



Weatherford

MICRORESISTIVITY LOG

COMPANY GRAND MESA OPERATING COMPANY

WELL E & E # 1-34

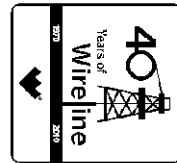
FIELD WILDCAT

PROVINCE/COUNTY LOGAN

COUNTRY/STATE U.S.A. / KANSAS

LOCATION 351' FSL & 739' FEL

NE SW SE SE



SEC 34 TWP 13S RGE 32W Other Services MPD/MDN MAI/MFE

API Number 15-109-21027

Permit Number

Permanent Datum G.L., Elevation 2874 feet

Log Measured From KB

Drilling Measured From K.B. @ 5 FEET

Date 12-AUG-2011

Run Number ONE

Depth Driller 4650.00 feet

Depth Logger 4651.00 feet

First Reading 4615.00 feet

Last Reading 3850.00 feet

Casing Driller 222.00 feet

Casing Logger 219.00 feet

Bit Size 7.875 inches

Hole Fluid Type CHEMICAL

Density / Viscosity 9.10 lb/USg 56.00 CP

PH / Fluid Loss 10.50 8.00 ml/30Min

Sample Source FLOWLINE

Rm @ Measured Temp 1.05 @ 97.0 ohm-m

Rmf @ Measured Temp 0.84 @ 97.0 ohm-m

Rmc @ Measured Temp 1.26 @ 97.0 ohm-m

Source Rmf / Rmc CALC CALC

Rm @ BHT 0.86 @ 119.0 ohm-m

Time Since Circulation 4 HOURS

Max Recorded Temp 119.00 deg F

Equipment Name COMPACT

Equipment / Base 13025 LIB

Recorded By A. GIAMBALVO

Witnessed By KENT MATSON

S.O. / JOB # 3529203

Elevations:
KB 2879.00
DF 2877.00
GL 2874.00

BOREHOLE RECORD

Last Edited: 12-AUG-2011 17:59

Bit Size inches	Depth From feet	Depth To feet
7.875	219.00	4651.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	219.00	24.00

REMARKS

Tools Used: MPD, MCG, MDN, MML, MFE, MAI.
 Hardware: MPD: 8 inch profile plate 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 5.5 inch production casing = 192 cu. ft.
 Service order #3529203
 Rig: Murtin # 24
 Engineer: A. Giambalvo, W. Stambaugh
 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

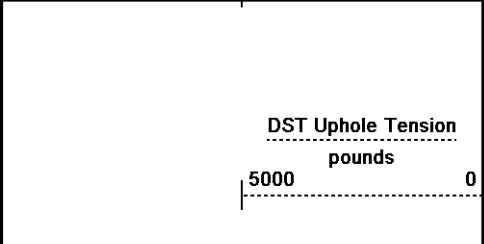
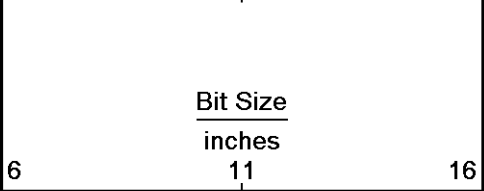
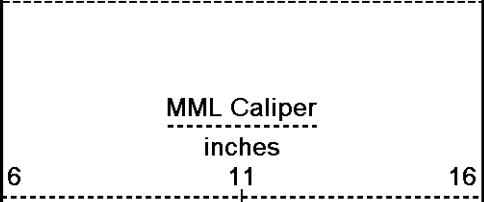
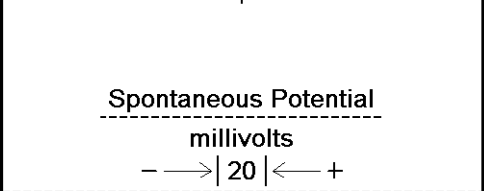
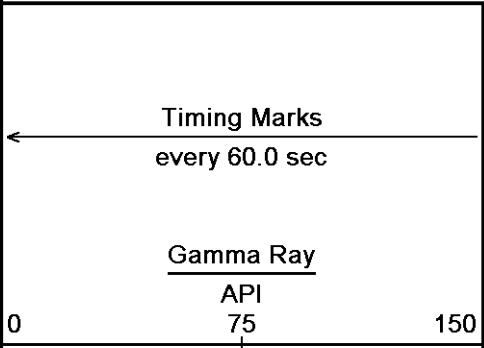
Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 31-AUG-2011 09:37

Filename: C:\DOCUME~1\sysadmin\LOCALS~1\Temp\Weatherfor...\Grand Mesa E & E # 1-34_003.dta

Recorded on 12-AUG-2011 18:06

System Versions: Logged with 11.03.4044 Plotted with 12.01.3513



Depth in Feet

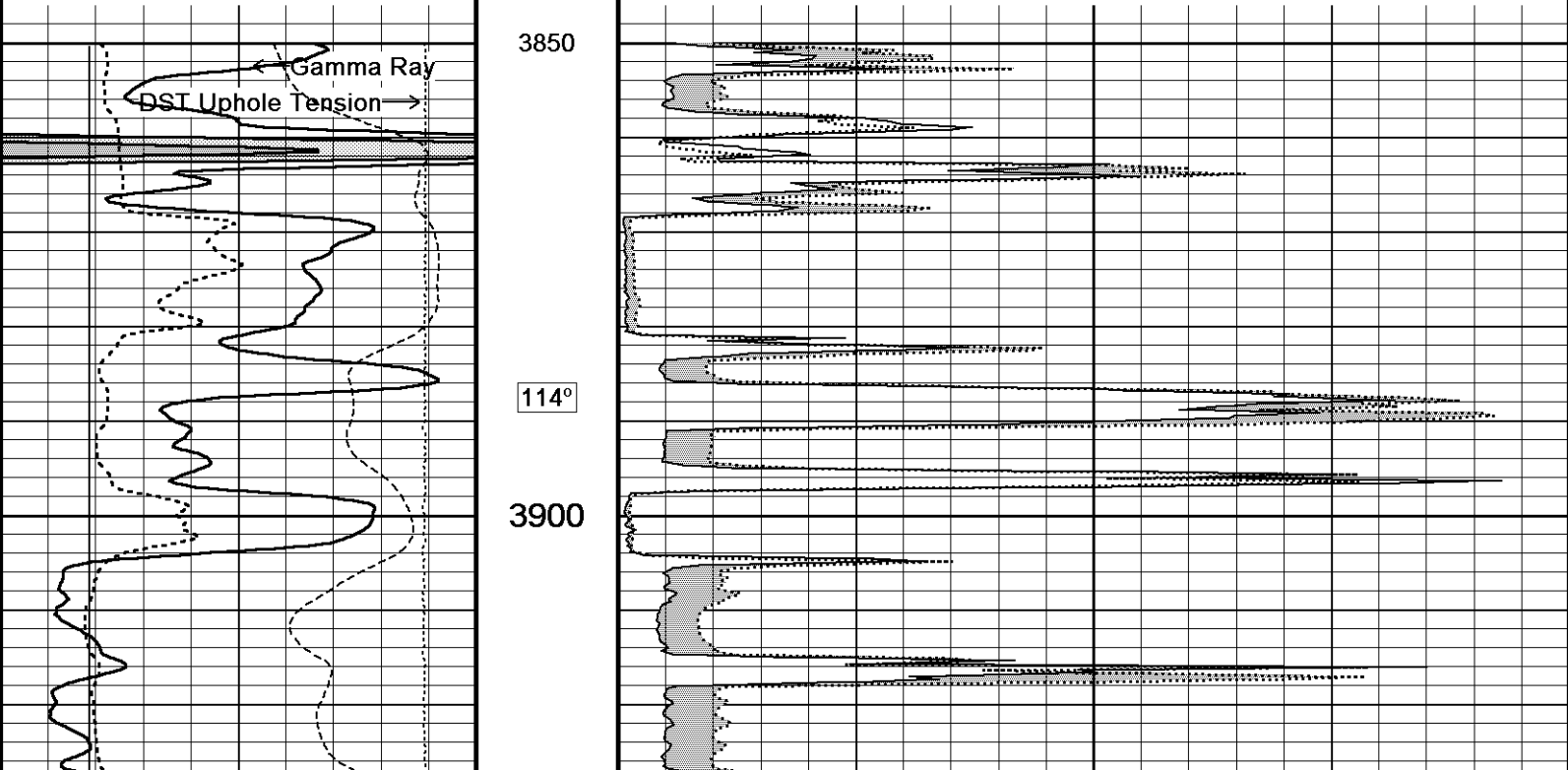
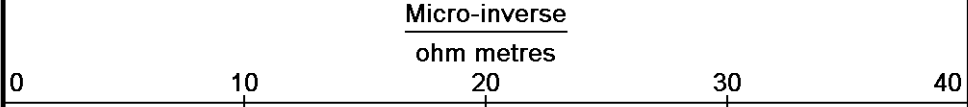
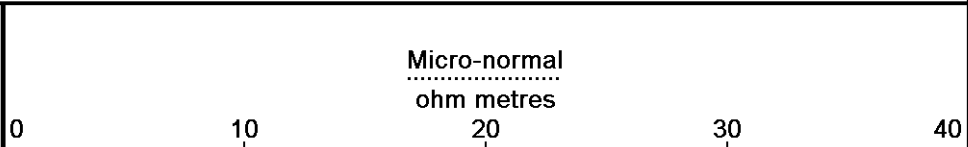
Borehole Temp in deg F

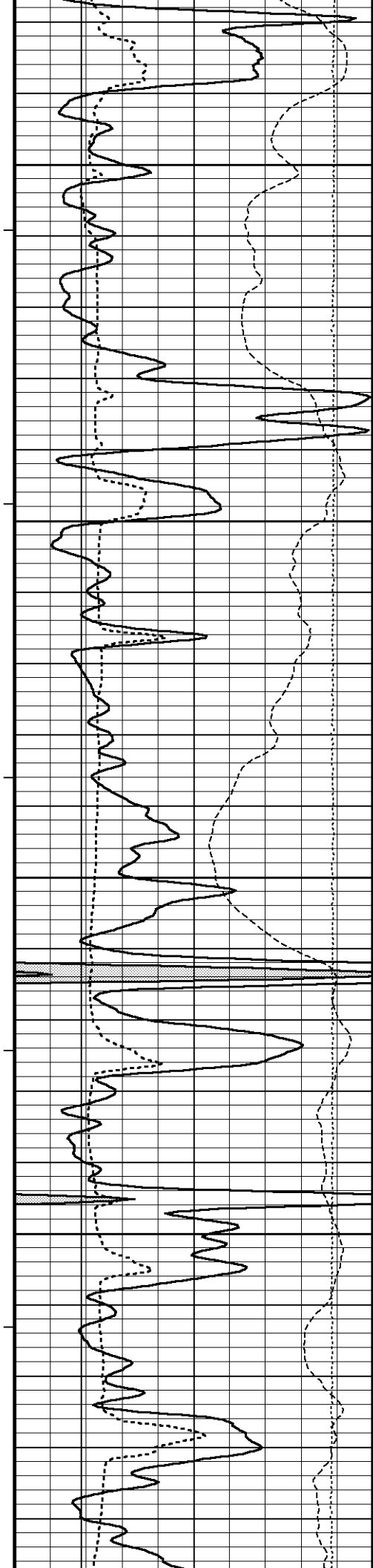
Replay Scale 1:240

3850

114°

3900





115°

3950

115°

4000

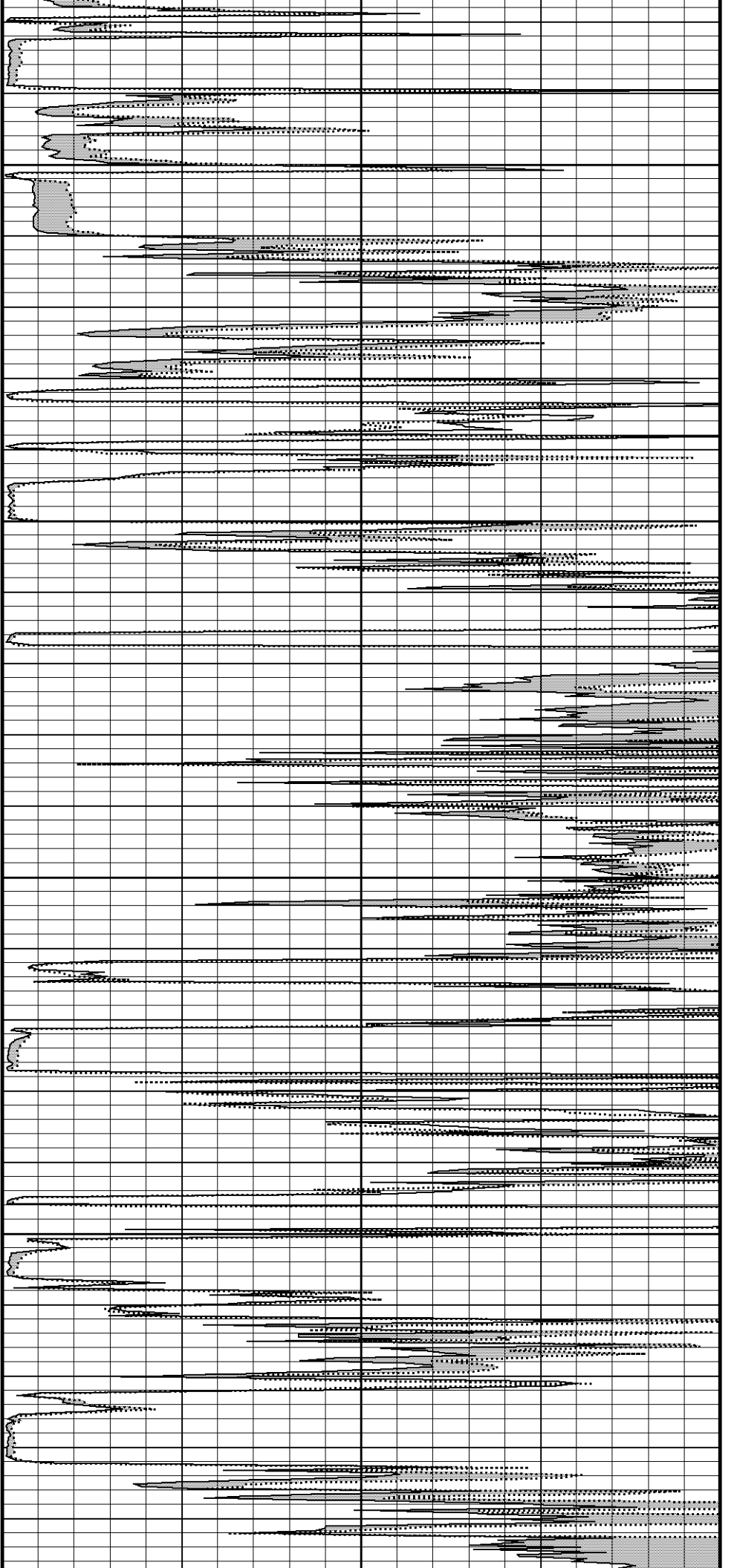
115°

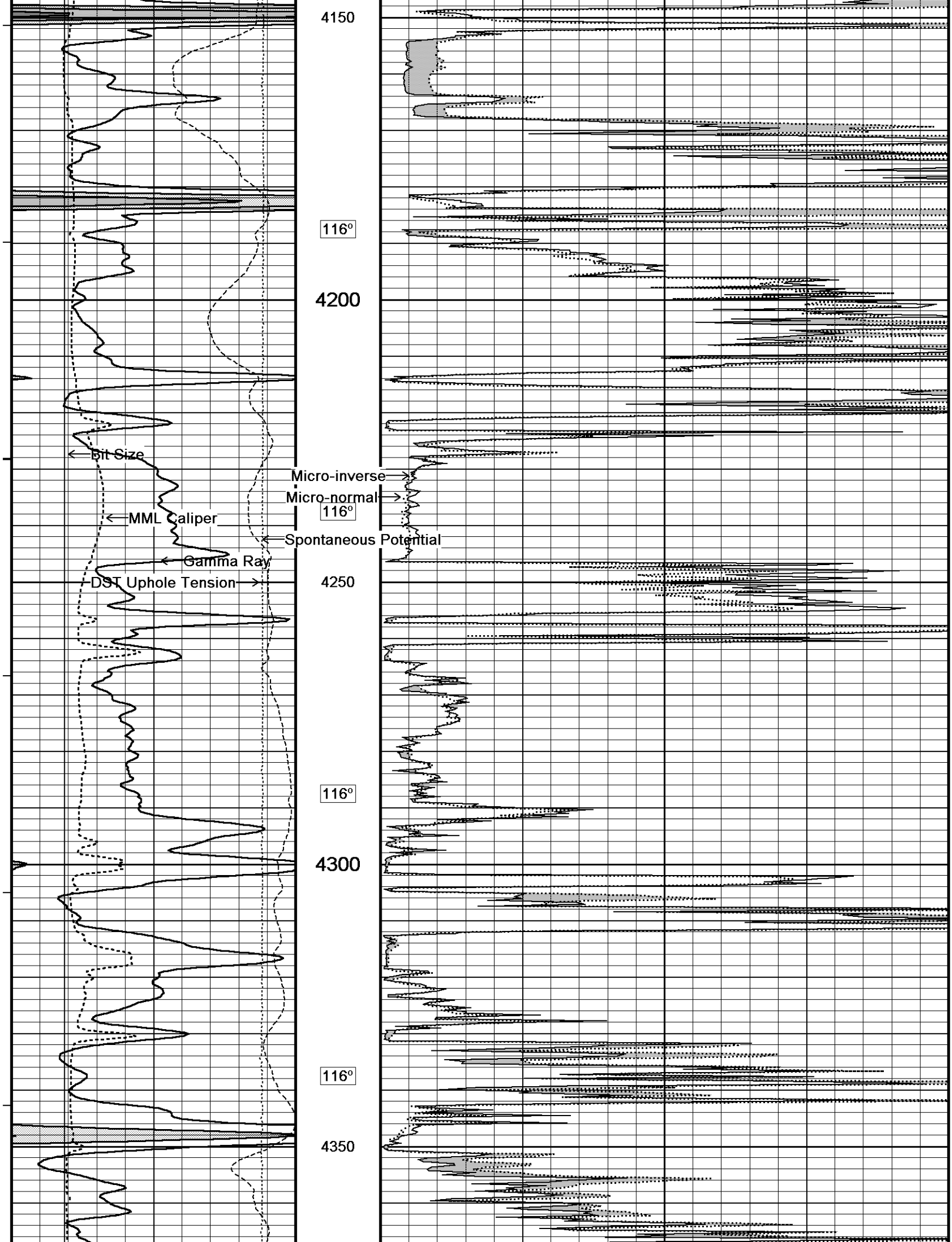
4050

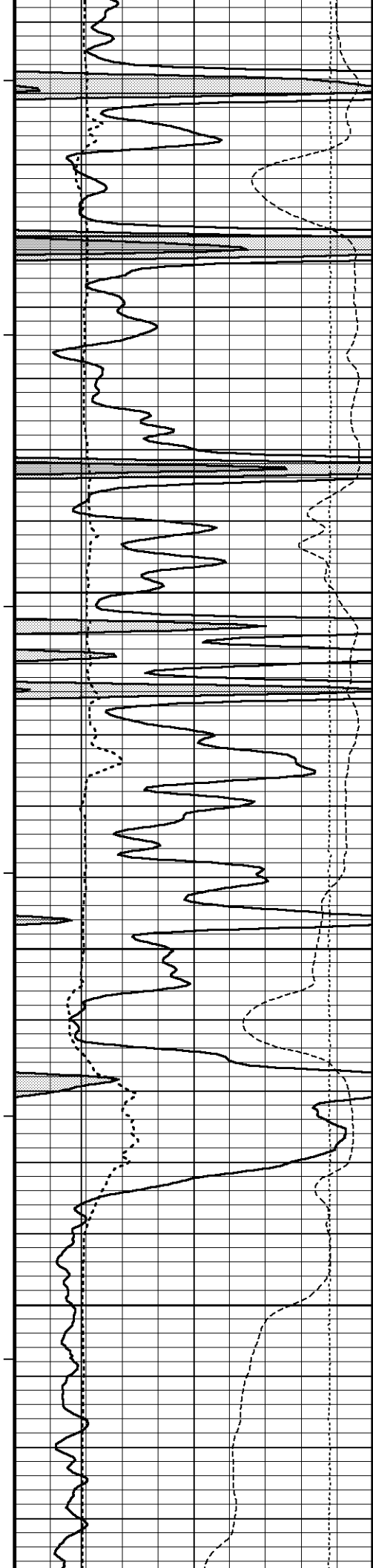
115°

4100

115°







117°

4400

117°

4450

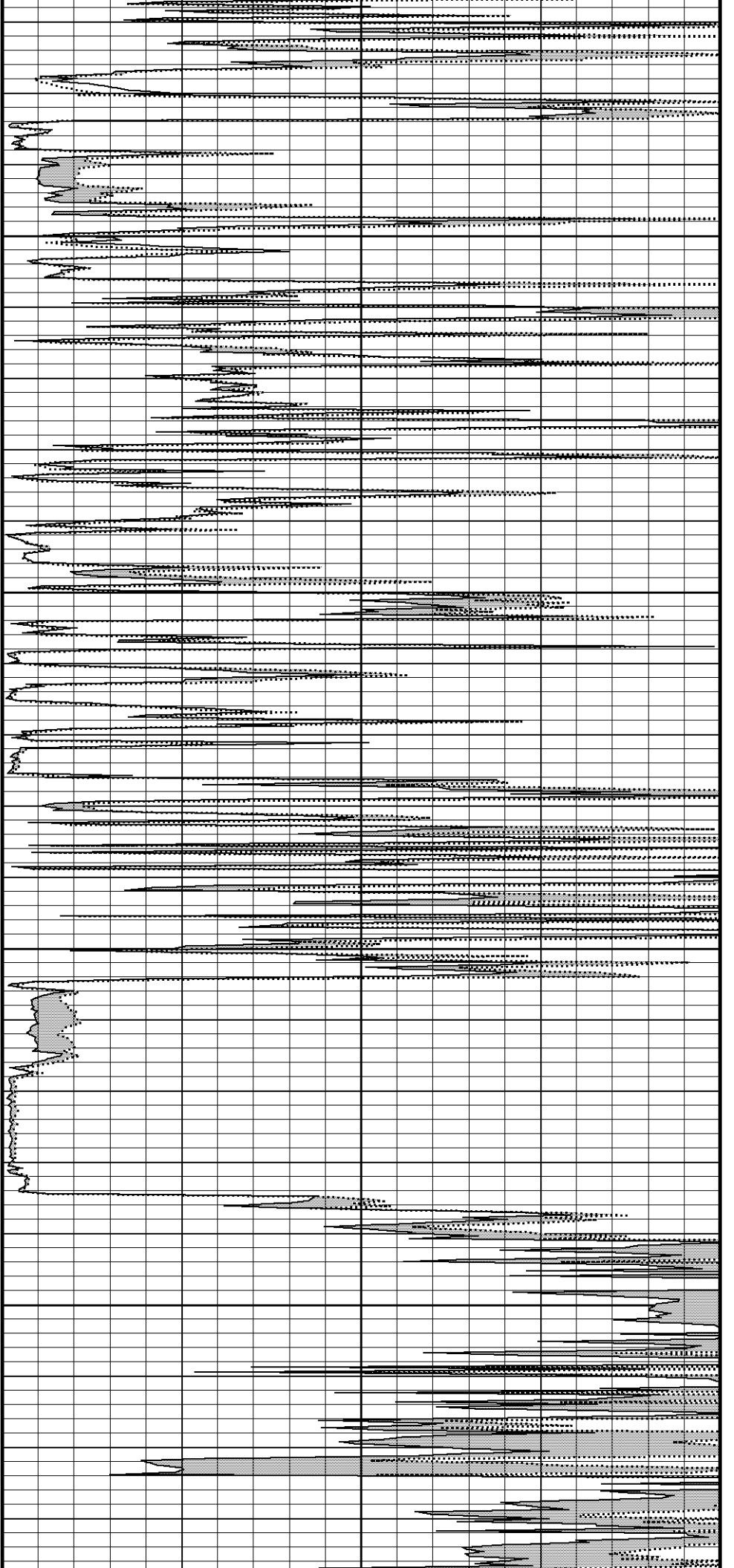
118°

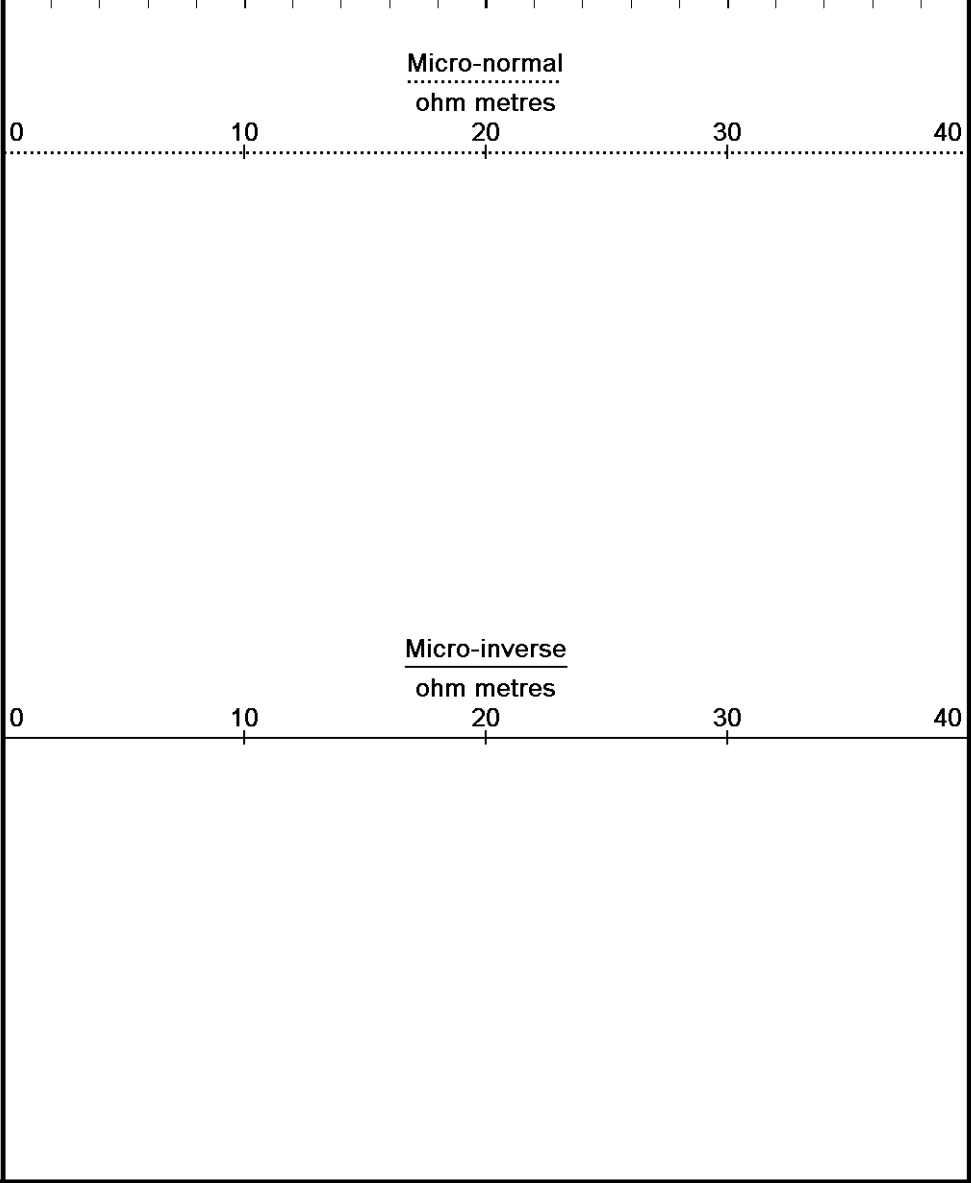
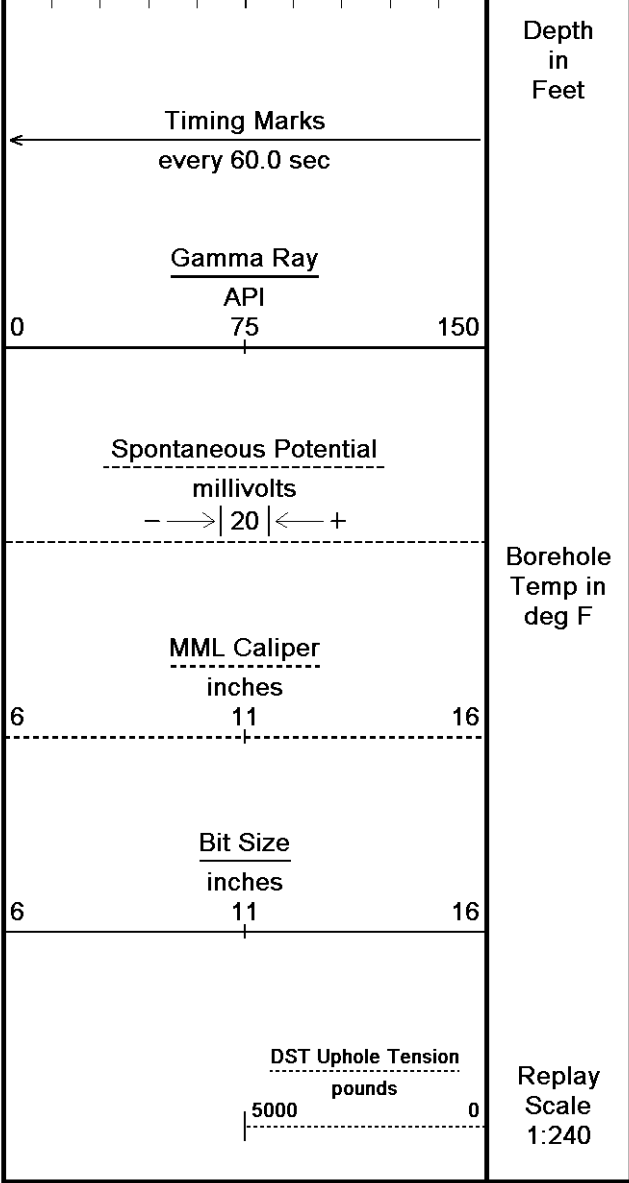
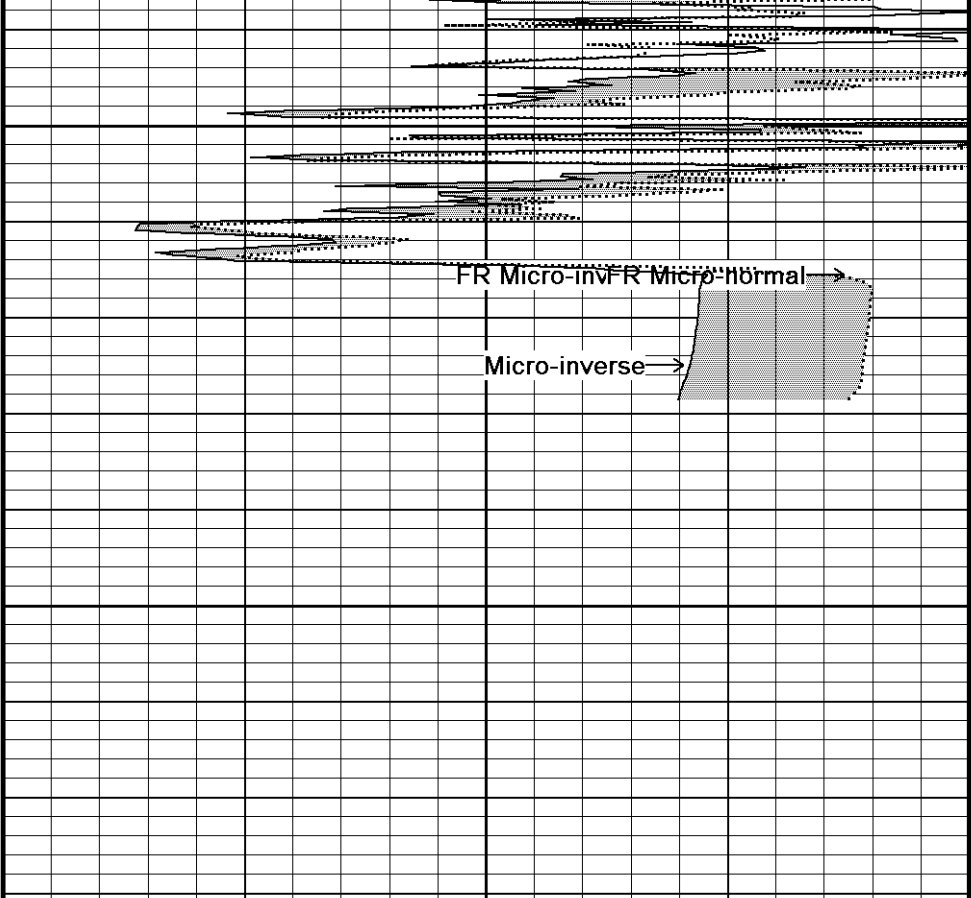
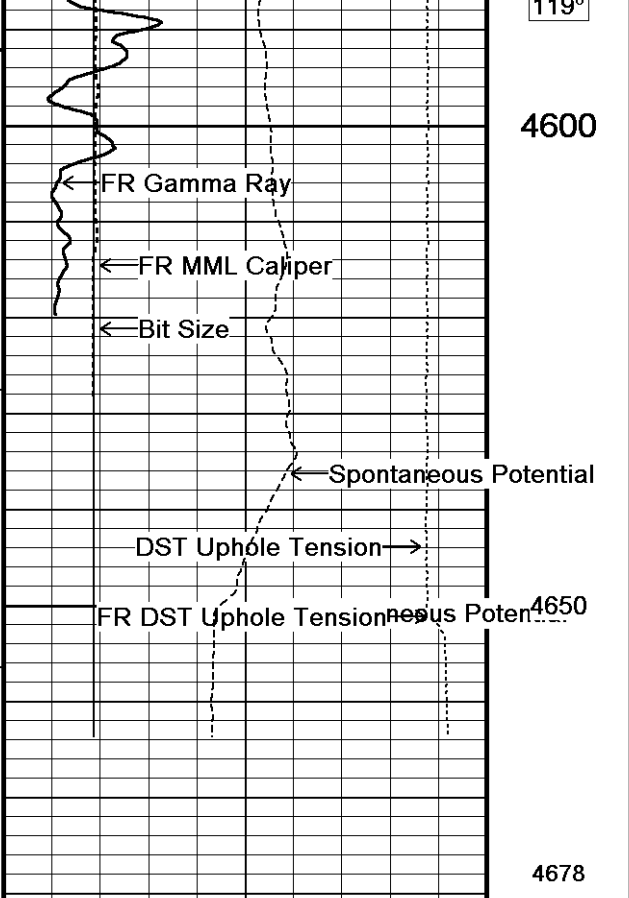
4500

119°

4550

4600

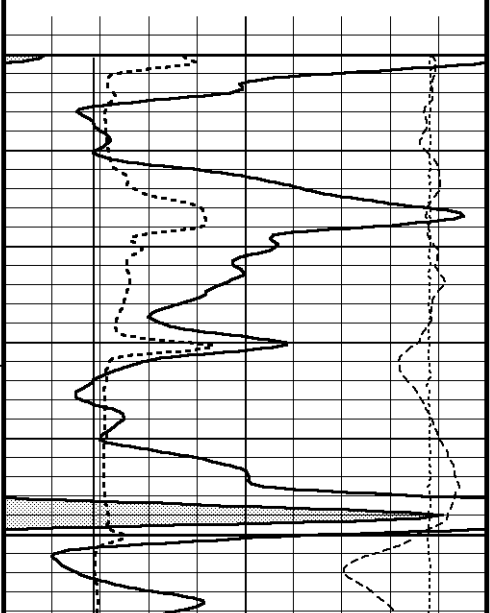
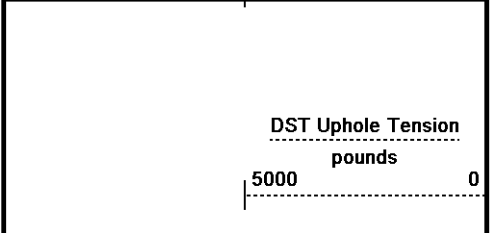
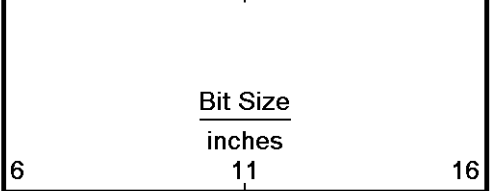
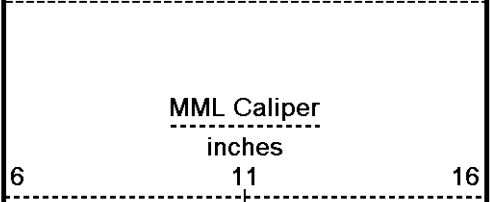
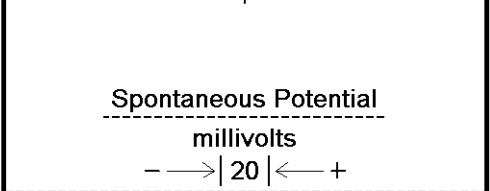
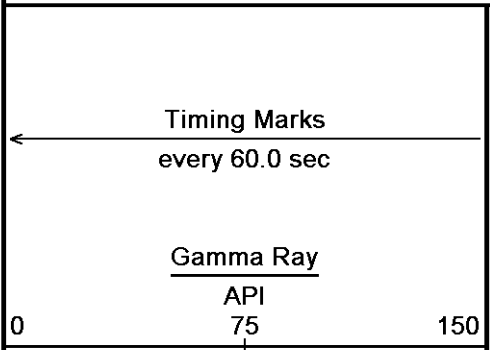




↑ 5 INCH MAIN ↑

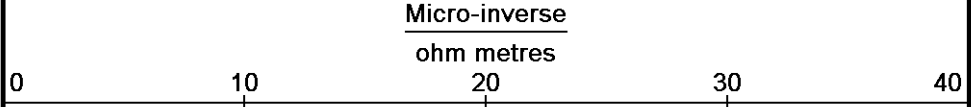
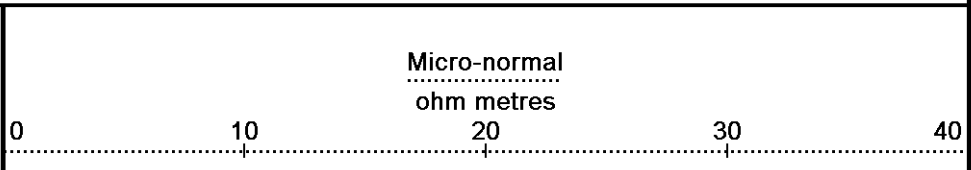
↓ REPEAT SECTION ↓

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 31-AUG-2011 09:37
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Recorded on 12-AUG-2011 17:41
System Versions: Logged with 11.03.4044 Plotted with 12.01.3513

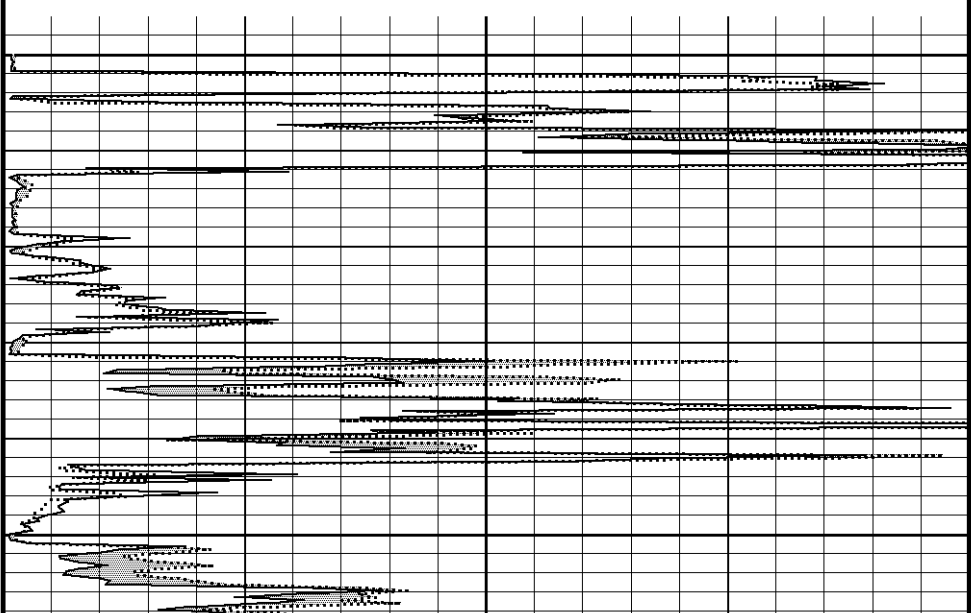


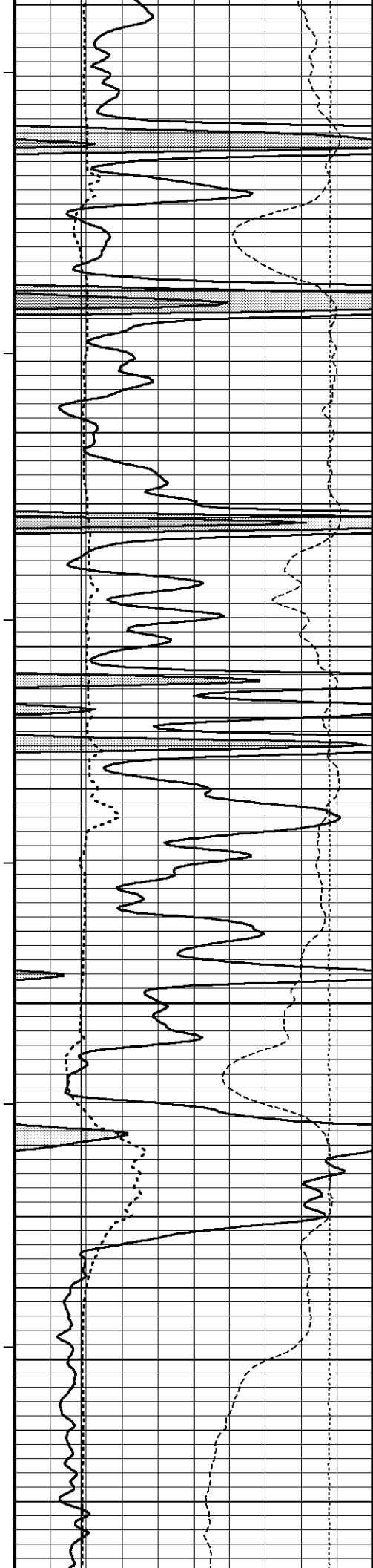
Depth
in
Feet

Borehole
Temp in
deg F



Replay
Scale
1:240





116°

4400

116°

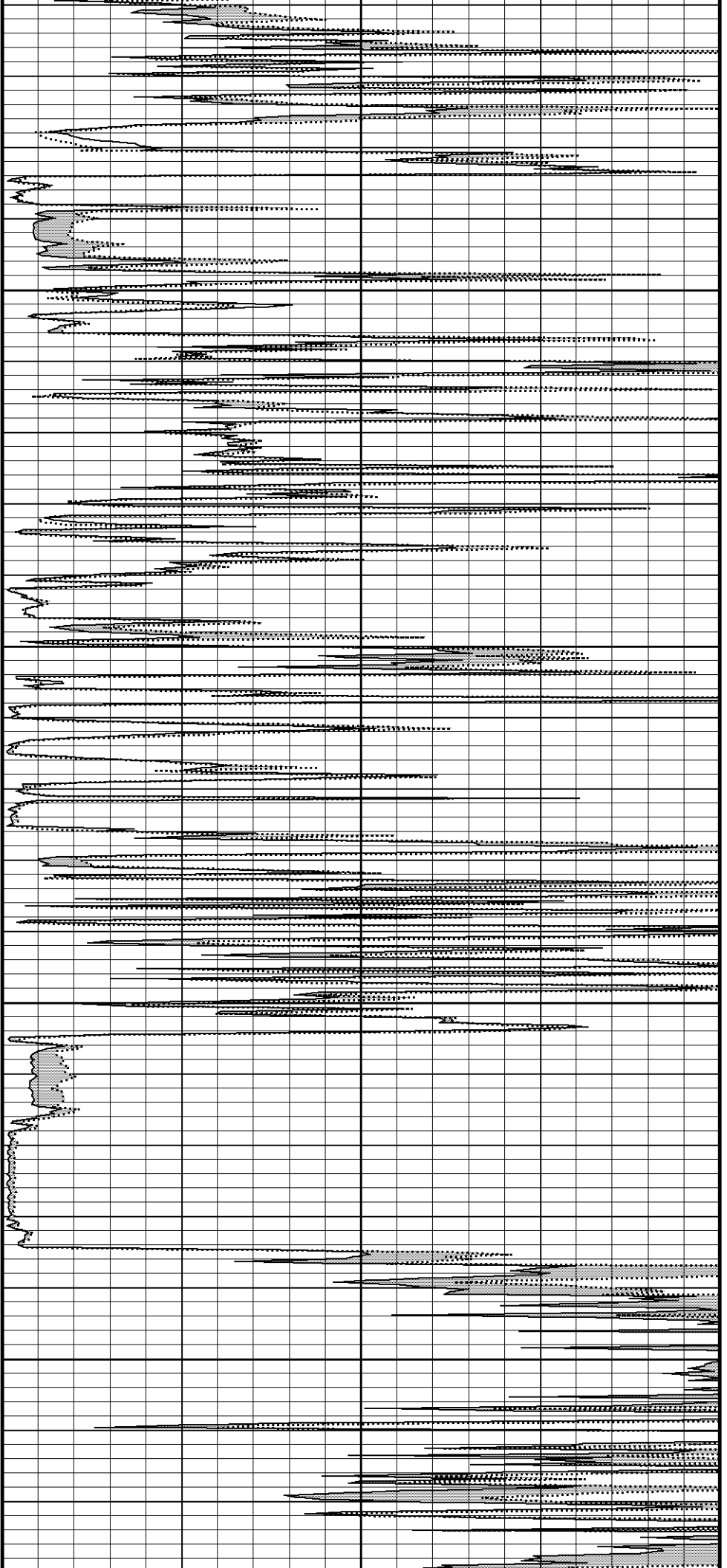
4450

117°

4500

118°

4550



118°

4600

4650

4678

Depth in Feet

Borehole Temp in deg F

Replay Scale 1:240

FR Gamma Ray

FR MML Caliper

Bit Size

Spontaneous Potential

DST Uphole Tension

FR DST Uphole Tension vs Potential

FR Micro-inverse-normal

Micro-inverse

Timing Marks every 60.0 sec

Gamma Ray API 0 75 150

Spontaneous Potential millivolts - -> | 20 | <- +

MML Caliper inches 6 11 16

Bit Size inches 6 11 16

DST Uphole Tension pounds 5000 0

Micro-normal ohm metres 0 10 20 30 40

Micro-inverse ohm metres 0 10 20 30 40

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION

C:\DOCUME~1\sysadmin\LOCALS~1\Temp\Weatherford PreView\0\Grand Mesa E & E # 1-34_003.dta

General Constants All 000 Last Edited on 12-AUG-2011 17:06

General Parameters

Mud Resistivity	1.050	ohm-metres
Mud Resistivity Temperature	97.000	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	

Down-hole Tension Calibration All 000 Field Calibration on 30-JUN-2010 01:00

Reading No	Measured	Calibrated (lbs)
1	14112.01	10.00
2	15164.79	427.00

Down-hole Tension Calibration SMS 0 Field Calibration on 30-JUN-2010 01:00

Reading No	Measured	Calibrated (lbs)
1	14112.01	10.00
2	15164.79	427.00

High Resolution Temperature Calibration MCG-C 139 Field Calibration on 02-AUG-2011 18:13

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

High Resolution Temperature Constants MCG-C 139 Last Edited on

Pre-filter Length	11
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SP Calibration MCG-C 139 Field Calibration on 02-AUG-2011 18:12

	Measured	Calibrated (mV)
Reference 1	103.5	100.0
Reference 2	-96.9	-100.0

Gamma Calibration MCG-C 139 Field Calibration on 11-AUG-2011 16:09

	Measured	Calibrated (API)
Background	73	50
Calibrator (Gross)	1130	775
Calibrator (Net)	1057	725

Gamma Constants MCG-C 139 Last Edited on 12-AUG-2011 17:03

Gamma Calibrator Number	grc38	
Mud Density	1.10	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	

Concentration of KCl

0.00

kppm

Micro Normal and Micro Inverse Calibration MML-A 16

Base Calibration on 02-AUG-2011 16:55

Field Check on 11-AUG-2011 15:49

Base Calibration

Channel	Measured		Calibrated (ohm-m)	
	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.2	60.2	2.6	12.8
Micro Inverse	15.6	78.4	1.7	8.4

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	32.1	32.1
Micro Inverse	16.3	16.3

Micro Normal and Micro Inverse Constants MML-A 16

Last Edited on 12-AUG-2011 17:04

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 16

Base Calibration on 02-AUG-2011 17:07

Field Calibration on 11-AUG-2011 15:48

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14087	5.98
2	17465	7.97
3	20778	9.86
4	24732	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
6.05	5.98

Neutron Calibration MDN-A.B 66

Base Calibration on 02-AUG-2011 19:16

Field Check on 11-AUG-2011 16:02

Base Calibration

Ratio	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3250	102	3714	110
	31.962		33.764	

Field Calibrator at Base

Calibrated (cps)
1591
2269
0.701

Field Check

Calibrated (cps)
1571
2283
0.688

Neutron Constants MDN-A.B 66

Last Edited on 12-AUG-2011 17:05

Neutron Source Id	P58125B	
Neutron Jig Number	5824NE	
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	

EE Calibration MEE-A A 52

Base Calibration on 02-AUG-2011 16:38

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	964.4	126.8
Base Check		280.0
Field Check		280.1

FE Constants MFE-A.A 52

Last Edited on 12-AUG-2011 17:05

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 167

Field Calibration on 02-AUG-2011 18:25

	Measured	Calibrated(Deg F)
Lower	1.00	33.80
Upper	11.00	51.80

High Resolution Temperature Constants MAI-A.A 167

Last Edited on

Pre-filter Length	11
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Induction Calibration MAI-A.A 167

Base Calibration on 11-MAR-2011 09:58
Field Check on 11-AUG-2011 15:45

Base Calibration

Test Loop Calibration Channel	Measured		Calibrated (mmho/m)	
	Low	High	Low	High
1	17.3	474.2	9.3	966.2
2	6.3	388.4	7.6	821.4
3	3.3	259.4	5.2	566.0
4	1.9	133.0	2.6	279.2

Array Temperature	76.8	Deg F
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Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	13.8	3837.3
2	0.0	0.0	29.7	3474.6
3	0.0	0.0	29.1	3050.7
4	0.0	0.0	19.7	2079.9
Deep	0.0	0.0	18.6	2047.2
Medium	0.0	0.0	42.2	3988.3
Shallow	0.0	0.0	43.2	5051.1

Array Temperature	0.0	85.4	Deg F
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Induction Constants MAI-A.A 167

Last Edited on 12-AUG-2011 17:05

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

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 35

Base Calibration on 02-AUG-2011 17:17
Field Calibration on 11-AUG-2011 15:51

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	19303	3.99
2	29535	5.98
3	39888	7.97
4	49472	9.86
5	60384	11.92
6	N/A	N/A

Field Calibration

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

Photo Density Calibration MPD-B 35

Base Calibration on 02-AUG-2011 18:00
Field Check on 11-AUG-2011 15:56

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	56174	27139	59556	30836
Reference 2	22984	2574	24941	2541

Field Check at Base

1165.2	1387.5
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Field Check

1163.6	1388.5
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PE Calibration

Base Calibration	WS	Measured		Calibrated Ratio
		WH	Ratio	
Background	207	1028		
Reference 1	20811	55977	0.375	0.371
Reference 2	6055	22836	0.268	0.272

Field Check at Base

207.3	1028.3
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Field Check

208.9	1028.0
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Density Constants MPD-B 35

Last Edited on 12-AUG-2011 17:05

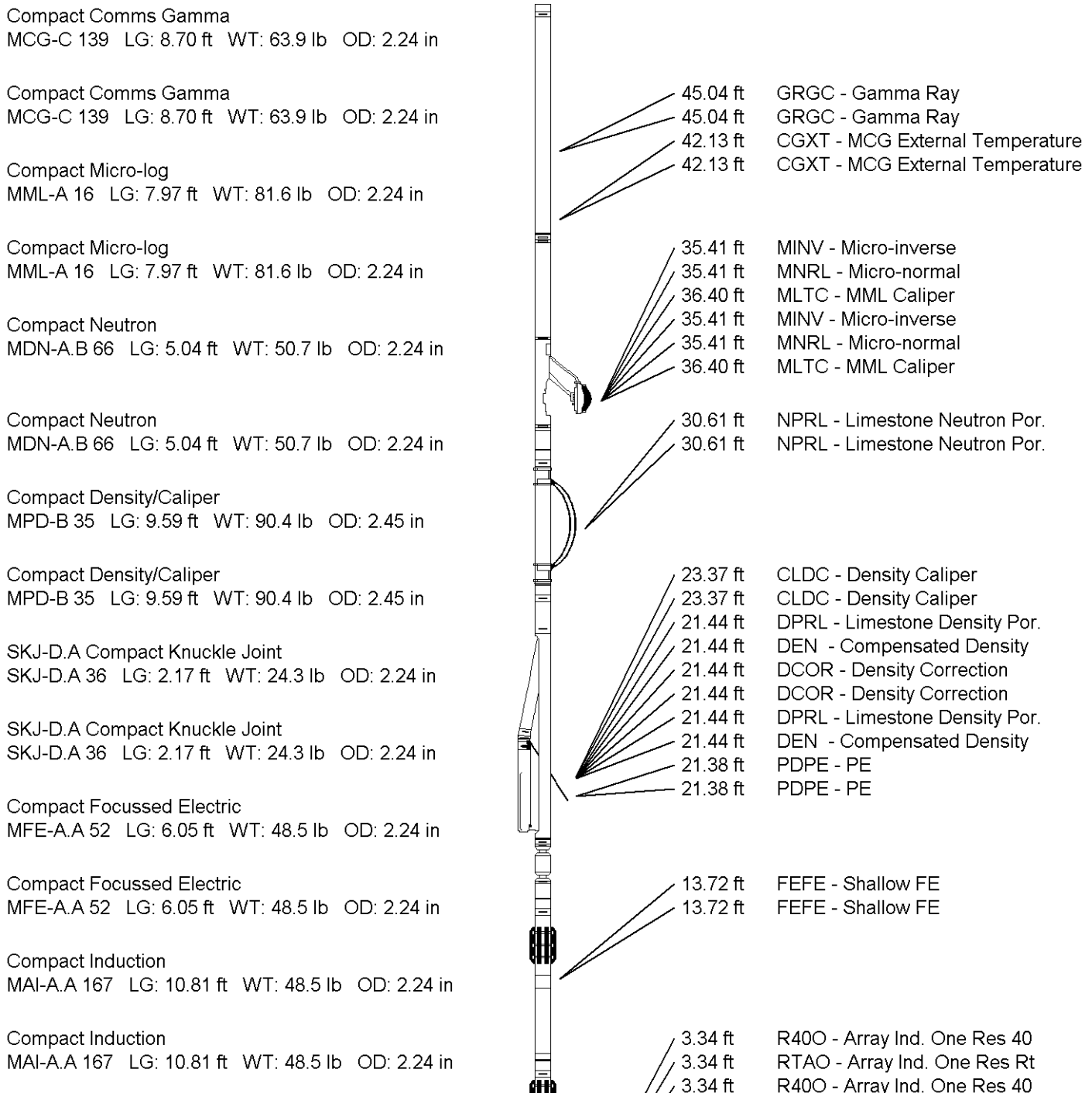
Density Source Id	p50557b
Nylon Calibrator Number	dnce695
Aluminium Calibrator Number	dacd698
Density Shoe Profile	8 inch
Caliper Source for Processing	Density Caliper
PE Correction to Density	Not Applied

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
0.00	0.00

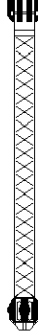
DOWNHOLE EQUIPMENT

C:\DOCUME~1\sysadmin\LOCALS~1\Temp\Weatherford PreView\0\Grand Mesa E & E # 1-34_003.dta



Total Length: 50.32 ft Weight: 407.9 lb

Total Length: 50.32 ft Weight: 407.9 lb



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 GRAND MESA OPERATING COMPANY
WELL E & E # 1-34
FIELD WILDCAT
PROVINCE/COUNTY LOGAN
COUNTRY/STATE U.S.A. / KANSAS

Elevation Kelly Bushing	2879.00	feet	First Reading	4615.00	feet
Elevation Drill Floor	2877.00	feet	Depth Driller	4650.00	feet
Elevation Ground Level	2874.00	feet	Depth Logger	4651.00	feet



Weatherford[®]

MICRORESISTIVITY LOG

