

**Weatherford®****NUCLEAR LOG
MGS-MDN-MPD
SCALE 5":100**

COMPANY

SAVIA PERU S.A

WELL

LOG-33D

FIELD

LOBITOS OFFSHORE

PROVINCE/COUNTY

PIURA

COUNTRY/STATE

PERU

LOCATION

N: 9°508,652.99 m
E: 459,049.25 mLatitude
LongitudeOther Services
MDL

Permanent Datum SEA LVL, Elevation 335 feet

Log Measured From DF

Drilling Measured From DF

Elevations:

feet

KB
DF
GL385.00
385.00
335.00

Date

04-AUG-2013

Run Number

1

Service Order

834

Depth Driller

8150.00 feet

Depth Logger

8128.25 feet

First Reading

8071.73 feet

Last Reading

5708.00 feet

Casing Driller

5707.00 feet

Casing Logger

5708.00 feet

Bit Size

8.500 inches

Hole Fluid Type

WBAC

Density / Viscosity

11.50 lb/USg 48.00 Sec/qt

PH / Fluid Loss

9.40 5.00 ml/30Min

Sample Source

ACTIVE PIT

Rm @ Measured Temp

0.81 @ 75.0 ohm-m

Rmf @ Measured Temp

0.622 @ 75.0 ohm-m

Rmc @ Measured Temp

1.481 @ 75.0 ohm-m

Source Rmf / Rmc

PRESS

Rm @ BHT

1.092 @103.0 ohm-m

Time Since Circulation

1 HOUR

Max Recorded Temp

103.00 deg F

Equipment / Base

2 TALARA

Recorded By

J. GUERRERO

Witnessed By

A. ORTEGA

E. ROLDAN

REMARKS

1. Objective: To obtain accurate open hole Gamma Ray, Neutron, Caliper, Resistivity Log (Dual Laterolog) in Compact Well Shuttle - Messenger Conveyance.
2. Maximum recorded temperature 103 degF recorded.
3. Fluid resistivity measurements during logging operation: Rmf= 0.622 @ 70deg F, Rm=0.807@ 70Deg F, Rmc=1.481@ 70degF.
4. This is a deviated well with a maximum deviation of 65.30 degrees @ 2814.00 ft.
5. Well sketch per driller's depth.
6. Bottom not tagged due to nature of the conveyance. Maximum depth recorded in Log header (8128.25ft) is the maximum depth reached by the induction tool in the run.
7. Logging speed below 30 ft/min (following operational procedure).
8. Main Section from 8128.25ft to 5708 ft, as requested.
9. No Repeat Section performed due to deployment method used in the job.
10. Resistivity curves (Dual laterolog) presented in this log are not corrected for borehole conditions.
11. Neutron log is corrected by temperature and borehole size by the density caliper.
12. Density log is corrected for mud density and borehole size by density caliper. Matrix used: 2,68 g/cc
13. Calculated Volumes and caliper averages from 8128.25ft to 5708 ft, for a future 7.0 O.D casing:
Hole Volume= 1235 FT 3
Annular Volume = 605 FT 3
Caliper Average = 9.76 in.
14. Flow test were done at the following depths: 200ft, 2000ft, 4000ft ,5500ft, 6500ft, 7500ft, 7975ft.

Crew at your service

J. Guerrero, A. Baca, H. Quezada, J. Escobar, E. Roldan

BOREHOLE RECORD

Last Edited: 06-AUG-2013 08:59

Bit Size
inches

17.000

Depth From
feet

0.00

Depth To
feet

1224.00

17.000	0.00	1224.00
12.250	1224.00	5707.00
8.500	5707.00	8150.00

CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	13.375	0.00	1224.00	48.00
CASING	9.625	0.00	5707.00	43.00

WELL DIAGRAM

13.38 in Casing: 0.00 ft

9.63 in Casing: 0.00 ft

17.00 in Bit size: 0.00 - 1224.00 ft

13.38 in Casing shoe: 1224.00 ft

12.25 in Bit size: 1224.00 - 5707.00 ft

9.63 in Casing shoe: 5707.00 ft

8.50 in Bit size: 5707.00 - 8150.00 ft

Total bit depth: 8150.00 ft

Temperature: 103.00 Degrees F

DOWNHOLE EQUIPMENT

D:\LOGS\PERU\TALARA\LO6-33D-CWS\merge-PROCESS-lo6-33d2.dta

Shuttle Running Tool 3.5"

SRT-A.A 31 LG: 6.62 ft WT: 37.5 lb OD: 2.52 in

SKJ-E.B Compact Knuckle Joint

SKJ-E.B 507 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

MBS-F.A 200v Compact Battery Sub

MBS-F.A 116 LG: 17.06 ft WT: 123.5 lb OD: 2.24 in

Compact Memory Sub E.B

MMS-E.B 148 LG: 5.20 ft WT: 37.5 lb OD: 2.24 in

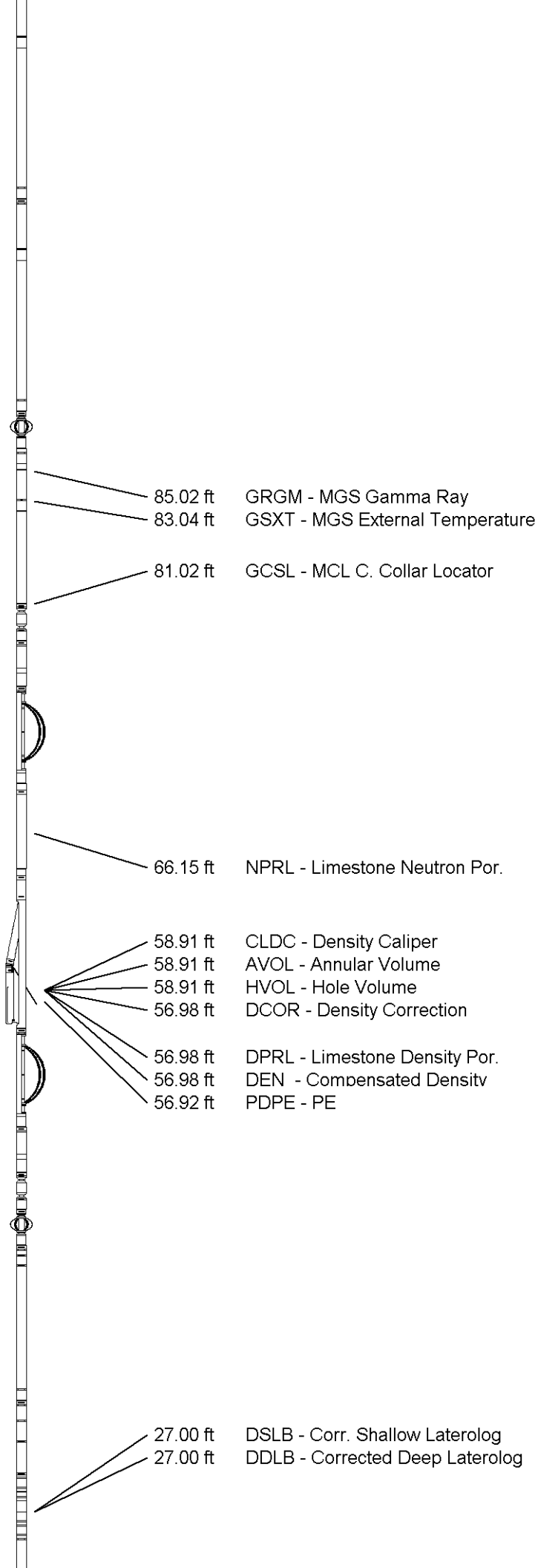
MIS-E.B Compact Inline Standoff sub

MIS-E.B 640 LG: 2.14 ft WT: 15.4 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.

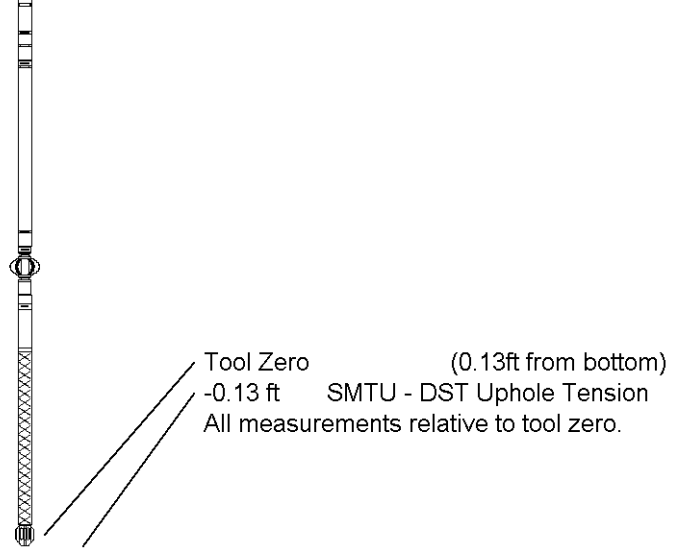


Compact Lower Guard Sub.
MLG-B.B 257 LG: 8.00 ft WT: 55.1 lb OD: 2.24 in

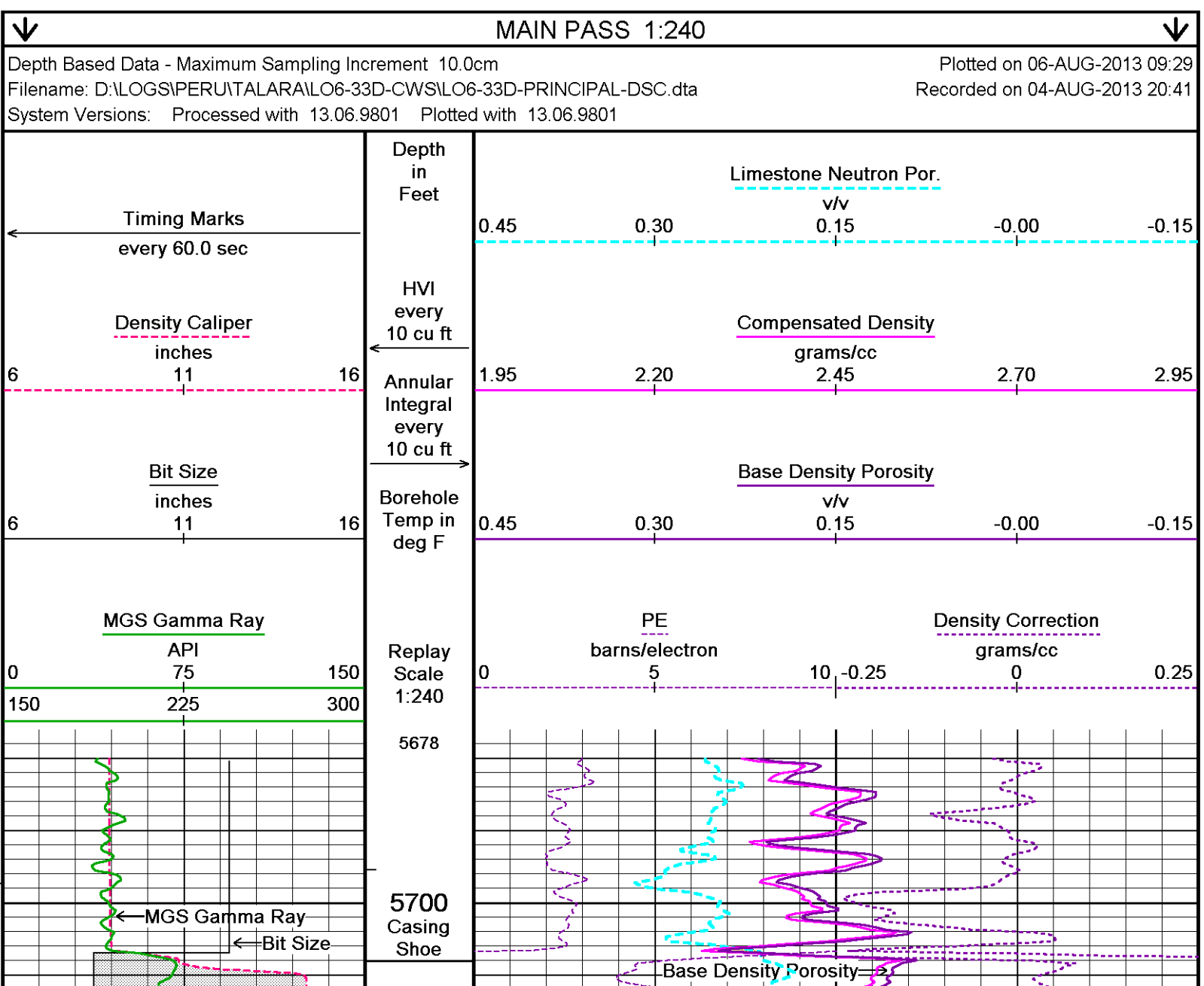
MIS-E.A Compact Inline Standoff sub
MIS-E.A 152 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

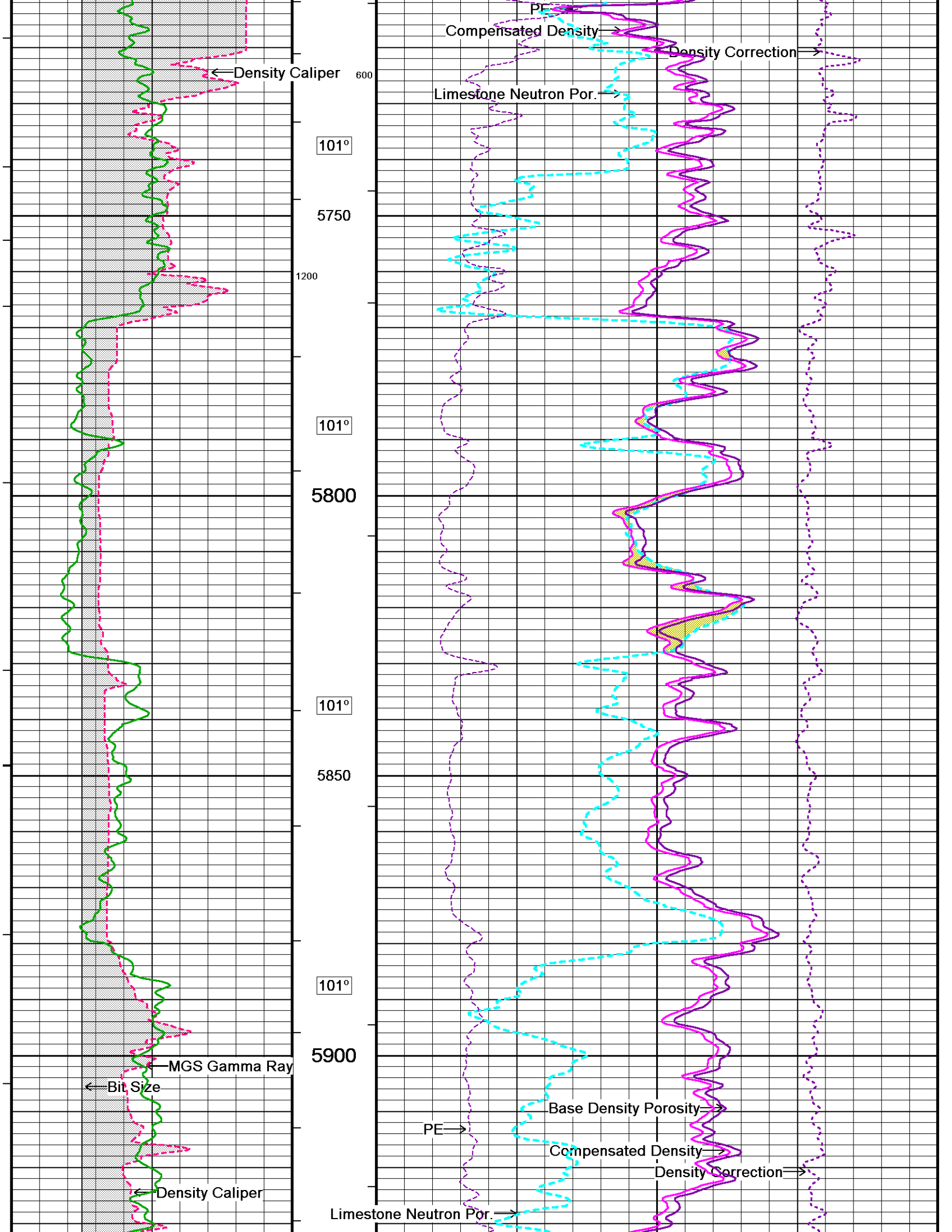
Compact Induction
MAI-B.A 223 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

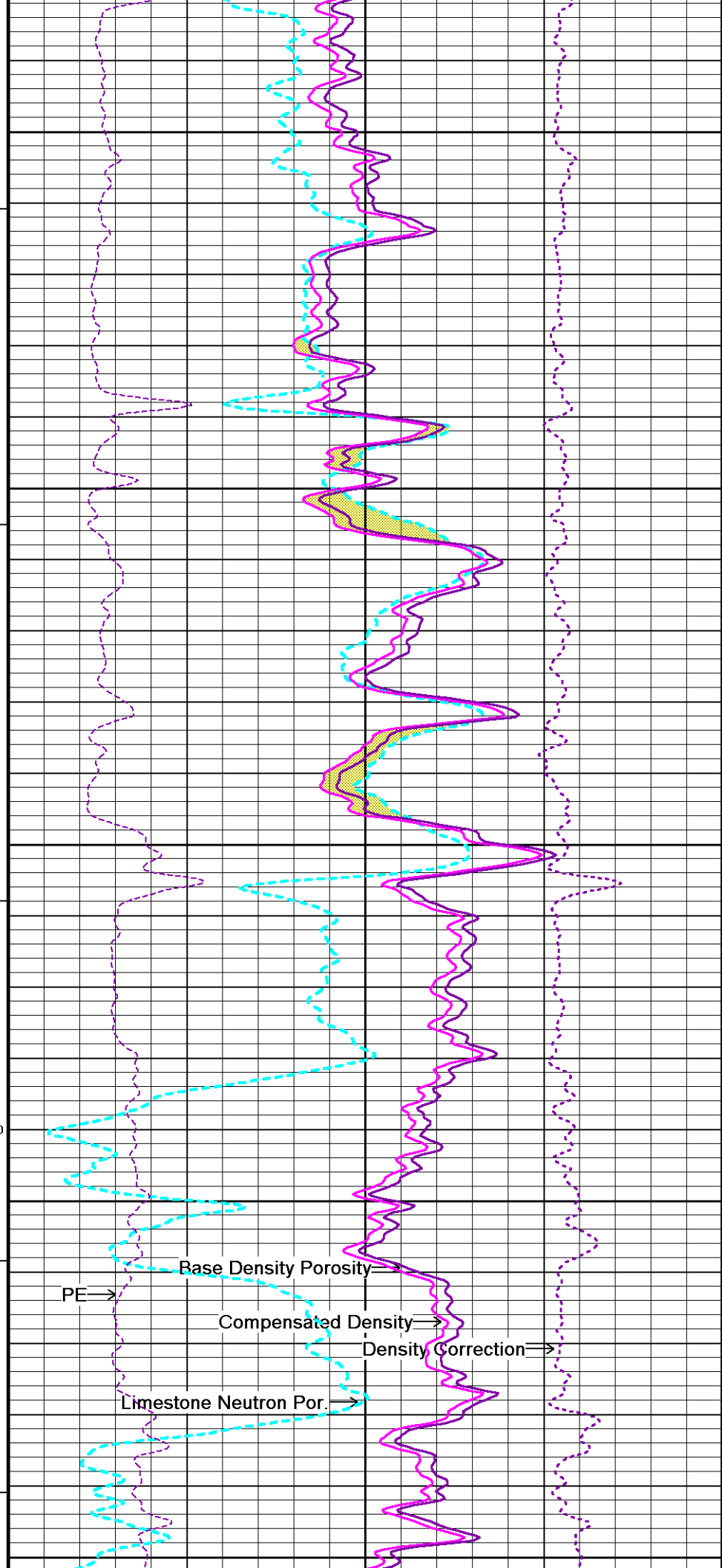
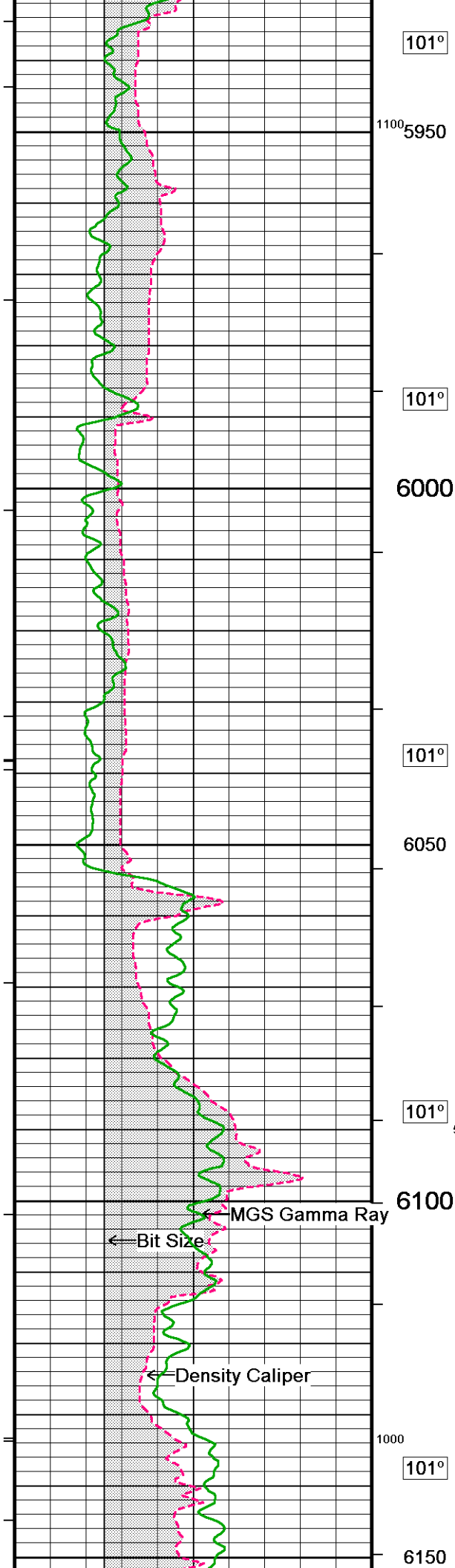
Total Length: 158.25 ft Weight: 1131.0 lb

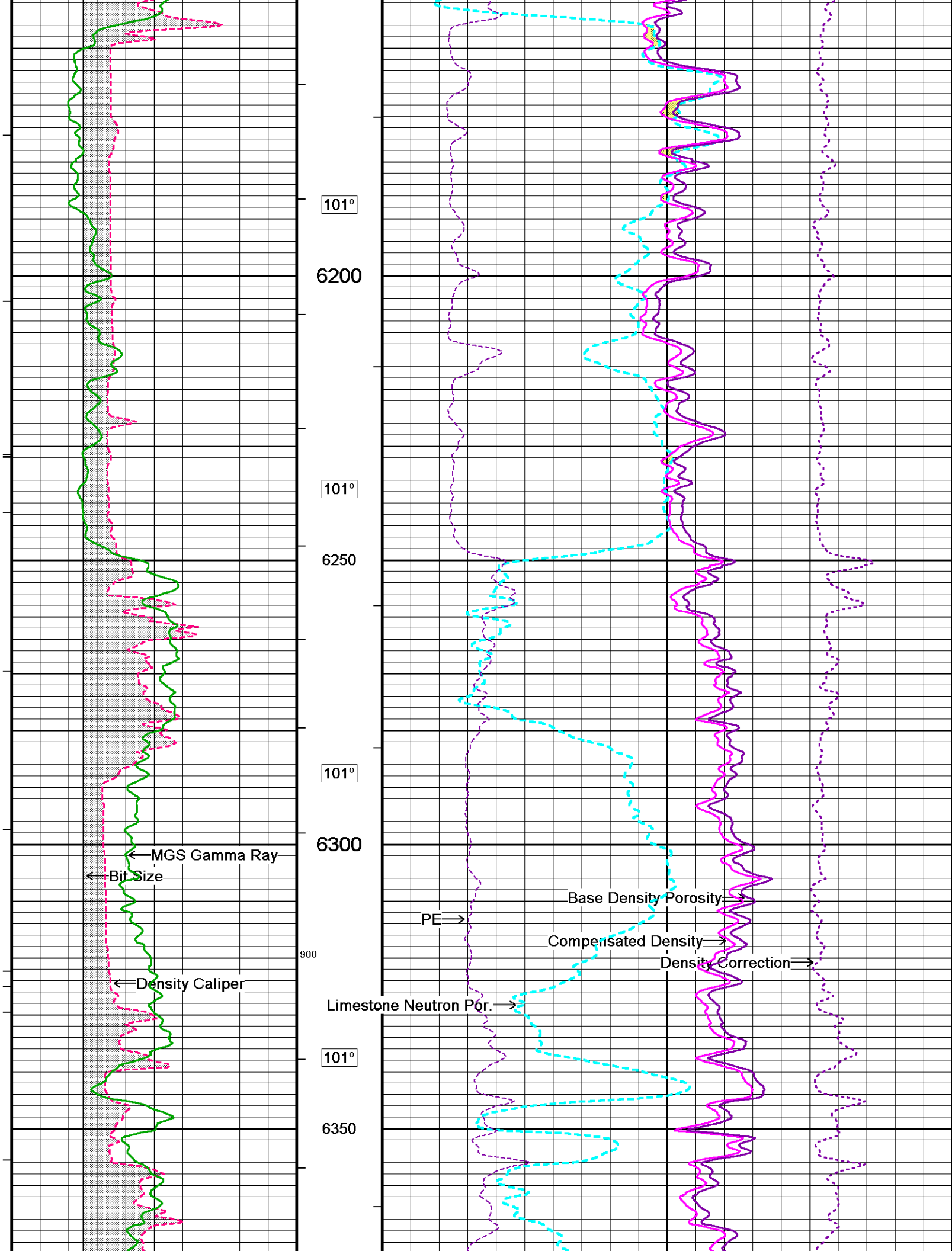


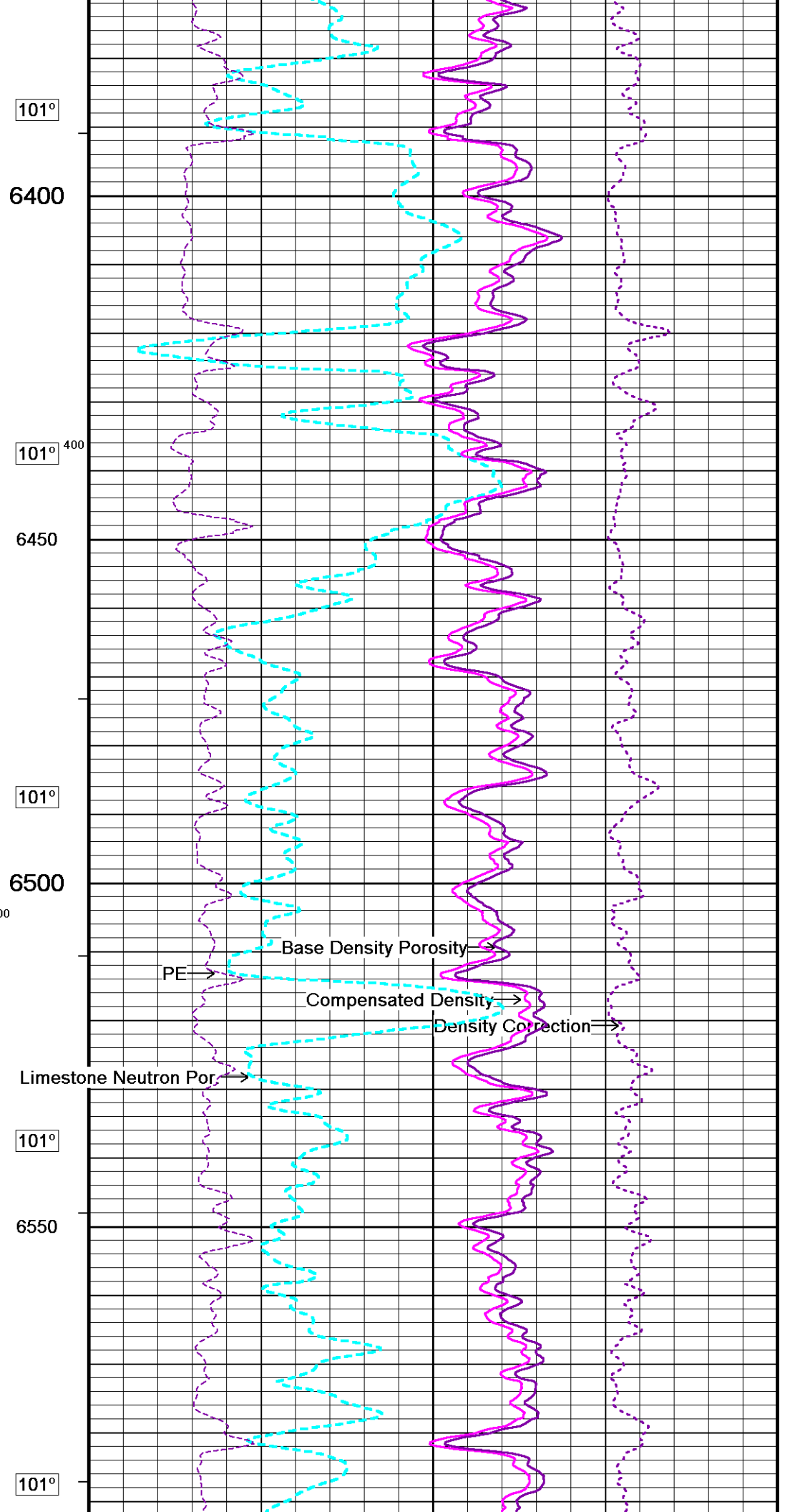
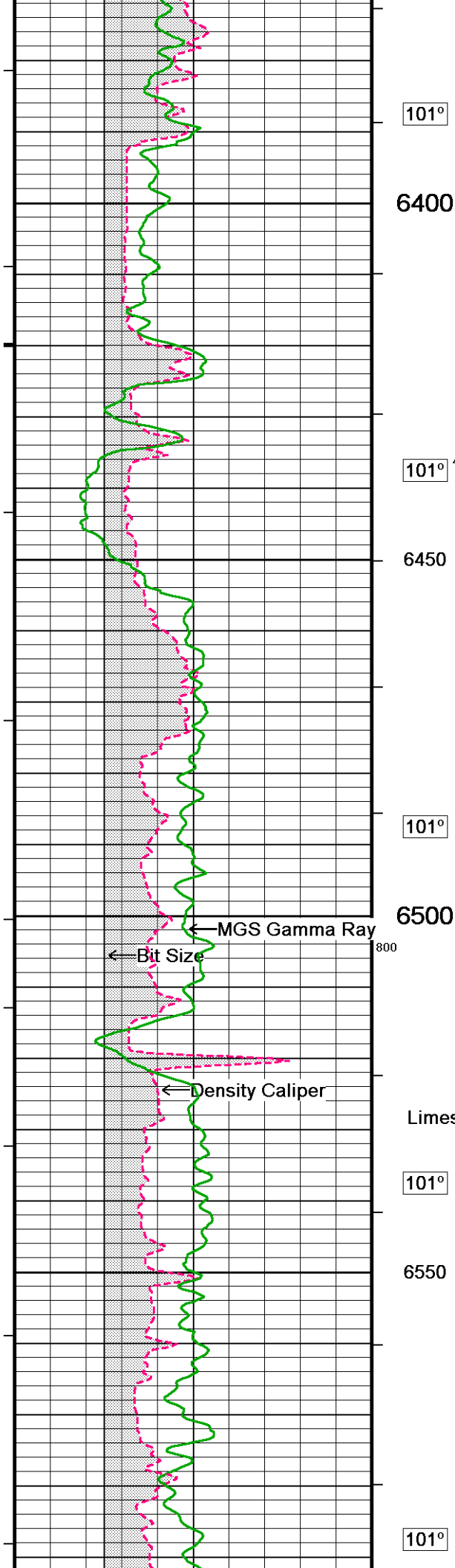
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs,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

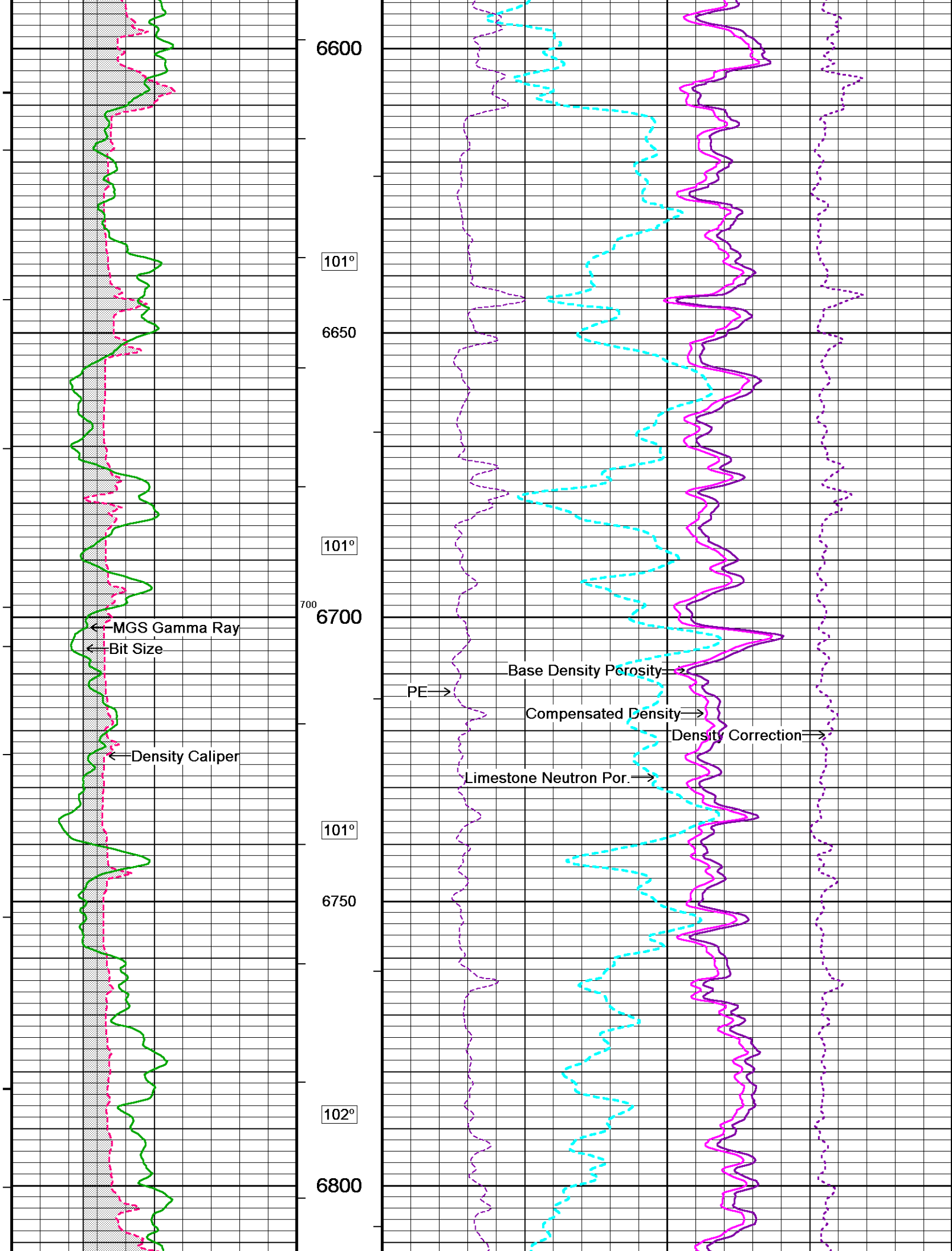


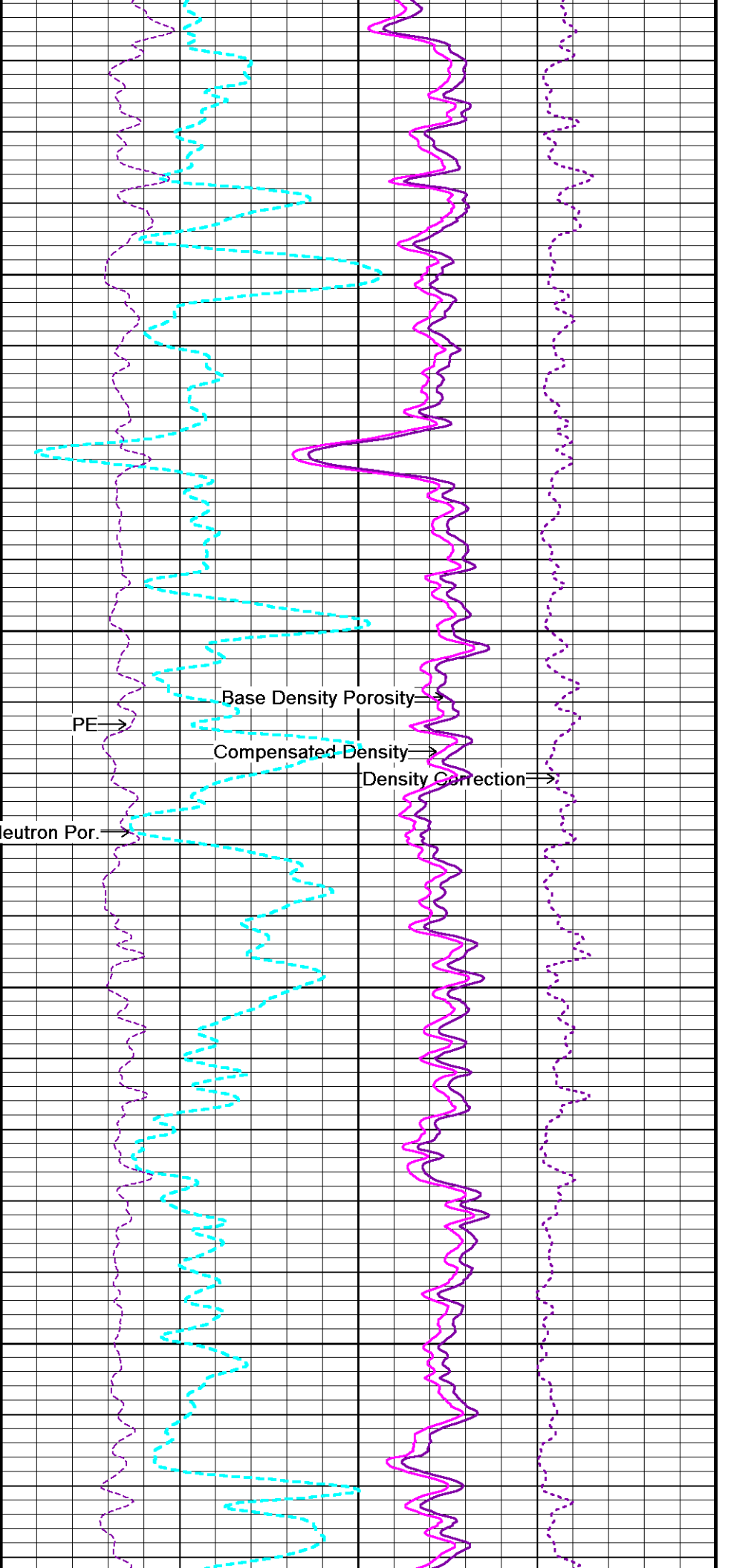
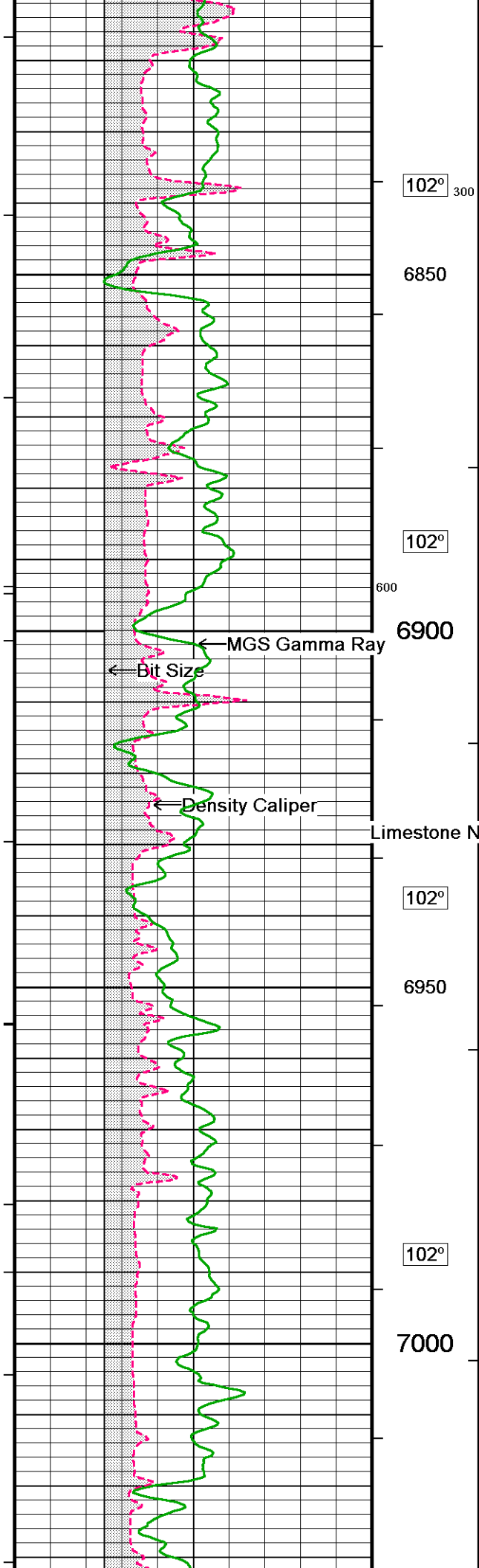


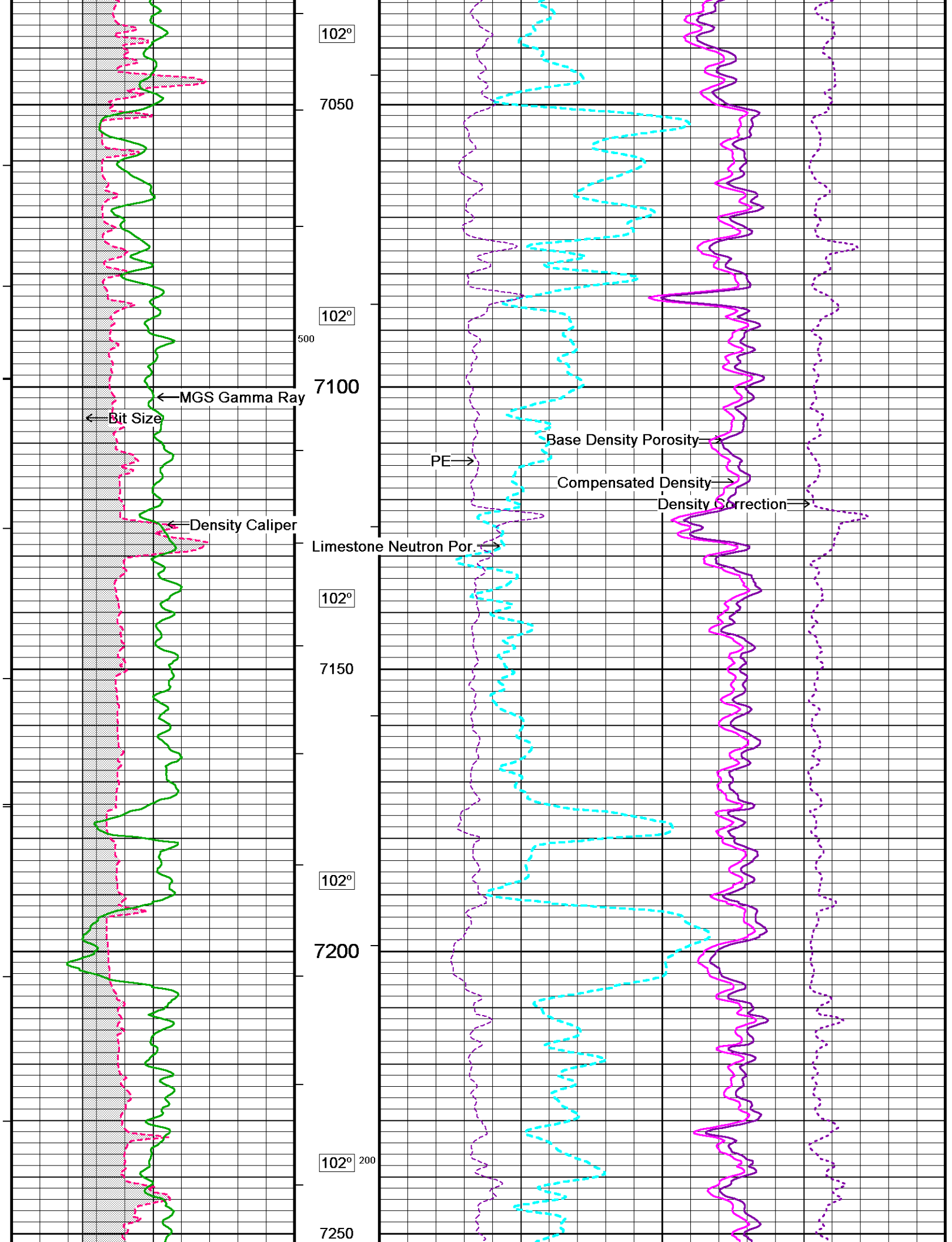


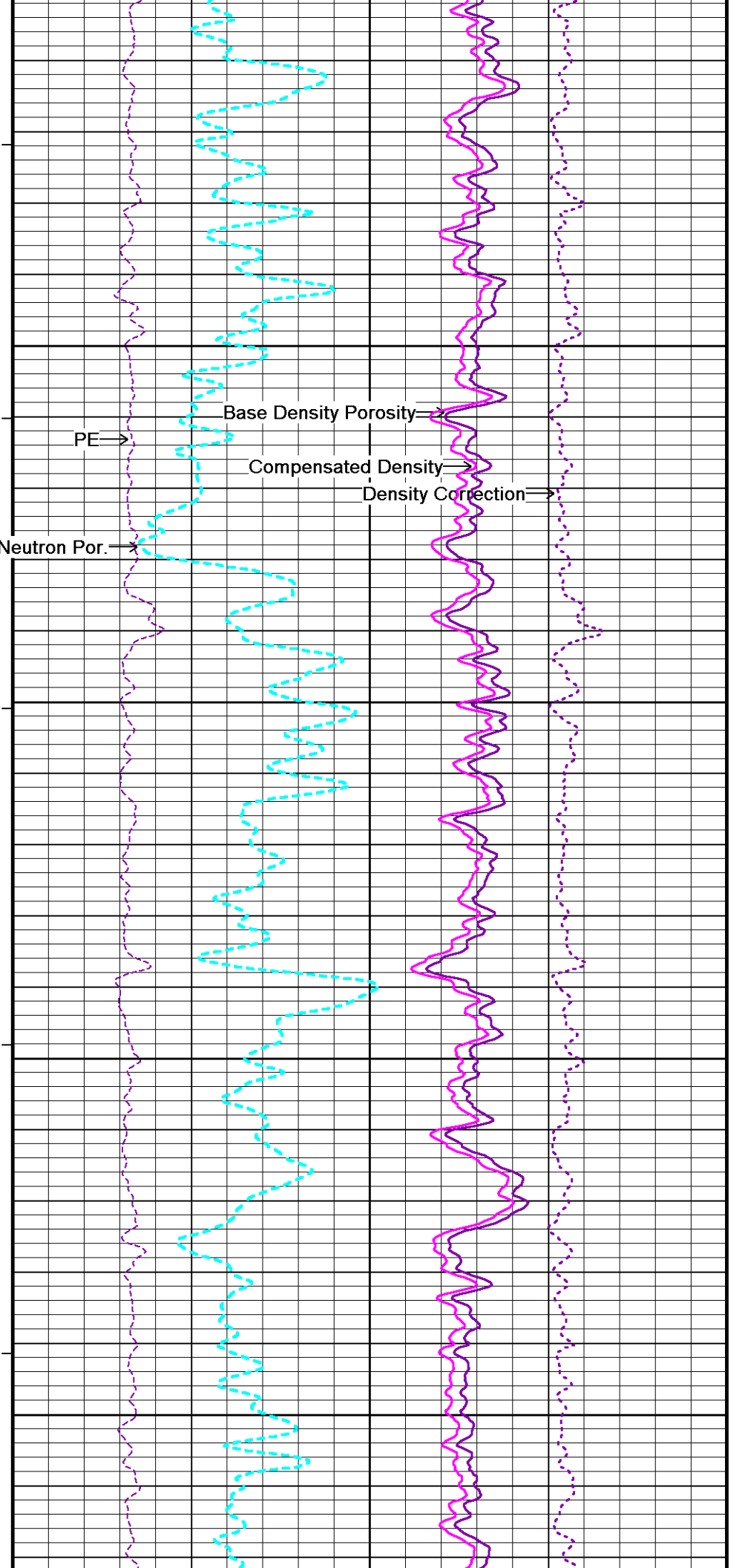
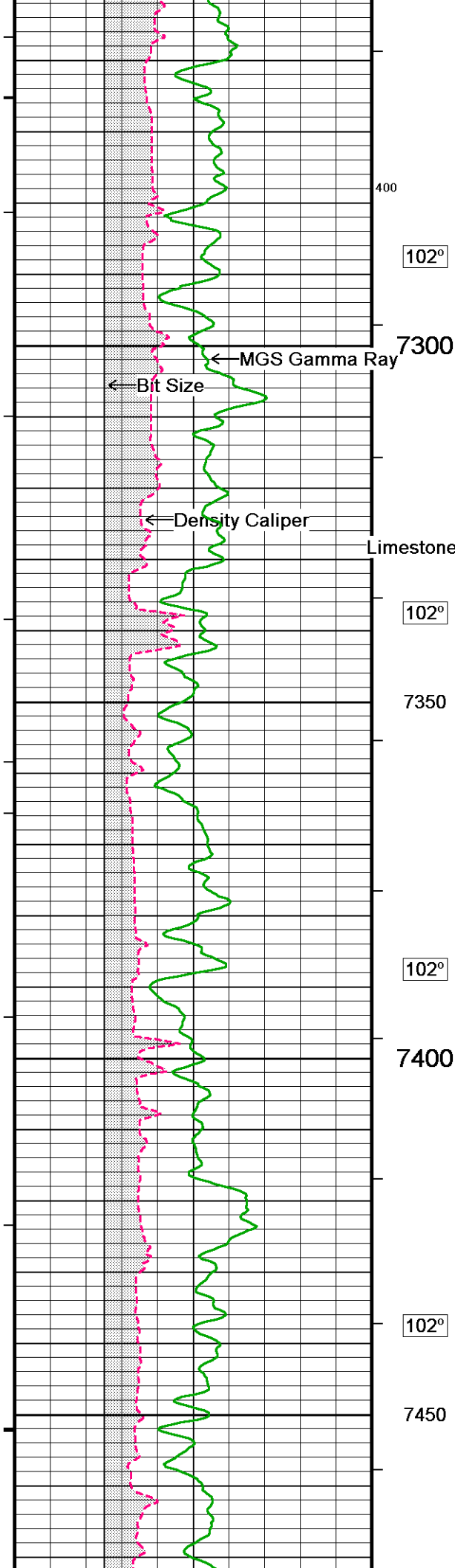


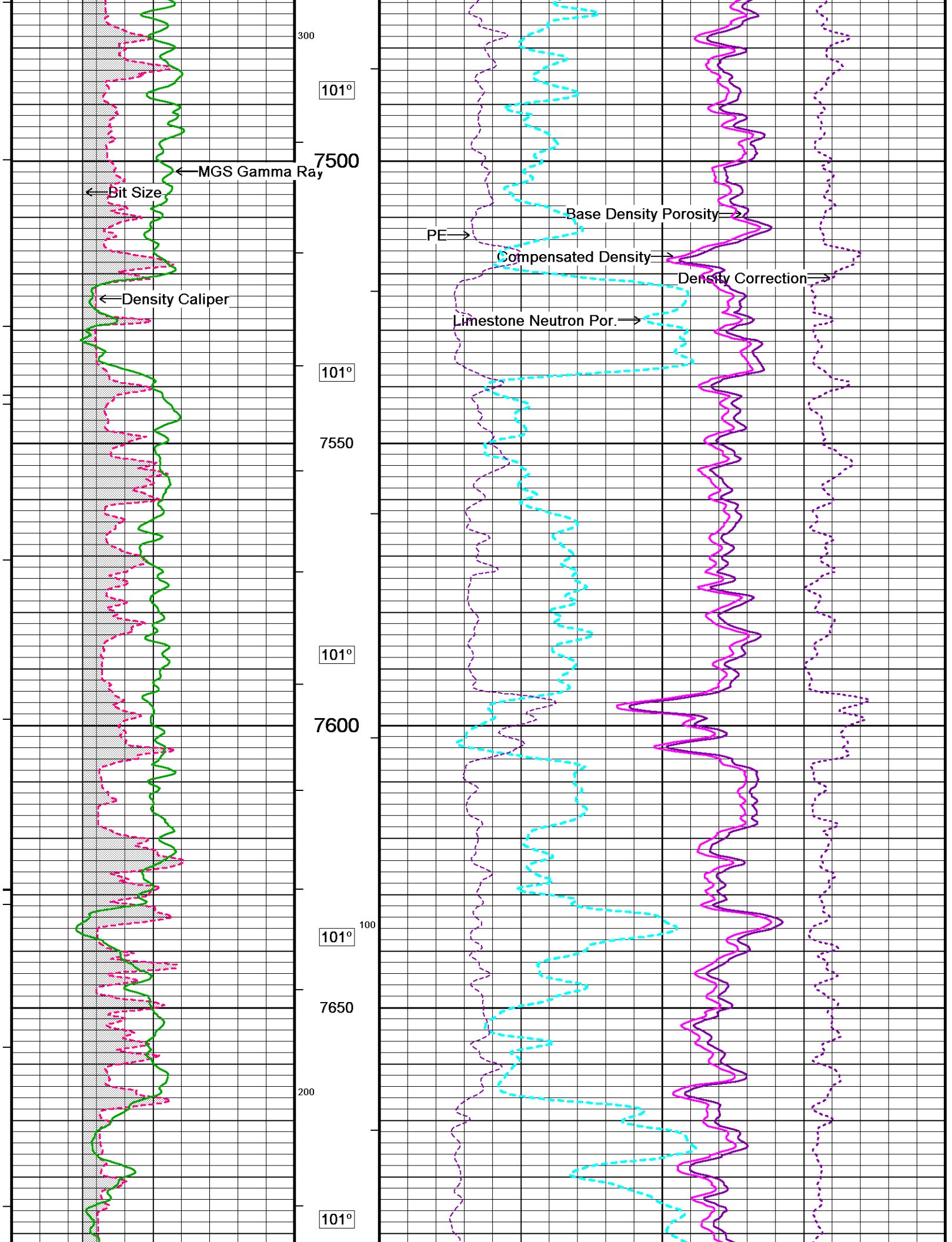


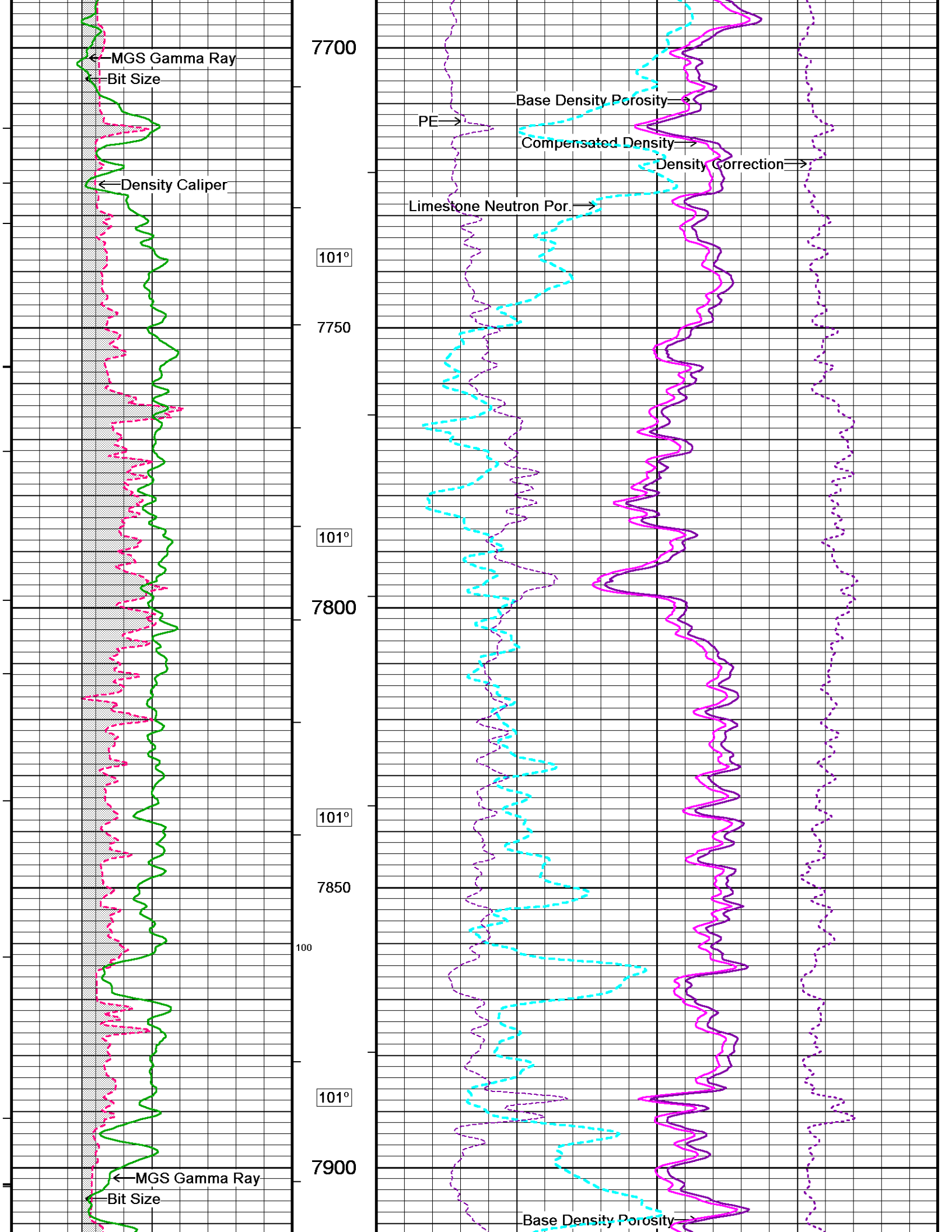


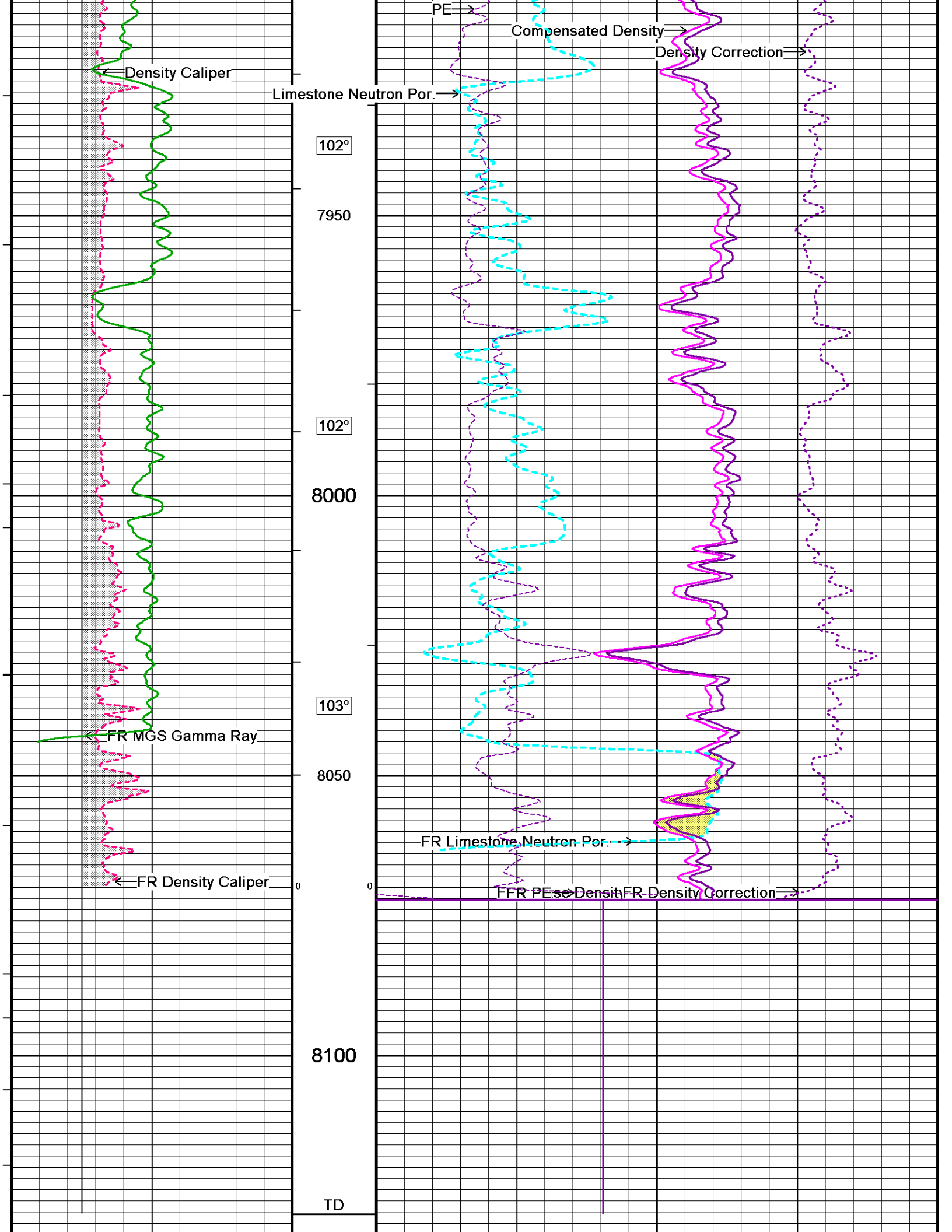


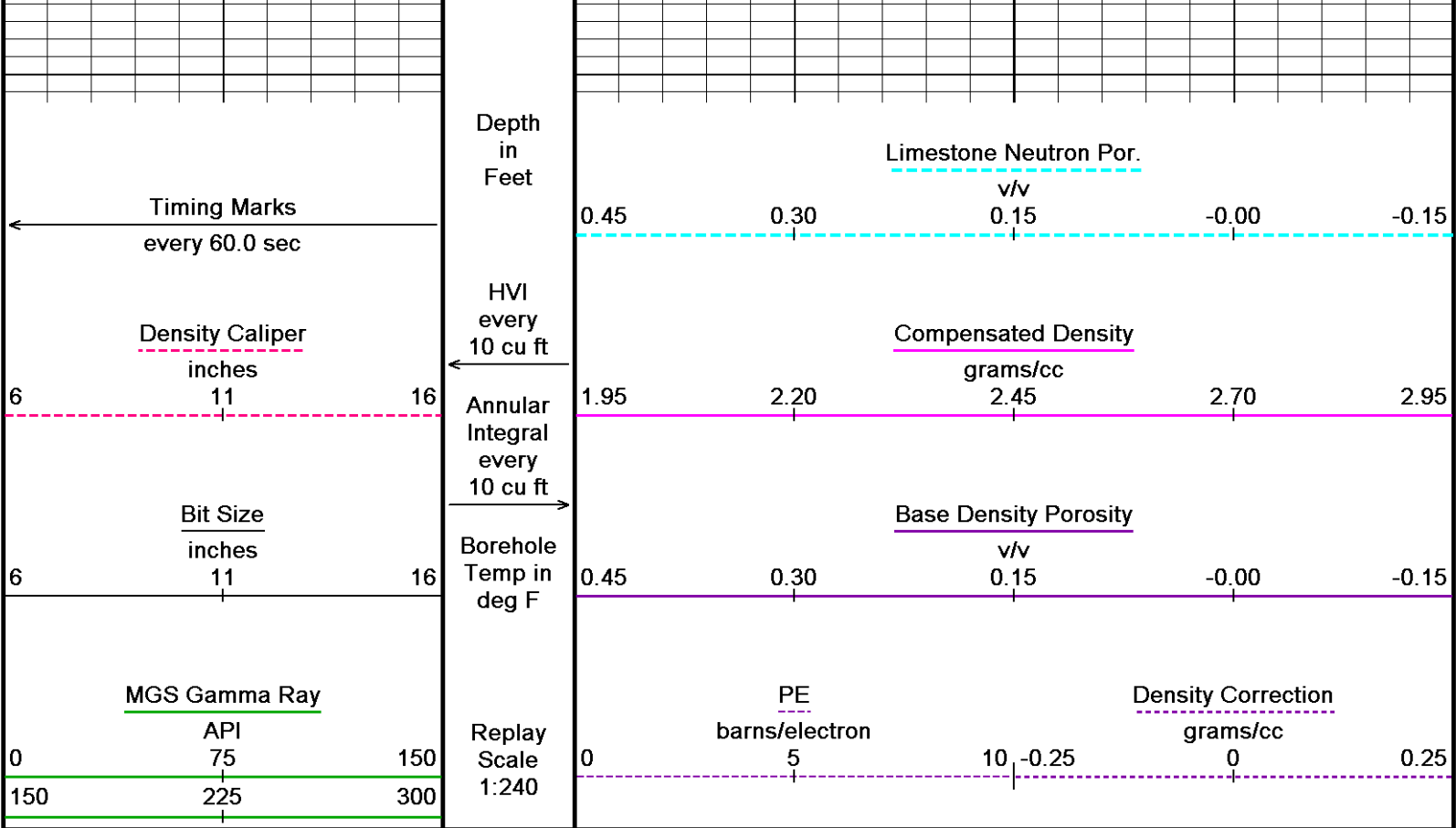












Depth Based Data - Maximum Sampling Increment 10.0cm
 Filename: D:\LOGS\PERU\TALARA\LO6-33D-CWS\LO6-33D-PRINCIPAL-DSC.dta
 System Versions: Processed with 13.06.9801 Plotted with 13.06.9801

Plotted on 06-AUG-2013 09:29
 Recorded on 04-AUG-2013 20:41

MAIN PASS 1:240

BEFORE SURVEY CALIBRATION		
D:\LOGS\PERU\TALARA\LO6-33D-CWS\merge-PROCESS-lo6-33d2.dta		
General Constants All 000		Last Edited on 04-AUG-2013,22:15
General Parameters		
Mud Resistivity	0.810	ohm-metres
Mud Resistivity Temperature	75.000	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	7.000	inches
Caliper for Differential Caliper	Density Caliper	
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	

MMS Parameters MMS-E.B 148		Last Edited on 04-AUG-2013 00:08
Logging Parameters		
Firmware Version	2v40	
Caliper Open On	MAI	
Caliper Open Delay		minutes
Caliper Closed On	Unknown	
Caliper Closed Delay	N/A	

Caliper Closed Delay	N/A	minutes
Sample Rate	1.00	seconds
Use Deep Sleep	Yes	
Delay Deep Sleep	No	
Deep Sleep Wake Time	420.0	minutes
Deep Sleep Wake on Temperature	No	
Deep Sleep Wake Temperature	N/A	degrees C
Deep Sleep Wake on Pressure	No	
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	20.0	seconds
Pulse Duration Status Pulse From	10.0	seconds
Pulse Duration Caliper Close From	60.0	seconds
Pulse Duration Caliper Open From	65.0	seconds
Pulse Duration Release Pulse From	90.0	seconds
Pulse Duration Release Pulse To	120.0	seconds
Pulse Release Duration	80.0	seconds
Pulse Discriminator Pressure Band	214.0	seconds
Pulse Pressure Discriminator	436.0	seconds
Use Negative Pulsing	No	
Good Status Reply Open Hole	65535.0	seconds
Good Status Reply Cased Hole	40.0	seconds
Bad Status Reply	60.0	seconds
Status Pulse To	30.0	seconds
Caliper Close To		seconds
Caliper Open To	85.0	seconds

Configuration

MMS,MGS,MDN,MPD,MPD,MLE,MAI

High Resolution Temperature Calibration MGS-C.A 43

Field Calibration on 03-AUG-2013,22:01

	Measured	Calibrated(Deg F)
Lower	10.00	10.00
Upper	200.00	200.00

High Resolution Temperature Constants MGS-C.A 43

Last Edited on 04-AUG-2013,22:15

Pre-filter Length	11
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Gamma Calibration MGS-C.A 43

Field Calibration on 03-AUG-2013 22:11

	Measured	Calibrated (API)
Background	19	12
Calibrator (Gross)	843	543
Calibrator (Net)	824	531

Gamma Constants MGS-C.A 43

Last Edited on 04-AUG-2013,22:15

Gamma Calibrator Number	140	
Mud Density	1.37	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

Neutron Calibration MDN-A.B 175

Base Calibration on 21-JUL-2013 14:22

Field Check on 03-AUG-2013 22:00

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3028	94	3714	110
Ratio	32.189		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	2215	3213
Ratio	0.689	

Field Check	Calibrated (cps)	
	2216	3230
Ratio	0.681	

Neutron Constants MDN-A.B 175			Last Edited on 04-AUG-2013,22:15		
Neutron Source Id	P31121B				
Neutron Jig Number	NJ5727				
Epithermal Neutron	No				
Caliper Source for Processing	Density Caliper				
Stand-off	0.00	inches			
Mud Density	1.37	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	MGS External Temperature				
Temperature	N/A	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				

Caliper Calibration MPD-C.A 238			Base Calibration on 26-JUL-2013 19:09 Field Calibration on 03-AUG-2013 22:17		
Base Calibration					
Reading No		Measured	Calibrator Size (in)		
1		16776	3.98		
2		24865	5.96		
3		33504	7.99		
4		41564	9.86		
5		50704	11.93		
6		N/A	N/A		
Field Calibration					
		Measured Caliper (in)	Actual Caliper (in)		
		8.01	7.99		

Photo Density Calibration MPD-C.A 238					Base Calibration on 26-JUL-2013 18:35	
					Field Check on 03-AUG-2013 22:42	
Density Calibration						
Base Calibration		Measured		Calibrated (sdu)		
		Near	Far	Near	Far	
	Reference 1	46248	21617	59536	30850	
	Reference 2	18475	2534	24833	2521	
Field Check at Base						
		1374.9	1621.0			
Field Check						
		1375.4	1619.2			
PE Calibration						
Base Calibration		Measured		Calibrated		
	WS	WH	Ratio	Ratio		
	Background	251	1217			
	Reference 1	17986	46037	0.396	0.371	
	Reference 2	4911	18310	0.273	0.270	
Field Check at Base						
		251.5	1217.1			
Field Check						
		248.9	1217.2			

Density Constants MPD-C.A 238		Last Edited on 04-AUG-2013,22:16	
Density Source Id	P18245B		
Nylon Calibrator Number	DNCE694		
Aluminium Calibrator Number	DACD697		

Density Shoe Profile	4 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.37	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)	
2.68	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	

COMPANY	SAVIA PERU S.A
WELL	LO6-33D
FIELD	LOBITOS OFFSHORE
PROVINCE/COUNTY	PIURA
COUNTRY/STATE	PERU

Elevation Kelly Bushing	385.00	feet	First Reading	8071.73	feet
Elevation Drill Floor	385.00	feet	Depth Driller	8150.00	feet
Elevation Ground Level	335.00	feet	Depth Logger	8128.25	feet



Weatherford®

NUCLEAR LOG
MGS-MDN-MPD
SCALE 5":100