RELIANCE
OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Clough NR 323-3
Field	Rulison
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC

Well Clough NR 323-3

Field Rulison

County Garfield State Colorado

Location: API # : 05-045-23918

SEC 3 TWP 6S RGE 94W

Other Services

				Elevation
Permanent Datum	Ground Level	Elevation	6719.1'	K.B. 6743.1' D.F. 6742.1' G.L. 6719.1'
Log Measured From	Kelly Bushing	24 FT		
Drilling Measured From	Kelly Bushing			

Date	30-OCT-2018
Run Number	One
Depth Driller	9951 FT
Depth Logger	9854 FT
Bottom Logged Interval	9840 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Fresh Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	245°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	9:50
Equipment Number	HD-0359
Location	Grand Junction, CO
Recorded By	A. Ellsworth
Witnessed By	D. Welsh

Borehole Record			Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To

Casing Record	Size (in)	Wgt (lbs/Ft)	Grade	Top	Bottom
Surface Casing	9 5/8	36	J-55	Surface	1126 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	9911 FT
Intermediate #2					
Liner					

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

Log ran as per customer request
Depth referenced to Kelly Bushing at 24 FT
Marker Joint logged from 5900 FT - 5914 FT
Log ran from 9840 FT to Surface
Log ran with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!!

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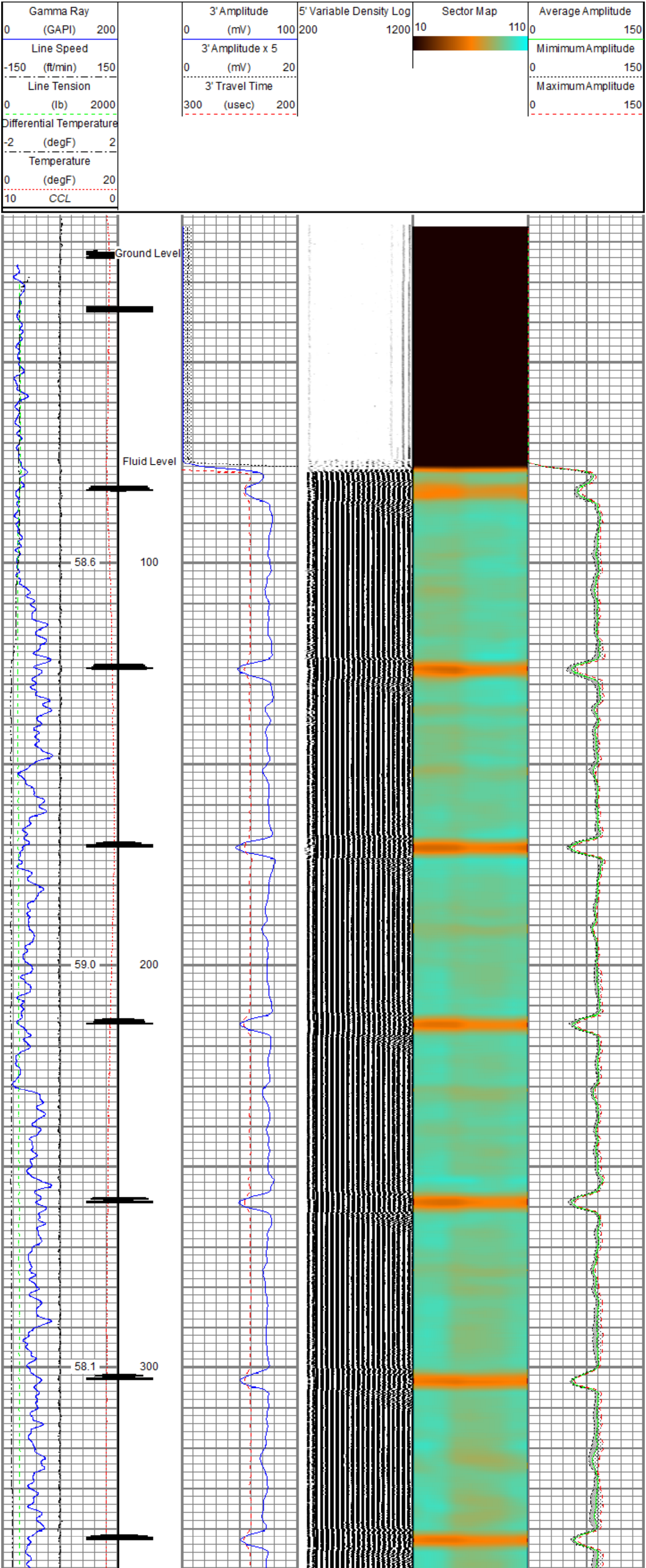
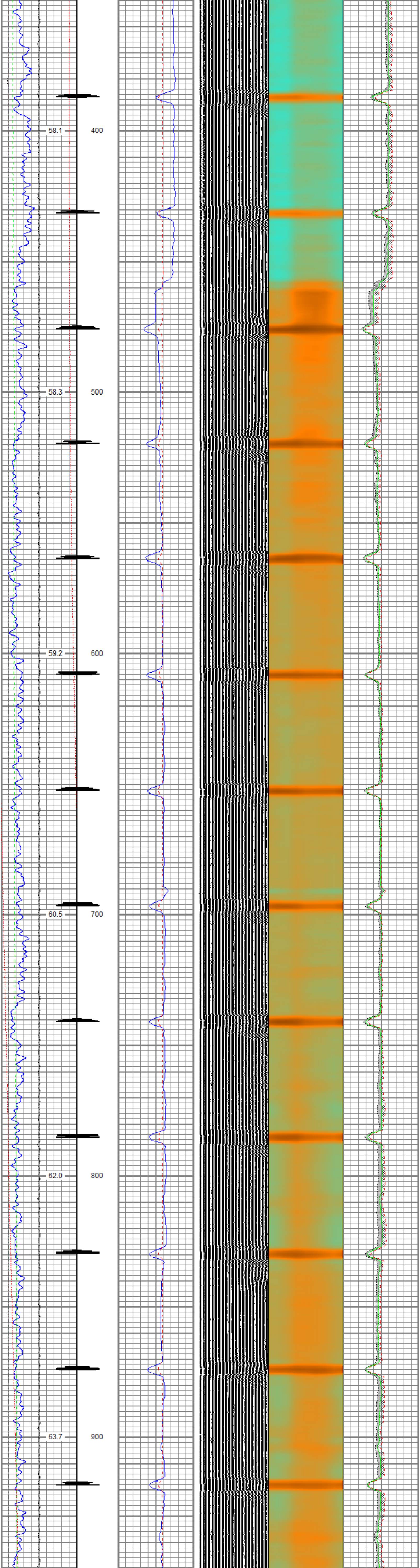
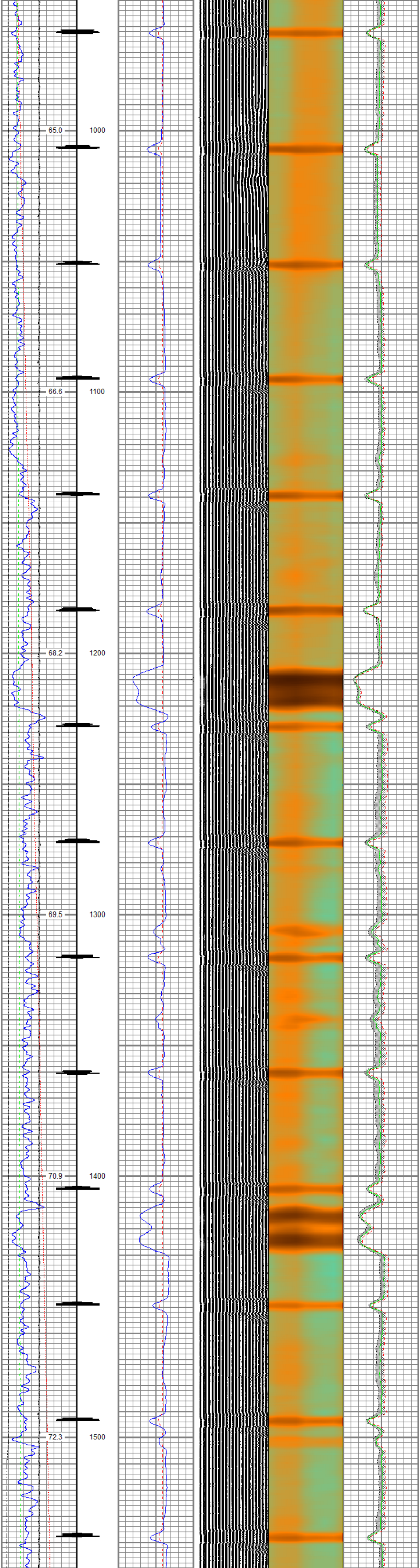
Main Pass

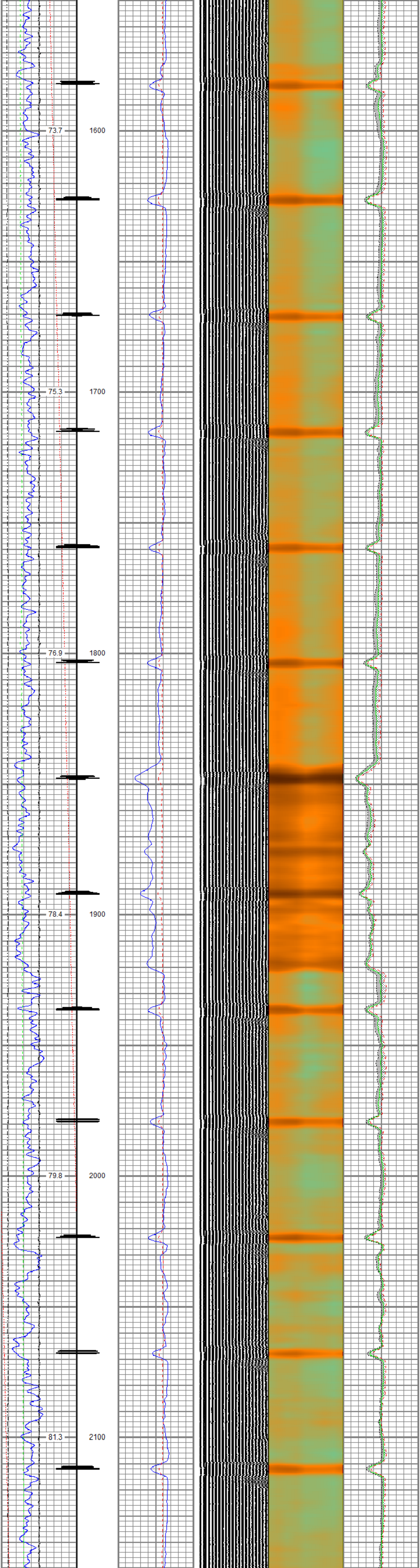
Recorded With 0 PSI Surface Induced Pressure

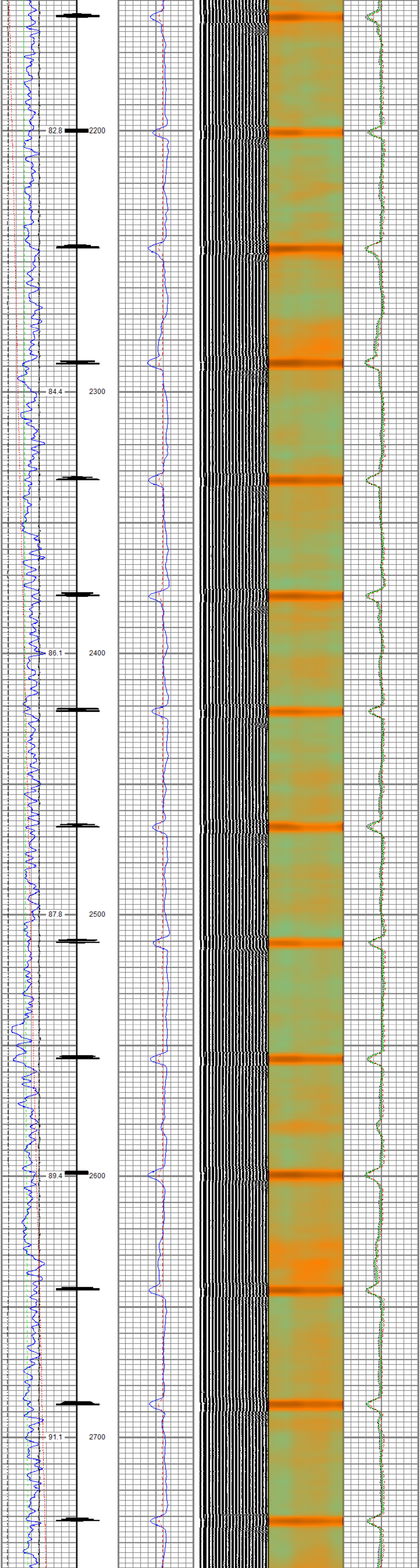
Database File	tep\tep_clough nr 323-3_rbl_10-30-18\tep_clough nr 323-3_rbl_10-30-18.db
Dataset Pathname	main.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Wed Oct 31 10:09:59 2018
Charted by	Depth in Feet scaled 1:240

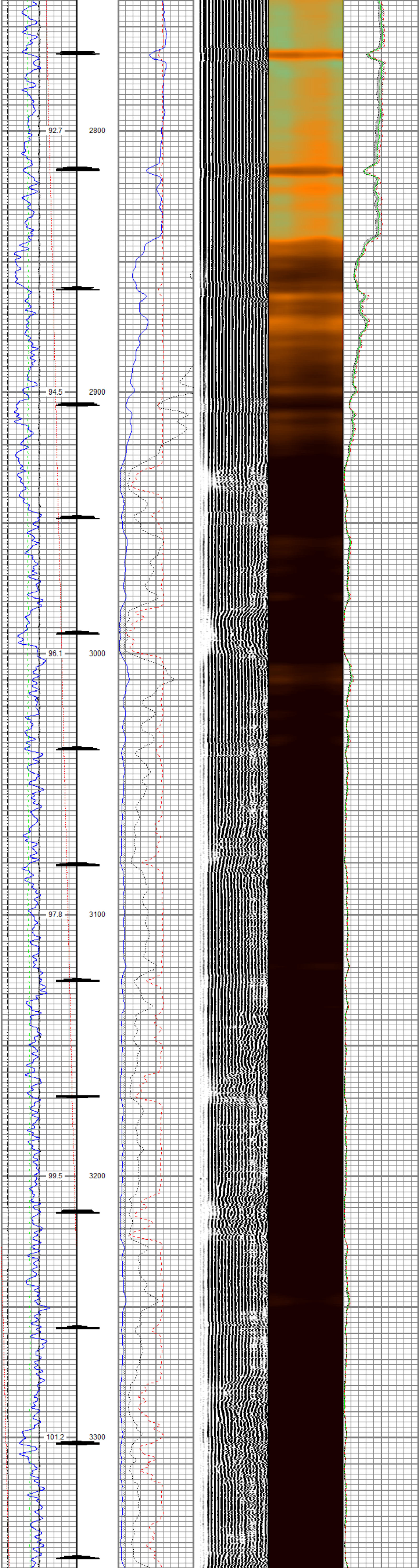


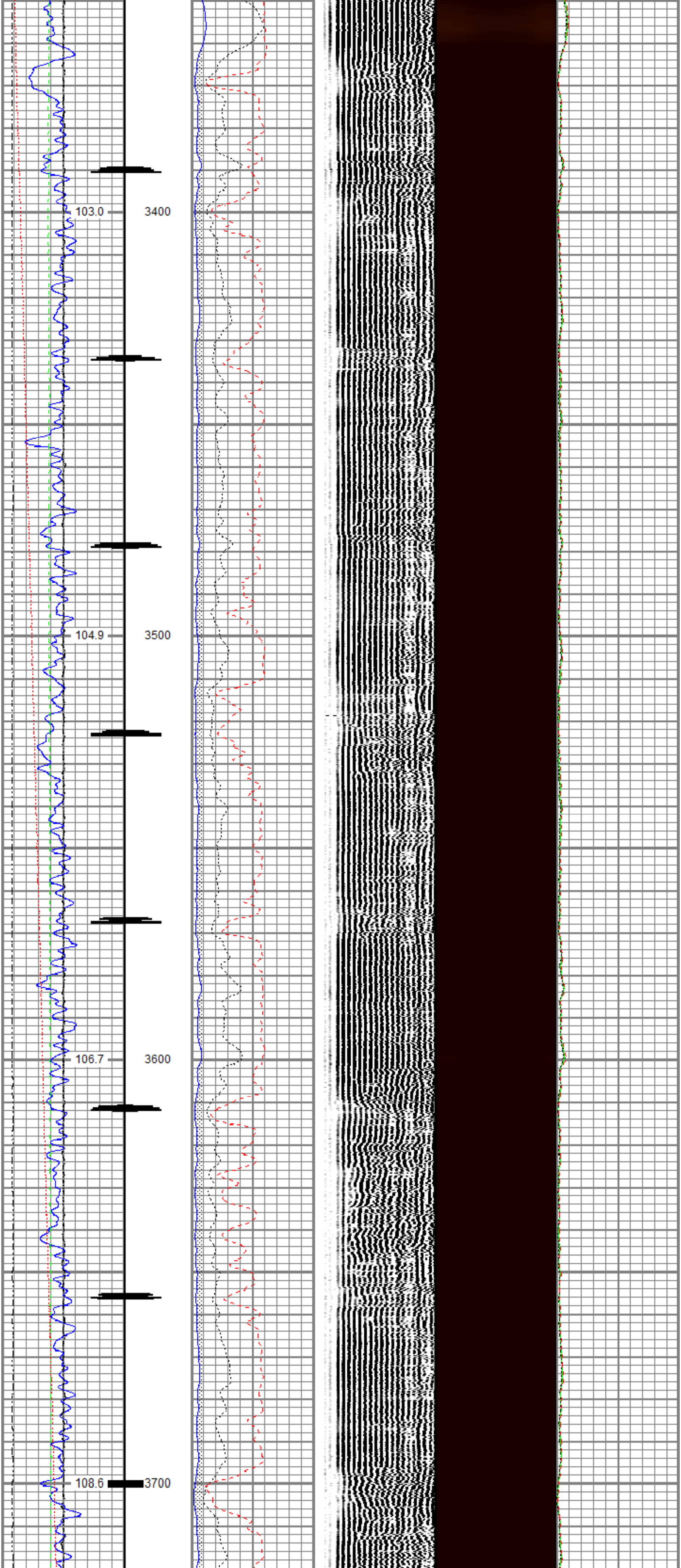


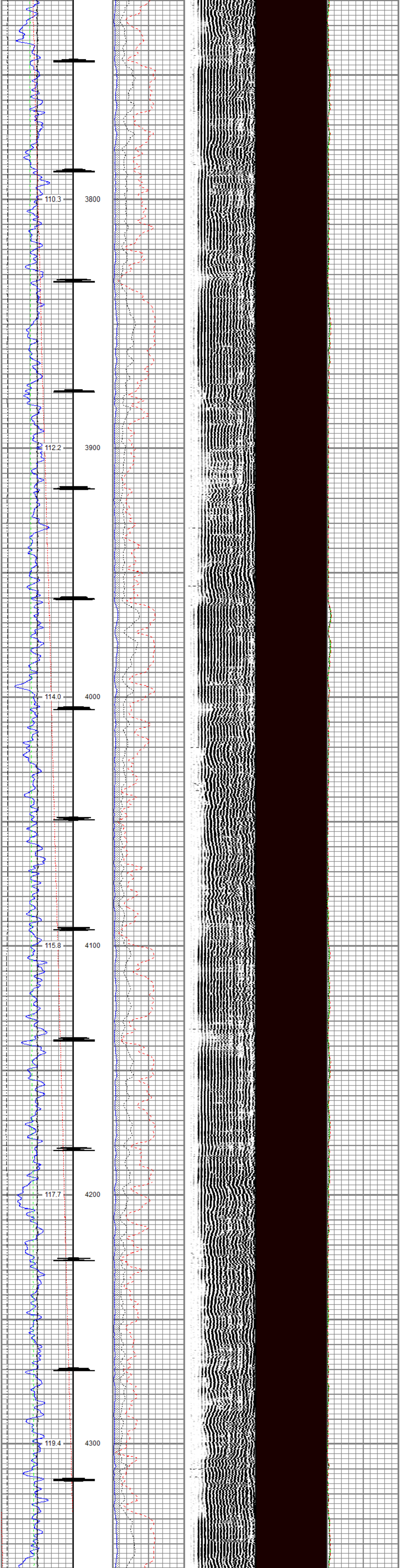








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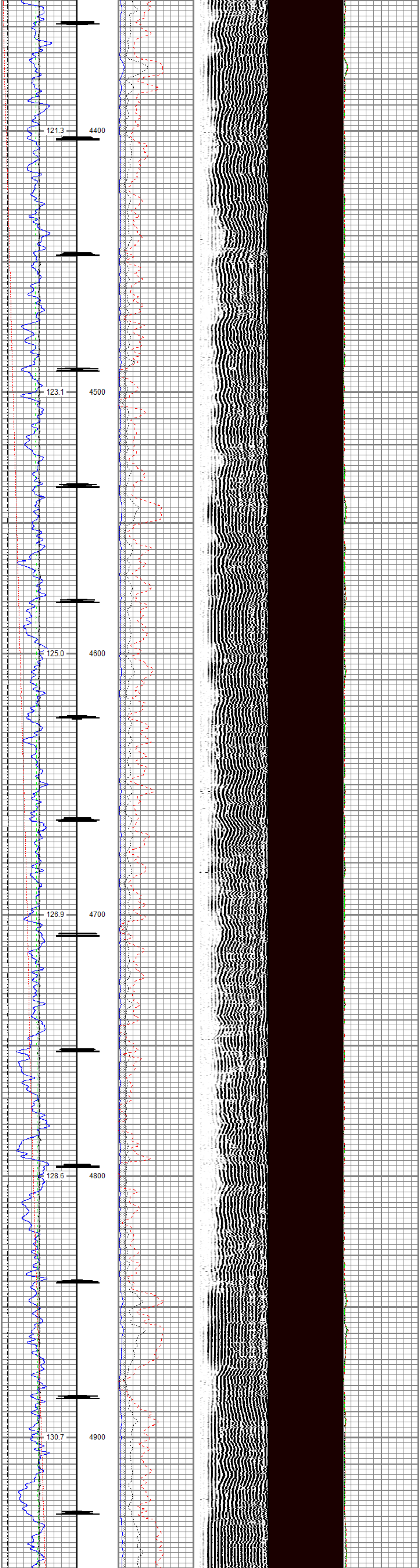
112.2
3900
114.0
4000
115.8
4100
117.7
4200
119.4
4300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123.1
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125.0
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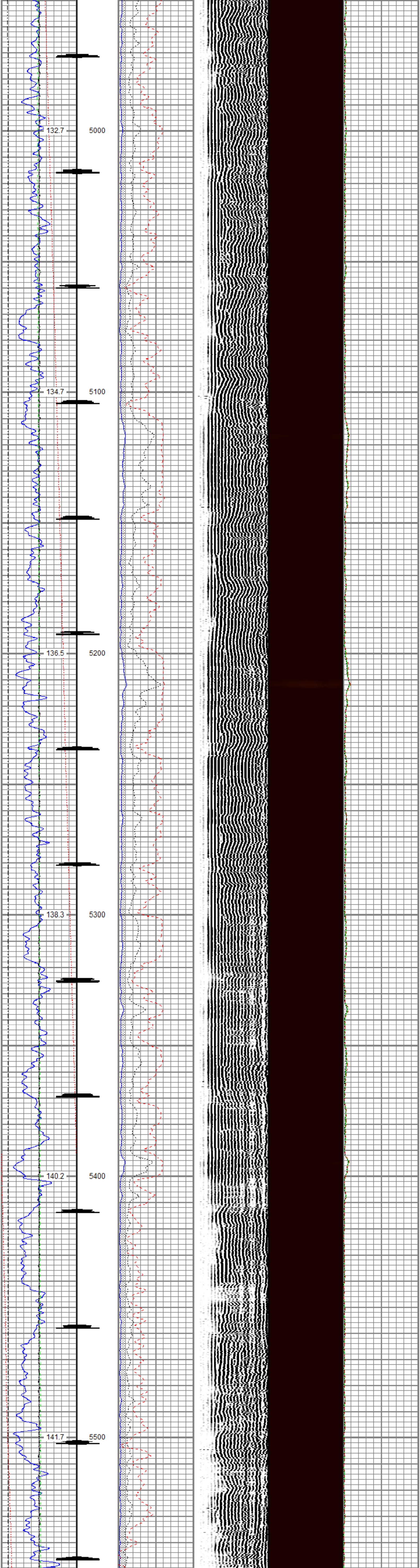
128.6
4800
130.7
4900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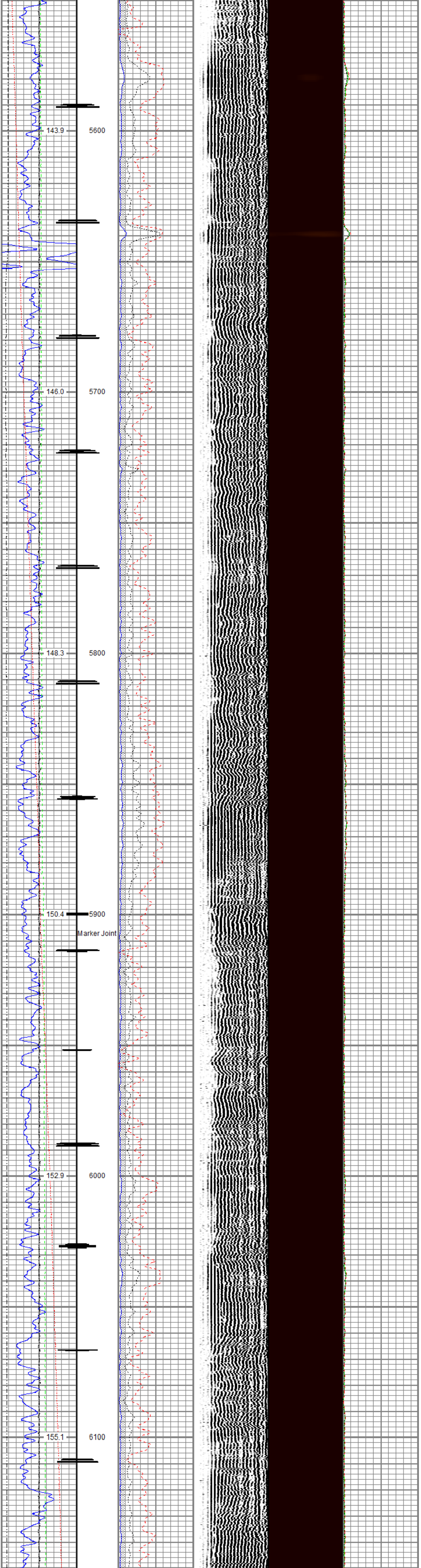
5000
134.7
5100
136.5
5200
138.3
5300
140.2
5400
141.7
5500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146.0
5700
148.3
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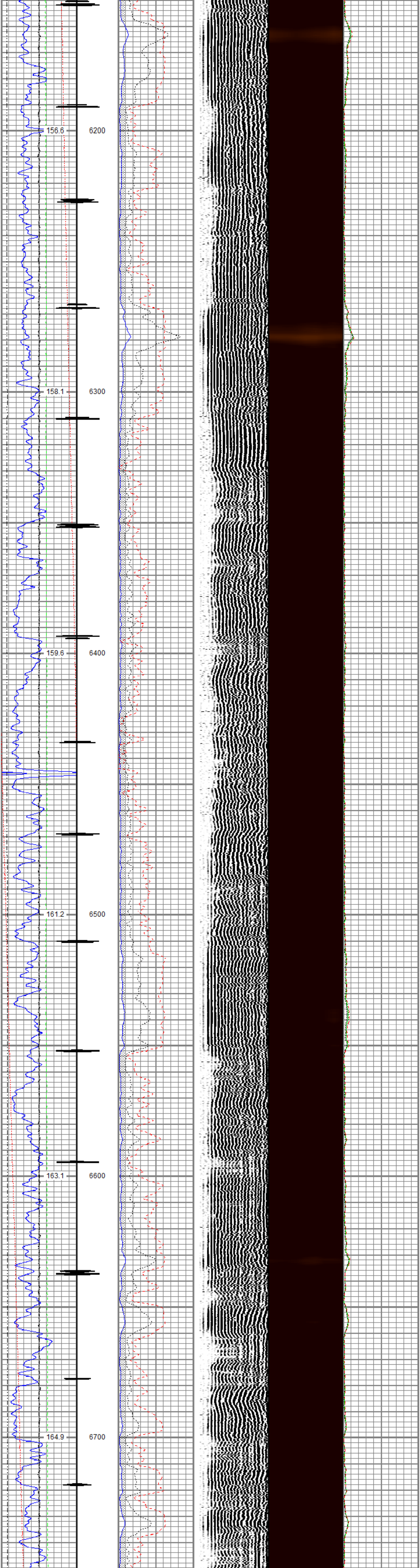
150.4
5900
Marker Joint
152.9
6000
155.1
6100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159.6
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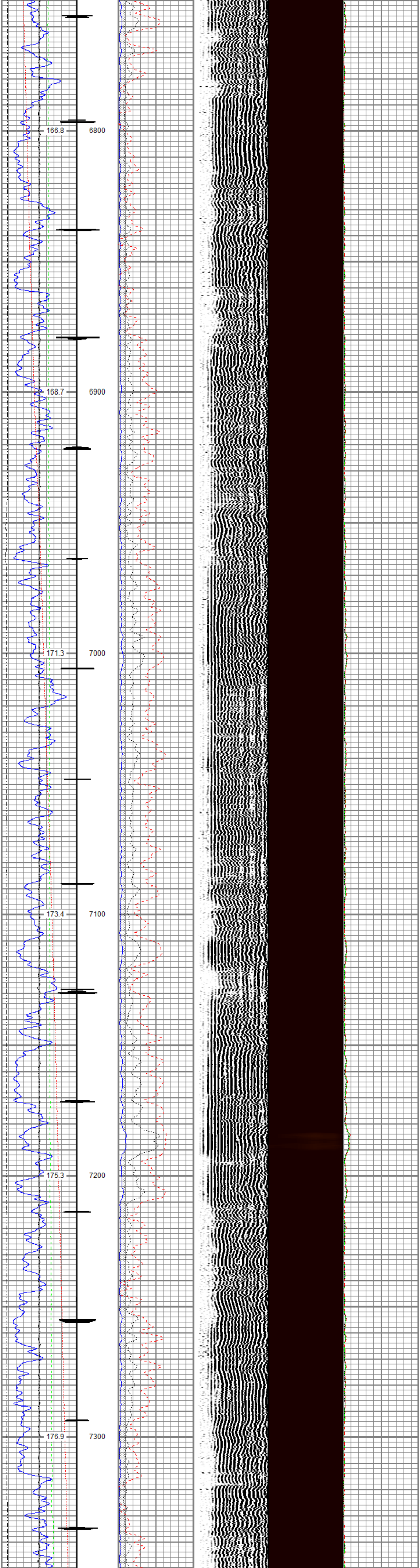
164.9
6700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171.3
7000
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175.3
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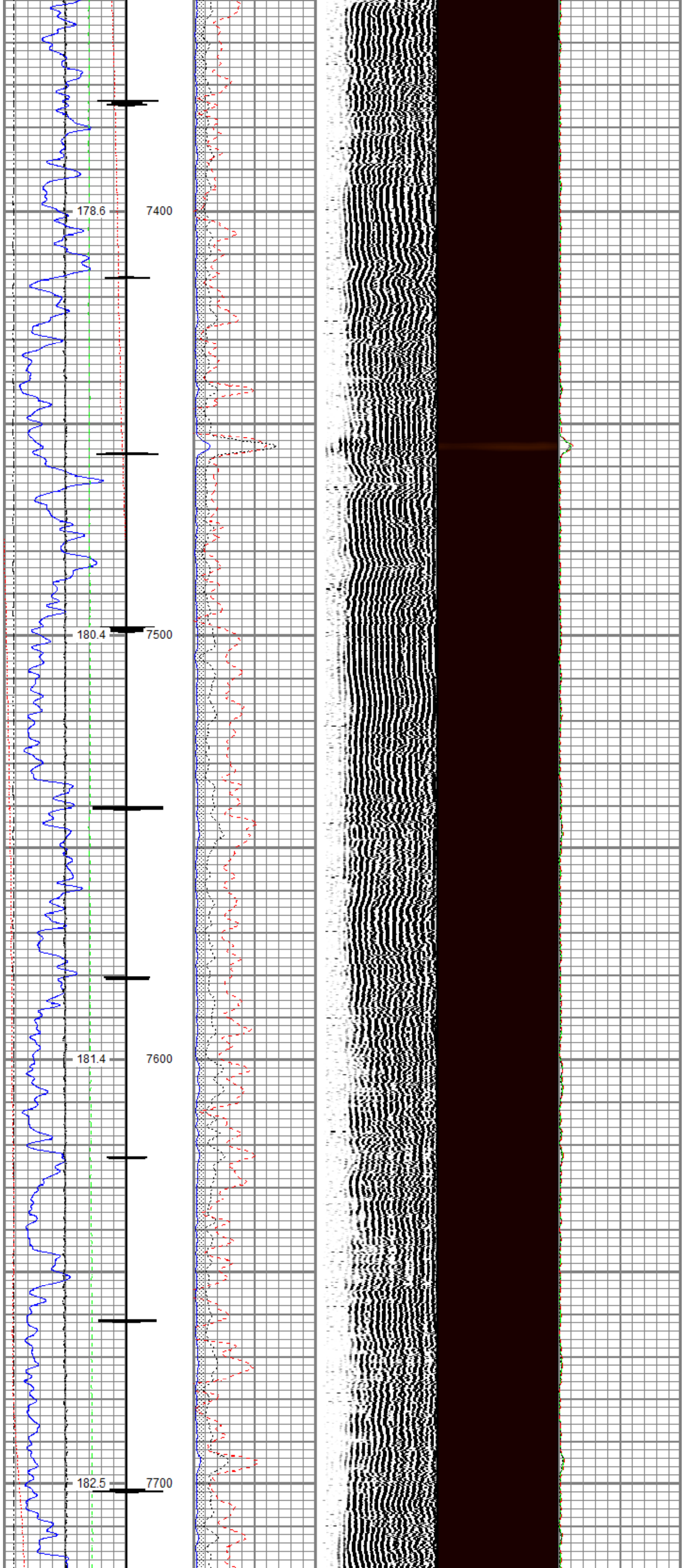
176.9
7300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182.5
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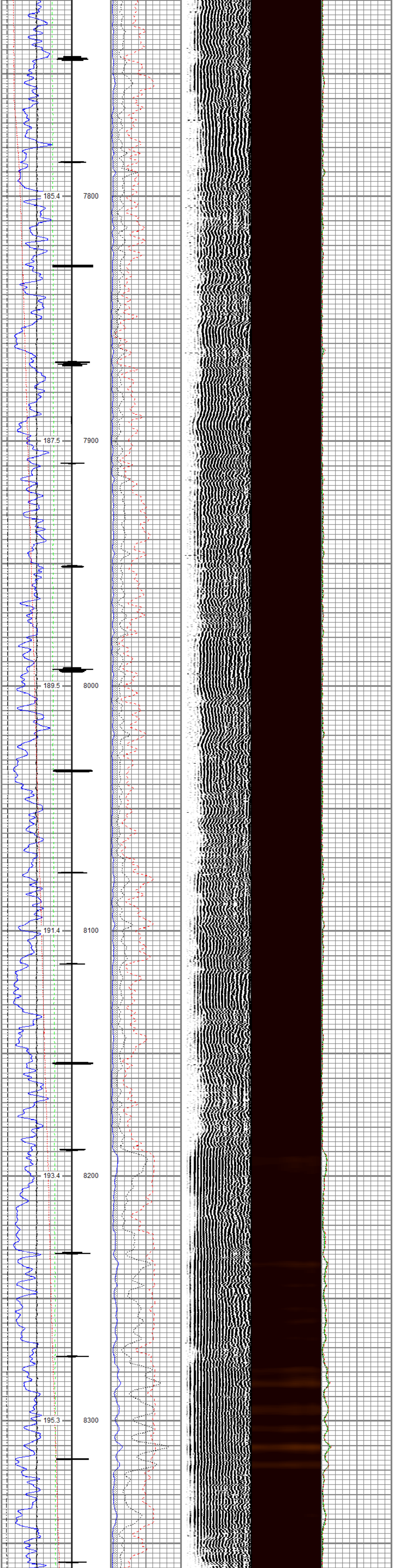

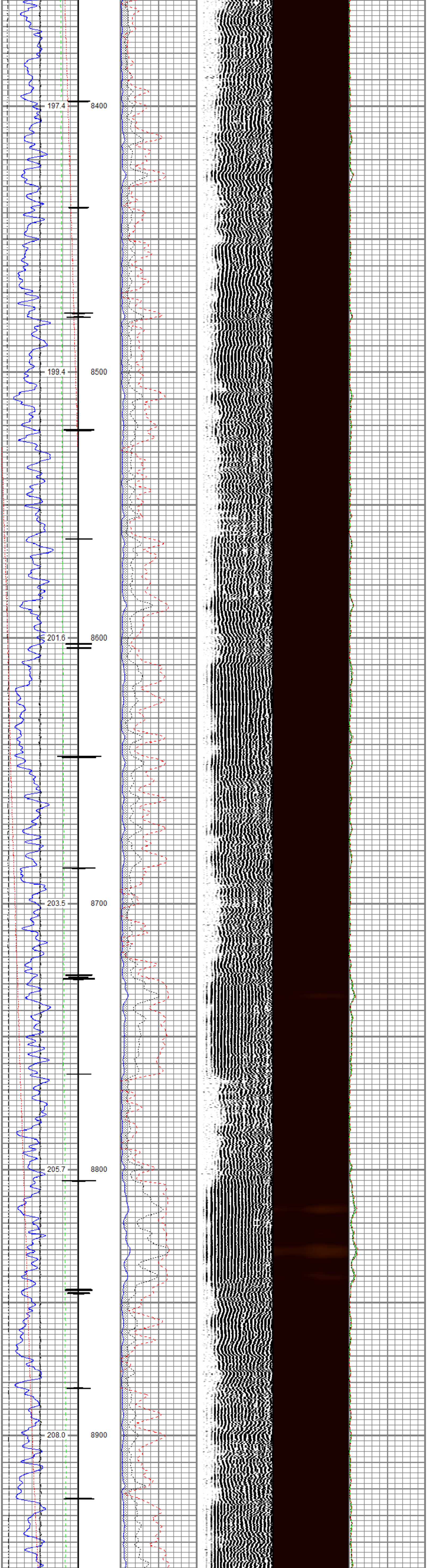

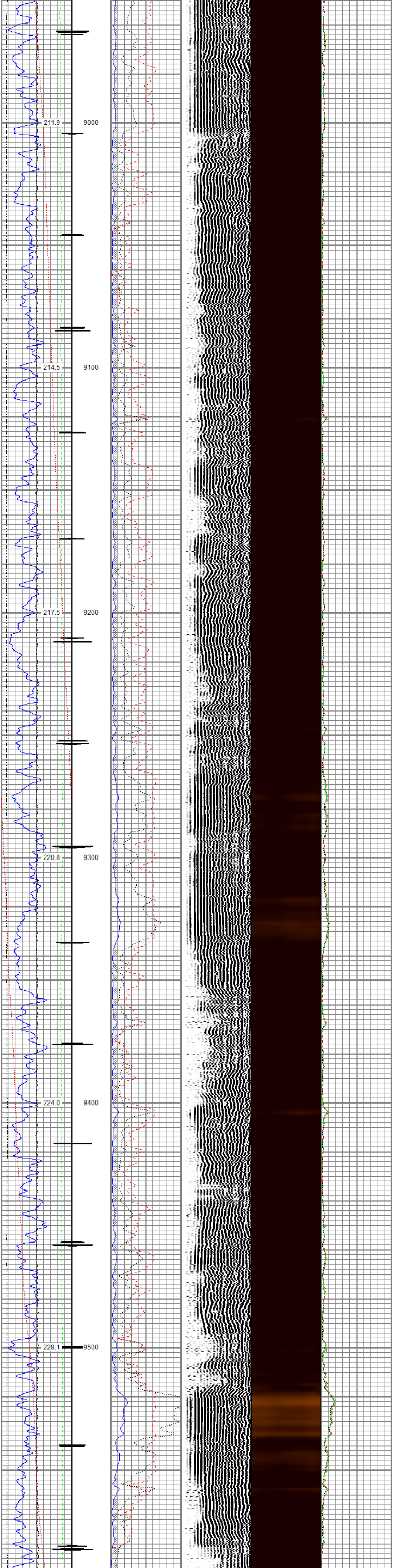

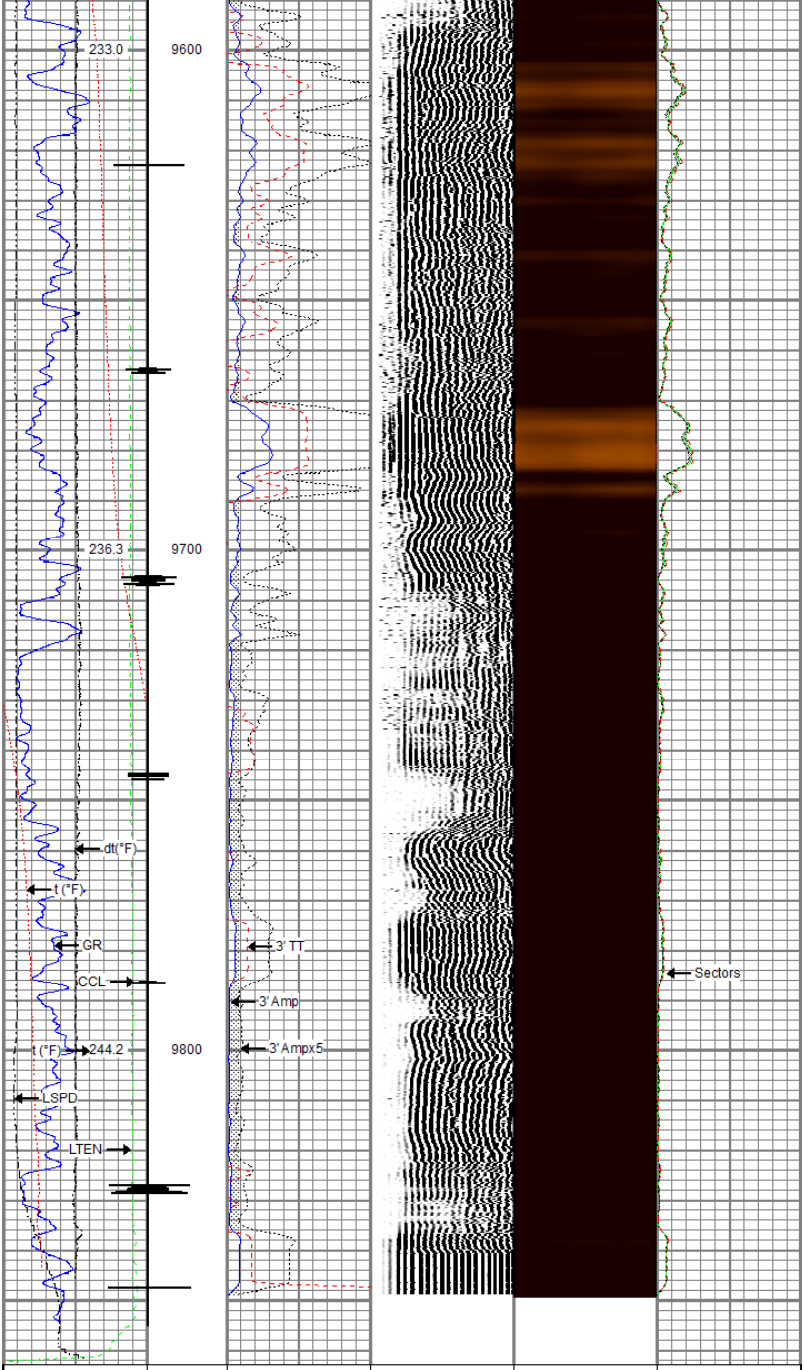

Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 200	0 (mV) 100	200 1200	10 110	0 150
Line Speed	3' Amplitude x 5			Mimimum Amplitude
-150 (ft/min) 150	0 (mV) 20			0 150
Line Tension	3' Travel Time			Maximum Amplitude
0 (lb) 2000	300 (usec) 200			0 150
Differential Temperature				
-2 (degF) 2				
Temperature				
0 (degF) 20				
10 CCL 0				

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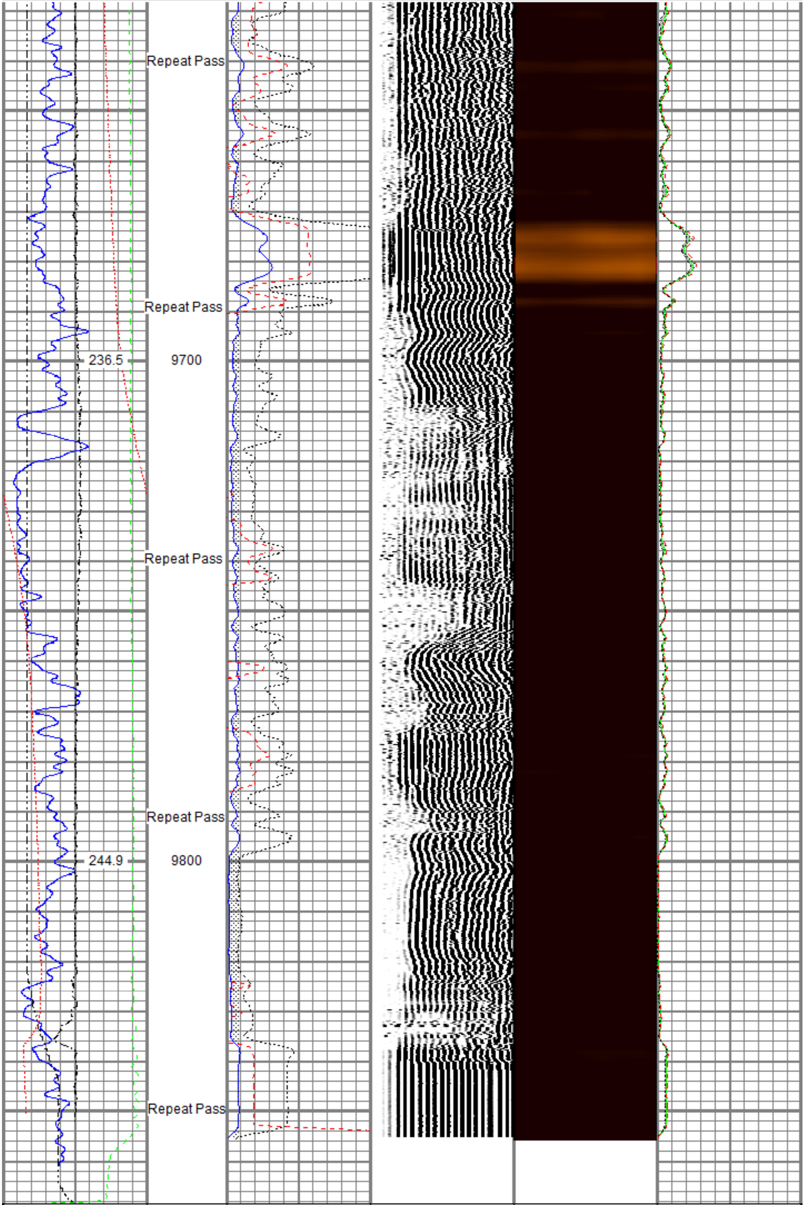
Repeat Pass

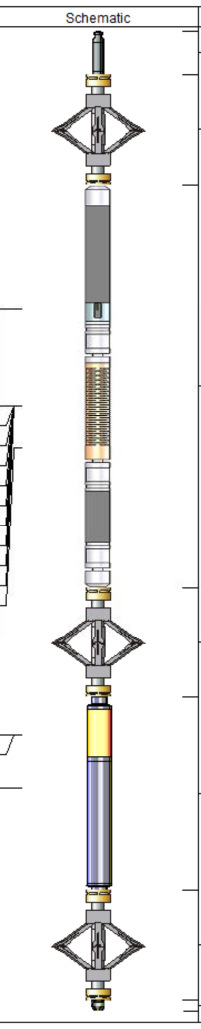
Recorded With 0 PSI Surface Induced Pressure

Database File	tep\tep_clough nr 323-3_rbl_10-30-18\tep_clough nr 323-3_rbl_10-30-18.db
Dataset Pathname	repeat.2
Presentation Format	ros_rbt004_tep
Dataset Creation	Wed Oct 31 10:22:34 2018
Charted by	Depth in Feet scaled 1:240

Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 200	0 (mV) 100	200 1200	10 110	0 150
Line Speed	3' Amplitude x 5			Mimimum Amplitude
-150 (ft/min) 150	0 (mV) 20			0 150
Line Tension	3' Travel Time			Maximum Amplitude
0 (lb) 2000	300 (usec) 200			0 150
Differential Temperature				
-2 (degF) 2				
Temperature				
0 (degF) 20				



Gamma Ray 0 (GAPI) 200	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 1200	Sector Map 10 110	Average Amplitude 0 150
Line Speed -150 (ft/min) 150	3' Amplitude x 5 0 (mV) 20			Mimimum Amplitude 0 150
Line Tension 0 (lb) 2000	3' Travel Time 300 (usec) 200			Maximum Amplitude 0 150
Differential Temperature -2 (degF) 2				
Temperature 0 (degF) 20				

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
			Titan CHD-14375 GO Titan 1-7/16" Assembled Electric Cable Head w/ 1" Fishing Neck	1.03	1.44	3.60
			DSS RAC-2750 5A GO DSS 2-3/4" Roller 5 Arm Centralizer w/ GO Ends	2.55	2.75	32.00
TEMP	16.33					
			Probe Radii-2750 RBT (FW0712-020) Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub	9.39	2.75	105.00
WVFS8	14.10					
WVFS7	14.10					
WVFS6	14.10					
WVFS5	14.10					
WVFS4	14.10					
WVFS3	14.10					
WVFS2	14.10					
WVFS1	14.10					
WVFCAL	14.10					
WVF3FT	14.10					
WVF5FT	13.10					
			DSS RAC-2750 5A GO DSS 2-3/4" Roller 5 Arm Centralizer w/ GO Ends	2.55	2.75	32.00
CCL$2	6.42					
CCL$1	6.42					
GR	5.18		Probe GR-CCL-2750 GOB (FW1302-119) Probe 2-3/4" rev.2 Digital Scintillation Gamma Ray/CCL Combined	4.51	2.75	55.00
			DSS RAC-2750 5A GO DSS 2-3/4" Roller 5 Arm Centralizer w/ GO Ends	2.55	2.75	32.00
			GO BN-14375 GO 1 7/16" Bull Nose with Go Box Top	0.25	1.44	1.00

Dataset:	tep_clough nr 323-3_rbl_10-30-18.db: field/well/run1/main.1
Total length:	22.82 ft
Total weight:	260.60 lb
O.D.:	2.75 in

Calibration Report

Database File	c:\programdata\warrior\data\tep\tep_clough nr 323-3_rbl_10-30-18\tep_clough nr 323-3_rbl_10-30-18.db
Dataset Pathname	main.1
Dataset Creation	Wed Oct 31 10:09:59 2018

Gamma Ray Calibration Report

Serial Number:	FW1302-119	
Tool Model:	2750 GOB	
Performed:	Sun Nov 12 12:33:00 2017	
Calibrator Value:	637.0	GAPI
Background Reading:	112.3	cps
Calibrator Reading:	1039.1	cps
Sensitivity:	0.6873	GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number:	FW0712-020	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	32.485	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.003	0.921	0.800	81.196	86.983	1.082
CAL	0.740	0.942				
5'	-0.039	0.749	0.800	81.196	101.971	4.808
SUM						
S1	-0.008	0.851	0.000	100.000	116.357	0.987
S2	-0.006	0.946	0.000	100.000	105.020	0.599
S3	-0.005	1.050	0.000	100.000	94.808	0.427
S4	-0.005	1.176	0.000	100.000	84.646	0.453
S5	-0.006	1.118	0.000	100.000	88.925	0.539
S6	-0.005	1.002	0.000	100.000	99.262	0.496
S7	-0.006	0.900	0.000	100.000	110.423	0.625
S8	-0.005	0.824	0.000	100.000	120.725	0.563

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.740	0.942	1.000	0.000

Air Zero Calibration, performed Tue Oct 30 04:57:06 2018:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	-0.003	0.000	-0.000
5'	-0.001	0.000	-0.000
SUM			
S1	-0.007	0.000	-0.000
S2	-0.004	0.000	-0.000
S3	-0.005	0.000	0.000
S4	-0.004	0.000	-0.000
S5	-0.004	0.000	-0.000
S6	-0.004	0.000	-0.000
S7	-0.005	0.000	0.000
S8	-0.005	0.000	-0.000

Temperature Calibration Report

Serial Number:	FW0712-020	
Tool Model:	2750 RBT	
Performed:	Thu Dec 21 07:48:40 2017	
	Reference	Reading
Low Reference:	100.00 degF	109.43 degF
High Reference:	350.00 degF	405.87 degF
Gain:	0.84	
Offset:	7.72	
Delta Spacing	1	

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Field	Rulison
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State	Colorado