RELIANCE
OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Ware SR 314-12
Field	Rulison
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Ware SR 314-12
Field Rulison
County Garfield State Colorado
Location: API # : 05-045-23453
SEC 12 TWP 7S RGE 94W
Other Services
--

Permanent Datum	Ground Level	Elevation	7479'
Log Measured From	Kelly Bushing		24 FT
Drilling Measured From	Kelly Bushing		

Elevation
K.B. 7503'
D.F. 7502'
G.L. 7479'

Date	17-FEB-2018		
Run Number	One		
Depth Driller	9978 FT		
Depth Logger	9931 FT		
Bottom Logged Interval	9910 FT		
Top Log Interval	Surface		
Open Hole Size	8.750"		
Type Fluid	Water		
Density / Viscosity	8.34 lb/gal		
Max. Recorded Temp.	244°F		
Estimated Cement Top	See Log		
Time Well Ready	ROA		
Time Logger on Bottom	6:50		
Equipment Number	HD-0359		
Location	Grand Junction, CO		
Recorded By	Z. Fisher		
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	32.3	H-40	Surface	1158 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	9938 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 6605-6626 FT
Log ran from 9910 FT to Surface
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\sr 314-12\processed_tep_ware sr 314-12_rbl_02-17-18.db
Dataset Pathname	main
Presentation Format	ros_rbt004_tep
Dataset Creation	Sat Feb 17 06:55:33 2018
Charted by	Depth in Feet scaled 1:240

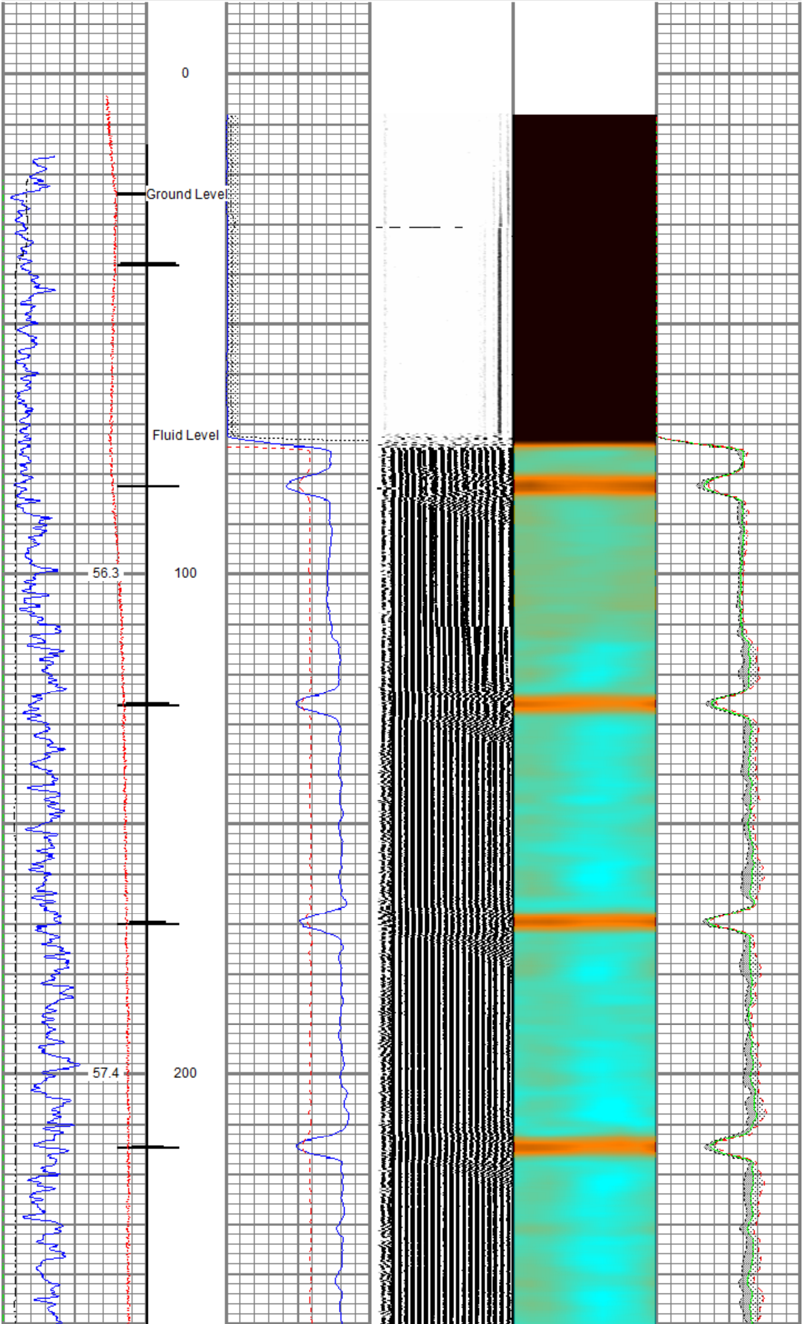
Gamma Ray
0 (GAPI) 200
Casing Collar Locator
Line Speed
-150 (ft/min) 150
Line Tension
0 (lb) 2000
Temperature
0 (degF) 20

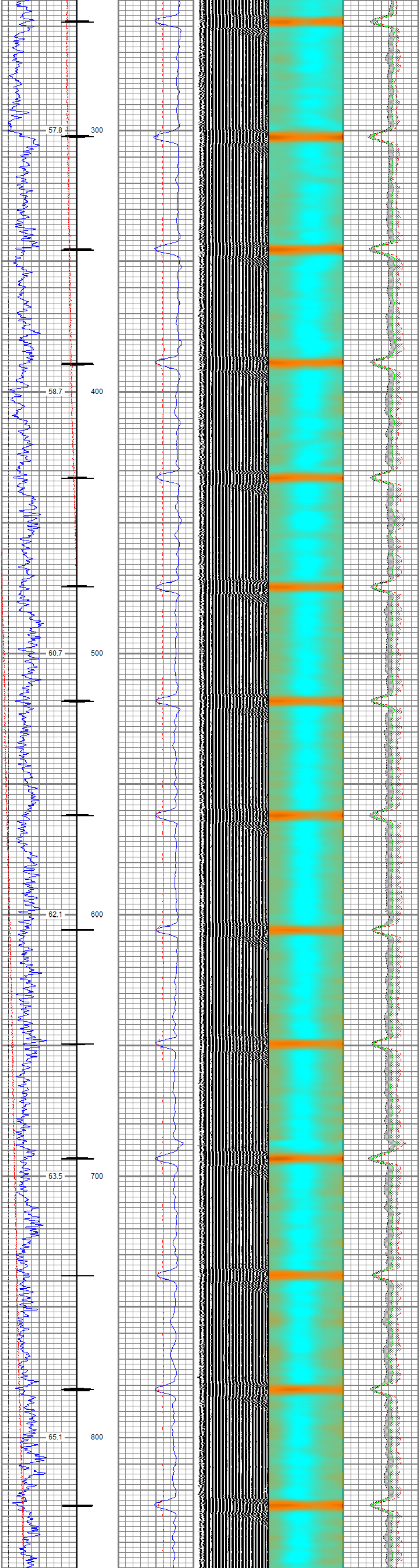
3' Amplitude
0 (mV) 100
3' Amplitude x 5
0 (mV) 20
3' Travel Time
300 (usec) 200

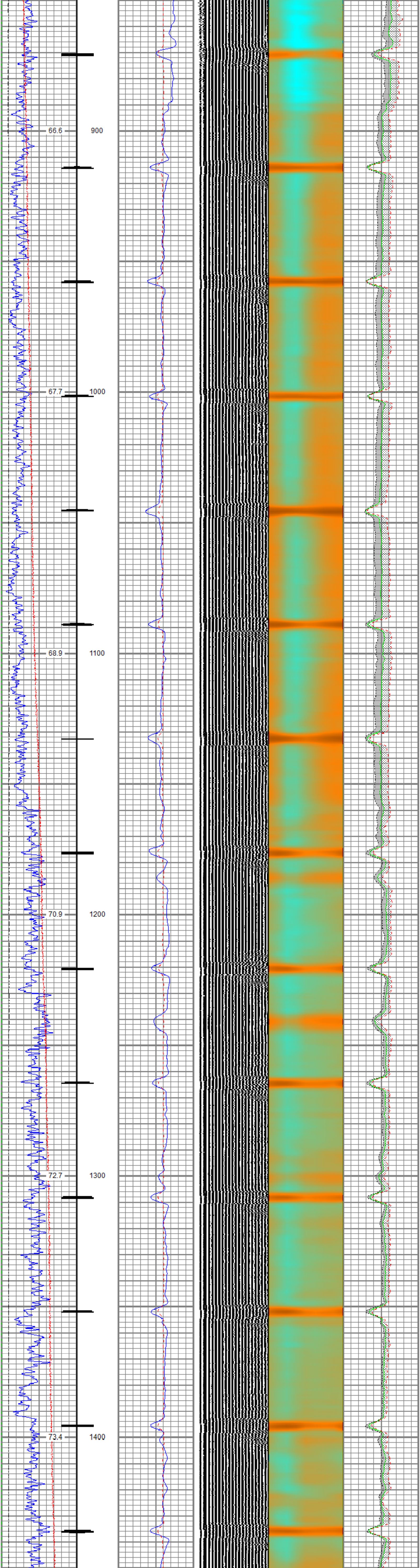
5' Variable Density Log
200 (usec) 1200

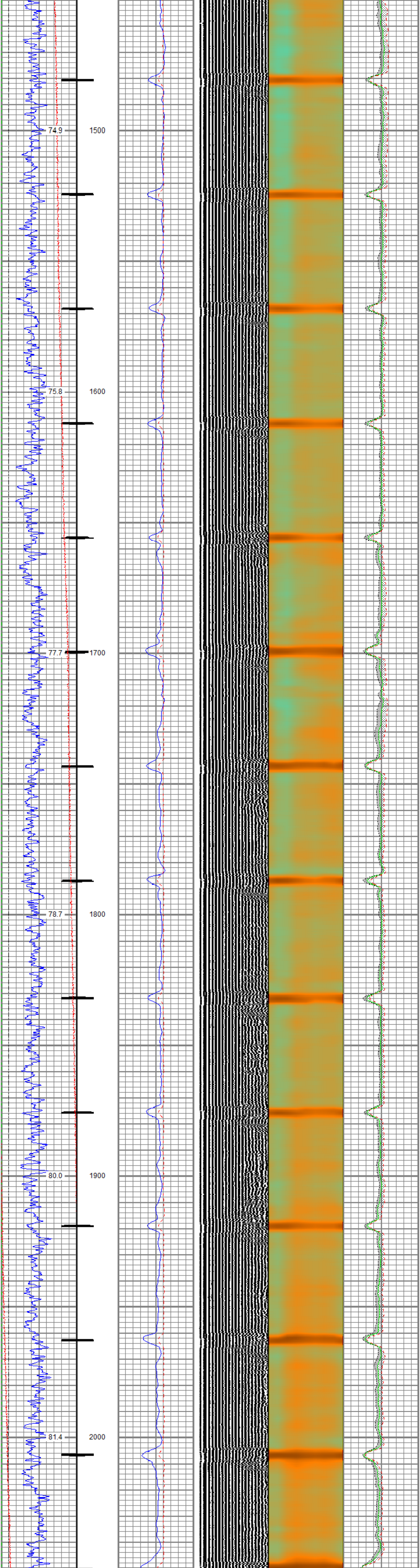
Sector Map

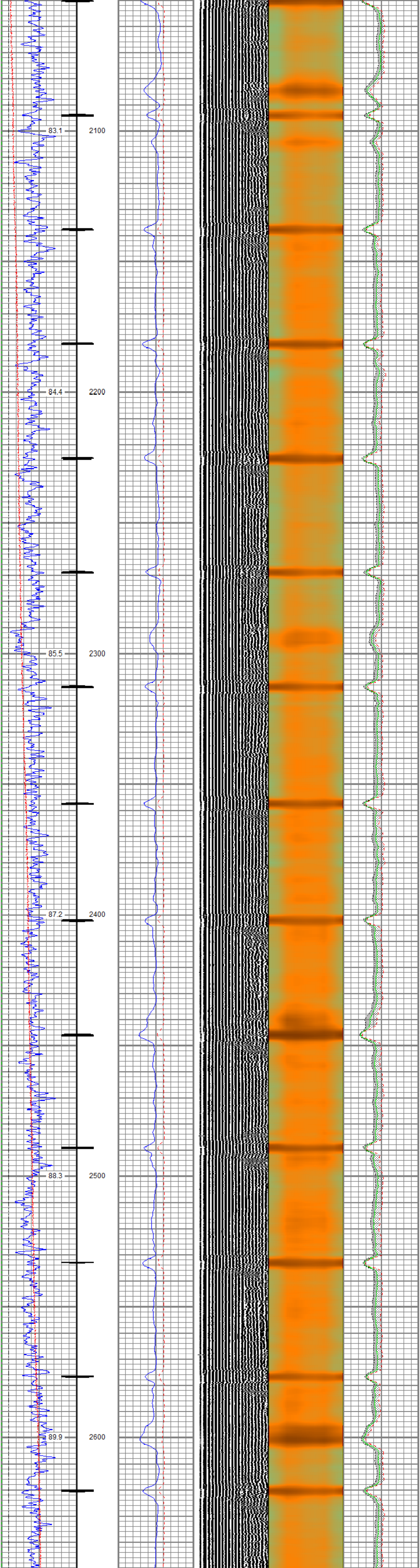
Average Amplitude
0 150
Mimimum Amplitude
0 150
Maximum Amplitude
0 150

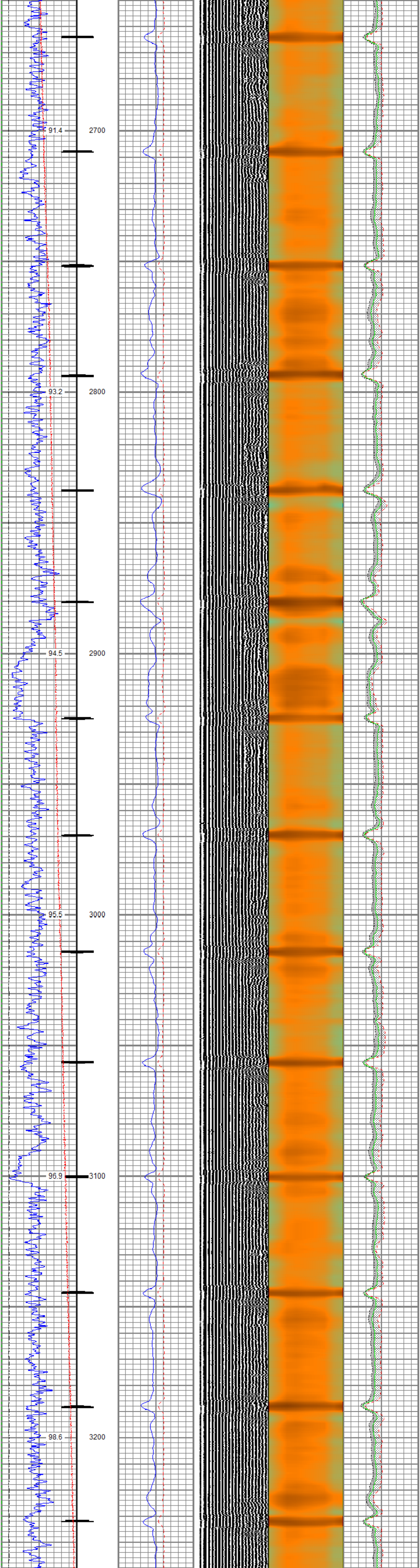


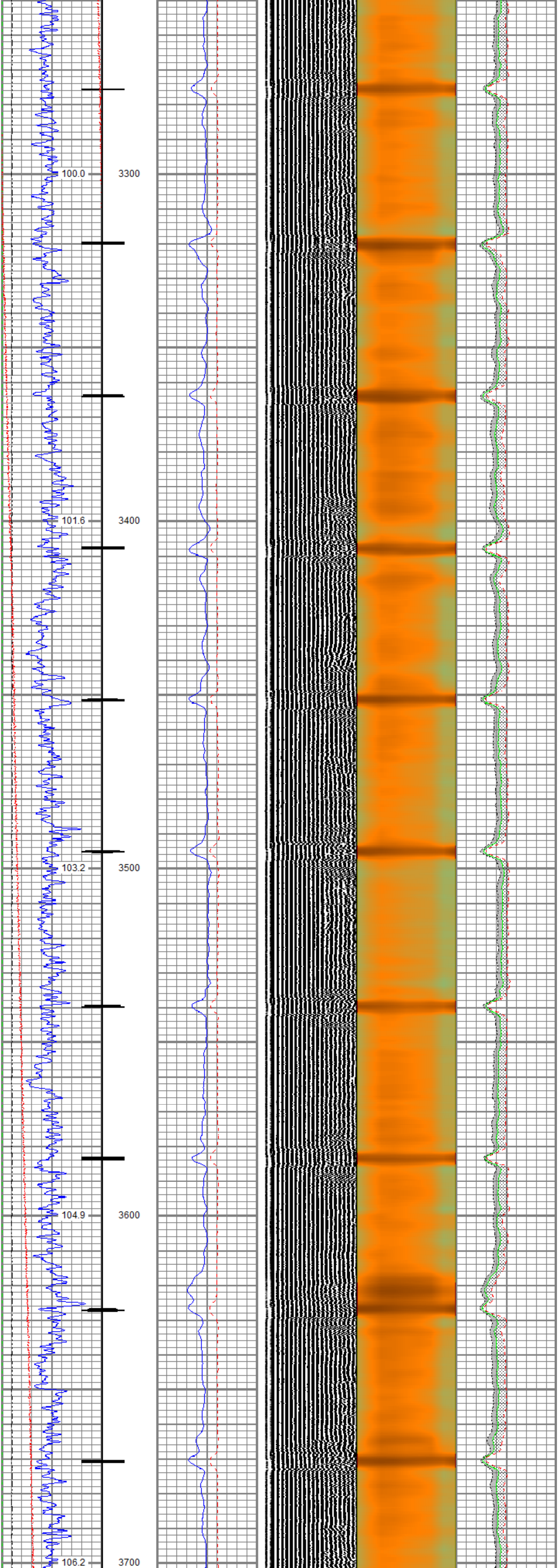


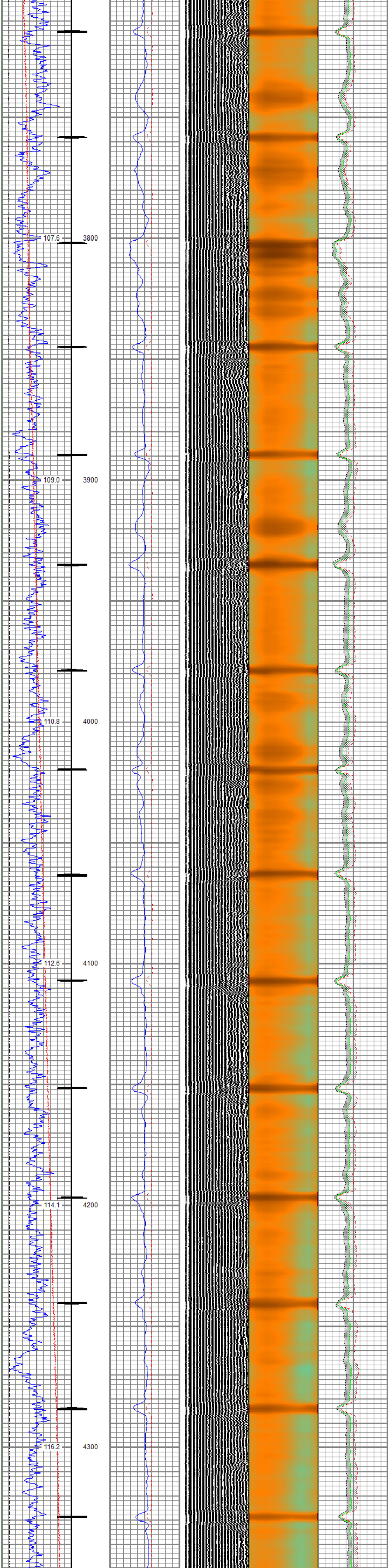


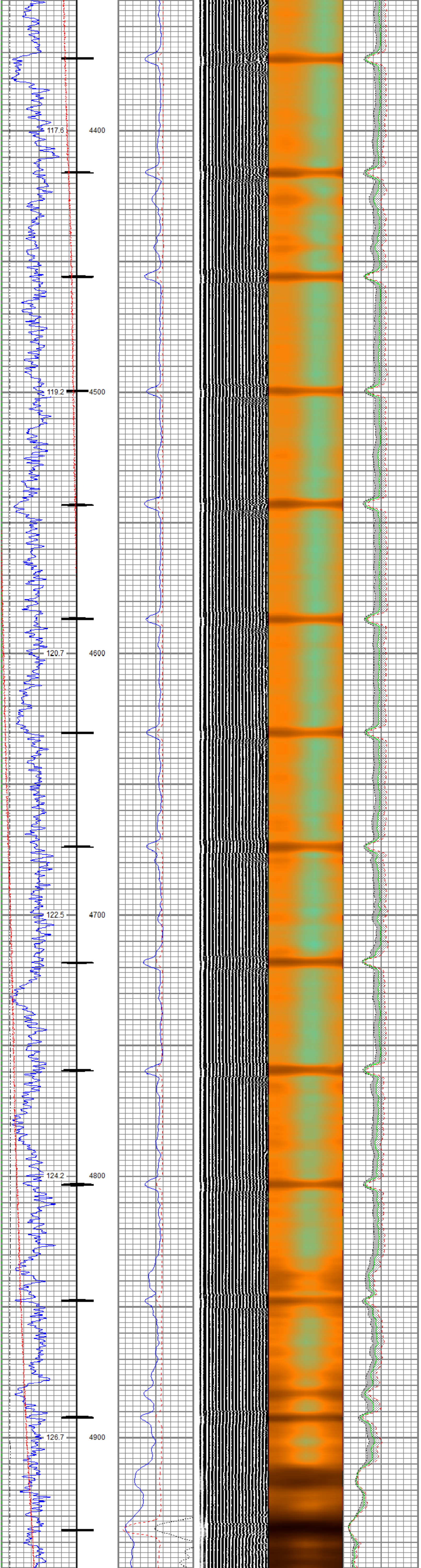


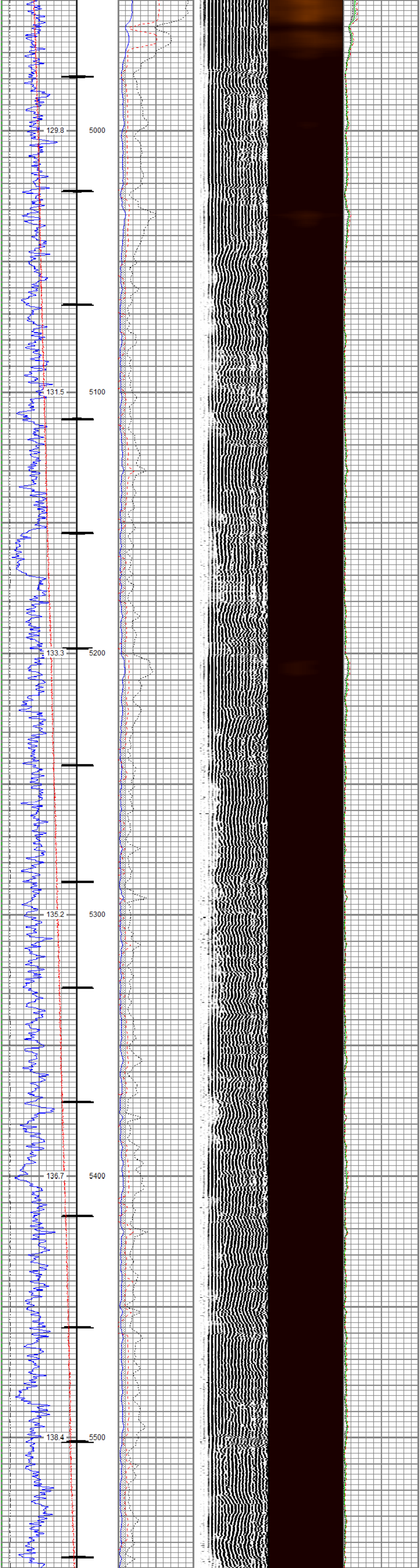


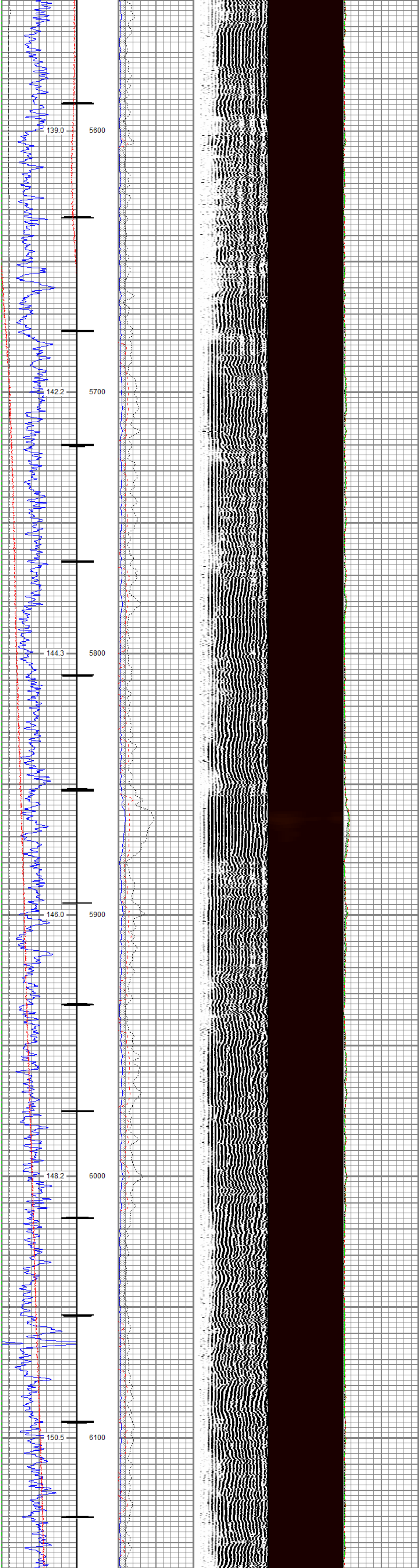


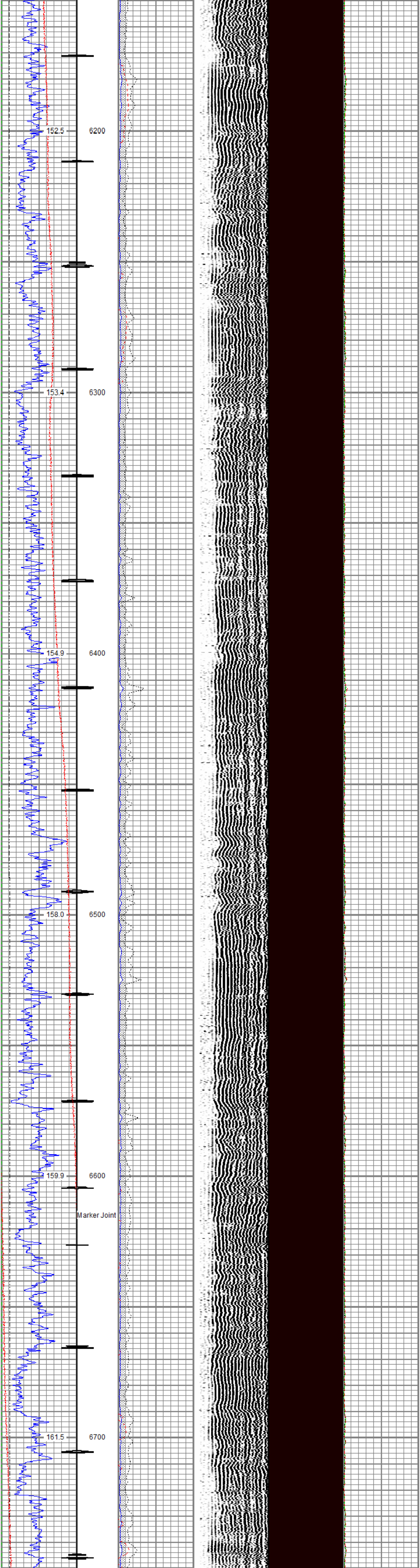


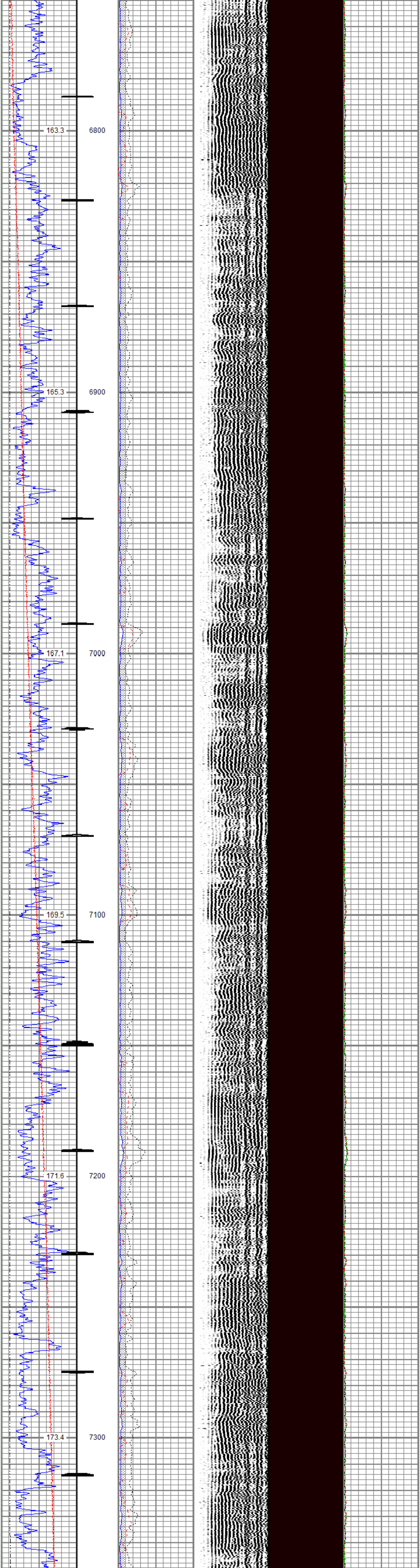

107.6
3800
109.0
3900
110.8
4000
112.6
4100
114.1
4200
116.2
4300

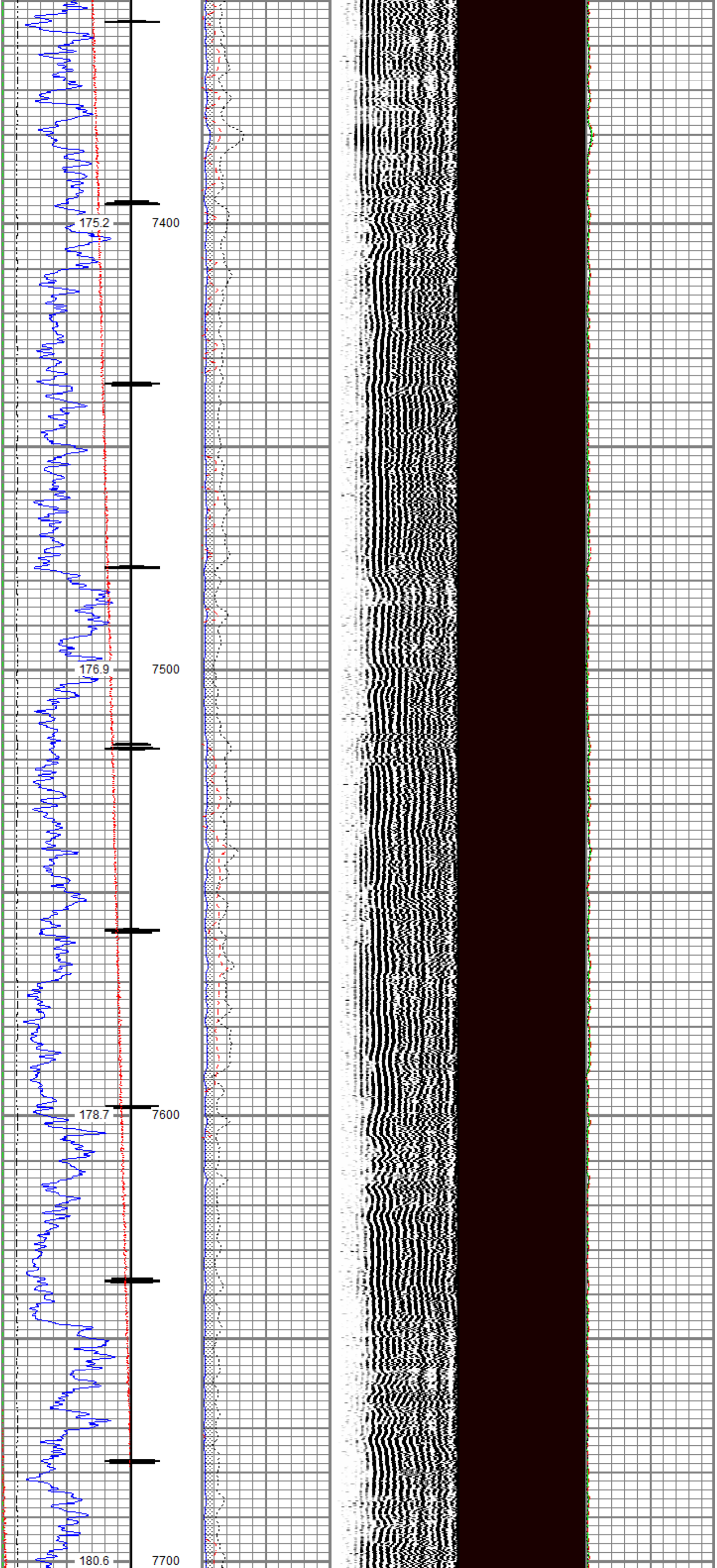

117.6
4400
119.2
4500
120.7
4600
122.5
4700
124.2
4800
126.7
4900

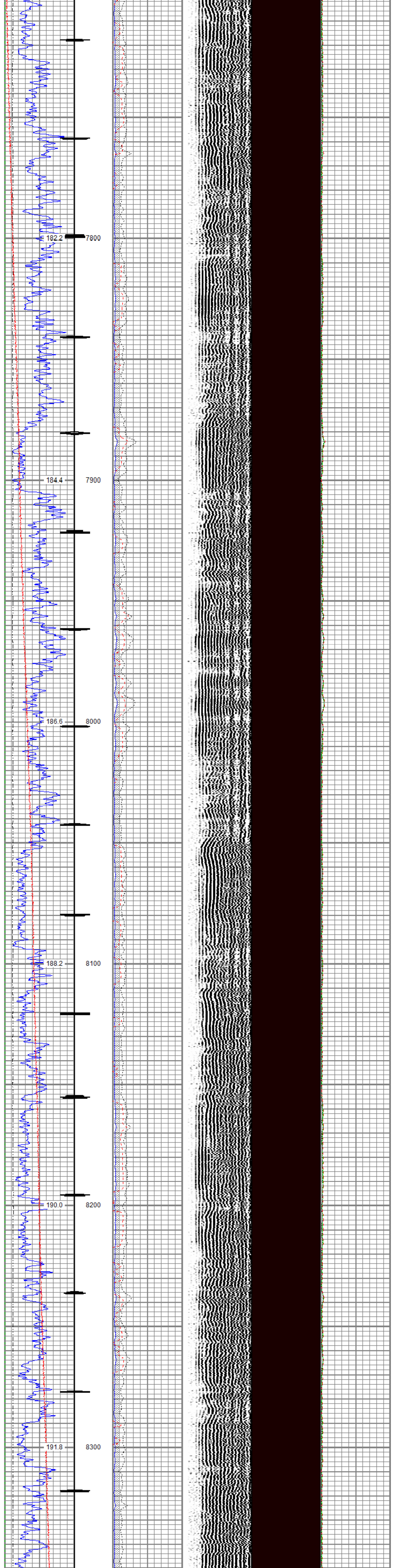

129.8
5000
131.5
5100
133.3
5200
135.2
5300
136.7
5400
138.4
5500

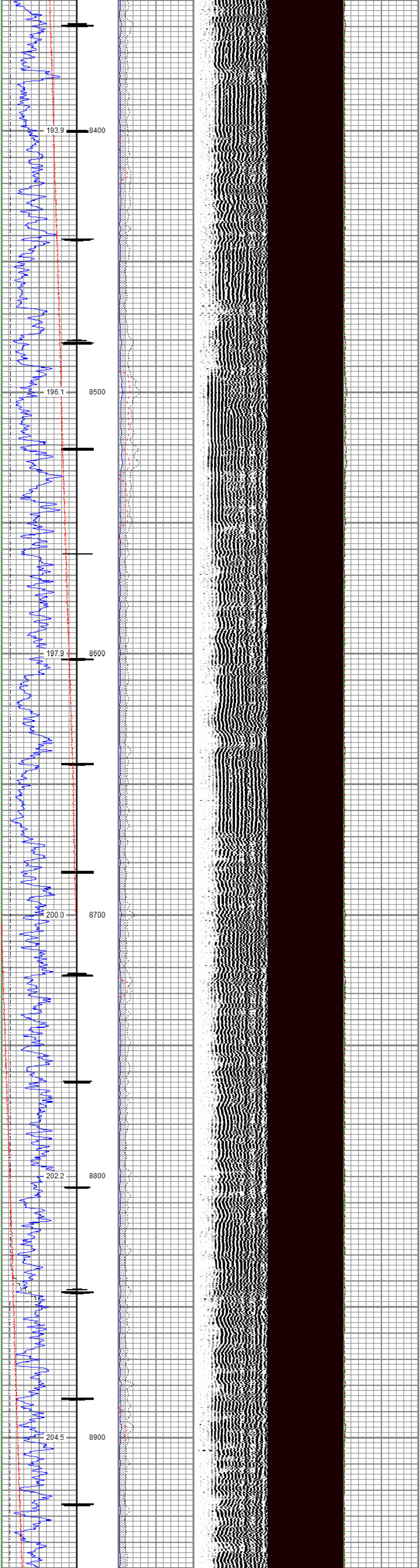

139.0
5600
142.2
5700
144.3
5800
146.0
5900
148.2
6000
150.5
6100

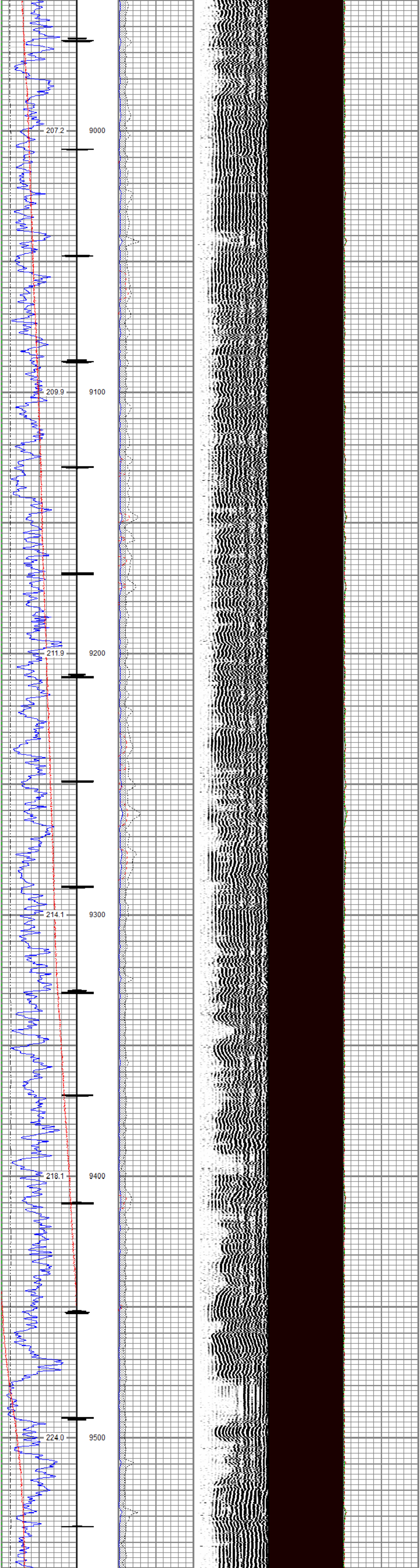

152.5
6200
153.4
6300
154.9
6400
158.0
6500
159.9
6600
Marker Joint
161.5
6700

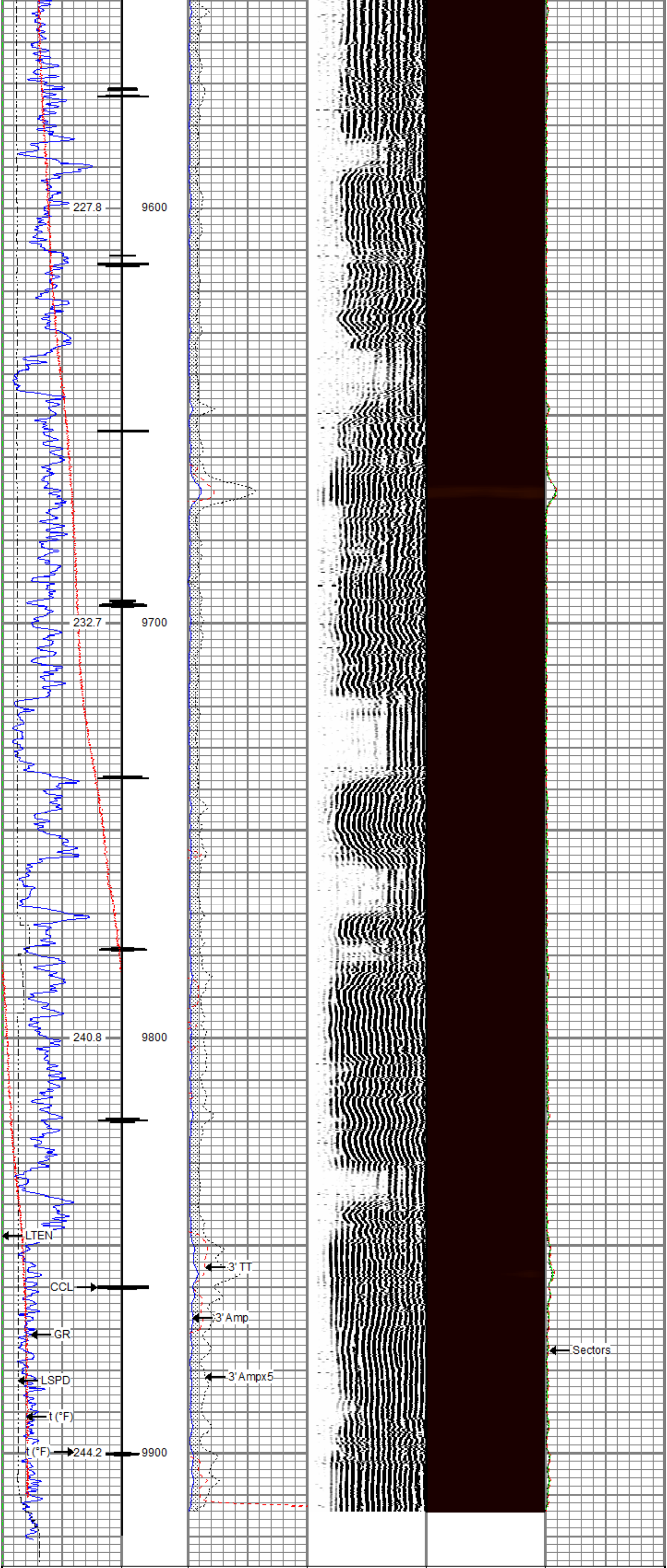

163.3
6800
165.3
6900
167.1
7000
169.5
7100
171.6
7200
173.4
7300


175.2
7400
176.9
7500
178.7
7600
180.6
7700









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

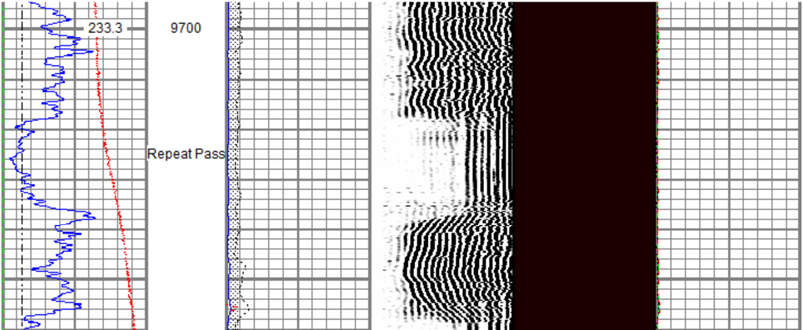
RELIANCE
OILFIELD SERVICES

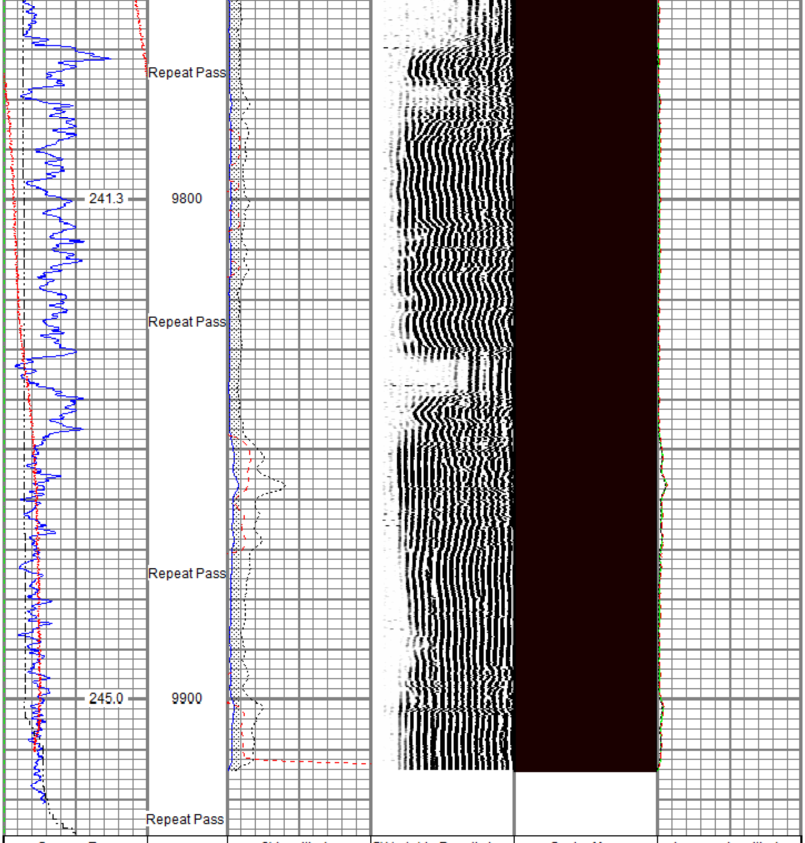
Repeat Pass

Recorded with 0 PSI Surface Induced Pressure

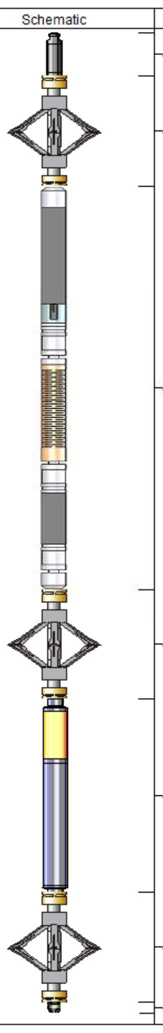
Database File	tep\sr 314-12\processed_tep_ware sr 314-12_rbl_02-17-18.db
Dataset Pathname	repeat
Presentation Format	ros_rbt004_tep
Dataset Creation	Sat Feb 17 06:51:45 2018
Charted by	Depth in Feet scaled 1:240

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
Temperature 0 (degF) 20					





Gamma Ray		3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 200		0 (mV) 100	200 (usec) 1200		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
Temperature					
0 (degF) 20					

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
			Titan CHD-16875 GO Titan 1-11/16" Assembled Electric Cable Head w/ 1" Fishing Neck	1.03	1.69	5.40
			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 (FW1305-098) 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					
HEADVOLT	9.85					
			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 (FW1307-038) 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: PROCESSED_TEP_Ware SR 314-12_RBL_02-17-18.db: field/well/run1/main
Total length: 22.82 ft
Total weight: 262.40 lb
O.D.: 2.75 in

Calibration Report

Database File C:\ProgramData\Warrior\Data\TEP\SR 314-12\PROCESSED_TEP_Ware SR 314-12_RBL_02-17-18.db
Dataset Pathname main
Dataset Creation Sat Feb 17 06:55:33 2018

Gamma Ray Calibration Report

Serial Number: FW1307-038
Tool Model: 2750 GOB
Performed: Sun Nov 12 12:44:12 2017

Calibrator Value: 637.0 GAPI

Background Reading: 113.2 cps
Calibrator Reading: 1022.4 cps

Sensitivity: 0.7007 GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number: FW1305-098
Tool Model: 2750 RBT

Calibration Casing Diameter: 4.500 in
Calibration Depth: 32.264 ft

Master Calibration, performed Sat Feb 17 06:03:03 2018:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.000	0.865	0.800	81.196	92.997	0.755
CAL	0.756	0.767				
5'	0.000	0.736	0.800	81.196	109.268	0.775
SUM						
S1	-0.008	0.818	0.000	100.000	121.040	1.006
S2	-0.004	0.873	0.000	100.000	113.957	0.466
S3	-0.005	0.939	0.000	100.000	105.985	0.505
S4	-0.004	1.000	0.000	100.000	99.635	0.400
S5	-0.004	0.970	0.000	100.000	102.605	0.430
S6	-0.004	0.887	0.000	100.000	112.201	0.504
S7	-0.005	0.823	0.000	100.000	120.742	0.581
S8	-0.004	0.794	0.000	100.000	125.317	0.520

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.756	0.767	1.000	0.000

Air Zero Calibration, performed Sat Feb 17 06:03:26 2018:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	0.000	0.000	0.000
5'	0.000	0.000	0.000
SUM			
S1	-0.008	0.000	0.000
S2	-0.004	0.000	0.000
S3	-0.004	0.000	-0.001
S4	-0.004	0.000	0.000
S5	-0.004	0.000	0.000
S6	-0.005	0.000	0.001
S7	-0.005	0.000	0.000
S8	-0.004	0.000	0.000

Temperature Calibration Report

Serial Number: FW1305-098
Tool Model: 2750 RBT
Performed: Sun Nov 12 13:43:57 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

RELIANCE
OILFIELD SERVICES

Company	TEP Rocky Mountain LLC
Well	Ware SR 314-12
Field	Rulison
County	Garfield
State	Colorado