ACache Corp.

Engineering a Firm Foundation

Geotechnical Investigation
for the proposed
Petersen Park Bank Stabilization
10730 N 4400 W,
Tremonton, Utah

PREPARED FOR:
The Church of Jesus Christ of Latter-Day Saints
Care of:
Craig Rasmussen
Forsgren Associates, Inc.
95 West 100 South, Suite 115
Logan, UT, 84321

PREPARED BY:
ACache Corp.
PROJECT NO. 12400020

November 30, 2024

November 30, 2024

Attn. Craig Rasmussen
Forsgren Associates, Inc.
95 West 100 South, Suite 115
Logan, UT, 84321

Subject: **Geotechnical Investigation for the proposed Petersen Park Bank Stabilization 10730 N 4400 W, Tremonton, UT 84337**

ACache Corp. Project No. 12400020

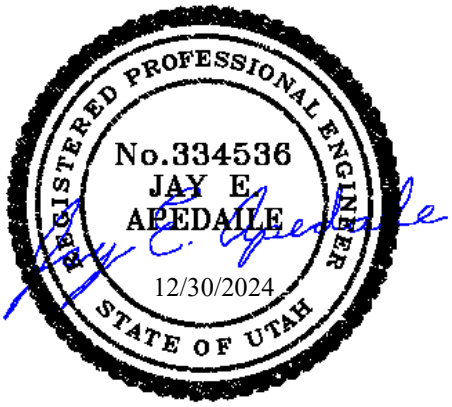
Mr. Rasmussen

It is with great pleasure that ACache Corp. presents this report of our findings for the subject site. It contains the results of our findings and an engineering interpretation of the results with respect to the available project characteristics.

We appreciate the opportunity of working with you on this project and look forward to future projects with you. If you have questions regarding this project, or any other, please do not hesitate to contact us at **(435)-760-3103**.

Sincerely,

A Cache Corp.



Jay E. Apedaile, P.E. M.S.
President

P.O. Box 393 ● 89 South 100 East ● Mendon, Utah 84325
Tele. (435) 760-3103 ● Fax (614) 883-9419 ● email: acachecorp@yahoo.com

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Tele. (435) 760-3103 ● Fax (614) 883-9419 ● email: acachecorp@yahoo.com

1.0 GENERAL PROJECT INFORMATION

1.1 Project Authorization

A Cache Corp. (ACC) was retained by Craig Rasmussen of Forsgren Associates, Inc. Inc. to conduct a Geotechnical Subsurface Investigation for the proposed Petersen Park Bank Stabilization project located at the address of 10730 N 4400 W, Tremonton, UT 84337 (see **Figures 1 and 2** in the Appendix).

1.2 Project Purpose and Description

The purpose of this study was to obtain soil information that can be used in the design of the proposed river bank stabilization project and to look for anything that might be alarming to the proposed project. Based on the information provided by Forsgren Associates, Inc., The Church of Jesus Christ of Latter-Day Saints is planning to stabilize the current river bank to reduce the erosion of the property into the Bear River.

This report and the recommendations herein are based on the available project information. If this information is incorrect, then ACC shall be informed, preferably in writing, so ACC can evaluate the validity of this report.

2.0 SITE AND SUBSURFACE CONDITIONS

2.1 Site Investigation

The proposed construction site covers a length of river bank approximately 0.4 miles long, along the north edge of the Petersen Park Recreation where the Baer River meanders south southeast and then east. The Camp is located at 10730 N 4400 W, Tremonton, UT 84337 (see **Figures 1 and 2** in the Appendix).

The general subsurface conditions along the river bank were investigated by pushing 12 Cone Penetration Tests (CPTs) to depths of 20-30-feet. The approximate location of each explored location is shown in **Figure 2** in the Appendix.

Logs of the CPT's are presented in the Appendix as **Figures 3-14**.

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3.0 FINDINGS

3.1 Site Conditions

At the time of our investigation the site consisted of a developed area with several pavilions Restrooms and camping sites with large grassy areas.

3.2 Surface Drainage

Currently, the overall drainage of the site is to the east south east. The soil conditions appear to be adequate in keeping the surface soils from eroding.

3.3 Geology

The site was mapped by Utah Geologic Survey as "Qal: Alluvium- fine-grained to gravelly: deposits in flood plains and channels" The observed soil conditions were consistent to those anticipated on the map.

3.4 Soil Profile

The soil profile at the site varied quite a bit from each location tested. The overall profile could be described as layers of alluvial deposits consisting of silts sands, clay with some gravel deposited in varying thicknesses. No repeating patterns were observed leaving us to think that the river has migrated across these locations and deposited soils in what appears to be sporadic and typical to alluvial deposits.

For detailed observations of the sub-soils, the location they were observed, the characteristics observed, and any other pertinent information observed in the field, see the Logs in the Appendix.

3.5 Ground Water and Infiltration Test

Ground water across the site was observed at depths greater than the river height at the time of our investigation. It is likely that the groundwater fluctuates some during the year according to rainfall irrigation, and other climatic and manmade (irrigation) influences. It is evident that ground water levels have been shallower as well as deeper at some point in time given the observed desiccated clays observed. A detailed evaluation of the groundwater is beyond the scope of this investigation.

3.6 Site Subsurface Variations

It is our experience that variations in continuity and nature of subsurface conditions should be anticipated. Due to the nature and depositional characteristics of soils encountered at the site, care should be taken in interpolating or extrapolating subsurface

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conditions beyond the exploratory borings. Seasonal fluctuations in ground water conditions are likely to occur.

4.0 CONCLUSIONS

Given the observed soil types and past history, it is evident that the soils will continue to erode slowly at low flows and more rapidly at high flows. The promotion of growth of vegetation and the placement of large riprap should go a long way to reduce the erosion and slow down the migration of the riverbank.

5.0 LIMITATIONS

The CPT data reflects the subsurface condition only at the specific location at the particular time designated on the CPT logs. Soil and ground water conditions may differ from conditions encountered at the actual CPT location.

The Geotechnical Engineer warrants that the findings contained herein, have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

This report has been prepared for the exclusive use of The Church of Jesus Christ of Latter-Day Saints for the specific use on the proposed Petersen Park Bank Stabilization at 10730 N 4400 W, Tremonton, Utah 84337.

7.0 REFERENCES

ASTM, American Society for Testing and Materials 2021

IBC, International Building Code, 2021 Edition, International Conference of Building Officials, Whittier, CA.

Utah Geologic Society Online Interactive Map

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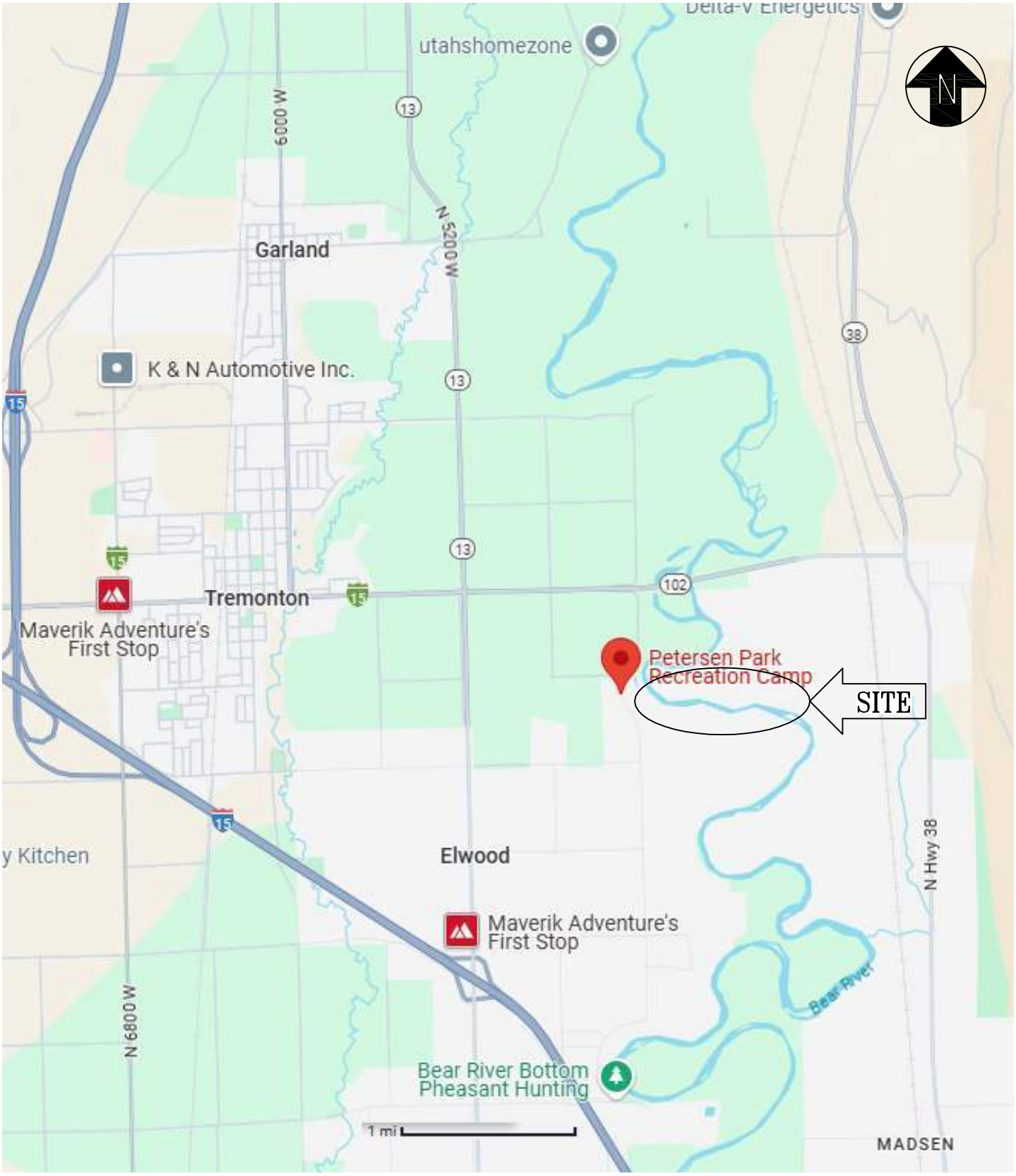
APPENDIX



UTAH

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ACache Corp.
Engineering a Firm Foundation

89 S. 100 E. P.O.Box 393 Mendon, Utah 84325
Volce: (435) 760-3103 Fax: ()
email: acachecorp@yahoo.com

Petersen Park Bank Stabilization

10730 N 4400 W, Tremonton, UT 84337

TITLE:	Vicinity Map
SCALE:	No Scale
DATE:	11/26/2024
DRAWING NO.	12400020 Figures.dwg

ENGINEER:	DRAWN BY:
J. Apedaile	J. Apedaile

FIGURE 1

UTAH

Google 2024

ACache Corp.
Engineering a Firm Foundation

89 S. 100 E. P.O.Box 393 Mendon, Utah 84325
Voice: (435) 760-3103 Fax: (614) 883-9419
email: acachecorp@yahoo.com

Petersen Park Bank Stabilization

721 W 1800 N, Logan, UT, 84341

TITLE:	Site Map		
SCALE:	No Scale	ENGINEER: J. Apedaile	DRAWN BY: J. Apedaile
DATE:	11/26/2024		
DRAWING NO.	12400020 Figures.dwg		

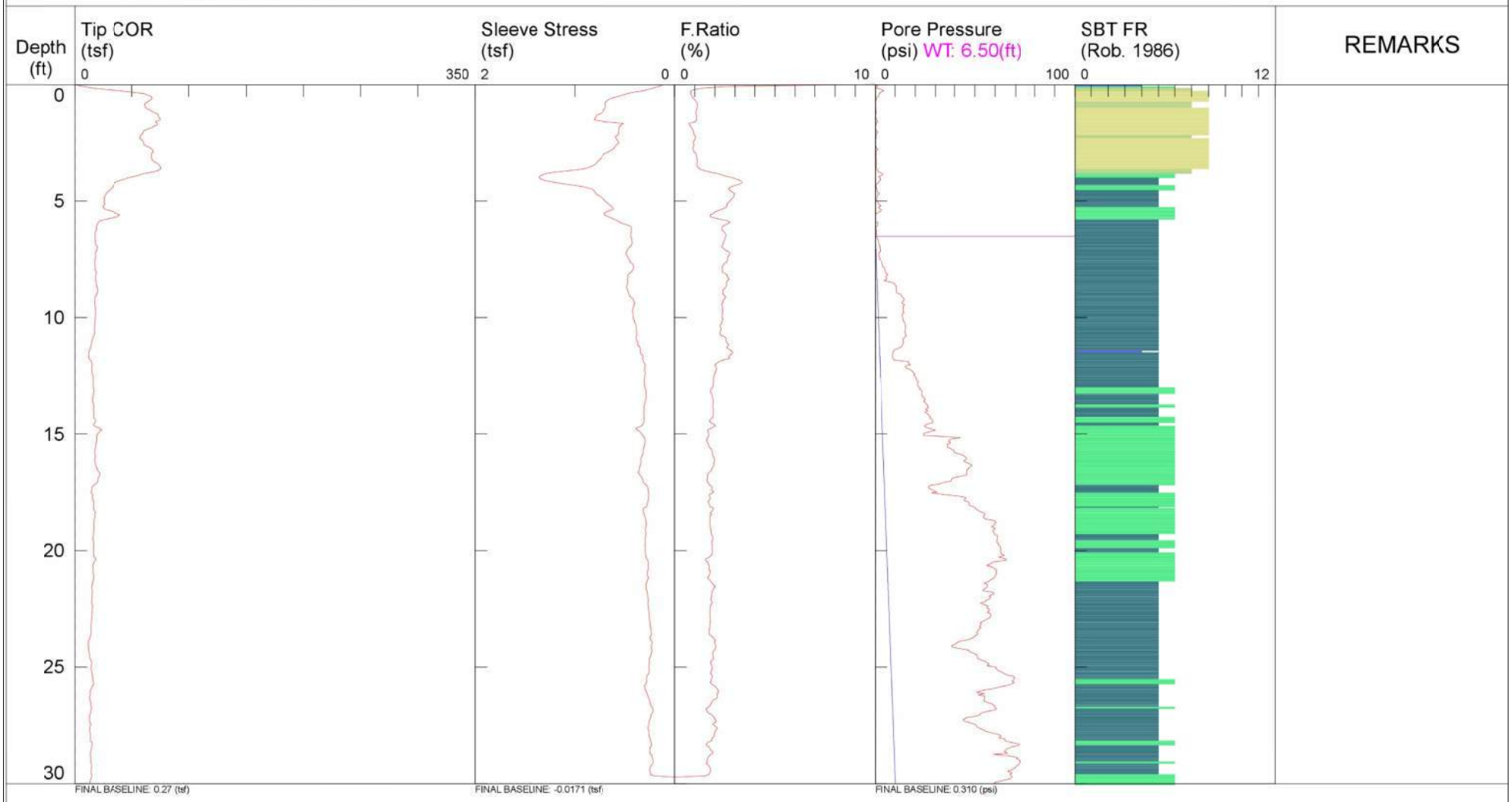
FIGURE 2

SOUNDING

ACache Corp.
Engineering a Firm Foundation

TOTAL DEPTH: 30.059 ft
SITE: CPT-01
SOUNDING
COMPANY: ACache Corp.
FILENAME: 24-10-24-01.DAT

PROBE ID: 4444.190XX
TEST ID: 24-10-24-01
PROJECT: Peterson Park
LOCATION: Tremonton



NOTES:: Example of notes

1 Sensitive fine grained
2 Organic material
3 Clays
4 Silty clay to clay
5 Clayey silt to silty clay
6 Sandy silt to clayey silt
7 Silty sand to sandy silt
8 sand to silty sand
9 Sand
10 Gravelly sand to sand
11 Very stiff fine grained **
12 Sand to clayey sand **

*SBT: Robertson 1986; **Overconsolidated or Cemented; *SBT/SPT CORRELATION: UBC-1983

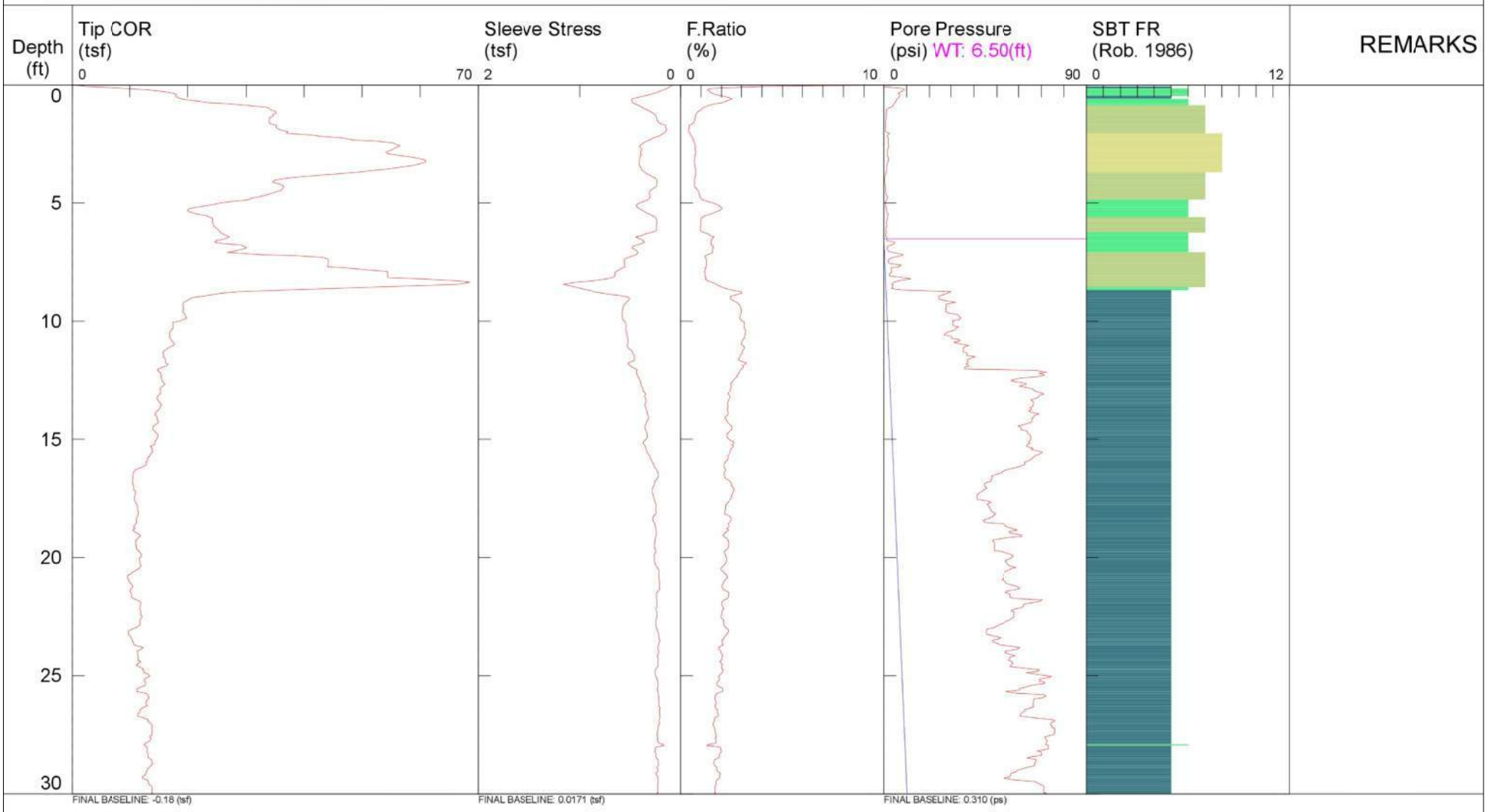
FIGURE 3

SOUNDING

ACache Corp.
Engineering a Firm Foundation

TOTAL DEPTH: 30.787 ft
SITE: CPT-02
SOUNDING
COMPANY: ACache Corp.
FILENAME: CPT-02.dat

PROBE ID: 4444.190XX
TEST ID: 24-10-24-02
PROJECT: Peterson Park
LOCATION: Tremonton



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*SBT: Robertson 1986; **Overconsolidated or Cemented; *SBT/SPT CORRELATION: UBC-1983

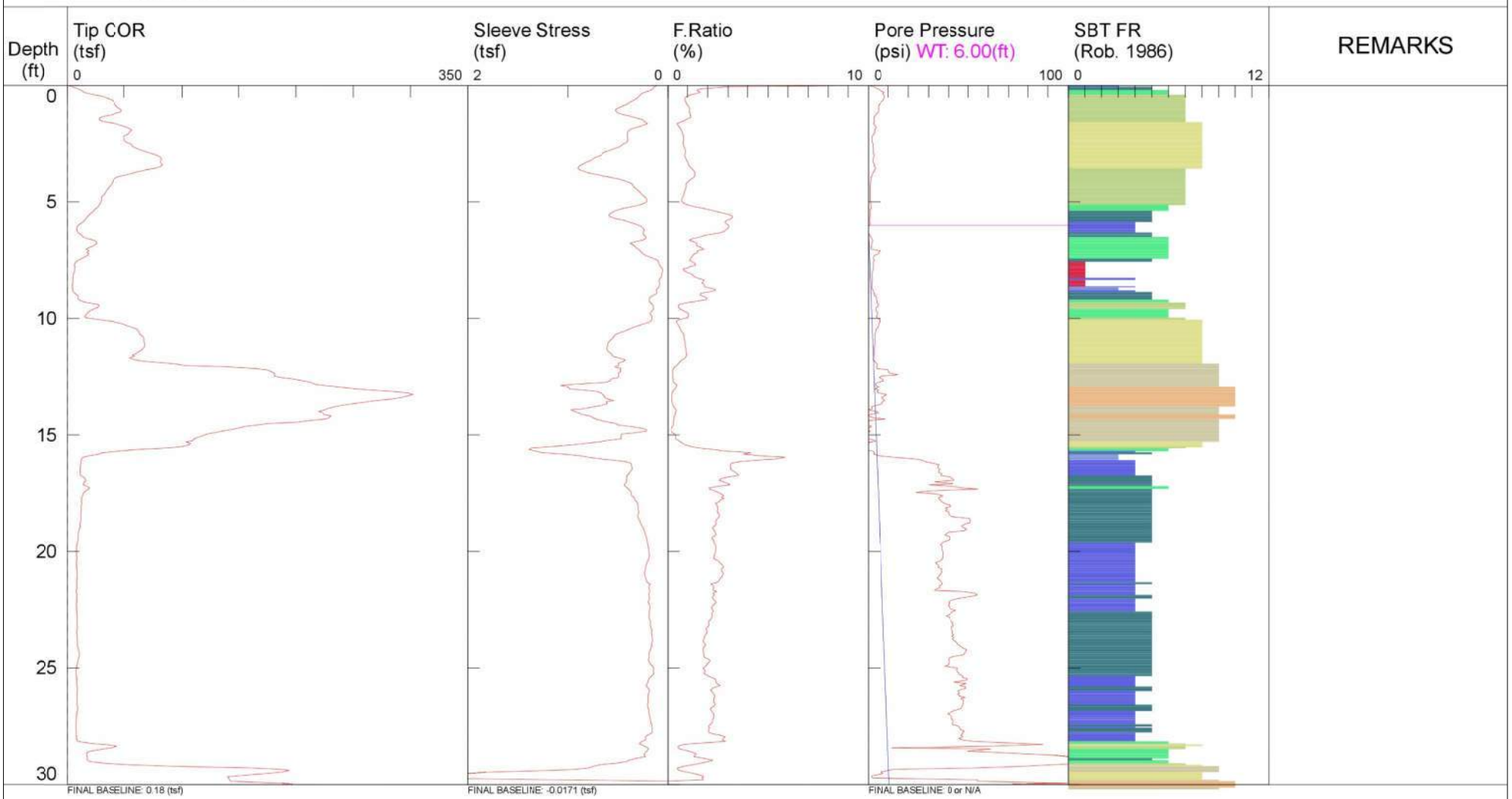
FIGURE 4

SOUNDING

ACache Corp.
Engineering a Firm Foundation

TOTAL DEPTH: 30.204 ft
SITE: CPT-03
SOUNDING
COMPANY: ACache Corp.
FILENAME: 24-10-24-03.DAT

PROBE ID: 4444.190XX
TEST ID: 24-10-24-03
PROJECT: Peterson Park
LOCATION: Tremonton



NOTES:: Example of notes

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FIGURE 5

SOUNDING

ACache Corp.
Engineering a Firm Foundation

TOTAL DEPTH: 17.652 ft
SITE: CPT-04
SOUNDING
COMPANY: ACache Corp.
FILENAME: 24-10-24-04.DAT

PROBE ID: 4444.190XX
TEST ID: 24-10-24-04
PROJECT: Peterson Park
LOCATION: Tremonton

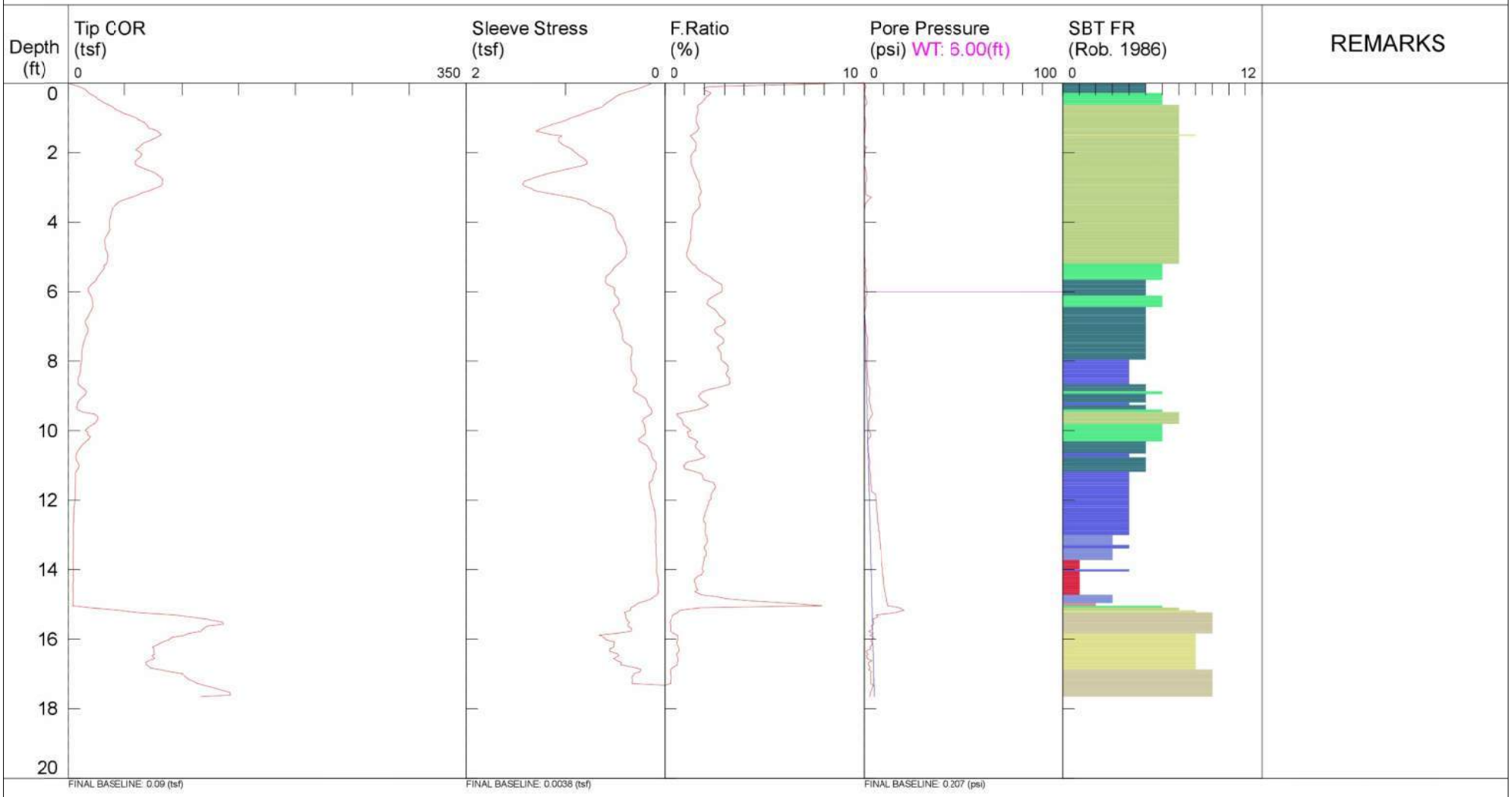

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FIGURE 6

SOUNDING

ACache Corp.
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TOTAL DEPTH: 20.090 ft
SITE: CPT-05
SOUNDING
COMPANY: ACache Corp.
FILENAME: 24-10-24-05.DAT

PROBE ID: 4444.190XX
TEST ID: 24-10-24-05
PROJECT: Peterson Park
LOCATION: Tremonton

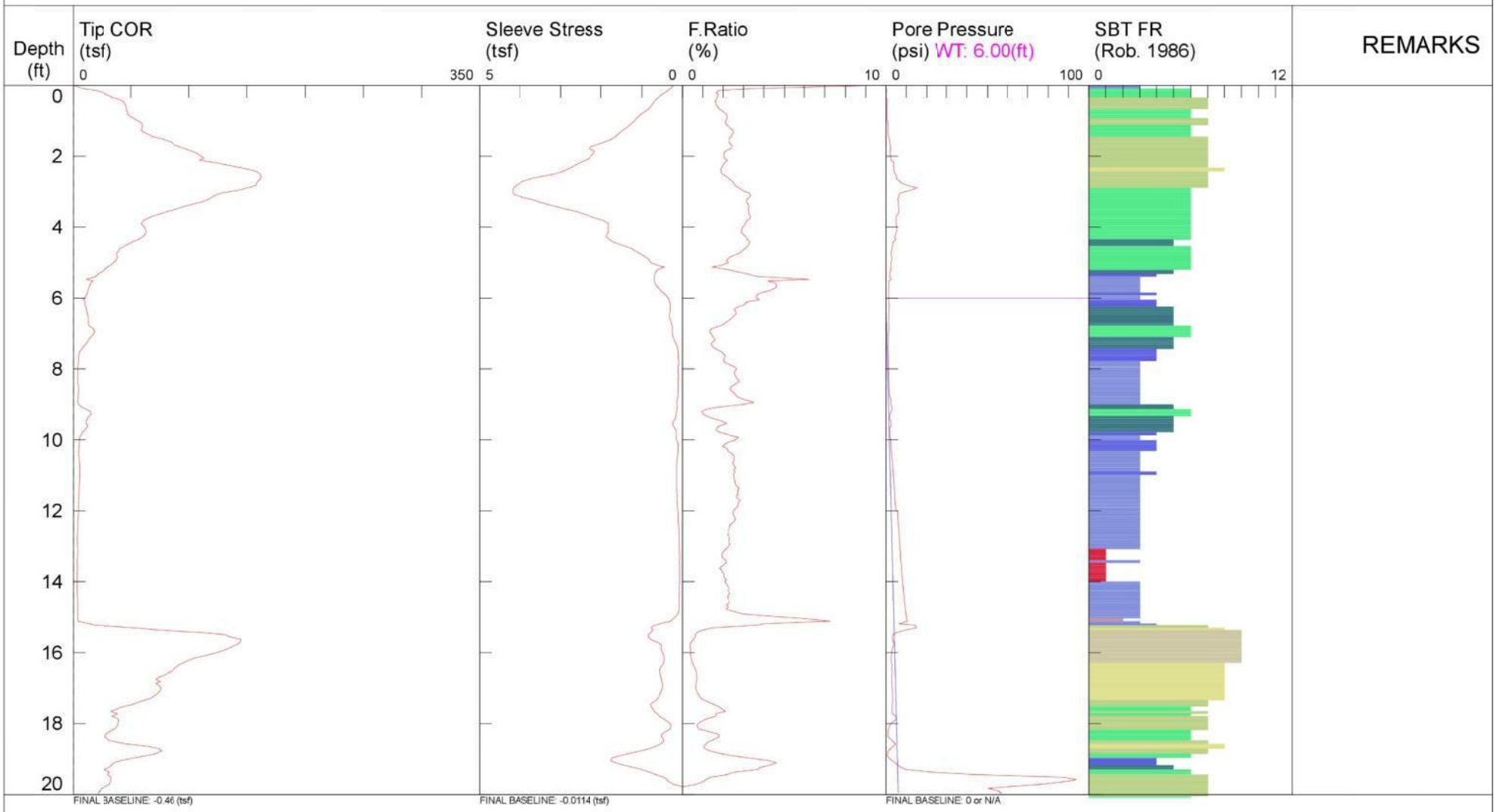

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FIGURE 7

SOUNDING

ACache Corp.
Engineering a Firm Foundation

TOTAL DEPTH: 20.094 ft
SITE: CPT-06
SOUNDING
COMPANY: ACache Corp.
FILENAME: 24-10-24-06.DAT

PROBE ID: 4444.190XX
TEST ID: 24-10-24-06
PROJECT: Peterson Park
LOCATION: Tremonton

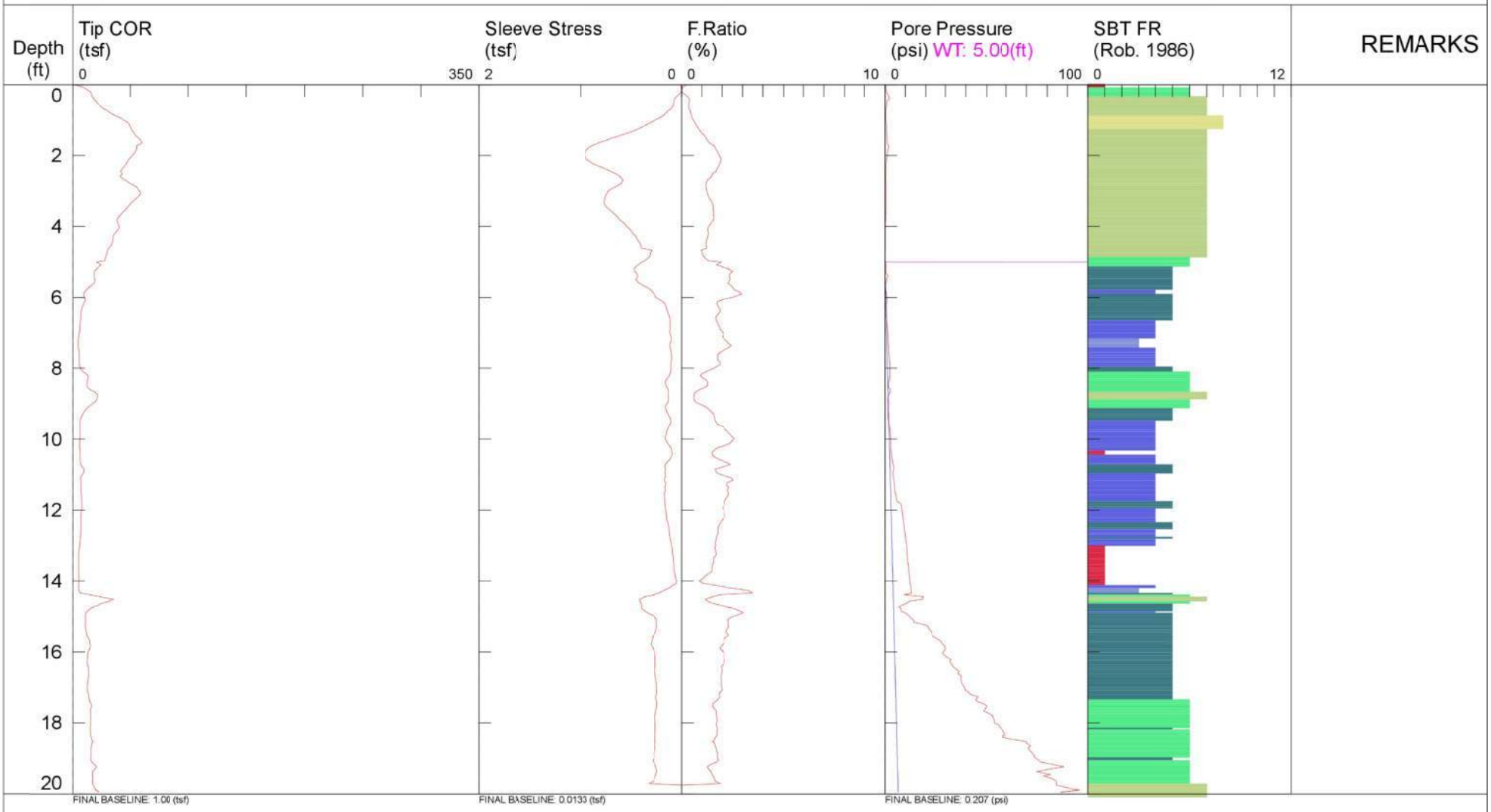

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FIGURE 8

SOUNDING

ACache Corp.
Engineering a Firm Foundation

TOTAL DEPTH: 20.151 ft
SITE: CPT-07
SOUNDING
COMPANY: ACache Corp.
FILENAME: 24-10-24-07.DAT

PROBE ID: 4444.190XX
TEST ID: 24-10-24-07
PROJECT: Peterson Park
LOCATION: Tremonton

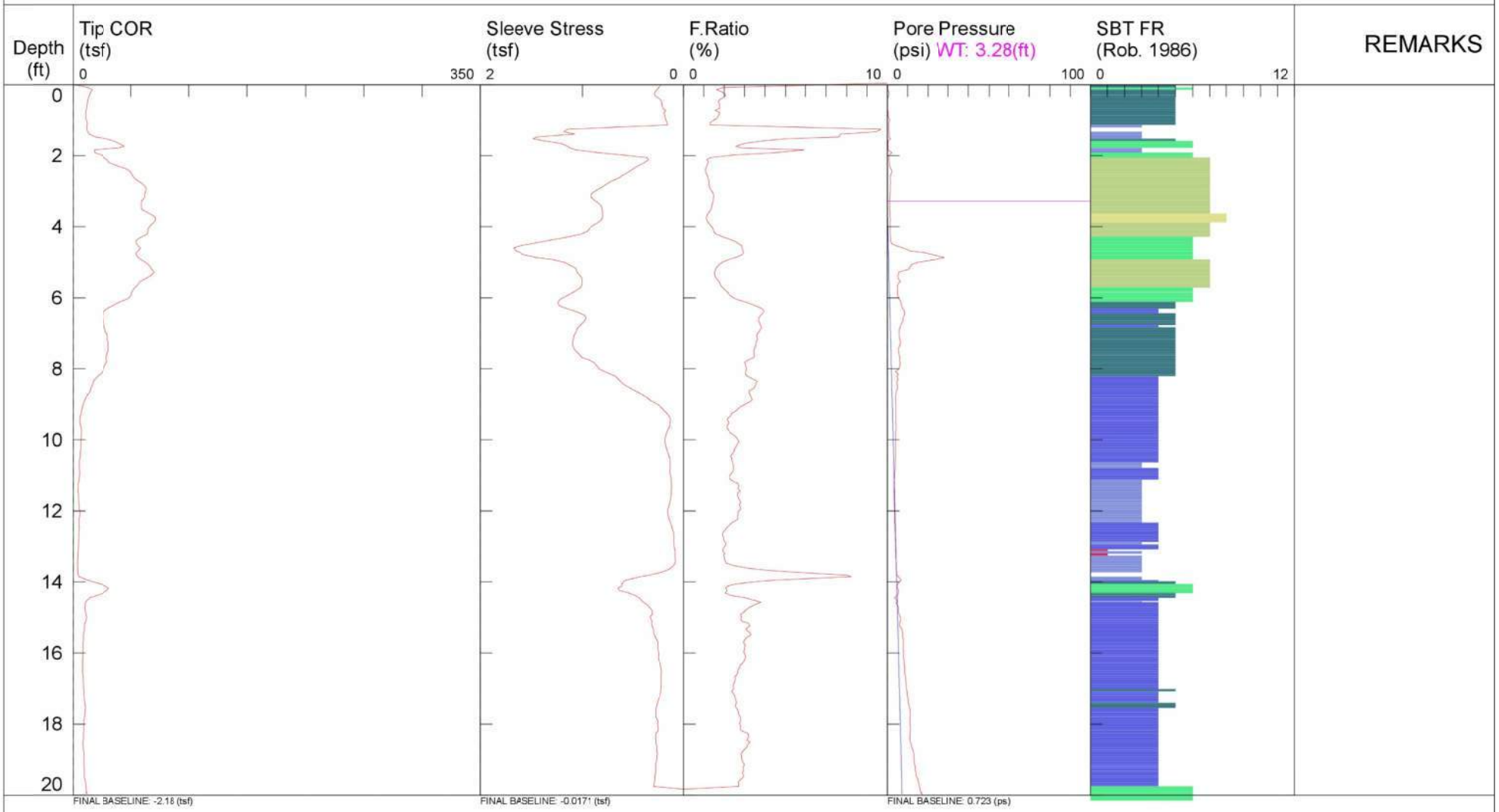

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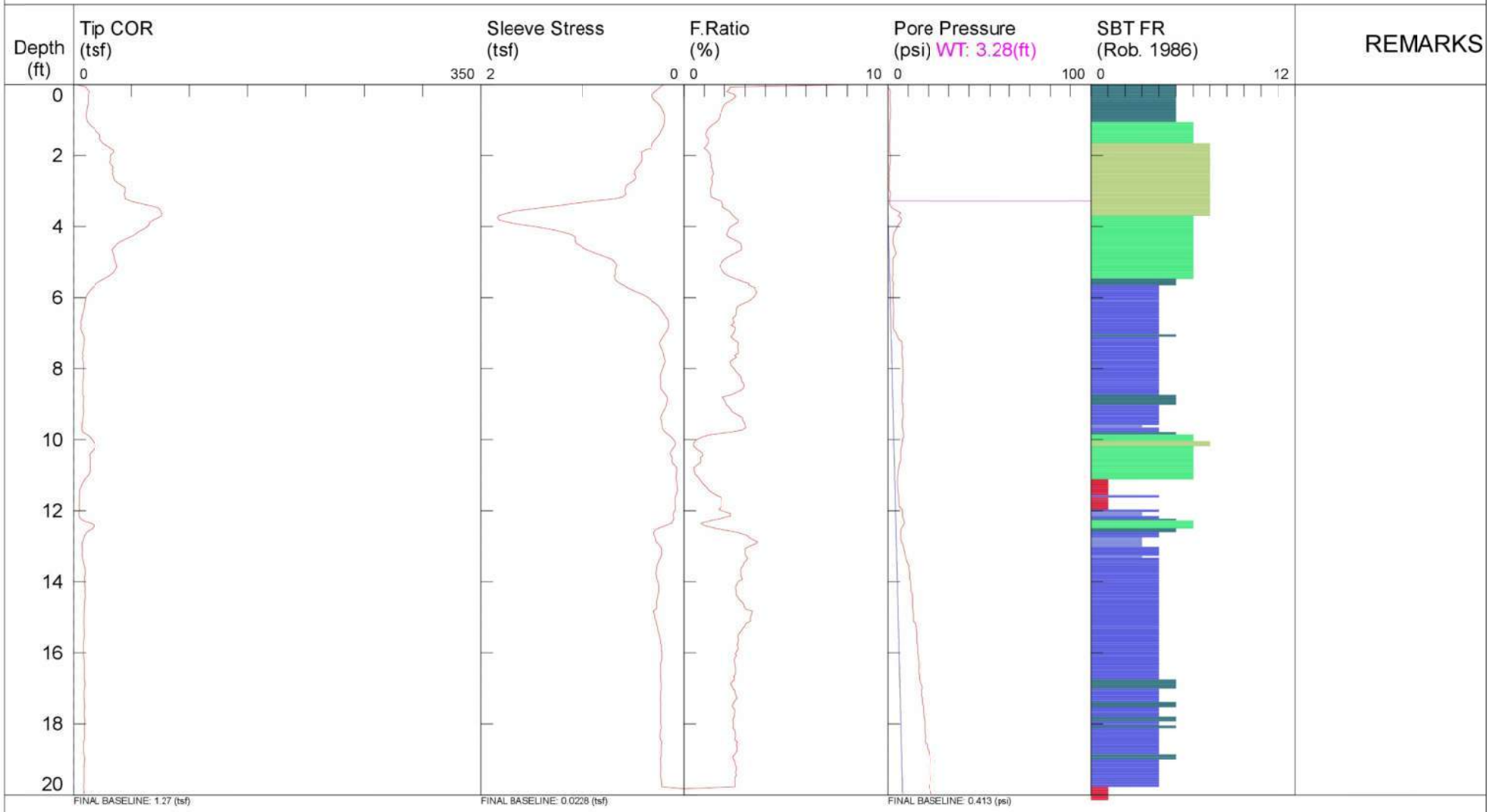
FIGURE 9

SOUNDING

ACache Corp.
Engineering a Firm Foundation

TOTAL DEPTH: 20.149 ft
SITE: CPT-08
SOUNDING
COMPANY: ACache Corp.
FILENAME: 24-10-24-08.DAT

PROBE ID: 4444.190XX
TEST ID: 24-10-24-08
PROJECT: Peterson Park
LOCATION: Tremonton



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*SBT: Robertson 1986; **Overconsolidated or Cemented; *SBT/SPT CORRELATION: UBC-1983

FIGURE 10

SOUNDING

ACache Corp.
Engineering a Firm Foundation

TOTAL DEPTH: 20.867 ft
SITE: CPT-09
SOUNDING
COMPANY: ACache Corp.
FILENAME: 24-10-24-09.DAT

PROBE ID: 4444.190XX
TEST ID: 24-10-24-09
PROJECT: Peterson Park
LOCATION: Tremonton

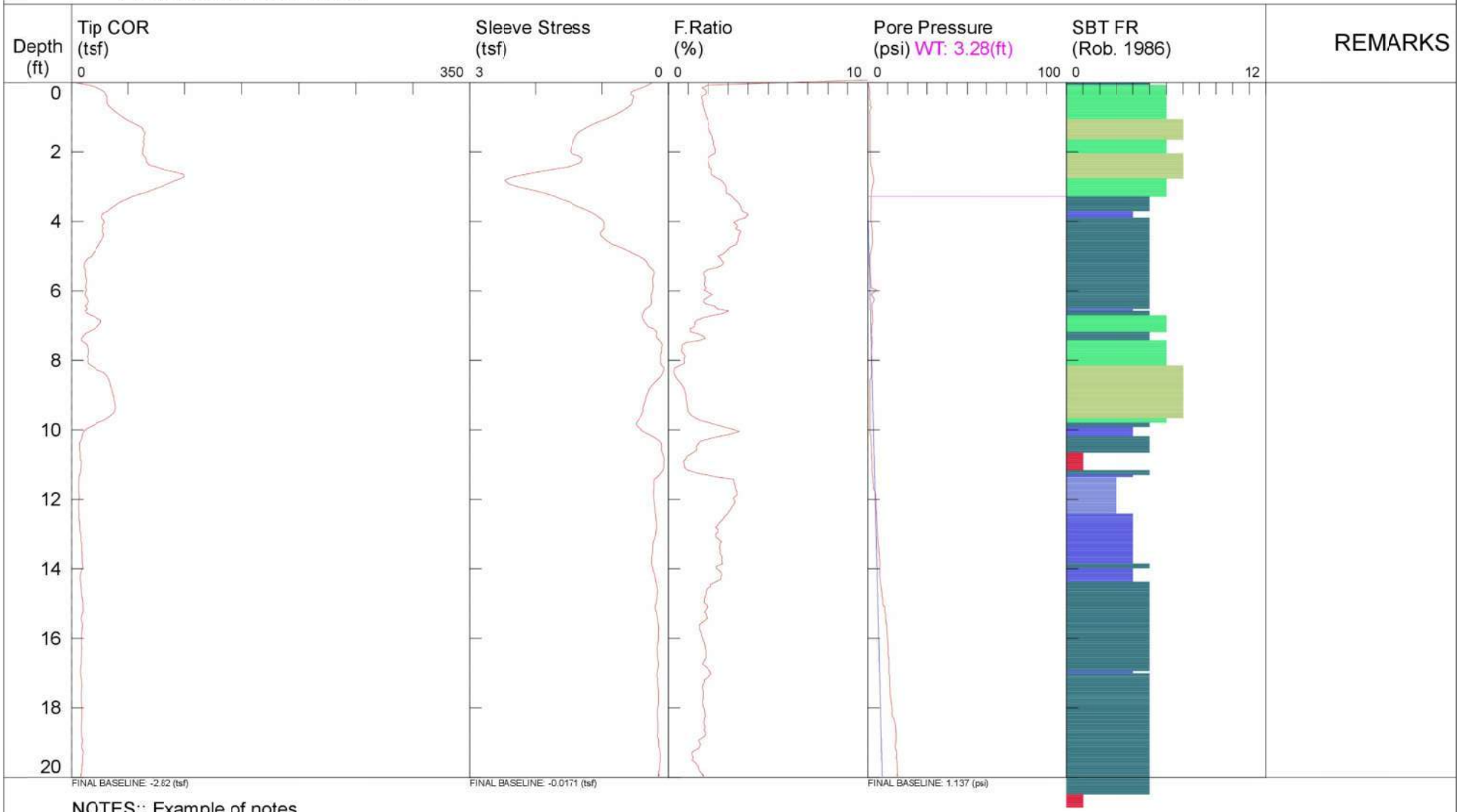

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FIGURE 11

SOUNDING

ACache Corp.
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TOTAL DEPTH: 20.278 ft
SITE: CPT-10
SOUNDING
COMPANY: ACache Corp.
FILENAME: 24-10-24-10.DAT

PROBE ID: 4444.190XX
TEST ID: 24-10-24-10
PROJECT: Peterson Park
LOCATION: Tremonton

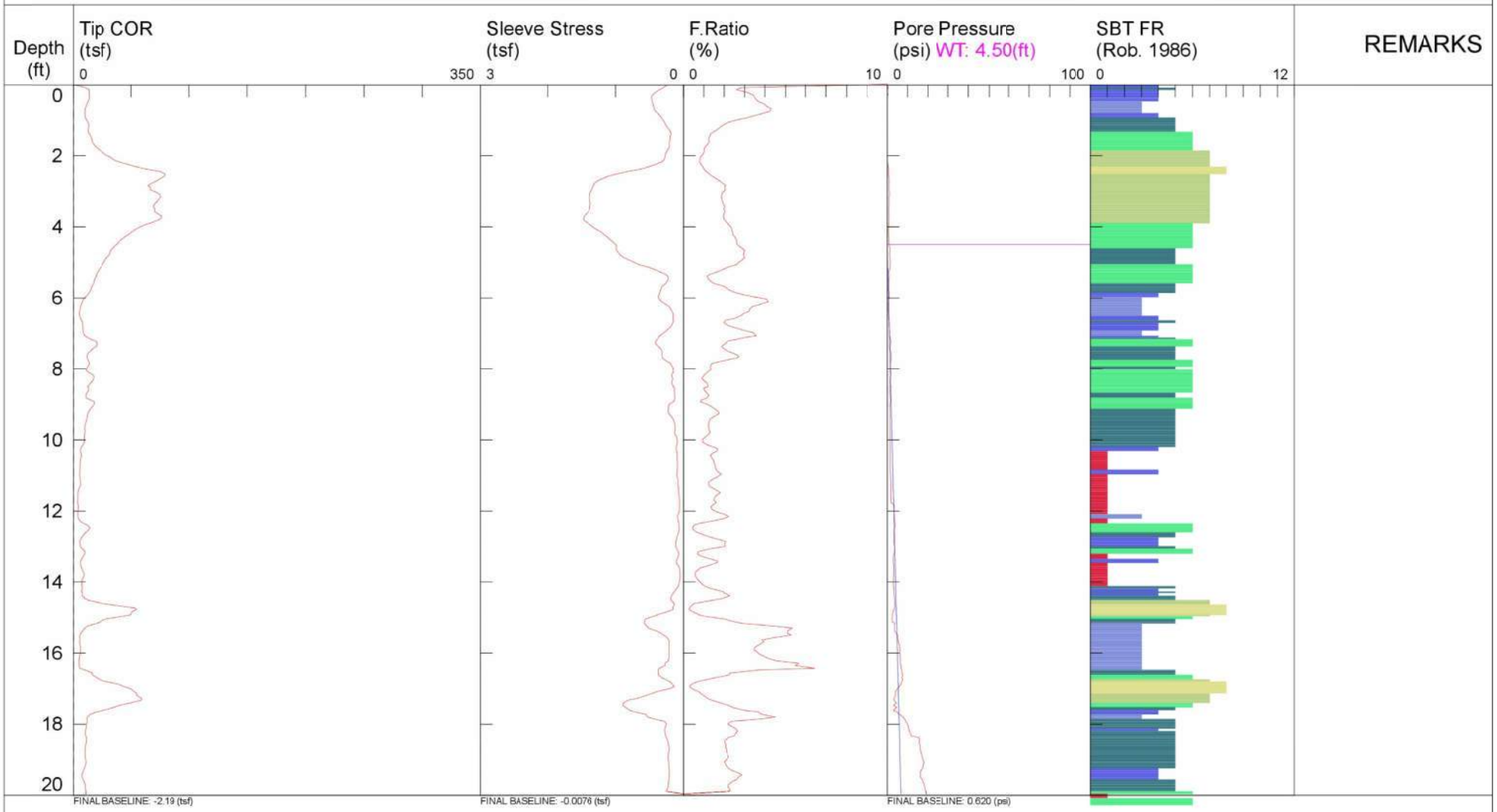

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FIGURE 12

SOUNDING

ACache Corp.
Engineering a Firm Foundation

TOTAL DEPTH: 20.089 ft
SITE: CPT-11
SOUNDING
COMPANY: ACache Corp.
FILENAME: 24-10-24-11.DAT

PROBE ID: 4444.190XX
TEST ID: 24-10-24-11
PROJECT: Peterson Park
LOCATION: Tremonton

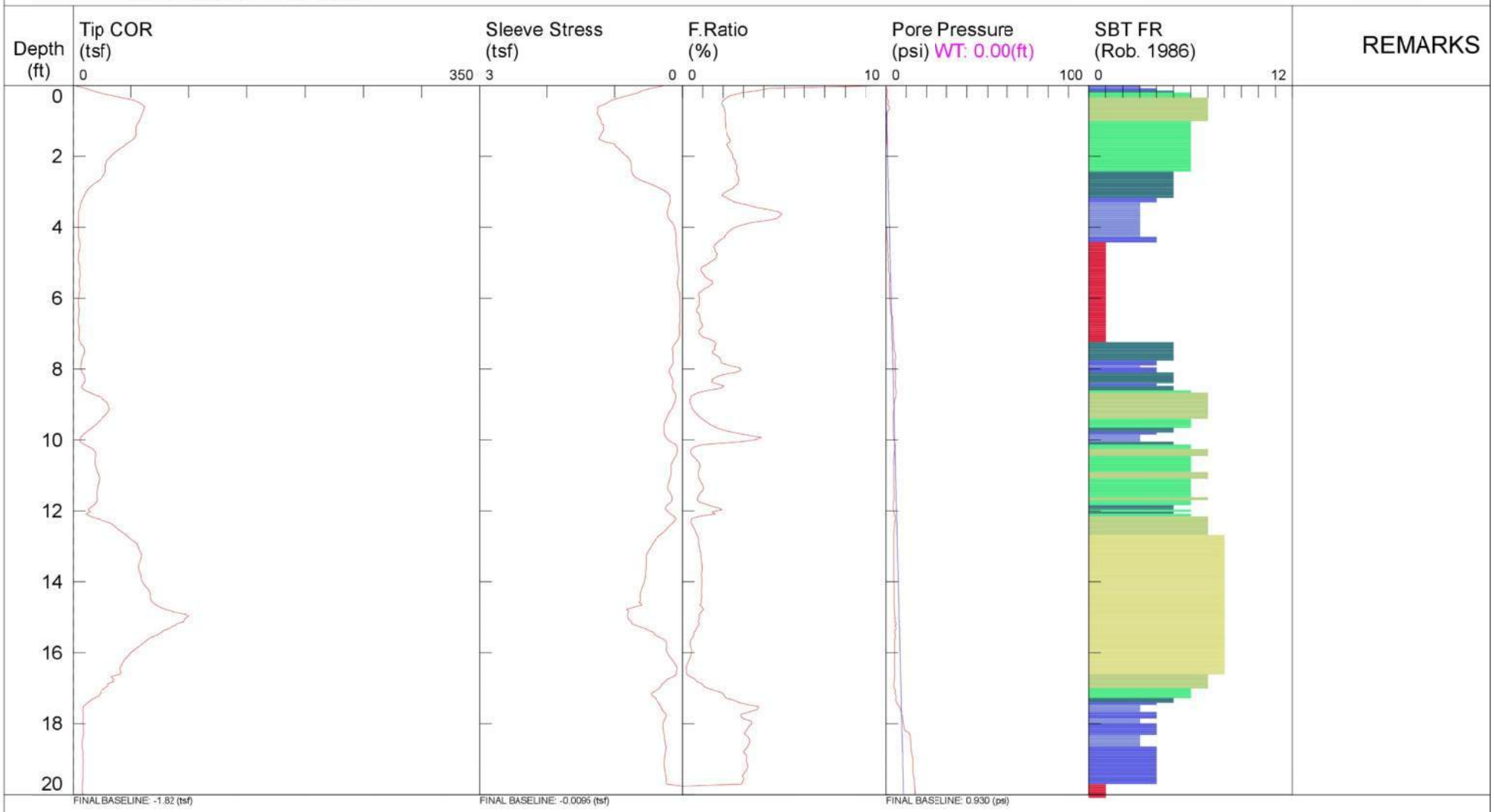

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FIGURE 13

SOUNDING

ACache Corp.
Engineering a Firm Foundation

TOTAL DEPTH: 20.219 ft
SITE: CPT-12
SOUNDING
COMPANY: ACache Corp.
FILENAME: 24-10-24-12.DAT

PROBE ID: 4444.190XX
TEST ID: 24-10-24-12
PROJECT: Peterson Park
LOCATION: Tremonton

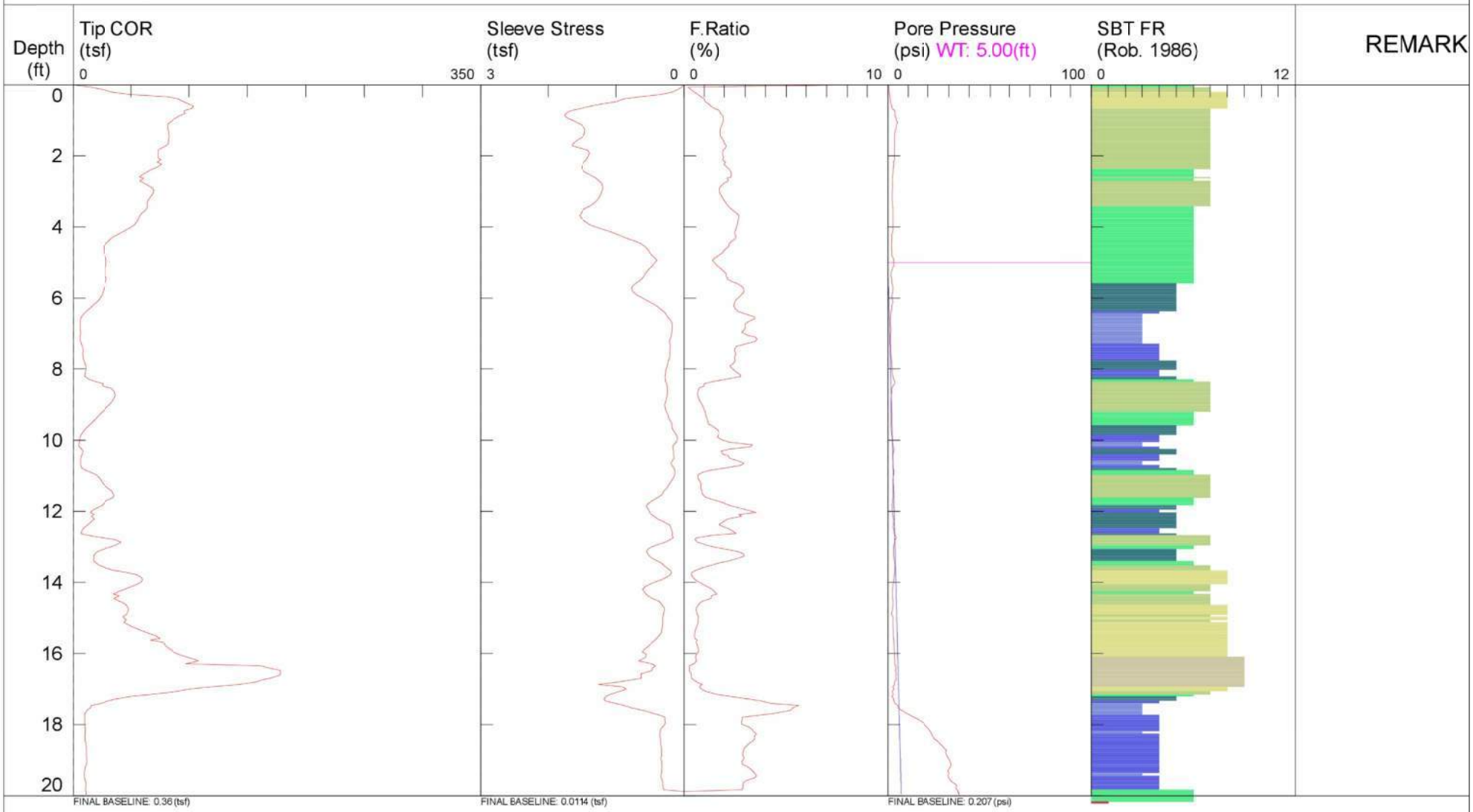

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FIGURE 14