



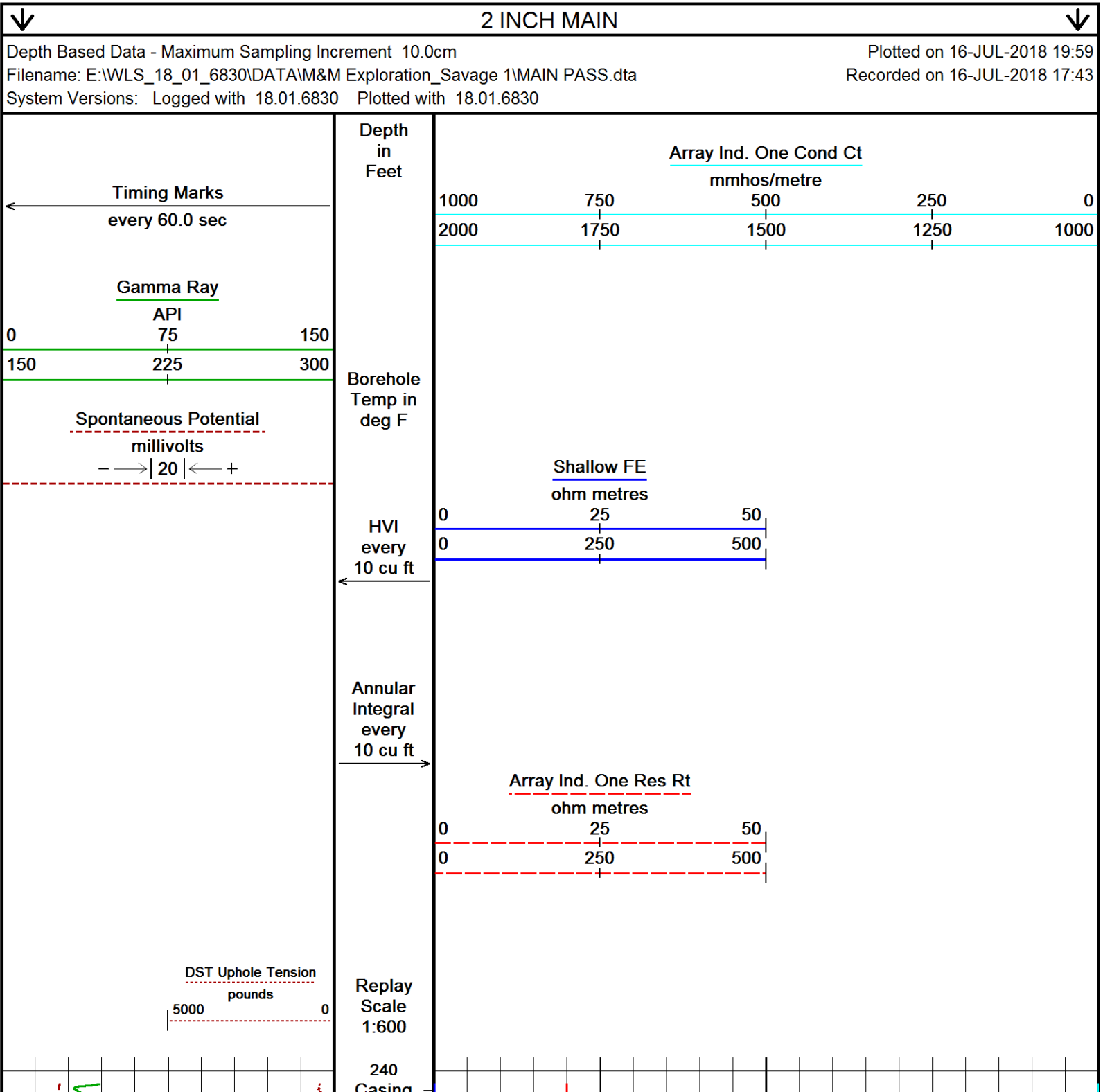
Weatherford®

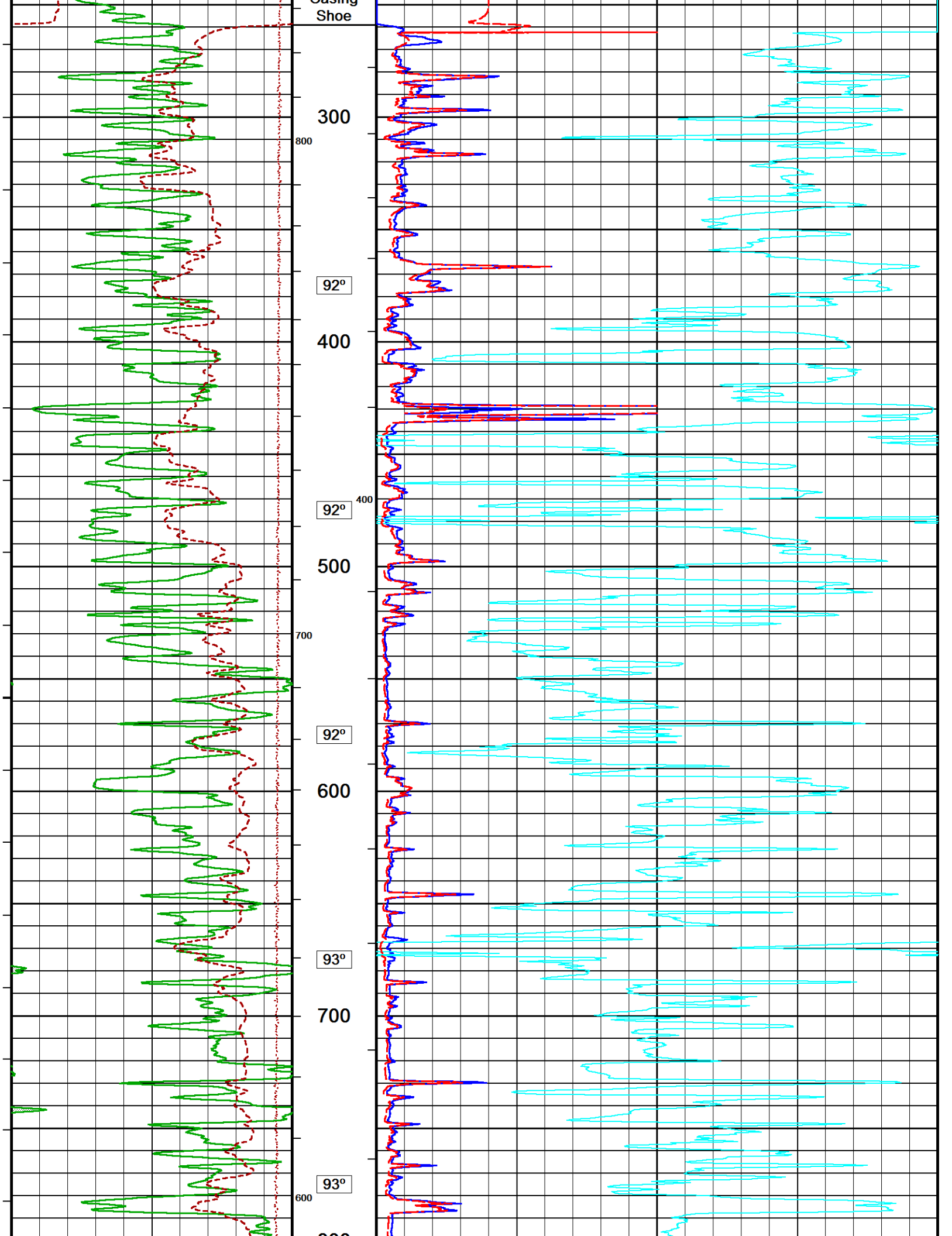
**ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG**

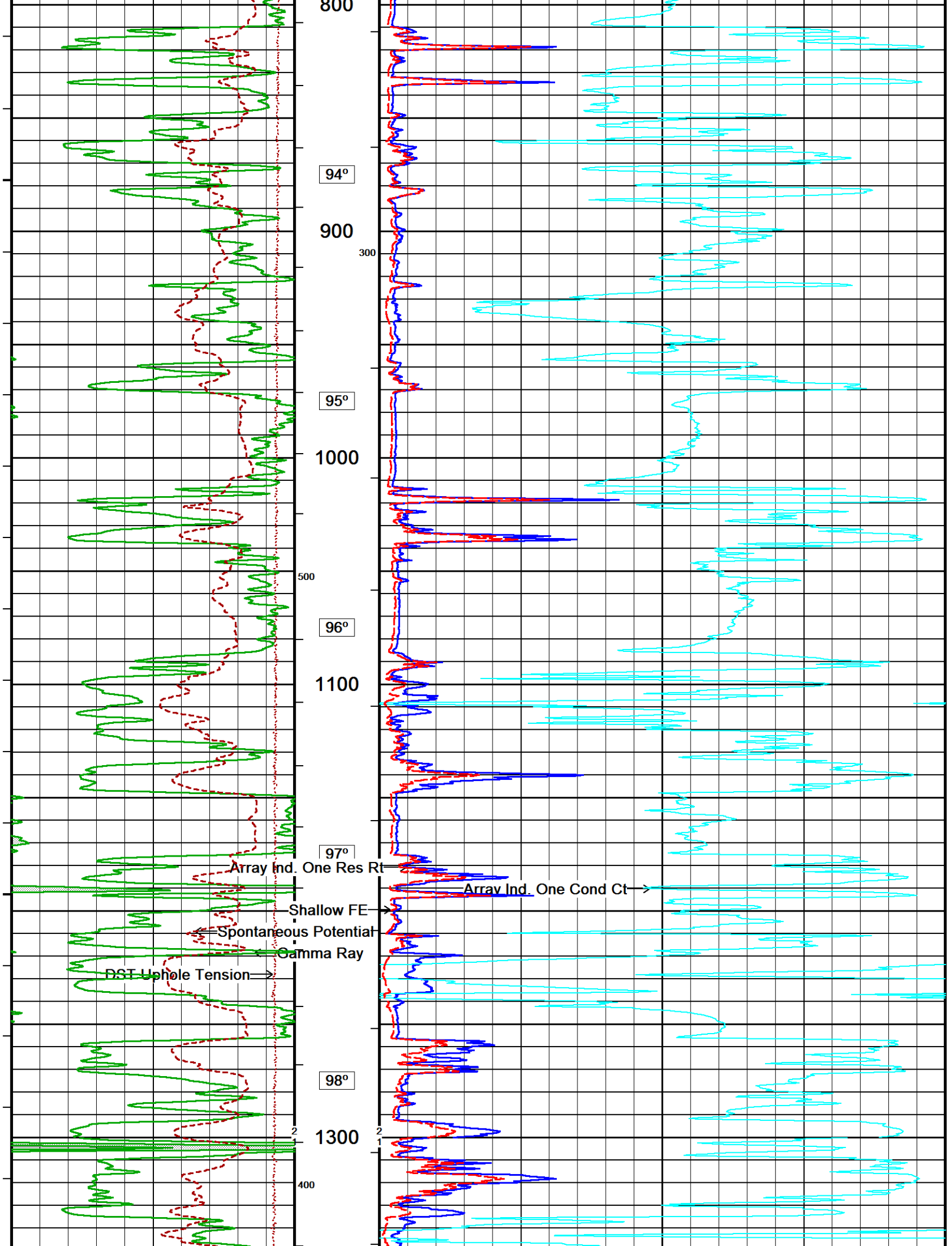
COMPANY		M & M EXPLORATION, INC			
WELL		Savage #1			
FIELD		Savage			
PROVINCE/COUNTY		MARION			
COUNTRY/STATE		KANSAS			
LOCATION		SW SE SW 330' FSL & 1650' FWL			
SEC 15	TWP 21S	RGE 4E	Other Services		
Latitude	38.2174338		PHOTO DENSITY		MICROLOG
Longitude	-96.9814468		DUAL SPACED NEUTRON		
API Number	15-115-21504				
Permanent Datum Ground Level, Elevation 1292 feet					
Log Measured From KB, 6.00 feet above Permanent Datum					
Drilling Measured From KB					Elevations: KB DF GL
Date	16-JUL-2018				1298.00 1292.00
Run Number	ONE				
Service Order	18148-218943986				
Depth Driller	2460.00				feet
Depth Logger	2455.00				feet
First Reading	2451.70				feet
Last Reading	259.00				feet
Casing Driller	252.00				feet
Casing Logger	259.00				feet
Bit Size	9.875				inches
Hole Fluid Type	WATER BASED				
Density / Viscosity	9.20	g/cc	47.00	sec/qt	
PH / Fluid Loss	10.00		8.80	ml/30Min	
Sample Source	FLOW LINE				
Rm @ Measured Temp	1.30 @ 96.0				ohm-m
Rmf @ Measured Temp	1.20 @ 96.0				ohm-m
Rmc @ Measured Temp	1.50 @ 96.0				ohm-m
Source Rmf / Rmc	CALC		CALC		
Rm @ BHT	1.20 @104.0				ohm-m
Time Since Circulation	3.0 HRS				
Max Recorded Temp	104.00				deg F
Equipment / Base	13379		ELRENO		
Recorded By	S. WIGHT				
Witnessed By	JUSTIN CARTER				MIKE AUSTIN

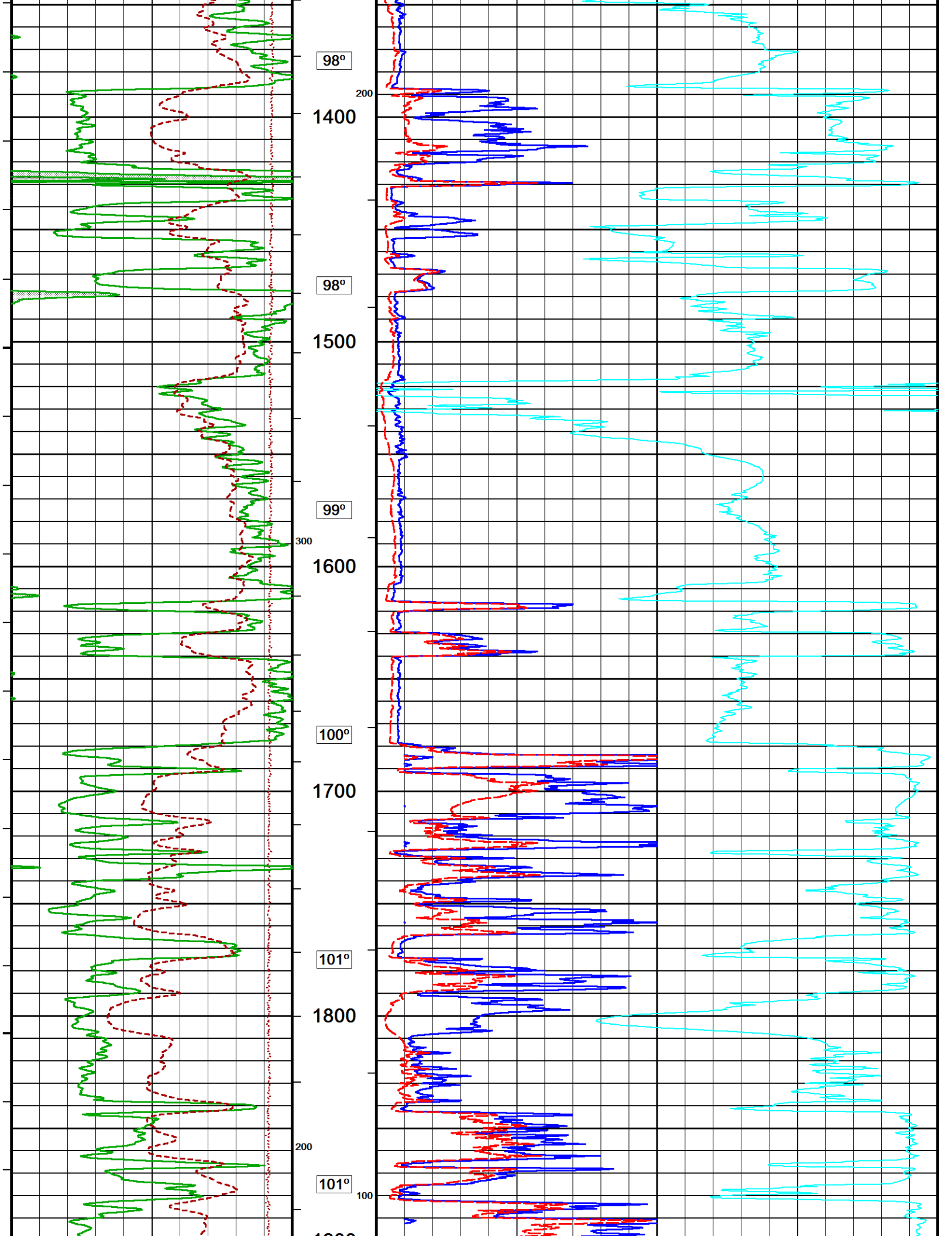
BOREHOLE RECORD					Last Edited: 16-JUL-2018 16:00
Bit Size inches		Depth From feet		Depth To feet	
12.250		0.00		252.00	
7.875		252.00		2460.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	8.625	0.00	252.00	24.00	

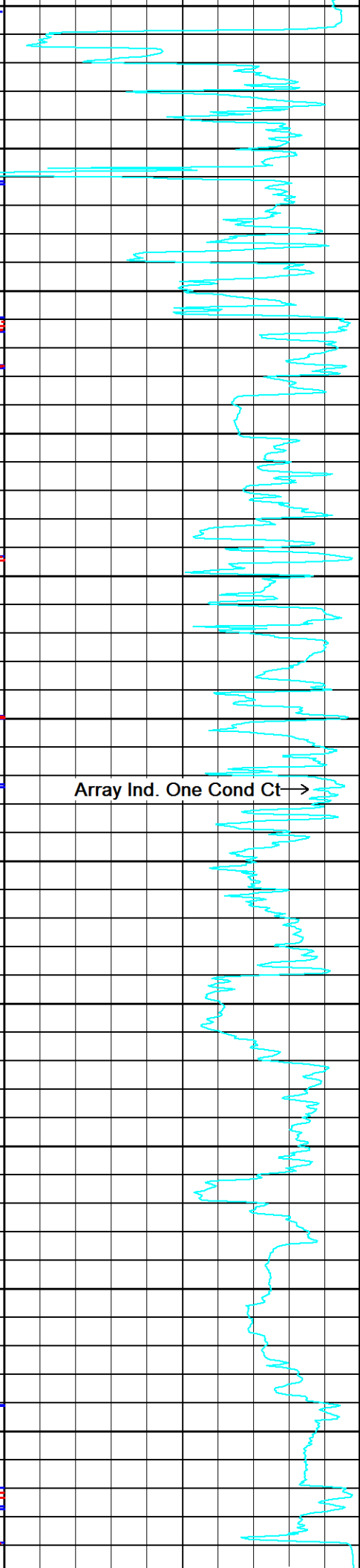
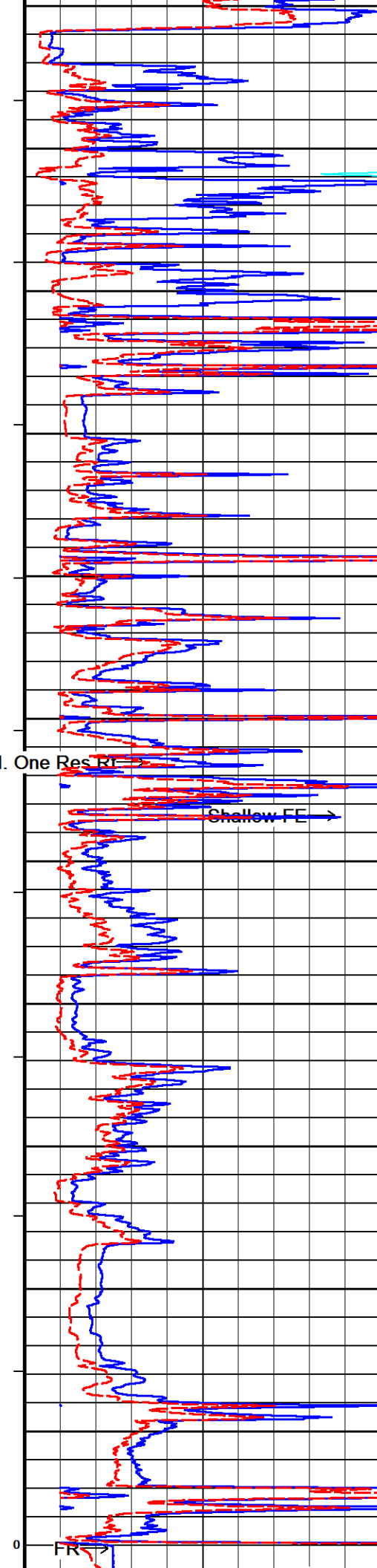
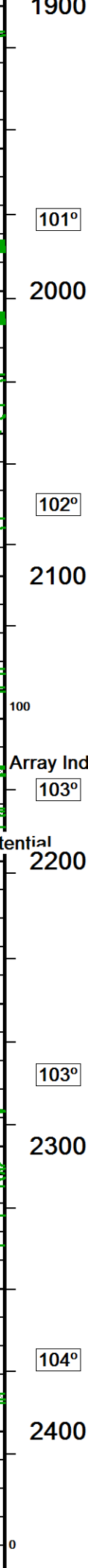
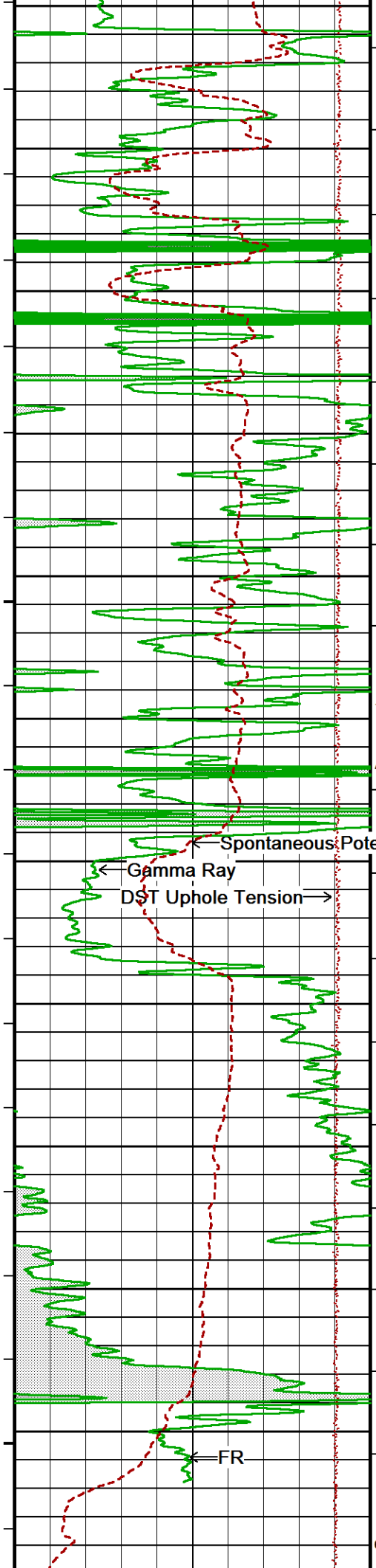
REMARKS
WLS 18.01.6830
TOOLSTRING: SHA, MCG, MDN (DUAL BOWSPRINGS), MPD (8" PROFILE PLATE), SKJ, MFE (ONE 0.5" STANDOFF), MAI (TWO 0.5" STANDOFFS).
INTERVAL REQUESTED: DENSITY / NEUTRON / MICROLOG: TD - 1300 FT INDUCTION / GAMMA RAY / CALIPER: TD - CASING
LIMESTONE MATRIX USED FOR POROSITY CALCULATION, 2.71 G/CC.
TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 830 CU FT. ANNULAR HOLE VOLUME FROM TD TO SURFACE CASING WITH 5.5" FUTURE CASING: 470 CU FT.
CREW: J. VOEGELI, D. PRICHARD
RIG: C I #1

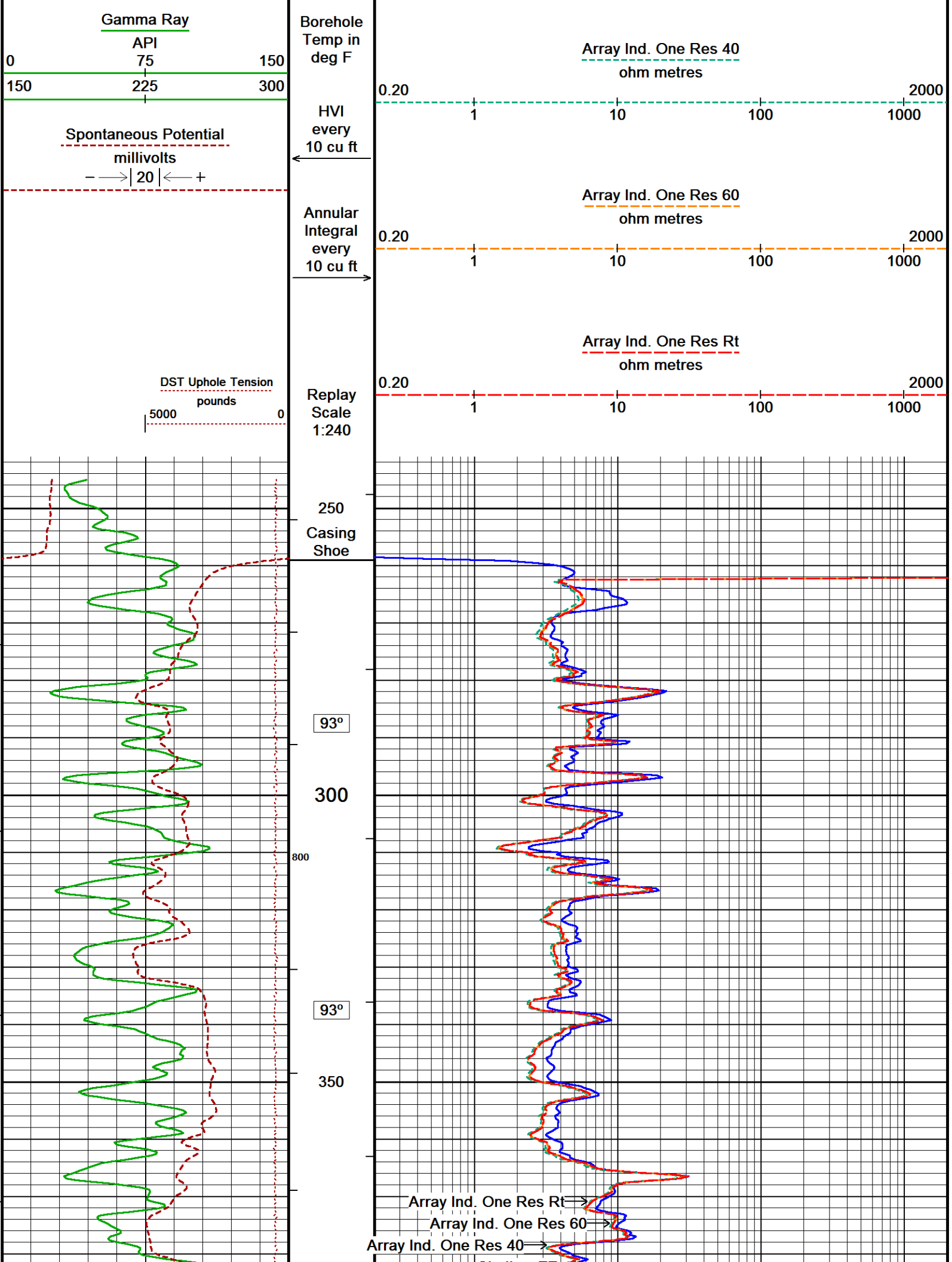


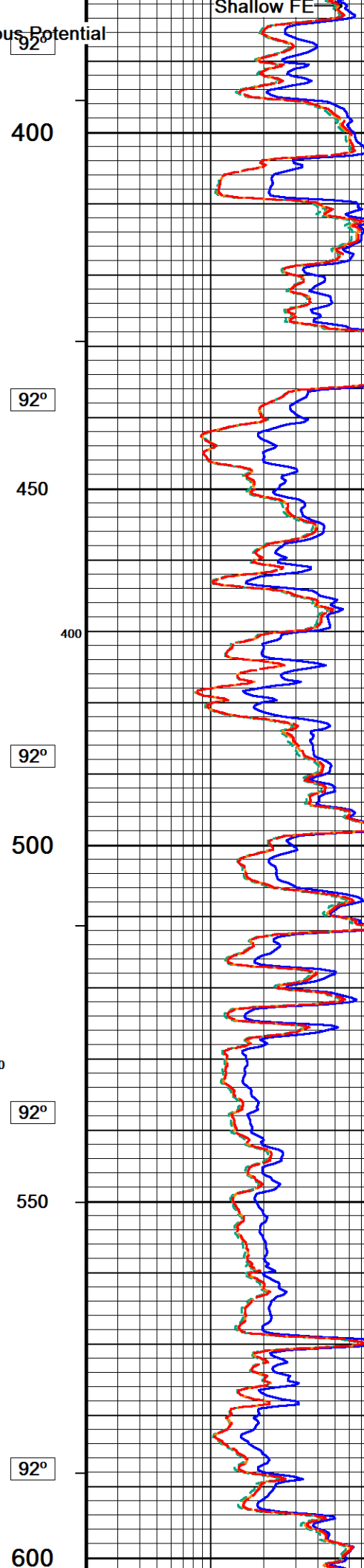
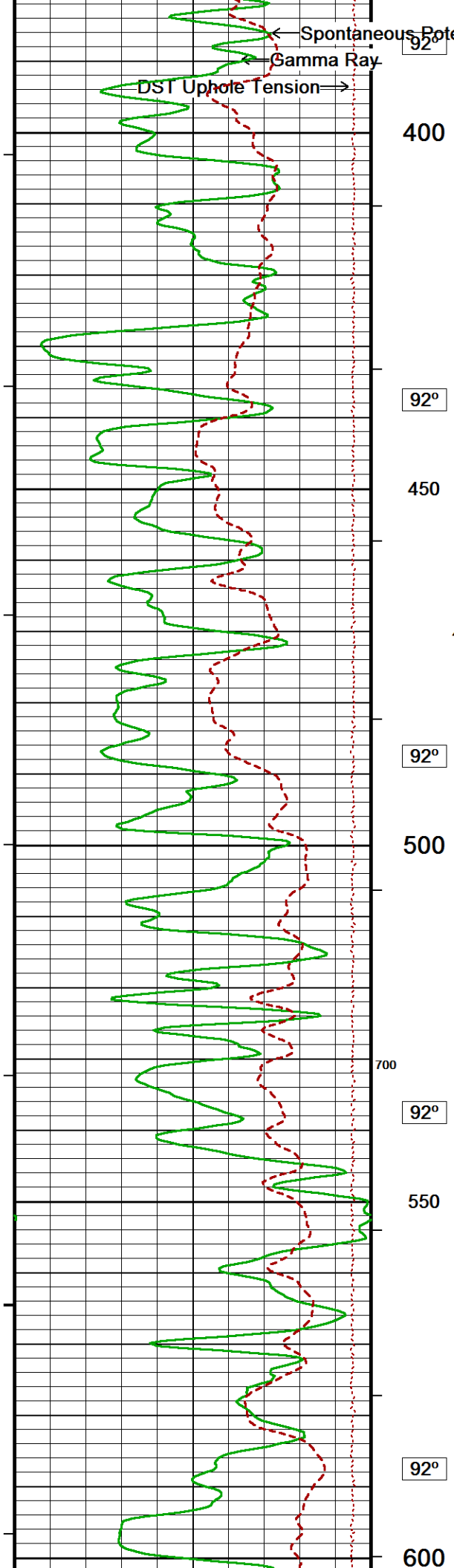


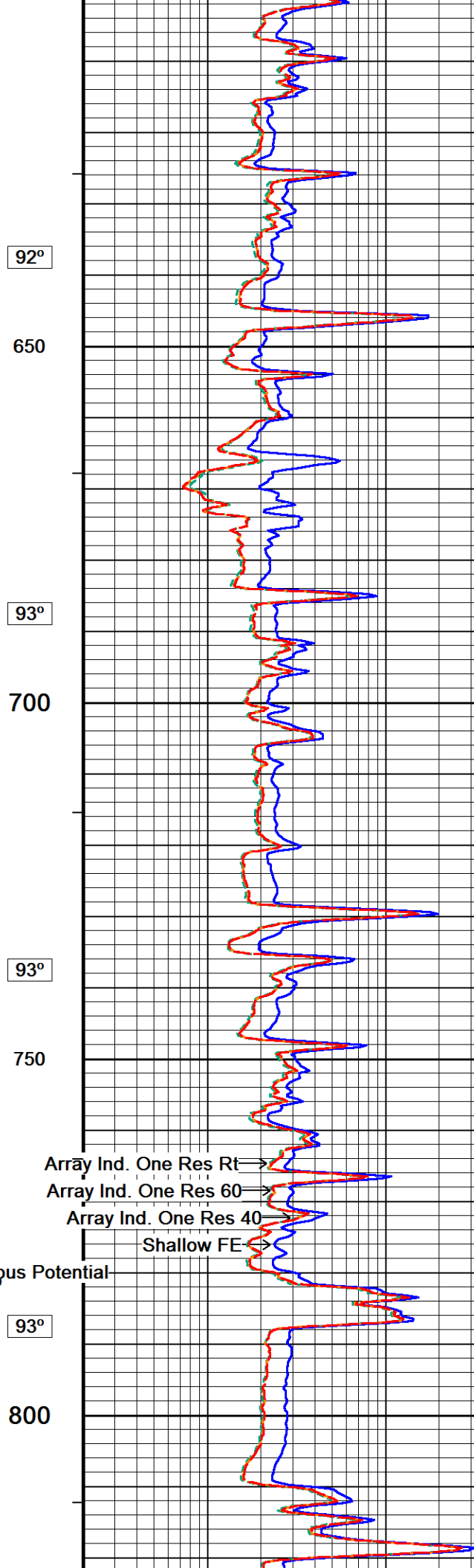
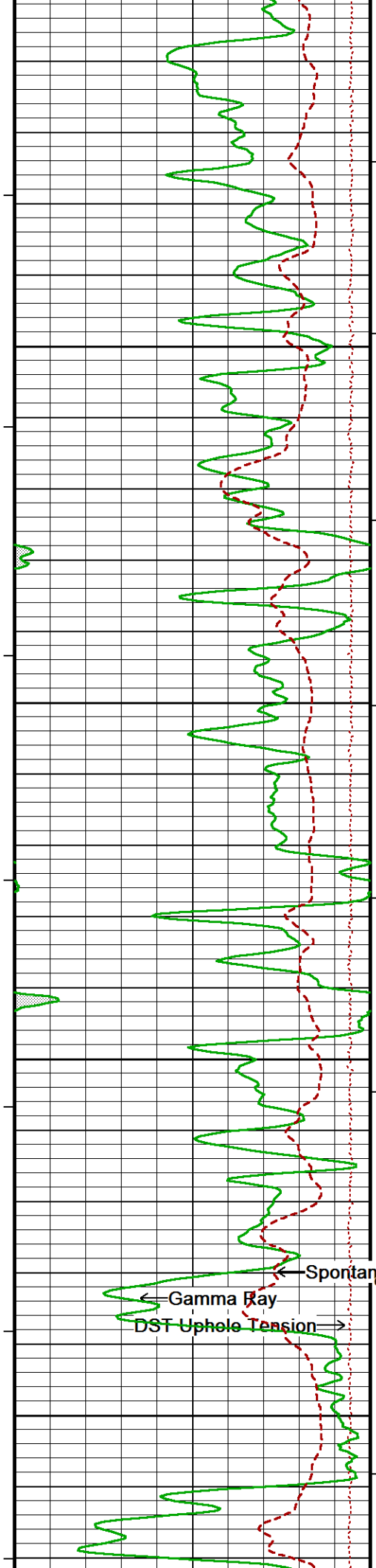


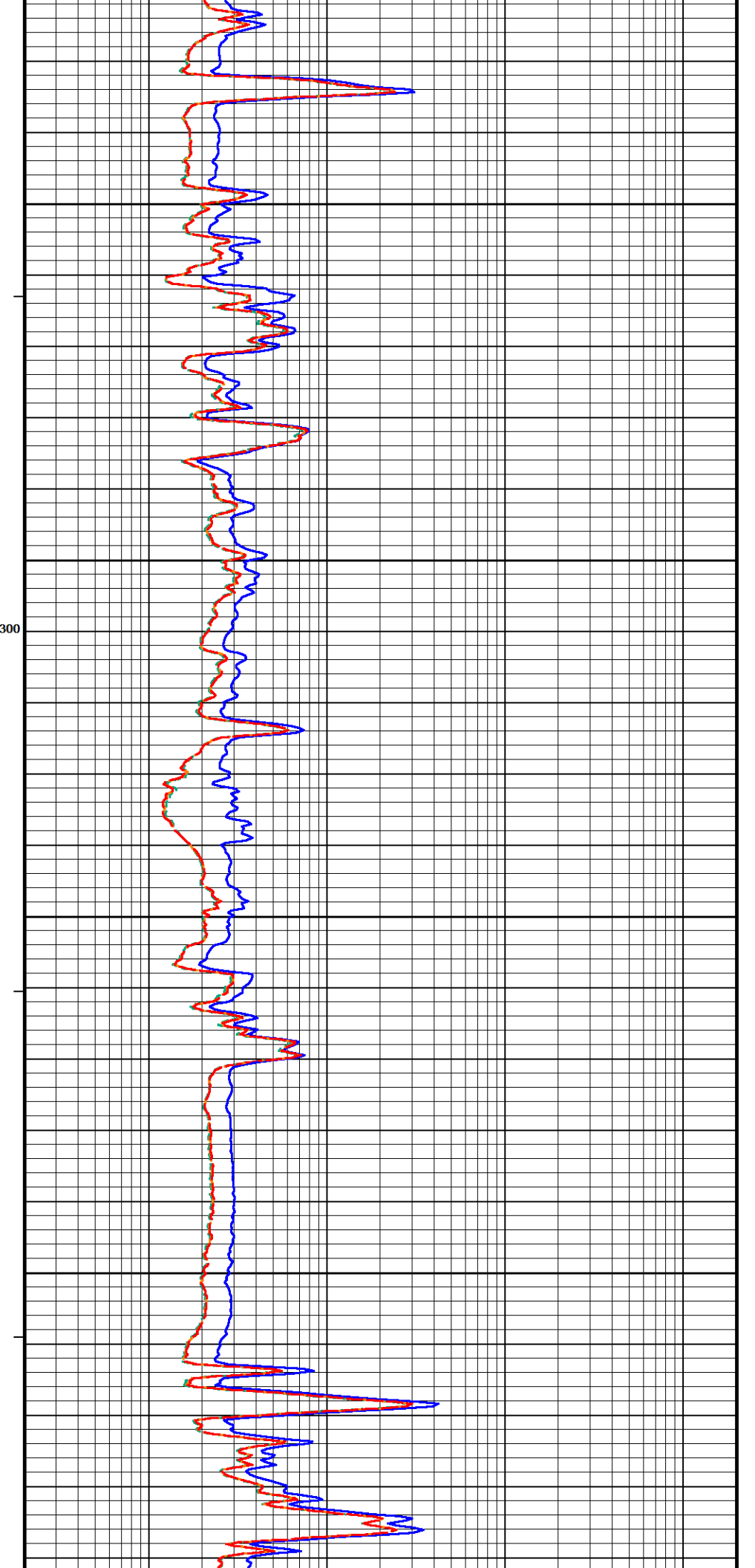
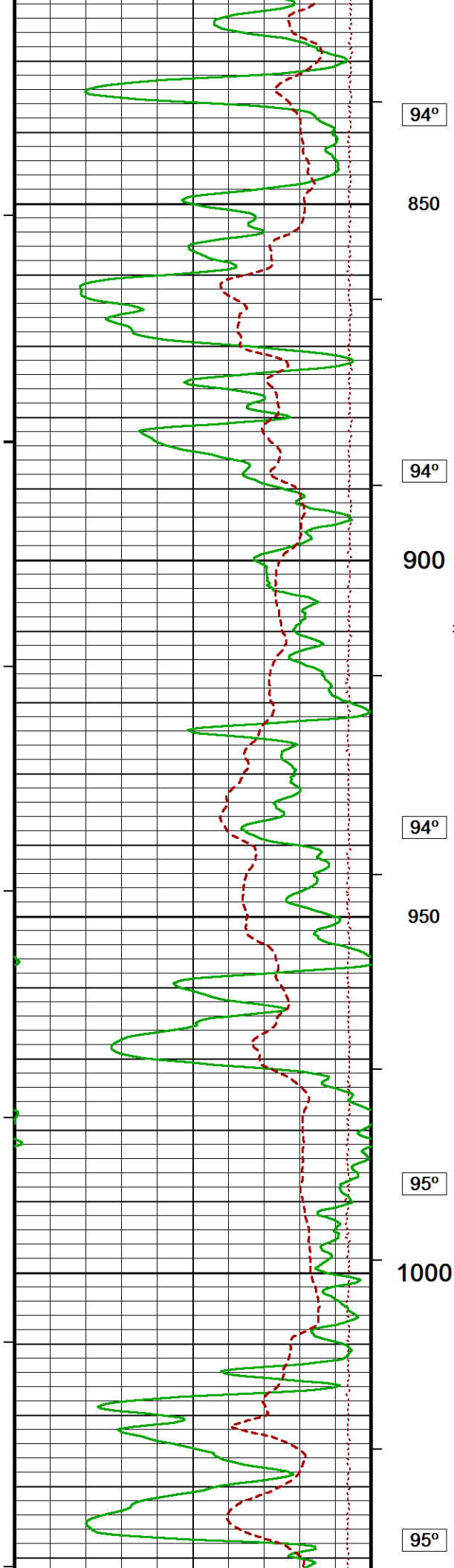


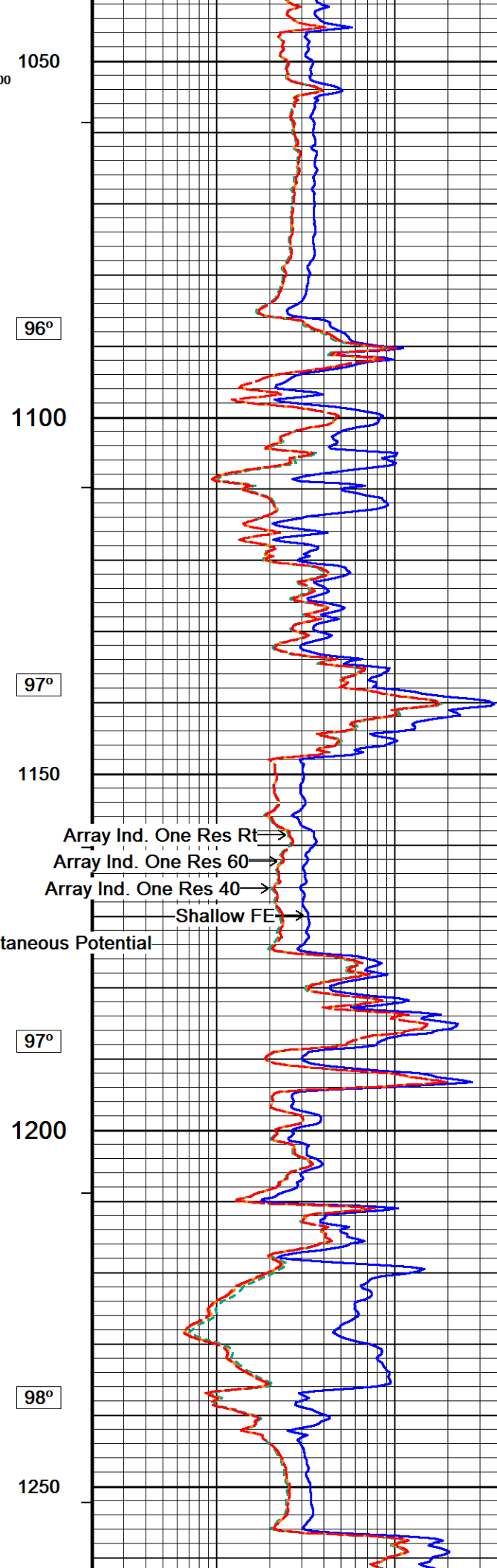
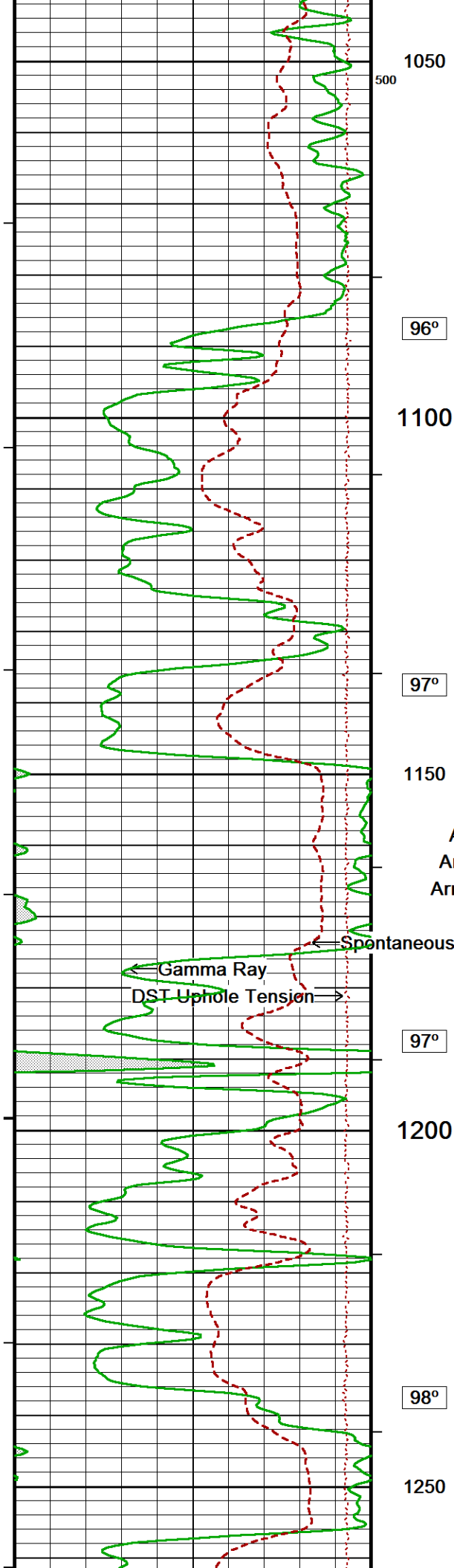


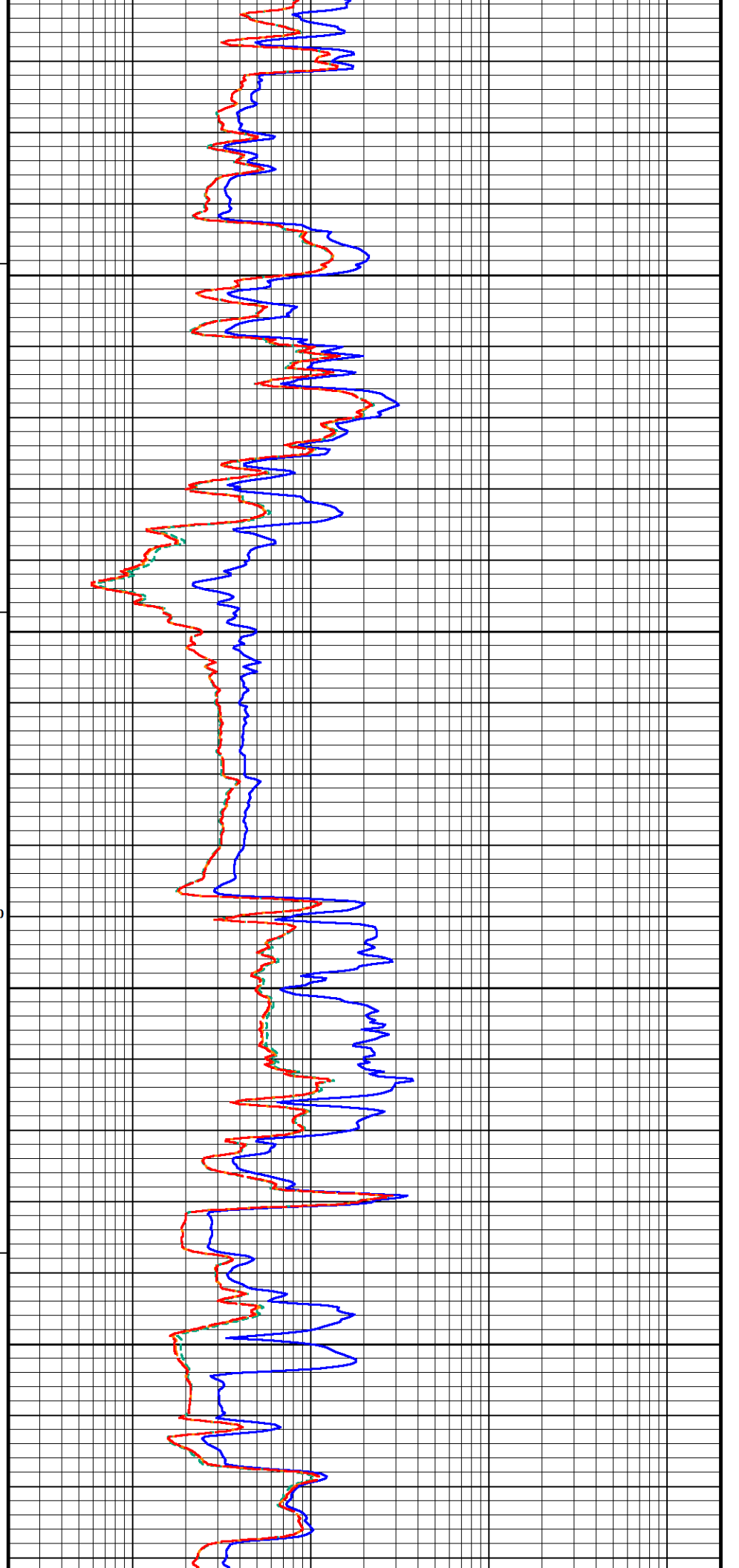
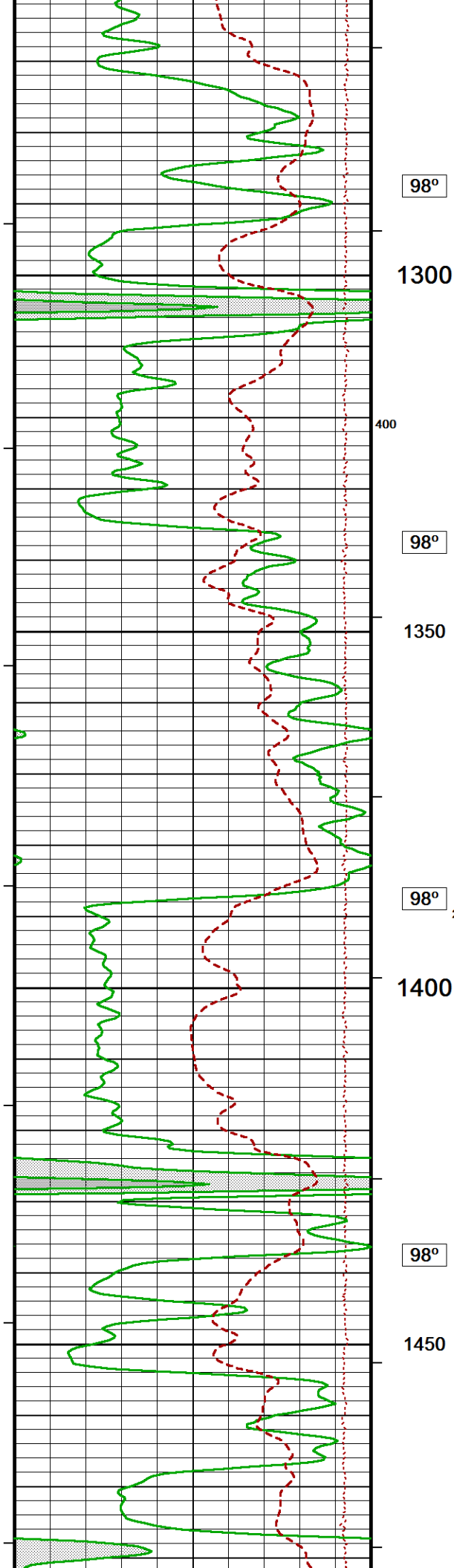


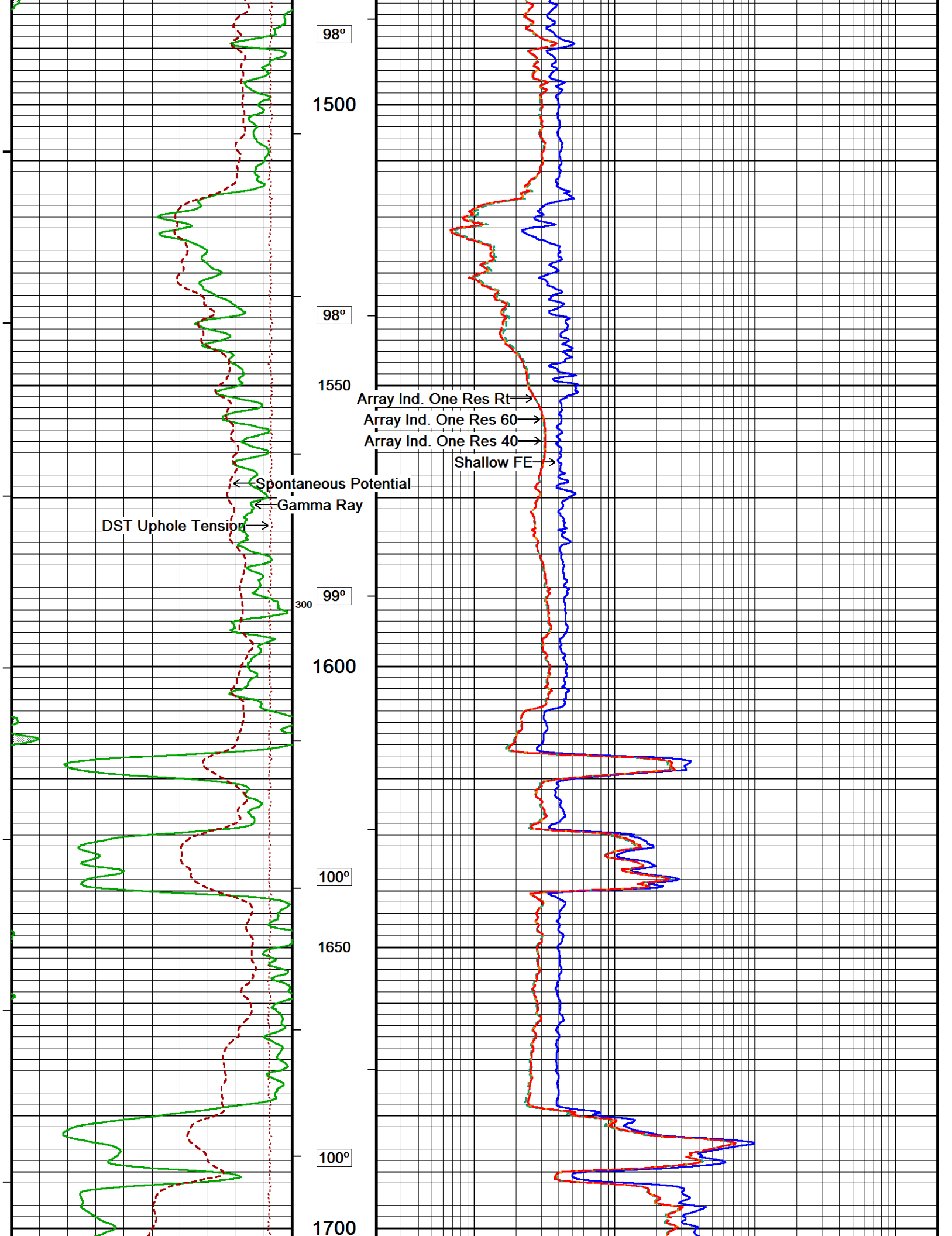


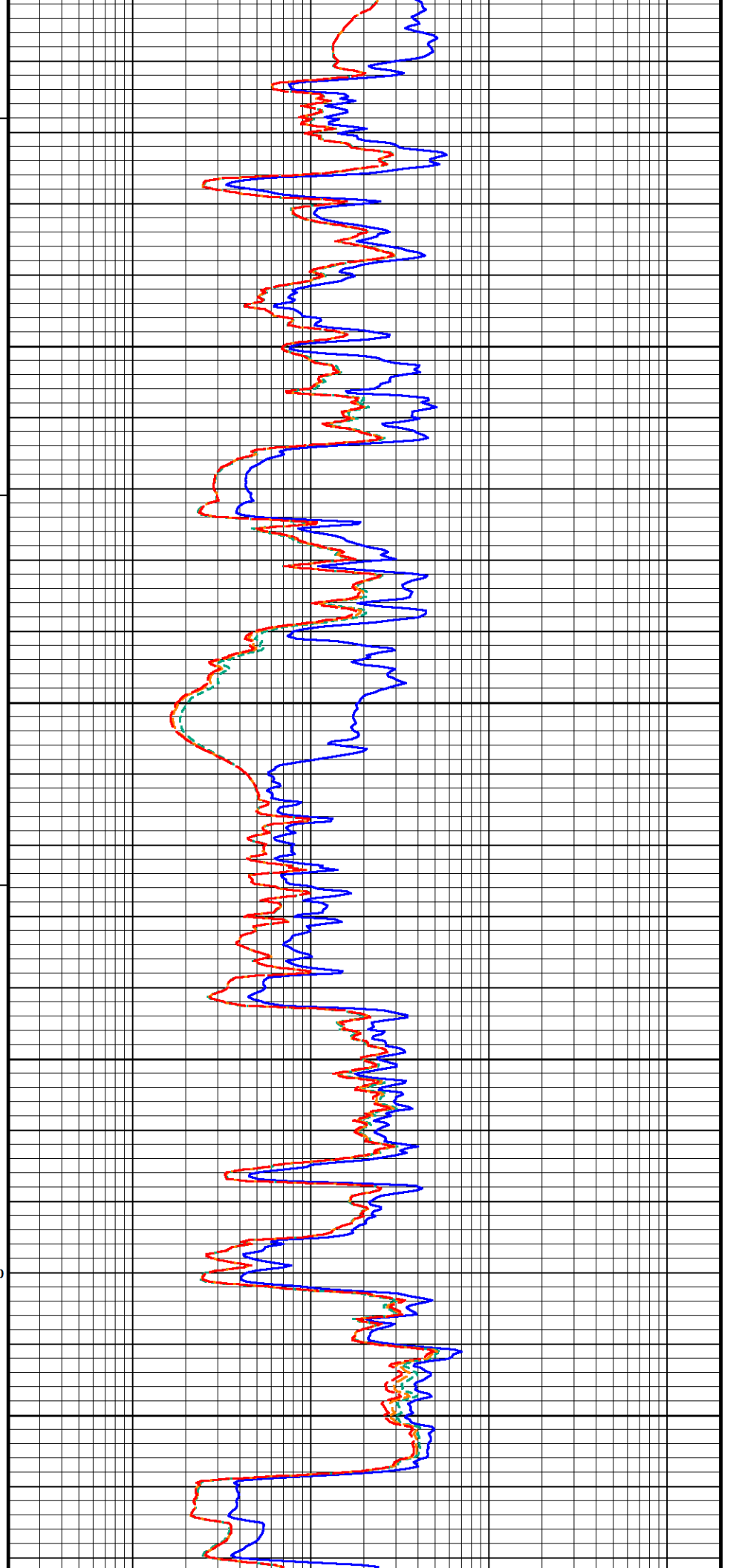
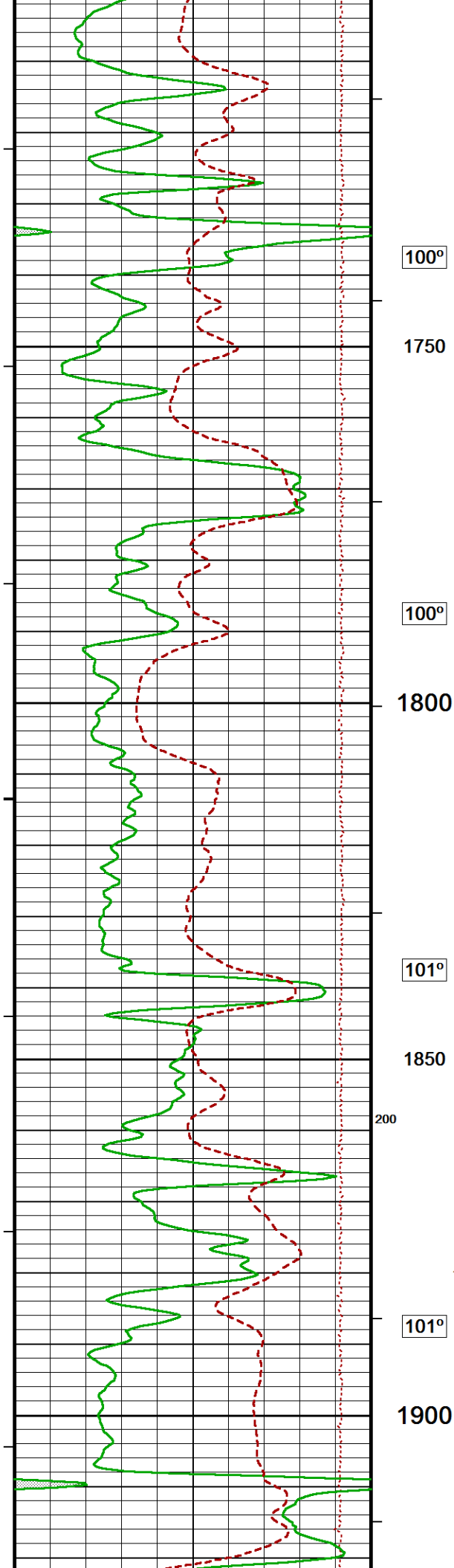


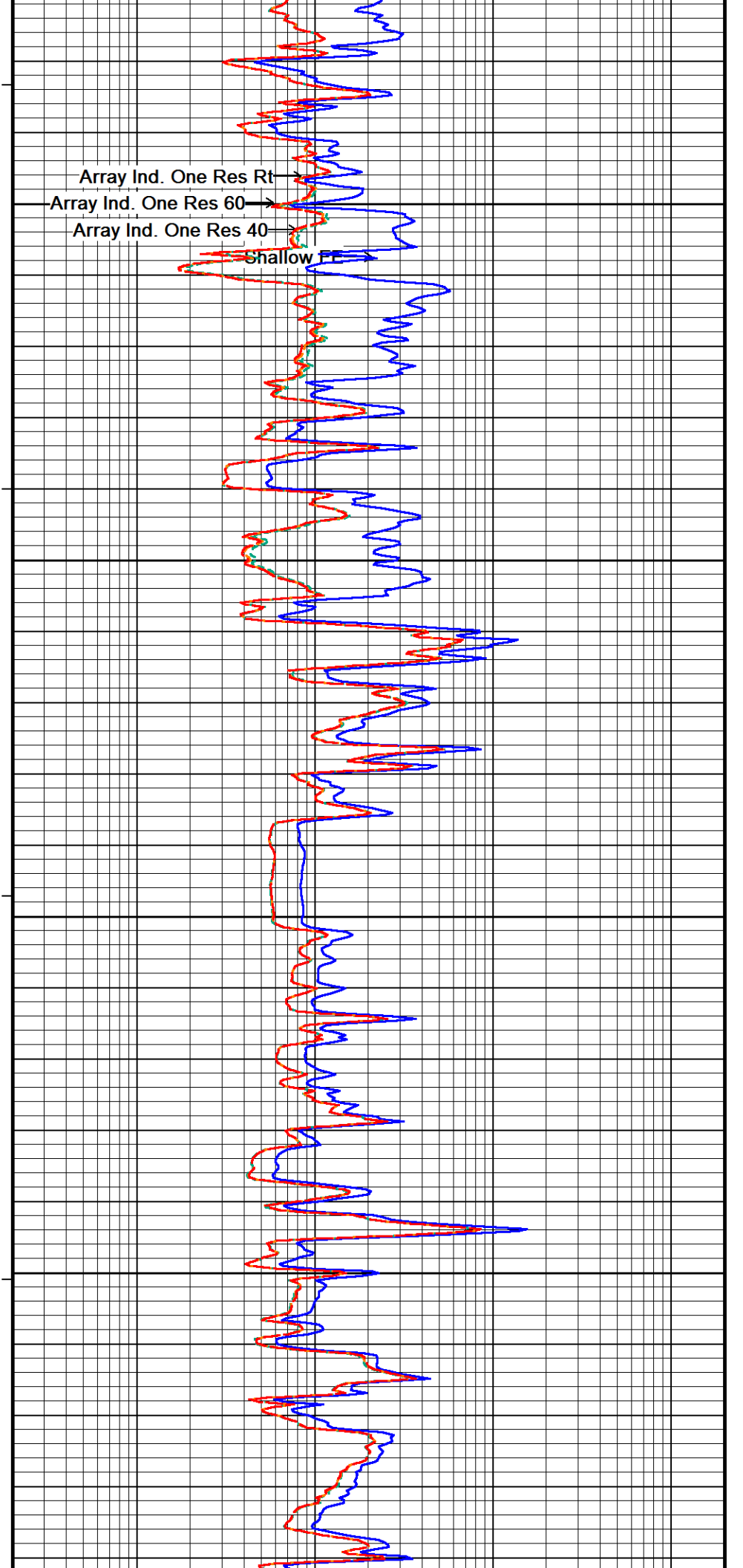
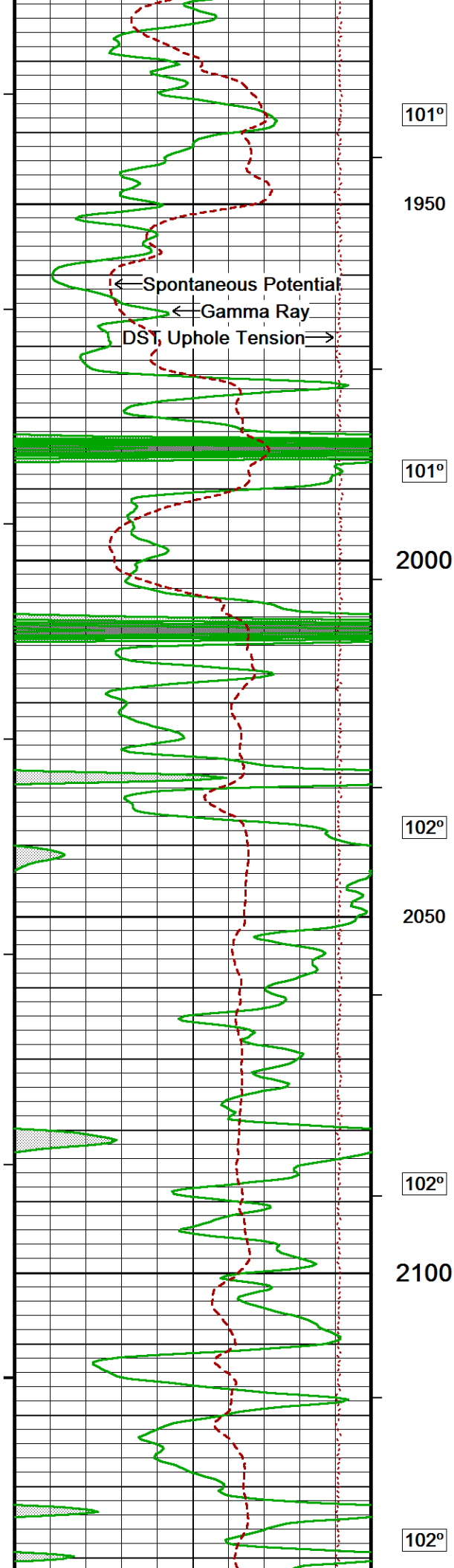


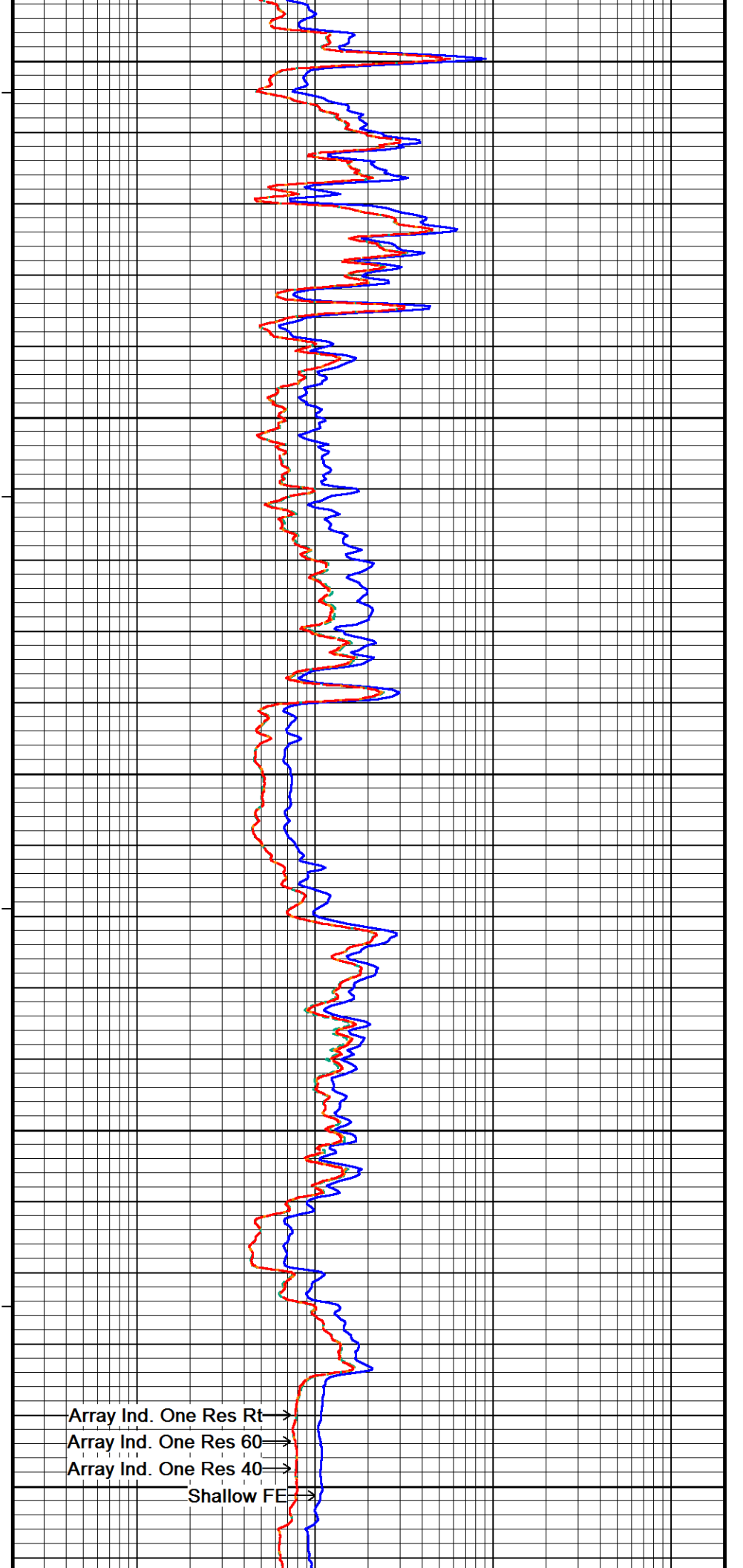
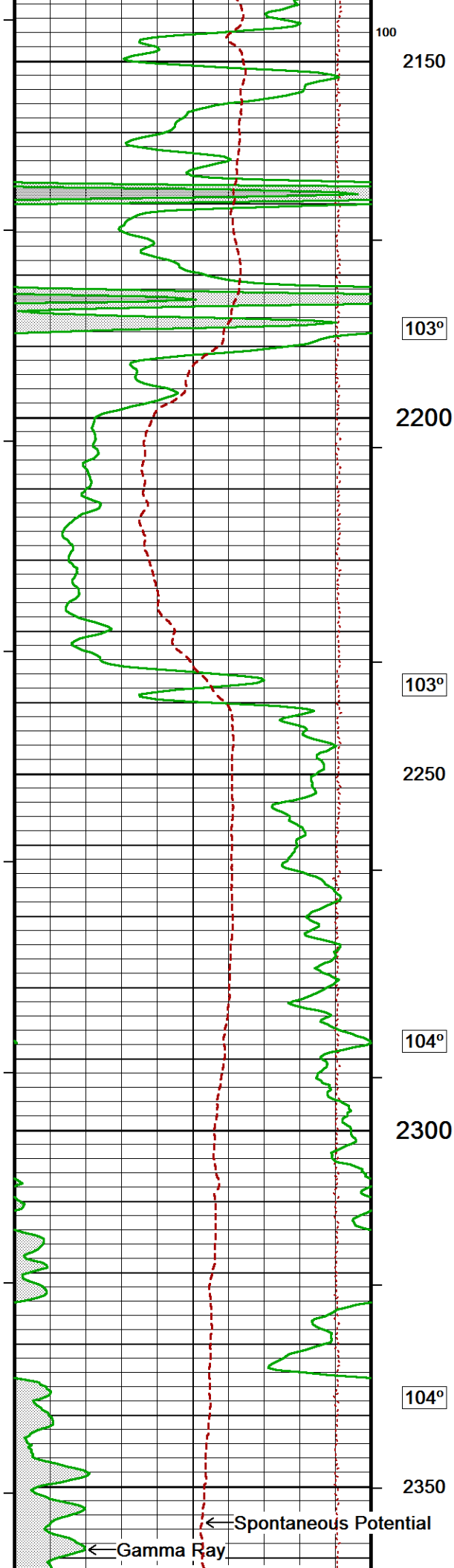


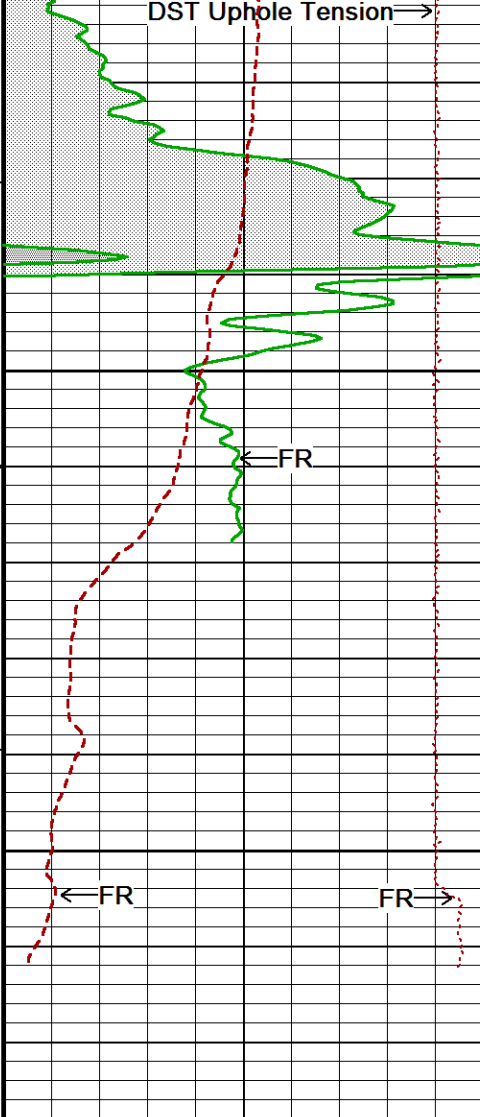












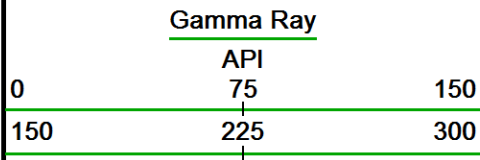
103°

2400

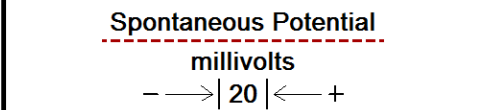
2450 TD

Depth in Feet

Timing Marks every 60.0 sec

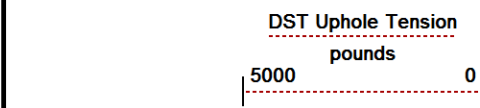


Borehole Temp in deg F

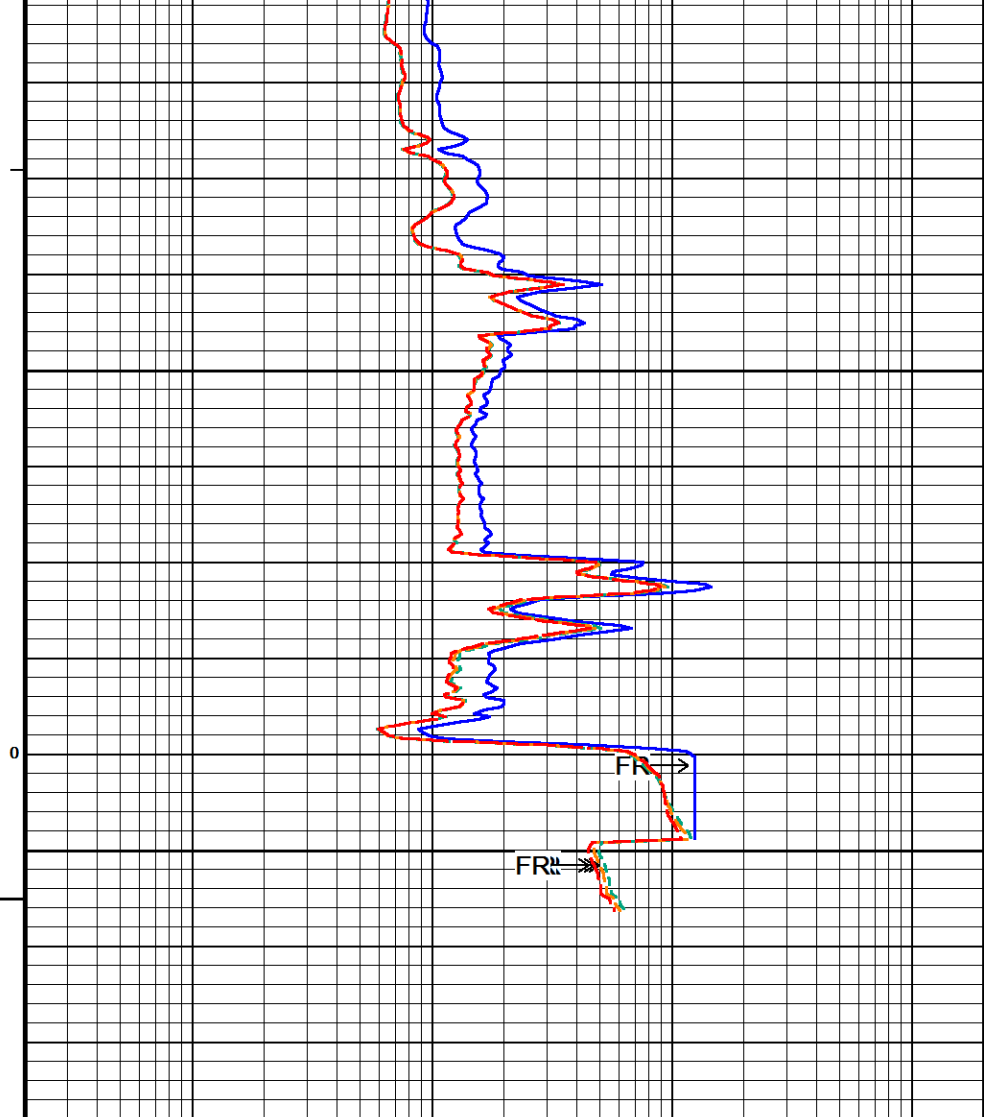


HVI every 10 cu ft

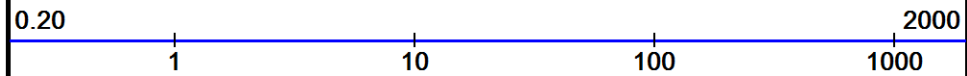
Annular Integral every 10 cu ft



Replay Scale 1:240



Shallow FE ohm metres



Array Ind. One Res 40 ohm metres



Array Ind. One Res 60 ohm metres



Array Ind. One Res Rt ohm metres



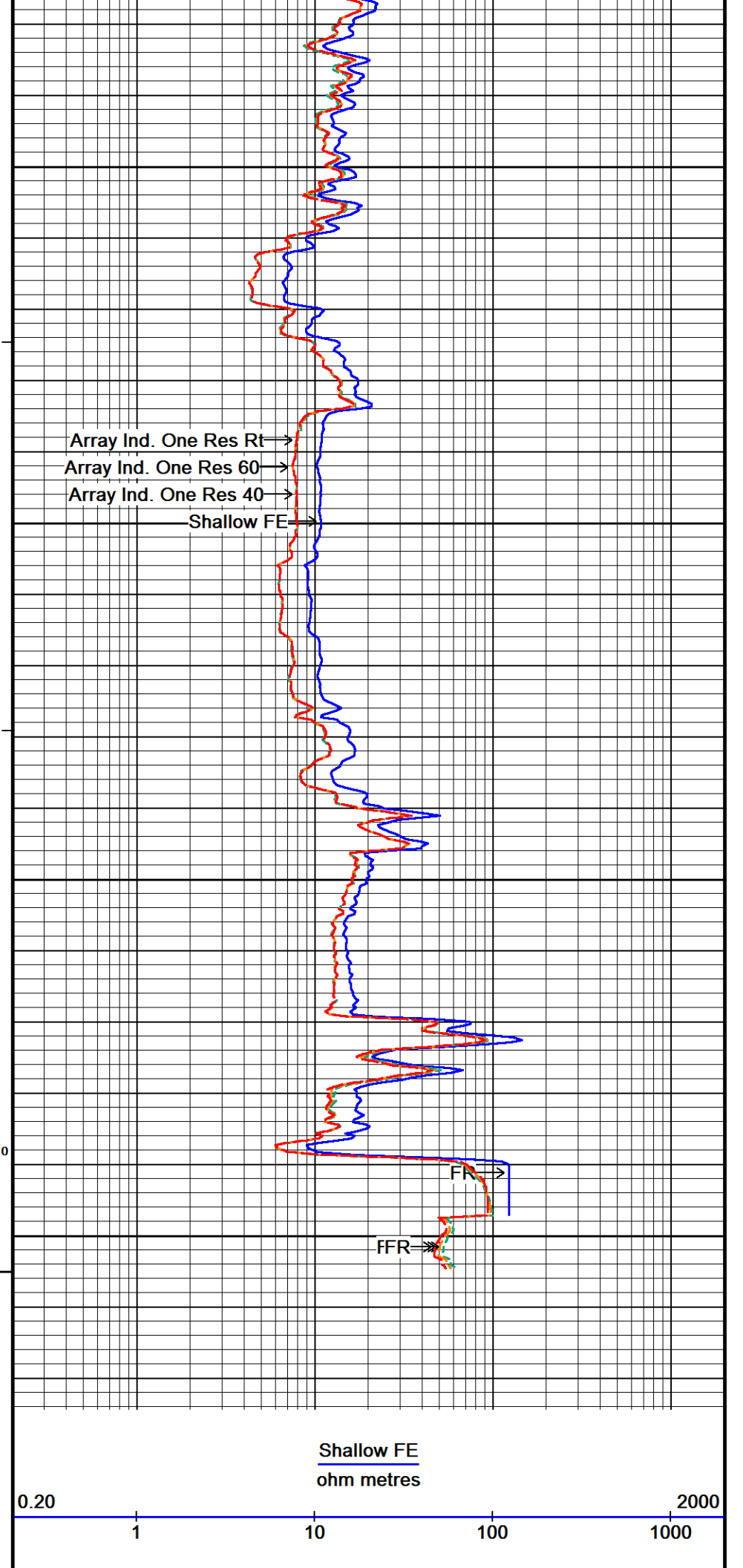
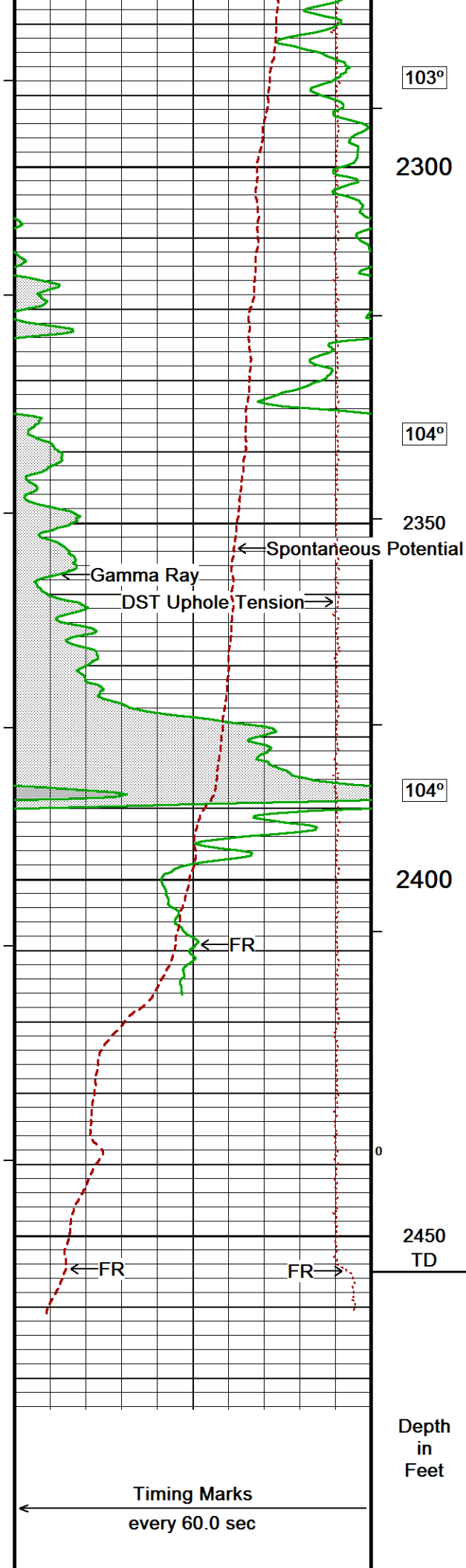
Plotted on 16-JUL-2018 19:59

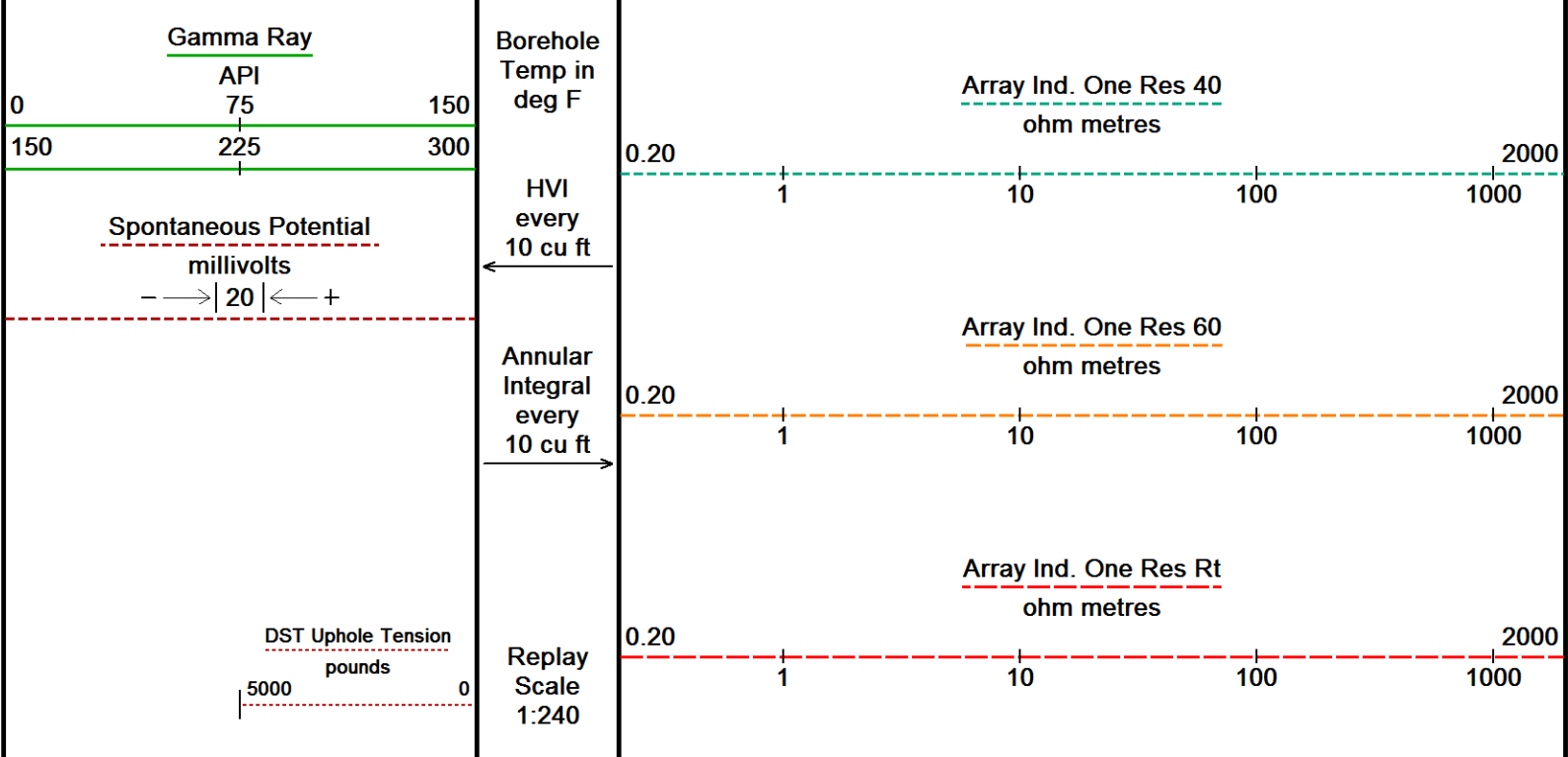
Recorded on 16-JUL-2018 17:27

The log plot displays depth in feet on the left axis, ranging from 2200 to 2250. The right axis shows resistivity in ohm metres on a logarithmic scale from 0.20 to 2000. The plot includes several data tracks:

- Gamma Ray**: A green line showing gamma ray readings, with API values of 75 and 225 marked.
- API**: A green line showing API values, with 75 and 225 marked.
- Spontaneous Potential**: A red dashed line showing spontaneous potential in millivolts, with a scale of 20 mV.
- DST Uphole Tension**: A red dashed line showing DST uphole tension in pounds, with a scale of 5000 pounds.
- Resistivity Curves**: Four resistivity curves are shown: Shallow FE (blue solid line), Array Ind. One Res 40 (green dashed line), Array Ind. One Res 60 (orange dashed line), and Array Ind. One Res Rt (red dashed line).

The plot also includes a timing mark every 60.0 sec and a borehole temperature in degrees Fahrenheit. The resistivity curves are plotted on a logarithmic scale from 0.20 to 2000 ohm metres.





Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 16-JUL-2018 19:59
 Filename: E:\WLS_18_01_6830\DATA\M&M Exploration_Savage 1\REPEAT PASS_1.dta
 Recorded on 16-JUL-2018 17:27
 System Versions: Logged with 18.01.6830 Processed with 18.01.6830 Plotted with 18.01.6830

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION
 E:\WLS_18_01_6830\DATA\M&M Exploration_Savage 1\MAIN PASS.dta

General Constants All 000			Last Edited on 16-JUL-2018,17:08		
General Parameters					
Mud Resistivity	1.300	ohm-metres			
Mud Resistivity Temperature	96.000	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 05-JUL-2018 19:41		
Reading No	Measured	Calibrated (lbs)			
1	14963.50	0.00			
2	16733.41	470.00			

Gamma Calibration MCG-E.A 571			Field Calibration on 16-JUL-2018 09:54		
	Measured	Calibrated (API)			
Background	55	39			
Calibrator (Gross)	1840	1300			
Calibrator (Net)	1785	1261			

Gamma Calibration Tolerances MCG-E.A 571

Gamma Calibration Tolerances MCG-E.A 571

Ratio	1.416	1.40	1.475	1.55	Counts/API
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Gamma Constants MCG-E.A 571

Last Edited on 16-JUL-2018,17:09

Gamma Calibrator Number	46	
GRC-M Calibrator Jig in Use?	NO	
Inactive Background Jig in Use?	NO	
Mud Density	1.10	gm/cc
Caliper Source for Processing	Bit Size	
Tool Position	Eccentred	
Potassium Equivalence	Chloride	
K Mud Concentration	0.00	%

SP Calibration MCG-E.A 571

Field Calibration on 05-JUL-2018,13:12

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

High Resolution Temperature Calibration MCG-E.A 571

Field Calibration on 05-JUL-2018,13:12

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

High Resolution Temperature Constants MCG-E.A 571

Last Edited on 28-MAR-2018,05:08

Pre-filter Length 11

Micro Normal and Micro Inverse Calibration MMR-A 11

Base Calibration on 21-JUN-2018 17:28

Field Check on 16-JUL-2018 10:04

	Resistor 1 (ohm)	Resistor 2 (ohm)
	10.0	50.0
Base Calibration		
	Measured	Calibrated (ohm-m)
Micro Normal	9.9 49.4	5.1 25.6
Micro Inverse	9.9 49.3	3.4 16.9
Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	94.3	94.3
Micro Inverse	62.5	62.5

Micro Normal & Micro Inverse Calibration Tolerance MMR-A 11

Micro Normal Res. 1	9.9		ohm	Micro Normal Res. 2	49.4		ohm
Micro Inverse Res. 1	9.9		ohm	Micro Inverse Res. 2	49.3		ohm
Micro Normal Base Check	94.3		ohm-m				
Micro Inverse Base Check	62.5		ohm-m				
Micro Normal Field Check	94.3		ohm-m				
Micro Inverse Field Check	62.5		ohm-m				

Micro Normal and Micro Inverse Constants MMR-A 11

Last Edited on 21-JUN-2018,17:25

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-A 11

Base Calibration on 21-JUN-2018 17:35

Field Calibration on 16-JUL-2018 10:16

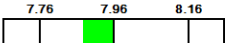
Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	15100	5.96
2	18463	7.98
3	21695	9.86
4	25806	11.93
5	0	0.00

Field Calibration

Measured Caliper (in)
7.88

Actual Caliper (in)
7.96

Caliper Calibration Tolerances MMR-A 11

Short Arm Field Cal. 7.88  in

Micro-Resistivity Caliper Constants MMR-A 11

Sonde Configuration Resistivity Mode

Neutron Calibration MDN-B.J 391

Base Calibration on 21-JUN-2018 15:11
Field Check on 16-JUL-2018 10:10

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3312	98	3714	110
Ratio	33.845		33.764	

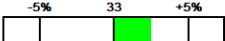
Field Calibrator at Base

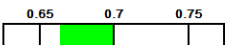
	Calibrated (cps)
	1129 1703
Ratio	0.663

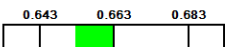
Field Check

	Calibrated (cps)
	1139 1745
Ratio	0.652

Neutron Calibration Tolerances MDN-B.J 391

Ratio 33.845 

Base Check 0.663 

Field Check 0.652 

Neutron Constants MDN-B.J 391

Last Edited on 16-JUL-2018,17:09

Neutron Source Id	N1054	
Neutron Jig Number	BLUE	
Air Hole Processing	Modified Ratio	
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	Constant Value	
Formation Pressure	0.00	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 359

Base Calibration on 21-JUN-2018 13:59
Field Check on 16-JUL-2018 09:55

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

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	958.2	126.8

Base Check 281.1

Field Check 281.1

FE Calibration Tolerances MFE-B.J 359

Reference 2	958.2		ohm
Base Check	281.1		ohm-m
Field Check	281.1		ohm-m

FE Constants MFE-B.J 359

Last Edited on 16-JUL-2018,10:17

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-B.J 375

Factory Loop Calibration 25-JUN-2018 18:06

Field Check on 16-JUL-2018 09:59

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)	17.2	476.6	9.3	966.2	2.083	-26.5
2	5.9	379.2	7.6	821.4	2.180	-5.4
3	3.1	258.6	5.2	566.0	2.195	-1.5
4 (far)	1.4	132.0	2.6	279.2	2.119	-0.4
Array Temperature	73.2		Deg F			

Tool Checks

Array	Factory Reference (mmho/m)		Before Survey (mmho/m)		
	Low	High	Low	High	
1 (near)	12.1	3803.1	12.3	3804.0	
2	30.4	3547.7	30.5	3547.6	
3	29.3	3051.9	29.3	3052.0	
4 (far)	20.6	2084.9	20.6	2084.9	
Array Temperature	88.8		86.0		Deg F

Induction Check Tolerances MAI-B.J 375

Low Array 1	12.3		mmho/m	High Array 1	3804.0		mmho/m
Low Array 2	30.5		mmho/m	High Array 2	3547.6		mmho/m
Low Array 3	29.3		mmho/m	High Array 3	3052.0		mmho/m
Low Array 4	20.6		mmho/m	High Array 4	2084.9		mmho/m

Induction Constants MAI-B.J 375

Last Edited on 16-JUL-2018,10:17

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	6.0000
Stand-off Fin Angle	60.00 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

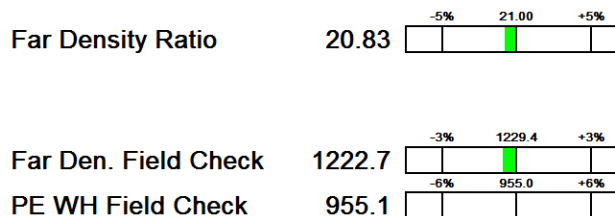
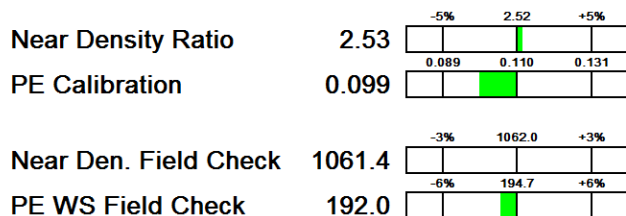
Squasher Start		0.0020	mhos/metre
Squasher Offset		N/A	mhos/metre
Borehole Normalisation			
DRM1	0.0000	DRC1	0.0000
DRM2	0.0000	DRC2	0.0000
MRM1	0.0000	MRC1	0.0000
MRM2	0.0000	MRC2	0.0000
SRM1	0.0000	SRC1	0.0000
SRM2	0.0000	SRC2	0.0000
Calibration Site Corrections			
Channel 1		0.00	mmhos/metre
Channel 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 375			Field Calibration on 05-JUL-2018,13:02
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	212.00	212.00	

High Resolution Temperature Constants MAI-B.J 375		Last Edited on 25-JUN-2018,18:09
Pre-filter Length	11	

Photo Density Calibration MPD-C.A 271				Base Calibration on 08-JUL-2018 19:16
				Field Check on 16-JUL-2018 10:03
Density Calibration				
Base Calibration		Measured		Calibrated (sdu)
	Near	Far	Near	Far
Background	1062	1229		
Reference 1	47579	23546	59494	26390
Reference 2	19446	2301	24557	2552
Field Check at Base				
	1062.0	1229.4		
Field Check				
	1061.4	1222.7		
PE Calibration				
Base Calibration		Measured		Calibrated
	WS	WH	Ratio	Ratio
Background	195	955		
Reference 1	17862	47426	0.380	0.367
Reference 2	5263	19336	0.276	0.271
Field Check at Base				
	194.7	955.0		
Field Check				
	192.0	955.1		

Photo Density Calibration Tolerances MPD-C.A 271



Density Constants MPD-C.A 271

Last Edited on 08-JUL-2018,19:17

Density Source Id	P56135B
Nylon Calibrator Number	766
Aluminium Calibrator Number	633
Density Shoe Profile	8 inch
Caliper Source for Processing	Density Caliper
PE Correction to Density	Not Applied
Mud Density	1.00 gm/cc
Mud Density Type	
Mud Filtrate Density	1.00 gm/cc
Dry Hole Mud Filtrate Density	1.00 gm/cc
DNCT	0.00 gm/cc
CRCT	0.00 gm/cc
Density Z/A Correction	Hybrid
Precision Enhanced Density Processing	Not Applied
Matrixdensity(gm/cc)	Depth(m)
2.71	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

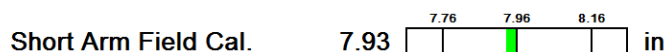
Caliper Calibration MPD-C.A 271

Base Calibration on 08-JUL-2018 19:39
Field Calibration on 16-JUL-2018 10:13

Base Calibration	Measured	Calibrator Size (in)
Reading No		
1	14240	4.01
2	24080	5.96
3	34144	7.96
4	43826	9.86
5	54976	11.93
6	N/A	N/A

Field Calibration	Measured Caliper (in)	Actual Caliper (in)
	7.93	7.96

Caliper Calibration Tolerances MPD-C.A 271



DOWNHOLE EQUIPMENT

E:\WLS_18_01_6830\DATA\M&M Exploration_Savage 1\MAIN PASS.dta

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

Compact Swivel Head Adaptor
SHA-J.B 721 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

Compact Comms Gamma
MCG-E.A 571 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in



45.66 ft GRGC - MCG Gamma Ray

42.76 ft CGXT - MCG External Temperature

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

Compact Neutron
MDN-B.J 391 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

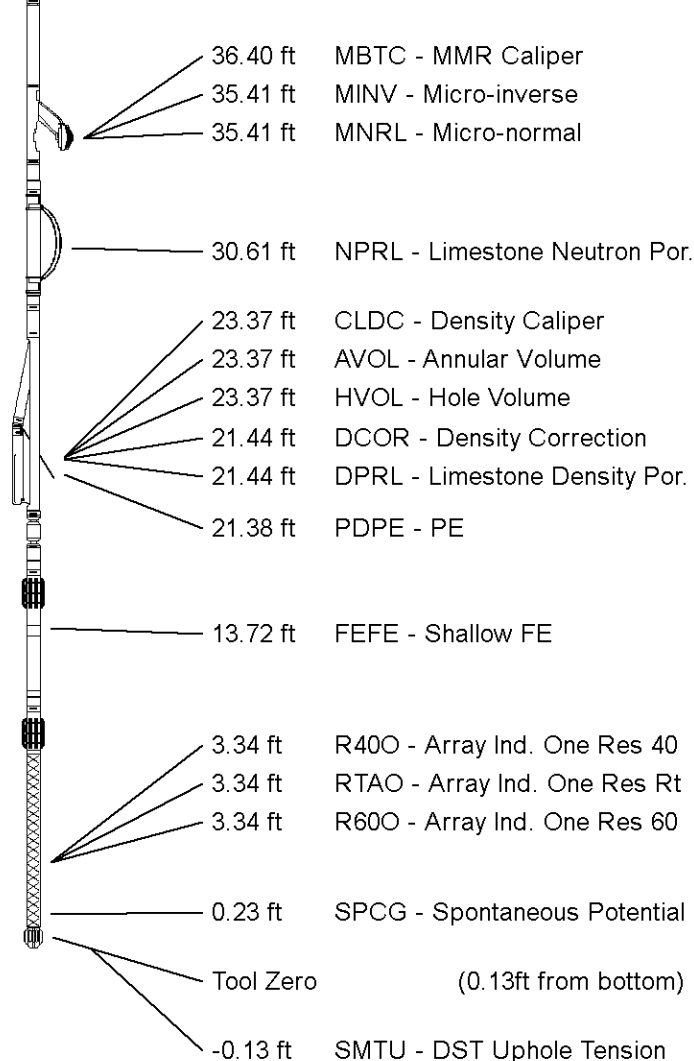
Compact Density/Caliper
MPD-C.A 271 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

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

Compact Focussed Electric
MFE-B.J 359 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Induction
MAI-B.J 375 LG: 10.81 ft WT: 48.5 lb OD: 2.240 in

Total Length: 55.64 ft Weight: 449.7 lb



All measurements relative to tool zero.

COMPANY M & M EXPLORATION, INC
WELL SAVAGE #1
FIELD SAVAGE
PROVINCE/COUNTY MARION
COUNTRY/STATE KANSAS

Elevation Kelly Bushing	1298	feet	First Reading	2451.70	feet
Elevation Drill Floor		feet	Depth Driller	2460.00	feet
Elevation Ground Level	1292	feet	Depth Logger	2455.00	feet

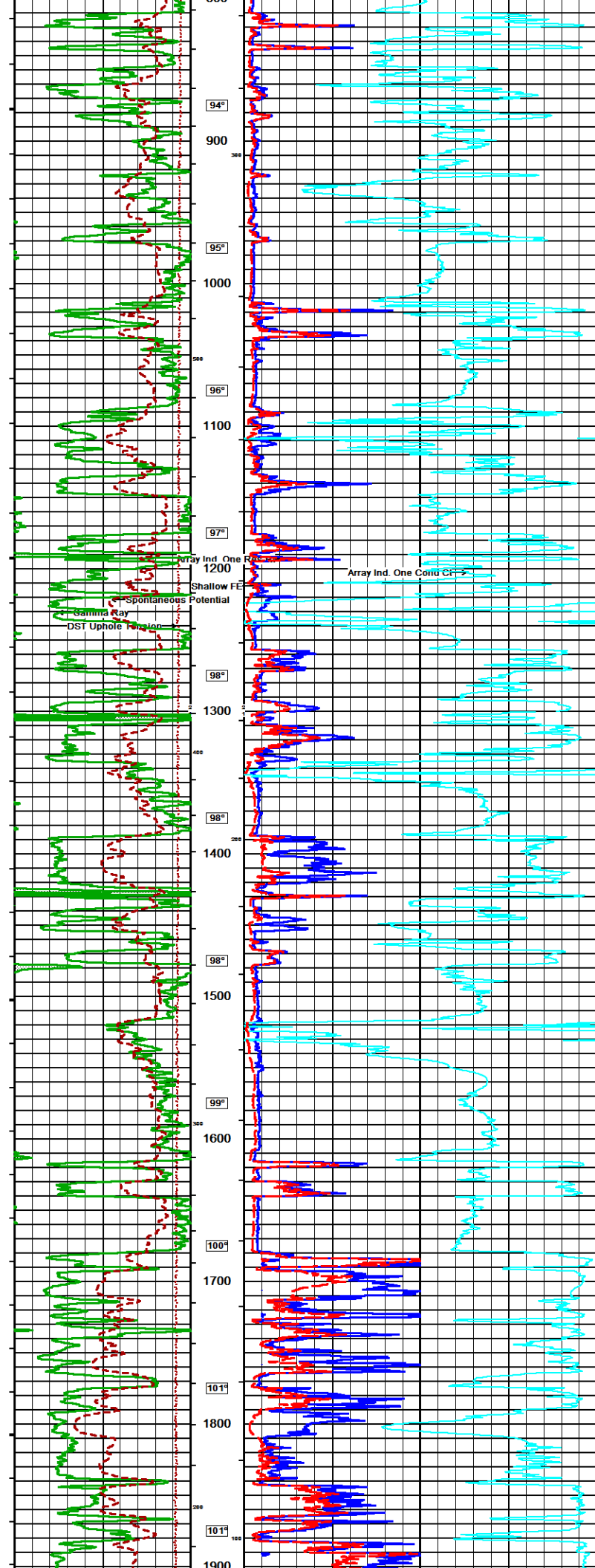


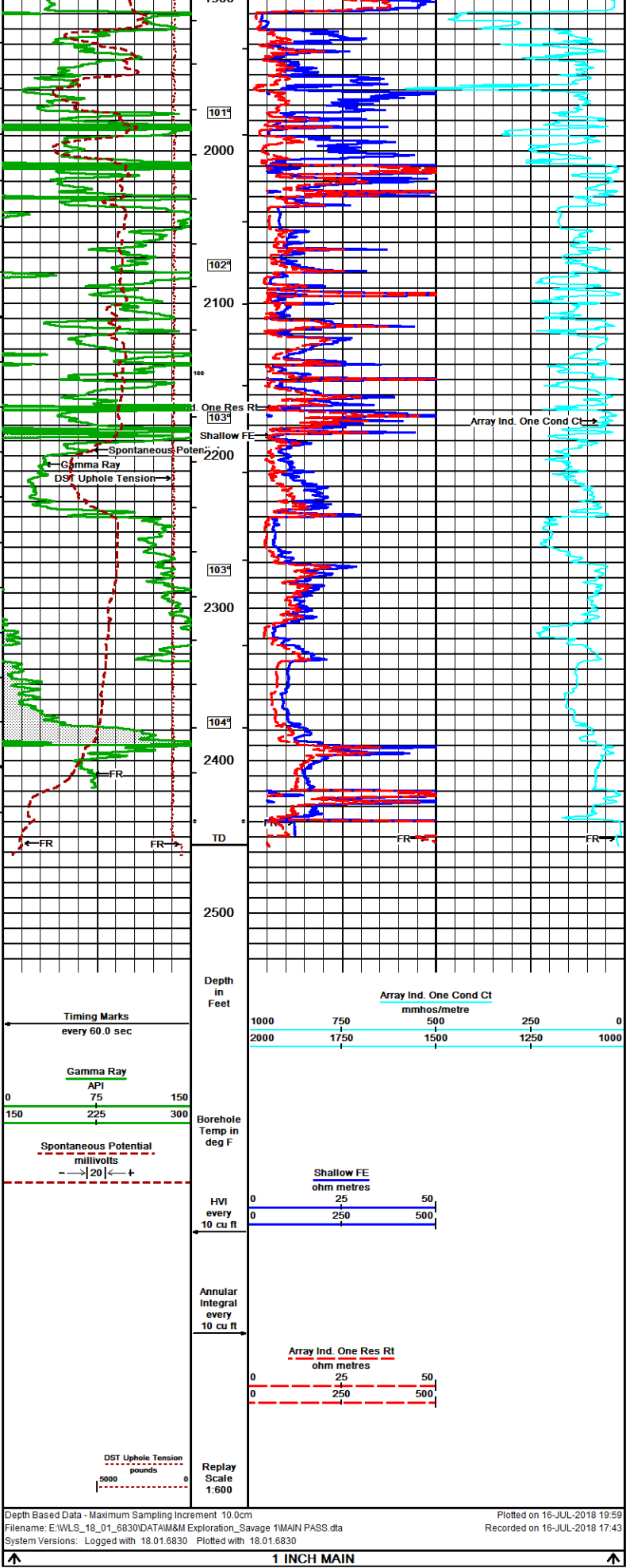
ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

Weatherford®

		COMPANY	M & M EXPLORATION, I
		WELL	SAVAGE #1
		FIELD	SAVAGE
		PROVINCE/COUNTY	MARION
		COUNTRY/STATE	KANSAS
		LOCATION	SW SE SW 330' FSI & 15-15-2304
		SEC 15	T1N2P 21S
		RANGE	4E
		ZONE	4E
		DATE	15-JUL-2018
		LOG MEASURED FROM	KB
		PERMANENT DATUM	Ground Level, Elevation 1292 feet
		LOG MEASURED FROM	KB, 6.00 feet above Permanent Datum
		DRILLING MEASURED FROM	KB
		DATE	15-JUL-2018
		RUN NUMBER	ONE
		SERVICE ORDER	18146-218943985
		DEPTH DRILLER	2460.00 feet
		DEPTH LOGGER	2465.00 feet
		FIRST READING	2451.70 feet
		LAST READING	259.00 feet
		CASING DRILLER	252.00 feet
		CASING LOGGER	259.00 feet
		BIT SIZE	9.875 inches
		HOLE FLUID TYPE	WATER BASED
		DENSITY / VISCOSITY	9.20 g/cc
		PH / FLUID LOSS	10.00
		SAMPLE SOURCE	FLOW LINE
		RIN @ MEASURED TEMP	1.30 @ 96.0 ohm-m
		RIN @ MEASURED TEMP	1.20 @ 96.0 ohm-m
		RIN @ MEASURED TEMP	1.50 @ 96.0 ohm-m
		SOURCE RIN / RINC	CALC
		RIN @ BHT	1.20 @ 104.0 ohm-m
		TIME SINCE CIRCULATION	3.0 HRS
		MAX RECORDED TEMP	104.00 deg F
		EQUIPMENT / BASE	13379 ELRENO
		RECORDED BY	S. WRIGHT
		WITNESSED BY	JUSTIN CARTER

[illegible]





COMPANY	M & M EXPLORATION, INC
WELL	SAVAGE #1
FIELD	SAVAGE
PROVINCE/COUNTY	MARION
COUNTRY/STATE	KANSAS

ELEVATION DATA			DEPTH DATA		
Elevation Kelly Bushing	1298	feet	First Reading	2451.70	feet
Elevation Drill Floor		feet	Depth Driller	2460.00	feet
Elevation Ground Level	1292	feet	Depth Logger	2455.00	feet
			ARRAY INDUCTION		
			SHALLOW FOCUSED		
			ELECTRIC LOG		