Weatherford®

ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

COMPANY	GRAND MESA OPERATING COMPANY
WELL	DIXIE #1-5
FIELD	WILDCAT
PROVINCE/COUNTY	LINCLON
COUNTRY/STATE	U.S.A. / COLORADO
LOCATION	1057' FSL & 1678' FEL

SEC 5	TWP 11S	RGE 54W	Other Services
Latitude		39.11408	MPD/MDN MML
Longitude		-103.46727	MSS
API Number		05-073-06758	

Permanent Datum GL, Elevation 5077 feet
Log Measured From KB, 19.00 feet above Permanent Datum
Drilling Measured From KB

Elevations:	feet
KB	5096.00
DF	5094.00
GL	5077.00

Date	20-JAN-2019					
Run Number	ONE					
Service Order	17876-235225672					
Depth Driller	7635.00	feet				
Depth Logger	7638.00	feet				
First Reading	7634.00	feet				
Last Reading	474.00	feet				
Casing Driller	480.00	feet				
Casing Logger	474.00	feet				
Bit Size	7.875	inches				
Hole Fluid Type	CHEMICAL					
Density / Viscosity	9.30	lb/USg	59.00	sec/qt		
PH / Fluid Loss	11.00		6.40	ml/30Min		
Sample Source	FLOWLINE					
Rm @ Measured Temp	0.60 @100.0	ohm-m				
Rmf @ Measured Temp	0.45 @100.0	ohm-m				
Rmc @ Measured Temp	0.72 @100.0	ohm-m				
Source Rmf / Rmc	CALC		CALC			
Rm @ BHT	0.36 @169.0	ohm-m				
Time Since Circulation	5 HOURS					
Max Recorded Temp	169.00	deg F				
Equipment / Base	13096		LIB			
Recorded By	BANDAR BINOSFUR					
Witnessed By	GARET DINKEL					

BOREHOLE RECORD

Last Edited: 21-JAN-2019 17:31

Bit Size inches	Depth From feet	Depth To feet
7.875	480.00	7635.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	480.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 18.03.9344.
- RUN ONE: SHA, MCG, MML, MDN, MPD, SKJ, MFE, MSS, MAI RAN 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: 2940 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING: 1760 CU.FT.

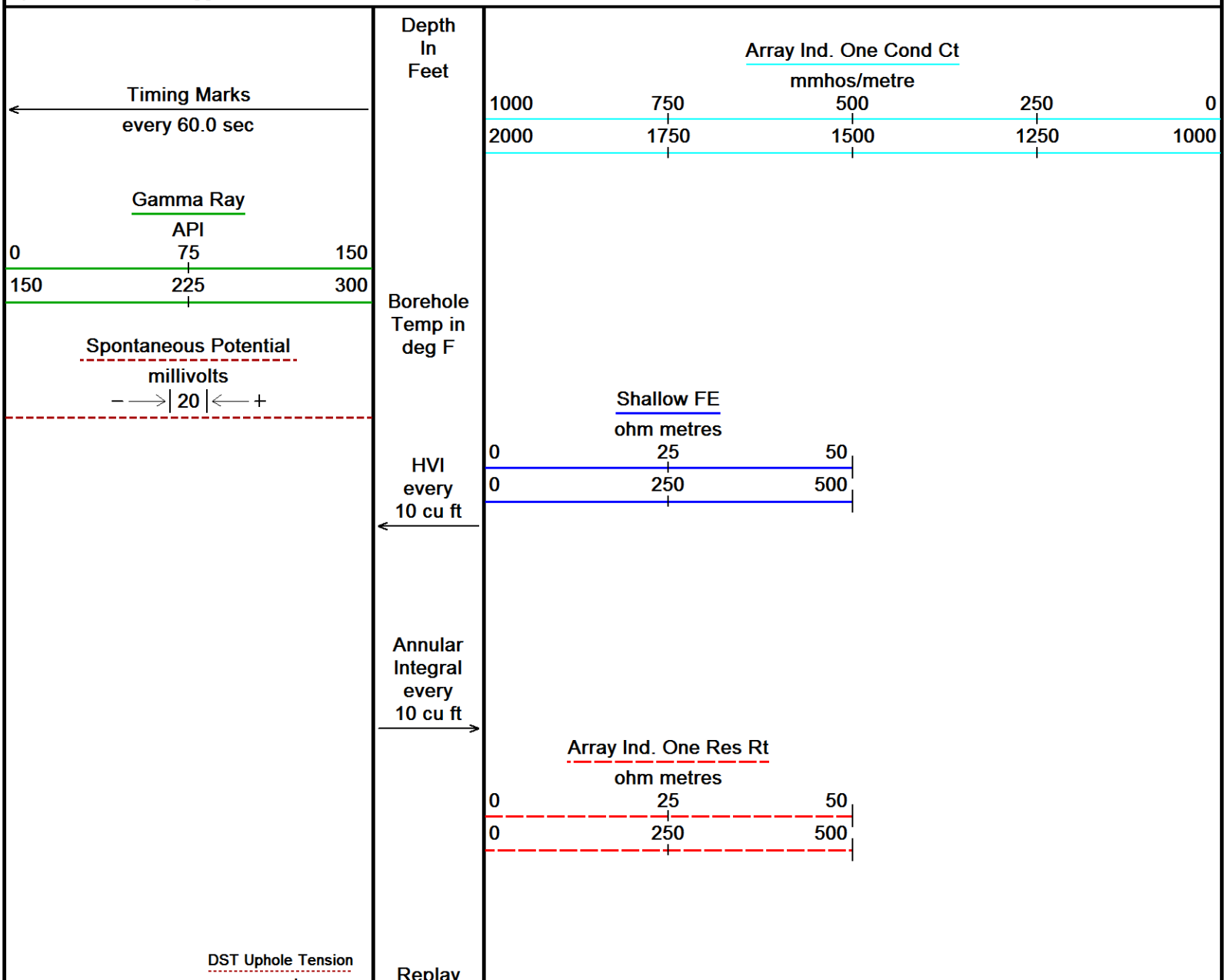
- BRIDGING IN THE FIRST RUN AT 1020', CLIENT DECIDED TO RUN WIPER TRIP AND SECOND RUN WAS COMPLETED SUCCSSFULLY.

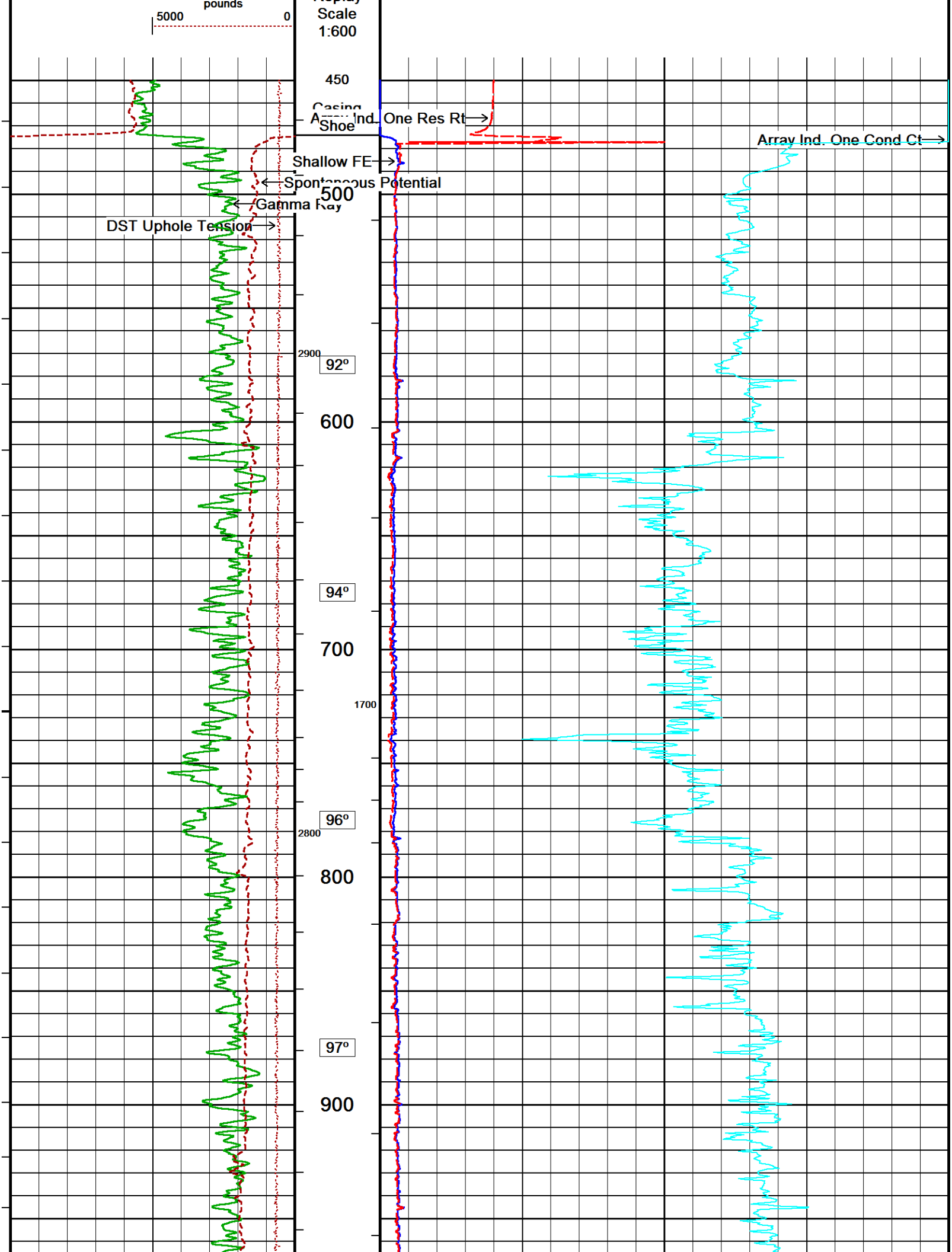
- ENGINEER: B. BINOSFUR

- OPERATORS: B. TOVAR, B. COPELAND.

2 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 21-JAN-2019 17:42
Filename: C:\Minimus 18.03.9344\Data\GRAND MESA DIXIE #1-5\MAIN PASS.dta
Recorded on 21-JAN-2019 11:56
System Versions: Logged with 18.03.9344 Plotted with 18.03.9344

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5000
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Replay
Scale
1:600
450
Casing
Shoe
Array Ind. One Res Rt
Array Ind. One Cond Ct
Shallow FE
Spontaneous Potential
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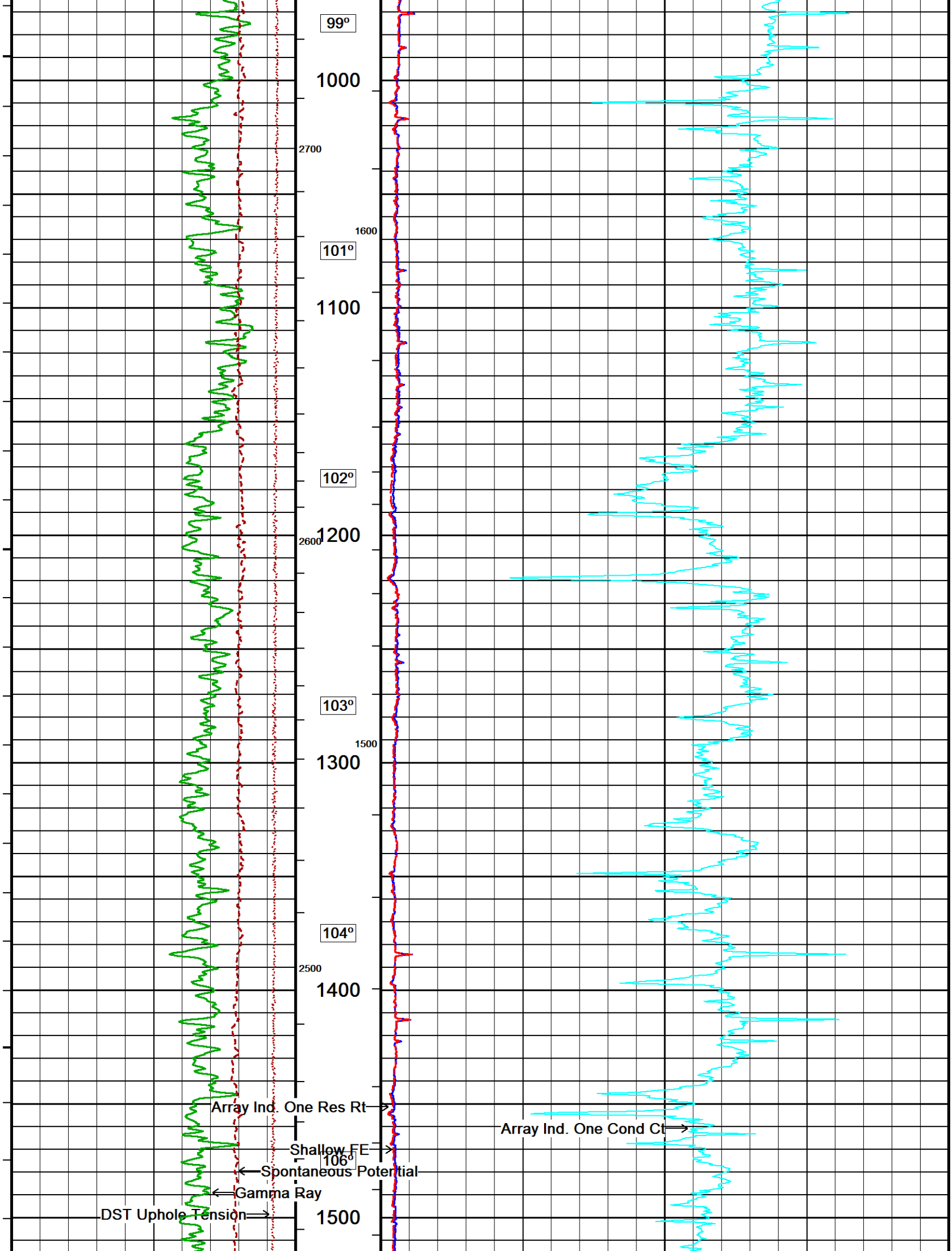
Gamma Ray
DST Uphole Tension
2900
92°
600
94°
700
1700
96°
2800
800
97°
900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1200
2600
103°
1500
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106°
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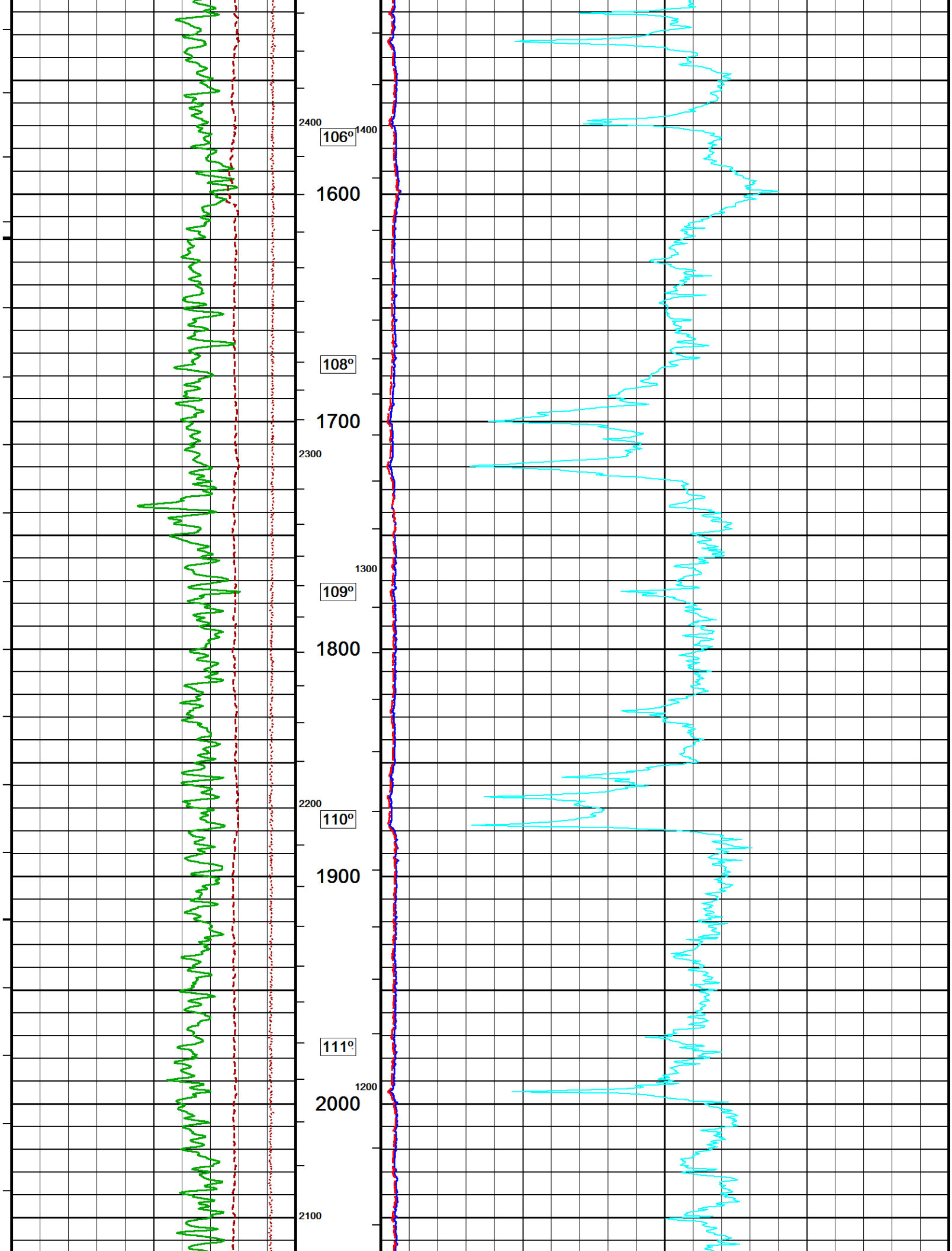
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
Array Ind. One Cond Ct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1600
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1800
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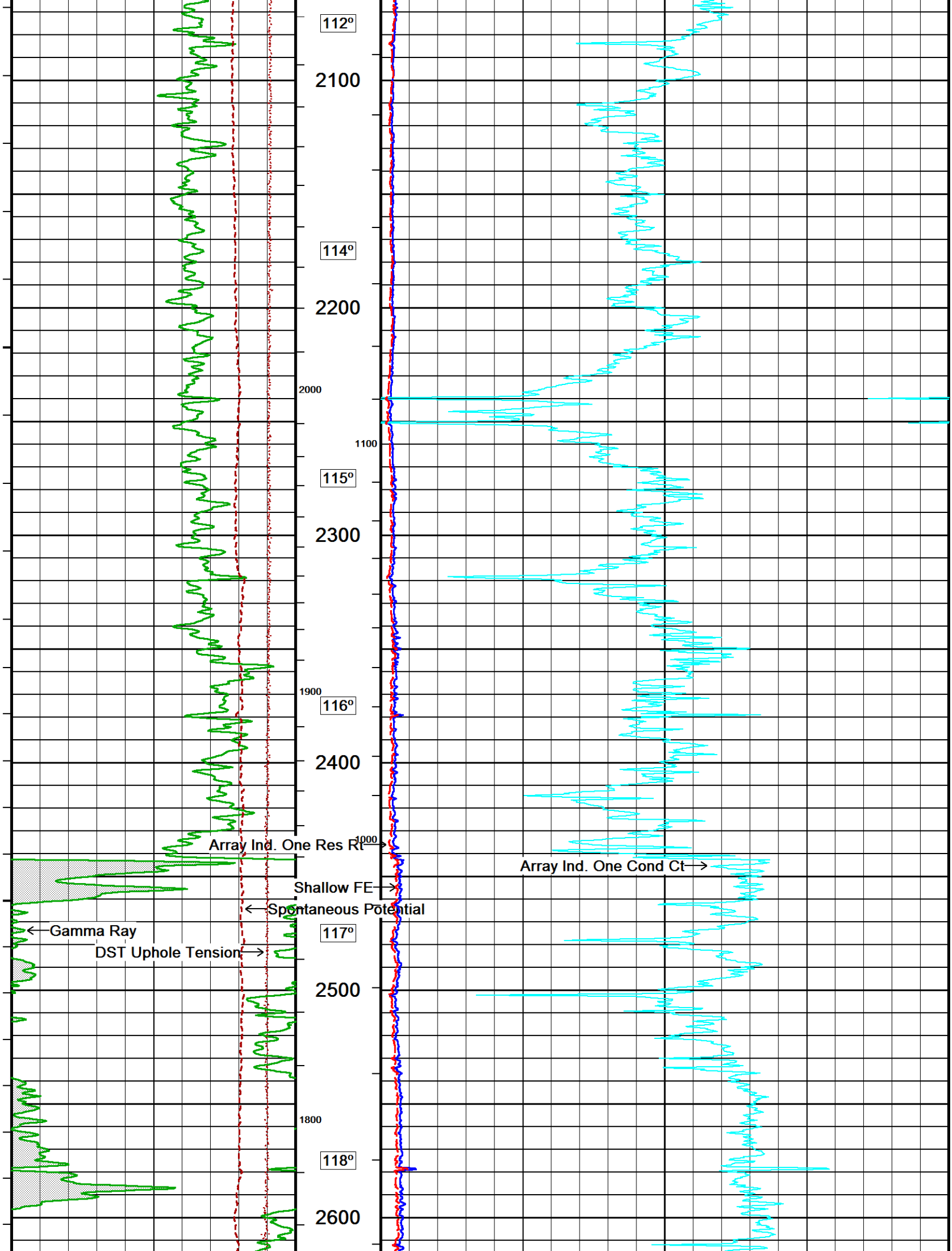
110°
1900
111°
1200
2000
2100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2200
2000
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2300
1900
116°
2400
1000
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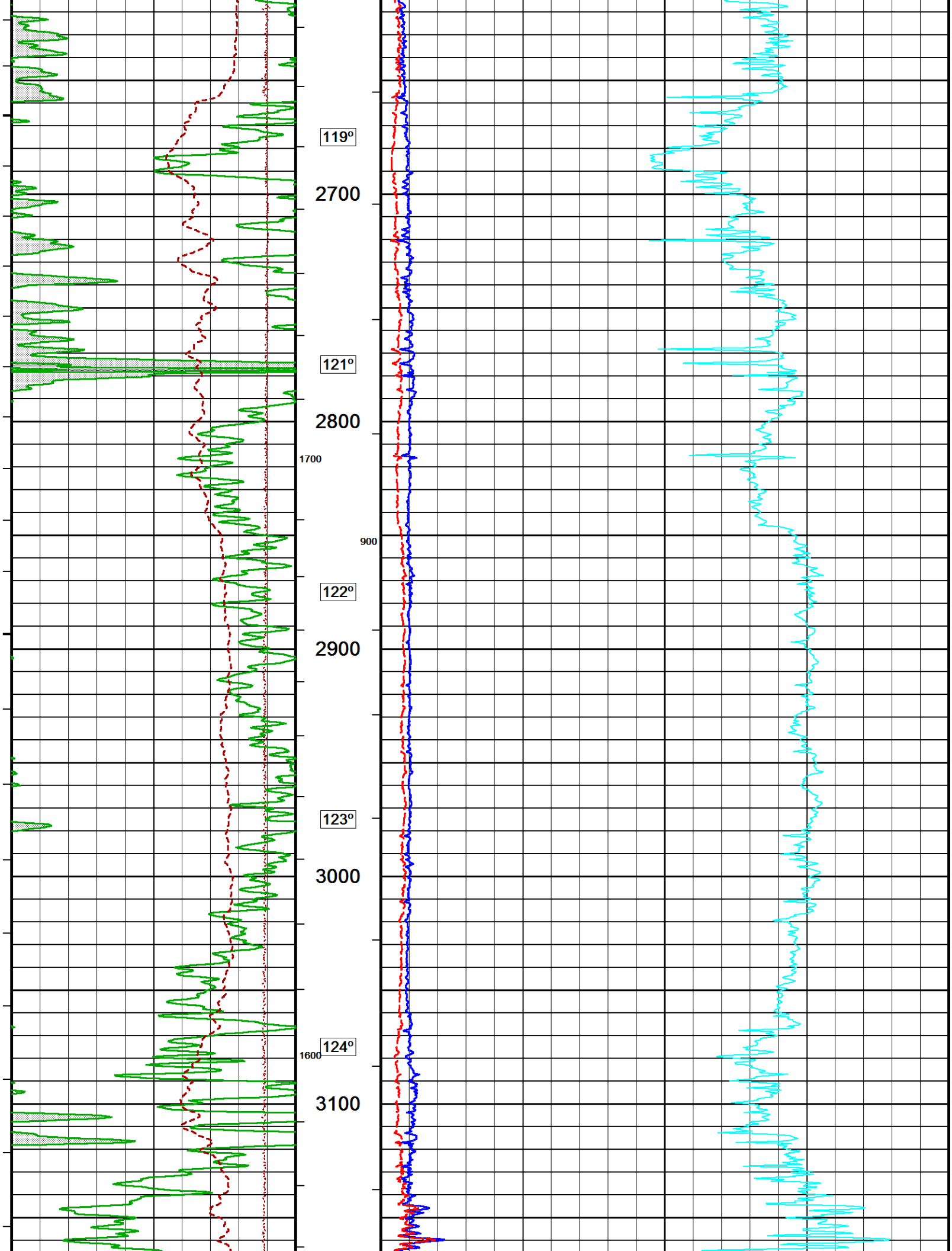
2600
Array Ind. One Res Rt
Array Ind. One Cond Ct
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension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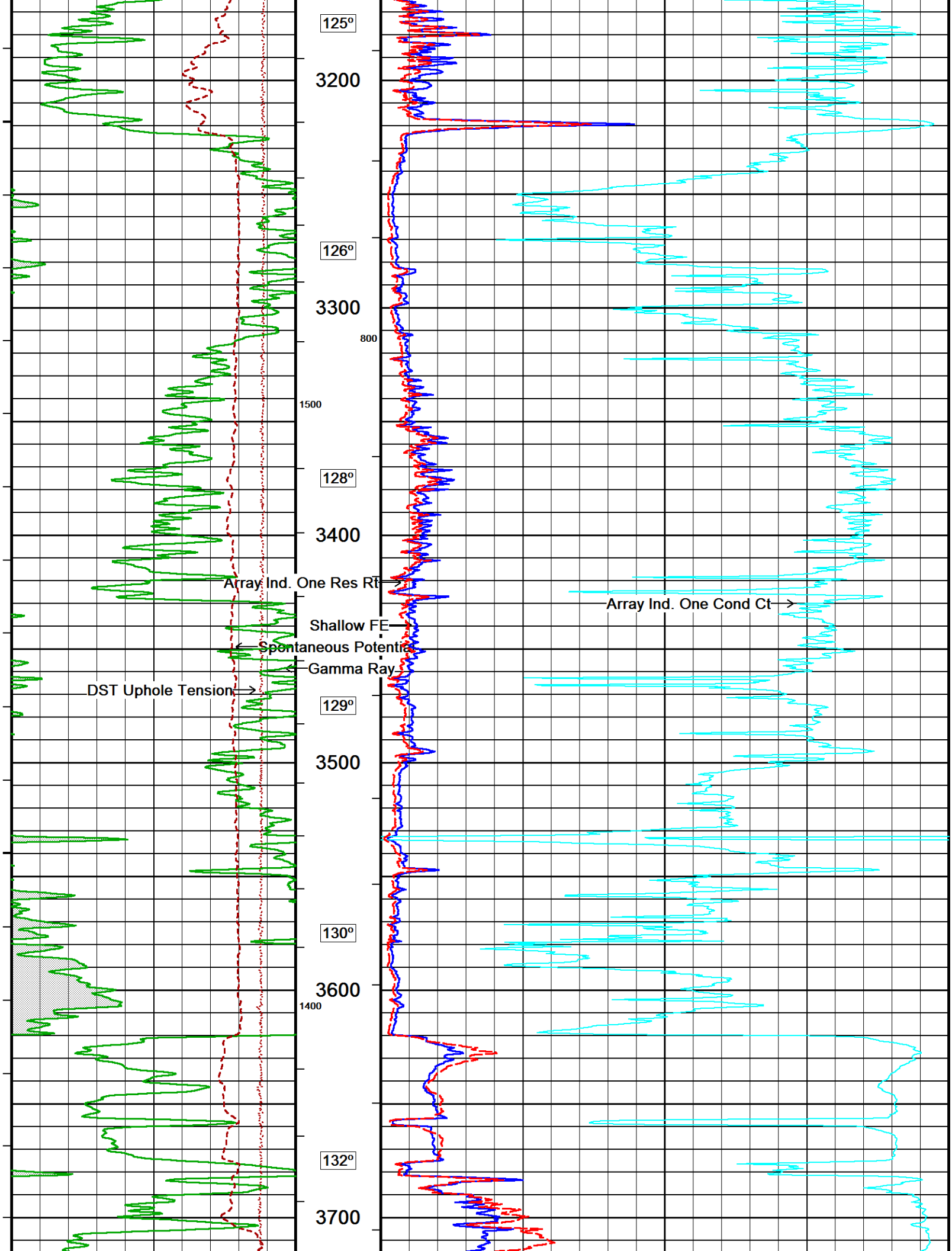
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126°
3300
800
1500
128°
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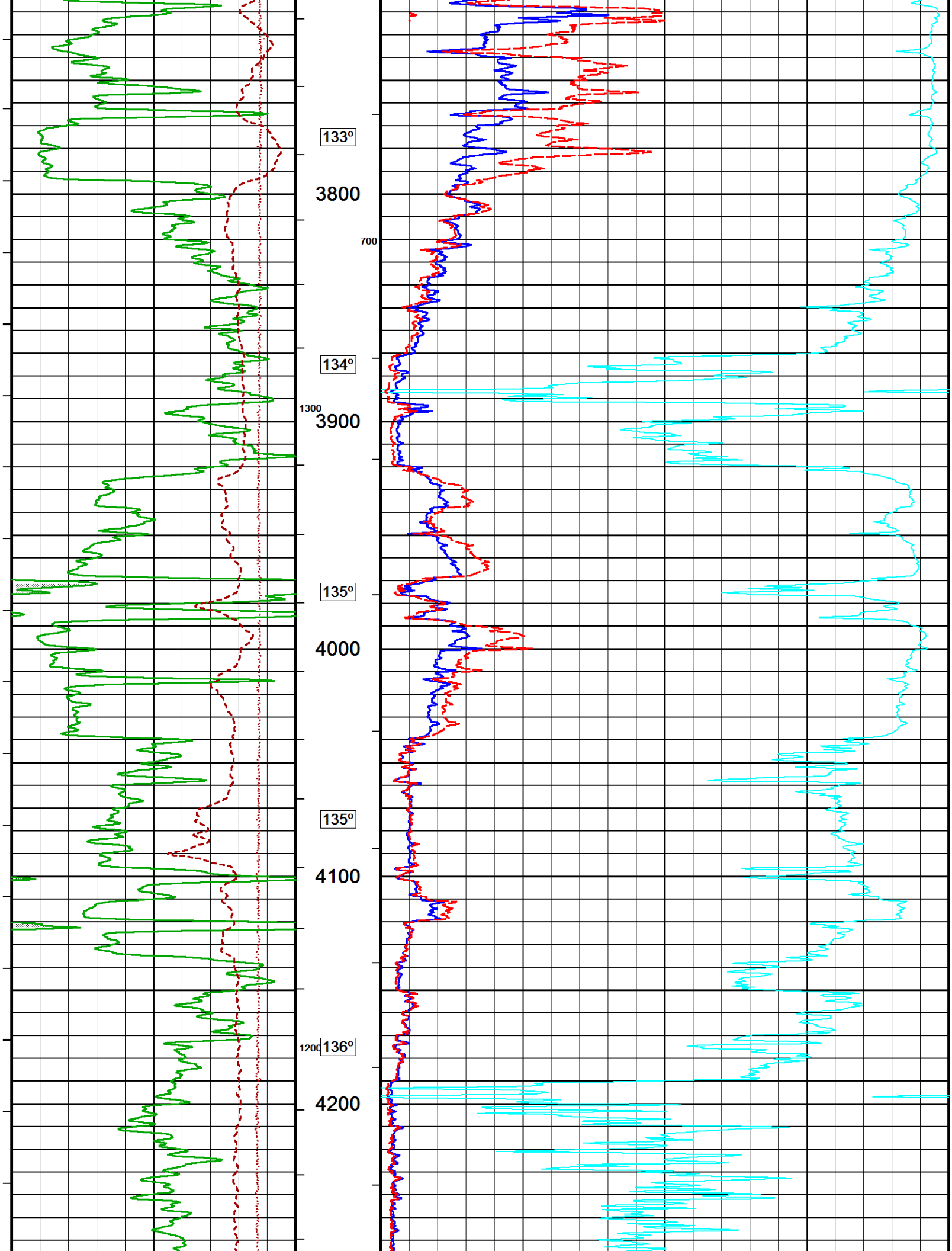
Array Ind. One Res Rt
Array Ind. One Cond Ct
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
129°
3500
130°
3600
1400
132°
3700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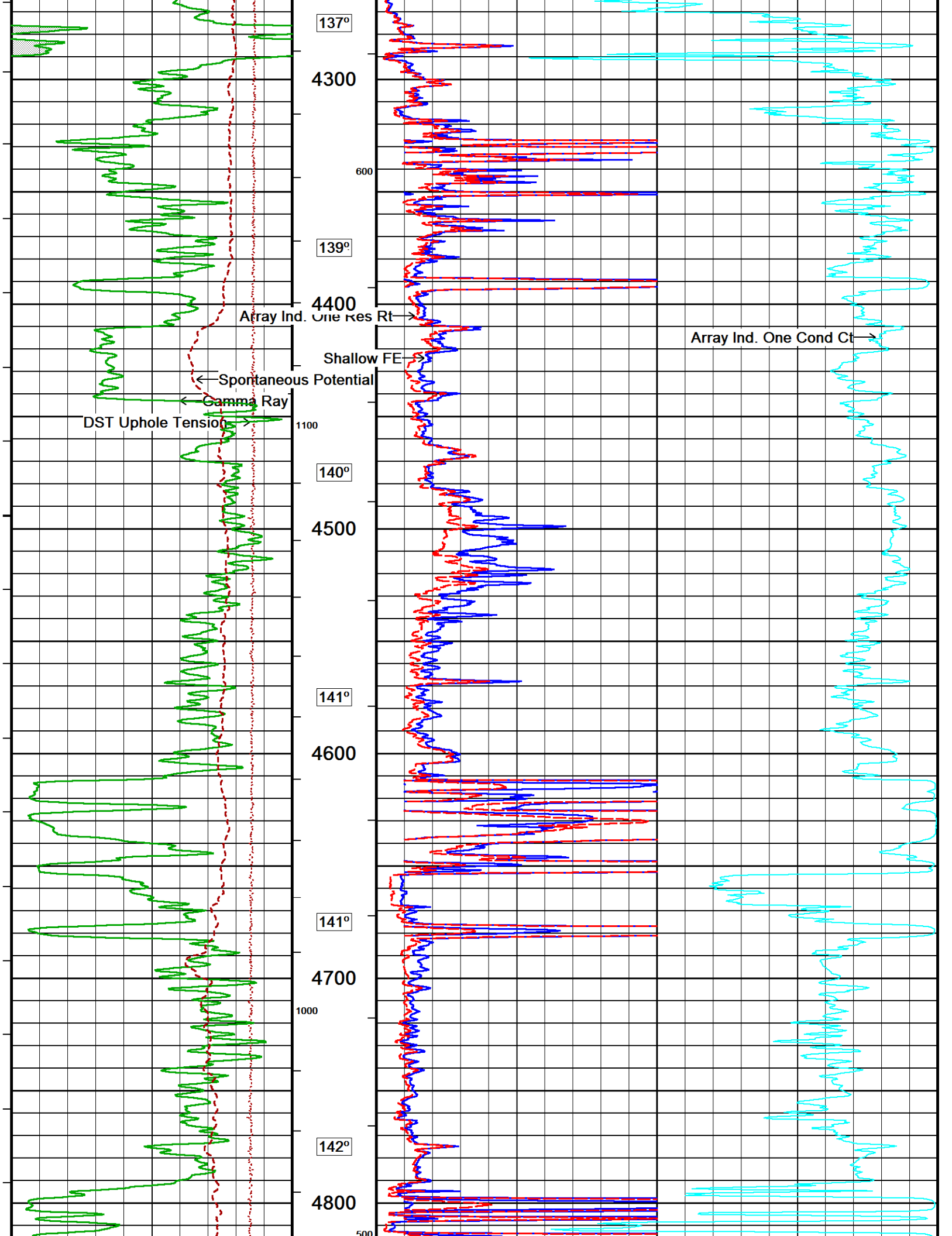
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Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
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141°
4600
141°
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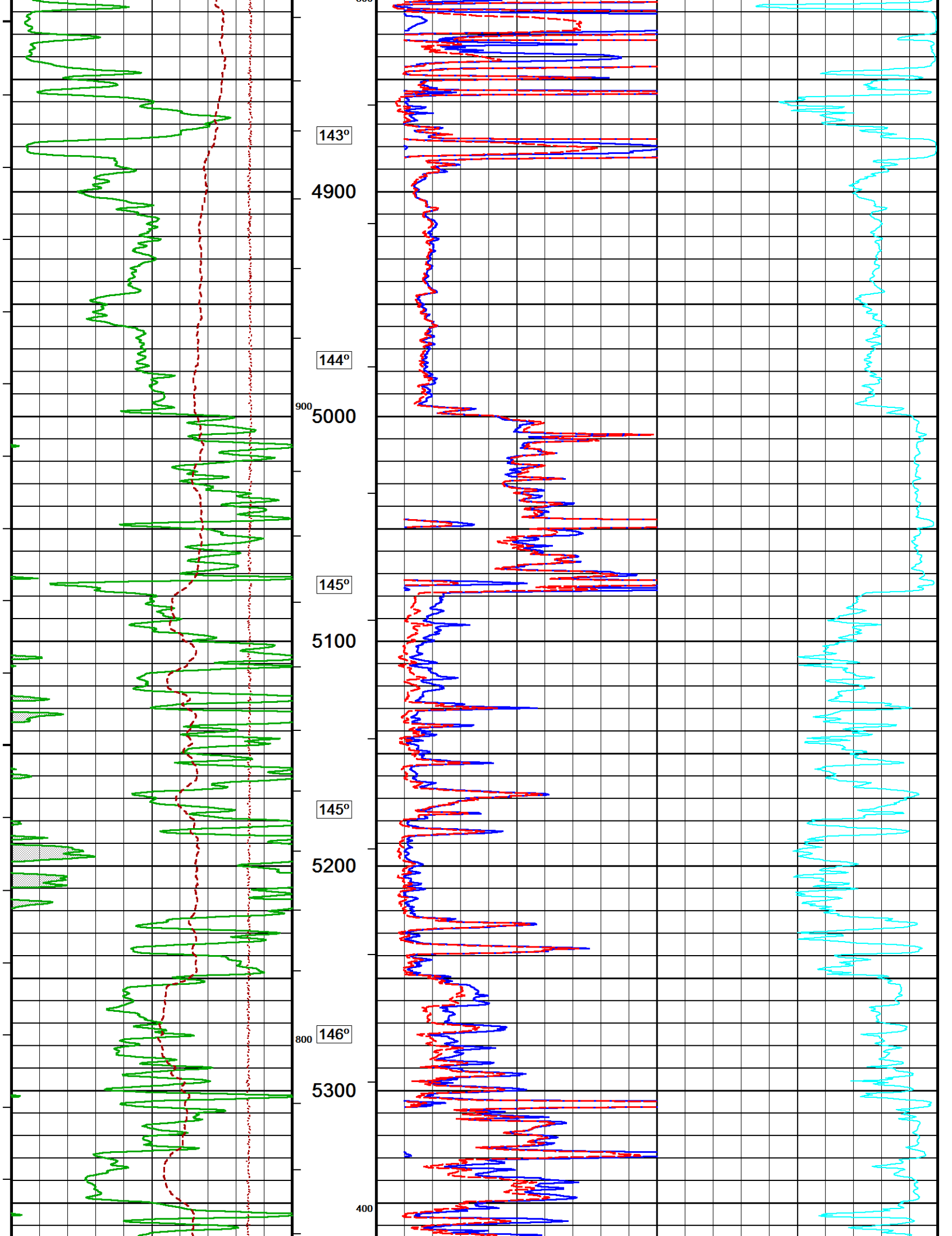
1000
142°
4800
500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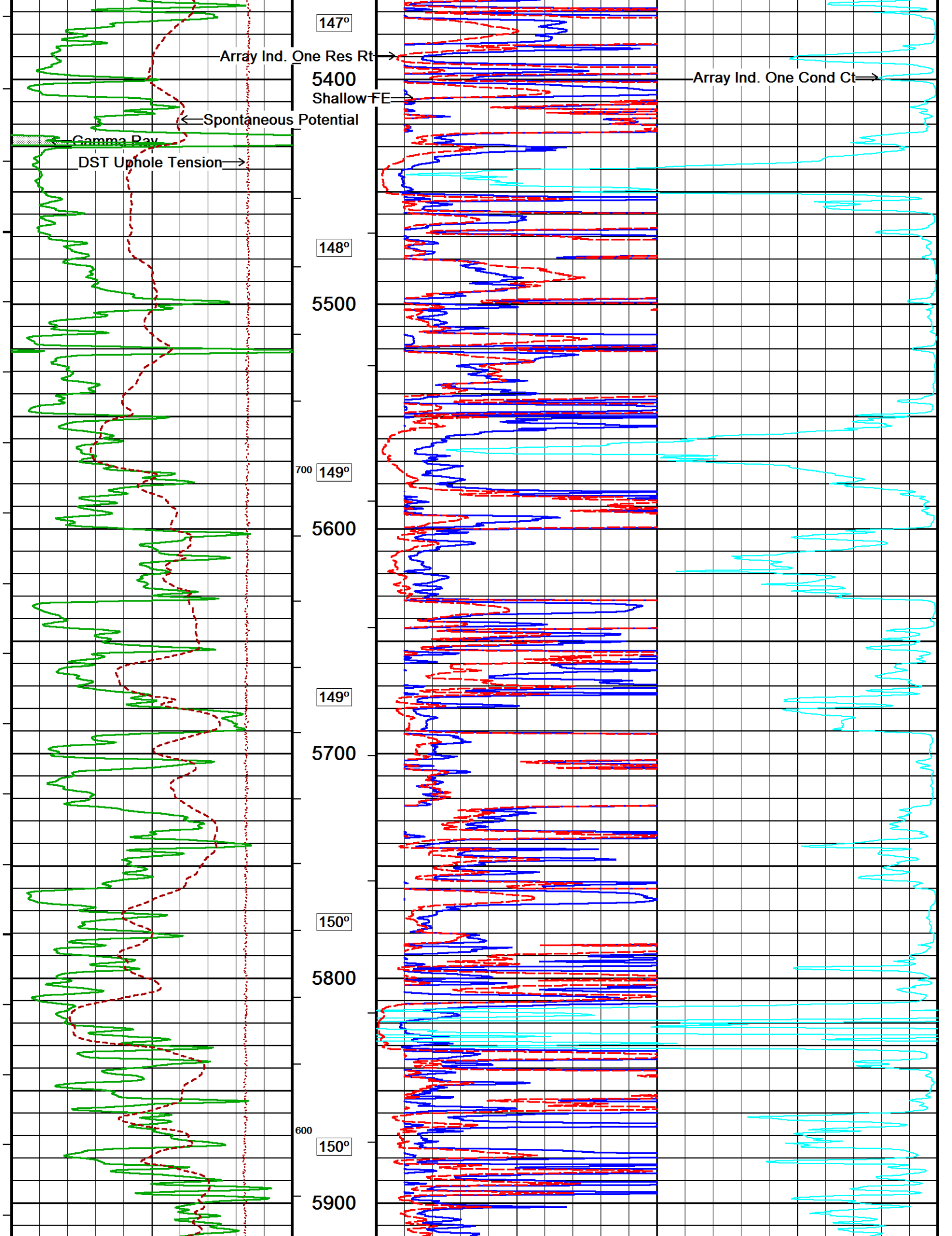
800
146°
5300
400


147°
Array Ind. One Res Rt
5400
Shallow FE
Array Ind. One Cond Ct
Spontaneous Potential
Gamma Ray
DST Uphole Tension
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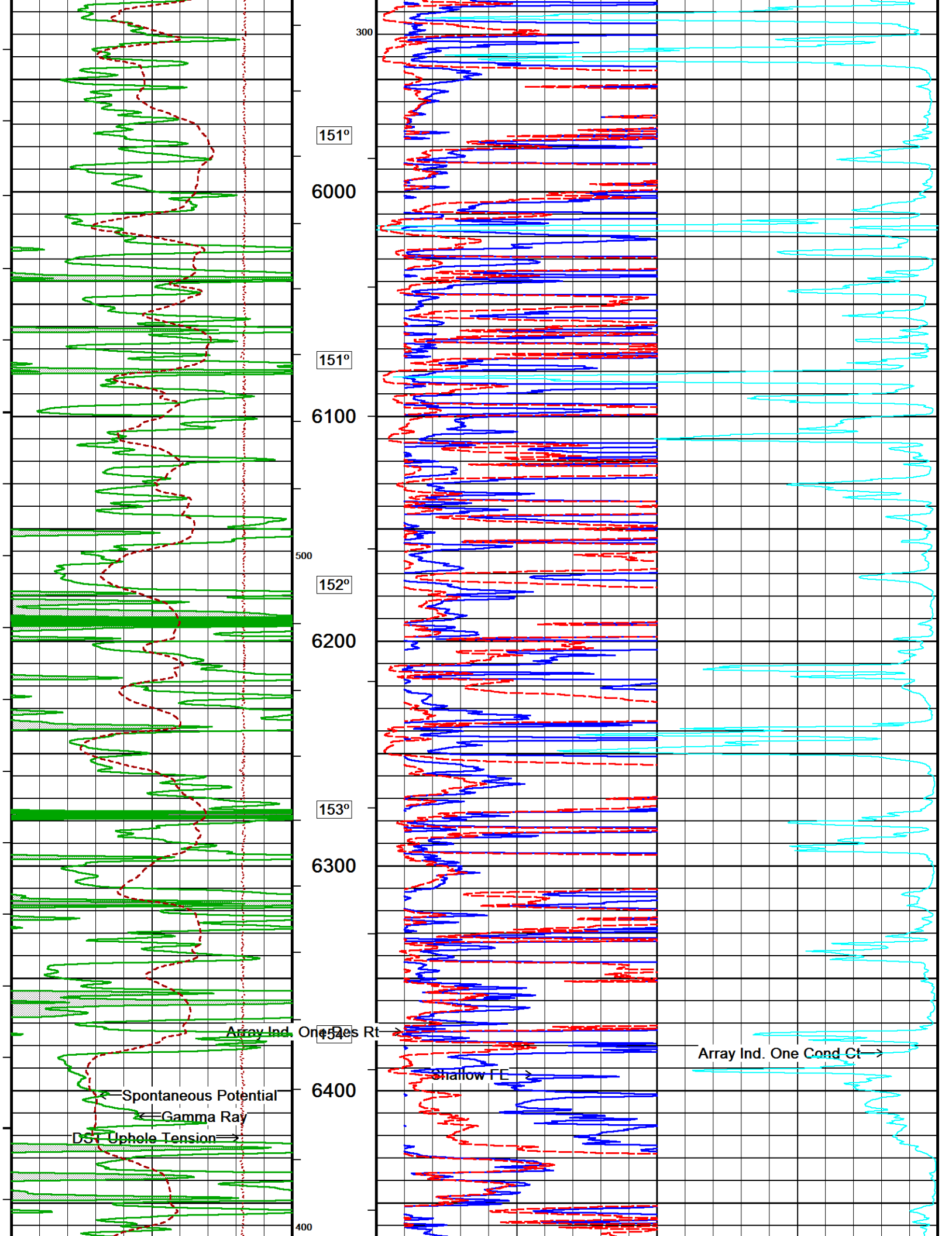
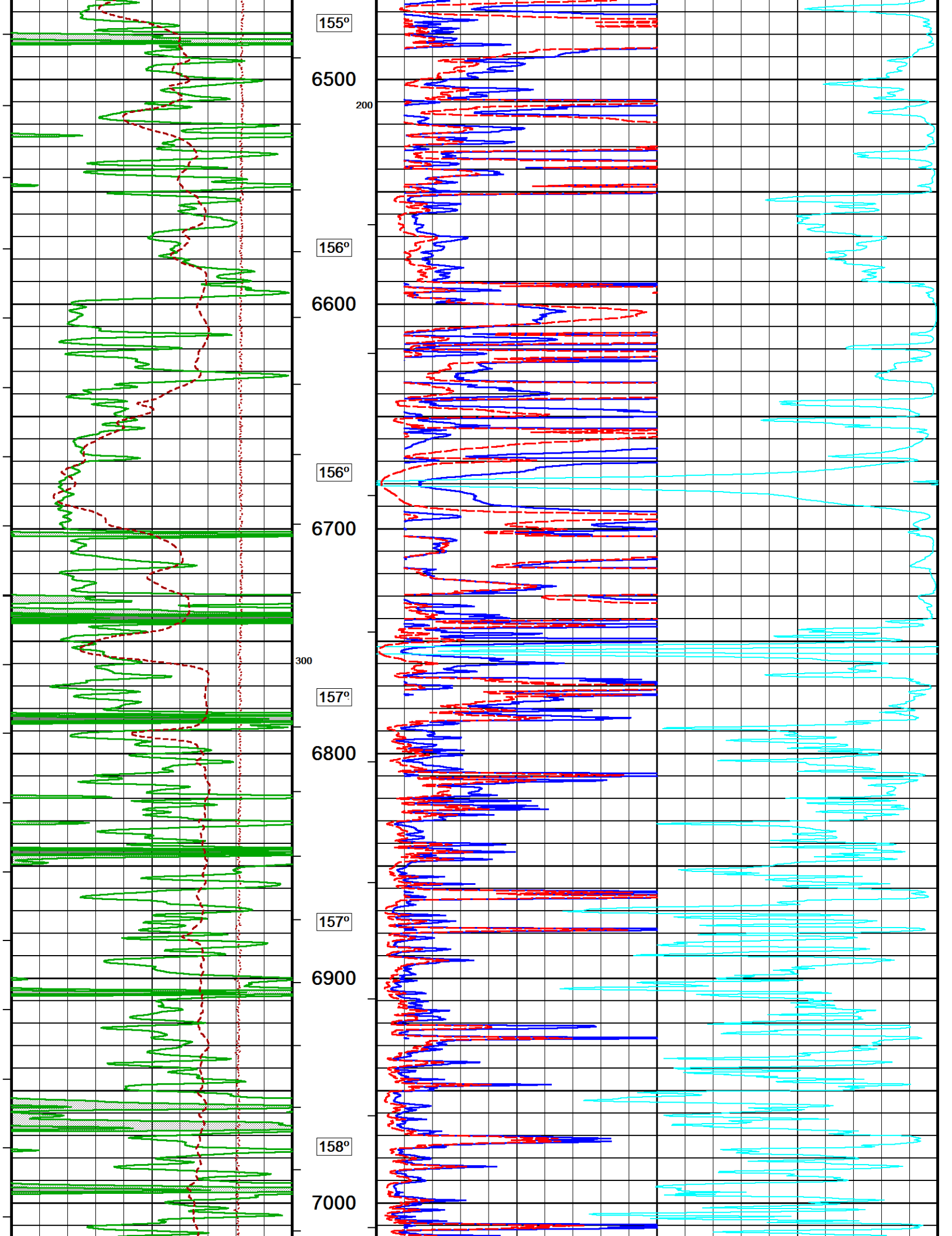
700
149°
5600
149°
5700
150°
5800
600
150°
5900


300
151°
6000
151°
6100
500
152°
6200
153°
6300
154°
6400
400
Array Ind. One Res Rt
Array Ind. One Cond Ct
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension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158°
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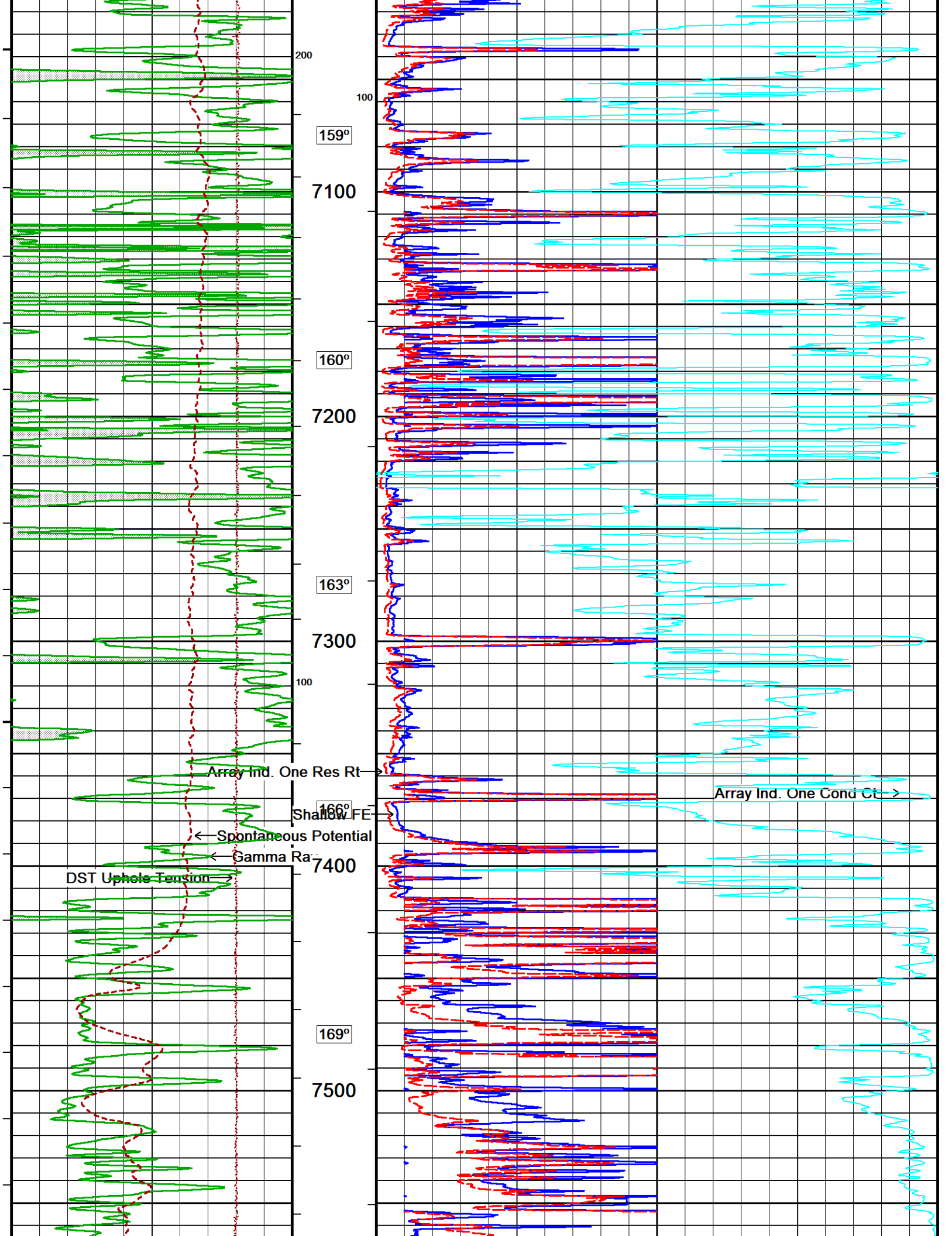
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160°
7200
163°
7300
100
Array Ind. One Res Rt
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Shallow FE
Spontaneous Potential
Gamma Ra
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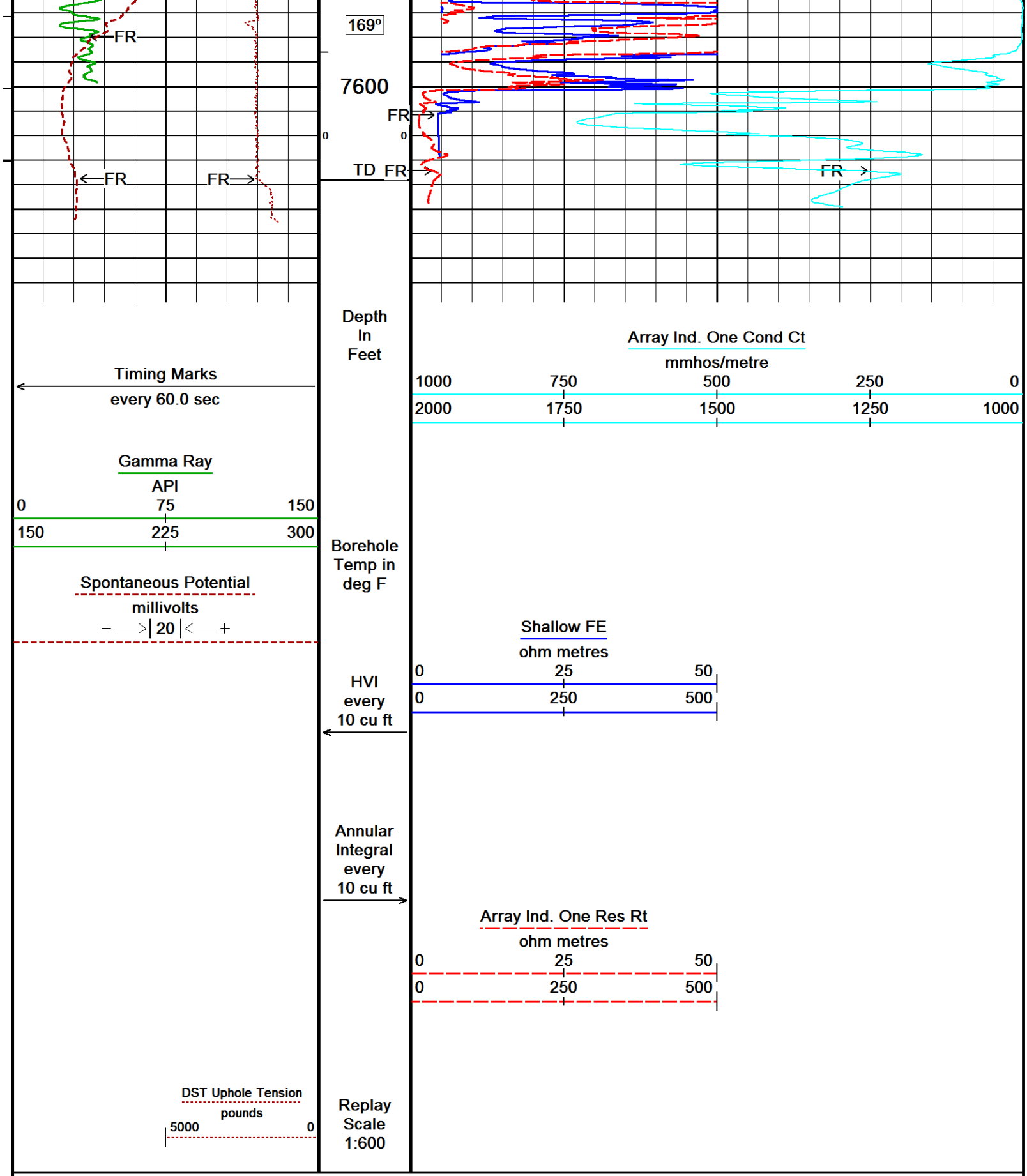
DST Uphole Tension
Array Ind. One Cond Ct
169°
7500



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2 INCH MAIN

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
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Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 21-JAN-2019 17:42

Filename: C:\Minimus 18.03.9344\Data\GRAND MESA DIXIE #1-5\MAIN PASS.dta — Recorded on 21-JAN-2019 11:56

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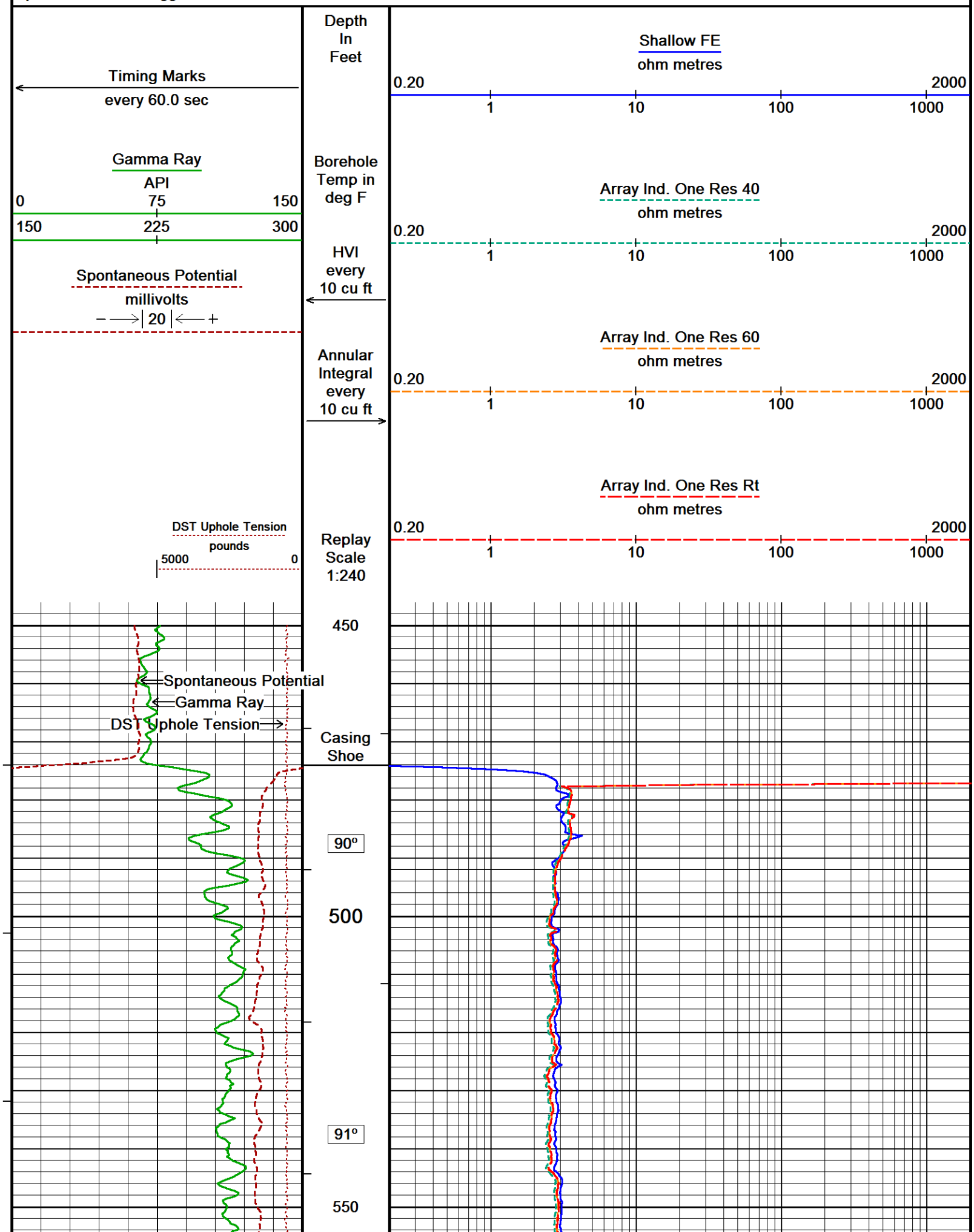
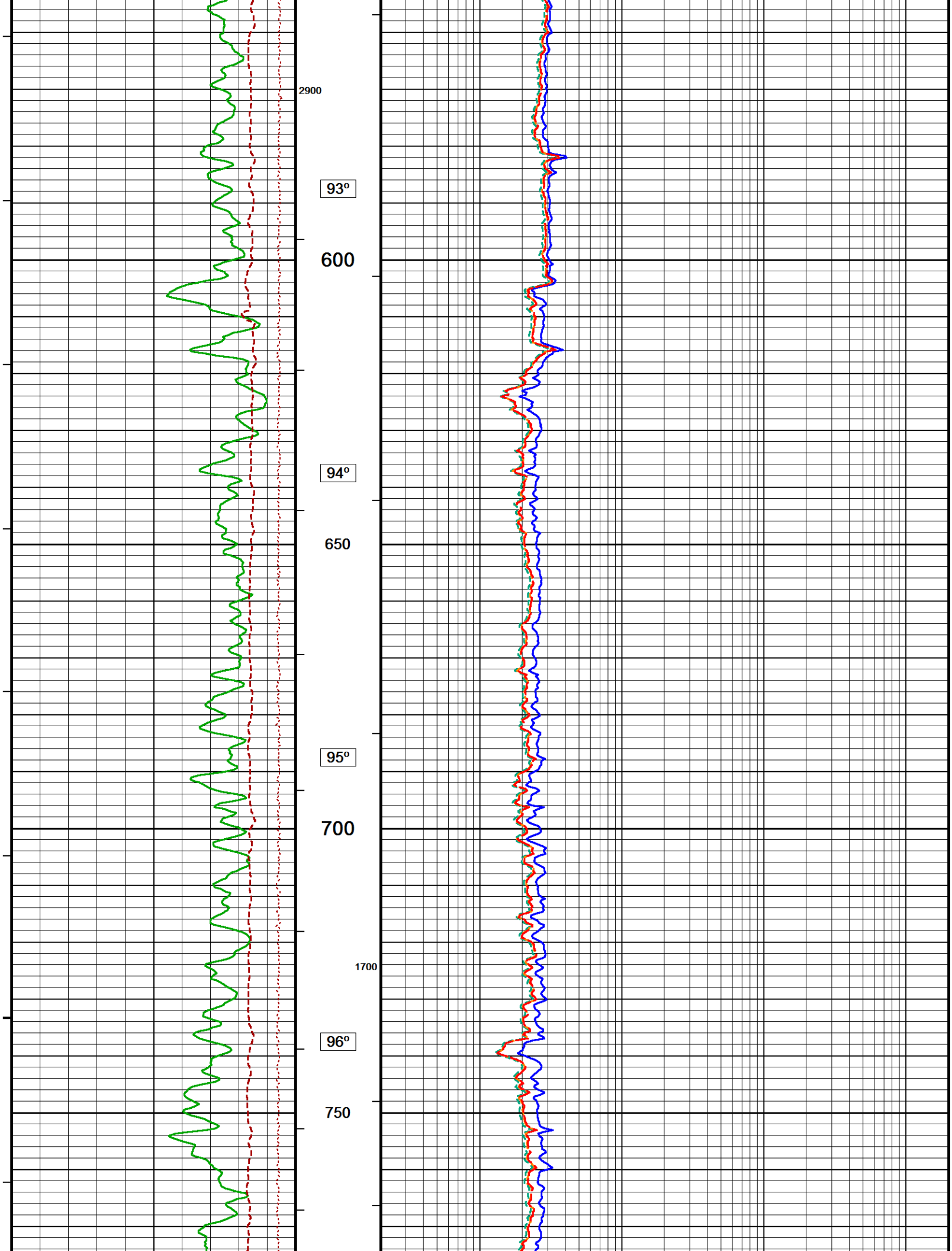
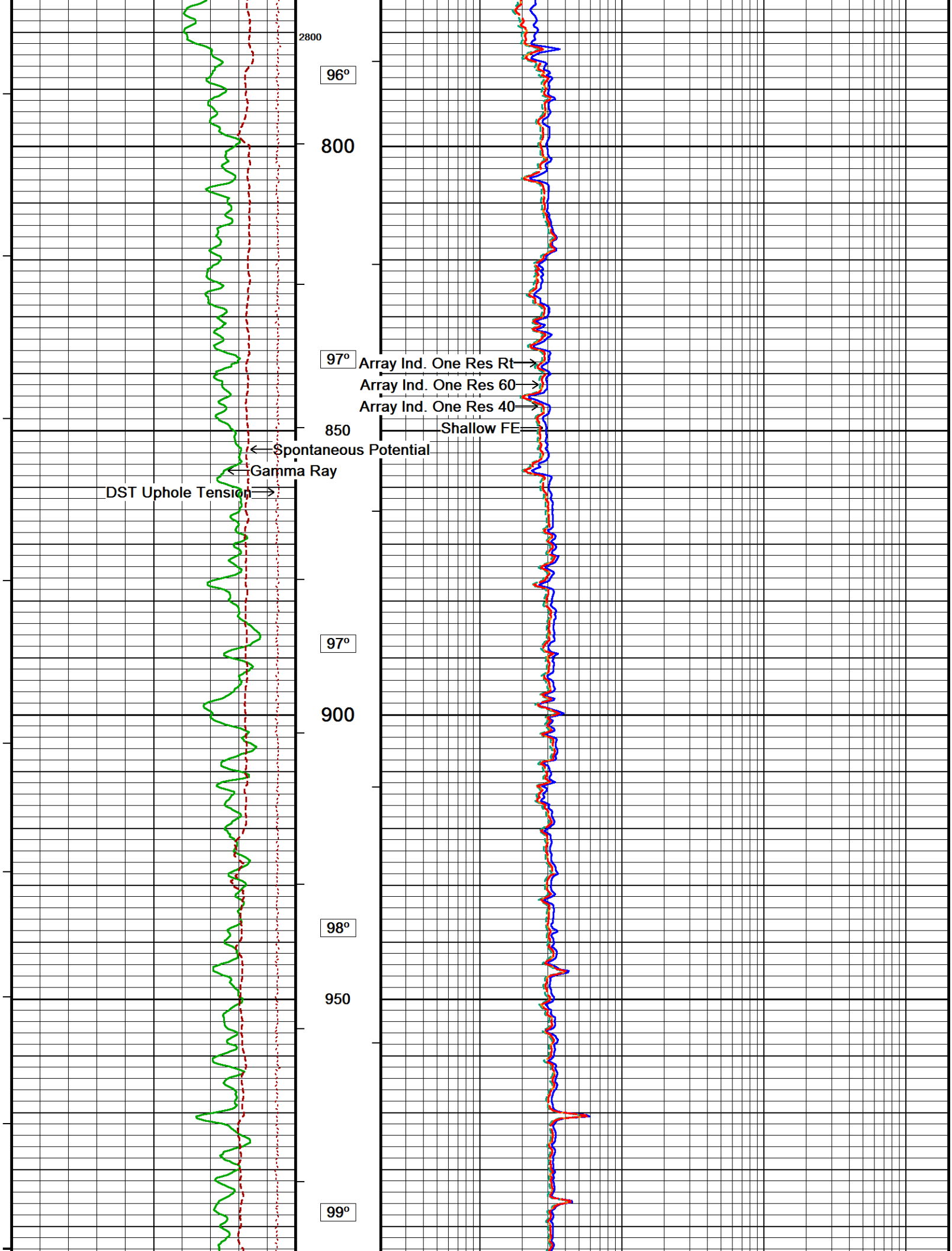
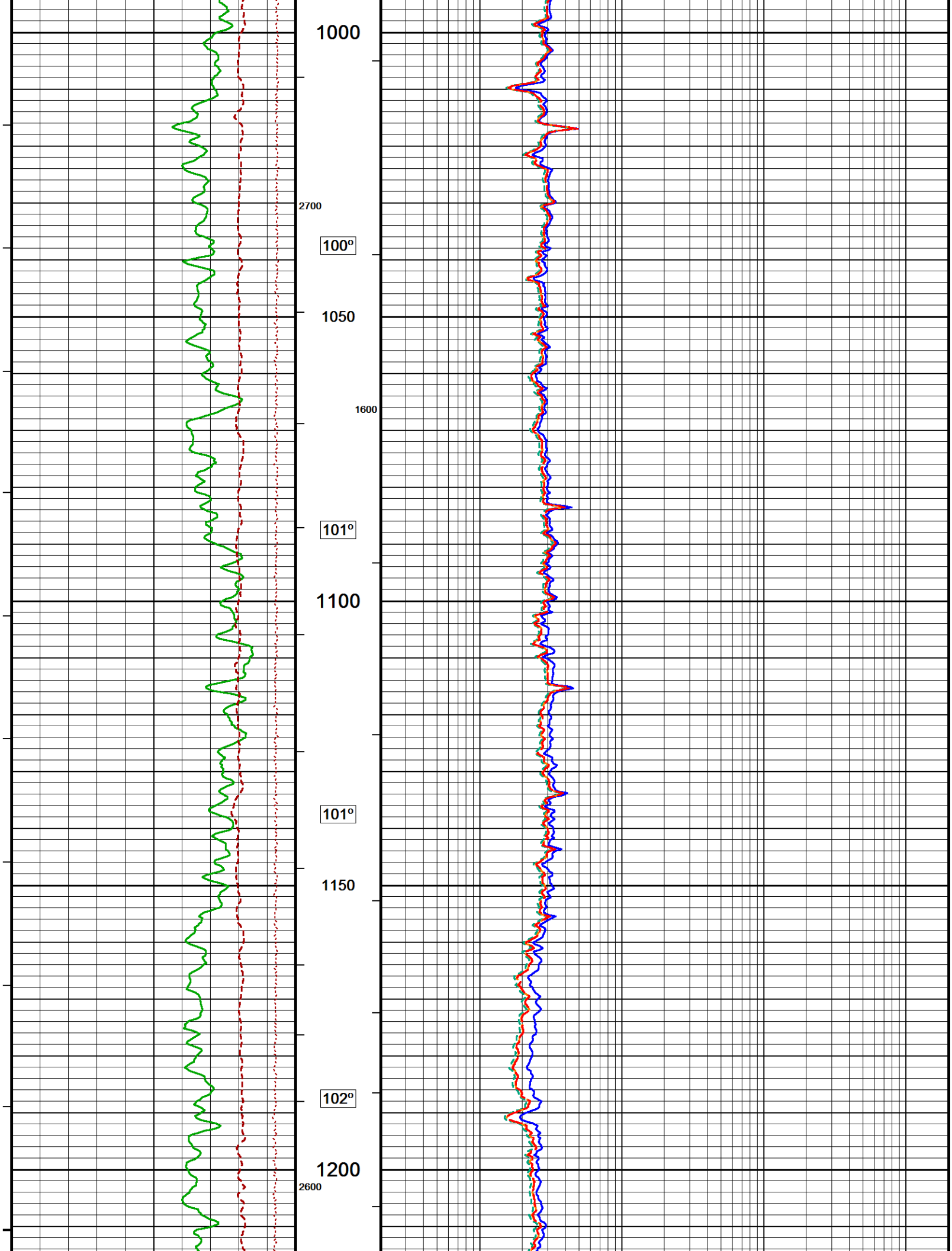



2900
93°
600
94°
650
95°
700
1700
96°
750


2800
96°
800
97°
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
850
Spontaneous Potential
Gamma Ray
DST Uphole Tension
97°
900
98°
950
99°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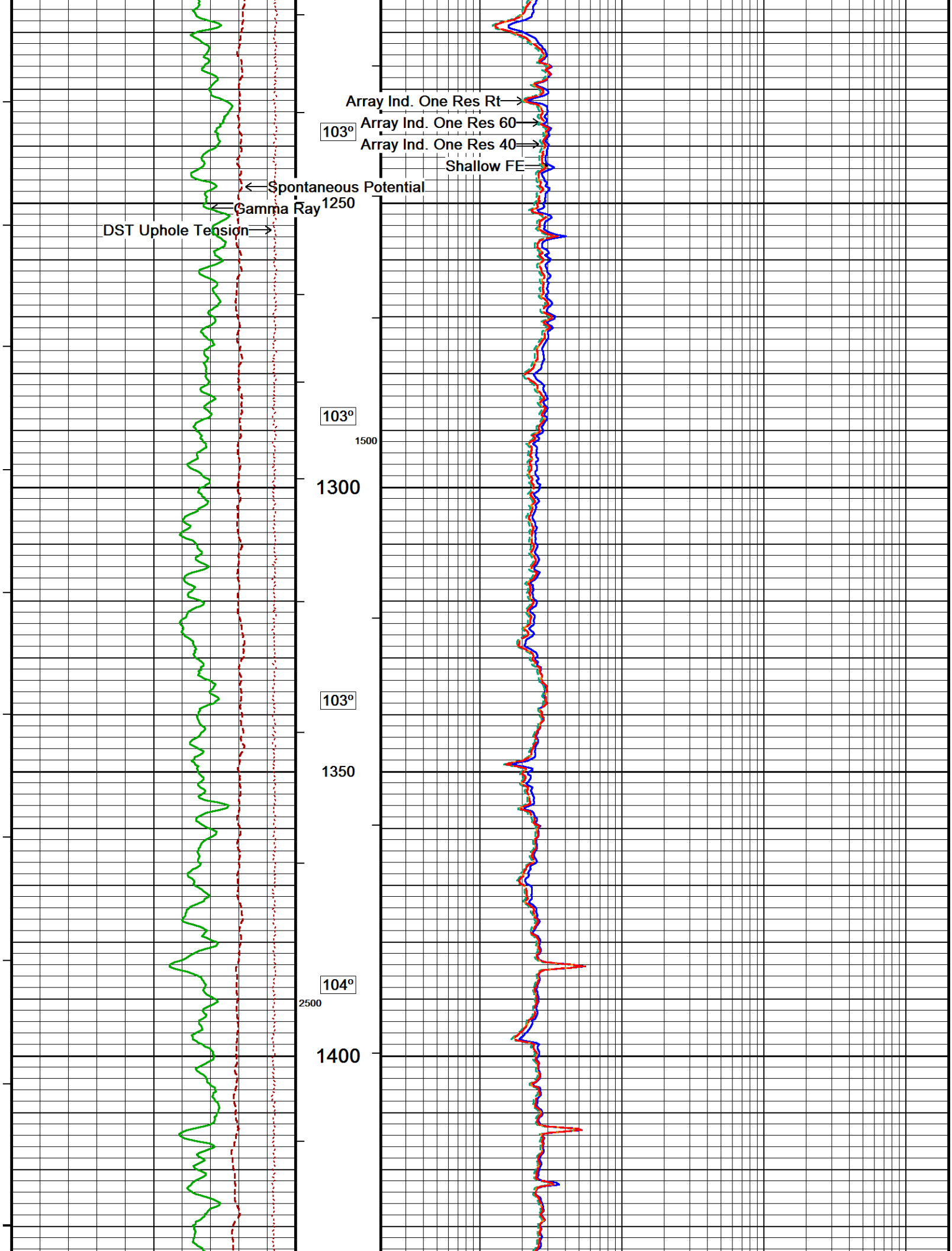
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Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
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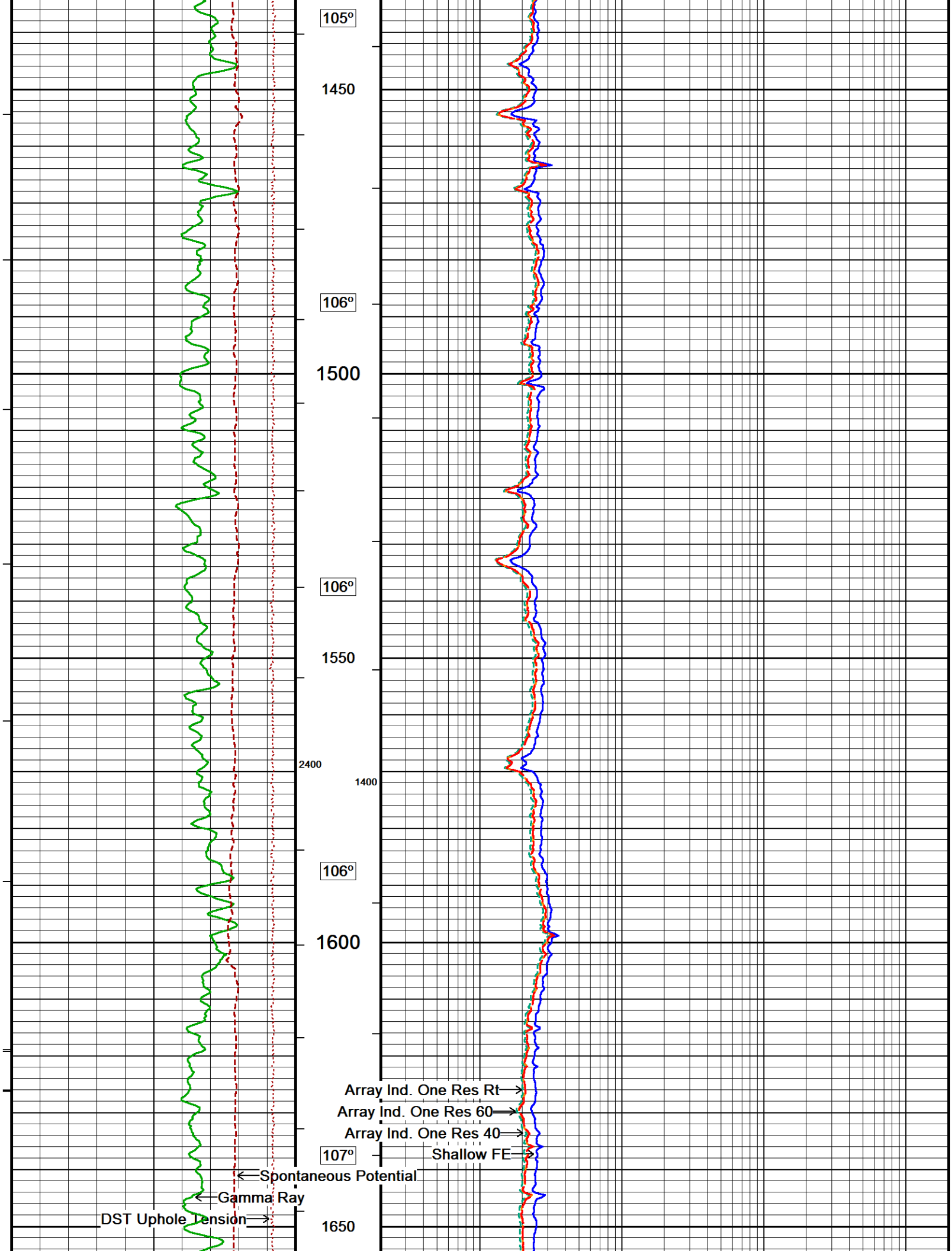
103°
103°
104°
1250
1500
1300
1350
2500
1400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106°
1500
106°
1550
2400
1400
106°
1600
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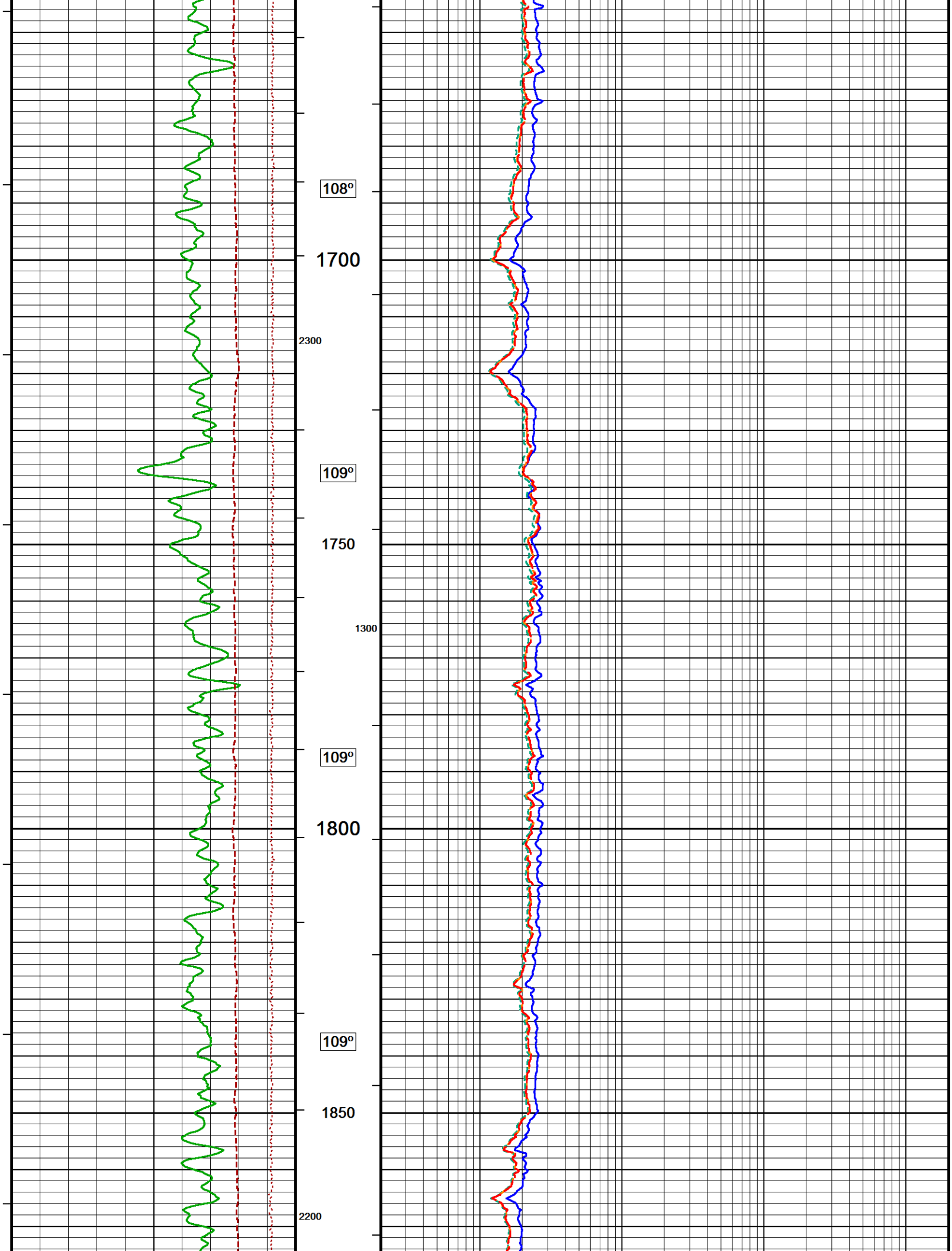
Array Ind. One Res 60
Array Ind. One Res 40
107°
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
1650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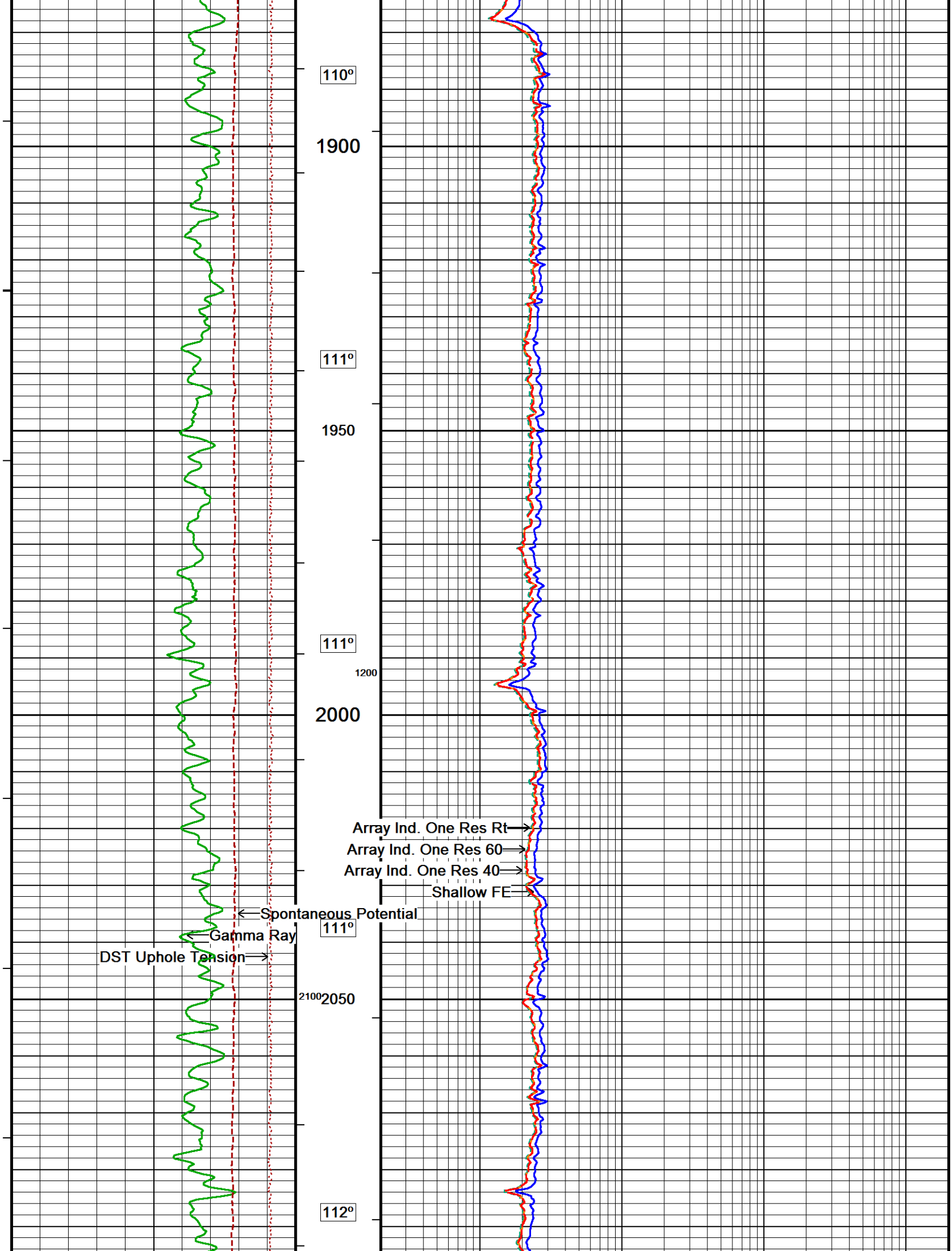
109º
1800
109º
1850
2200


110°
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111°
1950
111°
1200
2000
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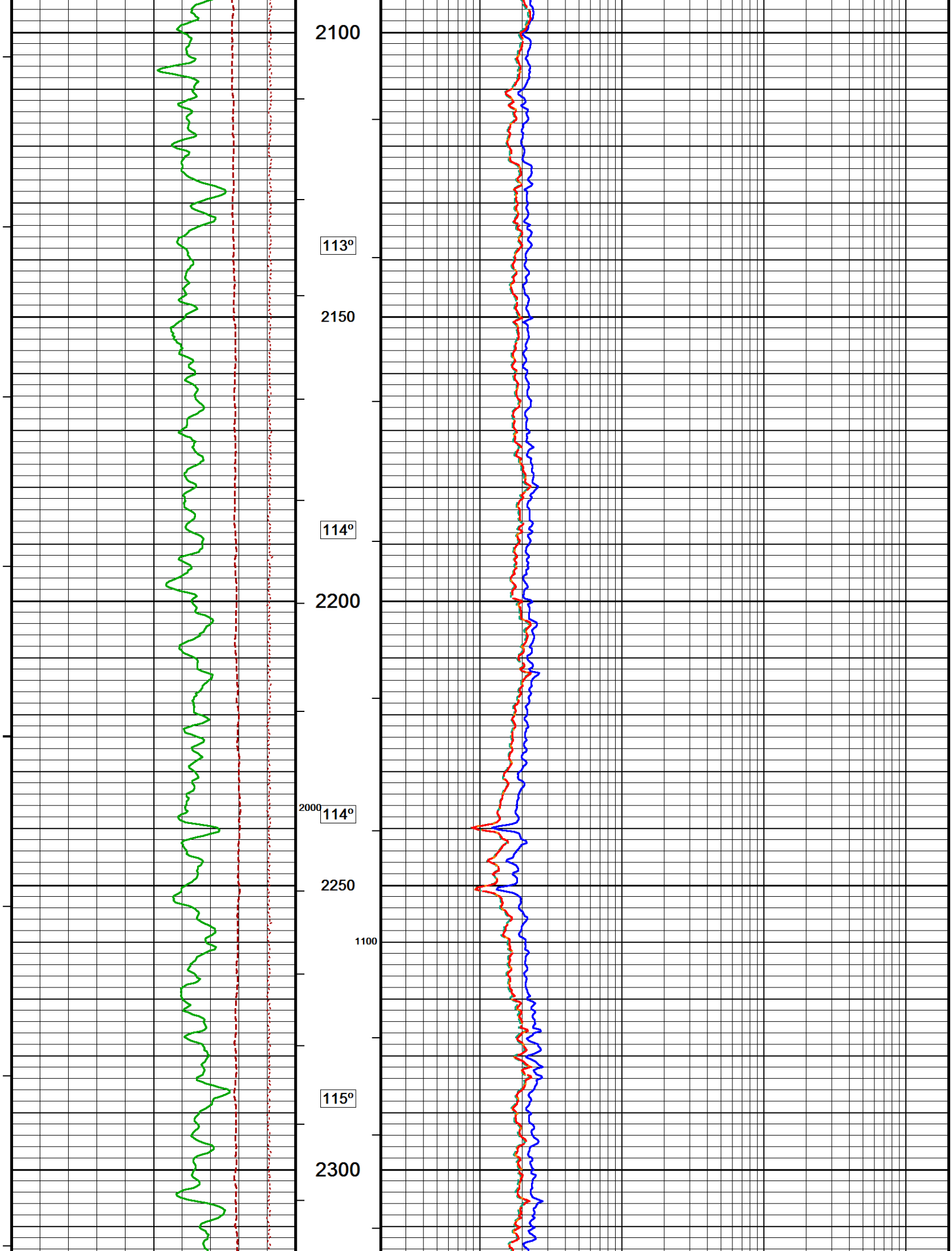
Spontaneous Potential
111°
Gamma Ray
DST Uphole Tension
2100
2050
112°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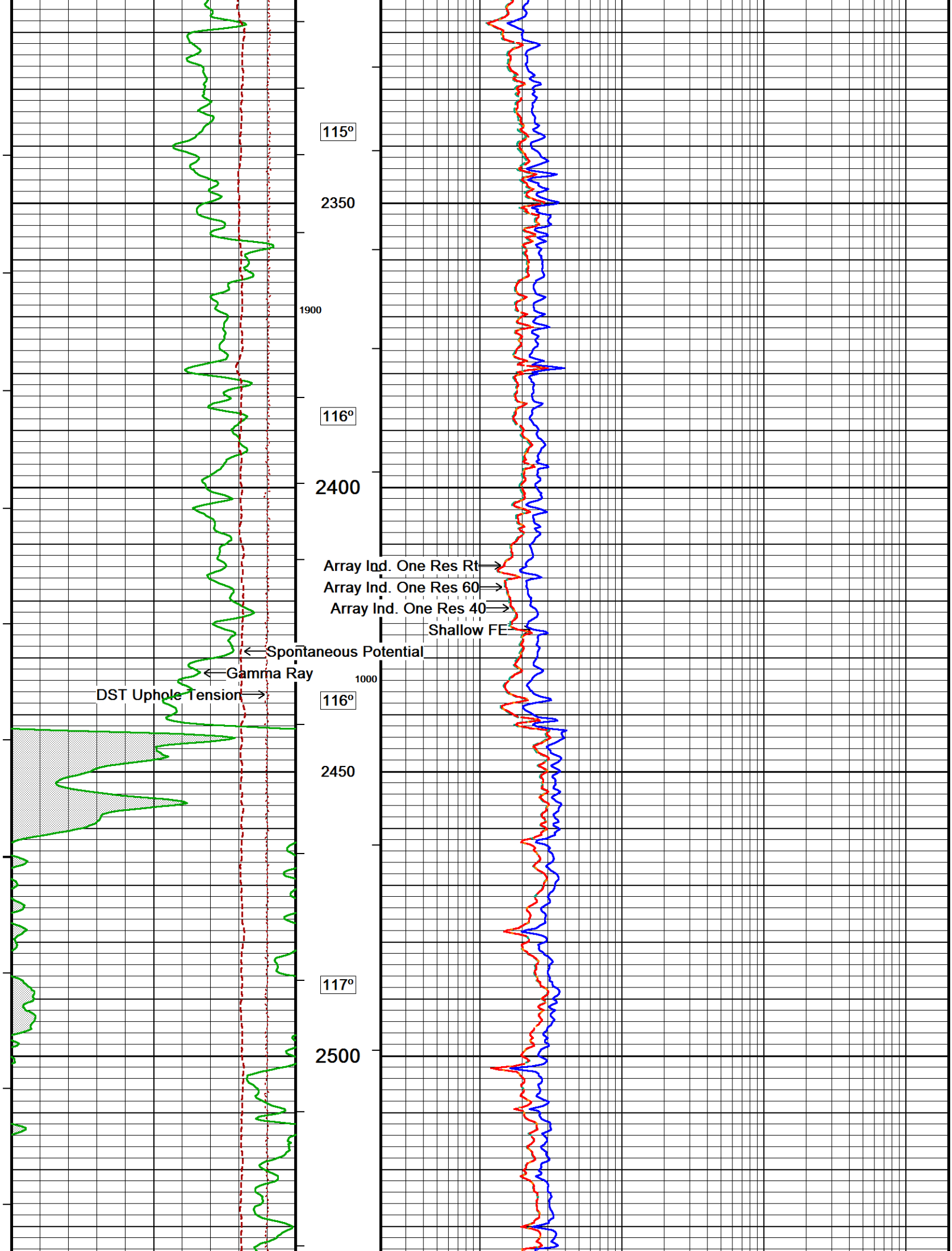
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Shallow FE
Spontaneous Potential
Gamma Ray
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DST Uphole Tension
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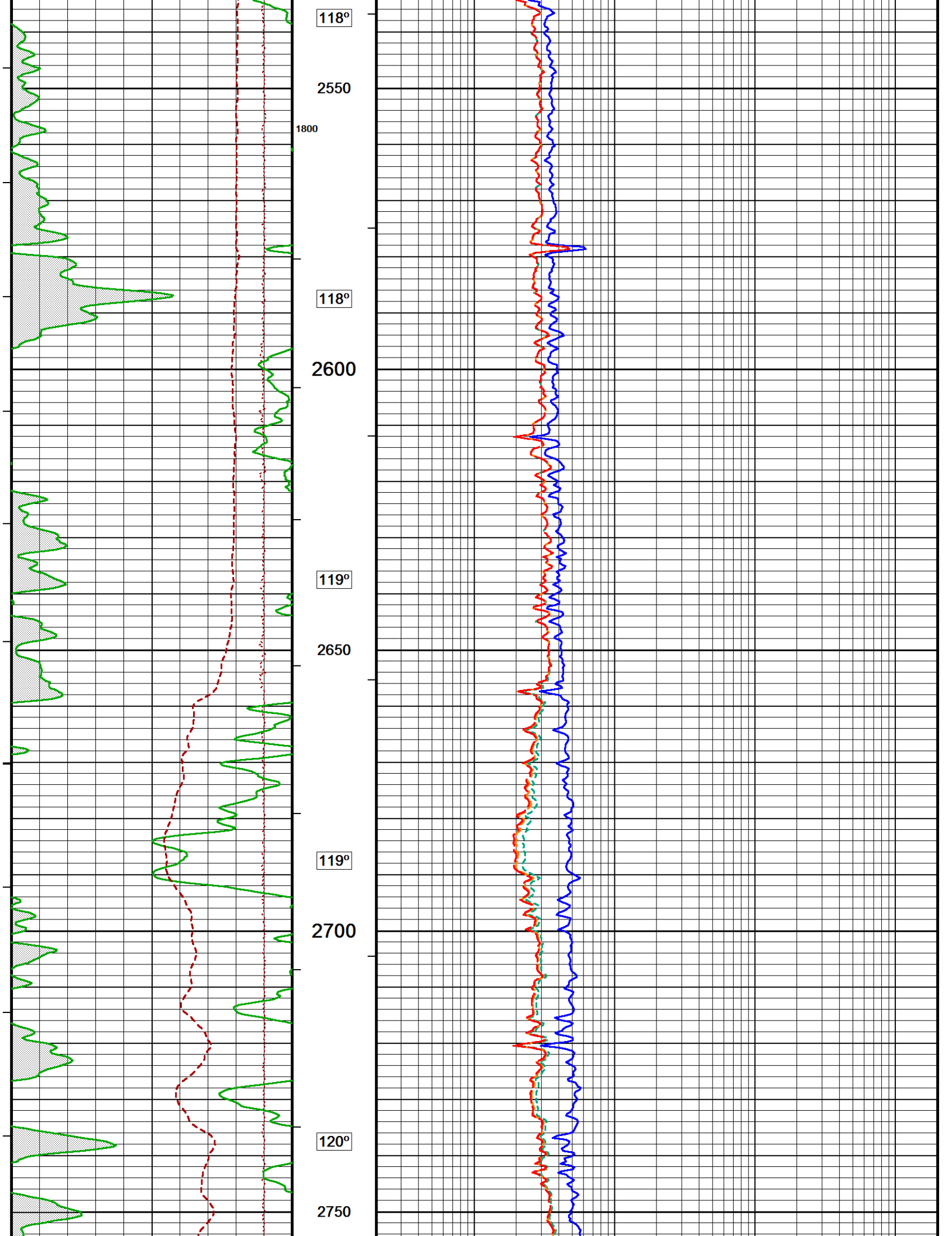
2450
117°
2500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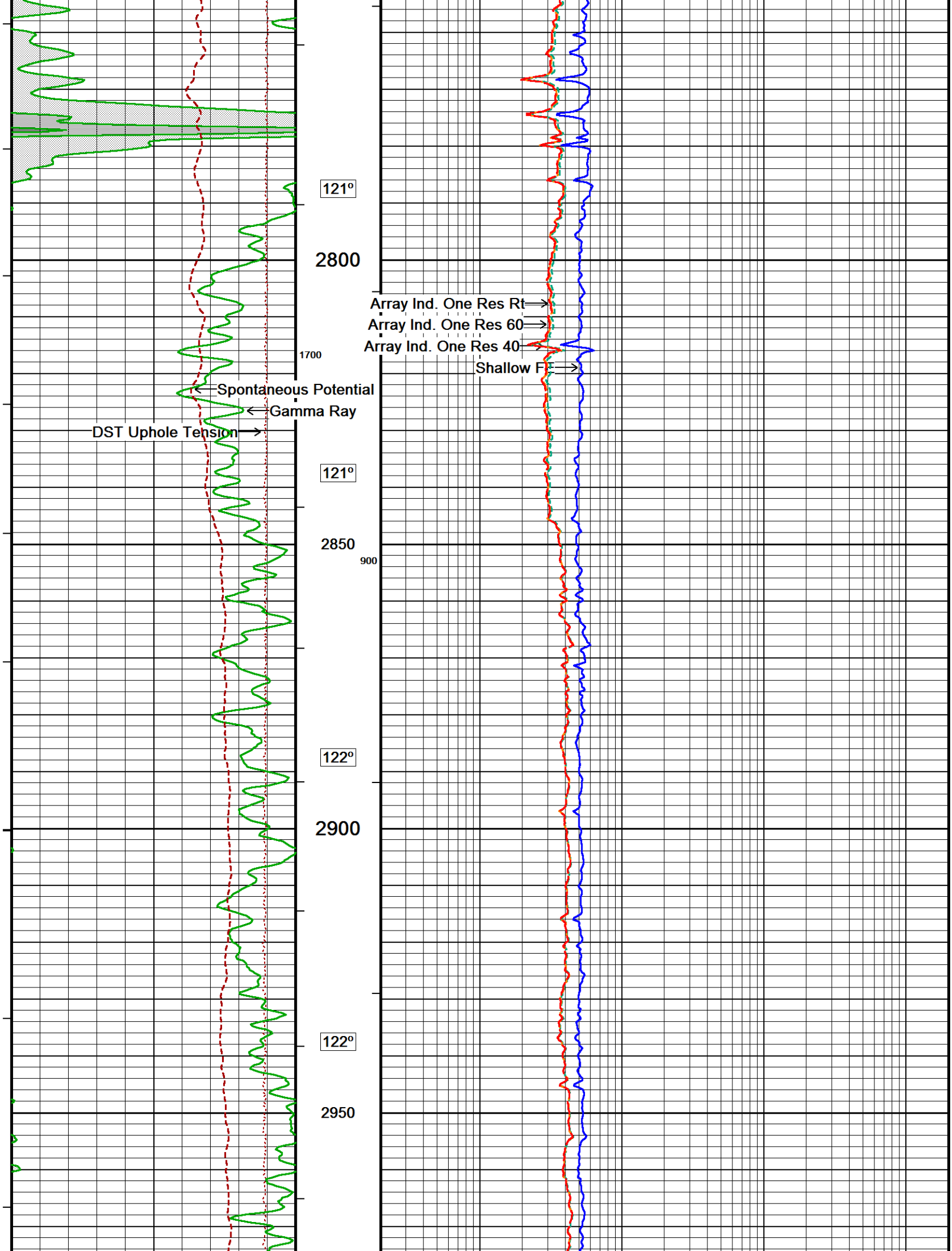
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1700
Spontaneous Potential
Gamma Ray
DST Uphole Tension
121°
2850
900
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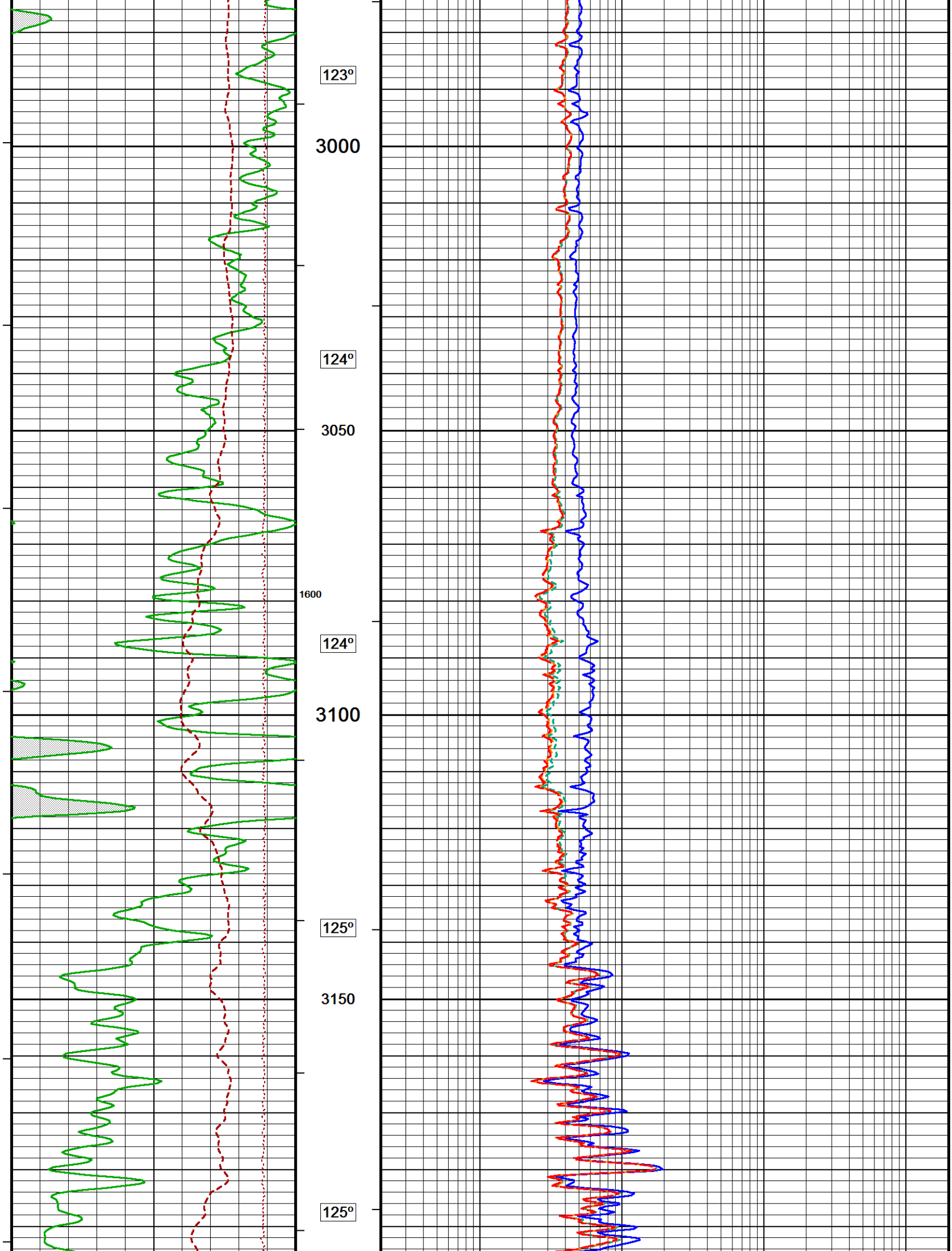
2900
122°
2950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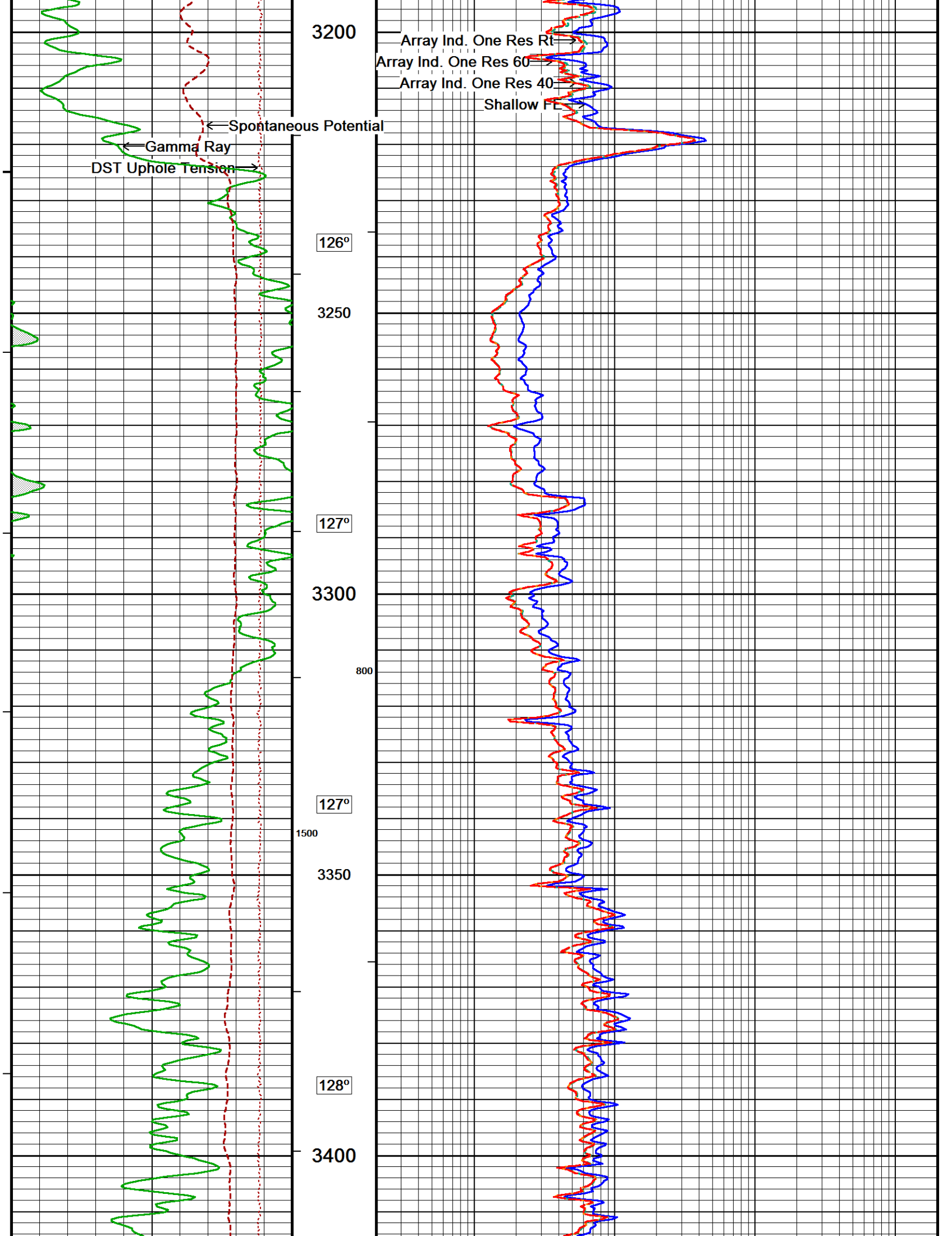
3150
125°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Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
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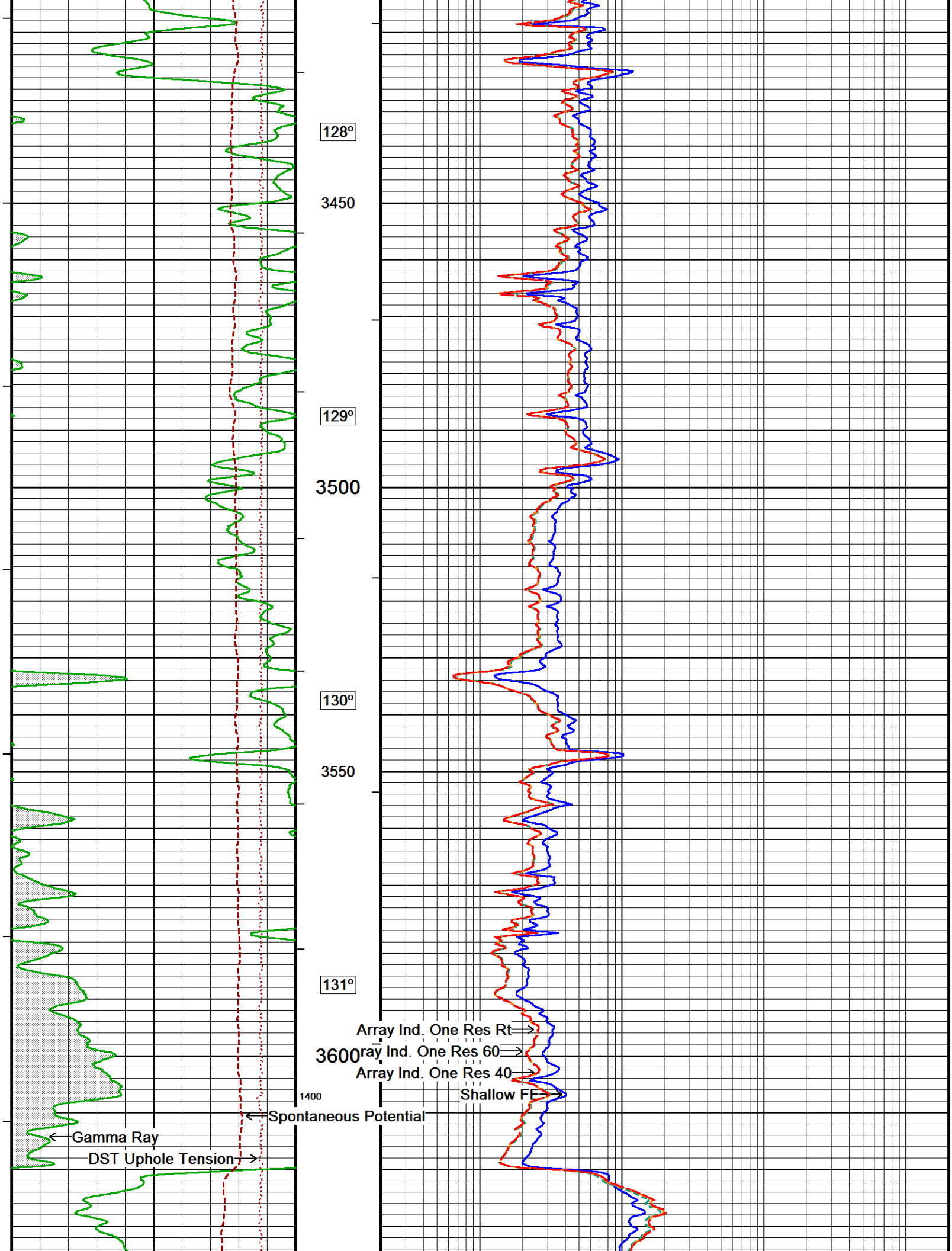
127°
3300
800
127°
1500
3350
128°
3400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129°
3500
130°
3550
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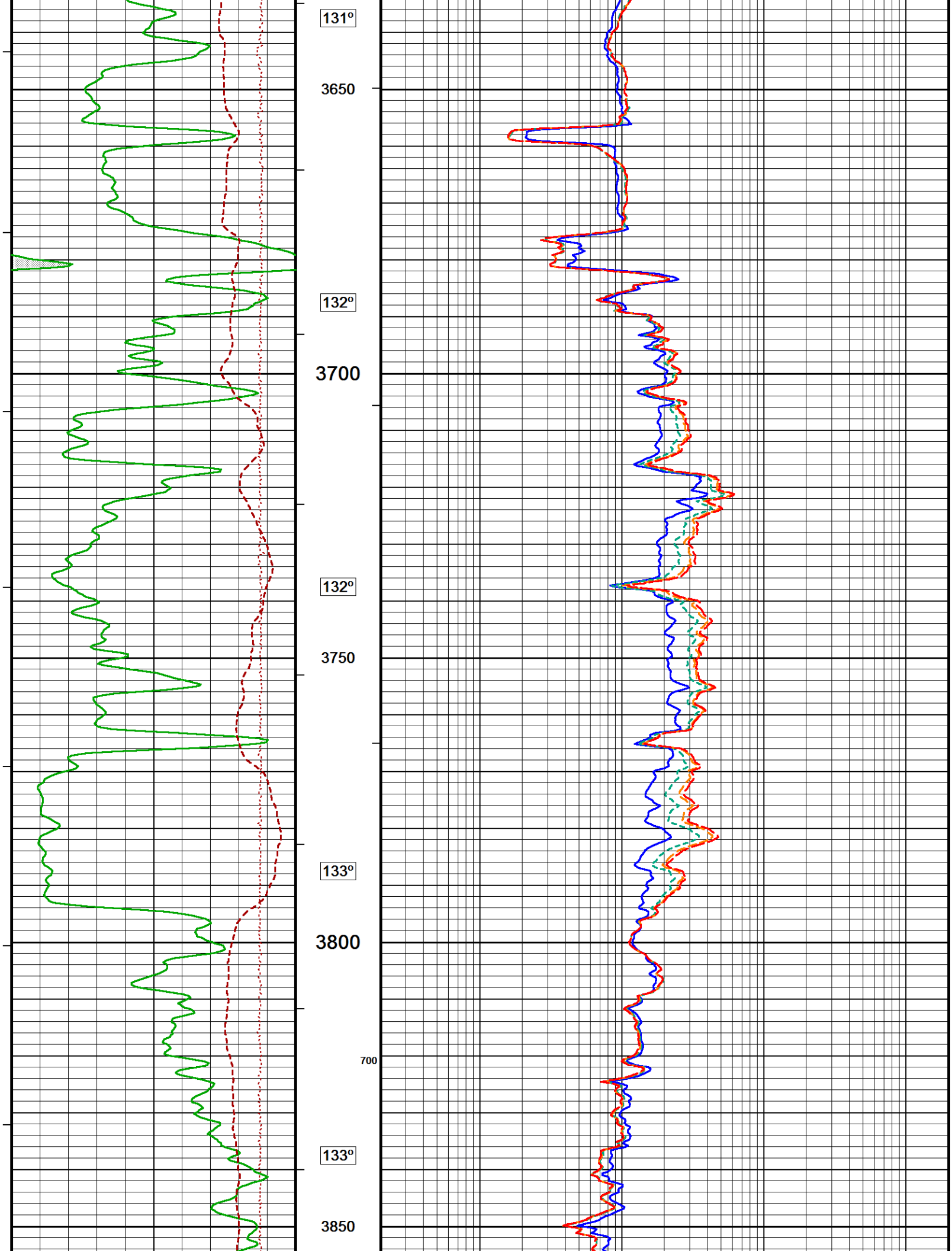
Shallow FE
1400
Spontaneous Potential
Gamma Ray
DST Uphole Tension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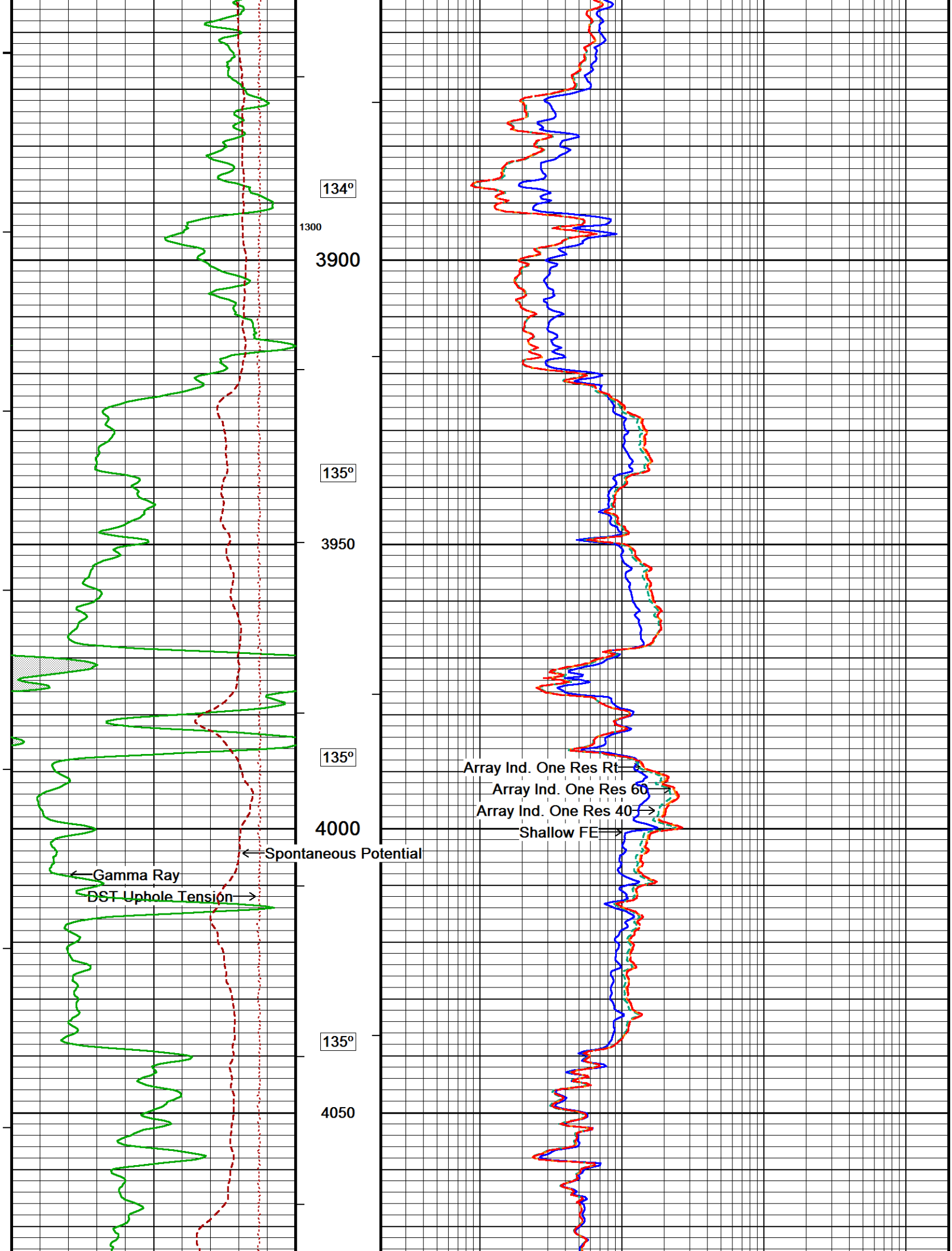
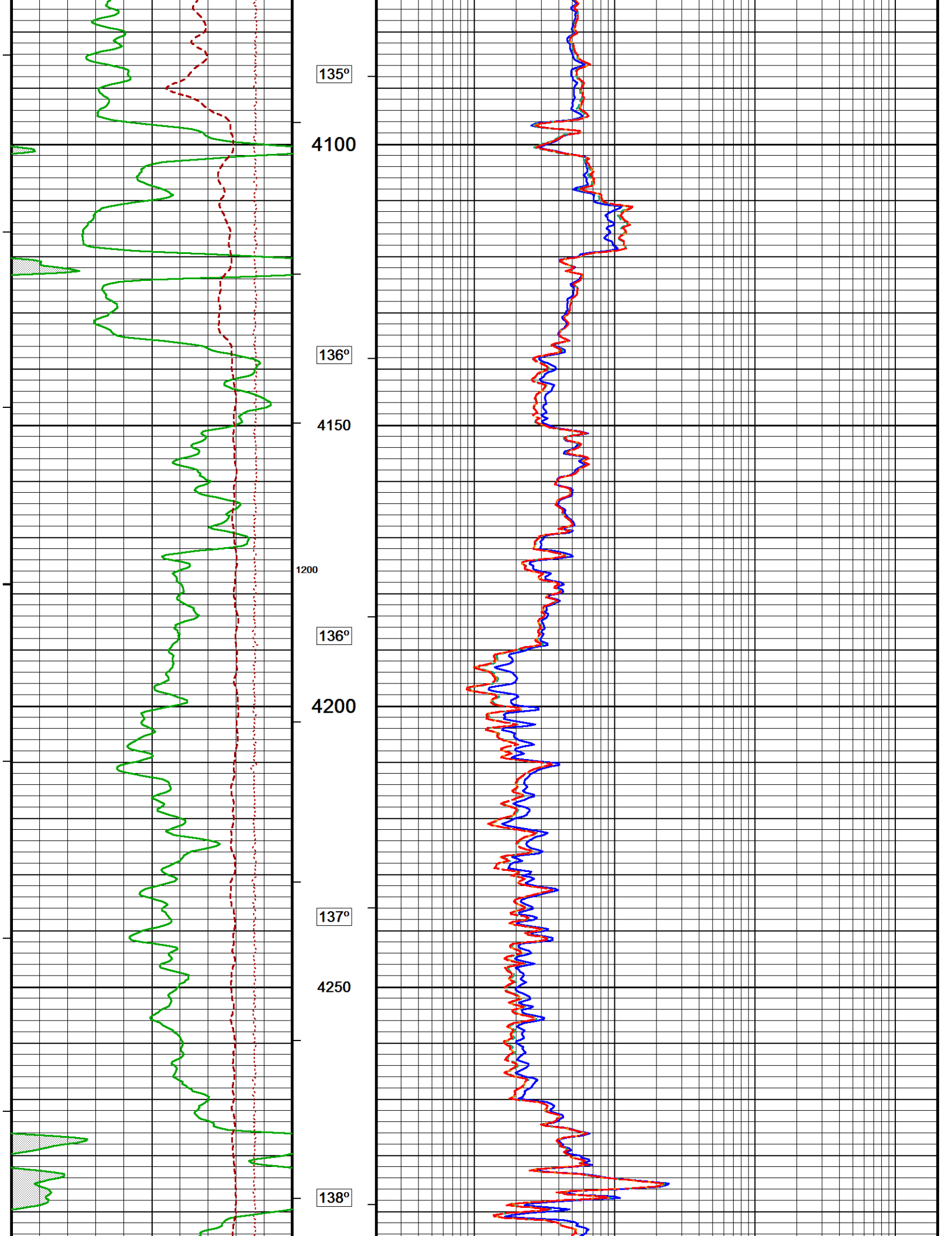
700
133°
3850


134°
1300
3900
135°
3950
135°
4000
135°
4050
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension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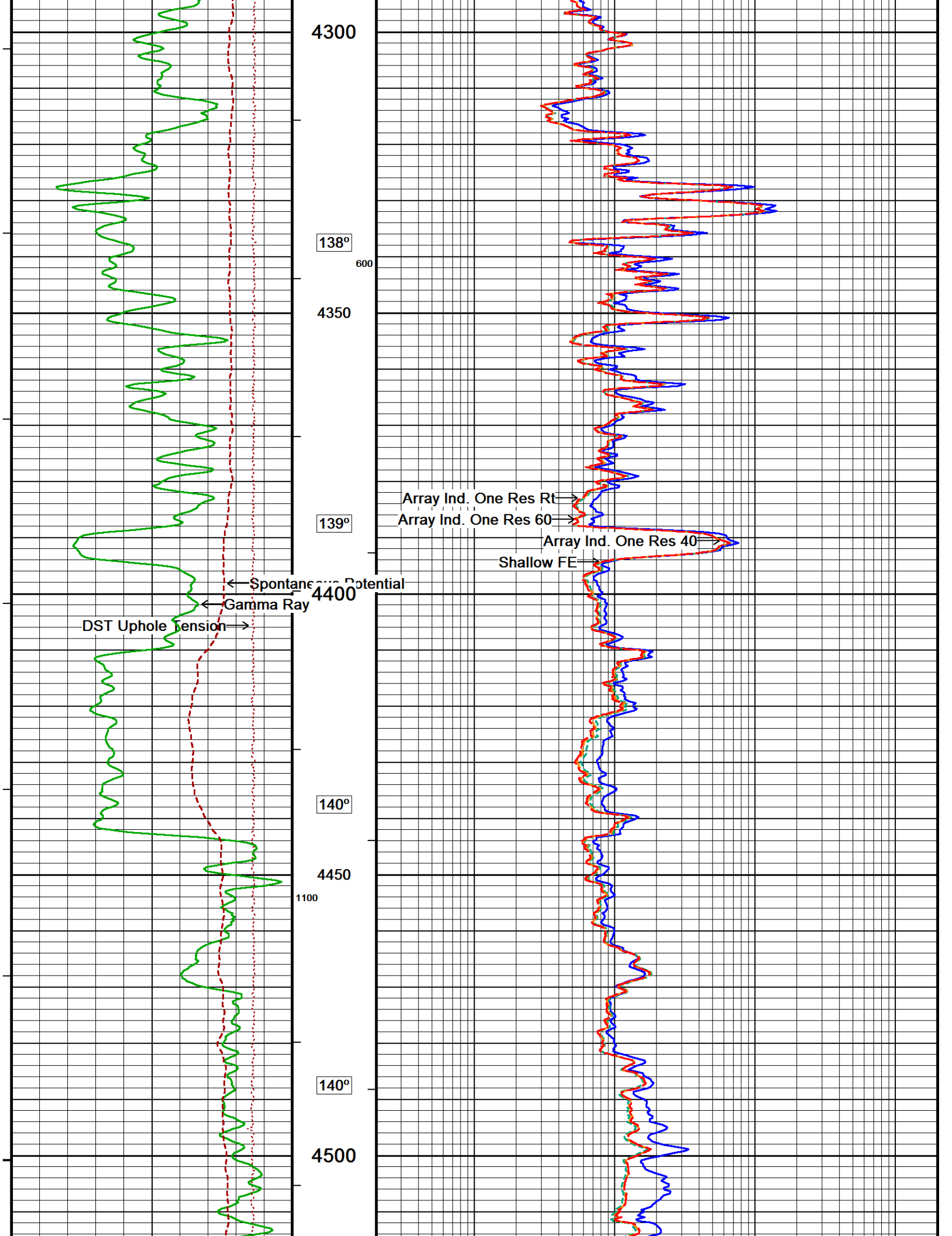
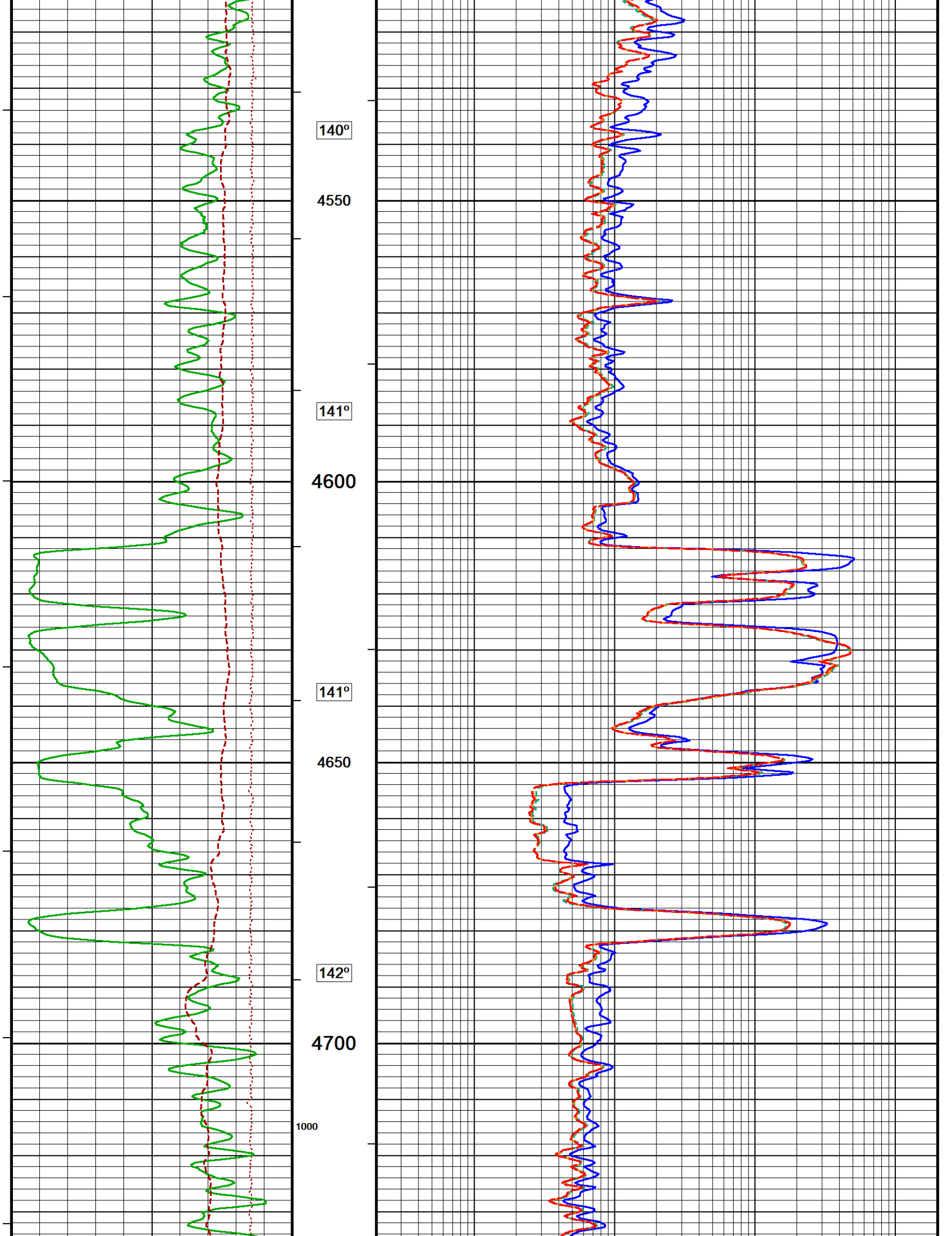
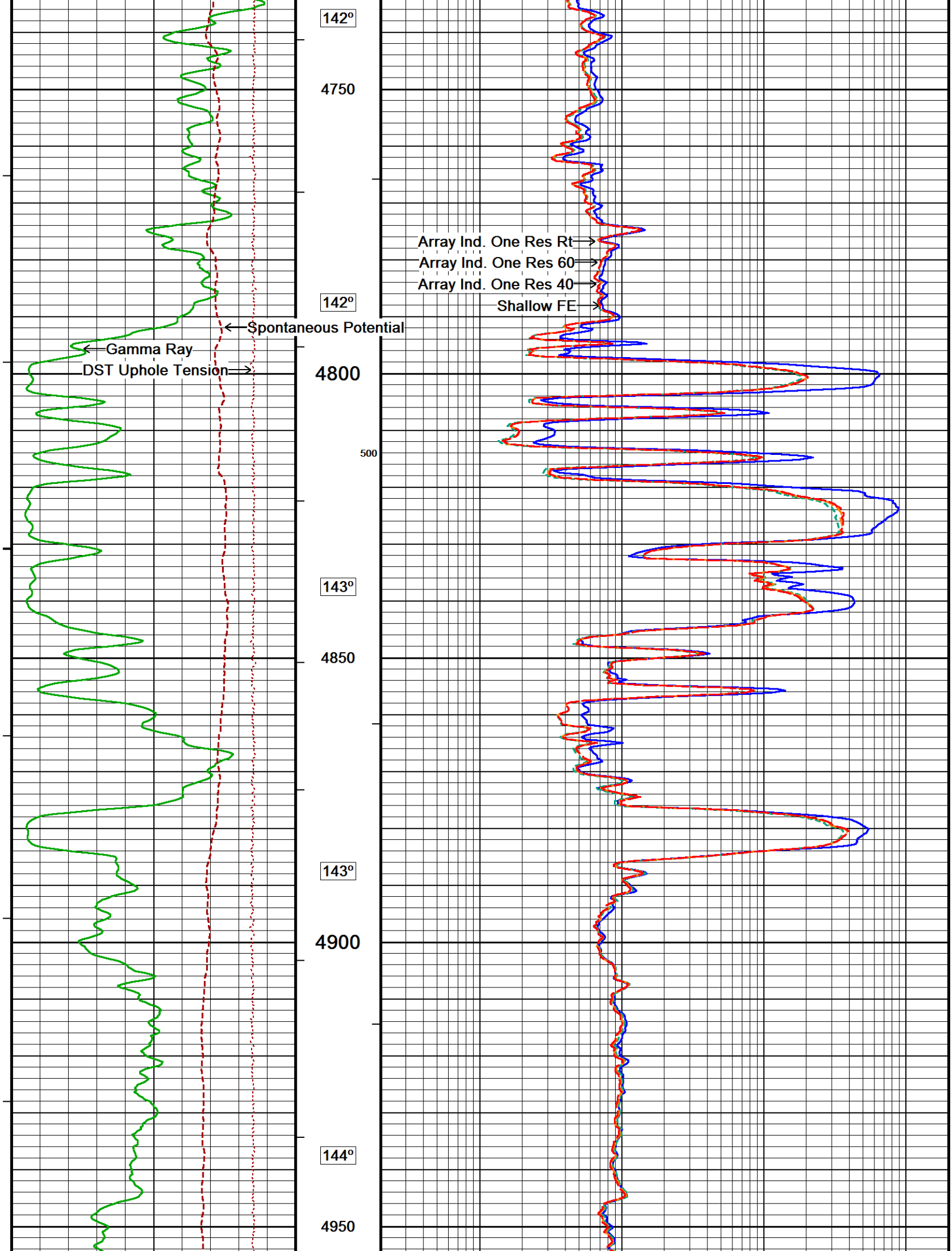
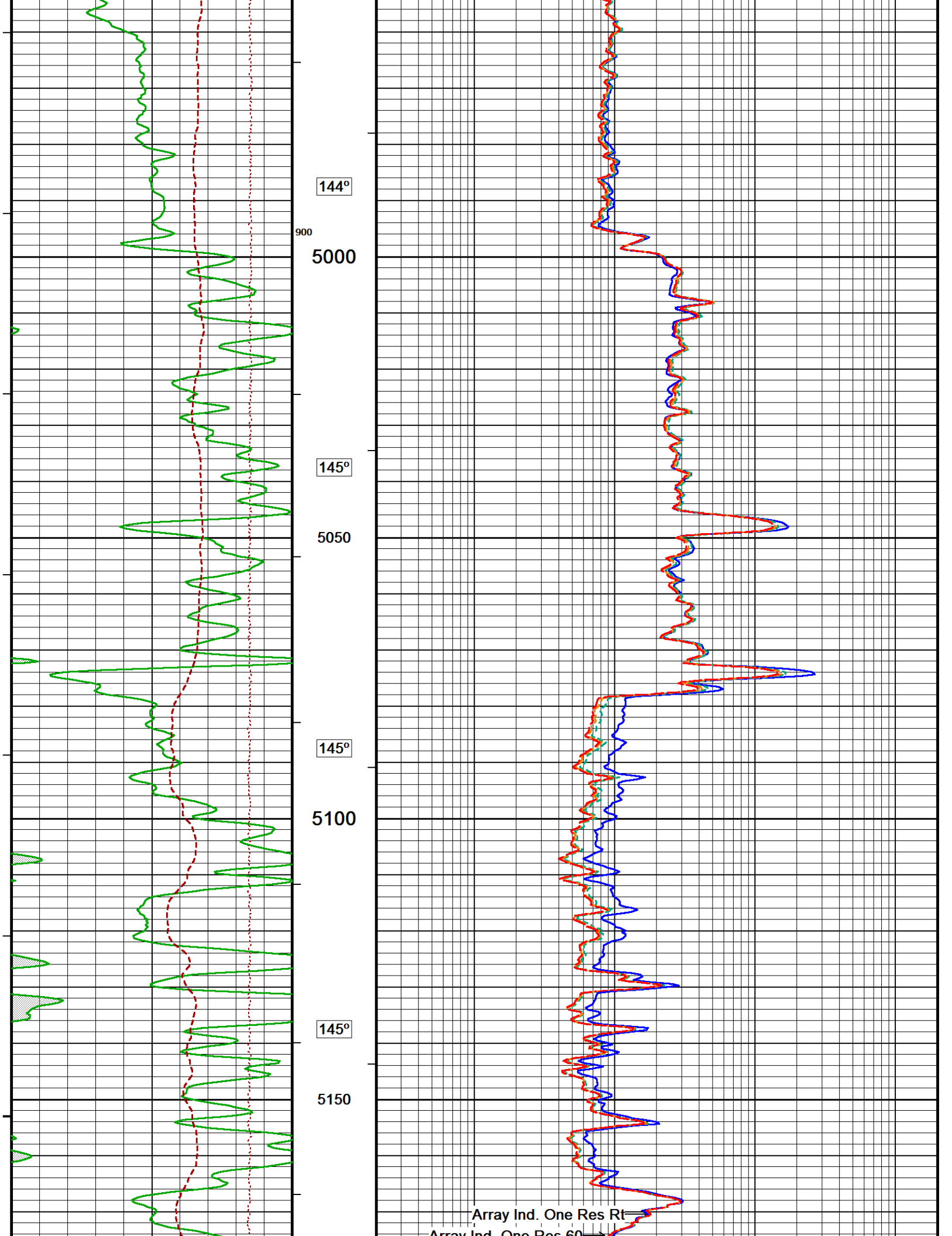
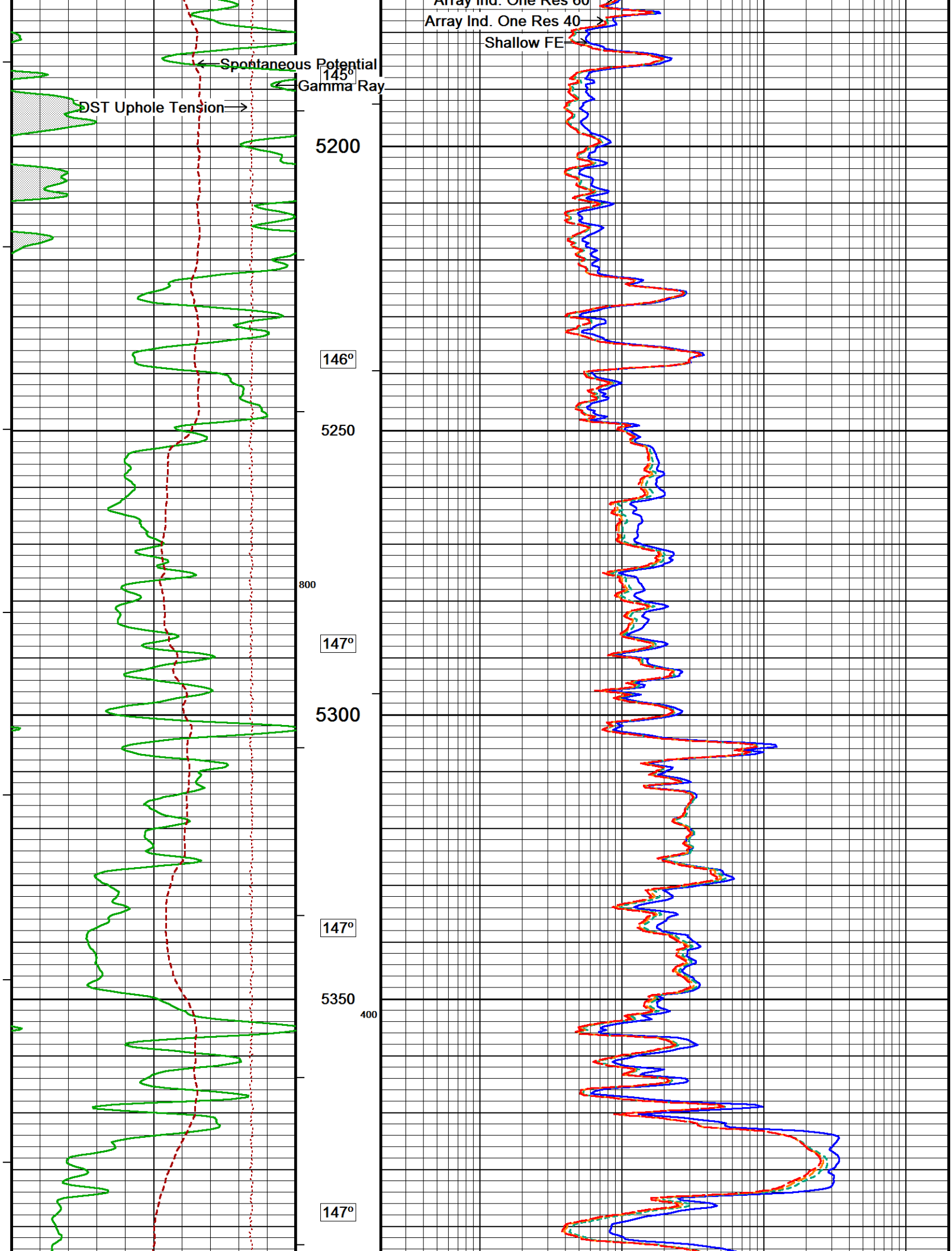
136°
4150
1200
136°
4200
137°
4250
138°

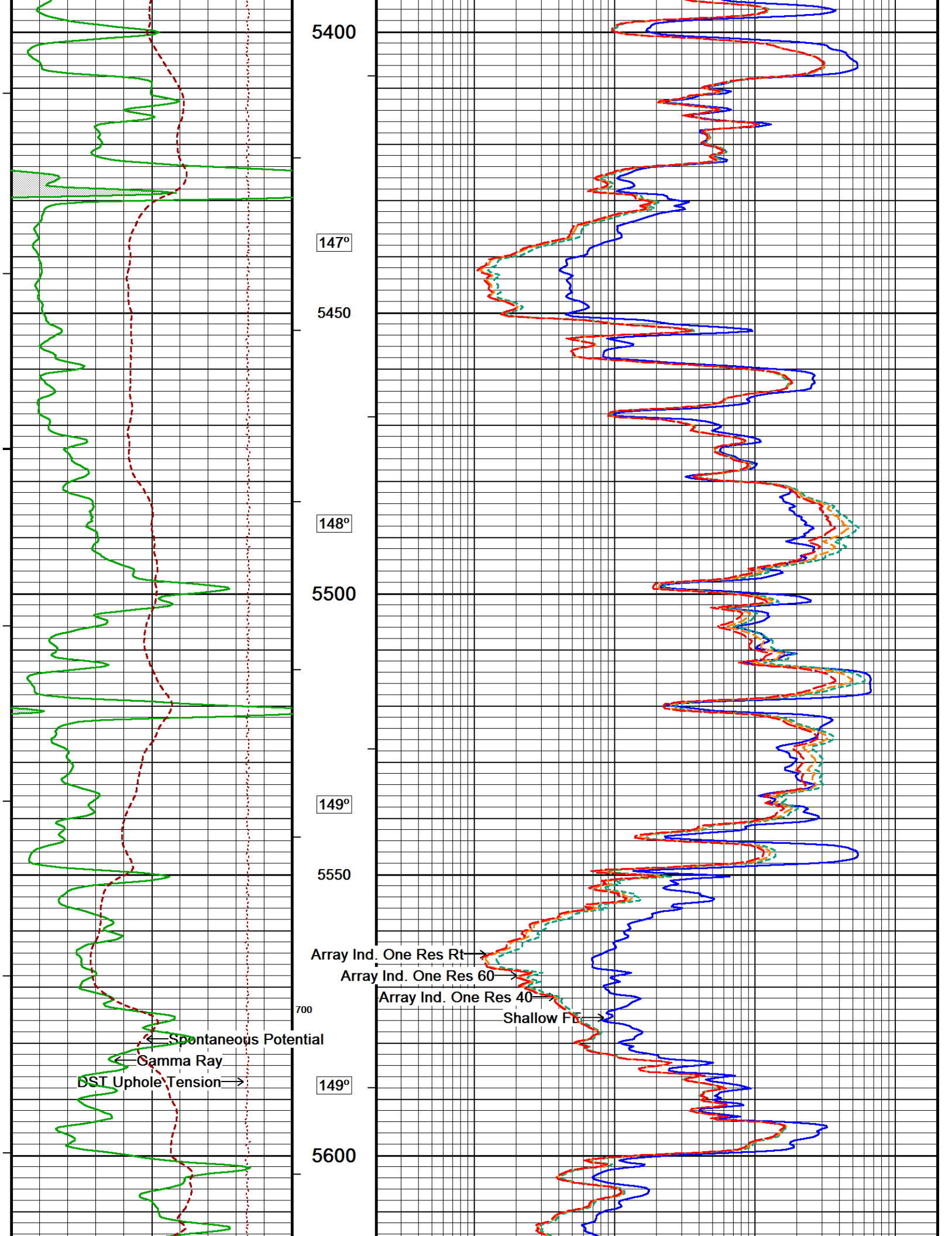

4300
138°
600
4350
Array Ind. One Res Rt
Array Ind. One Res 60
139°
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
4400
Gamma Ray
DST Uphole Tension
140°
4450
1100
140°
4500

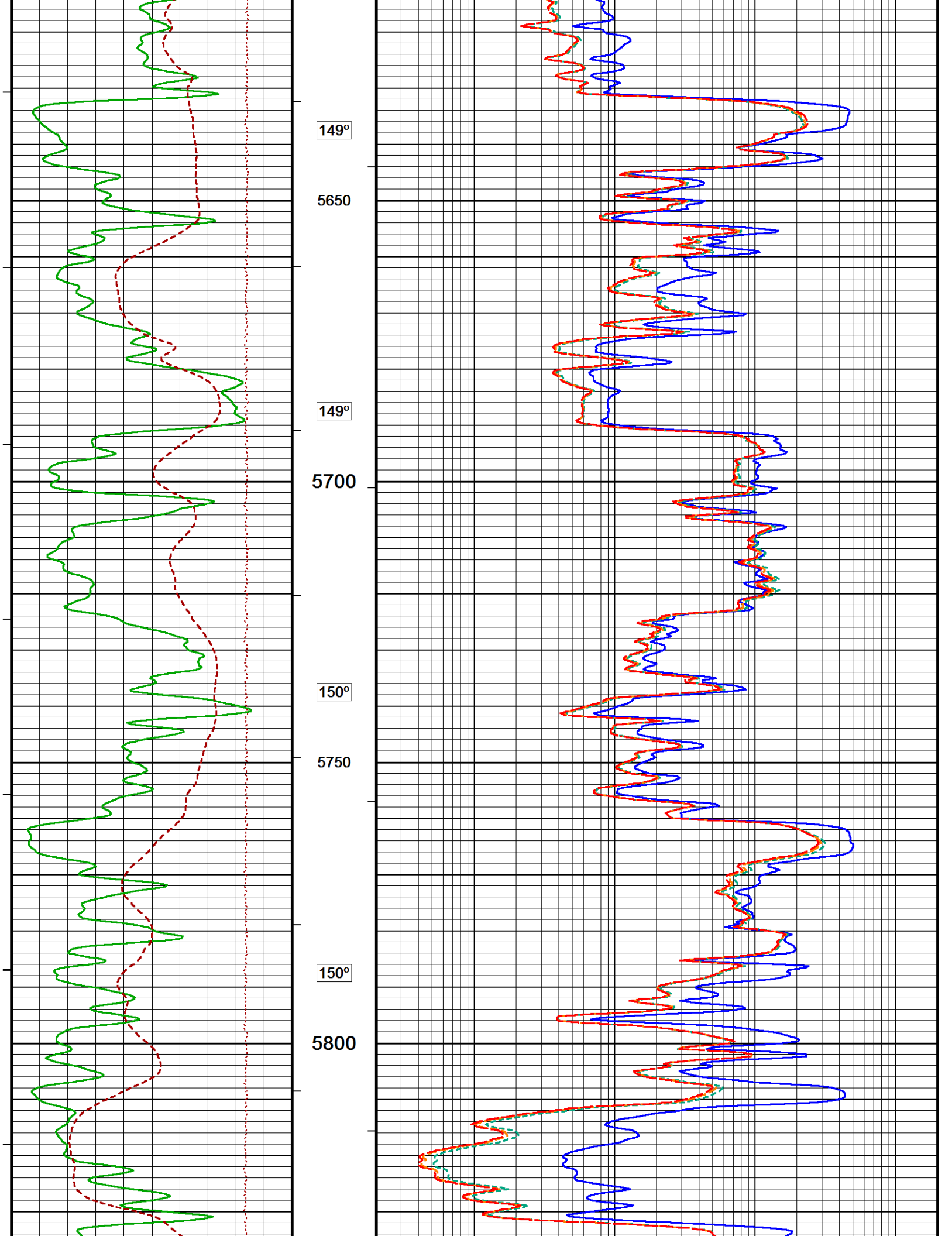

140°
4550
141°
4600
141°
4650
142°
4700
1000

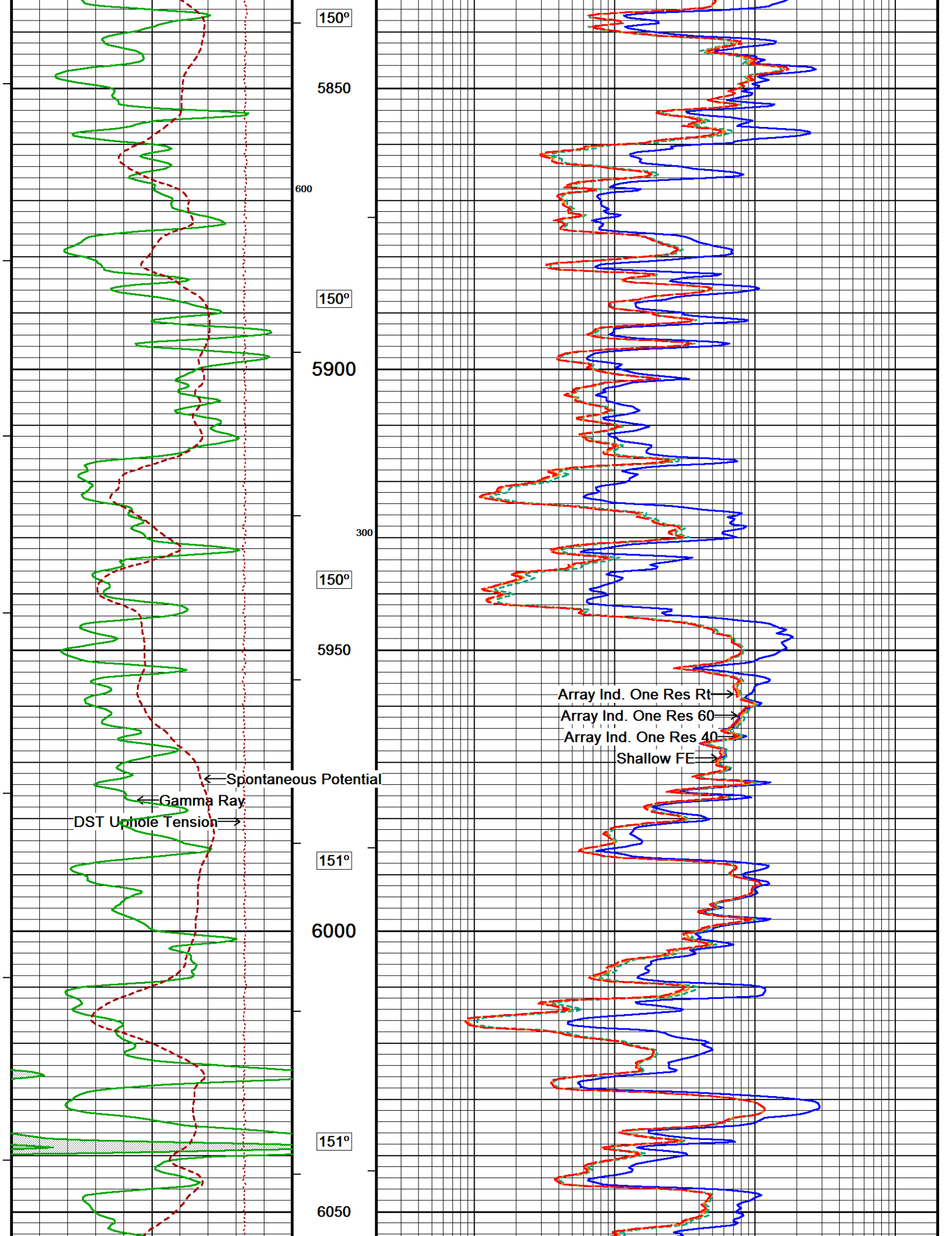

142°
4750
142°
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
4800
500
143°
4850
143°
4900
144°
4950

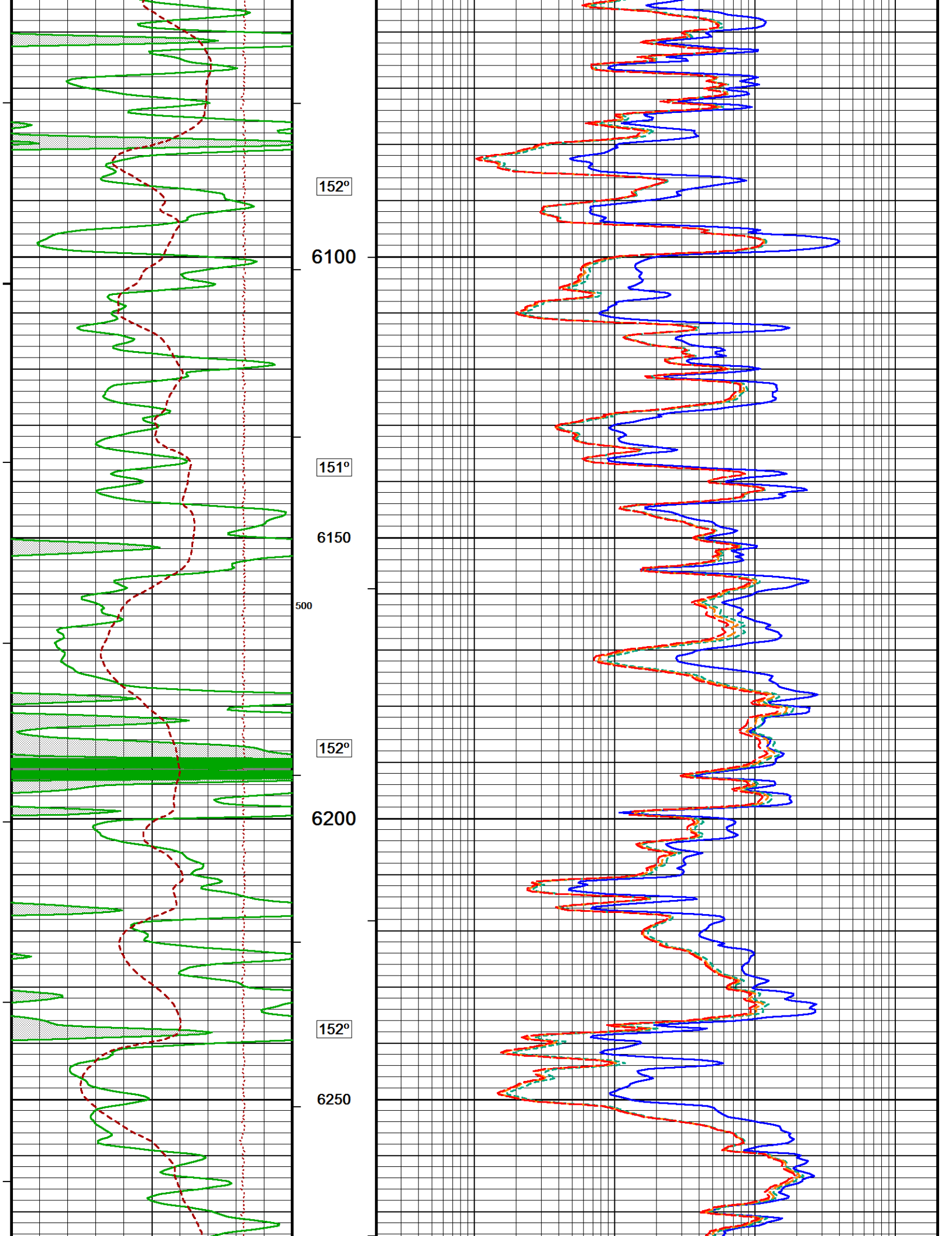

144°
900
5000
145°
5050
145°
5100
145°
5150
Array Ind. One Res Rt

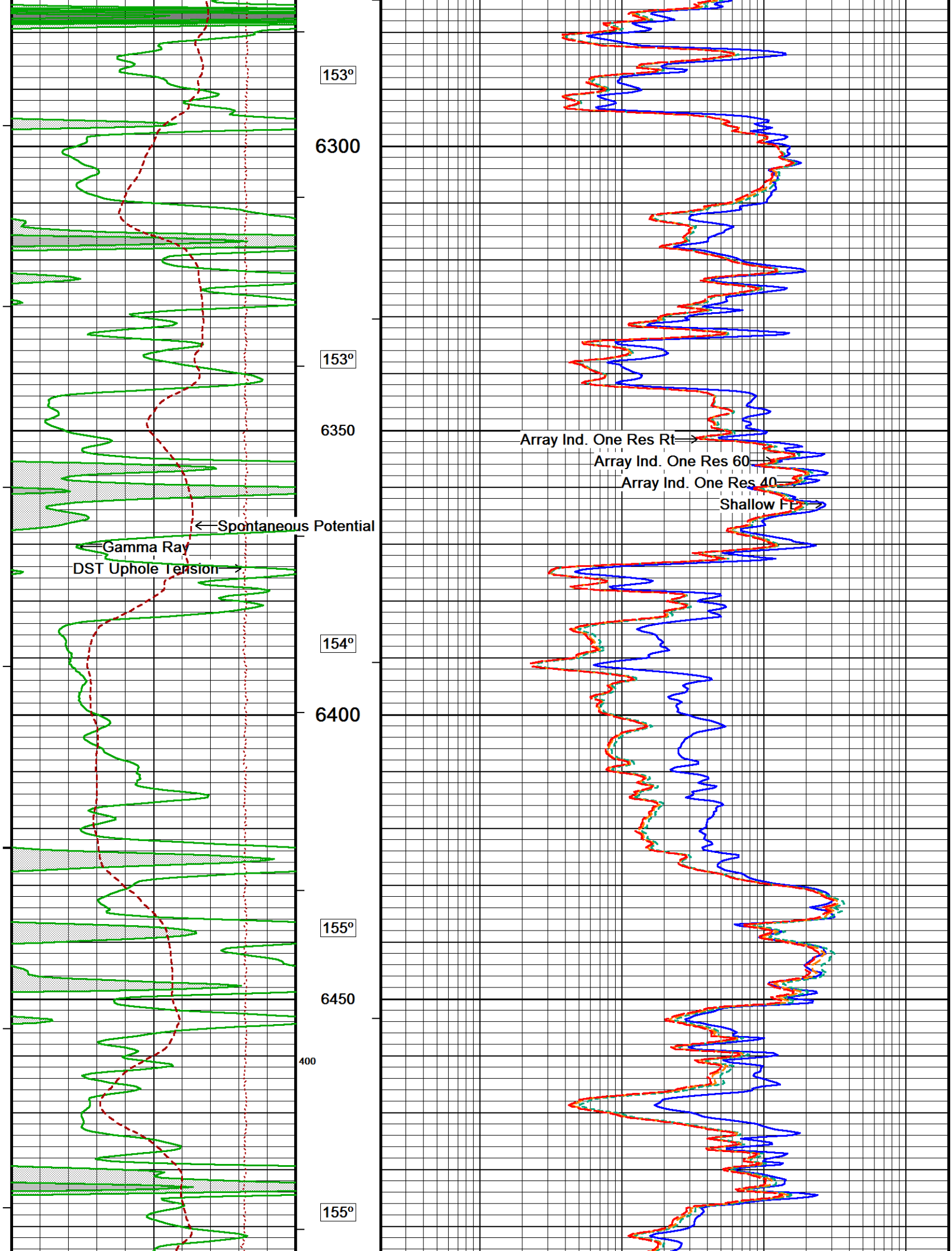

Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
145°
5200
146°
5250
800
147°
5300
147°
5350
400
147°

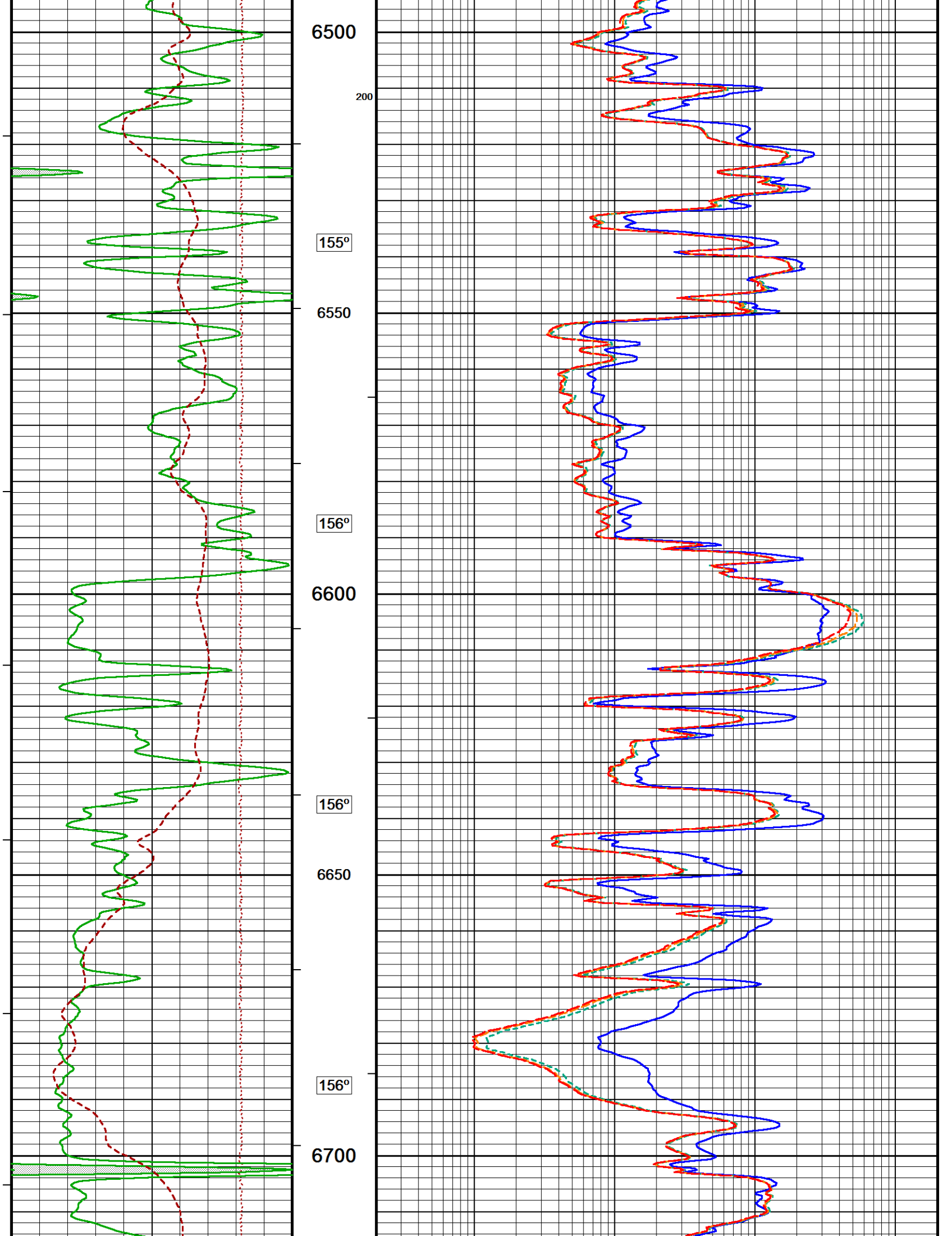

5400
147°
5450
148°
5500
149°
5550
700
149°
5600
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow Ft
Spontaneous Potential
Gamma Ray
DST Uphole Tension

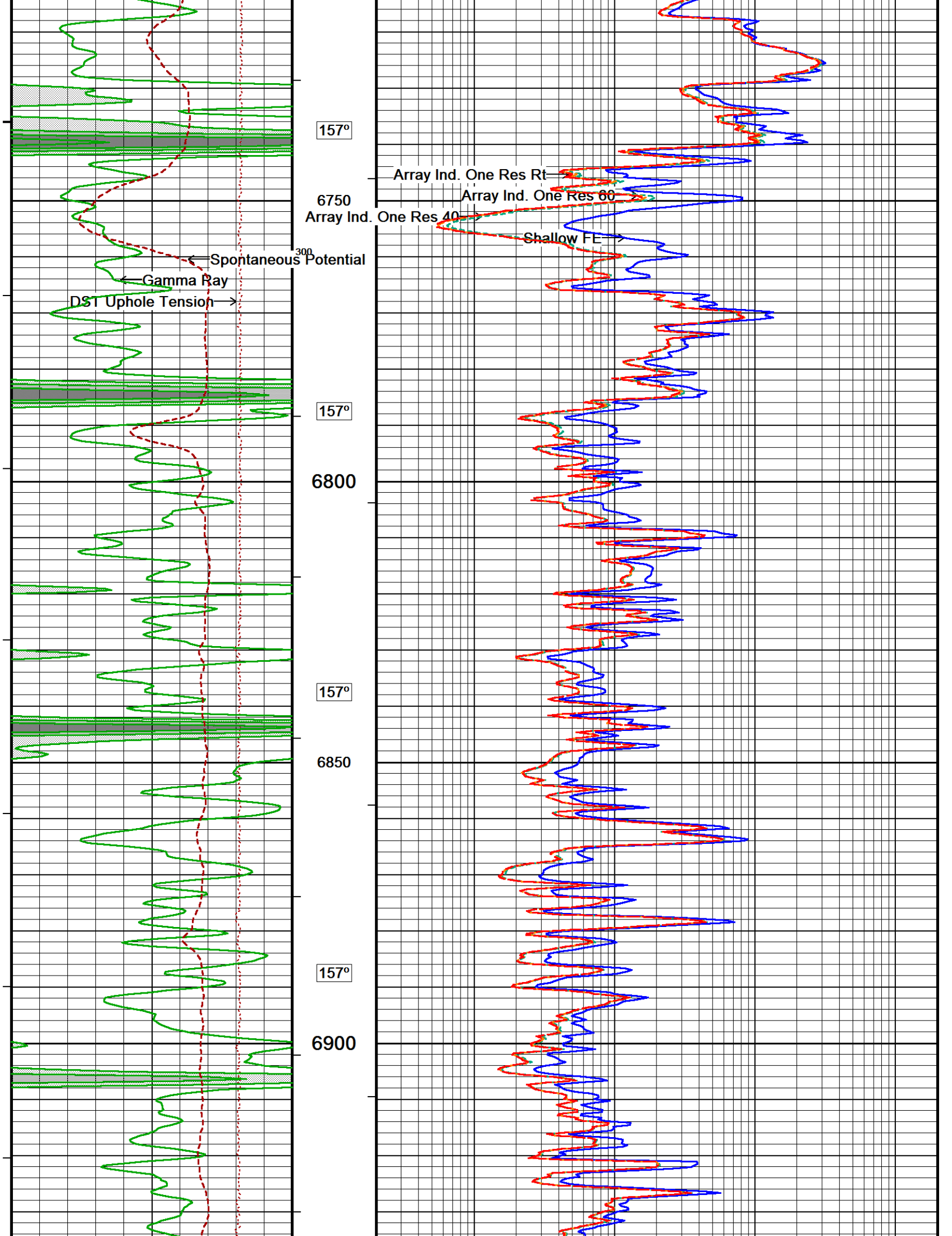

149°
5650
149°
5700
150°
5750
150°
5800

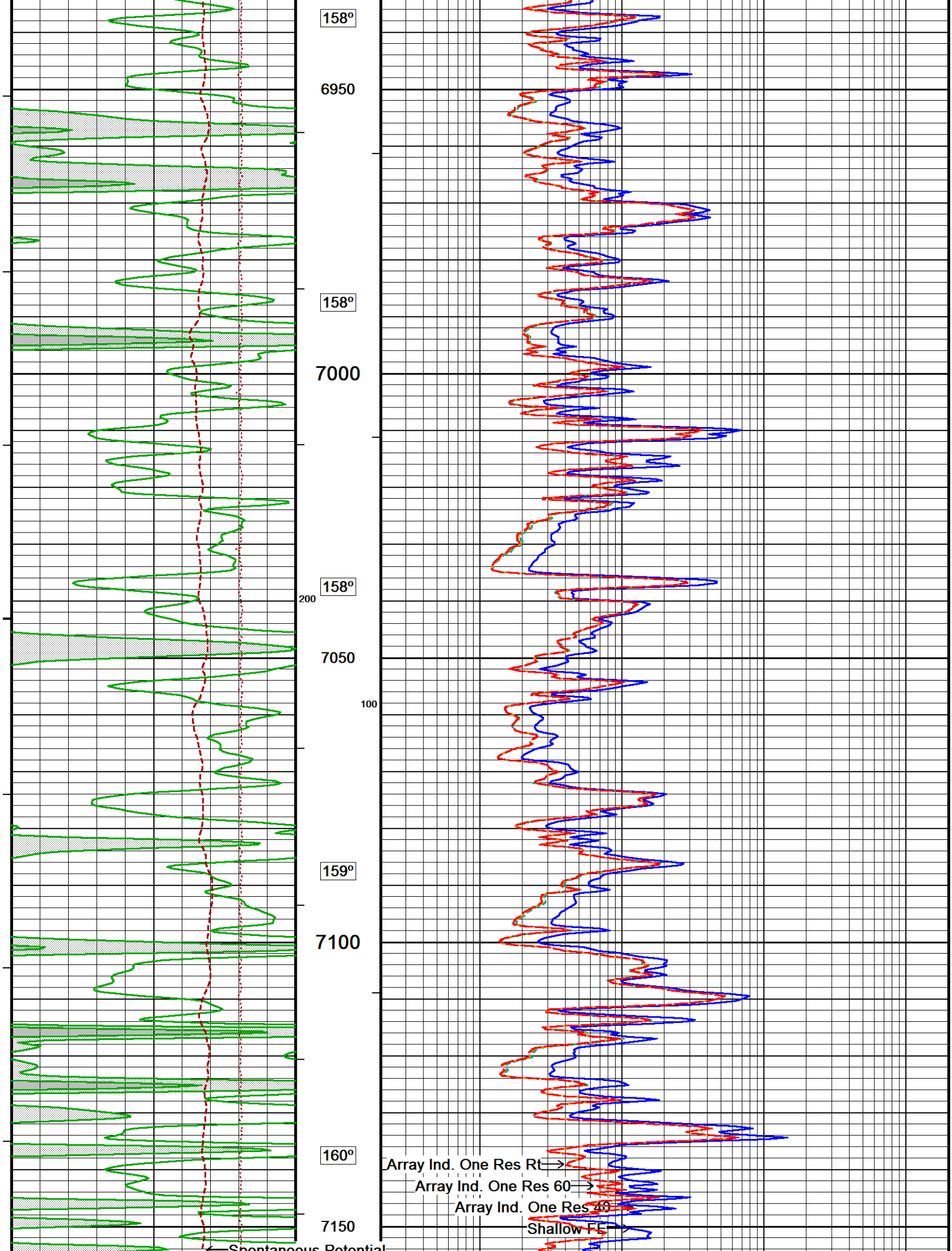

150°
5850
600
150°
5900
300
150°
5950
151°
6000
151°
6050
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension

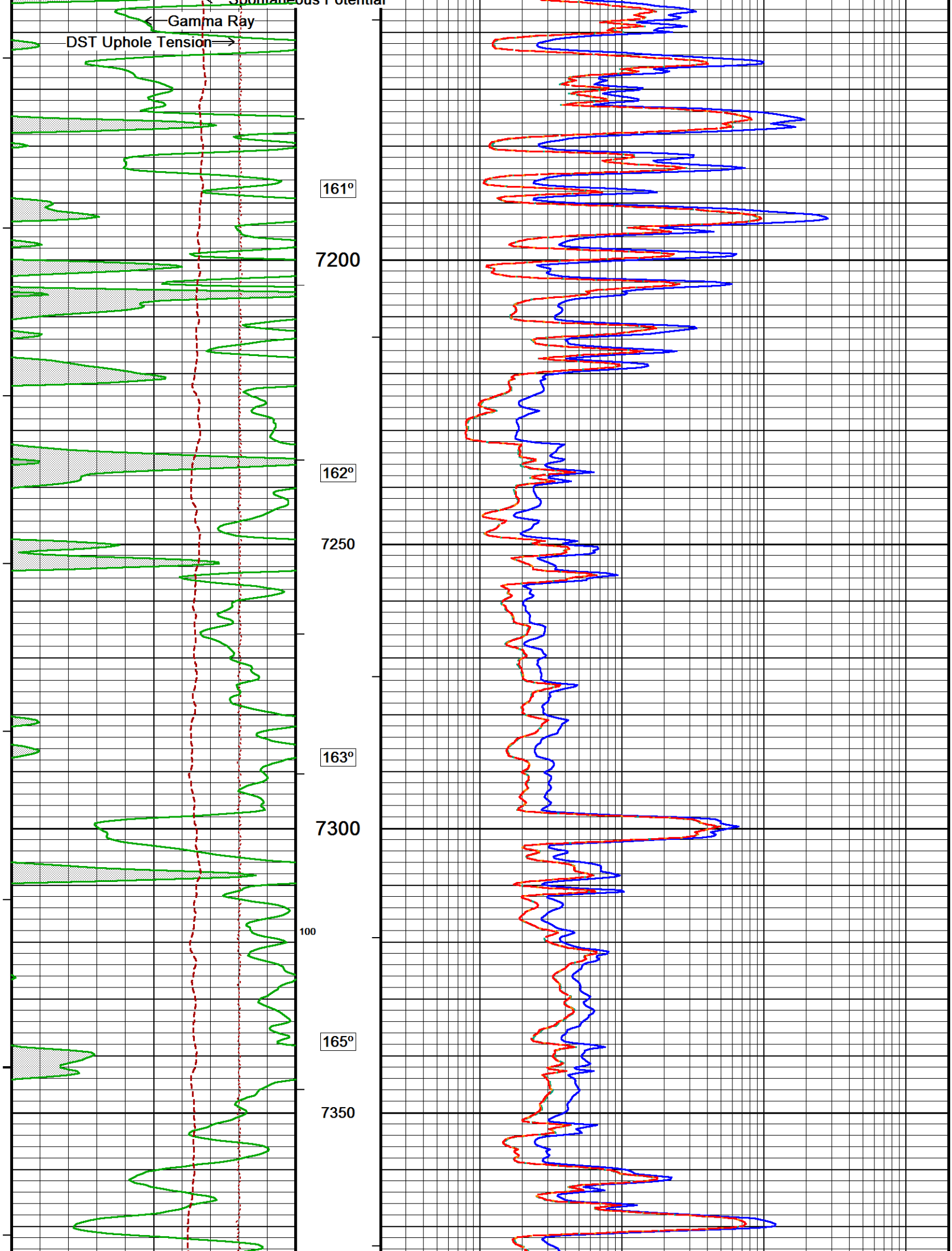

152º
6100
151º
6150
500
152º
6200
152º
6250

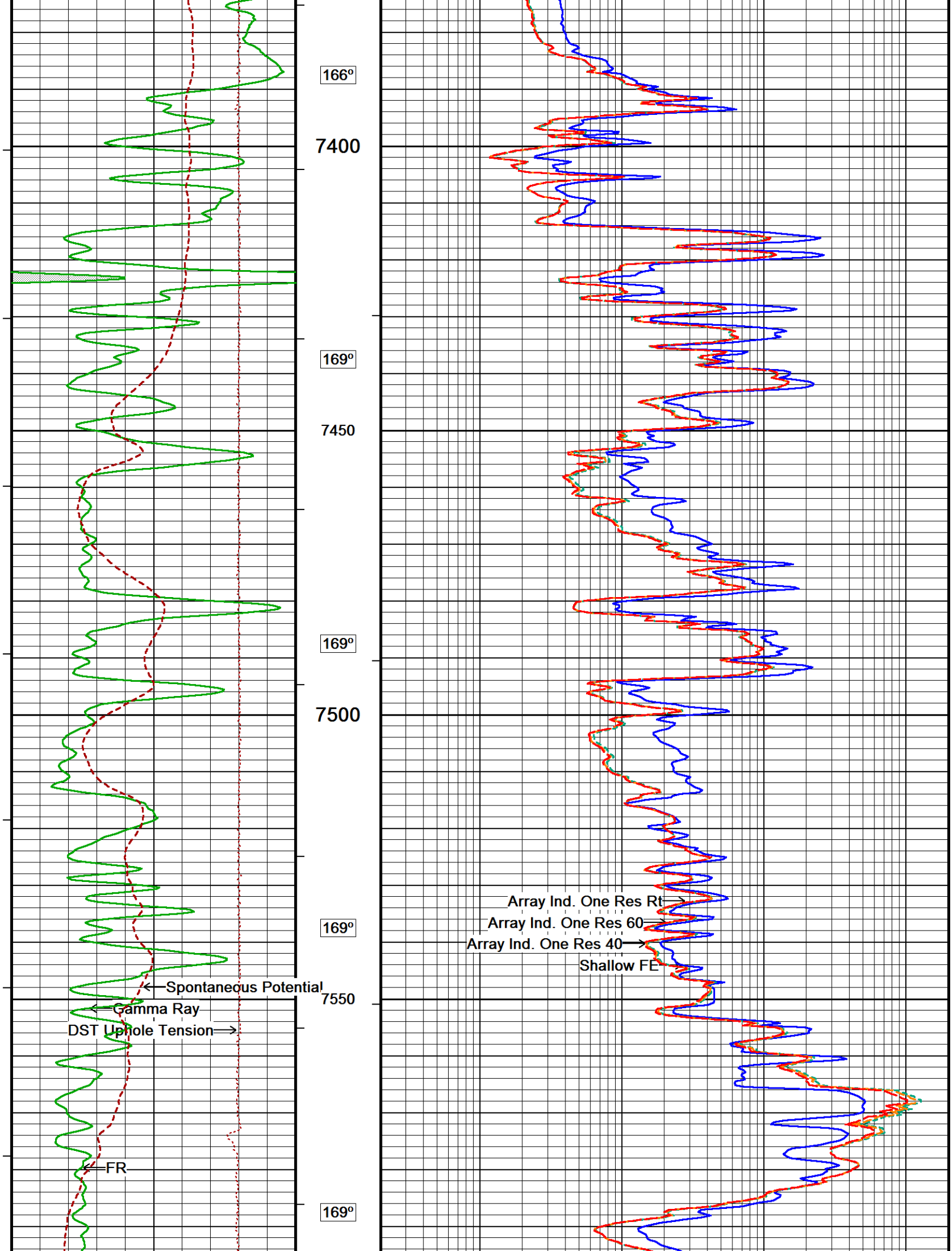

153°
6300
153°
6350
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FT
Spontaneous Potential
Gamma Ray
DST Uphole Tension
154°
6400
155°
6450
400
155°

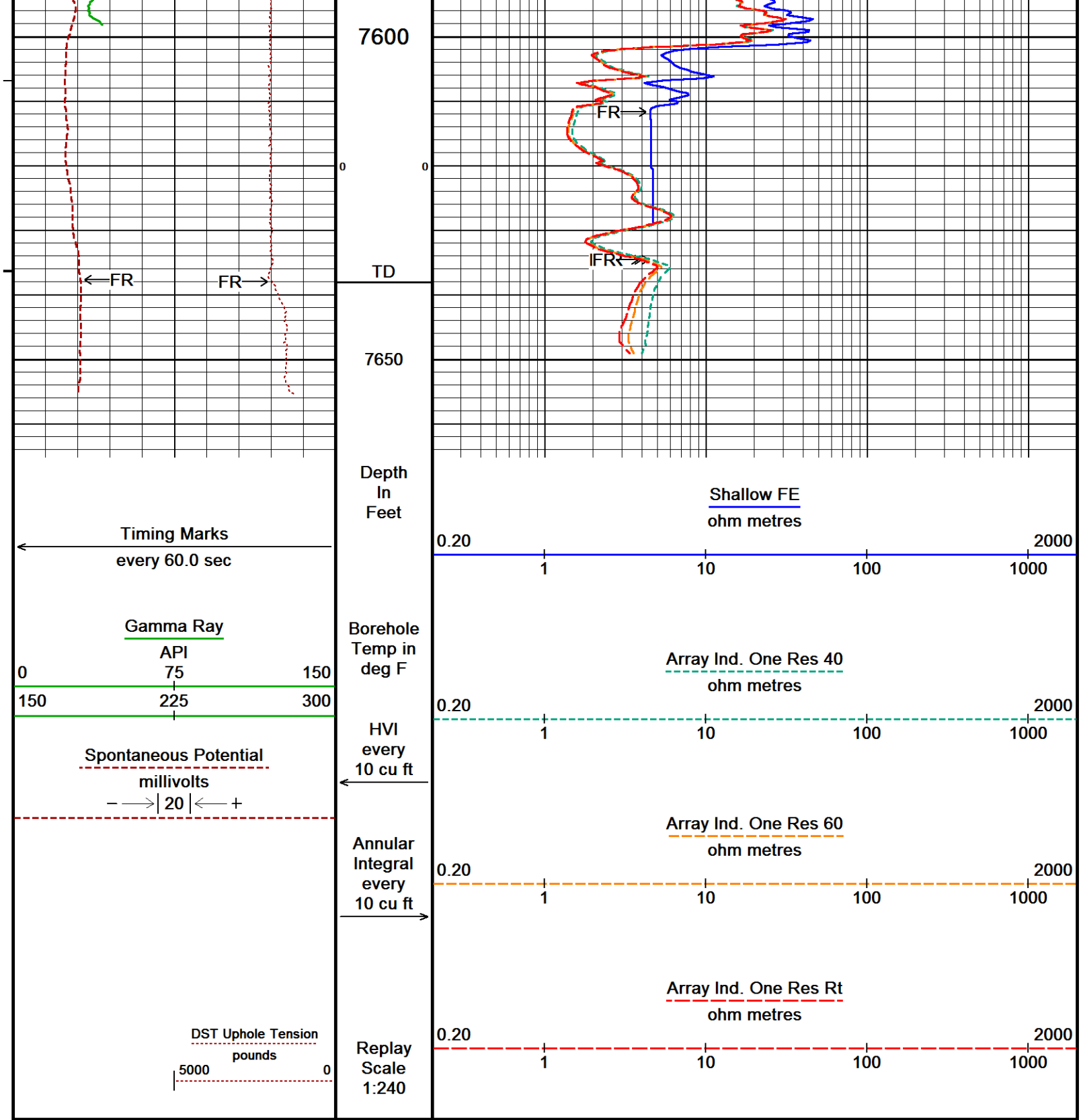

6500
200
155°
6550
156°
6600
156°
6650
156°
6700


157°
Array Ind. One Res Rt
Array Ind. One Res 60
6750
Array Ind. One Res 40
Shallow FE
300
Spontaneous Potential
Gamma Ray
DST Uphole Tension
157°
6800
157°
6850
157°
6900


158°
6950
158°
7000
158°
200
7050
100
159°
7100
160°
7150
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 20
Shallow FE
Spontaneous Potential


Spontaneous Potential
Gamma Ray
DST Uphole Tension
161°
7200
162°
7250
163°
7300
100
165°
7350


166°
7400
169°
7450
169°
7500
169°
7550
169°
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
FR



Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 21-JAN-2019 17:43
Filename: C:\Minimus 18.03.9344\Data\GRAND MESA DIXIE #1-5\MAIN PASS.dta
Recorded on 21-JAN-2019 11:56
System Versions: Logged with 18.03.9344 Plotted with 18.03.9344

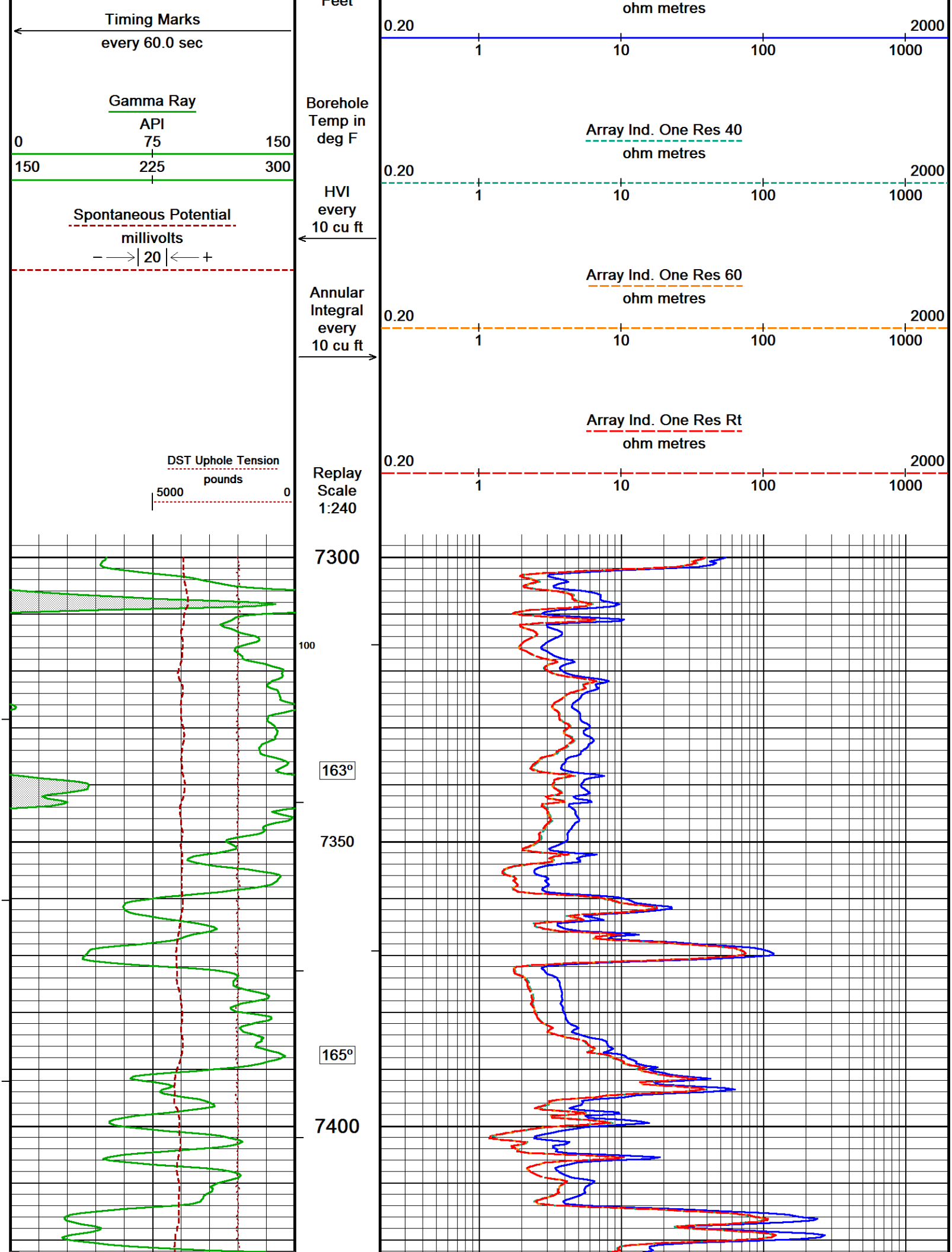
5 INCH MAIN

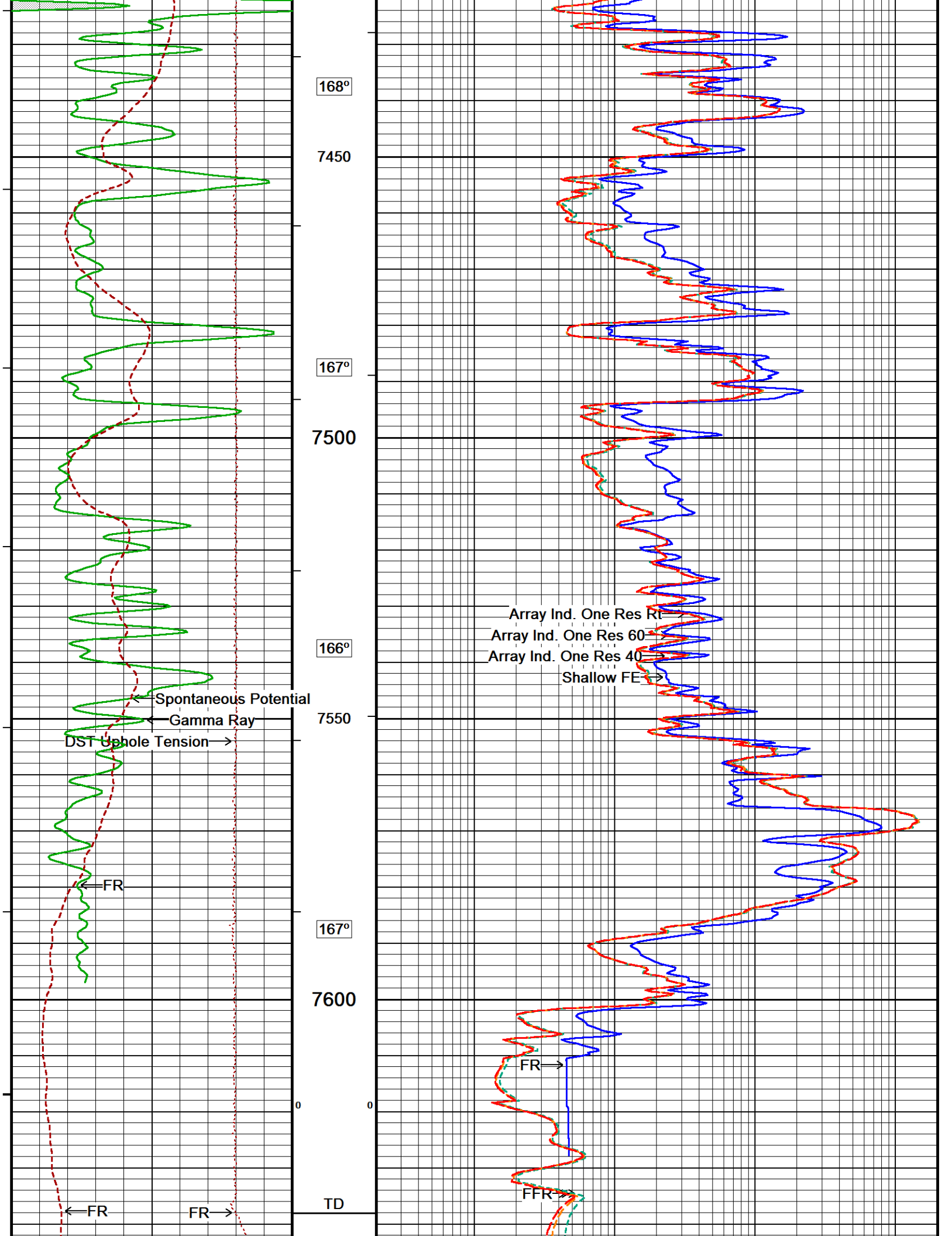
REPEAT SECTION

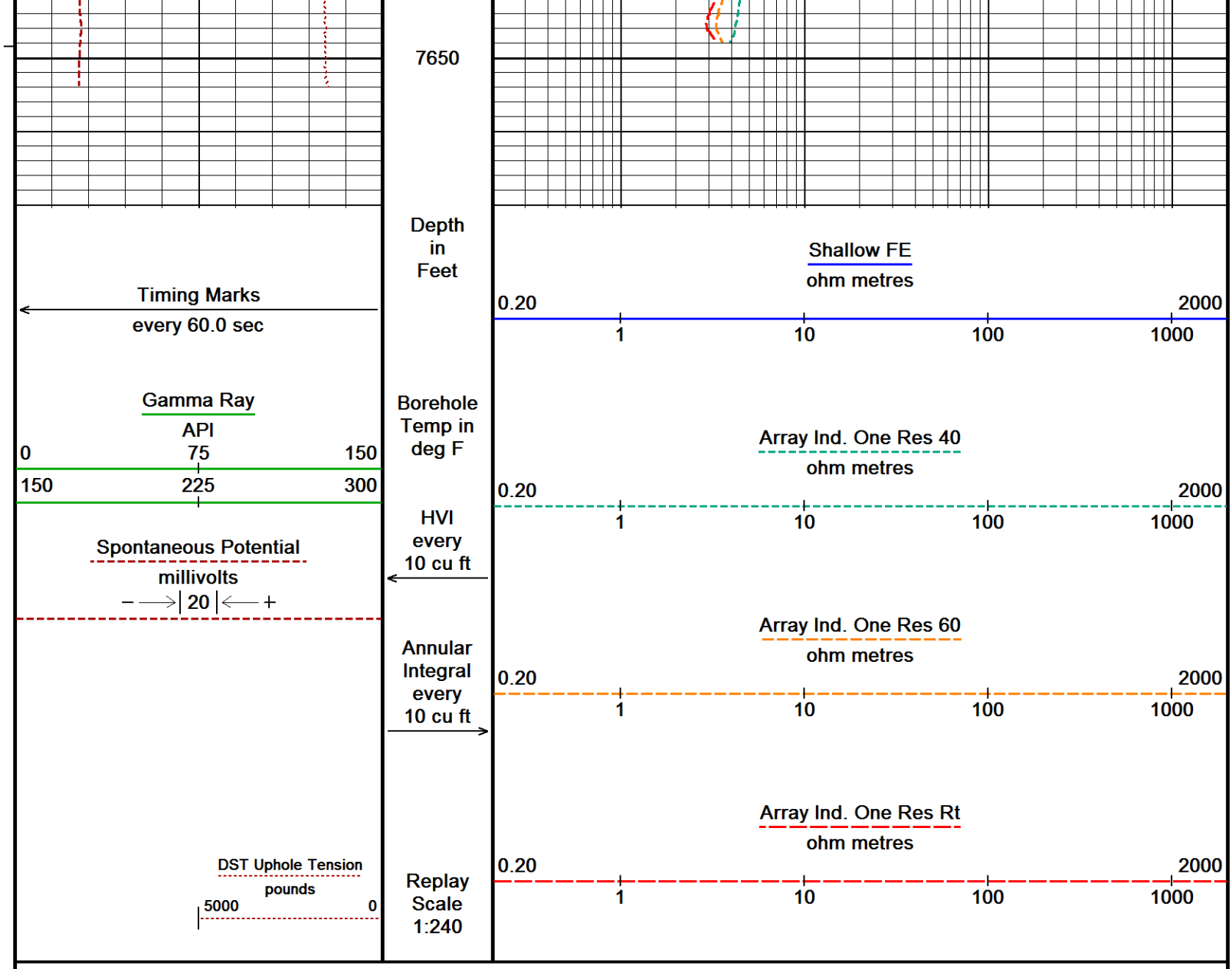
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 21-JAN-2019 17:43
Filename: C:\Minimus 18.03.9344\Data\GRAND MESA DIXIE #1-5\REPEAT PASS.dta
Recorded on 21-JAN-2019 11:39
System Versions: Logged with 18.03.9344 Plotted with 18.03.9344

Depth
in
Feet

Shallow FE


Feet
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
150
225
300
Spontaneous Potential
millivolts
– 20 +
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
ohm metres
0.20
2000
1
10
100
1000
Array Ind. One Res 40
Array Ind. One Res 60
Array Ind. One Res Rt
7300
100
163°
7350
165°
7400


168°
7450
167°
7500
166°
7550
167°
7600
TD
Spontaneous Potential
Gamma Ray
DST Uphole Tension
FR
FR
FR
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
FR
FFR



Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 21-JAN-2019 17:43
Filename: C:\Minimus 18.03.9344\Data\GRAND MESA DIXIE #1-5\REPEAT PASS.dta
Recorded on 21-JAN-2019 11:39
System Versions: Logged with 18.03.9344 Plotted with 18.03.9344

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 18.03.9344\Data\GRAND MESA DIXIE #1-5\MAIN PASS.dta

General Constants All 000

Last Edited on 21-JAN-2019,11:02

General Parameters		
Mud Resistivity	0.600	ohm-metres
Mud Resistivity Temperature	100.000	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. Two Res Rt	

RWA Constant A	0.620
RWA Constant M	2.150
SW/APOR Tool Source	0.000

Down-hole Tension Calibration SMS 0

Field Calibration on 21-JAN-2019 10:51

Reading No	Measured	Calibrated (lbs)
1	15761.00	0.00
2	17196.25	527.00

SP Calibration MCG-D.K 443

Field Calibration on 10-DEC-2018 15:37

	Measured	Calibrated (mV)
Reference 1	100.8	99.9
Reference 2	-98.4	-99.9

High Resolution Temperature Calibration MCG-D.K 443

Field Calibration on 12-OCT-2018,05:20

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	212.00	212.00

High Resolution Temperature Constants MCG-D.K 443

Last Edited on 12-OCT-2018,05:20

Pre-filter Length	11

Gamma Calibration MCG-D.K 443

Field Calibration on 18-JAN-2019 15:28

	Measured	Calibrated (API)
Background	192	135
Calibrator (Gross)	841	591
Calibrator (Net)	648	456

Gamma Calibration Tolerances MCG-D.K 443

		1.40	1.475	1.55	
Ratio	1.422				Counts/API

Gamma Constants MCG-D.K 443

Last Edited on 20-JAN-2019,21:10

Gamma Calibrator Number	MCGGRCC141	
GRC-M Calibrator Jig in Use?	NO	
Inactive Background Jig in Use?	NO	
Mud Density	1.11	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Potassium Equivalence	Chloride	
K Mud Concentration	0.00	%

Micro Normal and Micro Inverse Calibration MMR-B.A 91

Base Calibration on 18-JAN-2019 12:24
Field Check on 18-JAN-2019 14:09

	Resistor 1 (ohm)	Resistor 2 (ohm)
	10.0	50.0

Base Calibration

	Measured		Calibrated (ohm-m)	
Micro Normal	10.2	49.8	5.1	25.6
Micro Inverse	9.9	49.4	3.4	16.9

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	93.8	93.8
Micro Inverse	62.3	62.3

Micro Normal & Micro Inverse Calibration Tolerance MMR-B.A 91

Micro Normal Res. 1	10.2	-5%	10.0	+5%	ohm	Micro Normal Res. 2	49.8	-5% 50.0 +5% ohm
Micro Inverse Res. 1	9.9	-5%	10.0	+5%	ohm	Micro Inverse Res. 2	49.4	-5% 50.0 +5% ohm
Micro Normal Base Check	93.8	-2%	93.40	+2%	ohm-m			
Micro Inverse Base Check	62.3	-2%	62.27	+2%	ohm-m			
Micro Normal Field Check	93.8	-2%	93.8	+2%	ohm-m			
Micro Inverse Field Check	62.3	-2%	62.3	+2%	ohm-m			

Micro Normal and Micro Inverse Constants MMR-B.A 91

Last Edited on 13-APR-2018,05:04

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-B.A 91

Base Calibration on 18-JAN-2019 14:14
Field Calibration on 18-JAN-2019 14:17

Base Calibration

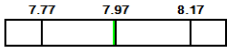
Reading No	Measured	Calibrator Size (in)
1	14078	5.98
2	17477	7.97
3	20615	9.86
4	24868	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.96	7.97

Caliper Calibration Tolerances MMR-B.A 91

Short Arm Field Cal. 7.96 in



Micro-Resistivity Caliper Constants MMR-B.A 91

Sonde Configuration	Resistivity Mode

Micro Laterolog Calibration MMR-B.A 91

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

Resistor 1 (ohm)	Resistor 2 (ohm)
0.0	0.0

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-B.A 91

Pad Type	6 in Solid Nylon B23059	
Standoff Offset	0.0000	inches
Micro Laterolog K Factor	0.0128	
Micro Laterolog Rm K Factor	N/A	

Mudcake Thickness Correction Constants

Mud Cake Source	Constant Value	
Mud Cake Thickness	0.4000	inches
Mud Cake Thickness Caliper		
Mud Cake Resistivity	0.1500	ohm-m
Mud Cake Resistivity Temp.	20.00	Degrees C
Mud Cake Resistivity Source	Constant Value	
Temp. for Rmc Corr.	MCG External Temperature	

Neutron Calibration MDN-B.A 292

Base Calibration on 07-JAN-2019,13:23
Field Check on 18-JAN-2019 15:36

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2910	91	3714	110
Ratio	31.871		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	2207	3209
Ratio	0.688	

Field Check

Calibrated (cps)	
2196	3210

Ratio	0.684

Neutron Calibration Tolerances MDN-B.A 292

Ratio	31.871	-5% 33 +5%
Base Check	0.688	0.65 0.7 0.75
Field Check	0.684	0.668 0.688 0.708

Neutron Constants MDN-B.A 292

Last Edited on 20-JAN-2019,21:11

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	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-JAN-2019 15:43
Field Check on 19-JAN-2019 15:50

	Resistor 1 (ohm)	Resistor 2 (ohm)
	0.0	1000.0

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	962.9	126.8
Base Check		281.6
Field Check		281.6

FE Calibration Tolerances MFE-B.J 352

Reference 2	962.9	-3% 980.0 +3%	ohm
Base Check	281.6	-2% 277.0 +2%	ohm-m
Field Check	281.6	-2% 281.6 +2%	ohm-m

FE Constants MFE-B.J 352

Last Edited on 20-JAN-2019,21:12

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-C.K 319

Last Edited on 08-JUL-2018,09:57

Maximum Boundary Contrast	70.00	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
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

Waveform Discriminator Filter	Not Applied	
Semblance Window Width	150.00	micro-sec
Semblance Processing Enabled	Yes	
Tracking Boxes Enabled In Processing	Yes	

Induction Calibration MAI-B.J 390

Factory Loop Calibration 07-JAN-2019 10:28
Field Check on 19-JAN-2019 15:38

Factory Loop Calibration

High Conductivity Reference Resistor	3.3	ohm
Low Conductivity Reference Resistor	333.3	ohm

	Measured Signal (unitless)		Reference Conductivity (mmho/m)		Calibration	
Array	Low	High	Low	High	Gain	Offset
1 (near)	16.8	458.6	9.3	966.2	2.166	-27.2
2	6.3	377.7	7.6	821.4	2.191	-6.2
3	3.8	258.6	5.2	566.0	2.200	-3.0
4 (far)	1.9	132.3	2.6	279.2	2.121	-1.4

Array Temperature	77.9	Deg F

Tool Checks

	Factory Reference (mmho/m)		Before Survey (mmho/m)	
Array	Low	High	Low	High
1 (near)	13.2	3960.1	13.0	3959.2
2	29.9	3563.5	29.8	3563.3
3	27.9	3061.4	27.8	3061.3
4 (far)	19.7	2087.8	19.7	2088.0

Array Temperature	64.9	58.9	Deg F

Induction Check Tolerances MAI-B.J 390

Low Array 1	13.0	11.7	13.2	14.7	mmho/m	High Array 1	3959.2	-0.5%	3960.1	+0.5%	mmho/m
Low Array 2	29.8	28.4	29.9	31.4	mmho/m	High Array 2	3563.3	-0.5%	3563.5	+0.5%	mmho/m
Low Array 3	27.8	26.4	27.9	29.4	mmho/m	High Array 3	3061.3	-0.5%	3061.4	+0.5%	mmho/m
Low Array 4	19.7	18.2	19.7	21.2	mmho/m	High Array 4	2088.0	-0.5%	2087.8	+0.5%	mmho/m

Induction Constants MAI-B.J 390

Last Edited on 20-JAN-2019,21:12

Induction Model	RtAP-WBM	
Borehole Correction Constants		
Tool Centred	No	
Hole Size Source	Density Caliper	
Hole Size Constant Value	N/A	inches
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
Rm Source	Global Value: Temperature Corrected	
Temp. for Rm Corr.	MCG External Temperature	
Borehole Correction Method	Default	
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
Symmetrised Receiver Gains		
Receiver 1	1.00	
Receiver 2	1.00	
Receiver 3	1.00	
Receiver 4	1.00	
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	

High Resolution Temperature Calibration MAI-B.J 390

Field Calibration on 15-MAY-2018,12:48

	Measured	Calibrated(Deg F)
Lower	10.00	10.00
Upper	100.00	100.00

High Resolution Temperature Constants MAI-B.J 390

Last Edited on 06-MAR-2018,13:01

Pre-filter Length	11

Caliper Calibration MRD-C.A.216

Base Calibration on 18-JAN-2019,17:06

Caliper Calibration MPD-C.A 216

Field Calibration on 18-JAN-2019 17:08

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16199	3.99
2	24624	5.98
3	33344	7.97
4	41632	9.86
5	50912	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.93	7.97

Caliper Calibration Tolerances MPD-C.A 216

		7.57	7.97	8.37	
Long Arm Field Cal.	7.93				in

Photo Density Calibration MPD-C.A 216

Base Calibration on 18-JAN-2019 16:36

Field Check on 18-JAN-2019 16:51

Density Calibration

Base Calibration	Measured Near	Measured Far	Calibrated (sdu) Near	Calibrated (sdu) Far
Background	993	1180		
Reference 1	46604	22300	59556	30836
Reference 2	18380	2158	24941	2541
Field Check at Base	993.3	1179.8		
Field Check	994.1	1177.2		

PE Calibration

Base Calibration	WS	Measured WH	Ratio	Calibrated Ratio
Background	179	890		
Reference 1	19088	46448	0.415	0.371
Reference 2	5249	18271	0.292	0.272
Field Check at Base	179.3	890.5		
Field Check	183.2	889.7		

Photo Density Calibration Tolerances MPD-C.A 216

Near Density Ratio	2.62	-5%	2.52	+5%		
PE Calibration	0.115	0.089	0.110	0.131		
Far Density Ratio	21.59	-5%	21.00	+5%		
Near Den. Field Check	994.1	-3%	993.3	+3%		
PE WS Field Check	183.2	-6%	179.3	+6%		
Far Den. Field Check	1177.2	-3%	1179.8	+3%		
PE WH Field Check	889.7	-6%	890.5	+6%		

Density Constants MPD-C.A 216

Last Edited on 20-JAN-2019,21:12

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	1.11	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	Applied
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

DOWNHOLE EQUIPMENT

C:\Minimus 18.03.9344\Data\GRAND MESA DIXIE #1-5\MAIN PASS.dta

Cablehead, 11 pin
CBH-CB 264 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Swivel Head Adaptor
SHA-J.B 595 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

Compact Comms Gamma
MCG-D.K 443 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-Resistivity
MMR-B.A 91 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

Compact Neutron
MDN-B.A 292 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper
MPD-C.A 216 LG: 9.59 ft WT: 90.4 lb OD: 2.913 in

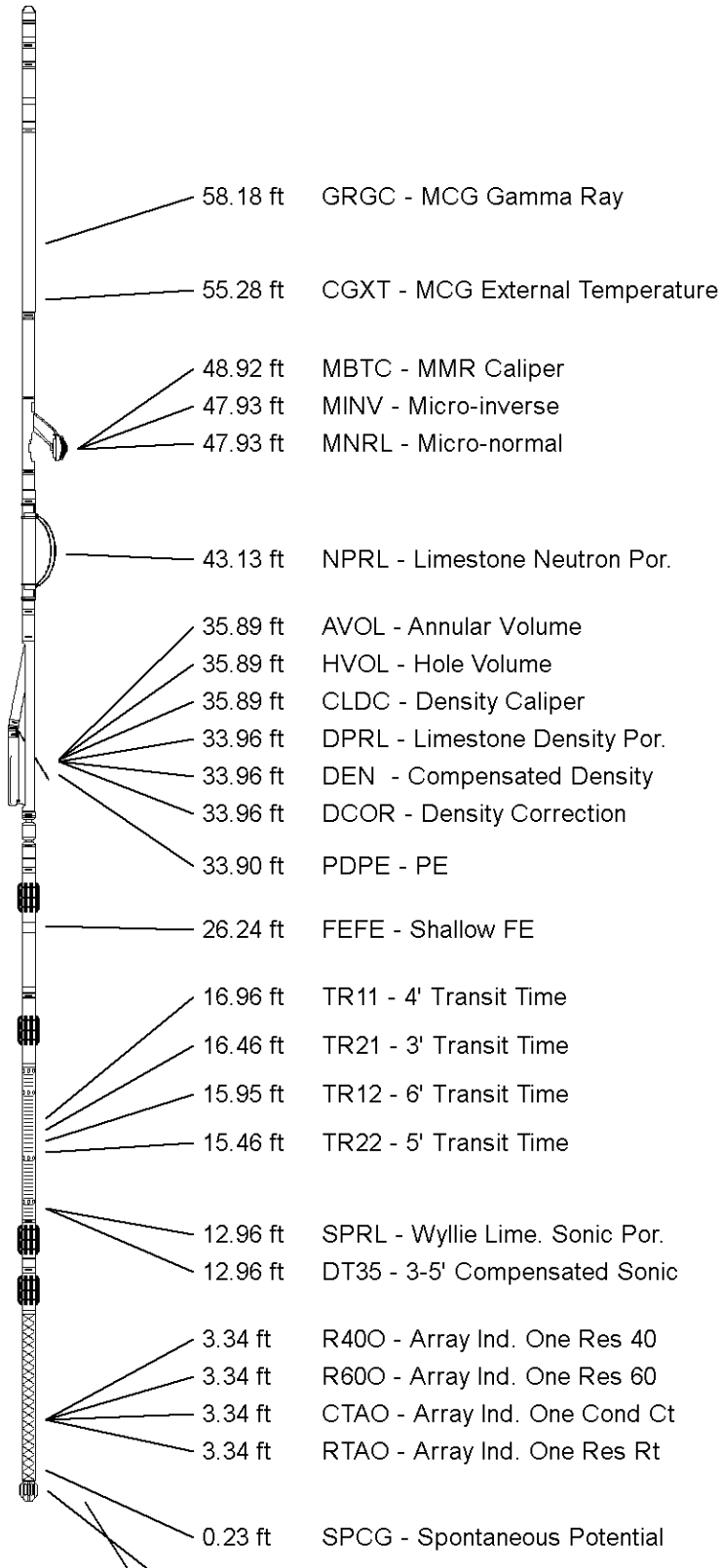
Compact Knuckle Joint
SKJ-E.B 733 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

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

Compact Sonic
MSS-C.K 319 LG: 12.52 ft WT: 72.8 lb OD: 2.244 in

Compact Induction
MAI-B.J 390 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 68.16 ft Weight: 526.9 lb



Tool Zero (0.13ft from bottom)

-0.13 ft SMTU - DST Uphole Tension

All measurements relative to tool zero.

COMPANY	GRAND MESA OPERATING COMPANY
WELL	DIXIE #1-5
FIELD	WILDCAT
PROVINCE/COUNTY	LINCLON
COUNTRY/STATE	U.S.A. / COLORADO

Elevation Kelly Bushing	5096 feet		First Reading	7634.00	feet
Elevation Drill Floor	5094 feet		Depth Driller	7635.00	feet
Elevation Ground Level	5077 feet		Depth Logger	7638.00	feet

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COMPANY	GRAND MESA OPERATING COMPANY
WELL	DIXIE #1-5
FIELD	WILDCAT
PROVINCE/COUNTY	LINCLON
COUNTRY/STATE	U.S.A. / COLORADO
LOCATION	1057' FSL & 1678' FEL
SEC 5 TWP 11S RGE 54W	Other Services
Latitude	39.11408 MPD/MDN
Longitude	-103.46727 MSS
API Number	05-073-06758 MML
Permanent Datum GL, Elevation 5077 feet	Elevations: feet
Log Measured From KB, 19.00 feet above Permanent Datum	KB 5096.00
	DF 5094.00
Drilling Measured From KB	GL 5077.00
Date	20-JAN-2019
Run Number	ONE
Service Order	17876-235225672
Depth Driller	7635.00 feet
Depth Logger	7638.00 feet
First Reading	7634.00 feet
Last Reading	474.00 feet
Casing Driller	480.00 feet
Casing Logger	474.00 feet
Bit Size	7.875 inches
Hole Fluid Type	CHEMICAL
Density / Viscosity	9.30 lb/USg / 59.00 sec/qt
PH / Fluid Loss	11.00 / 6.40 ml/30Min
Sample Source	FLOWLINE
Rm @ Measured Temp	0.60 @100.0 ohm-m
Rmf @ Measured Temp	0.45 @100.0 ohm-m
Rmc @ Measured Temp	0.72 @100.0 ohm-m
Source Rmf / Rmc	CALC / CALC
Rm @ BHT	0.36 @169.0 ohm-m
Time Since Circulation	5 HOURS
Max Recorded Temp	169.00 deg F
Equipment / Base	13096 / LIB
Recorded By	BANDAR BINOSFUR
Witnessed By	GARET DINKEL

1 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 18.03.9344\Data\GRAND MESA DIXIE #1-5\MAIN PASS.dta
System Versions: Logged with 18.03.9344 Plotted with 18.03.9344

Plotted on 21-JAN-2019 17:43
Recorded on 21-JAN-2019 11:56

Timing Marks
every 60.0 sec

Depth In Feet

Array Ind. One Cond Ct
mmhos/metre
1000 750 500 250 0
2000 1750 1500 1250 1000

Gamma Ray
API
0 75 150
150 225 300

Borehole Temp in deg F

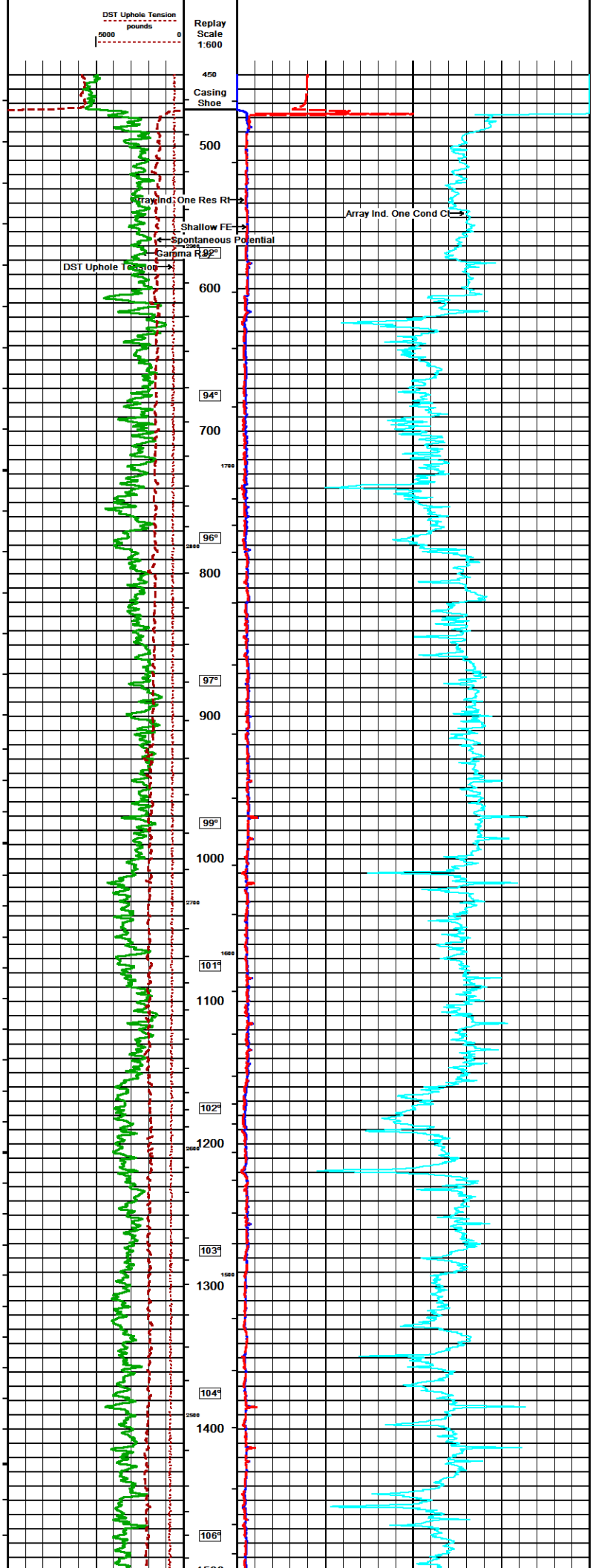
Spontaneous Potential
millivolts
- —>| 20 |<— +

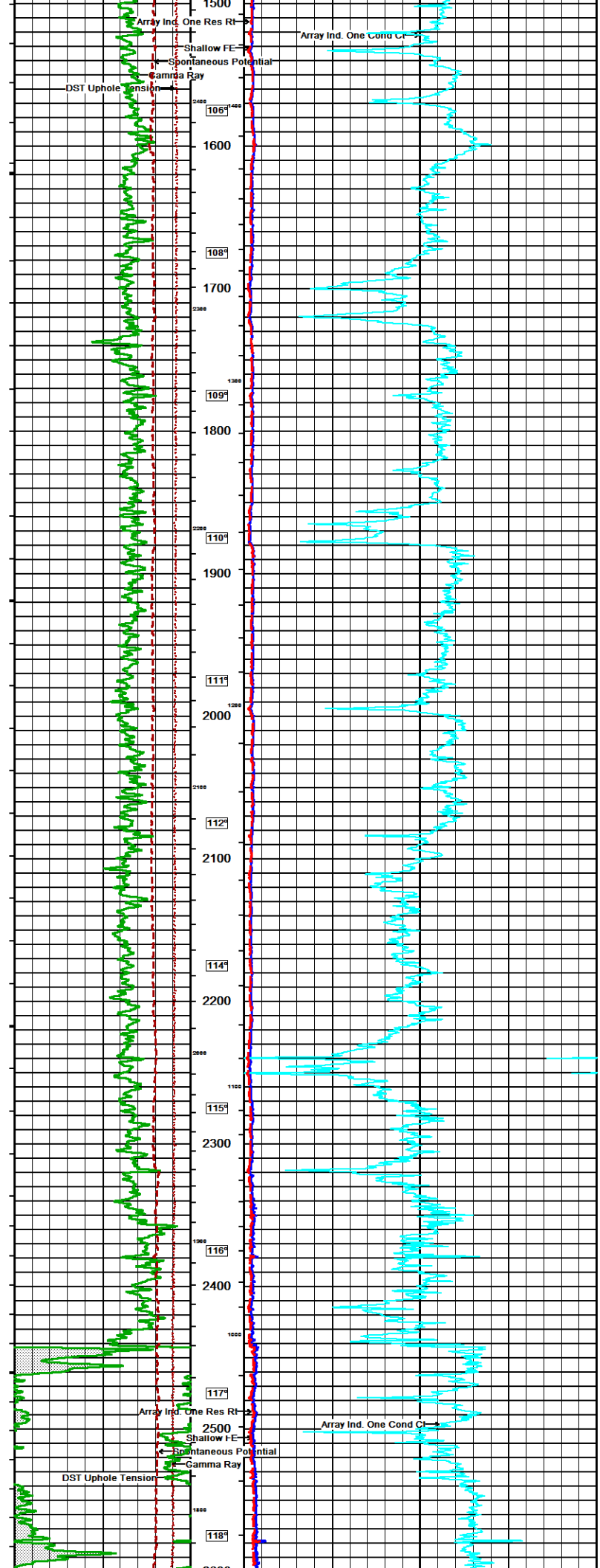
Shallow FE
ohm metres
0 25 50
0 250 500

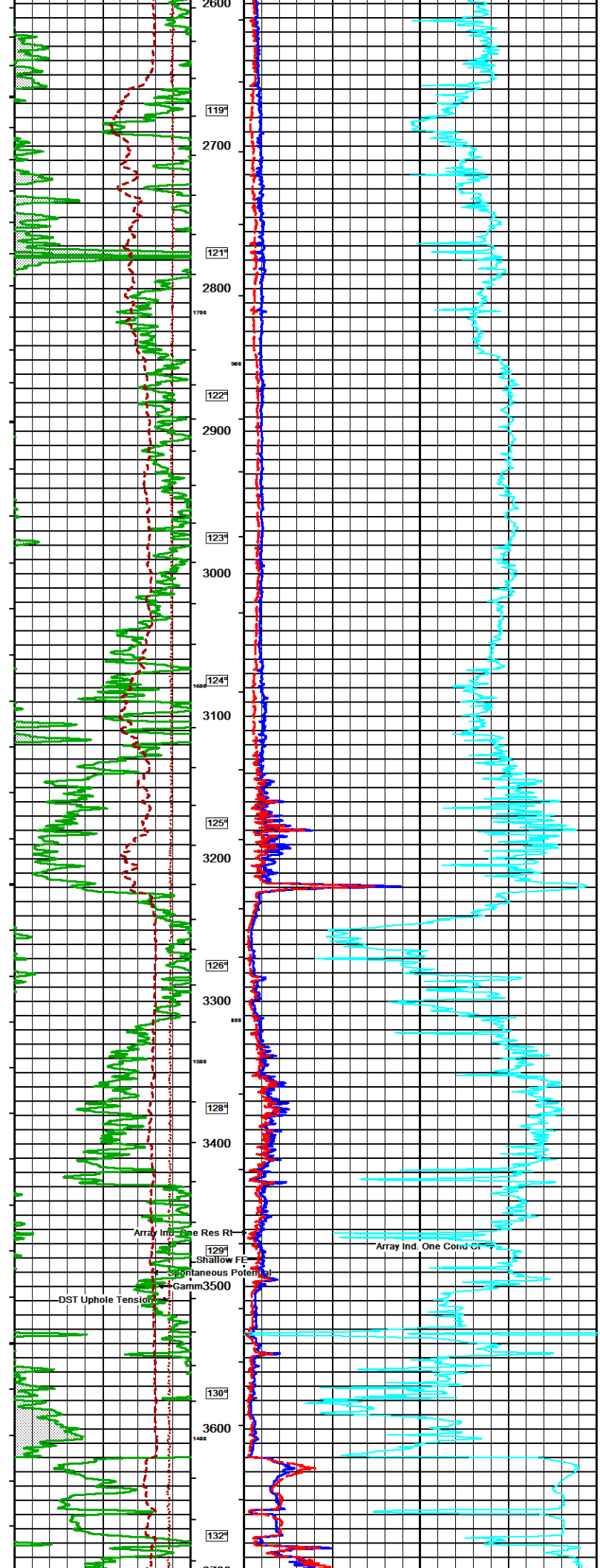
HVI every 10 cu ft

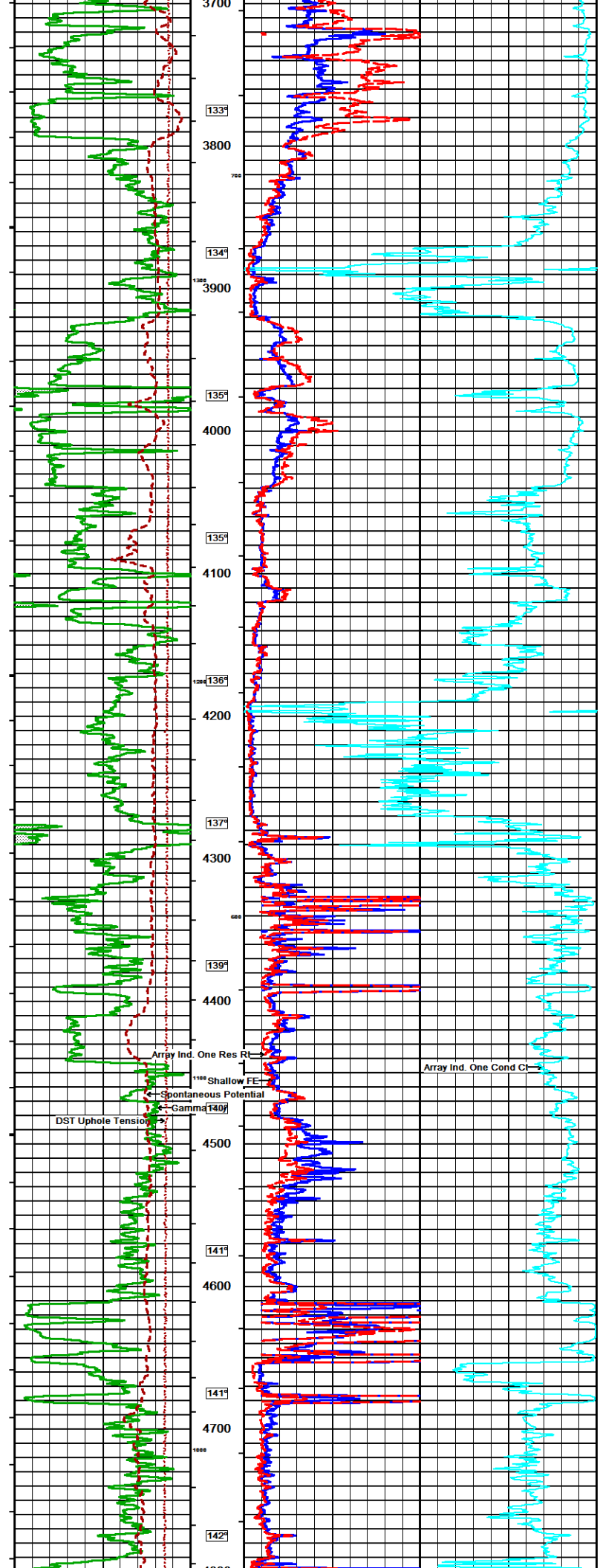
Annular Integral every 10 cu ft

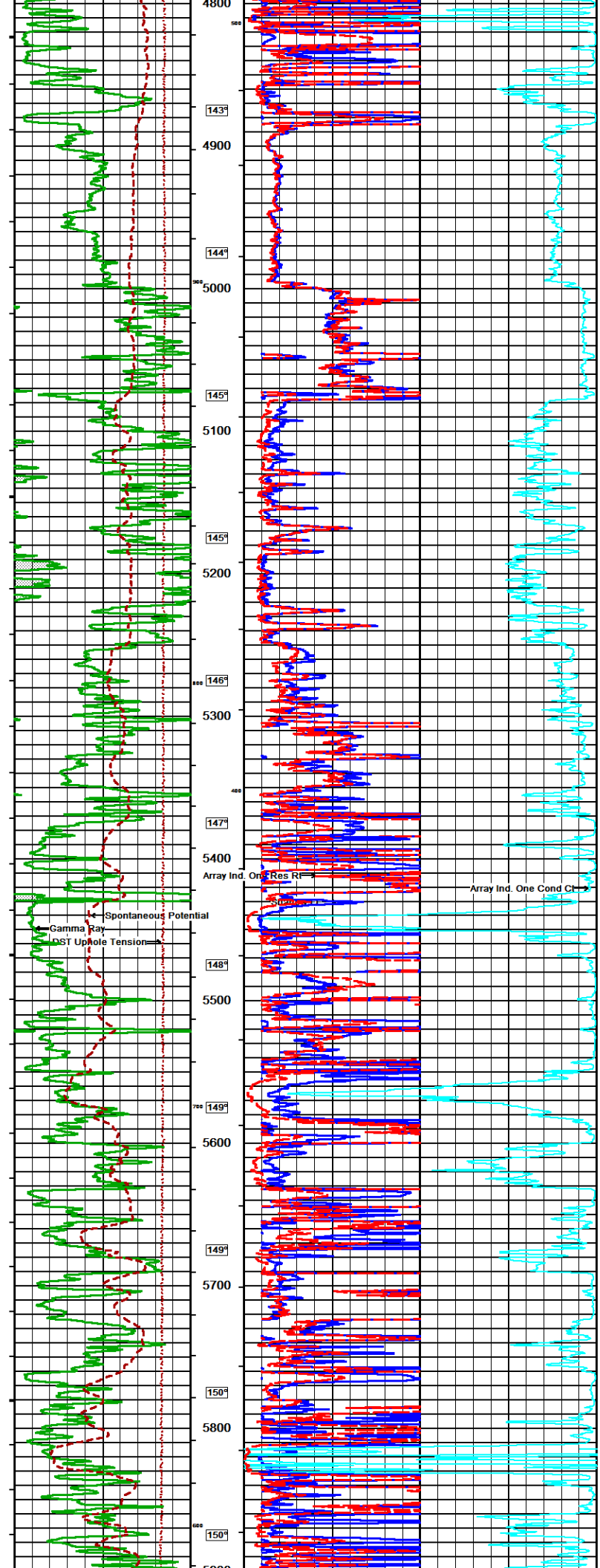
Array Ind. One Res Rt
ohm metres
0 25 50
0 250 500

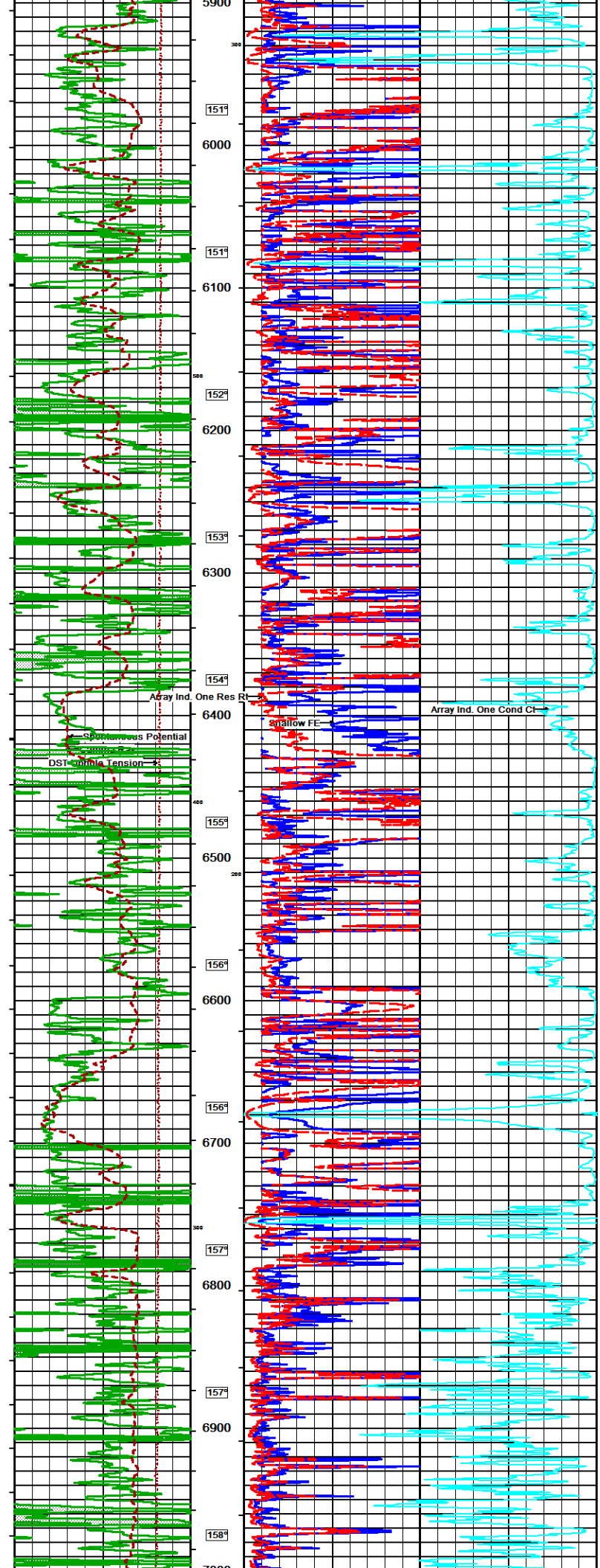

DST Uphole Tension
pounds
5000
0
Replay
Scale
1:600
450
Casing
Shoe
500
Array Ind. One Res Rt
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
Array Ind. One Cond Ct
600
94°
700
96°
800
97°
900
99°
1000
101°
1100
102°
1200
103°
1300
104°
1400
106°

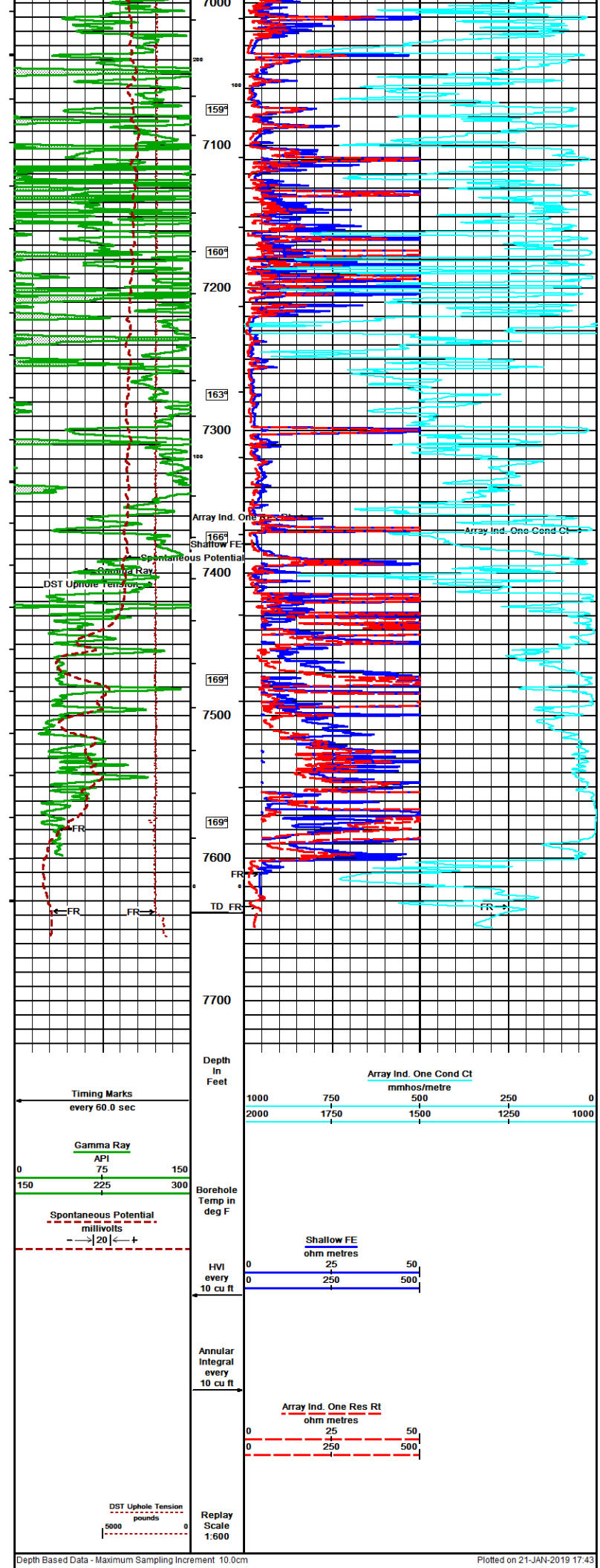

Array Ind. One Res RI
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
Array Ind. One Cond CI
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
106
108
109
110
111
112
114
115
116
117
118


2600
119°
2700
121°
2800
122°
2900
123°
3000
124°
3100
125°
3200
126°
3300
128°
3400
129°
3500
130°
3600
132°
Array Ind. One Res Rt
Shallow FE
Spontaneous Potential
Gamm
DST Uphole Tension
Array Ind. One Cond Ct


3700
133°
3800
134°
3900
135°
4000
135°
4100
136°
4200
137°
4300
139°
4400
Array Ind. One Res Rt
Shallow FE
Spontaneous Potential
Gamma
140°
DST Uphole Tension
4500
141°
4600
141°
4700
142°
Array Ind. One Cond Ct


4800
143°
4900
144°
5000
145°
5100
145°
5200
146°
5300
147°
5400
Array Ind. One Res Rt
Array Ind. One Cond Ct
Spontaneous Potential
Gamma Ray
DST Uphole Tension
148°
5500
149°
5600
149°
5700
150°
5800
150°


5900
6000
6100
6200
6300
6400
6500
6600
6700
6800
6900
7000
151°
152°
153°
154°
155°
156°
157°
158°
Array Ind. One Res Rt
Array Ind. One Cond Ct
Spontaneous Potential
DST Cable Tension



Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 21-JAN-2019 17:43

Filename: C:\Minimus 18.03.9344\Data\GRAND MESA DIXIE #1-5\MAIN PASS.dta Recorded on 21-JAN-2019 11:56
System Versions: Logged with 18.03.9344 Plotted with 18.03.9344

1 INCH MAIN

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