



Weatherford

COMPOSITE LOG

COMPANY				TAOS RESOURCES OPERATING COMPANY LLC			
WELL				LONG #1			
FIELD				BIDDLE			
PROVINCE/COUNTY				COWLEY			
COUNTRY/STATE				USA / KANSAS			
LOCATION				990' FNL & 1320' FWL			
SEC	TWP	RGE	Other Services				
36	31S	4E	NONE				
API Number		15-035-24527					
Permit Number		34484					
Permanent Datum GL, Elevation 1192 feet							
Log Measured From KB							
Drilling Measured From KB							
Date	24-SEP-2013						
Run Number	ONE						
Service Order	3542056						
Depth Driller	3530.00			feet			
Depth Logger	3530.00			feet			
First Reading	3527.00			feet			
Last Reading	276.00			feet			
Casing Driller	272.00			feet			
Casing Logger	276.00			feet			
Bit Size	7.875			inches			
Hole Fluid Type	WBM						
Density / Viscosity	9.40 lb/USg		38.00 CP				
PH / Fluid Loss	8.00		12.00 ml/30Min				
Sample Source	FLOW LINE						
Rm @ Measured Temp	1.10 @ 85.0			ohm-m			
Rmf @ Measured Temp	0.88 @ 85.0			ohm-m			
Rmc @ Measured Temp	1.32 @ 85.0			ohm-m			
Source Rmf / Rmc	CALC		CALC				
Rm @ BHT	0.84 @ 111.0		ohm-m				
Time Since Circulation	4 HOURS						
Max Recorded Temp	111.00		deg F				
Equipment / Base	13145		OKC				
Recorded By	AXEL HANNENBERG			GRANT HUTCHINSON			
Witnessed By	MARK SEELY						

BOREHOLE RECORD					Last Edited: 24-SEP-2013 23:38
Bit Size inches		Depth From feet		Depth To feet	
7.875		272.00		3530.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	8.625	0.00	272.00	24.00	

REMARKS
WLS 13.04.8723
DEPTH CONTROL: CALIBRATED MEASURING WHEEL
TOOLS RAN: MCG, MML, MDN, MPD, MFE, MSS, MAI RAN IN COMBINATION
HARDWARE: MAI: TWO 0.5 INCH STANDOFFS USED. MFE: ONE 0.5 INCH STANDOFF USED. MDN: DUAL NEUTRON BOW SPRINGS USED. MPD: 8 INCH PROFILE PLATE USED. MSS: THREE .5 INCH STANDOFFS USED.
2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.
TOTAL HOLE VOLUME FROM TD TO CASING SHOE = 1500 CU.FT. ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO CASING SHOE = 960 CU.FT.

SERVICE ORDER # 3542056

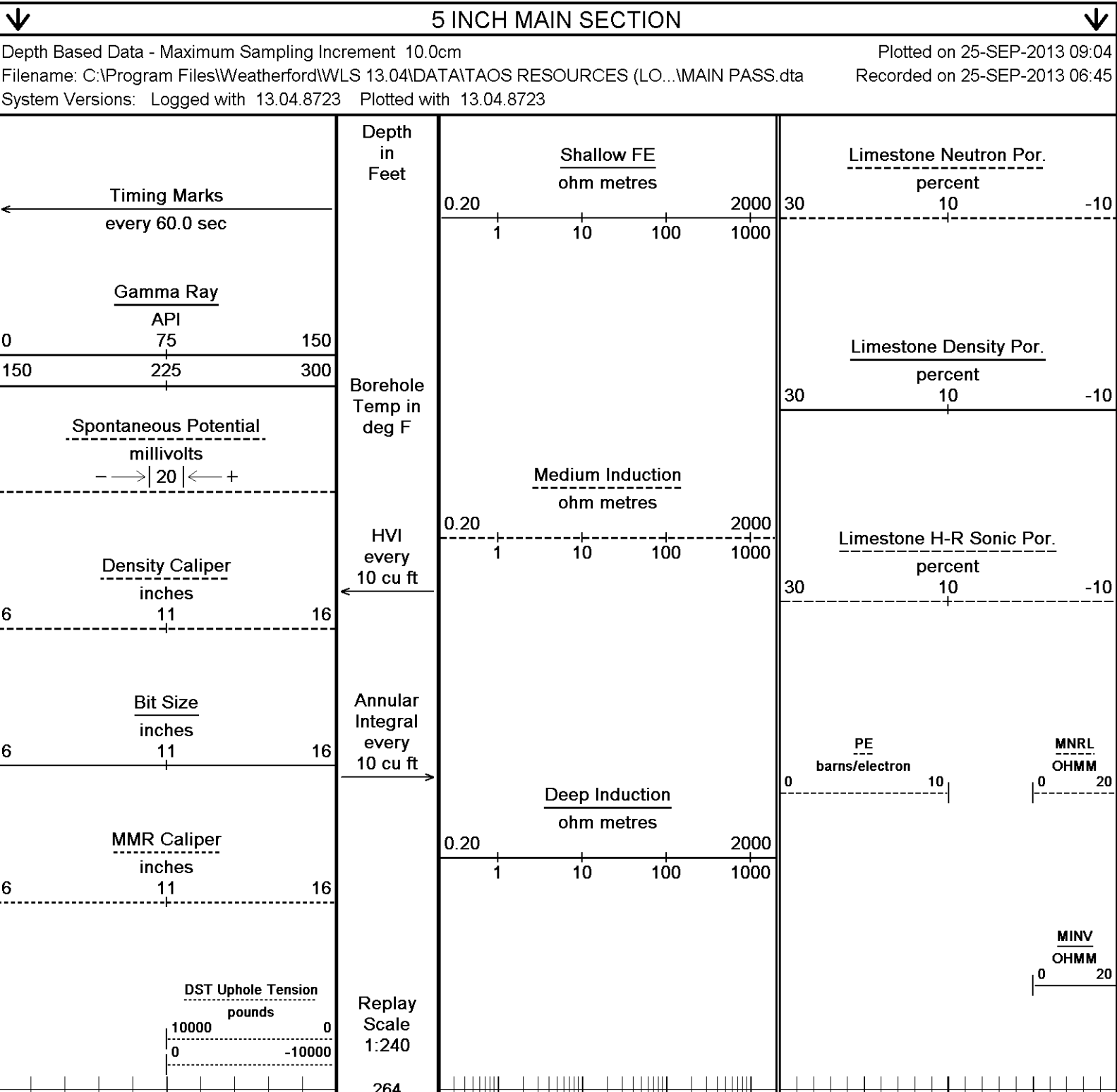
RIG: FOSSIL DRILLING RIG #2

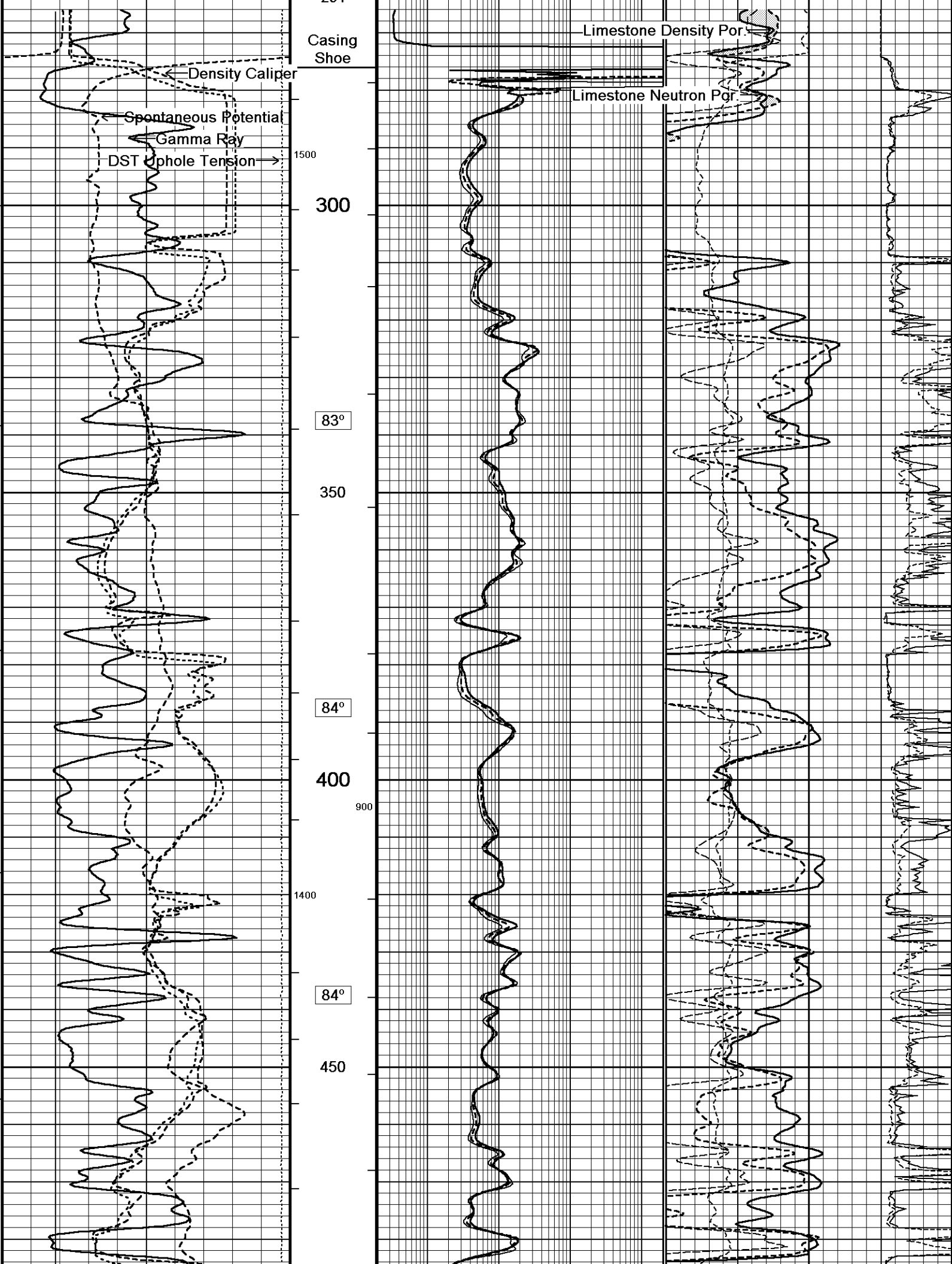
OPERATOR(S): JEFF HILL

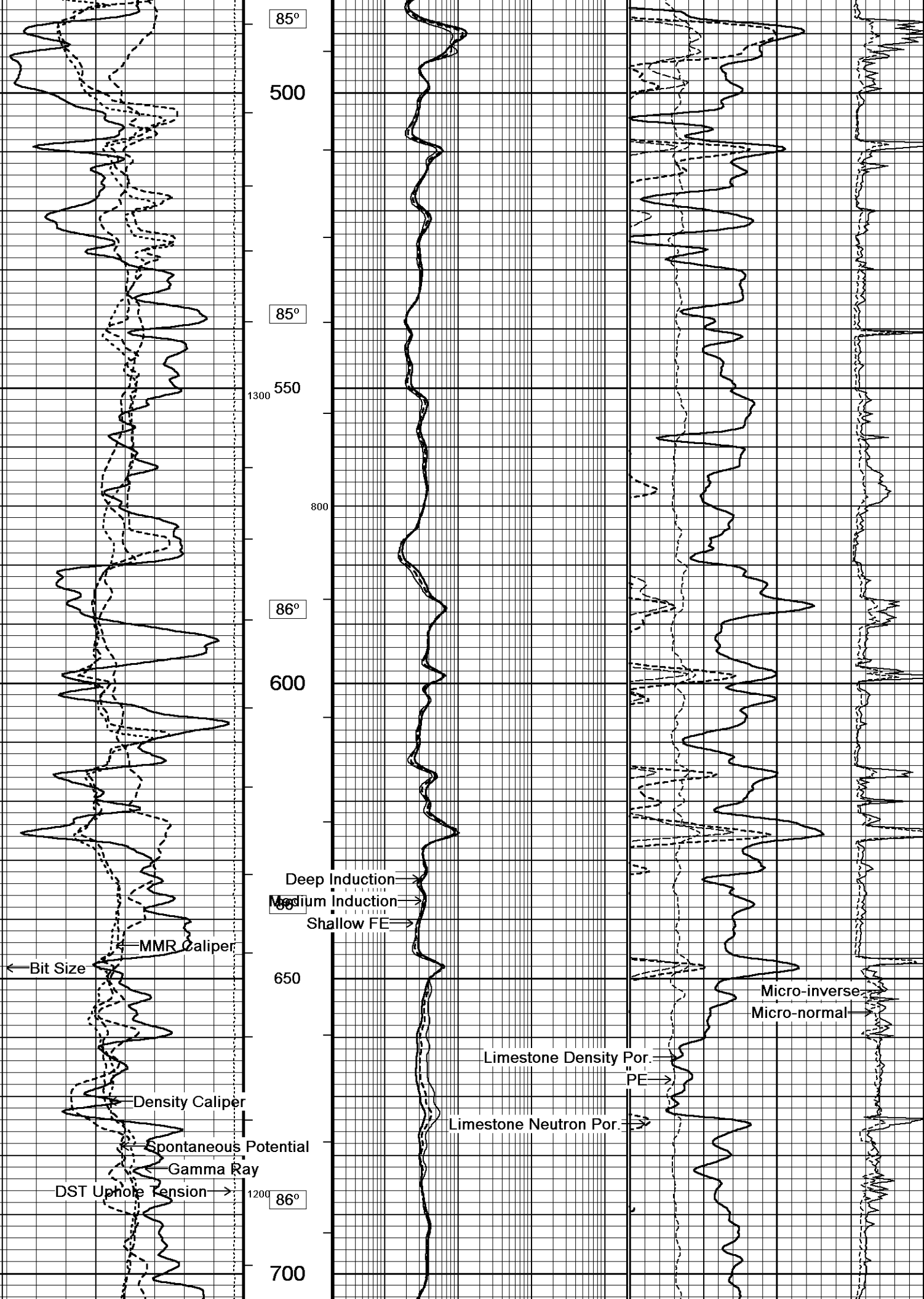
AFTER CONSULTING WITH CLIENT INDUCTION CURVES PRESENTED IN LEGACY MODE DUE TO MFE RTAP PROCESSING ERRORS.

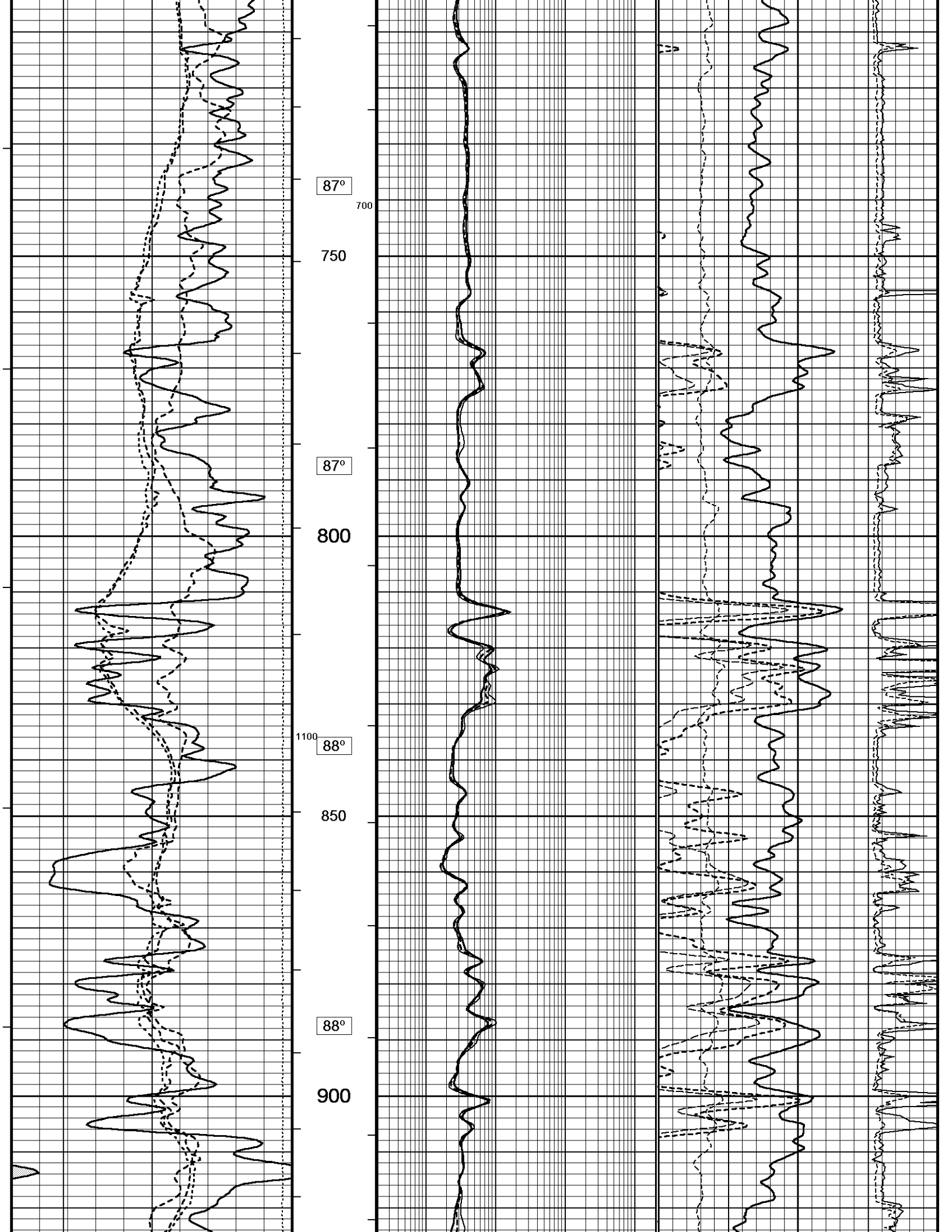
HOLE WASHOUTS AND RUGOSITY WILL AFFECT LOG QUALITY AND REPEATABILITY

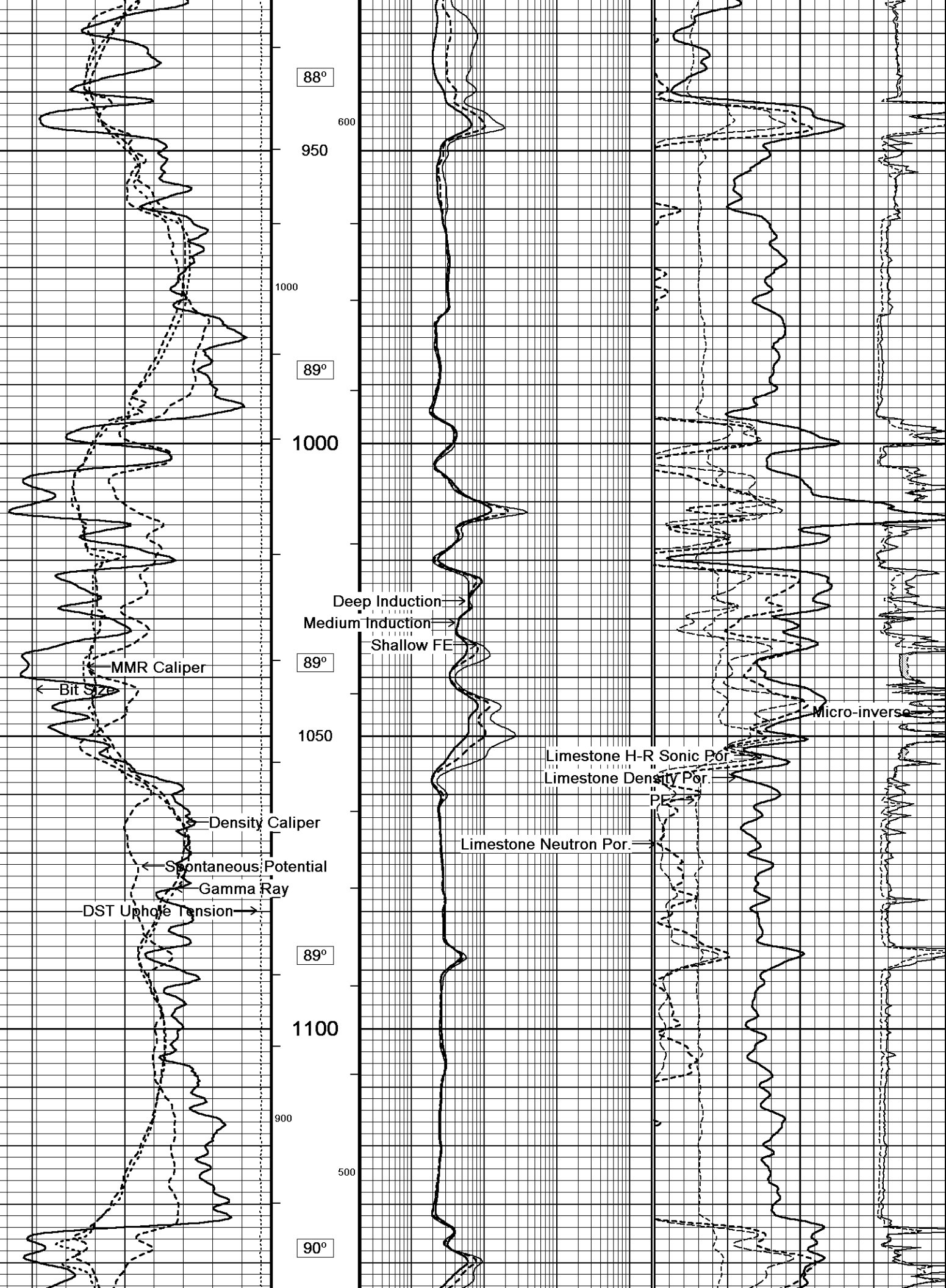
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, 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.

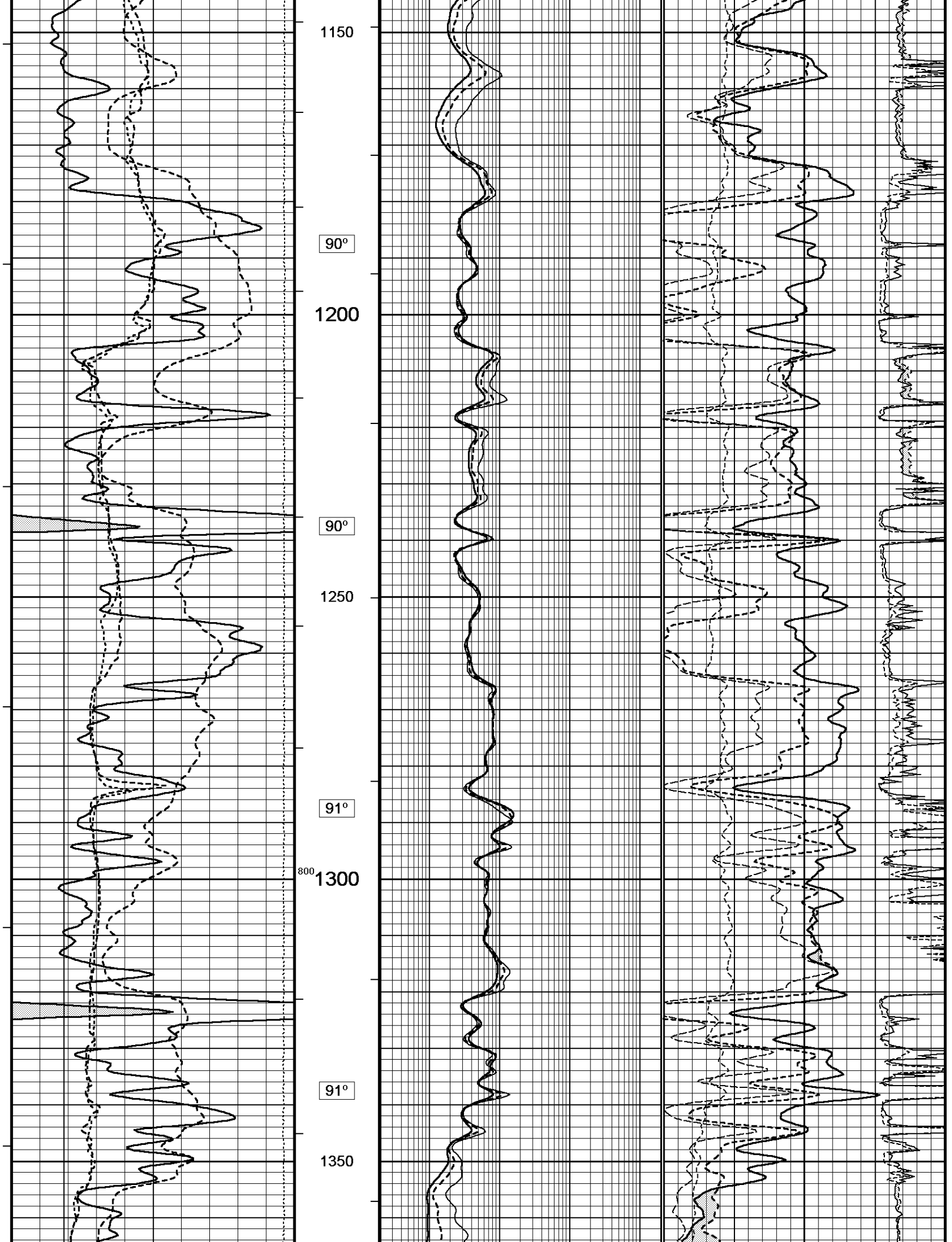


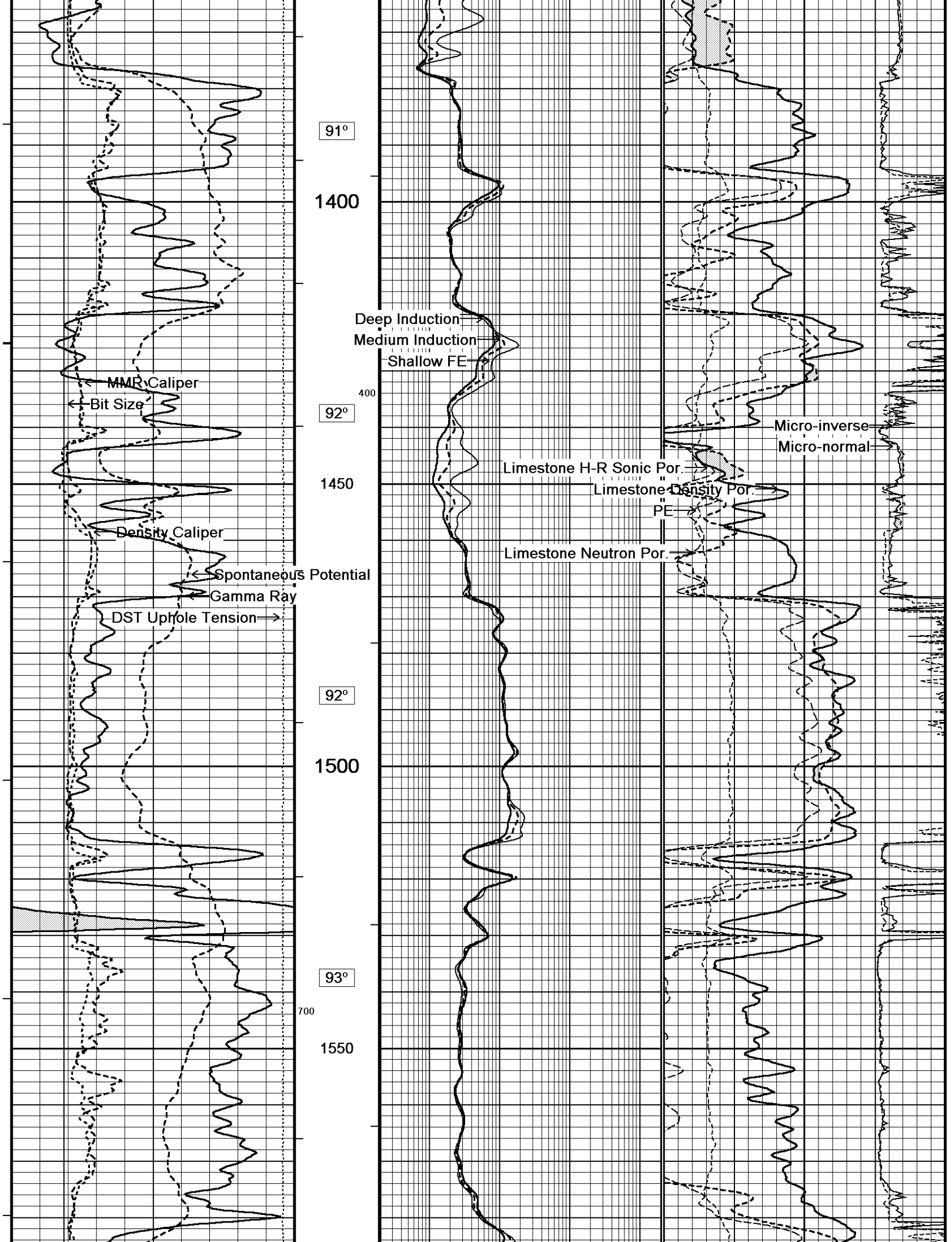


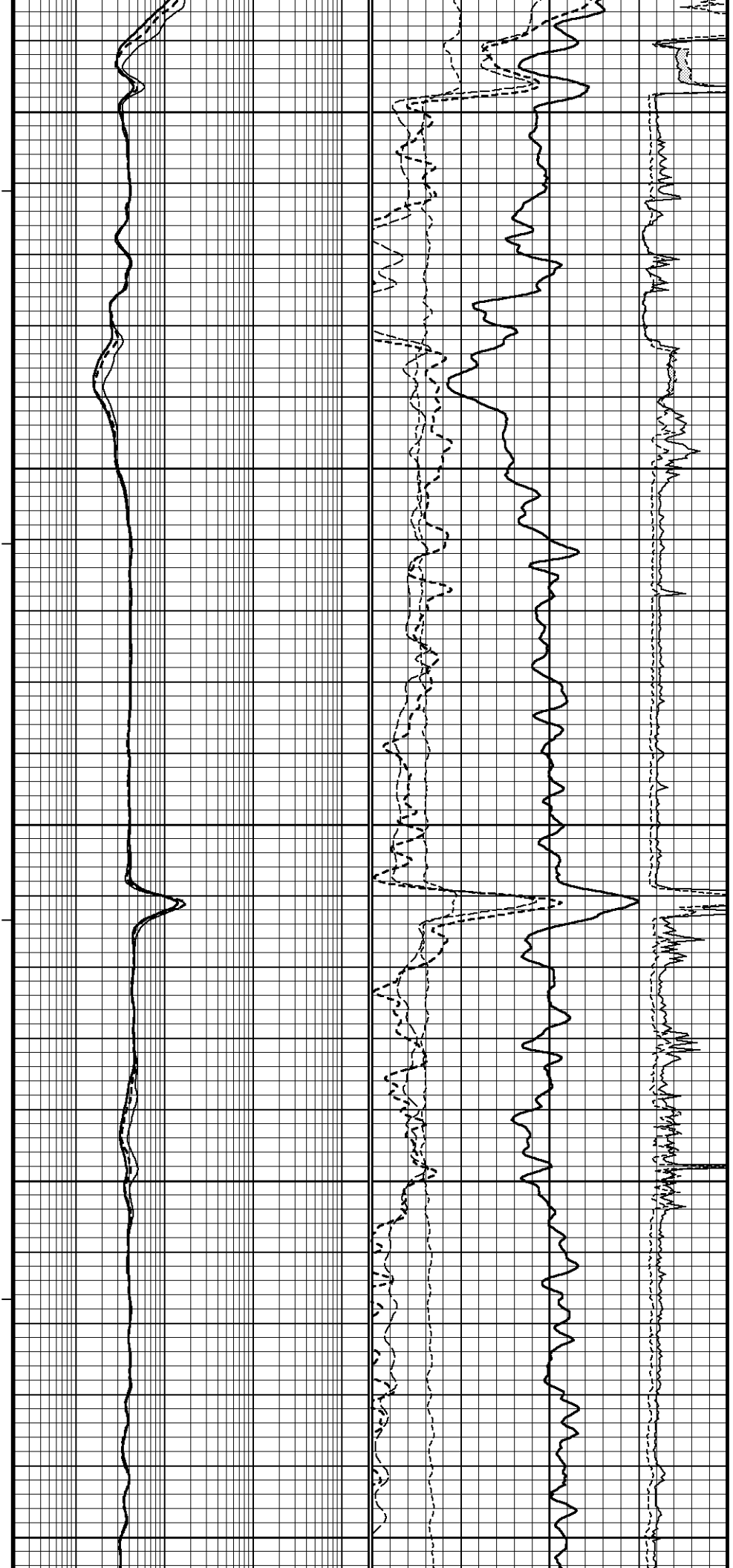
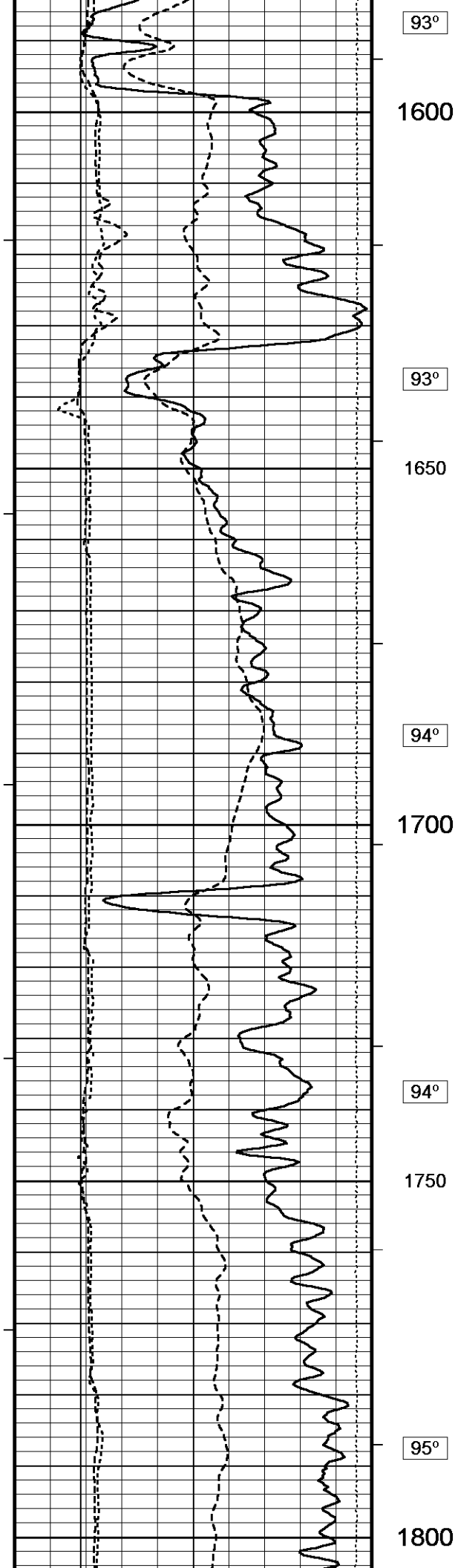


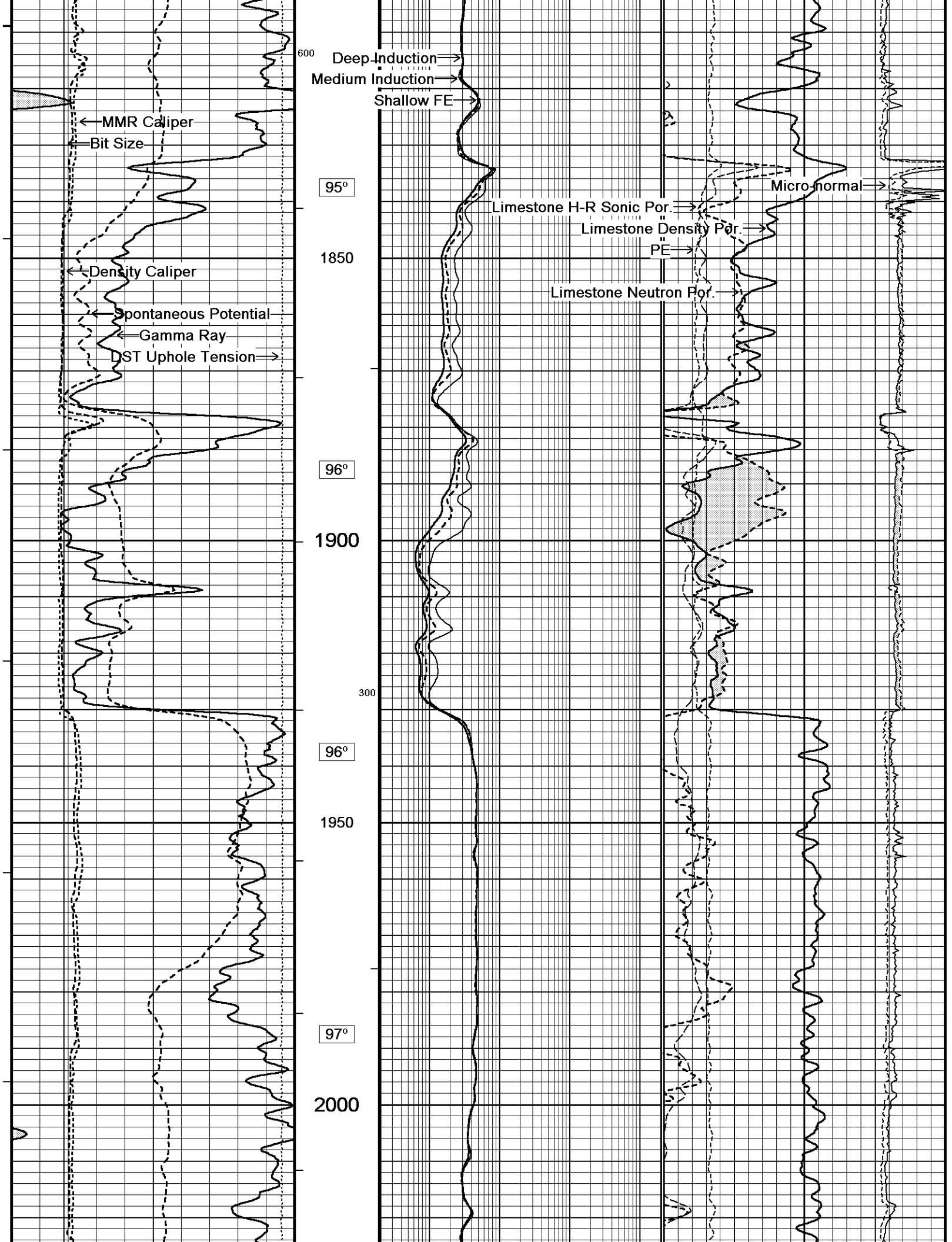


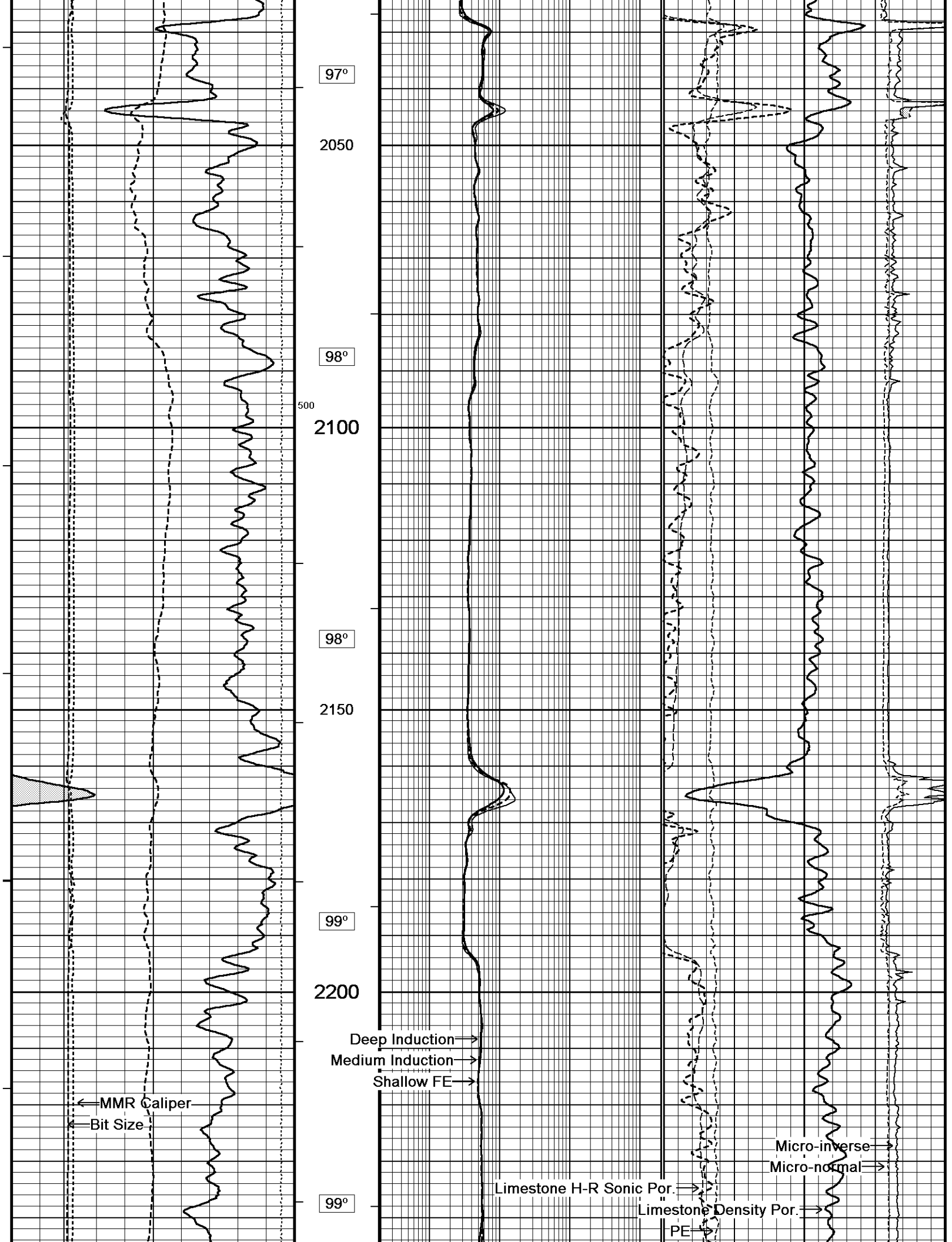


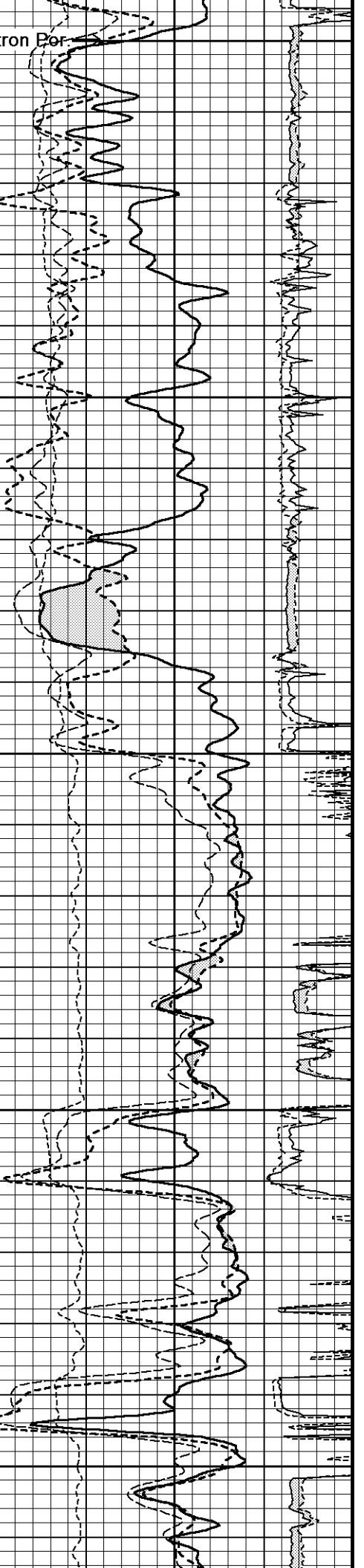
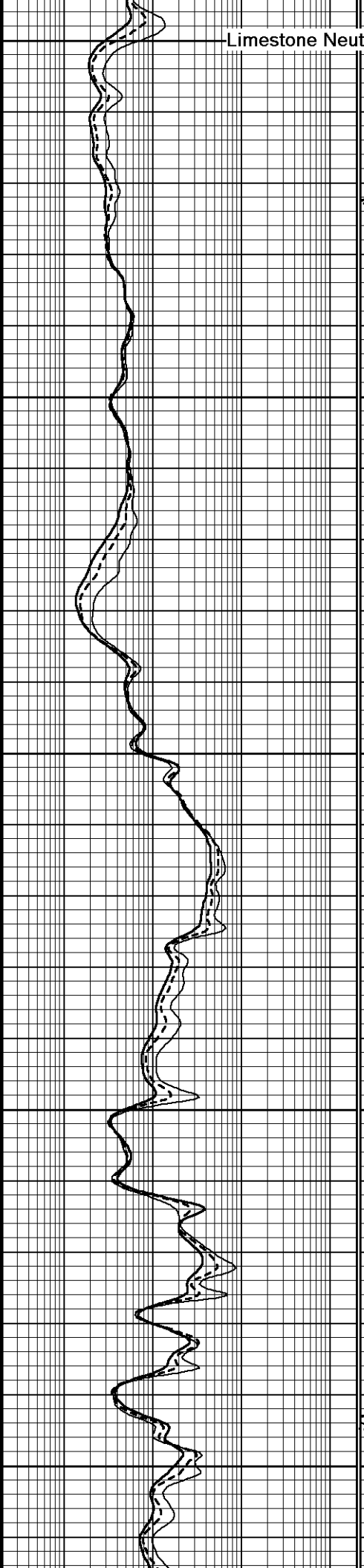
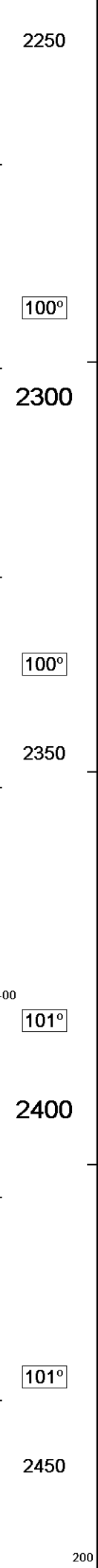
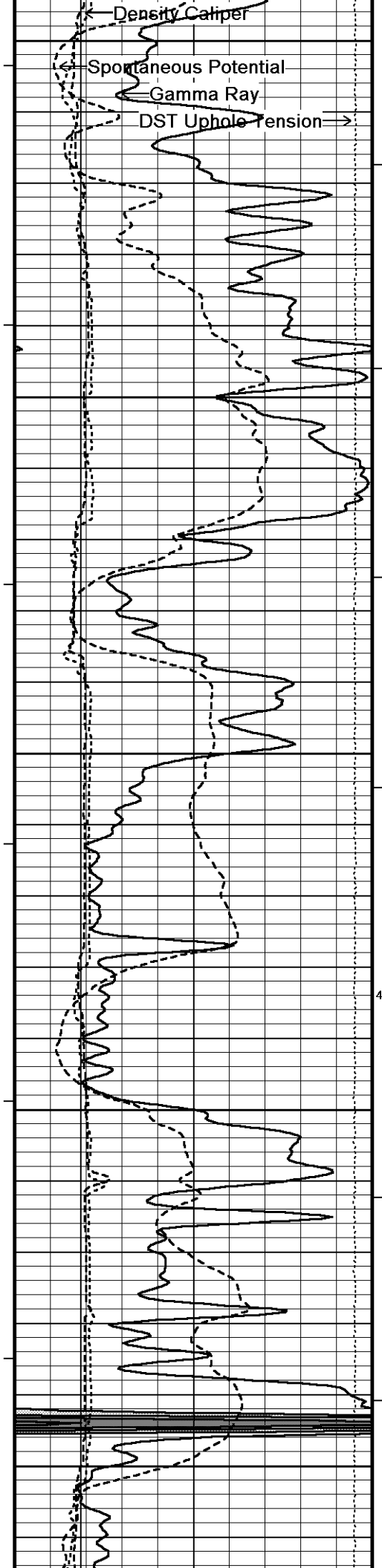


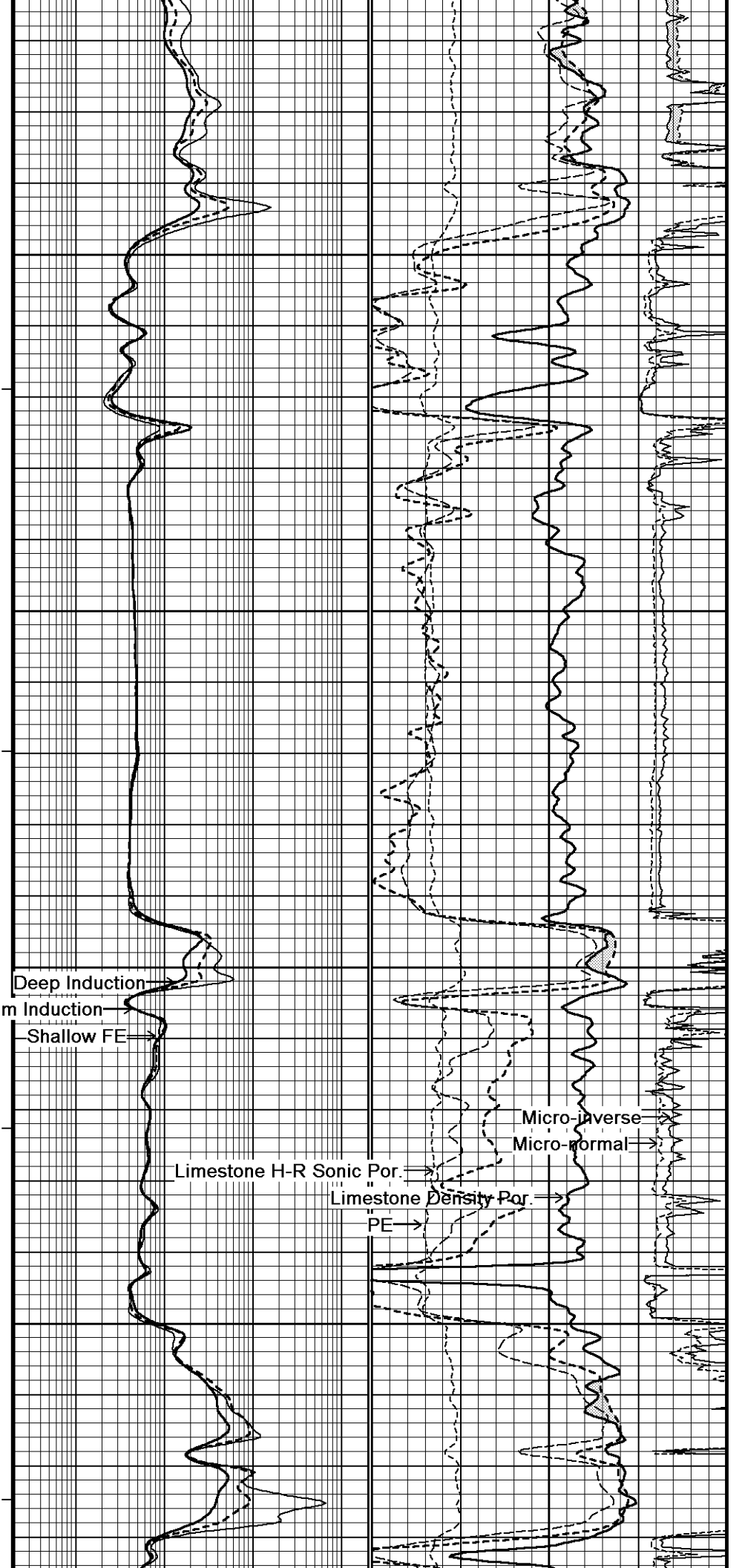
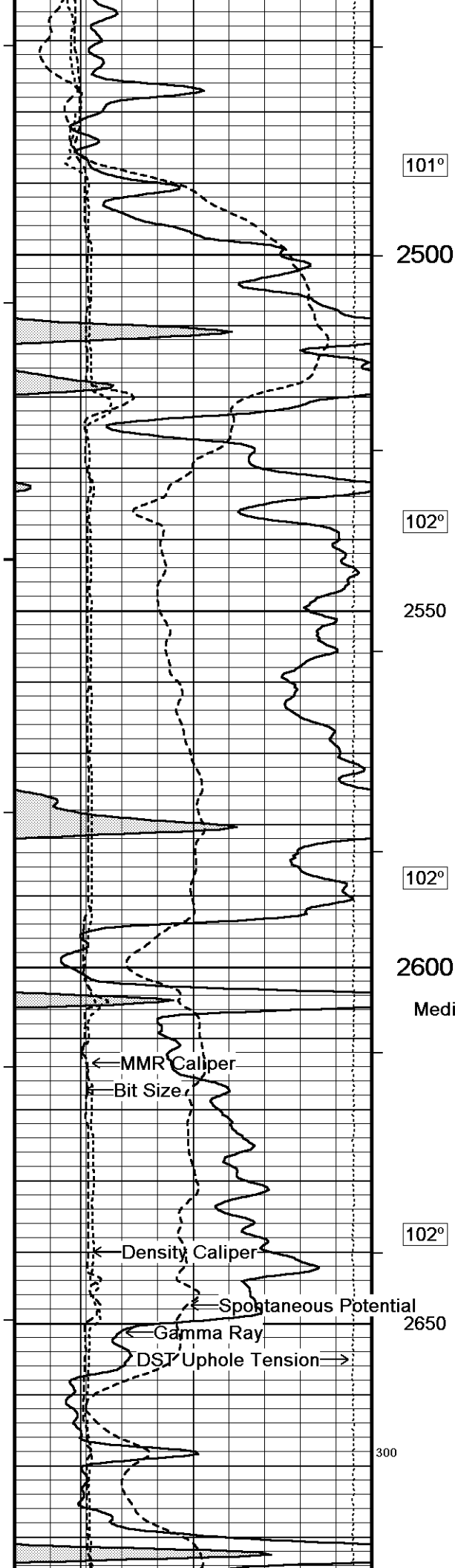


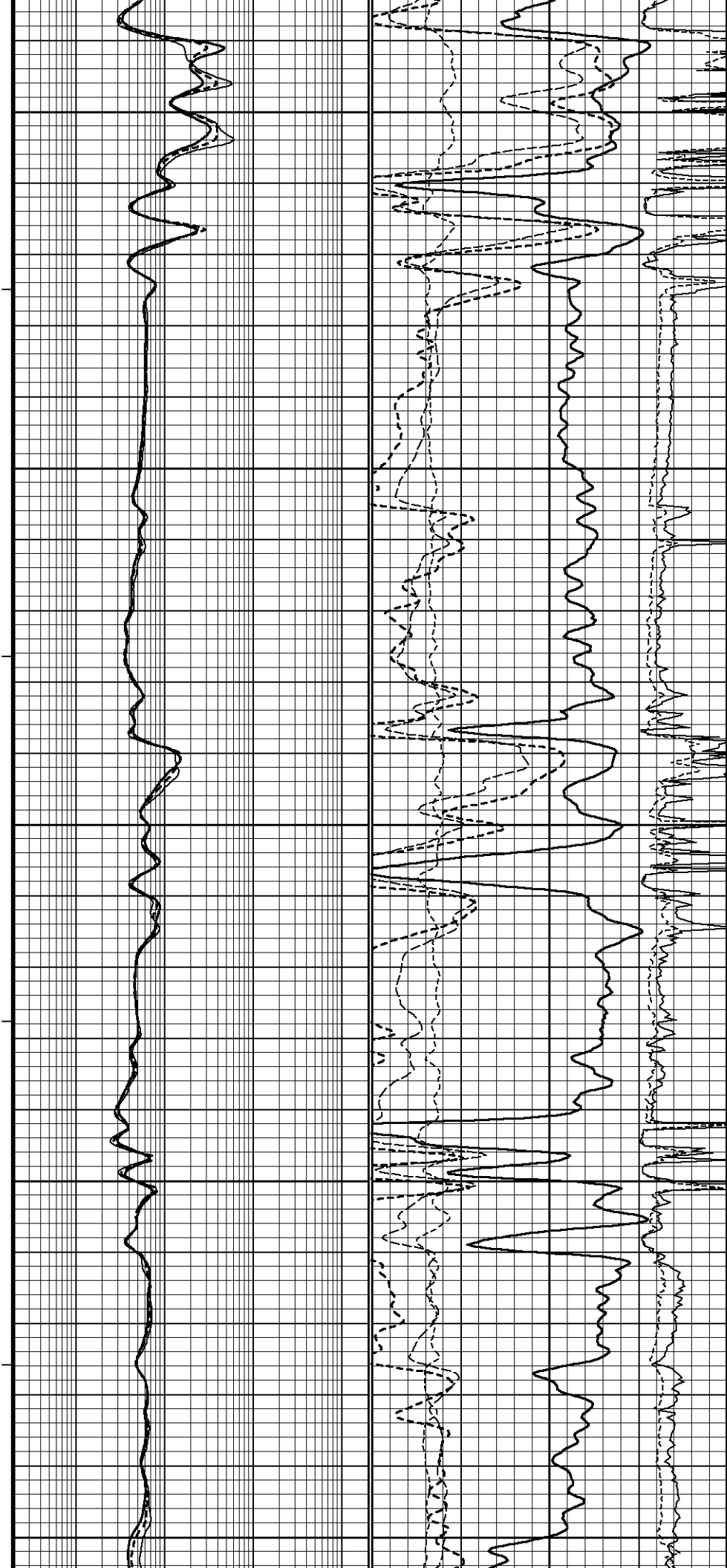
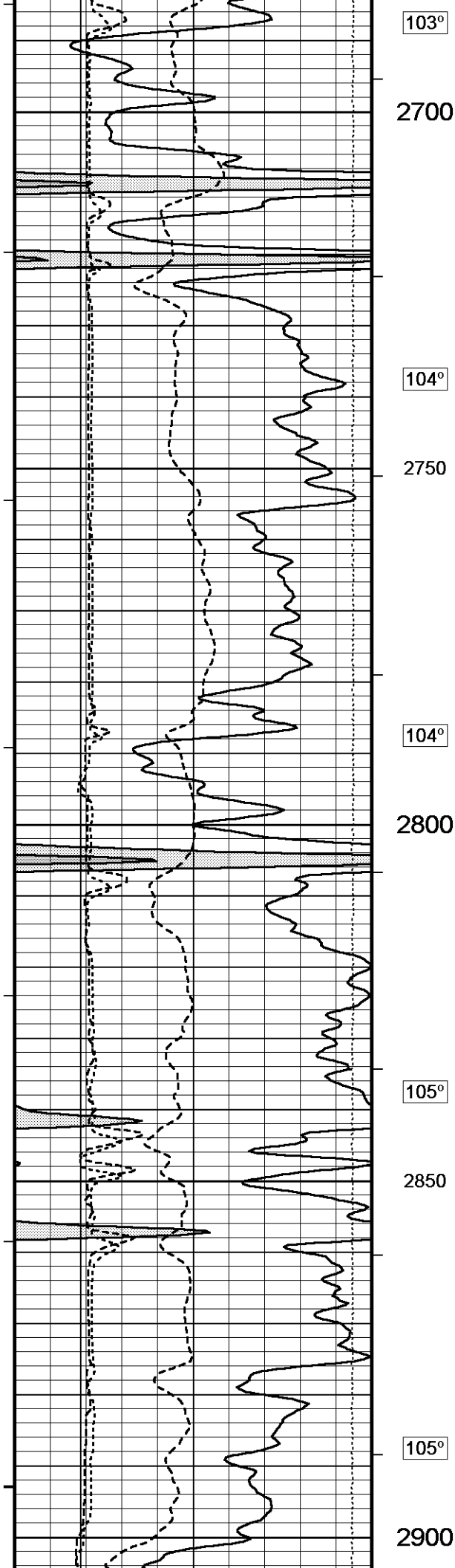


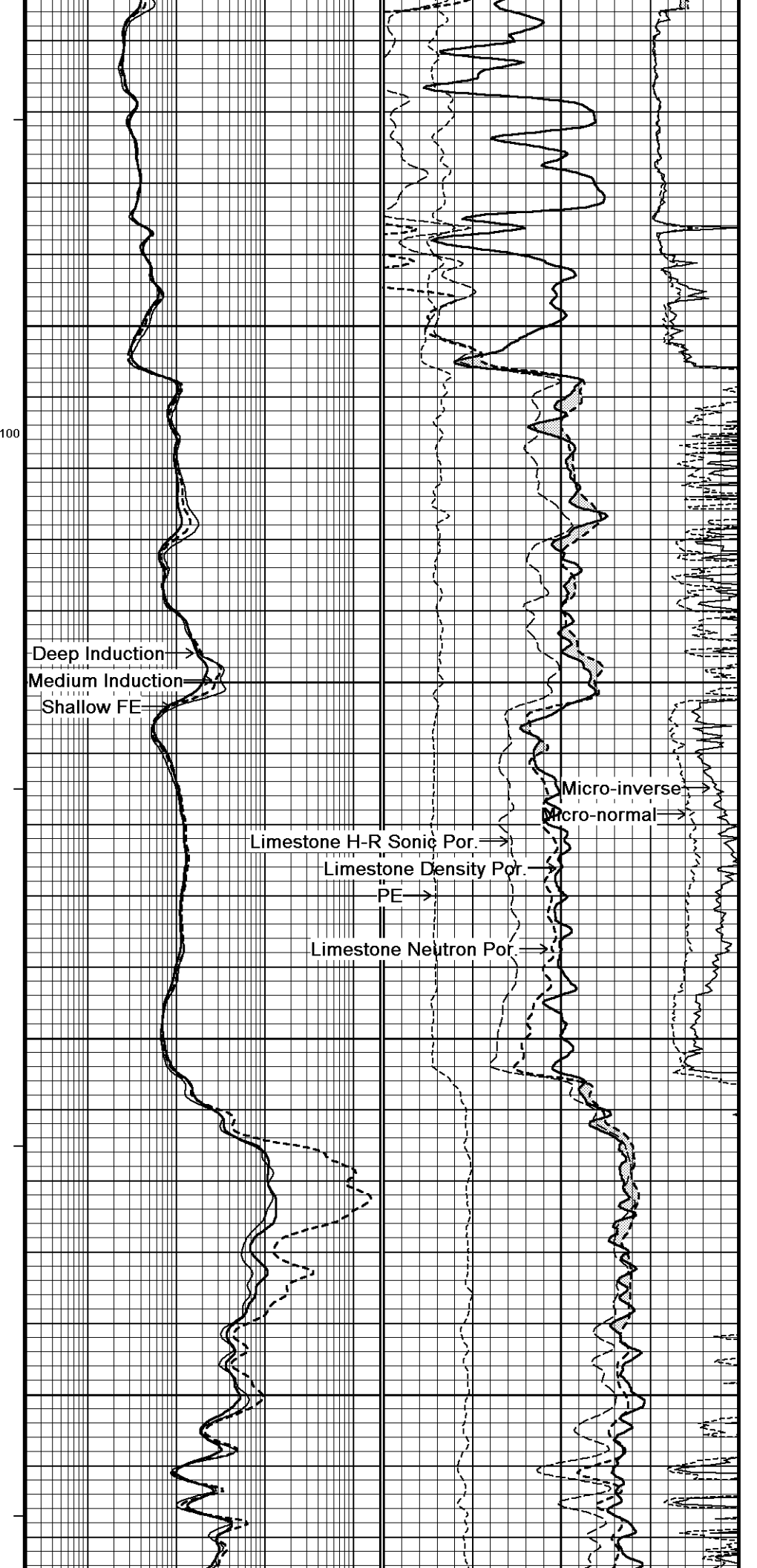
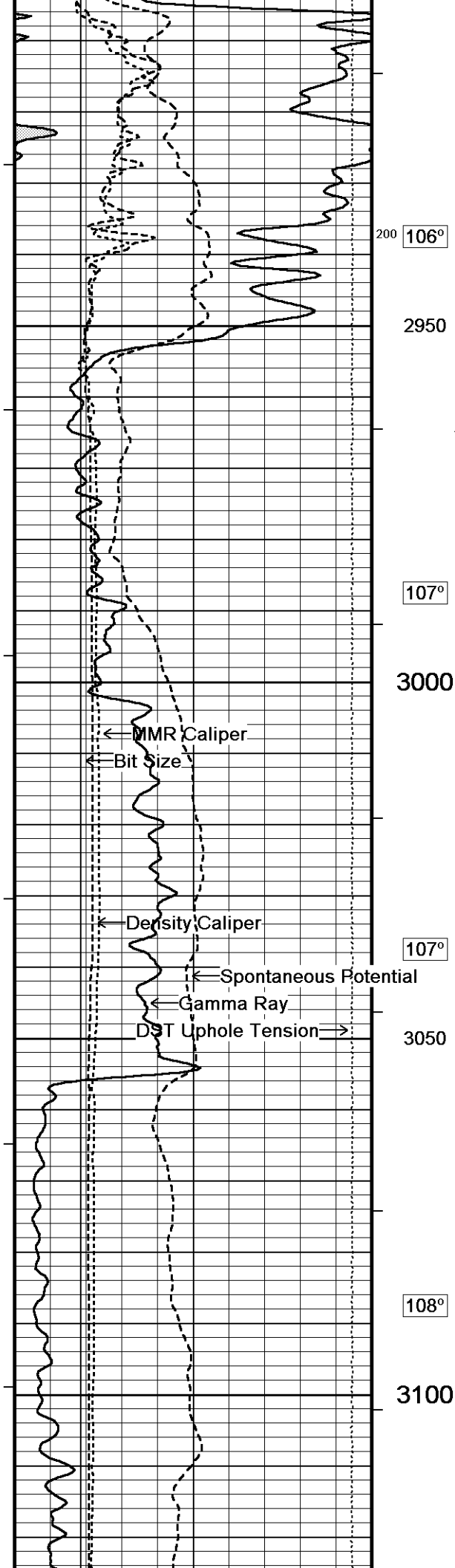


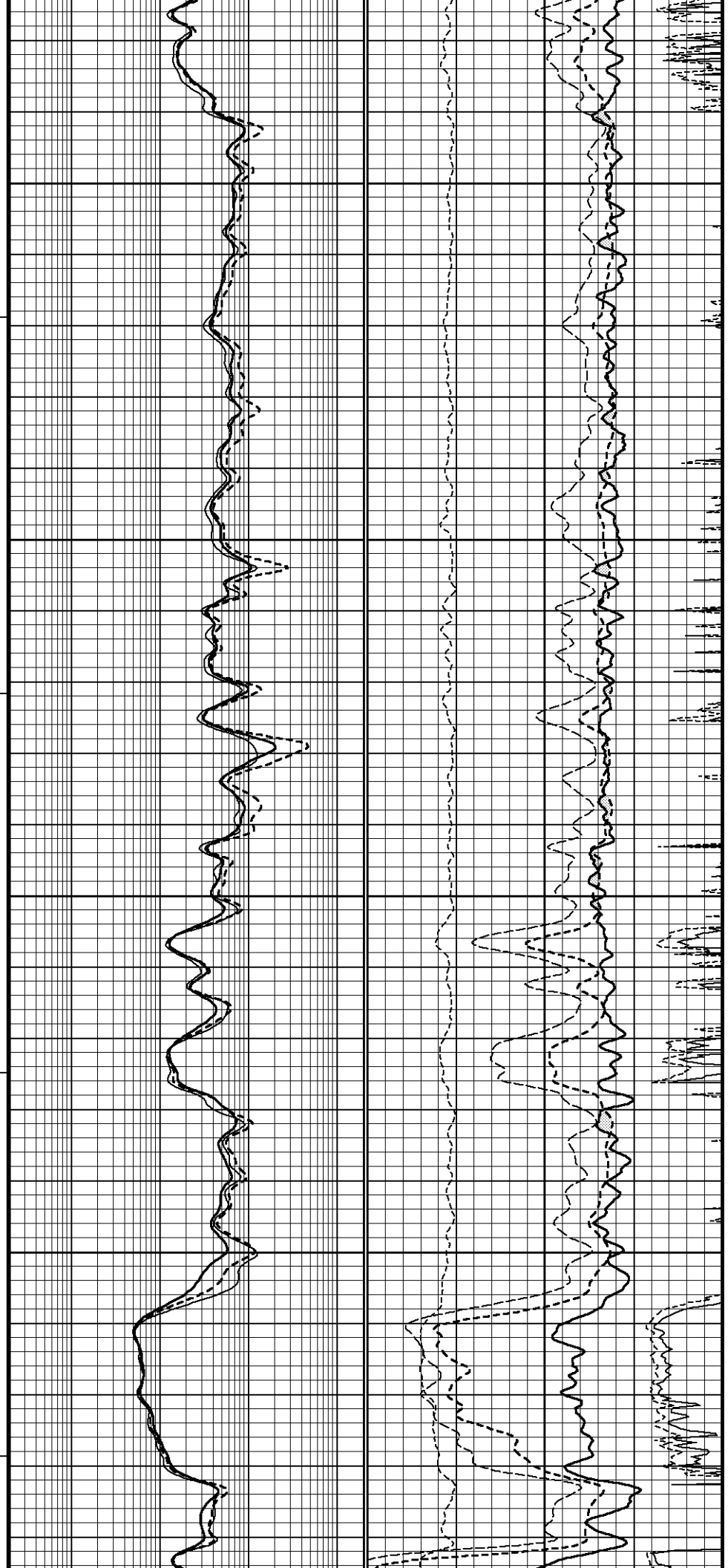
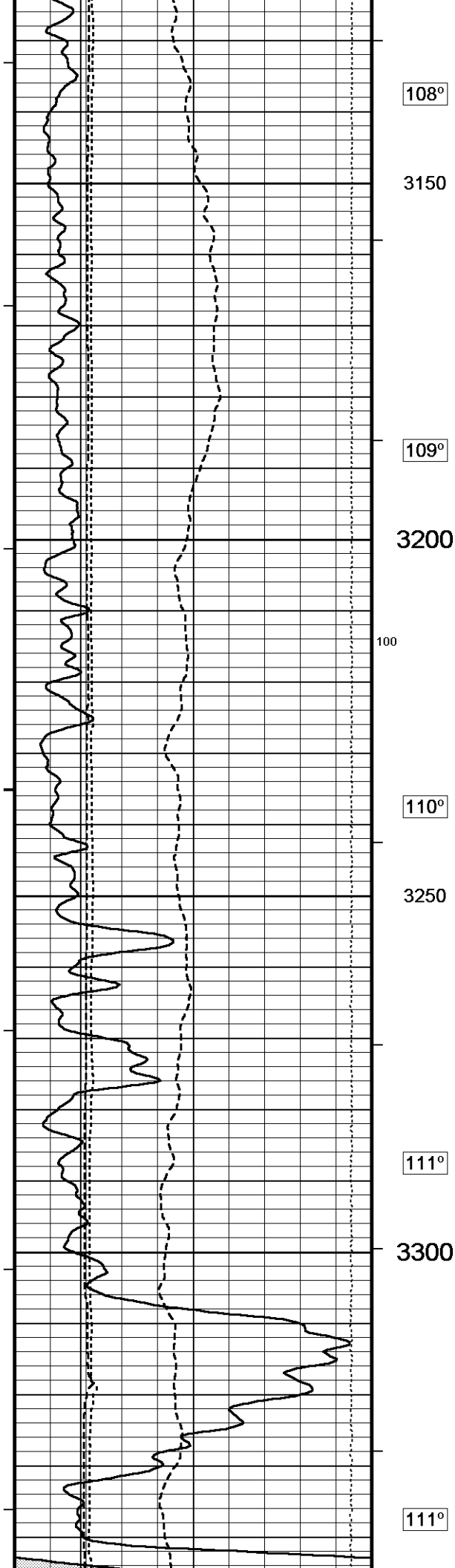


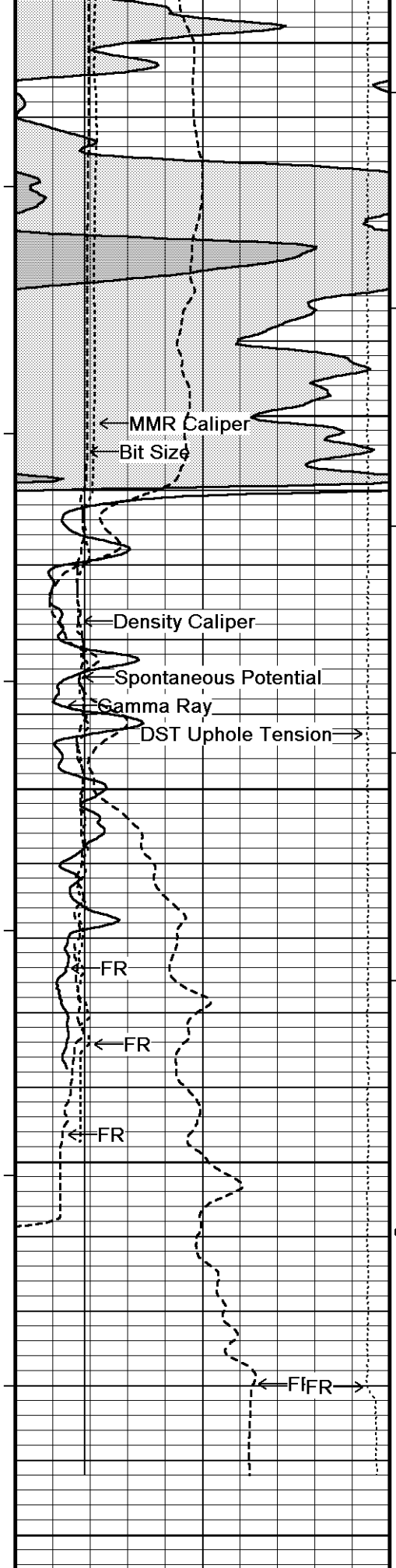




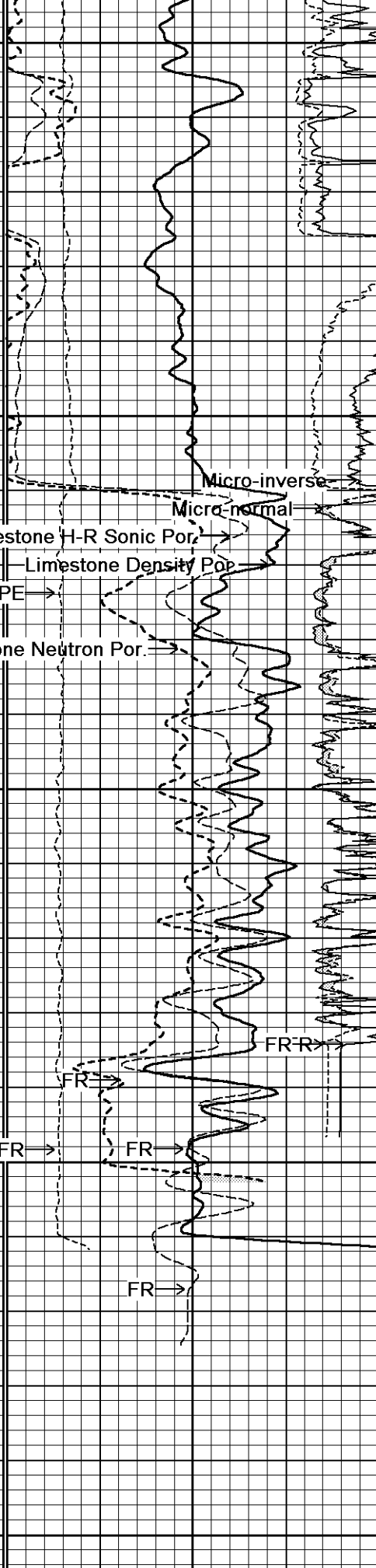
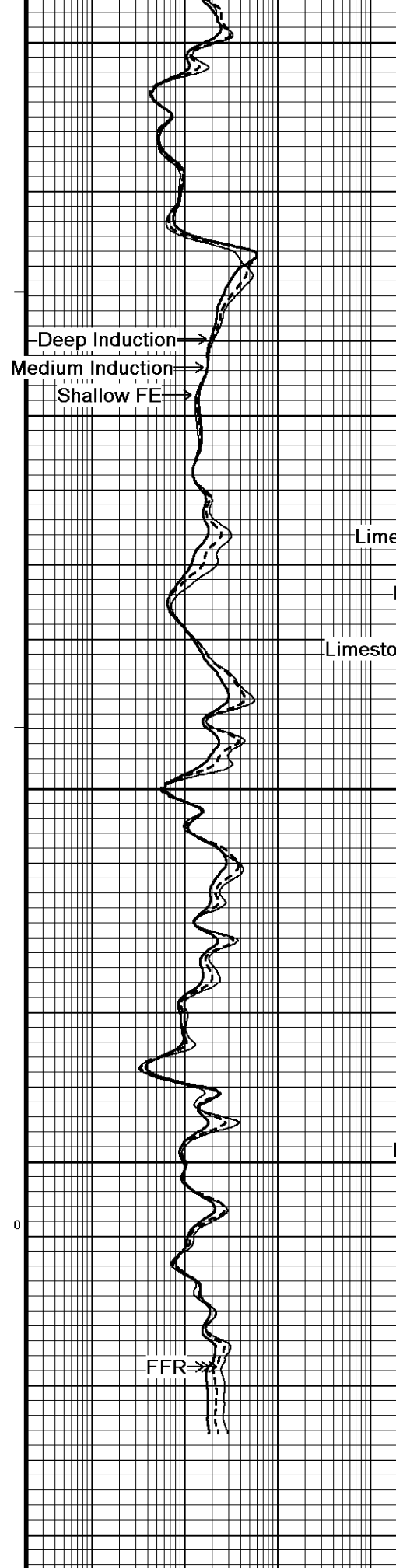






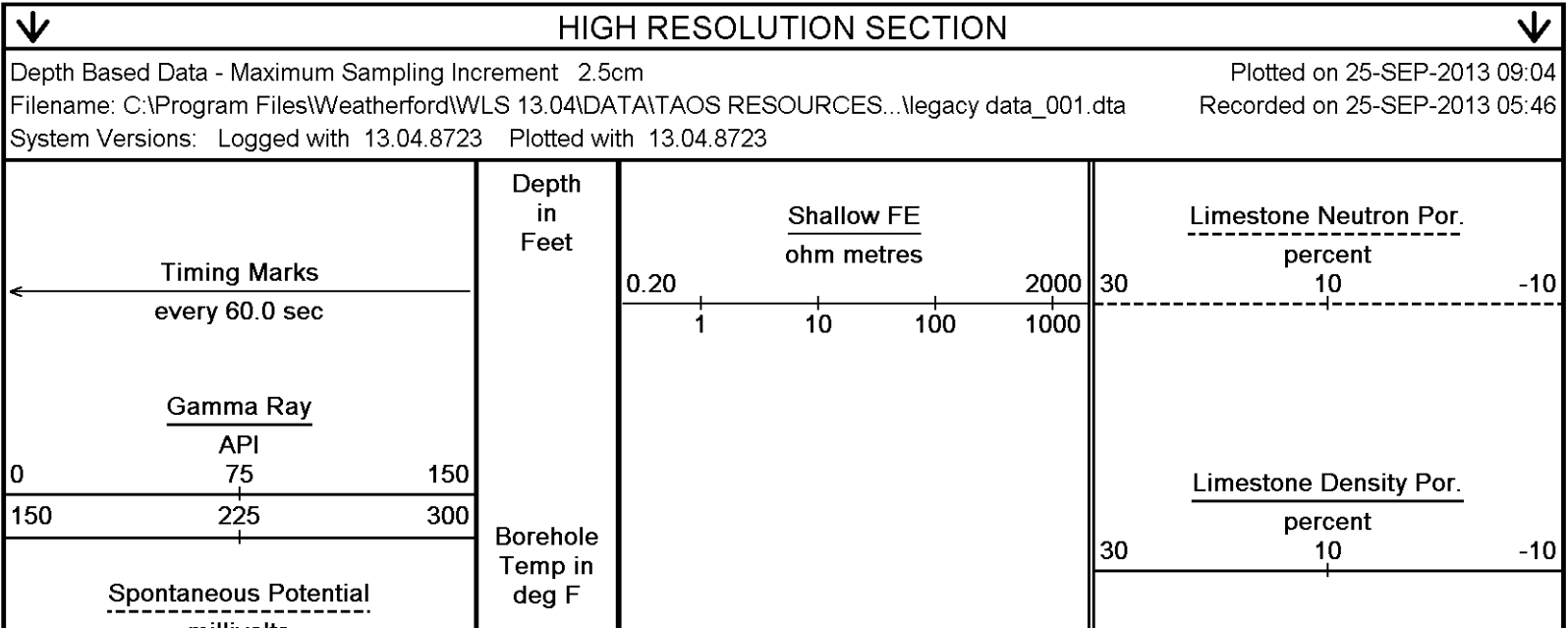
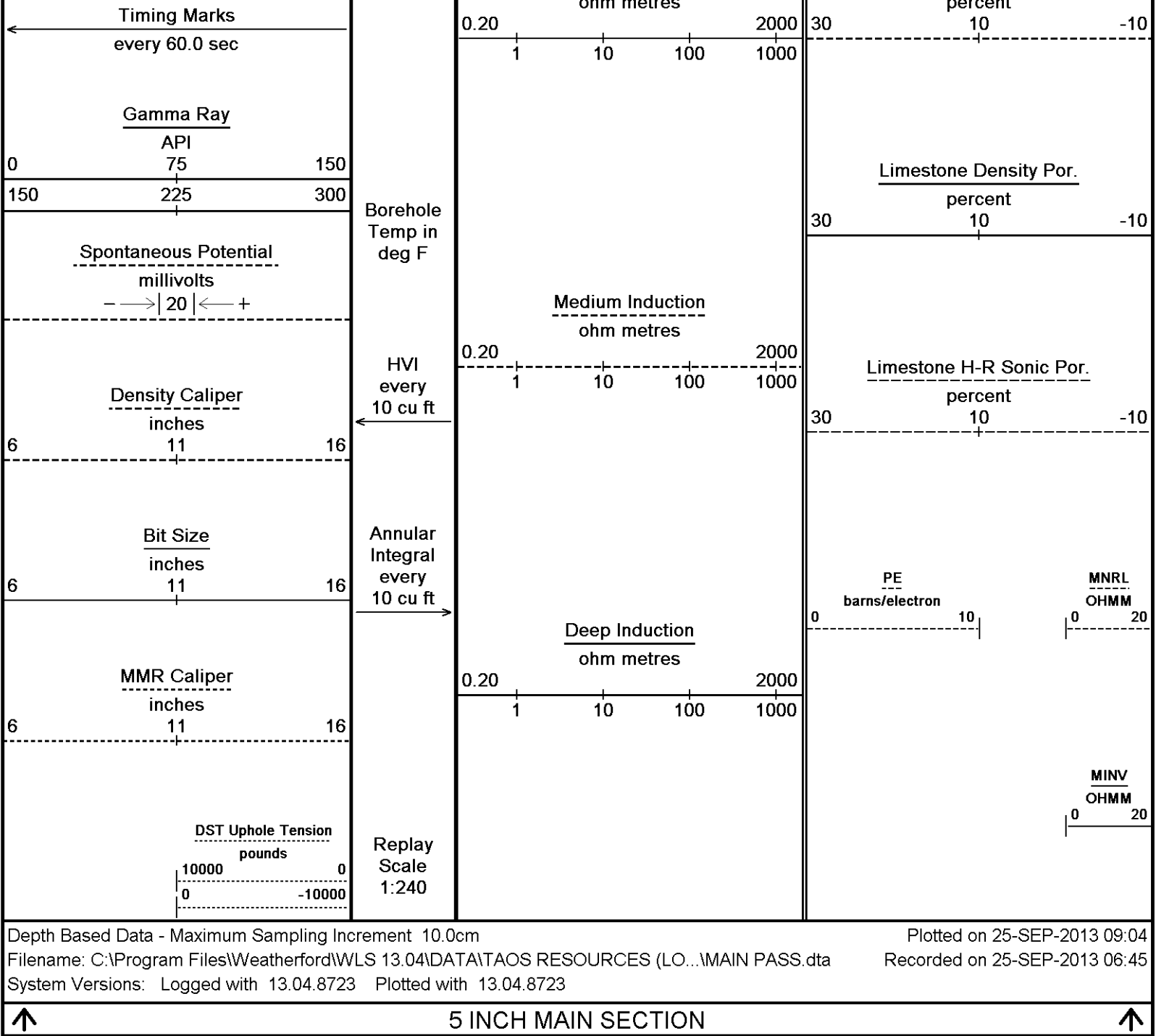


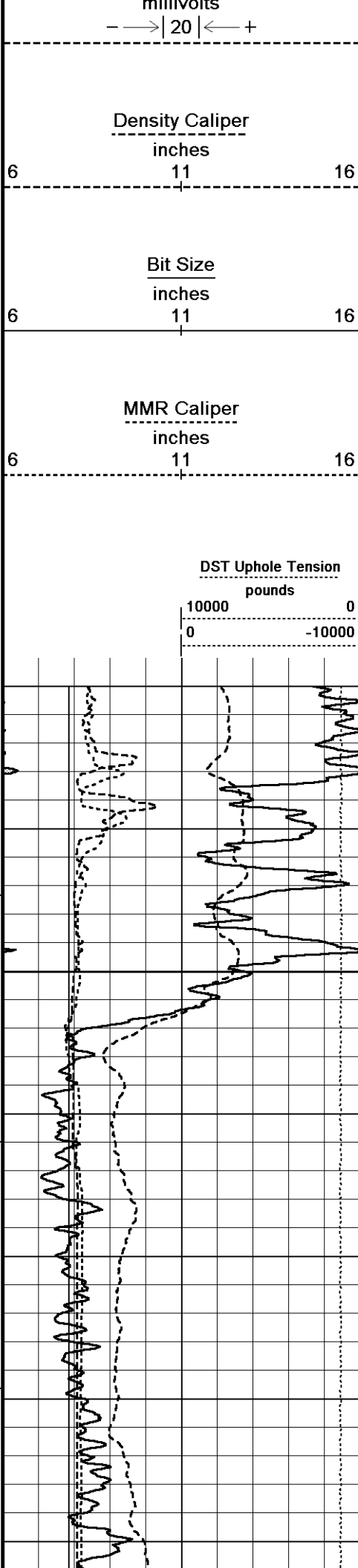
3350
112°
3400
111°
3450
110°
3500
0
3550
Depth
in
Feet



Shallow FE

Limestone Neutron Por.





HVI
every
10 cu ft
←

Annular
Integral
every
10 cu ft
→

Replay
Scale
1:120

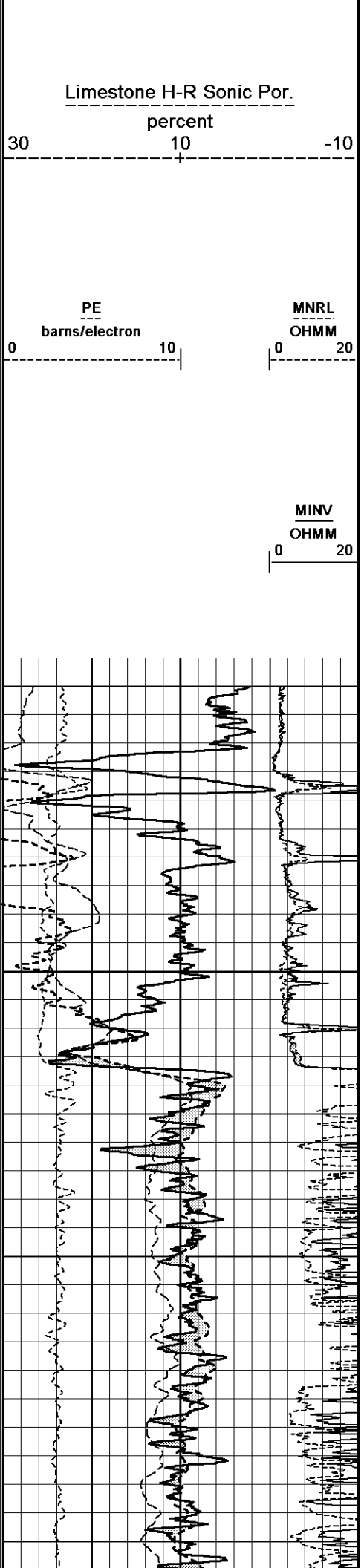
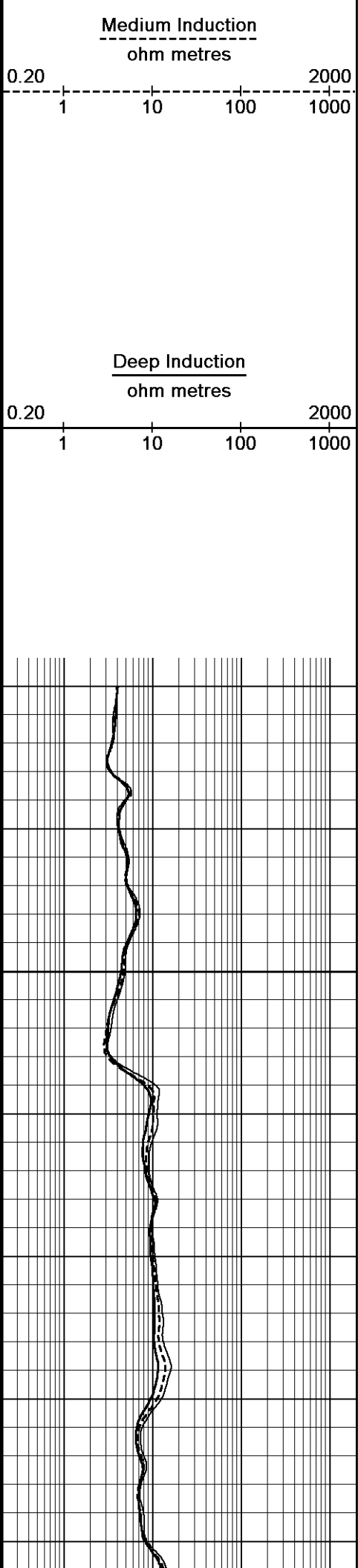
2930

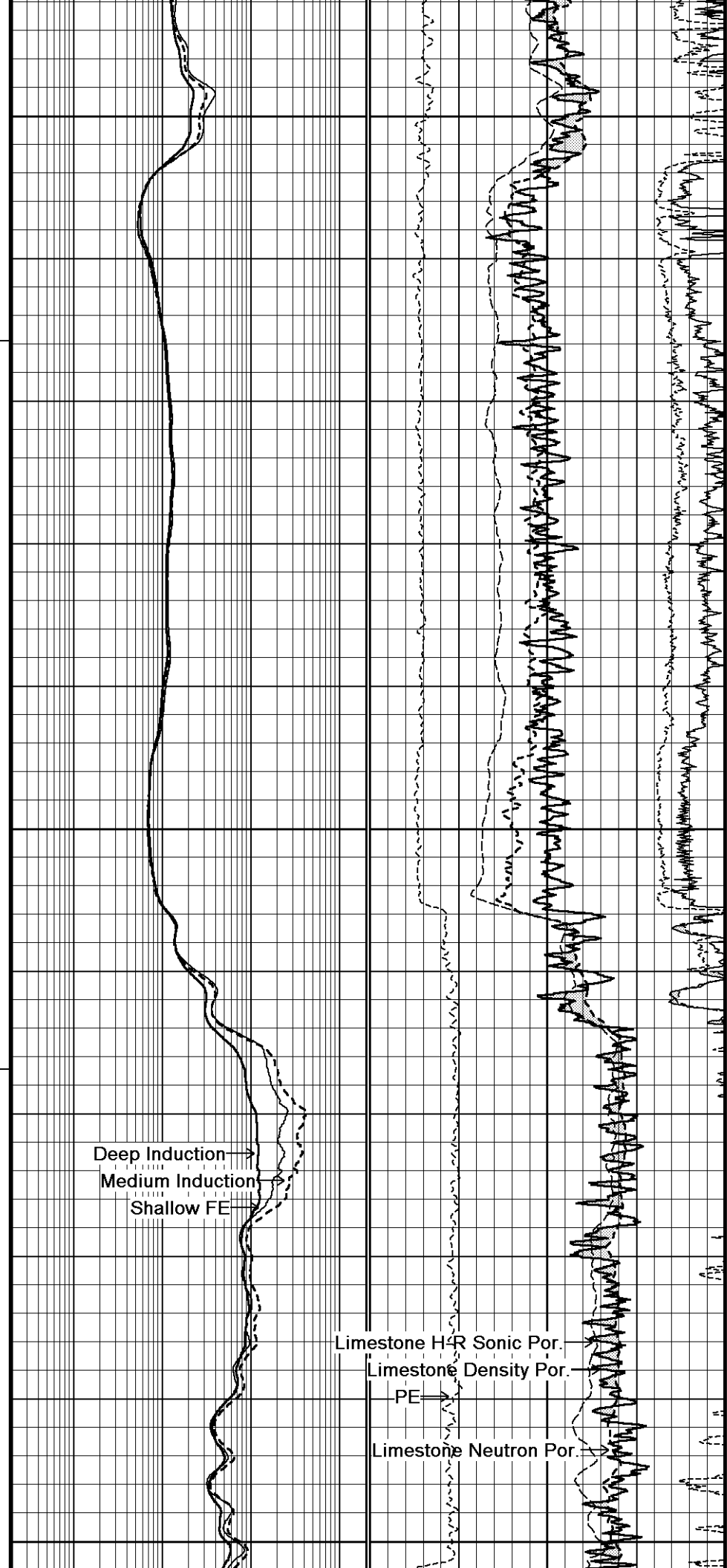
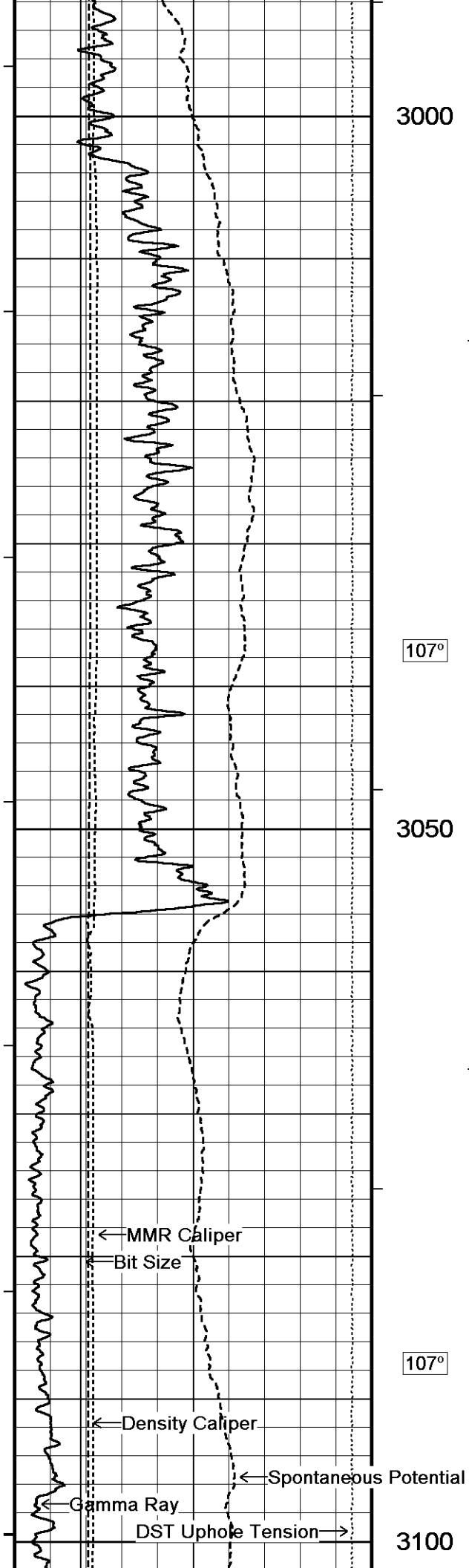
200

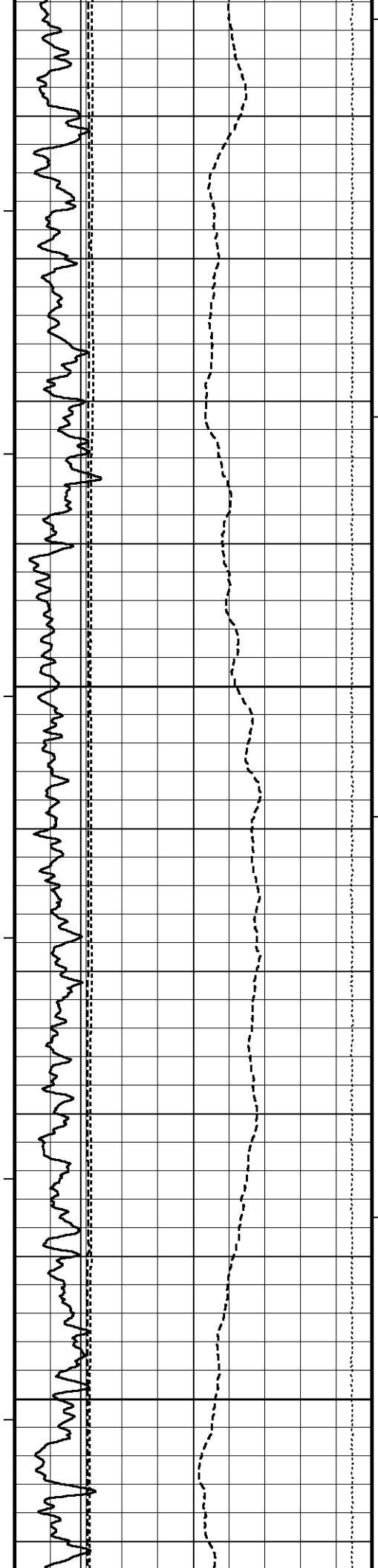
2950

100

106°





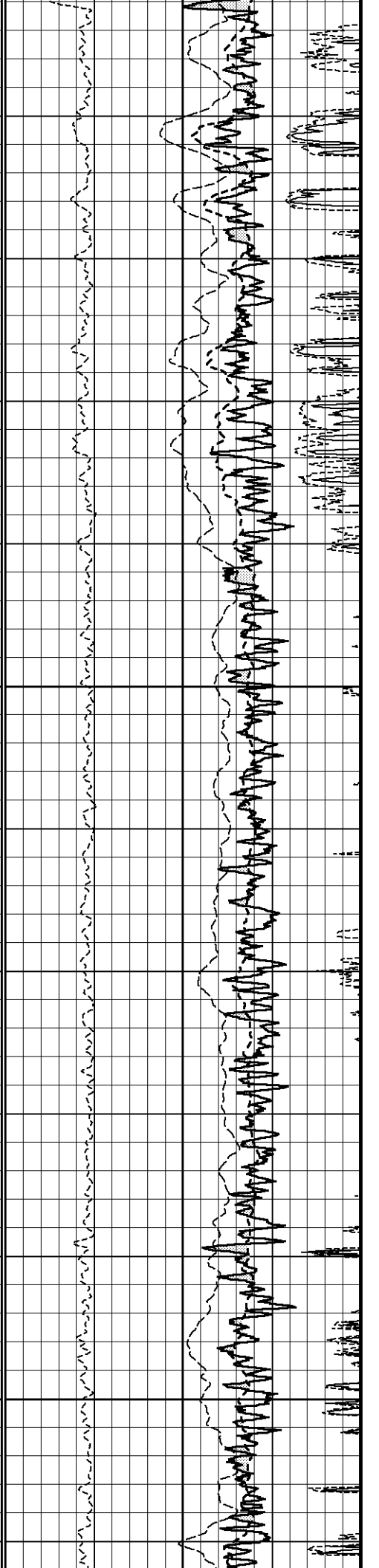
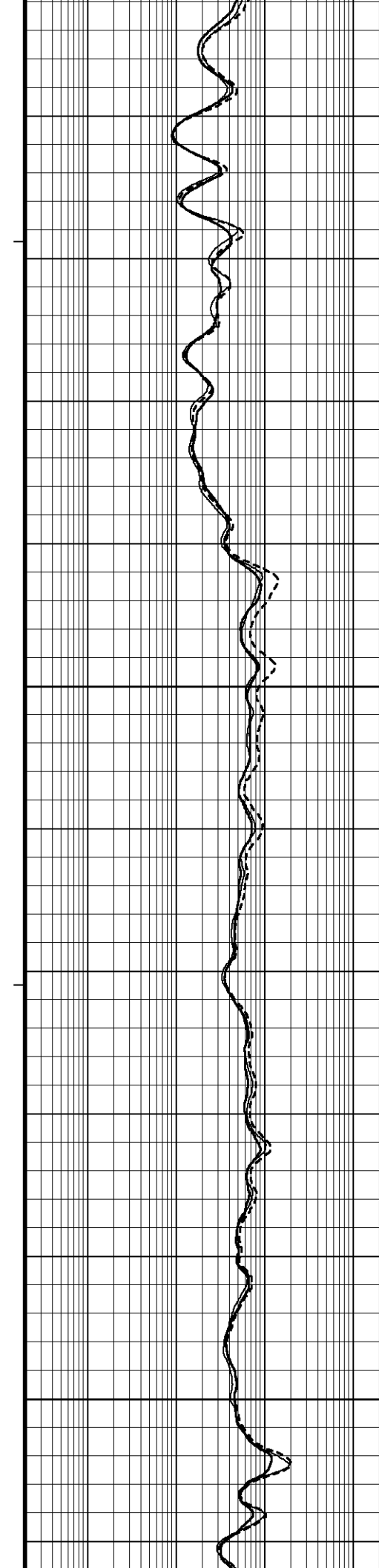


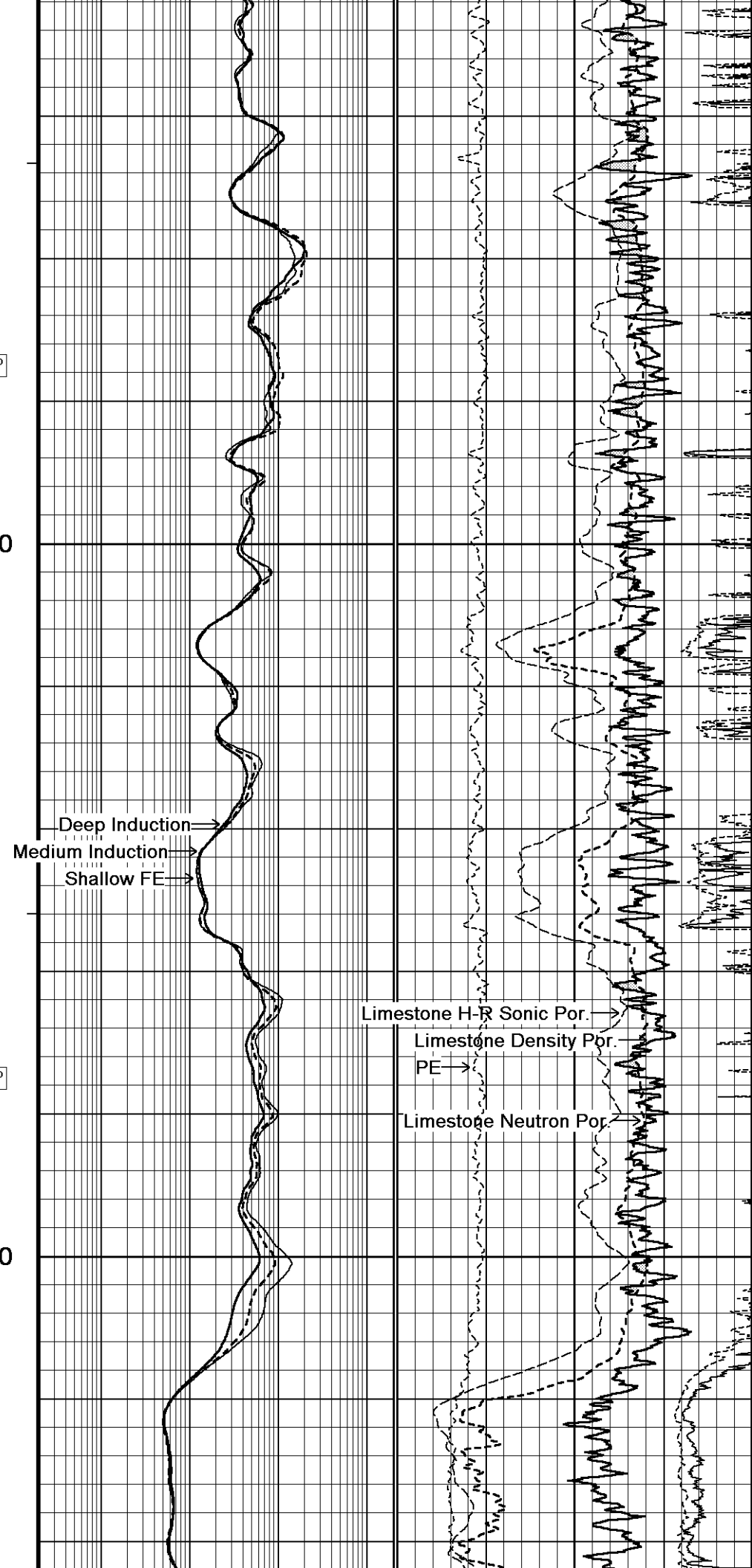
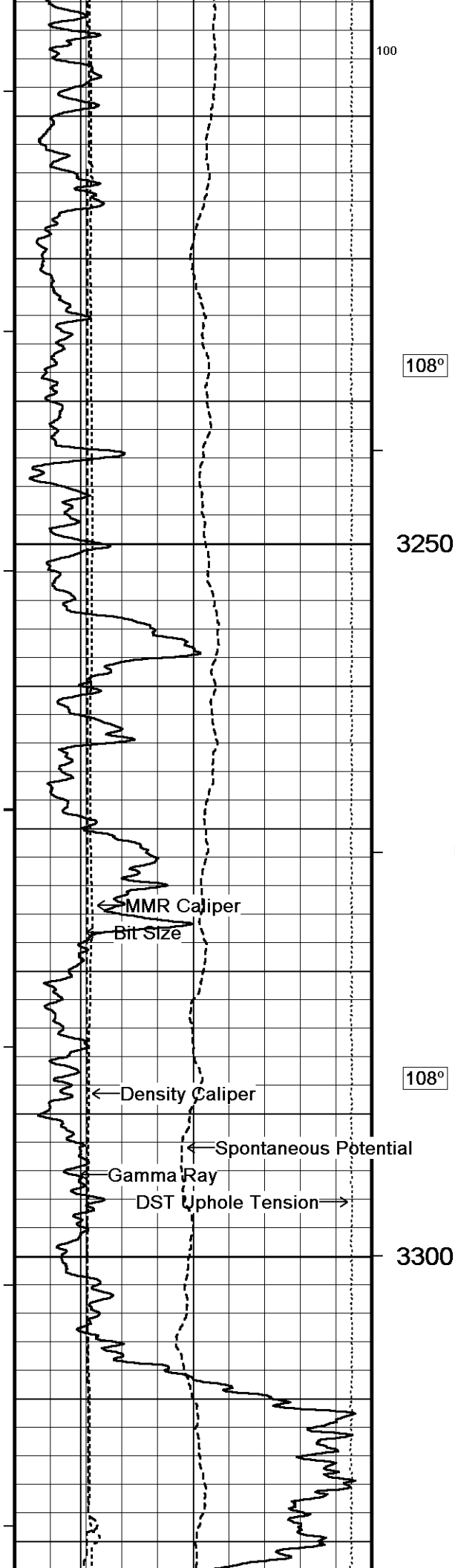
107°

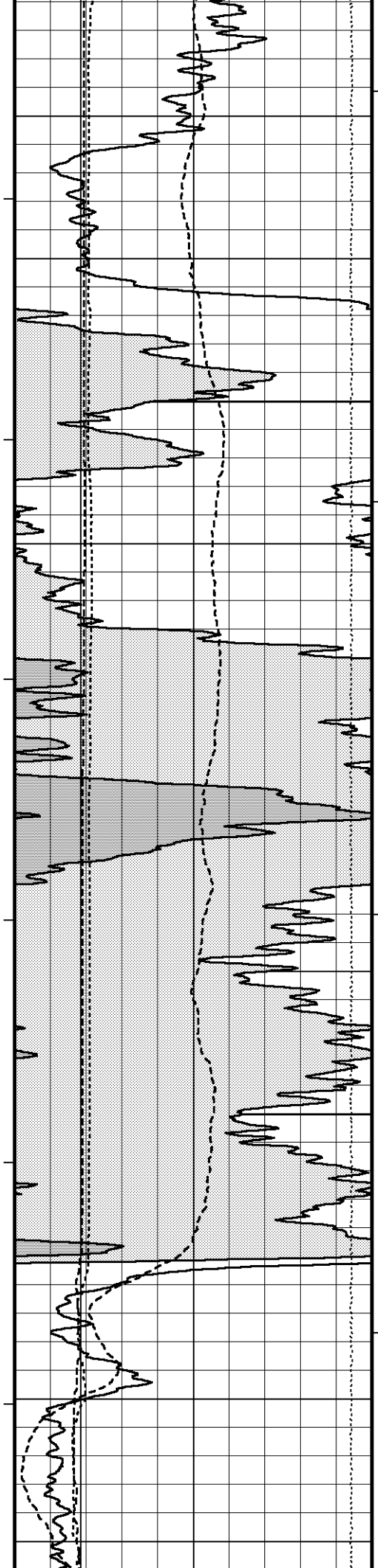
3150

107°

3200





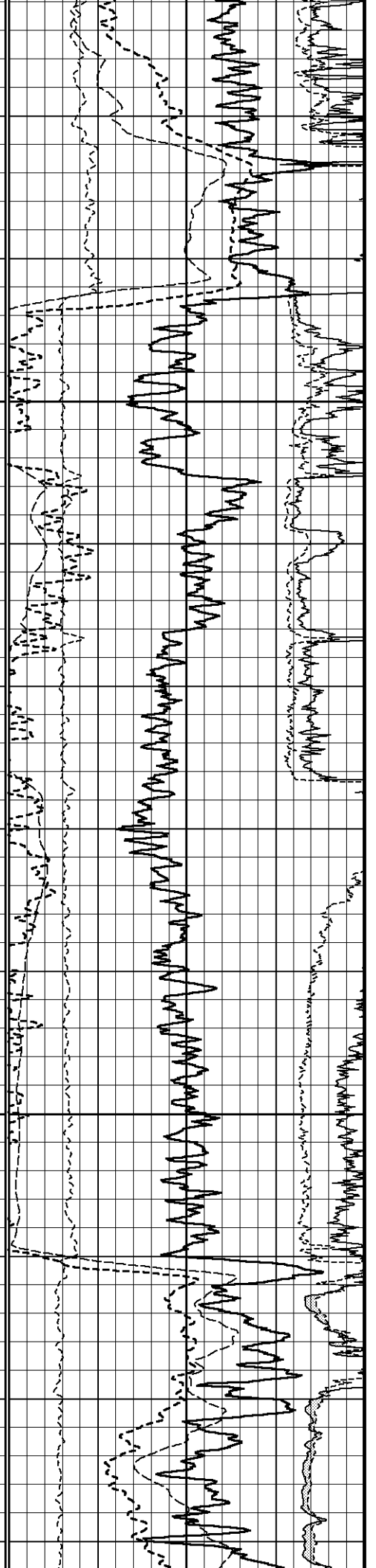
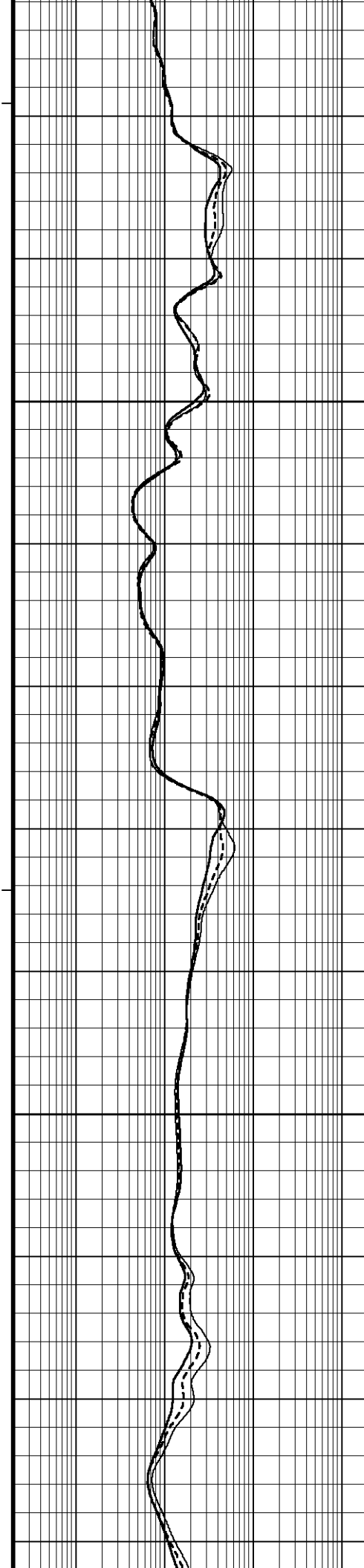


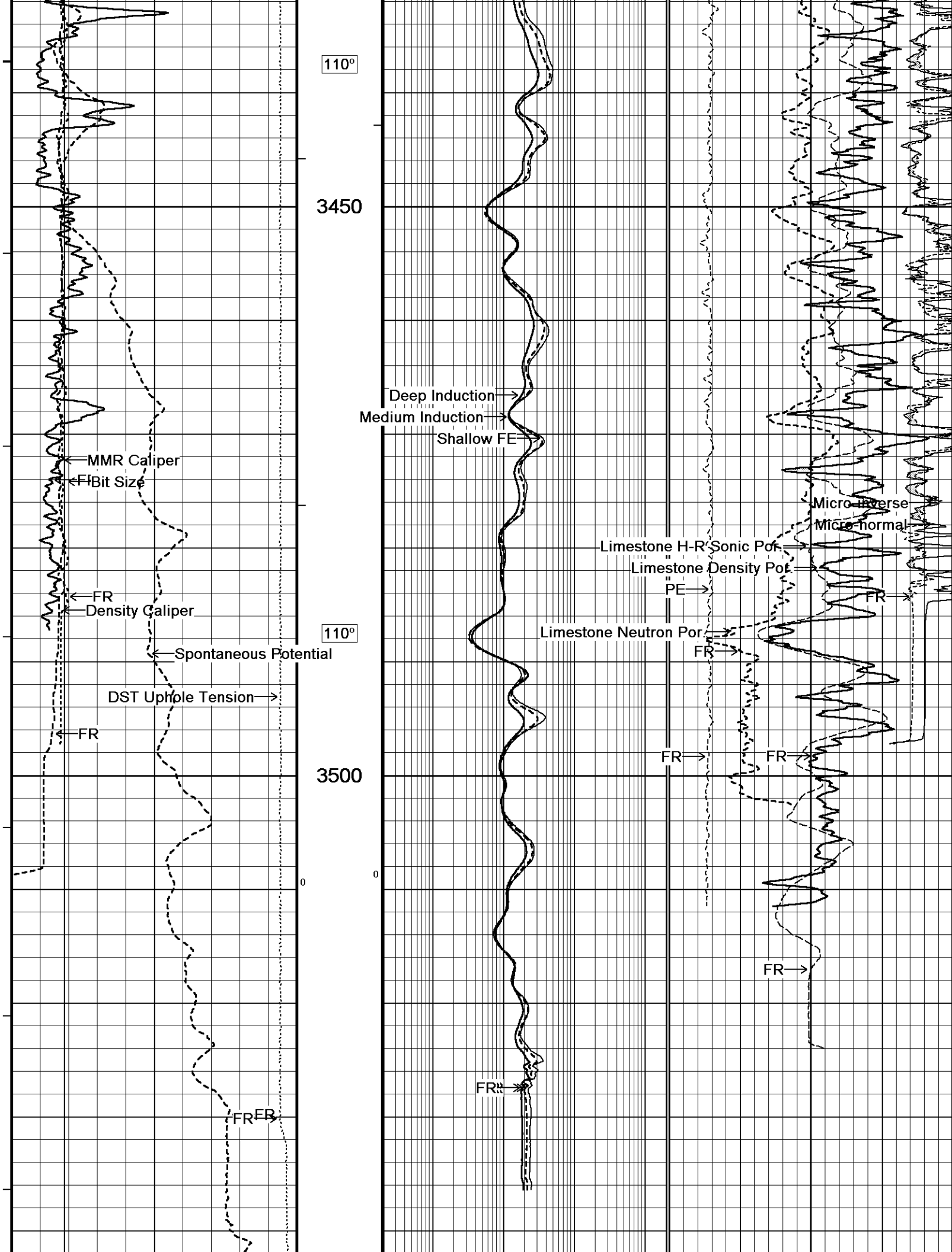
109°

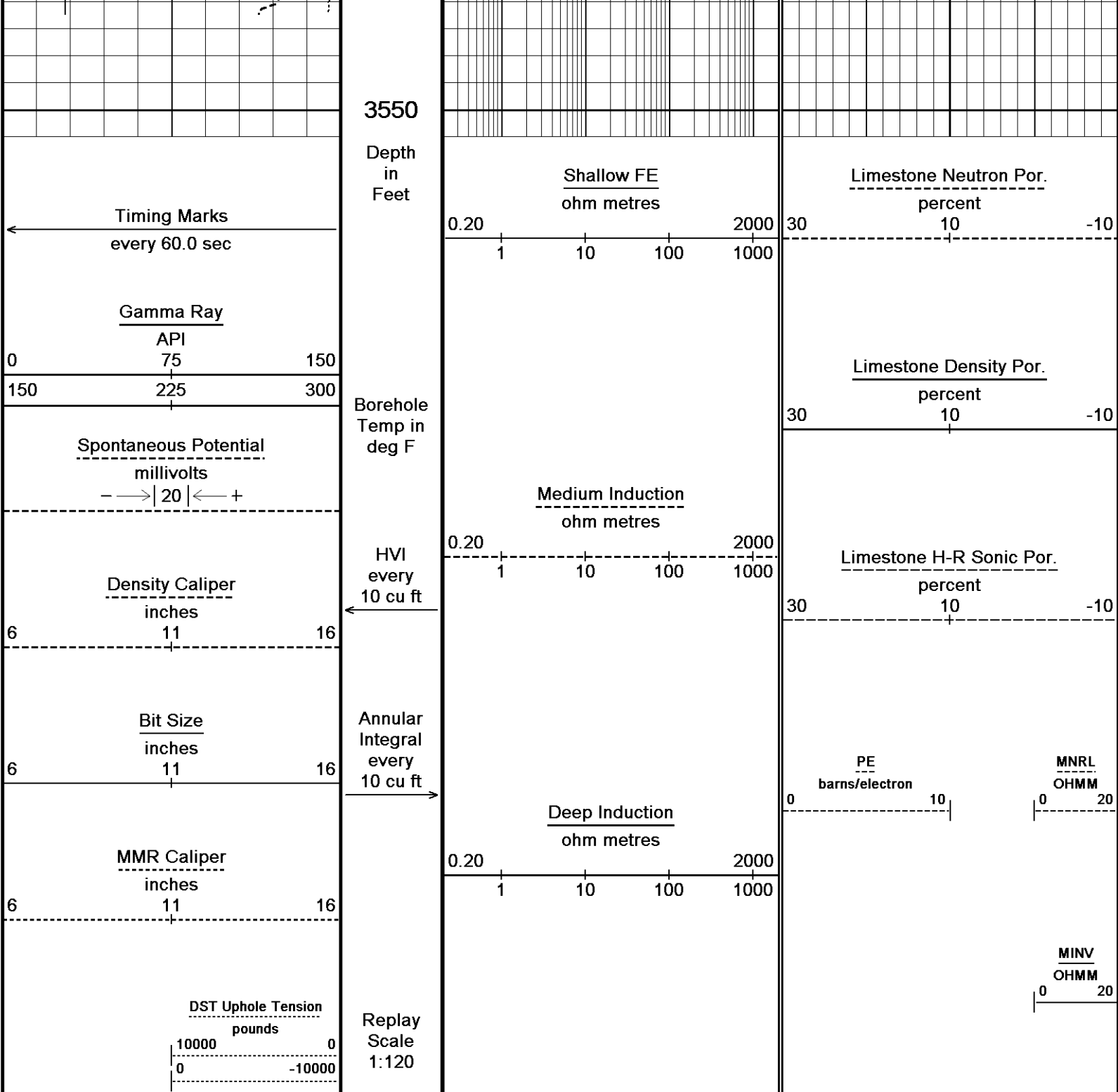
3350

111°

3400





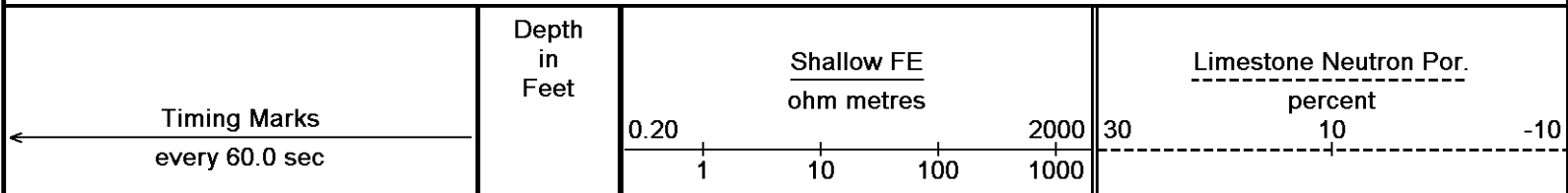


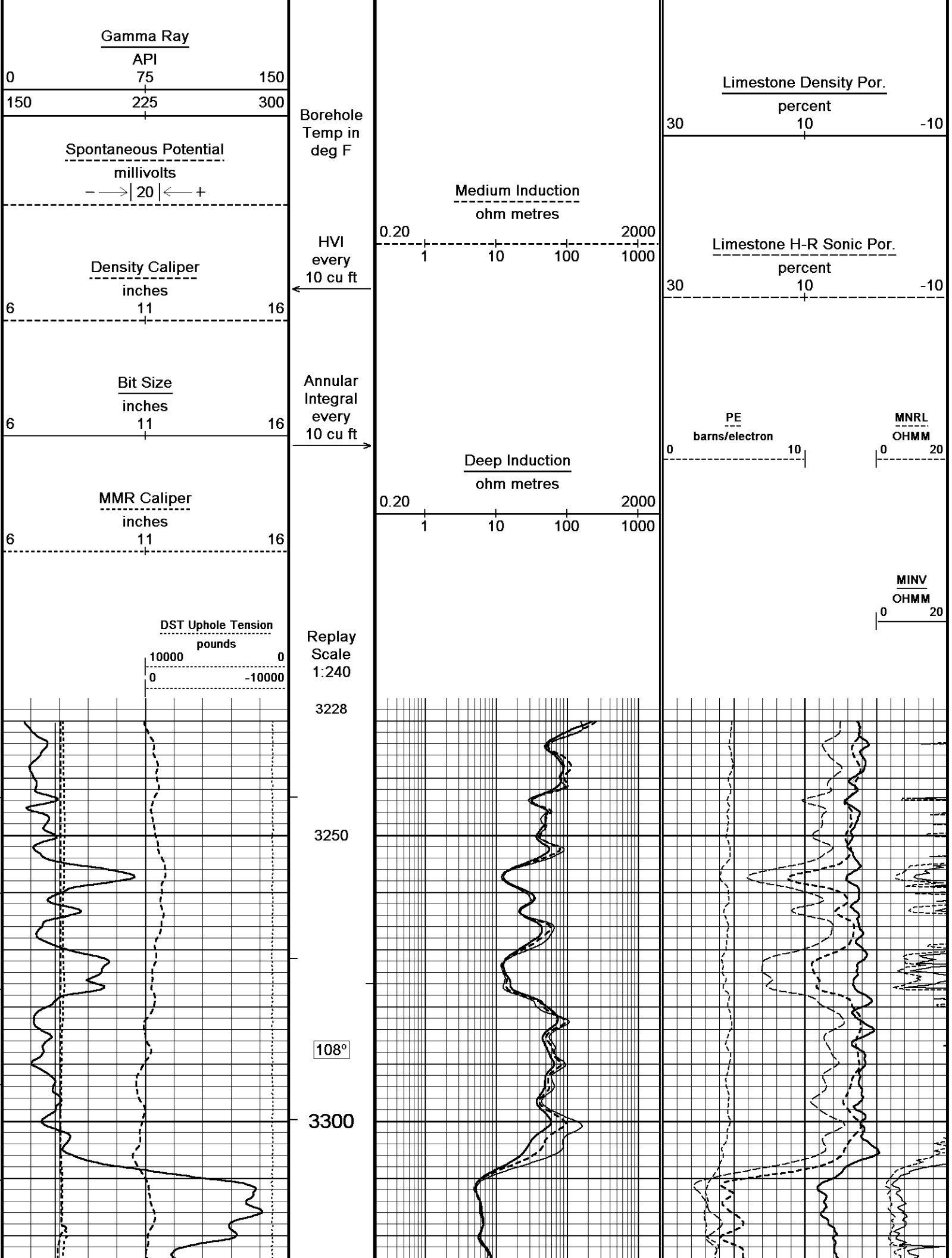
Depth Based Data - Maximum Sampling Increment 2.5cm	Plotted on 25-SEP-2013 09:04
Filename: C:\Program Files\Weatherford\WLS 13.04\DATA\TAOS RESOURCES...\legacy data_001.dta	Recorded on 25-SEP-2013 05:46
System Versions: Logged with 13.04.8723 Plotted with 13.04.8723	

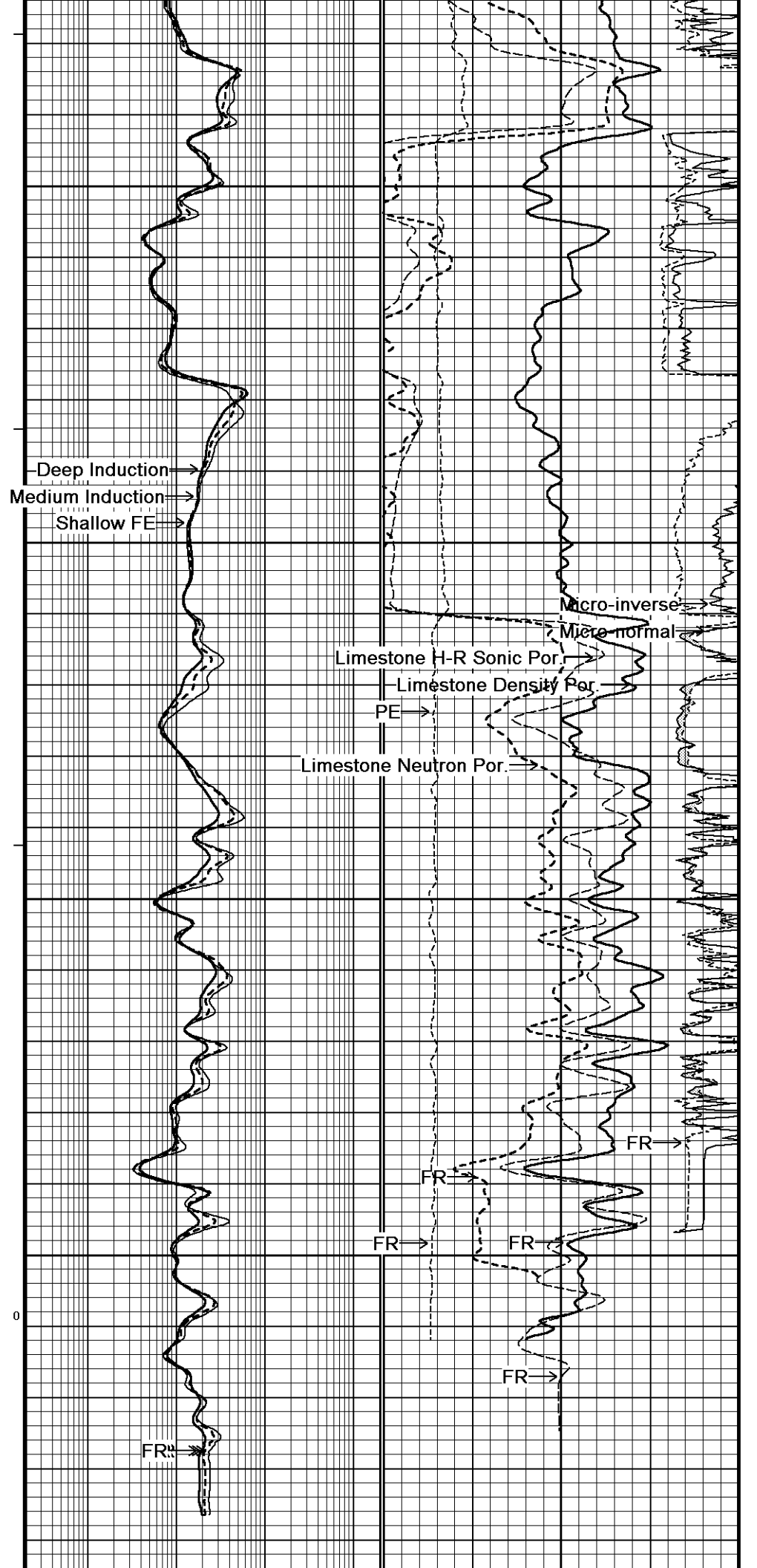
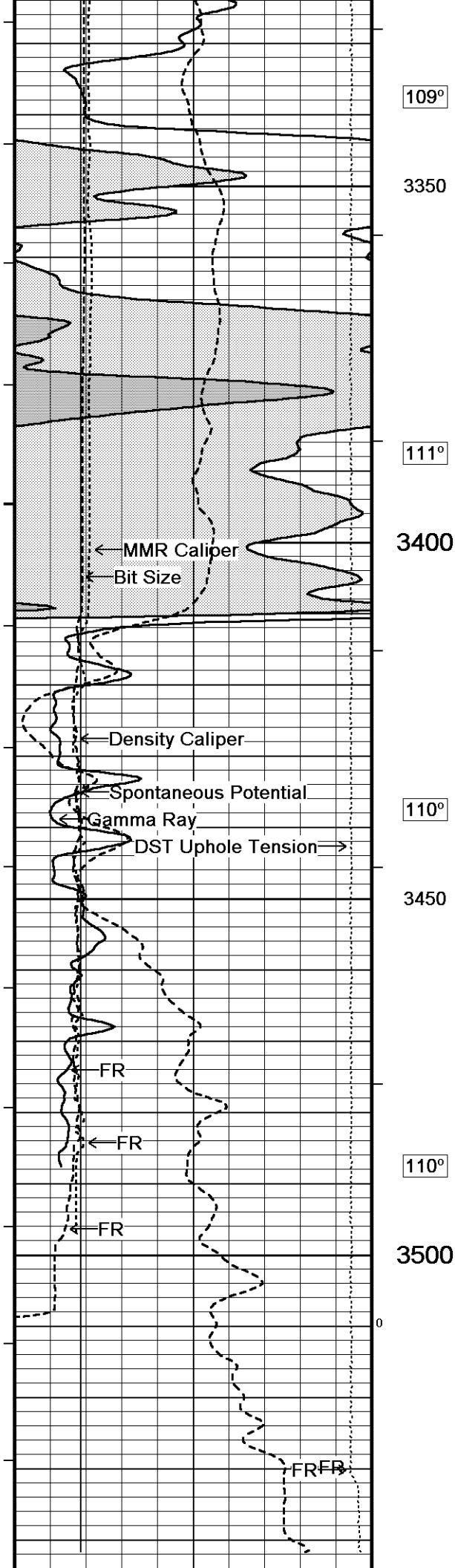
↑	HIGH RESOLUTION SECTION	↑
---	-------------------------	---

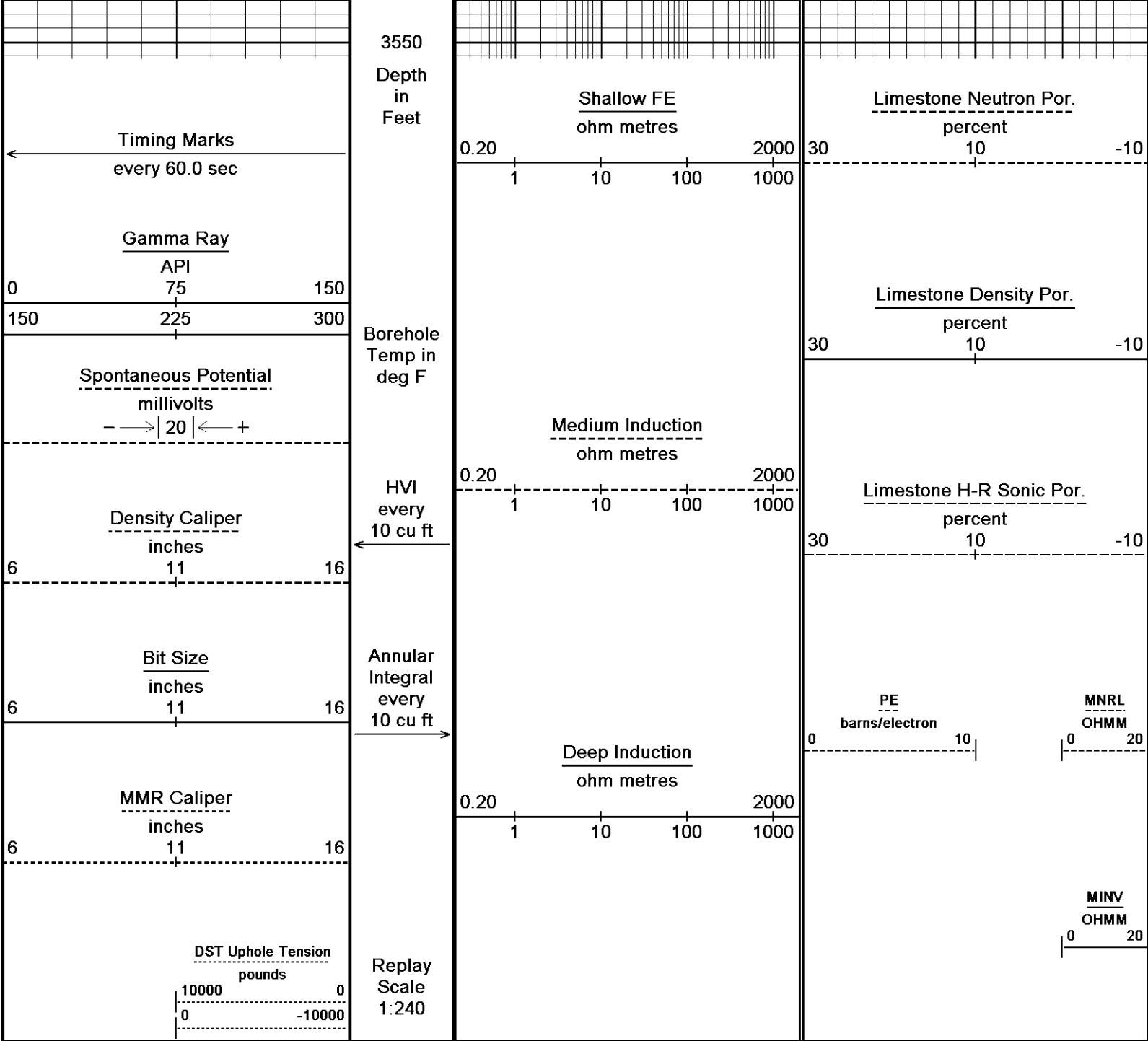
↓	5 INCH REPEAT SECTION 1:240	↓
---	-----------------------------	---

Depth Based Data - Maximum Sampling Increment 10.0cm	Plotted on 25-SEP-2013 09:04
Filename: C:\Program Files\Weatherford\WLS 13.04\DATA\TAOS RESOURCES ...REPEAT PASS.dta	Recorded on 25-SEP-2013 05:46
System Versions: Logged with 13.04.8723 Processed with 13.04.8723 Plotted with 13.04.8723	









Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 25-SEP-2013 09:04

Filename: C:\Program Files\Weatherford\WLS 13.04\DATA\TAOS RESOURCES ...REPEAT PASS.dta

Recorded on 25-SEP-2013 05:46

System Versions: Logged with 13.04.8723 Processed with 13.04.8723 Plotted with 13.04.8723

↑

5 INCH REPEAT SECTION 1:240

↑

BEFORE SURVEY CALIBRATION		
C:\Program Files\Weatherford\WLS 13.04\DATA\TAOS RESOURCES (LONG #1)\MAIN.dta		
General Constants All 000		Last Edited on 25-SEP-2013,05:01
General Parameters		
Mud Resistivity	1.100	ohm-metres
Mud Resistivity Temperature	85.000	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	Density Caliper	
Rwa Parameters		
Porosity used	Limestone Density Por.	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	
Down-hole Tension Calibration SMS 0		
		Field Calibration on 18-AUG-2013 01:14
Reading No	Measured	Calibrated (lbs)
1	20454.58	0.00
2	20525.76	262.00
High Resolution Temperature Calibration MCG-D.K 431		
		Field Calibration on 24-SEP-2013,10:13
	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	100.00	100.00
High Resolution Temperature Constants MCG-D.K 431		
		Last Edited on 24-SEP-2013,10:13
Pre-filter Length	11	
SP Calibration MCG-D.K 431		
		Field Calibration on 24-SEP-2013,10:13
	Measured	Calibrated (mV)
Reference 1	100.0	100.0
Reference 2	-100.0	-100.0
Gamma Calibration MCG-D.K 431		
		Field Calibration on 24-SEP-2013 10:39
	Measured	Calibrated (API)
Background	40	26
Calibrator (Gross)	1090	722
Calibrator (Net)	1050	696
Gamma Constants MCG-D.K 431		
		Last Edited on 24-SEP-2013,23:40
Gamma Calibrator Number	36	
Mud Density	1.13	gm/cc
Caliper Source for Processing	Bit Size	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm
Micro Normal and Micro Inverse Calibration MMR-B.A 68		
		Base Calibration on 28-AUG-2013,15:24 Field Check on 24-SEP-2013 10:30
Base Calibration		
	Measured	Calibrated (ohm-m)
Channel	Resistor 1 Resistor 2	Resistor 1 Resistor 2
Micro Normal	12.0 58.8	5.0 25.0
Micro Inverse	15.6 76.0	5.0 25.0
Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	77.6	77.6
Micro Inverse	60.1	60.1
Micro Normal and Micro Inverse Constants MMR-B.A 68		
		Last Edited on 26-JUL-2013,09:49
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	0.0000	inches
Caliper Calibration MMR-B.A 68		
		Base Calibration on 28-AUG-2013,15:23 Field Calibration on 24-SEP-2013 10:32
Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	14043	5.96
2	17278	7.98
3	20581	9.94
4	24293	11.91
5	0	0.00

Field Calibration

Measured Caliper (in)
9.83

Actual Caliper (in)
9.94

Neutron Calibration MDN-A.B 55

Base Calibration on 19-AUG-2013 10:31
Field Check on 24-SEP-2013 10:45

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3170	98	3714	110
Ratio	32.218		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	2324	3384
Ratio	0.687	

Field Check

	Calibrated (cps)	
	2285	3333
Ratio	0.685	

Neutron Constants MDN-A.B 55

Last Edited on 24-SEP-2013,10:40

Neutron Source Id	P14033B	
Neutron Jig Number	N639	
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	MCG External Temperature	
Temperature	N/A	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 65

Base Calibration on 19-SEP-2013,09:38
Field Check on 24-SEP-2013 10:17

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	9.7	1.3
Reference 2	956.1	126.8
Base Check		282.0
Field Check		282.0

FE Constants MFE-A.A 65

Last Edited on 25-SEP-2013,05:04

Running Mode	No Sleeve	
MFE K Factor	0.1268	
Caliper Source for FE correction	Bit Size	
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-C.A 147

Last Edited on 24-SEP-2013,22:49

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		
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	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)	Depth (ft)
N/A	N/A	N/A	
N/A	N/A	N/A	0.00
N/A	N/A	N/A	0.00
N/A	N/A	N/A	0.00
N/A	N/A	N/A	0.00

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

High Resolution Temperature Calibration	MAI-A.A 11	Field Calibration on 24-SEP-2013,10:13
	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants	MAI-A.A 11	Last Edited on 24-SEP-2013,10:13
Pre-filter Length	11	

Induction Calibration	MAI-A.A 11	Base Calibration on 12-SEP-2013,10:34
		Field Check on 24-SEP-2013 10:15
Base Calibration		
Test Loop Calibration	Measured	Calibrated (mmho/m)
Channel	Low High	Low High
1	14.9 441.9	9.3 966.2
2	5.1 355.2	7.6 821.4
3	3.0 242.9	5.2 566.0
4	1.5 126.7	2.6 279.2
Array Temperature	70.3	Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	19.1	4127.9
2	0.0	0.0	35.0	3810.5
3	0.0	0.0	31.8	3275.2
4	0.0	0.0	21.6	2186.2
Deep			18.7	2091.6
Medium			46.3	4364.2
Shallow			53.6	5692.4
Array Temperature		0.0	72.6	Deg F

Induction Constants MAI-A.A 11

Last Edited on 25-SEP-2013,05:04

Induction Model		RtAP-WBM	
Caliper for Borehole Corr.		Bit Size	
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		6.0000	
Stand-off Fin Angle		60.00	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	

Caliper Calibration MPD-A.A 11

Base Calibration on 23-AUG-2013 14:50

Field Calibration on 24-SEP-2013 10:19

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	19968	4.01
2	28144	5.96
3	36416	7.98
4	44976	9.94
5	53728	11.91
6	N/A	N/A
Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	7.93	7.98

Photo Density Calibration MPD-A.A 11

Base Calibration on 23-AUG-2013 14:36

Field Check on 24-SEP-2013 10:29

Density Calibration		
Base Calibration	Measured	Calibrated (sdu)

	Near	Far	Near	Far
Reference 1	46165	24404	59869	31110
Reference 2	19799	2432	24557	2522

Field Check at Base

1176.8 1268.5

Field Check

1172.7 1267.5

PE Calibration

Base Calibration

Measured

Calibrated

WS

WH

Ratio

Ratio

Background

212

1045

Reference 1

16895

45995

0.371

0.369

Reference 2

5194

19664

0.268

0.271

Field Check at Base

211.9

1044.7

Field Check

213.9

1043.3

Density Constants MPD-A.A 11

Last Edited on 24-SEP-2013,23:40

Density Source Id	260	
Nylon Calibrator Number	633	
Aluminium Calibrator Number	633	
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

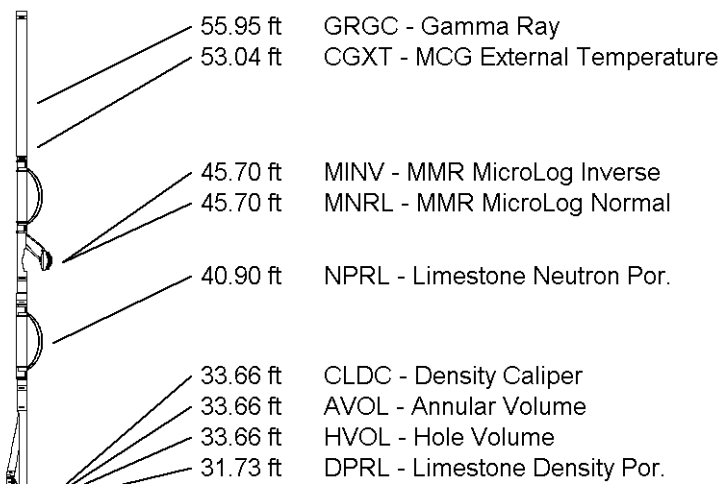
C:\Program Files\Weatherford\WLS 13.04\DATA\TAOS RESOURCES (LONG #1)\MAIN.dta

Compact Comms Gamma
MCG-D.K 431 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-Resistivity
MMR-B.A 68 LG: 8.59 ft WT: 81.6 lb OD: 4.88 in

Compact Neutron
MDN-A.B 55 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
MPD-A.A 11 LG: 9.53 ft WT: 90.4 lb OD: 2.45 in

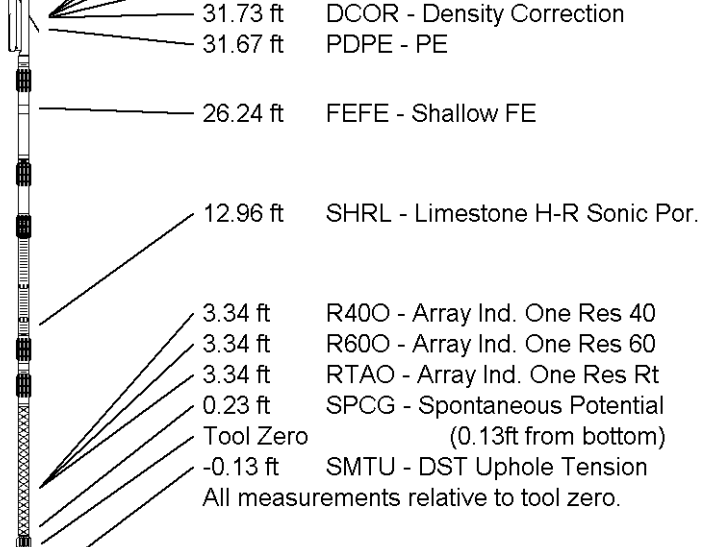


Compact Focussed Electric
MFE-A.A 65 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic
MSS-C.A 147 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

Compact Induction
MAI-A.A 11 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 61.24 ft Weight: 456.4 lb



COMPANY	TAOS RESOURCES OPERATING COMPANY LLC
WELL	LONG #1
FIELD	BIDDLE
PROVINCE/COUNTY	COWLEY
COUNTRY/STATE	USA / KANSAS

Elevation Kelly Bushing	1200.00	feet	First Reading	3527.00	feet
Elevation Drill Floor	1198.00	feet	Depth Driller	3530.00	feet
Elevation Ground Level	1192.00	feet	Depth Logger	3530.00	feet



Weatherford®

COMPOSITE LOG