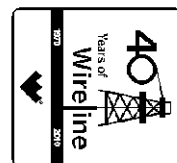




Weatherford

**COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG**

COMPANY **M & M EXPLORATION, INC.**
WELL **Z-BAR #9-14**
FIELD **AETNA GAS AREA**
PROVINCE/COUNTY **BARBER**
COUNTRY/STATE **U.S.A. / KANSAS**
LOCATION **660' FSL & 1980' FWL**



SEC	TWP	RGE	Other Services	Elevations:
9	34S	14W	MAI/MFE	KB 1561.00 DF 1559.00 GL 1549.00
API Number	15-007-23700			
Permit Number				
Permanent Datum G.L., Elevation 1549 feet				
Log Measured From K.B. @ 12 FEET above Permanent Datum				
Drilling Measured From K.B.				
Date	07-JUL-2011			
Run Number	ONE			
Depth Driller	4900.00			feet
Depth Logger	4897.00			feet
First Reading	4876.00			feet
Last Reading	3800.00			feet
Casing Driller	900.00			feet
Casing Logger	896.00			feet
Bit Size	7.875			inches
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.00 lb/USg			55.00 CP
PH / Fluid Loss	9.00			10.40 ml/30Min
Sample Source	FLOWLINE			
Rm @ Measured Temp	0.56 @ 92.0			ohm-m
Rmf @ Measured Temp	0.45 @ 92.0			ohm-m
Rmc @ Measured Temp	0.67 @ 92.0			ohm-m
Source Rmf / Rmc	CALC	CALC	CALC	
Rm @ BHT	0.43 @ 12.0			ohm-m
Time Since Circulation	4 HOURS			
Max Recorded Temp	121.00			deg F
Equipment Name	COMPACT			
Equipment / Base	13057	LIB		
Recorded By	R. HOFFMAN			
Witnessed By	BETH BROCK			
S.O. # / JOB #	3531102			LB11-156

BOREHOLE RECORD

Last Edited: 07-JUL-2011 11:03

Bit Size inches	Depth From feet	Depth To feet
7.875	896.00	4897.00

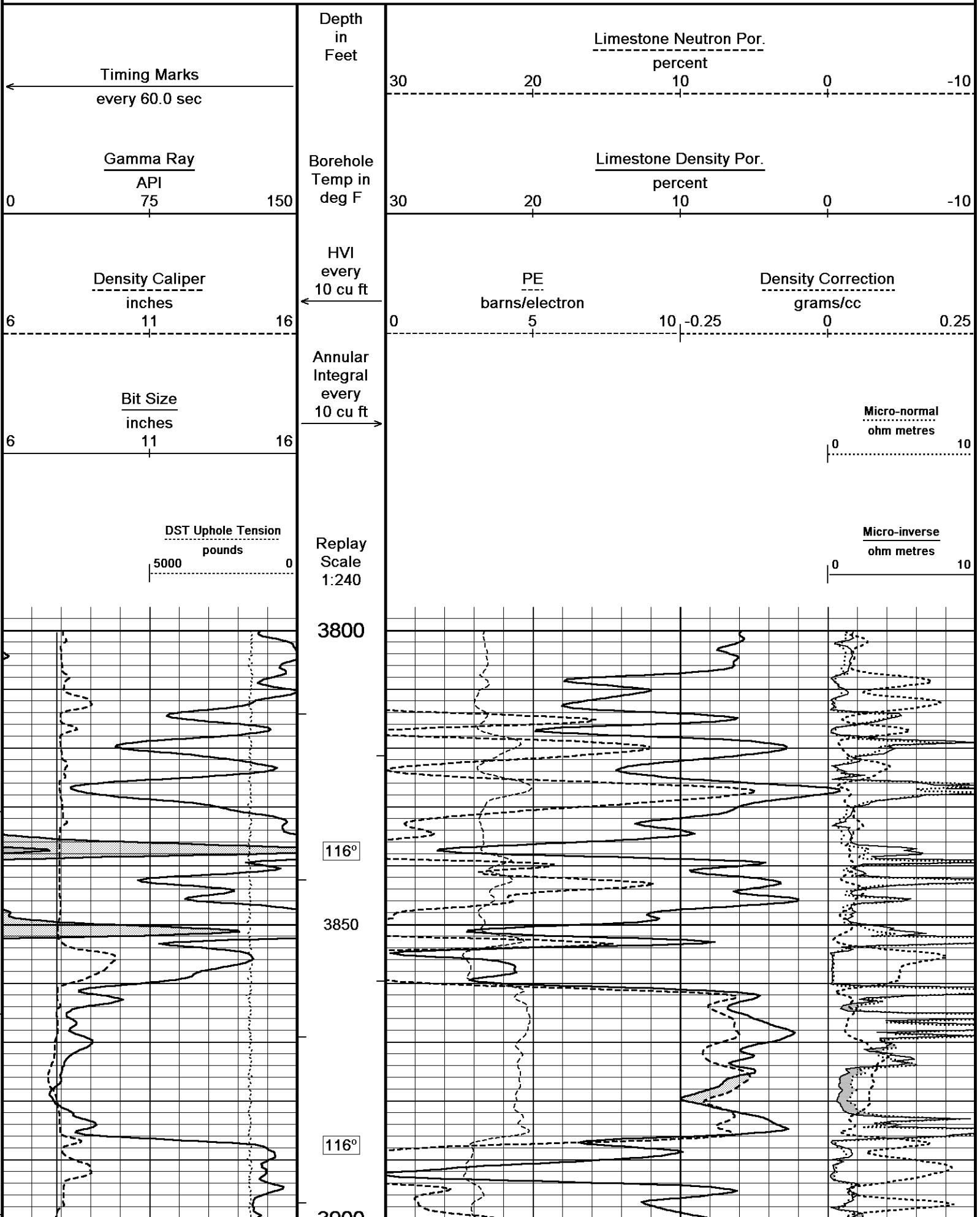
CASING RECORD

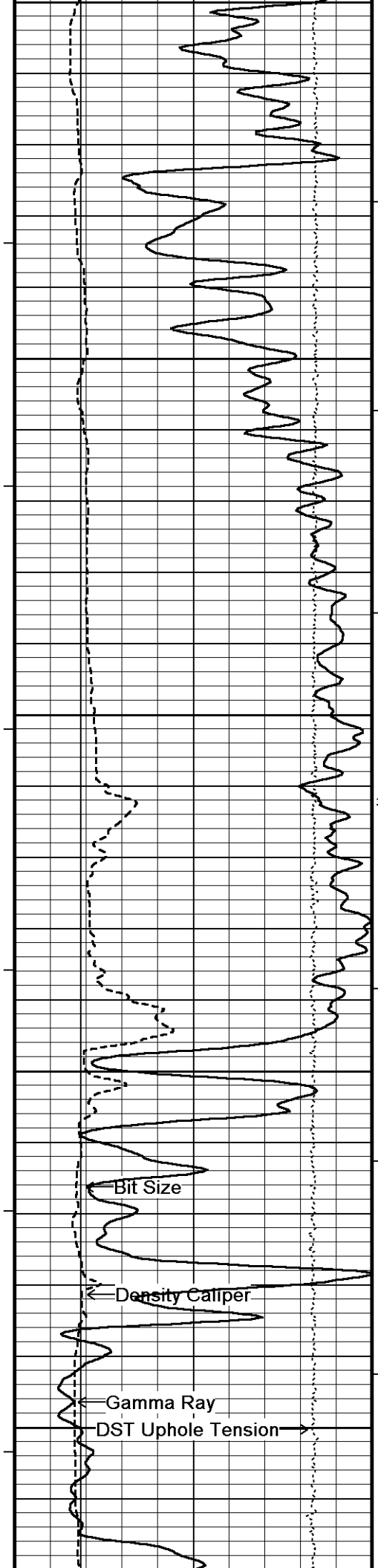
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	896.00	24.00

REMARKS

Tools Ran: MCG, MML, MDN, MPD, SKJ, 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.
Annular volume with 4.5 inch production casing= 258 cu. ft.
Service order #3531102
Rig: Southwind Rig #70
Engineer: R. Hoffman
Operator(s): B. Reeves

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.





3900

117°

3950

117°

4000

300

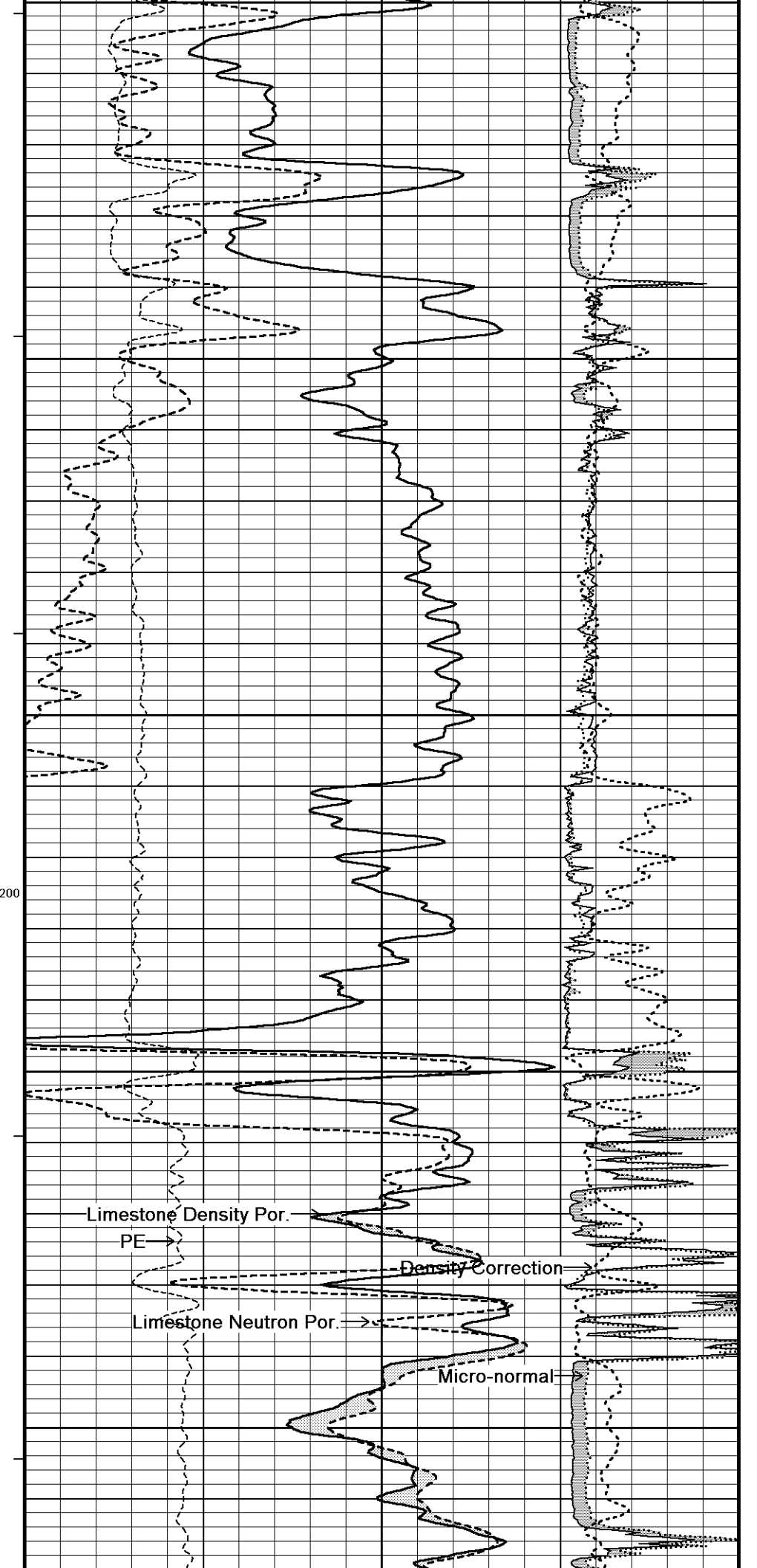
200

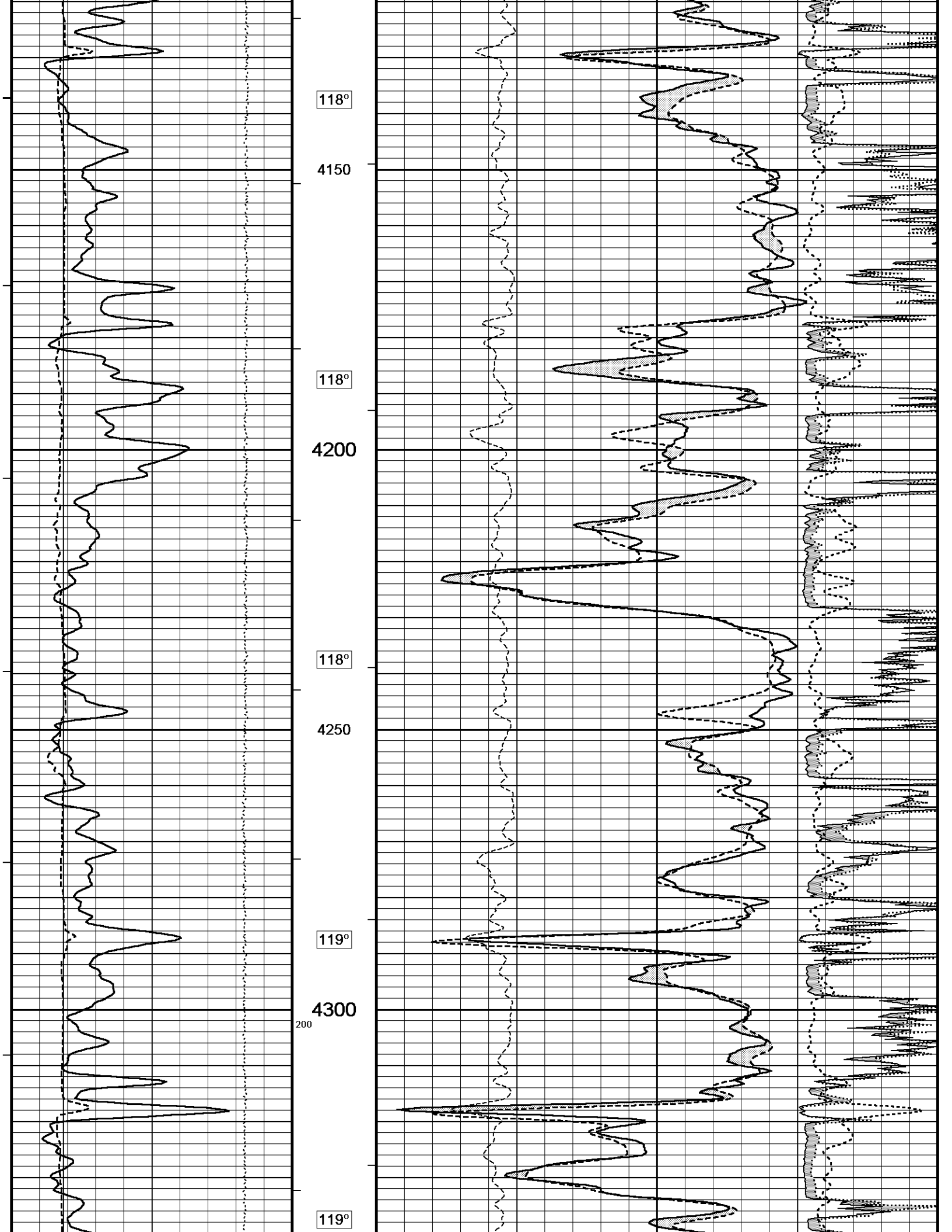
117°

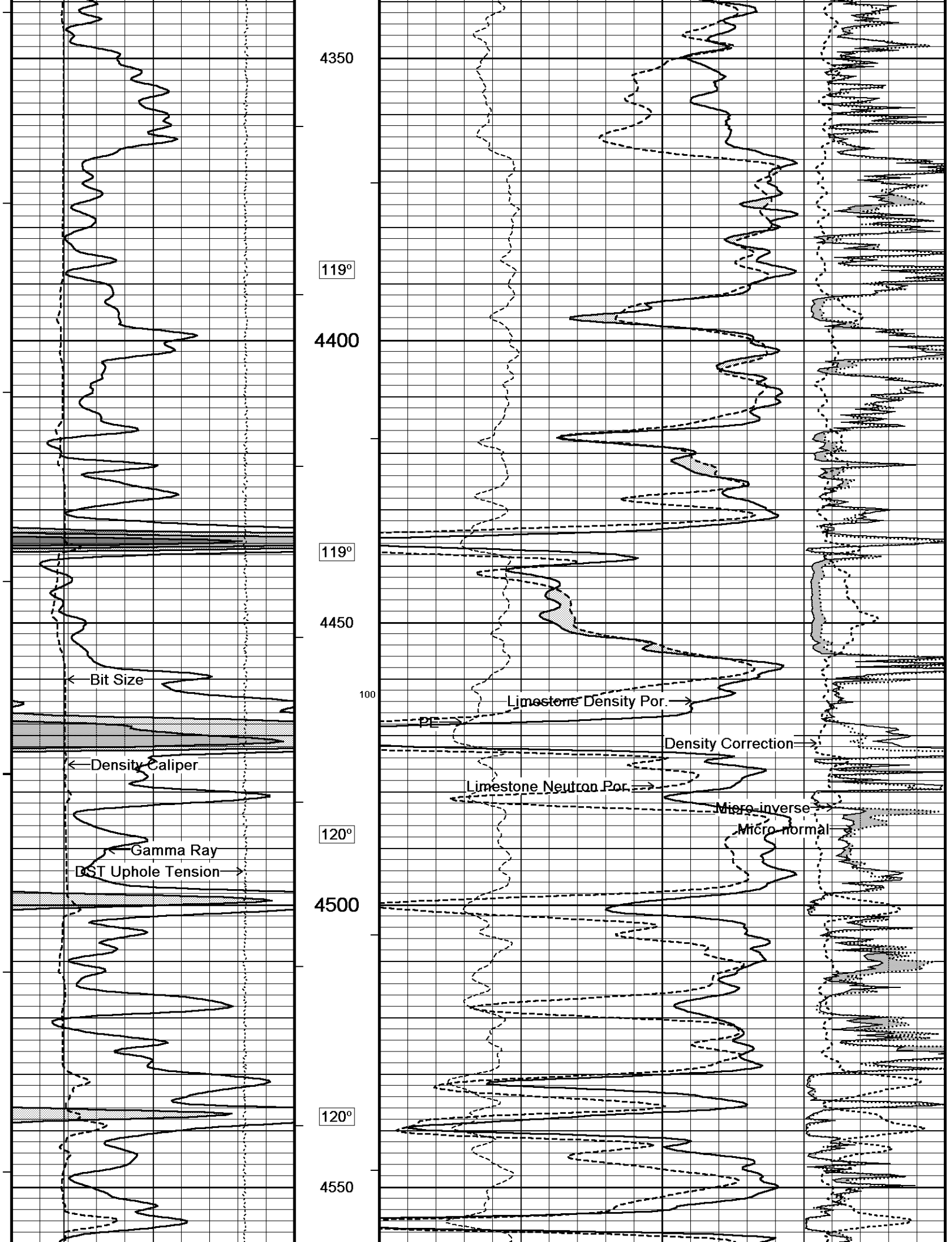
4050

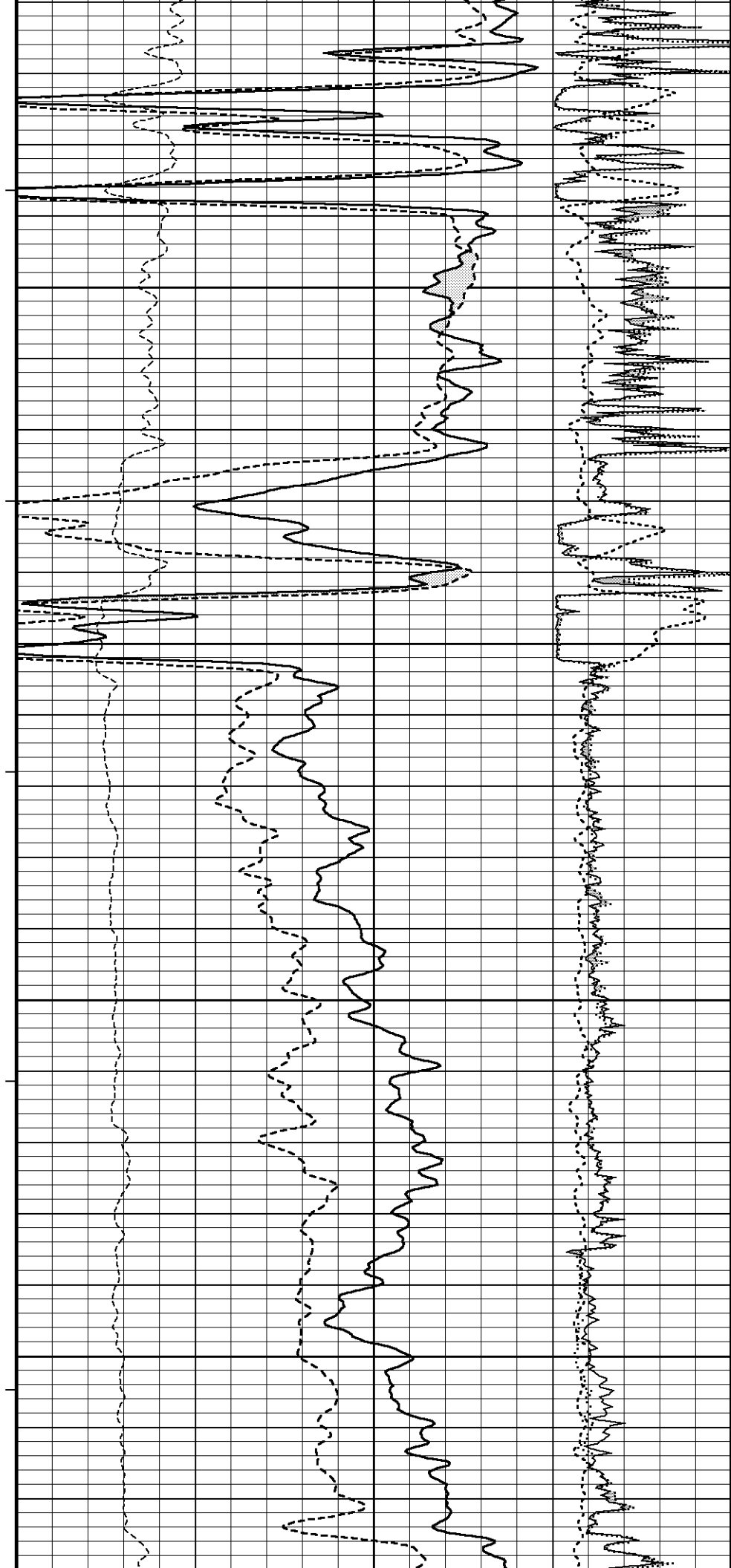
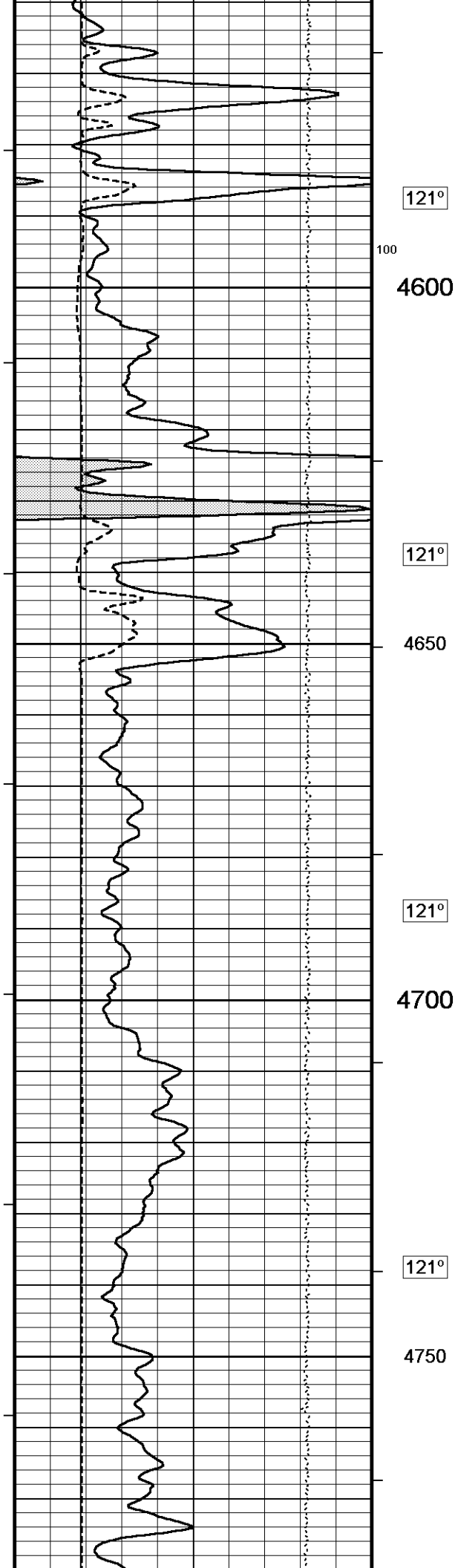
118°

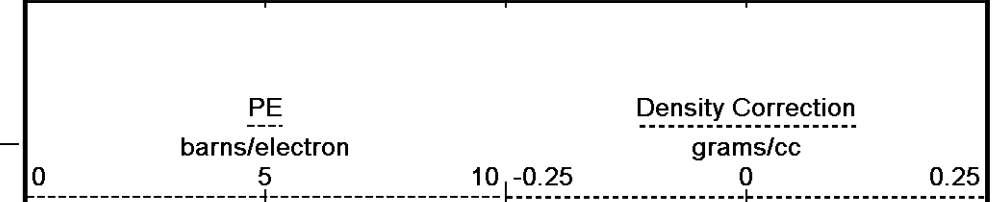
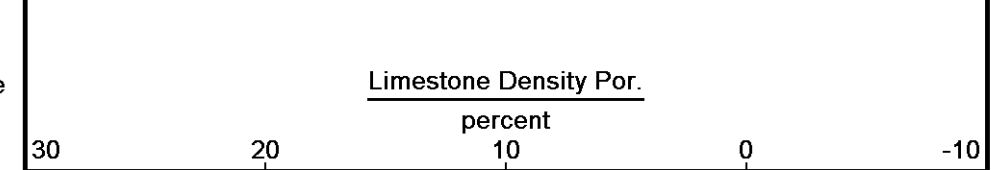
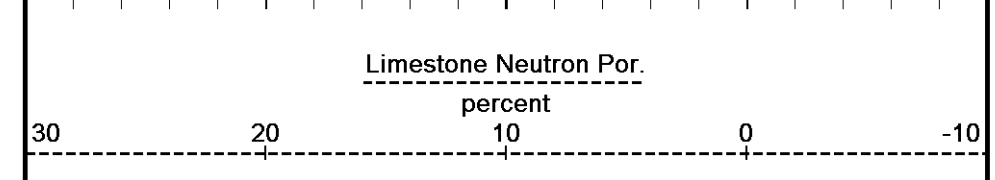
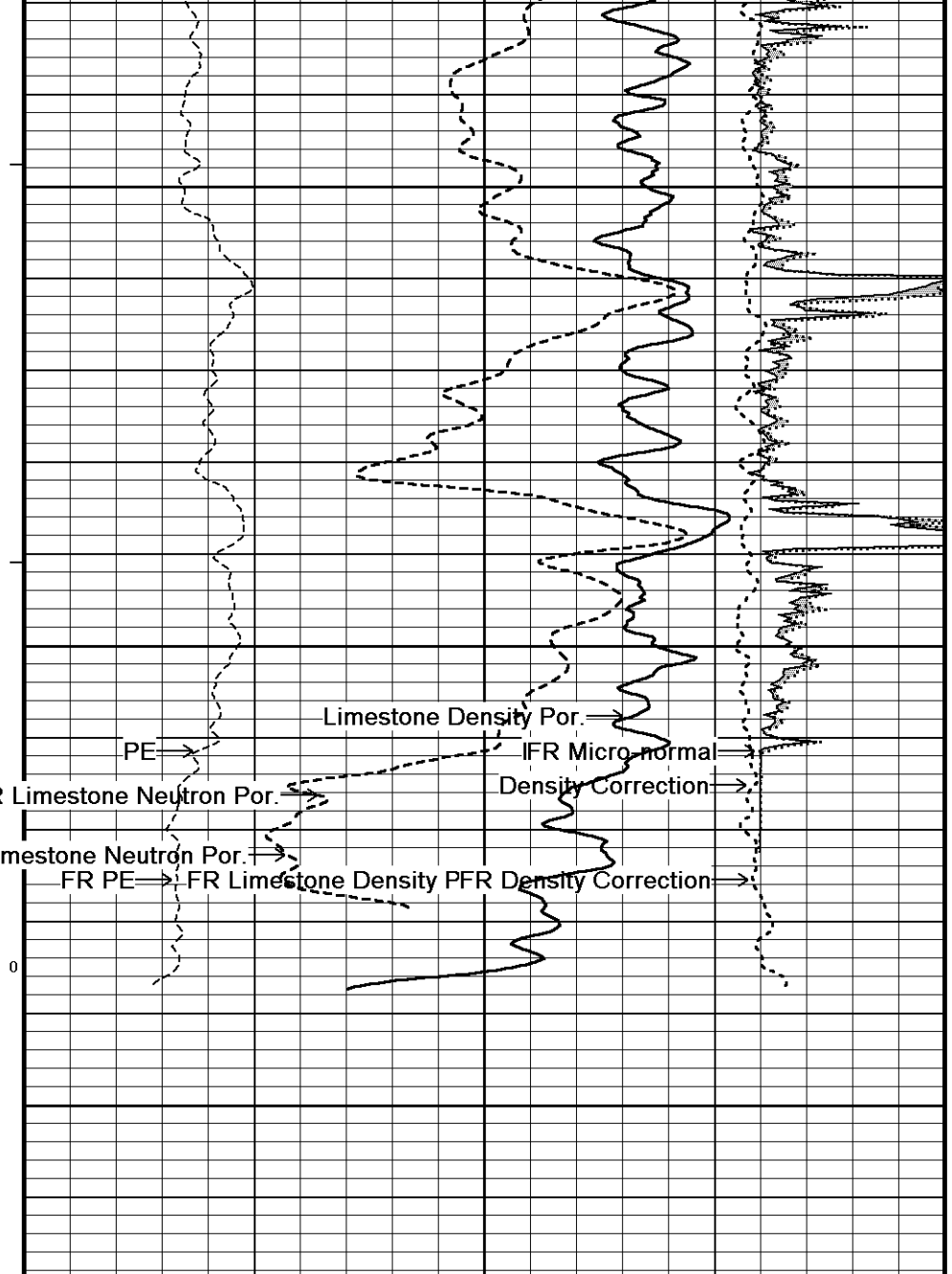
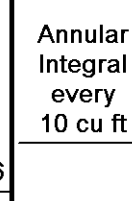
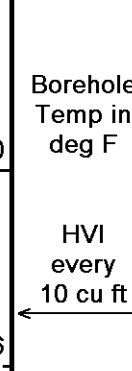
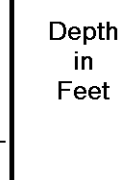
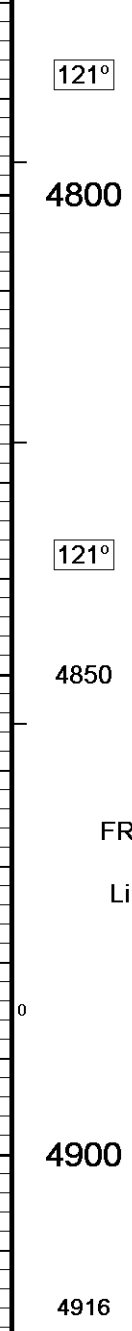
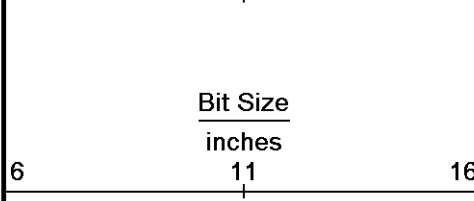
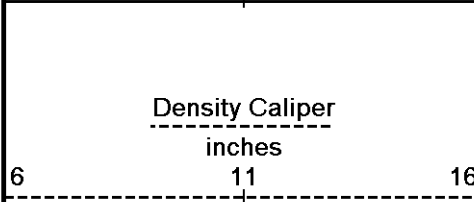
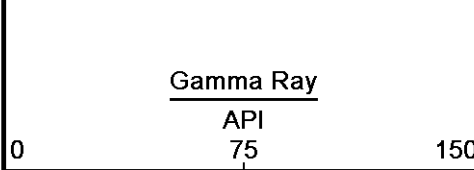
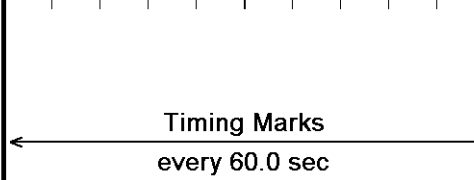
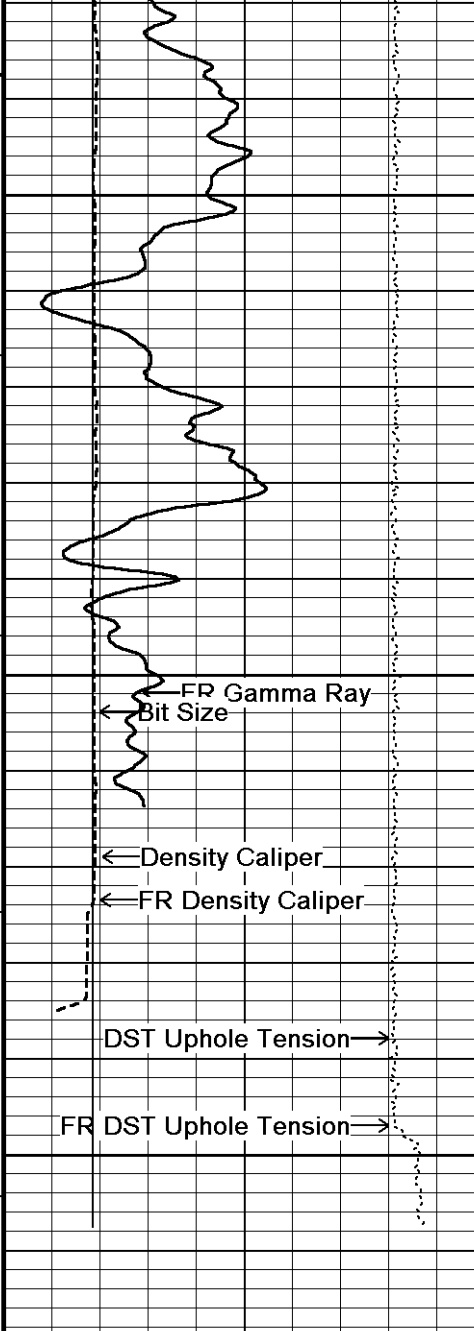
4100











DST Uphole Tension pounds 50000	Replay Scale 1:240	Micro-inverse ohm metres 010
---	---------------------------------------	--

Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 07-JUL-2011 11:49

Filename: C:\Minimus 11.02.3186\Data\M&M Z-Bar #9-14\M&M Z-Bar #9-14_002 spooled section.dta

Recorded on 07-JUL-2011 10:42

System Versions: Logged with 11.02.3186 Plotted with 11.02.3186

5 INCH MAIN PASS

5 INCH REPEAT PASS

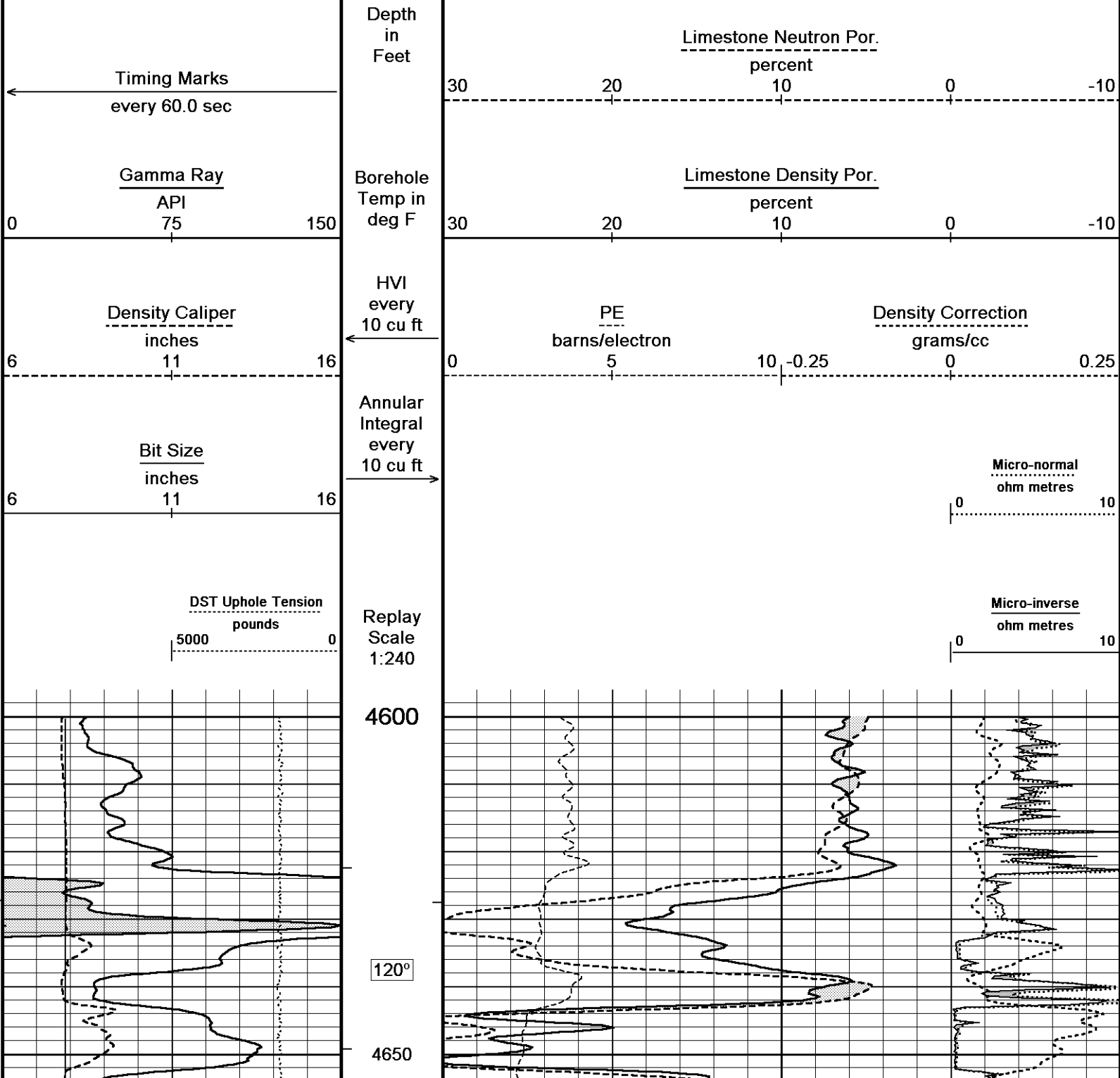
Depth Based Data - Maximum Sampling Increment 10.0cm

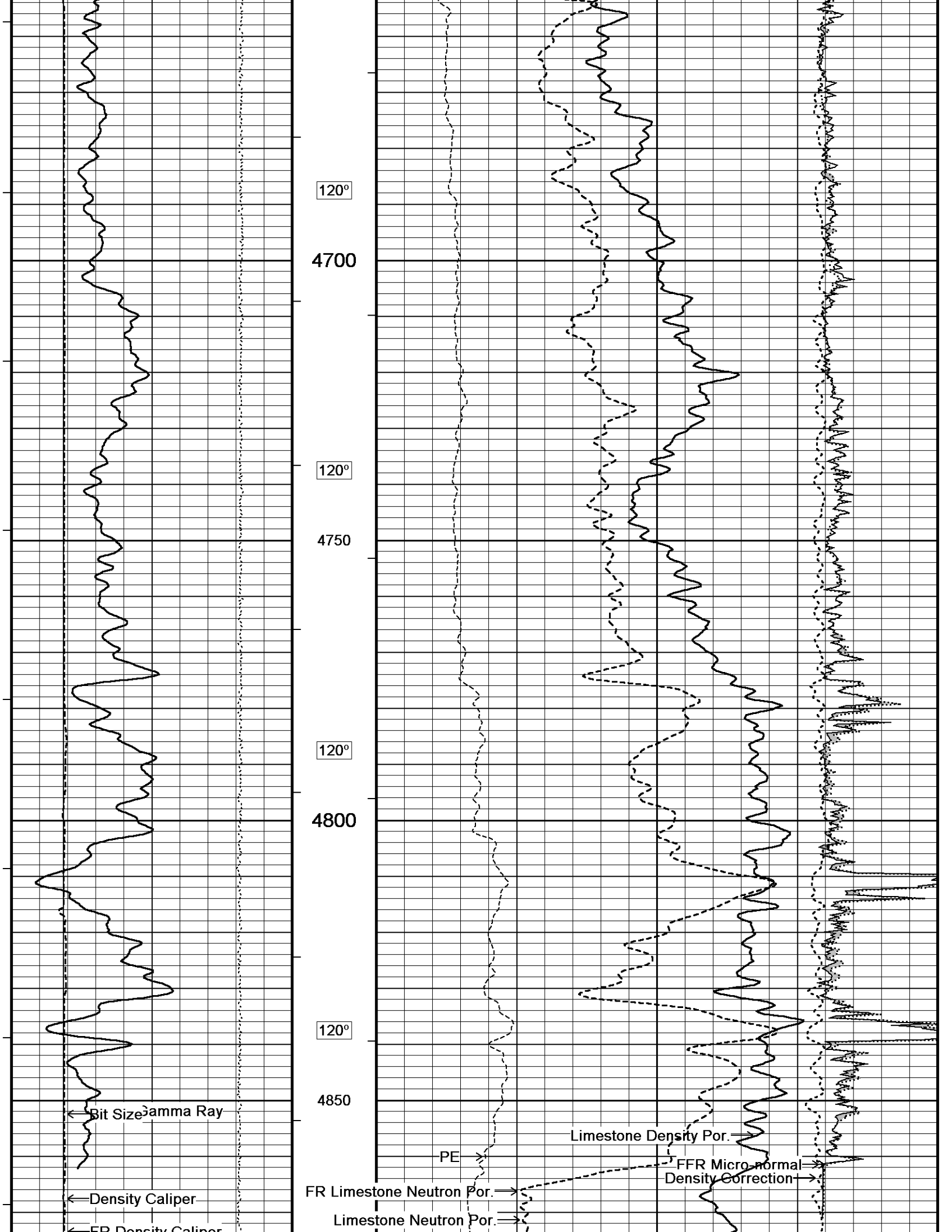
Plotted on 07-JUL-2011 11:49

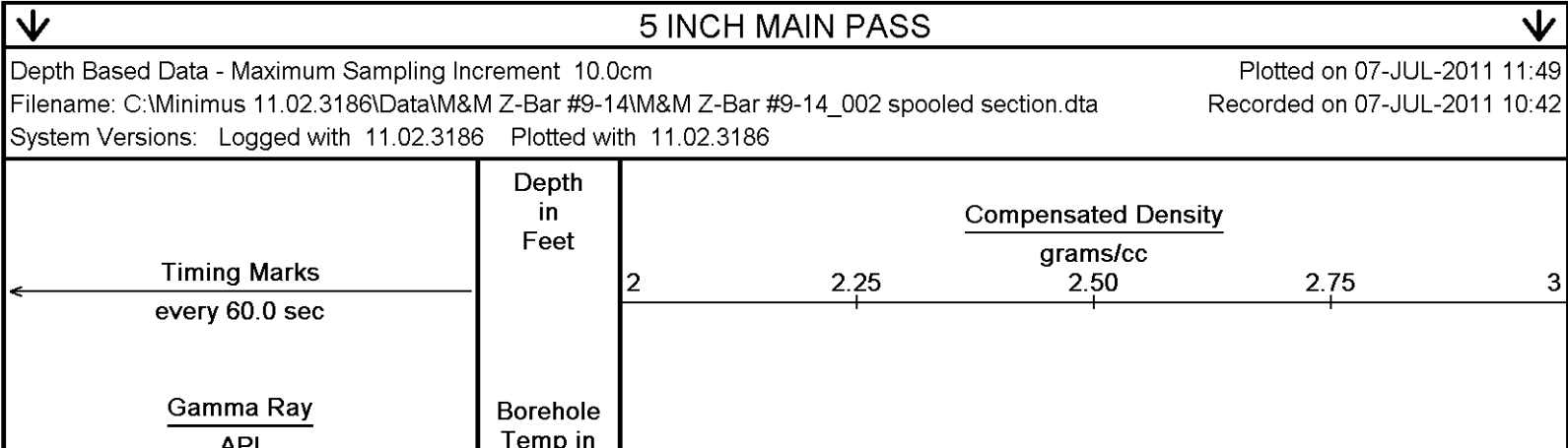
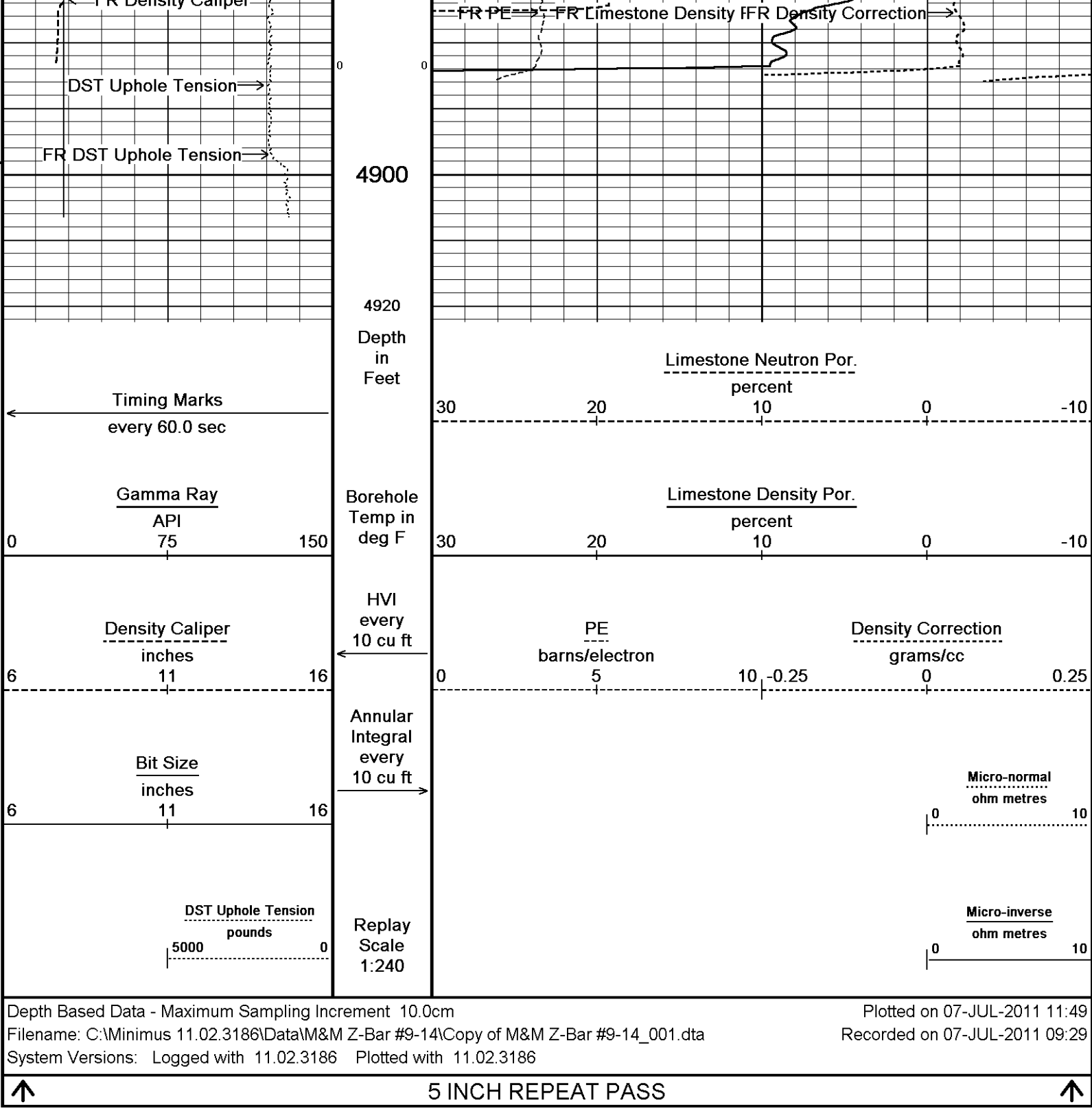
Filename: C:\Minimus 11.02.3186\Data\M&M Z-Bar #9-14\Copy of M&M Z-Bar #9-14_001.dta

Recorded on 07-JUL-2011 09:29

System Versions: Logged with 11.02.3186 Plotted with 11.02.3186







0 75 150

deg F

Density Caliper
inches
6 11 16

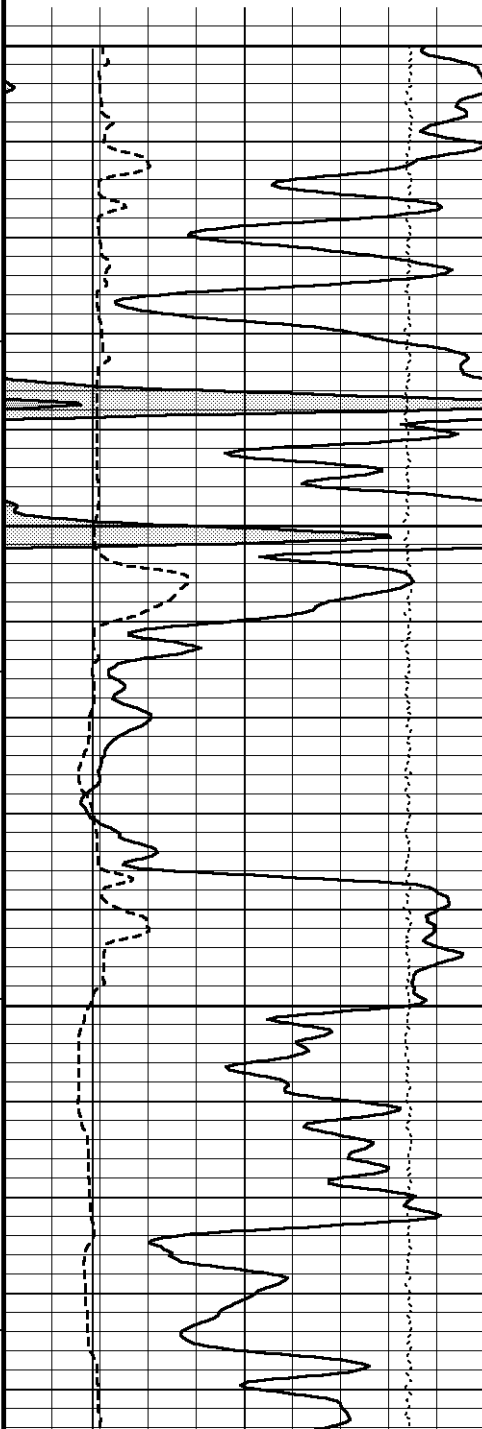
HVI
every
10 cu ft

Bit Size
inches
6 11 16

Annular
Integral
every
10 cu ft

DST Uphole Tension
pounds
5000 0

Replay
Scale
1:240



3800

116°

3850

116°

3900

117°

Limestone Density Por.

percent

30 20 10 0 -10

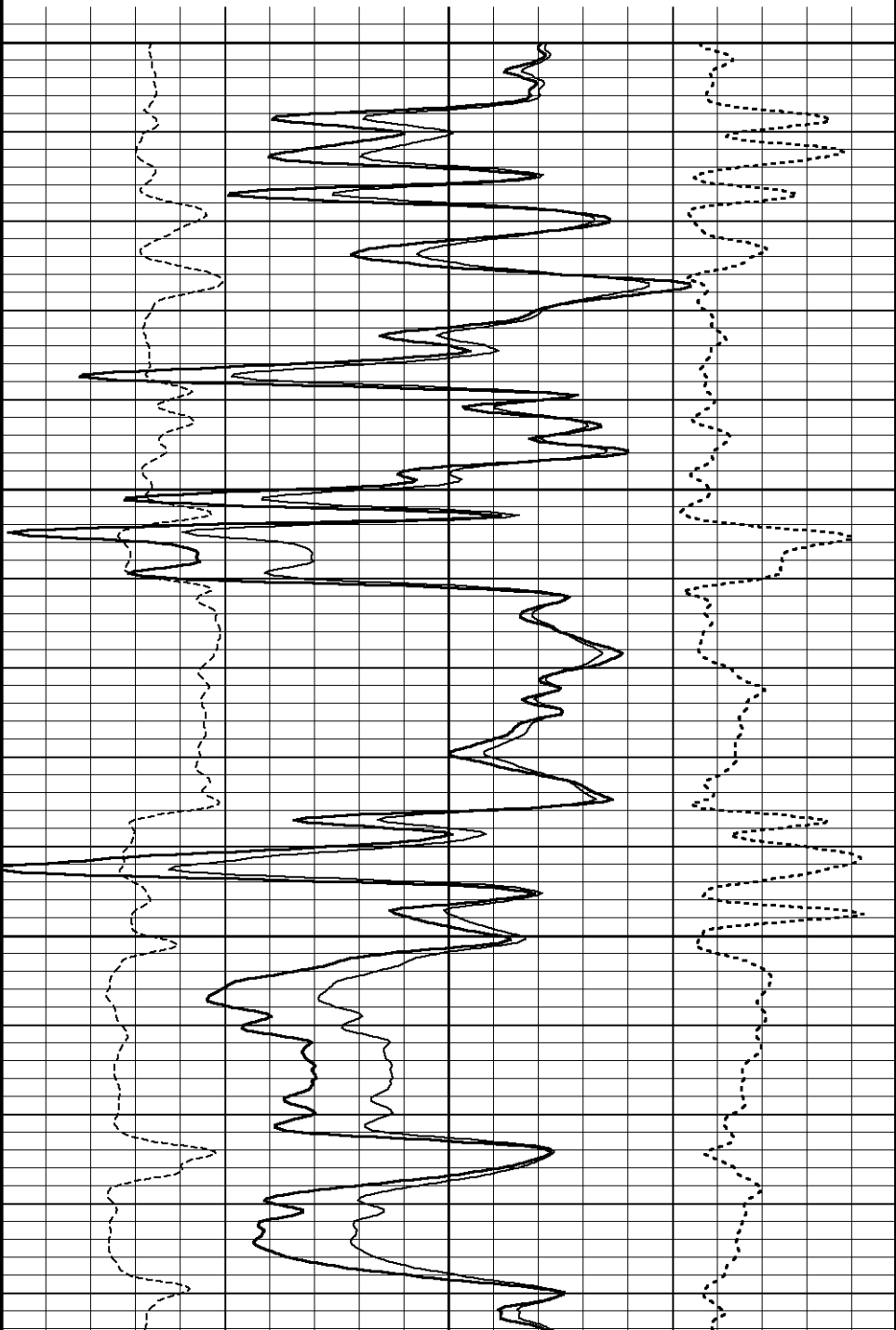
PE

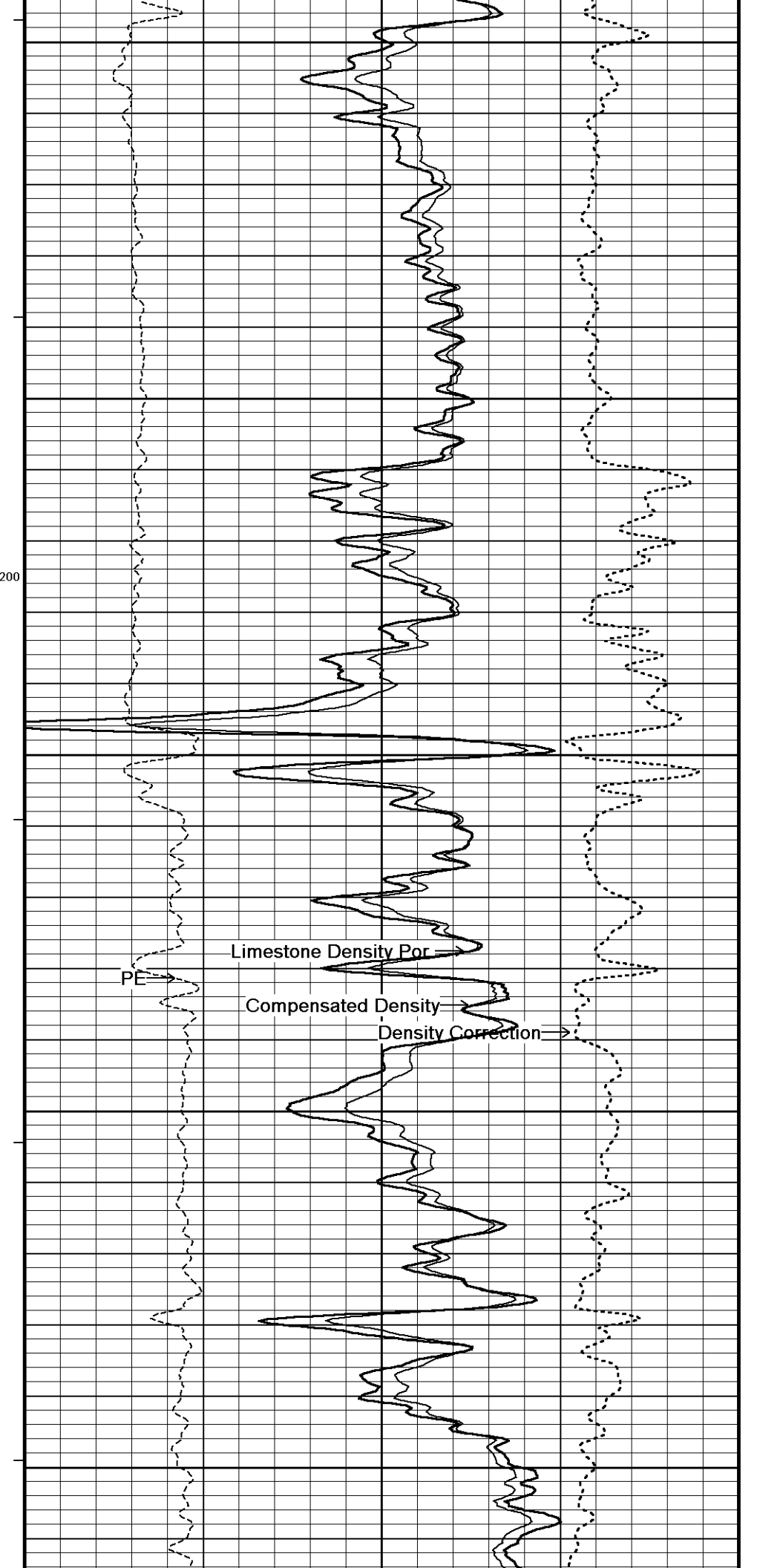
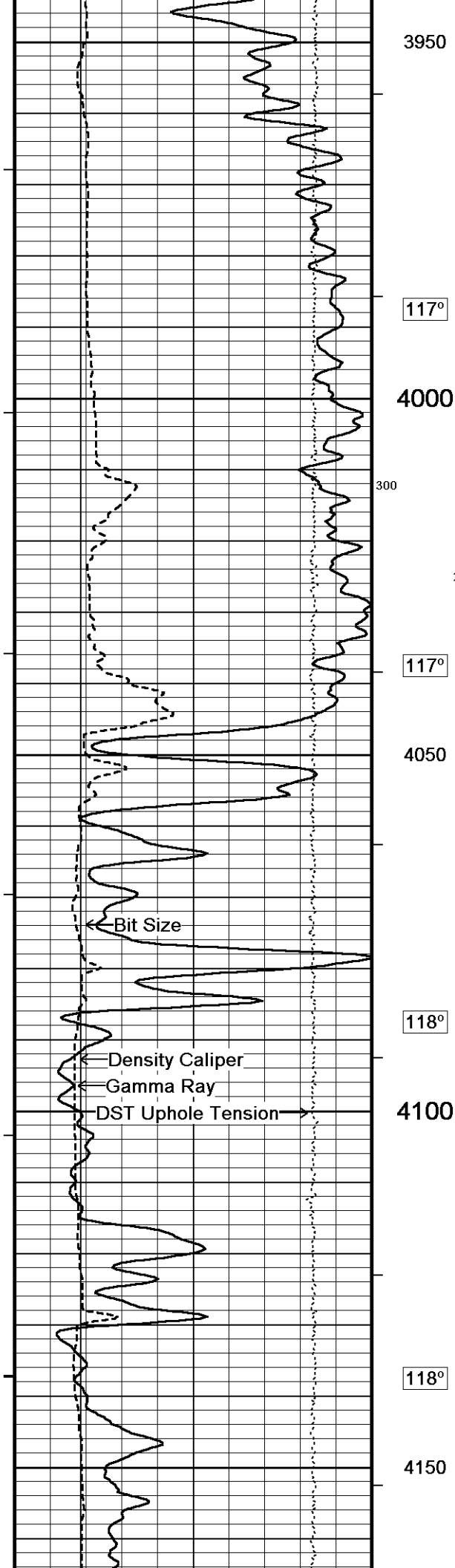
barns/electron

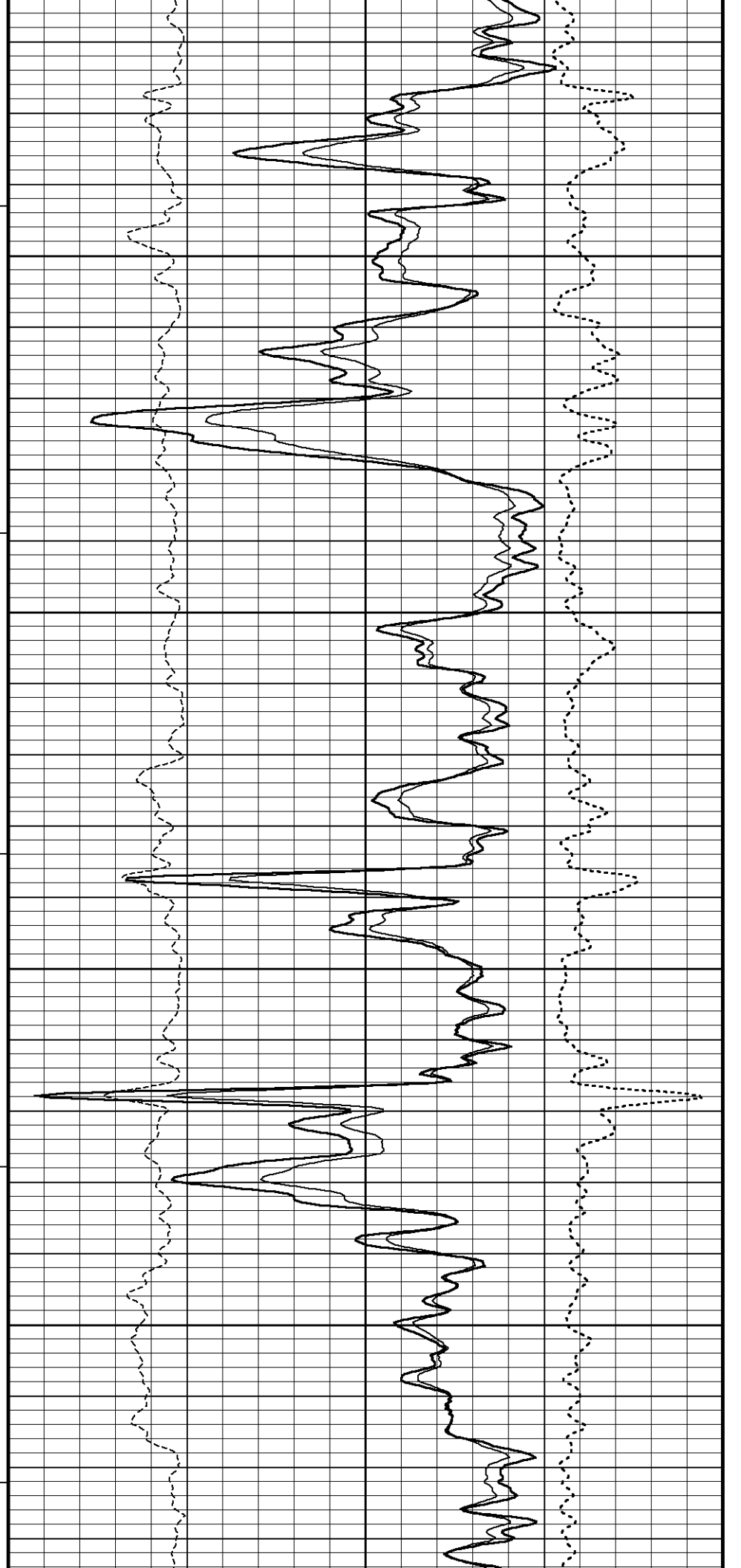
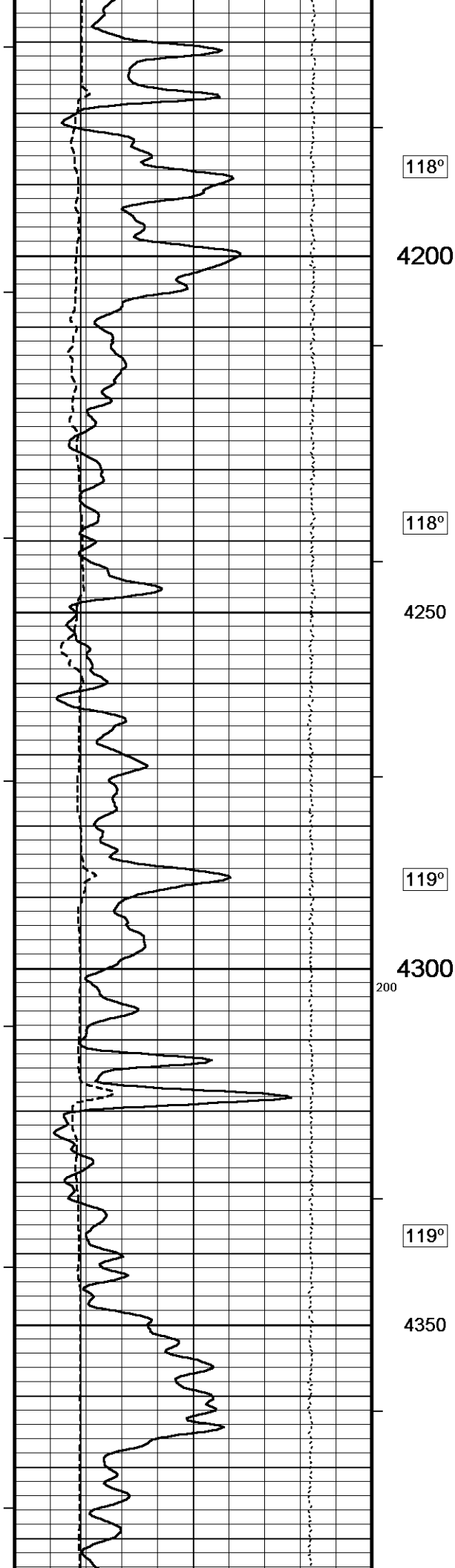
Density Correction

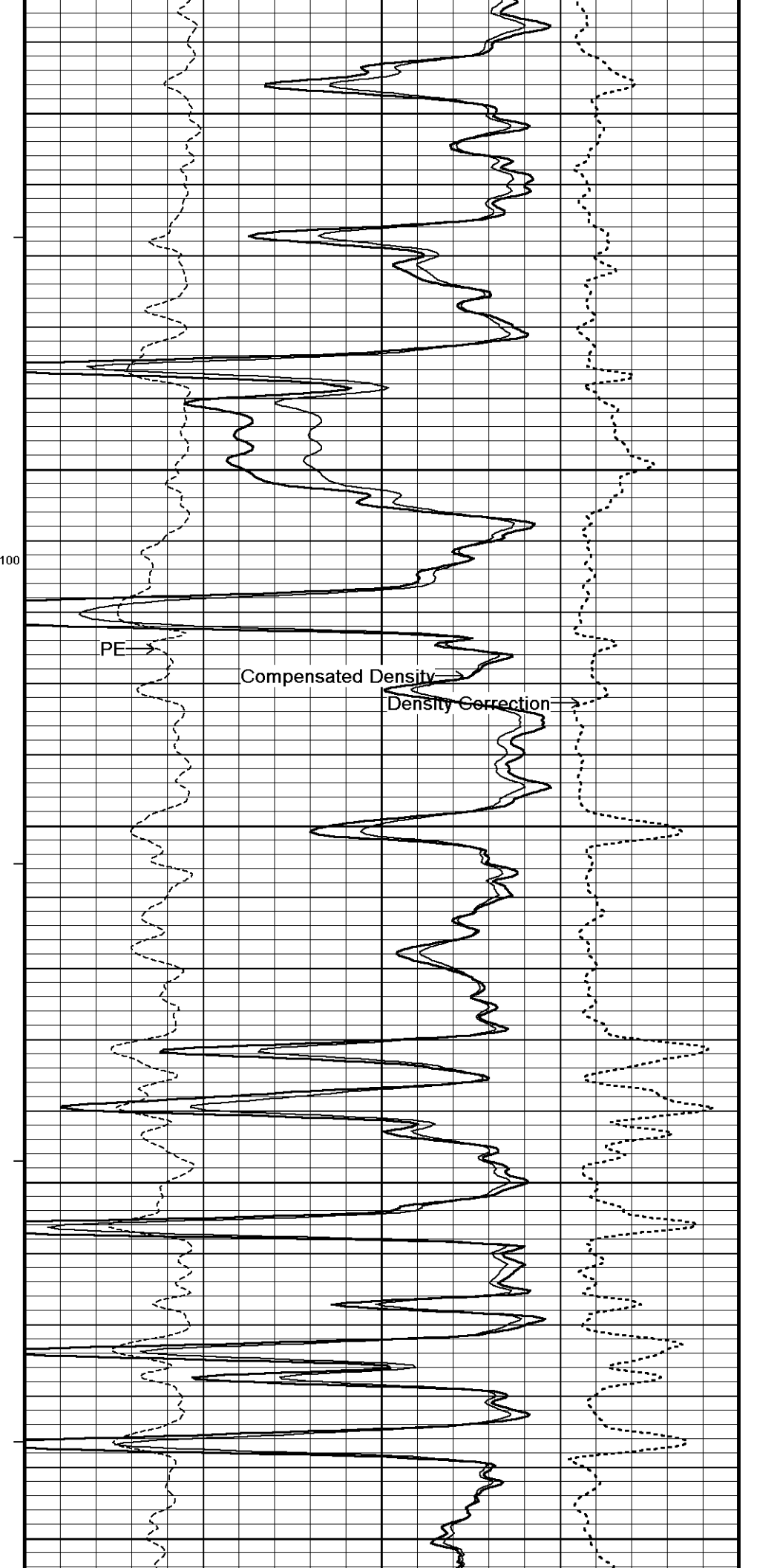
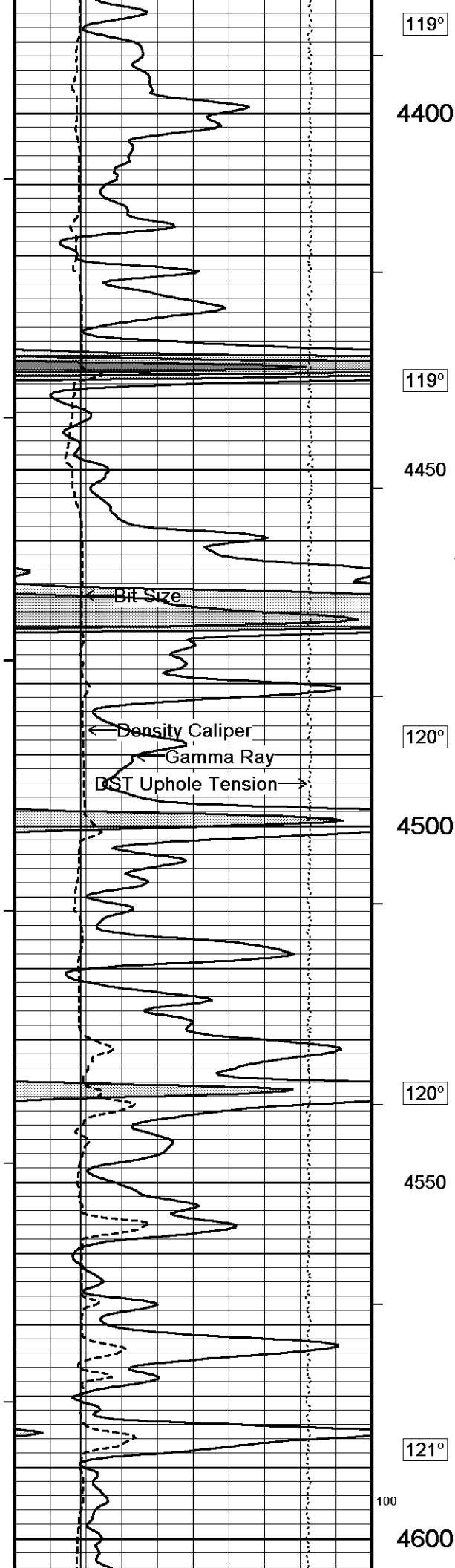
grams/cc

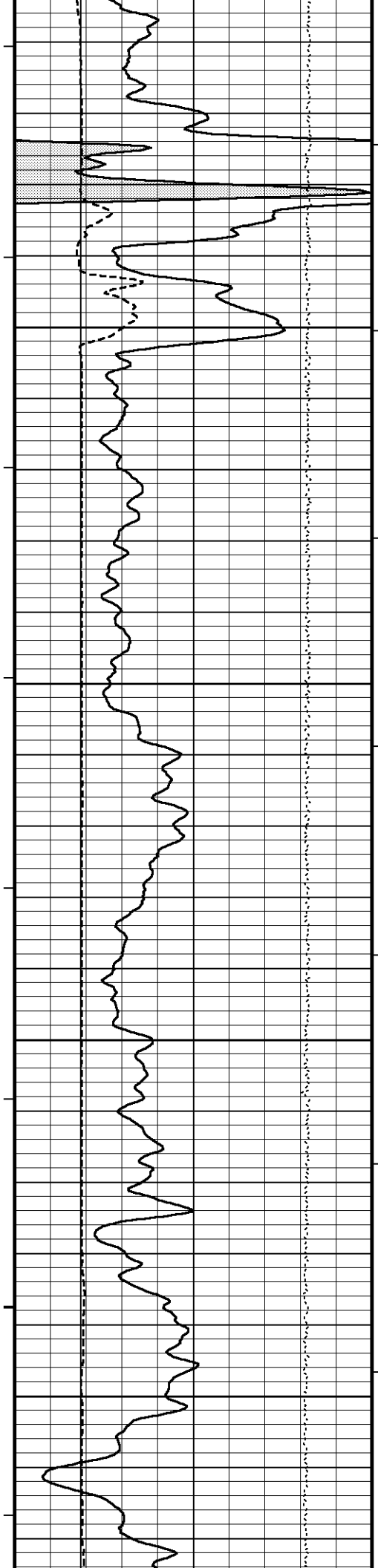
0 5 10 -0.25 0 0.25











121°

4650

121°

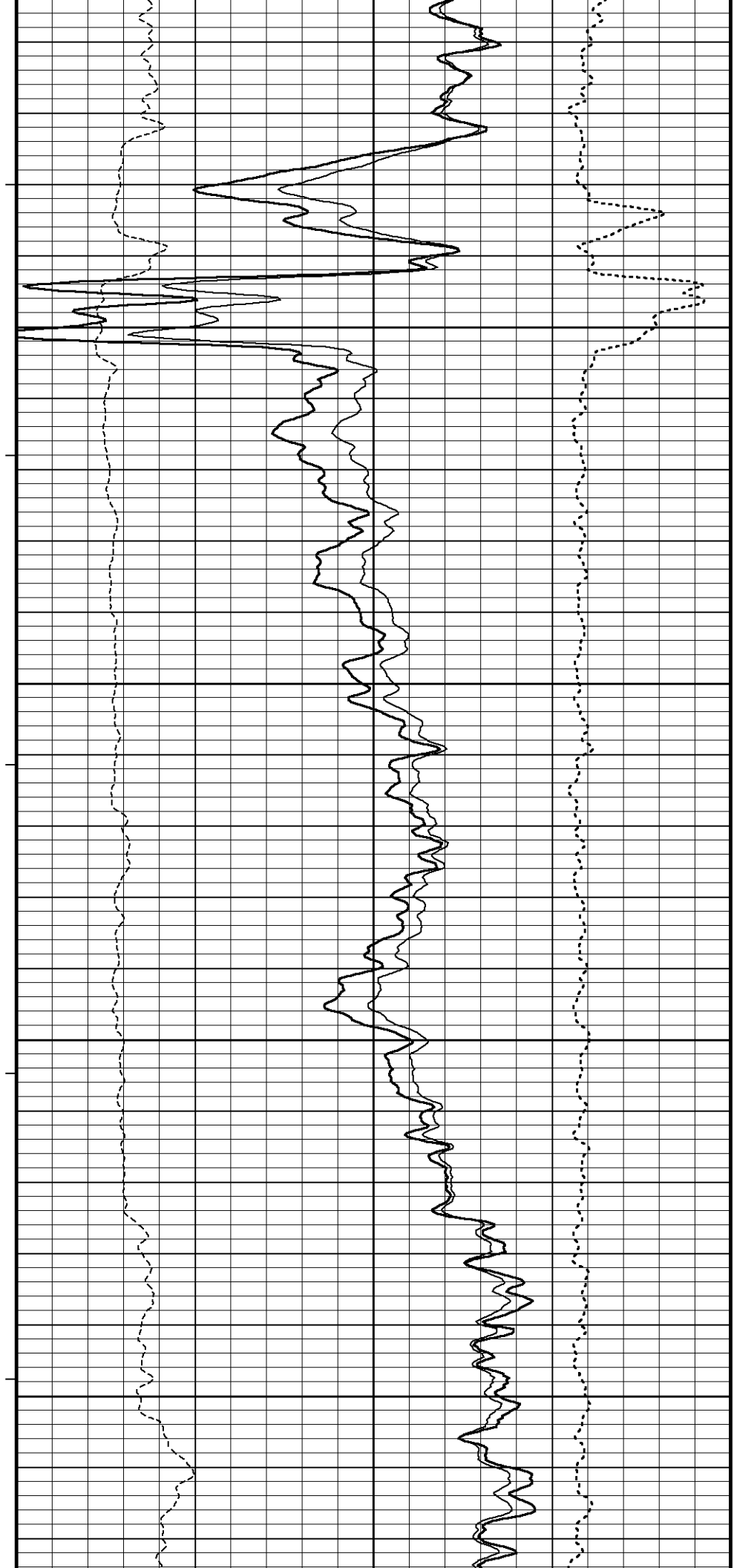
4700

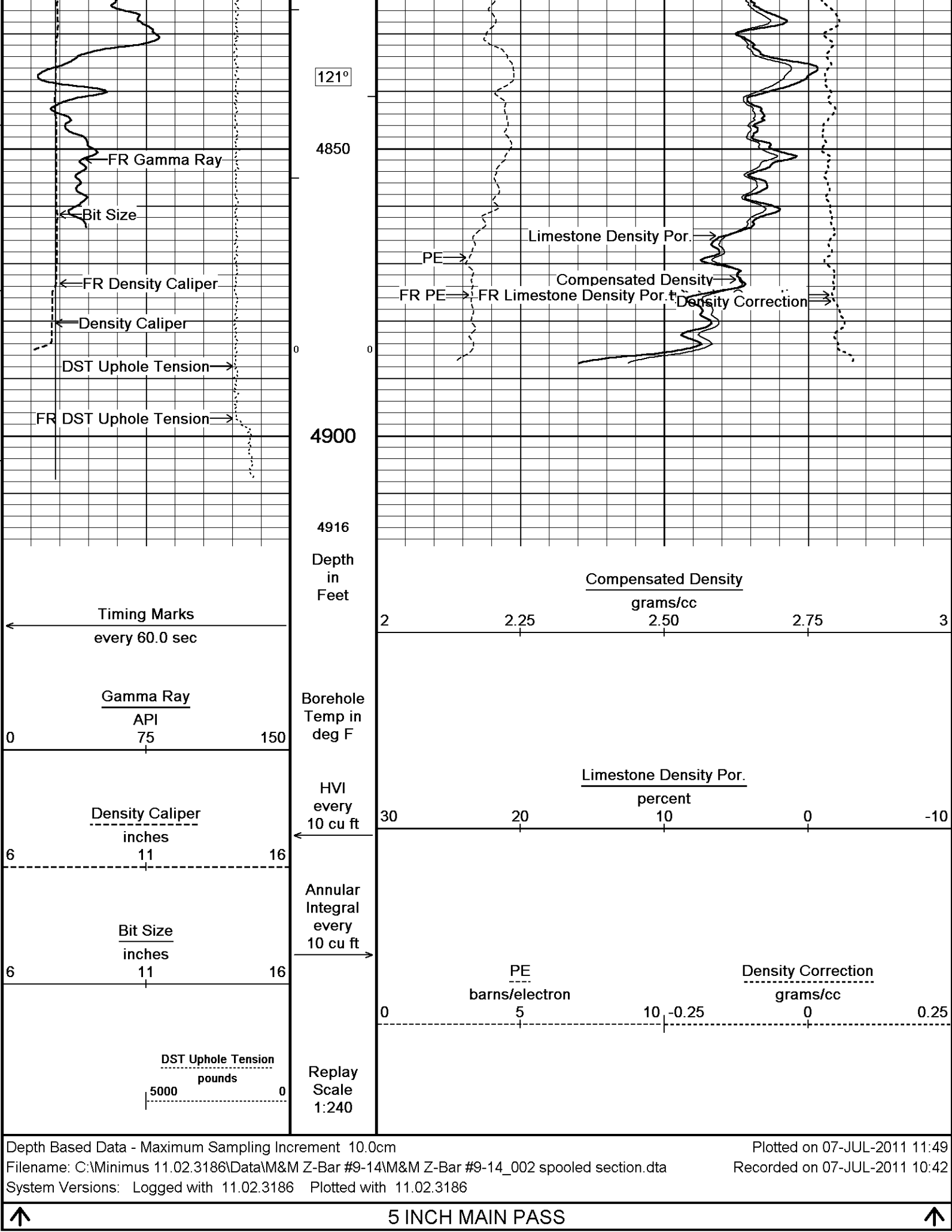
121°

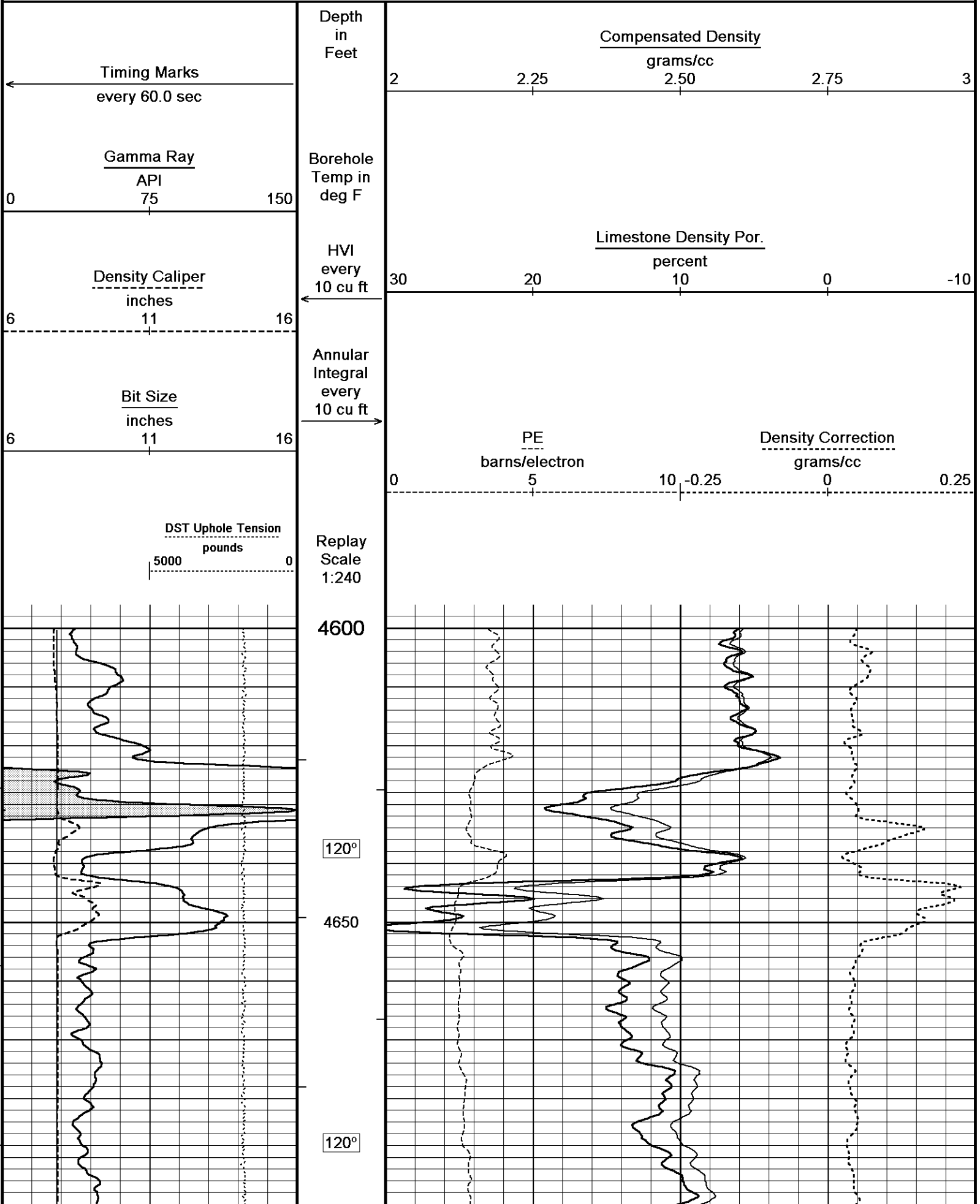
4750

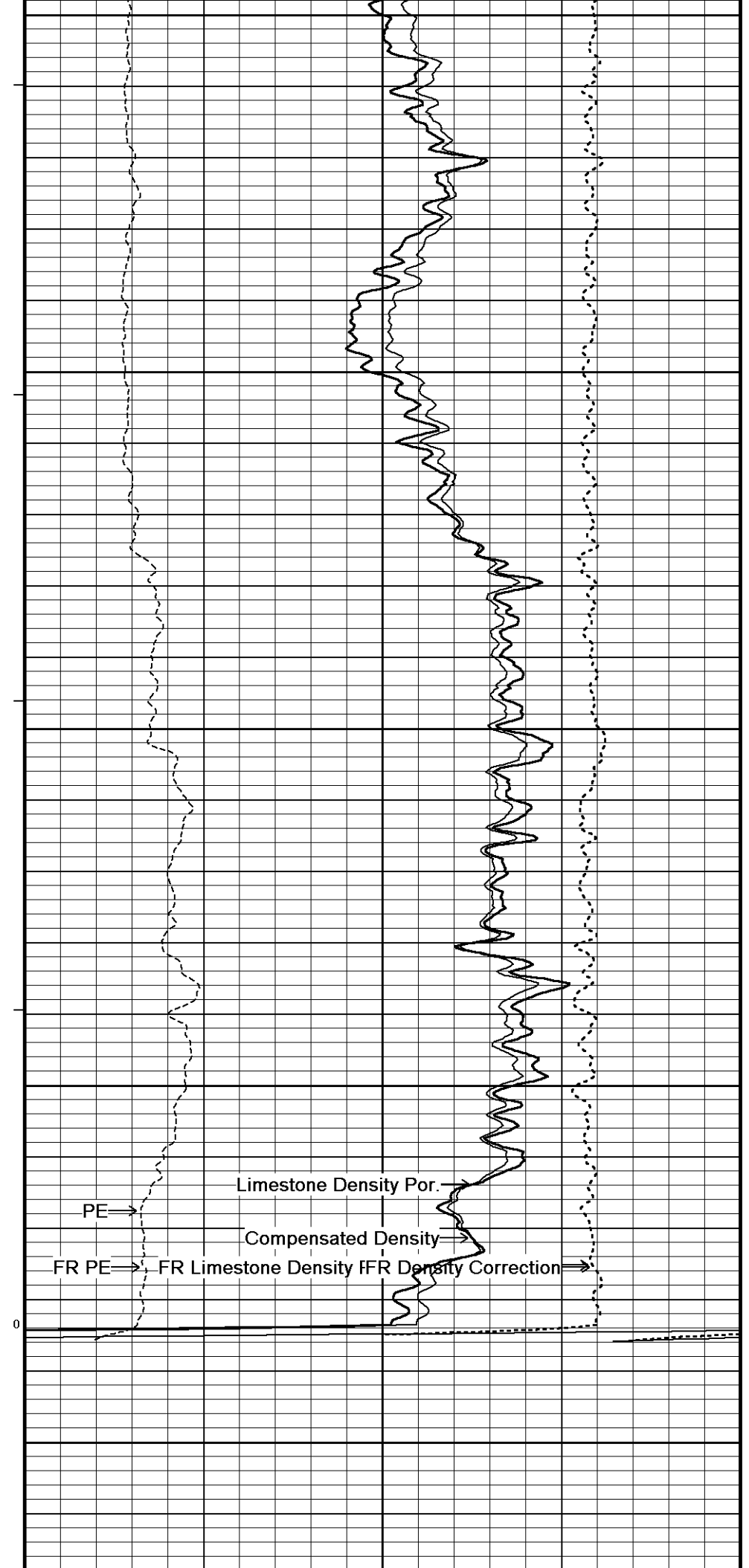
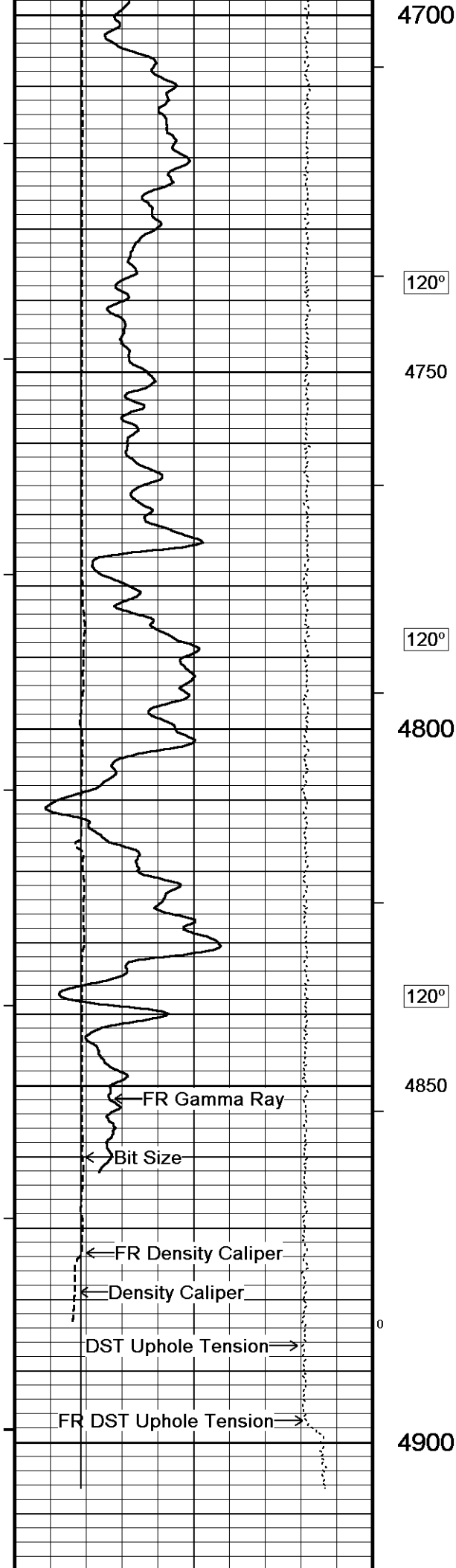
121°

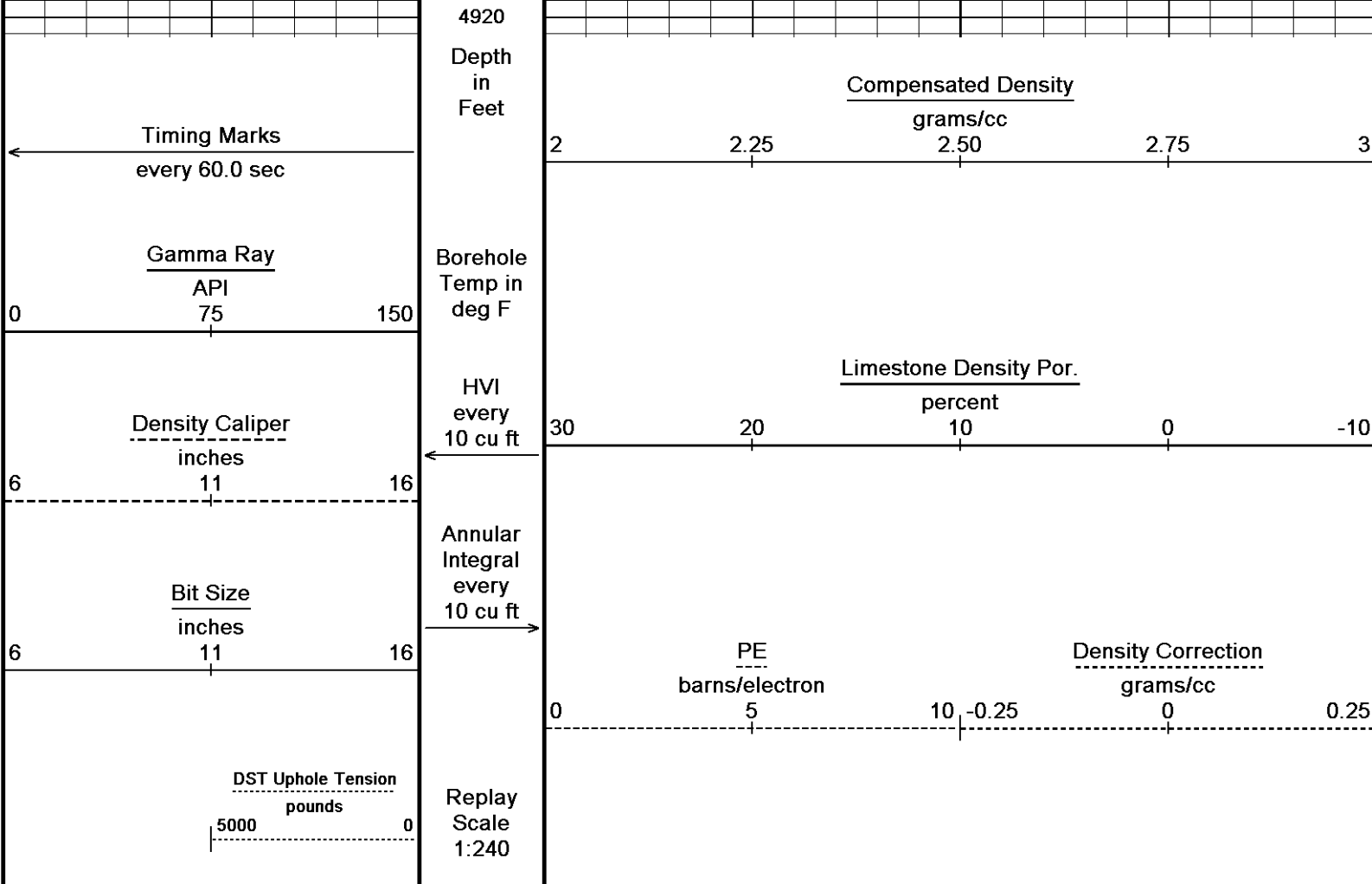
4800











Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 07-JUL-2011 11:49
 Filename: C:\Minimus 11.02.3186\Data\M&M Z-Bar #9-14\Copy of M&M Z-Bar #9-14_001.dta
 Recorded on 07-JUL-2011 09:29
 System Versions: Logged with 11.02.3186 Plotted with 11.02.3186

↑ 5 INCH REPEAT PASS ↑

BEFORE SURVEY CALIBRATION		
C:\Minimus 11.02.3186\Data\M&M Z-Bar #9-14\M&M Z-Bar #9-14_002 spooled section.dta		
General Constants All 000		Last Edited on 07-JUL-2011,07:39
General Parameters		
Mud Resistivity	0.560	ohm-metres
Mud Resistivity Temperature	92.000	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	4.500	inches
Caliper for Differential Caliper	Density 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	
Down-hole Tension Calibration SMS 0		Field Calibration on 05-JUN-2011 04:37
Reading No	Measured	Calibrated (lbs)
1	13499.89	0.00
2	14983.70	496.00

High Resolution Temperature Calibration MCG-B 34				Field Calibration on 05-MAR-2011,23:56	
		Measured	Calibrated(Deg F)		
Lower		50.00	50.00		
Upper		75.00	75.00		
High Resolution Temperature Constants MCG-B 34				Last Edited on	
Pre-filter Length		11			
SP Calibration MCG-B 34				Field Calibration on 20-APR-2011 14:53	
		Measured	Calibrated (mV)		
Reference 1		106.7	100.0		
Reference 2		-95.0	-100.0		
Gamma Calibration MCG-B 34				Field Calibration on 07-JUL-2011 02:24	
		Measured	Calibrated (API)		
Background		66	45		
Calibrator (Gross)		1116	770		
Calibrator (Net)		1050	725		
Gamma Constants MCG-B 34				Last Edited on 07-JUL-2011,06:30	
Gamma Calibrator Number		grc38			
Mud Density		1.08	gm/cc		
Caliper Source for Processing		Density Caliper			
Tool Position		Eccentred			
Concentration of KCl		0.00	kppm		
Micro Normal and Micro Inverse Calibration MML-A 4				Base Calibration on 16-MAY-2011 09:23 Field Check on 07-JUL-2011 02:10	
Base Calibration					
		Measured	Calibrated (ohm-m)		
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2	
Micro Normal	12.1	60.1	2.6	12.8	
Micro Inverse	15.6	78.3	1.7	8.4	
Channel	Base Check (ohm-m)		Field Check (ohm-m)		
Micro Normal		32.2	32.2		
Micro Inverse		16.3	16.3		
Micro Normal and Micro Inverse Constants MML-A 4				Last Edited on 07-JUL-2011,06:31	
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 4				Base Calibration on 16-MAY-2011 09:38 Field Calibration on 07-JUL-2011 02:11	
Base Calibration					
Reading No		Measured	Calibrator Size (in)		
1		14953	5.98		
2		18280	7.97		
3		21656	9.86		
4		25588	11.92		
5		0	0.00		
6		N/A	N/A		
Field Calibration					
		Measured Caliper (in)	Actual Caliper (in)		
		6.04	5.98		
Neutron Calibration MDN-A.B 65				Base Calibration on 02-JUL-2011 23:27 Field Check on 07-JUL-2011 02:18	
Base Calibration					
		Measured	Calibrated (cps)		
	Near	Far	Near	Far	
	3269	103	3714	110	
Ratio		31.795	33.764		
Field Calibration					
		Measured	Calibrated (cps)		
	Near	Far	Near	Far	
	3269	103	3714	110	
Ratio		31.795	33.764		

Field Calibrator at Base	Calibrated (cps)
	1562 2227
Ratio	0.701
Field Check	Calibrated (cps)
	1579 2250
Ratio	0.702

Neutron Constants MDN-A.B 65			Last Edited on 07-JUL-2011,06:30		
Neutron Source Id	757				
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	MCG External Temperature				
Temperature	N/A	degrees F			
Mud Salinity	0.00	kppm			
Formation Fluid Salinity Source	Constant Value				
Formation Fluid Salinity	0.00	kppm			
Barite Mud Correction	Not Applied				

FE Calibration MFE-A.A 55			Base Calibration on 21-JUN-2011 10:19 Field Check on 07-JUL-2011 02:02		
Base Calibration					
	Measured	Calibrated (ohm-m)			
Reference 1	0.0	0.0			
Reference 2	953.6	126.8			
Base Check		281.3			
Field Check		281.3			

FE Constants MFE-A.A 55			Last Edited on 07-JUL-2011,06:31		
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			

High Resolution Temperature Calibration MAI-A.A 45			Field Calibration on 13-AUG-2010,13:31		
	Measured	Calibrated(Deg F)			
Lower	50.00	50.00			
Upper	100.00	100.00			

High Resolution Temperature Constants MAI-A.A 45			Last Edited on		
Pre-filter Length	11				

Induction Calibration MAI-A.A 45				Base Calibration on 13-AUG-2010,13:32	
				Field Check on 07-JUL-2011 02:00	
Base Calibration					
Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel	Low	High		Low	High
1	14.5	473.5		9.3	966.2
2	5.2	373.4		7.6	821.4
3	2.8	260.6		5.2	566.0
4	1.6	132.2		2.6	279.2
Array Temperature		86.2	Deg F		
Channel		Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High		Low	High
1	0.0	0.0		19.7	3845.9

1	0.0	0.0	19.7	3845.9
2	0.0	0.0	33.0	3631.9
3	0.0	0.0	30.0	3050.5
4	0.0	0.0	20.4	2094.0
Deep	0.0	0.0	18.0	1920.7
Medium	0.0	0.0	43.2	4051.1
Shallow	0.0	0.0	50.2	5475.8
Array Temperature		0.0	88.4	Deg F

Induction Constants MAI-A.A 45

Last Edited on 07-JUL-2011,01:50

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	

Caliper Calibration MPD-B 65

Base Calibration on 01-JUL-2011 18:46

Field Calibration on 07-JUL-2011 02:03

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	13710	3.99
2	22224	5.98
3	30784	7.97
4	39184	9.86
5	48352	11.92
6	N/A	N/A
Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	5.97	5.98

Photo Density Calibration MPD-B 65

Base Calibration on 02-JUL-2011 22:55

Field Check on 07-JUL-2011 02:09

Density Calibration				
Base Calibration		Measured	Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	50829	24574	59556	30836
Reference 2	20710	2286	24941	2541

Field Check at Base

1245.3 1199.3

Field Check

1245.0 1197.7

PE Calibration

Base Calibration

	WS	Measured WH	Ratio	Calibrated Ratio
Background	226	1107		
Reference 1	19076	50633	0.381	0.371
Reference 2	5565	20564	0.274	0.272

Field Check at Base

225.7 1107.0

Field Check

226.6 1109.6

Density Constants MPD-B 65

Last Edited on 07-JUL-2011,06:31

Density Source Id	254
Nylon Calibrator Number	695
Aluminium Calibrator Number	698
Density Shoe Profile	8 inch
Caliper Source for Processing	Density Caliper
PE Correction to Density	Not Applied
Mud Density	1.08 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\M&M Z-Bar #9-14\M&M Z-Bar #9-14_002 spooled section.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-B 34 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-log

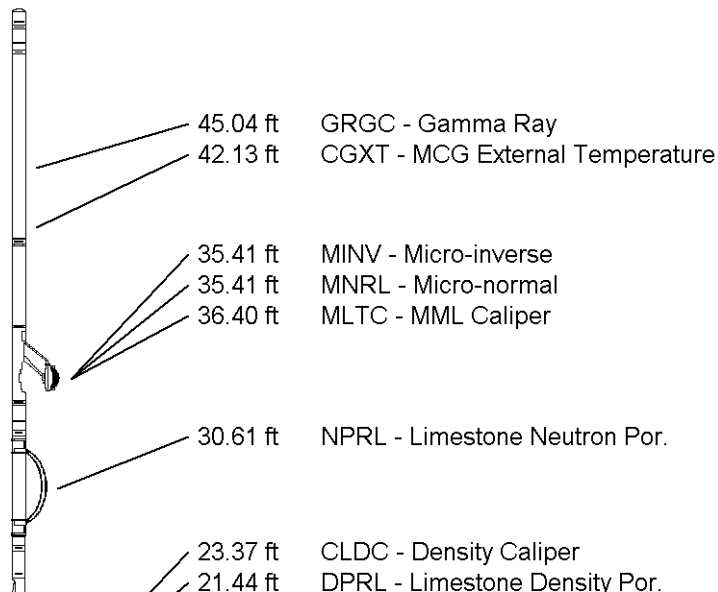
MML-A 4 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

Compact Neutron

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

Compact Density/Caliper

MPD-B 65 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

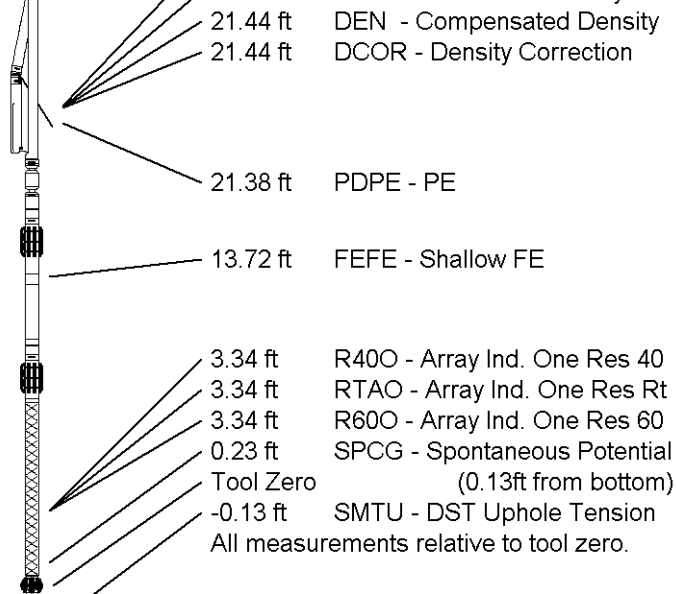


SKJ-D.A Compact Knuckle Joint
 SKJ-D.A 37 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

Compact Focussed Electric
 MFE-A.A 55 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: 51.90 ft Weight: 423.3 lb



COMPANY	M & M EXPLORATION, INC.
WELL	Z-BAR #9-14
FIELD	AETNA GAS AREA
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1561.00	feet	First Reading	4876.00	feet
Elevation Drill Floor	1559.00	feet	Depth Driller	4900.00	feet
Elevation Ground Level	1549.00	feet	Depth Logger	4897.00	feet



Weatherford®

COMPACT PHOTO DENSITY
 COMPENSATED NEUTRON
 MICRORESISTIVITY LOG

