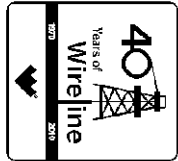




# Weatherford

## MICRORESISTIVITY LOG

COMPANY **REDLAND RESOURCES INC.**  
 WELL **BRYNN # 9-15**  
 FIELD **HARDTNER**  
 PROVINCE/COUNTY **BARBER**  
 COUNTRY/STATE **U.S.A. / KANSAS**  
 LOCATION **660' FSL & 1980' FEL SW/4**



SEC 9 TWP 35 RGE 12W Other Services  
 API Number 15-007-23731 MAI/MFE  
 Permit Number MPD/MDN

Permanent Datum G.L., Elevation 1396 feet  
 Log Measured From KB  
 Drilling Measured From K.B. @ 13 FEET

Elevations:  
 KB 1409.00  
 DF 1407.00  
 GL 1396.00

Date	03-SEP-2011	
Run Number	ONE	
Depth Driller	5076.00	feet
Depth Logger	5070.00	feet
First Reading	5034.00	feet
Last Reading	3800.00	feet
Casing Driller	262.00	feet
Casing Logger	262.00	feet
Bit Size	7.875	inches
Hole Fluid Type	CHEMICAL	
Density / Viscosity	9.40 lb/USg	
PH / Fluid Loss	10.50	10.00 ml/30Min
Sample Source	FLOWLINE	
Rm @ Measured Temp	0.45 @ 90.0	ohm-m
Rmf @ Measured Temp	0.36 @ 90.0	ohm-m
Rmc @ Measured Temp	0.54 @ 90.0	ohm-m
Source Rmf / Rmc	CALC	CALC
Rm @ BHT	0.33 @123.0	ohm-m
Time Since Circulation	5 HOURS	
Max Recorded Temp	123.00	deg F
Equipment Name	COMPACT	
Equipment / Base	13096	LIB
Recorded By	A. GIAMBALVO	
Witnessed By	BETH BROCK	W. STAMBAUGH
S.O. / JOB #	3531151	LB11-225

BOREHOLE RECORD			Last Edited: 03-SEP-2011 02:20
Bit Size inches	Depth From feet	Depth To feet	
7.875	262.00	5070.00	

CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	13.375	0.00	262.00	48.00

**REMARKS**

Tools Used: MPD, MCG, MDN, MFE, MAI, MML.  
 Hardware: MPD: 8 inch profile plate used. MAI, MSS and MFE: 0.5 Inch standoffs used. MDN: Dual Bowspring used.  
 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.  
 Annular volume with 4.5 inch production casing = 285 cu. ft  
 Service order #3531151  
 Rig: Duke #7  
 Engineer: A. Giambalvo  
 Operator(s): N. Adame, C. Veatch

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

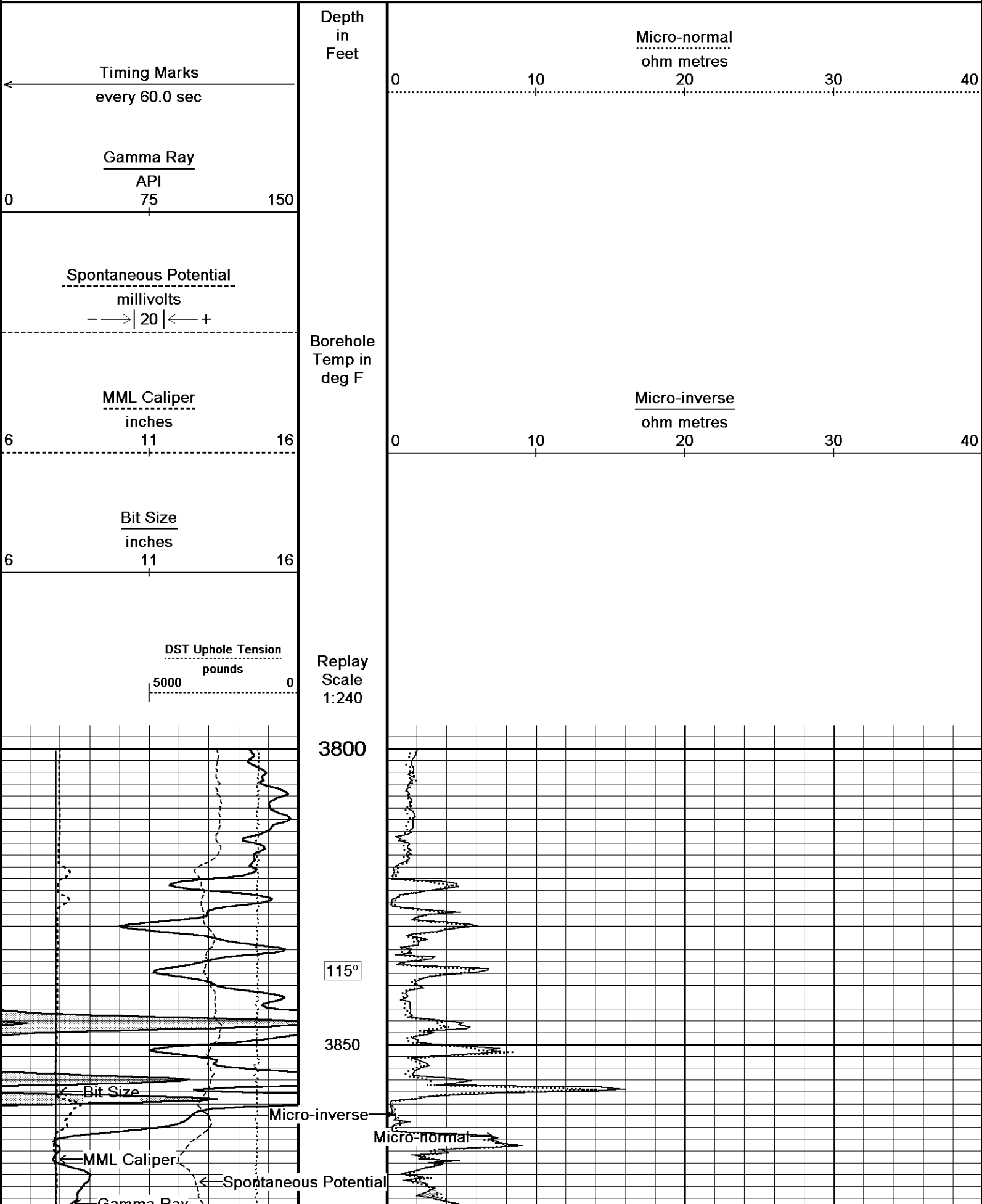
Depth Based Data - Maximum Sampling Increment 10.0cm

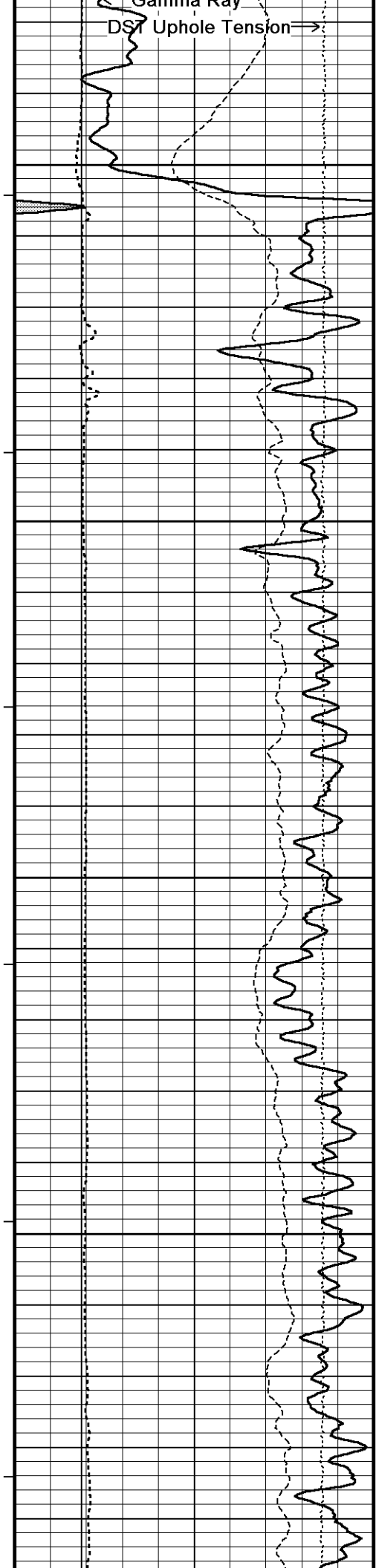
Plotted on 18-JAN-2012 14:48

Filename: C:\DOCUME~1\ScheffJL\LOCALS~1\Temp\Weatherford Pr...\Redland Brynn # 9-15\_002.dta

Recorded on 03-SEP-2011 02:21

System Versions: Logged with 11.03.4044 Plotted with 12.01.3513





115°

3900

116°

3950

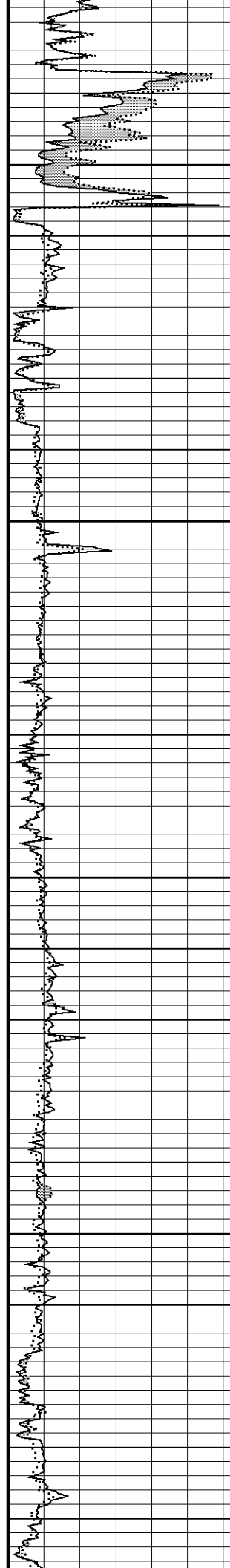
116°

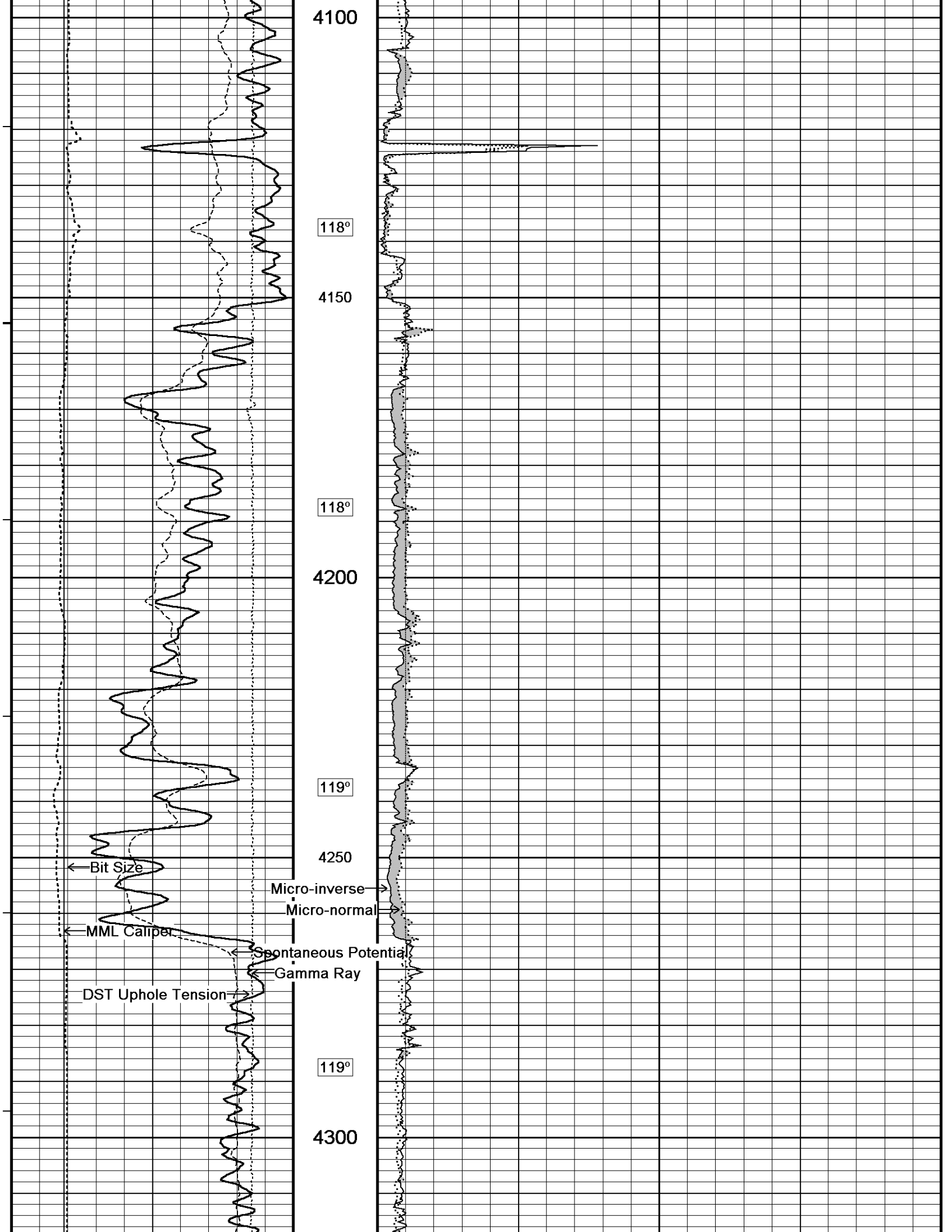
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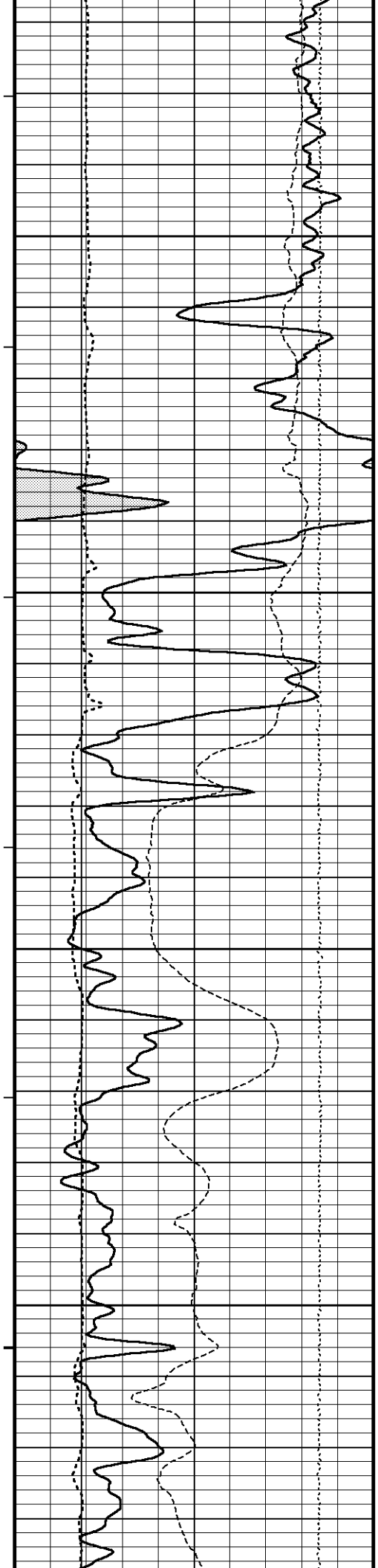
117°

4050

117°







120°

4350

120°

4400

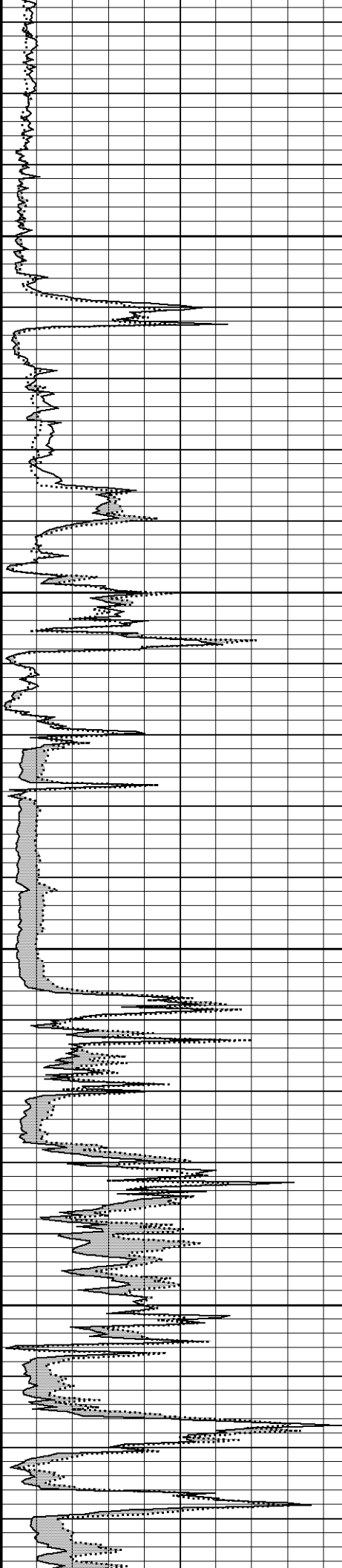
121°

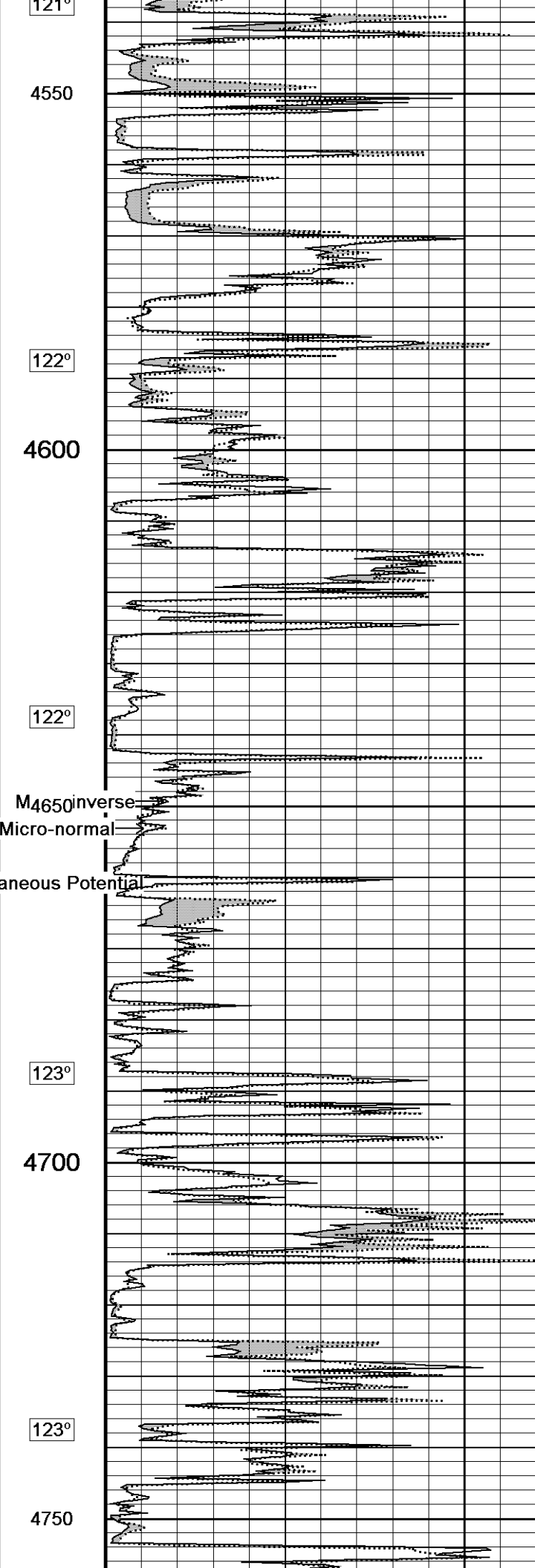
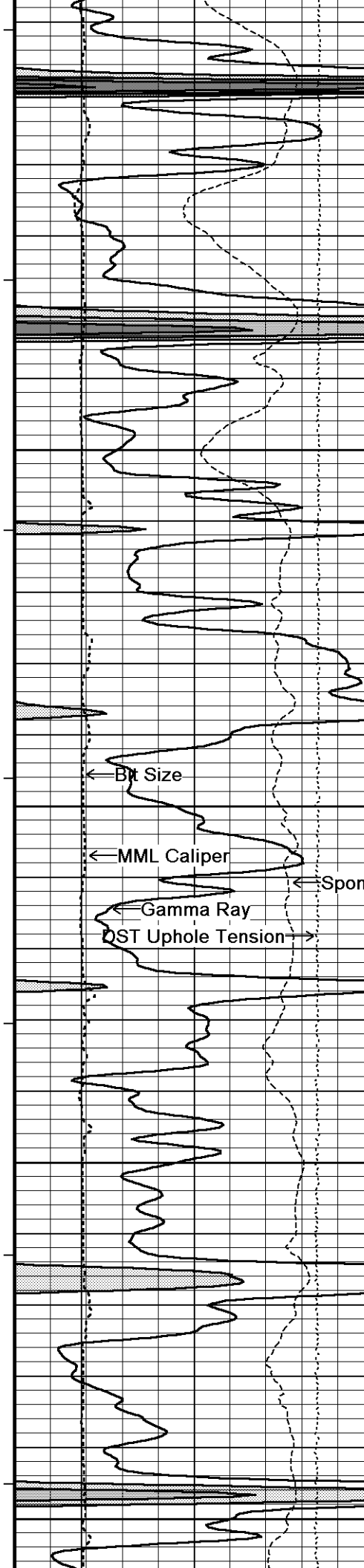
4450

121°

4500

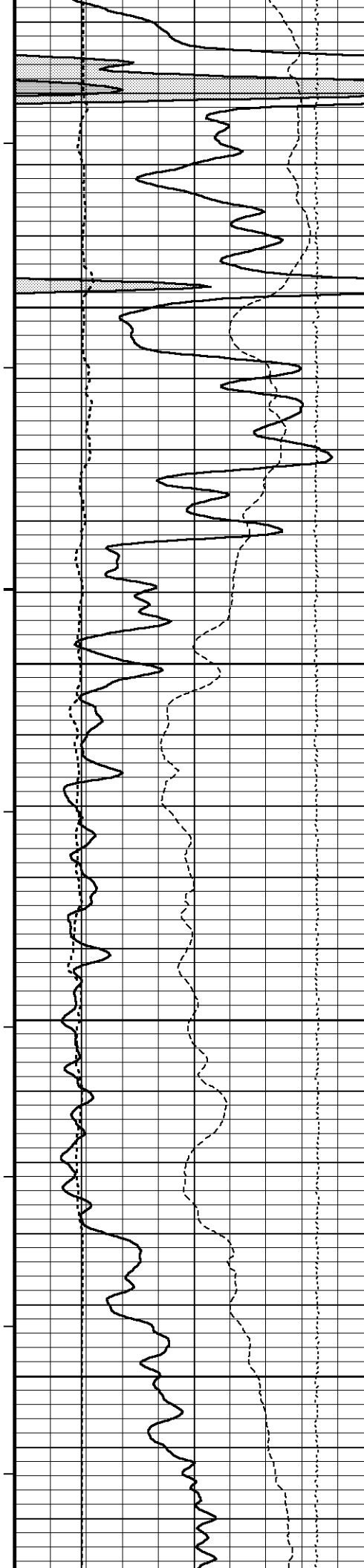
121°





121°  
4550  
122°  
4600  
122°  
123°  
4700  
123°  
4750

← Bit Size  
← MML Caliper  
← Gamma Ray  
DST Uphole Tension →  
← Spontaneous Potential  
M4650inverse  
Micro-normal



123°

4800

124°

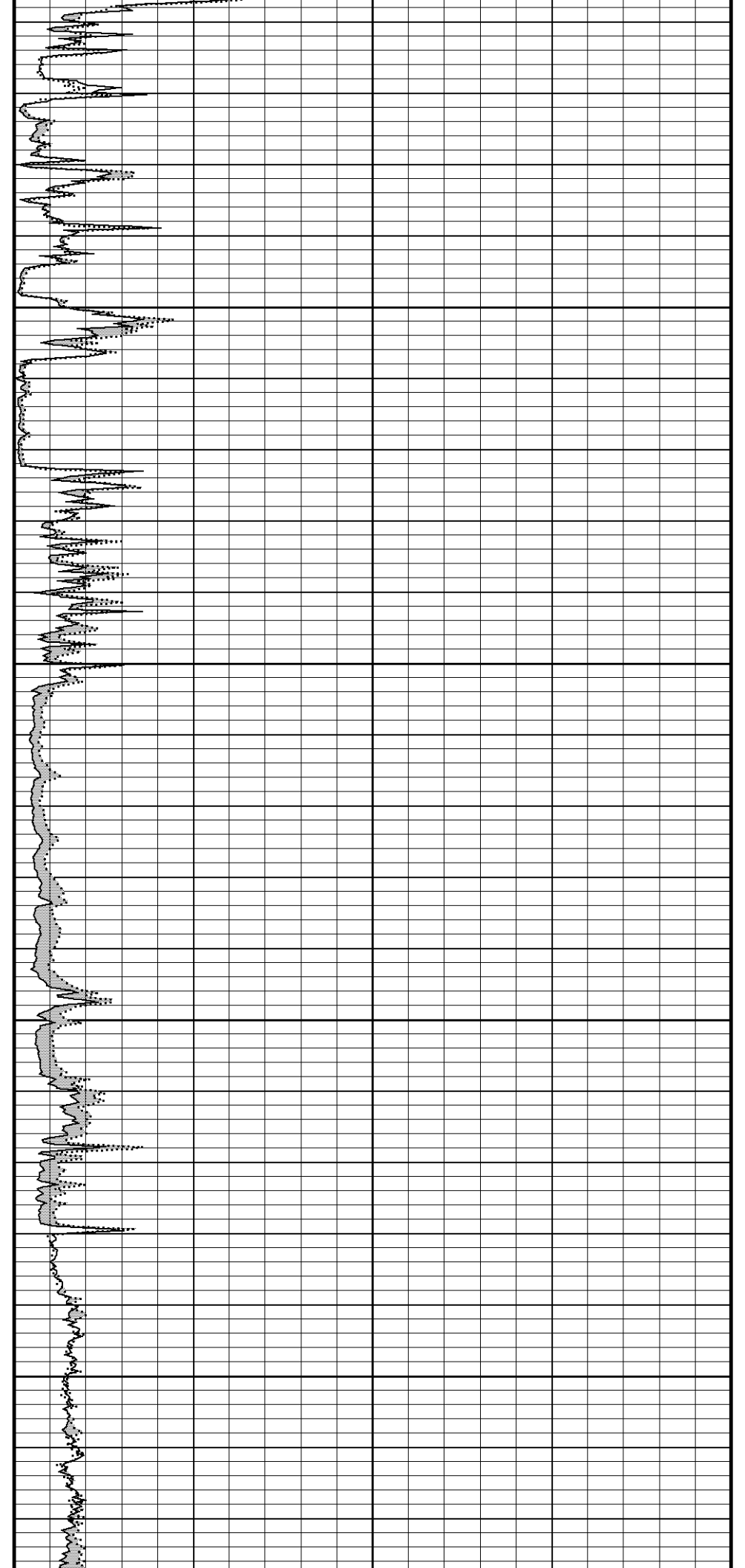
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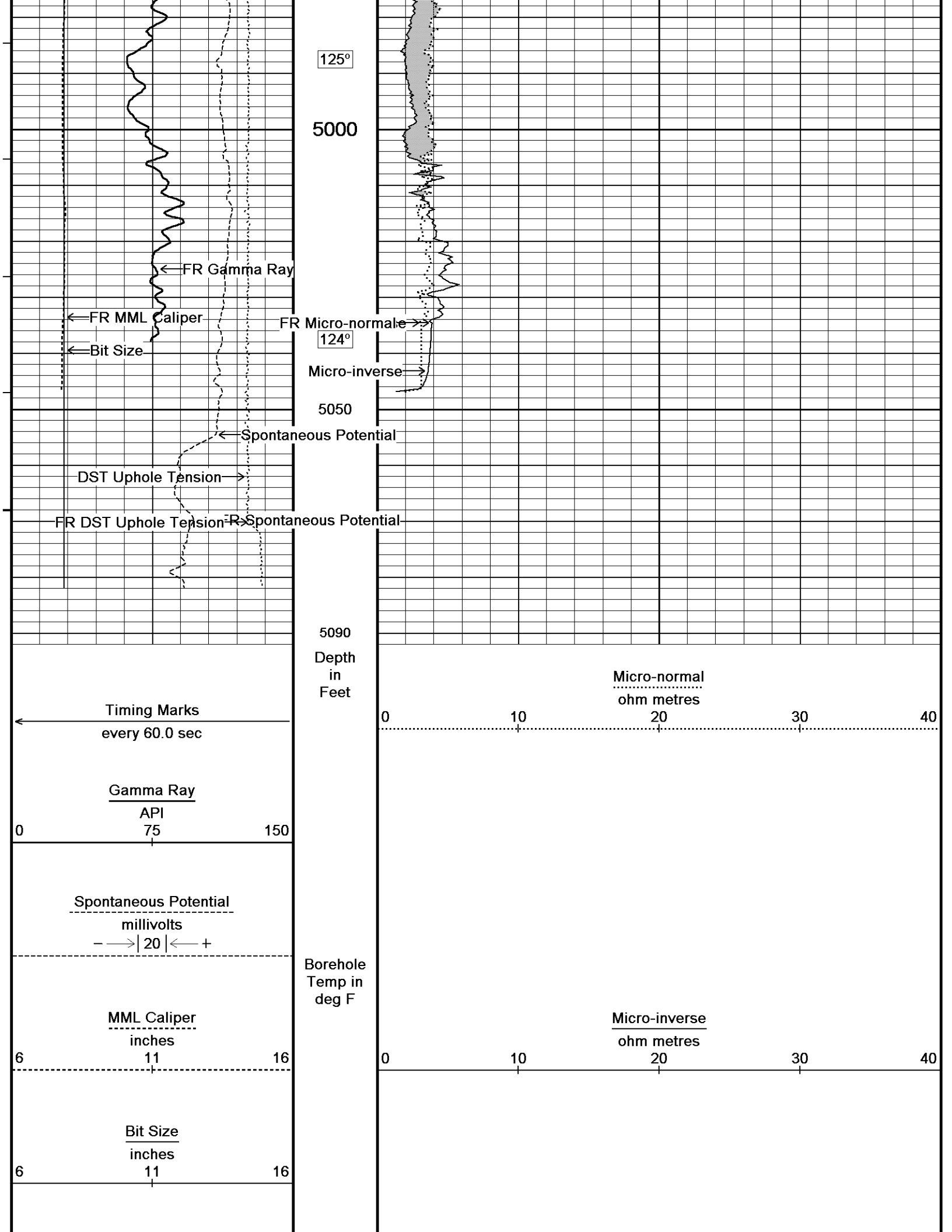
124°

4900

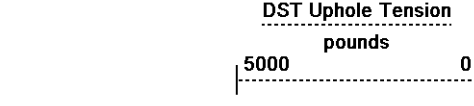
125°

4950









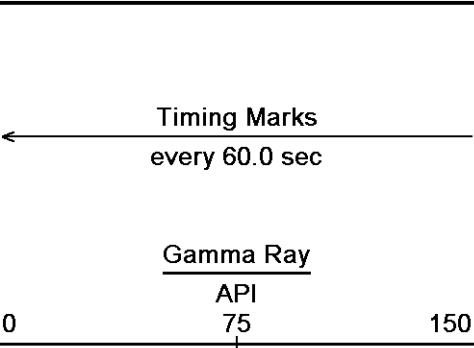
Replay  
Scale  
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 18-JAN-2012 14:48  
 Filename: C:\DOCUME~1\ScheffJL\LOCALS~1\Temp\Weatherford Pr...\Redland Brynn # 9-15\_002.dta  
 Recorded on 03-SEP-2011 02:21  
 System Versions: Logged with 11.03.4044 Plotted with 12.01.3513

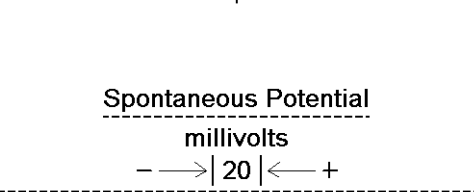
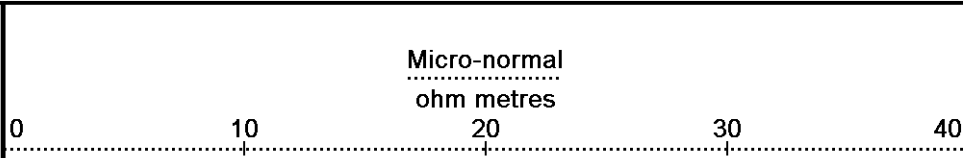
5 INCH MAIN

REPEAT SECTION

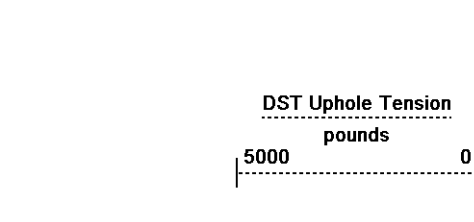
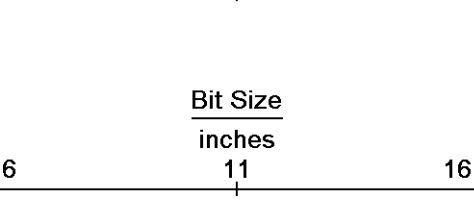
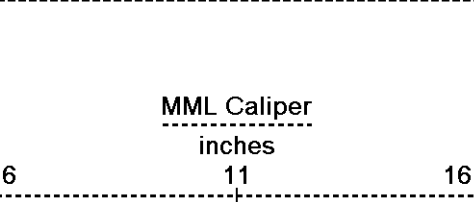
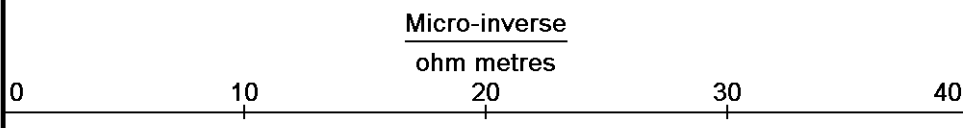
Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 18-JAN-2012 14:48  
 Filename: C:\DOCUME~1\ScheffJL\LOCALS~1\Temp\Weatherford Pr...\Redland Brynn # 9-15\_001.dta  
 Recorded on 03-SEP-2011 01:53  
 System Versions: Logged with 11.03.4044 Plotted with 12.01.3513



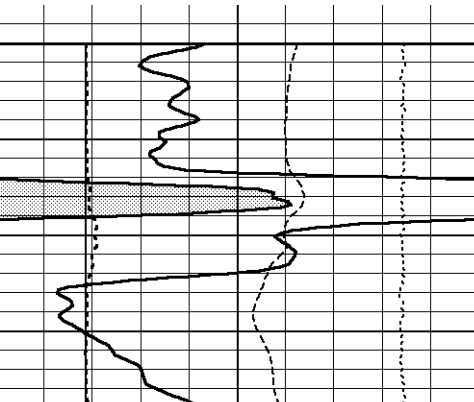
Depth  
in  
Feet



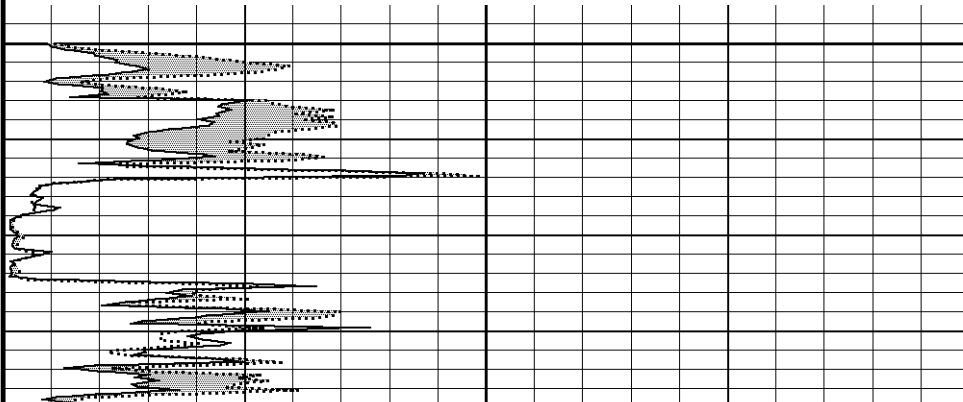
Borehole  
Temp in  
deg F



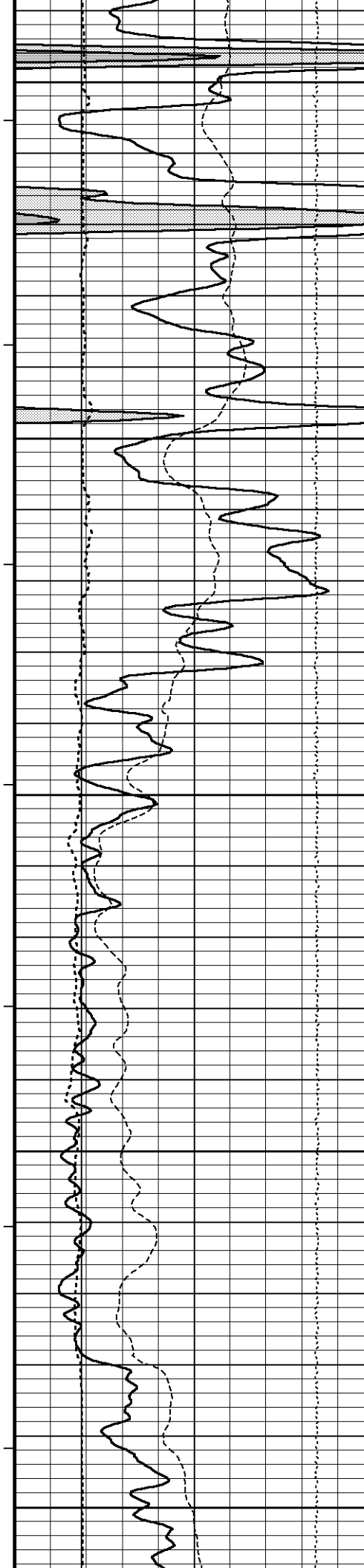
Replay  
Scale  
1:240



4700



122°



4750

122°

4800

123°

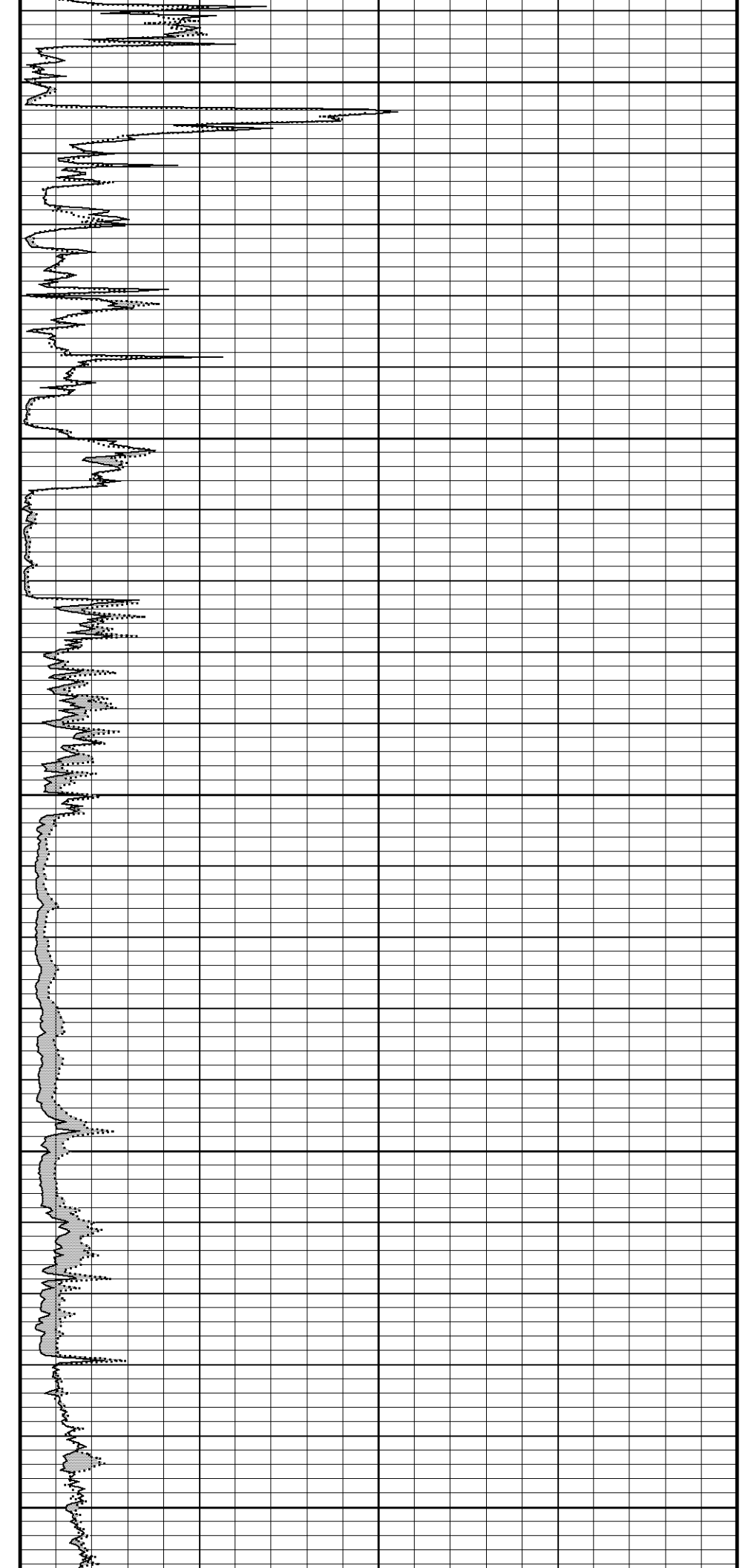
4850

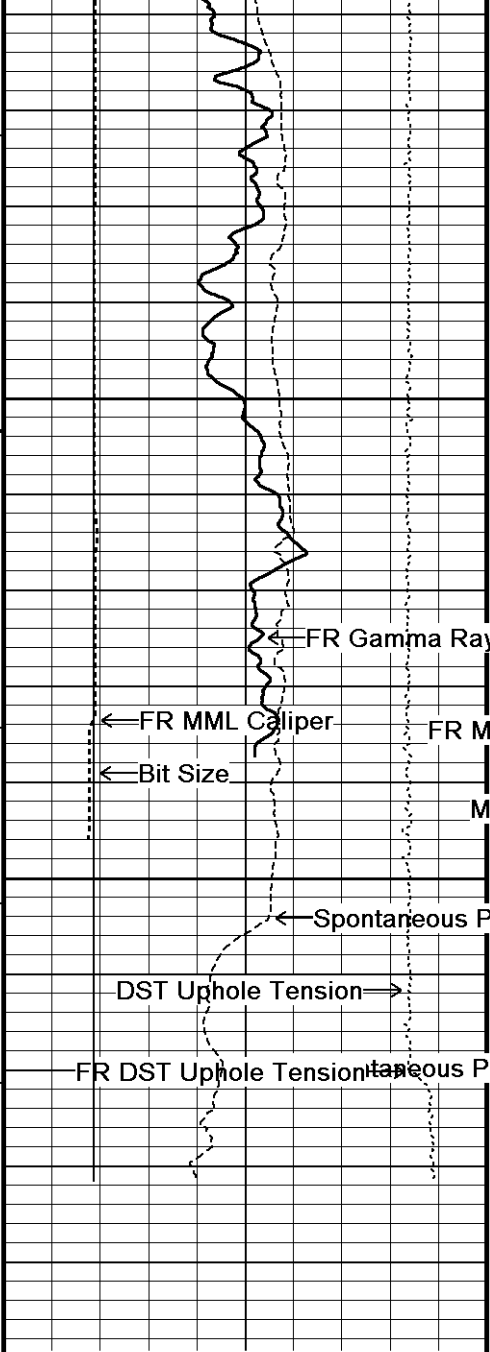
123°

4900

123°

4950





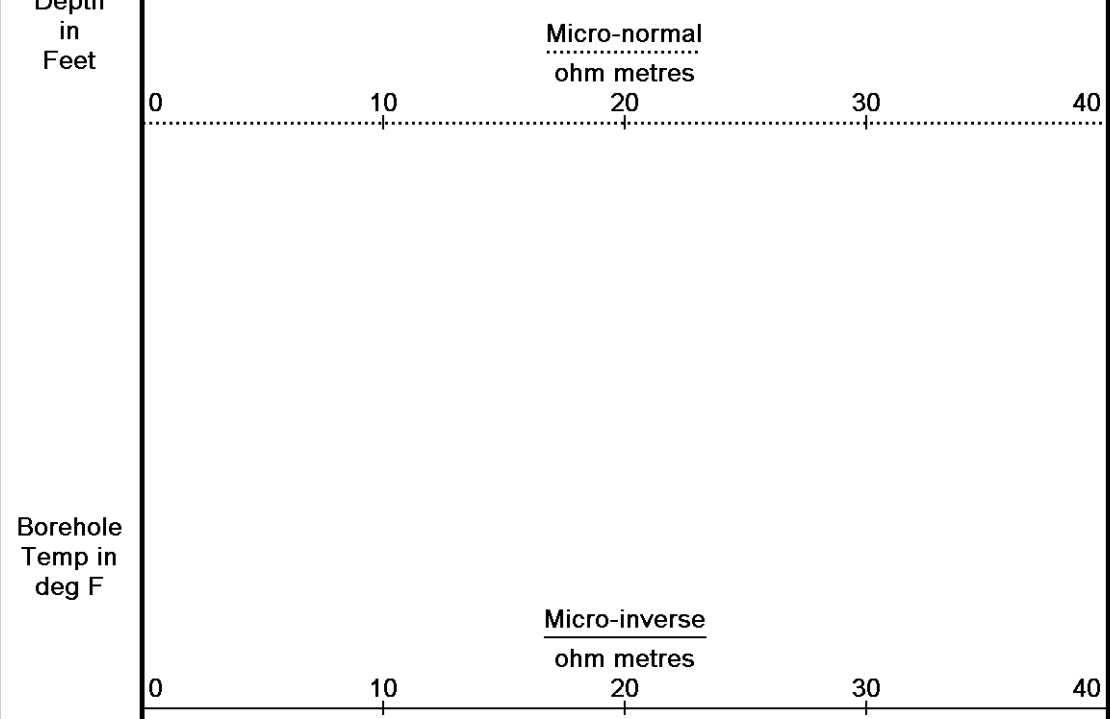
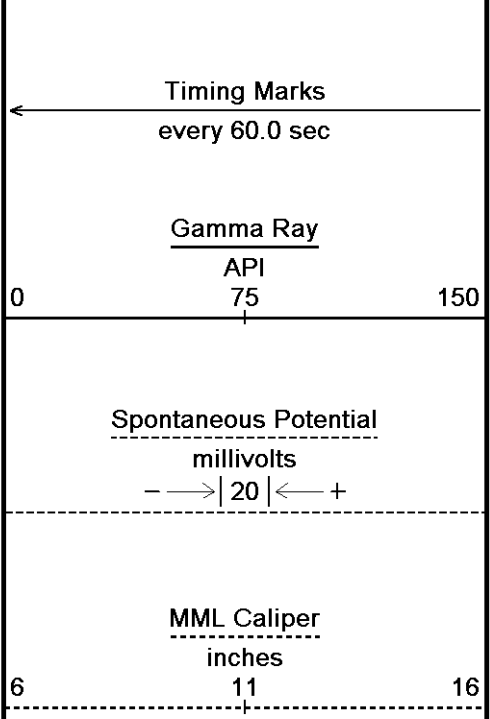
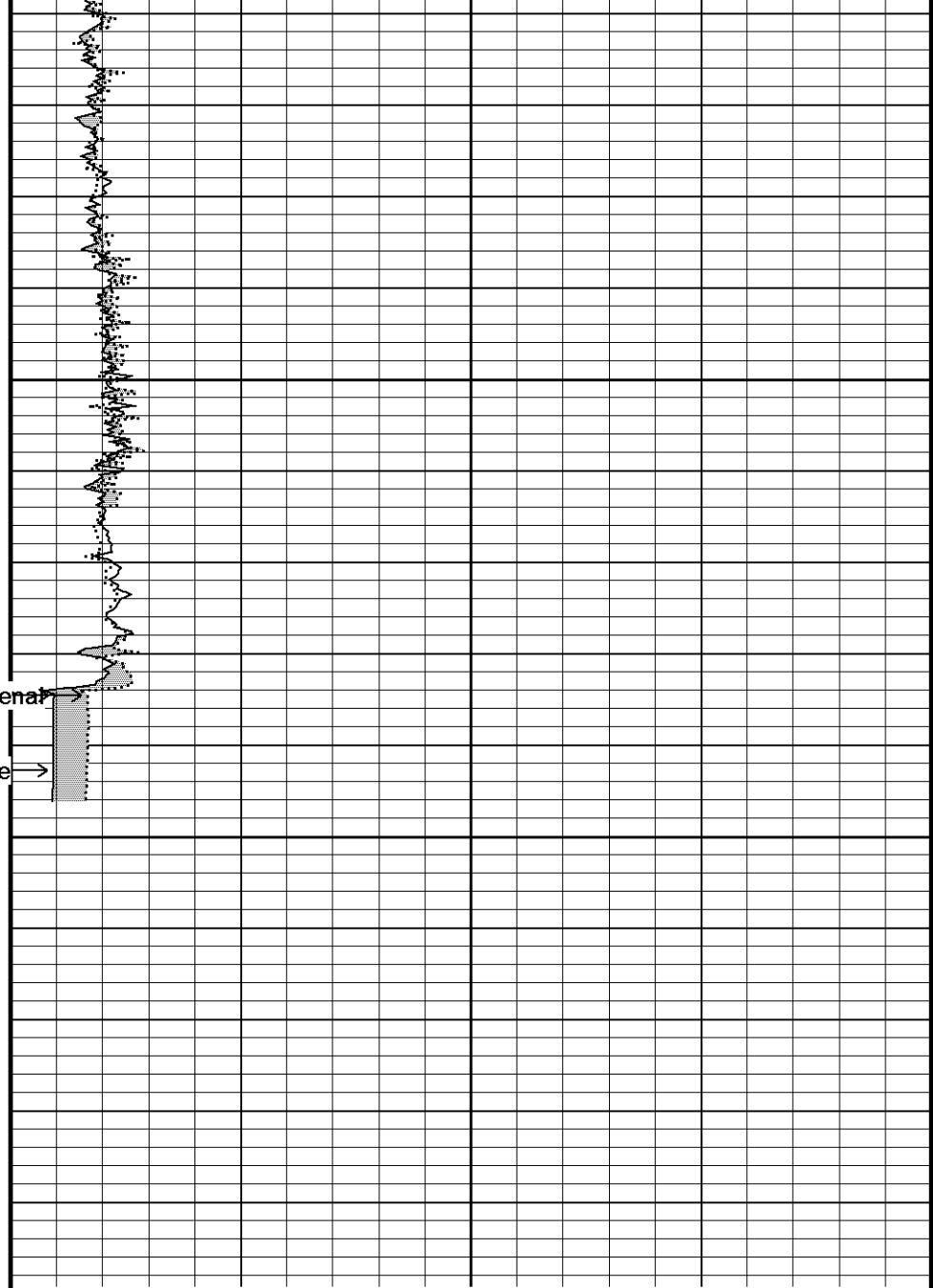
123°

5000

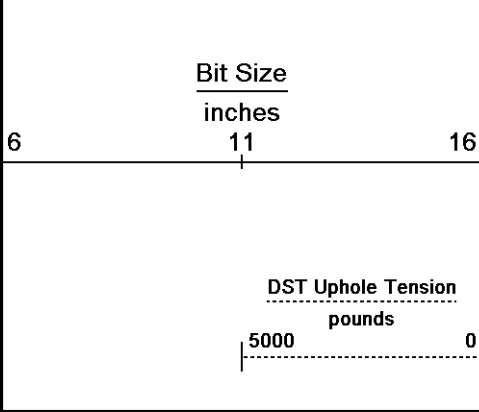
5050

5096

Depth in Feet



Borehole Temp in deg F



Replay  
Scale  
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 18-JAN-2012 14:48  
 Filename: C:\DOCUME~1\SchefFJL\LOCALS~1\Temp\Weatherford Pr...Redland Brynn # 9-15\_001.dta Recorded on 03-SEP-2011 01:53  
 System Versions: Logged with 11.03.4044 Plotted with 12.01.3513

↑ REPEAT SECTION ↑

**BEFORE SURVEY CALIBRATION**  
 C:\DOCUME~1\SchefFJL\LOCALS~1\Temp\Weatherford PreView\0\Redland Brynn # 9-15\_002.dta

General Constants All 000 Last Edited on 03-SEP-2011 02:17

General Parameters		
Mud Resistivity	0.450	ohm-metres
Mud Resistivity Temperature	90.000	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	Base Density Porosity	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	

Down-hole Tension Calibration SMS 0 Field Calibration on 28-JUL-2011 17:55

Reading No	Measured	Calibrated (lbs)
1	12257.67	0.00
2	13806.99	650.00

Gamma Calibration MCG-B 39 Field Calibration on 30-AUG-2011 15:55

	Measured	Calibrated (API)
Background	69	46
Calibrator (Gross)	751	502
Calibrator (Net)	682	456

Gamma Constants MCG-B 39 Last Edited on 02-SEP-2011 13:07

Gamma Calibrator Number	grc141	
Mud Density	1.13	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

SP Calibration MCG-B 39 Field Calibration on 12-AUG-2011 22:38

	Measured	Calibrated (mV)
Reference 1	106.3	100.0
Reference 2	-96.0	-100.0

High Resolution Temperature Calibration MCG-B 39

Field Calibration on 12-AUG-2011 22:38

	Measured	Calibrated(Deg F)
Lower	0.00	0.00
Upper	0.00	0.00

High Resolution Temperature Constants MCG-B 39

Last Edited on 25-JUL-2011 15:38

Pre-filter Length 11

Micro Normal and Micro Inverse Calibration MML-A 9

Base Calibration on 25-JUL-2011 15:19  
Field Check on 30-AUG-2011 15:50

Base Calibration

Channel	Measured		Calibrated (ohm-m)	
	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.1	59.7	2.6	12.8
Micro Inverse	15.6	77.9	1.7	8.4

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	32.4	32.4
Micro Inverse	16.4	16.4

Micro Normal and Micro Inverse Constants MML-A 9

Last Edited on 03-SEP-2011 02:17

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 9

Base Calibration on 25-JUL-2011 15:15  
Field Calibration on 30-AUG-2011 15:48

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14873	5.98
2	18342	7.97
3	21621	9.86
4	25326	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

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

Neutron Calibration MDN-A.B 39

Base Calibration on 25-JUL-2011 16:27  
Field Check on 30-AUG-2011 16:09

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
Ratio	2945	93	3714	110
	31.807		33.764	

Field Calibrator at Base

Calibrated (cps)
2258
3233
0.698

Field Check

Calibrated (cps)
2073
3255
0.637

Neutron Constants MDN-A.B 39

Last Edited on 03-SEP-2011 02:18

Neutron Source Id	N1095	
Neutron Jig Number	NECD117	
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	None	
Formation Pressure	N/A	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 67**

Base Calibration on 25-JUL-2011 15:26  
Field Check on 30-AUG-2011 15:39

Base Calibration		
	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	960.8	126.8
Base Check		280.7
Field Check		280.7

**FE Constants MFE-A.A 67**

Last Edited on 03-SEP-2011 02:18

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

**High Resolution Temperature Calibration MAI-A.A 188**

Field Calibration on 12-AUG-2011 22:41

	Measured	Calibrated(Deg F)
Lower	32.00	32.00
Upper	68.00	68.00

**High Resolution Temperature Constants MAI-A.A 188**

Last Edited on 21-JUN-2011 20:05

Pre-filter Length	11
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**Induction Calibration MAI-A.A 188**

Base Calibration on 25-JUL-2011 15:59  
Field Check on 30-AUG-2011 15:37

Base Calibration					
Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High	
1	16.5	472.3	9.3	966.2	
2	6.0	378.3	7.6	821.4	
3	3.5	260.7	5.2	566.0	
4	1.1	135.1	2.6	279.2	
Array Temperature	82.2		Deg F		
Channel	Base Check (mmho/m)		Field Check (mmho/m)		
	Low	High	Low	High	
1	0.0	0.0	15.6	3846.3	
2	0.0	0.0	31.1	3566.9	
3	0.0	0.0	28.5	3038.2	
4	0.0	0.0	20.9	2036.9	
Deep	0.0	0.0	18.1	1921.8	
Medium	0.0	0.0	40.3	4051.8	
Shallow	0.0	0.0	45.8	5358.2	
Array Temperature	0.0		88.2 Deg F		

**Induction Constants MAI-A.A 188**

Last Edited on 03-SEP-2011 02:21

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	

#### Caliper Calibration MPD-B 64

Base Calibration on 17-AUG-2011 11:32  
Field Calibration on 30-AUG-2011 15:41

Base Calibration			
Reading No		Measured	Calibrator Size (in)
1		12448	3.99
2		20960	5.98
3		29519	7.97
4		37920	9.86
5		47152	11.92
6		N/A	N/A
Field Calibration			
		Measured Caliper (in)	Actual Caliper (in)
		5.96	5.98

#### Photo Density Calibration MPD-B 64

Base Calibration on 17-AUG-2011 11:49  
Field Check on 30-AUG-2011 15:47

Density Calibration					
Base Calibration		Measured		Calibrated (sdu)	
		Near	Far	Near	Far
Reference 1	59462	30873	59556	30836	
Reference 2	23795	2766	24941	2541	
Field Check at Base					
	1214.8	1407.4			
Field Check					
	1209.6	1414.0			
PE Calibration					
Base Calibration		Measured		Calibrated	
	WS	WH	Ratio	Ratio	
Background	220	1086			
Reference 1	22916	59258	0.390	0.371	
Reference 2	6604	23658	0.283	0.272	
Field Check at Base					
	220.4	1086.2			
Field Check					
	220.4	1080.4			

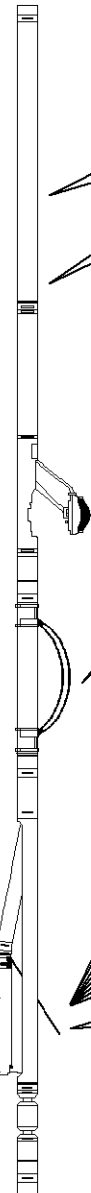
Density Source Id	P57072B	
Nylon Calibrator Number	DNCE695	
Aluminium Calibrator Number	DACD698	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.13	gm/cc
Mud Density Z/A Multiplier	1.11	
Mud Filtrate Density	1.00	gm/cc
Dry 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	0.00

### DOWNHOLE EQUIPMENT

C:\DOCUME~1\SchefJL\LOCALS~1\Temp\Weatherford PreView\0\Redland Brynn # 9-15\_002.dta

- Compact Comms Gamma  
MCG-B 39 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in
  
- Compact Comms Gamma  
MCG-B 39 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in
  
- Compact Micro-log  
MML-A 9 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in
  
- Compact Micro-log  
MML-A 9 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in
  
- Compact Neutron  
MDN-A.B 39 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in
  
- Compact Neutron  
MDN-A.B 39 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in
  
- Compact Density/Caliper  
MPD-B 64 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in
  
- Compact Density/Caliper  
MPD-B 64 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in
  
- SKJ-D.A Compact Knuckle Joint  
SKJ-D.A 91 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in
  
- SKJ-D.A Compact Knuckle Joint  
SKJ-D.A 91 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in
  
- Compact Focussed Electric  
MFE-A.A 67 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in
  
- Compact Focussed Electric  
MFE-A.A 67 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in



- 45.04 ft GRGC - Gamma Ray
- 45.04 ft GRGC - Gamma Ray
- 42.13 ft CGXT - MCG External Temperature
- 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
- 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.
- 30.61 ft NPRL - Limestone Neutron Por.
  
- 23.37 ft CLDC - Density Caliper
- 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
- 21.44 ft DCOR - Density Correction
- 21.44 ft DPRL - Limestone Density Por.
- 21.44 ft DEN - Compensated Density
- 21.38 ft PDPE - PE
- 21.38 ft PDPE - PE
  
- 13.72 ft FEFE - Shallow FE
- 13.72 ft FEFE - Shallow FE



Compact Induction  
 MAI-A.A 188 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Compact Induction  
 MAI-A.A 188 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



- 3.34 ft R400 - Array Ind. One Res 40
  - 3.34 ft RTAO - Array Ind. One Res Rt
  - 3.34 ft R400 - Array Ind. One Res 40
  - 3.34 ft R600 - Array Ind. One Res 60
  - 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	REDLAND RESOURCES INC.
WELL	BRYNN # 9-15
FIELD	HARDTNER
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1409.00	feet	First Reading	5034.00	feet
Elevation Drill Floor	1407.00	feet	Depth Driller	5076.00	feet
Elevation Ground Level	1396.00	feet	Depth Logger	5070.00	feet



MICRORESISTIVITY LOG

