

**Weatherford****MICRORESISTIVITY LOG**

COMPANY

MCCOY PETROLEUM CORPORATION

WELL

M-M DIEL UNIT "A" # 1-8

FIELD

WILDCAT

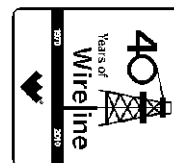
PROVINCE/COUNTY

LANE

COUNTRY/STATE

U.S.A. / KANSAS

LOCATION

2310' FSL & 2310' FEL**NW NW SE**

SEC

TWP

8

20S

RGE

27W

Other Services

MAI/MFE

MPD/MDN

API Number

15-101-22334

Permit Number

Permanent Datum G.L., Elevation 2733 feet

Log Measured From KB

Drilling Measured From K.B. @ 10 FEET

Date

16-DEC-2011

Elevations:

KB 2743.00
DF 2741.00
GL 2733.00

Run Number

ONE

Depth Driller

4730.00

feet

Depth Logger

4735.00

feet

First Reading

4699.00

feet

Last Reading

1900.00

feet

Casing Driller

228.00

feet

Casing Logger

227.00

feet

Bit Size

7.875

inches

Hole Fluid Type

CHEMICAL

Density / Viscosity

9.40 lb/USg

54.00 CP

PH / Fluid Loss

10.50

7.60 ml/30Min

Sample Source

FLOWLINE

Rm @ Measured Temp

1.45 @ 67.0

ohm-m

Rmf @ Measured Temp

1.16 @ 67.0

ohm-m

Rmc @ Measured Temp

1.74 @ 67.0

ohm-m

Source Rmf / Rmc

CALC

CALC

Rm @ BHT

0.80 @ 125.0

ohm-m

Time Since Circulation

5 HOURS

Max Recorded Temp

126.00

deg F

Equipment Name

COMPACT

Equipment / Base

13096

LIB

Recorded By

A. GIAMBALVO

JERRY SMITH

S.O. / JOB #

3534684

LB11-319

BOREHOLE RECORD

Last Edited: 16-DEC-2011 07:22

Bit Size
inches

7.875

Depth From
feet

227.00

Depth To
feet

4735.00

CASING RECORD

Type

Size
inches

8.625

Depth From
feet

10.00

Shoe Depth
feet

227.00

Weight
pounds/ft

24.00

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 5.5 inch production casing from TD to 3800 ft = 158 cu. ft

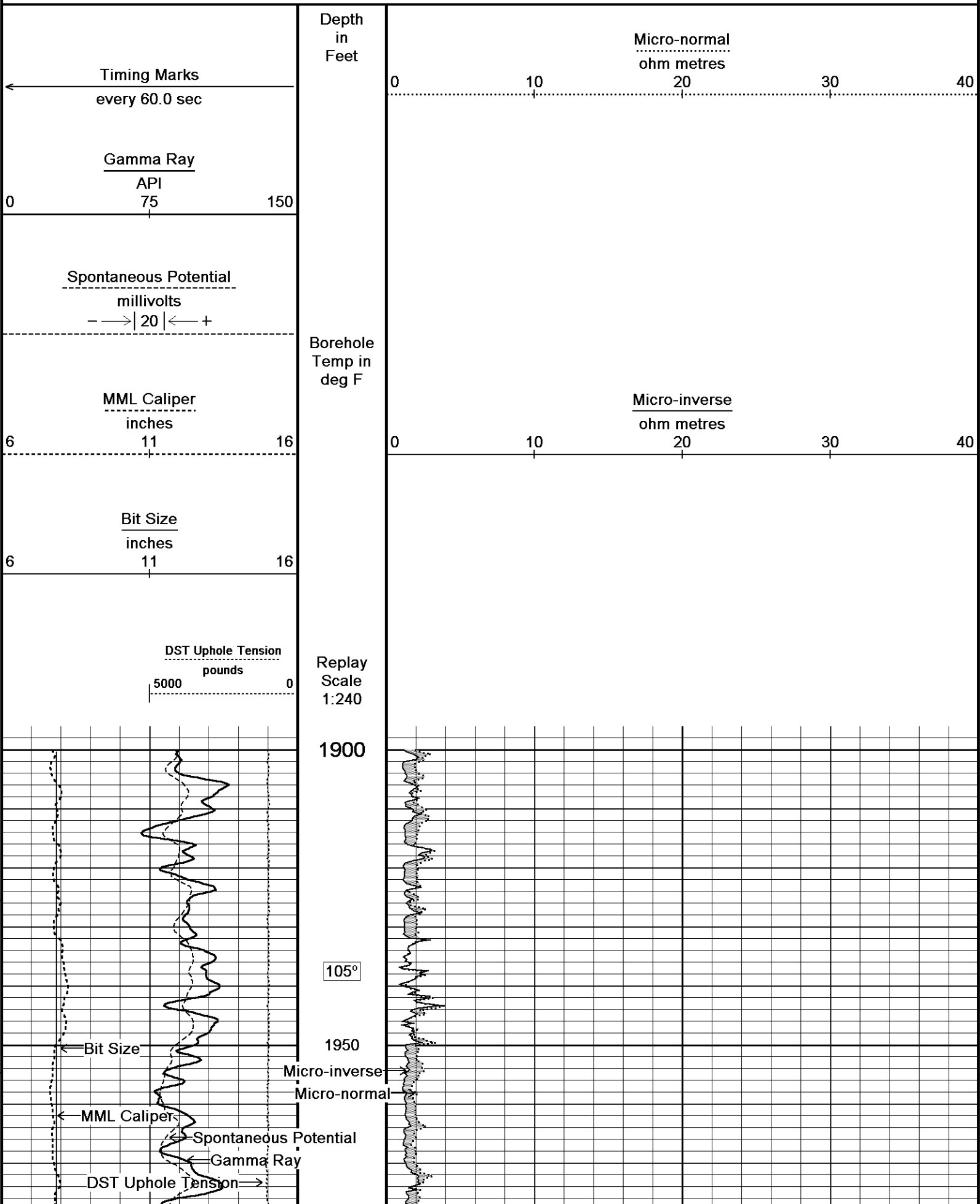
Service Order #3534684

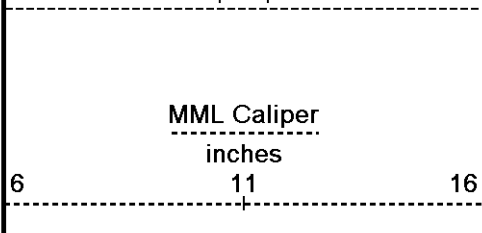
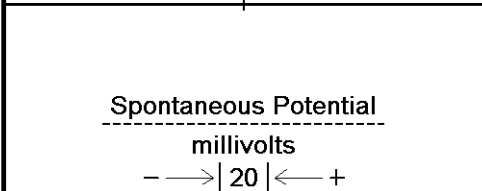
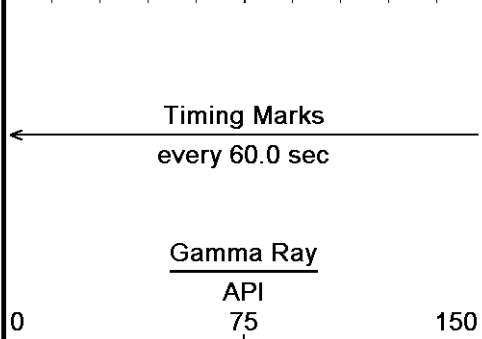
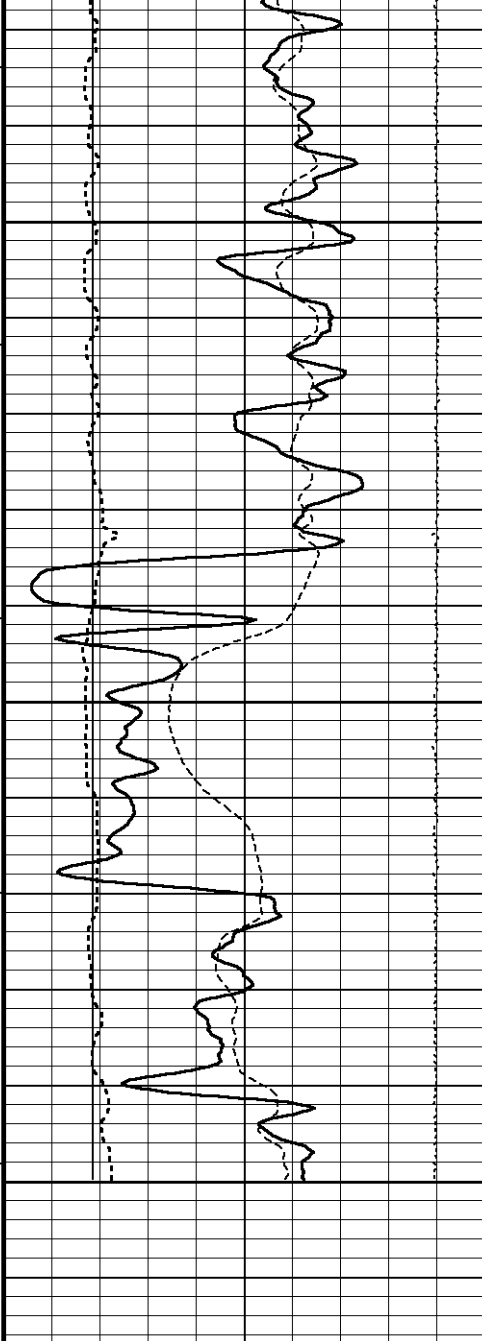
Rig: Val # 7

Engineer: A. Giambalvo

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.





106°

2000

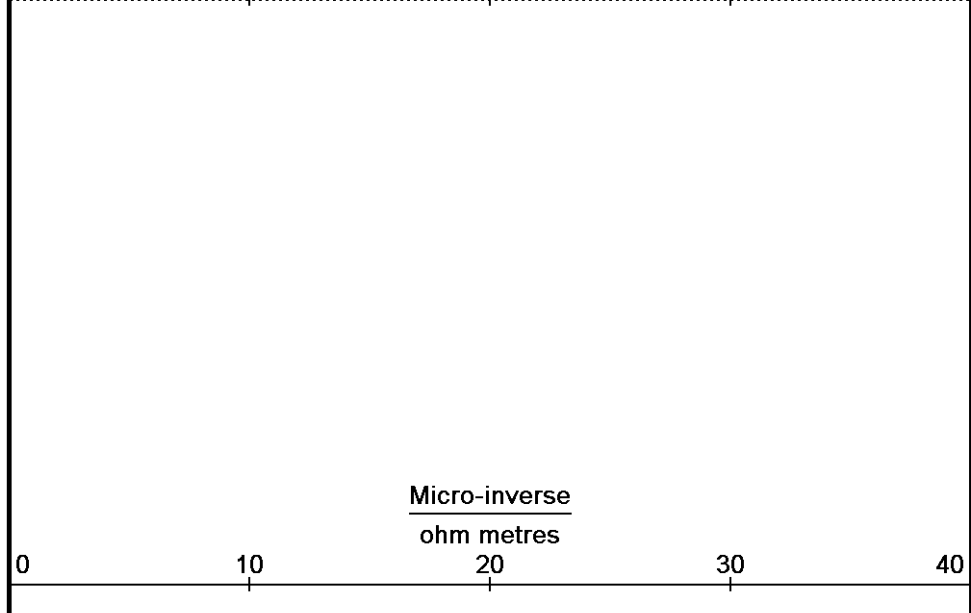
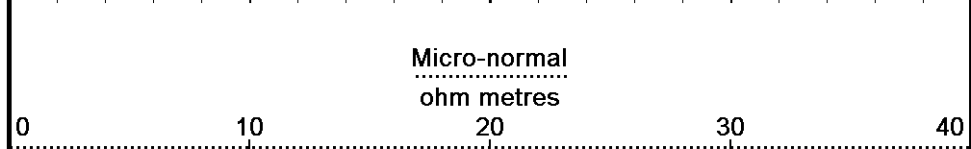
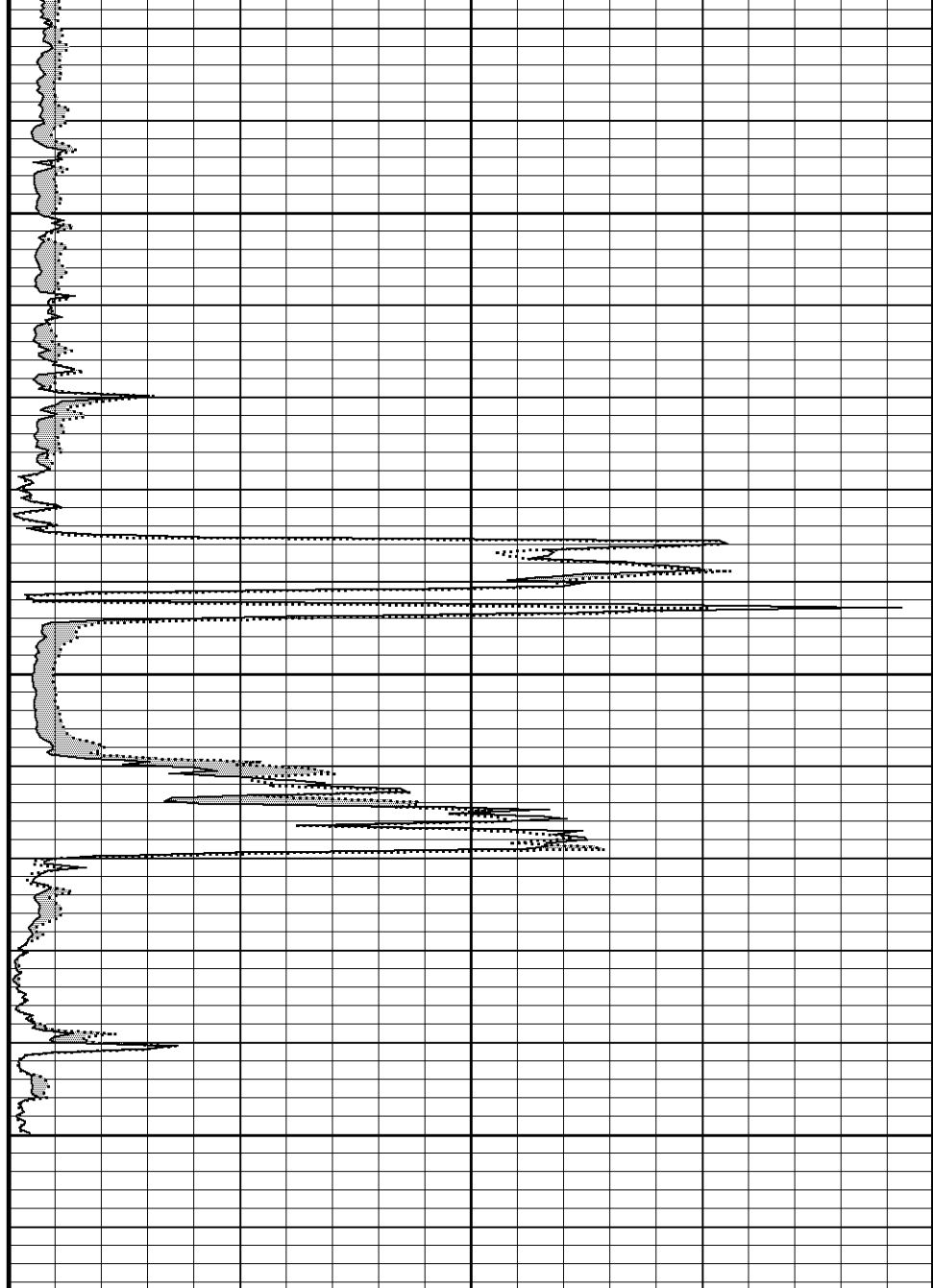
106°

2050

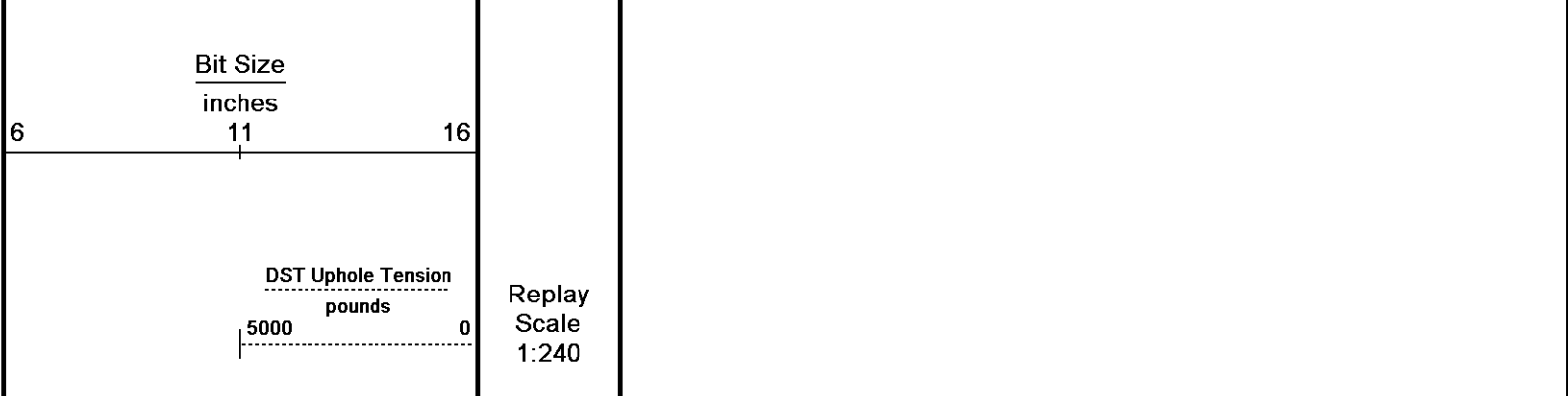
106°

2100

2114
Depth
in
Feet



Borehole
Temp in
deg F



Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 11.02.3186\Data\McCoy M-M Diel Unit ...McCoy M-M Diel Unit A # 1-8 Splice.dta
System Versions: Plotted with 12.03.5032

Plotted on 16-DEC-2011 07:58
Recorded on 16-DEC-2011 04:15

↑

5 INCH MAIN PASS

↑

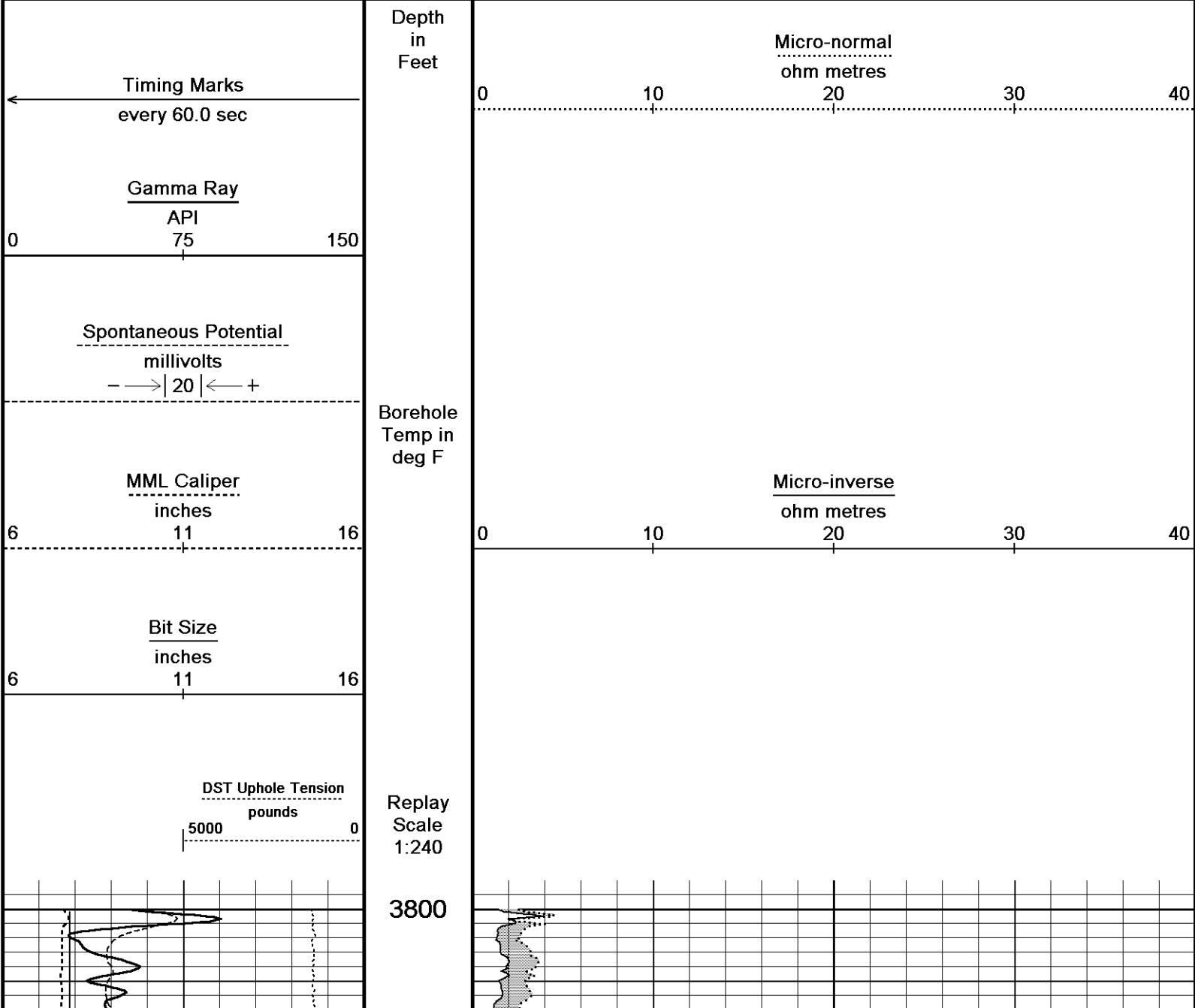
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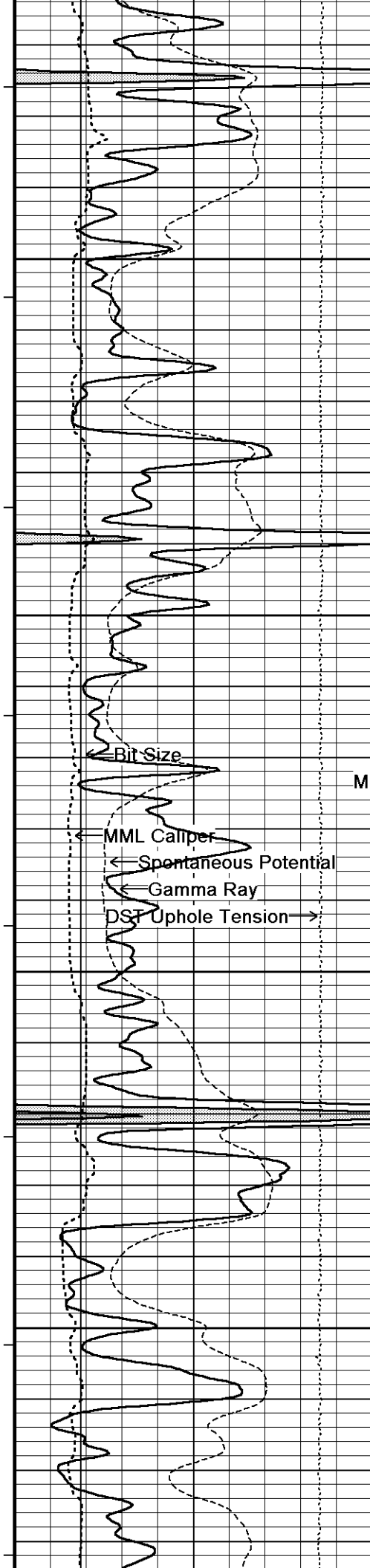
5 INCH MAIN PASS

↓

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 11.02.3186\Data\McCoy M-M Diel Unit ...McCoy M-M Diel Unit A # 1-8 Splice.dta
System Versions: Plotted with 12.03.5032

Plotted on 16-DEC-2011 07:58
Recorded on 16-DEC-2011 04:15





119°

3850

119°

3900

Micro-inverse

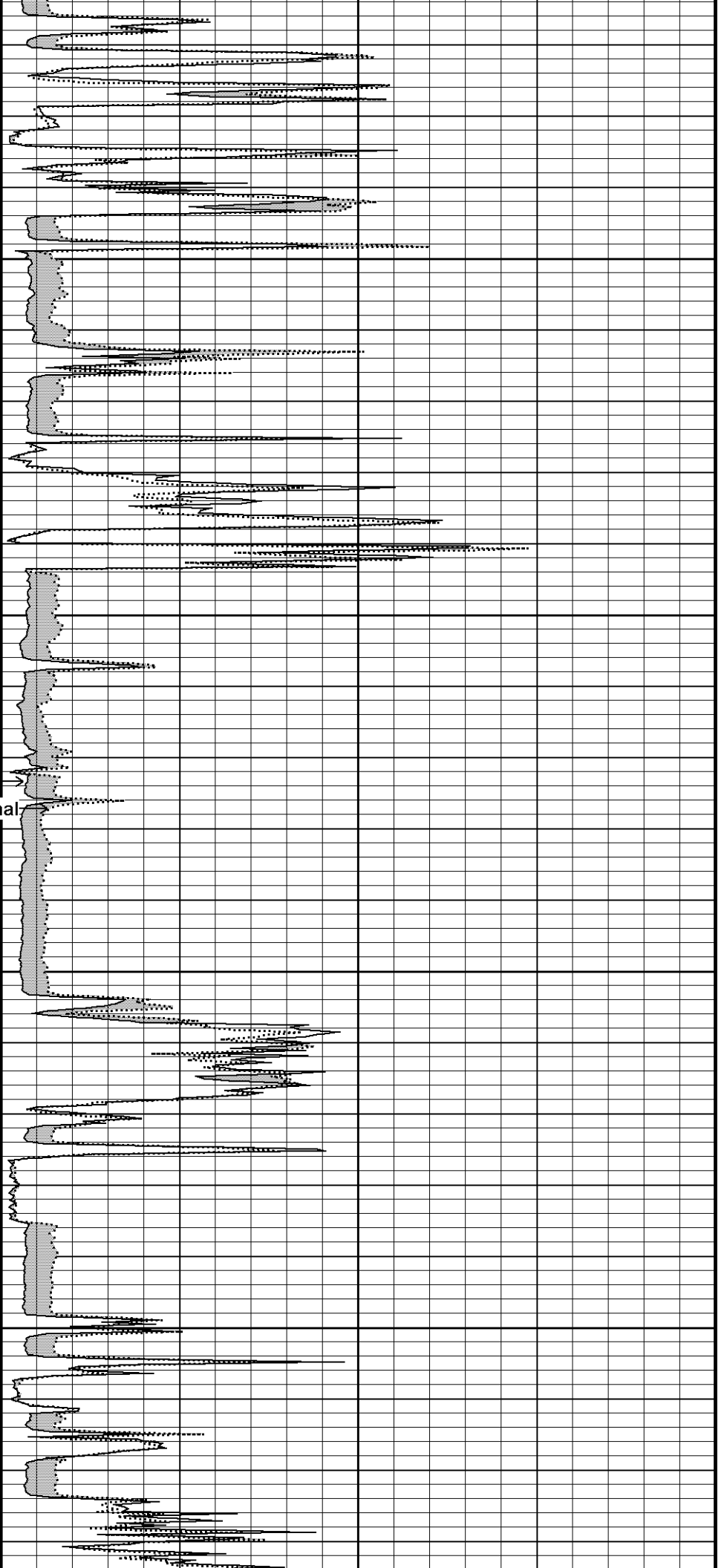
Micro-normal

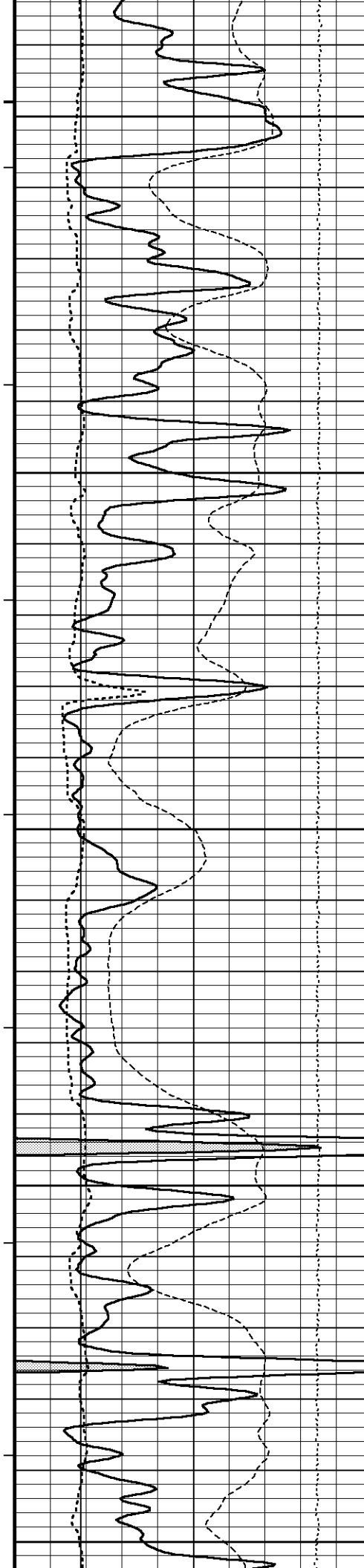
119°

3950

119°

4000





119°

4050

120°

4100

121°

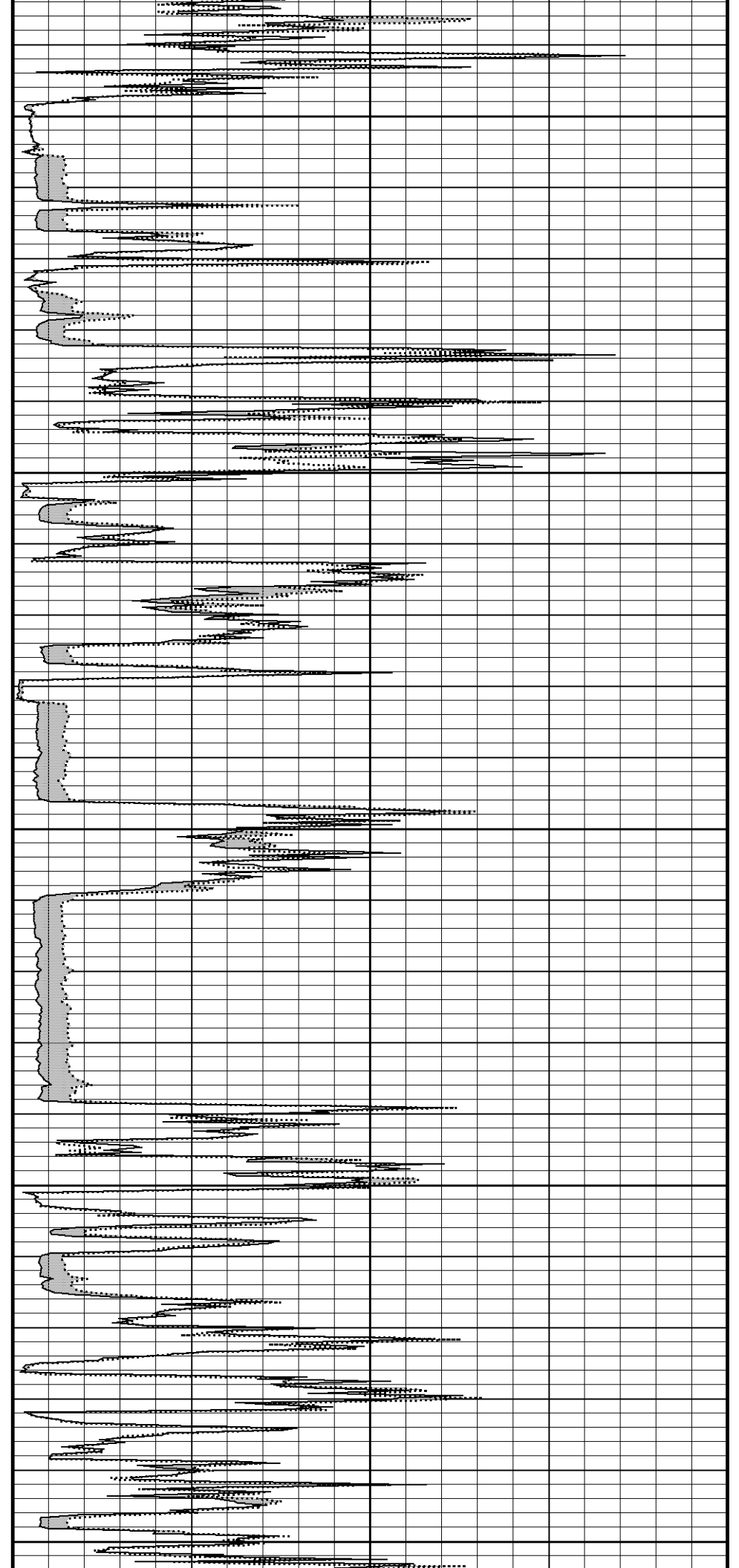
4150

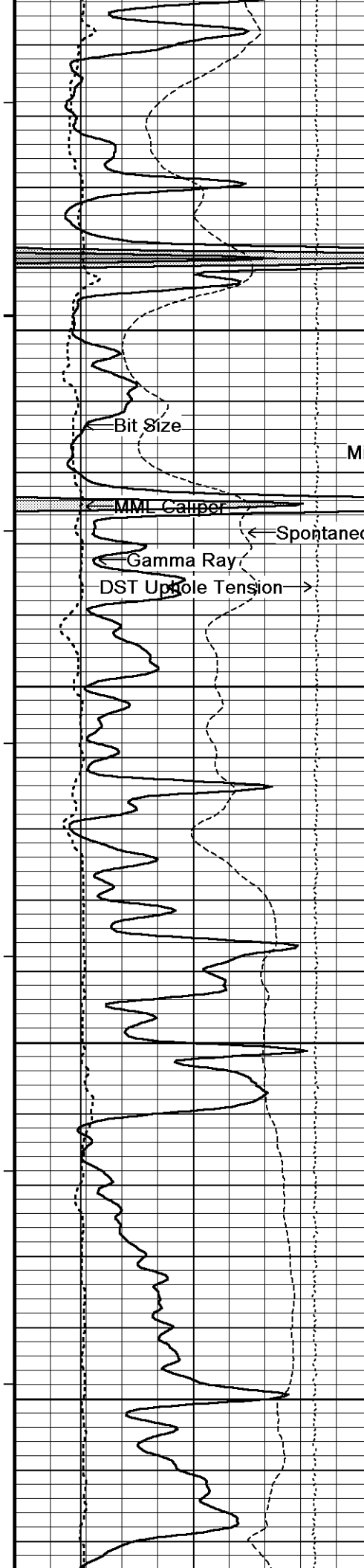
121°

4200

121°

4250





122°

4300

Bit Size

Micro-inverse →

Micro-normal ←

MML Caliper

← Spontaneous Potential

Gamma Ray

DST Up/Down Tension →

122°

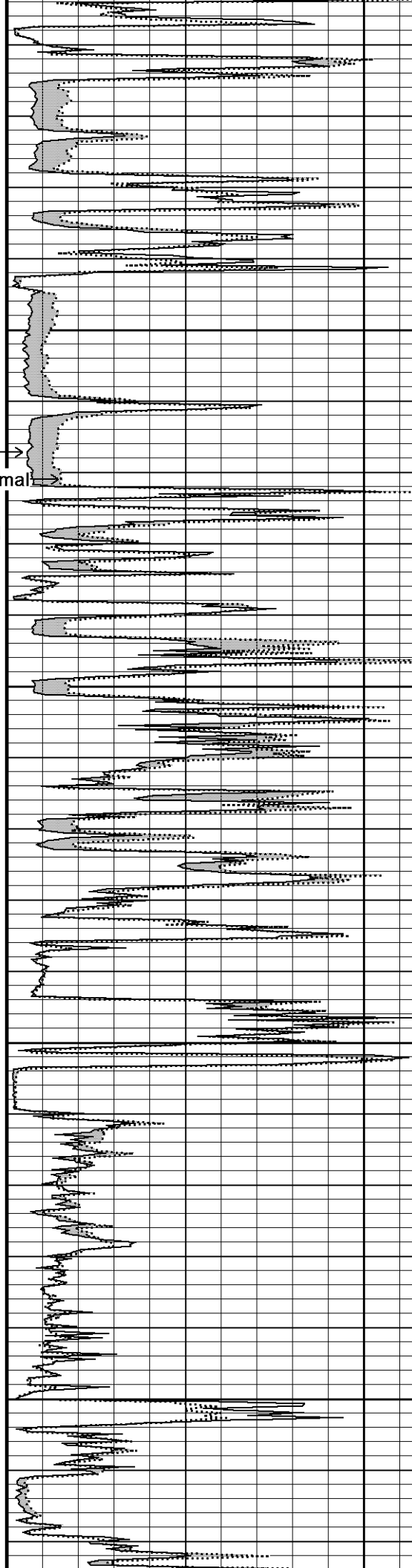
4350

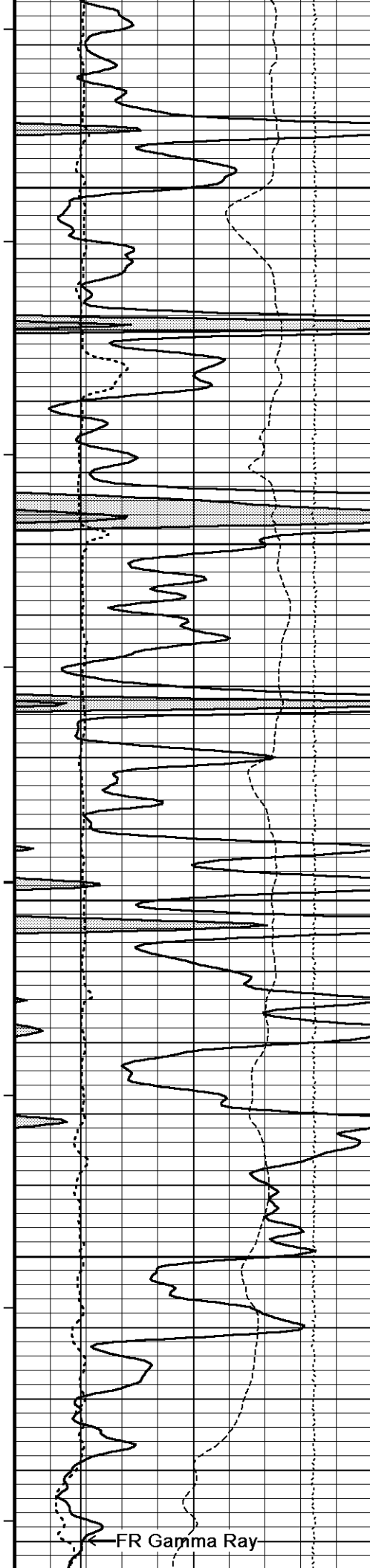
123°

4400

123°

4450





124°

4500

124°

4550

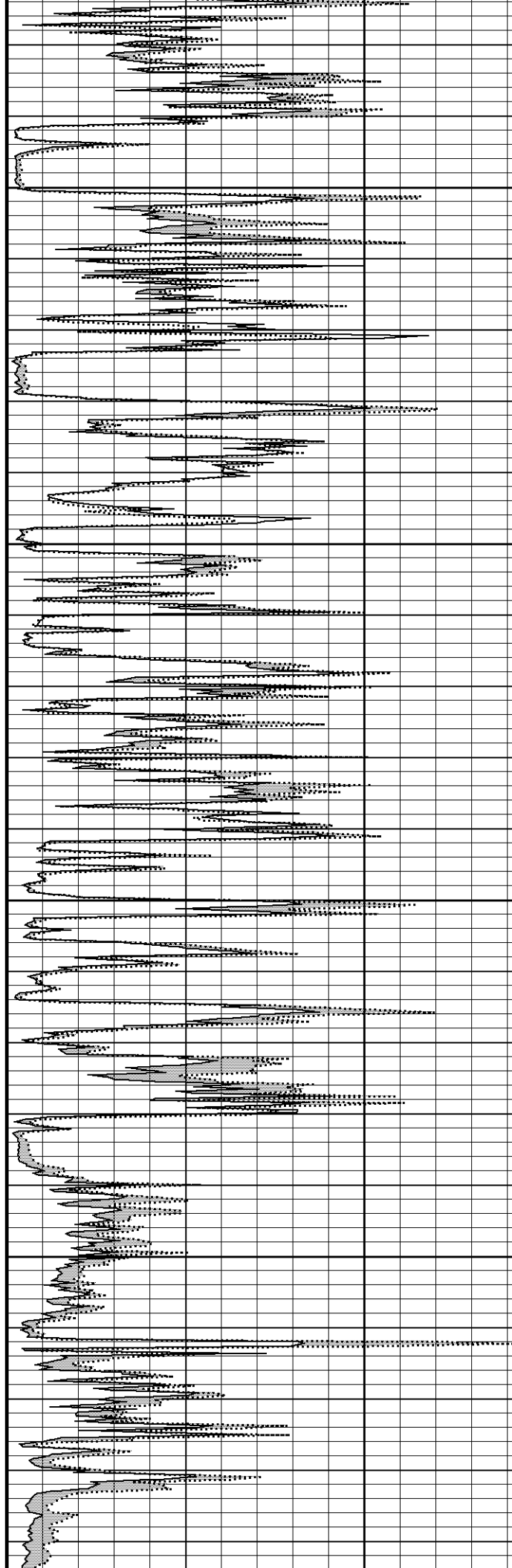
125°

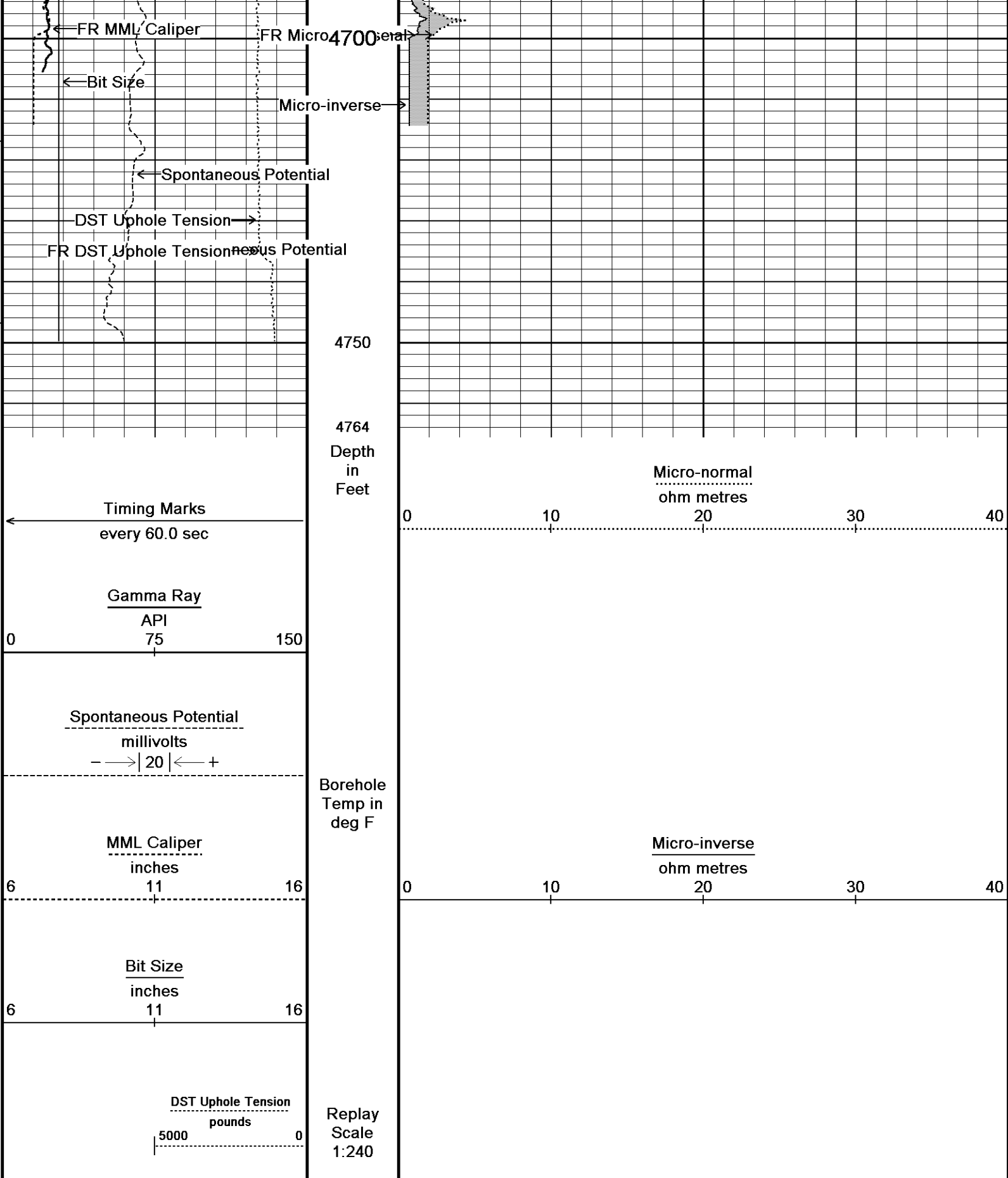
4600

126°

4650

125°



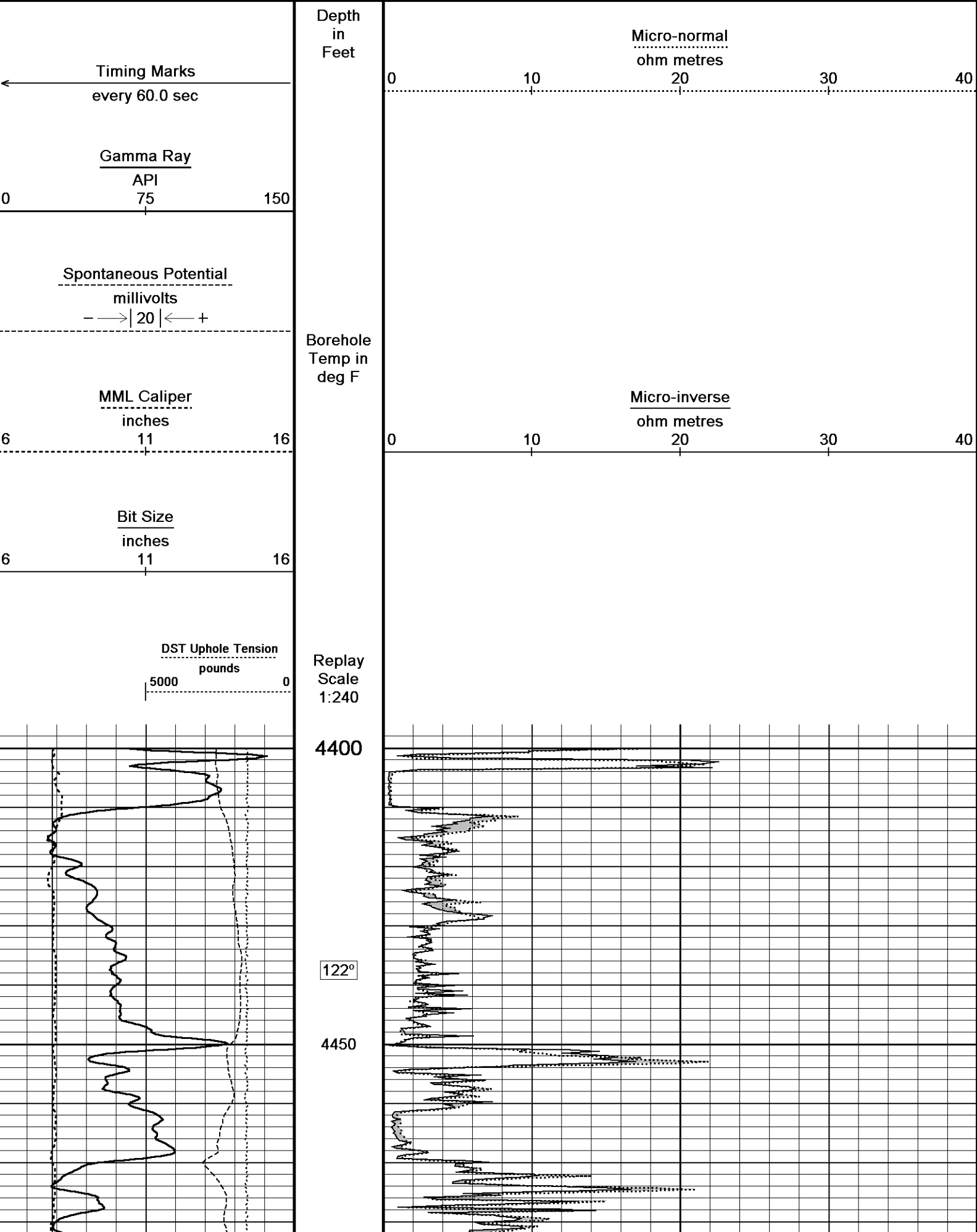


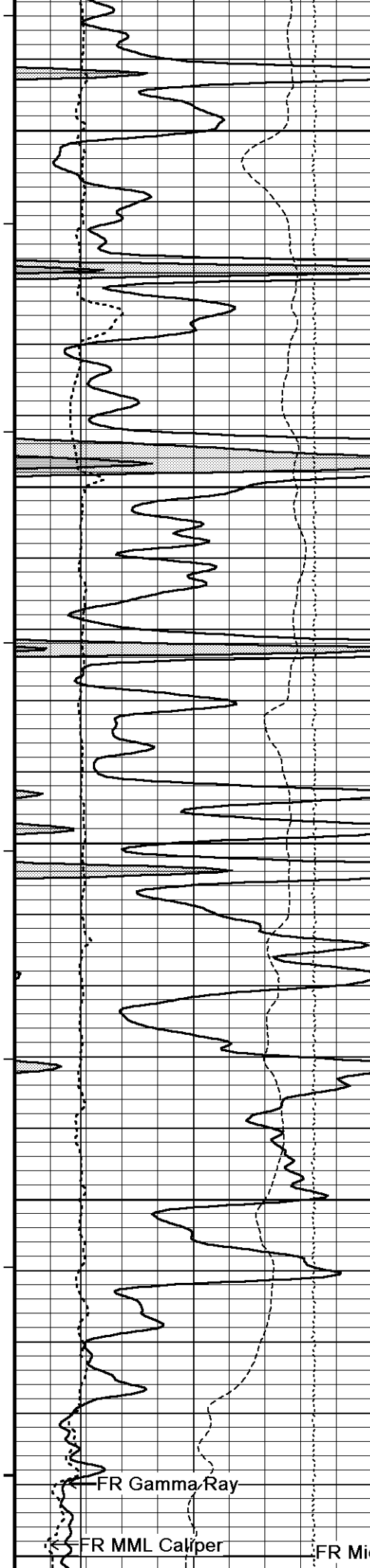
Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 11.02.3186\Data\McCoy M-M Diel Unit ...McCoy M-M Diel Unit A # 1-8 Splice.dta
System Versions: Plotted with 12.03.5032

Plotted on 16-DEC-2011 07:58
Recorded on 16-DEC-2011 04:15

↑ 5 INCH MAIN PASS ↑

↓ 5 INCH REPEAT PASS ↓





122°

4500

123°

4550

124°

4600

125°

4650

125°

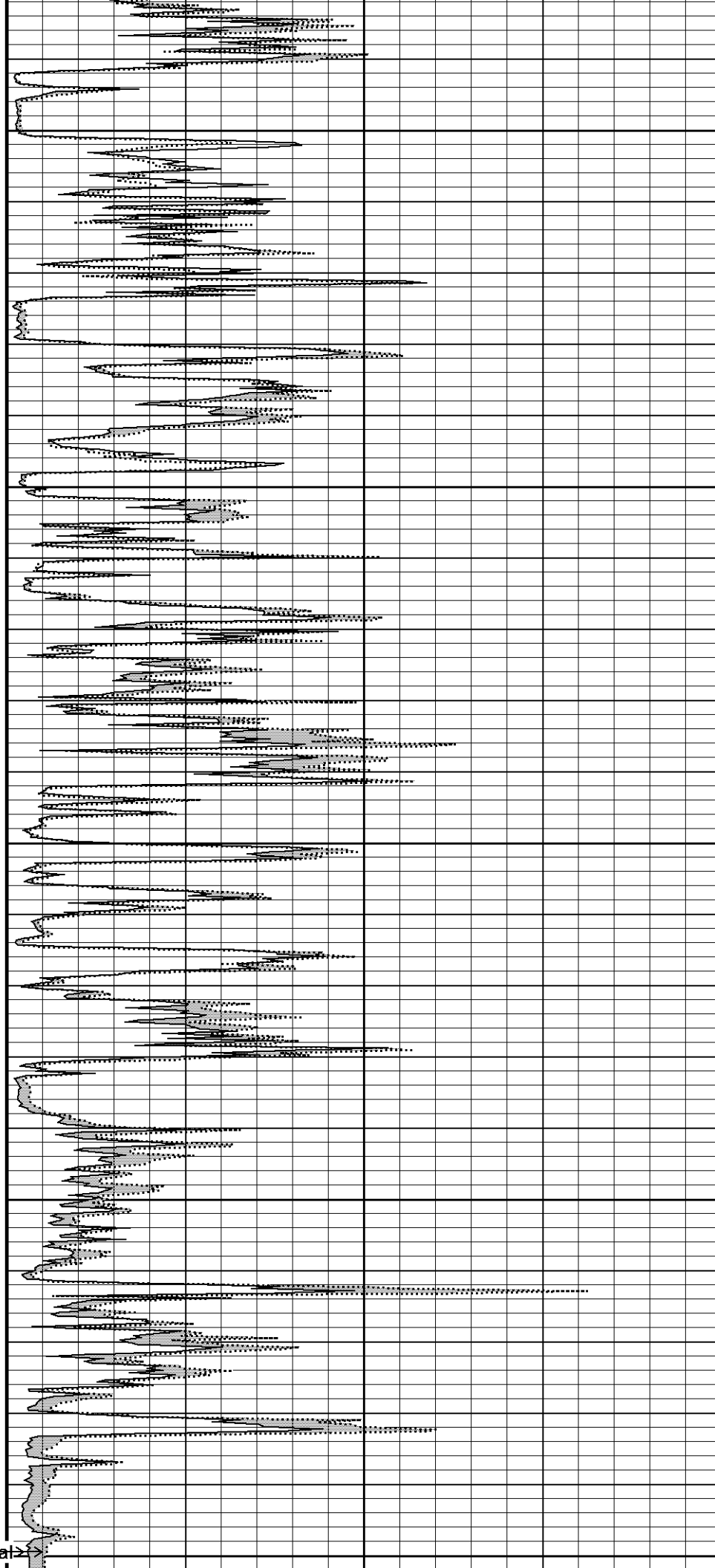
FR Gamma Ray

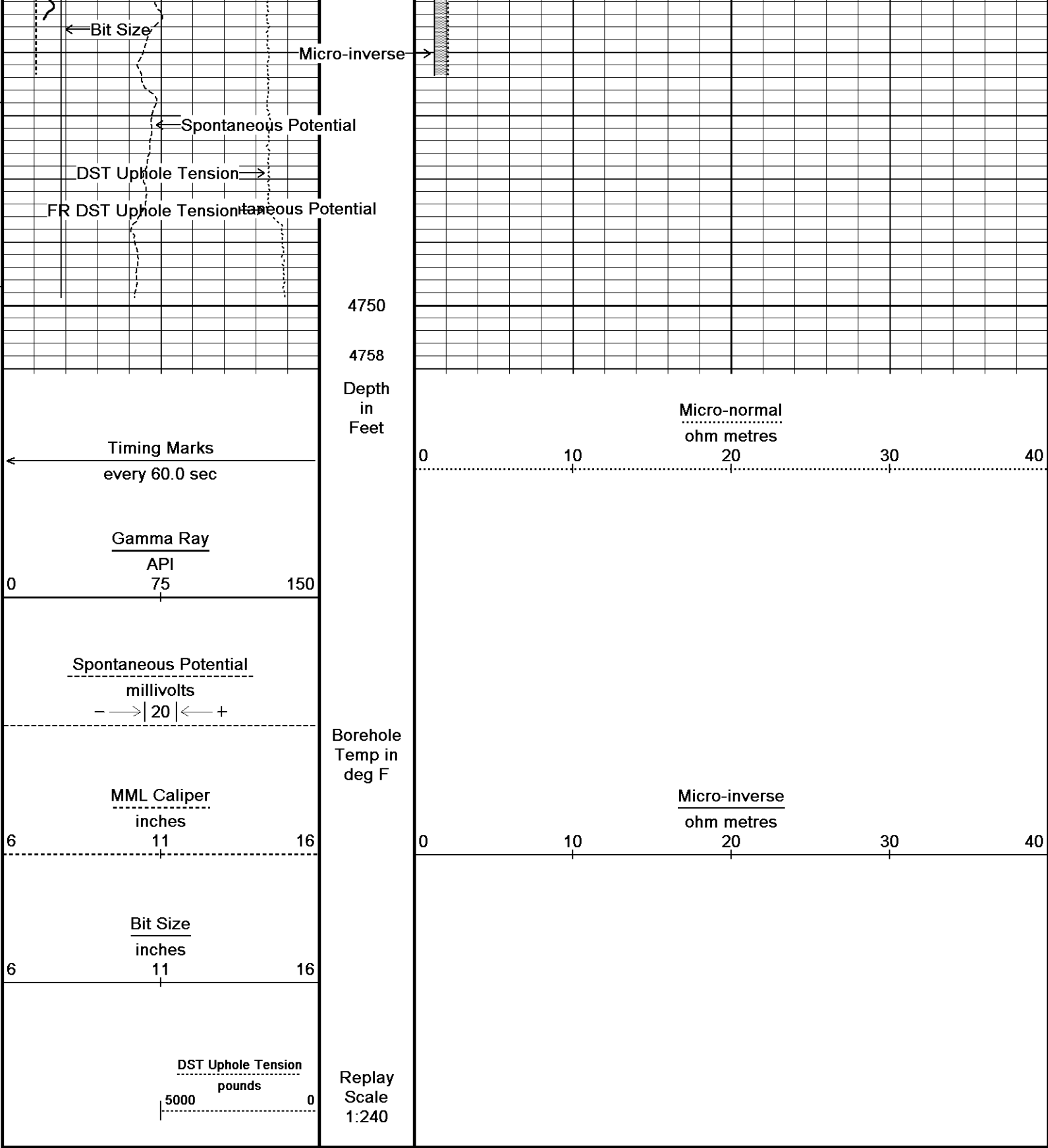
FR MML Caliper

FR Micro

4700

eraz>





Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 11.02.3186\Data\McCoy M-M Diel Unit A # 1-8\McCoy M-M Diel Unit A # 1-8_002.dta
System Versions: Logged with 12.03.5032 Processed with 12.03.5032 Plotted with 12.03.5032

↑ 5 INCH REPEAT PASS ↑

General Parameters		
Mud Resistivity	1.450	ohm-metres
Mud Resistivity Temperature	67.000	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. Six Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	

Down-hole Tension Calibration SMS 0			Field Calibration on 23-OCT-2011 03:19
Reading No	Measured	Calibrated (lbs)	
1	12734.06	0.00	
2	13523.27	454.00	

Gamma Calibration MCG-C 84			Field Calibration on 14-DEC-2011 10:22
	Measured	Calibrated (API)	
Background	70	46	
Calibrator (Gross)	756	502	
Calibrator (Net)	686	456	

Gamma Constants MCG-C 84			Last Edited on 16-DEC-2011,02:54
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-C 84			Field Calibration on 28-DEC-2010 11:28
	Measured	Calibrated (mV)	
Reference 1	100.3	100.0	
Reference 2	-99.7	-100.0	

High Resolution Temperature Calibration MCG-C 84			Field Calibration on 24-JUN-2010,13:02
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	75.00	75.00	

High Resolution Temperature Constants MCG-C 84			Last Edited on
Pre-filter Length	11		

Micro Normal and Micro Inverse Calibration MML-A 9					Base Calibration on 21-NOV-2011 11:00 Field Check on 28-NOV-2011 19:50	
Base Calibration						
		Measured		Calibrated (ohm-m)		
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2		
Micro Normal	12.1	59.5	2.6	12.8		
Micro Inverse	15.6	77.7	1.7	8.4		
Channel		Base Check (ohm-m)		Field Check (ohm-m)		
Micro Normal		32.5		32.5		
Micro Inverse		16.4		16.4		

Micro Normal and Micro Inverse Constants MML-A 9			Last Edited on 29-NOV-2011,00:10
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 21-NOV-2011 11:11
Field Calibration on 28-NOV-2011 19:54

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	15045	5.98
2	18517	7.97
3	21877	9.86
4	25857	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.96	7.97

Neutron Calibration MDN-A.B 39

Base Calibration on 22-NOV-2011 10:41
Field Check on 14-DEC-2011 10:28

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2737	86	3714	110
Ratio	31.919		33.764	

Field Calibrator at Base

	Calibrated (cps)
	2423 3477
Ratio	0.697

Field Check

	Calibrated (cps)
	2406 3408
Ratio	0.706

Neutron Constants MDN-A.B 39

Last Edited on 16-DEC-2011,02:55

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
Salinity Correction	Not Applied
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 21-NOV-2011 10:35
Field Check on 14-DEC-2011 10:40

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	959.4	126.8

Base Check	281.1
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Field Check	281.0
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FE Constants MFE-A.A 67

Last Edited on 16-DEC-2011,02:55

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

Induction Calibration MAI-A.A 188

Base Calibration on 14-JUN-2006 13:48

Field Check on 14-DEC-2011 10:42

Base Calibration

Test Loop Calibration

Channel	Measured		Calibrated (mmho/m)	
	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	13.9	3846.8
2	0.0	0.0	30.5	3568.4
3	0.0	0.0	28.2	3039.7
4	0.0	0.0	20.8	2038.0
Deep	0.0	0.0	17.9	1922.9
Medium	0.0	0.0	39.9	4053.9
Shallow	0.0	0.0	44.8	5360.2

Array Temperature 0.0 65.6 Deg F

Induction Constants MAI-A.A 188

Last Edited on 16-DEC-2011,02:59

Induction Model

Caliper for Borehole Corr.	RtAP-WBM	
Hole Size for Borehole Correction	Density Caliper	
Tool Centred	N/A	inches
Stand-off Type	No	
Stand-off	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	

High Resolution Temperature Calibration MAI-A.A 188

Field Calibration on 14-JUN-2006,13:48

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

Pre-filter Length

11

Caliper Calibration MPD-B 65

Base Calibration on 21-NOV-2011 14:58

Field Calibration on 14-DEC-2011 10:36

Base Calibration

Reading No

Measured

Calibrator Size (in)

1

13999

3.99

2

22481

5.98

3

30982

7.97

4

39297

9.86

5

48432

11.92

6

N/A

N/A

Field Calibration

Measured Caliper (in)

6.04

Actual Caliper (in)

5.98

Photo Density Calibration MPD-B 65

Base Calibration on 21-NOV-2011 14:42

Field Check on 14-DEC-2011 10:33

Density Calibration

Base Calibration

Measured

Calibrated (sdu)

Near

Far

Near

Far

Reference 1

60841

28249

59556

30836

Reference 2

24364

2437

24941

2541

Field Check at Base

1234.7

1185.8

Field Check

1233.5

1181.3

PE Calibration

Base Calibration

Measured

Calibrated

WS

WH

Ratio

Ratio

Background

223

1098

Reference 1

22974

60634

0.382

0.371

Reference 2

6577

24217

0.275

0.272

Field Check at Base

223.4

1098.4

Field Check

223.3

1095.5

Density Constants MPD-B 65

Last Edited on 16-DEC-2011,02:55

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

DOWNHOLE EQUIPMENT

C:\Minimus 11.02.3186\Data\McCoy M-M Diel Unit A # 1-8\McCoy M-M Diel Unit A # 1-8 Splice.dta

MCB-A.A 11B Tension Cablehead
MCB-A.A 161 LG: 2.40 ft WT: 19.8 lb OD: 2.24 in

Compact Comms Gamma
MCG-C 84 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 Neutron
MDN-A.B 39 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

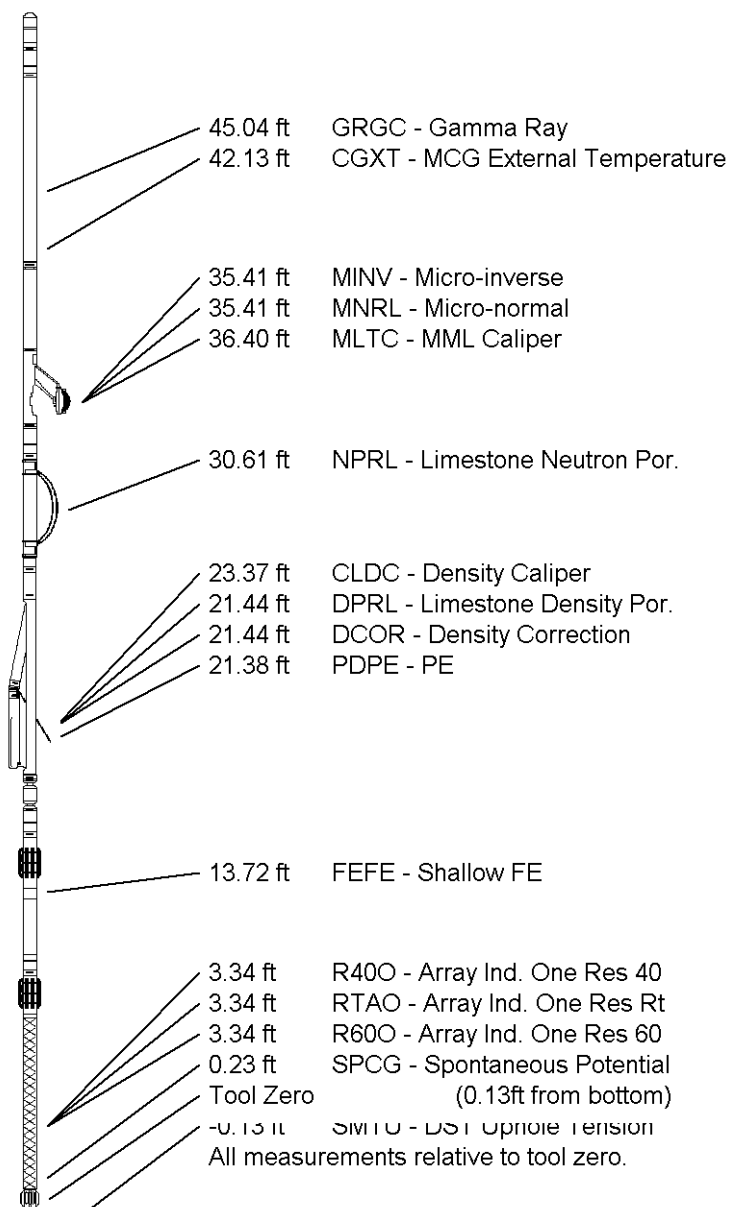
Compact Density/Caliper
MPD-B 65 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 91 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

Compact Focussed Electric
MFE-A.A 67 LG: 6.05 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: 52.72 ft Weight: 427.7 lb



COMPANY	MCCOY PETROLEUM CORPORATION
WELL	M-M DIEL UNIT "A" # 1-8
FIELD	WILDCAT
PROVINCE/COUNTY	LANE
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2743.00	feet	First Reading	4699.00	feet
Elevation Drill Floor	2741.00	feet	Depth Driller	4730.00	feet
Elevation Ground Level	2733.00	feet	Depth Logger	4735.00	feet



Weatherford®

MICRORESISTIVITY LOG

