



# Weatherford

## MICRORESISTIVITY LOG

COMPANY

O'BRIEN ENERGY RESOURCES CORP.

WELL

VANDERPOOL # 1-5

FIELD

WILDCAT

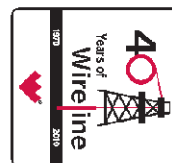
PROVINCE/COUNTY

MEADE

COUNTRY/STATE

U.S.A. / KANSAS

LOCATION

2041' FSL & 2060' FWL  
SW NE NE SW

SEC

TWP 34S

RGE 28W

Other Services  
MPD/MDN  
MAI/MFE

API Number

15-119-21317

MAI/MFE

Permit Number

Permanent Datum G.L., Elevation 2356 feet

Log Measured From KB

Drilling Measured From K.B.

Date

01-MAY-2012

Elevations: KB 2368.00  
DF 2366.00  
GL 2356.00

Run Number

ONE

Depth Driller

6405.00 feet

Depth Logger

6404.00 feet

First Reading

6368.00 feet

Last Reading

2800.00 feet

Casing Driller

1500.00 feet

Casing Logger

1497.00 feet

Bit Size

7.875 inches

Hole Fluid Type

CHEMICAL

Density / Viscosity

9.10 lb/USg 51.00 CP  
9.50 8.80 ml/30Min

PH / Fluid Loss

9.50

Sample Source

FLOWLINE

Rm @ Measured Temp

1.40 @ 80.0 ohm-m

Rmf @ Measured Temp

1.12 @ 80.0 ohm-m

Rmc @ Measured Temp

1.68 @ 80.0 ohm-m

Source Rmf / Rmc

CALC

Rm @ BHT

0.89 @128.0 ohm-m

Time Since Circulation

5 HOURS

Max Recorded Temp

128.00 deg F

Equipment Name

COMPACT

Equipment / Base

13025 LIB

Recorded By

A. GIAMBALVO

Witnessed By

PETER DEBENHAM

ROGER PEARSON

S.O. / JOB #

3534651

LB12-109

### BOREHOLE RECORD

Last Edited: 01-MAY-2012 15:13

Bit Size inches	Depth From feet	Depth To feet
7.875	1497.00	6404.00

### CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	12.00	1497.00	24.00

### REMARKS

Tools Run: MAI, MPD, MCG, MDN, MFE, MML.  
 Hardware: MPD: 8 inch profile plate used. MAI and MFE: 0.5 inch standoffs used. MDN: Dual Eccentralizer used.  
 2.71 G/CC Limestone density matrix used to calculate porosity.  
 Borhole rugosity, tight pulls, and washouts will affect data quality.  
 Tight pull at 5968' will affect data quality.  
 Customer was informed of noise appearing on SP during logging. Customer requested that noisy sections not be relogged.  
 All intervals logged and scaled per customer's request.  
 Annular volume with 4.5 inch production casing = 1402 cu. ft.  
 Service order # 3534651  
 Rig: Duke #6  
 Engineer: A. Giambalvo  
 Operator(s): N. Adame

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions in our price schedule.

5 INCH MAIN

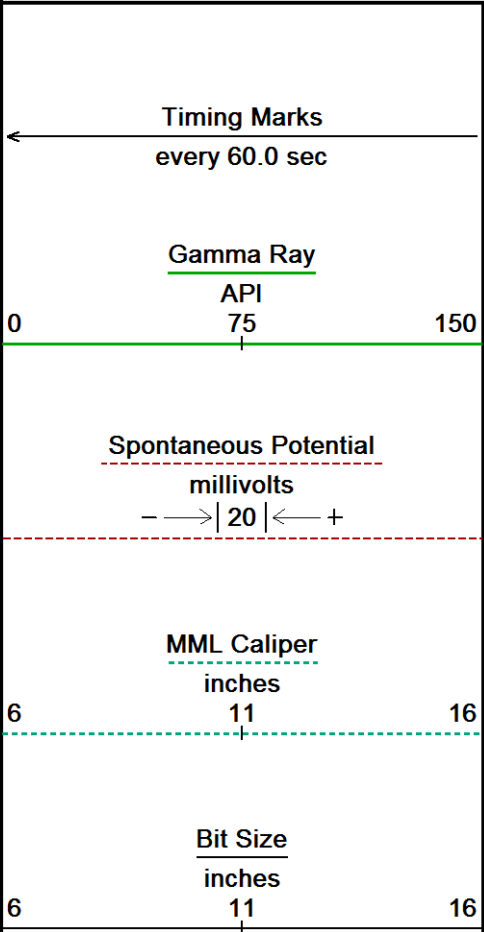
Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 09-MAY-2012 10:33

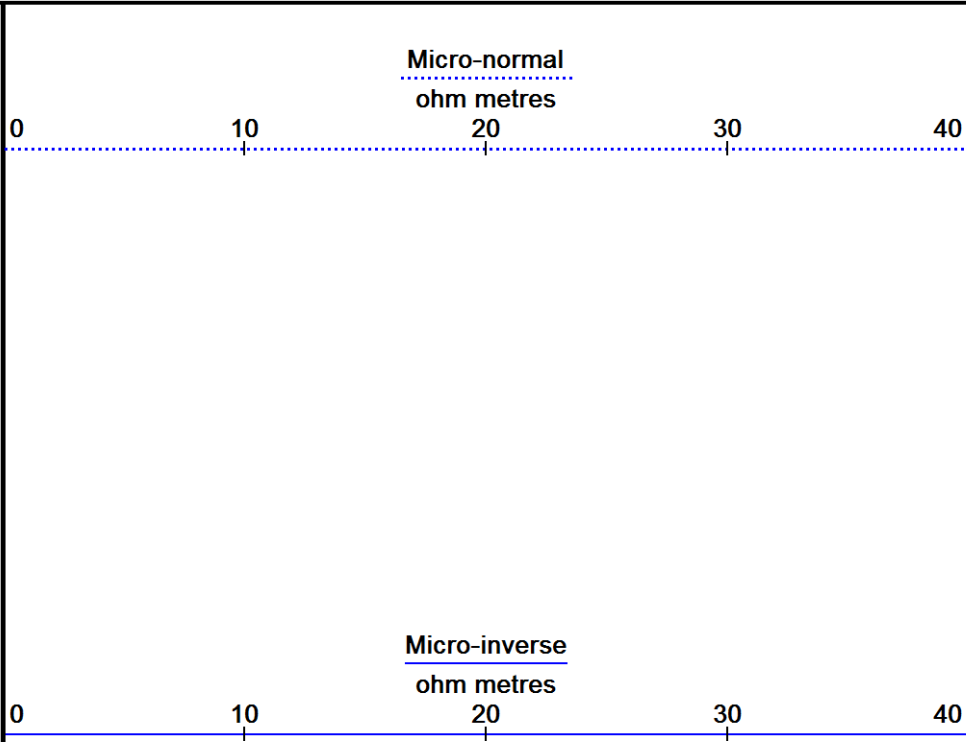
Filename: C:\Users\JoeWeatherford Pre...\O'Brien Energy Resources Corp. Vanderpool # 1-5\_004.dta

Recorded on 01-MAY-2012 12:17

System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 12.01.3513

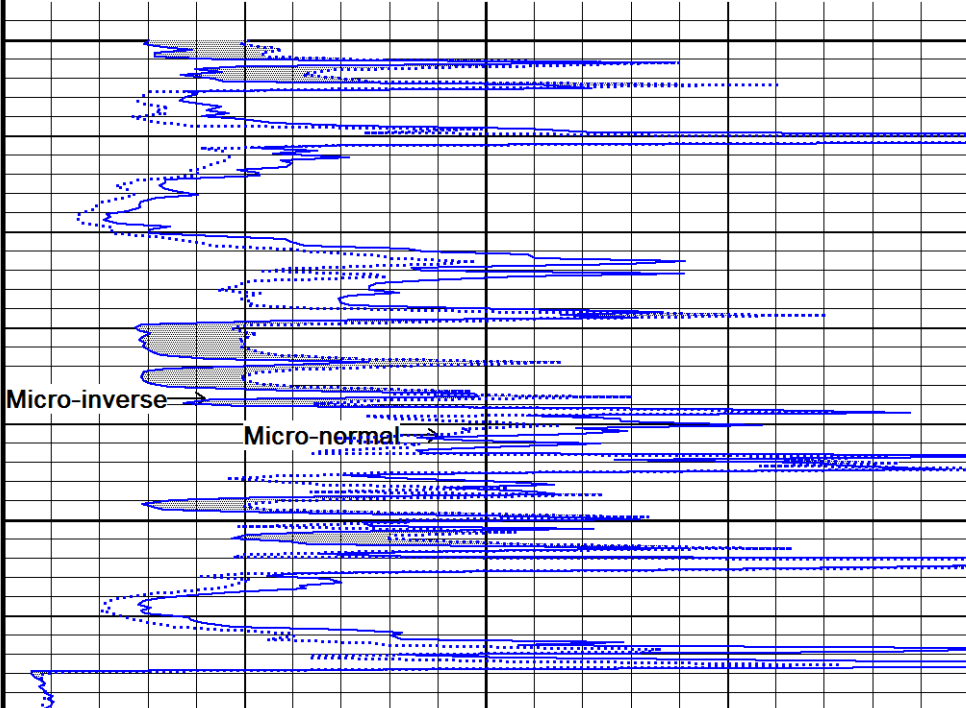
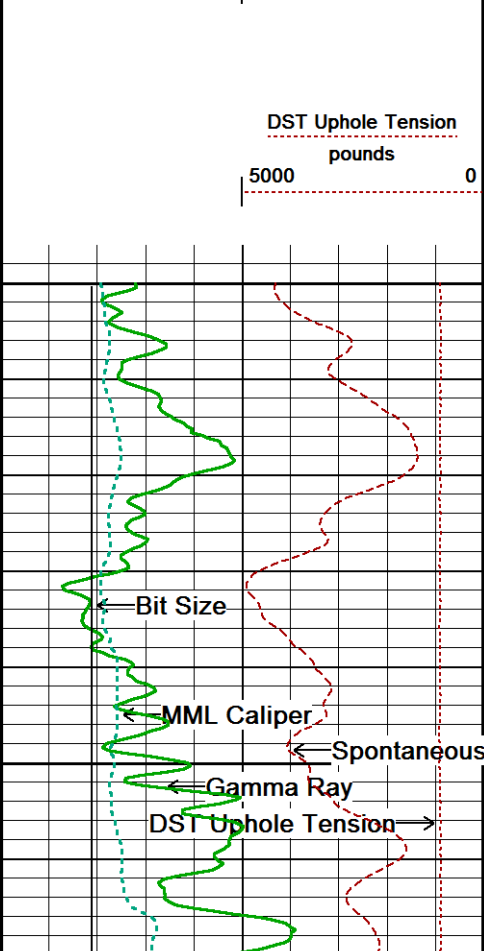


Depth in Feet



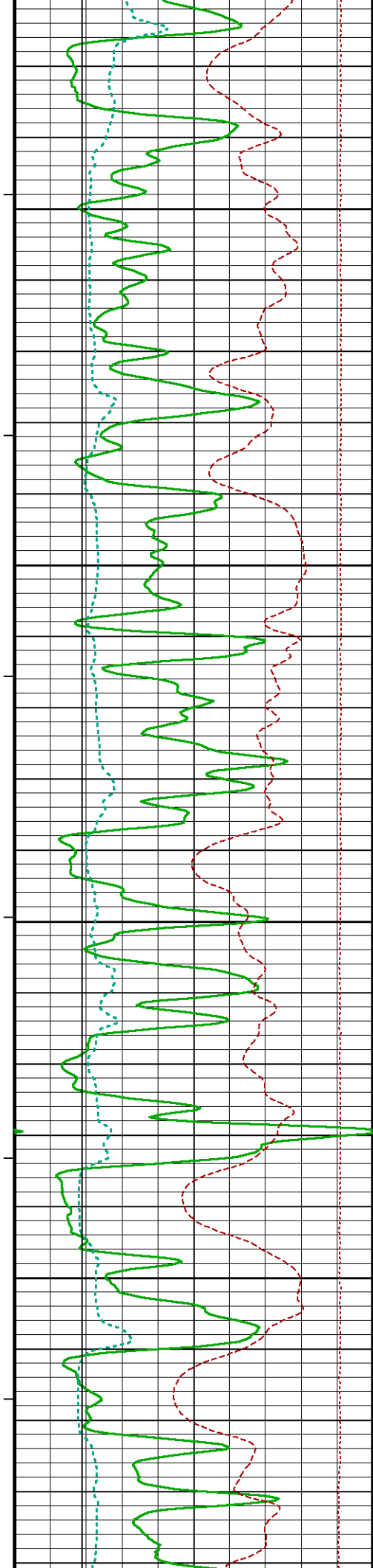
Borehole Temp in deg F

Replay Scale 1:240



101°

2850'



101°

2900

102°

2950

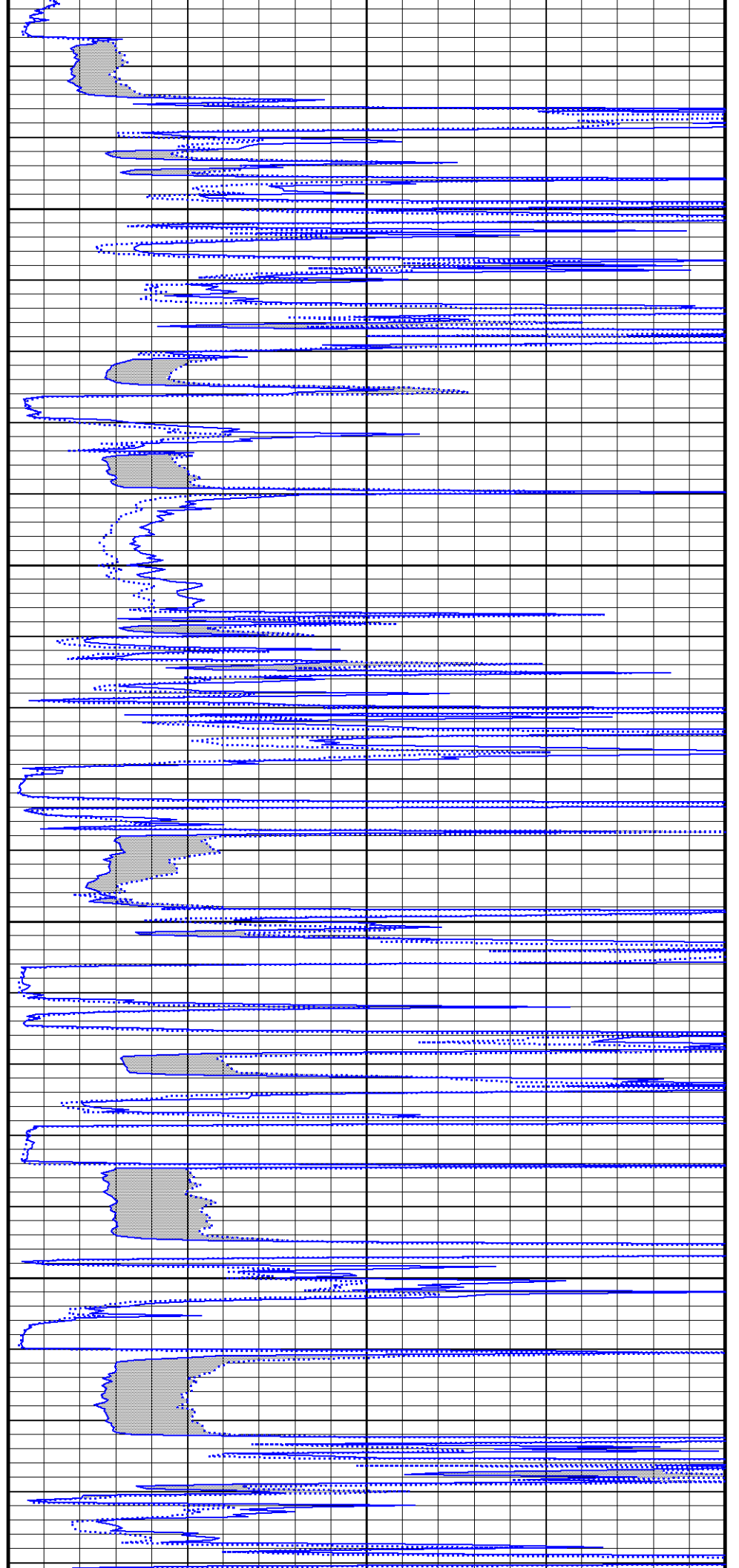
102°

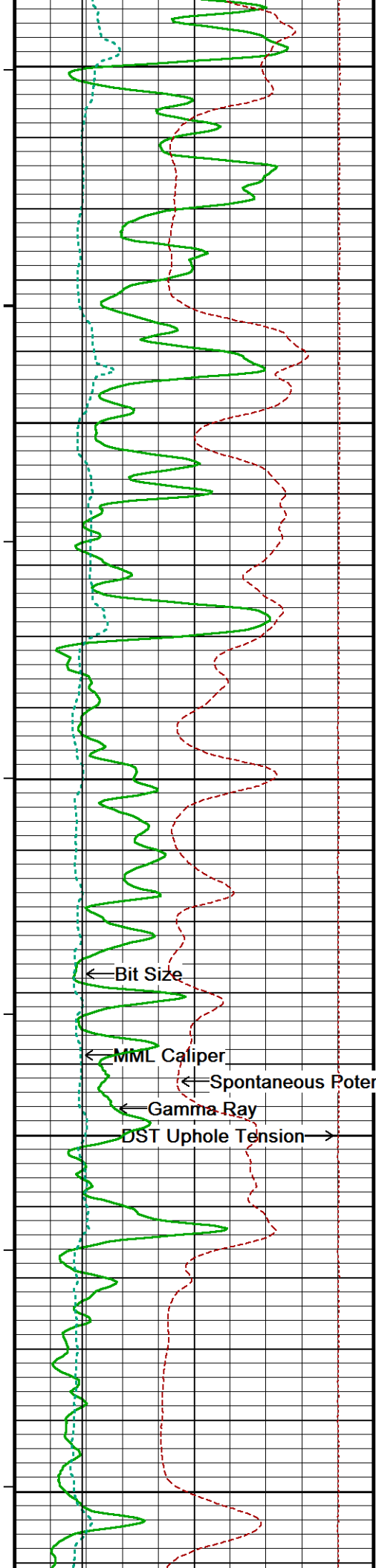
3000

102°

3050

103°





3100

103°

3150

103°

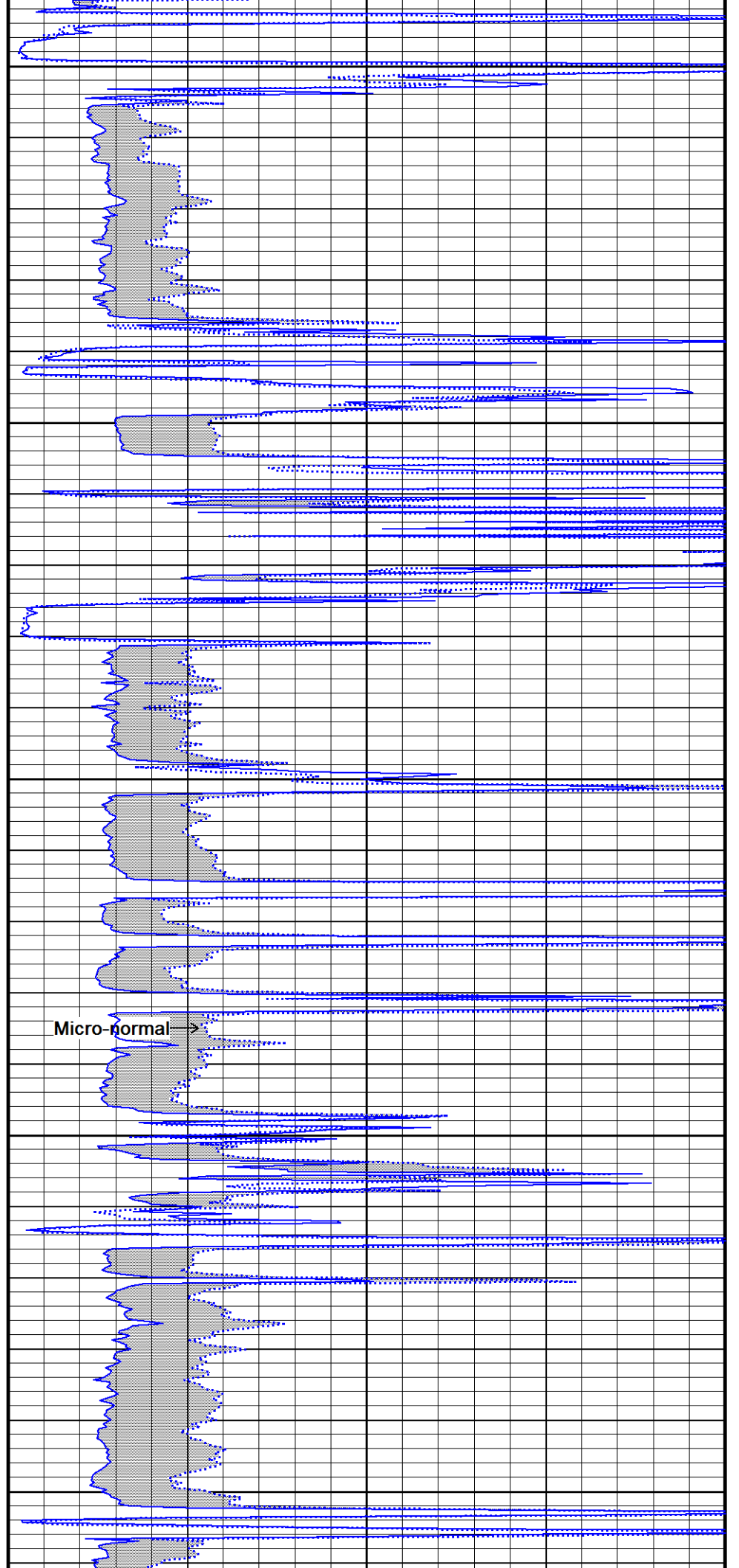
3200

104°

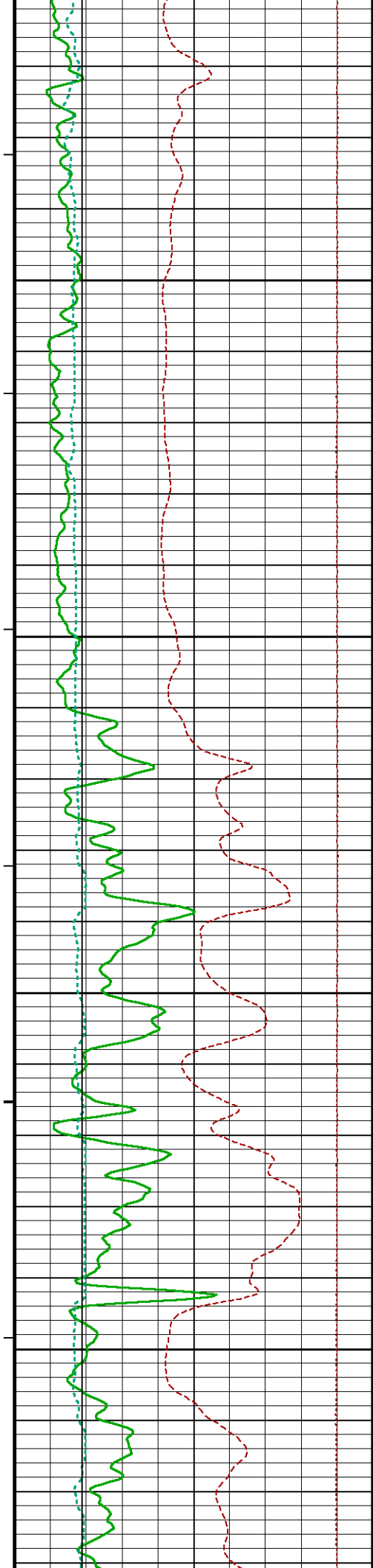
3250

104°

3300



Micro-normal



104°

3350

105°

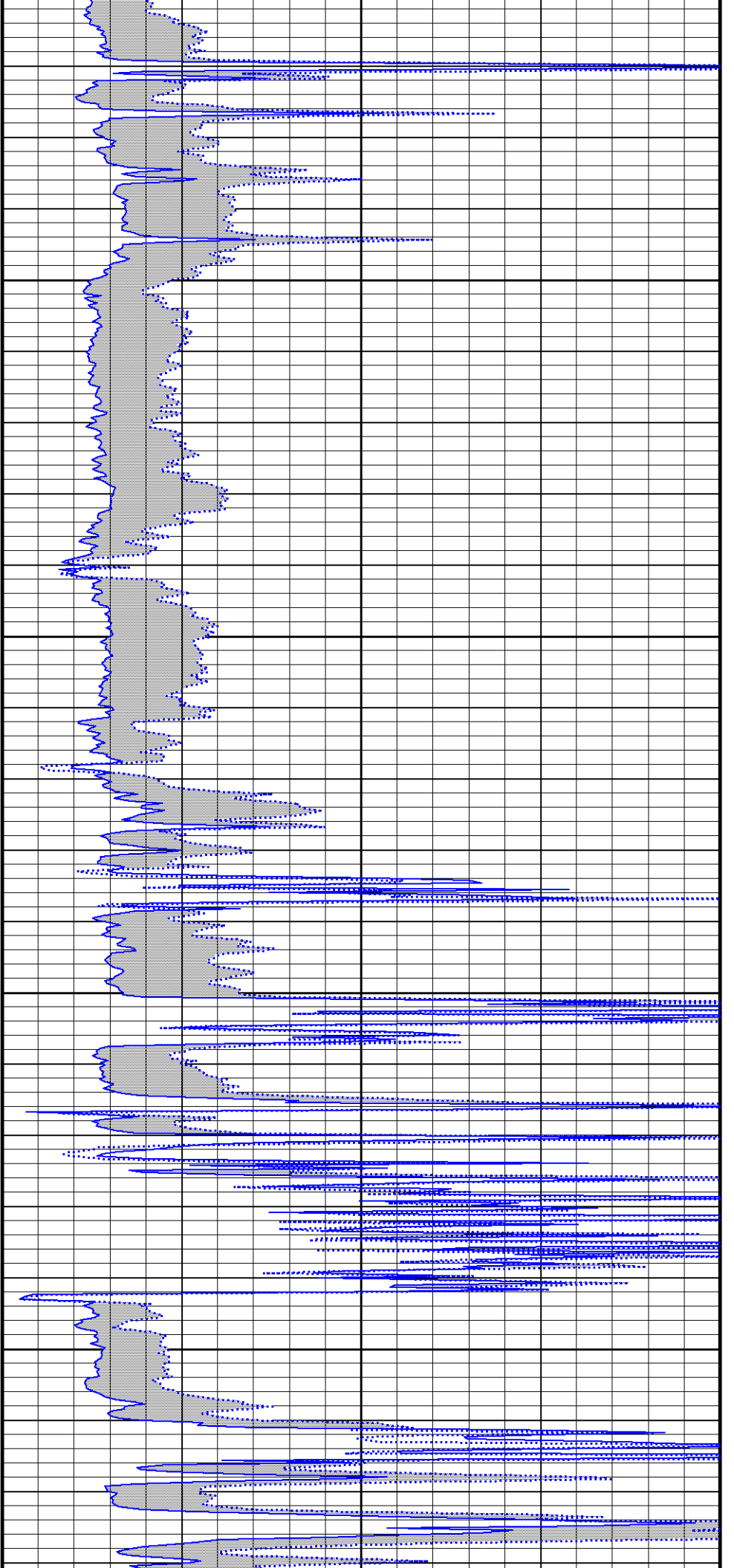
3400

105°

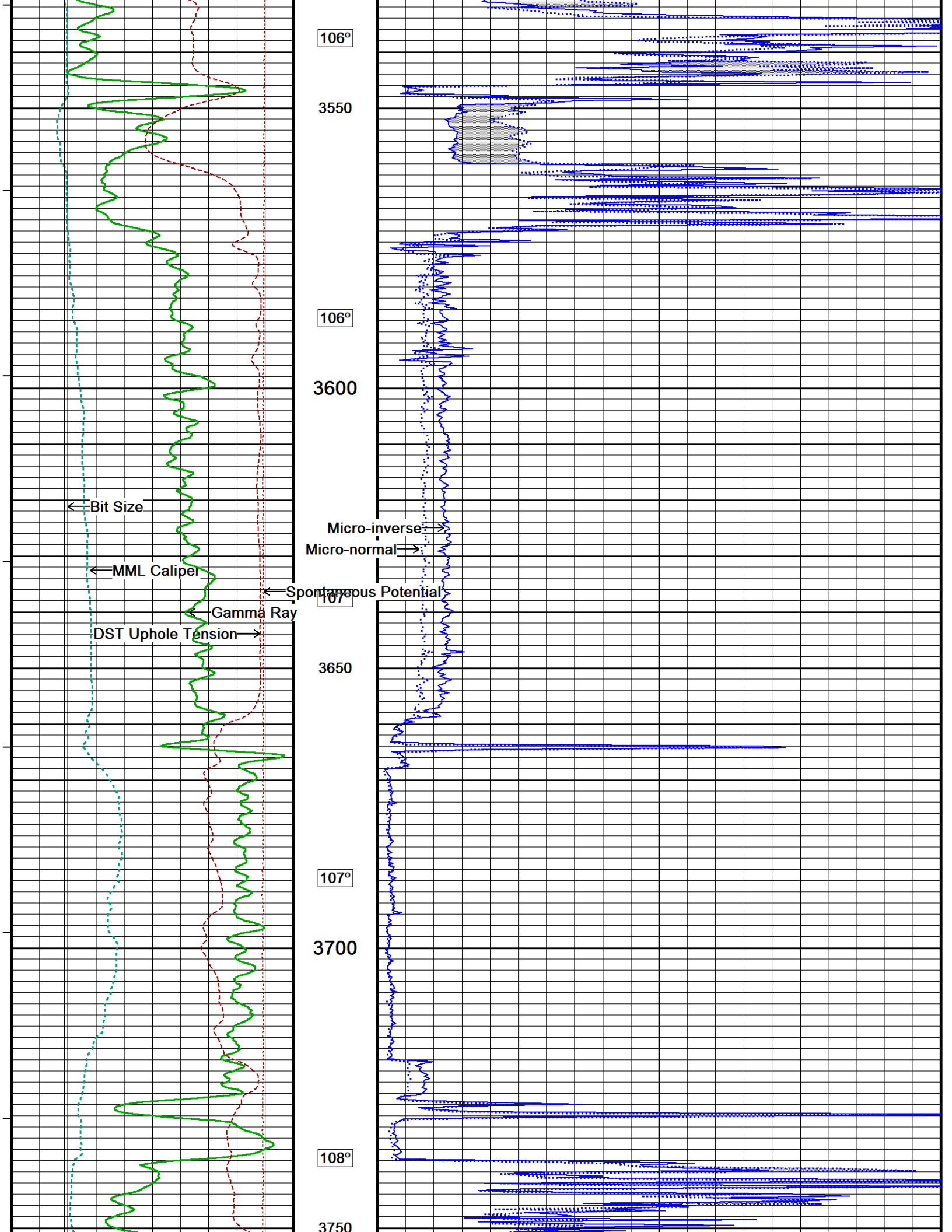
3450

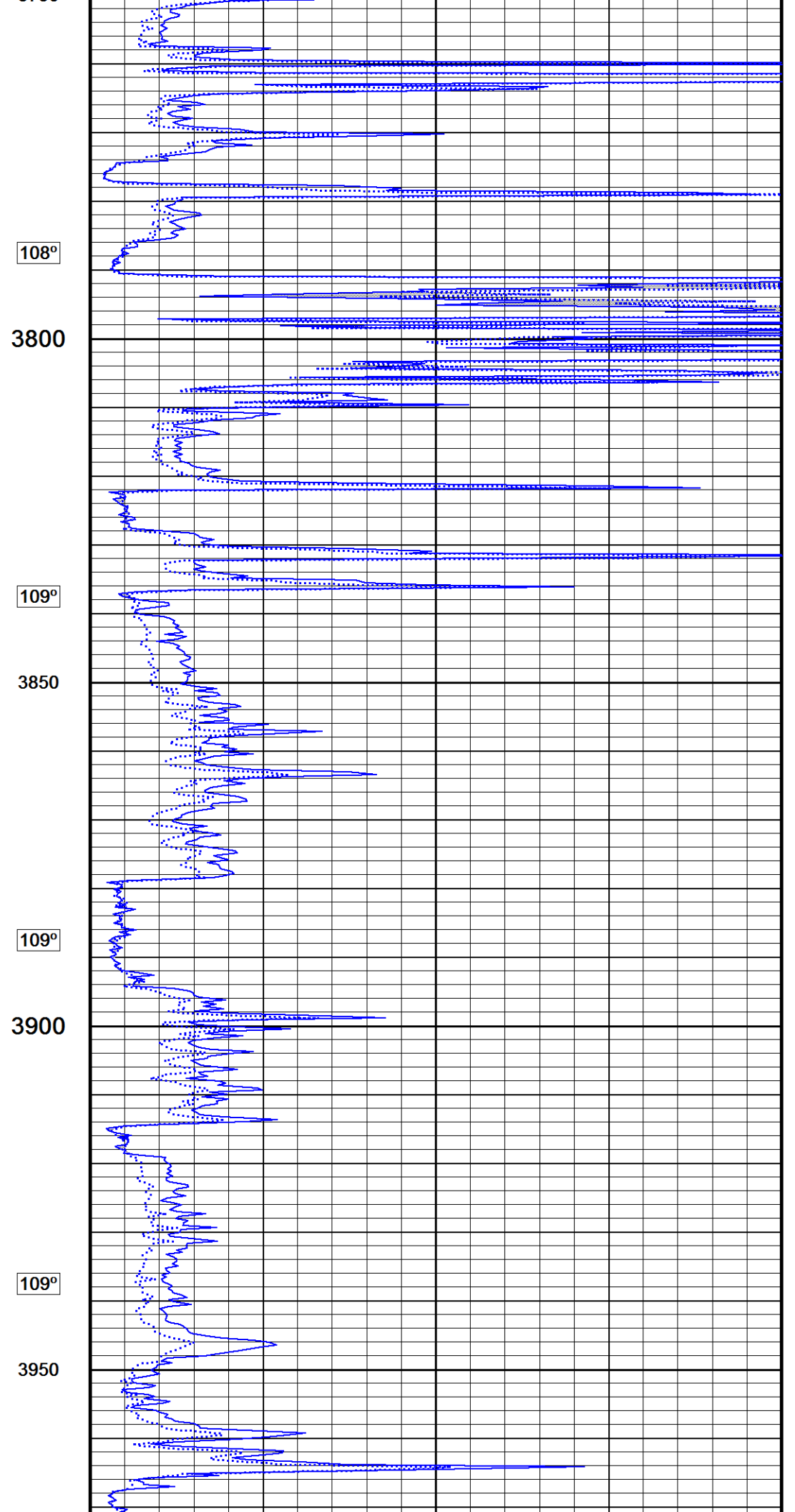
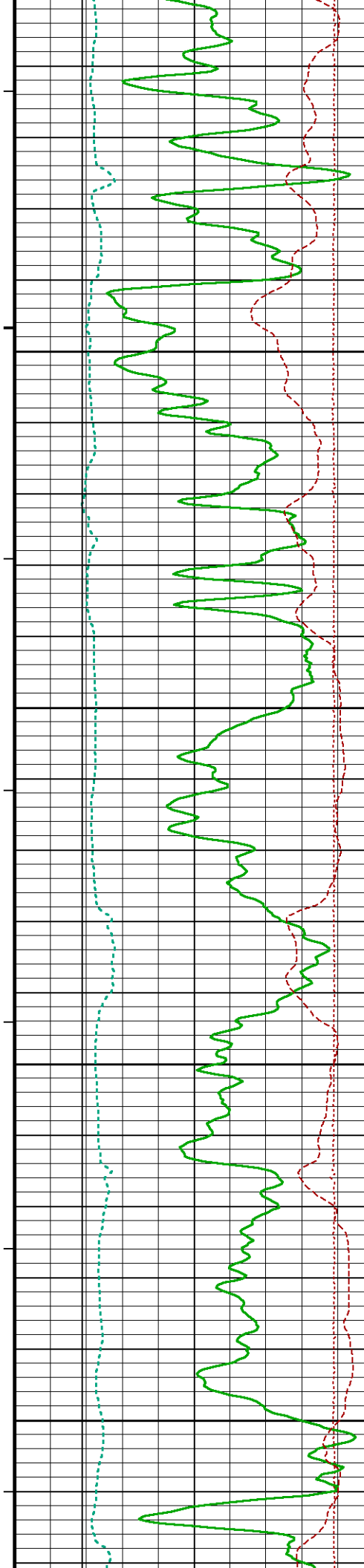
105°

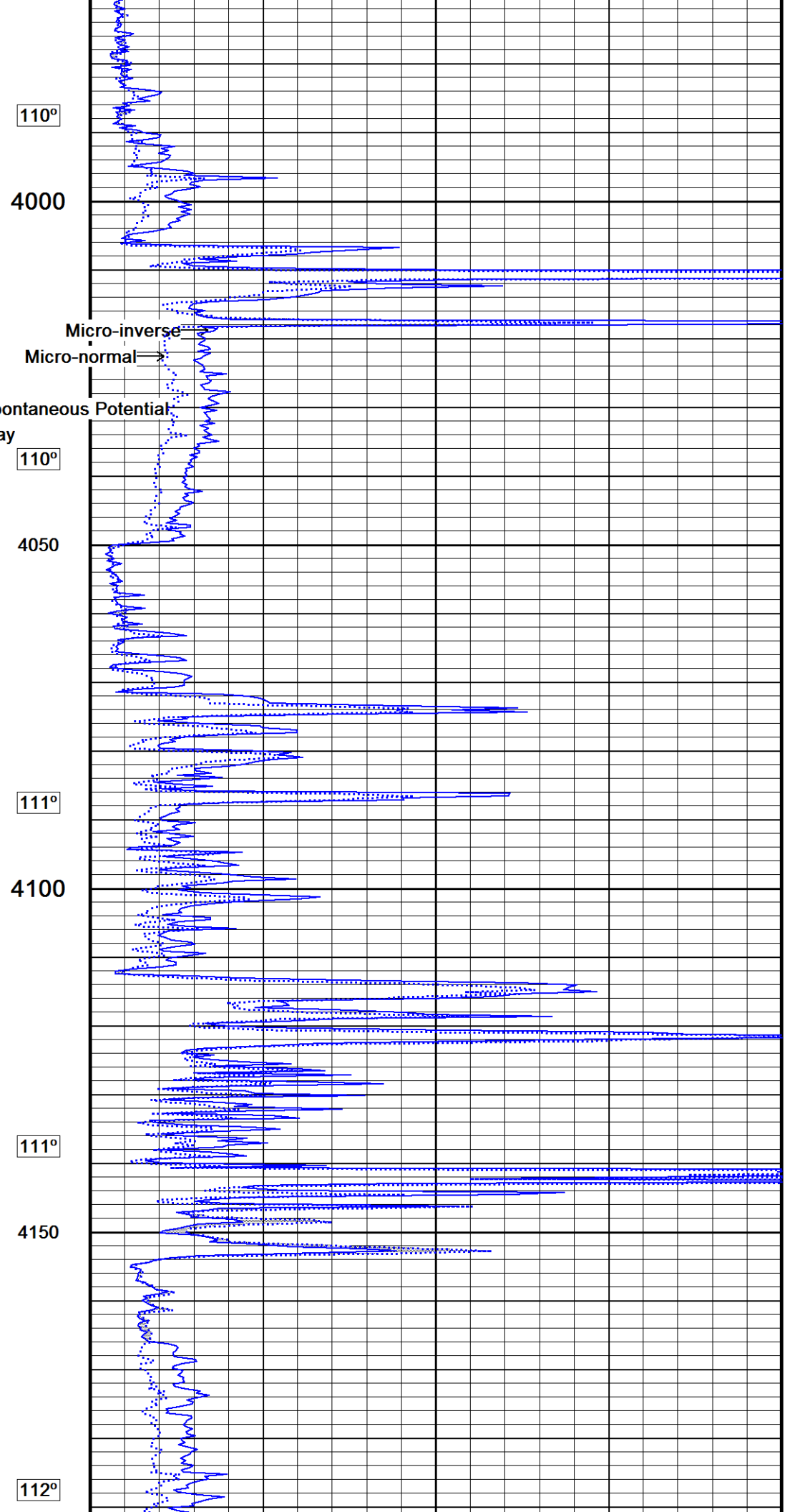
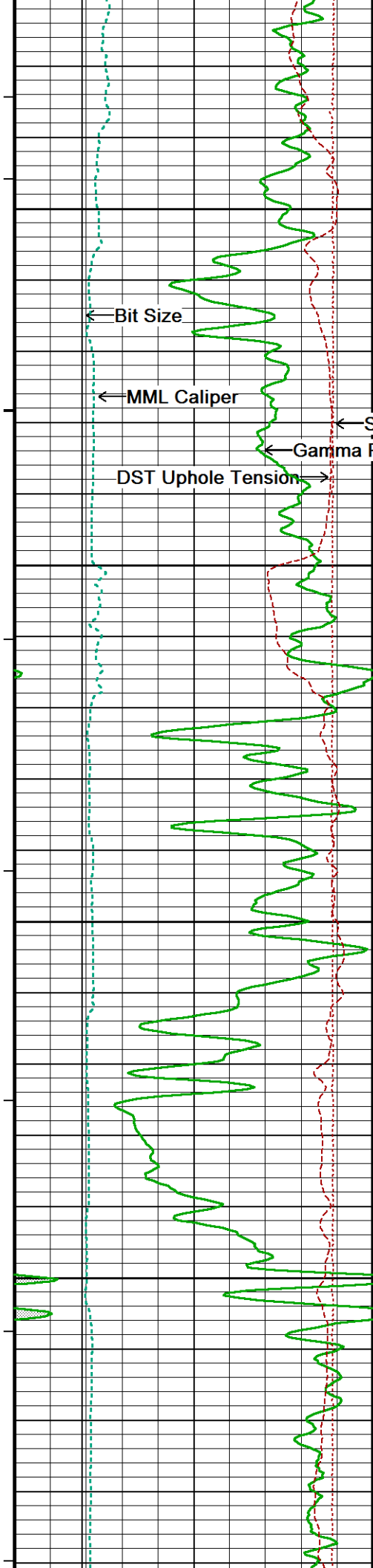
3500



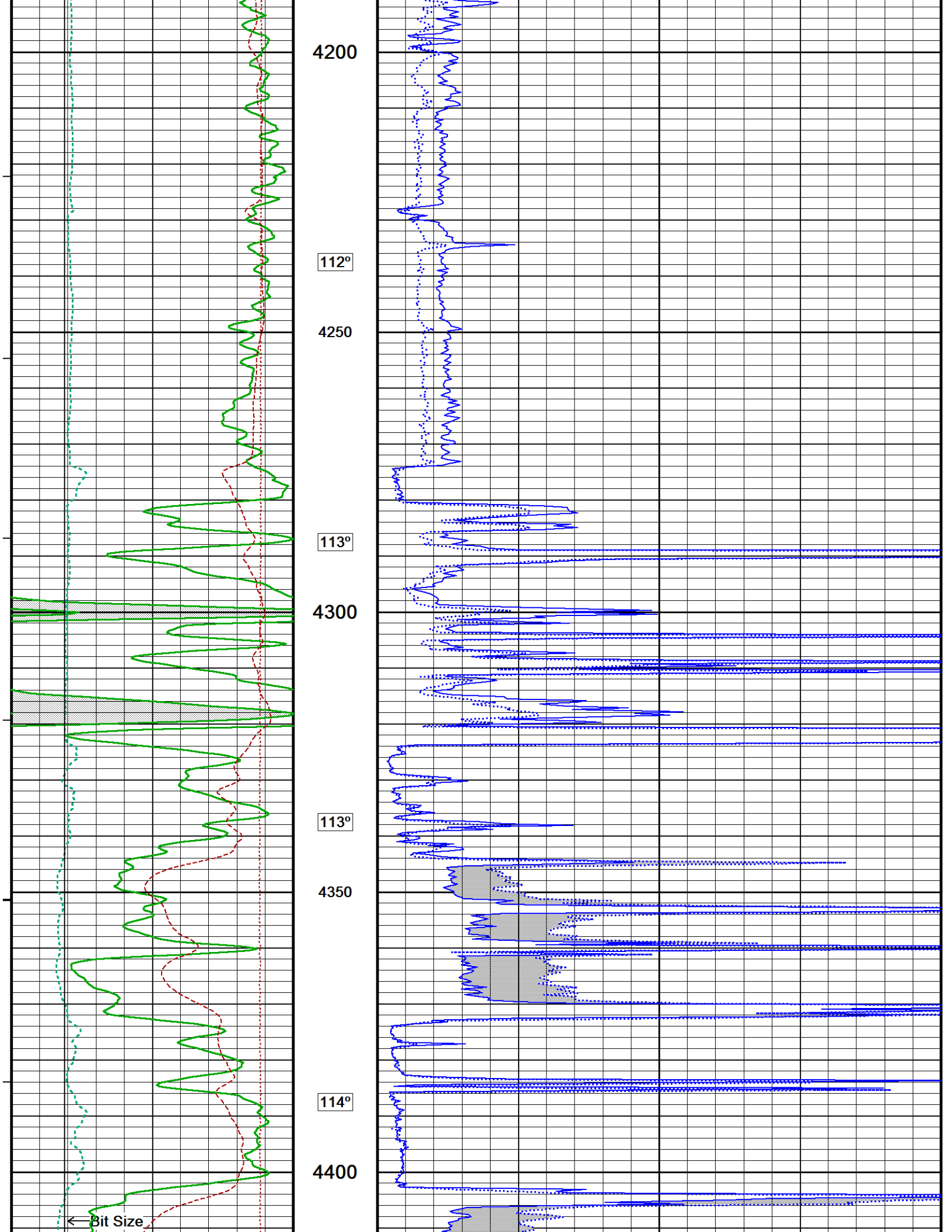


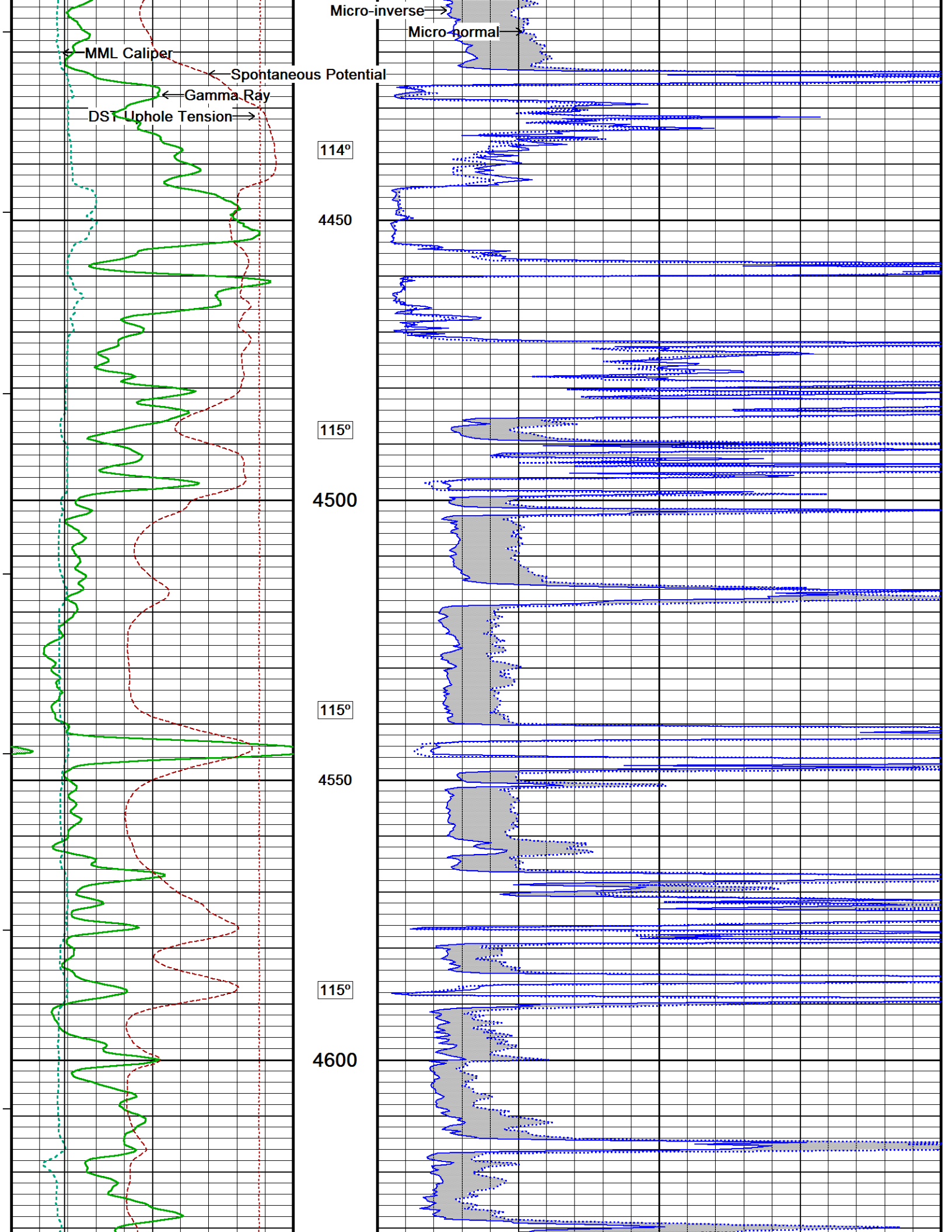












MML Caliper

Spontaneous Potential

Gamma Ray

DST Uphole Tension

114°

4450

115°

4500

115°

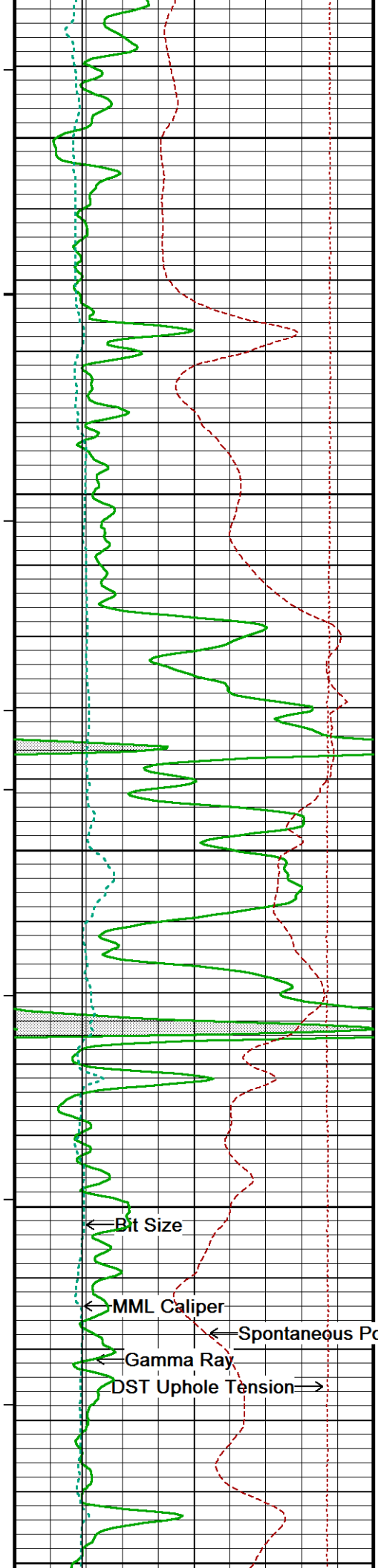
4550

115°

4600

Micro-inverse

Micro-normal



116°

4650

116°

4700

116°

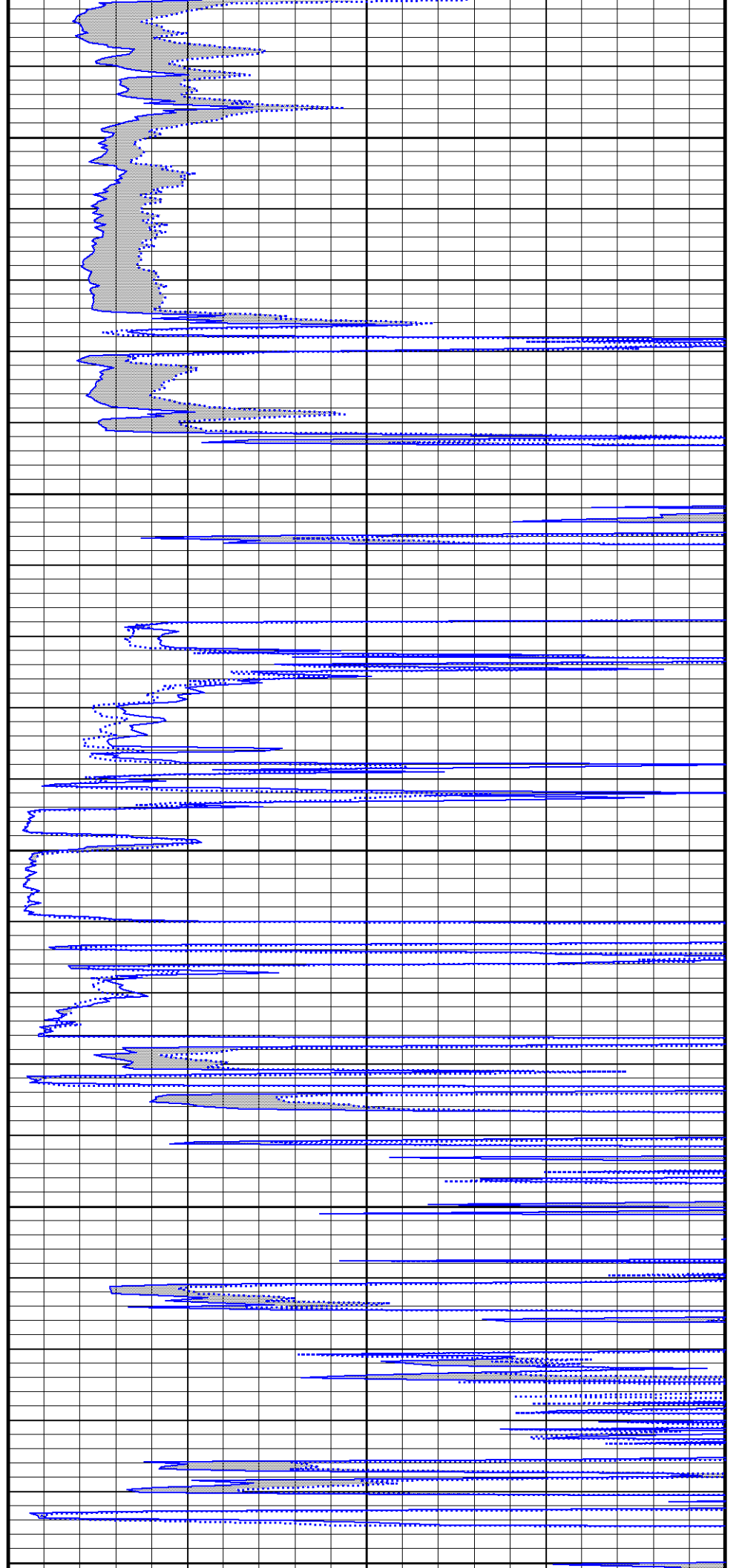
4750

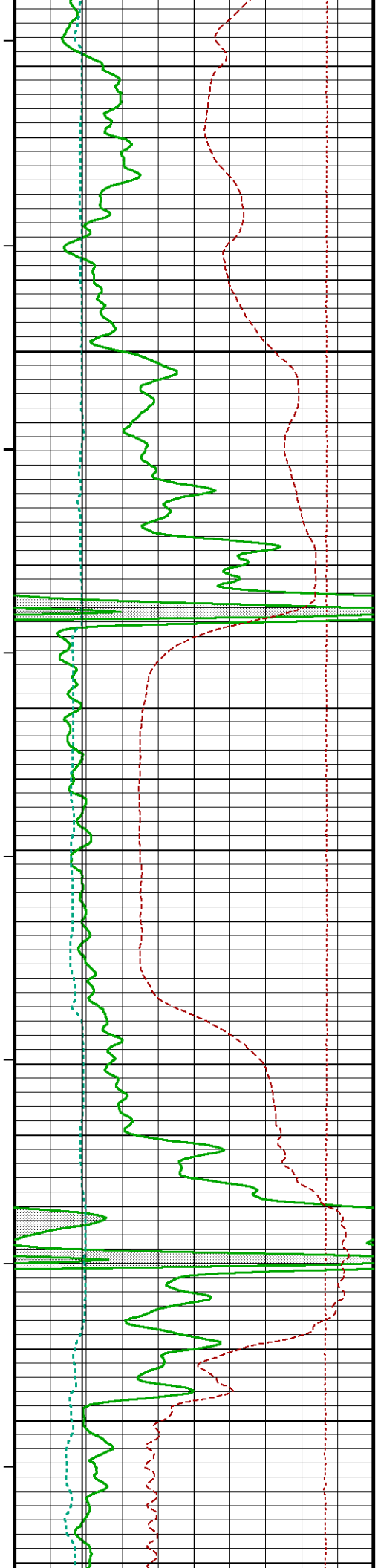
116°

4800

117°

4850





117°

4900

117°

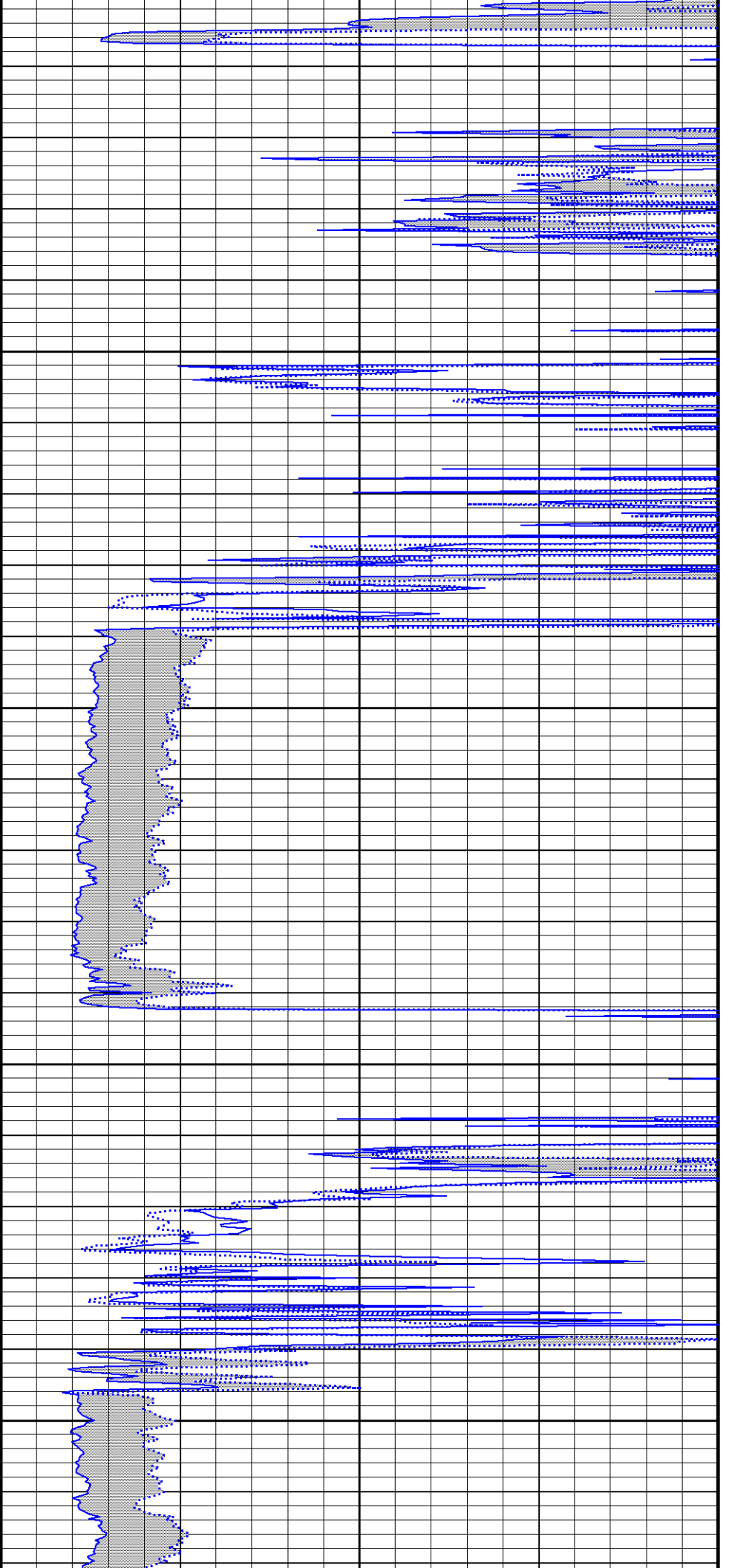
4950

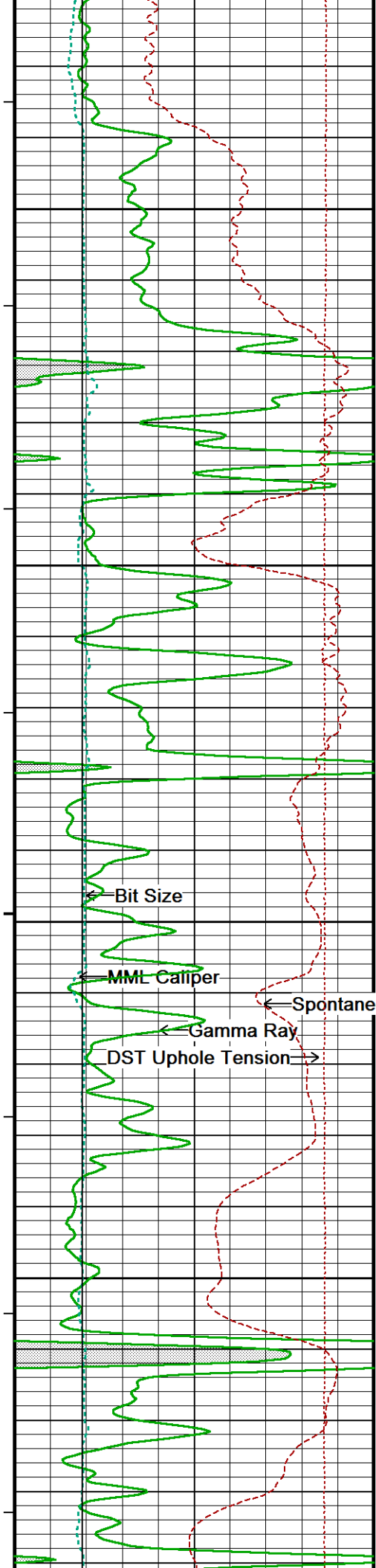
118°

5000

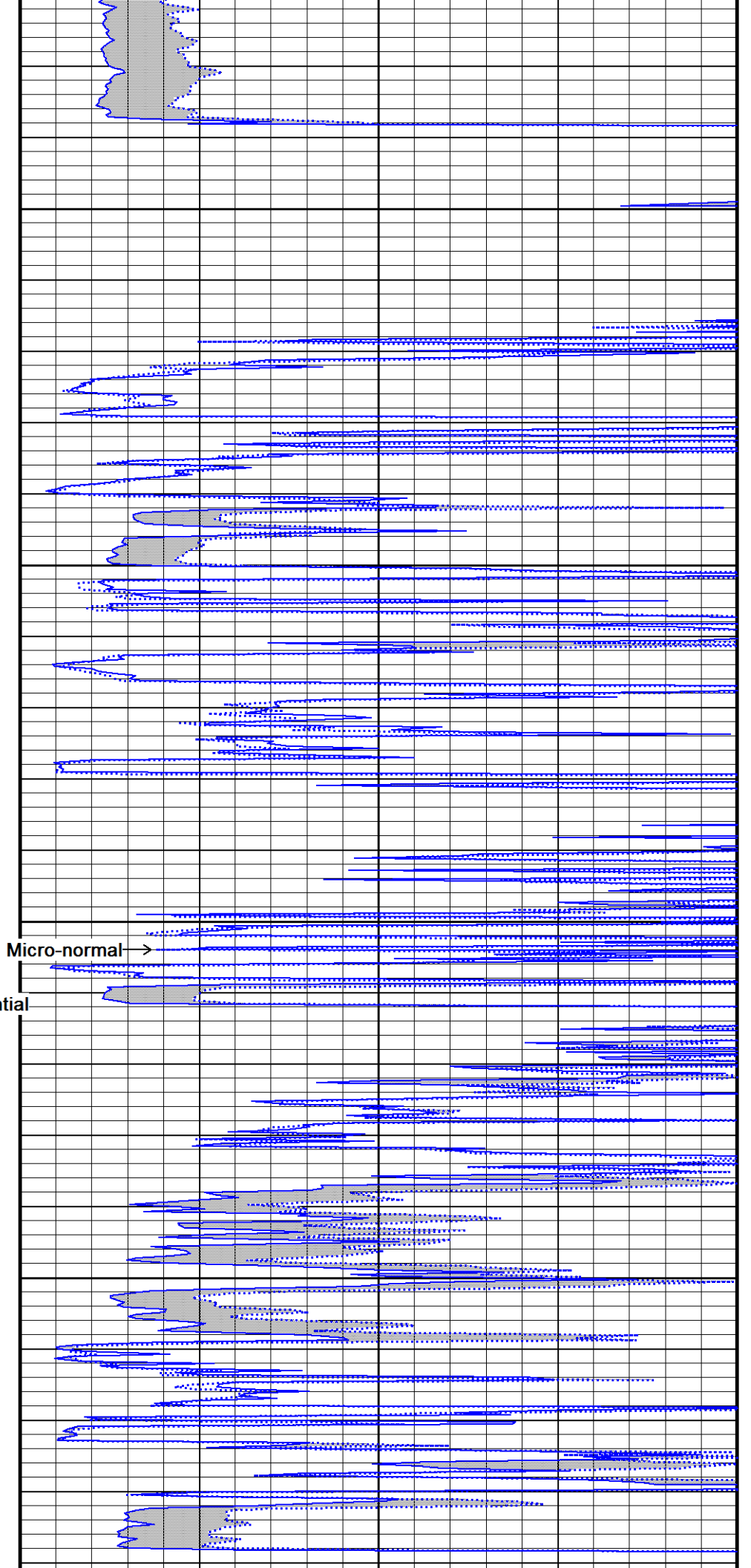
118°

5050





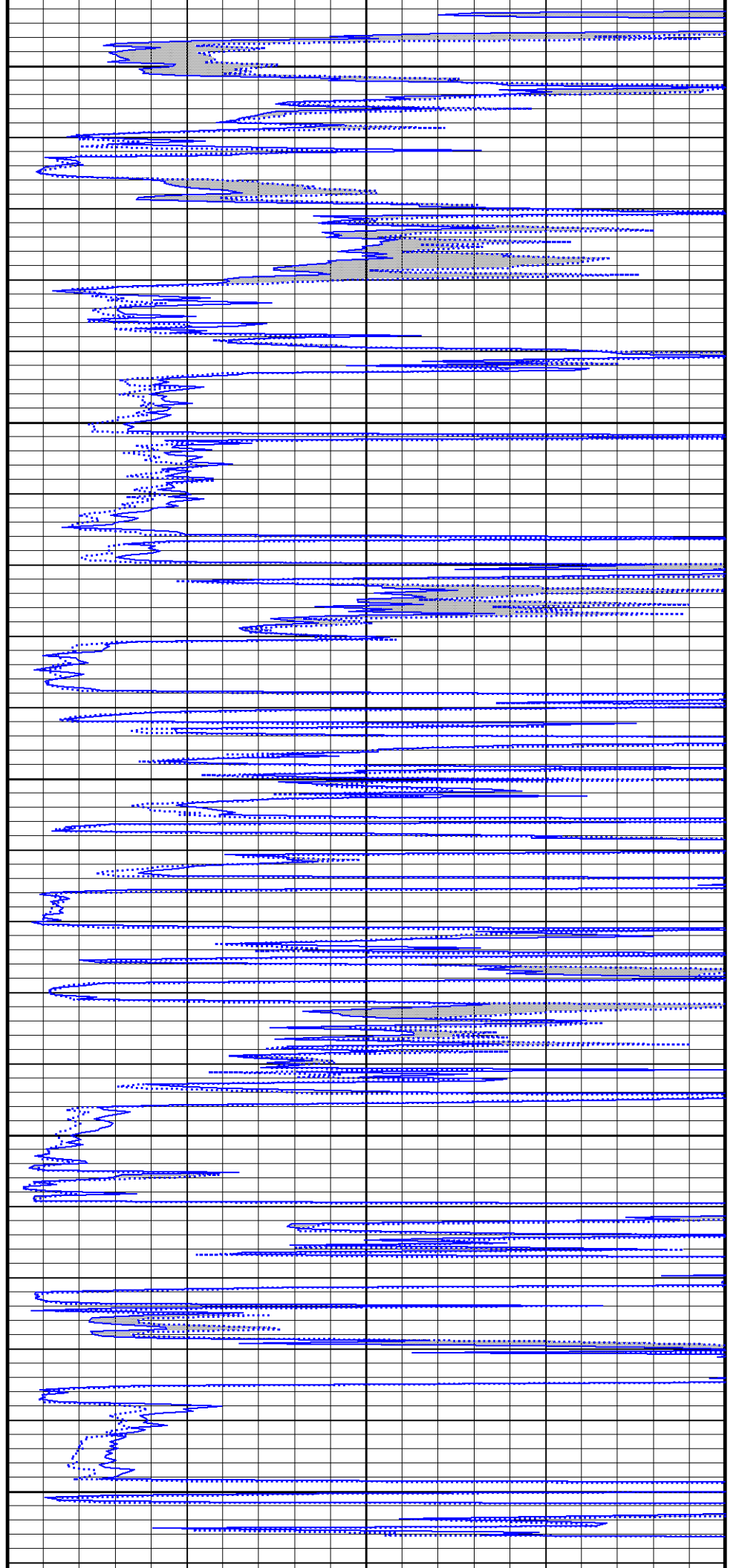
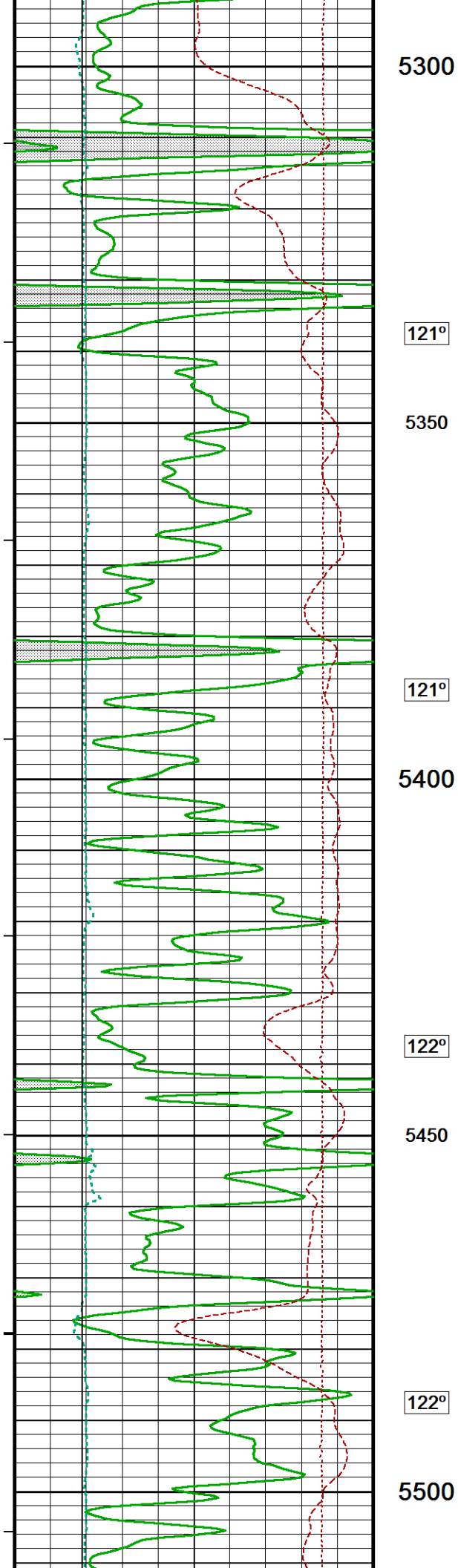
119°  
5100  
119°  
5150  
120°  
5200  
120°  
5250  
121°



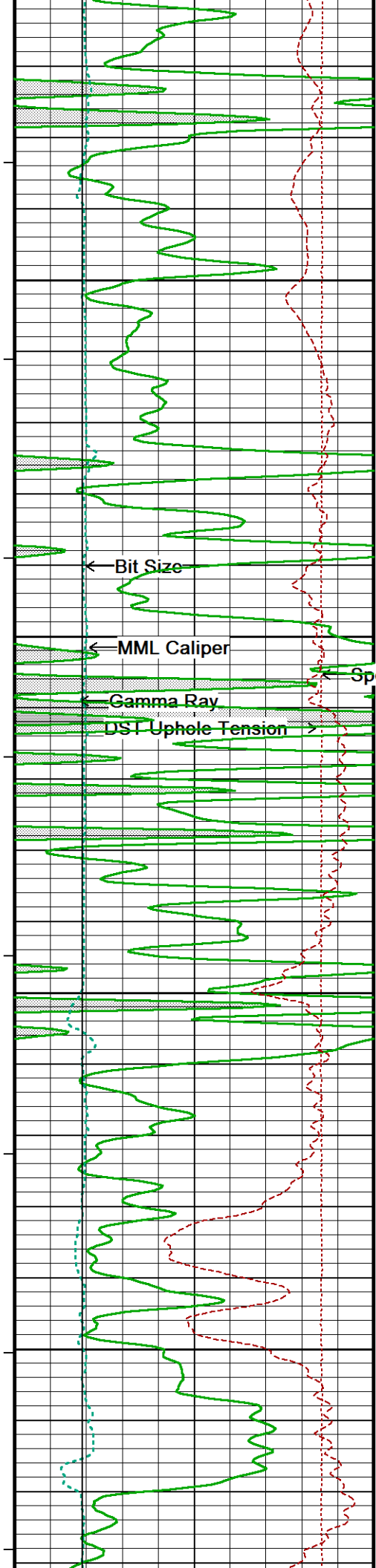
← Bit Size  
← MML Caliper  
← Spontaneous Potential  
← Gamma Ray  
DST Uphole Tension →

Micro-normal →









122°

5550

123°

5600

123°

5650

124°

5700

← Bit Size

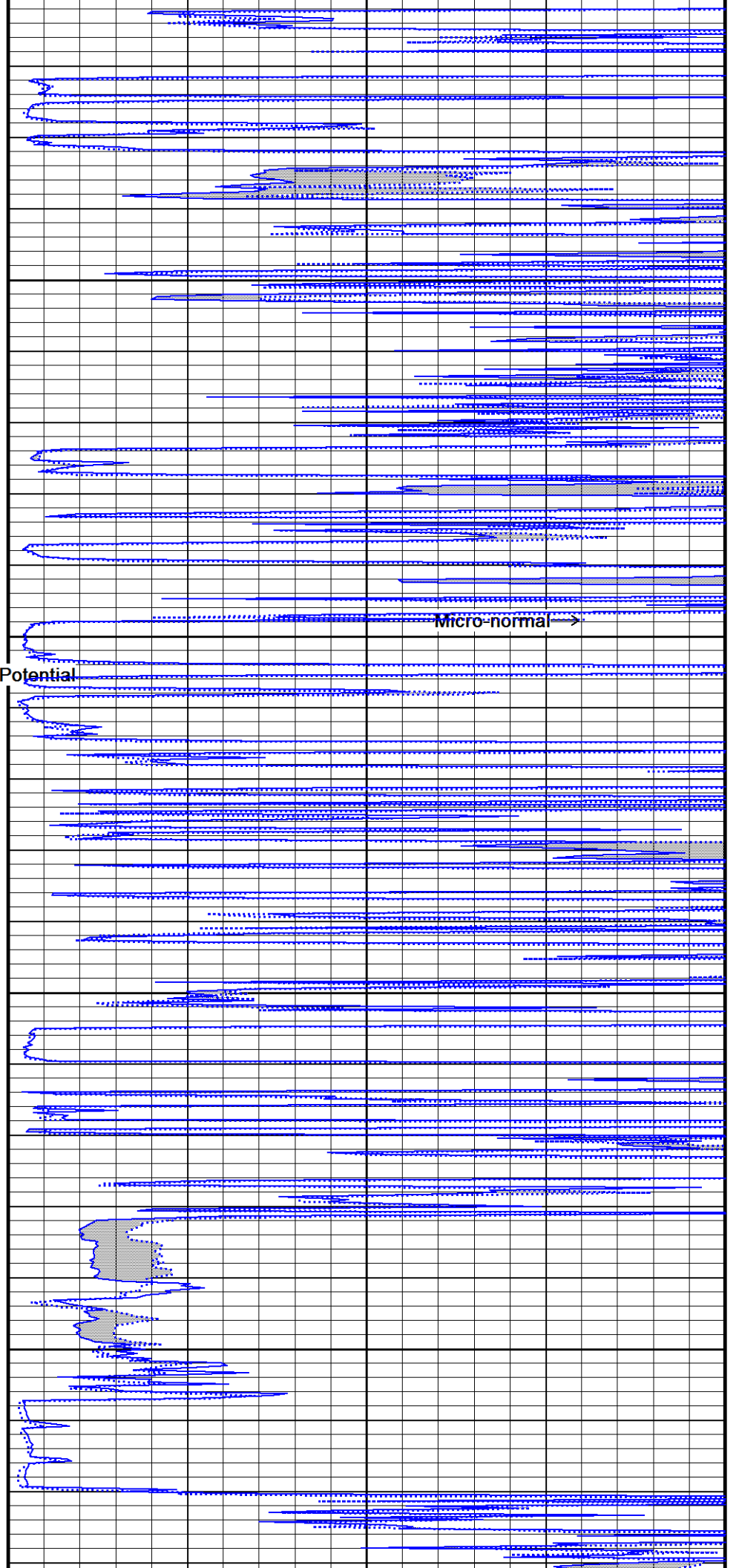
← MML Caliper

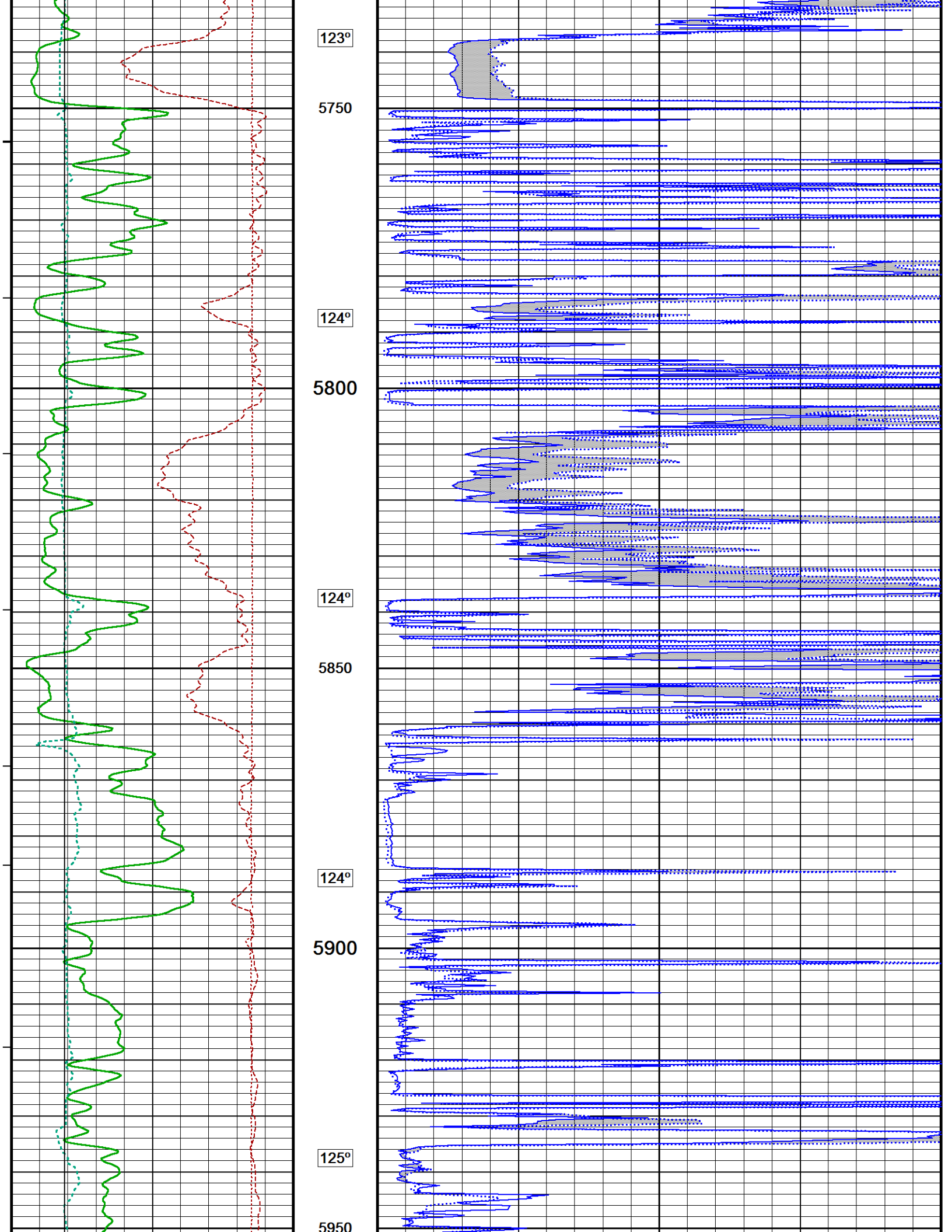
← Gamma Ray

DST Uphole Tension →

Spontaneous Potential

Micro-normal →





← Bit Size  
← MML Caliper  
← Gamma Ray  
DST Uphole Tension →

Micro-inverse →  
Micro-normal →  
Spontaneous Potential ←

126°

127°

127°

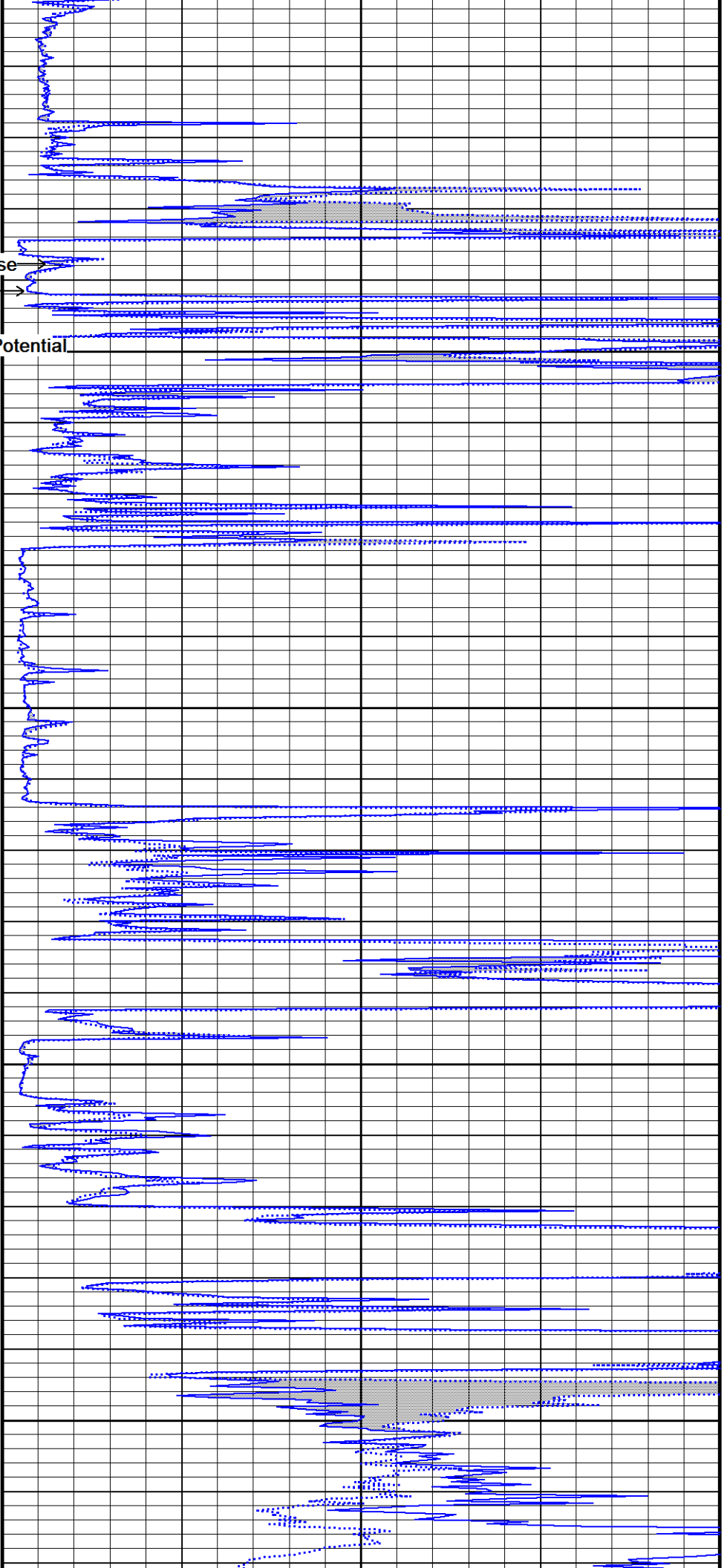
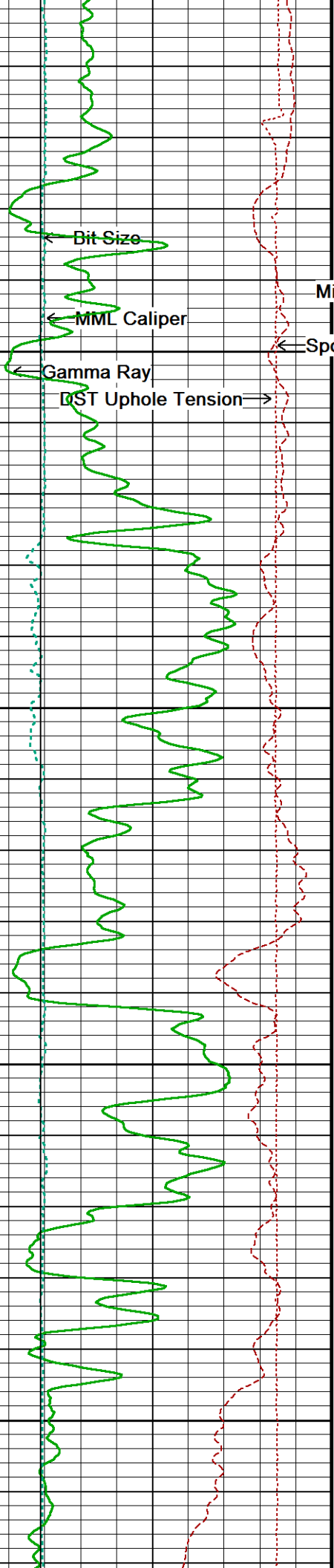
128°

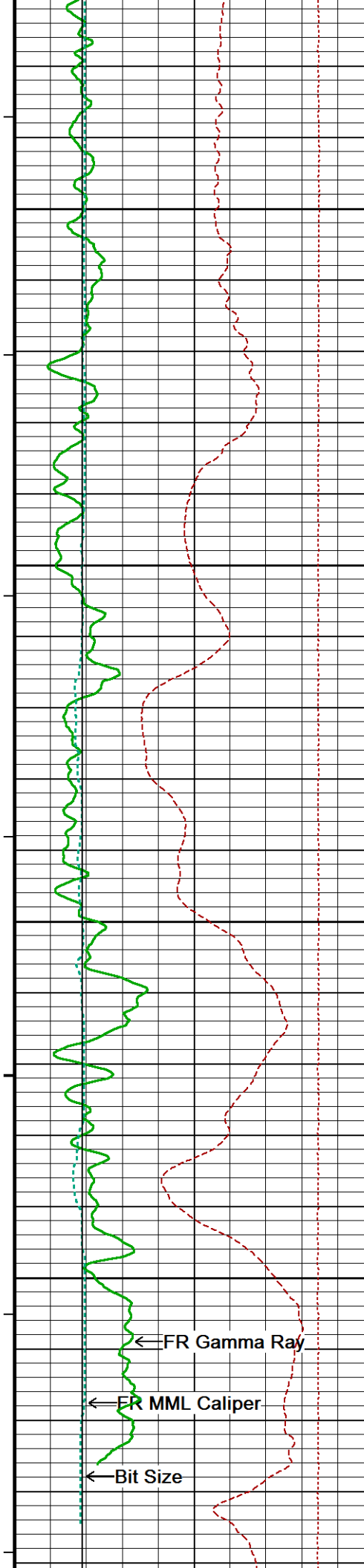
6000

6050

6100

6150





128°

6200

128°

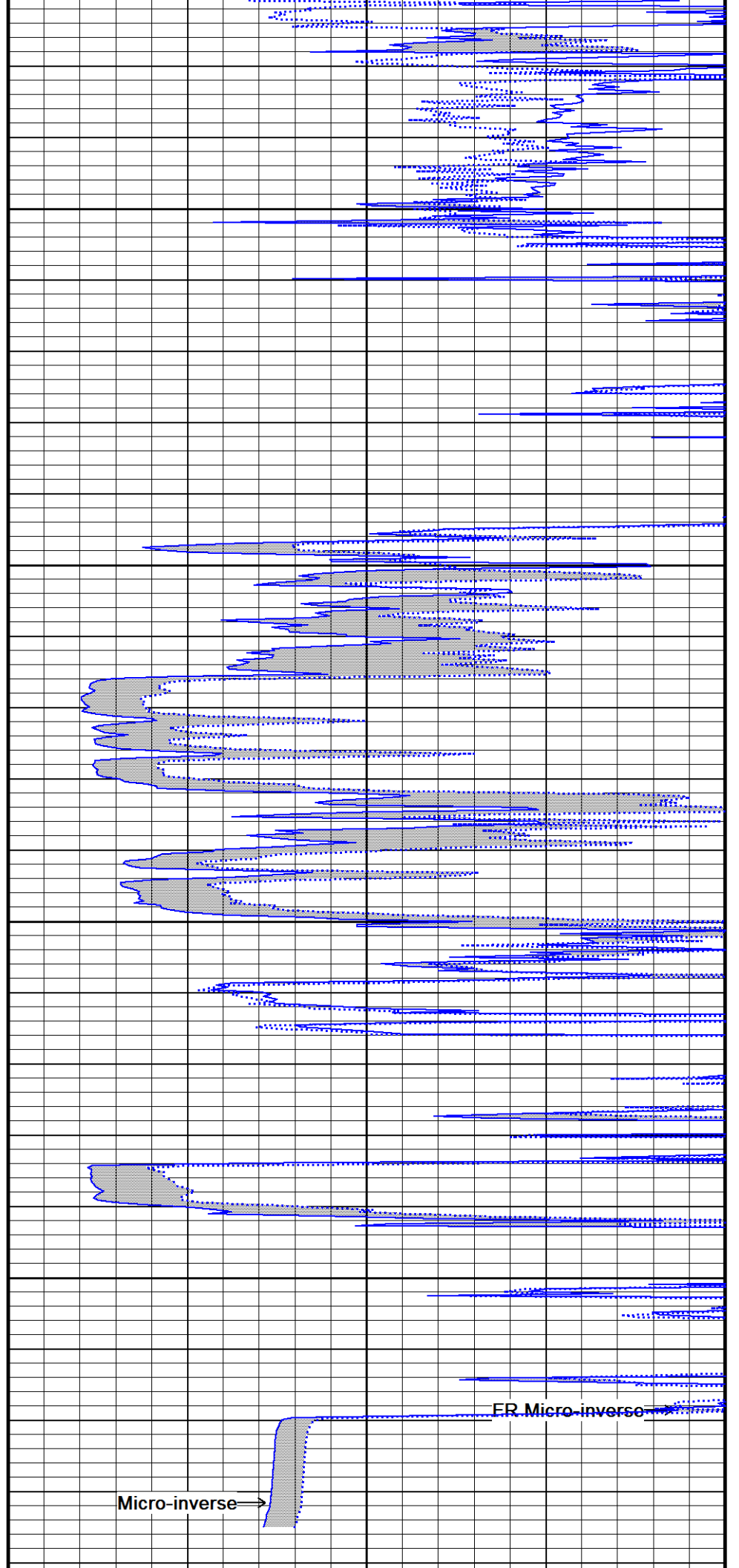
6250

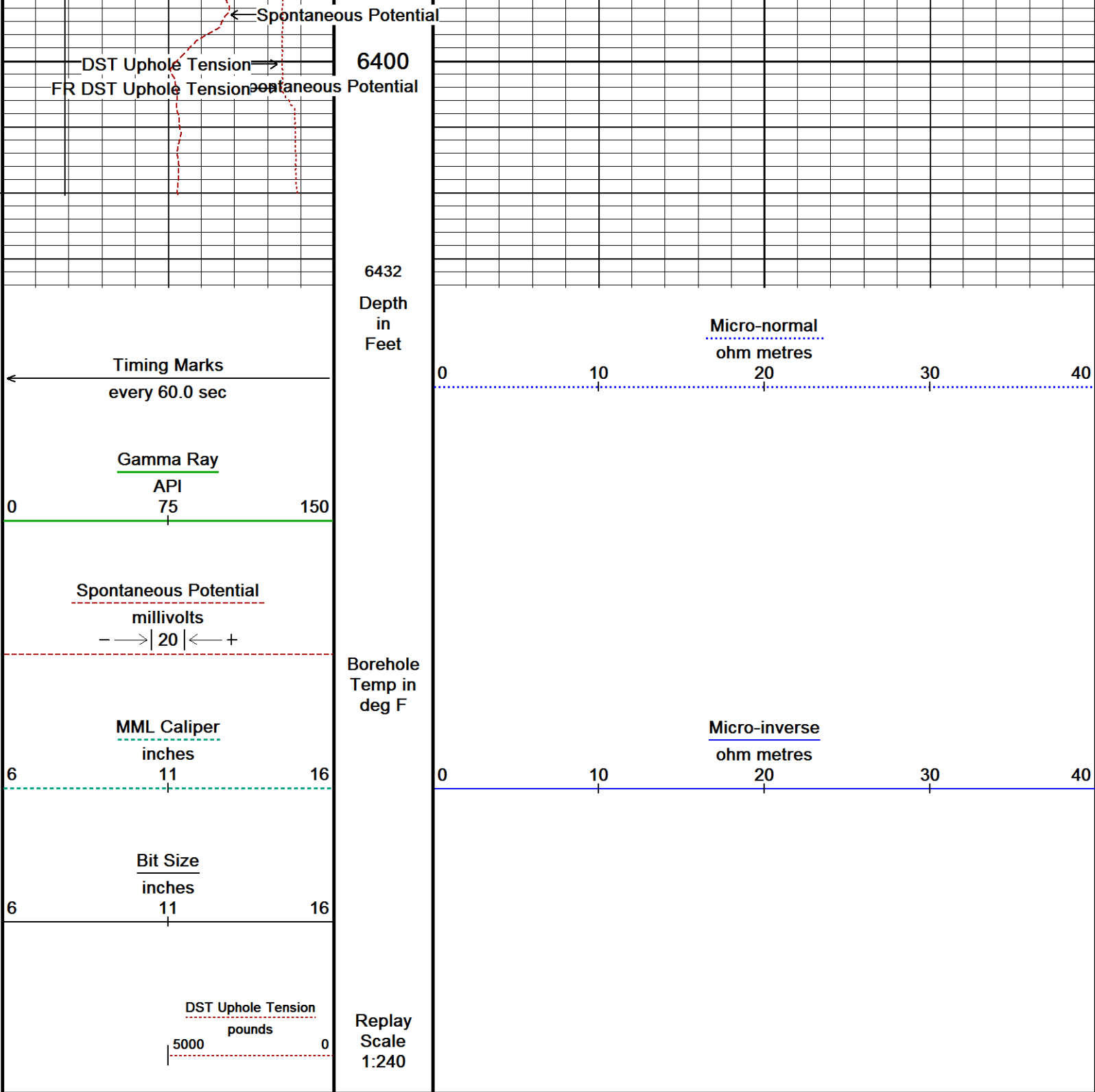
128°

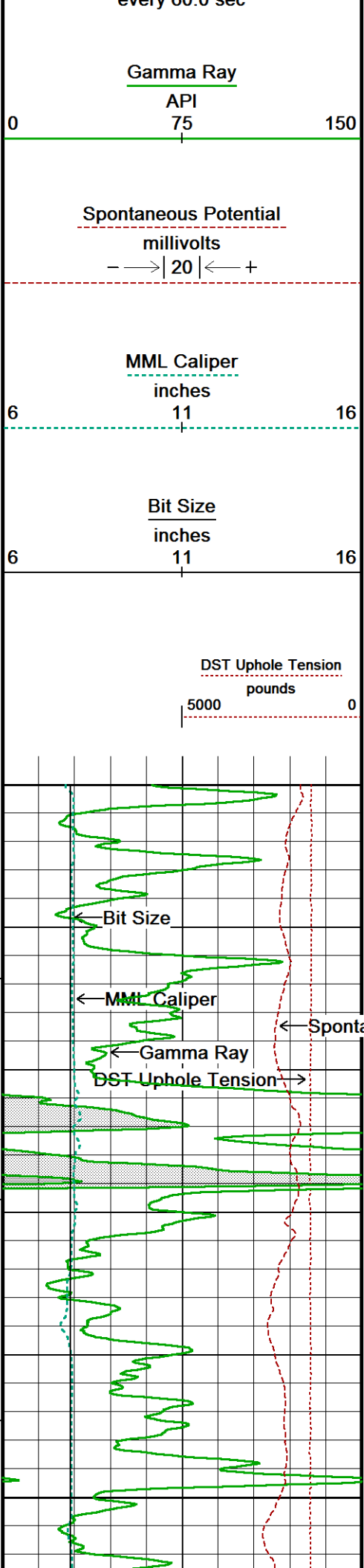
6300

128°

6350

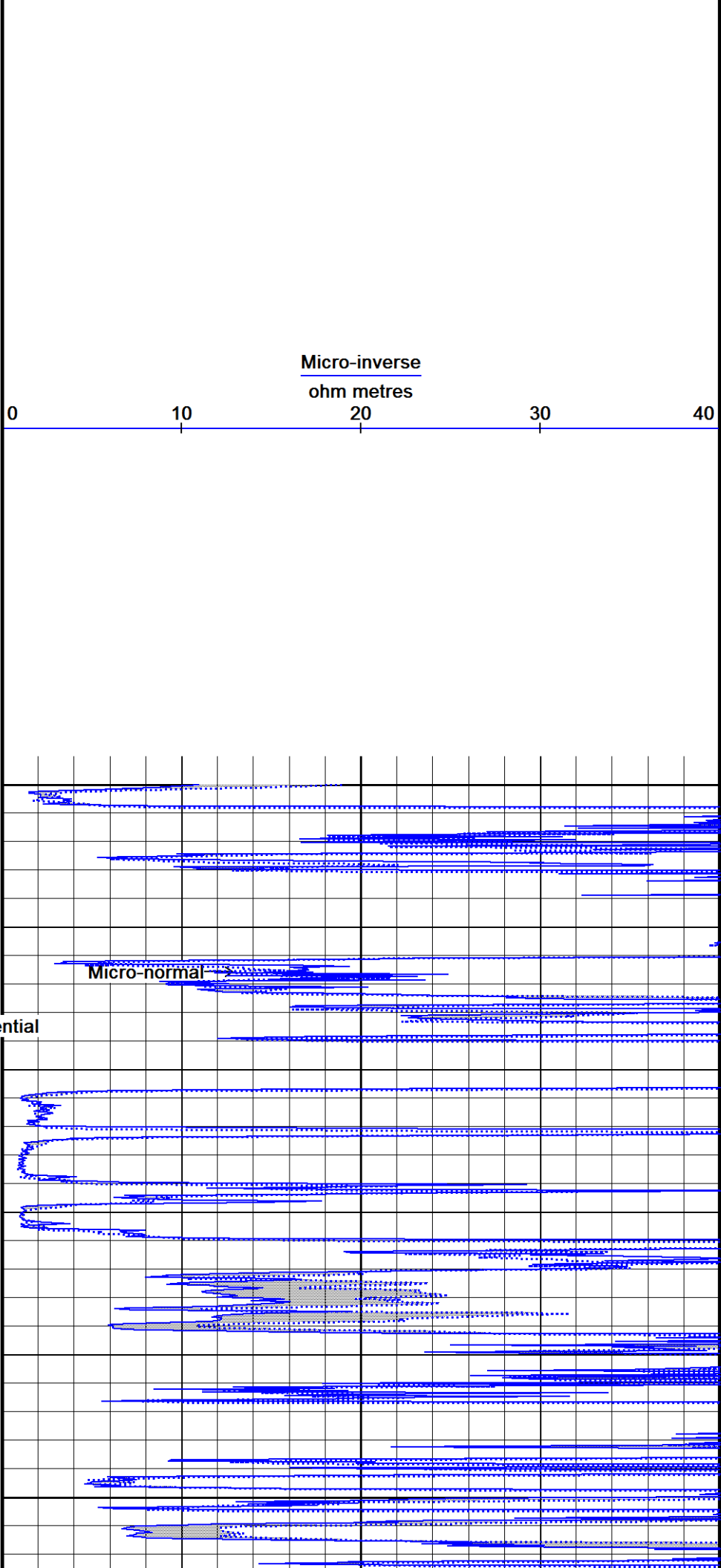




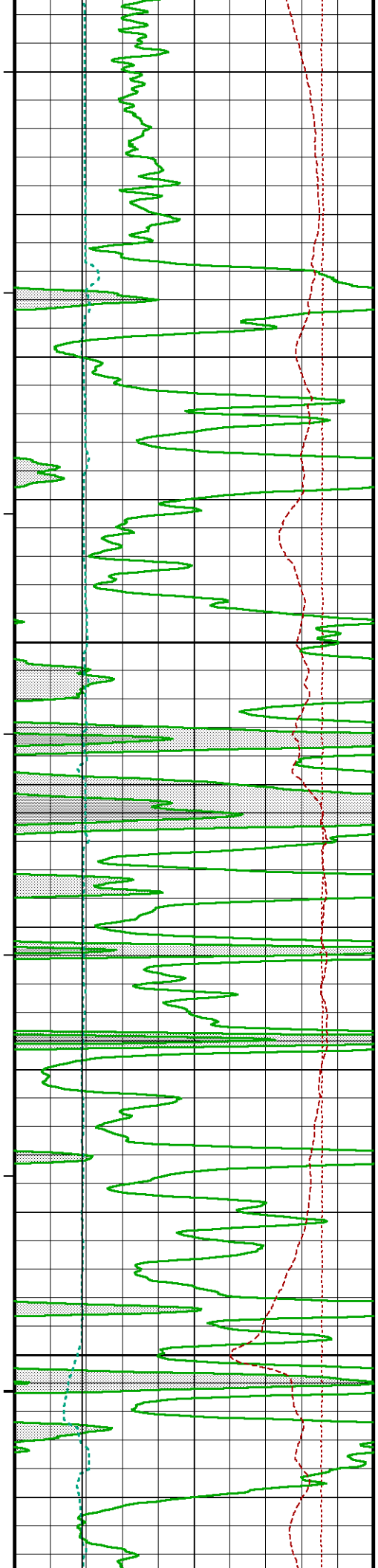


Borehole  
Temp in  
deg F

Replay  
Scale  
1:120





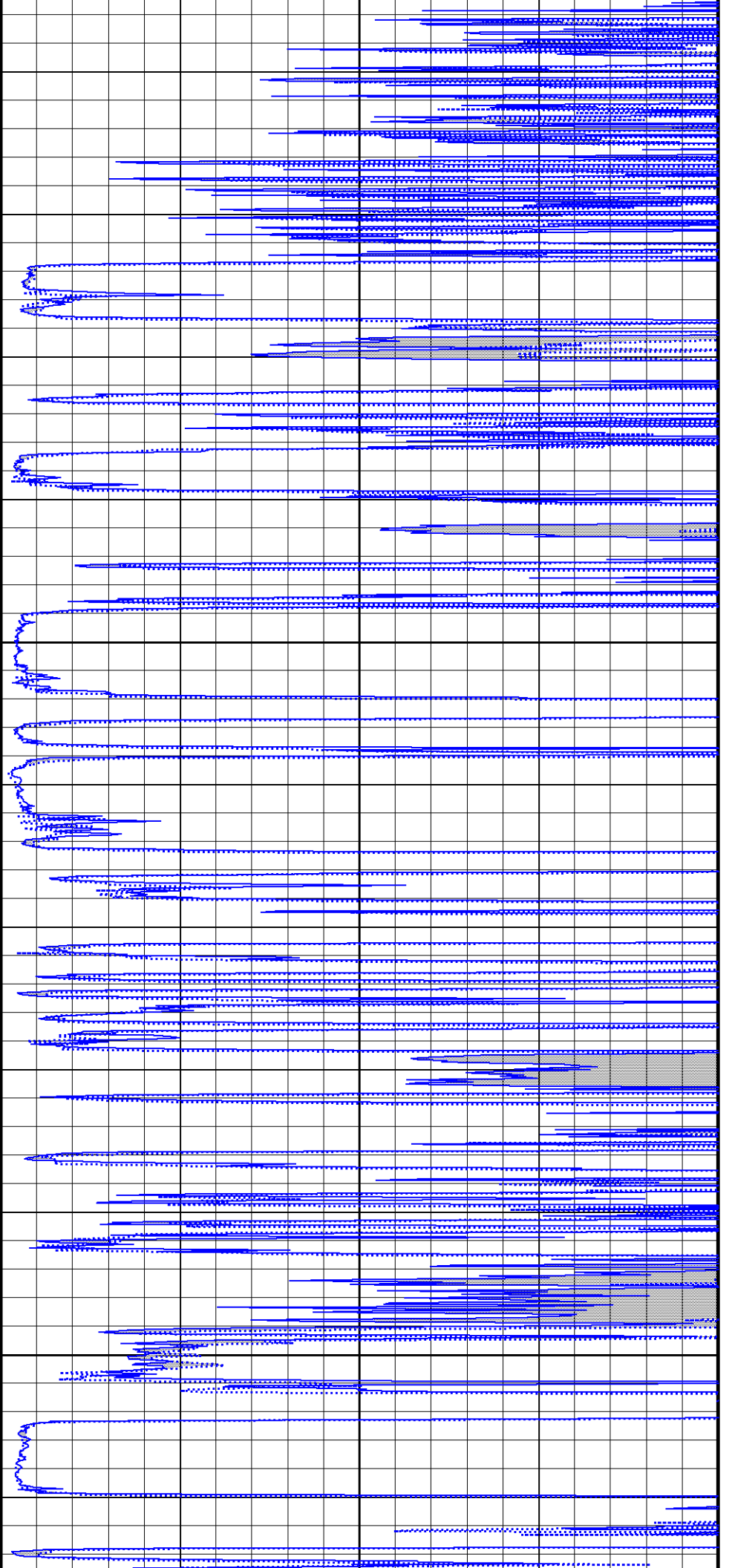


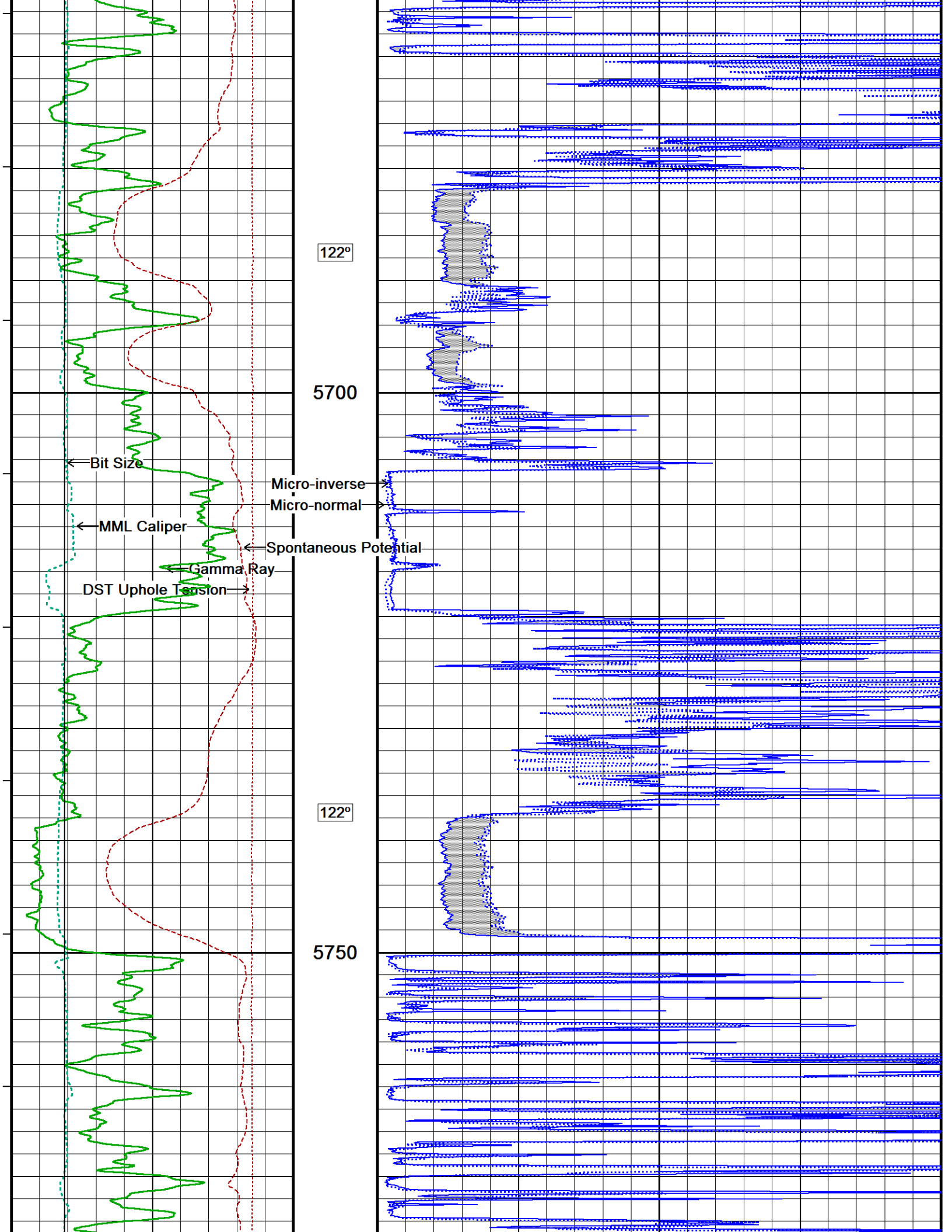
121°

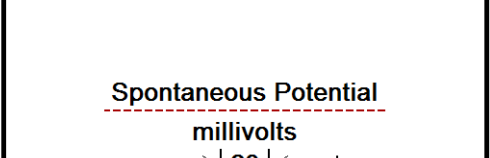
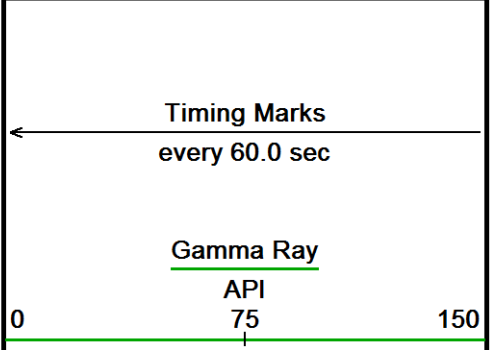
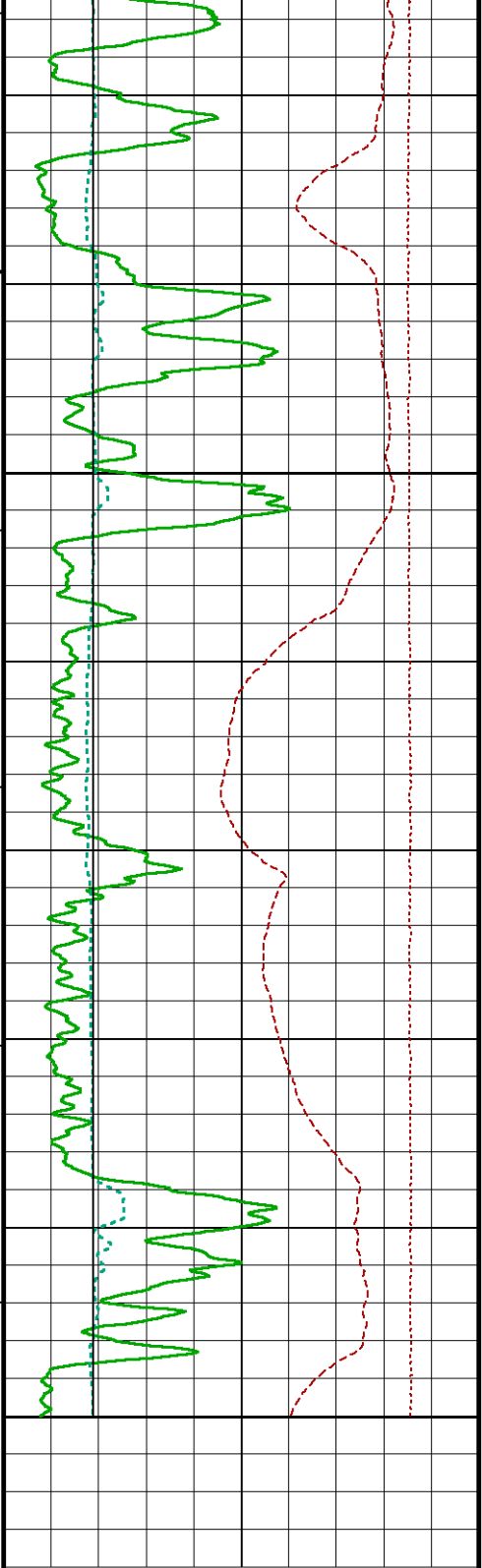
5600

121°

5650







122°

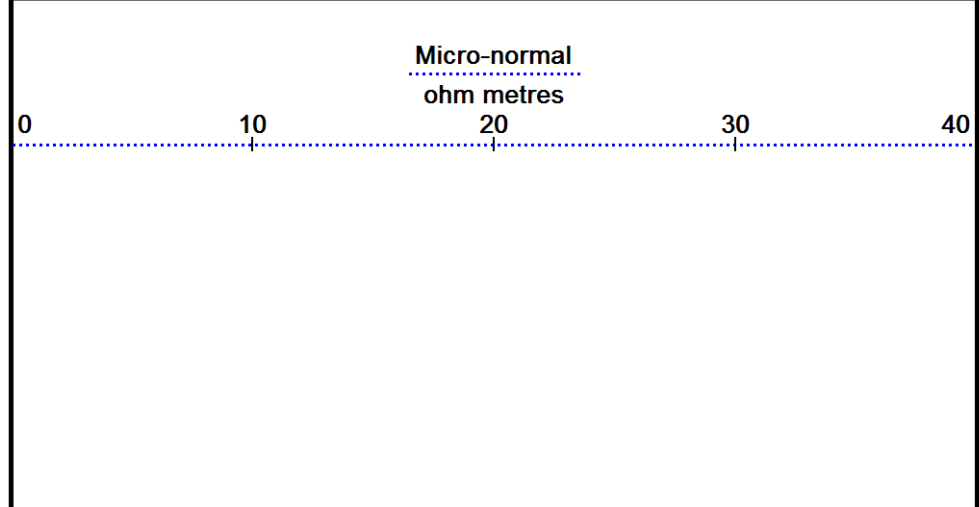
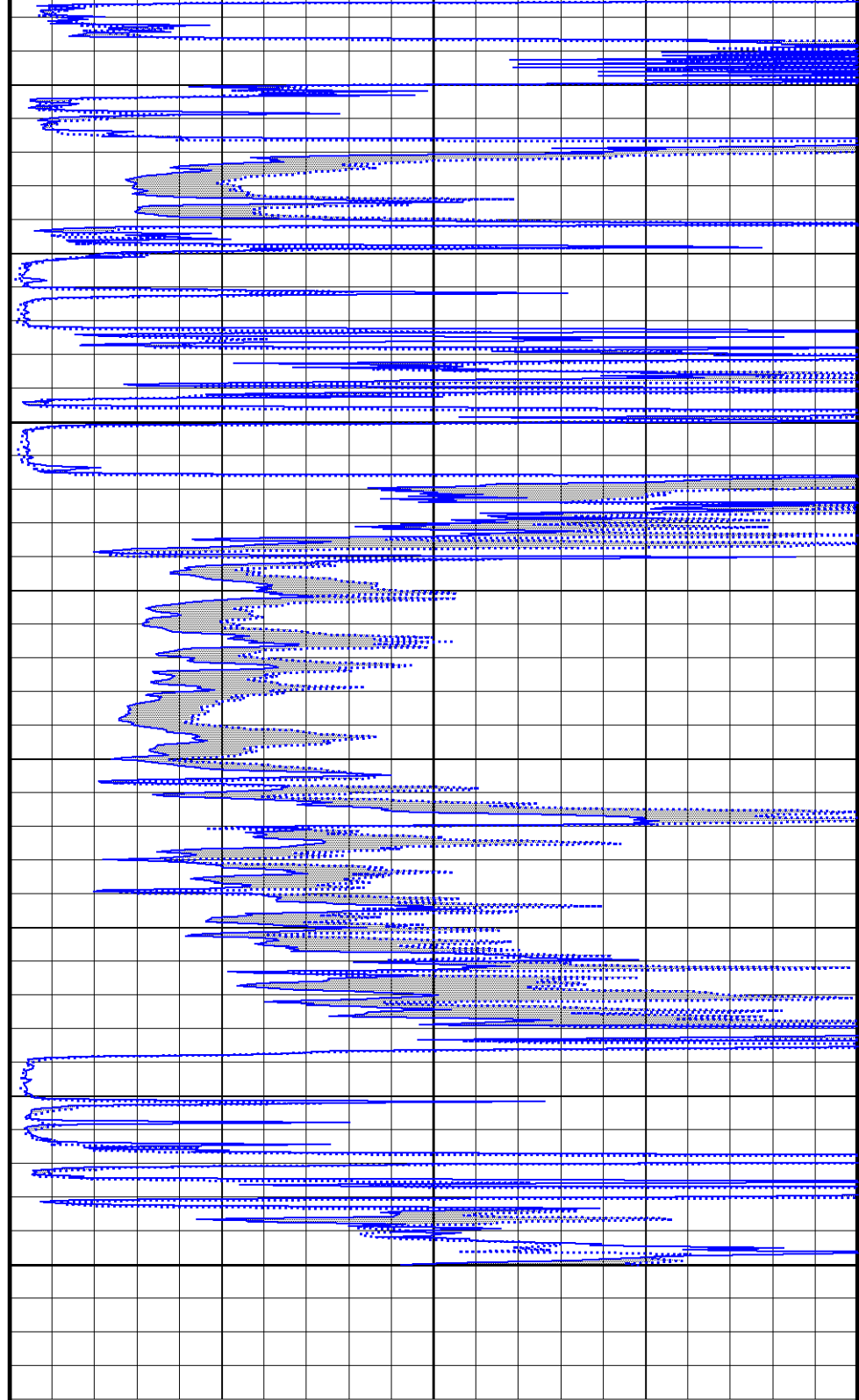
5800

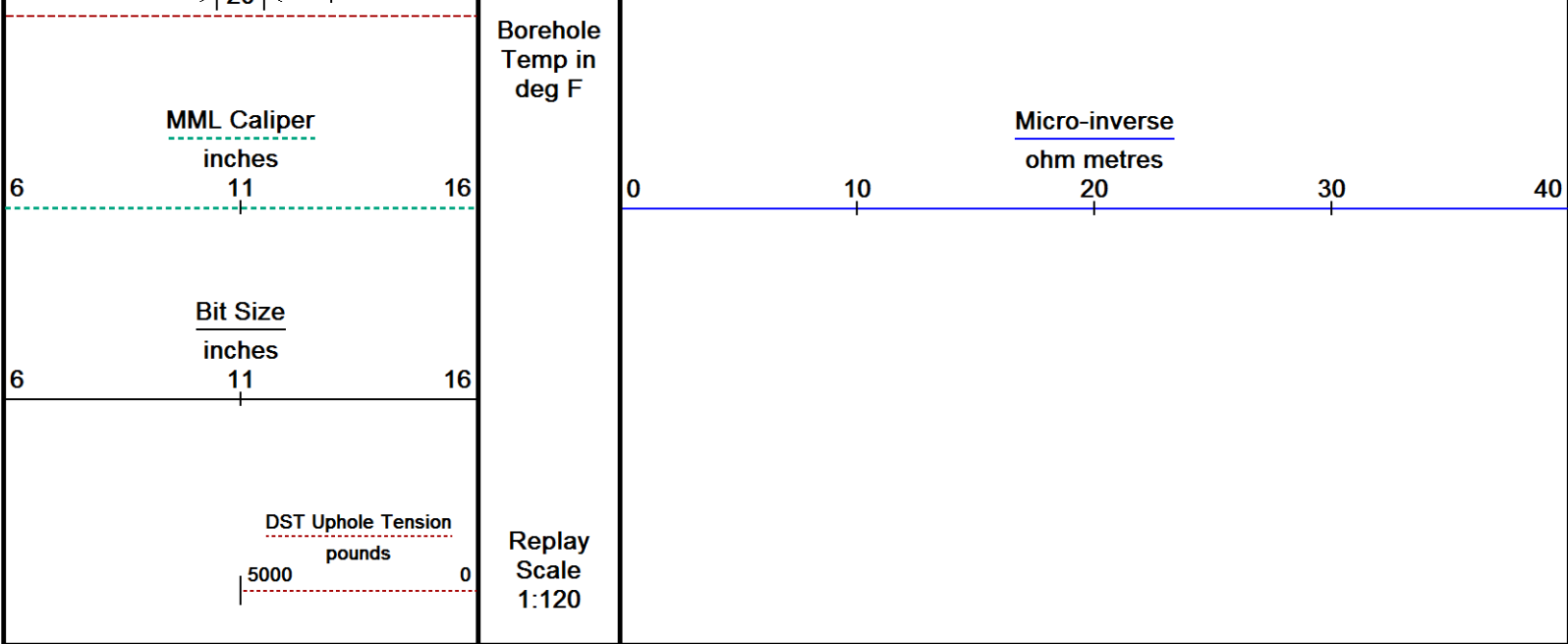
122°

5850

5856

Depth in Feet



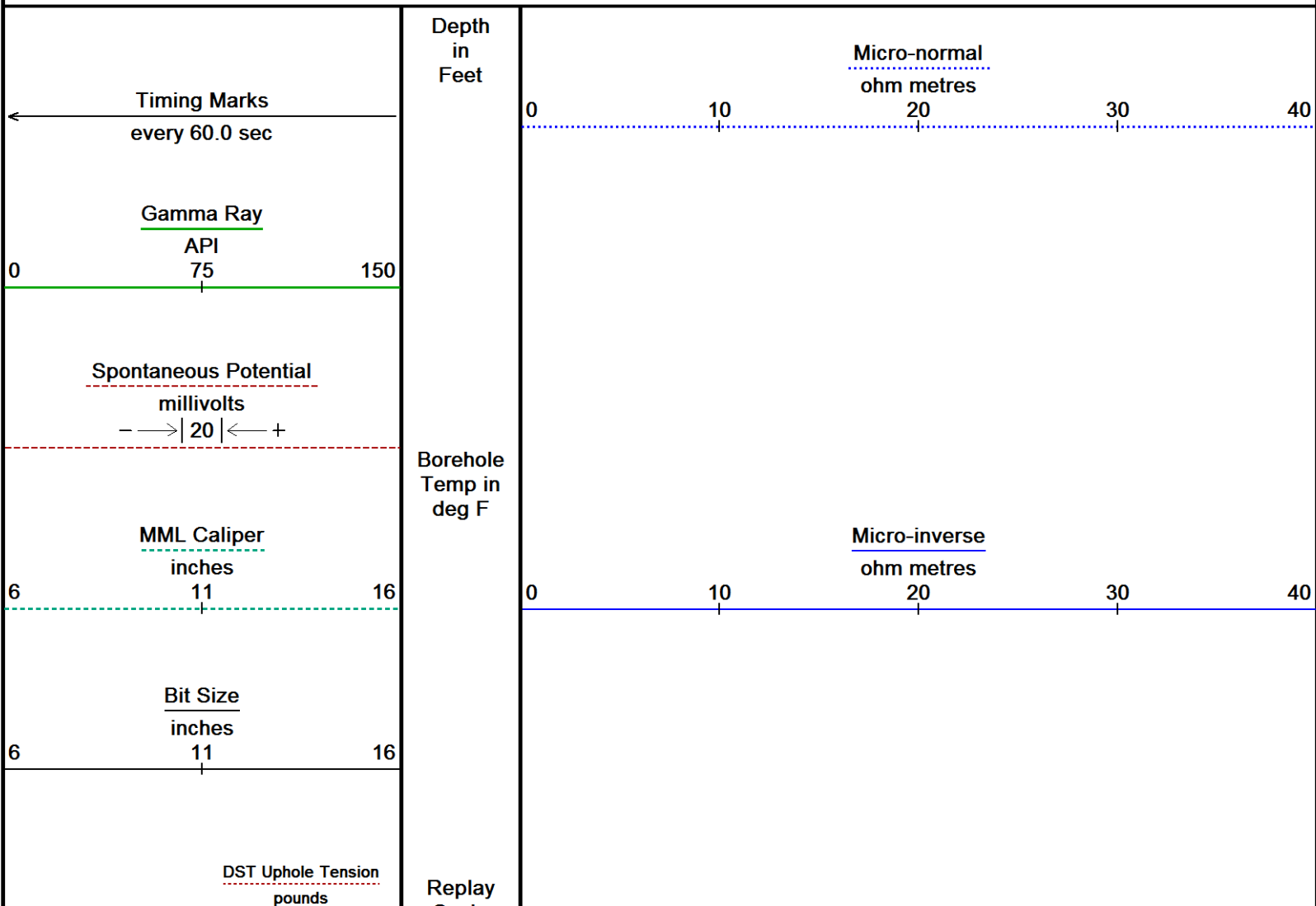


Depth Based Data - Maximum Sampling Increment 2.5cm  
 Plotted on 09-MAY-2012 10:33  
 Filename: C:\Users\JoeWeatherford Pre...\O'Brien Energy Resources Corp. Vanderpool # 1-5\_002.dta  
 Recorded on 01-MAY-2012 11:14  
 System Versions: Logged with 11.03.4044 Plotted with 12.01.3513

↑ 10 INCH HIGH RESOLUTION ↑

↓ REPEAT SECTION ↓

Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 09-MAY-2012 10:33  
 Filename: C:\Users\JoeWeatherford Pre...\O'Brien Energy Resources Corp. Vanderpool # 1-5\_003.dta  
 Recorded on 01-MAY-2012 11:14  
 System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 12.01.3513



5000 0

Scale  
1:240

5500

← Spontaneous Potential

← Gamma Ray

→ DST Uphole Tension

121°

5550

121°

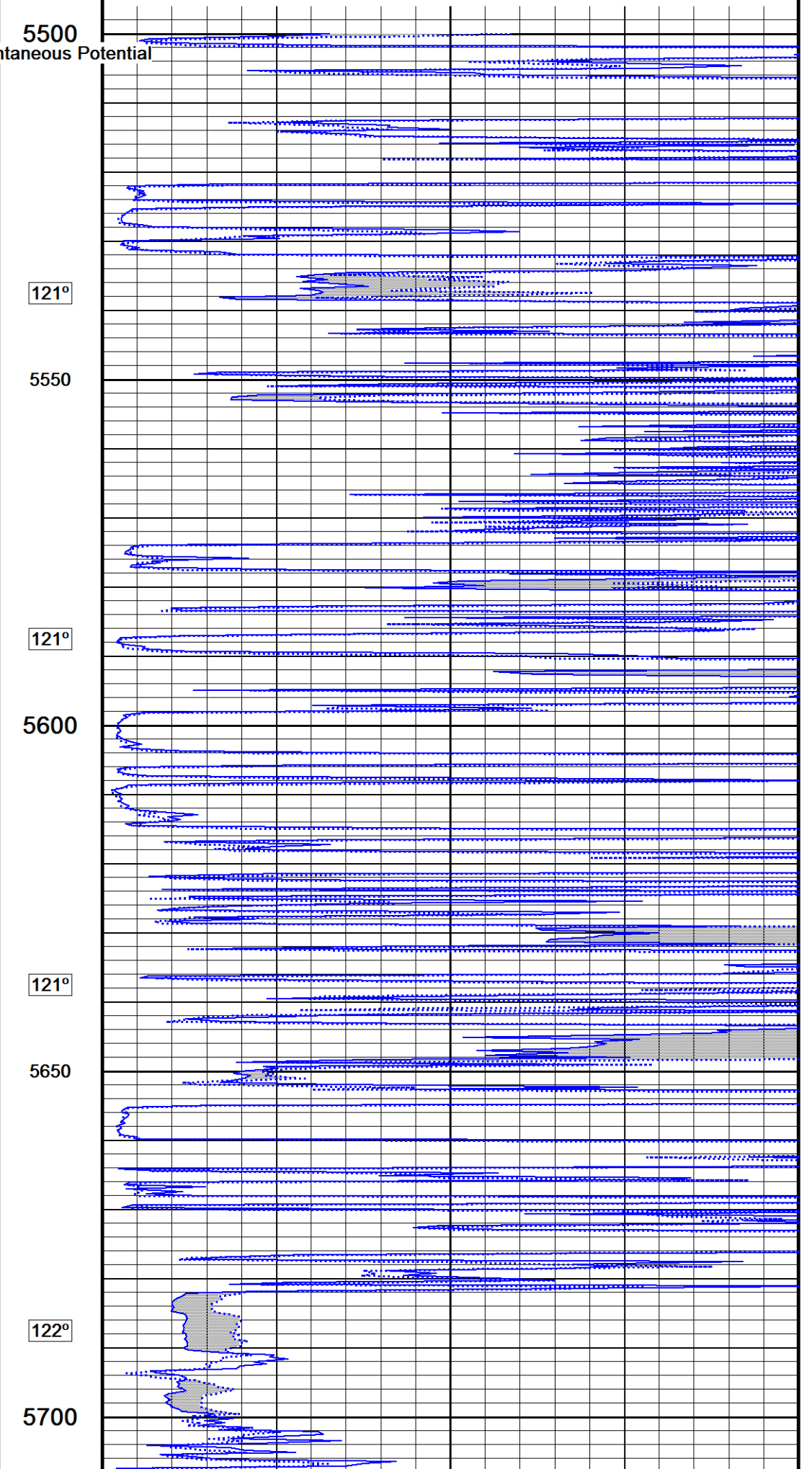
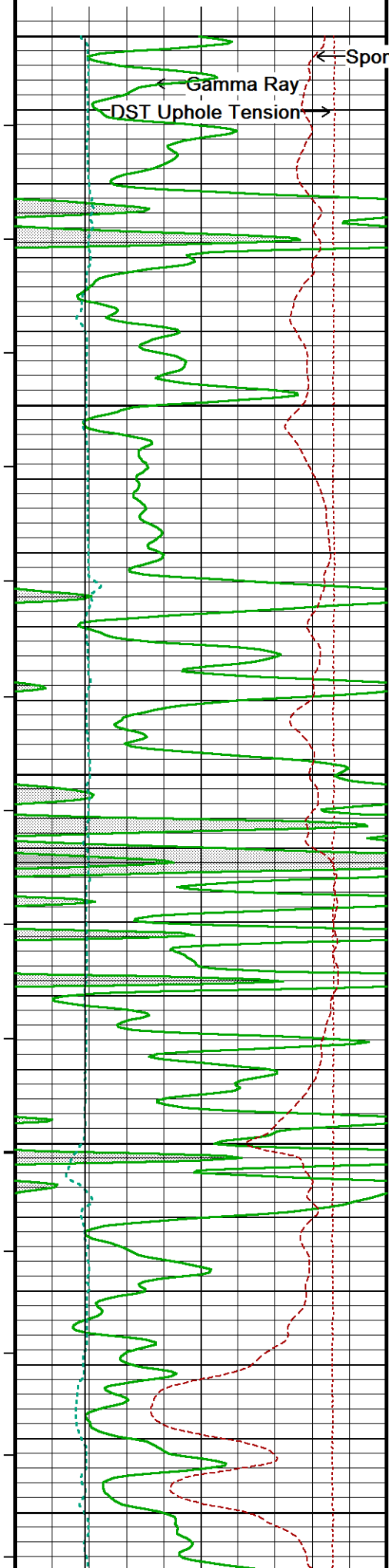
5600

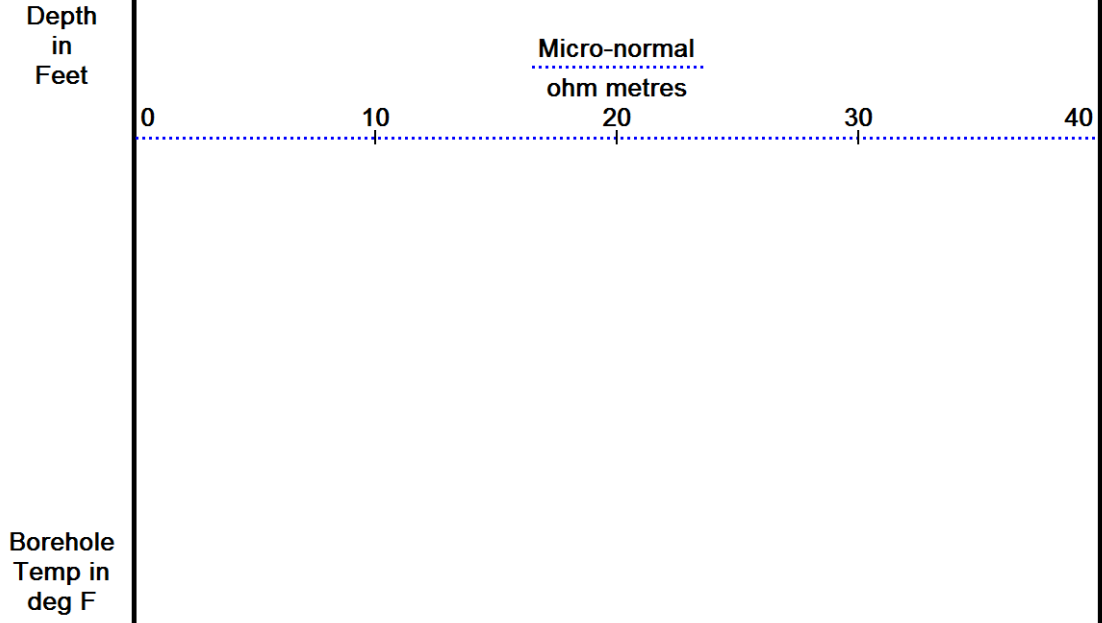
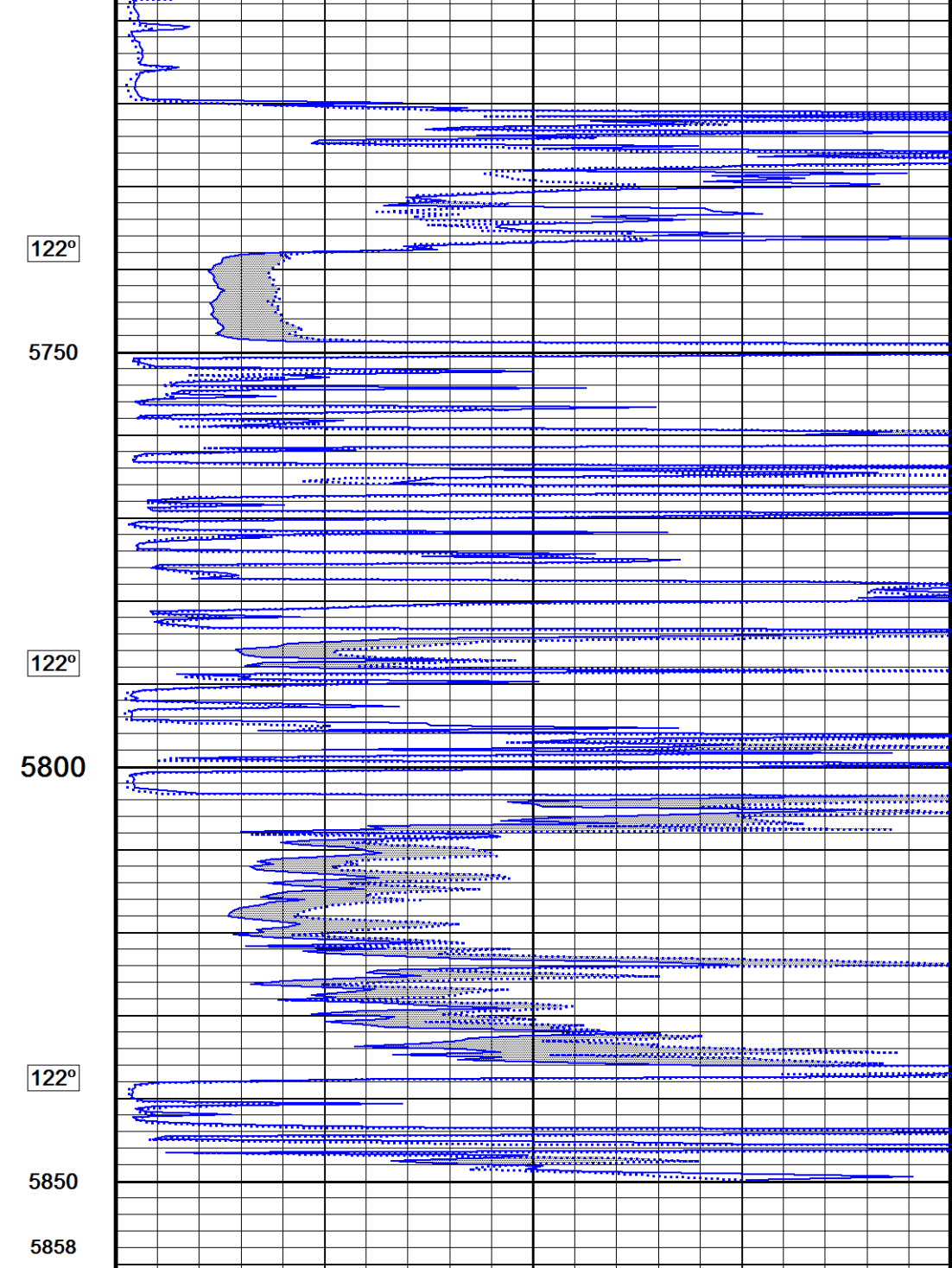
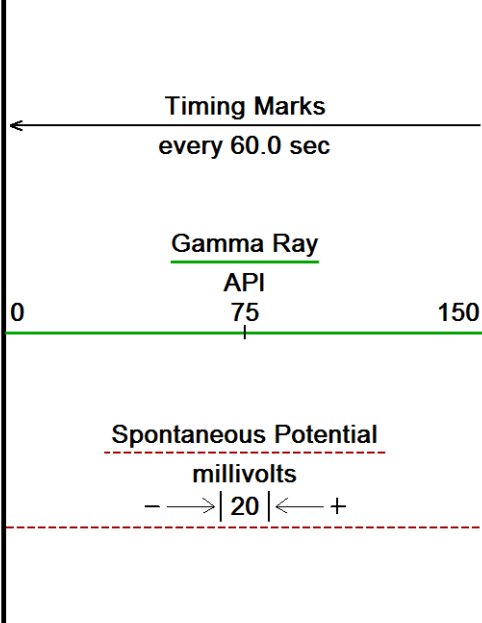
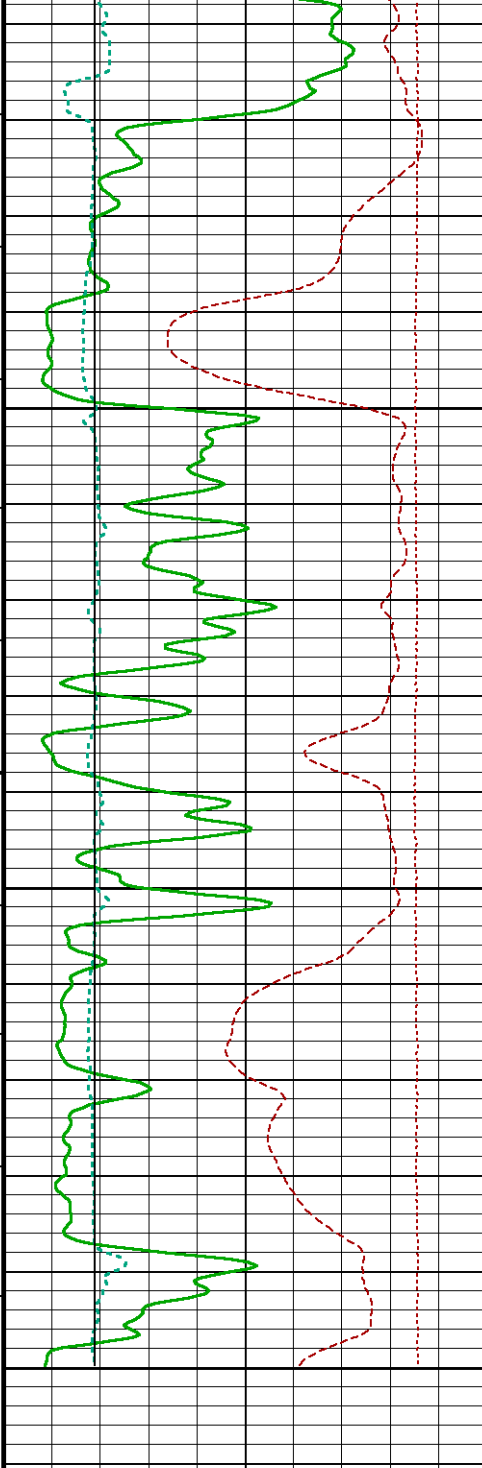
121°

5650

122°

5700





122°

5750

122°

5800

122°

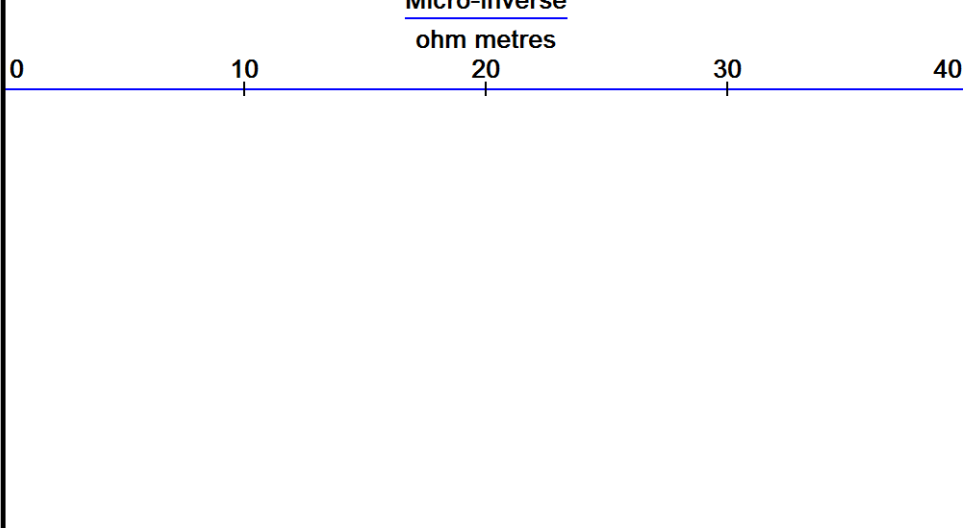
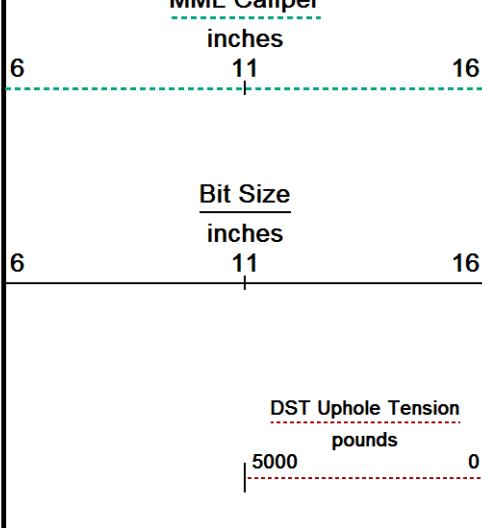
5850

5858

Depth  
in  
Feet

Borehole  
Temp in  
deg F





Replay  
Scale  
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 09-MAY-2012 10:33  
 Filename: C:\Users\Joe\Weatherford PreView\O'Brien Energy Resources Corp. Vanderpool # 1-5\_003.dta  
 Recorded on 01-MAY-2012 11:14  
 System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 12.01.3513

↑ REPEAT SECTION ↑

**BEFORE SURVEY CALIBRATION**

C:\Users\Joe\Weatherford PreView\O'Brien Energy Resources Corp. Vanderpool # 1-5\_004.dta

General Constants All 000 Last Edited on 01-MAY-2012 10:05

General Parameters  
 Mud Resistivity 1.400 ohm-metres  
 Mud Resistivity Temperature 80.000 degrees F  
 Water Level 0.000 feet  
 Density/Neutron Processing Wet Hole

Hole/Annular Volume and Differential Caliper Parameters  
 HVOL Method Single Caliper  
 HVOL Caliper 1 Density Caliper  
 HVOL Caliper 2 N/A  
 Annular Volume Diameter 4.500 inches  
 Caliper for Differential Caliper Density Caliper

Rwa Parameters  
 Porosity used Limestone Density Por.  
 Resistivity used Array Ind. One Res Rt  
 RWA Constant A 1.000  
 RWA Constant M 2.000

Down-hole Tension Calibration All 000 Field Calibration on 30-JUN-2010 01:00

Reading No	Measured	Calibrated (lbs)
1	14112.01	10.00
2	15164.79	427.00

Down-hole Tension Calibration SMS 0 Field Calibration on 29-MAR-2012 12:07

Reading No	Measured	Calibrated (lbs)
1	-2133.10	0.00
2	-2135.89	100.00

Gamma Calibration MCG-C 208 Field Calibration on 30-APR-2012 10:21

	Measured	Calibrated (API)
Background	70	49
Calibrator (Gross)	1102	774
Calibrator (Net)	1031	725

Gamma Constants MCG-C 208 Last Edited on 01-MAY-2012 10:05

Gamma Calibrator Number gcr38  
 Mud Density 1.09 gm/cc

Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

SP Calibration MCG-C 208		Field Calibration on 24-FEB-2012 11:08
	Measured	Calibrated (mV)
Reference 1	98.6	100.0
Reference 2	-101.8	-100.0

High Resolution Temperature Calibration MCG-C 208		Field Calibration on 18-OCT-2011 15:32
	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MCG-C 208		Last Edited on
Pre-filter Length	11	

Caliper Calibration MML-A 16		Base Calibration on 12-MAR-2012 09:42	Field Calibration on 30-APR-2012 10:14
Base Calibration			
Reading No	Measured	Calibrator Size (in)	
1	14446	5.98	
2	17749	7.97	
3	20974	9.86	
4	24969	11.92	
5	0	0.00	
6	N/A	N/A	
Field Calibration			
	Measured Caliper (in)	Actual Caliper (in)	
	5.95	5.98	

Micro Normal and Micro Inverse Calibration MML-A 16		Base Calibration on 26-APR-2012 12:26	Field Check on 30-APR-2012 10:10
Base Calibration			
Channel	Resistor 1	Measured Resistor 2	Calibrated (ohm-m) Resistor 1 Resistor 2
Micro Normal	12.2	60.2	5.0 25.0
Micro Inverse	15.6	78.3	5.0 25.0
Channel	Base Check (ohm-m)		Field Check (ohm-m)
Micro Normal	62.9		62.9
Micro Inverse	48.2		48.2

Micro Normal and Micro Inverse Constants MML-A 16		Last Edited on 01-MAY-2012 10:07
Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159	
Micro Normal K Factor	1.0000	
Micro Inverse K Factor	1.0000	
Standoff Offset	N/A inches	

Neutron Calibration MDN-A.B 66		Base Calibration on 26-APR-2012 15:28	Field Check on 30-APR-2012 10:26
Base Calibration			
	Near	Measured Far	Calibrated (cps) Near Far
	3170	99	3714 110
Ratio	32.037		33.764
Field Calibrator at Base			
			Calibrated (cps)
			1619 2337
Ratio			0.693
Field Check			
			Calibrated (cps)
			1615 2335
Ratio			0.692

Neutron Constants MDN-A.B 66		Last Edited on 01-MAY-2012 10:05
Neutron Source Id	P58125B	
Neutron lig Number	5824NE	

Neutron Log Number	5024NE	No	
Epithermal Neutron		Density Caliper	
Caliper Source for Processing		0.00	inches
Stand-off		1.00	gm/cc
Mud Density		7.10	cu
Limestone Sigma		4.26	cu
Sandstone Sigma		4.70	cu
Dolomite Sigma		None	
Formation Pressure Source		N/A	kpsi
Formation Pressure		Constant Value	
Temperature Source		68.00	degrees F
Temperature		0.00	kppm
Mud Salinity		Constant Value	
Formation Fluid Salinity Source		0.00	kppm
Formation Fluid Salinity		Not Applied	
Barite Mud Correction			

FE Calibration MFE-C.A 353

Base Calibration on 26-APR-2012 11:56  
Field Check on 30-APR-2012 09:56

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	964.1	126.8
Base Check		281.1
Field Check		281.0

FE Constants MFE-C.A 353

Last Edited on 01-MAY-2012 10:07

Running Mode	No Sleeve	
MFE K Factor	0.1268	
Caliper Source for FE correction	Density Caliper	
Caliper Value for FE correction	N/A	inches
Rm Source for FE correction	Temperature Corr	
Temp. for Rm Corr.	MCG External Temperature	
Stand-off	0.5	inches

Induction Calibration MAI-A.A 167

Base Calibration on 11-MAR-2011 09:58  
Field Check on 30-APR-2012 09:51

Base Calibration

Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High	
1	17.3	474.2	9.3	966.2	
2	6.3	388.4	7.6	821.4	
3	3.3	259.4	5.2	566.0	
4	1.9	133.0	2.6	279.2	
Array Temperature		76.8			Deg F
Channel	Base Check (mmho/m)		Field Check (mmho/m)		
	Low	High	Low	High	
1	0.0	0.0	12.6	3840.0	
2	0.0	0.0	29.5	3477.8	
3	0.0	0.0	29.0	3053.5	
4	0.0	0.0	19.7	2082.0	
Deep	0.0	0.0	18.5	2049.0	
Medium	0.0	0.0	42.2	3991.9	
Shallow	0.0	0.0	42.9	5055.6	
Array Temperature		0.0		66.5	Deg F

Induction Constants MAI-A.A 167

Last Edited on 01-MAY-2012 10:07

Induction Model	RtAP-WBM	
Caliper for Borehole Corr.	Density Caliper	
Hole Size for Borehole Correction	N/A	inches
Tool Centred	No	
Stand-off Type	Fins	
Stand-off	0.50	inches
Number of Fins on Stand-off	8.0000	
Stand-off Fin Angle	45.00	degrees
Stand-off Fin Width	0.5000	inches

Borehole Corr. Rm Source		Temperature Corr	
Temp. for Rm Corr.		MCG External Temperature	
Squasher Start		0.0020	mhos/metre
Squasher Offset		N/A	mhos/metre
Borehole Normalisation			
DRM1	0.0000	DRC1	0.0000
DRM2	0.0000	DRC2	0.0000
MRM1	0.0000	MRC1	0.0000
MRM2	0.0000	MRC2	0.0000
SRM1	0.0000	SRC1	0.0000
SRM2	0.0000	SRC2	0.0000

Calibration Site Corrections			
Channel 1		0.00	mmhos/metre
Channel 2		0.00	mmhos/metre
Channel 3		0.00	mmhos/metre
Channel 4		0.00	mmhos/metre

Apparent Porosity and Water Saturation Constants			
Archie Constant (A)		1.00	
Cementation Exponent (M)		2.00	
Saturation Exponent (N)		2.00	
Saturation of Water for Apor		100.00	percent
Resistivity of Water for Apor and Sw		0.05	ohm-m
Resistivity of Mud Filtrate for Sw		0.00	ohm-m
Source for Rt		0.00	
Source for Rxo		0.00	

#### High Resolution Temperature Calibration MAI-A.A 167

Field Calibration on 12-MAR-2012 11:57

	Measured	Calibrated(Deg F)
Lower	1.00	33.80
Upper	11.00	51.80

#### High Resolution Temperature Constants MAI-A.A 167

Last Edited on

Pre-filter Length	11
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#### Caliper Calibration MPD-B 31

Base Calibration on 25-APR-2012 10:33

Field Calibration on 30-APR-2012 10:09

Base Calibration			
Reading No	Measured	Calibrator Size (in)	
1	17391	3.99	
2	25871	5.98	
3	34557	7.97	
4	42895	9.86	
5	52288	11.92	
6	N/A	N/A	
Field Calibration			
	Measured Caliper (in)	Actual Caliper (in)	
	5.95	5.98	

#### Photo Density Calibration MPD-B 31

Base Calibration on 25-APR-2012 10:55

Field Check on 30-APR-2012 10:06

Density Calibration				
Base Calibration				
		Measured		Calibrated (sdu)
	Near	Far	Near	Far
Reference 1	57255	28372	59556	30836
Reference 2	22697	2144	24941	2541
Field Check at Base				
	697.4	855.9		
Field Check				
	696.9	860.6		

PE Calibration				
Base Calibration				
		Measured		Calibrated
	WS	WH	Ratio	Ratio
Background	128	611		

Background	120	0.11		
Reference 1	22865	57104	0.402	0.371
Reference 2	6649	22599	0.297	0.272

Field Check at Base  
128.3      610.7

Field Check  
128.3      609.6

Density Constants MPD-B 31

Last Edited on 01-MAY-2012 10:06

Density Source Id	P50557B	
Nylon Calibrator Number	DNCE695	
Aluminium Calibrator Number	DACD698	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.09	gm/cc
Mud Density Z/A Multiplier	1.11	
Mud Filtrate Density	1.00	gm/cc
Dry Hole Mud Filtrate Density	1.00	gm/cc
DNCT	0.00	gm/cc
CRCT	0.00	gm/cc
Density Z/A Correction	Hybrid	
Matrix Density (gm/cc)	Depth (ft)	
2.71	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	

### DOWNHOLE EQUIPMENT

C:\Users\Joe\Weatherford PreView\0\O'Brien Energy Resources Corp. Vanderpool # 1-5\_004.dta

Compact Comms Gamma  
MCG-C 208 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Comms Gamma  
MCG-C 208 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-log  
MML-A 16 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

Compact Micro-log  
MML-A 16 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

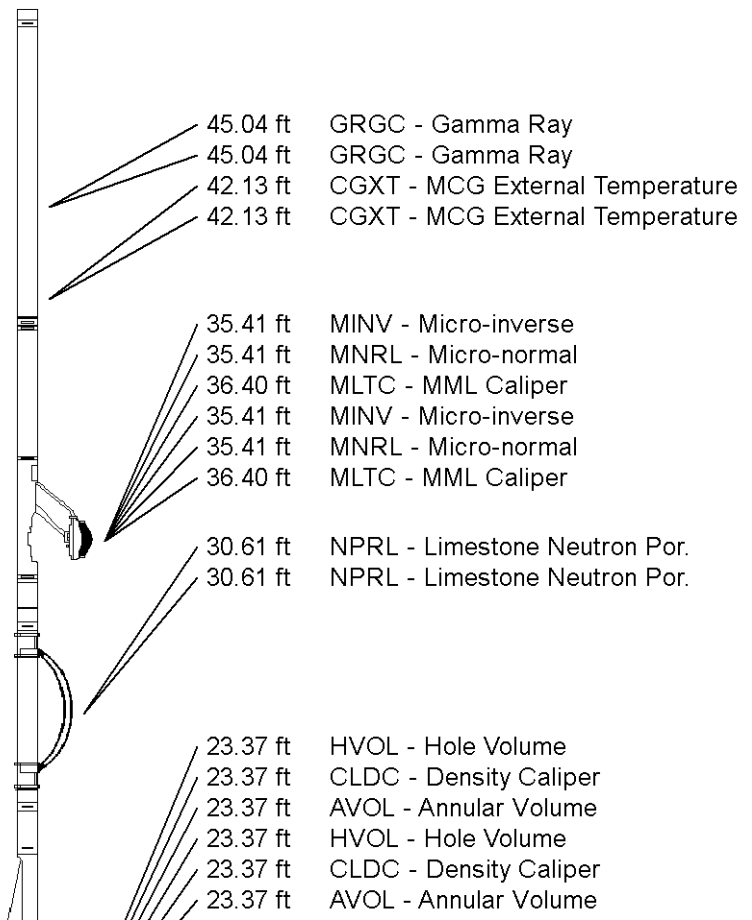
Compact Neutron  
MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Neutron  
MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper  
MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Density/Caliper  
MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

SKJ-D.A Compact Knuckle Joint  
SKJ-D.A 36 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in



SKJ-D.A Compact Knuckle Joint  
 SKJ-D.A 36 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

Compact Focussed Electric  
 MFE-C.A 353 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

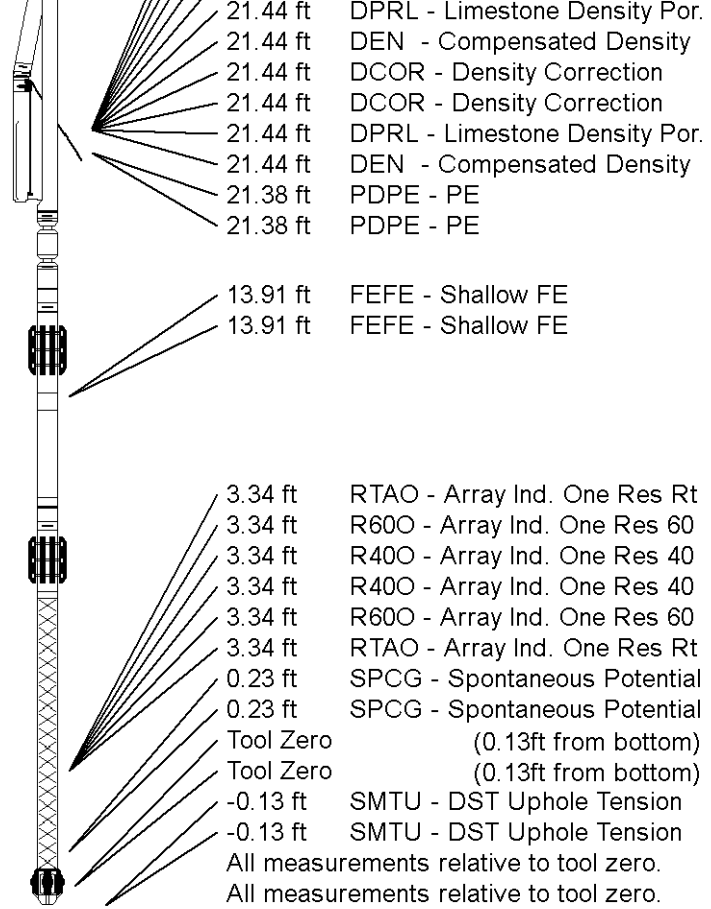
Compact Focussed Electric  
 MFE-C.A 353 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Induction  
 MAI-A.A 167 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Compact Induction  
 MAI-A.A 167 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 50.32 ft Weight: 407.9 lb

Total Length: 50.32 ft Weight: 407.9 lb



**COMPANY** O'BRIEN ENERGY RESOURCES CORP.  
**WELL** VANDERPOOL # 1-5  
**FIELD** WILDCAT  
**PROVINCE/COUNTY** MEADE  
**COUNTRY/STATE** U,S,A, / KANSAS

Elevation Kelly Bushing	2368.00	feet	First Reading	6368.00	feet
Elevation Drill Floor	2366.00	feet	Depth Driller	6405.00	feet
Elevation Ground Level	2356.00	feet	Depth Logger	6404.00	feet



MICRORESISTIVITY LOG

