



Weatherford[®]

MICRORESISTIVITY LOG

COMPANY GRAND MESA OPERATING
WELL P-D #1-27
FIELD WILDCAT
PROVINCE/COUNTY GOVE
COUNTRY/STATE U.S.A. / KANSAS
LOCATION 674' FNL & 196' FEL
NE SE NE NE

SEC 27	TWP 13S	RGE 31W	Other Services MA/MFE MPD/MDN	Elevations: KB 2875.00 DF 2873.00 GL 2870.00
API Number	15-063-22029		Permanent Datum G.L., Elevation 2870 feet	
Permit Number			Log Measured From KB	
Date	23-SEP-2012		Drilling Measured From K.B. @ 5 FEET	
Run Number	ONE			
Depth Driller	4662.00		feet	
Depth Logger	4663.00		feet	
First Reading	4630.00		feet	
Last Reading	3600.00		feet	
Casing Driller	219.00		feet	
Casing Logger	218.00		feet	
Bit Size	7.875		inches	
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.10 lb/USg	67.00 CP		
PH / Fluid Loss	10.50	7.20 ml/30Min		
Sample Source	FLOWLINE			
Rm @ Measured Temp	1.24 @ 94.0	ohm-m		
Rmf @ Measured Temp	0.99 @ 94.0	ohm-m		
Rmc @ Measured Temp	1.49 @ 94.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.97 @ 120.0	ohm-m		
Time Since Circulation	3 HOURS			
Max Recorded Temp	120.00	deg F		
Equipment Name	COMPACT			
Equipment / Base	13057	LIB		
Recorded By	R.HOFFMAN			
Witnessed By	BOB SHREIBER			
S.O. # / JOB #	3538924		LB12-256	

BOREHOLE RECORD

Last Edited: 23-SEP-2012 11:39

Bit Size inches	Depth From feet	Depth To feet
7.875	218.00	4663.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	218.00	24.00

REMARKS

Tools Ran: MCG, MML, MDN, MPD, 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.
 Tight pulls, washouts and borehole rugosity will affect data quality.
 Annular volume with 5.5 inch production casing= 205 cu. ft.
 Service order: #3538924
 Rig: Murfin #24
 Engineer: R. Hoffman
 Operator(s): K. Rinehart

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

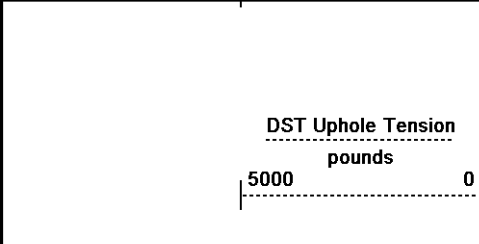
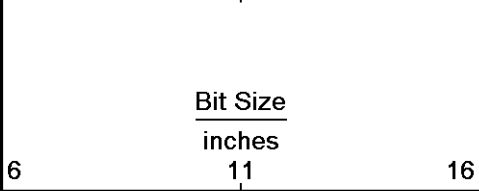
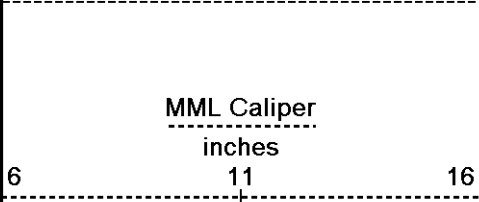
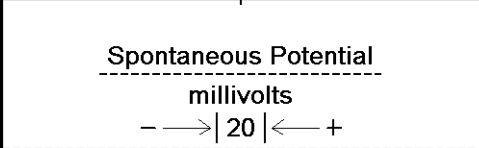
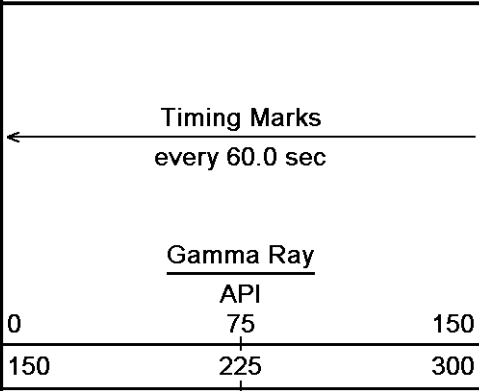
Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 23-SEP-2012 13:15

Filename: C:\Minimus 13.02.6600\Data\Grand Mesa...\Grand Mesa P-D #1-27_Main spooled section.dta

Recorded on 23-SEP-2012 13:02

System Versions: Logged with 13.02.6600 Plotted with 13.02.6600



Depth in Feet

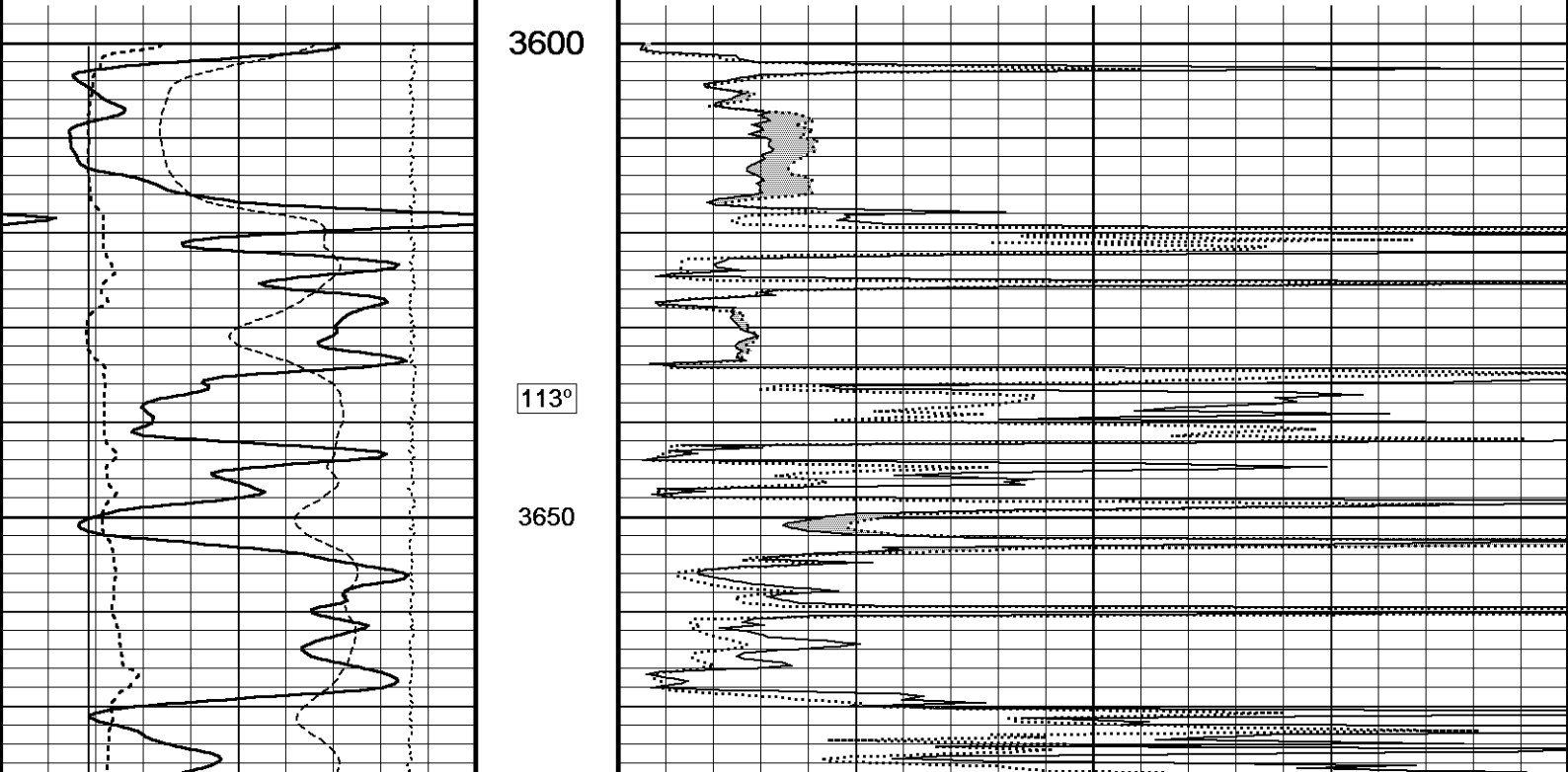
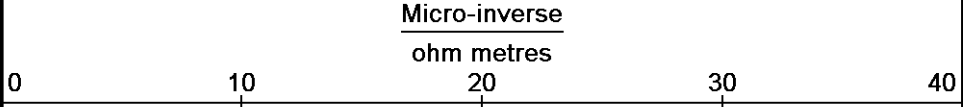
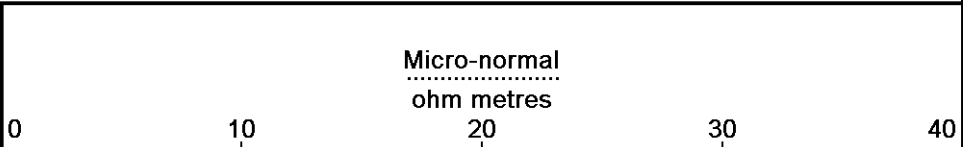
Borehole Temp in deg F

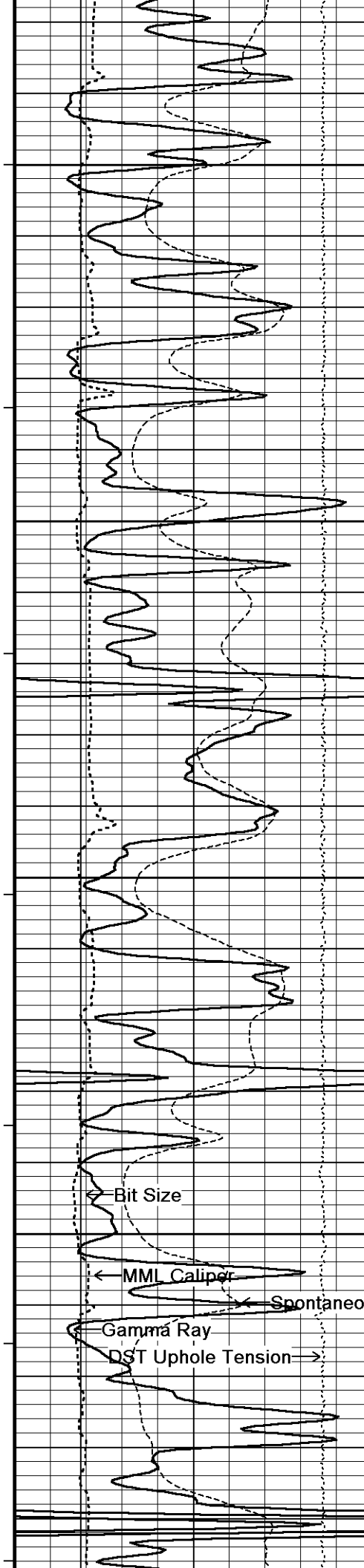
Replay Scale 1:240

3600

113°

3650





113°

3700

113°

3750

113°

3800

113°

3850

113°

Micro-inverse
Micro-normal

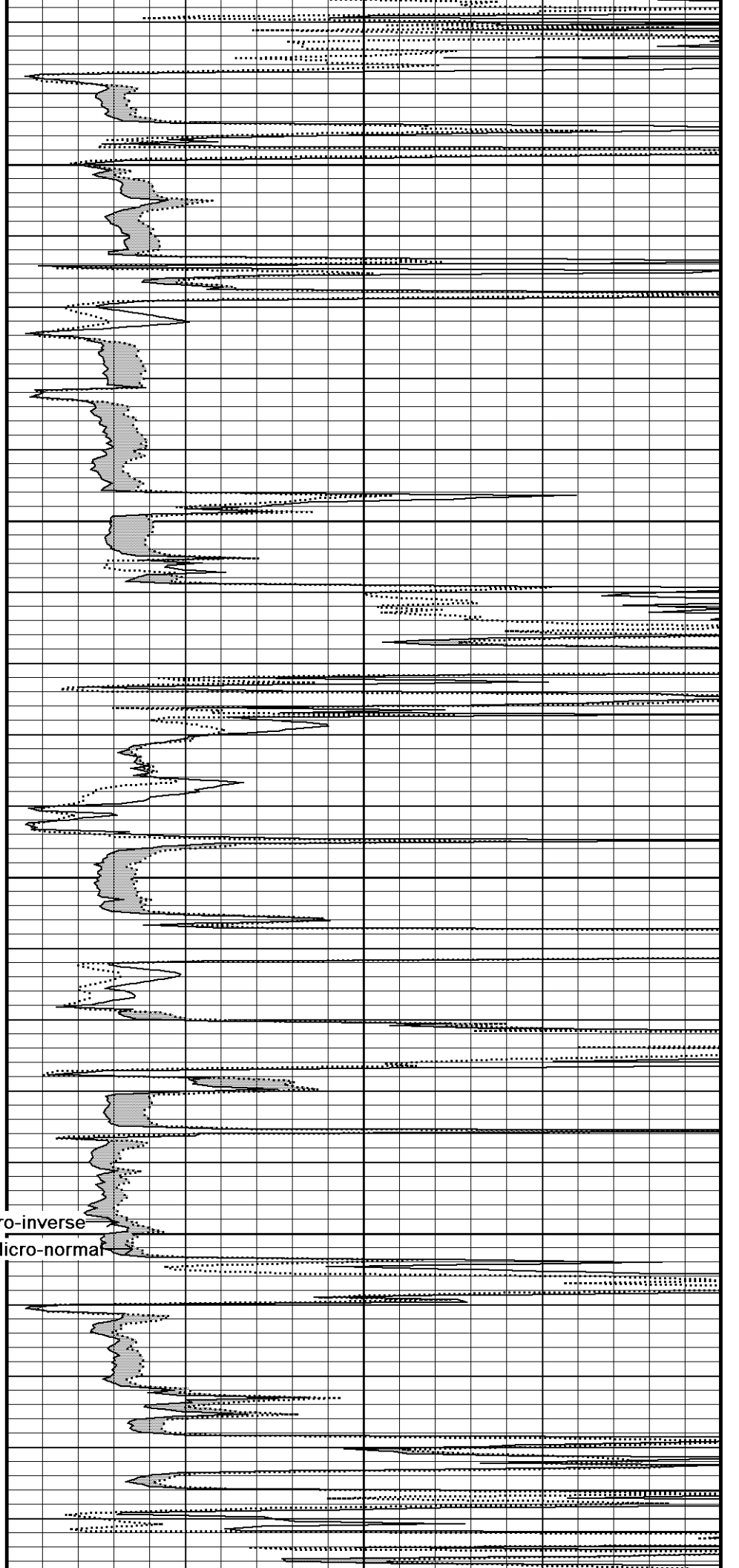
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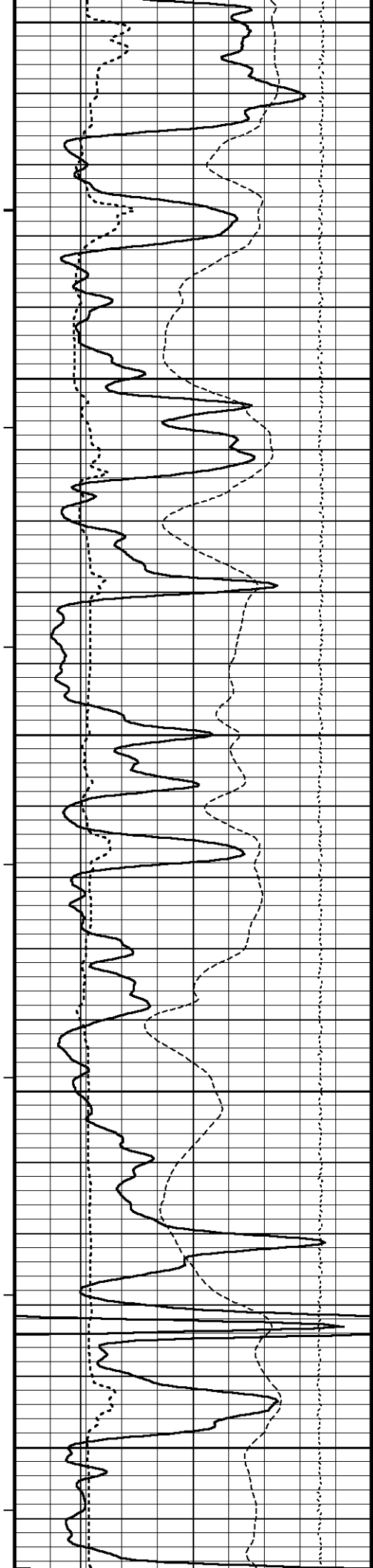
Gamma Ray

DST Uphole Tension

MML Caliper

Bit Size





3900

113°

3950

113°

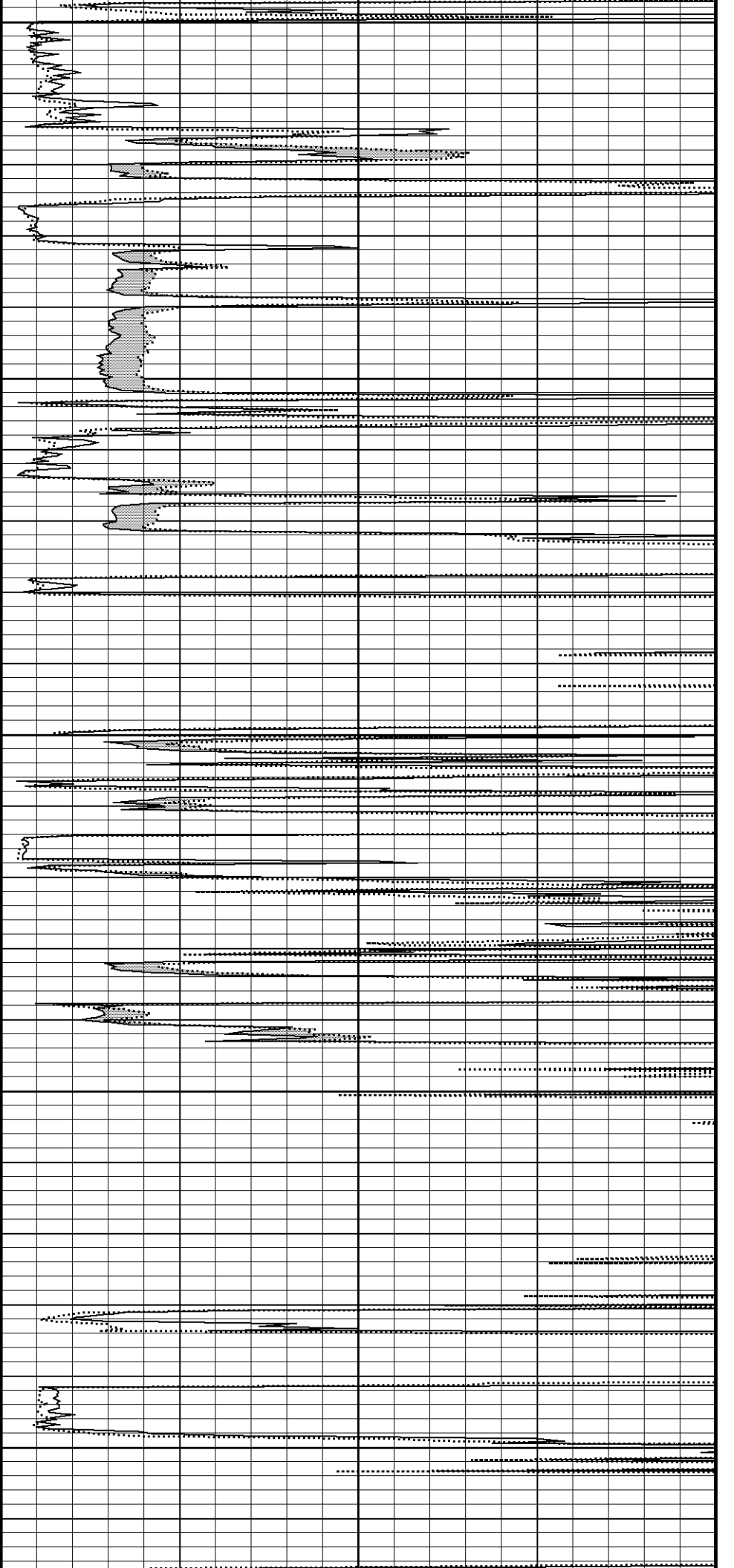
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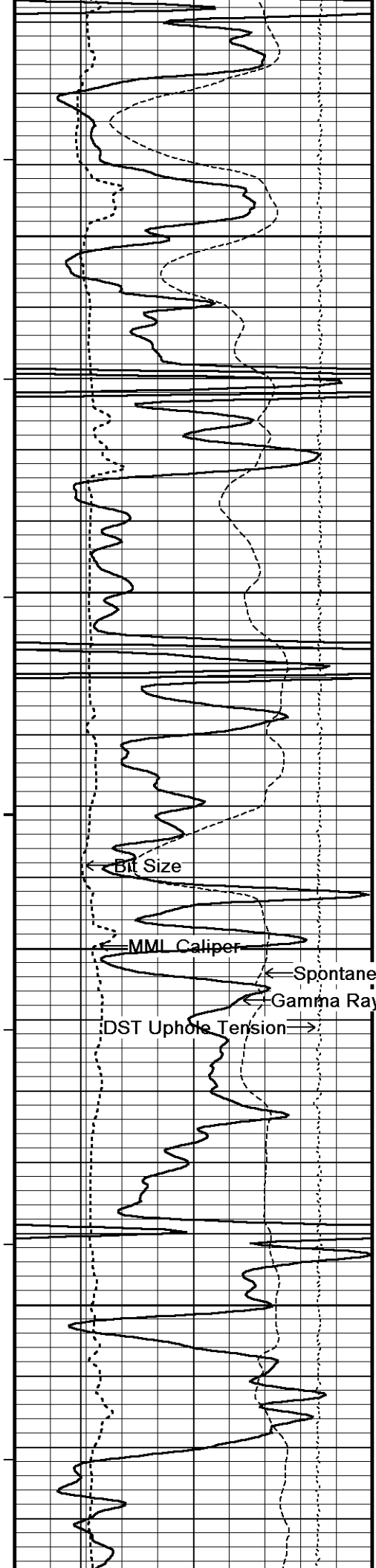
114°

4050

114°

4100





114°

4150

115°

4200

115°

Micro-inverse

4250

Micro-normal

Spontaneous Potential

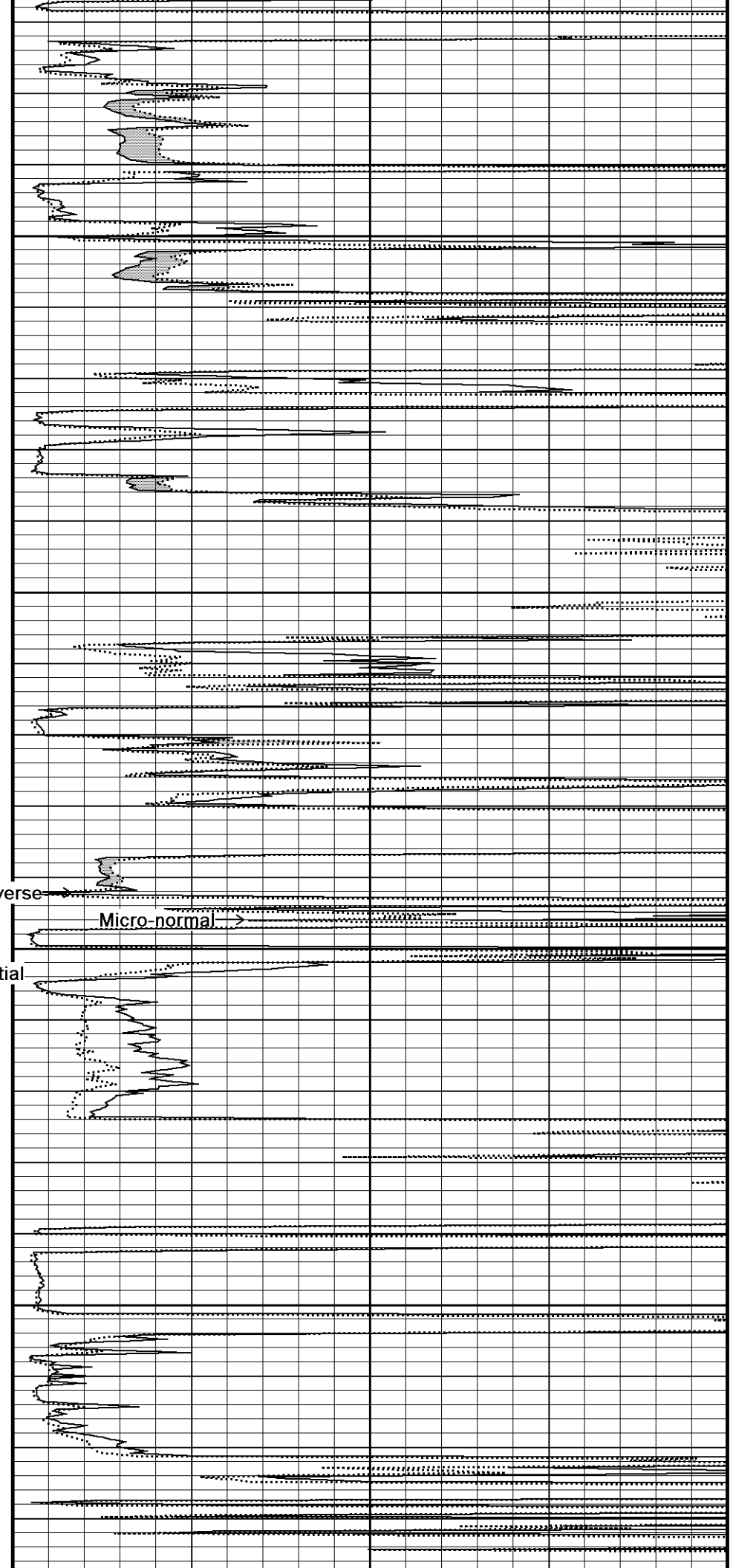
Gamma Ray

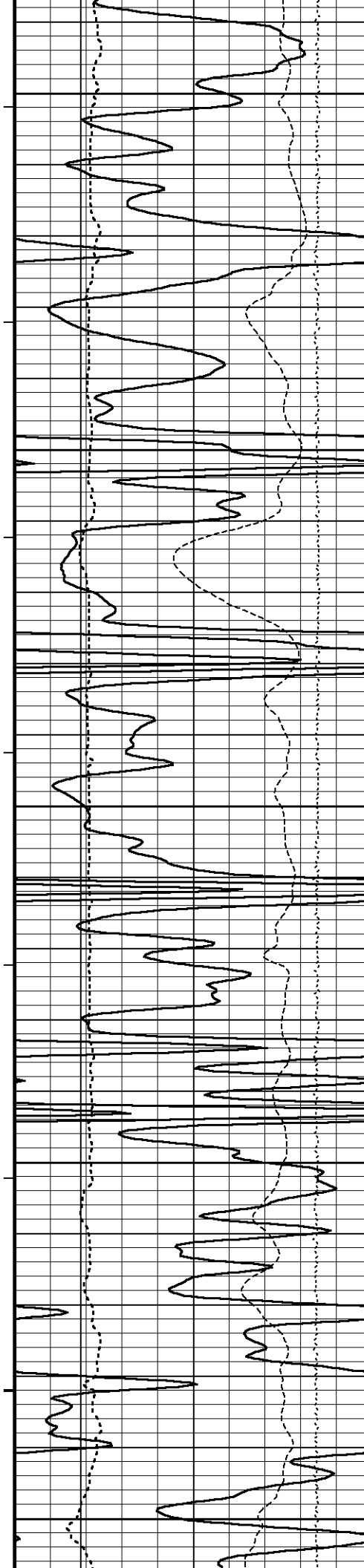
DST Uphole Tension

116°

4300

4400





116°

4350

117°

4400

117°

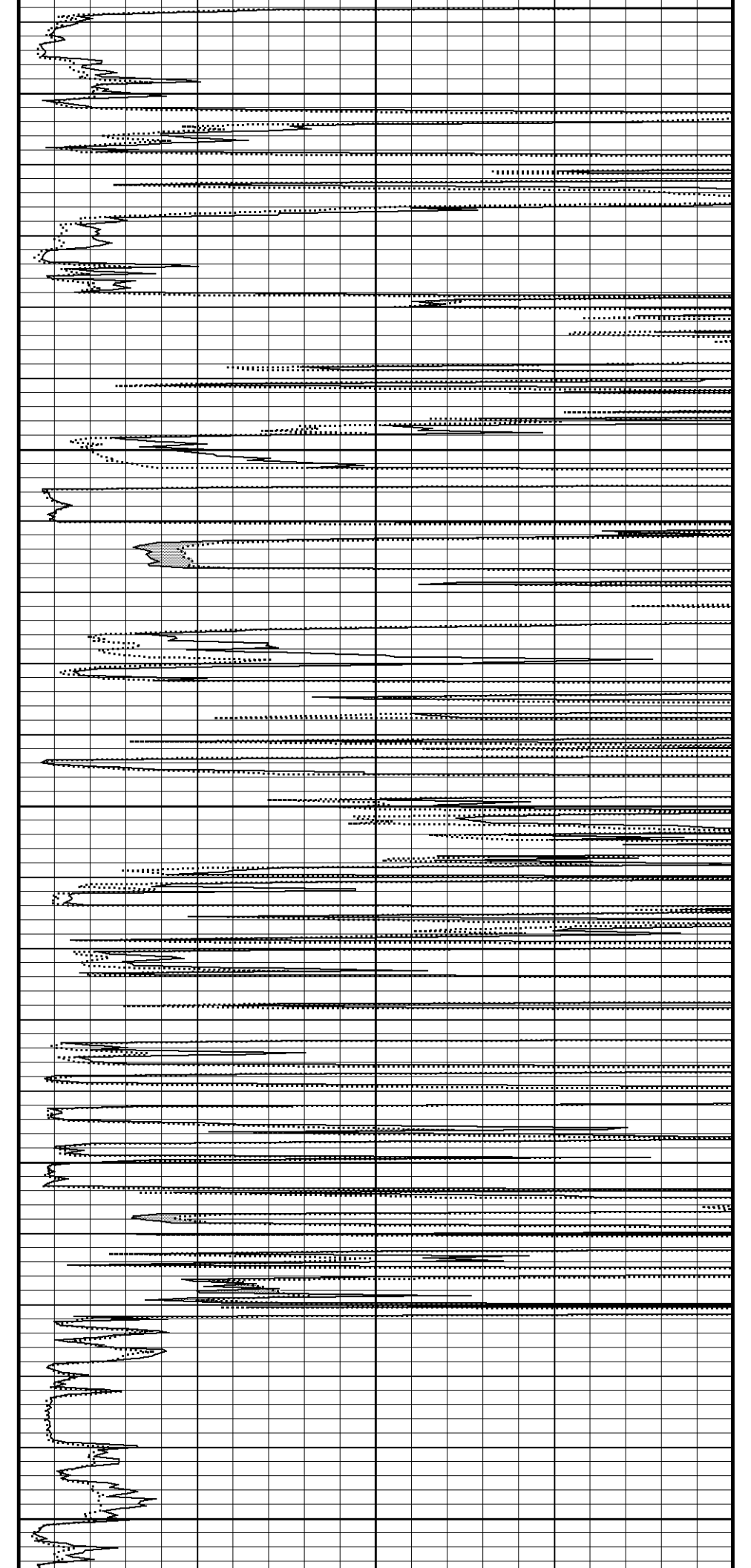
4450

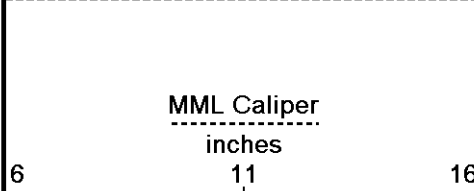
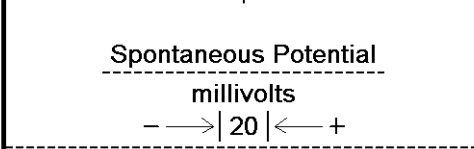
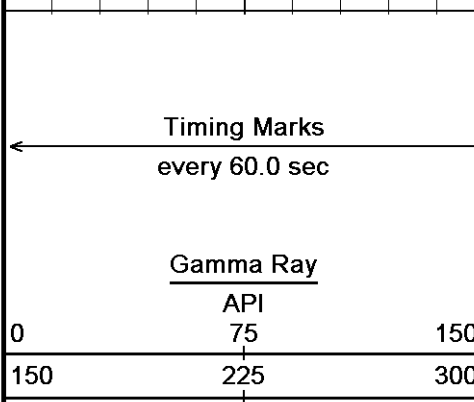
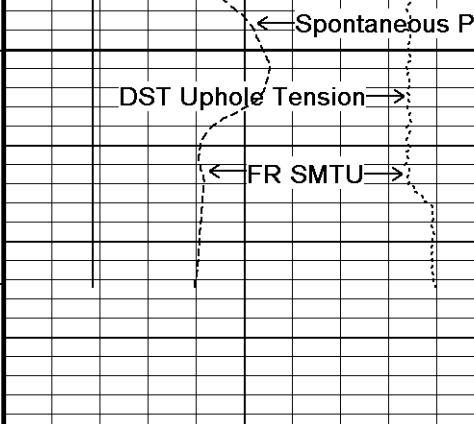
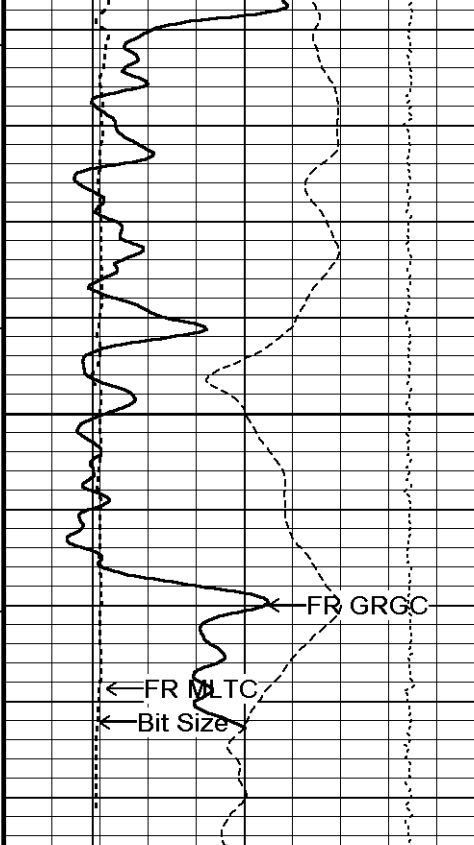
118°

4500

119°

4550





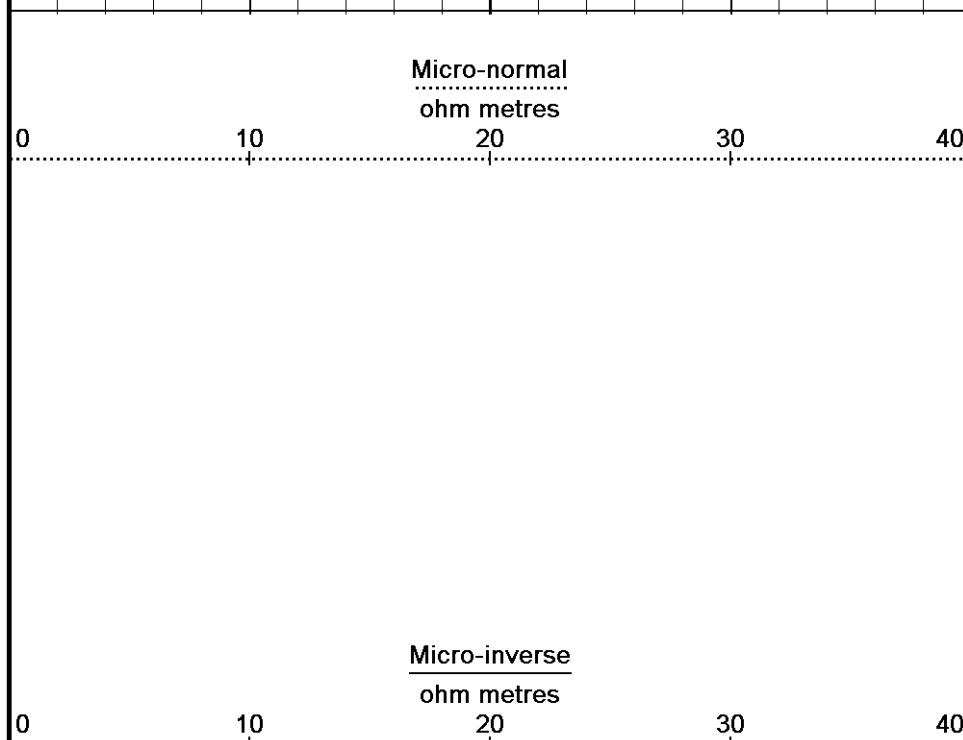
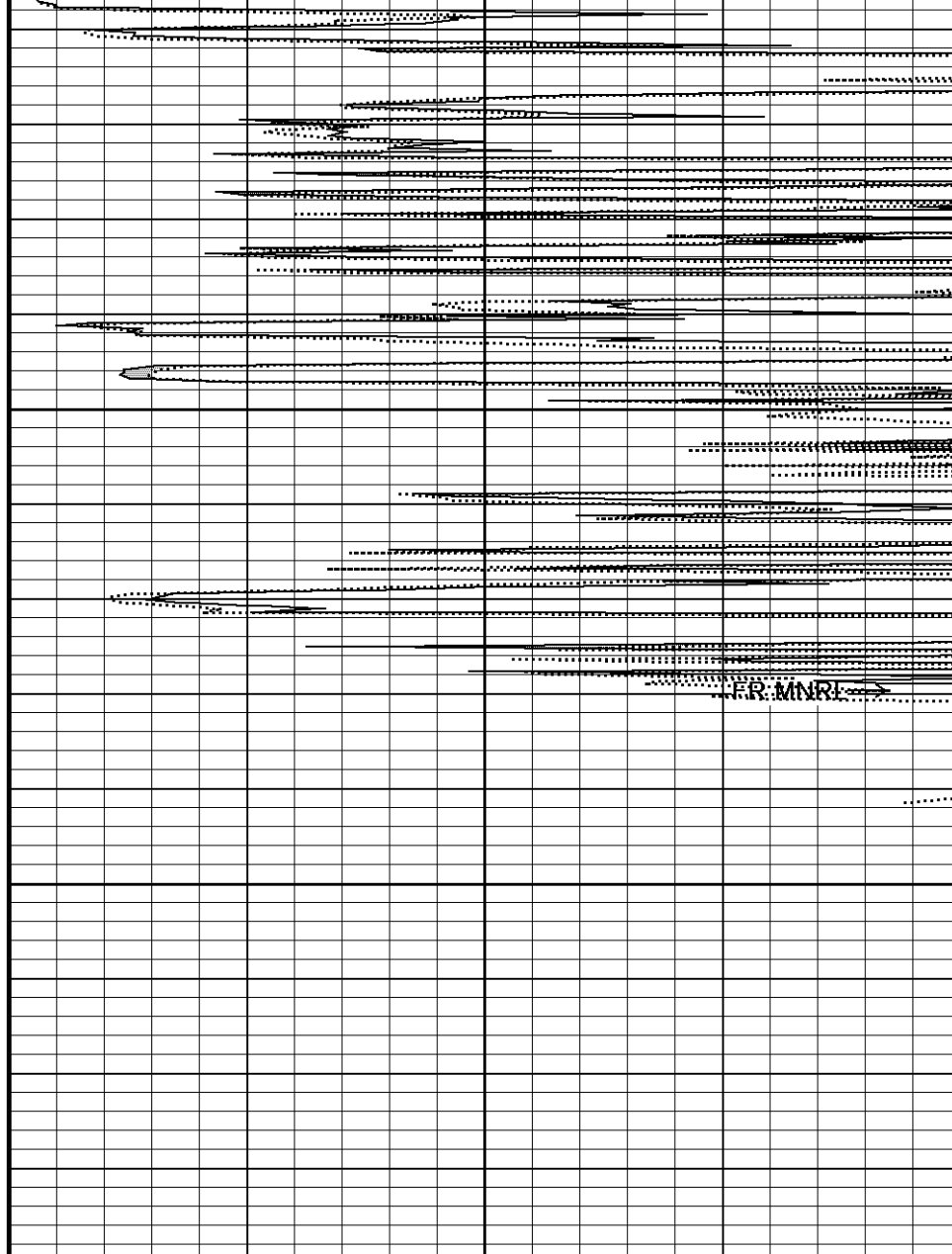
120°

4600

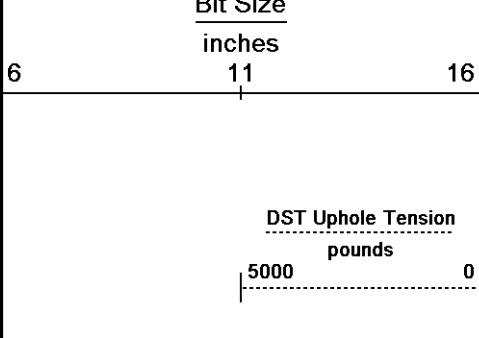
4650

4688

Depth
in
Feet



Borehole
Temp in
deg F



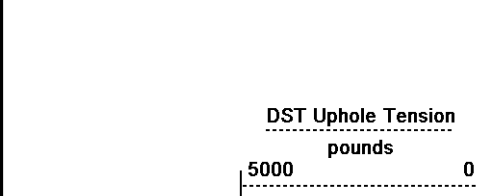
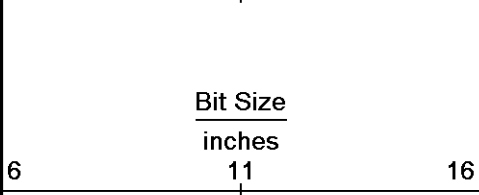
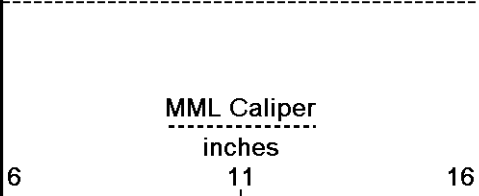
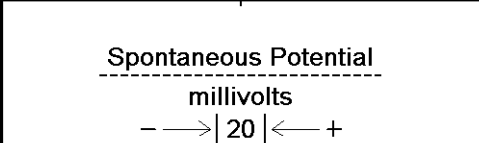
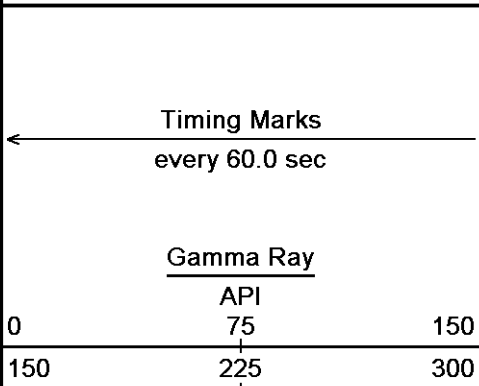
Replay
Scale
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 23-SEP-2012 13:15
 Filename: C:\Minimus 13.02.6600\Data\Grand Mesa...\Grand Mesa P-D #1-27_Main spooled section.dta
 Recorded on 23-SEP-2012 13:02
 System Versions: Logged with 13.02.6600 Plotted with 13.02.6600

↑ 5 INCH MAIN ↑

↓ 5 INCH REPEAT ↓

Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 23-SEP-2012 13:15
 Filename: C:\Minimus 13.02.6600\Data\Grand Mesa P-D #1-27\Grand Mesa P-D #1-27_001.dta
 Recorded on 23-SEP-2012 11:22
 System Versions: Logged with 13.02.6600 Plotted with 13.02.6600

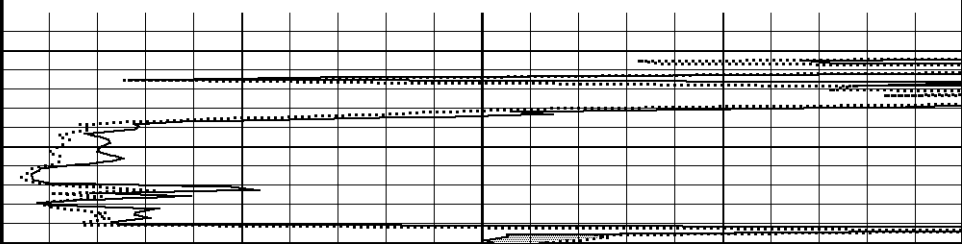
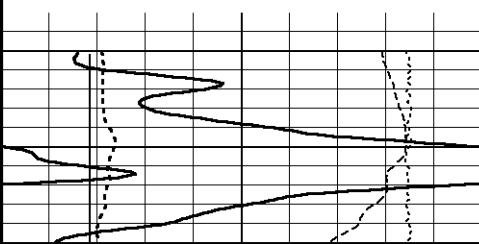
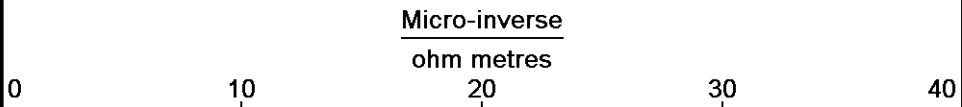
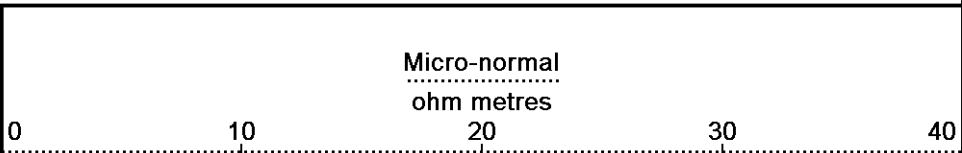


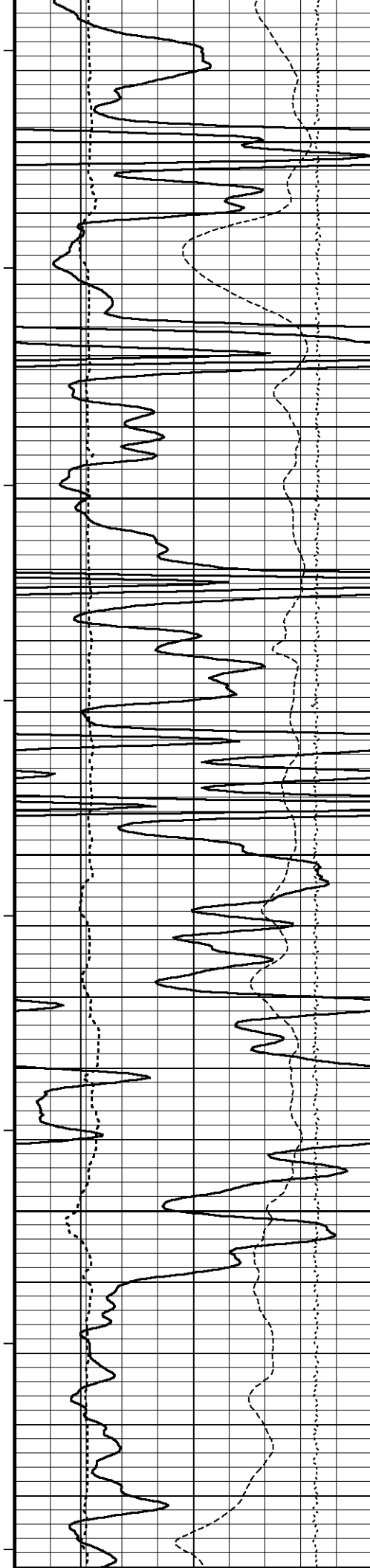
Depth
in
Feet

Borehole
Temp in
deg F

Replay
Scale
1:240

4358





4400

116°

4450

117°

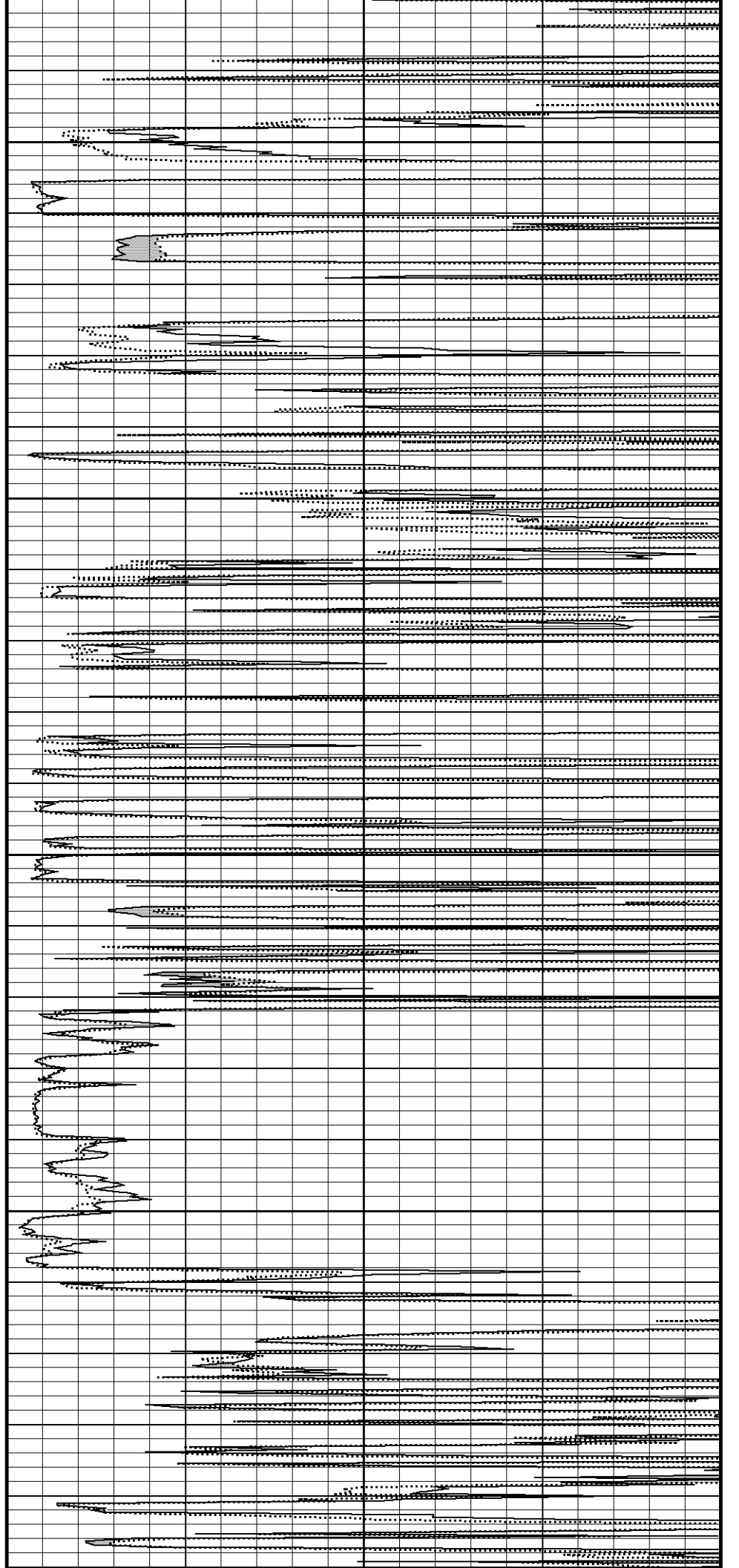
4500

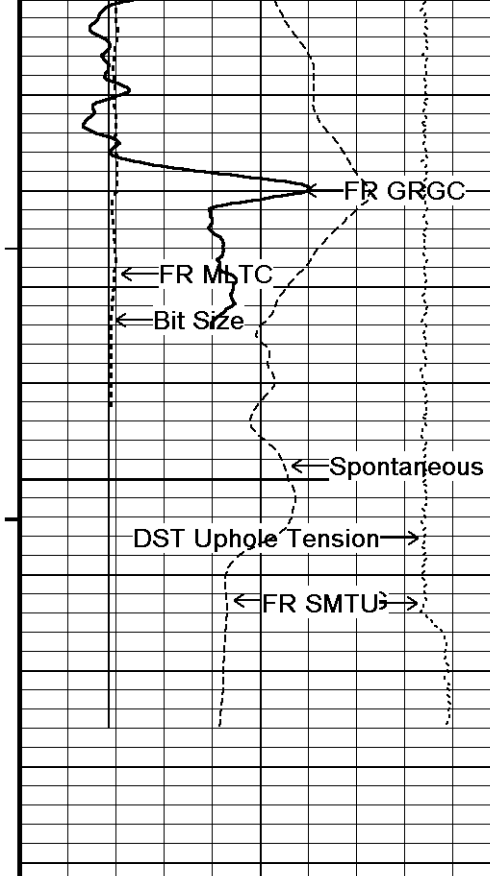
118°

4550

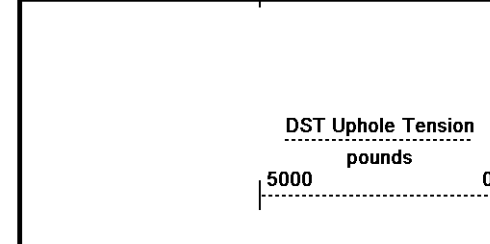
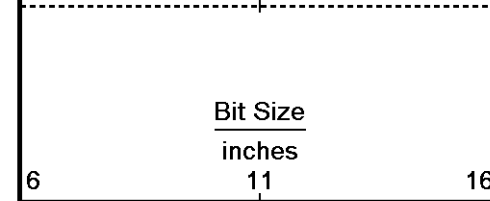
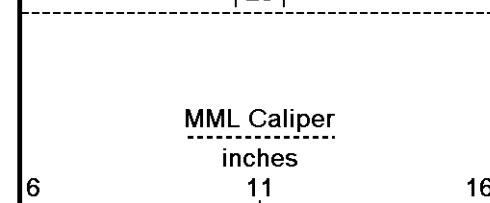
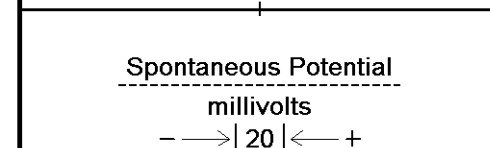
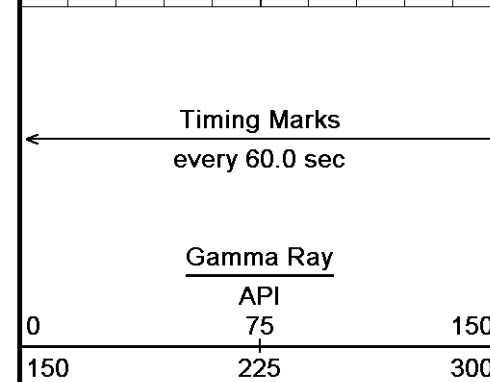
118°

4600



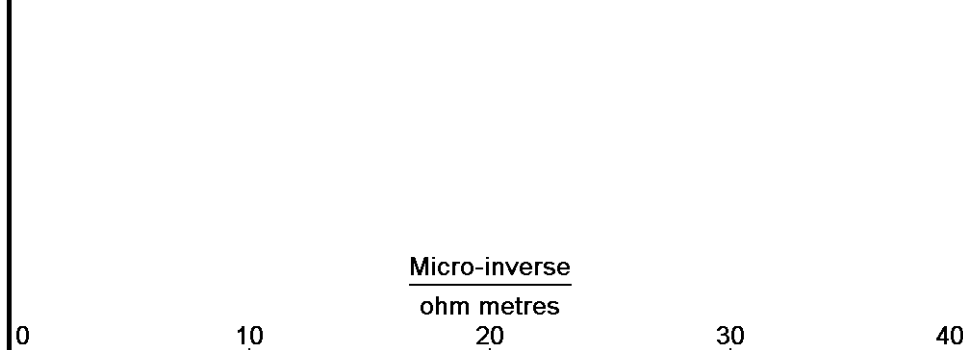
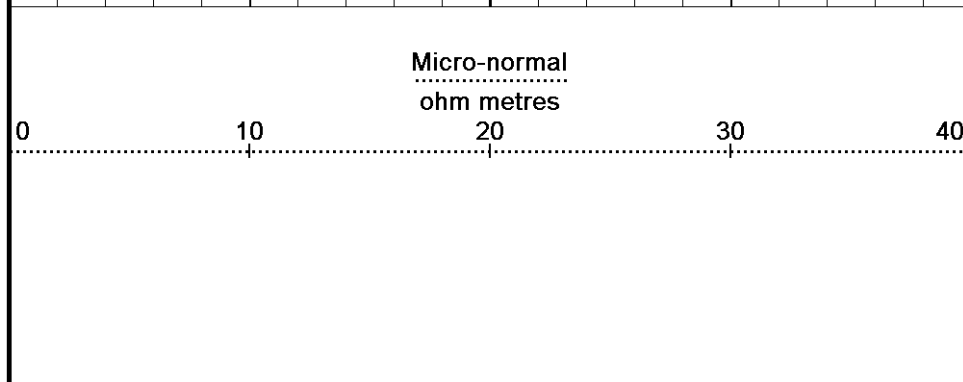
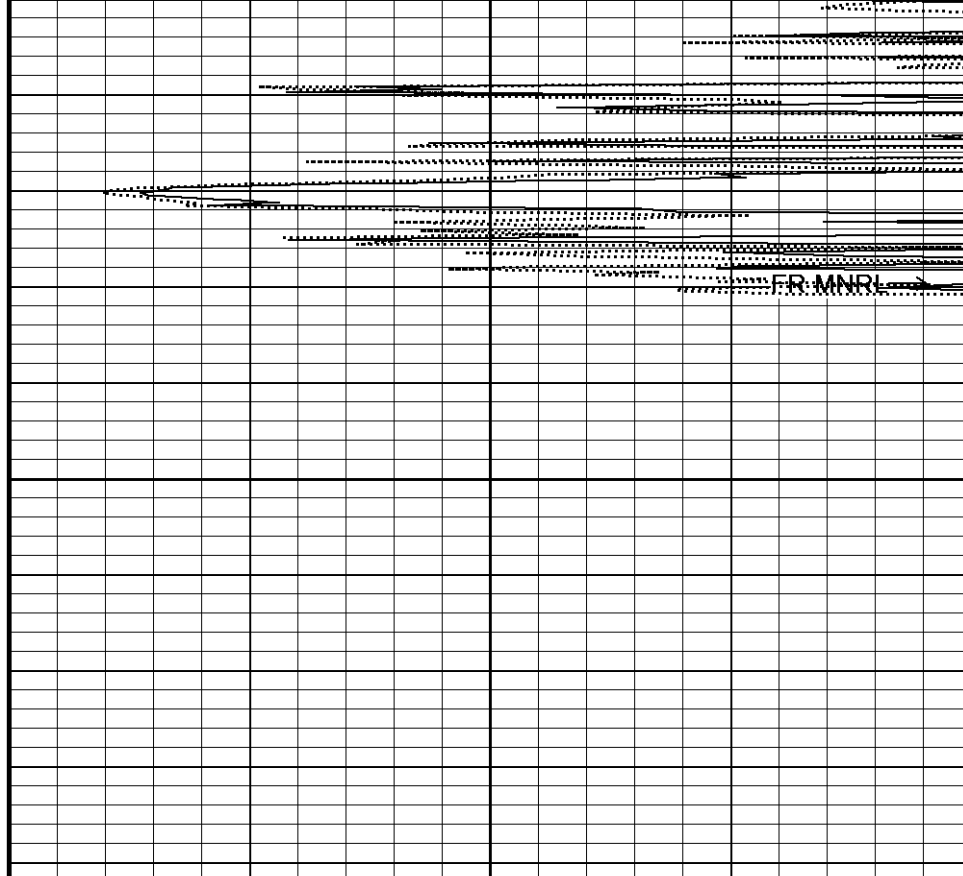


4690
Depth
in
Feet



Borehole
Temp in
deg F

Replay
Scale
1:240



5 INCH REPEAT

BEFORE SURVEY CALIBRATION
 C:\Minimus 13.02.6600\Data\Grand Mesa P-D #1-27\Grand Mesa P-D #1-27_Main spooled section.dta

General Constants All 000 Last Edited on 23-SEP-2012,10:02

General Parameters		
Mud Resistivity	1.240	ohm-metres
Mud Resistivity Temperature	94.000	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	0.610	
RWA Constant M	2.150	

Gamma Calibration MCG-C 208 Field Calibration on 23-SEP-2012 00:17

	Measured	Calibrated (API)
Background	67	46
Calibrator (Gross)	1106	771
Calibrator (Net)	1039	725

Gamma Constants MCG-C 208 Last Edited on 23-SEP-2012,10:02

Gamma Calibrator Number	GR38	
Mud Density	1.09	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 03-AUG-2012,16:18

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

High Resolution Temperature Constants MCG-C 208 Last Edited on

Pre-filter Length	11
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Caliper Calibration MML-A 4 Base Calibration on 27-AUG-2012 09:13
Field Calibration on 23-SEP-2012 00:13

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	15511	5.98
2	18793	7.97
3	22115	9.86
4	26057	11.92
5	0	0.00
6	N/A	N/A
Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	5.94	5.98

Micro Normal and Micro Inverse Calibration MML-A 4 Base Calibration on 27-AUG-2012 09:21
Field Check on 23-SEP-2012 00:11

Base Calibration		
	Measured	Calibrated (ohm-m)

Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.2	60.2	5.0	25.0
Micro Inverse	15.7	78.5	5.0	25.0

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	62.9	62.8
Micro Inverse	48.2	48.2

Micro Normal and Micro Inverse Constants MML-A 4

Last Edited on 15-SEP-2012,14:38

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	N/A	inches	

DOWNHOLE EQUIPMENT

C:\Minimus 13.02.6600\Data\Grand Mesa P-D #1-27\Grand Mesa P-D #1-27_Main 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-C 208 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

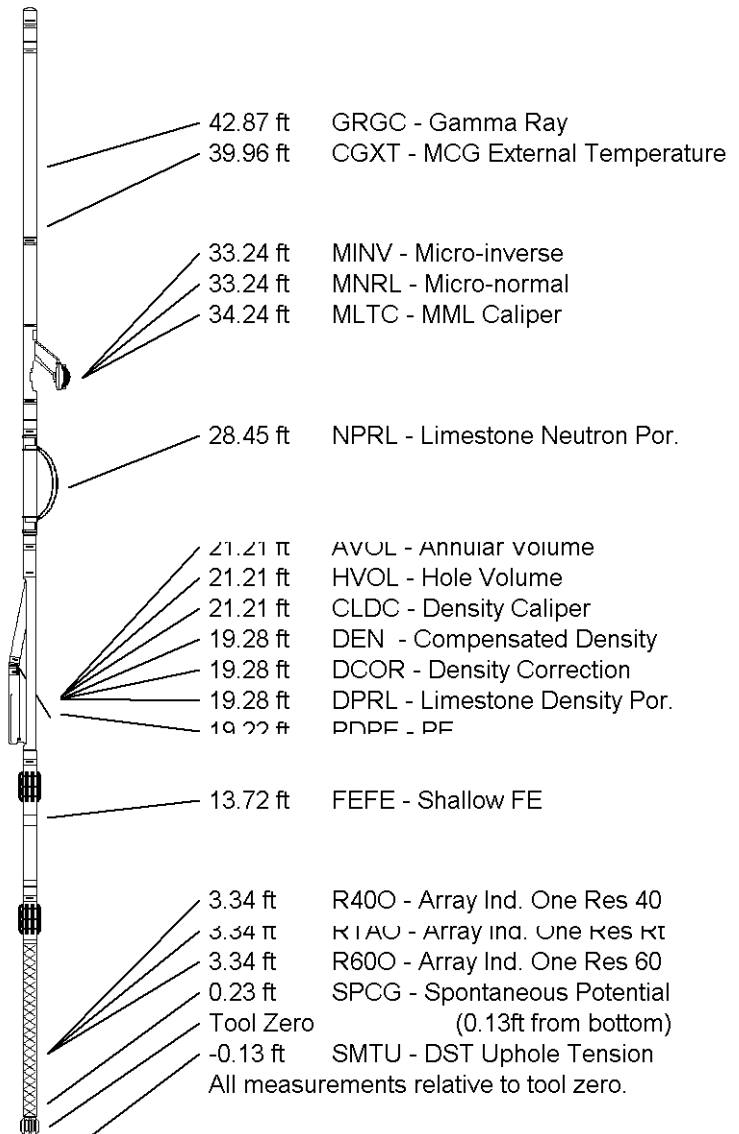
Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

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

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: 49.73 ft Weight: 399.0 lb



COMPANY	GRAND MESA OPERATING
WELL	P-D #1-27
FIELD	WILDCAT
PROVINCE/COUNTY	GOVE
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2875.00	feet
Elevation Drill Floor	2873.00	feet
Elevation Ground Level	2870.00	feet

First Reading	4630.00	feet
Depth Driller	4662.00	feet
Depth Logger	4663.00	feet



Weatherford[®]

MICRORESISTIVITY LOG