



Weatherford®

**ARRAY INDUCTION
NEUTRON/DENSITY
COMPOSITE LOG**

COMPANY

SUENMAUR EXPLORATION & PRODUCTION, LLC.

WELL

MUIRHEAD FARMS #1-12

FIELD

WILDCAT

PROVINCE/COUNTY

DECATUR

COUNTRY/STATE

U.S.A. / KANSAS

LOCATION

605' FSL & 634' FWL

SEC 12

TWP 5S

RGE 28W

Other Services

Latitude

MML

MSS

API Number

15-039-21230

Permanent Datum GL, Elevation 2731 feet

Log Measured From KB

Drilling Measured From KB @ 5 FEET

Date

13-MAY-2016

Run Number

ONE

Service Order

4558-150307389

Depth Driller

4485.00 feet

Depth Logger

4483.00 feet

First Reading

4480.00 feet

Last Reading

260.00 feet

Casing Driller

260.00 feet

Casing Logger

260.00 feet

Bit Size

7.875 inches

Hole Fluid Type

CHEMICAL

Density / Viscosity

9.30 lb/USg 65.00 CP

PH / Fluid Loss

10.00 6.40 ml/30Min

Sample Source

FLOWLINE

Rm @ Measured Temp

1.0 @ 75.0 ohm-m

Rmf @ Measured Temp

0.80 @ 75.0 ohm-m

Rmc @ Measured Temp

1.20 @ 75.0 ohm-m

Source Rmf / Rmc

CALC CALC

Rm @ BHT

0.61 @122.0 ohm-m

Time Since Circulation

4 HOURS

Max Recorded Temp

122.00 deg F

Equipment / Base

13096 OKC

Recorded By

ADAM SILL

LARRY NICHOLSON

BOREHOLE RECORD

Last Edited: 13-MAY-2016 08:35

Bit Size
inches

7.875

Depth From
feet

260.00

Depth To
feet

4485.00

CASING RECORD

Type

Size
inches

8.625

Depth From
feet

0.00

Shoe Depth
feet

260.00

Weight
pounds/ft

24.00

REMARKS

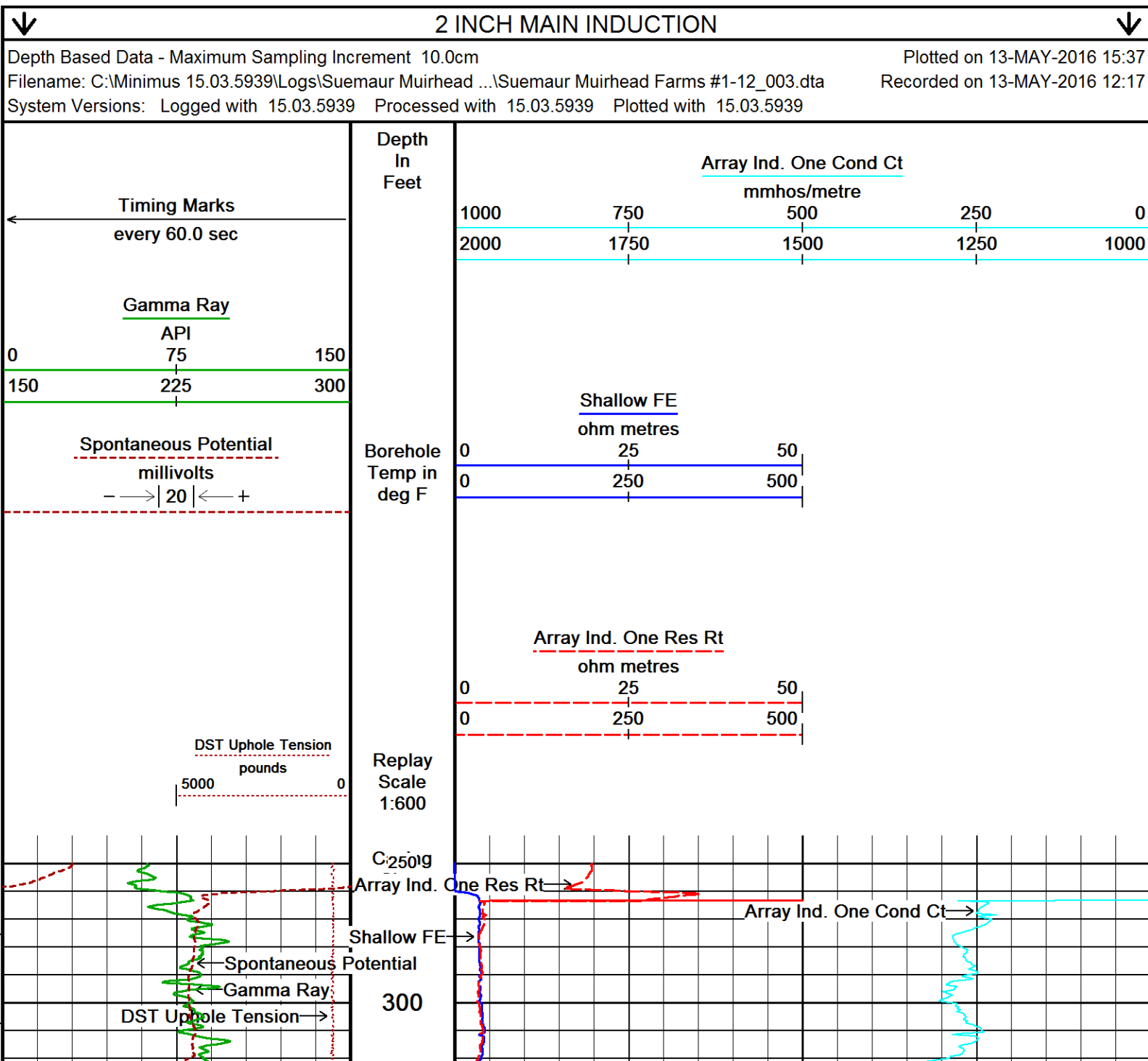
- SOFTWARE ISSUE: WLS 15.03.5939.
- RUN ONE: MCG, MML, MDN, MPD, MFE, MSS, MAI RUN IN COMBINATION.
 - HARDWARE: DUAL BOWSPRING USED ON MDN.
 - 0.5 INCH STANDOFF USED ON MFE.
 - TWO 0.5 INCH STANDOFFS USED ON MSS.
 - 0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.
- 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: 1564 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING: 871 CU.FT.

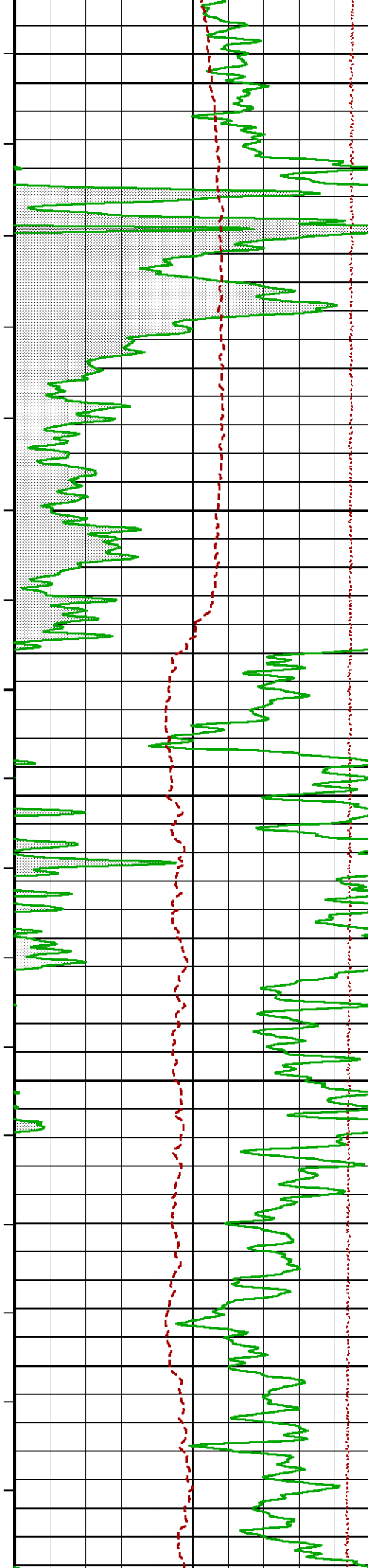
- RIG: MURFIN #7.

- ENGINEER: A. SILL.

- OPERATOR: J. LaPOINT.

In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will give the Company the benefit of the Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ. ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF THE COMPANY, AND THE CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. THE COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISIONS CONCERNING THE SERVICES.





92°

400

94°

500

95°

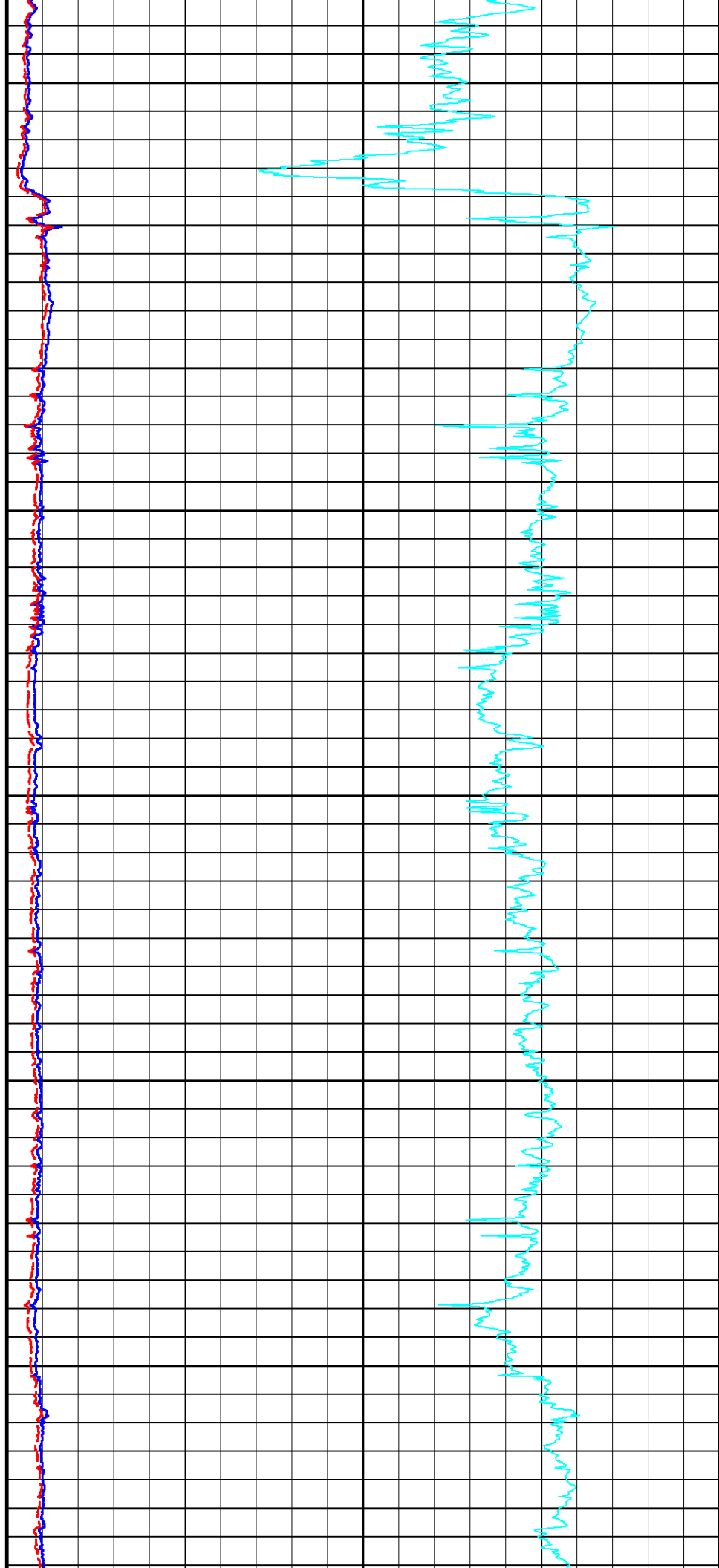
600

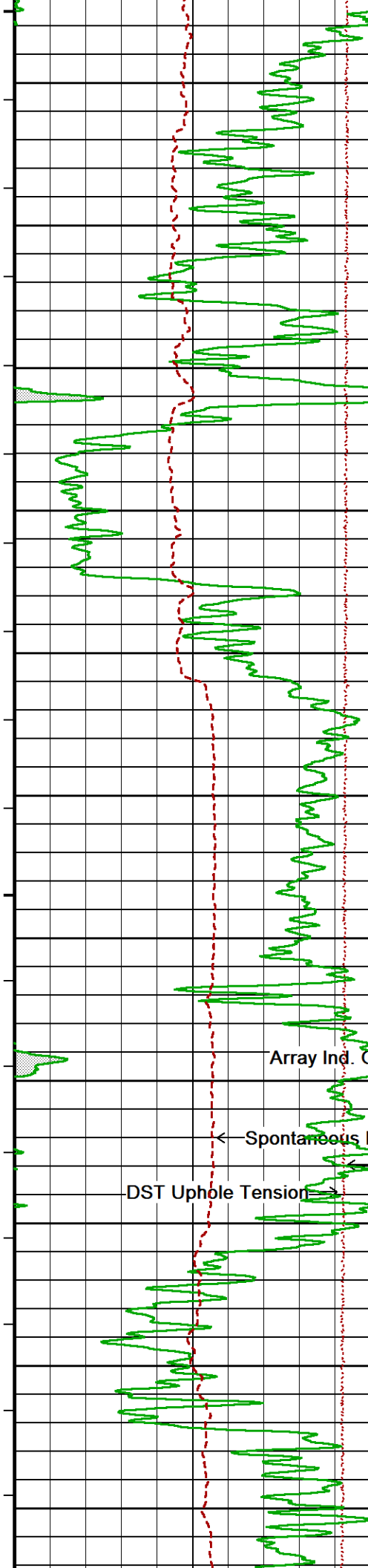
96°

700

96°

800





97°

900

98°

1000

98°

1100

100°

1200

Array Ind. One Res Rt

Shallow FE

Spontaneous Potential

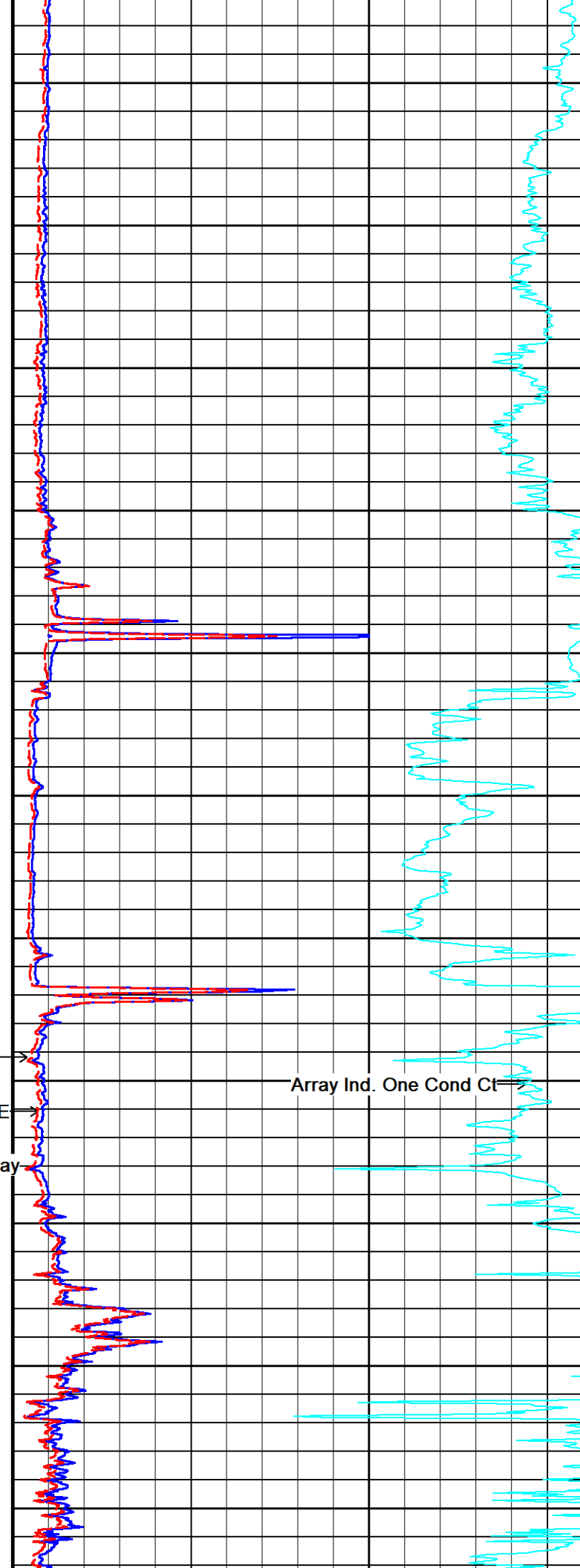
DST Uphole Tension

101°

1300

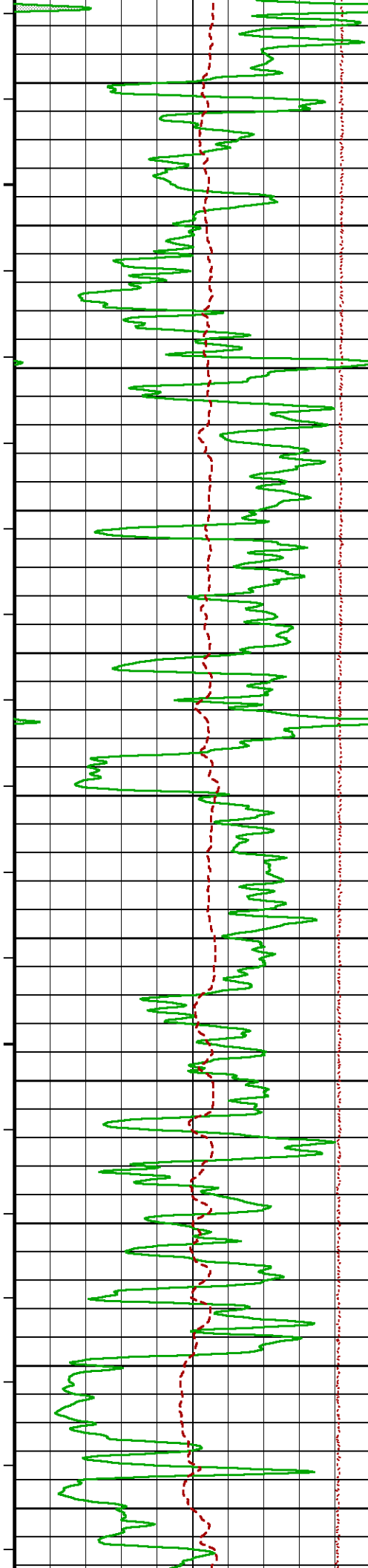
102°

1400



Array Ind. One Cond Ct

Gamma Ray



101°

1500

103°

1600

103°

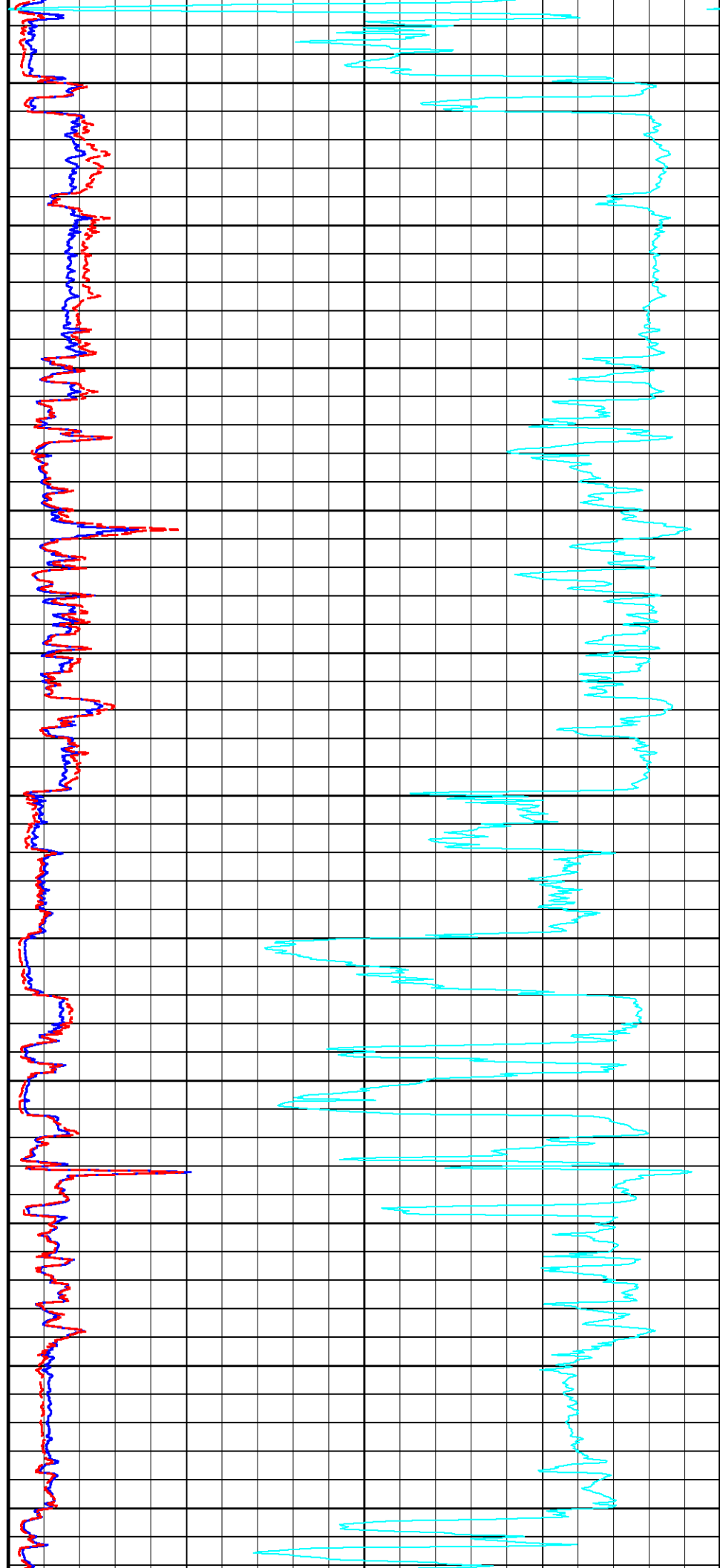
1700

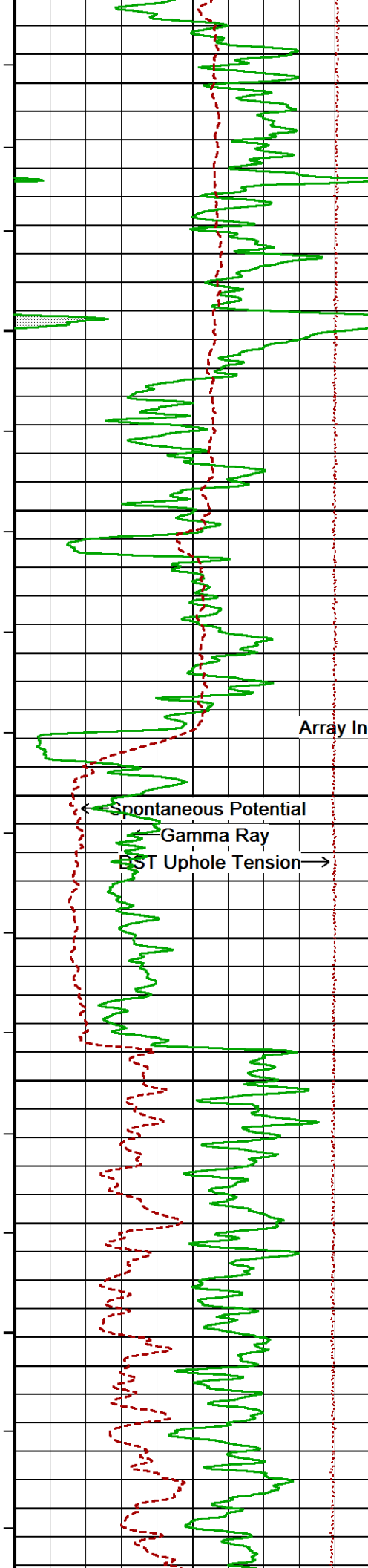
104°

1800

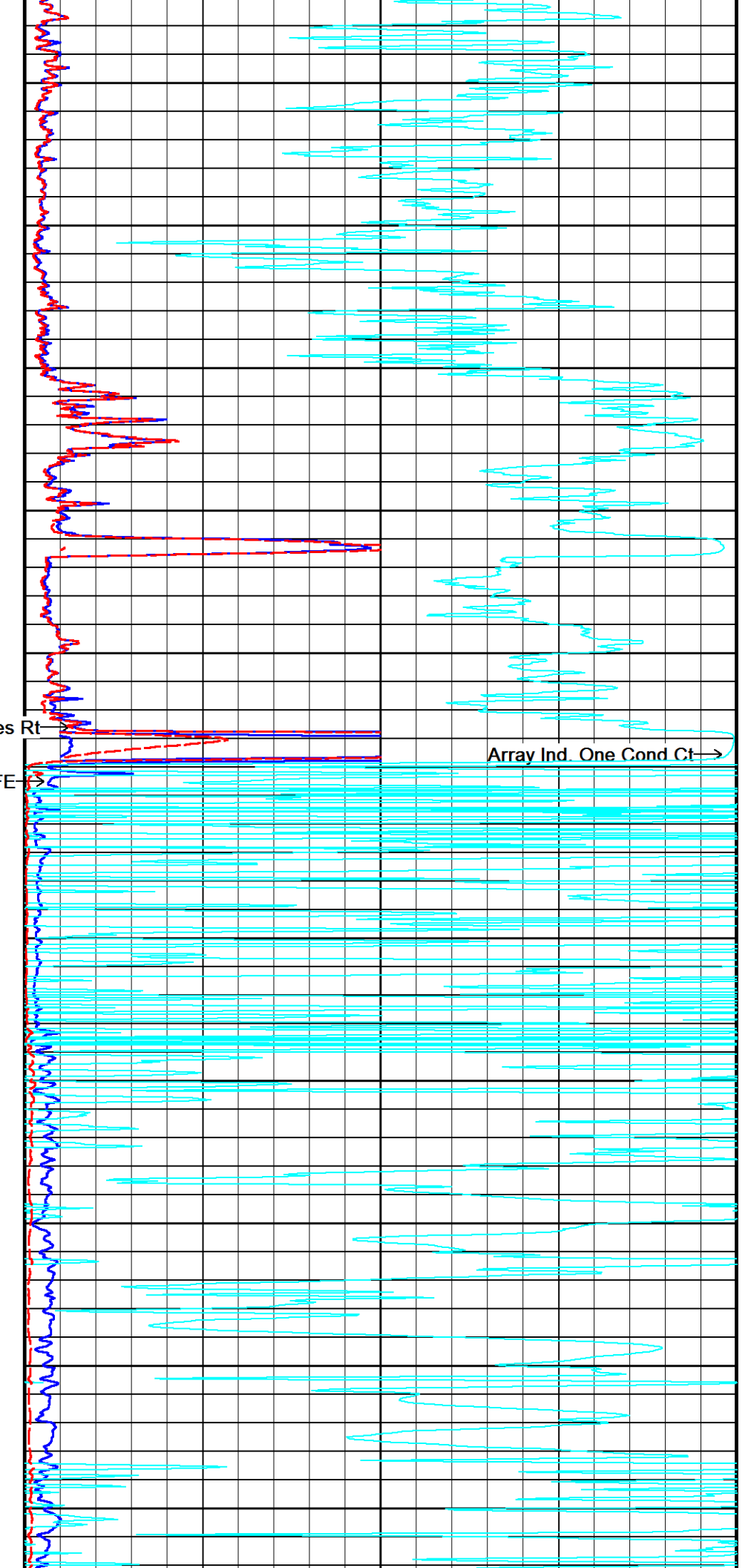
105°

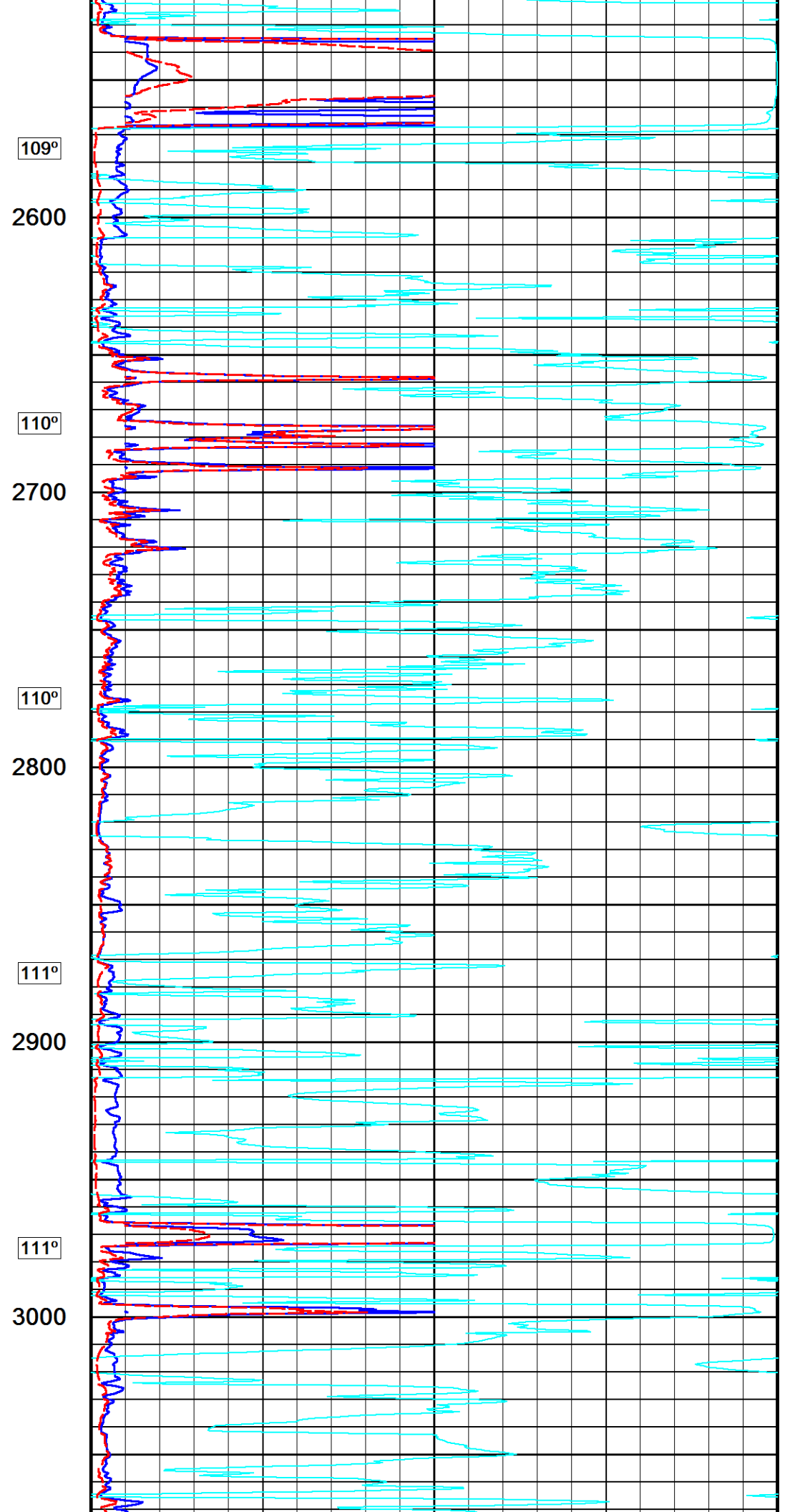
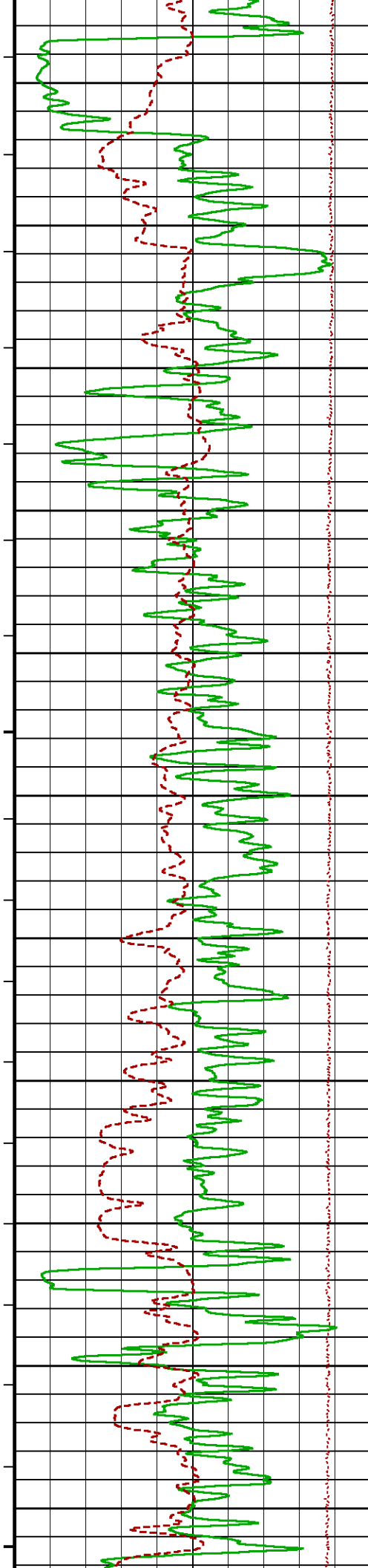
1900

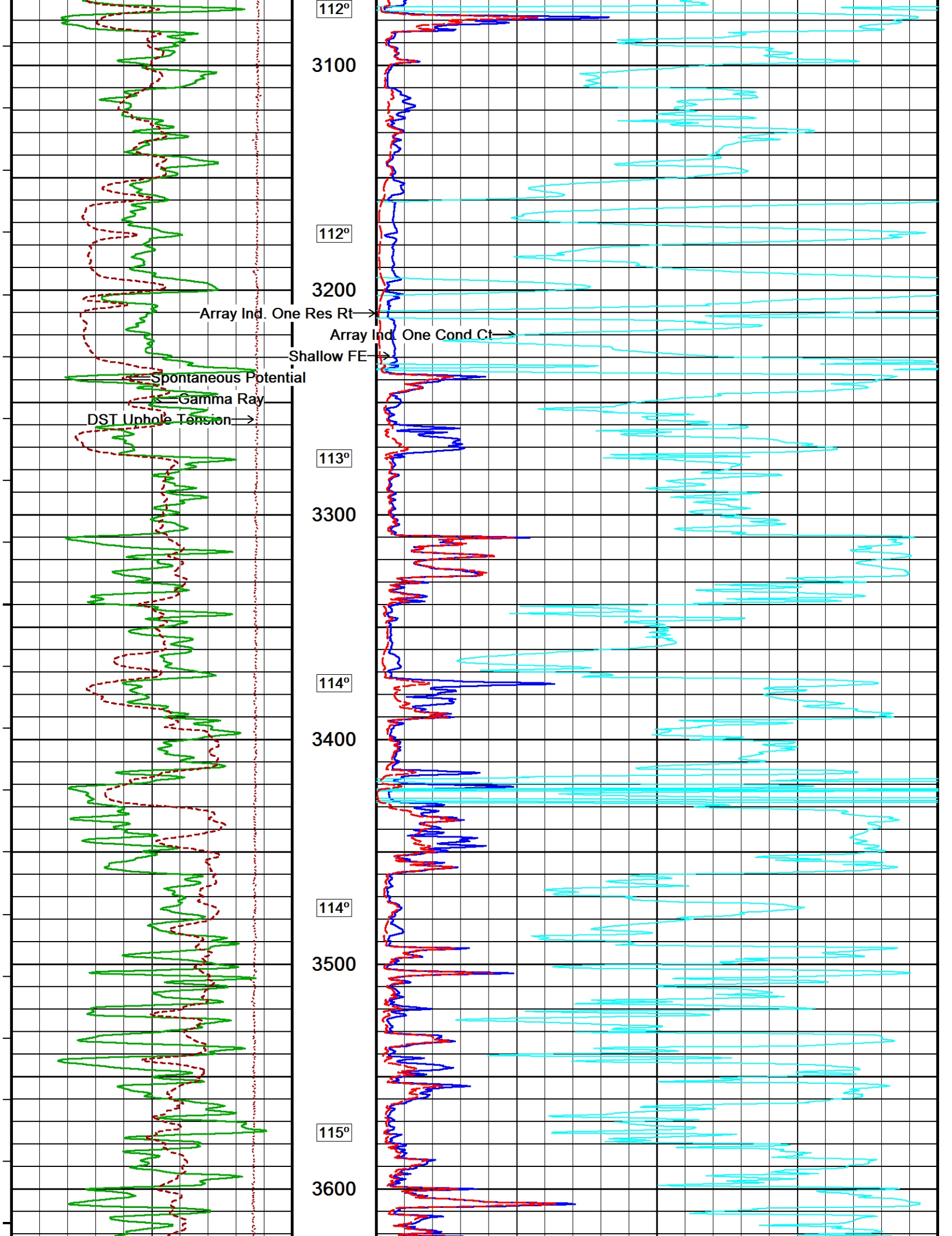


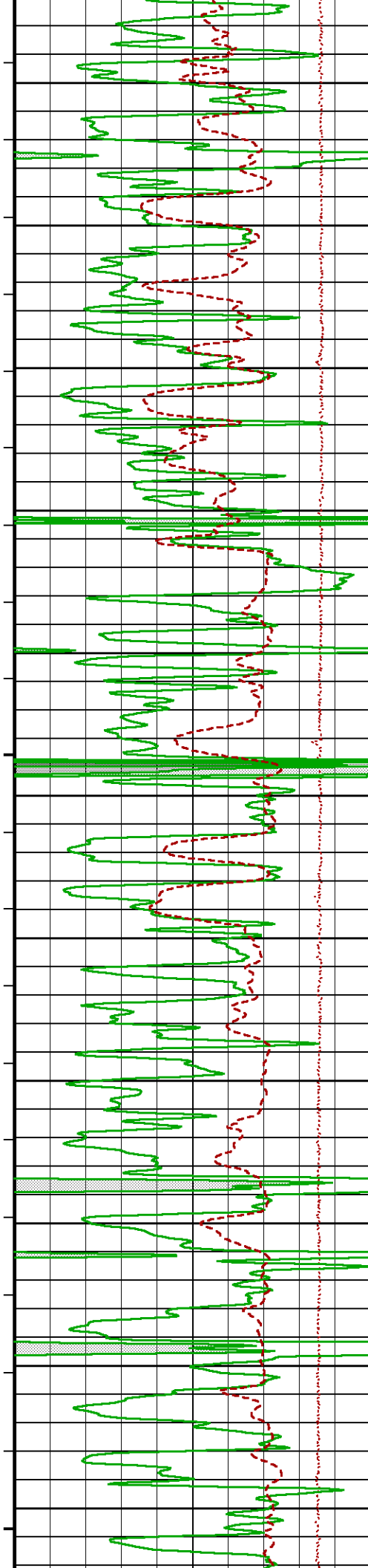


106°
2000
106°
2100
107°
2200
Array Ind. One Res Rt
Shallow FE
107°
2300
108°
2400
108°
2500









116°

3700

116°

3800

117°

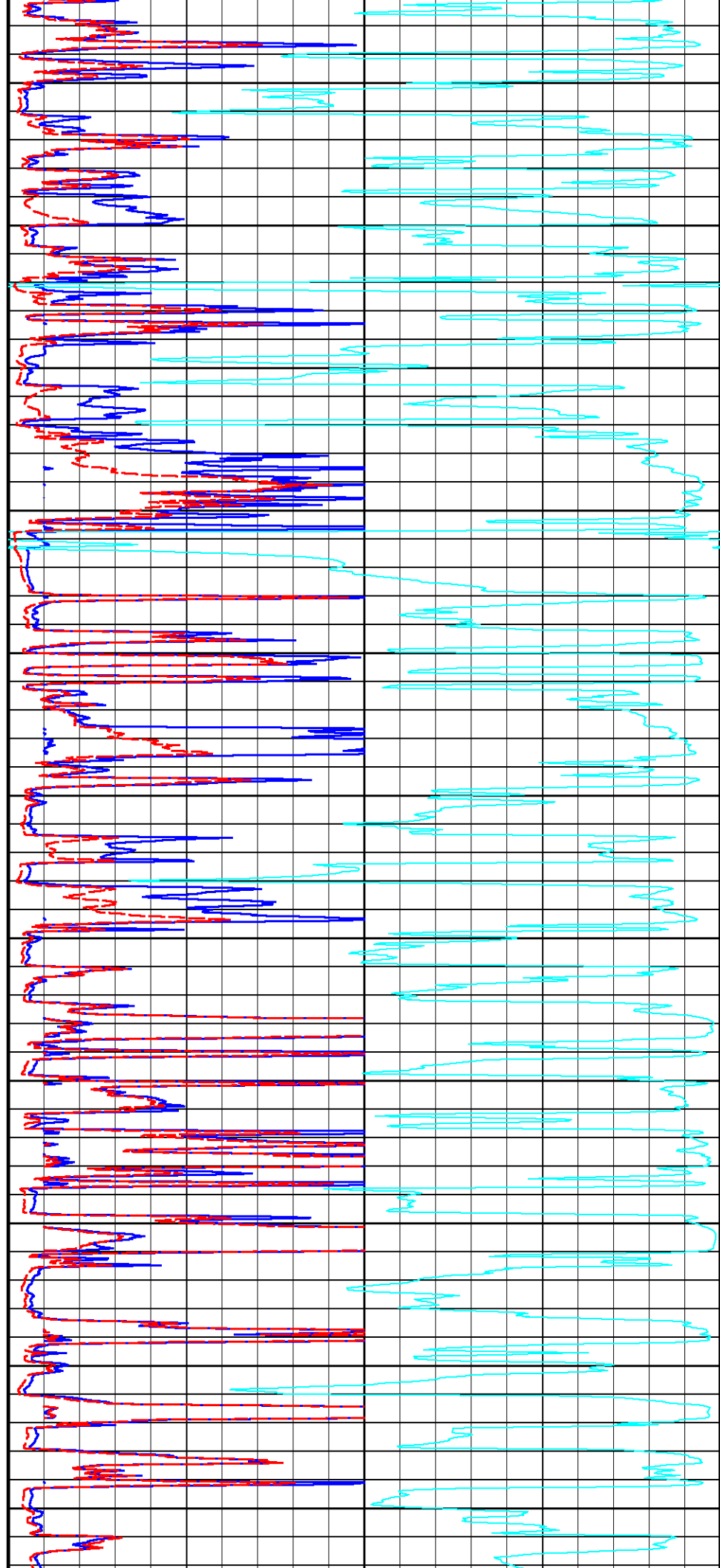
3900

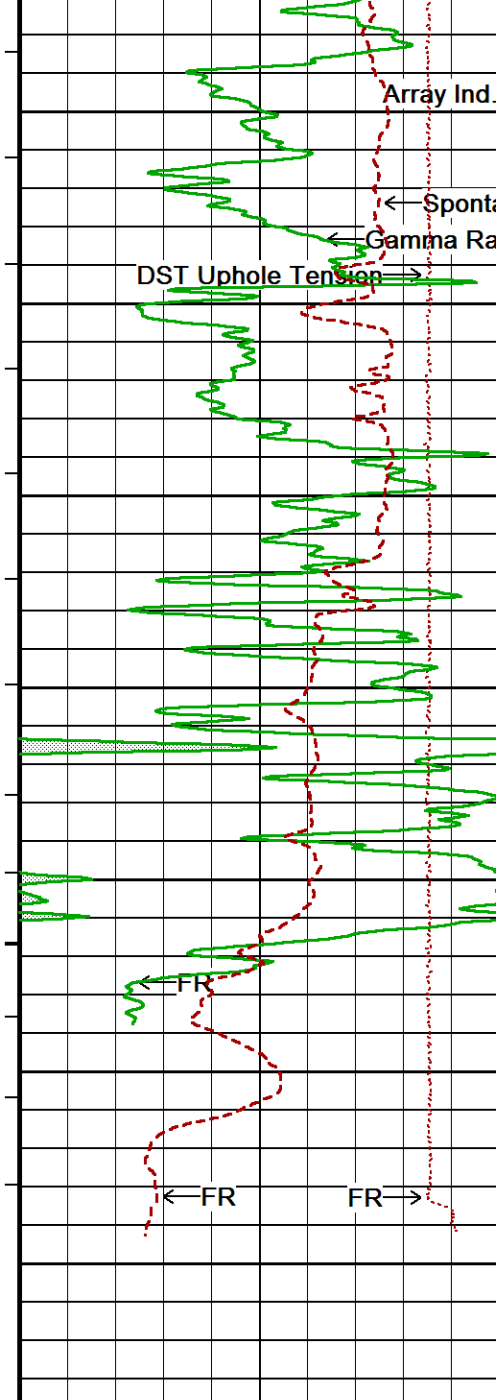
118°

4000

119°

4100





120°

Array Ind. One Cond Ct →

4200

Shallow FE →

← Spontaneous Potential

← Gamma Ray

DST Uphole Tension →

121°

4300

122°

4400

← FR

FR →

TD

4500

Depth
In
Feet

Timing Marks
every 60.0 sec

Gamma Ray

API

75

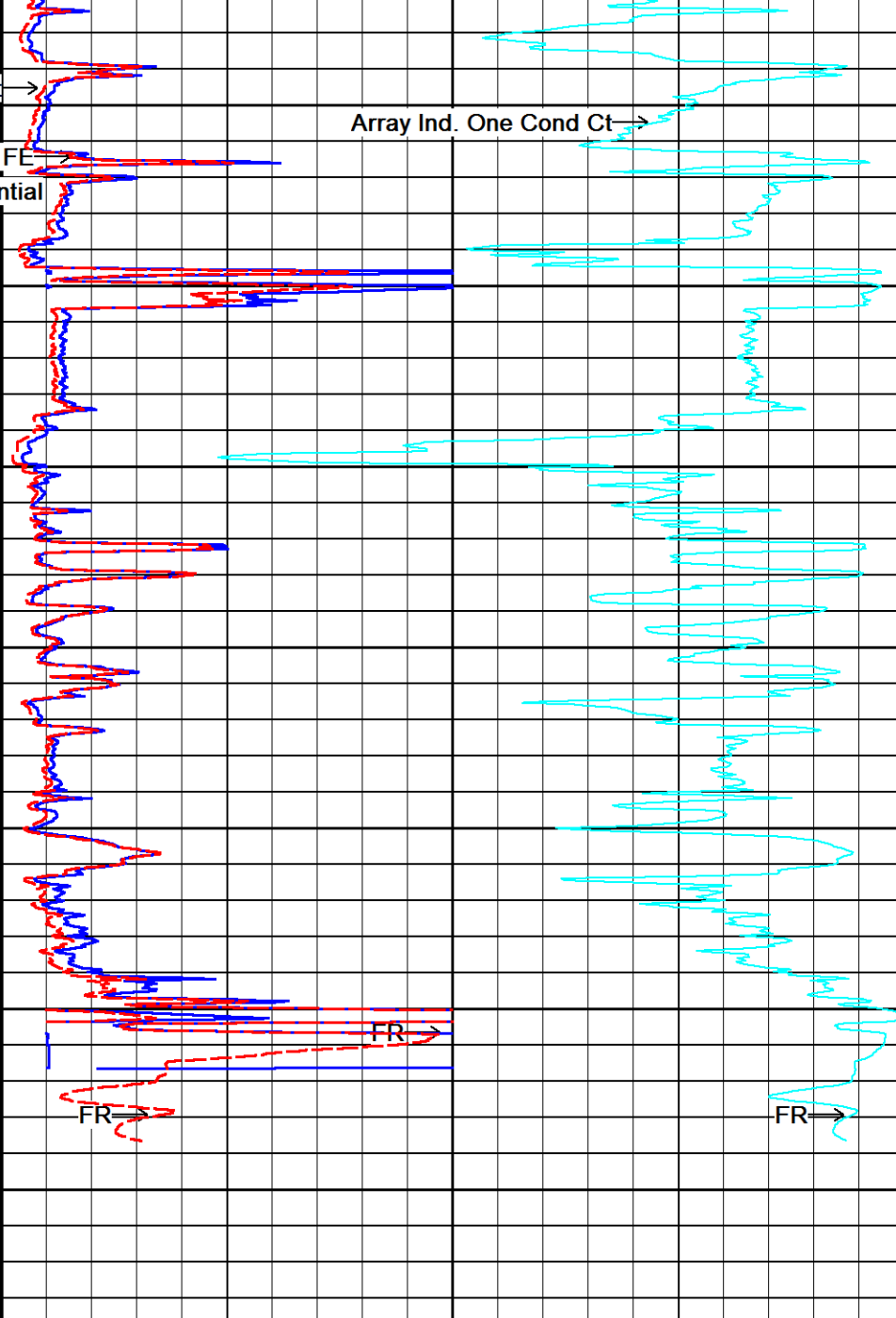
225

300

Spontaneous Potential
millivolts

— → | 20 | ← +

Borehole
Temp in
deg F



Array Ind. One Cond Ct →

FR →

FR →

FR →

Array Ind. One Cond Ct

mmhos/metre

1000

750

500

250

0

2000

1750

1500

1250

1000

Shallow FE

ohm metres

0

25

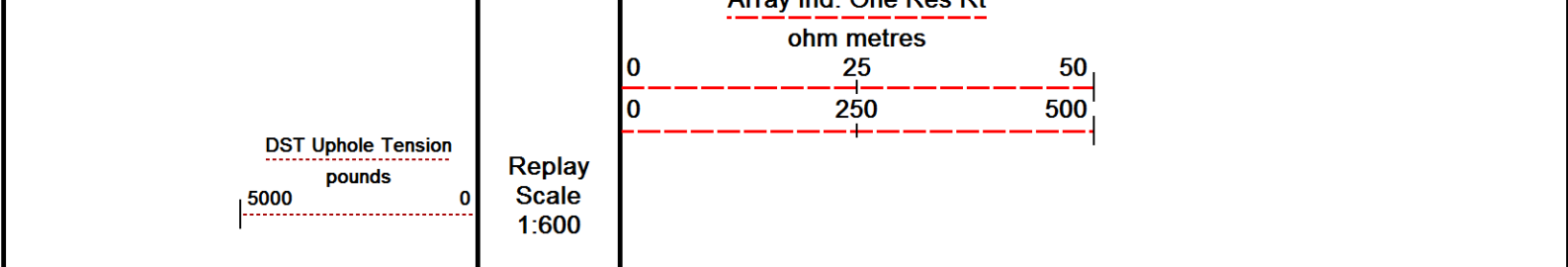
50

0

250

500

Array Ind. One Pos Pt



Depth Based Data - Maximum Sampling Increment 10.0cm	Plotted on 13-MAY-2016 15:37
Filename: C:\Minimus 15.03.5939\Logs\Suemauro Muirhead ...\Suemauro Muirhead Farms #1-12_003.dta	Recorded on 13-MAY-2016 12:17
System Versions: Logged with 15.03.5939 Processed with 15.03.5939 Plotted with 15.03.5939	

↑

2 INCH MAIN INDUCTION

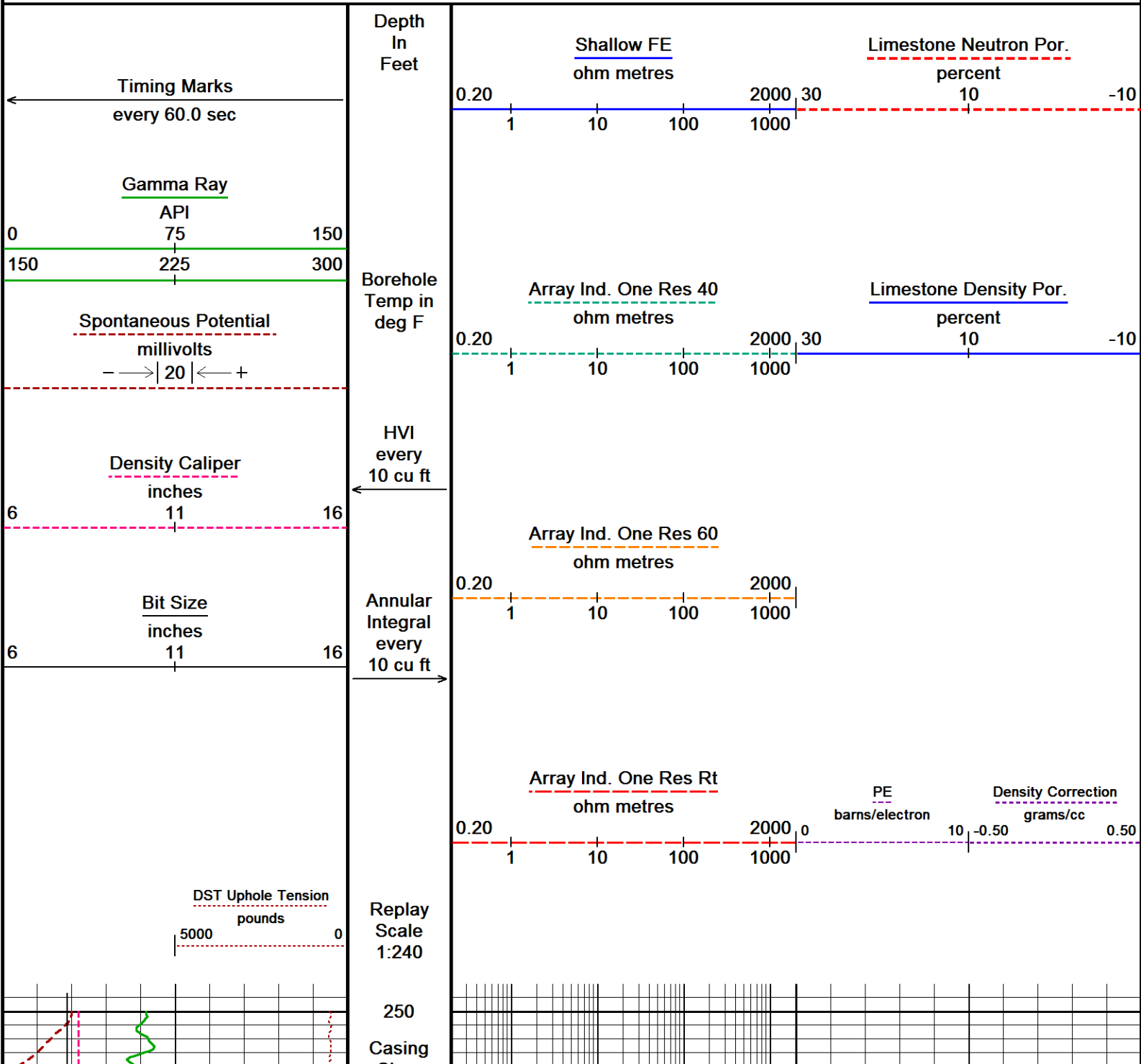
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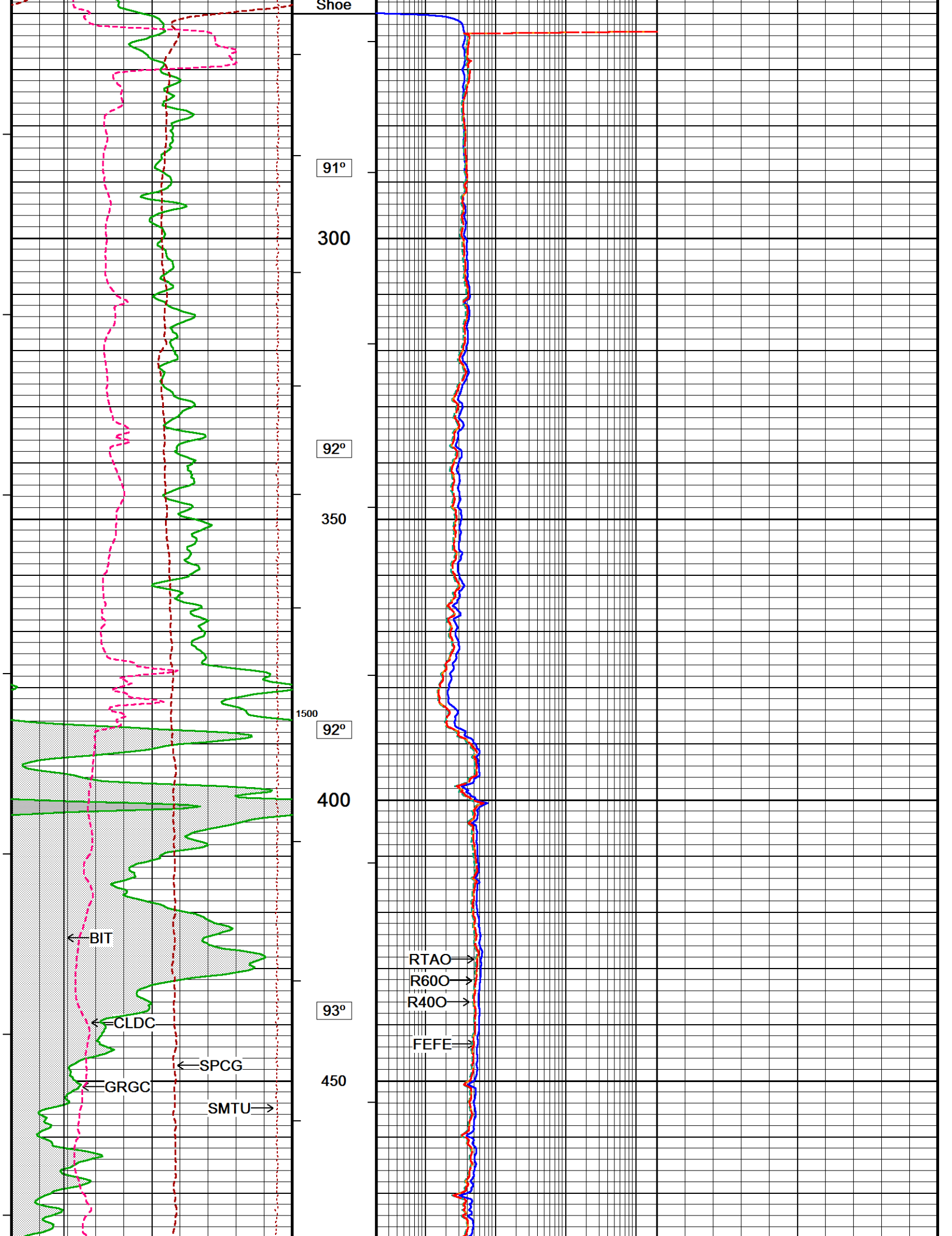
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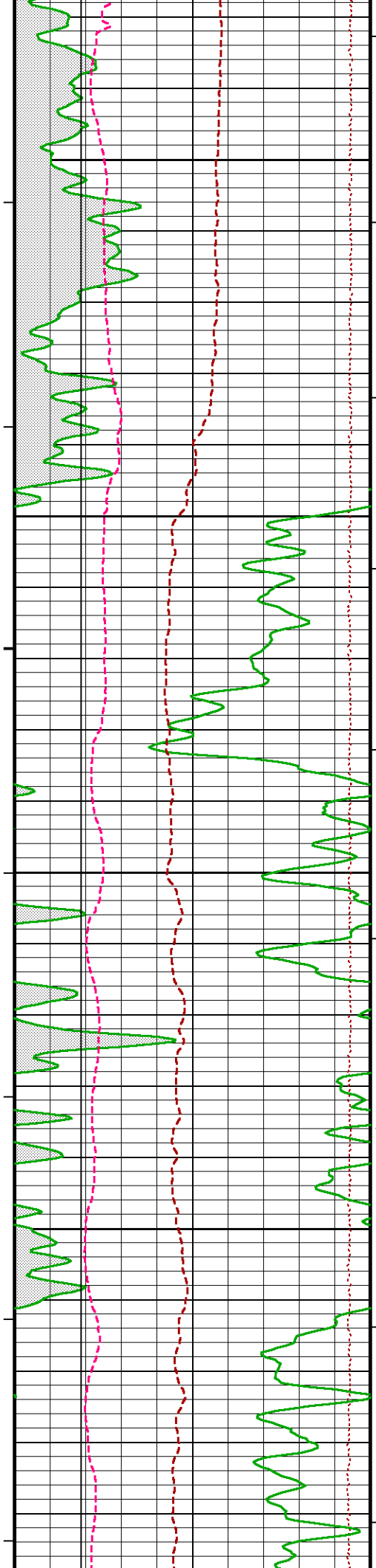
5 INCH MAIN COMPOSITE

↓

Depth Based Data - Maximum Sampling Increment 10.0cm	Plotted on 13-MAY-2016 15:37
Filename: C:\Minimus 15.03.5939\Logs\Suemauro Muirhead ...\Suemauro Muirhead Farms #1-12_003.dta	Recorded on 13-MAY-2016 12:17
System Versions: Logged with 15.03.5939 Processed with 15.03.5939 Plotted with 15.03.5939	







94°

500 800

94°

550

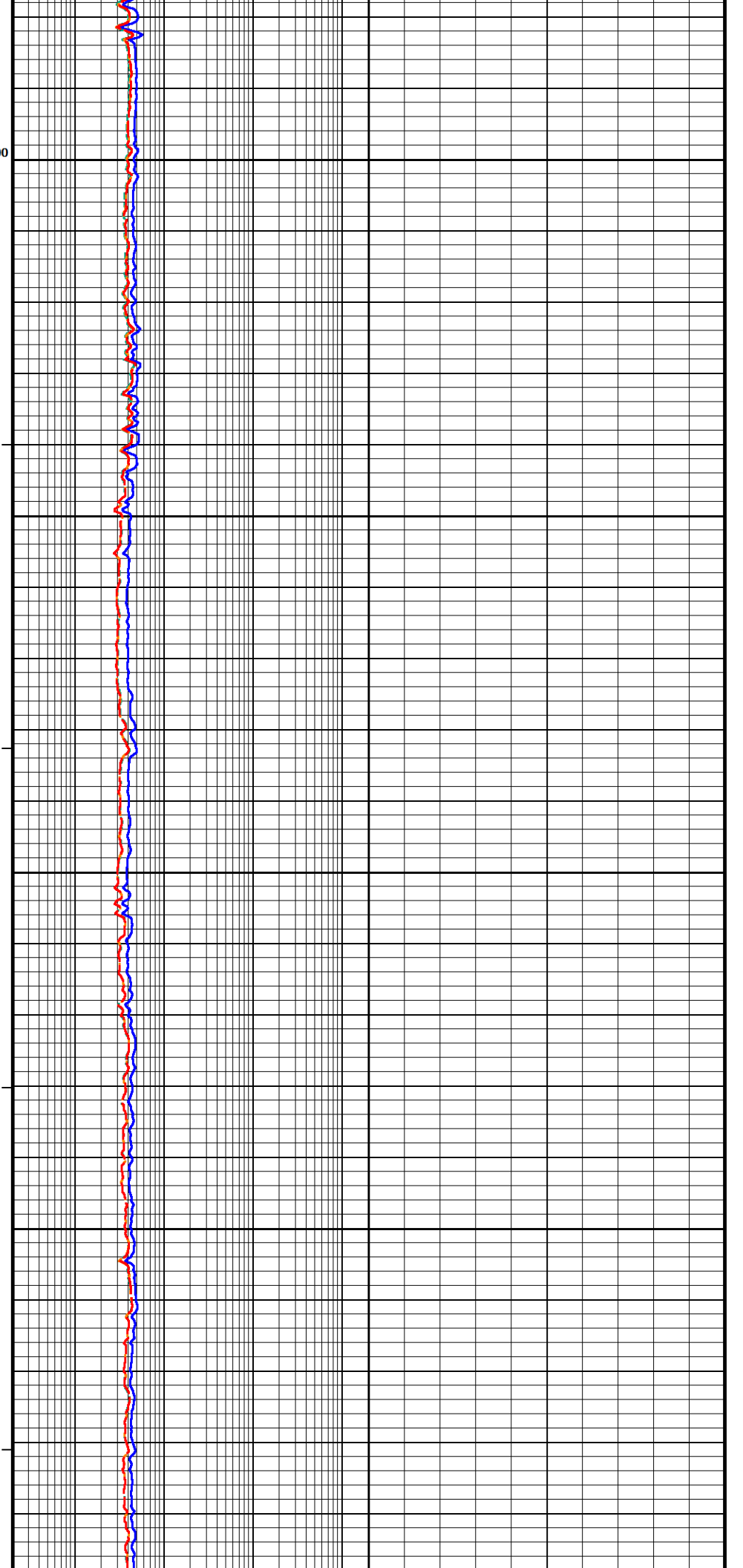
95°

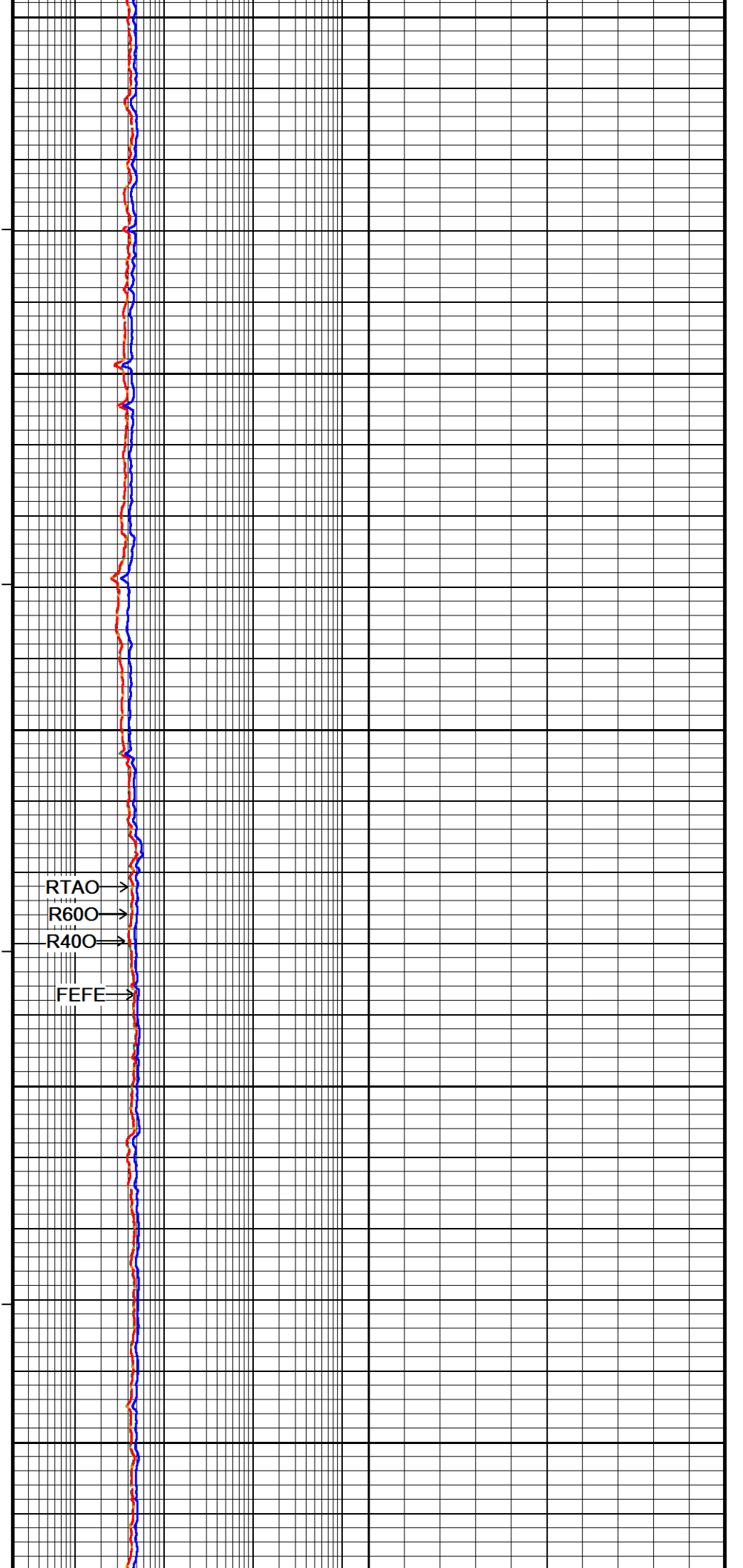
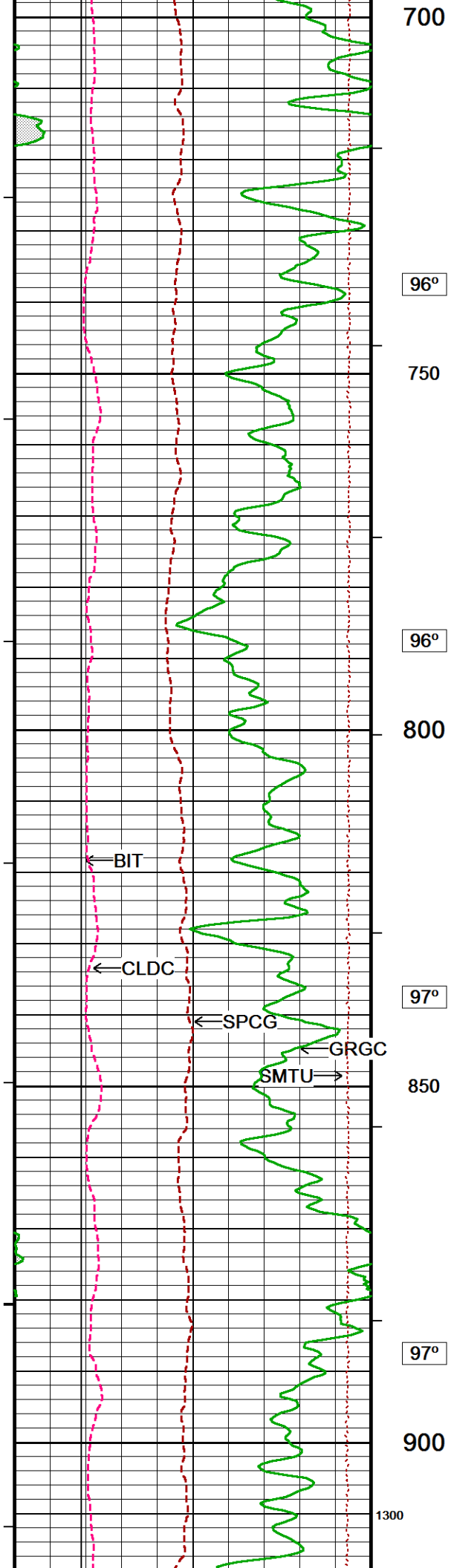
600

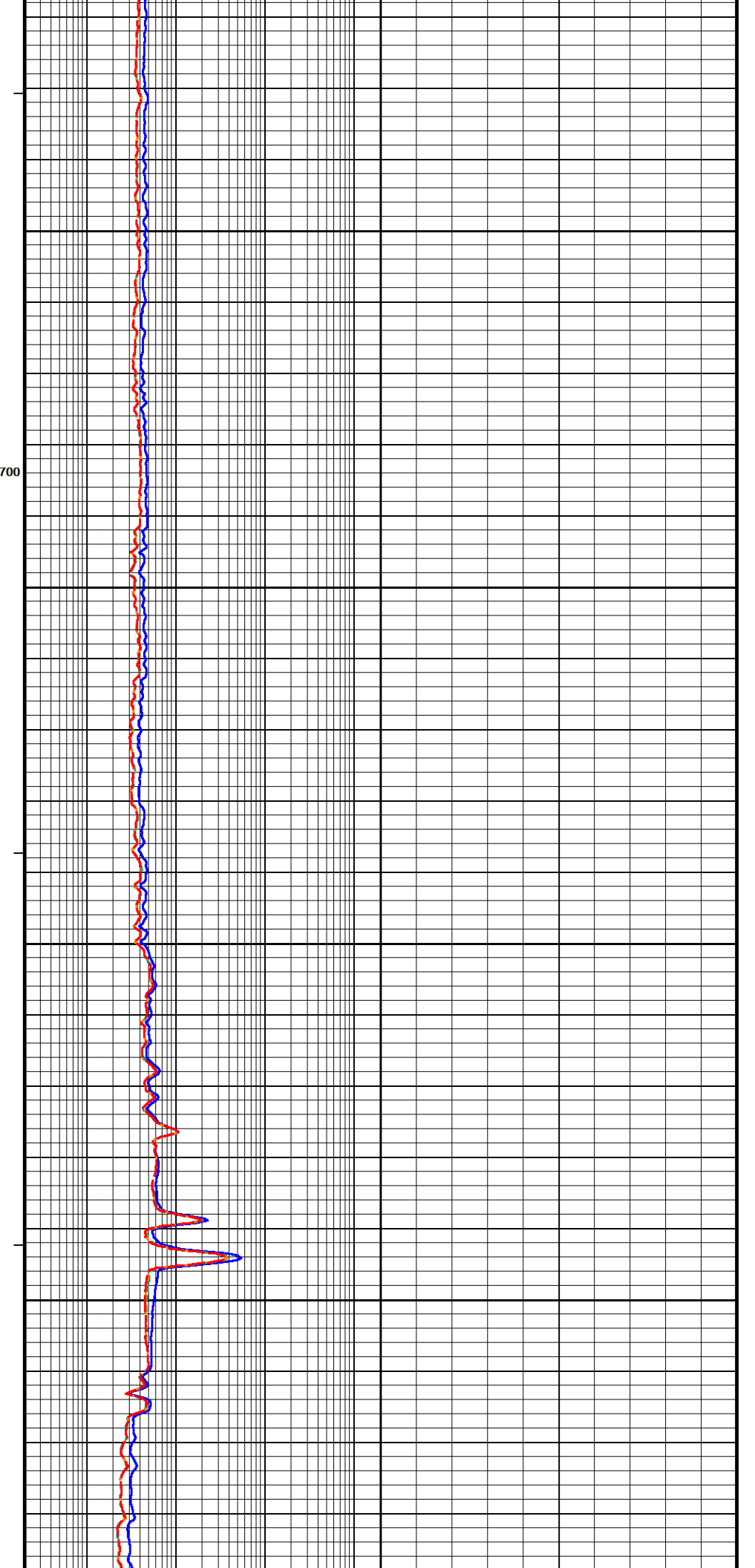
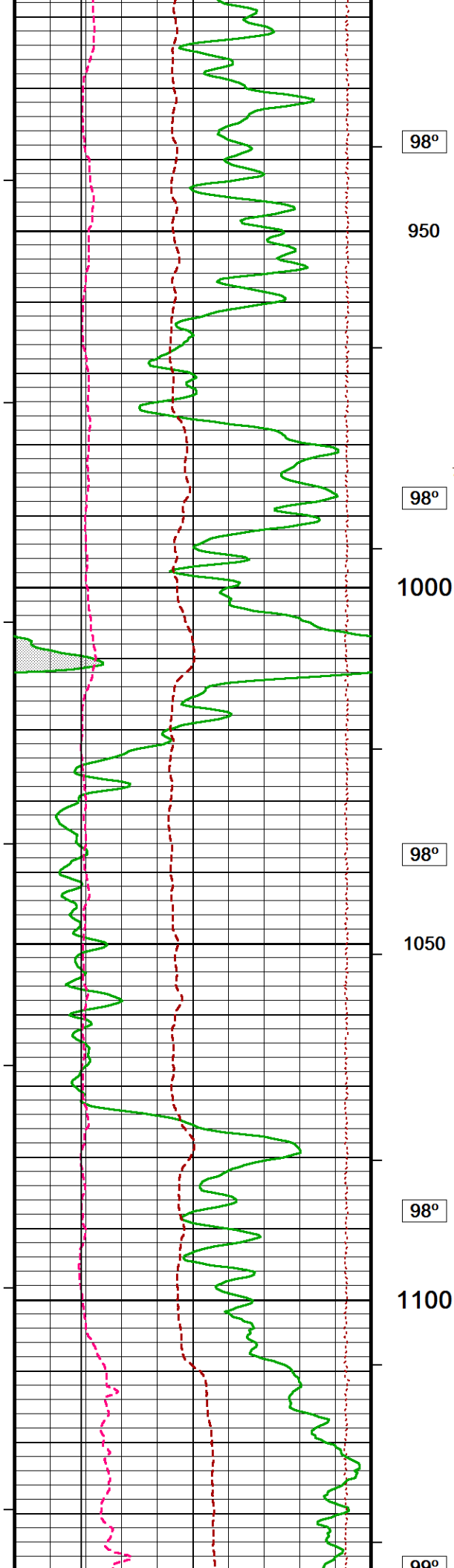
1400 95°

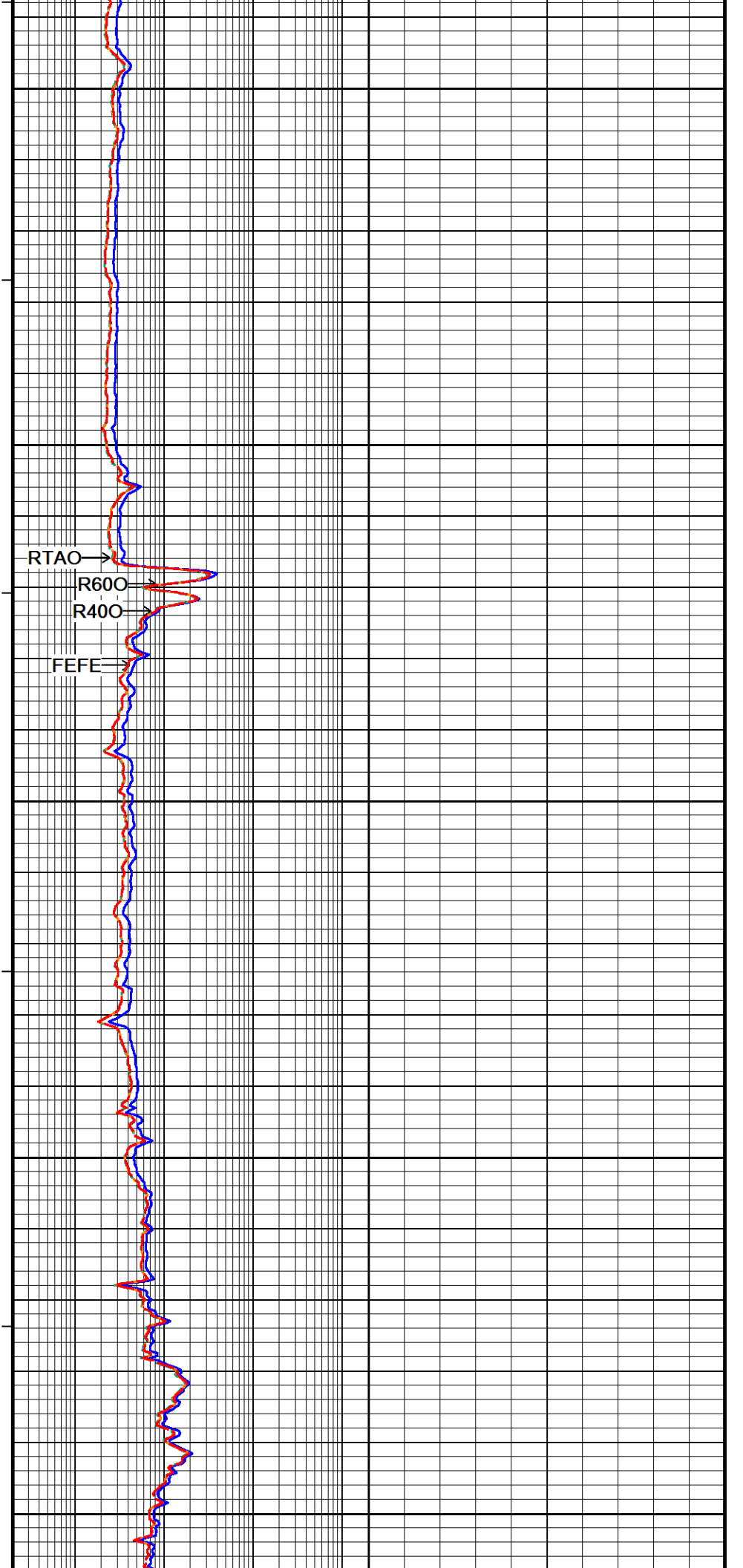
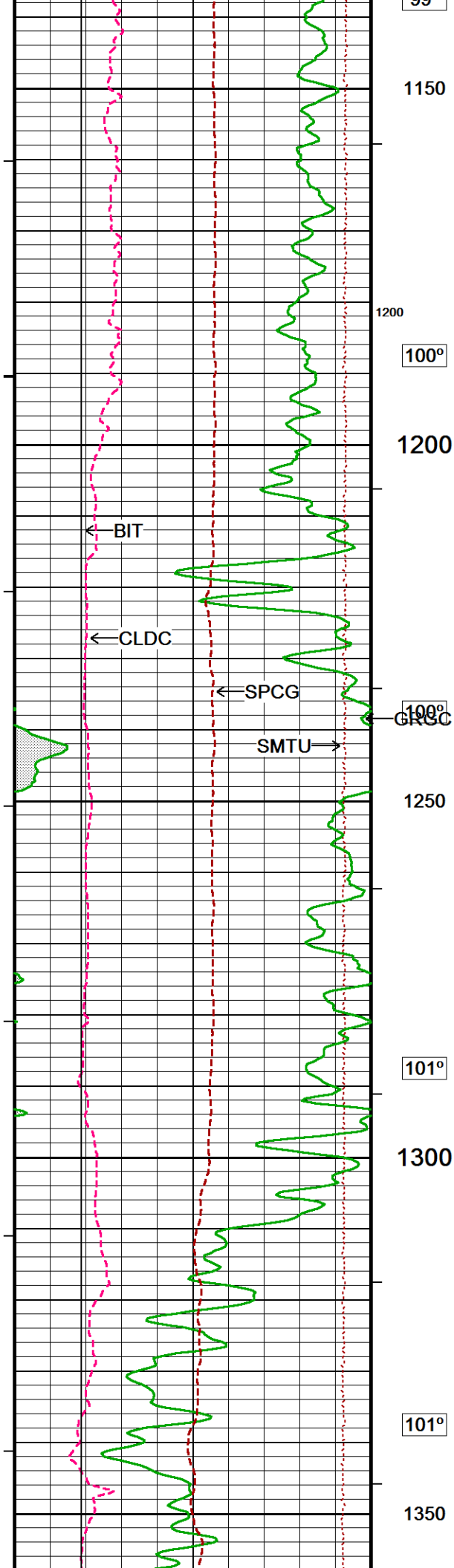
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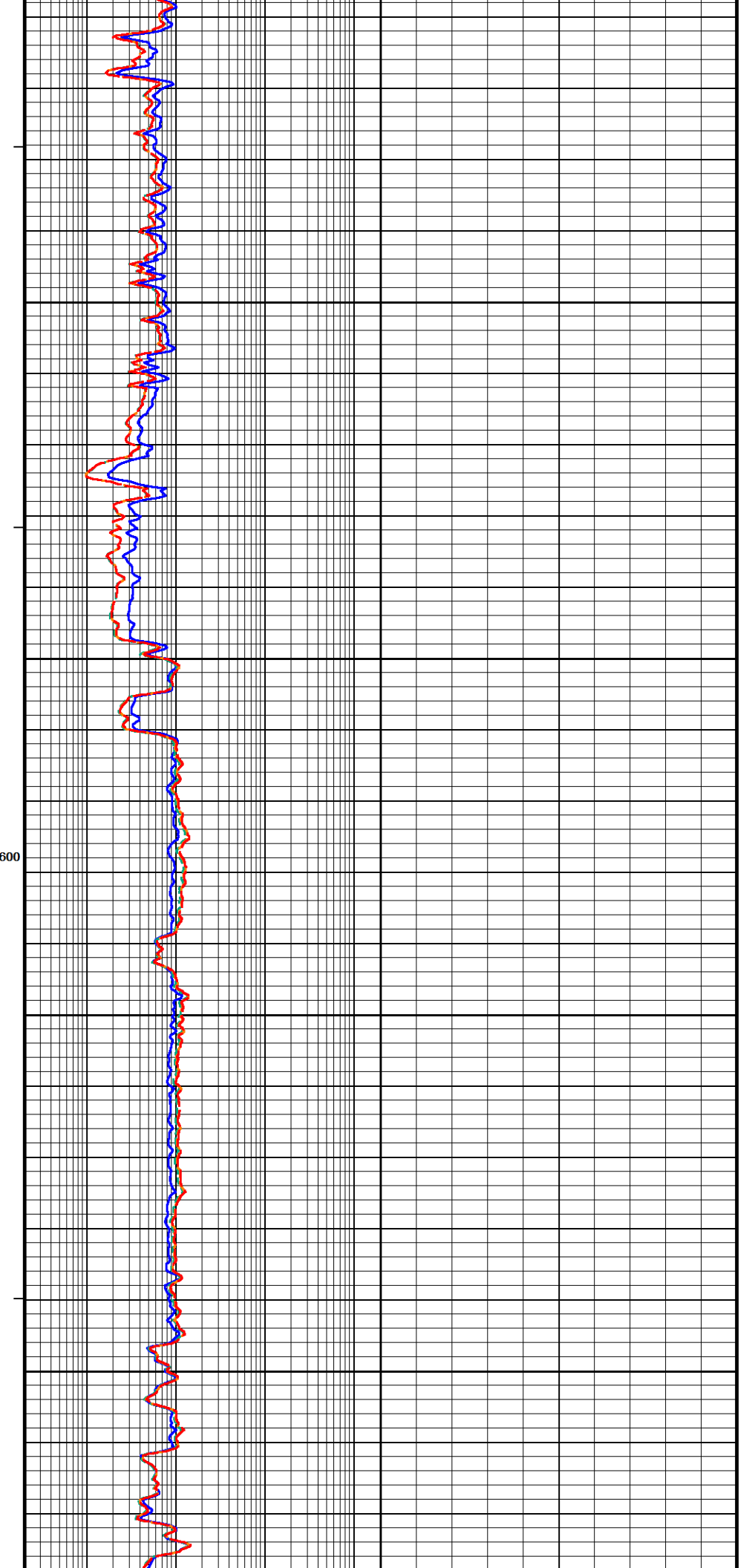
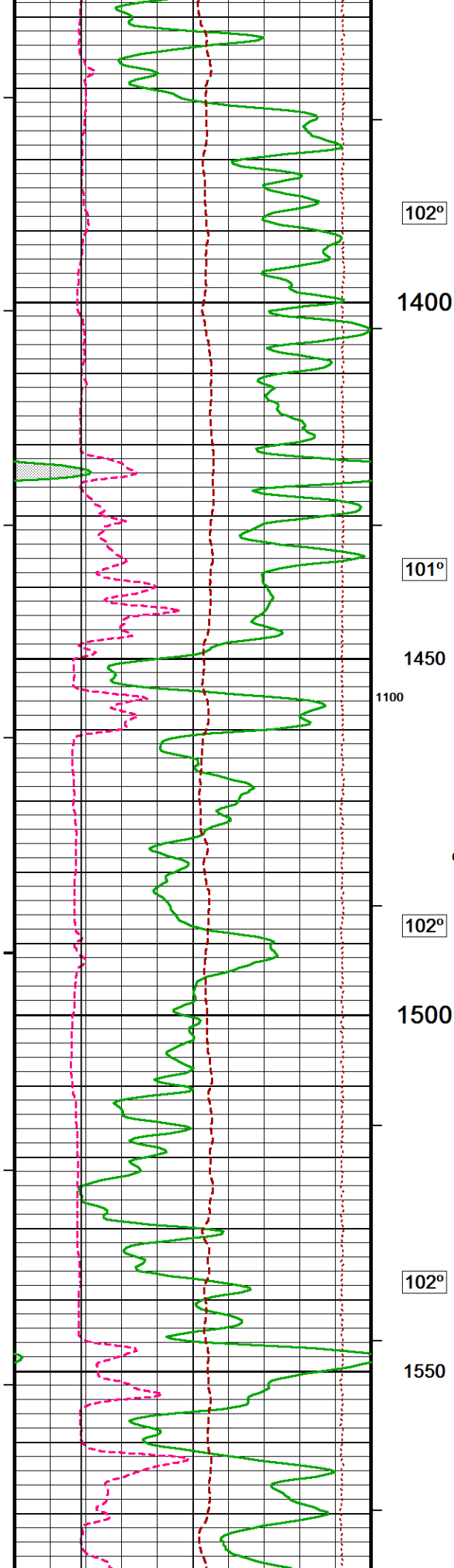
96°

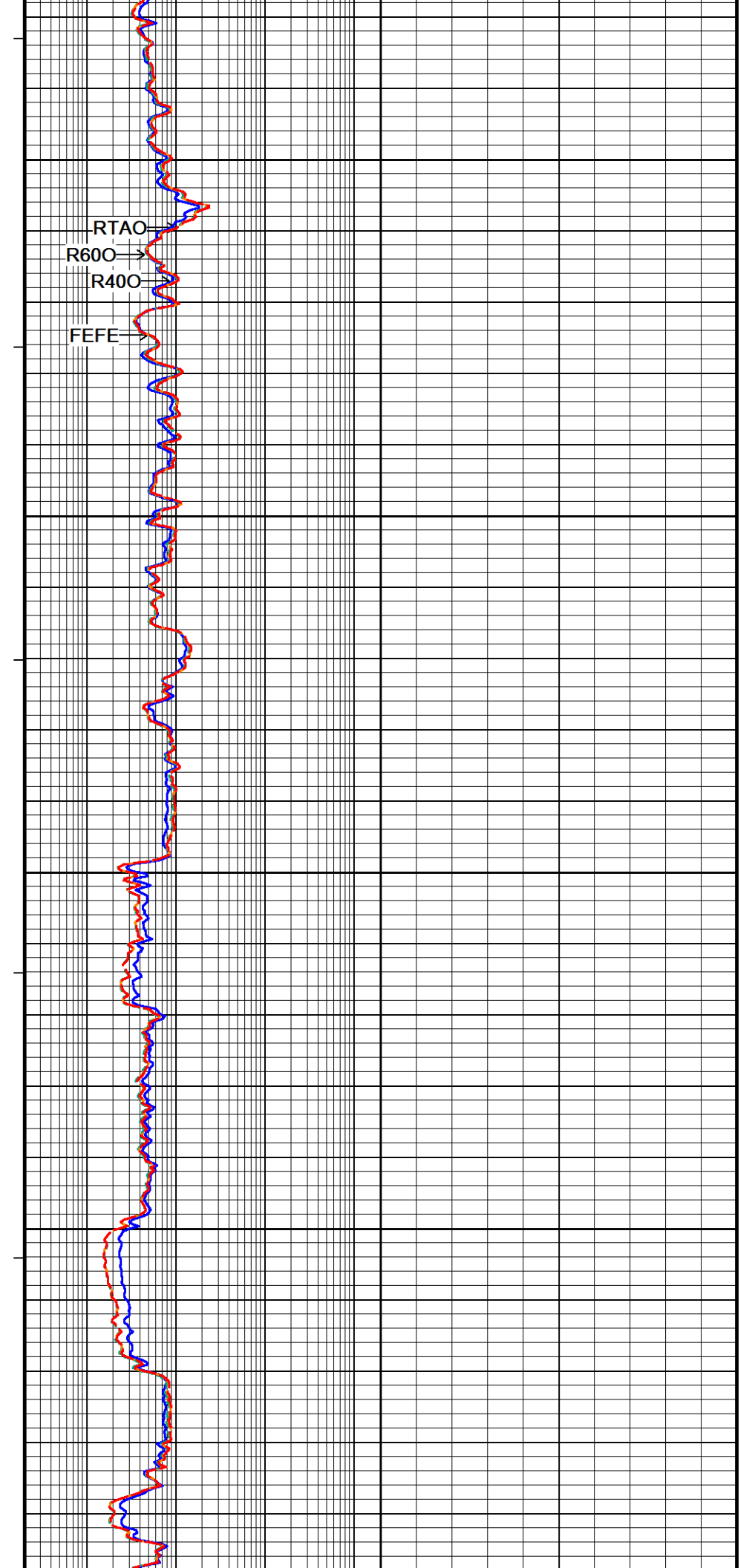
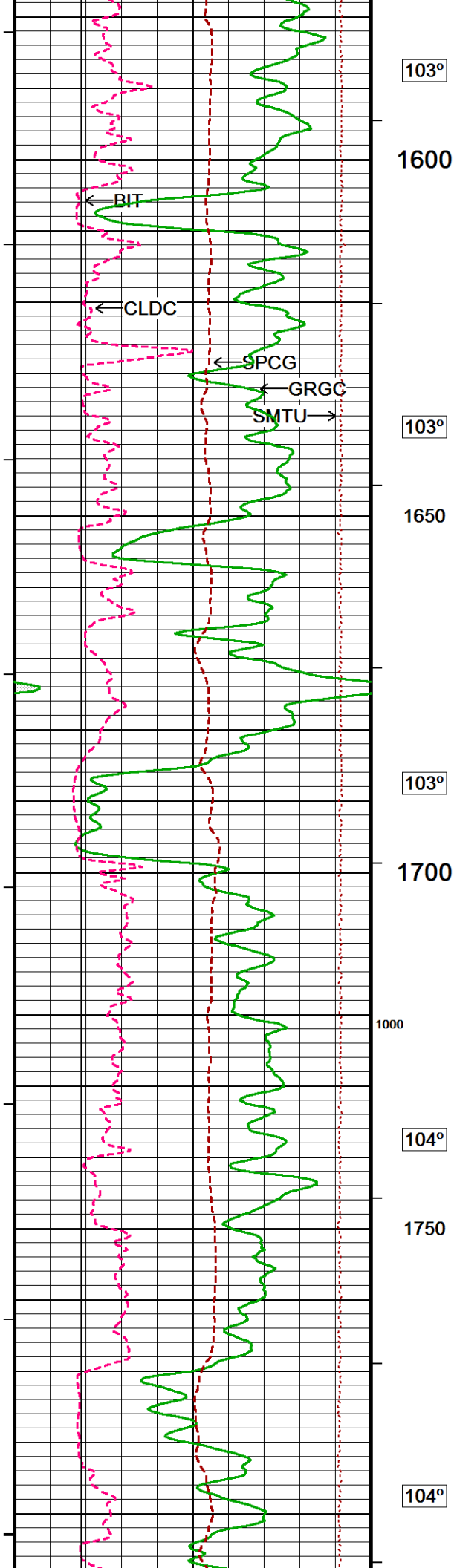


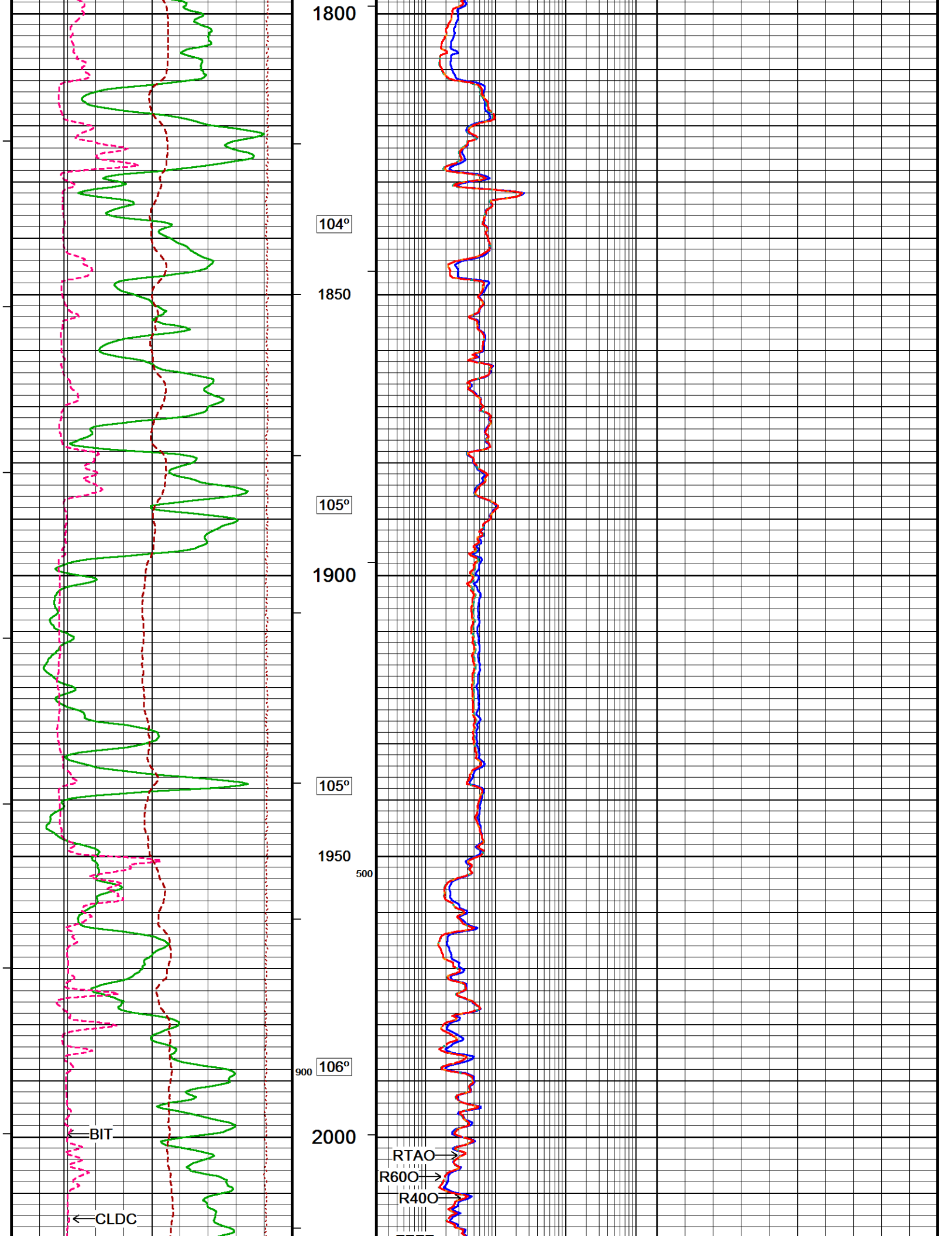


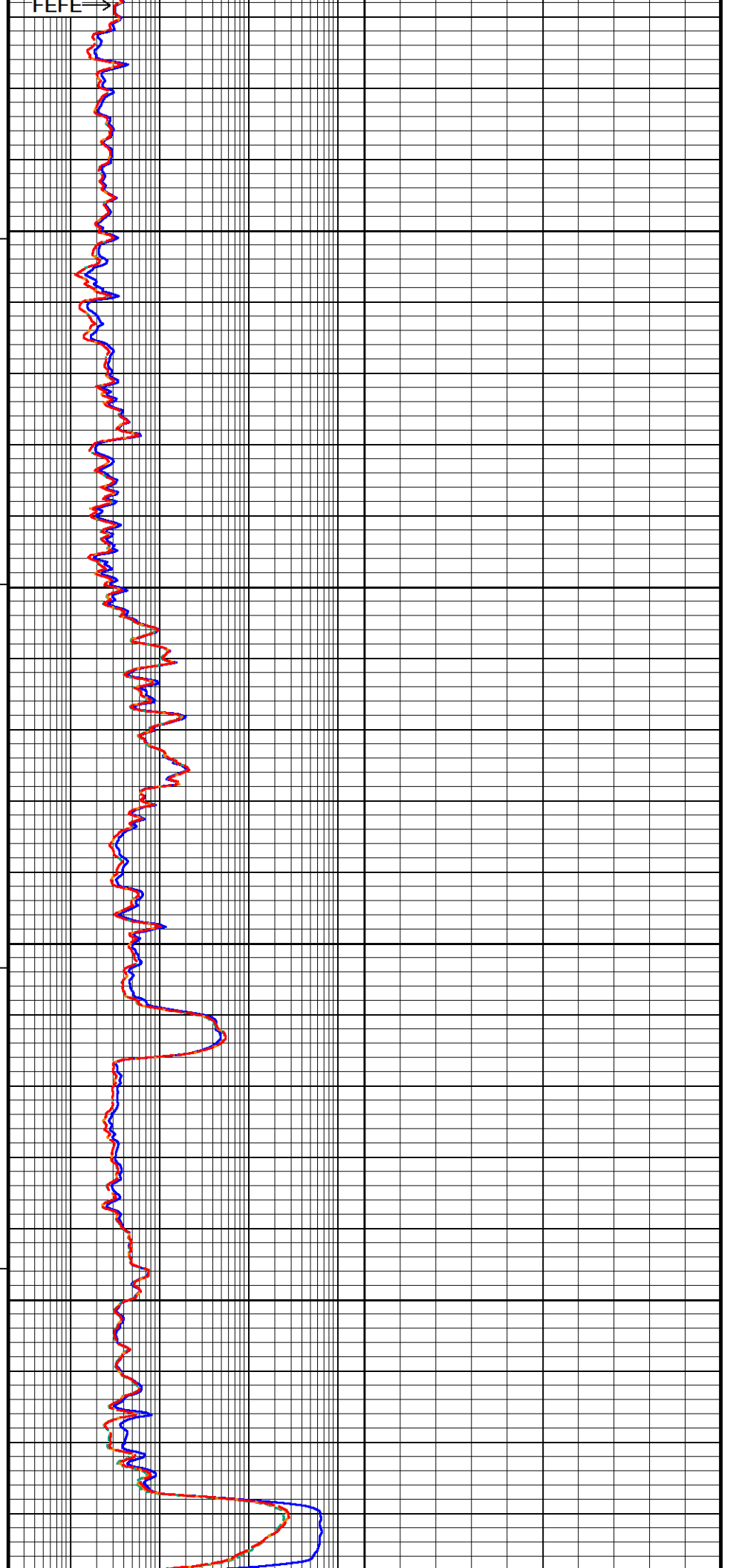
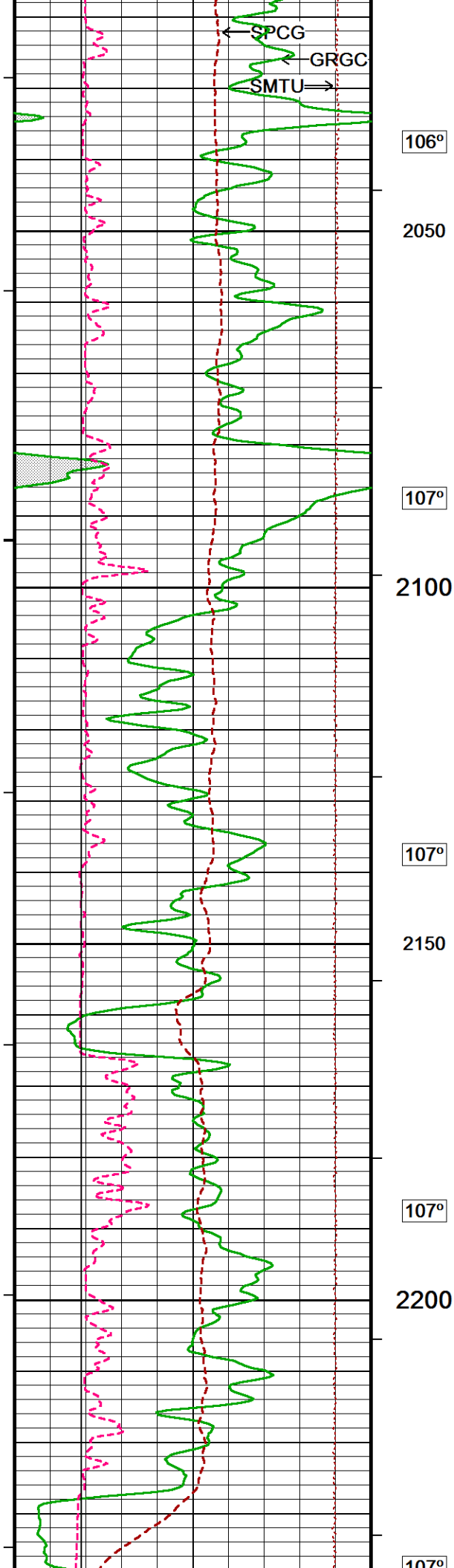


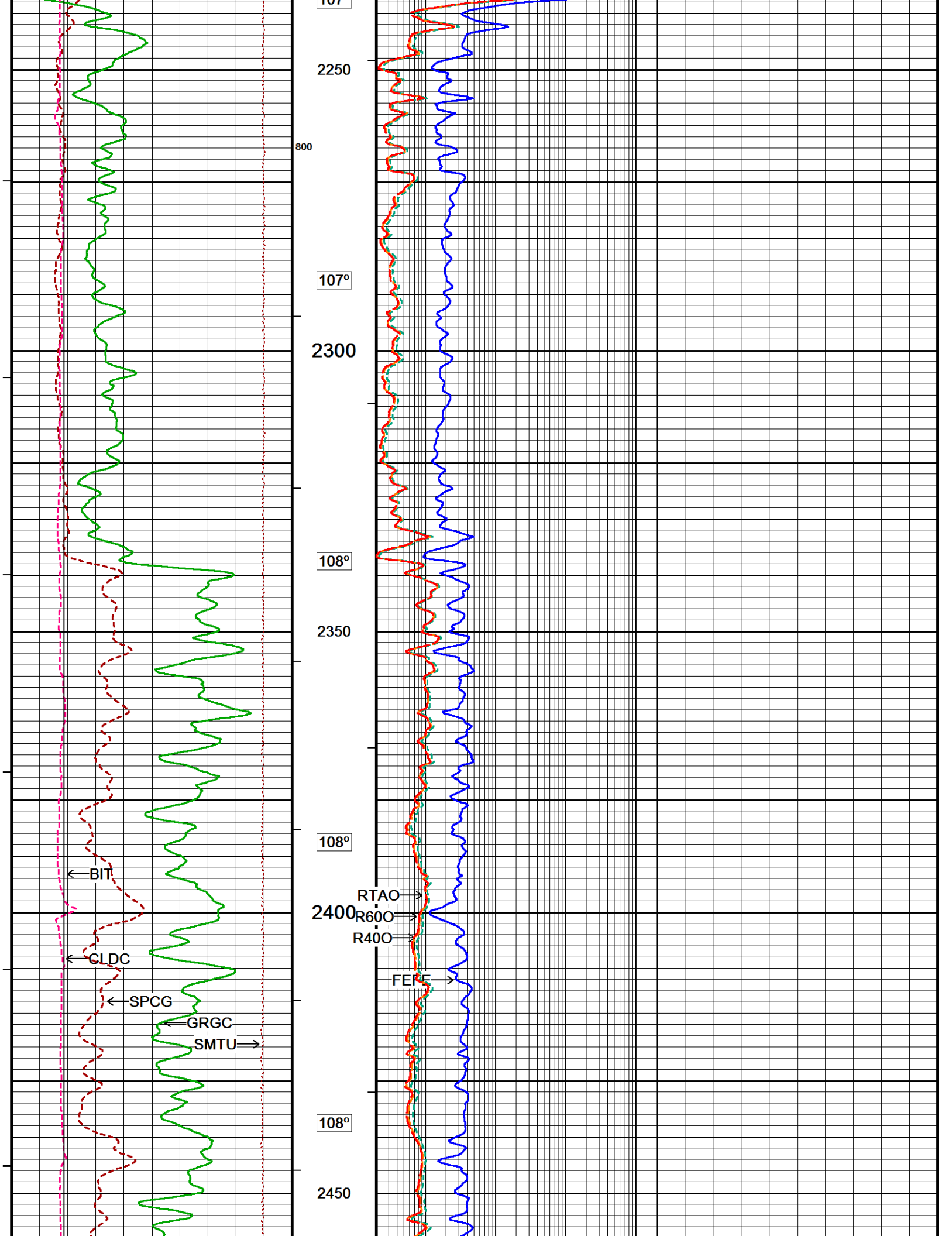


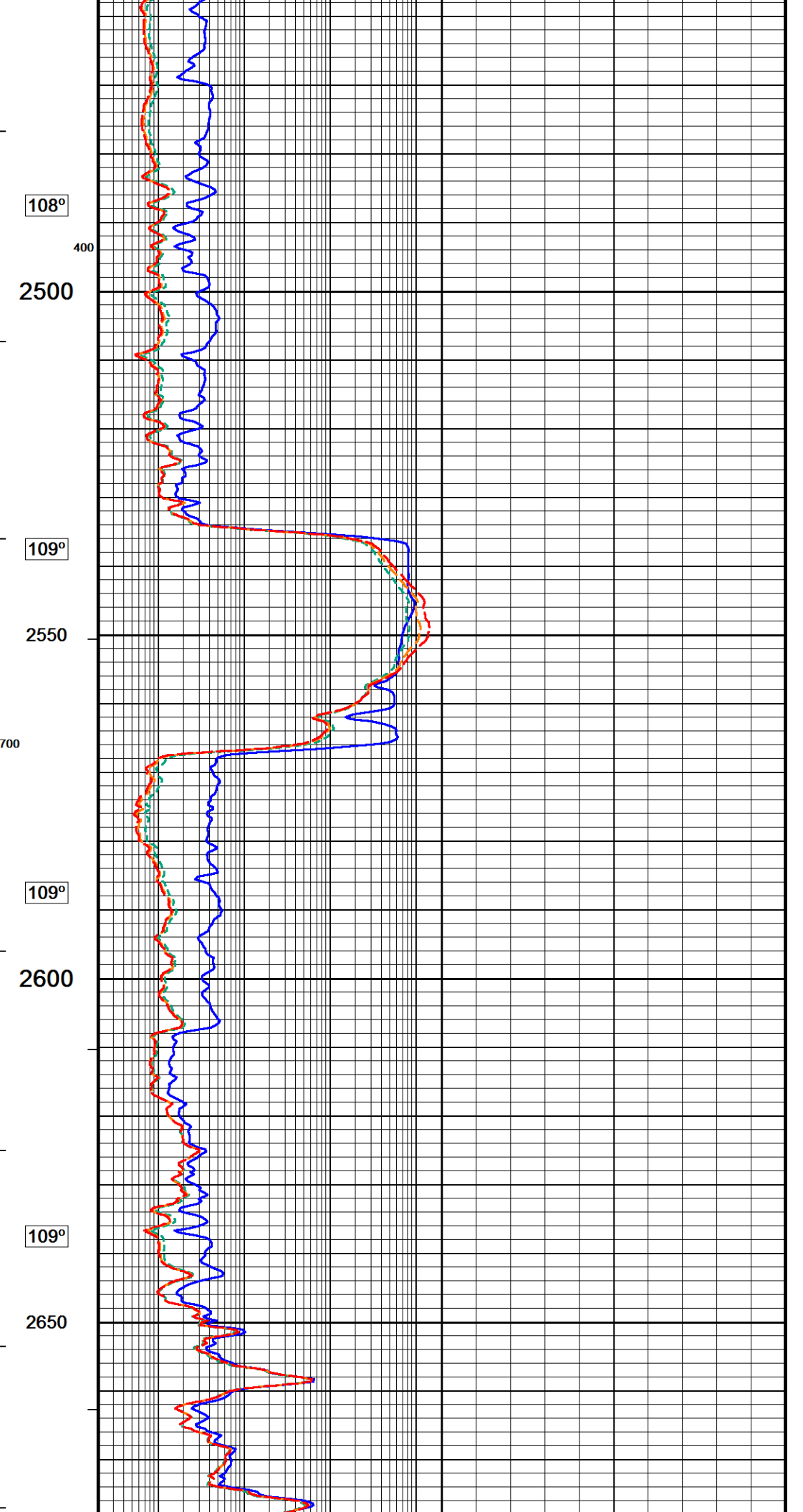
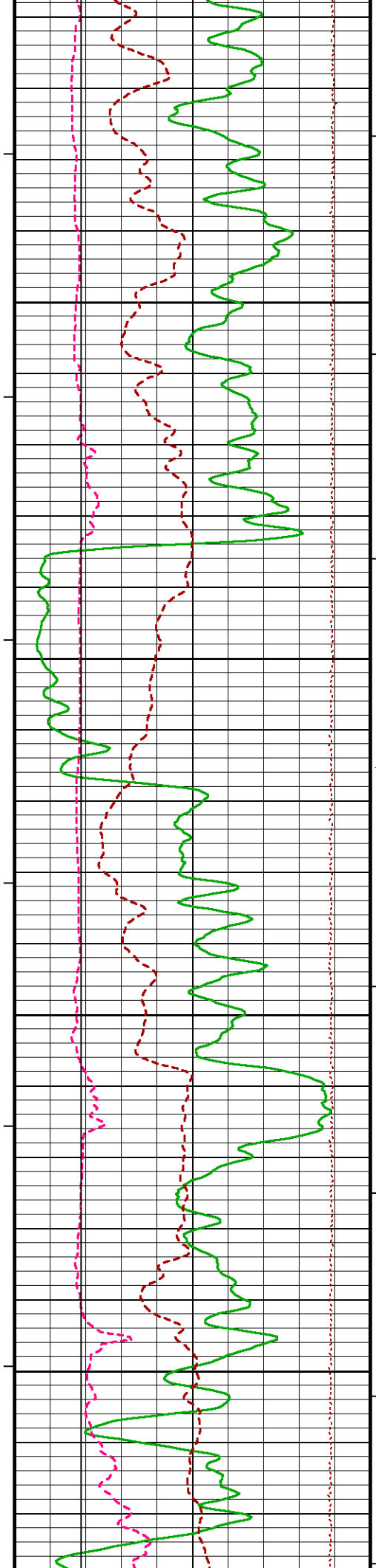


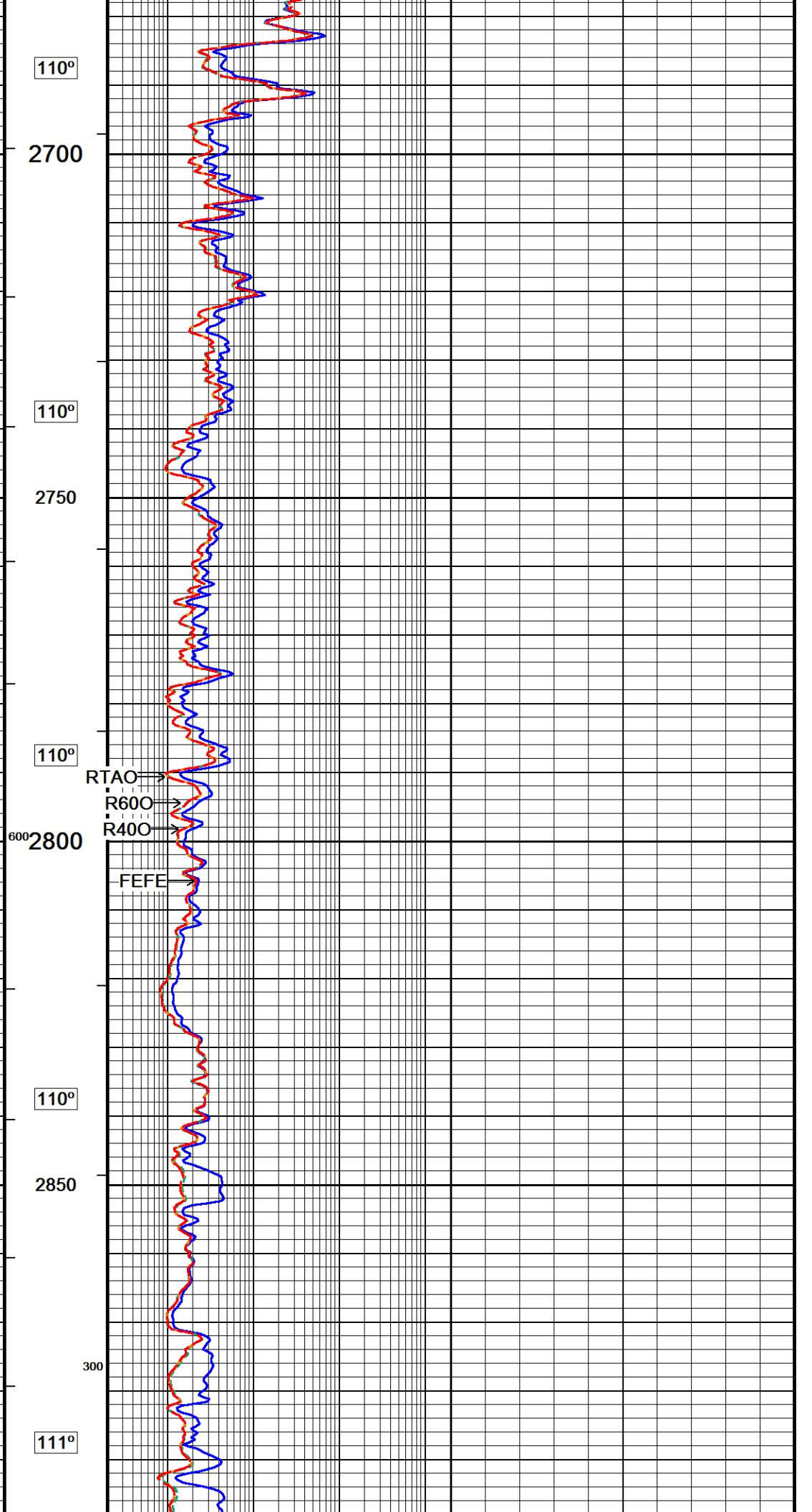
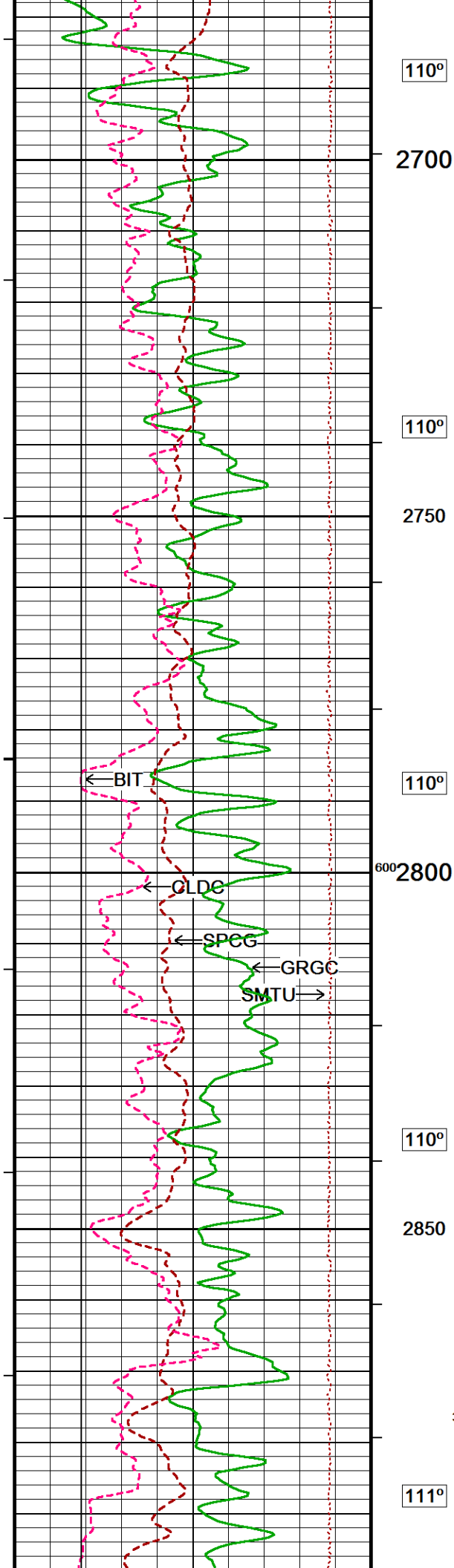


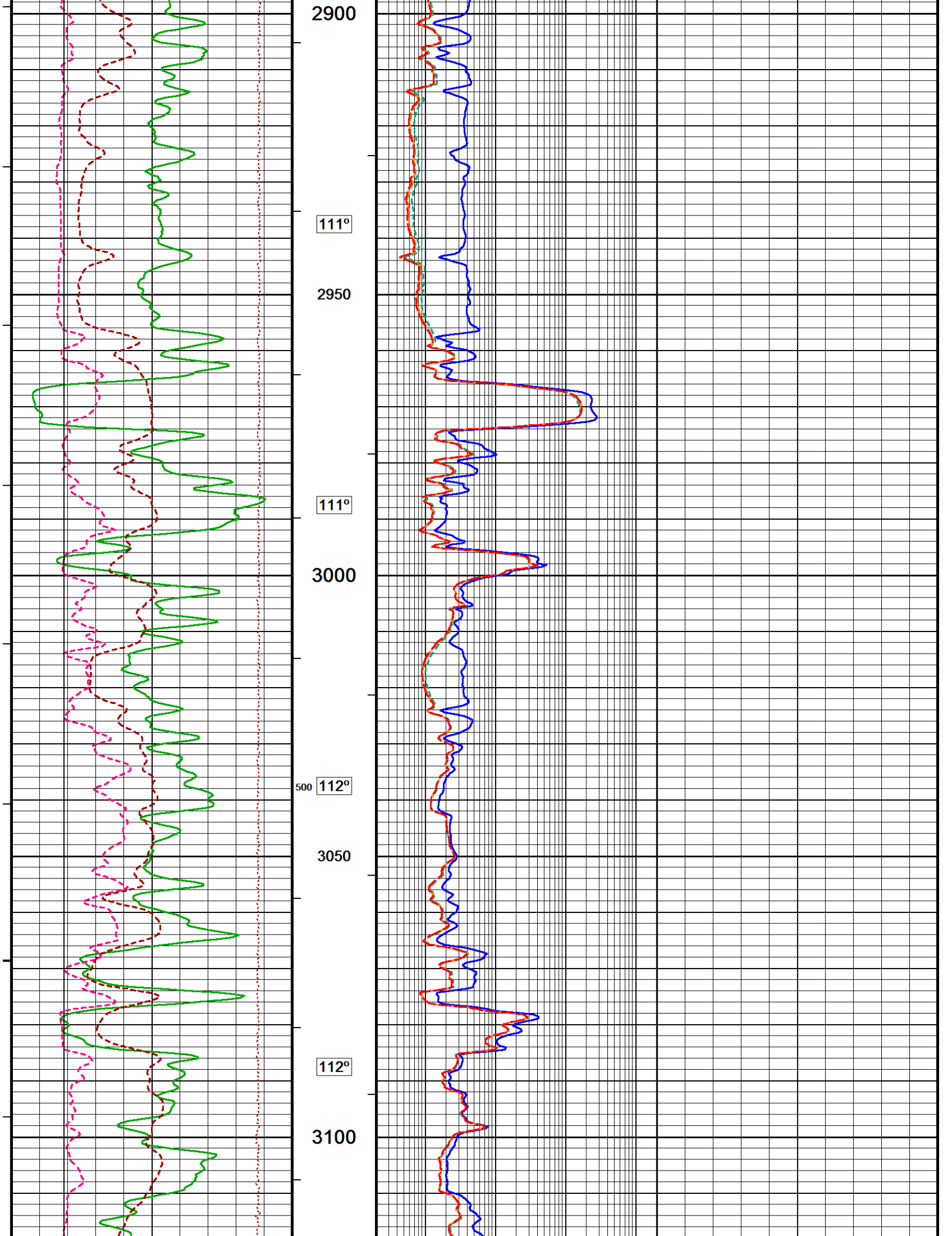


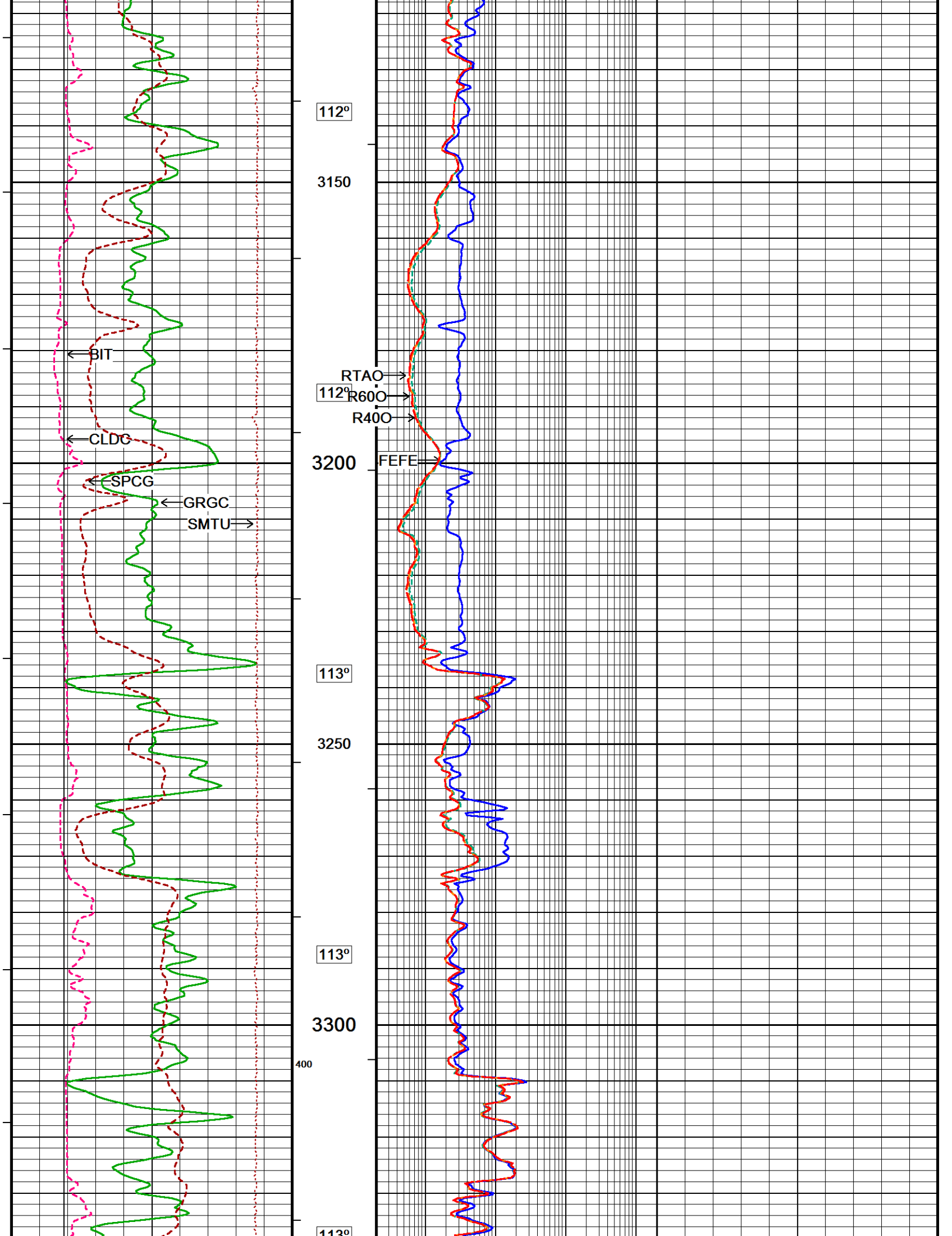


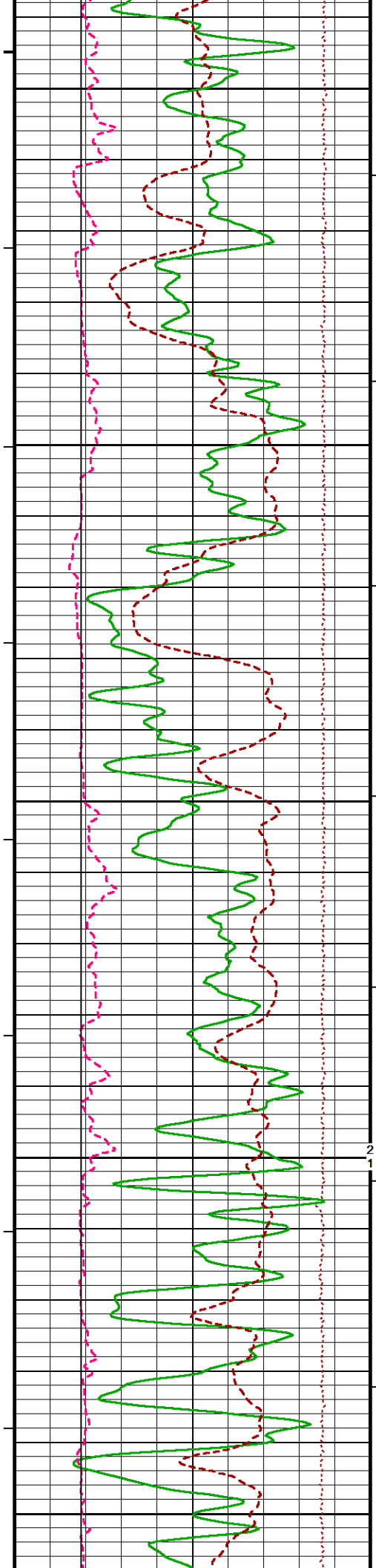




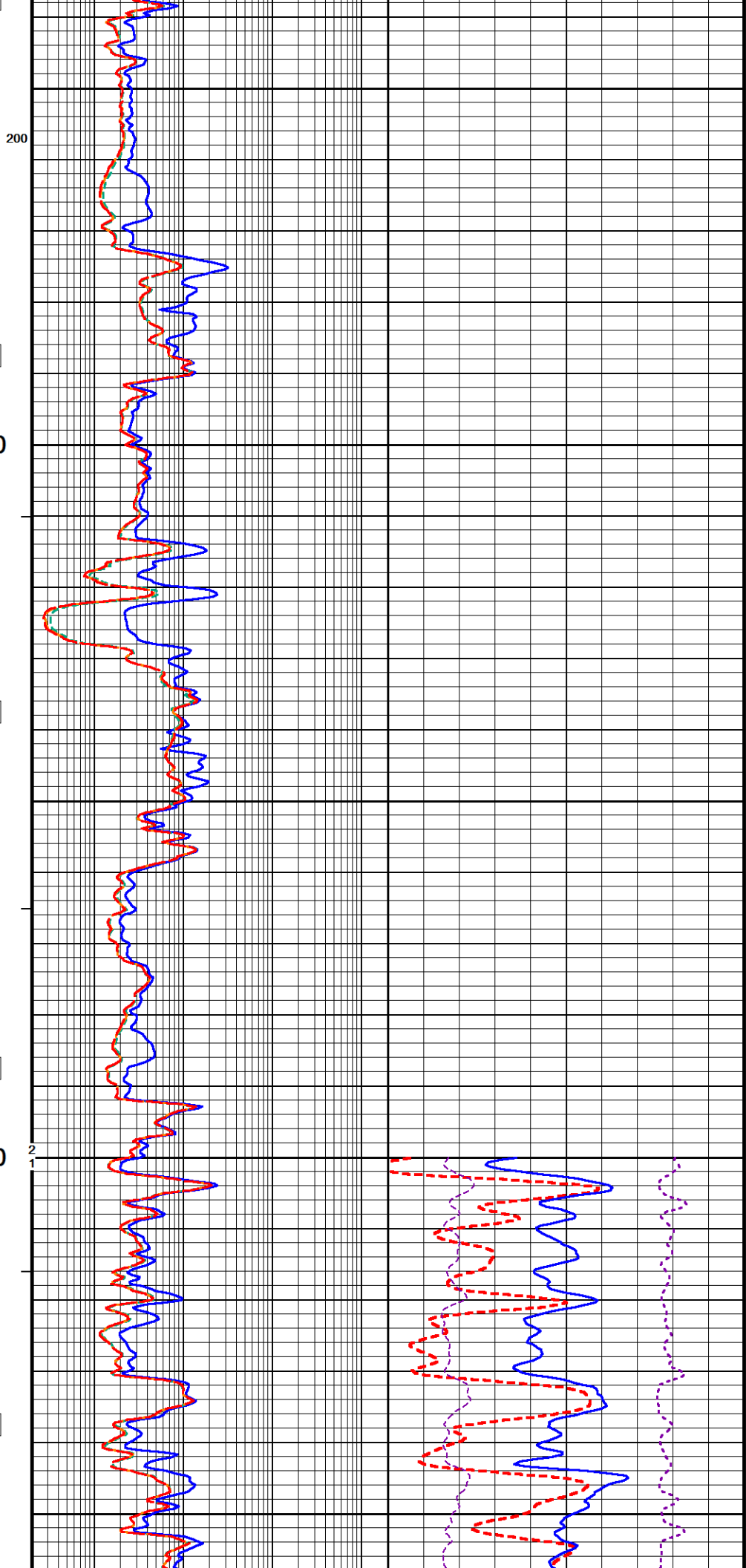


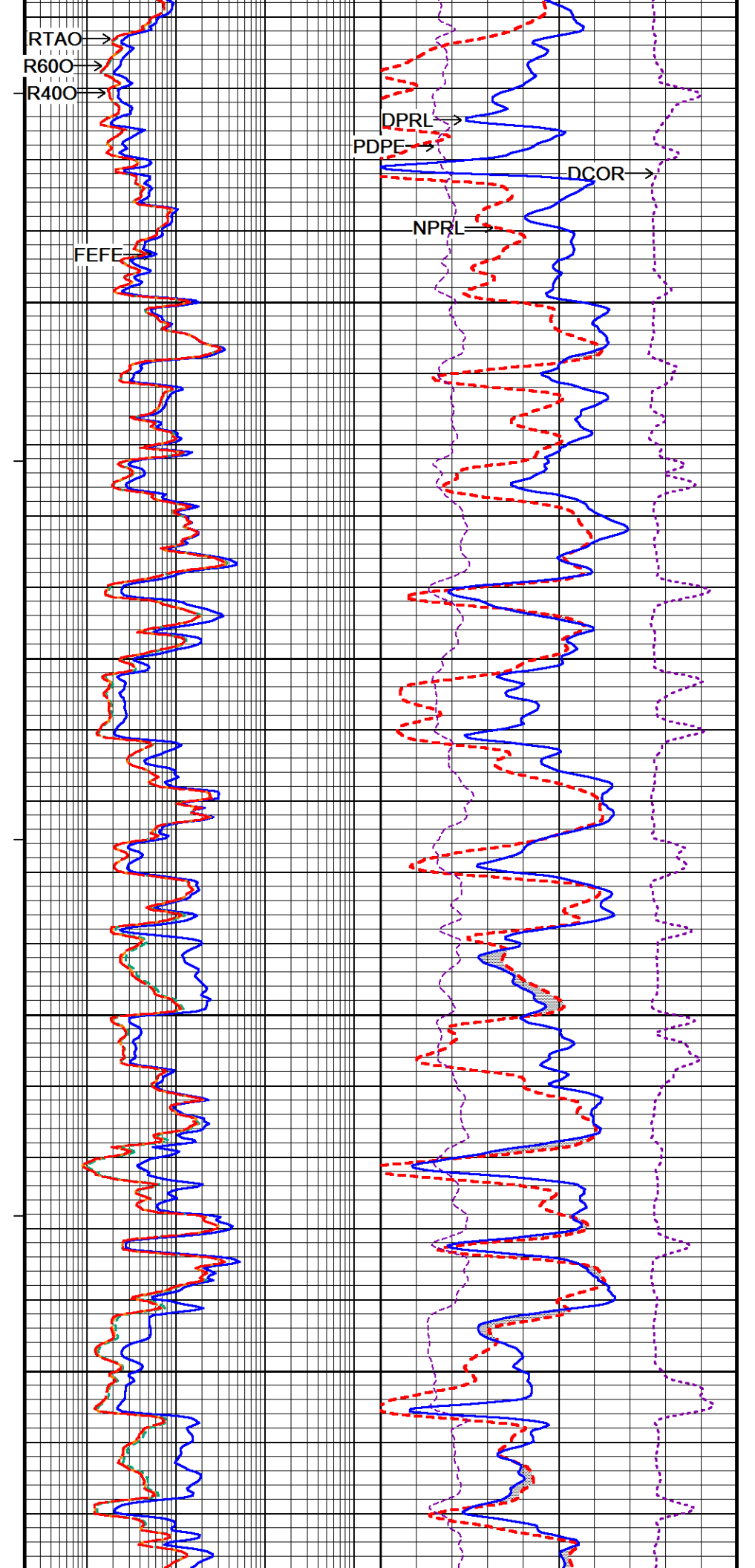
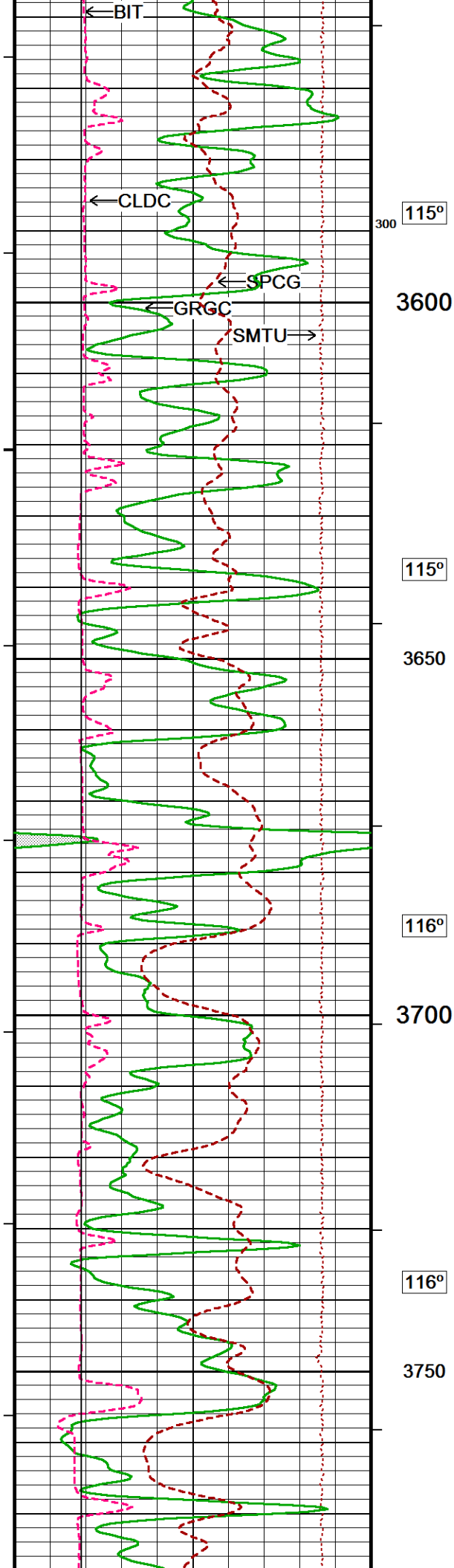


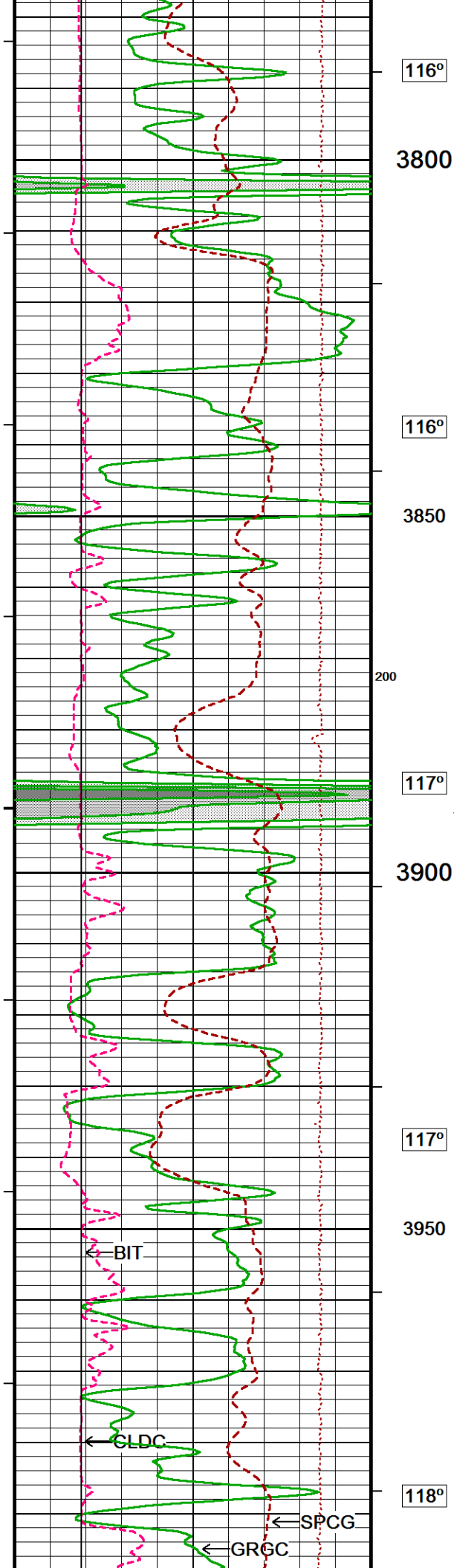




115°
3350
200
114°
3400
114°
3450
114°
3500
115°
3550







116°

3800

116°

3850

200

117°

100

3900

117°

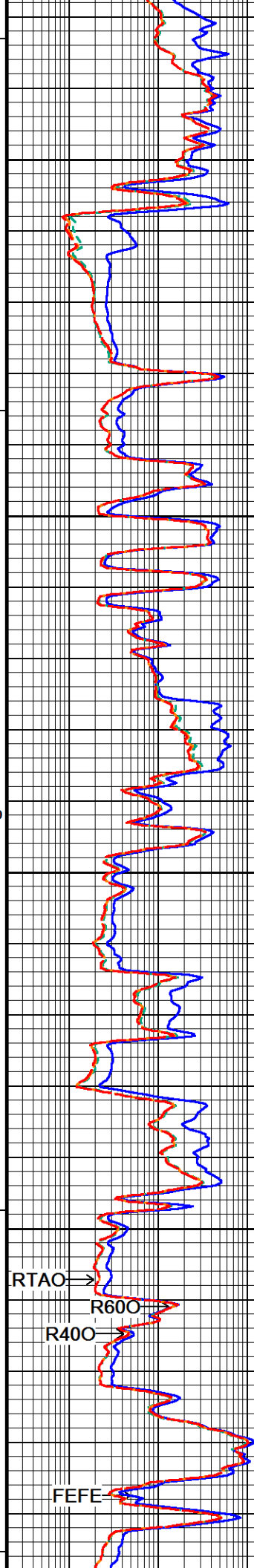
3950

← BIT

← CLDC

← SPCG

← GRGC

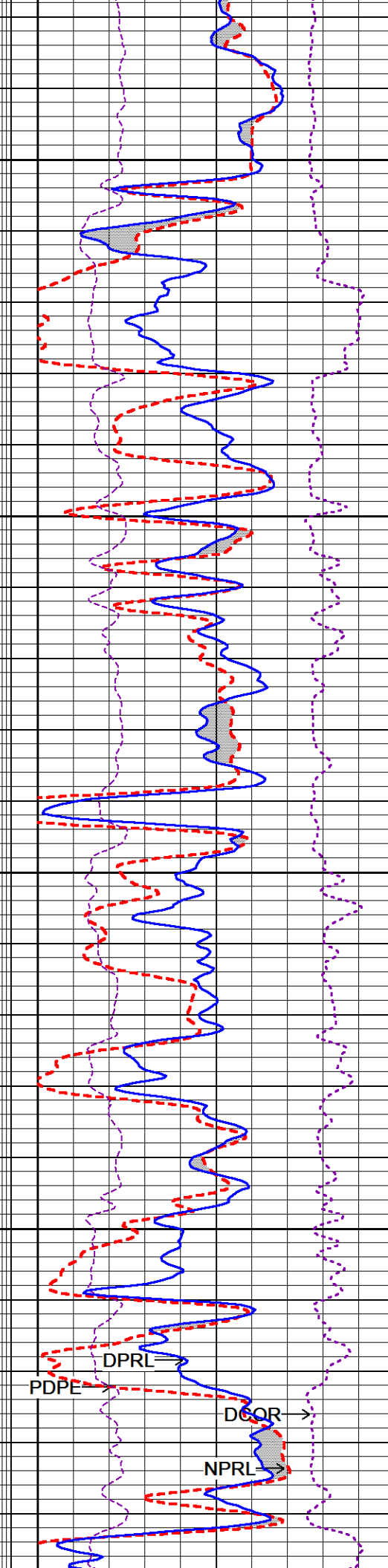


RTAO →

R600 →

R400 →

FEFE →

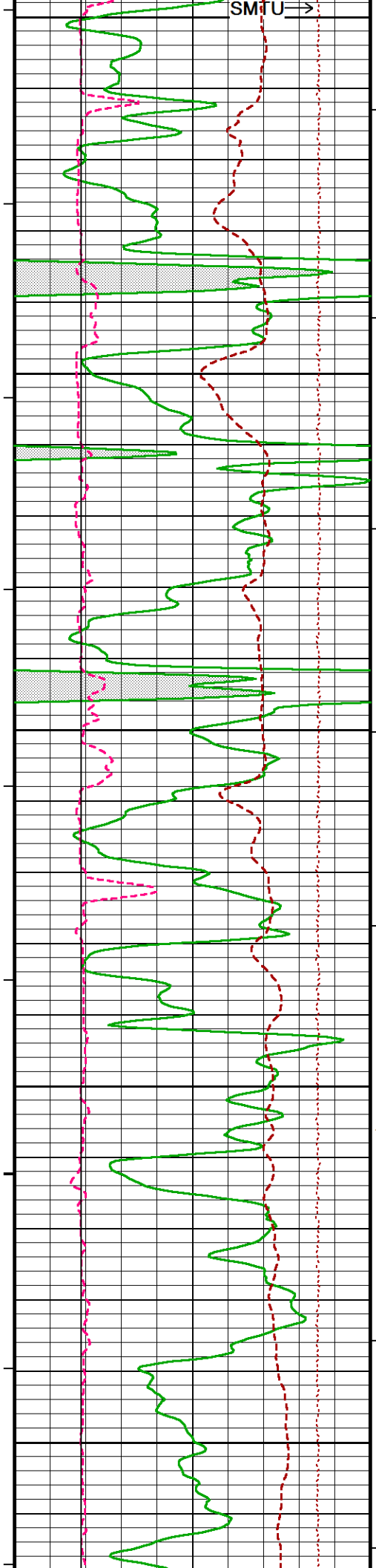


DPRL →

PDPE →

DCQR →

NPRL →



4000

119°

4050

119°

4100

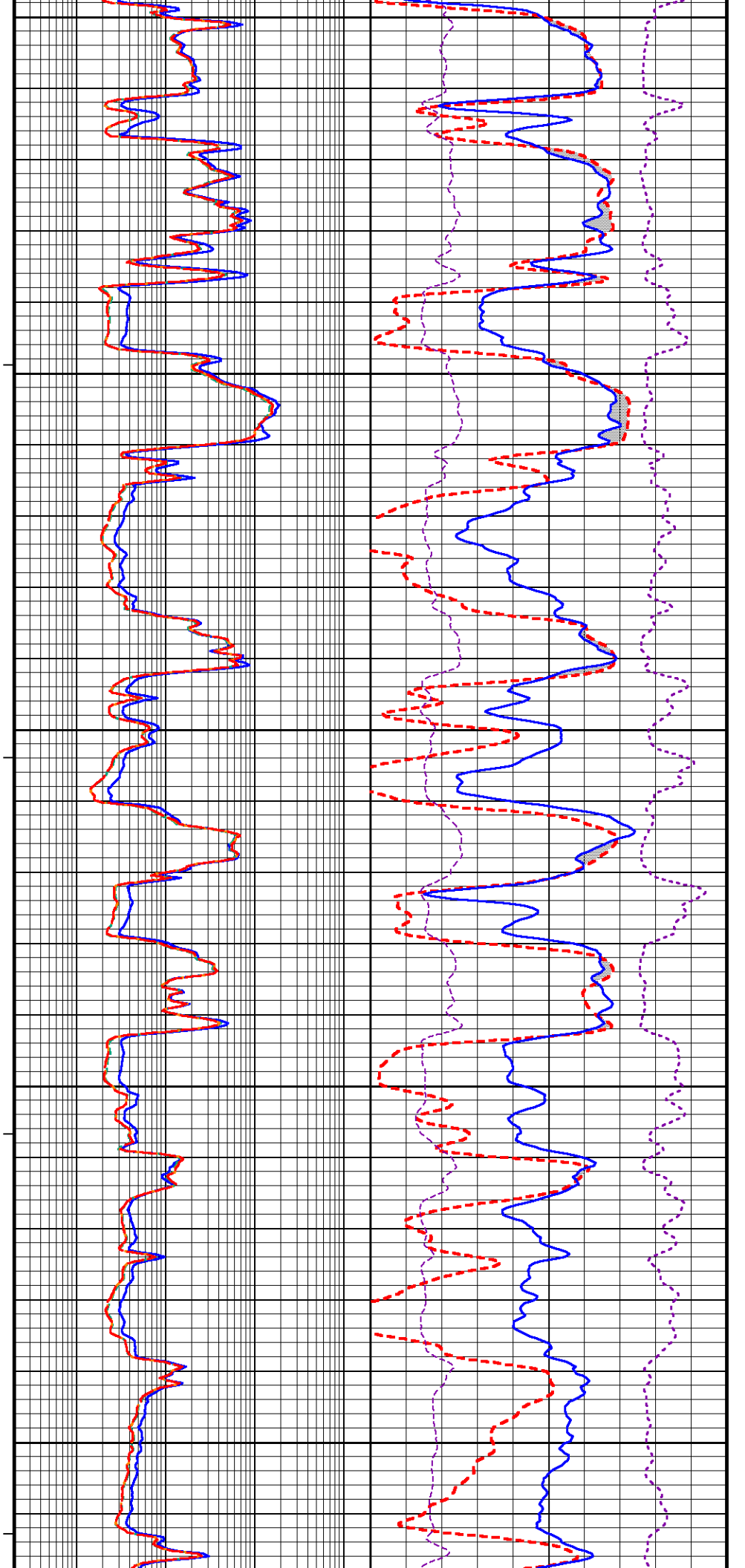
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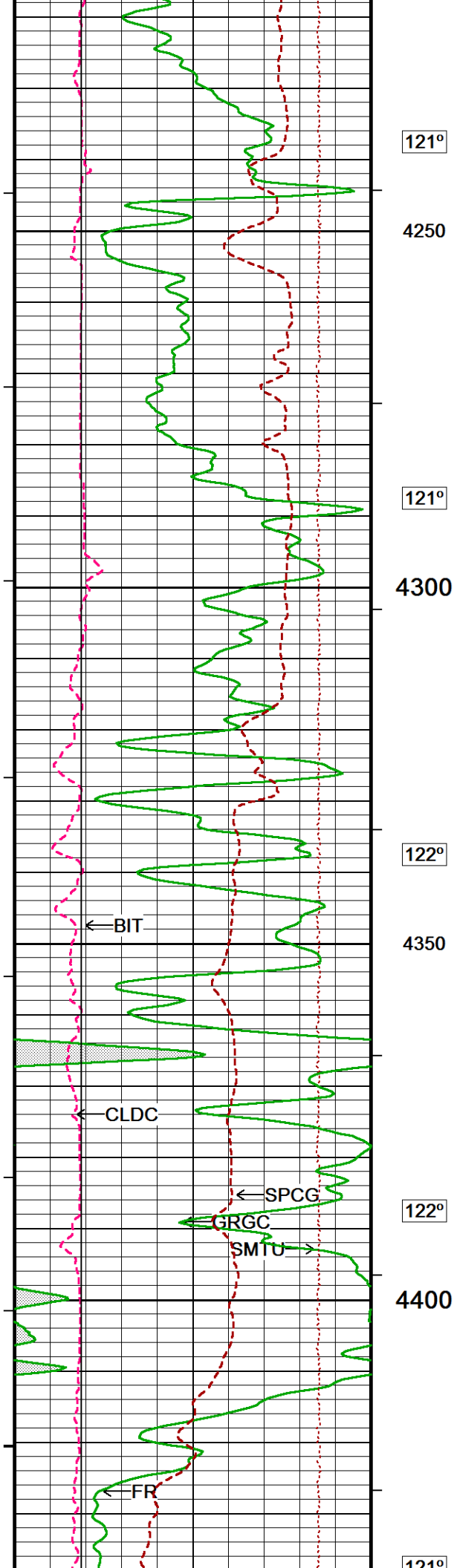
4150

100

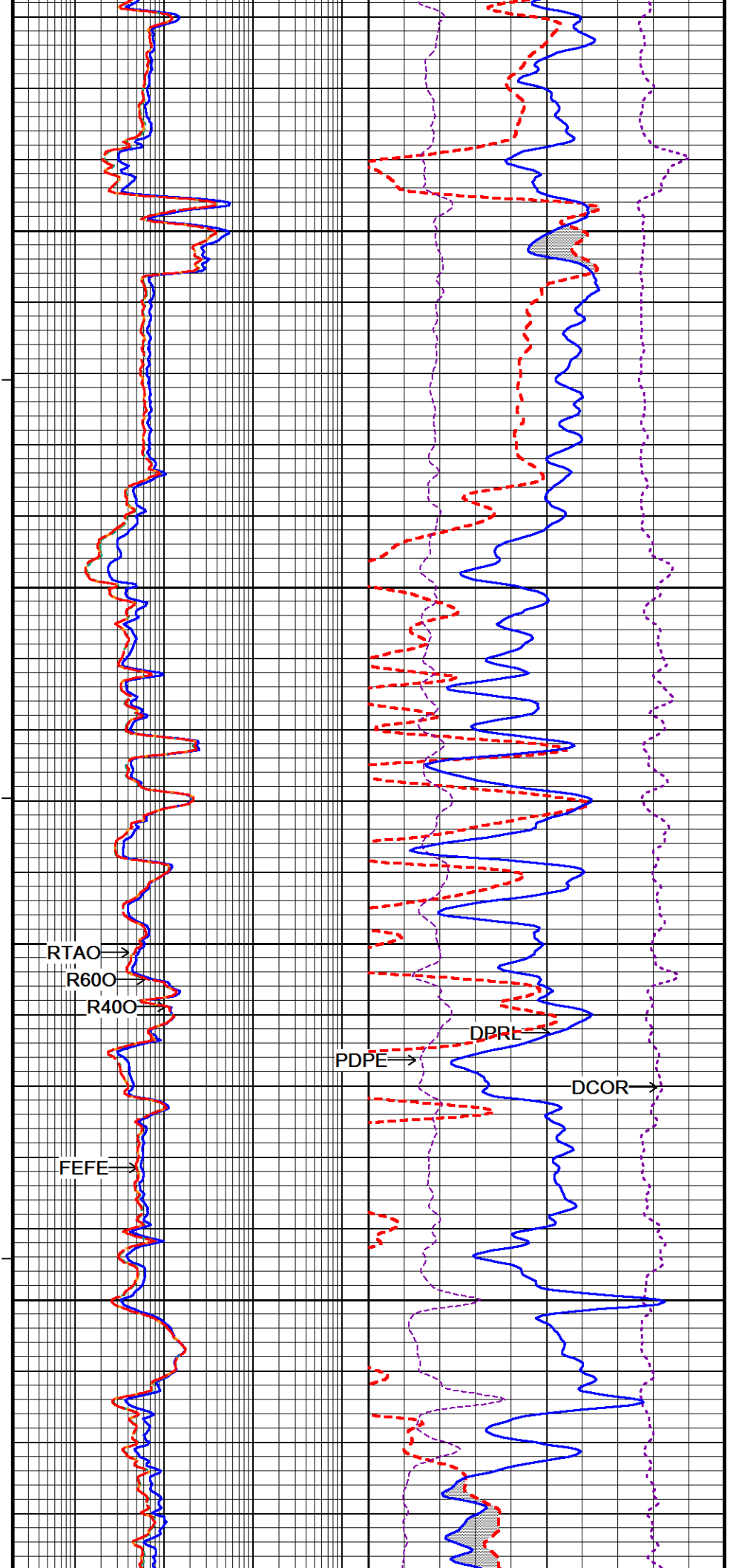
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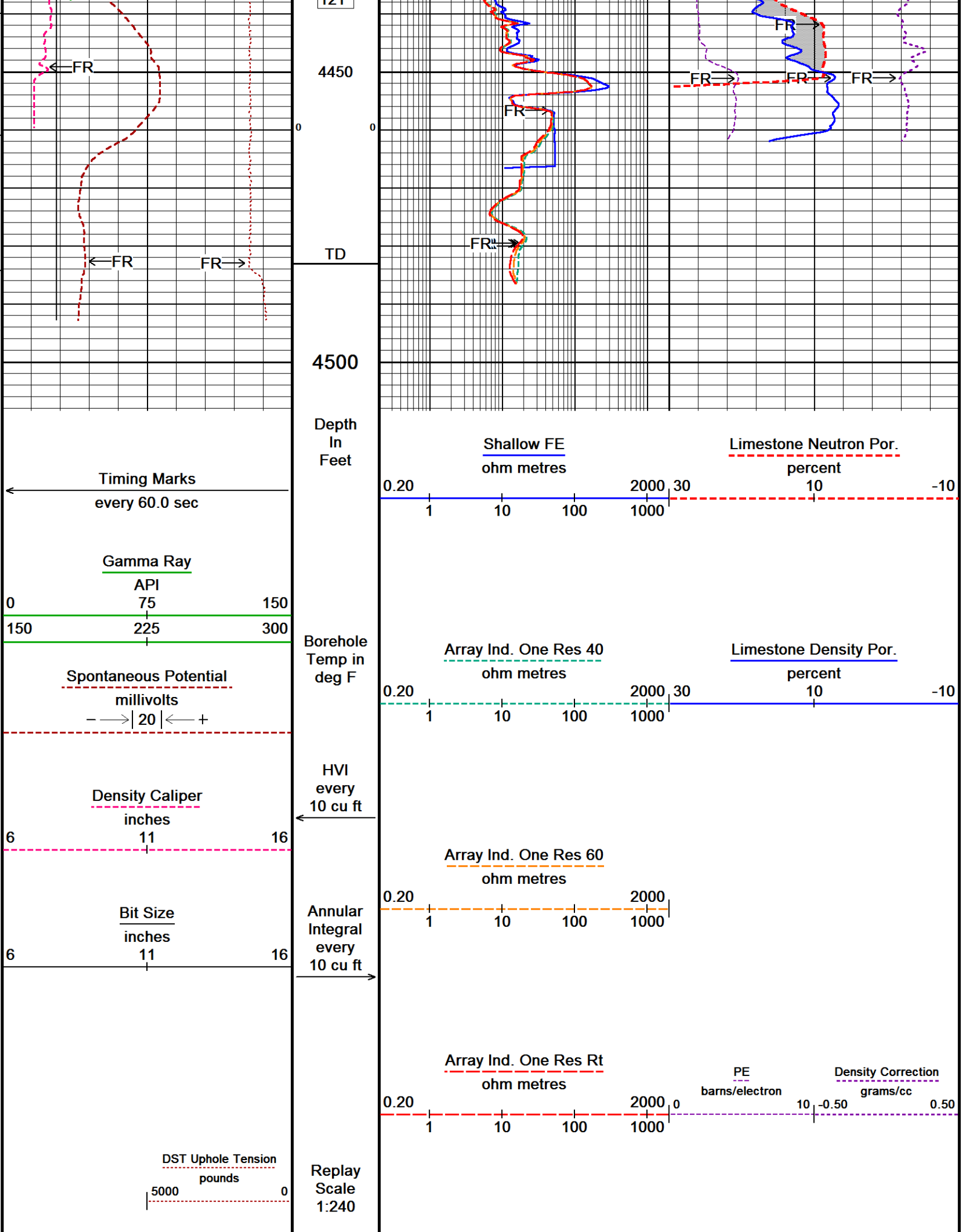
4200





121°
4250
121°
4300
122°
4350
122°
4400
121°







5 INCH MAIN COMPOSITE



10 INCH HIGH RESOLUTION COMPOSITE



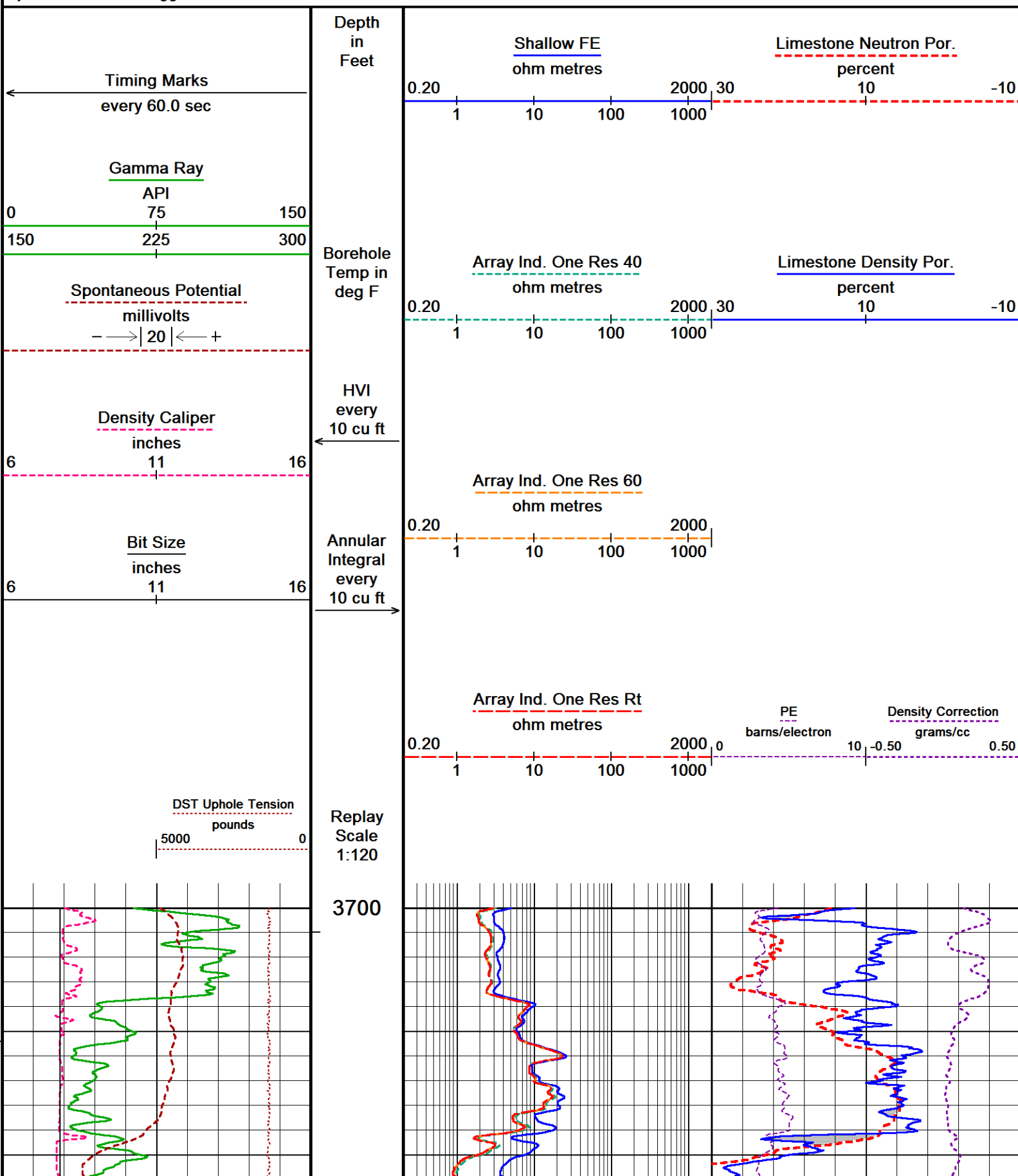
Depth Based Data - Maximum Sampling Increment 2.5cm

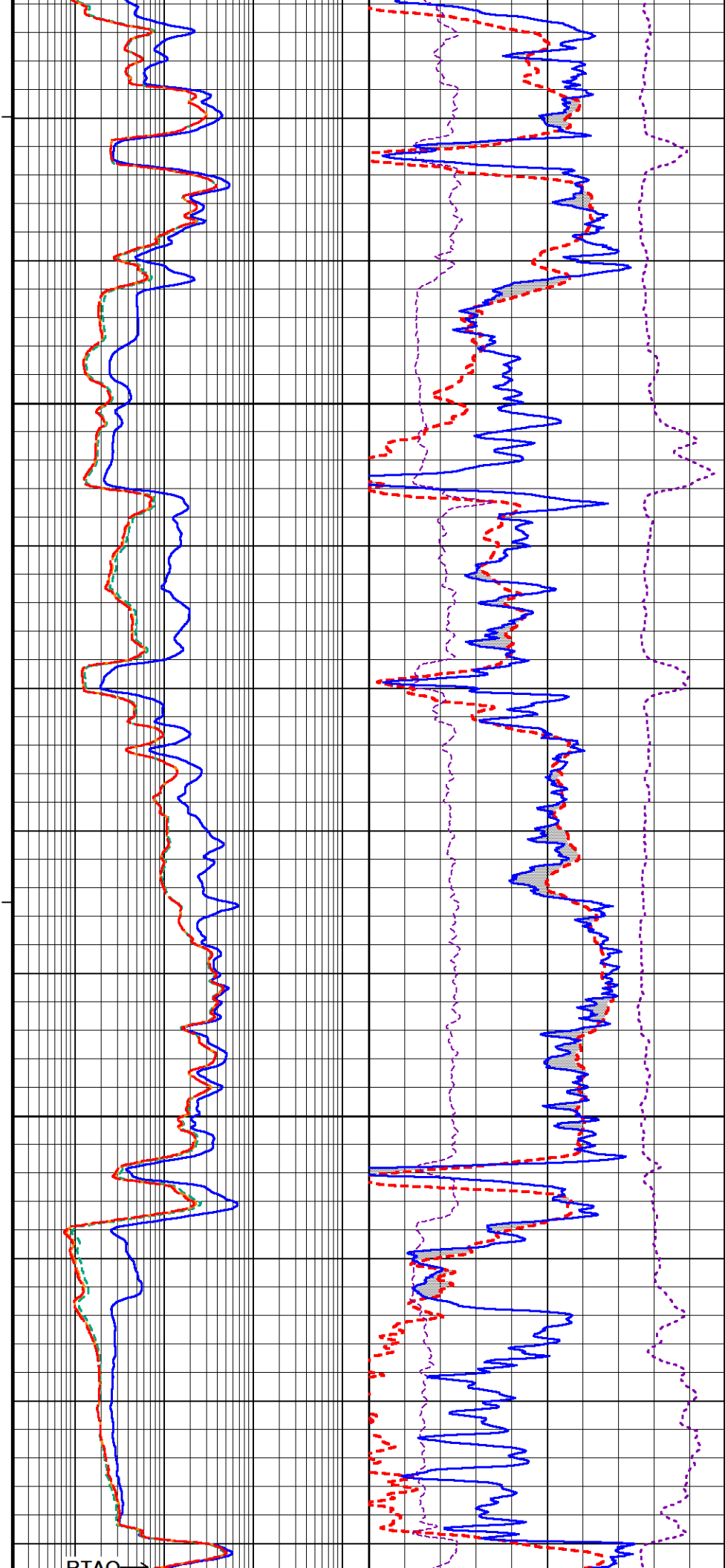
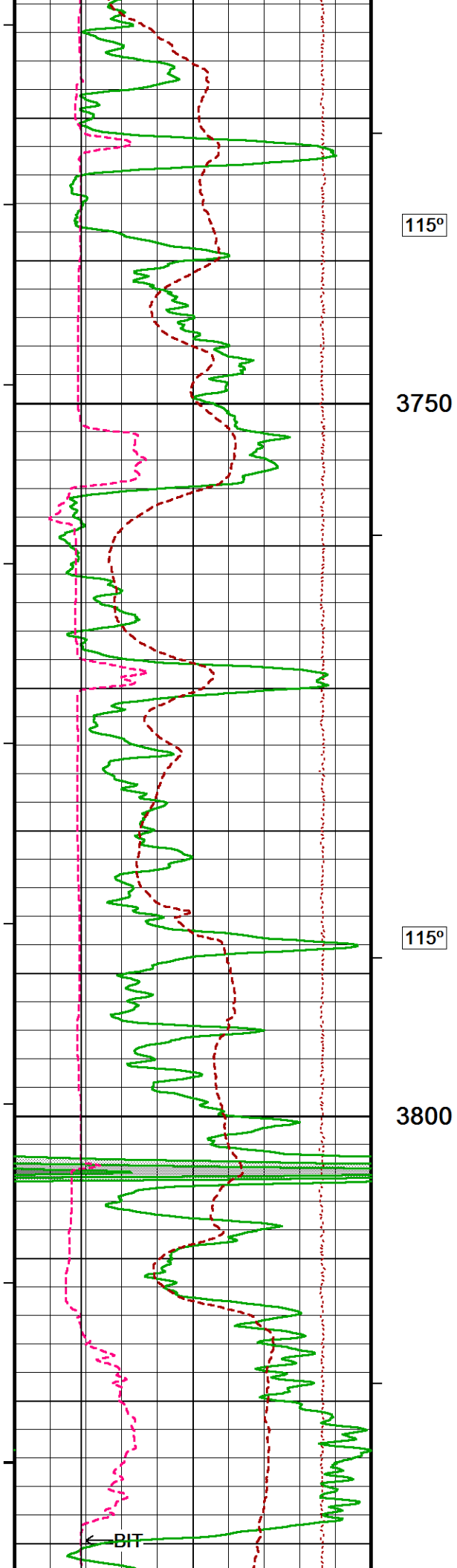
Plotted on 13-MAY-2016 15:37

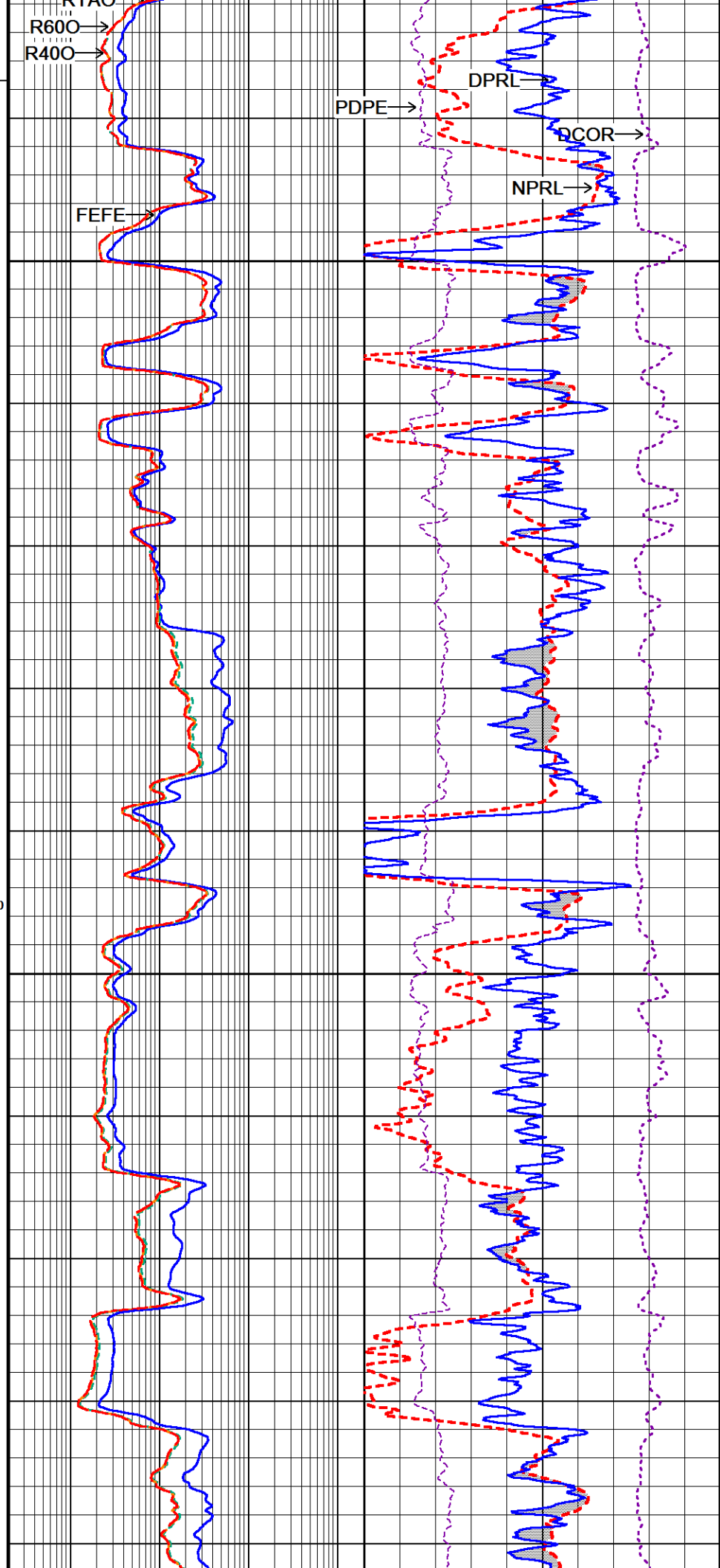
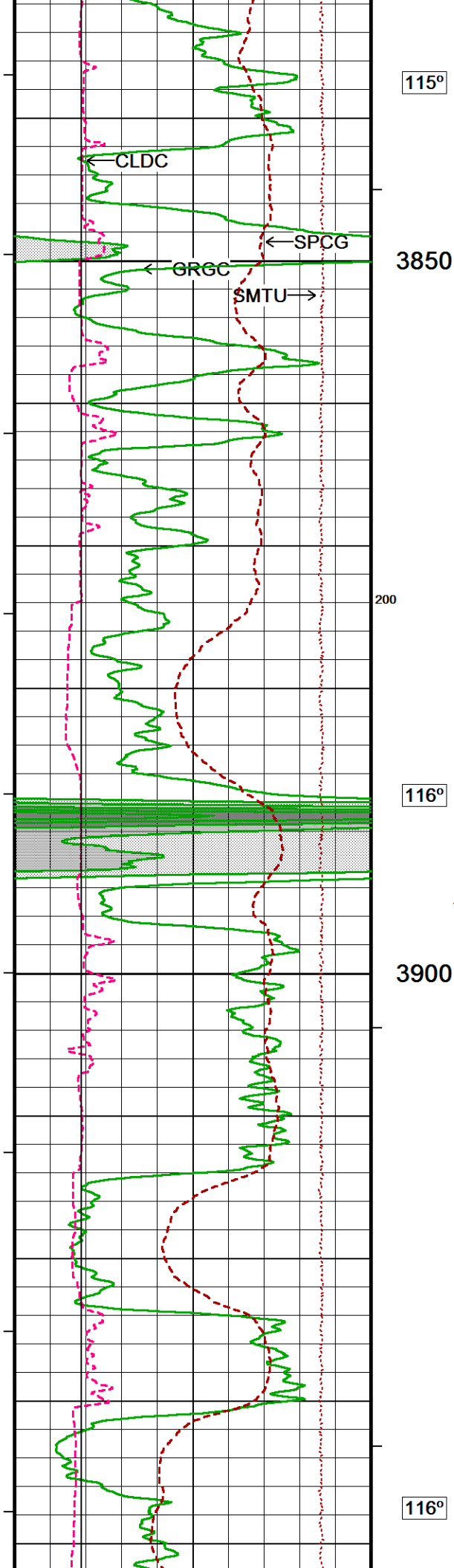
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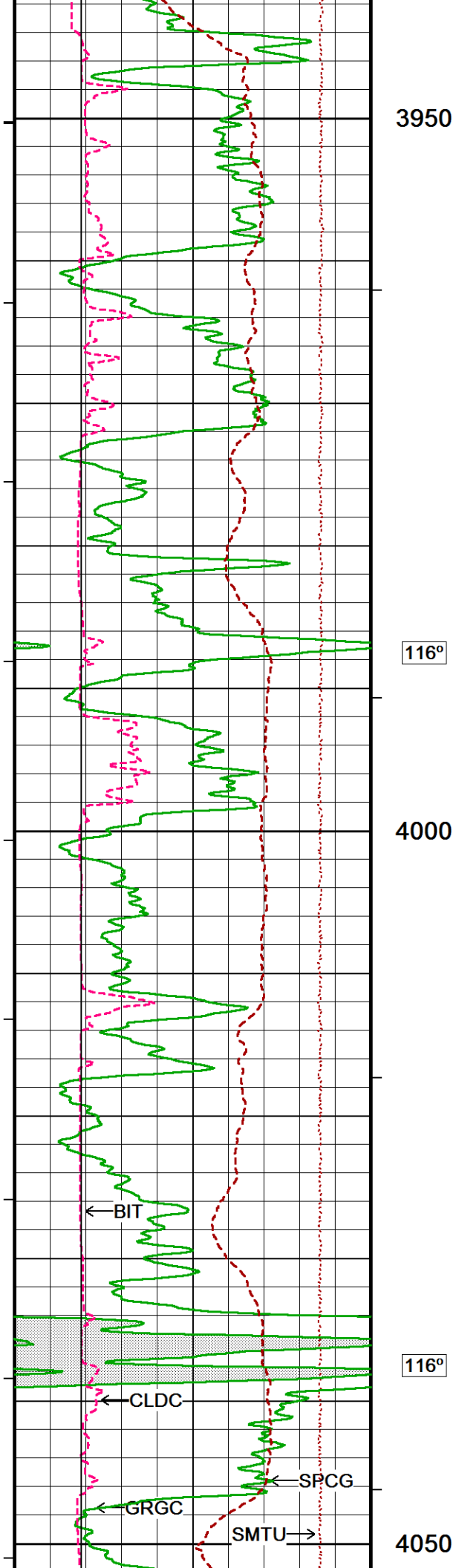
Recorded on 13-MAY-2016 10:46

System Versions: Logged with 15.03.5939 Plotted with 15.03.5939









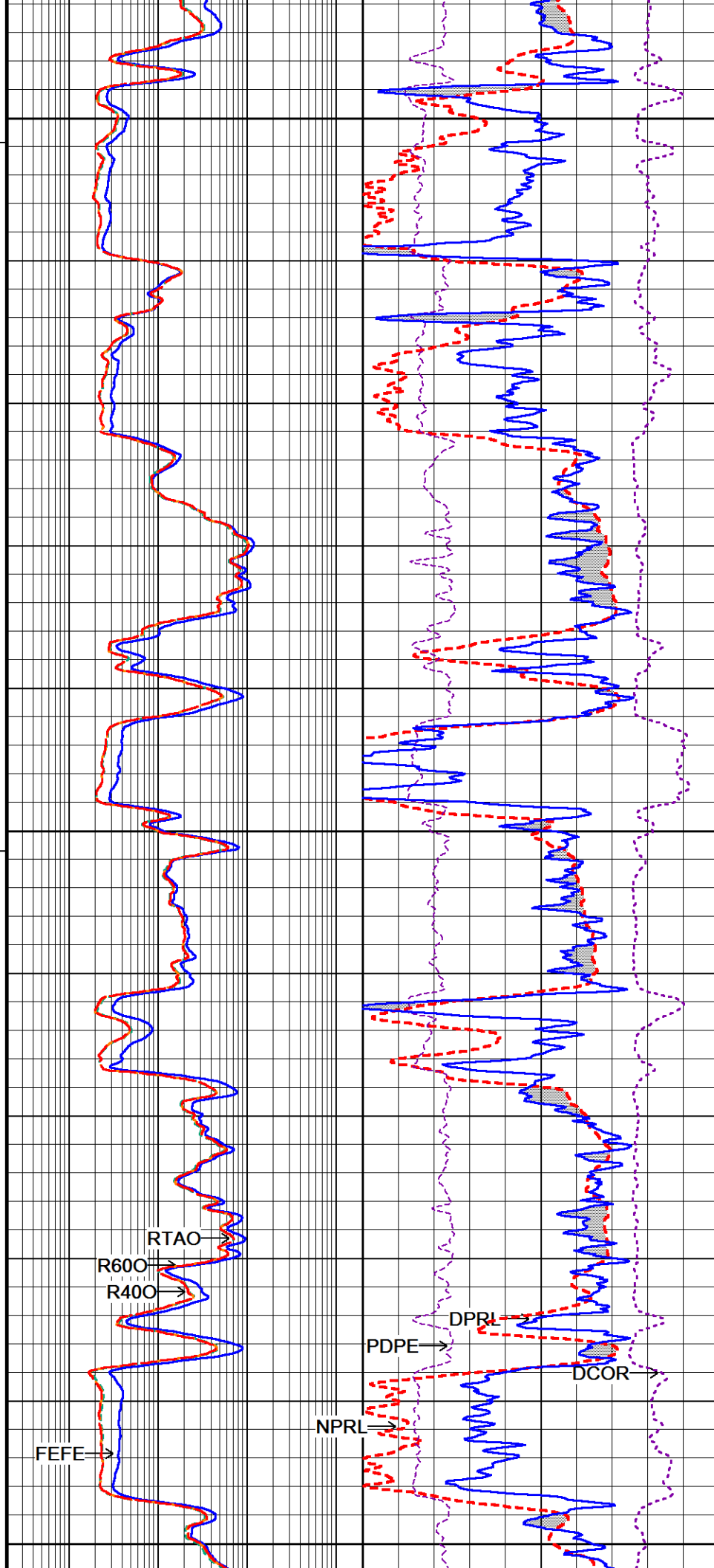
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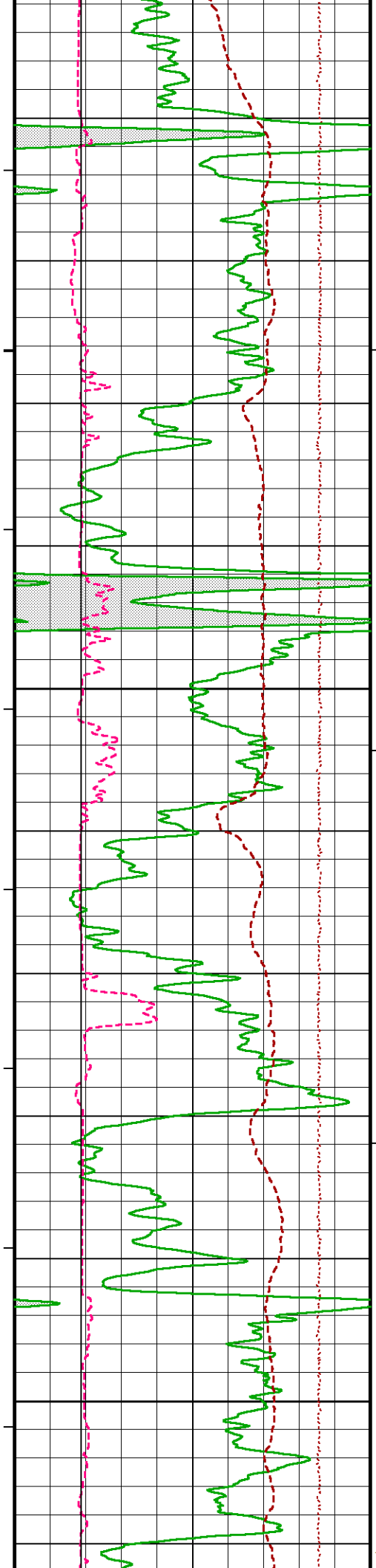
116°

4000

116°

4050





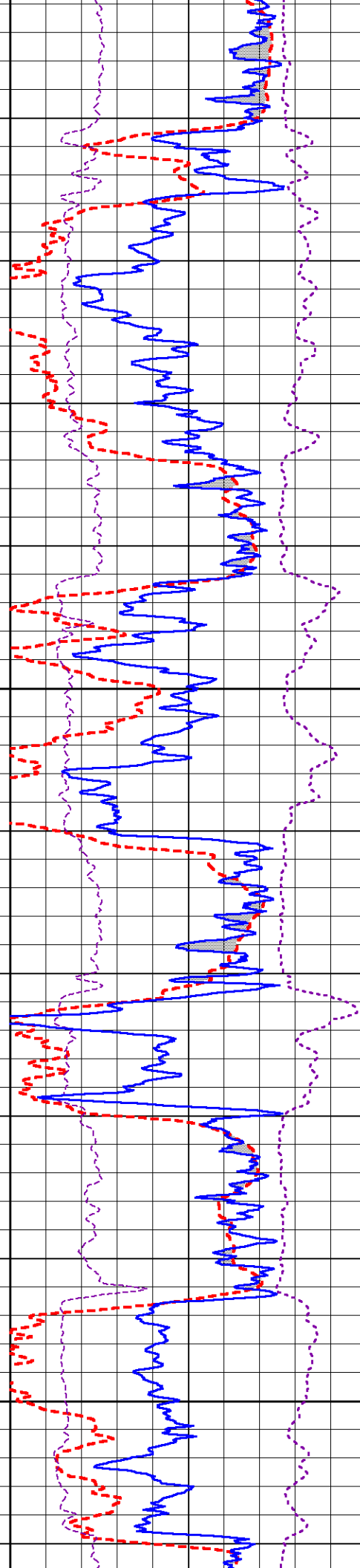
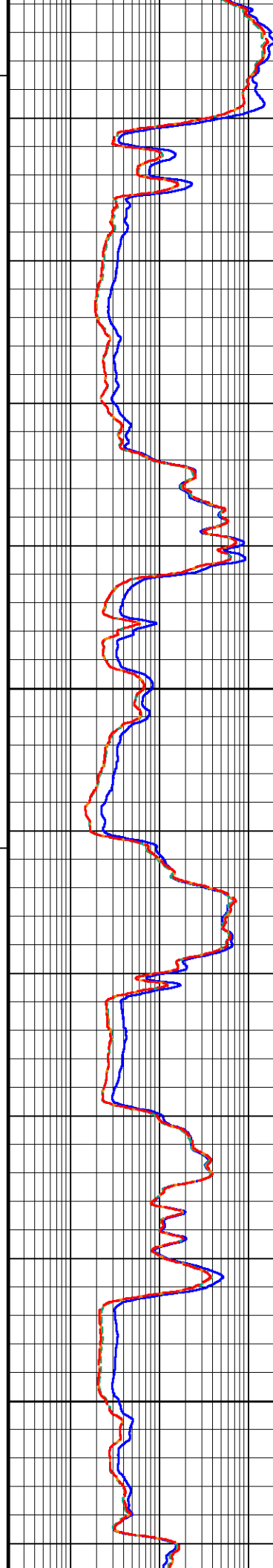
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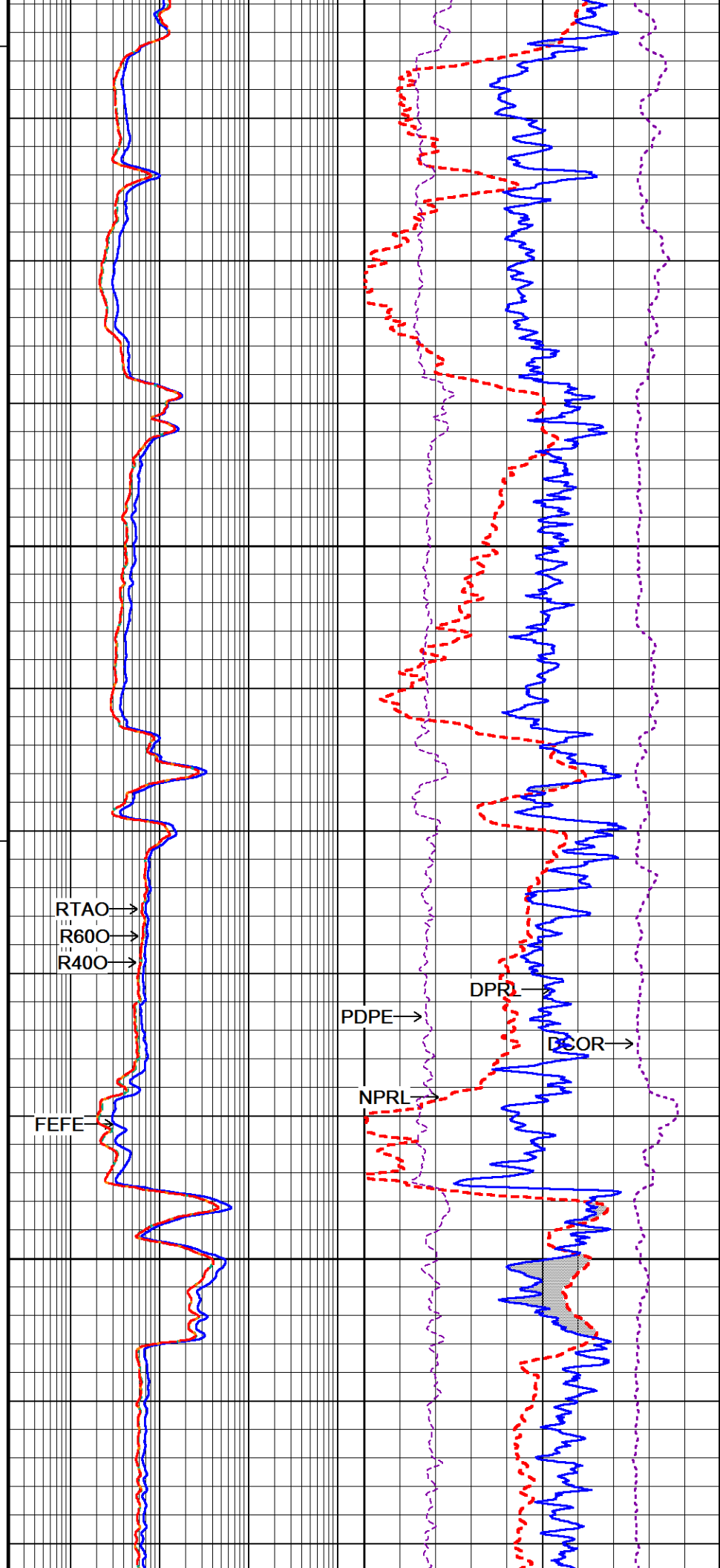
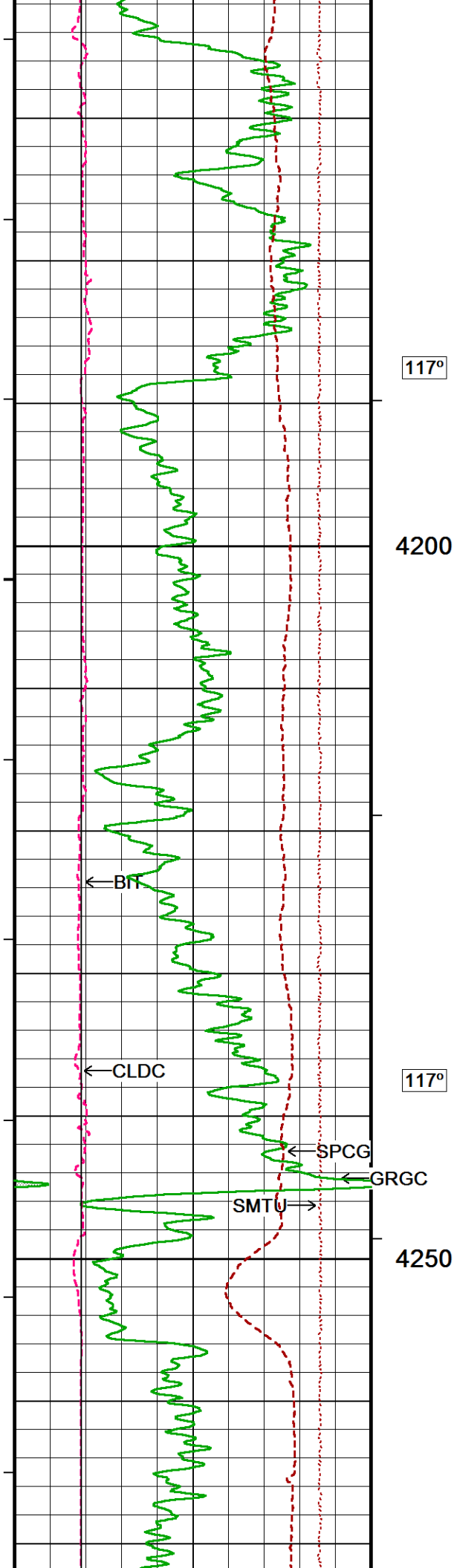
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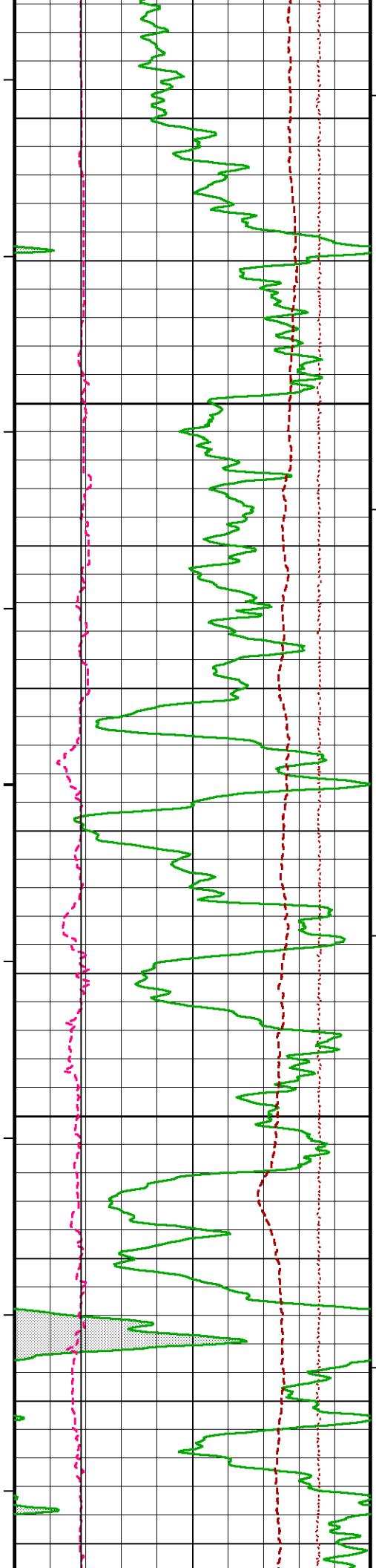
117°

4150

100





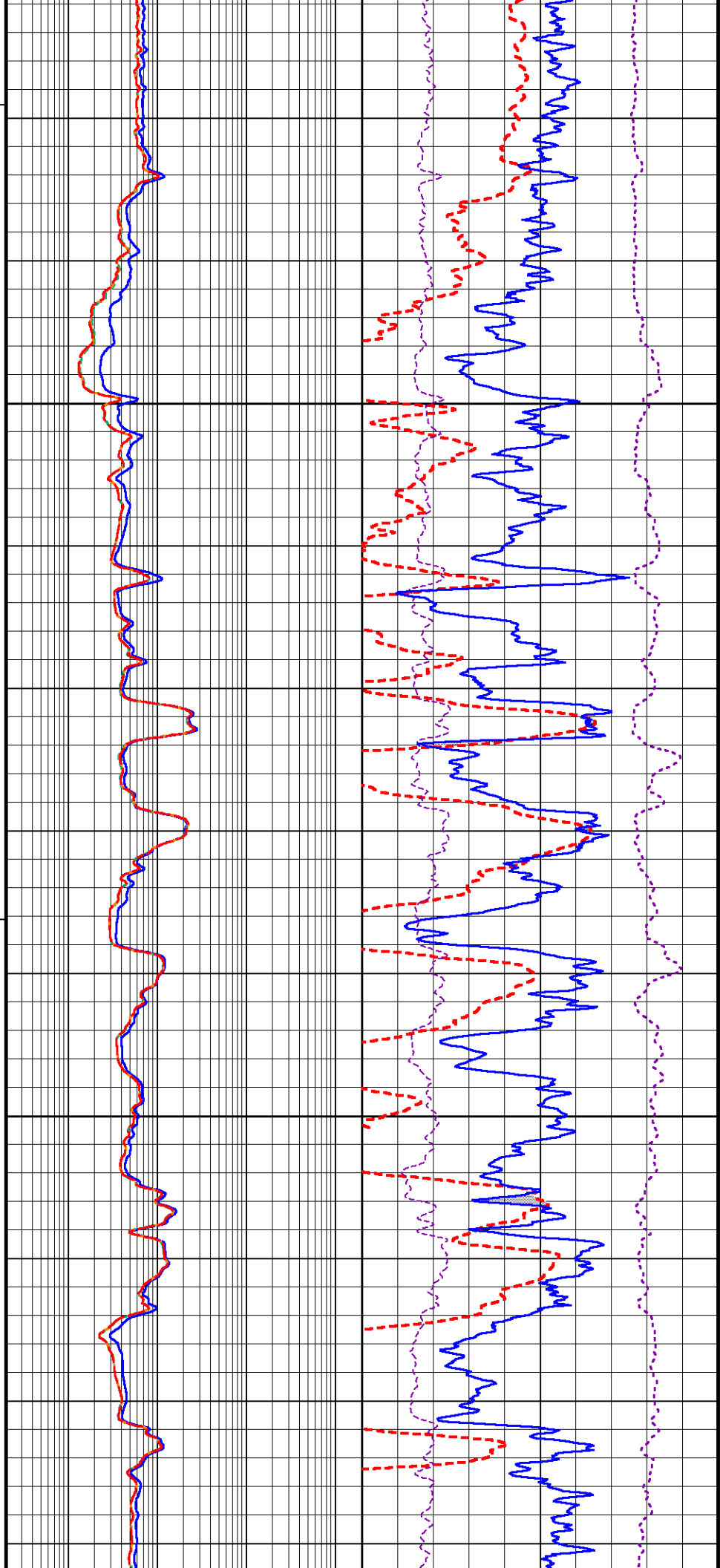


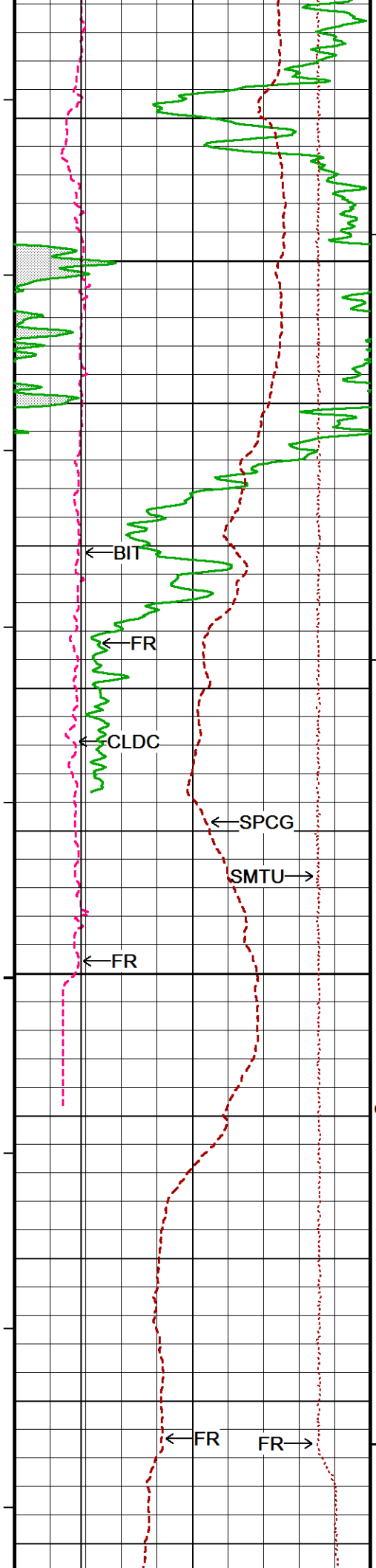
118°

4300

119°

4350





120°

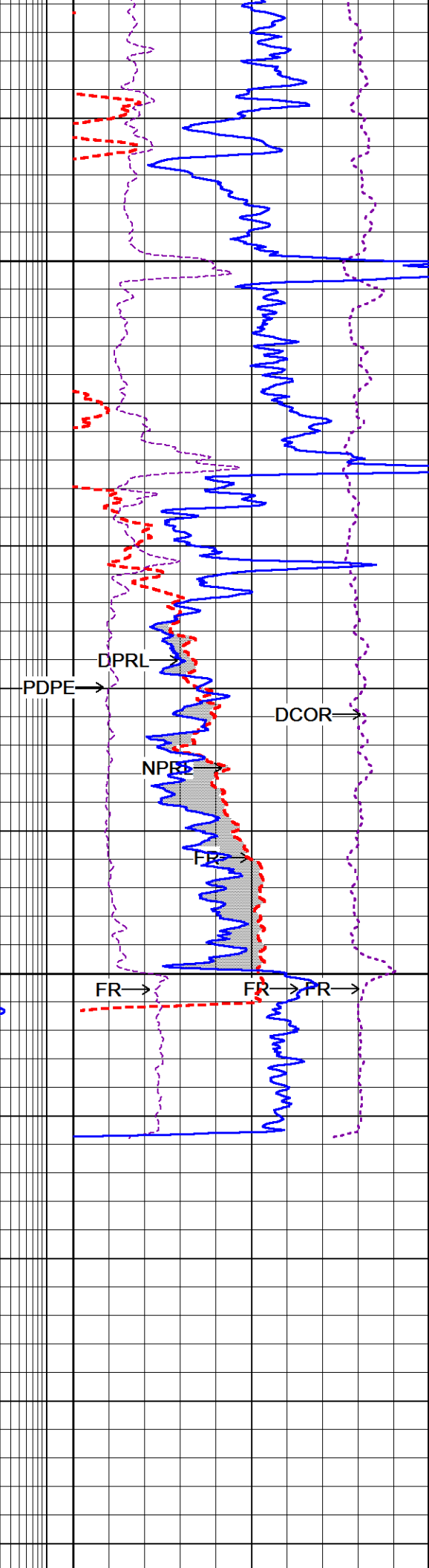
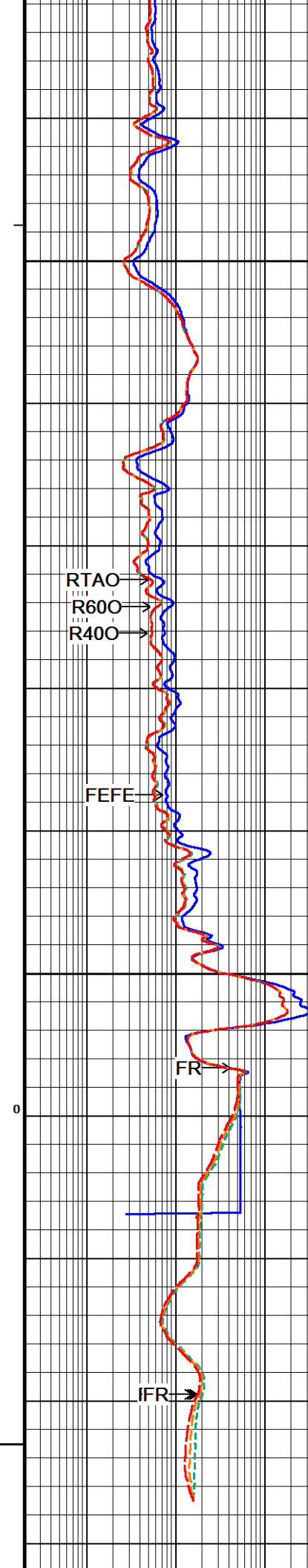
4400

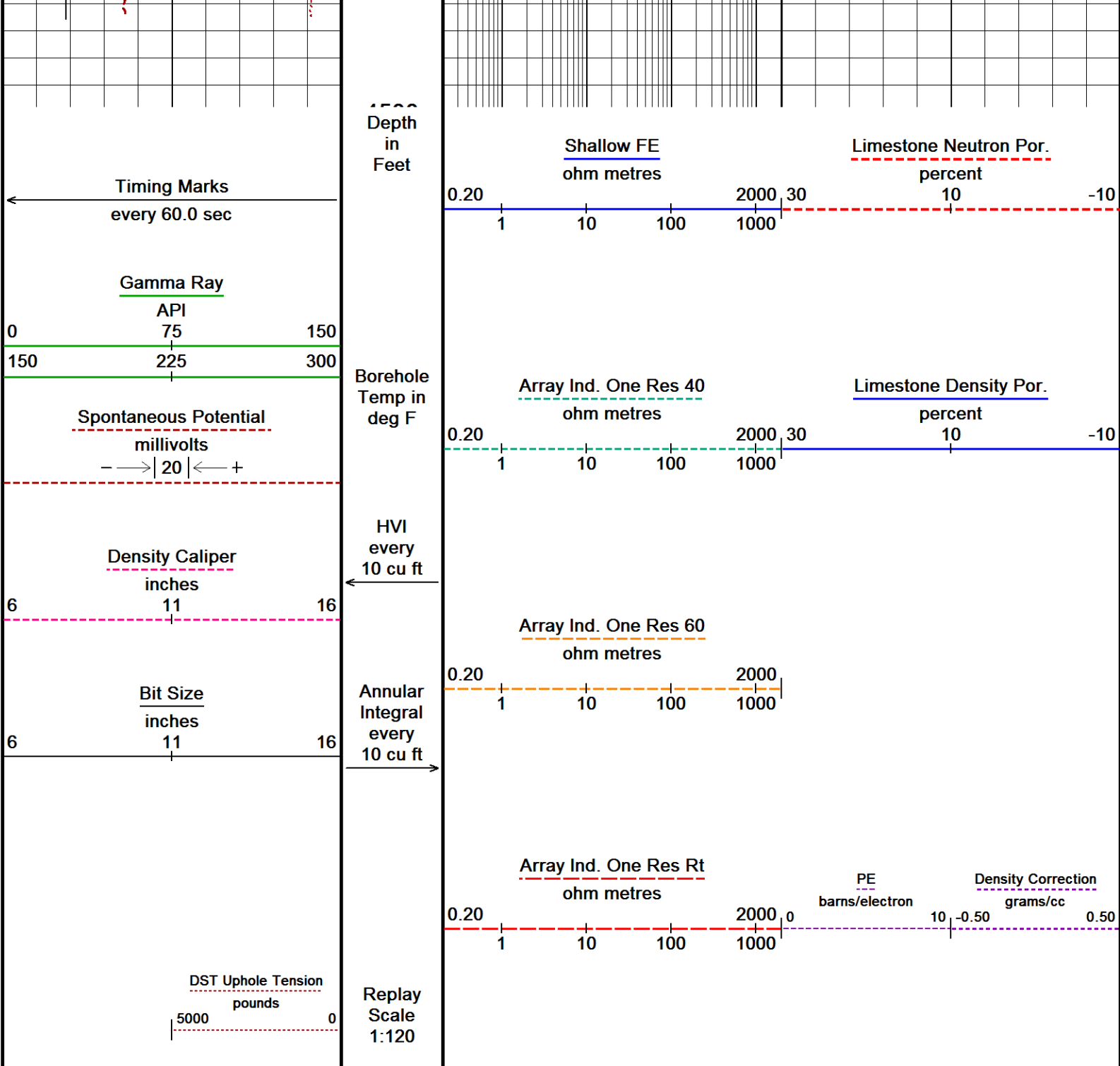
119°

4450

0

TD





Depth Based Data - Maximum Sampling Increment 2.5cm
Filename: C:\Minimus 15.03.5939\Logs\Suemaaur Muirhead Farms #1-12_001.dta
System Versions: Logged with 15.03.5939 Plotted with 15.03.5939
Plotted on 13-MAY-2016 15:37
Recorded on 13-MAY-2016 10:46

↑ 10 INCH HIGH RESOLUTION COMPOSITE ↑

BEFORE SURVEY CALIBRATION		
C:\Minimus 15.03.5939\Logs\Suemaaur Muirhead Farms #1-12\Suemaaur Muirhead Farms #1-12_002.dta		
General Constants All 000		Last Edited on 13-MAY-2016,10:18
General Parameters		
Mud Resistivity	1.000	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 Method	Single Caliper
HVOL Caliper 1	Density Caliper
HVOL Caliper 2	N/A
Annular Volume Diameter	5.500
Caliper for Differential Caliper	None
inches	
Rwa Parameters	
Porosity used	Base Density Porosity
Resistivity used	Array Ind. One Res Rt
RWA Constant A	0.610
RWA Constant M	2.150
SW/APOR Tool Source	0.000

Down-hole Tension Calibration SMS 0			Field Calibration on 13-MAY-2016 09:56
Reading No	Measured	Calibrated (lbs)	
1	7583.35	0.00	
2	8123.24	481.00	

Gamma Calibration MCG-C 123			Field Calibration on 12-MAY-2016 23:52
	Measured	Calibrated (API)	
Background	67	46	
Calibrator (Gross)	731	502	
Calibrator (Net)	664	456	

Gamma Calibration Tolerances MCG-C 123		
Ratio	1.456	1.40 1.475 1.55 Counts/API

Gamma Constants MCG-C 123			Last Edited on 13-MAY-2016,08:37
Gamma Calibrator Number	MCGGRCC141		
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	%	

High Resolution Temperature Calibration MCG-C 123			Field Calibration on 31-OCT-2015,17:05
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	100.00	100.00	

High Resolution Temperature Constants MCG-C 123			Last Edited on 22-SEP-2015,11:43
Pre-filter Length	11		

SP Calibration MCG-C 123			Field Calibration on 02-NOV-2015 16:50
	Measured	Calibrated (mV)	
Reference 1	100.3	100.0	
Reference 2	-100.1	-99.9	

Micro Normal and Micro Inverse Calibration MMR-C.A 247					Base Calibration on 19-MAR-2016 14:09	
					Field Check on 12-MAY-2016 23:39	
Base Calibration						
		Measured		Calibrated (ohm-m)		
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2		
Micro Normal	10.2	50.0	5.1	25.6		
Micro Inverse	10.0	49.5	3.4	16.9		
Channel	Base Check (ohm-m)		Field Check (ohm-m)			
Micro Normal	93.5		93.5			
Micro Inverse	62.2		62.2			

Micro Normal & Micro Inverse Calibration Tolerance MMR-C.A 247				
Micro Normal Res. 1	10.2	-5% 10.0 +5% ohm	Micro Normal Res. 2	50.0
Micro Inverse Res. 1	10.0	-5% 10.0 +5% ohm	Micro Inverse Res. 2	49.5
				-5% 50.0 +5% ohm
				-5% 50.0 +5% ohm

Micro Normal Base Check	93.5		ohm-m
Micro Inverse Base Check	62.2		ohm-m
Micro Normal Field Check	93.5		ohm-m
Micro Inverse Field Check	62.2		ohm-m

Micro Normal and Micro Inverse Constants MMR-C.A 247

Last Edited on 20-OCT-2015,12:33

Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159		
Micro Normal K Factor	0.5110		
Micro Inverse K Factor	0.3380		
Standoff Offset	0.0000	inches	

Caliper Calibration MMR-C.A 247

Base Calibration on 19-MAR-2016 14:00

Field Calibration on 12-MAY-2016 23:38

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	14634	5.98
2	18010	7.97
3	21228	9.86
4	25180	11.92
5	0	0.00
6	N/A	N/A

Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	7.94	7.97

Caliper Calibration Tolerances MMR-C.A 247

Short Arm Field Cal.	7.94		in
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Micro-Resistivity Caliper Constants MMR-C.A 247

Last Edited on

Sonde Configuration	Resistivity Mode
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Neutron Calibration MDN-A.B 66

Base Calibration on 21-MAR-2016 13:01

Field Check on 12-MAY-2016 23:57

Base Calibration		
	Measured	Calibrated (cps)
	Near Far	Near Far
Ratio	3116 97	3714 110
	32.277	33.764
Field Calibrator at Base		
		Calibrated (cps)
Ratio		2061 3028
		0.681
Field Check		
		Calibrated (cps)
Ratio		2147 3071
		0.699

Neutron Calibration Tolerances MDN-A.B 66

Ratio	32.277	
Base Check	0.681	
Field Check	0.699	

Neutron Constants MDN-A.B 66

Last Edited on 13-MAY-2016,08:36

Neutron Source Id	P0204NN	
Neutron Jig Number	NJ5736	
Air Hole Processing	Legacy	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.00	gm/cc
Limestone Sigma	7.10	cm

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	Constant Value	
Temperature	68.00	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	

FE Calibration MFE-B.J 352		Base Calibration on 19-MAR-2016 14:35 Field Check on 12-MAY-2016 23:31	
Base Calibration			
	Measured	Calibrated (ohm-m)	
Reference 1	0.0	0.0	
Reference 2	963.3	126.8	
Base Check		281.5	
Field Check		281.5	

FE Calibration Tolerances MFE-B.J 352			
Reference 2	963.3	-3% 980.0 +3%	ohm
Base Check	281.5	-2% 277.0 +2%	ohm-m
Field Check	281.5	-2% 281.5 +2%	ohm-m

FE Constants MFE-B.J 352		Last Edited on 13-MAY-2016,08:36	
Running Mode	No Sleeve		
MFE K Factor	0.1268		
Borehole Correction Constants			
Sonde Position	0.5	inches	
Hole Size Source	Density Caliper		
Hole Size Constant Value	N/A	inches	
Rm Source	Global Value: Temperature Corrected		
Temp. for Rm Corr.	MCG External Temperature		

Sonic Constants MSS-A.A 55			Last Edited on 13-MAY-2016,08:36		
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 Sonic				
Correction for Sonde Skew	Applied				
Cycle Stretch Algorithm	Applied				
MN3FT	N/A	micro-sec			
MX3FT	N/A	micro-sec			
Hunt-Raymer Constant	83.13	micro-sec/ft			
Sonde Mode	Compensated				
Hole Type	Open Hole				
Sonde Parameters					
	Measured	Calibrated			
Offset	N/A	0.0000			
Free Pipe	N/A	N/A			
Peak Amplitude Source	N/A				
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
7'	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)	N/A
N/A	N/A	N/A	
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Full Waveform Parameters

Use 3' Waveform to derive TR	N/A	
Use 4' Waveform to derive TR	N/A	
Use 5' Waveform to derive TR	N/A	
Use 6' Waveform to derive TR	N/A	
3' Waveform Discriminator Level	N/A	mV
4' Waveform Discriminator Level	N/A	mV
5' Waveform Discriminator Level	N/A	mV
6' Waveform Discriminator Level	N/A	mV
3' Waveform Filter	N/A	
4' Waveform Filter	N/A	
5' Waveform Filter	N/A	
6' Waveform Filter	N/A	
Semblance Level	N/A	
Semblance Window Width	N/A	micro-sec
Sonic 1 Despiker	N/A	N/A
Sonic 2 Despiker	N/A	N/A

Induction Calibration MAI-A.A 111

Base Calibration on 05-AUG-2014,09:34
Field Check on 12-MAY-2016 23:29

Base Calibration

Test Loop Calibration	Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High
1	17.6	473.6	9.3	966.2
2	6.4	385.9	7.6	821.4
3	3.2	264.0	5.2	566.0
4	2.1	135.5	2.6	279.2

Array Temperature 23.0 Deg F

Test Loop Calibration Verified 09-DEC-2015 11:03

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	12.1	3873.0	12.6	3868.3
2	29.8	3528.1	30.1	3525.4
3	29.1	3021.3	29.3	3020.2
4	19.1	2058.5	19.3	2057.8
Deep	17.7	1962.1	17.9	1962.2
Medium	43.1	3976.4	43.4	3975.1
Shallow	44.4	5232.7	44.9	5227.3

Array Temperature 65.8 67.6 Deg F

Induction Calibration Tolerances MAI-A.A 111

Low Conductivity 1	17.6		mmho/m High Conductivity 1	473.6		mmho/m
Low Conductivity 2	6.4		mmho/m High Conductivity 2	385.9		mmho/m
Low Conductivity 3	3.2		mmho/m High Conductivity 3	264.0		mmho/m
Low Conductivity 4	2.1		mmho/m High Conductivity 4	135.5		mmho/m
Background Vx 1	0.0		mmho/m Phase Check Loop 1	0.0		%
Background Vx 2	0.0		mmho/m Phase Check Loop 2	0.0		%
Background Vx 3	0.0		mmho/m Phase Check Loop 3	0.0		%
Background Vx 4	0.0		mmho/m Phase Check Loop 4	0.0		%

Field Check

1154.9 1328.6

PE Calibration

Base Calibration

Measured

Calibrated

	WS	WH	Ratio
Background	212	1033	
Reference 1	20885	49605	0.426
Reference 2	5804	20019	0.295

Ratio

0.371

0.272

Field Check at Base

211.9 1032.9

Field Check

211.2 1032.8

Photo Density Calibration Tolerances MPD-B 104

Near Density Ratio 2.56

-5%	2.52	+5%
0.089	0.110	0.131

PE Calibration 0.122

-5%	0.110	+5%

Far Density Ratio 20.58

-5%	21.00	+5%

Near Den. Field Check 1154.9

-3%	1156.0	+3%

PE WS Field Check 211.2

-6%	211.9	+6%

Far Den. Field Check 1328.6

-3%	1333.0	+3%

PE WH Field Check 1032.8

-6%	1032.9	+6%

Density Constants MPD-B 104

Last Edited on 13-MAY-2016,08:36

Density Source Id	P50557B	
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	1.12	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 (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	0.00	
0.00	0.00	

Caliper Calibration MPD-B 104

Base Calibration on 19-MAR-2016 13:20
Field Calibration on 12-MAY-2016 23:33

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13186	3.99
2	22133	5.98
3	30784	7.97
4	39008	9.86
5	48032	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.91	7.97

Caliper Calibration Tolerances MPD-B 104

Short Arm Field Cal. 7.91

7.77	7.97	8.17

in

DOWNHOLE EQUIPMENT

C:\Minimus 15.03.5939\Logs\Suemaaur Muirhead Farms #1-12\Suemaaur Muirhead Farms #1-12_002.dta

Cablehead, 11 pin
CBH-CA 155 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Comms Gamma
MCG-C 123 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-Resistivity
MMR-C.A 247 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

Compact Neutron
MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

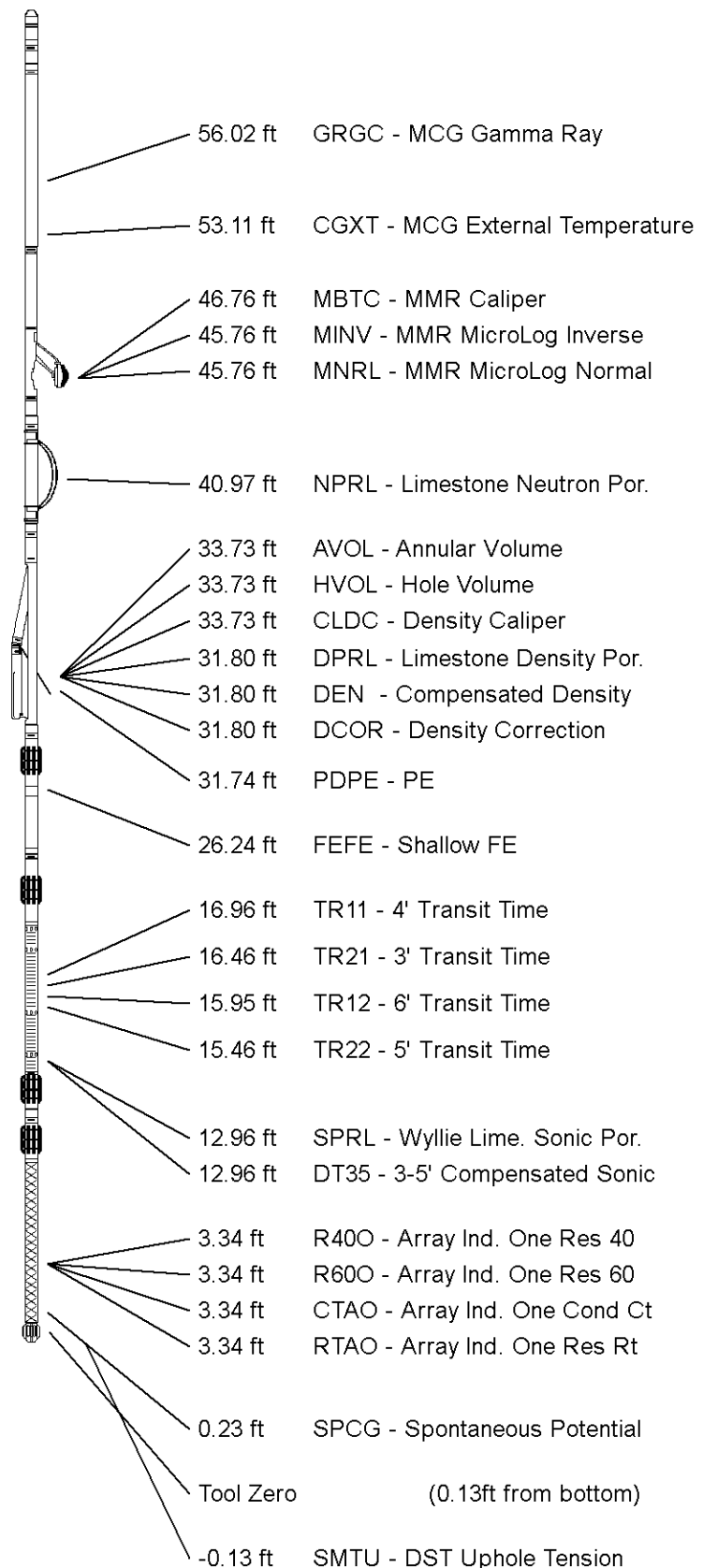
Compact Density/Caliper
MPD-B 104 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

Compact Focussed Electric
MFE-B.J 352 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Sonic
MSS-A.A 55 LG: 12.52 ft WT: 72.8 lb OD: 2.244 in

Compact Induction
MAI-A.A 111 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 63.70 ft Weight: 480.6 lb



All measurements relative to tool zero.

COMPANY
WELL
FIELD

SUEMAUR EXPLORATION & PRODUCTION, LLC.
MUIRHEAD FARMS #1-12
WILDCAT

PROVINCE/COUNTY	DECATUR
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2736.00	feet	First Reading	4480.00	feet
Elevation Drill Floor	2734.00	feet	Depth Driller	4485.00	feet
Elevation Ground Level	2731.00	feet	Depth Logger	4483.00	feet



Weatherford®

ARRAY INDUCTION
NEUTRON/DENSITY
COMPOSITE LOG