24"
			255.7				
SS 21		16-19 18-17				Same as above.	Recovery=18"/24"
			253.7				
SS 22		16-30 49-44				Silty Sand (SM) - purple, orange, and tan, fine to medium grained, well graded, subangular, very dense (-HCL)	Recovery=18"/24"
			251.7	50			
SS 23		39-50/5" ---				Same as above.	Recovery=11"/11"
			249.7				
SS 24		16-36 38-17				Same as above	Recovery=12"/24"
			247.7				
SS 25		19-24 22-21		55		Same as above, dense.	Recovery=12"/24"
			245.7				
SS 26		17-20 20-24				Same as above, dense.	Recovery=21"/24"
			243.7				
SS 27		6-16 17-18				Same as above.	Recovery=24"/24"
			241.7	60			
SS 28		18-28 30-28				Same as above, very dense.	Recovery=24"/24"
			239.7				
SS 29		20-35 30-45				Same as above.	Recovery=20"/24"
			237.7				
SS 30		24-35 47-40		65		Same as above.	Recovery=20"/24"
			235.7				
SS 31		20-27 36-38				Same as above.	Recovery=12"/24"
			233.7				
SS 32		18-24 30-30				Same as above.	Recovery=12"/24"
			231.7	70			
SS 33		43-37 38-46				Same as above.	Recovery=24"/24"
			229.7				
SS 34		18-20 22-20				Same as above, dense.	Recovery=24"/24"
			227.7				
SS		12-24 24-21				Same as above.	Recovery=24"/24"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

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GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	3 OF 5	BA-11

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
35			225.7				
SS 36		19-23 23-27	223.7			*Elastic Silt (MH) - orange, white, and tan, medium plasticity, subrounded, hard (-HCL)	Recovery=24"/24"
SS 37		14-23 20-20	221.7			Silty Sand (SM) - tan, brown, and black, fine grained, well graded, subangular, dense (-HCL)	Recovery=24"/24"
SS 38		7-23 25-25	219.7	80		Same as above.	Recovery=24"/24"
SS 39		15-23 25-27	217.7			Same as above.	Recovery=12"/24"
SS 40		18-23 27-28	215.7	85		Same as above.	Recovery=20"/24"
SS 41		17-30 25-28	213.7			Same as above, very dense.	Recovery=24"/24"
SS 42		20-23 25-30	211.7			Same as above, very dense.	Recovery=24"/24"
SS 43		23-37 37-37	209.7	90		Same as above, very dense.	Recovery=24"/24"
SS 44		25-30 29-29	207.7			Silty Sand (SM) - tan and brown, medium grained, well graded, subangular, very dense (-HCL)	Recovery=12"/24"
SS 45		20-23 30-27	205.7	95		Same as above.	Recovery=12"/24"
SS 46		17-26 25-27	203.7			Same as above.	Recovery=18"/24"
SS 47		19-27 24-21	201.7			Same as above.	Recovery=20"/24"
SS 48		9-14 19-24	199.7	100		Same as above, dense.	Recovery=24"/24"
SS 49		18-21 26-26	197.7			Same as above.	Recovery=18"/24"
SS 50		18-27 26-31	195.7	105		Same as above, very dense.	Recovery=21"/24"
SS 51		24-32 33-38	193.7			Same as above.	Recovery=24"/24"
SS 52		18-29 27-24	191.7			Sandy Lean Clay (CL) - white, low plasticity, well graded, subrounded, hard (-HCL).	Recovery=24"/24"
SS 53		6-10 11-14	189.7	110		Silty Sand (SM) - white and tan, fine grained, well graded, subangular, medium dense (-HCL)	Recovery=24"/24"
SS 54		10-50/2" ---	187.7			Same as above, very dense.	Recovery=8"/8"
SS		50/3"-- ---				*Silty Sand with Gravel (SM) - white and tan, very	Recovery=3"/3"

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GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	4 OF 5	BA-11

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %
20 40 60 80

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
55			185.7			coarse grained, poorly graded, subangular, contains shell fragments, very dense (+HCL)	
SS 56		50/5"-- ---				Same as above.	Recovery=5"/5"
SS 57		33-34 38-50/4"	183.7			Same as above.	Recovery=22"/22"
SS 58		38-50/3" ---	181.7	120		Same as above.	Recovery=9"/9"
SS 59		18-29 40-50/3"	179.7			Same as above.	Recovery=21"/21"
SS 60		42-50/5" ---	177.7	125		Same as above.	Recovery=11"/11"
SS 61		33-36 40-42	175.7			Same as above.	Recovery=24"/24"
SS 62		20-33 28-45	173.7			Same as above.	Recovery=24"/24"
SS 63		19-42 50-47	171.7	130		Same as above.	Recovery=20"/24"
SS 64		32-50/4" ---	169.7			Same as above.	Recovery=10"/10"
SS 65		20-33 50/3"--	167.7	135		Same as above.	Recovery=15"/15"
SS 66		30-42 50/5"--	165.7			Same as above.	Recovery=17"/17"
SS 67		32-36 38-50/4"	163.7			Same as above, well graded, very dense.	Recovery=22"/22"
SS 68		42-42 50/5"--	161.7	140		*Same as above, no gravel.	Recovery=17"/17"
SS 69		32-40 36-50/3"	159.7			*Same as above, no gravel.	Recovery=21"/21"
SS 70		24-26 28-50/4"	157.7	145		Clayey Sand (SC) - light green, white and tan, fine grained, well graded, subangular, very dense, contains shell fragments, +HCl.	Recovery=22"/22"
SS 71		19-49 50/2"--	155.7			Same as above.	Recovery=14"/14"
SS 72		44-39 50/4"--	153.7			Same as above.	Recovery=16"/16"
SS 73		30-39 50/3"--	151.7	150		Same as above.	Recovery=15"/15"
SS 74		44-50/5" ---	149.7			Same as above.	Recovery=11"/11"
SS		48-32 50/3"--	147.7			Same as above.	Recovery=15"/15"

SS = SPLIT SPOON; UD = SHELBY TUBE;
PS = STATIONARY PISTON; AU= HAND AUGER CUTTINGS

SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-11**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG	PROJECT	JOB NO.	SHEET NO.	HOLE NO.
	PDCF-SRS	50123-0-4059	5 OF 5	BA-11

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ WATER CONTENT % + ATT. LIMITS % (20 40 60 80)	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
~~75~~				145.7				
SS 76		▲	21-48 37-32				*Silt with Sand (ML) - light green and tan, low plasticity, very fine grained, well graded, subrounded, very dense (-HCL)	Recovery=24"/24" "Green Clay" at 156 feet.
				143.7				
SS 77		▲	21-20 33-50/3"				Silty Sand (SM) - dark gray, medium grained, well graded, subangular, very dense (-HCL)	Recovery=21"/21" Top of Congaree Formation at 158 feet.
				142.0				
							Boring Terminated at 159.75 feet. Hole abandoned per 3Q5 Requirements. Hole drilled with bentonite drilling mud.	

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-11**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	1 OF 5	BA-14

SITE	COORDINATES	ANGLE FROM HORIZONTAL
PDCF-SRS	N 78512 E 55710	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH
10/25/2000	11/1/2000	R. Banks/LAW	CME-55	3 7/8 inches	140 lbs/30 inches	167.8

GROUND EL.	DEPTH/EL. GROUND WATER	LOGGED BY:
306.8	▽ / ▼ /	Jason Suber/LAW

▲ N-VALUE (SPT) ○ WATER CONTENT % + ATT. LIMITS %

SAMP. TYPE AND NO.	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
AU		306.8		Silty Sand (SM) - red and brown, medium grained, well graded, subrounded, dry, (-HCL)	Hand auger to 6 feet to check for interferences.
		303.8		Clayey Sand (SC) - pink, purple, and tan, fine grained, poorly graded, subrounded, moist, (-HCL)	
		302.8	5	Silty Sand (SM) - yellow and tan, medium grained, well graded, subangular, moist, (-HCL) FILL CES	
SS 1	11-12 10-16	300.8		Clayey Sand (SC) - red and brown, medium grained, well graded, medium dense, subrounded, moist, (-HCL) FILL CES	Recovery=12"/24"
SS 2	8-15 25-38	298.8		*Clayey Sand (SC) - gray and tan, fine grained, well graded, dense, subrounded, moist, (-HCL)	Recovery=20"/24"
SS 3	25-34 28-26	296.8	10	*Same as above, very dense.	Recovery=20"/24"
SS 4	4-8 12-15	294.8		*Clayey Sand (SC) - red, brown, and tan, fine grained, well graded, medium dense, subangular, moist, (-HCL)	Recovery=20"/24"
SS 5	12-18 20-25	292.8	15	*Same as above, dense.	Recovery=20"/24"
SS 6	10-12 23-36	290.8		*Same as above.	Recovery=21"/24"
SS 7	17-34 35-45	288.8		*Same as above, very dense.	Recovery=18"/24"
SS 8	13-23 30-32	286.8	20	Silty Sand (SM) - red, brown, and tan, fine grained, well graded, very dense, subangular, moist, (-HCL)	Recovery=22"/24"
SS 9	22-24 40-34	284.8		Same as above.	Recovery=24"/24"
SS 10	13-14 17-18	282.8	25	Silty Sand (SM) - pink, white, and brown, fine grained, well graded, dense, subangular, moist, (-HCL)	Recovery=24"/24"
SS 11	17-20 18-22	280.8		Same as above.	Recovery=22"/24"
SS 12	17-18 21-21	278.8		Same as above.	Recovery=20"/24"
SS 13	13-20 17-24	276.8	30	Silty Sand (SM) - red, brown, and yellow, medium grained, well graded, dense, subangular, moist, (-HCL)	Recovery=24"/24"
SS 14	18-19 22-24	274.8		Same as above.	Recovery=20"/24"
SS	14-23 24-24	272.8		Same as above.	Recovery=17"/24"

SS = SPLIT SPOON; UD = SHELBY TUBE;
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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. BA-14

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	2 OF 5	BA-14

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
15			270.8				
SS 16		20-16 16-18				Same as above.	Recovery=12"/24"
SS 17		1-8 22-22	268.8			Same as above.	Recovery=24"/24"
SS 18		17-16 17-20	266.8	40		Same as above.	Recovery=24"/24"
SS 19		16-18 15-18	264.8			Same as above.	Recovery=20"/24"
SS 20		14-19 26-35	262.8	45		Same as above.	Recovery=12"/24"
SS 21		18-22 24-28	260.8			Same as above.	Recovery=12"/24"
SS 22		14-18 24-26	258.8			Same as above.	Recovery=20"/24"
SS 23		19-24 42-50/5"	256.8	50		Same as above, very dense.	Recovery=18"/23"
SS 24		28-41 50/4"--	254.8			Same as above.	Recovery=10"/16"
SS 25		30-48 47-48	252.8	55		Same as above.	Recovery=12"/24"
SS 26		42-50/4" ---	250.8			Same as above.	Recovery=10"/10"
SS 27		10-17 14-17	248.8			Same as above, dense.	Recovery=12"/24"
SS 28		10-13 14-13	246.8	60		*Clayey Sand (SC) - red, brown, and yellow, medium dense, medium grained, well graded, subangular, moist, (-HCL)	Recovery=12"/24"
SS 29		8-17 18-20	244.8			*Same as above, dense.	Recovery=18"/24"
SS 30		14-26 35-40	242.8	65		*Same as above, very dense.	Recovery=9"/24"
SS 31		14-28 36-48	240.8			*Poorly Graded Sand with Silt (SP-SM) - red, brown, and yellow, very dense, medium grained, well graded, subangular, moist, (-HCL)	Recovery=11"/24"
SS 32		17-33 28-28	238.8			*Same as above.	Recovery=8"/24"
SS 33		13-15 14-14	236.8	70		*Same as above, medium dense.	Recovery=7"/24"
SS 34		7-9 8-10	234.8			*Elastic Silt (MH) - yellow and tan, low plasticity, very stiff, fine grained, well graded, subrounded, moist, (-HCL)	Recovery=24"/24"
SS		5-9 10-10	232.8			*Same as above.	Recovery=24"/24"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. BA-14

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG	PROJECT	JOB NO.	SHEET NO.	HOLE NO.
	PDCF-SRS	50123-0-4059	3 OF 5	BA-14

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %
20 40 60 80

SAMP. TYPE AND NO.	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
35		230.8			Recovery=24"/24"
SS 36	6-7 10-15			*Same as above.	Recovery=24"/24"
SS 37	9-12 15-20	228.8		*Same as above.	Recovery=24"/24"
SS 38	8-10 11-14	226.8	80	*Same as above, with sand.	Recovery=24"/24"
SS 39	11-13 14-22	224.8		*Same as above.	Recovery=24"/24"
SS 40	9-15 13-15	222.8	85	*Silty Sand (SM) - yellow and tan, coarse grained, well graded, medium dense, subangular, moist, (-HCL)	Recovery=24"/24"
SS 41	16-26 29-29	220.8		Silty Sand (SM) - yellow and tan, coarse grained, well graded, very dense, subangular, moist, (-HCL)	Recovery=24"/24"
SS 42	16-20 22-24	218.8		Same as above, dense.	Recovery=19"/24"
SS 43	12-21 20-21	216.8	90	Same as above.	Recovery=15"/24"
SS 44	19-24 38-33	214.8		Same as above, very dense.	Recovery=18"/24"
SS 45	15-20 21-27	212.8	95	Same as above, dense.	Recovery=14"/24"
SS 46	14-23 30-28	210.8		Same as above, very dense.	Recovery=9"/24"
SS 47	11-11 14-19	208.8		Same as above, medium dense.	Recovery=13"/24"
SS 48	22-22 15-20	206.8	100	Same as above, dense.	Recovery=24"/24"
SS 49	9-14 13-17	204.8		Same as above, medium dense.	Recovery=24"/24"
SS 50	10-24 24-24	202.8	105	Same as above, dense.	Recovery=19"/24"
SS 51	16-16 18-19	200.8		Same as above, dense.	Recovery=15"/24"
SS 52	11-9 6-5	198.8		*Poorly Graded Sand with Silt (SP-SM) - yellow and tan, coarse grained, well graded, medium dense, subangular, moist, (-HCL)	Recovery=16"/24"
SS 53	6-7 10-15	196.8	110	Silty Sand (SM) - white and tan, fine grained, well graded, medium dense, subangular, moist, (-HCL)	Recovery=24"/24"
SS 54	7-17 19-30	194.8		Same as above, dense.	Recovery=24"/24"
SS	2-23 47-50/2"	192.8		Silty Sand (SM) - white and tan, very coarse grained,	Recovery=8"/20"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. BA-14

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG	PROJECT	JOB NO.	SHEET NO.	HOLE NO.
	PDCF-SRS	50123-0-4059	4 OF 5	BA-14

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	20 40 60 80	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
55				190.8			well graded, very dense, subangular, moist, contains shell fragments, (+HCL)	
SS 56			23-50/3" ---				Same as above.	Recovery=9"/9"
				188.8				
SS 57			42-50/4" ---				Same as above.	Recovery=10"/10"
				186.8	120			
SS 58		○ ▲	29-24 30-29				Same as above.	Recovery=24"/24"
				184.8				50% water loss reported by driller.
SS 59			21-50/6" ---				Same as above.	Recovery=12"/12"
				182.8				
SS 60		▲	43-46 33-50/4"		125		Same as above.	Recovery=21"/22"
				180.8				
SS 61		▲	20-36 27-50/5"				Same as above.	Recovery=23"/23"
				178.8				
SS 62		○ ▲	10-36 31-30				*Same as above, with gravel.	Recovery=24"/24"
				176.8	130			
SS 63		▲	37-37 43-32				*Same as above.	Recovery=24"/24"
				174.8				
SS 64			44-50/2" ---				*Same as above.	Recovery=8"/8"
				172.8				
SS 65			33-28 50/4"--		135		*Same as above.	Recovery=8"/16"
				170.8				
SS 66			33-32 50/5"--				*Same as above.	Recovery=17"/17"
				168.8				
SS 67		○ ▲	21-26 28-48				*Same as above.	Recovery=24"/24"
				166.8	140			
SS 68		▲	12-31 26-50/3"				Silty Sand (SM) - white and tan, fine grained, well graded, very dense, subangular, moist, (+HCL)	Recovery=21"/21"
				164.8				
SS 69		▲	13-31 34-50/3'				Same as above.	Recovery=21"/21"
				162.8				
SS 70		+ ⊕	24-33 50/6"--		145		*Clayey Sand (SC) - white and tan, low plasticity, fine grained, well graded, very dense, subrounded, moist, (+HCL)	Recovery=18"/18"
				160.8				
SS 71			34-50/2" ---				*Same as above.	Recovery=8"/8"
				158.8				
SS 72			23-32 50/5"--				Silty Sand (SM) - tan and light green, fine grained, well graded, very dense, subangular, moist, contains shell fragments, (+HCL)	Recovery=17"/17"
				156.8	150			
SS 73			50/2"-- ---				Same as above.	Recovery=2"/2"
				154.8				
SS 74			46-49 50/3"--				Same as above.	Recovery=4"/15"
				152.8				
SS			21-50/5" ---				Same as above.	Recovery=11"/11"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. BA-14

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	5 OF 5	BA-14

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %
20 40 60 80

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
75			150.8				
SS 76	☒	▲ 50/6"-- ---				Same as above.	Recovery=6"/6"
			148.8				
SS 77	☒	▲ 50/2"-- ---				Same as above.	Recovery=2"/2"
			146.8	160			
SS 78	☒	▲ 50/2"-- ---				Silty Sand (SM) - light green, medium grained, very dense, well graded, subangular, moist, (+HCL)	Recovery=2"/2"
			144.8				
SS 79	☒	16-18 26-48				*Sandy Silt (ML) -dark green and gray, low plasticity, fine grainded, well graded, hard, subrounded, moist, (-HCL)	Recovery=24"/24" "Green Clay" at 162 feet.
			142.8				
SS 80	☒	22-25 31-50/1"		165		*Same as above.	Recovery=19"/19"
			140.8				
SS 81	☒	16-31 36-50/4"				Silty Sand (SM) - light green and gray, fine grained, well graded, very dense, subangular, moist, (-HCL)	Recovery=22"/22" Top of Congaree Formation at 166 feet.
			139.0				
						Boring Terminated at 167.8 feet. Drilled with bentonite drilling mud. Hole abandoned per 3Q5 requirements.	

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-14**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	1 OF 5	BA-15

SITE	COORDINATES	ANGLE FROM HORIZONTAL
PDCF-SRS	N 78217 E 55442	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH
10/10/2000	10/13/2000	R. Banks/LAW	CME-55	3 7/8 inches	140 lbs/30 inches	179.2

GROUND EL.	DEPTH/EL. GROUND WATER	LOGGED BY:
310.0	▽ / ▼ /	Jason Suber/LAW

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %
20 40 60 80

SAMP. TYPE AND NO.	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
AU		310.0		Silty Sand (SM) - gray, fine grained, poorly graded, subangular, -HCl.	Hand augered to 6 feet to check for interferences.
		306.0	5	Silty Sand (SM) - yellow, tan, fine grained, poorly graded, subrounded, -HCL.	
SS 1	4-7 17-12	304.0		Silty Sand (SM) - orange, tan, fine grained, poorly graded, subrounded, medium dense, HCl.	Recovery=24"/24"
SS 2	6-8 20-25	302.0		Clayey Sand (SC) - red, brown, tan, fine grained, poorly graded, subrounded, contains silt, -dense, HCl.	Recovery=24"/24"
SS 3	20-21 28-30	300.0	10	*Silty Sand (SM) - orange, brown, tan, well graded, subangular, fine grained, dense, -HCl.	Recovery=24"/24"
SS 4	13-35 28-31	298.0		*Silty Sand (SM) - orange, brown, tan, fine to very coarse grained, subangular, very dense, -HCl.	Recovery=24"/24"
SS 5	16-20 28-34	296.0	15	*Same as above, dense.	Recovery=24"/24"
SS 6	15-17 24-32	294.0		*Same as above.	Recovery=24"/24"
SS 7	8-15 27-36	292.0		*Silty Sand (SM) - purple, yellow, tan, fine to very coarse grained, well graded, subangular, dense, -HCl.	Recovery=24"/24"
		290.0	20		
SS 8	10-16 25-21	284.0	25	Clayey Sand (SC) - purple, tan, fine to very coarse grained, well graded, subangular, dense, -HCl.	Recovery=22"/24"
SS 9	15-19 20-23	279.0	30	Silty Sand (SM) - yellow, tan, white, fine to very coarse, well graded, subangular, QTZ fragments, dense, -HCl.	Recovery=18"/24"
SS	22-21 32-36			Silty Sand (SM) - yellow, tan, fine to coarse grained,	Recovery=14"/24"

SS = SPLIT SPOON; UD = SHELBY TUBE;
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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-15**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	2 OF 5	BA-15

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %
20 40 60 80

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
10	X		274.0			well graded, subangular, very dense, -HCl.	
SS 11	X	22-19 22-23	269.0	40		Same as above, dense.	Recovery=19"/24"
SS 12	X	19-19 20-25	264.0	45		Silty Sand (SM) - yellow, tan, fine to medium grained, well graded, subangular, dense, -HCl.	Recovery=24"/24"
SS 13	X	18-25 25-33	259.0	50		Same as above.	Recovery=20"/24"
SS 14	X	19-21 31-34	254.0	55		Silty Sand (SM) - yellow, tan, red, brown, fine to medium grained, well graded, subangular, very dense, -HCl.	Recovery=21"/24"
SS 15	X	16-21 19-28	249.0	60		Silty Sand (SM) - yellow, tan, fine to medium, well graded, subangular, dense, -HCl.	Recovery=20"/24"
SS 16	X	16-22 23-22	244.0	65		Same as above.	Recovery=20"/24"
SS 17	X	18-23 22-29	239.0	70		Silty Sand (SM) - red, brown, tan, fine to medium, well graded, subangular, dense, -HCl.	Recovery=12"/24"
SS	X	30-32 35-50				Same as above, very dense.	Recovery=17"/24"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-15**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	3 OF 5	BA-15

▲ N-VALUE (SPT)
O WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
18	X		234.0				
SS 19	X	116 35-53 63-75	229.0	80		Silty Sand (SM) - yellow, tan, fine to medium grained, poorly graded, subangular, very dense, -HCl.	Recovery=13"/24"
SS 20	X	27-34 40-44	224.0	85		Same as above.	Recovery=12"/24"
SS 21	X	9-9 14-16	219.0	90		*Fat Clay with Sand (CH) - poorly graded, subangular, very stiff, -HCl.	Recovery=24"/24"
SS 22	X	10-9 12-14	214.0	95		*Same as above.	Recovery=24"/24"
SS 23	X	30-42 43-39	209.0	100		Silty Sand (SM) - yellow, tan, fine to medium grained, poorly graded, subangular, very dense, -HCl.	Recovery=9"/24"
SS 24	X	10-12 15-18	204.0	105		Same as above, medium dense.	Recovery=24"/24"
SS 25	X	20-30 30-33	199.0	110		Same as above, very dense.	Recovery=17"/24"
SS	X	17-14 20-24				Same as above, dense.	Recovery=24"/24"

SS = SPLIT SPOON; UD = SHELBY TUBE;
PS = STATIONARY PISTON; AU= HAND AUGER CUTTINGS

SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. BA-15

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	4 OF 5	BA-15

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %
20 40 60 80

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
26	X		194.0				
SS 27	X	24-33 30-37	189.0	120		Same as above, very dense.	Recovery=18"/24"
SS 28	X	14-24 20-22	184.0	125		Lean Clay with Sand (CL) - tan, fine grained, well graded, subangular, hard, -HCl.	Recovery=24"/24"
SS 29	X	98-100/3"	179.0	130		Lean Clay with Sand (CL) - white, tan, fine grained, well graded, subangular, QTZ fragments, hard, +HCl.	Recovery=9"/9"
SS 30	X	50-100/5"	174.0	135		Same as above.	Recovery=11"/11"
SS 31	X	56-100/4"	169.0	140		Same as above.	Recovery=10"/10"
SS 32	X	151 69-68 83-98	164.0	145		Silty Sand (SM) - white, gray, fine grained, poorly graded, subangular, very dense, +HCl.	Recovery=24"/24"
SS 33	X	30-50/5"	159.0	150		Clayey Sand (SC) - white, gray, fine grained, poorly graded, subangular, very dense, +HCl.	Recovery=11"/11"
SS	X	31-38 50/4"				Same as above.	Recovery=16"/16"

SS = SPLIT SPOON; UD = SHELBY TUBE;
PS = STATIONARY PISTON; AU= HAND AUGER CUTTINGS

SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-15**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	5 OF 5	BA-15

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
34			154.0				
SS 35		33-50/6"	149.0	160		Same as above.	Recovery=12"/12"
SS 36		43-50/5"	144.0	165		Same as above.	Recovery=2"/11"
							"Green Clay" at 167 feet.
SS 37		27-26 30-50/5"	139.0	170		*Clayey Sand (SC) - green, gray, poorly graded, fine grained, very dense, moist, -HCl.	Recovery=24"/24"
SS 38		45-50/3"	134.0	175		*Silty Sand (SM) - green, gray, medium grained, subangular, very dense, -HCl.	Recovery=9"/9"
SS 39		50/2"	130.8			Poorly Graded Sand (SP) - light brown, coarse grained, subangular, very dense, -HCl. Boring Terminated at 179.2 feet. Drilled with bentonite drilling mud. Hole abandoned per 3Q5 requirements.	Recovery=1"/2" Top of Comgaree Formation at 179 feet.

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-15**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG	PROJECT	JOB NO.	SHEET NO.	HOLE NO.
	PDCF-SRS	50123-0-4059	1 OF 5	BA-16

SITE	COORDINATES	ANGLE FROM HORIZONTAL
PDCF-SRS	N 78246 E 55659	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH
10/16/2000	10/18/2000	R. Banks/LAW	CME-55	3 7/8 inches	140 lbs/30 inches	164.9

GROUND EL.	DEPTH/EL. GROUND WATER	LOGGED BY:
301.5	/ /	Jason Suber/LAW

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
AU			301.5			Silty Sand (SM) - gray, tan, and orange-brown, fine grained, poorly graded, subangular, (-HCL)	Hand Augered to 6 feet to check for interferences.
SS 1		11-18 32-40	295.5	5		*Clayey Sand (SC) - gray, tan, and orange-brown, fine grained, poorly graded, subangular, dense to very dense (-HCL).	Recovery=24"/24"
SS 2		34-30 38-45	293.5			*Same as above.	Recovery=20"/24"
SS 3		18-22 40-49	291.5	10		*Same as above.	Recovery=20"/24"
SS 4		30-30 46-50	289.5			Silty Sand (SM) - orange, brown, and white, medium grained, poorly graded, subangular, quartz fragments, very dense (-HCL)	Recovery=24"/24"
SS 5		5-17 34-43	287.5	15		Silty Sand (SM) - orange, brown, and purple, coarse grained, poorly graded, subangular, quartz fragments, very dense (-HCL)	Recovery=24"/24"
SS 6		18-24 26-30	285.5			Same as above.	Recovery=21"/24"
SS 7		22-24 33-38	283.5			Same as above.	Recovery=22"/24"
			281.5	20			
SS 8		13-12 14-16	275.5	25		Silty Sand (SM) - orange, brown, and yellow-tan, medium grained, well graded, subangular, quartz fragments, medium dense to dense (-HCL)	Recovery=22"/24"
SS 9		14-20 20-20	270.5	30		Same as above.	Recovery=21"/24"
SS		10-13 16-17				Same as above, yellow-tan, medium dense.	Recovery=21"/24"

SS = SPLIT SPOON; UD = SHELBY TUBE;
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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. BA-16

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG	PROJECT PDCF-SRS	JOB NO. 50123-0-4059	SHEET NO. 2 OF 5	HOLE NO. BA-16

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
10			265.5				
SS 11		18-17 18-18	260.5	40		Same as above, purple and tan, dense.	Recovery=21"/24"
SS 12		13-11 12-15	255.5	45		*Clayey Sand (SC) - purple and tan, well graded, subangular, QTZ, medium dense, -HCl.	Recovery=21"/24"
SS 13		16-19 20-22	250.5	50		Silty Sand (SM) - purple, white, and tan, fine grained, poorly graded, subangular, dense to very dense (-HCL)	Recovery=22"/24"
SS 14		21-23 30-32	245.5	55		Same as above.	Recovery=14"/24"
SS 15		16-16 17-15	240.5	60		Same as above, purple, white and tan, dense.	Recovery=20"/24"
SS 16		10-11 8-14	235.5	65		Same as above, light brown, medium dense.	Recovery=24"/24"
SS 17		22-32 40-42	230.5	70		Same as above, light brown, very dense.	Recovery=12"/24"
SS		22-26 29-32				Silty Sand (SM) - red-brown, medium grained,	Recovery=12"/24"

SS = SPLIT SPOON; UD = SHELBY TUBE;
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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. BA-16

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	3 OF 5	BA-16

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %
20 40 60 80

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
18			225.5			poorly graded, subangular, very dense (-HCL)	
SS 19		8-7 8-15	220.5	80		*Well Graded Sand with Clay (SW-SC) - red-brown, medium grained, poorly graded, subangular, medium dense (-HCL)	Recovery=16"/24"
SS 20		12-13 12-12	215.5	85		*Fat Clay (CH) - yellow-tan, fine grained, poorly graded, subrounded, very stiff (-HCL)	Recovery=24"/24"
SS 21		6-8 10-10	210.5	90		Clayey Sand (SC) - tan, fine grained, poorly graded, subrounded, very stiff (-HCL)	Recovery=24"/24"
SS 22		9-12 10-13	205.5	95		Same as above.	Recovery=24"/24"
							End Drilling Activities 10/16/00 - 1700 hrs.
SS 23		16-27 28-26	200.5	100		Silty Sand (SM) - tan, fine grained, poorly graded, subangular, very dense (-HCL)	Recovery=24"/24"
SS 24		19-14 17-16	195.5	105		Silty Sand (SM) - yellow, tan, and light brown, medium grained, well graded, subangular, dense (-HCL)	Recovery=24"/24"
SS 25		9-8 12-17	190.5	110		Same as above.	Recovery=24"/24"
SS		22-21 22-25	186.5			Same as above.	Recovery=11"/24"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-16**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	4 OF 5	BA-16

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	20 40 60 80	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
26	X							
SS 27	X	▲ ○	1-1 0-0		120		*Poorly Graded Sand with Silt (SP-SM) - red-brown, medium grained, poorly graded, subangular, very loose (-HCL). (Blow Counts=1,1,WH/12")	Recovery=24"/24" Began losing drilling mud at 119 feet.
SS 28	X		▲ 48-50/3" -	180.5 178.5			Silty Sand (SM) - tan and white, fine grained, well graded, subangular, very dense, quartz fragments, trace clay, (+HCL)	Recovery=9"/9" Possible "Soft Zone" from 120 to 121 feet.
SS 29	X		▲ 30-50/3" -	175.5	125		Silty Sand (SM) - tan, medium grained, well graded, subangular, very dense (-HCL)	Recovery=9"/9"
SS 30	X	⊕+ ▲	8-17 34-50	170.5	130		*Poorly Graded Sand with Silt (SP-SM) -tan, medium grained, well graded, subangular, very dense (-HCL).	Recovery=24"/24"
SS 31	X	▲	13-27 26-29	165.5	135		*Same as above.	Recovery=24"/24"
SS 32	X	○ ▲	18-23 30-43	160.5	140		Silty Sand (SM) - tan, medium grained, well graded, subangular, very dense (-HCL)	Recovery=24"/24"
SS 33	X		▲ 17-27 50/4"	155.5	145		Same as above.	Recovery=16"/16"
SS 34	X	▲	19-32 48-48	150.5	150		Same as above.	Recovery=24"/24"
SS	X	○	▲ 20-50/2" -				Same as above.	Recovery=8"/8"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-16**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	5 OF 5	BA-16

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %
20 40 60 80

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
35			145.5				Boring caved to 95 feet overnight.
SS 36	X	20-25 30-28	140.5	160		*ELASTIC SILT WITH SAND (MH) - green and gray, fine grained, poorly graded, subrounded, hard (-HCL)	Recovery=24"/24" "Green Clay" @ 159 feet.
SS 37	X	32-50/5" -	136.6			*Poorly Graded Sand with Silt (SP-SM) - gray, medium grained, well graded, subangular,very dense (-HCL) Boring Terminated at 164.9 feet Drilled with bentonite drilling mud Hole Abandoned per 3Q5 Requirements	Recovery=24"/11" Congaree Formation @ 164 feet.

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-16**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG	PROJECT	JOB NO.	SHEET NO.	HOLE NO.
	PDCF-SRS	50123-0-4059	1 OF 5	BA-34UD

SITE	COORDINATES	ANGLE FROM HORIZONTAL
PDCF-SRS	N 78514 E 55974	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH
4/4/2001	4/5/2001	R.Banks/LAW	CME-55	3 7/8 inches	140 lbs/30 inches	163.7

GROUND EL.	DEPTH/EL. GROUND WATER	LOGGED BY:
301.6	▽ / ▼ /	Matt Cooke/LAW

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ WATER CONTENT % + ATT. LIMITS % (20 40 60 80)	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
				301.6				
					5			
					10			
					15			
UD 1	■	○+ +					SILTY SAND (SM) - tan, red, poorly graded, fine to medium grained, subangular, moist, -HCl.	Gross Recovery=15" Net Recovery=12.5" Only pushed UD-1 12"; drill out and push UD-1A 19-21 feet.
				282.6				
UD 1A	■				20		*SILTY SAND (SM) - tan, poorly graded, fine grained, subrounded to subangular, moist, -HCl.	Gross Recovery=21.5" Net Recovery=18"
				280.6				
					25			
					30			

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. BA-34UD

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	2 OF 5	BA-34UD

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	20 40 60 80	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
UD 2				264.6			SILTY SAND (SM) - red, fine to medium grained, poorly graded, subangular, moist, -HCl.	Gross Recovery=25" Net Recovery=24"
					40			
UD 3				258.6			*CLAYEY SAND (SC) - tan, white, fine grained.	Gross Recovery=26" Net Recovery=24"
					45			
					50			
					55			
UD 4				242.6			*Same as above, red, medium grained.	Gross Recovery=25" Net Recovery=23"
					60			
					65			
UD 5				232.3			*FAT CLAY (CH) - gray, tan, high plasticity, dry, -HCl.	Gross Recovery=28" Net Recovery=27"
					70			Lost circulation at 70 feet.

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-34UD**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	3 OF 5	BA-34UD

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	N-VALUE / WATER CONTENT / ATT. LIMITS (20 40 60 80)	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
UD 6							*CLAYEY SAND (SC) - gray, poorly graded, medium grained, QTZ sand, moist, -HCl.	Gross Recovery=20" Net Recovery=17"
				222.6				
UD 6A					80		Same as above.	Gross Recovery=18" Net Recovery=17"
				220.6				
					85			
UD 7							*POORLY GRADED SAND WITH SILT (SP-SM) - white, gray, poorly graded, medium grained, subangular, moist, -HCl.	Gross Recovery=26" Net Recovery=23.5"
				212.6				
					90			
					95			
					100			
UD 8							*SILTY SAND (SM) - brown, poorly graded, fine to medium grained, subangular, QTZ, black staining, moist, -HCl.	Gross Recovery=27" Net Recovery=24"
				196.6	105			
UD 9							*POORLY GRADED SAND (SP) - fine to medium grained, subrounded to subangular, QTZ, moist, -HCl.	Gross Recovery=26" Net Recovery=23"
				192.6				
					110			

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-34UD**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	4 OF 5	BA-34UD

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

20 40 60 80

SAMP. TYPE AND NO.	ELEVATION IN FEET	DEPTH IN FT	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
UD 10	184.6		CLAYEY SAND (SC) - brown, tan, poorly graded, medium grained, subangular, QTZ, moist, -HCl.	Gross Recovery=19" Net Recovery=17"
		120		
UD 11	176.6	125	SILTY SAND WITH GRAVEL (SM) - gray, white, poorly graded, subangular, calcareous sand, cemented zones, moist, +HCl.	Gross Recovery=19" Net Recovery=17"
UD 12	170.6	130	*POORLY GRADED SAND (SP) - gray, fine grained, subrounded, calcareous sand, wet, +HCl.	Gross Recovery=26" Net Recovery=13.5"
		135		
UD 13	162.6		No Recovery	Gross Recovery=0" Net Recovery=0"
UD 13A	160.6	140	No Recovery	Gross Recovery=0" Net Recovery=0"
UD 13B	158.1		No Recovery	Gross Recovery=0" Net Recovery=0" Pushed UD-13B extra 6".
UD 13C	156.1	145	SILTY SAND WITH GRAVEL (SM) - gray, poorly graded, medium grained, subangular, calcareous sand, moist, +HCl.	Gross Recovery=24" Net Recovery=20"
		150		
UD 14	148.6		CLAYEY SAND (SC) - light green, brown, poorly graded, very fine to fine grained, subangular to subrounded, moist, -HCl.	Gross Recovery=27" Net Recovery=24"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-34UD**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG	PROJECT PDCF-SRS	JOB NO. 50123-0-4059	SHEET NO. 5 OF 5	HOLE NO. BA-34UD

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ WATER CONTENT % + ATT. LIMITS % (20 40 60 80)	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
					160			
UD 15	■			137.9			Tube sheared off bolts and broke off in bottom of hole. Abandon hole with tube in place. Boring Terminated at 163.67 feet. Hole abandoned per 3Q5 requirements. Hole drilled with bentonite drilling mud.	Gross Recovery=0" Net Recovery=0"

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-34UD**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG	PROJECT	JOB NO.	SHEET NO.	HOLE NO.
	PDCF-SRS	50123-0-4059	1 OF 4	BA-35UD

SITE	COORDINATES	ANGLE FROM HORIZONTAL
PDCF-SRS	N 79166 E 55785	Vertical

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH
4/2/2001	4/5/2001	W. Melvin/LAW	CME-55	5 inches	140 lbs/30 inches	133.2

GROUND EL.	DEPTH/EL. GROUND WATER	LOGGED BY:
276.0	/ /	M. Chiru-Danzer/LAW

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ WATER CONTENT % + ATT. LIMITS % (20 40 60 80)	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
				276.0				
					5			
					10			
UD 1							No recovery	
				262.0				
UD 1A							No recovery	
					15			
				260.0				
UD 1B		○+ —+					*CLAYEY SAND (SC); red tan, poorly graded, fine to medium gradation, subangular, QTZ.	
				258.0				
					20			
UD 2		○++					*SILTY SAND (SM); tan, light tan, white, poorly graded, fine to medium, subangular, QTZ.	
				252.0				
					25			
					30			
UD 3		○					*SILTY SAND (SM); tan, poorly graded, fine to medium, subrounded to subangular, QTZ, wet.	
				244.0				

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SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-35UD**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	2 OF 4	BA-35UD

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) / ○ WATER CONTENT % / + ATT. LIMITS % (20 40 60 80)	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
UD 4		○		238.0			*POORLY GRADED SAND WITH SILT (SP-SM); tan, poorly graded, fine to medium, subrounded to subangular, QTZ, wet.	
					40			
					45			
UD 5		○		226.0			*POORLY GRADED SAND WITH SILT (SP-SM); poorly graded, fine to coarse, subangular to subrounded, QTZ, wet, -HCl.	
UD 5A				224.0	50		*Same as above.	
					55			
					60			
UD 6		+ 108 ○		213.0			SILTY SAND (SM); light tan, poorly graded, fine gradation, subrounded to subangular, QTZ.	
				212.0			FAT CLAY (CH); light tan yellow, high plasticity.	
					65			
UD 7		+ ○		206.0			FAT CLAY (CH); light tan yellow, high plasticity.	
					70			
UD 8		+ 105 ⊕		203.0			*FAT CLAY WITH SAND (CH); tan light tan, medium to high plasticity, wet.	
				202.0			FAT CLAY (CH); light tan light green, medium to high plasticity, wet.	

SS = SPLIT SPOON; UD = SHELBY TUBE;
PS = STATIONARY PISTON; AU= HAND AUGER CUTTINGS

SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-35UD**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG	PROJECT	JOB NO.	SHEET NO.	HOLE NO.
	PDCF-SRS	50123-0-4059	3 OF 4	BA-35UD

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ WATER CONTENT % + ATT. LIMITS % (20 40 60 80)	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
UD 9		○		199.0			*POORLY GRADED SAND WITH SILT (SP-SM); tan light pink, poorly graded, fine gradation, subrounded, wet.	
				198.0			POORLY GRADED SAND WITH SILT (SP-SM); yellow light tan, poorly graded, fine to medium, subangular, wet.	
					80			
					85			
UD 10		○		185.0	90		*SILTY SAND WITH GRAVEL (SM); light tan, well graded, fine to coarse gradation, subrounded, QTZ, wet.	
				184.0			*SILTY SAND WITH GRAVEL (SM); white light tan, well graded sand and gravel-sized particles of strongly cemented carbonaceous materials.	
					95			
UD 11		○		178.0			*POORLY GRADED SAND WITH SILT (SP-SM); light tan, poorly graded, fine, subrounded, QTZ, wet.	
					100			
					105			
UD 12		⊖+		169.0			*CLAYEY SAND WITH GRAVEL (SC); light tan, poorly graded, fine, subrounded, QTZ, wet.	
				168.0			*CLAYEY SAND WITH GRAVEL (SC); light tan white, poorly graded, fine to medium gradation, subangular, QTZ/CARB., with gravel-sized particles of carb. materials.	
					110			

SS = SPLIT SPOON; UD = SHELBY TUBE;
PS = STATIONARY PISTON; AU= HAND AUGER CUTTINGS

SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-35UD**

LAW
LAWGIBB Group Member

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
PDCF-SRS	50123-0-4059	4 OF 4	BA-35UD

▲ N-VALUE (SPT)
○ WATER CONTENT %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	N-VALUE / WATER CONTENT / ATT. LIMITS (20 40 60 80)	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION (* = field classification adjusted based on laboratory testing data and/or re-examination of sample by field geologist/engineer)	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
UD 13				157.0			*CLAYEY SAND (SC); light tan light green, well graded, fine to coarse gradation, subangular, w/gravel-sized particles of carbonaceous materials	
				156.0	120		Same as above; no gravel	
					125			
UD 14				148.0			*SANDY SILT (ML); yellow light tan, poorly graded, fine, subrounded, wet.	
					130			
UD 15				142.8			SILTY SAND (SM); dark green dark gray, poorly graded, fine to medium gradation, subrounded to subangular, GLAUCONITE, wet. Boring terminated at 133.2 feet as per 3Q5 requirements.	

SS = SPLIT SPOON; UD = SHELBY TUBE;
PS = STATIONARY PISTON; AU= HAND AUGER CUTTINGS

SITE Pit Disassembly and Conversion Facility
FINAL LOG

HOLE NO. **BA-35UD**

8/1/07 86 of 115

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
Northeast Expansion	NEX	1 OF 3	FB-20

SITE	COORDINATES	ANGLE FROM HORIZONTAL
APSF-NE	N 78642 E 55518	90

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH
4/29/98	5/13/98	J Corbitt/Graves	Failing 1500	3 7/8 in	140 lb/30 in	112.7

GROUND EL.	DEPTH/EL. GROUND WATER	LOGGED BY:
301.4	▽ / ▼ /	C. Rothammer/WSRC

▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS % (20 40 60 80)

SAMP. TYPE AND NO.	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	DESCRIPTION AND CLASSIFICATION
		301.4		
SS 1	9-11-14	293.9	5	SILTY SAND (SM); with clay; medium reddish brown; medium dense; wet; subangular; poorly graded; fine to medium grained, lithic fragments
SS 2	7-10-15	292.4		CLAYEY SAND (SC); dark yellowish brown and red with tan; medium dense; moist; subangular; poorly graded; fine to medium grained
SS 3	9-21-31	290.9	10	CLAYEY SAND WITH GRAVEL (SC); very dense; same as above
SS 4	18-31-40	289.4		CLAYEY SAND (SC); dark brownish yellow with tan; very dense; moist; subangular; poorly graded; fine to medium grained, lithic fragments
SS 5	24-17-14	287.9		CLAYEY SAND WITH GRAVEL (SC); medium purple, orange, and yellow; dense; moist; subangular; well graded; fine to medium grained
SS 6	6-12-16	286.4		SANDY FAT CLAY (CH); medium purple with white; very stiff; moist; high plasticity
SS 7	6-11-19	284.9	15	CLAYEY SAND WITH GRAVEL (SC); medium white, yellow, orange, and purple; medium dense; wet; subangular; well graded; fine to coarse grained
SS 8	10-14-30	283.4		SILTY SAND (SM) with clay; medium reddish brown; dense; wet; subangular; poorly graded; fine to medium sand
SS 9	10-15-17	281.9		same as above; reddish brown with yellow
SS 10	7-12-17	280.4	20	same as above; medium dense
SS 11	12-23-20	278.9		same as above; dense
SS 12	12-18-17	277.4		POORLY GRADED SAND WITH SILT (SP-SM); medium brownish red; dense; wet; subangular; poorly graded; fine to medium grained
SS 13	11-15-22	275.9	25	CLAYEY SAND (SC); medium brownish red with white; dense; wet; subangular; poorly graded; fine to medium grained
SS 14	15-19-21	274.4		POORLY GRADED SAND WITH SILT (SP-SM); medium brownish red, yellow, and orange; dense; wet; subangular; poorly graded; fine to medium grained
SS 15	12-14-18	272.9		SILTY SAND (SM); medium brownish red, white, and yellow; banded; dense; moist; subangular; poorly graded; fine to very fine grained
SS 16	10-18-21	271.4		same as above; light reddish brown and red
SS 17	17-19-21	269.9	30	same as above; light brown with yellow and orange; subrounded; well graded; fine to medium grained
SS 18	11-14-16	268.4		same as above; with clay; medium red, white, yellow, purple, and orange; some mottling; medium dense; subangular; poorly graded
SS 19	10-17-21	266.9		same as above; dense

NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING

Hand auger to 6 feet to check for underground interferences and then switch to mud rotary.

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER

SITE: FINAL LOG

HOLE NO. FB-20

8/1/07 87 of 115

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
Northeast Expansion	NEX	2 OF 3	FB-20

▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %

SAMP. TYPE AND NO.	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 20	16-18-28	265.4		same as above; dark brownish red with white and yellow	
SS 21	10-16-18	263.9		same as above; with clay; dark red with yellow	
SS 22	14-14-19	262.4		same as above; dark red, white, and yellow	
SS 23	9-19-22	260.9	40	same as above	
SS 24	15-16-16	259.4		same as above; medium brownish yellow with red and white	
SS 25	12-19-25	257.9		CLAYEY SAND (SC); medium brownish yellow with white; dense; moist; subangular; poorly graded; fine to medium grained	
SS 26	9-16-19	256.4	45	SILTY SAND (SM) with clay; medium dark red, white, and yellow; mottled; dense; moist; subangular; poorly graded; fine to medium grained	
SS 27	14-15-26	254.9		CLAYEY SAND (SC); medium dark red, white, and yellow; mottled; dense; moist; subangular; poorly graded; fine to medium grained	
SS 28	20-22-26	253.4		same as above; dark red; wet; trace coarse sand	
SS 29	19-30-26	251.9		SILTY SAND (SM); dark red, white, yellow, and purple; very dense; wet; subangular; poorly graded; fine to medium grained, trace coarse sand	
SS 30	12-20-27	250.4	50	POORLY GRADED GRAVEL WITH SILT (GP-GM); medium red, yellow, and tan; dense; wet; subangular; poorly graded; fine to coarse grained	
SS 31	6-15-25	248.9		POORLY GRADED SAND WITH SILT (SP-SM); medium reddish brown with yellow; dense; wet; subrounded; poorly graded; fine to medium grained, trace gravel	
SS 32	10-10-6	247.4		CLAYEY SAND (SC); medium brownish white and yellow; mottled; medium dense; moist; subangular; well graded; fine to coarse grained	
SS 33	8-10-10	245.9	55	SILTY SAND (SM) with clay; medium brownish red; medium dense; moist; subangular; well graded; fine to medium grained	
SS 34	6-10-12	244.4		same as above; medium brownish yellow	
SS 35	16-20-23	242.9		WELL GRADED SAND WITH SILT (SW-SM); medium orange; dense; wet; subrounded; well graded; fine to coarse grained	
SS 36	6-6-8	241.4		CLAYEY SAND (SC); medium brownish orange with white; medium dense; wet; subangular; well graded; fine to coarse grained	
SS 37	3-8-13	239.9	60	SILTY SAND (SM) with clay; medium brownish yellow; medium dense; wet; subangular; well graded; fine to coarse grained	
SS 38	16-20-18	238.4		POORLY GRADED SAND WITH SILT (SP-SM); medium brownish orange; dense; wet; angular; poorly graded; fine to coarse grained	
SS 39	19-21-26	236.9		no recovery	Catcher broken
SS 40	12-20-22	235.4	65	SILTY SAND (SM); medium orange; dense; moist; subangular; poorly graded; fine to medium grained	
SS 41	10-11-24	233.9		CLAYEY SAND (SC); medium brownish orange; dense; moist; subangular; poorly graded; fine to medium grained	
SS 42	17-28-34	232.4		SILTY SAND (SM) with clay; medium brownish orange with pink and white; very dense; wet; subangular; well graded; fine to coarse grained, lenses of moist clayey sand	
SS 43	10-26-28	230.9	70	POORLY GRADED SAND WITH SILT (SP-SM); medium brownish orange with medium gray; very dense; wet; subangular; poorly graded; medium to coarse grained	
SS 44	10-11-21	229.4		SILTY SAND (SM); medium brownish orange; dense; wet; subangular; poorly graded; fine to medium grained	
SS 45	21-24-12	227.9		no recovery	
SS 46	13-13-13	226.4		CLAYEY SAND (SC); medium brownish orange; medium dense; moist; subangular; well graded; fine to coarse	

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. **FB-20**

8/1/07 88 115

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
Northeast Expansion	NEX	3 OF 3	FB-20

▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS % (20, 40, 60, 80)

SAMP. TYPE AND NO.	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 47	6-10-10			grained, trace gravel	
		224.9		same as above; with silt; medium brownish yellow with black; wet; lithic fragment; Mn present; lenses of fat clay	
SS 48	12-21-22			SANDY LEAN CLAY (CL); medium brownish yellow with white, black, and brown; mottled; hard; moist; medium plasticity; Mn present	
		223.4			
SS 49	7-10-15			same as above; with orange and tan zones; very stiff; lenses of fat clay	
		221.9			
SS 50	19-16-10		80	FAT CLAY (CH); light yellowish brown with black streaks; very stiff; moist; high plasticity	
		220.4			
SS 51	10-17-21			CLAYEY SAND (SC); medium yellowish brown with black, white, and brown; mottled; dense; moist; subangular; poorly graded; fine to medium grained, Mn present, clay lenses	
		218.9			
SS 52	13-19-22			same as above; with silt; wet	
		217.4			
SS 53	17-19-22			SILTY SAND (SM) with clay; medium yellowish brown; dense; wet; subangular; poorly graded; fine to medium grained	
		215.9	85		
SS 54	10-15-20			CLAYEY SAND (SC); medium yellowish brown; dense; wet; subangular; poorly graded; fine to medium grained	
		214.4			
SS 55	18-7-10			POORLY GRADED SAND WITH CLAY (SP-SC); medium brownish orange; medium dense; wet; subangular; poorly graded; fine to medium grained, trace gravel	
		212.9			
SS 56	14-24-36			WELL GRADED SAND WITH CLAY (SW-SC); medium brownish orange; very dense; wet; subangular; well graded; fine to coarse grained	
		211.4	90		
SS 57	29-15-14			POORLY GRADED SAND WITH SILT (SP-SM); light brown with tan; medium dense; wet; subangular; poorly graded; fine to medium grained	
		209.9			
SS 58	10-19-23			POORLY GRADED SAND (SP) trace silt; light brown; dense; moist; subangular; poorly graded; fine to medium grained, trace coarse sand	
		208.4			
SS 59	10-16-15			SILTY SAND (SM); brownish orange; dense; moist; subangular; poorly graded; fine to medium grained	
		206.9			
SS 60	19-25-31		95	same as above (top 0.6 ft.); remaining portion is yellowish brown fat clay with sand (CH), hard, moist, high plasticity	
		205.4			
SS 61	16-18-21			same as above; medium brownish orange with black; wet; Mn present	
		203.9			
SS 62	8-13-25			CLAYEY SAND WITH GRAVEL (SC); medium brown; dense; moist; subangular; well graded; fine to very coarse grained	
		202.4			
SS 63	4-9-19		100	CLAYEY SAND (SC) with 0.4 ft thick grayish brown lean clay layer at 100.0 ft; medium yellowish brown; medium dense; wet; subangular; poorly graded; fine to medium grained	Loas circulation (5/6/98).
		200.8			
SS 64	15-16-19			same as above; medium yellowish brown to grayish brown; dense; some Mn staining	
		199.3			
SS 65	17-18-19			POORLY GRADED SAND (SP) trace clay; medium grayish brown; dense; wet; subangular; poorly graded; fine to medium grained	Lost circulation on 5/12/98 while attempting to redrill to 180 feet for geophysical logging.
		197.8			
SS 66	12-12-15			same as above; trace silt; medium dense; with black Mn staining	
		196.3	105		
SS 67	9-14-15			POORLY GRADED SAND WITH SILT (SP-SM); medium grayish brown; medium dense; wet; subangular; poorly graded; fine to medium grained; trace Mn staining	
		194.8			
SS 68	10-9-9			POORLY GRADED SAND WITH CLAY (SP-SC); medium grayish brown; medium dense; wet; subangular; poorly graded; fine to medium grained	
		193.3			
SS 69	1-2-1			LEAN CLAY WITH SAND (CL); light grayish white, light brown, and black; soft; wet; medium plasticity; sand fraction is very fine to fine grained	
		191.8			
SS 70	WR/37 in		110	CLAYEY SAND (SC); medium grayish brown; very loose; wet; subangular; poorly graded; fine to medium grained	Lost circulation and could not regain. Pumped two mud tubs into hole with 500 gallons water will take one more spoon (5/7/98).
		188.7			
				Total depth of boring 112.7 fet.	Hole abandoned with grout mix per 3Q5.

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER

SITE: FINAL LOG

HOLE NO. FB-20

8/1/07 89 of 115

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
Northeast Expansion	NEXT	1 OF 3	FB-20A

SITE	COORDINATES	ANGLE FROM HORIZONTAL
APSF-NE	N 78642 E 55518	90

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH
4/29/98	5/13/98	J Corbitt/Graves	Failing 1500	3 7/8 in	140 lb/30 in	120.0

GROUND EL.	DEPTH/EL. GROUND WATER	LOGGED BY:
301.4	▽ / ▼ /	C. Rothammer/WSRC

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS % (20 40 60 80)	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
				301.4				Hand auger to 6 feet to check for underground interferences. Then switch to mud rotary. Straight drill to 106.5 feet to begin sampling.
					5			
					10			
					15			
					20			
					25			
					30			
					35			

SS = SPLIT SPOON; ST = SHELBY TUBE;
PS = STATIONARY PISTON; PB = PITCHER

SITE: FINAL LOG

HOLE NO. FB-20A

8/1/07 90 of 115

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
Northeast Expansion	NEX	2 OF 3	FB-20A

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS % (20 40 60 80)	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
					45			
					50			
					55			
					60			Adding quick gel.
					65			
					70			
					75			
					80			
					85			

SS = SPLIT SPOON; ST = SHELBY TUBE;
PS = STATIONARY PISTON; PB = PITCHER

SITE: FINAL LOG

HOLE NO. FB-20A

8/1/07 91 of 115

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
Northeast Expansion	NEXT	3 OF 3	FB-20A

▲ N-VALUE (SPT)
○ RECOVERY %
+ ATT. LIMITS %

20 40 60 80

SAMP. TYPE AND NO.	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
			90		
			95		
			100		
			105		Lost circulation at 102 feet. Mixed two batches OF grout. On 3/11/98 tagged grout at 75 feet. Continued drilling down to 106.5 feet and started sampling.
SS 1	18-48-45	193.4		POORLY GRADED SAND WITH SILT (SP-SM); medium yellowish brown; very dense; wet; subangular; poorly graded; fine to medium grained	
SS 2	17-20-22	191.9		same as above; dense	
SS 3	17-21-30	190.4	110	POORLY GRADED SAND (SP) trace silt; medium yellowish brown; very dense; wet; subangular; poorly graded; fine to coarse grained	
SS 4	9-10-12	188.9		WELL GRADED SAND WITH CLAY (SW-SC); medium yellowish brown; medium dense; wet; subangular; well graded; fine to coarse grained, Mn present	
SS 5	8-10-13	187.4		FAT CLAY (CH); med yellowish brown with red and black streaks; v stiff; moist; high plasticity; upper 6 inches are clayey sand.;black is Mn	
SS 6	16-25-25	185.9	115	POORLY GRADED SAND WITH CLAY (SP-SC); medium yellowish brown; dense; wet; subangular; poorly graded; very fine to fine grained	
SS 7	10-12-14	184.4		CLAYEY SAND (SC); medium yellowish brown with tan, white, and black; medium dense; wet; subangular; well graded; fine to coarse grained	
SS 8	4-16-21	182.9		same as above; dense	
SS 9	13-14-13		120	Total depth of boring 120 feet.	Lost circulation, never recovered. Hole abandoned with grout mix per 3Q5.

SS = SPLIT SPOON; ST = SHELBY TUBE;
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. **FB-20A**

8/1/07 106 of 115

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
Northeast Expansion	NEX	1 OF 5	FB-28

SITE	COORDINATES	ANGLE FROM HORIZONTAL
APSF-NE	N 78382 E 55388	90

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH
4/29/98	5/4/98	J Corbitt/Graves	Failing 1500	3 7/8 in	140 lb/30 in	161.5

GROUND EL.	DEPTH/EL. GROUND WATER	LOGGED BY:
308.2	/ /	C. Rothammer/WSRC

▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS % (20 40 60 80)

SAMP. TYPE AND NO.	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		308.2			Hole offset 2 feet to the east of CPT. Hand auger to 6 feet to check for interferences.
			5		
SS 1	6-12-15	300.7		CLAYEY SAND (SC); dark brownish red; medium dense; wet; subangular; well graded; fine to coarse grained, trace gravel	
SS 2	6-10-12	299.2		same as above; with yellow	
SS 3	10-17-23	297.7	10	same as above; dense	
SS 4	10-13-17	296.2		same as above; medium dense; trace gravel and very coarse sand	
SS 5	8-14-19	294.7		same as above; dense	
SS 6	9-14-19	293.2		same as above; dark reddish brown with yellow and white; fine to very coarse grained; sandy clay lenses	
SS 7	13-18-27	291.7	15	same as above	
SS 8	12-22-37	290.2		same as above; very dense	
SS 9	15-27-37	288.7		same as above; with gravel	
SS 10	9-10-15	287.2	20	same as above; dark brownish red with white; medium dense; lithic fragments, trace gravel	
SS 11	6-12-22	285.7		no recovery	
SS 12	6-7-11	281.7	25	CLAYEY SAND (SC); dark red with white and yellow; medium dense; wet; subangular; well graded; medium sand to gravel, lithic fragments	
SS 13	9-13-21	276.7	30	FAT CLAY (CH); medium purple; hard; wet; high plasticity	

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER

SITE: FINAL LOG

HOLE NO. FB-28

8/1/07 107 of 115

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
Northeast Expansion	NEX	2 OF 5	FB-28

▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %

SAMP. TYPE AND NO.	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 14	7-6-23	271.7		same as above; with white; very stiff; moist	
SS 15	7-10-12	266.7	40	POORLY GRADED SAND WITH CLAY (SP-SC); medium yellow with white; medium dense; moist; subangular; poorly graded; fine to medium grained	
SS 16	10-20-19	261.7	45	POORLY GRADED SAND WITH SILT (SP-SM); light to medium yellow ,white, tan, and black; dense; moist; subangular; poorly graded; fine to medium grained	
SS 17	10-14-36	256.7	50	CLAYEY SAND (SC); light to medium yellow, white, purple, and tan; dense; moist; subangular; poorly graded; fine to medium grained, lenses of fat clay	
SS 18	12-14-16	251.7	55	same as above; medium brownish yellow with white; medium dense; wet	
SS 19	12-15-18	246.7	60	same as above; dense	
SS 20	15-18-20	241.7	65	same as above	
SS 21	10-12-19	236.7	70	same as above; medium red, white, and yellow; mottled; well graded; fine to coarse grained, trace gravel	

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER

SITE: FINAL LOG

HOLE NO. FB-28

8/1/07 108 of 115

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
Northeast Expansion	NEX	3 OF 5	FB-28

▲ N-VALUE (SPT)
○ RECOVERY %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 22		16-21-18	231.7			same as above	
SS 23		WR/3 in 9/3 in-10-16	226.7	80		SILTY SAND (SM) with clay; medium dark brownish yellow; medium dense; wet; subrounded; well graded; medium to very coarse grained, trace gravel, Mn present	
SS 24		28-25-34	221.7	85		same as above; medium yellowish brown; very dense; subangular; poorly graded; fine to medium grained	
SS 25		34-50-50/4 in	216.7	90		same as above; with gravel; with white; well graded; fine to very coarse grained	Cement in the hole from surface, attempted to ream it out to correct situation.
SS 26		27-50-50	211.7	95		same as above; medium brownish yellow with orange, white, and black streaks; poorly graded; fine to medium grained, Mn present	
SS 27		15-14-15	206.7	100		same as above; medium dense	
SS 28		126 28-38-29	201.7	105		same as above; medium yellowish brown with white; very dense; well graded; lithic fragments	
SS 29		30-43-40	196.7	110		POORLY GRADED SAND WITH SILT (SP-SM); dark yellowish orange; very dense; wet; subangular; poorly graded; fine to medium grained	

SS = SPLIT SPOON; ST = SHELBY TUBE;
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. **FB-28**

8/1/07 109 of 115

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
Northeast Expansion	NEX	4 OF 5	FB-28

▲ N-VALUE (SPT)
○ RECOVERY %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 30		29-35-50/4 in	191.7			same as above; with coarse sand	
SS 31		22-24-22	186.7	120		SILTY SAND (SM); dark yellowish orange; dense; wet; subangular; poorly graded; fine to medium grained	
SS 32		12-14-16	181.7	125		CLAYEY SAND (SC); dark yellowish orange; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 33		8-9-10	176.7	130		same as above; medium yellowish brown	
SS 34		WH/8 in-1/4 in-3	171.7	135		ELASTIC SILT (MH); medium yellowish brown with white; soft; moist; medium plasticity	
SS 35		6-16-29	170.2			SILTY SAND (SM); light medium brown with white and red; dense; wet; subrounded; poorly graded; very fine grained, silts are elastic	
SS 36		50/4 in	166.7	140		no recovery	
SS 37		122 35-60-62	161.7	145		WELL GRADED SAND WITH GRAVEL (SW); light yellowish brown; very dense; wet; subrounded; well graded; medium to very coarse grained	
SS 38		10-12-12	156.7	150		SILTY SAND (SM); light greenish yellow with orange; medium dense; moist; subangular; poorly graded; very fine to fine grained, silts are elastic	

SS = SPLIT SPOON; ST = SHELBY TUBE;
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. **FB-28**

8/1/07 110 of 115

GEOTECHNICAL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
Northeast Expansion	NEX	5 OF 5	FB-28

▲ N-VALUE (SPT)
O RECOVERY %
+ ATT. LIMITS %

SAMP. TYPE AND NO.	SAMPLE	20 40 60 80	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 39			19-20-38	151.7			same as above; light yellowish brown; very dense	
SS 40		▲	19-43-51	146.7	160		same as above	
							Total depth of boring 161.5 feet.	Hole abandoned with grout mix per 3Q5.

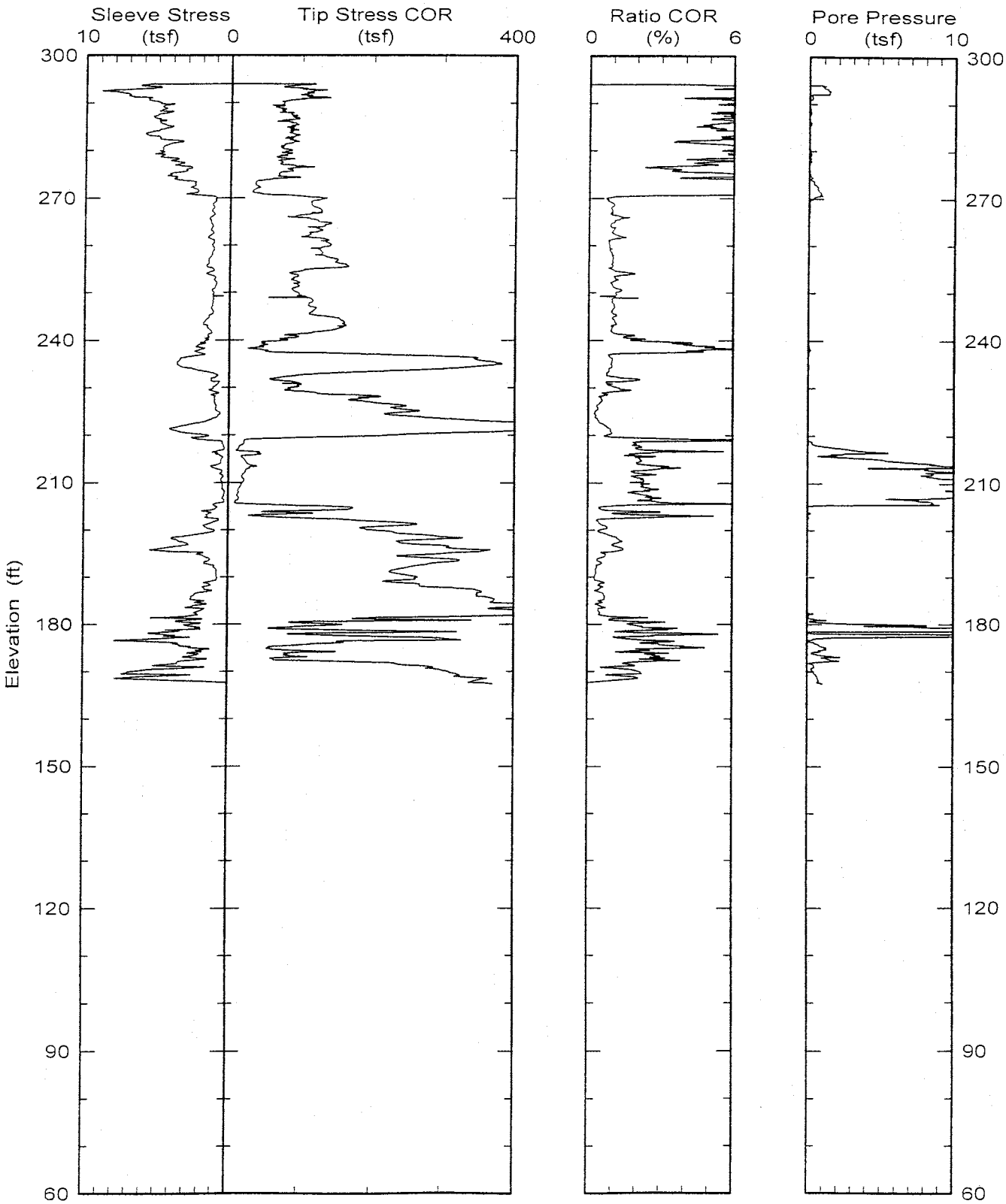
SS = SPLIT SPOON; ST = SHELBY TUBE;
PS = STATIONARY PISTON; PB = PITCHER

SITE: FINAL LOG

HOLE NO. FB-28

Applied Research Associates
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Date: 15/Jan/2003
Test ID: FCPT-C12
Northing: 78300.00
Easting: 55845.00
Elevation: 299.96



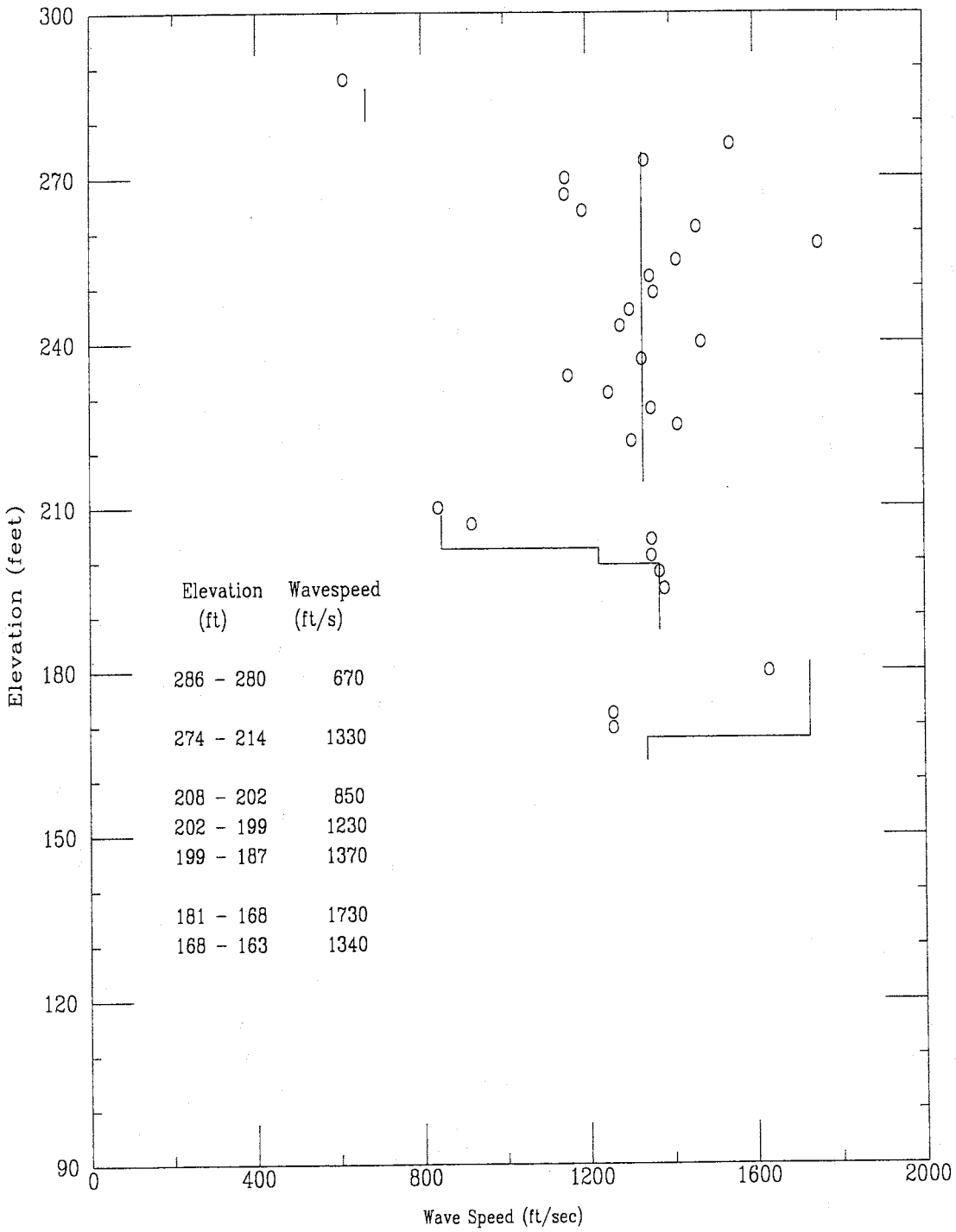
Maximum depth: 132.62 (ft)

Test ID: FCPT-C12
File: 315J0302.ECP

8/1/07

CPT-C-12 APPLIED RESEARCH ASSOCIATES, INC. 15/Jan/2003

Shear Wave Speeds

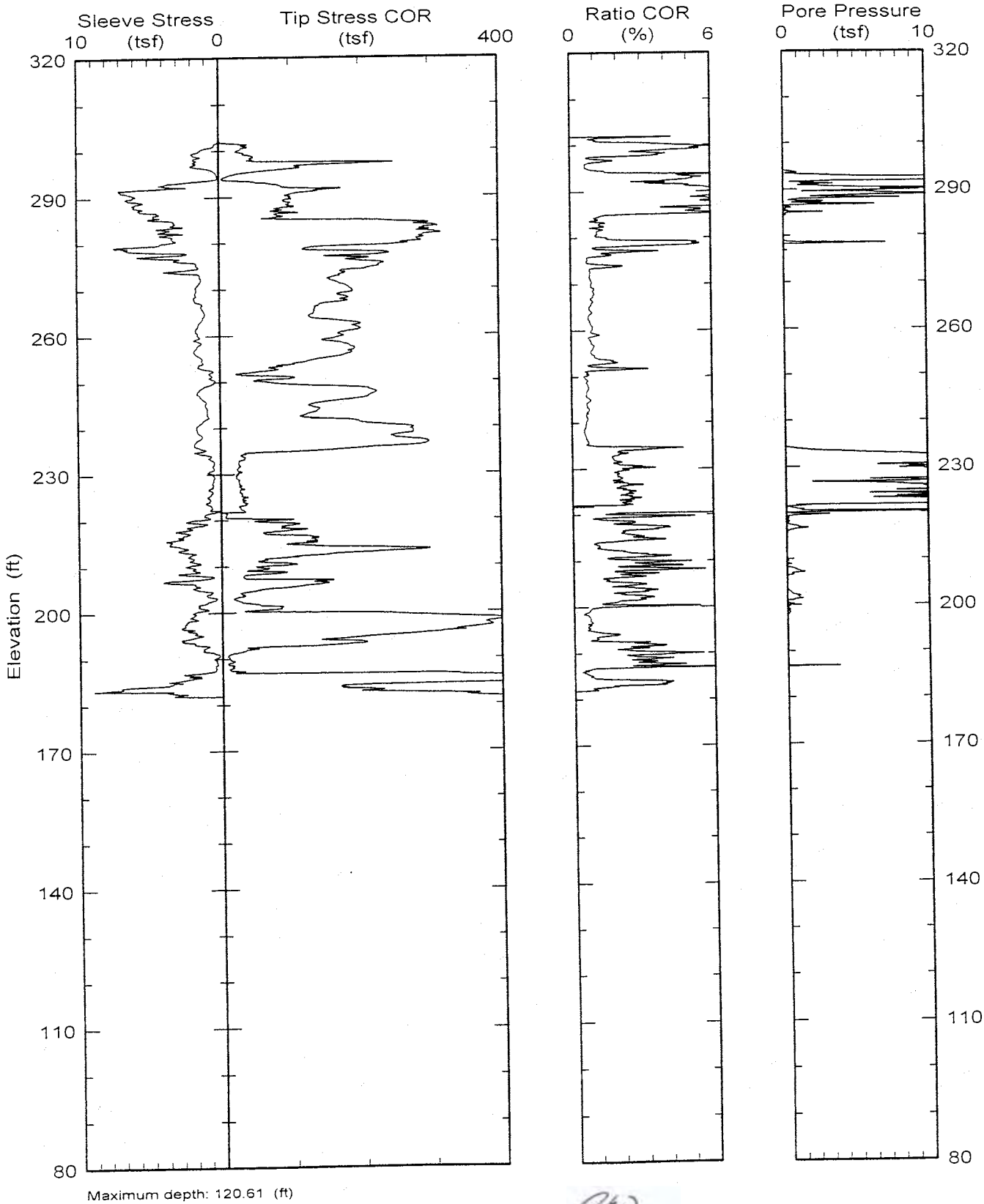


File 315j0302

8/1/07

Applied Research Associates
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Date: 18/Feb/2003
Test ID: FCPT-SZ-31
Northing: 78413.2
Easting: 55812.4
Elevation: 302.08

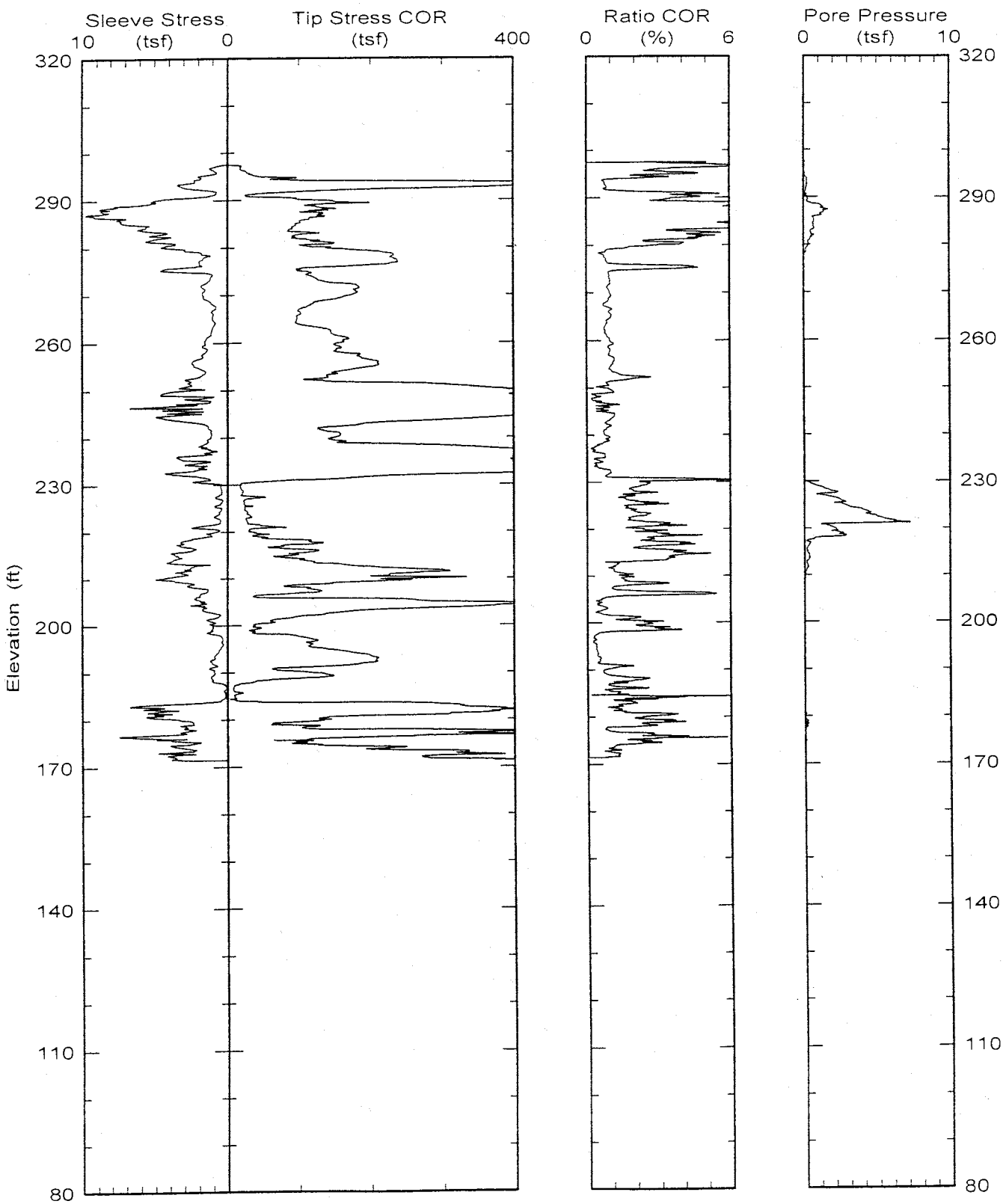


Test ID: FCPT-SZ-31
File: 318F0302c.ECP

8/1/07

Applied Research Associates
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Date: 18/Feb/2003
Test ID: FCPT-SZ-32
Northing: 78388.1
Easting: 55768.9
Elevation: 297.71



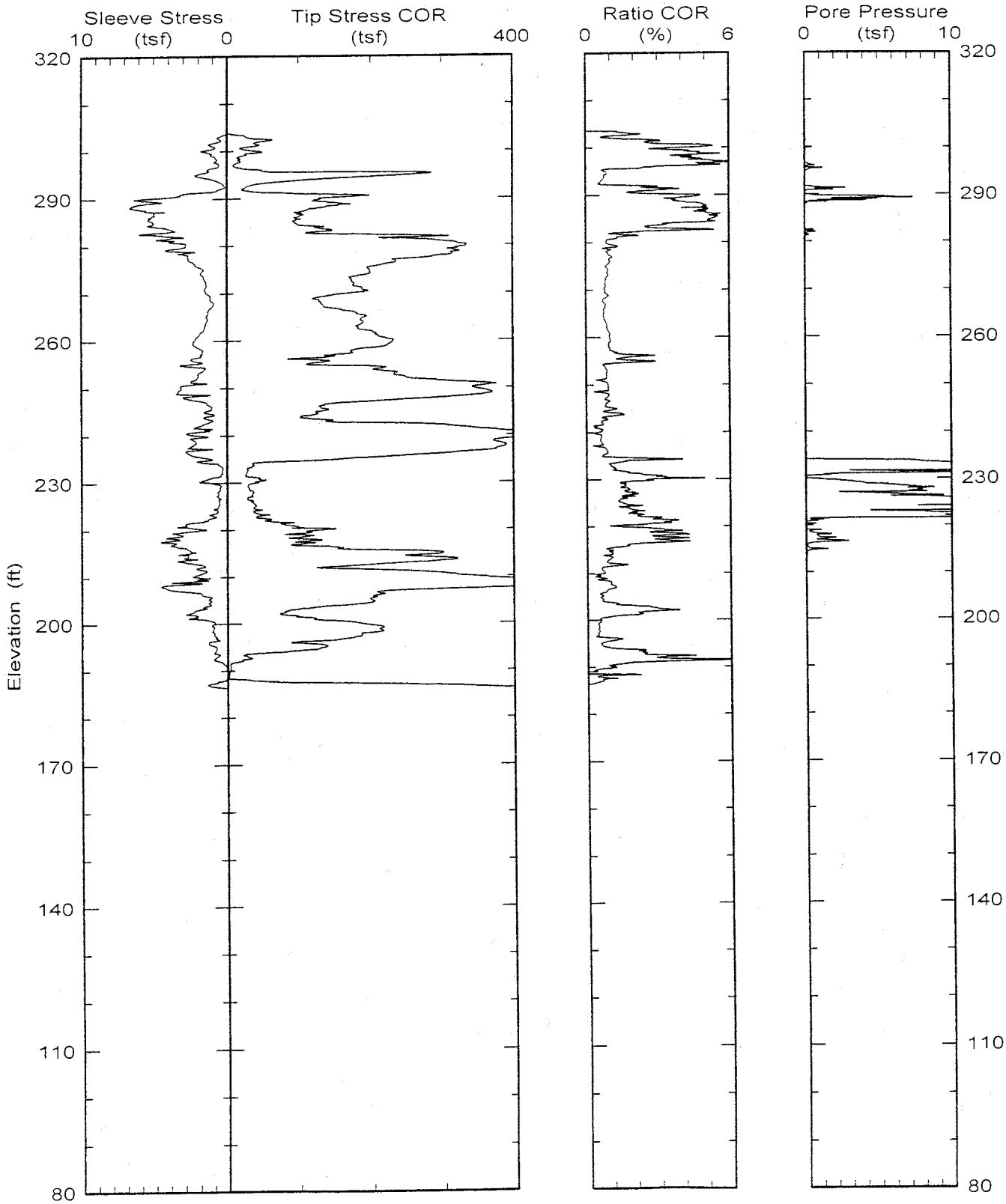
Maximum depth: 126.68 (ft)

Test ID: FCPT-SZ-32
File: 318F0303c.ECP

8/1/07

Applied Research Associates
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Date: 19/Feb/2003
Test ID: FCPT-SZ-33
Northing: 78438.3
Easting: 55768.9
Elevation: 303.78



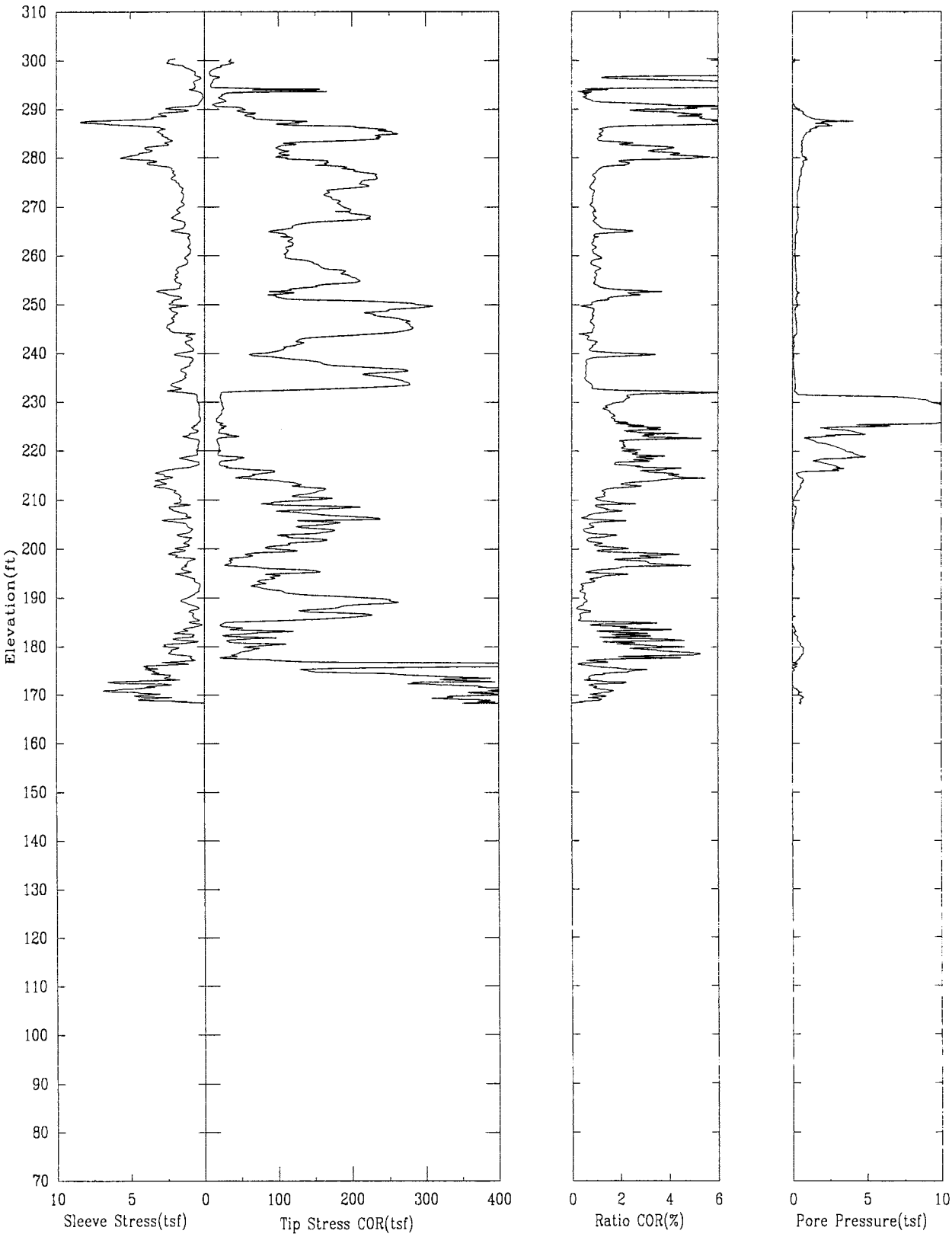
Maximum depth: 117.60 (ft)

Test ID: FCPT-SZ-33
File: 319F0301c.ECP

8/1/07

CPT-A-09A APPLIED RESEARCH ASSOCIATES, INC. 12/04/00

North 78639.19 East 55782.38 Elevation 306.4



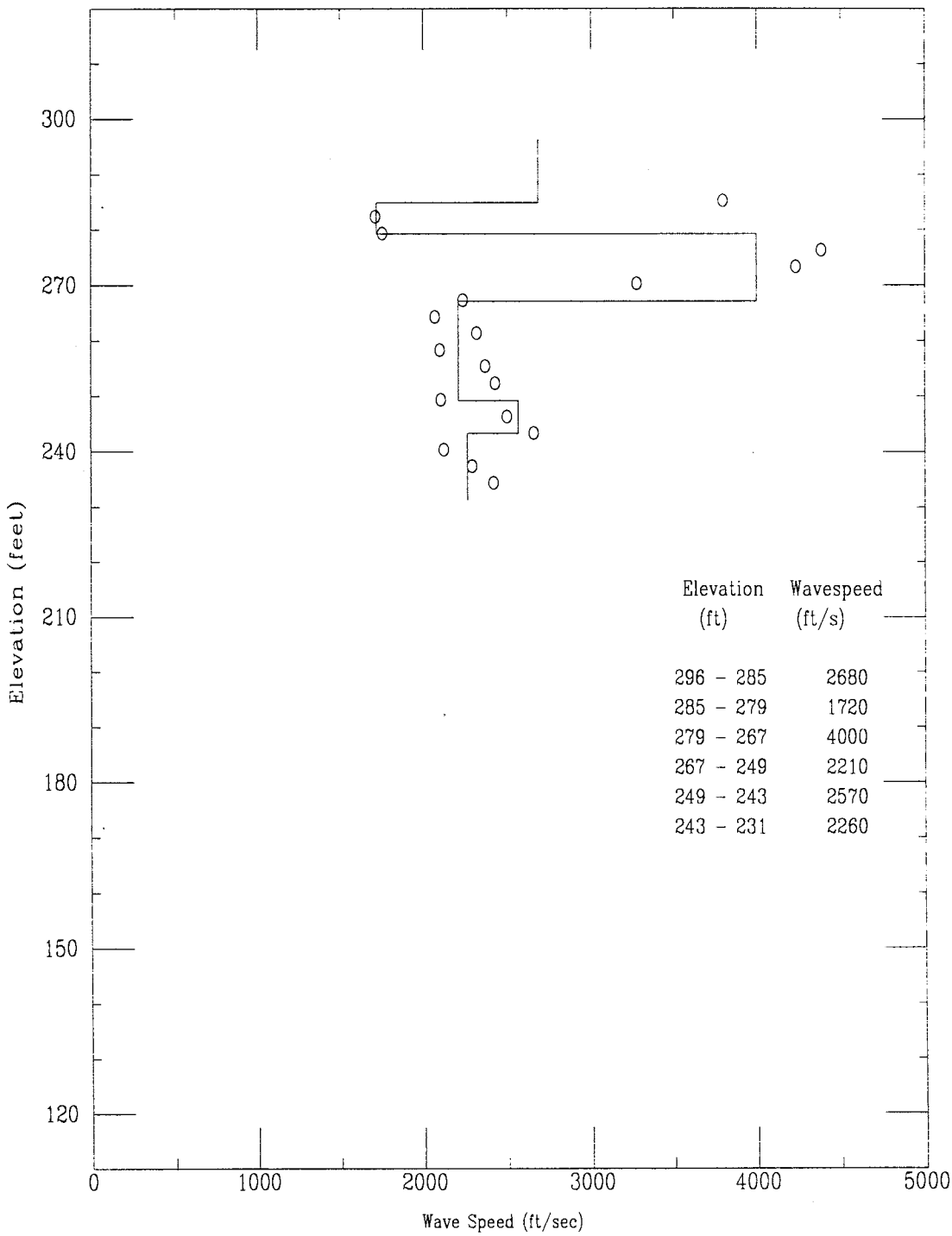
File 404D004.ECP

50 of 267

8/1/07

CPT-A-09A APPLIED RESEARCH ASSOCIATES, INC. 12/04/00

Compression Wave Speeds

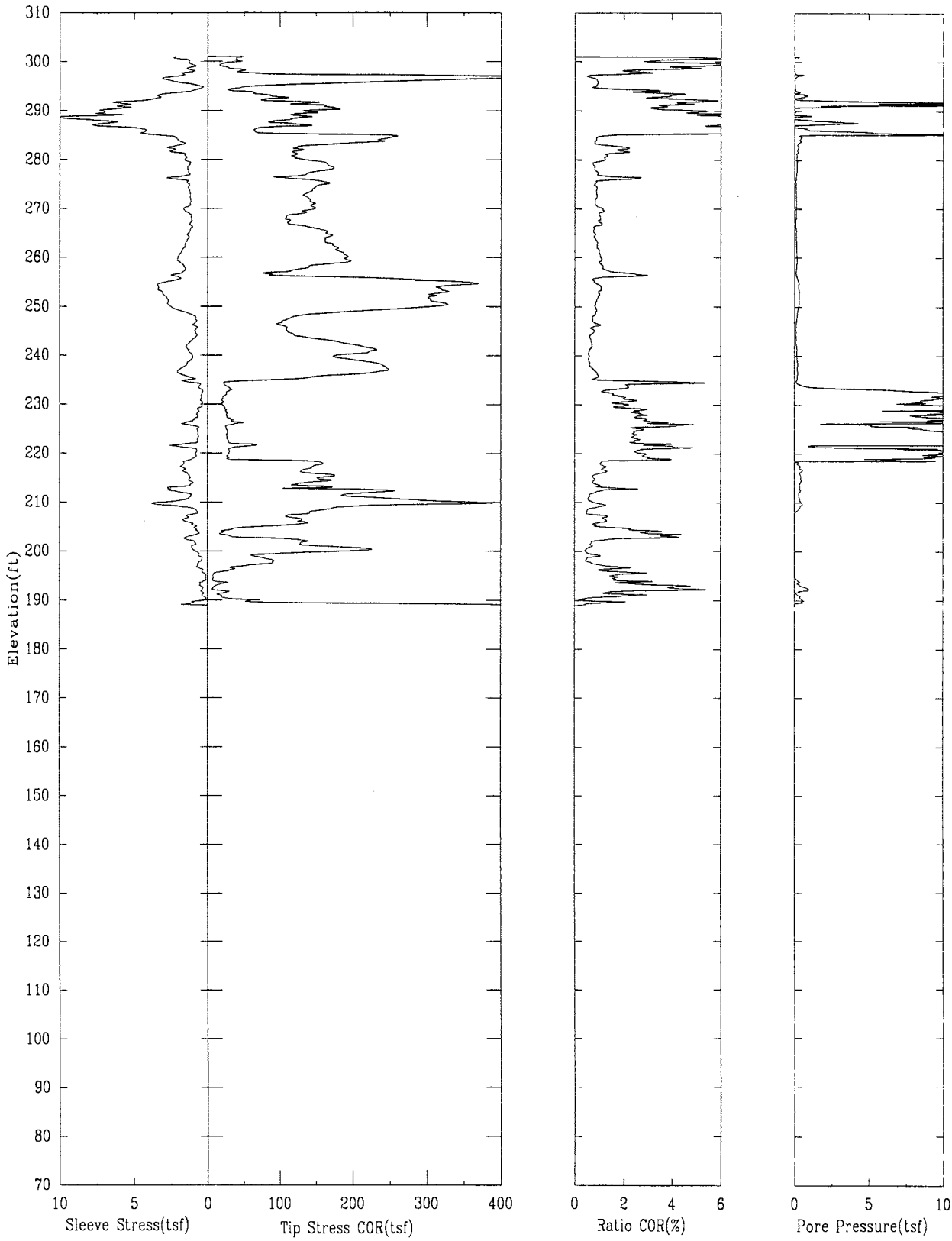


File 404d004S

318 of 767 8/1/07

CPT-A-11 APPLIED RESEARCH ASSOCIATES, INC. 10/23/00

North 78510.00 East 55715.00 Elevation 307.0



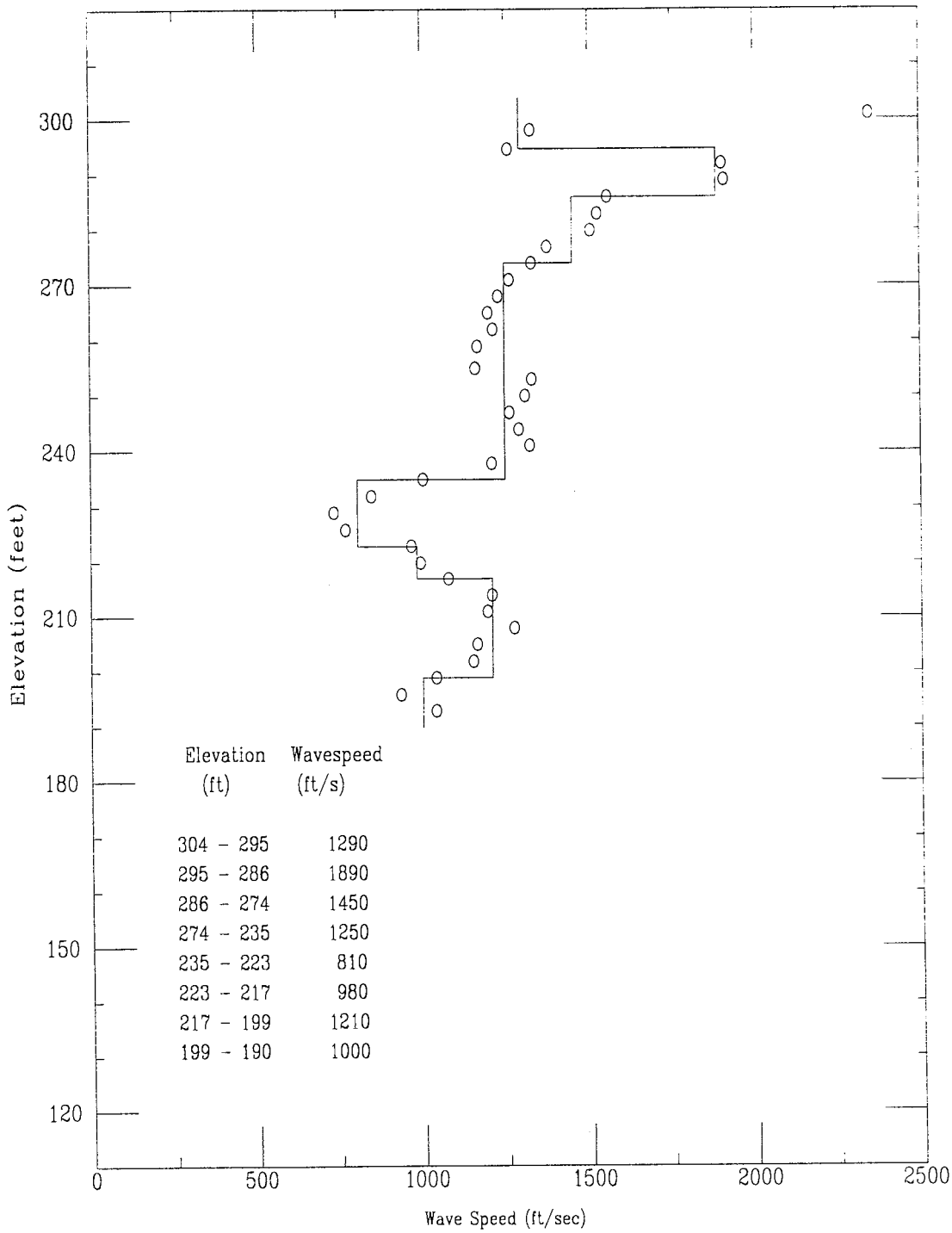
File 4230001.ECP

65 of 767

8/1/07

CPT-A-11 APPLIED RESEARCH ASSOCIATES, INC. 10/23/00

Shear Wave Speeds

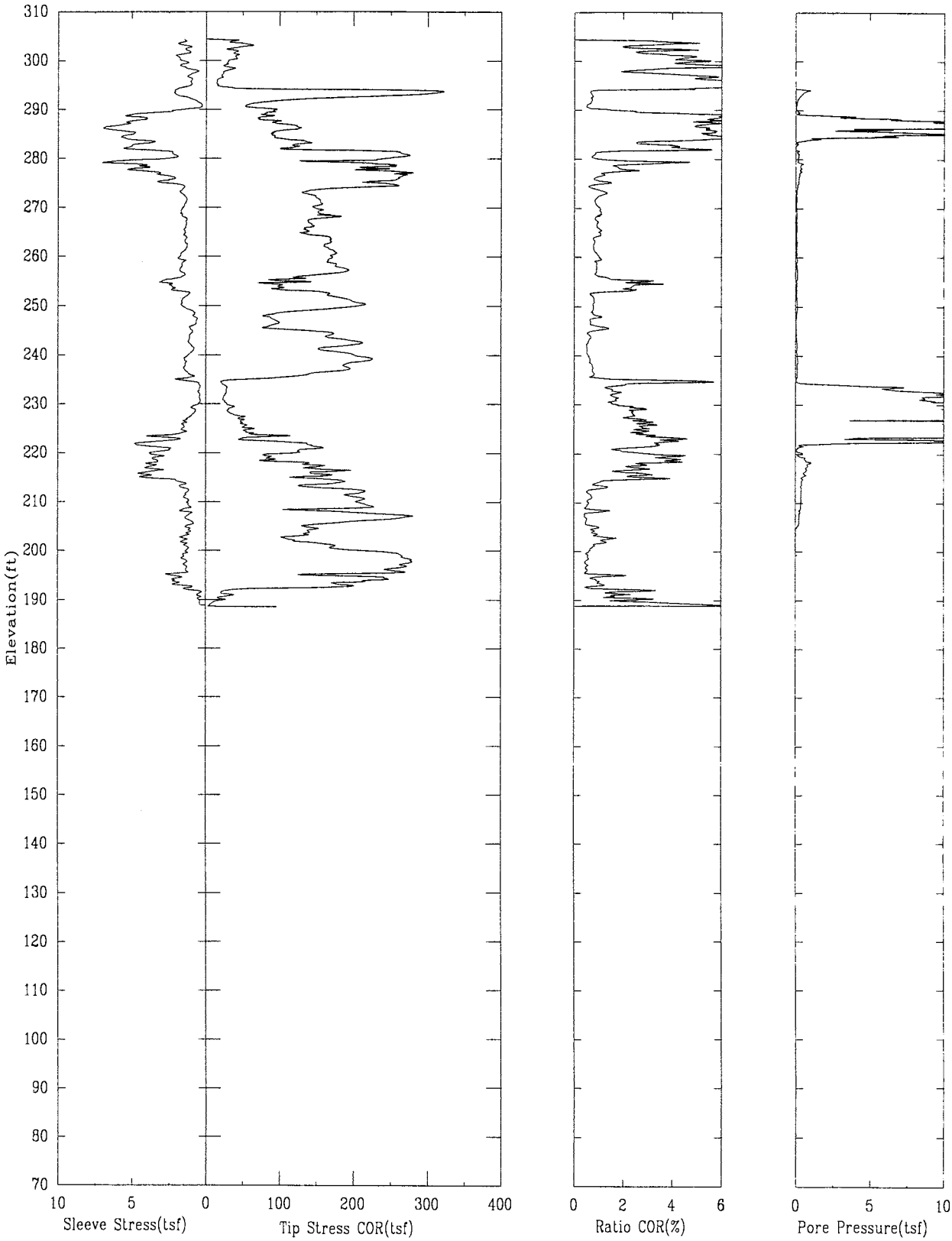


File 423o001S

340 of 767 8/1/07

CPT-A-12 APPLIED RESEARCH ASSOCIATES, INC. 10/19/00

North 78510.00 East 55847.00 Elevation 310.4



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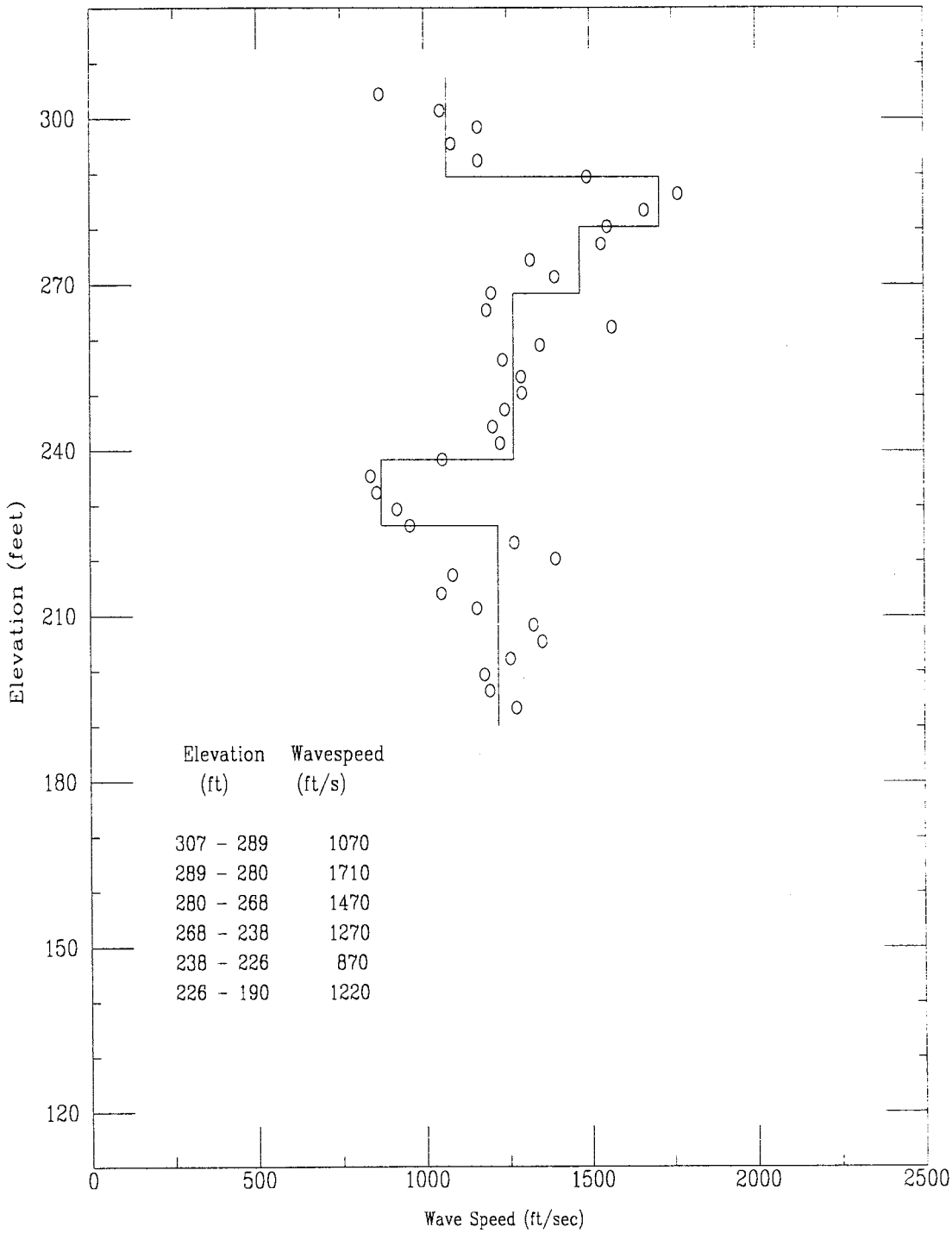
69 B 767 8/1/07

CPT-A-12 APPLIED RESEARCH ASSOCIATES, INC. 10/19/00

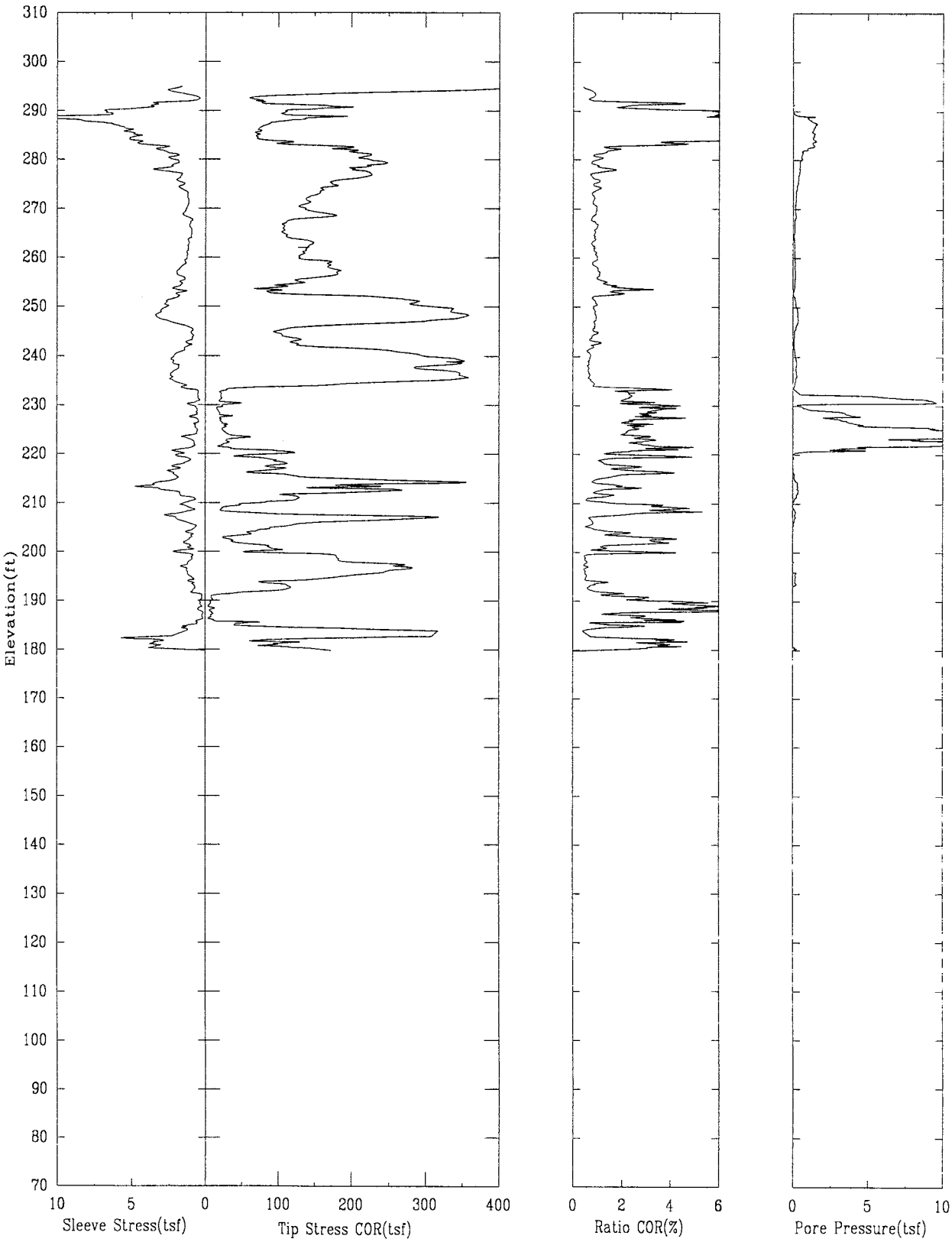
Shear Wave Speeds



File 419o001S

CPT-A-14 APPLIED RESEARCH ASSOCIATES, INC. 10/19/00

North 78413.21 East 55783.36 Elevation 301.0



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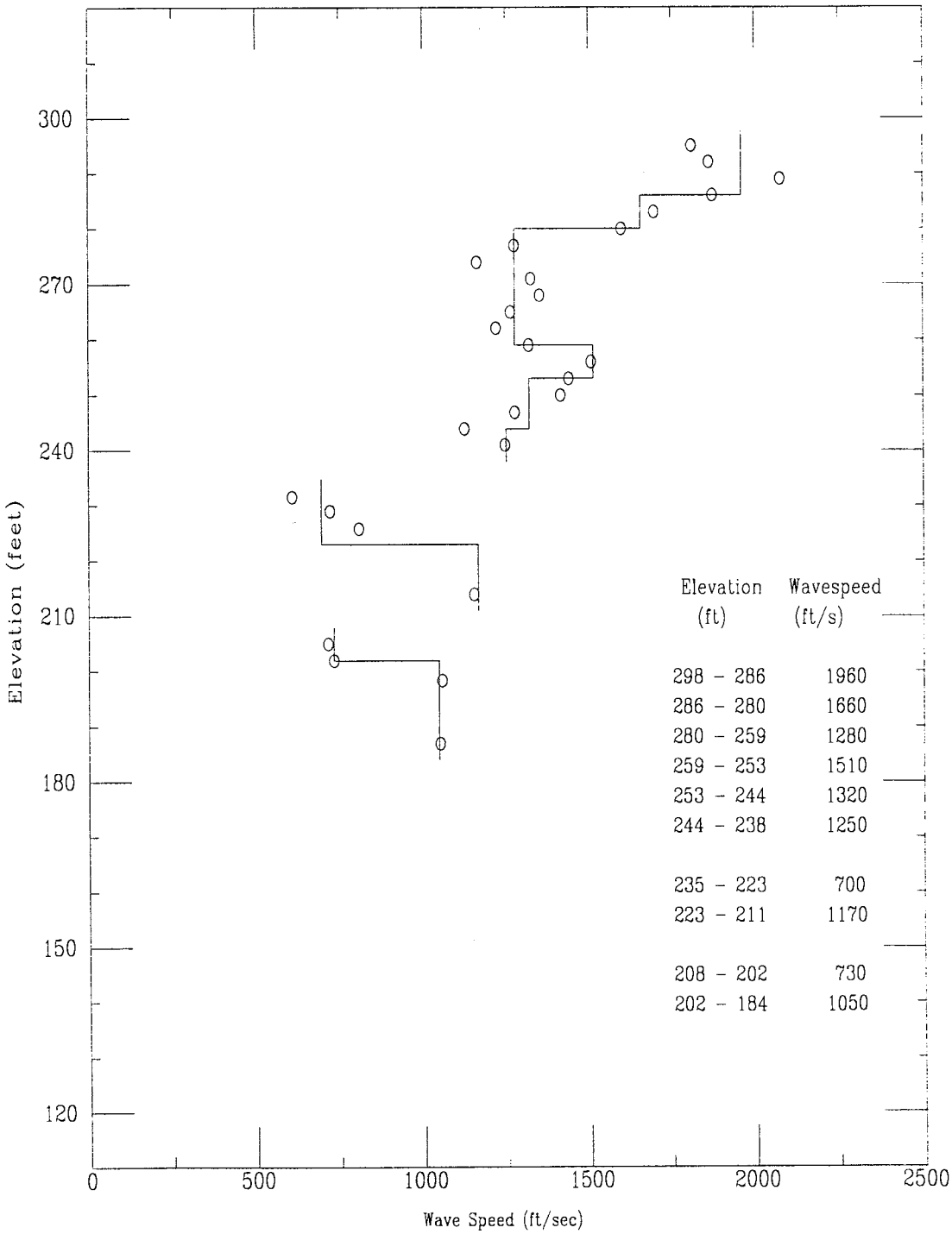
80 n 767

8/1/07

CPT-A-14 APPLIED RESEARCH ASSOCIATES, INC. 10/19/00

Shear Wave Speeds

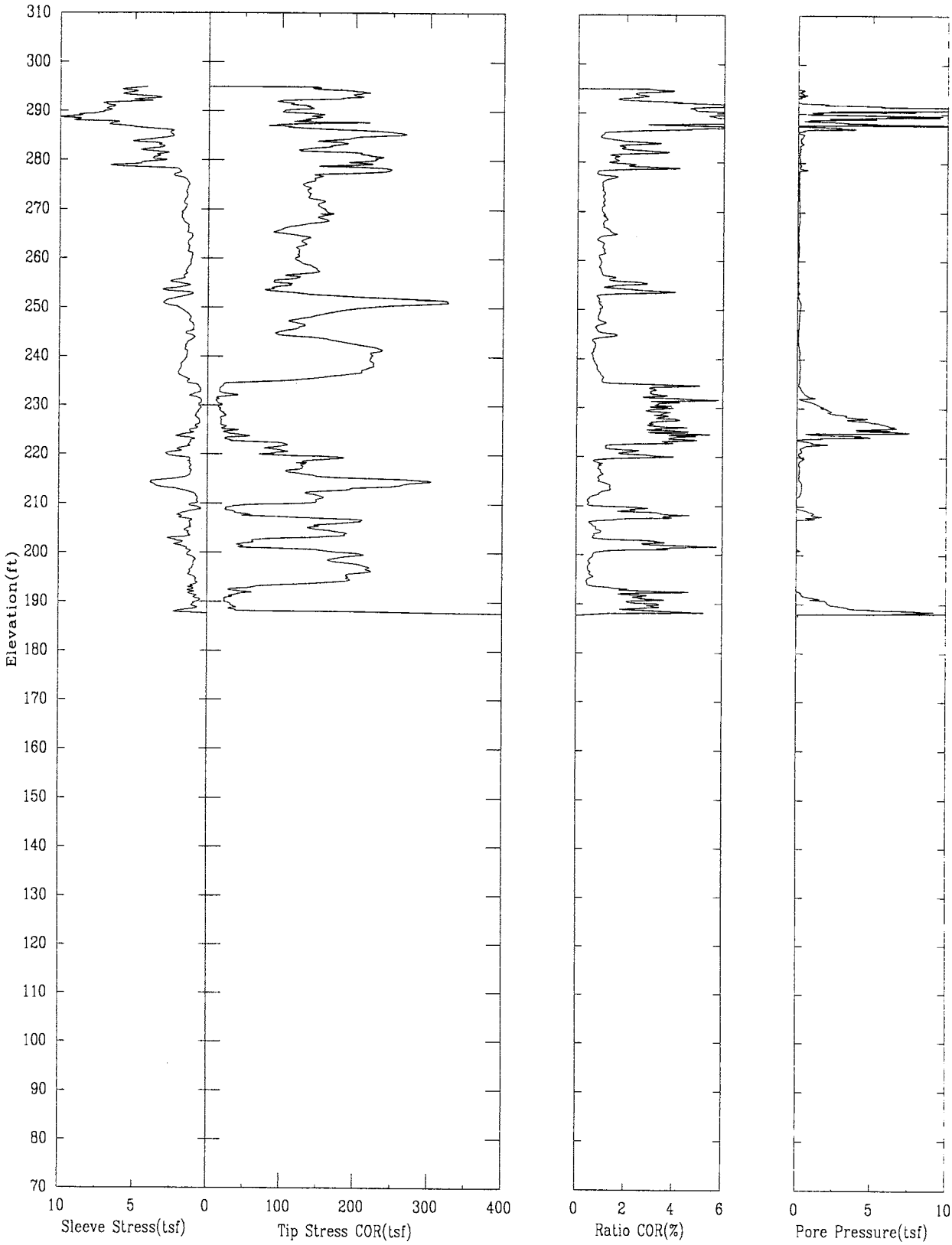


File 419o003S

315 of 767 8/1/07

CPT-A-15 APPLIED RESEARCH ASSOCIATES, INC. 10/24/00

North 78380.00 East 55650.00 Elevation 301.0



File 4240002.ECP

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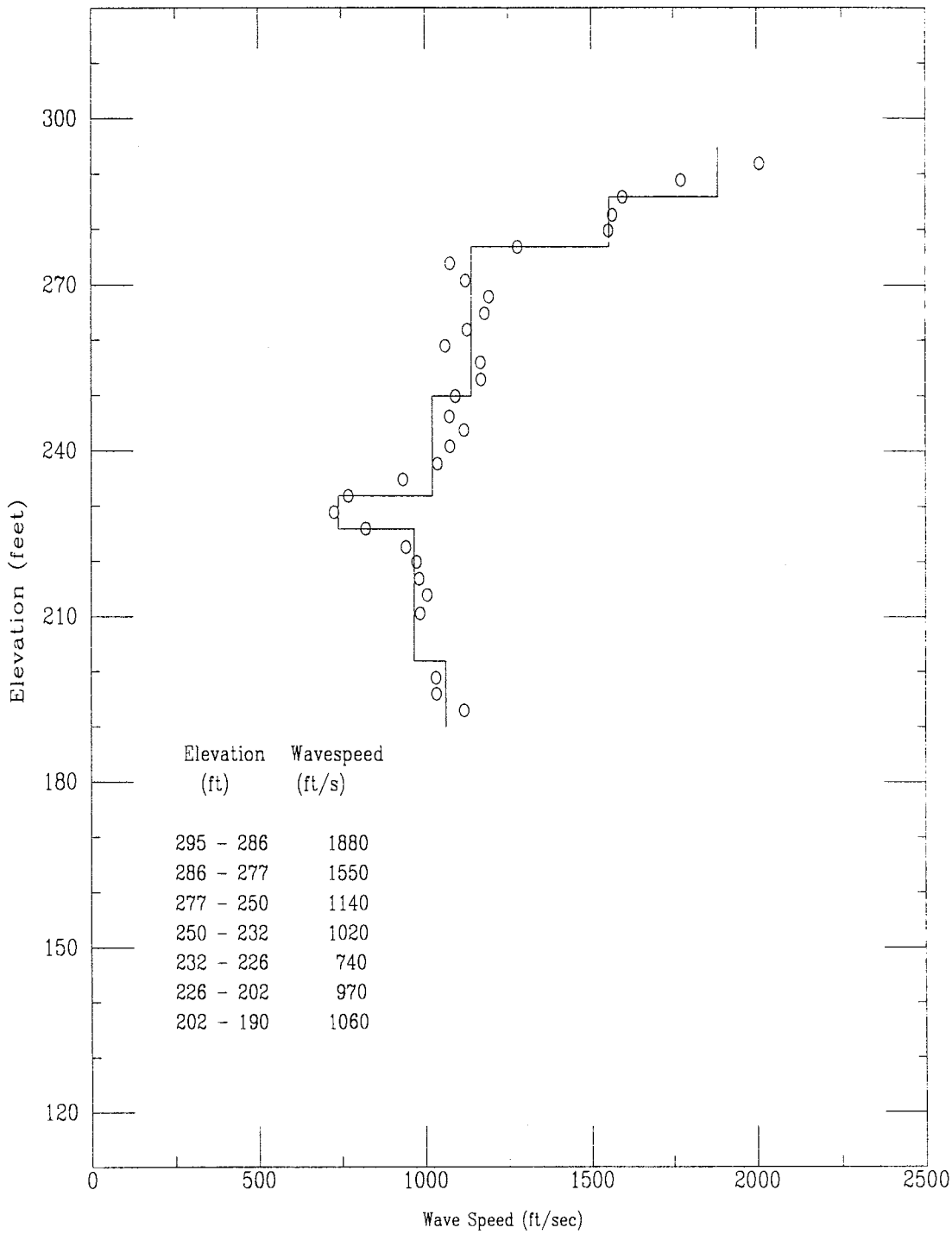
8/1/07

CPT-A-15 APPLIED RESEARCH ASSOCIATES, INC. 10/24/00

Shear Wave Speeds



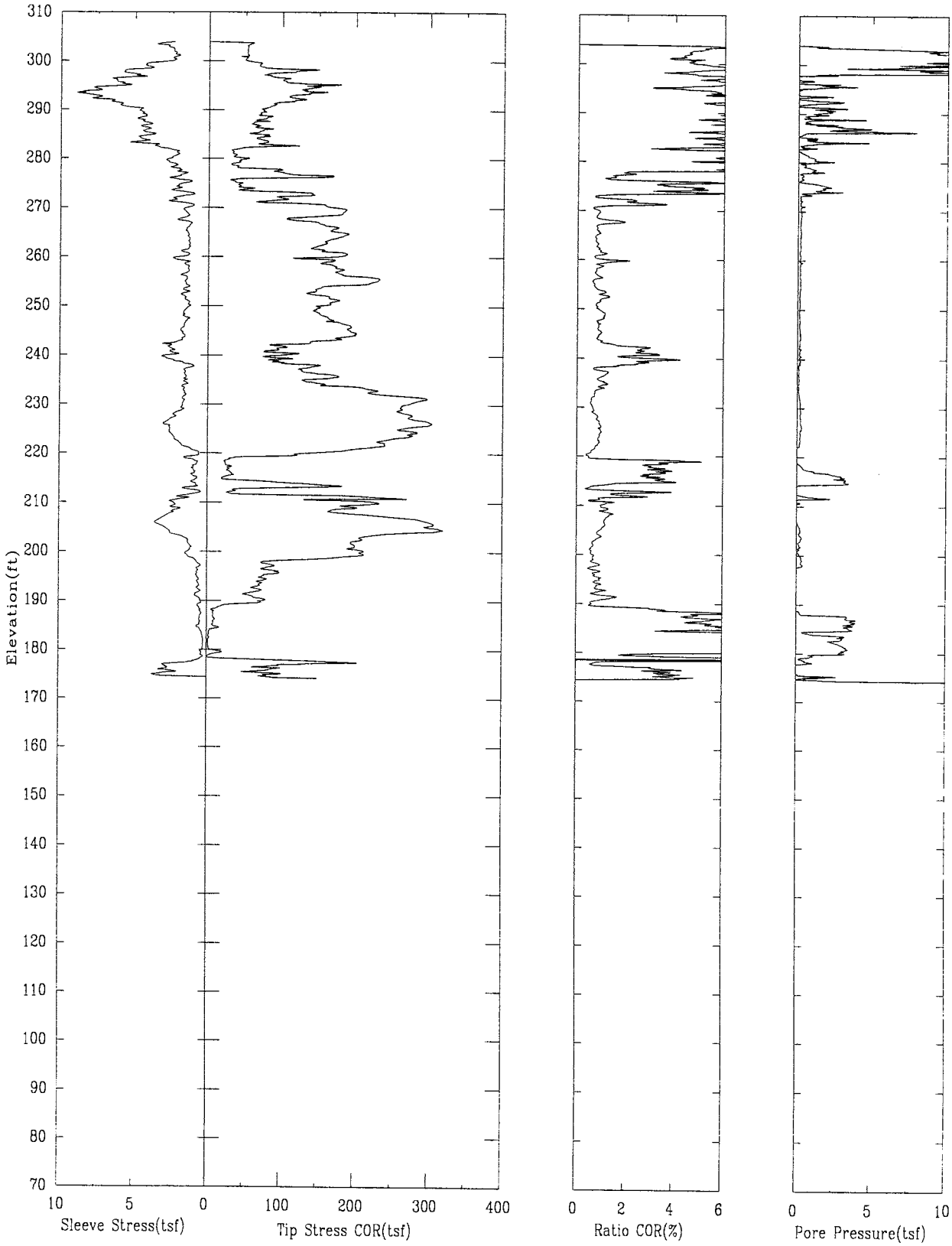
Elevation (ft)	Wavespeed (ft/s)
295 - 286	1880
286 - 277	1550
277 - 250	1140
250 - 232	1020
232 - 226	740
226 - 202	970
202 - 190	1060

File 424o002S

386 of 767 8/1/07

CPT-A-17 APPLIED RESEARCH ASSOCIATES, INC. 11/01/00

North 78273.00 East 55413.00 Elevation 309.9



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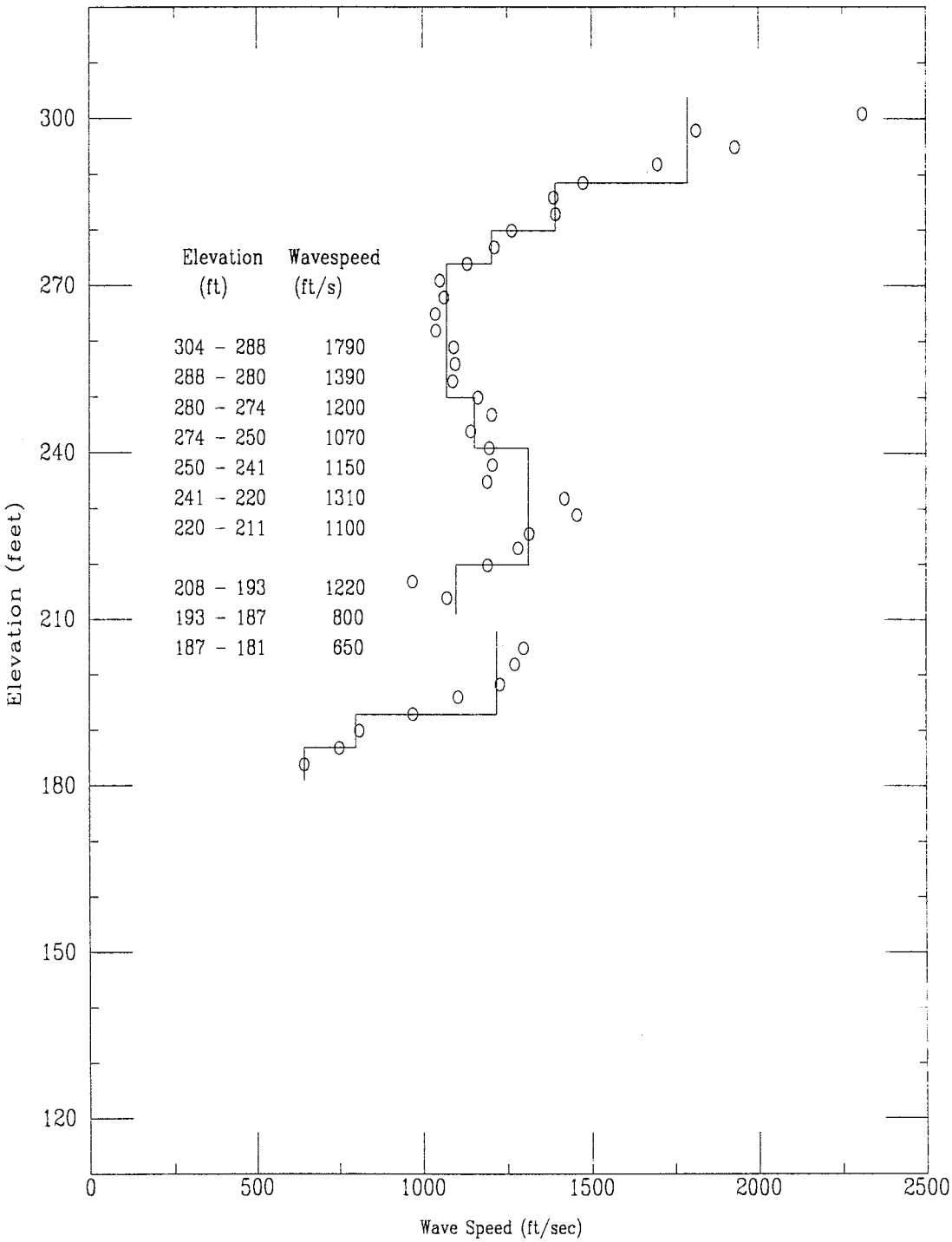
95 02 767

8/1/07

CPT-A-17 APPLIED RESEARCH ASSOCIATES, INC. 11/01/00

Shear Wave Speeds



File 401n001S

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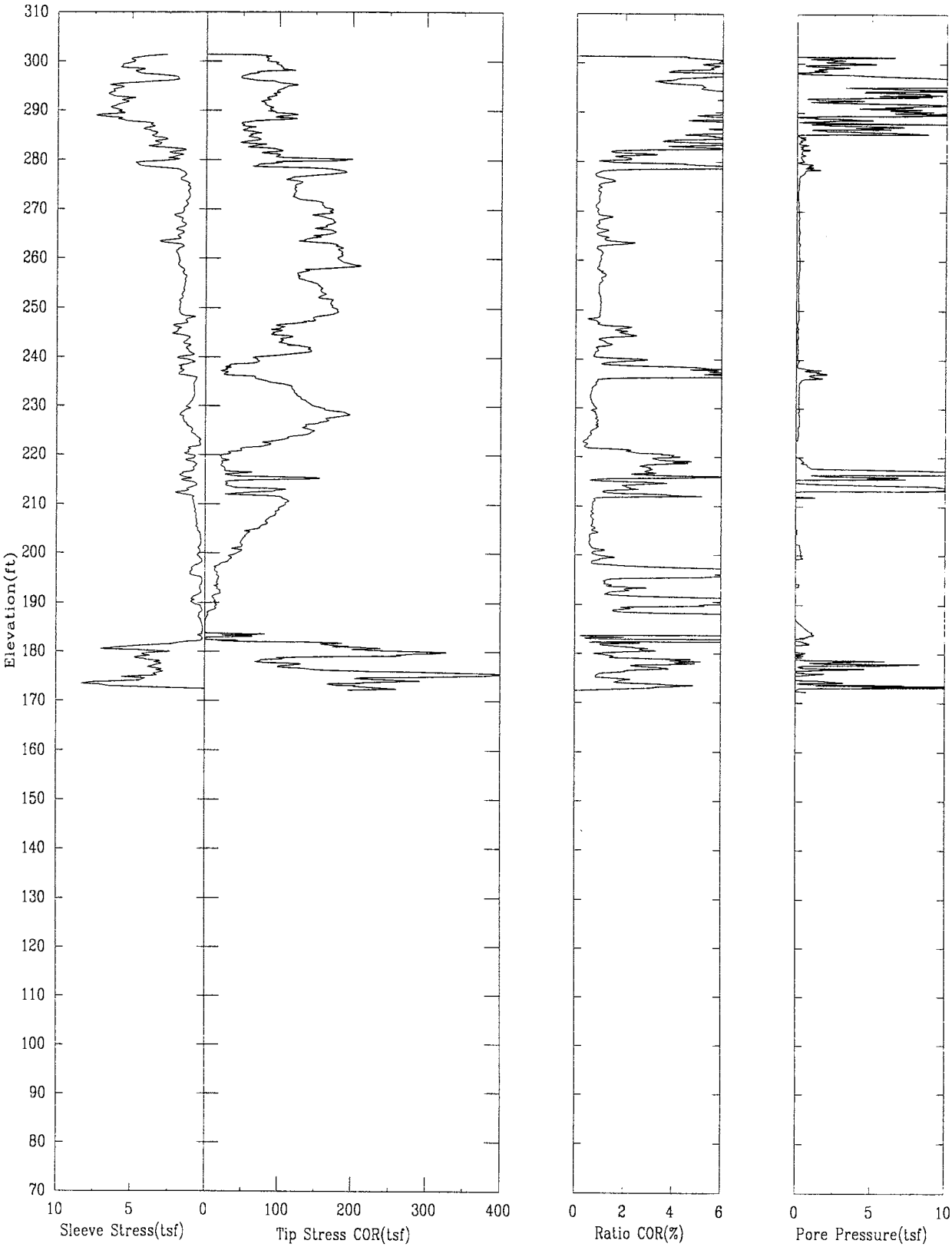
CPT-A-18 APPLIED RESEARCH ASSOCIATES, INC. 11/06/00

North 78295.48 East 55495.20 Elevation 307.4



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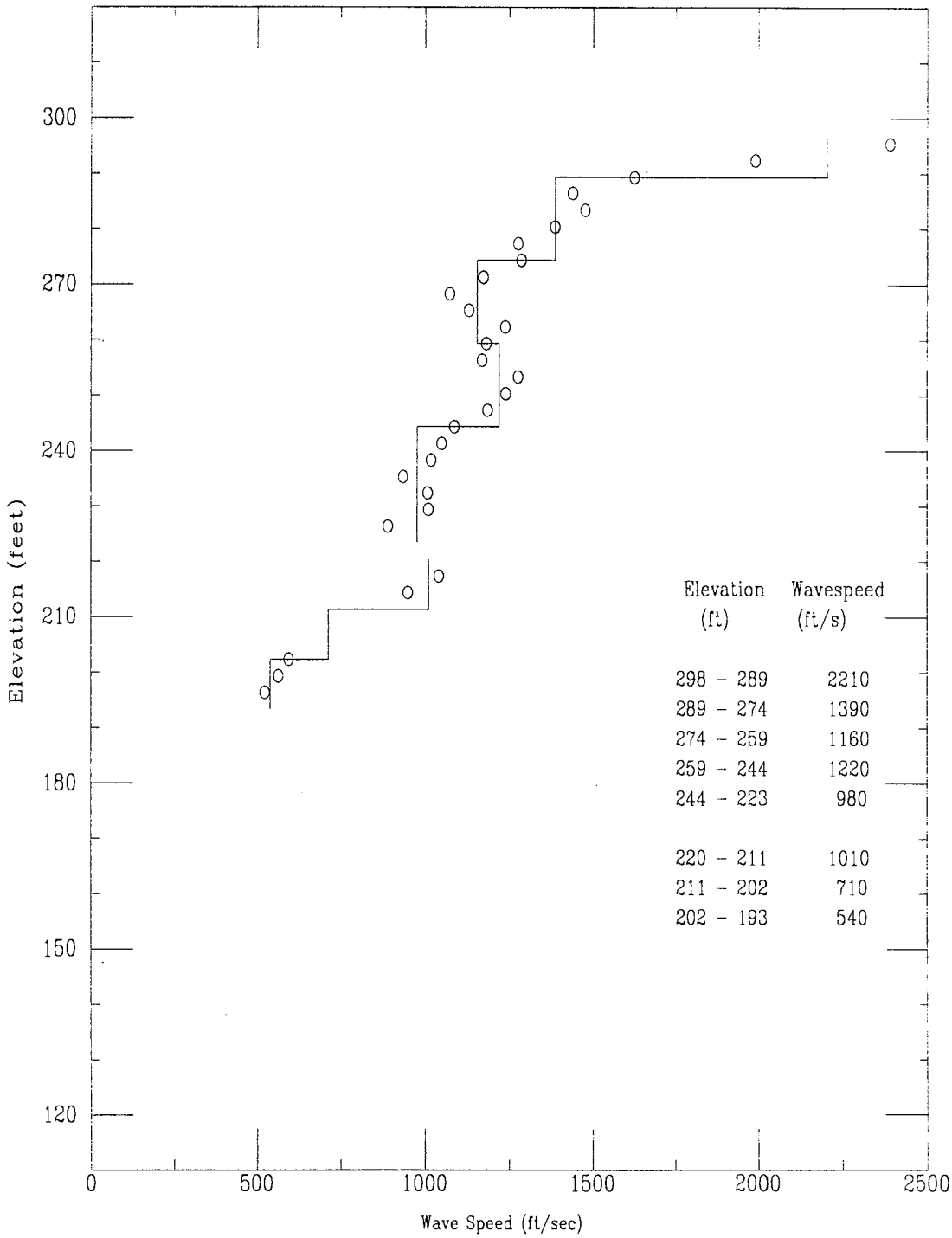
98 R 767

8/1/07

CPT-A-18 APPLIED RESEARCH ASSOCIATES, INC. 11/06/00

Shear Wave Speeds

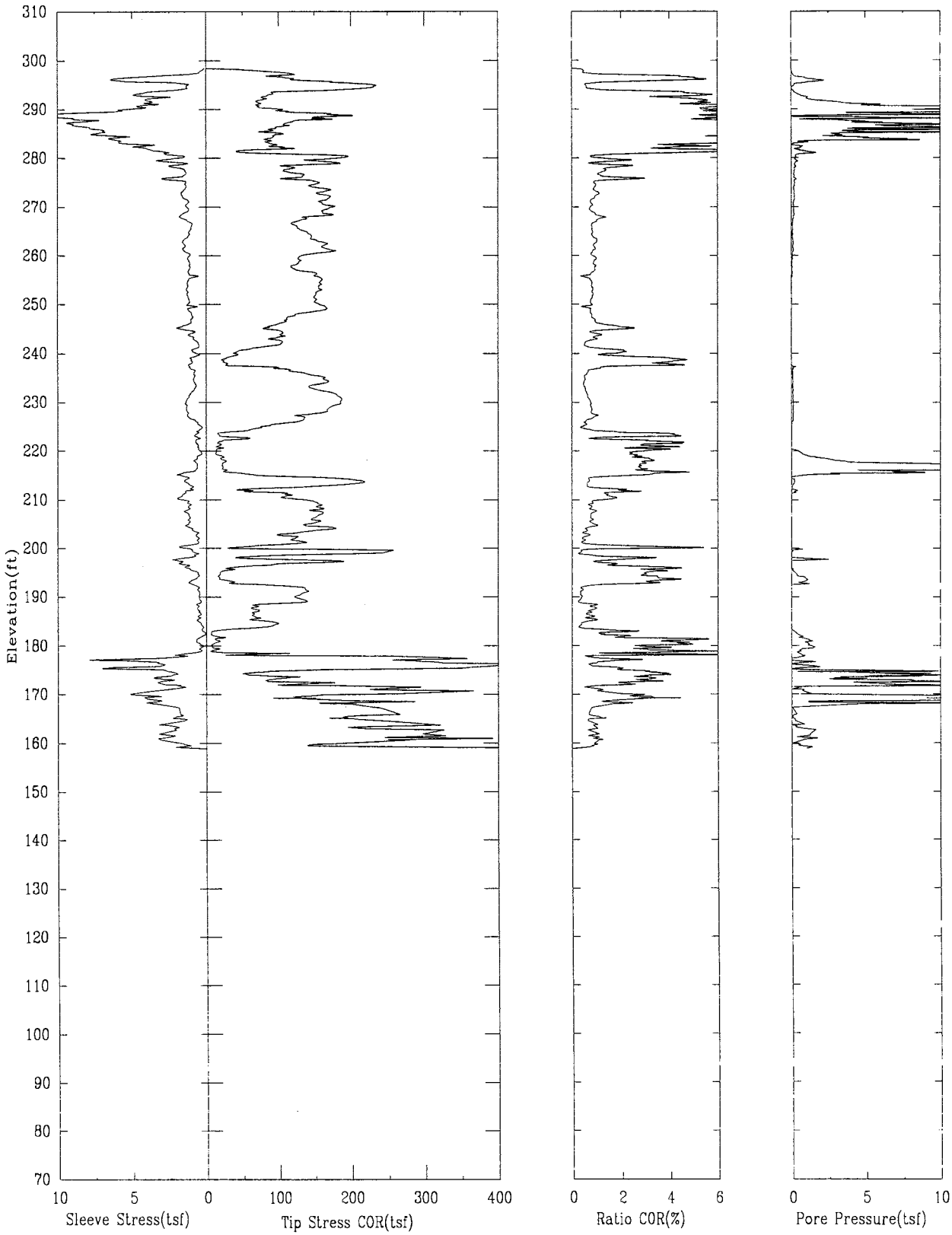


File 406n001S

417 of 767 8/1/07

CPT-A-19 APPLIED RESEARCH ASSOCIATES, INC. 11/27/00

North 78295.21 East 55580.24 Elevation 304.4

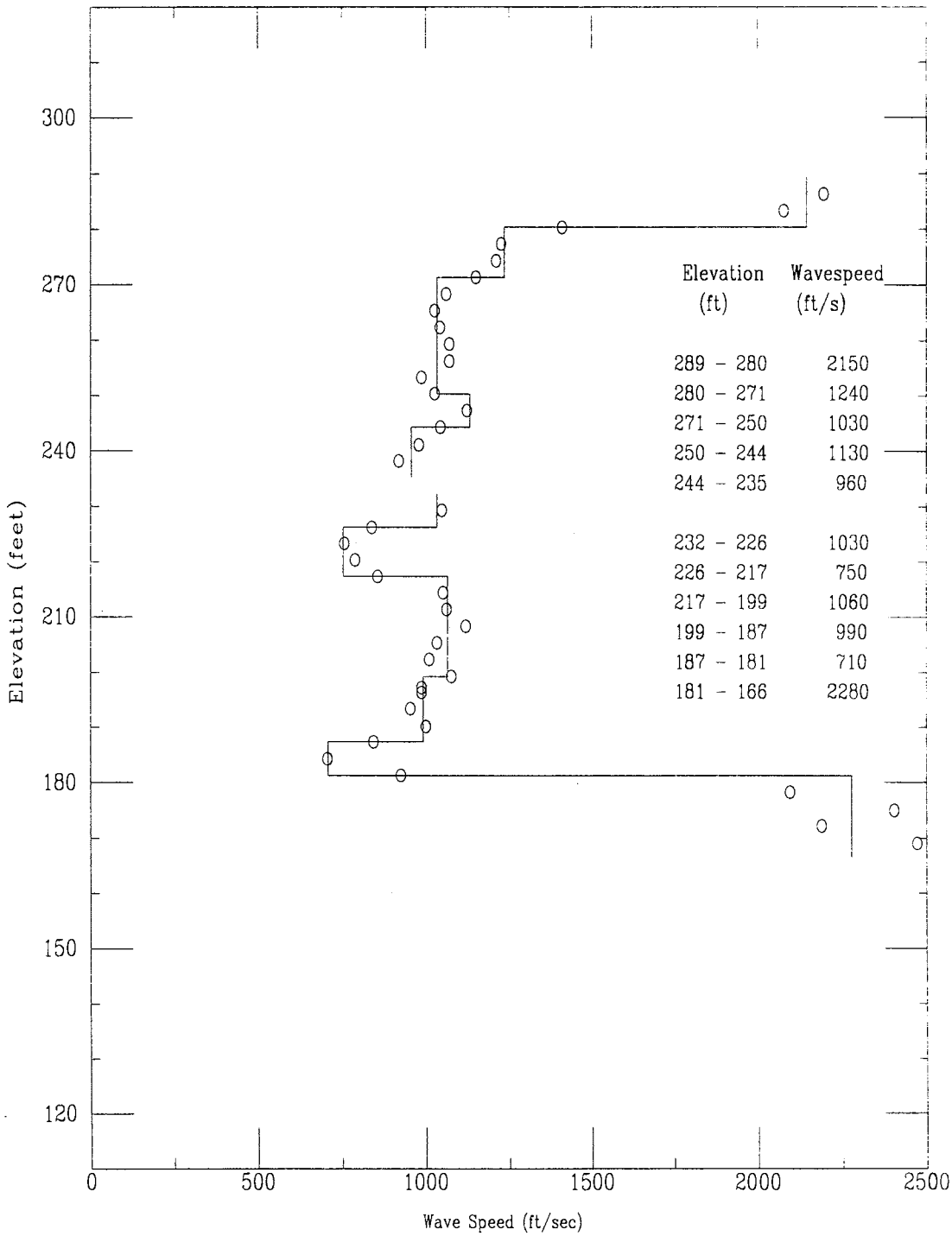


File 427N004.ECP

102 of 767 8/1/07

CPT-A-19 APPLIED RESEARCH ASSOCIATES, INC. 11/27/00

Shear Wave Speeds

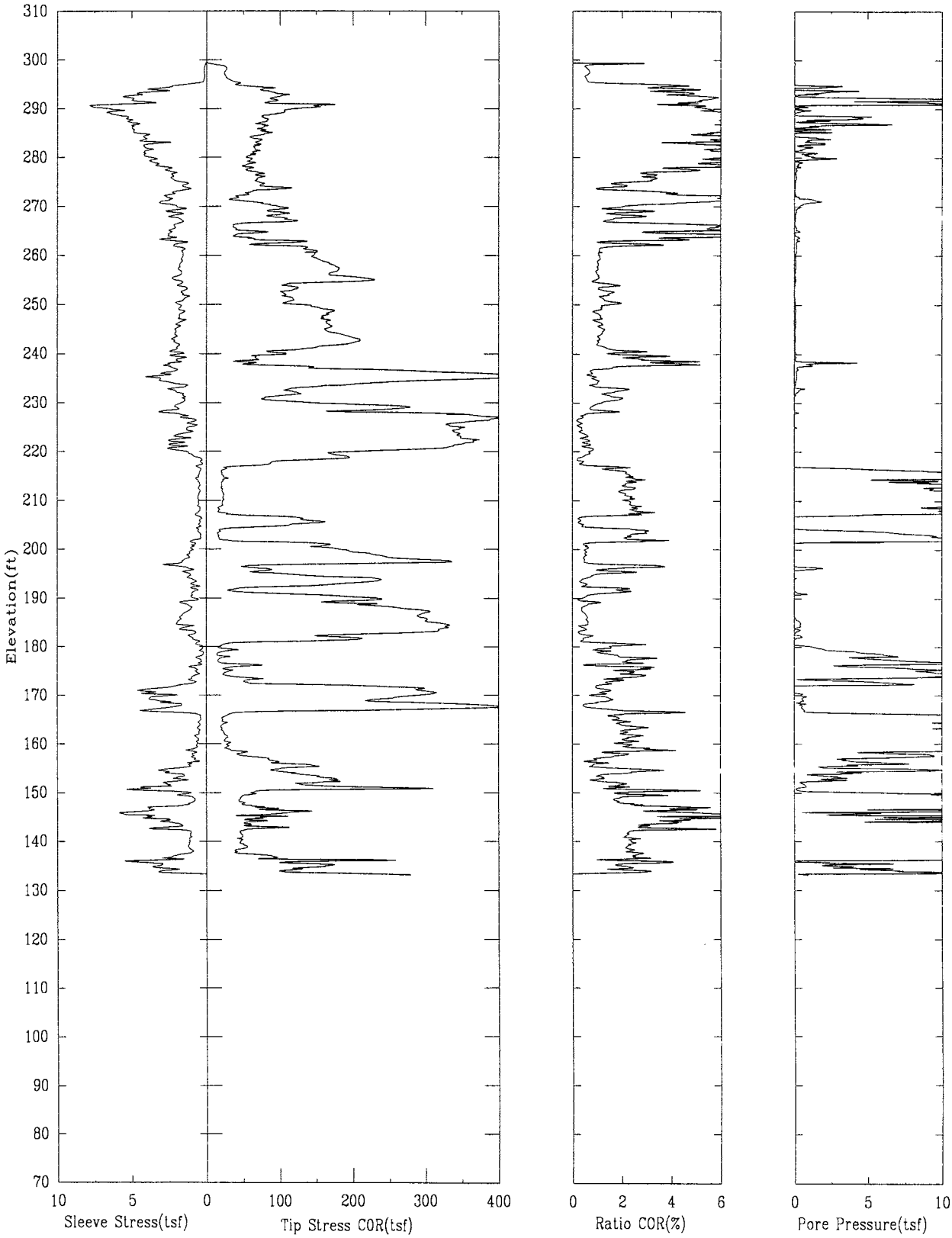


File 427n005S

428 of 767 8/1/07

CPT-A-20 APPLIED RESEARCH ASSOCIATES, INC. 11/08/00

North 78250.00 East 55715.00 Elevation 299.6

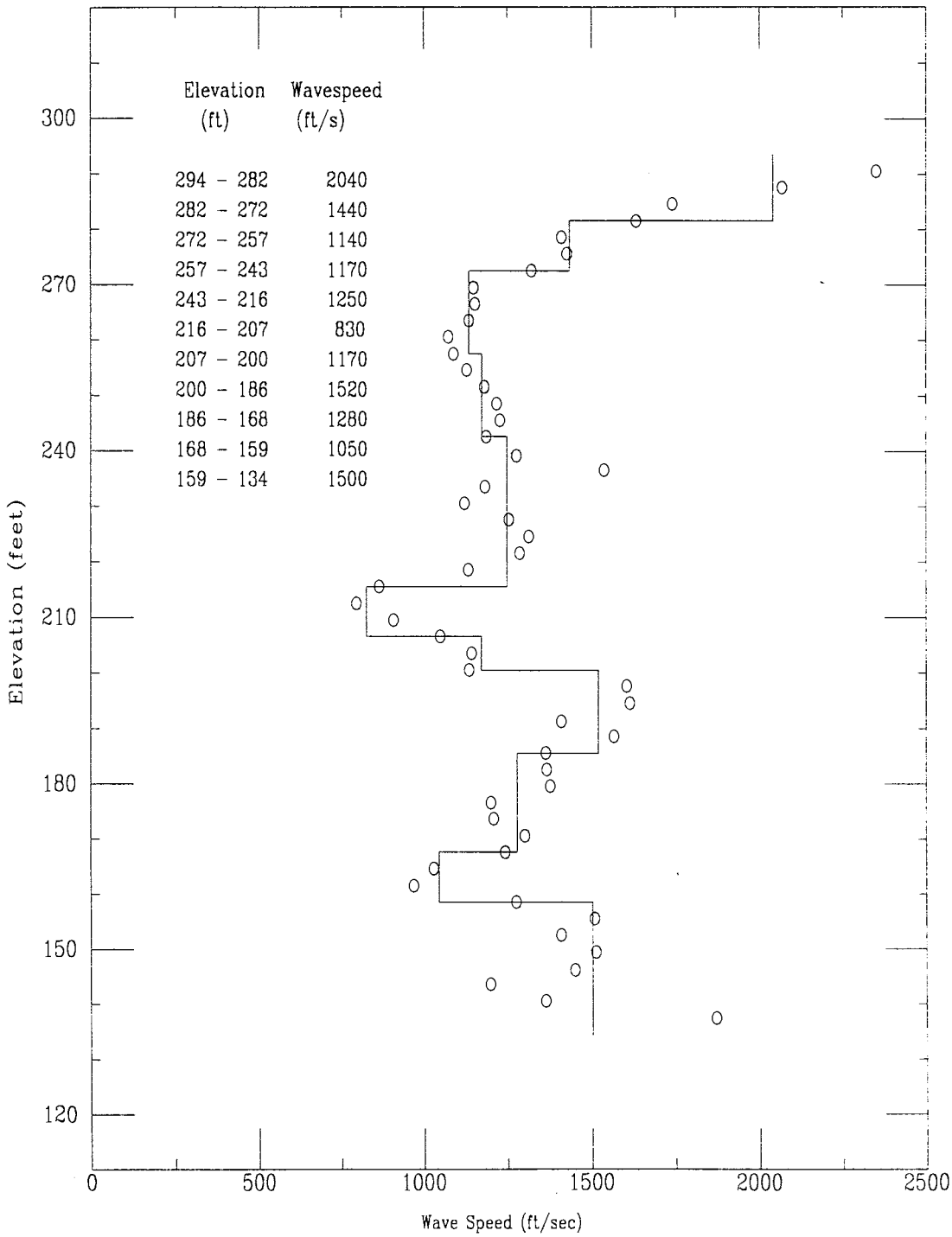


File 408N001.ECP

106 of 767 8/1/07

CPT-A-20 APPLIED RESEARCH ASSOCIATES, INC. 11/08/00

Shear Wave Speeds

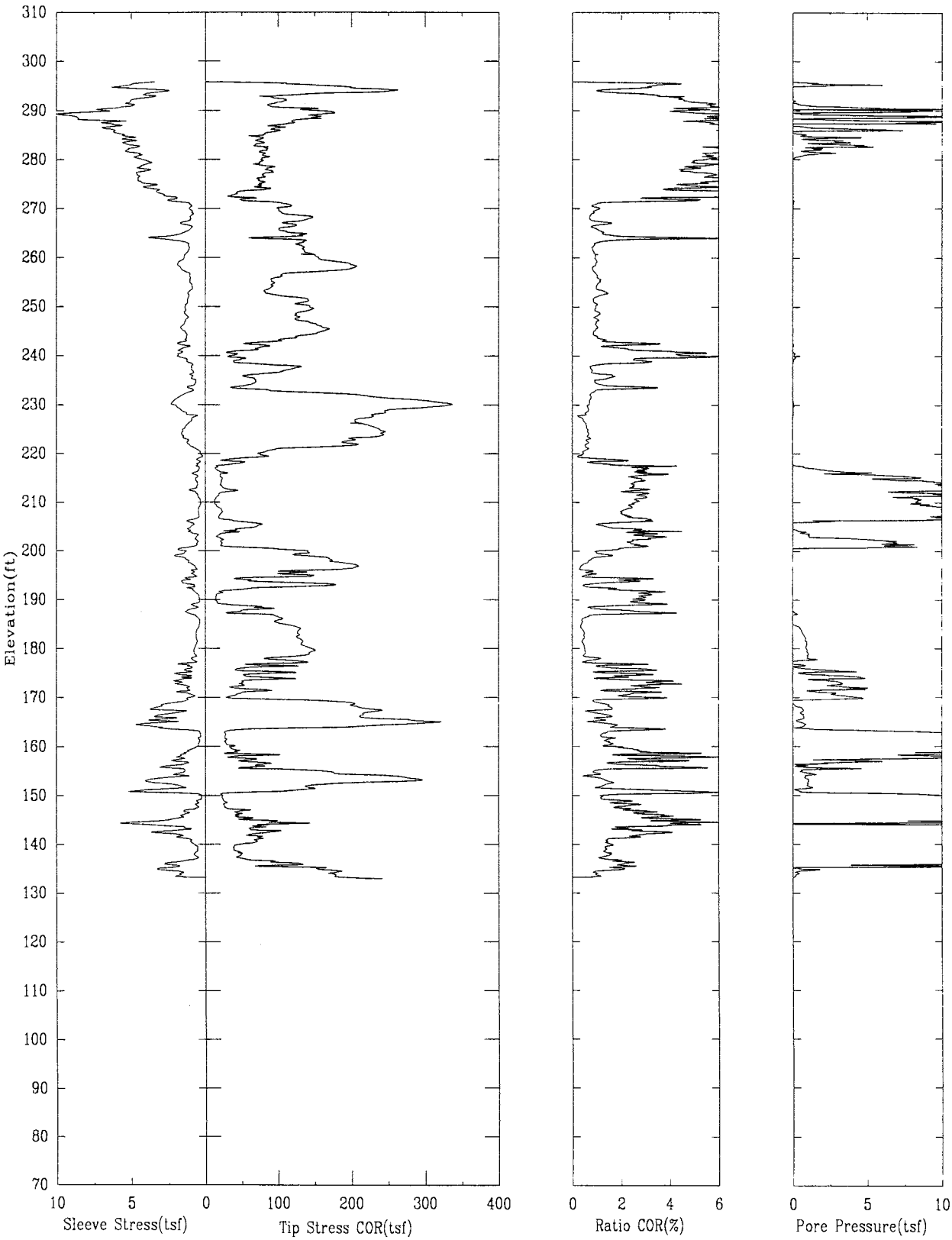


File 408n001S

440 of 767 8/1/07

CPT-A-24 APPLIED RESEARCH ASSOCIATES, INC. 11/07/00

North 78235.00 East 55664.73 Elevation 301.8



File 407N001.ECP

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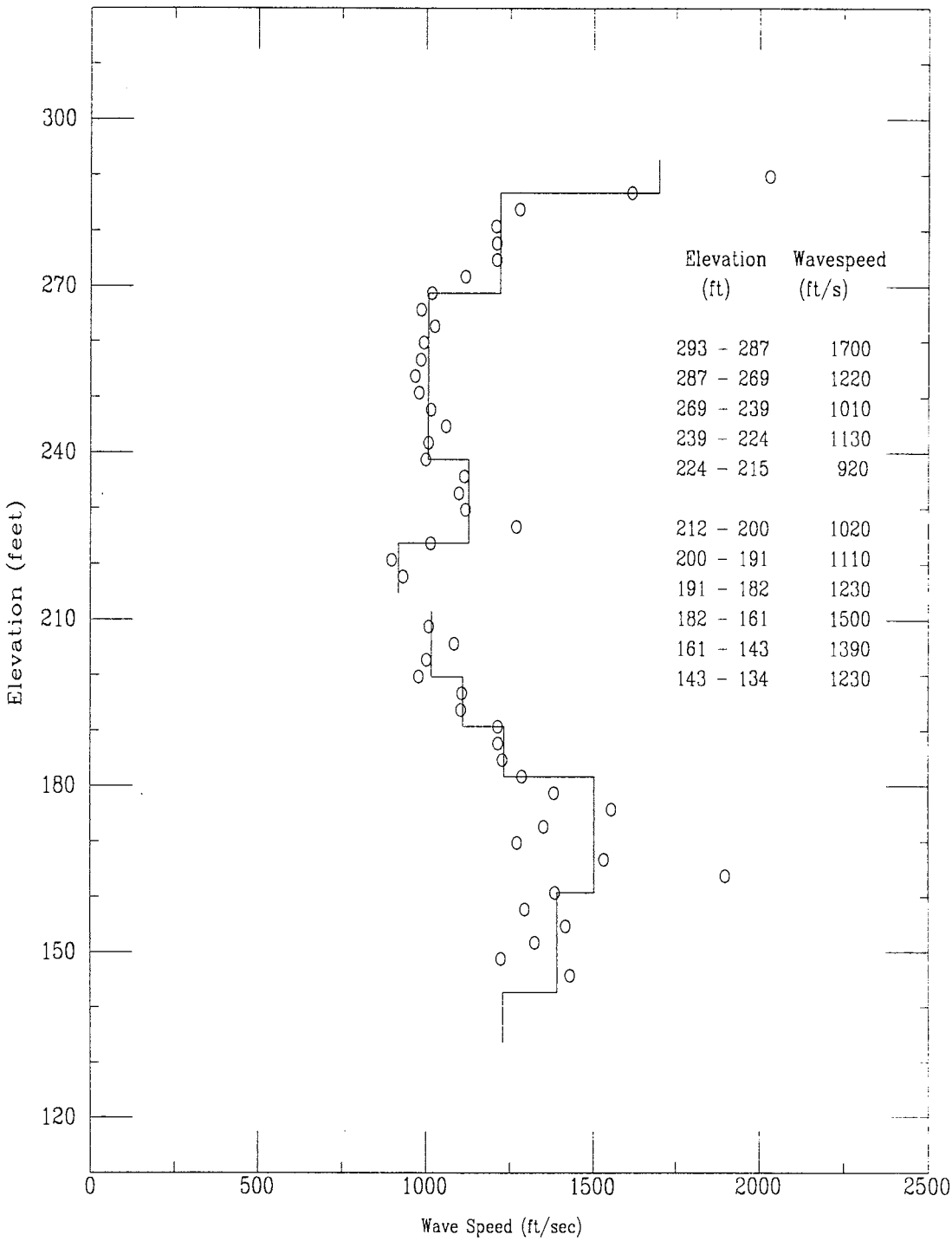
8/1/07

CPT-A-24 APPLIED RESEARCH ASSOCIATES, INC. 11/07/00

Shear Wave Speeds

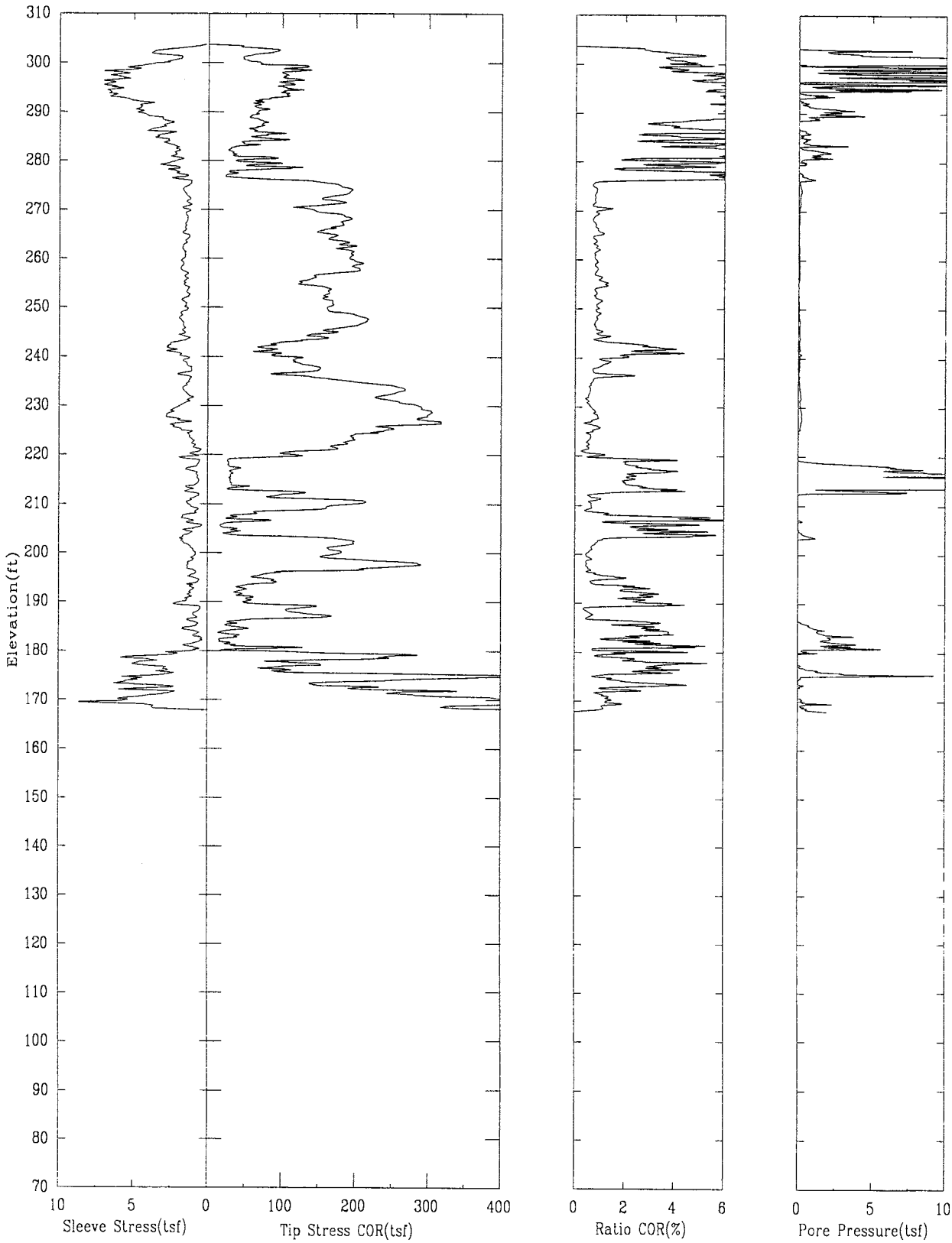


485 of 767 8/1/07

File 407n001S

CPT-A-25 APPLIED RESEARCH ASSOCIATES, INC. 11/03/00

North 78224.61 East 55448.41 Elevation 309.7



File 403N002.ECP

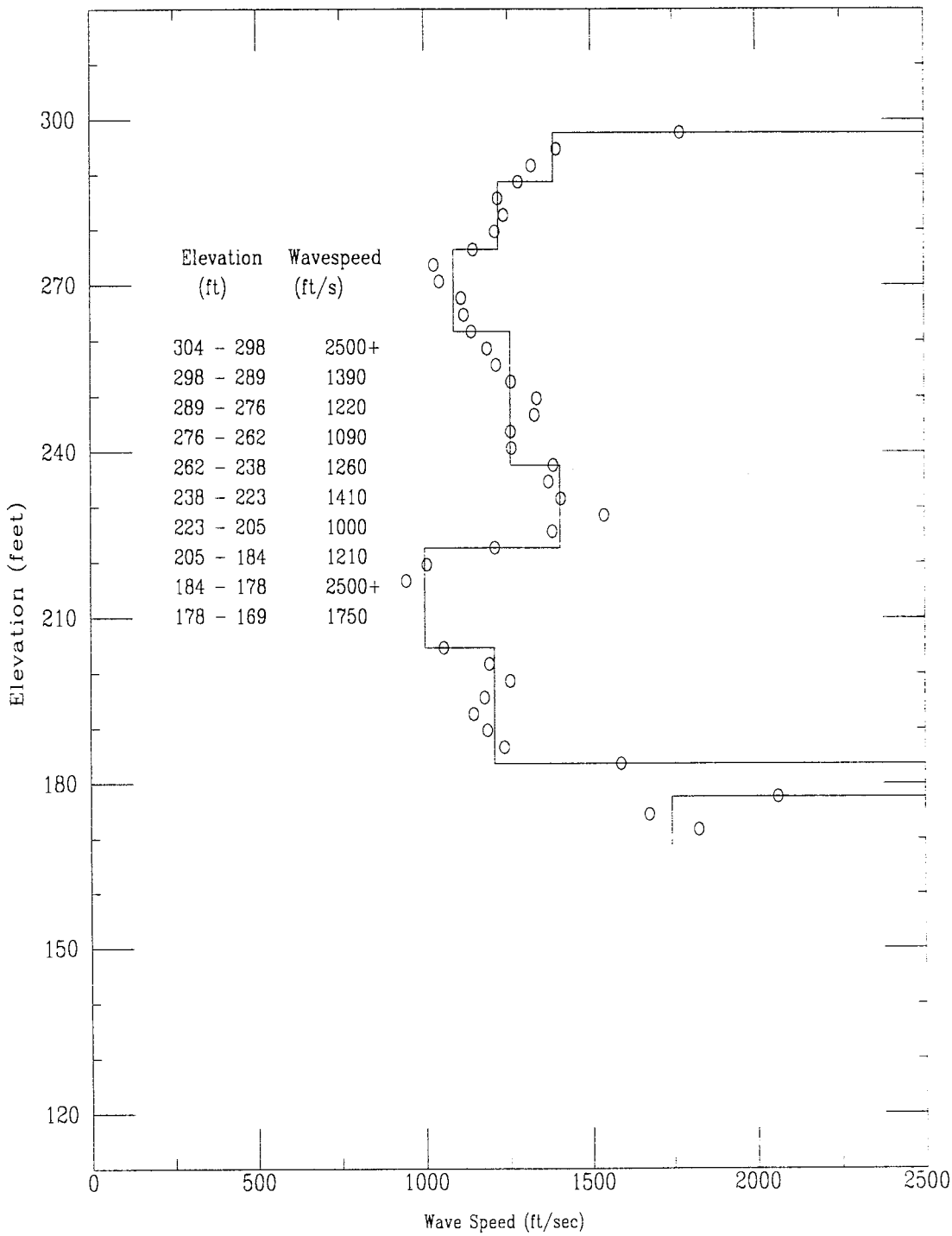
126 of 767

8/1/07

126

CPT-A-25 APPLIED RESEARCH ASSOCIATES, INC. 11/03/00

Shear Wave Speeds

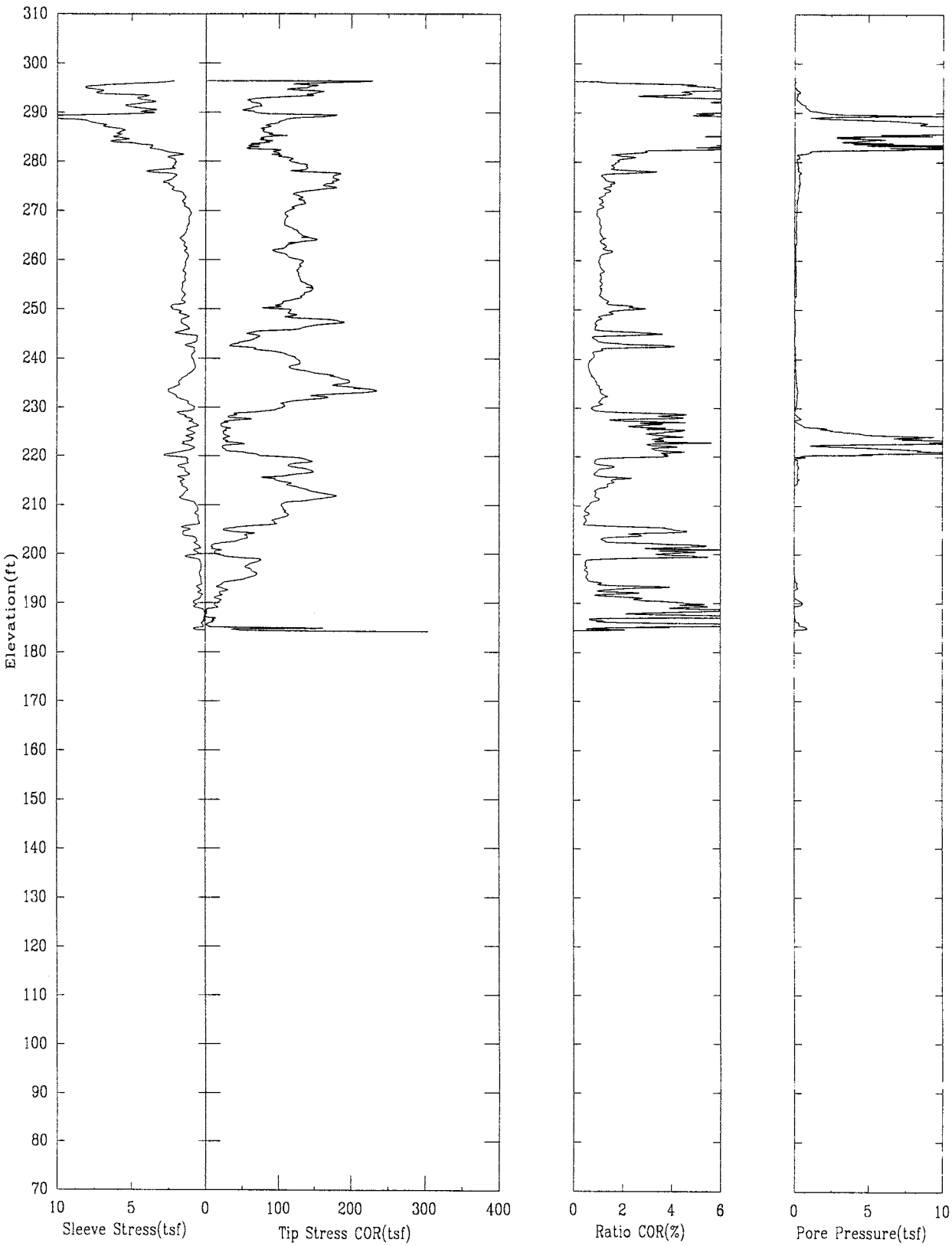


File 403n002S

498 of 767 8/1/07

CPT-A-26 APPLIED RESEARCH ASSOCIATES, INC. 11/06/00

North 78319.47 East 55617.58 Elevation 302.4



File 406N004.ECP

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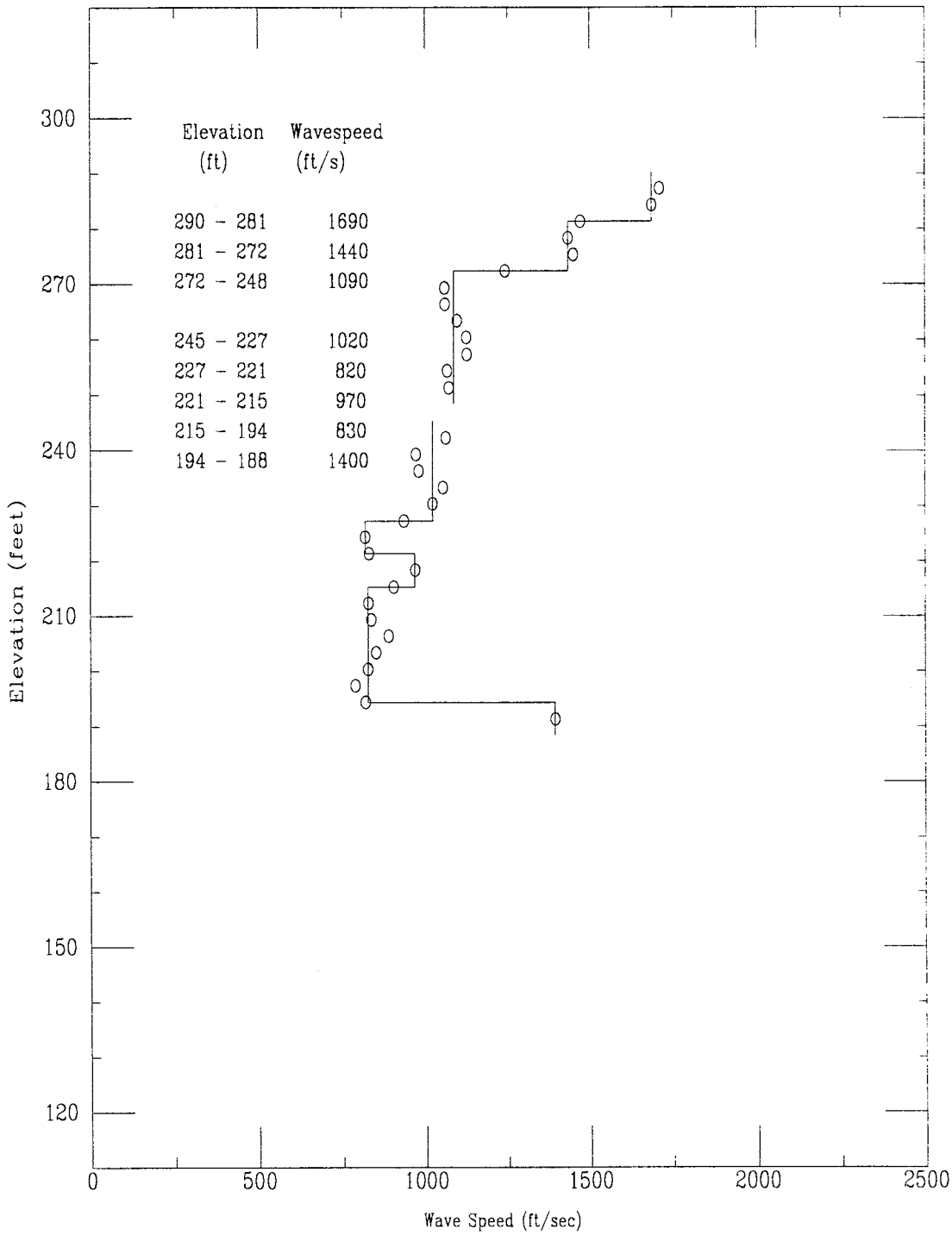
CPT-A-26 APPLIED RESEARCH ASSOCIATES, INC. 11/06/00

Shear Wave Speeds

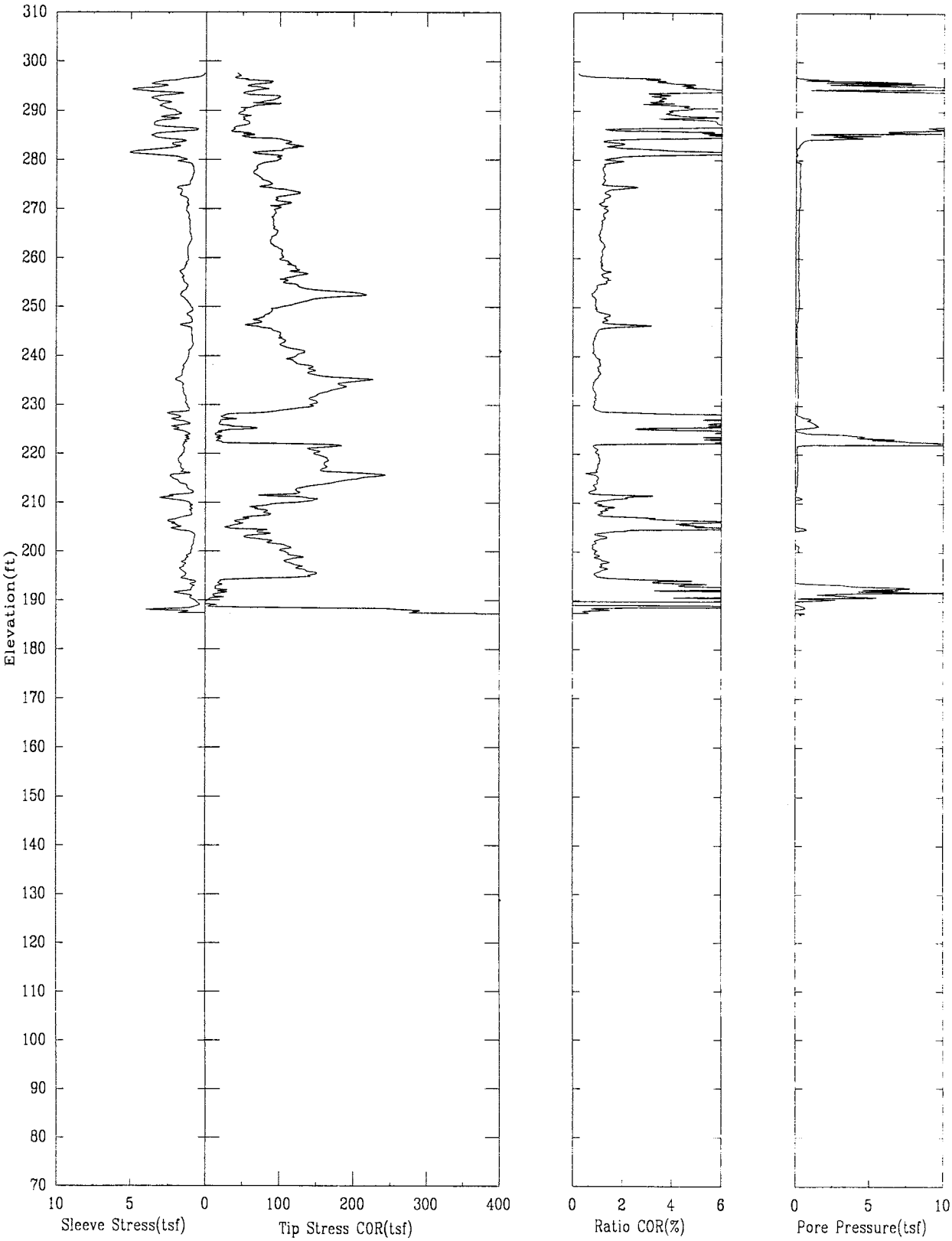


File 406n004S

511 of 767 8/1/07

CPT-A-39 APPLIED RESEARCH ASSOCIATES, INC. 02/07/01

North 78575.3 East 55512.5 Elevation 303.6

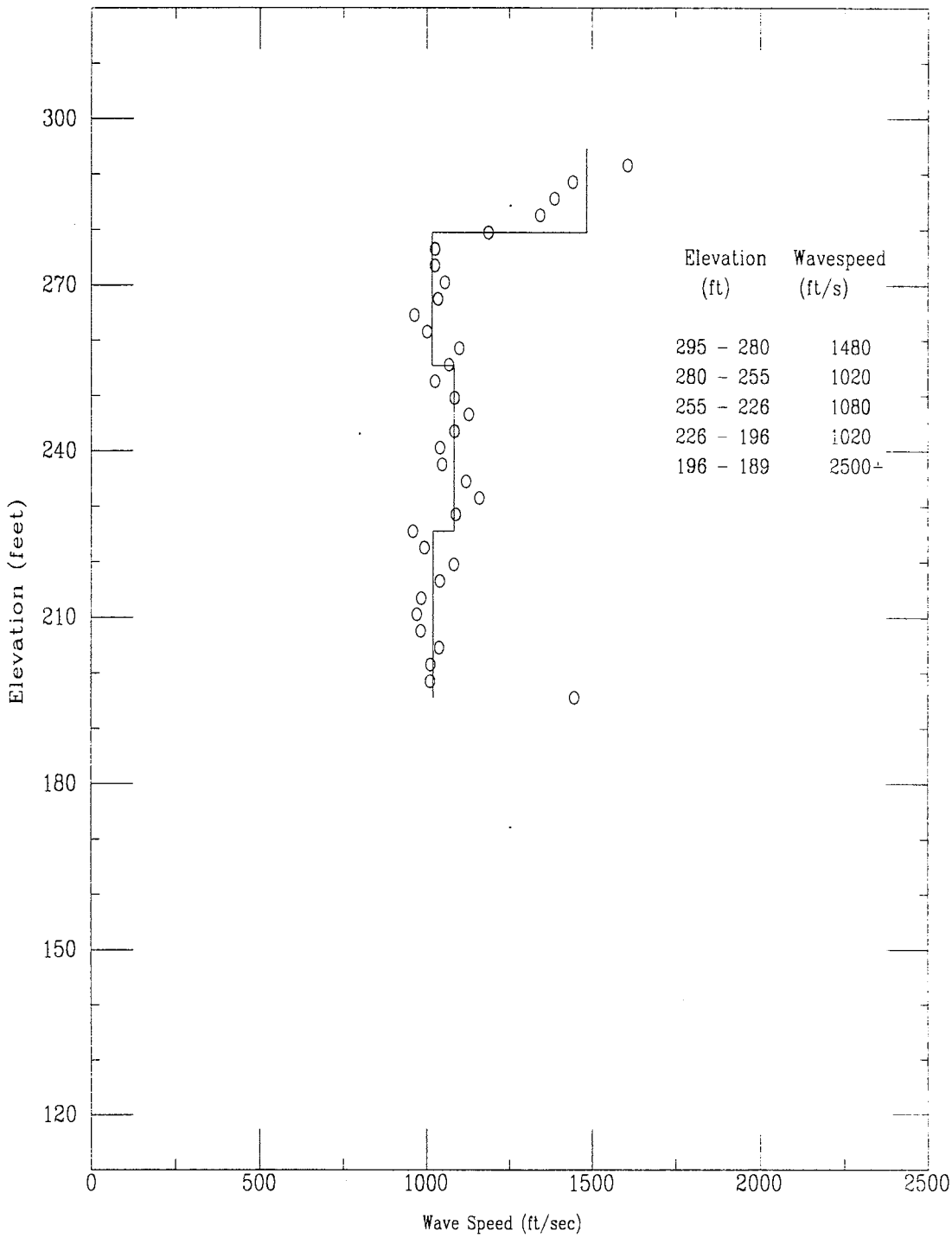


File 407F101.ECP

189 of 767 8/1/07

CPT-A-39 APPLIED RESEARCH ASSOCIATES, INC. 02/07/01

Shear Wave Speeds

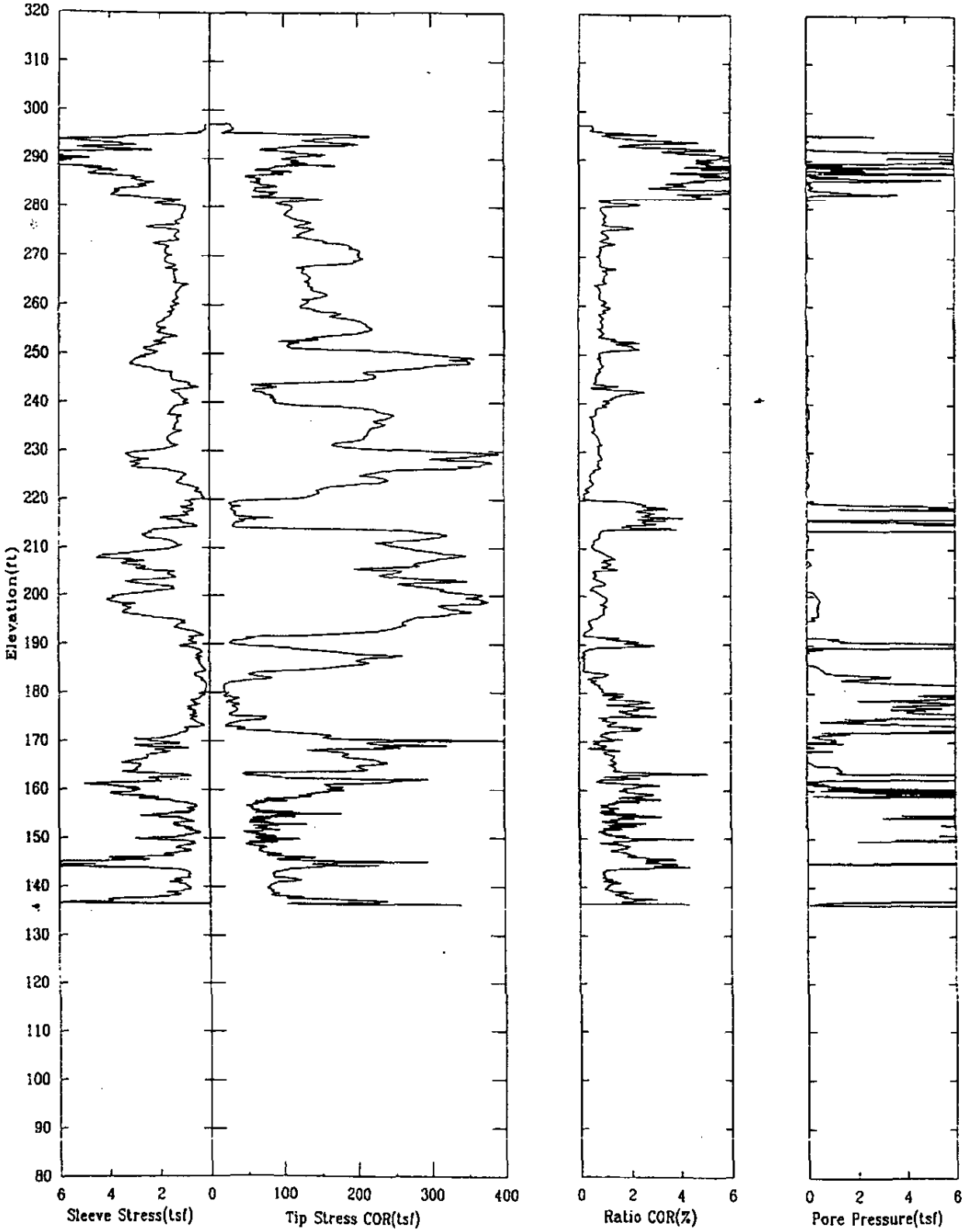


File 407f101S

656 of 767 8/1/07

CPT-175 APPLIED RESEARCH ASSOCIATES, INC. 03/20/98

North 78770 East 55451 Elevation 303.1



File 320M801.ECP

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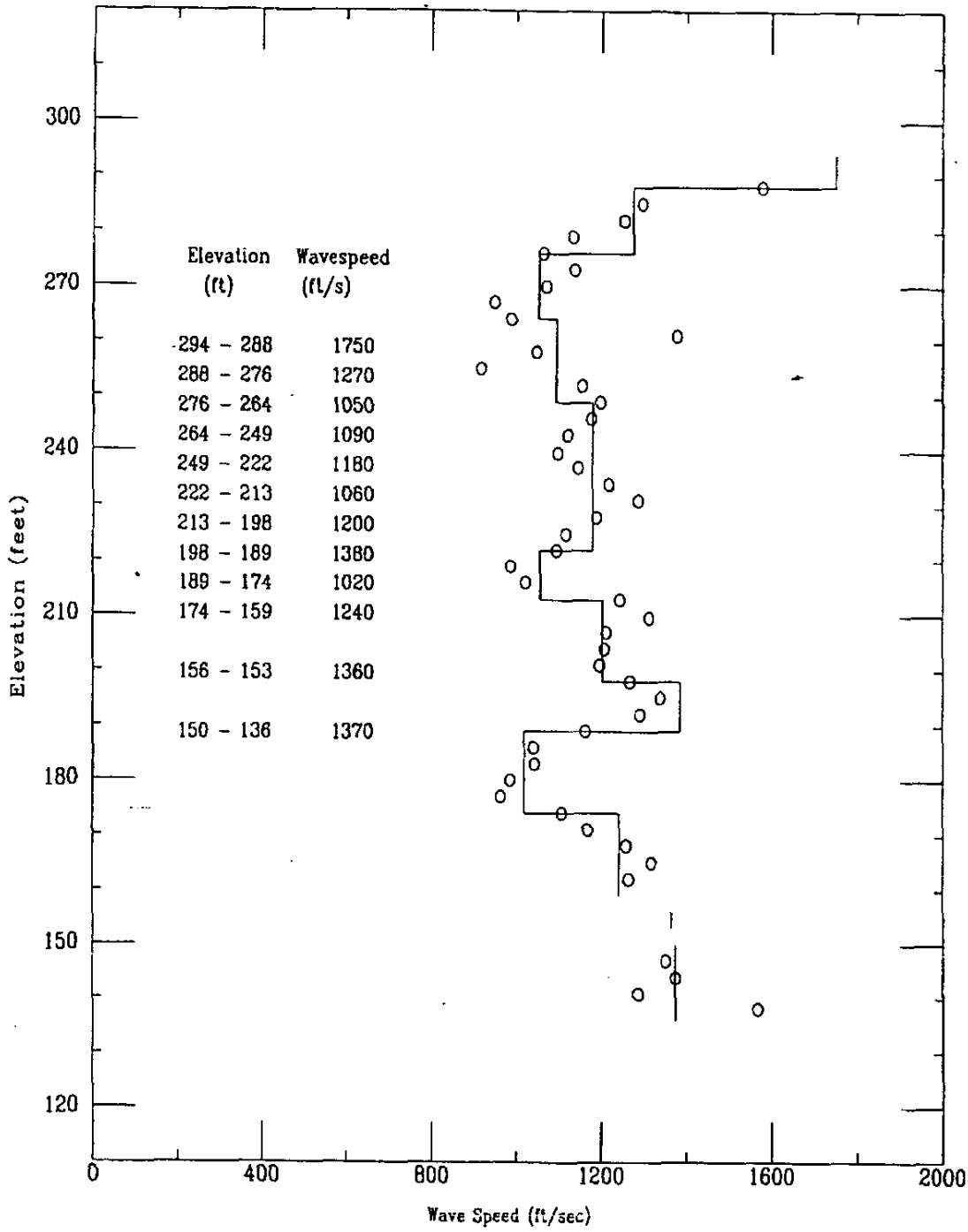
8/1/07

CPT-175 APPLIED RESEARCH ASSOCIATES, INC. 03/20/98

Shear Wave Speeds



File 320m801S

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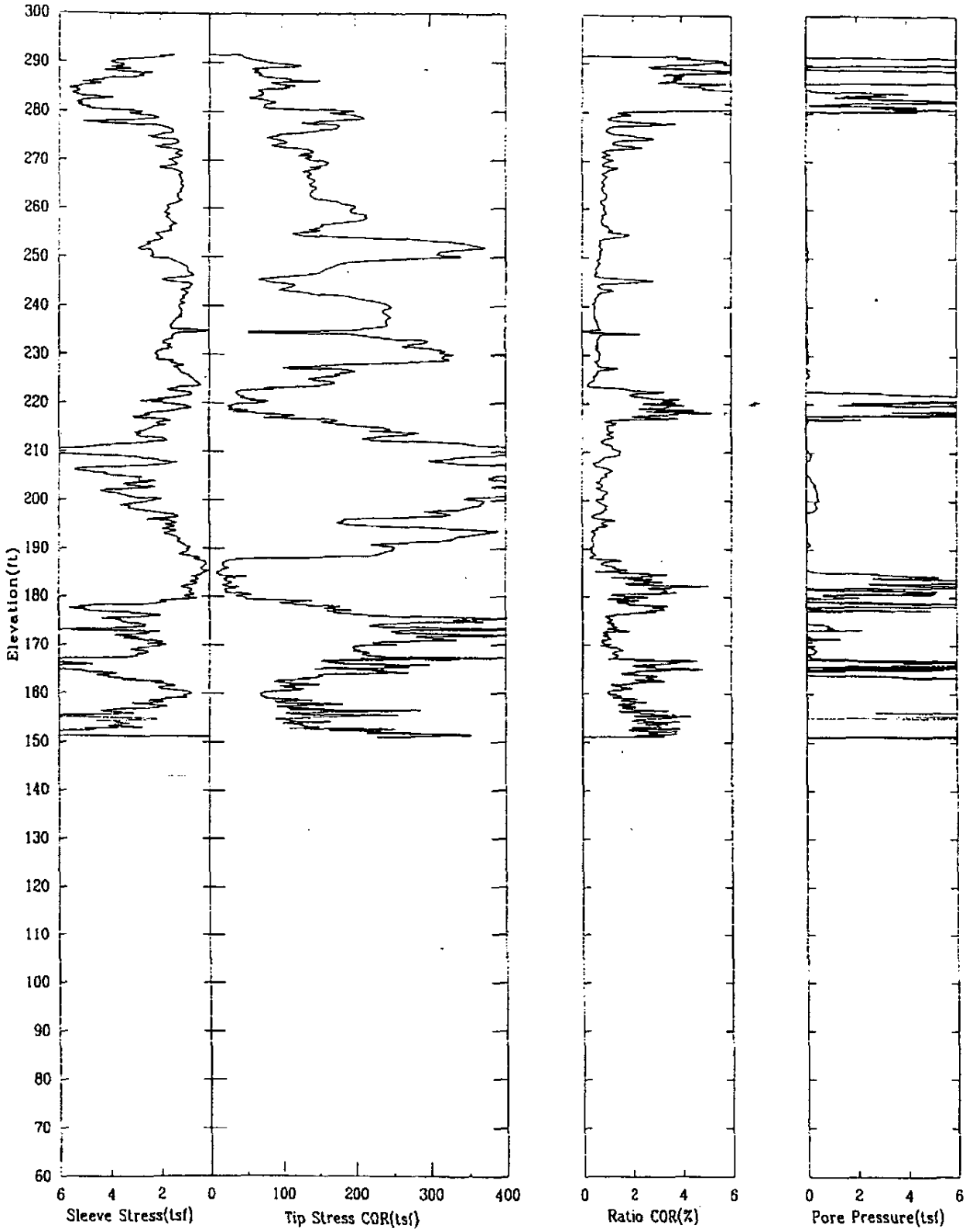
8/1/07

CPT-176 APPLIED RESEARCH ASSOCIATES, INC. 03/26/98

North 78770 East 55583 Elevation 297.6



File 326M805.ECP

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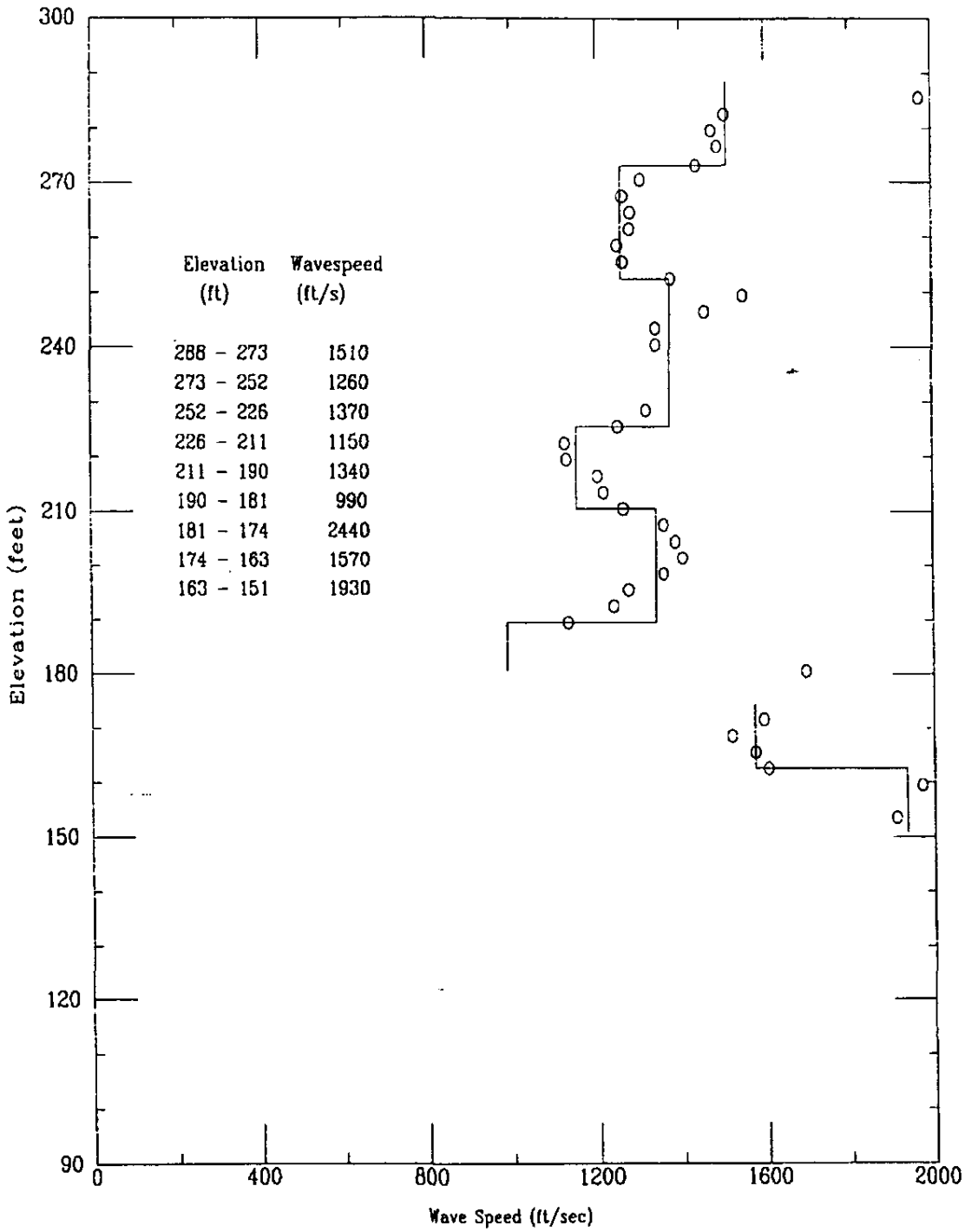
8/1/07

CPT-176 APPLIED RESEARCH ASSOCIATES, INC. 03/26/98

Shear Wave Speeds



File 326m805S

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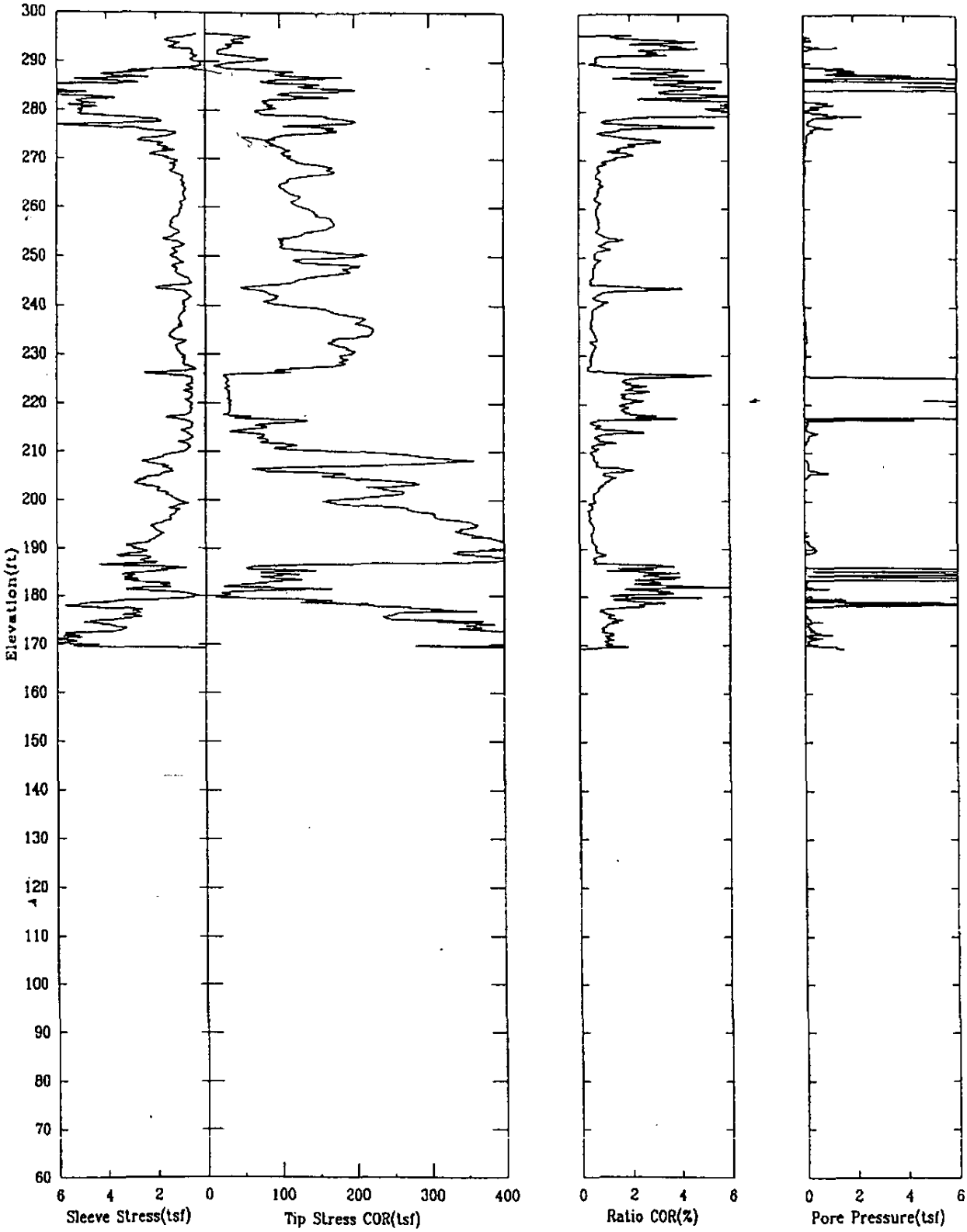
8/1/07

CPT-177 APPLIED RESEARCH ASSOCIATES, INC. 03/27/98

North 78770 East 55715 Elevation 301.7



File 327M801.ECP

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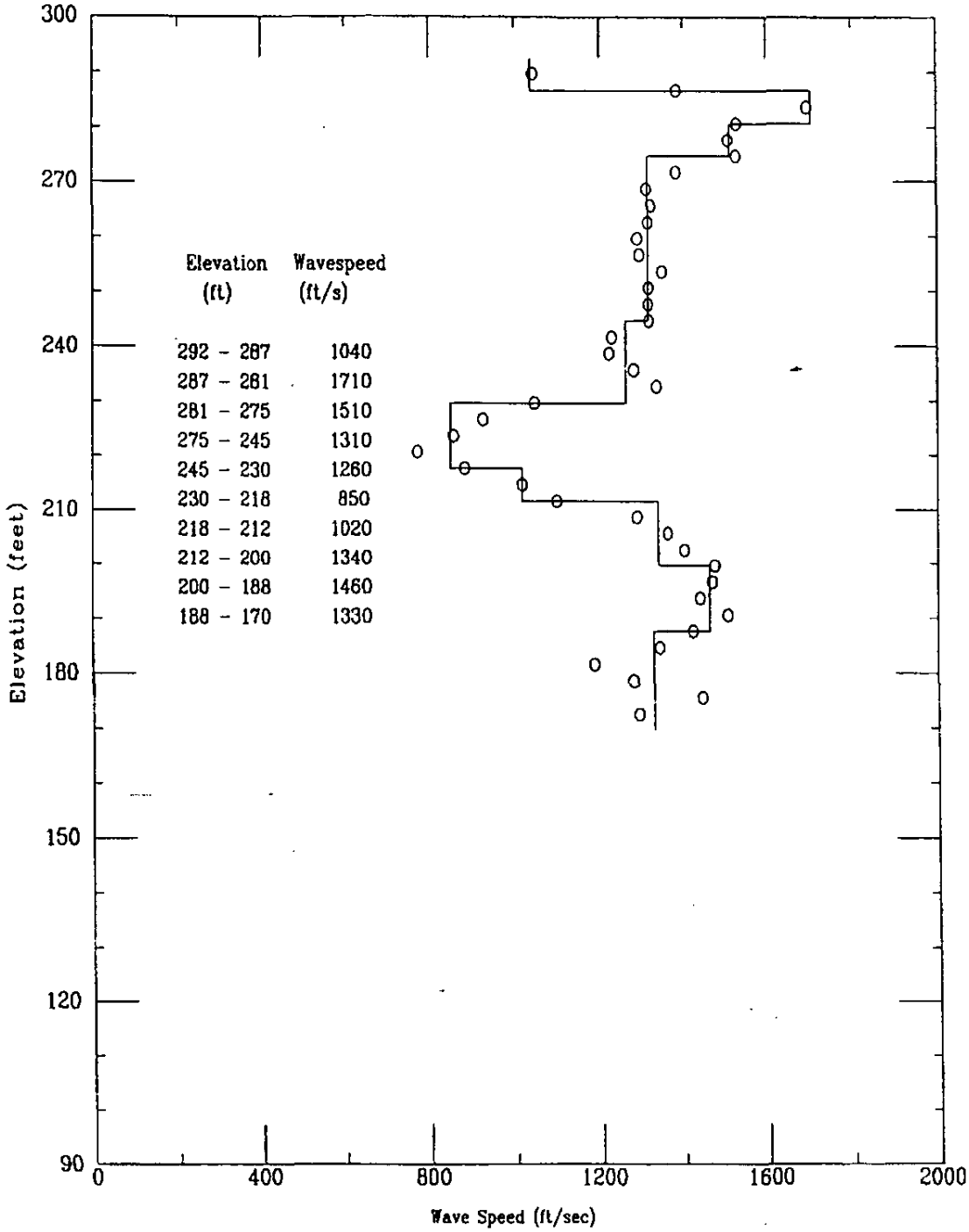
8/1/07

CPT-177 APPLIED RESEARCH ASSOCIATES, INC. 03/27/98

Shear Wave Speeds



File 327m801S

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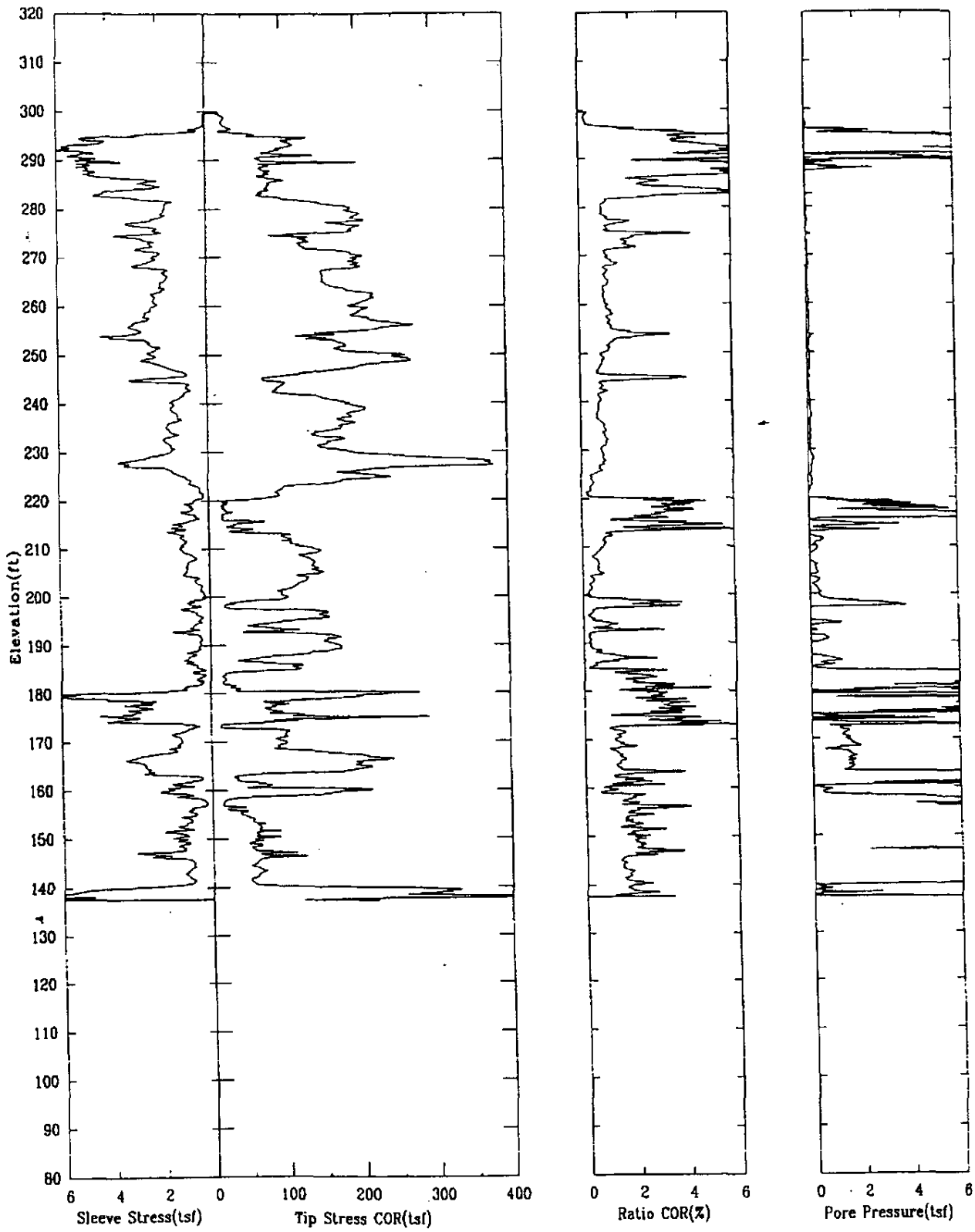
8/1/07

CPT-178 APPLIED RESEARCH ASSOCIATES, INC. 03/19/98

North 78640 East 55385 Elevation 305.6



File 419M801.ECP

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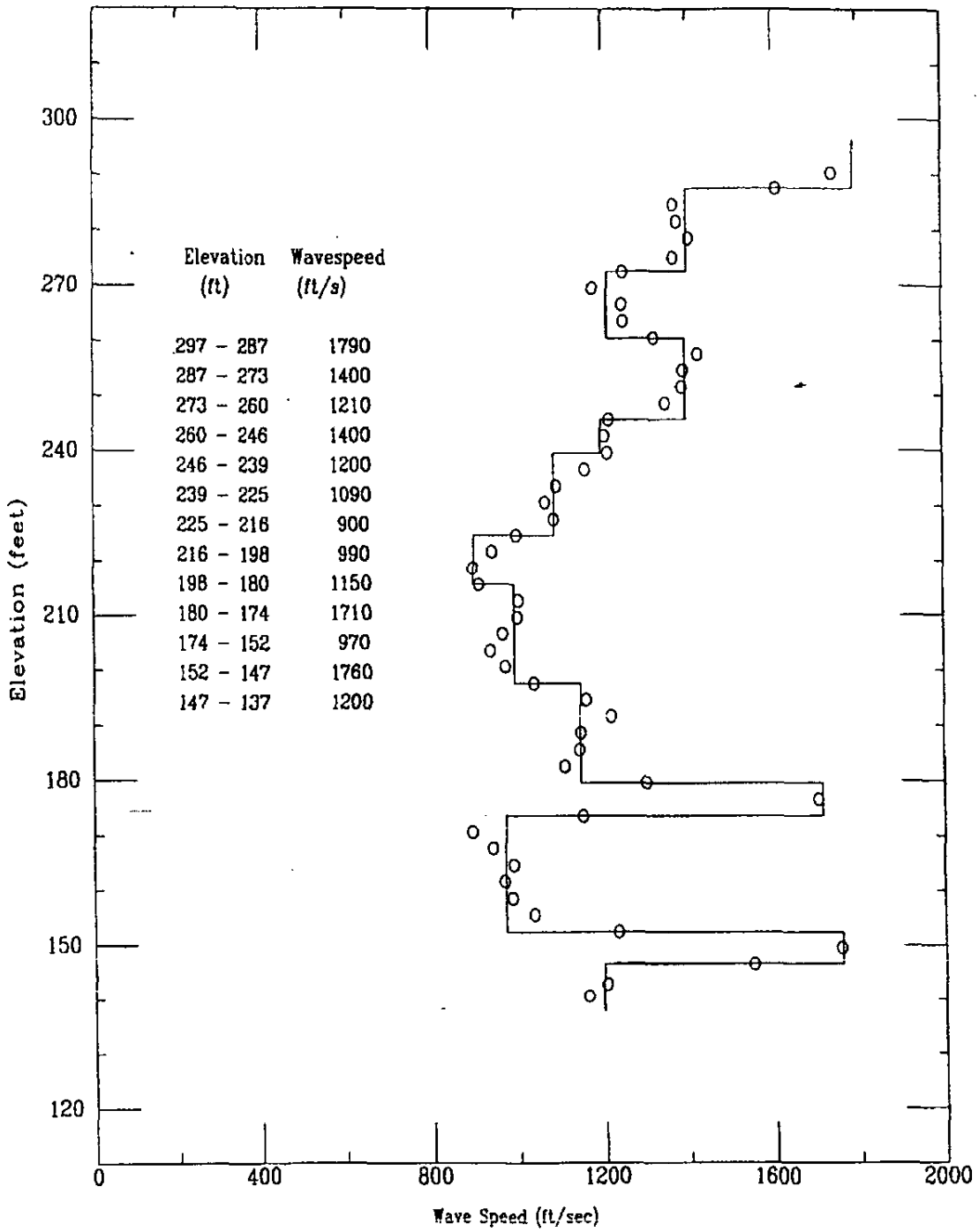
8/1/07

CPT-178 APPLIED RESEARCH ASSOCIATES, INC. 03/19/98

Shear Wave Speeds



File 419mB01S

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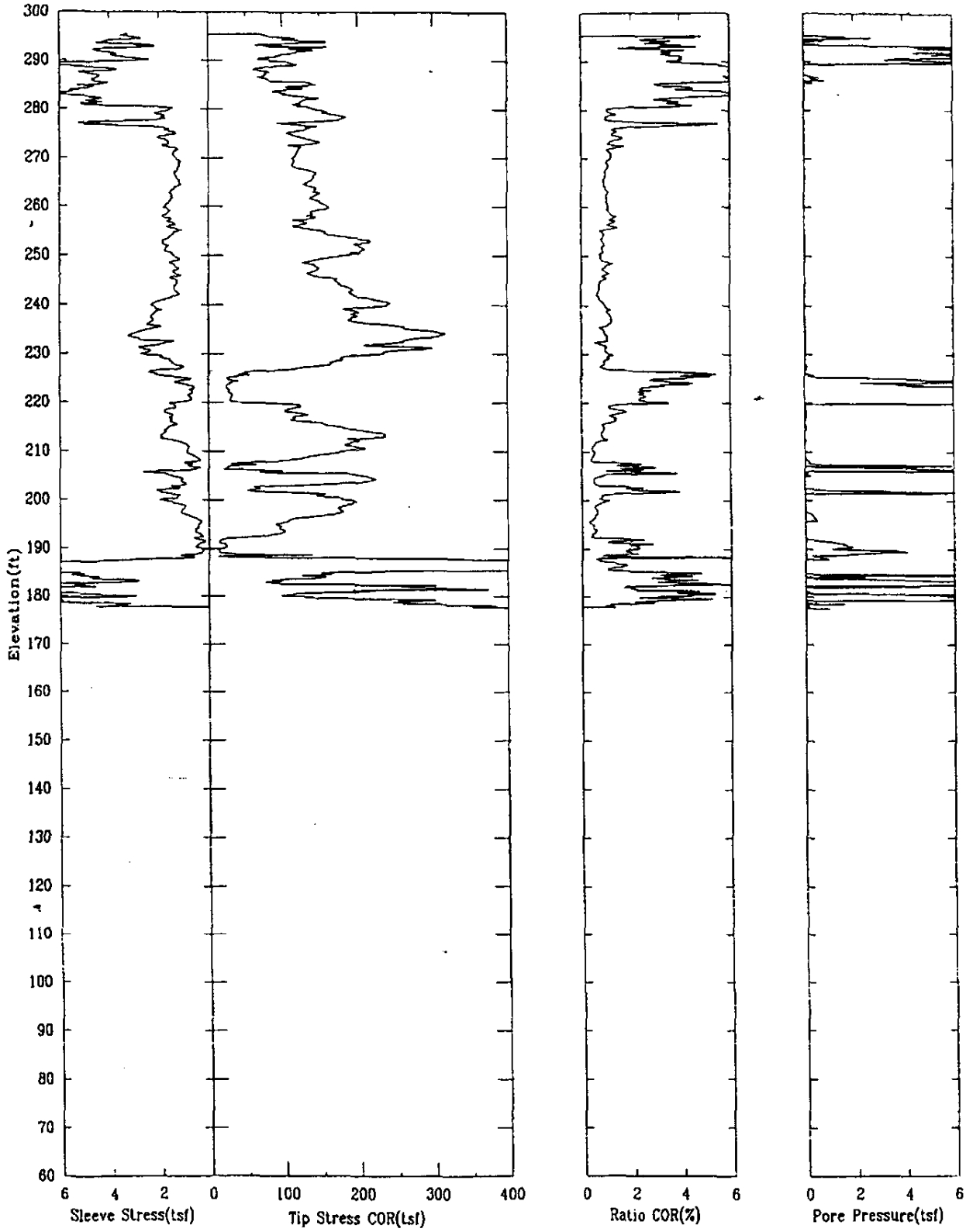
8/1/07

CPT-179 APPLIED RESEARCH ASSOCIATES, INC. 03/24/98

North 78640 East 55518 Elevation 301.4



File 324M604.ECP

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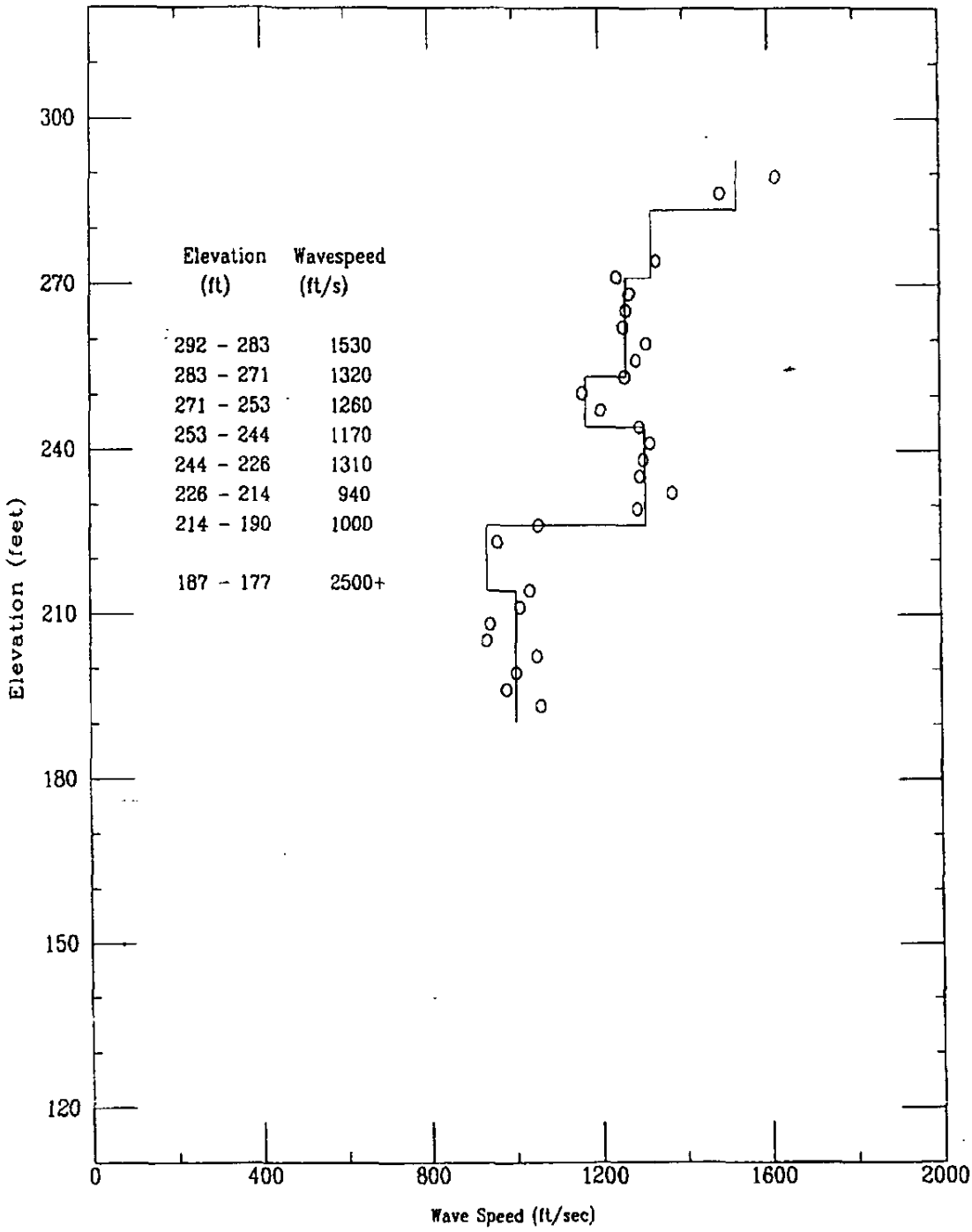
8/1/07

CPT-179 APPLIED RESEARCH ASSOCIATES, INC. 03/24/98

Shear Wave Speeds



File 324m804S

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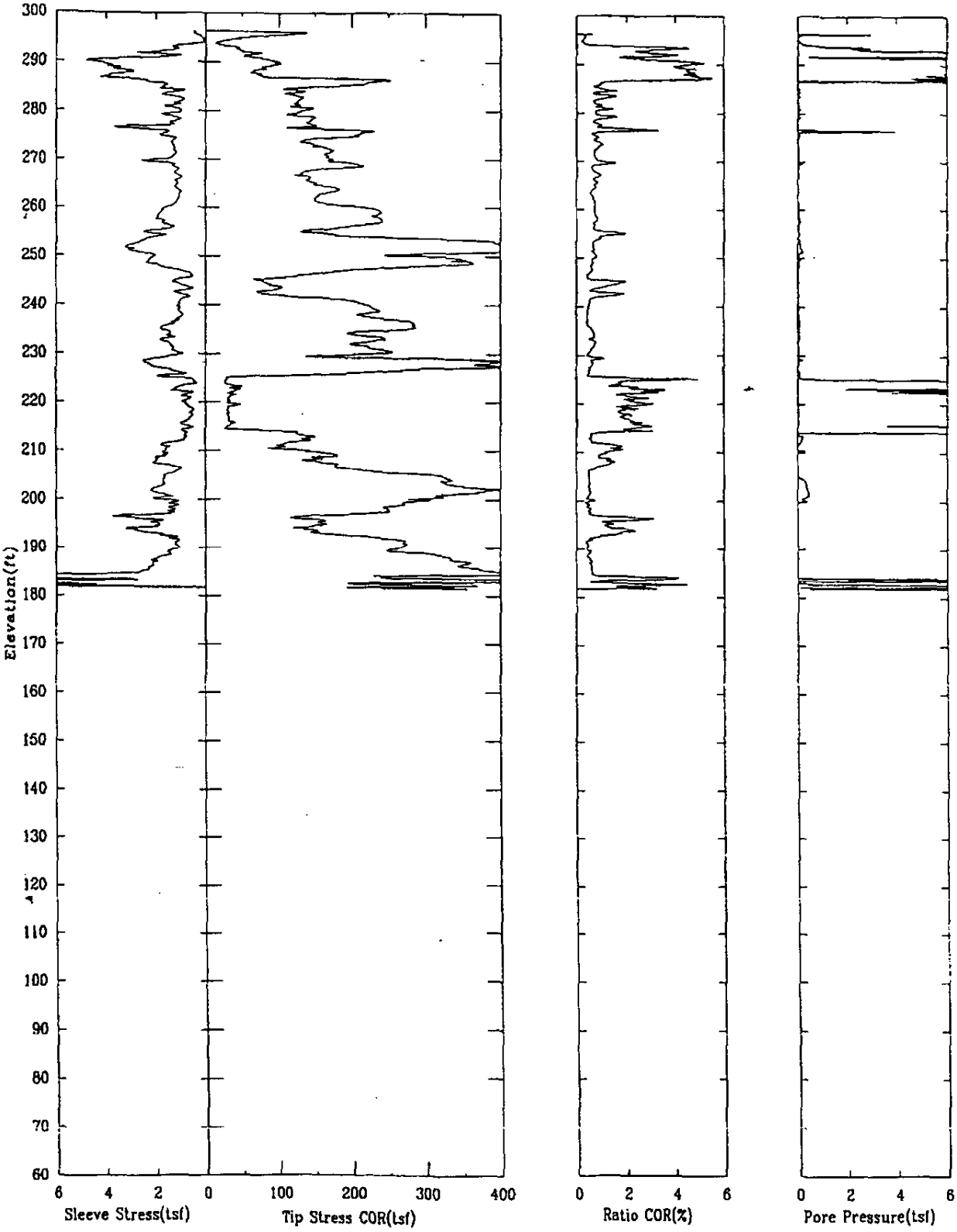
8/1/07

CPT-180 APPLIED RESEARCH ASSOCIATES, INC. 03/26/98

North 78640 East 55650 Elevation 302.3



File 326M802.ECP

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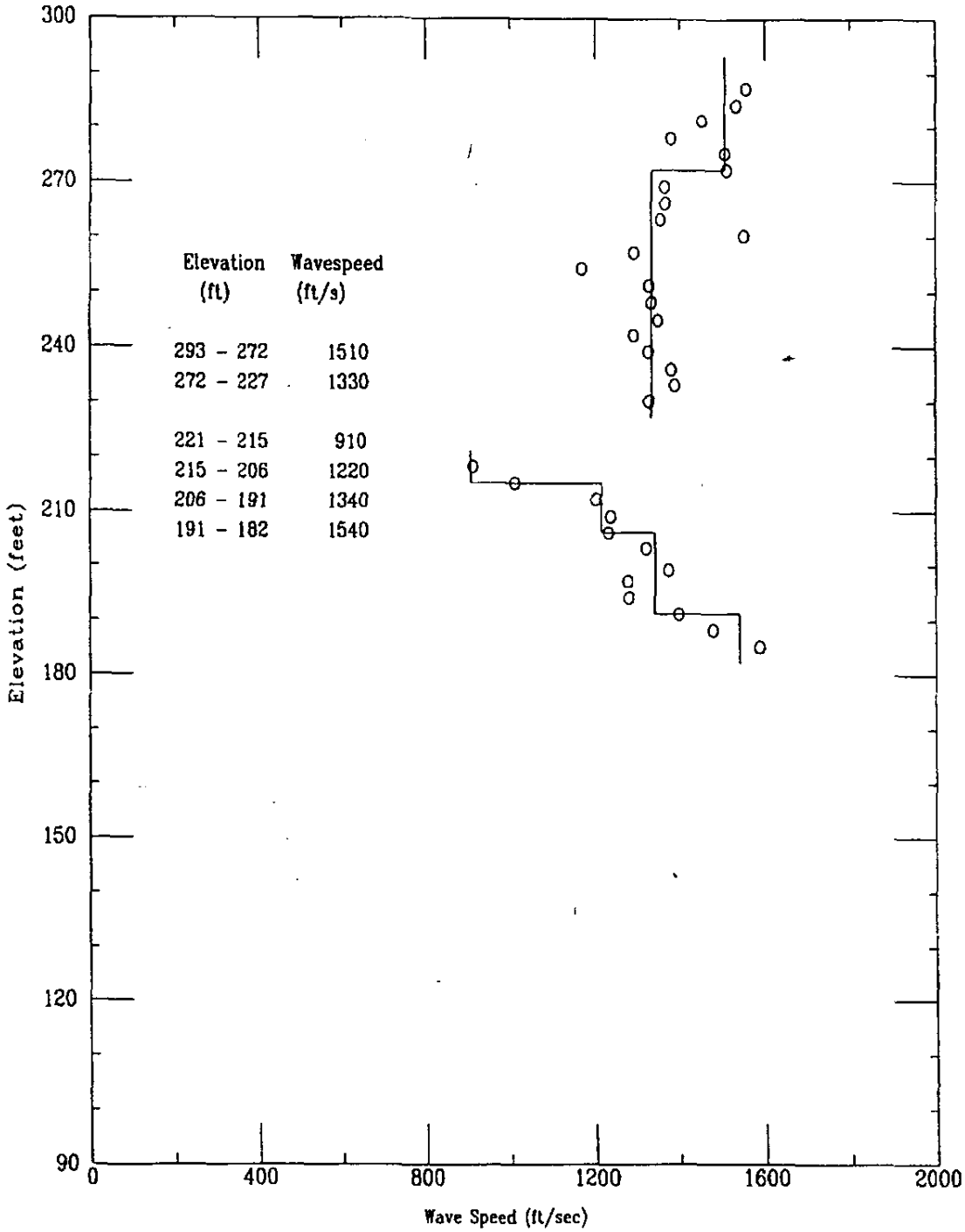
CPT-180 APPLIED RESEARCH ASSOCIATES, INC. 03/26/98

Shear Wave Speeds



File 326m8025

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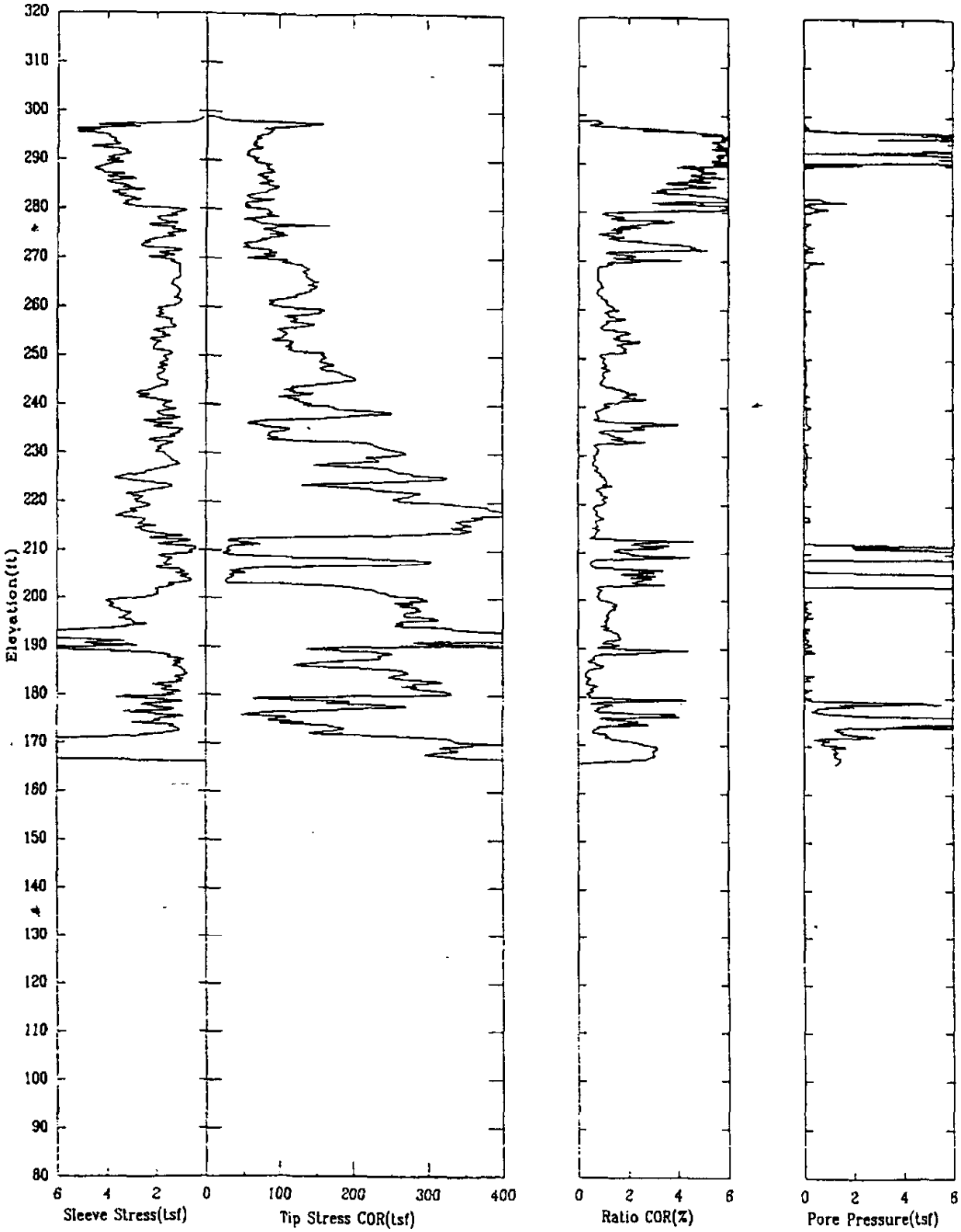
8/1/07

CPT-181 APPLIED RESEARCH ASSOCIATES, INC. 03/10/98

North 78510 East 55330 Elevation 304.9



File 410M801.ECP

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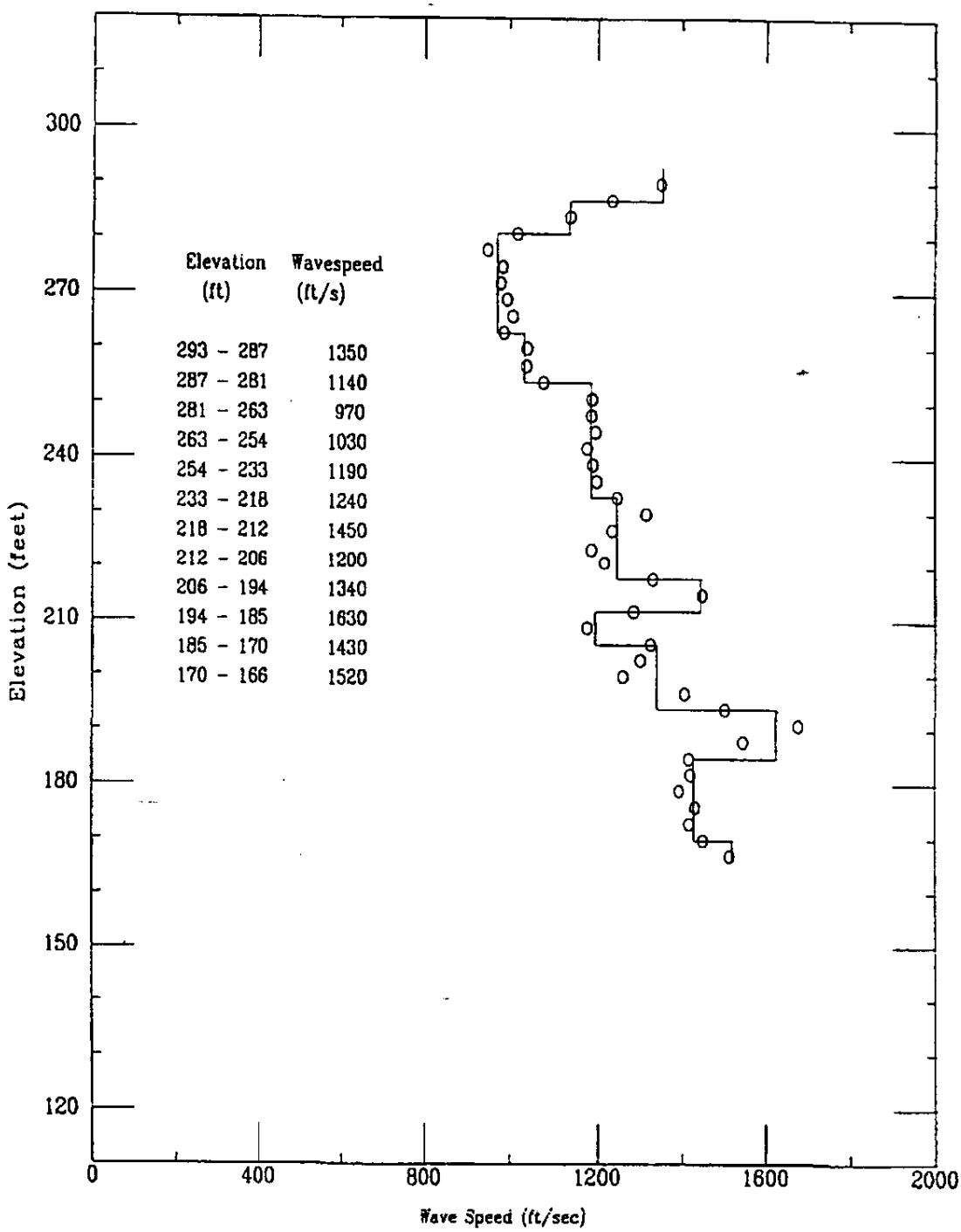
CPT-181 APPLIED RESEARCH ASSOCIATES, INC. 03/10/98

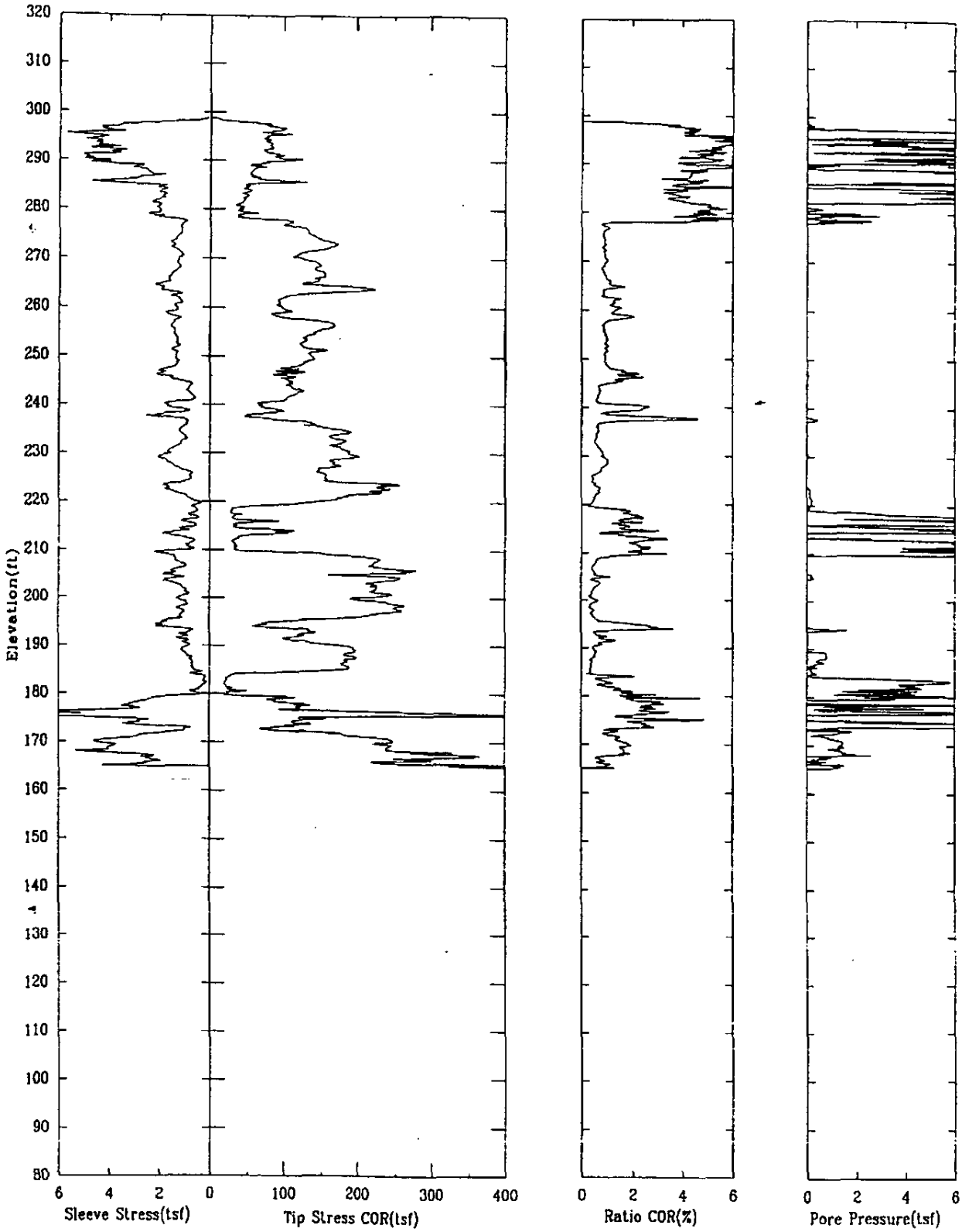
Shear Wave Speeds



File 410m801S

CPT-182 APPLIED RESEARCH ASSOCIATES, INC. 03/23/98

North 78510 East 55451 Elevation 304.8



File 323M801.ECP

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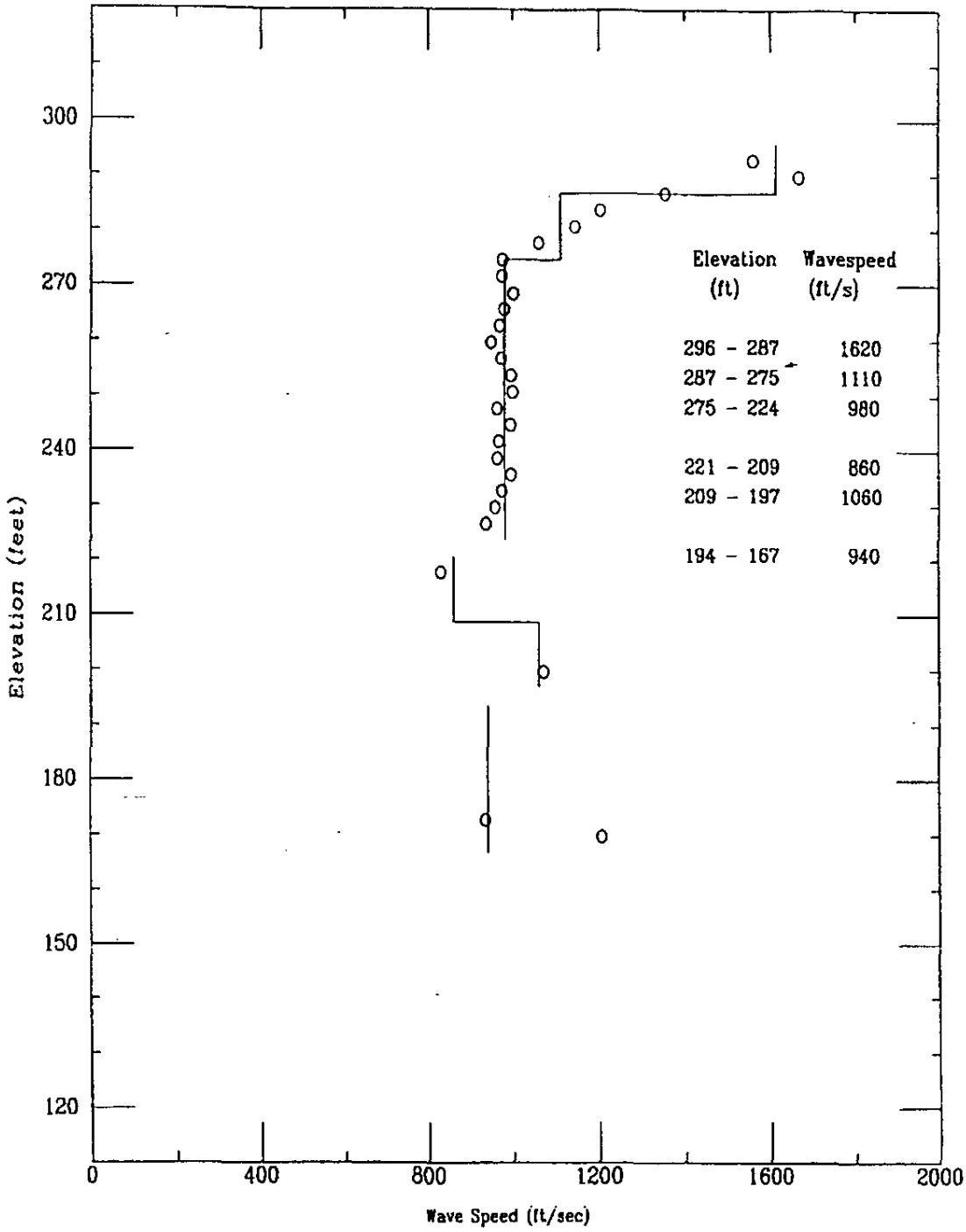
CPT-182 APPLIED RESEARCH ASSOCIATES, INC. 03/23/98

Shear Wave Speeds



File 323m801S

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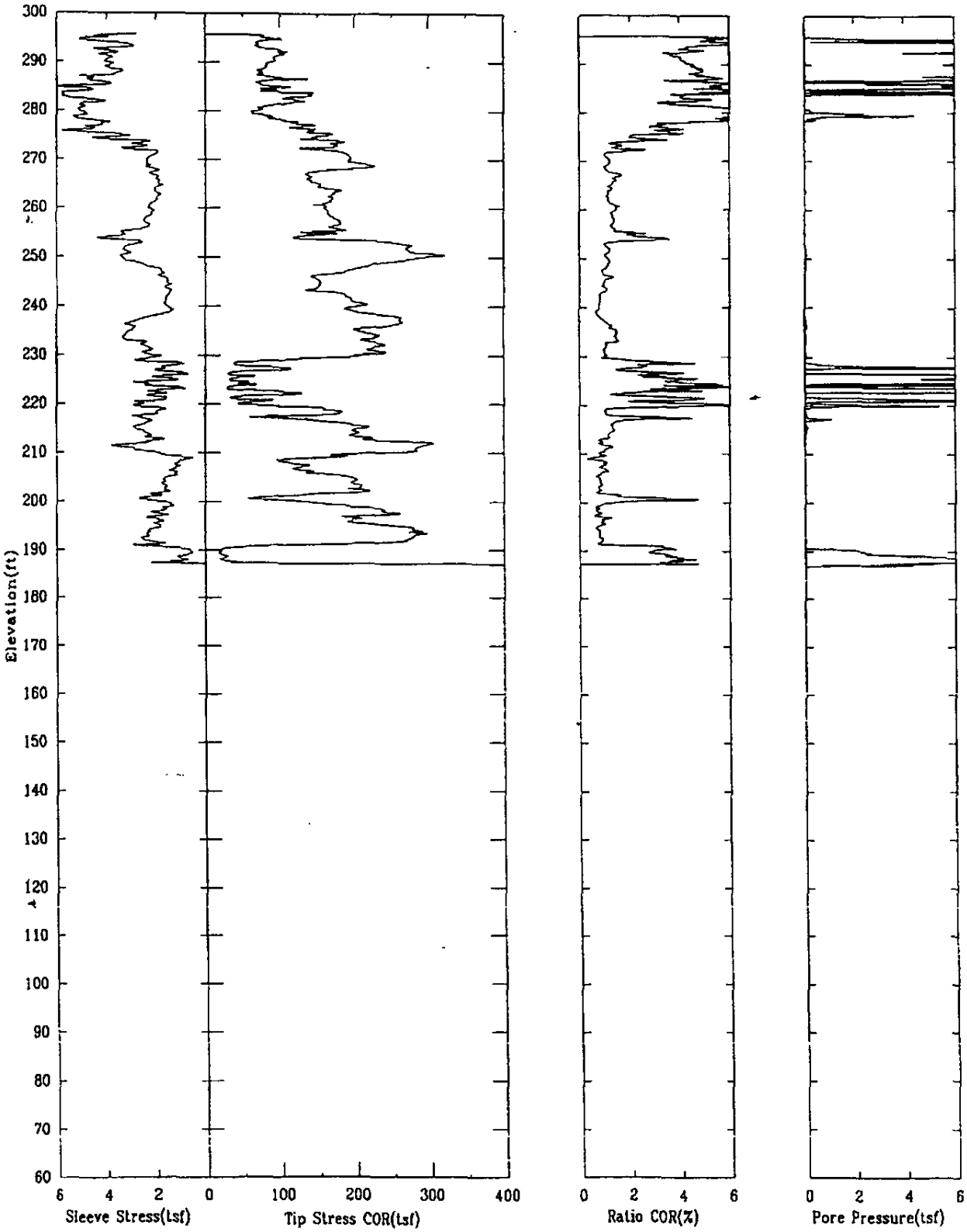
CPT-183 APPLIED RESEARCH ASSOCIATES, INC. 03/25/98

North 78510 East 55583 Elevation 301.7



File 325M804.ECP

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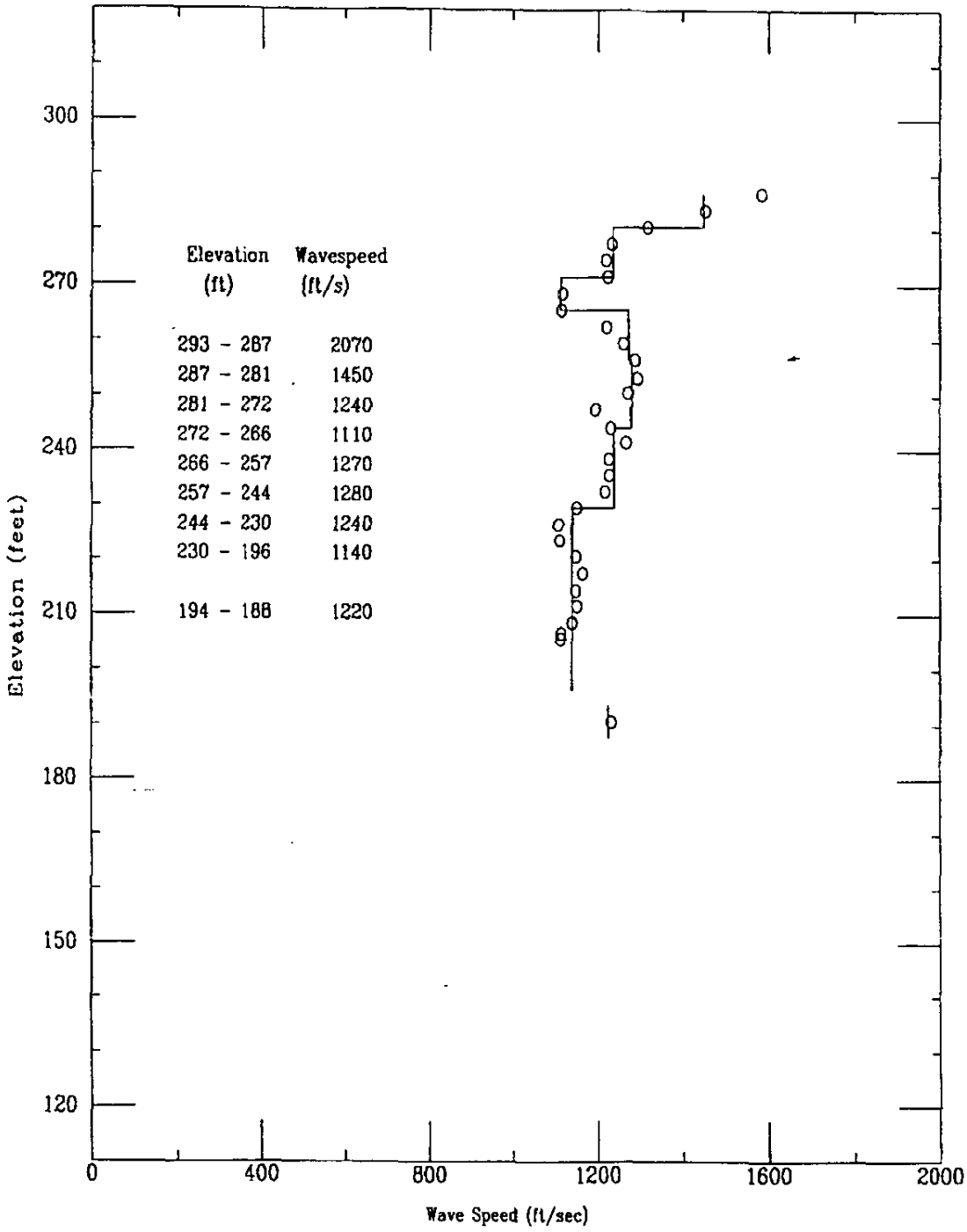
CPT-183 APPLIED RESEARCH ASSOCIATES, INC. 03/25/98

Shear Wave Speeds



File 325m804S

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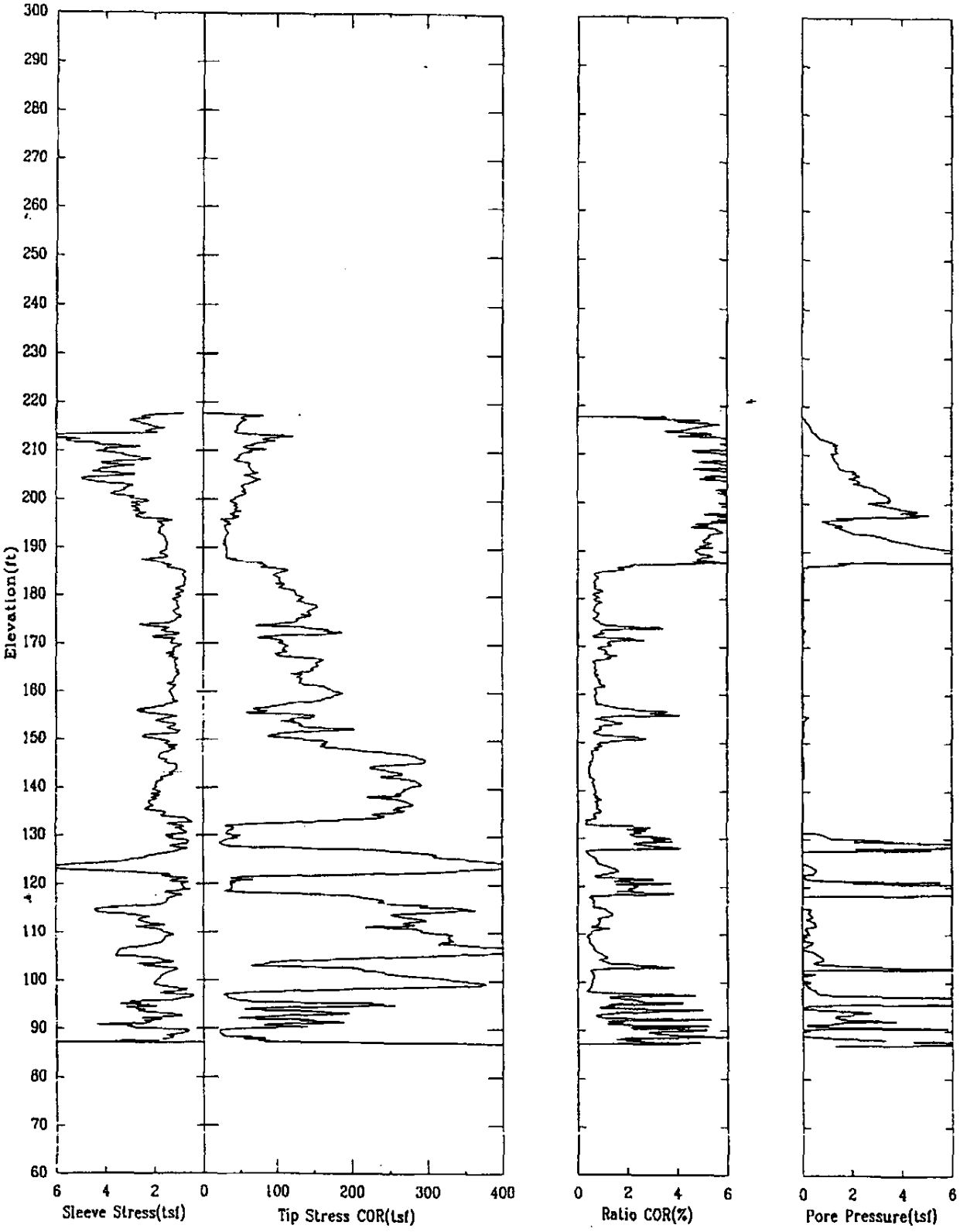
8/1/07

CPT-185 APPLIED RESEARCH ASSOCIATES, INC. 03/18/98

North 78380 East 55385 Elevation 223.7



File 41BM807.ECP

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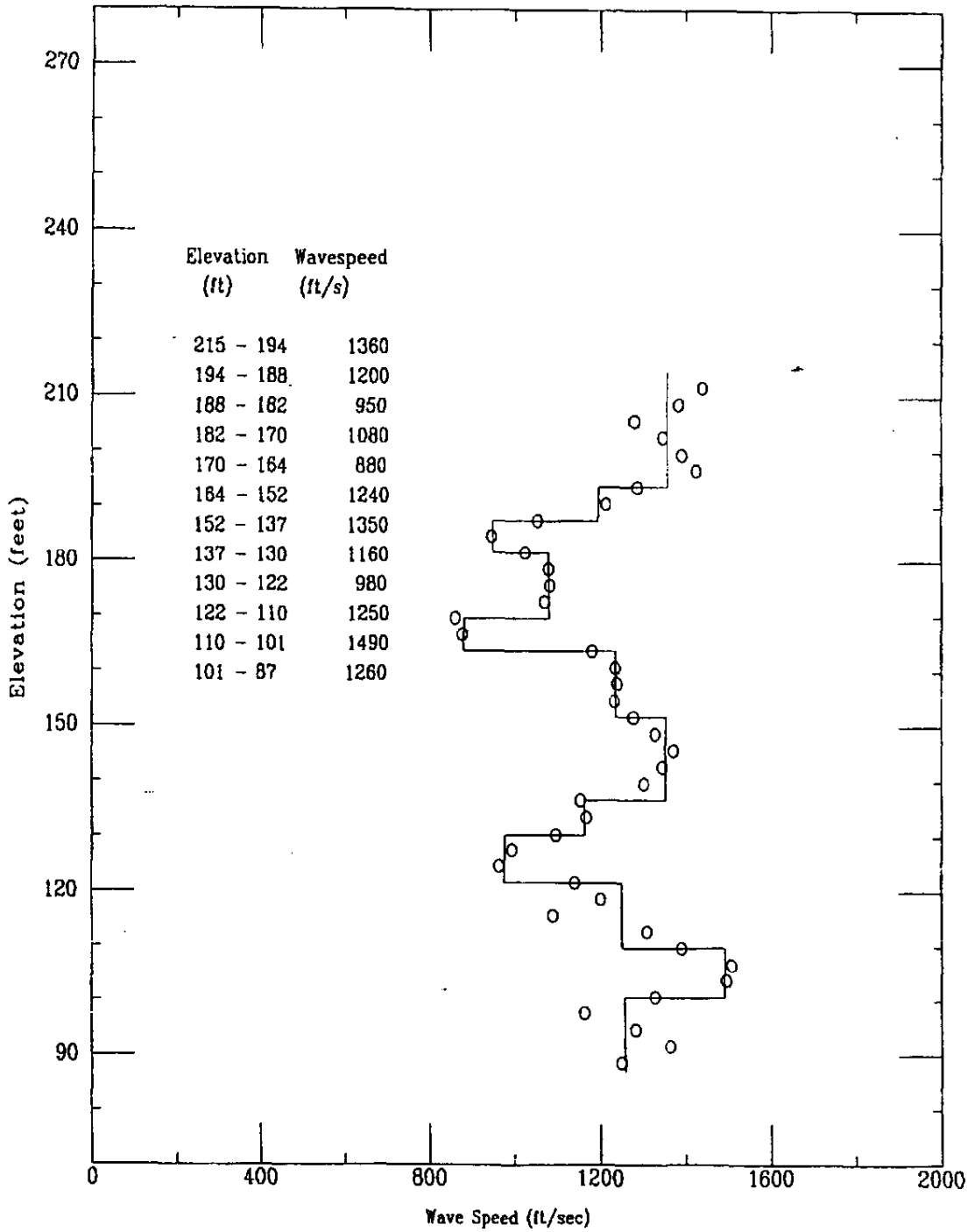
CPT-185 APPLIED RESEARCH ASSOCIATES, INC. 03/18/98

Shear Wave Speeds



File 418m802S

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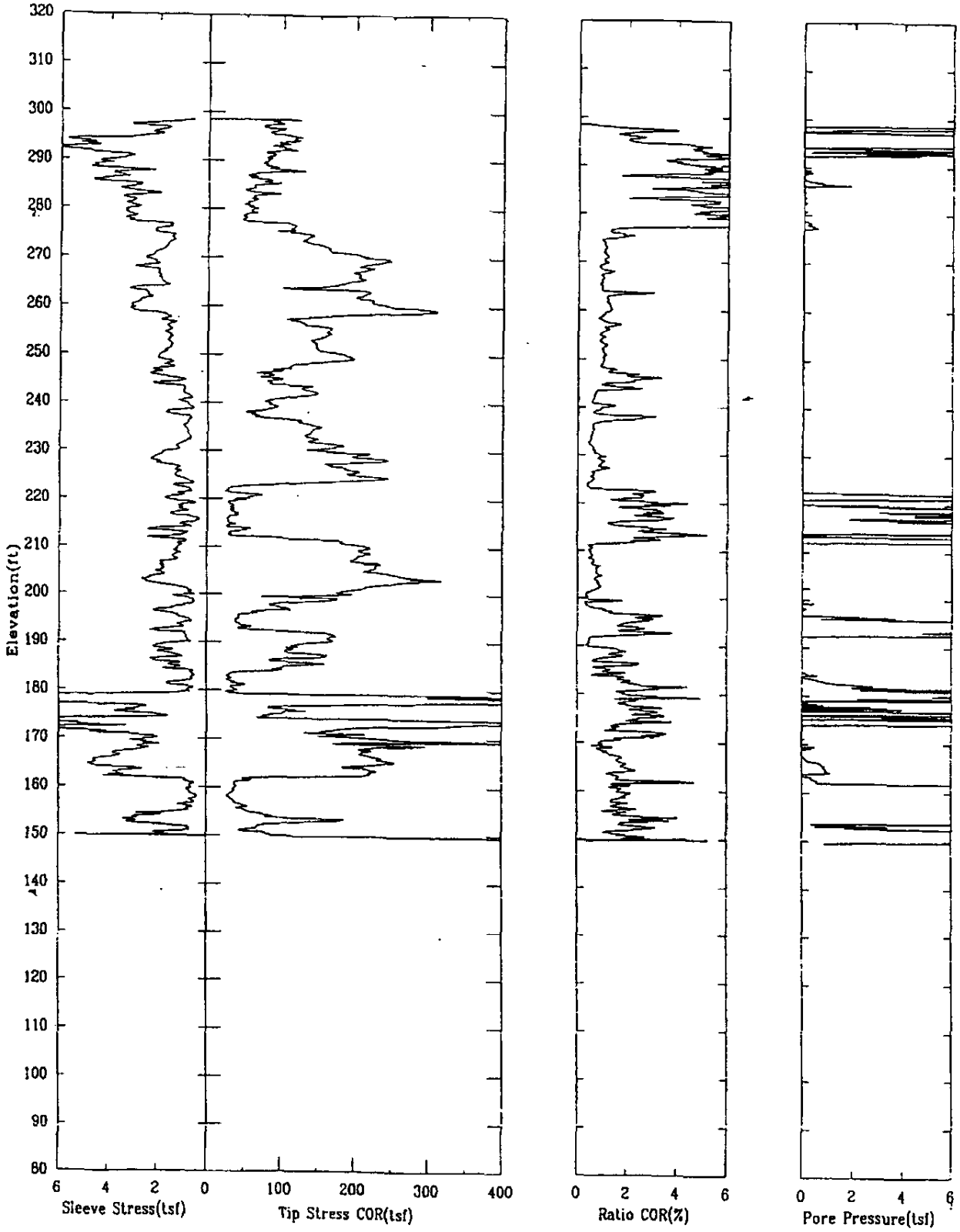
8/1/07

CPT-186 APPLIED RESEARCH ASSOCIATES, INC. 03/24/98

North 78380 East 55518 Elevation 304.5



File 324M801.ECP

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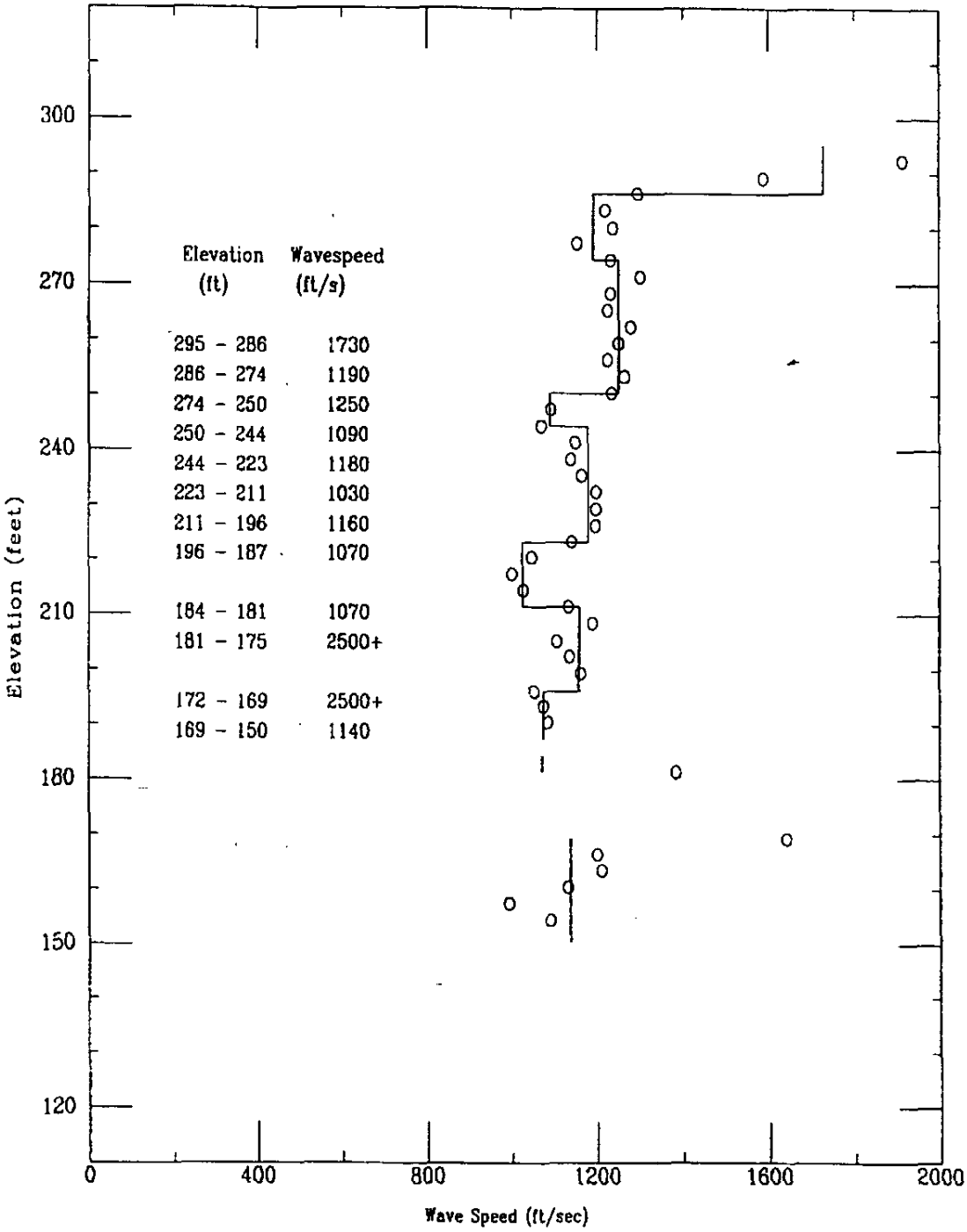
CPT-186 APPLIED RESEARCH ASSOCIATES, INC. 03/24/98

Shear Wave Speeds



File 324m801S

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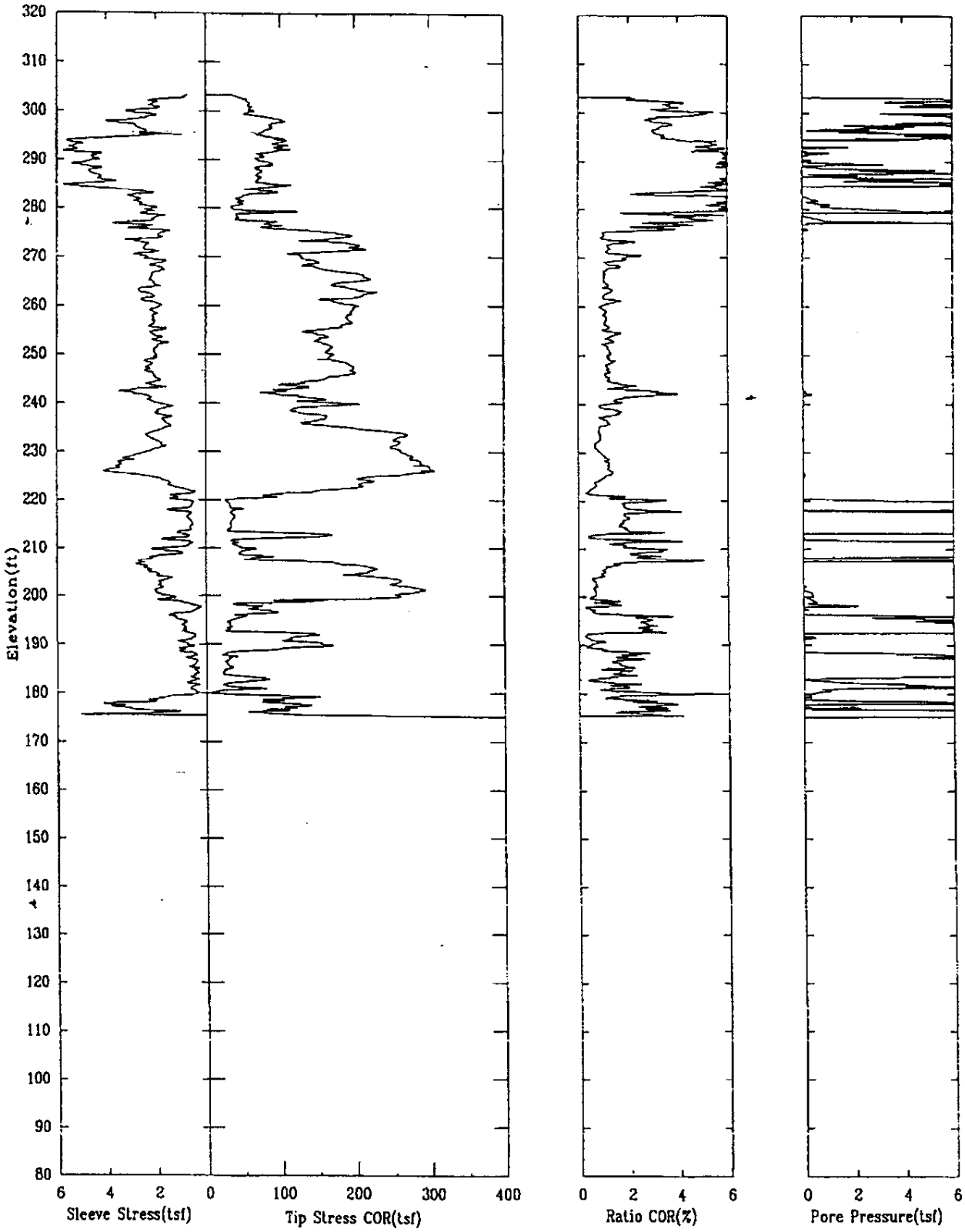
CPT-189 APPLIED RESEARCH ASSOCIATES, INC. 03/23/98

North 78250 East 55451 Elevation 309.2



File 323M804.ECP

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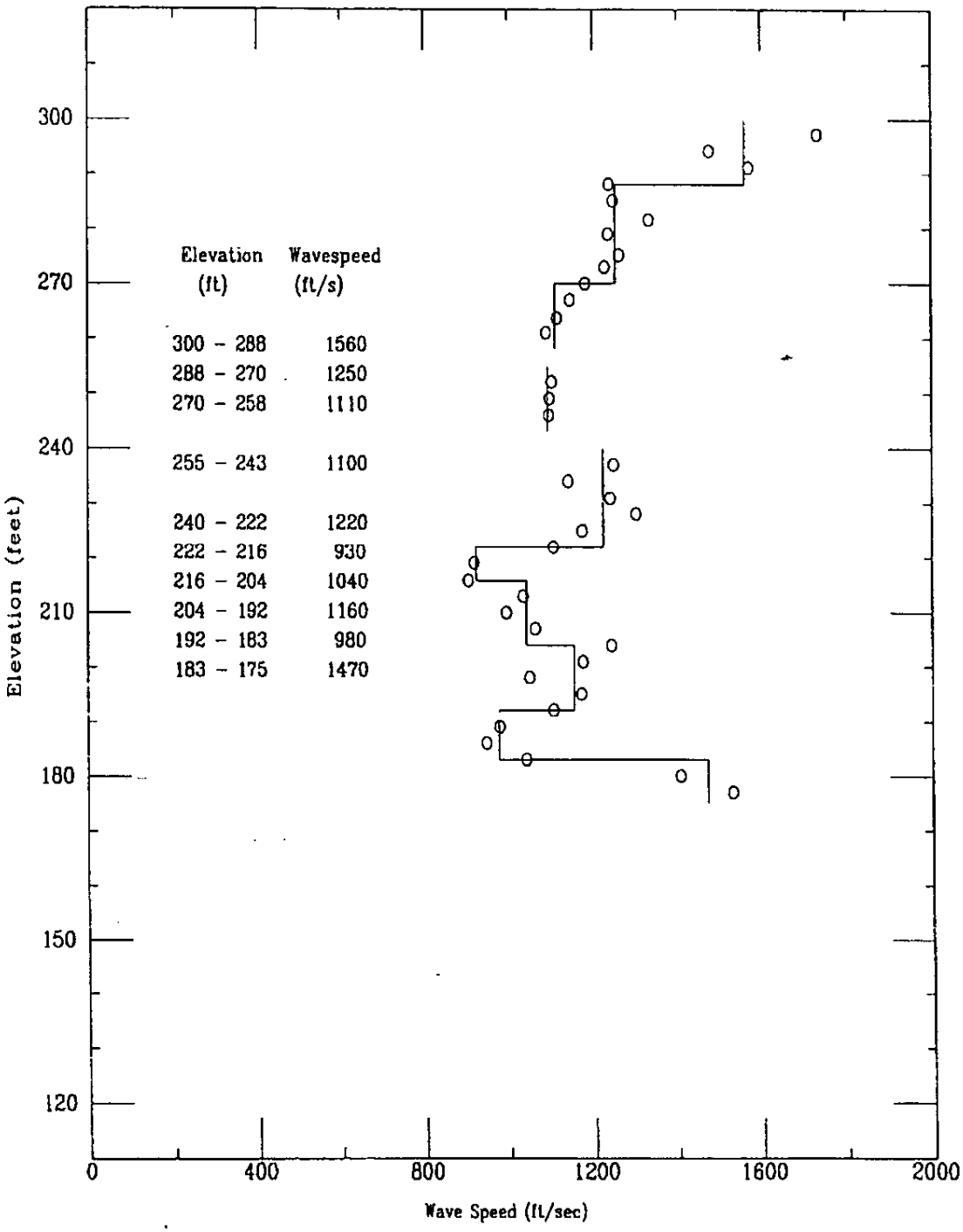
CPT-189 APPLIED RESEARCH ASSOCIATES, INC. 03/23/98

Shear Wave Speeds



File 323m604S

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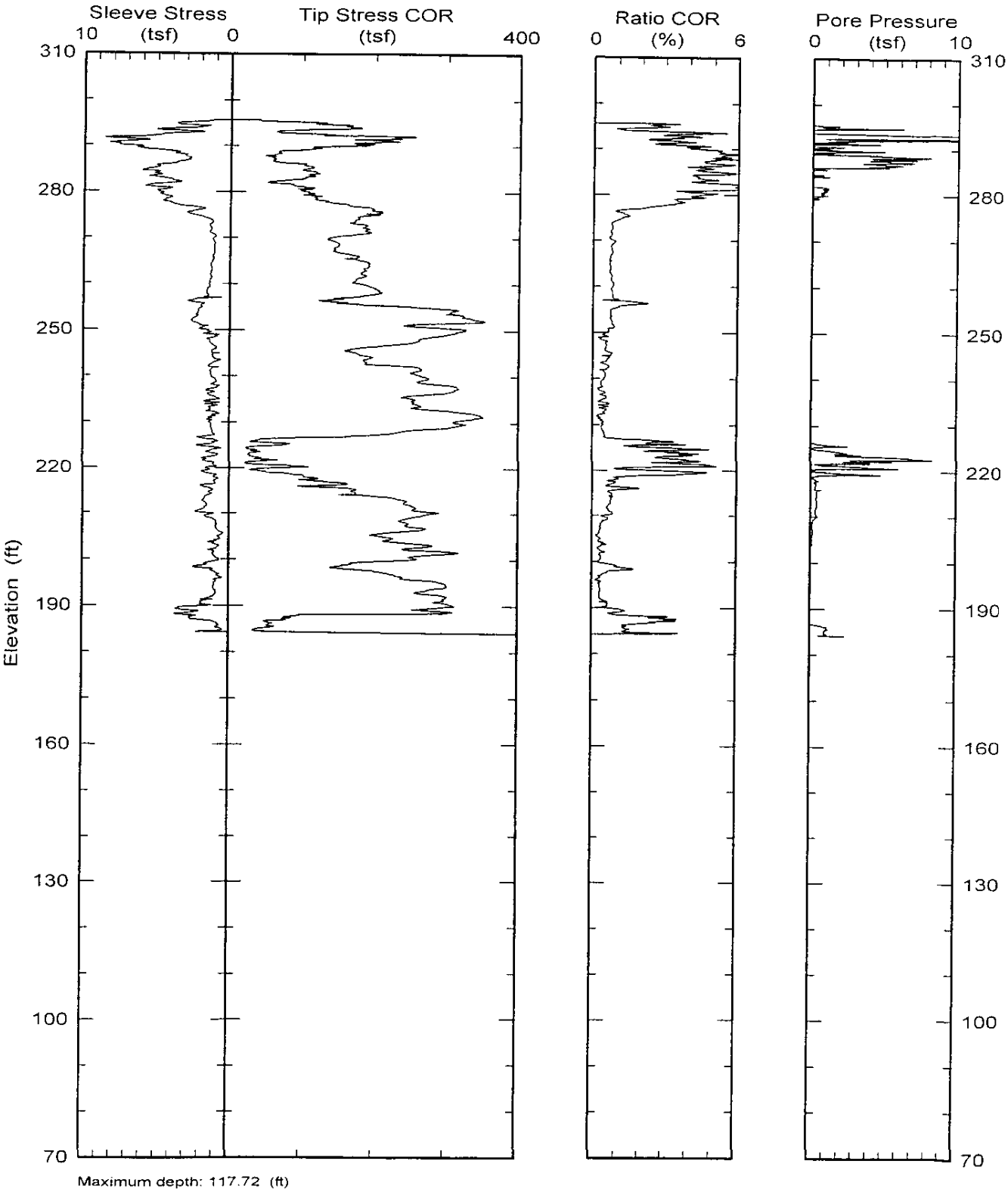
Applied Research Associates
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Date: 05/Jan/2004
Test ID: FWSBC-01
Northing: 78579
Easting: 55582
Elevation: 301.7



Test ID: FWSBC-01
File: 305J0401C.ECP

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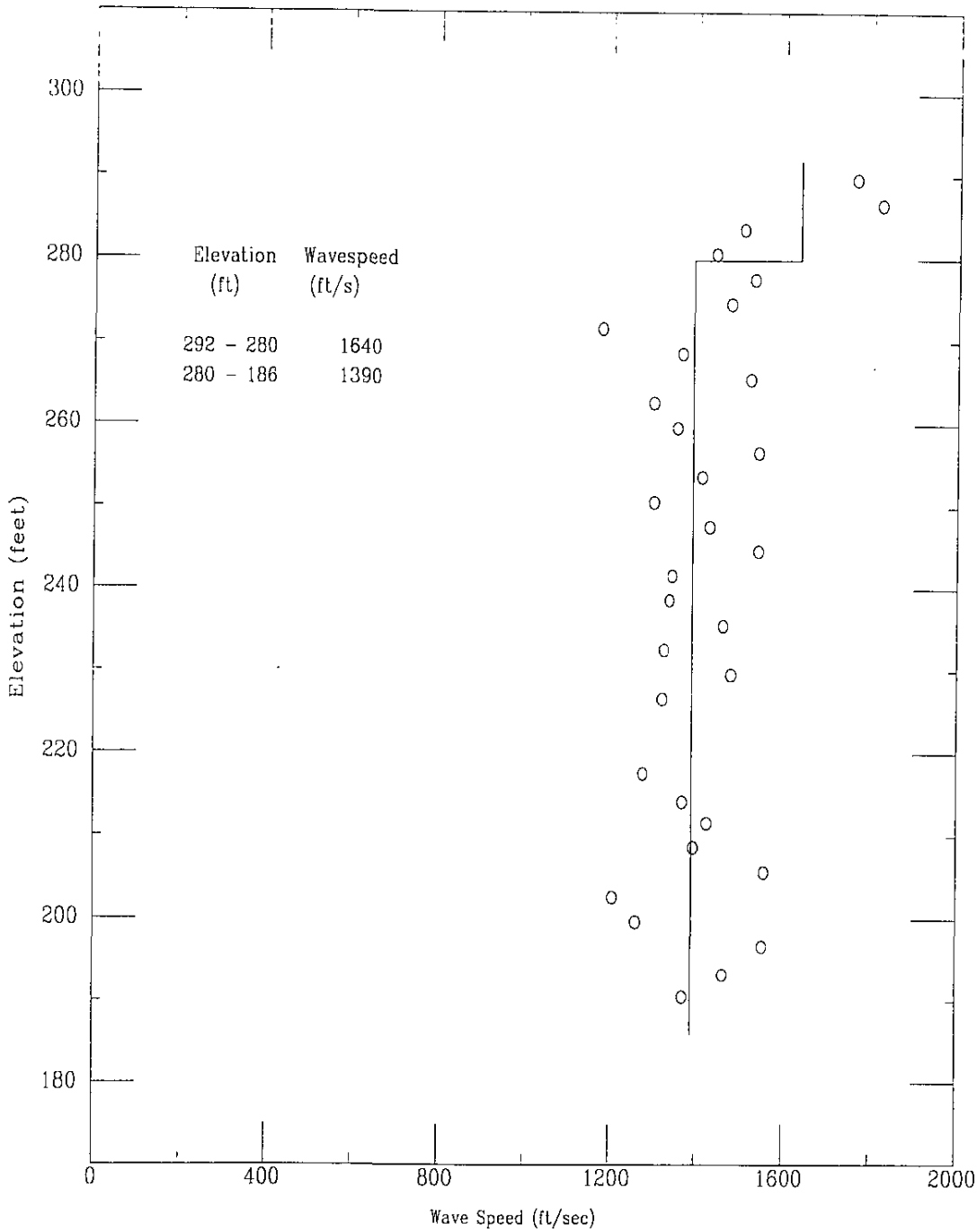
FWSBC-01 APPLIED RESEARCH ASSOCIATES, INC. 05/Jan/2004

Shear Wave Speeds



File 305j0401

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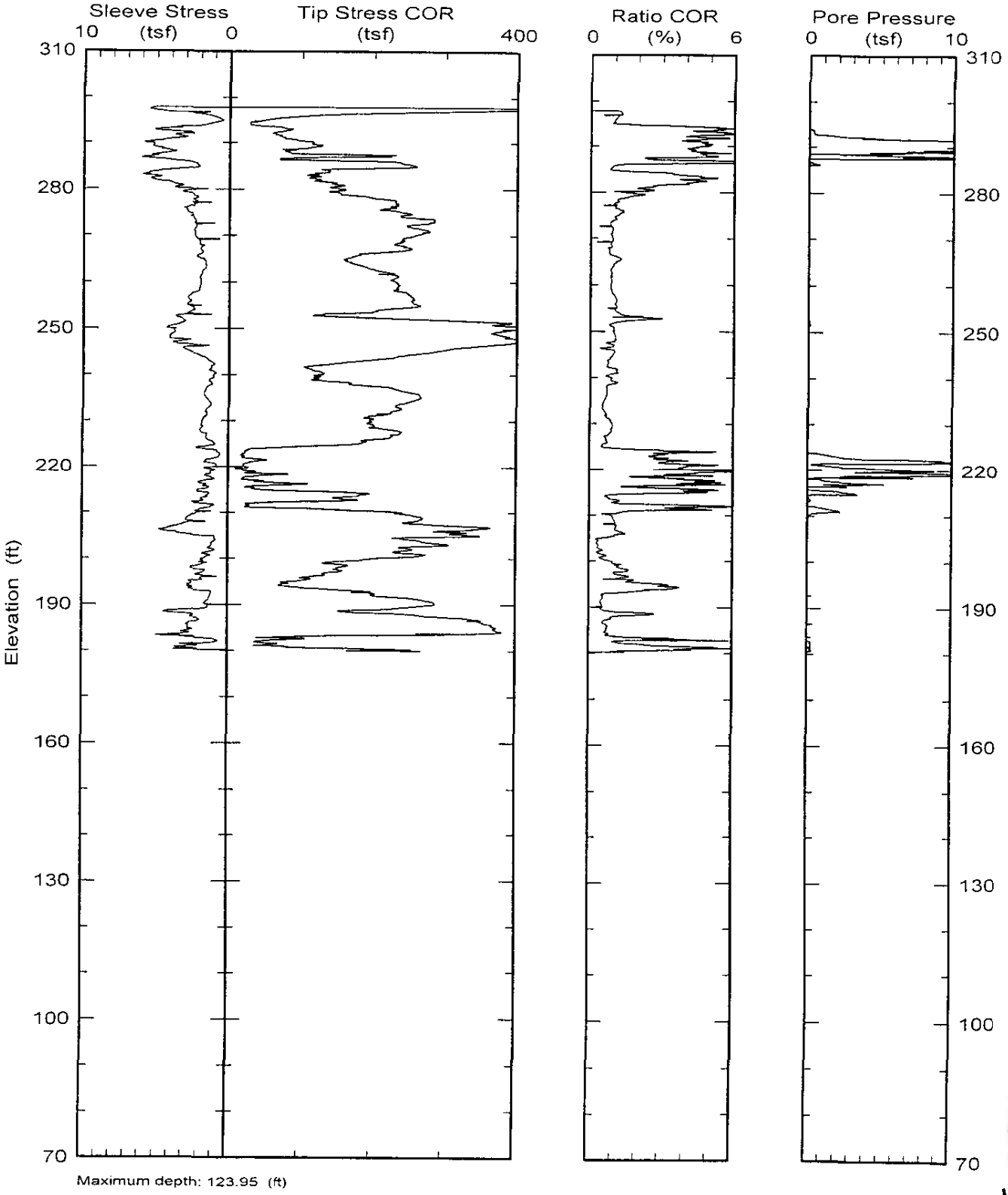
Applied Research Associates
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Date: 11/Nov/2003
Test ID: FWSBC2
Northing: 78569
Easting: 55652
Elevation: 303.8



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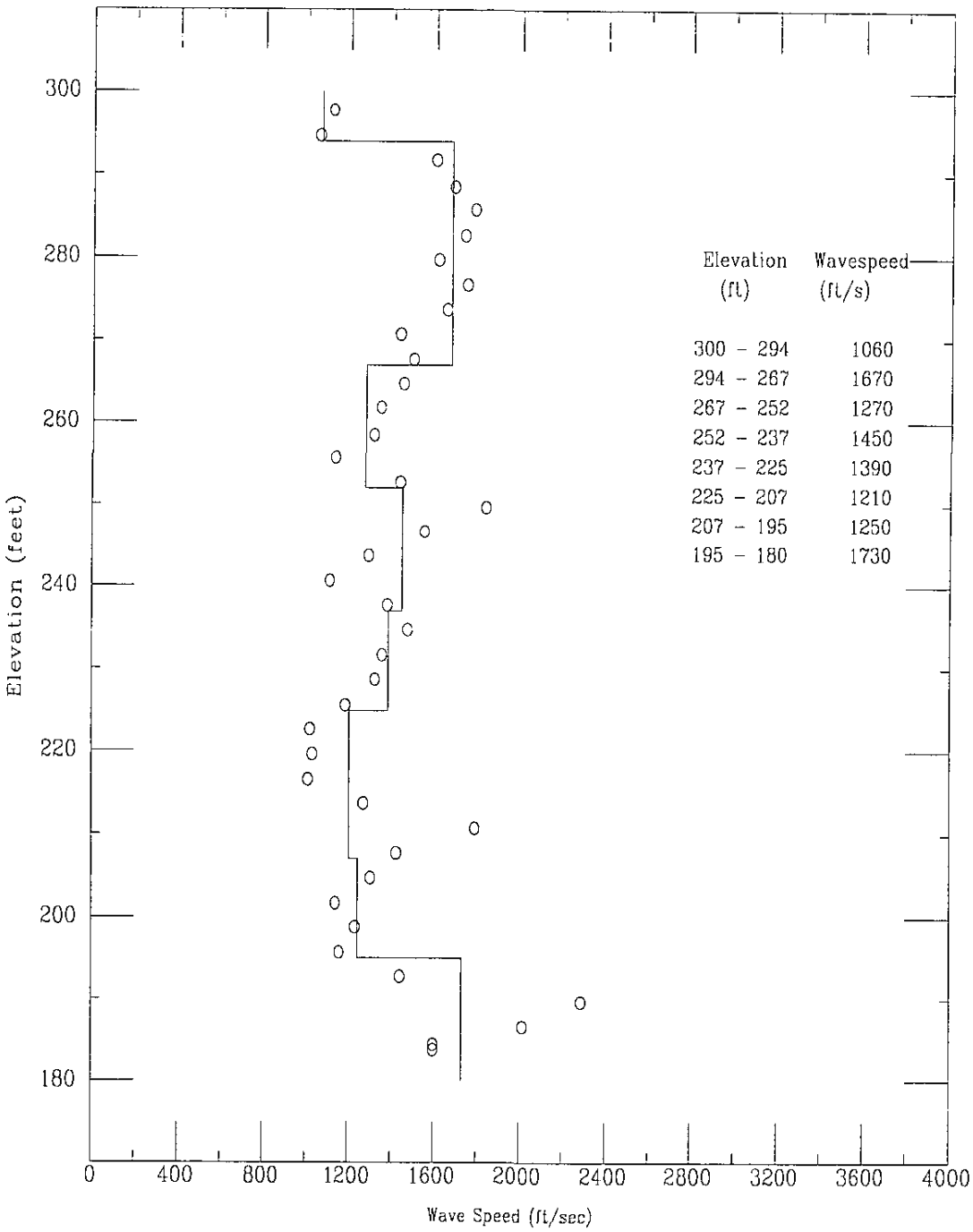
Test ID: FWSBC2
File: 311N0301C.ECP

FWSBC2 APPLIED RESEARCH ASSOCIATES, INC. 11/Nov/2003

Shear Wave Speeds



File 311n0301

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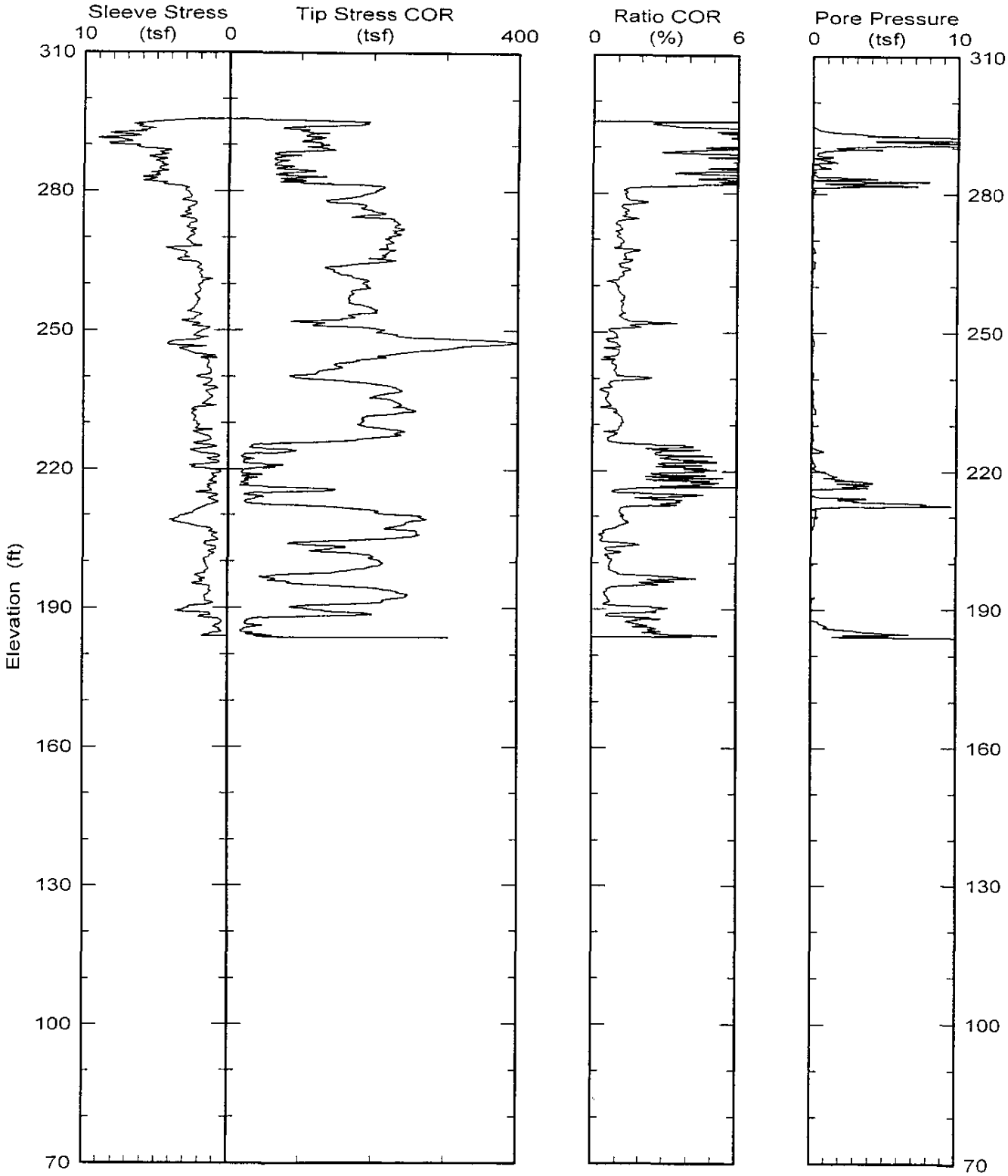
Applied Research Associates
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Date: 10/Nov/2003
Test ID: FWSBC3
Northing: 78477.5
Easting: 55610.8
Elevation: 301.7



Maximum depth: 118.13 (ft)

Test ID: FWSBC3
File: 310N0303C.ECP

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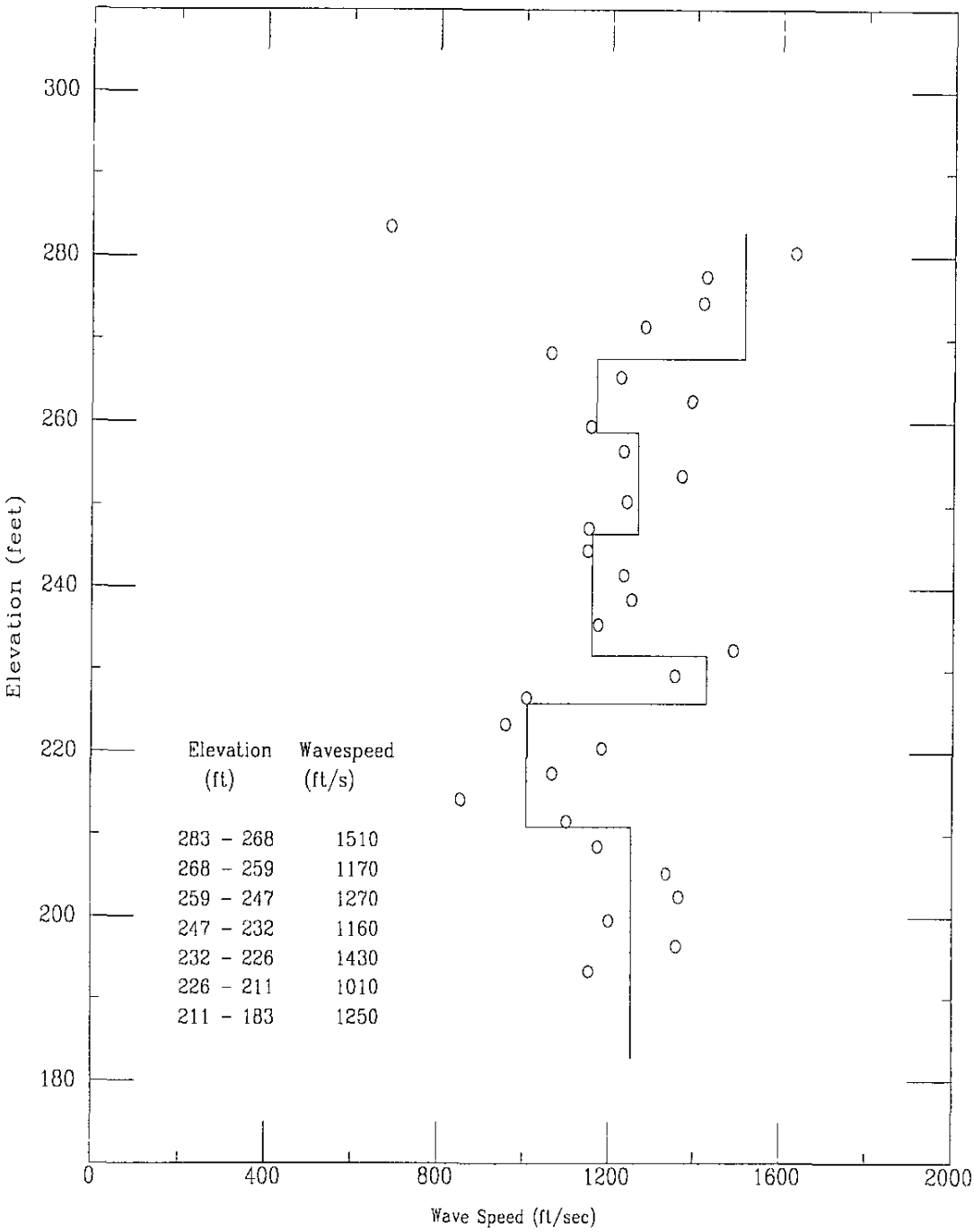
FWSBC3 APPLIED RESEARCH ASSOCIATES, INC. 10/Nov/2003

Shear Wave Speeds



File 310n0303

25

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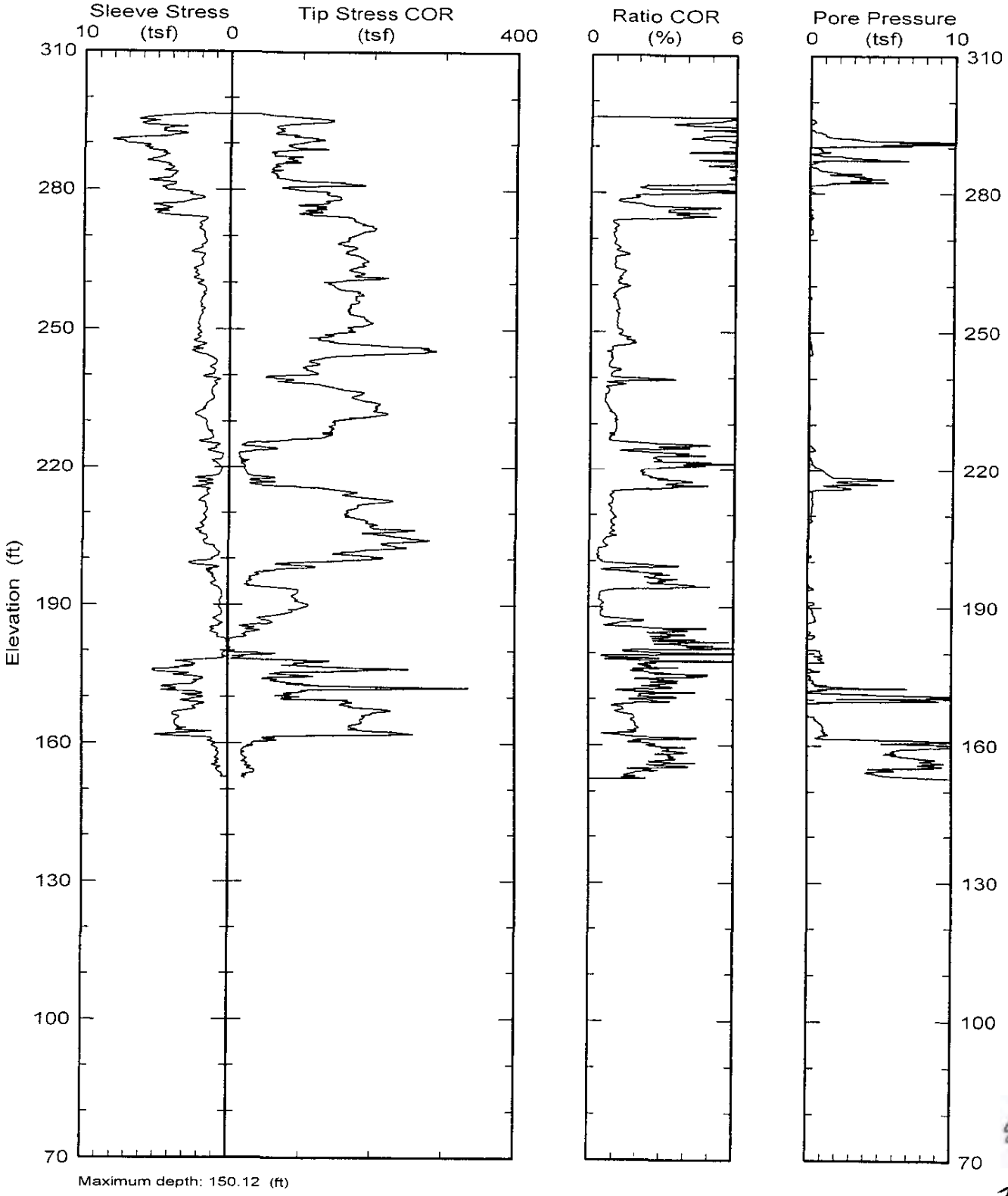
Applied Research Associates
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Date: 10/Nov/2003
Test ID: FWSBC4
Northing: 78429
Easting: 55582
Elevation: 302.4



Maximum depth: 150.12 (ft)

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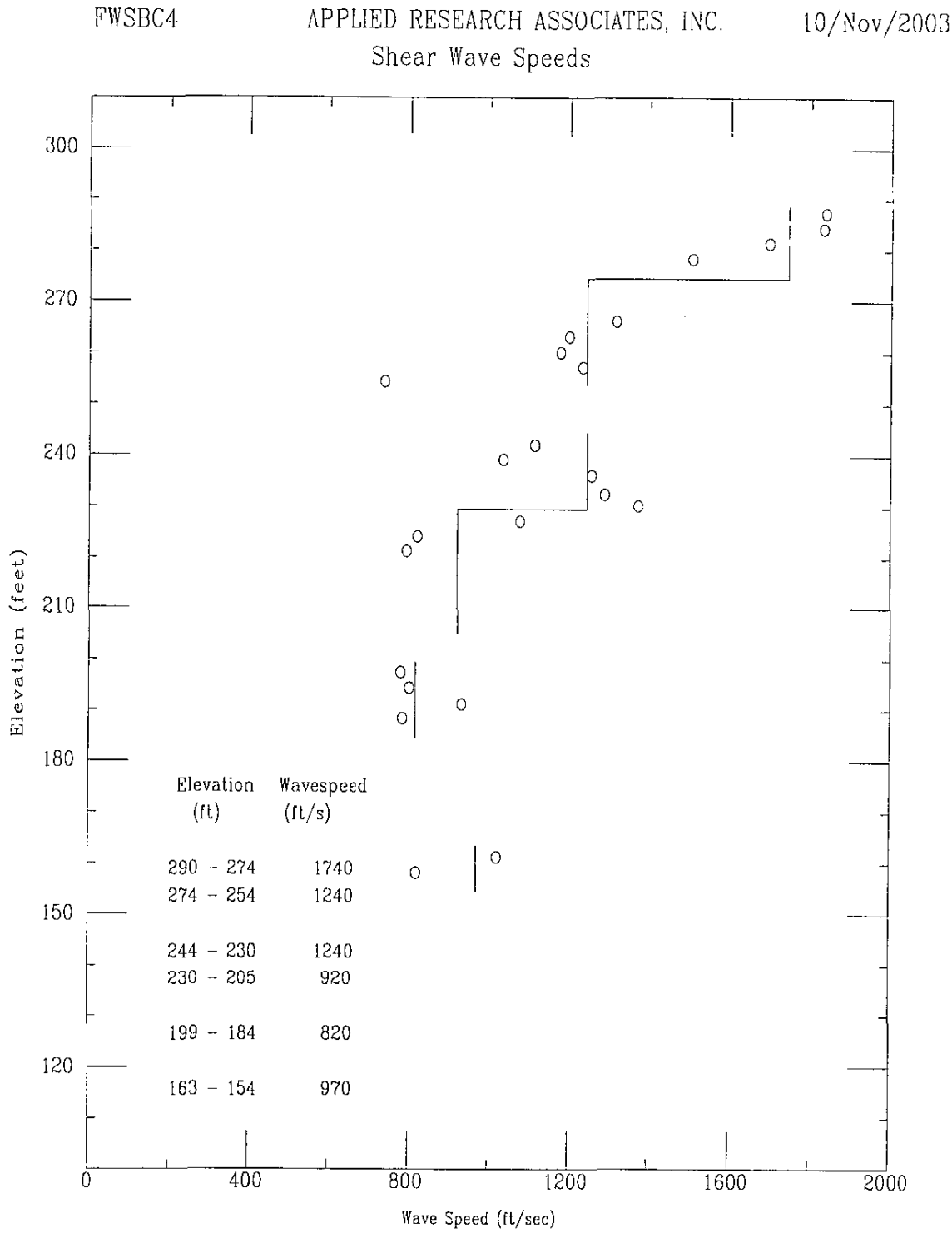
Test ID: FWSBC4
File: 310N0302C.ECP



File 310n0302

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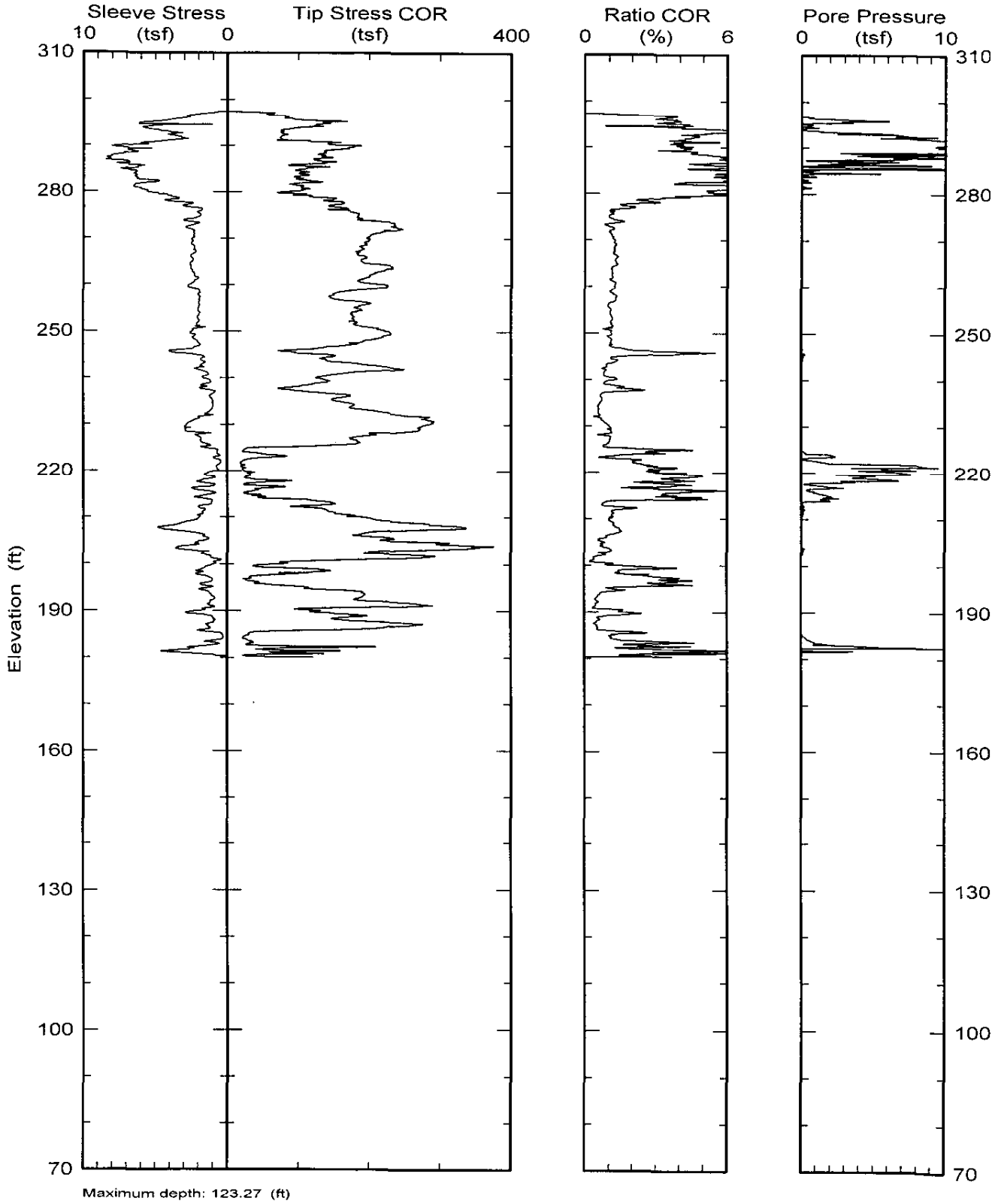
Applied Research Associates
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Date: 10/Nov/2003
Test ID: FWSBC5
Northing: 78346
Easting: 55577
Elevation: 303.3



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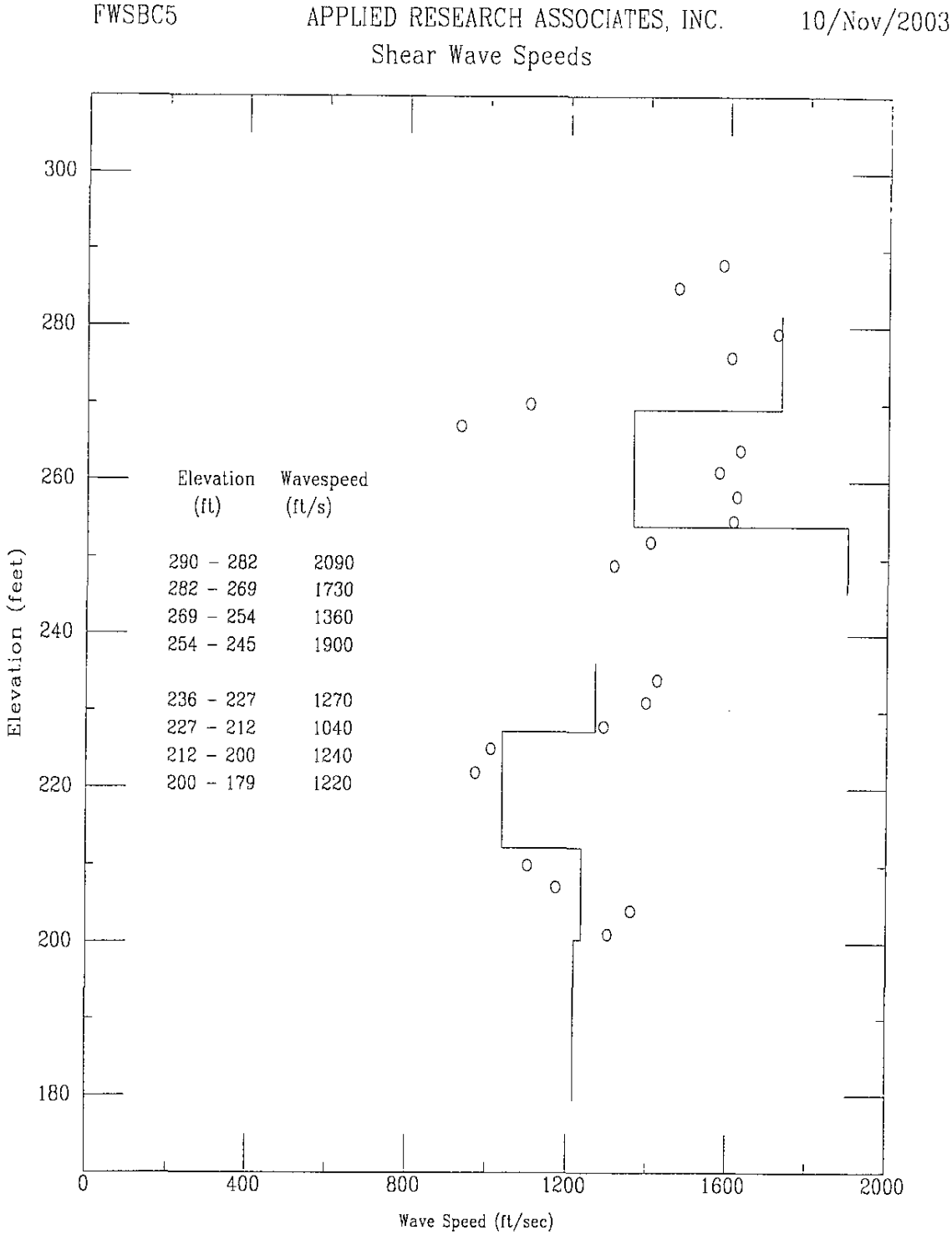
43

Test ID: FWSBC5
File: 310N0301C.ECP



File 310n0301

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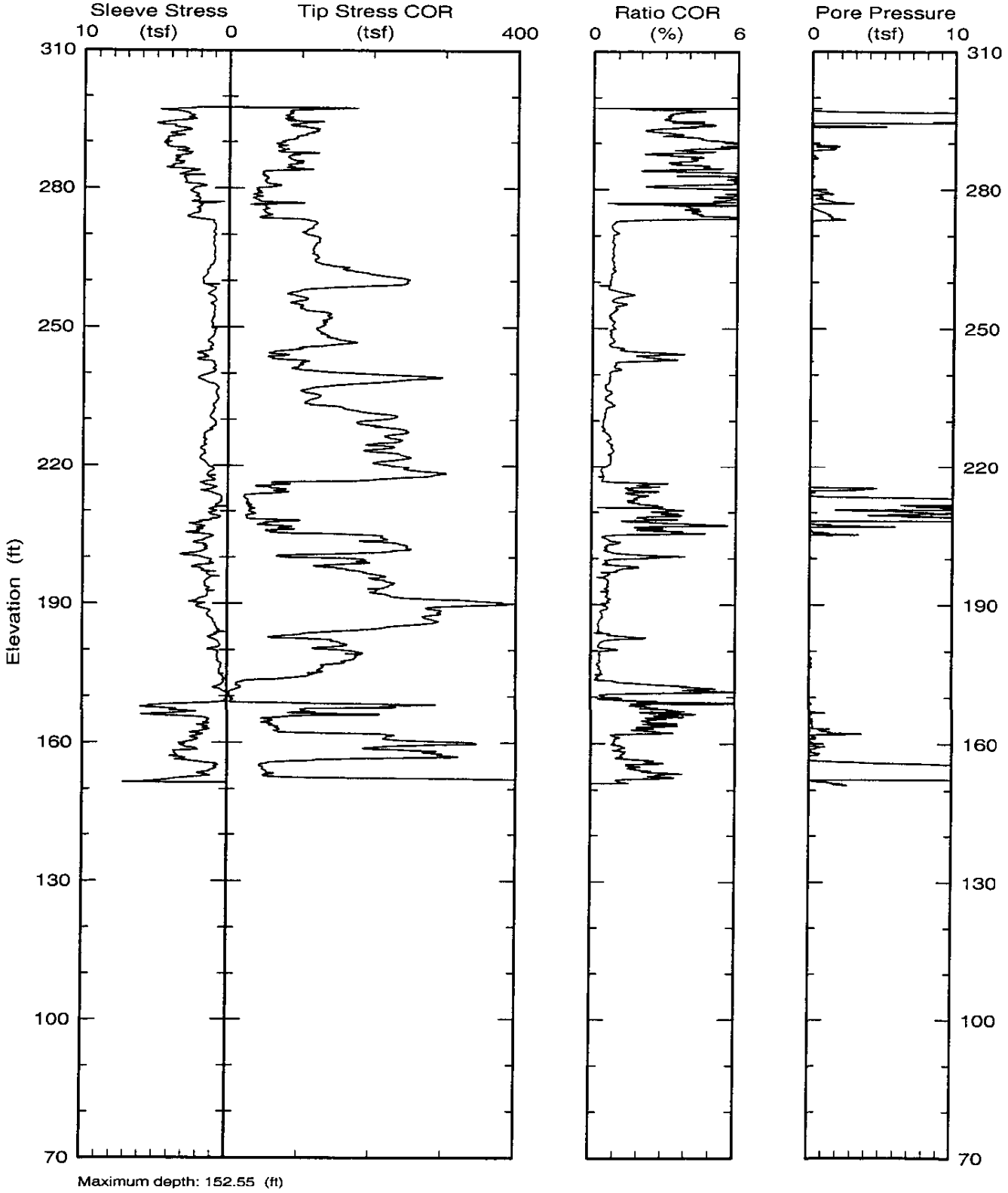
Applied Research Associates
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Date: 06/Jan/2004
Test ID: FWSBC-06
Northing: 78465
Easting: 55499
Elevation: 303.6

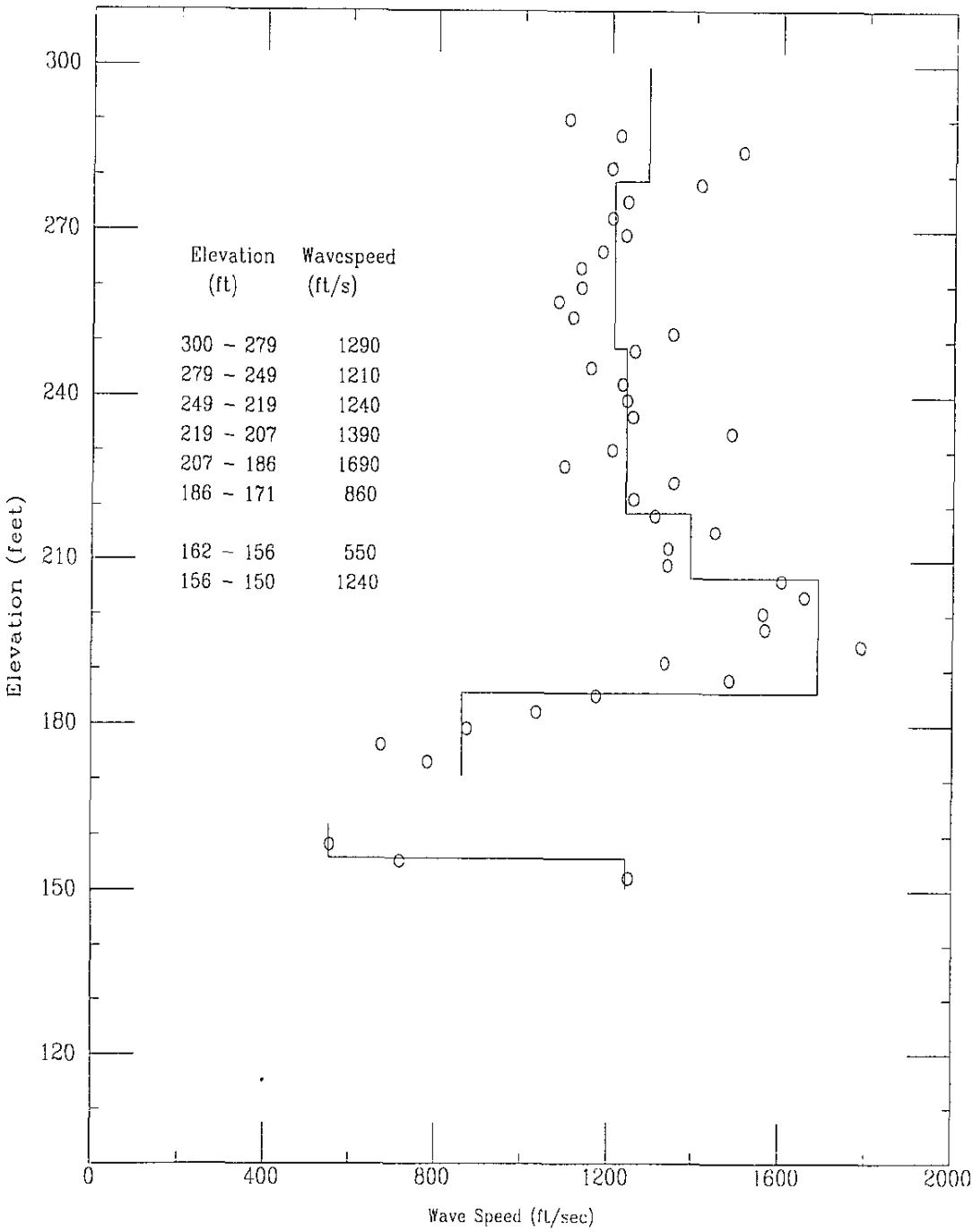


Test ID: FWSBC-06
File: 306J0401C.ECP

8/1/07

FWSBC-06 APPLIED RESEARCH ASSOCIATES, INC. 06/Jan/2004

Shear Wave Speeds



File 306j0401

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