



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company TEP Rocky Mountain LLC		Well Federal SG 441-21		Field Grand Valley		County Garfield		State Colorado							
Location:		API #: 05-045-24130		Other Services											
SEC 22 TWP 7S RGE 96W															
Permanent Datum		Ground Level		Elevation		6090.8'									
Log Measured From		Kelly Bushing		24 FT											
Drilling Measured From		Kelly Bushing													
Date		06-APR-2019													
Run Number		One													
Depth Driller		6931 FT													
Depth Logger		6874 FT													
Bottom Logged Interval		6860 FT													
Top Log Interval		Surface													
Open Hole Size		8.750"													
Type Fluid		Water													
Density / Viscosity		8.34 lb/gal													
Max. Recorded Temp.		189°F													
Estimated Cement Top		See Log													
Time Well Ready		ROA													
Time Logger on Bottom		1:30													
Equipment Number		HD-0331													
Location		Grand Junction, CO													
Recorded By		Z. Fisher													
Witnessed By		Dustin 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		1032 FT					
Intermediate #1		4 1/2		11.6		P-110		Surface		6889 FT					
Intermediate #2															
Inner															

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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 3753-3776 FT
Recorded with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!

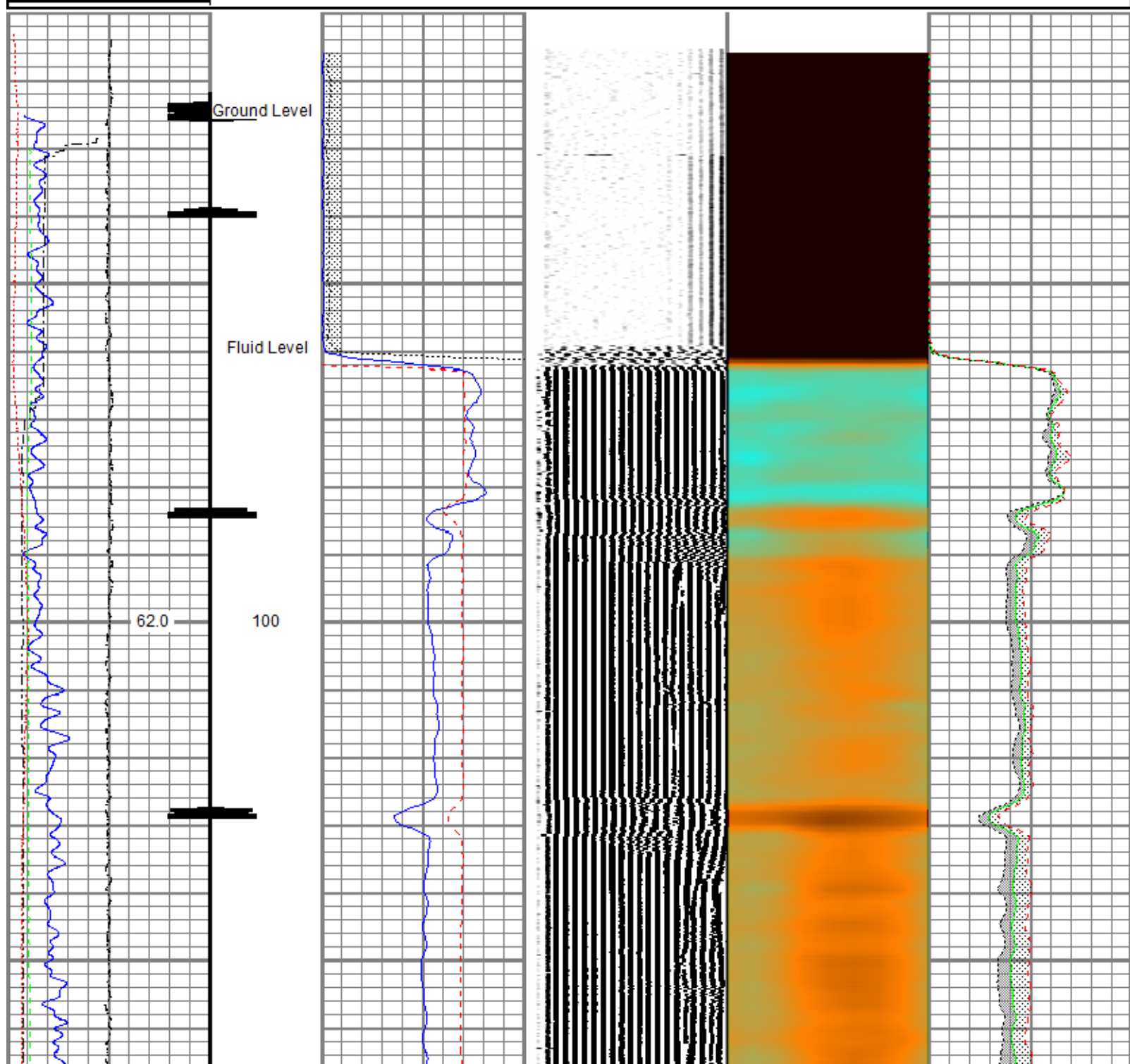


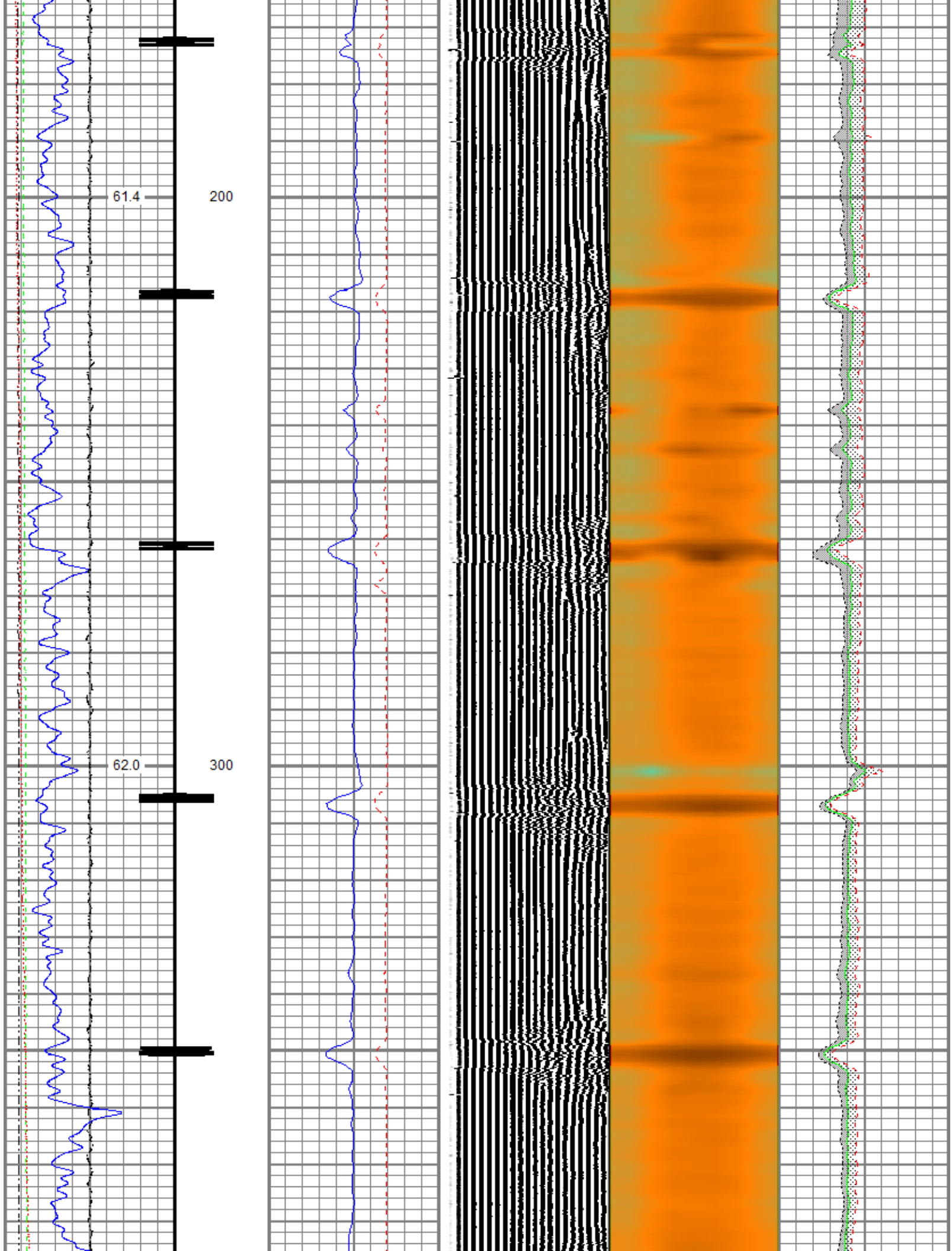
Main Pass

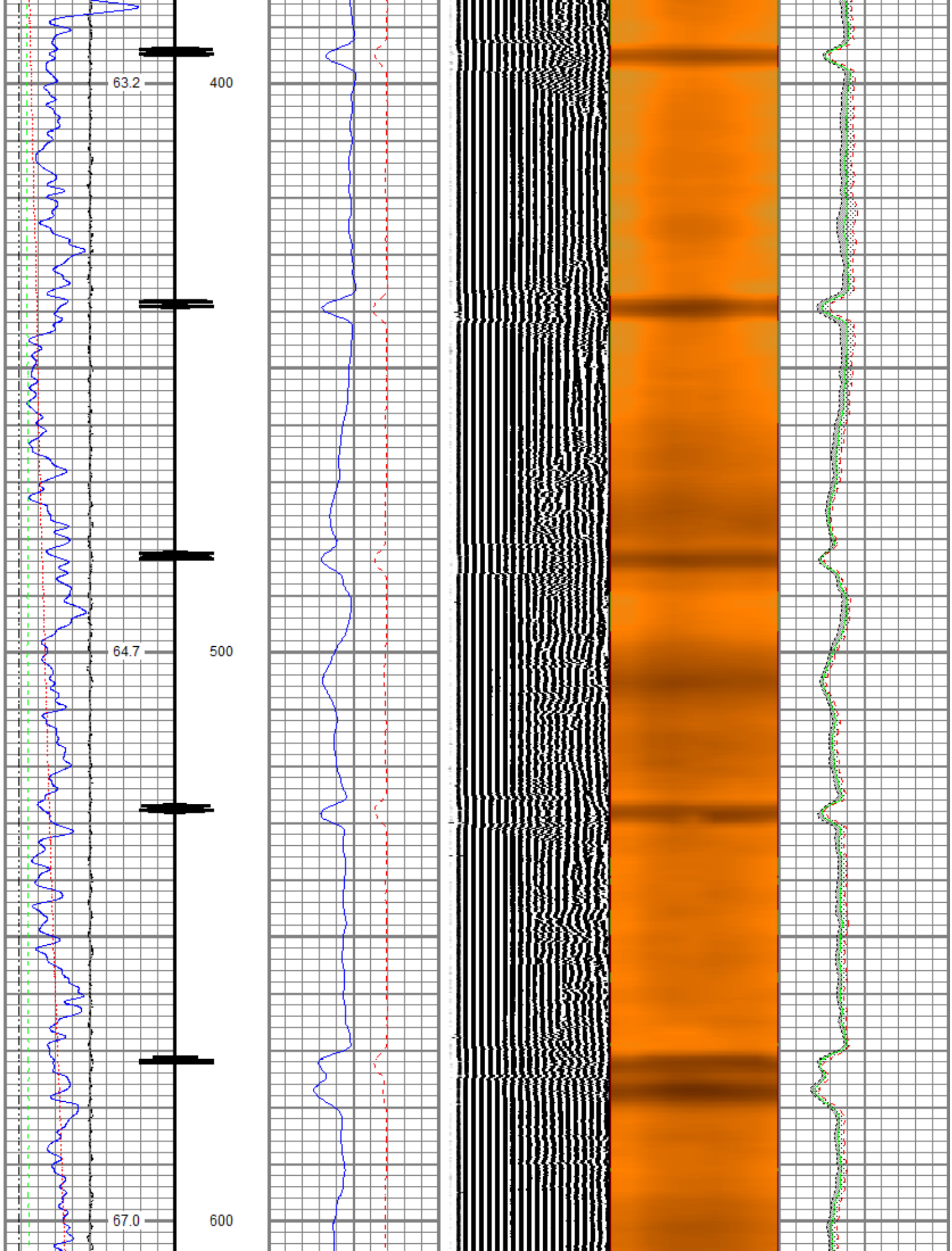
Recorded With 0 PSI Surface Induced Pressure

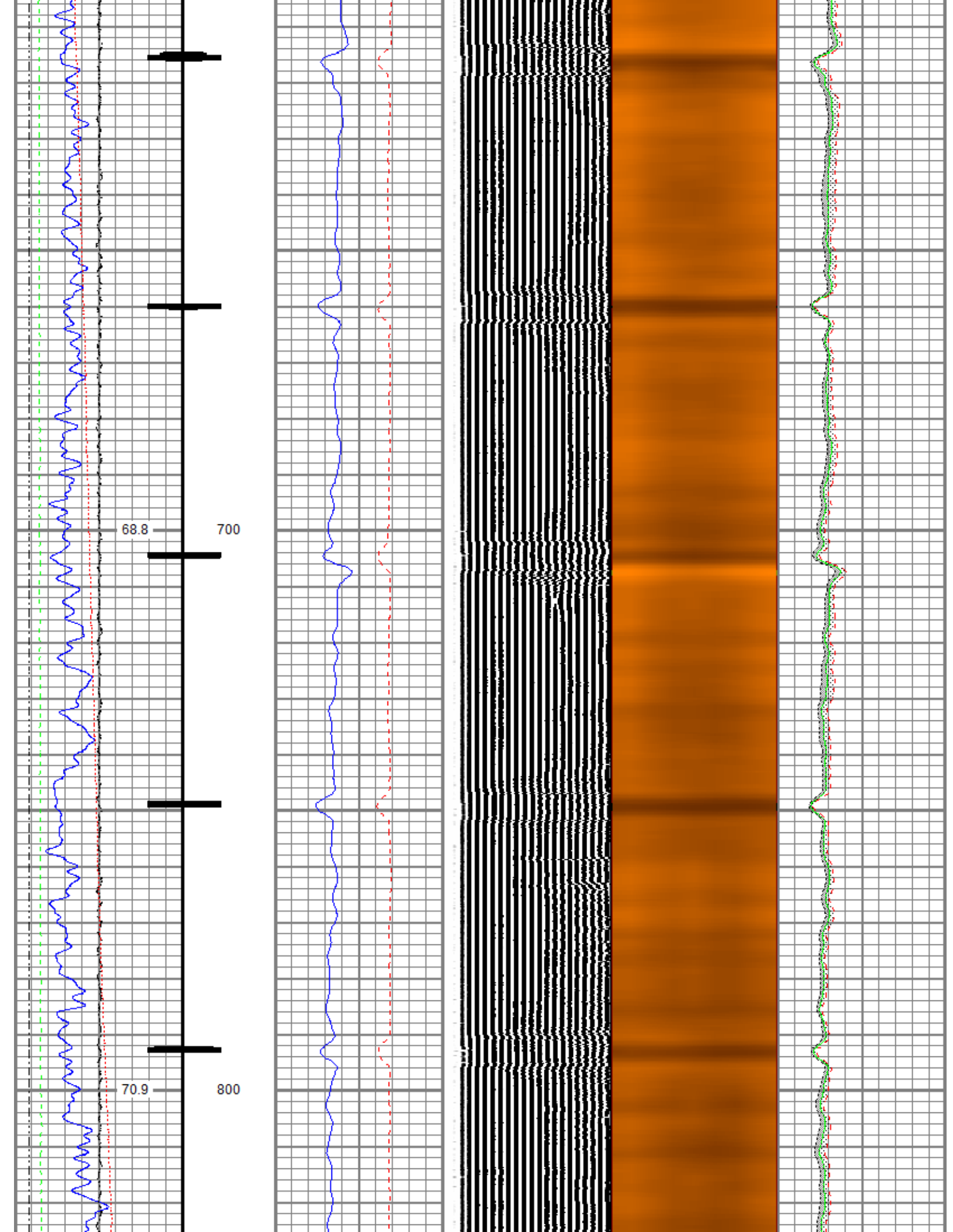
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 Dataset Creation Sat Apr 06 12:32:40 2019
 Charted by Depth in Feet scaled 1:240

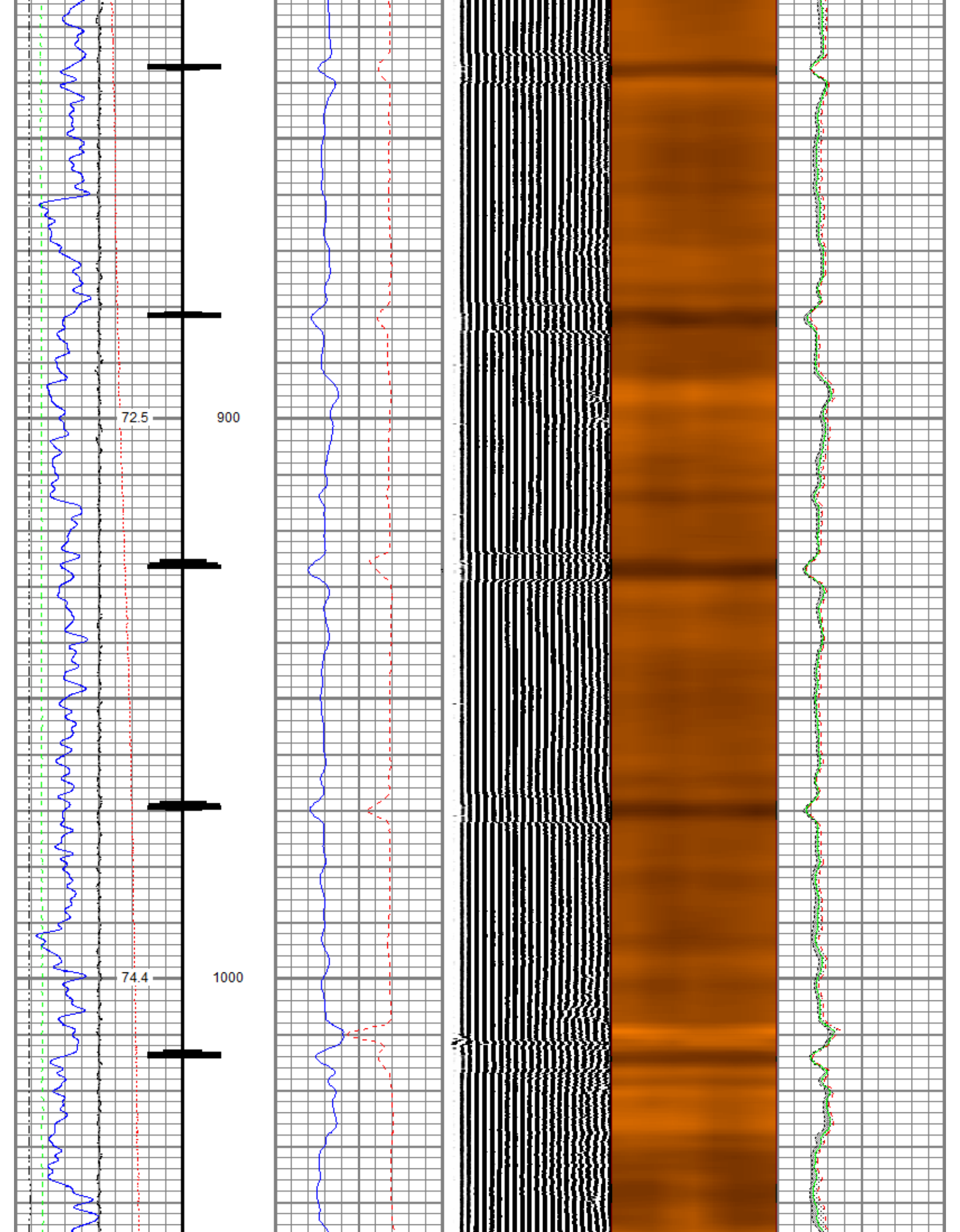
Gamma Ray	0	3' Amplitude (mV) 100	5' Variable Density Log	Sector Map	0	Average Amplitude 150
(GAPI) 200		3' Amplitude x 5	200 (usec) 1200			Minimum Amplitude
Line Speed	0	(mV) 20			0	150
(ft/min) 150		3' Travel Time				Maximum Amplitude
Line Tension (lb) 2000	0	(usec) 200			0	150
Differential Temperature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

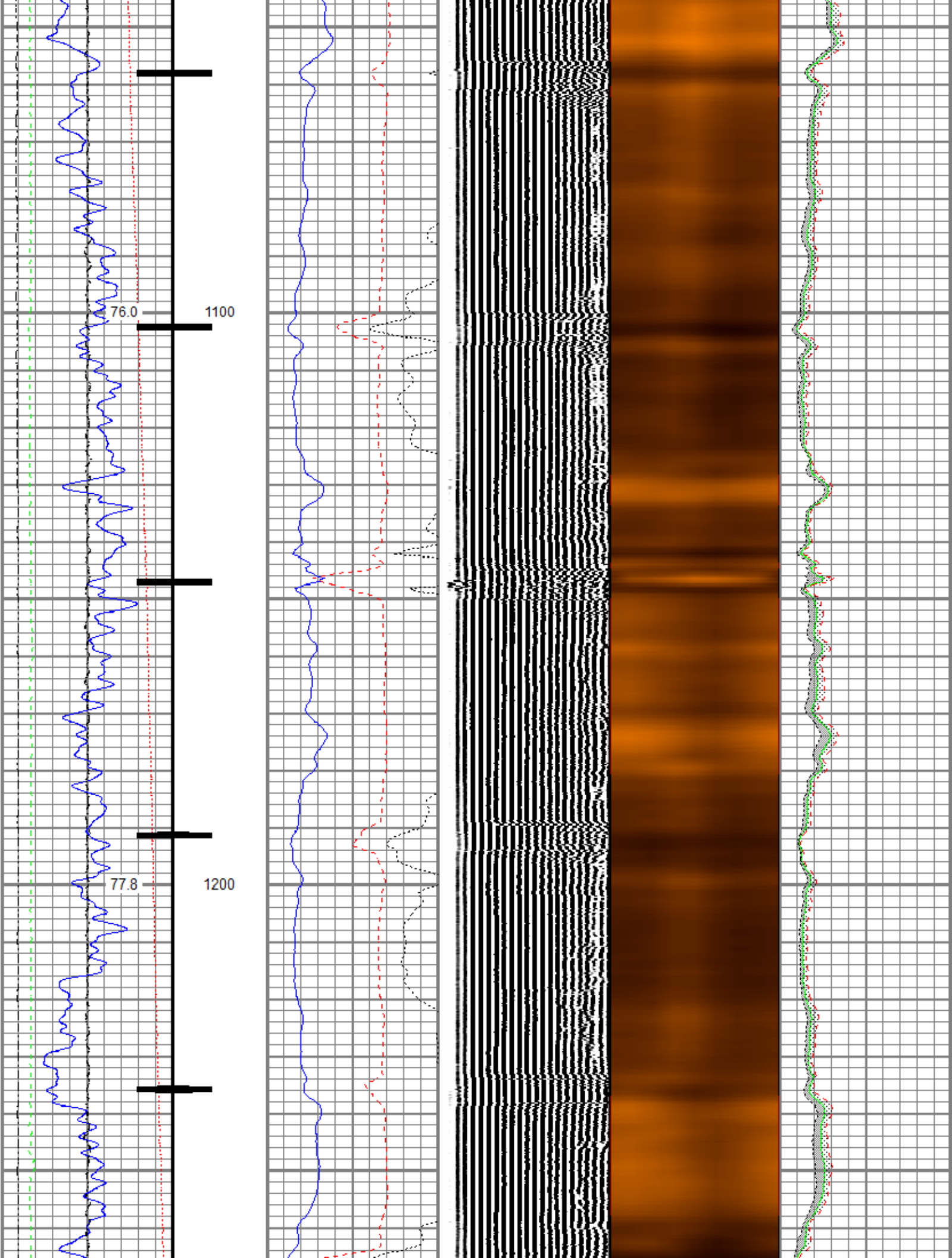


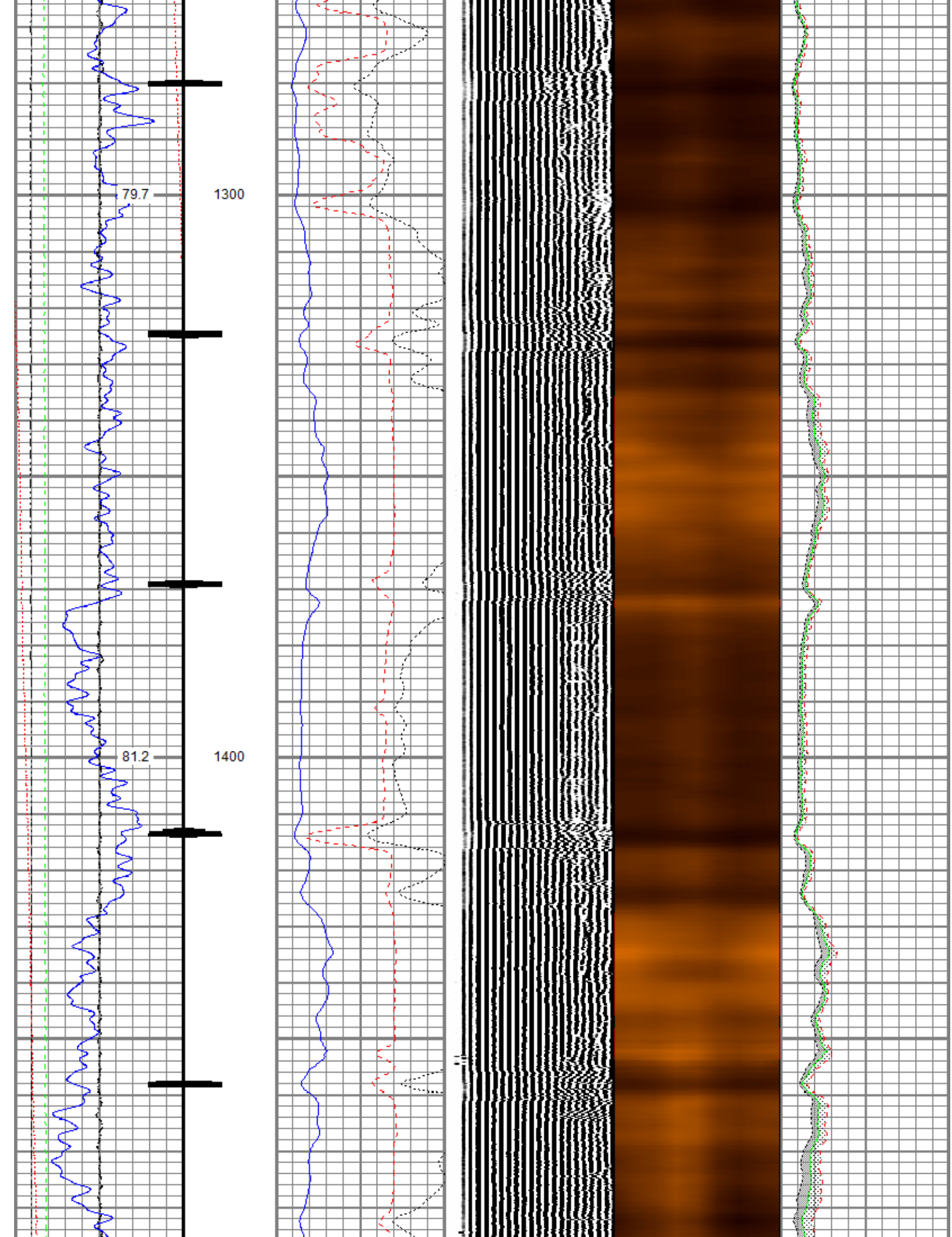


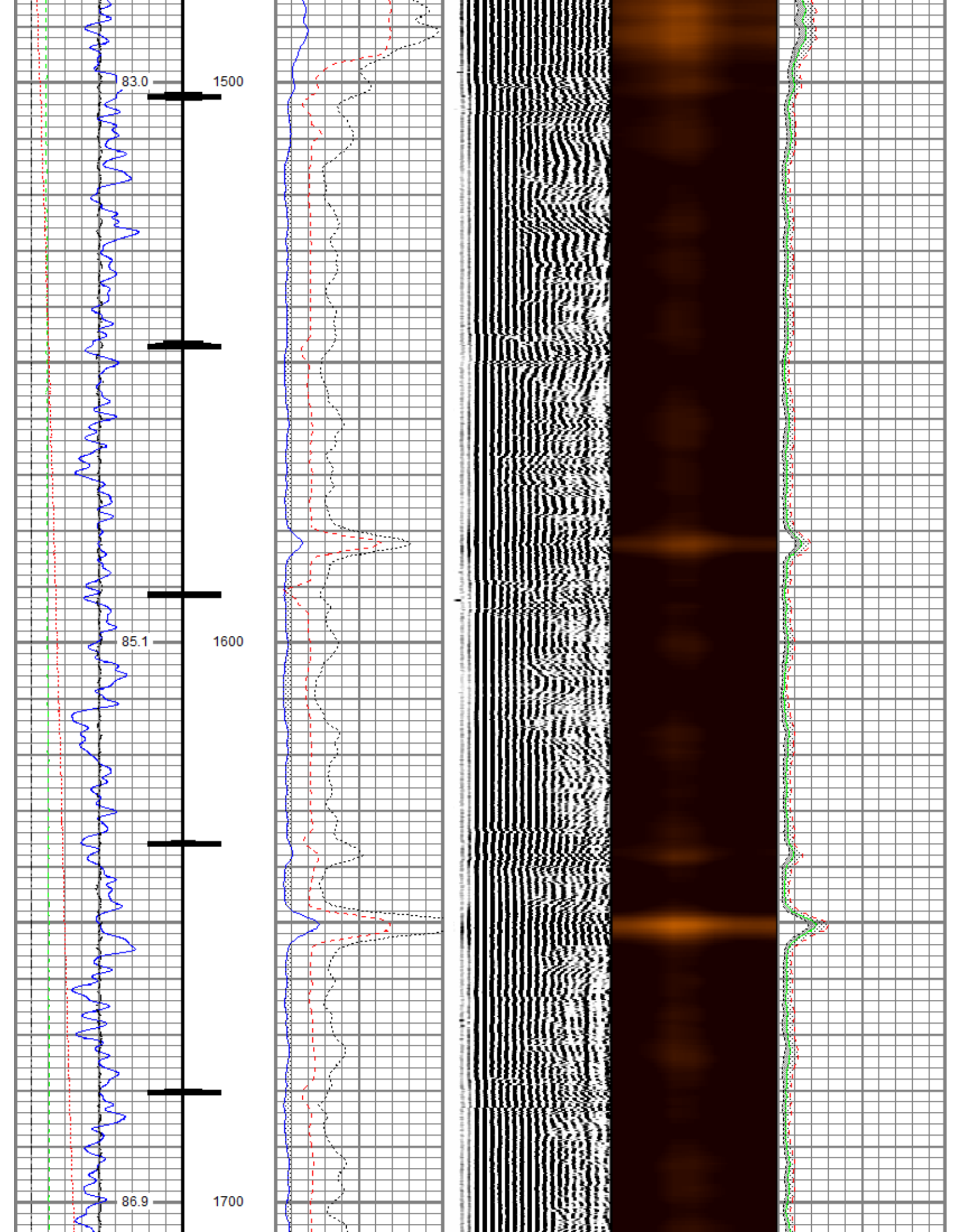


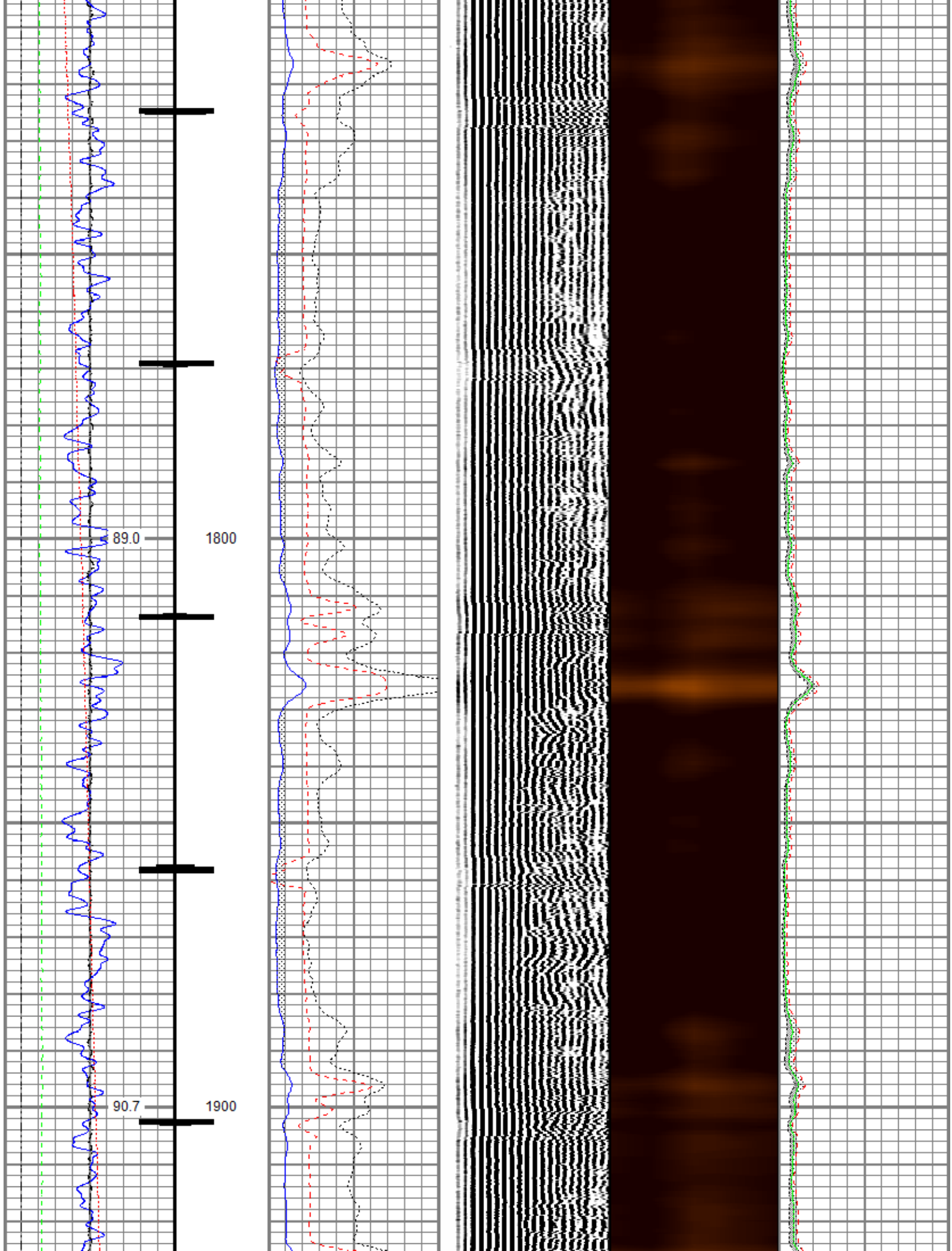


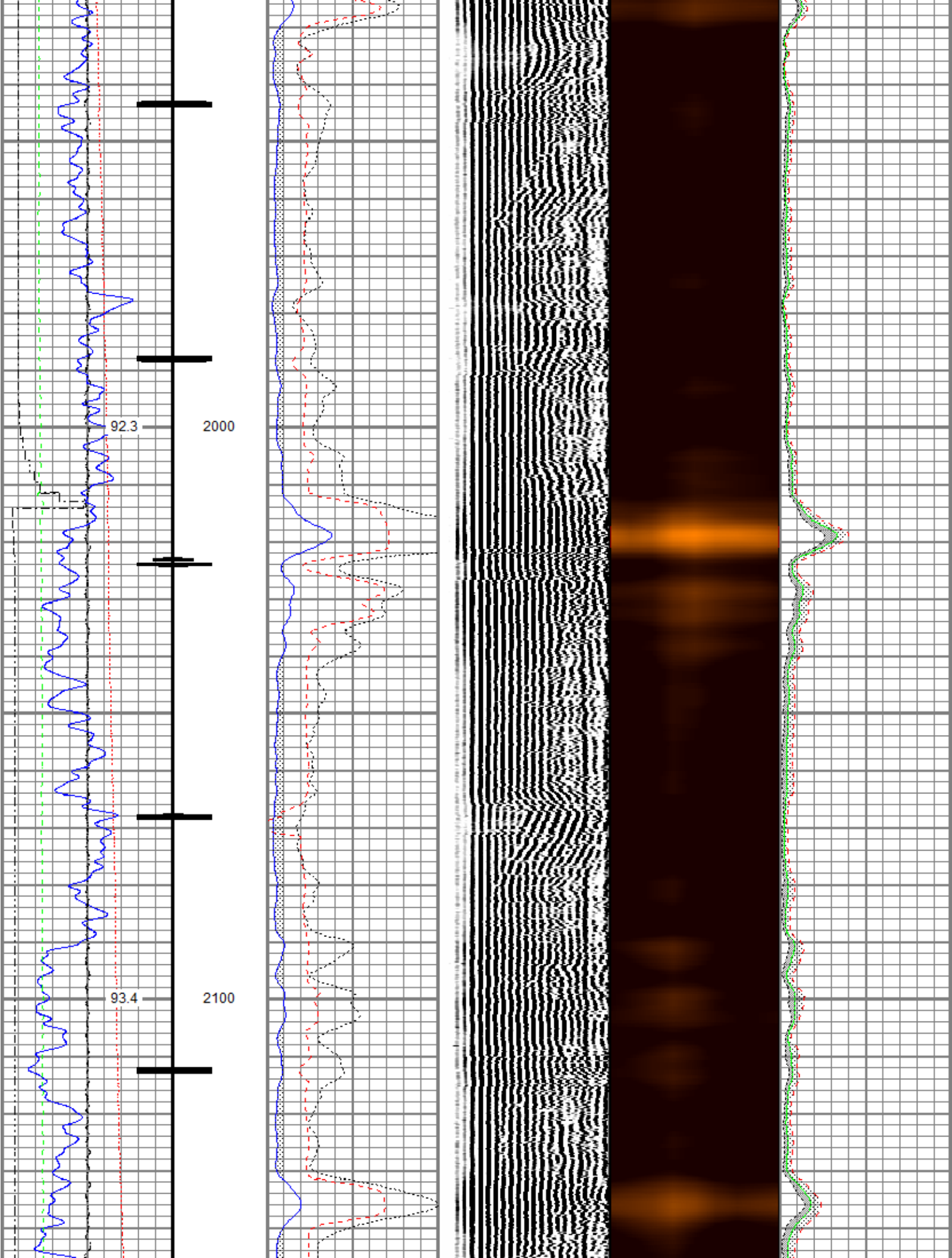


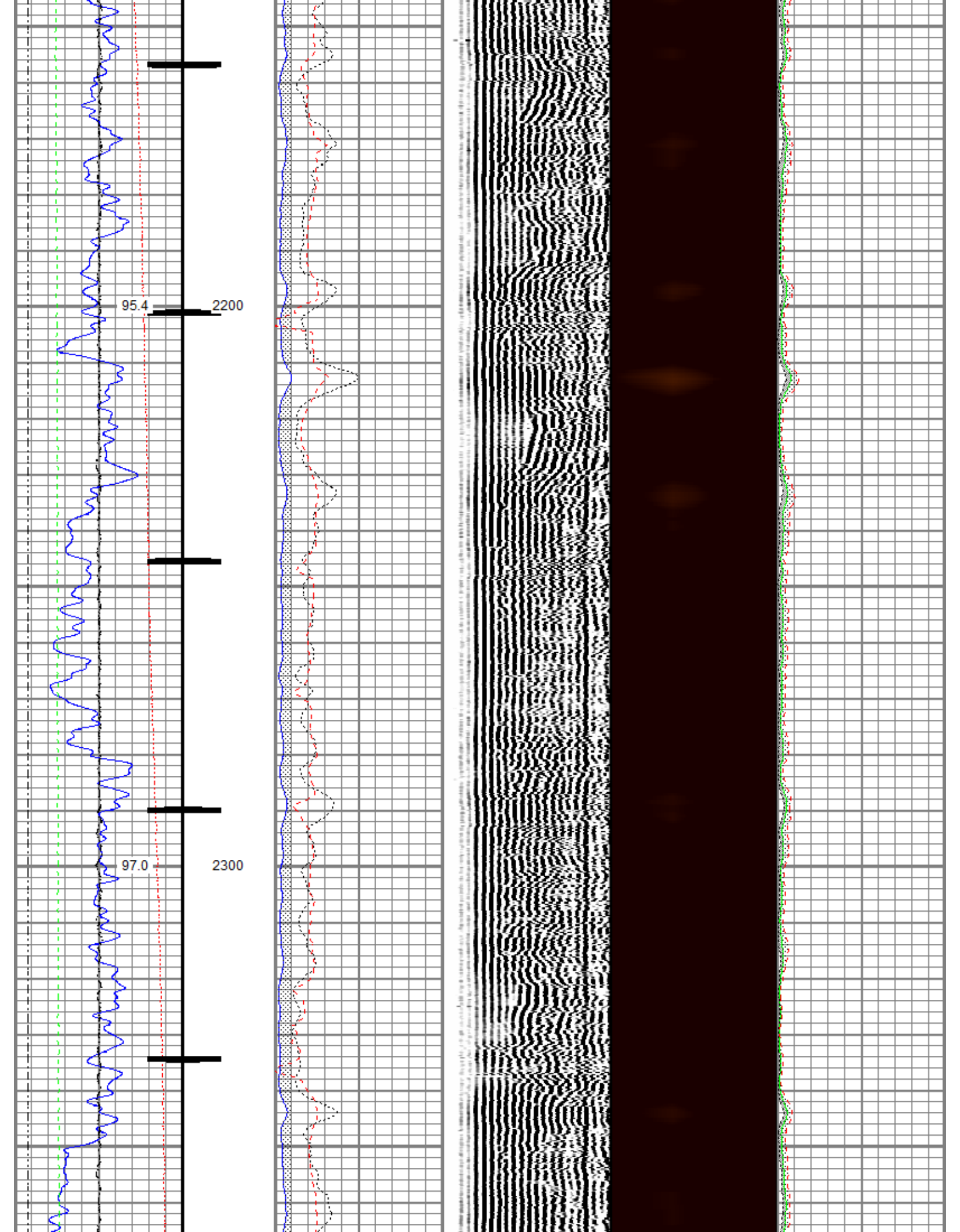


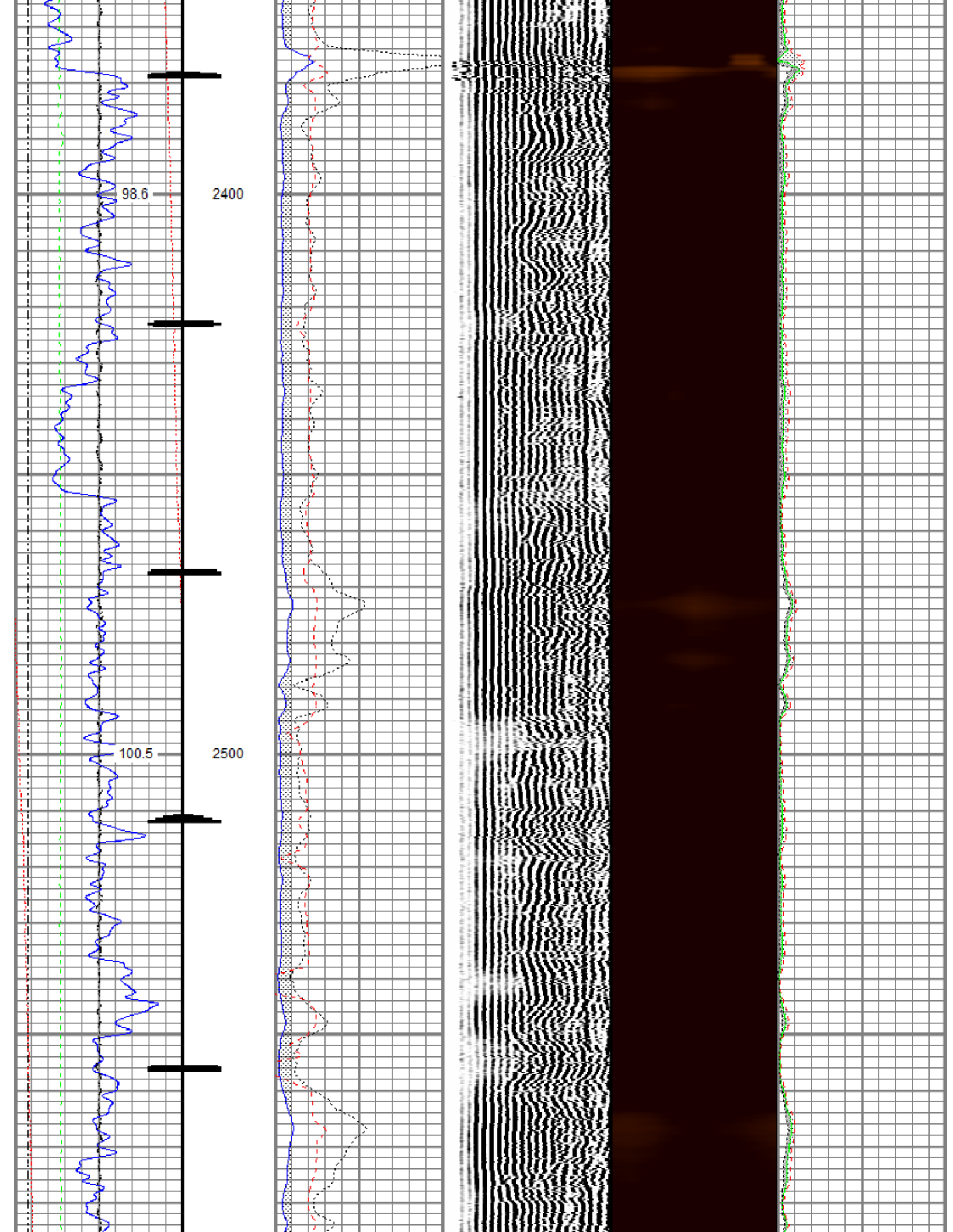


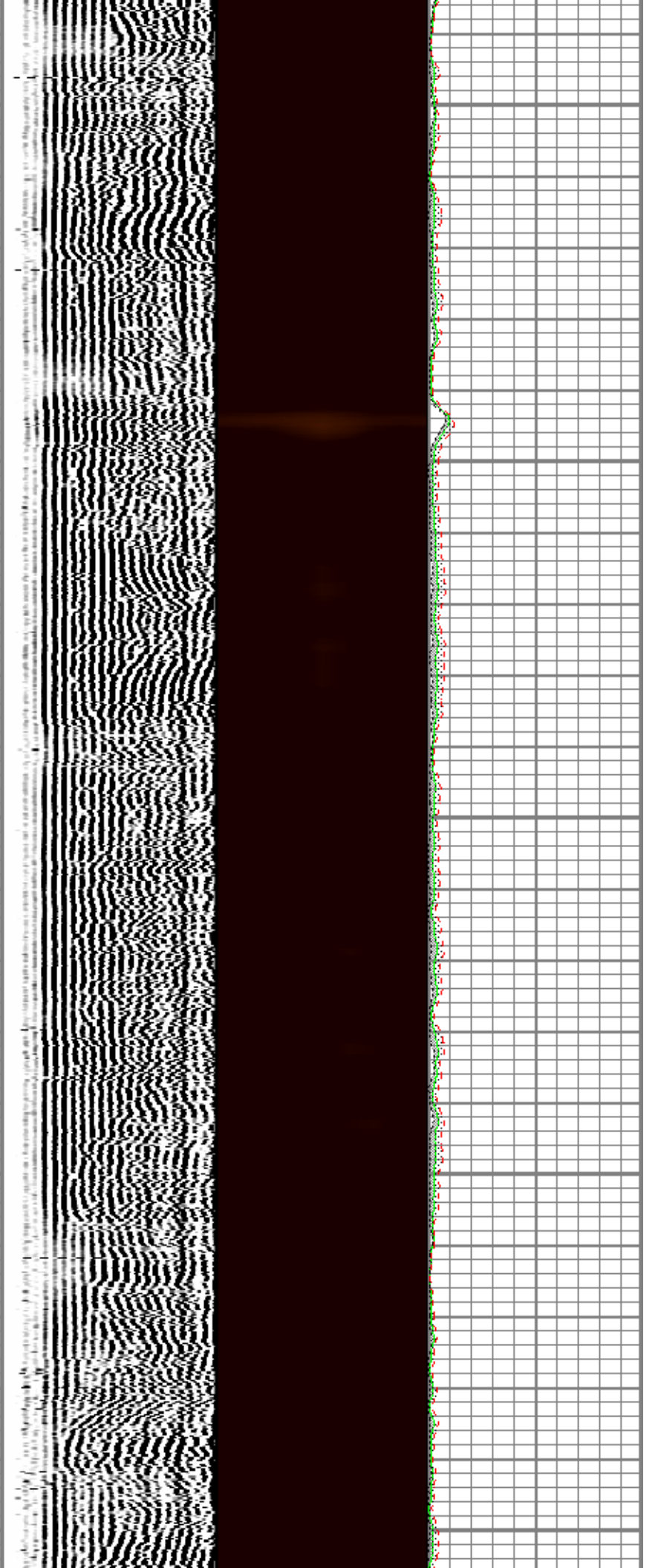
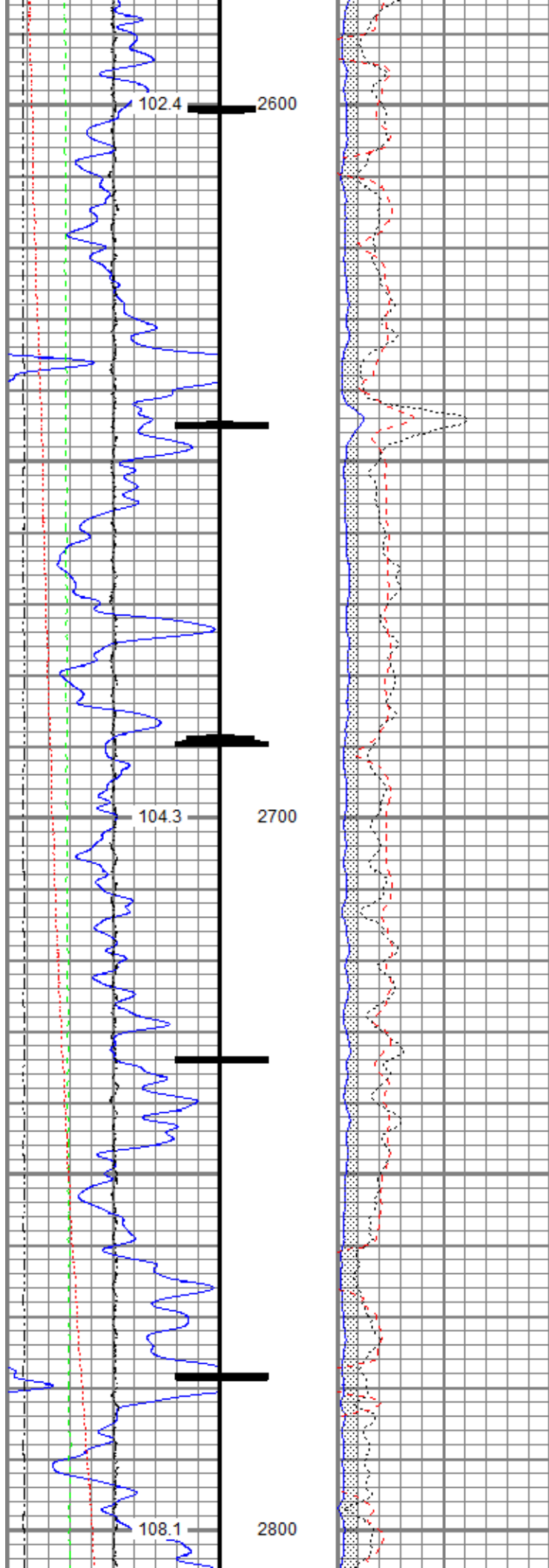


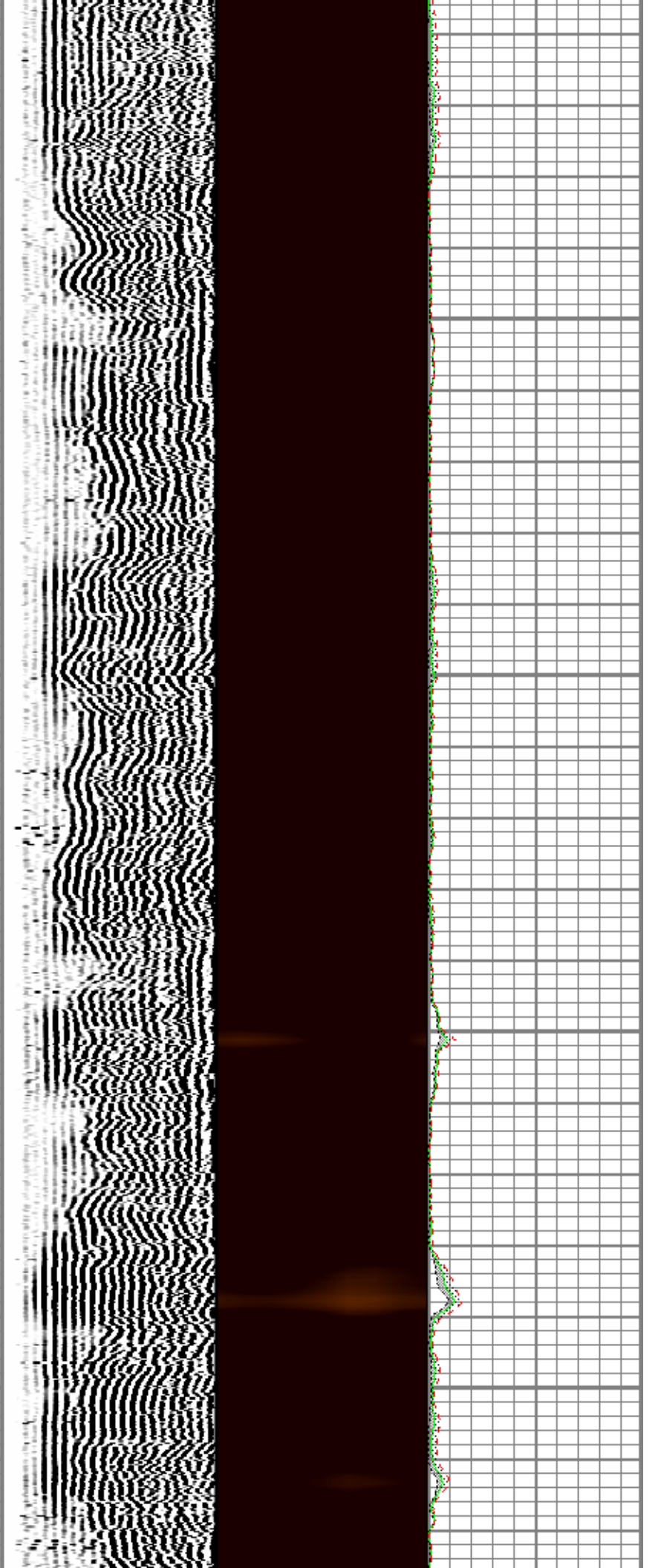
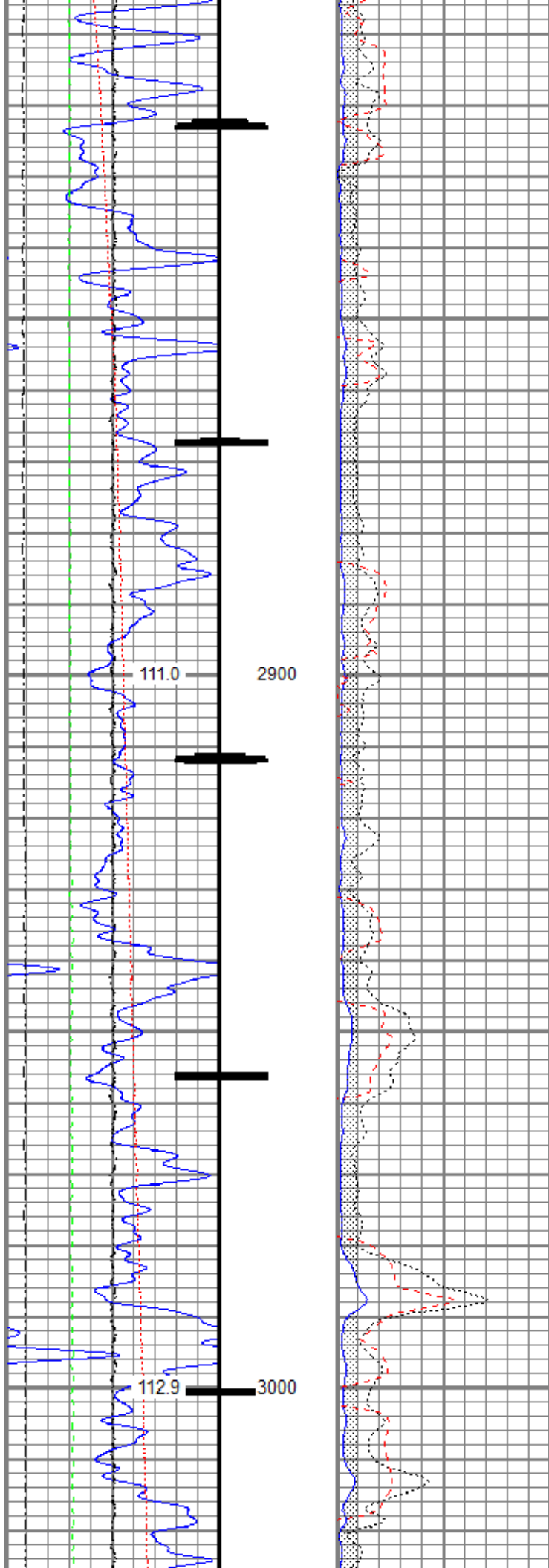


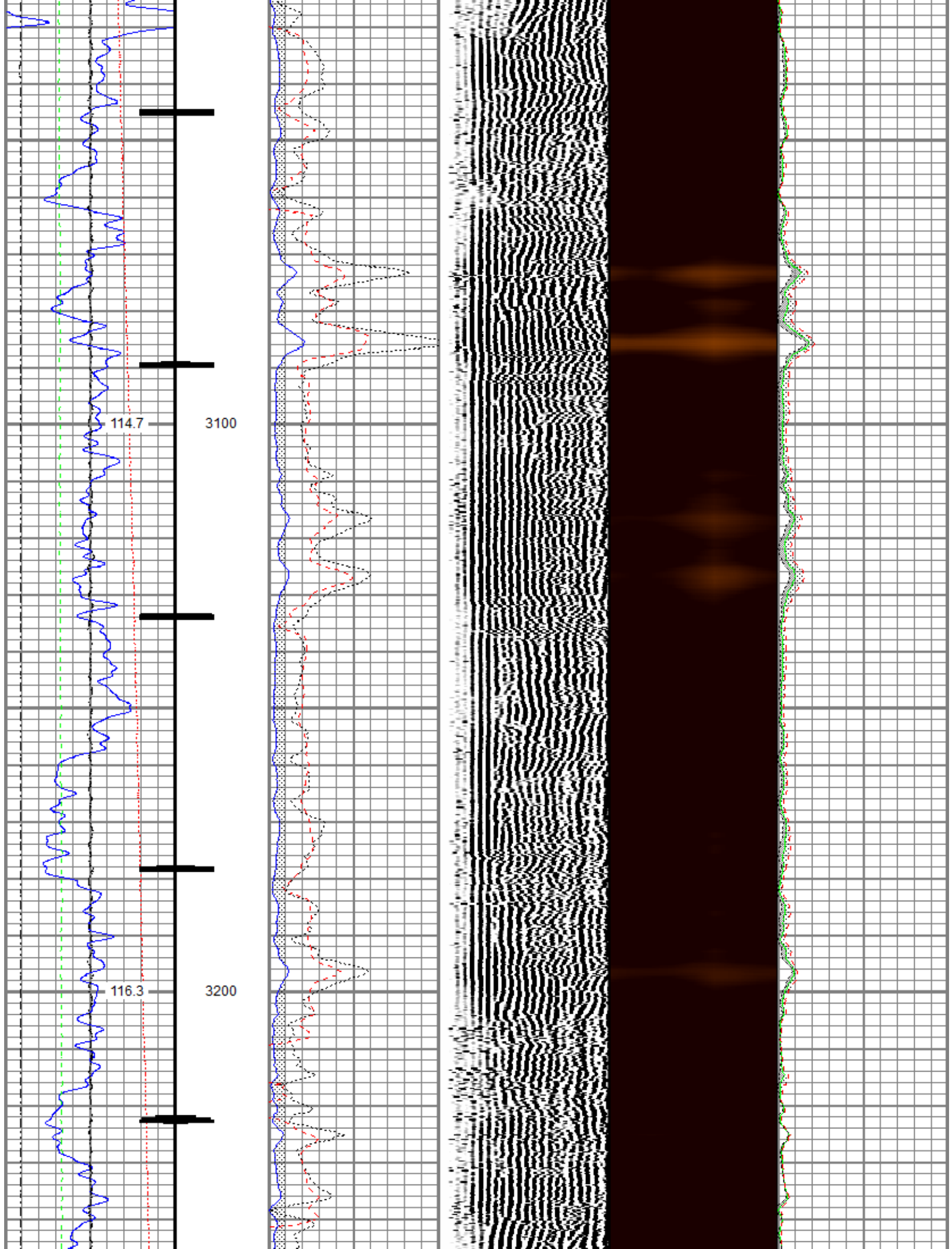


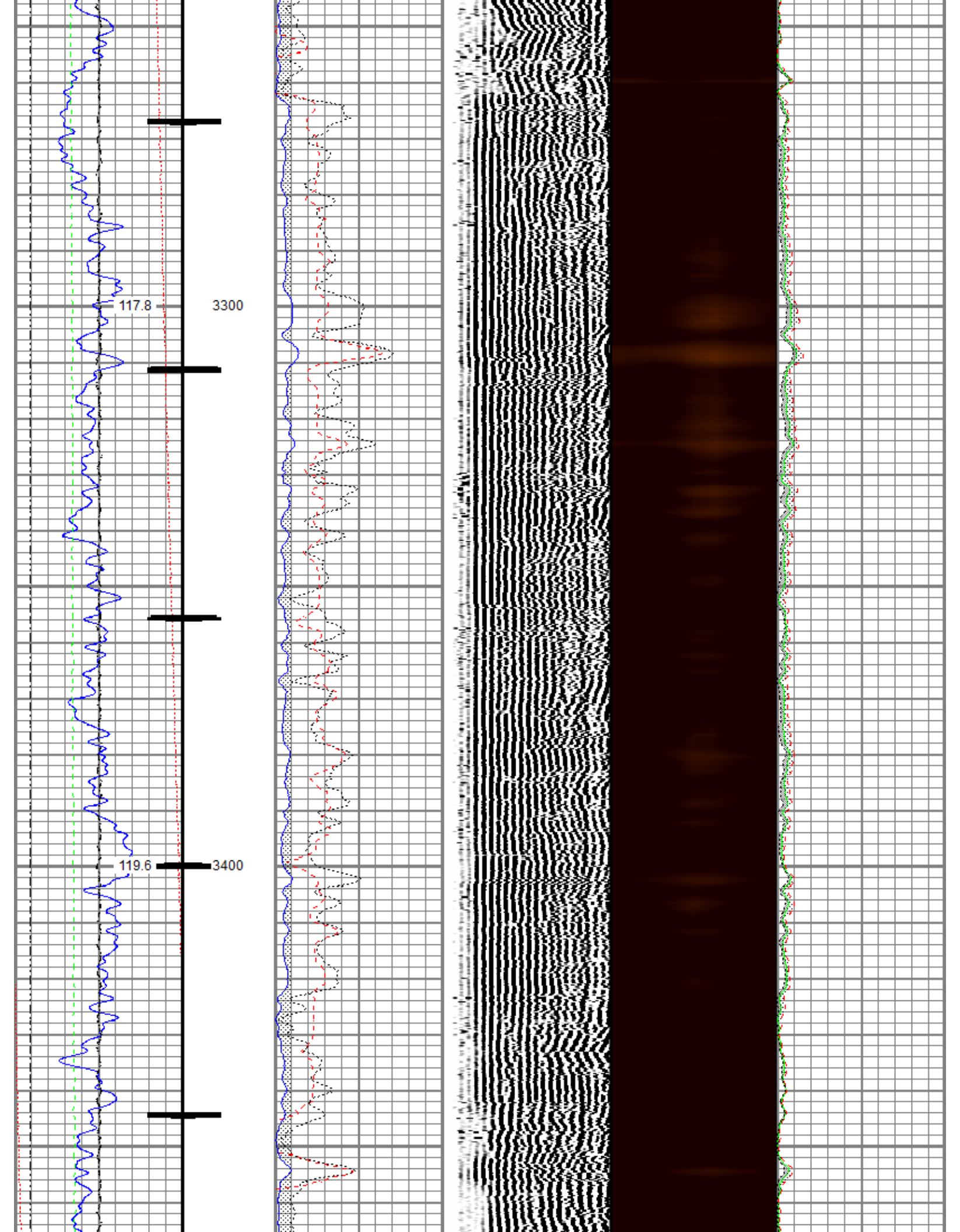


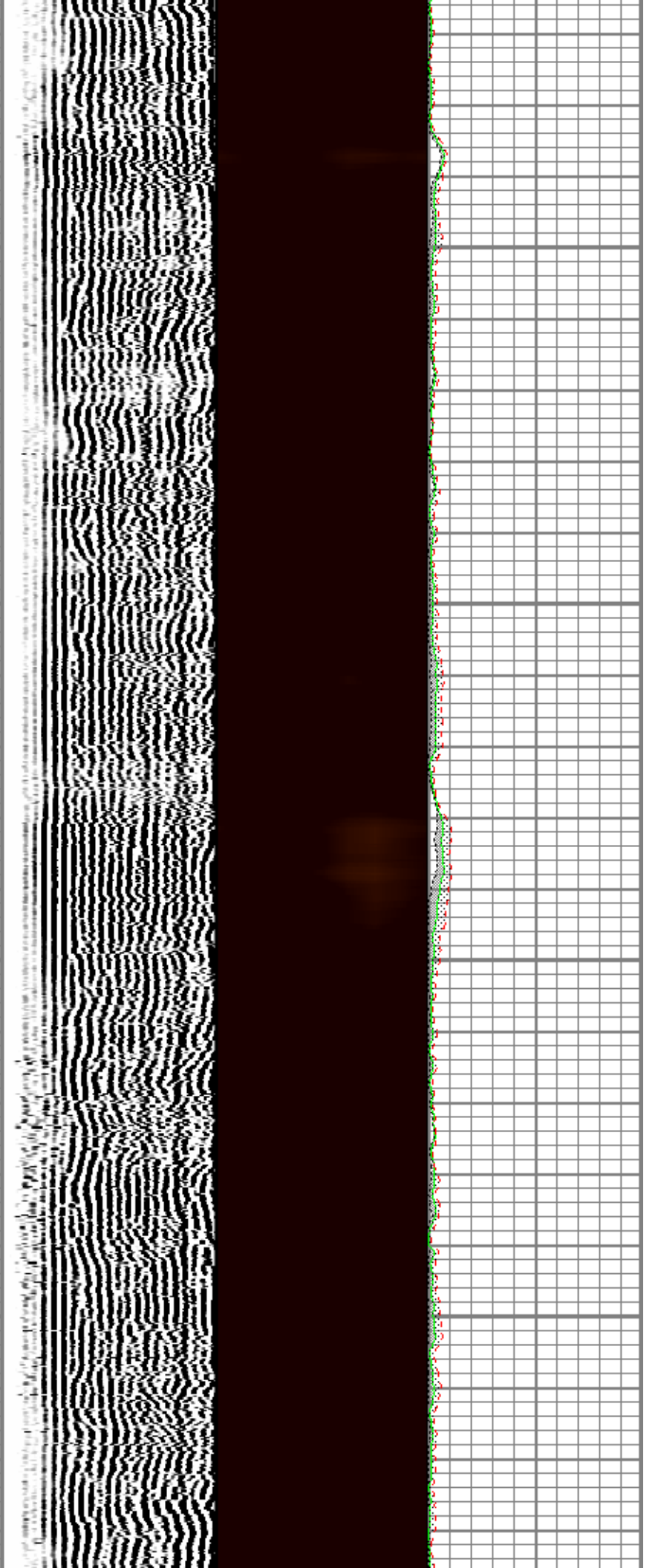
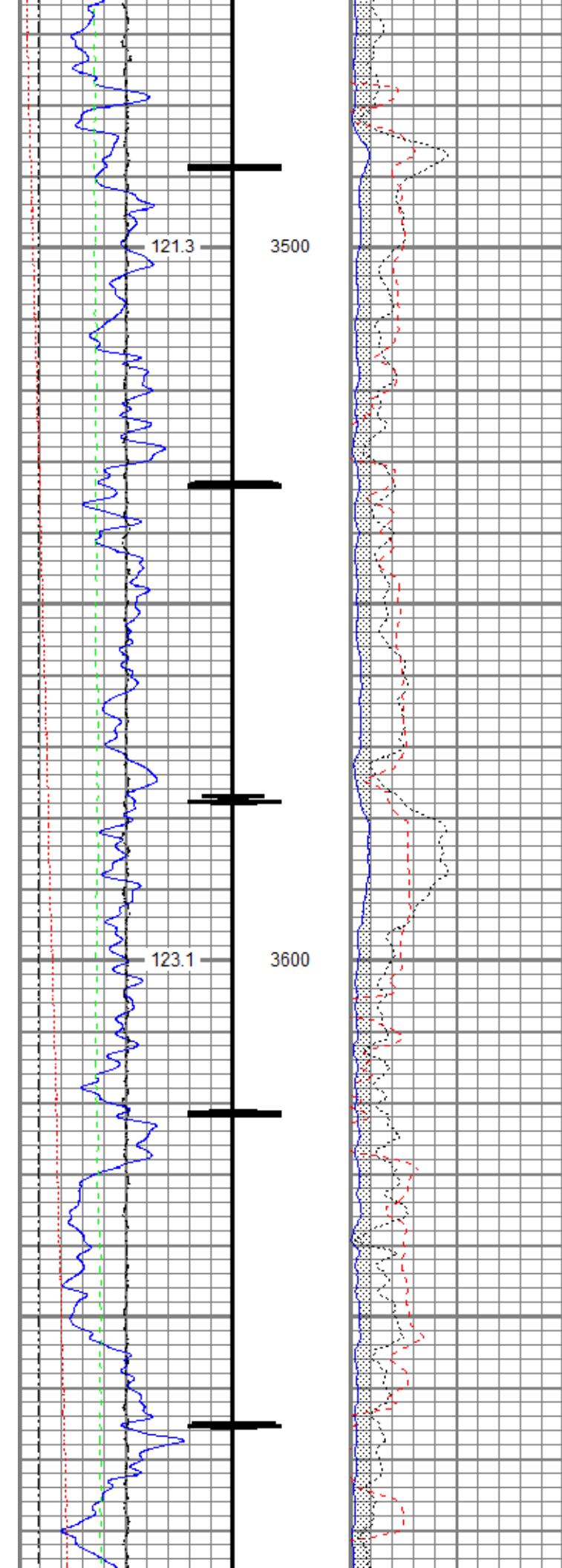












124.9

3700

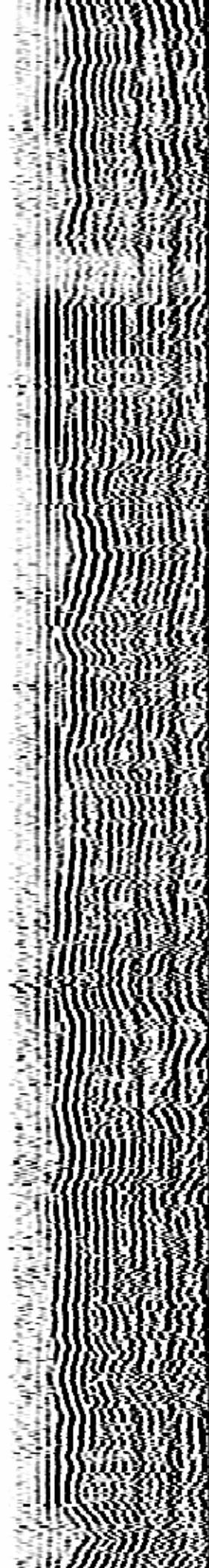
Marker Joint

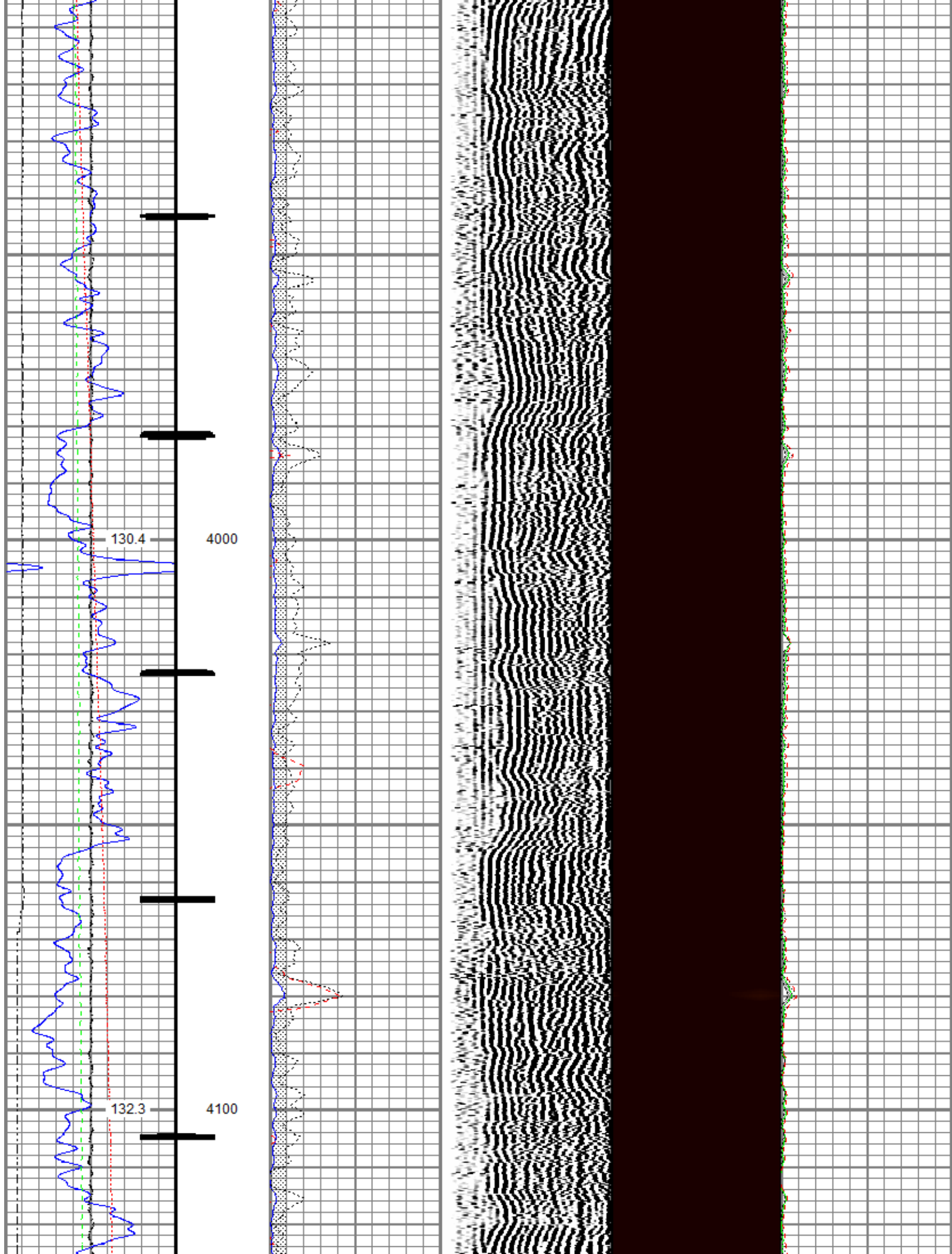
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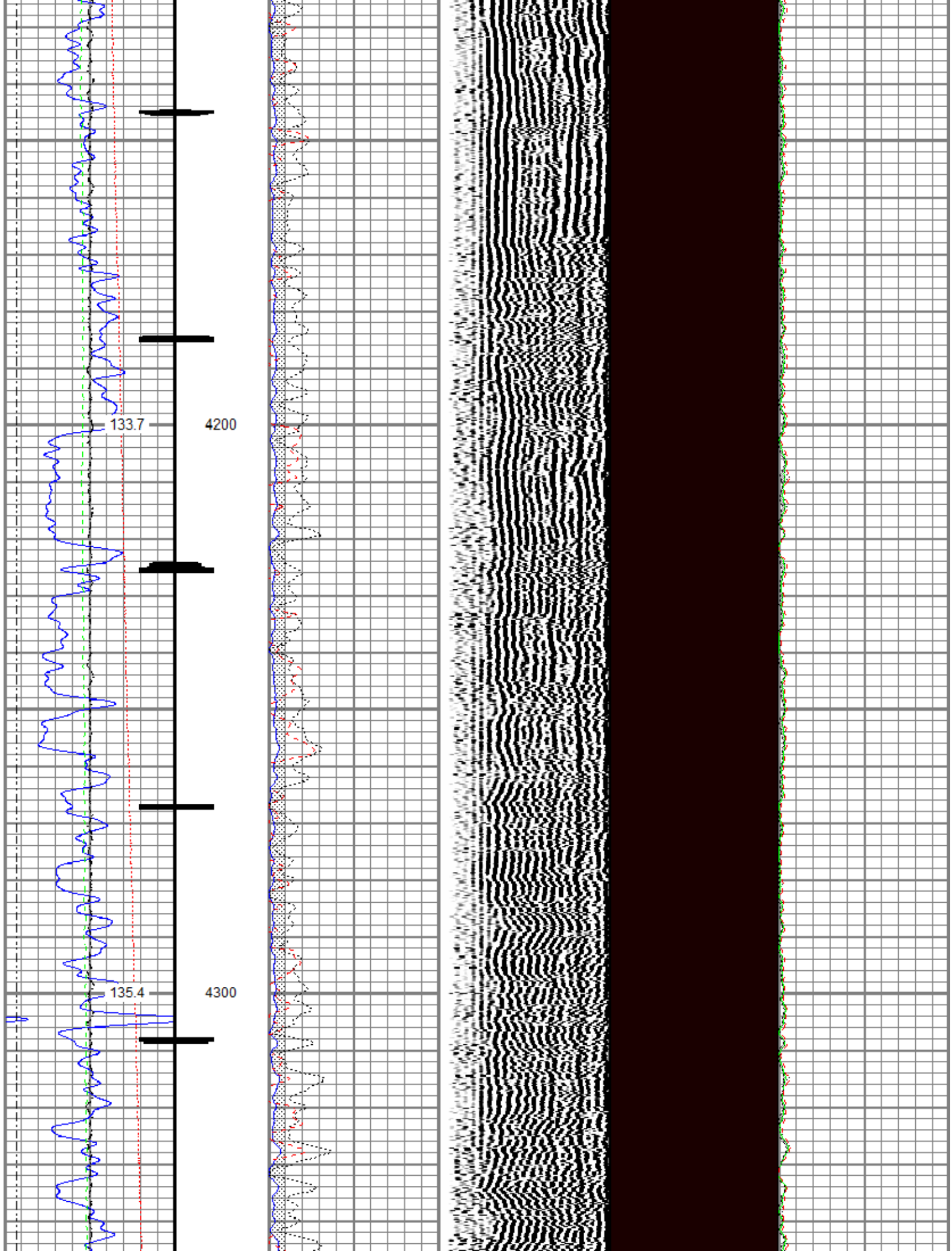
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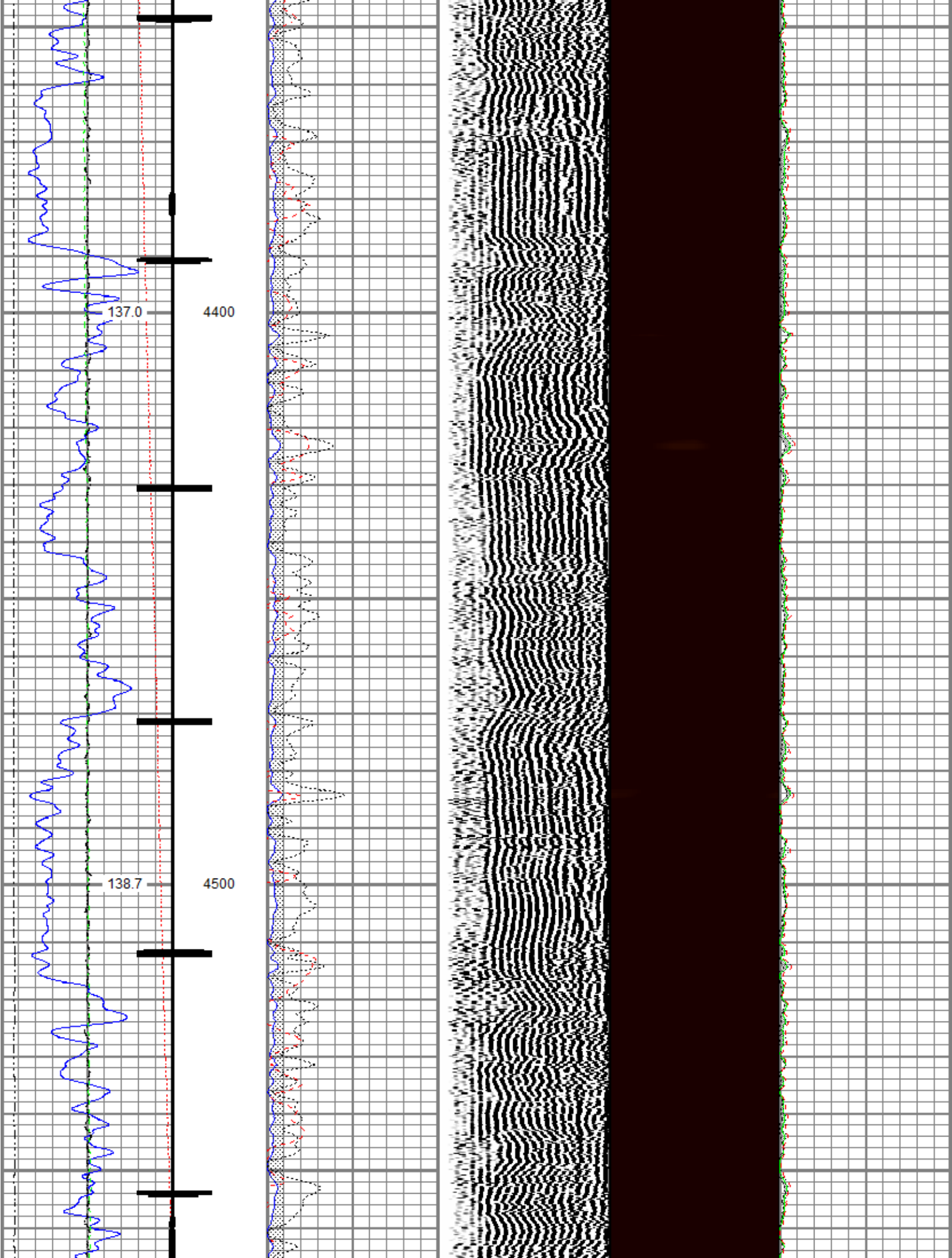
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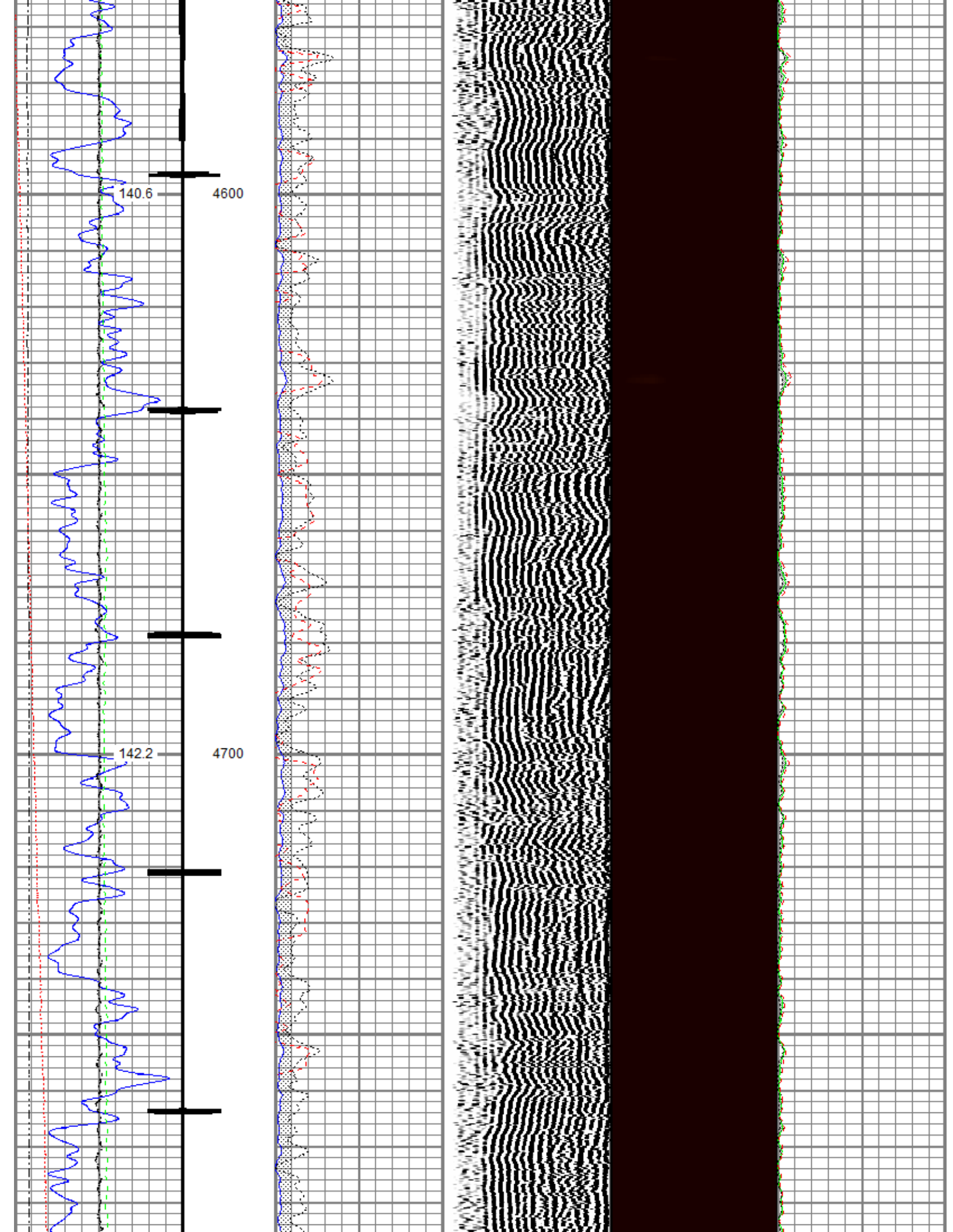
3900

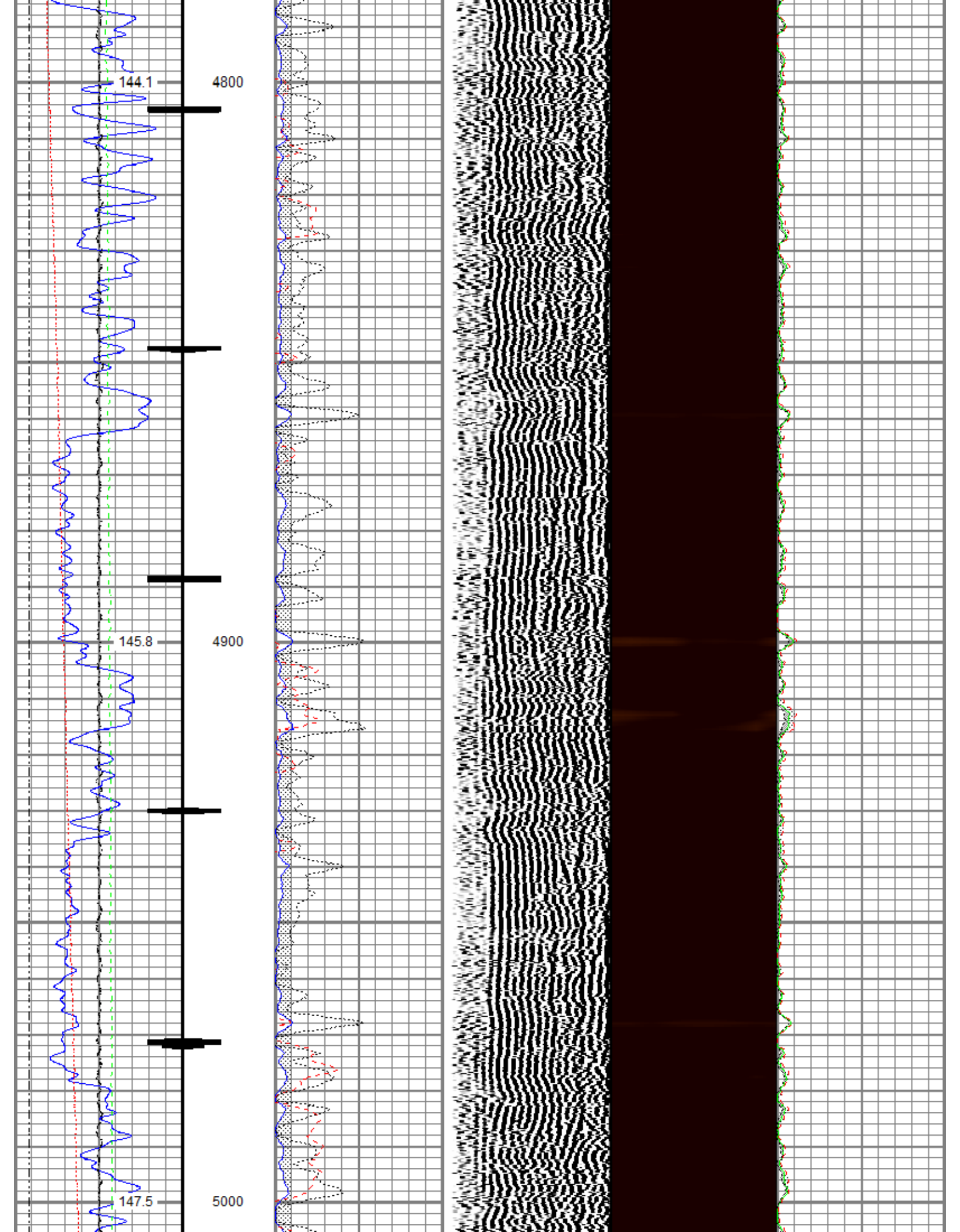


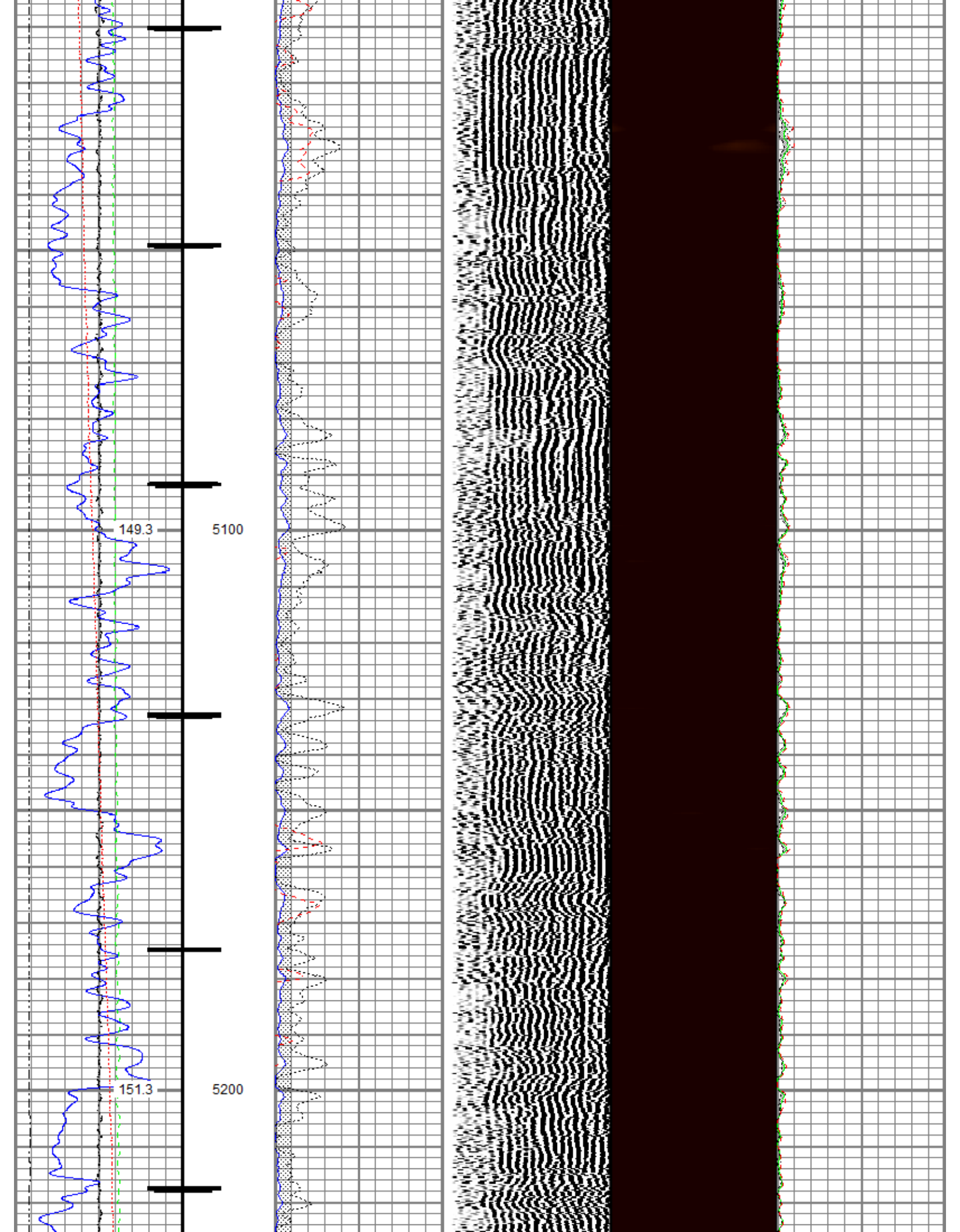


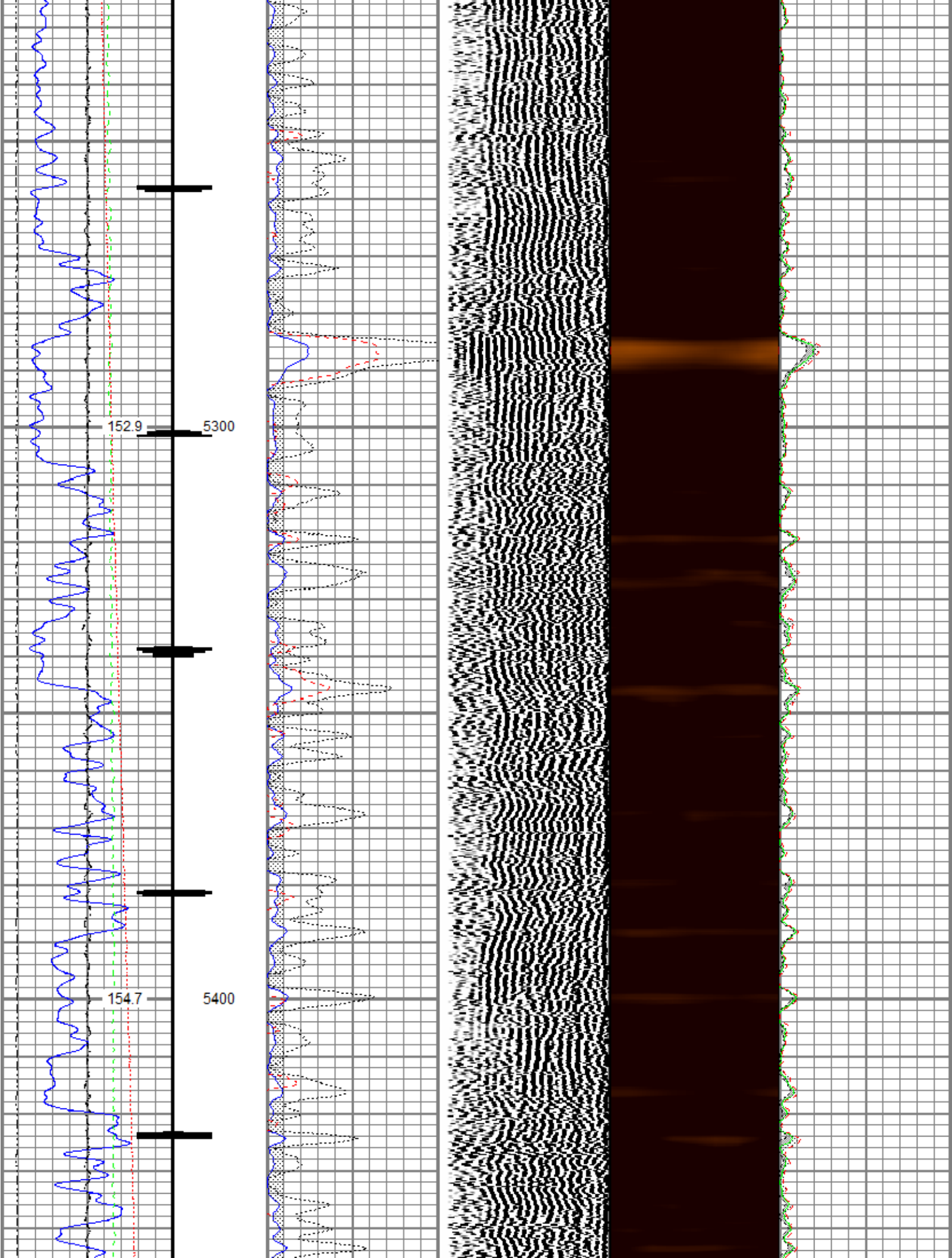


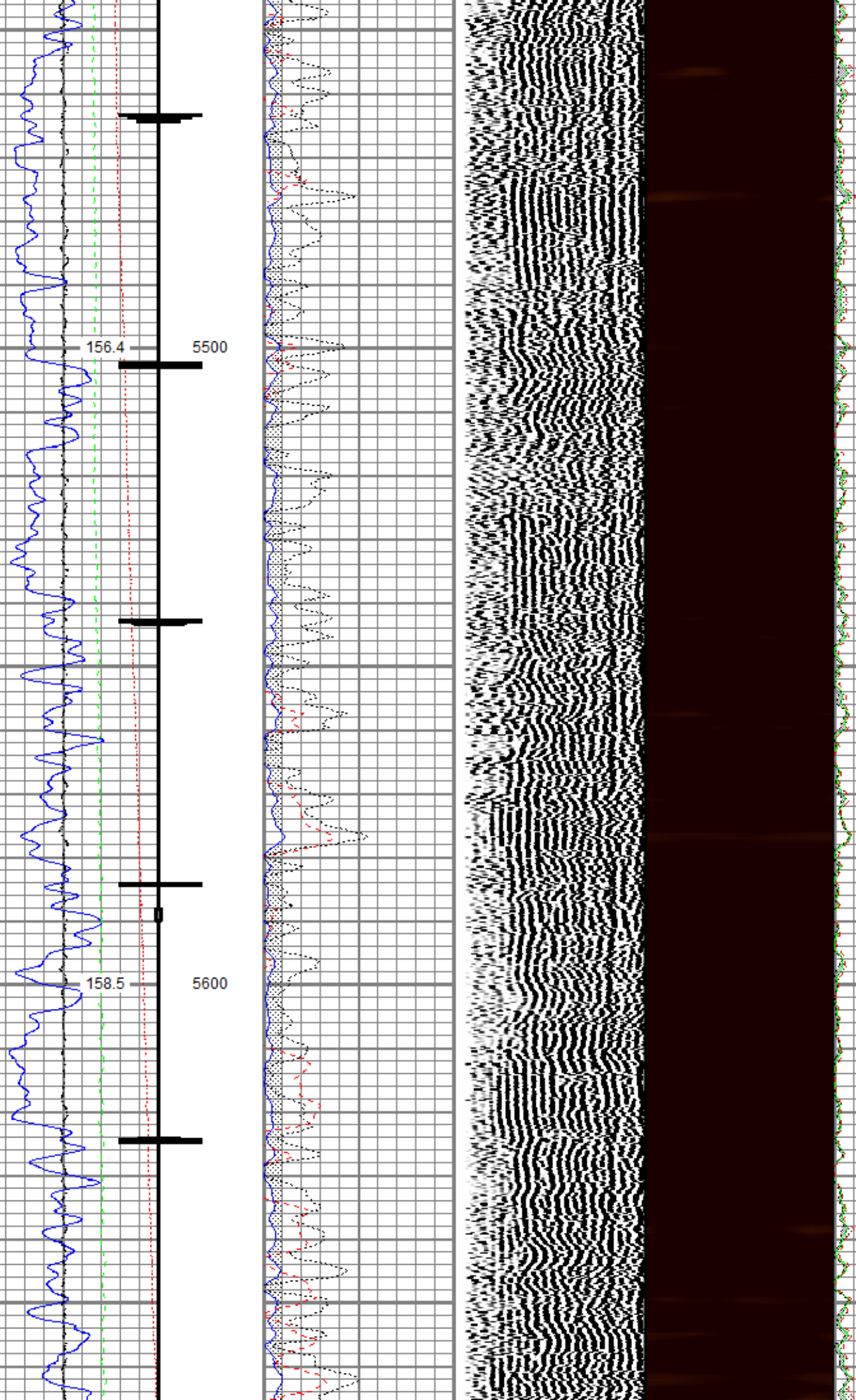


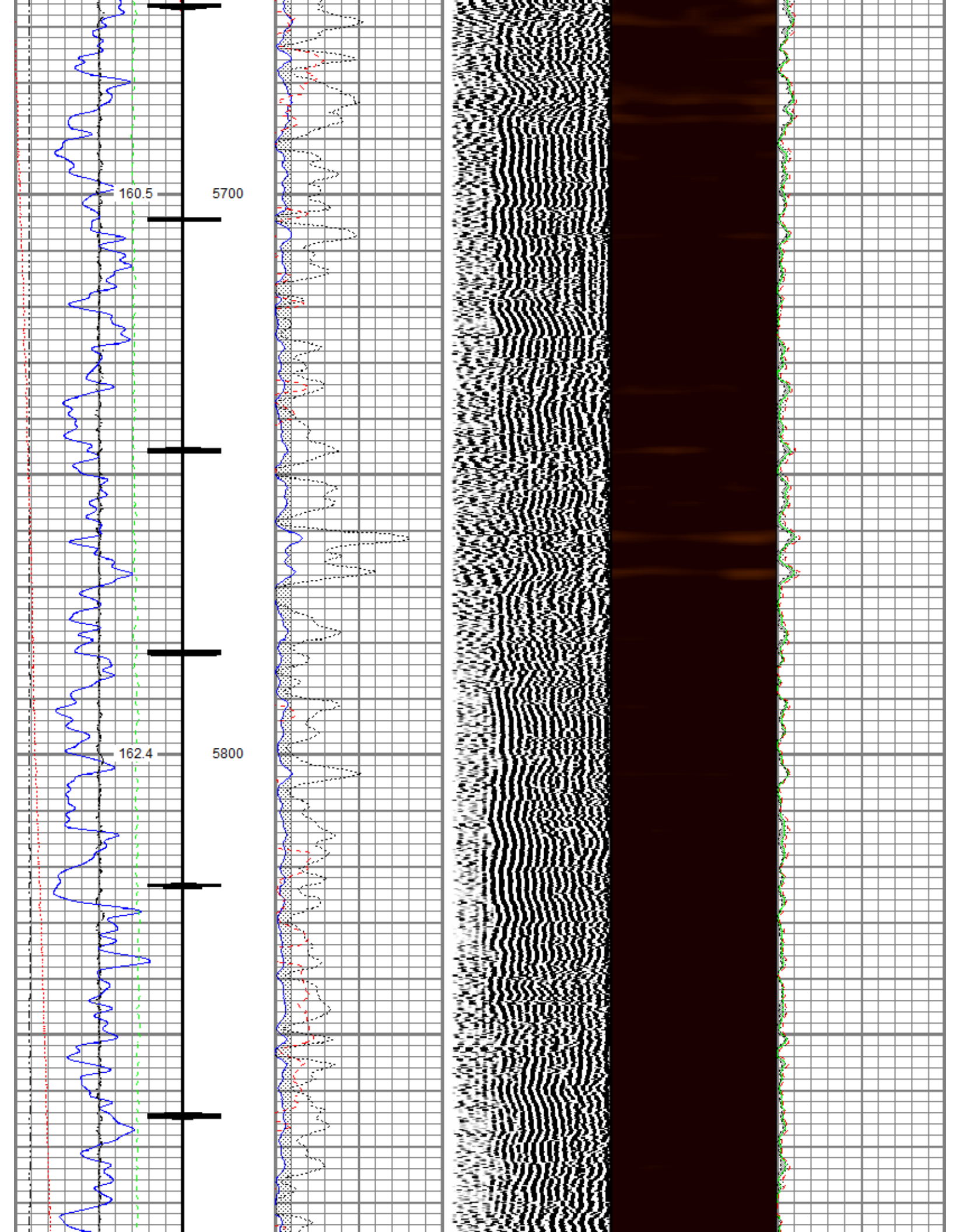


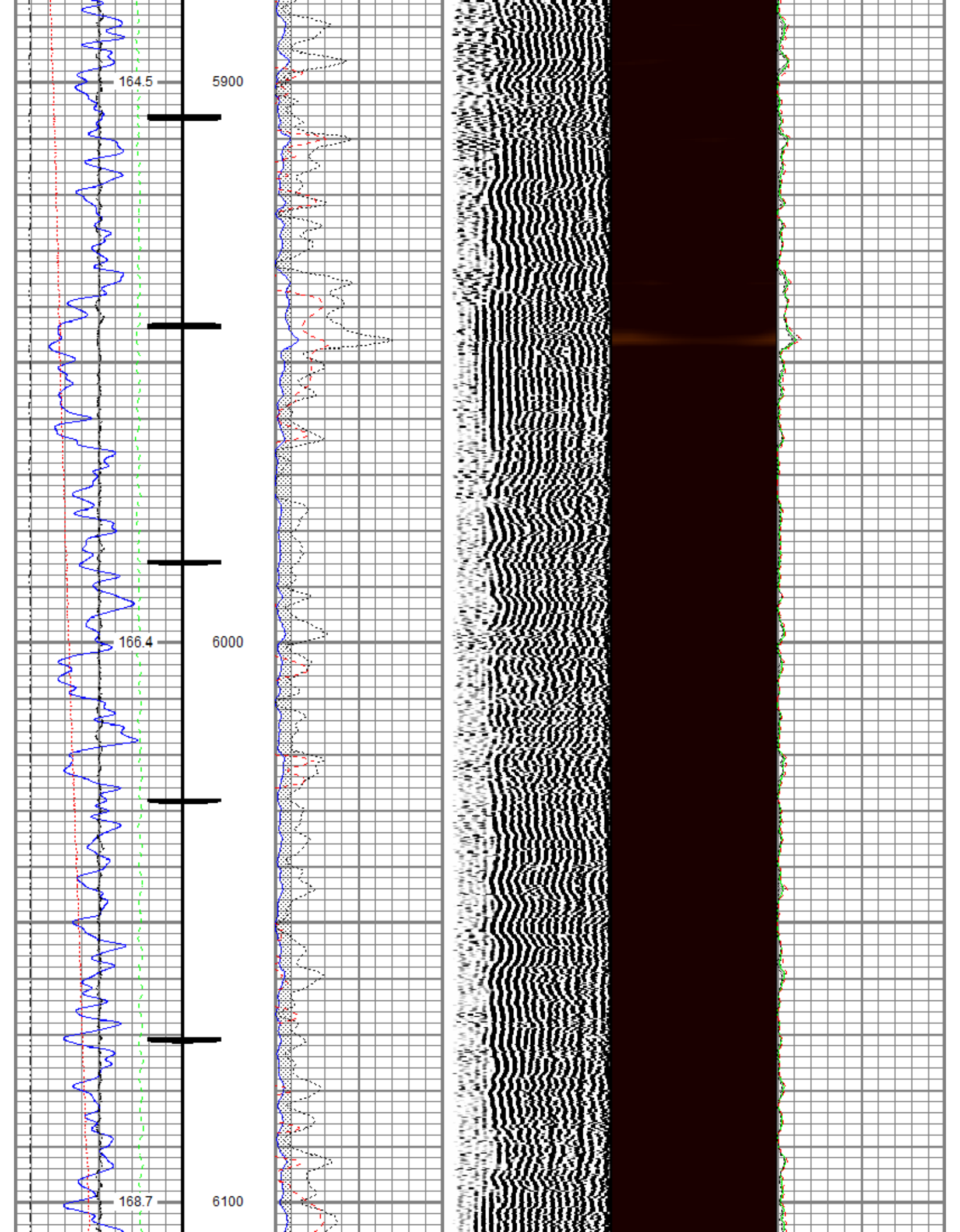


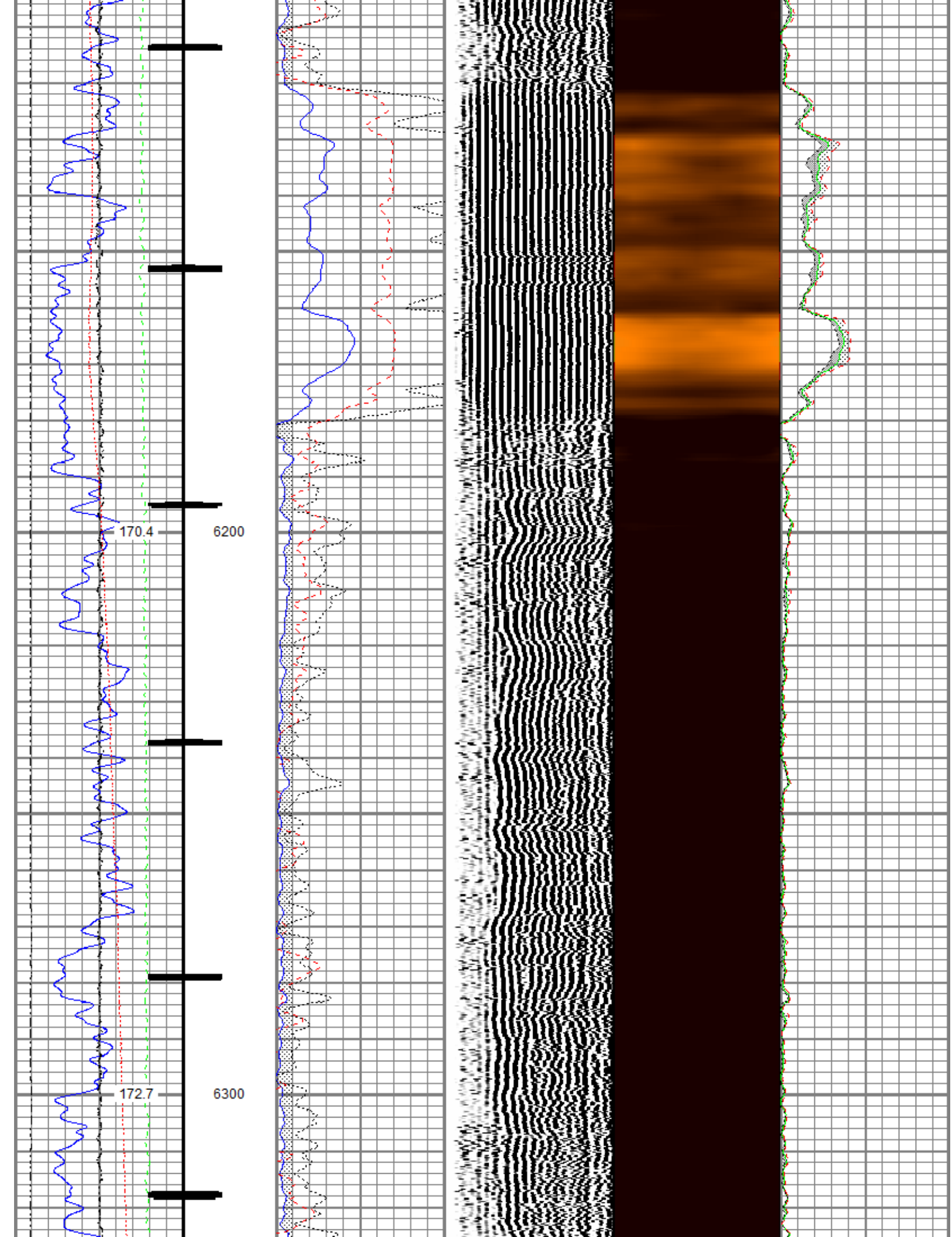


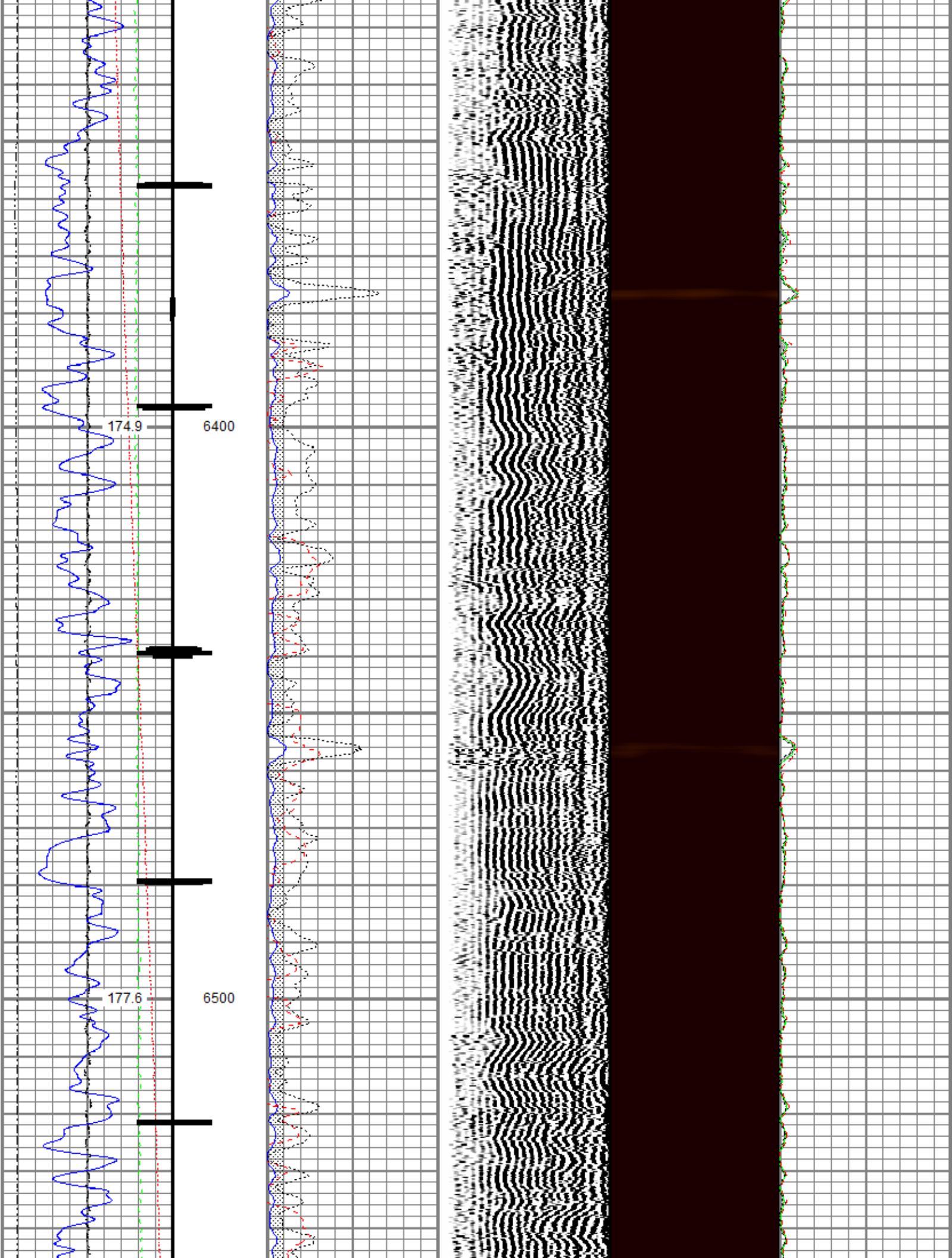


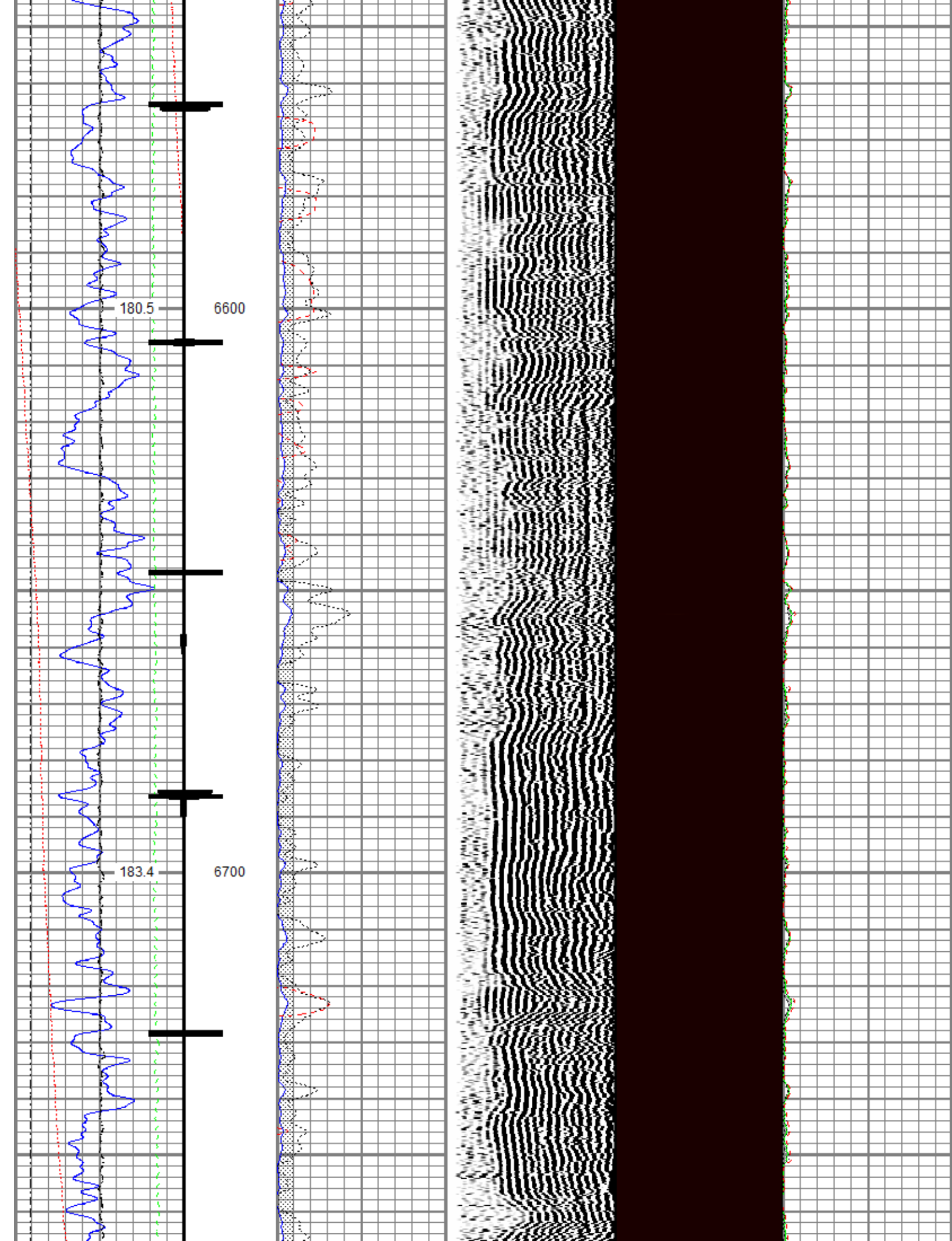


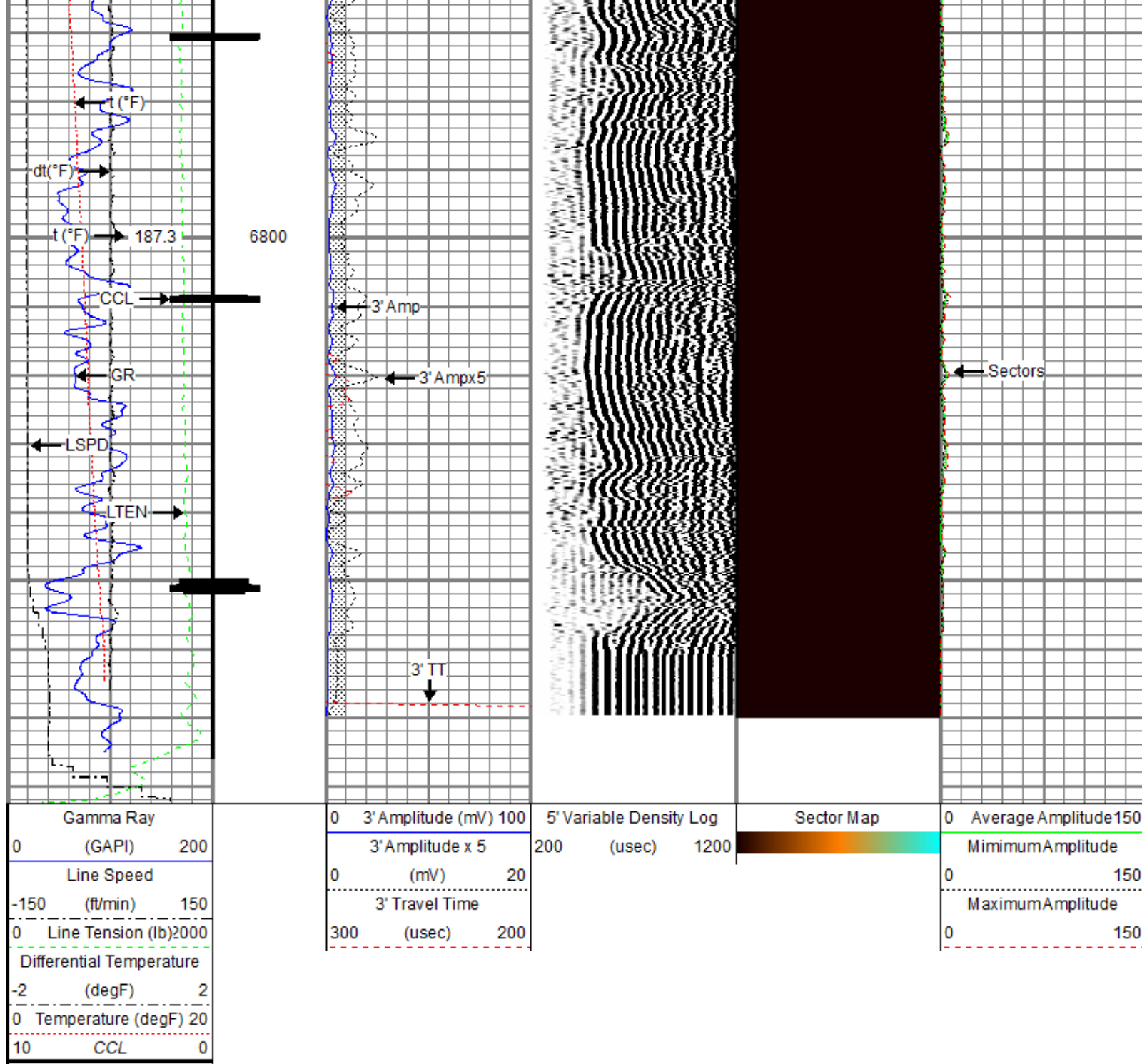








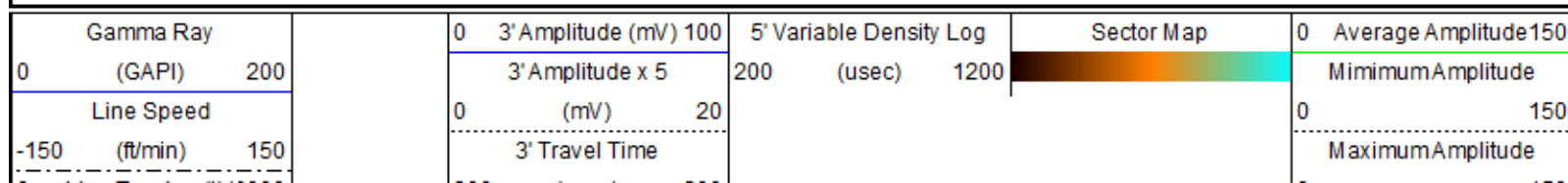




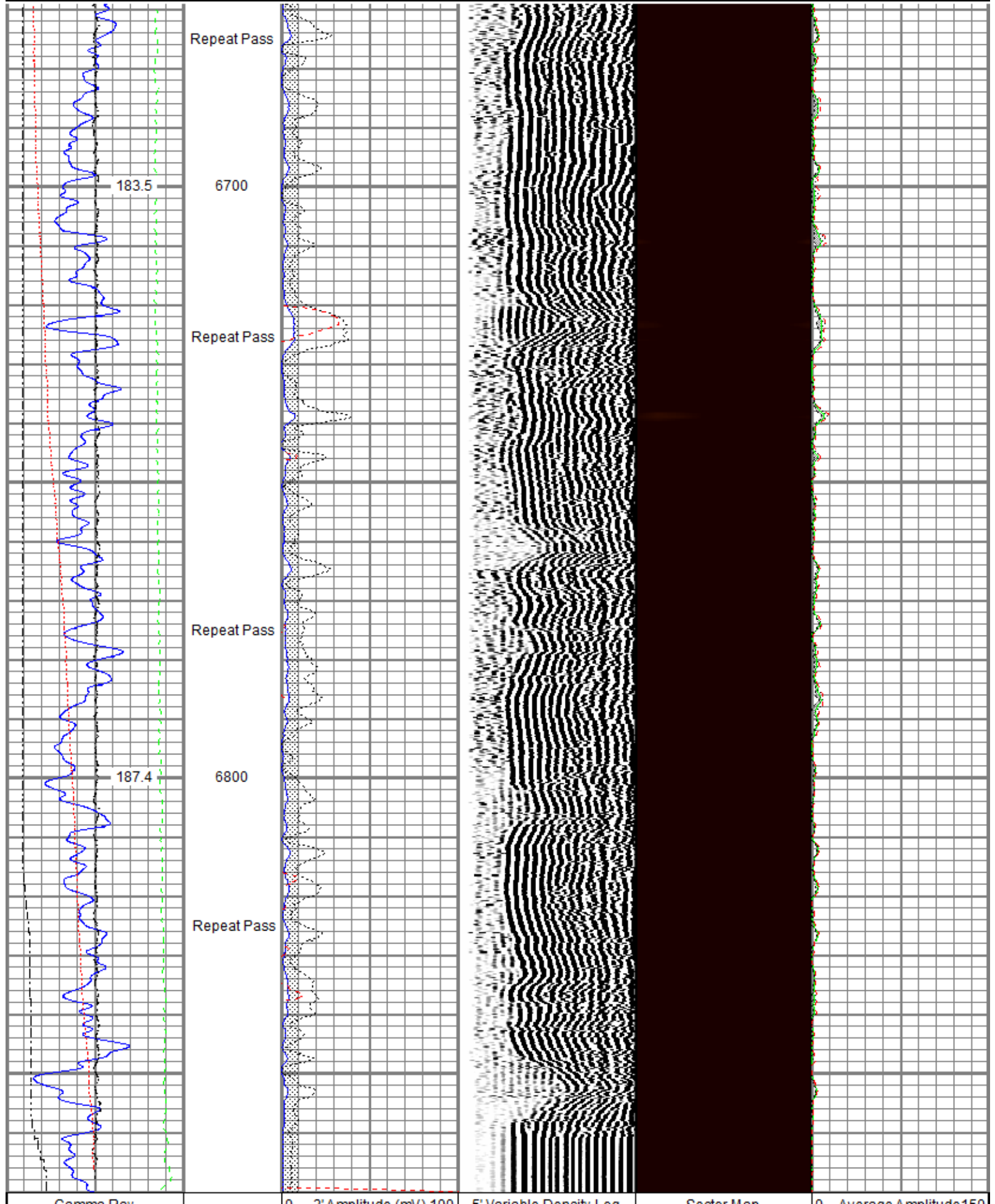
Repeat Pass

Recorded With 0 PSI Surface Induced Pressure

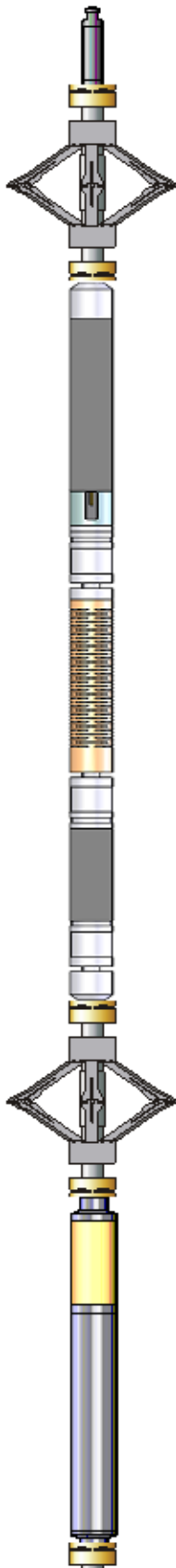
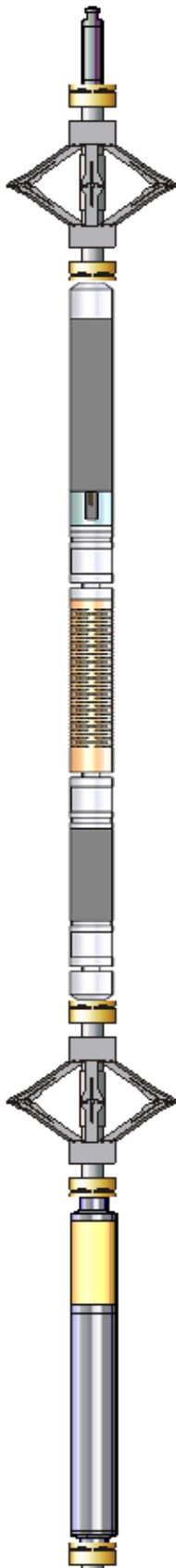
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 Dataset Creation Sat Apr 06 12:36:09 2019
 Charted by Depth in Feet scaled 1:240

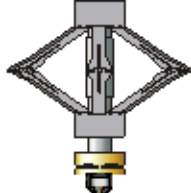


Line Tension (lb)	2000	300	(usec)	200	0	150
Differential Temperature						
-2	(degF)	2				
0	Temperature (degF)	20				



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

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
TEMP	16.33		Titan CHD-14375 GO	1.03	1.44	3.60
			Titan 1-7/16" Assembled Electric Cable Head w/ 1" Fishing Neck			
			DSS RAC-2750 5A GO	2.55	2.75	32.00
			DSS 2-3/4" Roller 5 Arm Centralizer w/ GO Ends			
			Probe Radii-2750 RBT (101013)	9.39	2.75	105.00
			Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub			
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					
CCL\$2 CCL\$1	6.42		DSS RAC-2750 5A GO	2.55	2.75	32.00
	6.42		DSS 2-3/4" Roller 5 Arm Centralizer w/ GO Ends			
GR	5.18		Probe GR-CCL-2750 GOB (FW1307-038)	4.51	2.75	55.00
			Probe 2-3/4" rev.2 Digital Scintillation Gamma Ray/CCL Combined			



UW CENT-DSS RAC
5 Arm 2-3/4" Roller Centralizer

2.55

2.75

32.00

GO BN-14375

0.25

1.44

1.00

GO 1-7/16" Bull Nose with Go Box Top

Dataset: tep_federal sg 441-21_rbl_04-06-19.db: field/well/run1/main.2
Total length: 22.82 ft
Total weight: 260.60 lb
O.D.: 2.75 in

Calibration Report

Database File c:\programdata\warrior\data\tep_federal sg 441-21_rbl_04-06-19\tep_federal sg 441-21_rbl_04-06-19.db
Dataset Pathname main.2
Dataset Creation Sat Apr 06 12:32:40 2019

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: 101013
Tool Model: 2750 RBT

Calibration Casing Diameter: 4.500 in
Calibration Depth: -96.813 ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.006	0.827	0.800	81.196	97.870	0.252
CAL	0.003	0.741				
5'	0.004	0.553	0.800	81.196	146.437	0.272
SUM						
S1	0.008	0.833	0.000	100.000	121.220	-0.918
S2	0.007	0.832	0.000	100.000	121.246	-0.846
S3	0.005	0.813	0.000	100.000	123.738	-0.567
S4	0.006	0.807	0.000	100.000	124.917	-0.764
S5	0.007	0.776	0.000	100.000	130.019	-0.892
S6	0.005	0.807	0.000	100.000	124.727	-0.664
S7	0.003	0.831	0.000	100.000	120.735	-0.362
S8	0.007	0.879	0.000	100.000	114.675	-0.766

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.003	0.741	1.000	0.000

Air Zero Calibration, performed Fri Apr 05 18:37:57 2019:

	Raw (v)	Calibrated (v)	Results
	<u>Zero</u>	<u>Zero</u>	<u>Offset</u>
3'	0.005	0.000	-0.000
5'	0.006	0.000	-0.001
SUM			
S1	0.003	0.000	0.000
S2	0.003	0.000	0.001
S3	0.003	0.000	0.000
S4	0.005	0.000	-0.000
S5	0.006	0.000	-0.000
S6	0.005	0.000	-0.000
S7	0.003	0.000	-0.000
S8	0.005	0.000	-0.000

Temperature Calibration Report				
Serial Number:	101013			
Tool Model:	2750 RBT			
Performed:	Sun Nov 12 13:21:13 2017			
	Reference		Reading	
Low Reference:	100.00	degF	112.30	degF
High Reference:	350.00	degF	394.75	degF
Gain:	0.89			
Offset:	0.60			
Delta Spacing	1			

	Company	TEP Rocky Mountain LLC
	Well	Federal SG 441-21
	Field	Grand Valley
	County	Garfield
	State	Colorado