



Weatherford[®]

MICRORESISTIVITY LOG

GRAND MESA OPERATING COMPANY

PHILLIP # 1-26

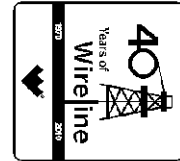
WILDCAT

GOVE

U.S.A. / KANSAS

2180' FNL & 1707' FWL

NW SW SE NW



PROVINCE/COUNTY

COUNTRY/STATE

LOCATION

SEC

TWP

RGE

Other Services

26

13S

31W

MPD/MDN

MAI/MFE

Permit Number

15-063-22000

MSS

Permanent Datum G.L., Elevation 2851 feet

Log Measured From KB

Drilling Measured From K.B.

Elevations:

KB

DF

GL

2856.00

2854.00

2851.00

feet

Date

03-JUN-2012

Run Number

ONE

Depth Driller

4631.00

feet

Depth Logger

4638.00

feet

First Reading

4591.00

feet

Last Reading

3600.00

feet

Casing Driller

210.00

feet

Casing Logger

207.00

feet

Bit Size

7.875

inches

Hole Fluid Type

CHEMICAL

Density / Viscosity

9.20

lb/USg

63.00

CP

PH / Fluid Loss

10.50

7.20

ml/30Min

Sample Source

FLOWLINE

Rm @ Measured Temp

0.92 @ 81.0

ohm-m

Rmf @ Measured Temp

0.74 @ 81.0

ohm-m

Rmc @ Measured Temp

1.10 @ 81.0

ohm-m

Source Rmf / Rmc

CALC

CALC

Rm @ BHT

0.61 @125.0

ohm-m

Time Since Circulation

7 HOURS

Max Recorded Temp

126.00

deg F

Equipment Name

COMPACT

Equipment / Base

13057

Recorded By

A. GIAMBALVO

Witnessed By

BOB SCHRIEBER

S.O. / JOB #

3534584

LB12-138

BOREHOLE RECORD

Last Edited: 04-JUN-2012 02:20

Bit Size
inches

7.875

Depth From
feet

207.00

Depth To
feet

4638.00

CASING RECORD

Type

SURFACE

Size
inches

8.625

Depth From
feet

5.00

Shoe Depth
feet

207.00

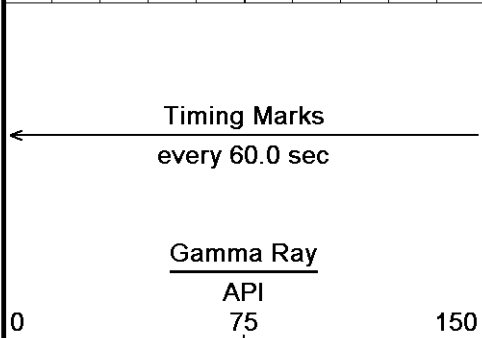
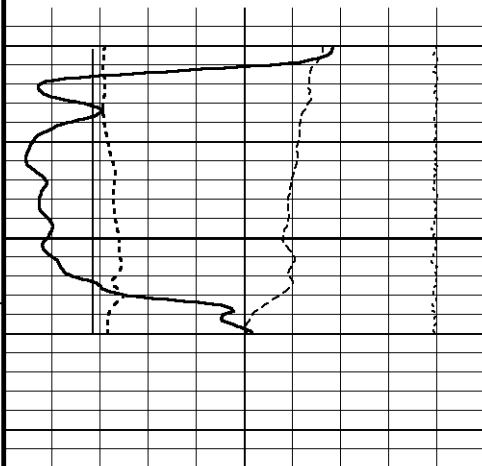
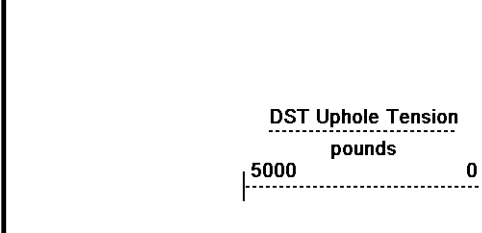
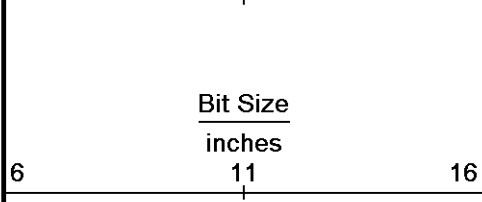
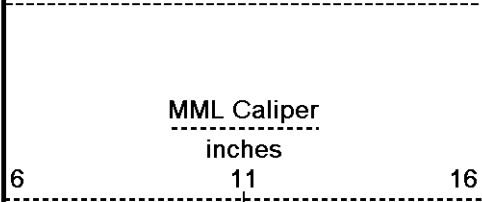
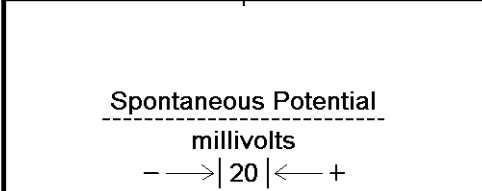
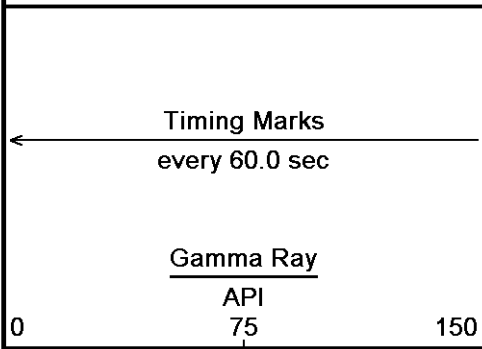
Weight
pounds/ft

24.00

REMARKS

Tools Ran: MCG, MML, MDN, MPD, MFE, MSS, MAI.
Hardware Used: MDN Dual Eccentralizer used. MPD 8 inch profile plate used. MFE, MSS and MAI 0.5 inch standoffs used.
2.71 g/cc Limestone Density Matrix used to calculate porosity.
All intervals logged and scaled per customer's request.
Annular volume with 5.5 inch production casing calculated0 = 192 cu. ft.
Service order #3534584
Rig: Murfin Rig # 24
Engineer: A. Giambalvo
Operator(s): K. Rinehart

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.

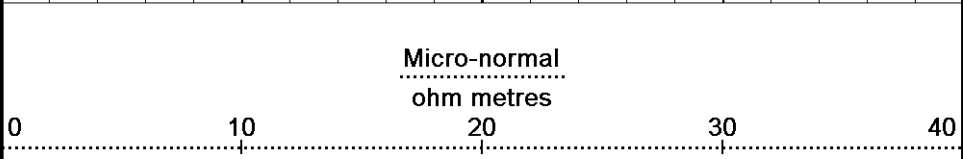
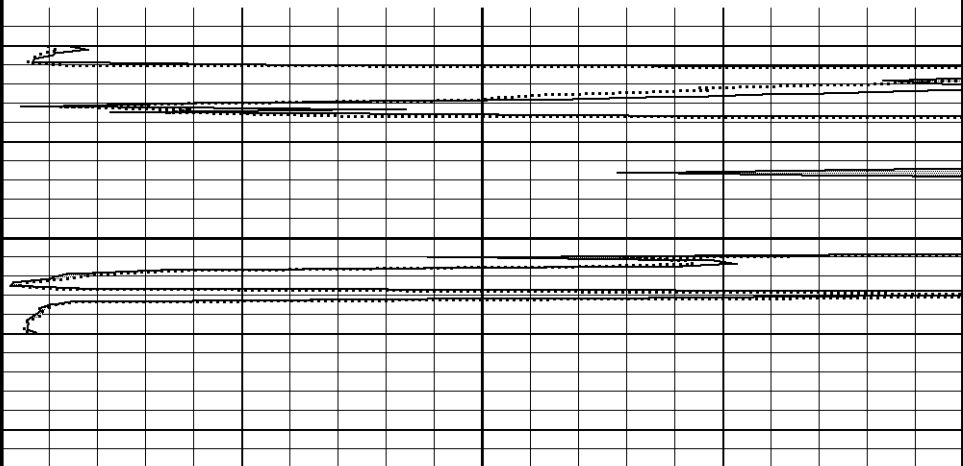
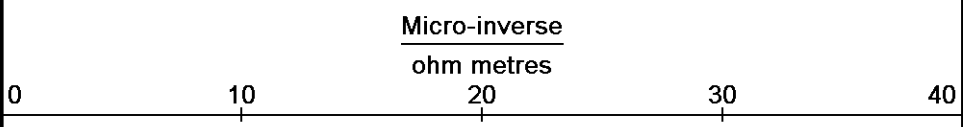
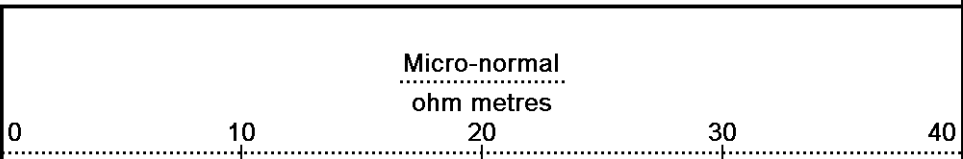


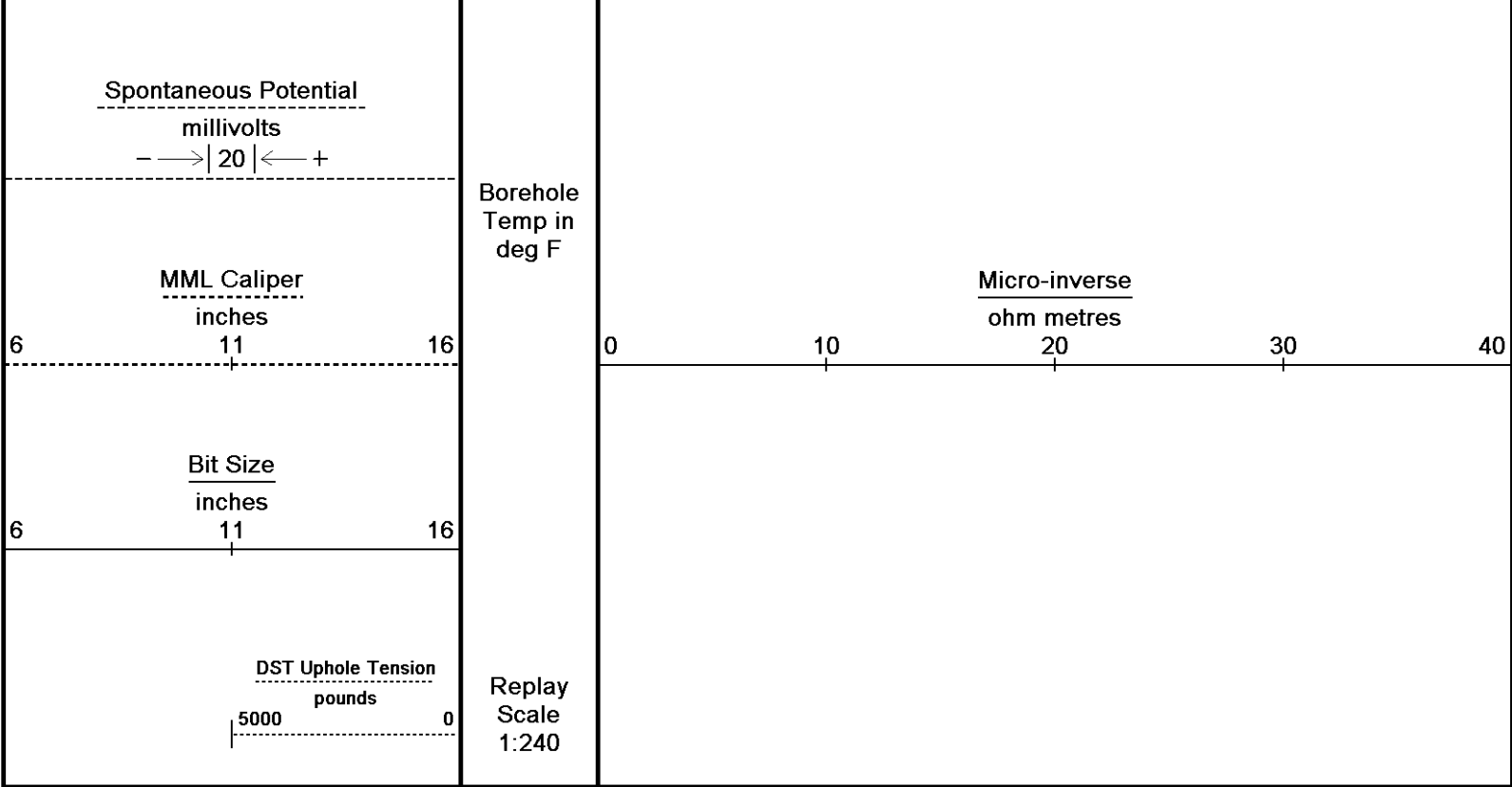
Depth in Feet

Borehole Temp in deg F

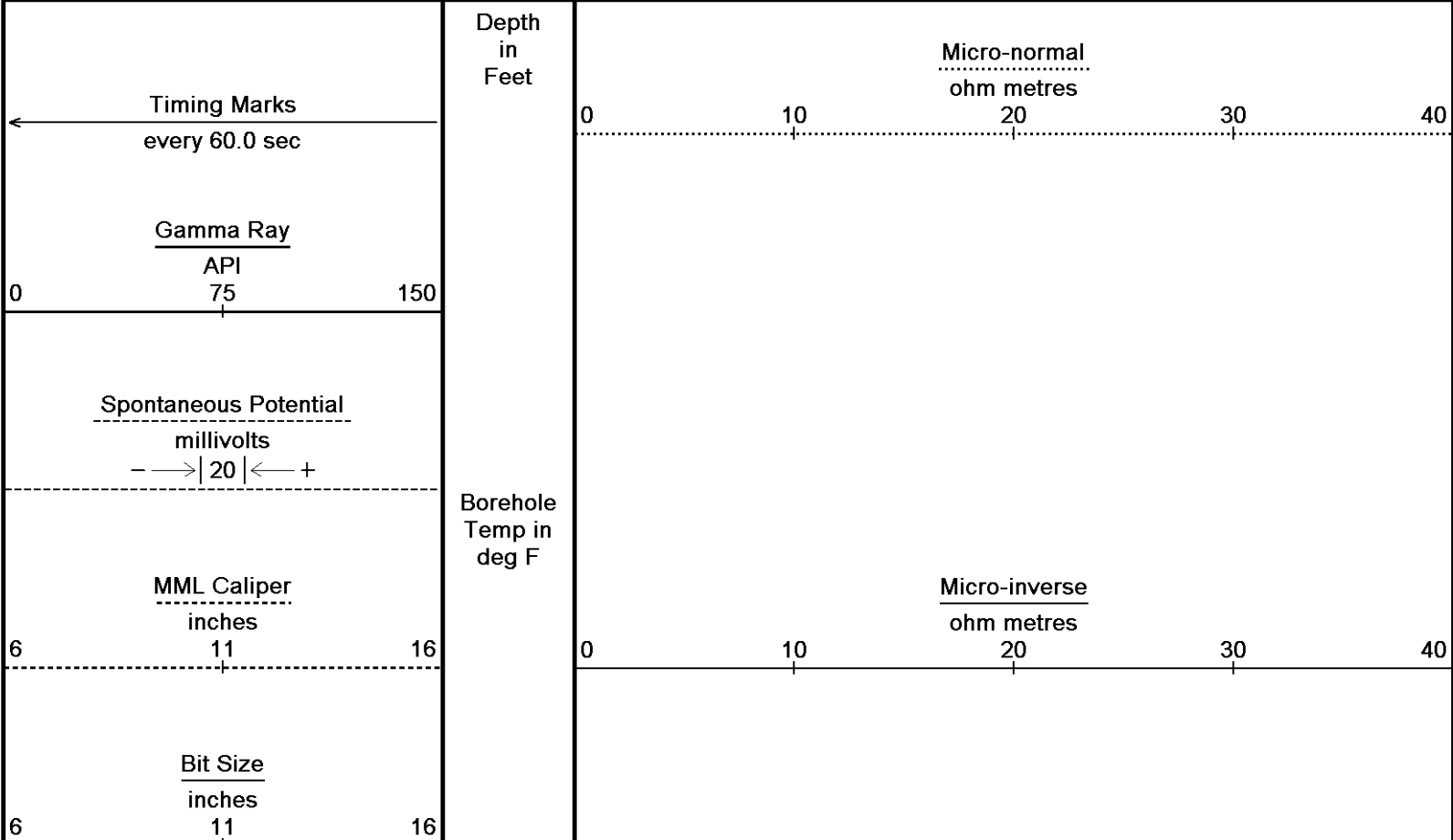
Replay Scale 1:240

Depth in Feet



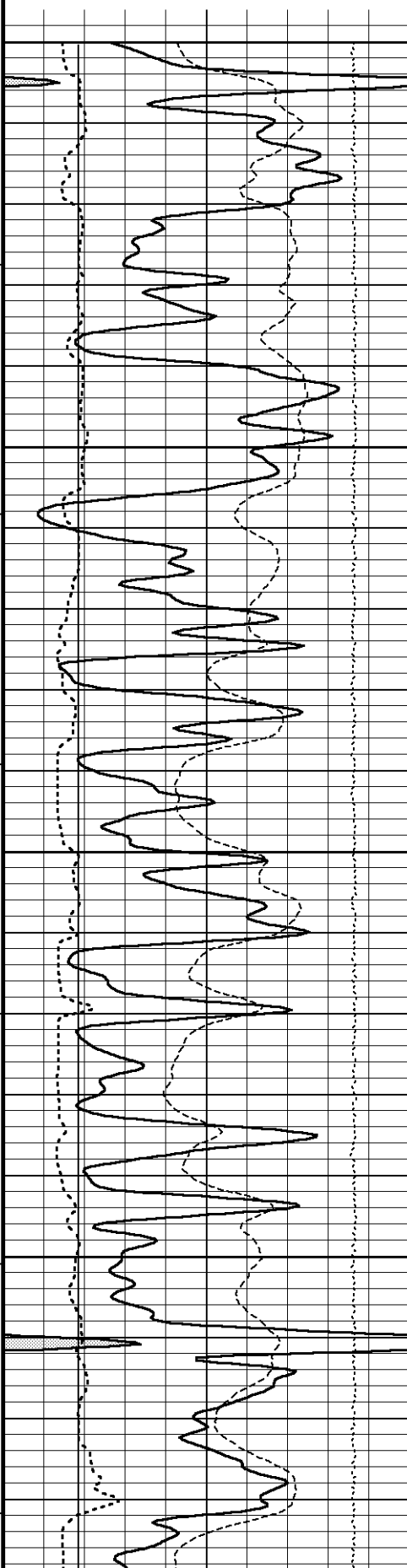


↑ **5 INCH ANHYDRITE** ↑



DST Uphole Tension
pounds
5000 0

Replay
Scale
1:240



3600

116°

3650

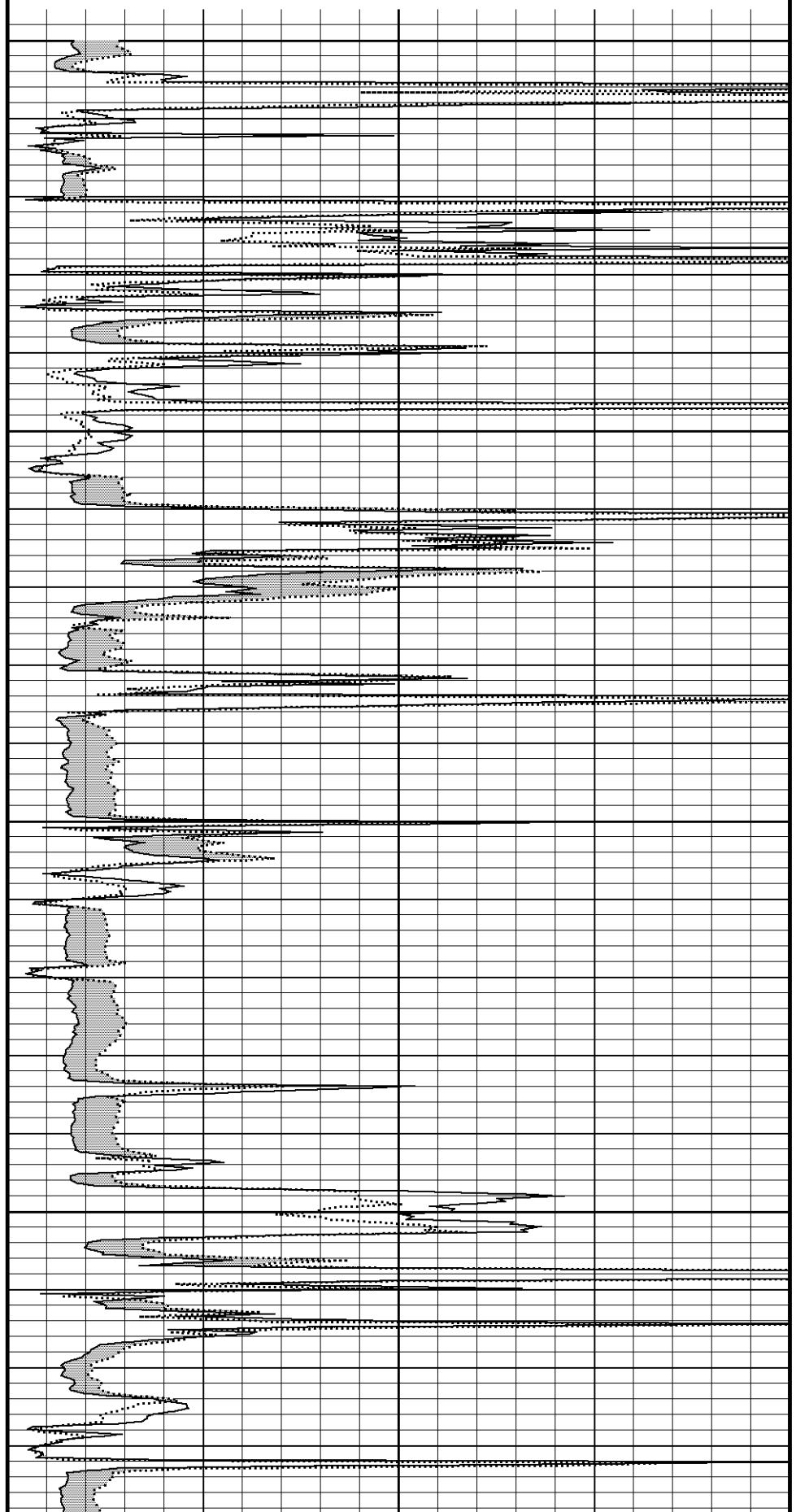
117°

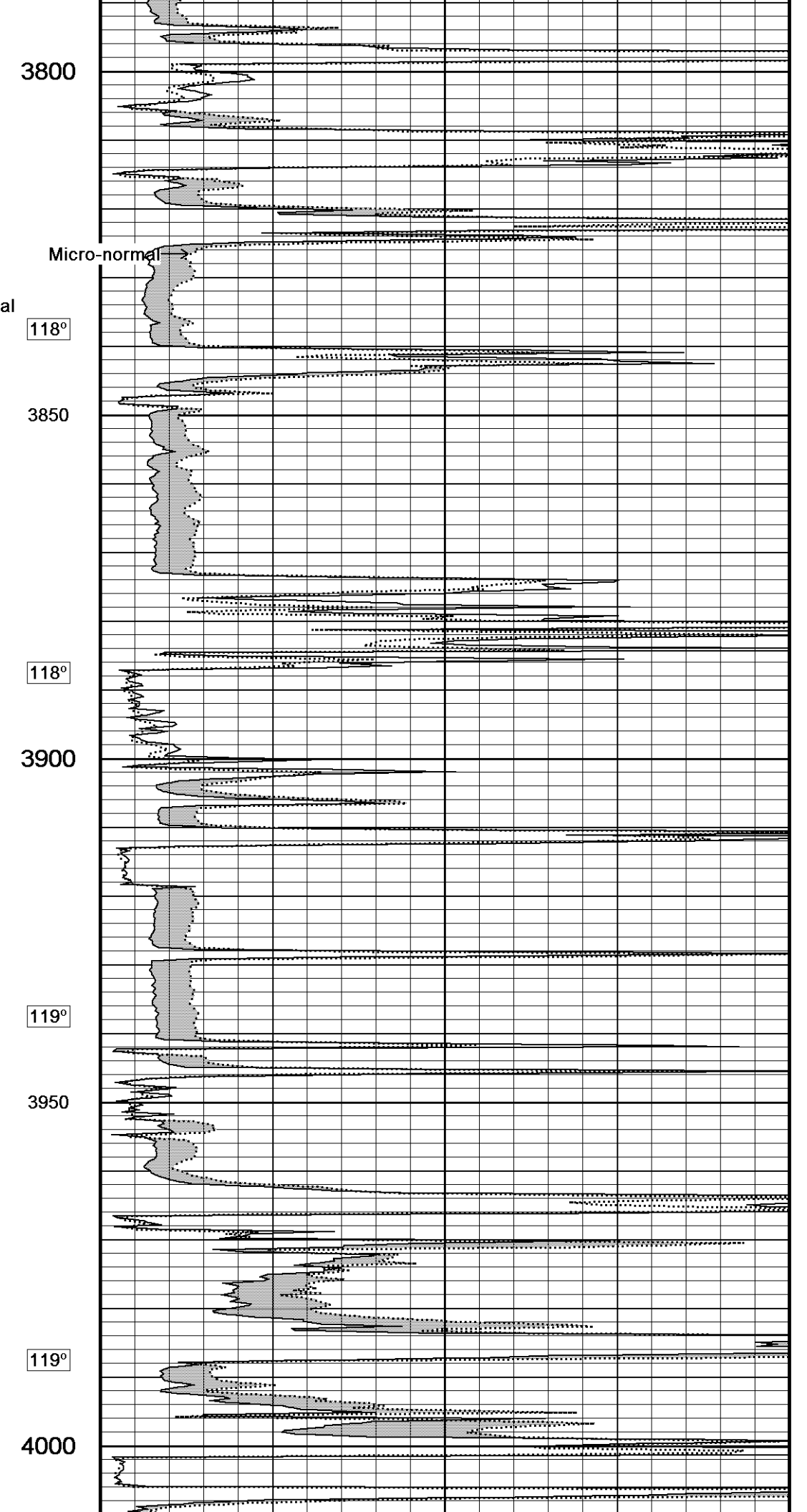
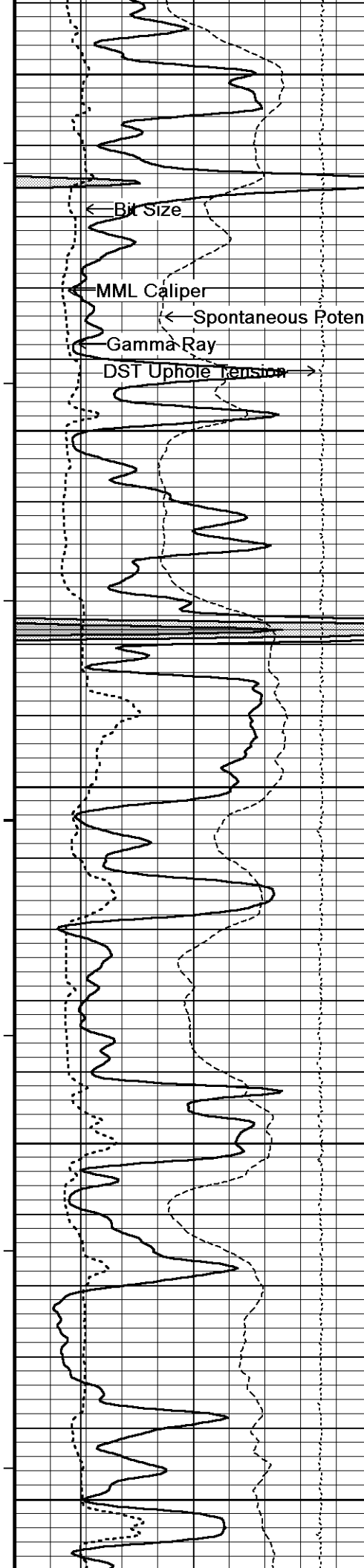
3700

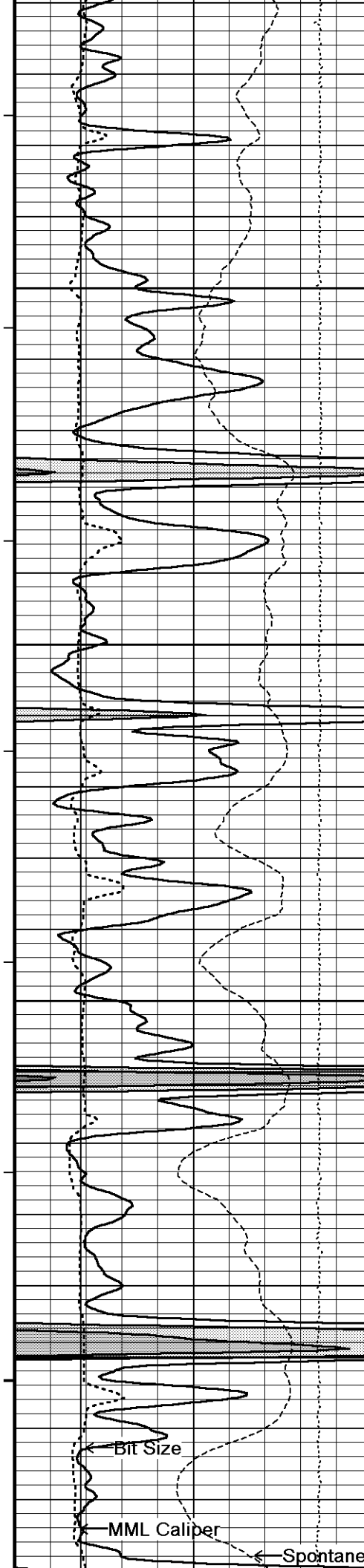
117°

3750

117°







119°

4050

120°

4100

120°

4150

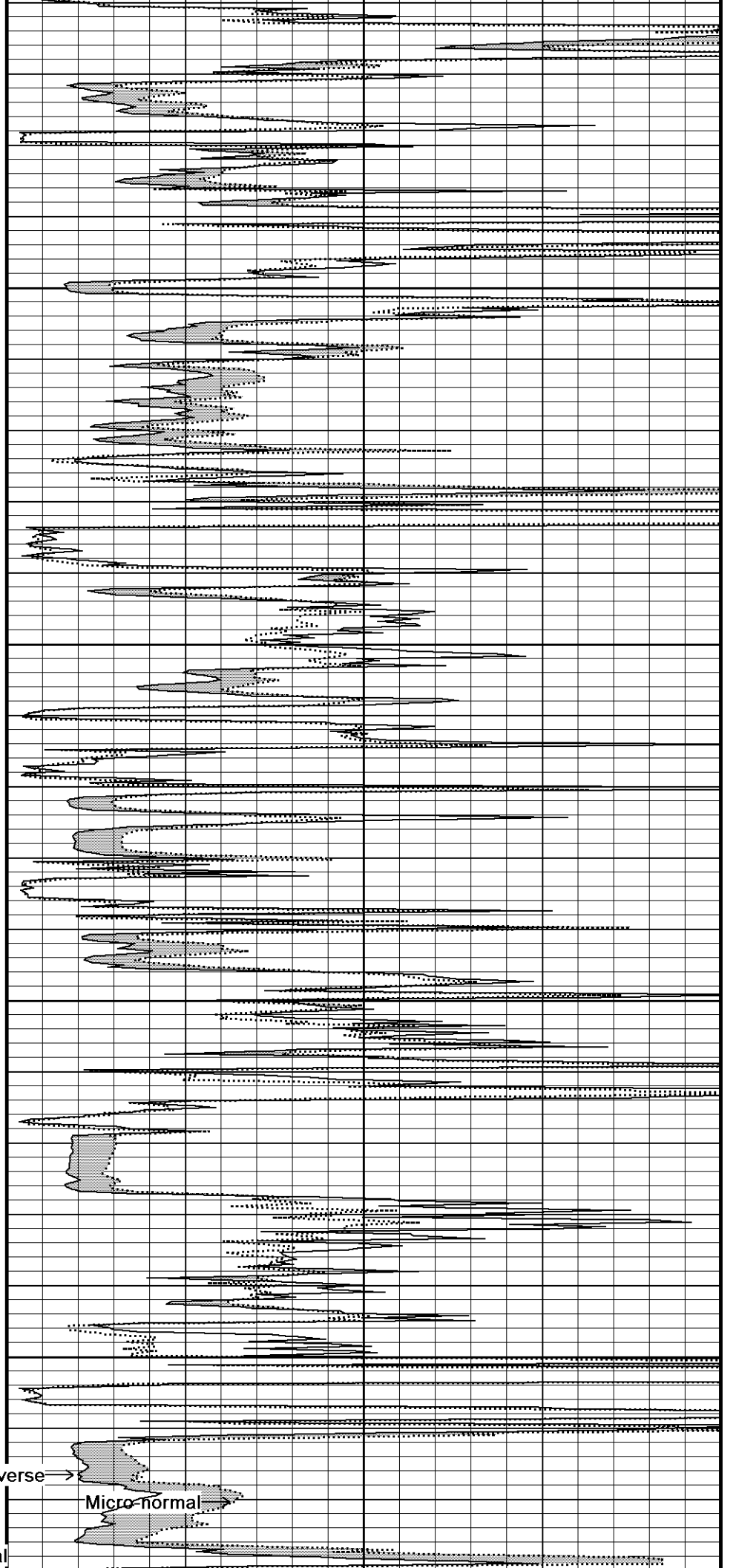
121°

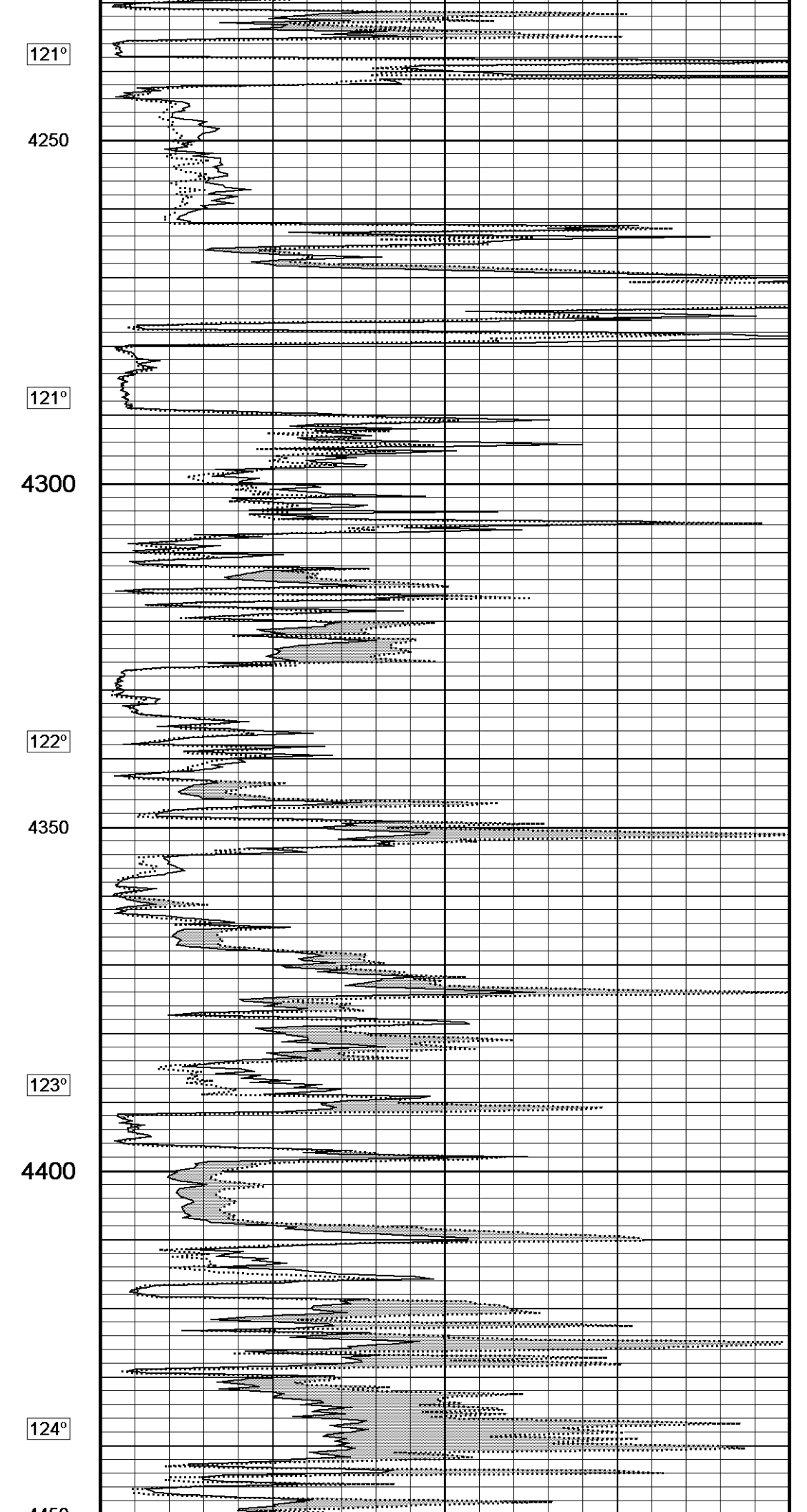
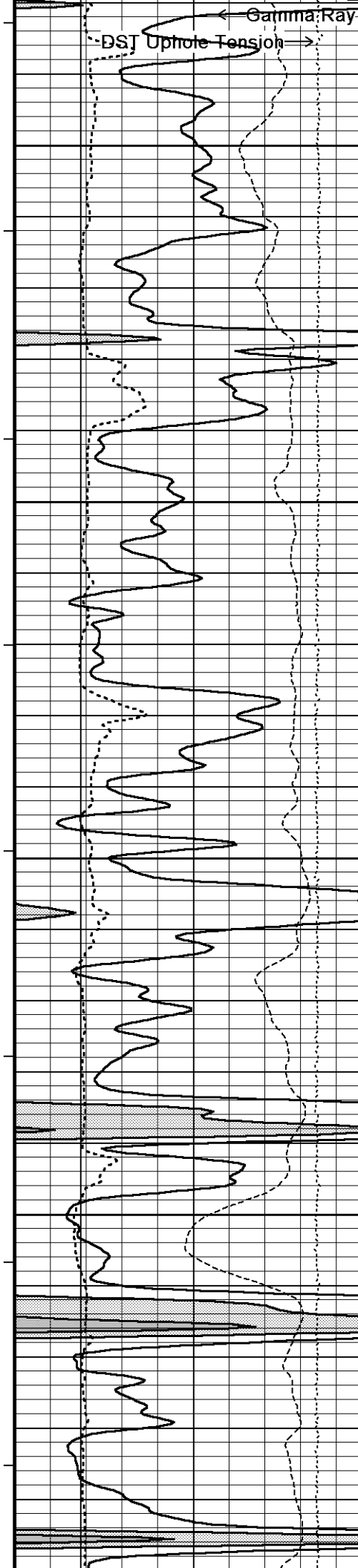
4200

Micro-inverse →

Micro-normal →

← Spontaneous Potential





121°

4250

121°

4300

122°

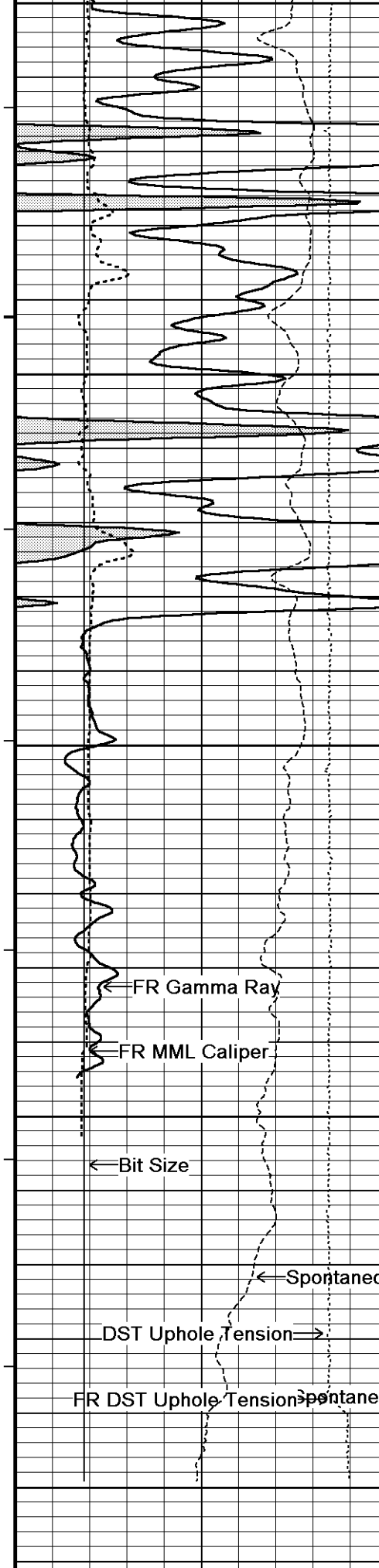
4350

123°

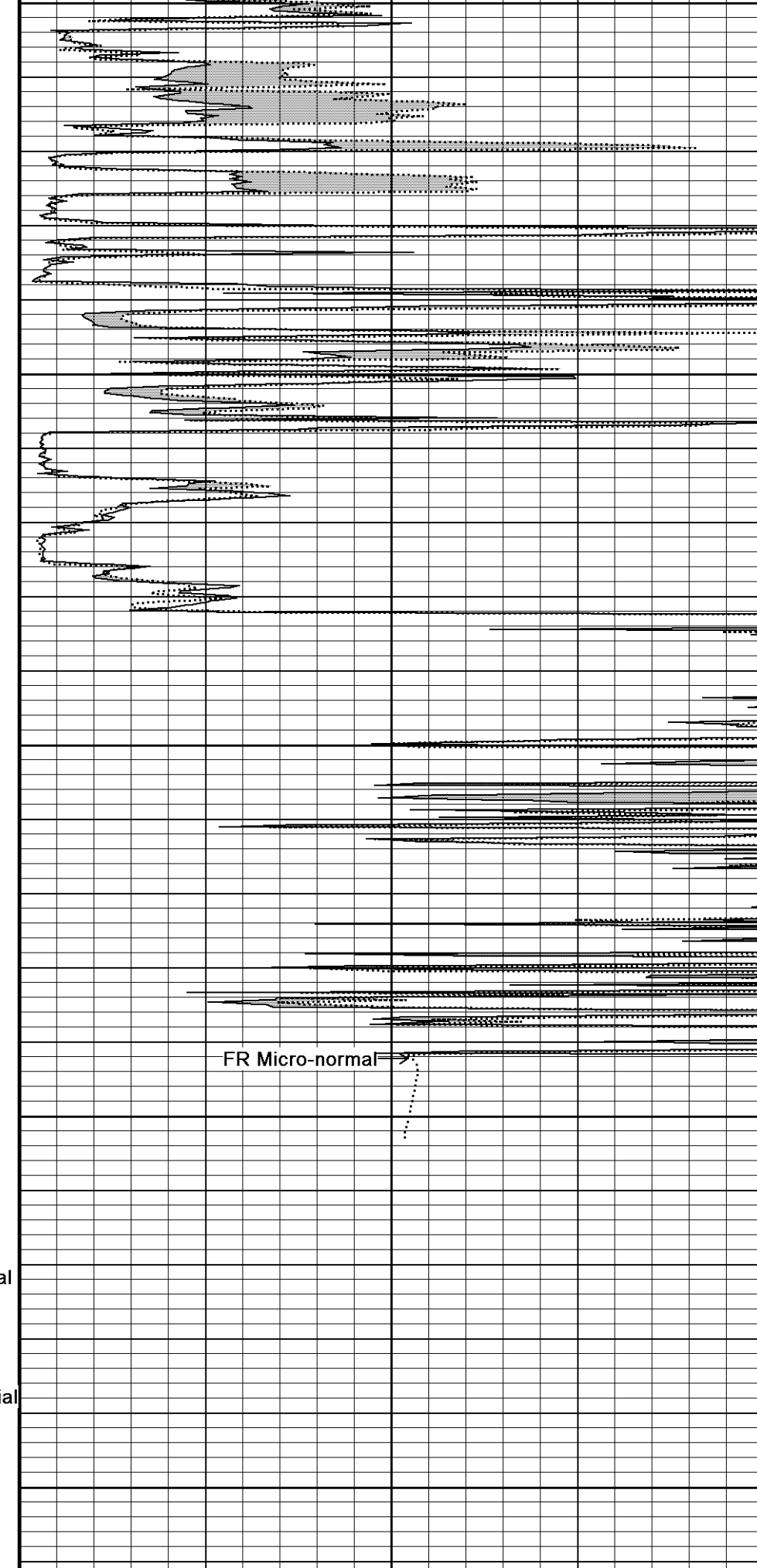
4400

124°

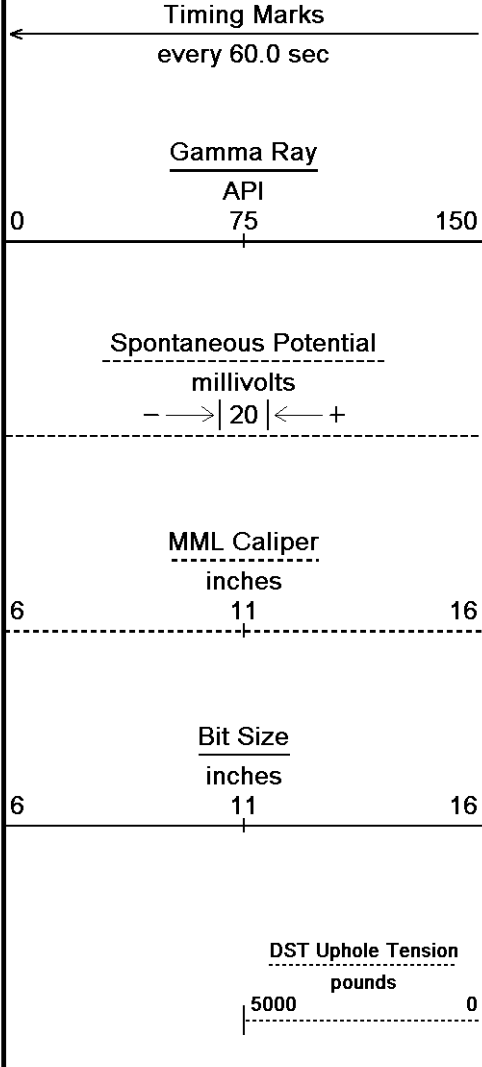
4450



4450
 125°
 4500
 125°
 4550
 125°
 4600
 4650
 4660
 Depth
 in
 Feet



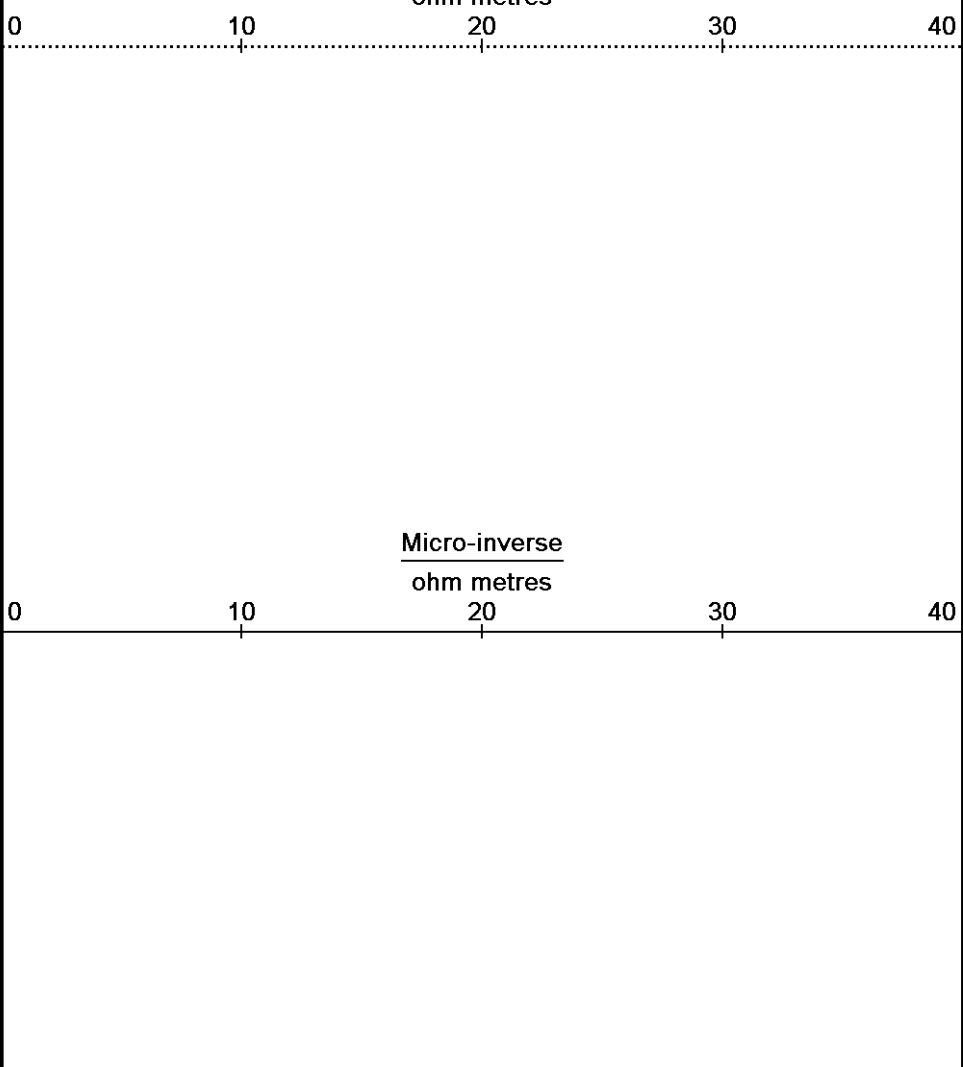
Micro-normal



Feet

Borehole Temp in deg F

Replay Scale 1:240

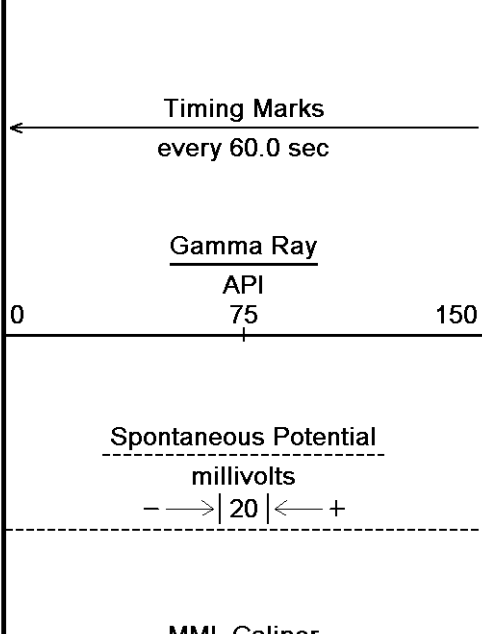


Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 04-JUN-2012 02:32
 Filename: C:\Minimus 11.03.4044\Data\Gran...\Grand Mesa Operating Company Phillip # 1-26_004.dta
 Recorded on 03-JUN-2012 22:06
 System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 11.03.4044

↑ 5 INCH MAIN PASS ↑

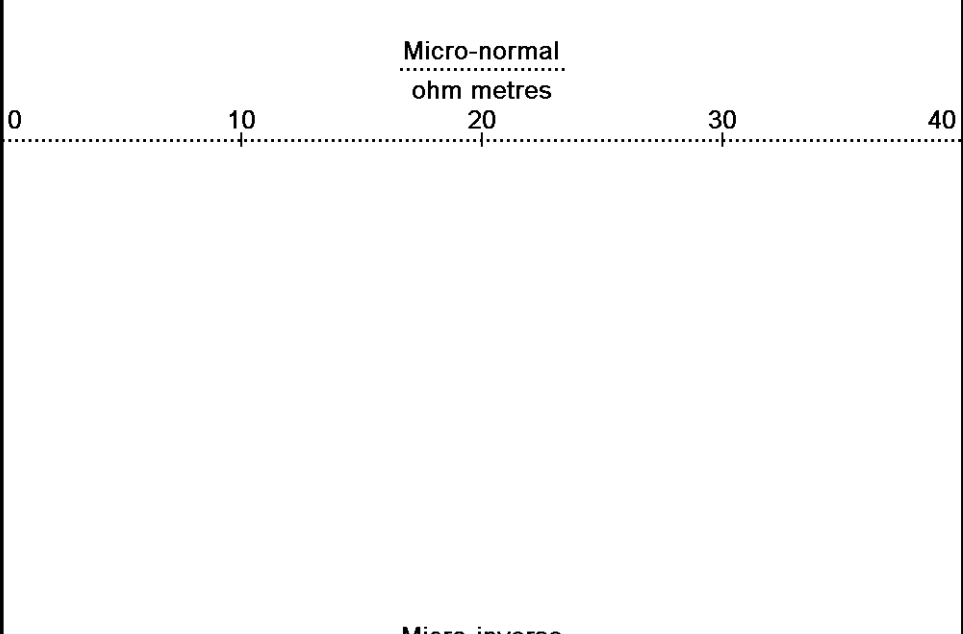
↓ 10 INCH HI RESOLUTION ↓

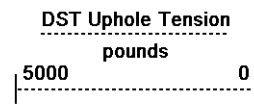
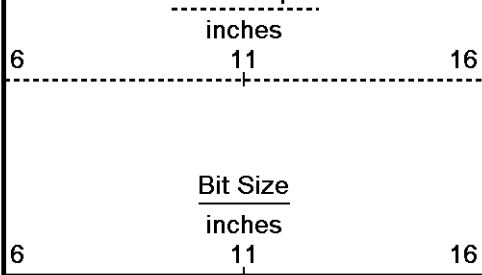
Depth Based Data - Maximum Sampling Increment 2.5cm
 Plotted on 04-JUN-2012 02:32
 Filename: C:\Minimus 11.03.4044\Data\Gran...\Grand Mesa Operating Company Phillip # 1-26_006.dta
 Recorded on 03-JUN-2012 23:05
 System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 11.03.4044



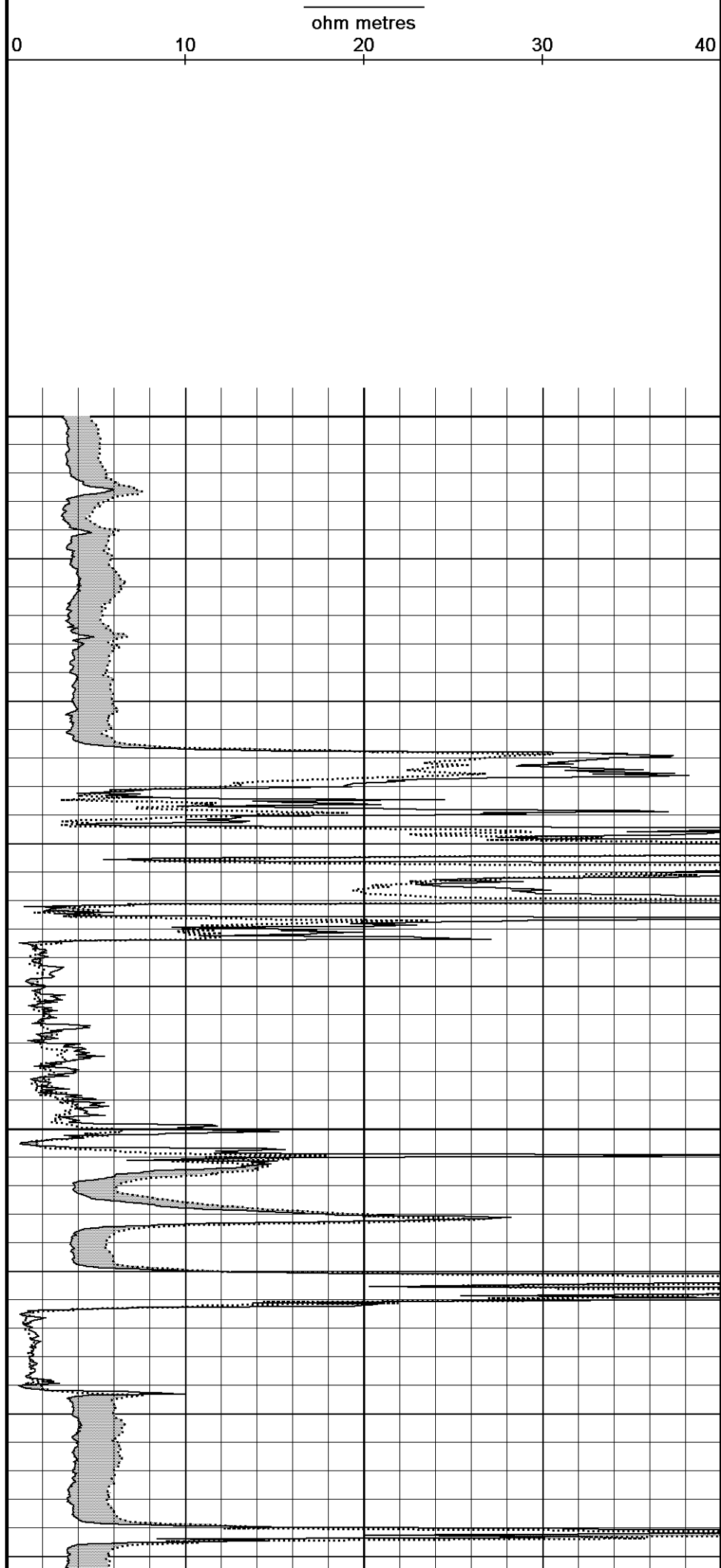
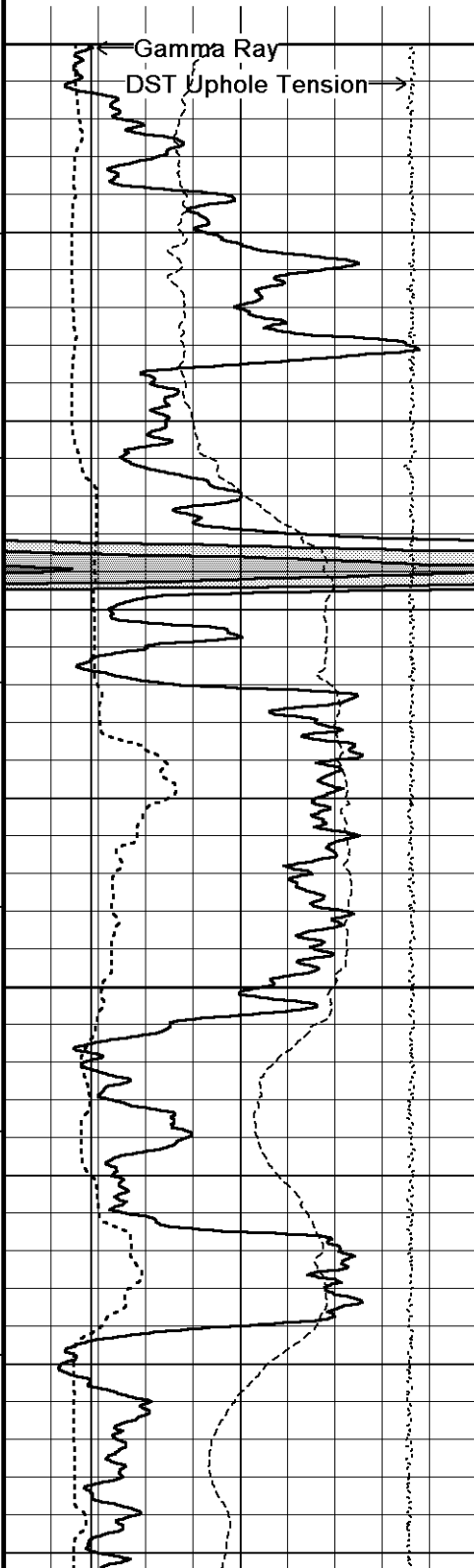
Depth in Feet

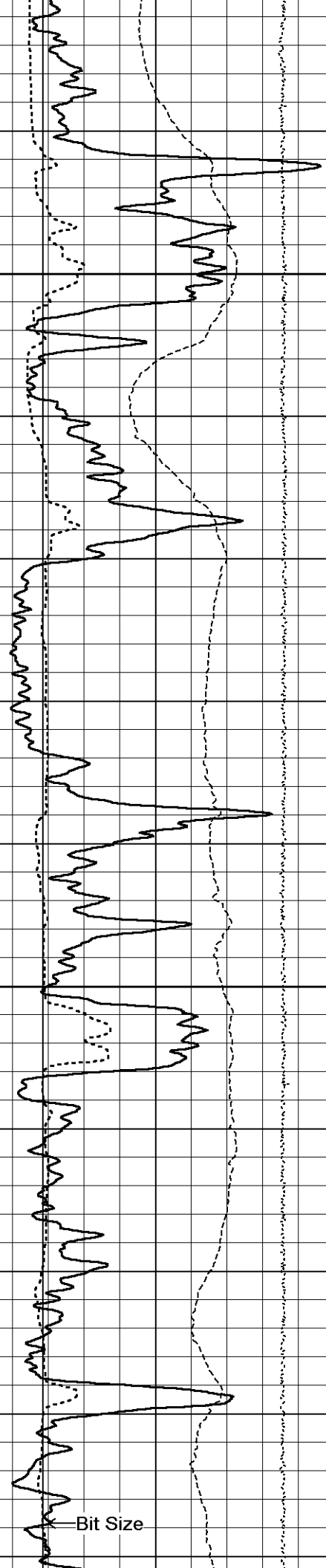
Borehole Temp in deg F





Replay
Scale
1:120





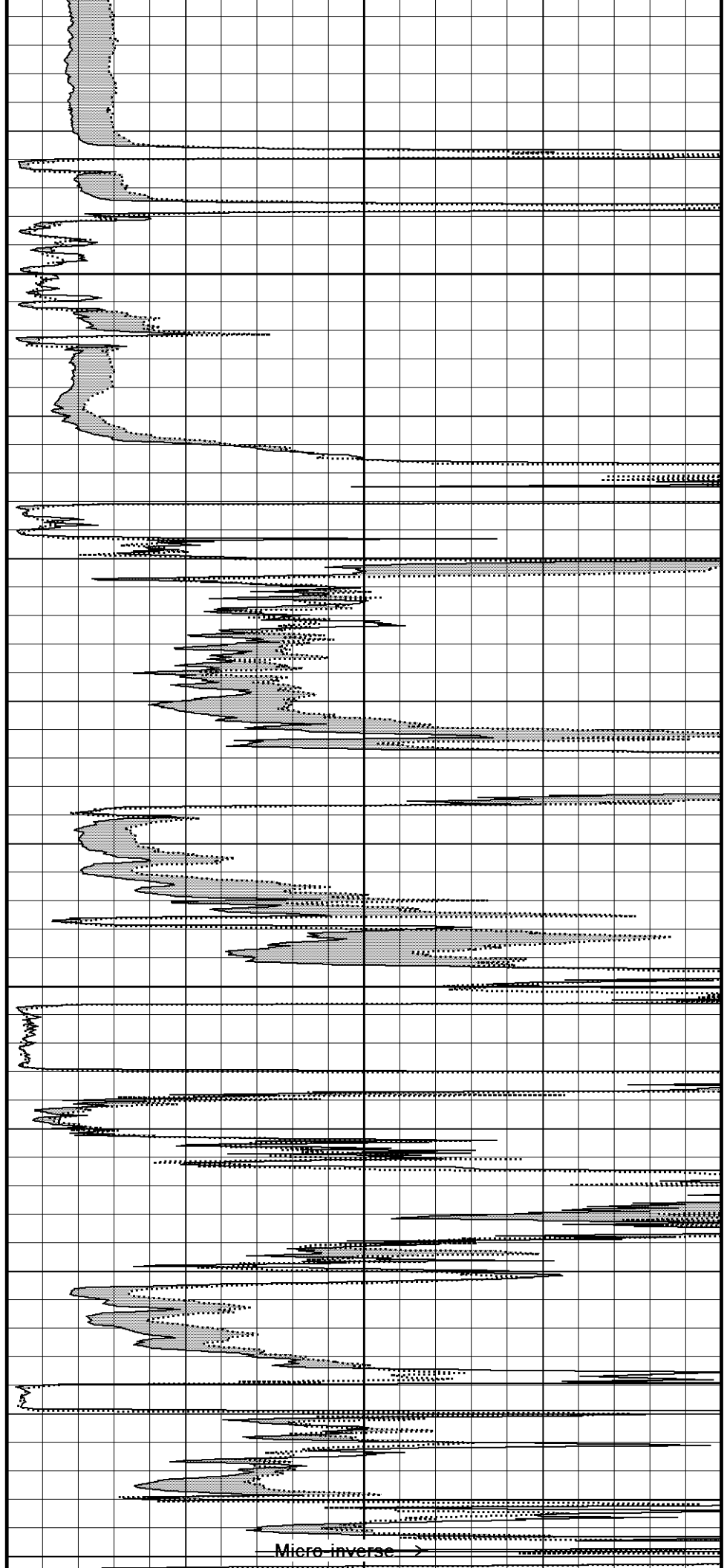
119°

3950

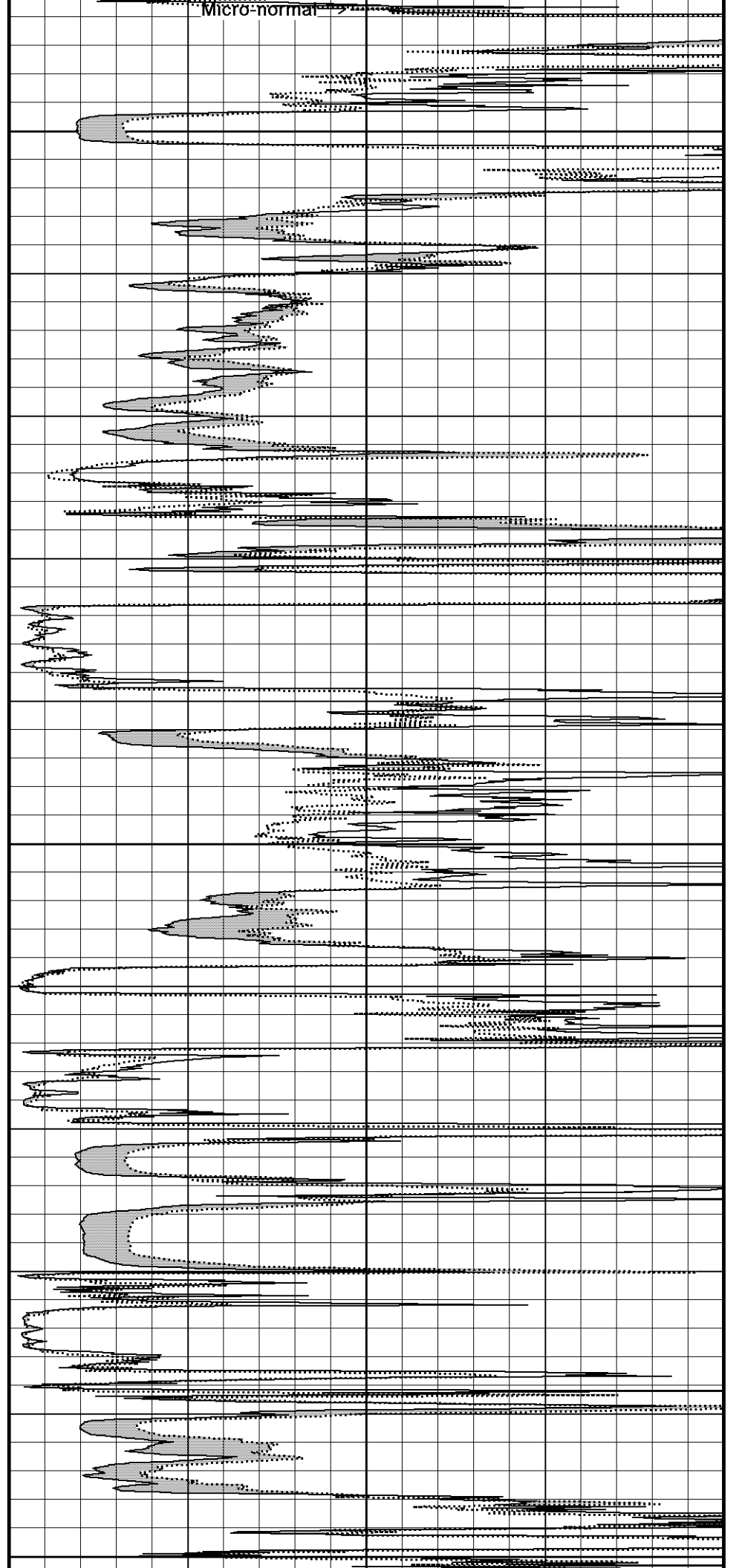
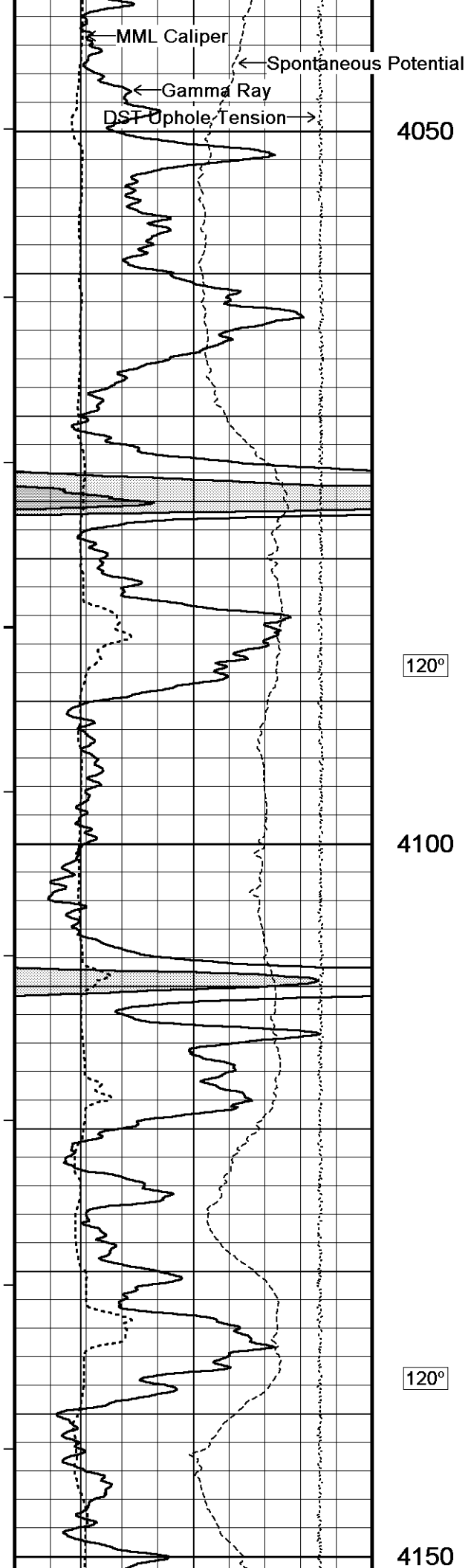
119°

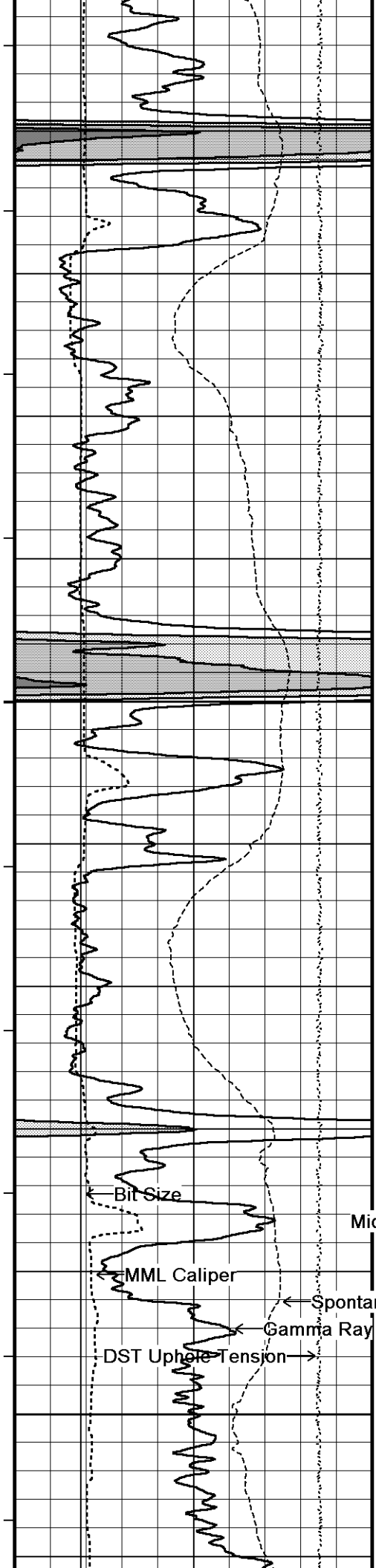
4000

120°



Micro inverse >



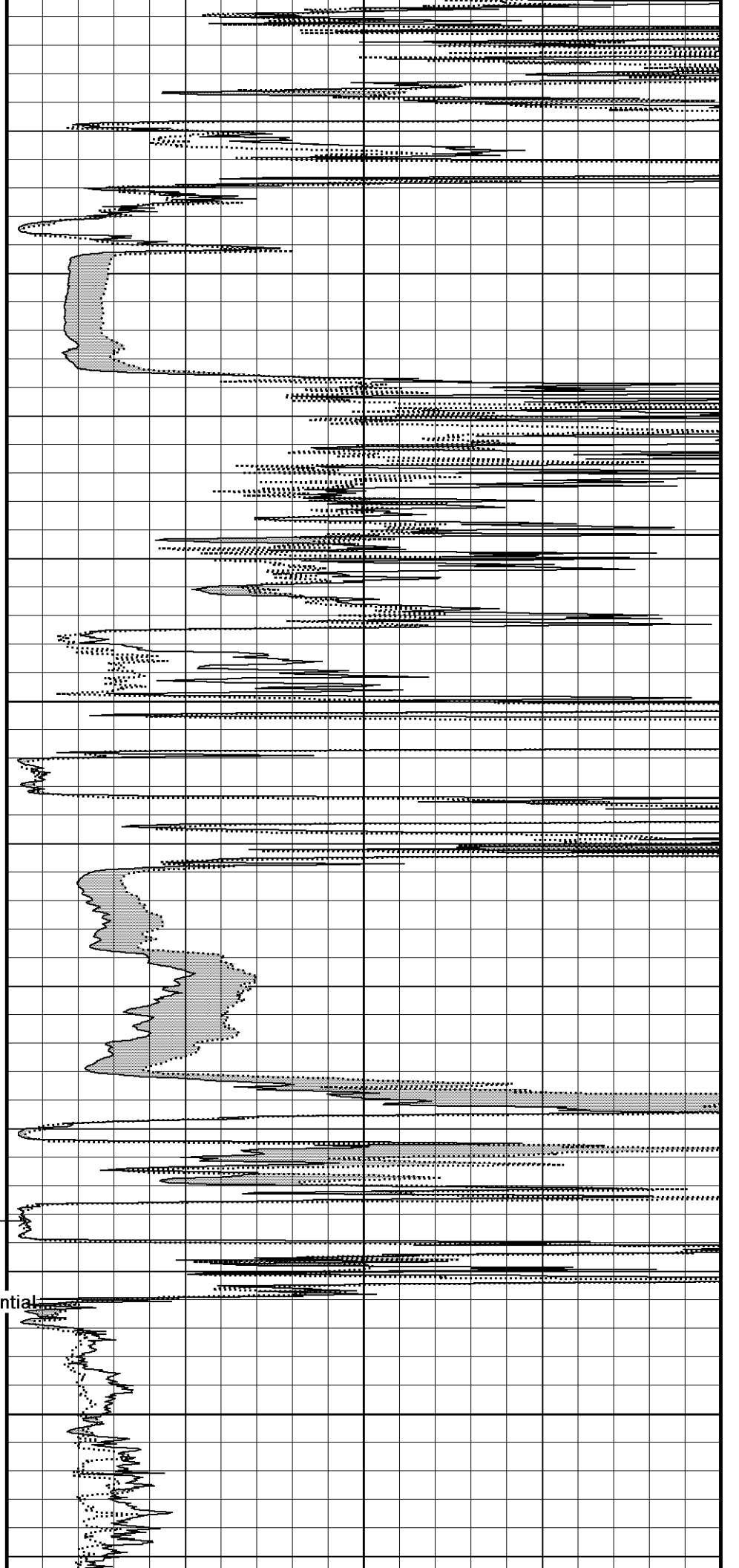


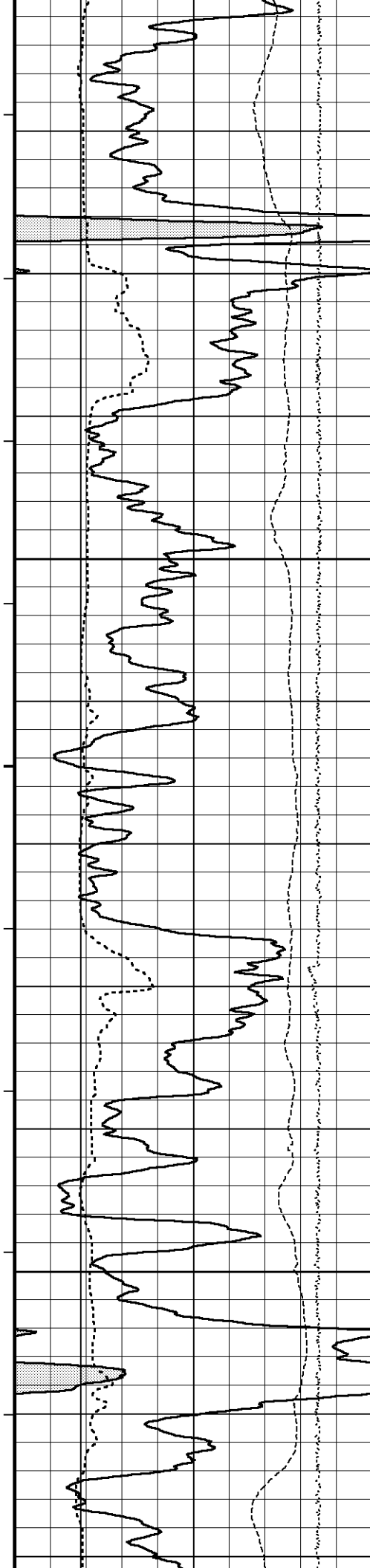
121°

4200

Micro-inverse
121°

4250



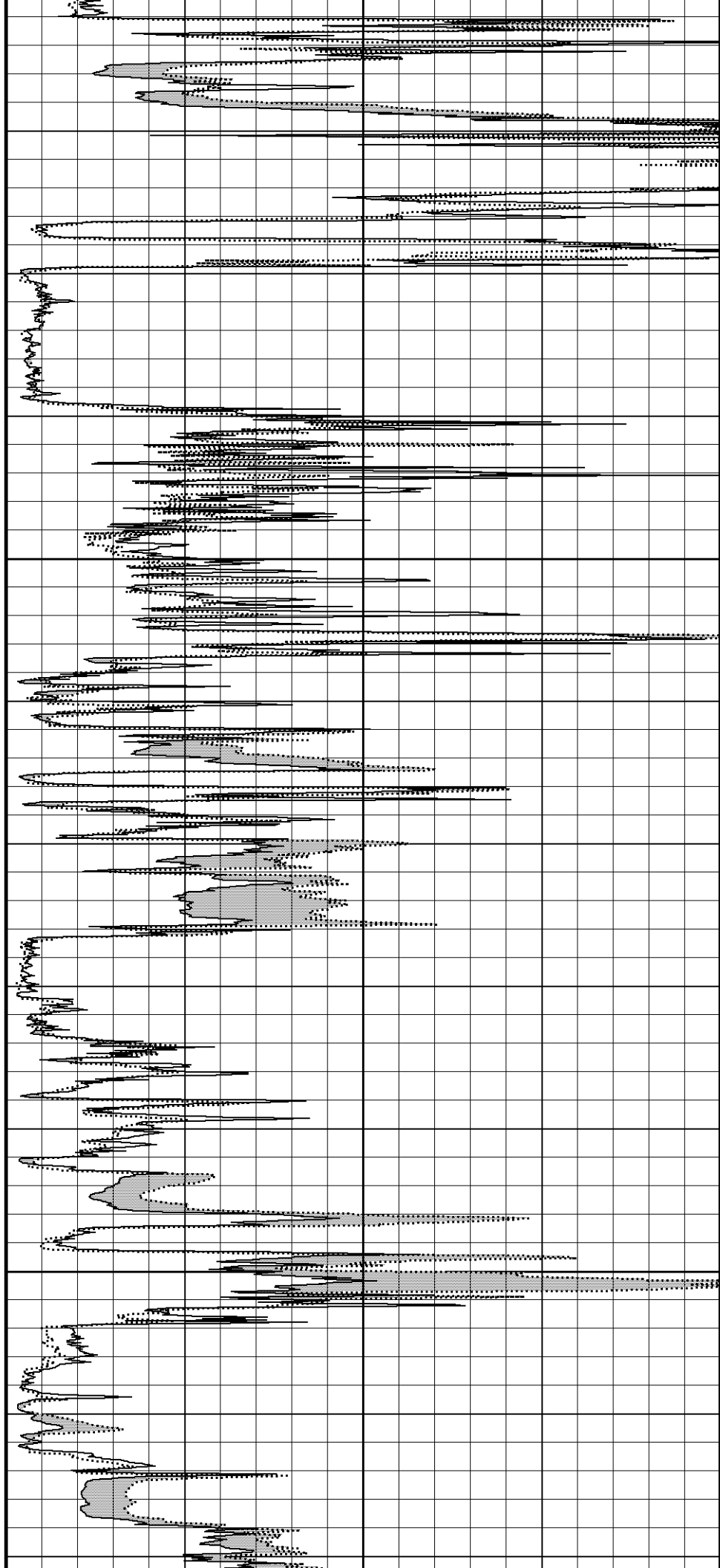


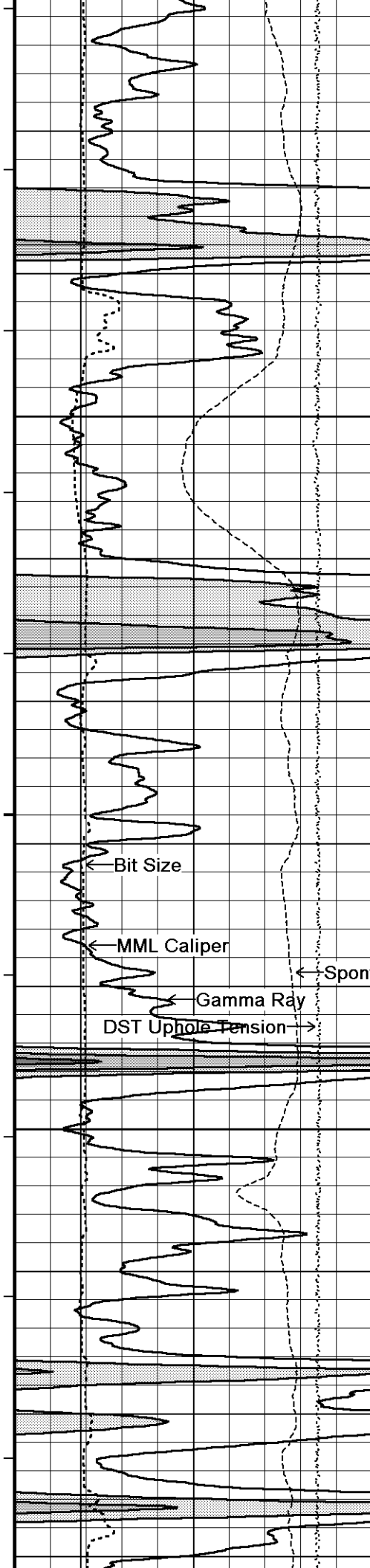
122°

4300

122°

4350



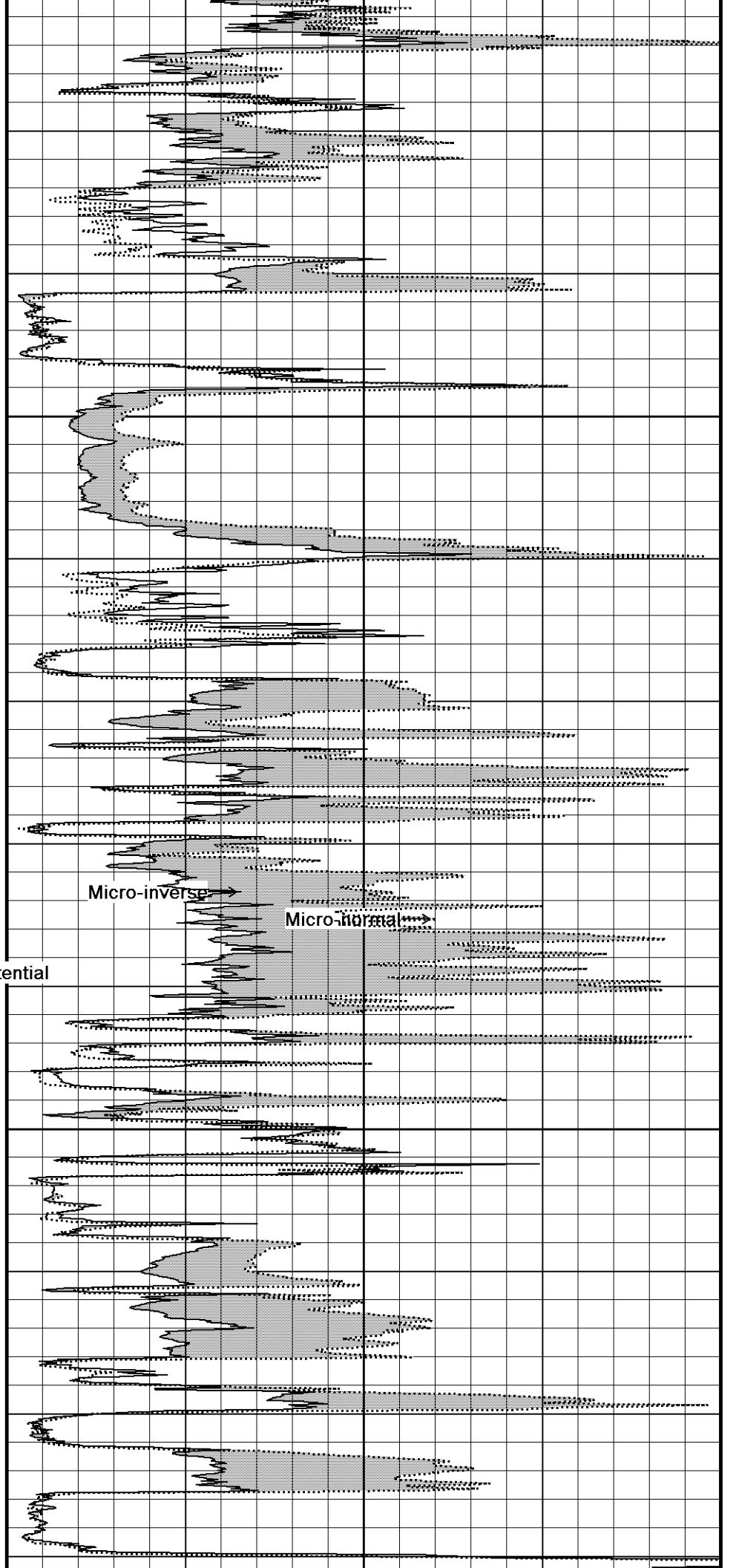


123°

4400

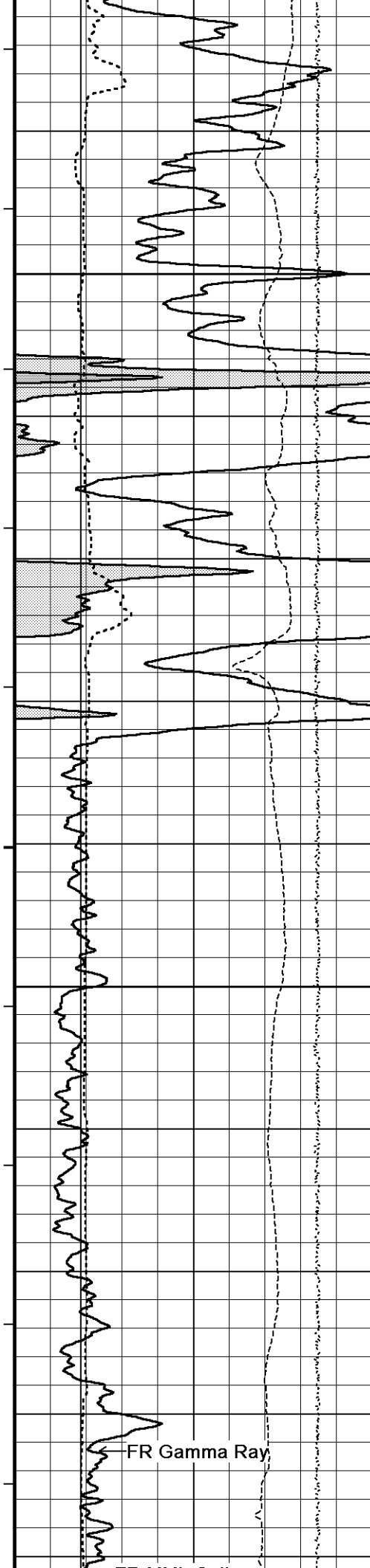
124°

4450



Micro-inverse

Micro-normal



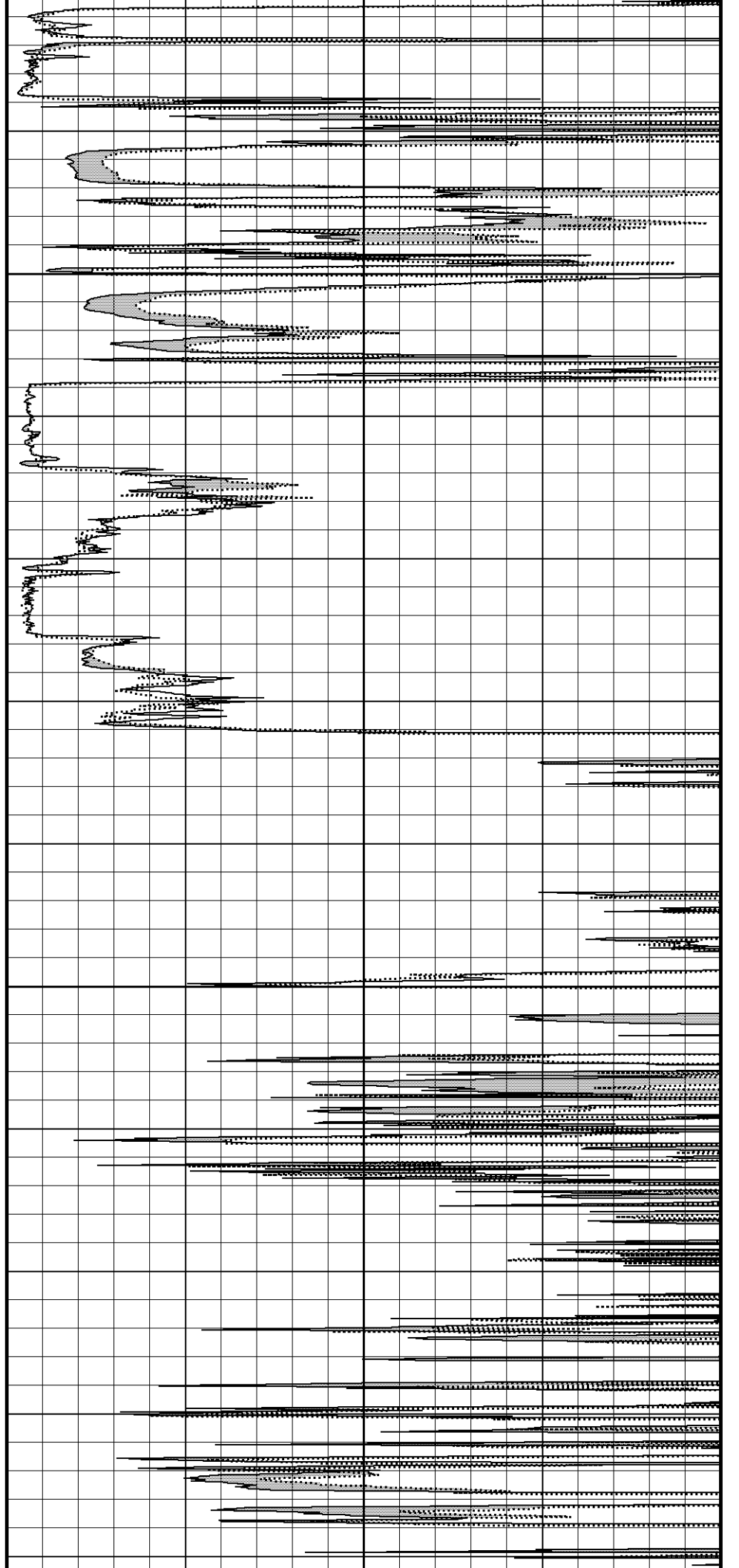
125°

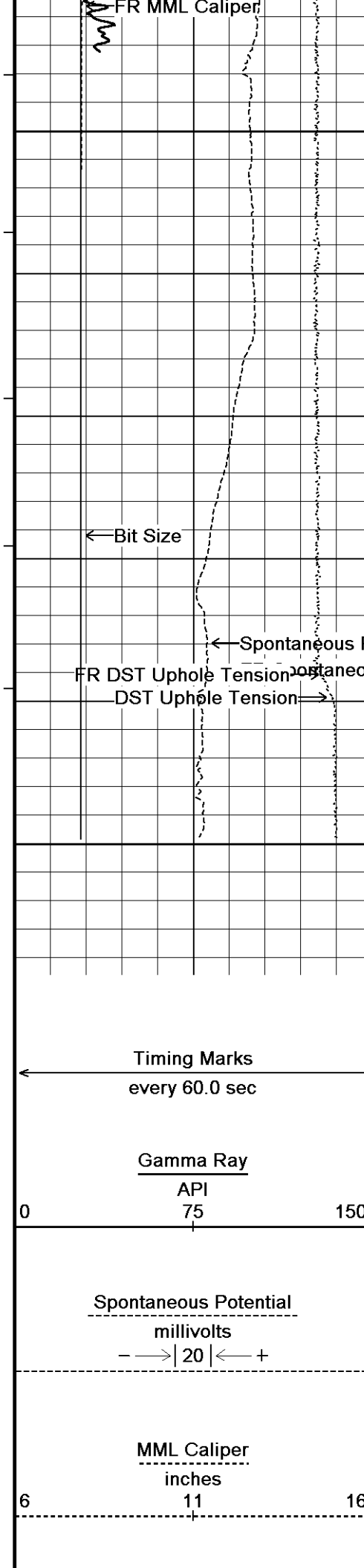
4500

126°

4550

125°



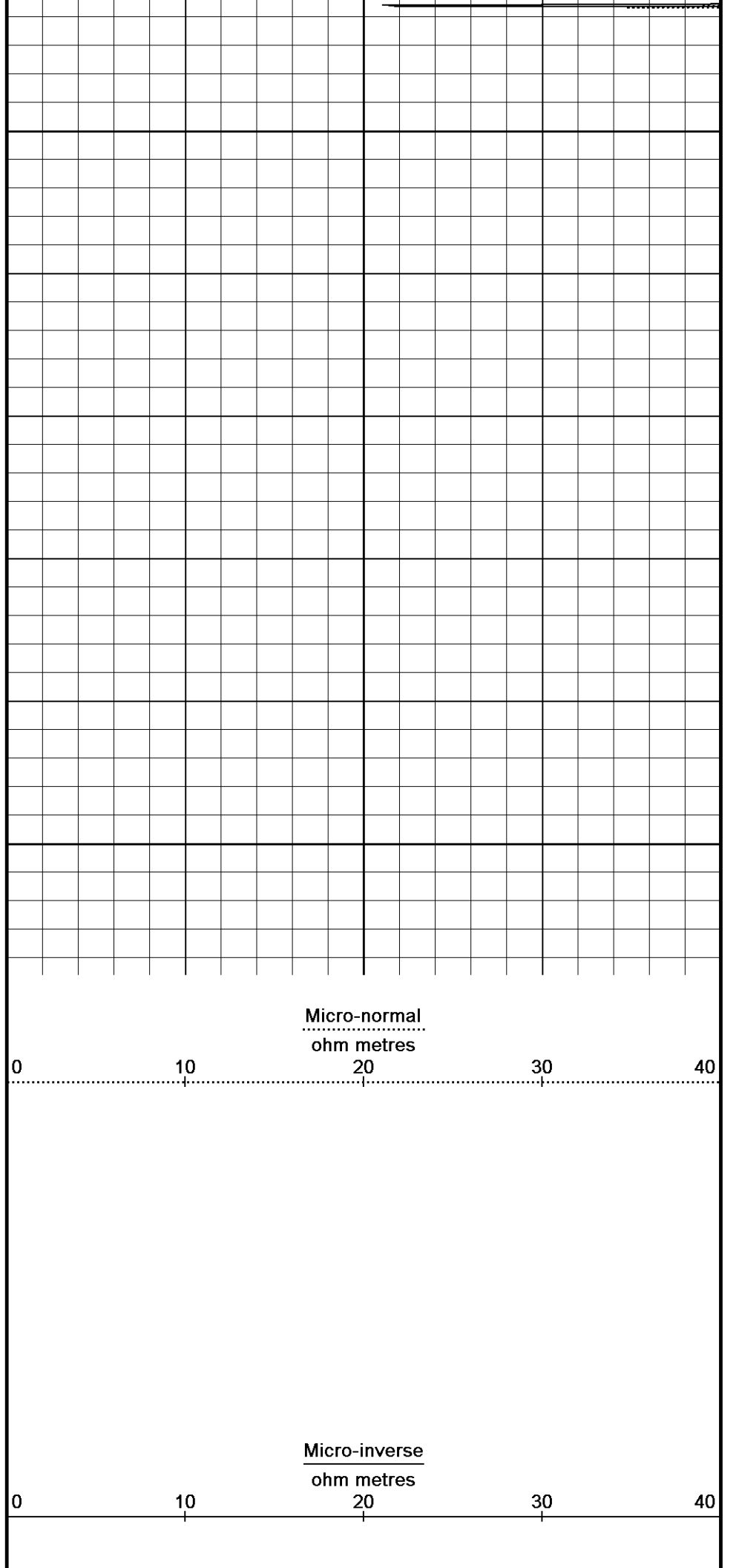


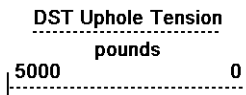
4600

4650

4658

Depth
in
Feet





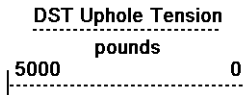
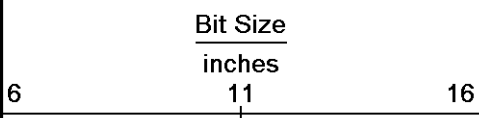
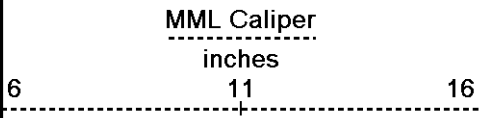
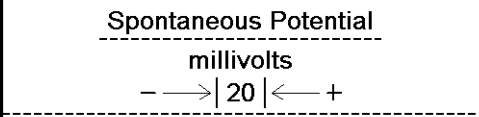
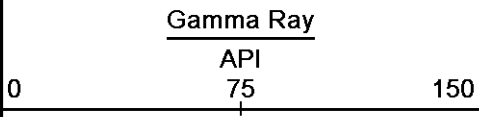
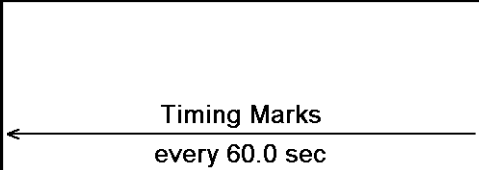
Replay
Scale
1:120

Depth Based Data - Maximum Sampling Increment 2.5cm
 Plotted on 04-JUN-2012 02:32
 Filename: C:\Minimus 11.03.4044\Data\Gran...\Grand Mesa Operating Company Phillip # 1-26_006.dta
 Recorded on 03-JUN-2012 23:05
 System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 11.03.4044

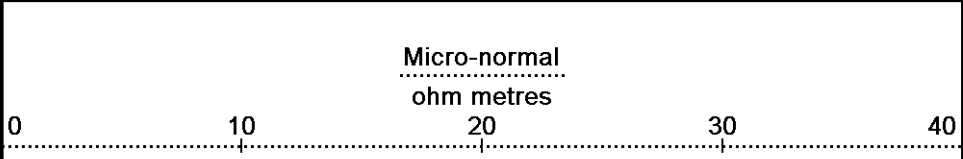
↑ 10 INCH HI RESOLUTION ↑

↓ 5 INCH REPEAT PASS ↓

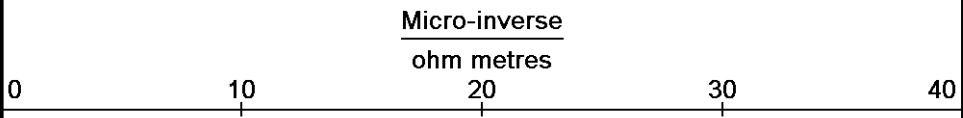
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 Plotted on 04-JUN-2012 02:32
 Filename: C:\Minimus 11.03.4044\Data\Gran...\Grand Mesa Operating Company Phillip # 1-26_003.dta
 Recorded on 03-JUN-2012 21:40
 System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 11.03.4044



Depth
in
Feet

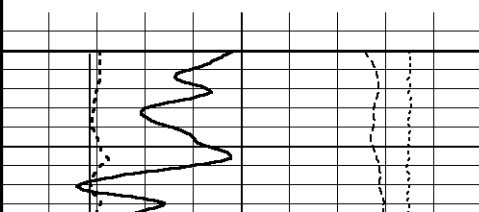


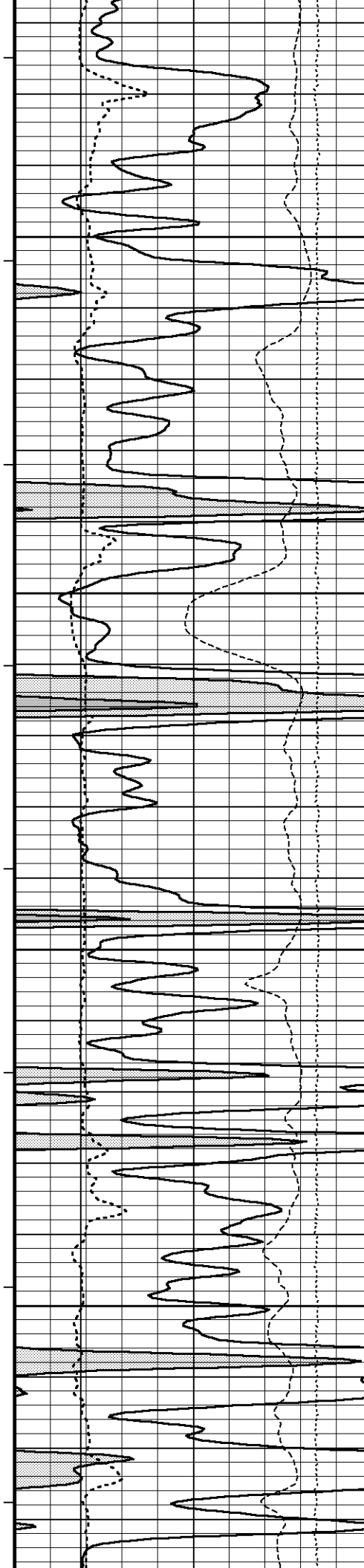
Borehole
Temp in
deg F



Replay
Scale
1:240

4300





121°

4350

122°

4400

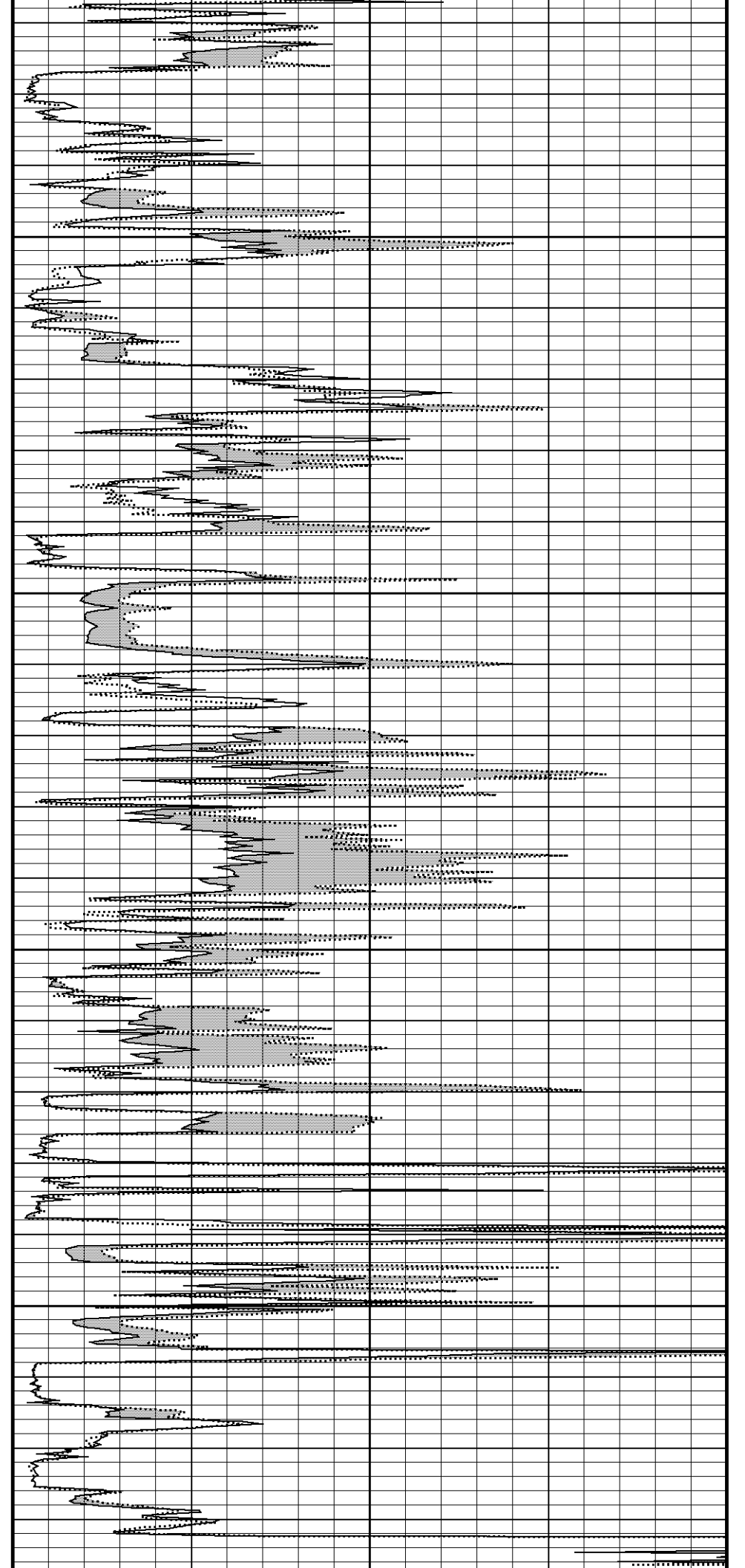
123°

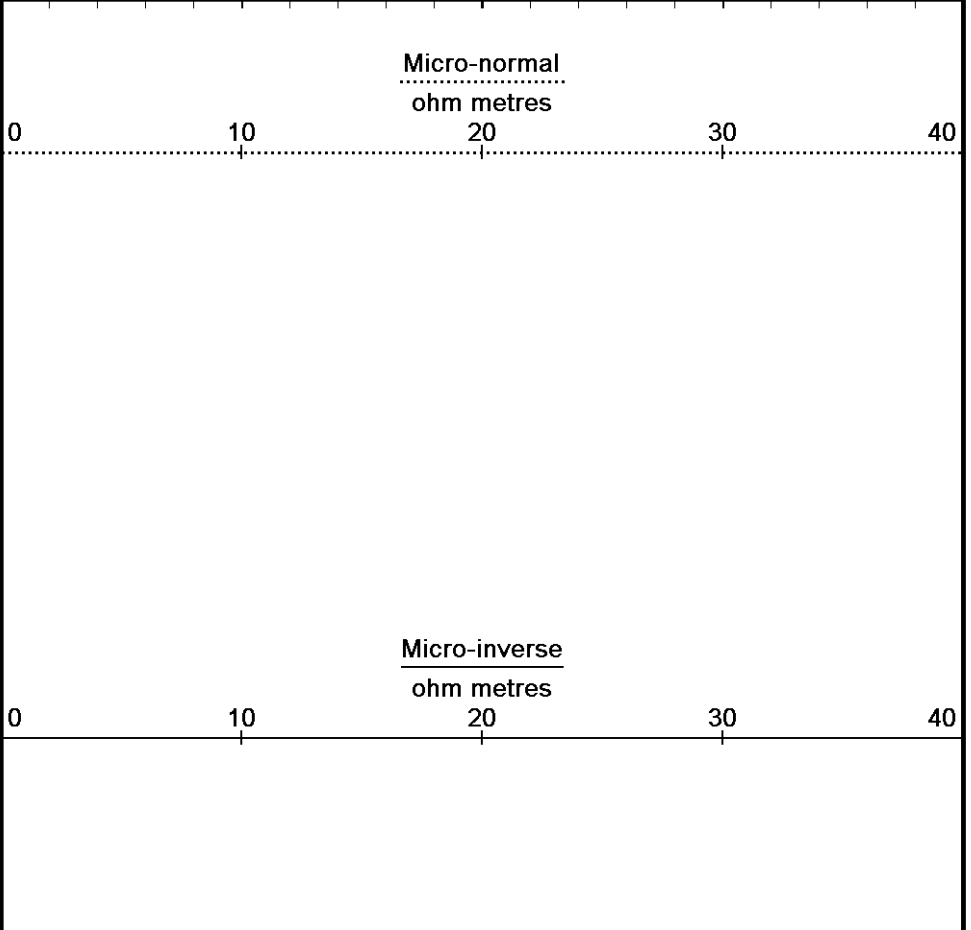
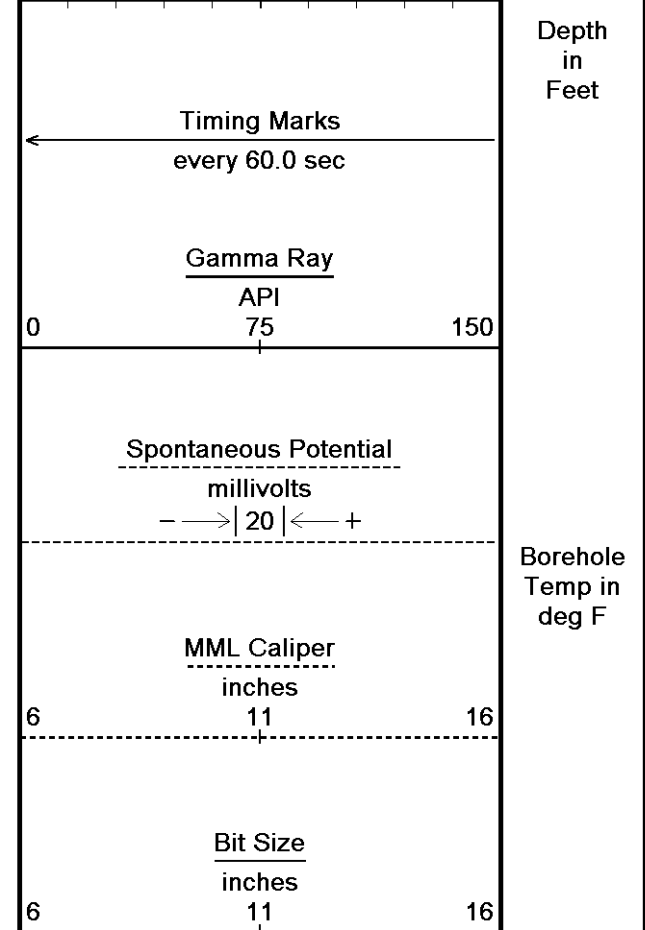
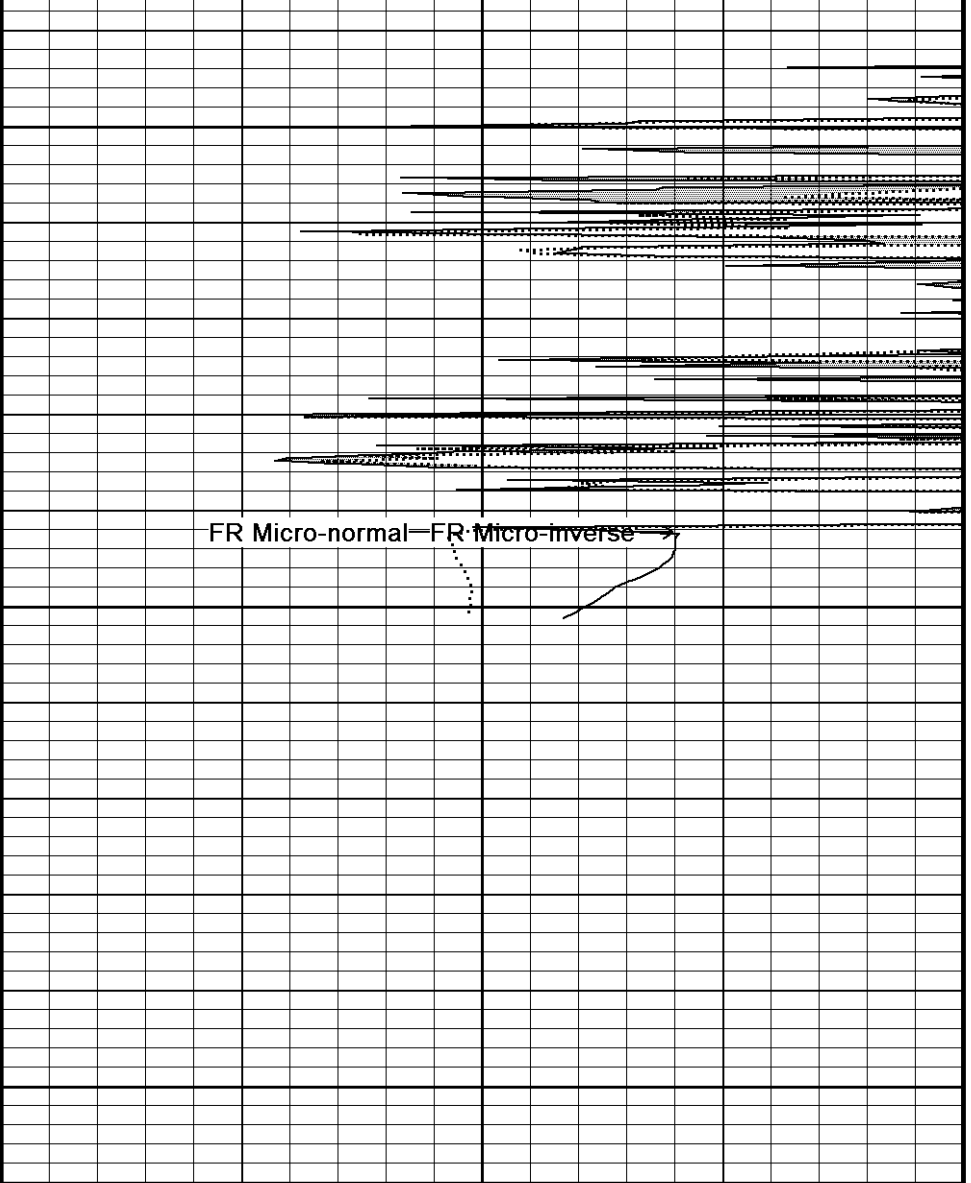
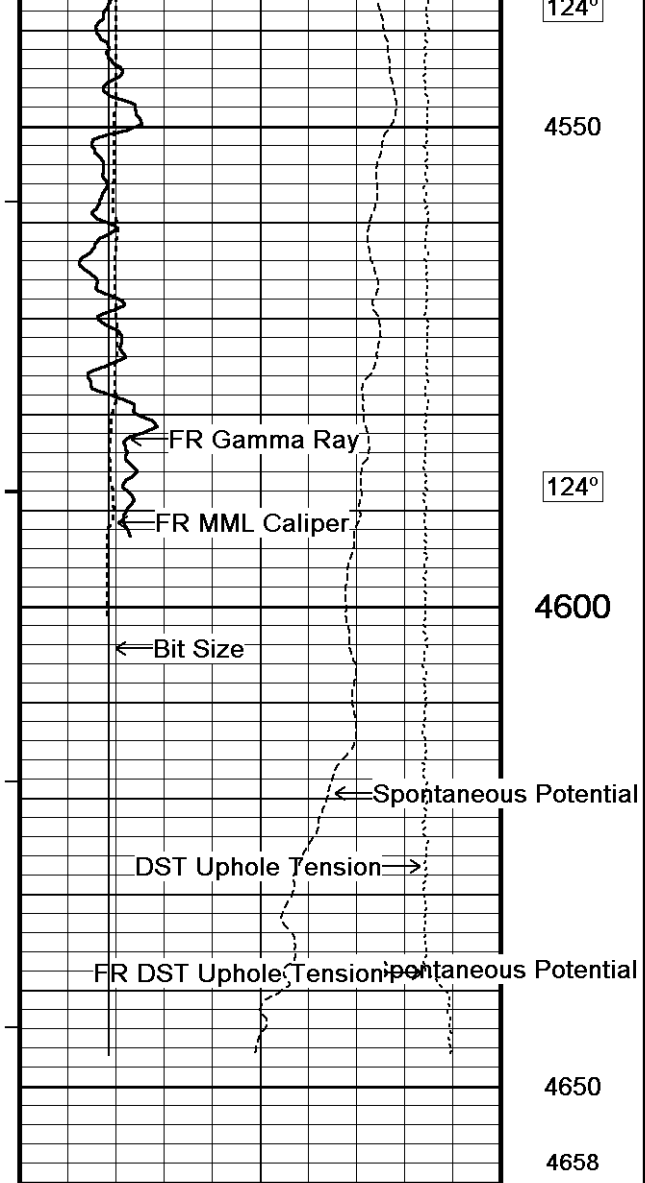
4450

124°

4500

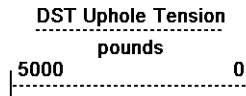
125°





Depth in Feet

Borehole Temp in deg F



Replay
Scale
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 04-JUN-2012 02:32

Filename: C:\Minimus 11.03.4044\Data\Gran...\Grand Mesa Operating Company Phillip # 1-26_003.dta

Recorded on 03-JUN-2012 21:40

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



5 INCH REPEAT PASS



BEFORE SURVEY CALIBRATION

C:\Minimus 11.03.4044\Data\Grand Mesa Operating Company Phillip # 1-26\Grand Mesa Operating Company Phillip # 1-26_003.dta

General Constants All 000

Last Edited on 03-JUN-2012,20:21

General Parameters

Mud Resistivity	0.920	ohm-metres
Mud Resistivity Temperature	81.000	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	5.500	inches
Caliper for Differential Caliper	Density Caliper	

Rwa Parameters

Porosity used	Base Density Porosity
Resistivity used	Array Ind. Four Res Rt
RWA Constant A	0.610
RWA Constant M	2.150

Gamma Calibration MCG-C 84

Field Calibration on 31-MAY-2012 09:46

	Measured	Calibrated (API)
Background	66	44
Calibrator (Gross)	1148	769
Calibrator (Net)	1082	725

Gamma Constants MCG-C 84

Last Edited on 03-JUN-2012,20:21

Gamma Calibrator Number	GR38	
Mud Density	1.10	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

SP Calibration MCG-C 84

Field Calibration on 28-MAY-2012,07:31

	Measured	Calibrated (mV)
Reference 1	103.5	100.0
Reference 2	-96.9	-100.0

High Resolution Temperature Calibration MCG-C 84

Field Calibration on 28-MAY-2012,07:32

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MCG-C 84

Last Edited on

Pre-filter Length	11
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Caliper Calibration MML-A 16

Base Calibration on 23-MAY-2012 11:59

Field Calibration on 31-MAY-2012 09:39

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14501	5.98
2	17771	7.97
3	21107	9.86
4	24905	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
6.01	5.98

Micro Normal and Micro Inverse Calibration MML-A 16

Base Calibration on 23-MAY-2012 12:04
Field Check on 31-MAY-2012 09:40

Base Calibration

Channel	Measured		Calibrated (ohm-m)	
	Resistor 1	Resistor 2	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 03-JUN-2012,13:49

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 65

Base Calibration on 23-MAY-2012 14:31
Field Check on 31-MAY-2012 09:51

Base Calibration

Ratio	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3164	98	3714	110
	32.187		33.764	

Field Calibrator at Base

Calibrated (cps)
1615
2315

Ratio 0.697

Field Check

Calibrated (cps)
1630
2345

Ratio 0.695

Neutron Constants MDN-A.B 65

Last Edited on 03-JUN-2012,20:22

Neutron Source Id	PN-521	
Neutron Jig Number	5824NE	
Epithermal Neutron	No	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.00	gm/cc
Limestone Sigma	7.10	cu
Sandstone Sigma	4.26	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	Constant Value	
Formation Pressure	0.00	kpsi
Temperature Source	Constant Value	
Temperature	68.00	degrees F
Mud Salinity	0.00	kppm
Formation Fluid Salinity Source	Constant Value	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-A.A 55

Base Calibration on 23-MAY-2012 09:37
Field Check on 31-MAY-2012 09:30

Base Calibration

Reference 1	Measured	Calibrated (ohm-m)
	0.0	0.0

Reference 1	0.0	0.0
Reference 2	951.5	126.8
Base Check		281.5
Field Check		281.6

FE Constants MFE-A.A 55

Last Edited on 03-JUN-2012,13:50

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

Sonic Constants MSS-A.A 55

Last Edited on 06-JAN-2011,18:39

Maximum Boundary Contrast	100.00	micro-sec/ft
Fluid Transit Time	189.00	micro-sec/ft
Limestone Transit Time	47.50	micro-sec/ft
Sandstone Transit Time	55.50	micro-sec/ft
Dolomite Transit Time	43.50	micro-sec/ft
Sonic used for Porosities	3-5' Compensated Sonic	
Correction for Sonde Skew	Applied	
Cycle Stretch Algorithm	Applied	
MN3FT	N/A	micro-sec
MX3FT	N/A	micro-sec
Hunt-Raymer Constant	83.13	micro-sec/ft

Sonde Mode	Compensated
Hole Type	Open Hole

Sonde Parameters

	Measured	Calibrated
Offset	N/A	0.0000
Free Pipe	N/A	N/A
Peak Amplitude Source		N/A

Waveform	Start Time (micro-sec)	Width (micro-sec)	Pre Gain	Start Gain	Discriminator (mV)
3'	N/A	N/A	N/A	N/A	N/A
4'	N/A	N/A	N/A	N/A	N/A
5'	N/A	N/A	N/A	N/A	N/A
6'	N/A	N/A	N/A	N/A	N/A

Processed Fixed Gate Parameters

Waveform Used For Processing	N/A		
Start Time (micro-sec)	End Time (micro-sec)	Discriminator (mV)	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Full Waveform Parameters

Use 3' Waveform to derive TR	N/A
Use 4' Waveform to derive TR	N/A
Use 5' Waveform to derive TR	N/A
Use 6' Waveform to derive TR	N/A
3' Waveform Discriminator Level	N/A mV
4' Waveform Discriminator Level	N/A mV
5' Waveform Discriminator Level	N/A mV
6' Waveform Discriminator Level	N/A mV
3' Waveform Filter	N/A
4' Waveform Filter	N/A
5' Waveform Filter	N/A
6' Waveform Filter	N/A

Semblance Level	N/A
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Semblance Window Width	N/A	micro-sec
Sonic 1 Despiker	N/A	N/A
Sonic 2 Despiker	N/A	N/A

Induction Calibration MAI-A.A 45

Base Calibration on 12-JAN-2012,13:34
Field Check on 31-MAY-2012 09:29

Base Calibration

Test Loop Calibration

Channel	Measured		Calibrated (mmho/m)	
	Low	High	Low	High
1	14.4	472.6	9.3	966.2
2	5.7	374.0	7.6	821.4
3	3.4	261.2	5.2	566.0
4	2.5	133.9	2.6	279.2

Array Temperature 79.4 Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	18.3	3851.3
2	0.0	0.0	31.6	3629.3
3	0.0	0.0	28.5	3049.3
4	0.0	0.0	18.2	2079.0
Deep	0.0	0.0	16.0	1911.0
Medium	0.0	0.0	42.4	4060.5
Shallow	0.0	0.0	49.4	5483.1

Array Temperature 0.0 70.7 Deg F

Induction Constants MAI-A.A 45

Last Edited on 03-JUN-2012,20:22

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 45

Field Calibration on 12-JAN-2012,13:36

	Measured	Calibrated(Deg F)
Lower	50.00	50.00

DOWNHOLE EQUIPMENT

C:\Minimus 11.03.4044\Data\Grand Mesa Operating Company Phillip # 1-26\Grand Mesa Operating Company Phillip # 1-26_003.dta

MCB-A.A 11B Tension Cablehead
MCB-A.A 155 LG: 2.40 ft WT: 19.8 lb OD: 2.24 in

MCB-A.A 11B Tension Cablehead
MCB-A.A 155 LG: 2.40 ft WT: 19.8 lb OD: 2.24 in

Compact Comms Gamma
MCG-C 84 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Comms Gamma
MCG-C 84 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 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
MPD-B 59 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Density/Caliper
MPD-B 59 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Focussed Electric
MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Focussed Electric
MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Focussed Electric
MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

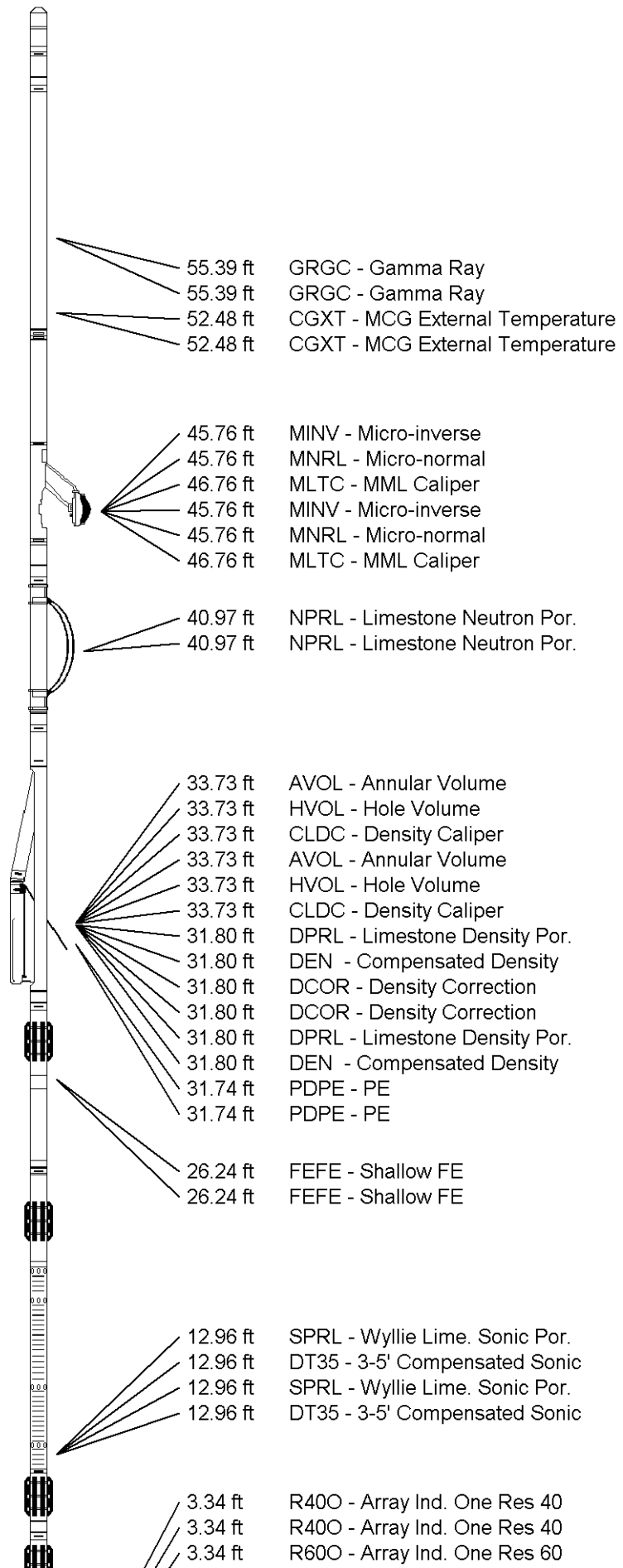
Compact Focussed Electric
MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic
MSS-A.A 55 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

Compact Sonic
MSS-A.A 55 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

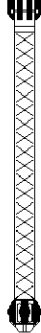
Compact Induction
MAI-A.A 45 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Compact Induction
MAI-A.A 45 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in



Total Length: 63.07 ft Weight: 476.2 lb

Total Length: 63.07 ft Weight: 476.2 lb



3.34 ft RTAO - Array Ind. One Res Rt
 3.34 ft R600 - Array Ind. One Res 60
 3.34 ft RTAO - Array Ind. One Res Rt
 0.23 ft SPCG - Spontaneous Potential
 0.23 ft SPCG - Spontaneous Potential
 Tool Zero (0.13ft from bottom)
 Tool Zero (0.13ft from bottom)
 -0.13 ft SMTU - DST Uphole Tension
 -0.13 ft SMTU - DST Uphole Tension
 All measurements relative to tool zero.
 All measurements relative to tool zero.

COMPANY GRAND MESA OPERATING COMPANY
 WELL PHILLIP # 1-26
 FIELD WILDCAT
 PROVINCE/COUNTY GOVE
 COUNTRY/STATE U.S.A. / KANSAS

Elevation Kelly Bushing	2856.00	feet	First Reading	4591.00	feet
Elevation Drill Floor	2854.00	feet	Depth Driller	4631.00	feet
Elevation Ground Level	2851.00	feet	Depth Logger	4638.00	feet



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