

**Weatherford®**

COMBINED LOG

MDL-MCG-MDN-MPD

SCALE 5":100

COMPANY

SAVIA PERU S.A

WELL

LOG-31D

FIELD

LOBITOS OFFSHORE

PROVINCE/COUNTY

PIURA

COUNTRY/STATE

PERU

LOCATION

N: 9°50'8.651.50 m
E: 459,047.72 m

Latitude
Longitude

Other Services

Permanent Datum SEA LVL, Elevation 335 feet

Log Measured From KB

Drilling Measured From KB

Elevations:

KB 50.00
DF 50.00
GL 335.00

Date 12-JUN-2013

Run Number

1

Service Order

825

Depth Driller

7668.00

feet

Depth Logger

7638.60

feet

First Reading

7611.00

feet

Last Reading

4950.00

feet

Casing Driller

2521.00

feet

Casing Logger

2521.00

feet

Bit Size

8.500

inches

Hole Fluid Type

WBAC

Density / Viscosity

11.30 lb/USg

51.00 Sec/qt

PH / Fluid Loss

9.20

5.20 ml/30Min

Sample Source

ACTIVE PIT

Rm @ Measured Temp

0.15 @ 70.0

ohm-m

Rmf @ Measured Temp

0.07 @ 70.0

ohm-m

Rmc @ Measured Temp

0.34 @ 70.0

ohm-m

Source Rmf / Rmc

PRESS

Rm @ BHT

0.10 @102.0

ohm-m

Time Since Circulation

1 HOUR

Max Recorded Temp

102.00

deg F

Equipment / Base

2

TALARA

Recorded By

J. GUERRERO

Witnessed By

A. ORTEGA

REMARKS

- Objective: To obtain accurate open hole Gamma Ray, Neutron, Caliper, Resistivity Log (Dual Laterolog) in Compact Well Shuttle - Messenger Conveyance.
- Maximum recorded temperature 102 degF recorded.
- Fluid resistivity measurements during logging operation: Rmf= 0.07 @ 70deg F, Rm=0.15@ 70Deg F, Rmc=0.34@ 70degF.
- This is a deviated well with a maximum deviation of 63.84 degrees @ 4376 ft.
- Well sketch per driller's depth.
- Bottom not tagged due to nature of the conveyance. Maximum depth recorded in Log header (7638.60ft) is the maximum depth reached by the induction tool in the run.
- Main Section from 7638.60ft ft to 4950 ft, as requested.
- No Repeat Section performed due to deployment method used in the job.
- Resistivity curves (Dual laterolog) presented in this log are not corrected for borehole conditions.
- Neutron log is corrected by temperature and borehole size by the density caliper.
- Density log is corrected for mud density and borehole size by density caliper.
- Calculated Volumes and caliper averages from 7638.60ft to 4950 ft, for a future 5.5 O.D casing:
Hole Volume= 1240 FT 3
Annular Volume = 805 FT 3
Caliper Average = 9.30 in.
Caliper Max = 12.64 in @ 7445 ft.
- Operation started at 20:00 11-06-2013.
We reached bottom at 11:00 12-06-2013.
Deployment was done at 11:30 12-06-2013.
Log interval was finished at 15:30 12-06-2013.
Job was finished at 20:00 12-06-2013.

Crew at your service

J. Guerrero, J Jimenez, J. Escobar, E. Cruz

Bit Size
inchesDepth From
feetDepth To
feet

12.250

0.00

2521.00

8.500

2521.00

7668.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	9.625	0.00	2521.00	43.00

WELL DIAGRAM

9.63 in Casing: 0.00 ft

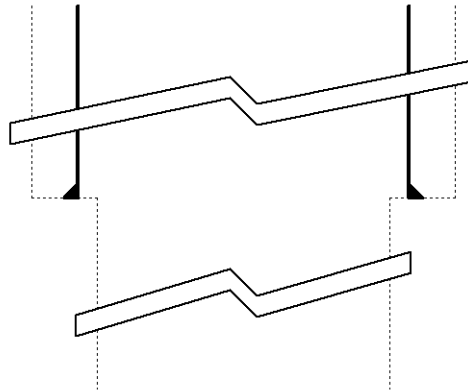
12.25 in Bit size: 0.00 - 2521.00 ft

9.63 in Casing shoe: 2521.00 ft

8.50 in Bit size: 2521.00 - 7668.00 ft

Total bit depth: 7668.00 ft

Temperature: 102.00 Degrees F



DOWNHOLE EQUIPMENT

D:\LOGS\PERU\ITALARA\LO6-CWS\LO6-31D-DSC-FINAL-HVOL-AVOL-COMPLETE.dta

Shuttle Running Tool 5" (SRT B)

SRT-A 2 LG: 6.47 ft WT: 37.5 lb OD: 2.52 in

SKJ-E.A Compact Knuckle Joint

SKJ-E.A 170 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

MBS-A.A 400v Compact Battery Sub

MBS-A.A 56 LG: 14.24 ft WT: 105.8 lb OD: 2.24 in

Compact Stiff Bridle Electrode Sub.

MBE-C.B 261 LG: 12.33 ft WT: 77.2 lb OD: 2.28 in

Compact Stiff Bridle Electrode Sub.

MBE-C.B 262 LG: 12.33 ft WT: 77.2 lb OD: 2.28 in

Compact Stiff Bridle Electrode Sub.



Compact Gain Drive Electrode Sub.
MBE-A.A 56 LG: 12.33 ft WT: 77.2 lb OD: 2.24 in

Compact Comms Gamma
MCG-D.A 261 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Memory Sub. A.C
MMS-A.C 1 LG: 3.12 ft WT: 22.0 lb OD: 2.24 in

SKJ-E.A Compact Knuckle Joint
SKJ-E.A 171 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SHA-J.B Compact Swivel Head Adaptor
SHA-J.B 479 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

MIS-D.B Compact Inline Bowspring sub
MIS-D.B 755 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

Compact Neutron
MDN-C.A 441 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
MPD-C.A 197 LG: 9.59 ft WT: 90.4 lb OD: 2.24 in

MIS-D.B Compact Inline Bowspring sub
MIS-D.B 756 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

SHA-H Compact Swivel Head Adaptor
SHA-H 180 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

SKJ-E.A Compact Knuckle Joint
SKJ-E.A 180 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

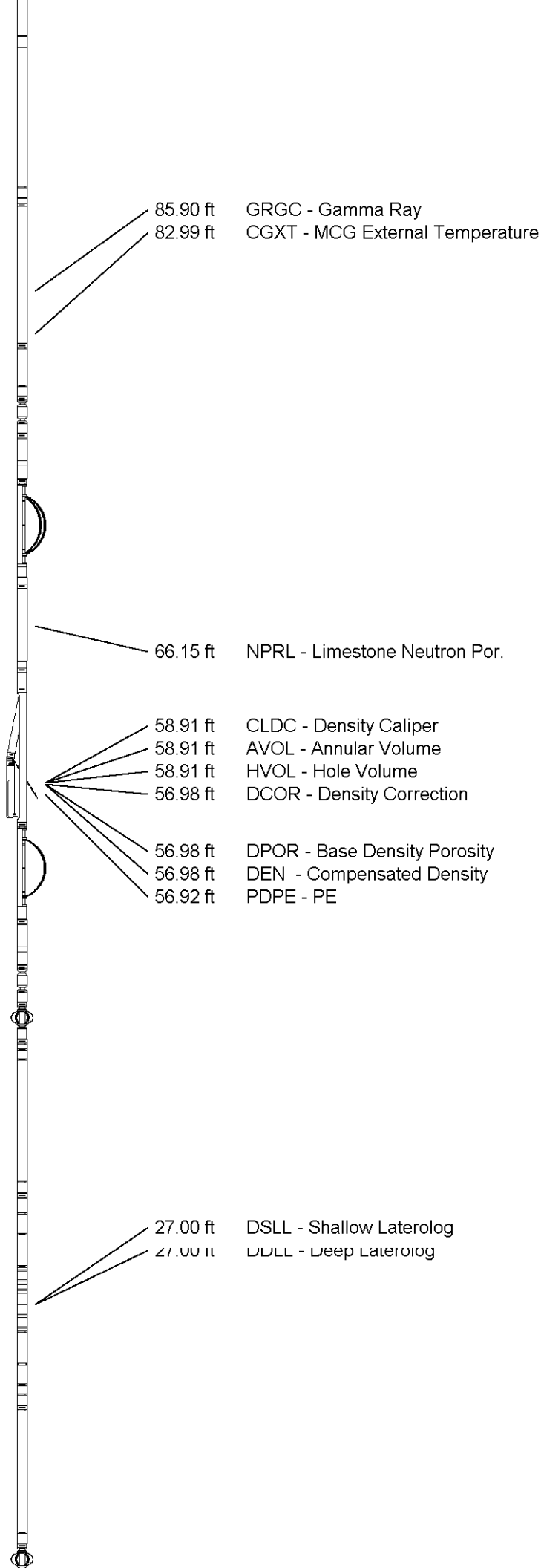
MIS-B Compact Inline Standoff sub
MIS-B 99 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Upper Guard sub
MUG-B.B 260 LG: 8.98 ft WT: 68.3 lb OD: 2.24 in

Compact Laterolog Electrode Sub.
MLE-D.A 228 LG: 12.34 ft WT: 92.6 lb OD: 2.24 in

Compact Lower Guard Sub.
MLG-B.B 257 LG: 8.00 ft WT: 55.1 lb OD: 2.24 in

MIS-B Compact Inline Standoff sub



MIS-B 98 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Induction

MAI-B.A 223 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 151.05 ft Weight: 1080.3 lb

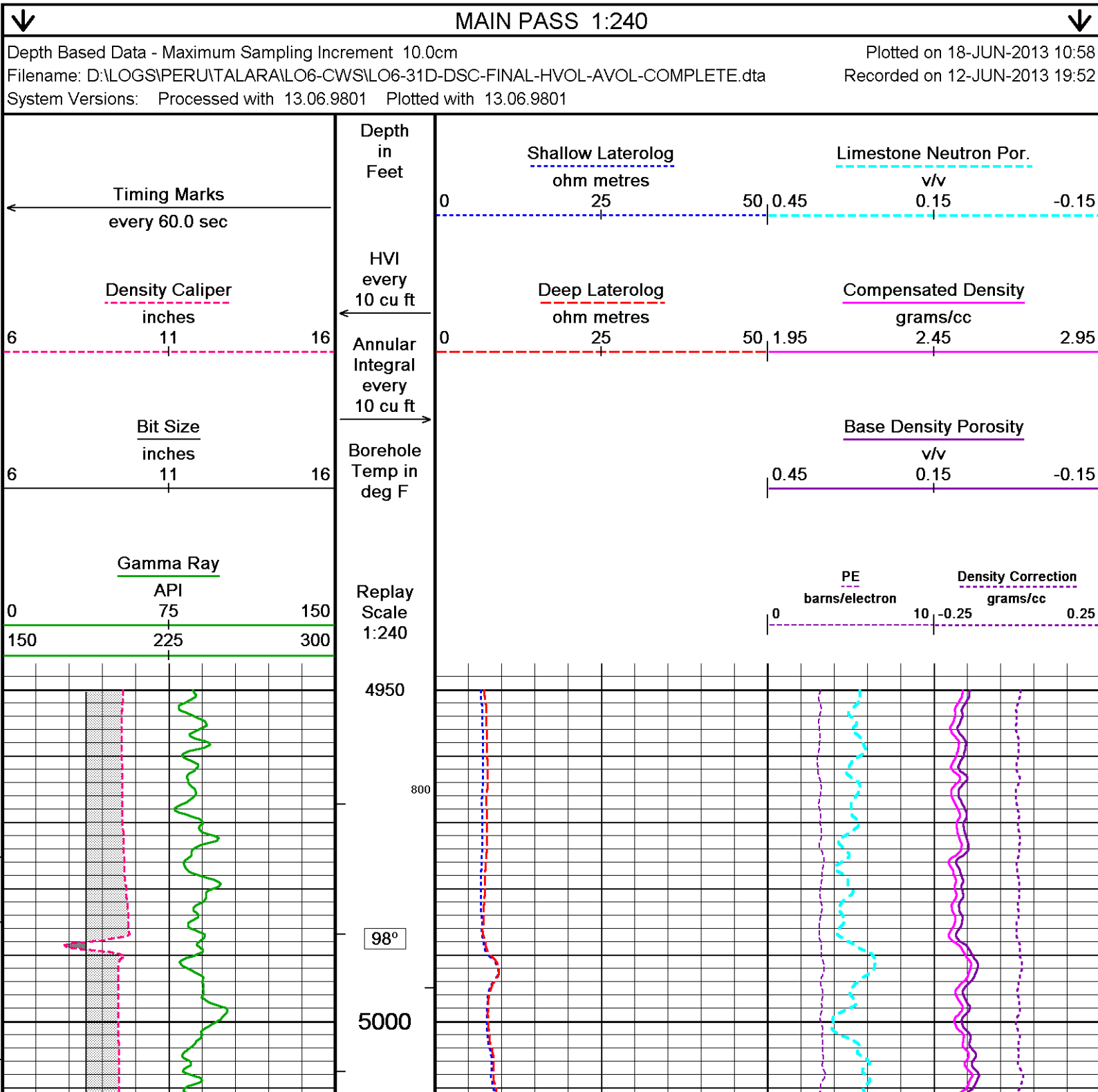


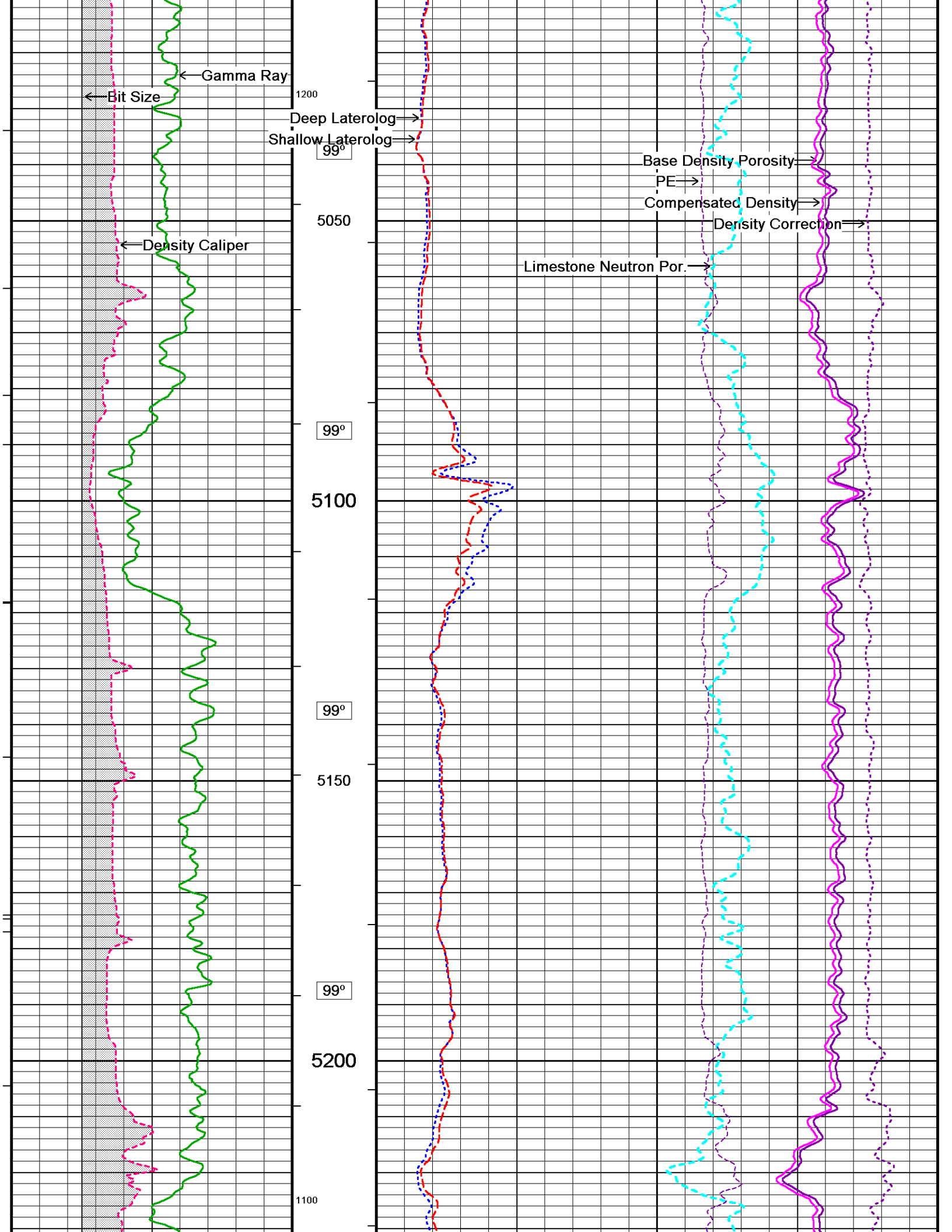
Tool Zero

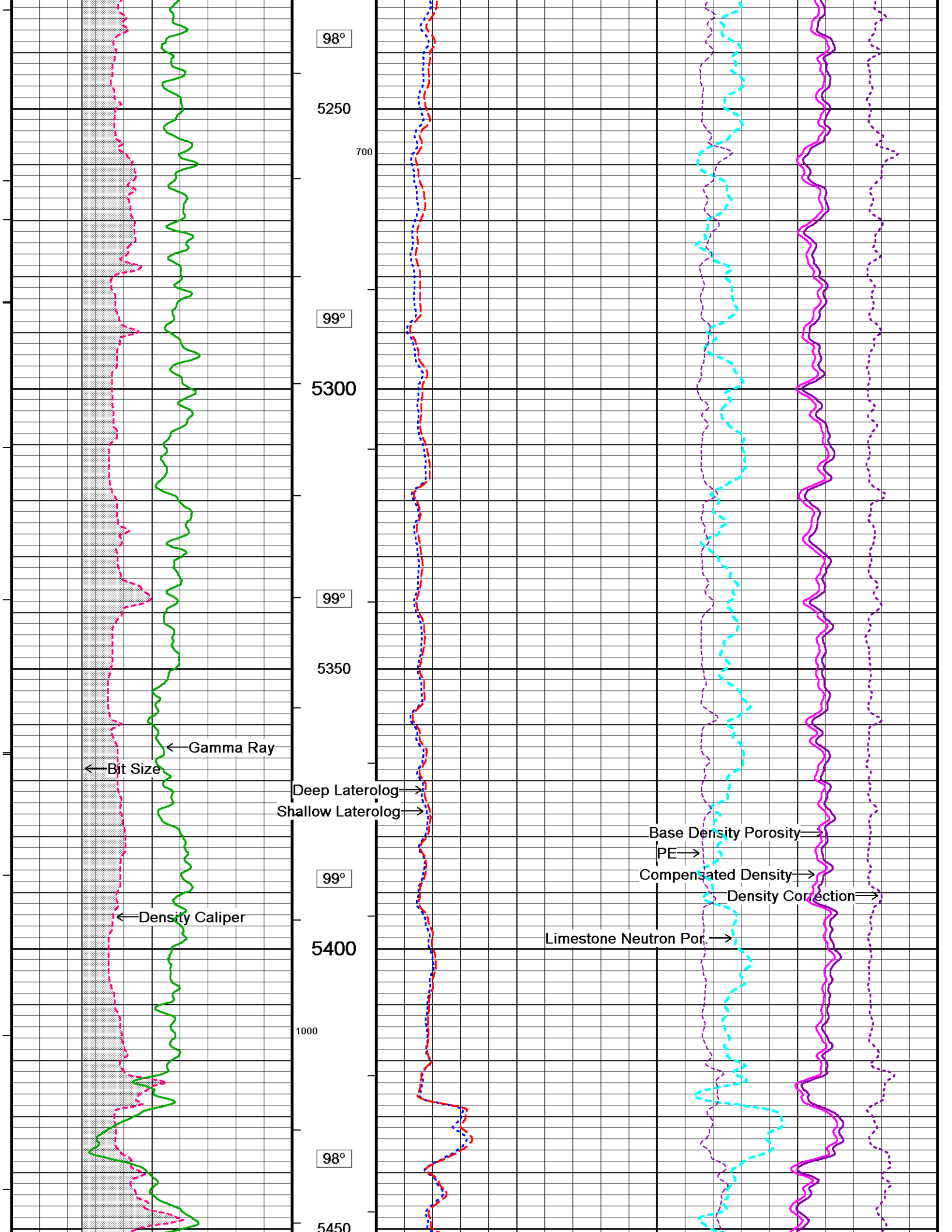
(0.13ft from bottom)

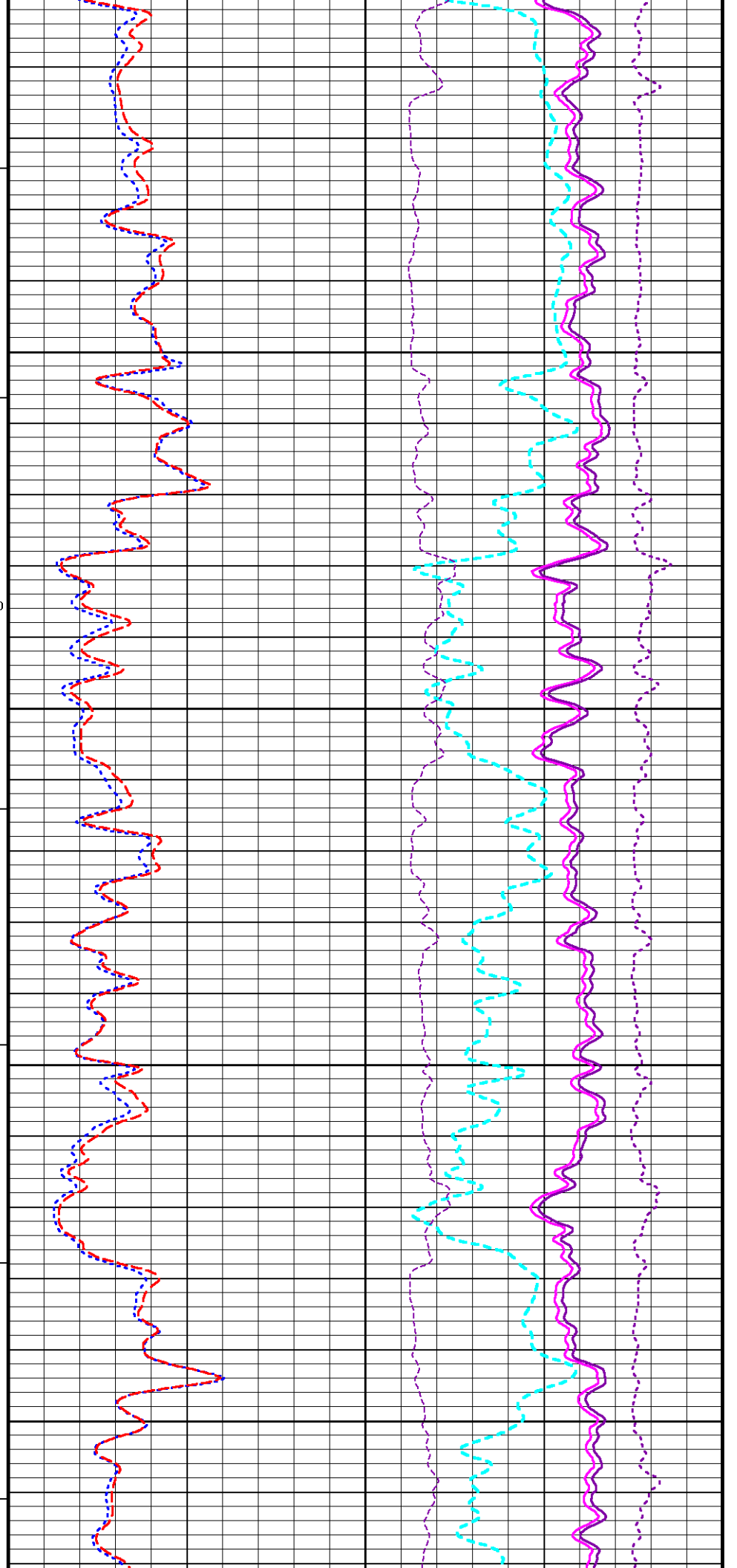
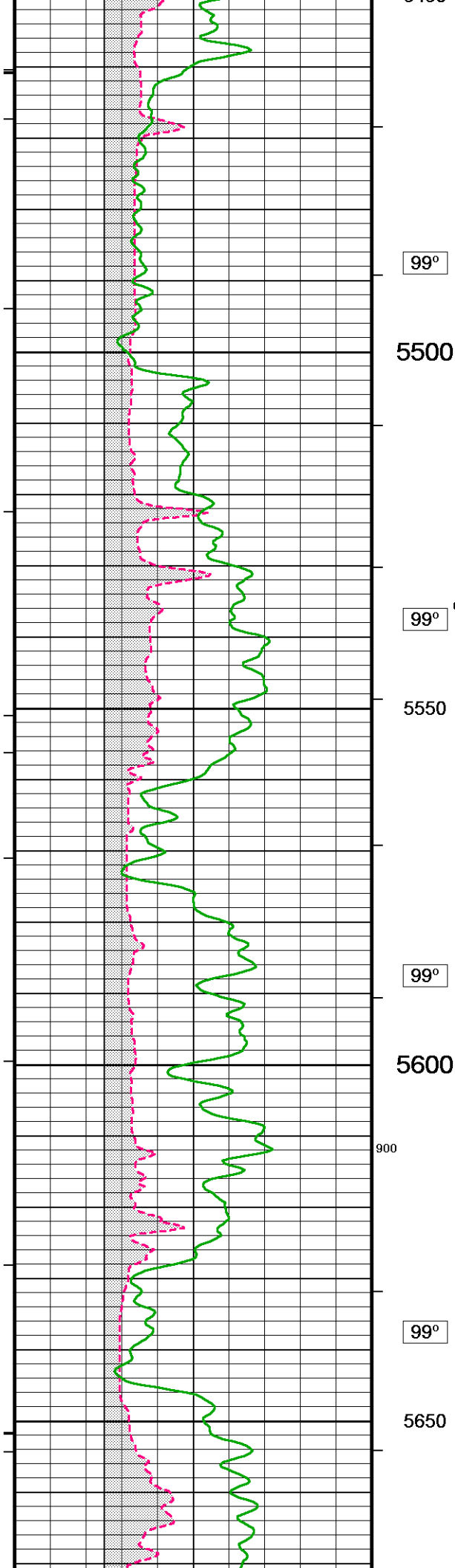
All measurements relative to tool zero.

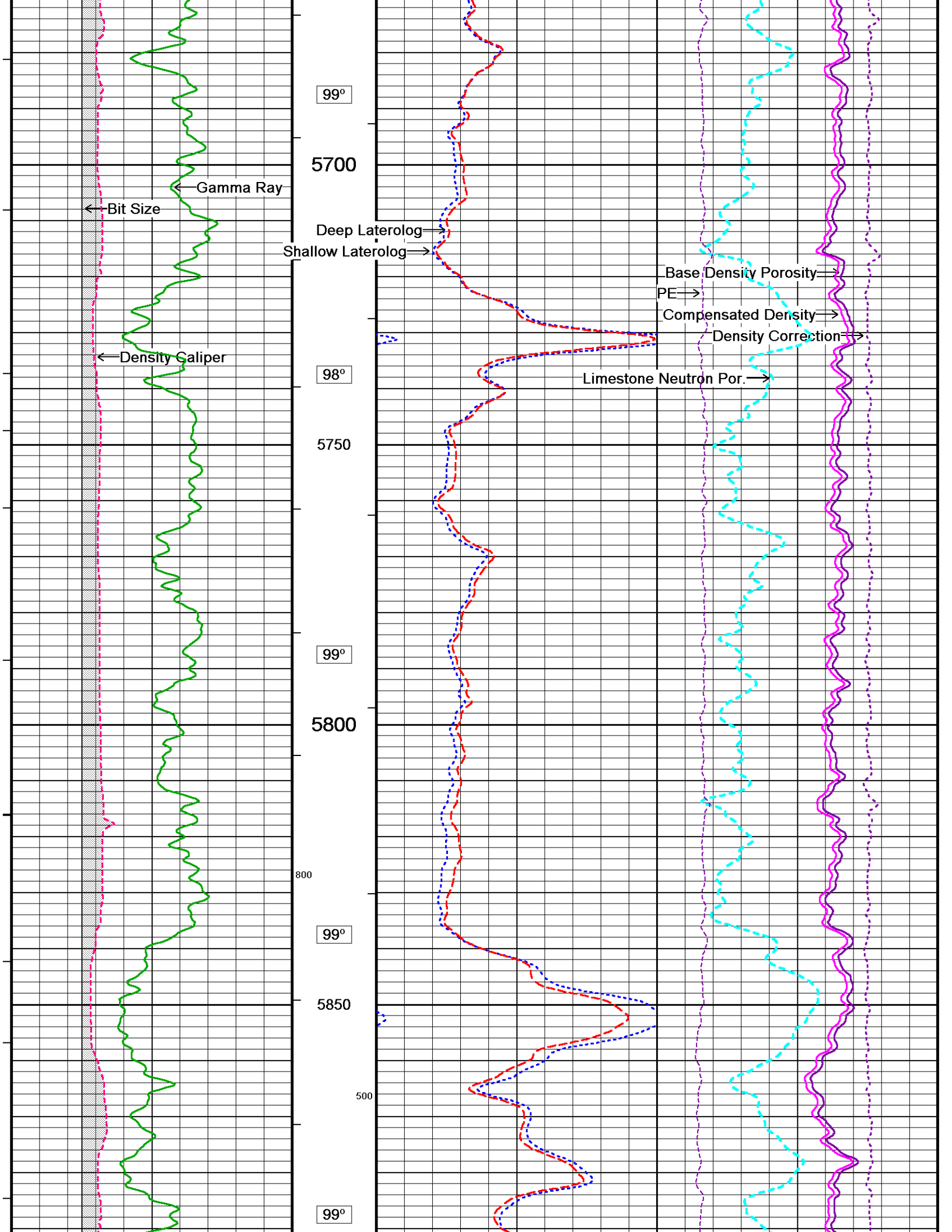
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs,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

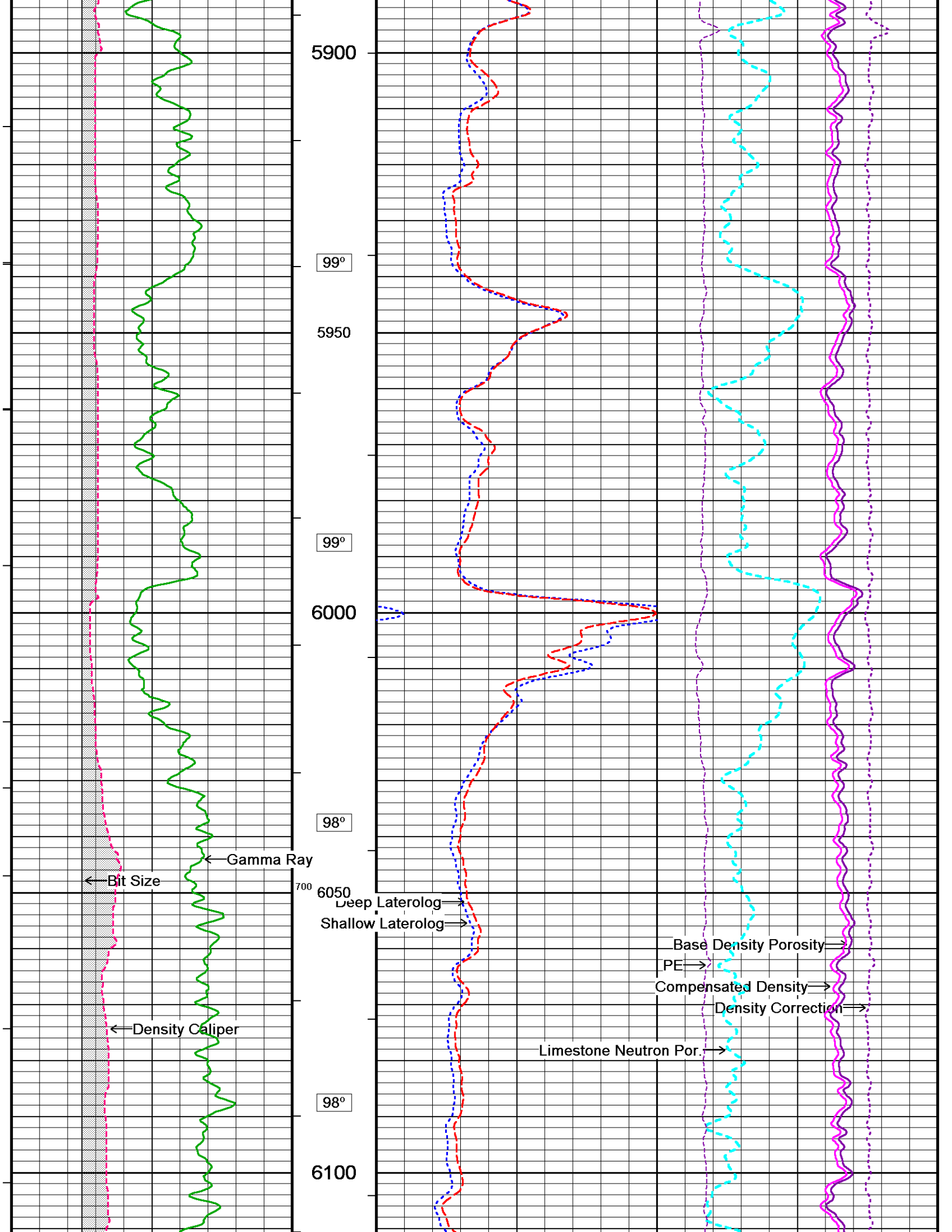


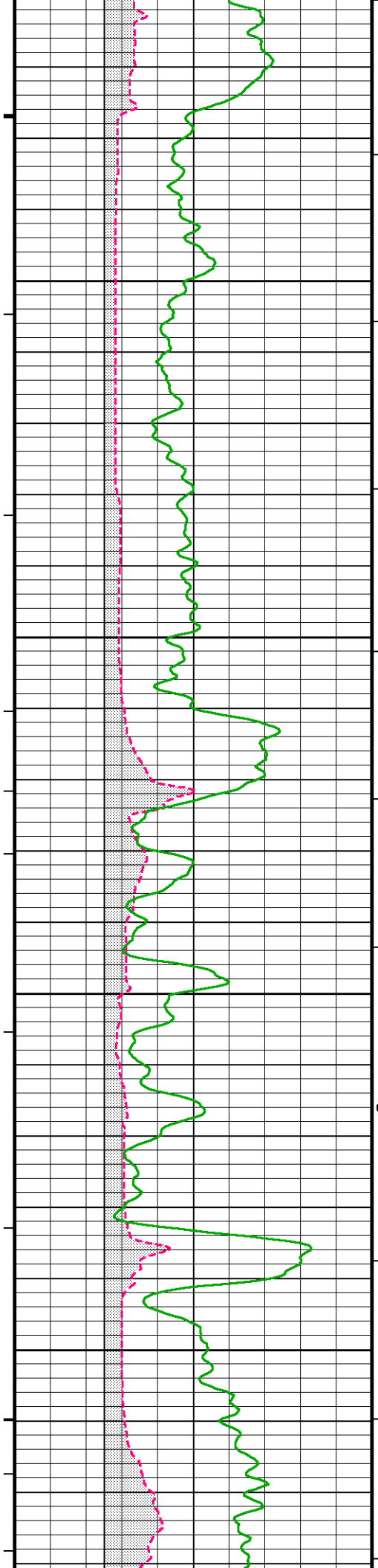




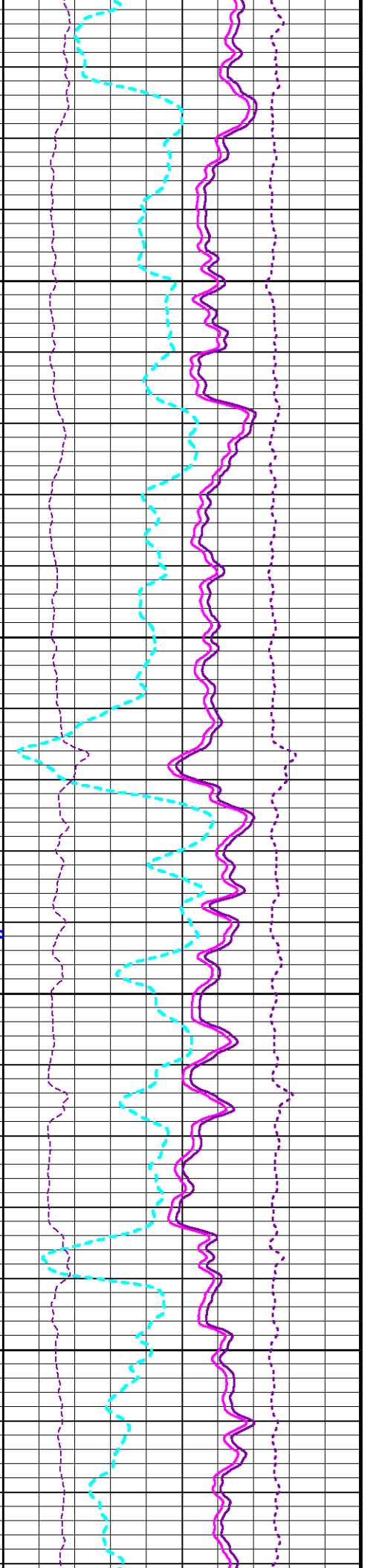
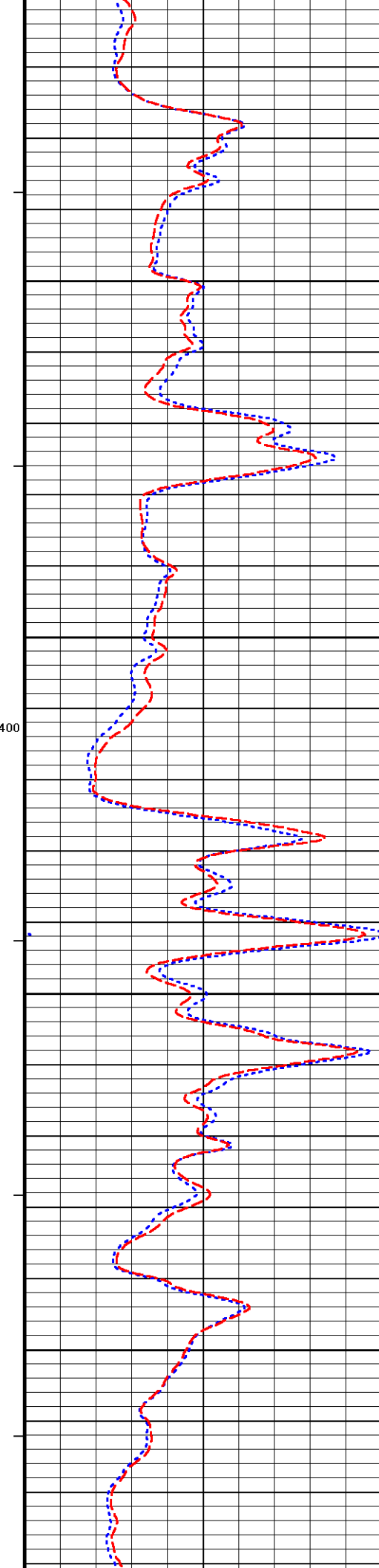


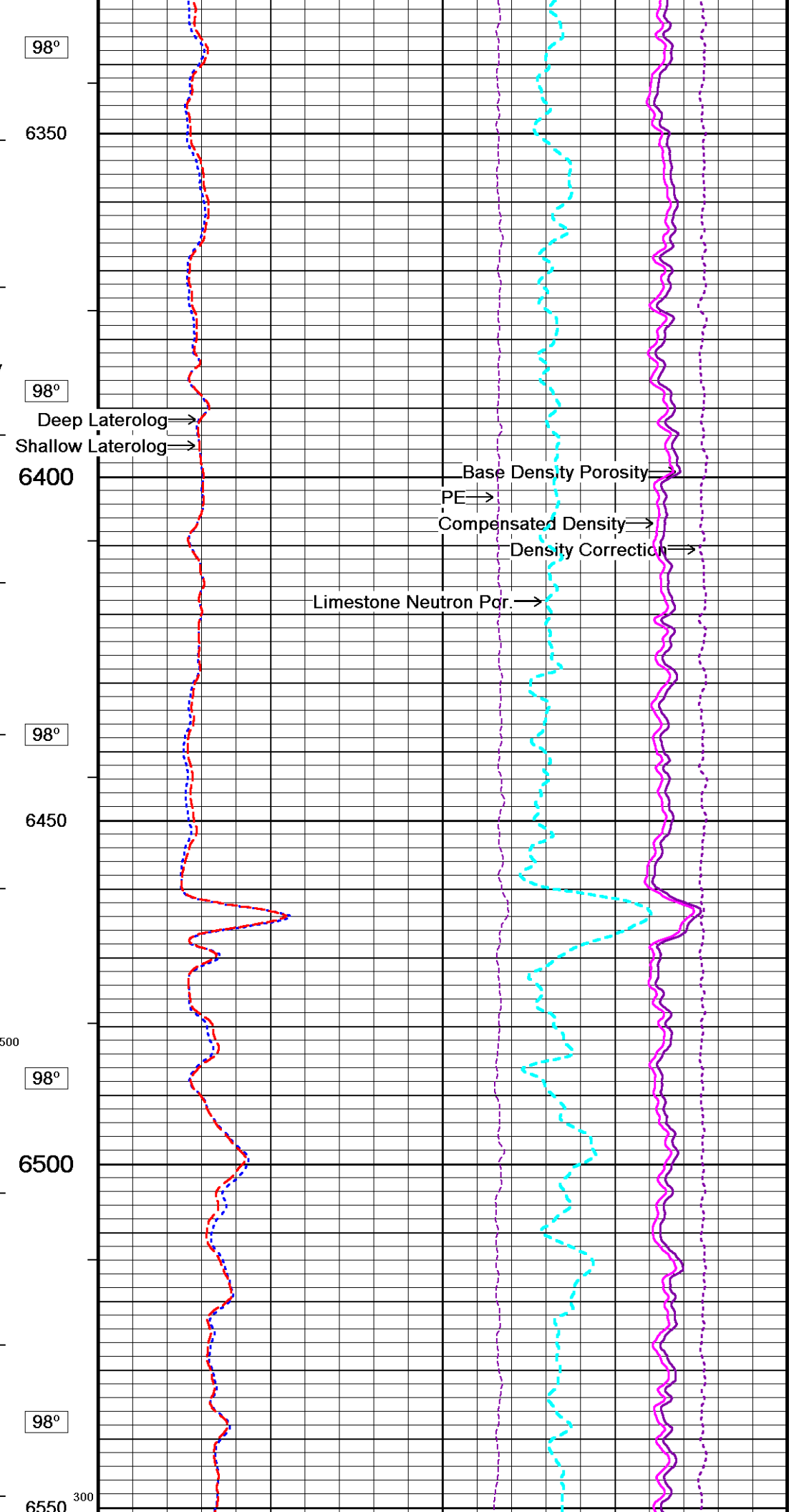
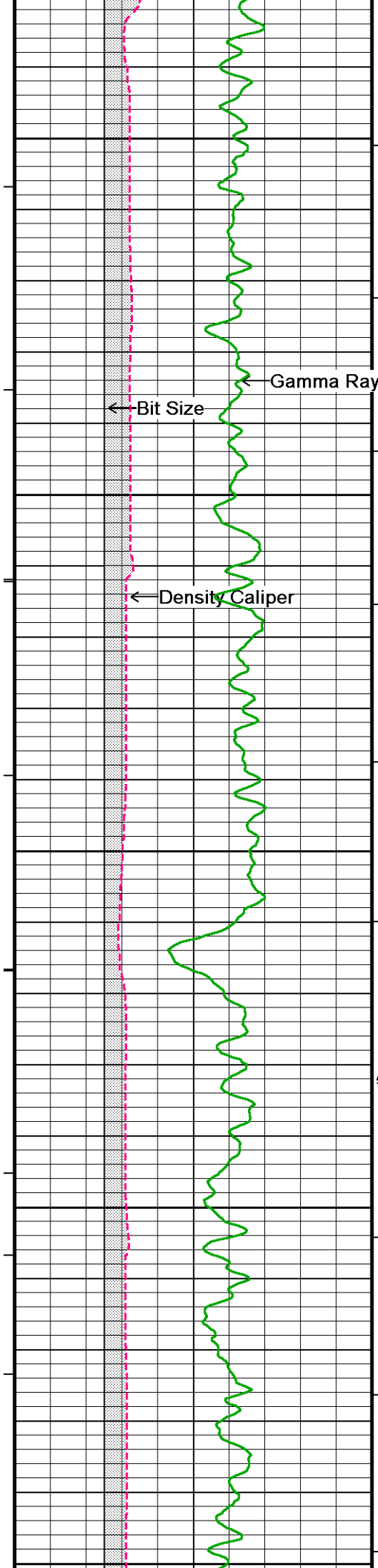


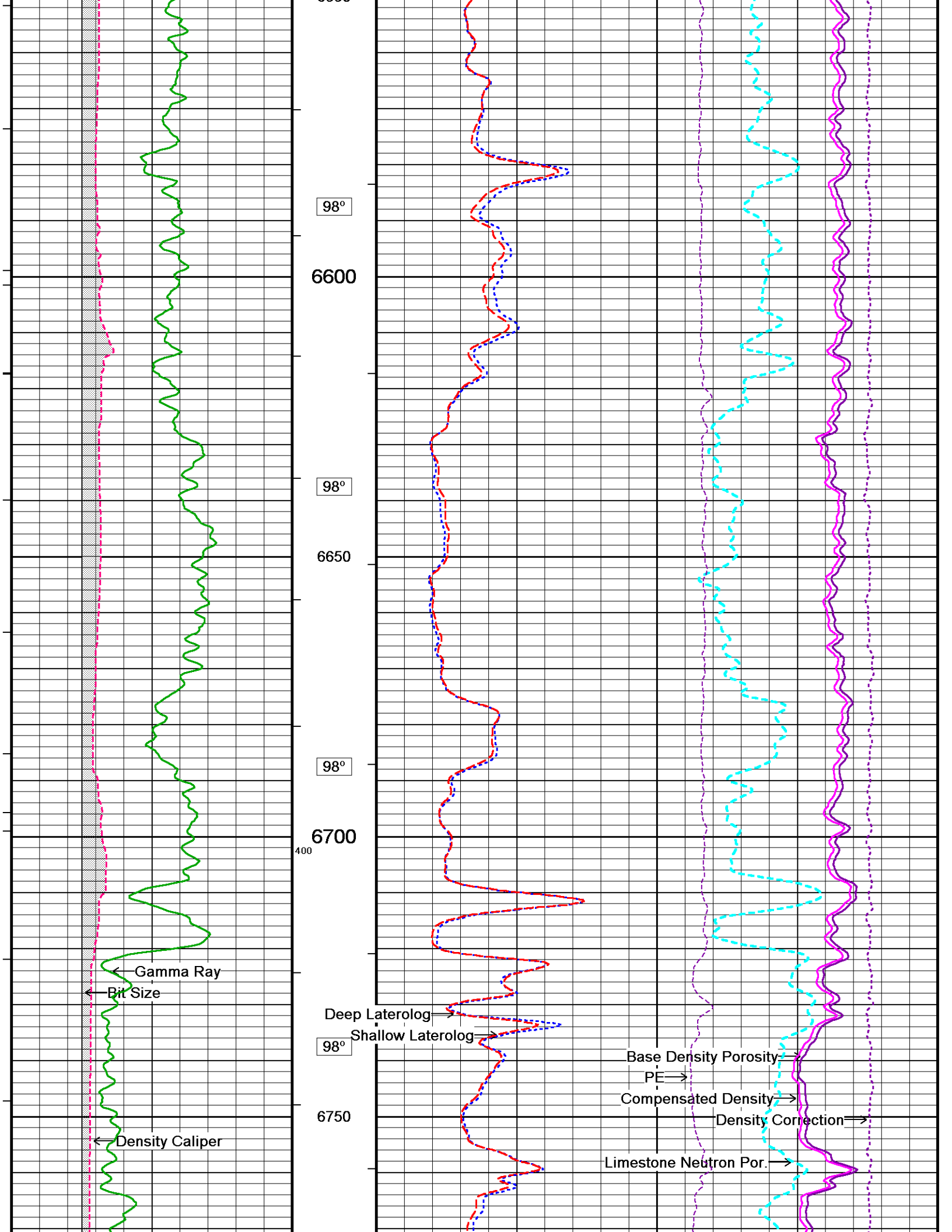


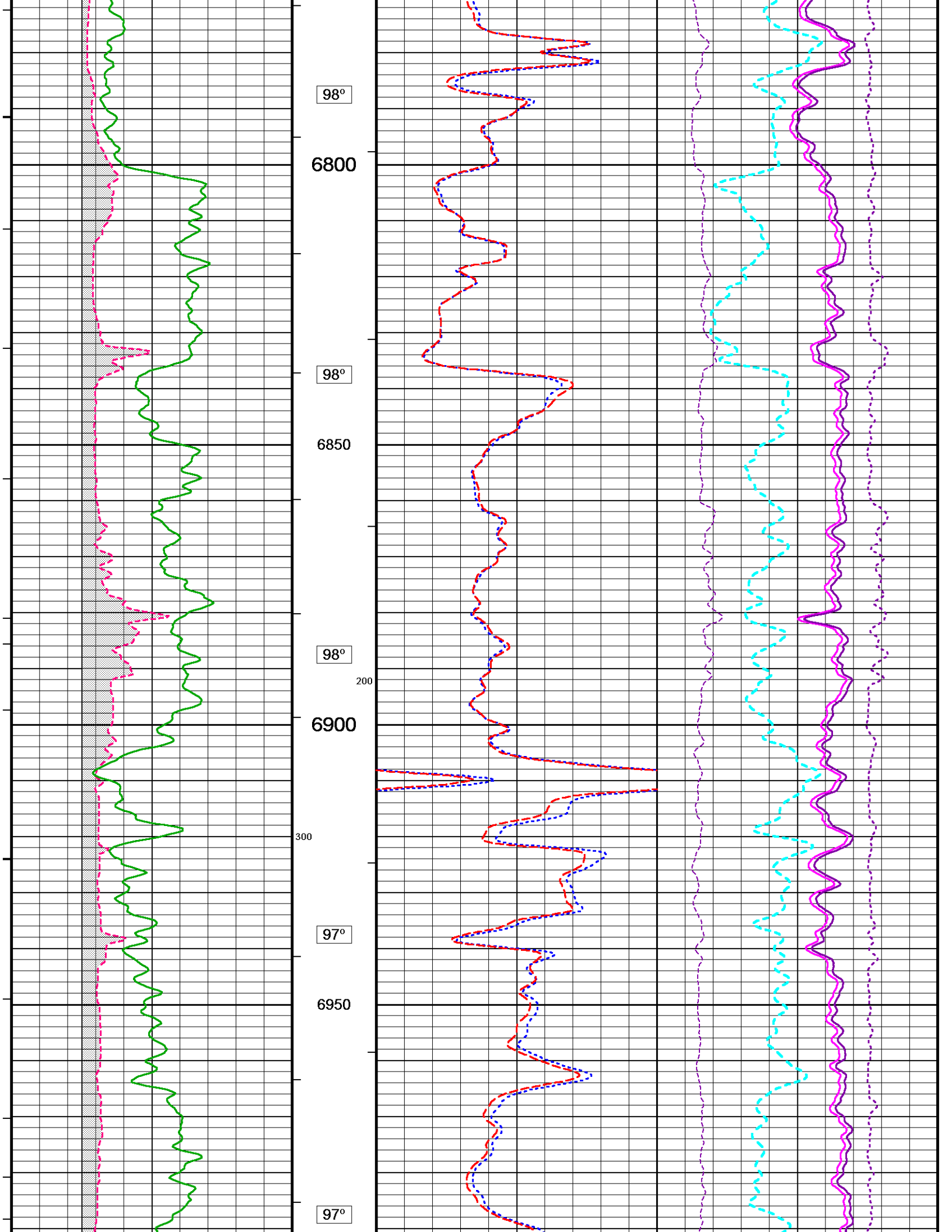


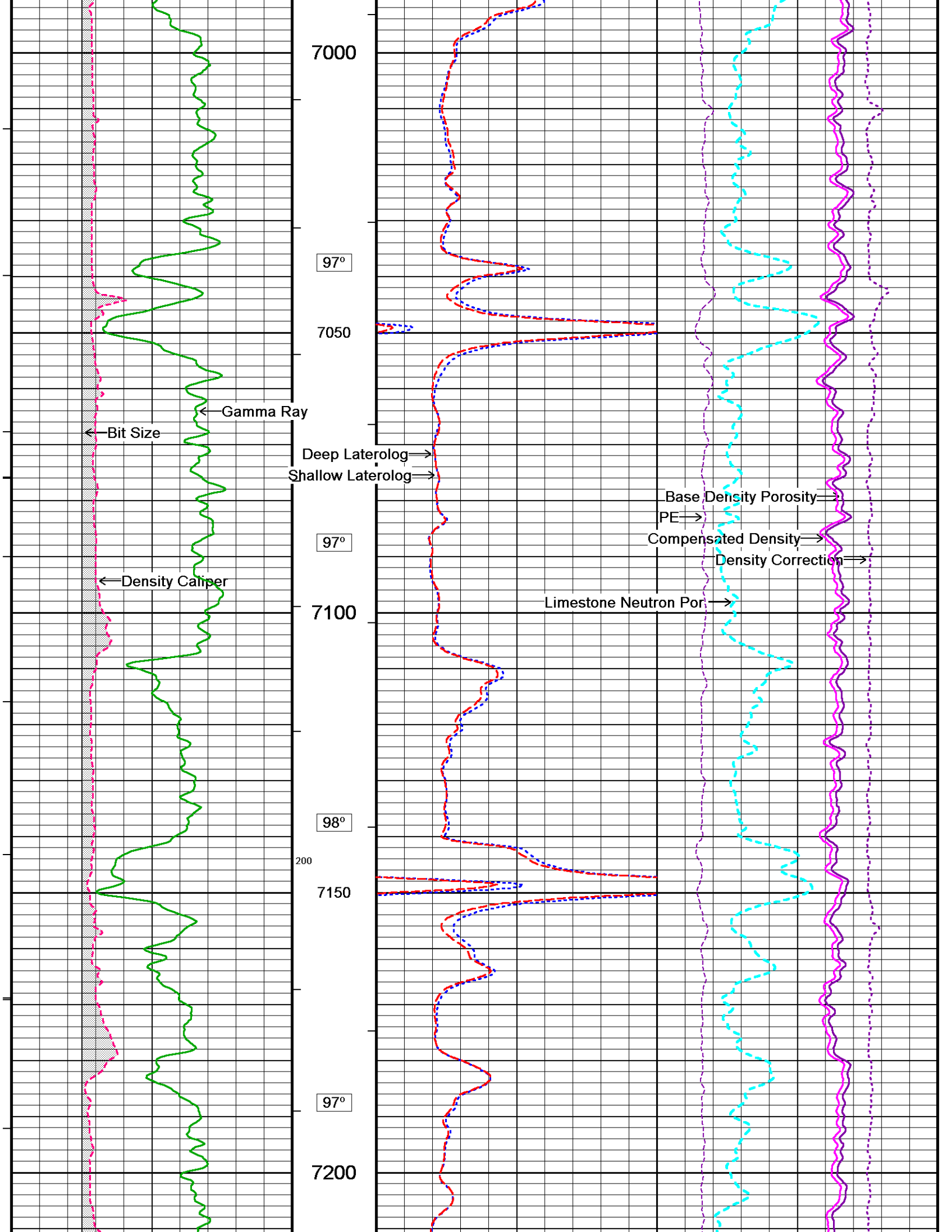
98°
6150
99°
6200
400
98°
6250
600
98°
6300

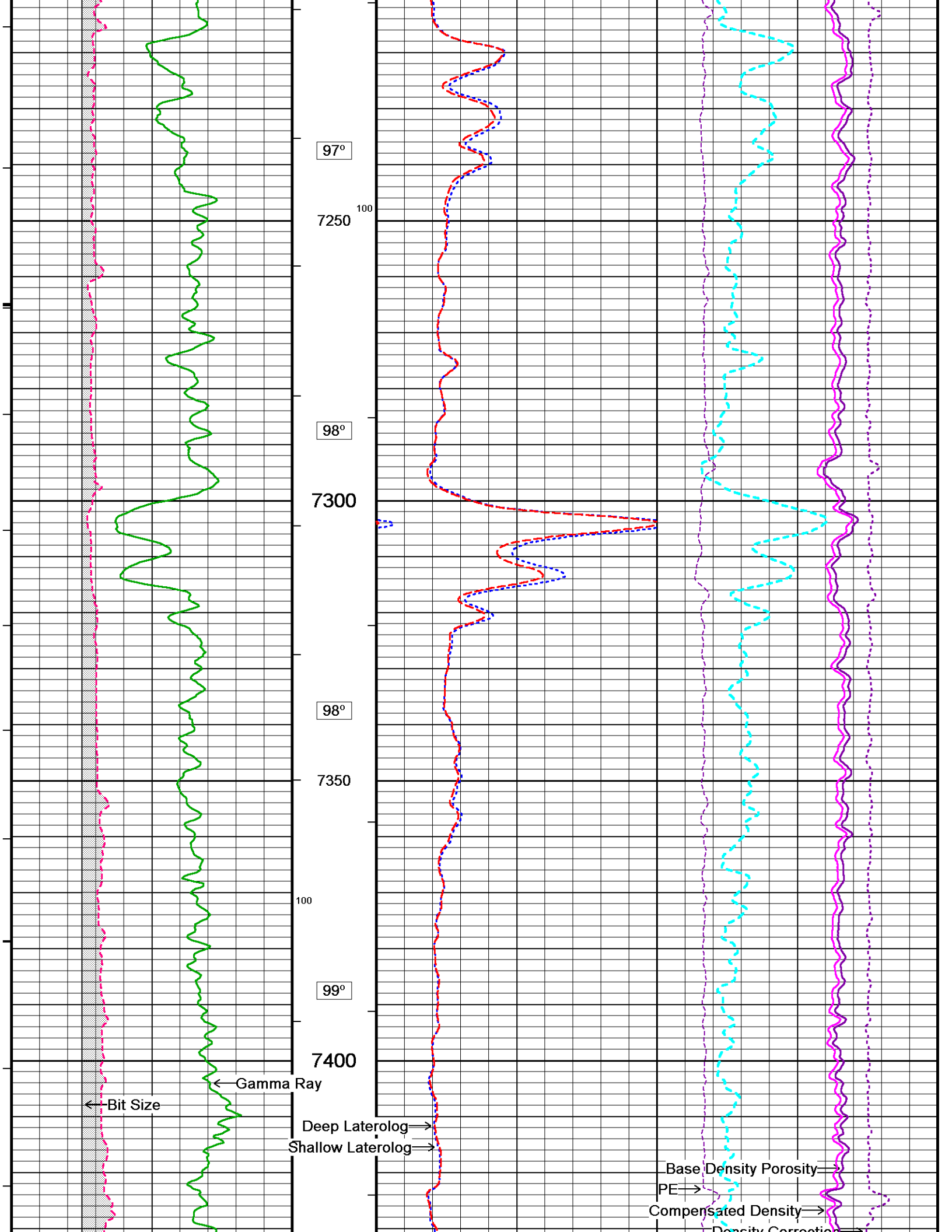


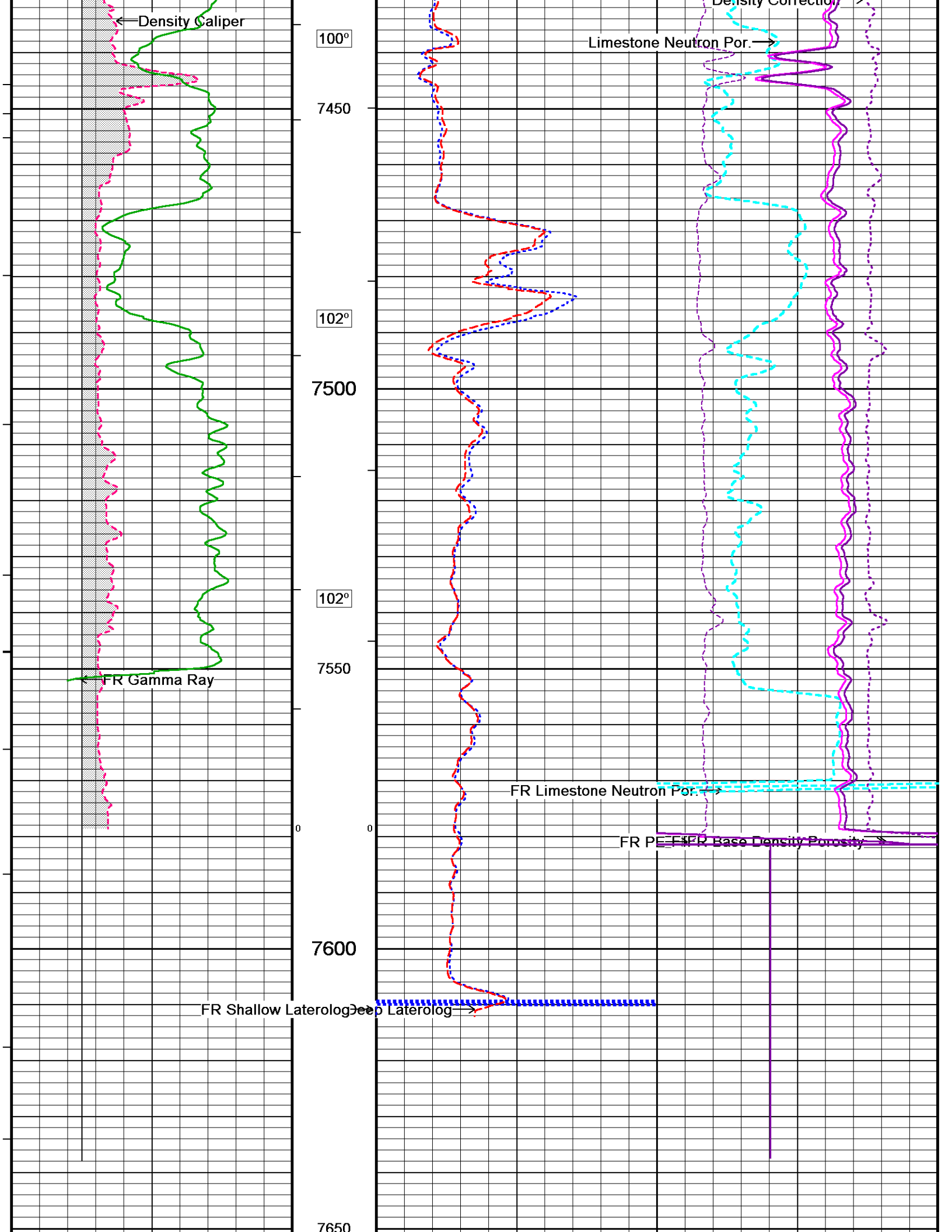


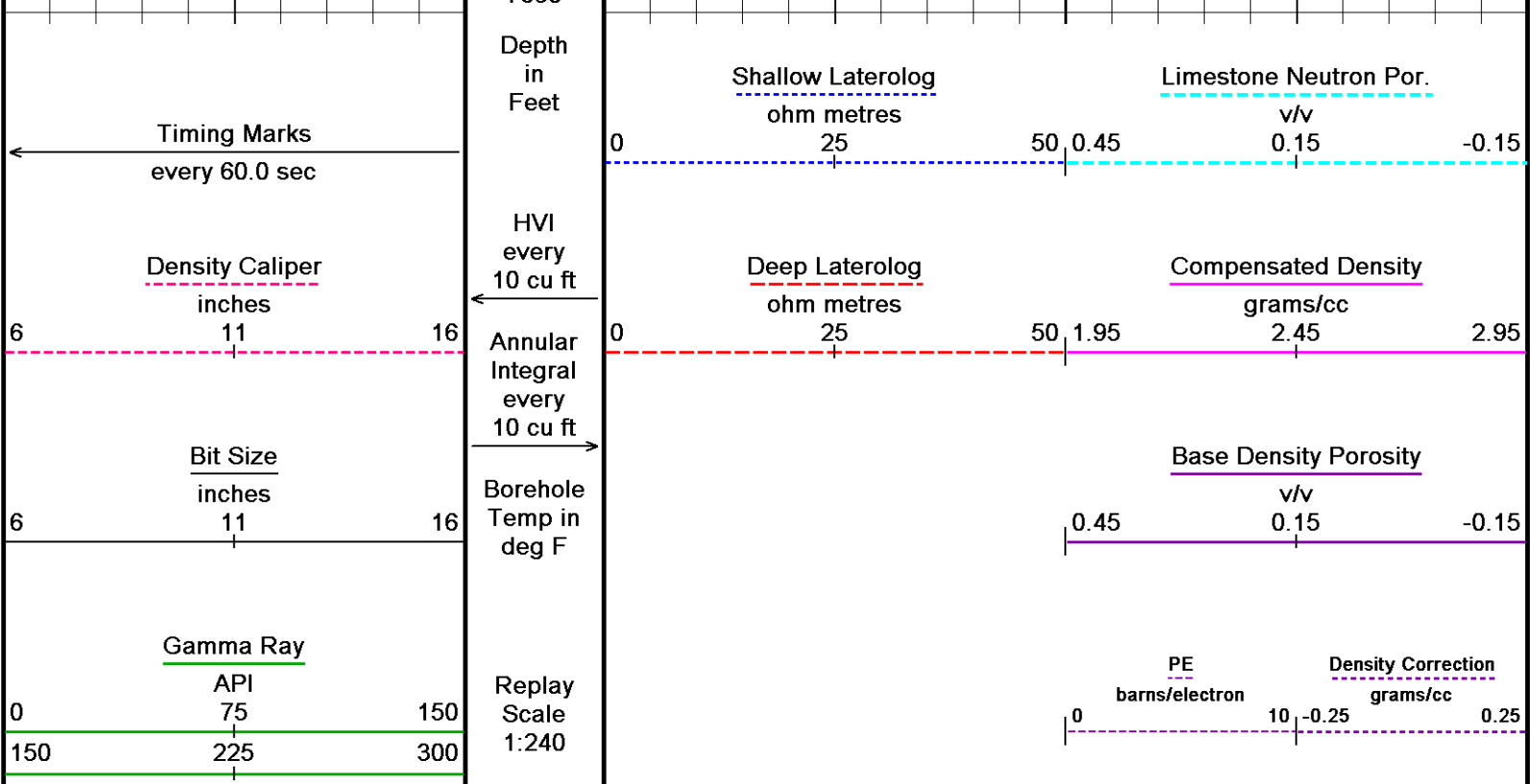












Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 18-JUN-2013 10:58
 Filename: D:\LOGS\PERUITALARA\LO6-CWS\LO6-31D-DSC-FINAL-HVOL-AVOL-COMPLETE.dta Recorded on 12-JUN-2013 19:52
 System Versions: Processed with 13.06.9801 Plotted with 13.06.9801

↑ MAIN PASS 1:240 ↑

BEFORE SURVEY CALIBRATION

D:\LOGS\PERUITALARA\LO6-CWS\porcess1.dta

General Constants All 000			Last Edited on 12-JUN-2013,22:12		
General Parameters					
Mud Resistivity	0.150		ohm-metres		
Mud Resistivity Temperature	70.000		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	None				
HVOL Caliper 2	N/A				
Annular Volume Diameter	7.000		inches		
Caliper for Differential Caliper	None				
Rwa Parameters					
Porosity used	Base Density Porosity				
Resistivity used	Deep Induction				
RWA Constant A	0.610				
RWA Constant M	2.150				
SW/APOR Tool Source	0.000				

Gamma Calibration MCG-D.A 261			Field Calibration on 09-JUN-2013 13:39		
	Measured	Calibrated (API)			
Background	72	48			
Calibrator (Gross)	931	616			
Calibrator (Net)	858	568			

Gamma Constants MCG-D.A 261			Last Edited on 12-JUN-2013,22:07		
Gamma Calibrator Number	145				
Mud Density	1.35	gm/cc			
Caliper Source for Processing	Density Caliper				

Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

High Resolution Temperature Calibration MCG-D.A 261			Field Calibration on 09-JUN-2013,13:05
	Measured	Calibrated(Deg F)	
Lower	10.00	10.00	
Upper	200.00	200.00	

High Resolution Temperature Constants MCG-D.A 261		Last Edited on 09-JUN-2013,13:05
Pre-filter Length	11	

Neutron Calibration MDN-C.A 441		Base Calibration on 15-MAY-2013 11:18
		Field Check on 09-JUN-2013 17:36
Base Calibration		
	Measured	Calibrated (cps)
	Near Far	Near Far
	3137 96	3714 110
Ratio	32.675	33.764
Field Calibrator at Base		Calibrated (cps)
		2123 3121
Ratio		0.680
Field Check		Calibrated (cps)
		0.686

Neutron Constants MDN-C.A 441		Last Edited on 12-JUN-2013,21:56
Neutron Source Id	P62419B	
Neutron Jig Number	NJ5737	
Epithermal Neutron	No	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.35	gm/cc
Limestone Sigma	7.10	cu
Sandstone Sigma	4.26	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	None	
Formation Pressure	0.00	kpsi
Temperature Source	MCG External Temperature	
Temperature	20.00	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	Constant Value	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	

Laterolog Calibration MLE-D.A 228		Base Calibration on 20-MAY-2013 17:20
		Field Check on 11-JUN-2013 15:01
Base Calibration		
	Measured	Calibrated (ohm-m)
Channel	Resistor 1 Resistor 2	Resistor 1 Resistor 2
Shallow	0.0 1010.4	0.0 1284.6
Deep	0.0 1010.4	0.0 747.1
Groningen	0.0 1010.3	0.0 796.8
Channel	Base Check (ohm-m)	Field Check (ohm-m)
Shallow	45.7	45.7
Deep	26.6	26.6
Groningen	226.9	226.9

Laterolog Constants MLE-D.A 228		Last Edited on 12-JUN-2013,19:44
Squasher Start	40000	ohm-m
Shallow Laterolog K Factor	1.2846	
Deep Laterolog K Factor	0.7471	
Groningen Laterolog K Factor	0.7968	

Matrix Density (gm/cc)	Depth (ft)
2.68	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
0.00	0.00

Caliper Calibration MPD-C.A 197

Base Calibration on 09-JUN-2013 17:47
Field Calibration on 11-JUN-2013 16:26

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16640	3.98
2	26014	5.96
3	36160	7.99
4	45792	9.86
5	56928	11.93
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.97	7.99

MMS Parameters MMS-A.C 1

Last Edited on 11-JUN-2013 16:55

Logging Parameters

Firmware Version	3v18	
Caliper Open On	MAI	
Caliper Open Delay		minutes
Caliper Closed On	Unknown	
Caliper Closed Delay	N/A	minutes
Sample Rate	1.00	seconds
Use Deep Sleep	No	
Delay Deep Sleep	N/A	
Deep Sleep Wake Time	N/A	minutes
Deep Sleep Wake on Temperature	N/A	
Deep Sleep Wake Temperature	N/A	degrees C
Deep Sleep Wake on Pressure	N/A	
Deep Sleep Wake Pressure	N/A	psi
MMI Pad Pressure	0.0	

Release Parameters

Pulse Duration Base Level	10.0	seconds
Pulse Duration Transition Time	60.0	seconds
Pulse Duration Status Pulse From	20.0	seconds
Pulse Duration Caliper Close From	145.0	seconds
Pulse Duration Caliper Open From	150.0	seconds
Pulse Duration Release Pulse From	215.0	seconds
Pulse Duration Release Pulse To	280.0	seconds
Pulse Release Duration	240.0	seconds
Pulse Discriminator Pressure Band	141.0	seconds
Pulse Pressure Discriminator	314.0	seconds
Use Negative Pulsing	No	
Good Status Reply Open Hole	18732.0	seconds
Good Status Reply Cased Hole	20.0	seconds
Bad Status Reply	60.0	seconds
Status Pulse To	80.0	seconds
Caliper Close To		seconds
Caliper Open To	210.0	seconds

Configuration

MCG,MDN,MPD,MPD,MLE,MAI

COMPANY	SAVIA PERU S.A
WELL	LO6-31D
FIELD	LOBITOS OFFSHORE
PROVINCE/COUNTY	PIURA
COUNTRY/STATE	PERU

Elevation Kelly Bushing	50.00	feet	First Reading	7611.00	feet
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Elevation Drill Floor	50.00	feet	Depth Driller	7668.00	feet
Elevation Ground Level	335.00	feet	Depth Logger	7638.60	feet


Weatherford[®]

COMBINED LOG

MDL-MCG-MDN-MPD

SCALE 5":100