



Weatherford[®]

**COMPENSATED NEUTRON
SONIC POROSITY
OVERLAY**

COMPANY				K3 OIL & GAS OPERATING COMPANY			
WELL				CATHERINE COBERLY UNIT 30-14			
FIELD				WILDCAT			
PROVINCE/COUNTY				GOVE			
COUNTRY/STATE				U.S.A. / KANSAS			
LOCATION				1209' FSL & 2495' FWL			
SEC 30	TWP 15S	RGE 28W	Other Services				
Latitude		15-063-22187			Elevations: KB 2550.00 DF 2548.00 GL 2542.00		
Longitude							
API Number				15-063-22187			
Permanent Datum GL, Elevation 2542 feet							
Log Measured From KB							
Drilling Measured From KB							
Date	06-MAY-2014						
Run Number	ONE						
Service Order	4558-86610112						
Depth Driller	4425.00			feet			
Depth Logger	4429.00			feet			
First Reading	4416.00			feet			
Last Reading	1900.00			feet			
Casing Driller	268.00			feet			
Casing Logger	263.00			feet			
Bit Size	7.875			inches			
Hole Fluid Type	CHEMICAL						
Density / Viscosity	9.20 lb/USg		54.00 CP				
PH / Fluid Loss	9.50		8.80 ml/30Min				
Sample Source	FLOWLINE						
Rm @ Measured Temp	0.71 @ 95.0			ohm-m			
Rmf @ Measured Temp	0.57 @ 95.0			ohm-m			
Rmc @ Measured Temp	0.85 @ 95.0			ohm-m			
Source Rmf / Rmc	CALC		CALC				
Rm @ BHT	0.56 @120.0		ohm-m				
Time Since Circulation	4 HOURS						
Max Recorded Temp	120.00			deg F			
Equipment / Base	13244		LIB				
Recorded By	ADAM SILL						
Witnessed By	PAT DEENIHAN						
JOB #	LB14-139						

BOREHOLE RECORD

Last Edited: 06-MAY-2014 22:44

Bit Size inches	Depth From feet	Depth To feet
7.875	268.00	4425.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	268.00	24.00

REMARKS

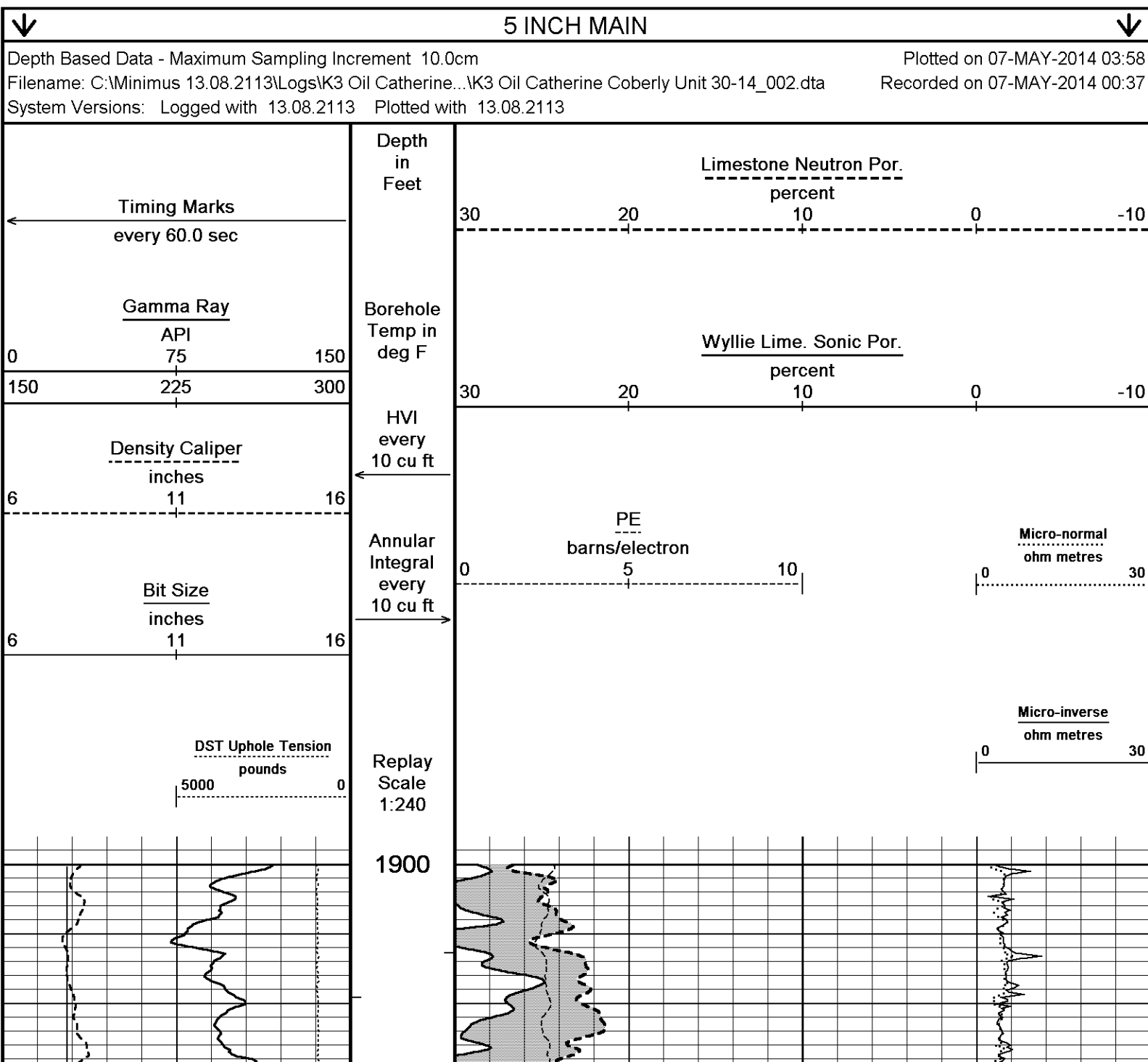
- SOFTWARE ISSUE: WLS 13.08.2113.
- RUN ONE: MCG, MML, MDN, MPD, MFE, MSS, MAI RUN IN COMBINATION.
 - HARDWARE: DUAL BOWSPRING USED ON MDN.
 - 0.5 INCH STANDOFF USED ON MFE.
 - TWO 0.5 INCH STANDOFFS USED ON MSS.
 - 0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY.
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.
- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 1801 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3500 FEET: 157 CU.FT.

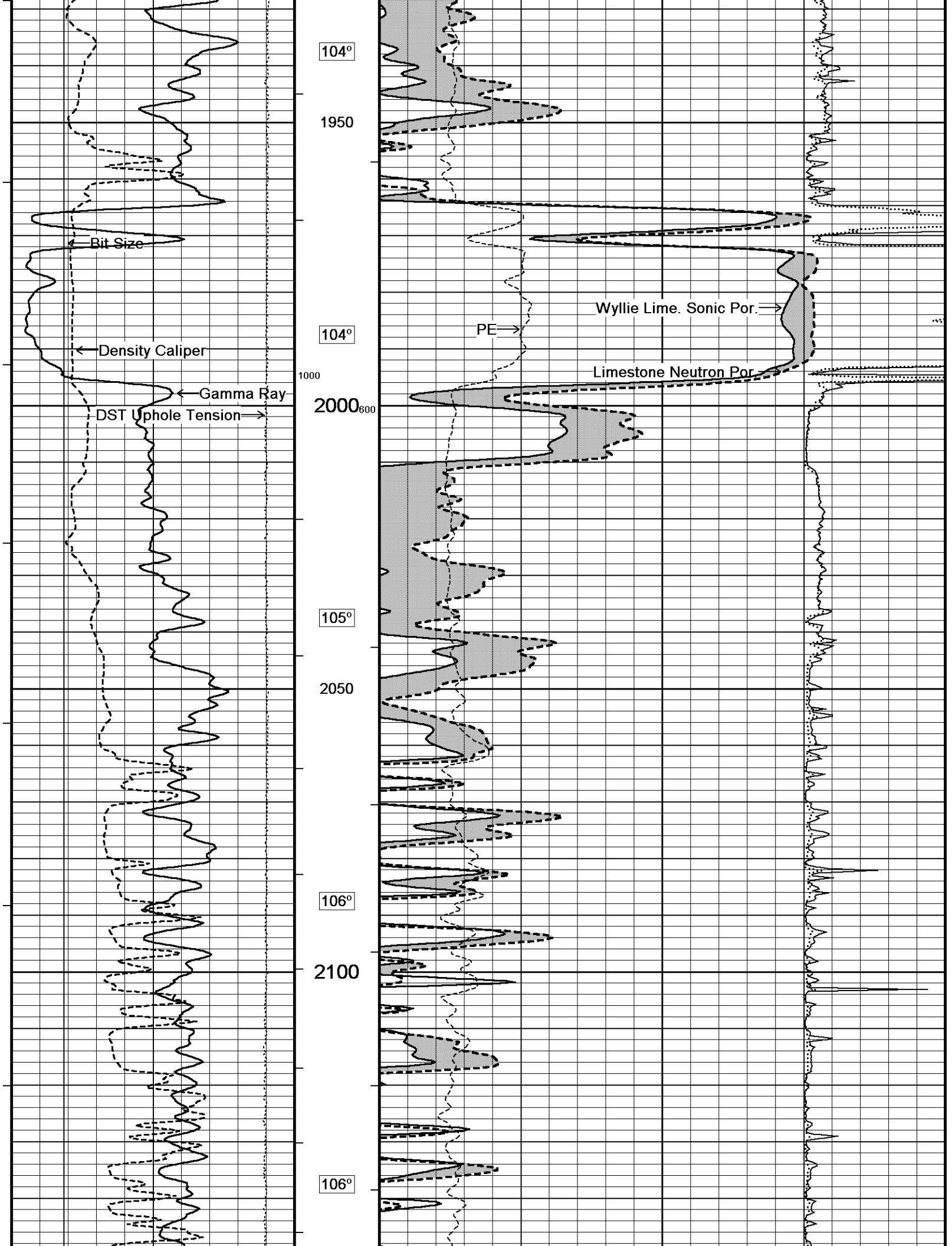
- RIG: DUKE #8.

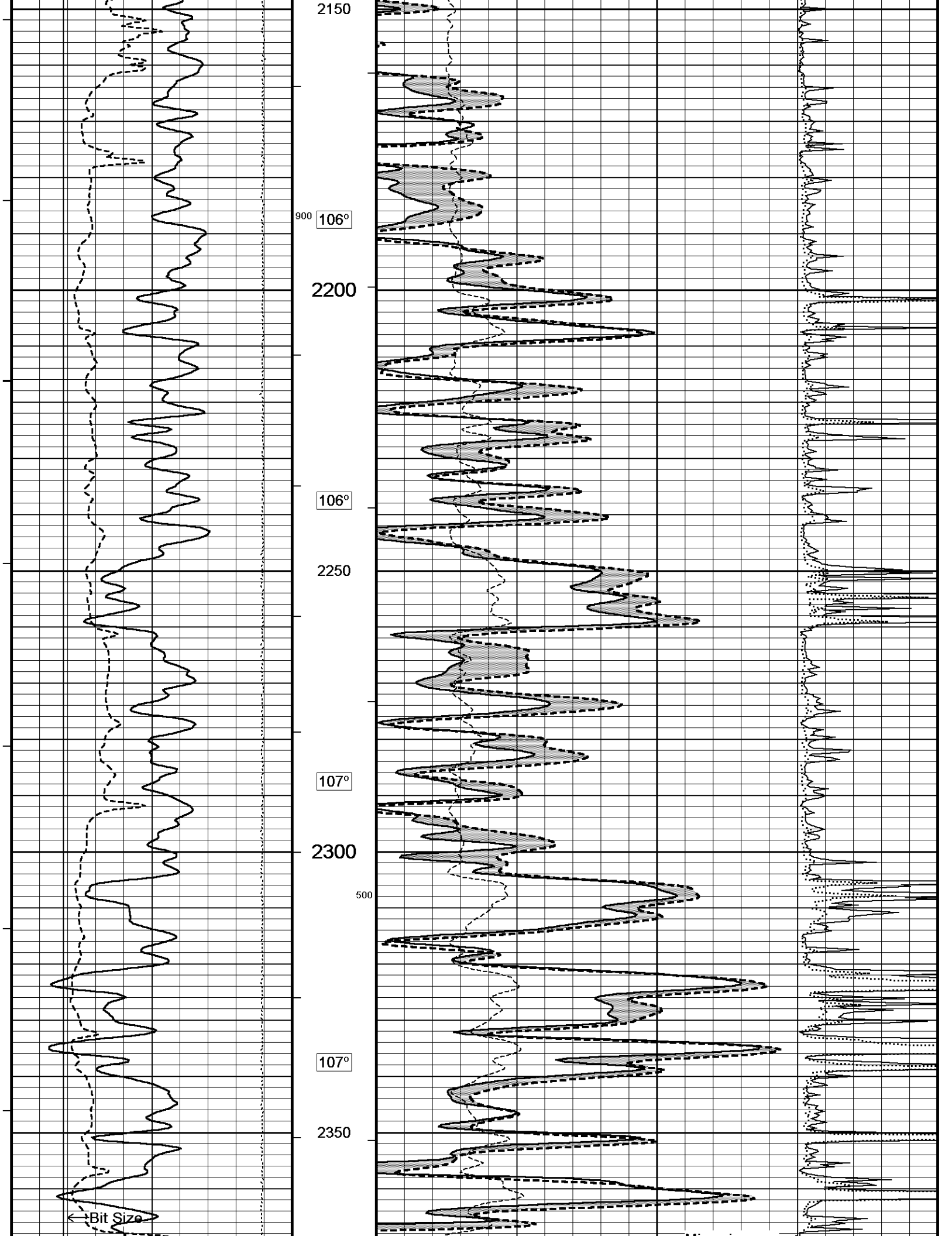
- ENGINEER: A. SILL.

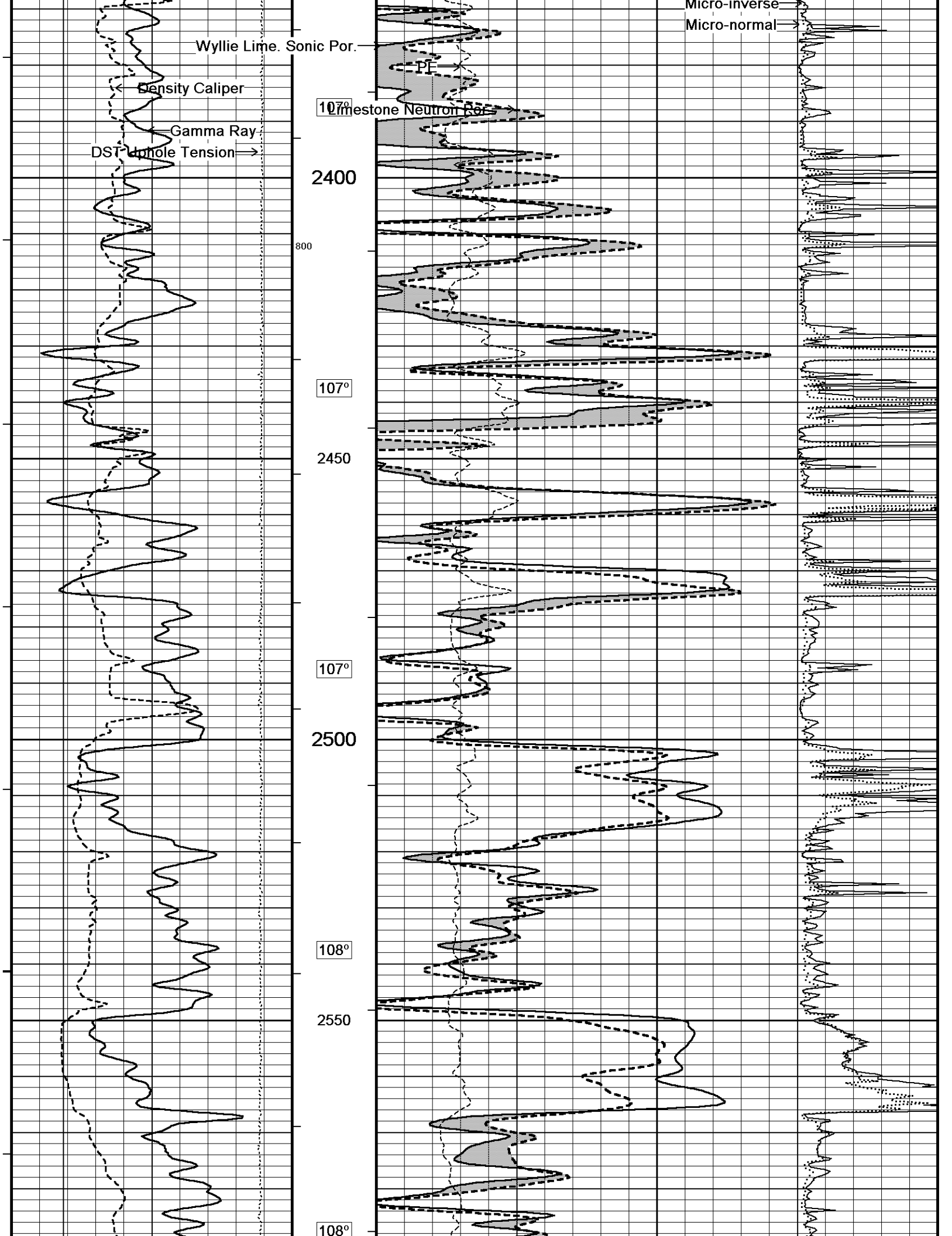
- OPERATOR: J. LaPOINT.

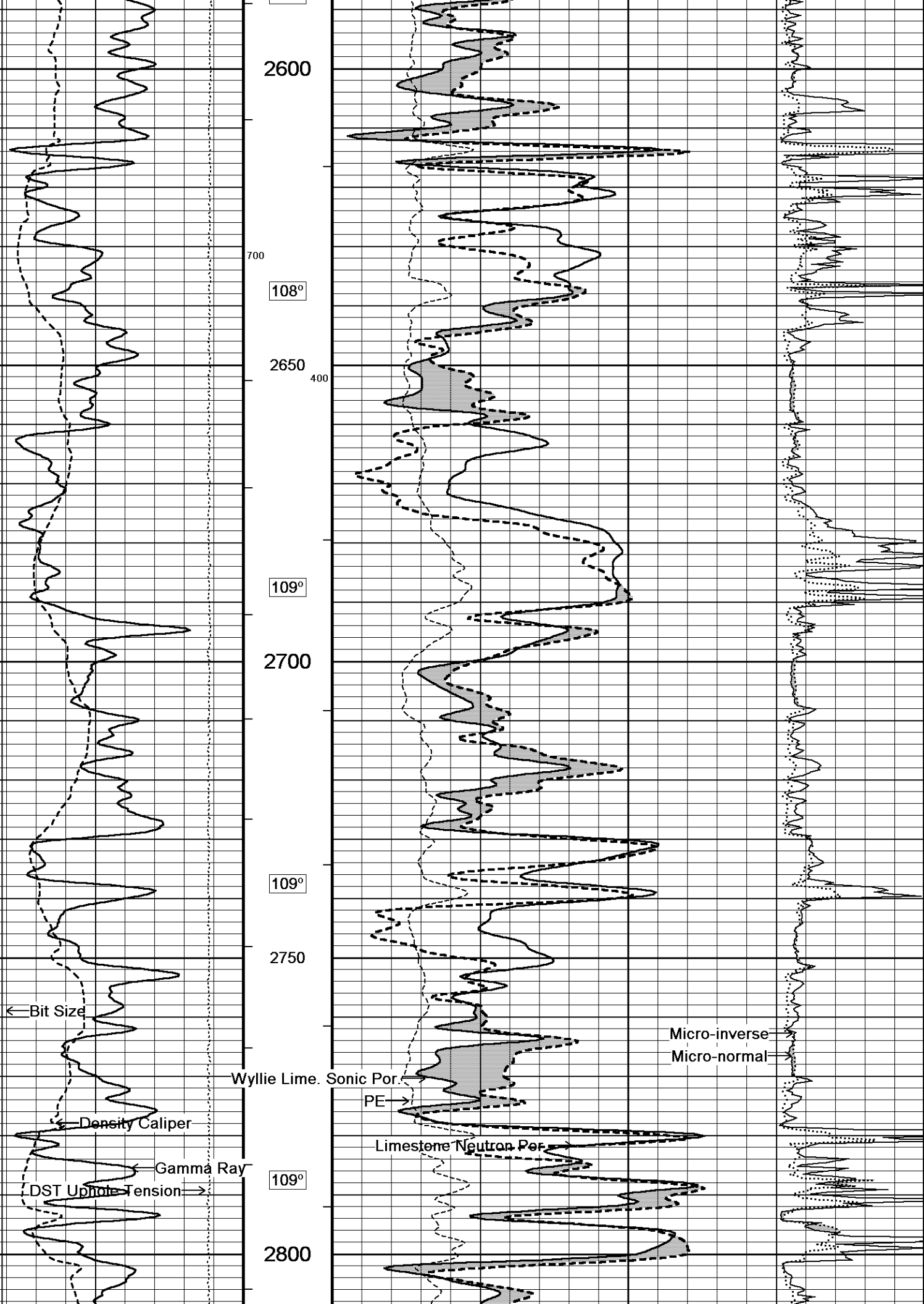
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will give the Company the benefit of the Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ. ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF THE COMPANY, AND THE CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. THE COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISIONS CONCERNING THE SERVICES.

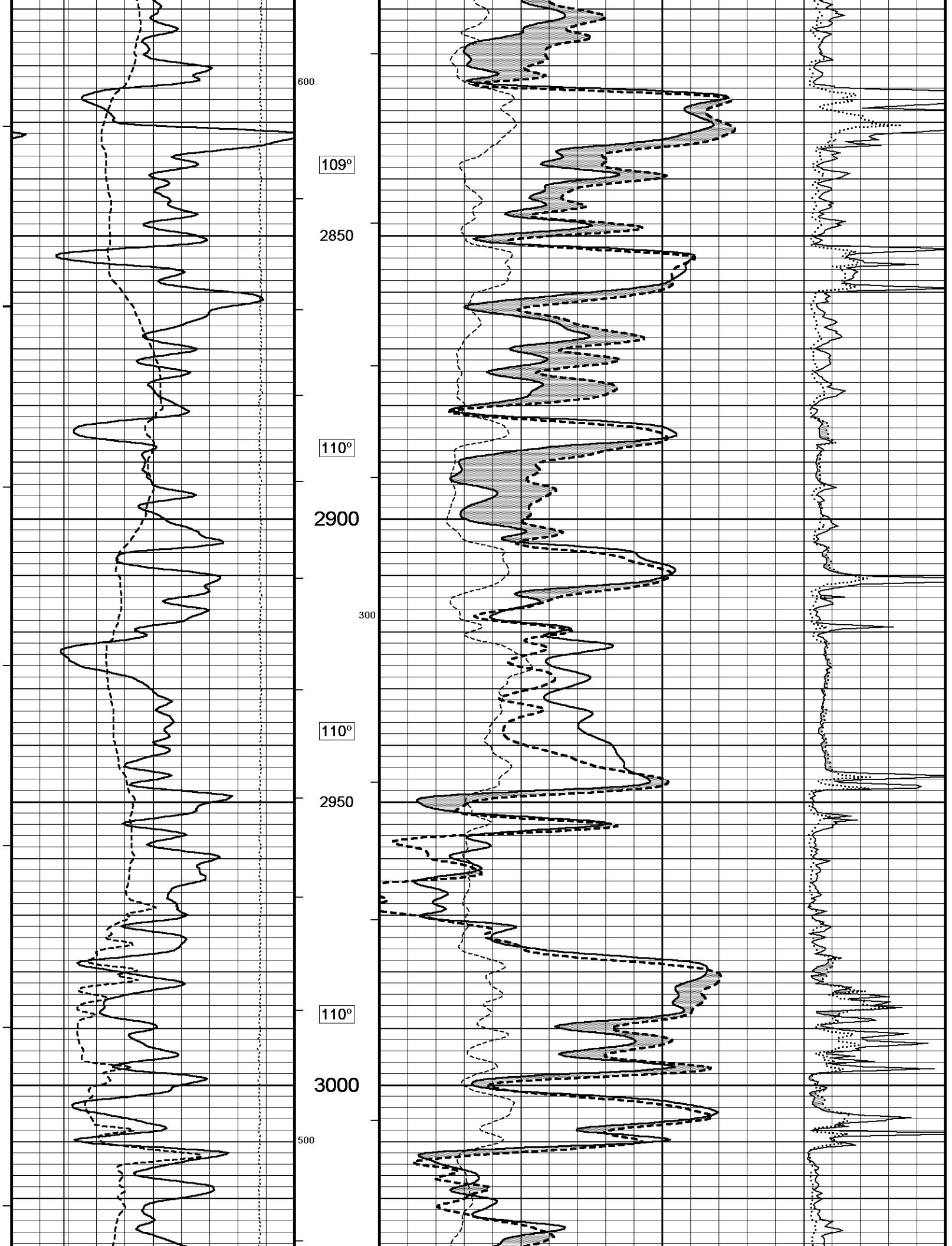


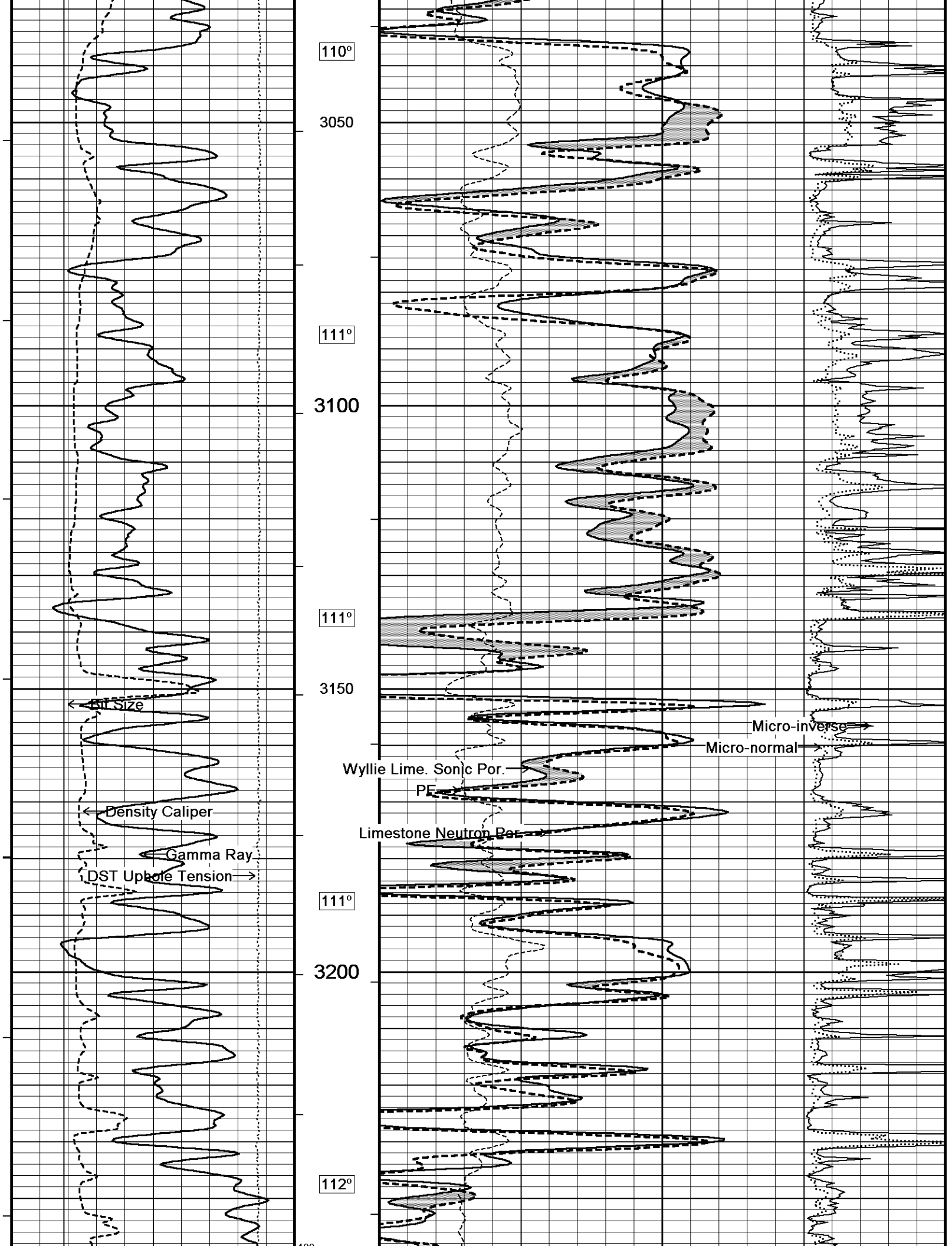


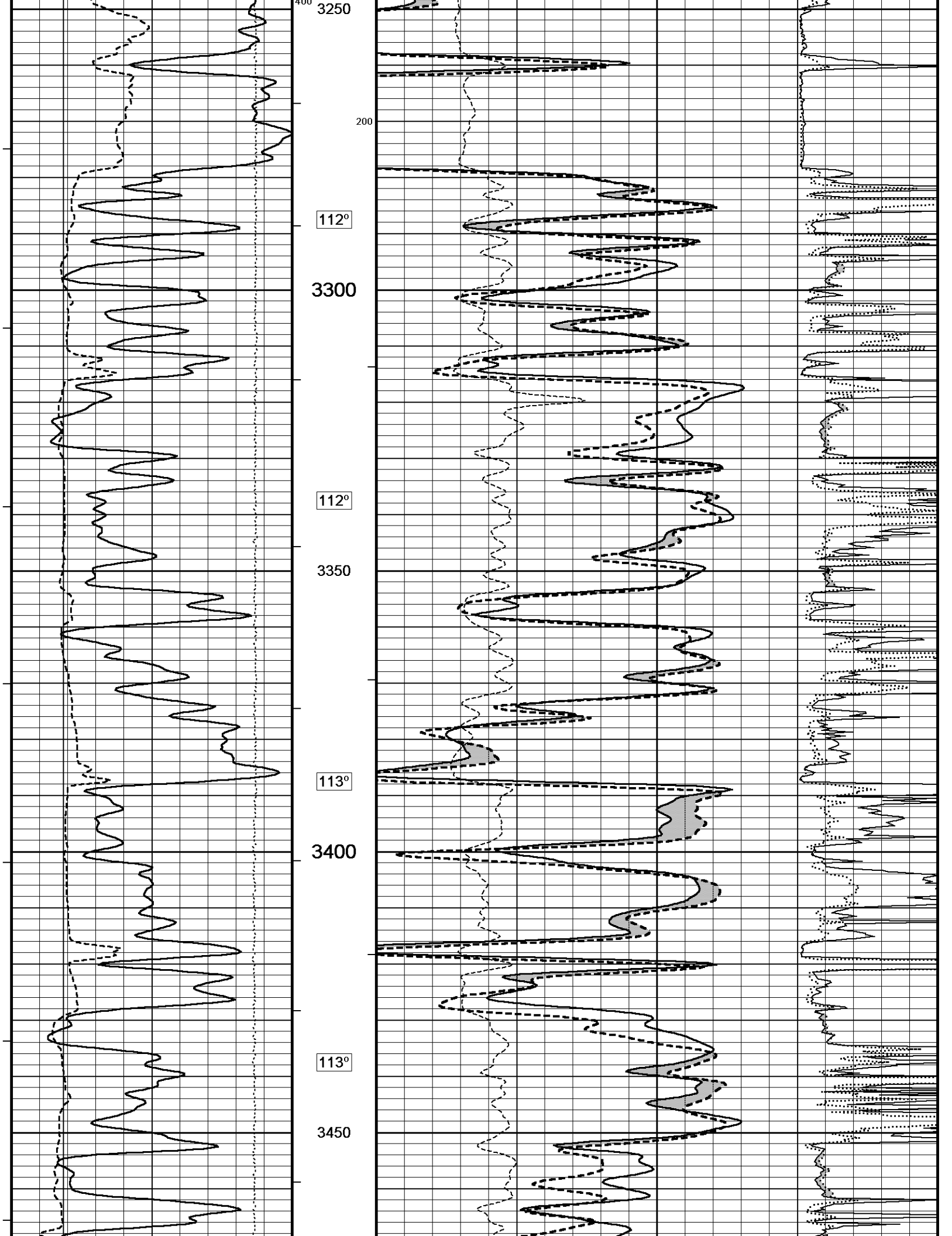


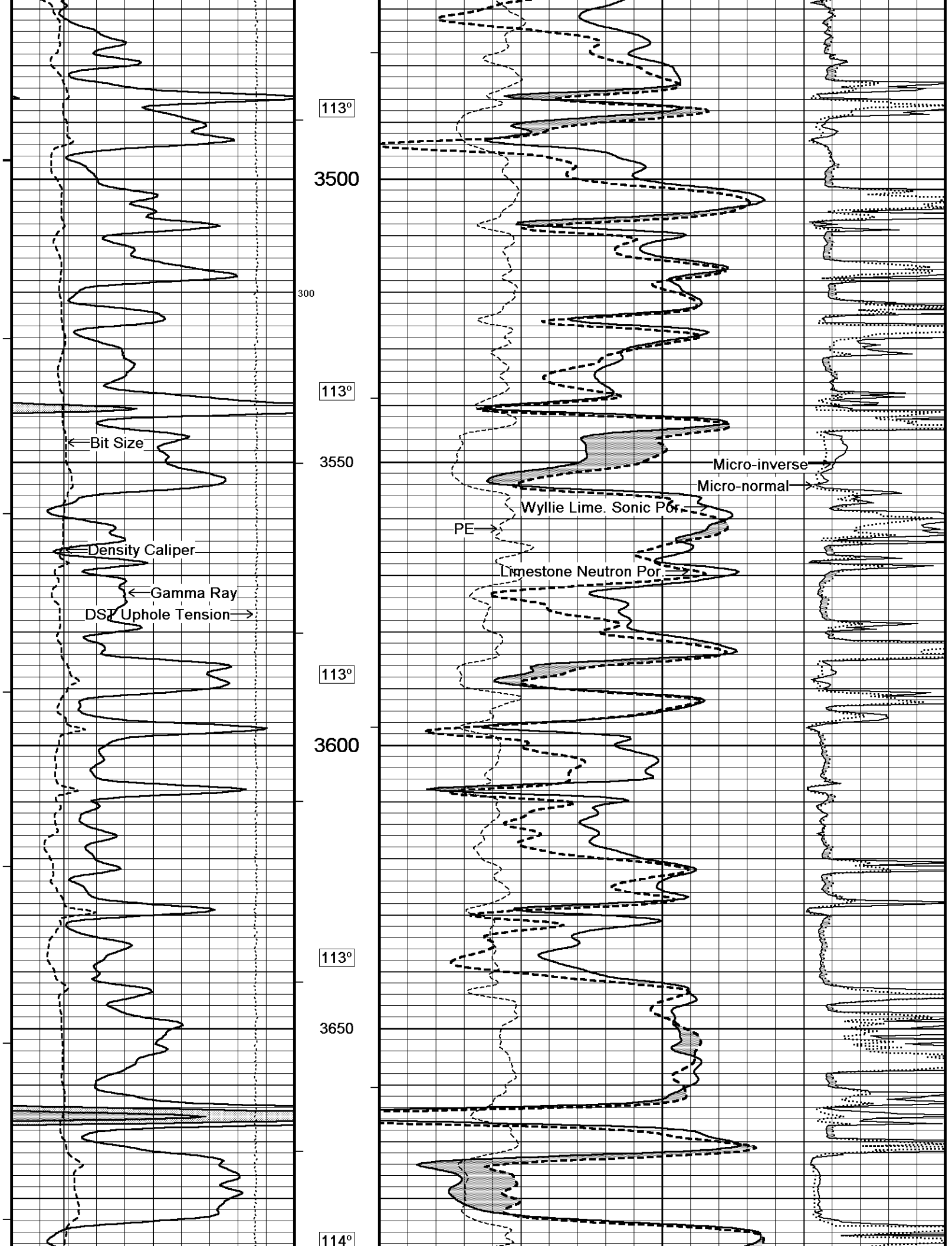


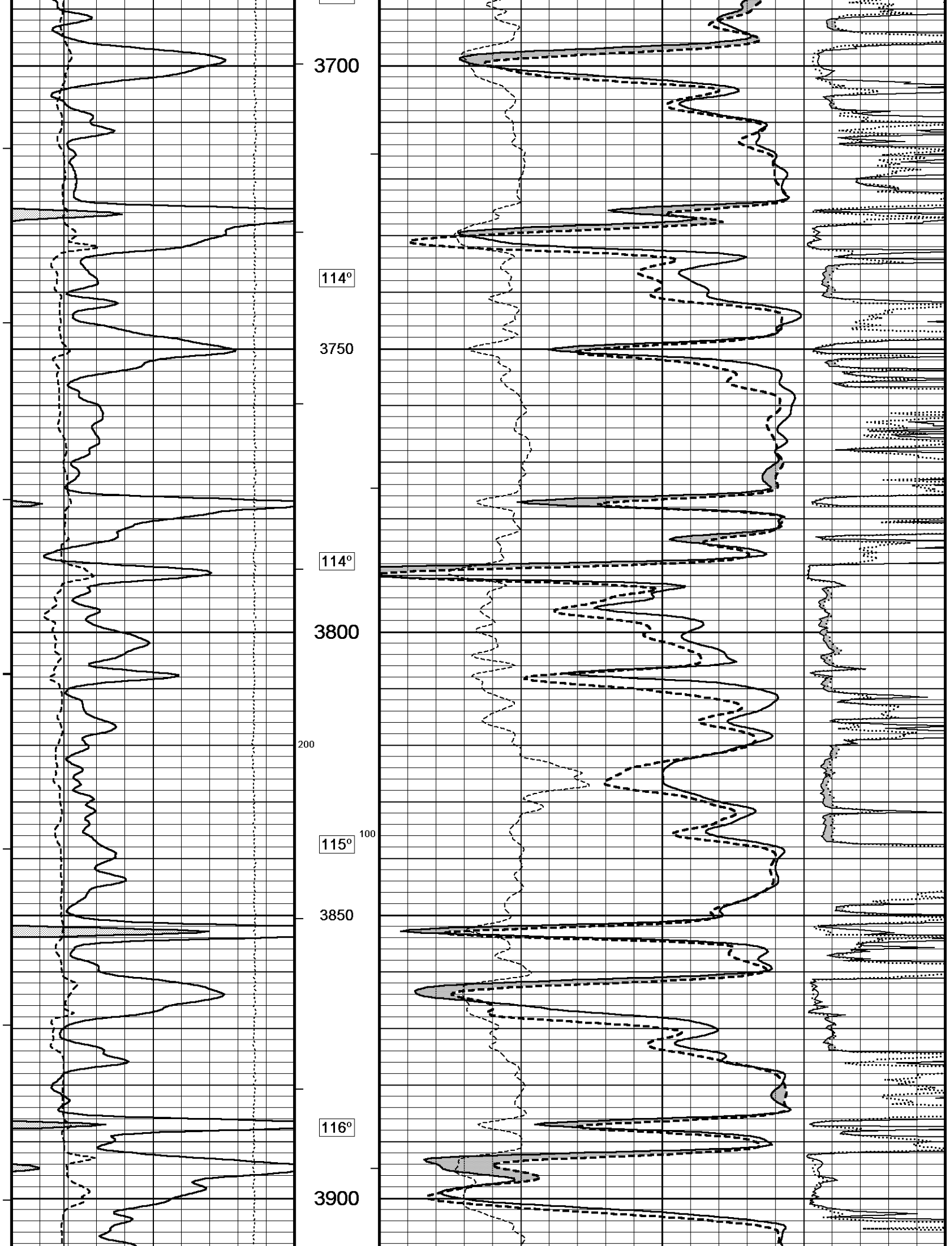


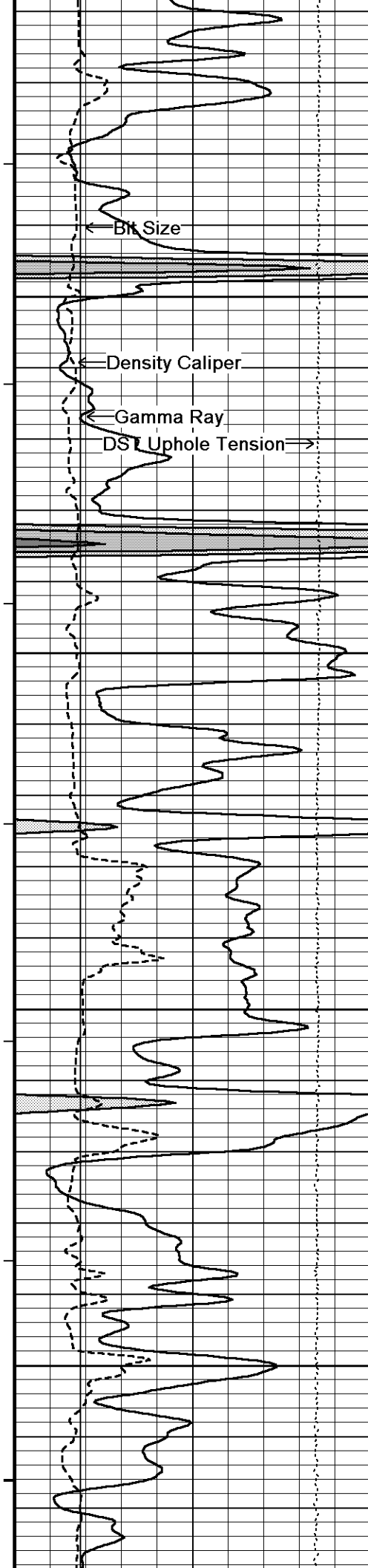












116°

3950
wyllie

116°

4000

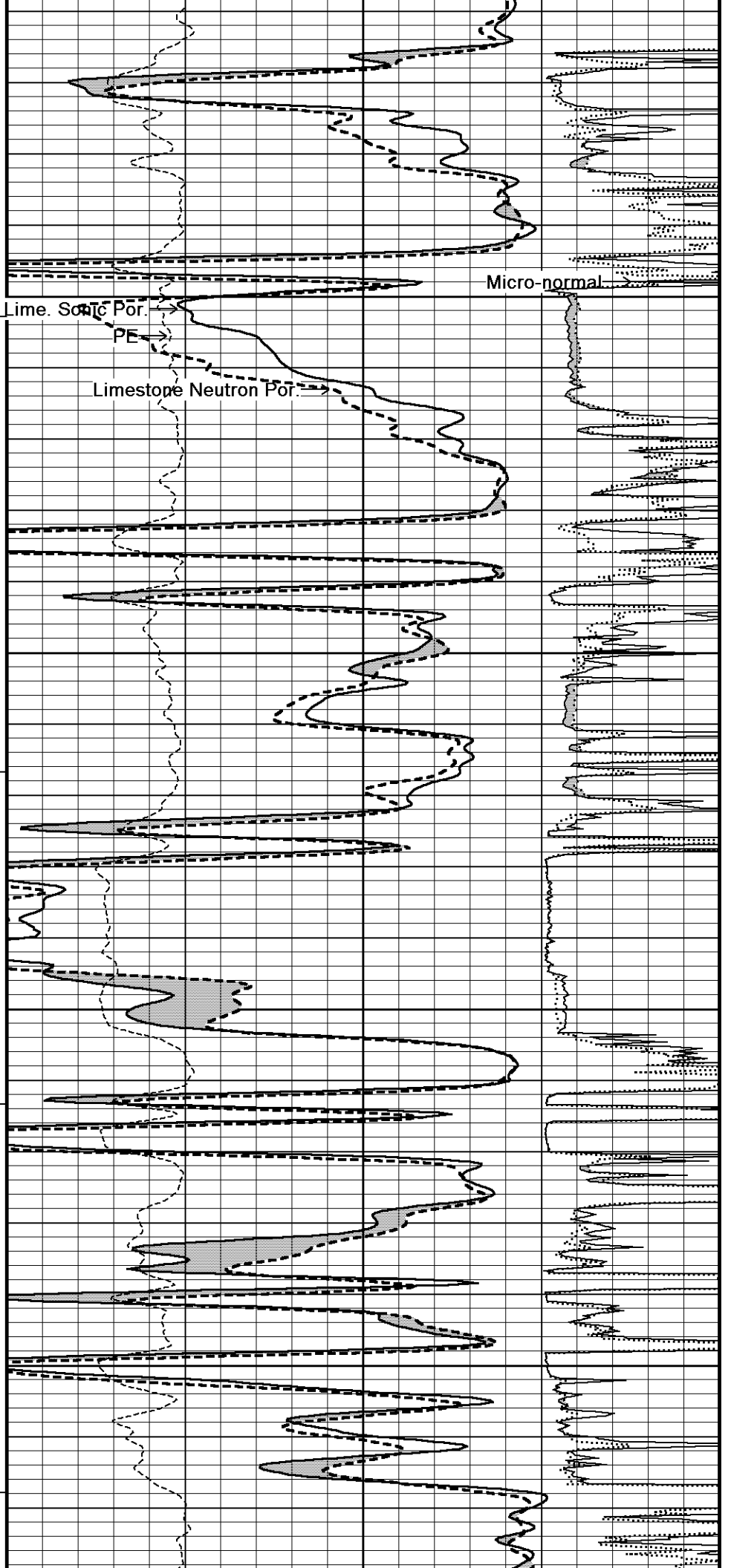
116°

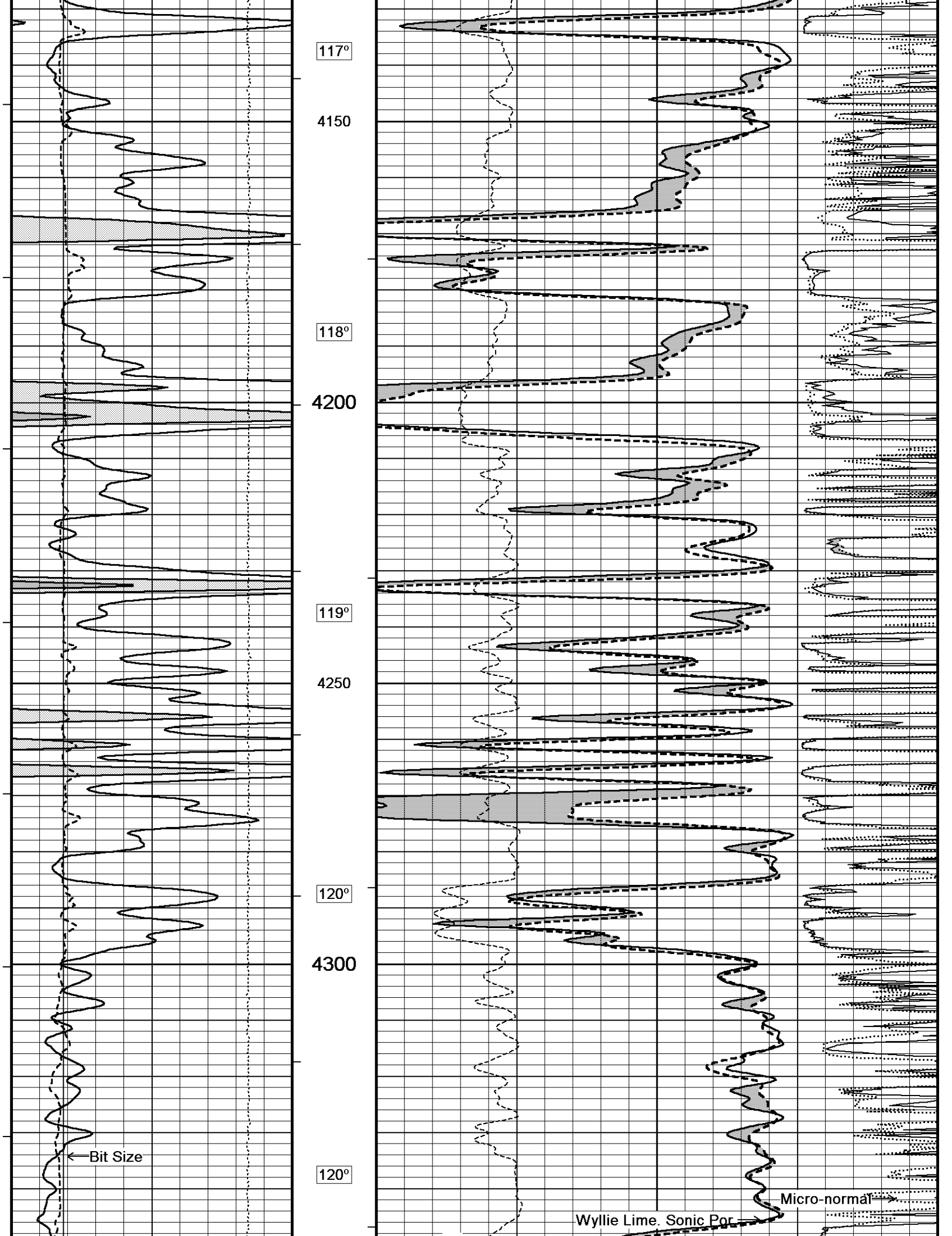
4050

117°

4100

100







5 INCH MAIN



BEFORE SURVEY CALIBRATION

C:\Minimus 13.08.2113\Logs\K3 Oil Catherine Coberly Unit 30-14\K3 Oil Catherine Coberly Unit 30-14_002.dta

General Constants All 000

Last Edited on 06-MAY-2014,23:59

General Parameters

Mud Resistivity	0.710	ohm-metres
Mud Resistivity Temperature	95.000	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	5.500	inches
Caliper for Differential Caliper	MMR 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
SW/APOR Tool Source	0.000

Down-hole Tension Calibration SMS 0

Field Calibration on 06-MAY-2014 23:40

Reading No	Measured	Calibrated (lbs)
1	15071.71	0.00
2	15879.48	481.00

Gamma Calibration MCG-C 150

Field Calibration on 06-MAY-2014 18:51

	Measured	Calibrated (API)
Background	68	46
Calibrator (Gross)	1139	771
Calibrator (Net)	1071	725

Gamma Constants MCG-C 150

Last Edited on 06-MAY-2014,22:46

Gamma Calibrator Number	GRC038	
Mud Density	1.10	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

SP Calibration MCG-C 150

Field Calibration on 10-MAR-2014 13:42

	Measured	Calibrated (mV)
Reference 1	99.9	99.0
Reference 2	-97.7	-98.8

High Resolution Temperature Calibration MCG-C 150

Field Calibration on 08-MAR-2014,10:59

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

High Resolution Temperature Constants MCG-C 150

Last Edited on 06-MAY-2014,18:36

Pre-filter Length	11
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Caliper Calibration MMR-C.A 248

Base Calibration on 24-MAR-2014 11:12

Field Calibration on 06-MAY-2014 18:35

Base Calibration		
Reading No	Measured	Calibrator Size (in)

1	13253	5.96
2	16528	7.97
3	19726	9.95
4	23473	11.91
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
8.04	7.97

Micro Normal and Micro Inverse Calibration MMR-C.A 248

Base Calibration on 24-MAR-2014 11:03
Field Check on 06-MAY-2014 18:36

Base Calibration

Channel	Measured		Calibrated (ohm-m)	
	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	10.1	49.8	5.1	25.6
Micro Inverse	9.9	49.5	3.4	16.9

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	93.6	93.6
Micro Inverse	62.2	62.2

Micro Normal and Micro Inverse Constants MMR-C.A 248

Last Edited on 23-JAN-2014,17:04

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	0.0000 inches

Neutron Calibration MDN-B.J 387

Base Calibration on 21-JAN-2014 13:56
Field Check on 06-MAY-2014 18:56

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
Ratio	2848	86	3714	110
	32.942		33.764	

Field Calibrator at Base

	Calibrated (cps)
Ratio	1737 2564
	0.677

Field Check

	Calibrated (cps)
Ratio	1757 2605
	0.675

Neutron Constants MDN-B.J 387

Last Edited on 06-MAY-2014,22:46

Neutron Source Id	P58125B
Neutron Jig Number	5824NE
Epithermal Neutron	
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

FE Calibration MFE-A.A 55

Base Calibration on 24-MAR-2014 10:21
Field Check on 06-MAY-2014 18:26

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	254.2	122.2

Reference 2	951.2	126.8
Base Check		281.7
Field Check		281.5

FE Constants MFE-A.A 55		Last Edited on 06-MAY-2014,22:45	
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	

Sonic Constants MSS-A.A 73		Last Edited on 06-MAY-2014,22:45	
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	3-5' 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		
Waveform	Start Time (micro-sec)	Width (micro-sec)	Pre Gain
3'	N/A	N/A	N/A
4'	N/A	N/A	N/A
5'	N/A	N/A	N/A
6'	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	

Compliance Window Width	N/A	mmhos/cm
Sonic 1 Despiker	N/A	N/A
Sonic 2 Despiker	N/A	N/A

Induction Calibration MAI-A.A 5

Base Calibration on 21-JAN-2014,09:50

Field Check on 06-MAY-2014 18:24

Base Calibration

Test Loop Calibration

Channel	Measured		Calibrated (mmho/m)	
	Low	High	Low	High
1	16.3	470.8	9.3	966.2
2	5.6	376.1	7.6	821.4
3	2.6	266.1	5.2	566.0
4	1.6	130.0	2.6	279.2

Array Temperature 71.1 Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1			16.2	3863.5
2			32.1	3590.5
3			30.0	2971.0
4			20.9	2126.0
Deep			18.6	1912.1
Medium			43.2	3860.5
Shallow			47.7	5372.0

Array Temperature 90.1 Deg F

Induction Constants MAI-A.A 5

Last Edited on 06-MAY-2014,22:45

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
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 5

Field Calibration on 21-JAN-2014,15:43

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

DOWNHOLE EQUIPMENT

C:\Minimus 13.08.2113\Logs\K3 Oil Catherine Coberly Unit 30-14\K3 Oil Catherine Coberly Unit 30-14_002.dta

CBH-C, Cablehead, 11 pin

CBH-C 0 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Comms Gamma

MCG-C 150 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-Resistivity

MMR-C.A 248 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

Compact Neutron

MDN-B.J 387 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper

MPD-D.A 480 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

Compact Focussed Electric

MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

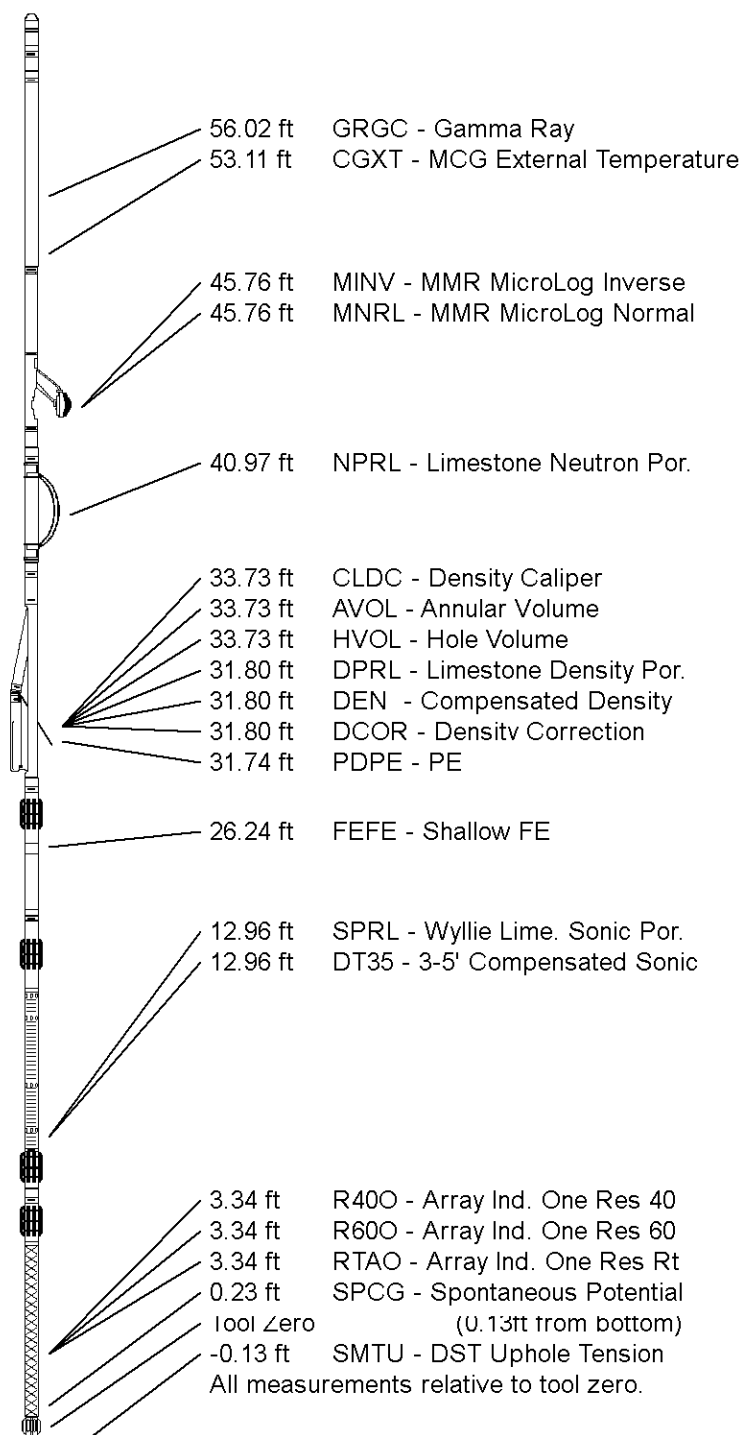
Compact Sonic

MSS-A.A 73 LG: 12.52 ft WT: 72.8 lb OD: 2.244 in

Compact Induction

MAI-A.A 5 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 63.70 ft Weight: 480.6 lb



COMPANY

K3 OIL & GAS OPERATING COMPANY

WELL

CATHERINE COBERLY UNIT 30-14

FIELD

WILDCAT

PROVINCE/COUNTY

GOVE

COUNTRY/STATE

U.S.A. / KANSAS

Elevation Kelly Bushing 2550.00 feet

Elevation Drill Floor 2548.00 feet

Elevation Ground Level 2542.00 feet

First Reading 4416.00 feet

Depth Driller 4425.00 feet

Depth Logger 4429.00 feet



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SONIC POROSITY
OVERLAY