



Weatherford[®]

MICRORESISTIVITY LOG

COMPANY SHAKESPEARE OIL COMPANY, INC.

WELL CAMPBELL #2-17

FIELD WILDCAT

PROVINCE/COUNTY LOGAN

COUNTRY/STATE U.S.A. / KANSAS

LOCATION 1180' FSL & 1010' FEL

NW NW SE SE

SEC 17	TWP 13S	RGE 32W	Other Services MPD/MDN MA/MFE	Elevations: KB 3037.00 DF 3036.00 GL 3027.00
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Permit Number 15-109-21097
 Permanent Datum G.L., Elevation 3027 feet
 Log Measured From KB
 Drilling Measured From K.B.

Date	10-SEP-2012		
Run Number	ONE		
Depth Driller	4700.00	feet	
Depth Logger	4700.00	feet	
First Reading	4666.00	feet	
Last Reading	3700.00	feet	
Casing Driller	254.00	feet	
Casing Logger	254.00	feet	
Bit Size	7.875	inches	
Hole Fluid Type	CHEMICAL		
Density / Viscosity	9.10 lb/USg	47.00 CP	
PH / Fluid Loss	11.00	9.60 ml/30Min	
Sample Source	FLOWLINE		
Rm @ Measured Temp	0.78 @ 97.0	ohm-m	
Rmf @ Measured Temp	0.62 @ 97.0	ohm-m	
Rmc @ Measured Temp	0.94 @ 97.0	ohm-m	
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	0.64 @ 118.0	ohm-m	
Time Since Circulation	3 HOURS		
Max Recorded Temp	118.00	deg F	
Equipment Name	COMPACT		
Equipment / Base	13057	LIB	
Recorded By	L. SCOTT		
Witnessed By	STEVE DAVIS		
S.O. / JOB#	3537842		LB12-247

BOREHOLE RECORD

Last Edited: 10-SEP-2012 08:52

Bit Size inches	Depth From feet	Depth To feet
7.875	254.00	4700.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	254.00	24.00

REMARKS

Tools Ran: MCG, MML, MDN, MPD, MFE, MAI.
 Hardware Used: MDN Dual Eccentralizer used. MPD 8 inch profile plate used. MFE, MSS 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= 175 cu. ft.
 Total hole volume from TD to Surface casing= 1800 cu. ft.
 Service order: #3537842
 Rig: Val #7
 Engineer: L. Scott
 Operator(s): J. LaPoint, M. Stegman

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



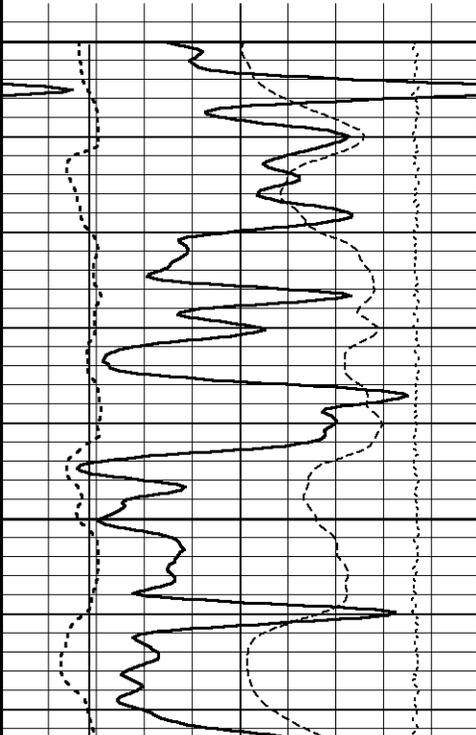
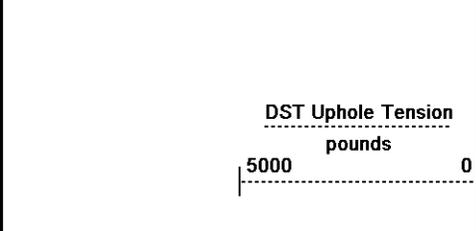
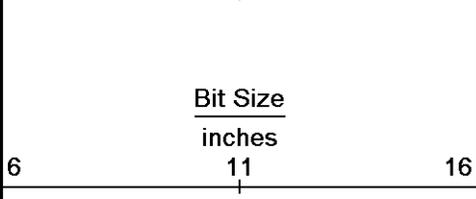
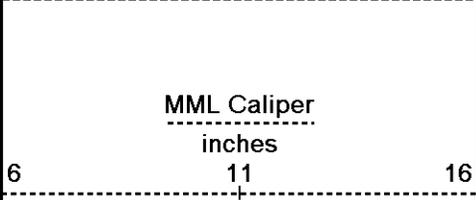
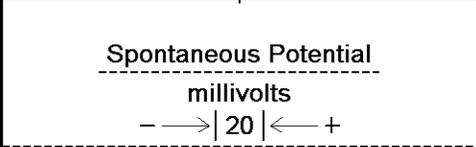
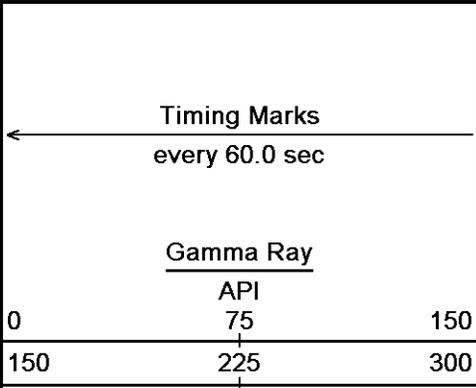
Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 10-SEP-2012 14:58

Filename: C:\Minimus 13.02.6600\Data\Shakespeare Campbel...\Shakespeare Campbell #2-17_002.dta

Recorded on 10-SEP-2012 12:12

System Versions: Logged with 13.02.6600 Plotted with 13.02.6600



Depth
in
Feet

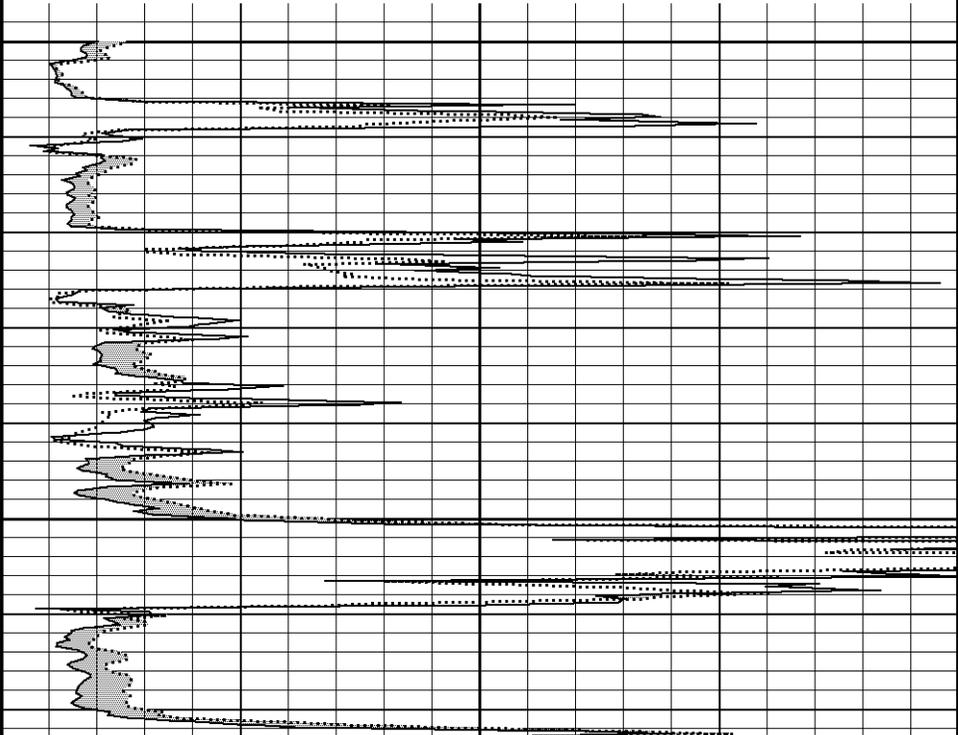
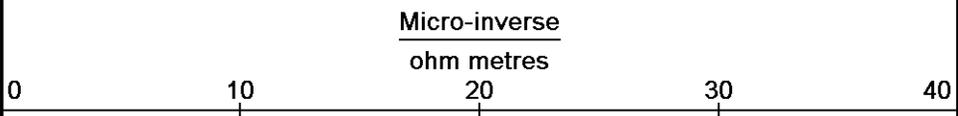
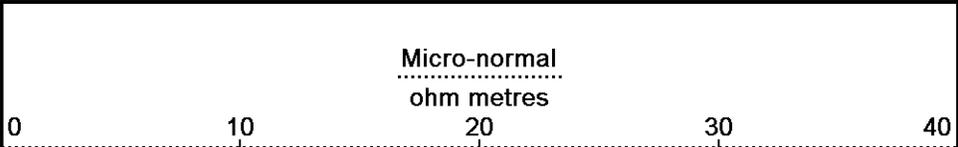
Borehole
Temp in
deg F

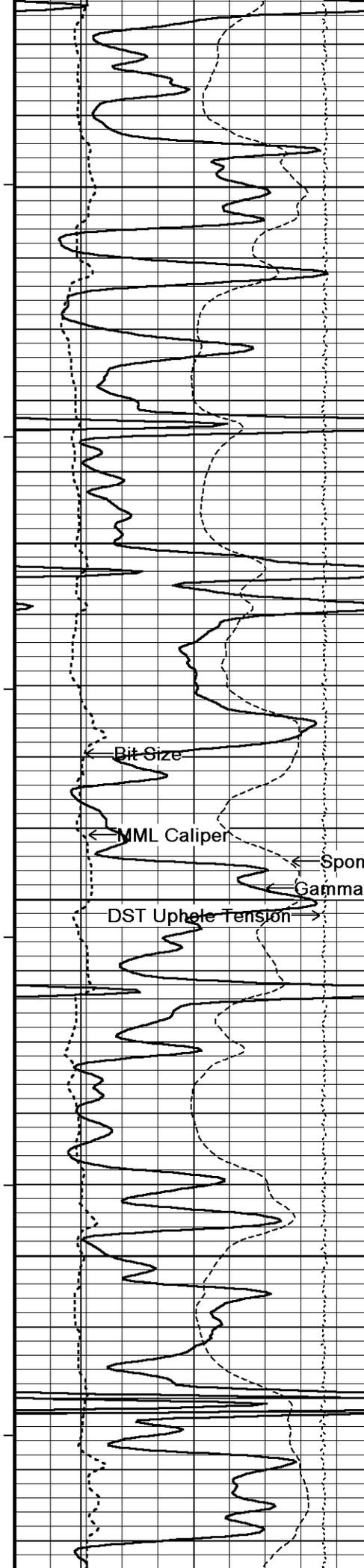
Replay
Scale
1:240

3700

112°

3750





112°

3800

112°

3850

Micro-inverse
112° Micro-normal

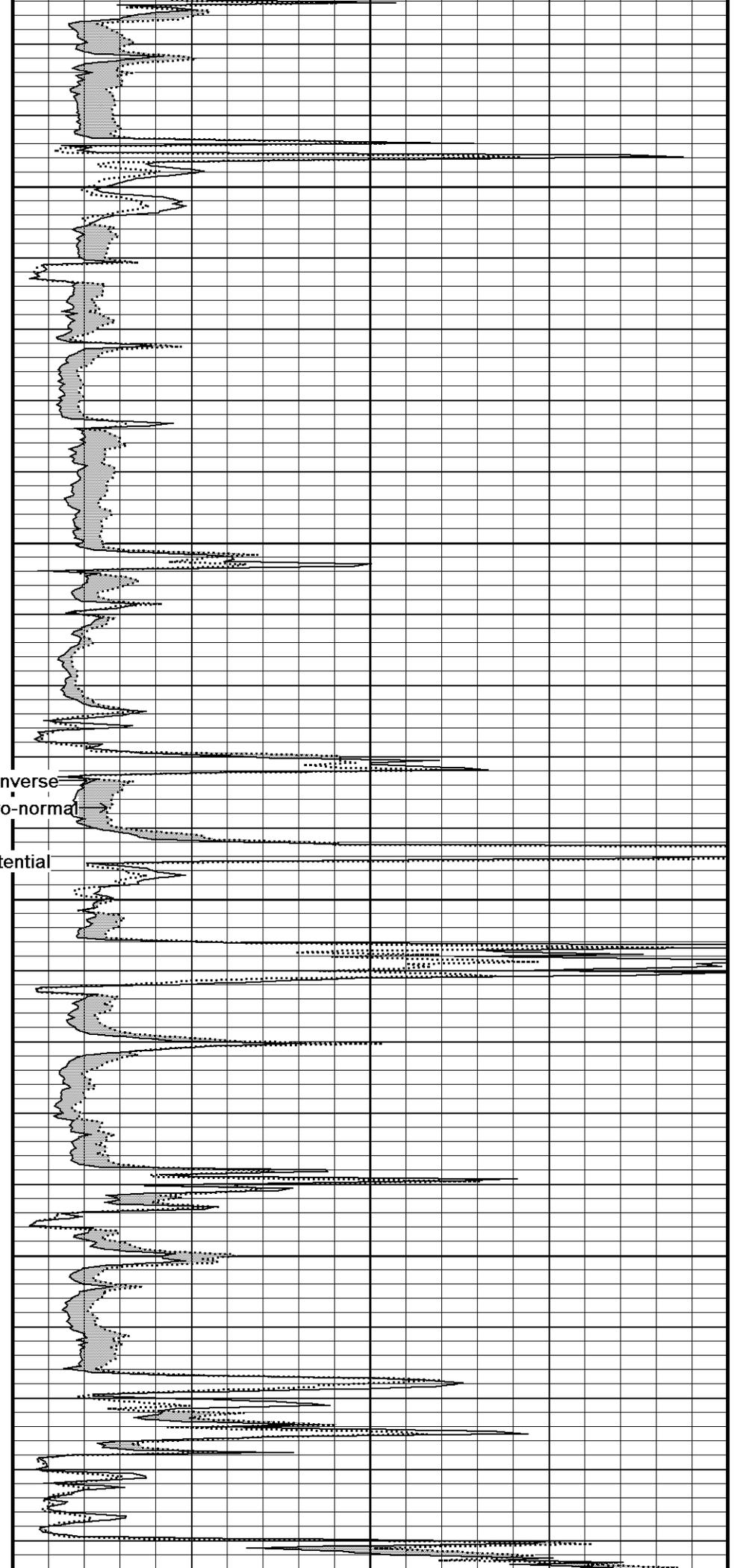
Spontaneous Potential
Gamma Ray

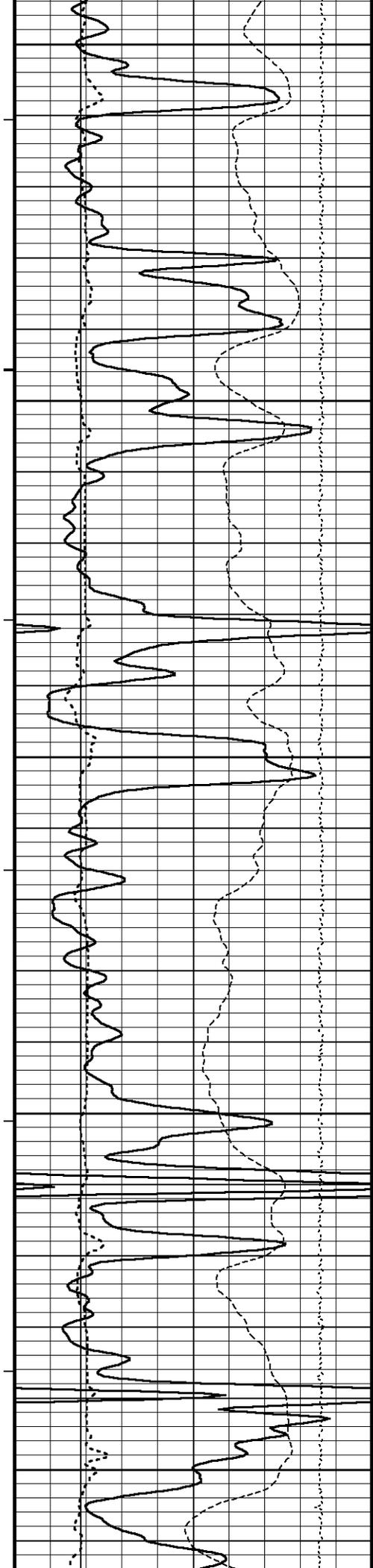
3900

113°

3950

113°





4000

113°

4050

113°

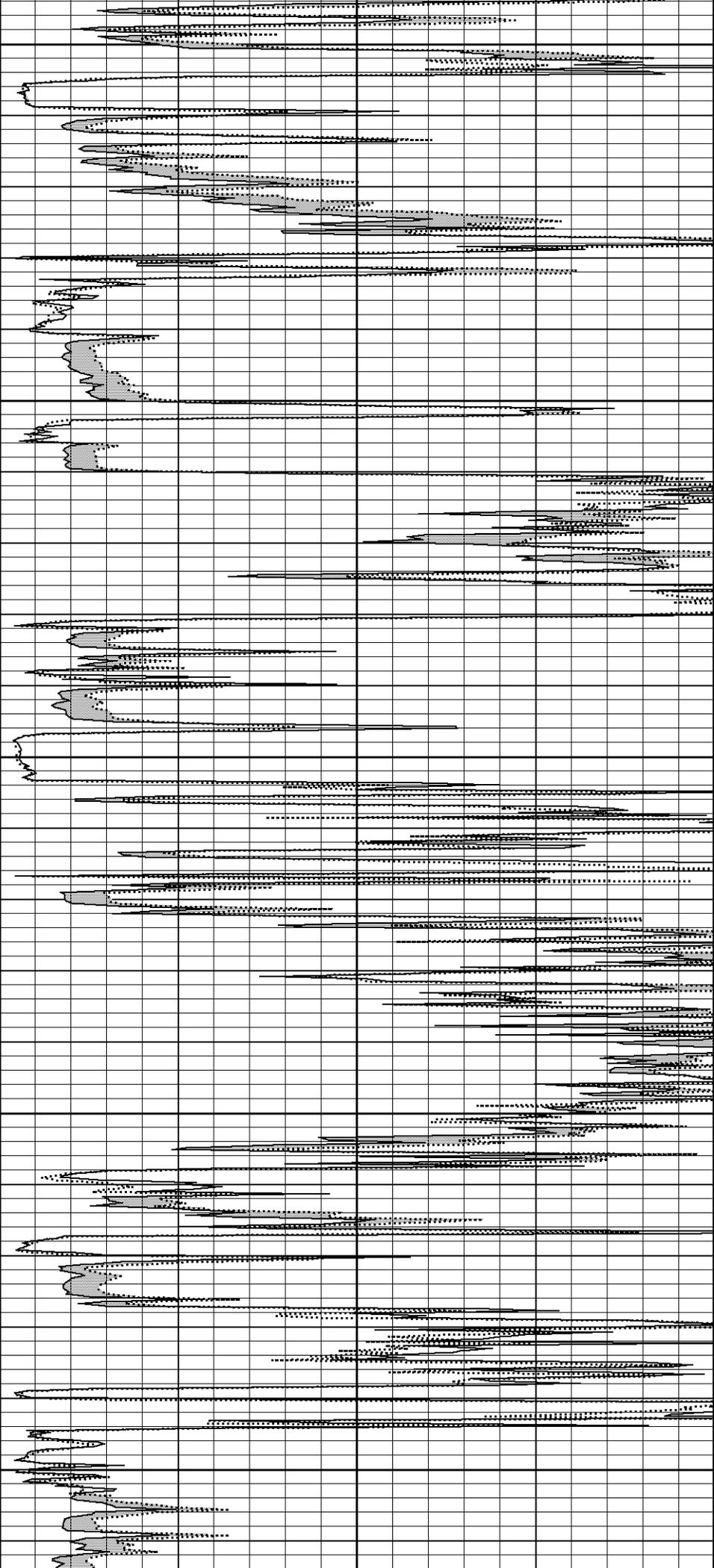
4100

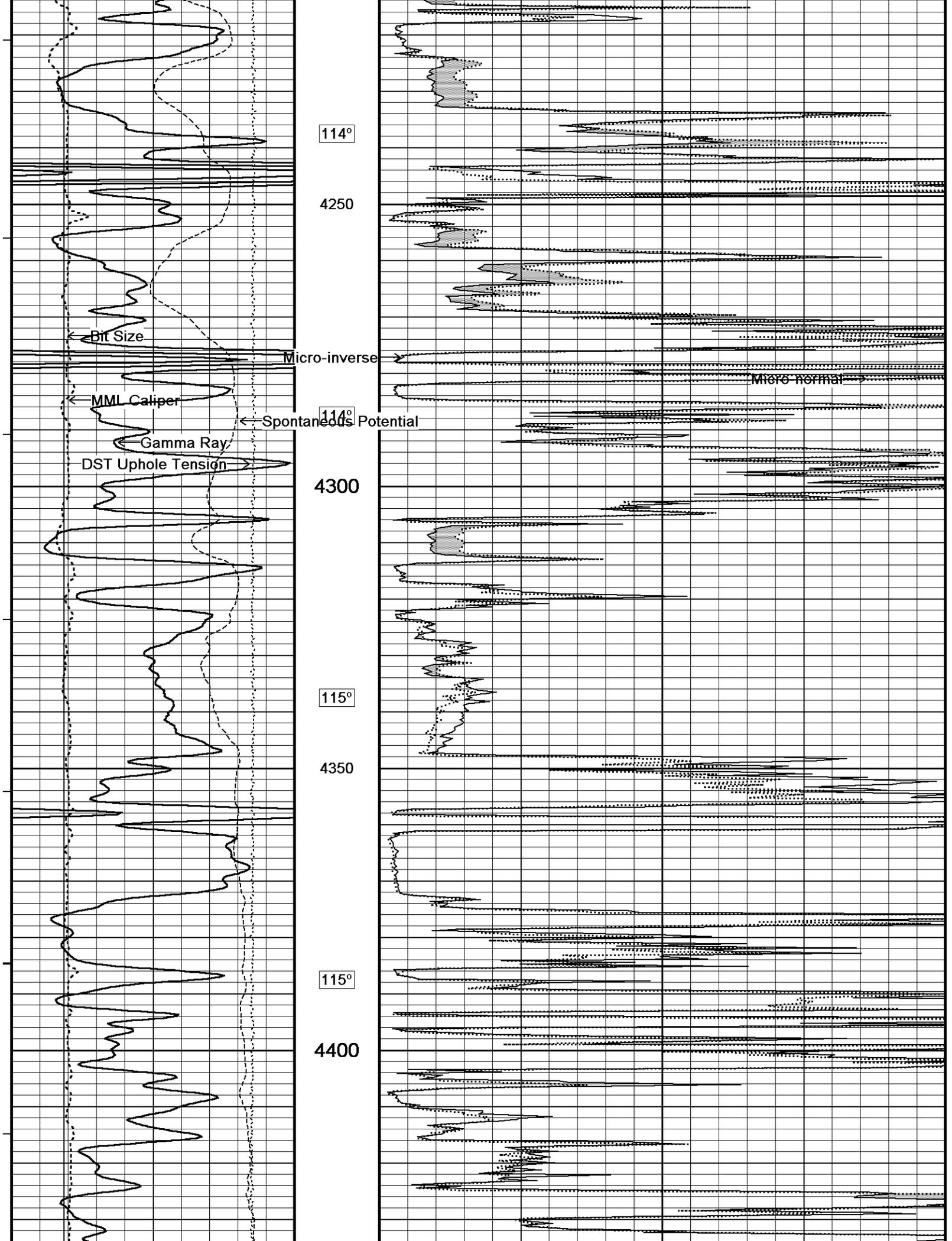
113°

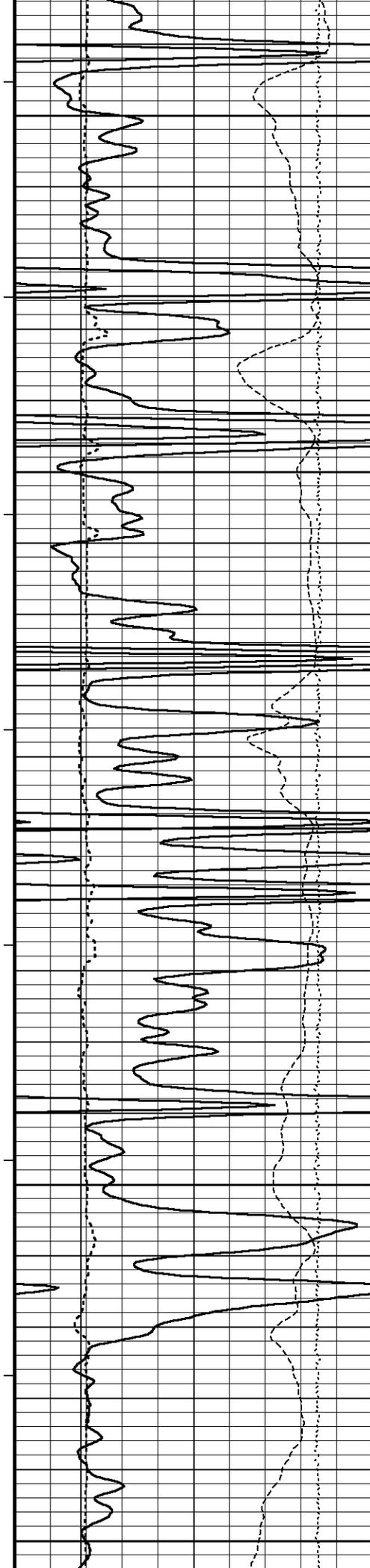
4150

114°

4200







115°

4450

116°

4500

117°

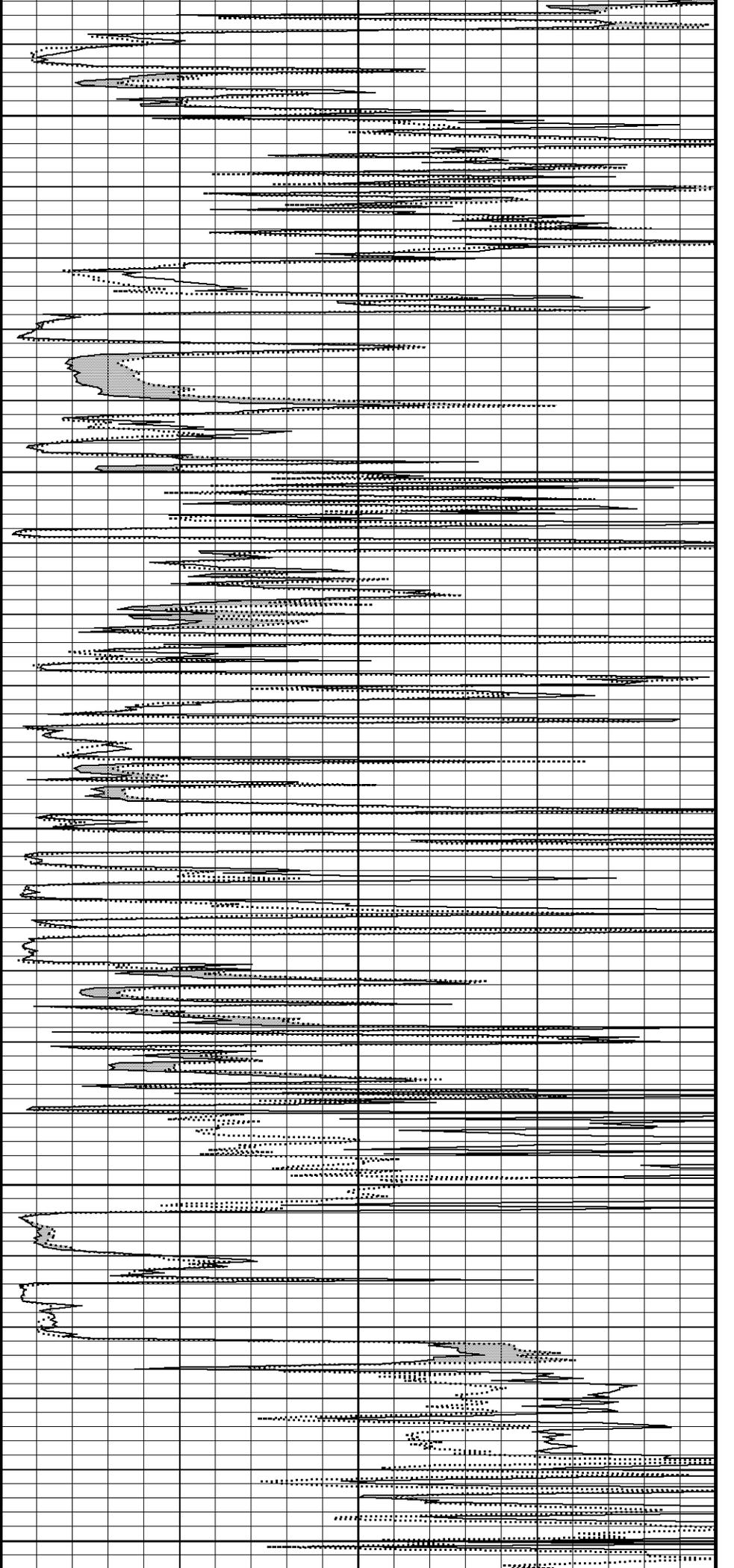
4550

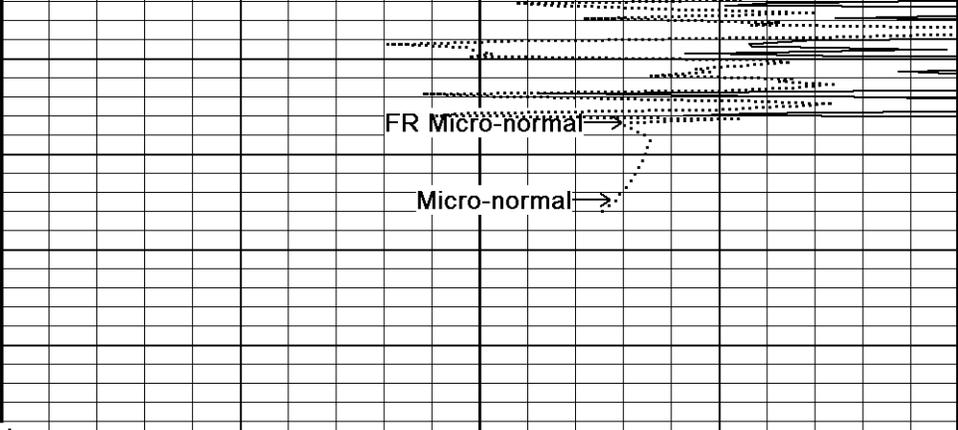
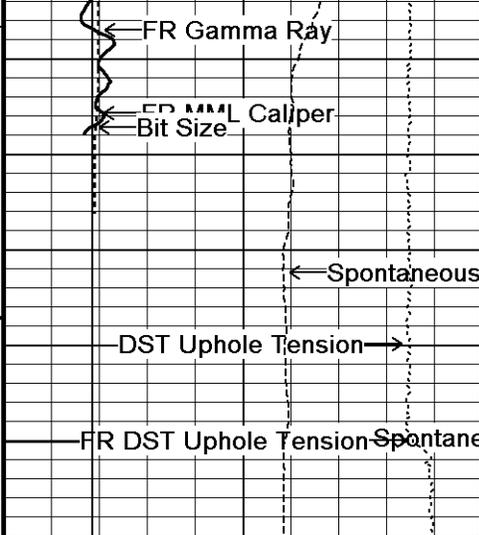
118°

4600

118°

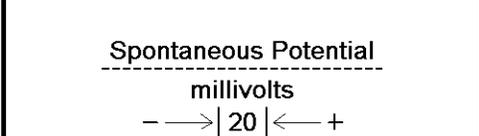
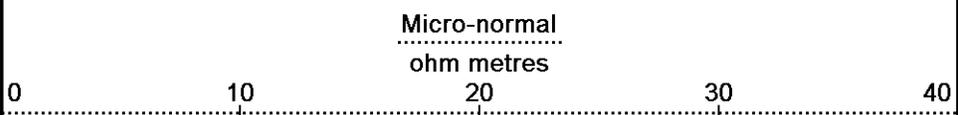
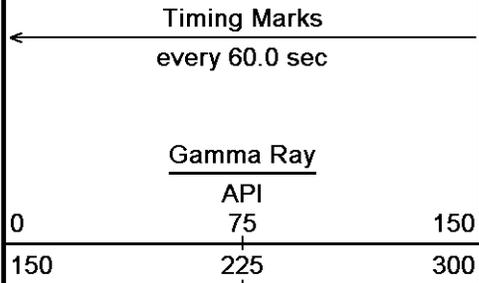
4650



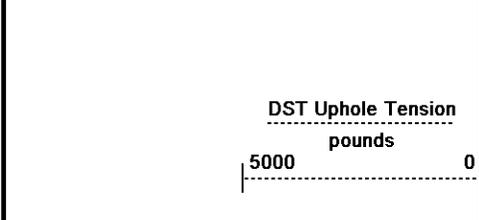
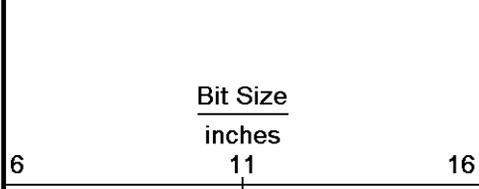
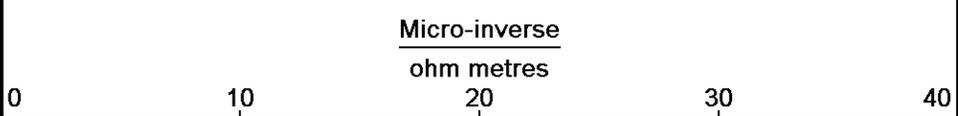
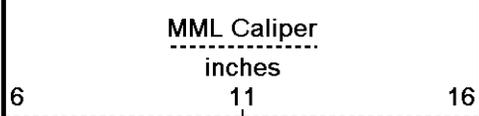


FR DST Uphole Tension Spontaneous Potential

4720
Depth
in
Feet



Borehole
Temp in
deg F



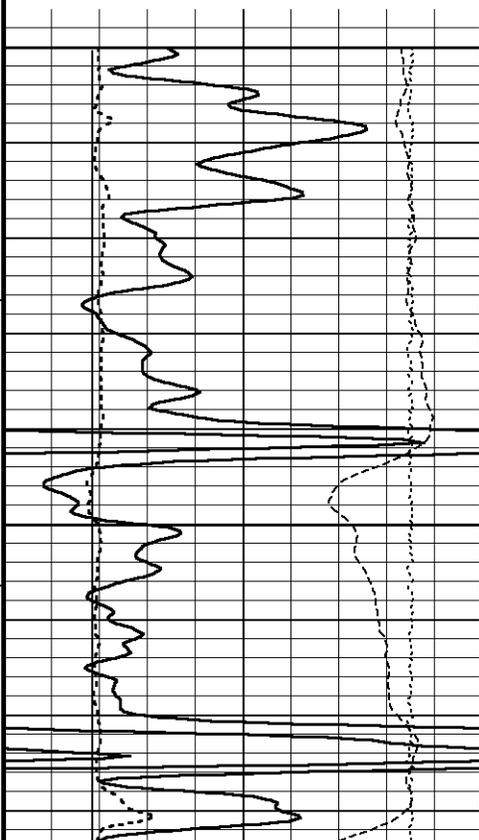
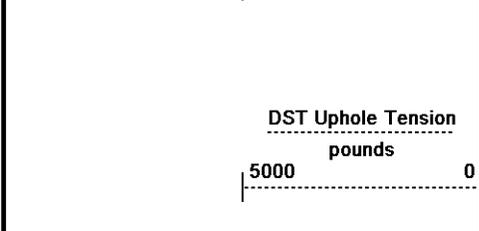
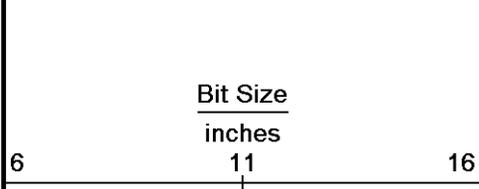
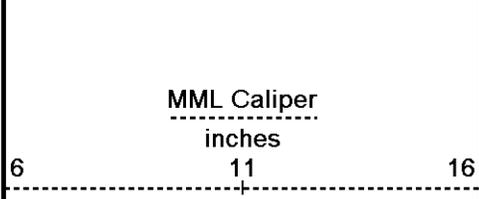
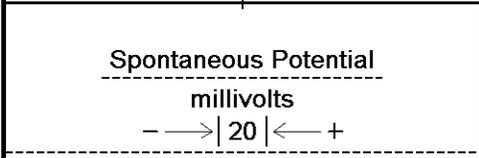
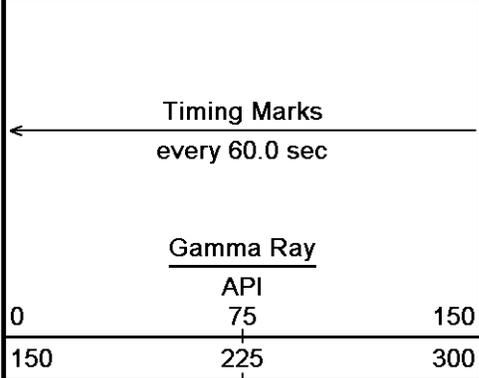
Replay
Scale
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm
 Filename: C:\Minimus 13.02.6600\Data\Shakespeare Campbel...\Shakespeare Campbell #2-17_002.dta
 System Versions: Logged with 13.02.6600 Plotted with 13.02.6600
 Plotted on 10-SEP-2012 14:58
 Recorded on 10-SEP-2012 12:12

↑ 5 INCH MAIN ↑

↓ REPEAT SECTION ↓

Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 10-SEP-2012 14:58



Depth
in
Feet

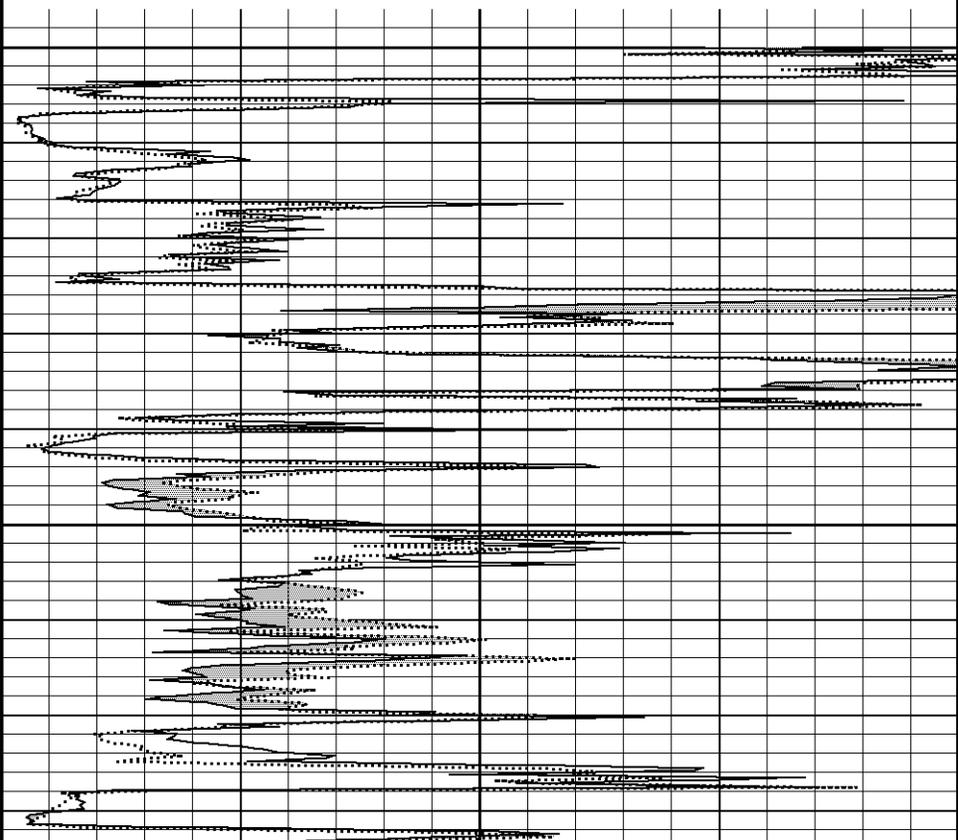
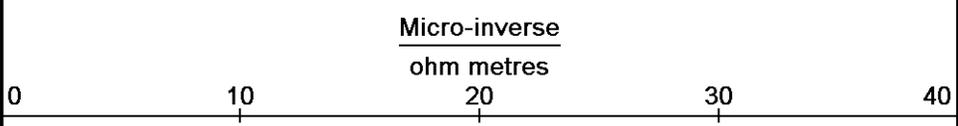
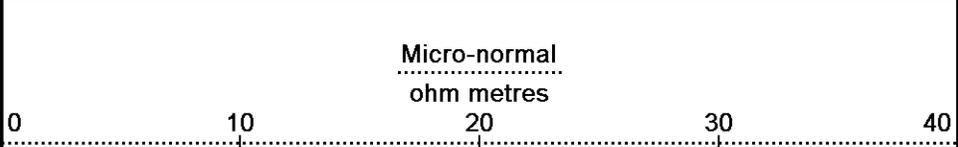
Borehole
Temp in
deg F

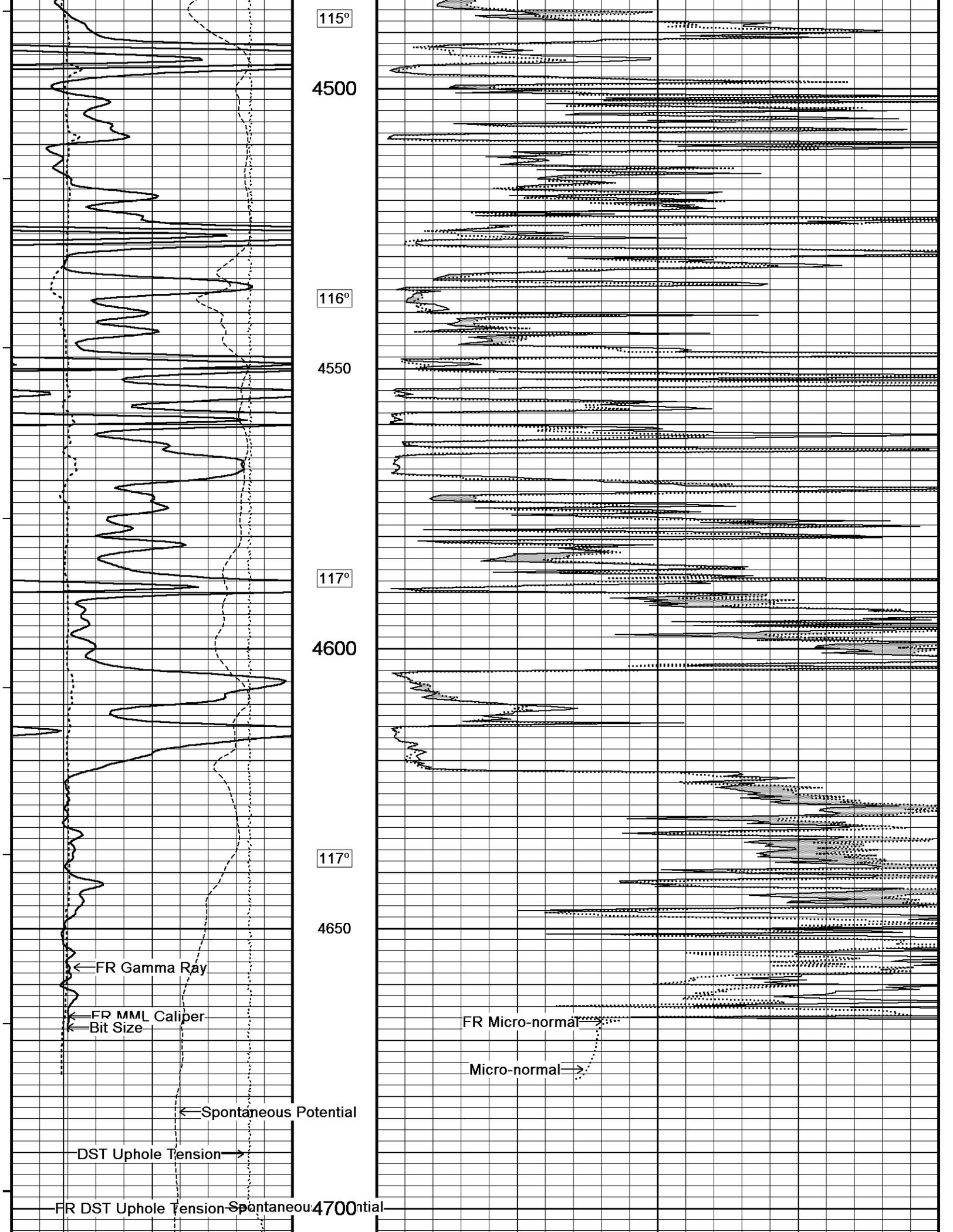
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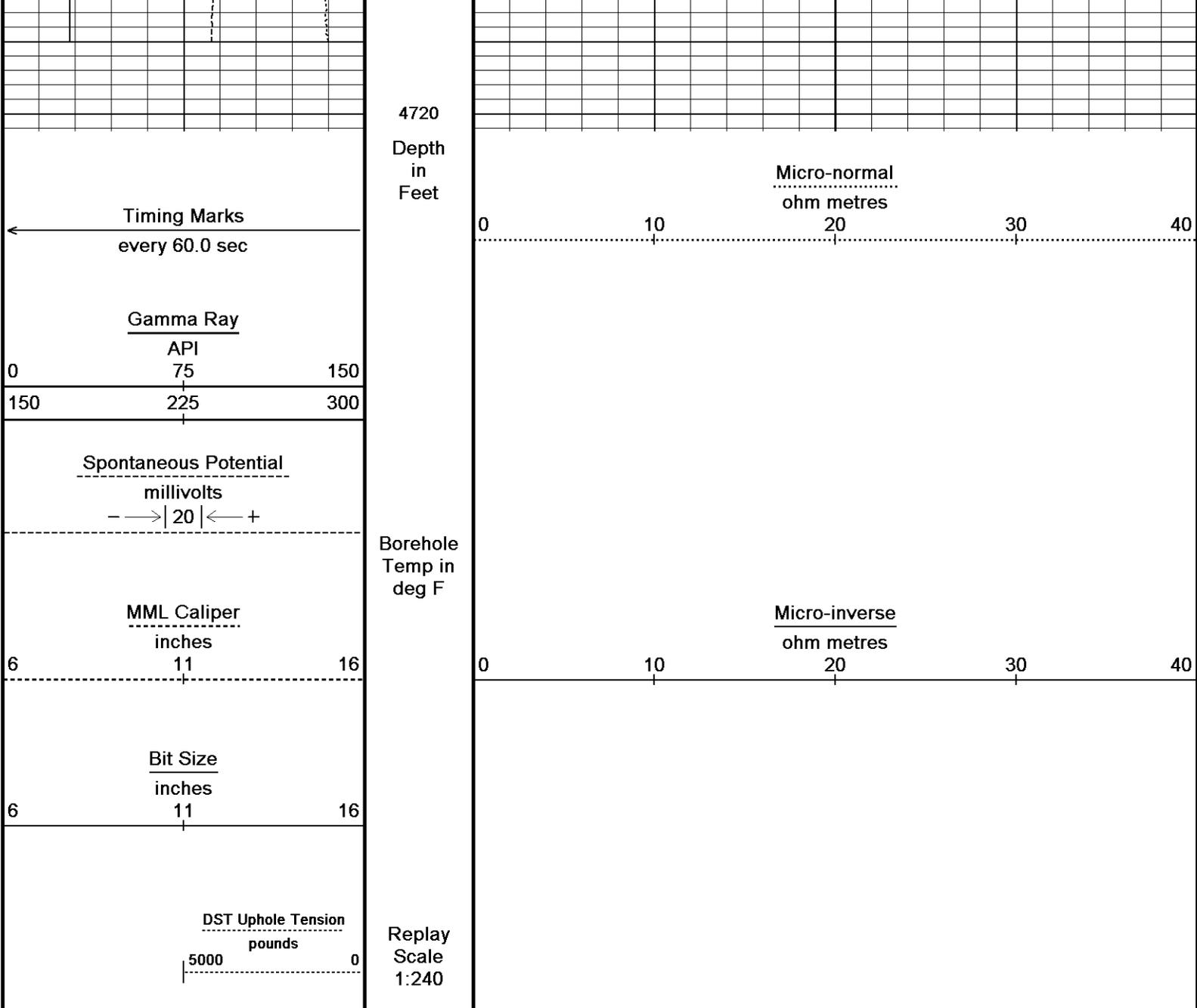
4400

115°

4450







Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 10-SEP-2012 14:58
 Filename: C:\Minimus 13.02.6600\Data\Shakespeare Campbel...\Shakespeare Campbell #2-17_001.dta Recorded on 10-SEP-2012 11:51
 System Versions: Logged with 13.02.6600 Plotted with 13.02.6600

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION
 C:\Minimus 13.02.6600\Data\Shakespeare Campbell #2-17\Shakespeare Campbell #2-17_001.dta

General Constants All 000 Last Edited on 10-SEP-2012,09:04

General Parameters		
Mud Resistivity	0.780	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	Base Density Porosity
Porosity used	Array Ind. One Res Rt
Resistivity used	0.610
RWA Constant A	2.150
RWA Constant M	

Down-hole Tension Calibration SMS 0

Field Calibration on 02-SEP-2012 08:42

Reading No	Measured	Calibrated (lbs)
1	15850.66	0.00
2	16330.28	400.00

Gamma Calibration MCG-C 208

Field Calibration on 09-SEP-2012 11:32

	Measured	Calibrated (API)
Background	71	49
Calibrator (Gross)	1113	774
Calibrator (Net)	1042	725

Gamma Constants MCG-C 208

Last Edited on 10-SEP-2012,09:04

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

SP Calibration MCG-C 208

Field Calibration on 03-AUG-2012 22:37

	Measured	Calibrated (mV)
Reference 1	100.2	101.0
Reference 2	-101.3	-101.0

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

Caliper Calibration MML-A 4

Base Calibration on 27-AUG-2012 09:13
Field Calibration on 09-SEP-2012 11:18

Base Calibration	Measured	Calibrator Size (in)
Reading No		
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)
	5.98	5.98

Micro Normal and Micro Inverse Calibration MML-A 4

Base Calibration on 27-AUG-2012 09:21
Field Check on 09-SEP-2012 11:16

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	62.9
Micro Inverse	48.2	48.2

Micro Normal and Micro Inverse Constants MML-A 4

Last Edited on 10-SEP-2012,09:01

Pad Type 8-12 in Soft Rubber Inflatable 006-9011-159
Micro Normal K Factor 1.0000

Micro Inverse K Factor
Standoff Offset

1.0000
N/A inches

Neutron Calibration MDN-A.B 65

Base Calibration on 28-AUG-2012 10:35
Field Check on 09-SEP-2012 11:37

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
Ratio	3134	97	3714	110
	32.240		33.764	

Field Calibrator at Base

	Calibrated (cps)	
Ratio	1654	2401
	0.689	

Field Check

	Calibrated (cps)	
Ratio	1646	2391
	0.688	

Neutron Constants MDN-A.B 65

Last Edited on 09-SEP-2012,15:38

Neutron Source Id	PN-521	
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	Constant Value	
Formation Pressure	0.00	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-B.J 352

Base Calibration on 27-AUG-2012 14:50
Field Check on 09-SEP-2012 11:08

Base Calibration

	Measured		Calibrated (ohm-m)	
	Reference 1	0.0		0.0
Reference 2	963.9		126.8	
Base Check			281.2	
Field Check			281.5	

FE Constants MFE-B.J 352

Last Edited on 10-SEP-2012,08:58

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 45

Base Calibration on 26-JUL-2012,09:22
Field Check on 09-SEP-2012 11:07

Base Calibration

Test Loop Calibration	Channel	Measured		Calibrated (mmho/m)	
		Low	High	Low	High
	1	14.4	472.6	9.3	966.2
	2	5.7	374.0	7.6	821.4
	3	3.4	261.2	5.2	566.0
	4	2.5	133.9	2.6	279.2
Array Temperature		78.4		Deg F	

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	19.5	3851.5
2	0.0	0.0	32.1	3629.5
3	0.0	0.0	28.9	3049.6
4	0.0	0.0	18.5	2079.4
Deep	0.0	0.0	16.3	1911.5
Medium	0.0	0.0	42.8	4060.8
Shallow	0.0	0.0	50.2	5483.0
Array Temperature		0.0		72.1 Deg F

Induction Constants MAI-A.A 45

Last Edited on 10-SEP-2012,08:58

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		
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 45

Field Calibration on 26-JUL-2012,09:09

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

High Resolution Temperature Constants MAI-A.A 45

Last Edited on

Pre-filter Length	11
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Caliper Calibration MPD-B 31

Base Calibration on 28-AUG-2012 11:03

Field Calibration on 09-SEP-2012 11:14

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	18576	3.99
2	27056	5.98
3	35613	7.97
4	44032	9.86
5	53360	11.92
6	N/A	N/A

MML-A 4 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

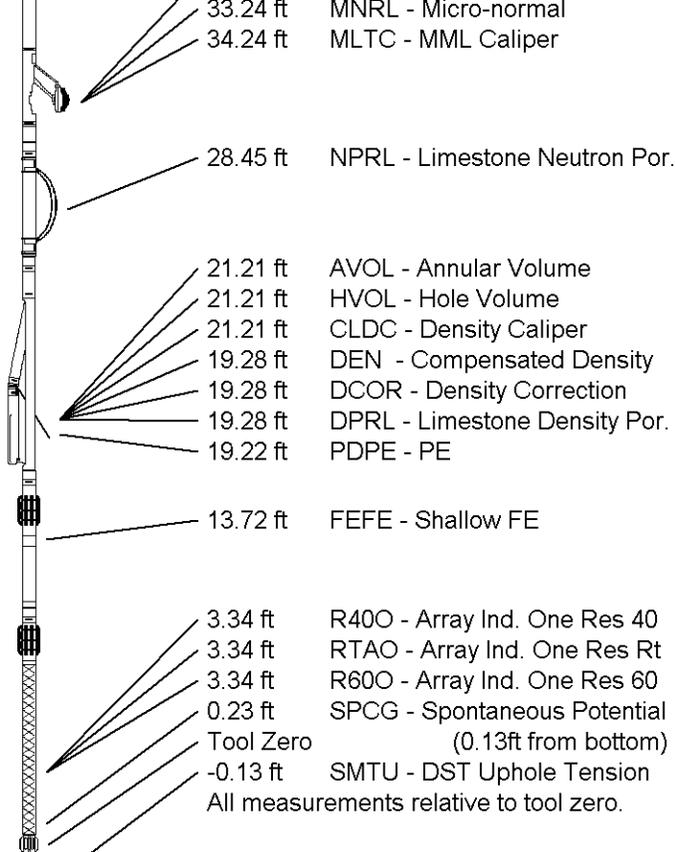
Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

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: 48.16 ft Weight: 383.6 lb



COMPANY	SHAKESPEARE OIL COMPANY, INC.
WELL	CAMPBELL #2-17
FIELD	WILDCAT
PROVINCE/COUNTY	LOGAN
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	3037.00	feet	First Reading	4666.00	feet
Elevation Drill Floor	3036.00	feet	Depth Driller	4700.00	feet
Elevation Ground Level	3027.00	feet	Depth Logger	4700.00	feet



Weatherford[®]

MICRORESISTIVITY LOG