MICRORESISTIVITY LOG

COMPANY	O'BRIEN RESOURCES, LLC
WELL	BOOMHOWER 36 #3
FIELD	BOOMHOWER
PROVINCE/COUNTY	LANE
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	1309' FSL & 2300' FEL NE NW SW SE

SEC	TWP	RGE	Other Services
36	17S	29W	MPD/MDN MAI/MFE

API Number 15-101-22464
Permit Number

Permanent Datum G.L, Elevation 2774 feet
Log Measured From KB
Drilling Measured From K.B. @ 10 FEET

Elevations:	feet
KB	2784.00
DF	2782.00
GL	2774.00

Date	25-OCT-2013			
Run Number	ONE			
Service Order	3539911			
Depth Driller	4685.00	feet		
Depth Logger	4683.00	feet		
First Reading	4650.00	feet		
Last Reading	3300.00	feet		
Casing Driller	275.00	feet		
Casing Logger	276.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.30 lb/USg	44.00 CP		
PH / Fluid Loss	11.00	5.60 ml/30Min		
Sample Source	FLOWLINE			
Rm @ Measured Temp	1.02 @ 78.0	ohm-m		
Rmf @ Measured Temp	0.82 @ 78.0	ohm-m		
Rmc @ Measured Temp	1.22 @ 78.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.69 @115.0	ohm-m		
Time Since Circulation	3 HOURS			
Max Recorded Temp	115.00	deg F		
Equipment / Base	13057	LIB		
Recorded By	ROB HOFFMAN			
Witnessed By	KURT TALBOTT			
JOB #	LB13-305			

BOREHOLE RECORD

Last Edited: 25-OCT-2013 06:19

Bit Size inches	Depth From feet	Depth To feet
7.875	275.00	4685.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	275.00	24.00

REMARKS

- SOFTWARE ISSUE: 13.05.9583
- MCG, MML, MDN, MPD, MFE, MAI RAN IN COMBINATION
- HARDWARE: DUAL BOWSPRING USED ON MDN
  0.5 INCH STANDOFF USED ON MFE_MAI
- 2.71 G/CC LIMESTONE DENSTIY MATRIX USED TO CALCULATE POROSITY
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL EFFECT DATA QUALITY
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMRES REQUEST
- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 1732 CU.FT.
- ANNULAR HOLE VOLUME WITH 4.5 INCH PRODUCTION CASING FROM TD TO 3300 FEET: 339 CU.FT.
- RIG: VAL DRILLING RIG #2

- ENGINEER: ROB HOFFMAN, JOHN LAPOINT

- OPERATOR: CARLOS RAMIREZ

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 25-OCT-2013 14:54

Filename: C:\Minimus 13.05.9583\Log...\O'Brien Resources Boomhower 36 #3_002 spooled section.dta — Recorded on 25-OCT-2013 09:30

System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Spontaneous Potential
millivolts
– → | 20 | ← +

MMR 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

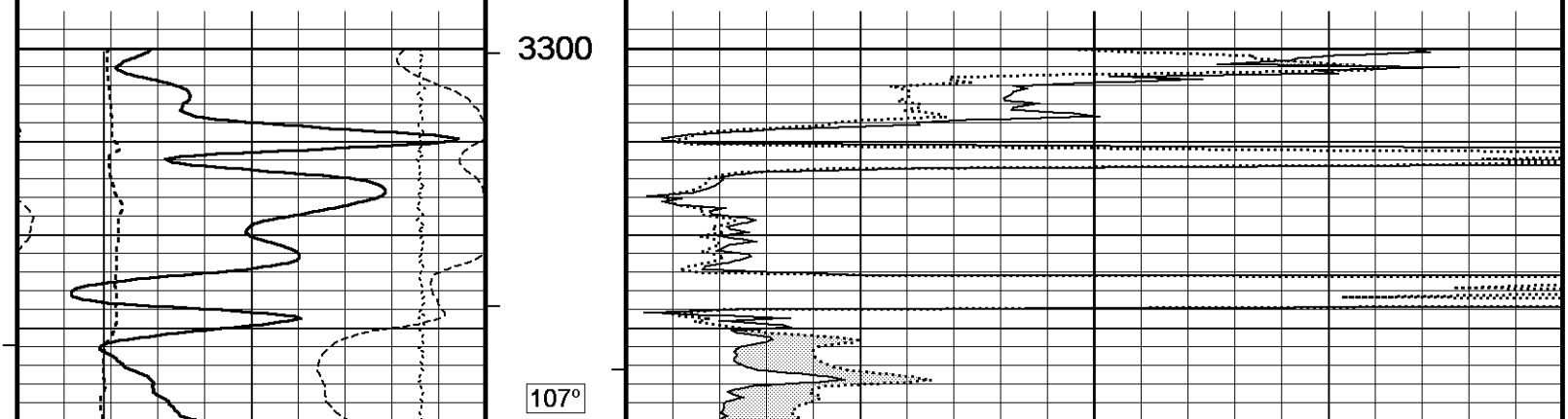
HVI every 10 cu ft

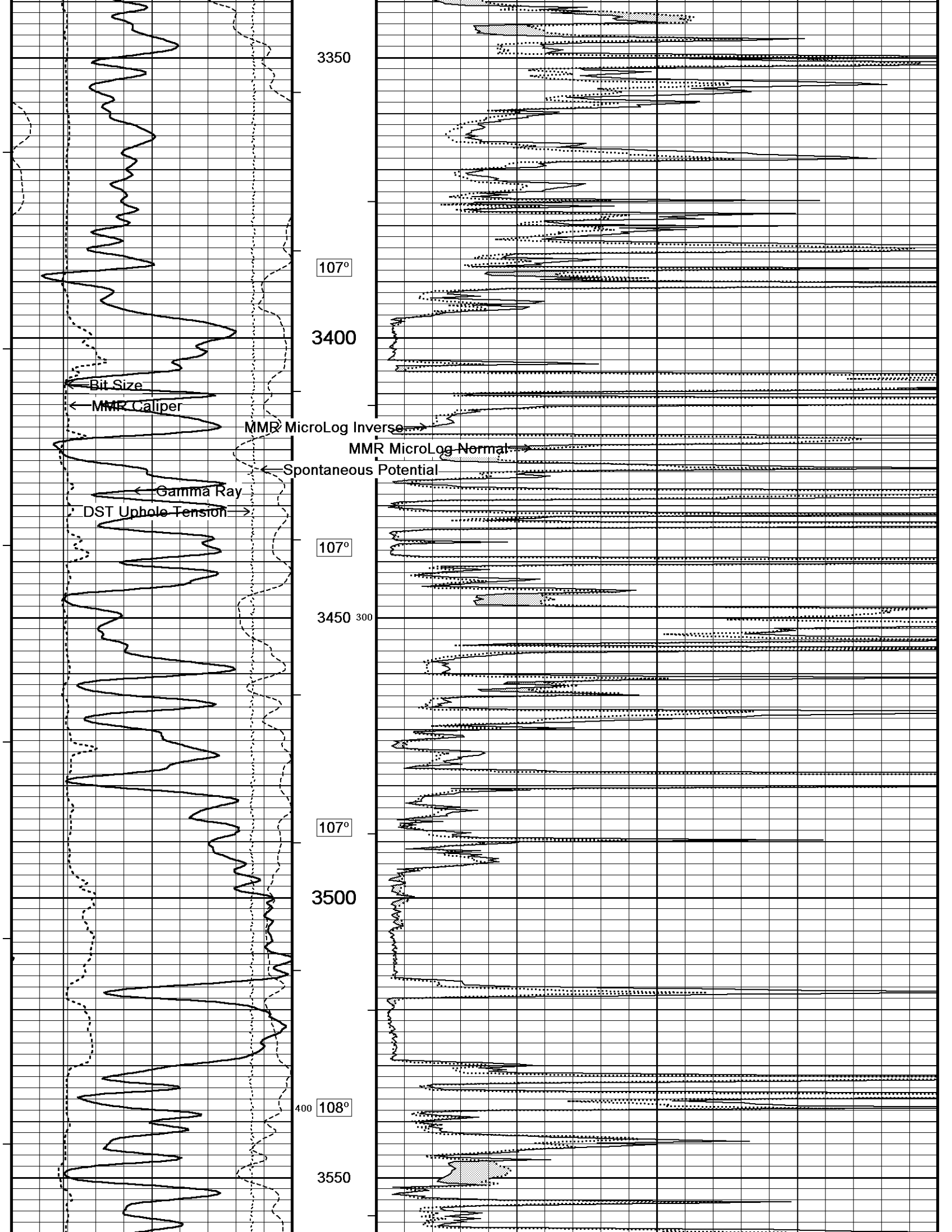
Annular Integral every 10 cu ft

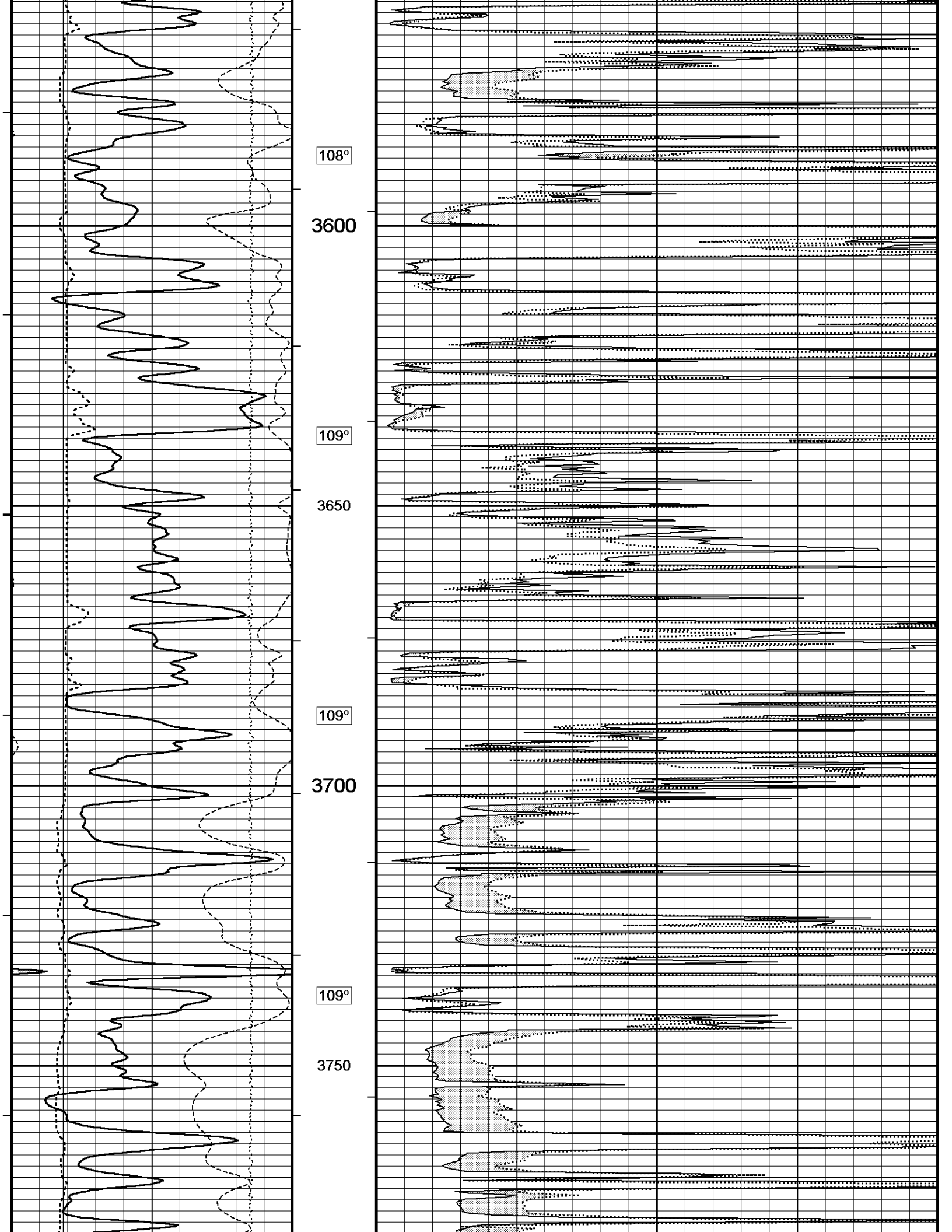
Replay Scale 1:240

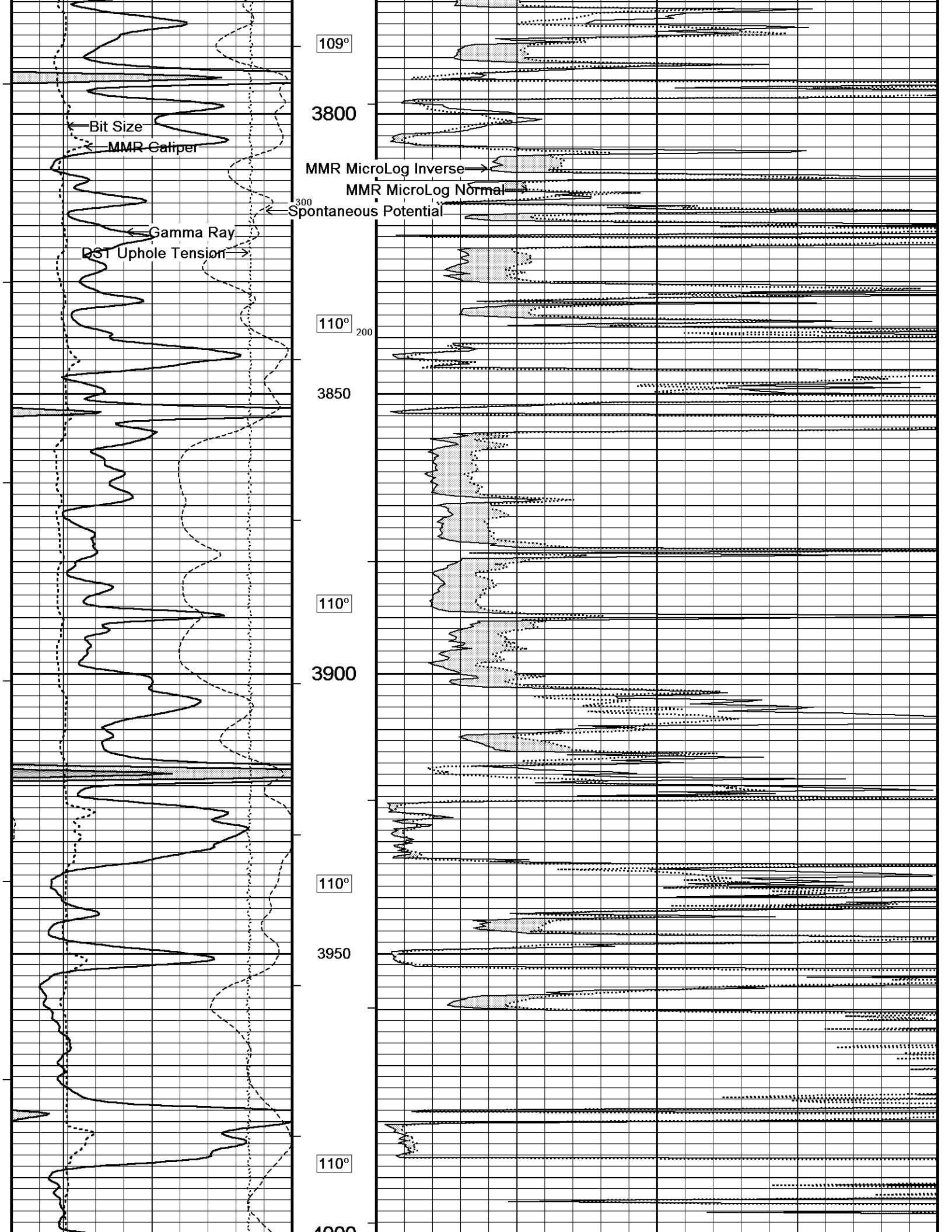
MMR MicroLog Normal
ohm metres
0 10 20 30 40

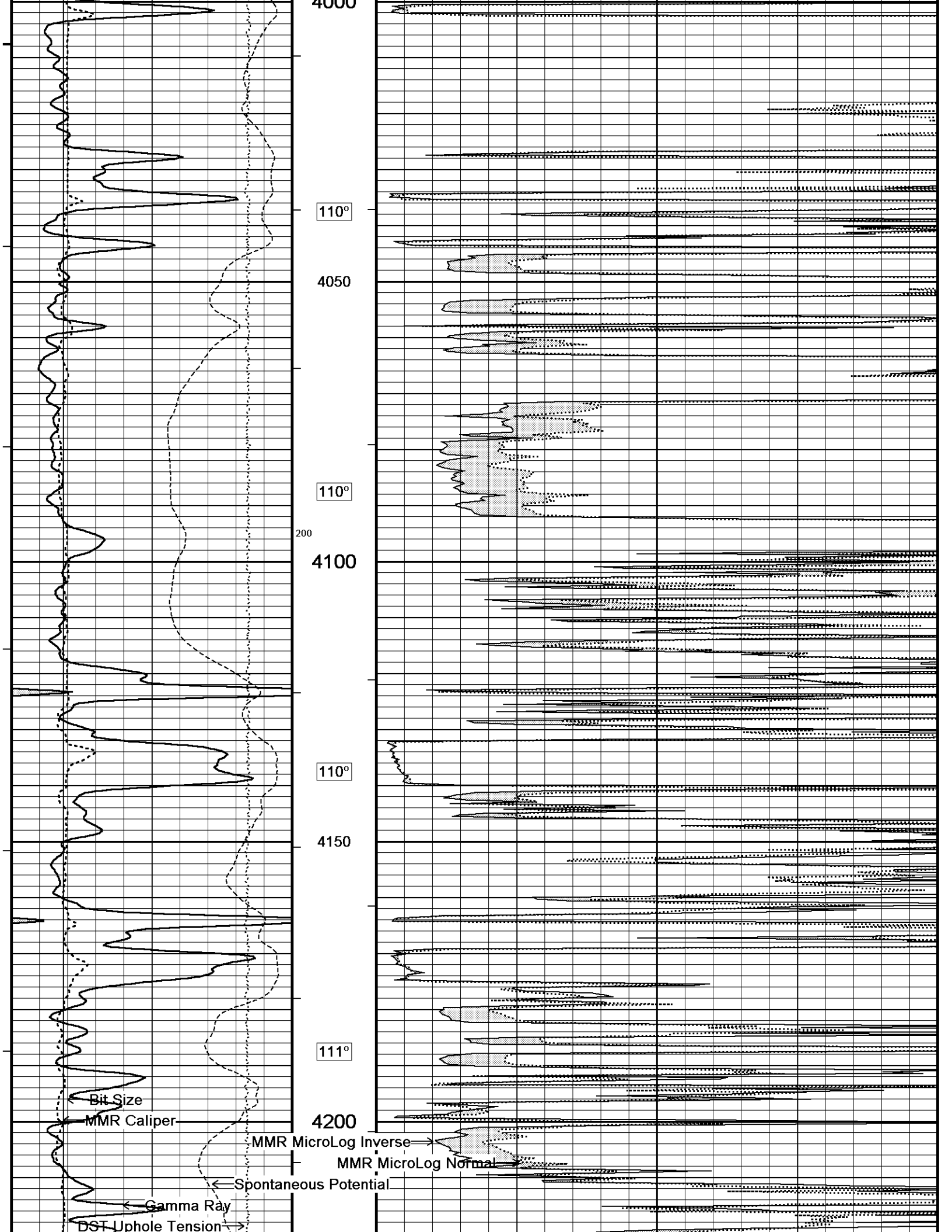
MMR MicroLog Inverse
ohm metres
0 10 20 30 40

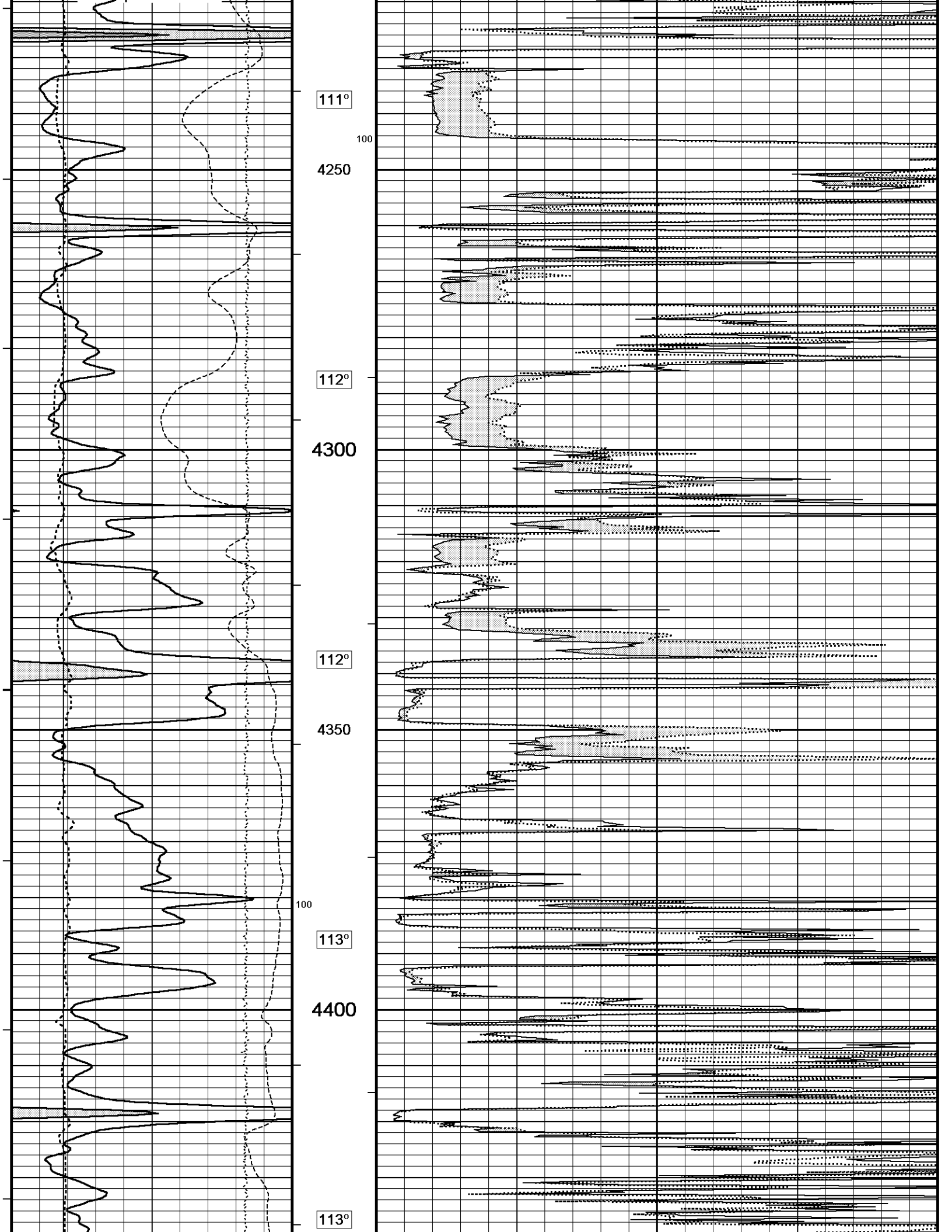


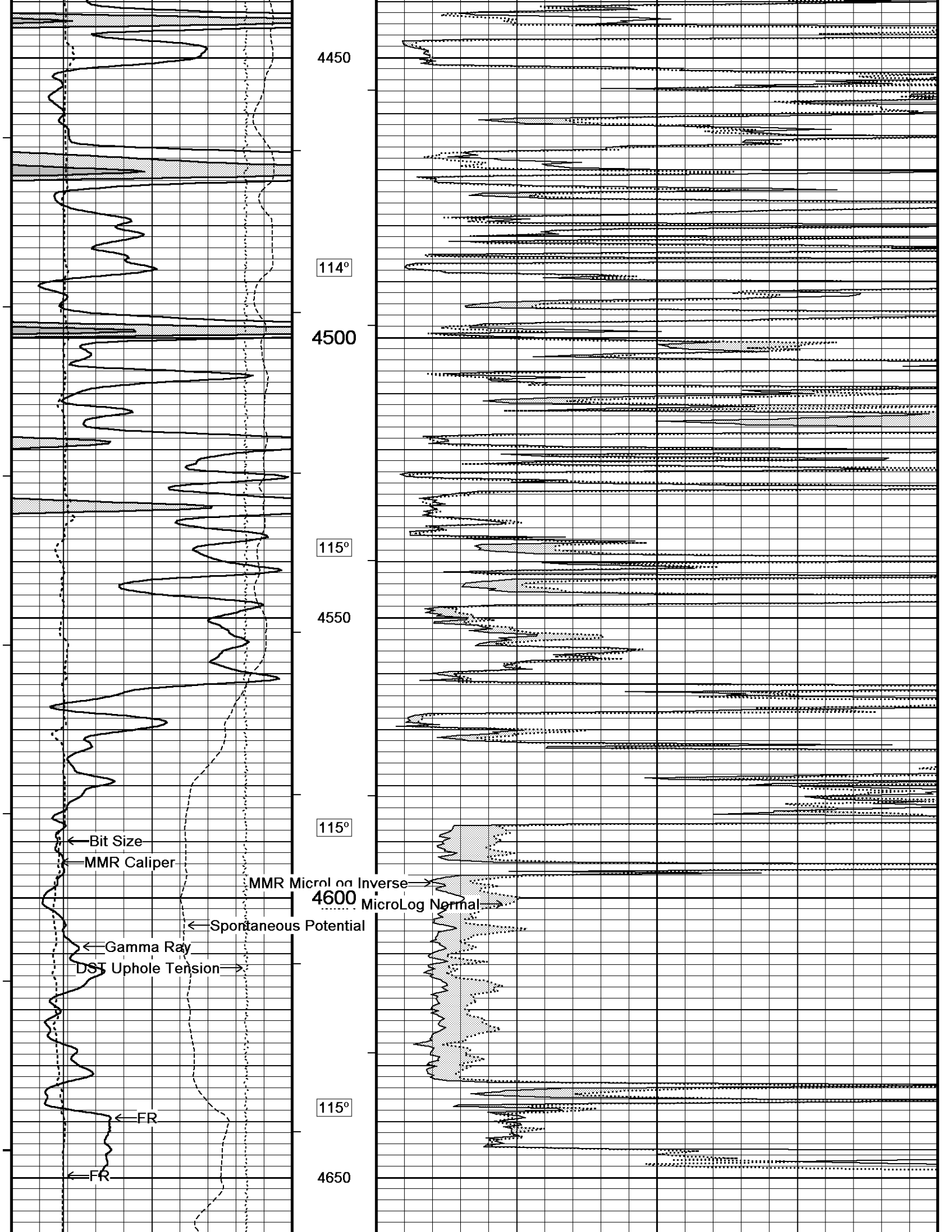

3350
107°
3400
Bit Size
MMR Caliper
MMR MicroLog Inverse
MMR MicroLog Normal
Spontaneous Potential
Gamma Ray
DST Uphole Tension
107°
3450
300
107°
3500
400
108°
3550

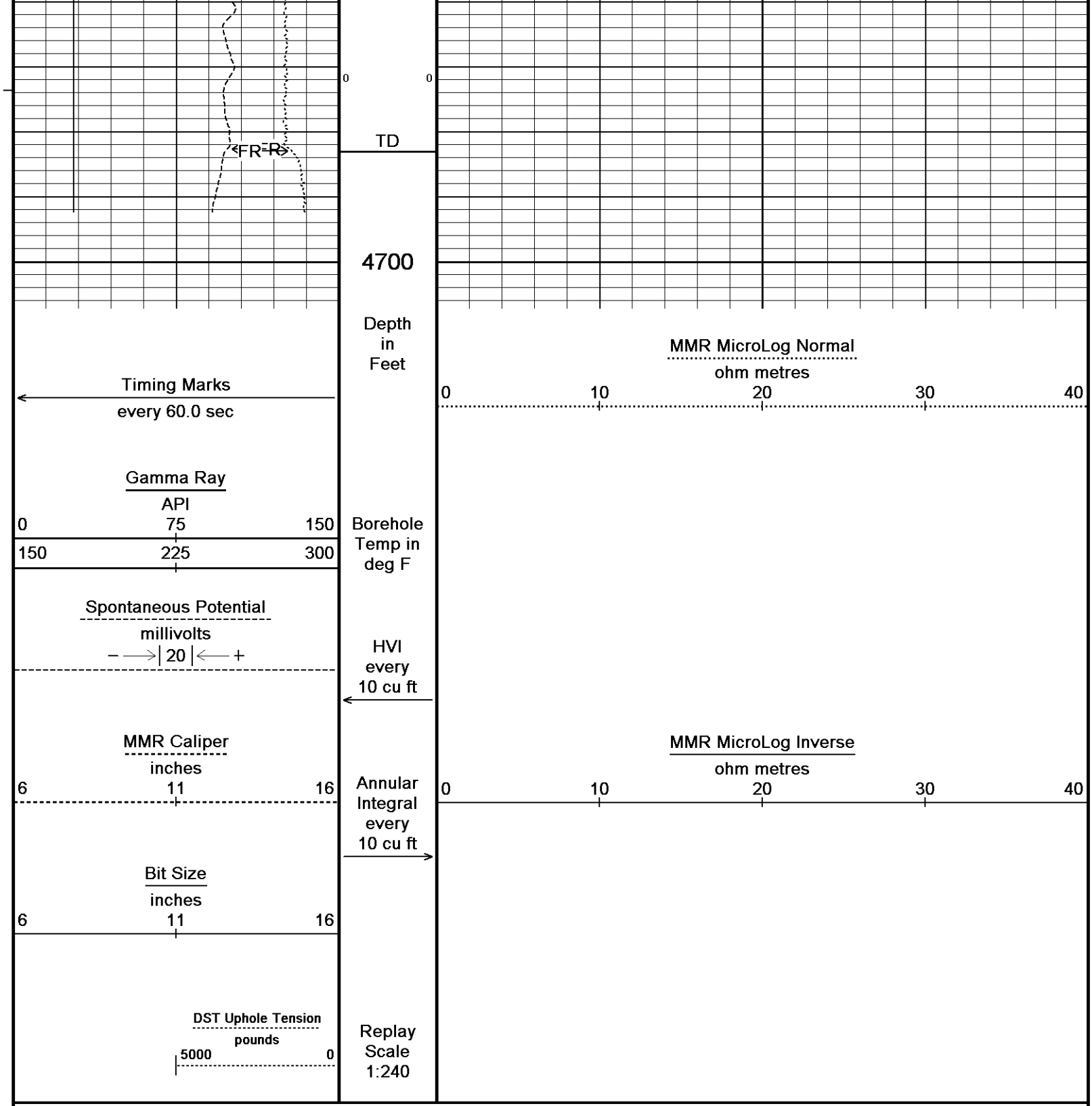

108°
3600
109°
3650
109°
3700
109°
3750


109°
3800
Bit Size
MMR Caliper
MMR MicroLog Inverse
MMR MicroLog Normal
300
Spontaneous Potential
Gamma Ray
DST Uphole Tension
110°
200
3850
110°
3900
110°
3950
110°
4000


4000
110°
4050
110°
200
4100
110°
4150
111°
4200
Bit Size
MMR Caliper
MMR MicroLog Inverse
MMR MicroLog Normal
Spontaneous Potential
Gamma Ray
DST Uphole Tension


111°
100
4250
112°
4300
112°
4350
100
113°
4400
113°


4450
114°
4500
115°
4550
115°
4600
115°
4650
Bit Size
MMR Caliper
MMR MicroLog Inverse
MicroLog Normal
Spontaneous Potential
Gamma Ray
DST Uphole Tension
FR
FR



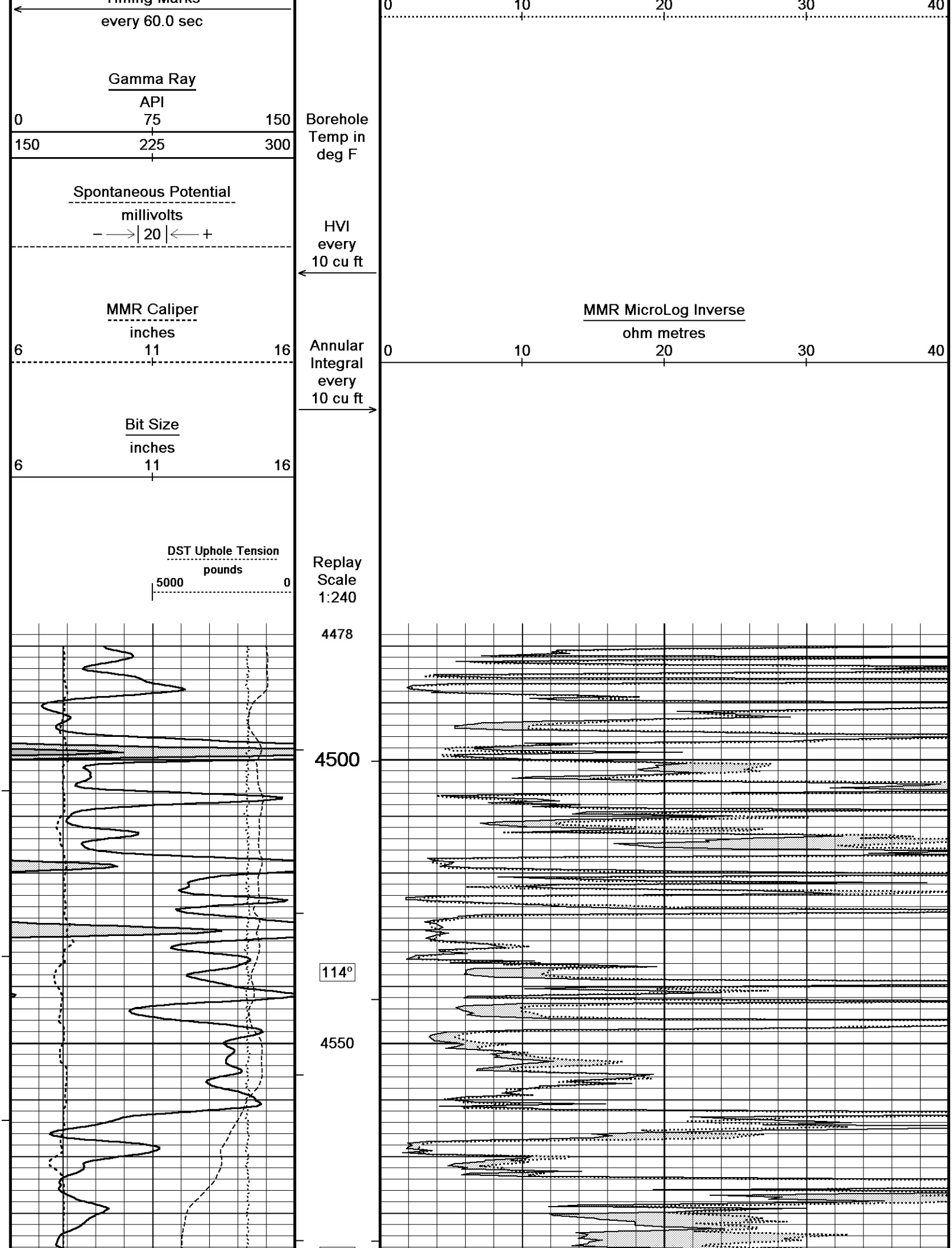
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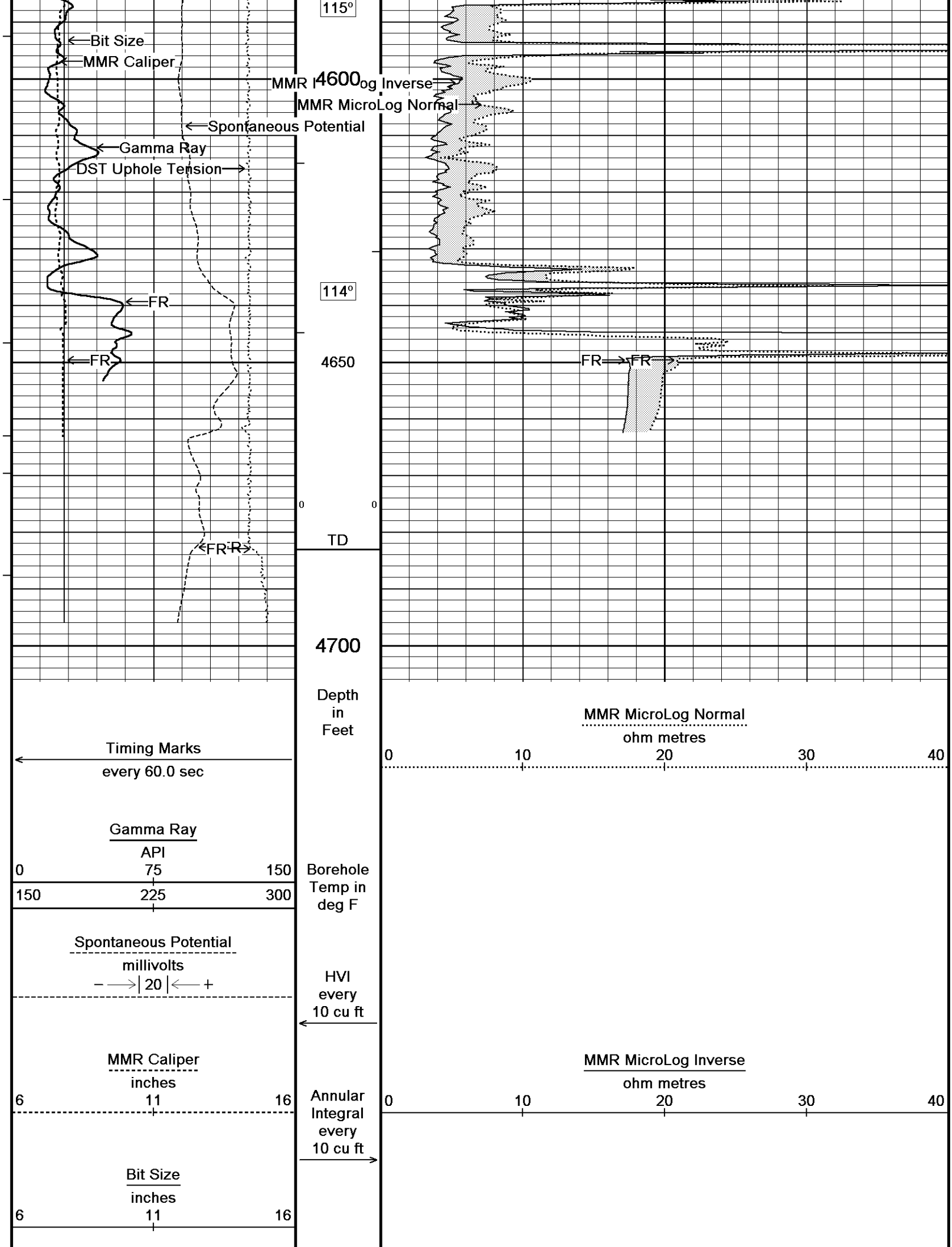
5 INCH MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 25-OCT-2013 14:54
Filename: C:\Minimus 13.05.9583\Logs\O'Brien Resou...\O'Brien Resources Boomhower 36 #3_001.dta — Recorded on 25-OCT-2013 07:48
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583




Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
150
225
300
Borehole Temp in deg F
Spontaneous Potential
millivolts
– 20 +
HVI every 10 cu ft
MMR Caliper
inches
6
11
16
Annular Integral every 10 cu ft
Bit Size
inches
6
11
16
DST Uphole Tension
pounds
5000
0
Replay Scale 1:240
0
10
20
30
40
MMR MicroLog Inverse
ohm metres
0
10
20
30
40
4478
4500
114°
4550


115°
Bit Size
MMR Caliper
MMR Inverse
MMR MicroLog Normal
Spontaneous Potential
Gamma Ray
DST Uphole Tension
FR
FR
4600
114°
4650
FR
FR
0
0
TD
FR
R
4700
Depth in Feet
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
150
225
300
Borehole Temp in deg F
Spontaneous Potential
millivolts
20
HVI every 10 cu ft
MMR Caliper
inches
6
11
16
Annular Integral every 10 cu ft
Bit Size
inches
6
11
16
MMR MicroLog Normal
ohm metres
0
10
20
30
40
MMR MicroLog Inverse
ohm metres
0
10
20
30
40

DST Uphole Tension
pounds
5000 0

Replay Scale 1:240

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 25-OCT-2013 14:54
Filename: C:\Minimus 13.05.9583\Logs\O'Brien Resou...\O'Brien Resources Boomhower 36 #3_001.dta — Recorded on 25-OCT-2013 07:48
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REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 13.05.9583\Logs\O'Brien Resources Boomhower 36 #3\O'Brien Resources Boomhower 36 #3_002 spooled section.dta

General Constants All 000

Last Edited on 25-OCT-2013,06:23

General Parameters		
Mud Resistivity	1.020	ohm-metres
Mud Resistivity Temperature	78.000	degrees F
Water Level	0.000	feet
Borehole Fluid 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	Crossplot Porosity	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	1.000	
RWA Constant M	2.000	
SW/APOR Tool Source	0.000	

High Resolution Temperature Calibration MCG-D.K 442

Field Calibration on 20-OCT-2013,18:27

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

High Resolution Temperature Constants MCG-D.K 442

Last Edited on 20-OCT-2013,18:27

Pre-filter Length	11

Gamma Calibration MCG-D.K 442

Field Calibration on 23-OCT-2013 01:26

	Measured	Calibrated (API)
Background	74	50
Calibrator (Gross)	1157	775
Calibrator (Net)	1083	725

Gamma Constants MCG-D.K 442

Last Edited on 25-OCT-2013,06:23

Gamma Calibrator Number	GRC38	
Mud Density	1.12	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

Caliper Calibration MMR-A 11

Base Calibration on 01-OCT-2013 09:07
Field Calibration on 23-OCT-2013 14:30

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14311	5.98
2	17410	7.97

3	20706	9.86
4	24667	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.99	7.97

Micro Normal and Micro Inverse Calibration MMR-A 11

Base Calibration on 11-OCT-2013 11:00
Field Check on 23-OCT-2013 14:26

Base Calibration

Channel	Measured Resistor 1	Measured Resistor 2	Calibrated (ohm-m) Resistor 1	Calibrated (ohm-m) Resistor 2
Micro Normal	12.1	59.0	5.0	25.0
Micro Inverse	15.5	76.7	5.0	25.0

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	77.5	77.5
Micro Inverse	59.4	59.4

Micro Normal and Micro Inverse Constants MMR-A 11

Last Edited on 18-APR-2013,13:52

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	0.0000	inches

Caliper Calibration MPD-B 31

Base Calibration on 11-OCT-2013 13:50
Field Calibration on 23-OCT-2013 01:14

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	18160	3.99
2	27038	5.98
3	35584	7.97
4	43976	9.86
5	53328	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.94	7.97

DOWNHOLE EQUIPMENT

C:\Minimus 13.05.9583\Logs\O'Brien Resources Boomhower 36 #3\O'Brien Resources Boomhower 36 #3_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-D.K 442 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-Resistivity
MMR-A 11 LG: 8.59 ft WT: 81.6 lb OD: 4.88 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

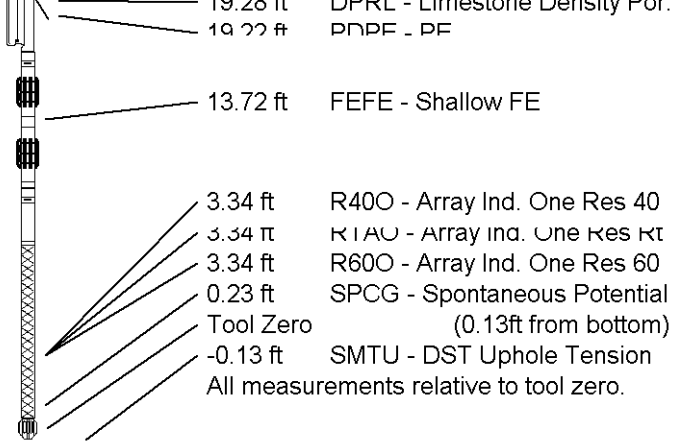


43.50 ft	GRGC - Gamma Ray
40.59 ft	CGXT - MCG External Temperature
33.24 ft	MBTC - MMR Caliper
33.24 ft	MINV - MMR MicroLog Inverse
33.24 ft	MNRL - MMR MicroLog Normal
28.45 ft	NPRL - Limestone Neutron Por.
21.21 ft	AVOL - Annular Volume
21.21 ft	HVOL - Hole Volume
21.21 ft	CLDC - Density Caliper
19.28 ft	DEN - Compensated Density
19.28 ft	DCOR - Density Correction
19.28 ft	DPRL - Limestone Density Por.

Compact Focussed Electric
MFE-B.J 352 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: 50.36 ft Weight: 399.0 lb



All measurements relative to tool zero.

COMPANY	O'BRIEN RESOURCES, LLC
WELL	BOOMHOWER 36 #3
FIELD	BOOMHOWER
PROVINCE/COUNTY	LANE
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2784.00	feet	First Reading	4650.00	feet
Elevation Drill Floor	2782.00	feet	Depth Driller	4685.00	feet
Elevation Ground Level	2774.00	feet	Depth Logger	4683.00	feet

Weatherford®

MICRORESISTIVITY LOG