



Radial Cement Bond  
Gamma Ray  
Casing Collar Log

Company TEP Rocky Mountain LLC		Well Federal SG 11-22		Field Grand Valley		County Garfield		State Colorado	
Company TEP Rocky Mountain LLC		Well Federal SG 11-22		Field Grand Valley		County Garfield		State Colorado	
Location:		API # : 05-045-24128		Other Services		PN			
SEC 22 TWP 7S RGE 96W		Ground Level		Elevation		6090.8'			
Permanent Datum		Log Measured From		Kelly Bushing		24 FT		K.B. 6114.8'	
Drilling Measured From		Kelly Bushing						D.F. ---	
								G.L. 6090.8'	
Date	Run Number	14-MAR-2019							
Depth Driller		One							
Depth Logger		6169 FT							
Bottom Logged Interval		6113 FT							
Top Log Interval		6099 FT							
Open Hole Size		Surface							
Type Fluid		---							
Density / Viscosity		Water							
Max. Recorded Temp.		8.34 lb/gal							
E.estimated Cement Top		174°F							
Time Well Ready		See Log							
Time Logger on Bottom		ROA							
Equipment Number		HD-0359							
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	1024 FT				
Intermediate #1	4 1/2	11.6	P-110	Surface	6130 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 3276-3299 FT  
Log ran from 6099 FT to Surface  
Recorded with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!

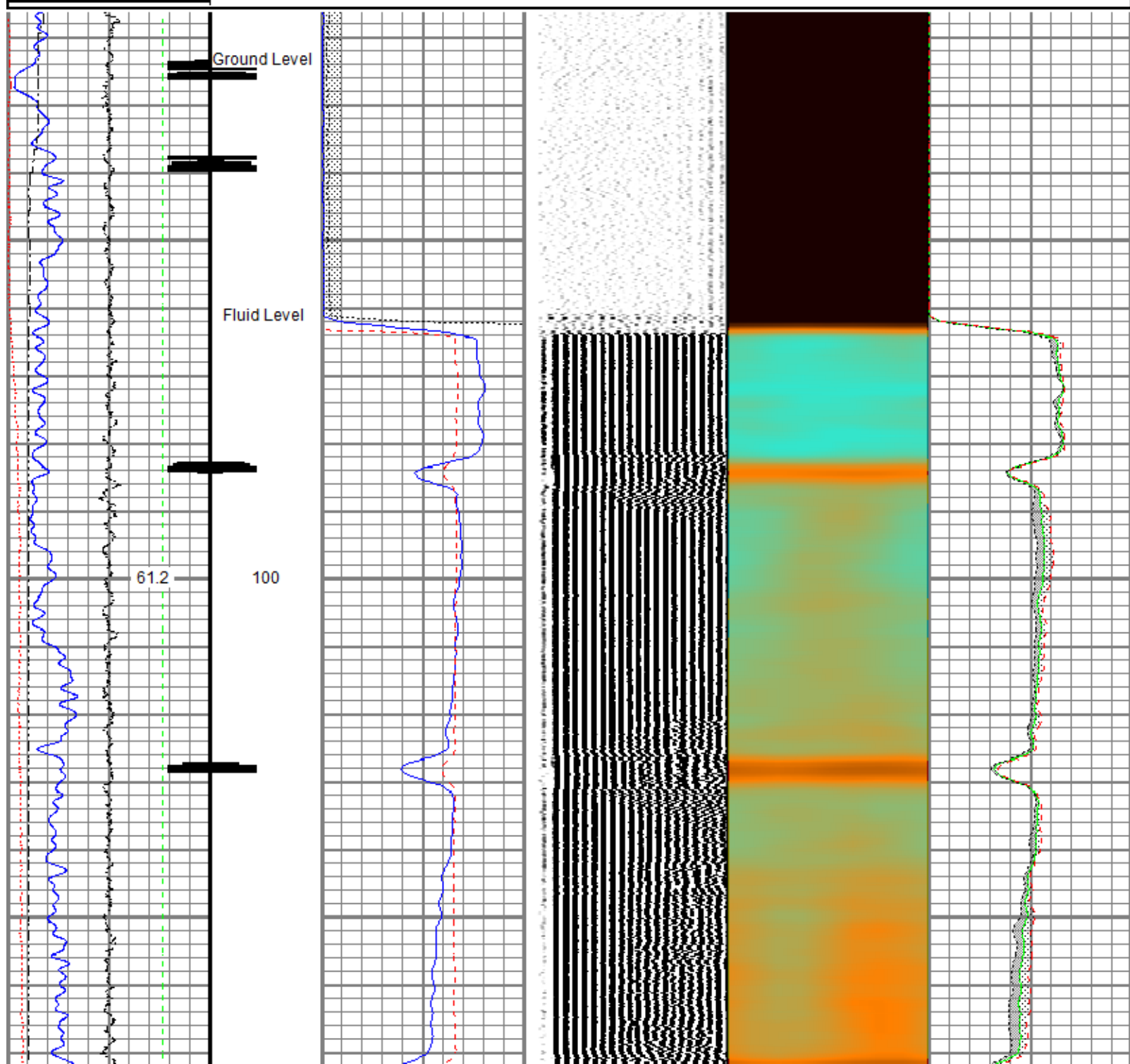


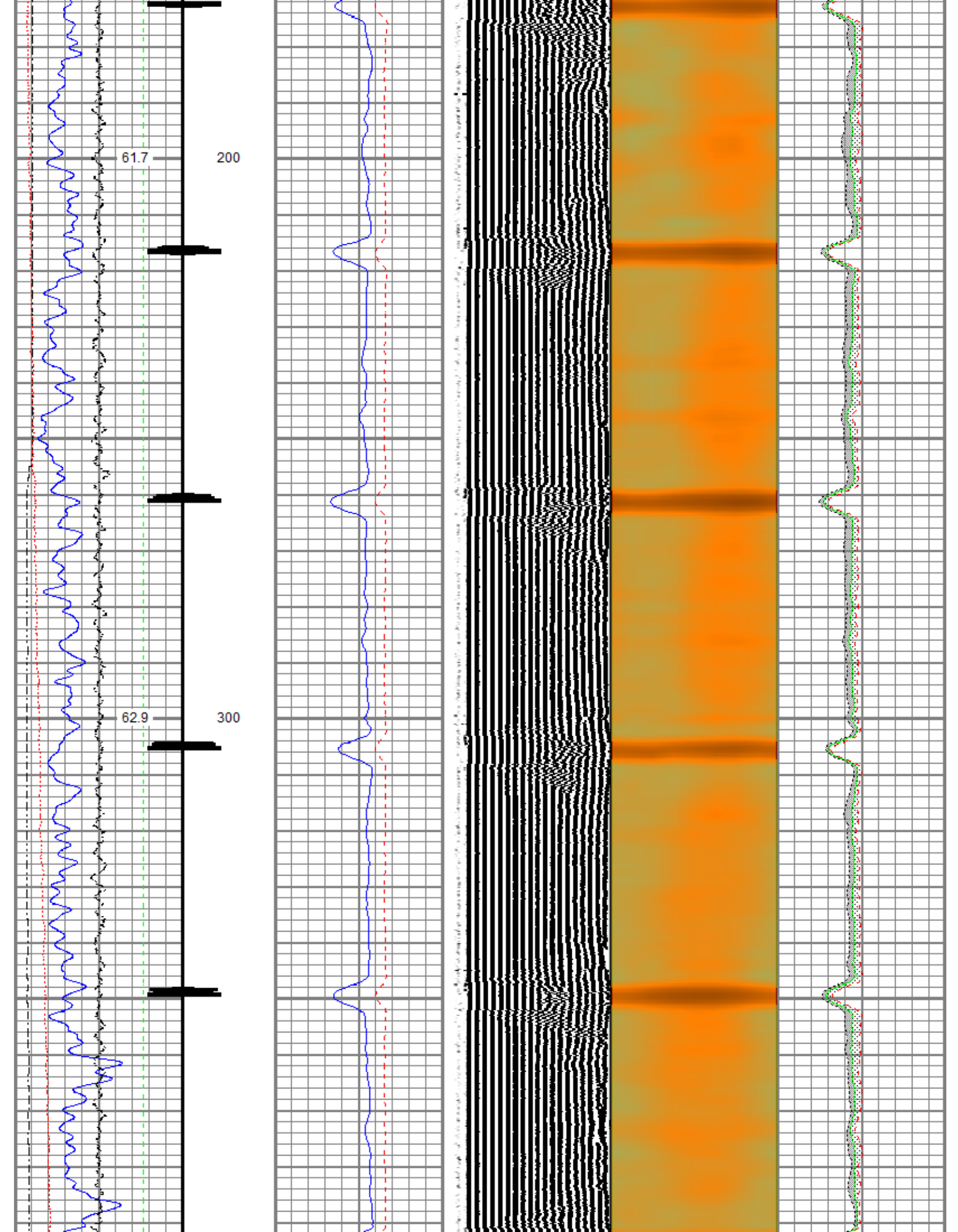
Main Pass

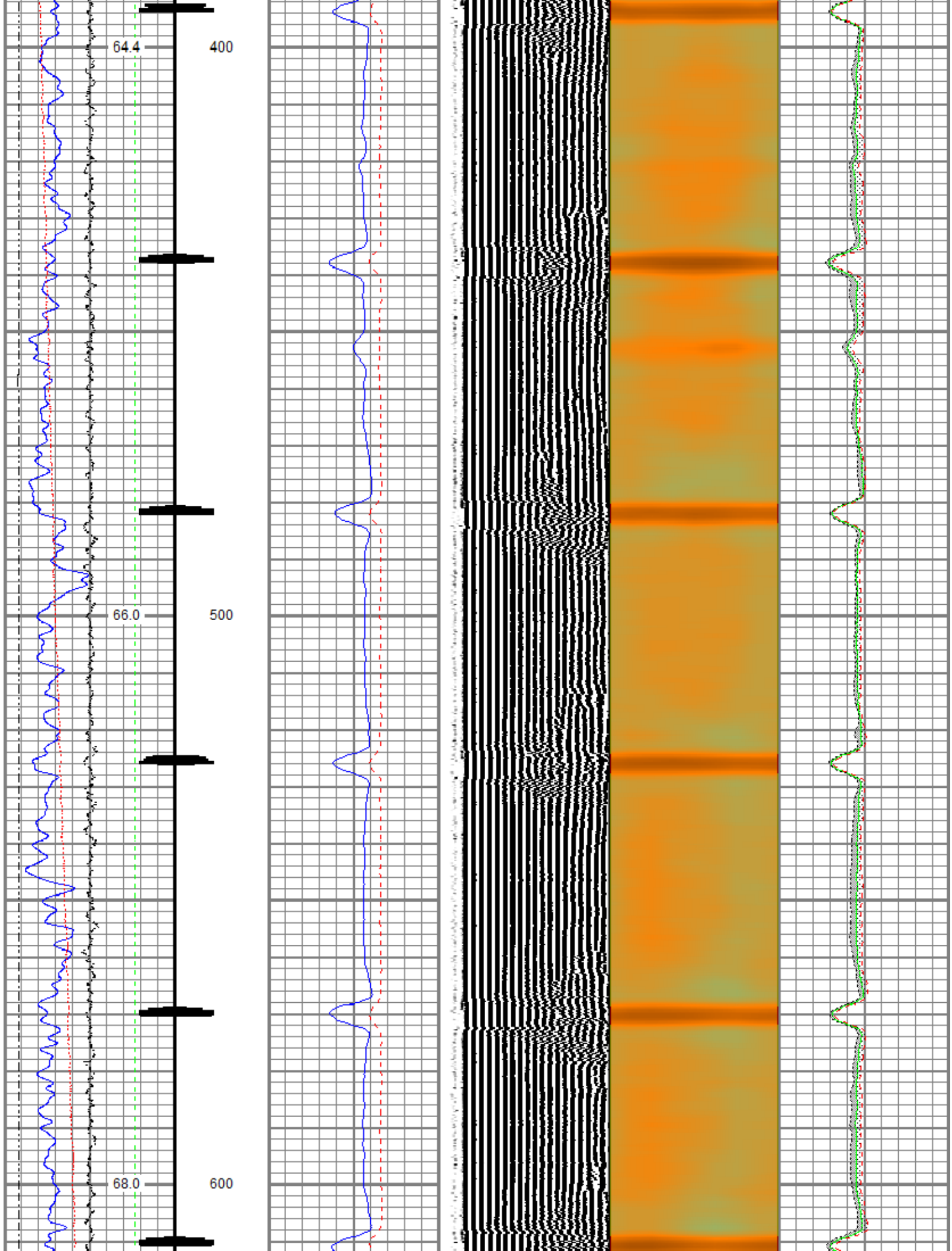
Recorded With 0 PSI Surface Induced Pressure

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 Dataset Pathname main.1  
 Presentation Format ros\_rbt004\_tep  
 Dataset Creation Fri Mar 15 08:35:06 2019  
 Charted by Depth in Feet scaled 1:240

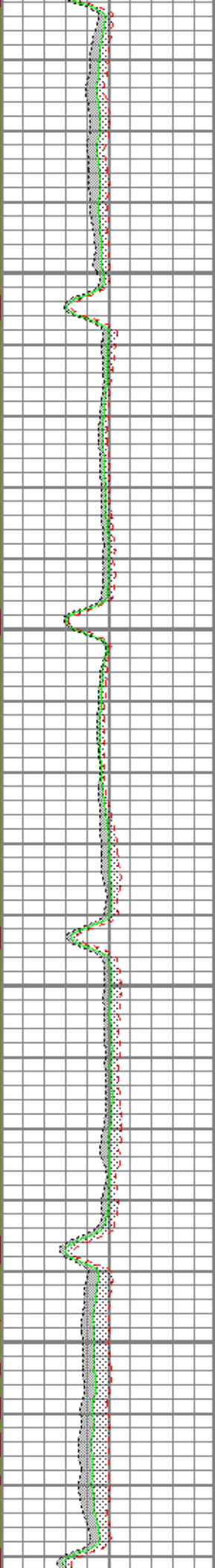
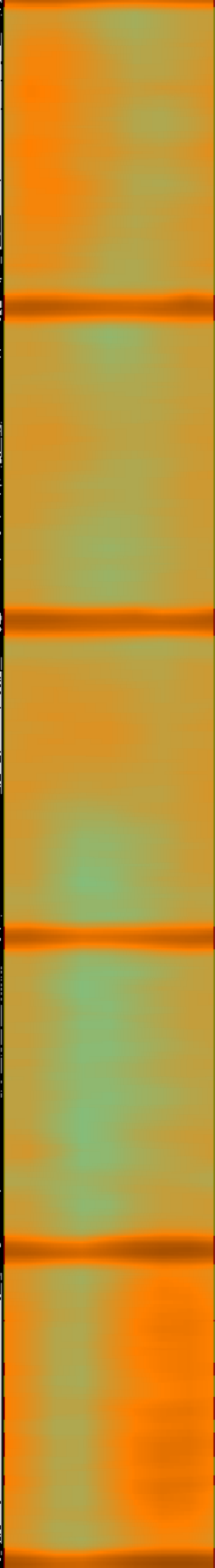
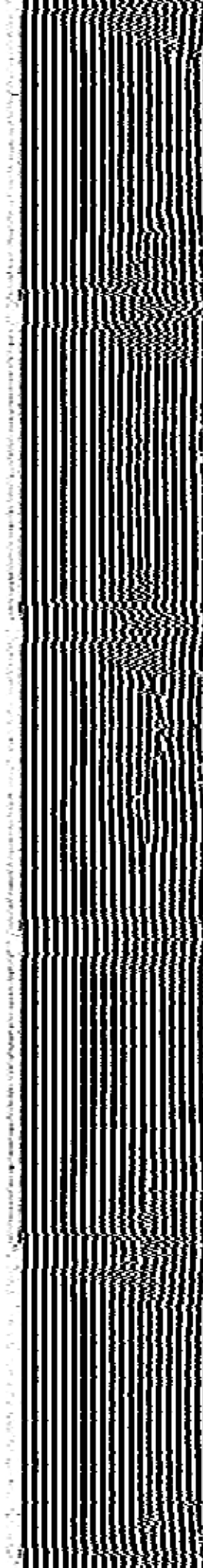
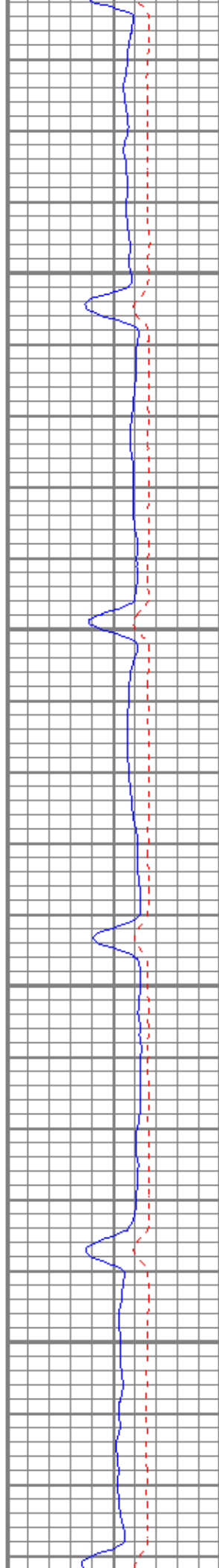
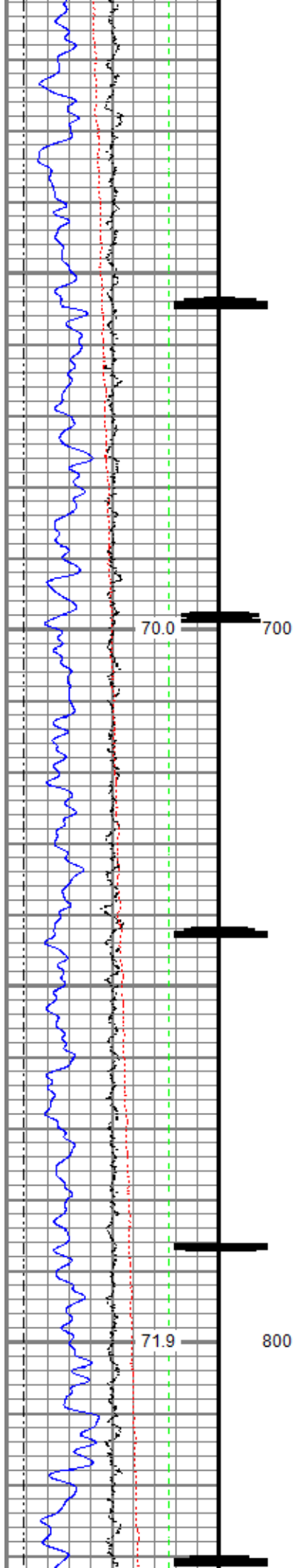
Gamma Ray	0	3' Amplitude (mV) 100	5' Variable Density Log	Sector Map	0	Average Amplitude 150
(GAPI) 200		3' Amplitude x 5	200	10		Minimum Amplitude
Line Speed		(mV) 20	1200			0
(ft/min) 150		3' Travel Time				Maximum Amplitude
Line Tension (lb) 2000		(usec) 200				0
Differential Temperature						150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

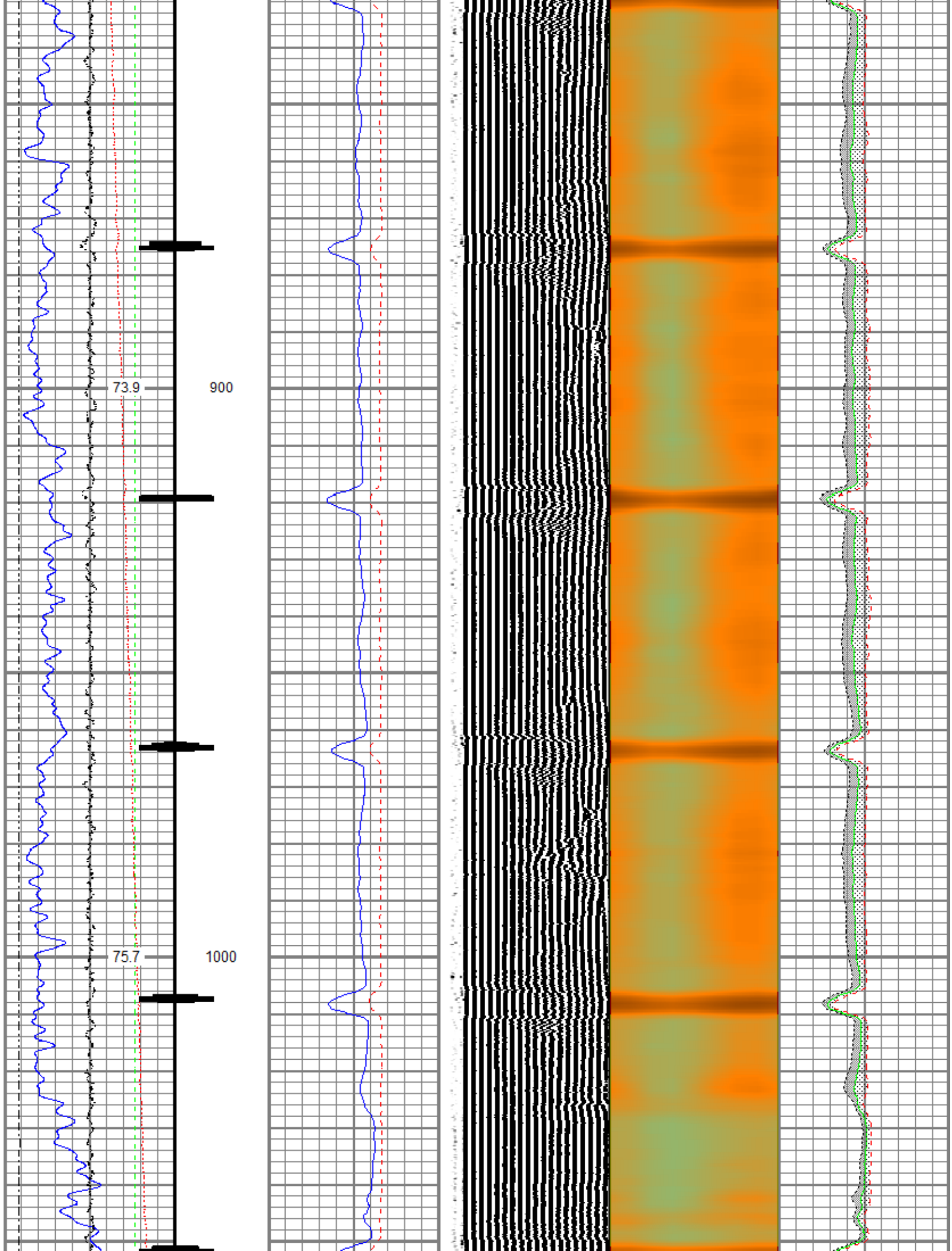


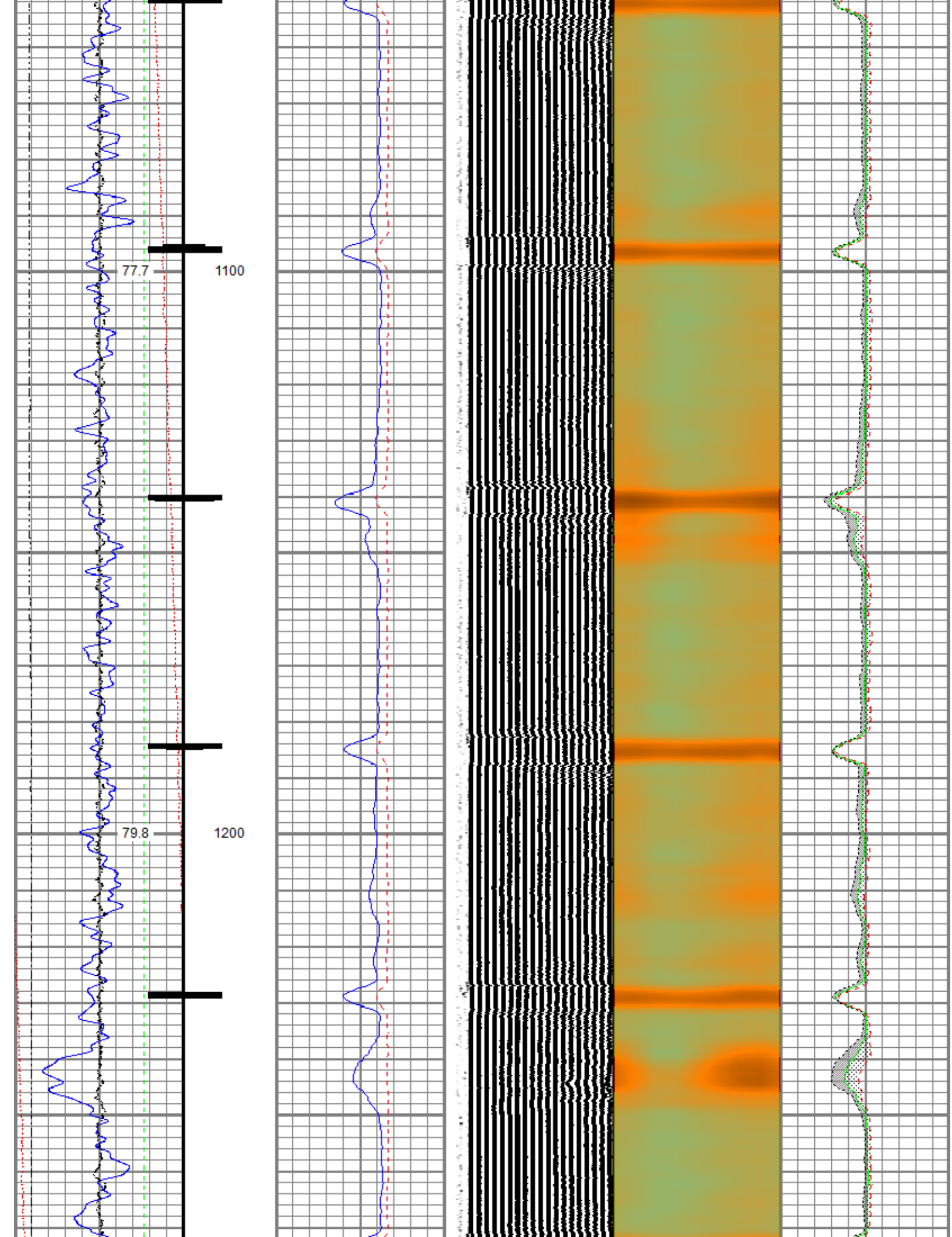


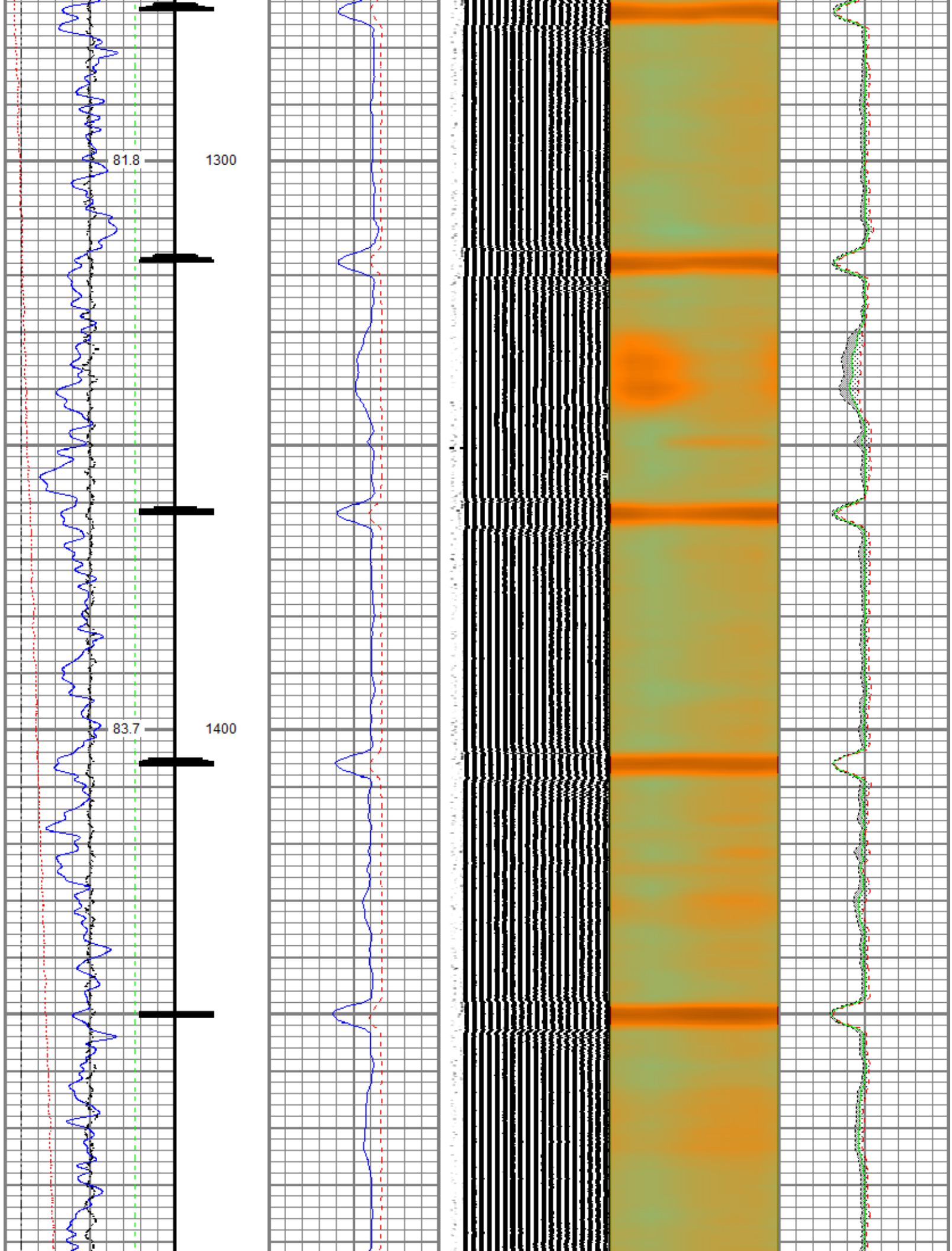




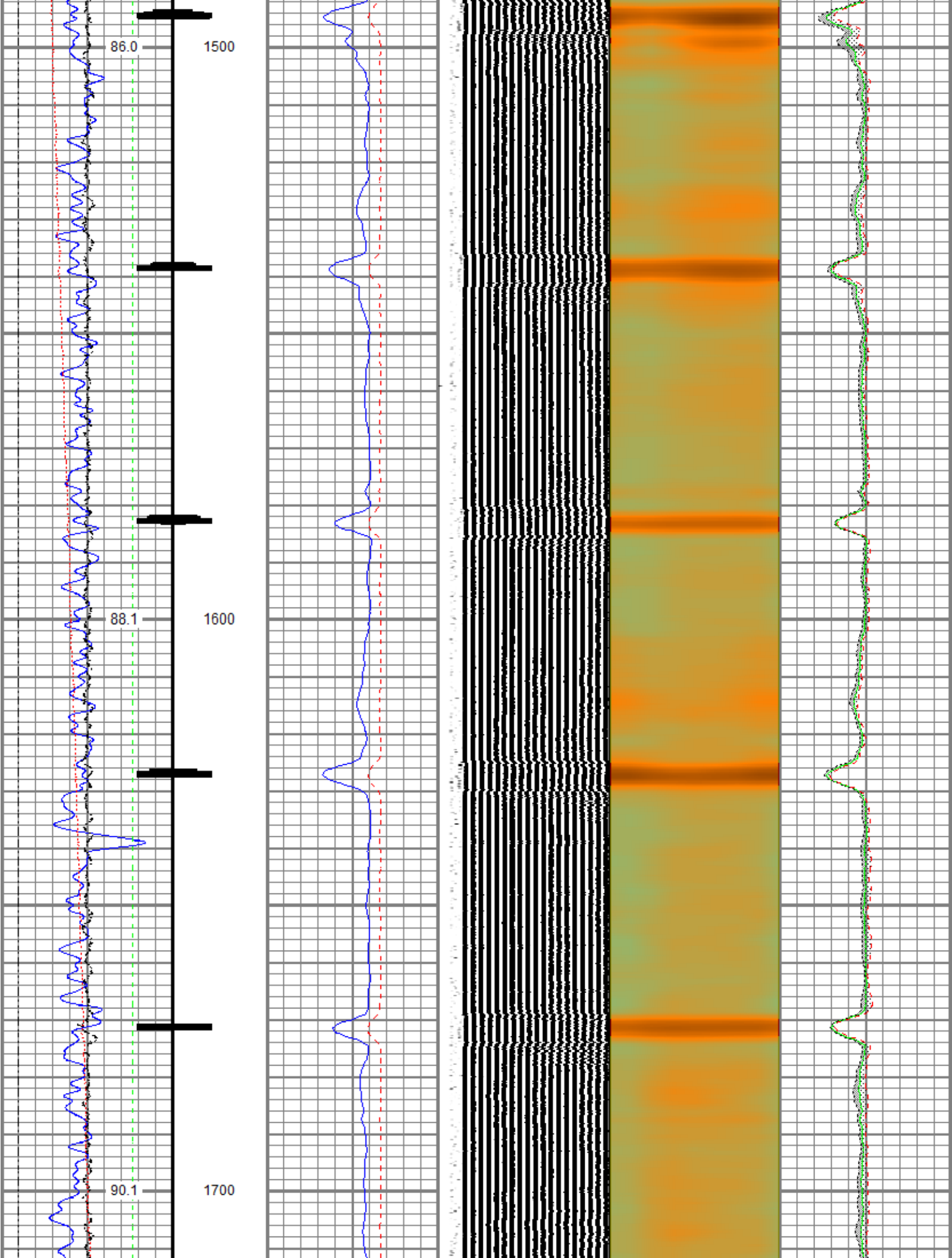


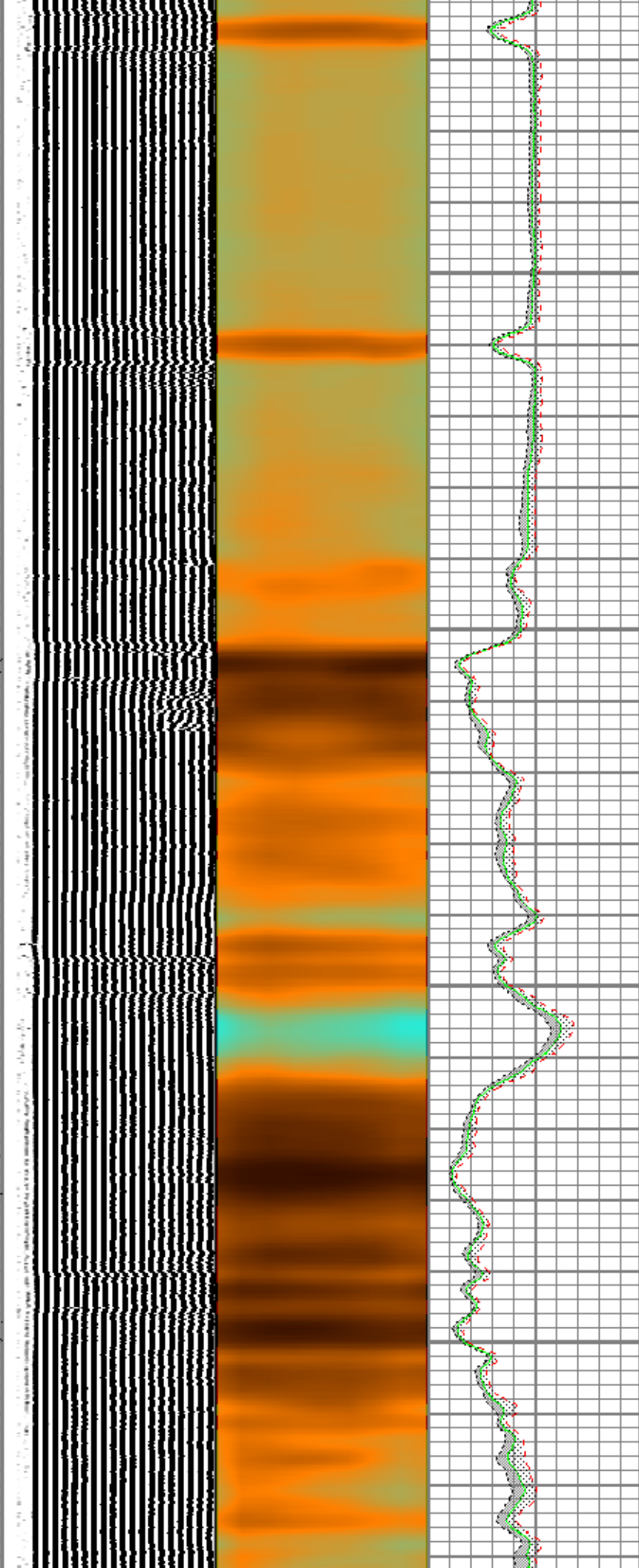
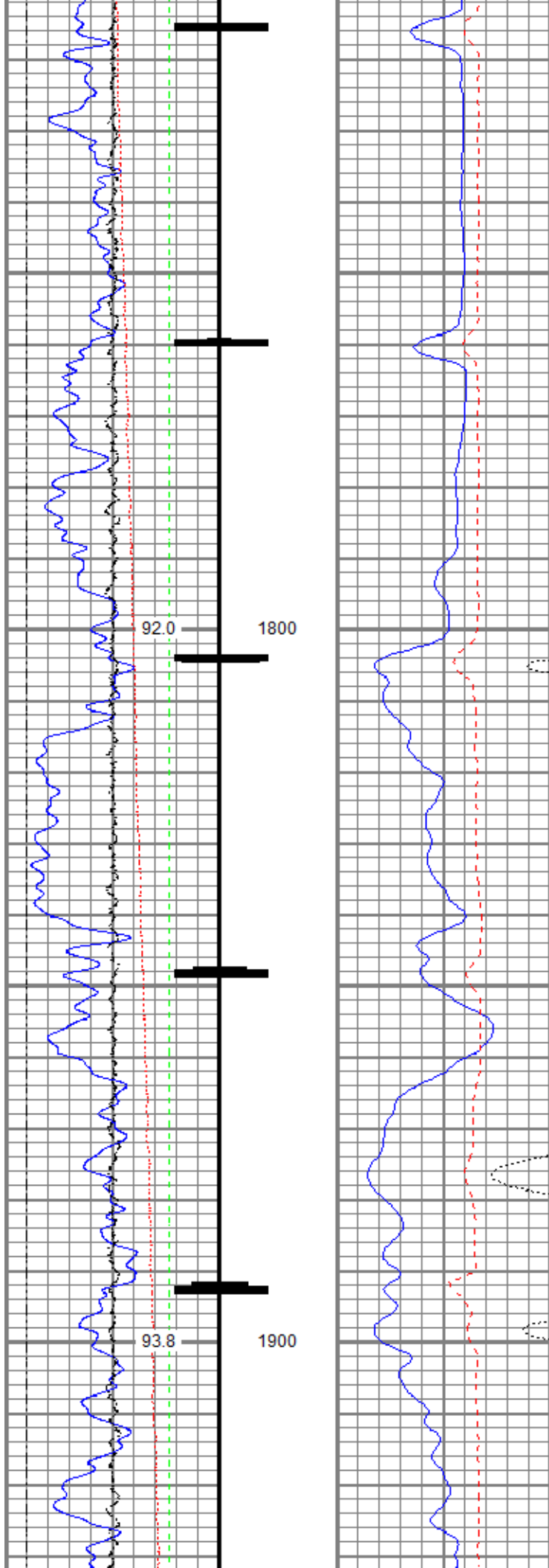


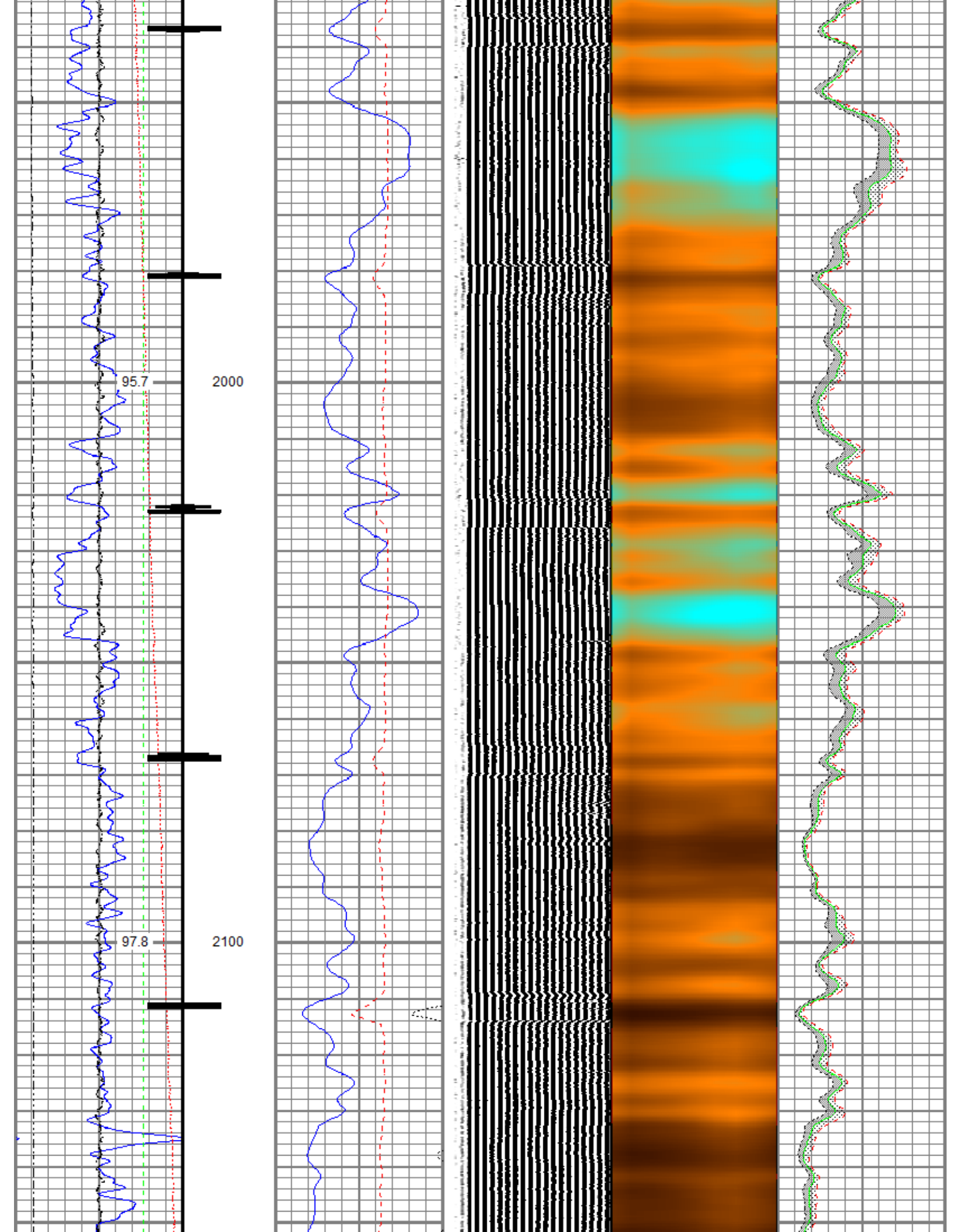


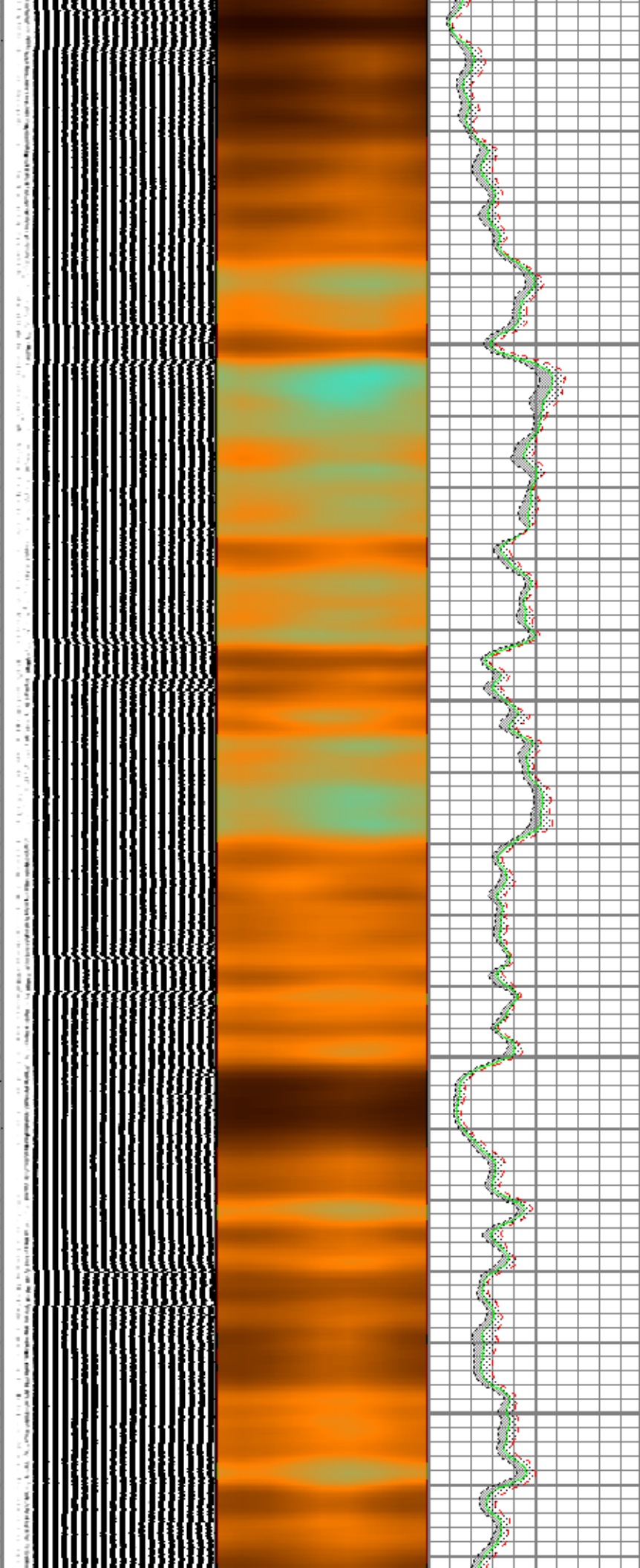
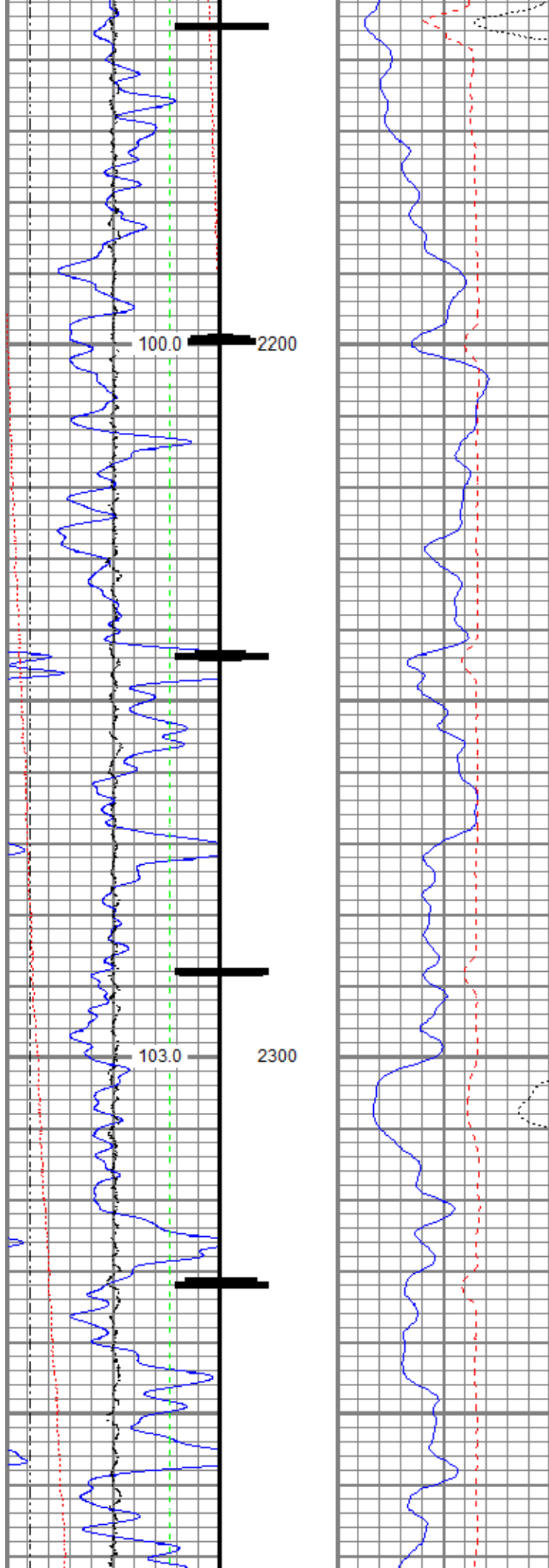




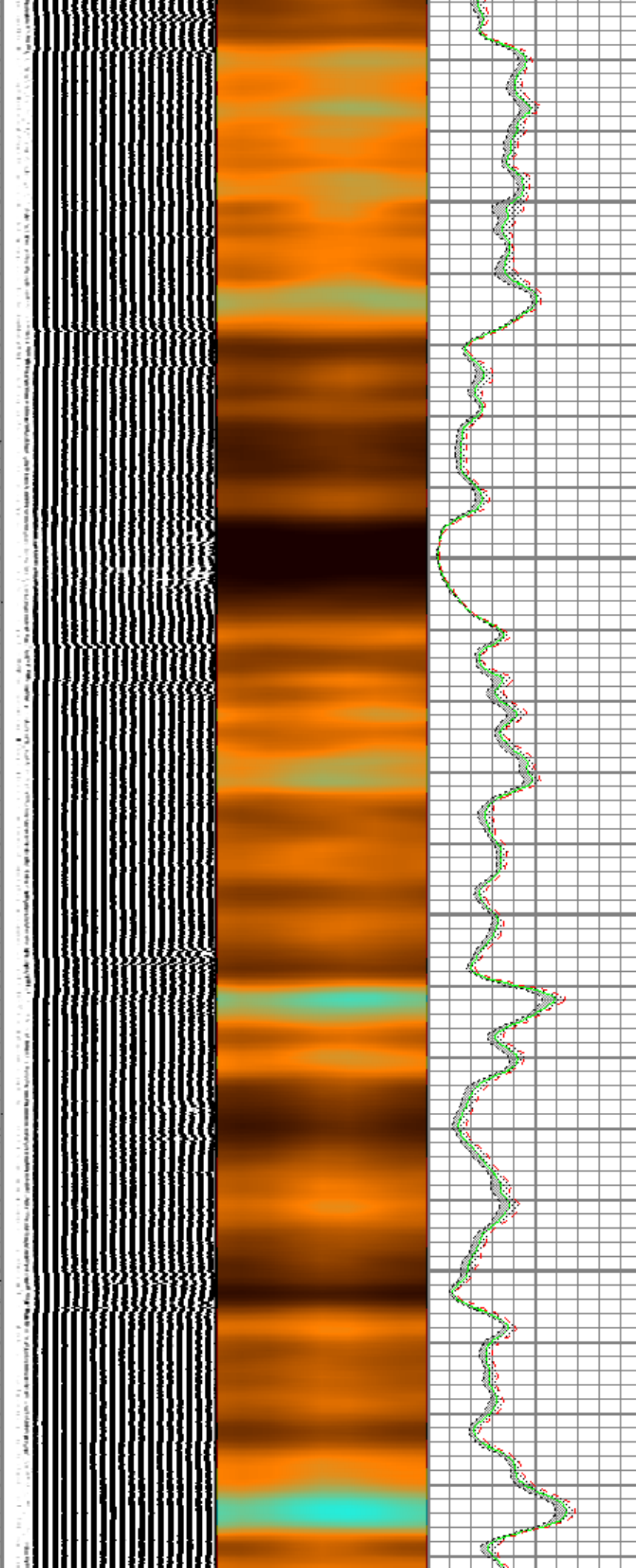
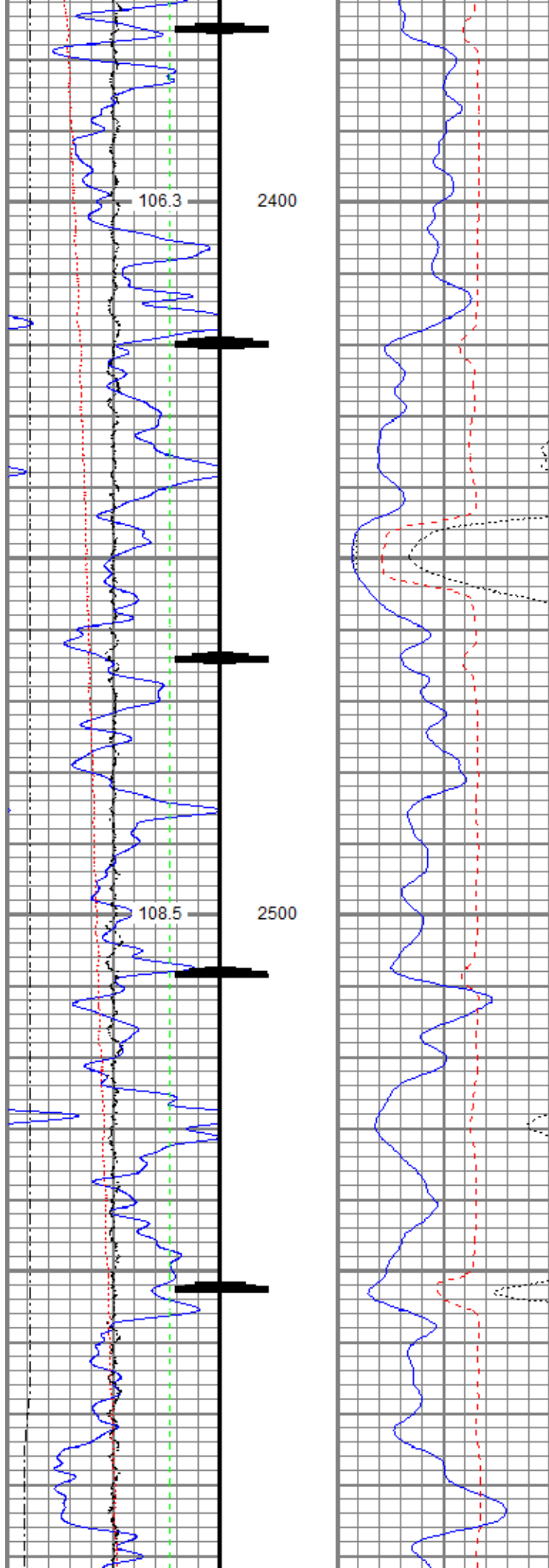




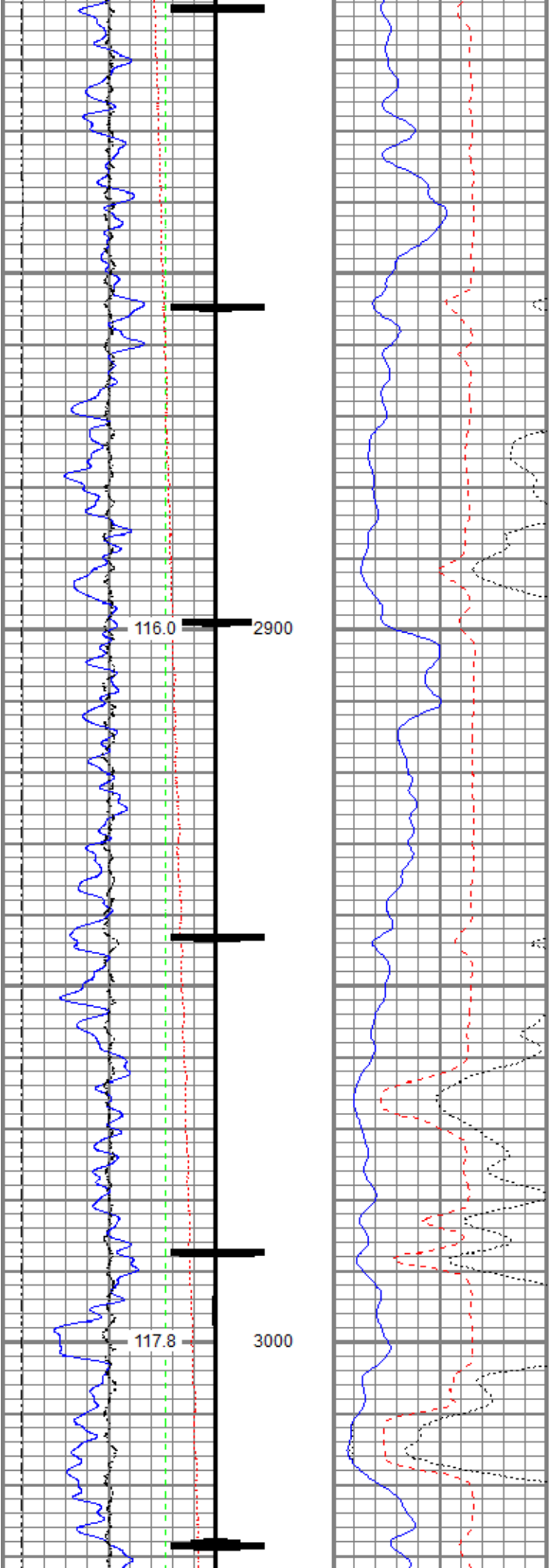




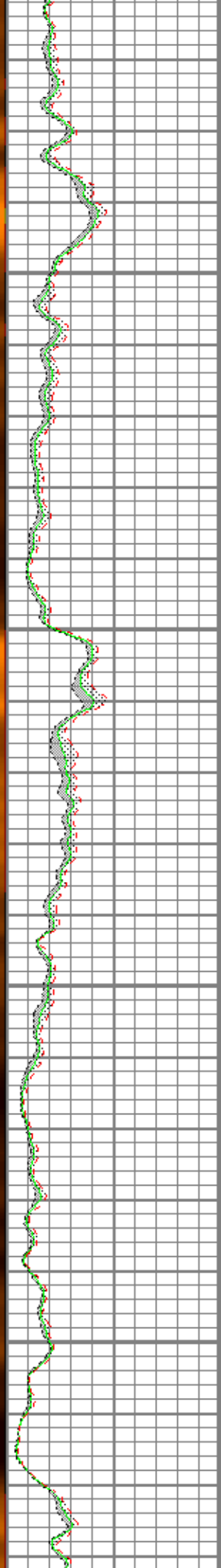
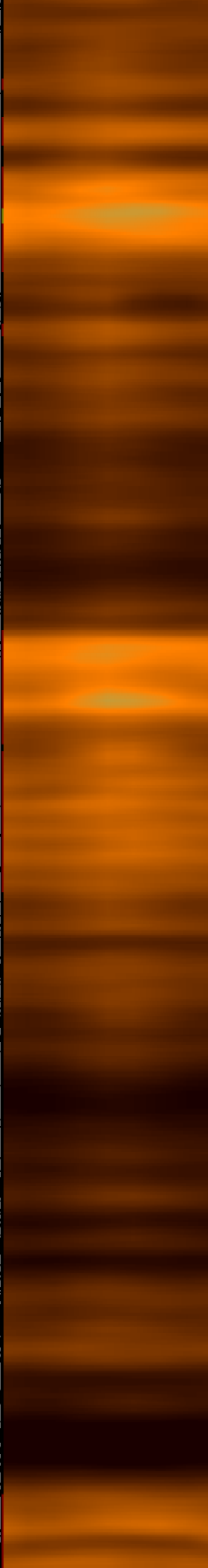
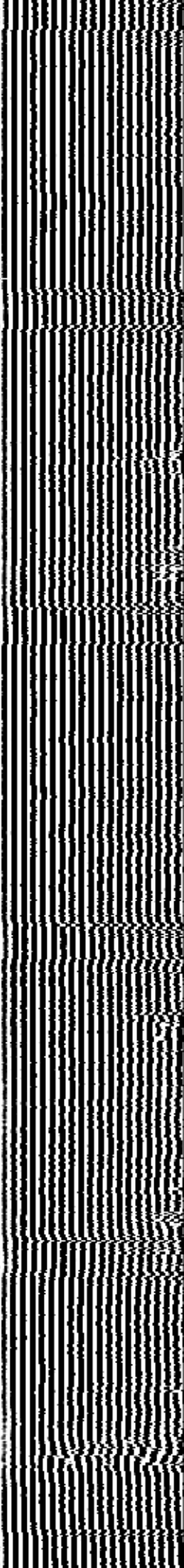


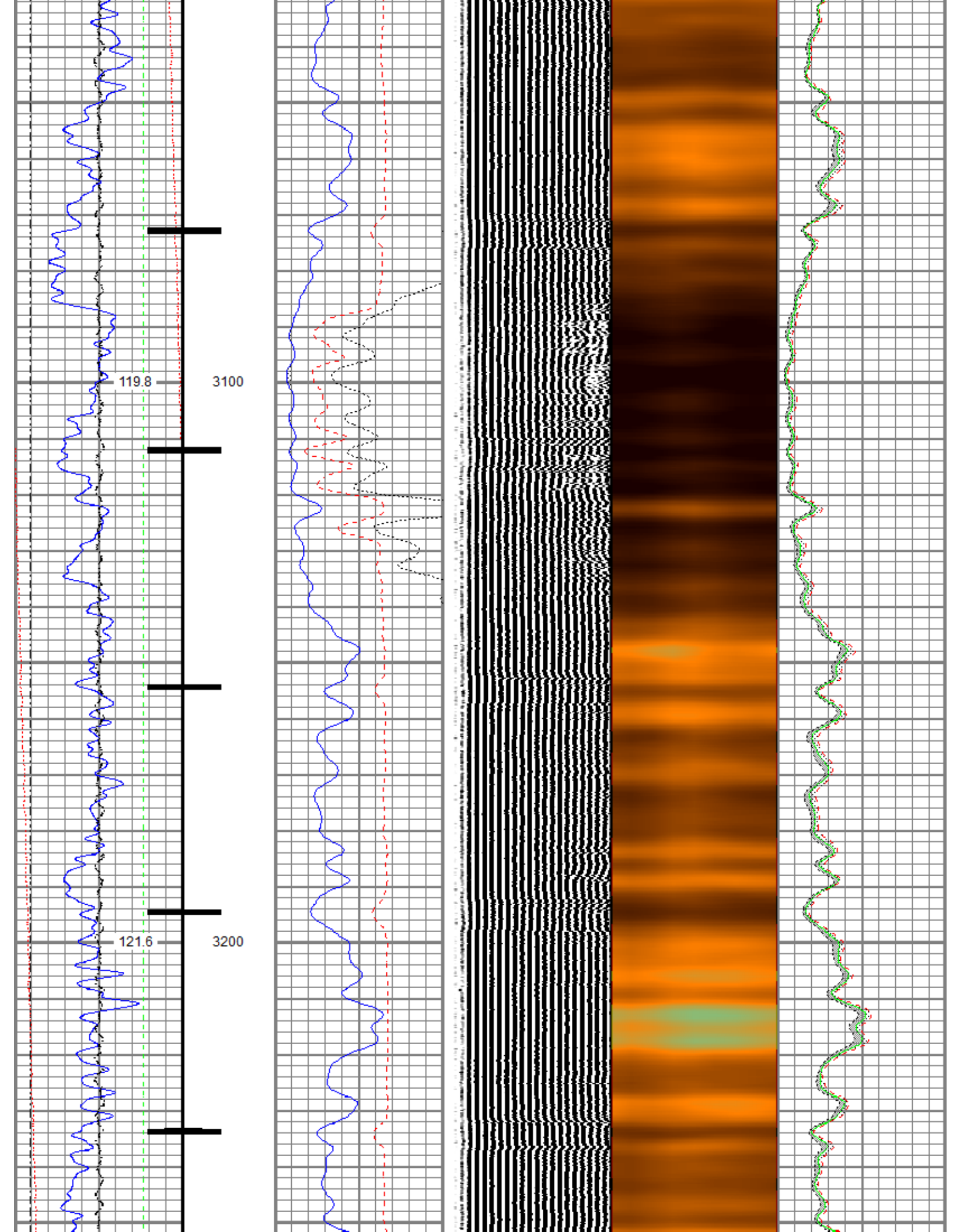




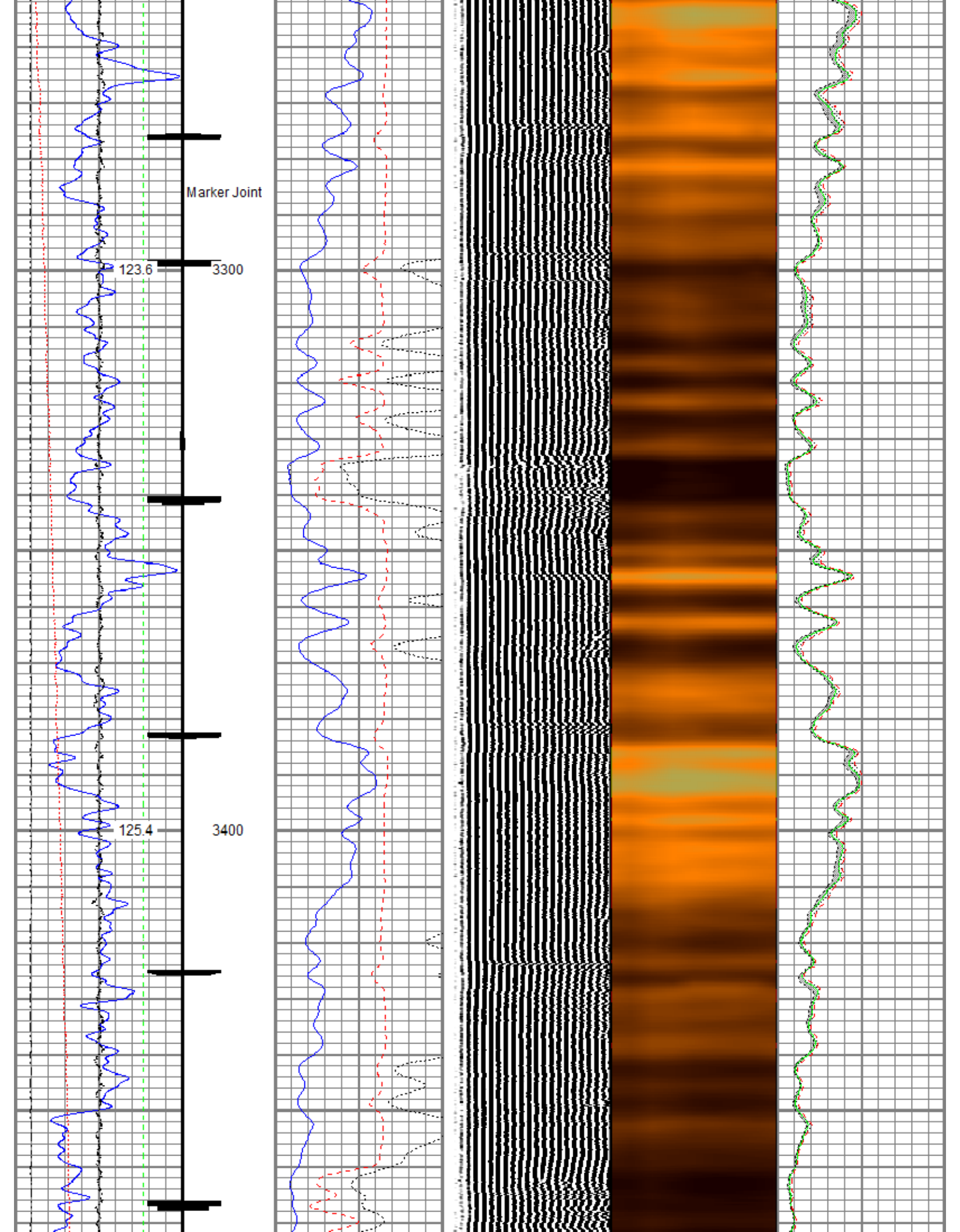


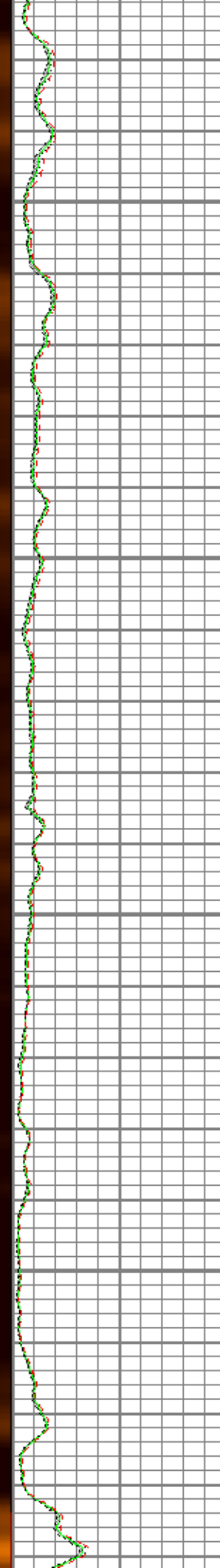
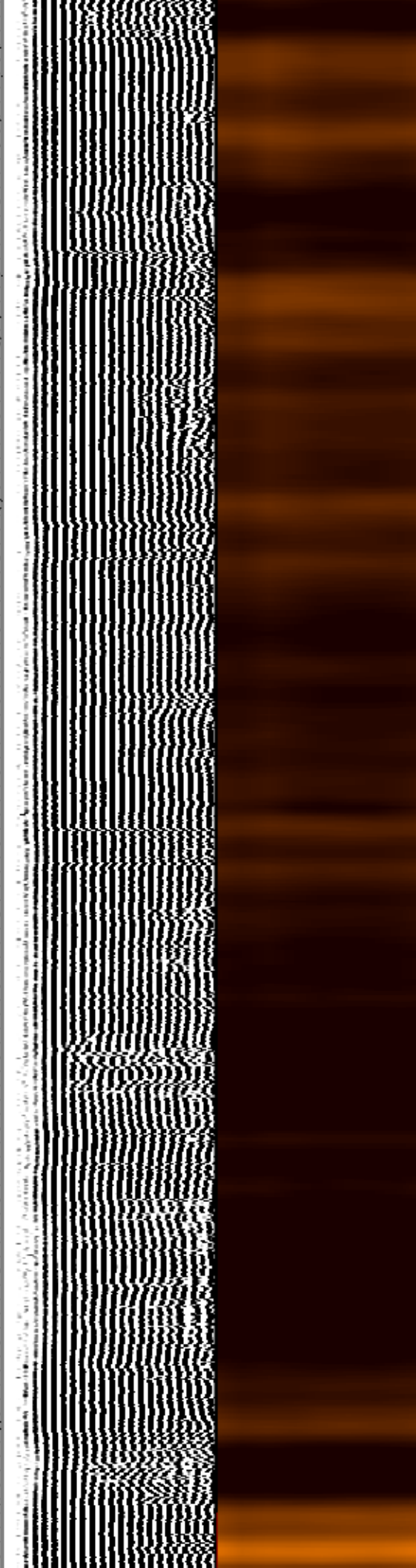
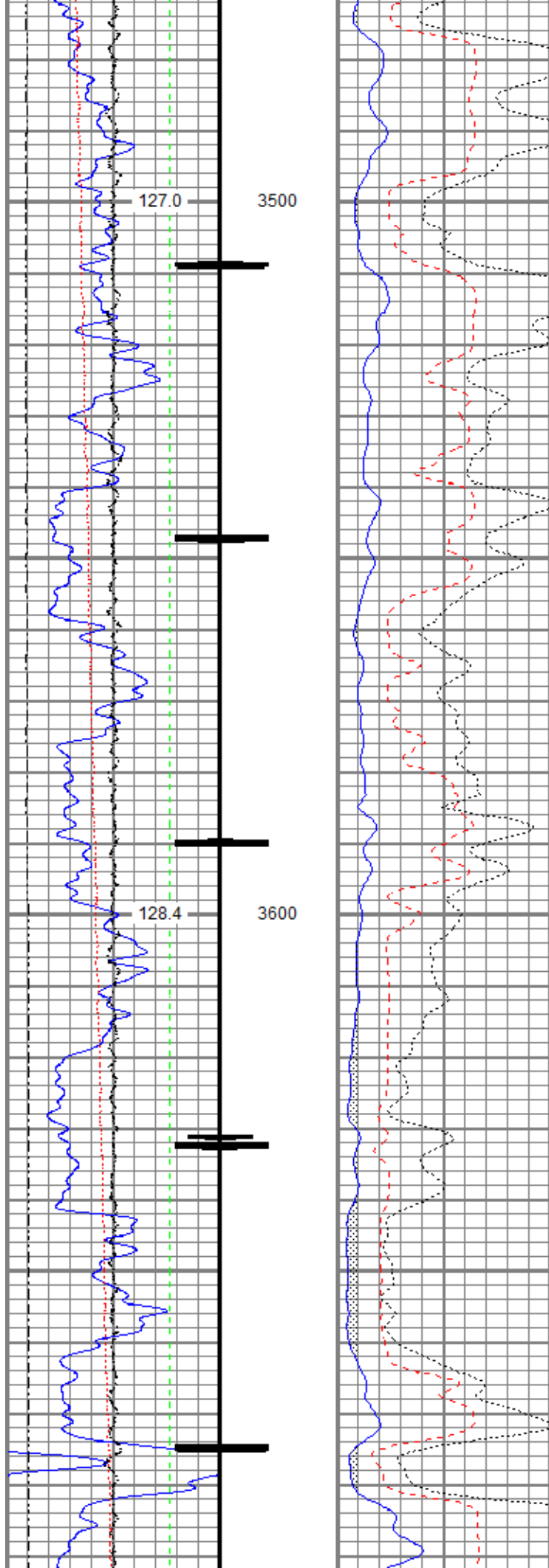
116.0 2900 117.8 3000

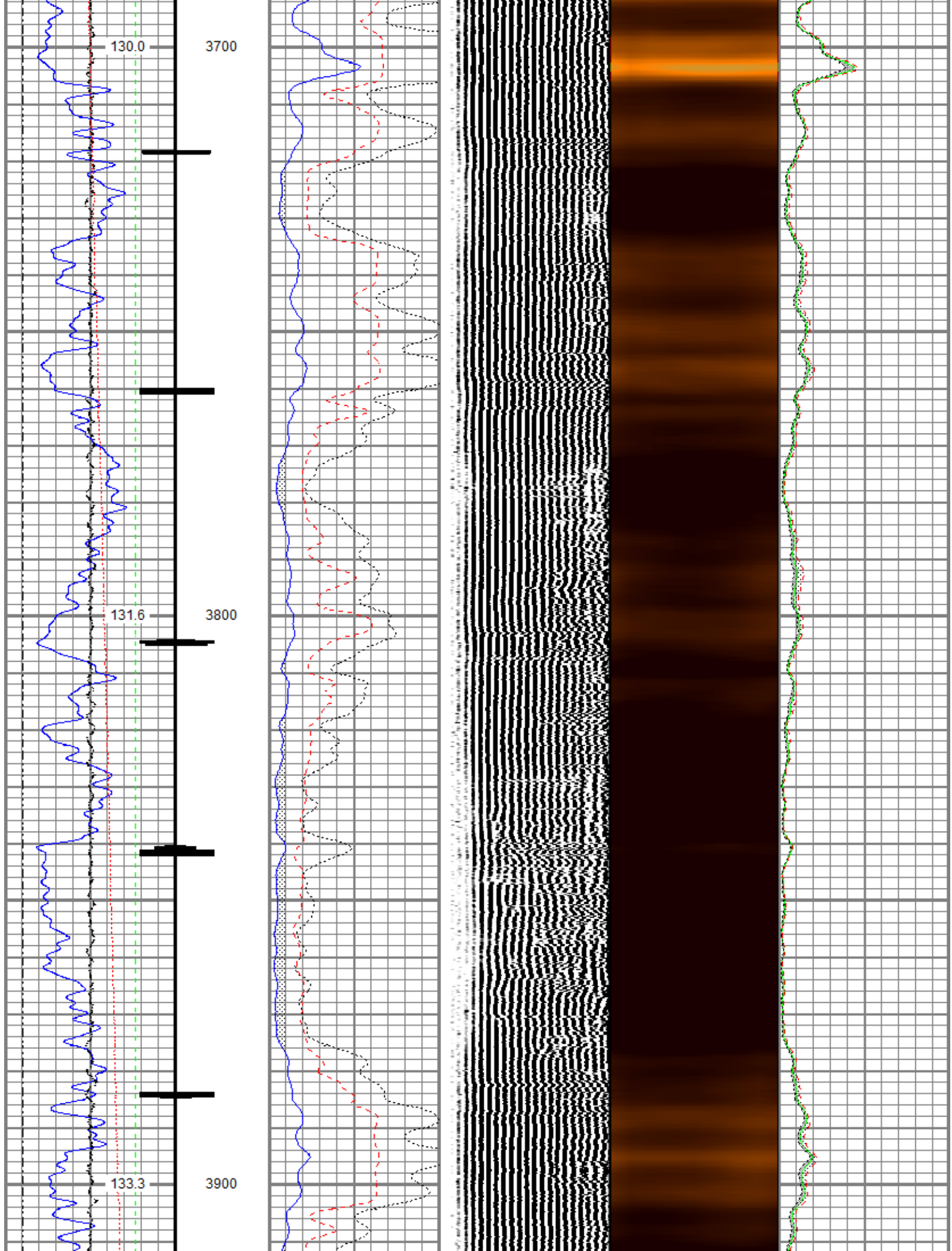




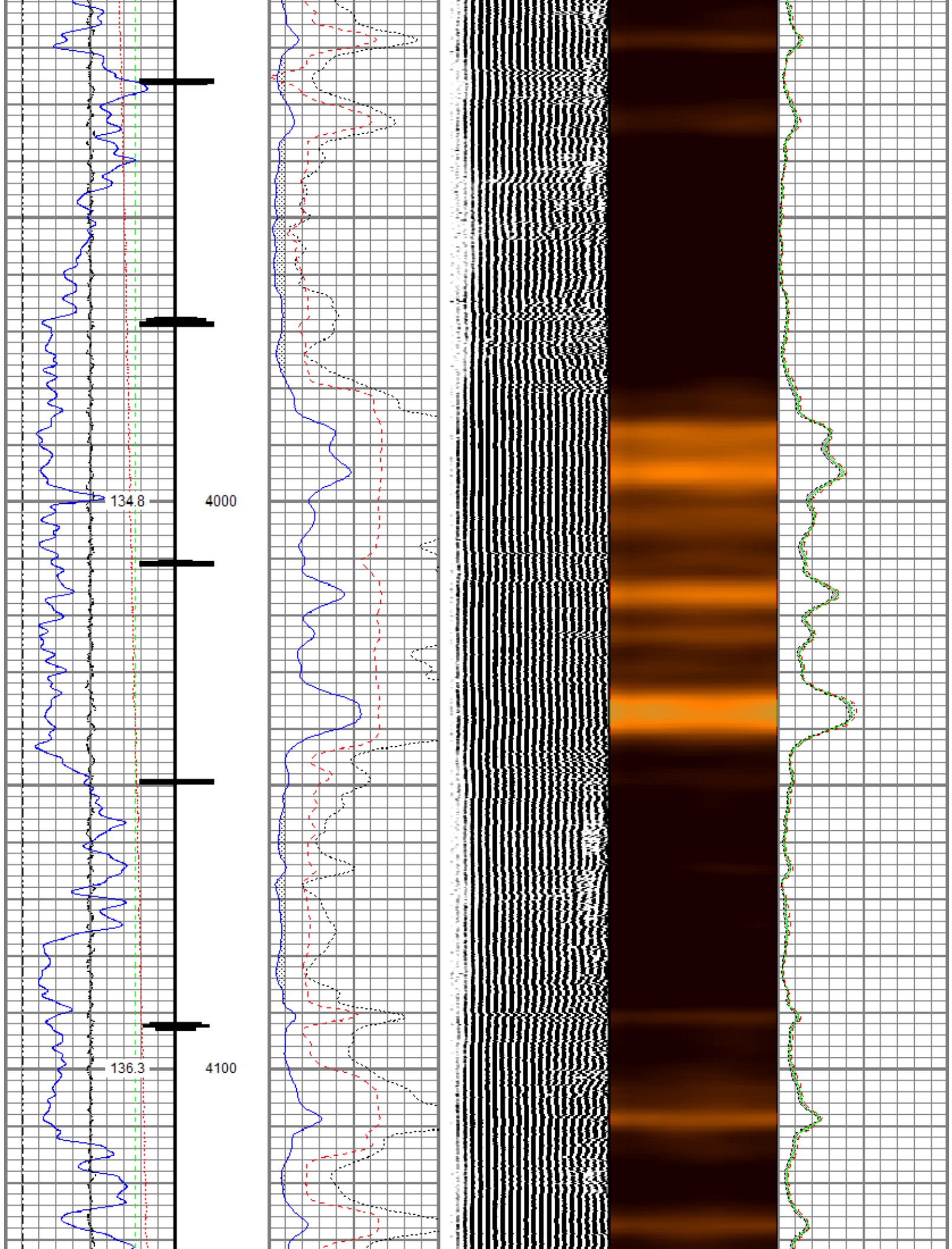




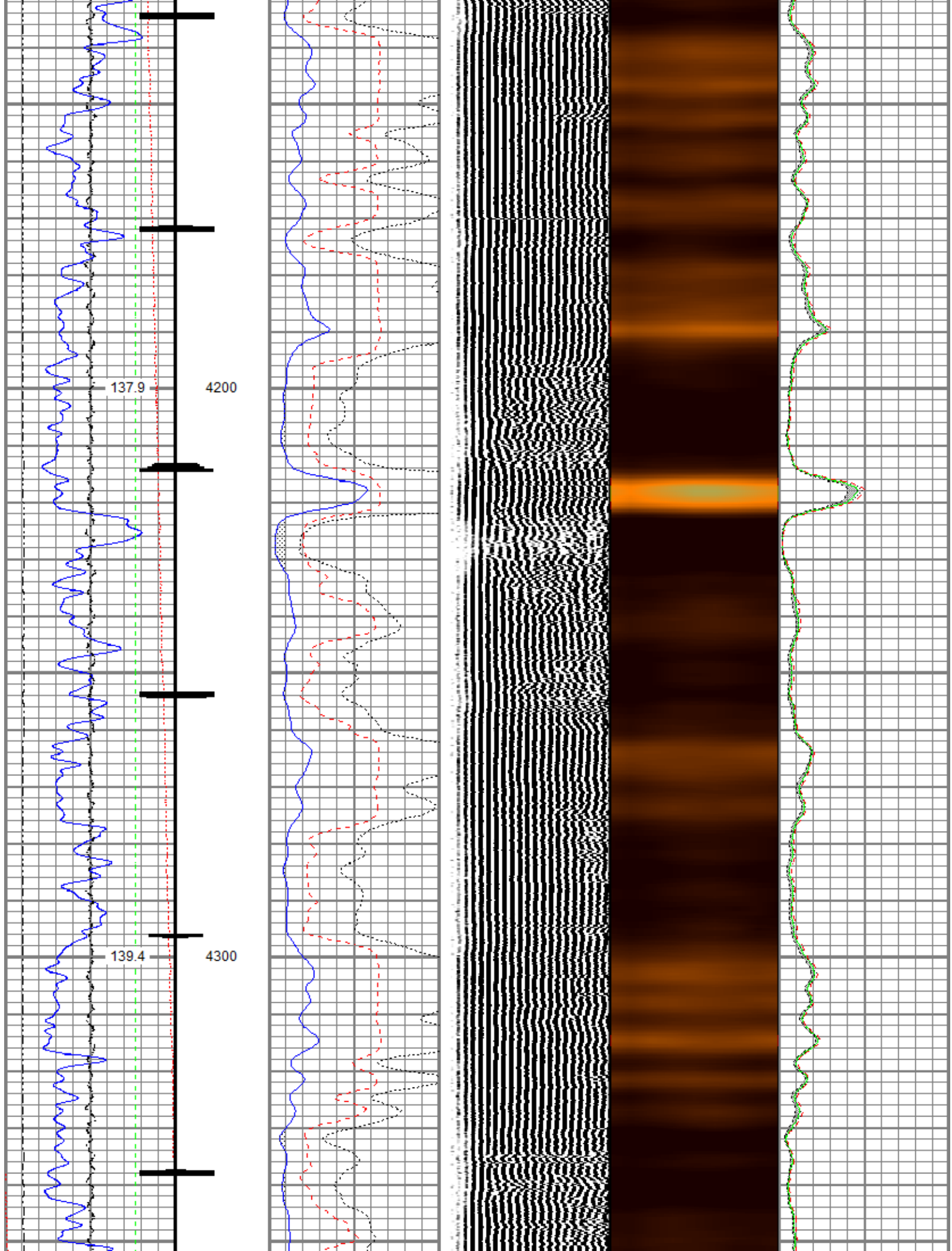


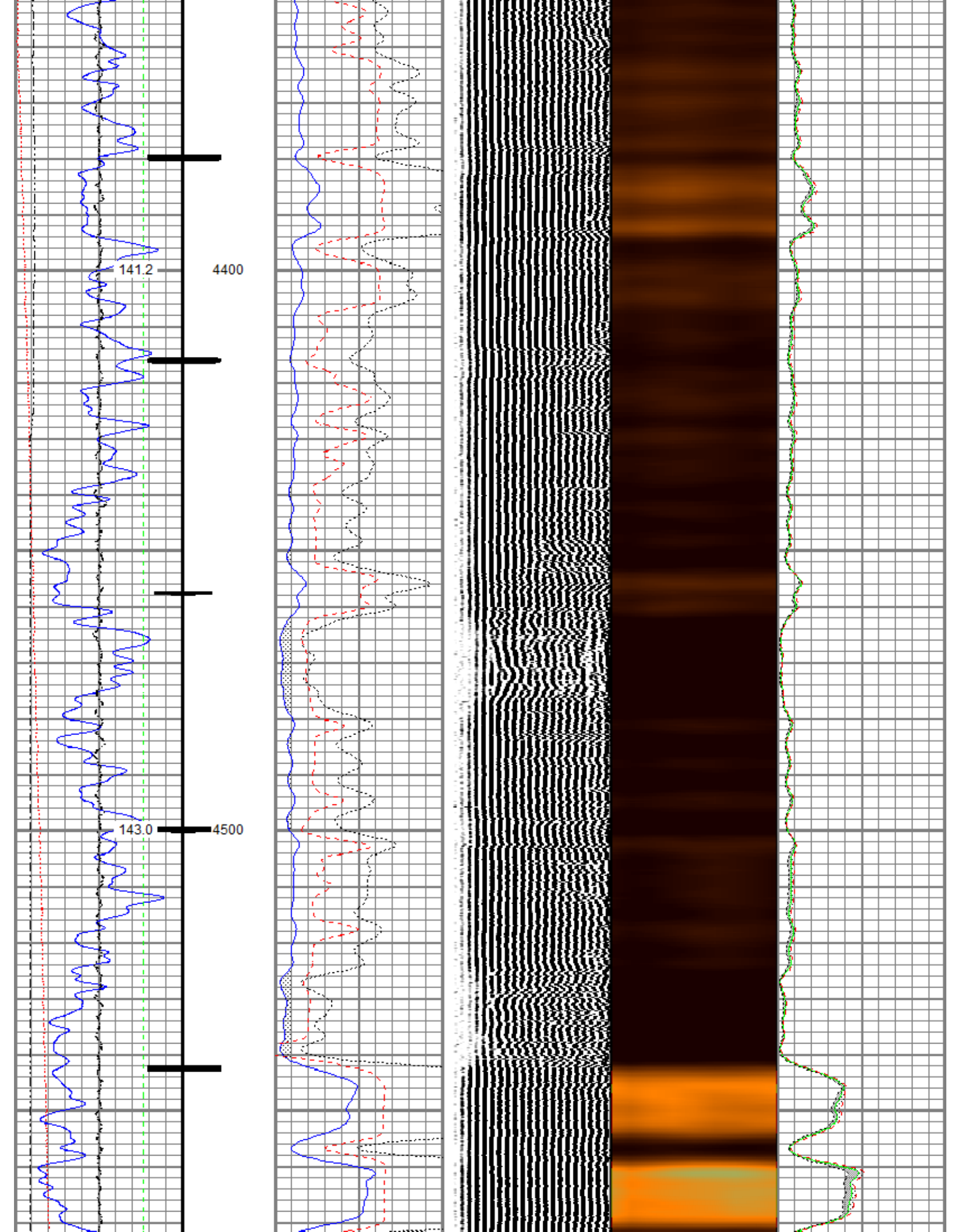


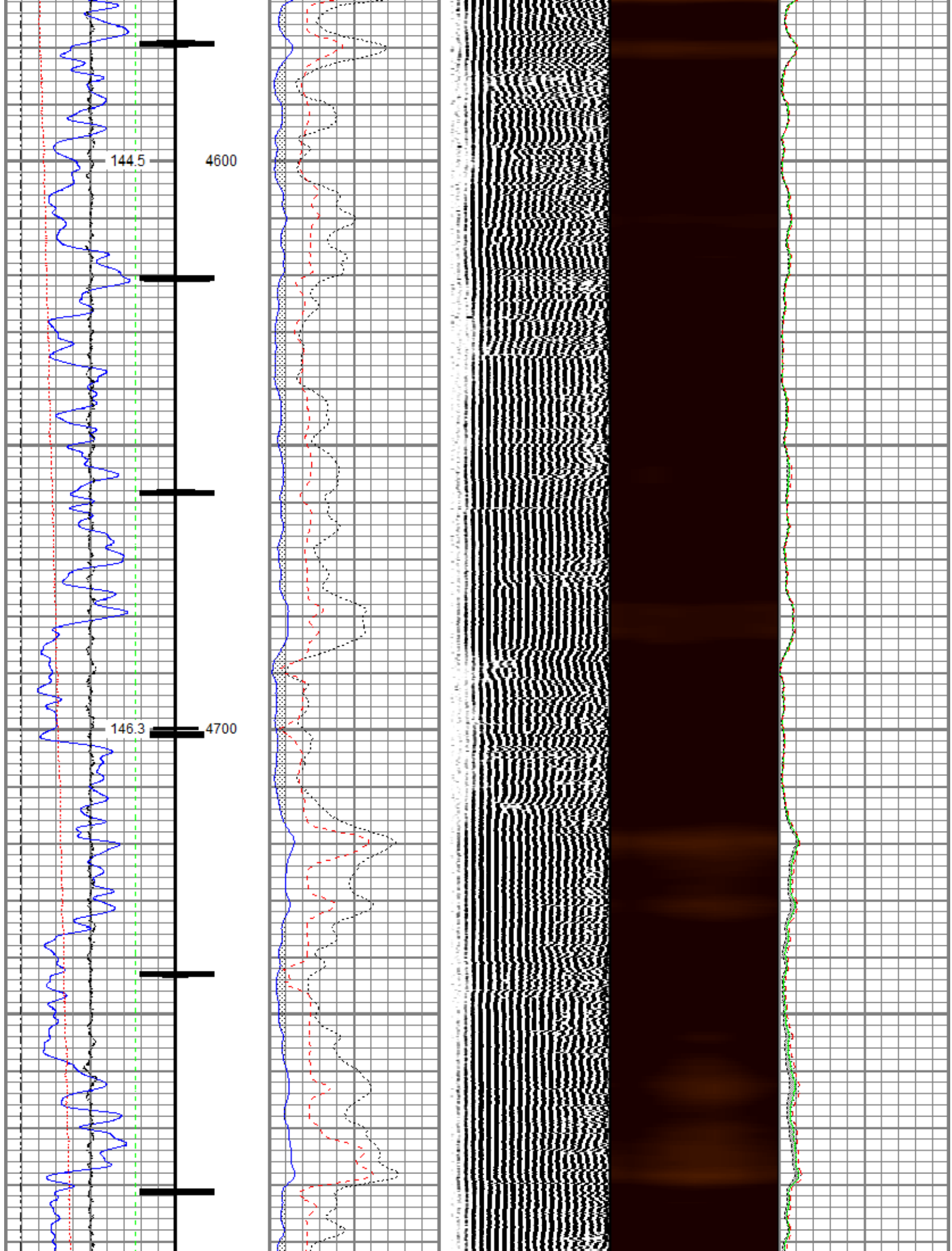




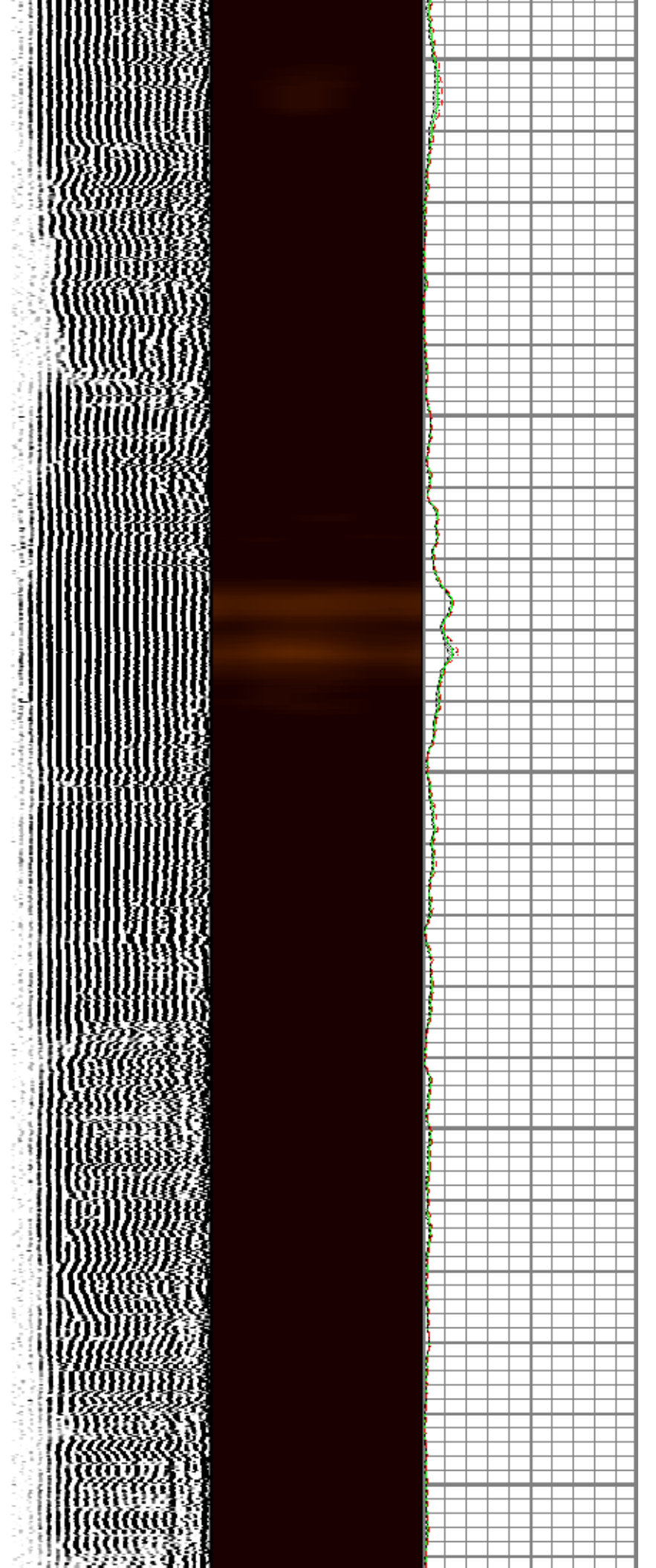
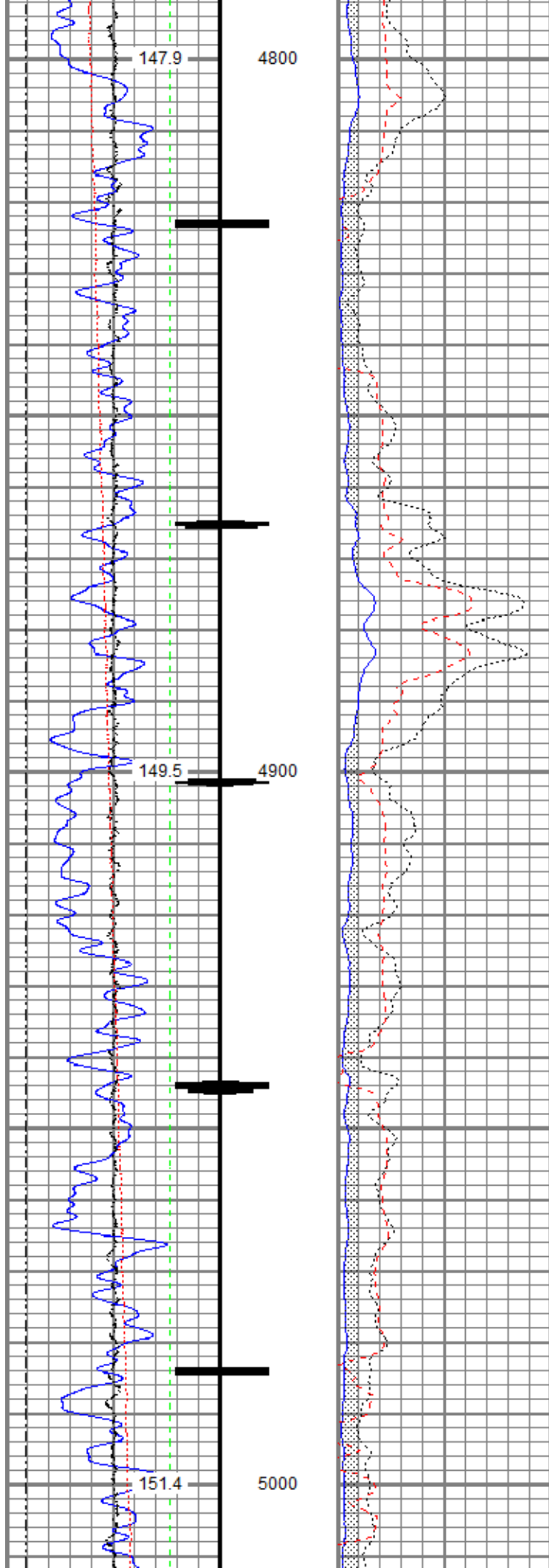




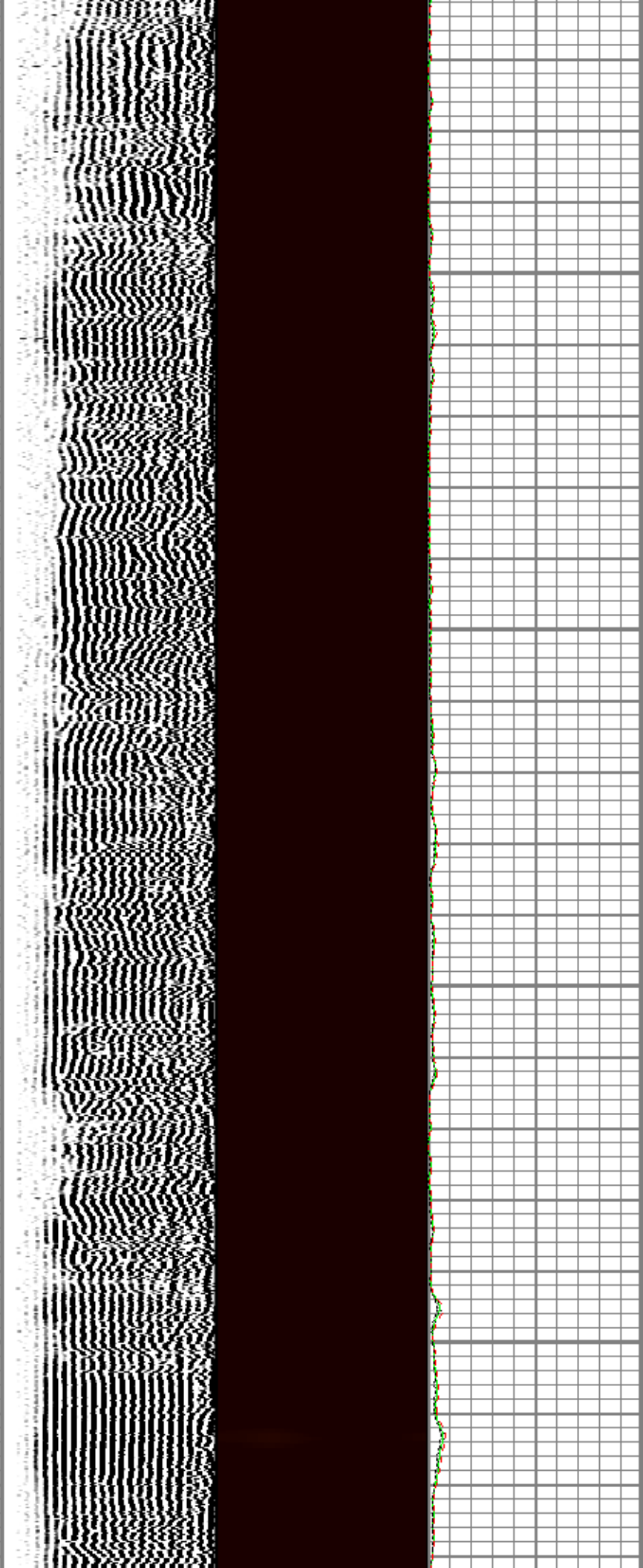
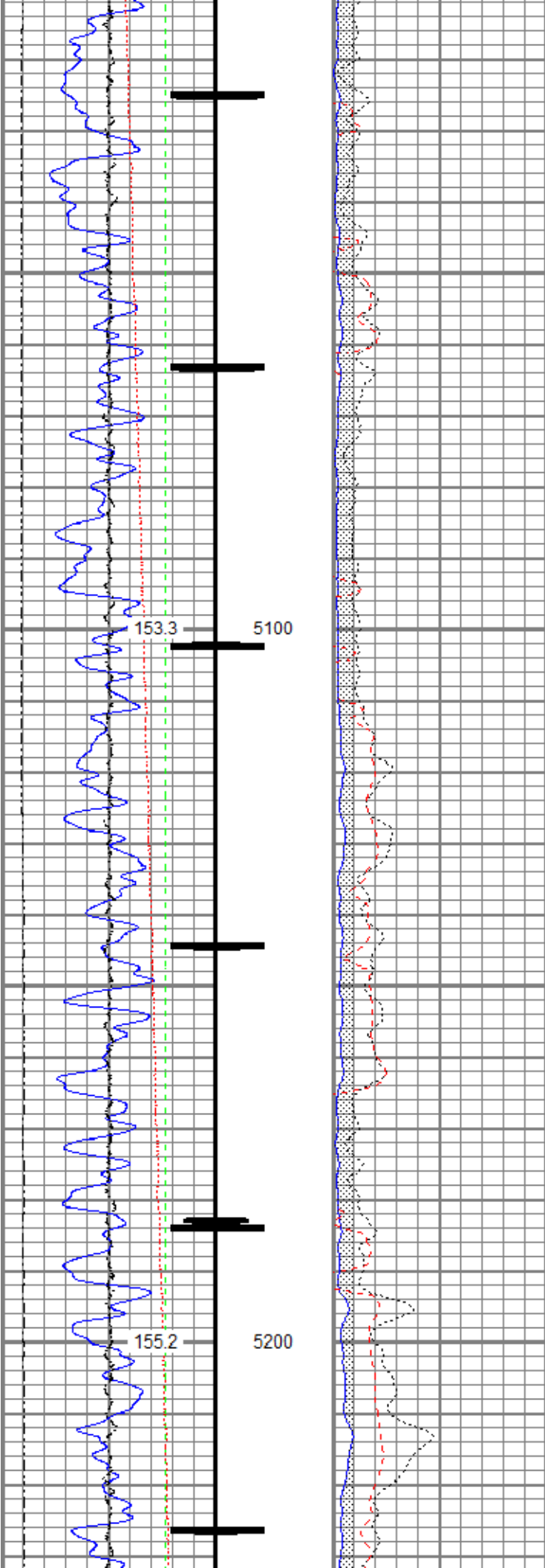


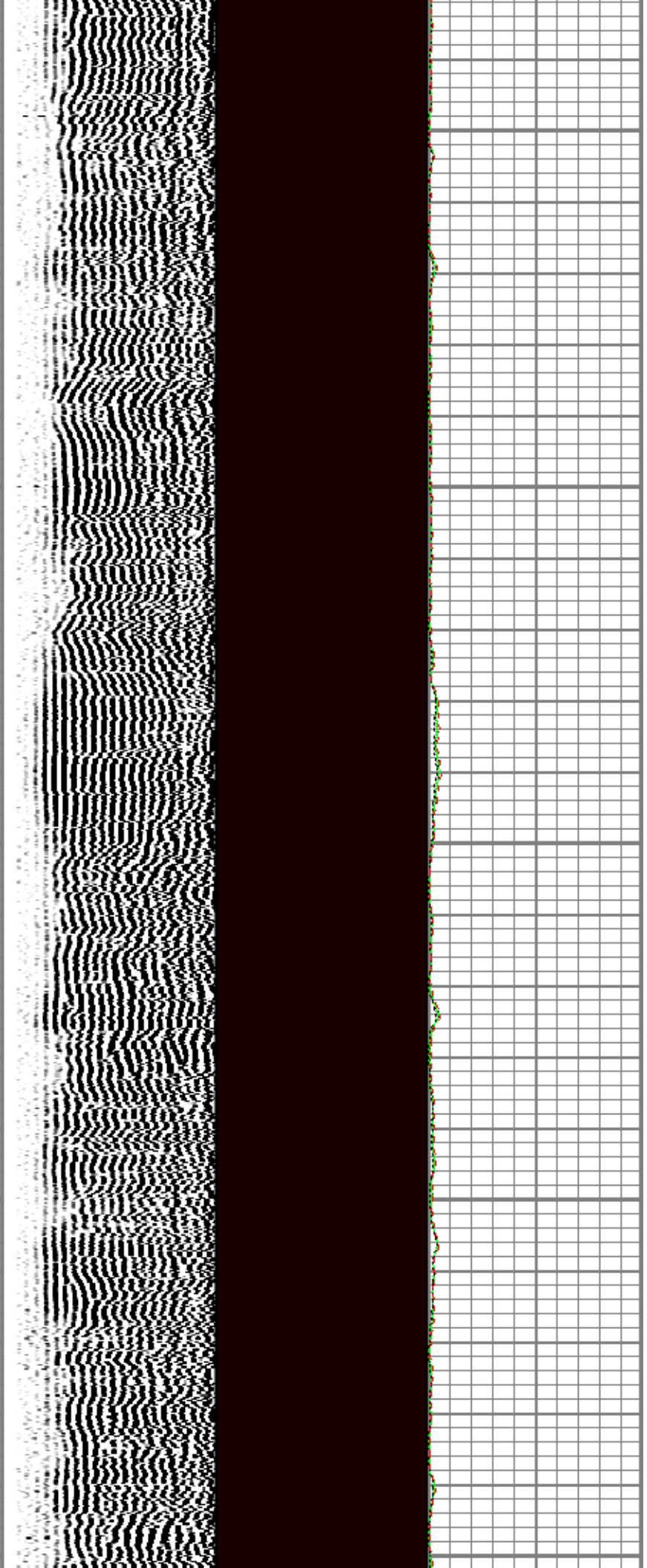
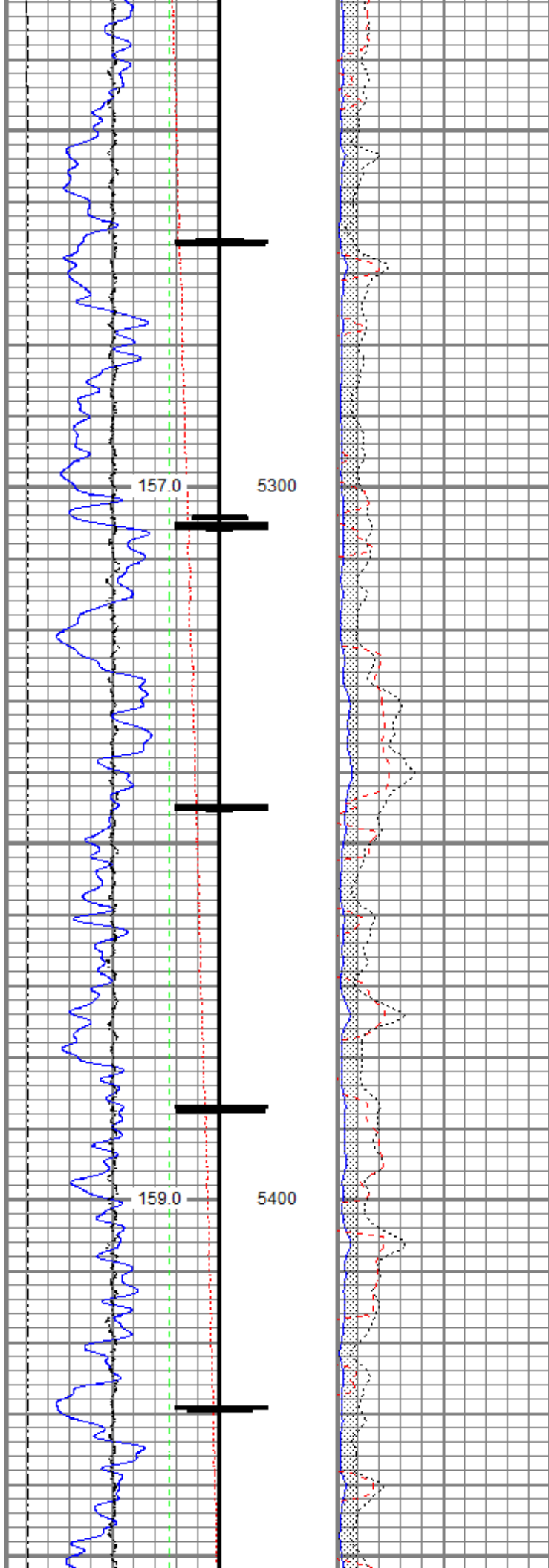


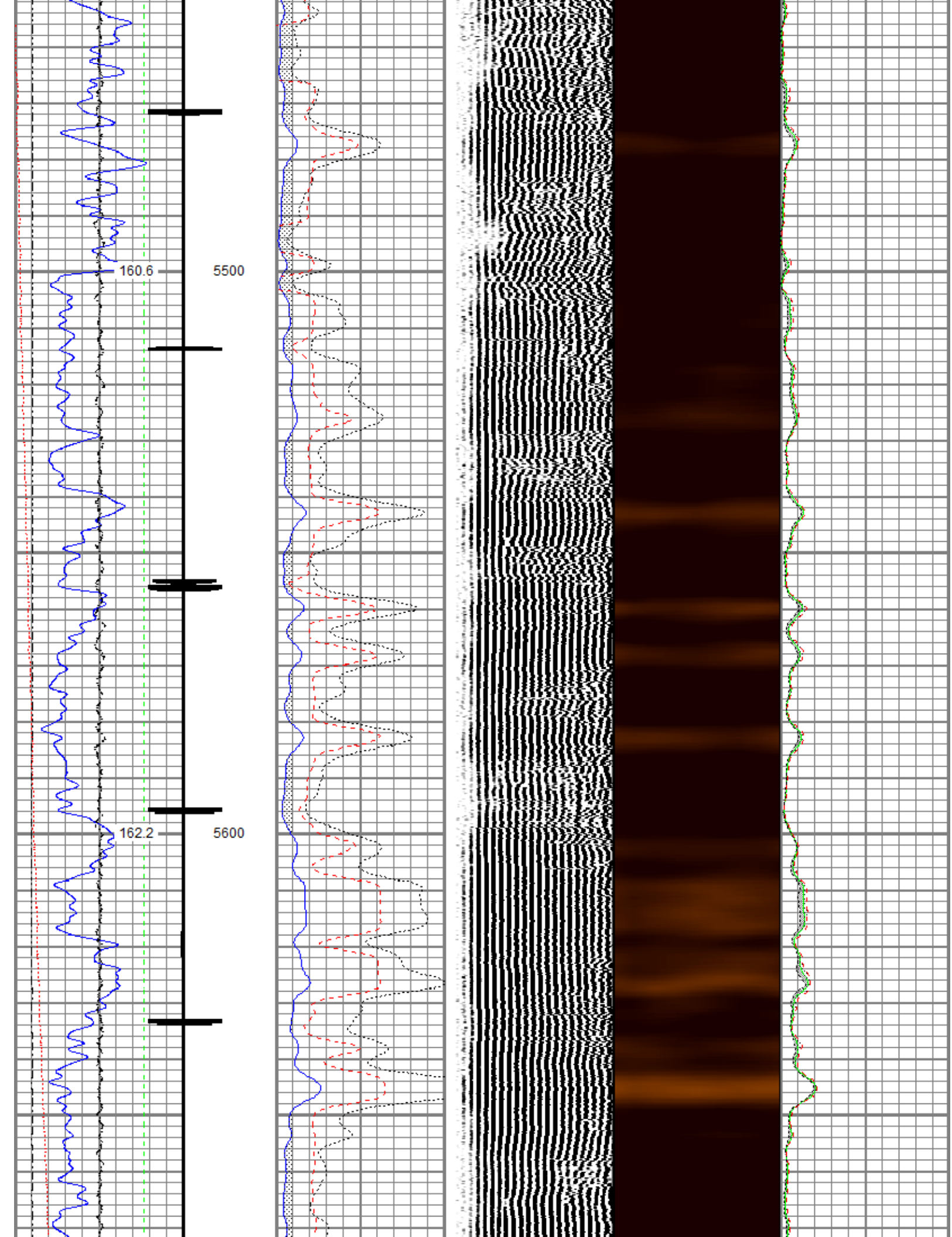




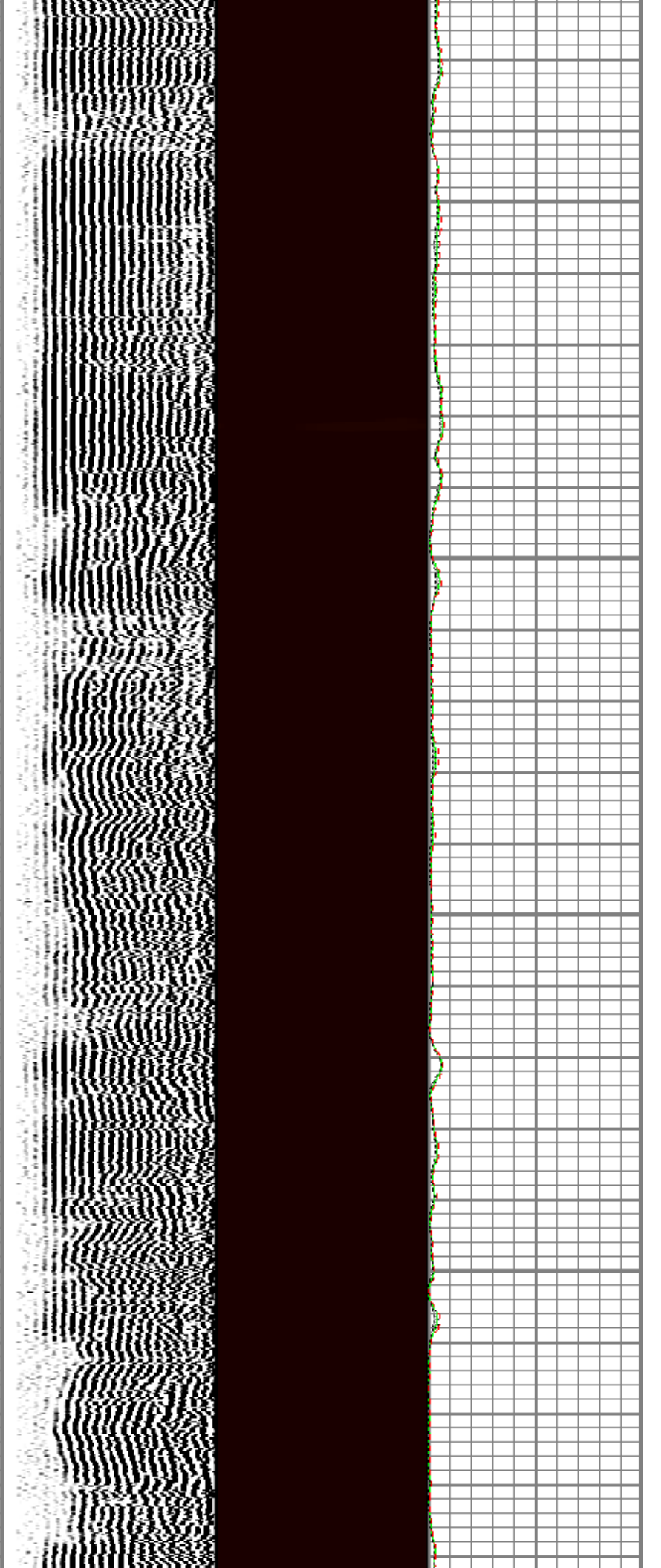
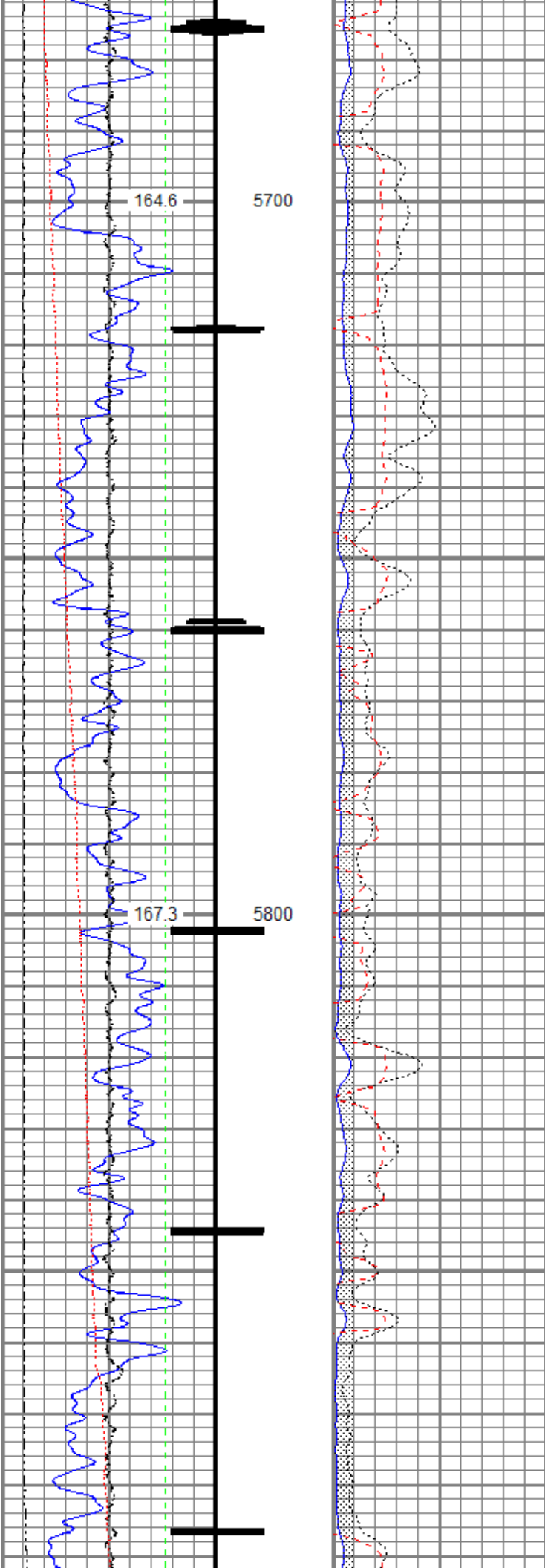




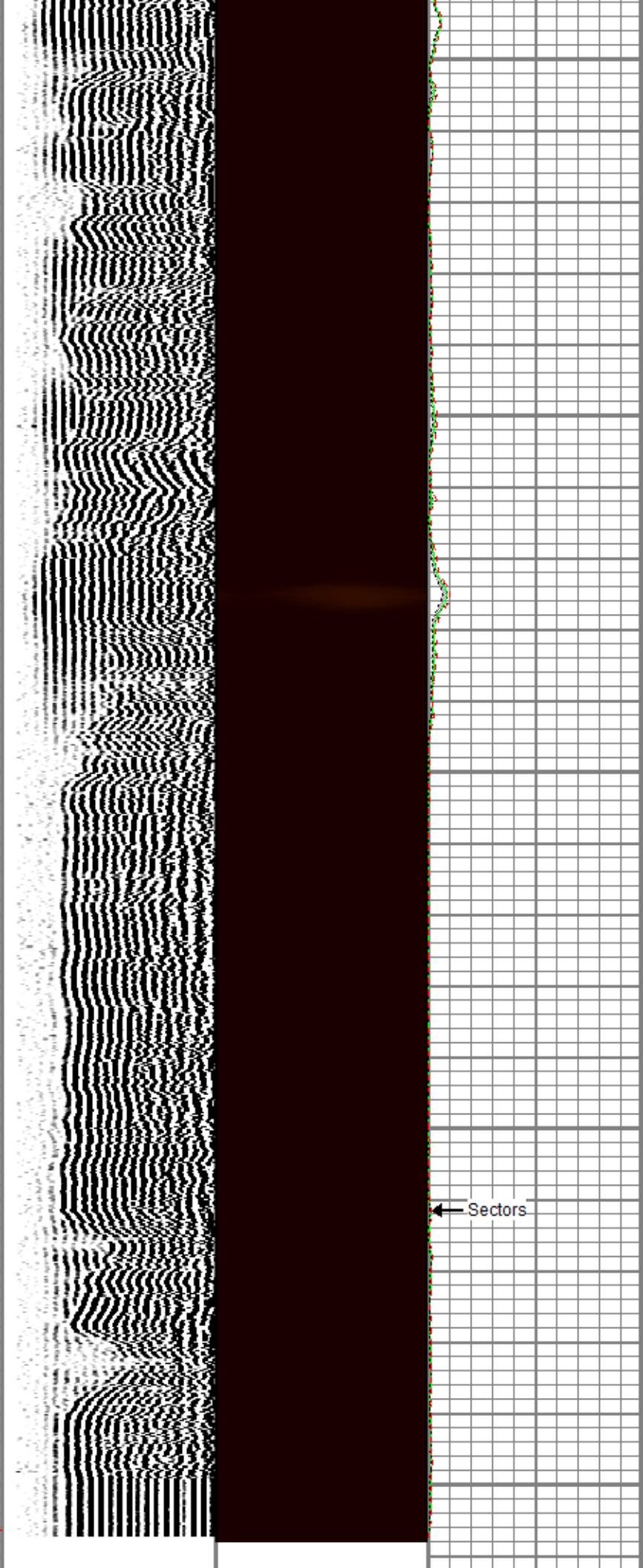
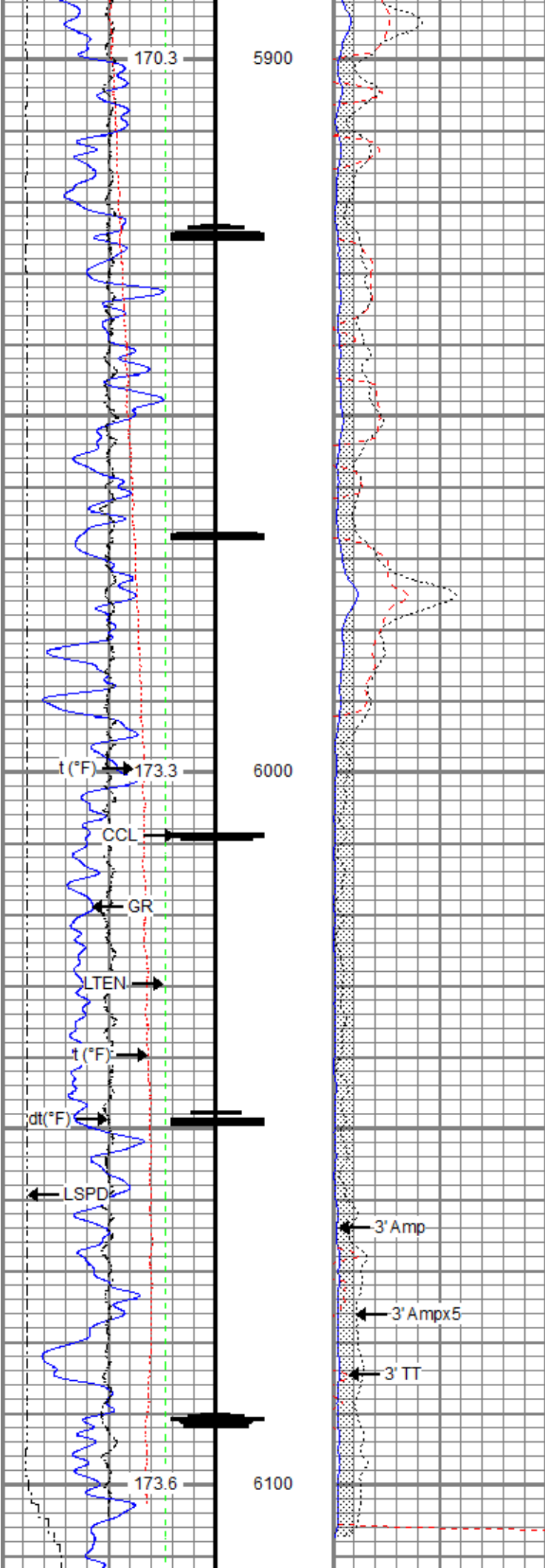


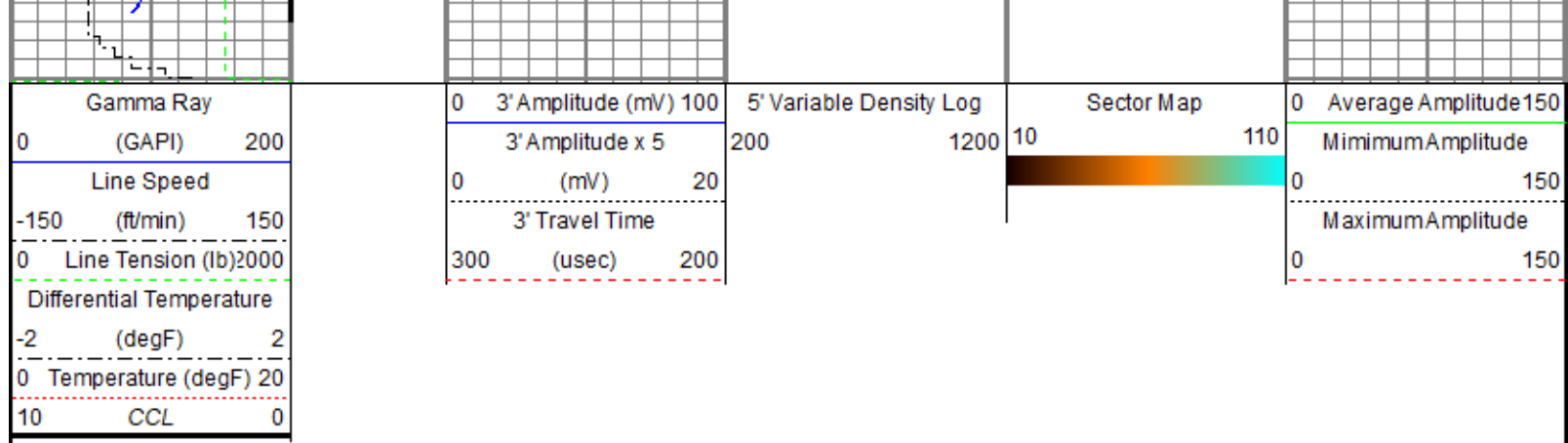








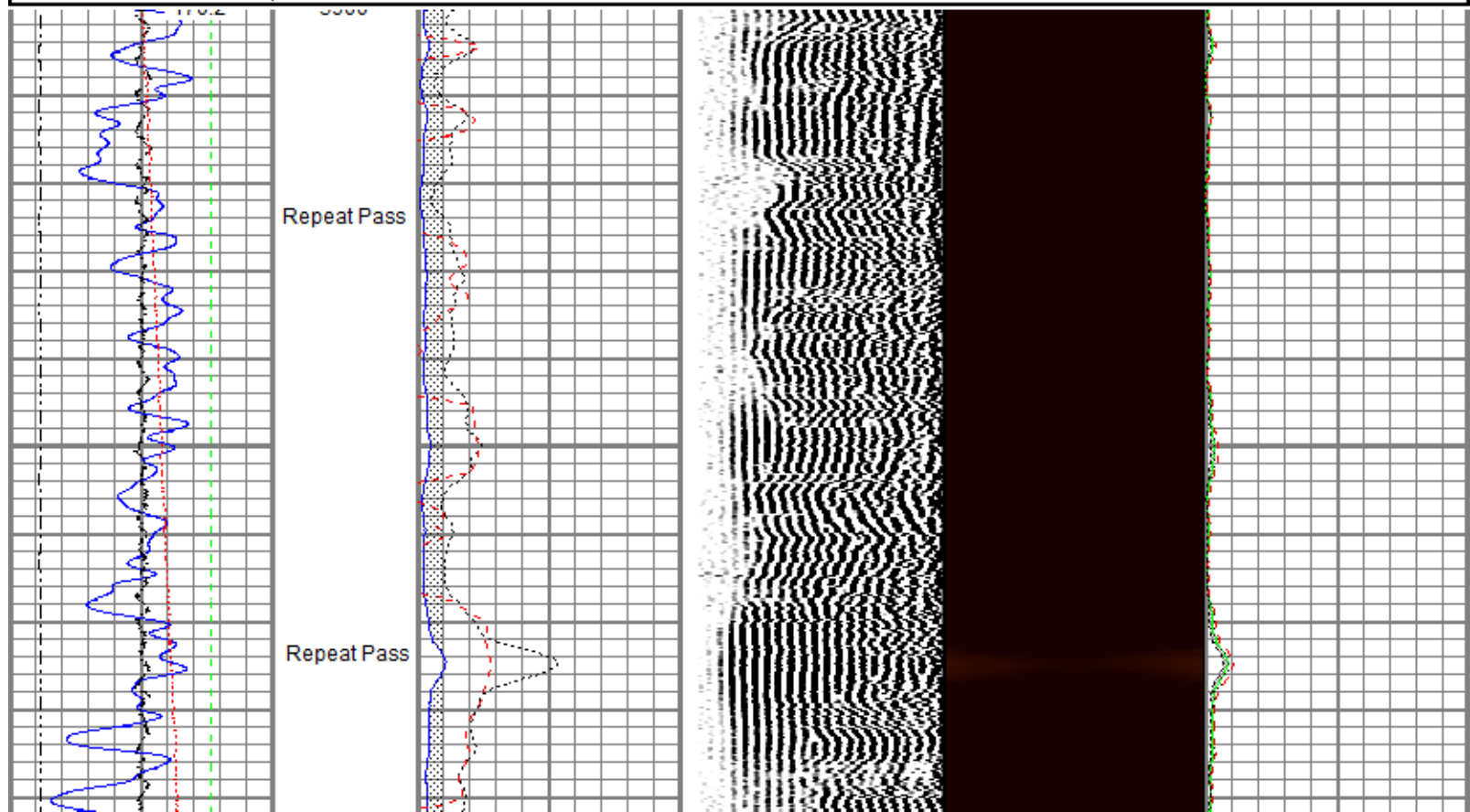
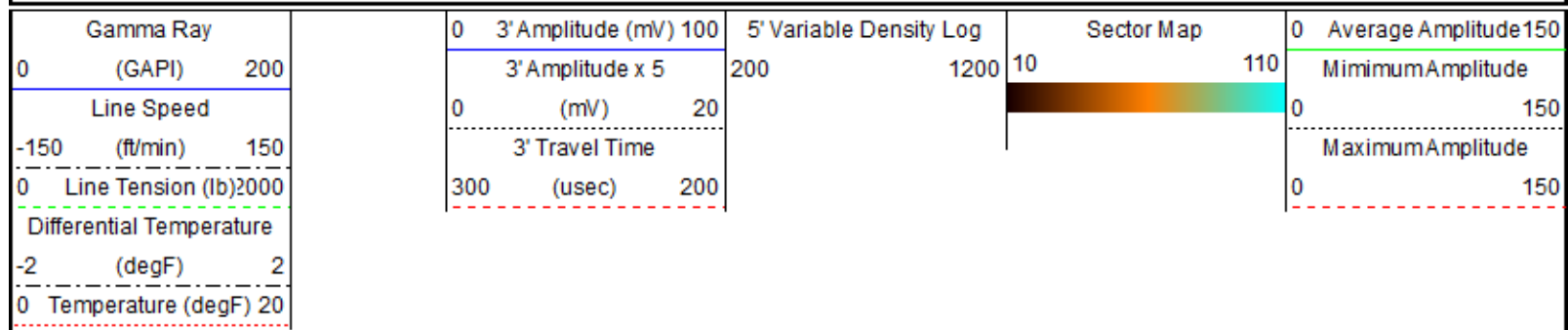


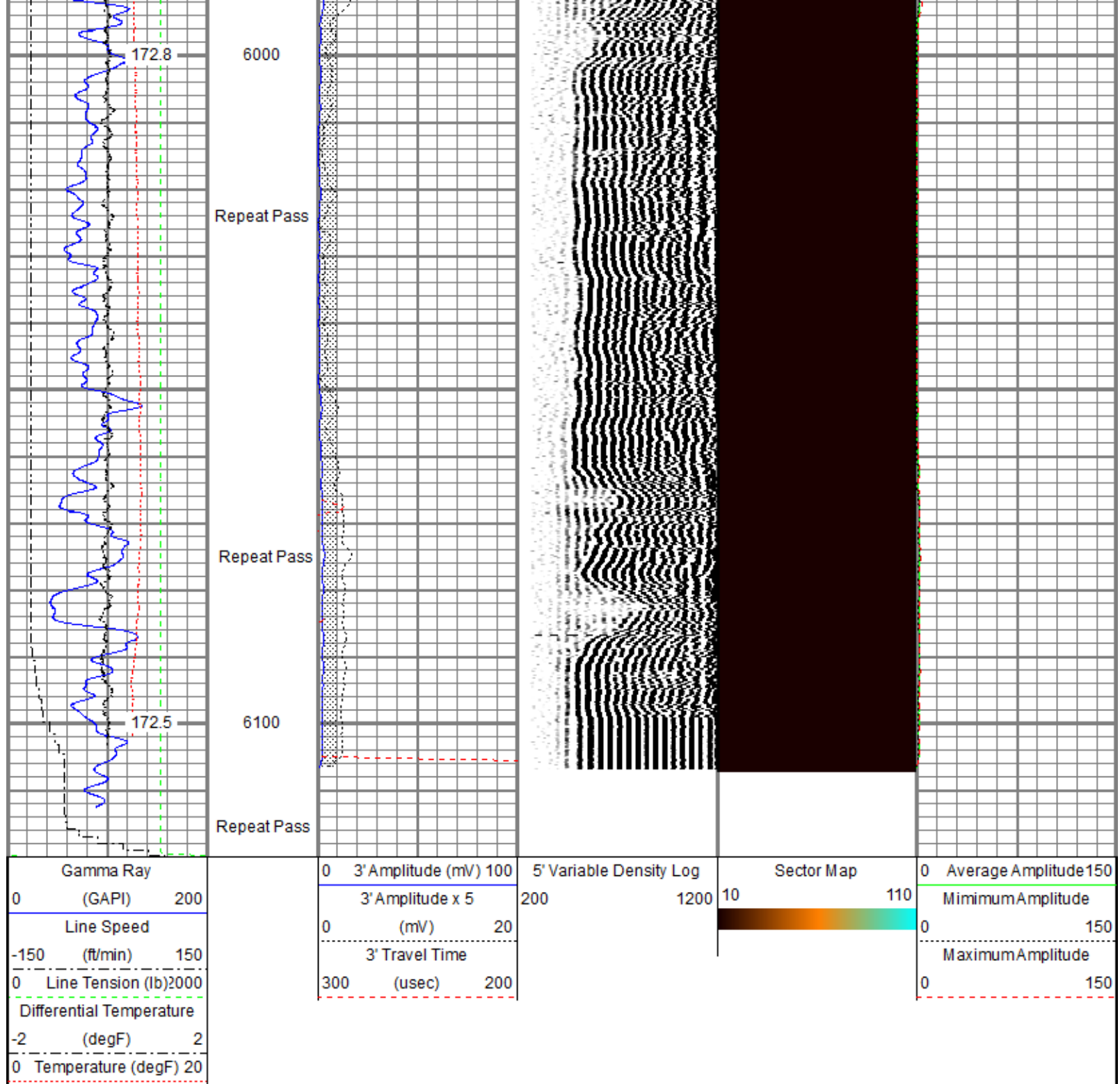


# Repeat Pass

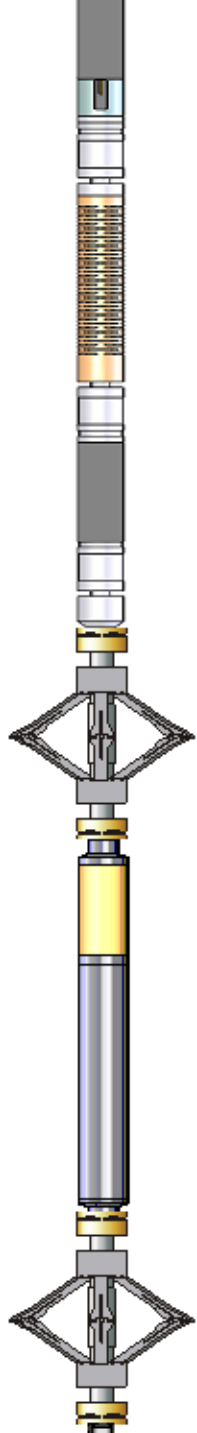
Recorded With 0 PSI Surface Induced Pressure

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 Dataset Pathname: repeat1.2  
 Presentation Format: ros\_rbt004\_tep  
 Dataset Creation: Fri Mar 15 08:42:35 2019  
 Charted by: Depth in Feet scaled 1:240





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							
WVFS8	14.10			Probe Radii-2750 RBT (FW1307-063) Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub	9.39	2.75	105.00	
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 (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_federal sg 11-22_rbl_03-14-19.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_federal sg 11-22_rbl_03-14-19\processed_tep_federal sg 11-22_rbl_03-14-19.db	
Dataset Pathname	main.1	
Dataset Creation	Fri Mar 15 08:35:06 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: FW1307-063

Tool Model: 2750 RBT

Calibration Casing Diameter: 4.500 in

Calibration Depth: 31.352 ft

## Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.001	0.859	0.800	81.196	93.717	0.710
CAL	-0.006	0.761				
5'	0.004	0.750	0.800	81.196	107.744	0.395
SUM						
S1	-0.003	0.973	0.000	100.000	102.426	0.302
S2	-0.000	0.956	0.000	100.000	104.571	0.009
S3	-0.001	0.858	0.000	100.000	116.381	0.100
S4	0.001	0.787	0.000	100.000	127.109	-0.070
S5	0.003	0.775	0.000	100.000	129.437	-0.324
S6	-0.000	0.794	0.000	100.000	125.912	0.024
S7	0.000	0.843	0.000	100.000	118.714	-0.029
S8	-0.001	0.927	0.000	100.000	107.735	0.102

## Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	-0.006	0.761	1.000	0.000

## Air Zero Calibration, performed Thu Mar 14 15:16:37 2019:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	-0.002		0.000		0.001	
5'	0.009		0.000		-0.002	
SUM						
S1	-0.003		0.000		-0.000	
S2	-0.002		0.000		0.001	
S3	-0.001		0.000		-0.000	
S4	-0.002		0.000		-0.000	
S5	-0.002		0.000		0.001	
S6	-0.002		0.000		0.000	
S7	-0.002		0.000		0.000	
S8	-0.003		0.000		0.001	

## Temperature Calibration Report

Serial Number: FW1307-063  
 Tool Model: 2750 RBT  
 Performed: Sun Nov 12 13:45:43 2017

	Reference	Reading
Low Reference:	100.00 degF	113.84 degF
High Reference:	350.00 degF	420.89 degF

Gain: 0.81  
 Offset: 7.31  
 Delta Spacing: 1



Company	TEP Rocky Mountain LLC
Well	Federal SG 11-22
Field	Grand Valley
County	Garfield
State	Colorado