Weatherford®

COMPACT PHOTO-DENSITY COMPENSATED NEUTRON MICRO-RESISTIVITY

COMPANY	MURFIN DRILLING COMPANY, INC.
WELL	DAUNTLESS #15-1
FIELD	WILDCAT
PROVINCE/COUNTY	LINCOLN
COUNTRY/STATE	U.S.A. / COLORADO
LOCATION	990' FSL & 1650' FEL

SEC 1	TWP 9S	RGE 56W	Other Services
Latitude	39.290150		MAI / MFE MSS
Longitude	-103.608500		
API Number	05-073-06732		

Permanent Datum GL, Elevation 5541 feet
Log Measured From KB, 13.00 feet above Permanent Datum
Drilling Measured From KB

Elevations:	feet
KB	5554.00
DF	5552.00
GL	5541.00

Date	16-DEC-2017			
Run Number	ONE			
Service Order	17937-200624549			
Depth Driller	8820.00	feet		
Depth Logger	8819.00	feet		
First Reading	8785.00	feet		
Last Reading	4000.00	feet		
Casing Driller	420.00	feet		
Casing Logger	478.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	WBM			
Density / Viscosity	9.35 lb/USg	46.00 sec/qt		
PH / Fluid Loss	9.00	5.20 ml/30Min		
Sample Source	FLOWLINE			
Rm @ Measured Temp	0.93 @ 99.0	ohm-m		
Rmf @ Measured Temp	0.74 @ 99.0	ohm-m		
Rmc @ Measured Temp	1.12 @ 99.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.51 @186.0	ohm-m		
Time Since Circulation	8 HOURS			
Max Recorded Temp	186.00	deg F		
Equipment / Base	13057	OKC		
Recorded By	M. MCGLOTHLIN		H. LEJEUNE	
Witnessed By	WES HANSEN		SCOTT ROBINSON	

BOREHOLE RECORD

Last Edited: 16-DEC-2017 16:40

Bit Size inches	Depth From feet	Depth To feet
7.875	420.00	8820.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	420.00	24.00

REMARKS

WLS SOFTWARE VERSION: 17.05.5956

TOOLSTRING: SHA, MCG, MMR, MDN (DUAL BOWSPRING ECCENTRALIZER), MPD (8" PROFILE PLATE), SKJ,
MFE (ONE 0.5" STANDOFF), MSS (0.5" STANDOFF), MAI (TWO 0.5" STANDOFFS)

LOG INTERVALS REQUESTED:
MICROLOG / DENSITY / NEUTRON: TD - 4000 FT
GAMMA RAY / INDUCTION / CALIPER / SONIC: TD - CASING

LIMESTONE MATRIX USED FOR POROSITY CALCULATION, 2.71 G/CC.

TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 4220 CU FT.
ANNULAR HOLE VOLUME FROM TD TO SURFACE CASING WITH 5.5" FUTURE CASING: 2840 CU FT.

MUD PROPERTIES:
CHLORIDES: 720 mg/L
LCM: 9 lb/bbl

CREW: M. MCGLOTHLIN, H. LEJEUNE, D. GILLISPIE.

LOG RESPONSES EFFECTED BY HOLE RUGOSITY AND WASHOUTS

RESISTIVITY ANOMALY OBSERVED FROM 630 FEET TO CASING SHOE AT 478 FEET.
ANOMALY REPEATED DURING CASING CHECK AND SUBSEQUENT PASSES.

5 INCH MAIN PASS - POROSITY 1:240

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 16-DEC-2017 19:36
Filename: C:\Minimus 17.05.5956\Data\MURFIN DRILLING (DAUNTLESS #15-1)\MAIN PASS.dta
Recorded on 16-DEC-2017 13:24
System Versions: Logged with 17.05.5956 Plotted with 17.05.5956

Timing Marks
every 60.0 sec

Density Caliper
inches
6 11 16

MMR Caliper
inches
6 11 16

MCG BH Corrected Gamma
API
0 75 150
150 225 300

Depth
In
Feet

Borehole
Temp in
deg F

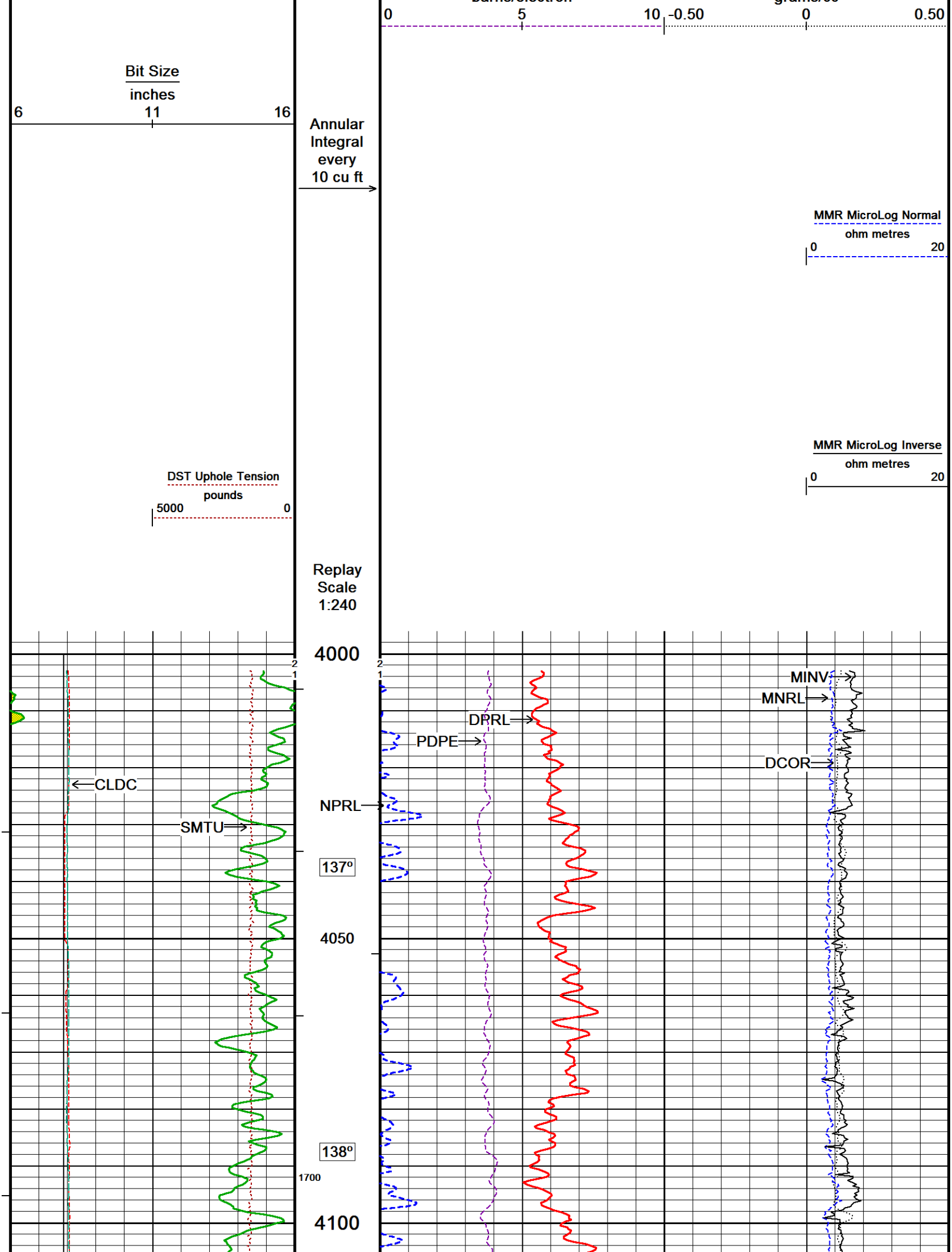
HVI
every
10 cu ft

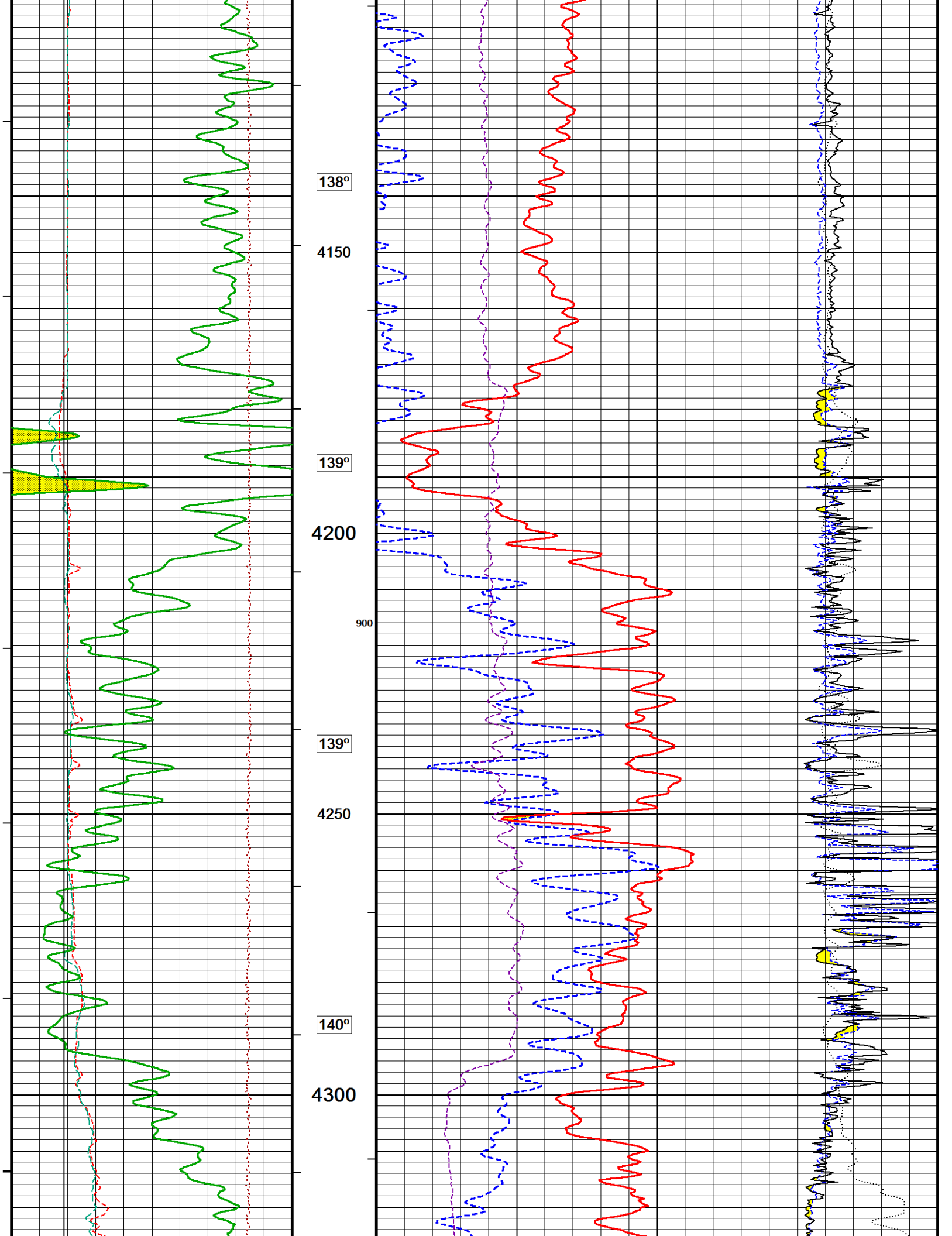
Limestone Neutron Por.
percent
30 20 10 0 -10

Limestone Density Por.
percent
30 20 10 0 -10

PE
barns/electron

Density Correction
grams/cc


0
5
10
-0.50
0
0.50
Bit Size
inches
6
11
16
Annular
Integral
every
10 cu ft
MMR MicroLog Normal
ohm metres
0
20
MMR MicroLog Inverse
ohm metres
0
20
DST Uphole Tension
pounds
5000
0
Replay
Scale
1:240
4000
2
1
CLDC
SMTU
NPRL
DPRL
PDPE
MINV
MNRL
DCOR
137°
4050
138°
1700
4100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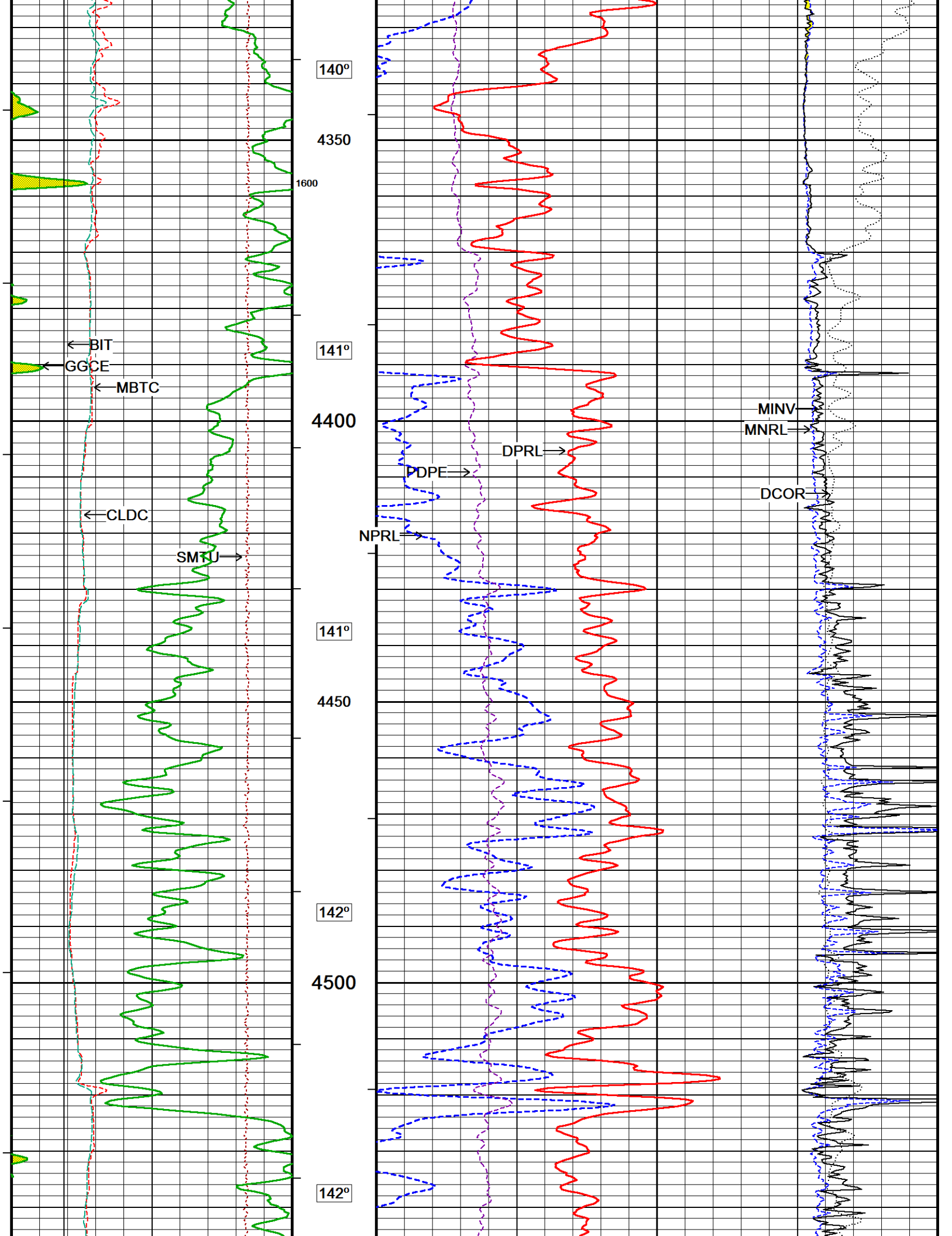
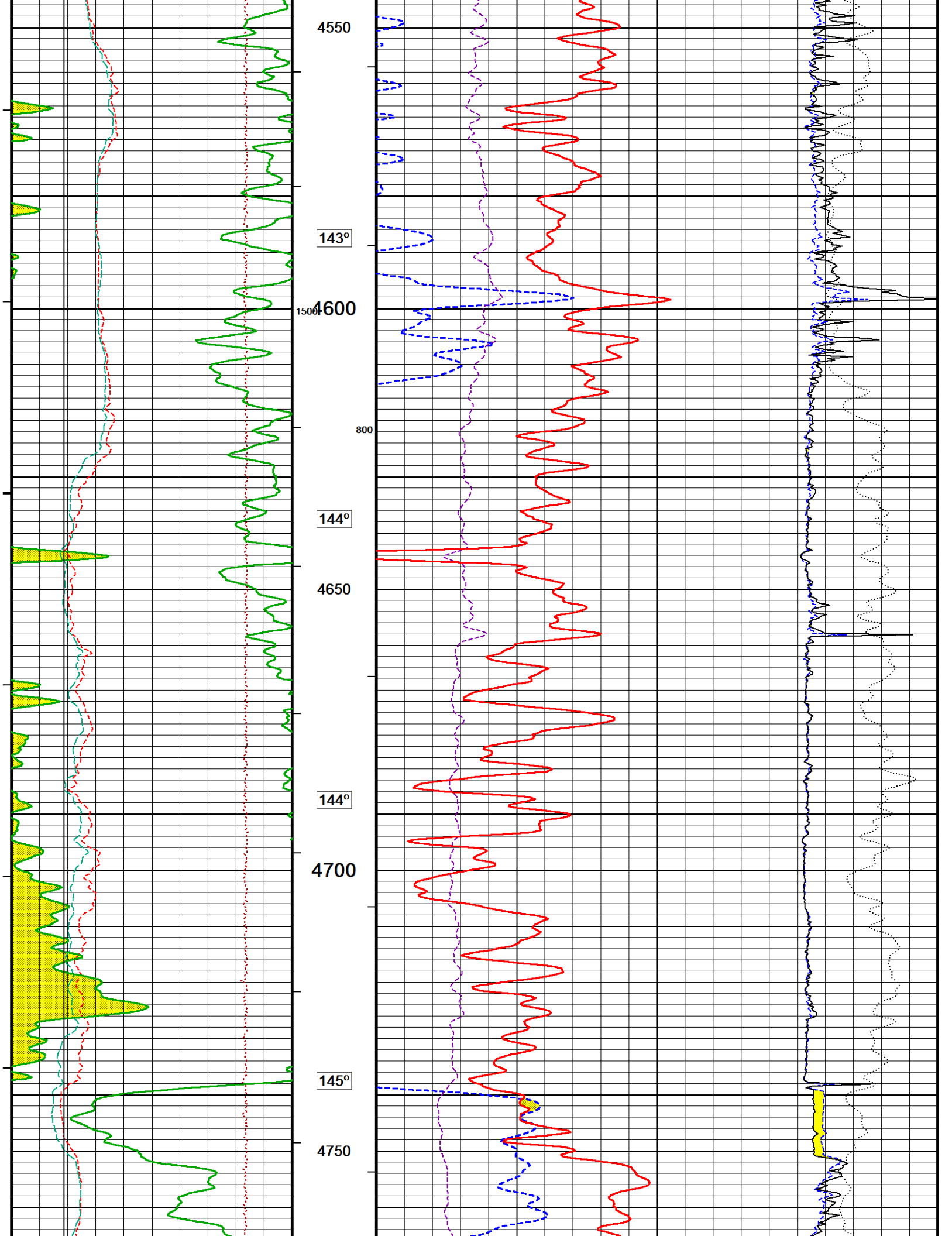
4150
139º
4200
900
139º
4250
140º
4300


140°
4350
1600
141°
4400
141°
4450
142°
4500
142°
BIT
GGCE
MBTC
CLDC
SMTU
NPRL
PDPE
DPRL
MINV
MNRL
DCOR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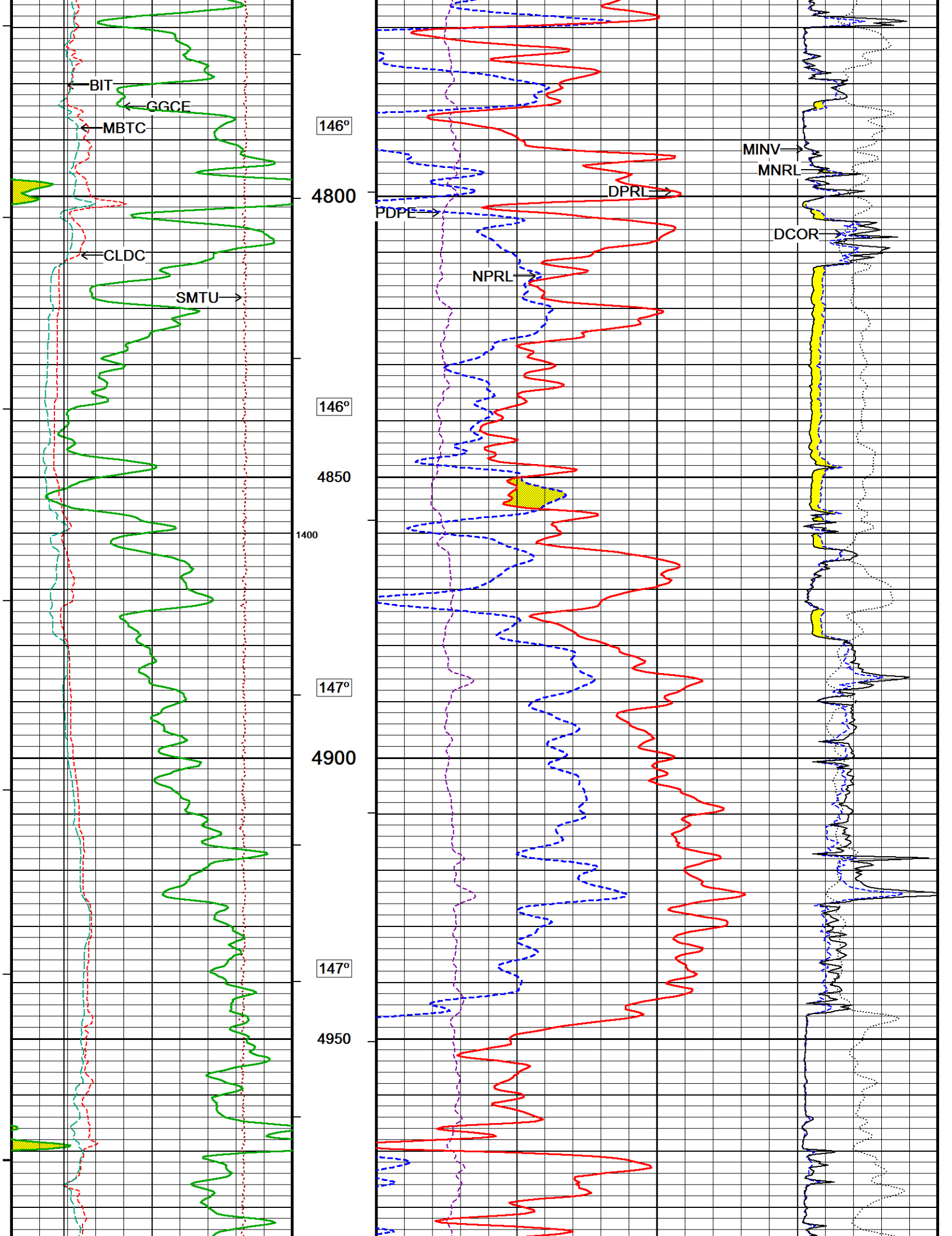
4600
800
144°
4650
144°
4700
145°
4750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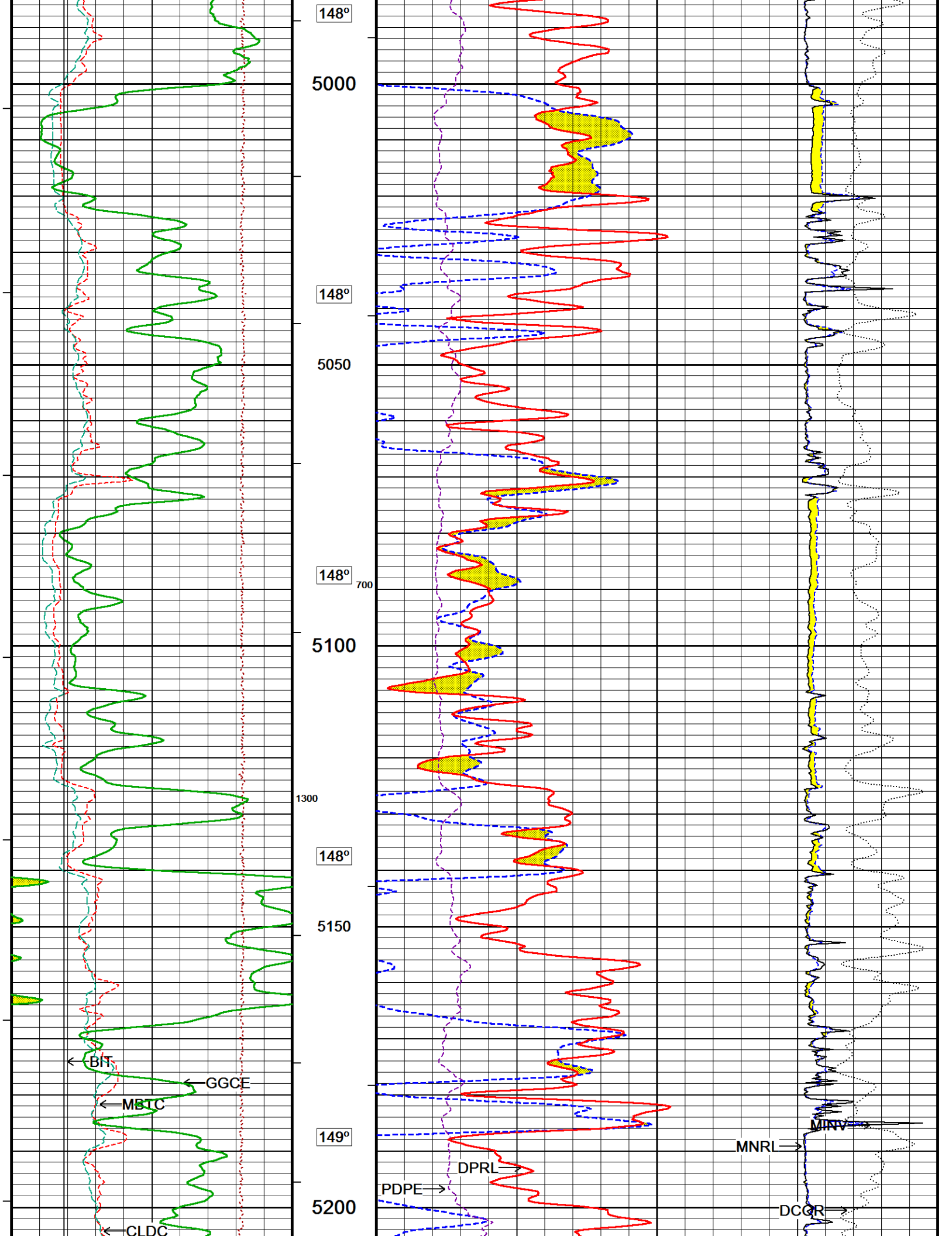
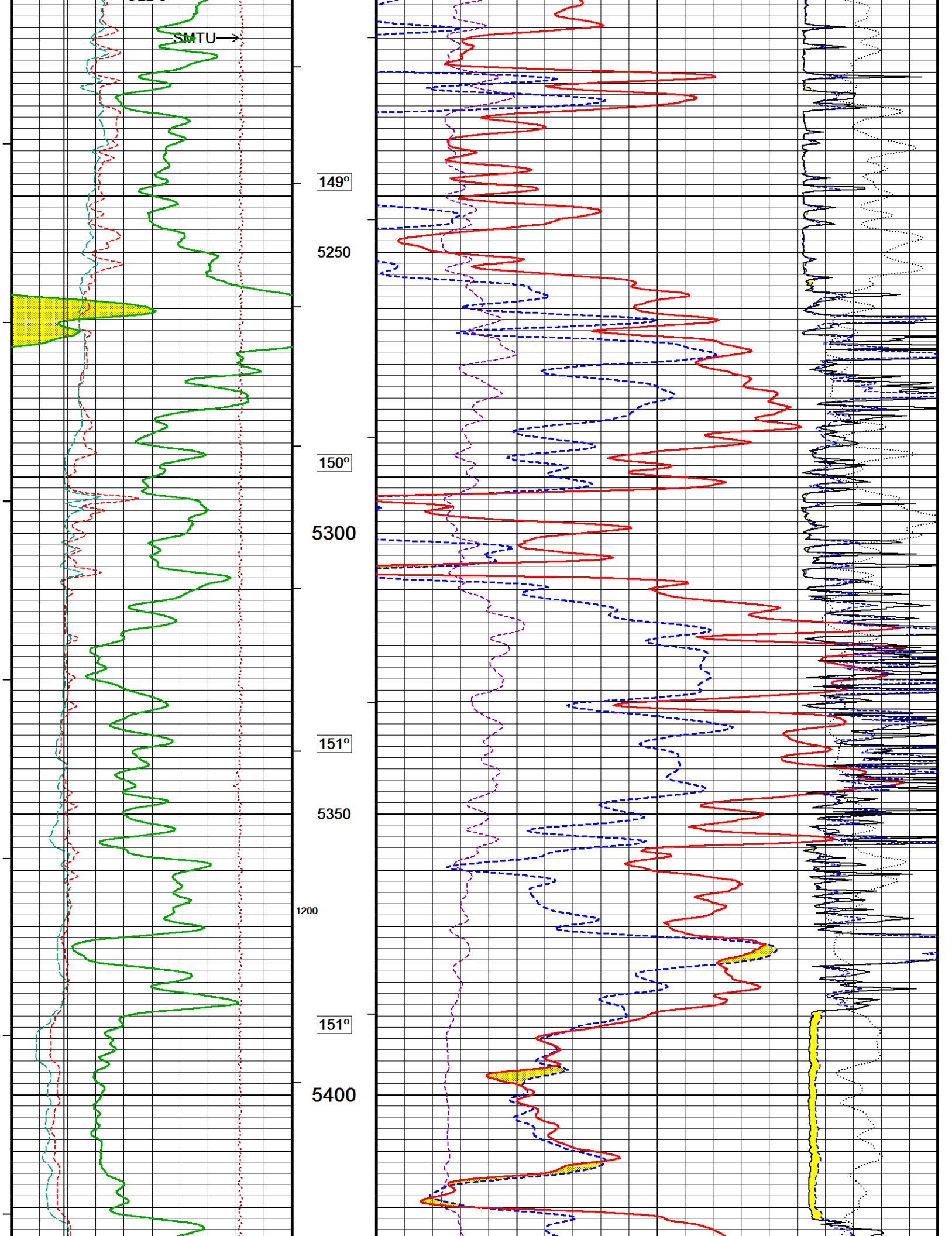
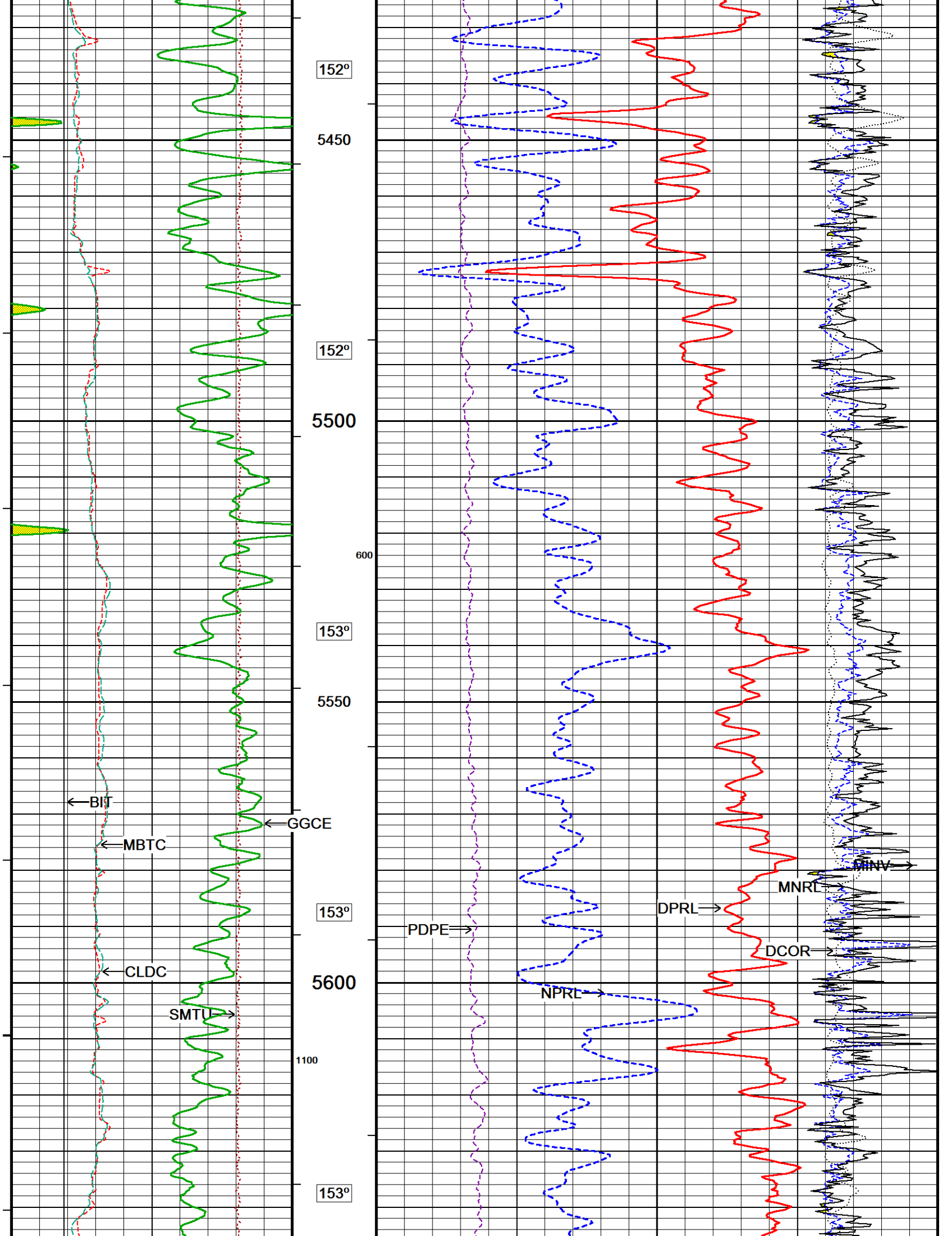
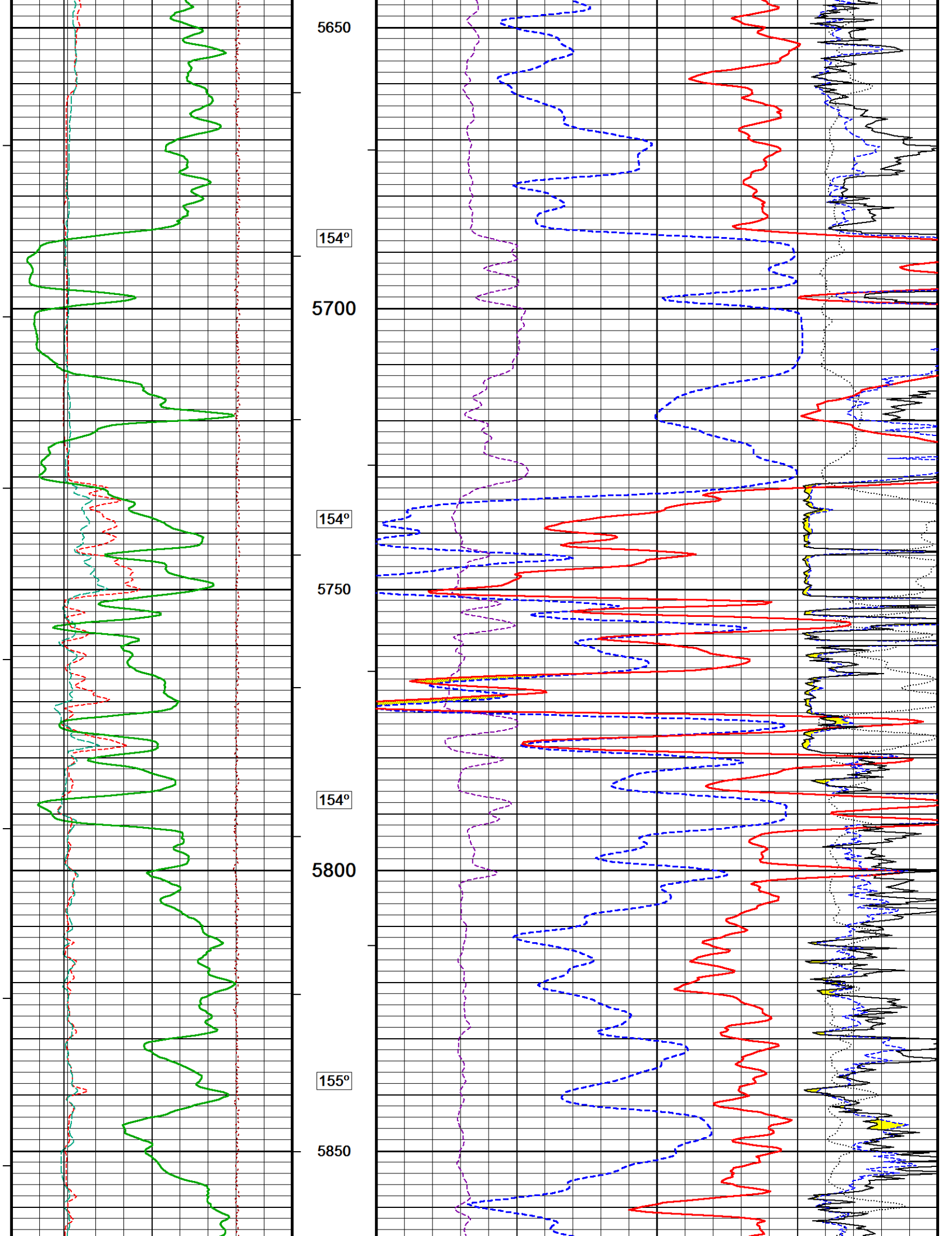
GGCE
MBTC
CLDC
SMTU
146°
4800
146°
4850
1400
147°
4900
147°
4950
PDPE
DPRL
NPRL
MINV
MNRL
DCOR


148°
5000
148°
5050
148°
700
5100
1300
148°
5150
149°
5200
BIT
GGCE
MBTC
CLDC
DPRL
PDPE
MINV
MNRL
DCOR


SMTU
149°
5250
150°
5300
151°
5350
1200
151°
5400


152°
5450
152°
5500
600
153°
5550
BIT
GGCE
MBTC
153°
PDPE
CLDC
5600
SMTU
NPRL
1100
153°
DPRL
MINV
MNRL
DCOR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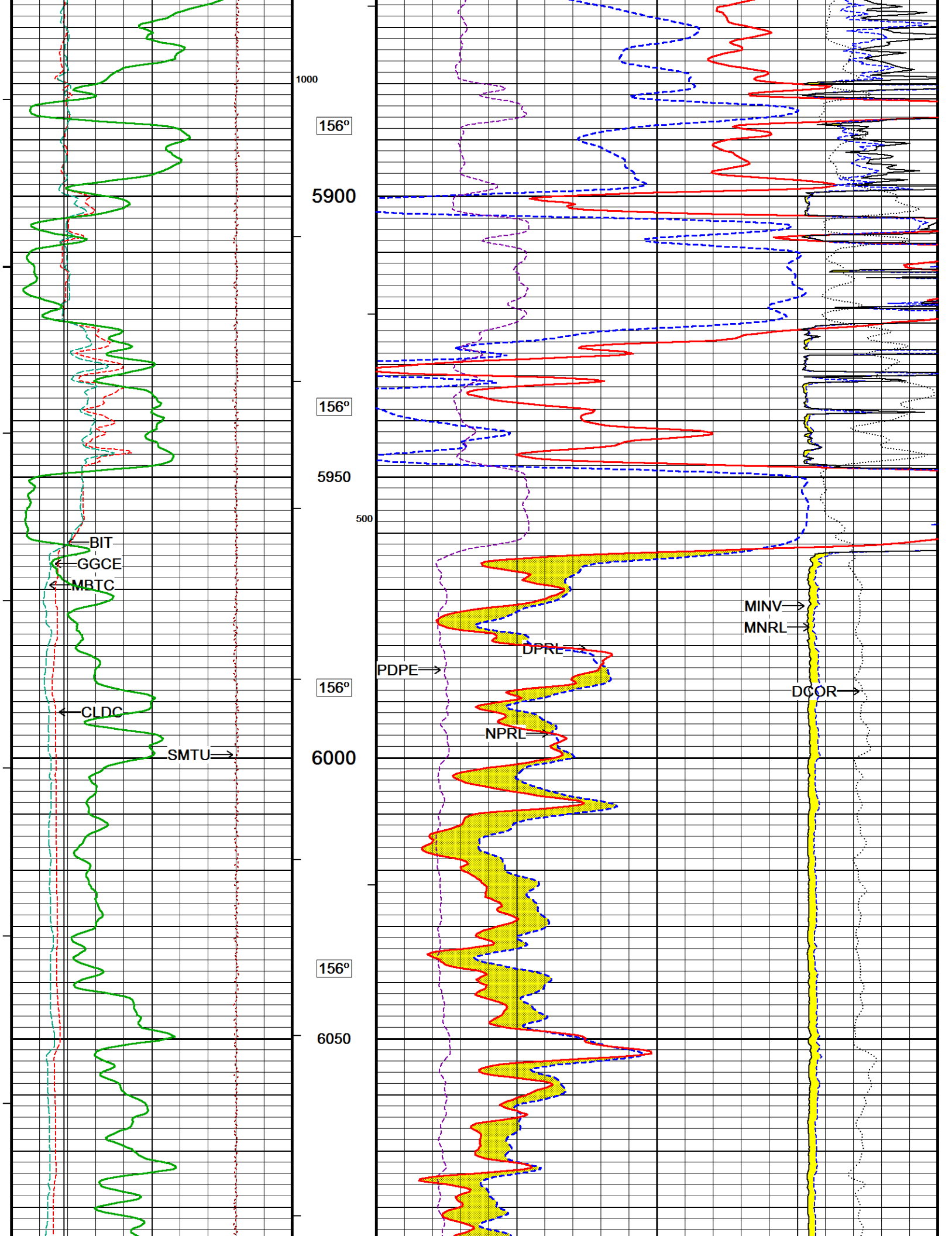
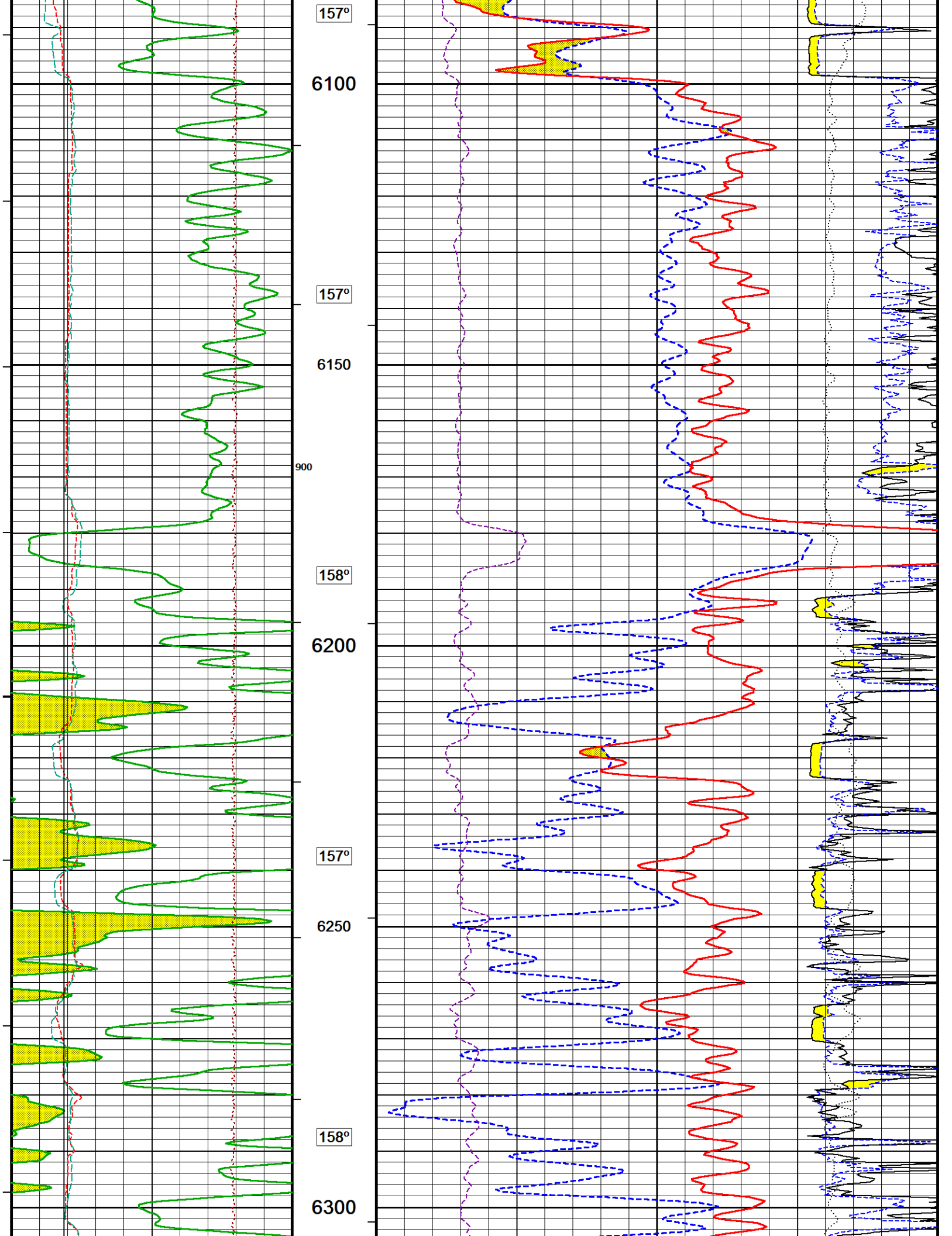
154°
5700
154°
5750
154°
5800
155°
5850


1000
156°
5900
156°
5950
500
BIT
GGCE
MBTC
CLDC
SMTU
PDPE
DPRL
NPRL
MINV
MNRL
DCOR
156°
6000
156°
6050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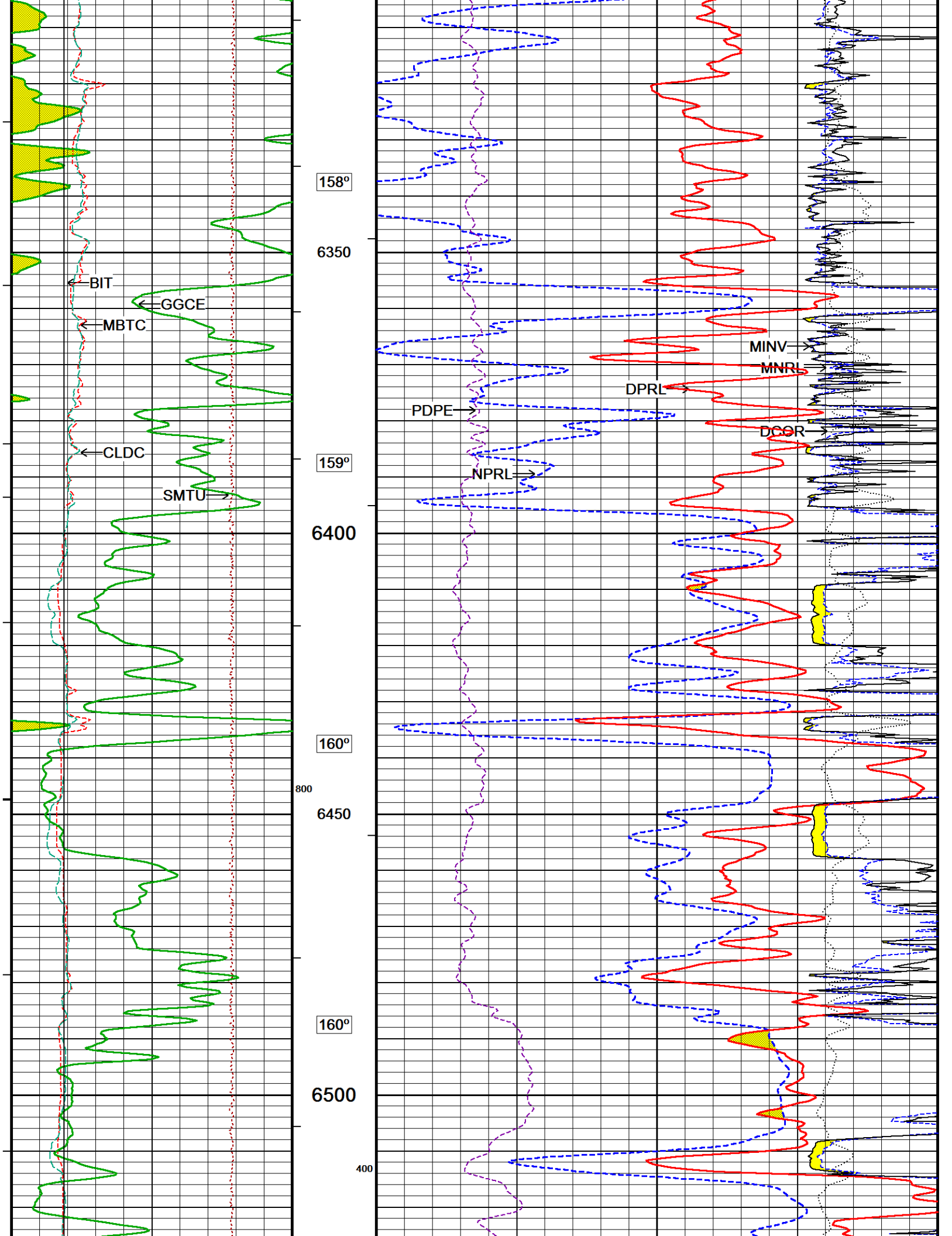
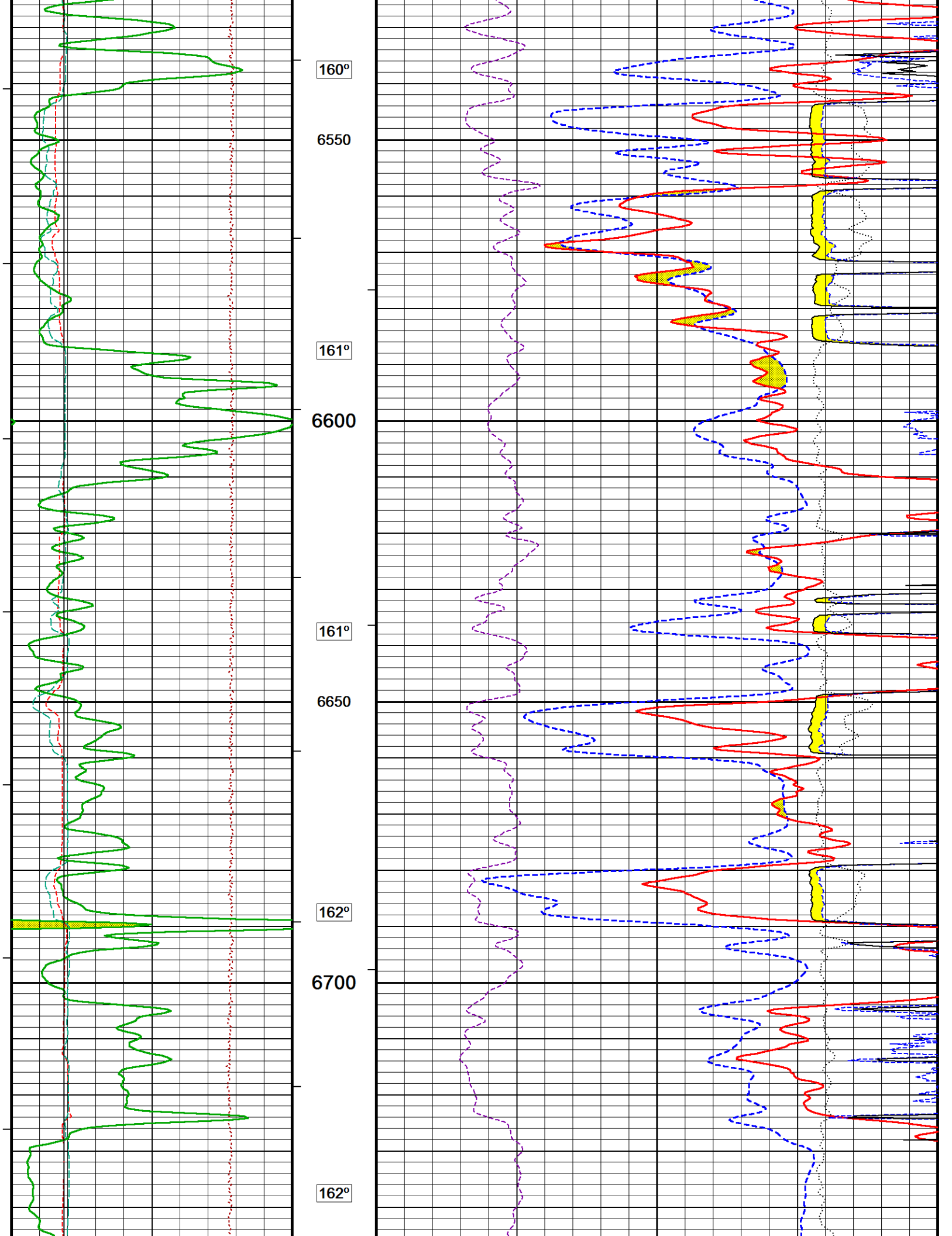
6100
157°
6150
900
158°
6200
157°
6250
158°
6300


BIT
GGCE
MBTC
CLDC
SMTU
158º
6350
159º
6400
160º
800
6450
160º
6500
400
PDPE
NPRL
DPRL
MINV
MNRL
DCOR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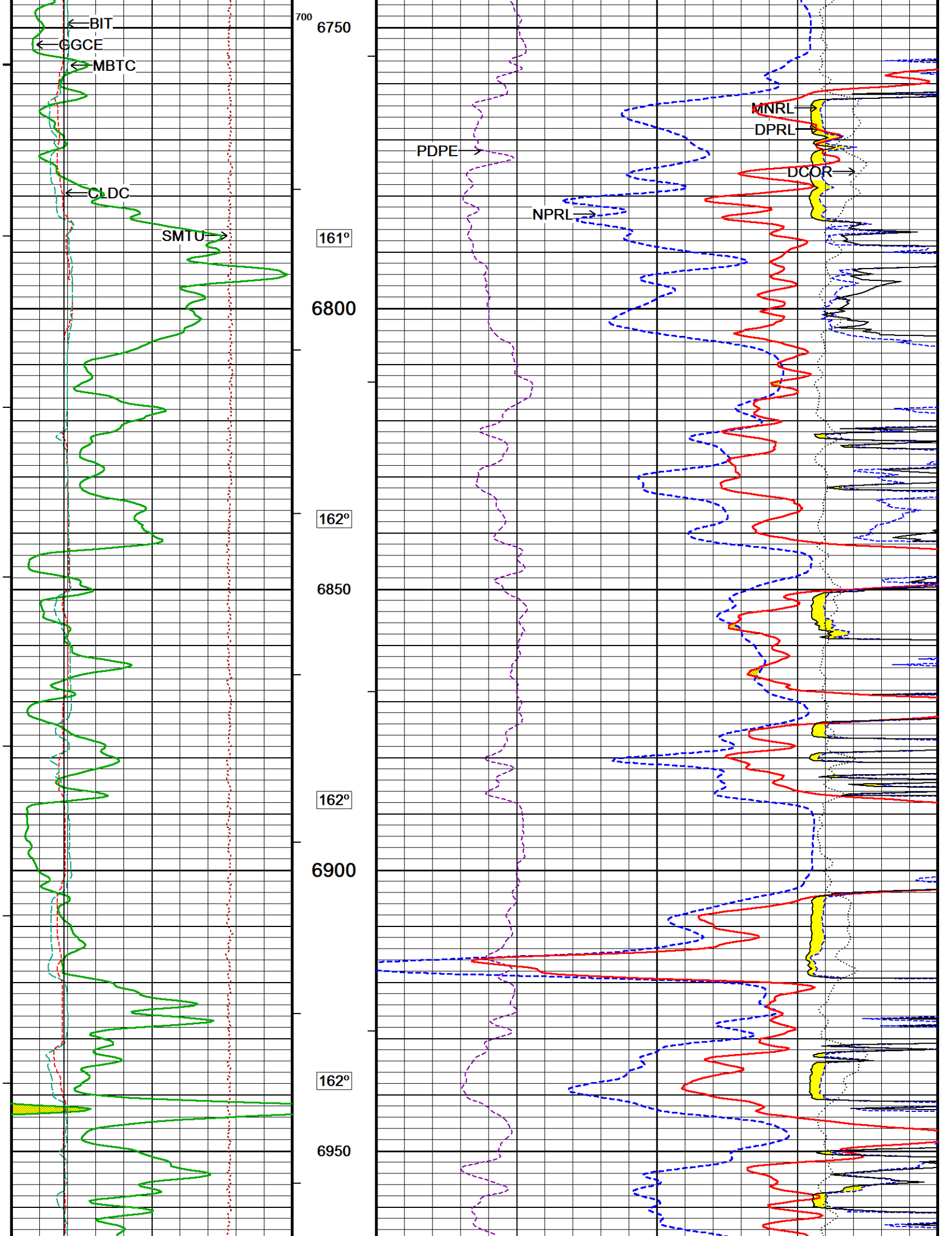
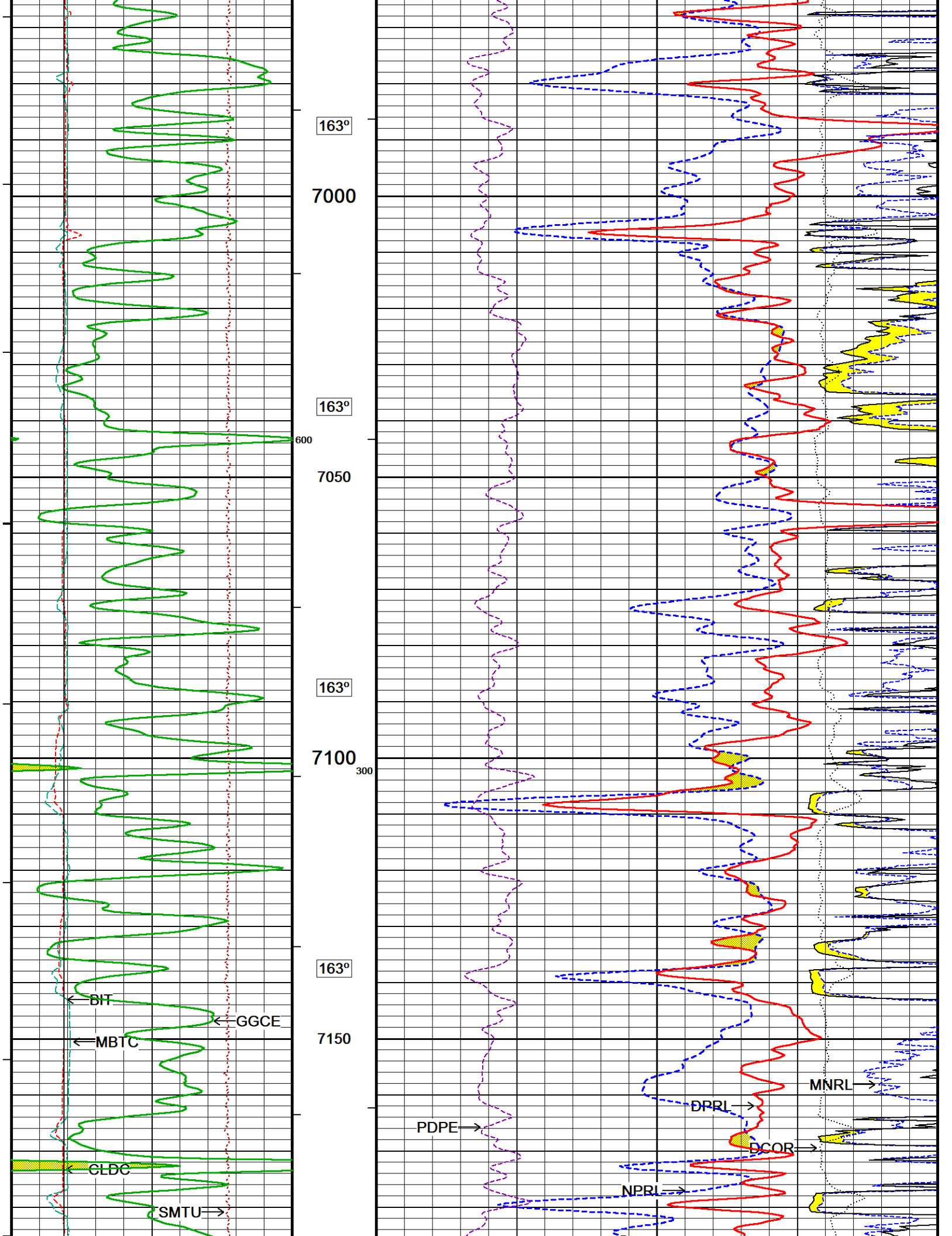
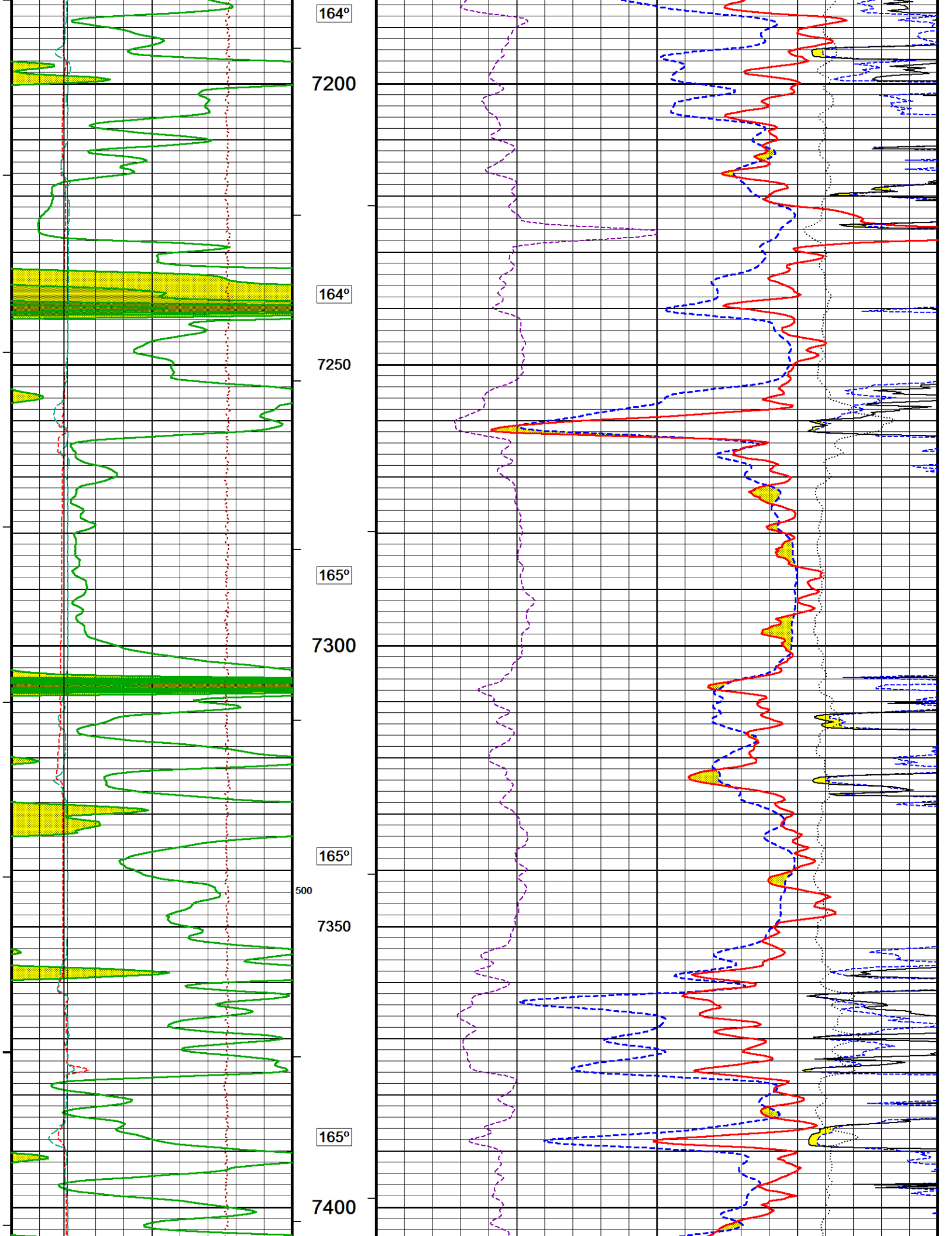
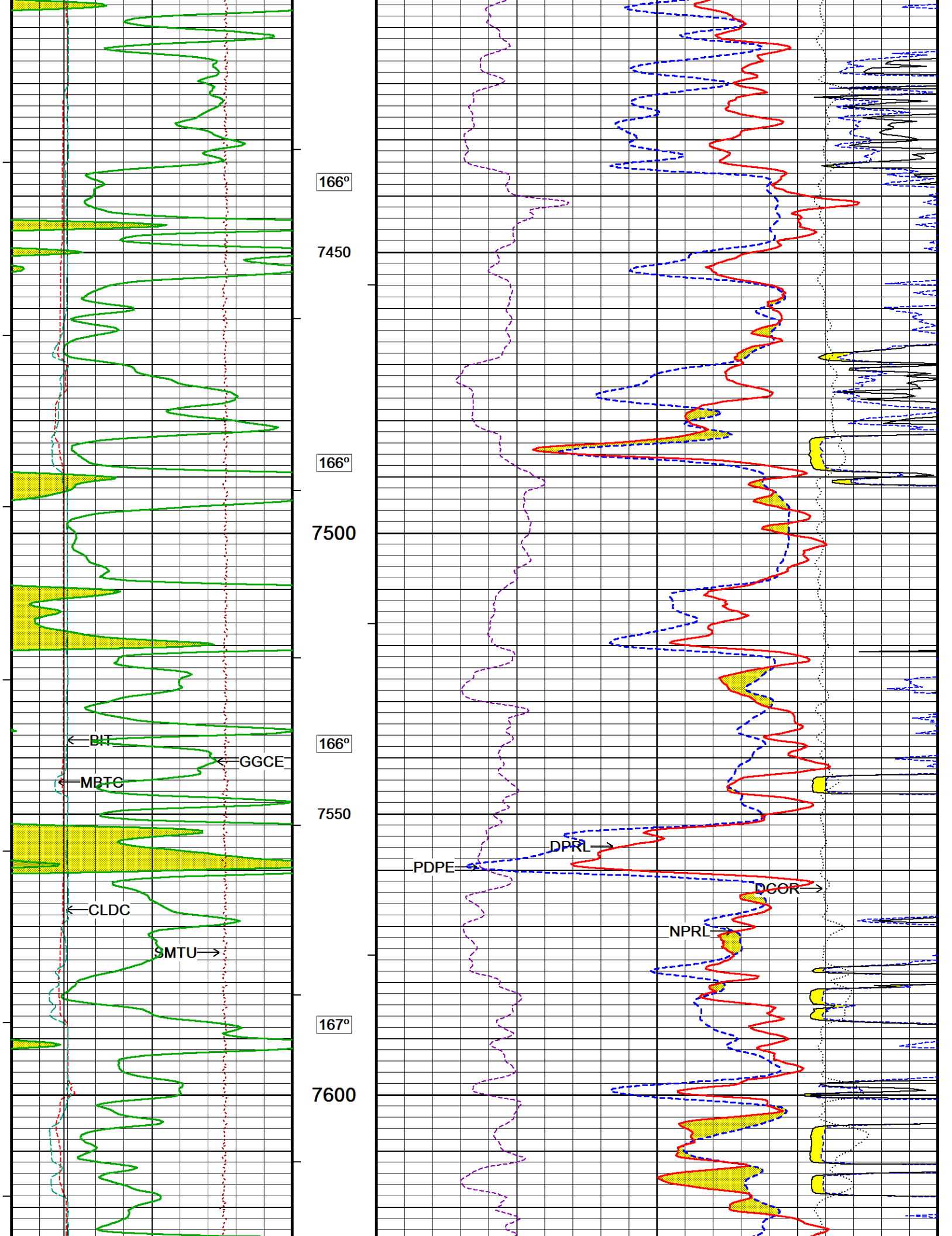
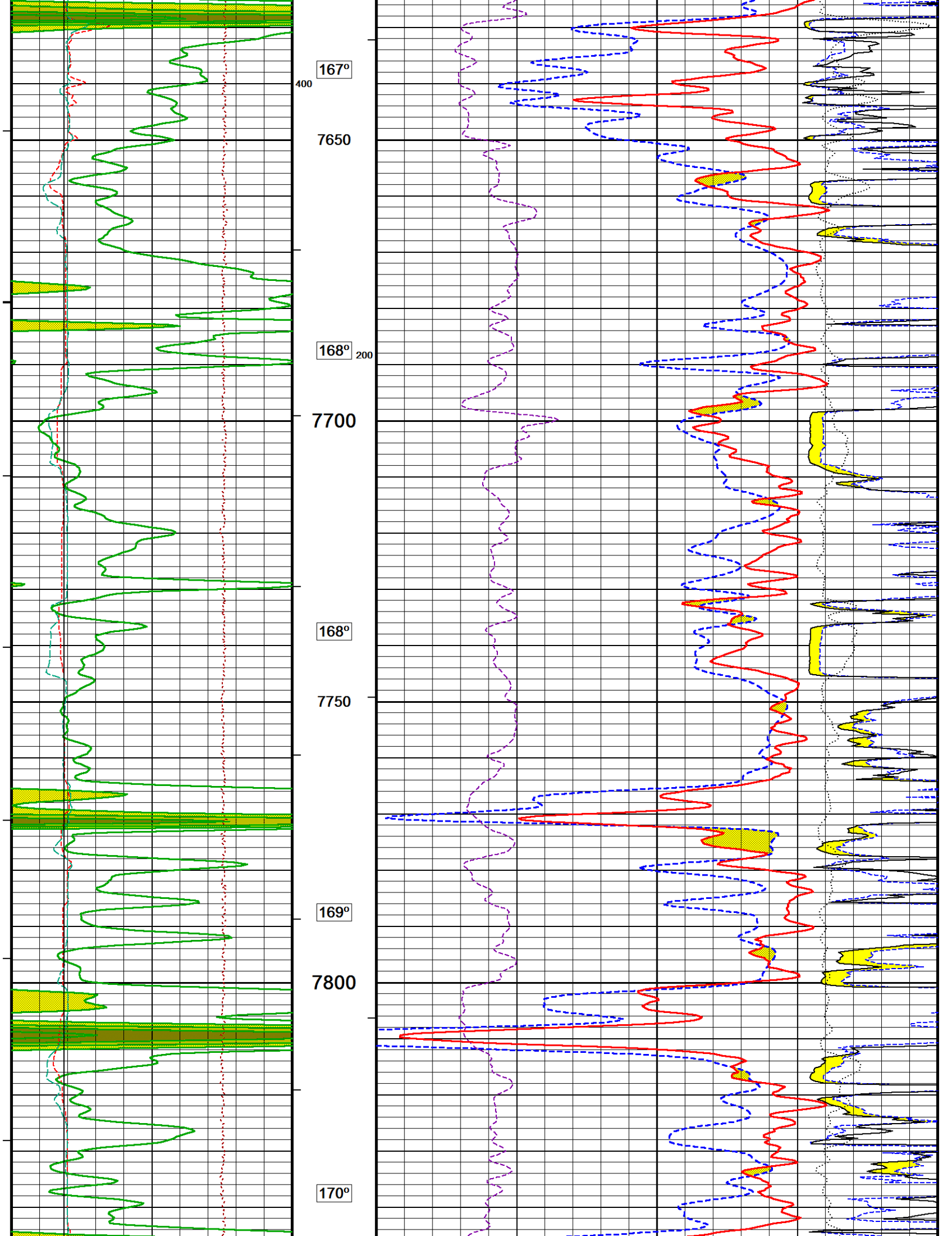
6550
161°
6600
161°
6650
162°
6700
162°

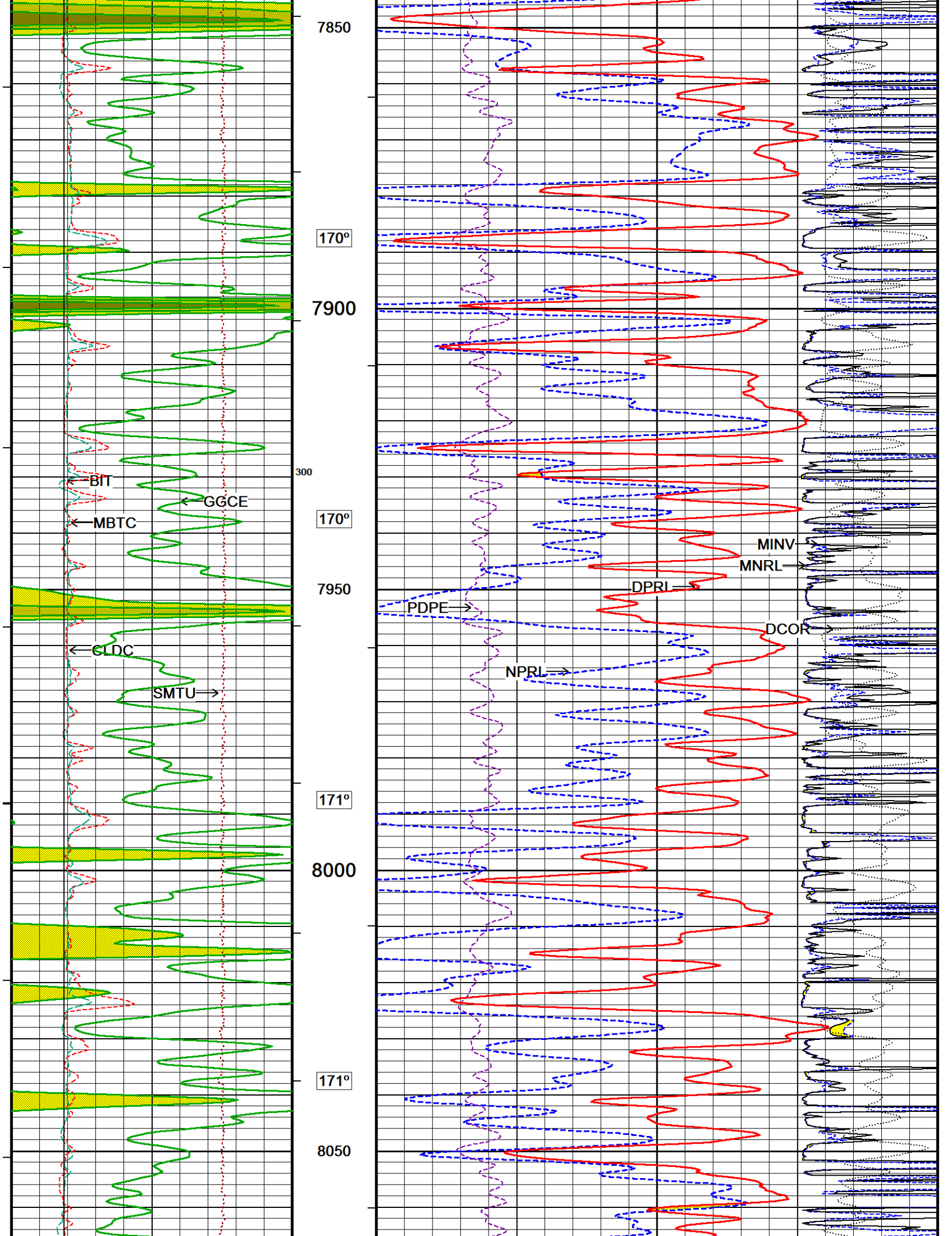

BIT
GGCE
MBTC
CLDC
SMTU
700
6750
161°
6800
162°
6850
162°
6900
162°
6950
PDPE
MNRL
DPRL
DCOR
NPRL

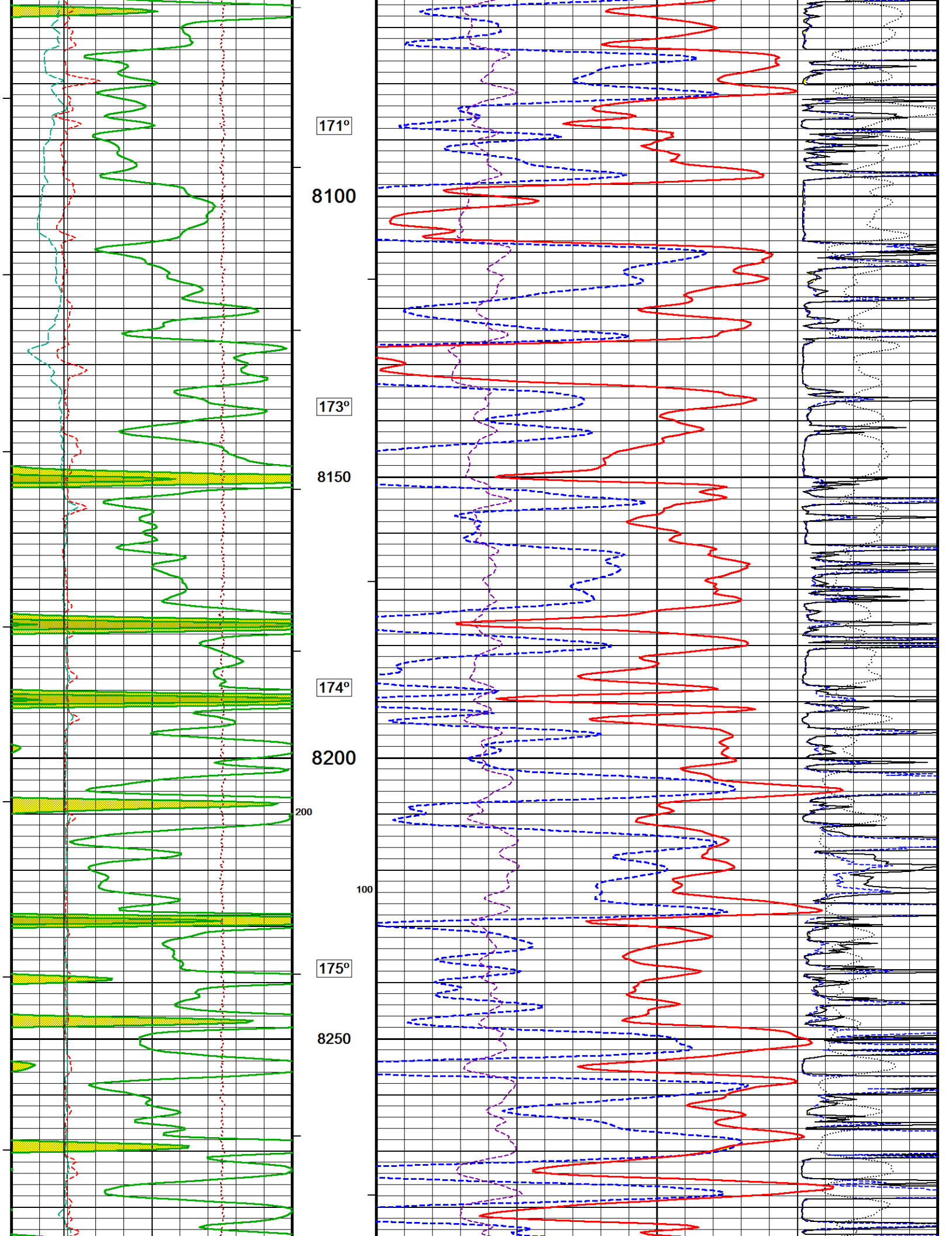

163°
7000
163°
600
7050
163°
7100
300
163°
7150
BIT
GGCE
MBTC
CLDC
SMTU
PDPE
MNRL
DPRL
DCOR
NPRL


164°
7200
164°
7250
165°
7300
165°
500
7350
165°
7400


166°
7450
166°
7500
166°
7550
167°
7600
BIT
GGCE
MBTC
CLDC
SMTU
DPRL
PDPE
DCOR
NPRL


167°
400
7650
168°
200
7700
168°
7750
169°
7800
170°


7850
170°
7900
300
BIT
GGCE
MBTC
170°
7950
CLDC
SMTU
171°
8000
171°
8050
MINV
MNRL
DPRI
PDPE
DCOR
NPRL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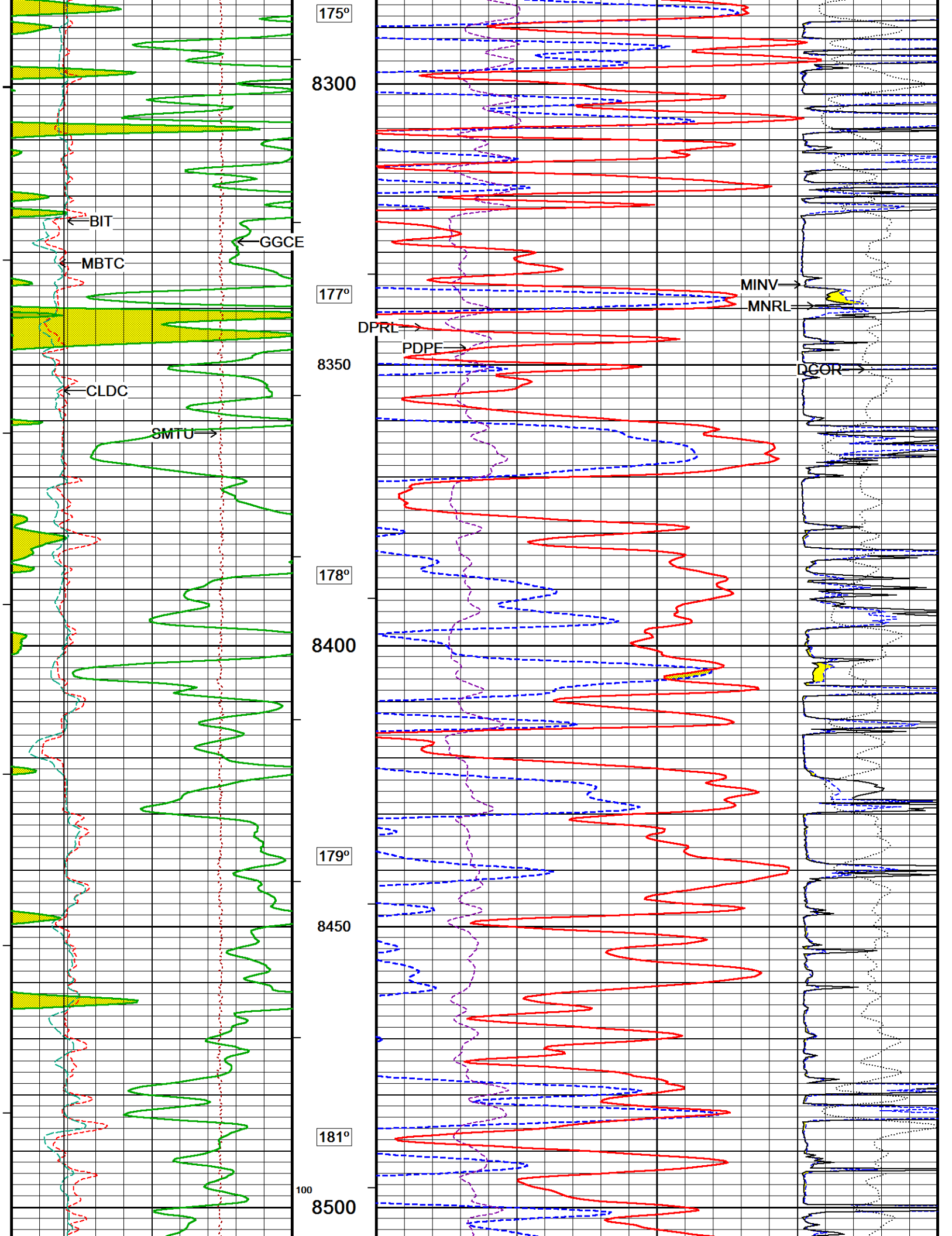
8100
173°
8150
174°
8200
200
100
175°
8250


175°
8300
BIT
GGCE
MBTC
177°
MINV
MNRL
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CLDC
SMTU
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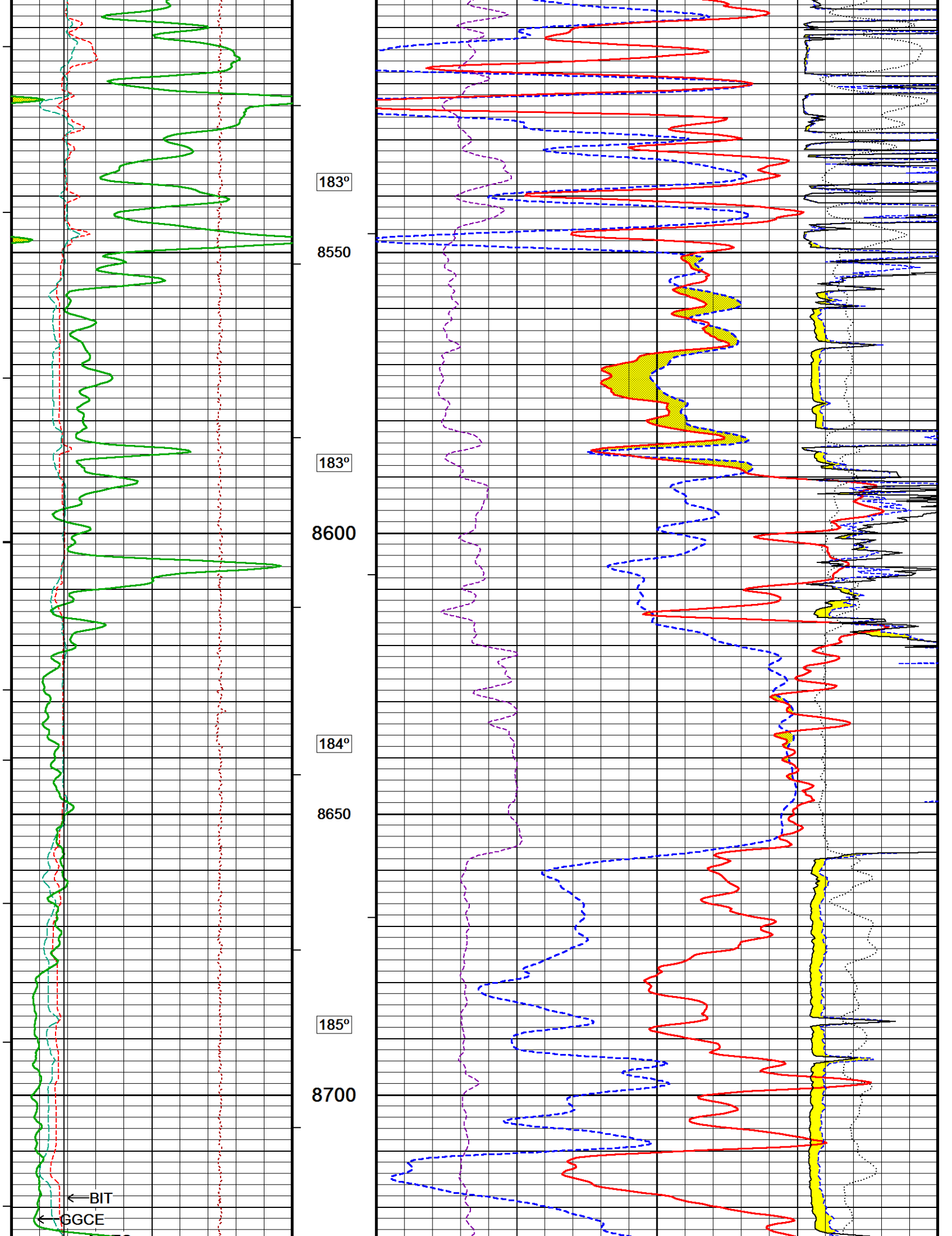
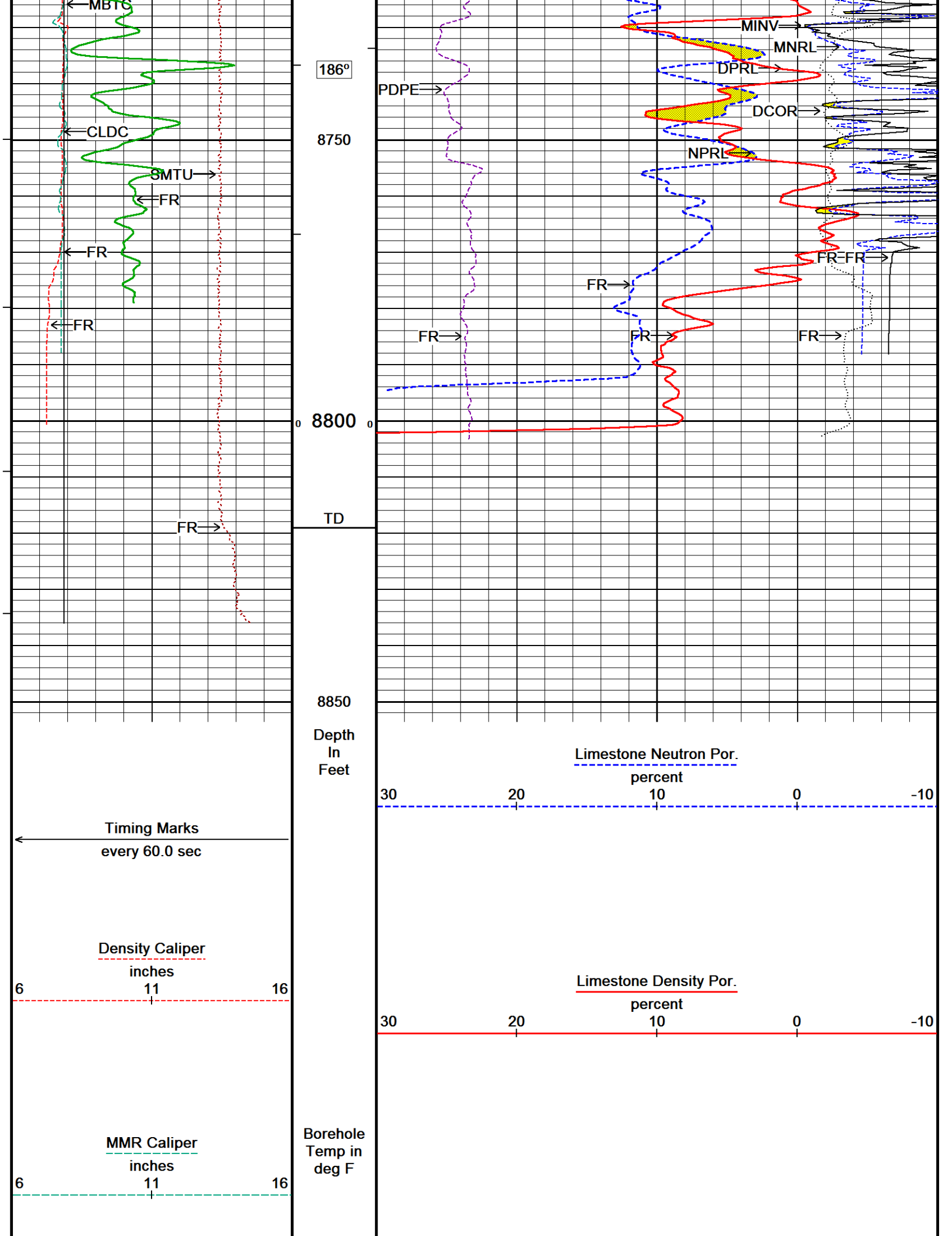
8400
179°
8450
181°
100
8500


183°
8550
183°
8600
184°
8650
185°
8700
BIT
GGCE


MBTC
CLDC
SMTU
FR
FR
FR
FR
186°
8750
8800
TD
8850
Depth
In
Feet
PDPE
MINV
MNRL
DPRL
DCOR
NPRL
FR
FR
FR
FR
FR
FR
Limestone Neutron Por.
percent
30
20
10
0
-10
Timing Marks
every 60.0 sec
Density Caliper
inches
6
11
16
Limestone Density Por.
percent
30
20
10
0
-10
MMR Caliper
inches
6
11
16
Borehole
Temp in
deg F

MCG BH Corrected Gamma
API
0 75 150
150 225 300

HVI
every
10 cu ft

PE
barns/electron
0 5 10

Density Correction
grams/cc
-0.50 0 0.50

Bit Size
inches
6 11 16

Annular
Integral
every
10 cu ft

MMR MicroLog Normal
ohm metres
0 20

MMR MicroLog Inverse
ohm metres
0 20

DST Uphole Tension
pounds
5000 0

Replay
Scale
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 16-DEC-2017 19:36
Filename: C:\Minimus 17.05.5956\Data\MURFIN DRILLING (DAUNTLESS #15-1)\MAIN PASS.dta
Recorded on 16-DEC-2017 13:24
System Versions: Logged with 17.05.5956 Plotted with 17.05.5956

5 INCH MAIN PASS - POROSITY 1:240

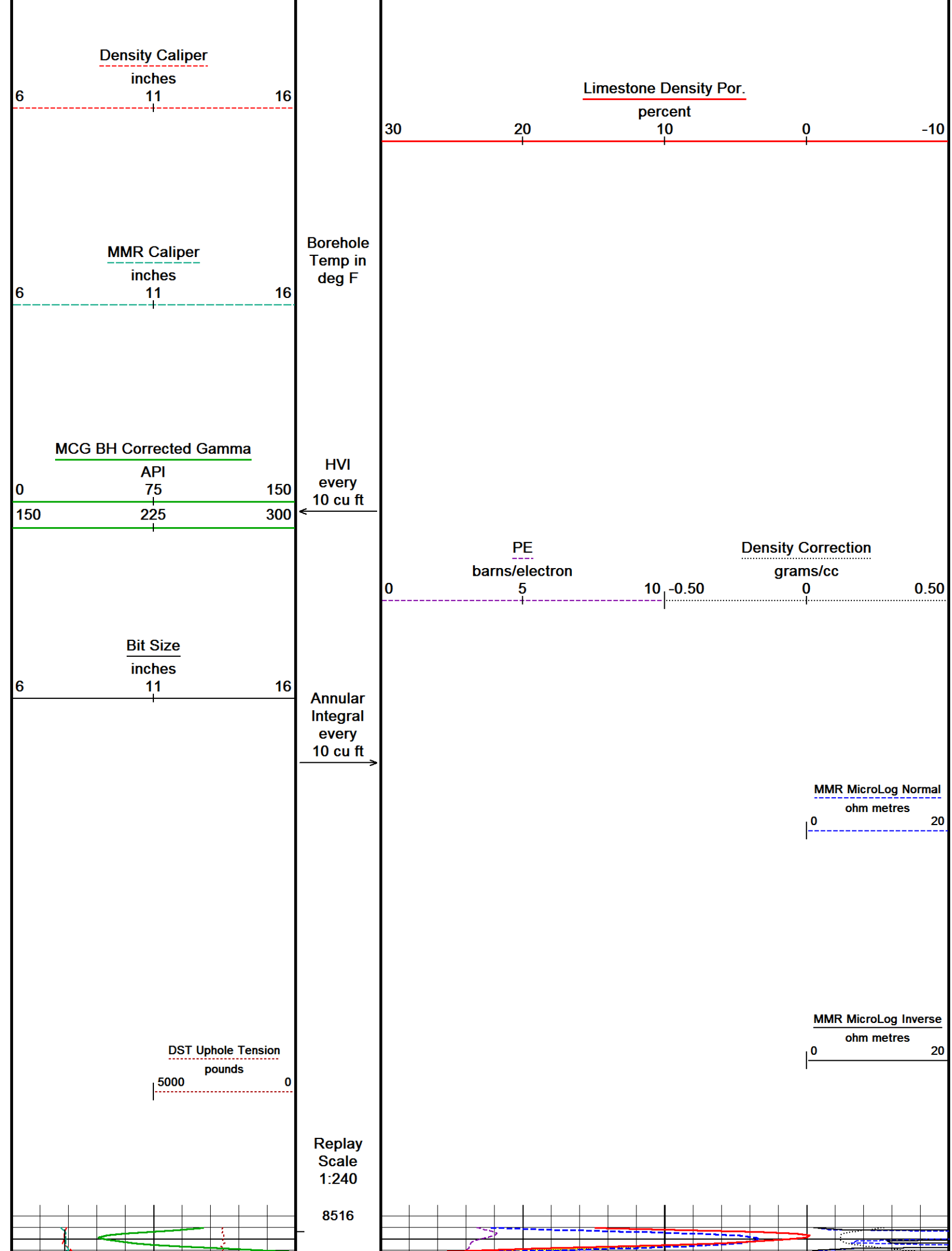
5 INCH REPEAT PASS - POROSITY 1:240

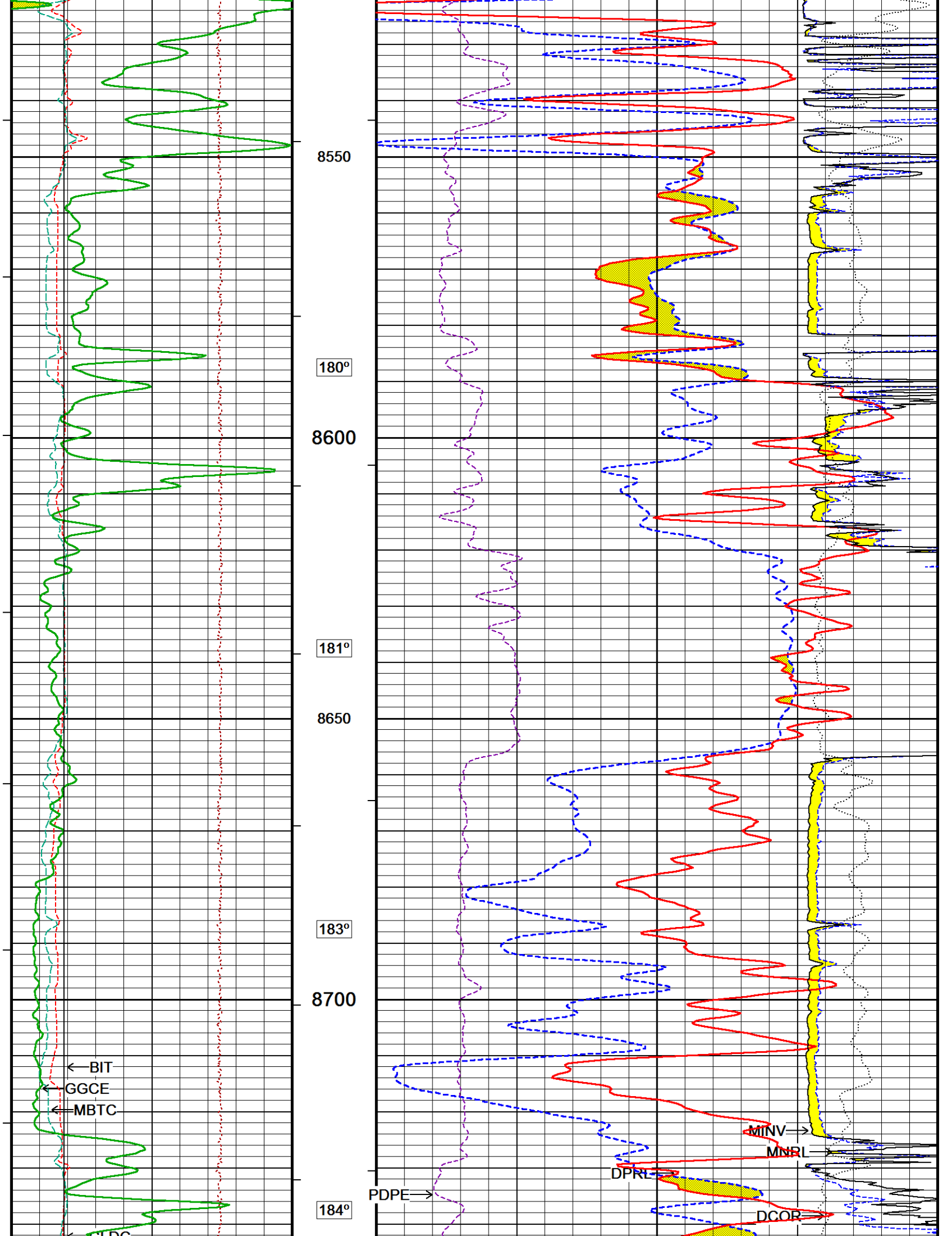
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 16-DEC-2017 19:36
Filename: C:\Minimus 17.05.5956\Data\MURFIN DRILLING (DAUNTLESS #15-1)\REPEAT PASS.dta
Recorded on 16-DEC-2017 12:47
System Versions: Logged with 17.05.5956 Plotted with 17.05.5956

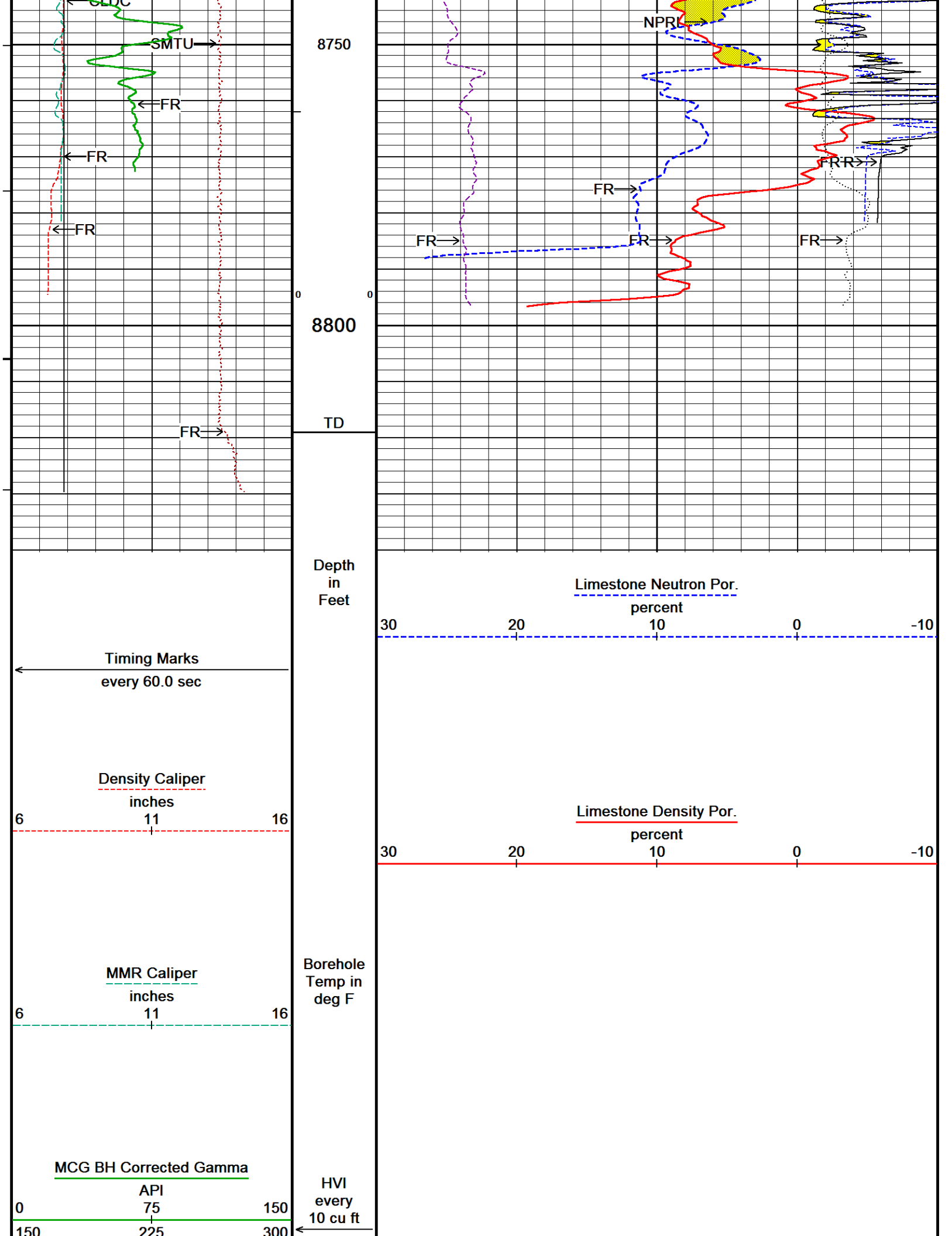
Depth
in
Feet

Limestone Neutron Por.
percent
30 20 10 0 -10

Timing Marks
every 60.0 sec


Density Caliper
inches
6
11
16
MMR Caliper
inches
6
11
16
MCG BH Corrected Gamma
API
0
75
150
150
225
300
Bit Size
inches
6
11
16
DST Uphole Tension
pounds
5000
0
Borehole Temp in deg F
HVI every 10 cu ft
Annular Integral every 10 cu ft
Replay Scale 1:240
8516
Limestone Density Por.
percent
30
20
10
0
-10
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.50
0
0.50
MMR MicroLog Normal
ohm metres
0
20
MMR MicroLog Inverse
ohm metres
0
20


8550
180°
8600
181°
8650
183°
8700
184°
BIT
GGCE
MBTC
PDPE
DPRL
MINV
MNRL
DCOR


SMTU
FR
FR
FR
FR
NPRL
FR
FR
FR
FRR
8750
0
0
8800
TD
Depth
in
Feet
Limestone Neutron Por.
percent
30
20
10
0
-10
Timing Marks
every 60.0 sec
Density Caliper
inches
6
11
16
Limestone Density Por.
percent
30
20
10
0
-10
MMR Caliper
inches
6
11
16
Borehole
Temp in
deg F
MCG BH Corrected Gamma
API
0
75
150
150
225
300
HVI
every
10 cu ft

PE
barns/electron
0 5 10

Density Correction
grams/cc
-0.50 0 0.50

Bit Size
inches
6 11 16

Annular Integral every 10 cu ft

MMR MicroLog Normal
ohm metres
0 20

MMR MicroLog Inverse
ohm metres
0 20

DST Uphole Tension
pounds
5000 0

Replay Scale 1:240

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 16-DEC-2017 19:36
Filename: C:\Minimus 17.05.5956\Data\MURFIN DRILLING (DAUNTLESS #15-1)\REPEAT PASS.dta
Recorded on 16-DEC-2017 12:47
System Versions: Logged with 17.05.5956 Plotted with 17.05.5956

5 INCH REPEAT PASS - POROSITY 1:240

5 INCH MAIN PASS - BULK DENSITY 1:240

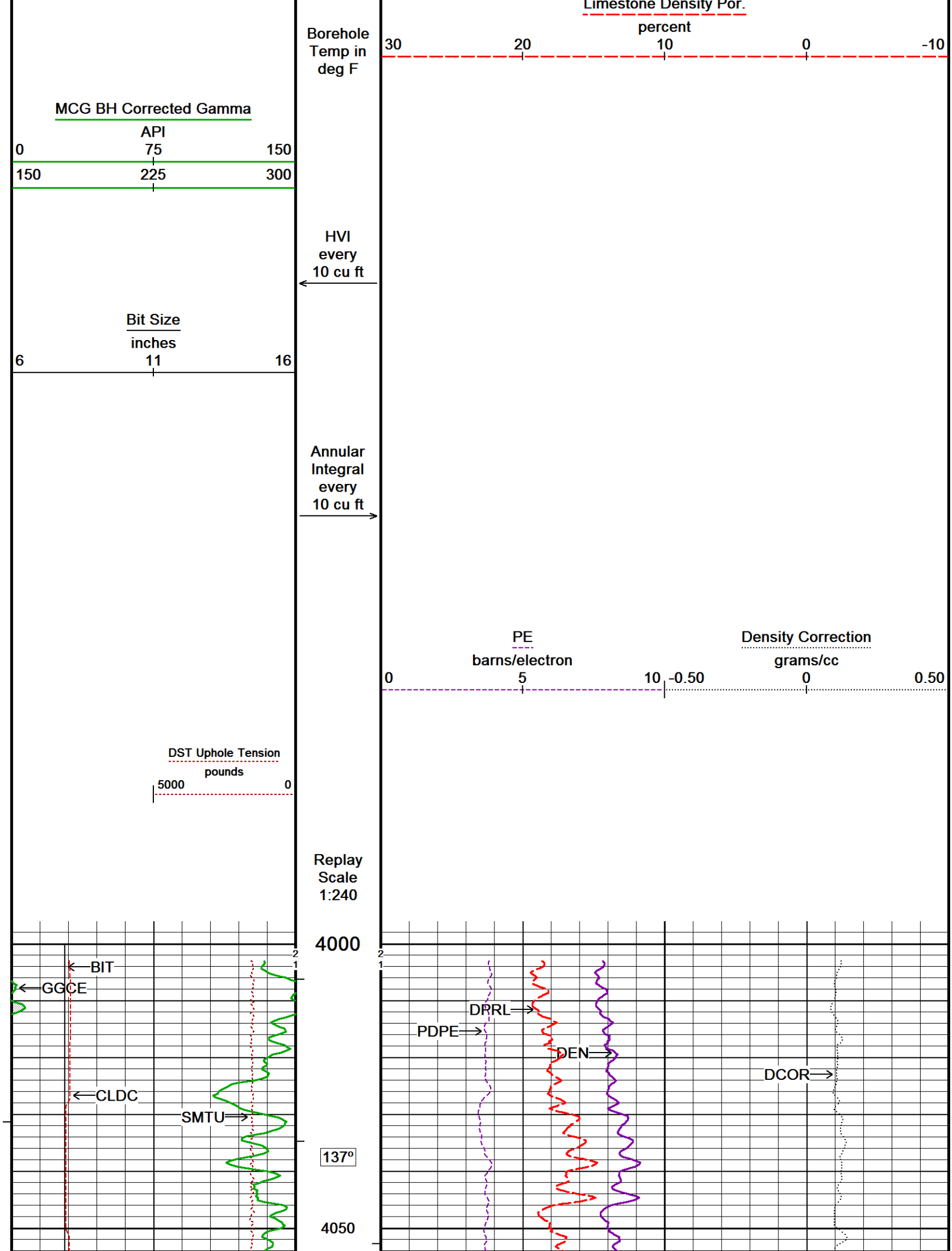
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 16-DEC-2017 19:36
Filename: C:\Minimus 17.05.5956\Data\MURFIN DRILLING (DAUNTLESS #15-1)\MAIN PASS.dta
Recorded on 16-DEC-2017 13:24
System Versions: Logged with 17.05.5956 Plotted with 17.05.5956

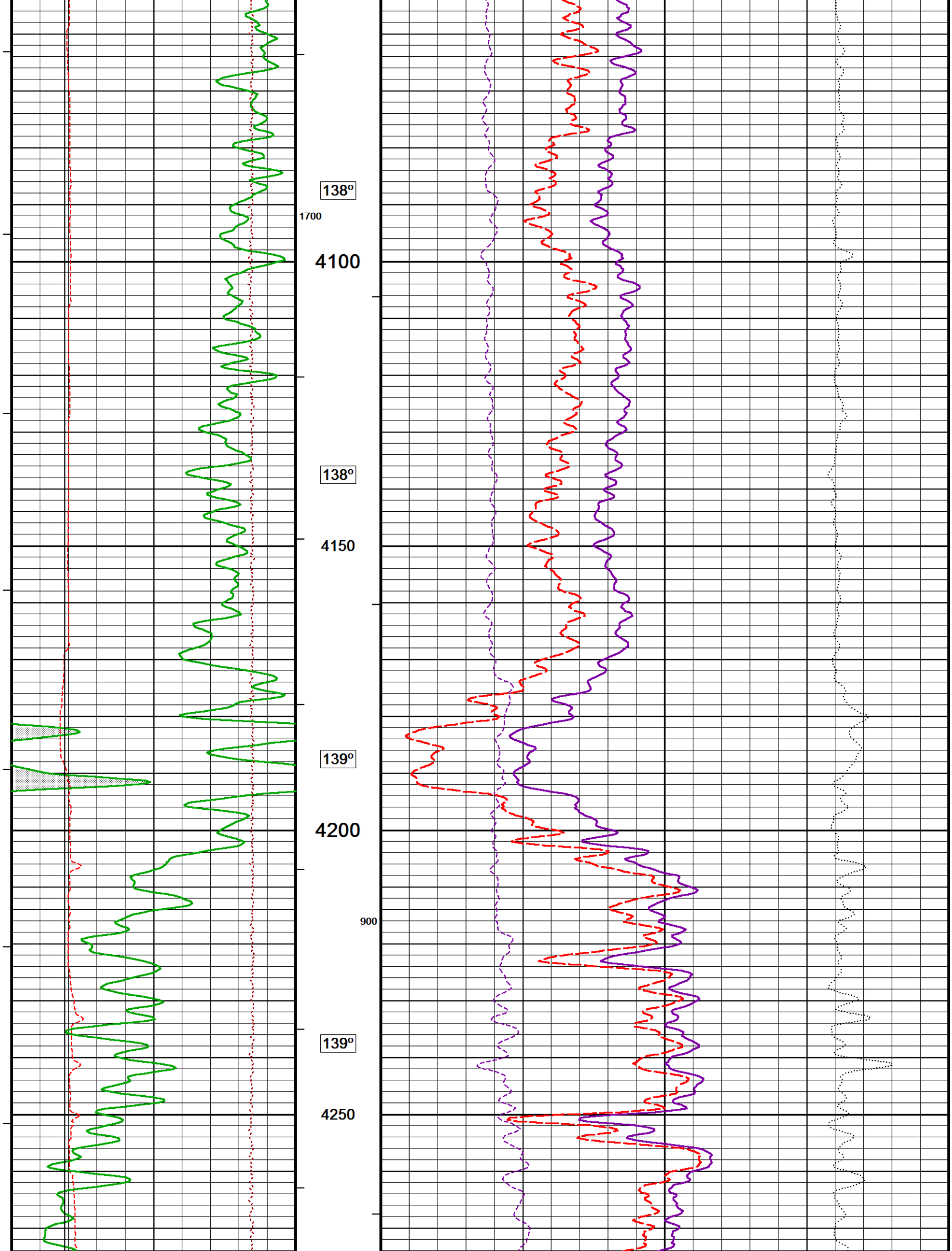
Depth In Feet

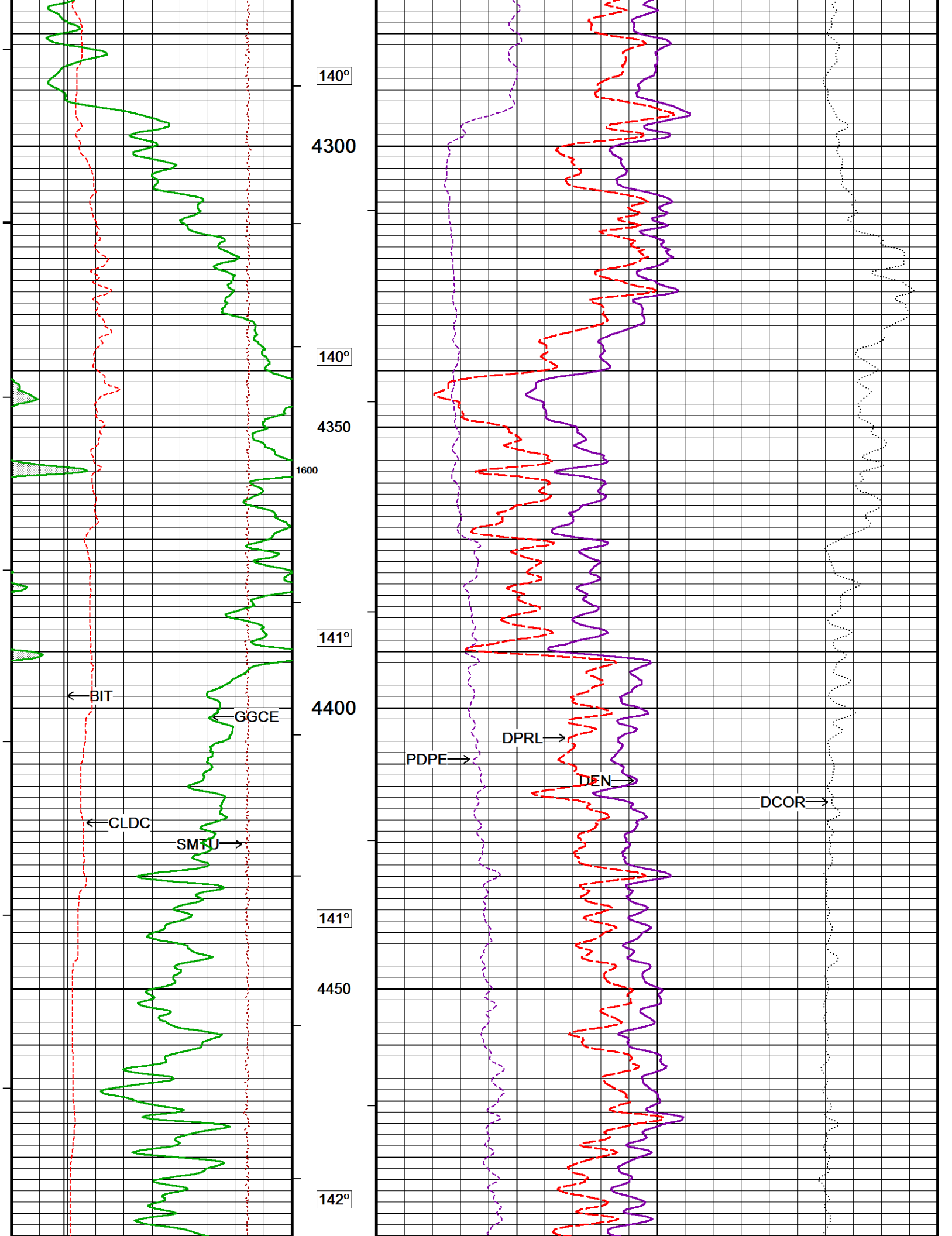
Compensated Density
grams/cc
2 2.25 2.50 2.75 3

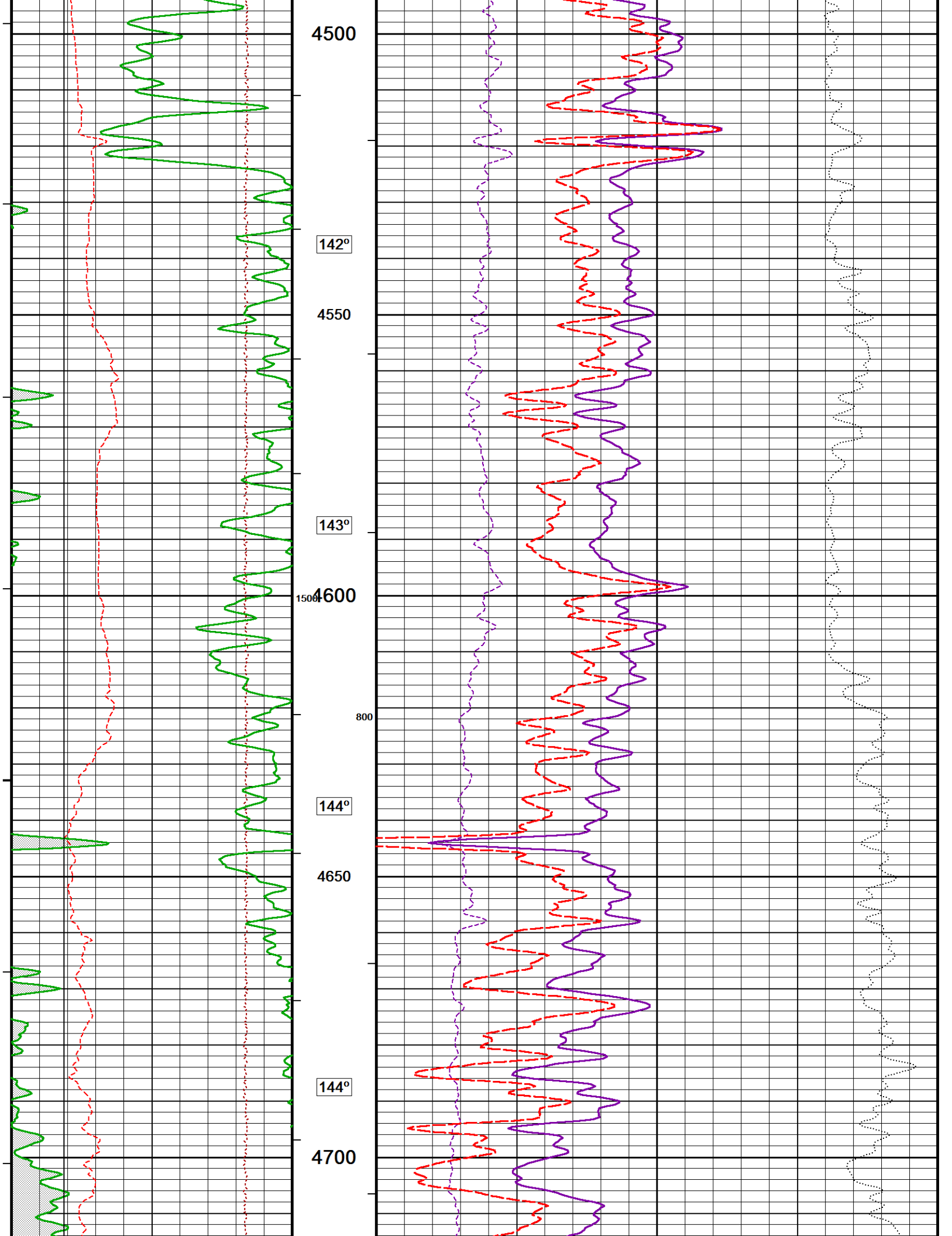
Timing Marks
every 60.0 sec

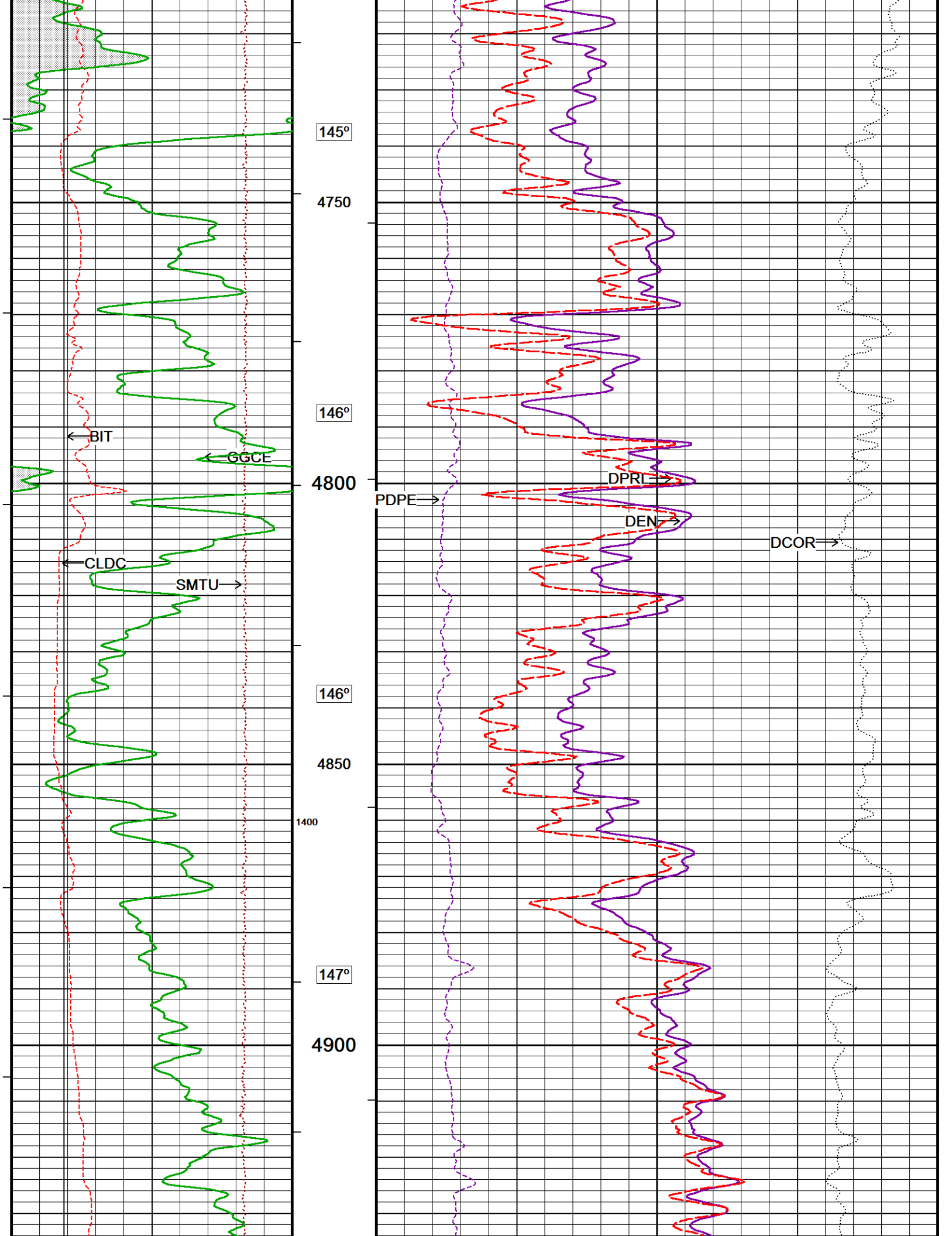
Density Caliper
inches
6 11 16

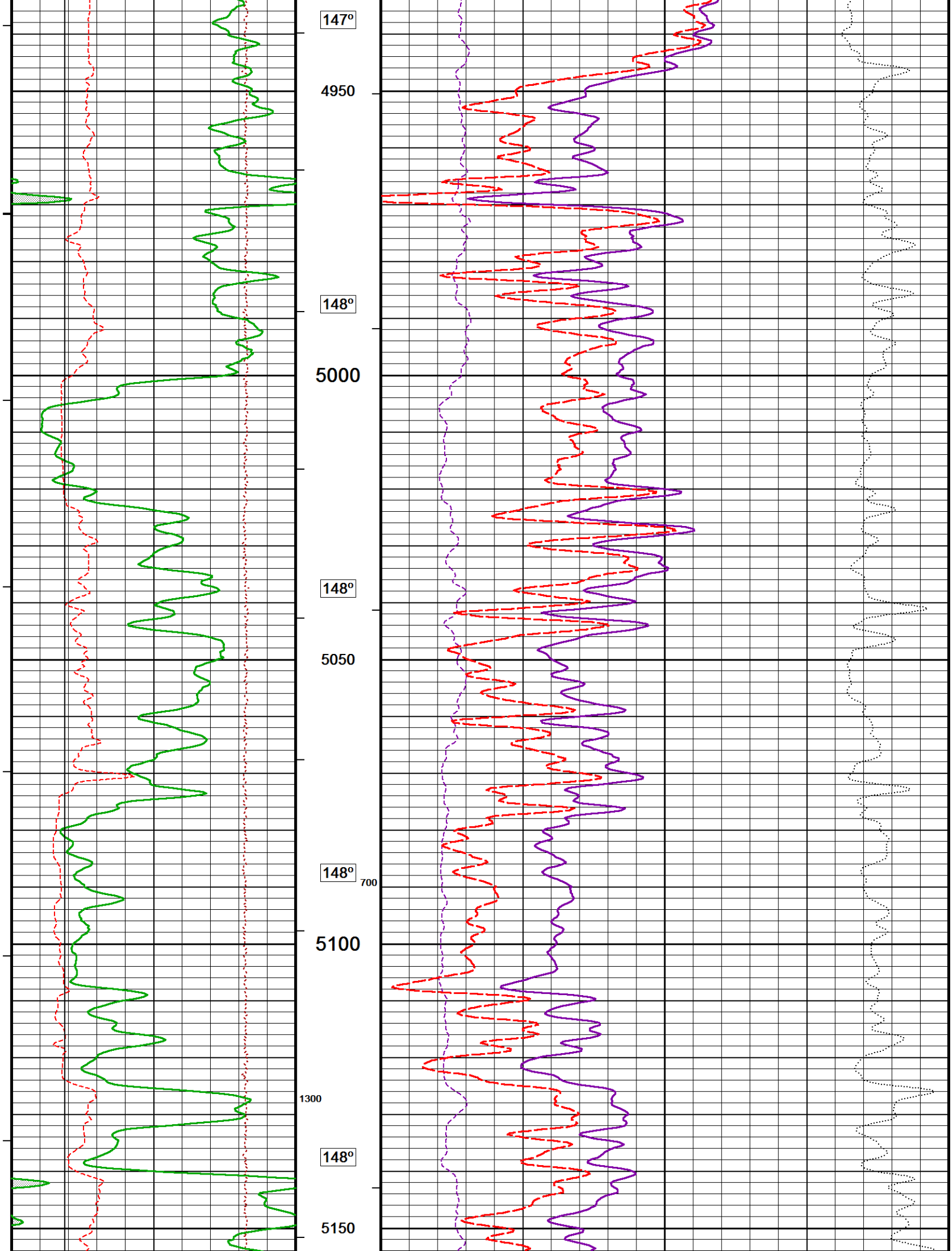

Limestone Density Por.
percent
30
20
10
0
-10
Borehole Temp in deg F
MCG BH Corrected Gamma
API
0
75
150
150
225
300
HVI every 10 cu ft
Bit Size
inches
6
11
16
Annular Integral every 10 cu ft
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.50
0
0.50
DST Uphole Tension
pounds
5000
0
Replay Scale 1:240
4000
BIT
GGCE
CLDC
SMTU
DPRL
PDPE
DEN
DCOR
137°
4050

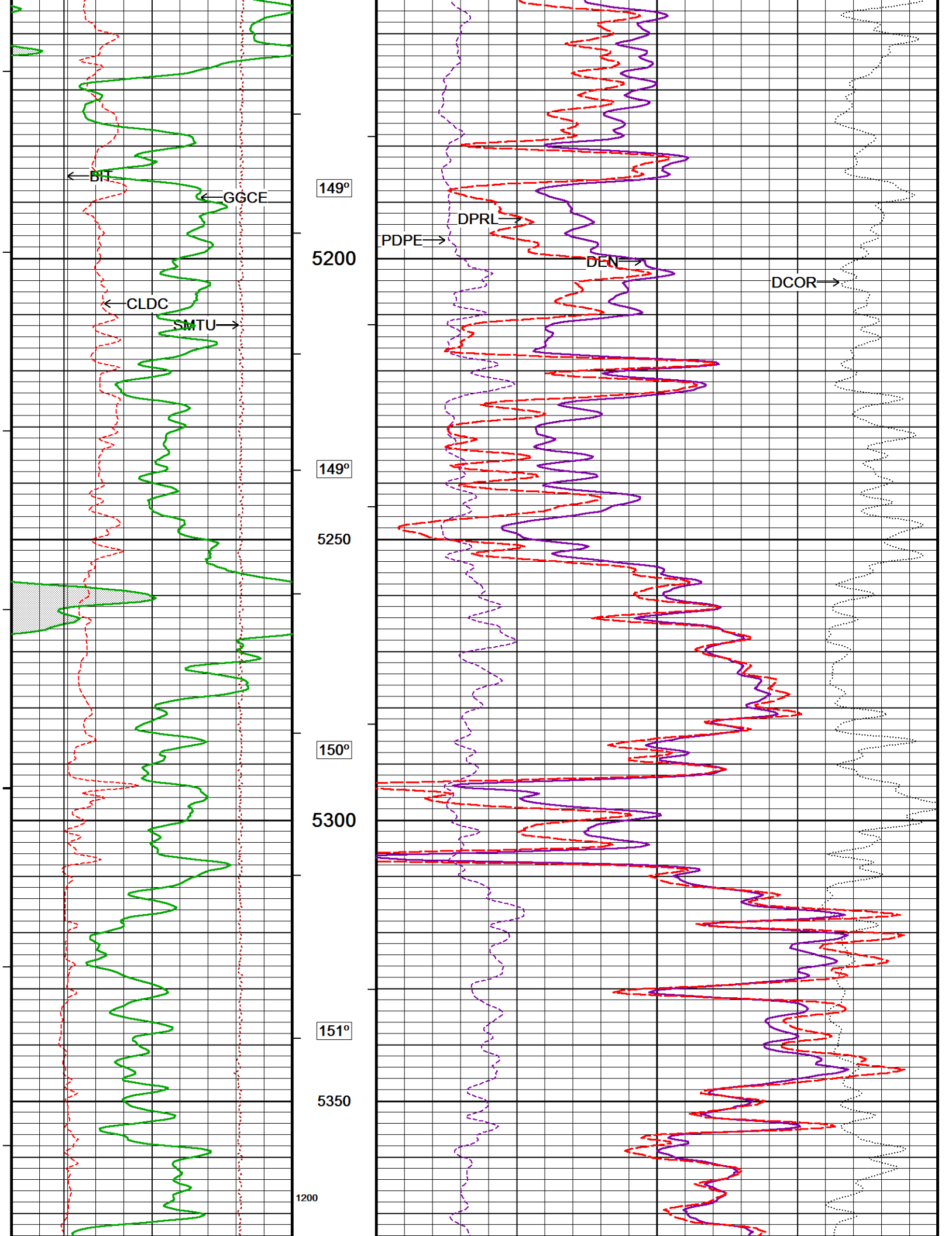

138°
1700
4100
138°
4150
139°
4200
900
139°
4250

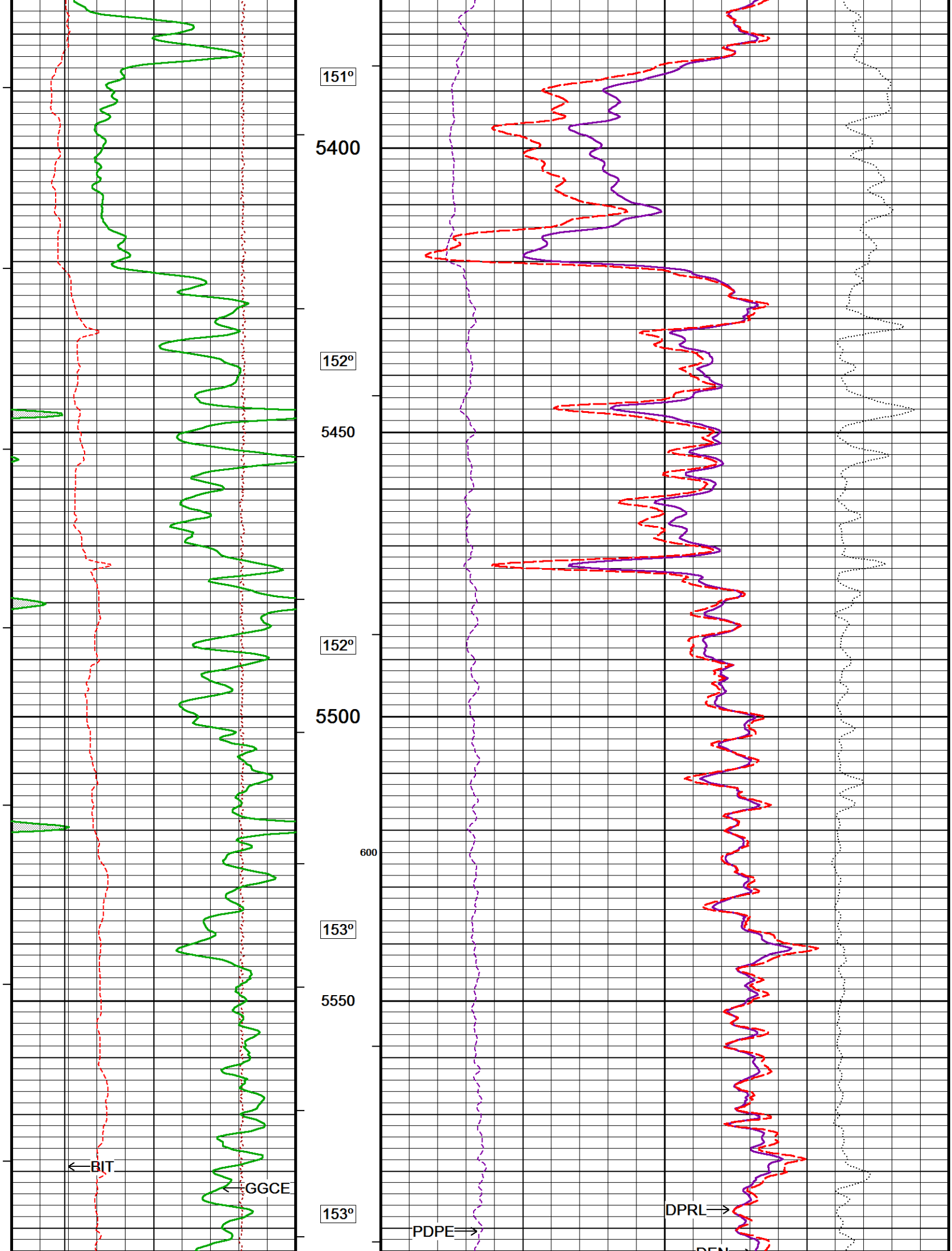

140°
4300
140°
4350
1600
141°
4400
141°
4450
142°
BIT
GGCE
CLDC
SMTU
DPRL
PDPE
DEN
DCOR

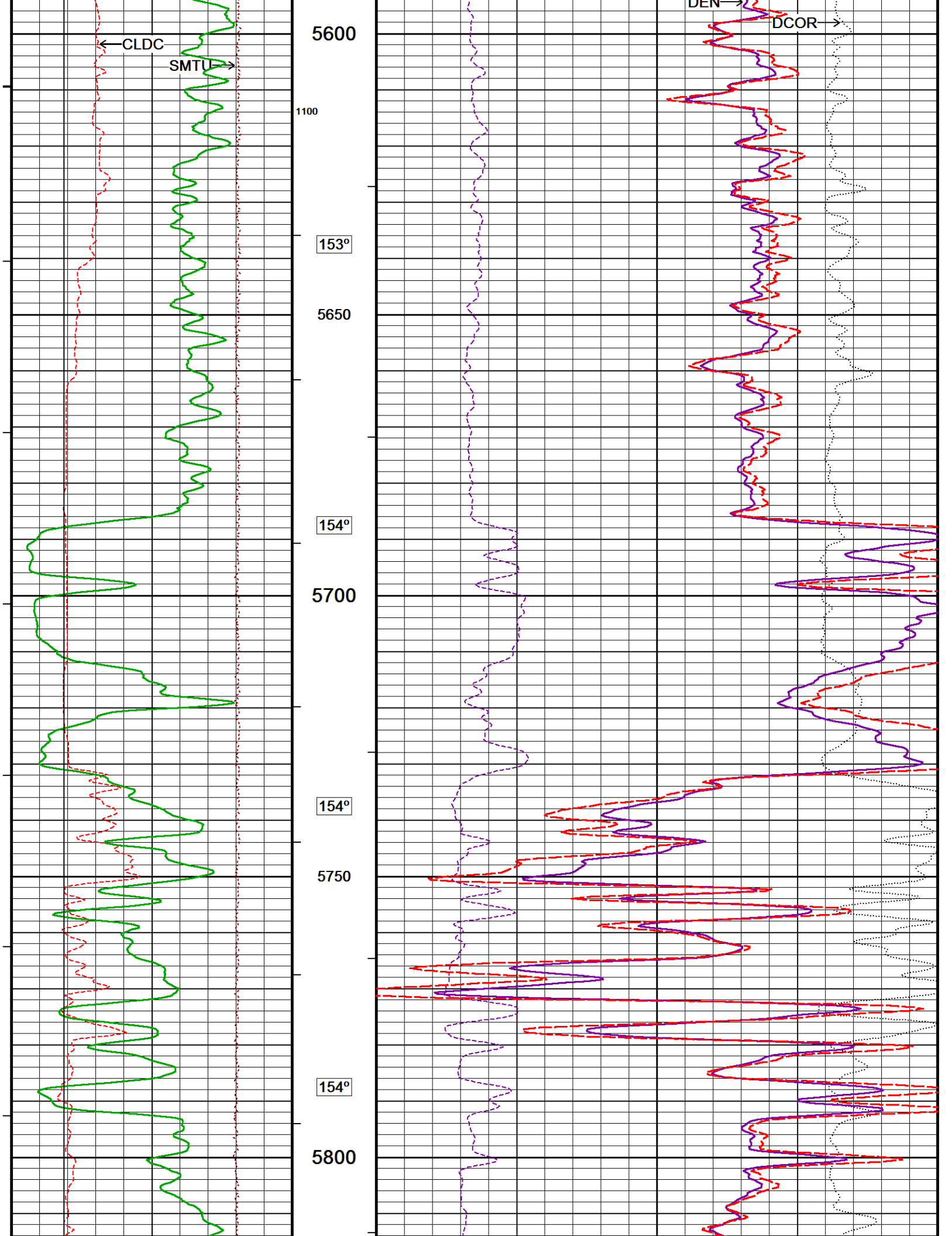

4500
142°
4550
143°
4600
1500
800
144°
4650
144°
4700

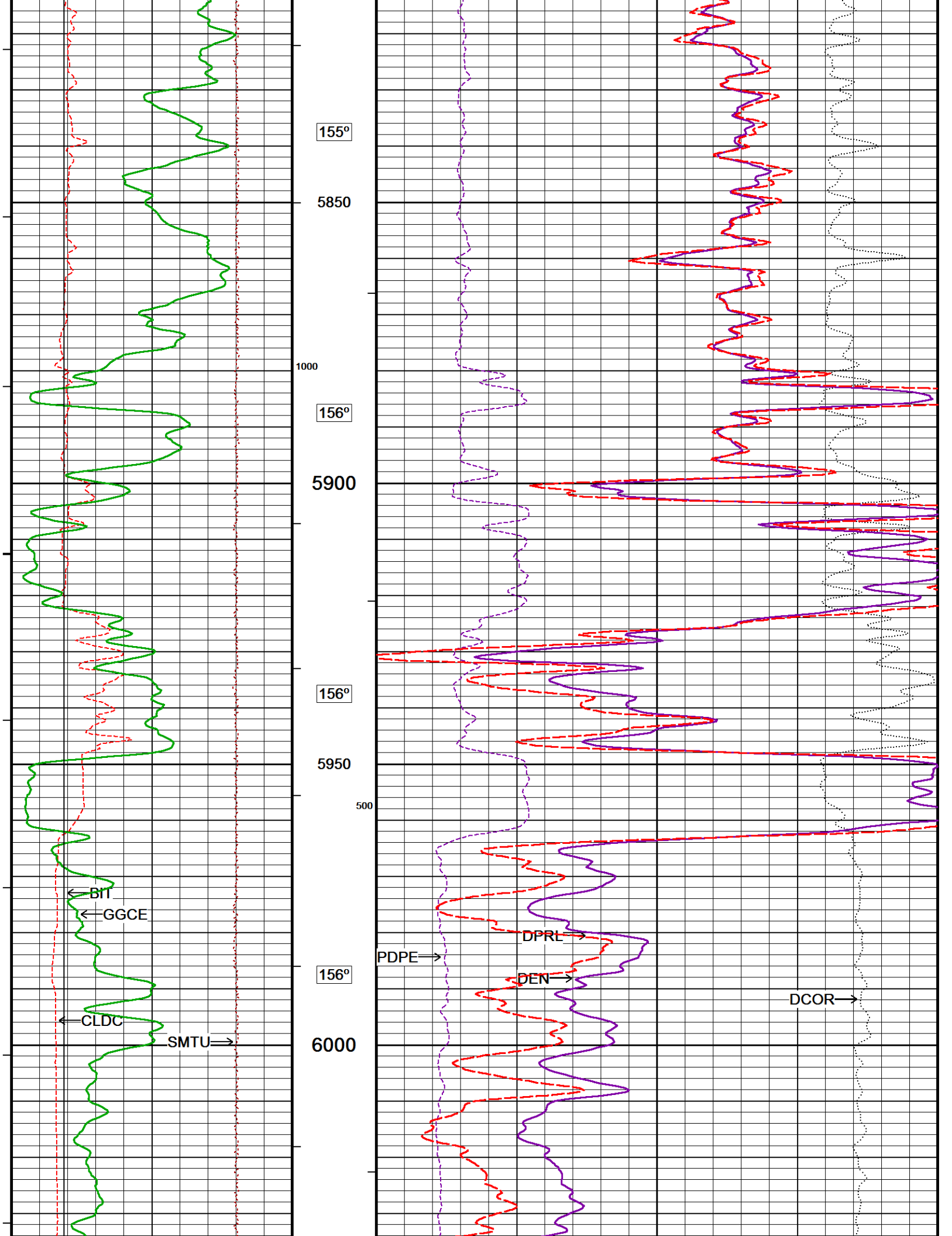

145°
4750
146°
BIT
GGCE
4800
PDPE
DPRL
DEN
DCOR
CLDC
SMTU
146°
4850
1400
147°
4900

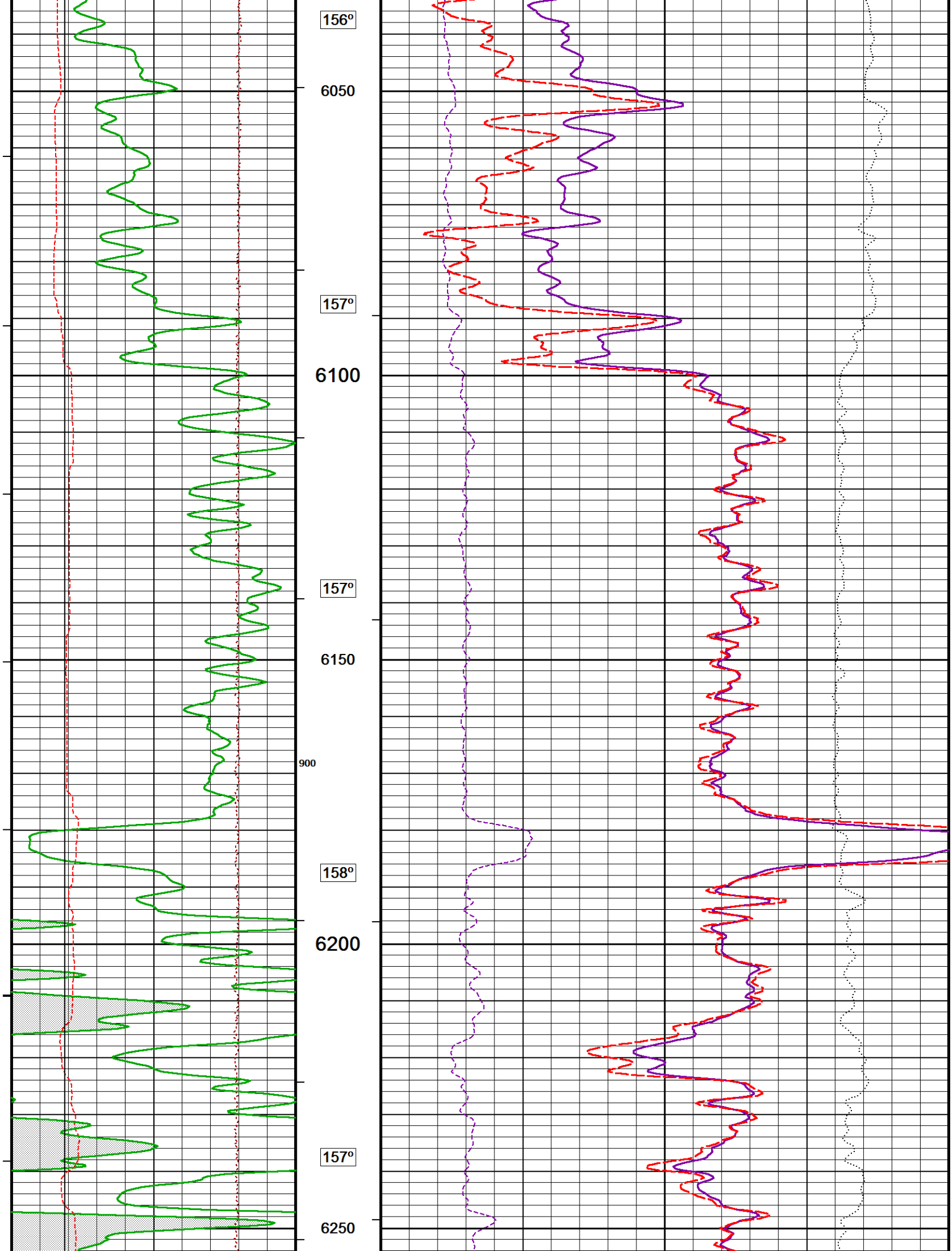

147°
4950
148°
5000
148°
5050
148°
700
5100
1300
148°
5150


BIT
GGCE
CLDC
SMTU
149°
5200
149°
5250
150°
5300
151°
5350
1200
DPRL
PDPE
DEN
DCOR


151°
5400
152°
5450
152°
5500
600
153°
5550
153°
BIT
GGCE
PDPE
DPRL


CLDC
SMTU
DEN
DCOR
5600
1100
153°
5650
154°
5700
154°
5750
154°
5800


155°
5850
1000
156°
5900
156°
5950
500
156°
6000
BIT
GGCE
CLDC
SMTU
PDPE
DPRL
DEN
DCOR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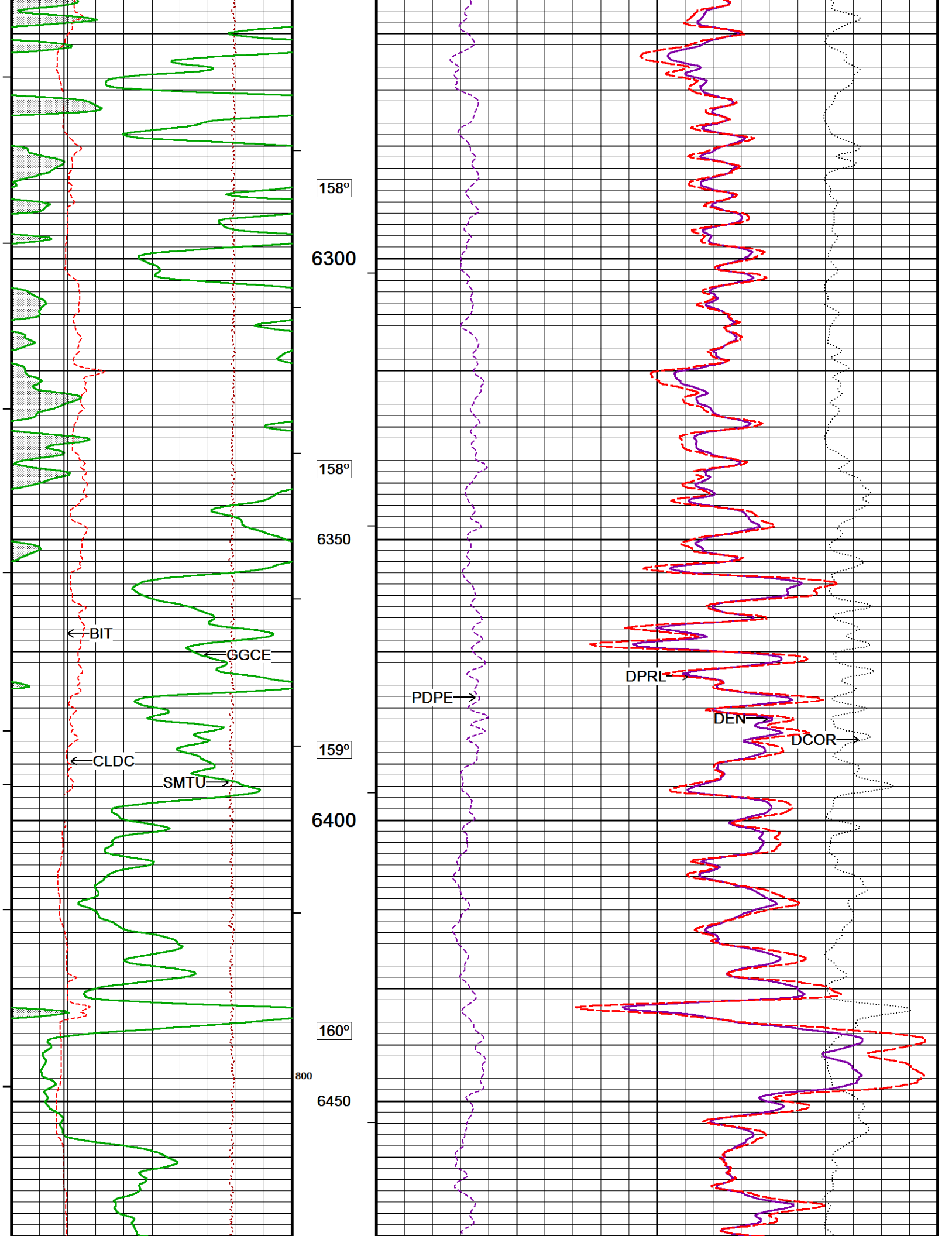
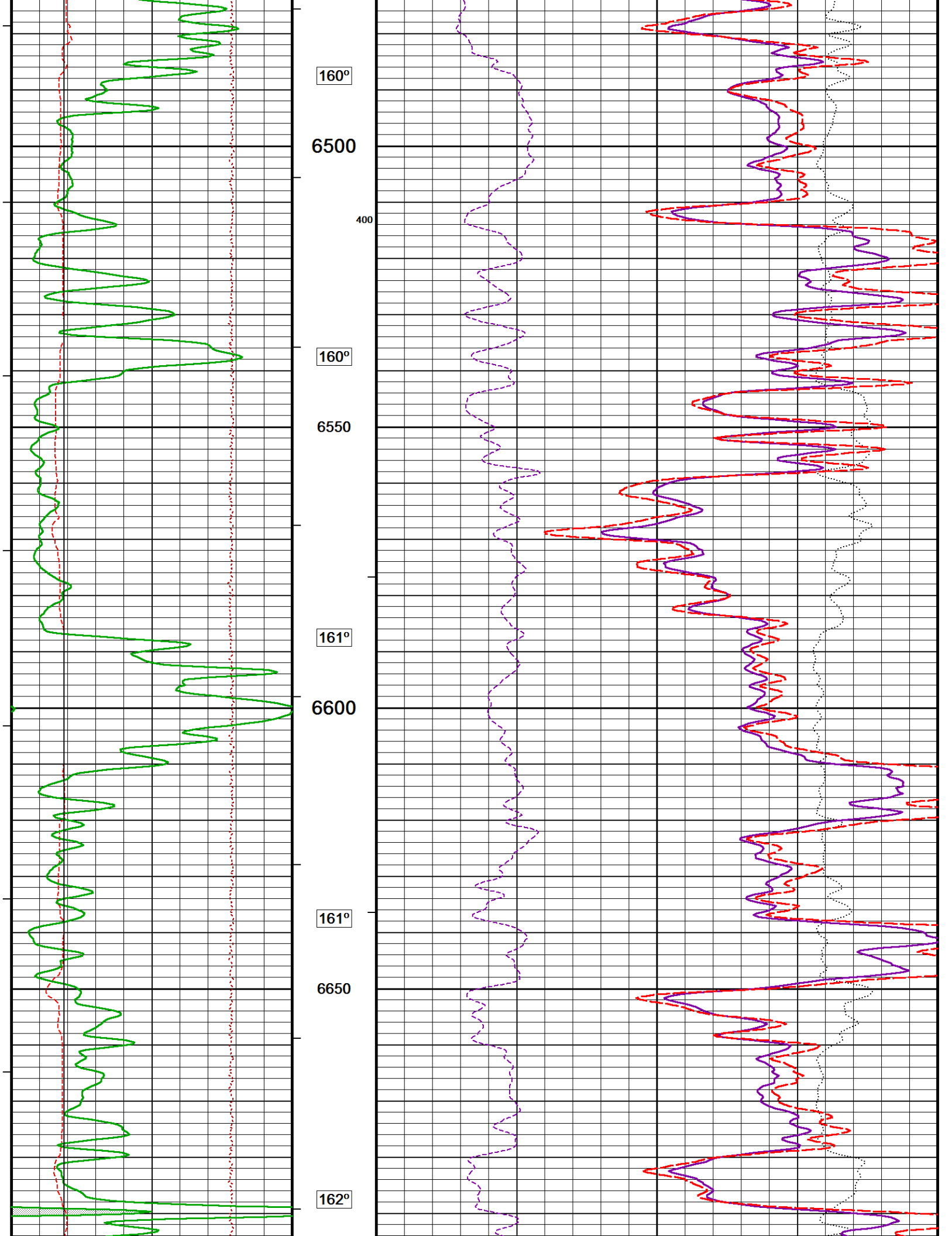
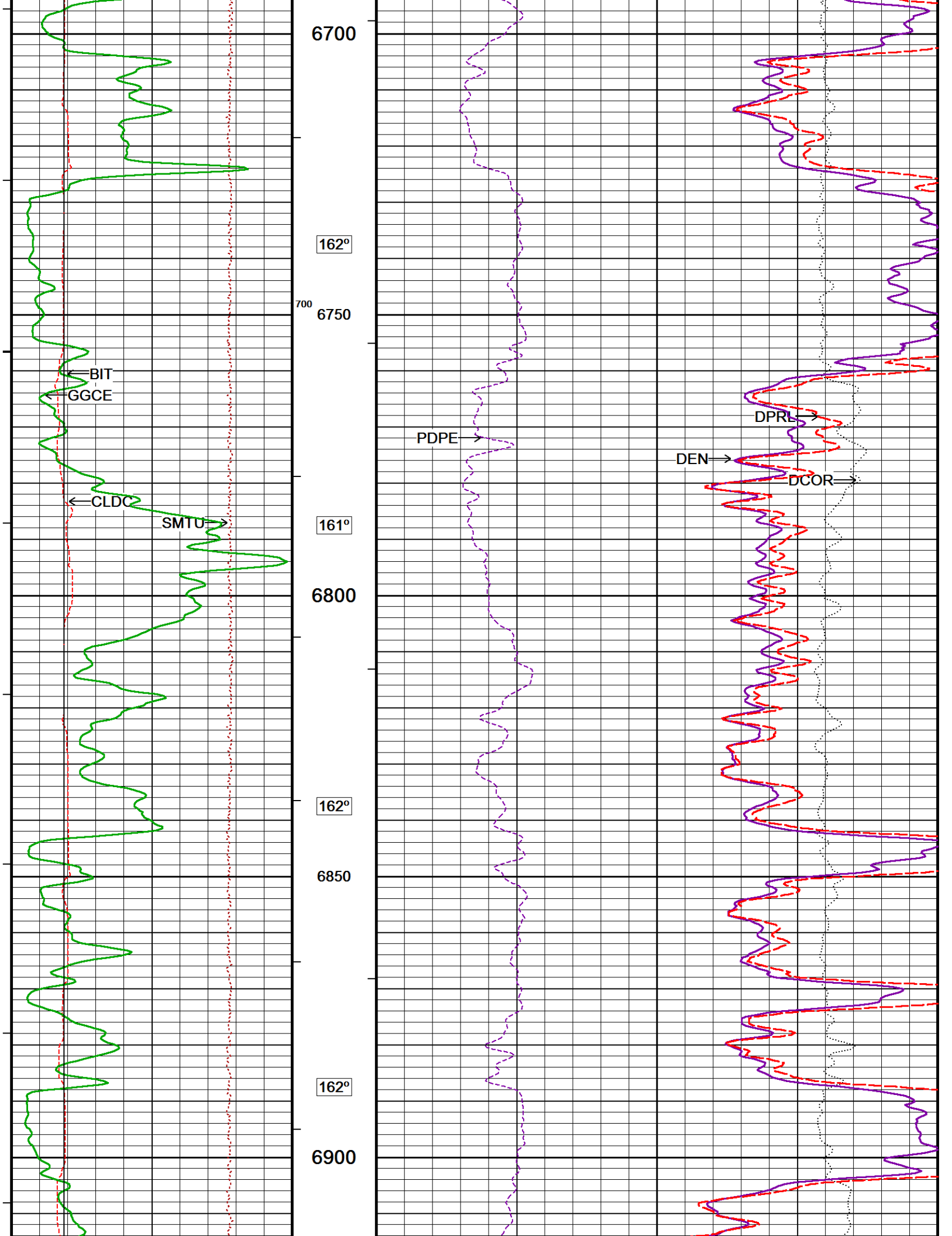
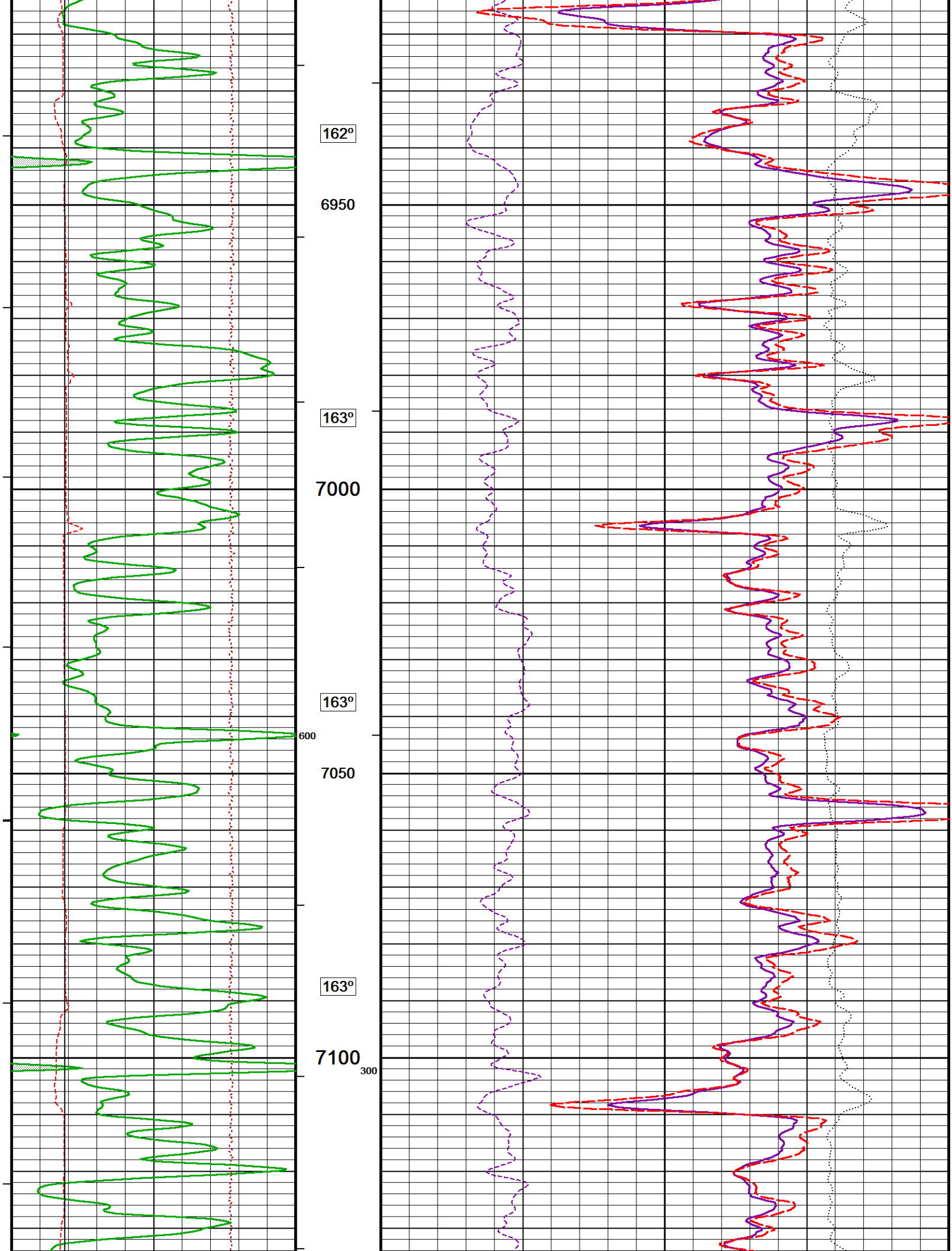
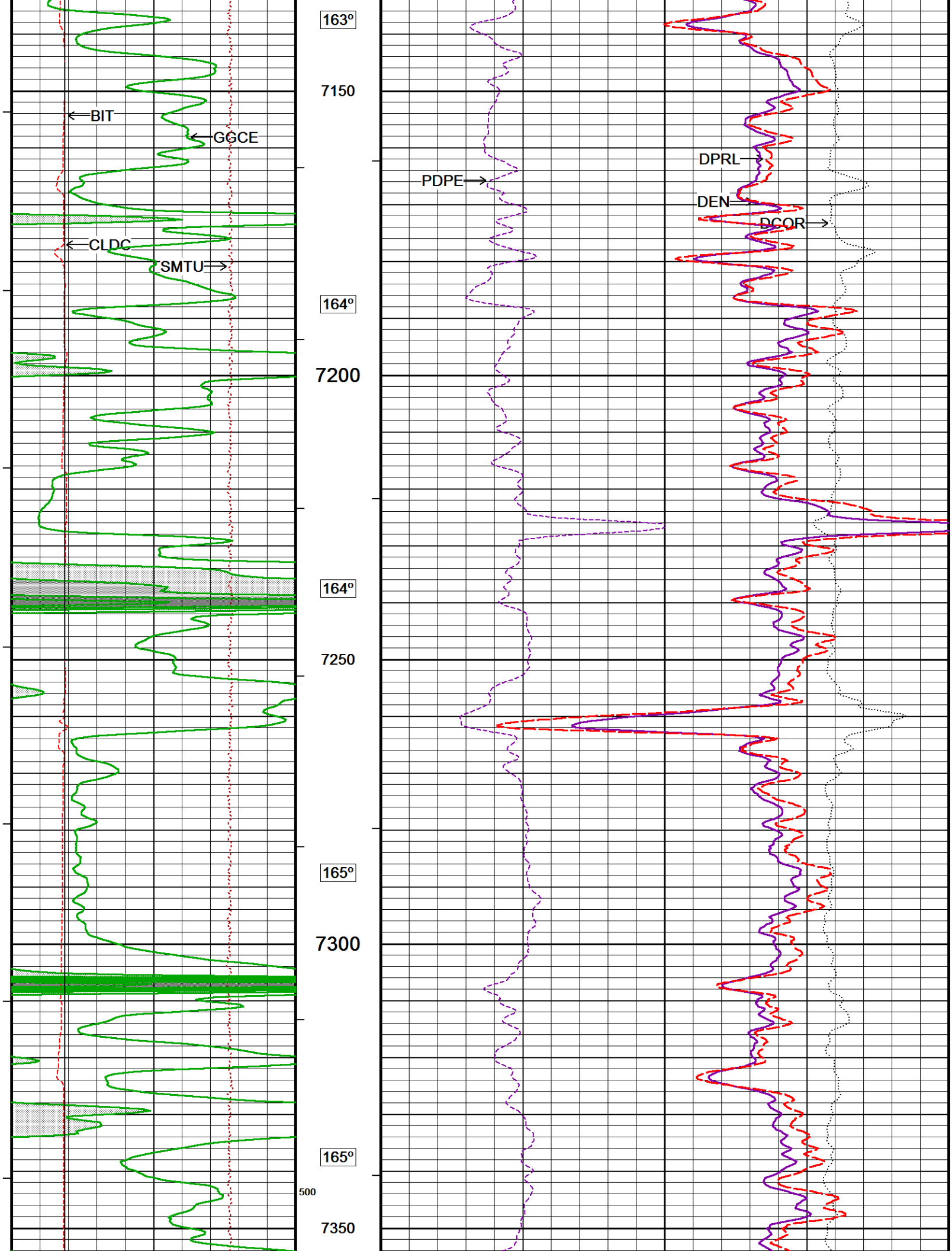
6050
157°
6100
157°
6150
900
158°
6200
157°
6250

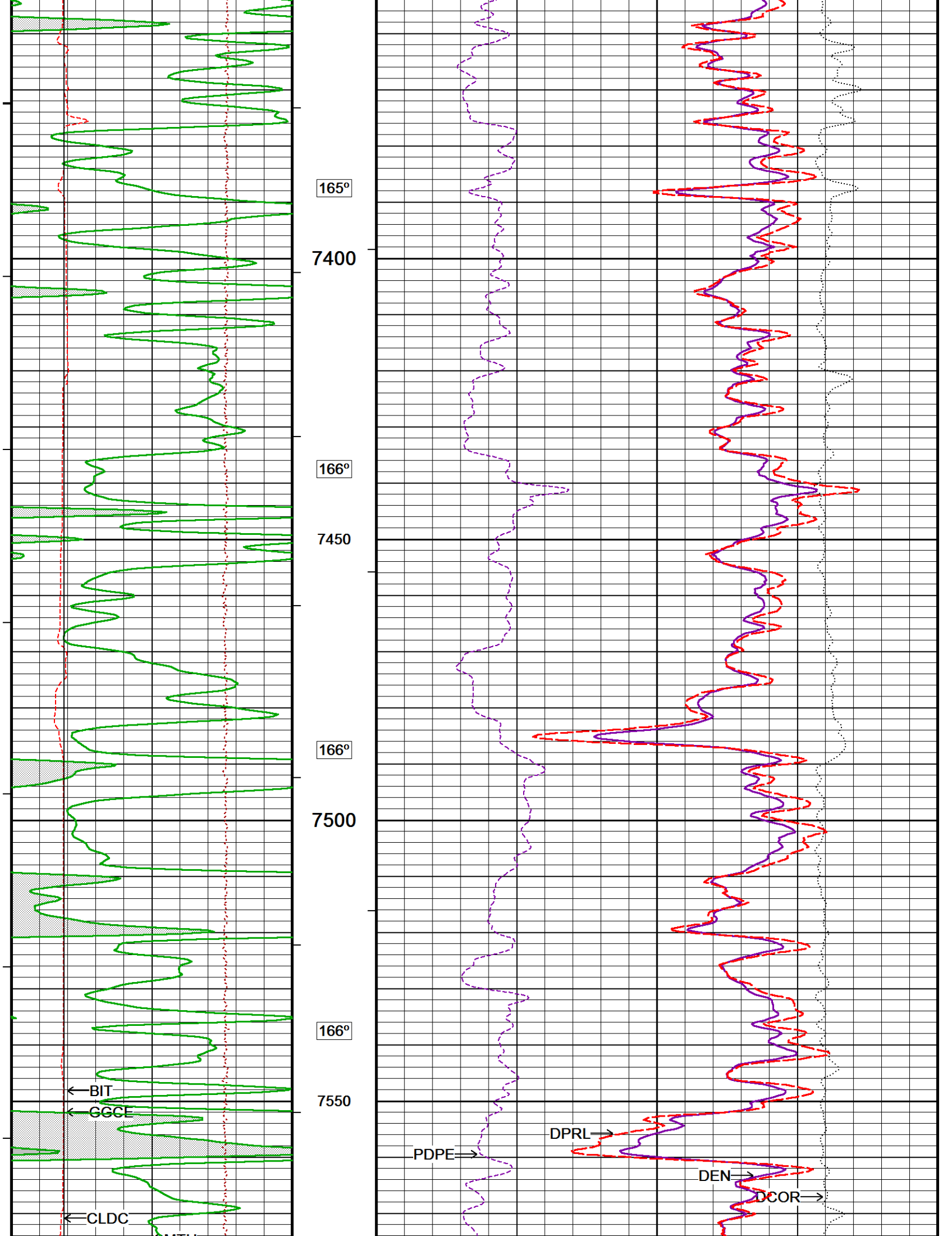

158°
6300
158°
6350
BIT
GGCE
CLDC
SMTU
159°
6400
160°
800
6450
PDPE
DPRL
DEN
DCOR

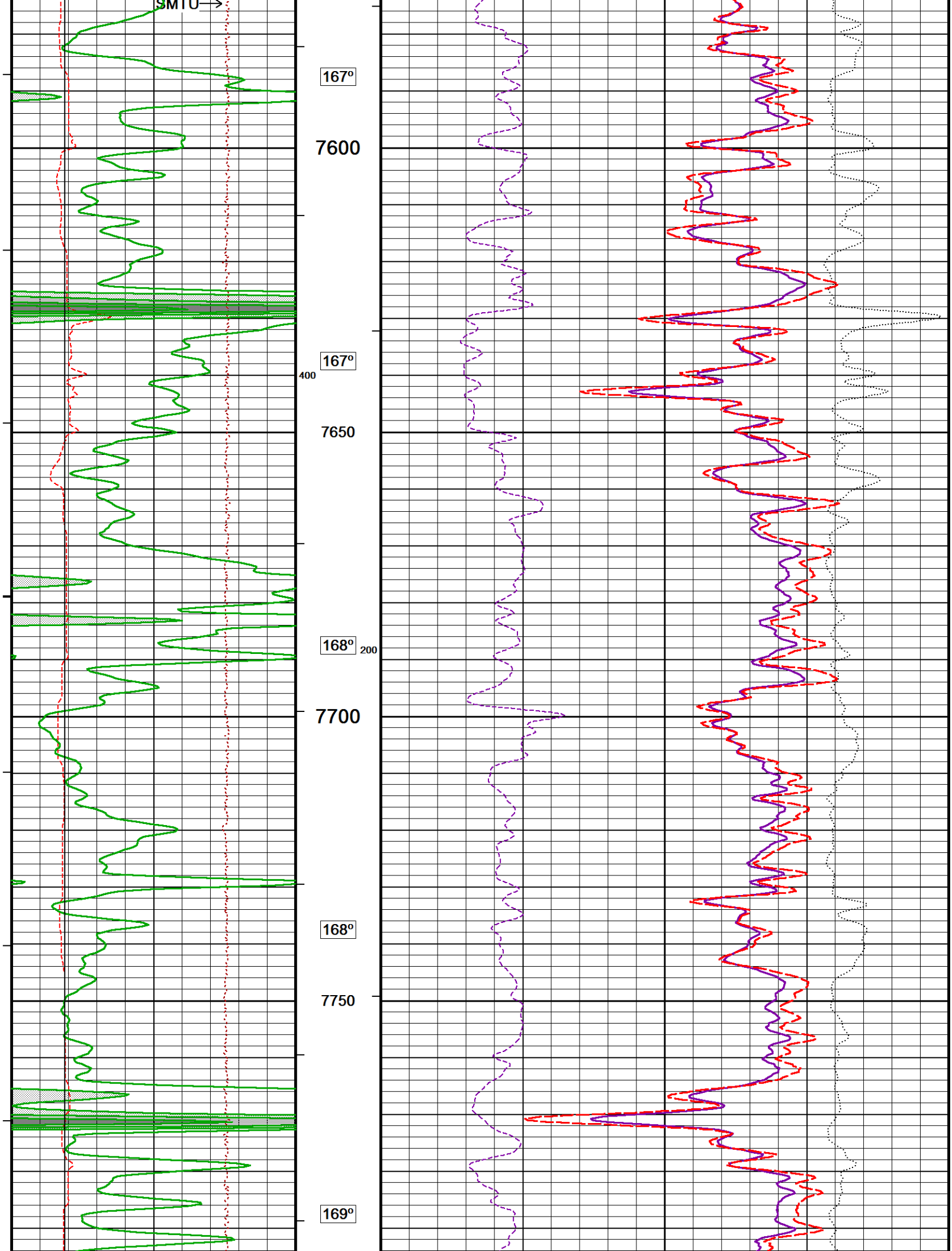

160°
6500
400
160°
6550
161°
6600
161°
6650
162°

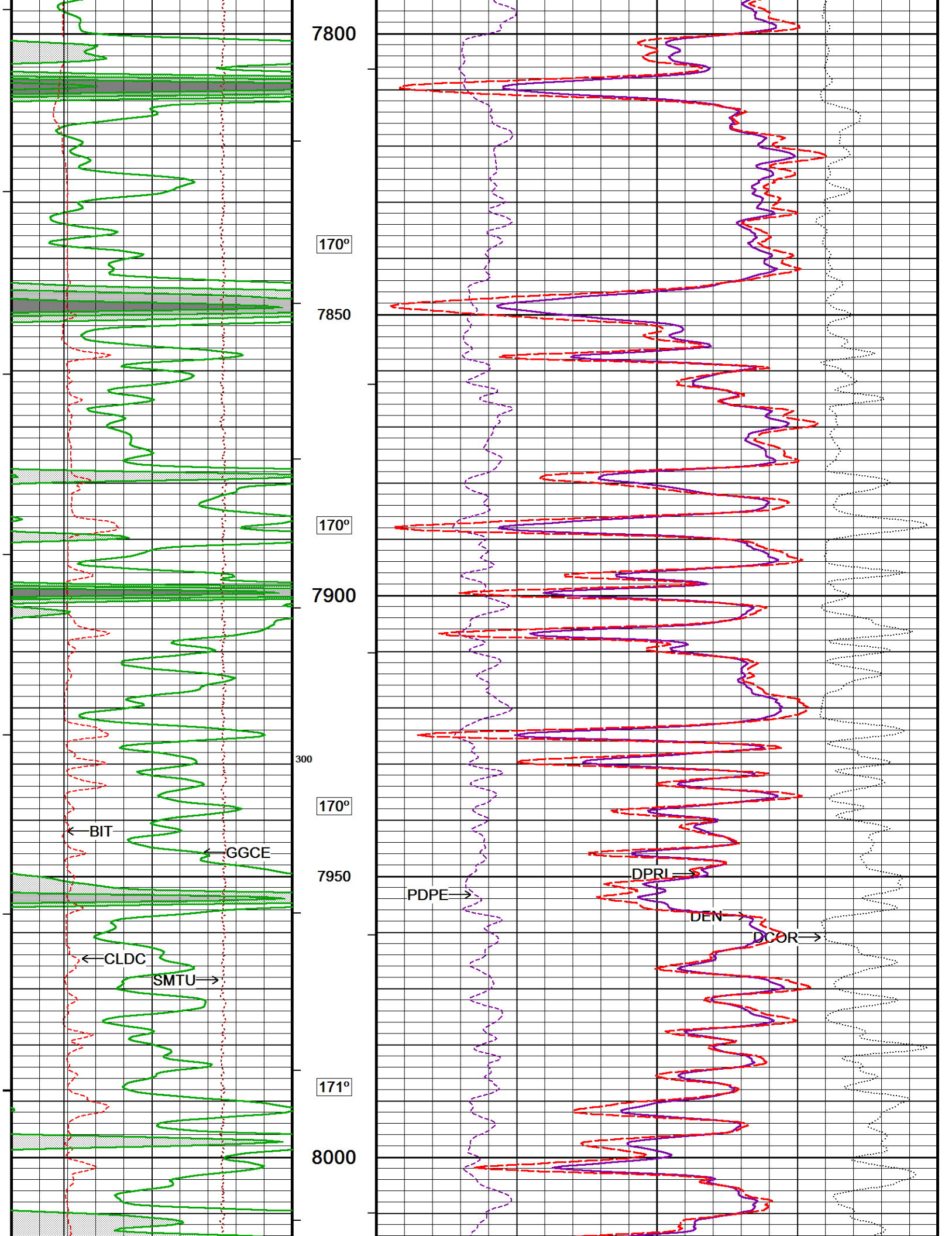

6700
162°
700
6750
BIT
GGCE
CLDC
SMTU
161°
6800
PDPE
DPRL
DEN
DCOR
162°
6850
162°
6900

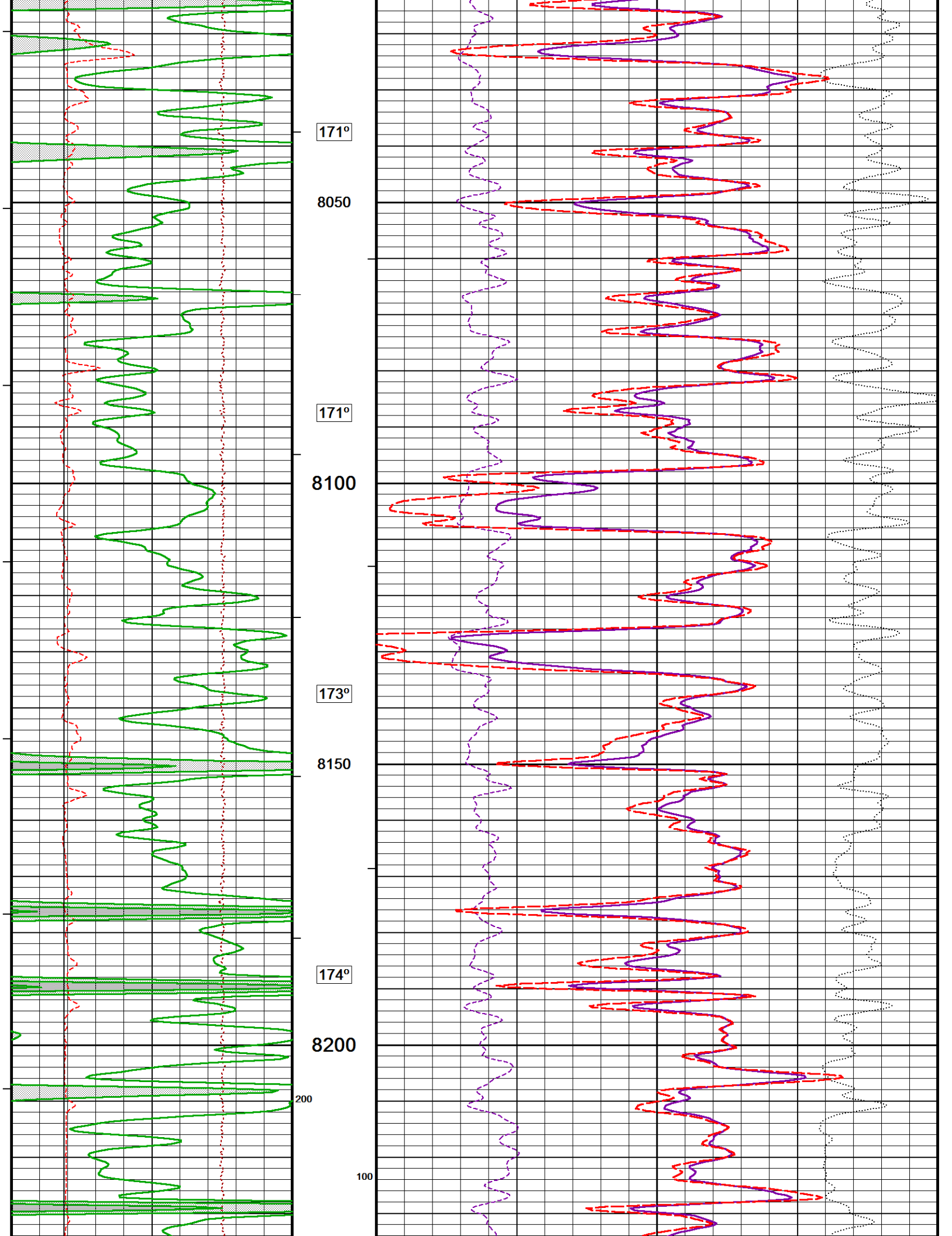

162°
6950
163°
7000
163°
600
7050
163°
7100
300

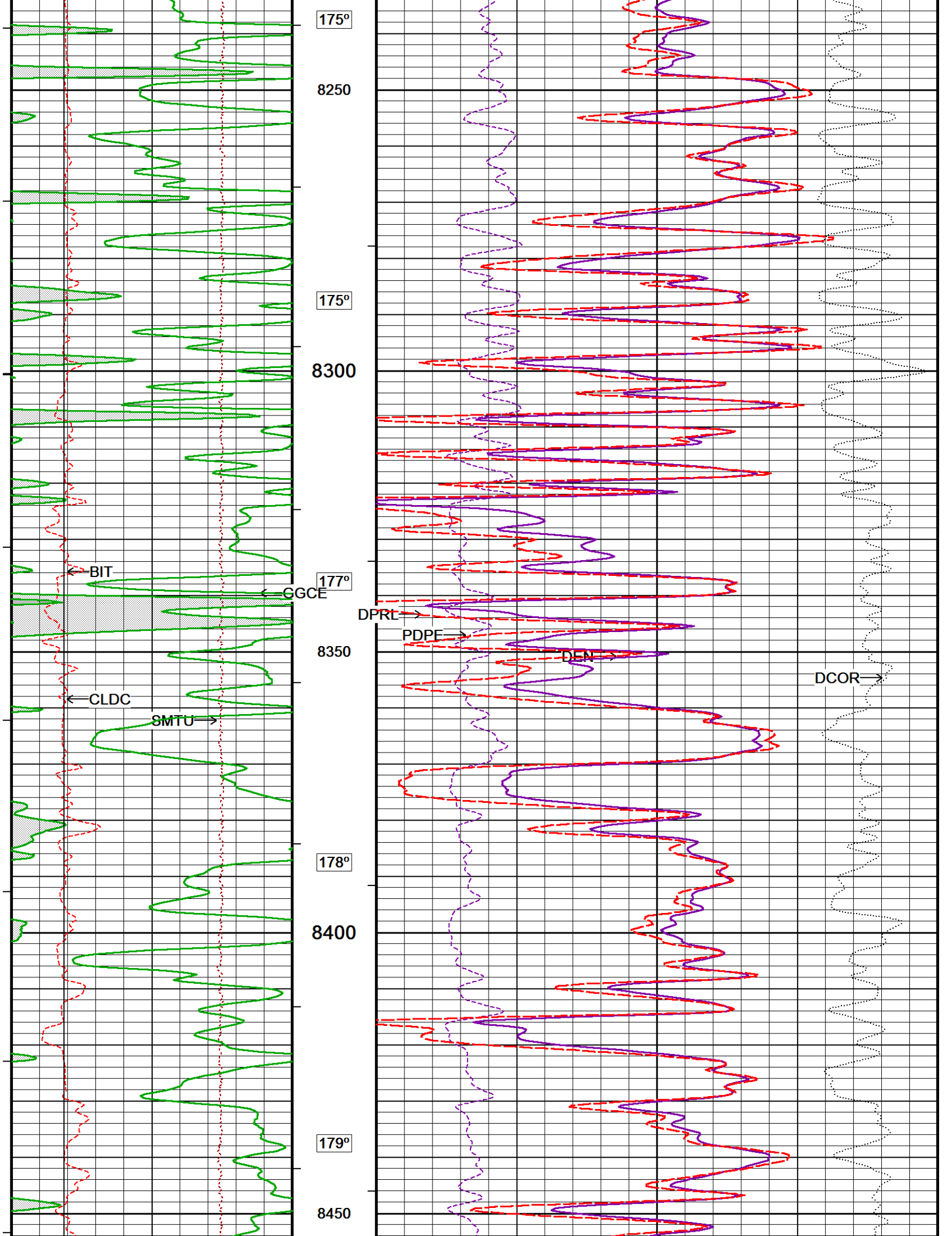

163°
7150
BIT
GGCE
CLDC
SMTU
164°
7200
164°
7250
165°
7300
165°
500
7350
PDPE
DPRL
DEN
DCOR

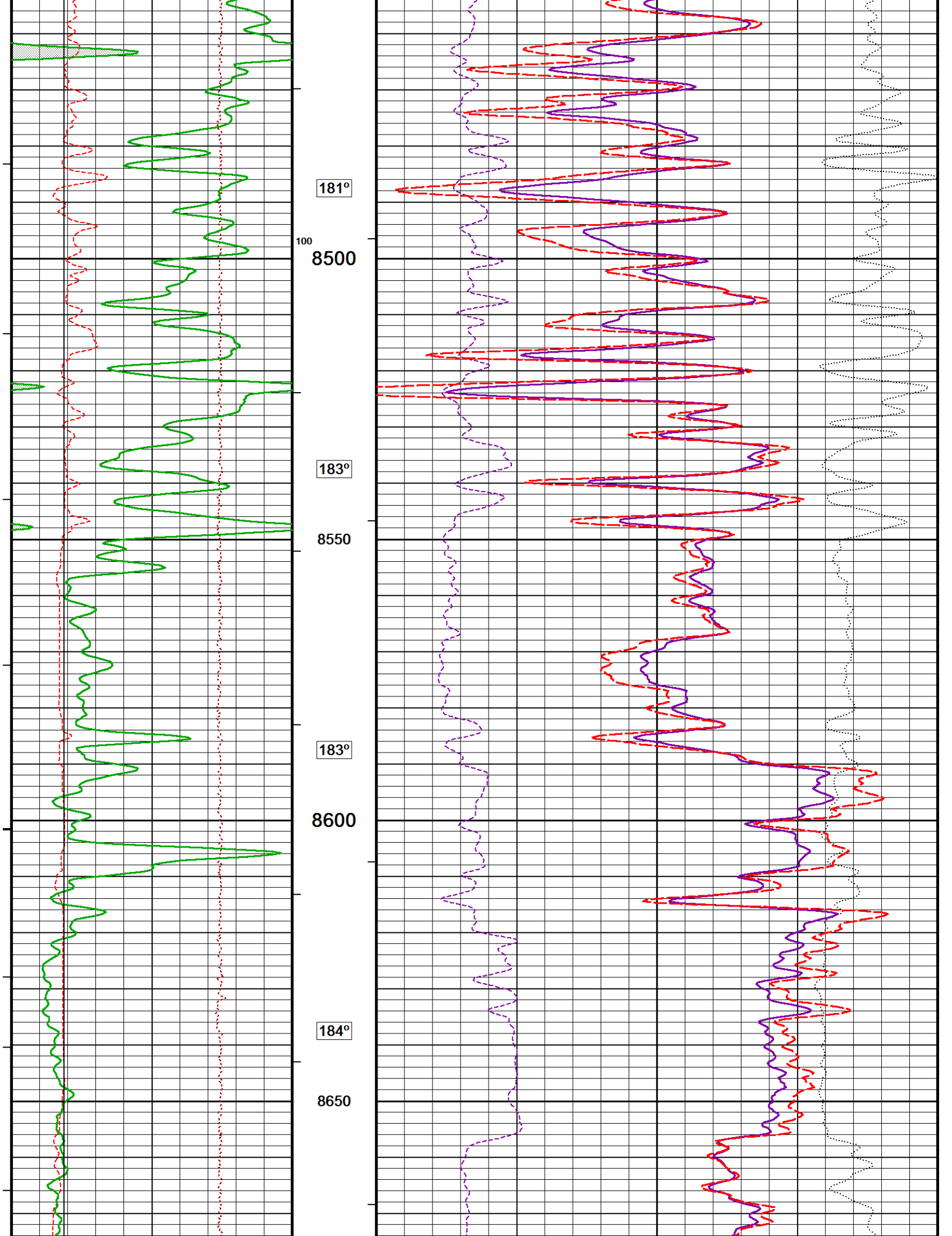

165º
7400
166º
7450
166º
7500
166º
7550
BIT
GCCE
CLDC
PDPE
DPRL
DEN
DCOR

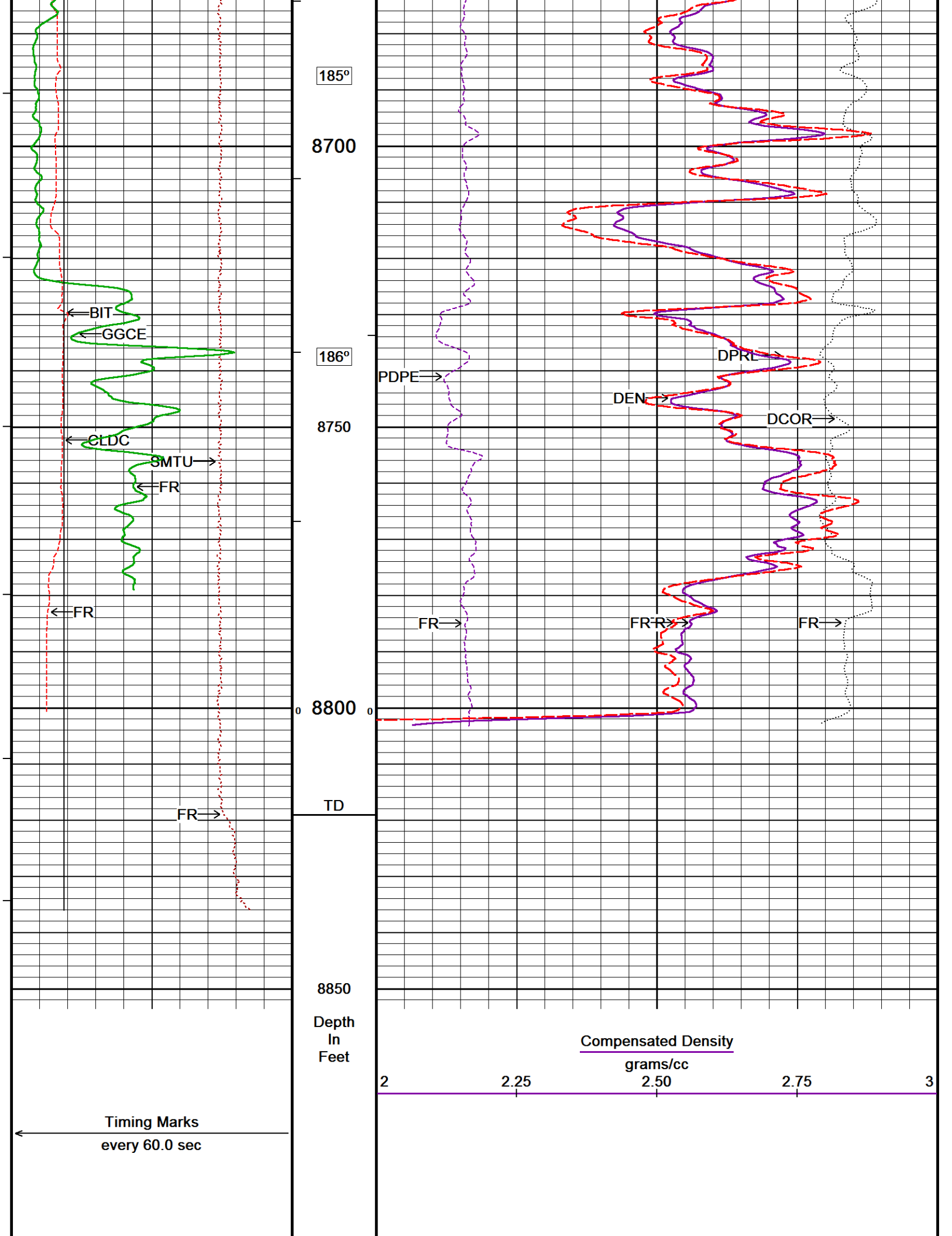

SMTU→
167°
7600
167°
400
7650
168°
200
7700
168°
7750
169°

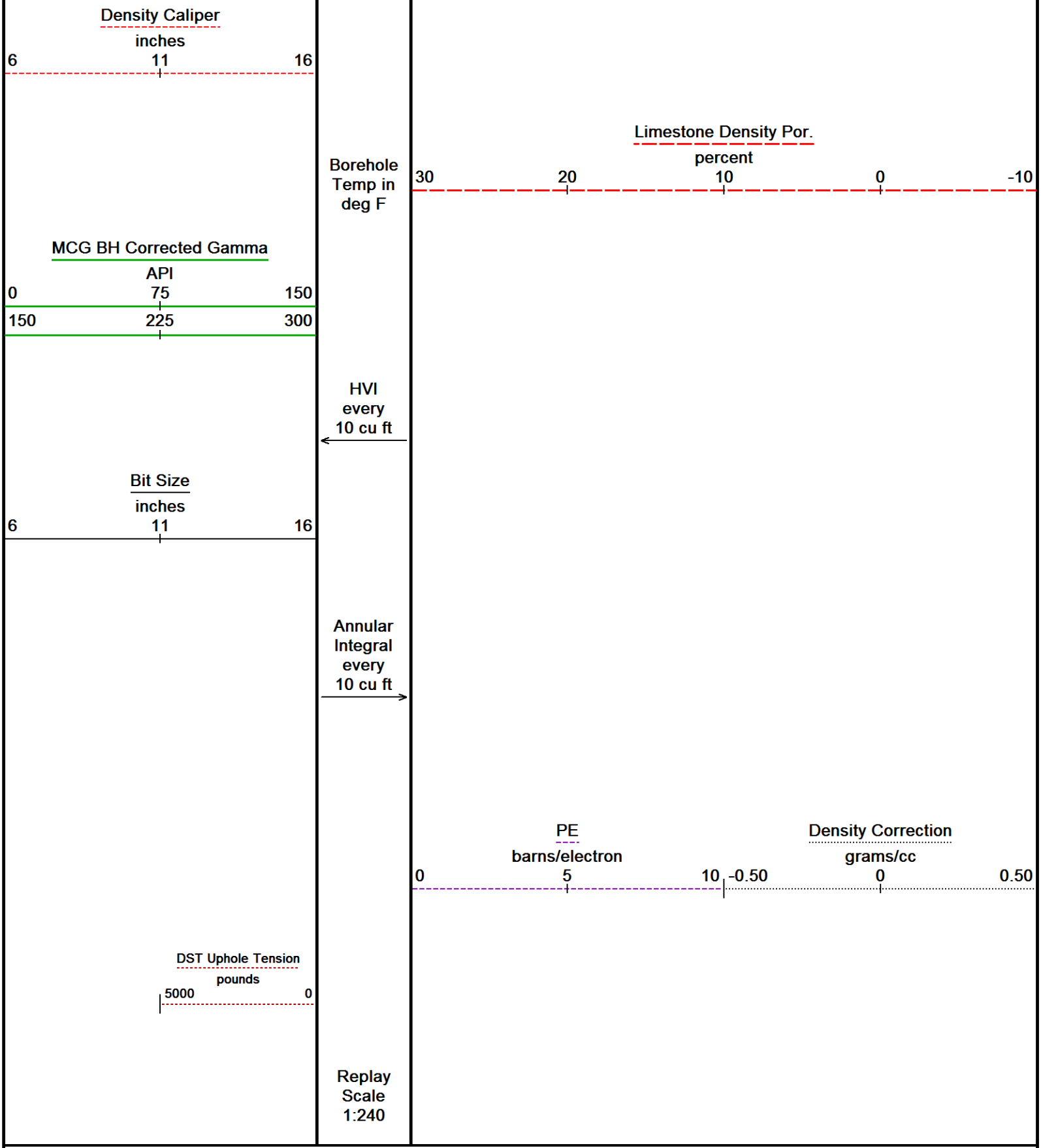

7800
170°
7850
170°
7900
300
170°
7950
171°
8000
BIT
GGCE
CLDC
SMTU
PDPE
DPRL
DEN
DCOR


171°
8050
171°
8100
173°
8150
174°
8200
200
100


175°
8250
175°
8300
BIT
177°
CGCE
DPRL
PDPE
8350
DEN
DCOR
CLDC
SMTU
178°
8400
179°
8450


181°
100
8500
183°
8550
183°
8600
184°
8650


185°
8700
186°
8750
8800
TD
8850
BIT
GGCE
CLDC
SMTU
FR
FR
FR
PDPE
FR
DPRL
DEN
DCOR
FR
FR
Depth
In
Feet
Compensated Density
grams/cc
2
2.25
2.50
2.75
3
Timing Marks
every 60.0 sec

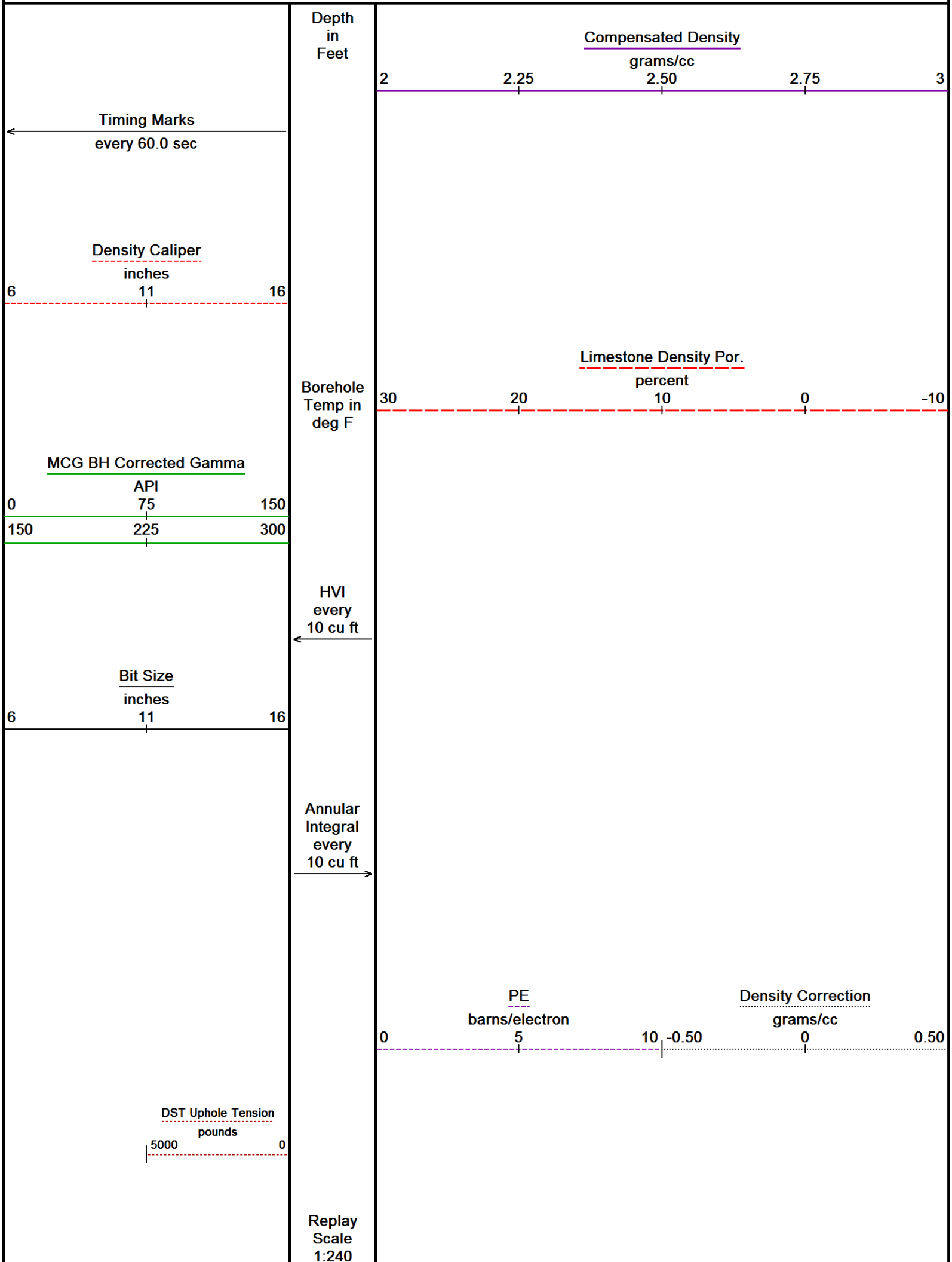


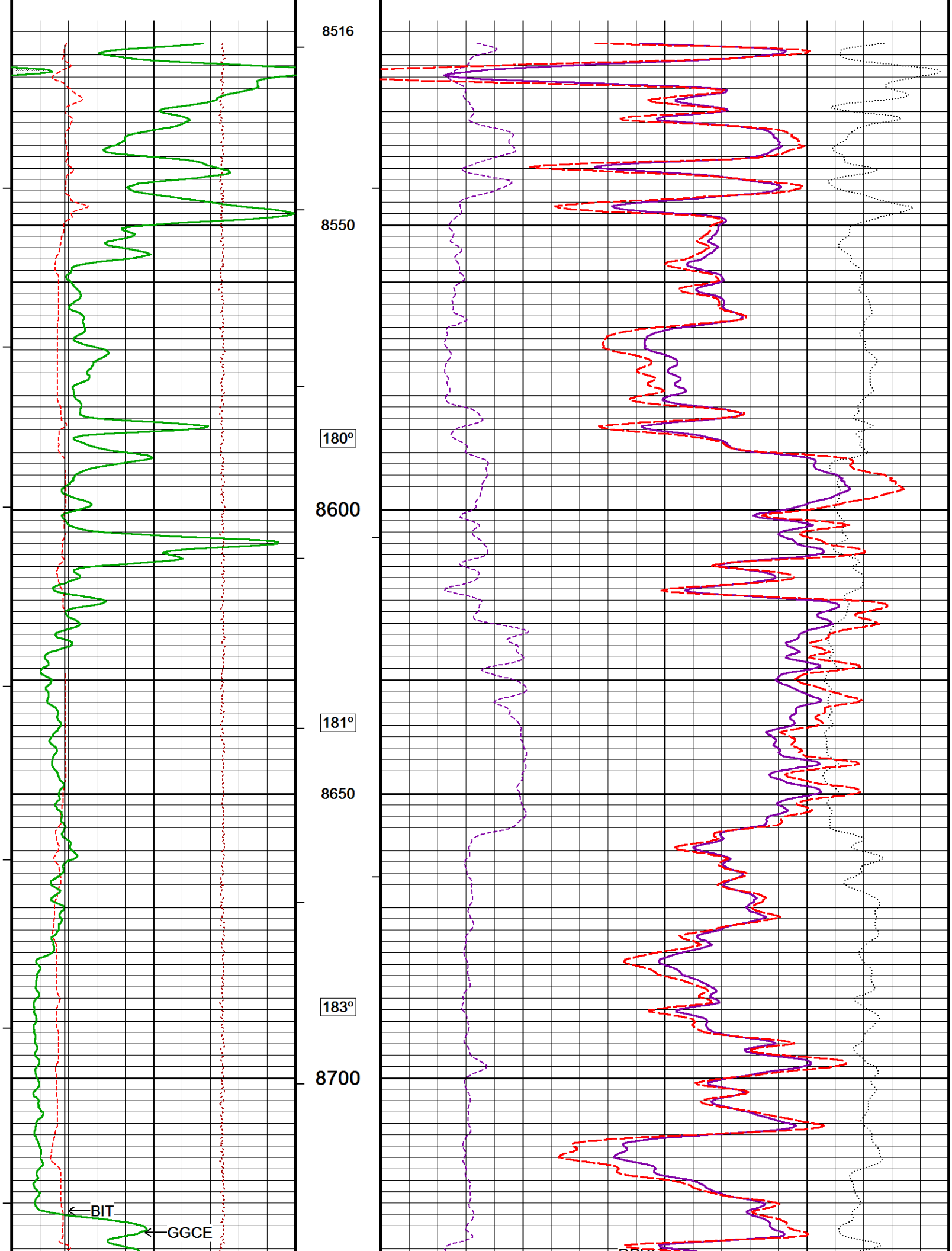
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 16-DEC-2017 19:36
Filename: C:\Minimus 17.05.5956\Data\MURFIN DRILLING (DAUNTLESS #15-1)\MAIN PASS.dta
Recorded on 16-DEC-2017 13:24
System Versions: Logged with 17.05.5956 Plotted with 17.05.5956

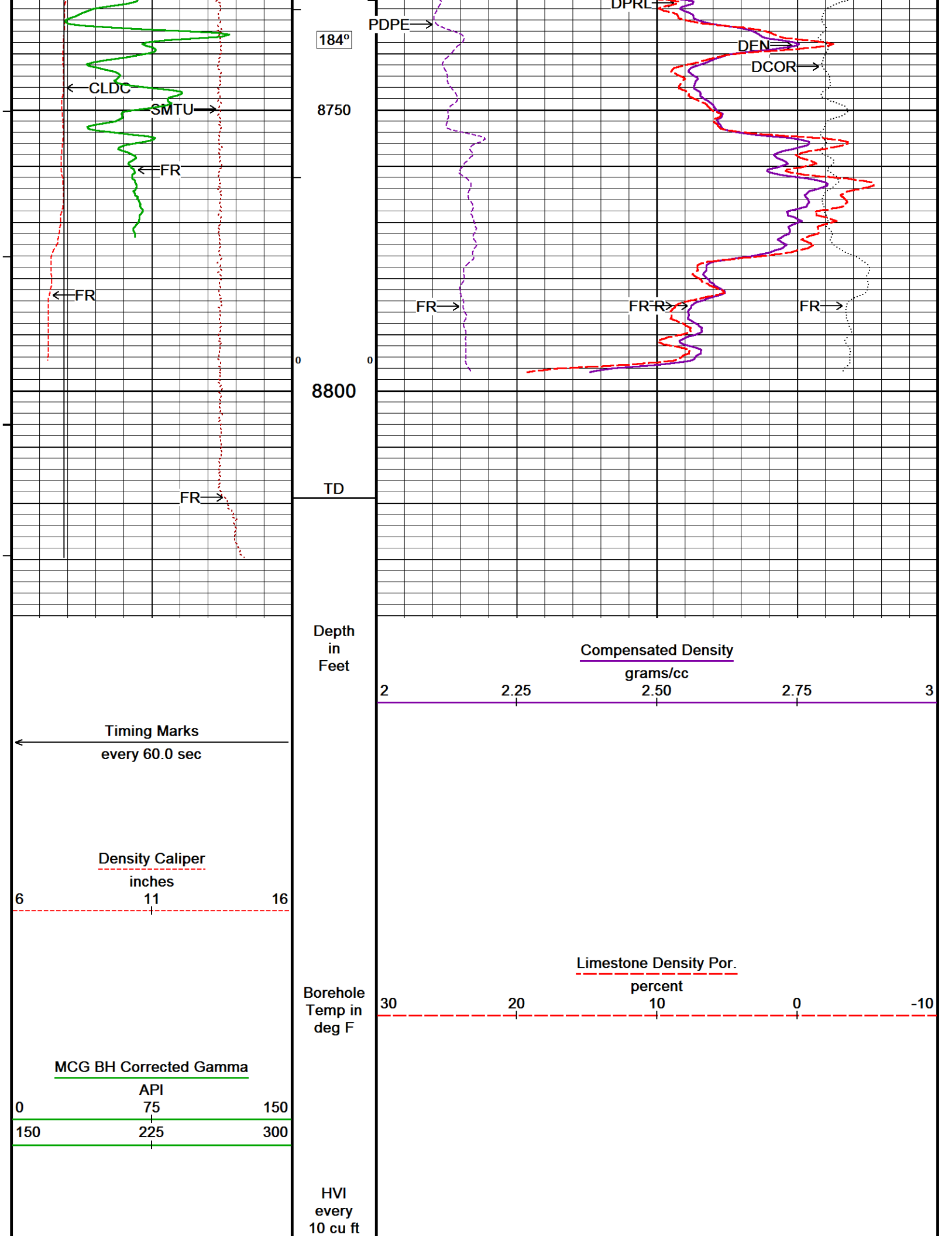
5 INCH MAIN PASS - BULK DENSITY 1:240

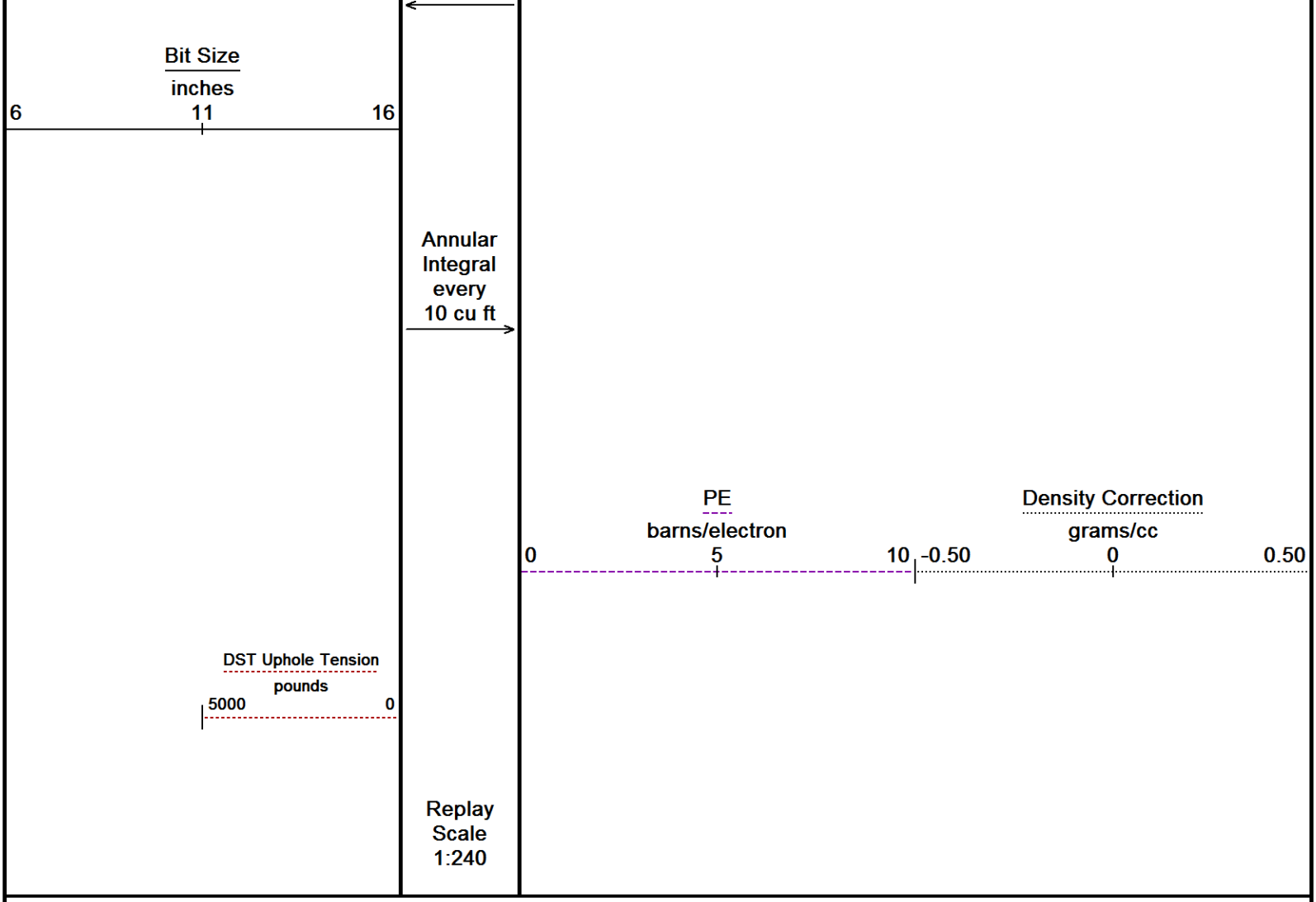
5 INCH REPEAT PASS - BULK DENSITY 1:240

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 16-DEC-2017 19:36
Filename: C:\Minimus 17.05.5956\Data\MURFIN DRILLING (DAUNTLESS #15-1)\REPEAT PASS.dta
Recorded on 16-DEC-2017 12:47
System Versions: Logged with 17.05.5956 Plotted with 17.05.5956


Depth
in
Feet
Compensated Density
grams/cc
2
2.25
2.50
2.75
3
Timing Marks
every 60.0 sec
Density Caliper
inches
6
11
16
Limestone Density Por.
percent
30
20
10
0
-10
Borehole
Temp in
deg F
MCG BH Corrected Gamma
API
0
75
150
150
225
300
HVI
every
10 cu ft
Bit Size
inches
6
11
16
Annular
Integral
every
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


8516
8550
180°
8600
181°
8650
183°
8700
BIT
GGCE


CLDC
SMTU
FR
FR
FR
PDPE
184°
8750
0
0
8800
TD
DPRL
DEN
DCOR
FR
FR
FR
Depth
in
Feet
Compensated Density
grams/cc
2
2.25
2.50
2.75
3
Timing Marks
every 60.0 sec
Density Caliper
inches
6
11
16
Limestone Density Por.
percent
30
20
10
0
-10
Borehole
Temp in
deg F
MCG BH Corrected Gamma
API
0
75
150
150
225
300
HVI
every
10 cu ft



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 16-DEC-2017 19:36
Filename: C:\Minimus 17.05.5956\Data\MURFIN DRILLING (DAUNTLESS #15-1)\REPEAT PASS.dta — Recorded on 16-DEC-2017 12:47
System Versions: Logged with 17.05.5956 Plotted with 17.05.5956

5 INCH REPEAT PASS - BULK DENSITY 1:240

BEFORE SURVEY CALIBRATION

C:\Minimus 17.05.5956\Data\MURFIN DRILLING (DAUNTLESS #15-1)\MAIN PASS.dta

General Constants All 000 — Last Edited on 16-DEC-2017,11:58

General Parameters		
Mud Resistivity	0.930	ohm-metres
Mud Resistivity Temperature	99.000	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	5.500	inches
Caliper for Differential Caliper	Density Caliper	
Rwa Parameters		
Porosity used	Crossplot Porosity	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	0.620	
RWA Constant M	2.150	
SW/APOR Tool Source	0.000	

High Resolution Temperature Calibration MCG-D.K 475

Field Calibration on 15-DEC-2017,10:22

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	200.00	200.00

High Resolution Temperature Constants MCG-D.K 475

Last Edited on 11-MAY-2016 11:23

Pre-filter Length	11

Gamma Calibration MCG-D.K 475

Field Calibration on 14-DEC-2017 14:26

	Measured	Calibrated (API)
Background	46	31
Calibrator (Gross)	1905	1292
Calibrator (Net)	1859	1261

Gamma Calibration Tolerances MCG-D.K 475

Ratio	1.474	1.40 / 1.475 / 1.55	Counts/API	

Gamma Constants MCG-D.K 475

Last Edited on 16-DEC-2017,09:16

Gamma Calibrator Number	GRC.C 46	
GRC-M Calibrator Jig in Use?	NO	
Inactive Background Jig in Use?	NO	
Mud Density	1.12	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Potassium Equivalence	Chloride	
K Mud Concentration	0.00	%

Caliper Calibration MPD-B 120

Base Calibration on 04-DEC-2017 08:42
Field Calibration on 14-DEC-2017 14:55

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	17603	4.00
2	26000	5.96
3	34637	7.96
4	43056	9.86
5	52138	11.88
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.91	7.96

Caliper Calibration Tolerances MPD-B 120

Short Arm Field Cal.	7.91	7.76 / 7.96 / 8.16	in

Photo Density Calibration MPD-B 120

Base Calibration on 01-DEC-2017 12:44
Field Check on 14-DEC-2017 14:50

Density Calibration

Base Calibration

	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Background	902	1137		
Reference 1	45220	22202	59494	30754
Reference 2	18316	2130	24557	2522

Field Check at Base

902.2	1137.1

Field Check

898.3	1118.1

PE Calibration

Base Calibration

	WS	Measured WH	Ratio	Calibrated Ratio
Background	162	801		
Reference 1	17484	45083	0.391	0.367
Reference 2	4866	18215	0.270	0.271

Field Check at Base

161.5	801.4

Field Check	161.3	798.9

Photo Density Calibration Tolerances MPD-B 120

		-5%		+5%
Near Density Ratio	2.54		2.52	
PE Calibration	0.116	0.089	0.110	0.131
Near Den. Field Check	898.3	-3%	902.2	+3%
PE WS Field Check	161.3	-6%	161.5	+6%

		-5%		+5%
Far Density Ratio	21.21		21.00	
Far Den. Field Check	1118.1	-3%	1137.1	+3%
PE WH Field Check	798.9	-6%	801.4	+6%

Density Constants MPD-B 120

Last Edited on 16-DEC-2017,09:16

Density Source Id	P5771B	
Nylon Calibrator Number	766	
Aluminium Calibrator Number	633	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.12	gm/cc
Mud Density Type		
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	
Precision Enhanced Density Processing	Not Applied	

Matrixdensity(gm/cc)	Depth(m)
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	

DOWNHOLE EQUIPMENT

C:\Minimus 17.05.5956\Data\MURFIN DRILLING (DAUNTLESS #15-1)\MAIN PASS.dta

11B Tension Cablehead
MCB-A.A 2 LG: 2.40 ft WT: 19.8 lb OD: 2.244 in

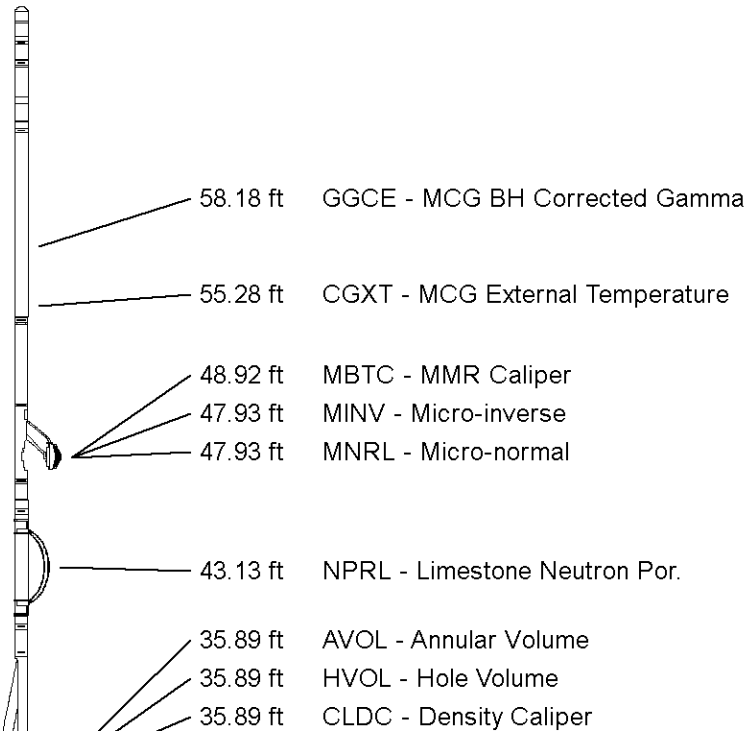
Compact Swivel Head Adaptor
SHA-J.A 438 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

Compact Comms Gamma
MCG-D.K 475 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-Resistivity
MMR-A 11 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

Compact Neutron
MDN-B.J 388 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper
MPD-B 120 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in



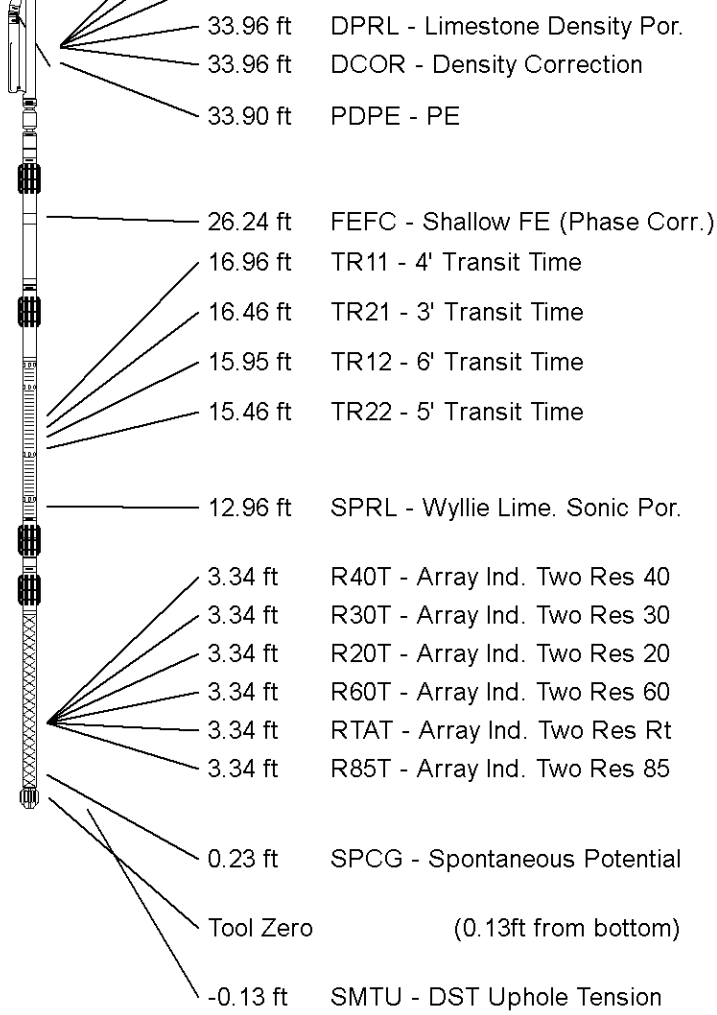
Compact Knuckle Joint
SKJ-E.A 166 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

Compact Focussed Electric
MFE-B.A 261 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Sonic
MSS-C.A 147 LG: 12.52 ft WT: 72.8 lb OD: 2.240 in

Compact Induction
MAI-B.J 426 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 68.16 ft Weight: 522.5 lb



All measurements relative to tool zero.

COMPANY	MURFIN DRILLING COMPANY, INC.
WELL	DAUNTLESS #15-1
FIELD	WILDCAT
PROVINCE/COUNTY	LINCOLN
COUNTRY/STATE	U.S.A. / COLORADO

Elevation Kelly Bushing	5554	feet	First Reading	8785.00	feet
Elevation Drill Floor	5552	feet	Depth Driller	8820.00	feet
Elevation Ground Level	5541	feet	Depth Logger	8819.00	feet

Weatherford®

COMPACT PHOTO-DENSITY
COMPENSATED NEUTRON
MICRO-RESISTIVITY