Weatherford®

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON

COMPANY	REDLAND RESOURCES, INC.
WELL	EMILY #30-5
FIELD	GRAY HAWK NW
PROVINCE/COUNTY	HODGEMAN
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	1659' FNL & 165' FWL NW/4

SEC	TWP	RGE	Other Services
30	23S	24W	MAI/MFE
			MSS

API Number 15-083-21877
Permit Number

Permanent Datum G.L., Elevation 2504 feet
Log Measured From KB
Drilling Measured From K.B.

Elevations:	feet
KB	2512.00
DF	2510.00
GL	2504.00

Date	14-FEB-2013	
Run Number	ONE	
Service Order	3537865	
Depth Driller	4900.00 feet	
Depth Logger	4900.00 feet	
First Reading	4887.00 feet	
Last Reading	3975.00 feet	
Casing Driller	222.00 feet	
Casing Logger	221.00 inches	
Bit Size	7.875	
Hole Fluid Type	CHEMICAL lb/USg	
Density / Viscosity	9.60 lb/USg	47.00 CP
PH / Fluid Loss	10.00	10.00
Sample Source	FLOWLINE	
Rm @ Measured Temp	1.32 @ 81.0 ohm-m	
Rmf @ Measured Temp	1.06 @ 81.0 ohm-m	
Rmc @ Measured Temp	1.58 @ 81.0 ohm-m	
Source Rmf / Rmc	CALC	CALC
Rm @ BHT	1.0 @107.0 ohm-m	
Time Since Circulation	4 HOURS	
Max Recorded Temp	107.00 deg F	
Equipment / Base	13057	LIB
Recorded By	R. HOFFMAN	
Witnessed By	BETH BROCK	
JOB #	LB13-45	

BOREHOLE RECORD

Last Edited: 14-FEB-2013 02:31

Bit Size inches	Depth From feet	Depth To feet
7.875	221.00	4900.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	221.00	24.00

REMARKS

Tools Used: MCG, MML, MDN, MPD, MFE, MSS, MAI ran in combination.
Hardware: MPD: 8 inch profile plate used. MAI, MSS, MFE: 0.5 Inch standoffs used. MDN: Dual Bowspring used.
2.71 G/CC Limestone density matrix used to calculate porosity.
Sonic porosity calculated using a Limestone scale (47.5 usec/ft).
Borehole rugosity, tight pulls, and washouts will affect data quality.
All intervals logged and scaled per customer's request.
Total hole volume from TD to Surface casing= 2185 cubic feet
Annular volume with 4.5 inch production casing TD to 3950ft = 262 cubic feet
Service order #353865
Rig: Duke Drilling Rig #8
Engineer: R. Hoffman
Operator(s): K. Rinehart

No microlog data presented due to tool failure. Customer said to continue logging out.

Software duplicates the pH value onto the fluid loss. The fluid loss is 8.0 ml/30Min.

Overlay presentation of the Neutron - Sonic Porosity presented on a limestone matrix

Overlay presentation of the Neutron - Density porosity presented on a limestone matrix.

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 14-FEB-2013 12:54
Filename: C:\Minimus 13.04.8492\Data\Redland Emily ...\Redland Emily #30-5_002 spooled section.dta
Recorded on 14-FEB-2013 04:54
System Versions: Logged with 13.04.8492 Processed with 13.04.8492 Plotted with 13.04.8492

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Density Caliper
inches
6 11 16

Bit Size
inches
6 11 16

DST Uphole Tension
pounds
5000 0

Depth in Feet

Borehole Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:240

Limestone Neutron Por.
percent
30 20 10 0 -10

Limestone Density Por.
percent
30 20 10 0 -10

PE
barns/electron
0 5 10

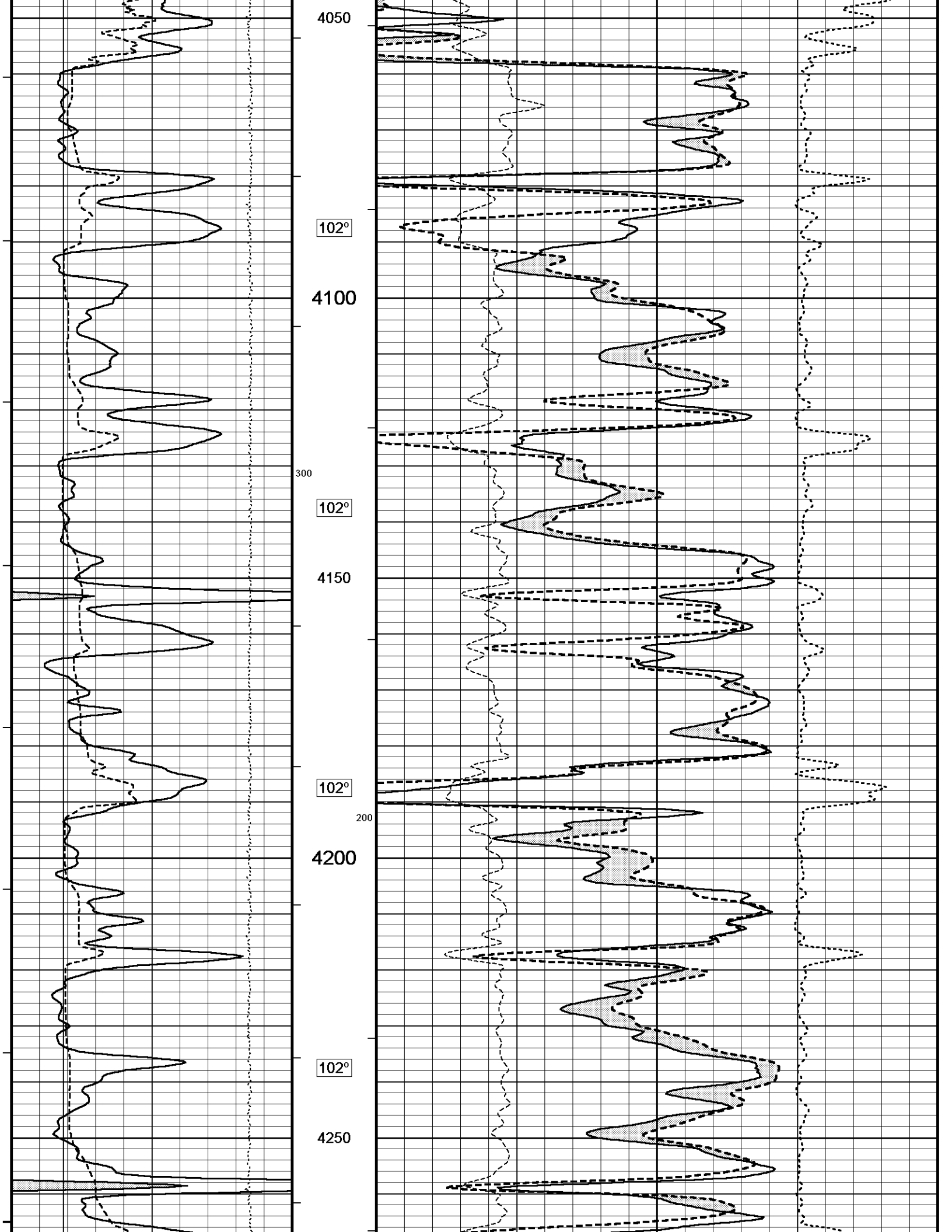
Density Correction
grams/cc
-0.50 0 0.50

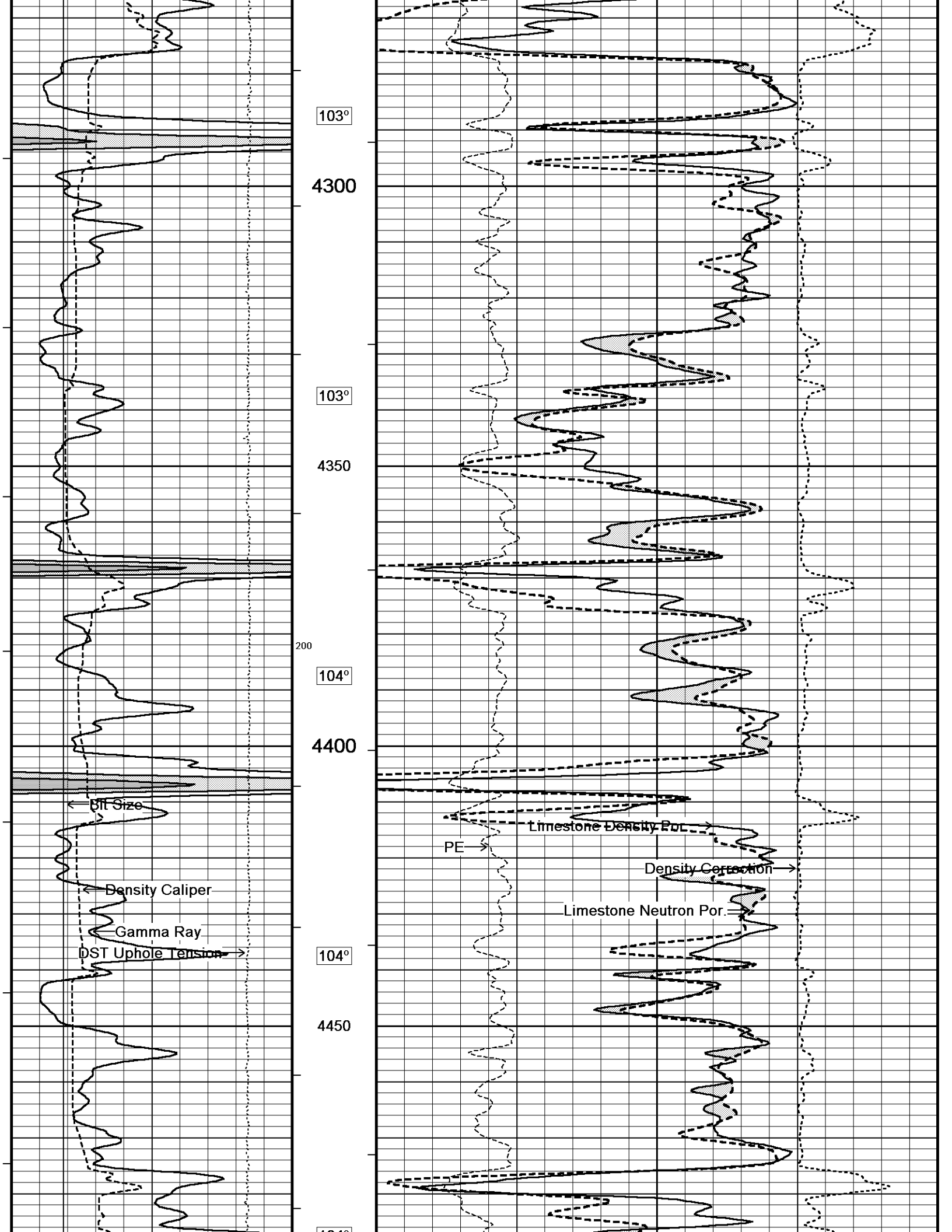
3974

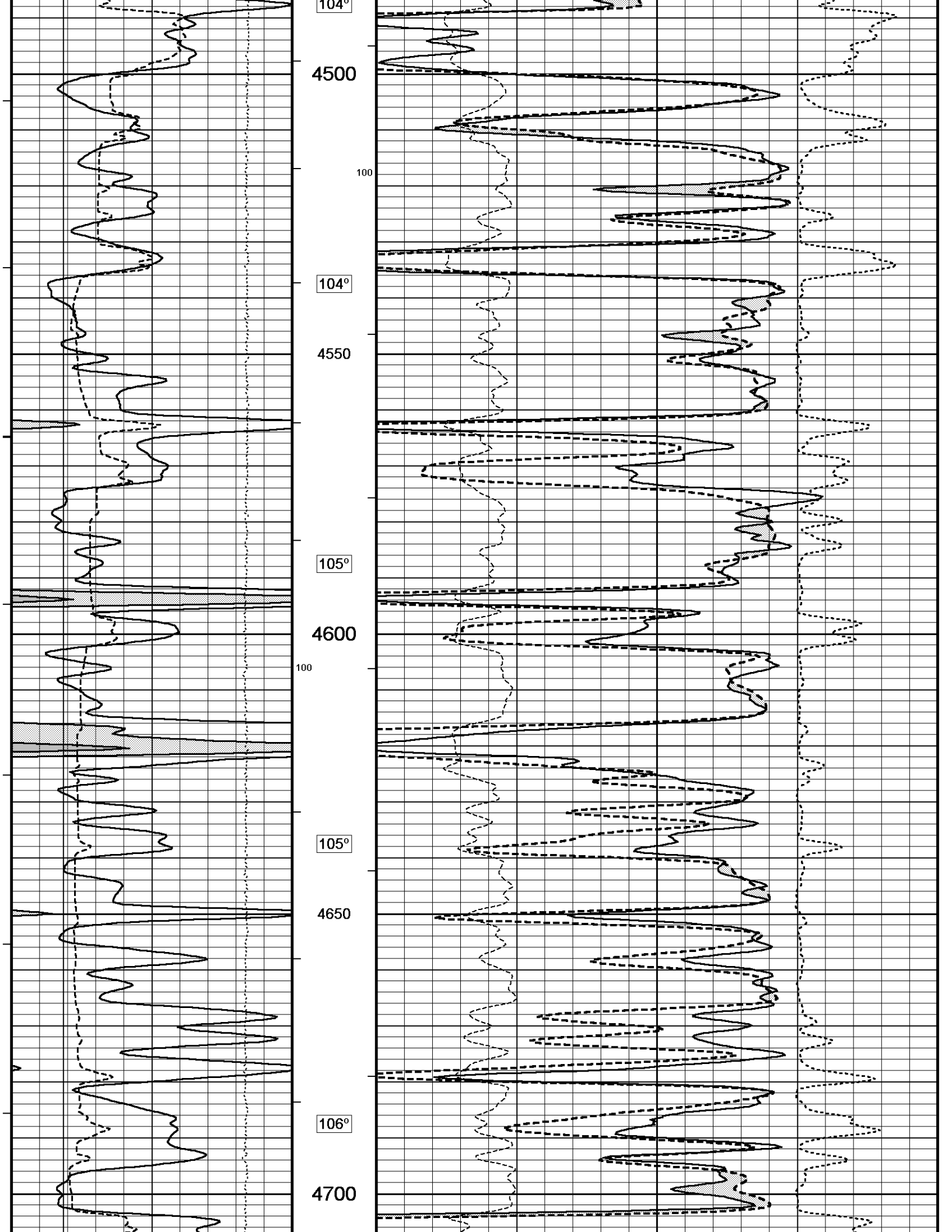
4000

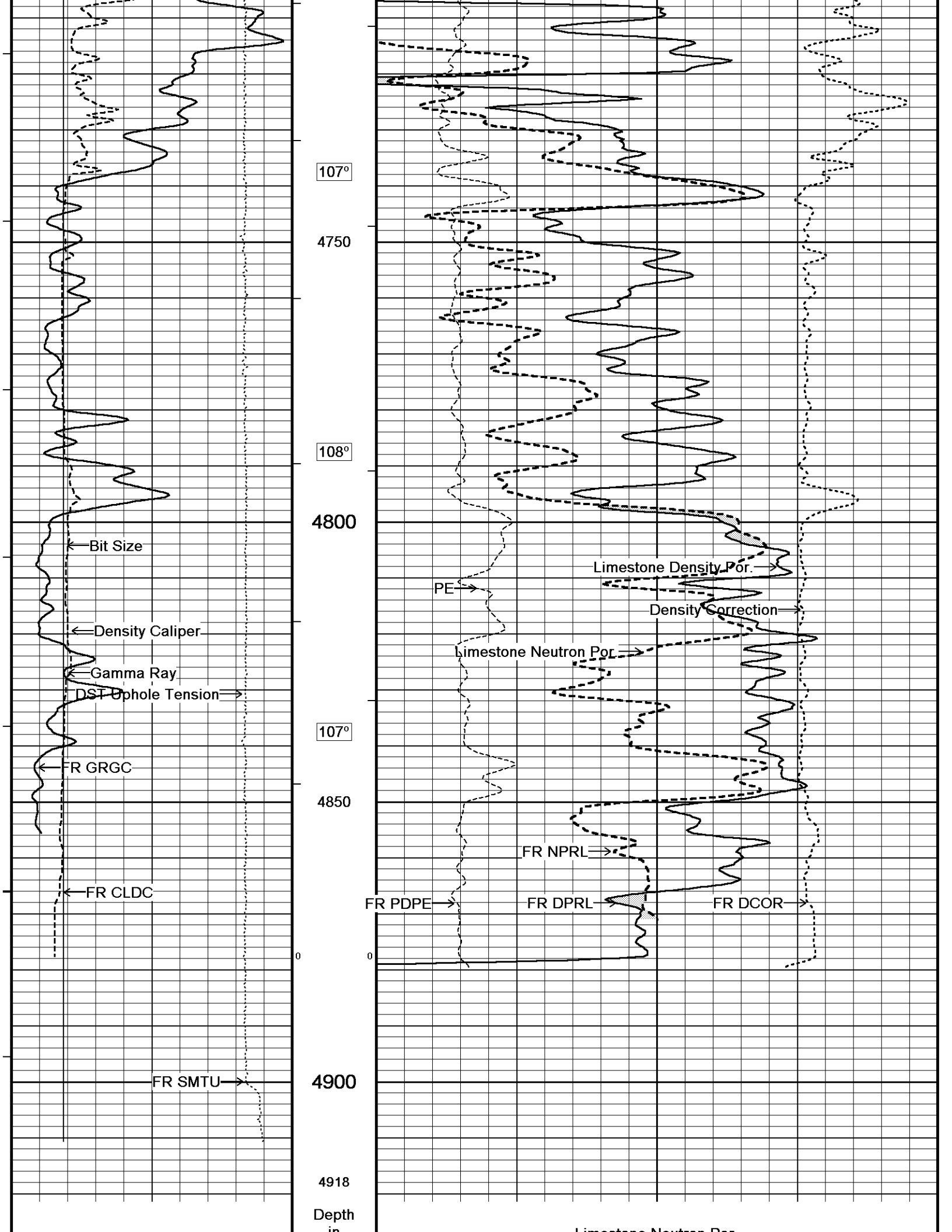
102°

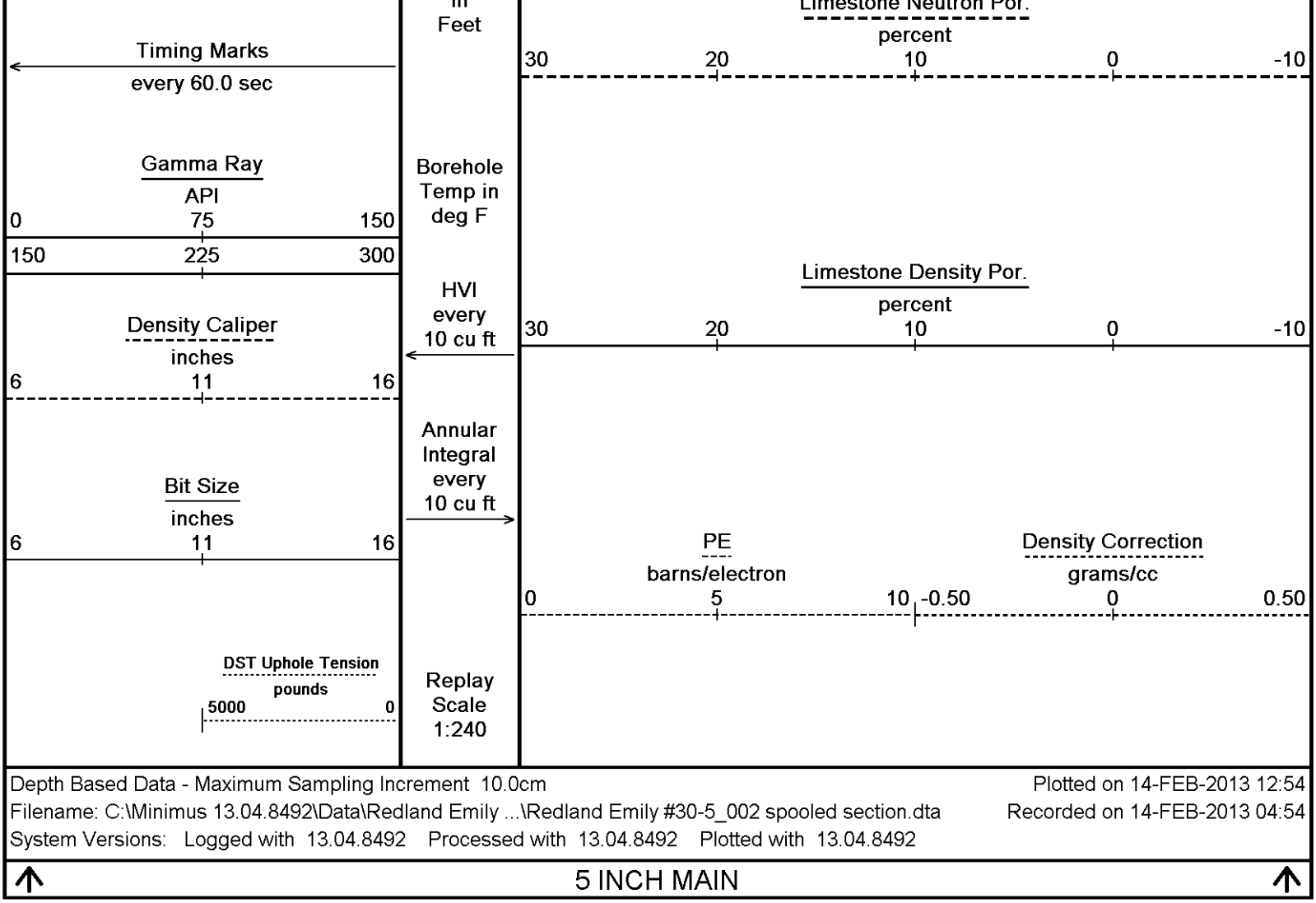
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
Limestone Density Por.
PE
Density Correction
Limestone Neutron Por.


4050
102°
4100
300
102°
4150
102°
200
4200
102°
4250


103°
4300
103°
4350
200
104°
4400
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
104°
4450
Limestone Density Por.
PE
Density Correction
Limestone Neutron Por.


104°
4500
100
104°
4550
105°
4600
100
105°
4650
106°
4700


107°
4750
108°
4800
107°
4850
4900
4918
Depth
in
0
0
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
FR GRGC
FR CLDC
FR SMTU
PE
Limestone Density Por.
Density Correction
Limestone Neutron Por.
FR NPRL
FR PDPE
FR DPRL
FR DCOR
Limestone Neutron Por.

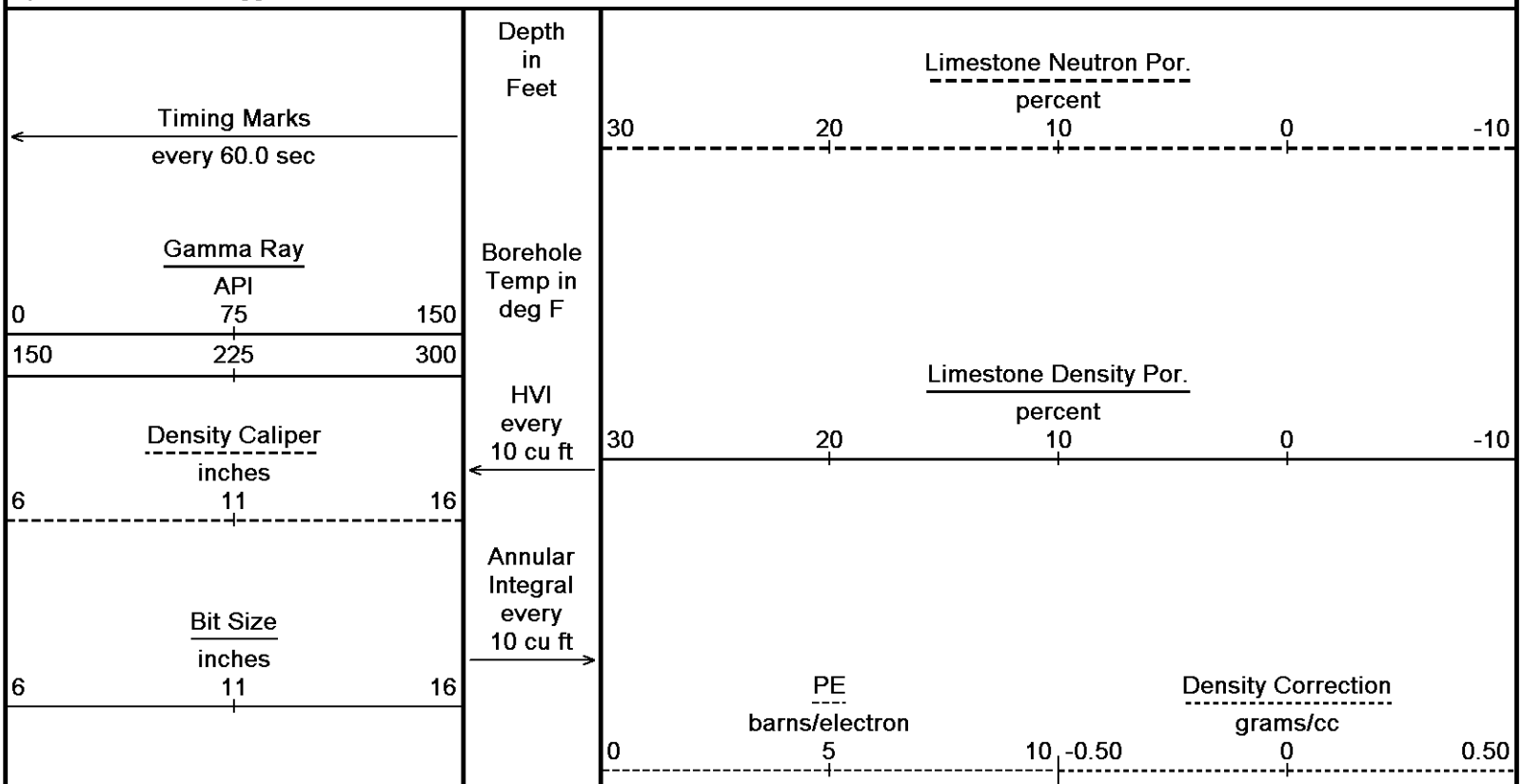


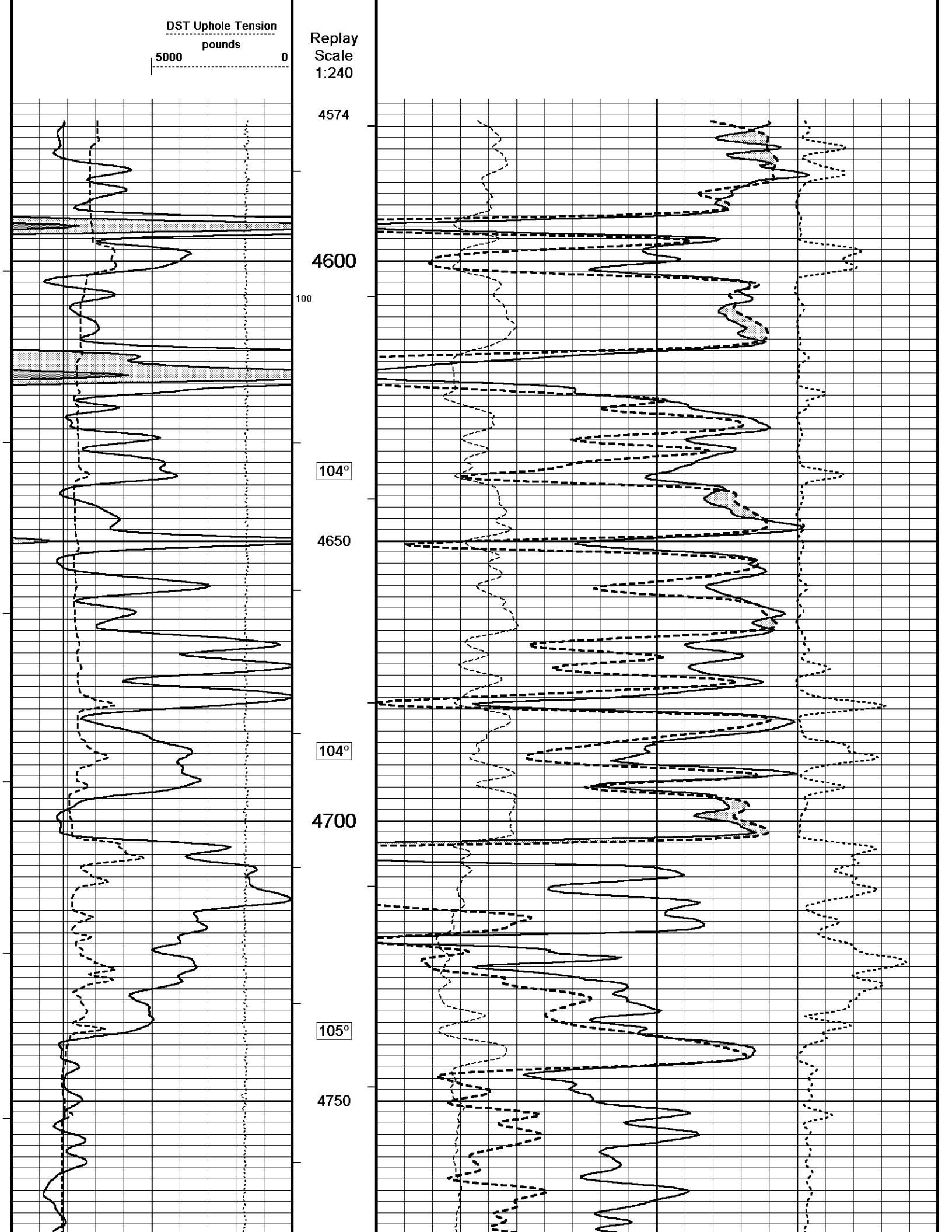
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 14-FEB-2013 12:54
Filename: C:\Minimus 13.04.8492\Data\Redland Emily ...\Redland Emily #30-5_002 spooled section.dta — Recorded on 14-FEB-2013 04:54
System Versions: Logged with 13.04.8492 Processed with 13.04.8492 Plotted with 13.04.8492

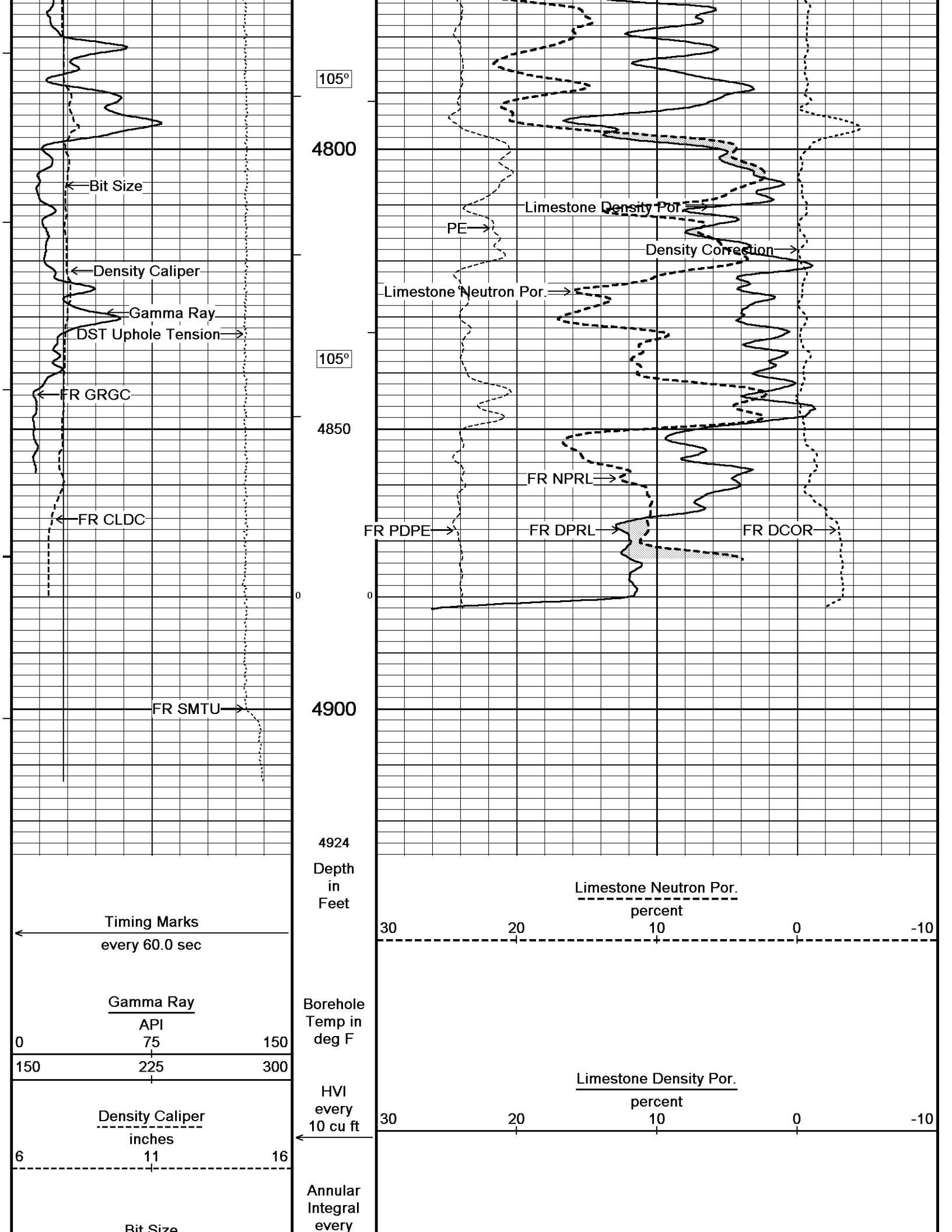
5 INCH MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 14-FEB-2013 12:54
Filename: C:\Minimus 13.04.8492\Data\Redland Emily #30-5\Redland Emily #30-5_001.dta — Recorded on 14-FEB-2013 02:57
System Versions: Logged with 13.04.8492 Processed with 13.04.8492 Plotted with 13.04.8492




DST Uphole Tension
pounds
5000
0
Replay
Scale
1:240
4574
4600
100
104°
4650
104°
4700
105°
4750


105°
4800
Bit Size
Limestone Density Por.
PE
Density Caliper
Density Correction
Limestone Neutron Por.
Gamma Ray
DST Uphole Tension
105°
FR GRGC
4850
FR NPRL
FR CLDC
FR PDPE
FR DPRL
FR DCOR
0
0
4900
FR SMTU
4924
Depth in Feet
Limestone Neutron Por.
percent
30
20
10
0
-10
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
Borehole Temp in deg F
150
225
300
Limestone Density Por.
percent
HVI every 10 cu ft
30
20
10
0
-10
Density Caliper
inches
6
11
16
Annular Integral every
Bit Size

Bit Size
inches
6 11 16

10 cu ft

PE
barns/electron
0 5 10

Density Correction
grams/cc
-0.50 0 0.50

DST Uphole Tension
pounds
5000 0

Replay
Scale
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 14-FEB-2013 12:54
Filename: C:\Minimus 13.04.8492\Data\Redland Emily #30-5\Redland Emily #30-5_001.dta — Recorded on 14-FEB-2013 02:57
System Versions: Logged with 13.04.8492 Processed with 13.04.8492 Plotted with 13.04.8492

REPEAT SECTION

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 14-FEB-2013 12:54
Filename: C:\Minimus 13.04.8492\Data\Redland Emily ...\Redland Emily #30-5_002 spooled section.dta — Recorded on 14-FEB-2013 04:54
System Versions: Logged with 13.04.8492 Processed with 13.04.8492 Plotted with 13.04.8492

Depth
in
Feet

Timing Marks
every 60.0 sec

Compensated Density
grams/cc
2 2.25 2.50 2.75 3

Gamma Ray
API
0 75 150
150 225 300

Borehole
Temp in
deg F

Limestone Density Por.
percent
30 20 10 0 -10

HVI
every
10 cu ft

Density Caliper
inches
6 11 16

Annular
Integral
every
10 cu ft

Bit Size
inches
6 11 16

PE
barns/electron
0 5 10

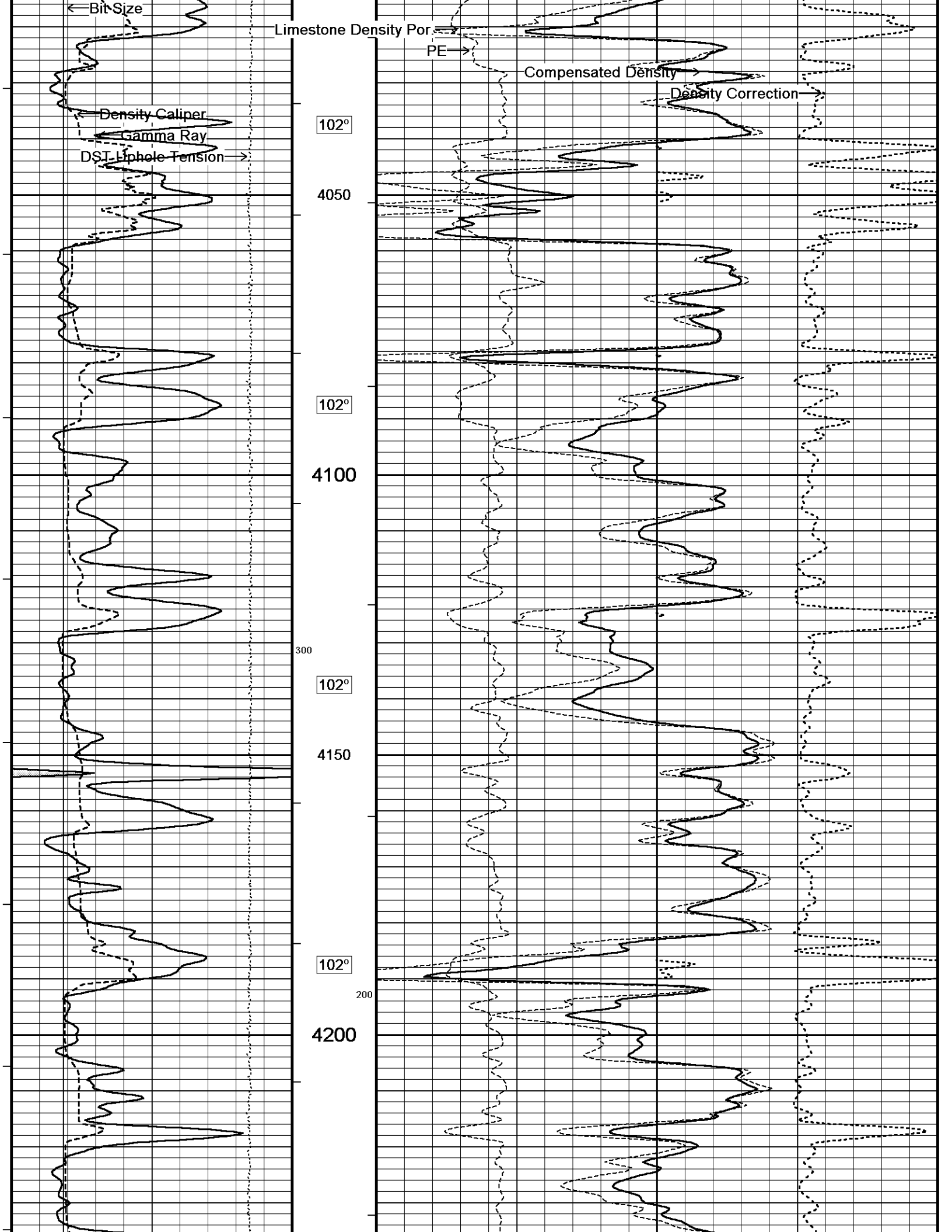
Density Correction
grams/cc
-0.25 0 0.25

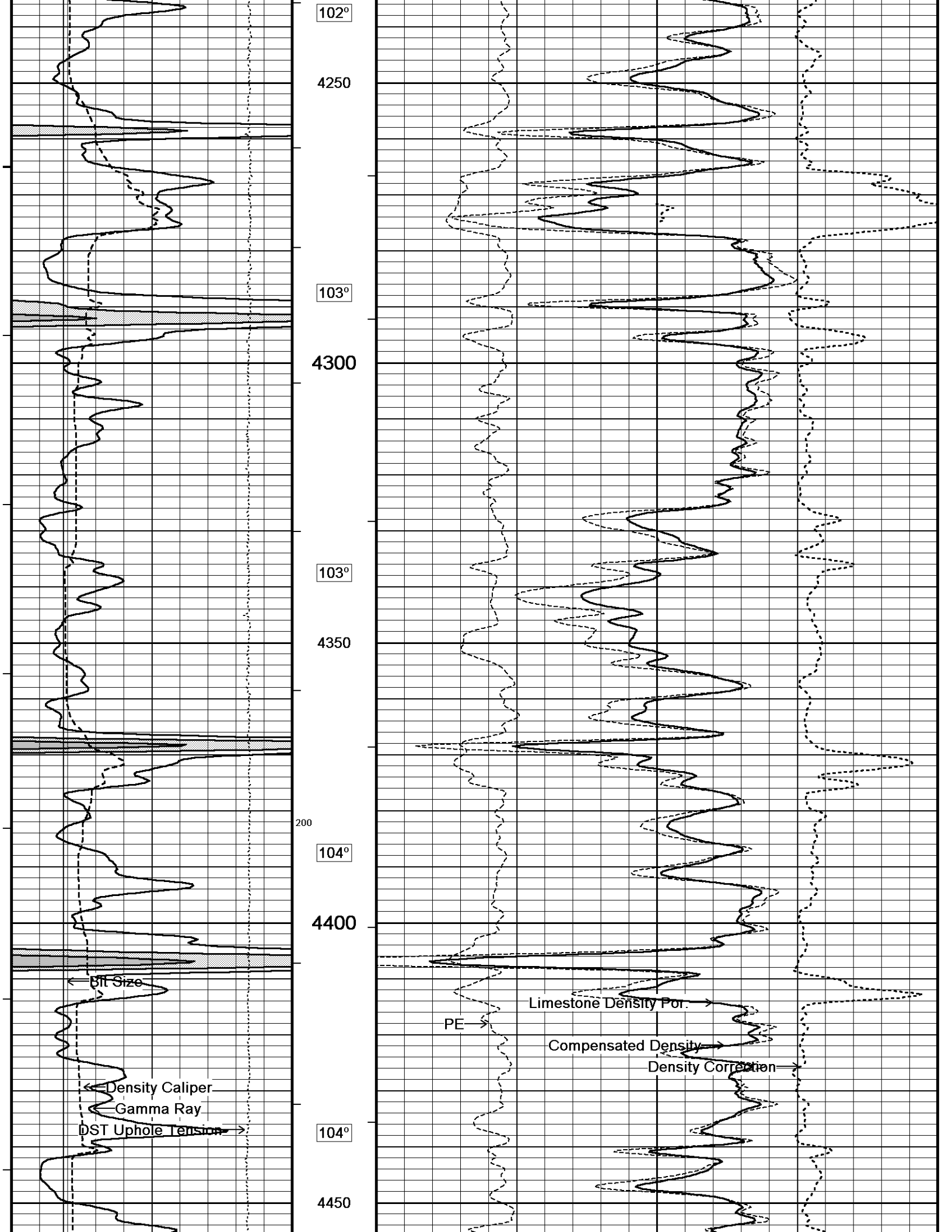
DST Uphole Tension
pounds
5000 0

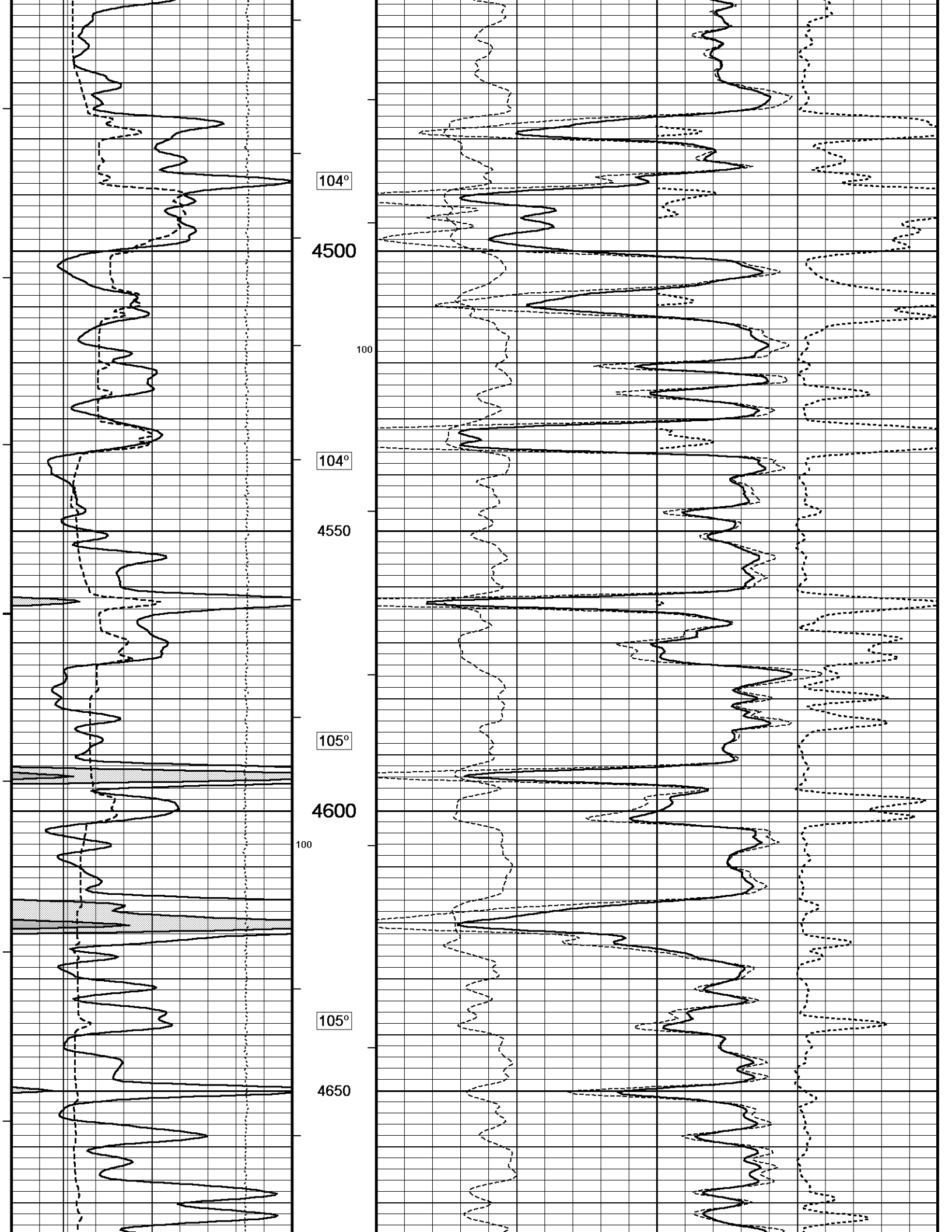
Replay
Scale
1:240

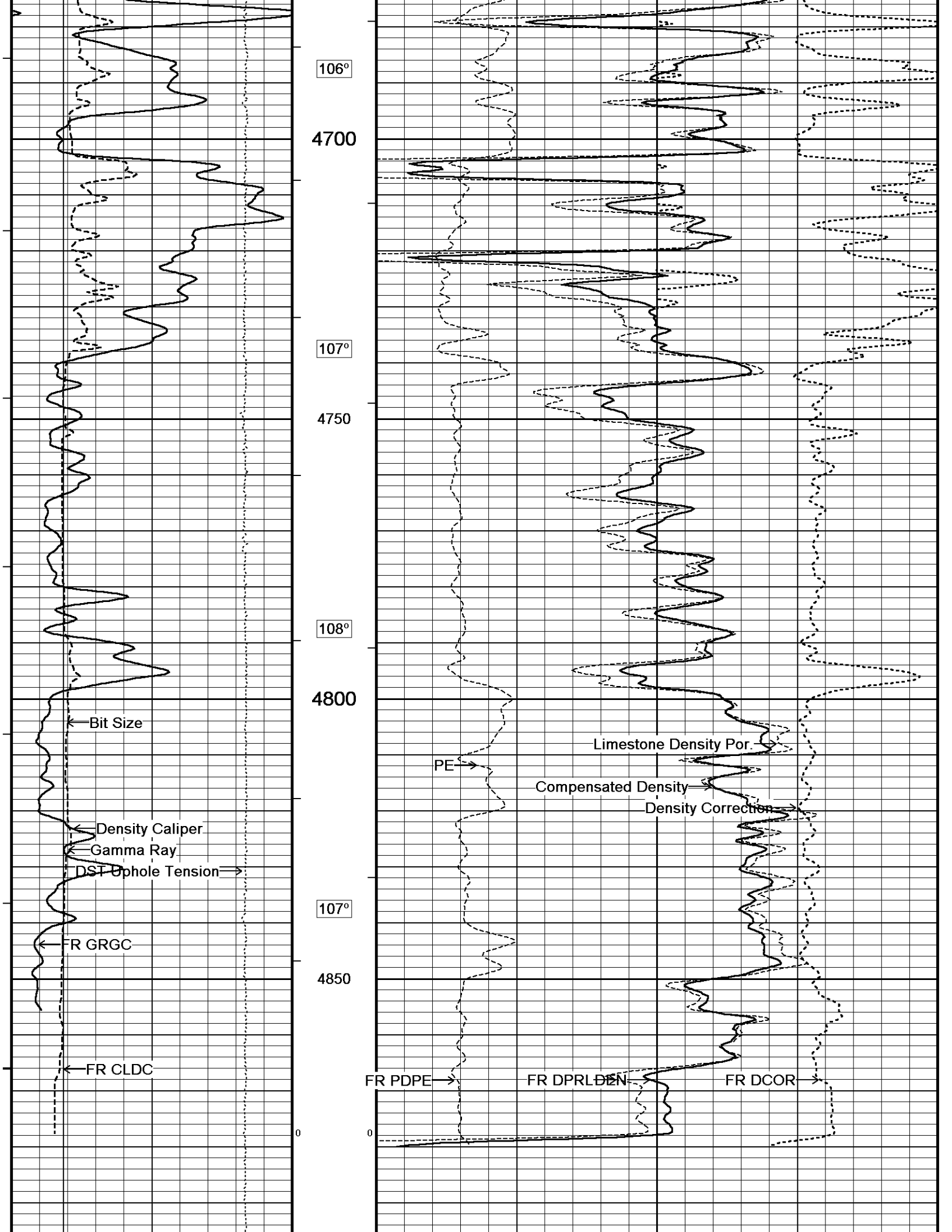
3974

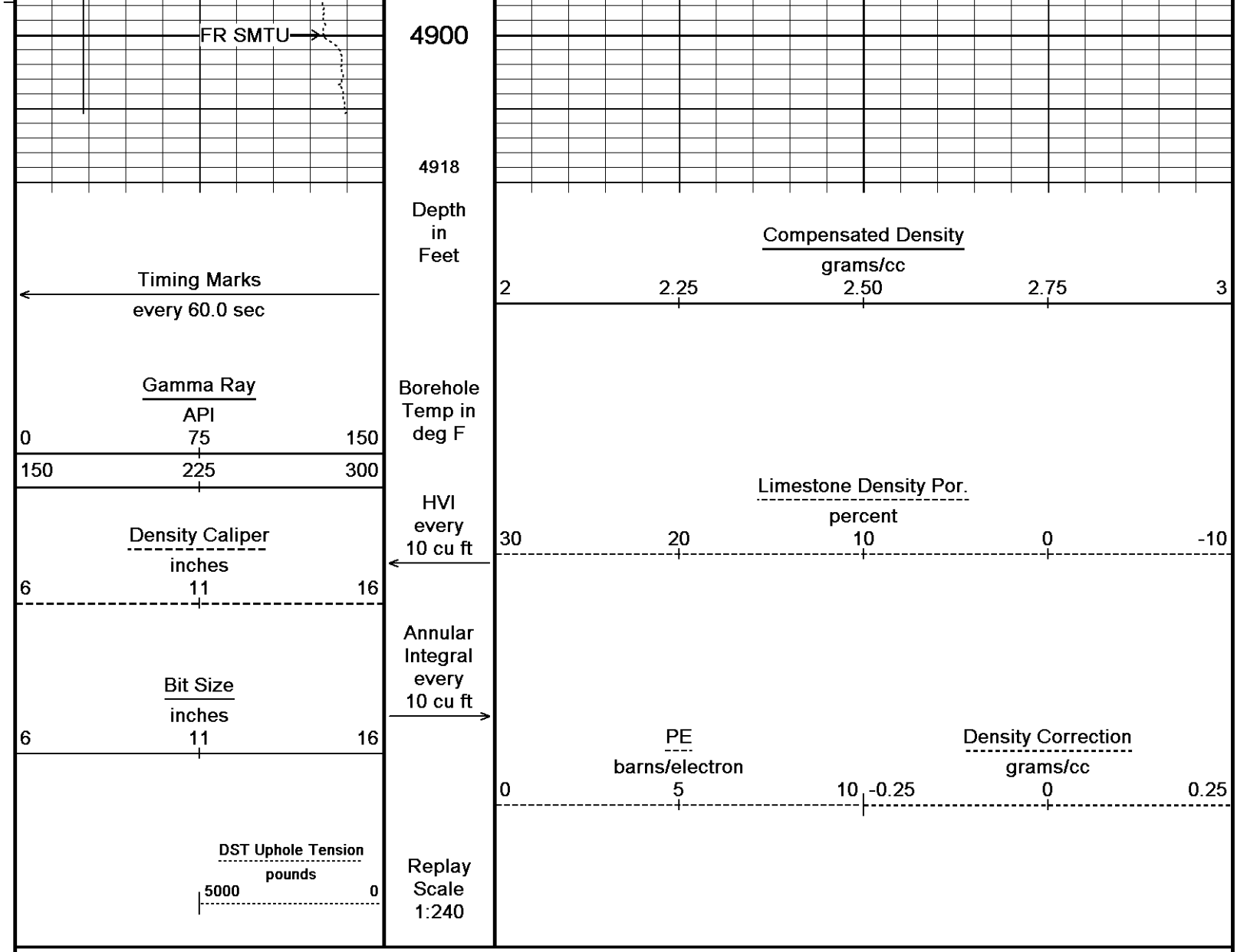
4000


Bit Size
Limestone Density Por
PE
Compensated Density
Density Correction
Density Caliper
Gamma Ray
DSI-Uphole Tension
102°
4050
102°
4100
300
102°
4150
102°
200
4200


102°
4250
103°
4300
103°
4350
200
104°
4400
104°
4450
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
PE
Limestone Density Por.
Compensated Density
Density Correction


104°
4500
100
104°
4550
105°
4600
100
105°
4650


106°
4700
107°
4750
108°
4800
107°
4850
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
FR GRGC
FR CLDC
PE
Limestone Density Por.
Compensated Density
Density Correction
FR PDPE
FR DPRL DEN
FR DCOR
0
0



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5 INCH MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 14-FEB-2013 12:54
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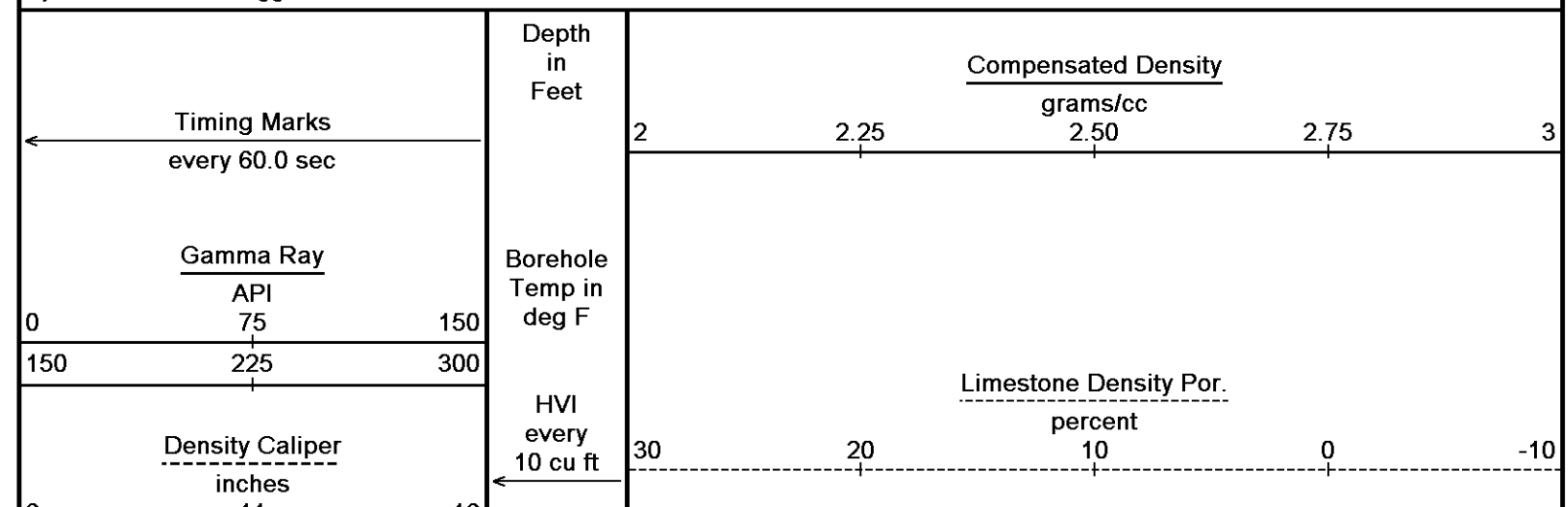
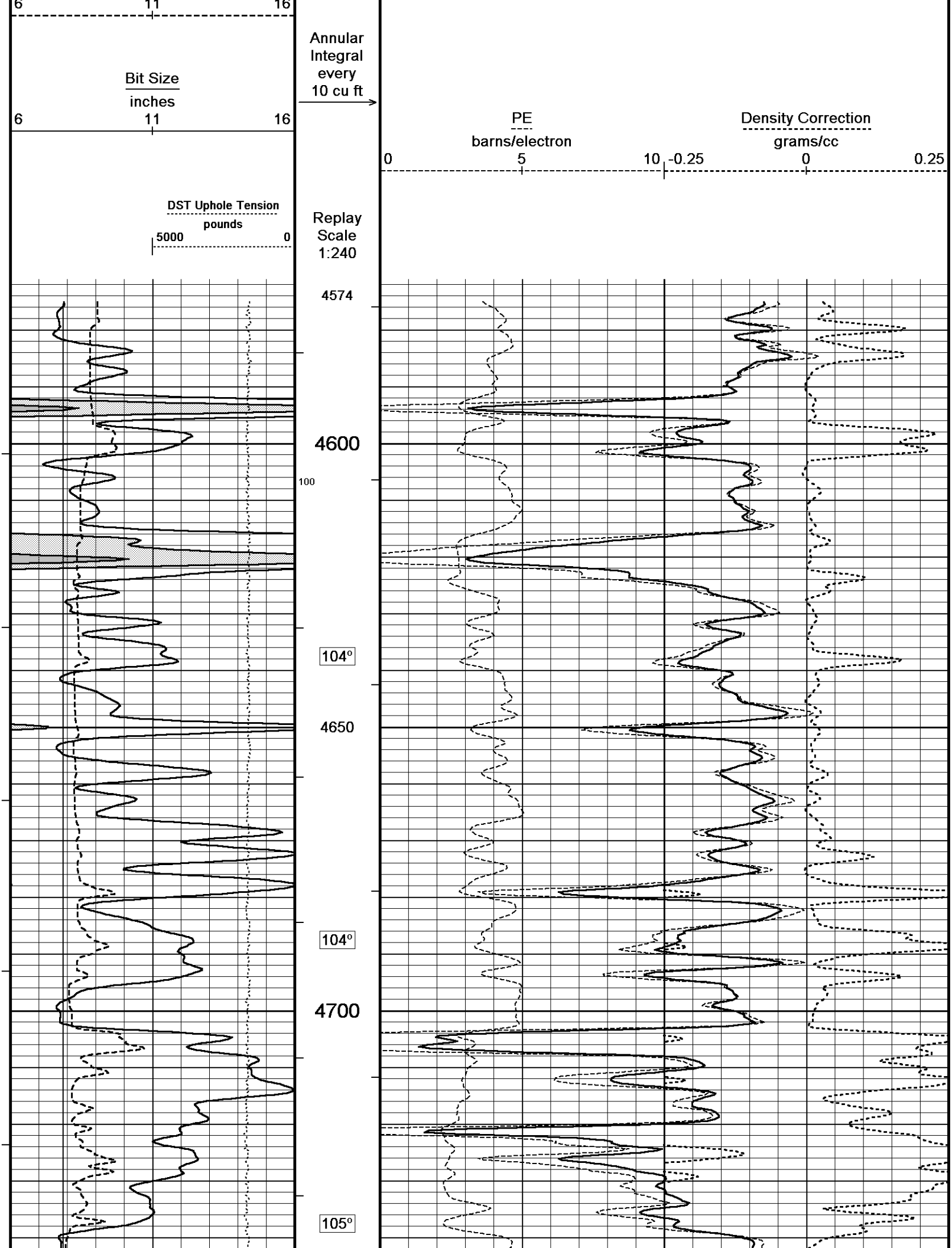
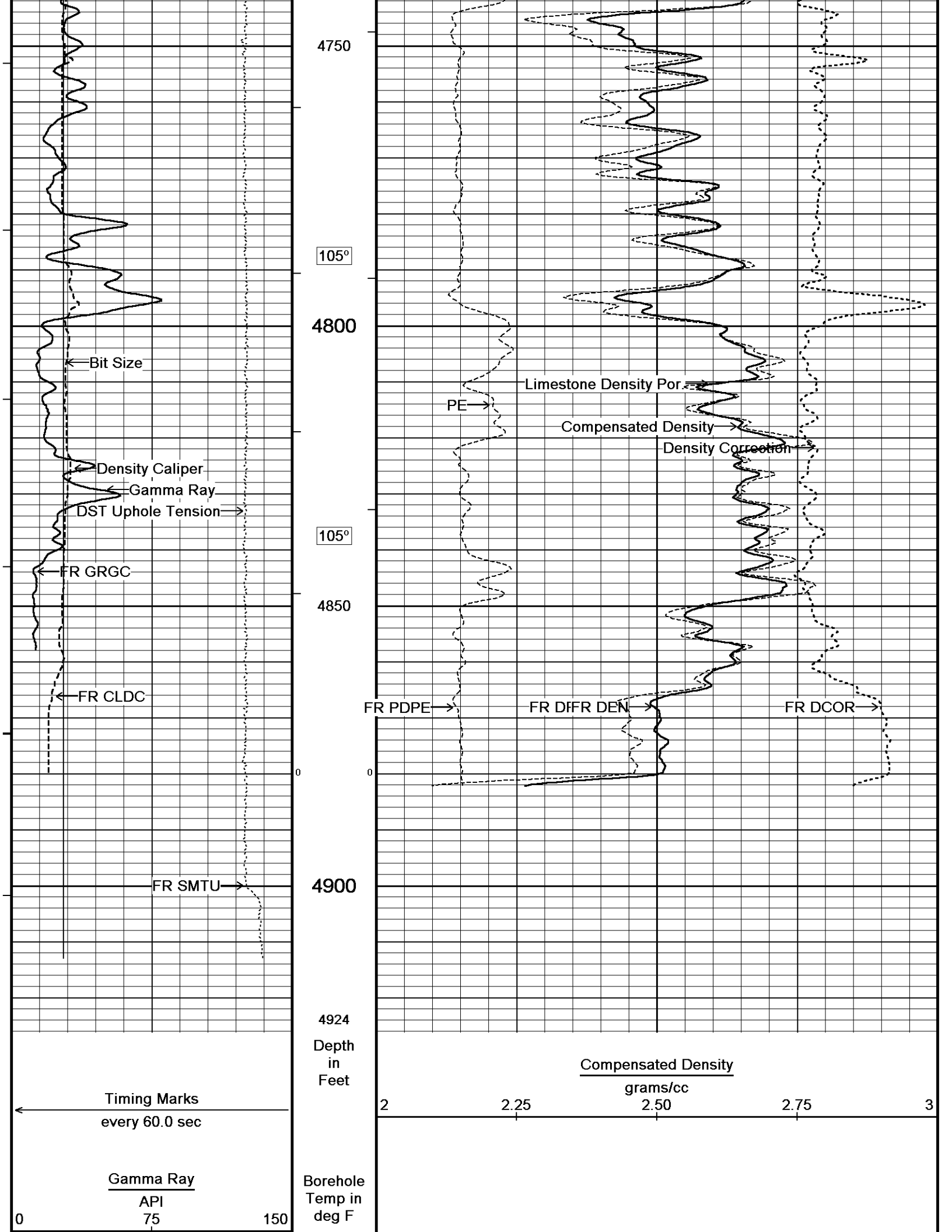
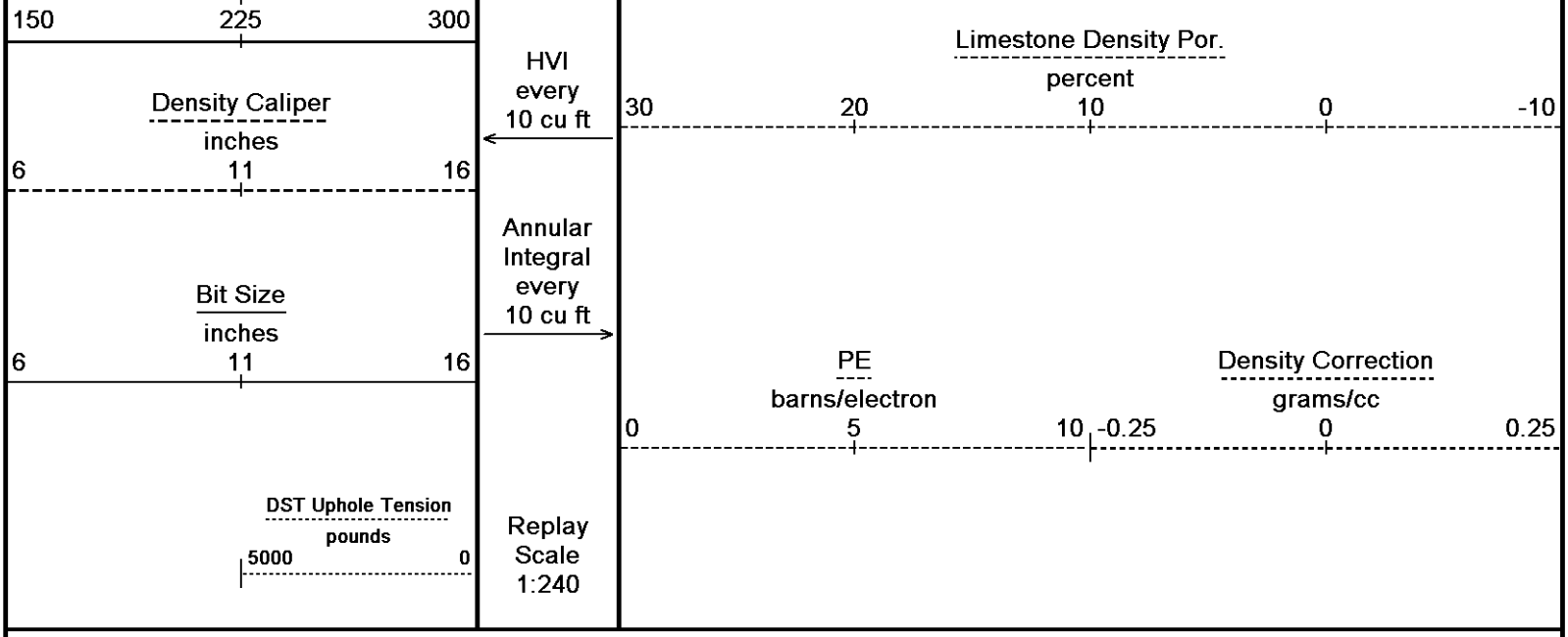



6
11
16
Bit Size
inches
6
11
16
Annular Integral every 10 cu ft
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.25
0
0.25
DST Uphole Tension
pounds
5000
0
Replay Scale 1:240
4574
4600
100
104°
4650
104°
4700
105°


4750
105°
4800
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
105°
FR GRGC
4850
FR CLDC
0
0
FR SMTU
4900
4924
Depth
in
Feet
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
Borehole
Temp in
deg F
PE
Limestone Density Por
Compensated Density
Density Correction
FR PDPE
FR DfFR DEN
FR DCOR
Compensated Density
grams/cc
2
2.25
2.50
2.75
3



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 14-FEB-2013 12:54
Filename: C:\Minimus 13.04.8492\Data\Redland Emily #30-5\Redland Emily #30-5_001.dta — Recorded on 14-FEB-2013 02:57
System Versions: Logged with 13.04.8492 Processed with 13.04.8492 Plotted with 13.04.8492

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 13.04.8492\Data\Redland Emily #30-5\Redland Emily #30-5_002 spooled section.dta

General Constants All 000

Last Edited on 14-FEB-2013,01:39

General Parameters		
Mud Resistivity	1.320	ohm-metres
Mud Resistivity Temperature	81.000	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	4.500	inches
Caliper for Differential Caliper	Density Caliper	
Rwa Parameters		
Porosity used	Crossplot Porosity	
Resistivity used	Array Ind. Six Res Rt	
RWA Constant A	1.000	
RWA Constant M	2.000	

Down-hole Tension Calibration SMS 0

Field Calibration on 14-FEB-2013 02:20

Reading No	Measured	Calibrated (lbs)
1	13618.10	0.00
2	14249.43	471.00

Micro Laterolog Calibration MMR-A 11

Base Calibration on 31-DEC-1999 00:00
Field Check on 31-DEC-1999 00:00

Base Calibration

Measured		Calibrated (ohm-m)	
Ref 1	Ref 2	Ref 1	Ref 2
0.0	0.0	0.0	0.0

Base Check (ohm-m)	Field Check (ohm-m)
0.0	0.0

Micro Laterolog Constants MMR-A 11

Last Edited on 12-NOV-2012,01:59

Pad Type	6 in Solid Nylon B23059

Micro Laterolog K Factor	0.0128	
Standoff Offset	0.0000	inches

Mudcake Thickness Correction Constants

Mud Cake Source	Constant Value	
Mud Cake Thickness	0.4000	inches
Mud Cake Thickness Caliper	N/A	
Mud Cake Resistivity	0.1500	ohm-m
Mud Cake Resistivity Temp.	68.00	Deg F
Mud Cake Resistivity Source	Constant Value	
Temp. Source Rmc Correc.	N/A	

Caliper Calibration MMR-A 11

Base Calibration on 16-JAN-2013 10:32
Field Calibration on 11-FEB-2013 07:37

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13881	5.98
2	17138	7.97
3	20398	9.86
4	24351	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
6.02	5.98

Micro Normal and Micro Inverse Calibration MMR-A 11

Base Calibration on 16-JAN-2013 10:36
Field Check on 11-FEB-2013 07:39

Base Calibration

	Measured		Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.3	59.9	5.0	25.0
Micro Inverse	15.5	77.5	5.0	25.0

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	76.3	76.3
Micro Inverse	58.7	58.7

Micro Normal and Micro Inverse Constants MMR-A 11

Last Edited on 05-NOV-2012,13:54

Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159	
Micro Normal K Factor	1.0000	
Micro Inverse K Factor	1.0000	
Standoff Offset	0.0000	inches

Neutron Calibration MDN-A.B 65

Base Calibration on 24-JAN-2013 15:09
Field Check on 11-FEB-2013 07:48

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2952	92	3714	110
Ratio	32.138		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	1720	2499
Ratio	0.688	

Field Check

	Calibrated (cps)	
	1721	2500
Ratio	0.696	

Neutron Constants MDN-A.B 65

Last Edited on 13-FEB-2013,02:00

Neutron Source Id	PN-521	
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	0.00	kpsi
Temperature Source	None	
Temperature	20.00	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	None	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-B.J 352

Base Calibration on 16-JAN-2013 10:20
Field Check on 11-FEB-2013 07:30

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	964.3	126.8
Base Check		281.2
Field Check		281.4

FE Constants MFE-B.J 352

Last Edited on 13-FEB-2013,02:00

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

Sonic Constants MSS-A.A 126

Last Edited on 12-NOV-2012,02:09

Maximum Boundary Contrast	100.00	micro-sec/ft
Fluid Transit Time	189.00	micro-sec/ft
Limestone Transit Time	47.50	micro-sec/ft
Sandstone Transit Time	55.50	micro-sec/ft
Dolomite Transit Time	43.50	micro-sec/ft
Sonic used for Porosities	3-5' Compensated	
Correction for Sonde Skew	Applied	
Cycle Stretch Algorithm	Applied	
MN3FT	0.00	micro-sec
MX3FT	1500.00	micro-sec
Hunt-Raymer Constant	83.13	micro-sec/ft
Sonde Mode	Compensated	
Hole Type	Open Hole	

Sonde Parameters

	Measured	Calibrated
Offset	0.0000	0.0000
Free Pipe	0.0000	

Peak Amplitude Source

Waveform	Start Time (micro-sec)	Width (micro-sec)	Pre Gain	Start Gain	Discriminator (mV)
3'	N/A	N/A	N/A	N/A	N/A
4'	N/A	N/A	N/A	N/A	N/A
5'	N/A	N/A	N/A	N/A	N/A
6'	N/A	N/A	N/A	N/A	N/A

Processed Fixed Gate Parameters

Waveform Used For Processing N/A

Start Time (micro-sec)	End Time (micro-sec)	Discriminator (mV)	Depth (ft)
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	0.00	0.00	

Full Waveform Parameters

Use 3' Waveform to derive TR	No	
Use 4' Waveform to derive TR	No	
Use 5' Waveform to derive TR	No	
Use 6' Waveform to derive TR	No	
3' Waveform Discriminator Level	0.30	mV
4' Waveform Discriminator Level	0.30	mV
5' Waveform Discriminator Level	0.15	mV
6' Waveform Discriminator Level	0.15	mV
3' Waveform Filter		
4' Waveform Filter		
5' Waveform Filter		
6' Waveform Filter		
Semblance Level	0.50	
Semblance Window Width	120.00	micro-sec
Sonic 1 Despiker	100.00	micro-sec/ft
Sonic 2 Despiker	100.00	micro-sec/ft

High Resolution Temperature Calibration MAI-A.A 45

Field Calibration on 13-DEC-2012,10:54

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MAI-A.A 45

Last Edited on 13-DEC-2012,10:53

Pre-filter Length	11

Induction Calibration MAI-A.A 45

Base Calibration on 26-JUL-2012,09:22
Field Check on 11-FEB-2013 07:29

Base Calibration

Test Loop Calibration	Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High
1	14.4	472.6	9.3	966.2
2	5.7	374.0	7.6	821.4
3	3.4	261.2	5.2	566.0
4	2.5	133.9	2.6	279.2

Array Temperature 78.4 Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1			18.2	3849.5
2			31.7	3628.1
3			28.7	3048.6
4			18.4	2078.8
Deep			16.1	1911.0
Medium			42.6	4059.4
Shallow			49.6	5480.7

Array Temperature 54.6 Deg F

Induction Constants MAI-A.A 45

Last Edited on 13-FEB-2013,02:00

Induction Model	RtAP-WBM	
Caliper for Borehole Corr.	Density Caliper	
Hole Size for Borehole Correction	2.500	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	

Gamma Calibration MCG-D.K 469

Field Calibration on 16-JAN-2013 11:11

	Measured	Calibrated (API)
Background	75	51
Calibrator (Gross)	1138	776
Calibrator (Net)	1063	725

Gamma Constants MCG-D.K 469

Last Edited on 14-FEB-2013,01:38

Gamma Calibrator Number	GR38	
Mud Density	1.08	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

SP Calibration MCG-D.K 469

Field Calibration on 07-NOV-2012 10:25

	Measured	Calibrated (mV)
Reference 1	101.0	100.7
Reference 2	-99.7	-100.8

High Resolution Temperature Calibration MCG-D.K 469

Field Calibration on 07-NOV-2012,10:25

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MCG-D.K 469

Last Edited on 07-NOV-2012,10:25

Pre-filter Length	11

Photo Density Calibration MPD-B 31

Base Calibration on 24-JAN-2013 09:49
Field Check on 11-FEB-2013 07:36

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	45759	23102	59556	30836
Reference 2	18982	1934	24941	2541

Field Check at Base

680.7	842.1

Field Check

680.6	839.9

PE Calibration

Base Calibration	Measured			Calibrated
	WS	WH	Ratio	Ratio
Background	127	606		
Reference 1	19469	45650	0.429	0.371
Reference 2	5712	18903	0.305	0.272

Field Check at Base		
	126.6	606.1
Field Check		
	127.5	604.7

Density Constants MPD-B 31

Last Edited on 14-FEB-2013,01:39

Density Source Id	254	
Nylon Calibrator Number	DNCE695	
Aluminium Calibrator Number	DACD698	
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

Caliper Calibration MPD-B 31

Base Calibration on 28-JAN-2013 08:35
Field Calibration on 11-FEB-2013 07:31

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	15824	3.99
2	24384	5.98
3	33040	7.97
4	41376	9.86
5	50943	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
6.04	5.98

DOWNHOLE EQUIPMENT

C:\Minimus 13.04.8492\Data\Redland Emily #30-5\Redland Emily #30-5_002 spooled section.dta

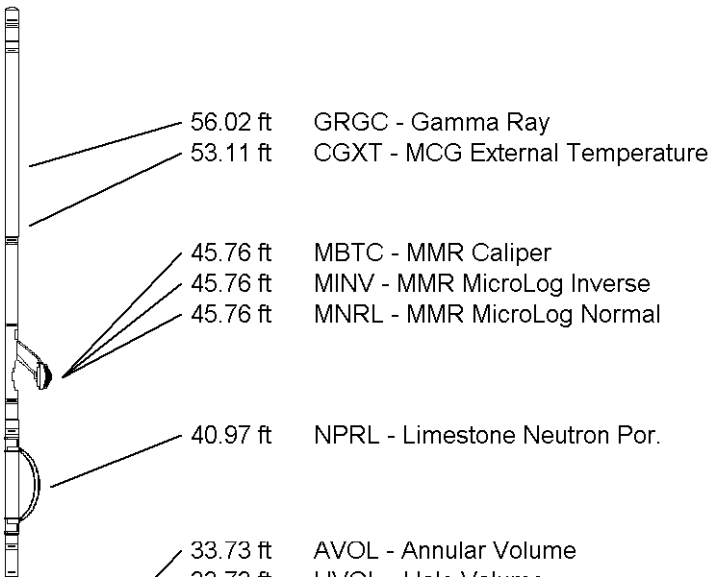
3/8" Triple Cone Cable Head (MCB C A)
MCB-C.A 5 LG: 1.58 ft WT: 15.4 lb OD: 2.24 in

Compact Comms Gamma
MCG-D.K 469 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

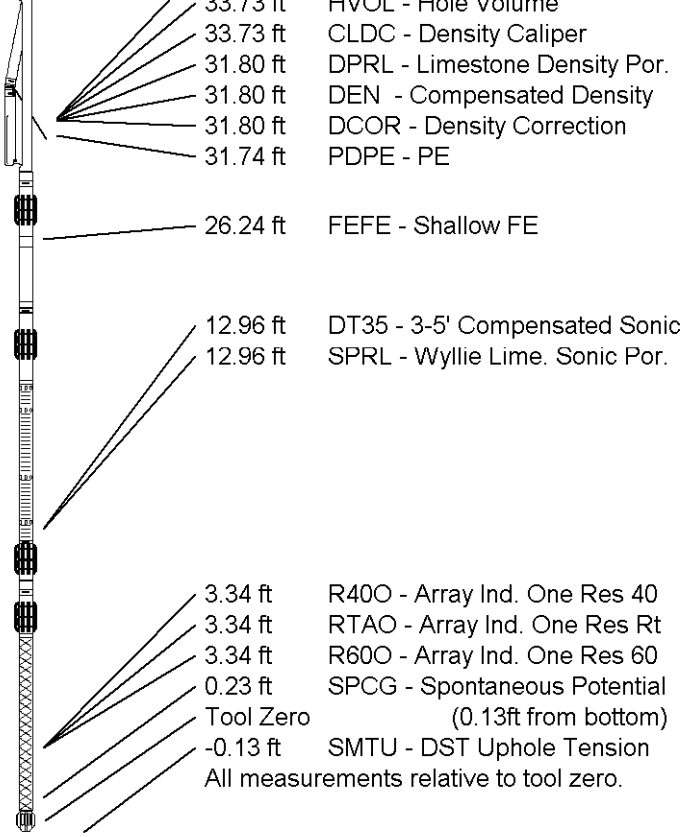
Compact Micro-Resistivity
MMR-A 11 LG: 8.59 ft WT: 81.6 lb OD: 4.88 in

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

Compact Density/Caliper



MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in



33.73 ft HVOL - Hole Volume
33.73 ft CLDC - Density Caliper
31.80 ft DPRL - Limestone Density Por.
31.80 ft DEN - Compensated Density
31.80 ft DCOR - Density Correction
31.74 ft PDPE - PE

Compact Focussed Electric
MFE-B.J 352 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

26.24 ft FEFE - Shallow FE

Compact Sonic
MSS-A.A 126 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

12.96 ft DT35 - 3-5' Compensated Sonic
12.96 ft SPRL - Wyllie Lime. Sonic Por.

Compact Induction
MAI-A.A 45 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

3.34 ft R40O - Array Ind. One Res 40
3.34 ft RTAO - Array Ind. One Res Rt
3.34 ft R60O - Array Ind. One Res 60
0.23 ft SPCG - Spontaneous Potential
Tool Zero (0.13ft from bottom)
-0.13 ft SMTU - DST Uphole Tension
All measurements relative to tool zero.

Total Length: 62.88 ft Weight: 471.8 lb

COMPANY	REDLAND RESOURCES, INC.
WELL	EMILY #30-5
FIELD	GRAY HAWK NW
PROVINCE/COUNTY	HODGEMAN
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2512.00	feet	First Reading	4887.00	feet
Elevation Drill Floor	2510.00	feet	Depth Driller	4900.00	feet
Elevation Ground Level	2504.00	feet	Depth Logger	4900.00	feet

Weatherford®

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON