

**Weatherford****MICRORESISTIVITY LOG**

COMPANY	GRAND MESA OPERATING COMPANY				
WELL	GLENNIS 4-27				
FIELD	WILDCAT				
PROVINCE/COUNTY	GOVE				
COUNTRY/STATE	U.S.A. / KANSAS				
LOCATION	757' FNL & 2013' FEL				
SEC	TWP	RGE	Other Services		MAI/MFE
27	13S	31W	MPD/MDN		
API Number	15-063-22054		MSS		
Permit Number					
Permanent Datum GL, Elevation 2860 feet					Elevations: KB 2865.00 DF 2863.00 GL 2860.00
Log Measured From KB					
Drilling Measured From KB					
Date	12-NOV-2012				
Run Number	ONE				
Service Order	3538947				
Depth Driller	4630.00				feet
Depth Logger	4630.00				feet
First Reading	4584.00				feet
Last Reading	3630.00				feet
Casing Driller	220.00				feet
Casing Logger	219.00				inches
Bit Size	7.875				
Hole Fluid Type	CHEMICAL				lb/USg
Density / Viscosity	9.30		lb/USg	54.00	CP
PH / Fluid Loss	10.00			10.00	
Sample Source	FLOWLINE				
Rm @ Measured Temp	1.29 @ 64.0				ohm-m
Rmf @ Measured Temp	1.03 @ 64.0				ohm-m
Rmc @ Measured Temp	1.55 @ 64.0				ohm-m
Source Rmf / Rmc	CALC		CALC		
Rm @ BHT	0.72 @120.0				ohm-m
Time Since Circulation	6 HOURS				
Max Recorded Temp	120.00		deg F		
Equipment / Base	13057		LIB		
Recorded By	ADAM SILL				
Witnessed By	KENT MATSON				
JOB #	LB12-296				

BOREHOLE RECORD

Last Edited: 12-NOV-2012 01:36

Bit Size inches	Depth From feet	Depth To feet
7.875	211.00	4630.00

CASING RECORD

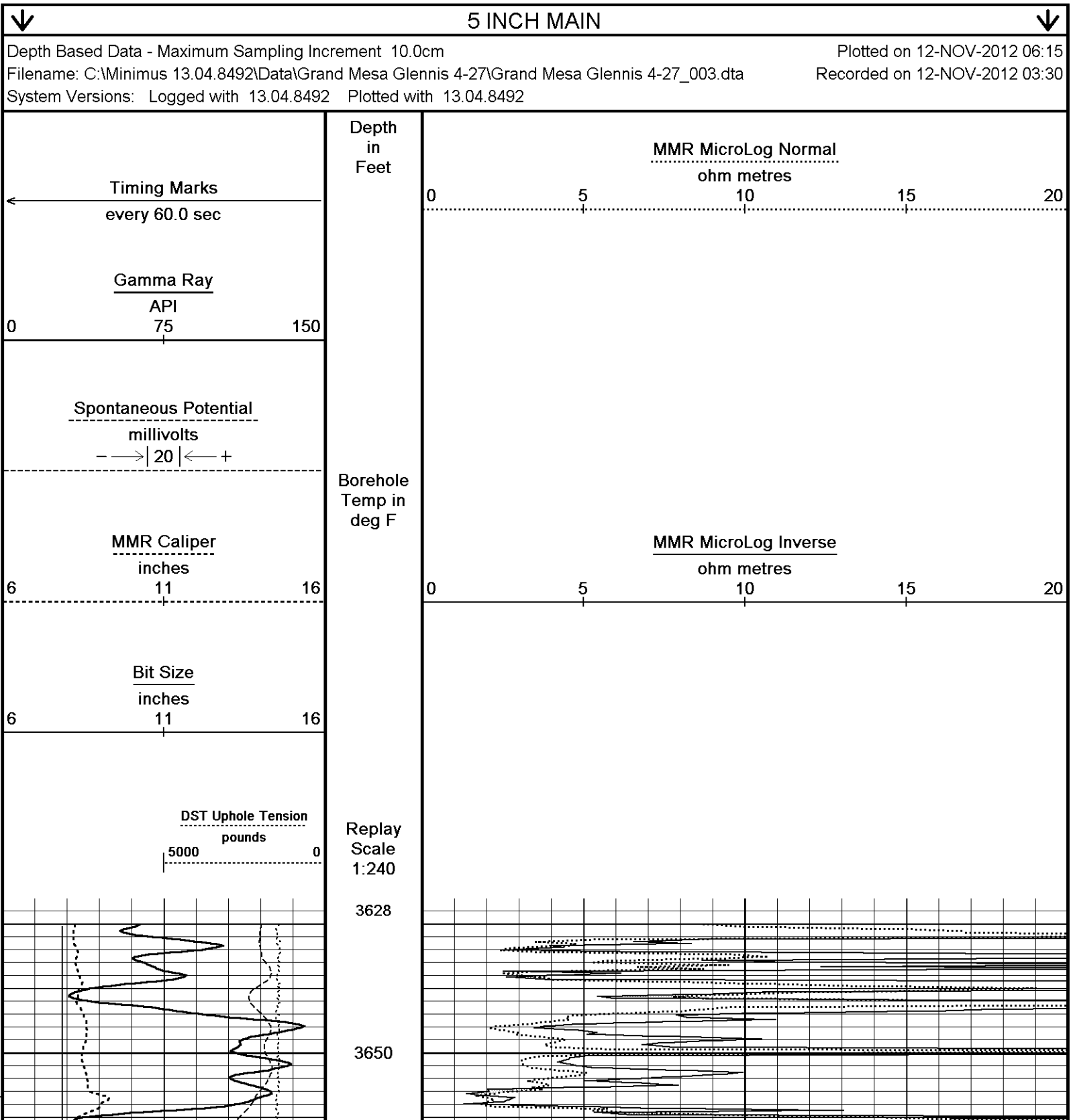
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	211.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 13.04.8492.
- MCG, MML, MDN, MPD, MFE, MSS, MAI RAN IN COMBINATION.
 - HARDWARE: DUAL BOWSPRING USED ON MDN.
 - 0.5 INCH STANDOFF USED ON MFE.
 - TWO 0.5 INCH STANDOFFS USED ON MSS.
 - 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: 1893 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3630 FEET: 235 CU. FT.

- SERVICE ORDER # 3538947.
- RIG: MURFIN #24.
- ENGINEER: A. SILL.
- OPERATOR(S): B. REEVES.

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.





113°

3900

114°

3950

114°

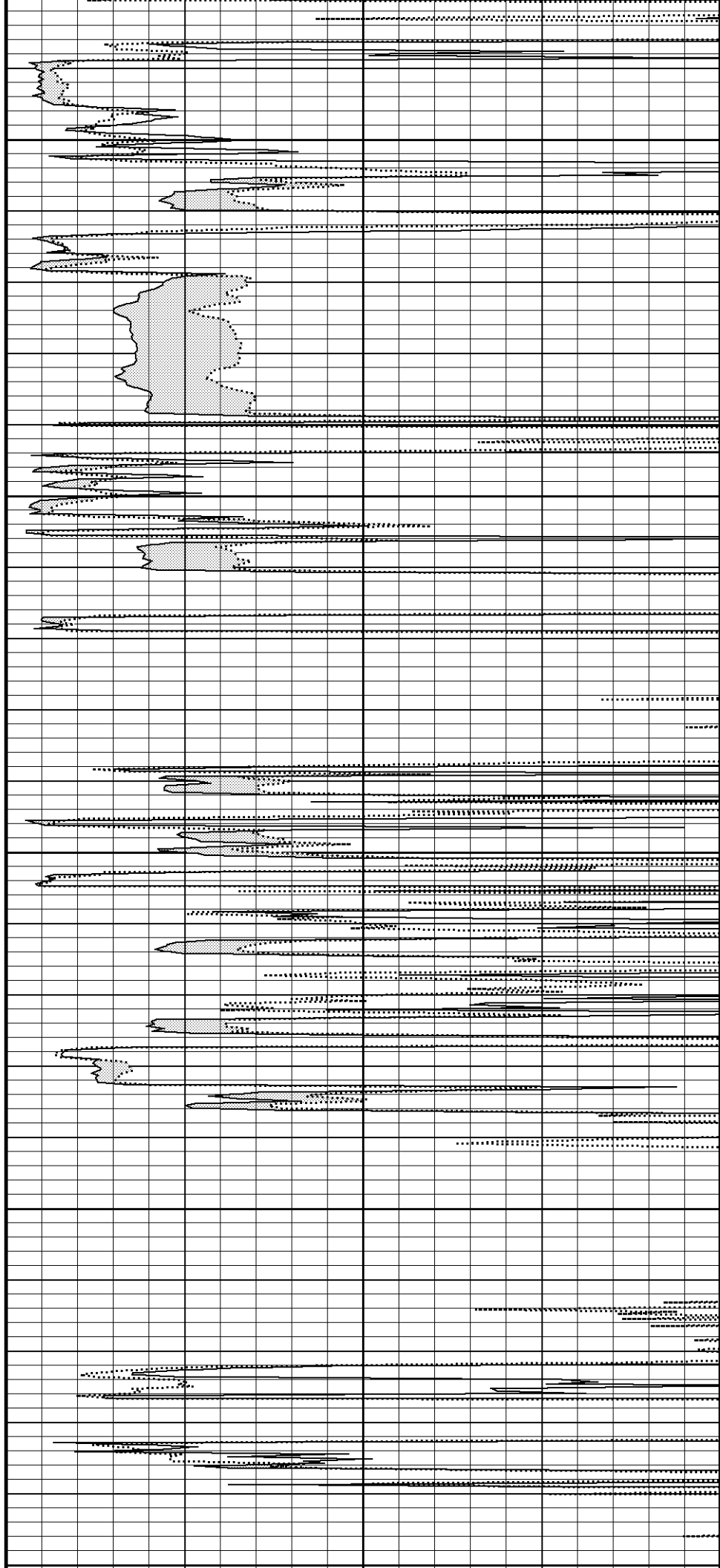
4000

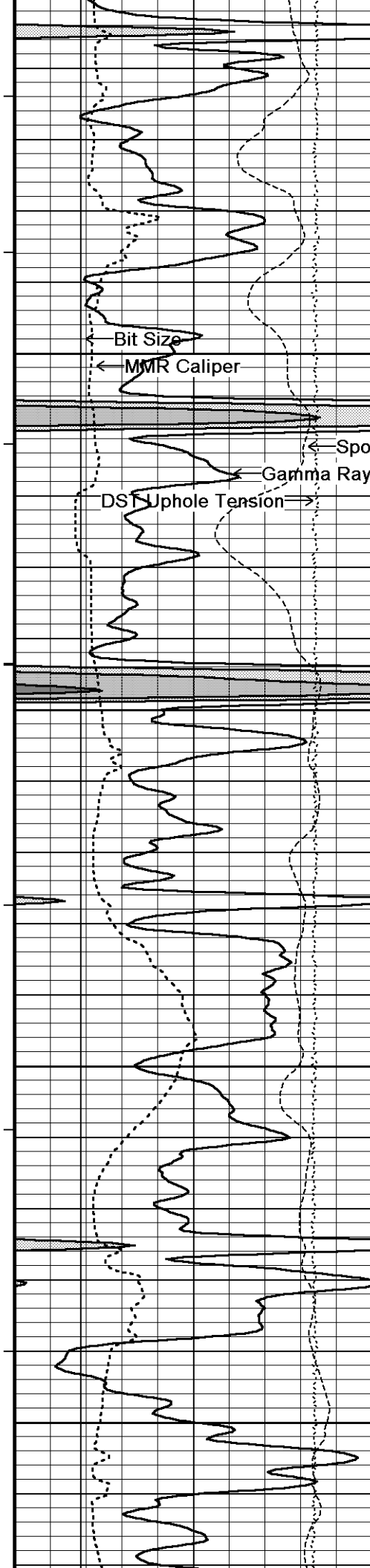
115°

4050

115°

4100





4100

115°

4150

116°

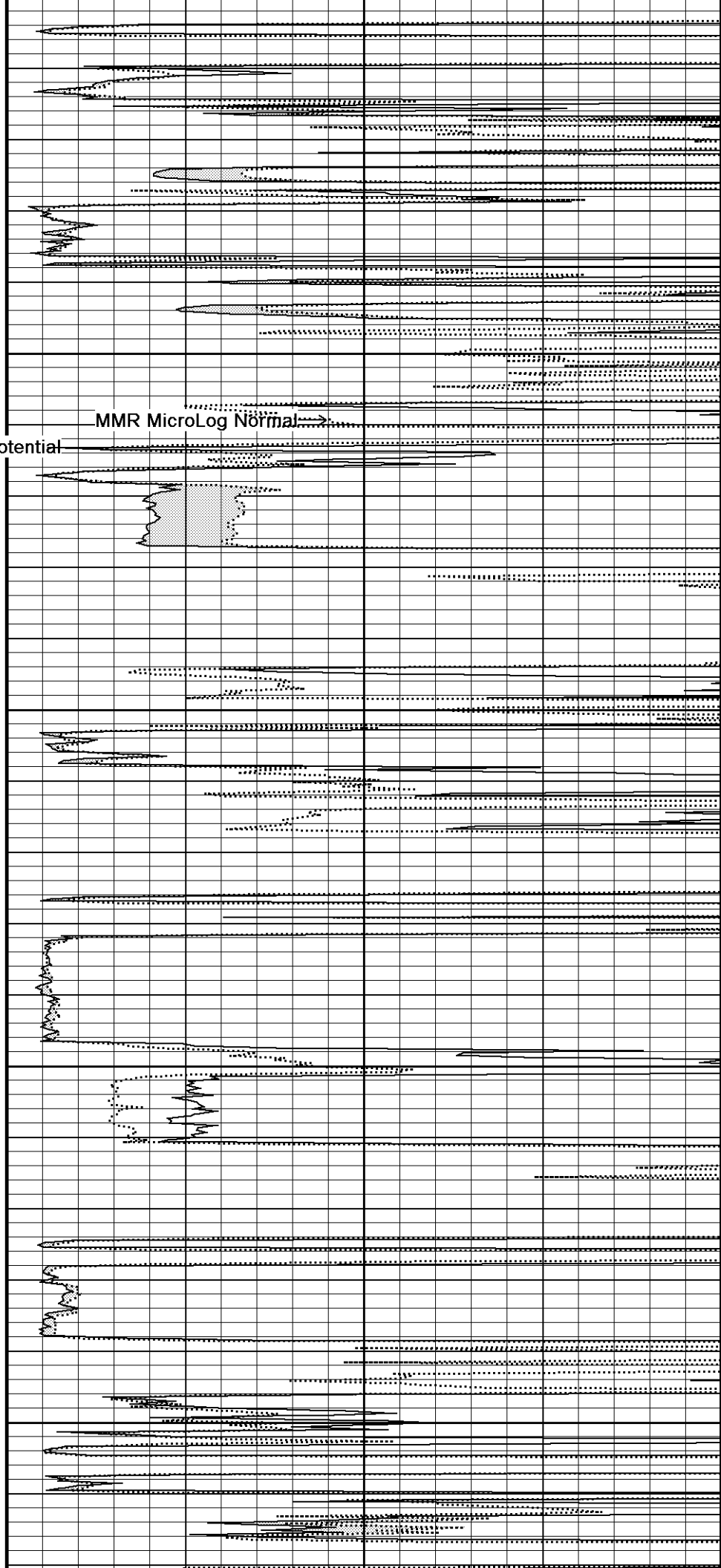
4200

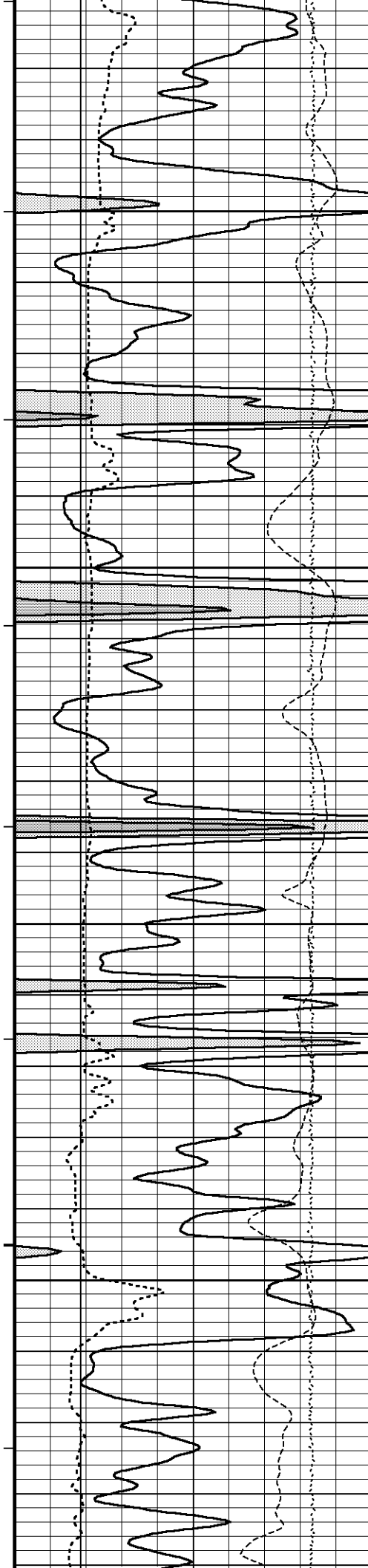
116°

4250

117°

4300





117°

4350

118°

4400

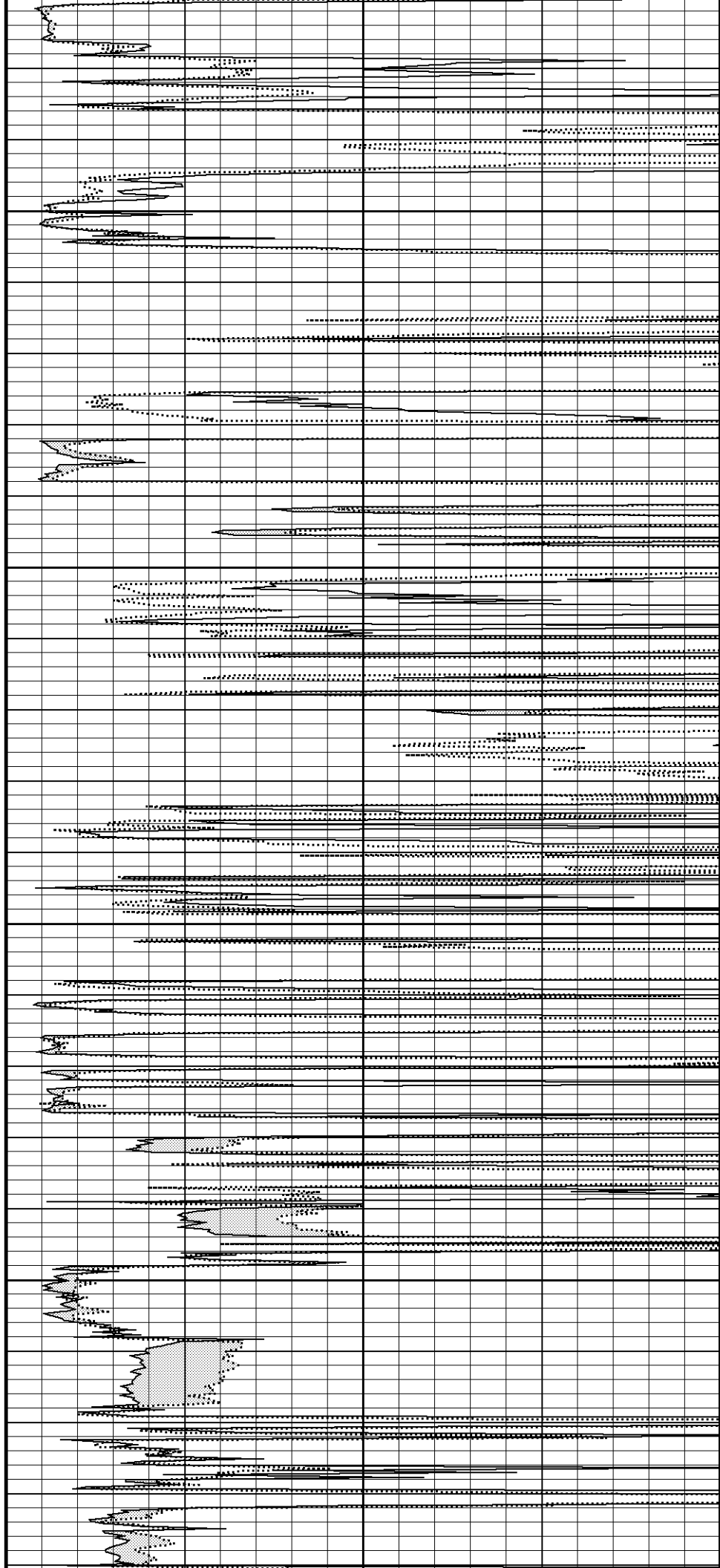
118°

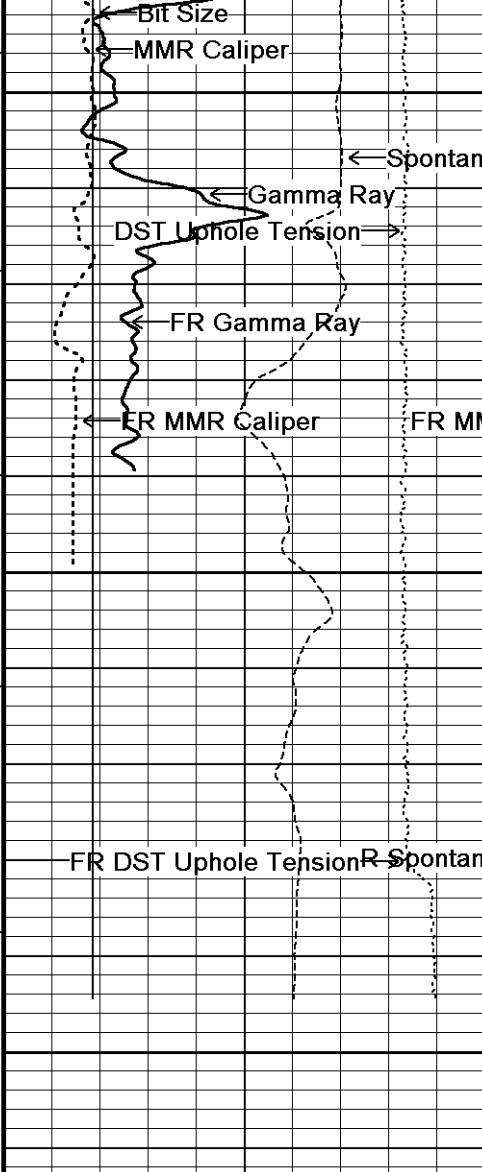
4450

119°

4500

120°



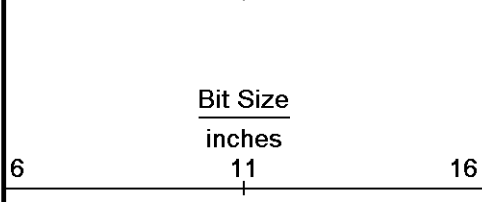
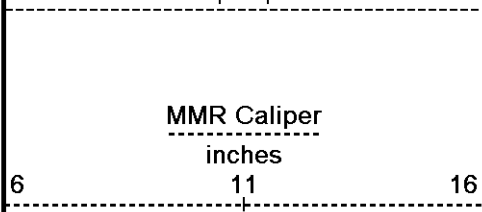
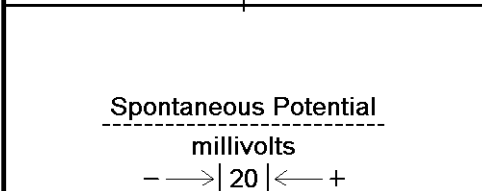
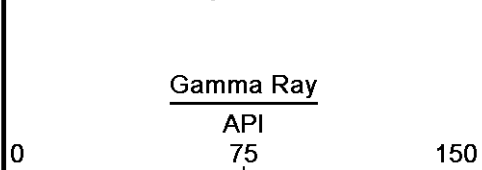
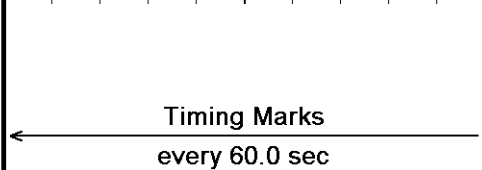


4550

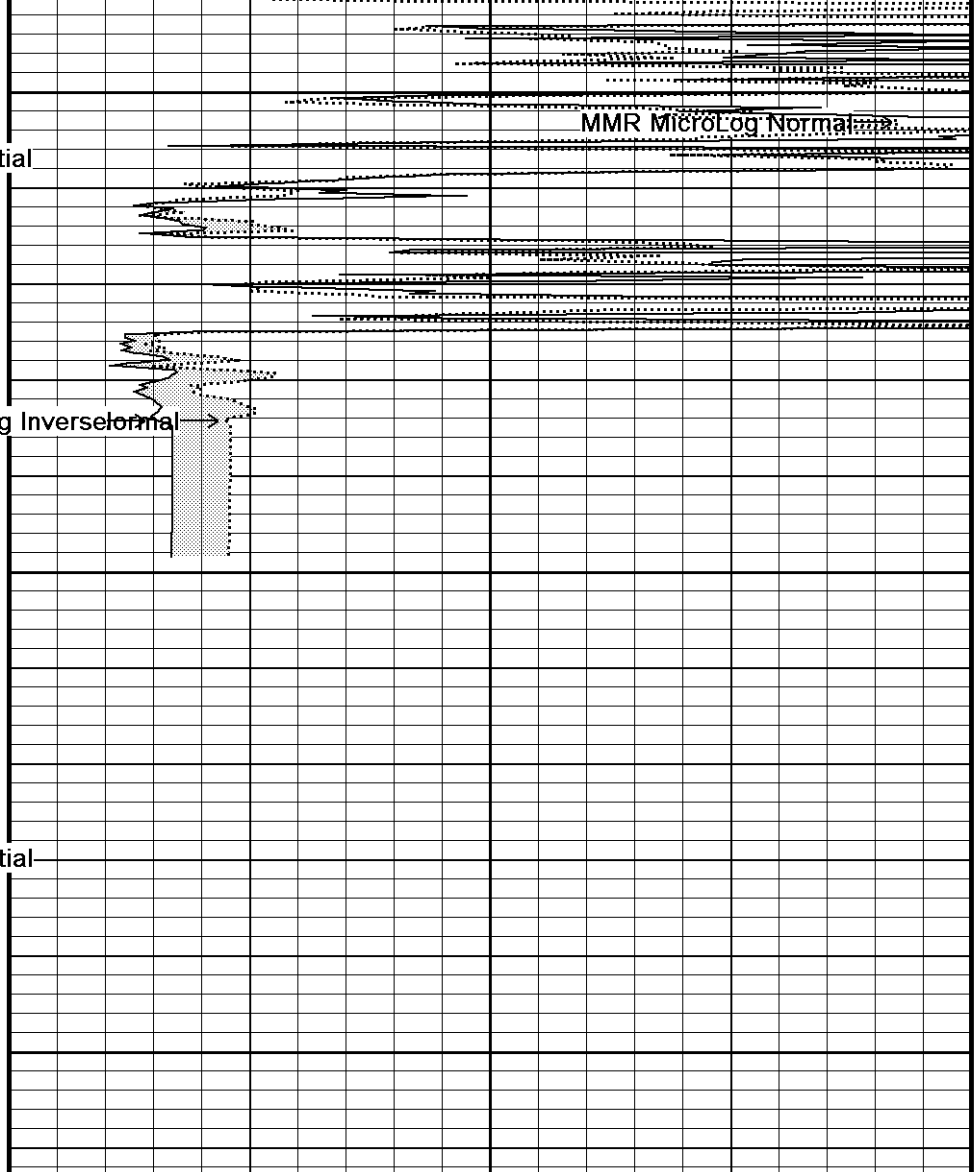
4600

4650

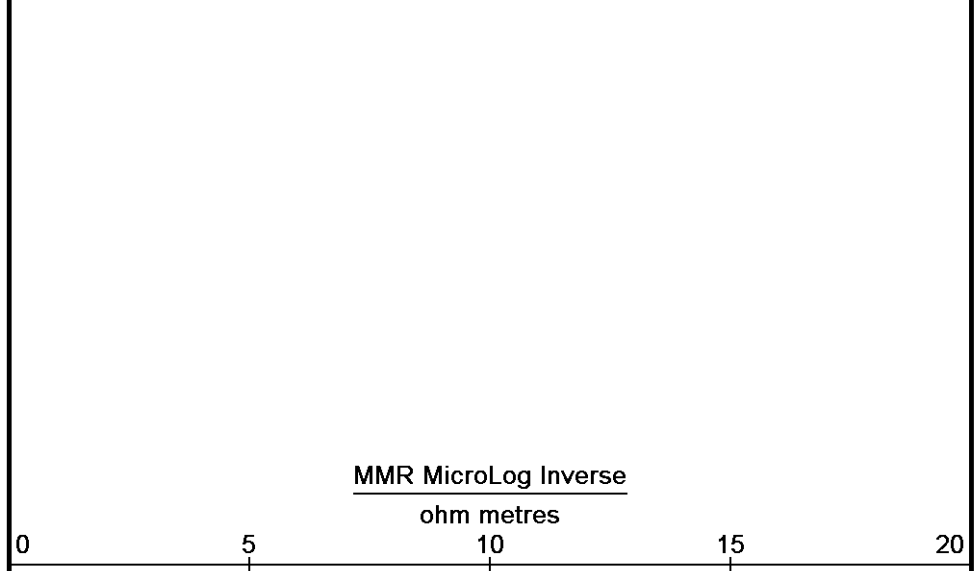
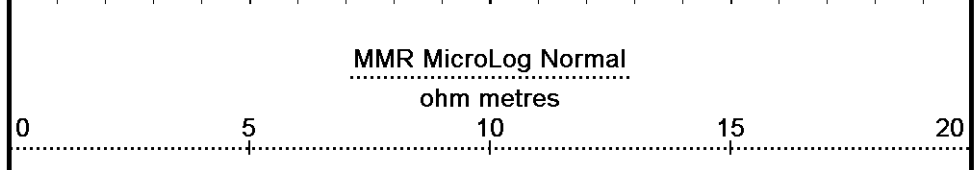
Depth
in
Feet



Borehole
Temp in
deg F



119°



DST Uphole Tension
pounds

50000

Replay
Scale
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.04.8492\Data\Grand Mesa Glennis 4-27\Grand Mesa Glennis 4-27_003.dta
System Versions: Logged with 13.04.8492 Plotted with 13.04.8492

Plotted on 12-NOV-2012 06:15
Recorded on 12-NOV-2012 03:30

↑

5 INCH MAIN

↑

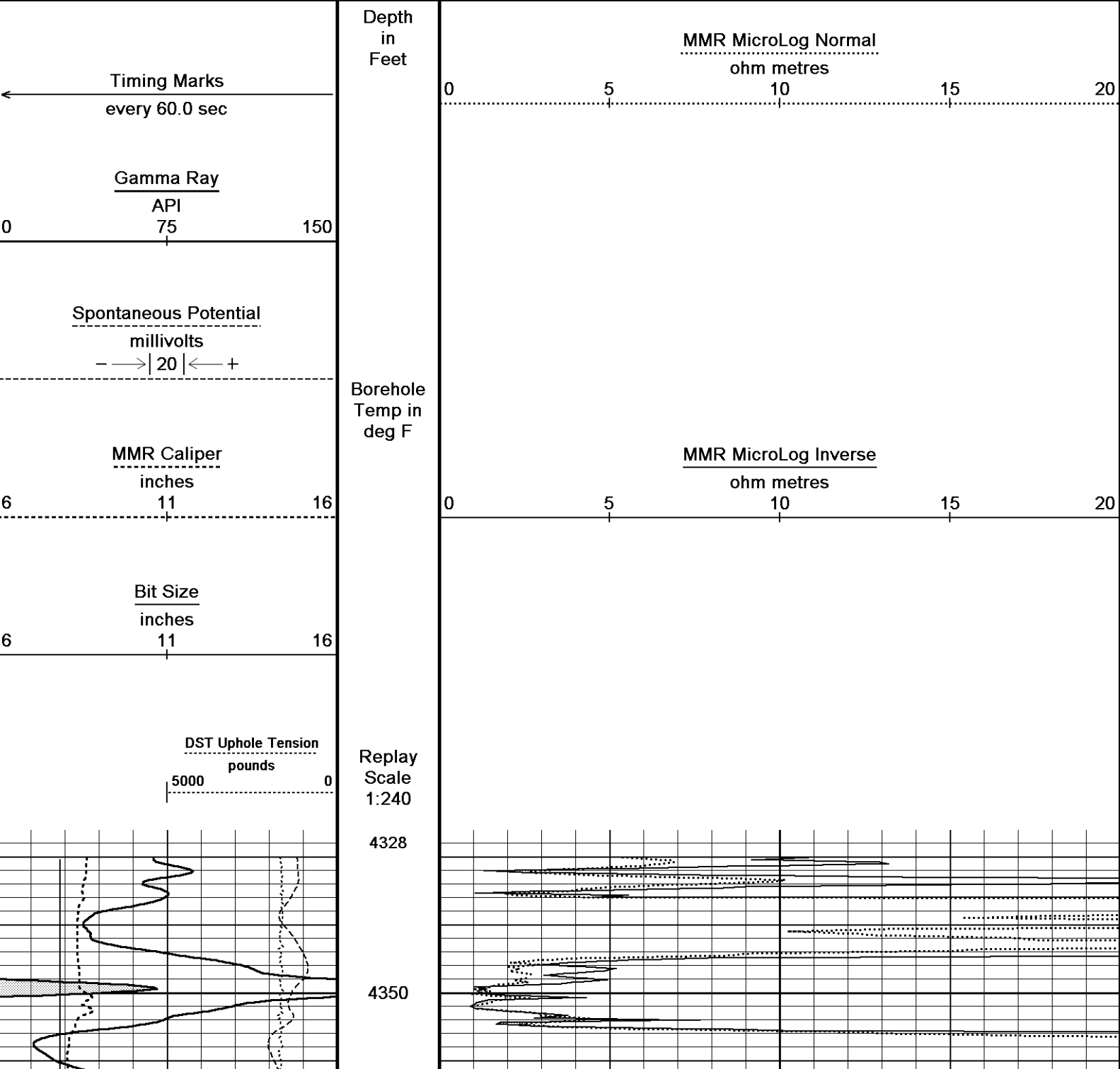
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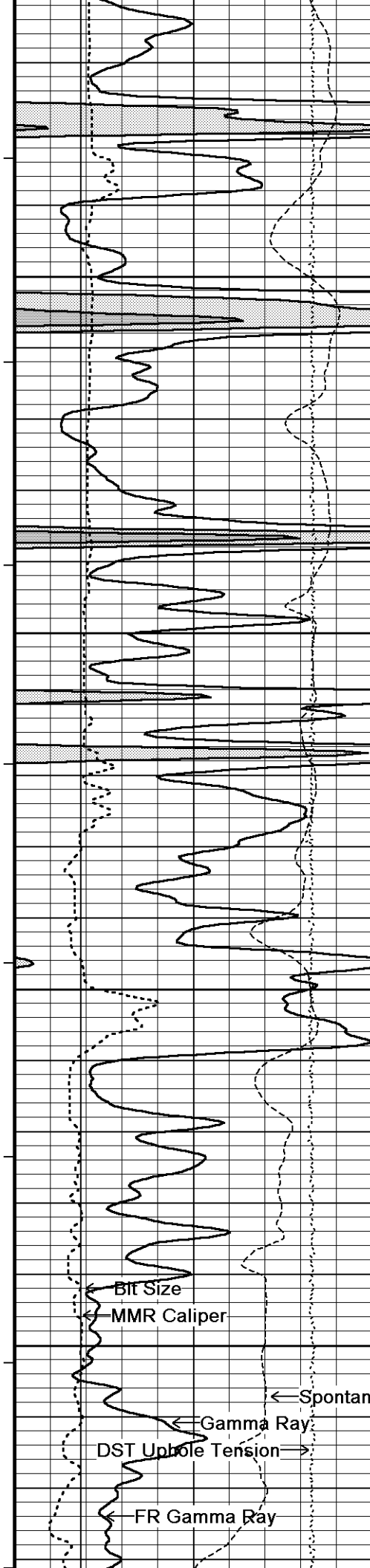
REPEAT SECTION

↓

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.04.8492\Data\Grand Mesa Glennis 4-27\Grand Mesa Glennis 4-27_002.dta
System Versions: Logged with 13.04.8492 Plotted with 13.04.8492

Plotted on 12-NOV-2012 06:15
Recorded on 12-NOV-2012 02:56





117°

4400

117°

4450

118°

4500

119°

4550

Bit Size

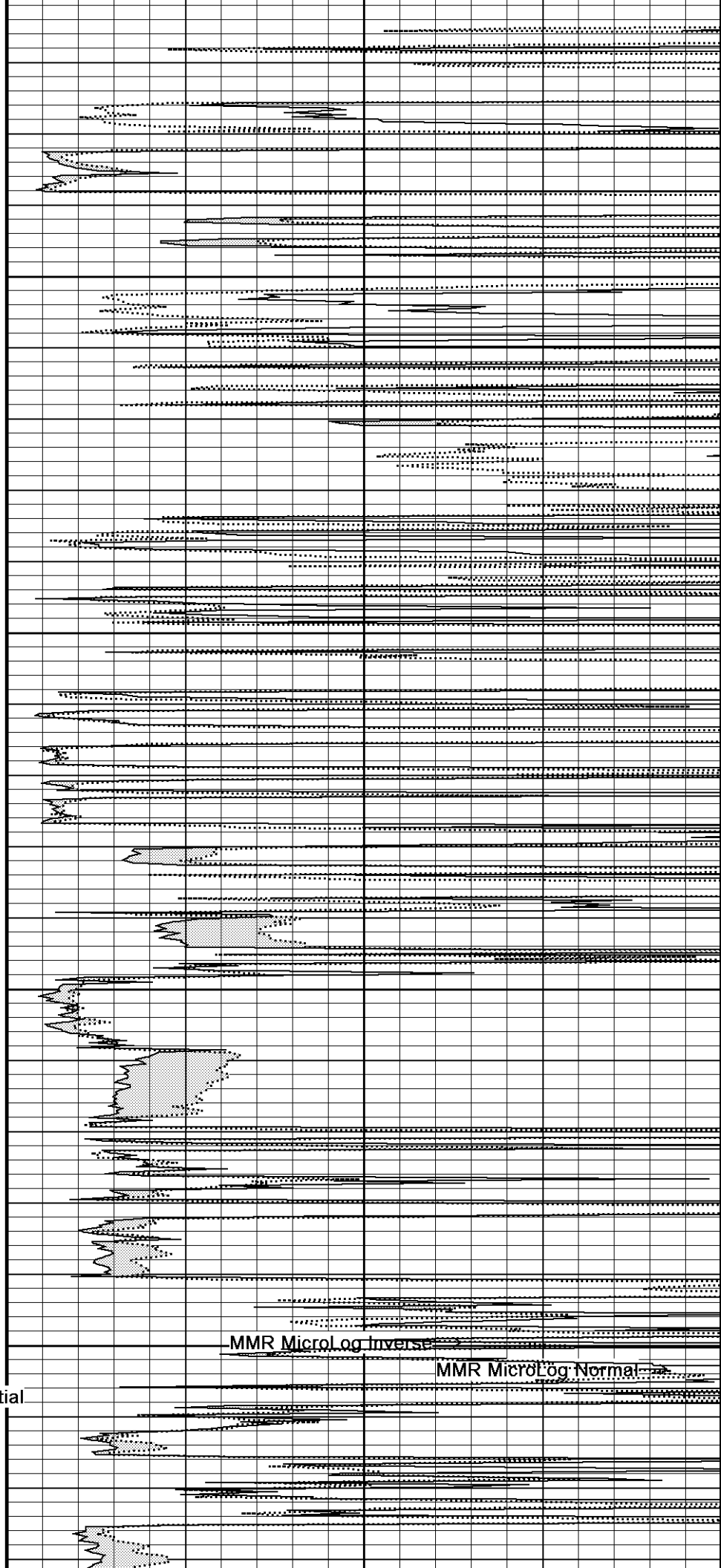
MMR Caliper

Spontaneous Potential

Gamma Ray

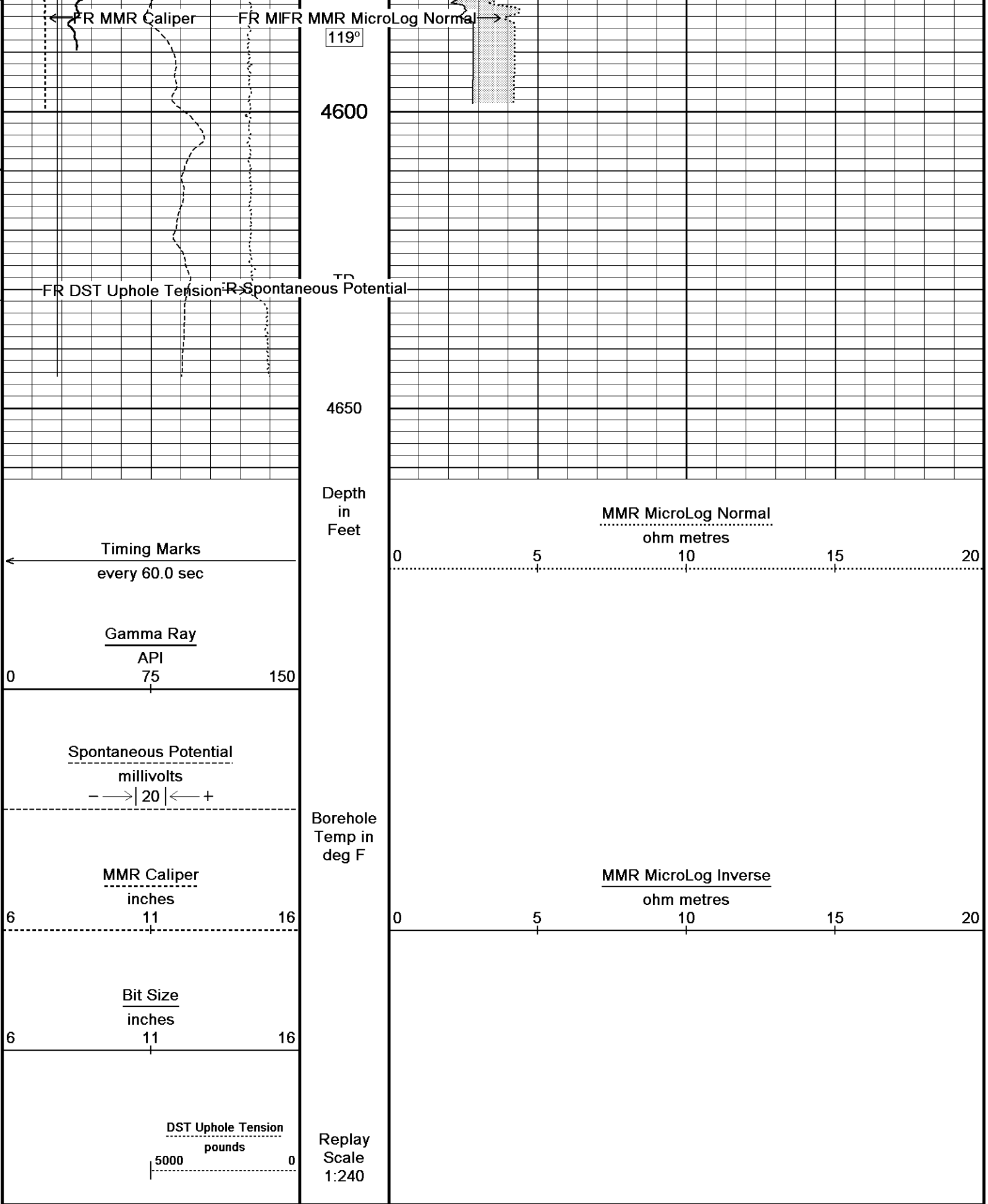
DST Uphole Tension

FR Gamma Ray



MMR Microlog Inverse

MMR Microlog Normal



BEFORE SURVEY CALIBRATION

C:\Minimus 13.04.8492\Data\Grand Mesa Glennis 4-27\Grand Mesa Glennis 4-27_003.dta

General Constants All 000

Last Edited on 12-NOV-2012,02:08

General Parameters

Mud Resistivity	1.290	ohm-metres
Mud Resistivity Temperature	64.000	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	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 208

Field Calibration on 07-NOV-2012 10:08

	Measured	Calibrated (API)
Background	75	55
Calibrator (Gross)	1067	780
Calibrator (Net)	992	725

Gamma Constants MCG-C 208

Last Edited on 08-NOV-2012,06:36

Gamma Calibrator Number	GR38	
Mud Density	1.12	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

High Resolution Temperature Calibration MCG-C 208

Field Calibration on 05-NOV-2012,14:26

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

High Resolution Temperature Constants MCG-C 208

Last Edited on 05-NOV-2012,14:25

Pre-filter Length	11
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Caliper Calibration MMR-A 11

Base Calibration on 05-NOV-2012 13:53

Field Calibration on 07-NOV-2012 10:02

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13946	5.98
2	16981	7.97
3	20167	9.86
4	24150	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.97	5.98

Micro Normal and Micro Inverse Calibration MMR-A 11

Base Calibration on 05-NOV-2012 14:07

Field Check on 07-NOV-2012 10:04

Base Calibration

Channel	Measured		Calibrated (ohm-m)	
	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.3	59.4	5.0	25.0
Micro Inverse	15.5	77.2	5.0	25.0

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	77.0	77.0
Micro Inverse	59.0	59.0

Micro Normal and Micro Inverse Constants MMR-A 11

Last Edited on 05-NOV-2012,13:54

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	

DOWNHOLE EQUIPMENT

C:\Minimus 13.04.8492\Data\Grand Mesa Glennis 4-27\Grand Mesa Glennis 4-27_003.dta

Compact Comms Gamma
MCG-C 208 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

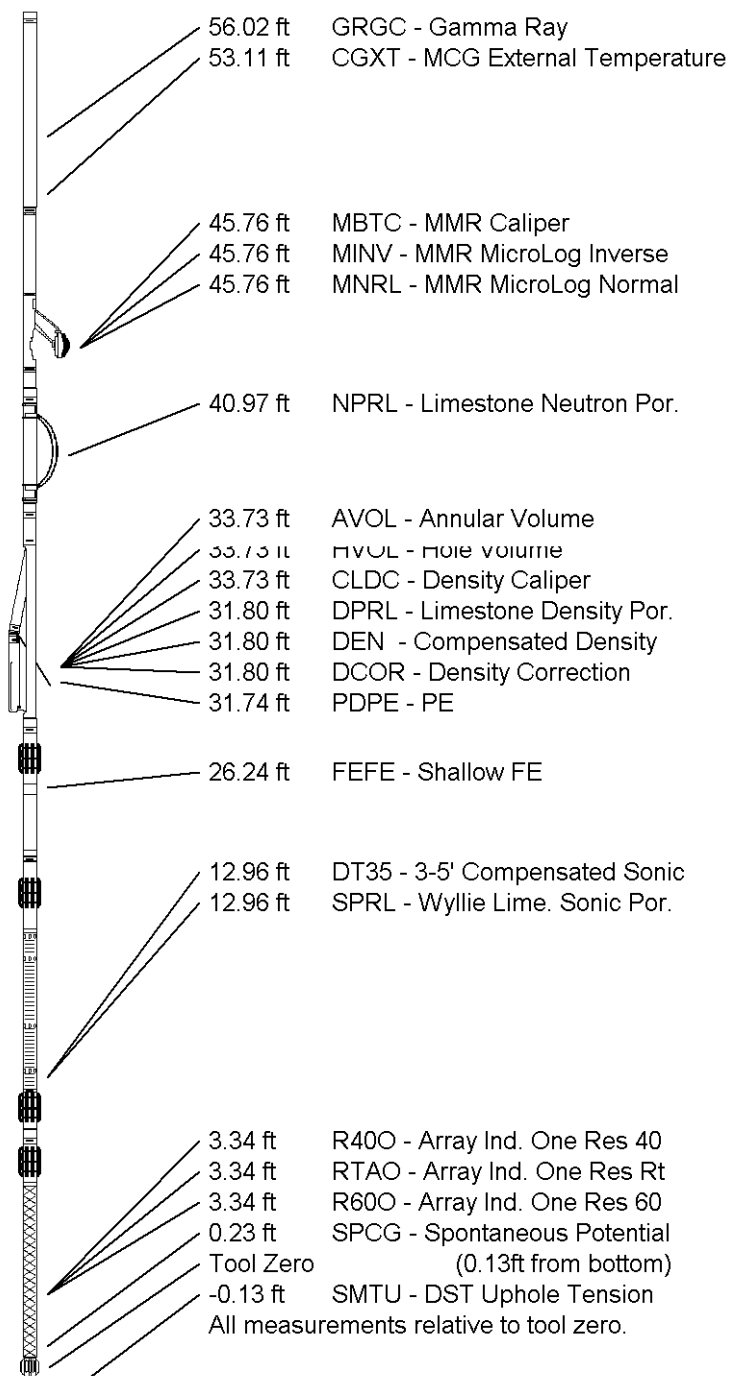
Compact Density/Caliper
MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Focussed Electric
MFE-B.J 352 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic
MSS-A.A 126 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

Total Length: 61.30 ft Weight: 456.4 lb



COMPANY
WELL
FIELD

GRAND MESA OPERATING COMPANY
GLENNIS 4-27
WILDCAT

PROVINCE/COUNTY		GOVE			
COUNTRY/STATE		U.S.A. / KANSAS			
Elevation Kelly Bushing	2865.00	feet	First Reading	4584.00	feet
Elevation Drill Floor	2863.00	feet	Depth Driller	4630.00	feet
Elevation Ground Level	2860.00	feet	Depth Logger	4630.00	feet



Weatherford[®]

MICRORESISTIVITY LOG