



Weatherford®

**ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG**

COMPANY				McCoy PETROLEUM CORPORATION			
WELL				MACK 'A' #1-1			
FIELD				WILDCAT			
PROVINCE/COUNTY				GRAY			
COUNTRY/STATE				U.S.A / KANSAS			
LOCATION				1980' FSL & 1980' FWL			
SEC 1	TWP 29S	RGE 29W	Other Services		MML		
Latitude	Longitude		MPD/MDN				
API Number		15-069-20505					
Permanent Datum GL, Elevation 2754 feet							
Log Measured From KB, 13.00 feet above Permanent Datum							
Drilling Measured From KB							
Date	27-MAR-2018				Elevations: feet		
Run Number	ONE				KB 2767.00		
Service Order	4558-209306005				DF 2765.00		
Depth Driller	6400.00				GL 2754.00		
Depth Logger	6398.00						
First Reading	6395.00						
Last Reading	1751.00						
Casing Driller	1752.00						
Casing Logger	1751.00						
Bit Size	7.875				feet		
Hole Fluid Type	CHEMICAL				inches		
Density / Viscosity	9.35 lb/USg		58.00 CP				
PH / Fluid Loss	10.00		7.60 ml/30Min				
Sample Source	FLOWLINE						
Rm @ Measured Temp	0.98 @ 75.0				ohm-m		
Rmf @ Measured Temp	0.78 @ 75.0				ohm-m		
Rmc @ Measured Temp	1.18 @ 75.0				ohm-m		
Source Rmf / Rmc	CALC		CALC				
Rm @ BHT	0.60 @122.0		ohm-m				
Time Since Circulation	5 HOURS						
Max Recorded Temp	122.00		deg F				
Equipment / Base	13244		LIB				
Recorded By	ADAM SILL						
Witnessed By	DAVID WILLIAMS						

BOREHOLE RECORD					Last Edited: 27-MAR-2018 04:53
Bit Size inches		Depth From feet		Depth To feet	
7.875		1752.00		6400.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	8.625	0.00	1752.00	24.00	

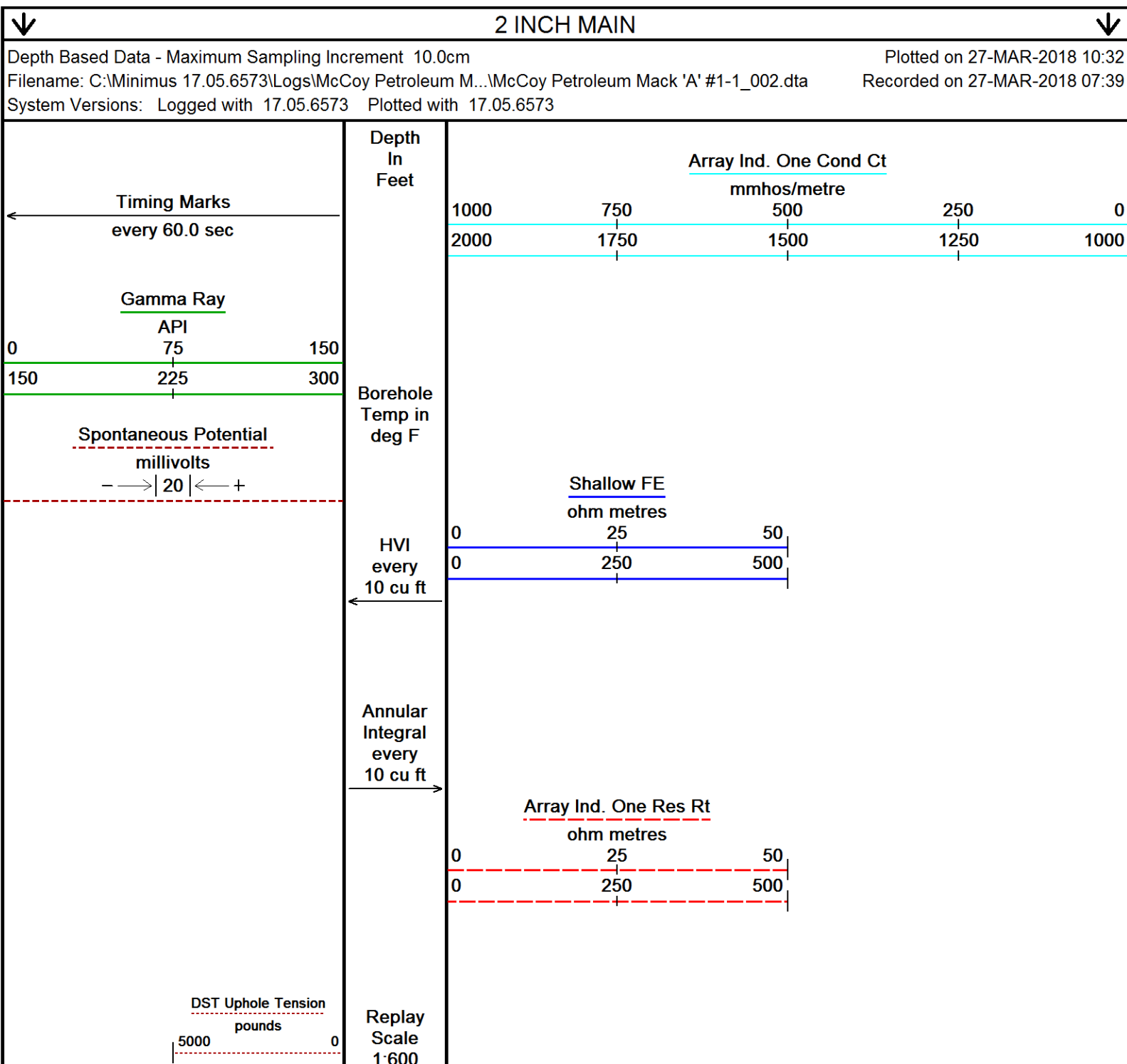
REMARKS
- SOFTWARE ISSUE: WLS 17.05.6573.
- RUN ONE: MCG, MML, MDN, MPD, MFE, MAI RUN IN COMBINATION. - HARDWARE: DUAL BOWSPRING USED ON MDN. 0.5 INCH STANDOFF USED ON MFE. 0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY.
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.
- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 1655 CU.FT.
- ANNULAR HOLE VOLUME WITH 4.5 INCH PRODUCTION CASING FROM TD TO 3200 FEET: 695 CU.FT.
- RIG: STERLING #5

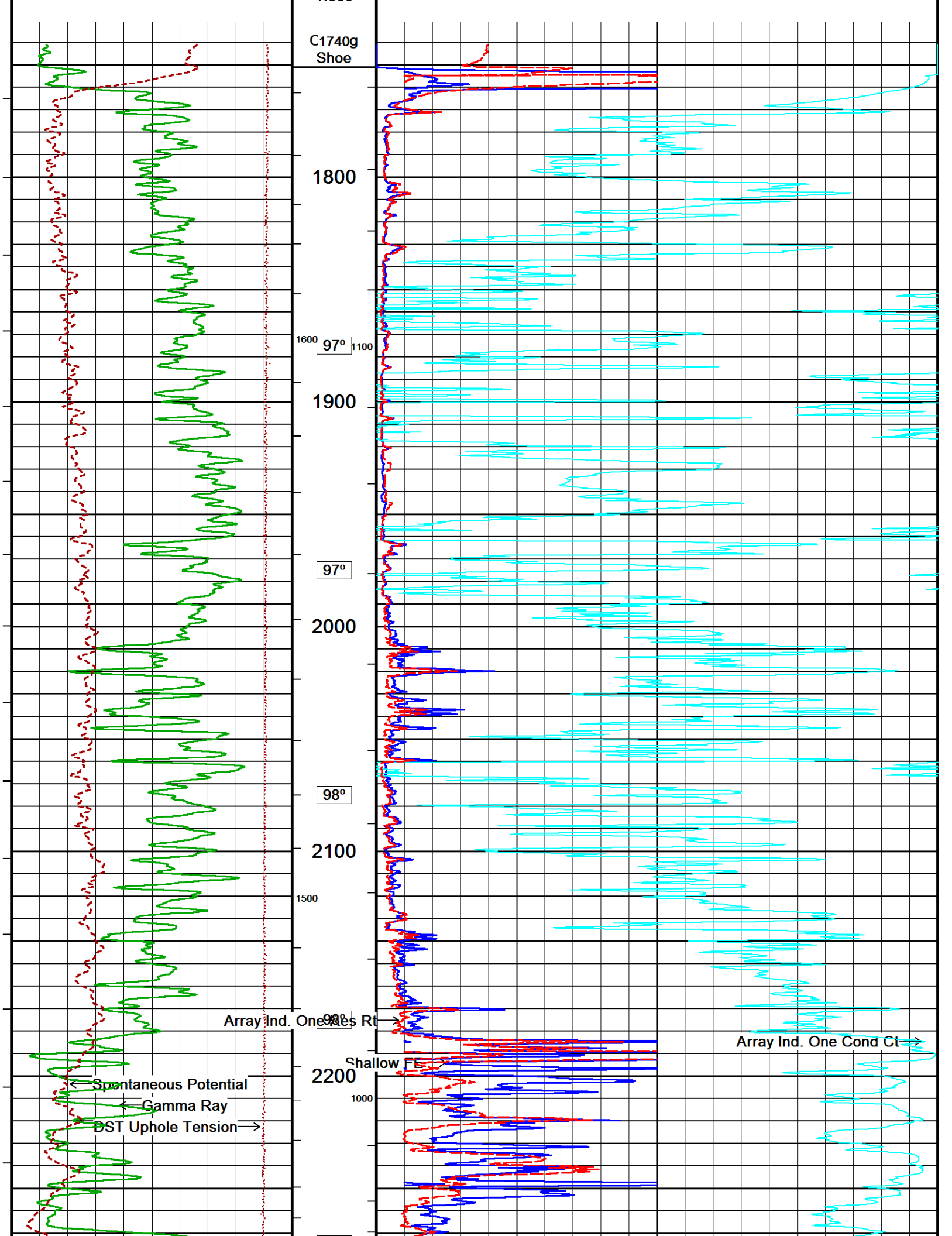
RIS: OPERING #0.

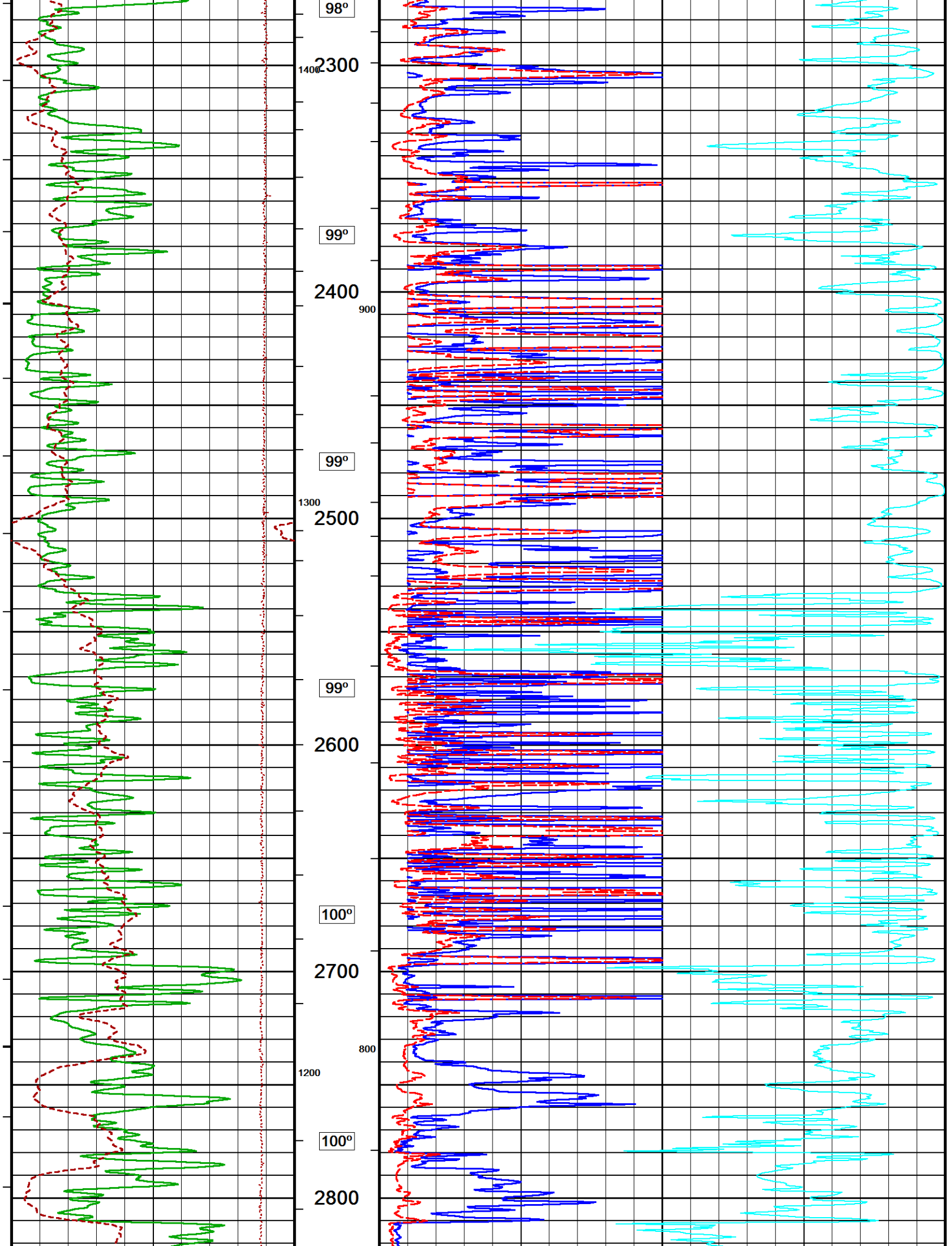
- ENGINEER: A. SILL.

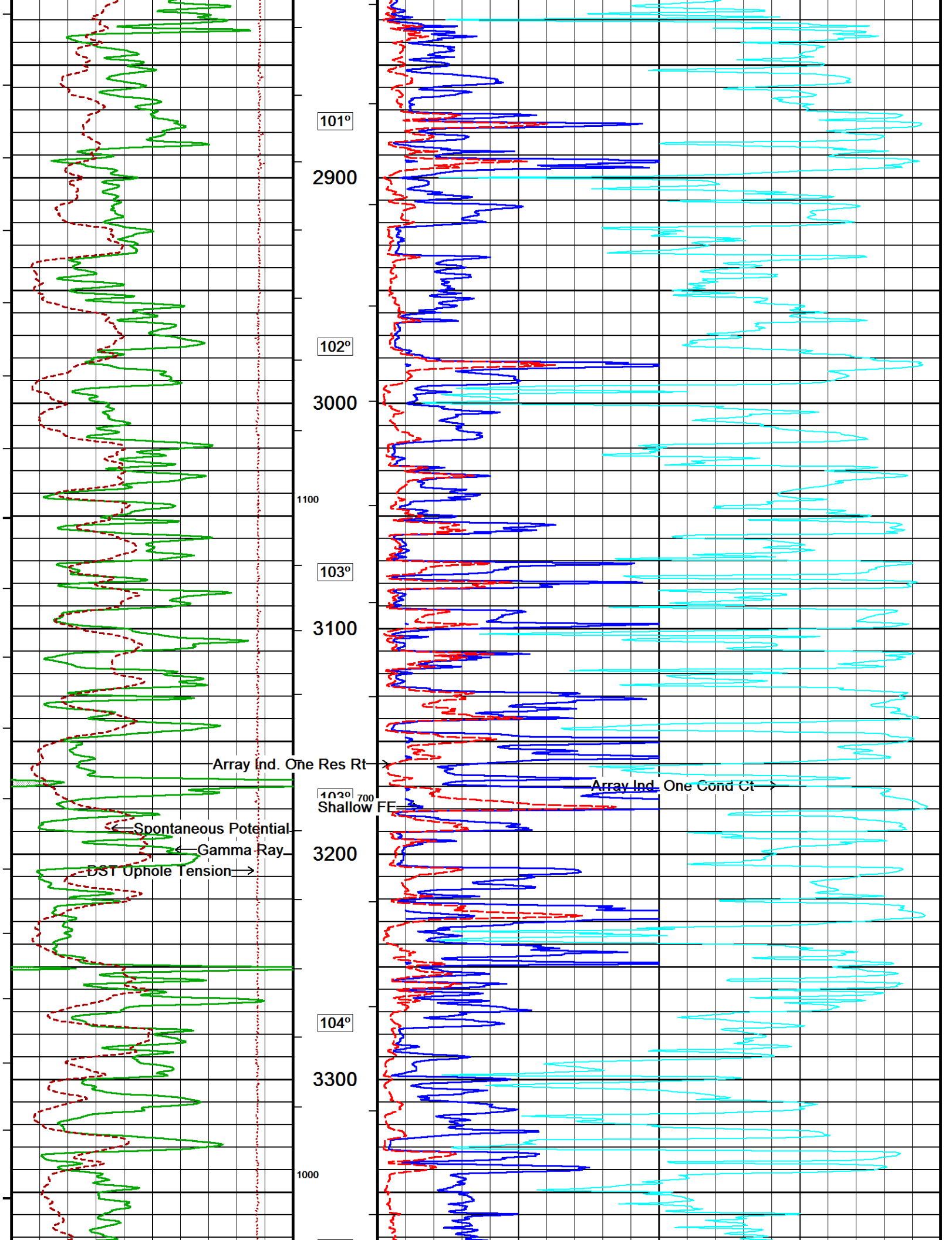
- OPERATOR: B. TOVAR, B. COPELAND.

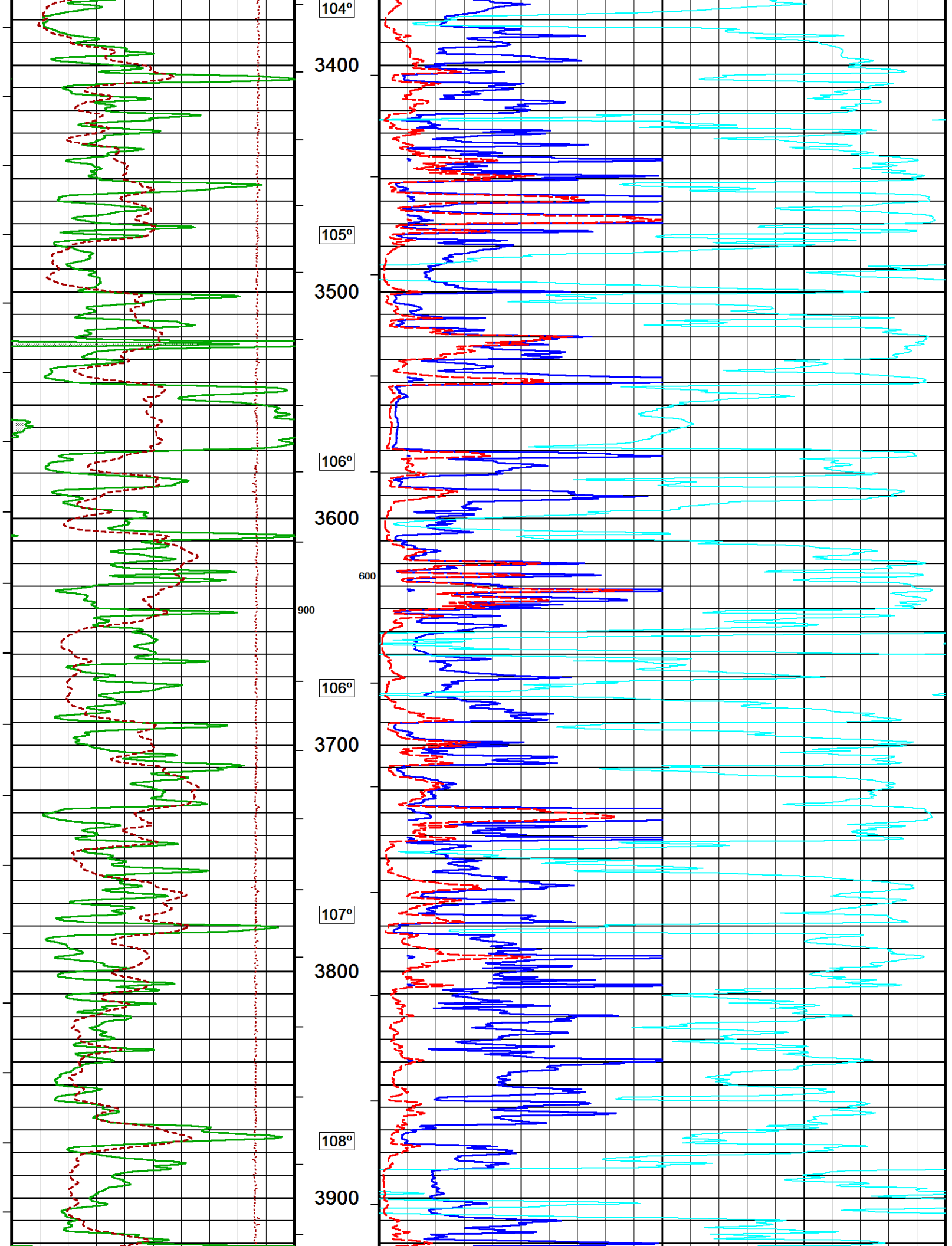
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will 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.

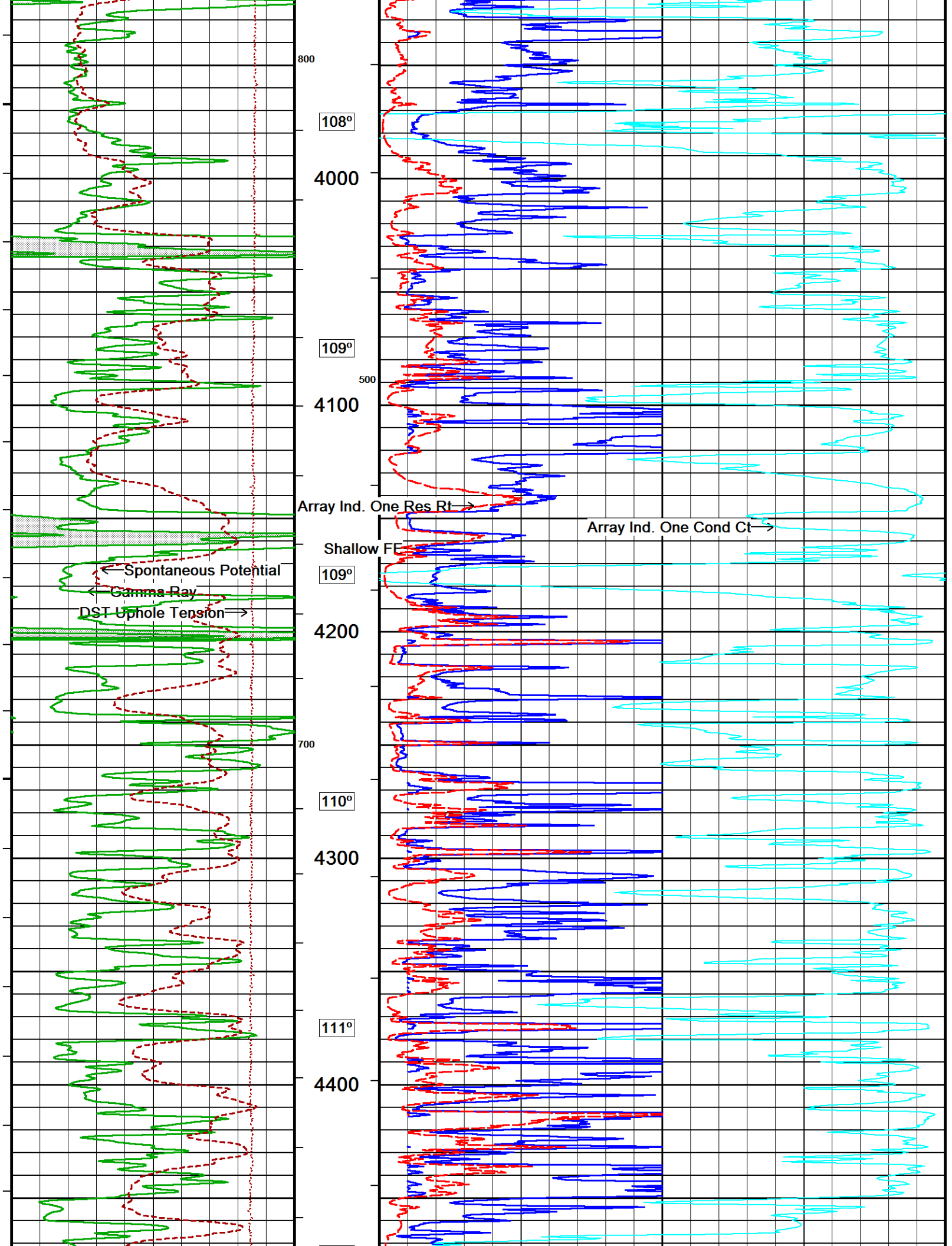


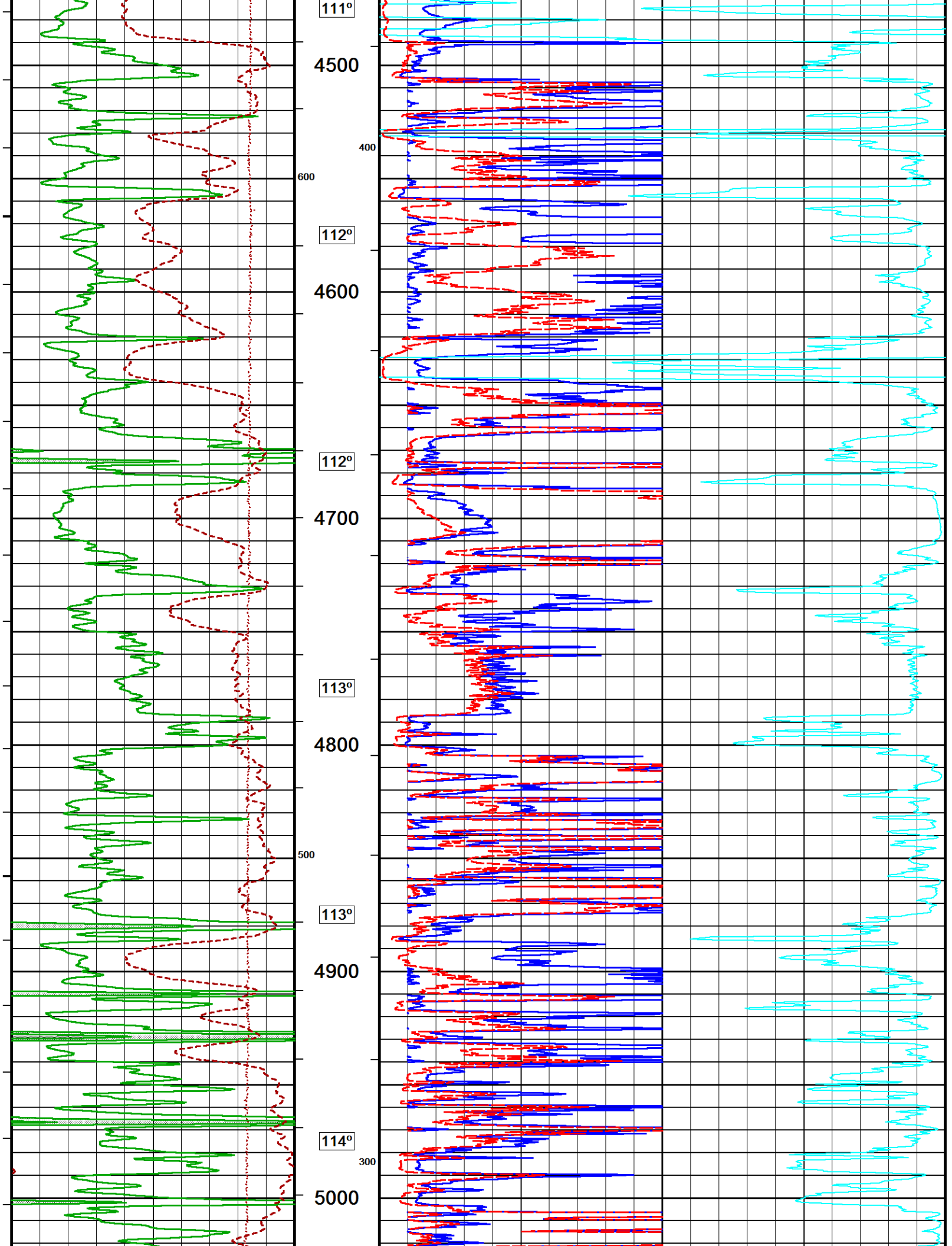


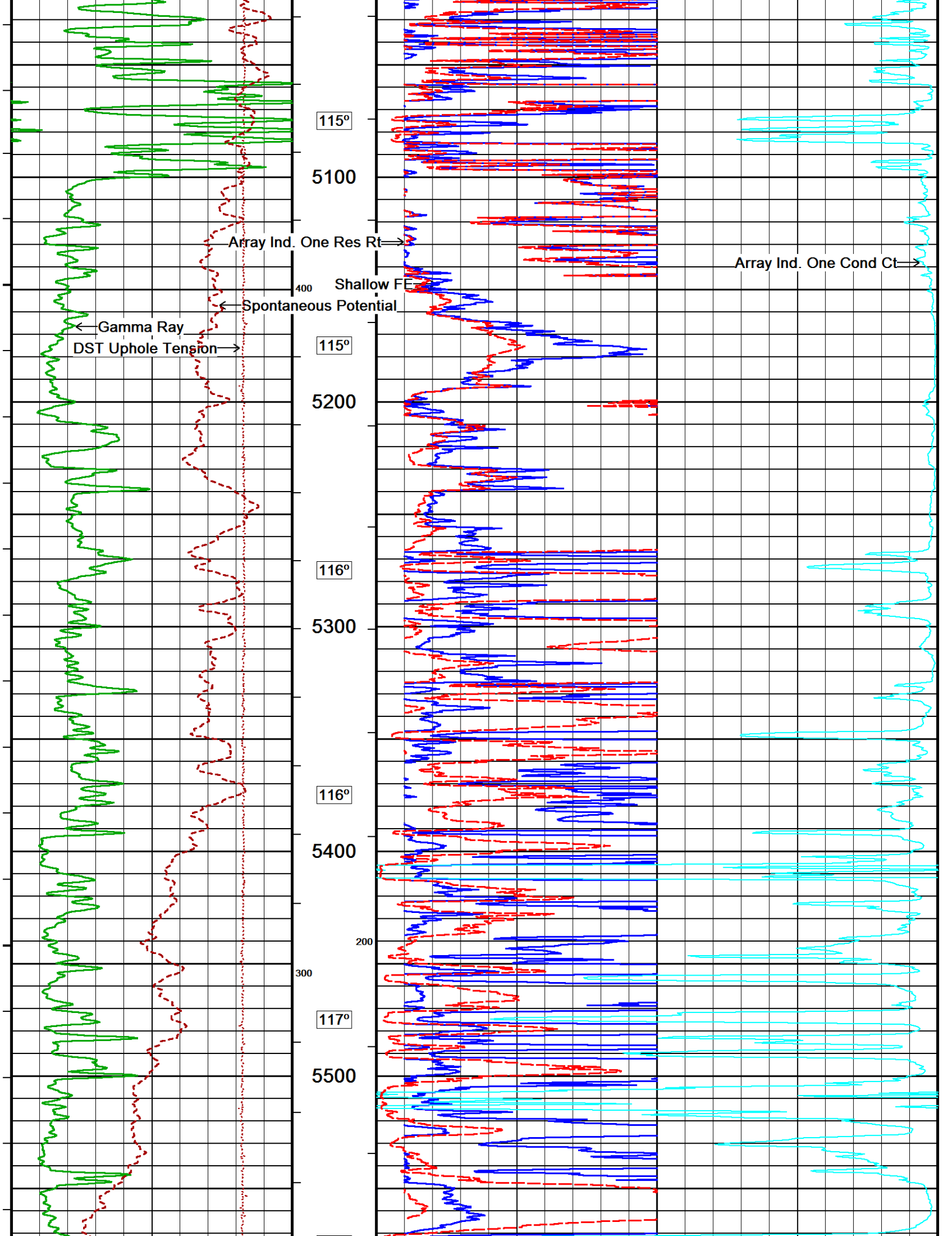


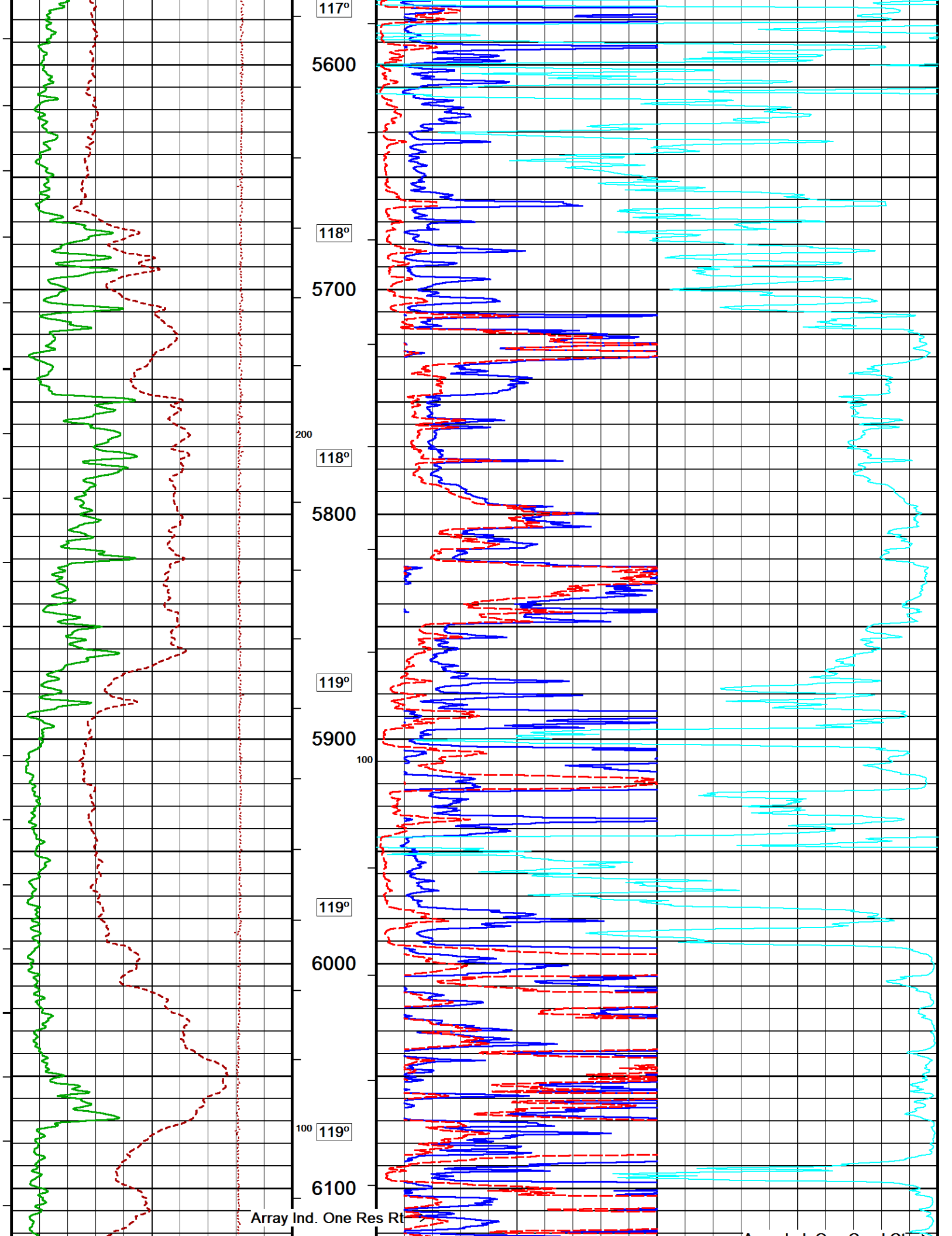


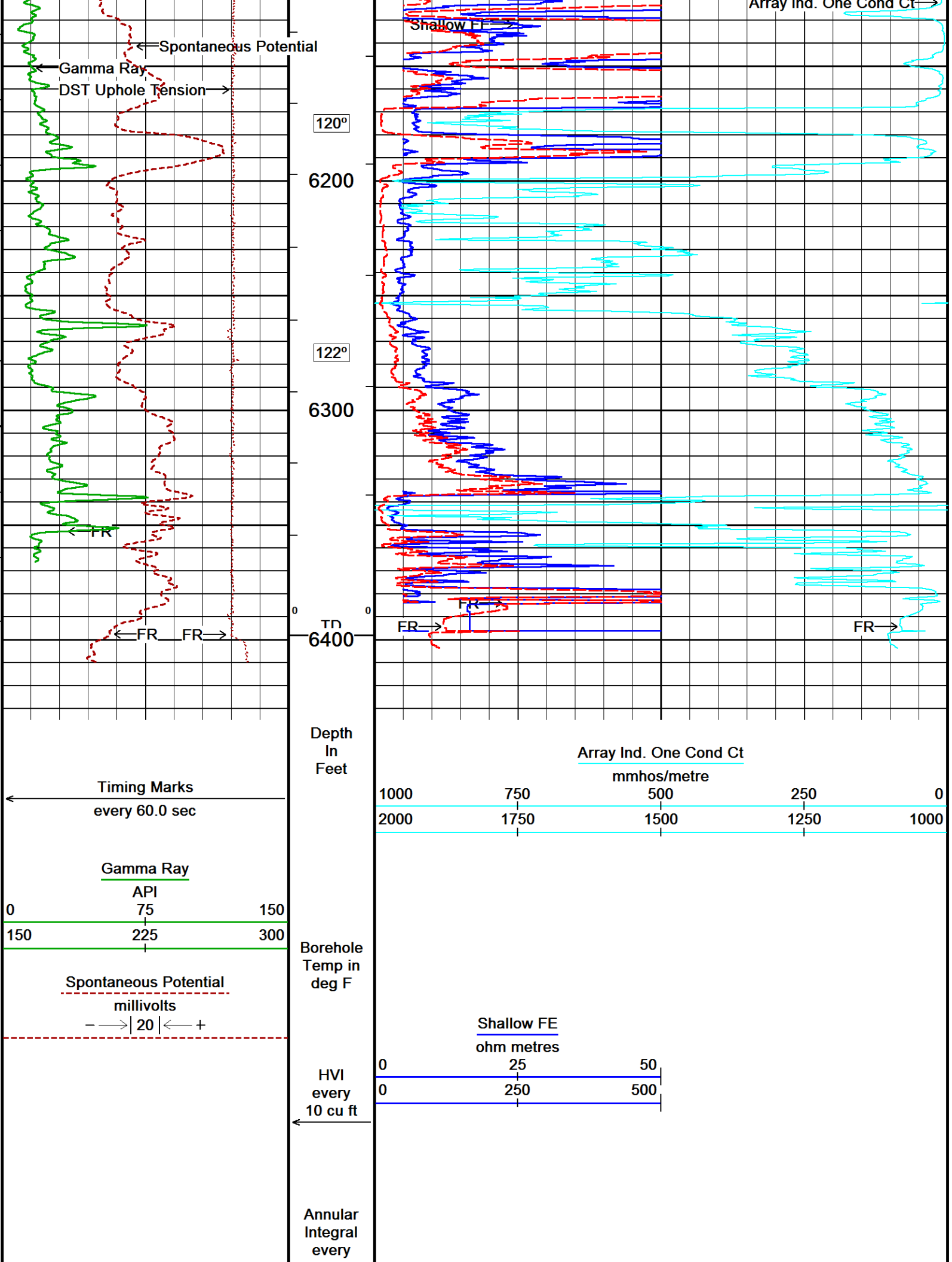


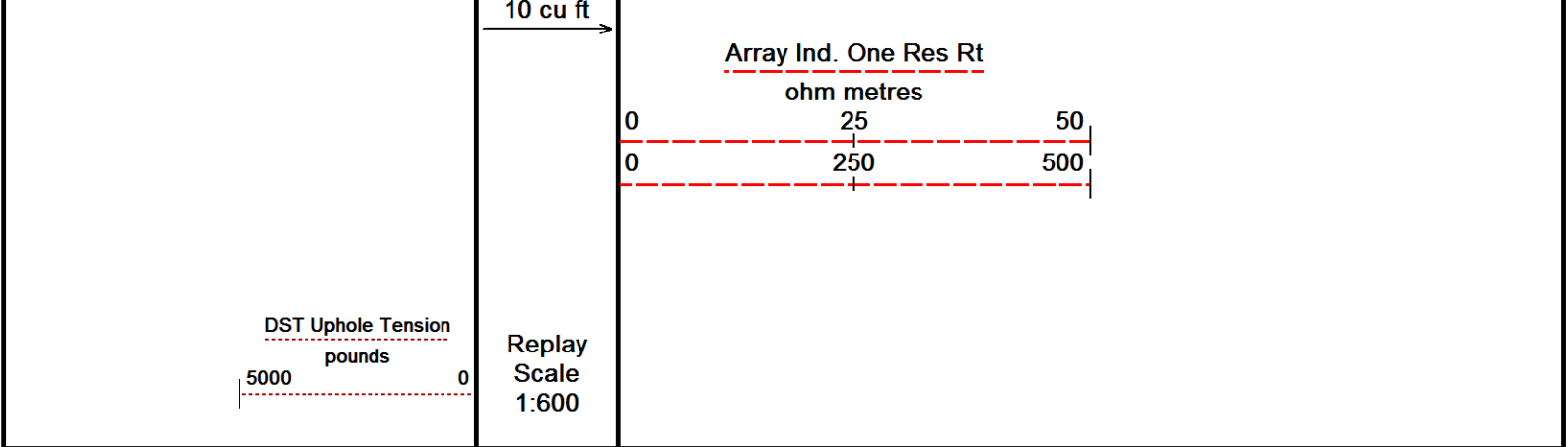












Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 17.05.6573\Logs\McCoy Petroleum M...\McCoy Petroleum Mack 'A' #1-1_002.dta
System Versions: Logged with 17.05.6573 Plotted with 17.05.6573

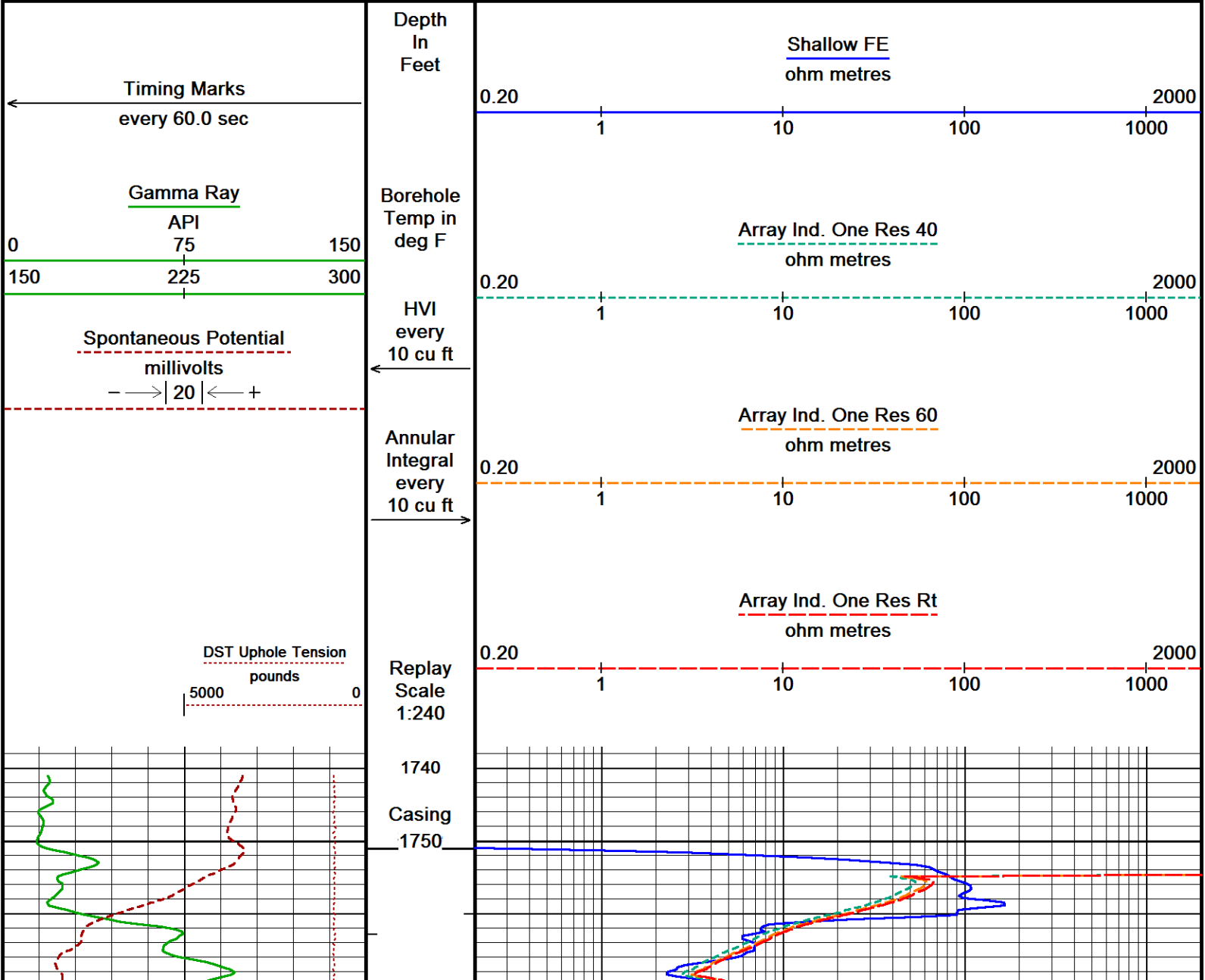
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Recorded on 27-MAR-2018 07:39

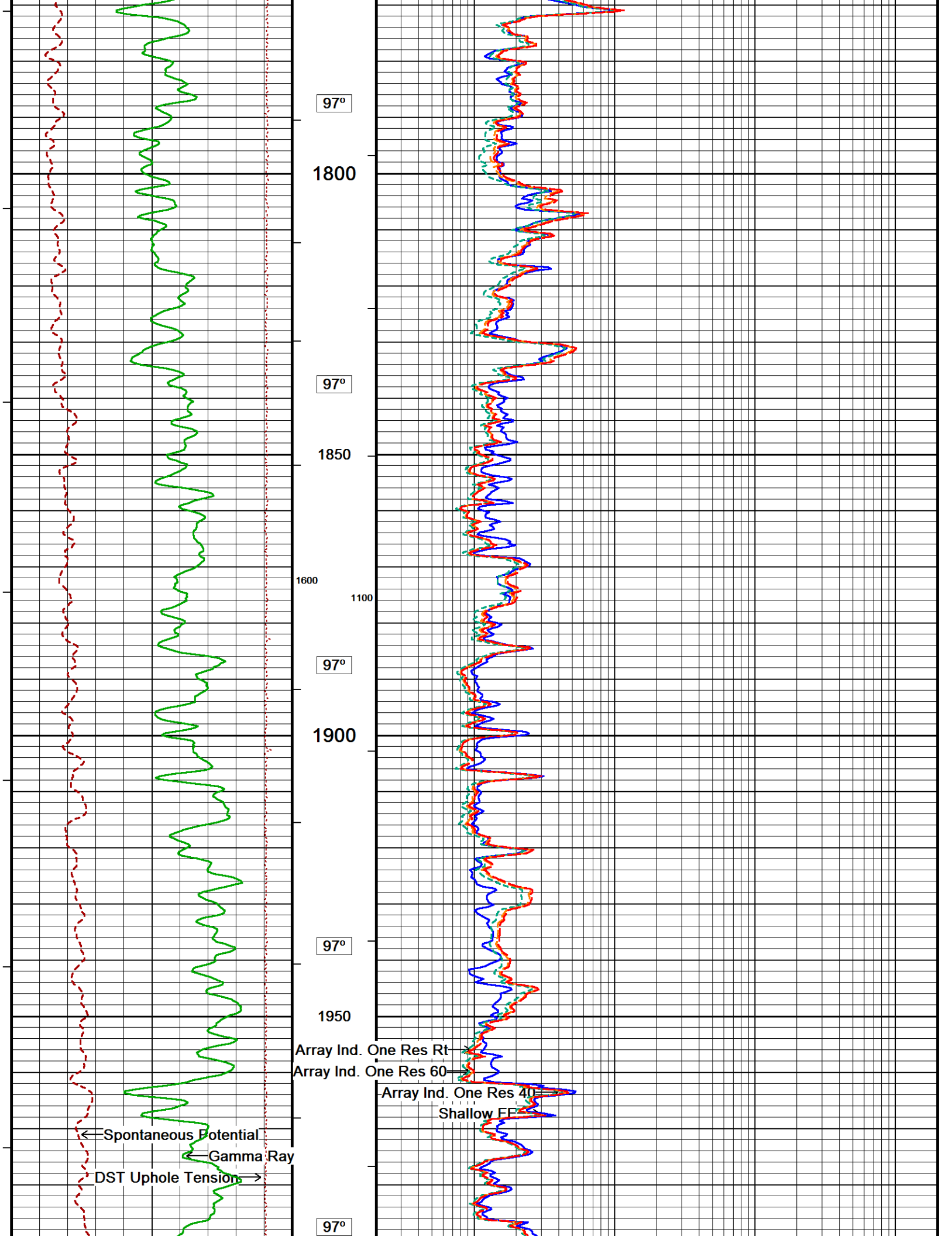
2 INCH MAIN

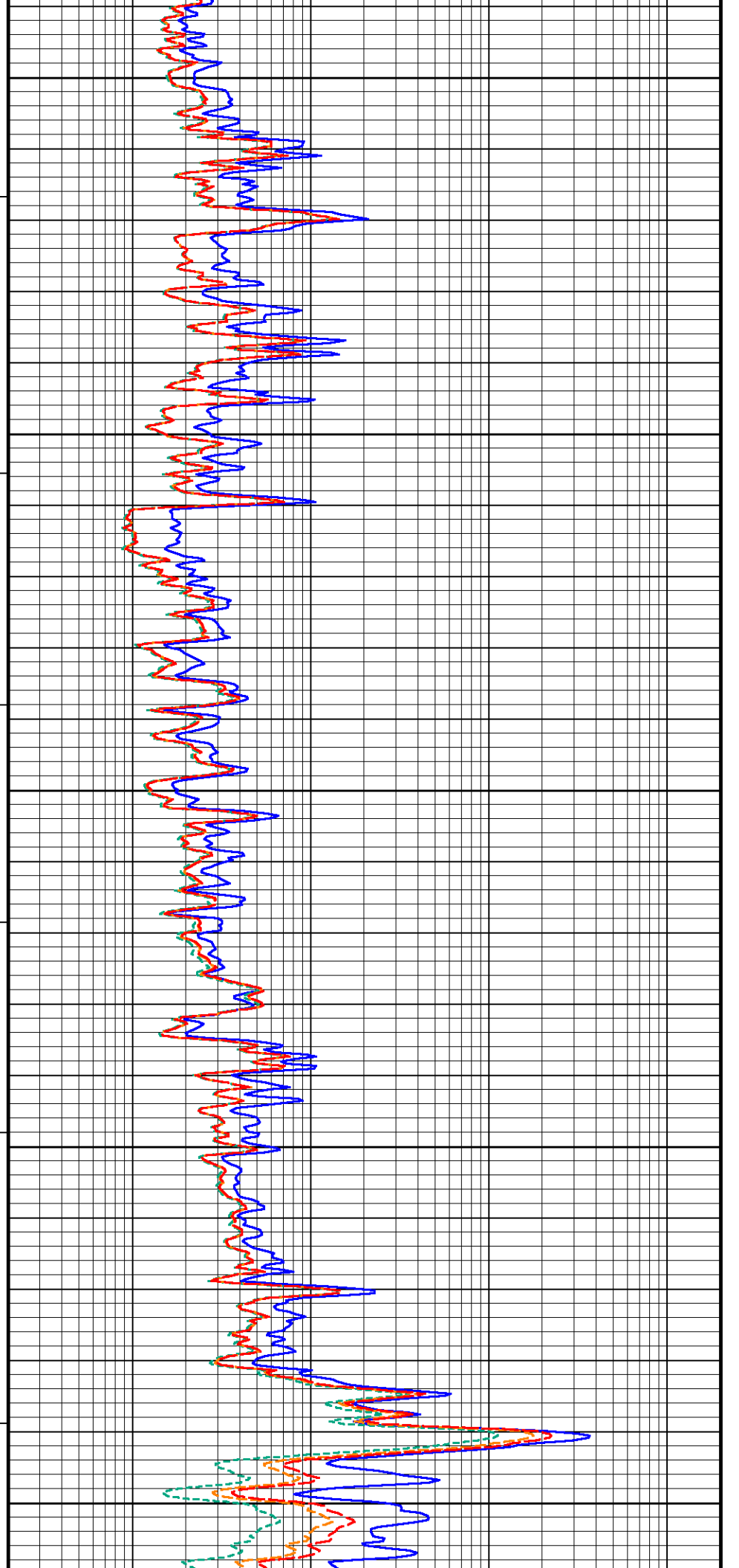
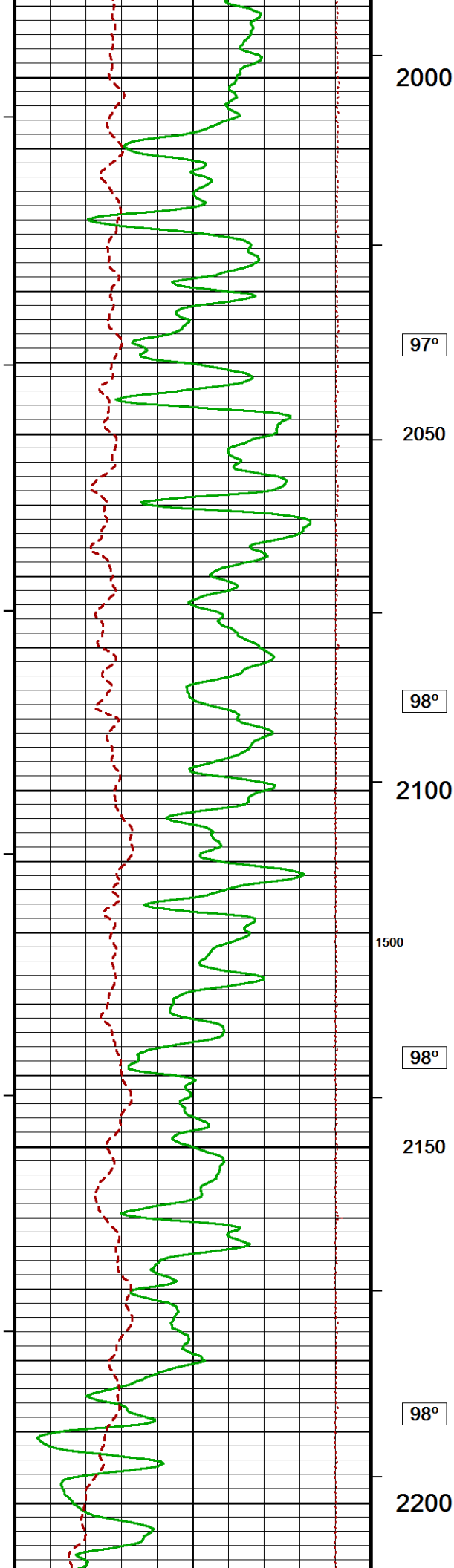
5 INCH MAIN

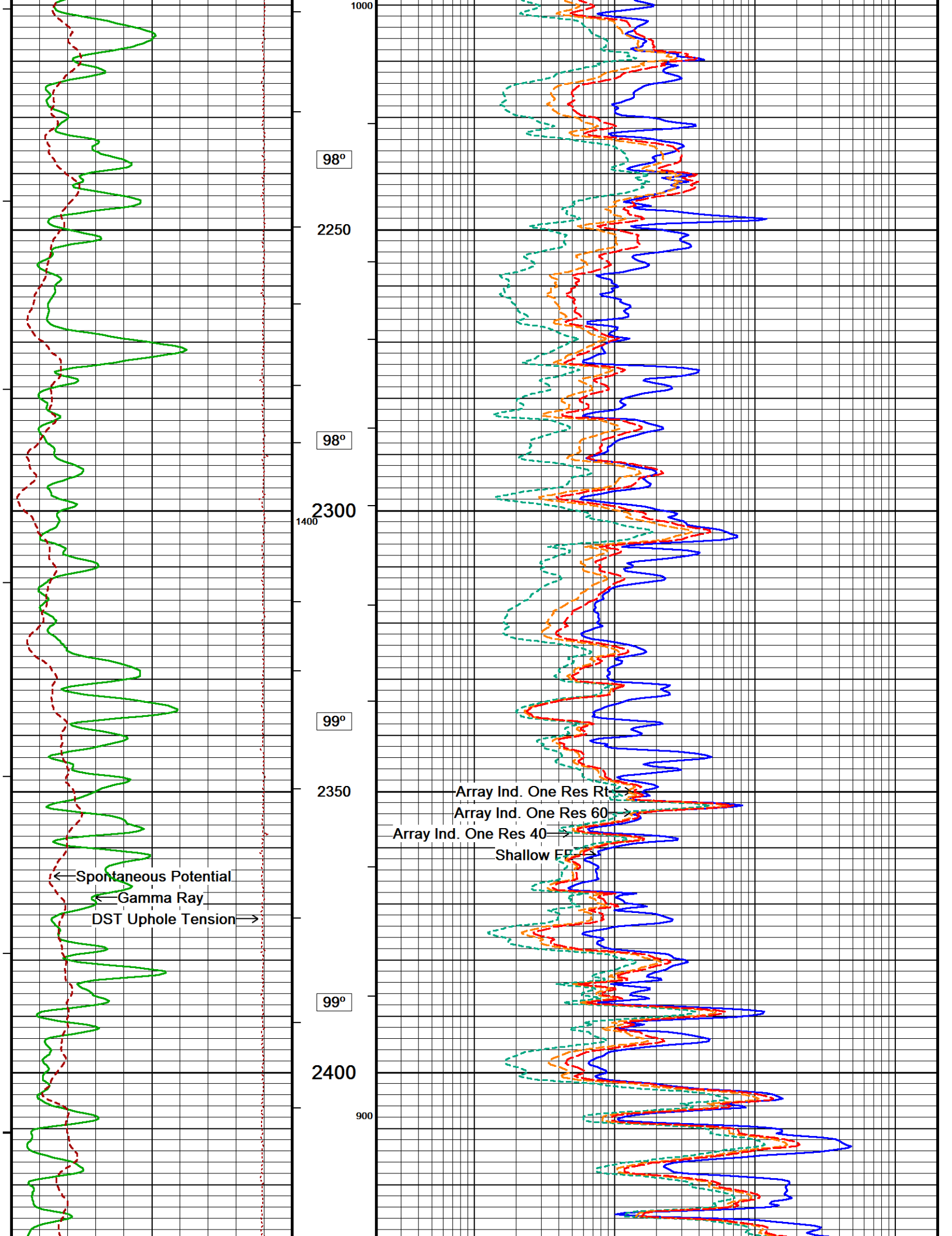
Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 17.05.6573\Logs\McCoy Petroleum M...\McCoy Petroleum Mack 'A' #1-1_002.dta
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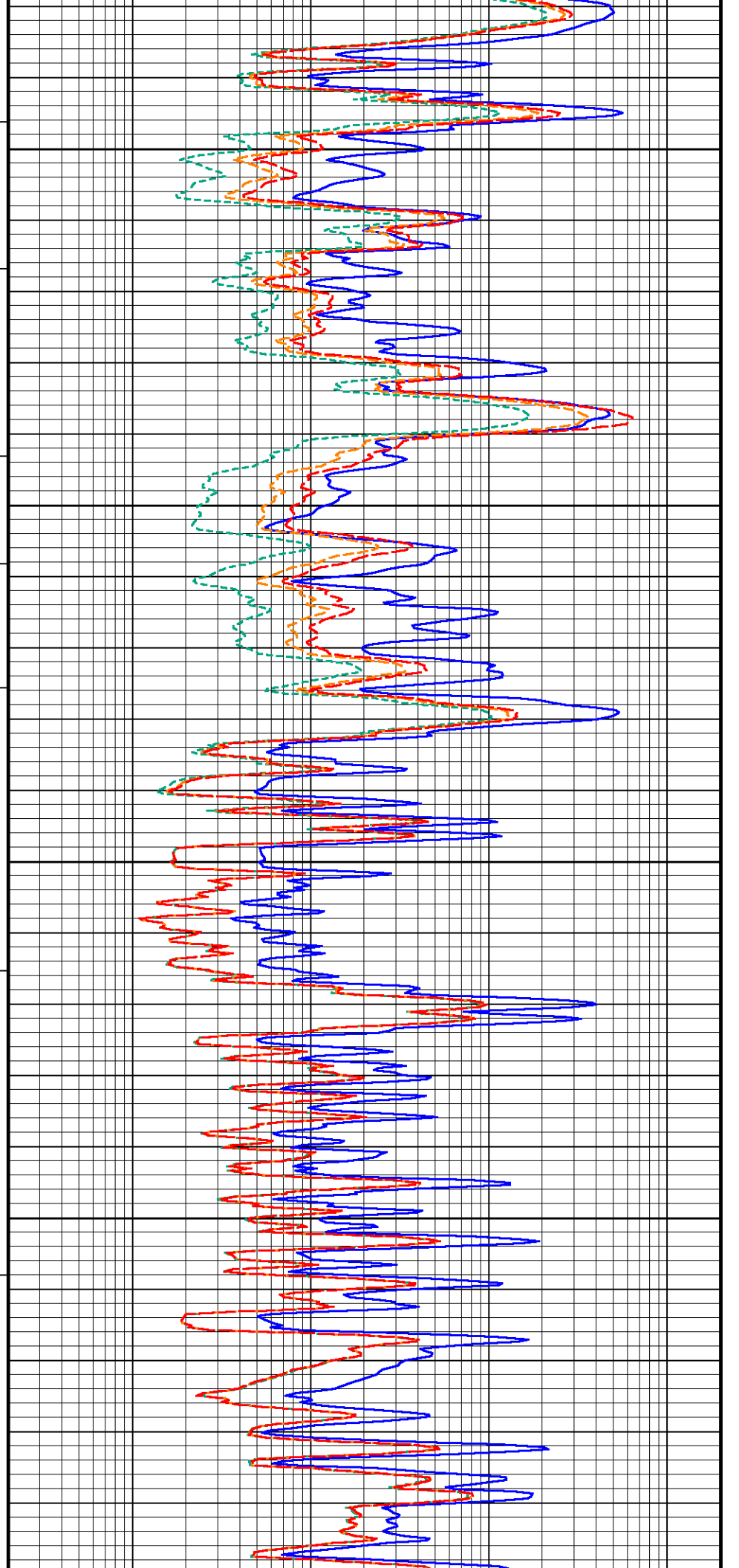
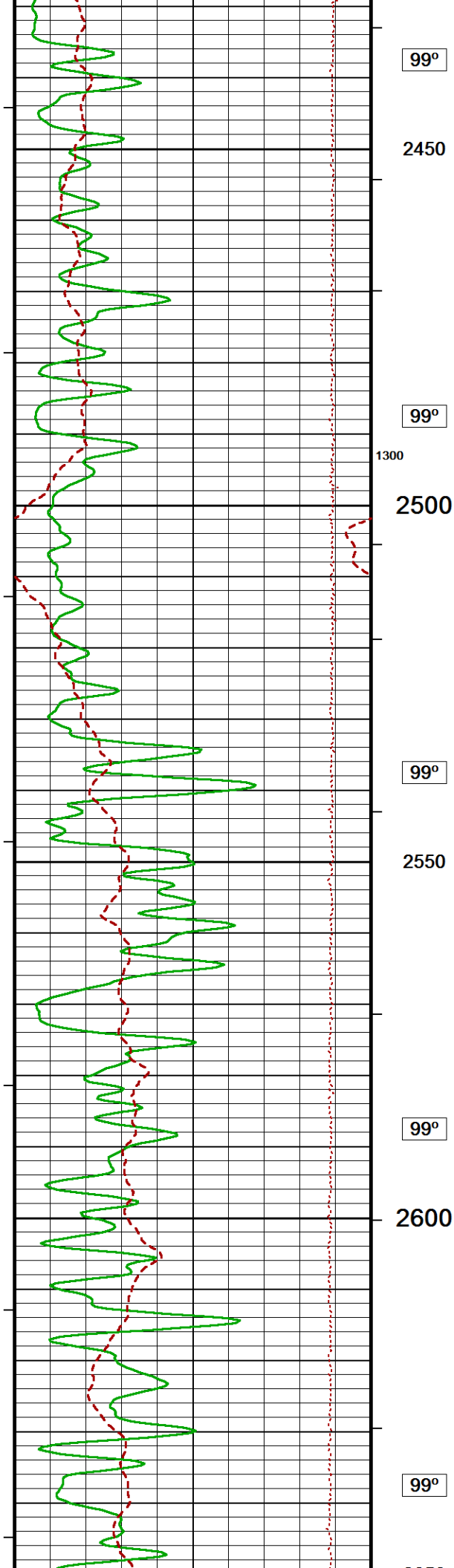
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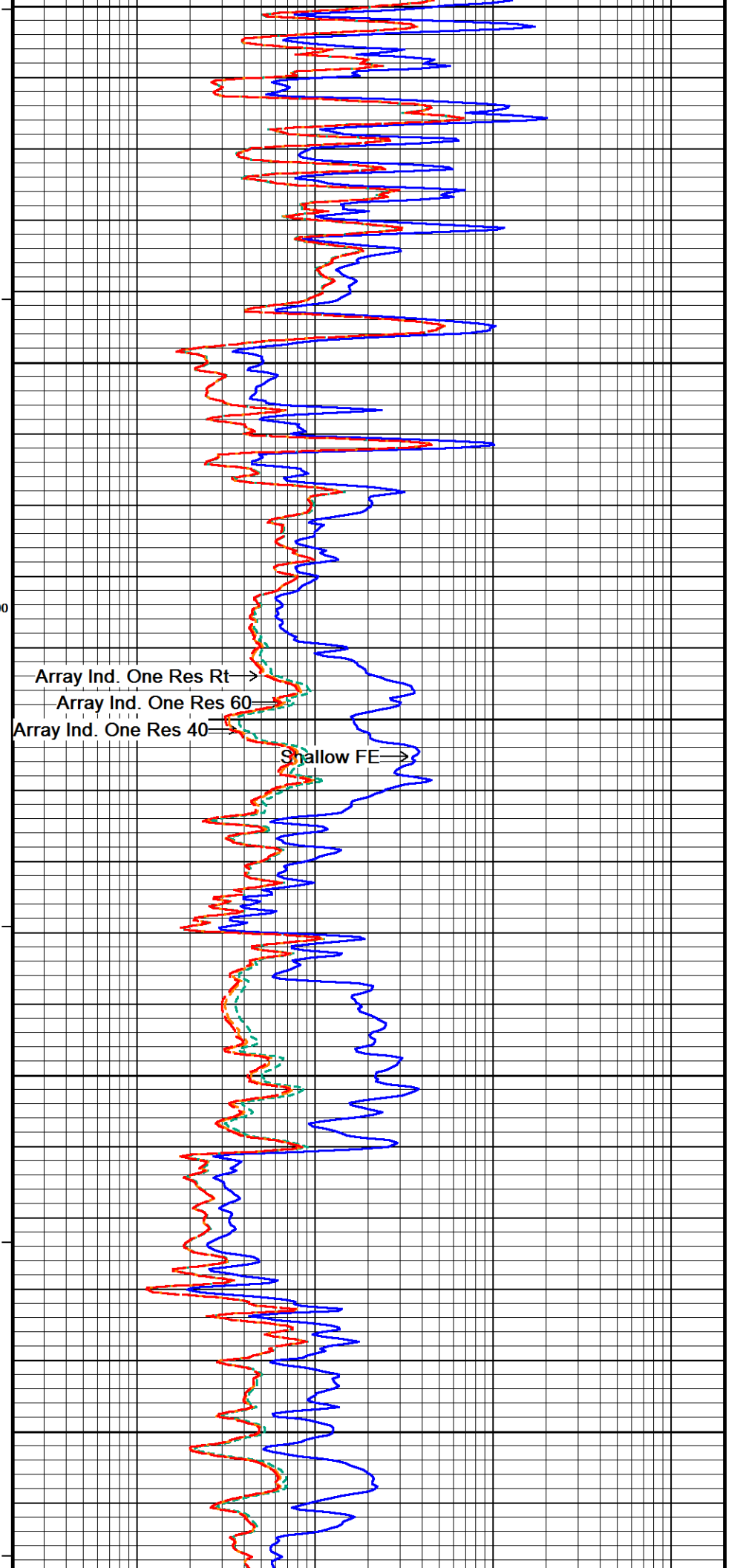
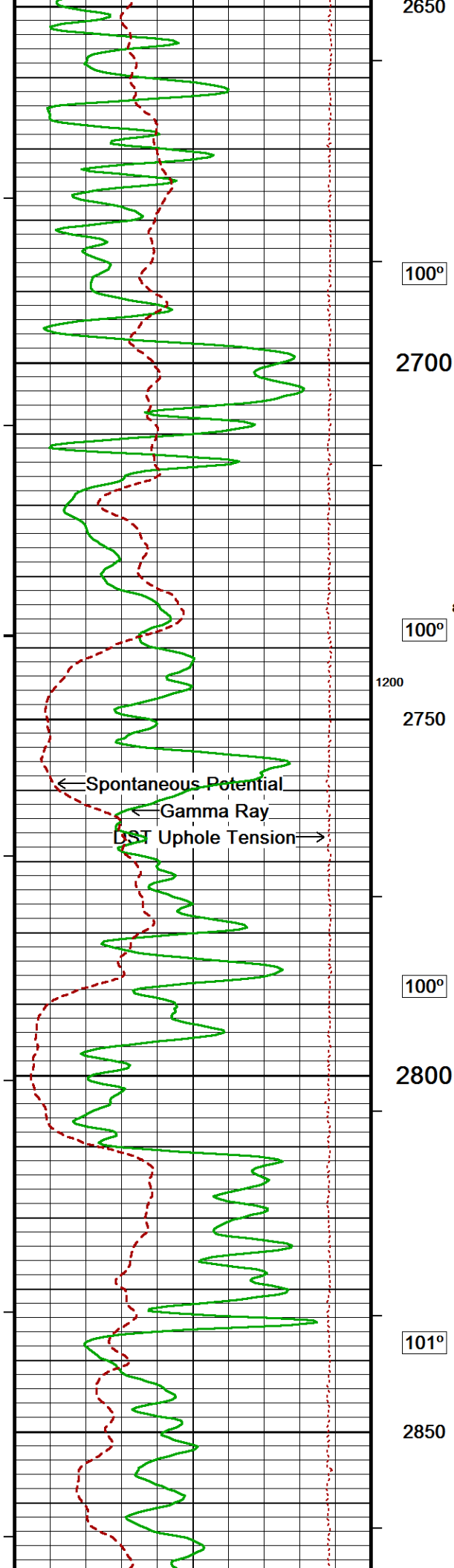


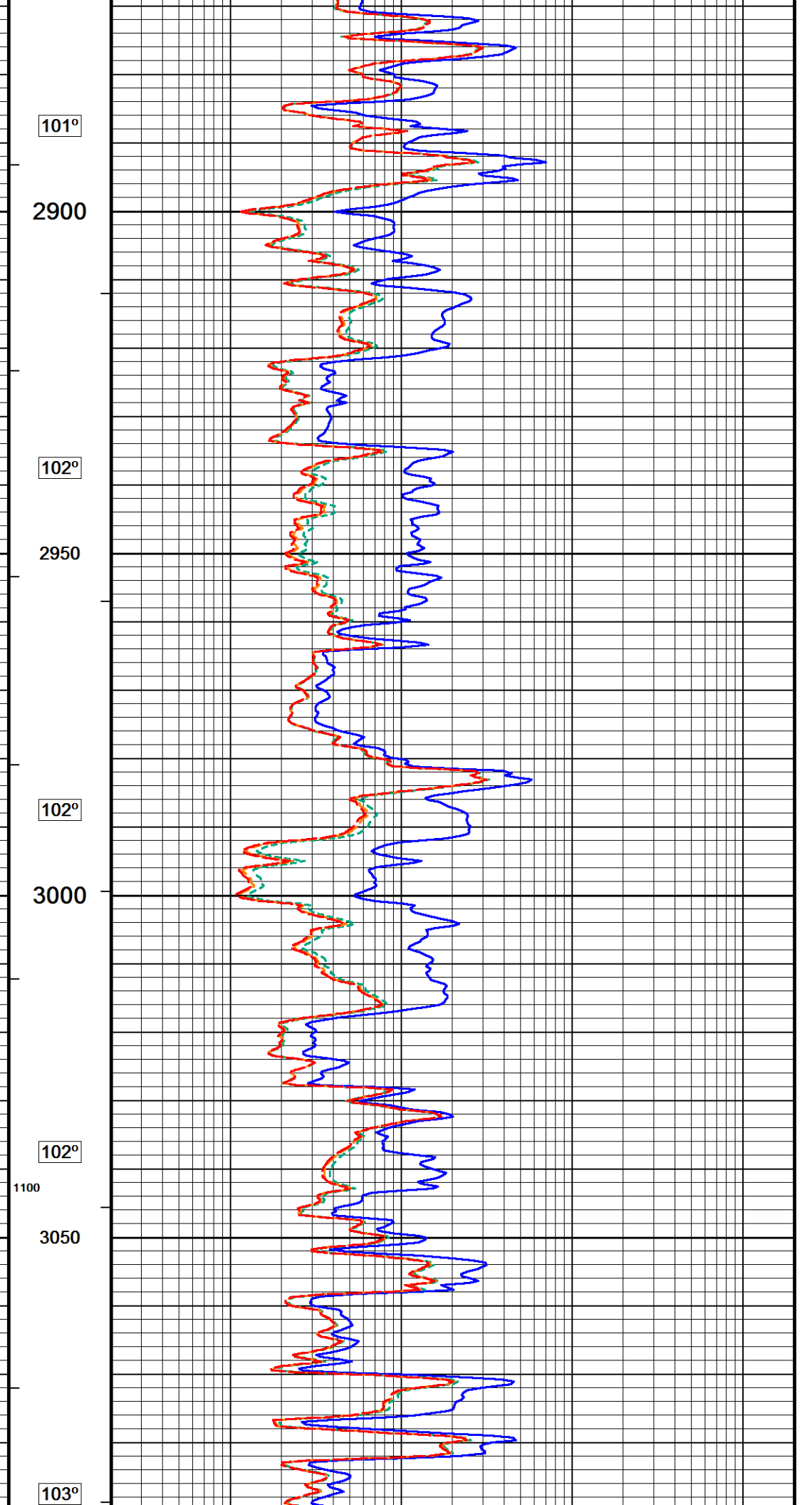
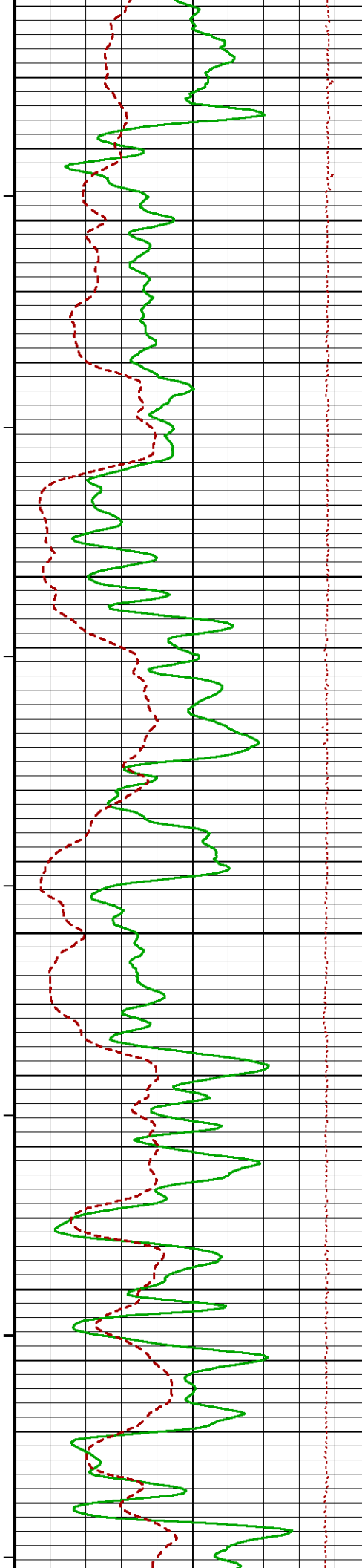


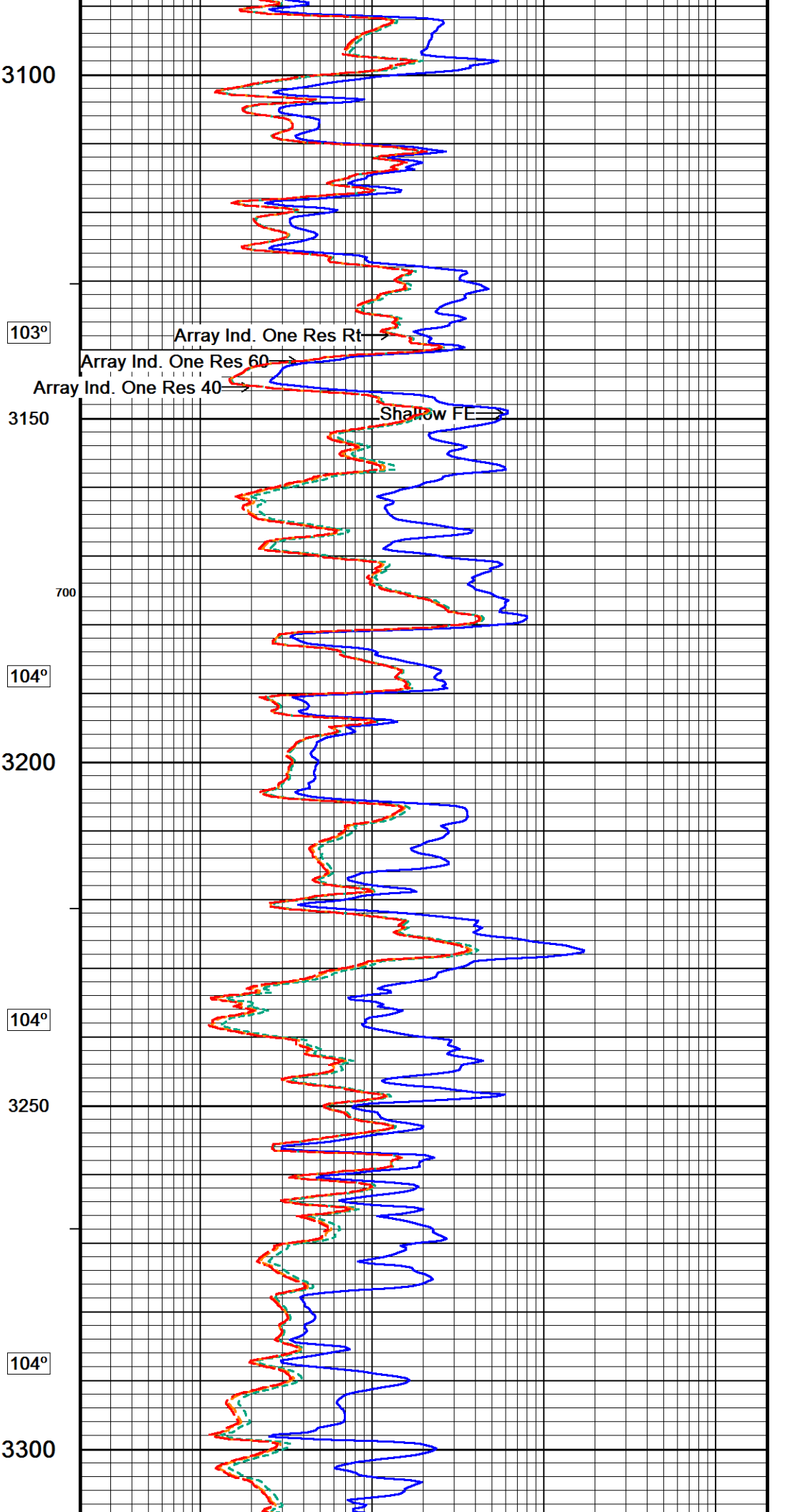
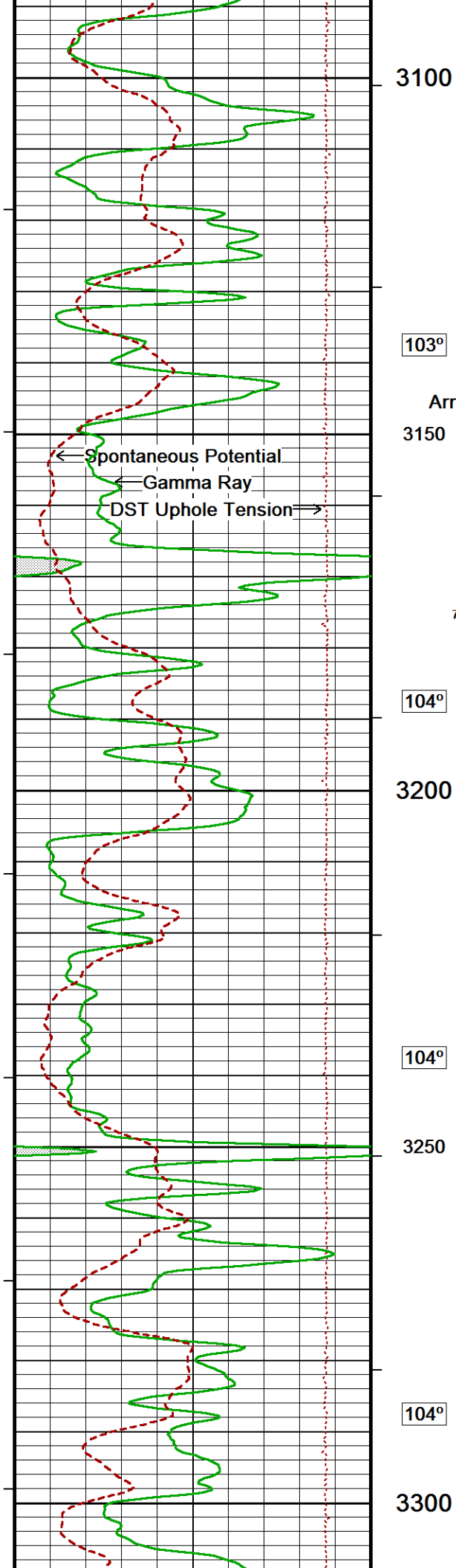


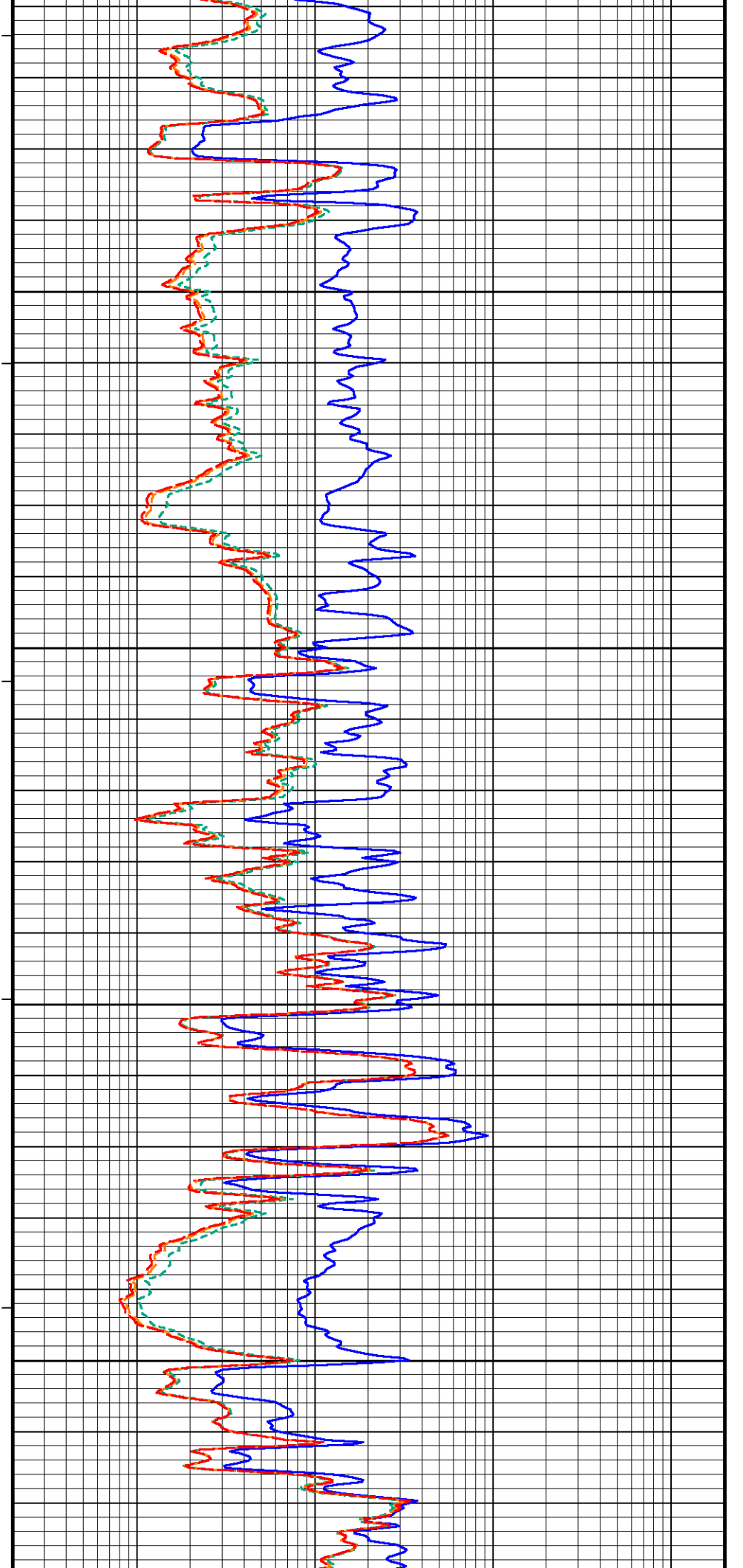
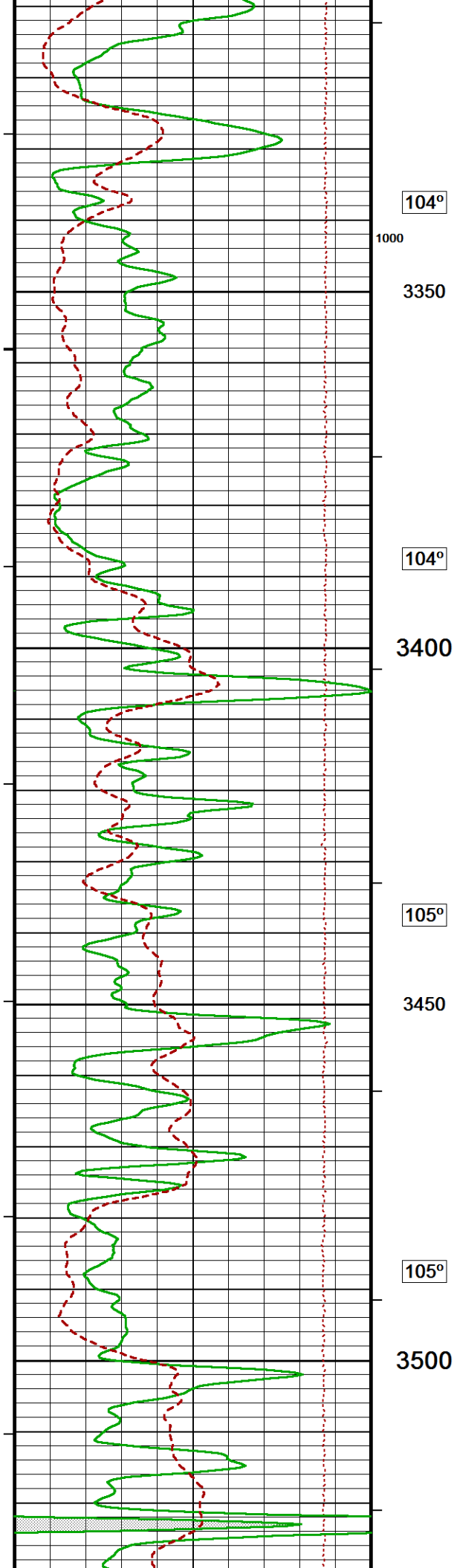


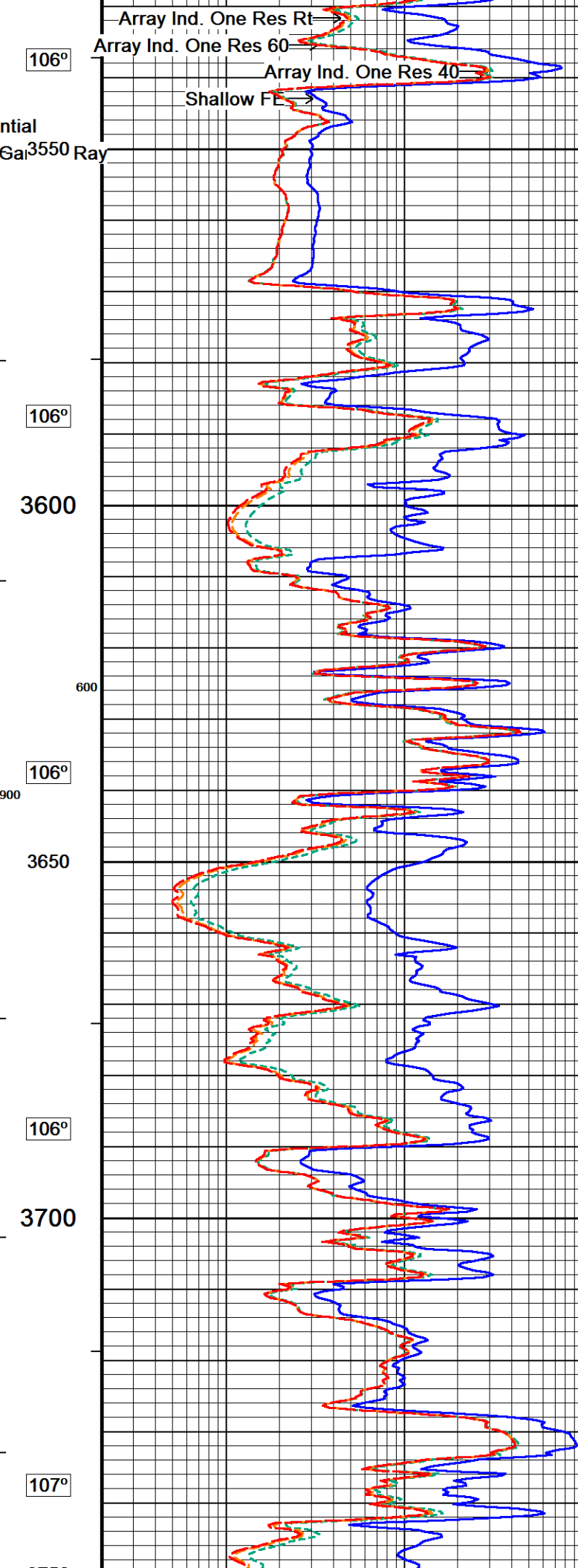
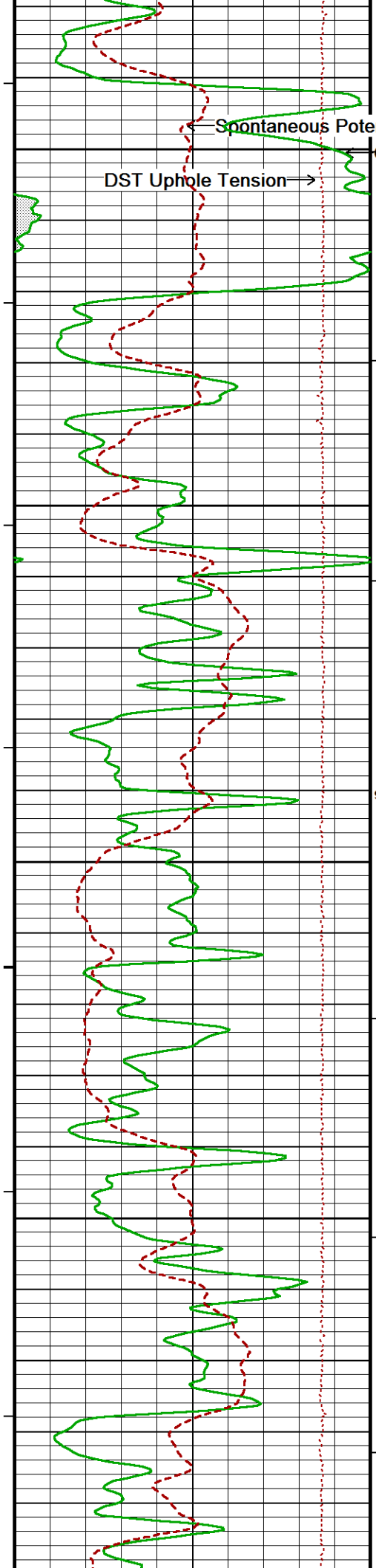


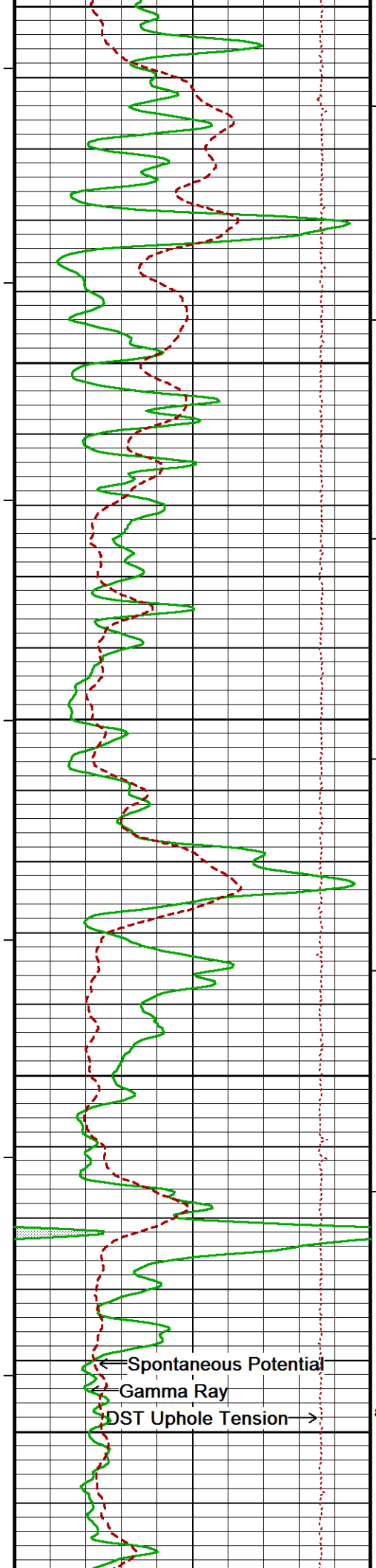






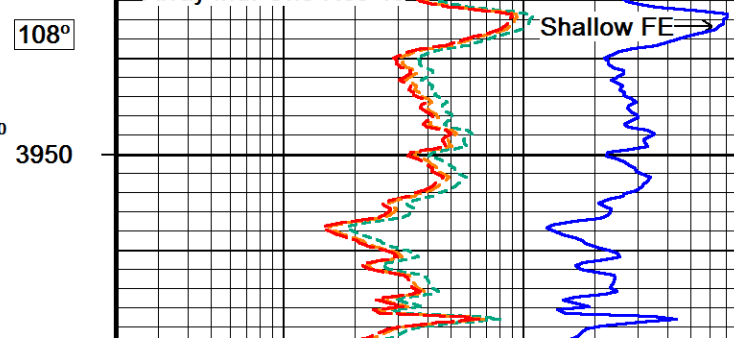


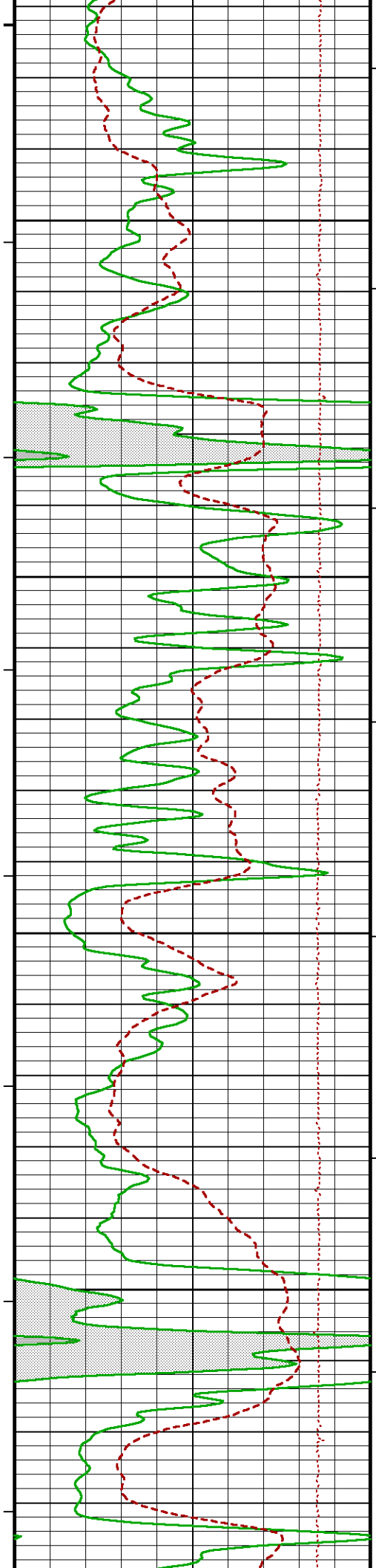




3750
107°
3800
107°
3850
108°
3900
108°
800
3950

Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40





108°

4000

108°

4050

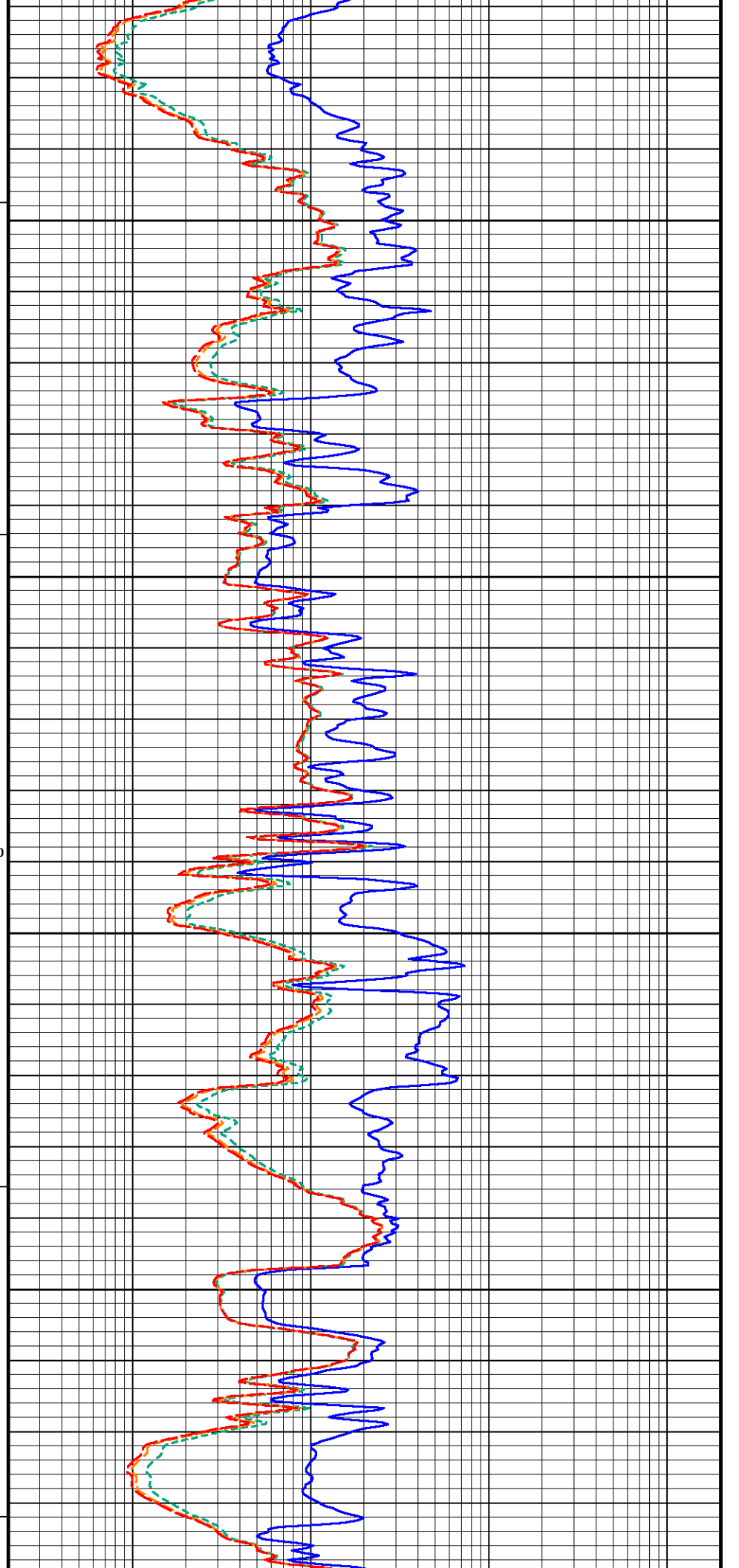
109° 500

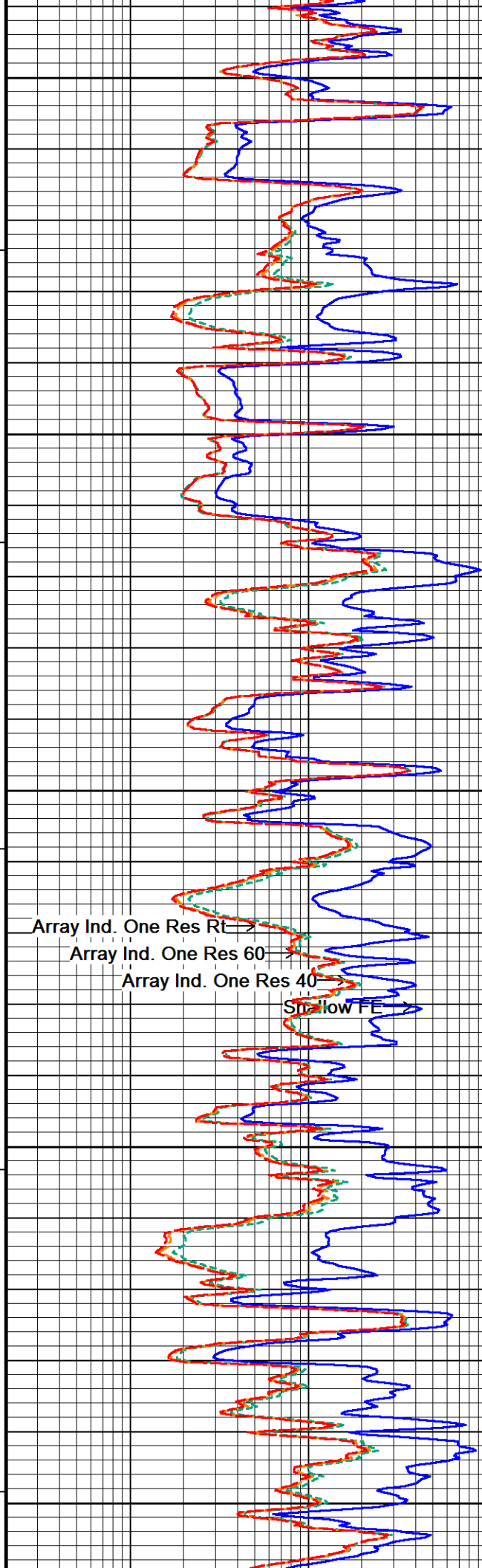
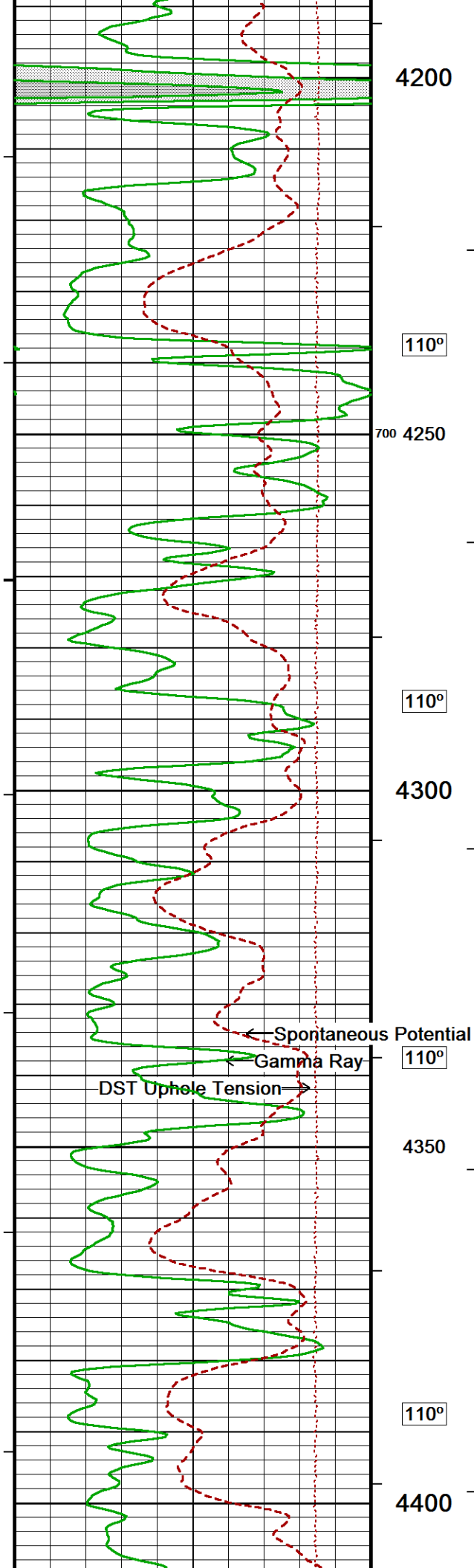
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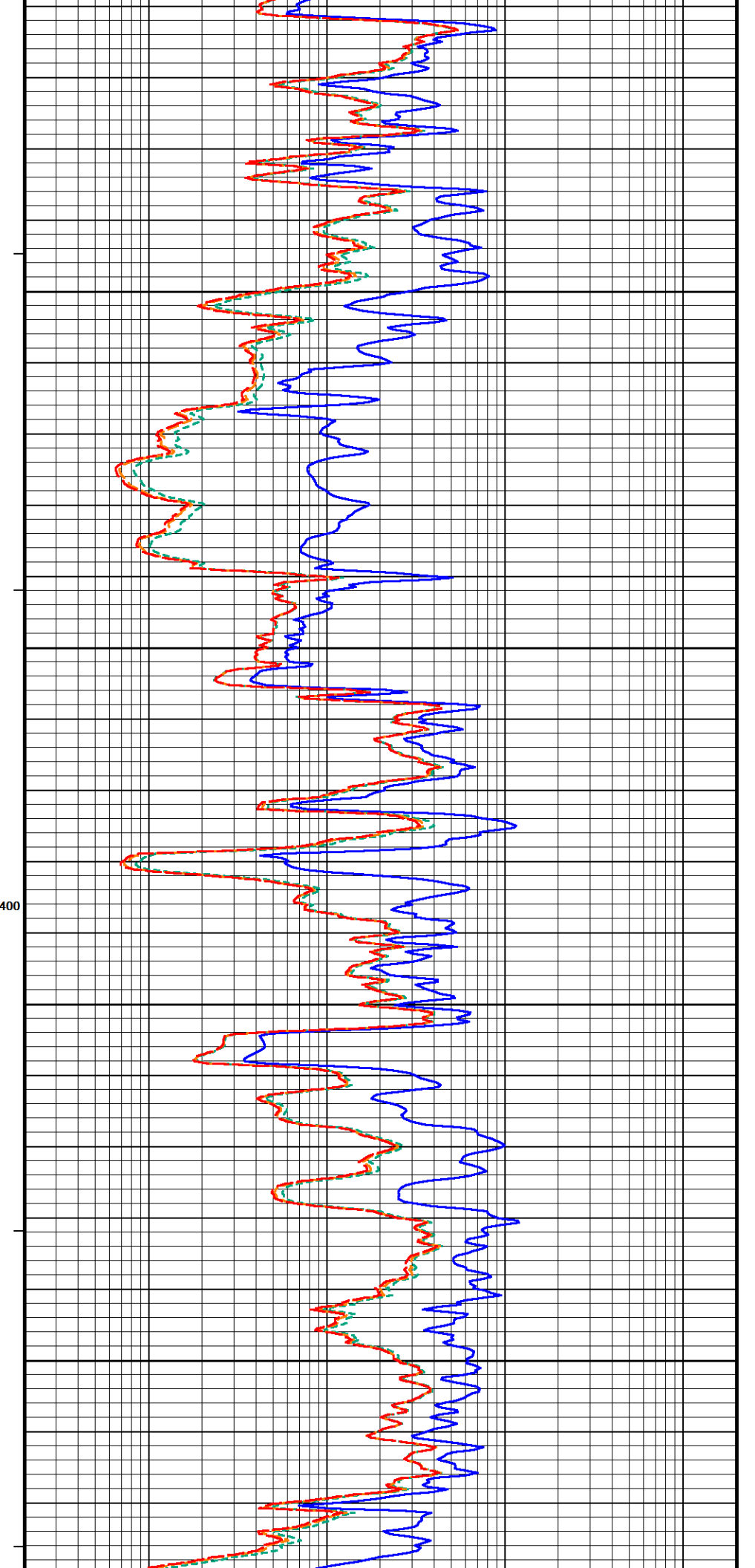
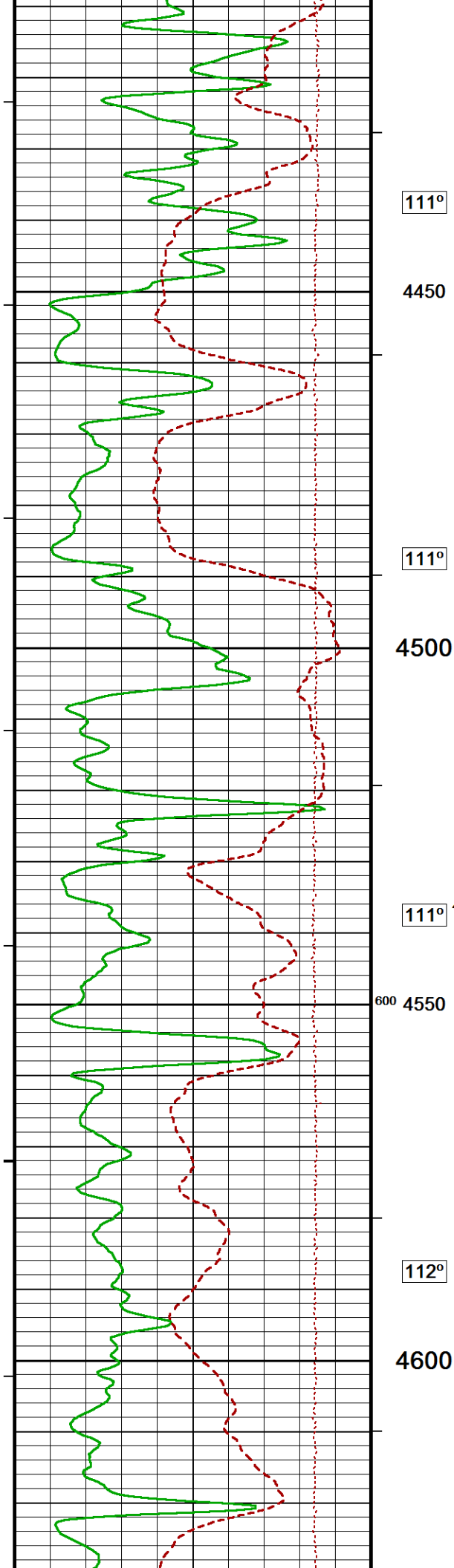
109°

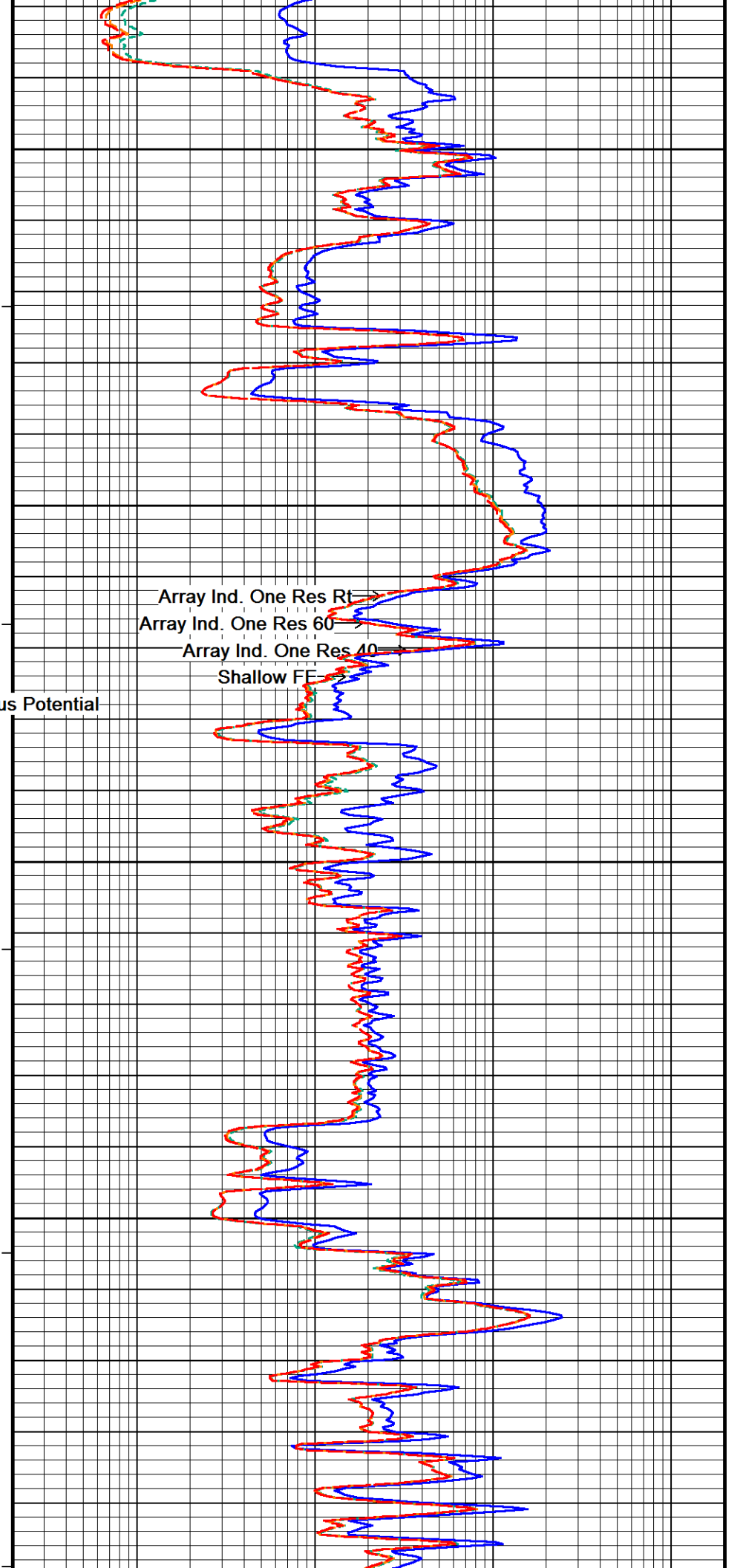
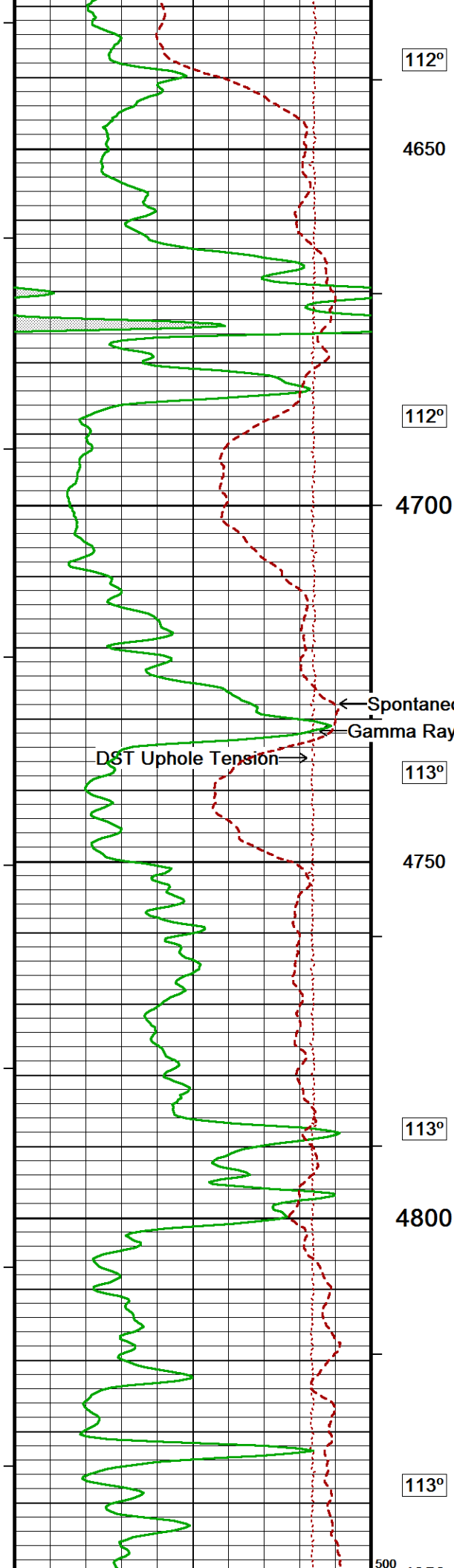
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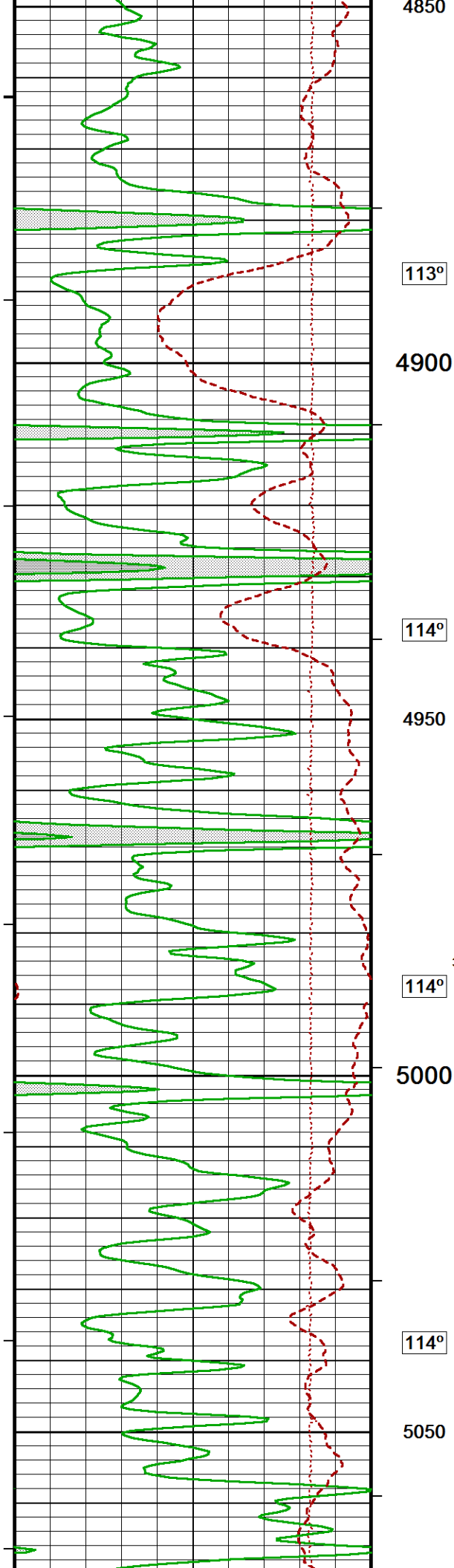
110°











4850

113°

4900

114°

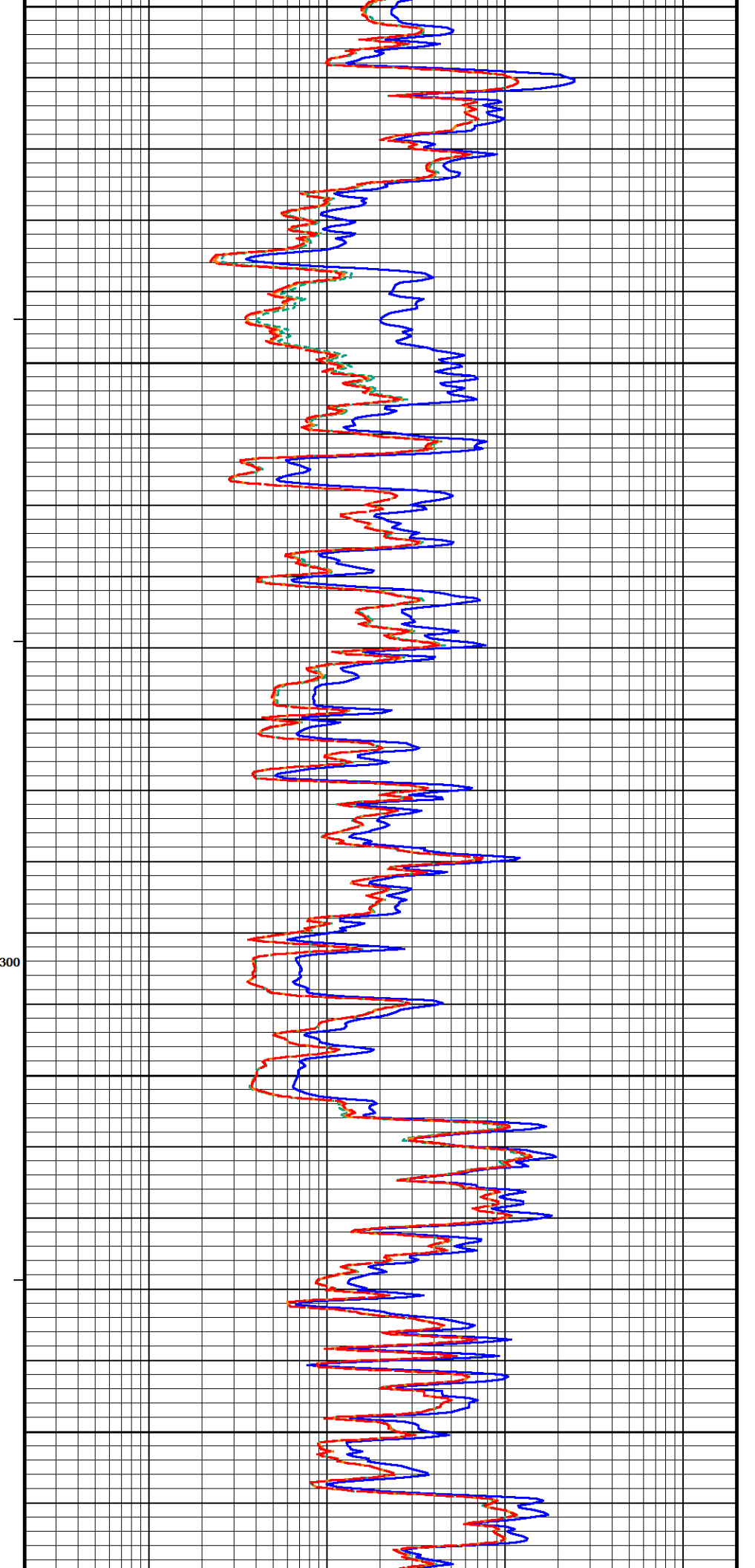
4950

114°

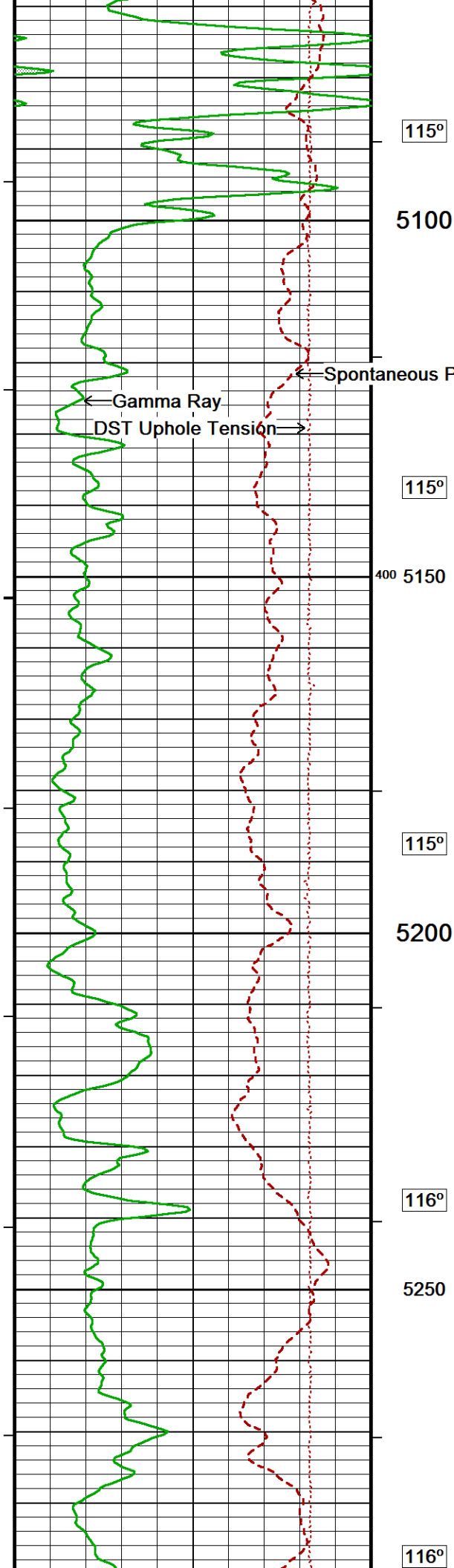
5000

114°

5050



300



115°

5100

115°

400 5150

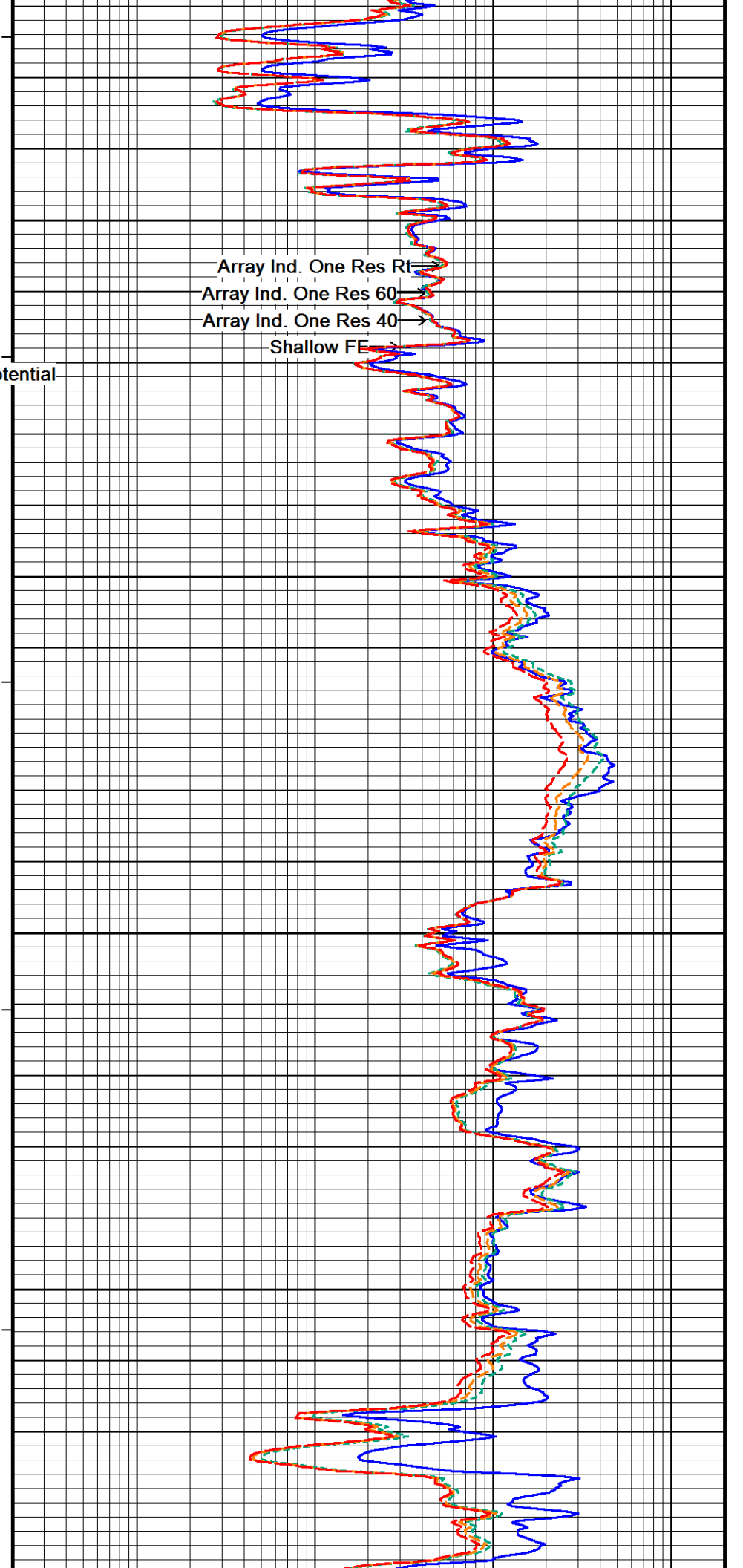
115°

5200

116°

5250

116°

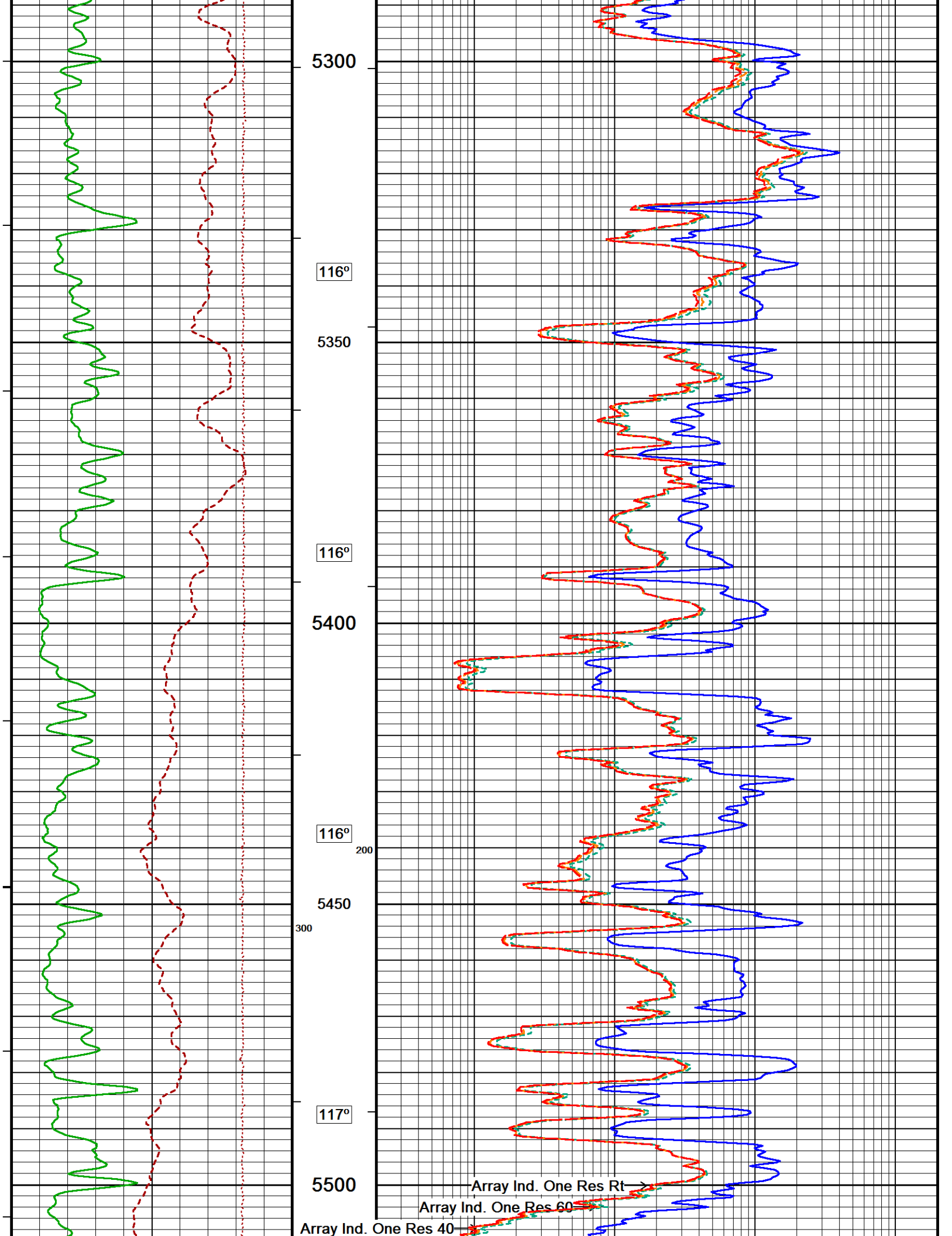


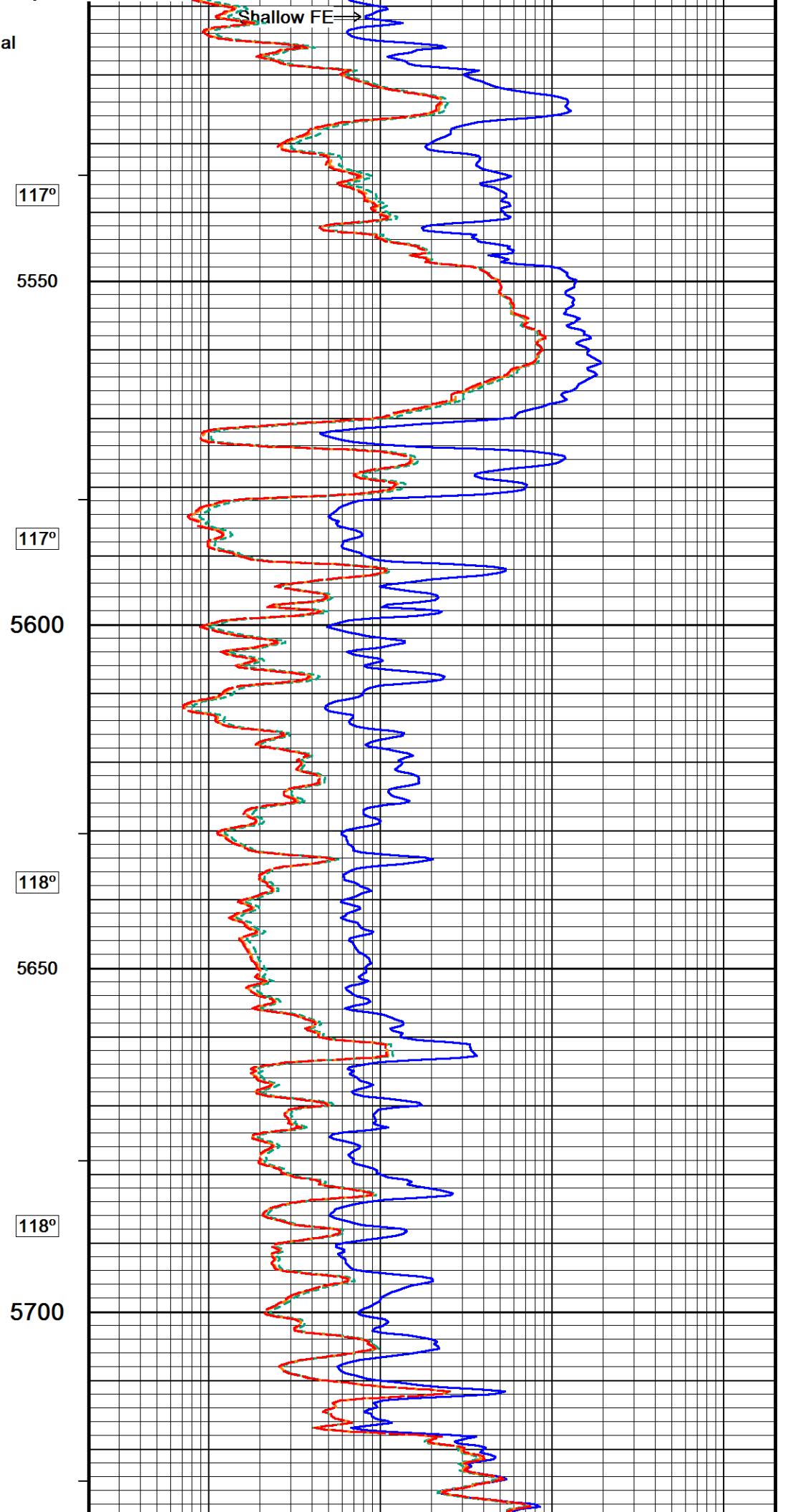
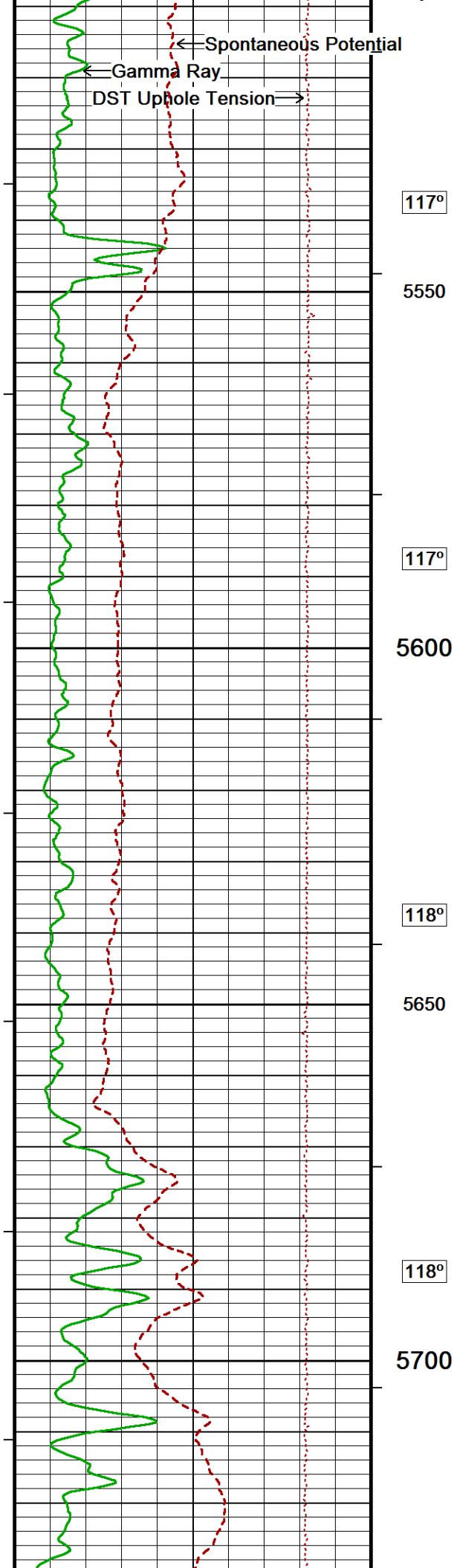
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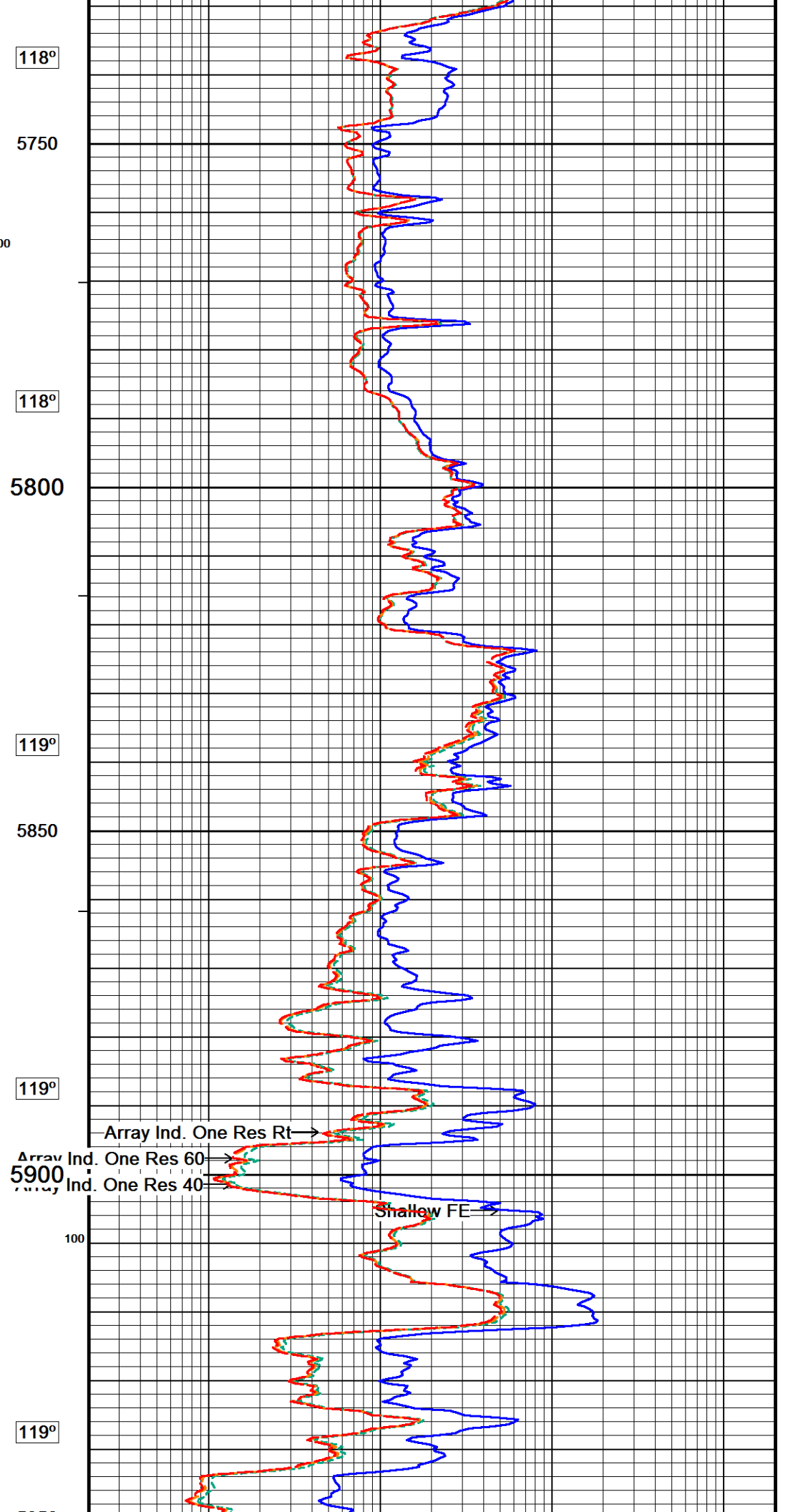
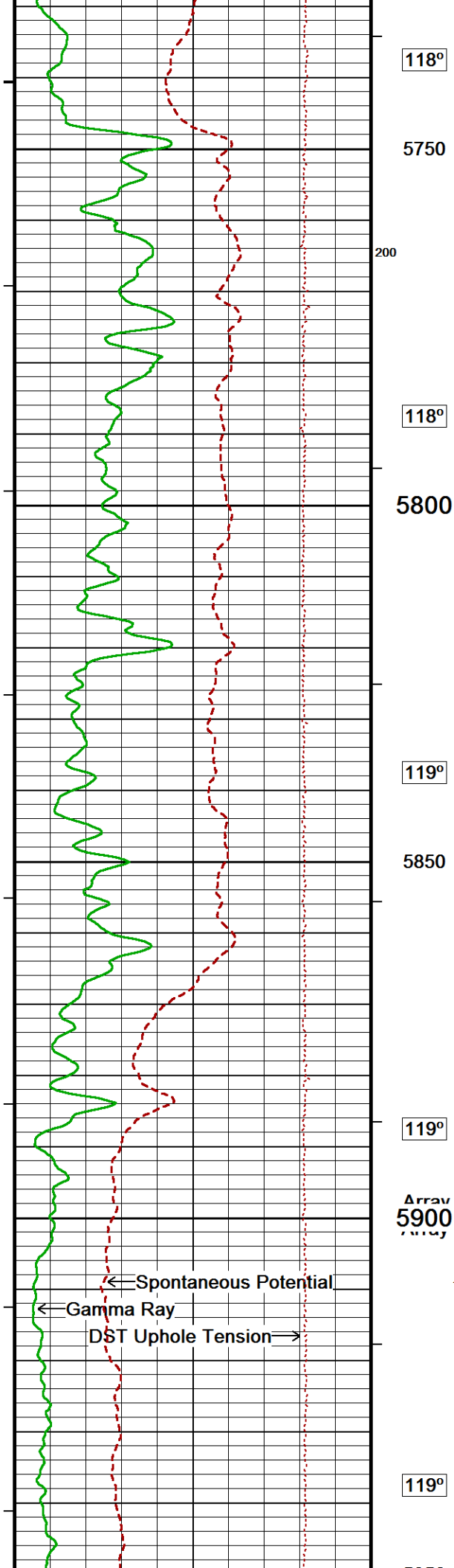
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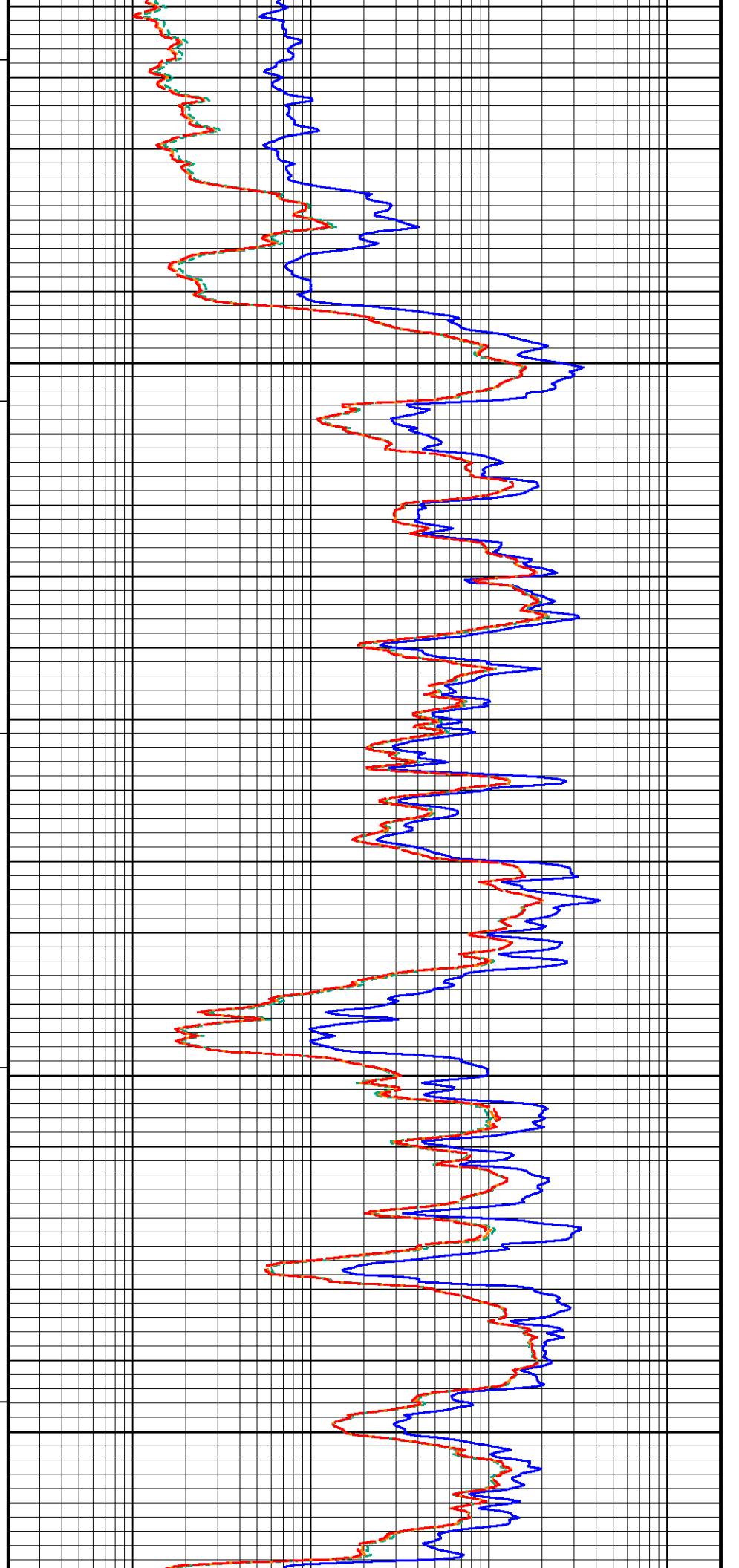
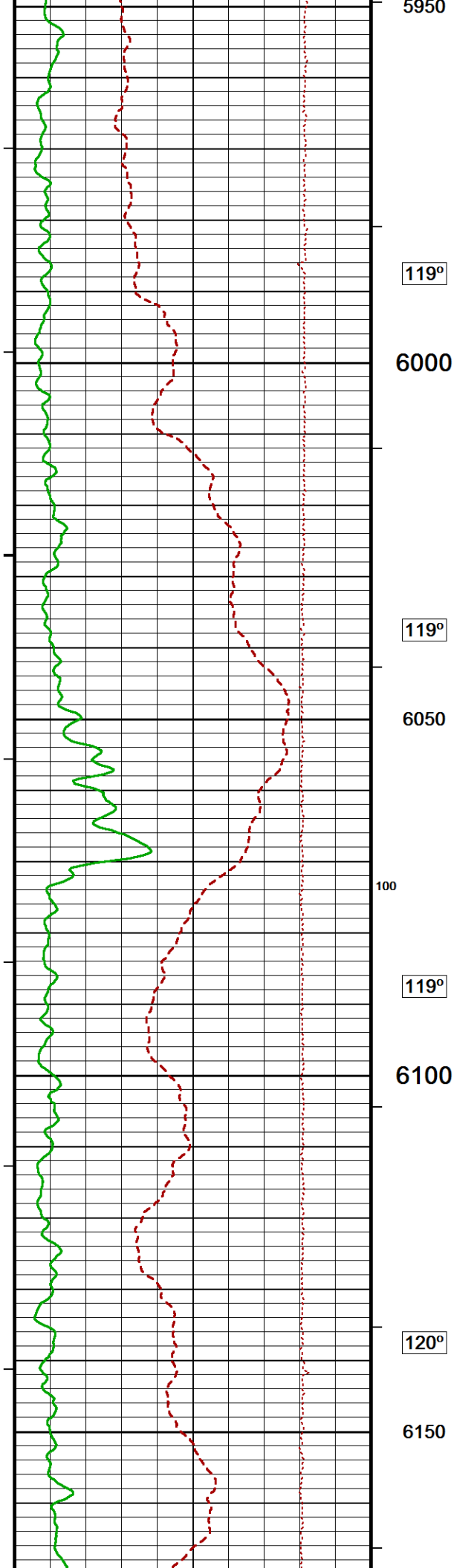
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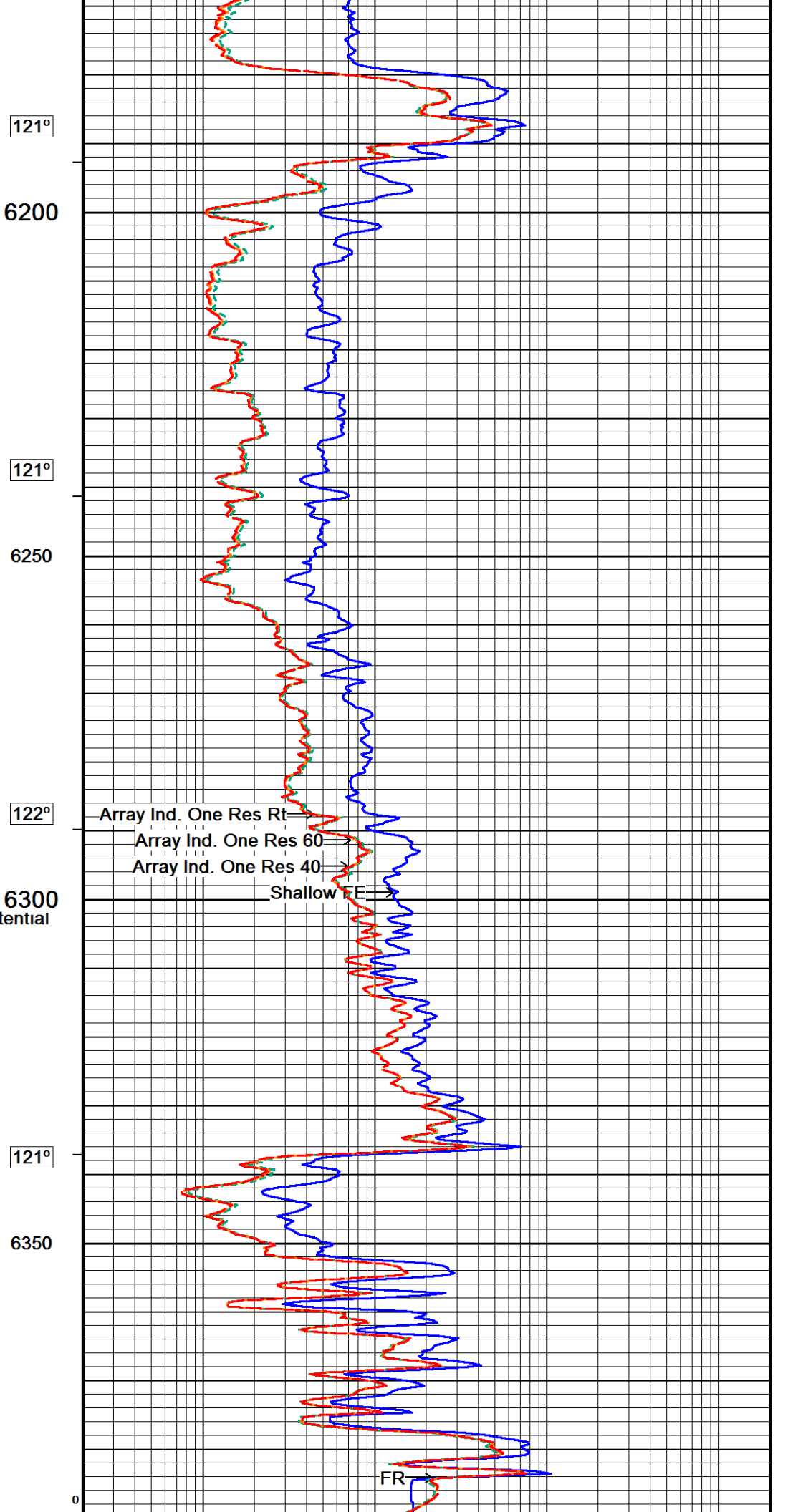
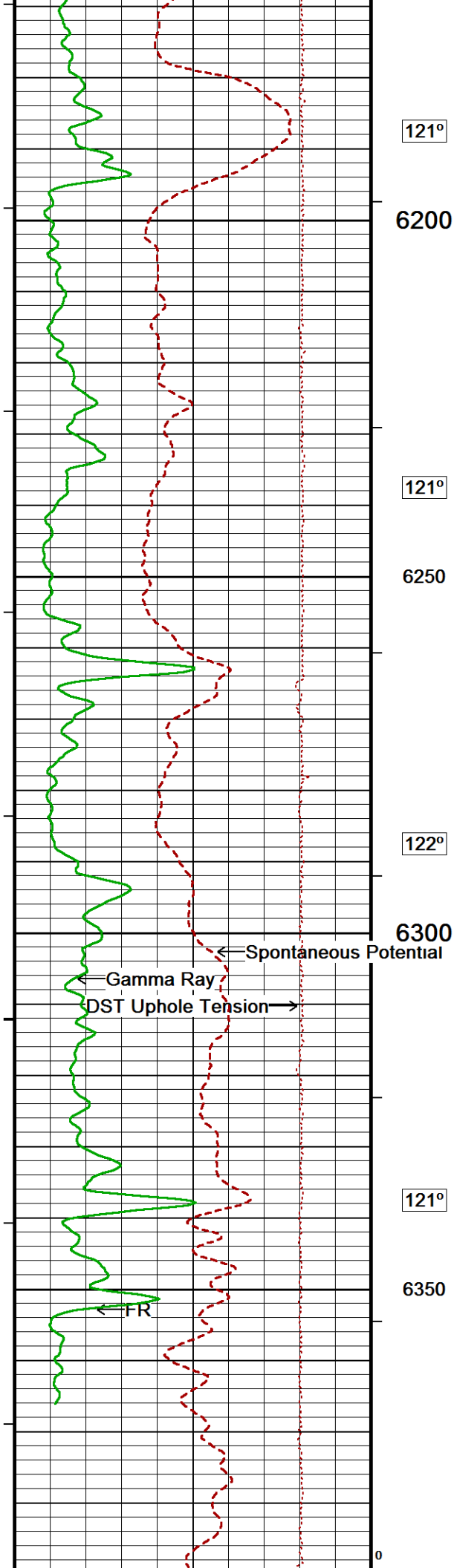
Shallow FE

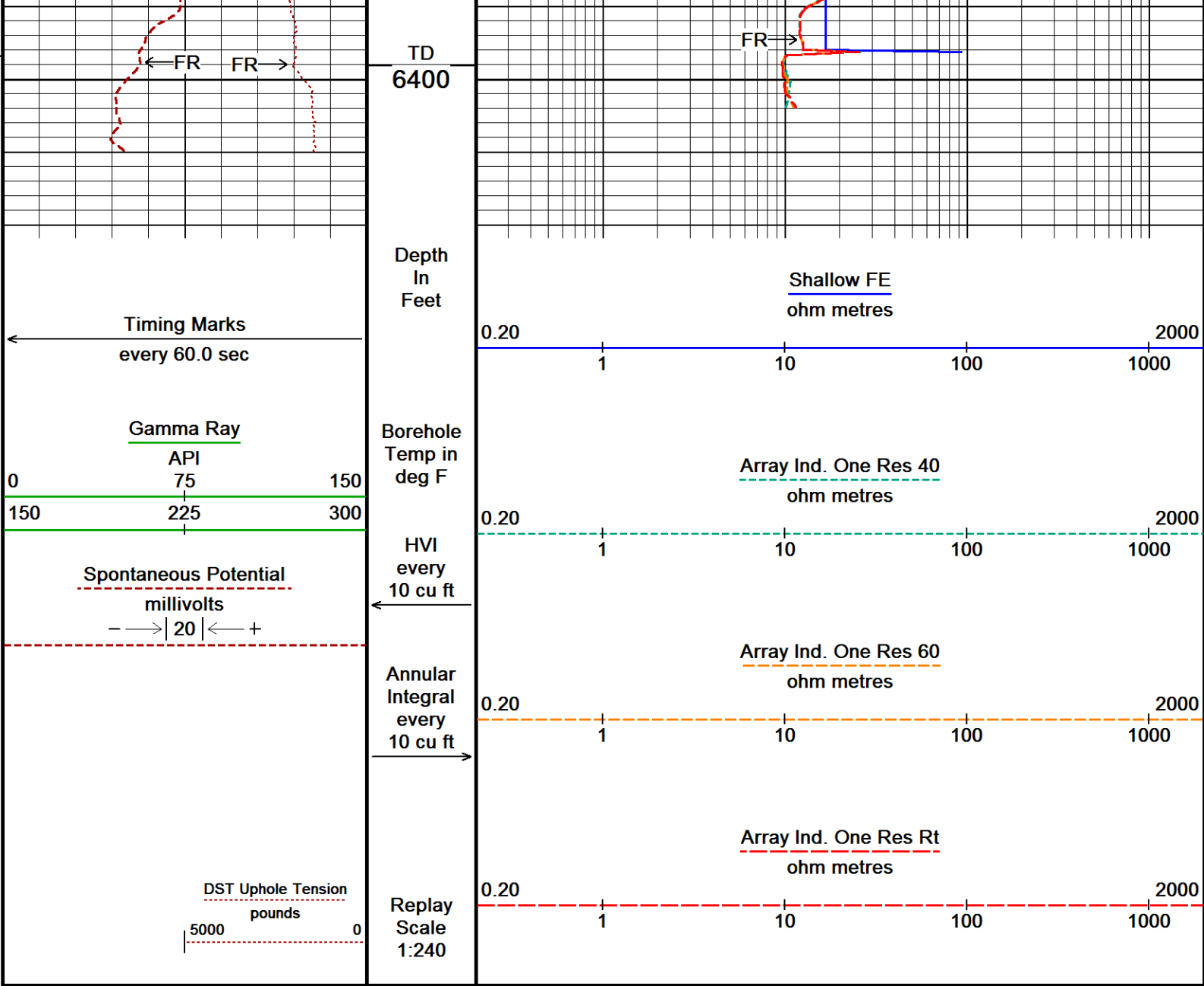










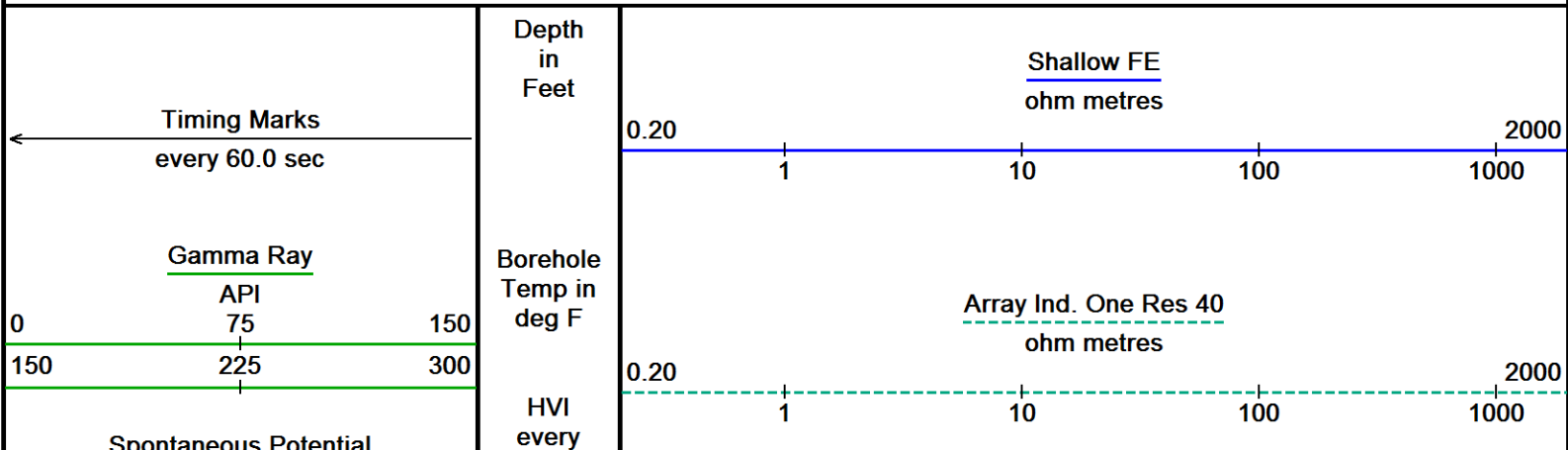


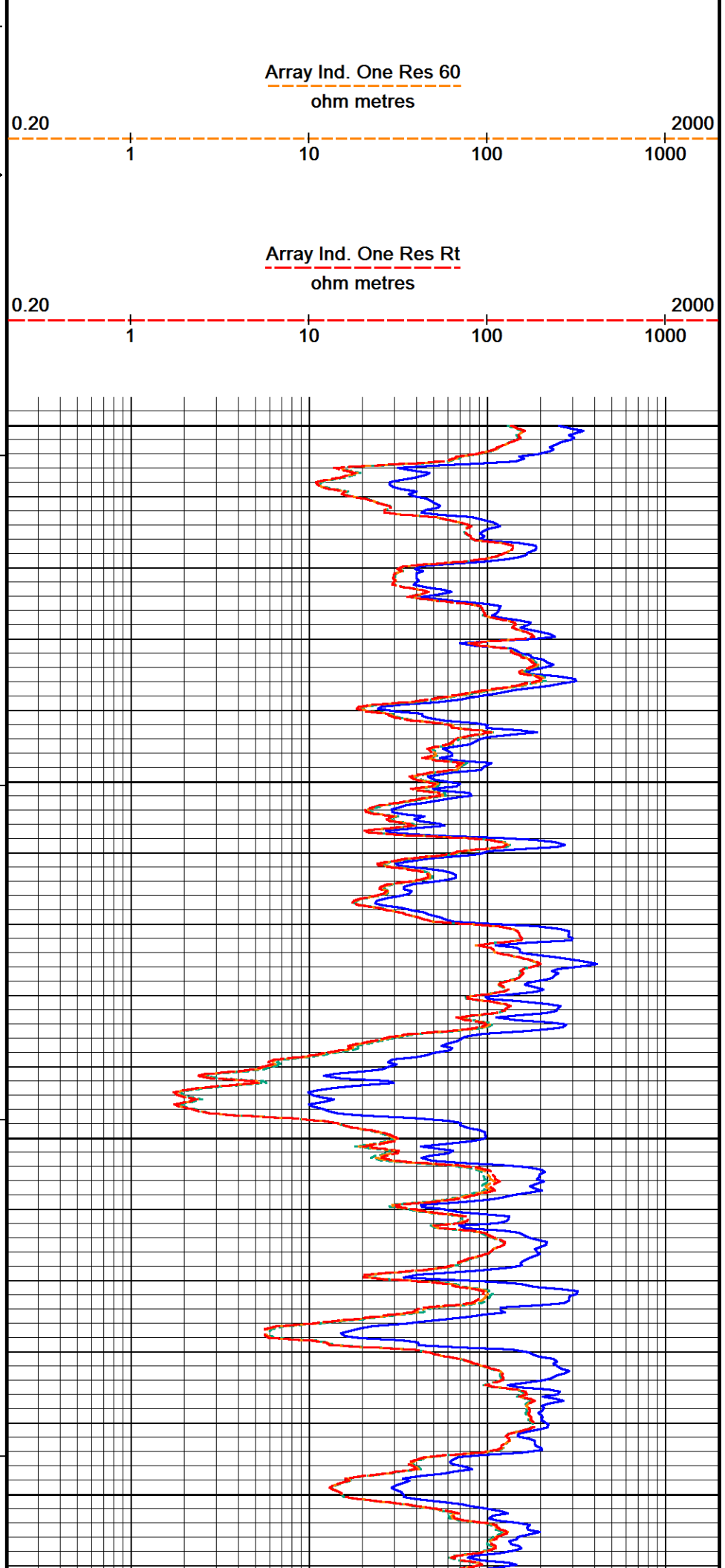
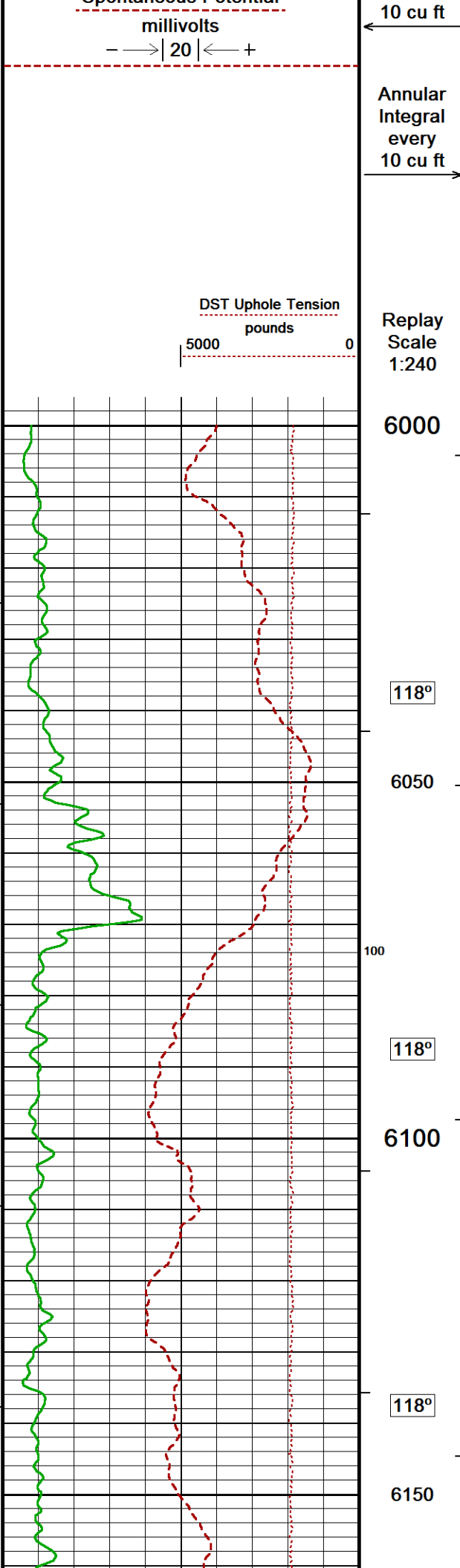
Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 27-MAR-2018 10:32
Filename: C:\Minimus 17.05.6573\Logs\McCoy Petroleum M...\McCoy Petroleum Mack 'A' #1-1_002.dta Recorded on 27-MAR-2018 07:39
System Versions: Logged with 17.05.6573 Plotted with 17.05.6573

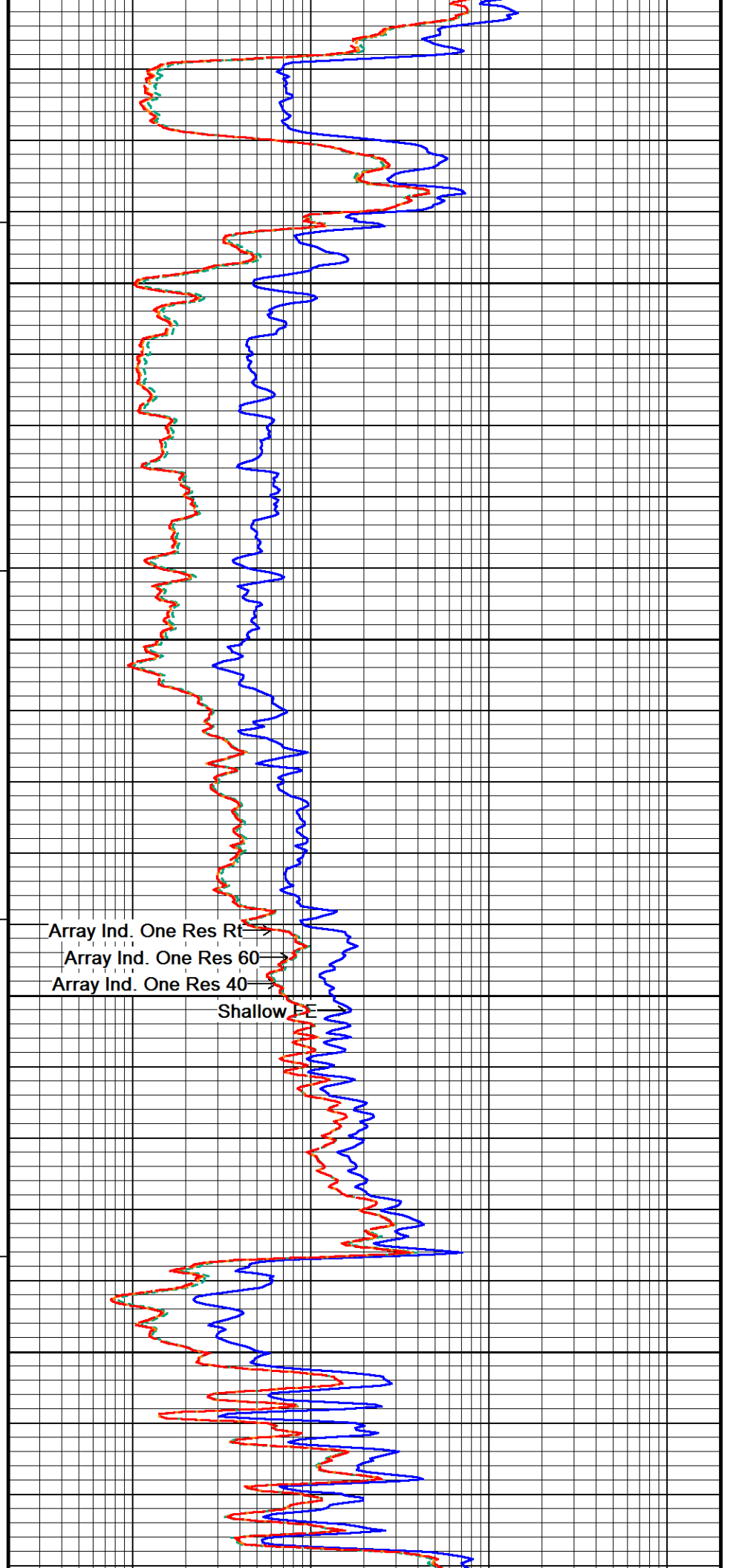
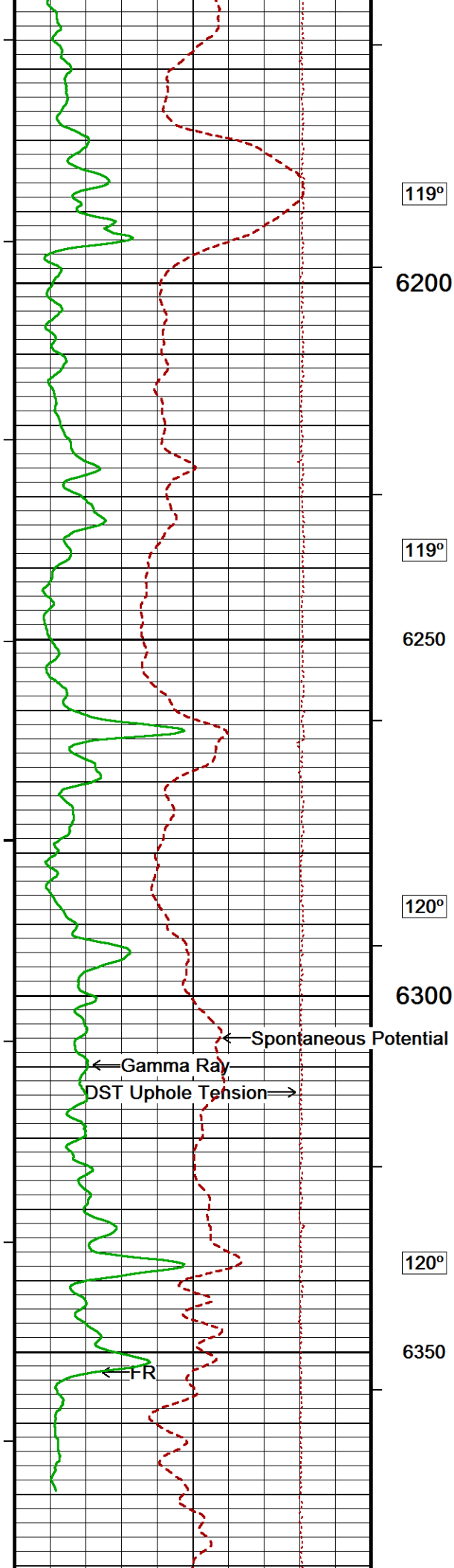
↑ 5 INCH MAIN ↑

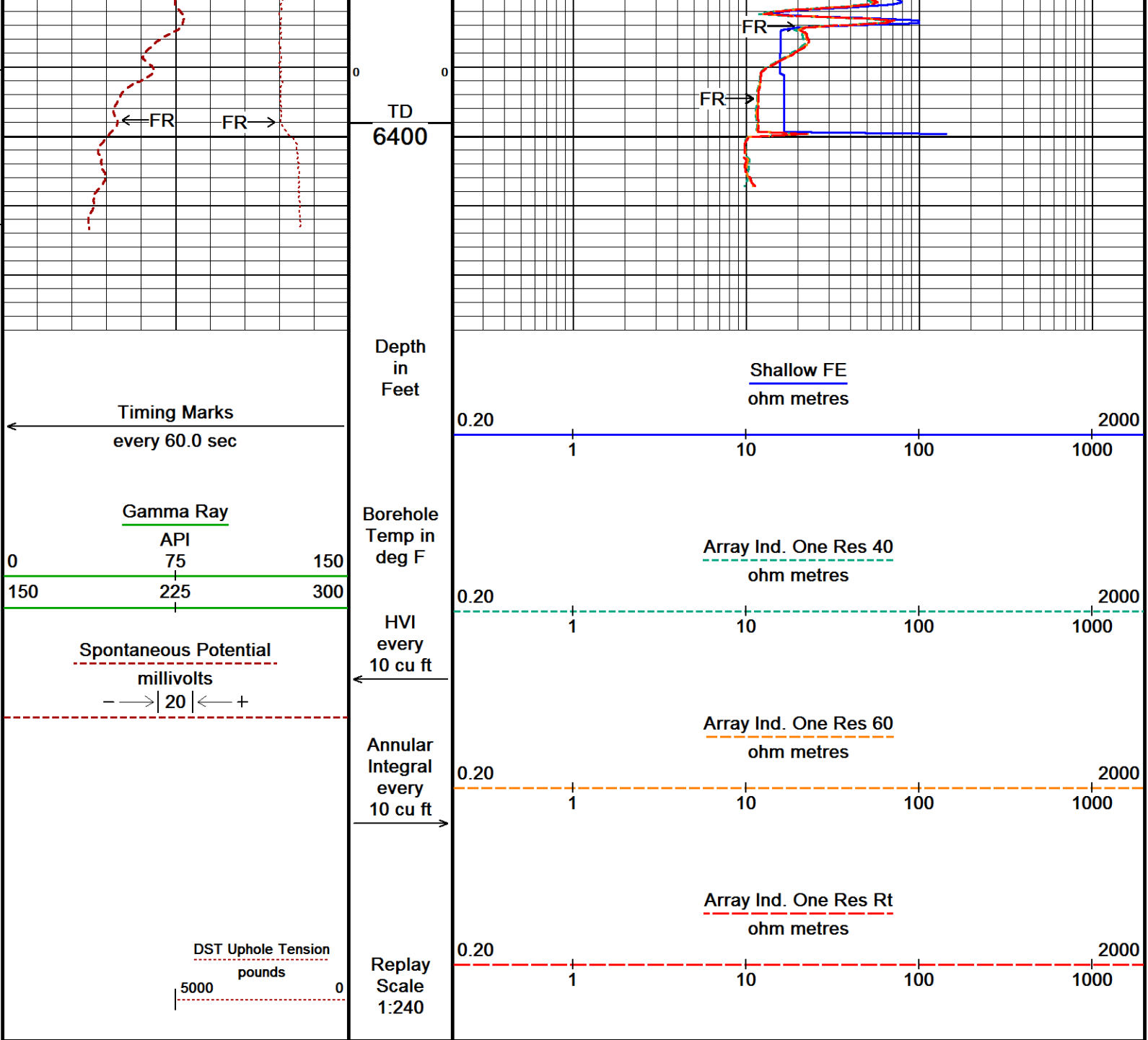
↓ REPEAT SECTION ↓

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 27-MAR-2018 10:32
Filename: C:\Minimus 17.05.6573\Logs\McCoy Petroleum M...\McCoy Petroleum Mack 'A' #1-1_001.dta Recorded on 27-MAR-2018 07:12
System Versions: Logged with 17.05.6573 Plotted with 17.05.6573









Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 27-MAR-2018 10:32
Filename: C:\Minimus 17.05.6573\Logs\McCoy Petroleum Mack 'A' #1-1\McCoy Petroleum Mack 'A' #1-1_001.dta Recorded on 27-MAR-2018 07:12
System Versions: Logged with 17.05.6573 Plotted with 17.05.6573

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION		
C:\Minimus 17.05.6573\Logs\McCoy Petroleum Mack 'A' #1-1\McCoy Petroleum Mack 'A' #1-1_001.dta		
General Constants All 000		Last Edited on 27-MAR-2018,06:40
General Parameters		
Mud Resistivity	0.980	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 Caliper 1	Density Caliper	
HVOL Caliper 2	N/A	

Annular Volume Diameter		4.500	inches
Caliper for Differential Caliper		Density Caliper	
Rwa Parameters			
Porosity used		Crossplot Porosity	
Resistivity used		Array Ind. Two Res Rt	
RWA Constant A		0.620	
RWA Constant M		2.150	
SW/APOR Tool Source		0.000	
Gamma Calibration MCG-D.K 431			
		Measured	Calibrated (API)
Background		94	65
Calibrator (Gross)		756	521
Calibrator (Net)		662	456
Field Calibration on 26-MAR-2018 21:46			
Gamma Calibration Tolerances MCG-D.K 431			
Ratio	1.451	1.40 1.475 1.55	Counts/API
Gamma Constants MCG-D.K 431			
		Last Edited on 27-MAR-2018,04:56	
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-D.K 431			
		Measured	Calibrated(Deg F)
Lower		50.00	50.00
Upper		100.00	100.00
Field Calibration on 19-MAR-2018,14:27			
High Resolution Temperature Constants MCG-D.K 431			
		Last Edited on 19-MAR-2018,14:27	
Pre-filter Length		11	
FE Calibration MFE-A.A 135			
		Base Calibration on 26-MAR-2018,21:57	
		Field Check on 26-MAR-2018 21:59	
		Resistor 1 (ohm)	Resistor 2 (ohm)
		0.0	1000.0
Base Calibration		Measured	Calibrated (ohm-m)
Reference 1		0.0	0.0
Reference 2		962.7	126.8
Base Check			281.2
Field Check			281.4
FE Calibration Tolerances MFE-A.A 135			
Reference 2	962.7	-3% 980.0 +3%	ohm
Base Check	281.2	-2% 277.0 +2%	ohm-m
Field Check	281.4	-2% 281.2 +2%	ohm-m
FE Constants MFE-A.A 135			
		Last Edited on 27-MAR-2018,04:55	
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

Induction Calibration MAI-A.A 111

Factory Loop Calibration 26-MAR-2018 21:53
Field Check on 26-MAR-2018 21:57

Factory Loop Calibration

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

Array	Measured Signal (unitless)		Reference Conductivity (mmho/m)		Calibration	
	Low	High	Low	High	Gain	Offset
1 (near)	17.6	473.6	9.3	966.2	0.000	0.0
2	6.4	385.9	7.6	821.4	0.000	0.0
3	3.2	264.0	5.2	566.0	0.000	0.0
4 (far)	2.1	135.5	2.6	279.2	0.000	0.0
Array Temperature	23.0		Deg F			

Tool Checks

Array	Factory Reference (mmho/m)		Before Survey (mmho/m)		
	Low	High	Low	High	
1 (near)	8.8	3837.9	8.8	3838.8	
2	27.1	3496.8	27.0	3497.1	
3	26.7	2994.8	26.7	2994.6	
4 (far)	17.6	2040.5	17.6	2039.9	
Array Temperature	66.0		66.1		Deg F

Induction Check Tolerances MAI-A.A 111

Low Array 1	8.8	7.3 8.8 10.3	mmho/m	High Array 1	3838.8	-0.5% 3837.9 +0.5%	mmho/m
Low Array 2	27.0	25.6 27.1 28.6	mmho/m	High Array 2	3497.1	-0.5% 3496.8 +0.5%	mmho/m
Low Array 3	26.7	25.2 26.7 28.2	mmho/m	High Array 3	2994.6	-0.5% 2994.8 +0.5%	mmho/m
Low Array 4	17.6	16.1 17.6 19.1	mmho/m	High Array 4	2039.9	-0.5% 2040.5 +0.5%	mmho/m

Induction Constants MAI-A.A 111

Last Edited on 27-MAR-2018,04:55

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 Pineapple
Stand-off 0.49 inches
Number of Fins on Stand-off 5.0000
Stand-off Fin Angle 72.00 degrees
Stand-off Fin Width 1.3878 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	

Caliper Calibration MPD-C.A 216

Base Calibration on 05-MAR-2018 14:30

Field Calibration on 26-MAR-2018 22:01

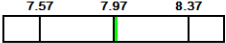
Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13952	3.99
2	22624	5.98
3	31328	7.97
4	39616	9.86
5	48944	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.99	7.97

Caliper Calibration Tolerances MPD-C.A 216

Long Arm Field Cal. 7.99  in

DOWNHOLE EQUIPMENT

C:\Minimus 17.05.6573\Logs\McCoy Petroleum Mack 'A' #1-1\McCoy Petroleum Mack 'A' #1-1_001.dta

Cablehead, 11 pin

CBH-C 0 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Swivel Head Adaptor

SHA-F 48 LG: 2.74 ft WT: 26.5 lb OD: 2.244 in

Compact Comms Gamma

MCG-D.K 431 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-log

MML-A 2 LG: 7.97 ft WT: 81.6 lb OD: 2.244 in

Compact Neutron

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

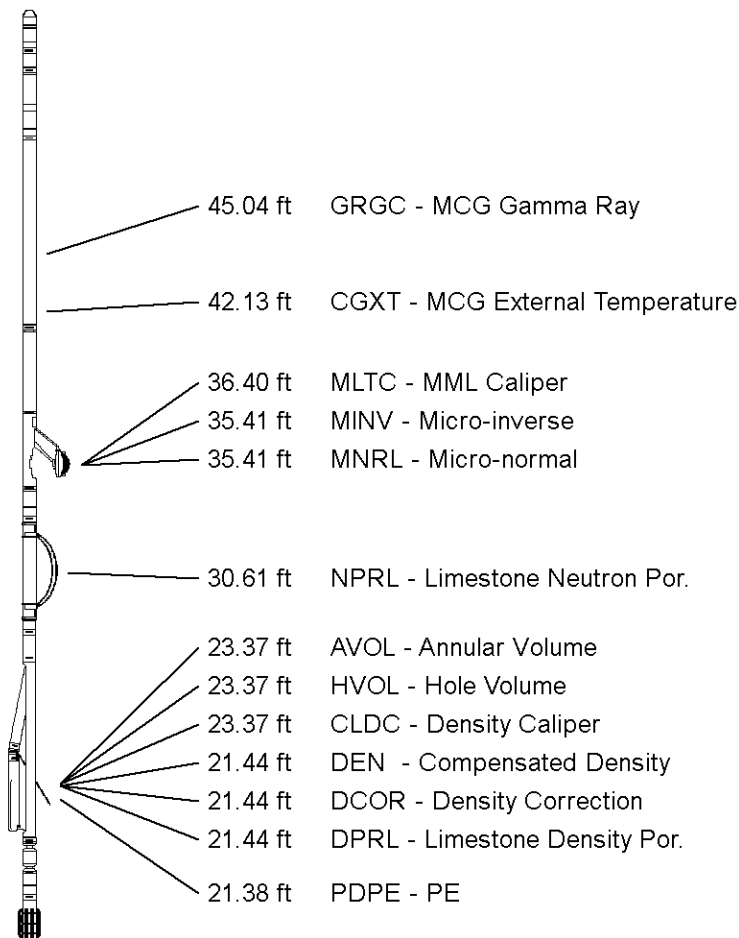
Compact Density/Caliper

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

Compact Knuckle Joint

SKJ-E.B 732 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

Compact Focussed Electric

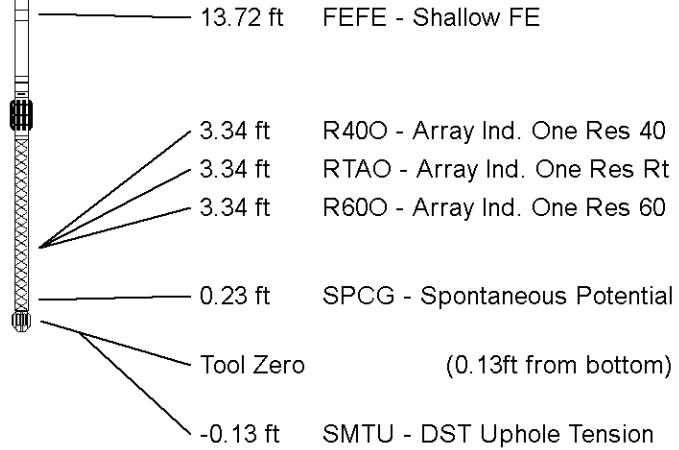


Compact Focused Electric
MFE-A.A 135 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Induction

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

Total Length: 55.46 ft Weight: 458.6 lb



All measurements relative to tool zero.

COMPANY McCOY PETROLEUM CORPORATION
WELL MACK 'A' #1-1
FIELD WILDCAT
PROVINCE/COUNTY GRAY
COUNTRY/STATE U.S.A / KANSAS

Elevation Kelly Bushing	2767	feet	First Reading	6395.00	feet
Elevation Drill Floor	2765	feet	Depth Driller	6400.00	feet
Elevation Ground Level	2754	feet	Depth Logger	6398.00	feet

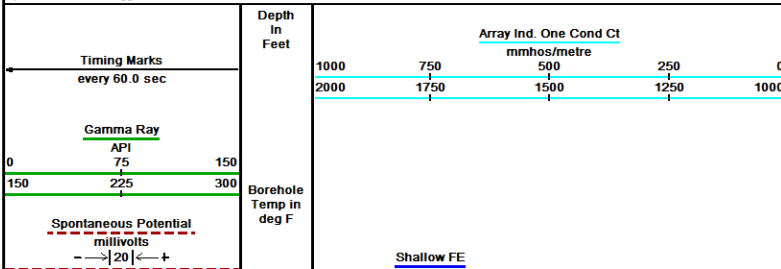


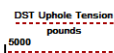
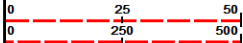
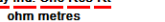
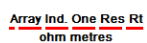
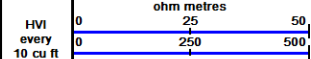
ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

Weatherford®

Weatherford®		ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG	
COMPANY	McCOY PETROLEUM CORPORATION	WELL	MACK 'A' #1-1
FIELD	WILDCAT	PROVINCE/COUNTY	GRAY
COUNTRY/STATE	U.S.A / KANSAS	LOCATION	1980' FSL & 1980' FWL
SEC. 1	TWP. 23S R3E 23W	Other Services	INFORMATION
Log Number	15-088-20595	Permanent Datum SL Elevation	2754 feet
Log Measured From KB	13.00 feet above Permanent Datum	KB	2767.00
Drilling Measured From KB		DF	2765.00
Date	27-MAR-2018	GL	2754.00
Run Number	ONE	Service Order	4558-209306005
Depth Driller	6400.00	feet	
Depth Logger	6398.00	feet	
First Reading	6395.00	feet	
Last Reading	1751.00	feet	
Casing Driller	1752.00	feet	
Casing Logger	1751.00	feet	
Bit Size	7.875	inches	
Hole Fluid Type	CHEMICAL		
Density/Viscosity	9.35 lb/USg	68.00 CP	
pH / Fluid Loss	10.00	7.60 ml/20min	
Sample Source			
Em @ Measured Temp	0.98 @ 75.0	ohm-in	
Rmt @ Measured Temp	0.78 @ 75.0	ohm-in	
Rmtc @ Measured Temp	1.18 @ 75.0	ohm-in	
Source Rmt / Rmtc	CALC		
Em @ BHT	0.60 @ 122.0	ohm-in	
Time since Circulation	5 HOURS		
Max Recorded Temp	122.00	deg F	
Equipment / Base	13244	LIB	
Recorded By	ADAM SILL		
Intersected By	DAVID WILLIAMS		

1 INCH MAIN
Depth Based Data - Maximum Sampling Increment: 10.0cm
Filename: C:\Minimus 17.05.6573\Logs\McCoy Petroleum Mack 'A' #1-1_002.dta
System Versions: Logged with 17.05.6573 Plotted with 17.05.6573
Plotted on 27-MAR-2018 10:32
Recorded on 27-MAR-2018 07:39





Replay Scale 1:600

C1740 G Shoe

1800

1900

2000

2100

2200

2300

2400

2500

2600

Array Ind. One Res Rt

Array Ind. One Cond Ct

97°

98°

98°

99°

99°

99°

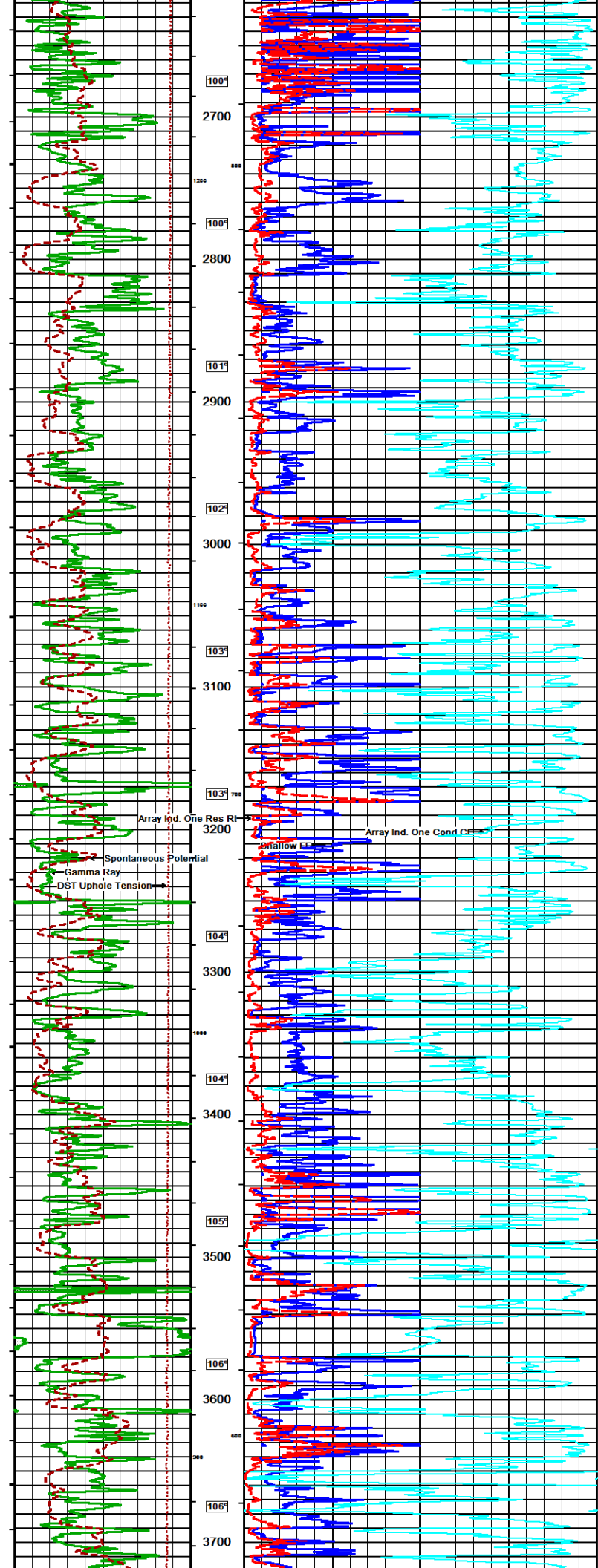
Spontaneous Potential

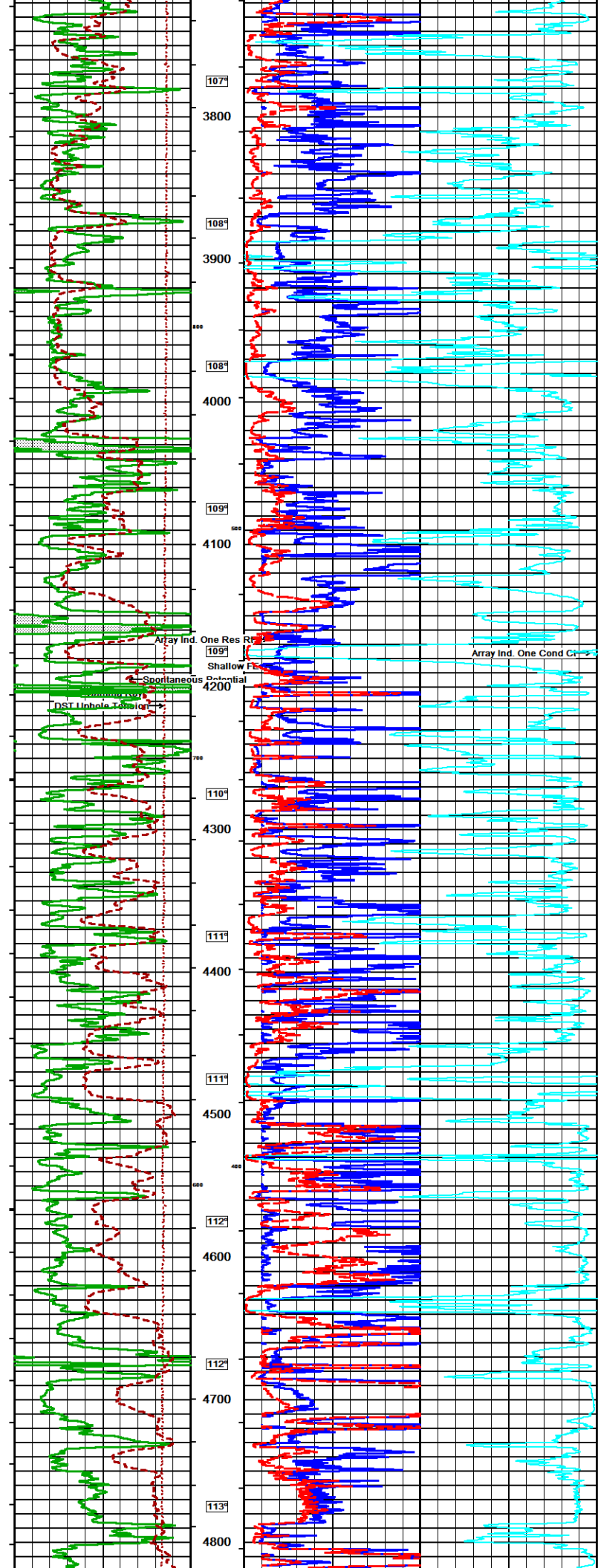
Gamma Ray

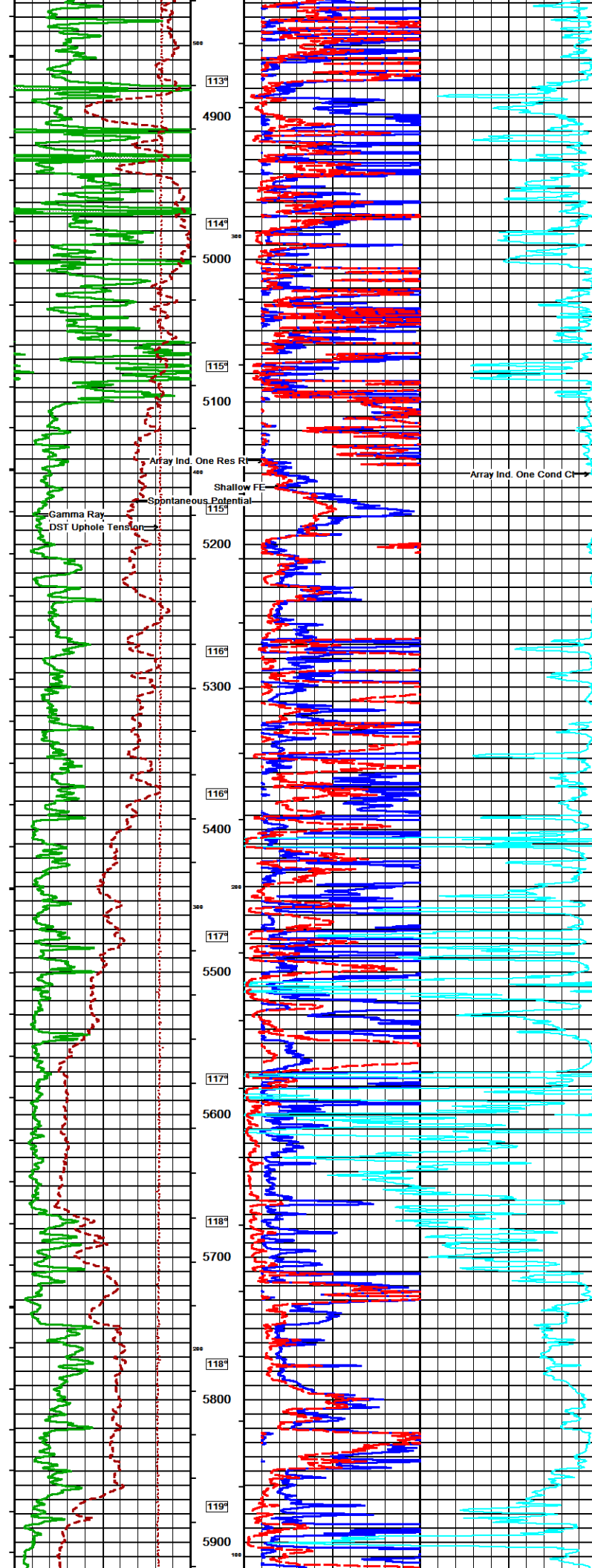
DST Uphole Tension

→

5

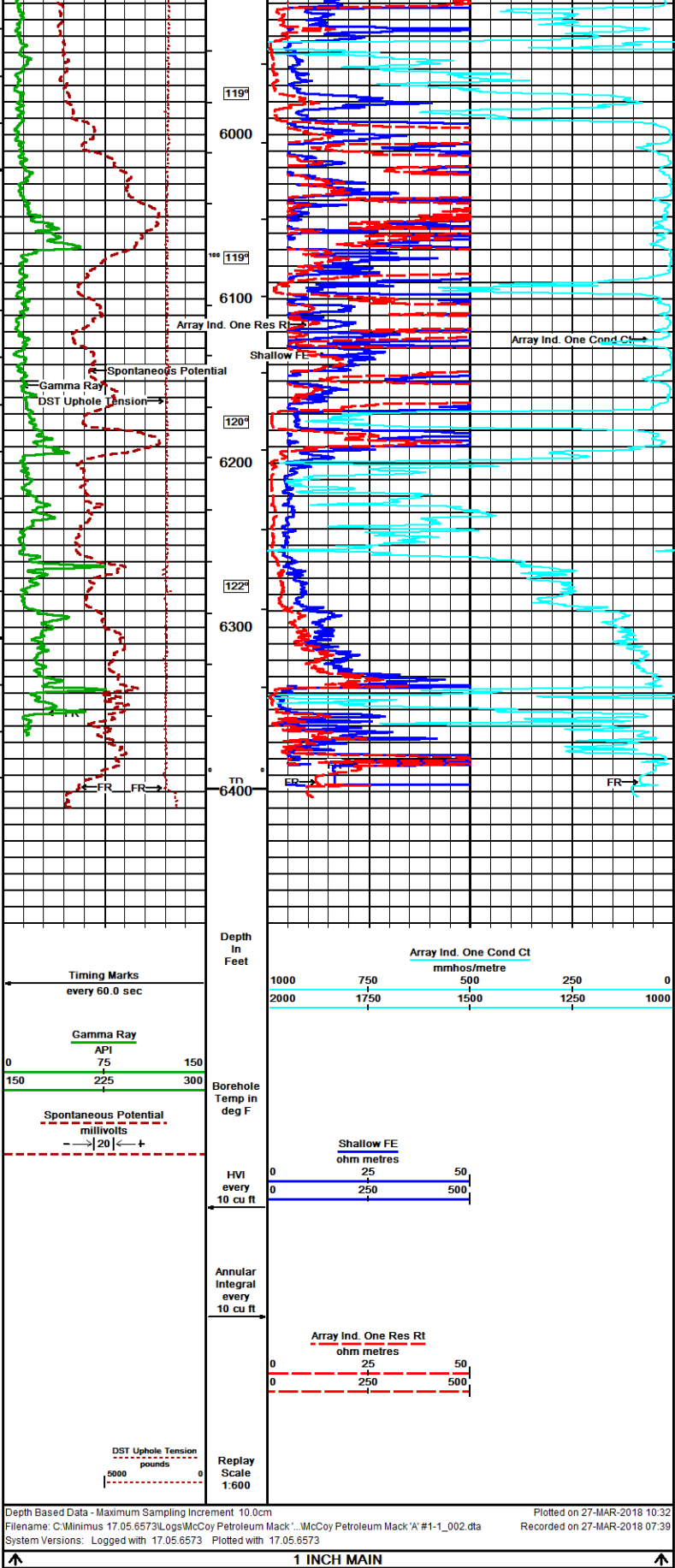






Array Ind. One Cond C

Array Ind. One Cond C



COMPANY		McCOY PETROLEUM CORPORATION			
WELL		MACK 'A' #1-1			
FIELD		WILDCAT			
PROVINCE/COUNTY		GRAY			
COUNTRY/STATE		U.S.A / KANSAS			
Elevation Kelly Bushing	2767	feet	First Reading	6395.00	feet
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