



Weatherford

**COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG**

COMPANY CHOLLA PRODUCTION, LLC.

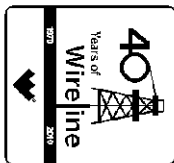
WELL METZGER #2-16

FIELD UNNAMED

PROVINCE/COUNTY SCOTT

COUNTRY/STATE U.S.A. / KANSAS

LOCATION 660' FSL & 660' FEL



SEC 16

TWP 19S

RGE 33W

Other Services
MAI/MFE

API Number 15-171-20796

Permit Number

Permanent Datum G.L., Elevation 2961 feet

Log Measured From KB

Drilling Measured From K.B.

Date 27-MAR-2011

Run Number ONE

Depth Driller 4700.00

Depth Logger 4700.00

First Reading 4678.00

Last Reading 2400.00

Casing Driller 264.00

Casing Logger 264.00

Bit Size 7.875

Hole Fluid Type CHEMICAL

Density / Viscosity 9.30 lb/USg

PH / Fluid Loss 9.00

Sample Source FLOWLINE

Rm @ Measured Temp 0.78 @ 73.0

Rmf @ Measured Temp 0.62 @ 73.0

Rmc @ Measured Temp 0.94 @ 73.0

Source Rmf / Rmc CALC

Rm @ BHT 0.50 @ 115.0

Time Since Circulation 5 HOURS

Max Recorded Temp 115.00

Equipment Name COMPACT

Equipment / Base 13057

Recorded By L. SCOTT

Witnessed By BILL GOFF

S.O.# / JOB# 3529124

BOREHOLE RECORD

Last Edited: 27-MAR-2011 07:36

Bit Size
inches
7.875

Depth From
feet
264.00

Depth To
feet
4700.00

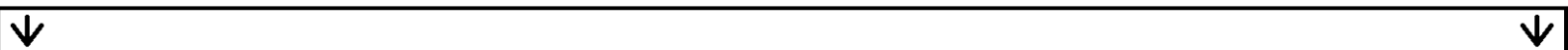
CASING RECORD

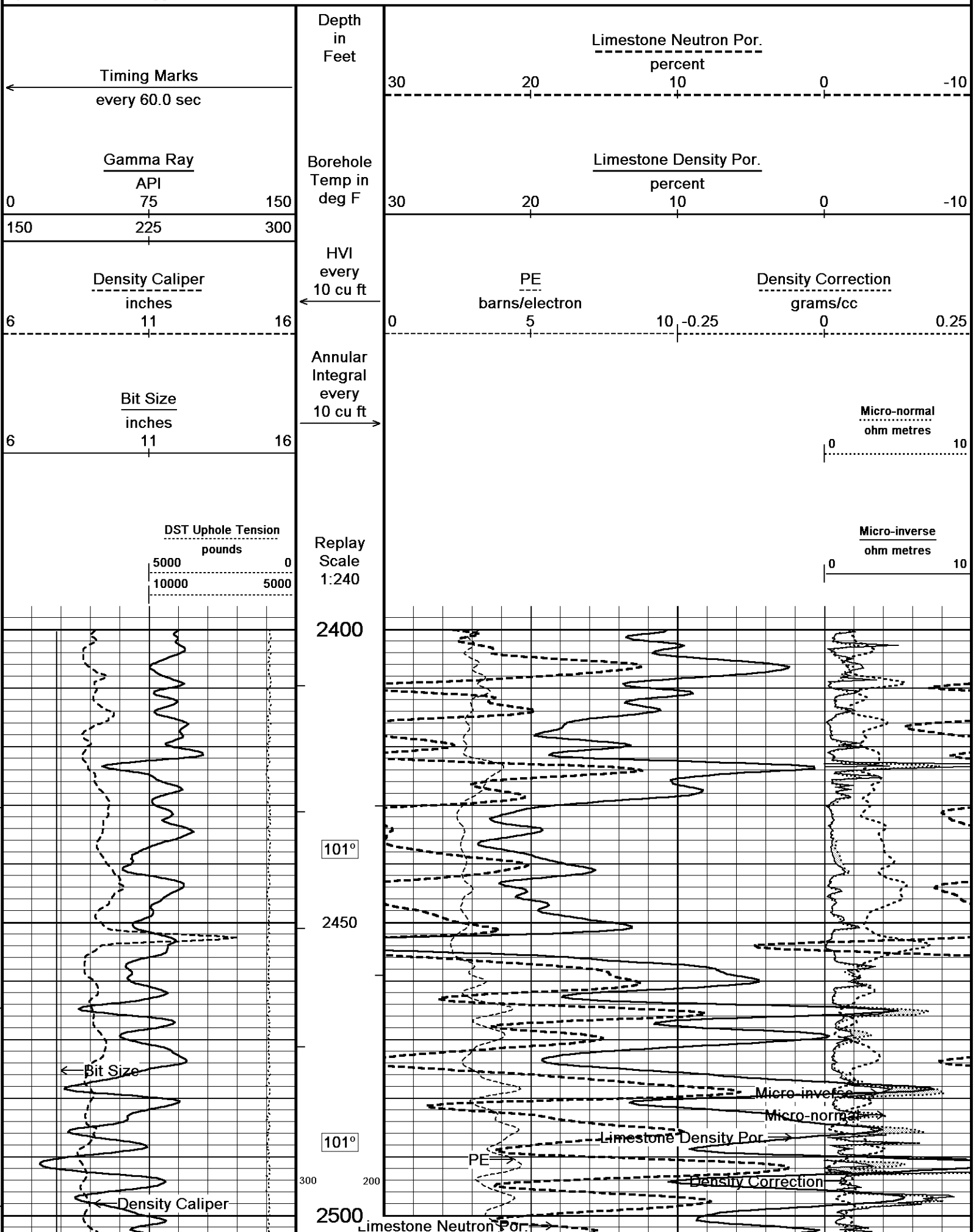
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	264.00	24.00

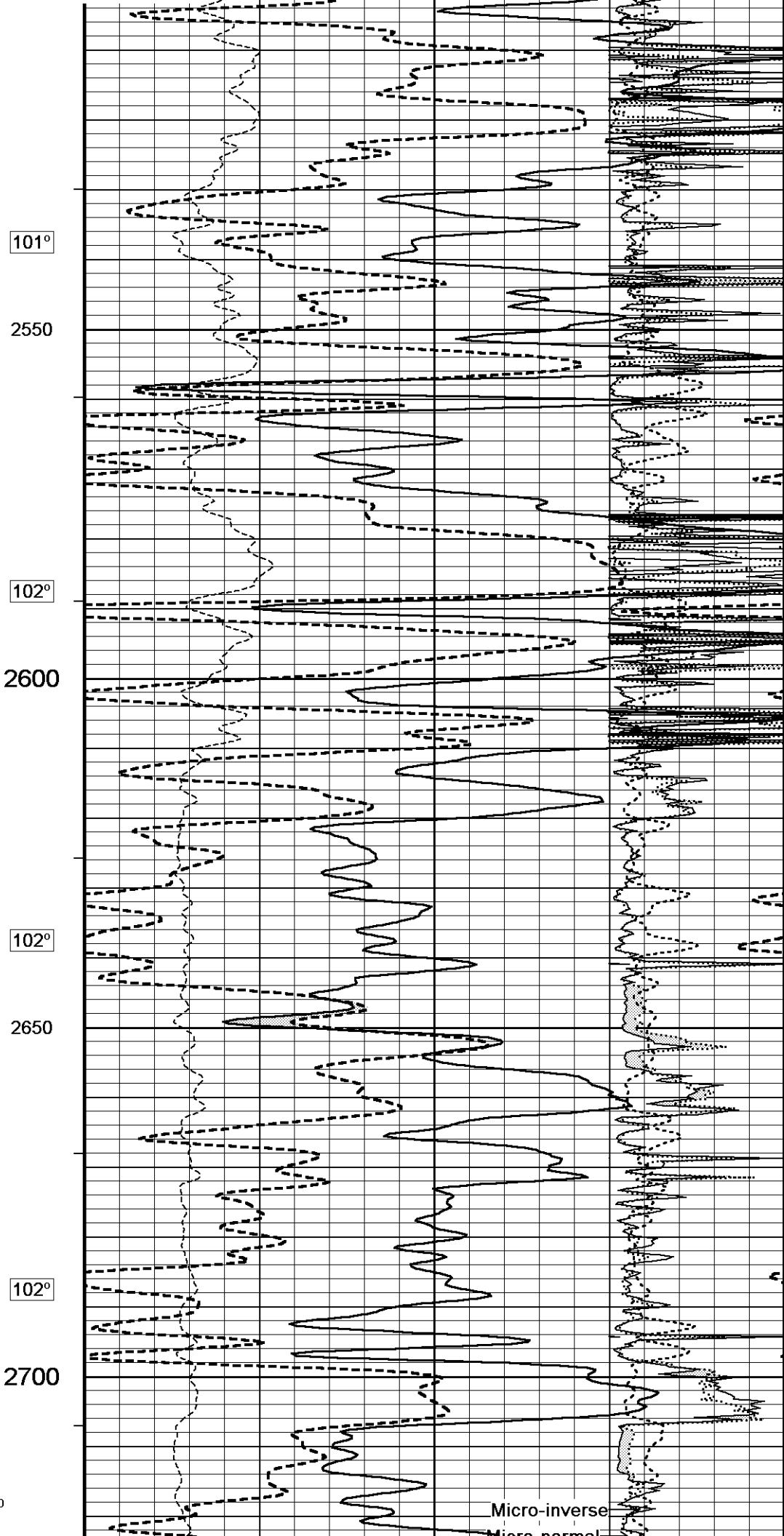
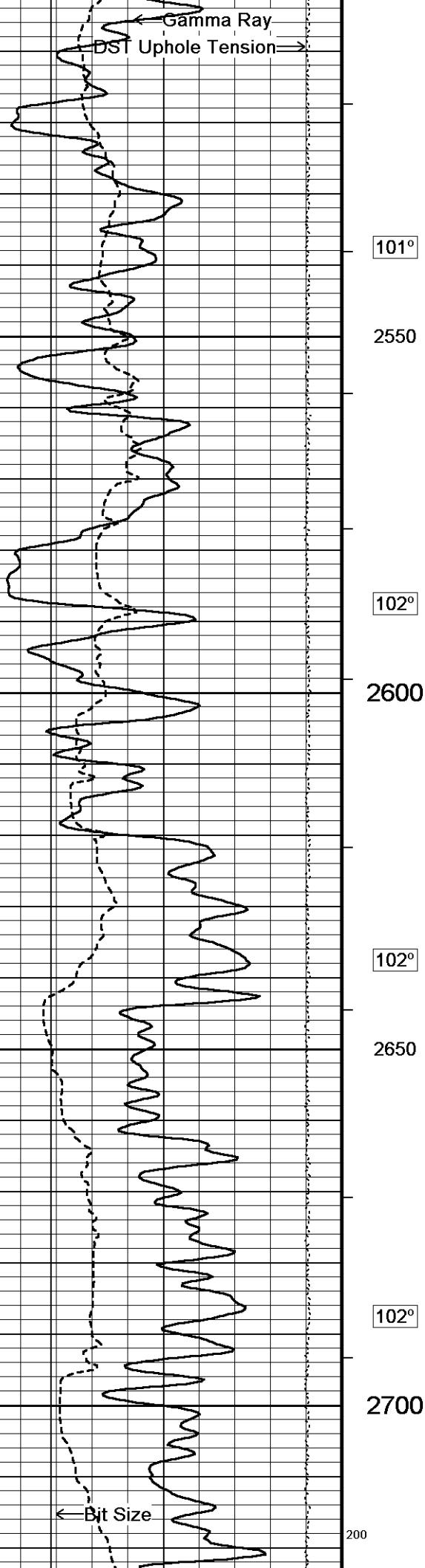
REMARKS

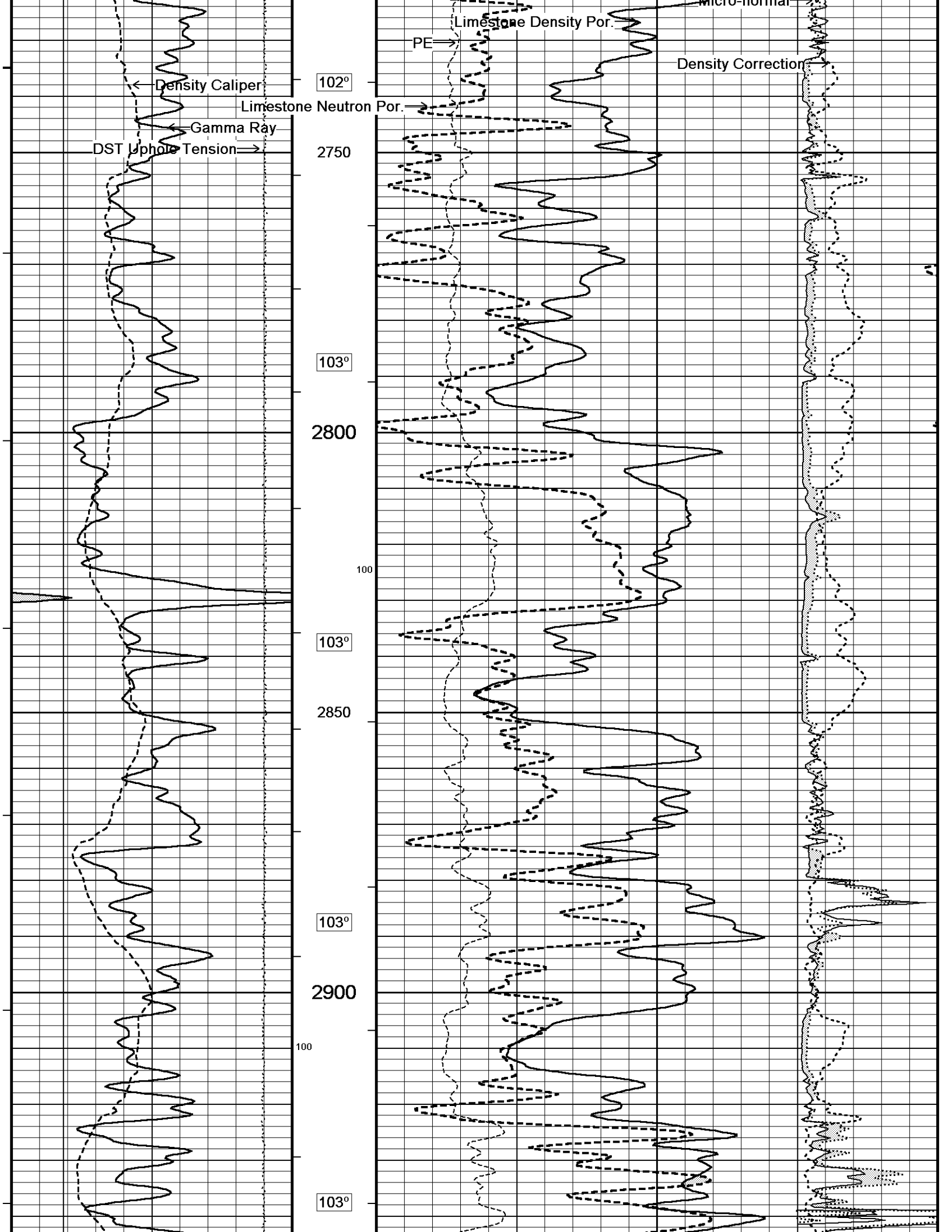
Tools Ran: MCG, MML, MDN, MPD, SKJ, MFE, MAI.
Hardware Used: MDN Dual Eccentralizer used. MPD 8 inch profile plate used. MFE and MAI 0.5 inch standoffs used.
2.71 g/cc Limestone Density Matrix used to calculate porosity.
All intervals logged and scaled per customer's request.
Annular volume with 5.5 inch production casing= 526 cu. ft.
Service order #3529124
Engineer: L. Scott
Operator(s): M. Stegman

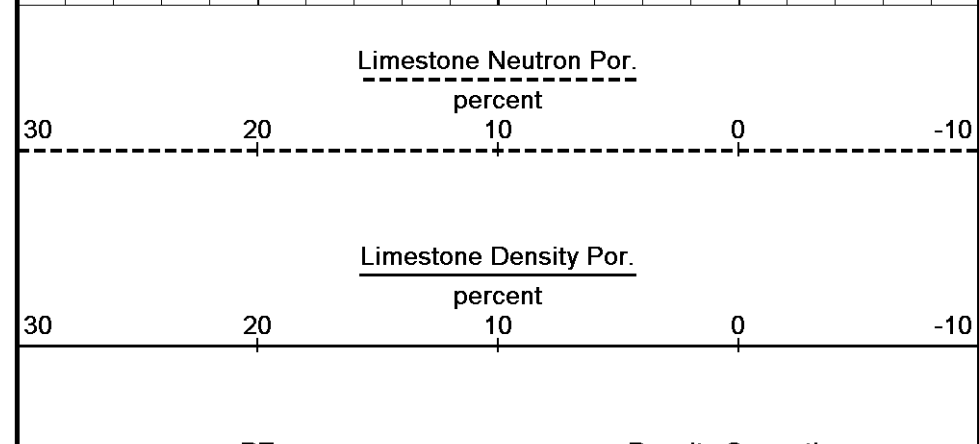
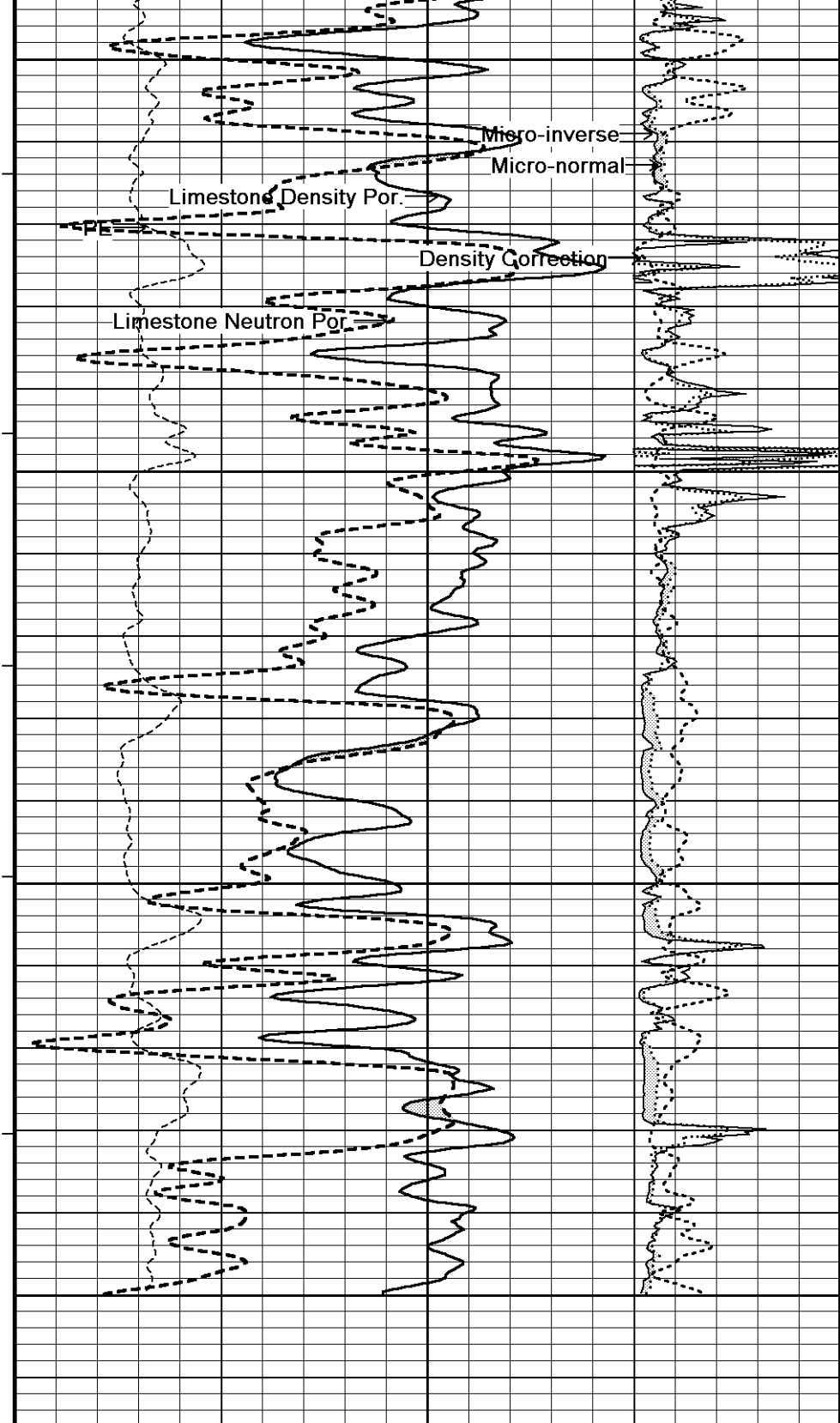
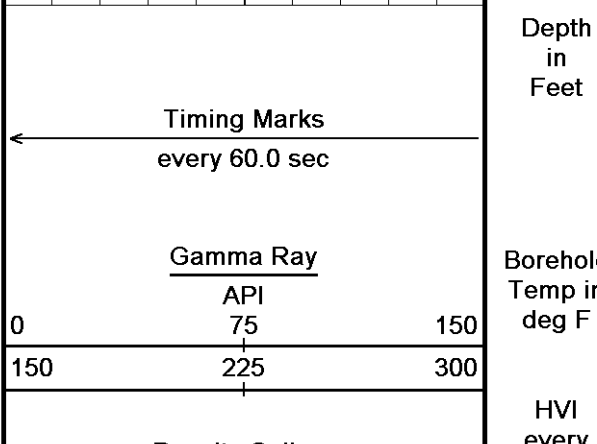
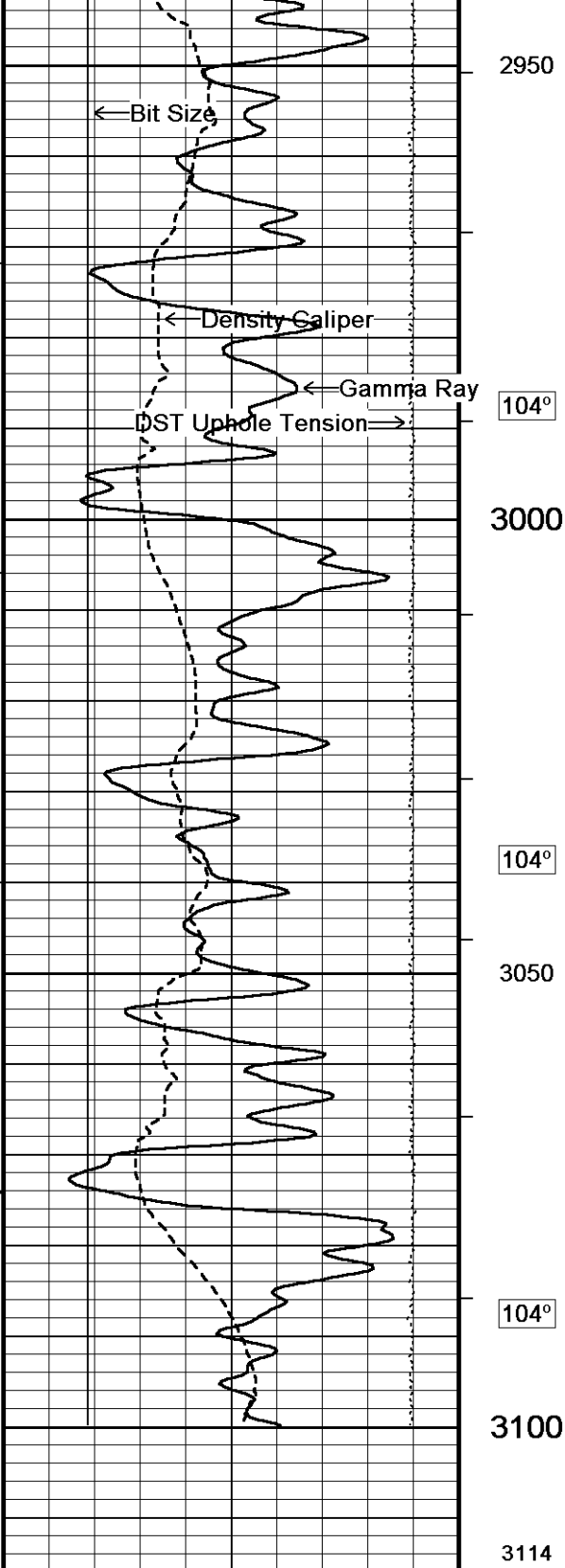
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs,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

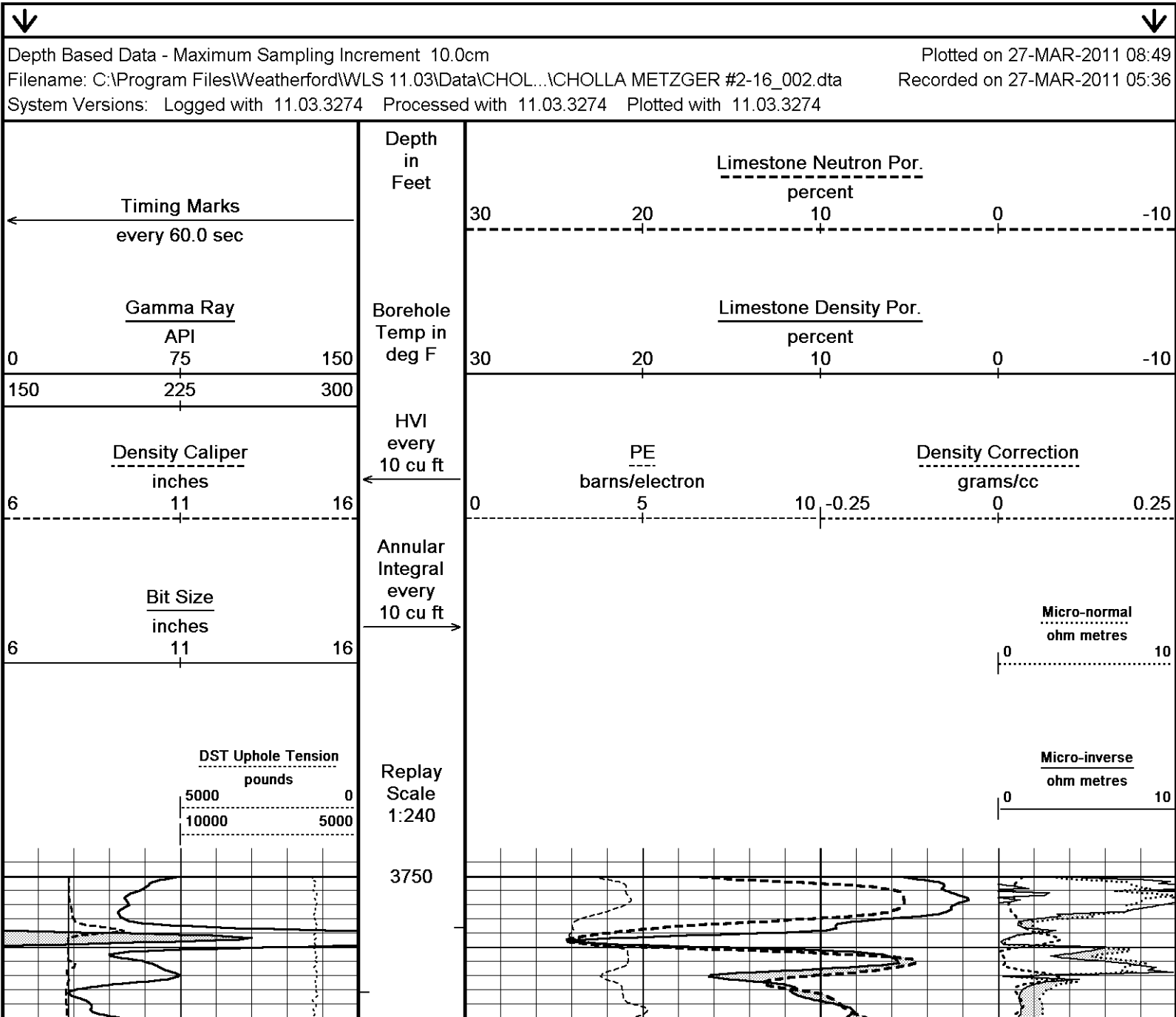
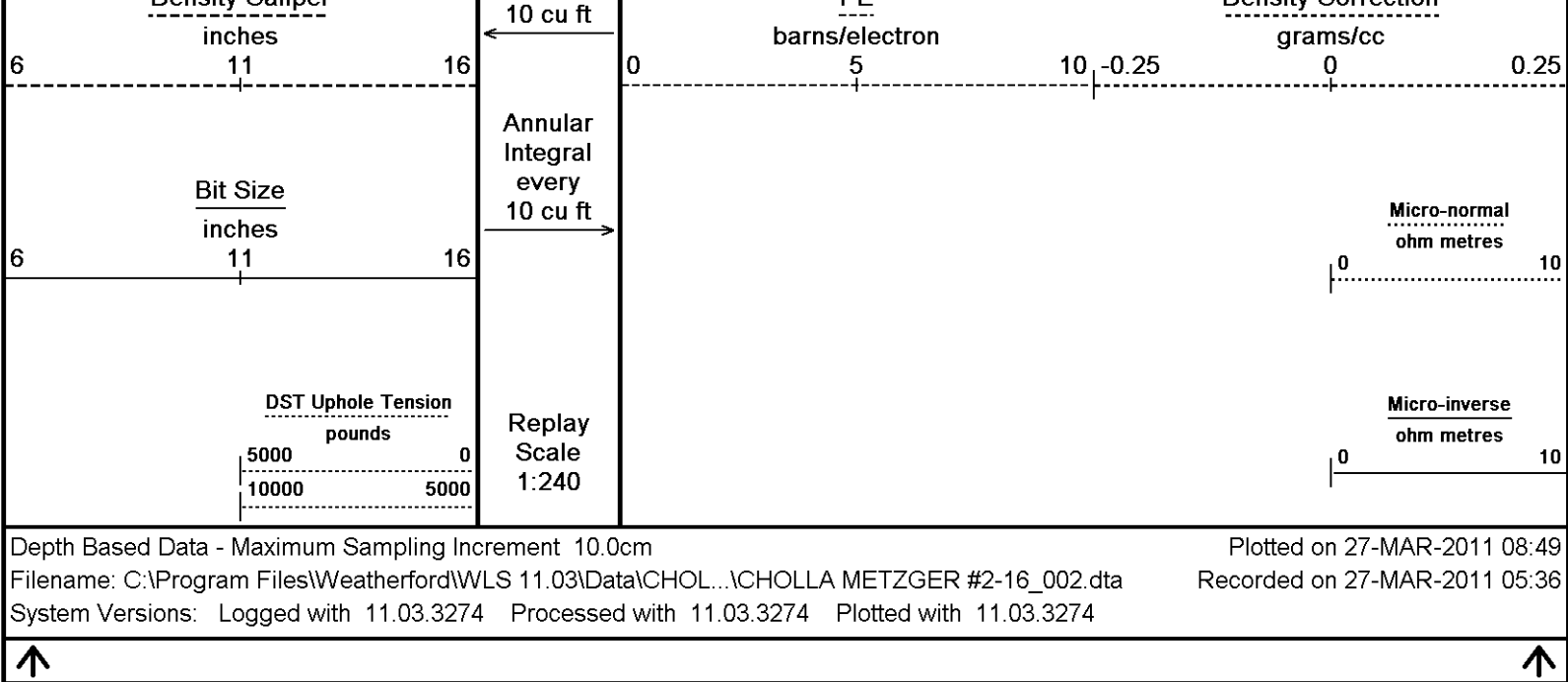


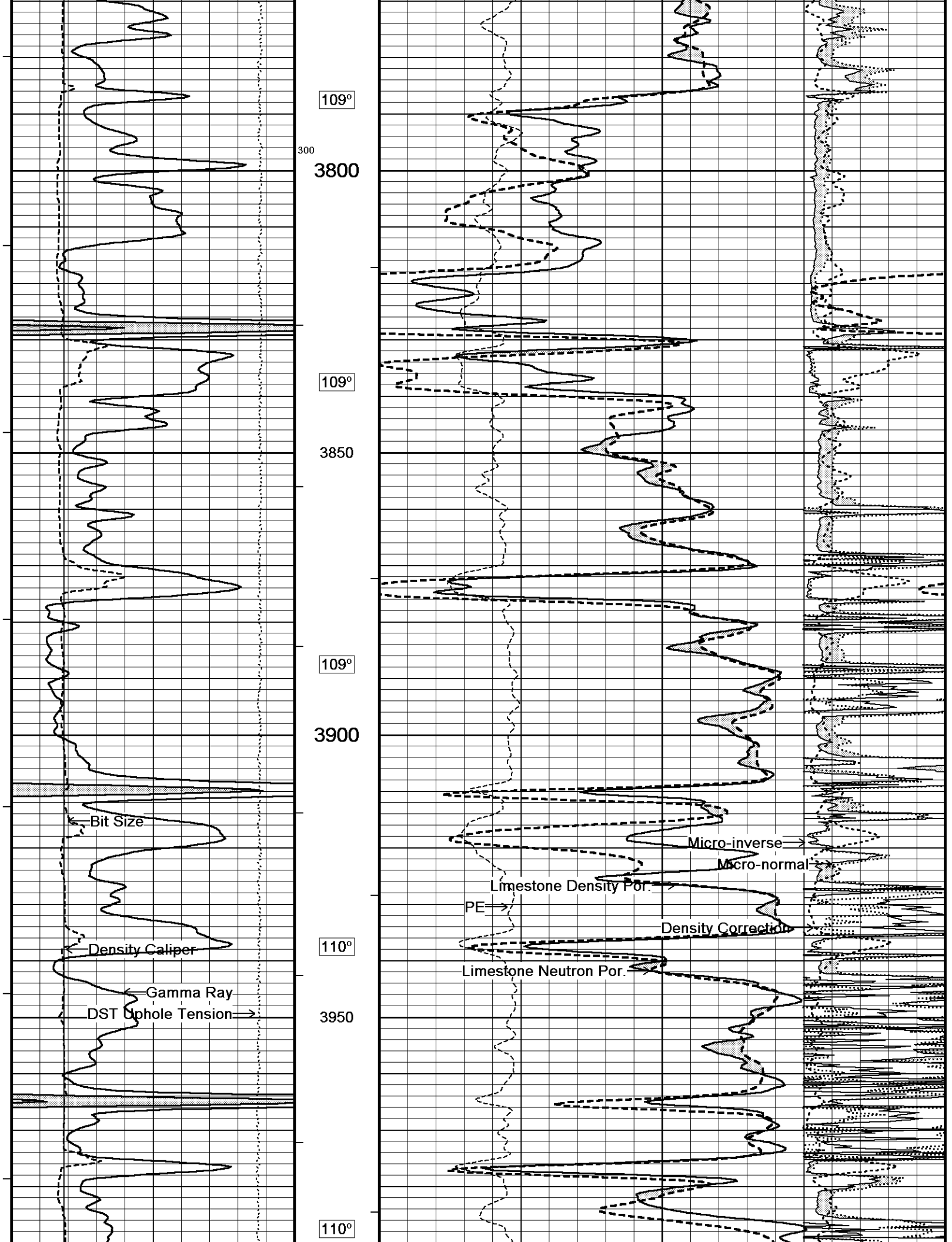


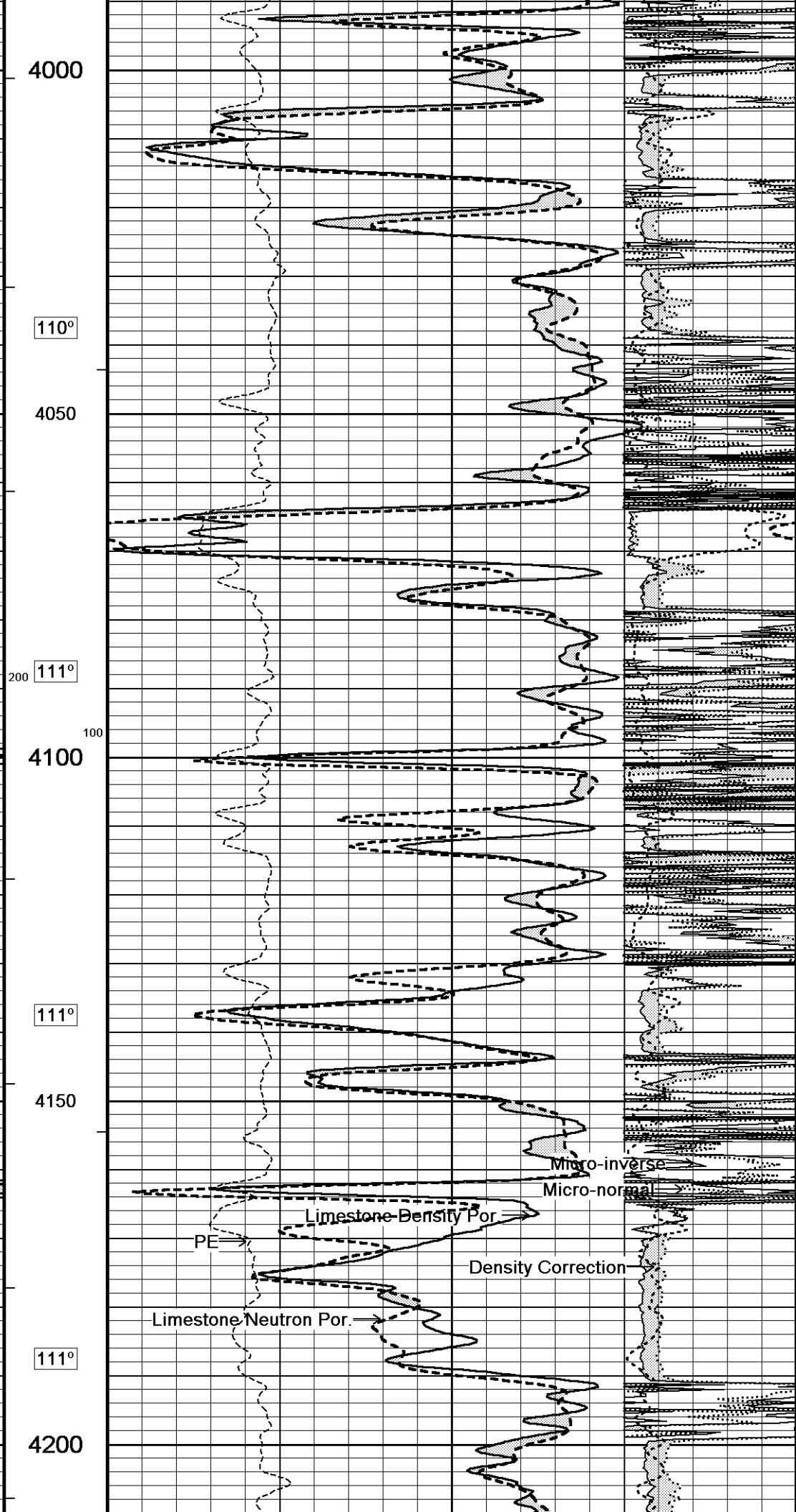
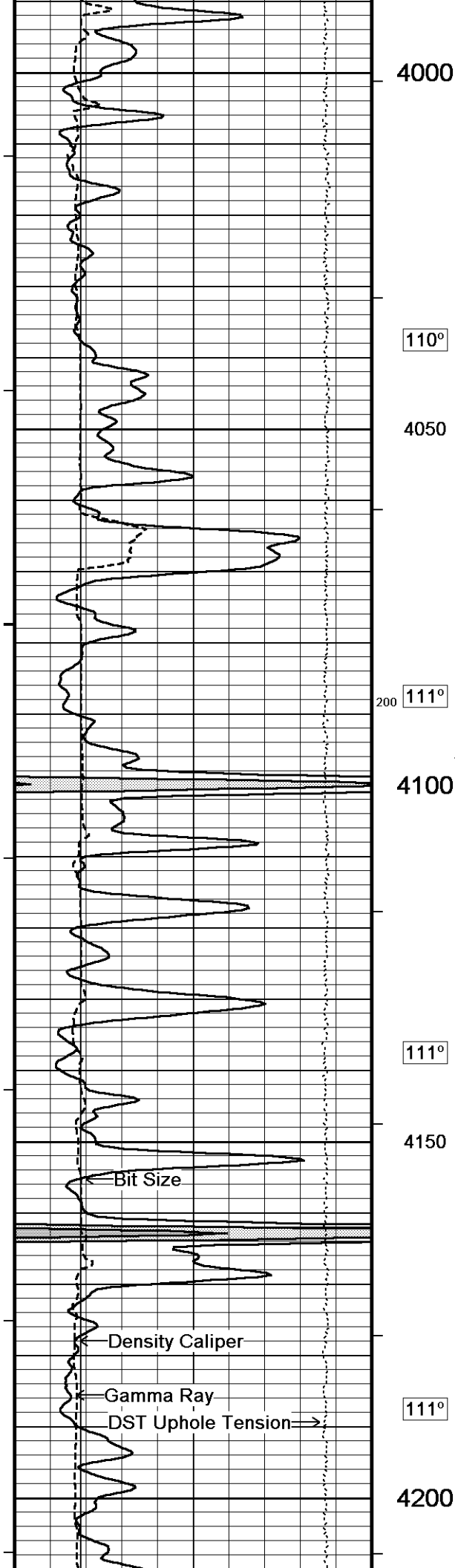


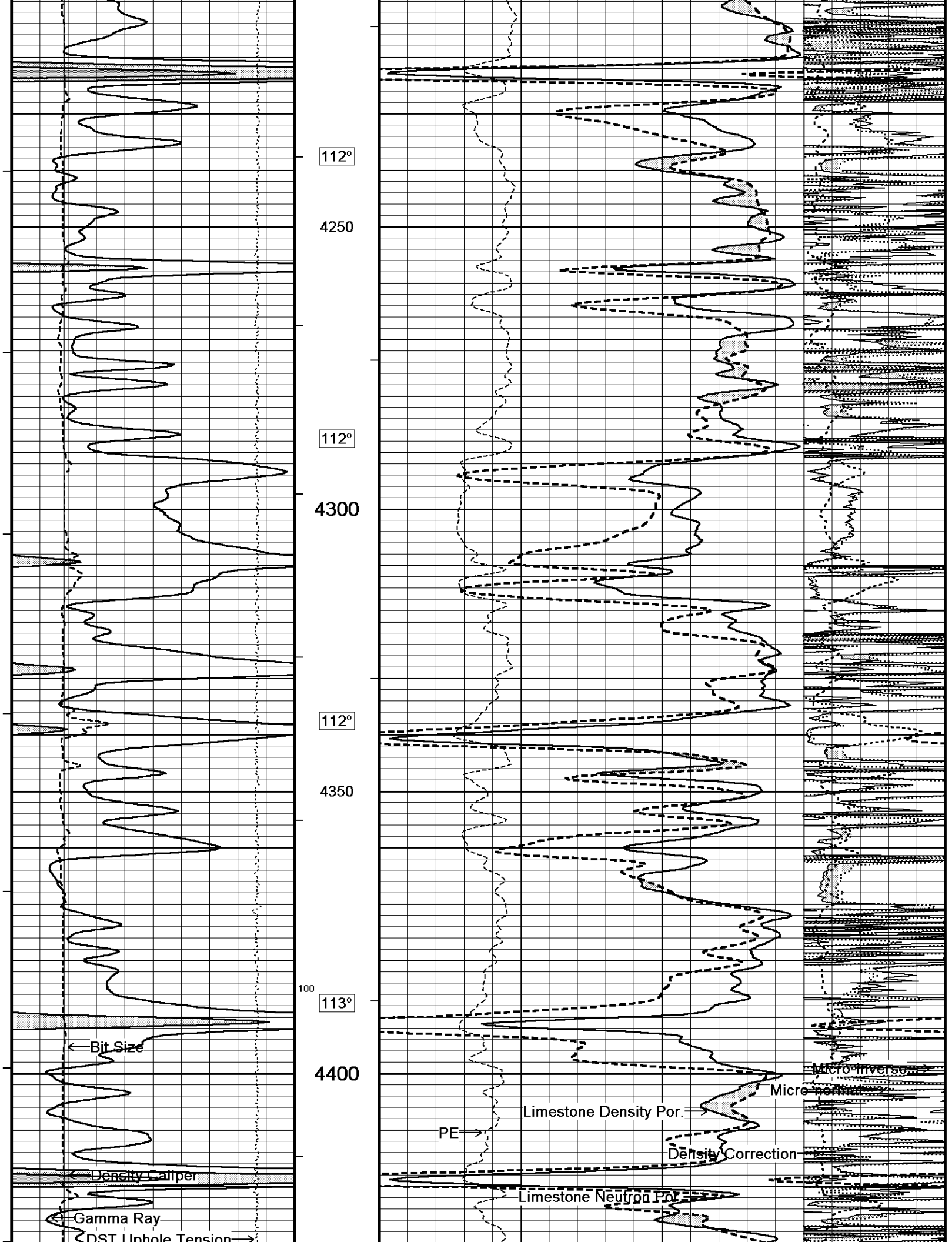


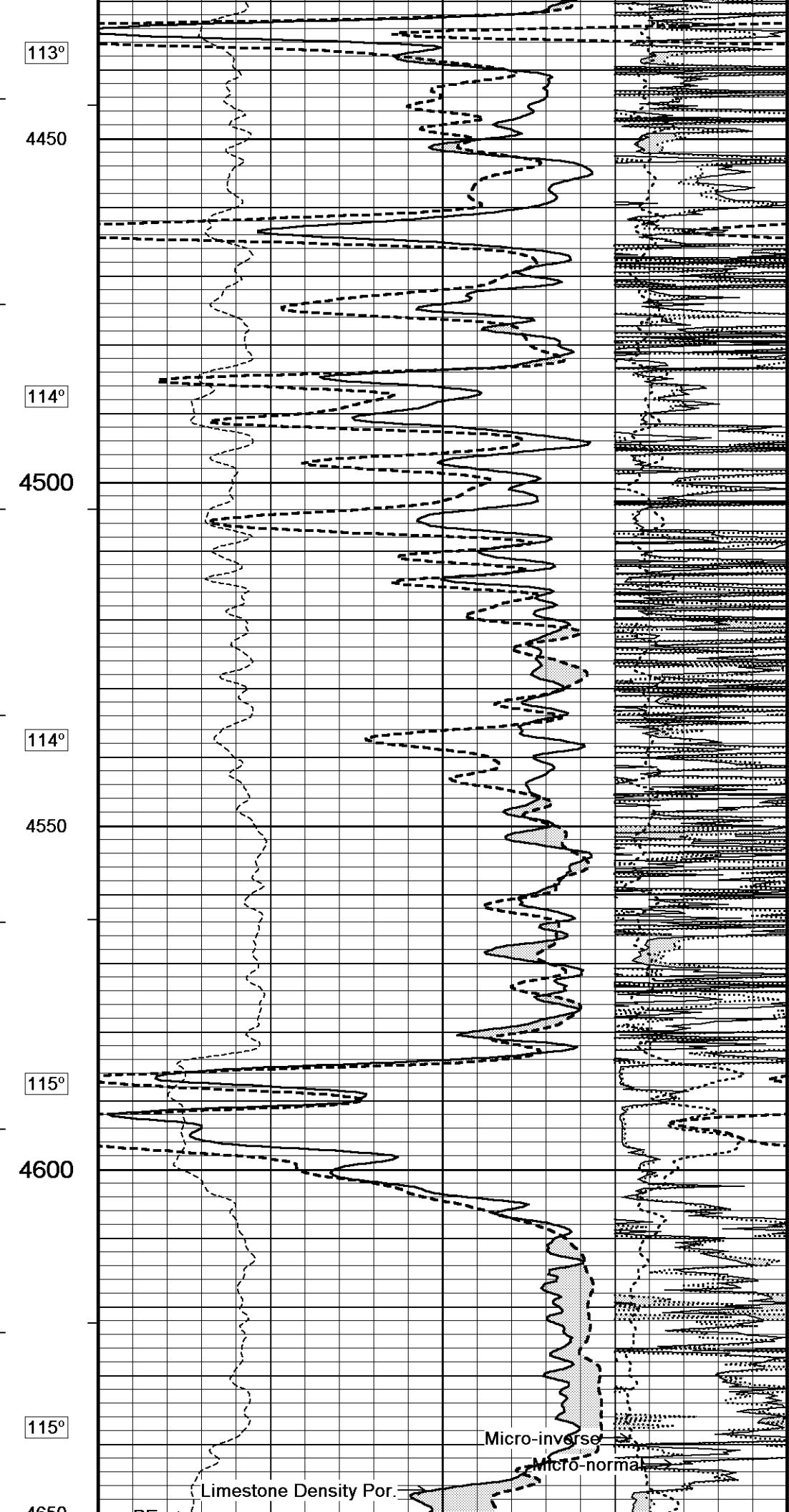
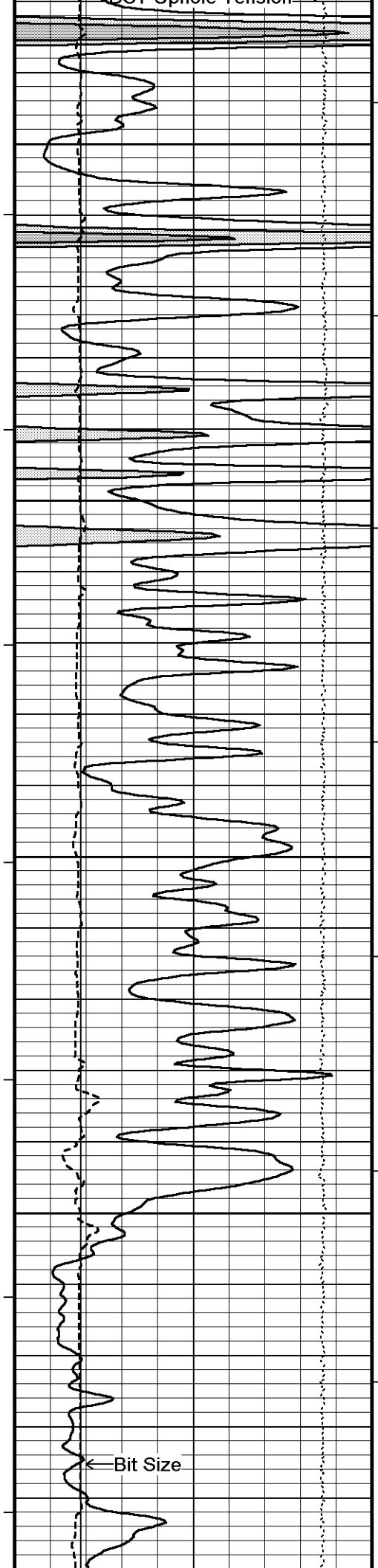


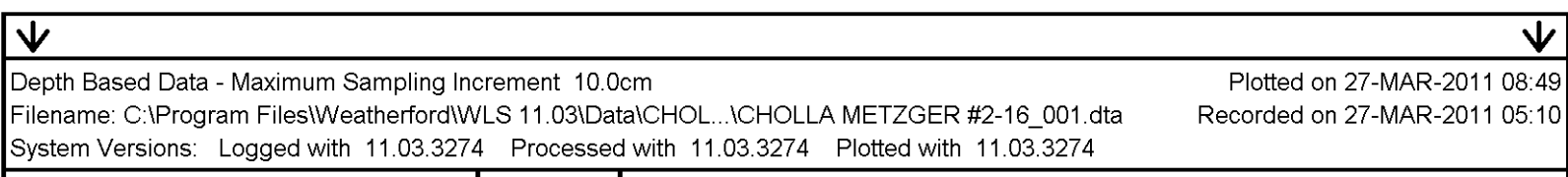
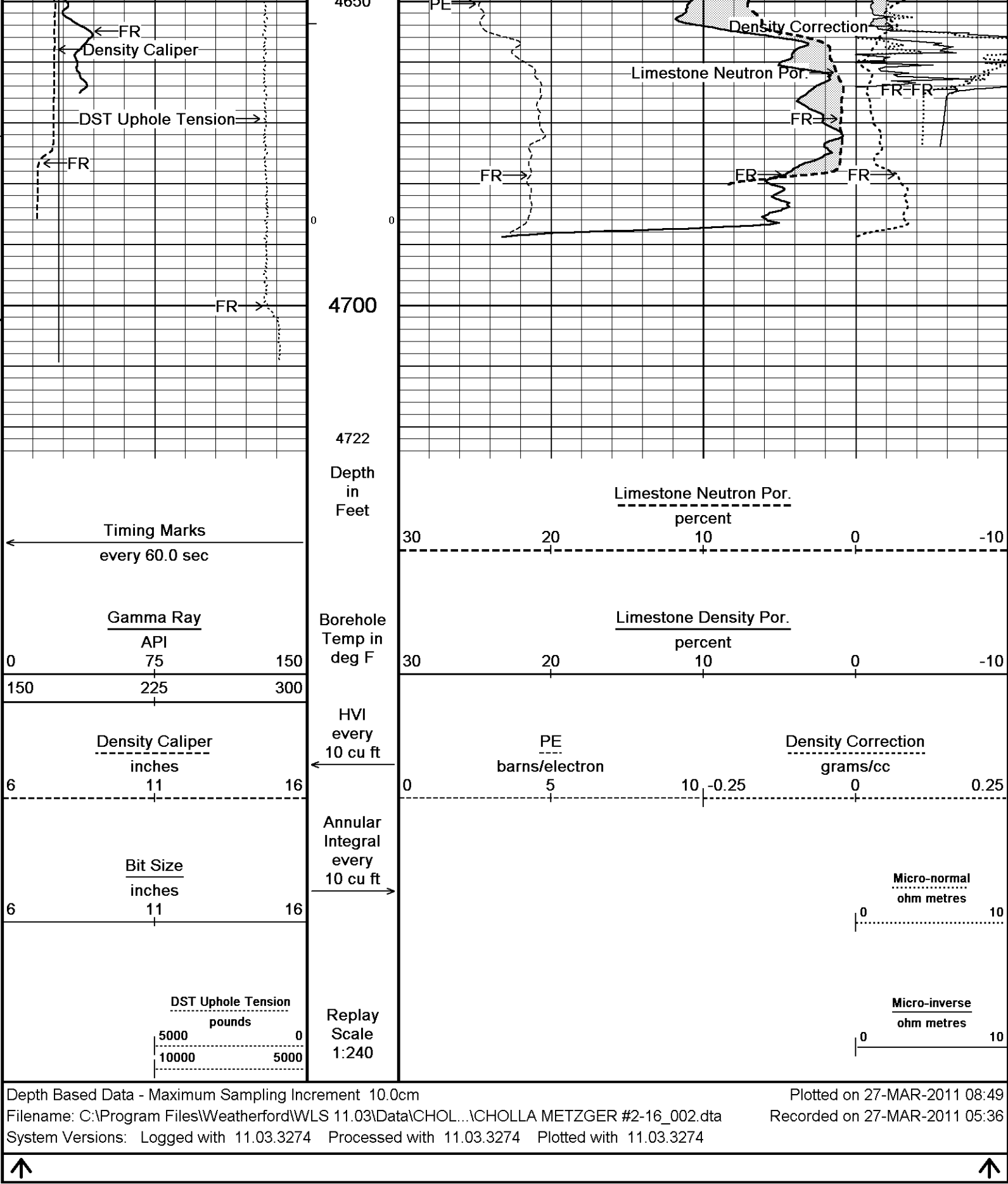




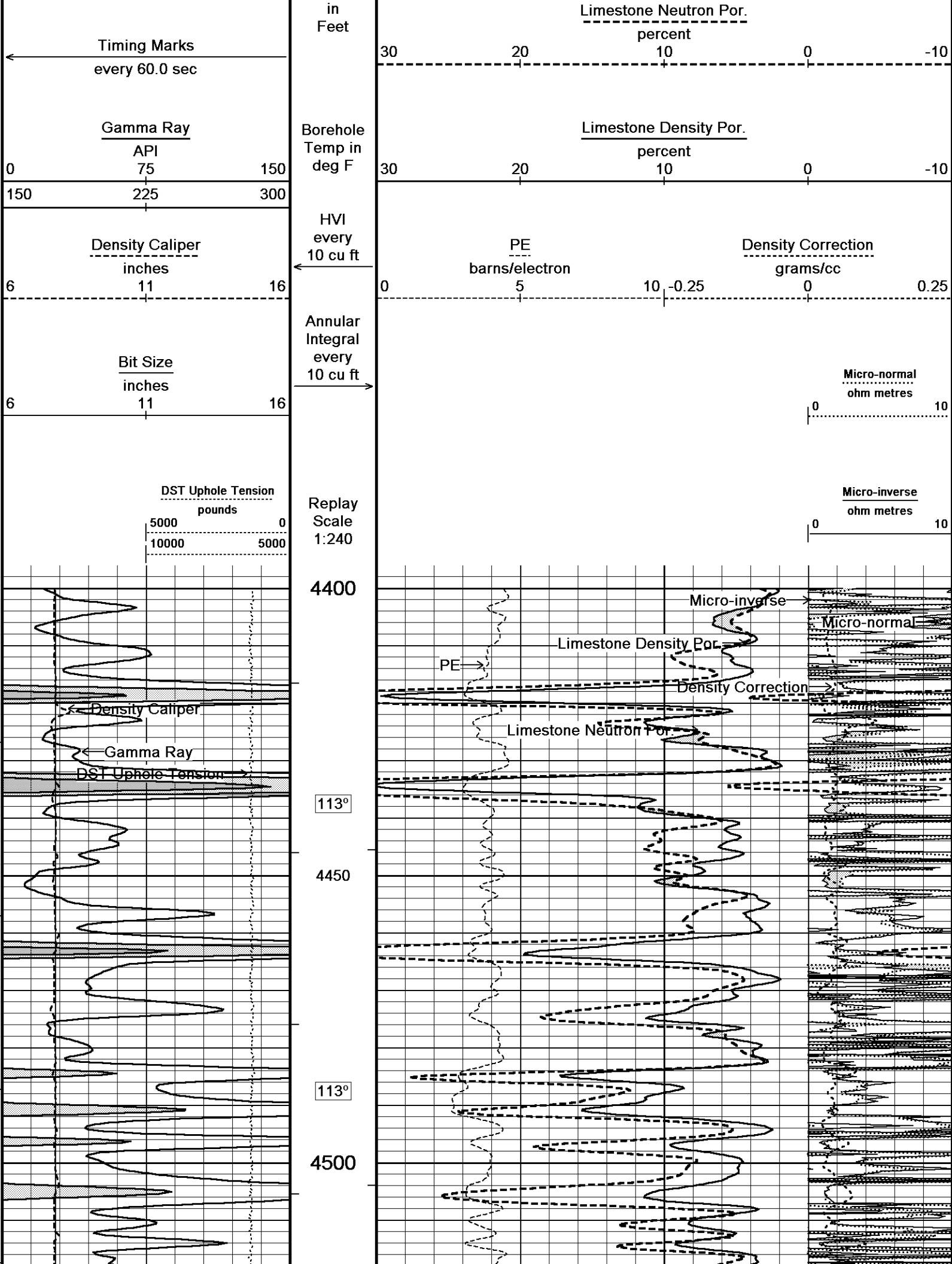


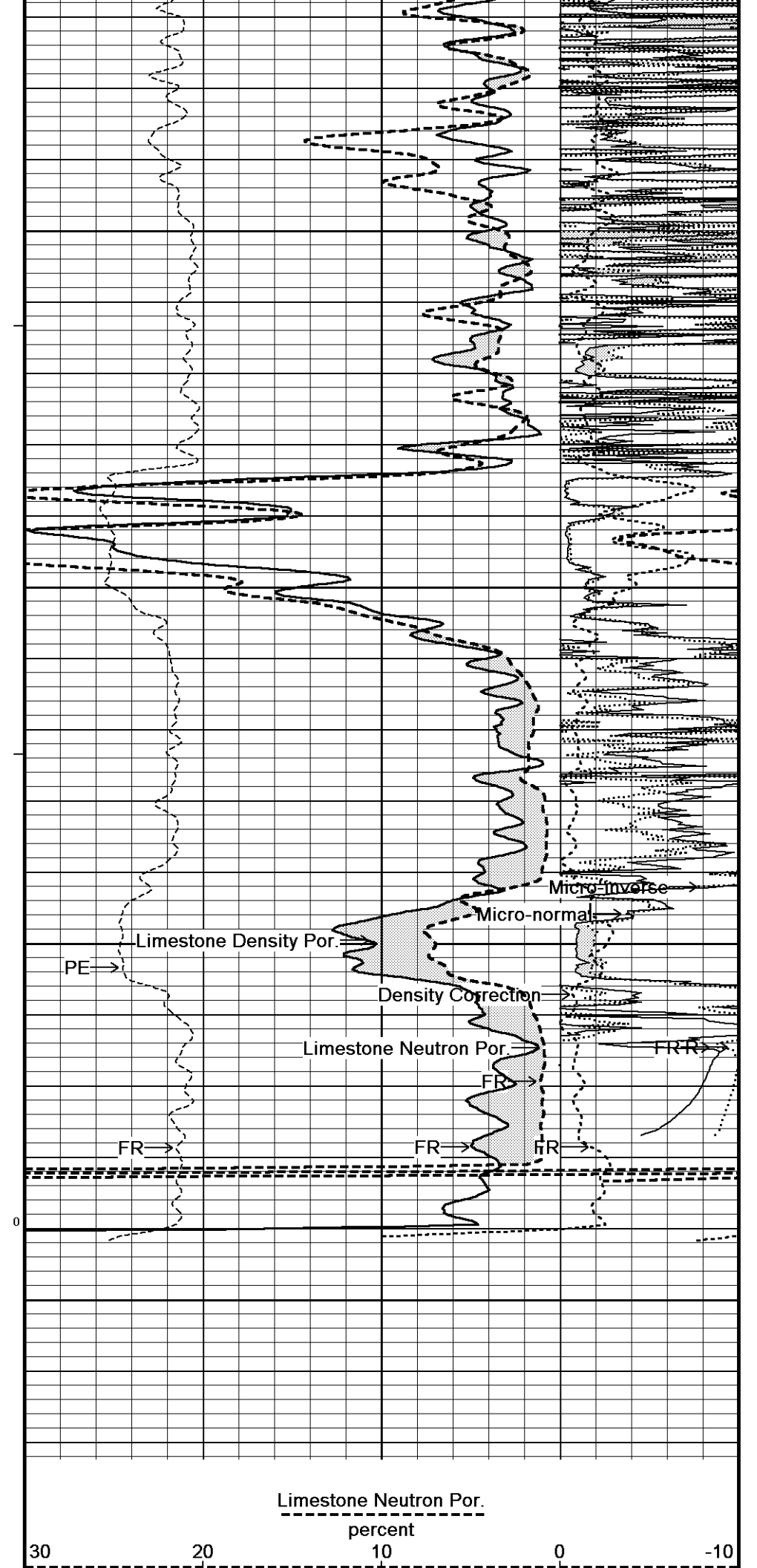
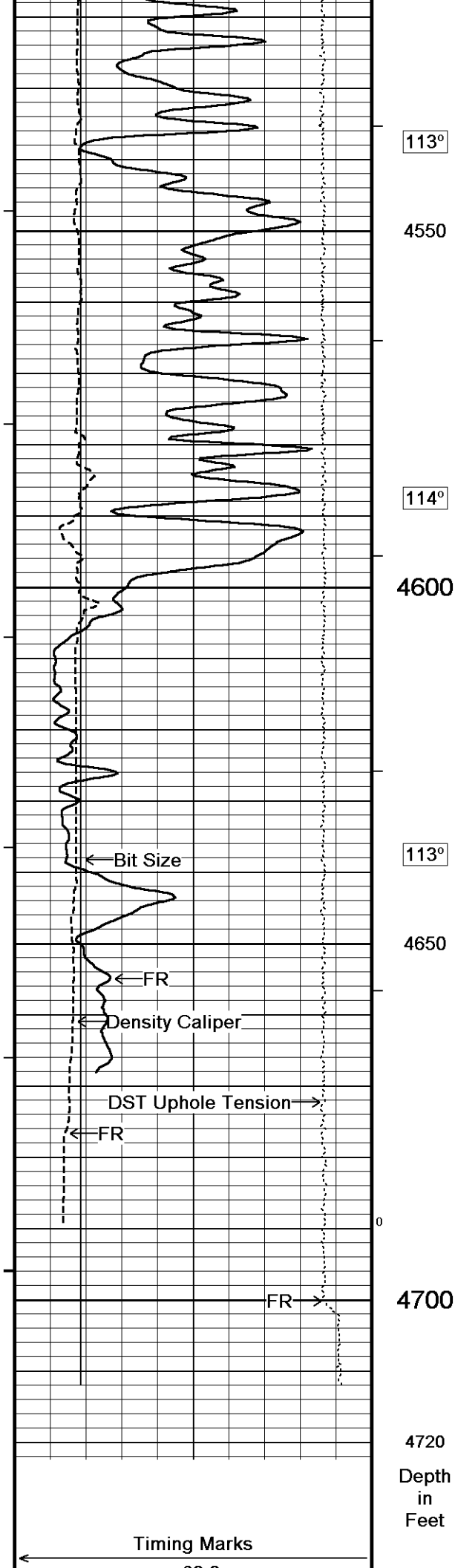






Depth





every 60.0 sec

Gamma Ray

API

75

225

11

Bit Size

inches

11

DST Uphole Tension

pounds

5000

10000

Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular
Integral
every
10 cu ft

Replay
Scale
1:240

Limestone Density Por.

percent

10

10

PE

barns/electron

5

Density Correction

grams/cc

0

0

Micro-normal

ohm metres

0

0

Micro-inverse

ohm metres

0

0

Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 27-MAR-2011 08:49

Filename: C:\Program Files\Weatherford\WLS 11.03\Data\CHOL...\CHOLLA METZGER #2-16_001.dta

Recorded on 27-MAR-2011 05:10

System Versions: Logged with 11.03.3274 Processed with 11.03.3274 Plotted with 11.03.3274



Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 27-MAR-2011 08:49

Filename: C:\Program Files\Weatherford\WLS 11.03\Data\CHOL...\CHOLLA METZGER #2-16_002.dta

Recorded on 27-MAR-2011 05:36

System Versions: Logged with 11.03.3274 Processed with 11.03.3274 Plotted with 11.03.3274

Timing Marks

every 60.0 sec

Gamma Ray

API

75

225

Density Caliper

inches

11

Bit Size

inches

11

DST Uphole Tension

pounds

5000

Depth
in
Feet

Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular
Integral
every
10 cu ft

Replay
Scale

Compensated Density

grams/cc

2.50

2.50

Limestone Density Por.

percent

10

10

PE

barns/electron

5

Density Correction

grams/cc

0

0

0.25

Scale
1:240
5000
0
-5000

2400

101°

2450

101°

300 200

2500

101°

2550

102°

2600

Bit Size

Density Caliper

Gamma Ray

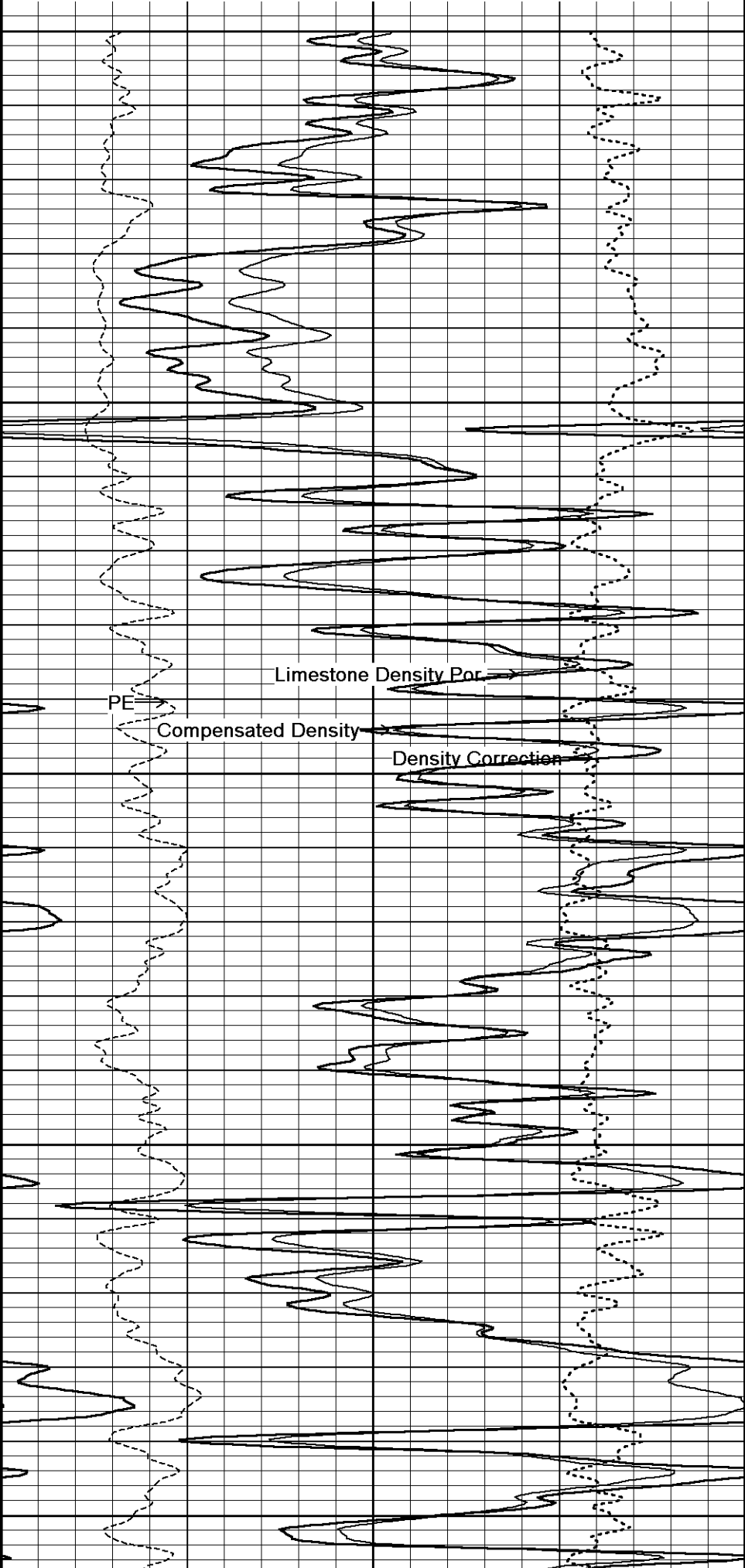
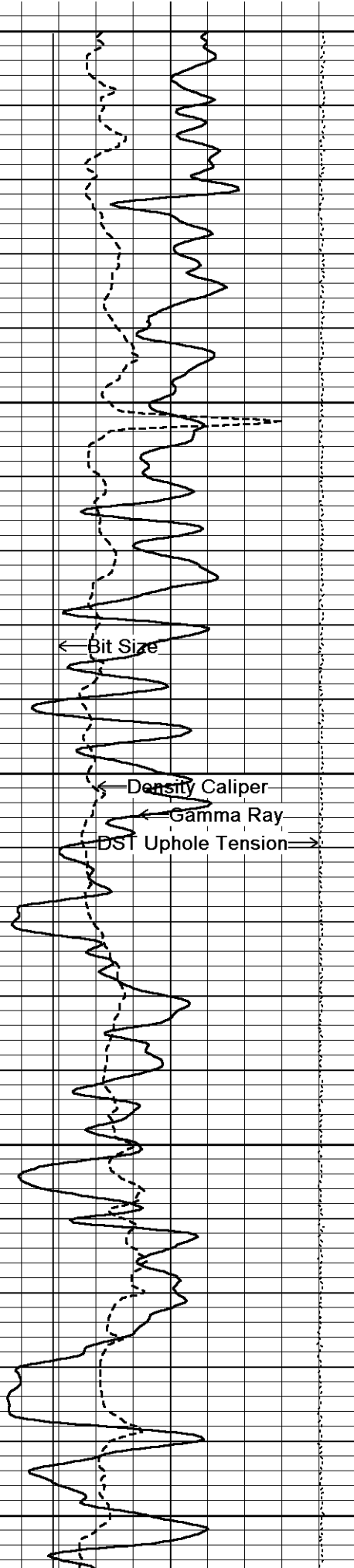
DST Uphole Tension

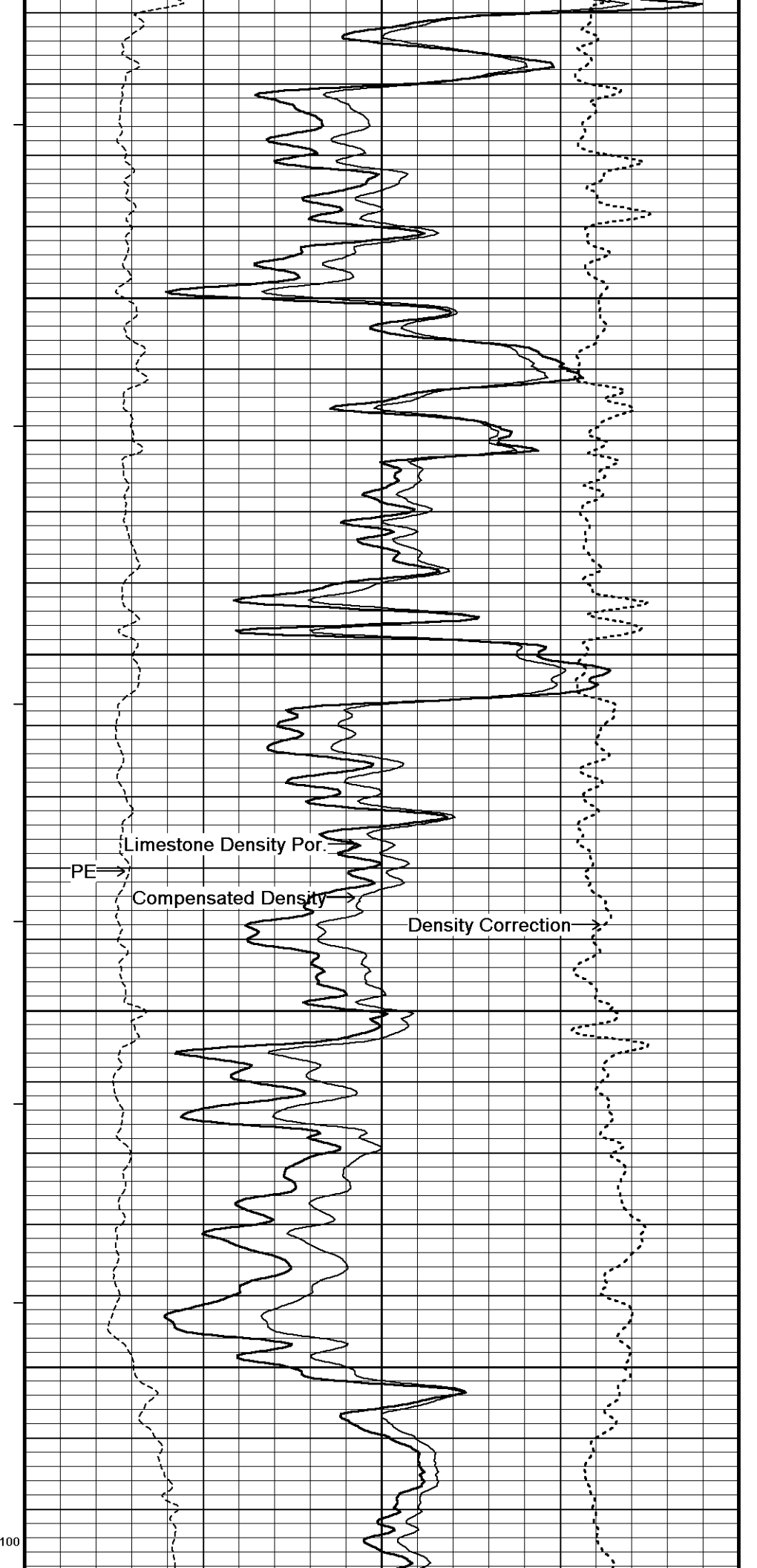
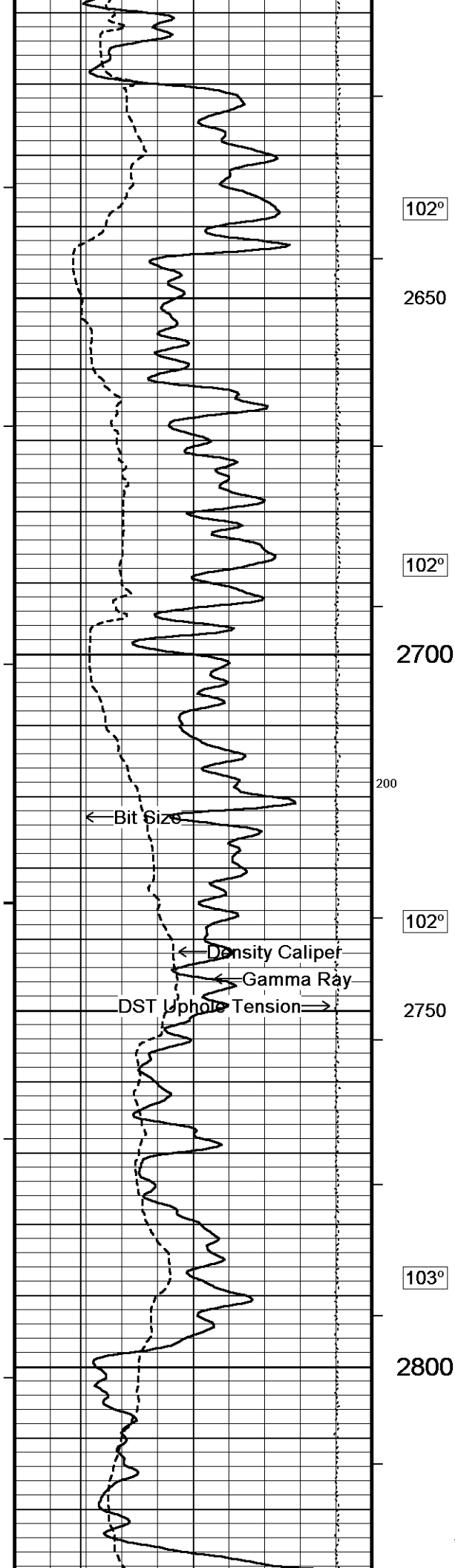
PE

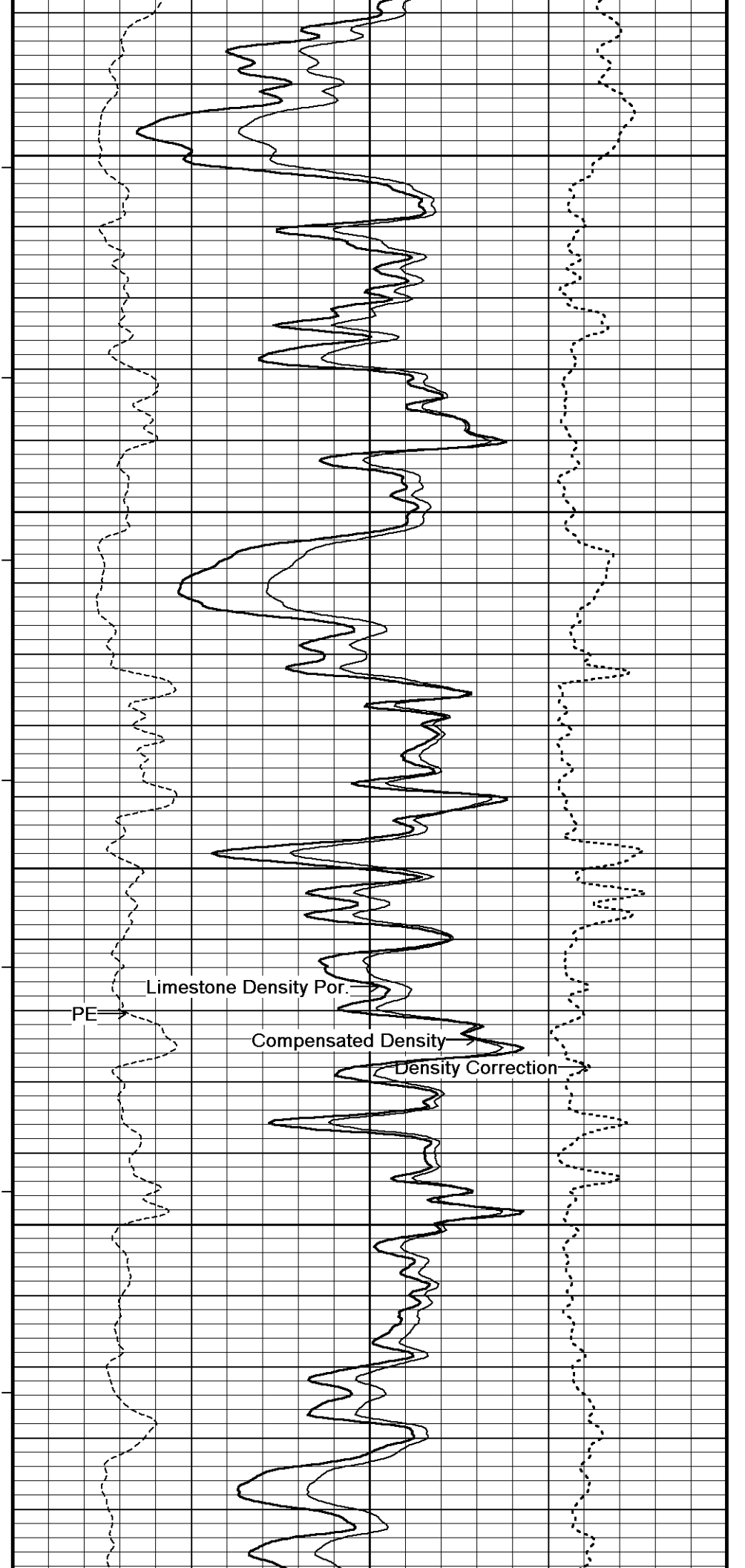
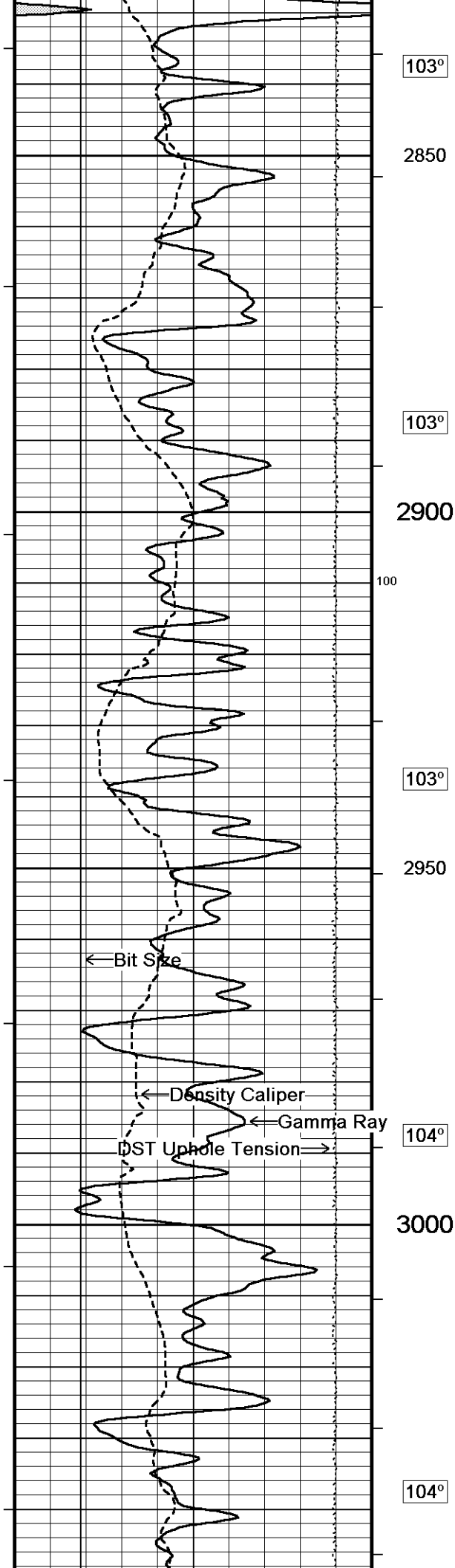
Limestone Density Por

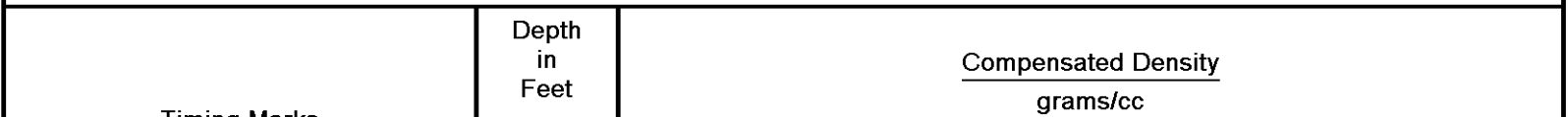
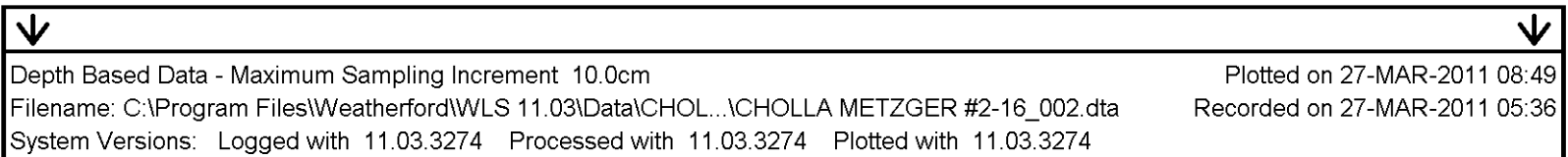
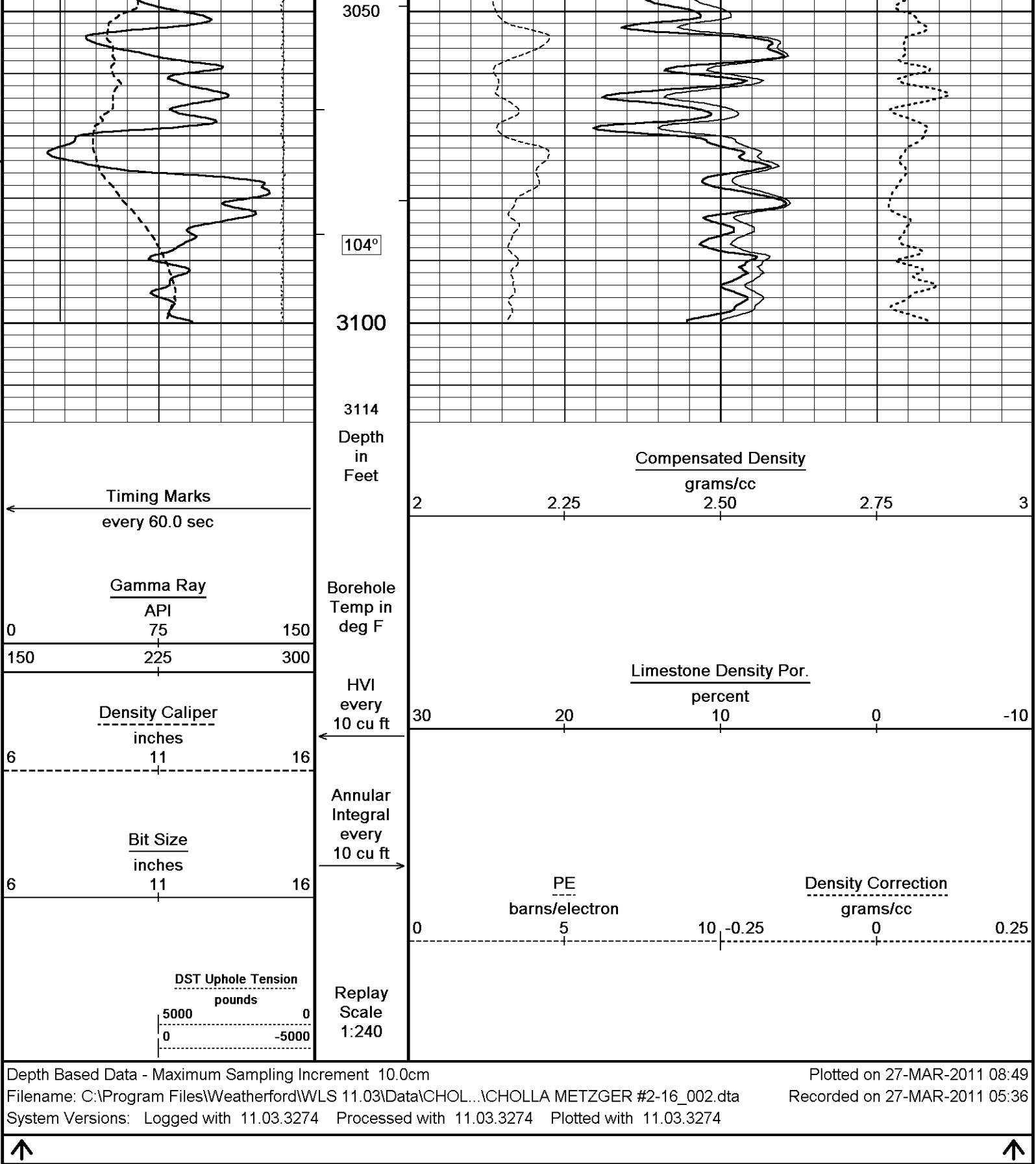
Compensated Density

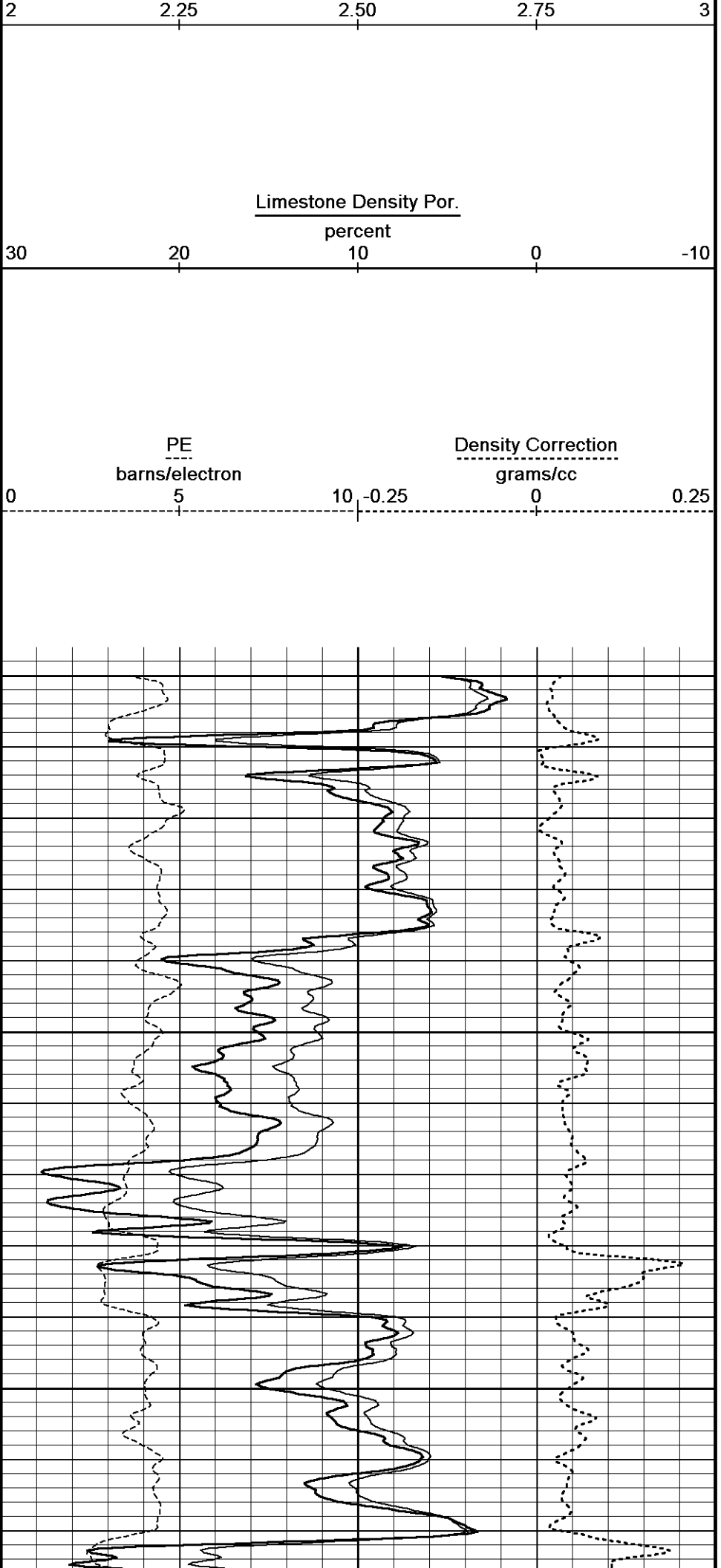
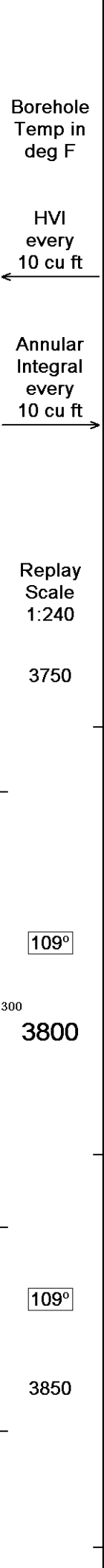
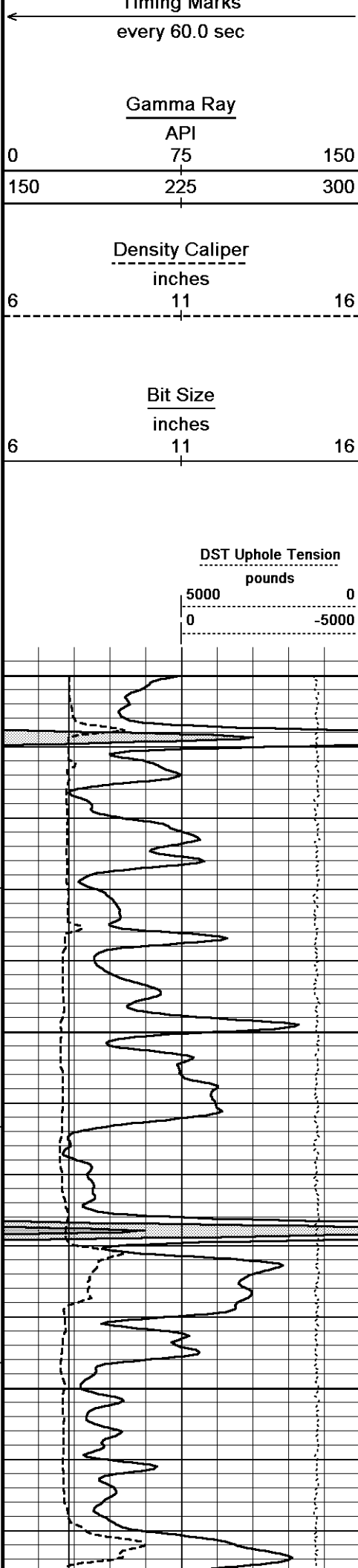
Density Correction

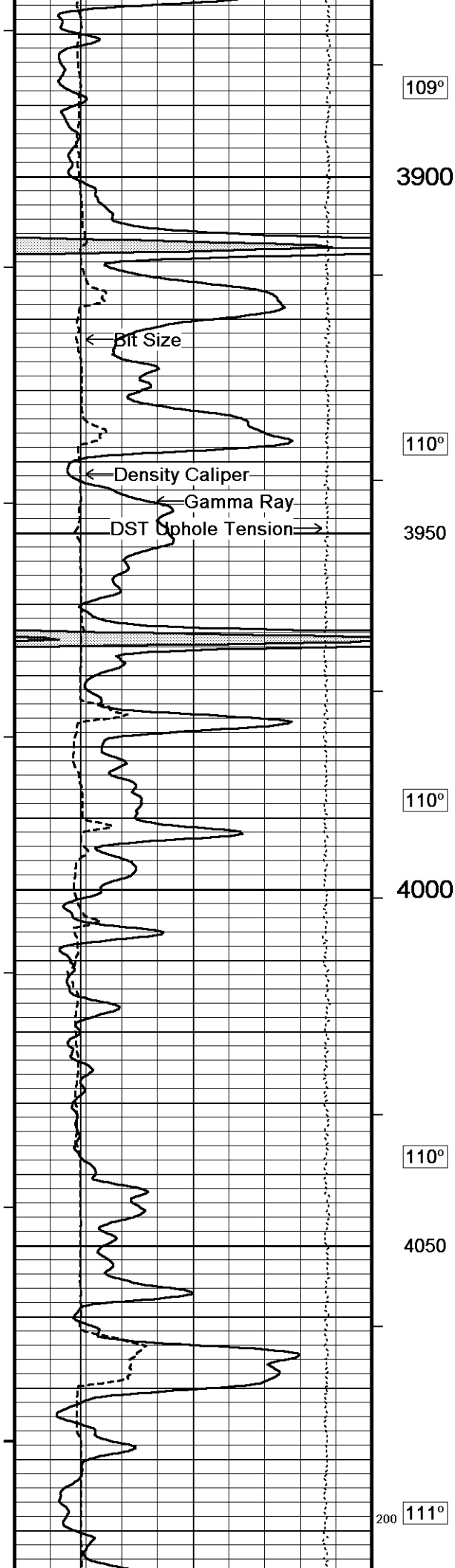












109°

3900

110°

3950

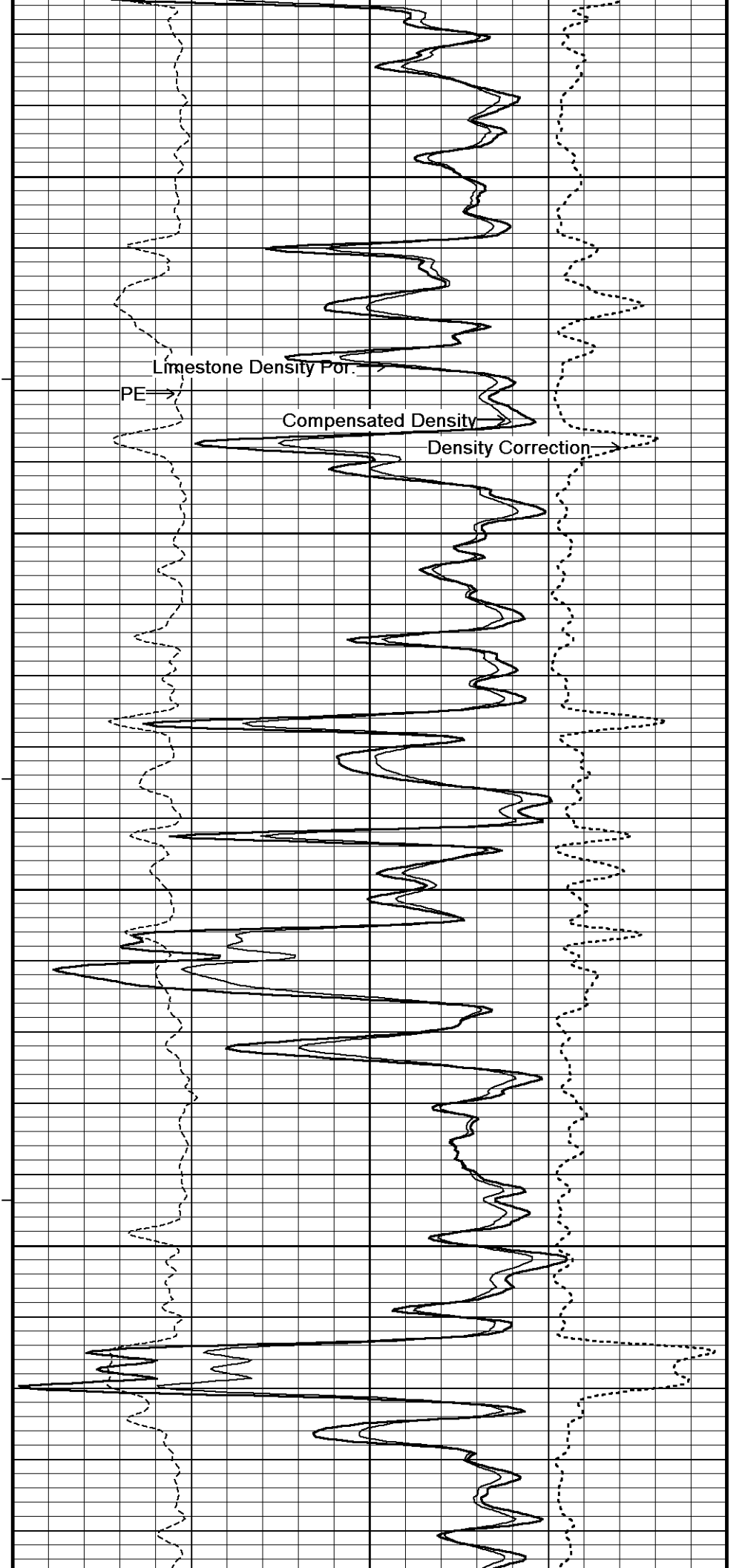
110°

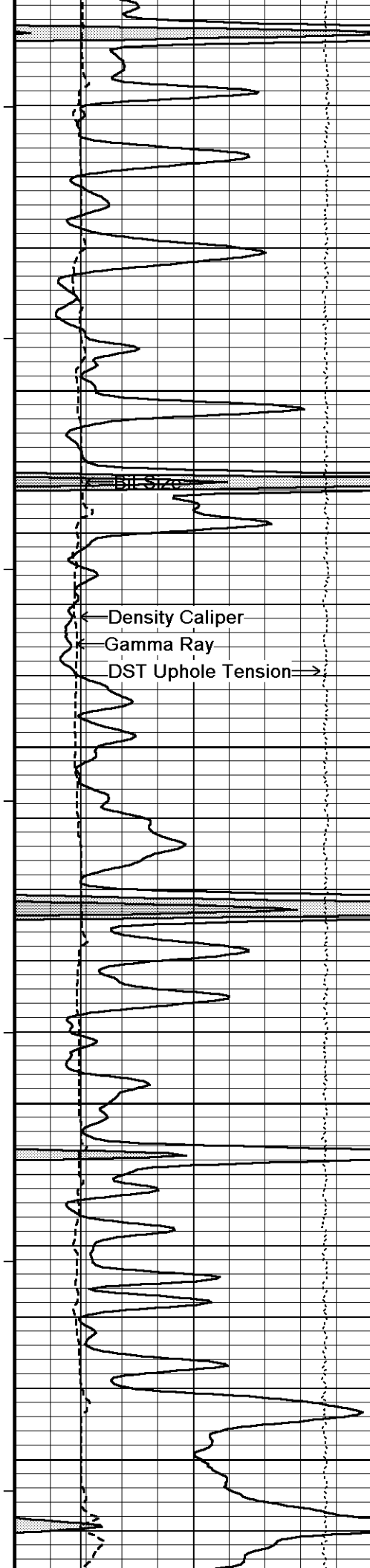
4000

110°

4050

200 111°





4100

111°

4150

111°

4200

112°

4250

112°

4300

Bit Size

Density Caliper

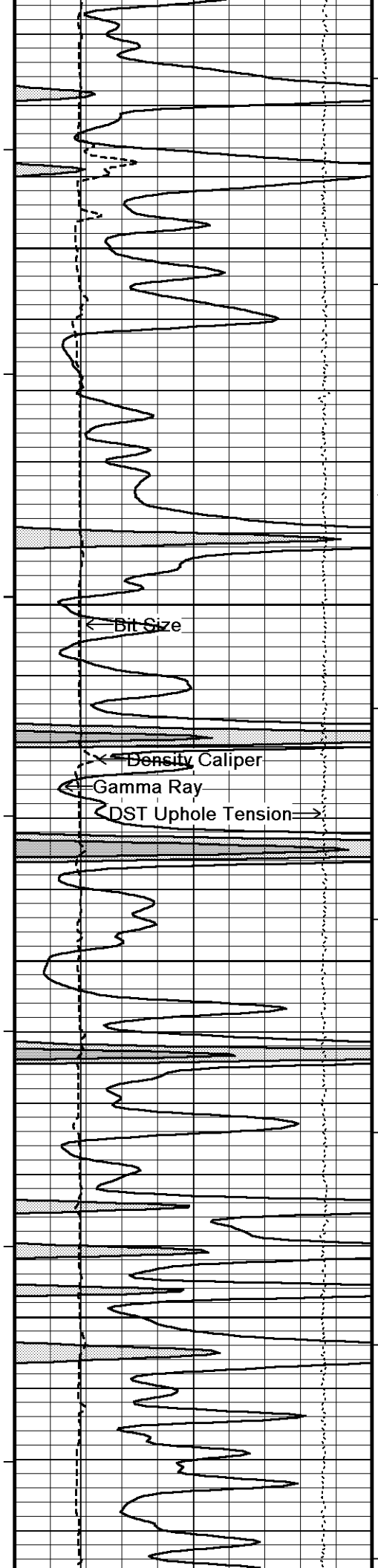
Gamma Ray

DST Uphole Tension

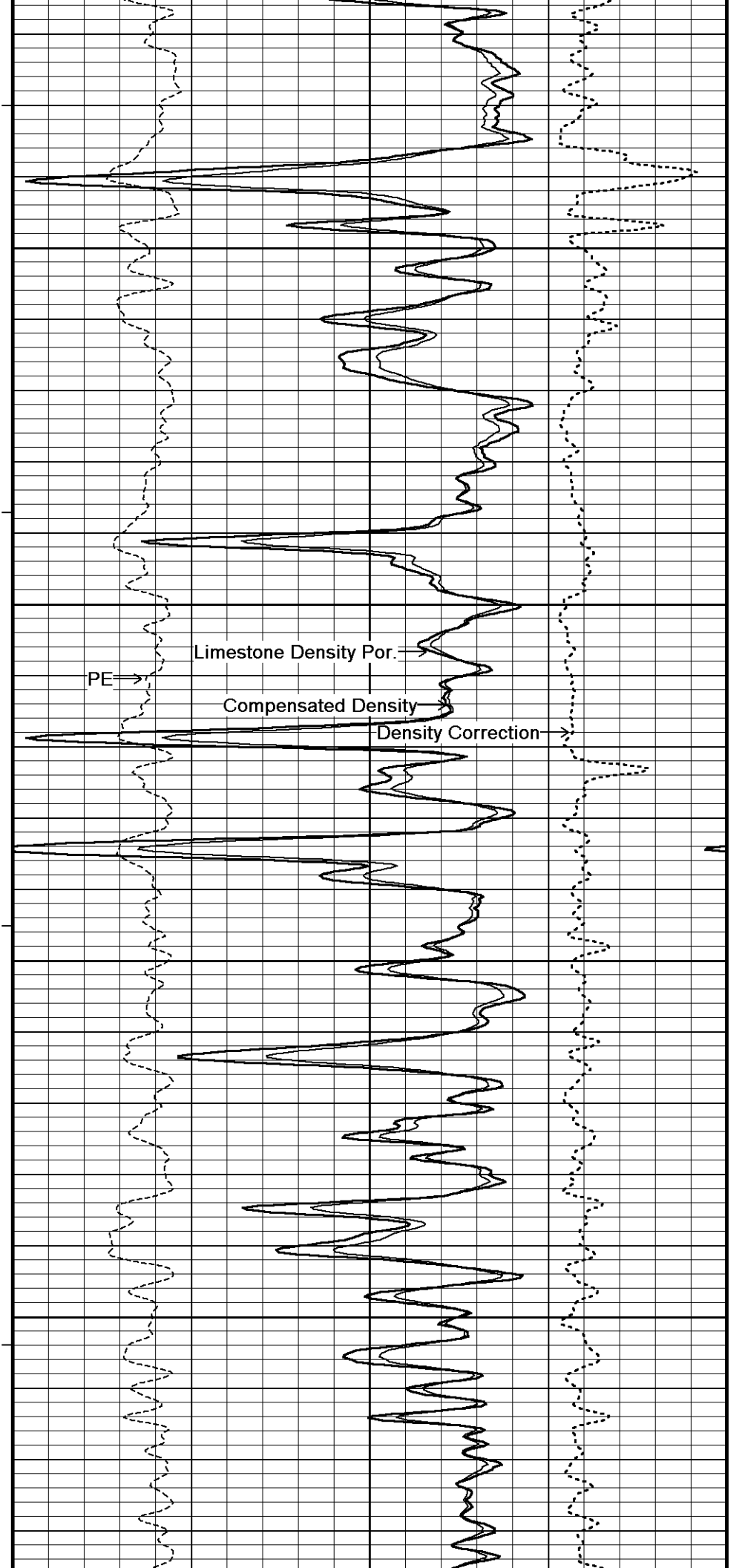
PE
Compensated Density

Limestone Density Por

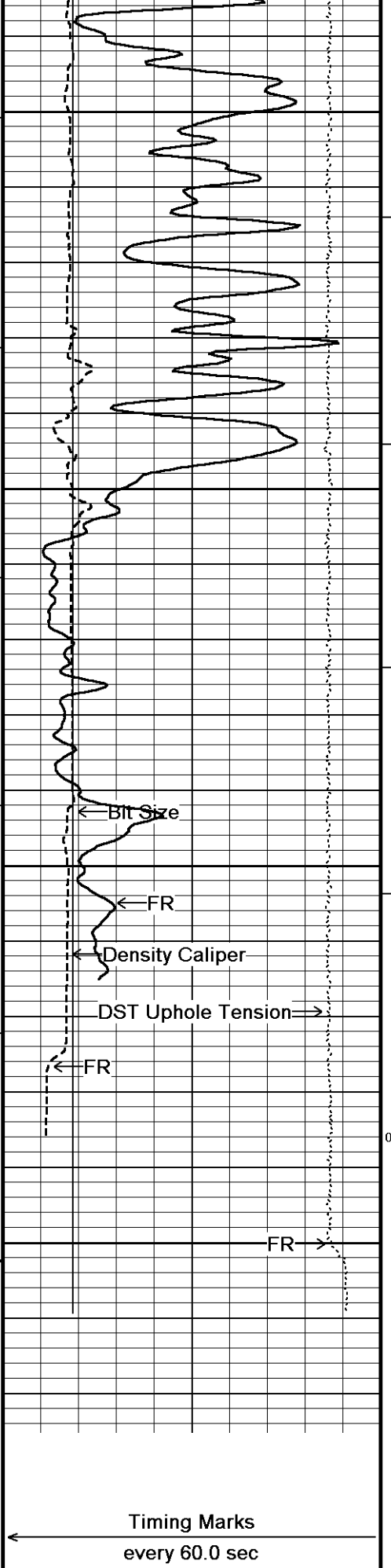
Density Correction



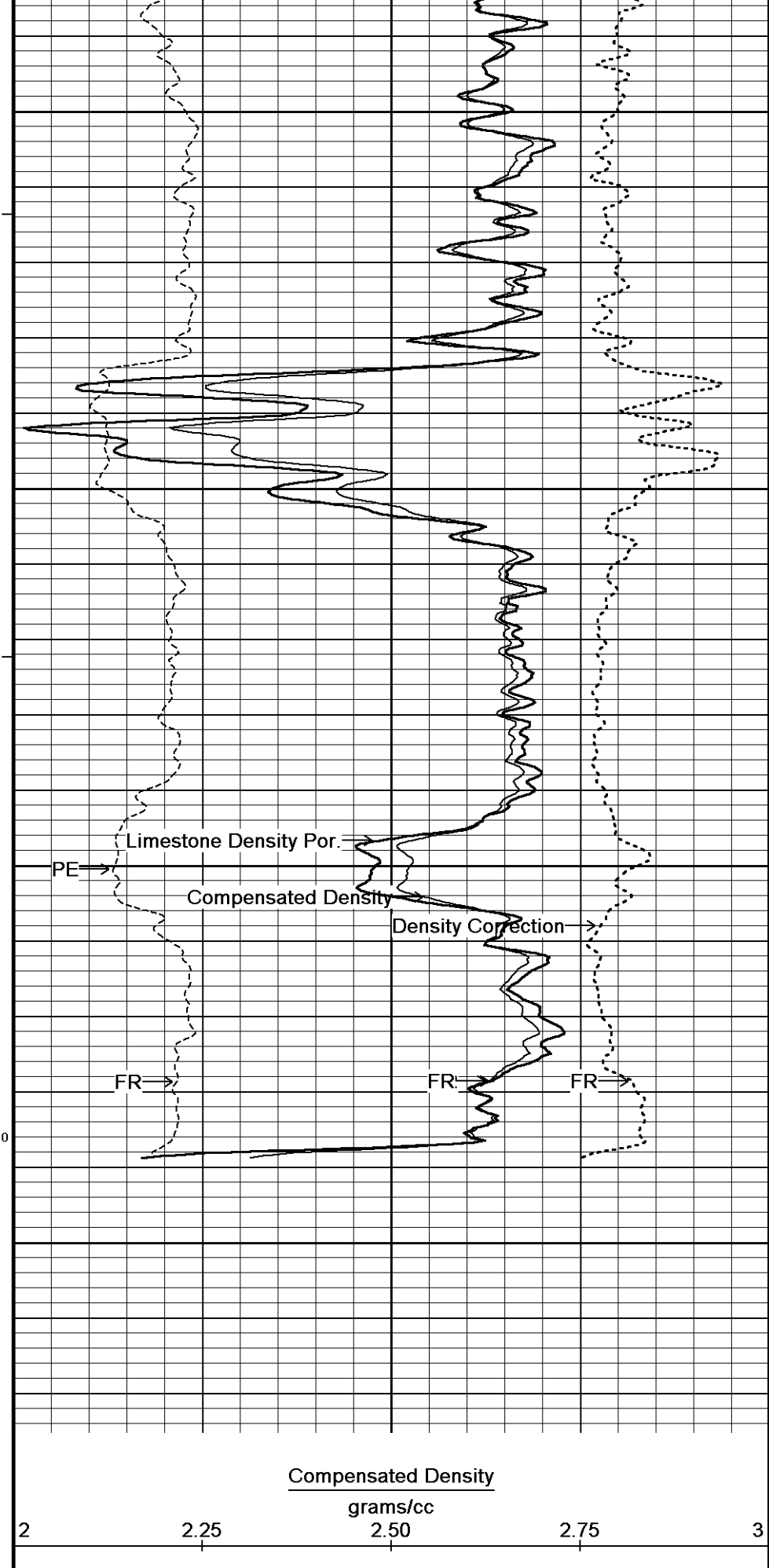
112°
4350
100
113°
4400
113°
4450
114°
4500



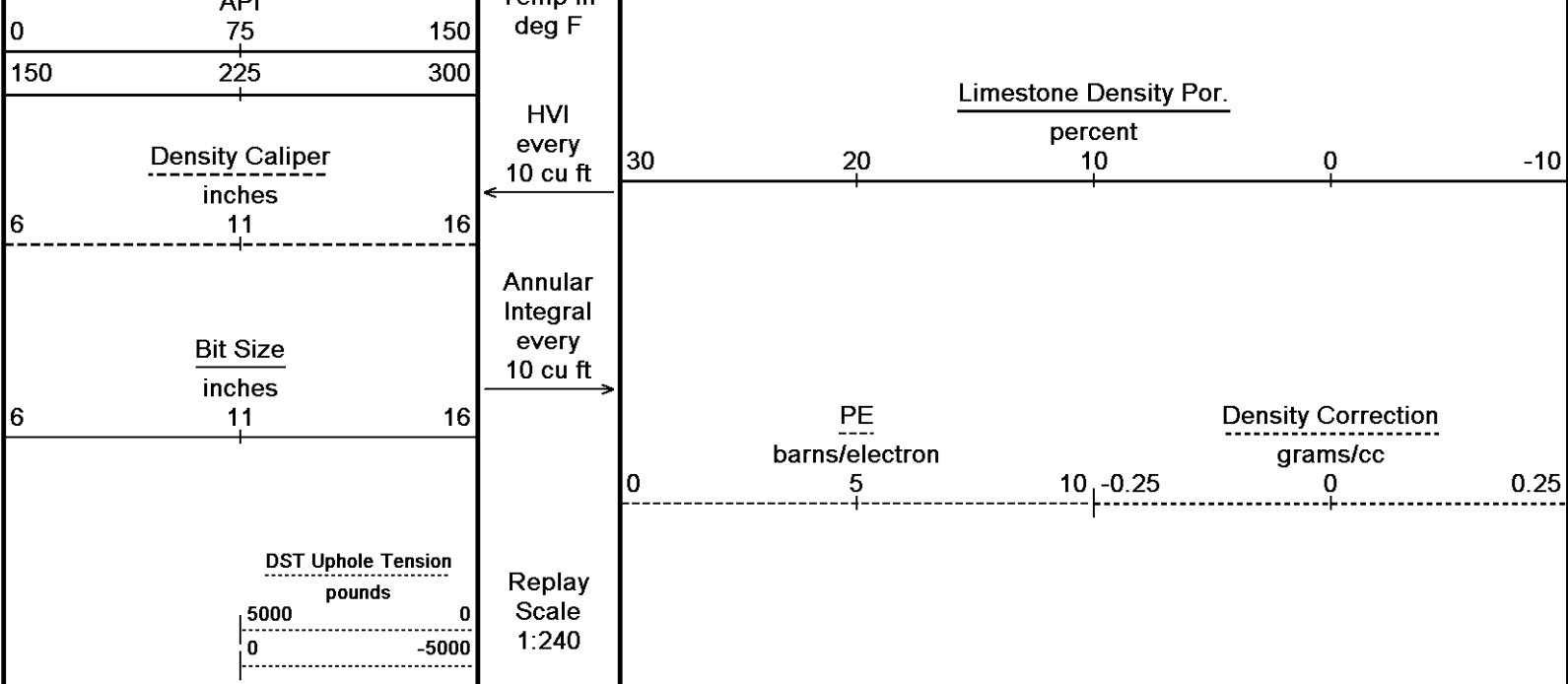
PE
Limestone Density Por.
Compensated Density
Density Correction



114°
4550
115°
4600
115°
4650
0
4700
4722
Depth
in
Feet



Gamma Ray
API
Borehole
Temp in



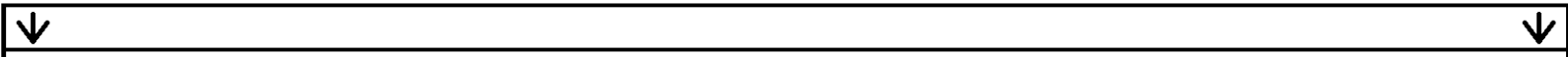
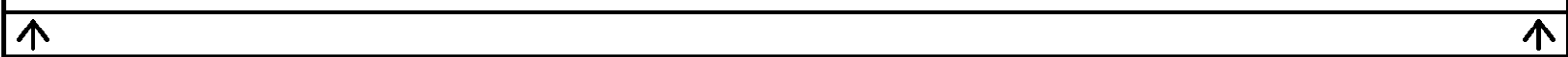
Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 27-MAR-2011 08:49

Filename: C:\Program Files\Weatherford\WLS 11.03\Data\CHOL...\CHOLLA METZGER #2-16_002.dta

Recorded on 27-MAR-2011 05:36

System Versions: Logged with 11.03.3274 Processed with 11.03.3274 Plotted with 11.03.3274



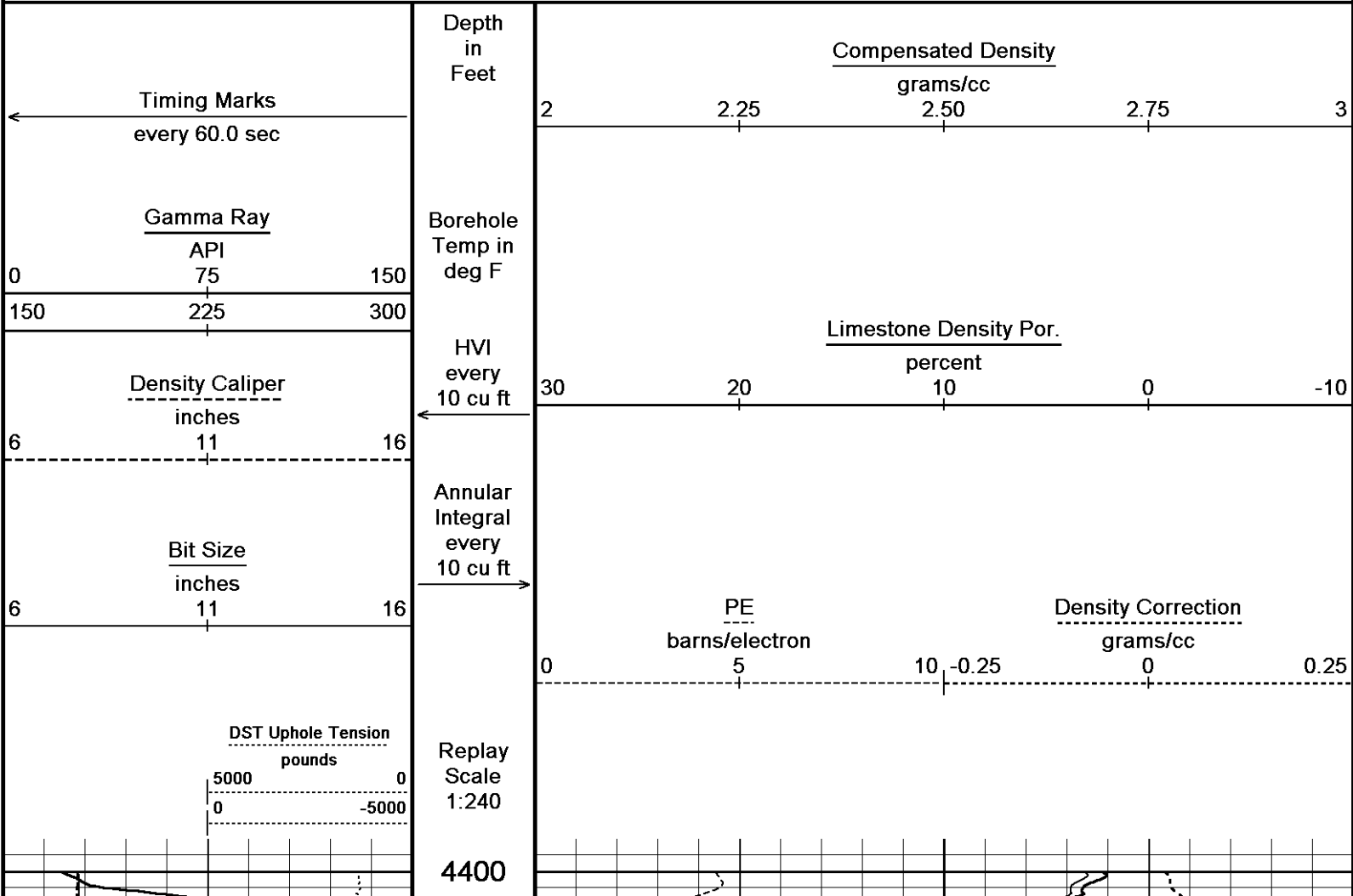
Depth Based Data - Maximum Sampling Increment 10.0cm

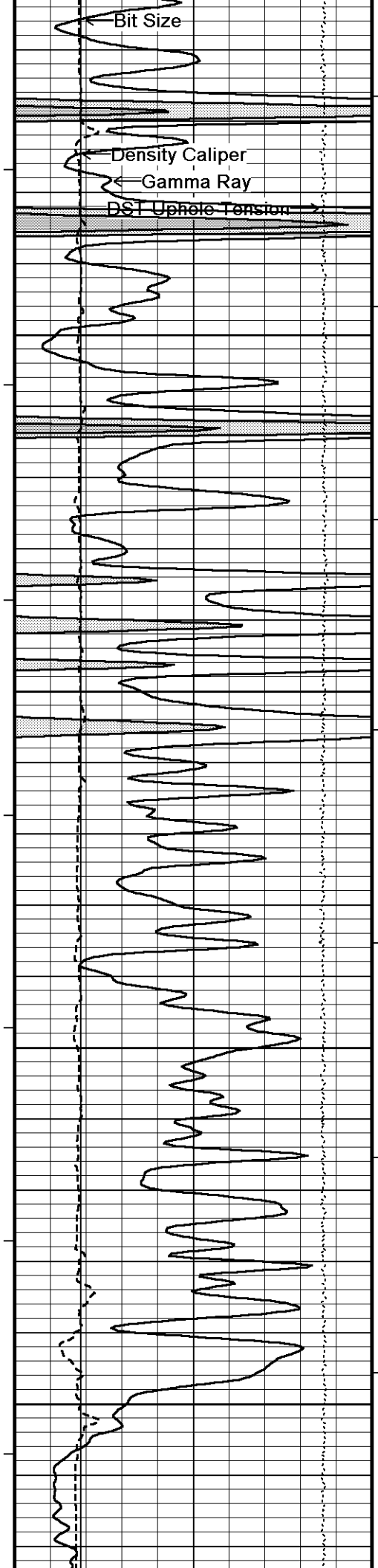
Plotted on 27-MAR-2011 08:49

Filename: C:\Program Files\Weatherford\WLS 11.03\Data\CHOL...\CHOLLA METZGER #2-16_001.dta

Recorded on 27-MAR-2011 05:10

System Versions: Logged with 11.03.3274 Processed with 11.03.3274 Plotted with 11.03.3274





113°

4450

113°

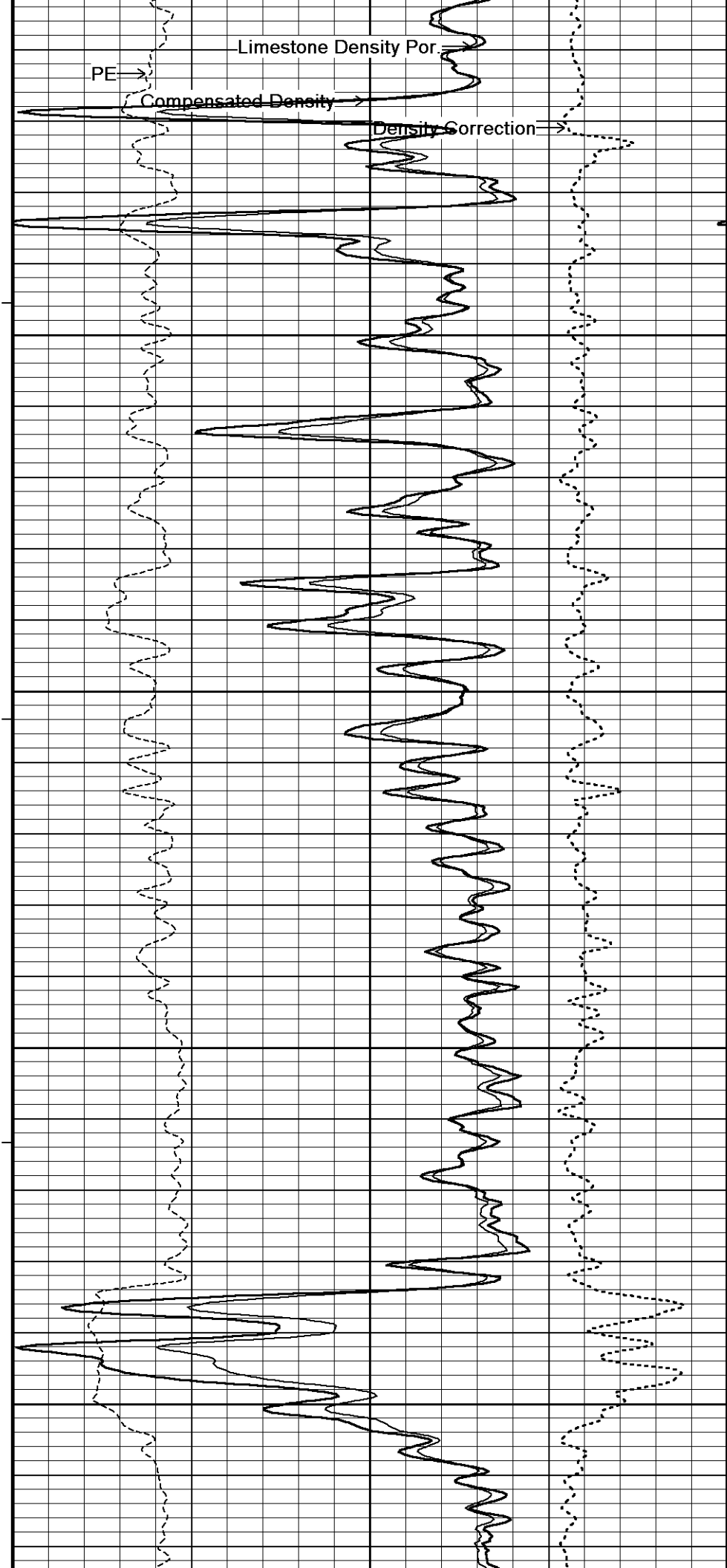
4500

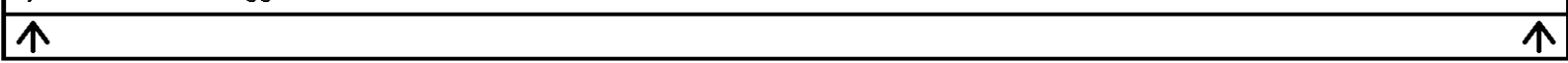
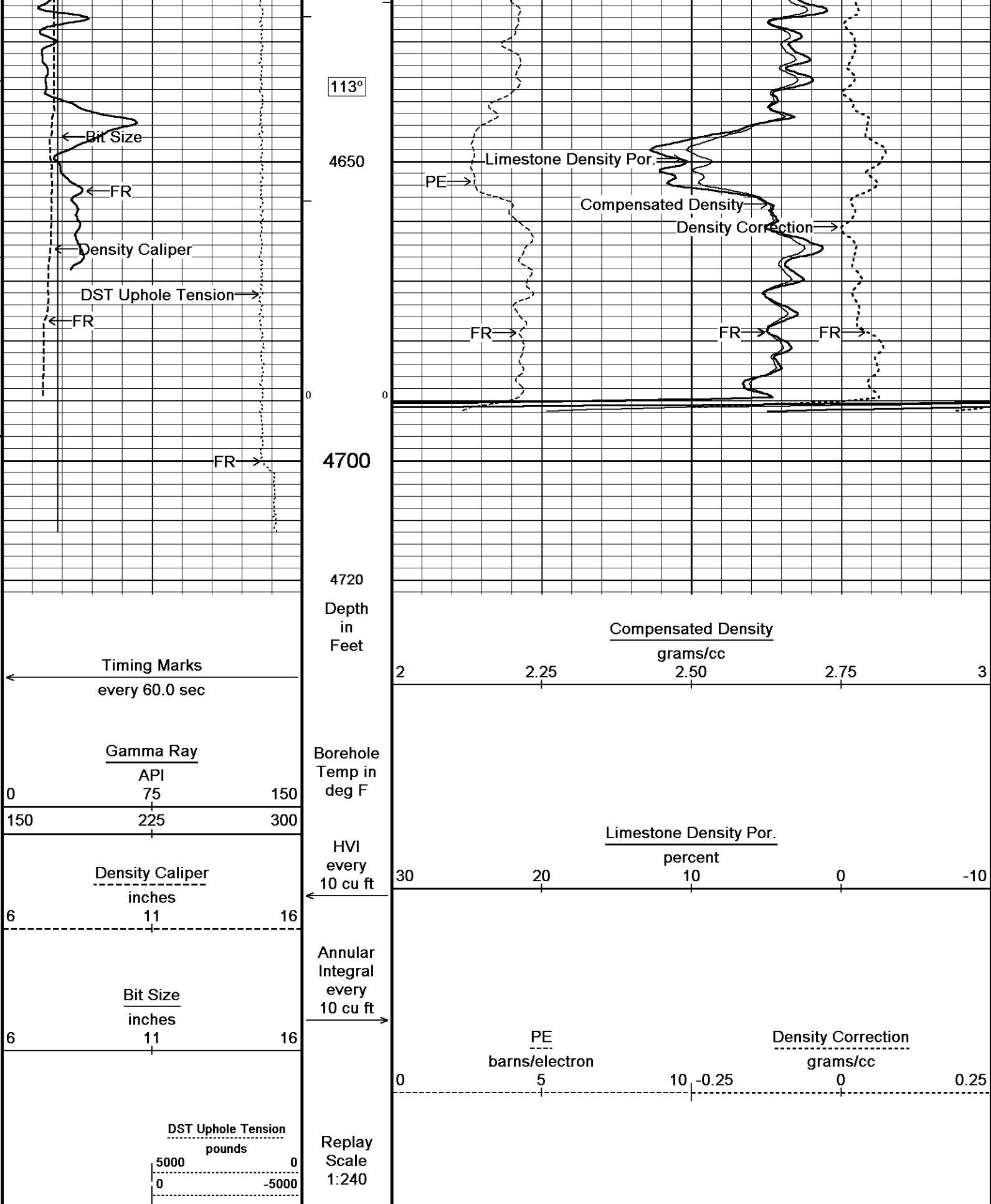
113°

4550

114°

4600





BEFORE SURVEY CALIBRATION

C:\Program Files\Weatherford\WLS 11.03\Data\CHOLLA METZGER #2-16\CHOLLA METZGER #2-16_002.dta

General Constants All 000

Last Edited on 27-MAR-2011,08:08

General Parameters

Mud Resistivity	0.780	ohm-metres
Mud Resistivity Temperature	73.000	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	None	

Rwa Parameters

Porosity used	Base Density Porosity
Resistivity used	Array Ind. One Res Rt
RWA Constant A	1.000
RWA Constant M	2.000

High Resolution Temperature Calibration MCG-B 34

Field Calibration on 19-OCT-2009,11:45

	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
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SP Calibration MCG-B 34

Field Calibration on 9-NOV-2009,18:07

	Measured	Calibrated (mV)
Reference 1	107.7	100.0
Reference 2	-93.8	-100.0

Gamma Calibration MCG-B 34

Field Calibration on 26-MAR-2011 18:43

	Measured	Calibrated (API)
Background	64	45
Calibrator (Gross)	1107	770
Calibrator (Net)	1043	725

Gamma Constants MCG-B 34

Last Edited on 27-MAR-2011,02:41

Gamma Calibrator Number	grc38	
Mud Density	1.12	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 07-JAN-2011 11:32

Field Check on 26-MAR-2011 18:45

Base Calibration

		Measured		Calibrated (ohm-m)
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.2	60.2	2.6	12.8
Micro Inverse	15.7	78.4	1.7	8.4

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	32.1	32.1
Micro Inverse	16.3	16.3

Micro Normal and Micro Inverse Constants MML-A 4

Last Edited on 23-MAR-2011,04:07

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 07-JAN-2011 11:28 Field Calibration on 26-MAR-2011 18:53		
Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	14856	5.96
2	18273	7.98
3	21730	9.95
4	25542	11.91
5	0	0.00
6	N/A	N/A
Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	5.96	5.98

Neutron Calibration MDN-A.B 65		
Base Calibration on 17-JAN-2011 15:12 Field Check on 26-MAR-2011 18:50		
Base Calibration		
	Measured	Calibrated (cps)
	Near Far	Near Far
	3079 97	3714 110
Ratio	31.797	33.764
Field Calibrator at Base		Calibrated (cps)
		1654 2338
Ratio		0.708
Field Check		Calibrated (cps)
		1667 2368
Ratio		0.704

Neutron Constants MDN-A.B 65		
Last Edited on 27-MAR-2011,02:41		
Neutron Source Id	757	
Neutron Jig Number	5824NE	
Epithermal Neutron	No	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.12	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	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 17-JAN-2011 13:58 Field Check on 26-MAR-2011 18:36		
Base Calibration		
	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	954.8	126.8
Base Check		281.8
Field Check		281.2

FE Constants MFE-A.A 55		
Last Edited on 27-MAR-2011,08:11		
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 178		
	Measured	Calibrated(Deg F)
Lower	1.00	33.80
Upper	11.00	51.80
High Resolution Temperature Constants MAI-A.A 178		
Pre-filter Length	11	
Induction Calibration MAI-A.A 178		
Base Calibration		Base Calibration on 17-JAN-2011,15:37
Test Loop Calibration		Field Check on 26-MAR-2011 18:27
Channel	Measured	Calibrated (mmho/m)
	Low	High
1	17.6	484.7
2	6.2	391.4
3	4.0	264.5
4	2.3	135.1
Array Temperature	77.0	Deg F
Channel	Base Check (mmho/m)	Field Check (mmho/m)
	Low	High
1	0.0	0.0
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
Deep	0.0	0.0
Medium	0.0	0.0
Shallow	0.0	0.0
Array Temperature	0.0	61.5 Deg F
Induction Constants MAI-A.A 178		
		Last Edited on 27-MAR-2011,08:10
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

Caliper Calibration MPD-B 65		Base Calibration on 26-MAR-2011 21:35
Base Calibration		Field Calibration on 26-MAR-2011 21:36
Reading No	Measured	Calibrator Size (in)
1	13025	3.99
2	21664	5.98
3	30144	7.97
4	38507	9.86
5	47728	11.92
6	N/A	N/A
Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	5.95	5.98

Photo Density Calibration MPD-B 65				Base Calibration on 26-MAR-2011 21:55	
Density Calibration				Field Check on 26-MAR-2011 21:59	
Base Calibration		Measured		Calibrated (sdu)	
		Near	Far	Near	Far
Reference 1		50493	24334	59556	30836
Reference 2		20772	2298	24941	2541
Field Check at Base					
		1251.7	1197.0		
Field Check					
		1252.3	1199.9		
PE Calibration					
Base Calibration		Measured		Calibrated	
	WS	WH	Ratio		Ratio
Background	228	1114			
Reference 1	19703	50302	0.396		0.371
Reference 2	5658	20626	0.278		0.272
Field Check at Base					
	227.6	1114.3			
Field Check					
	228.2	1111.8			

[illegible]

DOWNHOLE EQUIPMENT

C:\Program Files\Weatherford\WLS 11.03\Data\CHOLLA METZGER #2-16\CHOLLA METZGER #2-16_002.dta

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

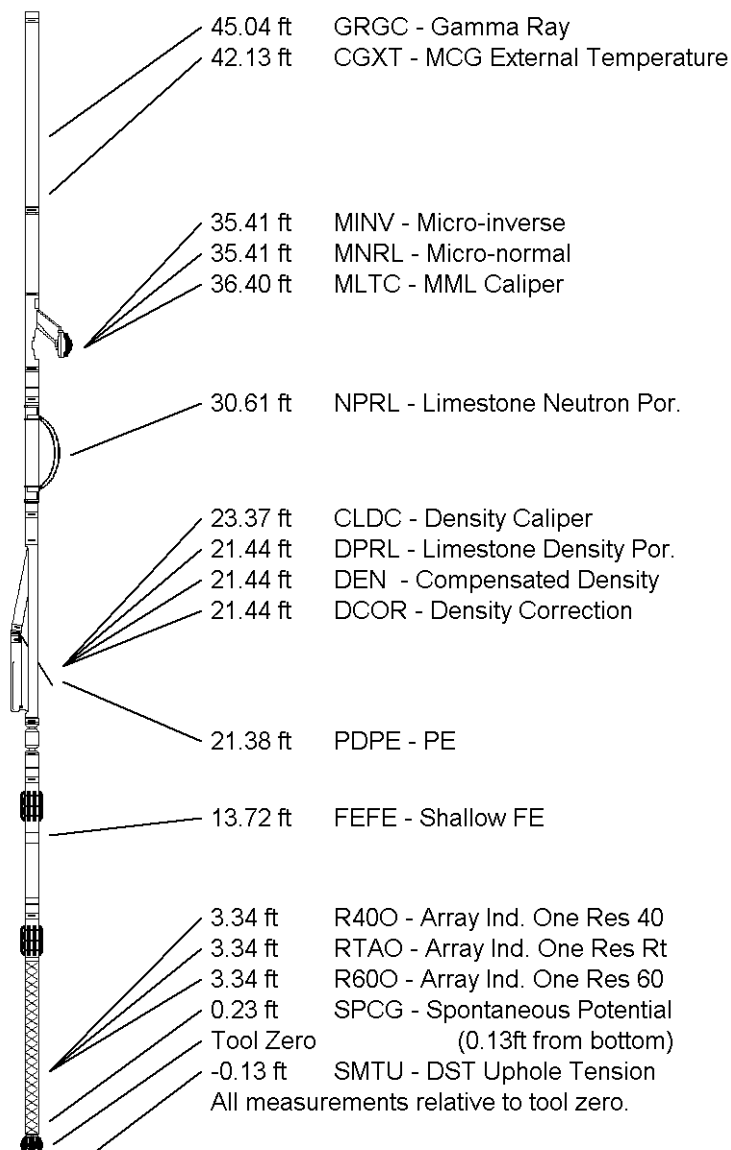
Compact Density/Caliper
MPD-B 65 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

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 178 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 50.32 ft Weight: 407.9 lb



COMPANY	CHOLLA PRODUCTION, LLC.
WELL	METZGER #2-16
FIELD	UNNAMED
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2966.00	feet	First Reading	4678.00	feet
Elevation Drill Floor	2965.00	feet	Depth Driller	4700.00	feet
Elevation Ground Level	2961.00	feet	Depth Logger	4700.00	feet



Weatherford®

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG

