



Weatherford

**COMPENSATED NEUTRON
SONIC POROSITY OVERLAY
MICRORESISTIVITY LOG**

COMPANY			SHAKESPEARE OIL INC.		
WELL			TUCKER #2-9		
FIELD			WILDCAT		
PROVINCE/COUNTY			SCOTT		
COUNTRY/STATE			U.S.A. / KANSAS		
LOCATION			2216' FSL & 1695' FWL		
SEC	TWP	RGE	Other Services		
9	16S	34W			
API Number			15-171-20973		
Permit Number					
Permanent Datum G.L., Elevation 3139 feet					
Log Measured From KB					
Drilling Measured From K.B. @ 10FEET					
Date	20-SEP-2013		Elevations:		
Run Number	ONE		KB		
Service Order	3541087		DF		
Depth Driller	4865.00		GL		
Depth Logger	4862.00		feet		
First Reading	4849.00		feet		
Last Reading	3800.00		feet		
Casing Driller	260.00		feet		
Casing Logger	264.00		feet		
Bit Size	7.875		inches		
Hole Fluid Type	CHEMICAL				
Density / Viscosity	9.30 lb/USg		52.00		CP
PH / Fluid Loss	10.00		8.80		ml/30Min
Sample Source	FLOWLINE				
Rm @ Measured Temp	0.72 @ 81.0		ohm-m		
Rmf @ Measured Temp	0.58 @ 81.0		ohm-m		
Rmc @ Measured Temp	0.86 @ 81.0		ohm-m		
Source Rmf / Rmc	CALC		CALC		
Rm @ BHT	0.53 @ 111.0		ohm-m		
Time Since Circulation	3 HOURS				
Max Recorded Temp	111.00		deg F		
Equipment / Base	13096		LIB		
Recorded By	ROB HOFFMAN				
Witnessed By	TIM PRIEST				
JOB #	LB13-266				

BOREHOLE RECORD				Last Edited: 20-SEP-2013 11:51
Bit Size inches		Depth From feet		Depth To feet
7.875		260.00		4865.00
CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	260.00	24.00

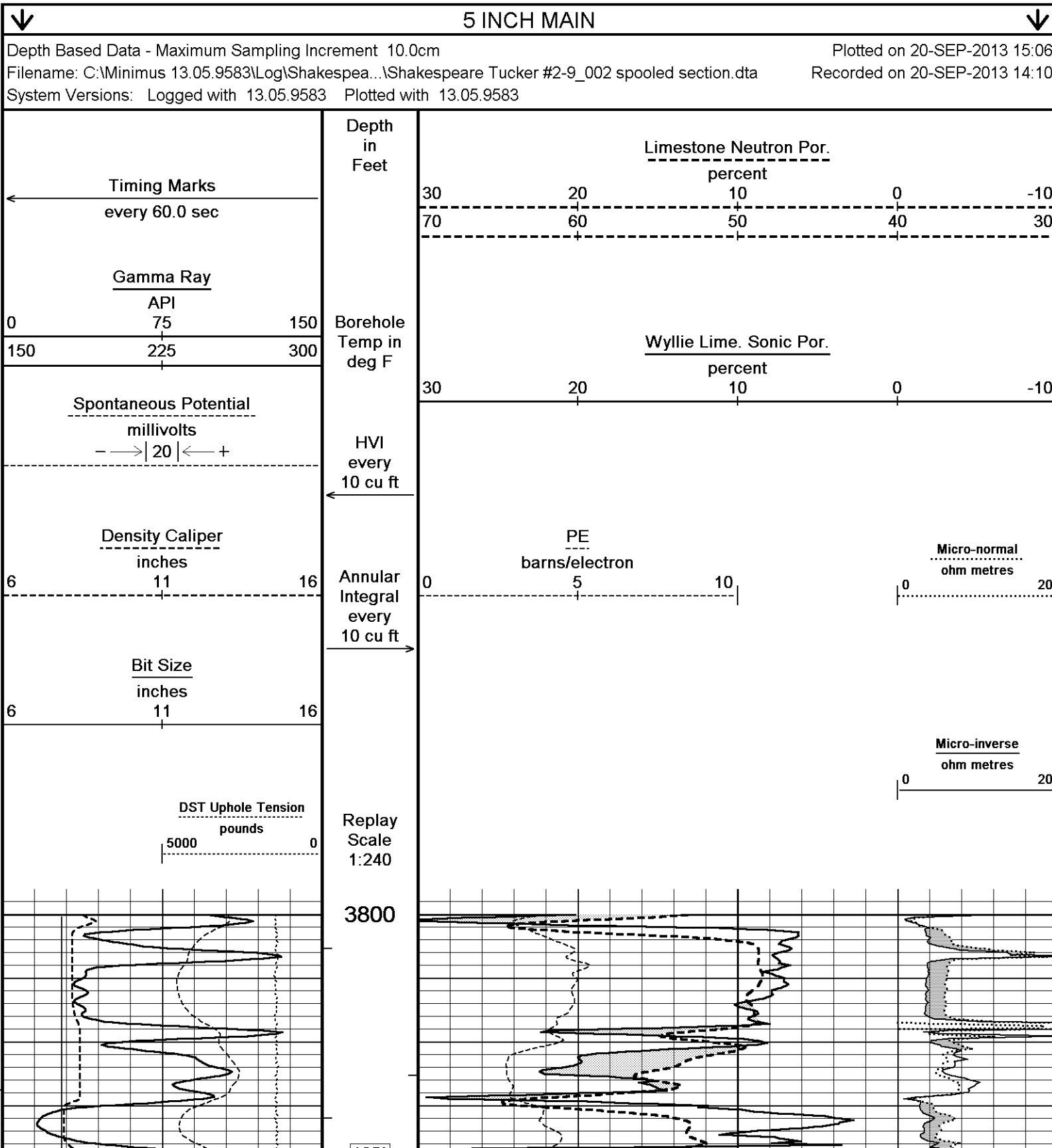
REMARKS
- SOFTWARE ISSUE: WLS 13.05.9583.
- MCG, MML, MDN, MPD, MFE, MSS, MAI RUN IN COMBINATION. - HARDWARE: DUAL BOWSPRING USED ON MDN. 0.5 INCH STANDOFF USED ON MFE. TWO 0.5 INCH STANDOFFS USED ON MSS. 0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY.
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.
- ANNULAR HOLE VOLUME WITH 4.5 INCH CASING FROM TD TO 3800 FEET: 279 CU. FT.
- SERVICE ORDER # 3541087

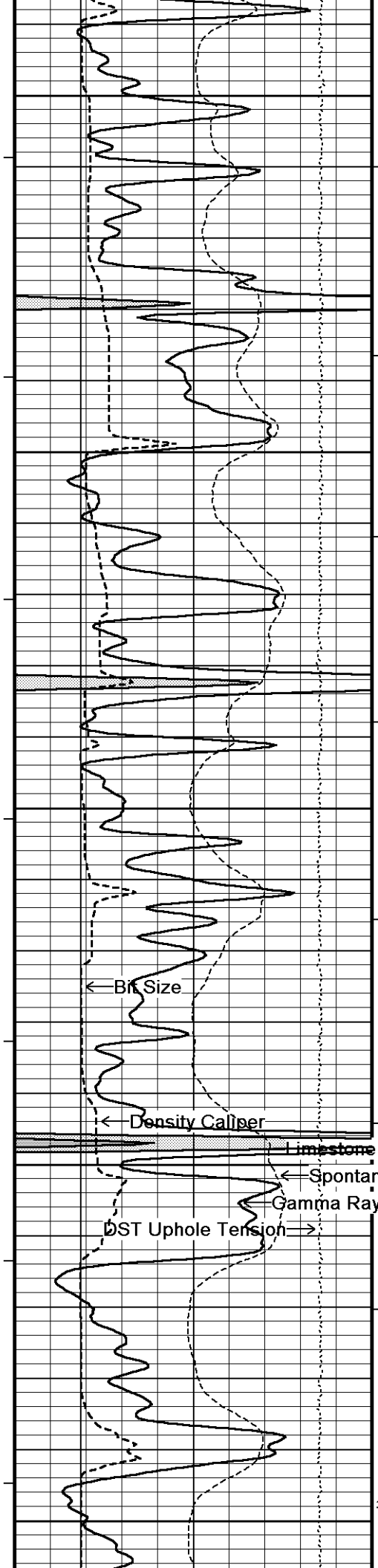
- RIG: HD DRILLING #2.

- ENGINEER: ROB HOFFMAN

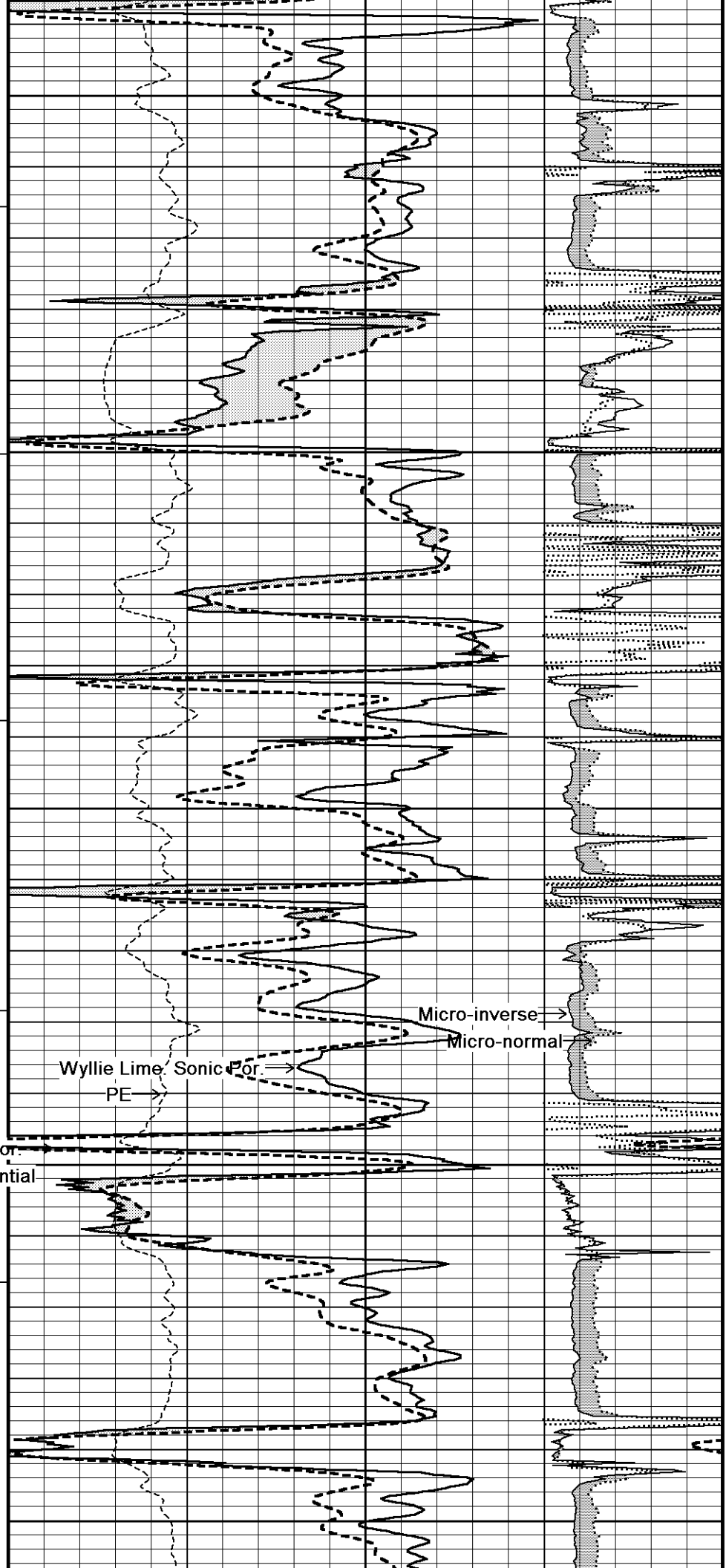
- OPERATOR(S): K. RINEHART, D. CANADAY

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.





105°
3850
105°
3900
105°
3950
105°
4000
106°
4050

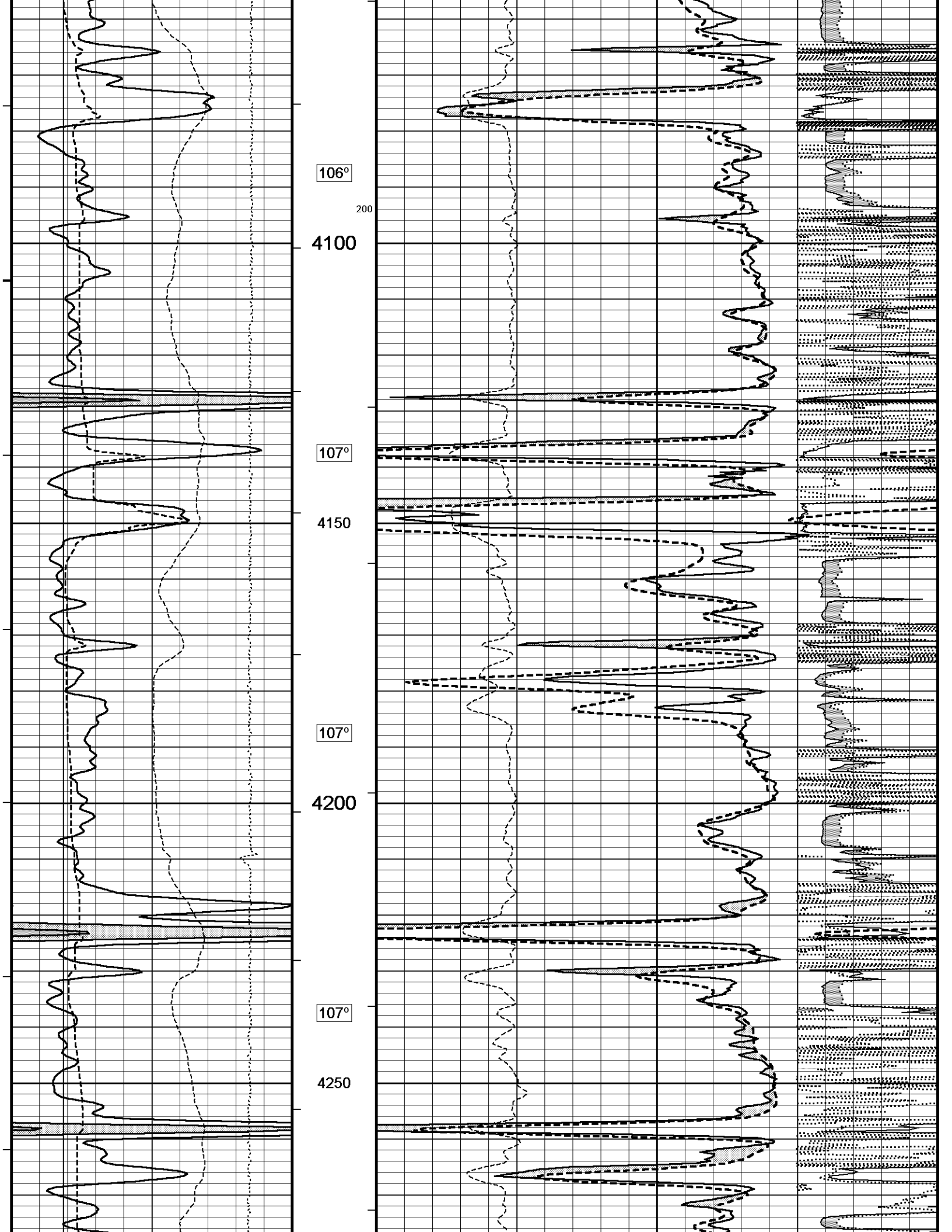


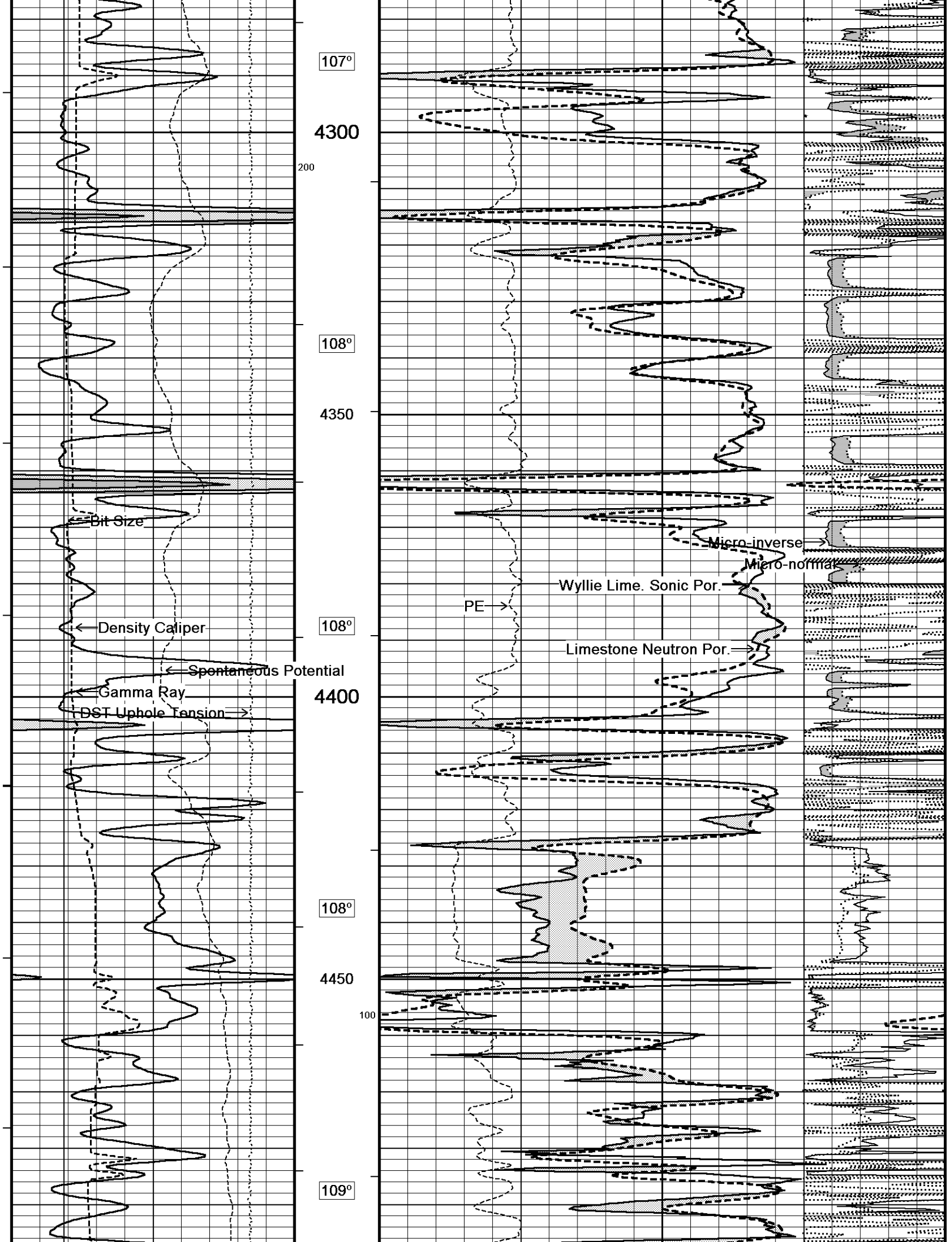
Wyllie Lime. Sonic Por. →
PE →
Micro-inverse →
Micro-normal →

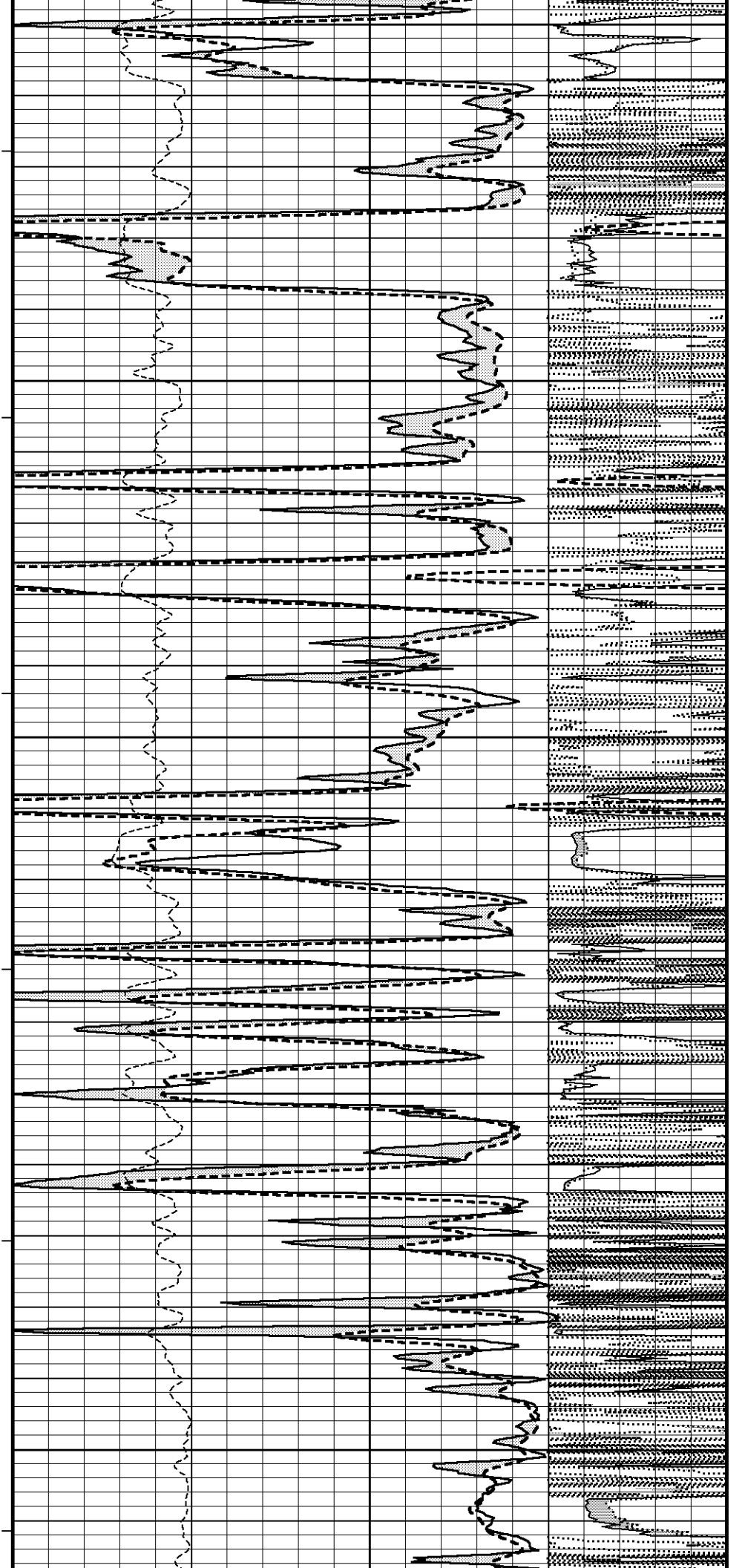
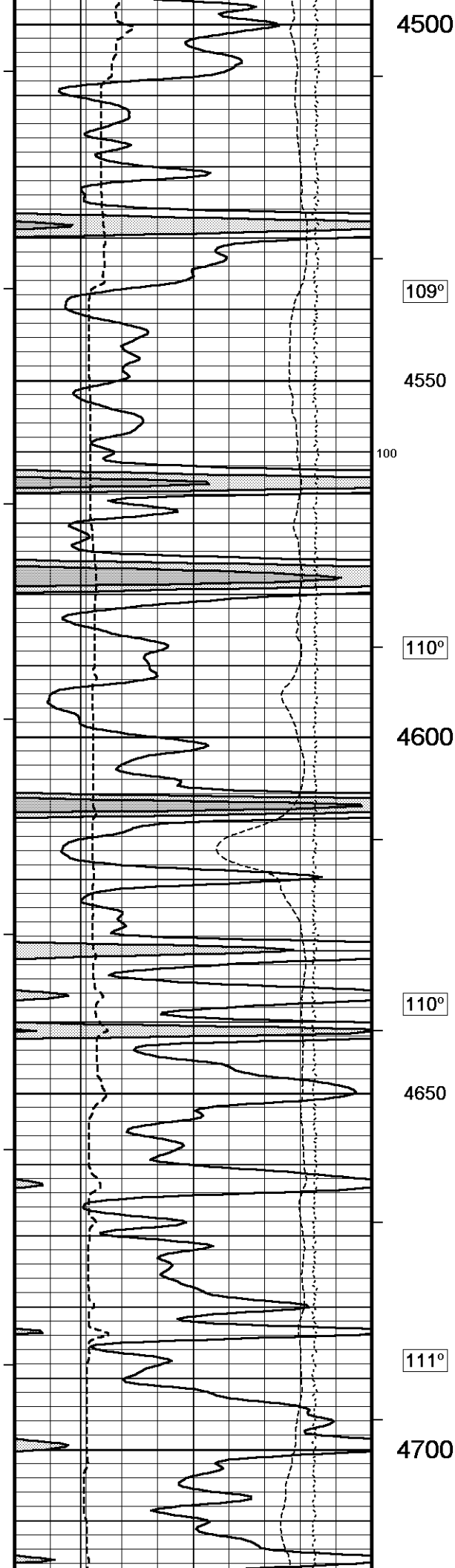
Limestone Neutron Por. →
Spontaneous Potential →

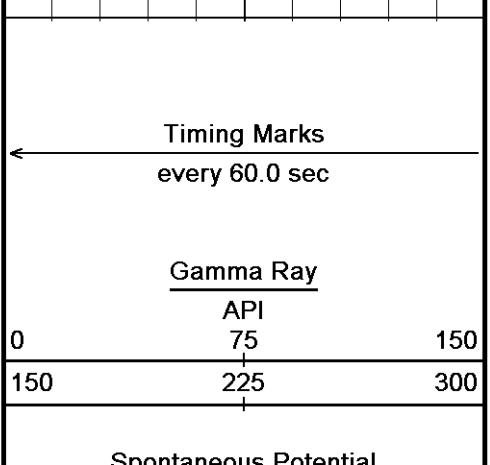
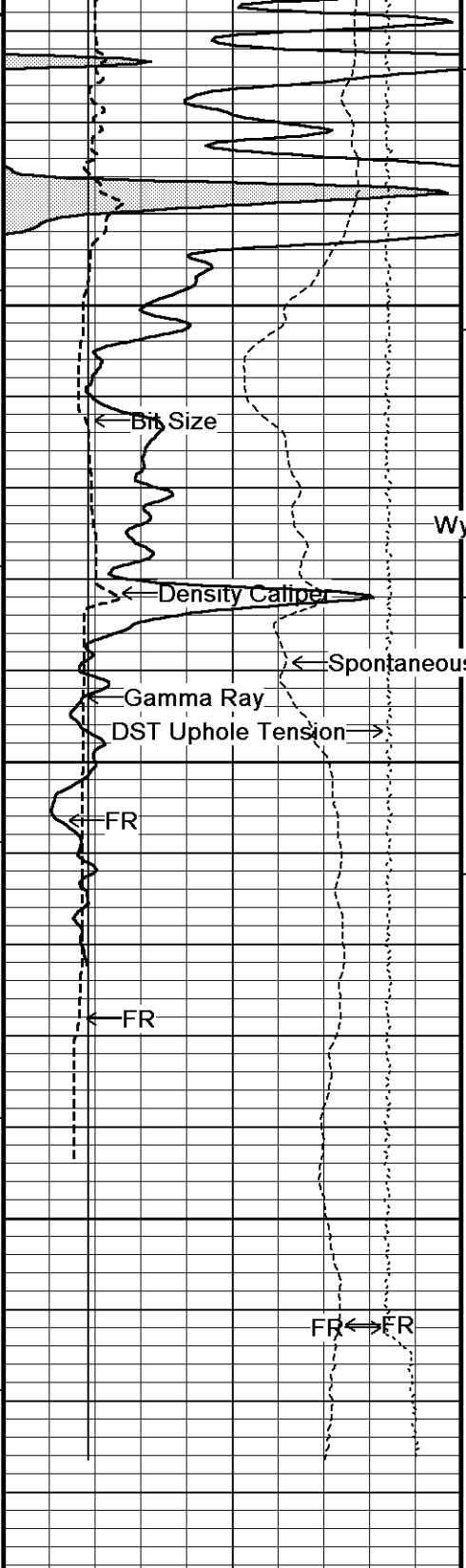
Gamma Ray

DST Uphole Tension →

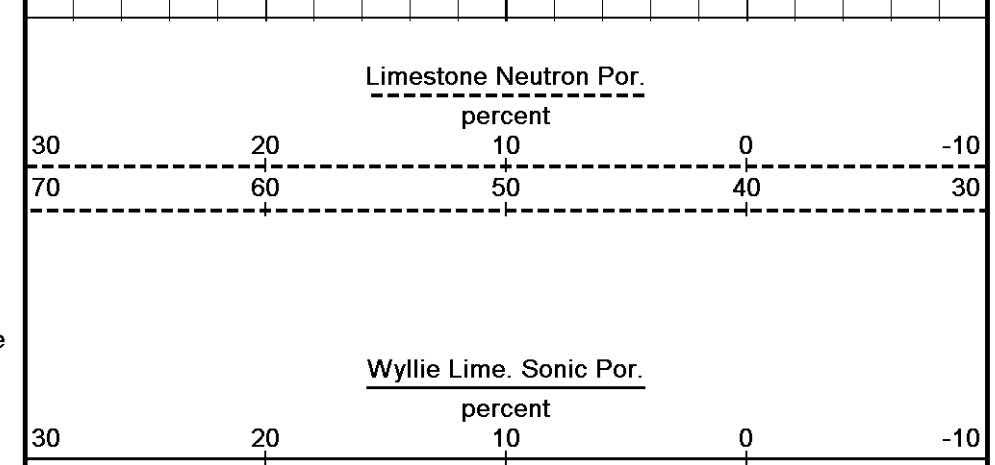
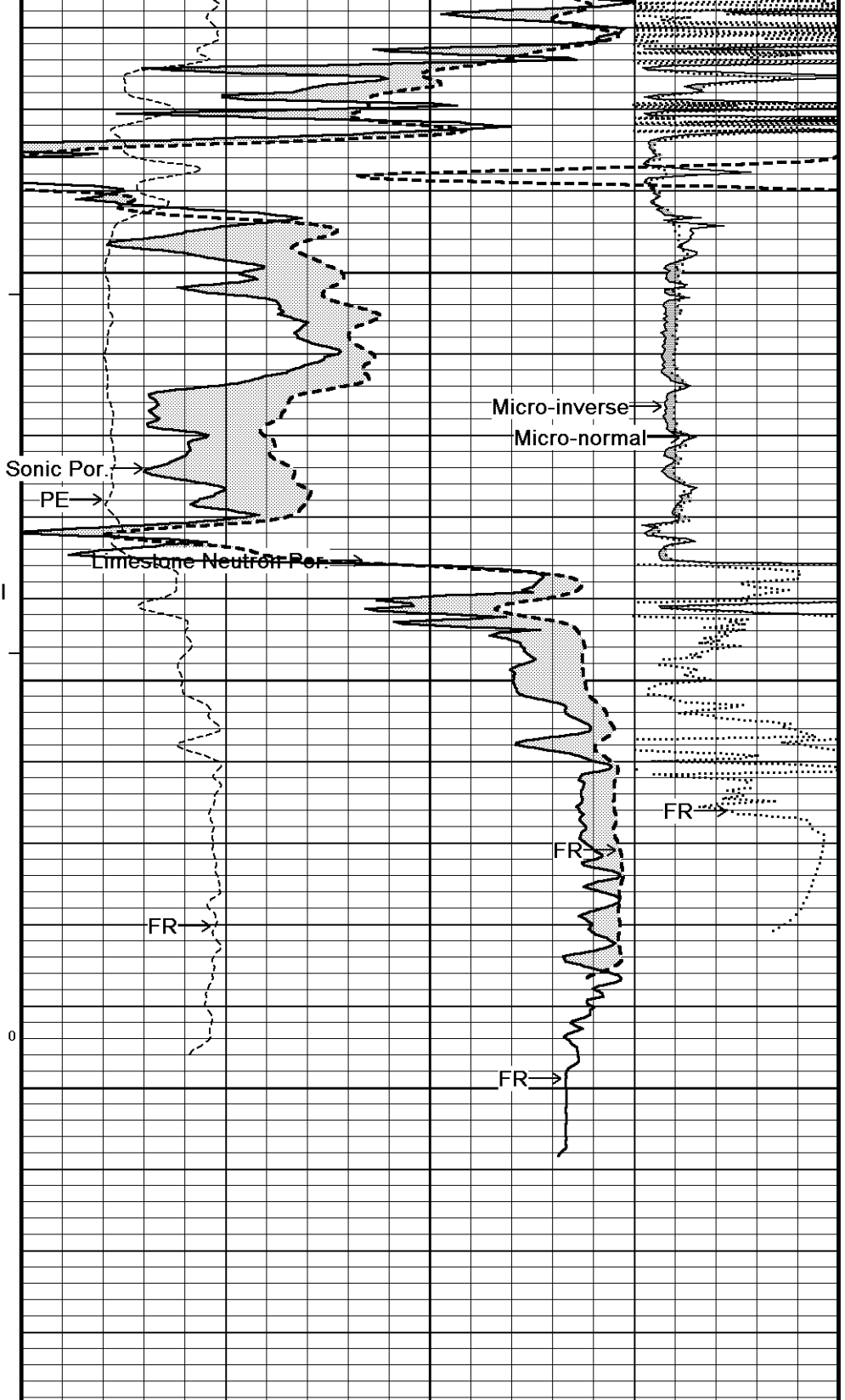


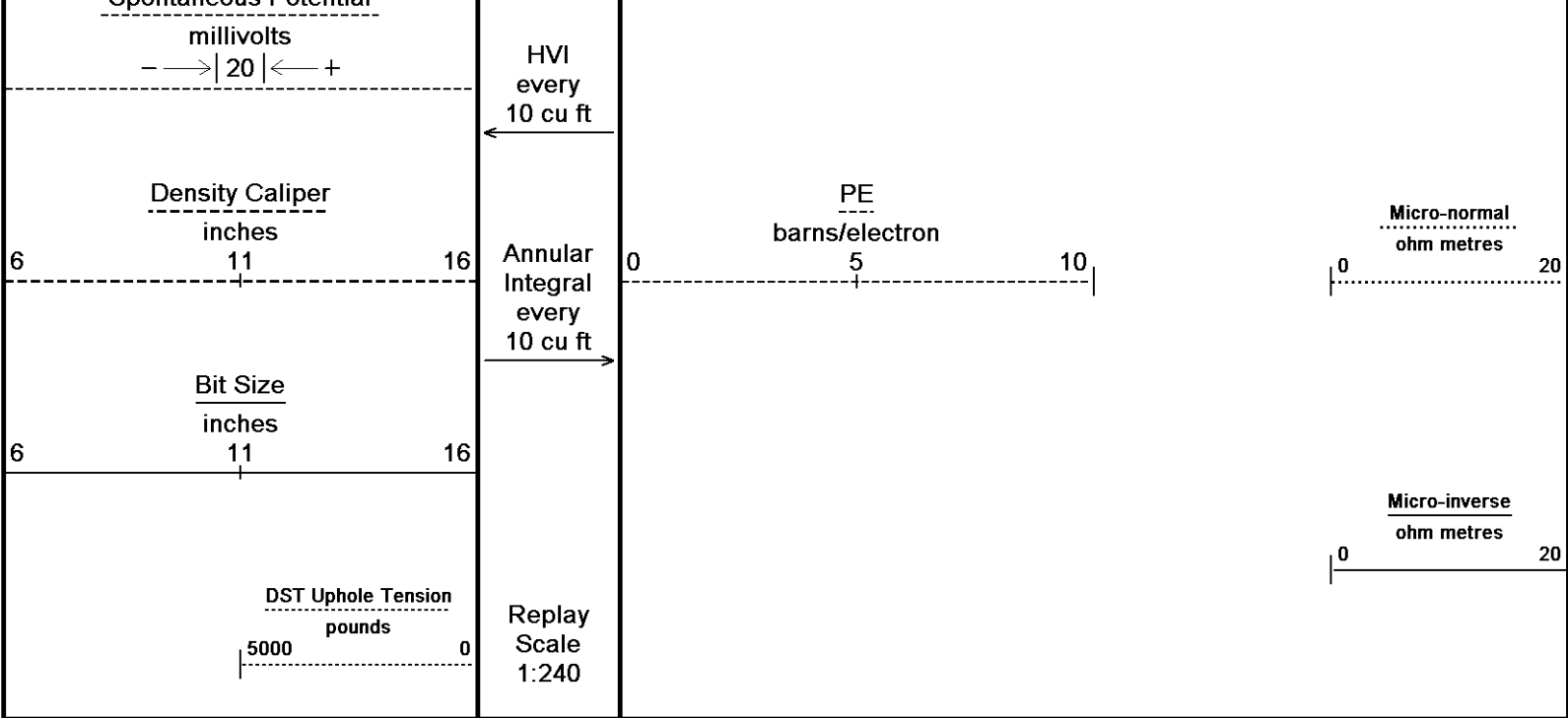






112°
4750
111°
4800
0
4850
4888
Depth in Feet
Timing Marks every 60.0 sec
Gamma Ray
API
0 75 150
150 225 300
Borehole Temp in deg F
Spontaneous Potential





Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 20-SEP-2013 15:06
Filename: C:\Minimus 13.05.9583\Log\Shakespeare Tucker #2-9_002 spooled section.dta
Recorded on 20-SEP-2013 14:10
System Versions: Logged with 13.05.9583 Plotted with 13.05.9583

↑ 5 INCH MAIN ↑

BEFORE SURVEY CALIBRATION
C:\Minimus 13.05.9583\Log\Shakespeare Tucker #2-9\Shakespeare Tucker #2-9.dta

General Constants All 000			Last Edited on 20-SEP-2013,11:53
General Parameters			
Mud Resistivity	0.720	ohm-metres	
Mud Resistivity Temperature	81.000	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	4.500	inches	
Caliper for Differential Caliper	Density Caliper		
Rwa Parameters			
Porosity used	Base Density Porosity		
Resistivity used	Array Ind. Six Res Rt		
RWA Constant A	1.000		
RWA Constant M	2.000		
SW/APOR Tool Source	0.000		

Gamma Calibration MCG-D.K 469		Field Calibration on 18-SEP-2013 10:56	
	Measured	Calibrated (API)	
Background	67	46	
Calibrator (Gross)	1127	771	
Calibrator (Net)	1061	725	

Gamma Constants MCG-D.K 469		Last Edited on 20-SEP-2013,11:53	
Gamma Calibrator Number	GRC38		
Mud Density	1.12	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl		kppm	
K Mud Type	Chloride		

K Mud Type		Chloride	0.00	%
K Mud Concentration				
High Resolution Temperature Calibration MCG-D.K 469				Field Calibration on 18-AUG-2013,02:35
	Measured	Calibrated(Deg F)		
Lower	50.00	50.00		
Upper	100.00	100.00		
High Resolution Temperature Constants MCG-D.K 469				Last Edited on 18-AUG-2013,02:35
Pre-filter Length	11			
Neutron Calibration MDN-A.B 66				Base Calibration on 31-JUL-2013 10:25 Field Check on 18-SEP-2013 11:03
Base Calibration				
	Measured	Calibrated (cps)		
	Near	Far	Near	Far
	3180	99	3714	110
Ratio	32.180		33.764	
Field Calibrator at Base			Calibrated (cps)	
			1617	2323
Ratio	0.696			
Field Check			Calibrated (cps)	
			1626	2326
Ratio	0.690			
Neutron Constants MDN-A.B 66				Last Edited on 18-SEP-2013,10:57
Neutron Source Id	P0204NN			
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		
Salinity Correction	Not Applied			
Formation Fluid Salinity Source	None			
Formation Fluid Salinity	N/A	kppm		
Barite Mud Correction	Not Applied			
Sonic Constants MSS-C.K 330				Last Edited on 29-JUN-2013,19:32
Maximum Boundary Contrast	100.00	micro-sec/ft		
Fluid Transit Time	189.00	micro-sec/ft		
Limestone Transit Time	47.50	micro-sec/ft		
Sandstone Transit Time	55.50	micro-sec/ft		
Dolomite Transit Time	43.50	micro-sec/ft		
Sonic used for Porosities	3-4' Compensated Sonic			
Correction for Sonde Skew	Applied			
Cycle Stretch Algorithm	Applied			
MN3FT	N/A	micro-sec		
MX3FT	N/A	micro-sec		
Hunt-Raymer Constant	83.13	micro-sec/ft		
Sonde Mode	Compensated			
Hole Type	Open Hole			
Sonde Parameters				
	Measured	Calibrated		
Offset	N/A	0.0000		
Free Pipe	N/A	N/A		
Peak Amplitude Source	N/A			

Peak Amplitude Source	N/A				
Waveform	Start Time (micro-sec)	Width (micro-sec)	Pre Gain	Start Gain	Discriminator (mV)
3'	N/A	N/A	N/A	N/A	N/A
4'	N/A	N/A	N/A	N/A	N/A
5'	N/A	N/A	N/A	N/A	N/A
6'	N/A	N/A	N/A	N/A	N/A

Processed Fixed Gate Parameters

Waveform Used For Processing	N/A			
Start Time (micro-sec)	End Time (micro-sec)	Discriminator (mV)	N/A	
N/A	N/A	N/A		
N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	

Full Waveform Parameters

Use 3' Waveform to derive TR	N/A	
Use 4' Waveform to derive TR	N/A	
Use 5' Waveform to derive TR	N/A	
Use 6' Waveform to derive TR	N/A	
3' Waveform Discriminator Level	N/A	mV
4' Waveform Discriminator Level	N/A	mV
5' Waveform Discriminator Level	N/A	mV
6' Waveform Discriminator Level	N/A	mV
3' Waveform Filter	N/A	
4' Waveform Filter	N/A	
5' Waveform Filter	N/A	
6' Waveform Filter	N/A	
Semblance Level	N/A	
Semblance Window Width	N/A	micro-sec
Sonic 1 Despiker	N/A	N/A
Sonic 2 Despiker	N/A	N/A

Micro Normal and Micro Inverse Calibration MML-A 3

Base Calibration on 15-AUG-2013 09:16
Field Check on 18-SEP-2013 10:45

Base Calibration

Channel	Measured		Calibrated (ohm-m)	
	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.3	60.3	5.0	25.0
Micro Inverse	15.7	78.4	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 3

Last Edited on 18-SEP-2013,10:44

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	

Caliper Calibration MPD-B 64

Base Calibration on 15-AUG-2013 14:54
Field Calibration on 18-SEP-2013 10:44

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16560	3.99
2	24992	5.98
3	32880	7.97
4	41184	9.86
5	50688	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
6.04	5.96

Photo Density Calibration MPD-B 64

Base Calibration on 15-AUG-2013 14:37
Field Check on 18-SEP-2013 10:42

Density Calibration		Measured		Calibrated (sdu)	
Base Calibration		Near	Far	Near	Far
Reference 1		60206	33560	59556	30836
Reference 2		25378	2915	24941	2541
Field Check at Base					
		1155.1	1345.7		
Field Check					
		1158.4	1339.4		

PE Calibration					
Base Calibration		Measured			Calibrated
	WS	WH	Ratio		Ratio
Background	211	1029			
Reference 1	22957	60005	0.386		0.371
Reference 2	6904	25238	0.276		0.272
Field Check at Base					
	211.2	1028.9			
Field Check					
	209.9	1029.8			

Density Constants MPD-B 64

Last Edited on 20-SEP-2013,11:53

Density Source Id	18235B
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	1.12 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 (m)
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

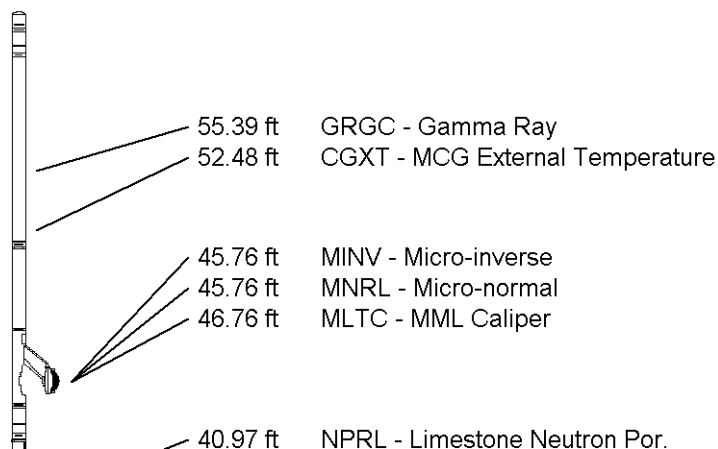
C:\Minimus 13.05.9583\Log\Shakespeare Tucker #2-9\Shakespeare Tucker #2-9.dta

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-D.K 469 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-log
MML-A 3 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

Compact Neutron



MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper

MPD-B 64 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Focussed Electric

MFE-B.J 353 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

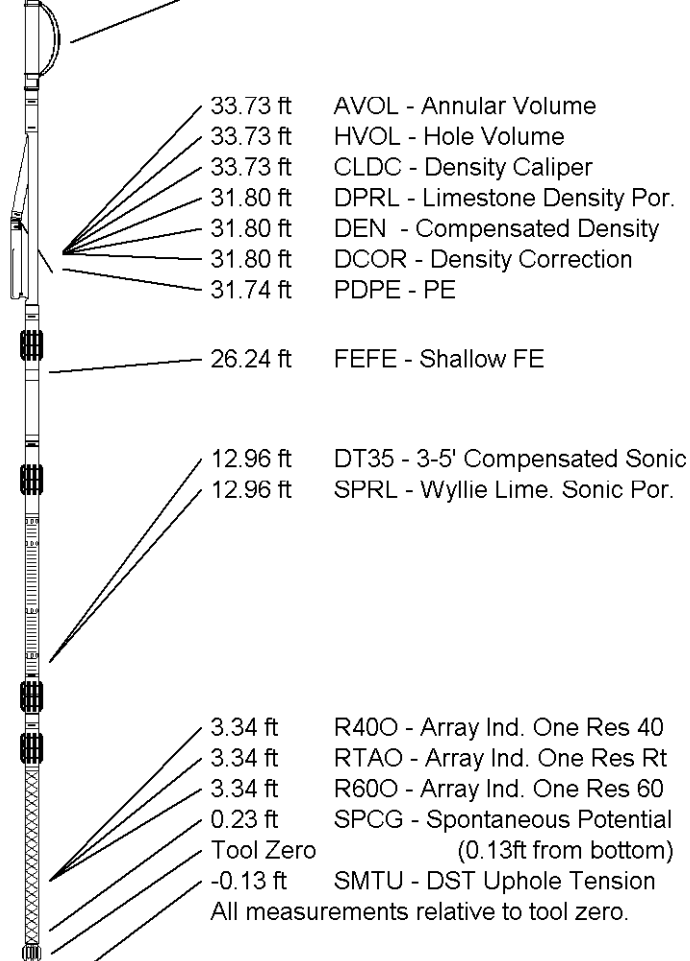
Compact Sonic

MSS-C.K 330 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

Compact Induction

MAI-A.A 167 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 62.25 ft Weight: 471.8 lb



COMPANY	SHAKESPEARE OIL INC.
WELL	TUCKER #2-9
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	3149.00	feet	First Reading	4849.00	feet
Elevation Drill Floor	3147.00	feet	Depth Driller	4865.00	feet
Elevation Ground Level	3139.00	feet	Depth Logger	4862.00	feet



Weatherford®

COMPENSATED NEUTRON
SONIC POROSITY OVERLAY
MICRORESISTIVITY LOG