MICRORESISTIVITY LOG

Weatherford

COMPANY	O'BRIEN ENERGY RESOURCES CORP.
WELL	HUSH #2-9
FIELD	BRUNO NE PROSPECT
PROVINCE/COUNTY	MEADE
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	100' FSL & 660' FEL

SEC 9	TWP 33S	RGE 30W	Other Services
Latitude			MDN/MPD MAI/MFE
Longitude			
API Number	15-119-21393		

Permanent Datum GL, Elevation 2729 feet
Log Measured From KB
Drilling Measured From KB @ 13 FEET

Elevations:	feet
KB	2742.00
DF	2740.00
GL	2729.00

Date	02-NOV-2015			
Run Number	ONE			
Service Order	4558-133683407			
Depth Driller	6400.00	feet		
Depth Logger	6399.00	feet		
First Reading	6366.00	feet		
Last Reading	4200.00	feet		
Casing Driller	1487.00	feet		
Casing Logger	1492.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	WBM			
Density / Viscosity	9.20 lb/USg	62.00 CP		
PH / Fluid Loss	9.50	8.60 ml/30Min		
Sample Source	FLOWLINE			
Rm @ Measured Temp	1.54 @ 75.0	ohm-m		
Rmf @ Measured Temp	1.23 @ 75.0	ohm-m		
Rmc @ Measured Temp	1.85 @ 75.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.92 @ 75.0	ohm-m		
Time Since Circulation	4 HOURS			
Max Recorded Temp	125.00	deg F		
Equipment / Base	13096	OKC		
Recorded By	ADAM SILL			
Witnessed By	ROGER PEARSON		PETE DEBENHAM	

BOREHOLE RECORD

Last Edited: 03-NOV-2015 02:00

Bit Size inches	Depth From feet	Depth To feet
7.875	1495.00	6400.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	1487.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 15.03.5939.
- RUN ONE: MCG, MML, MDN, MPD, MFE, MAI RUN IN COMBINATION.
  - HARDWARE: DUAL BOWSPRING USED ON MDN.
  0.5 INCH STANDOFF USED ON MFE.
  0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY.
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.
- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 1778 CU.FT.
- ANNULAR HOLE VOLUME WITH 4.5 INCH PRODUCTION CASING FROM TD TO 4200 FEET: 497 CU.FT.
- RIG: DUKE #9

- RIG: DURE #6.

- ENGINEER: A. SILL.

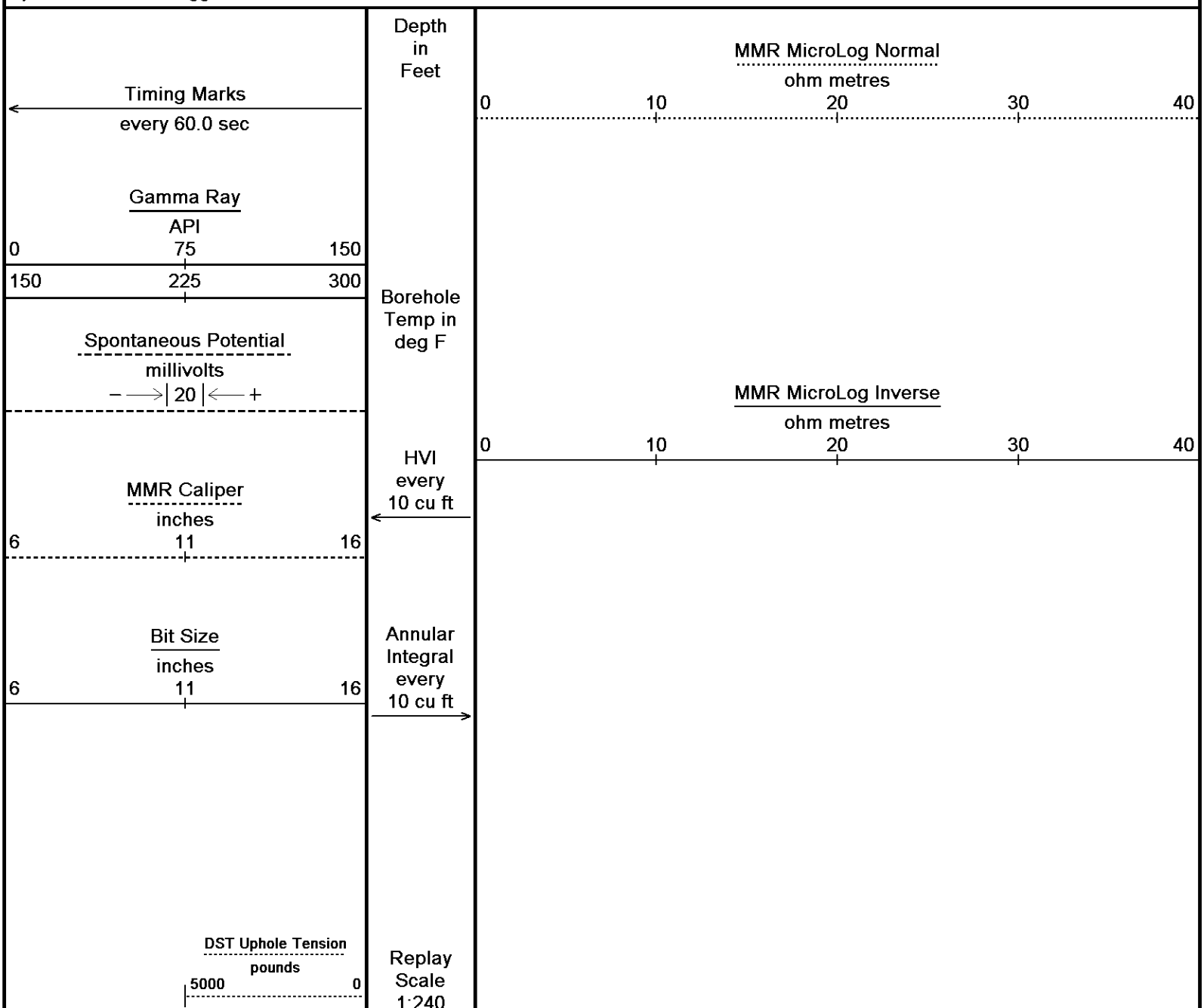
- OPERATOR: J. LaPOINT.

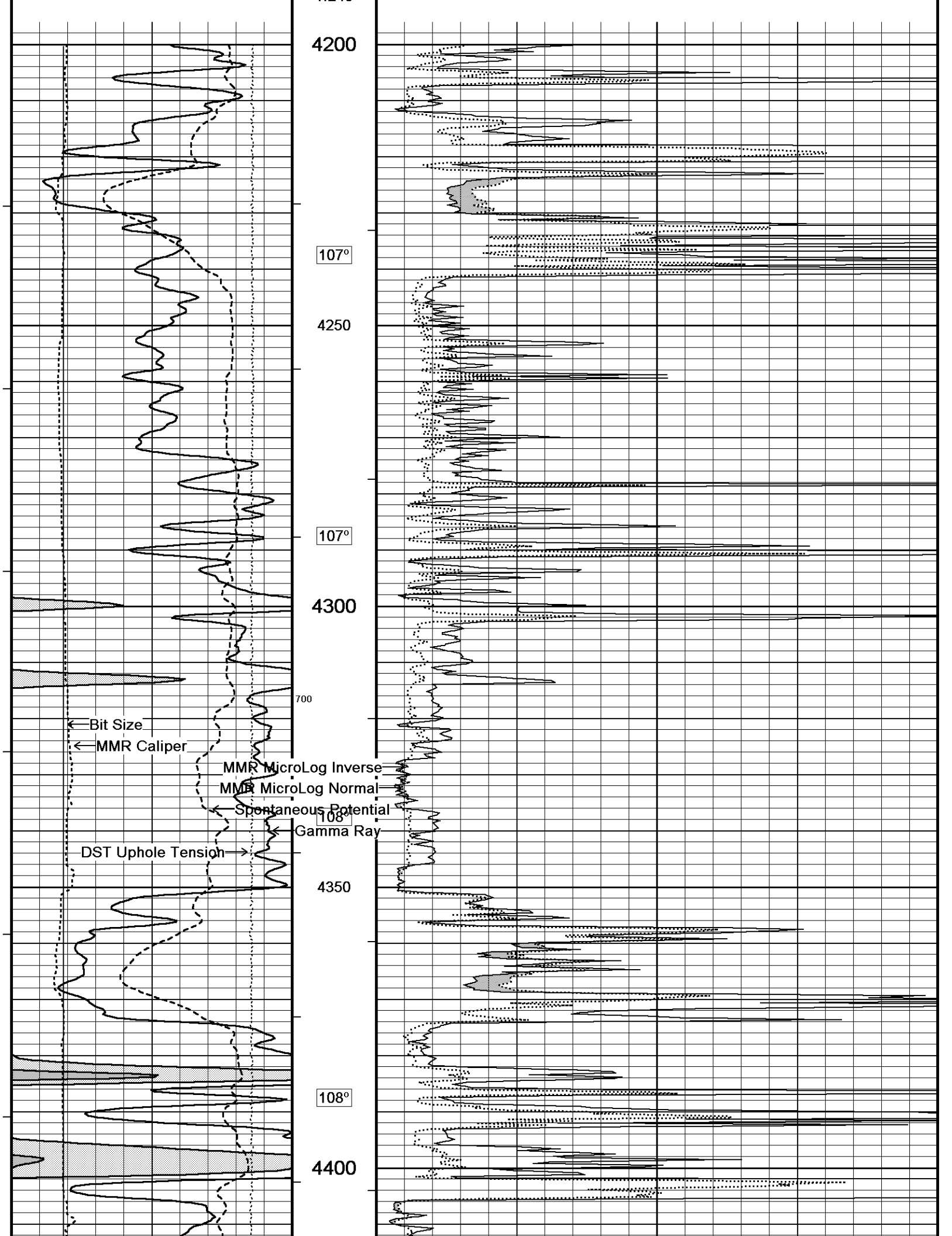
5 INCH MAIN

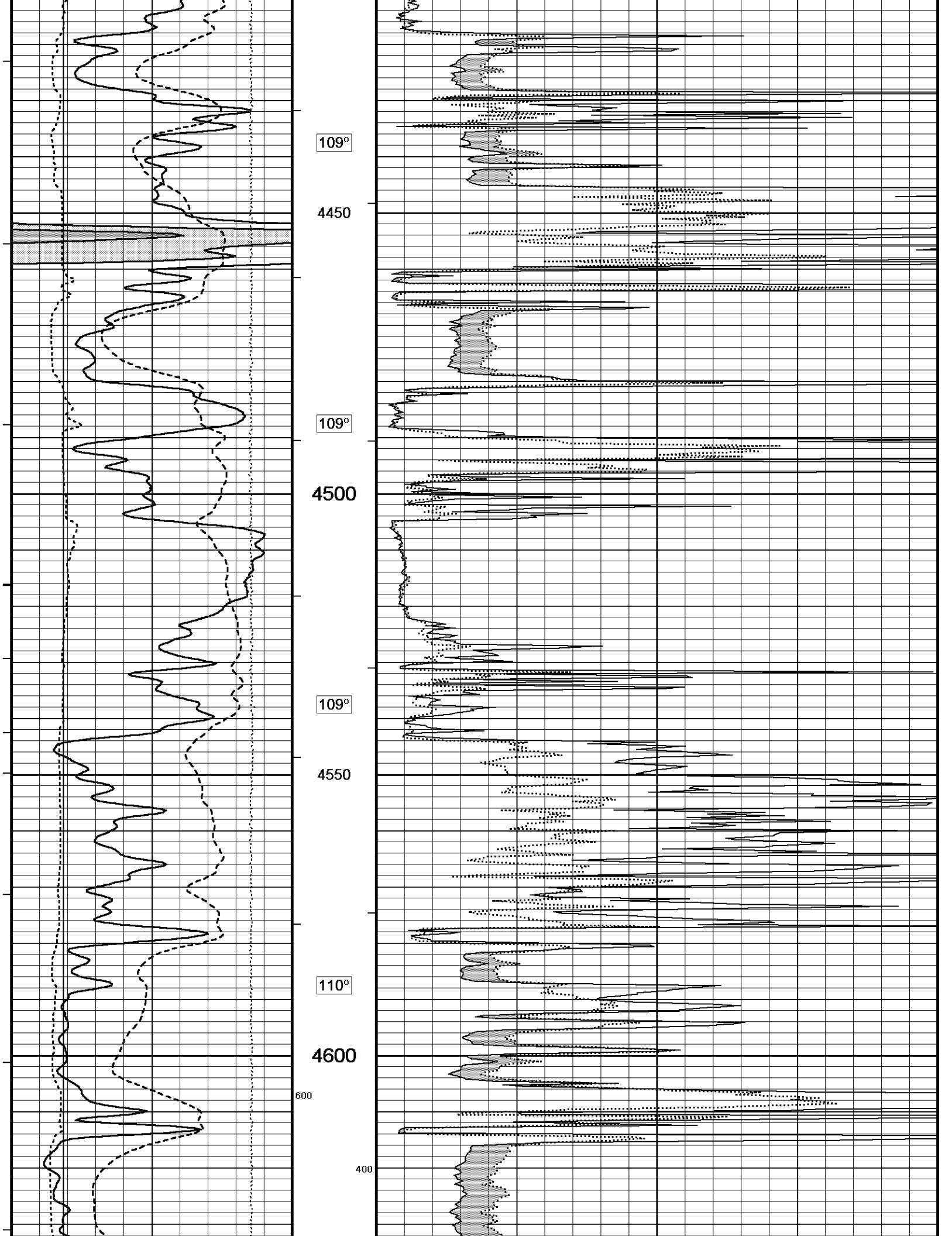
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 03-NOV-2015 02:03

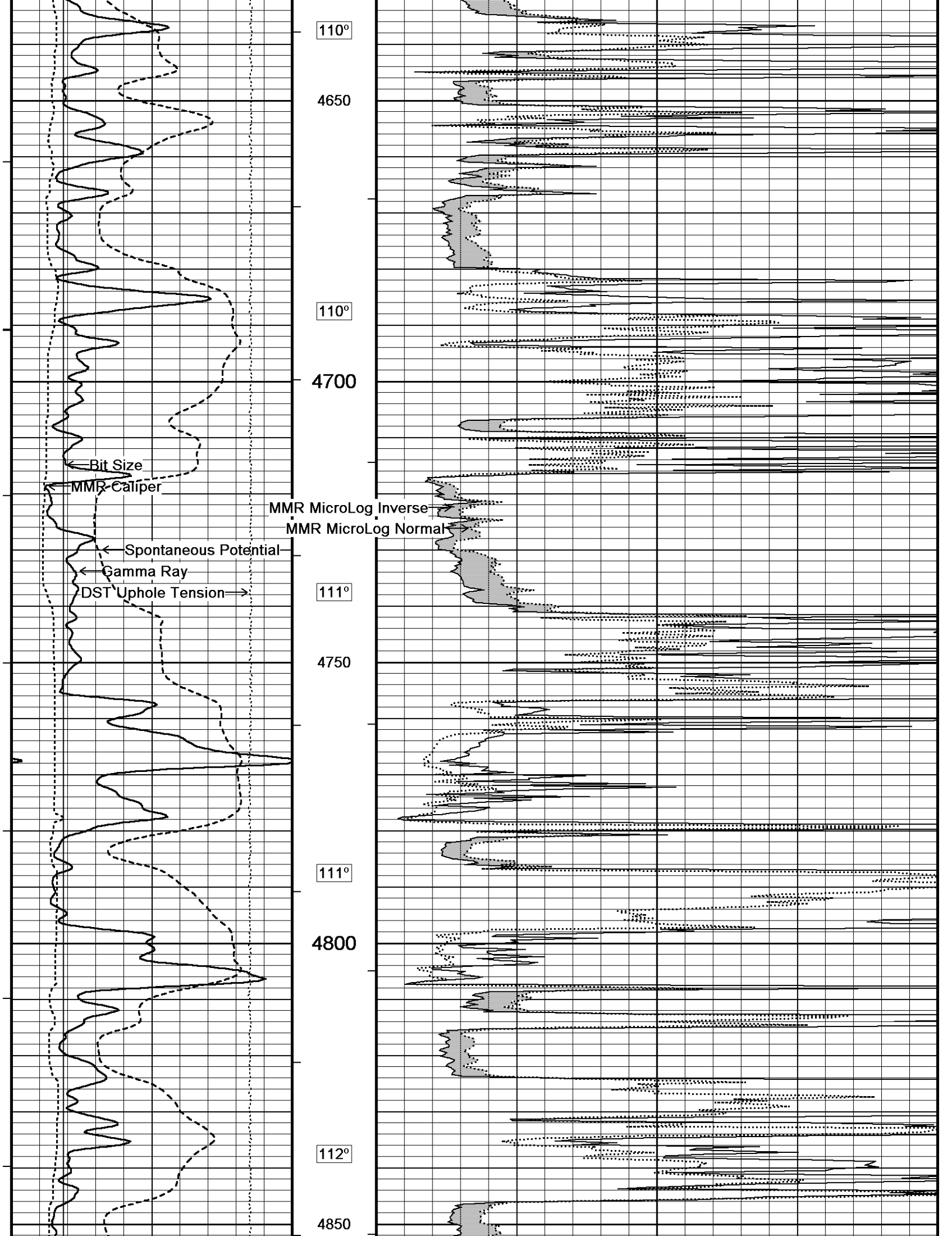
Filename: C:\Minimus 15.03.5939\Logs\O'Brien Hush #2-9\O'Brien Hush #2-9_003.dta — Recorded on 02-NOV-2015 21:51

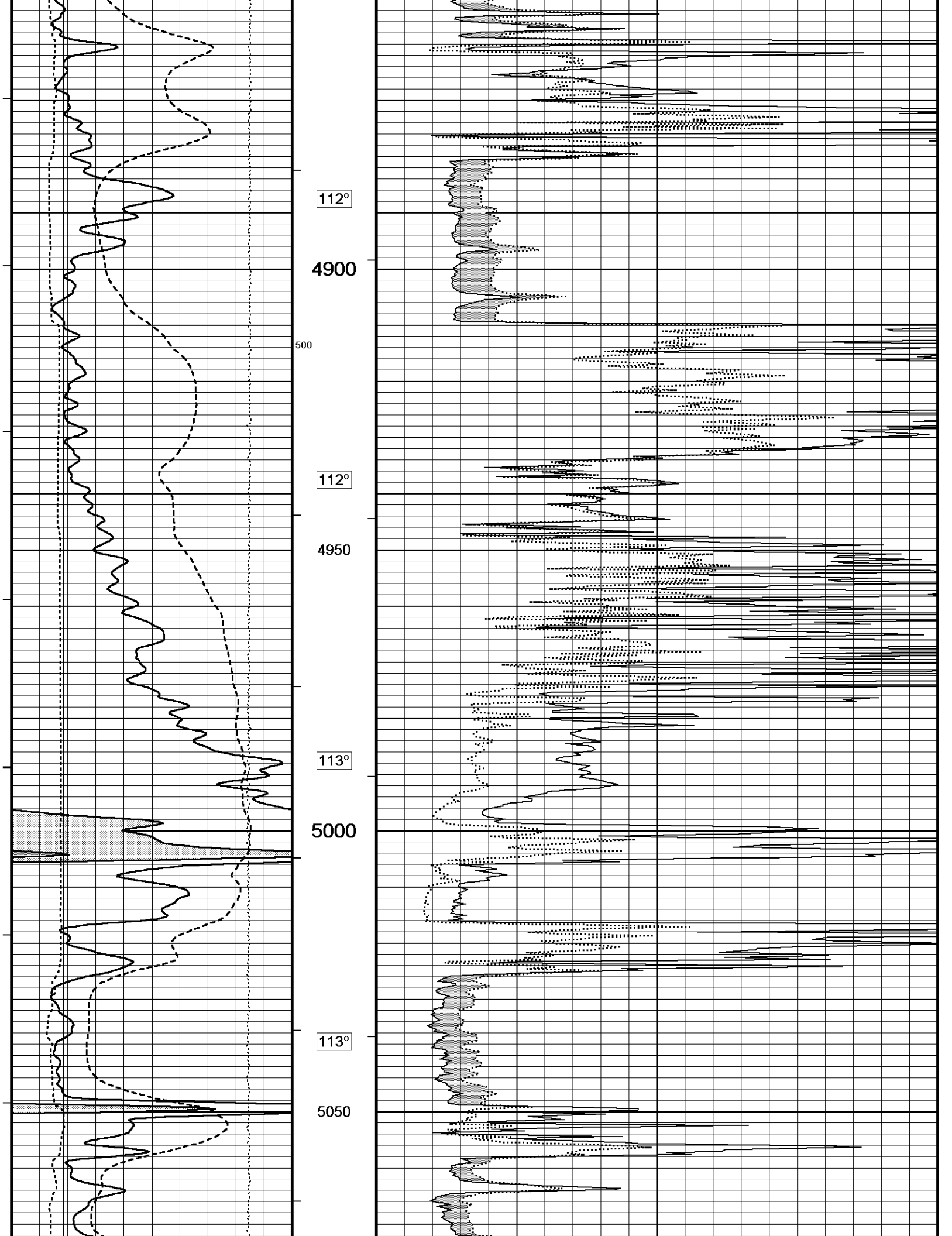
System Versions: Logged with 15.03.5939 Processed with 15.03.5939 Plotted with 15.03.5939

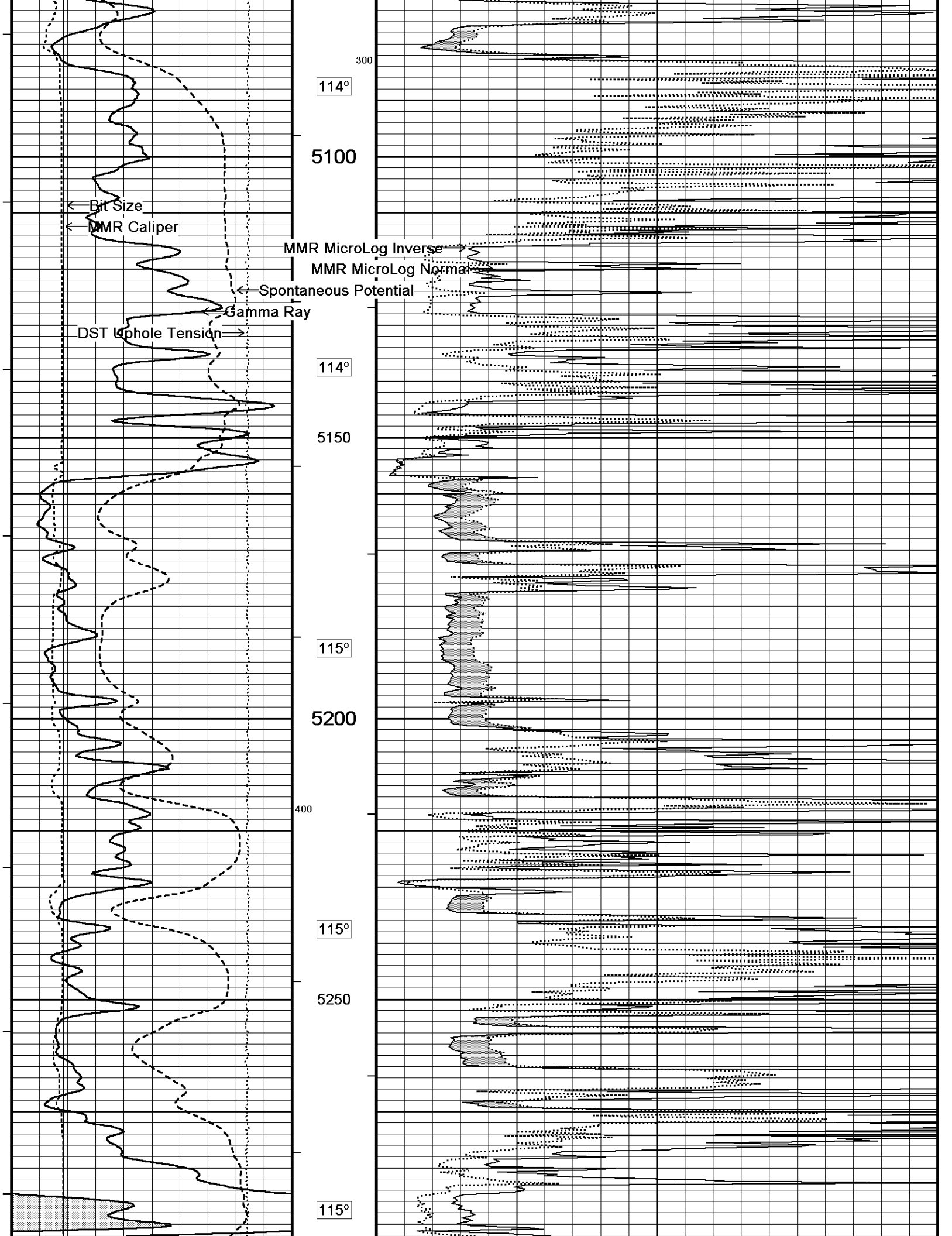


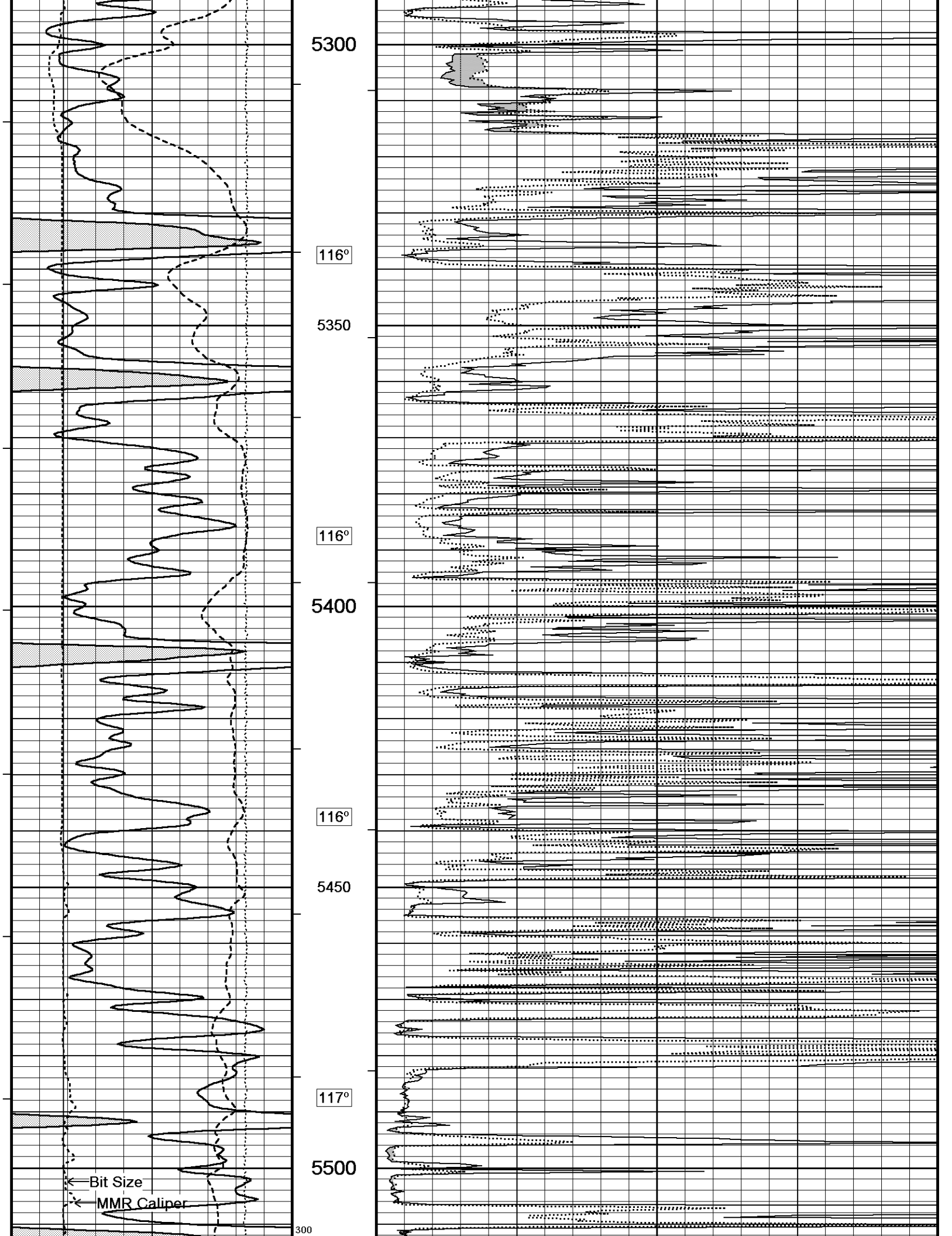

4200
107°
4250
107°
4300
700
Bit Size
MMR Caliper
MMR MicroLog Inverse
MMR MicroLog Normal
Spontaneous Potential
108°
Gamma Ray
DST Uphole Tension
4350
108°
4400

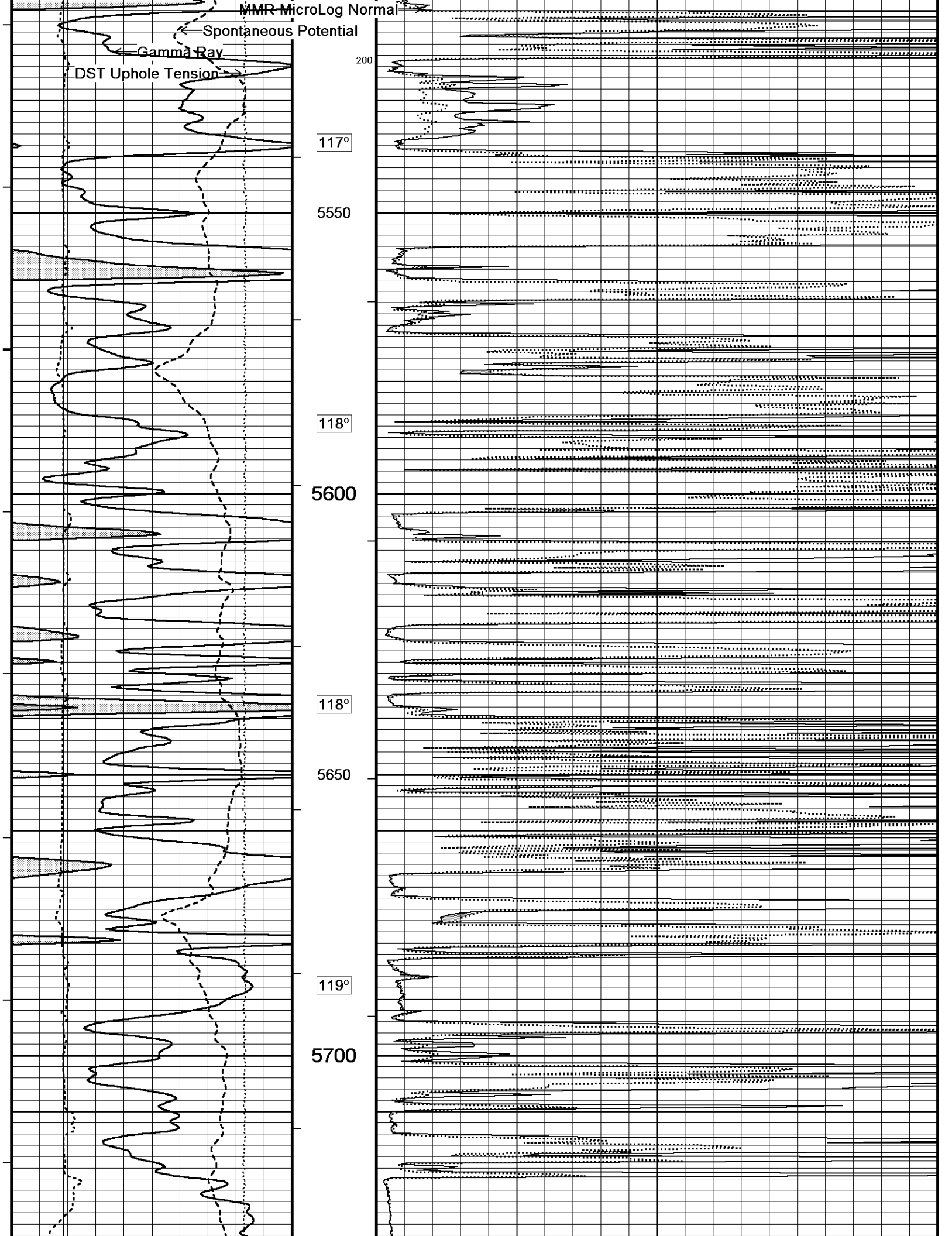

109°
4450
109°
4500
109°
4550
110°
4600
600
400

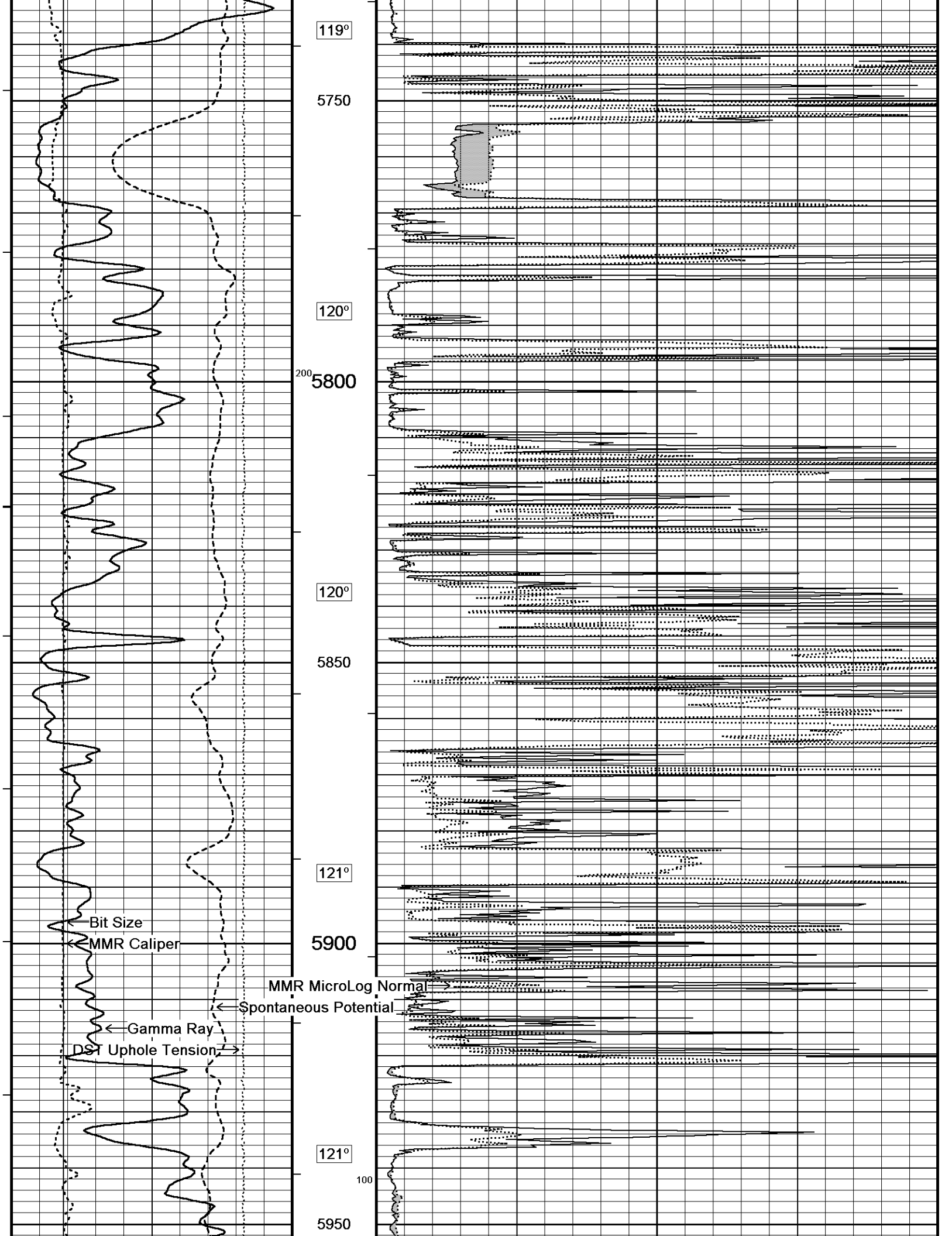

110°
4650
110°
4700
Bit Size
MMR Caliper
MMR MicroLog Inverse
MMR MicroLog Normal
Spontaneous Potential
Gamma Ray
DST Uphole Tension
111°
4750
111°
4800
112°
4850

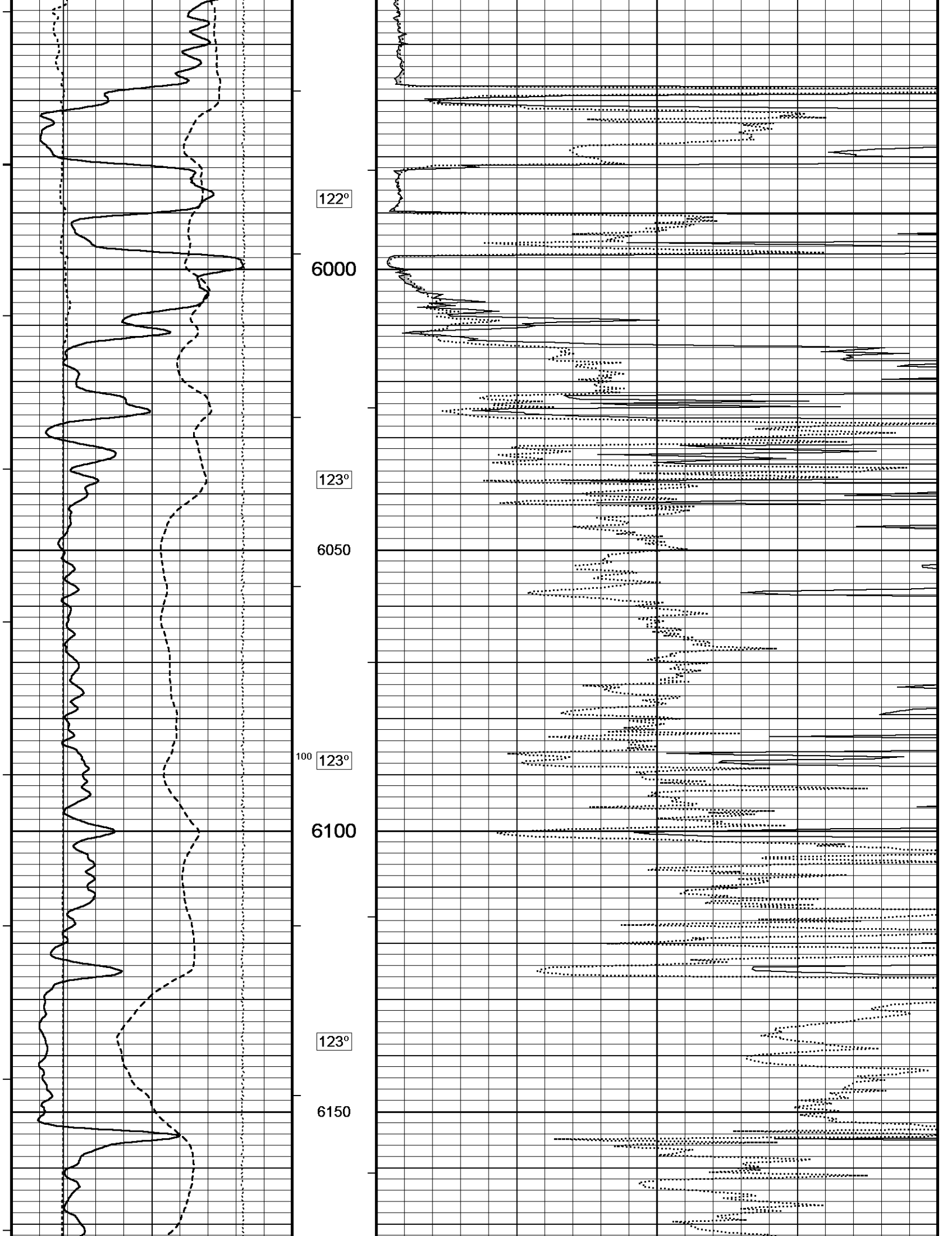

112°
4900
500
112°
4950
113°
5000
113°
5050

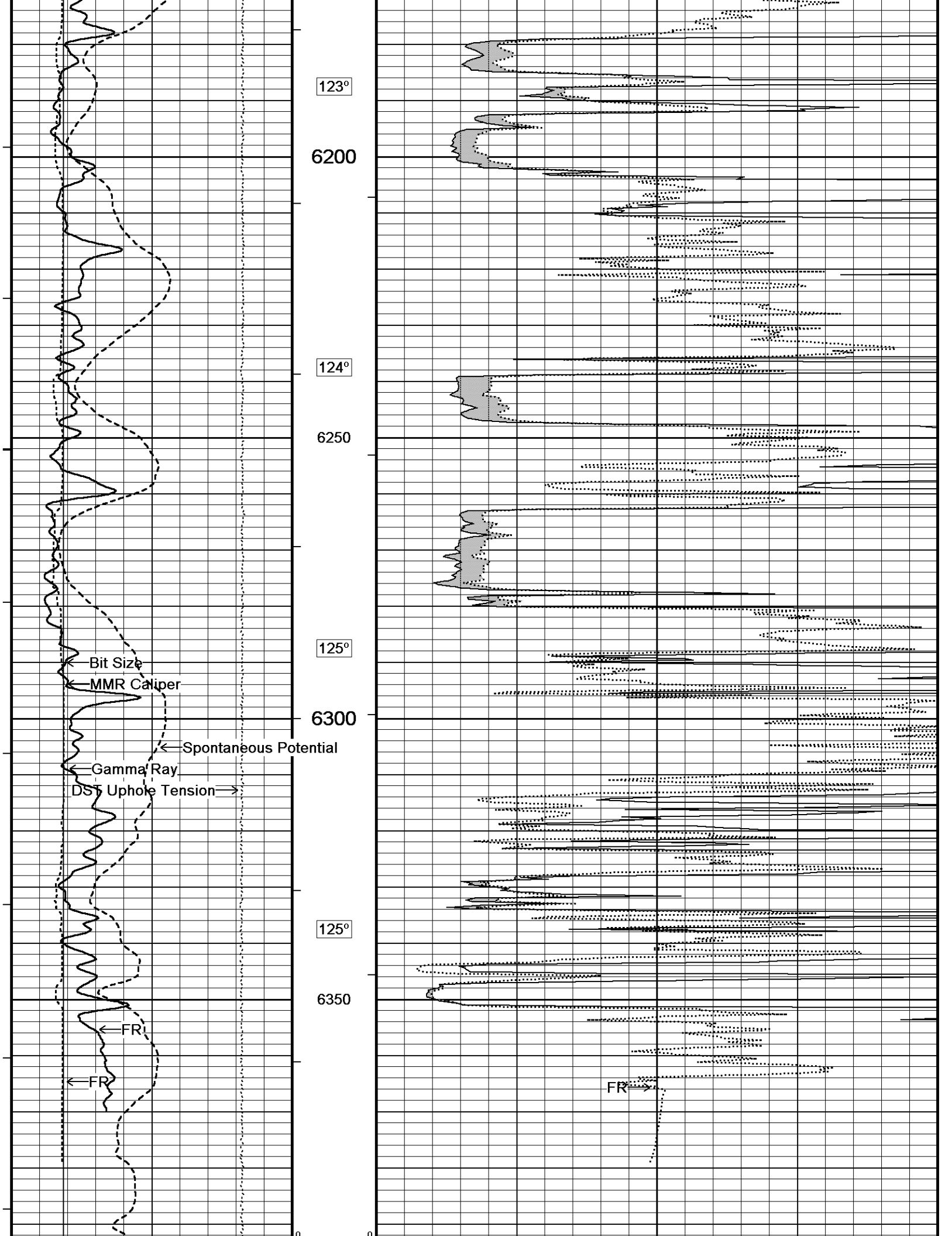

300
114°
5100
Bit Size
MMR Caliper
MMR MicroLog Inverse
MMR MicroLog Normal
Spontaneous Potential
Gamma Ray
DST Cphole Tension
114°
5150
115°
5200
400
115°
5250
115°

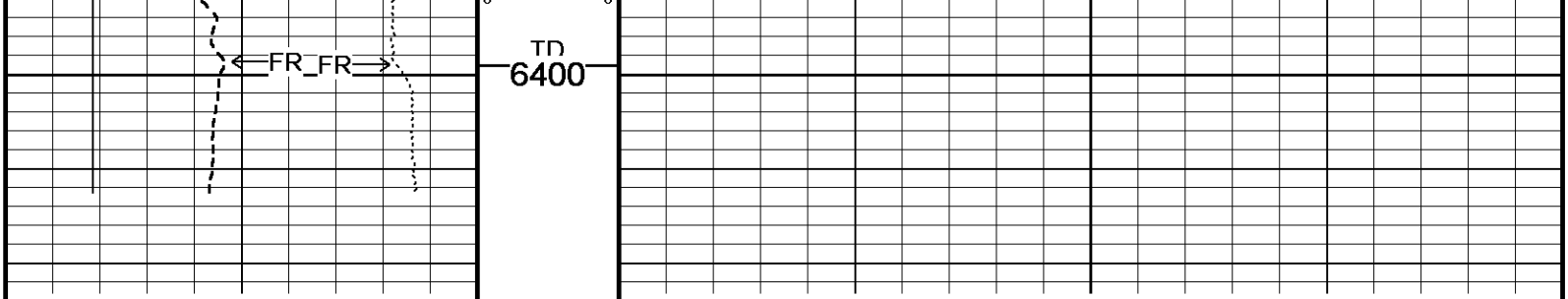

5300
116°
5350
116°
5400
116°
5450
117°
5500
Bit Size
MMR Caliper
300


MMR MicroLog Normal
Spontaneous Potential
Gamma Ray
DST Uphole Tension
200
117°
5550
118°
5600
118°
5650
119°
5700


119°
5750
120°
200
5800
120°
5850
121°
Bit Size
MMR Caliper
5900
MMR MicroLog Normal
Spontaneous Potential
Gamma Ray
DST Uphole Tension
121°
100
5950


122°
6000
123°
6050
100
123°
6100
123°
6150


123°
6200
124°
6250
125°
6300
125°
6350
Bit Size
MMR Caliper
Spontaneous Potential
Gamma Ray
DST Uphole Tension
FR
FR
FR
0
0



Depth in Feet

Timing Marks
every 60.0 sec

MMR MicroLog Normal
ohm metres
0 10 20 30 40

Gamma Ray
API
0 75 150
150 225 300

Borehole Temp in deg F

Spontaneous Potential
millivolts
− → | 20 | ← +

MMR MicroLog Inverse
ohm metres
0 10 20 30 40

HVI every 10 cu ft

MMR Caliper
inches
6 11 16

Bit Size
inches
6 11 16

Annular Integral every 10 cu ft

DST Uphole Tension
pounds
5000 0

Replay Scale 1:240

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 03-NOV-2015 02:03
Filename: C:\Minimus 15.03.5939\Logs\O'Brien Hush #2-9\O'Brien Hush #2-9_003.dta — Recorded on 02-NOV-2015 21:51
System Versions: Logged with 15.03.5939 Processed with 15.03.5939 Plotted with 15.03.5939

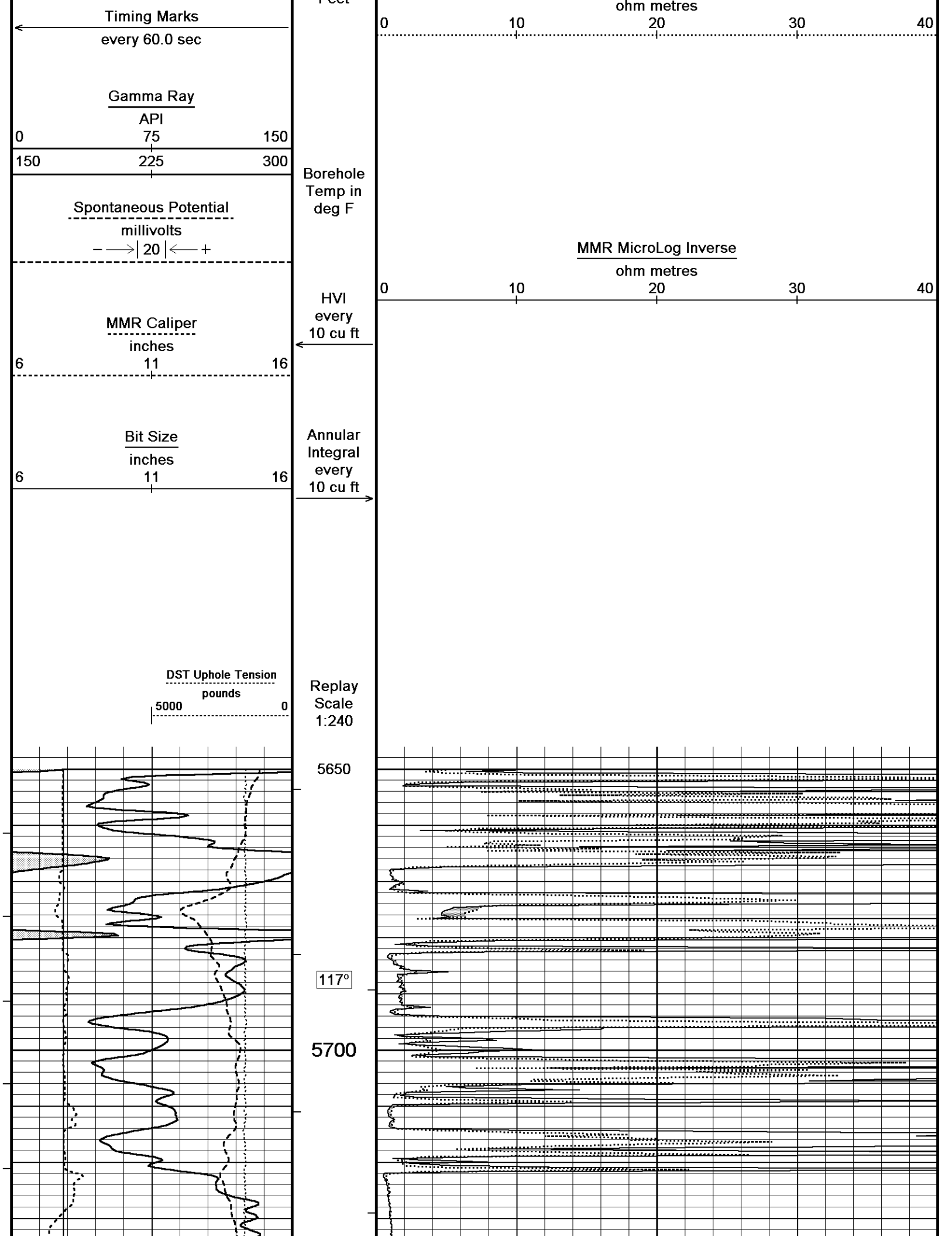
5 INCH MAIN

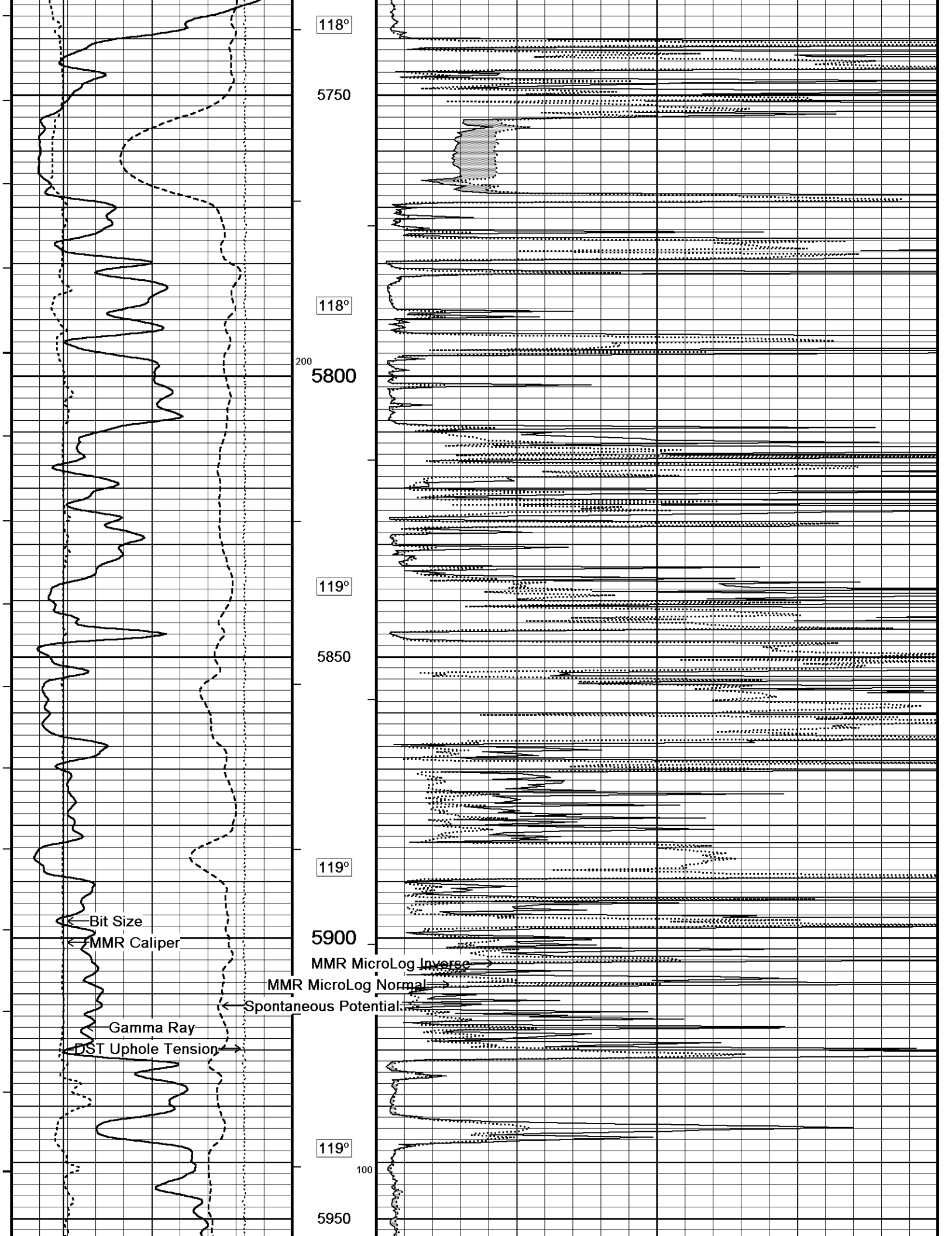
REPEAT SECTION

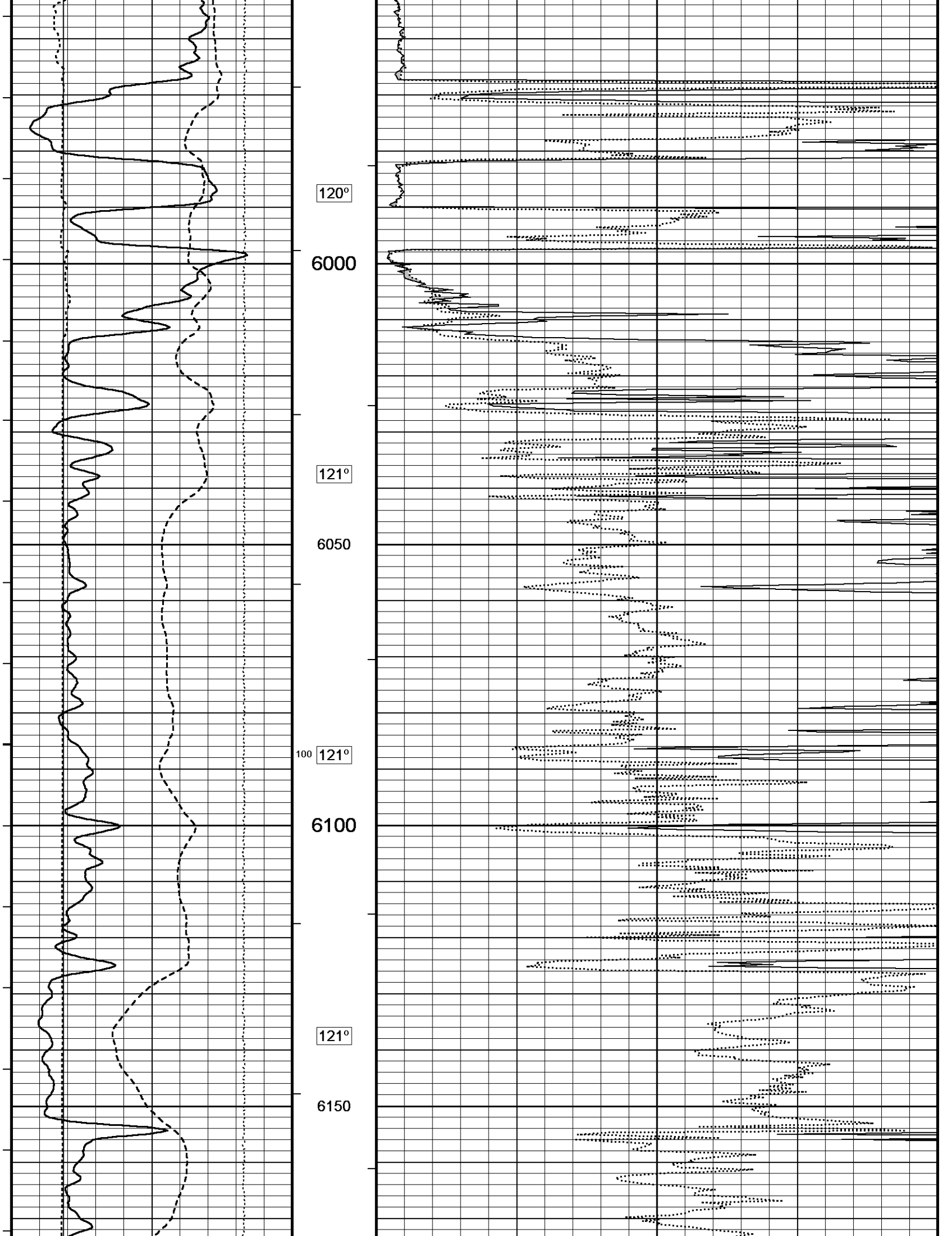
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 03-NOV-2015 02:03
Filename: C:\Minimus 15.03.5939\Logs\O'Brien Hush #2-9\O'Brien Hush #2-9_002.dta — Recorded on 02-NOV-2015 20:23
System Versions: Logged with 15.03.5939 Processed with 15.03.5939 Plotted with 15.03.5939

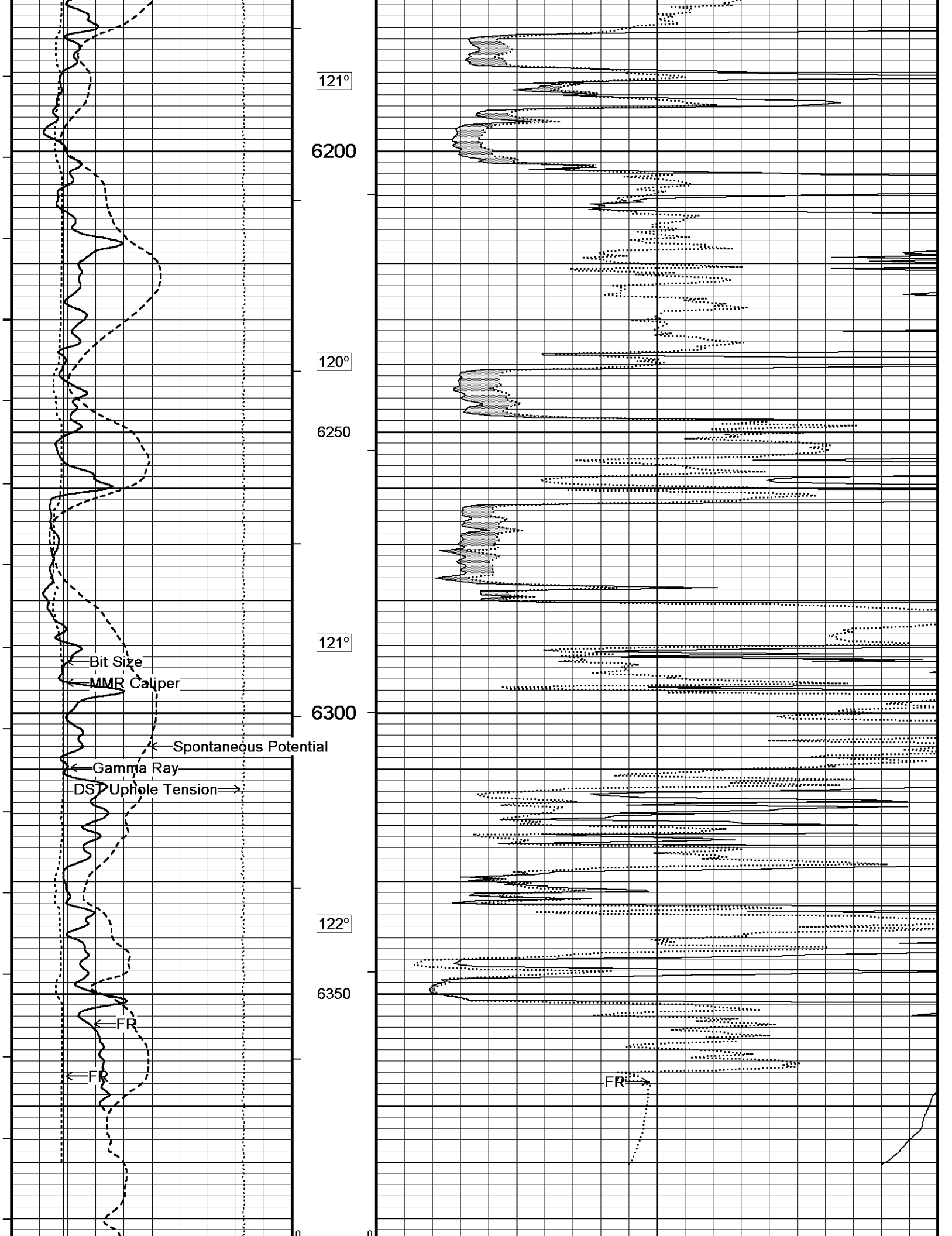
Depth in Feet

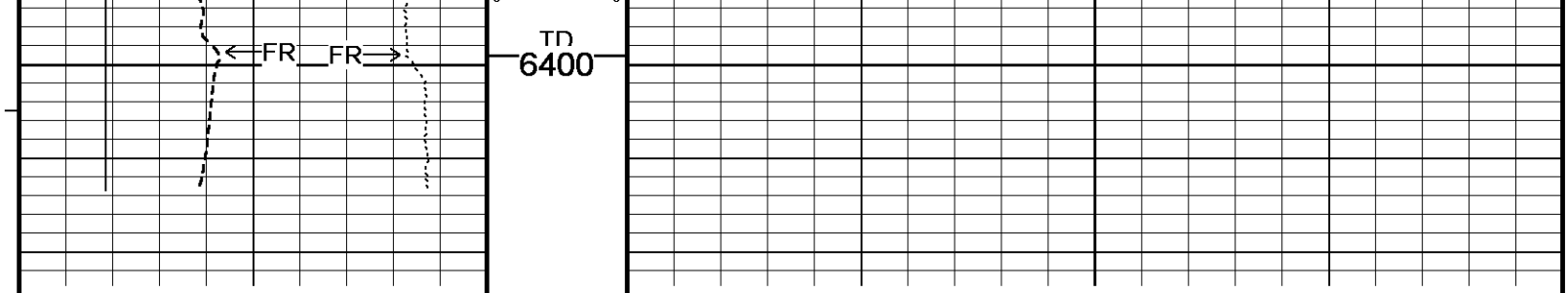
MMR MicroLog Normal


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
Feet
Borehole Temp in deg F
HVI every 10 cu ft
Annular Integral every 10 cu ft
Replay Scale 1:240
5650
117°
5700
ohm metres
0
10
20
30
40
MMR MicroLog Inverse
ohm metres
0
10
20
30
40


118°
5750
118°
200
5800
119°
5850
119°
Bit Size
MMR Caliper
5900
MMR MicroLog Inverse
MMR MicroLog Normal
Spontaneous Potential
Gamma Ray
DST Uphole Tension
119°
100
5950


120°
6000
121°
6050
100
121°
6100
121°
6150


121°
6200
120°
6250
121°
6300
122°
6350
Bit Size
MMR Caliper
Spontaneous Potential
Gamma Ray
DST Uphole Tension
FR
FR
FR
0
0



Depth in Feet

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

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

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 03-NOV-2015 02:03
Filename: C:\Minimus 15.03.5939\Logs\O'Brien Hush #2-9\O'Brien Hush #2-9_002.dta
Recorded on 02-NOV-2015 20:23
System Versions: Logged with 15.03.5939 Processed with 15.03.5939 Plotted with 15.03.5939

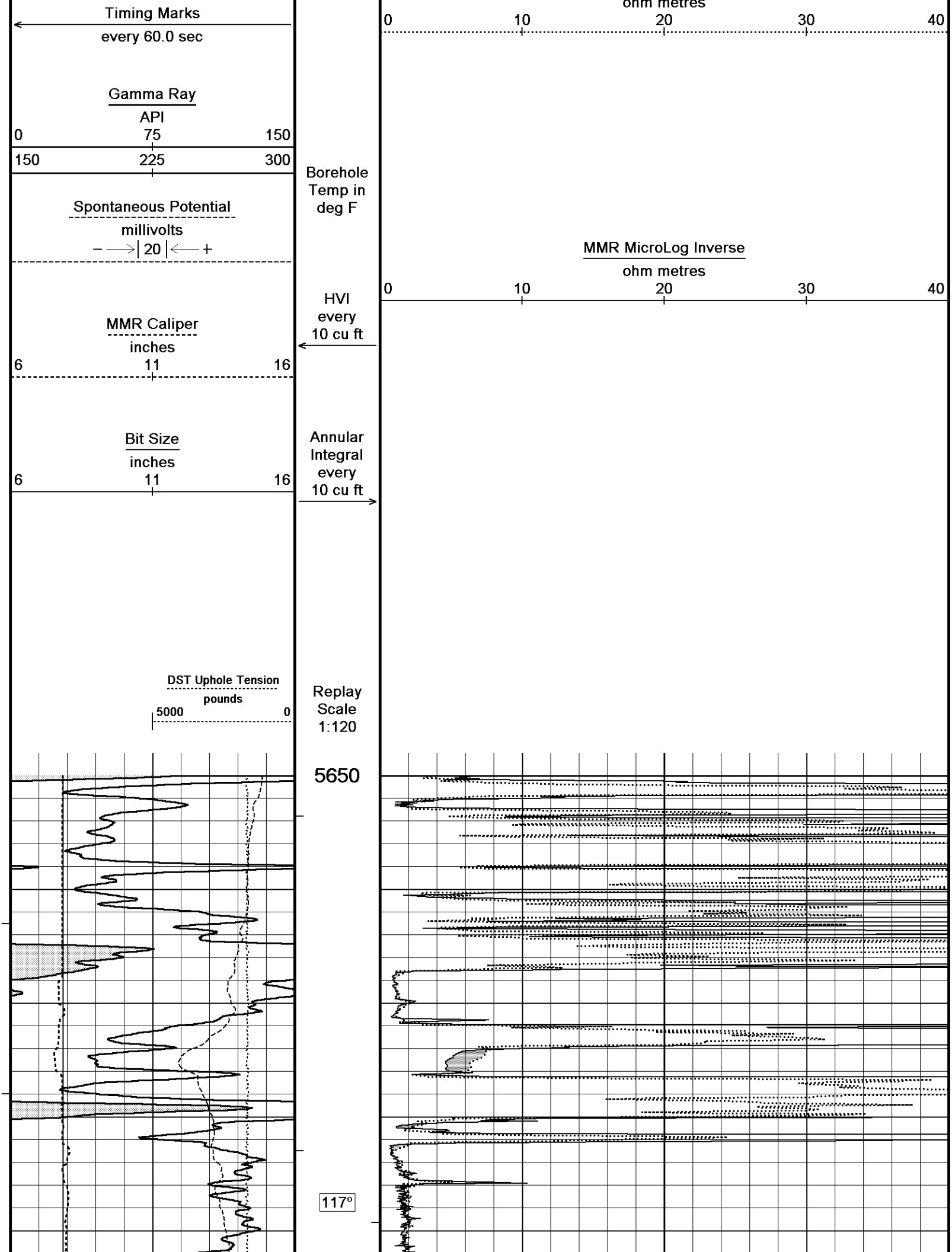
REPEAT SECTION

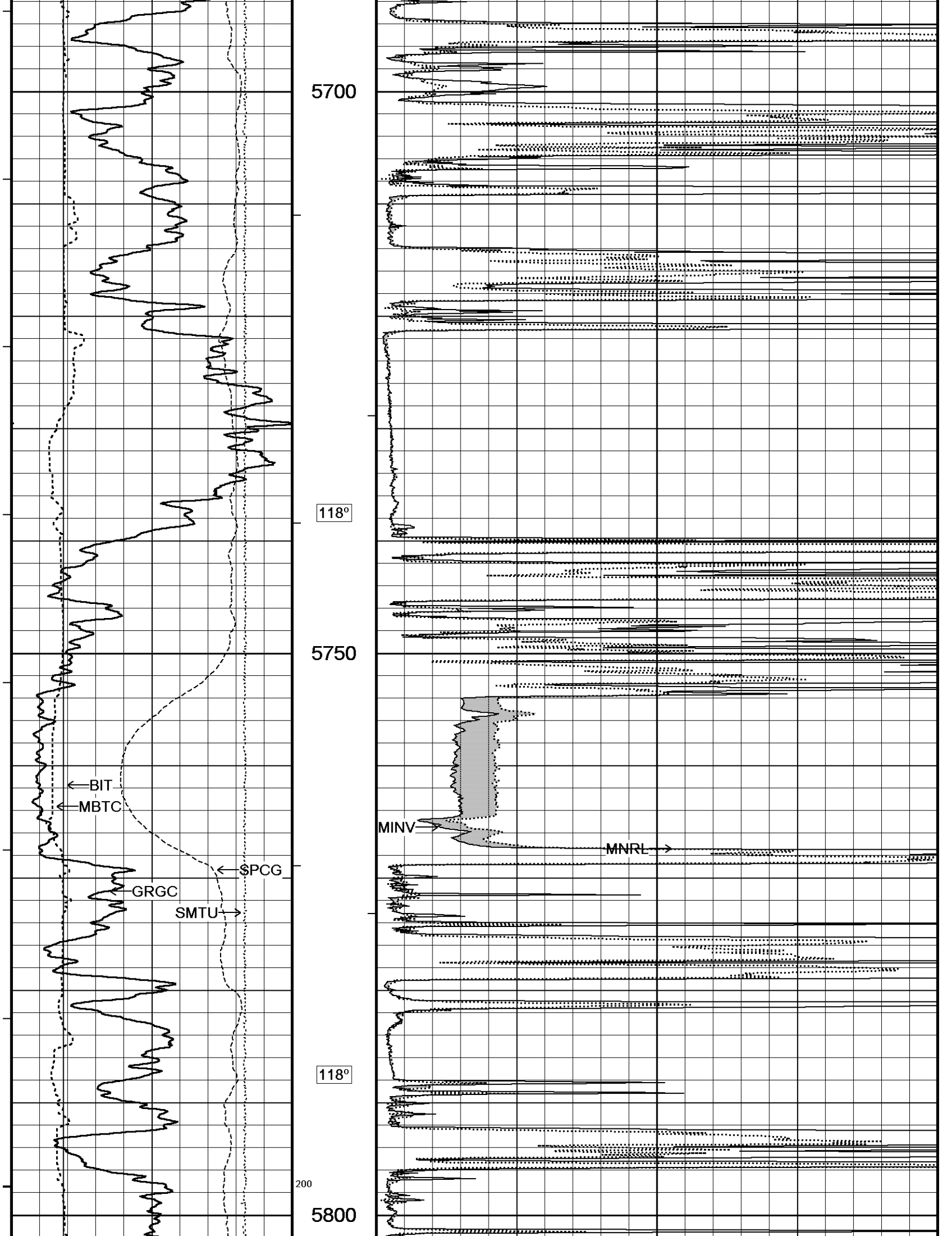
10 INCH HIGH RESOLUTION

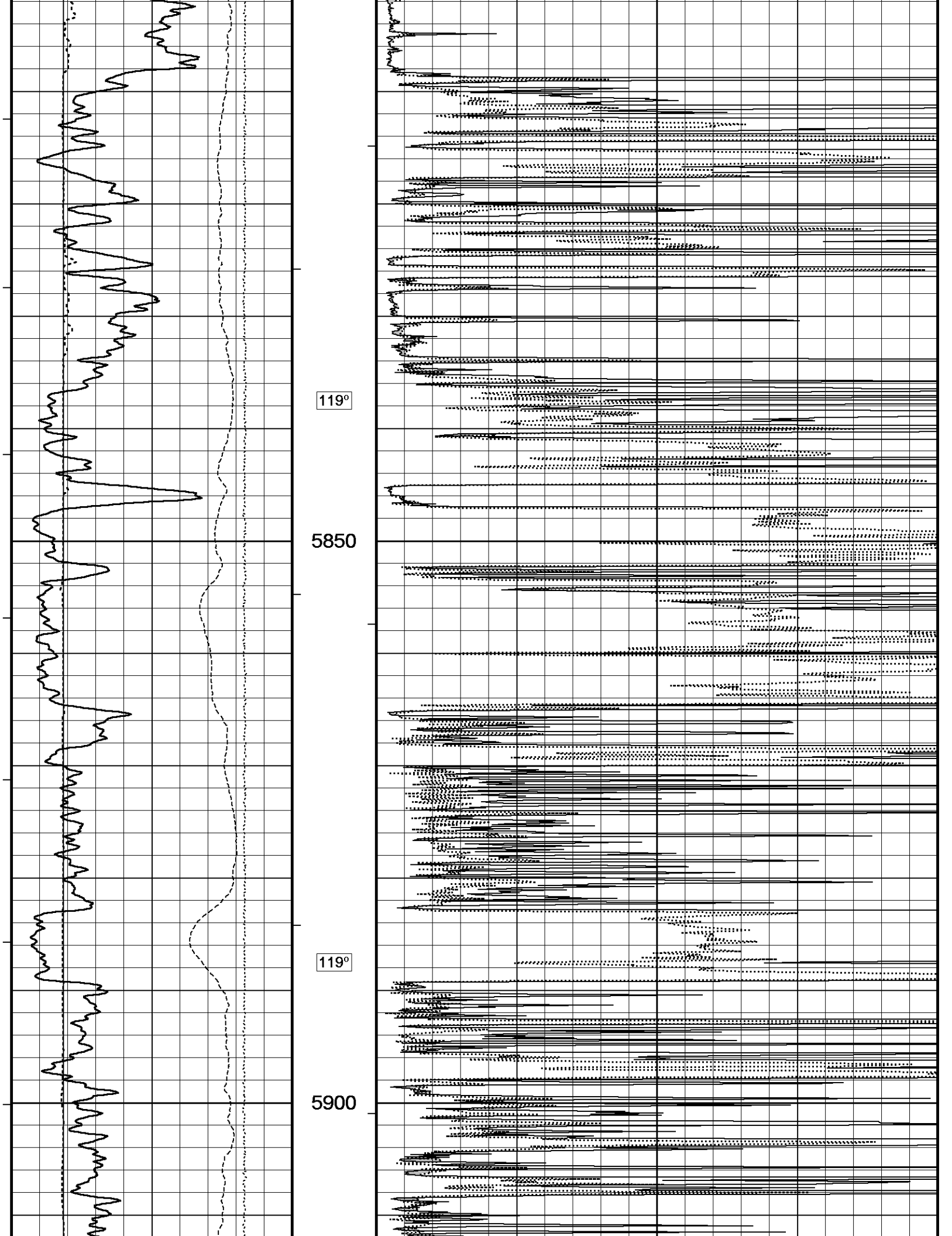
Depth Based Data - Maximum Sampling Increment 2.5cm
Plotted on 03-NOV-2015 02:03
Filename: C:\Minimus 15.03.5939\Logs\O'Brien Hush #2-9\O'Brien Hush #2-9_001.dta
Recorded on 02-NOV-2015 20:23
System Versions: Logged with 15.03.5939 Plotted with 15.03.5939

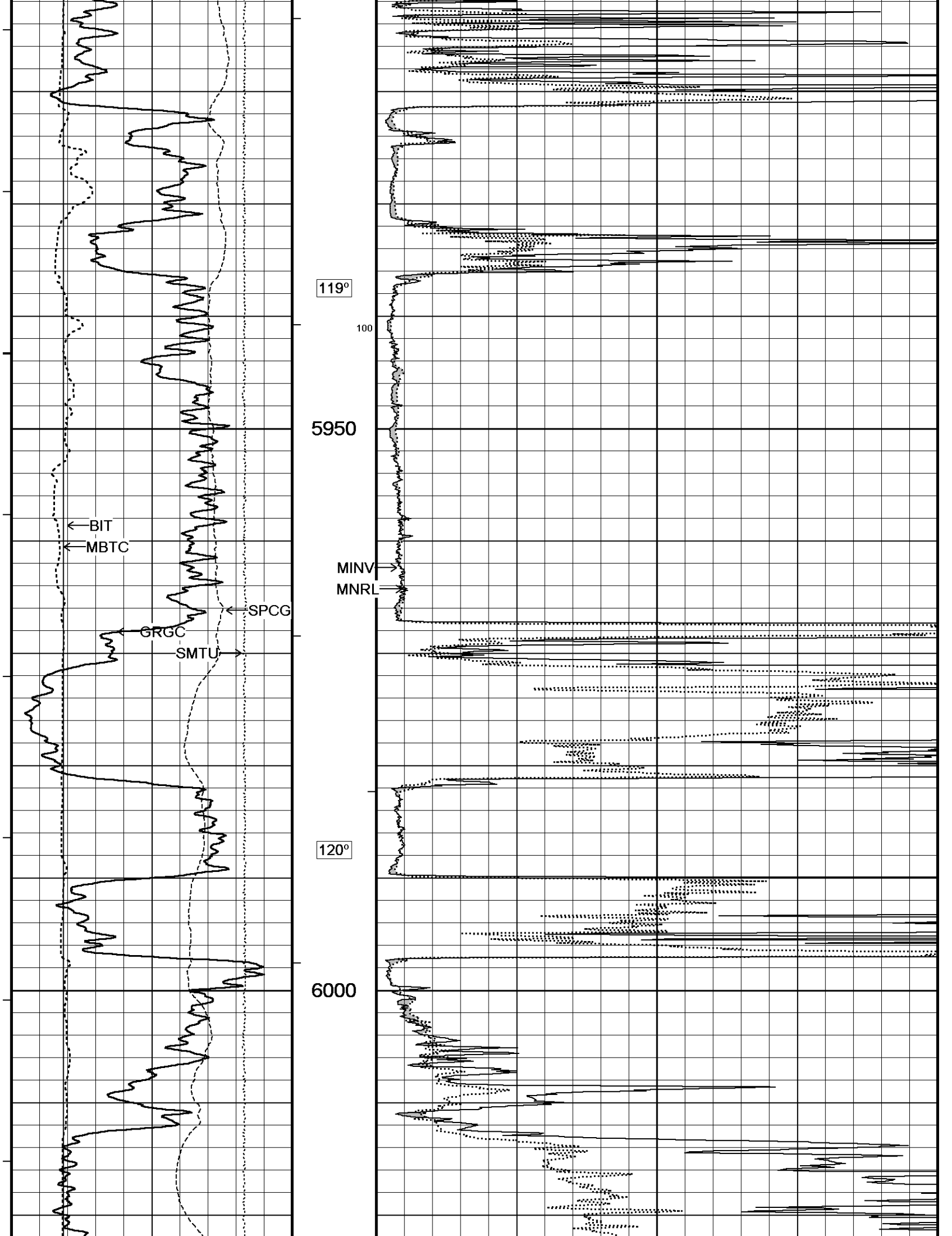
Depth in Feet

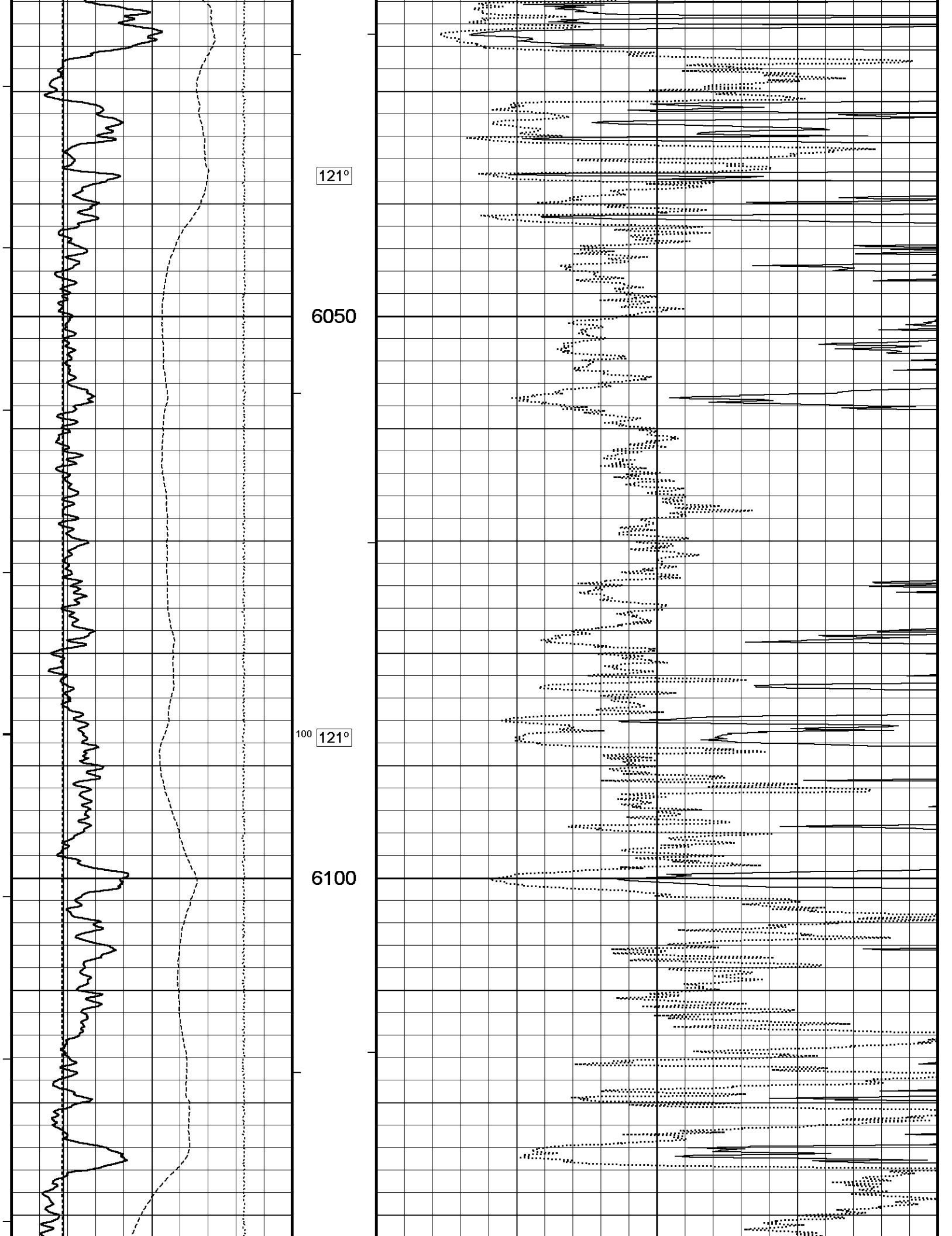
MMR MicroLog Normal

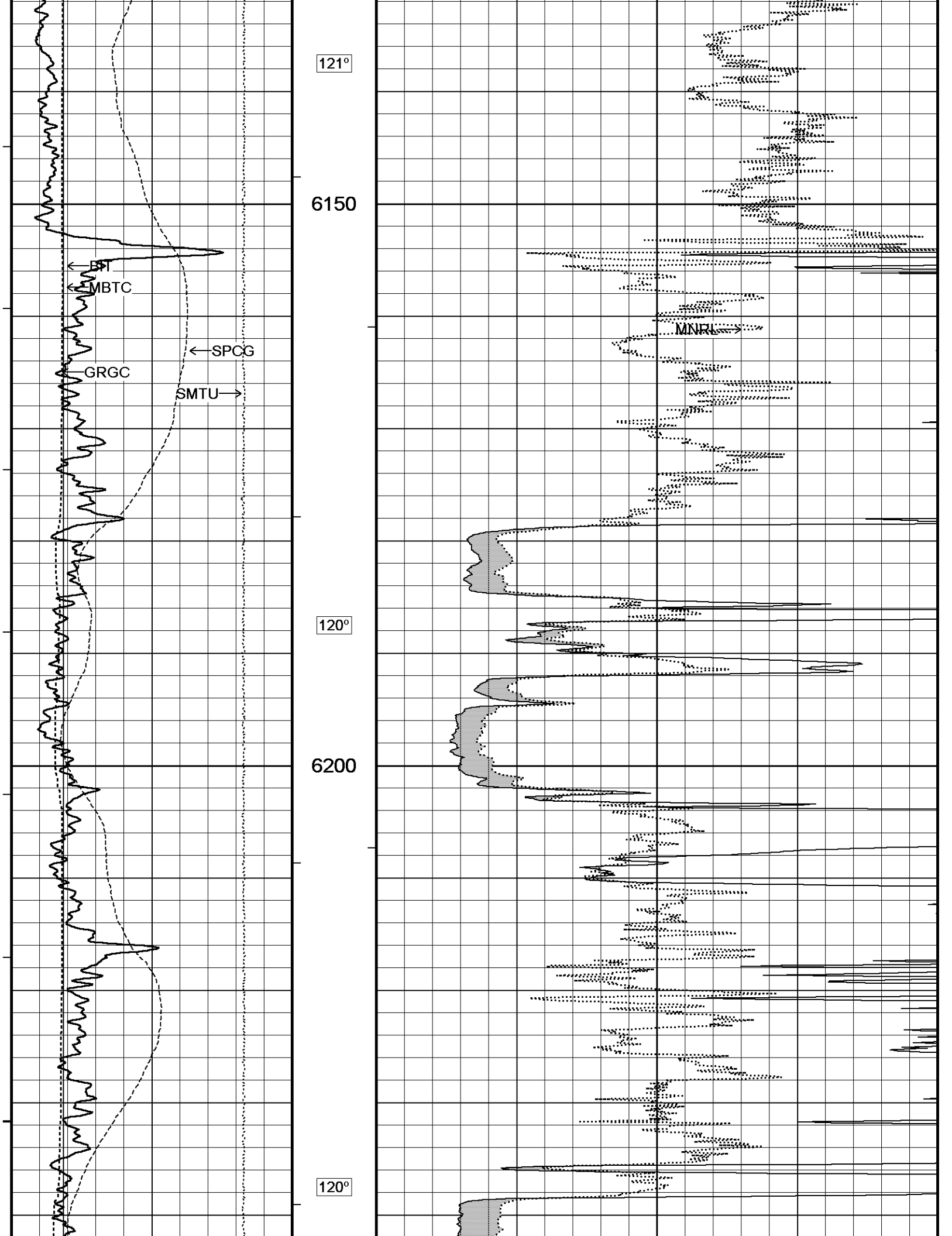

Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
150
225
300
Spontaneous Potential
millivolts
– 20 +
MMR Caliper
inches
6
11
16
Bit Size
inches
6
11
16
DST Uphole Tension
pounds
5000
0
Borehole Temp in deg F
HVI every 10 cu ft
Annular Integral every 10 cu ft
Replay Scale 1:120
5650
117°
ohm metres
0
10
20
30
40
MMR MicroLog Inverse
ohm metres
0
10
20
30
40

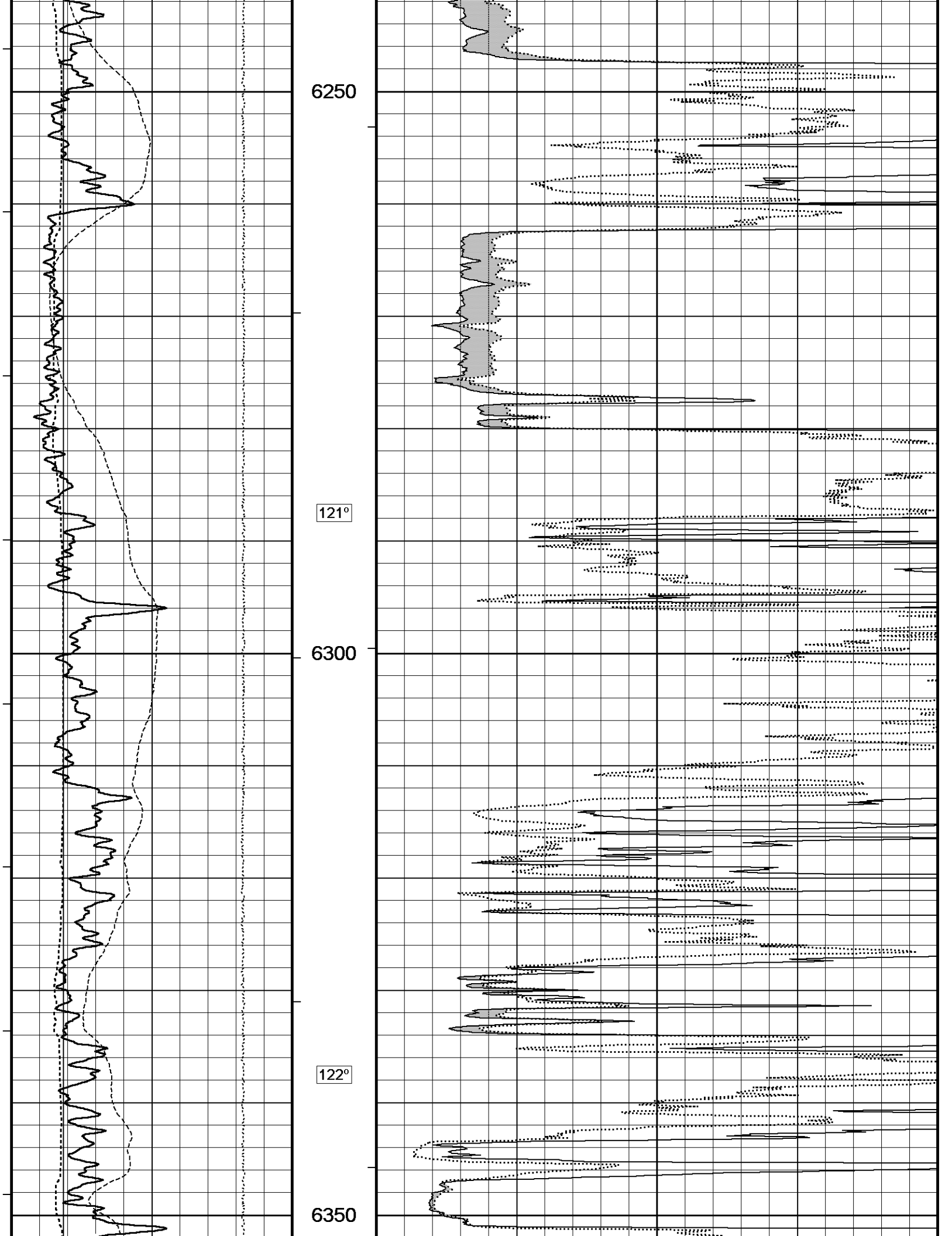

5700
118°
5750
BIT
MBTC
SPCG
GRGC
SMTU
MINV
MNRL
118°
200
5800

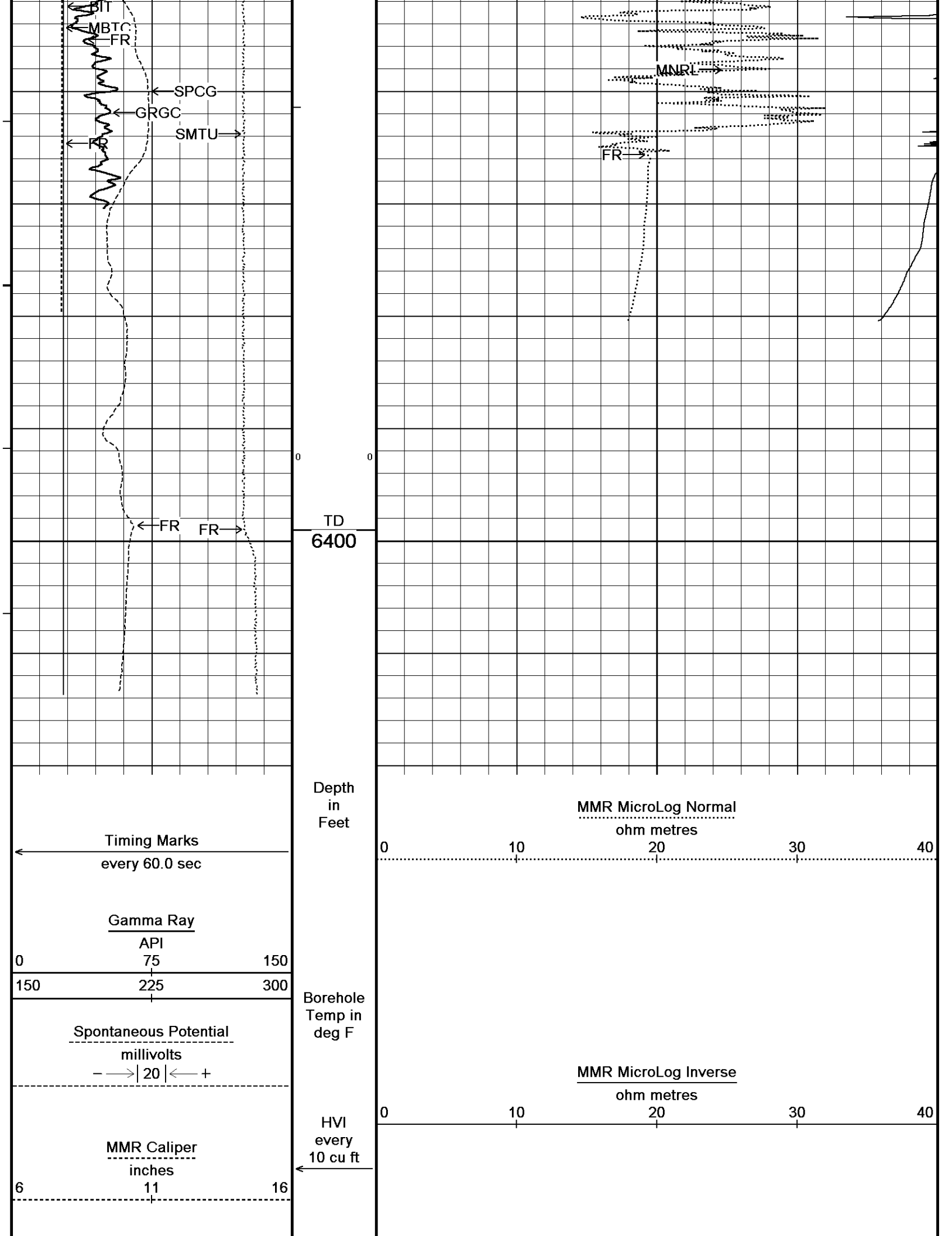

119°
5850
119°
5900

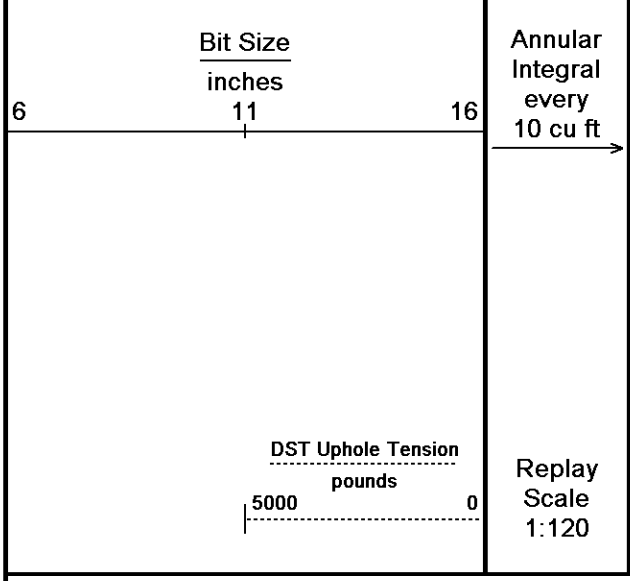

119°
100
5950
BIT
MBTC
MINV
MNRL
SPCG
GRGC
SMTU
120°
6000


121°
6050
100
121°
6100


121°
6150
BIT
MBTC
SPCG
GRGC
SMTU
MNRL
120°
6200
120°


6250
121°
6300
122°
6350


BIT
MBTC
FR
SPCG
GRGC
SMTU
FR
FR
FR
FR
MNRL
FR
0
0
TD
6400
Depth
in
Feet
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
Borehole
Temp in
deg F
HVI
every
10 cu ft
MMR MicroLog Normal
ohm metres
0
10
20
30
40
MMR MicroLog Inverse
ohm metres
0
10
20
30
40



Depth Based Data - Maximum Sampling Increment 2.5cm — Plotted on 03-NOV-2015 02:03
Filename: C:\Minimus 15.03.5939\Logs\O'Brien Hush #2-9\O'Brien Hush #2-9_001.dta — Recorded on 02-NOV-2015 20:23
System Versions: Logged with 15.03.5939 Plotted with 15.03.5939

10 INCH HIGH RESOLUTION

BEFORE SURVEY CALIBRATION

C:\Minimus 15.03.5939\Logs\O'Brien Hush #2-9\O'Brien Hush #2-9_002.dta

General Constants All 000

Last Edited on 02-NOV-2015,19:02

General Parameters		
Mud Resistivity	1.540	ohm-metres
Mud Resistivity Temperature	75.000	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	0.610	
RWA Constant M	2.150	
SW/APOR Tool Source	0.000	

Down-hole Tension Calibration SMS 0

Field Calibration on 31-OCT-2015 20:52

Reading No	Measured	Calibrated (lbs)
1	13795.62	0.00
2	14302.19	324.00

Gamma Calibration MCG-C 123

Field Calibration on 02-NOV-2015 16:32

	Measured	Calibrated (API)
Background	64	43
Calibrator (Gross)	739	499
Calibrator (Net)	675	456

Gamma Calibration Tolerances MCG-C 123

Ratio 1.480 (1.40 — 1.475 — 1.55) Counts/API

Gamma Constants MCG-C 123

Last Edited on 02-NOV-2015,18:45

Gamma Calibrator Number	MCGGRCC141

GRC-M Calibrator Jig in Use?	NO	
Inactive Background Jig in Use?	NO	
Mud Density	1.10	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Potassium Equivalence	Chloride	
K Mud Concentration	0.00	%

High Resolution Temperature Calibration MCG-C 123

Field Calibration on 31-OCT-2015,17:05

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	100.00	100.00

High Resolution Temperature Constants MCG-C 123

Last Edited on 22-SEP-2015,11:43

Pre-filter Length	11

SP Calibration MCG-C 123

Field Calibration on 02-NOV-2015 16:50

	Measured	Calibrated (mV)
Reference 1	100.3	100.0
Reference 2	-100.1	-99.9

Micro Normal and Micro Inverse Calibration MMR-C.A 247

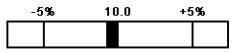
Base Calibration on 20-OCT-2015 12:47
Field Check on 02-NOV-2015 15:54

Base Calibration

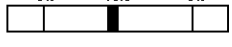
	Measured		Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	9.9	49.5	5.1	25.6
Micro Inverse	9.9	49.5	3.4	16.9

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	93.9	93.9
Micro Inverse	62.2	62.2

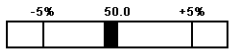
Micro Normal & Micro Inverse Calibration Tolerance MMR-C.A 247

Micro Normal Res. 1 9.9 

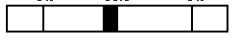
ohm

Micro Inverse Res. 1 9.9 

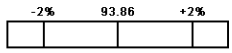
ohm

Micro Normal Res. 2 49.5 

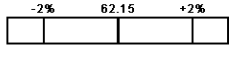
ohm

Micro Inverse Res. 2 49.5 

ohm

Micro Normal Base Check 93.9 

ohm-m

Micro Inverse Base Check 62.2 

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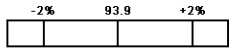
Micro Normal Field Check 93.9 

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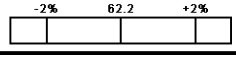
Micro Inverse Field Check 62.2 

ohm-m

Micro Normal and Micro Inverse Constants MMR-C.A 247

Last Edited on 20-OCT-2015,12:33

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	0.0000	inches

Caliper Calibration MMR-C.A 247

Base Calibration on 20-OCT-2015 12:39
Field Calibration on 02-NOV-2015 15:48

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14395	5.98
2	17722	7.97
3	20970	9.86
4	24935	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.95	7.97

Caliper Calibration Tolerances MMR-C.A 247

Short Arm Field Cal.	7.95	7.77	7.97	8.17	in

Micro-Resistivity Caliper Constants MMR-C.A 247

Last Edited on

Sonde Configuration	Resistivity Mode

Neutron Calibration MDN-A.B 114

Base Calibration on 09-OCT-2015 17:26
Field Check on 02-NOV-2015 16:43

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3115	97	3714	110
Ratio	32.183		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	2099	3004
Ratio	0.699	

Field Check

	Calibrated (cps)	
	2108	3030
Ratio	0.696	

Neutron Calibration Tolerances MDN-A.B 114

Ratio	32.183	-5%	33	+5%
Base Check	0.699	0.65	0.7	0.75
Field Check	0.696	0.679	0.699	0.719

Neutron Constants MDN-A.B 114

Last Edited on 02-NOV-2015,18:45

Neutron Source Id	P0204NN	
Neutron Jig Number	NJ5736	
Air Hole Processing	Legacy	
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	None	
Formation Pressure	N/A	kpsi
Temperature Source	Constant Value	
Temperature	68.00	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	None	
Formation Fluid Salinity	N/A	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-A.A 135

Base Calibration on 15-OCT-2015 15:11
Field Check on 02-NOV-2015 15:46

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	963.1	126.8
Base Check		281.2
Field Check		281.2

FE Calibration Tolerances MFE-A.A 135

Reference 2	963.1	-3%	980.0	+3%	ohm
Base Check	281.2	-2%	277.0	+2%	ohm-m
Field Check	281.2	-2%	281.2	+2%	ohm-m

FE Constants MFE-A.A 135

Last Edited on 02-NOV-2015,18:45

Running Mode	No Sleeve	
MFE K Factor	0.1268	
Borehole Correction Constants		
Sonde Position	0.5	inches
Hole Size Source	Density Caliper	
Hole Size Constant Value	N/A	inches
Rm Source	Global Value: Temperature Corrected	
Temp. for Rm Corr.	MCG External Temperature	

Induction Calibration MAI-A.A 111

Base Calibration on 05-AUG-2014,09:34
Field Check on 02-NOV-2015 15:39

Base Calibration

Test Loop Calibration	Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High
1	17.6	473.6	9.3	966.2
2	6.4	385.9	7.6	821.4
3	3.2	264.0	5.2	566.0
4	2.1	135.5	2.6	279.2

Array Temperature 23.0 Deg F

Test Loop Calibration Verified 27-OCT-2015 14:48

Channel	Base Check (mmho/m)		Field Check (mmho/m)		
	Low	High	Low	High	
1	0.0	0.0	10.1	3871.3	
2	0.0	0.0	27.9	3526.5	
3	0.0	0.0	27.4	3019.9	
4	0.0	0.0	18.0	2057.5	
Deep			16.7	1961.1	
Medium			40.9	3974.7	
Shallow			41.6	5230.4	
Array Temperature		0.0		67.1	Deg F

Induction Calibration Tolerances MAI-A.A 111

Low Conductivity 1	17.6	13.0 / 17.0 / 21.0	mmho/m	High Conductivity 1	473.6	430.0 / 475.0 / 520.0 mmho/m
Low Conductivity 2	6.4	4.5 / 6.0 / 7.5	mmho/m	High Conductivity 2	385.9	345.0 / 385.0 / 425.0 mmho/m
Low Conductivity 3	3.2	1.0 / 3.5 / 6.0	mmho/m	High Conductivity 3	264.0	240.0 / 260.0 / 280.0 mmho/m
Low Conductivity 4	2.1	0.0 / 2.0 / 4.0	mmho/m	High Conductivity 4	135.5	120.0 / 135.0 / 150.0 mmho/m
Background Vx 1	0.0	-110.0 / -32.5 / 45.0	mmho/m	Phase Check Loop 1	0.0	-2.0 / 0.0 / 2.0 %
Background Vx 2	0.0	-35.0 / 20.0 / 75.0	mmho/m	Phase Check Loop 2	0.0	-2.0 / 0.0 / 2.0 %
Background Vx 3	0.0	-60.0 / 2.5 / 65.0	mmho/m	Phase Check Loop 3	0.0	-2.0 / 0.0 / 2.0 %
Background Vx 4	0.0	-50.0 / -17.5 / 15.0	mmho/m	Phase Check Loop 4	0.0	-2.0 / 0.0 / 2.0 %

Induction Constants MAI-A.A 111

Last Edited on 02-NOV-2015,18:44

Induction Model	RtAP-WBM	
Borehole Correction Constants		
Tool Centred	No	
Hole Size Source	Density Caliper	
Hole Size Constant Value	N/A	inches
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
Rm Source	Global Value: Temperature Corrected	
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

Symmetrised Receiver Gains

Receiver 1	1.00
Receiver 2	1.00
Receiver 3	1.00
Receiver 4	1.00

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 111

Field Calibration on 24-NOV-2014,10:23

	Measured	Calibrated(Deg F)
Lower	10.00	10.00
Upper	100.00	100.00

High Resolution Temperature Constants MAI-A.A 111

Last Edited on 26-JUN-2014,15:06

Pre-filter Length	11

Caliper Calibration MPD-C.A 216

Base Calibration on 27-OCT-2015 15:00
Field Calibration on 02-NOV-2015 15:57

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	20748	3.99
2	30736	5.98
3	40832	7.97
4	50672	9.86
5	61360	11.92
6	N/A	N/A

Field Calibration

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

Caliper Calibration Tolerances MPD-C.A 216

Short Arm Field Cal.	7.94	7.77	7.97	8.17	in

Photo Density Calibration MPD-C.A 216

Base Calibration on 27-OCT-2015 15:24
Field Check on 02-NOV-2015 16:03

Density Calibration

Base Calibration

	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Background	1075	1260		
Reference 1	52868	25509	59556	30836
Reference 2	21121	2391	24941	2541

Field Check at Base

1074.9	1260.2

Field Check

1070.4 1266.4

PE Calibration

Base Calibration	WS	Measured WH	Ratio	Calibrated Ratio
Background	196	953		
Reference 1	21690	52686	0.415	0.371
Reference 2	5992	20992	0.289	0.272

Field Check at Base

195.7 953.2

Field Check

194.2 948.7

Photo Density Calibration Tolerances MPD-C.A 216

Near Density Ratio	2.58	-5% 2.52 +5%	Far Density Ratio	21.44	-5% 21.00 +5%
PE Calibration	0.118	0.089 0.110 0.131			
Near Den. Field Check	1070.4	-3% 1074.9 +3%	Far Den. Field Check	1266.4	-3% 1260.2 +3%
PE WS Field Check	194.2	-6% 195.7 +6%	PE WH Field Check	948.7	-6% 953.2 +6%

Density Constants MPD-C.A 216

Last Edited on 02-NOV-2015,18:45

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	1.10	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

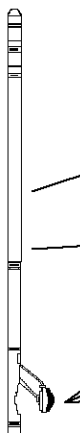
DOWNHOLE EQUIPMENT

C:\Minimus 15.03.5939\Logs\O'Brien Hush #2-9\O'Brien Hush #2-9_002.dta

Cablehead, 11 pin
CBH-CA 155 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Comms Gamma
MCG-C 123 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-Resistivity
MMR-C.A 247 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in



43.50 ft GRGC - MCG Gamma Ray

40.59 ft CGXT - MCG External Temperature

34.24 ft MBTC - MMR Caliper

33.24 ft MINV - MMR MicroLog Inverse

33.24 ft MNRL - MMR MicroLog Normal

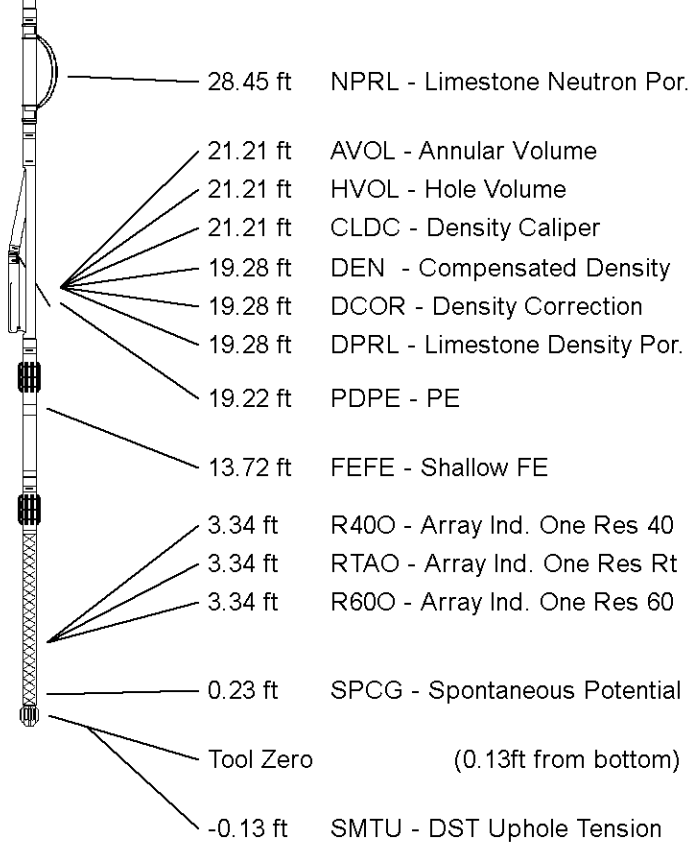
Compact Neutron
MDN-A.B 114 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper
MPD-C.A 216 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

Compact Focussed Electric
MFE-A.A 135 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Induction
MAI-A.A 111 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 51.18 ft Weight: 407.9 lb



All measurements relative to tool zero.

COMPANY	O'BRIEN ENERGY RESOURCES CORP.
WELL	HUSH #2-9
FIELD	BRUNO NE PROSPECT
PROVINCE/COUNTY	MEADE
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2742.00	feet	First Reading	6366.00	feet
Elevation Drill Floor	2740.00	feet	Depth Driller	6400.00	feet
Elevation Ground Level	2729.00	feet	Depth Logger	6399.00	feet

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MICRORESISTIVITY LOG