



Weatherford

**NUCLEAR LOG
MGS-MDN-MPD
SCALE 2":100**

COMPANY

SAVIA PERU S.A

WELL

LO06-29D

FIELD

LOBITOS

PROVINCE/COUNTY

PIURA

COUNTRY/STATE

Peru

LOCATION

N: 9 508 656.13 m
E: 459 052.36 m

Other Services
MDL

Permanent Datum SEA LEVEL, Elevation 50.000 feet

Log Measured From KB

Drilling Measured From KB

Elevations:
KB
DF
GL

feet
50.00
50.00
-335.00

Date 17-SEPT-2013

Run Number 1

Service Order 846

Depth Driller 8691.00 feet

Depth Logger 8676.00 feet

First Reading 8619.08 feet

Last Reading 4982.00 feet

Casing Driller 4982.00 feet

Casing Logger 4982.00 feet

Bit Size 8.500 inches

Hole Fluid Type WATER BASED

Density / Viscosity 11.50 lb/USg 17.00 CP

PH / Fluid Loss 9.00 5.00 ML/30MIN

Sample Source MUD PIT

Rm @ Measured Temp 0.27 @ 75.0 ohm-m

Rmf @ Measured Temp 0.16 @ 75.0 ohm-m

Rmc @ Measured Temp 0.50 @ 75.0 ohm-m

Source Rmf / Rmc PRESS FILTER

Rm @ BHT 0.18 @ 117.0 ohm-m

Time Since Circulation 08:00 16SEPT

Max Recorded Temp 117.00 deg F

Equipment / Base TAL

Recorded By YANINA MENDEZ

Witnessed By AUGUSTO ORTEGA

REMARKS

1. Objective: to obtain accurate open hole Gamma Ray, 1 arm Caliper , Nuclear and Resistivity (Dual Laterolog) log in 8.5" section.
2. This is the first run on the hole and on Compact Well Shuttle - Messenger Conveyance.
3. Maximum recorded temperature measured by Gamma Ray External Temperature sensor: 137 °F.
4. Mud resistivity measurements: Rm= 0.27@ 75 °F, Rmf= 0.16 @ 75 °F, Rmc= 0.50 @ 75 °F.
5. Mud resistivity measurements at BHT: Rm= 0.18 @ 117 °F, Rmf = 0.10 @ 117 °F, Rmc= 0.33 @ 117 °F.
6. Deviated well with a maximum deviation of 62.70° @ 4031 ft MD and a maximum dogleg of 5.53 @ 1306 ft MD.
7. Well sketch as per driller's depth.
8. Bottom not tagged due to nature of the conveyance. Maximun depth recorded in Log header (8676ft) is the maximun depth reached by the induction tool in the run.
9. Logging speed below 30ft/min (following operational procedures)
10. Main section from 8676ft to 4982ft, as requested.
11. No repeat section performed due to the method used for this job.
12. Resistivities curves (Dual Laterolog) presented in this log are not corrected for borehole conditions.
13. Neutron log is corrected by temperature and borehole size by the density caliper.
14. Density log is corrected for mud density and borehole size by the density caliper.
15. Density matrix = 2.72g/cc. from TD to 7200ft (Mogollon) and 2.68g/cc from 7200ft to Casing Shoe (Rio Bravo) as per client request.
16. Hole volume= 1918 ft^3
17. Annular volume= 945 ft^3 for a casing of 7"
18. Caliper Average 9.85 in
19. Flow test were done at the following depths: 300ft, 1000ft, 2000ft, 3000ft, 4000ft, 5000ft, 6000ft, 7000ft, 8000ft, 8620ft

Crew at your service:

Y. Mendez, J. Guerrero, G. Robladillo, J. Jimenez, C. Viera.

BOREHOLE RECORD

Last Edited: 17-SEP-2013 11:40

Bit Size
inches

17.000

Depth From
feet

0.00

Depth To
feet

1994.00

17.000	0.00	1994.00
12.250	1994.00	4982.00
8.500	4982.00	8691.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
k55	13.380	0.00	1994.00	54.50
N80	9.625	0.00	4982.00	43.50

WELL DIAGRAM

13.38 in Casing: 0.00 ft

9.63 in Casing: 0.00 ft

17.00 in Bit size: 0.00 - 1994.00 ft

13.38 in Casing shoe: 1994.00 ft

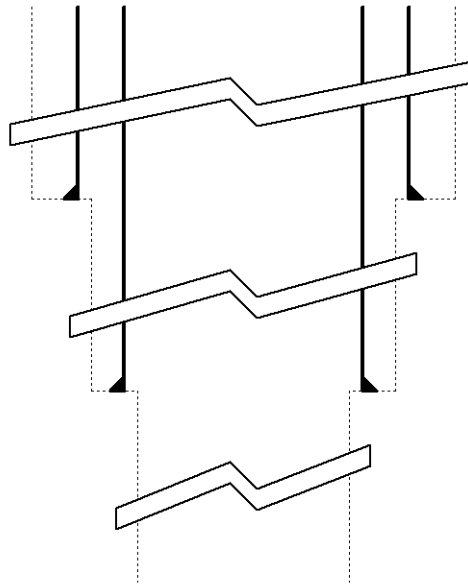
12.25 in Bit size: 1994.00 - 4982.00 ft

9.63 in Casing shoe: 4982.00 ft

8.50 in Bit size: 4982.00 - 8691.00 ft

Total bit depth: 8691.00 ft

Temperature: 117.00 Degrees F



DOWNHOLE EQUIPMENT

C:\YANINA'S INFORMATION\playing_well mgr\Savia\LO6-29D\New Folder2\Final_Data.dta

Shuttle Running Tool 3.5" (SRT A)

SRT-A 10 LG: 6.47 ft WT: 37.5 lb OD: 2.52 in

SKJ-E.A Compact Knuckle Joint

SKJ-E.A 168 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

MBS-F.A 200v Compact Battery Sub

MBS-F.A 71 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-B Compact Inline Standoff sub

MIS-B 99 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Stiff Bridle Electrode Sub.

MBE-C.B 259 LG: 12.33 ft WT: 77.2 lb OD: 2.28 in

Compact Stiff Bridle Electrode Sub.



Compact Stiff Bridge Electrode Sub.
MBE-D.A 136 LG: 12.33 ft WT: 77.2 lb OD: 2.24 in

Compact Stiff Bridge Electrode Sub.
MBE-A.A 56 LG: 12.33 ft WT: 77.2 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 Short Gamma
MGS-C.A 43 LG: 3.41 ft WT: 24.3 lb OD: 2.24 in

Compact Collar Locator
MCL-B.J 57 LG: 3.17 ft WT: 26.5 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 486 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

MIS-A.A Compact Inline Bowspring sub
MIS-A.A 236 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

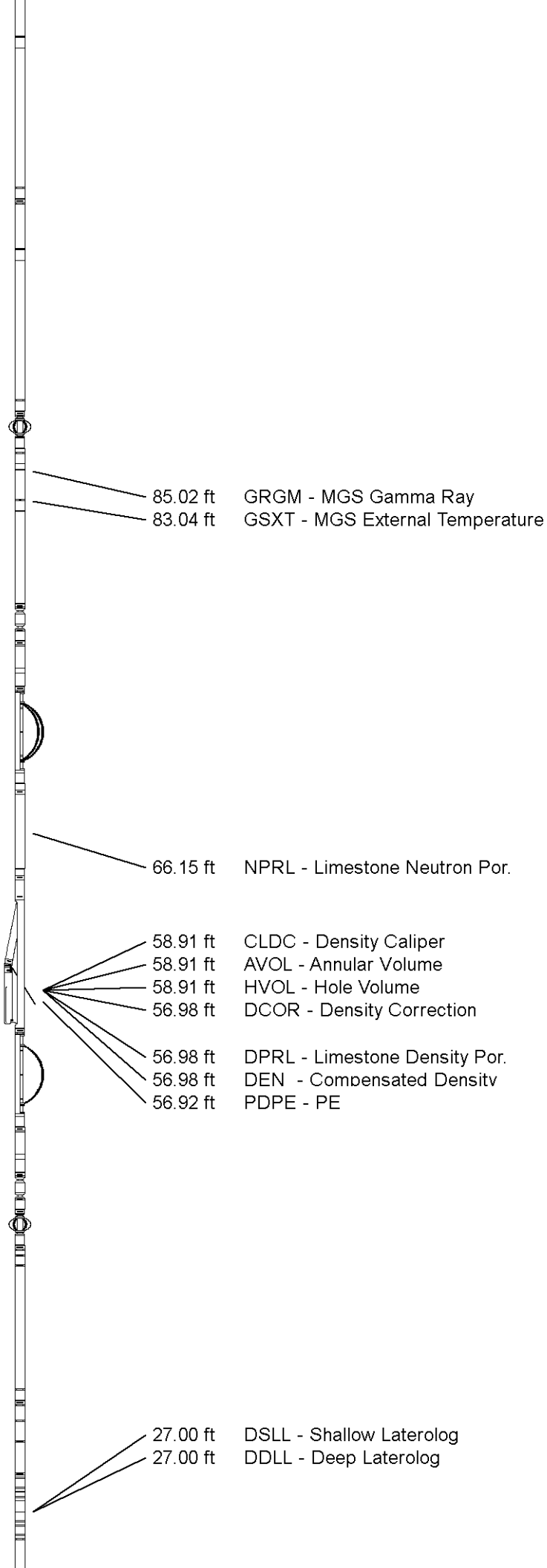
SHA-J.B Compact Swivel Head Adaptor
SHA-J.B 479 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

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

MIS-E.B Compact Inline Standoff sub
MIS-E.B 641 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 307 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

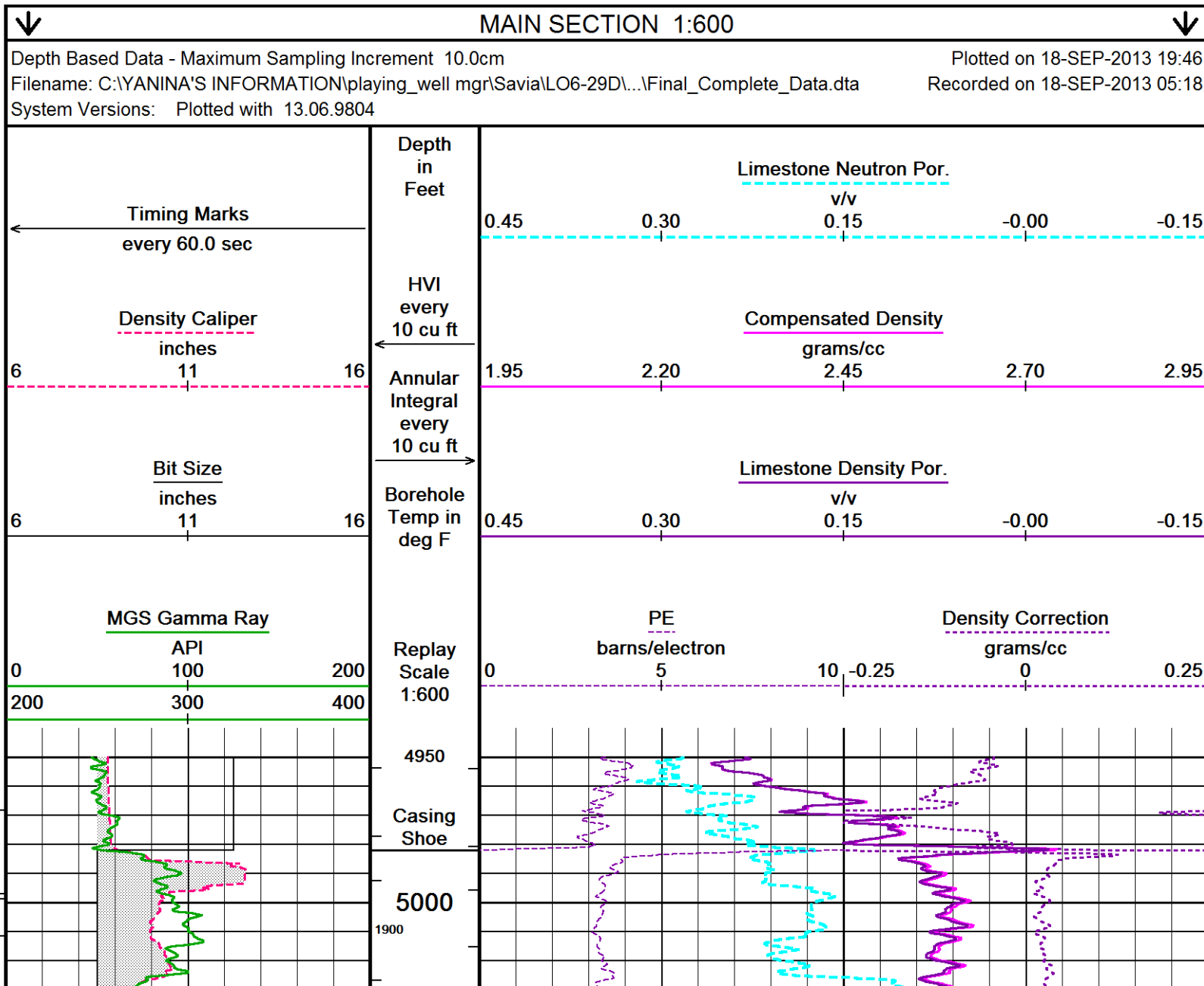
Compact Induction
MAI-B.J 367 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

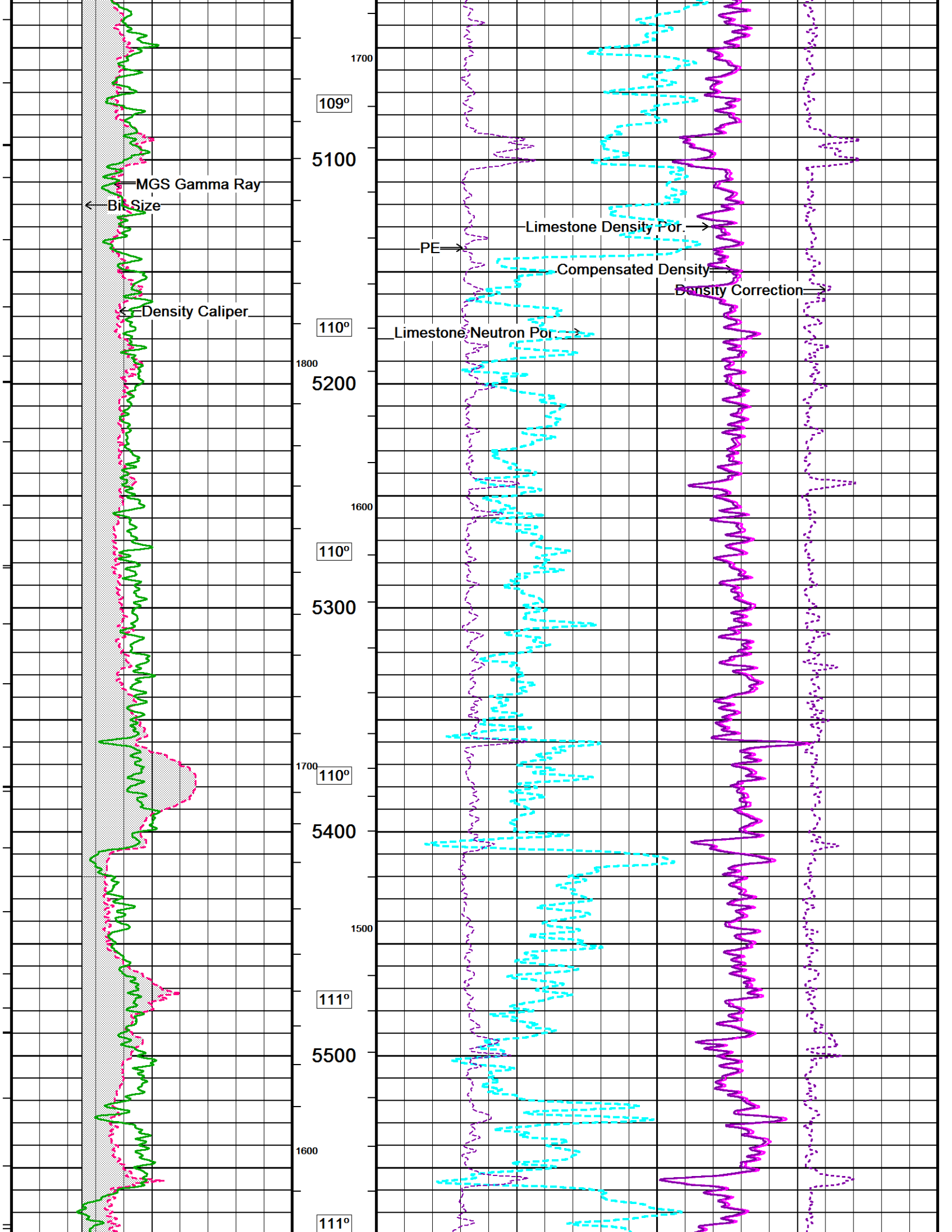
Total Length: 158.10 ft Weight: 1131.0 lb

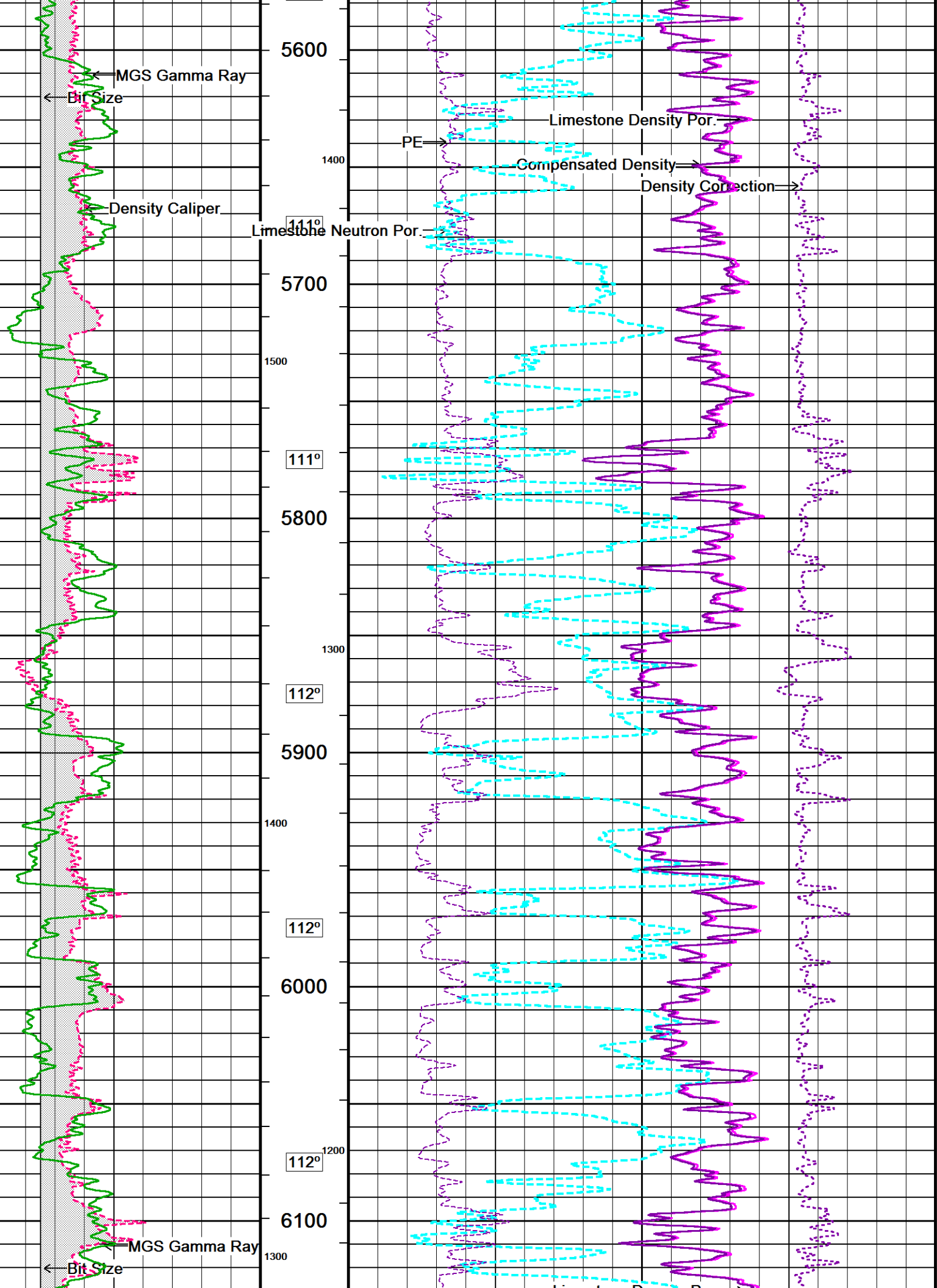


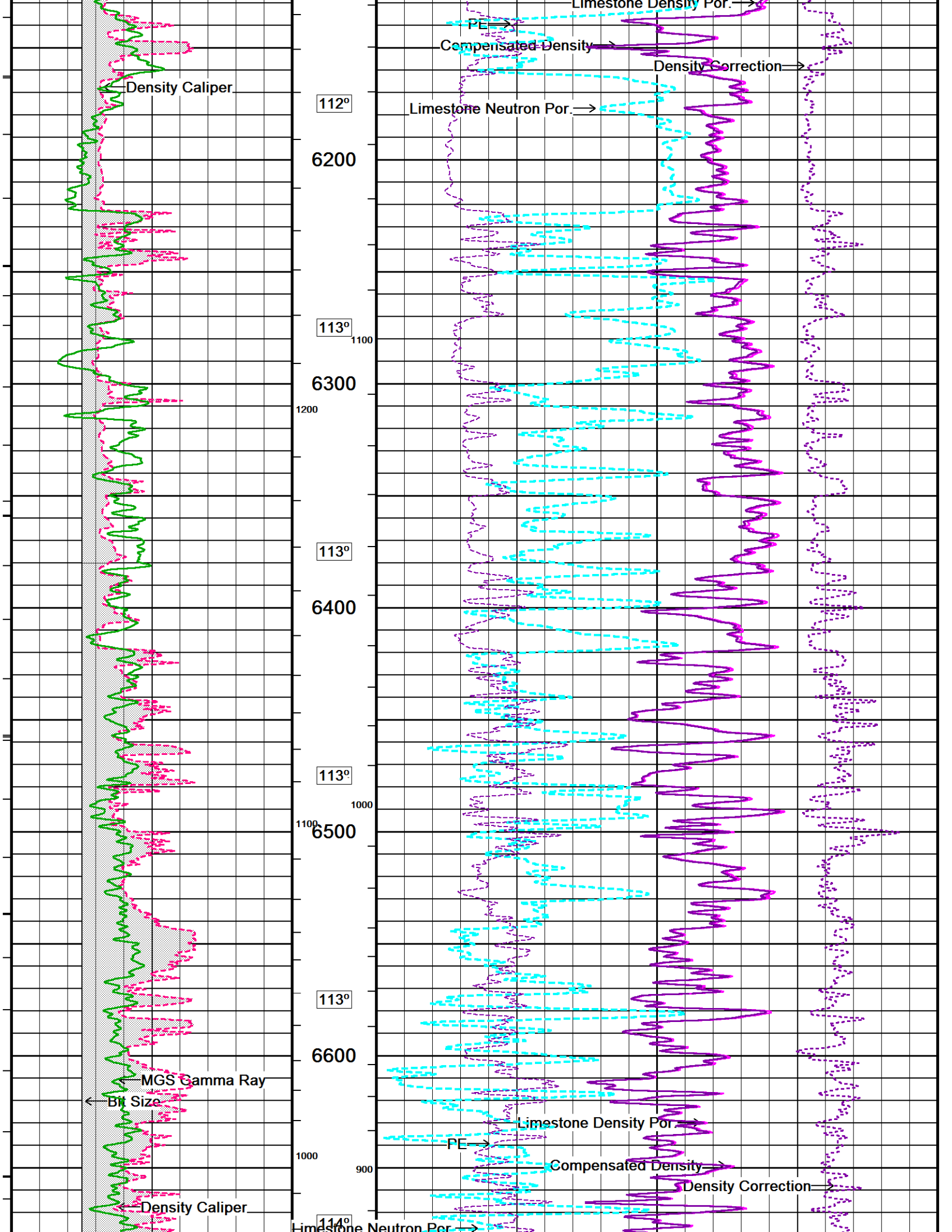
Tool Zero (0.13ft from bottom)
All measurements relative to tool zero.

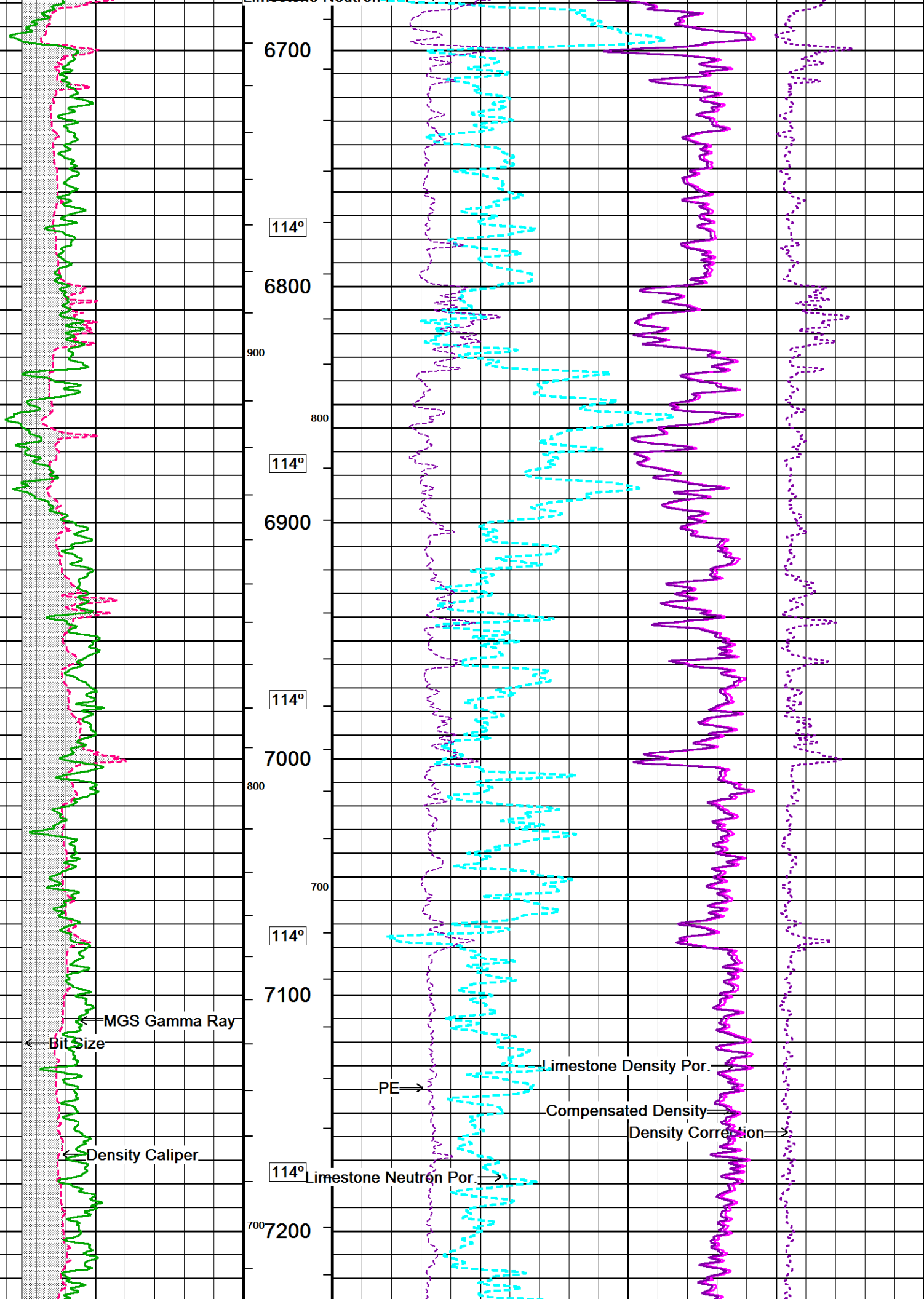
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs,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

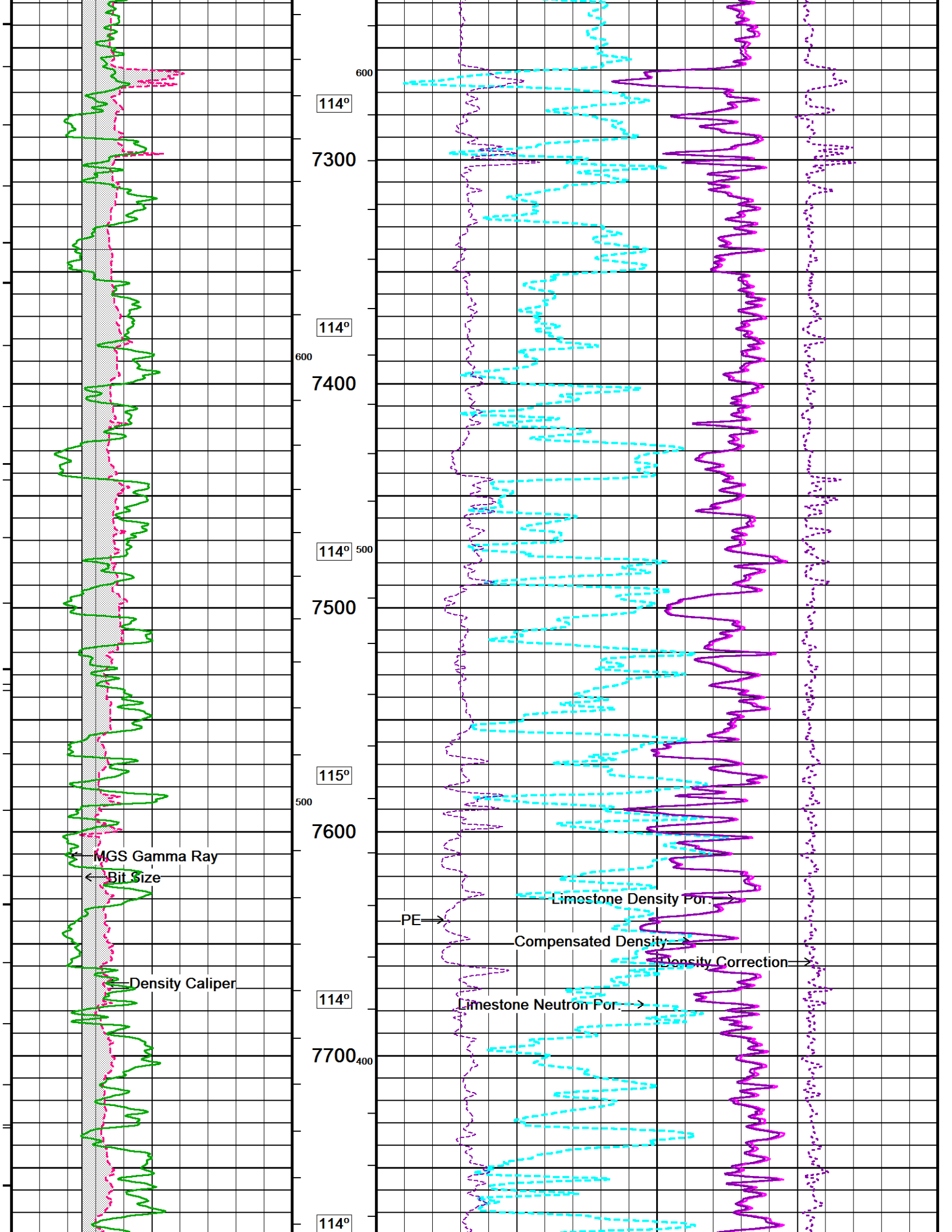


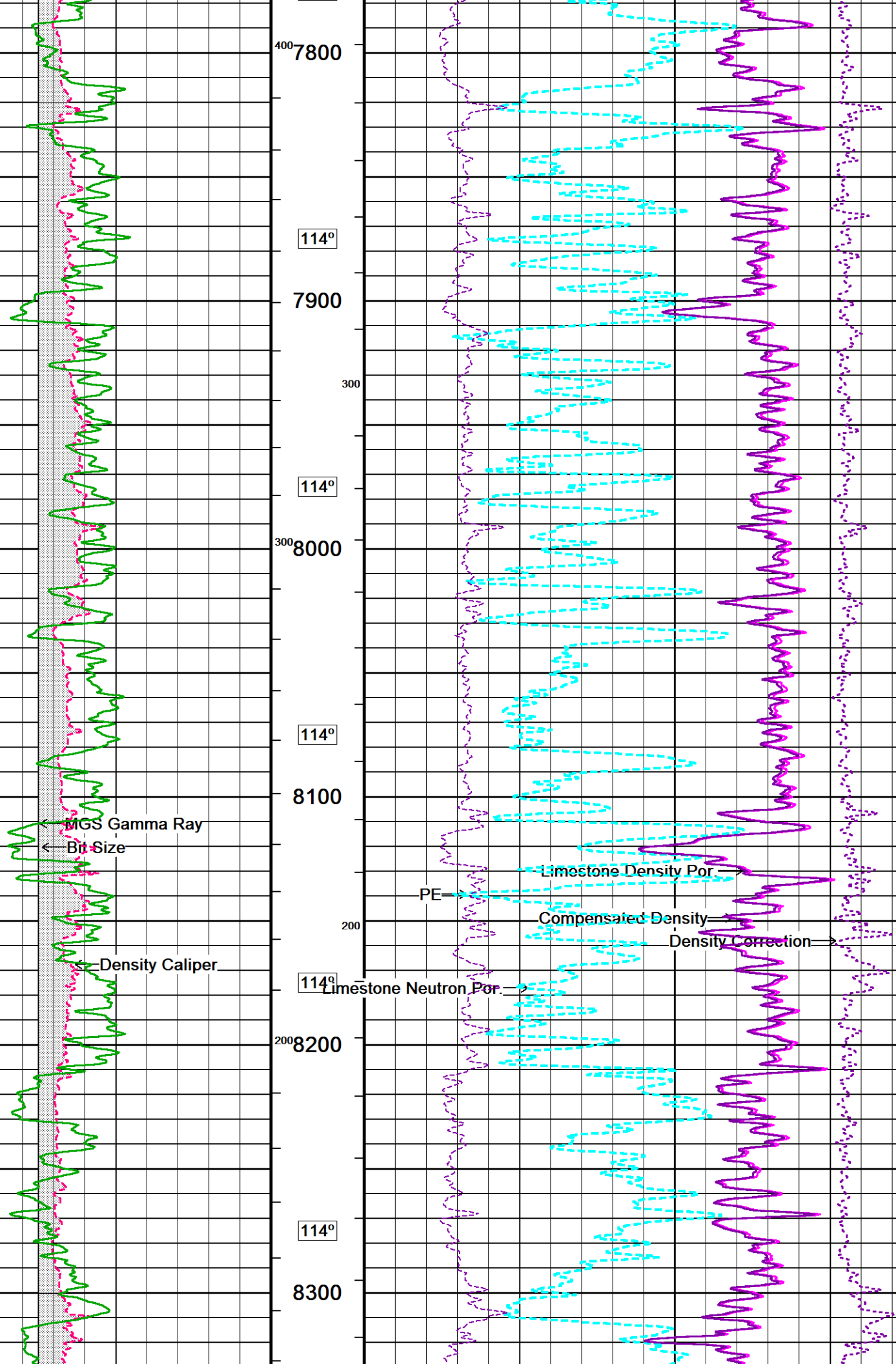


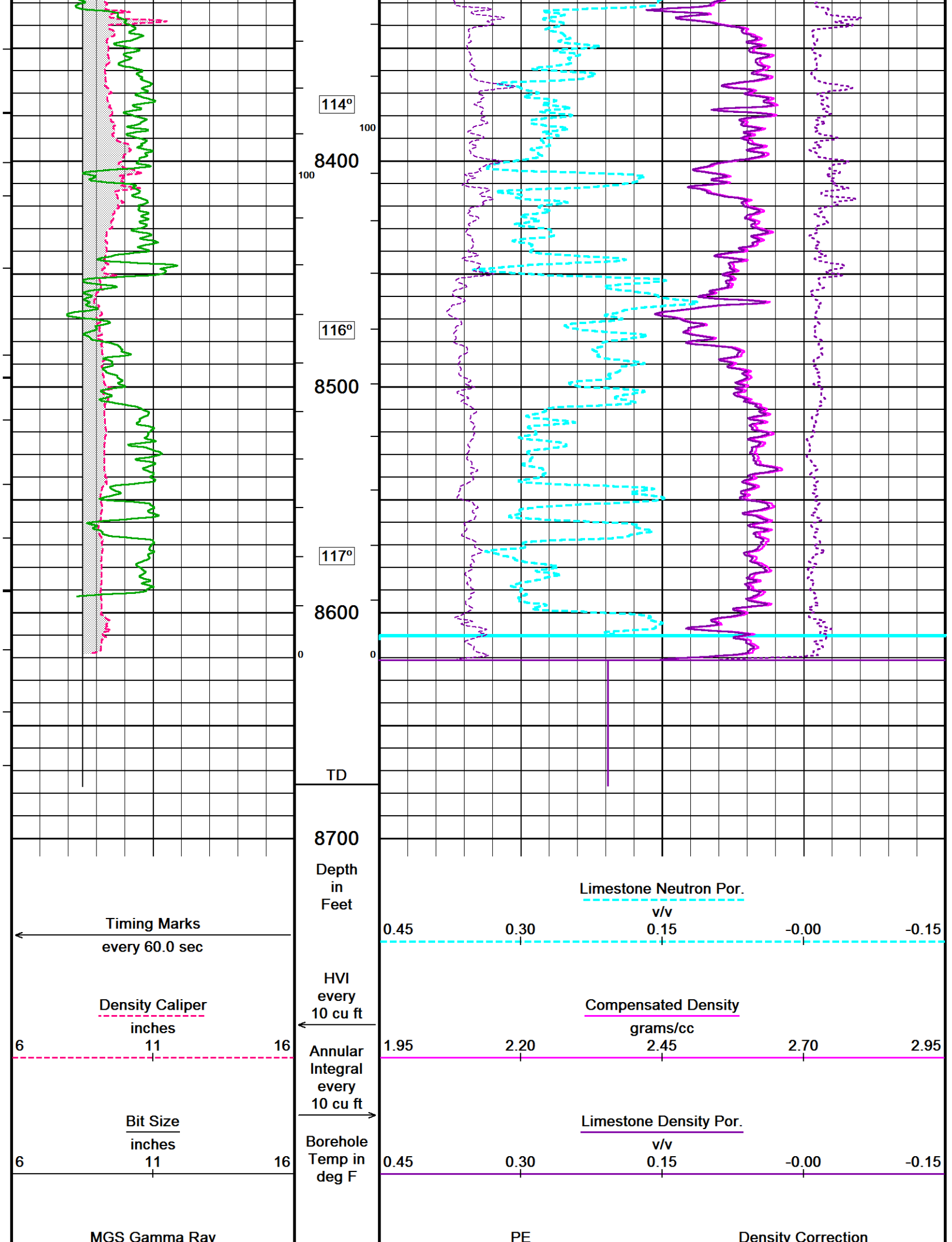


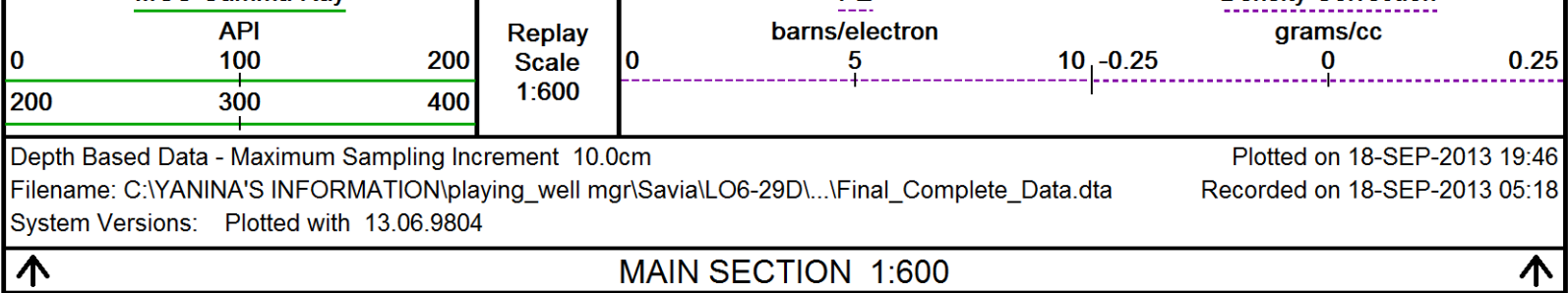












BEFORE SURVEY CALIBRATION
 C:\YANINA'S INFORMATION\playing_well mgr\Savia\LO6-29D\New Folder2\Final_Data.dta

General Constants All 000			Last Edited on 17-SEP-2013,05:31		
General Parameters					
Mud Resistivity	0.270		ohm-metres		
Mud Resistivity Temperature	75.000		degrees F		
Water Level	0.000		feet		
Borehole Fluid Processing	N/A				
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 17-SEP-2013 05:33

Logging Parameters		
Firmware Version	2v40	
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	Yes	
Delay Deep Sleep	No	
Deep Sleep Wake Time	360.0	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	852.0	seconds
Pulse Pressure Discriminator	1765.0	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

Bad Status Reply	00.0	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		
Gamma Calibration MGS-C.A 43		
		Field Calibration on 16-SEP-2013 09:35
	Measured	Calibrated (API)
Background	93	62
Calibrator (Gross)	945	630
Calibrator (Net)	851	568
Gamma Constants MGS-C.A 43		
		Last Edited on 17-SEP-2013,02:44
Gamma Calibrator Number	145	
Mud Density	1.38	gm/cc
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 MGS-C.A 43		
		Field Calibration on 16-SEP-2013,09:36
	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 16-SEP-2013,09:35
Pre-filter Length	11	
Neutron Calibration MDN-C.A 441		
		Base Calibration on 09-MAR-2013 15:27 Field Check on 17-MAR-2013 17:51
Base Calibration		
	Measured	Calibrated (cps)
	Near Far	Near Far
	3122 96	3714 110
Ratio	32.488	33.764
Field Calibrator at Base		Calibrated (cps)
		2097 3067
Ratio		0.684
Field Check		Calibrated (cps)
		2091 3058
Ratio		0.681
Neutron Constants MDN-C.A 441		
		Last Edited on 18-SEP-2013,10:33
Neutron Source Id	P62419B	
Neutron Jig Number	NJ5737	
Epithermal Neutron	No	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.38	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	MGS 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	
Caliper Calibration MPD-C.A 197		
		Base Calibration on 17-SEP-2013 02:30

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16753	3.98
2	26256	5.96
3	45952	9.86
4	57280	11.93
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
11.93	11.93

Photo Density Calibration MPD-C.A 197

Base Calibration on 10-AUG-2013 12:59

Field Check on 16-SEP-2013 09:19

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	61917	30390	59536	30850
Reference 2	25055	2770	24833	2521

Field Check at Base

1289.0 1390.9

Field Check

1279.6 1389.1

PE Calibration

Base Calibration	Measured			Calibrated
	WS	WH	Ratio	Ratio
Background	229	1151		
Reference 1	24812	61696	0.406	0.371
Reference 2	6993	24903	0.285	0.270

Field Check at Base

229.0 1150.9

Field Check

227.2 1143.2

Density Constants MPD-C.A 197

Last Edited on 18-SEP-2013,10:33

Density Source Id	P74838B
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	1.38 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

COMPANY
WELLSAVIA PERU S.A
LO06-29D

FIELD	LOBITOS
PROVINCE/COUNTY	PIURA
COUNTRY/STATE	Peru

Elevation Kelly Bushing	50.00	feet	First Reading	8619.08	feet
Elevation Drill Floor	50.00	feet	Depth Driller	8691.00	feet
Elevation Ground Level	-335.00	feet	Depth Logger	8676.00	feet



Weatherford®

NUCLEAR LOG
MGS-MDN-MPD
SCALE 2":100