RELIANCE
OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company TEP Rocky Mountain LLC
Well Federal RWF 321-8
Field Rulison
County Garfield
State Colorado

Company TEP Rocky Mountain LLC
Well Federal RWF 321-8
Field Rulison
County Garfield State Colorado

Location: API # : 05-045-24318

SEC 8 TWP 6S RGE 94W

Other Services

Permanent Datum	Ground Level	Elevation	5979.6'
Log Measured From	Kelly Bushing	24 FT	
Drilling Measured From	Kelly Bushing		

Elevation
K.B. 6003.6'
D.F. 6002.6'
G.L. 5979.6'

Date	10-DEC-2020		
Run Number	One		
Depth Driller	10098 FT		
Depth Logger	9996 FT		
Bottom Logged Interval	9984 FT		
Top Log Interval	Surface		
Open Hole Size	8.750"		
Type Fluid	Water		
Density / Viscosity	8.34 lb/gal		
Max. Recorded Temp.	252°F		
Estimated Cement Top	See Log		
Time Well Ready	ROA		
Time Logger on Bottom	16:26		
Equipment Number	HD-0331		
Location	Grand Junction, CO		
Recorded By	A. Ellsworth		
Witnessed By	---		

	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	1041 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	10056 FT
Intermediate #2					
Liner					

<<< Fold Here >>>

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 5907 -5929 FT
Recorded with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!

RELIANCE
OILFIELD SERVICES

Main Pass

Recorded With 0 PSI Surface Induced Pressure

Database File	tep\tep_federal rwf 321-8_rbl_12-10-20\tep_federal rwf 321-8_rbl_12-10-20.db
Dataset Pathname	Main.2
Presentation Format	ros_radii_tep
Dataset Creation	Sat Dec 12 16:09:06 2020
Charted by	Depth in Feet scaled 1:240

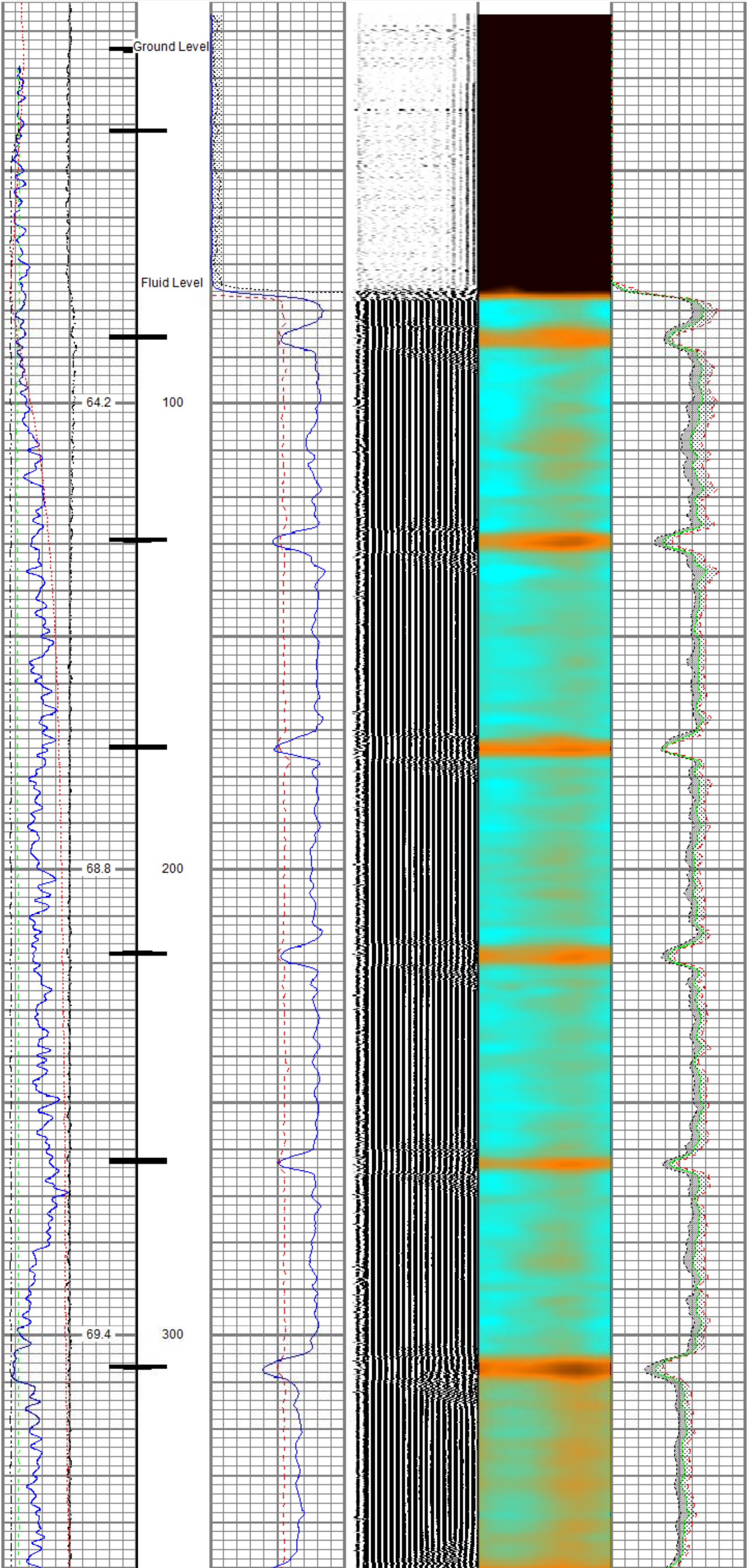
Gamma Ray
0 (GAPI) 200
Casing Collar Locator
Line Speed
-150 (ft/min) 150
Line Tension
0 (lb) 2000
Differential Temperature
-2 (degF) 2
Temperature
0 (degF) 20

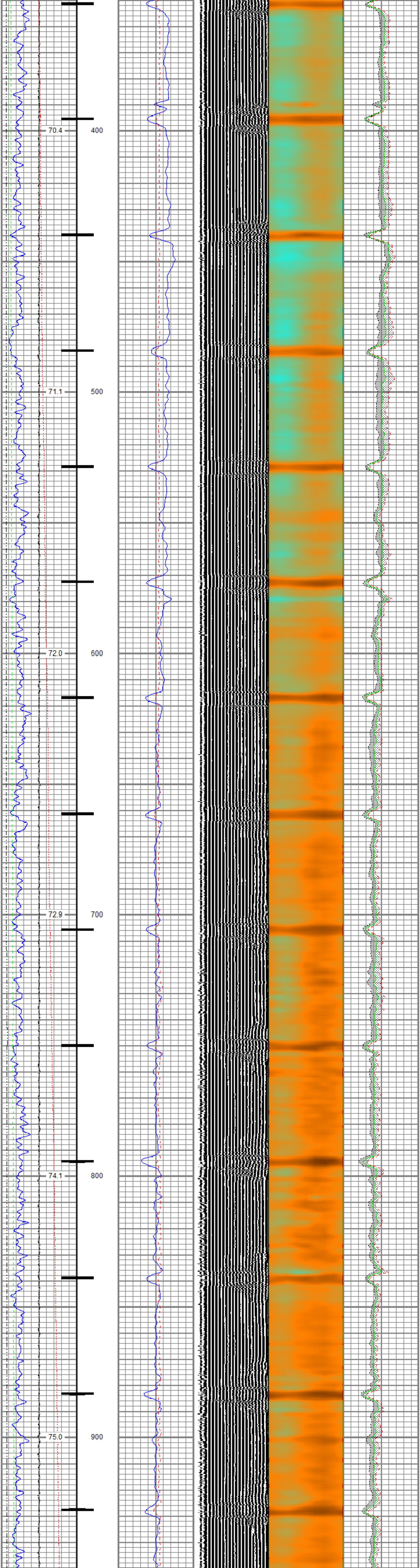
3' Amplitude
0 (mV) 100
3' Amplitude x 5
0 (mV) 20
3' Travel Time
300 (usec) 200

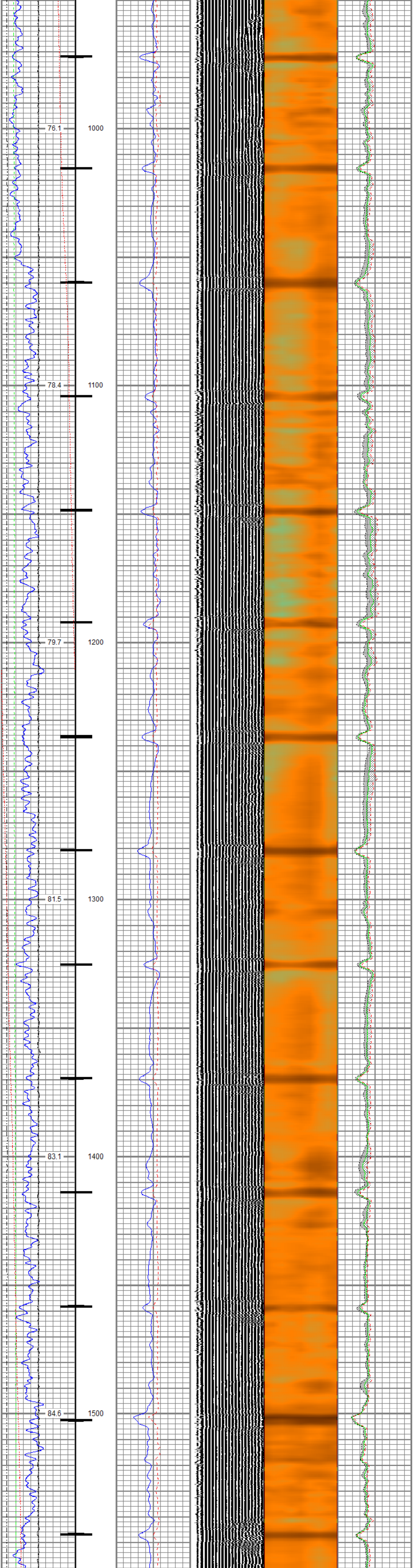
5' Variable Density Log
200 (usec) 1200

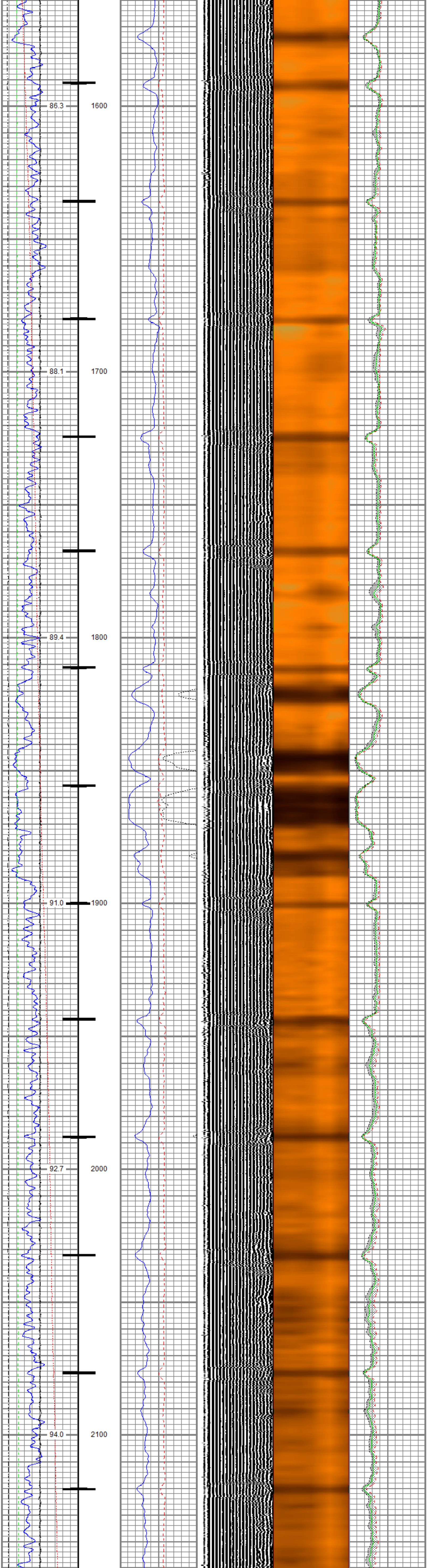
Sector Map

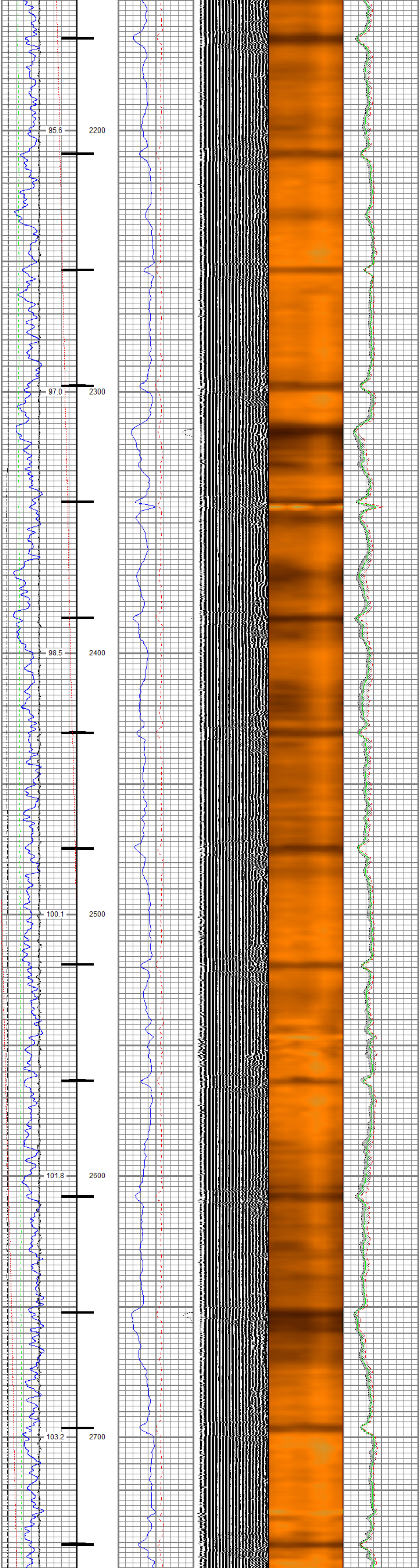
Average Amplitude
0 150
Mimimum Amplitude
0 150
Maximum Amplitude
0 150

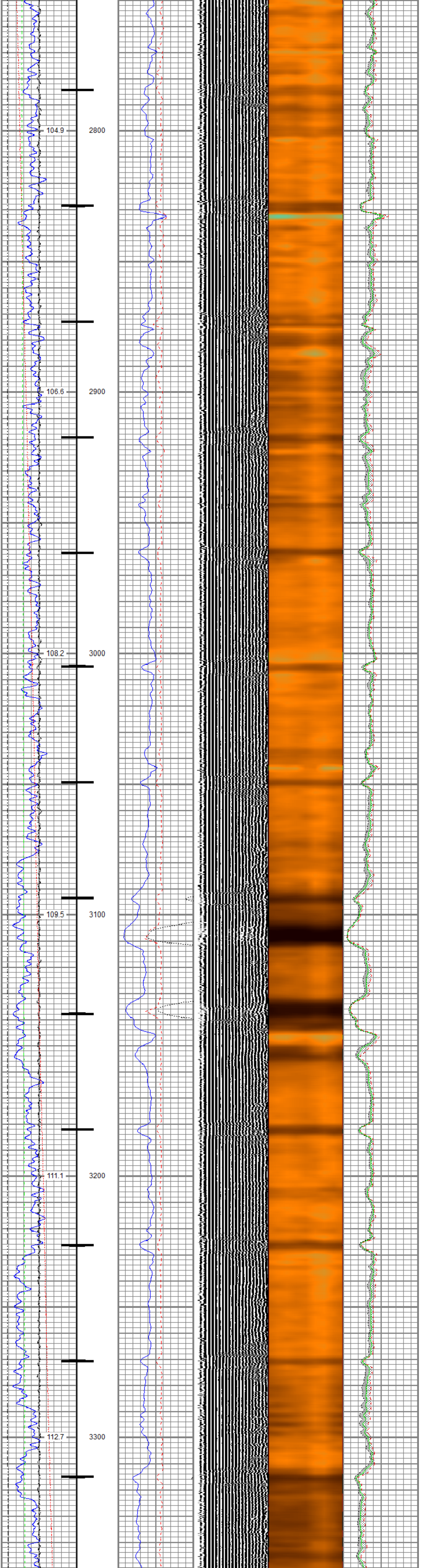


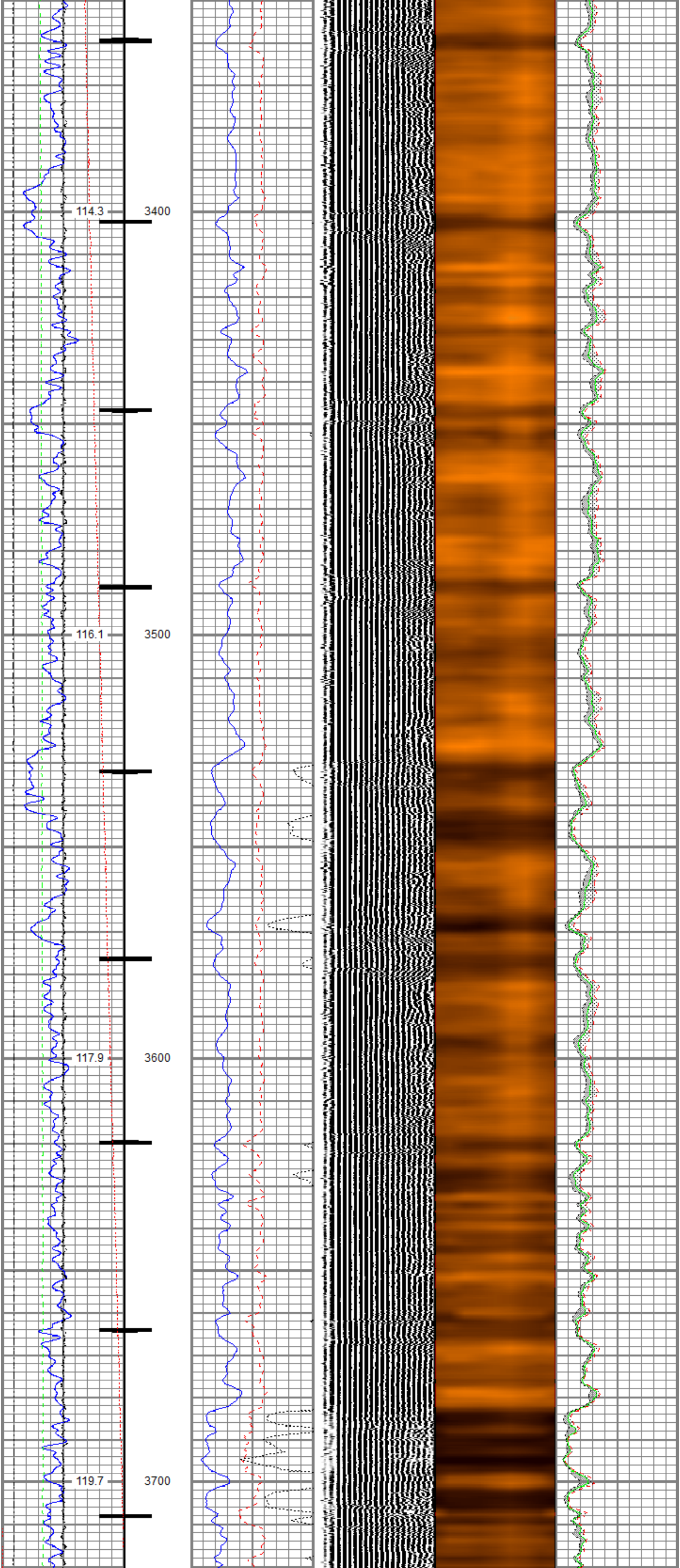


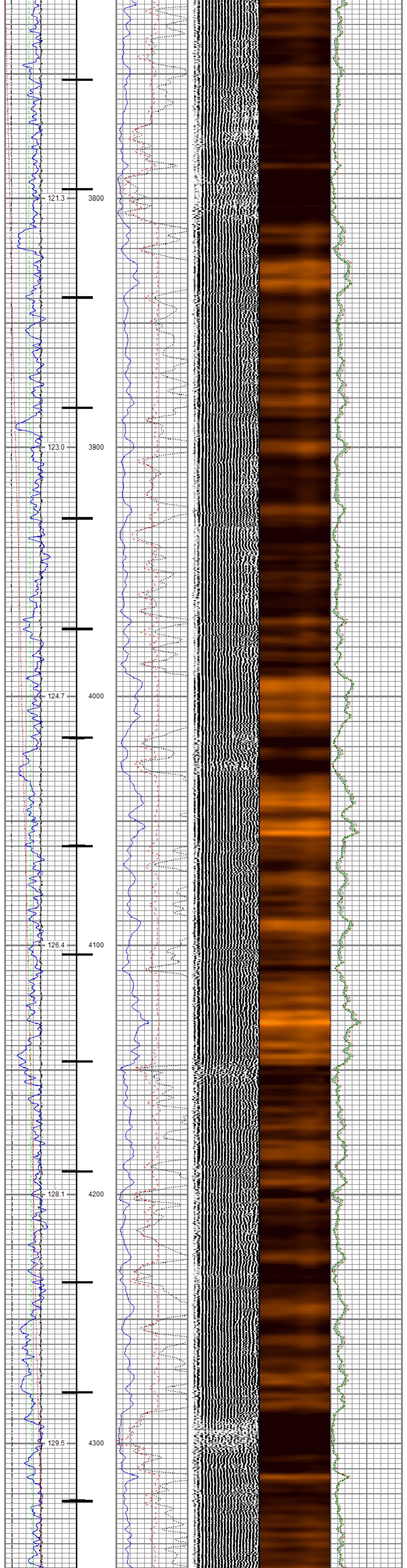


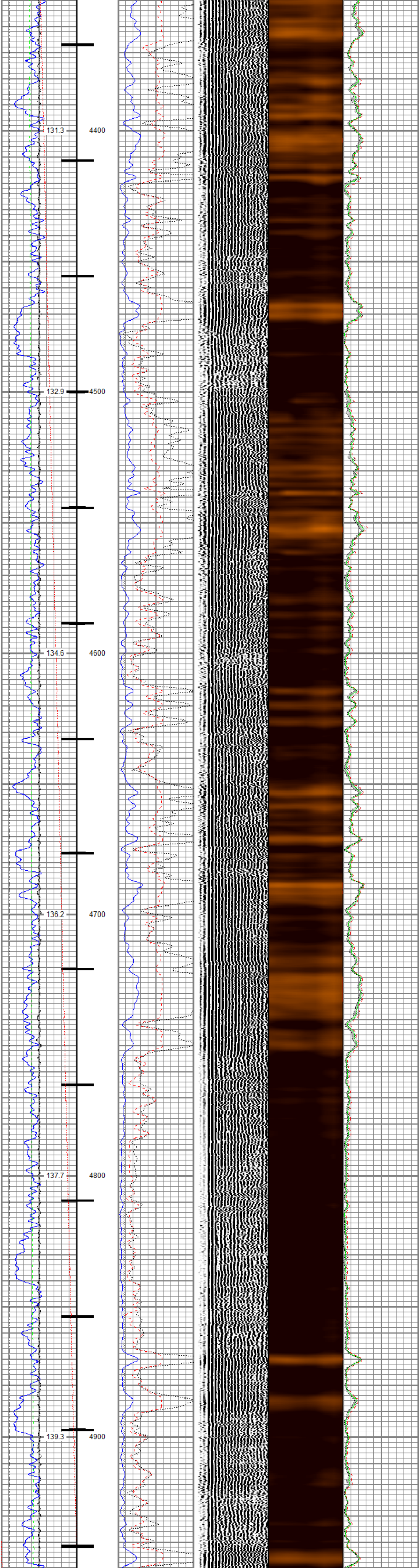


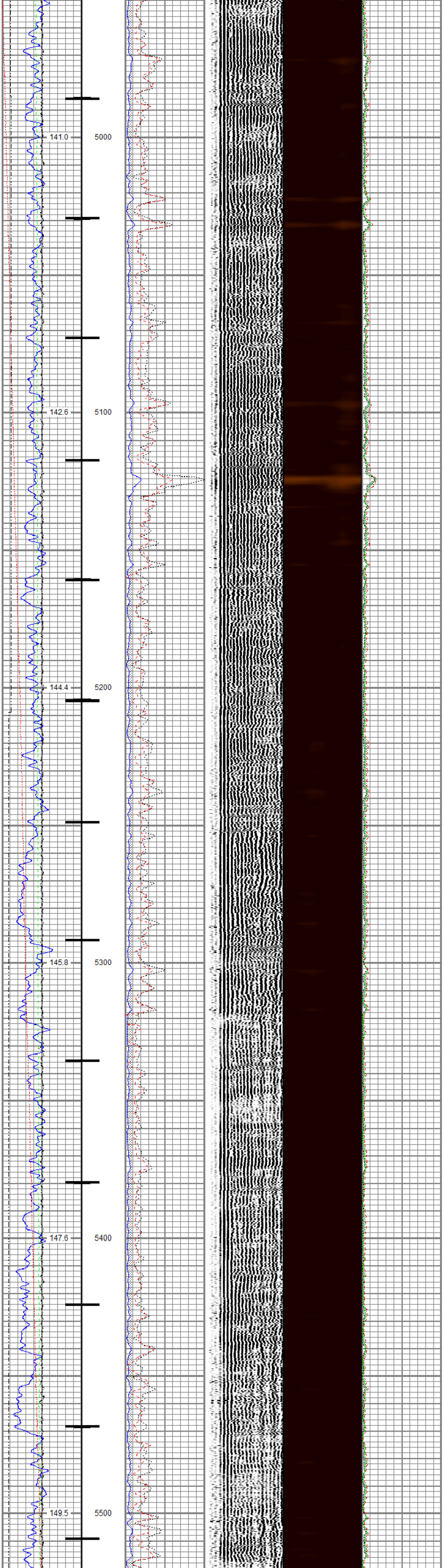


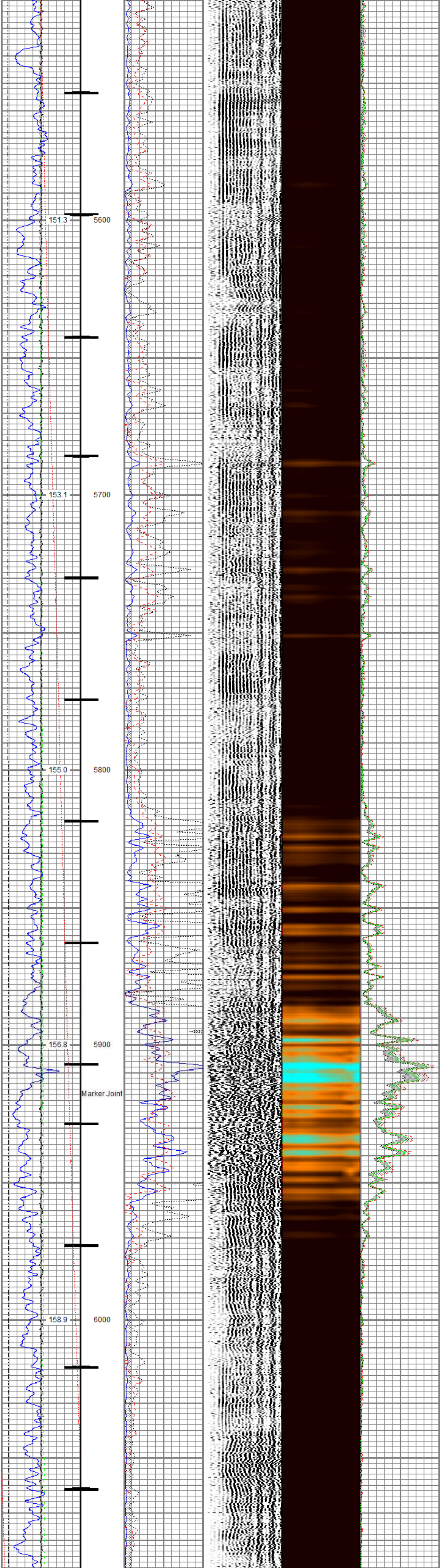


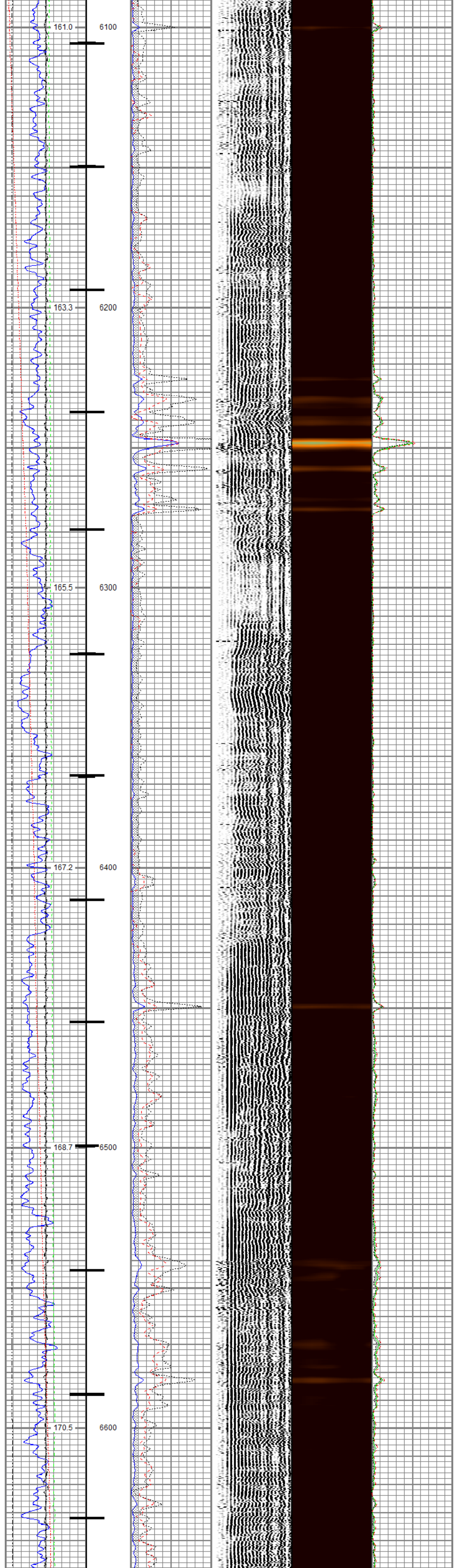


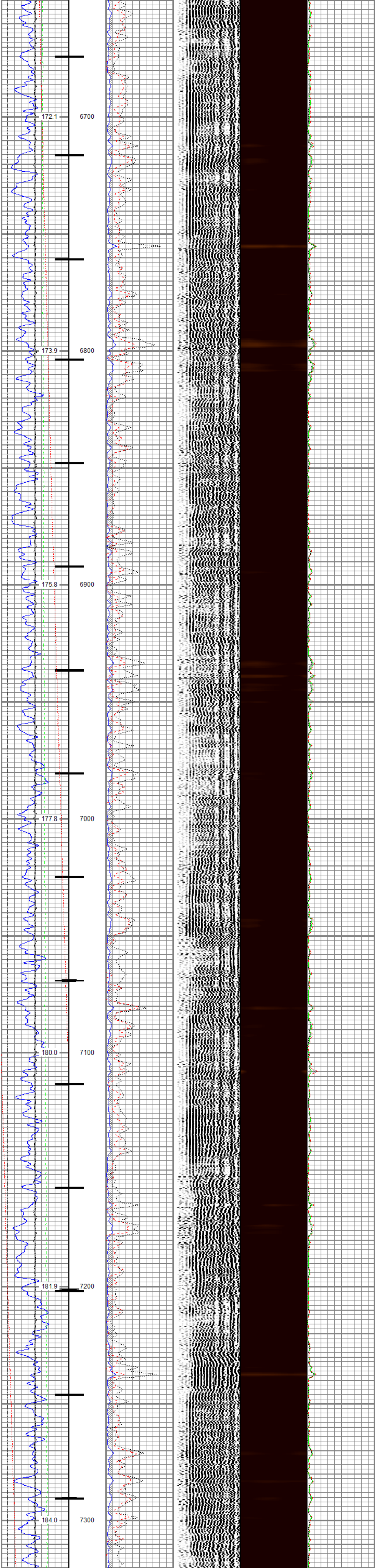

121.3
3800
123.0
3900
124.7
4000
126.4
4100
128.1
4200
129.5
4300

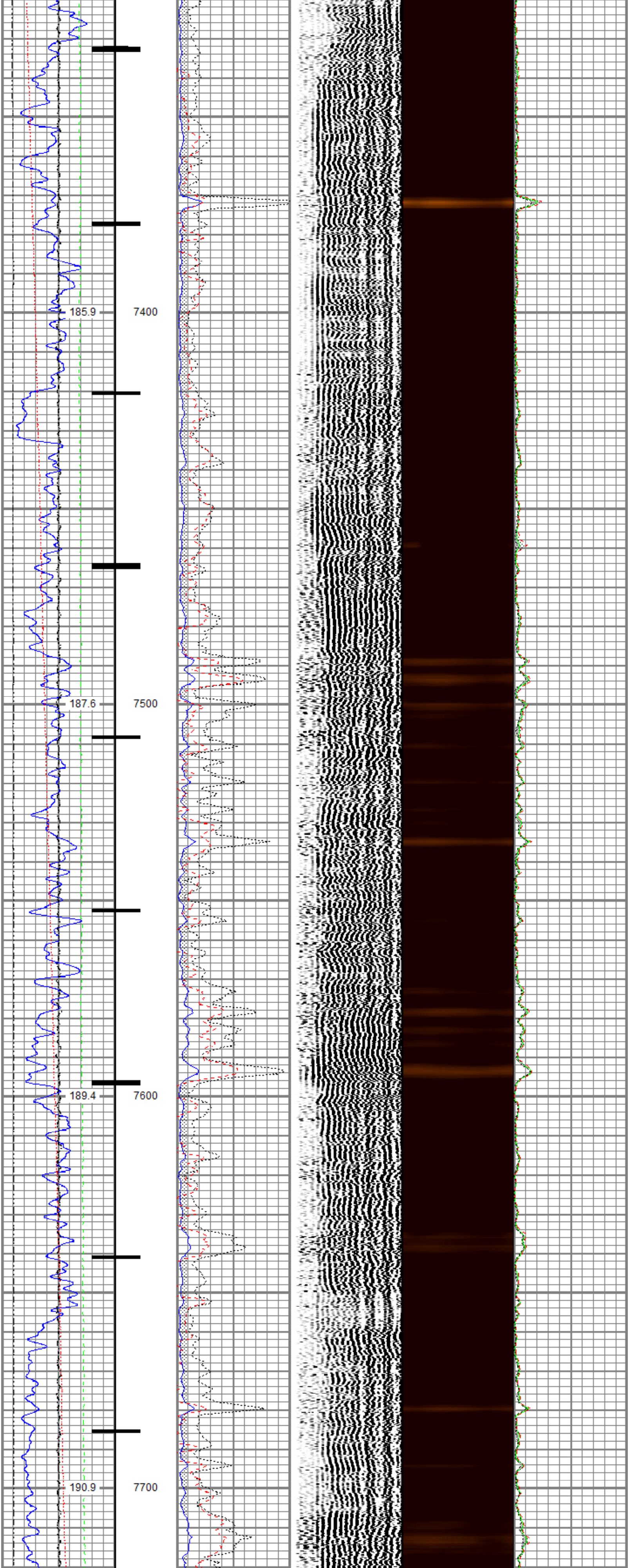

131.3
4400
132.9
4500
134.6
4600
136.2
4700
137.7
4800
139.3
4900

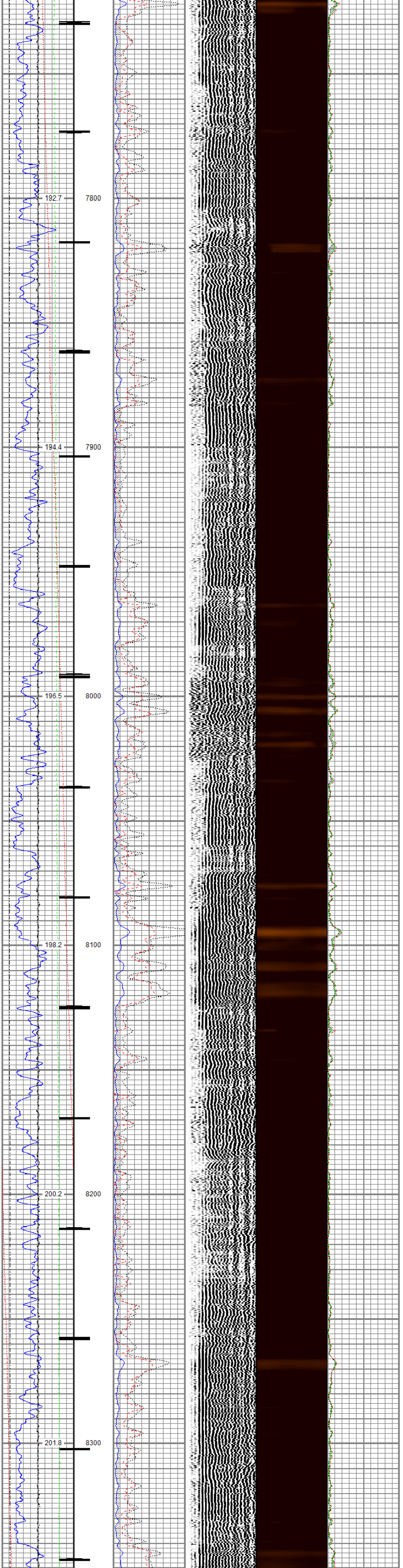

141.0
5000
142.6
5100
144.4
5200
145.8
5300
147.6
5400
149.5
5500

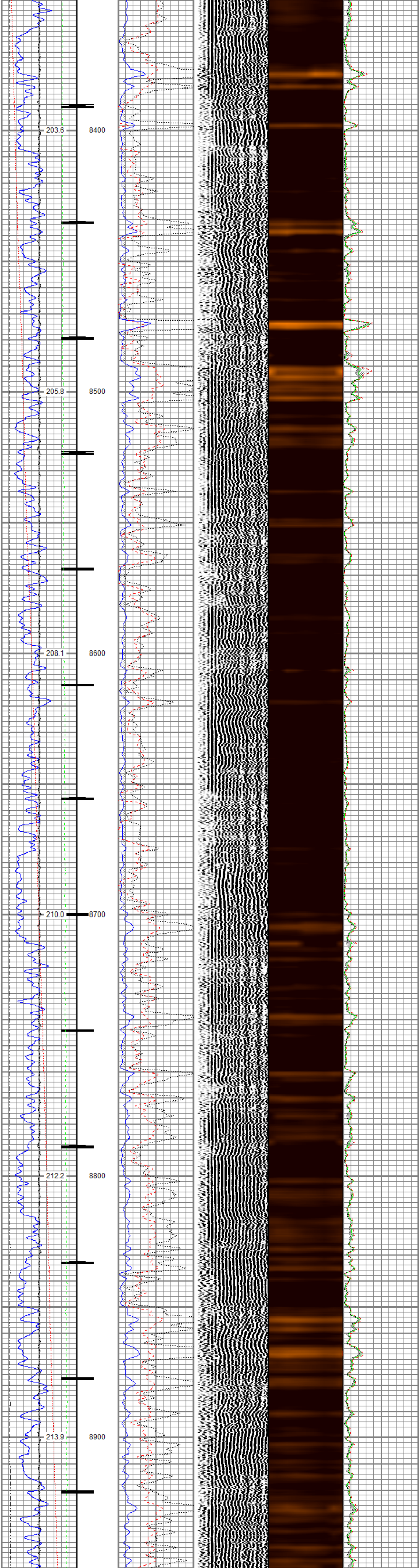

151.3
5600
153.1
5700
155.0
5800
156.8
5900
Marker Joint
158.9
6000

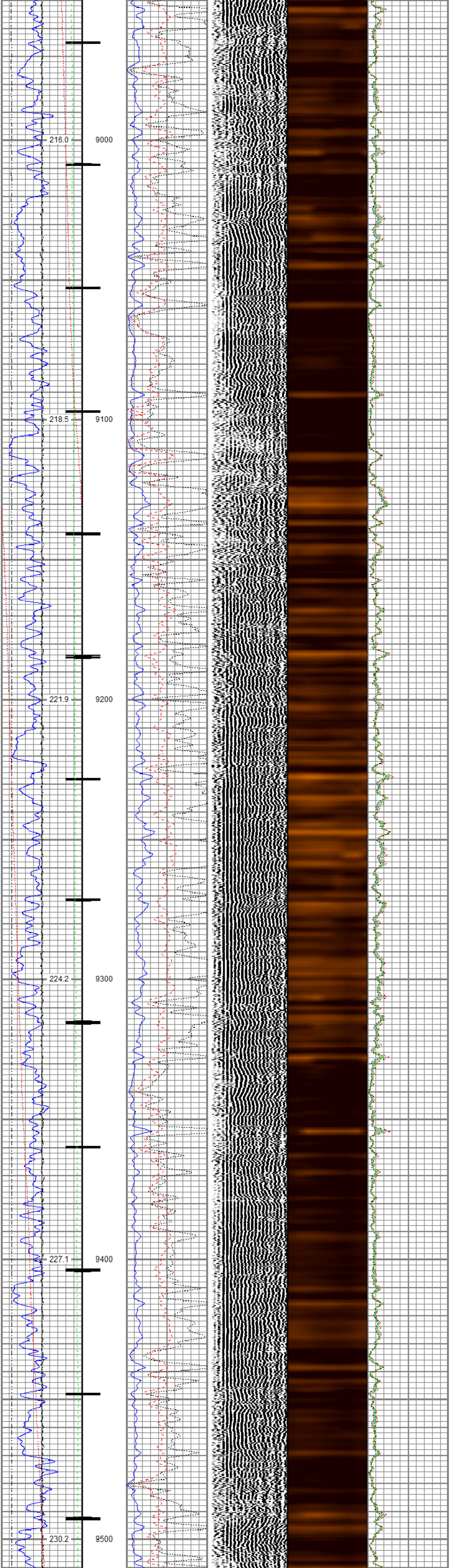

161.0
6100
163.3
6200
165.5
6300
167.2
6400
168.7
6500
170.5
6600

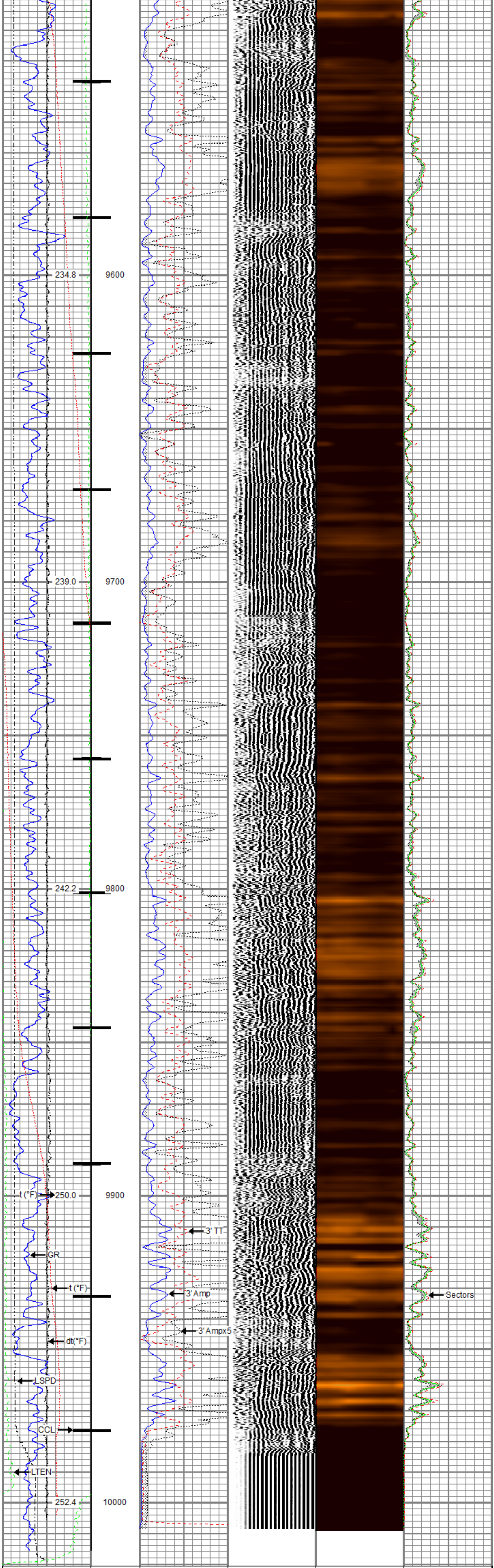

172.1
6700
173.9
6800
175.8
6900
177.8
7000
180.0
7100
181.9
7200
184.0
7300


185.9
7400
187.6
7500
189.4
7600
190.9
7700









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

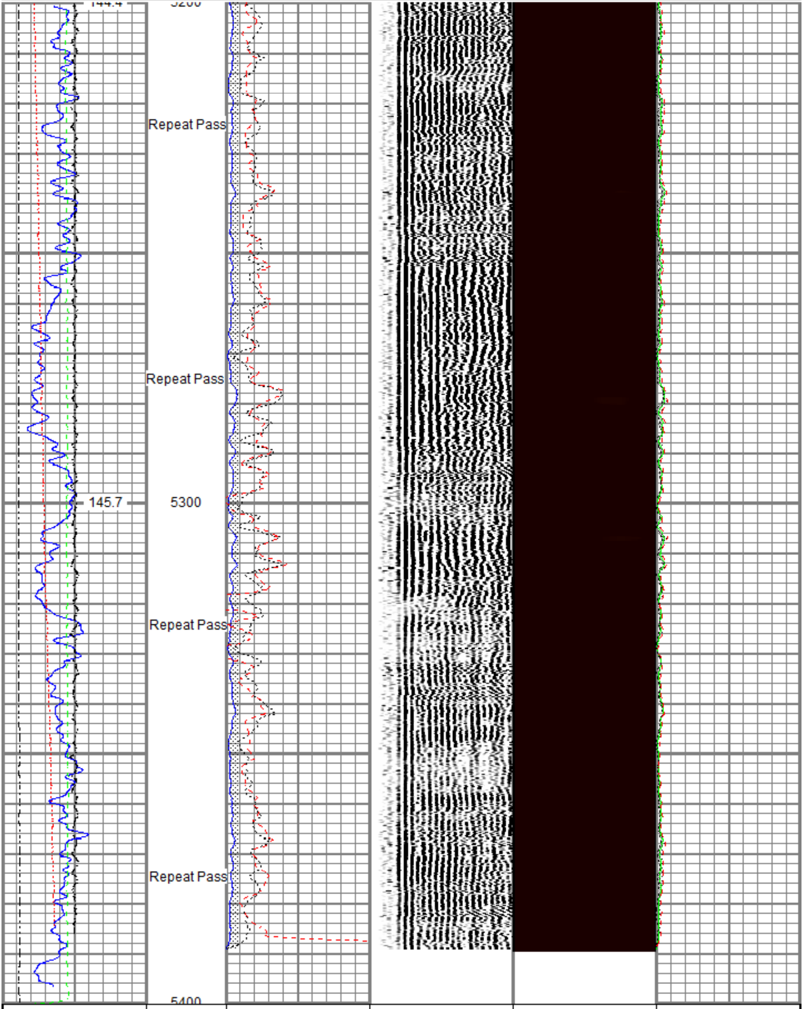
RELIANCE
OILFIELD SERVICES

Repeat Pass

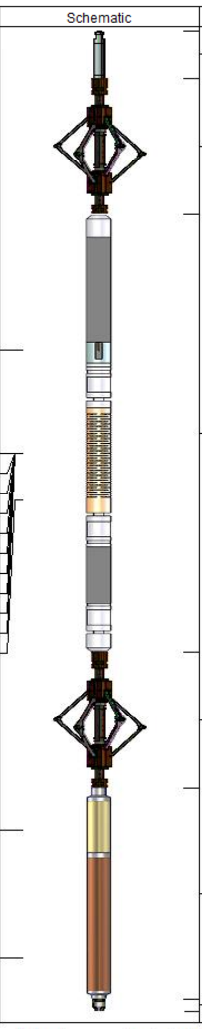
Recorded With 0 PSI Surface Induced Pressure

Database File	tep\tep_federal rwf 321-8_rbl_12-10-20\tep_federal rwf 321-8_rbl_12-10-20.db
Dataset Pathname	Repeat.2
Presentation Format	ros_radii_tep
Dataset Creation	Sat Dec 12 16:15:08 2020
Charted by	Depth in Feet scaled 1:240

Gamma Ray 0 (GAPI) 200		3' Amplitude 0 (mV) 100	5' Variable Density Log 200 (usec) 1200	Sector Map	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					



Gamma Ray 0 (GAPI) 200		3' Amplitude 0 (mV) 100	5' Variable Density Log 200 (usec) 1200	Sector Map	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 with 1" Fishing Neck	1.03	1.44	3.60
			BTA-MUD BTA 2-3/4" Roller 6 Arm Centralizer with Reversible Ends	2.92	2.72	25.00
TEMP	14.19					
			Probe Radii-2750 RBT (ROFS-RBT-0002) Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub	9.39	2.75	105.00
WVFS8	11.96					
WVFS7	11.96					
WVFS6	11.96					
WVFS5	11.96					
WVFS4	11.96					
WVFS3	11.96					
WVFS2	11.96					
WVFS1	11.96					
WVFCAL	11.96					
WVF3FT	11.96					
WVF5FT	10.96					
			BTA-MUD BTA 2-3/4" Roller 6 Arm Centralizer with Reversible Ends	2.92	2.72	25.00
CCL	3.88					
			Probe GR-CCL ANL-2750 A (051217) Probe 2.75" Analog 4 Channel Pulse Gamma Ray/CCL Combined	4.54	2.75	55.00
GR	1.14					
			GO BN-14375 GO 1-7/16" Bull Nose with Go Box Top	0.25	1.44	1.00

Dataset: tep_federal rwf 321-8_rbl_12-10-20.db: field/well/run1/Main.2
Total length: 21.05 ft
Total weight: 214.60 lb
O.D.: 2.75 in

Calibration Report

Database File	c:\programdata\warrior\data\tep\tep_federal rwf 321-8_rbl_12-10-20\tep_federal rwf 321-8_rbl_12-10-20.db
Dataset Pathname	Main.2
Dataset Creation	Sat Dec 12 16:09:06 2020

Gamma Ray Calibration Report

Serial Number:	051217	
Tool Model:	2750 A	
Performed:	Mon Oct 01 11:32:35 2018	
Calibrator Value:	637.0	GAPI
Background Reading:	115.3	cps
Calibrator Reading:	1027.7	cps
Sensitivity:	0.6982	GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number:	ROFS-RBT-0002	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	68.342	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.008	0.740	0.800	81.196	109.865	-0.050
CAL	0.003	0.800				
5'	0.012	0.554	0.800	81.196	148.263	-0.948
SUM						
S1	0.007	0.766	0.000	100.000	131.699	-0.908
S2	0.010	0.707	0.000	100.000	143.442	-1.478
S3	0.010	0.687	0.000	100.000	147.677	-1.406
S4	0.009	0.704	0.000	100.000	143.868	-1.225
S5	0.011	0.747	0.000	100.000	135.781	-1.479
S6	0.008	0.792	0.000	100.000	127.507	-1.045
S7	0.011	0.820	0.000	100.000	123.663	-1.347
S8	0.010	0.802	0.000	100.000	126.361	-1.309

Air Zero Calibration, performed Wed Dec 09 09:18:04 2020:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	0.004	0.000	-0.000
5'	0.004	0.000	0.001
SUM			
S1	-0.001	0.000	-0.000
S2	0.004	0.000	0.000
S3	0.002	0.000	0.001
S4	0.004	0.000	-0.001
S5	0.002	0.000	0.002
S6	0.005	0.000	-0.002
S7	0.003	0.000	0.000
S8	0.004	0.000	-0.001

Temperature Calibration Report

Serial Number:	ROFS-RBT-0002	
Tool Model:	2750 RBT	
Performed:	Wed Oct 14 10:20:48 2020	
	Reference	Reading
Low Reference:	100.00 degF	109.31 degF
High Reference:	235.00 degF	267.00 degF
Gain:	0.86	
Offset:	6.43	
Delta Spacing	1	

RELIANCE
OILFIELD SERVICES

Company	TEP Rocky Mountain LLC
Well	Federal RWF 321-8
Field	Rulison
County	Garfield
State	Colorado