MICRORESISTIVITY LOG

Weatherford

COMPANY	GRAND MESA OPERATING
WELL	SPONEY #1-33
FIELD	WILDCAT
PROVINCE/COUNTY	GOVE
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	1052' FSL & 583' FWL

40 Years of Wireline 1970 2010

SEC	TWP	RGE	Other Services
33	13S	31W	MAI/MFE
			MDN/MPD

API Number 15-063-21926
Permit Number

Permanent Datum G.L., Elevation 2929 feet
Log Measured From K.B. @ 5 FEET above Permanent Datum
Drilling Measured From K.B.

Elevations:	feet
KB	2934.00
DF	2932.00
GL	2929.00

Date	28-JUL-2011			
Run Number	ONE			
Depth Driller	4680.00	feet		
Depth Logger	4675.00	feet		
First Reading	4640.00	feet		
Last Reading	3600.00	feet		
Casing Driller	222.00	feet		
Casing Logger	221.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.40 lb/USg	52.00 CP		
PH / Fluid Loss	9.50	9.60 ml/30Min		
Sample Source	FLOWLINE			
Rm @ Measured Temp	1.05 @ 91.0	ohm-m		
Rmf @ Measured Temp	0.84 @ 91.0	ohm-m		
Rmc @ Measured Temp	1.26 @ 91.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.80 @120.0	ohm-m		
Time Since Circulation	4 HOURS			
Max Recorded Temp	120.00	deg F		
Equipment Name	COMPACT			
Equipment / Base	13057	LIB		
Recorded By	R. HOFFMAN			
Witnessed By	BOB PETERSEN			
S.O. # / JOB #	3531112		3531112	

BOREHOLE RECORD

Last Edited: 28-JUL-2011 02:19

Bit Size inches	Depth From feet	Depth To feet
7.875	221.00	4675.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	221.00	24.00

REMARKS

Tools Ran: MCG, MML, MDN, MPD, SKJ, MFE, MAI.
Hardware Used: MDN Dual Eccentralizer used. MPD 8 inch profile plate used. MFE 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 = 240 cu. ft.
Service order #3531112
Rig: Murfin Drilling Rig #24
Engineer: R. Hoffman
Operator(s): J. LaPoint

5 INCH MAIN PASS

5 INCH MAIN PASS

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 31-AUG-2011 09:38
Filename: C:\DOCUME~1\sysadmin\LOCALS~1\...\Grand Mesa Sponey #1-33_002 spooled section.dta
Recorded on 28-JUL-2011 03:10
System Versions: Logged with 11.02.3186 Plotted with 12.01.3513

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150

Spontaneous Potential
millivolts
– 20 +

MML Caliper
inches
6 11 16

Bit Size
inches
6 11 16

DST Uphole Tension
pounds
5000 0

Depth in Feet

Borehole Temp in deg F

Replay Scale 1:240

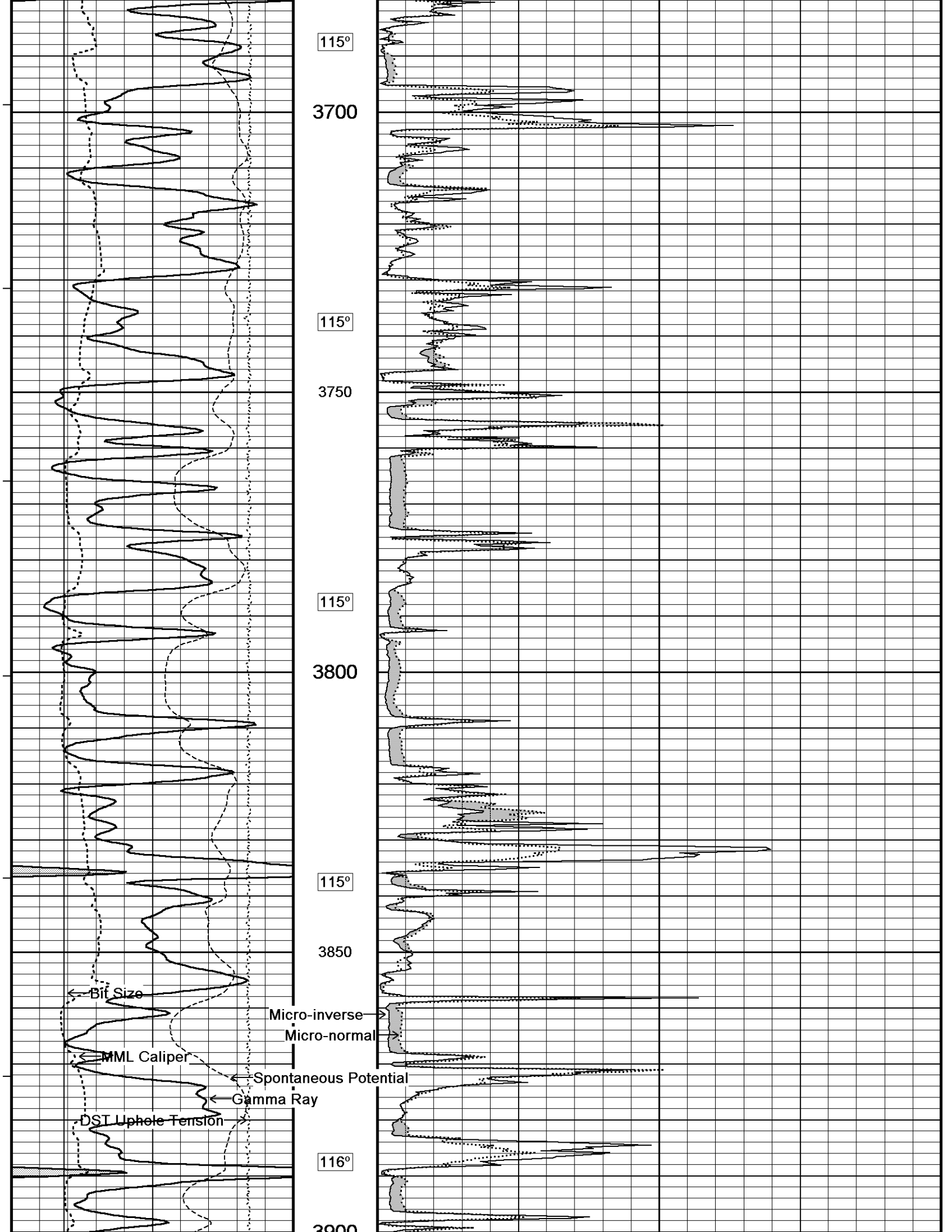
Micro-normal
ohm metres
0 10 20 30 40

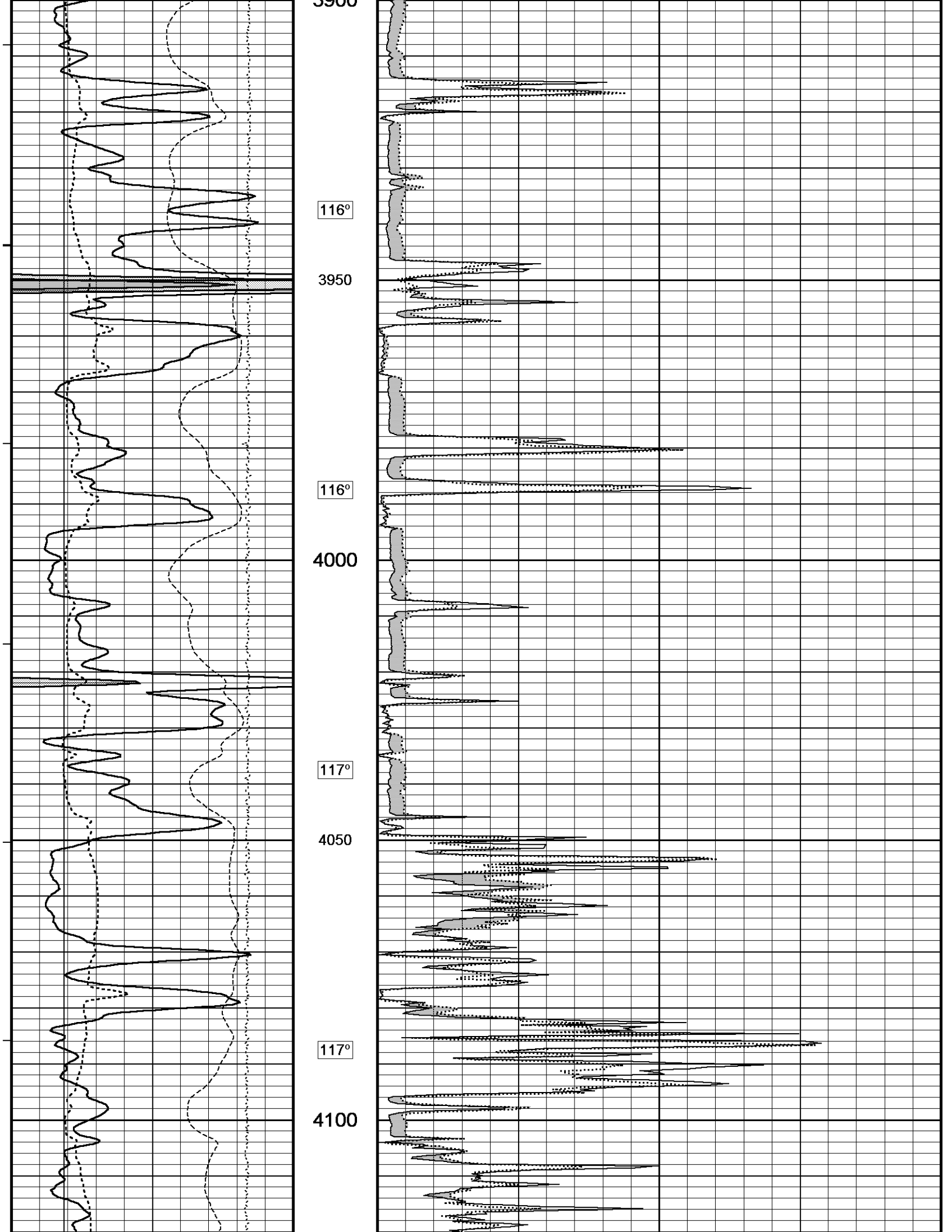
Micro-inverse
ohm metres
0 10 20 30 40

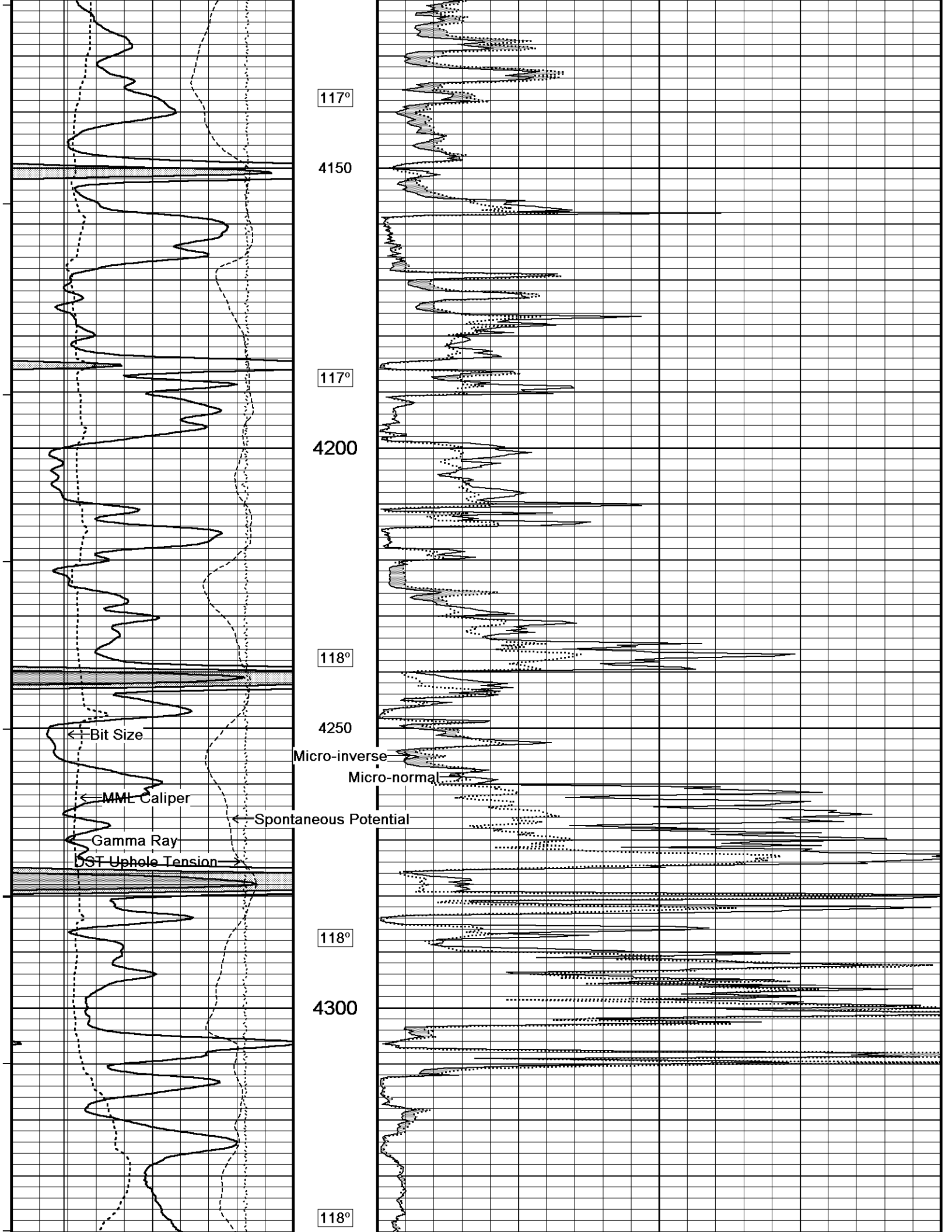
3600

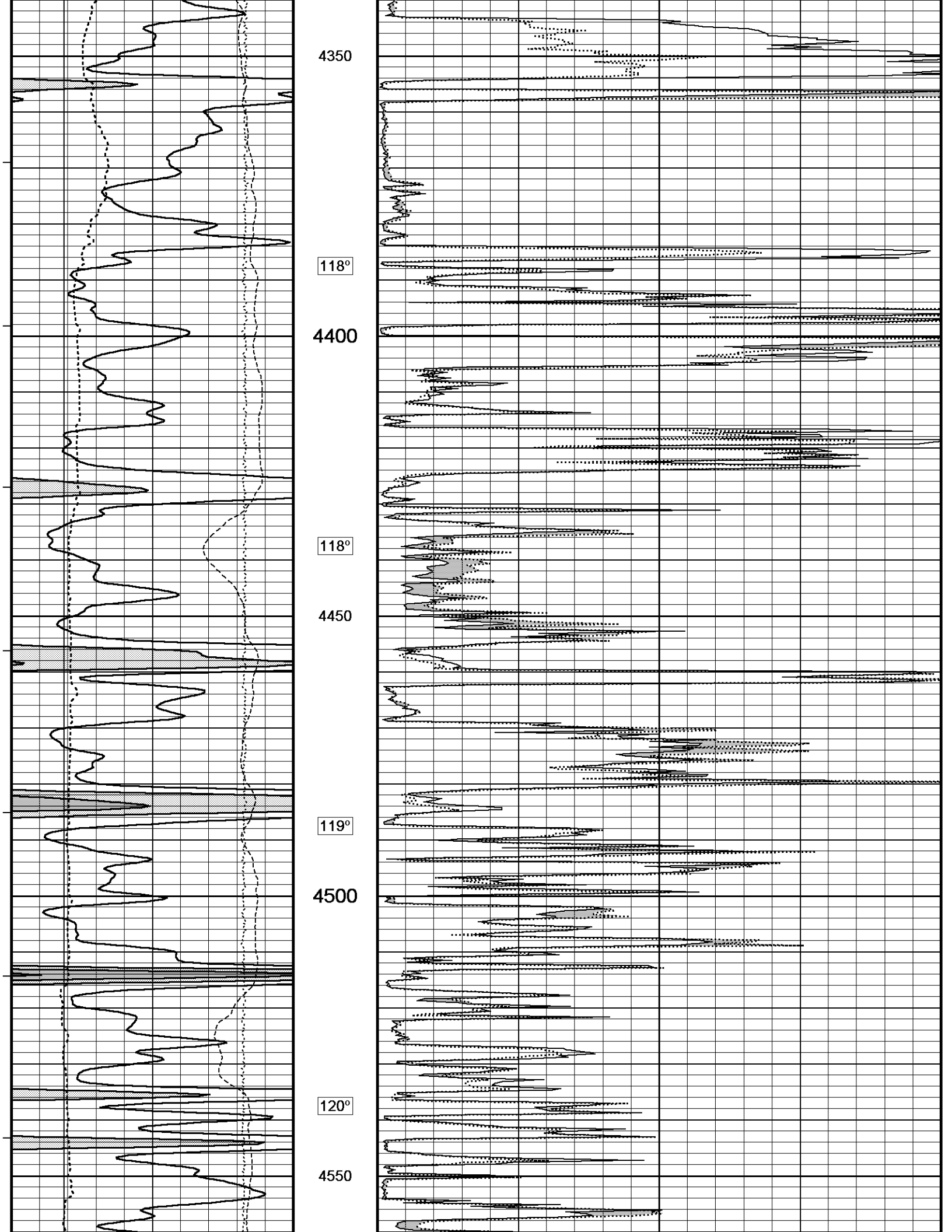
115°

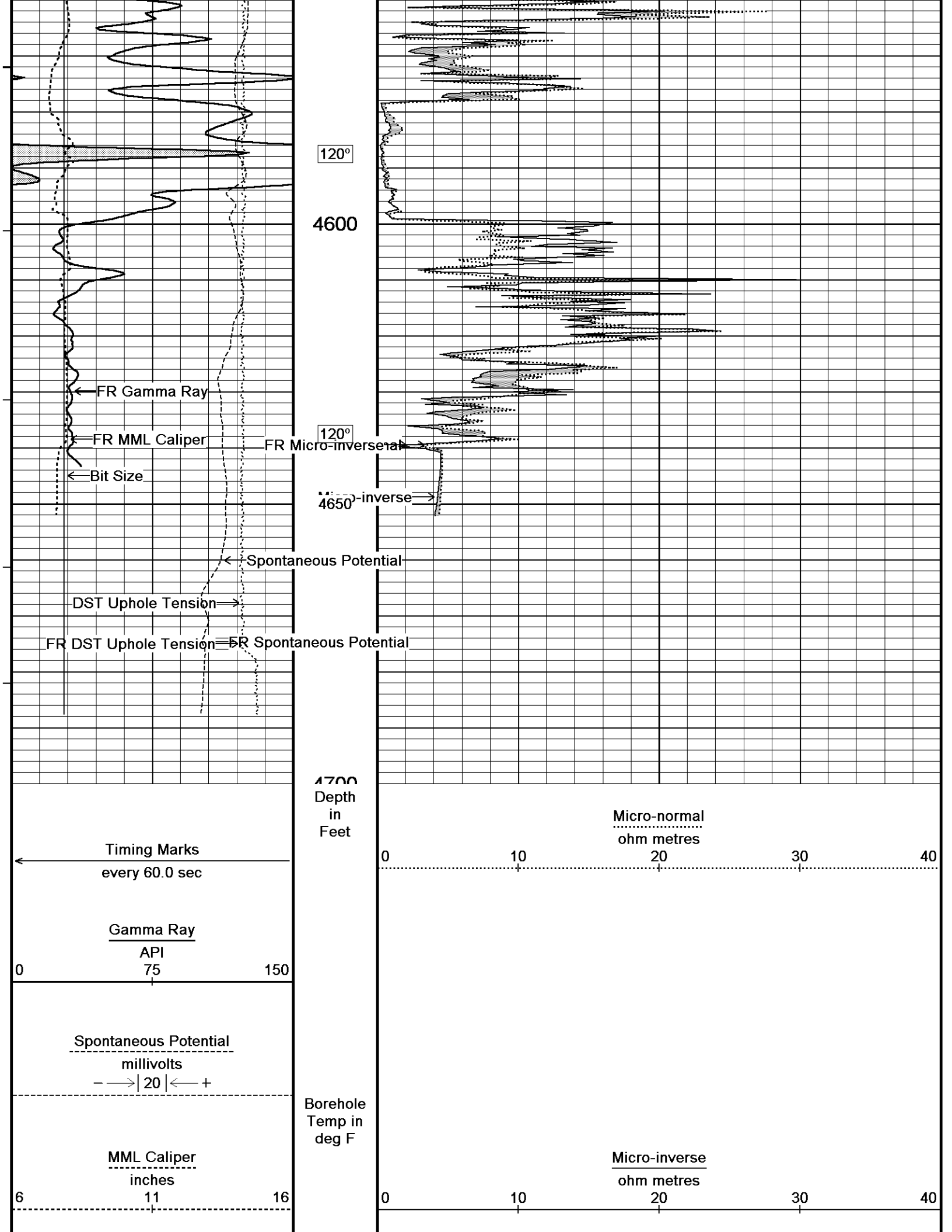
3650


115°
3700
115°
3750
115°
3800
115°
3850
116°
3900
Bit Size
Micro-inverse
Micro-normal
MML Caliper
Spontaneous Potential
Gamma Ray
DST Uphole Tension


3900
116°
3950
116°
4000
117°
4050
117°
4100


117°
4150
117°
4200
118°
4250
Bit Size
Micro-inverse
Micro-normal
MML Caliper
Spontaneous Potential
Gamma Ray
DST Uphole Tension
118°
4300
118°


4350
118°
4400
118°
4450
119°
4500
120°
4550


120°
4600
FR Gamma Ray
FR MML Caliper
Bit Size
120°
FR Micro-inverse
4650
Spontaneous Potential
DST Uphole Tension
FR DST Uphole Tension
FR Spontaneous Potential
Depth in Feet
Micro-normal
ohm metres
0
10
20
30
40
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
Spontaneous Potential
millivolts
20
Borehole Temp in deg F
MML Caliper
inches
6
11
16
Micro-inverse
ohm metres
0
10
20
30
40

Bit Size
inches
6 11 16

DST Uphole Tension
pounds
5000 0

Replay
Scale
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 31-AUG-2011 09:38
Filename: C:\DOCUME~1\sysadmin\LOCALS~1\...\Grand Mesa Sponey #1-33_002 spooled section.dta — Recorded on 28-JUL-2011 03:10
System Versions: Logged with 11.02.3186 Plotted with 12.01.3513

5 INCH MAIN PASS

5 INCH REPEAT PASS

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 31-AUG-2011 09:38
Filename: C:\DOCUME~1\sysadmin\LOCALS~1\Temp\...\Copy of Grand Mesa Sponey #1-33_001.dta — Recorded on 28-JUL-2011 02:04
System Versions: Logged with 11.02.3186 Plotted with 12.01.3513

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150

Spontaneous Potential
millivolts
– → | 20 | ← +

MML Caliper
inches
6 11 16

Bit Size
inches
6 11 16

DST Uphole Tension
pounds
5000 0

Depth
in
Feet

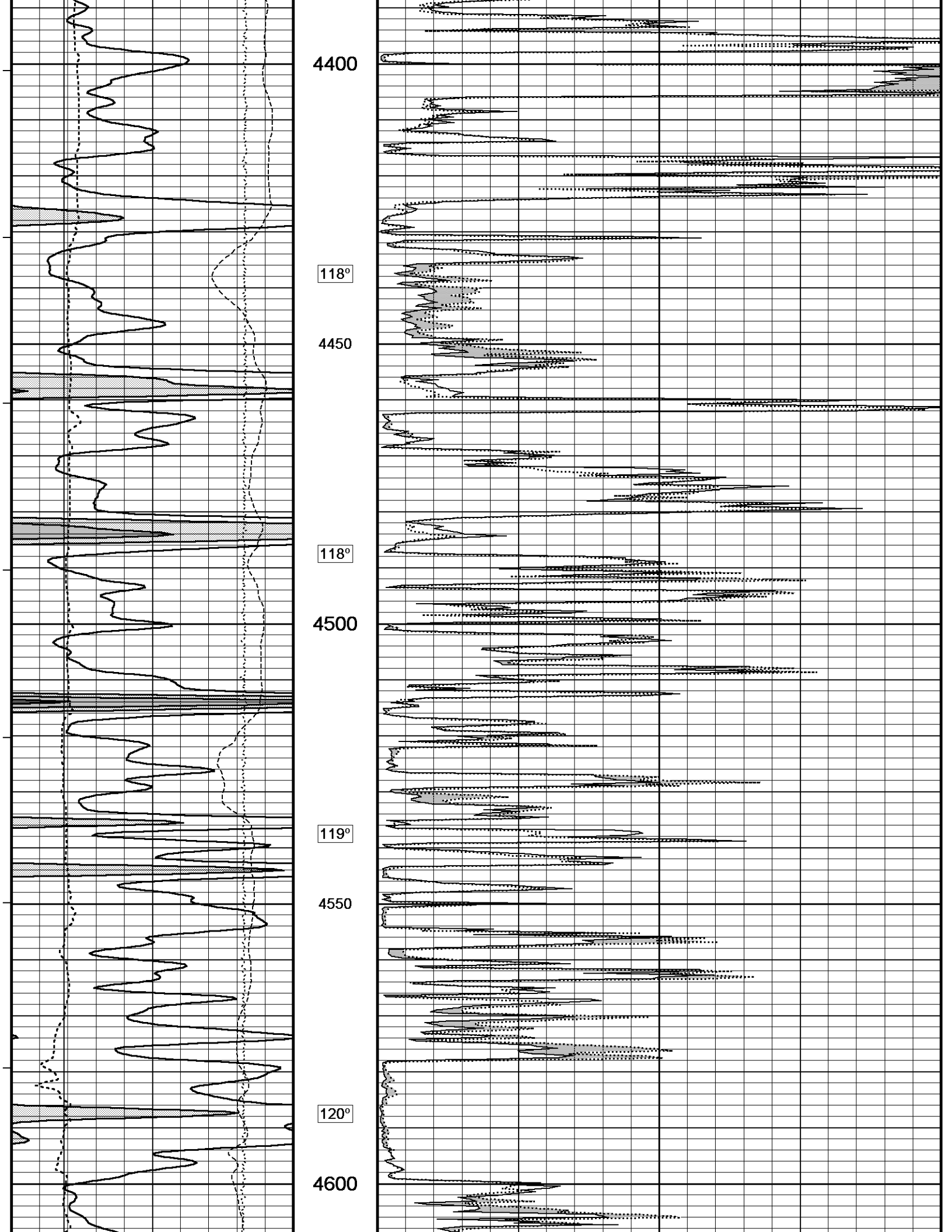
Borehole
Temp in
deg F

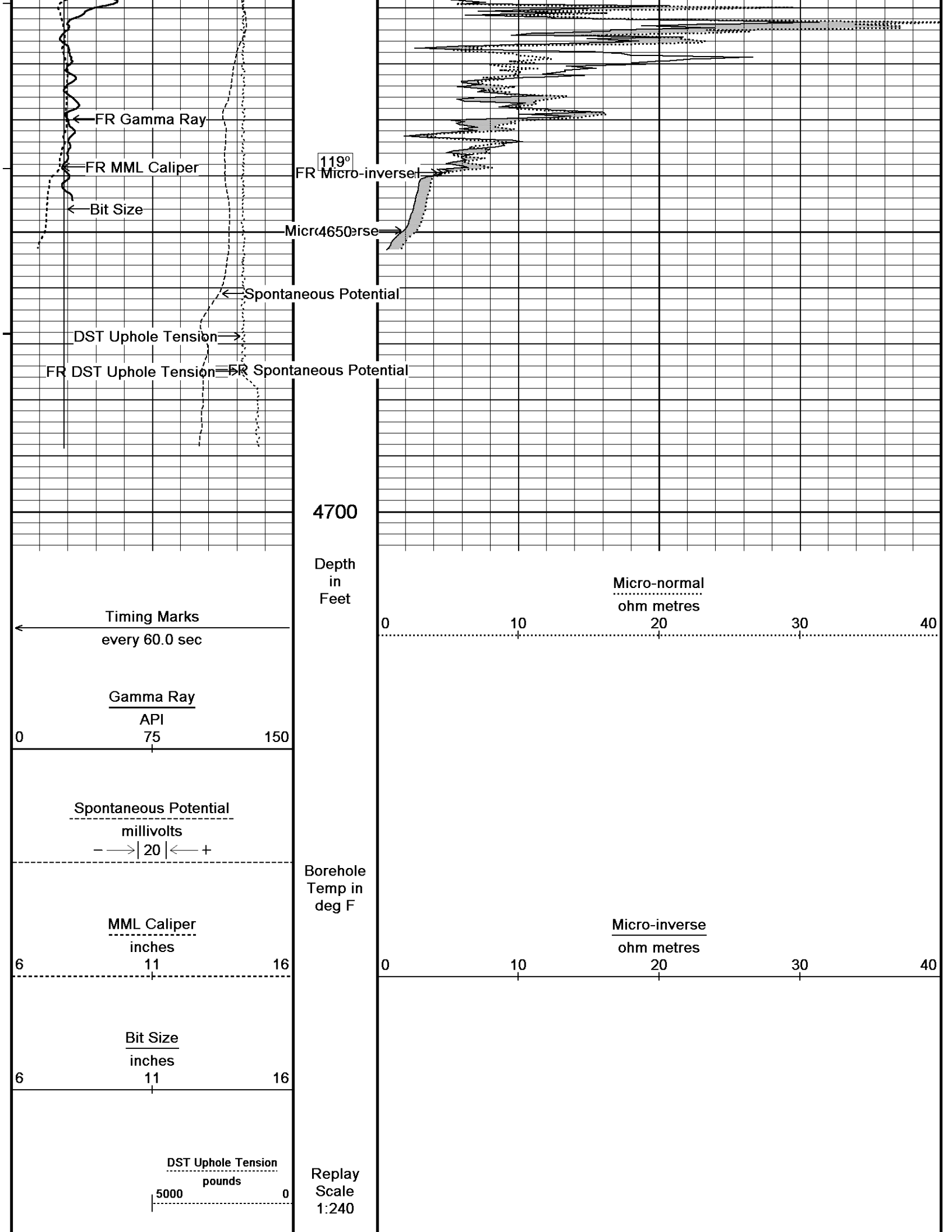
Replay
Scale
1:240

4374

Micro-normal
ohm metres
0 10 20 30 40

Micro-inverse
ohm metres
0 10 20 30 40


4400
118°
4450
118°
4500
119°
4550
120°
4600


FR Gamma Ray
FR MML Caliper
Bit Size
119°
FR Micro-inverse
Micro-inverse
4650
Spontaneous Potential
DST Uphole Tension
FR DST Uphole Tension
FR Spontaneous Potential
4700
Depth in Feet
Micro-normal
ohm metres
0
10
20
30
40
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
Spontaneous Potential
millivolts
20
Borehole Temp in deg F
MML Caliper
inches
6
11
16
Micro-inverse
ohm metres
0
10
20
30
40
Bit Size
inches
6
11
16
DST Uphole Tension
pounds
5000
0
Replay Scale 1:240

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 31-AUG-2011 09:38
Filename: C:\DOCUME~1\sysadmin\LOCALS~1\Temp\...\Copy of Grand Mesa Sponey #1-33_001.dta — Recorded on 28-JUL-2011 02:04
System Versions: Logged with 11.02.3186 Plotted with 12.01.3513

↑ 5 INCH REPEAT PASS ↑

BEFORE SURVEY CALIBRATION

C:\DOCUME~1\sysadmin\LOCALS~1\Temp\Weatherford PreView\0\Grand Mesa Sponey #1-33_002 spooled section.dta

General Constants All 000

Last Edited on 28-JUL-2011 01:48

General Parameters		
Mud Resistivity	1.050	ohm-metres
Mud Resistivity Temperature	91.000	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. One Res Rt	
RWA Constant A	1.000	
RWA Constant M	2.000	

High Resolution Temperature Calibration MCG-B 34

Field Calibration on 05-MAR-2011 23:56

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

High Resolution Temperature Constants MCG-B 34

Last Edited on

Pre-filter Length	11	

Gamma Calibration MCG-B 34

Field Calibration on 27-JUL-2011 15:31

	Measured	Calibrated (API)
Background	70	48
Calibrator (Gross)	1122	773
Calibrator (Net)	1053	725

Gamma Constants MCG-B 34

Last Edited on 28-JUL-2011 01:47

Gamma Calibrator Number	grc38	
Mud Density	1.13	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

Micro Normal and Micro Inverse Calibration MML-A 4

Base Calibration on 16-MAY-2011 10:23
Field Check on 27-JUL-2011 15:16

Base Calibration

	Measured		Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.1	60.1	2.6	12.8
Micro Inverse	15.6	78.3	1.7	8.4

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	32.2	32.2
Micro Inverse	16.3	16.3

Micro Normal and Micro Inverse Constants MML-A 4

Last Edited on 19-JUL-2011 12:17

Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159
Micro Normal K Factor	0.5110

Micro Inverse K Factor	0.3380	
Standoff Offset	N/A	inches

Caliper Calibration MML-A 4

Base Calibration on 16-MAY-2011 10:38
Field Calibration on 27-JUL-2011 15:15

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14953	5.98
2	18280	7.97
3	21656	9.86
4	25588	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
6.03	5.98

DOWNHOLE EQUIPMENT

C:\DOCUME~1\sysadmin\LOCALS~1\Temp\Weatherford PreView\0\Grand Mesa Sponey #1-33_002 spooled section.dta

3/8" Triple Cone Cable Head (MCB C A)
MCB-C.A 5 LG: 1.58 ft WT: 15.4 lb OD: 2.24 in

Compact Comms Gamma
MCG-B 34 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-log
MML-A 4 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

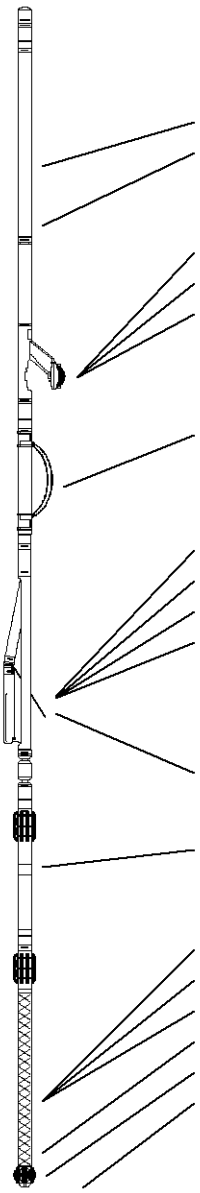
Compact Density/Caliper
MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 37 LG: 2.17 ft WT: 24.3 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 Induction
MAI-A.A 45 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 51.90 ft Weight: 423.3 lb



45.04 ft	GRGC - Gamma Ray
42.13 ft	CGXT - MCG External Temperature
35.41 ft	MINV - Micro-inverse
35.41 ft	MNRL - Micro-normal
36.40 ft	MLTC - MML Caliper
30.61 ft	NPRL - Limestone Neutron Por.
23.37 ft	CLDC - Density Caliper
21.44 ft	DPRL - Limestone Density Por.
21.44 ft	DEN - Compensated Density
21.44 ft	DCOR - Density Correction
21.38 ft	PDPE - PE
13.72 ft	FEFE - Shallow FE
3.34 ft	R40O - Array Ind. One Res 40
3.34 ft	RTAO - Array Ind. One Res Rt
3.34 ft	R60O - Array Ind. One Res 60
0.23 ft	SPCG - Spontaneous Potential
Tool Zero	(0.13ft from bottom)
-0.13 ft	SMTU - DST Uphole Tension

All measurements relative to tool zero.

COMPANY	GRAND MESA OPERATING
WELL	SPONEY #1-33
FIELD	WILDCAT

PROVINCE/COUNTY	GOVE
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2934.00	feet	First Reading	4640.00	feet
Elevation Drill Floor	2932.00	feet	Depth Driller	4680.00	feet
Elevation Ground Level	2929.00	feet	Depth Logger	4675.00	feet

Weatherford®

MICRORESISTIVITY LOG

40 Years of Wireline 1970 2010