PHOTO DENSITY COMPENSATED NEUTRON LOGS

Weatherford®

COMPANY	EAST CHEYENNE GAS STORAGE LLC
WELL	ECGS No 6-19D WPD003-1
FIELD	PEETZ WEST
PROVINCE/COUNTY	LOGAN
COUNTRY/STATE	USA/COLORADO
LOCATION	SESE 653' FSL AND 716' FEL

SEC	TWP	RGE	Other Services
6	11N	52W	MAI
			CMI

API Number 05-075-09409
Permit Number

Permanent Datum GL, Elevation 4553 feet
Log Measured From KB
Drilling Measured From KB

Elevations:	feet
KB	4566.00
DF	4565.00
GL	4553.00

Date	28-OCT-2012			
Run Number	ONE			
Depth Driller	5285.00	feet		
Depth Logger	5288.00	feet		
First Reading	5234.00	feet		
Last Reading	4200.00	feet		
Casing Driller	1220.00	feet		
Casing Logger	1216.00	feet		
Bit Size	8.750	inches		
Hole Fluid Type	WBM			
Density / Viscosity	9.90 lb/USg	52.00 CP		
PH / Fluid Loss	7.50	7.50 ml/30Min		
Sample Source	FLOWLINE			
Rm @ Measured Temp	3.33 @ 62.7	ohm-m		
Rmf @ Measured Temp	2.664 @ 62.7	ohm-m		
Rmc @ Measured Temp	3.996 @ 62.7	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	1.401 @153.0	ohm-m		
Time Since Circulation	4 HOURS			
Max Recorded Temp	153.00	deg F		
Equipment Name	COMPACT			
Equipment / Base	13144	RK SPR		
Recorded By	T. BENICH		J. PAULSON	
Witnessed By	J. ASHBY		L. CARRASCO	

BOREHOLE RECORD

Last Edited: 28-OCT-2012 21:23

Bit Size inches	Depth From feet	Depth To feet
8.750	1216.00	5288.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	9.625	0.00	1216.00	36.00

REMARKS

SOFTWARE VERSION 13.03.7779
TOOLS RUN: SHA, MCG, MDN, MPD, MIS-D, SKJ, MIS-E, SKJ, SHA, MIM, MIE, SKJ, MFE, MAI RUN IN COMBINATION.

HARDWARE: MPD: 8" PROFILE PLATE USED.
MAI: TWO 1 INCH STANDOFFS USED.
MDN: DUAL BOWSPRING USED.
MIM: ONE NONMETALIC CENTRALIZING BASKET USED.
MIE: ONE 1 INCH STANDOFF USED

2.65 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY FROM TD TO BOTTOM OF FORT HAYES FORMATION(5288FT TO 4700FT).

2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY IN FORT HAYES AND NIOBRARA FORMATION (4700 FT TO 4200 FT).

TIGHT PULLS, BOREHOLE SIZE AND RUGOSITY WILL AFFECT REPEATABILITY AND DATA QUALITY.

IMAGER PAD 3 APPEARED TO HAVE COMMS PROBLEMS FROM 5170 FT TO 4890 FT.

PAD 6 APPEARS TO HAVE BAD BUTTONS.

CALIPERS WERE CLOSED AND REOPENED AT 4795 TO TRY TO REMOVE MUDCAKE

ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.

LAT/ LONG: 40.95080 N / 103.21282 W

TOTAL HOLE VOLUME FROM TD TO SURFACE CASING =1800 CUBIC FEET

ANNULAR VOLUME WITH 7 INCH PRODUCTION CASING FROM TD TO SURFACE CASING = 730 CUBIC FEET

TOTAL VOLUME FROM TD TO 4200 FT =440 CUBIC FEET

ANNULAR VOLUME WITH 7 INCH PRODUCTION CASING FROM TD TO 4200 FT = 160 CUBIC FEET

SERVICE ORDER: 3531933

OPERATOR: B. PECK

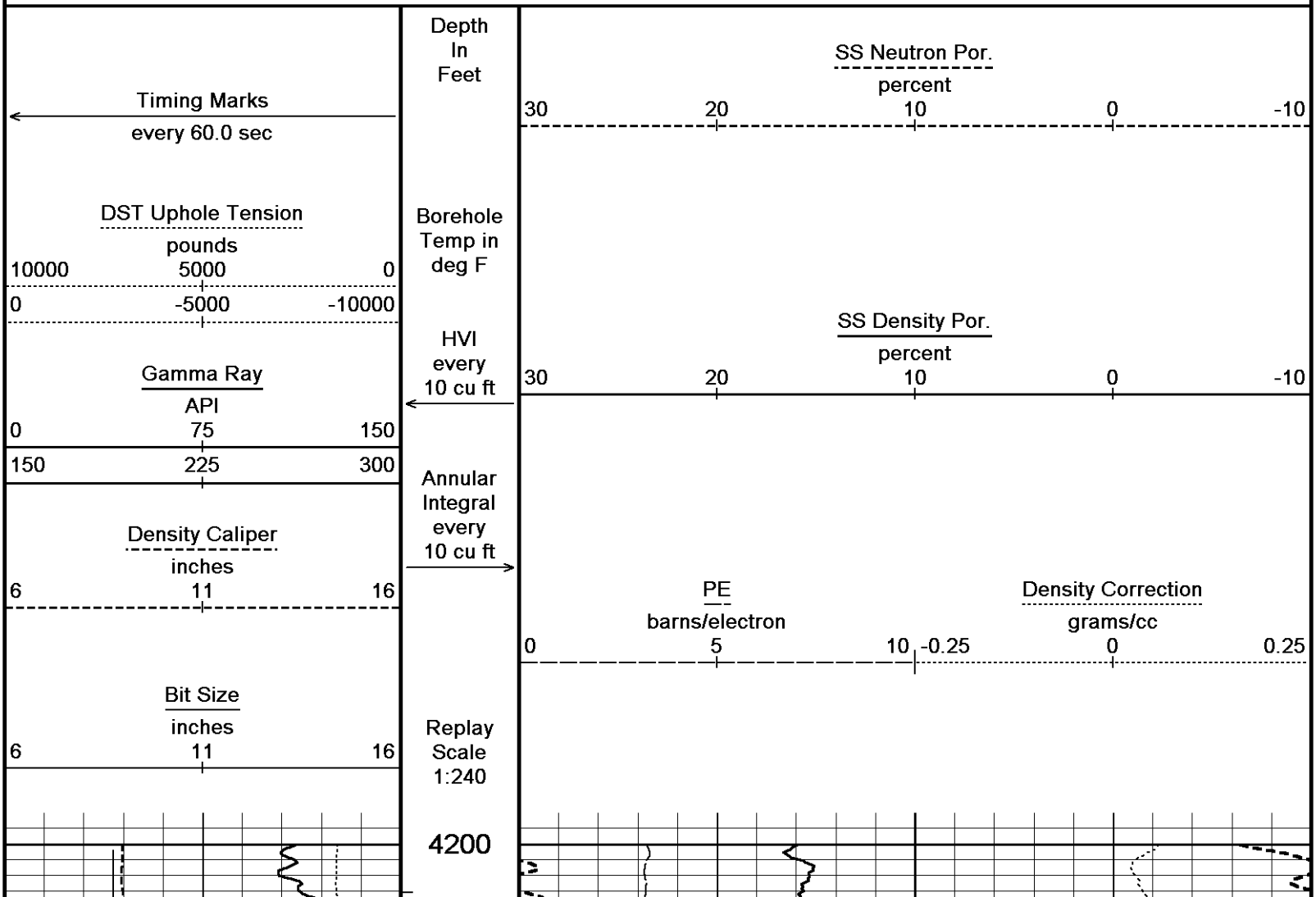
RIG: CADE 22

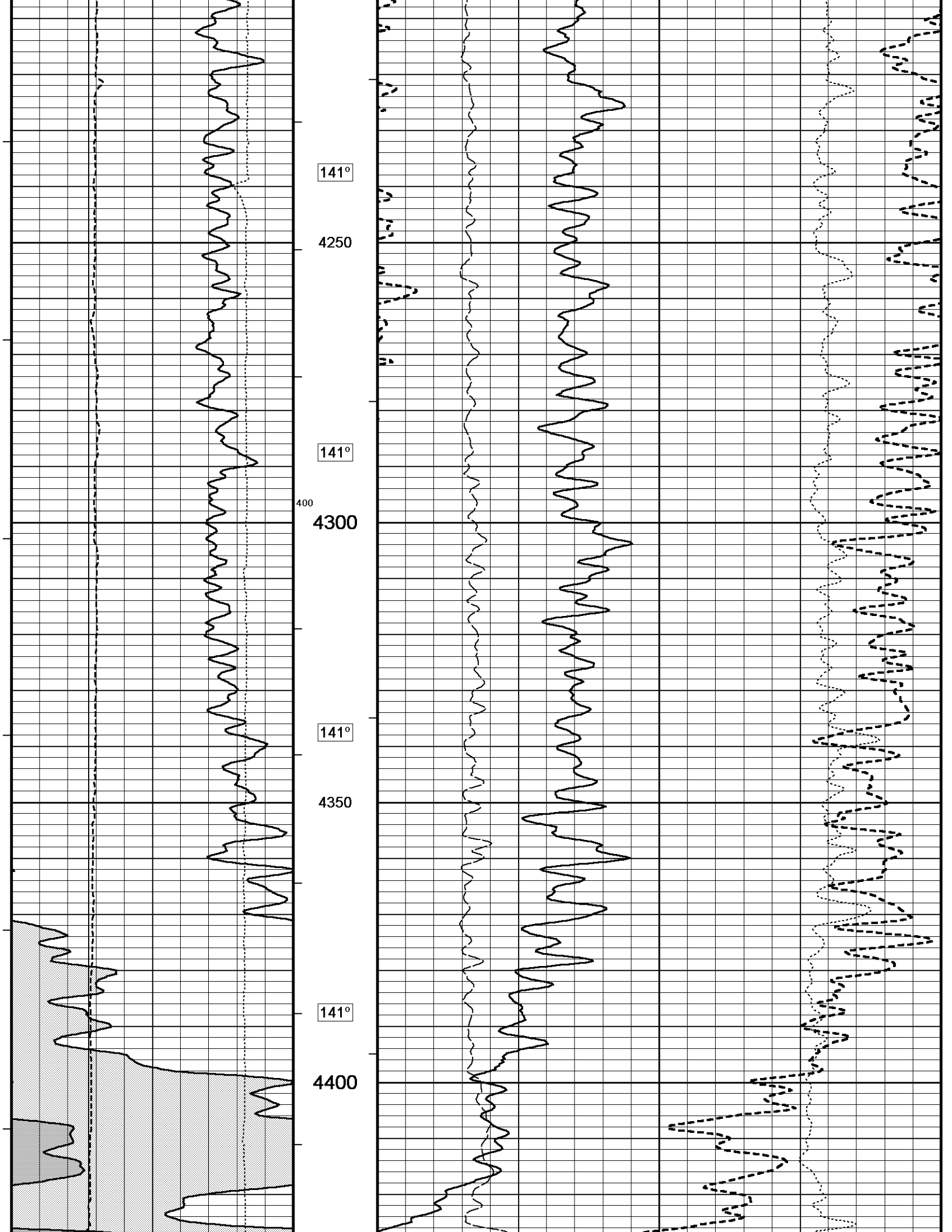
5 INCH MAIN LOG

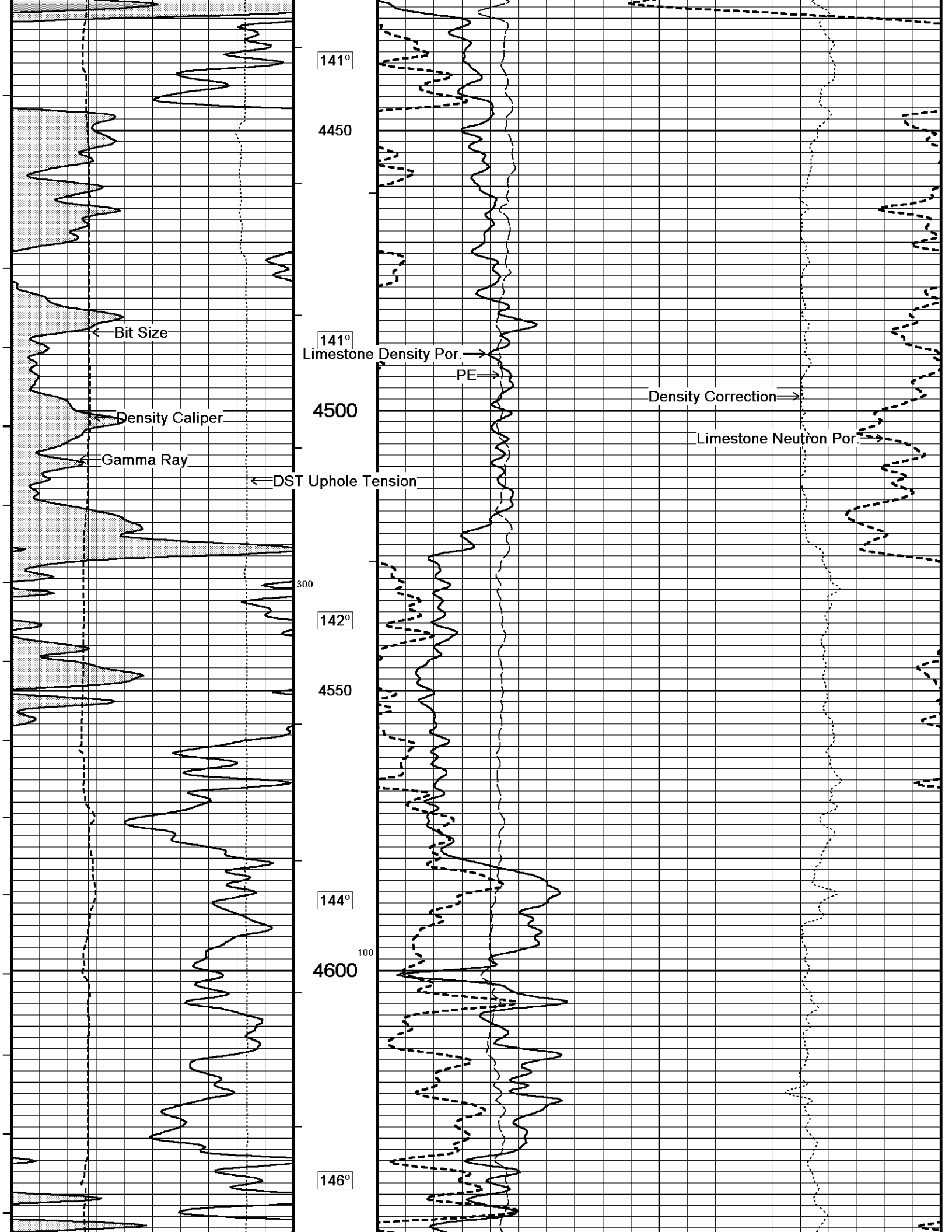
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 29-OCT-2012 09:00

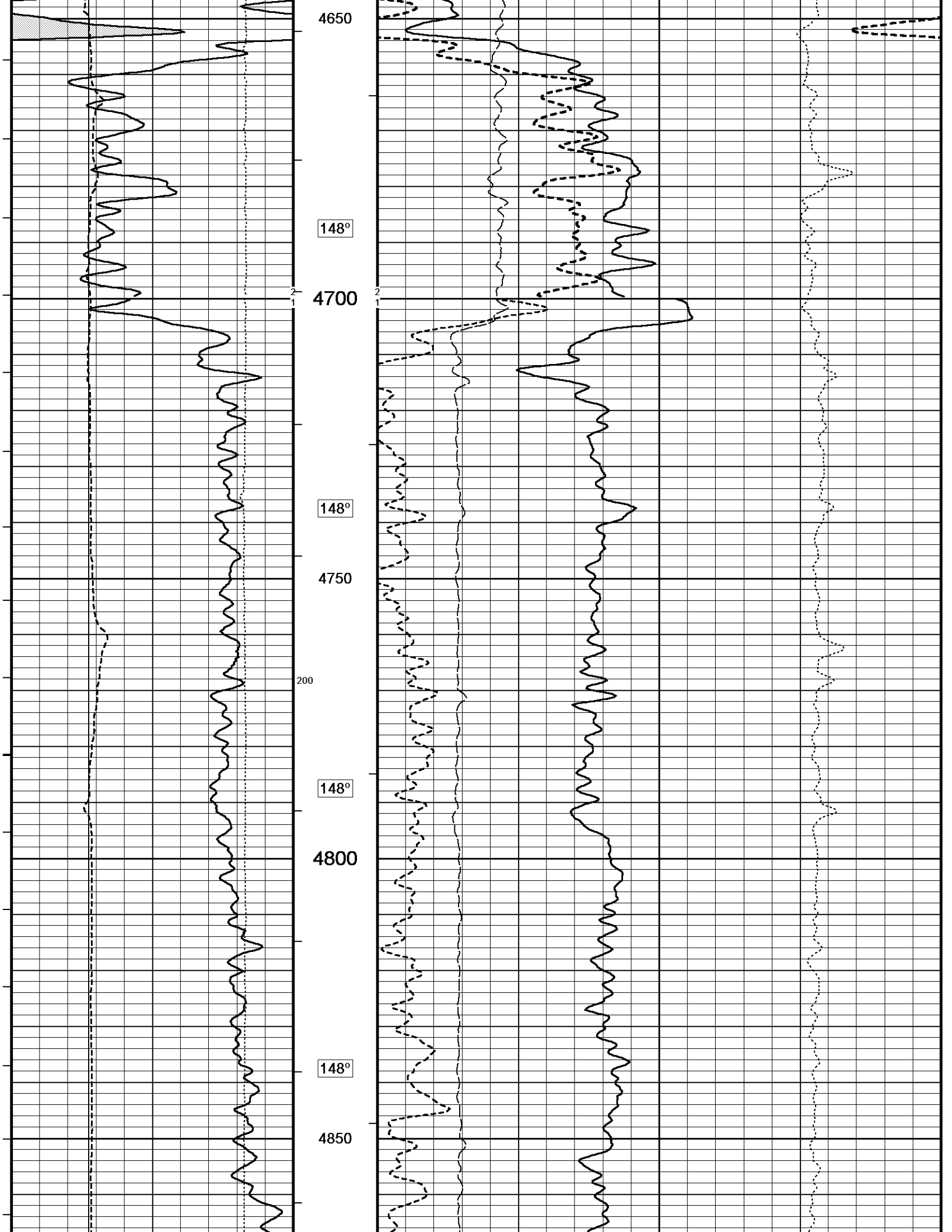
Filename: C:\Users\E164620\AppData\Local\Temp\Wea...\ECGS No 6-19D WPD003-1_MAINPASS.dta — Recorded on 28-OCT-2012 20:01

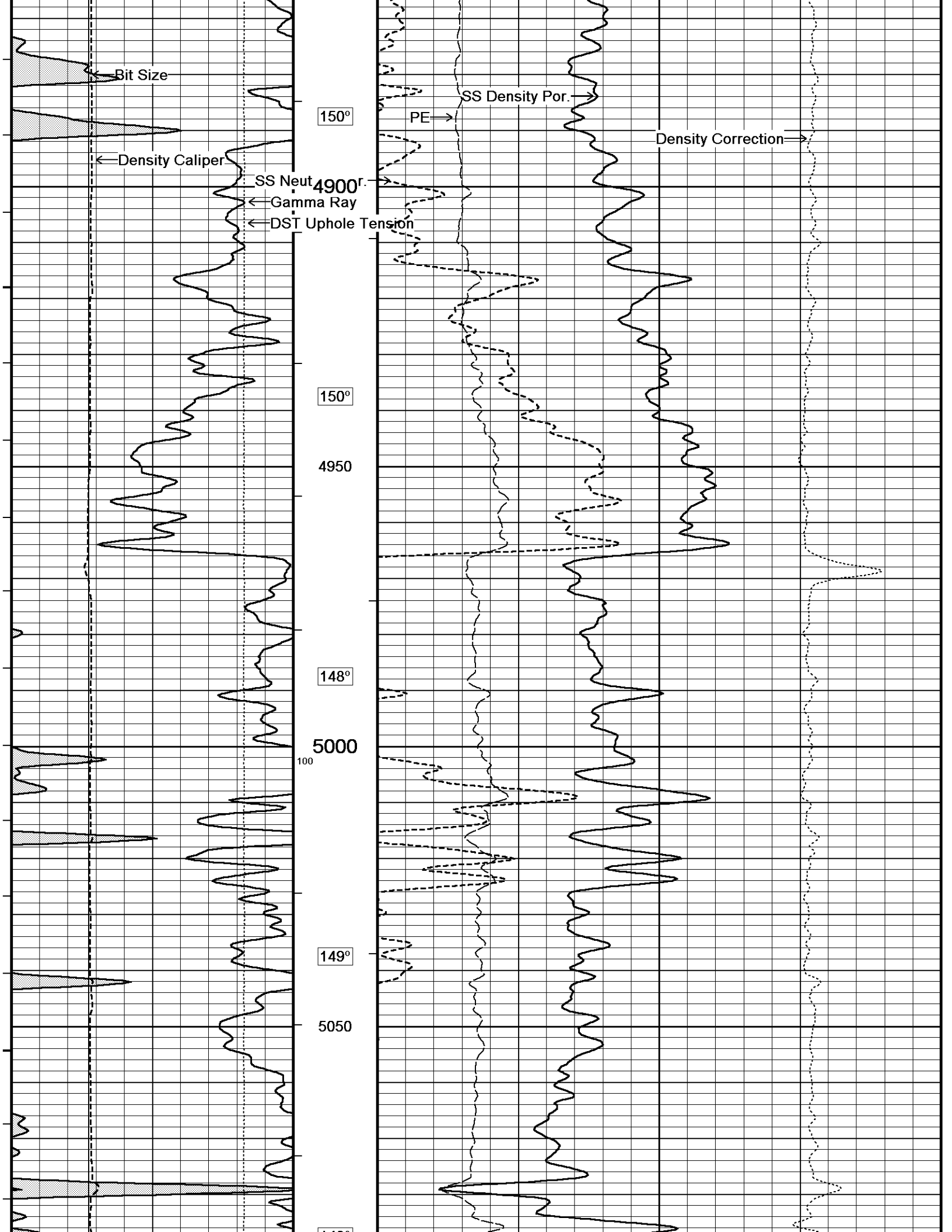
System Versions: Processed with 13.03.7779 Plotted with 13.03.6602

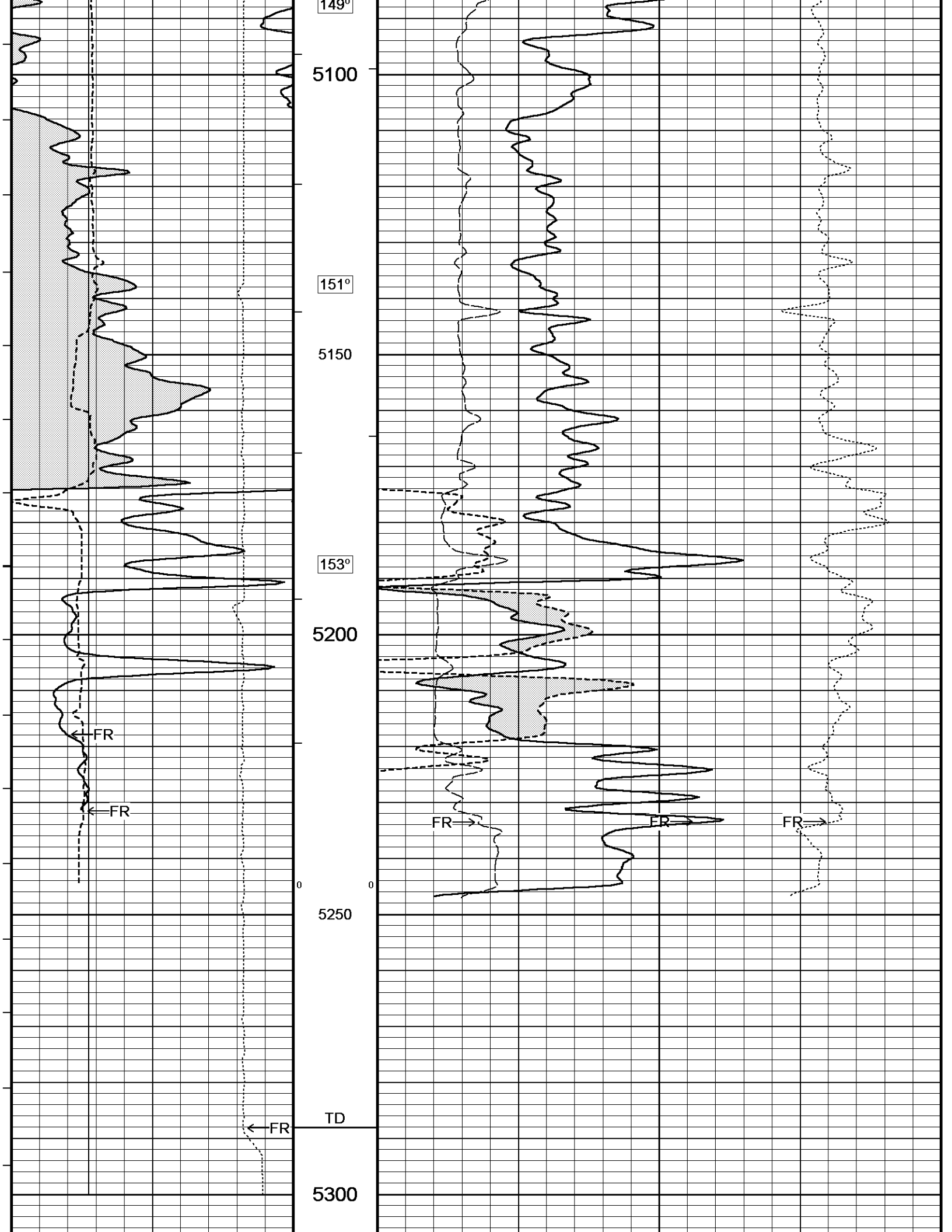


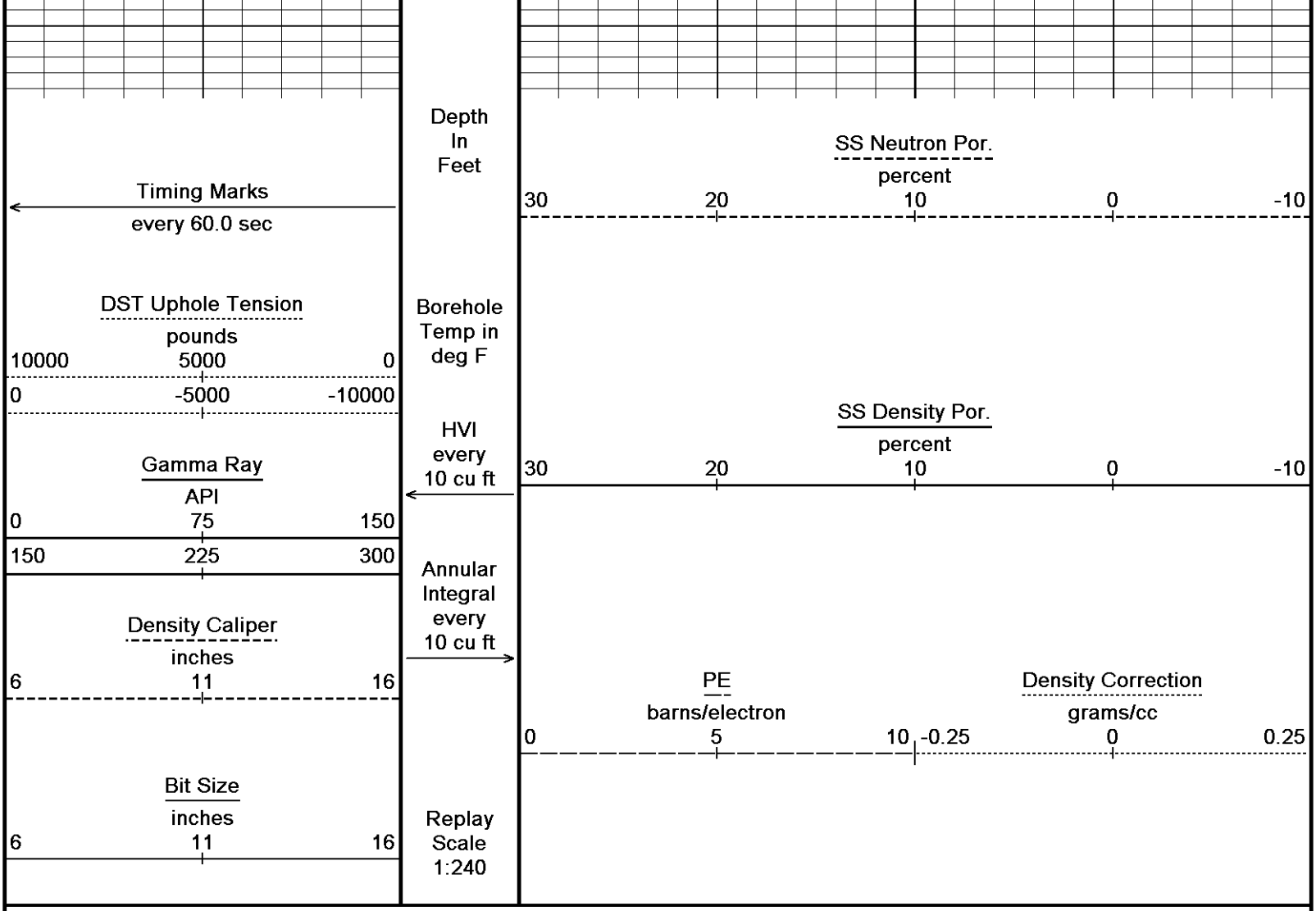

141°
4250
141°
400
4300
141°
4350
141°
4400


141°
4450
141°
Bit Size
Limestone Density Por.
PE
Density Correction
4500
Density Caliper
Limestone Neutron Por.
Gamma Ray
DST Uphole Tension
300
142°
4550
144°
100
4600
146°


4650
148°
4700
2
1
148°
4750
200
148°
4800
148°
4850


Bit Size
Density Caliper
SS Neut.
Gamma Ray
DST Uphole Tension
SS Density Por.
PE
Density Correction
150°
4900
150°
4950
148°
5000
100
149°
5050


149°
5100
151°
5150
153°
5200
FR
FR
FR
FR
FR
0
0
5250
TD
FR
5300

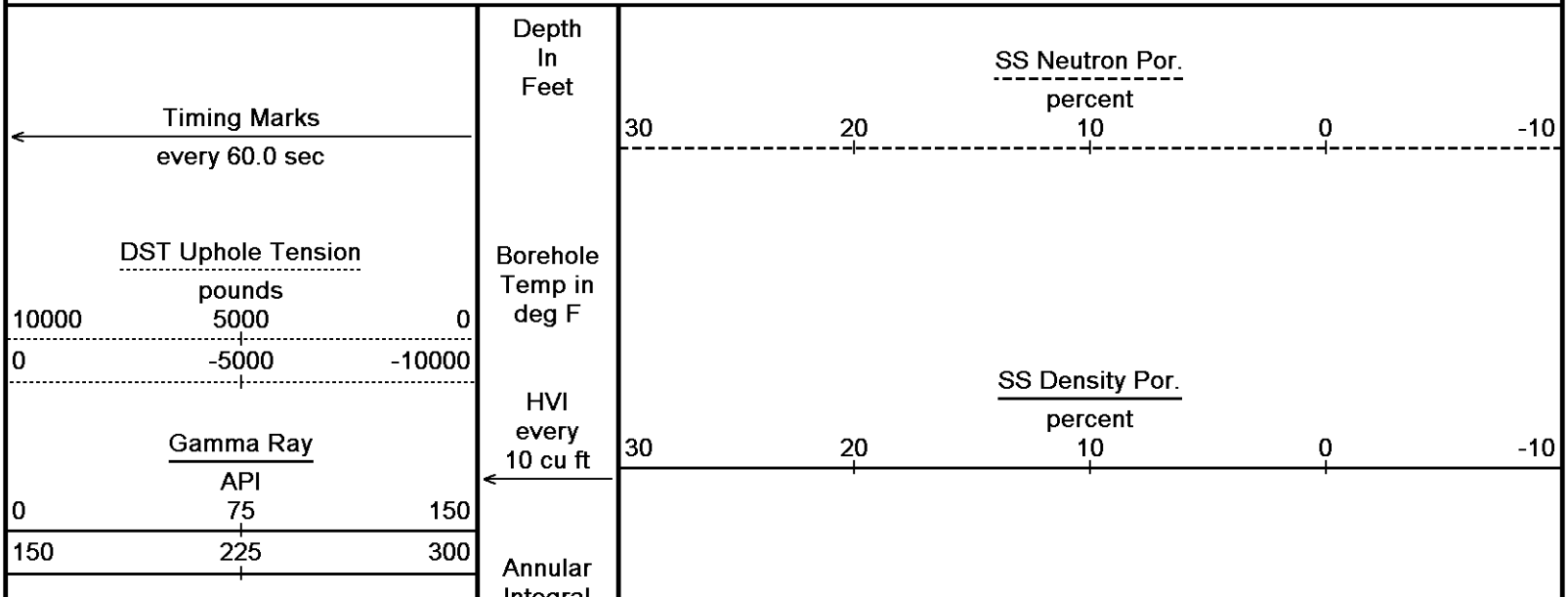


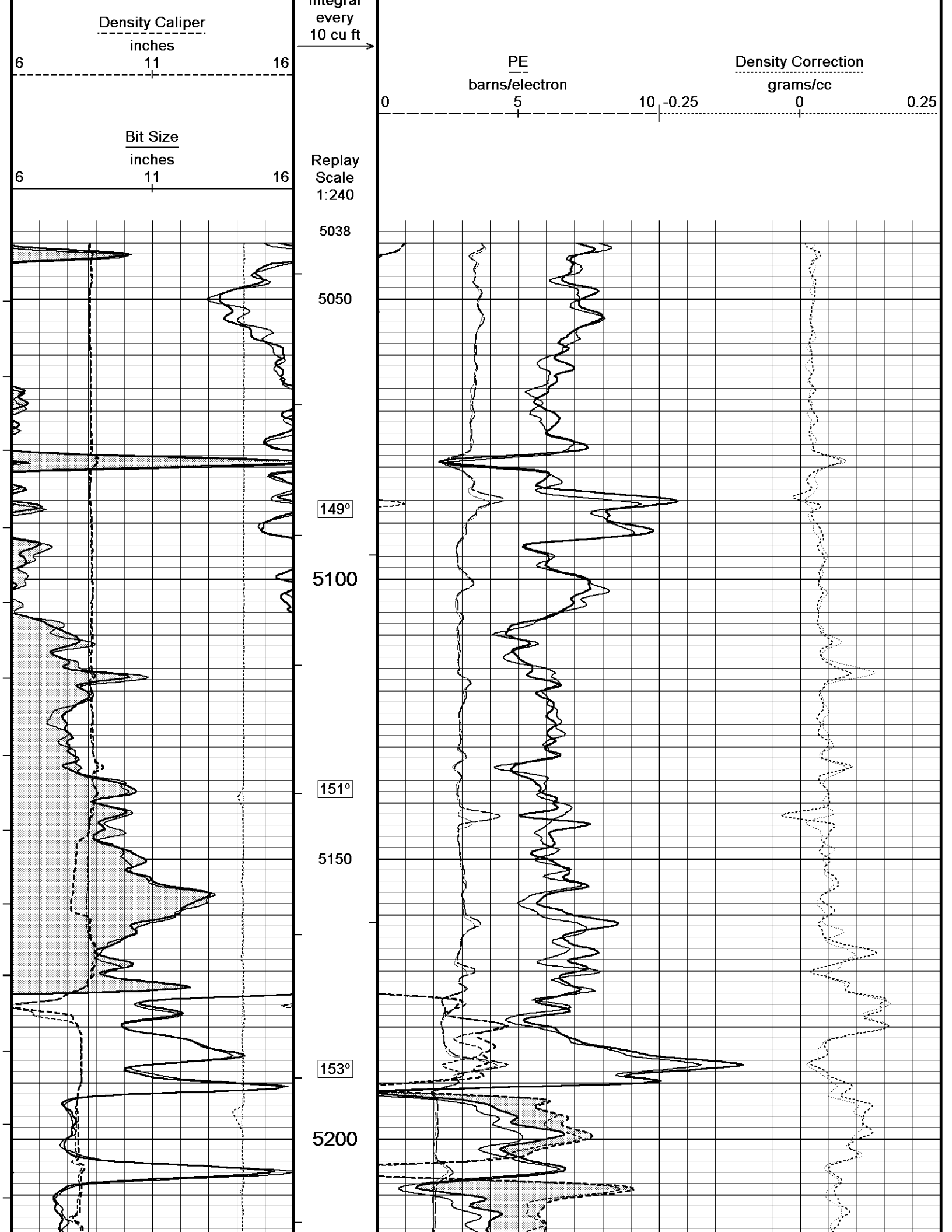
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 29-OCT-2012 09:00
Filename: C:\Users\E164620\AppData\Local\Temp\Wea...\ECGS No 6-19D WPD003-1_MAINPASS.dta — Recorded on 28-OCT-2012 20:01
System Versions: Processed with 13.03.7779 Plotted with 13.03.6602

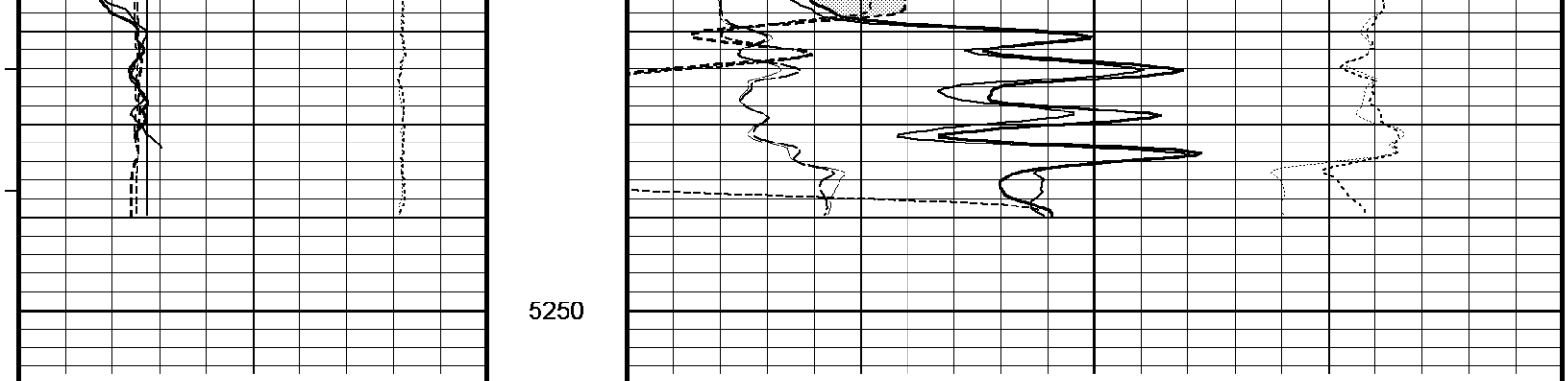
5 INCH MAIN LOG

OVERLAY SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 29-OCT-2012 09:00
Filename: C:\Users\E164620\AppData\Local\Temp\Wea...\ECGS No 6-19D WPD003-1_MAINPASS.dta — Recorded on 28-OCT-2012 20:01
Filename: C:\Users\E164620\AppData\Local\Temp\Weath...\ECGS No 6-19D WPD003-1_REPEAT.dta — Recorded on 28-OCT-2012 19:43
System Versions: Processed with 13.03.7779 Plotted with 13.03.6602




Density Caliper
inches
6
11
16
Integral every 10 cu ft
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.25
0
0.25
Bit Size
inches
6
11
16
Replay Scale 1:240
5038
5050
149°
5100
151°
5150
153°
5200



5250

Depth
In
Feet

SS Neutron Por.
percent
30 20 10 0 -10

Timing Marks
every 60.0 sec

DST Uphole Tension
pounds
10000 5000 0
0 -5000 -10000

Borehole
Temp in
deg F

HVI
every
10 cu ft

SS Density Por.
percent
30 20 10 0 -10

Gamma Ray
API
0 75 150
150 225 300

Annular
Integral
every
10 cu ft

Density Caliper
inches
6 11 16

PE
barns/electron
0 5 10

Density Correction
grams/cc
-0.25 0 0.25

Bit Size
inches
6 11 16

Replay
Scale
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 29-OCT-2012 09:00
Filename: C:\Users\E164620\AppData\Local\Temp\Wea...\ECGS No 6-19D WPD003-1_MAINPASS.dta — Recorded on 28-OCT-2012 20:01
Filename: C:\Users\E164620\AppData\Local\Temp\Weath...\ECGS No 6-19D WPD003-1_REPEAT.dta — Recorded on 28-OCT-2012 19:43
System Versions: Processed with 13.03.7779 Plotted with 13.03.6602

OVERLAY SECTION

5 INCH MAIN LOG

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 29-OCT-2012 09:00
Filename: C:\Users\E164620\AppData\Local\Temp\Wea...\ECGS No 6-19D WPD003-1_MAINPASS.dta — Recorded on 28-OCT-2012 20:01
System Versions: Processed with 13.03.7779 Plotted with 13.03.6602

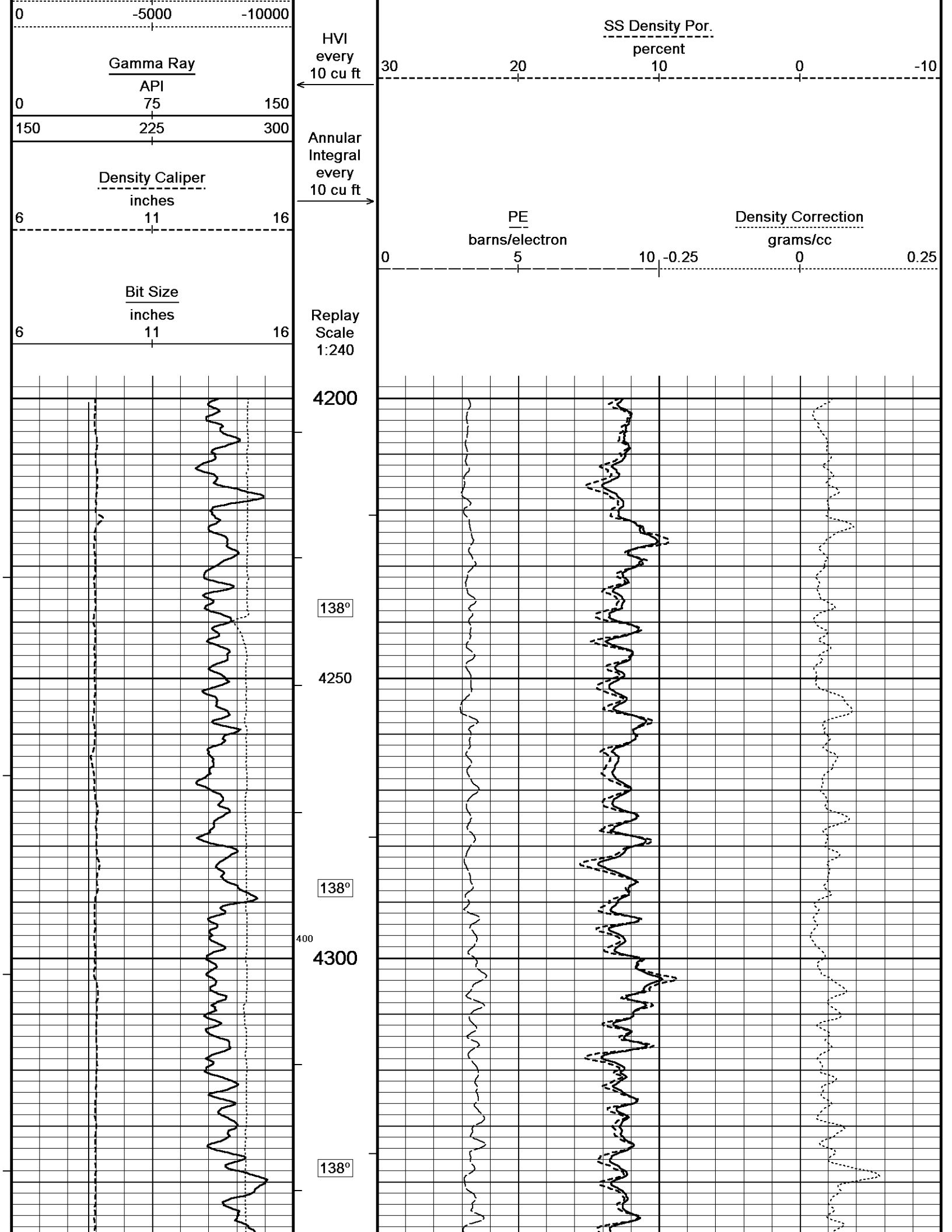
Depth
In
Feet

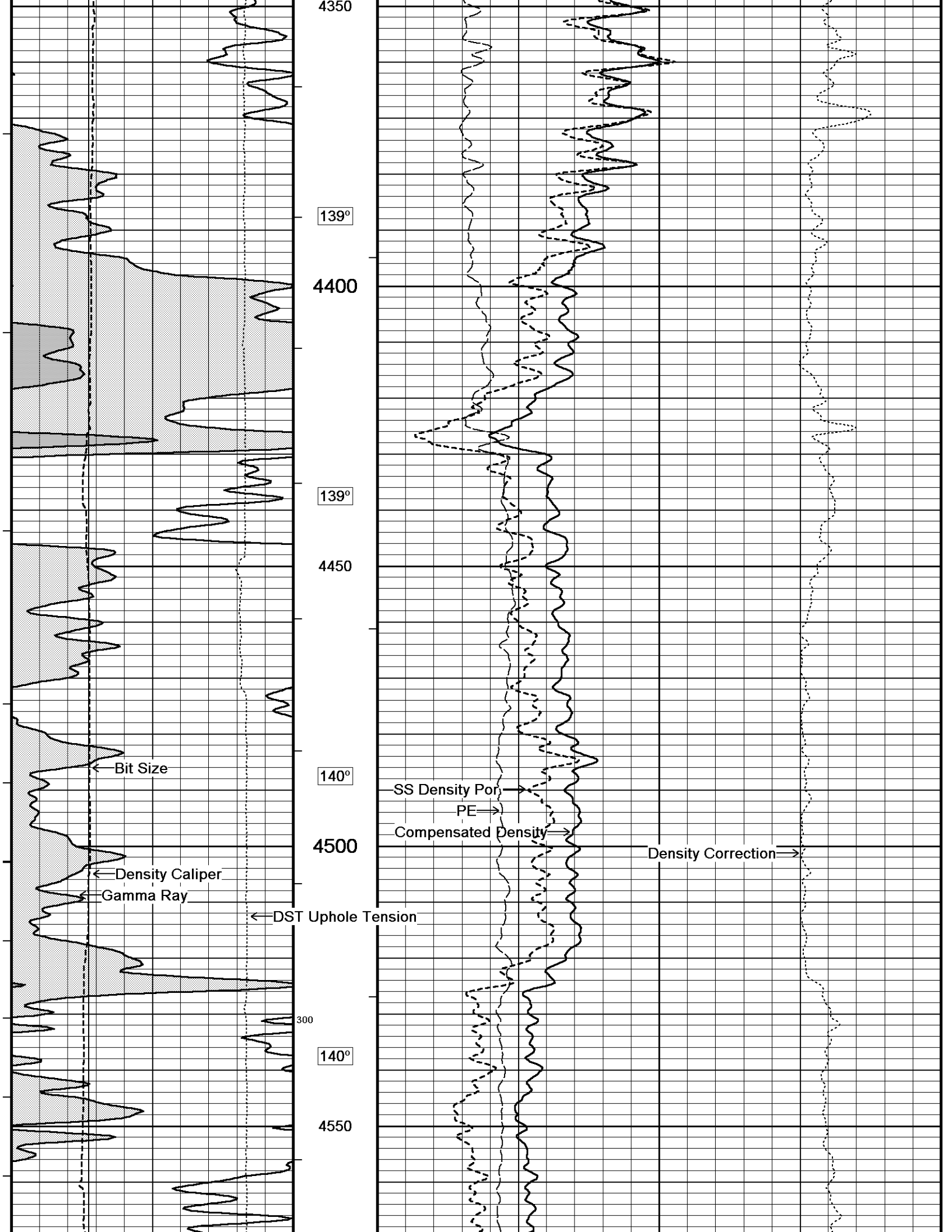
Compensated Density
grams/cc
2 2.25 2.50 2.75 3
1 1.25 1.50 1.75 2

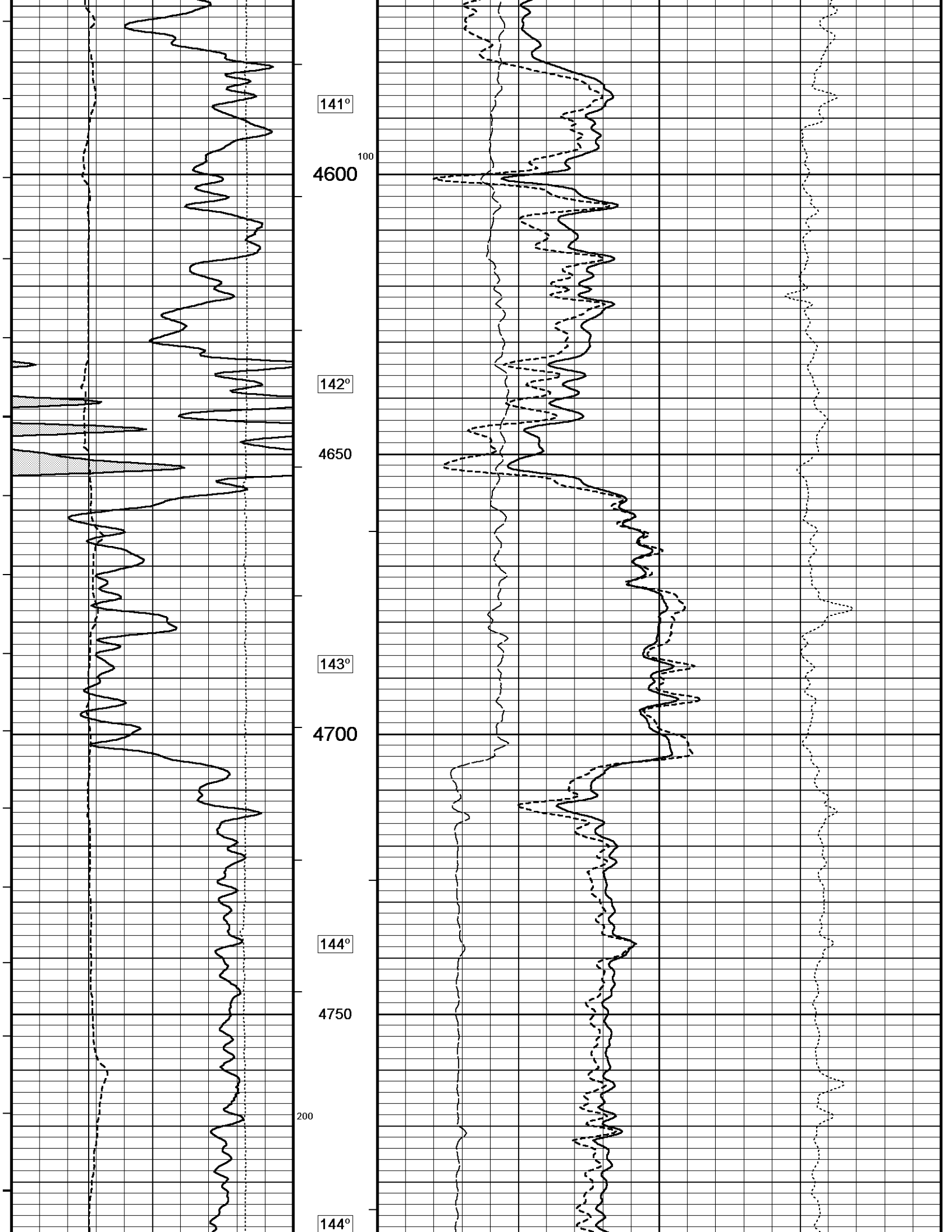
Timing Marks
every 60.0 sec

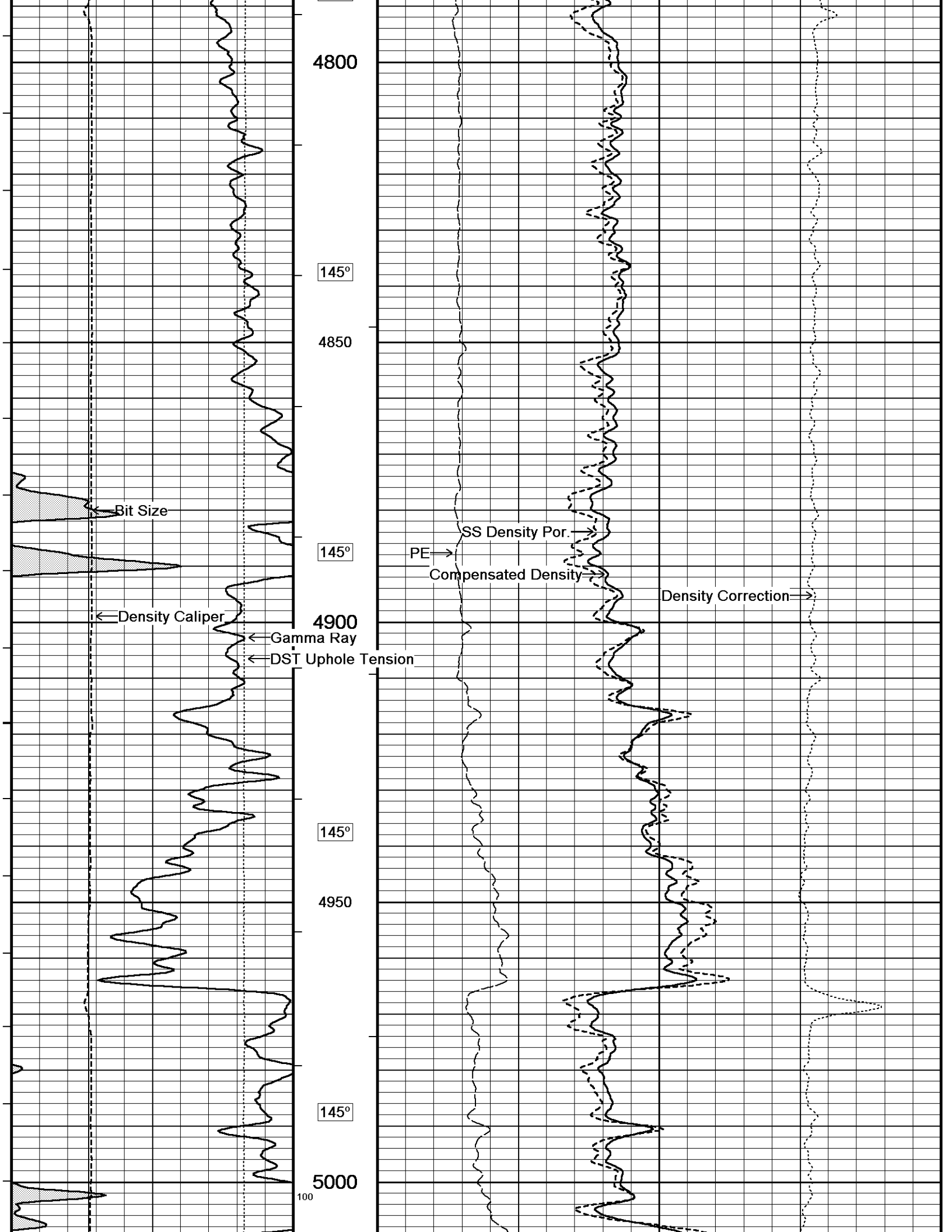
DST Uphole Tension
pounds
10000 5000 0

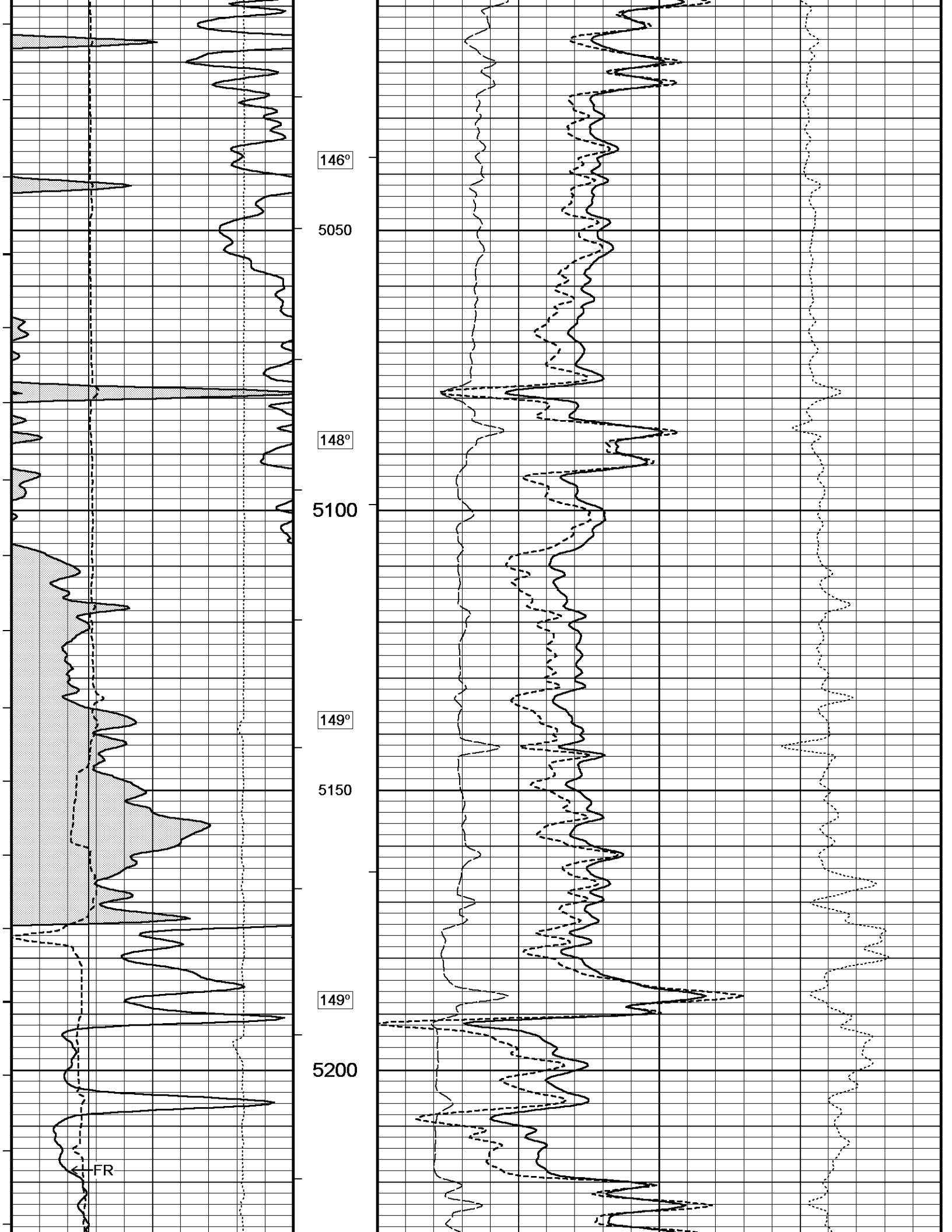
Borehole
Temp in
deg F

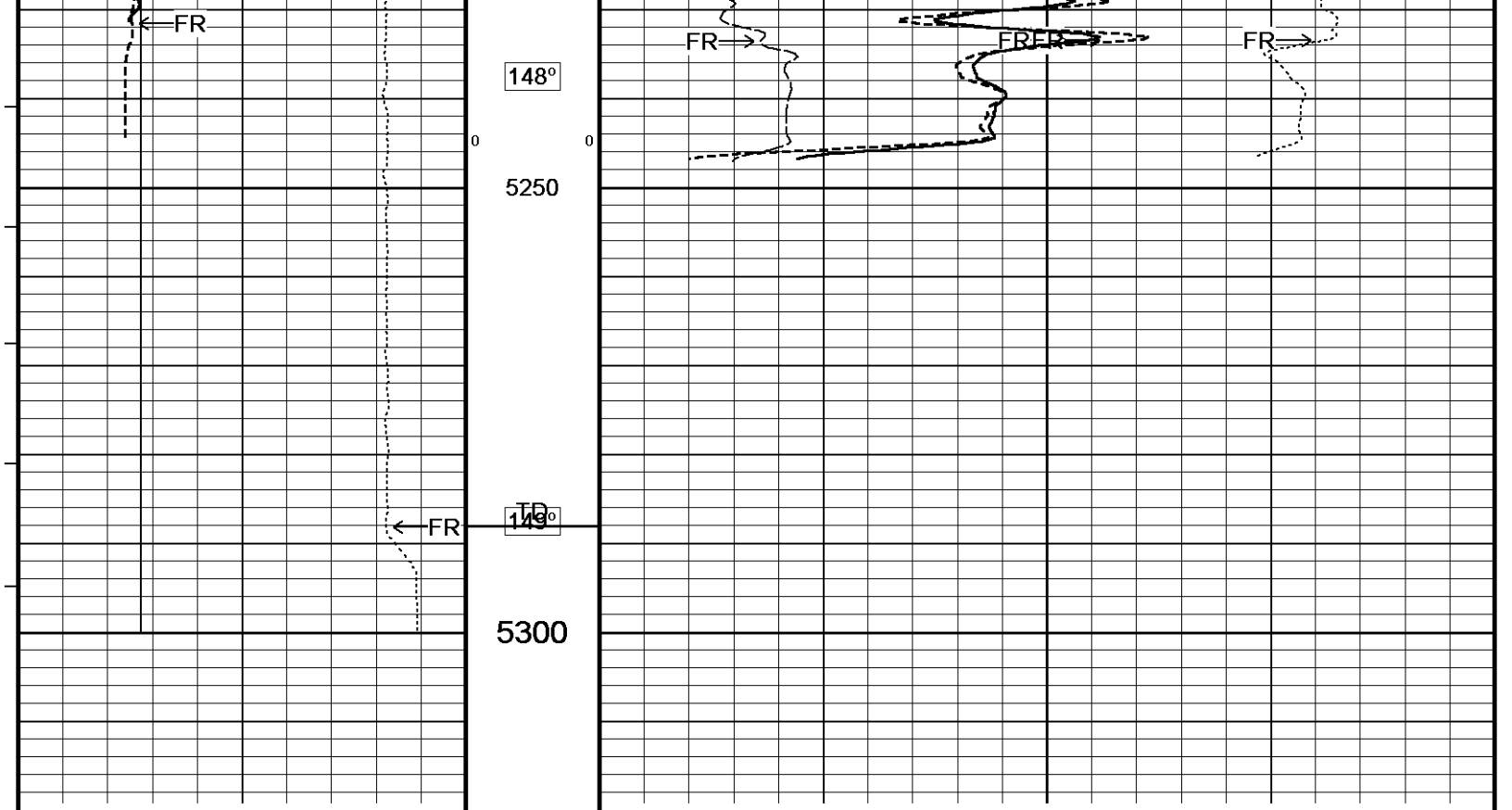

0
-5000
-10000
Gamma Ray
API
0
75
150
150
225
300
Density Caliper
inches
6
11
16
Bit Size
inches
6
11
16
HVI
every
10 cu ft
Annular
Integral
every
10 cu ft
Replay
Scale
1:240
SS Density Por.
percent
30
20
10
0
-10
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.25
0
0.25
4200
138°
4250
138°
400
4300
138°


4350
139°
4400
139°
4450
Bit Size
140°
SS Density Por
PE
Compensated Density
4500
Density Correction
Density Caliper
Gamma Ray
DST Uphole Tension
300
140°
4550


141°
100
4600
142°
4650
143°
4700
144°
4750
200
144°


4800
145°
4850
Bit Size
145°
SS Density Por.
PE
Compensated Density
Density Correction
Density Caliper
4900
Gamma Ray
DST Uphole Tension
145°
4950
145°
5000
100


146°
5050
148°
5100
149°
5150
149°
5200
FR



Depth In Feet

Timing Marks
every 60.0 sec

DST Uphole Tension
pounds
10000 5000 0
0 -5000 -10000

Gamma Ray
API
0 75 150
150 225 300

Density Caliper
inches
6 11 16

Bit Size
inches
6 11 16

Borehole Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:240

Compensated Density
grams/cc
2 2.25 2.50 2.75 3
1 1.25 1.50 1.75 2

SS Density Por.
percent
30 20 10 0 -10

PE
barns/electron
0 5 10

Density Correction
grams/cc
-0.25 0 0.25

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 29-OCT-2012 09:00
Filename: C:\Users\E164620\AppData\Local\Temp\Wea...\ECGS No 6-19D WPD003-1_MAINPASS.dta
Recorded on 28-OCT-2012 20:01
System Versions: Processed with 13.03.7779 Plotted with 13.03.6602

5 INCH MAIN LOG

BEFORE SURVEY CALIBRATION

Down-hole Tension Calibration All 000

Field Calibration on 24-OCT-2010 03:34

Reading No	Measured	0
1	15659.85	0.00
2	15734.68	370.00

General Constants All 000

Last Edited on 28-OCT-2012,19:11

General Parameters		
Mud Resistivity	3.330	ohm-metres
Mud Resistivity Temperature	62.700	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	7.000	inches
Caliper for Differential Caliper	Density Caliper	
Rwa Parameters		
Porosity used	Base Density Porosity	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	

Down-hole Tension Calibration SMS 0

Field Calibration on 28-OCT-2012 18:35

Reading No	Measured	Calibrated (lbs)
1	15363.35	0.00
2	16651.73	510.00

Gamma Calibration MCG-D.K 483

Field Calibration on 28-OCT-2012 08:43

	Measured	Calibrated (API)
Background	74	50
Calibrator (Gross)	832	569
Calibrator (Net)	758	519

Gamma Constants MCG-D.K 483

Last Edited on 05-OCT-2012,14:10

Gamma Calibrator Number	GRCC119	
Mud Density	1.00	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

SP Calibration MCG-D.K 483

Field Calibration on 23-SEP-2012,10:15

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

High Resolution Temperature Calibration MCG-D.K 483

Field Calibration on 30-SEP-2012,04:09

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

High Resolution Temperature Constants MCG-D.K 483

Last Edited on 02-OCT-2012,09:19

Pre-filter Length	11

Neutron Calibration MDN-B.J 372

Base Calibration on 09-OCT-2012 10:28
Field Check on 28-OCT-2012 09:04

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2898	88	3714	110
Ratio	32.889		33.764	

Field Calibrator at Base	Calibrated (cps)	
	2351	3475
Ratio	0.677	

Field Check	Calibrated (cps)	
	0	0
Ratio	0.000	

Neutron Constants MDN-B.J 372

Last Edited on 28-OCT-2012,16:55

Neutron Source Id	P31115B	
Neutron Jig Number	NJ5299	
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	7.00	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	None	
Formation Pressure	N/A	kpsi
Temperature Source	None	
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	

Navigation Constants MIE-A.A 207

Last Edited on 28-OCT-2012,16:53

Magnetic Declination	7.96	degrees	East

Magnetometer Parameters MIE-A.A 207

Date Of Last Magnetometer Calibration: 3-OCT-2012,17:23

	X Magnetometer	Y Magnetometer	Z Magnetometer
Slope	-1.000000	-1.000965	-0.989937
Offset	0.014422	-0.012785	0.011064

Magnetometer Constants MIE-A.A 207

Last Edited on

Magnetometer Calibrator Number: 000

Accelerometer Parameters MIE-A.A 207

Date Of Last Accelerometer Calibration: 28-OCT-2012,16:53

	X Accelerometer	Y Accelerometer	Z Accelerometer
Slope	-1.112364	-1.102657	-1.101773
Offset	0.011564	0.008310	0.010144

Accelerometer Constants MIE-A.A 207

Last Edited on 17-AUG-2011,09:33

Accelerometer Calibrator Number: 000

Accelerometer Temperature Characterisation

X Accelerometer

Serial Number	818			
Calibration Date	10-Mar-2009			
	B0	B1	B2	B3
Bias(g)	0.00000e+000	-9.54720e-006	-3.37284e-009	2.77661e-012
	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.89756e-004	3.97830e-007	3.83291e-010

Y Accelerometer

Serial Number	808			
Calibration Date	25-Feb-2009			
	B0	B1	B2	B3
Bias(g)	0.00000e+000	-2.75932e-006	-2.07753e-008	1.48470e-010
	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.72438e-004	2.93457e-007	8.36055e-010

Z Accelerometer

Serial Number	835			
Calibration Date	19-Mar-2009			
	B0	B1	B2	B3
Bias(g)	0.00000e+000	-9.62639e-006	-1.21867e-008	9.07240e-011
	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.81882e-004	3.88354e-007	7.48706e-010

Caliper Calibration MIE-A.A 207

Base Calibration on 28-OCT-2012 09:19
Field Calibration on 28-OCT-2012 09:22

Base Calibration

Reading No	Pads 1-5 Meas.	Pads 3-7 Meas.	Calibrator Size (in)
1	26888	26971	5.97
2	37117	37129	7.96
3	47211	46396	9.87
4	58796	57746	11.92
5	0	0	0.00

Reading No	Pad 2 Meas.	Pad 4 Meas.	Pad 6 Meas.	Pad 8 Meas.	Calibrator Size (in)
1	24831	25507	24808	25761	5.97
2	33668	34186	33550	34279	7.96
3	41838	42174	42148	42696	9.87
4	51734	51950	51983	52871	11.92
5	0	0	0	0	0.00

Field Calibration

Measured Pads 1-5 Caliper(in)	Measured Pads 3-7 Caliper(in)	Actual Caliper(in)
7.96	7.91	7.96

Measured Pad 2 Caliper(in)	Measured Pad 4 Caliper(in)	Measured Pad 6 Caliper(in)	Measured Pad 8 Caliper(in)	Actual Caliper(in)
3.96	3.96	4.00	4.00	7.96

Caliper Constants MIE-A.A 207

Last Edited on 12-OCT-2011,10:05

Caliper Difference for BRKT	0.120	inches

Imager Pad Check MIE-A.A 207

Field Check on

Pad 1	Pad Not Tested	Pad 5	Pad Not Tested
Pad 2	Pad Not Tested	Pad 6	Pad Not Tested
Pad 3	Pad Not Tested	Pad 7	Pad Not Tested
Pad 4	Pad Not Tested	Pad 8	Pad Not Tested

Compact Micro Imager Constants MIE-A.A 207

Last Edited on 28-OCT-2012,09:23

Sonde Configuration	Imager Mode	degrees
Arm-Pad Kit	Normal Pads (12.25 in)	
Centre Pad 1 Rotational Offset	0.00	
Image/Borehole Ovality Reference	Azimuth of Pad 1	degrees
Non Active Buttons	Omit	feet
Search Angle	0.00	feet
Correlation Interval	3.28	mAmp
Correlation Step	1.64	mAmp
Current Offset	0.0000	
Squasher Start	0.0500	
Image Processing	Enabled	

FE Calibration MFE-A.A 76

Base Calibration on 08-OCT-2012 10:03
Field Check on 28-OCT-2012 05:48

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	965.4	126.8
Base Check		279.7
Field Check		279.8

FE Constants MFE-A.A 76

Last Edited on 28-OCT-2012,16:57

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	1.0	inches

High Resolution Temperature Calibration MAI-B.A 219

Field Calibration on 10-AUG-2011,00:10

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

High Resolution Temperature Constants MAI-B.A 219

Last Edited on 30-SEP-2012,04:08

Pre-filter Length	11

Induction Calibration MAI-B.A 219

Base Calibration on 08-MAY-2012,15:56
Field Check on 28-OCT-2012 05:39

Base Calibration

Test Loop Calibration	Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High
1	17.4	478.1	9.3	966.2
2	5.8	380.3	7.6	821.4
3	3.5	258.5	5.2	566.0
4	1.9	136.0	2.6	279.2

Array Temperature	77.2	Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)		
	Low	High	Low	High	
1	0.0	0.0	12.4	3793.5	
2	0.0	0.0	30.9	3537.3	
3	0.0	0.0	28.6	3056.1	
4	0.0	0.0	19.3	2028.4	
Deep	0.0	0.0	16.5	1948.6	
Medium	0.0	0.0	42.7	4088.7	
Shallow	0.0	0.0	47.6	5283.8	
Array Temperature	0.0		68.4		Deg F

Induction Constants MAI-B.A 219

Last Edited on 28-OCT-2012,16:58

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	1.00	inches
Number of Fins on Stand-off	6.0000	
Stand-off Fin Angle	60.00	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	

Caliper Calibration MPD-B 183

Base Calibration on 18-OCT-2012 14:40
Field Calibration on 28-OCT-2012 06:03

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	17392	3.99
2	25904	5.97
3	34387	7.96
4	42672	9.87
5	52112	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.86	7.96

Photo Density Calibration MPD-B 183

Base Calibration on 18-OCT-2012 14:23
Field Check on 28-OCT-2012 06:00

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	39817	13046	52994	19123
Reference 2	18730	1788	25185	2558

Field Check at Base

639.0	756.5

Field Check

640.8	751.3

PE Calibration

Base Calibration	Measured			Calibrated
	WS	WH	Ratio	Ratio
Background	118	573		
Reference 1	13710	39721	0.347	0.309
Reference 2	5433	18657	0.294	0.274

Field Check at Base

117.9	572.8

Field Check

117.6	578.7

Density Constants MPD-B 183

Last Edited on 28-OCT-2012,16:56

Density Source Id	P15771B	
Nylon Calibrator Number	527	
Aluminium Calibrator Number	527	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.19	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	

DOWNHOLE EQUIPMENT

C:\Users\E164620\AppData\Local\Temp\Weatherford PreView\5\ECGS No 6-19D WPD003-1_MAINPASS.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

SHA-H Compact Swivel Head Adaptor
SHA-H 142 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

Compact Comms Gamma
MCG-D.K 483 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Neutron
MDN-B.J 372 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
MPD-B 183 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

MIS-D.B Compact Inline Bowspring sub
MIS-D.B 660 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 112 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

MIS-E.A Compact Inline Standoff sub
MIS-E.A 334 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 143 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SHA-J.B Compact Swivel Head Adaptor
SHA-J.B 574 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

Compact MMI Memory Section
MIM-A.A 207 LG: 4.65 ft WT: 26.5 lb OD: 2.24 in

Compact MMI Electrode Section
MIE-A.A 207 LG: 13.96 ft WT: 99.2 lb OD: 4.09 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 583 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

Compact Focussed Electric
MFE-A.A 76 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Induction
MAI-B.A 219 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 79.30 ft Weight: 608.5 lb

70.14 ft	GRGC - Gamma Ray
67.96 ft	CCLG - Casing Collar Locator
67.23 ft	CGXT - MCG External Temperature
63.68 ft	NPRS - Sandstone Neutron Por.
56.44 ft	CLDC - Density Caliper
54.51 ft	DPRS - Sandstone Density Por.
54.51 ft	DCOR - Density Correction
54.45 ft	PDPE - PE
21.27 ft	IECY - MIE Caliper Y
21.27 ft	IECX - MIE Caliper X
20.75 ft	IMZA - Z Accelerometer
20.75 ft	IAP1 - Azimuth of Reference
20.75 ft	ITLT - Borehole Tilt
20.75 ft	DI48 - Imager Diameter 4 - 8
20.75 ft	DI26 - Imager Diameter 2 - 6
20.75 ft	IMGR - MMI Image
13.72 ft	FEFC - Shallow FE (Phase Corr.)
3.34 ft	R20O - Array Ind. One Res 20
3.34 ft	R30O - Array Ind. One Res 30
3.34 ft	R60O - Array Ind. One Res 60
3.34 ft	R40O - Array Ind. One Res 40
3.34 ft	R85O - Array Ind. One Res 85
3.34 ft	RTAO - Array Ind. One Res Rt
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

COMPANY	EAST CHEYENNE GAS STORAGE LLC
WELL	ECGS No 6-19D WPD003-1
FIELD	PEETZ WEST
PROVINCE/COUNTY	LOGAN
COUNTRY/STATE	USA/COLORADO

Elevation Kelly Bushing	4566.00	feet	First Reading	5234.00	feet
Elevation Drill Floor	4565.00	feet	Depth Driller	5285.00	feet
Elevation Ground Level	4553.00	feet	Depth Logger	5288.00	feet

Weatherford®

PHOTO DENSITY COMPENSATED NEUTRON LOGS