



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company		Noble Energy Inc.		Company		Noble Energy Inc.	
Well		Roth A31-730		Well		Roth A31-730	
Field		Wattenberg		Field		Wattenberg	
County		Weld		County		Weld	
State		Colorado		State		Colorado	
Location:		API # : 05-123-51331		Other Services		CNL	
SEC 30 TWP 6N RGE 64W		Permanent Datum		Ground Level		Elevation	
		Log Measured From		Kelly Bushing		30 FT	
		Drilling Measured From		Kelly Bushing		4698'	
Date		19-NOV-2021		K.B. 4728'		D.F. ---	
Run Number		One		G.L. 4698'			
Depth Driller		17204 FT					
Depth Logger		7380 FT					
Bottom Logged Interval		7361 FT					
Top Log Interval		Surface					
Open Hole Size		8.5"					
Type Fluid		Water					
Density / Viscosity		8.34 lb/gal					
Max. Recorded Temp.		241 °F					
Estimated Cement Top		See Log					
Time Well Ready		ROA					
Time Logger on Bottom		12:10					
Equipment Number		HD-0324					
Location		Plateville, CO					
Recorded By		C. Sinerros					
Witnessed By		A. Dockins					
Run Number		Borehole Record		Tubing Record			
Bit		From		To		Size	
						Weight	
						From	
						To	
Casing Record		Size (in)		Wgt (lbs/Ft)		Grade	
Surface Casing		9 5/8		36		J 55	
Intermediate #1		5 1/2		17		P110	
Intermediate #2						30 FT	
Liner						1944.3 FT	
						17193 FT	

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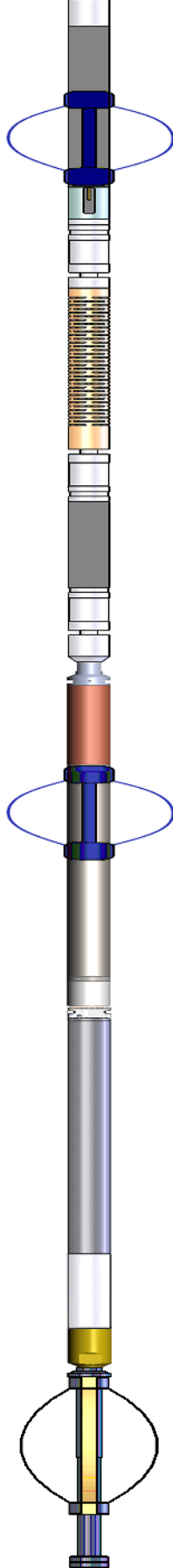
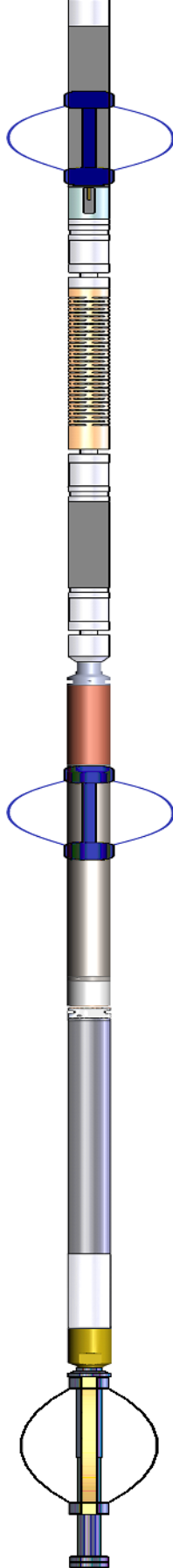
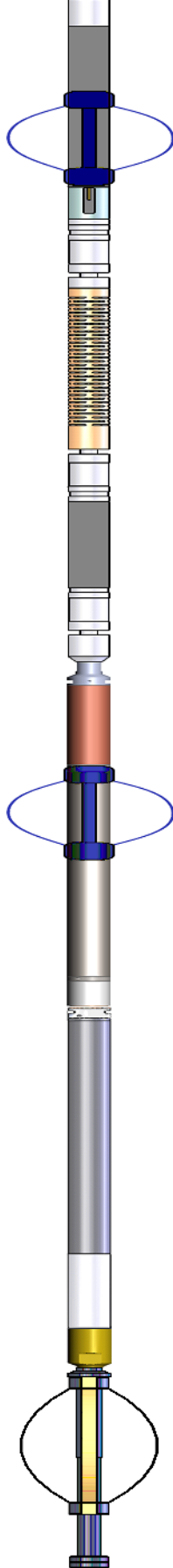
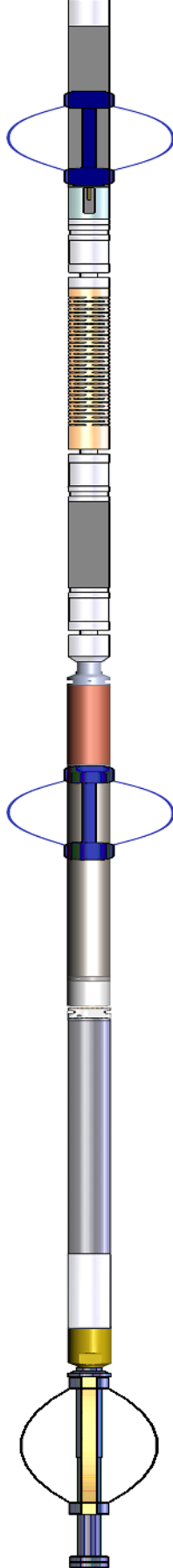
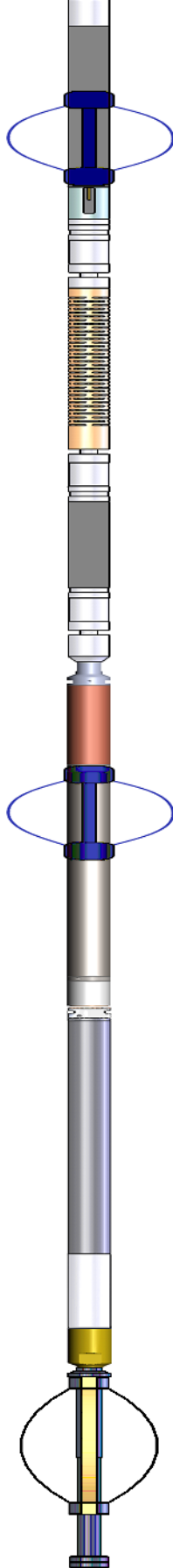
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, 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 Casing Tally reported Marker Joint at 6210.7 FT to 6230.6 FT
Adjusted -22 FT to correlate with Marker Joint
Log ran with 2500 PSI Surface Induced Pressure
Logging tools were clean and free of any debris upon completion of operations

Thank you for choosing Reliance Oilfield Services, LLC!!

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

TEMP	19.20		SO BS CENT-2750-4500 Slip Over 2-3/4" I.D. for 4-1/2" O.D. Casing Bow Spring Centralizer	1.33	3.25	10.00
WVFS8	16.96		Probe Radii-2750 RBT (FW1305-096) Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub	9.39	2.75	105.00
WVFS7	16.96					
WVFS6	16.96					
WVFS5	16.96					
WVFS4	16.96					
WVFS3	16.96					
WVFS2	16.96					
WVFS1	16.96					
WVFCAL	16.96					
WVF3FT	16.96					
WVF5FT	15.96					
CCL\$2	11.83					
CCL\$1	11.83					
GR	10.50		SO BS CENT-2750-4500 Slip Over 2-3/4" I.D. for 4-1/2" O.D. Casing Bow Spring Centralizer	1.33	3.25	10.00
			Probe GR-CCL-2750 6PB (FW1810-001) Probe 2-3/4" rev.1 Digital Scintillation Gamma Ray/CCL Combined with 6 Pin Bottom for CNT	4.80	2.75	55.00
CNLSC	4.53		Probe CN-2750 BL (FW1308-020_A1483) Probe 2-3/4" Compensated Neutron with Bottom Load	5.03	2.75	60.00
CNSSC	4.12					
LOCTIM	0.00		Probe CENT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.88	2.75	20.00
UTCTIM	0.00					
Dataset: noble_roth a31-730_rbl_cnl_11-19-21.db: field/well/run1/main.1 Total length: 23.14 ft Total weight: 263.60 lb O.D.: 3.25 in						

Calibration Report

Database File noble_roth a31-730_rbl_cnl_11-19-21.db
 Dataset Pathname main.1

Compensated Neutron Calibration Report						
		Serial Number:		FW1308-020_A1483		
		Tool Model:		2750 BL		
CALIBRATION		Mon Oct 19 14:19:51 2020				
Detector		Readings		Target		Normalization
Short Space		3241.60	cps	0.00	cps	1.0000
Long Space		452.04	cps	0.00	cps	1.0000
Ratio		Measured		Reference		
		7.1710		6.7797		
CNRAT Gain		0.9454				

Gamma Ray Calibration Report		
Serial Number:	FW1810-001	
Tool Model:	2750 6PB	
Performed:	Mon Oct 19 14:19:51 2020	
Calibrator Value:	637.0	GAPI
Background Reading:	100.1	cps
Calibrator Reading:	1264.5	cps
Sensitivity:	0.5471	GAPI/cps

Segmented Cement Bond Log Calibration Report		
Serial Number:	FW1305-096	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	5.500	in
Calibration Depth:	248.626	ft

Master Calibration, performed (Derived):						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.000	0.505	0.800	71.921	140.809	0.794
CAL	0.676	0.678				
5'	0.000	0.477	0.800	71.921	149.077	0.797
SUM						
S1	0.000	0.494	0.000	100.000	202.262	-0.007
S2	0.000	0.494	0.000	100.000	202.284	-0.007
S3	0.000	0.491	0.000	100.000	203.833	-0.009
S4	0.000	0.513	0.000	100.000	194.792	-0.011
S5	0.000	0.538	0.000	100.000	185.990	-0.009
S6	0.000	0.559	0.000	100.000	178.945	-0.008
S7	0.000	0.529	0.000	100.000	189.079	-0.008
S8	0.000	0.504	0.000	100.000	198.523	-0.002

Air Zero Calibration, performed Thu Nov 18 08:59:52 2021:		
	Raw (v)	Calibrated (v)
	Zero	Zero
		Offset

	Zero	Zero	Offset
3'	0.000	0.000	0.000
5'	0.000	0.000	0.000
SUM			
S1	0.000	0.000	0.000
S2	0.000	0.000	0.000
S3	0.000	0.000	0.000
S4	0.000	0.000	0.000
S5	0.000	0.000	0.000
S6	0.000	0.000	0.000
S7	0.000	0.000	0.000
S8	0.000	0.000	0.000

Temperature Calibration Report

Serial Number: FW1305-096
 Tool Model: 2750 RBT
 Performed: Mon Oct 19 14:19:51 2020

	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	

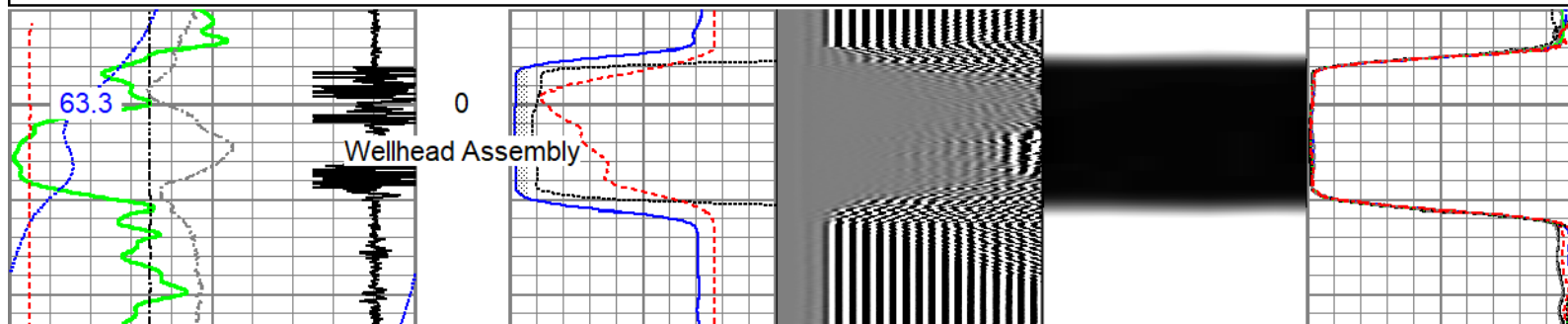


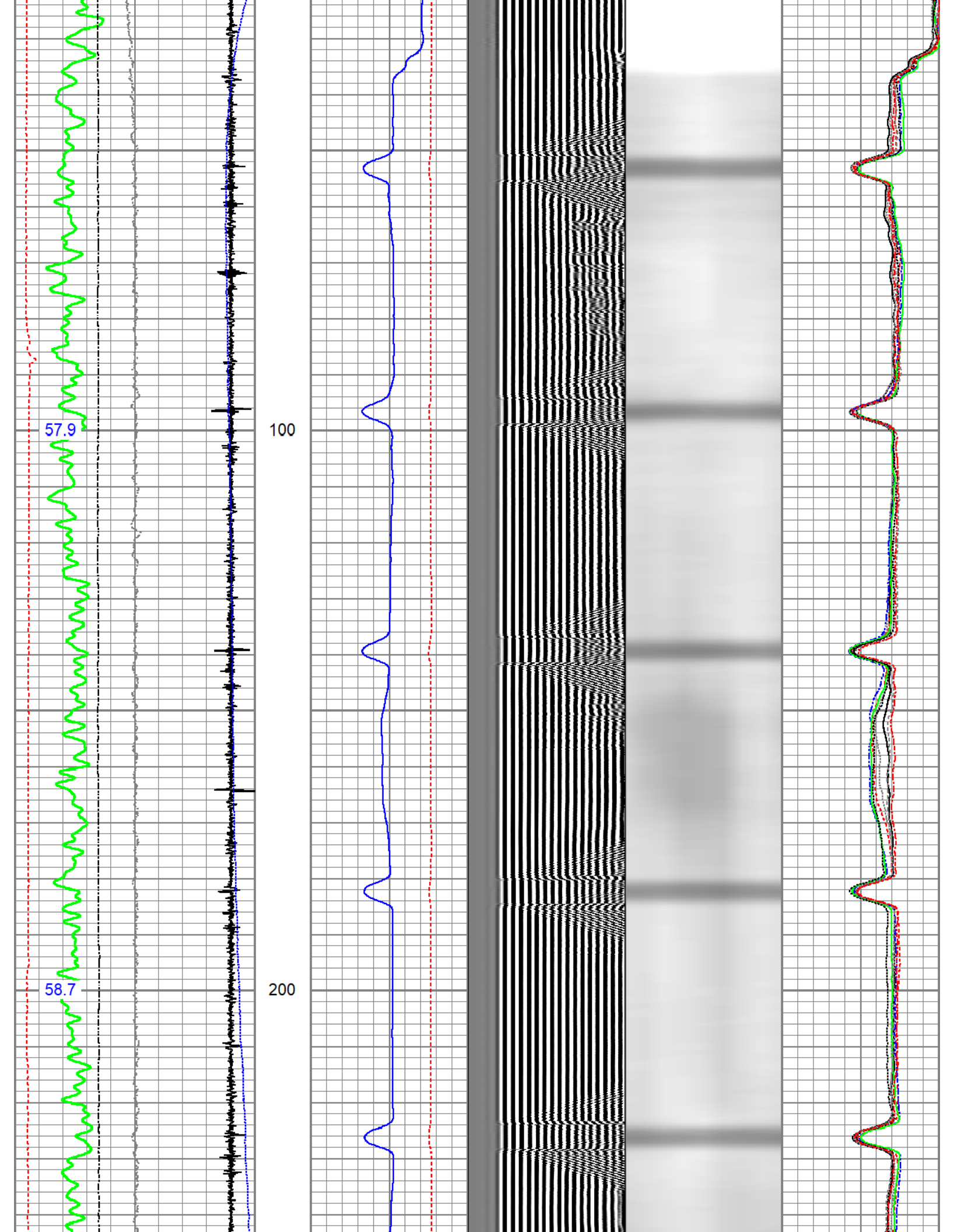
Main Pass

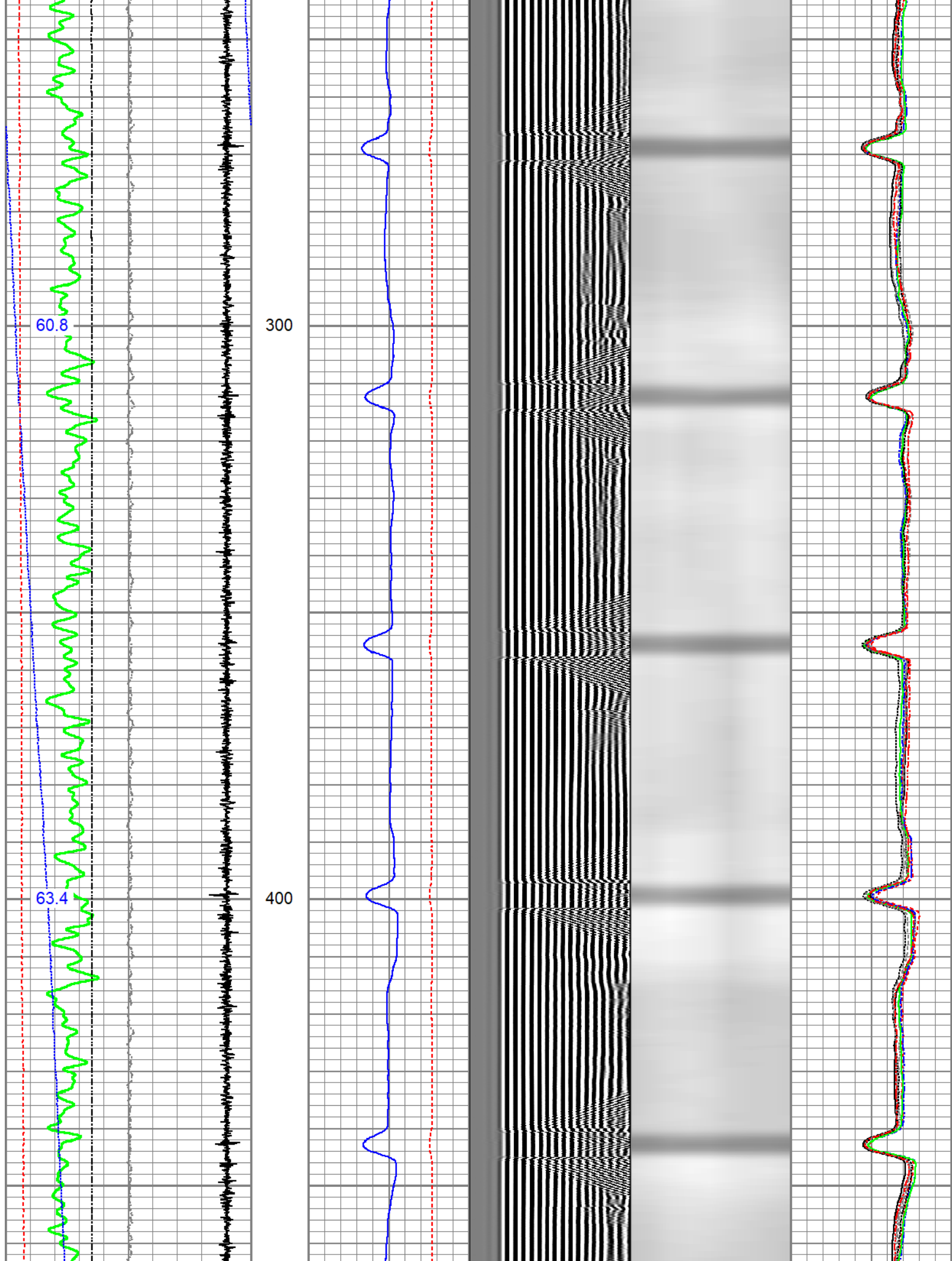
Recorded With 2500 Surface Induced Pressure

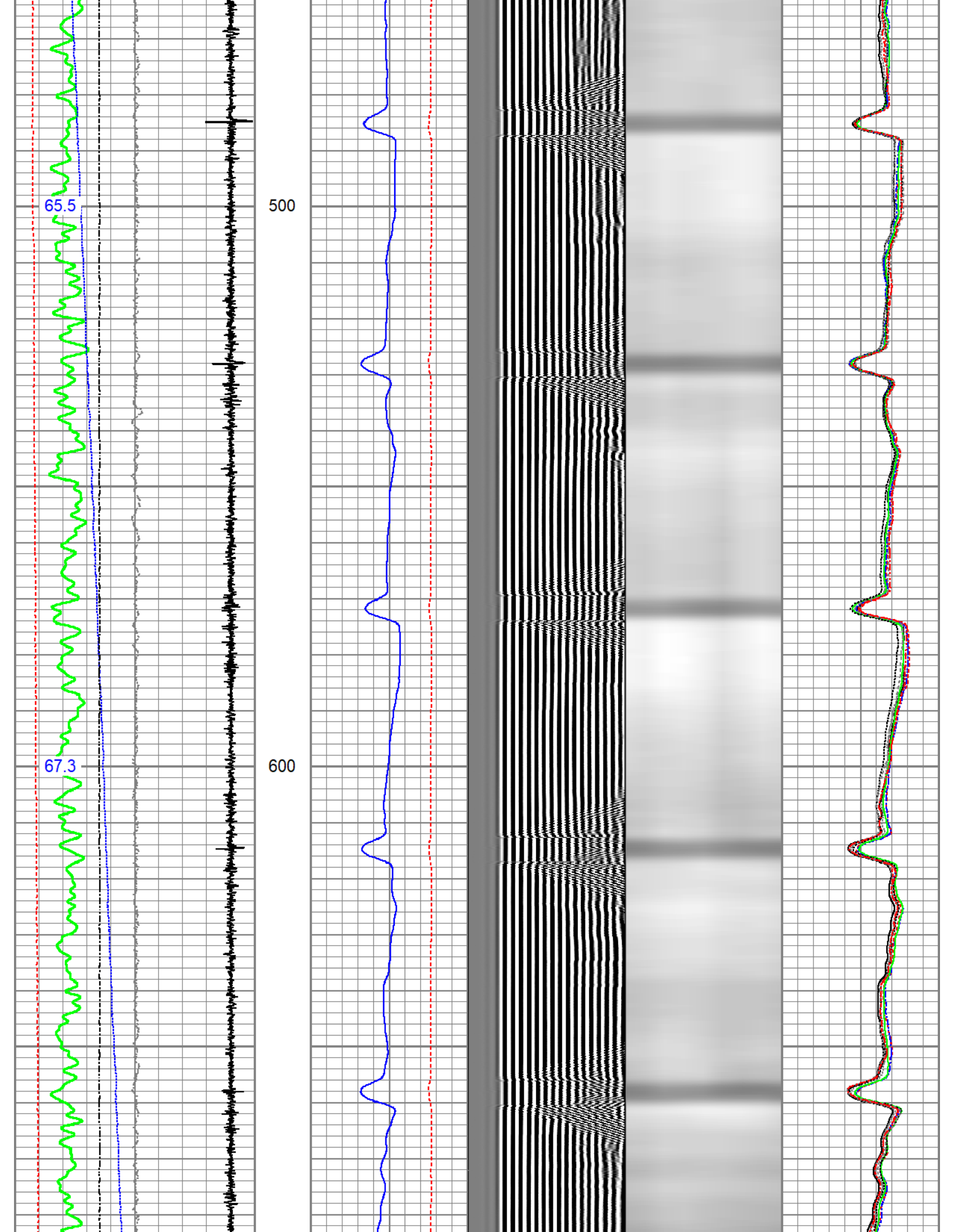
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 Dataset Creation: Fri Nov 19 15:03:42 2021
 Charted by: Depth in Feet scaled 1:240

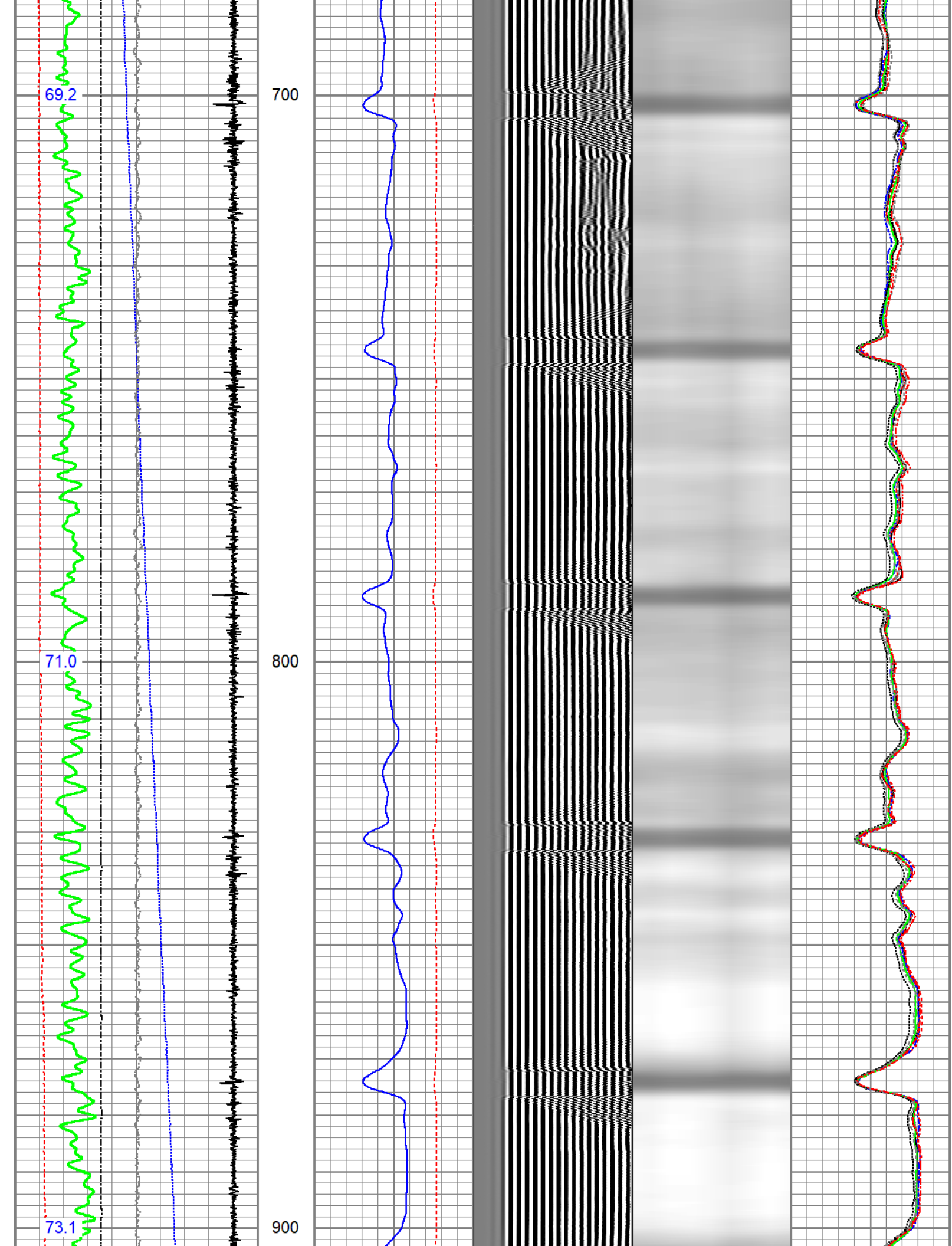
0	Gamma Ray (GAPI)	120	3' Amplitude	5' Variable Density	Sector Map	0	AMP S1	100
9	Casing Collar Locator	-1	0 (mV) 100	200 (usec) 1200		0	AMP S2	100
0	Temperature (degF)	20	3' Amplitude x 5			0	AMP S3	100
-150	Line Speed (ft/min)	150	0 (mV) 20			0	AMP S4	100
0	Line Tension (lb)	2000	3' Travel Time			0	AMP S5	100
	Differential Temperature		650 (usec) 150			0	AMP S6	100
-2	(degF)	2				0	AMP S7	100
Temperature						0	AMP S8	100
(degF)								

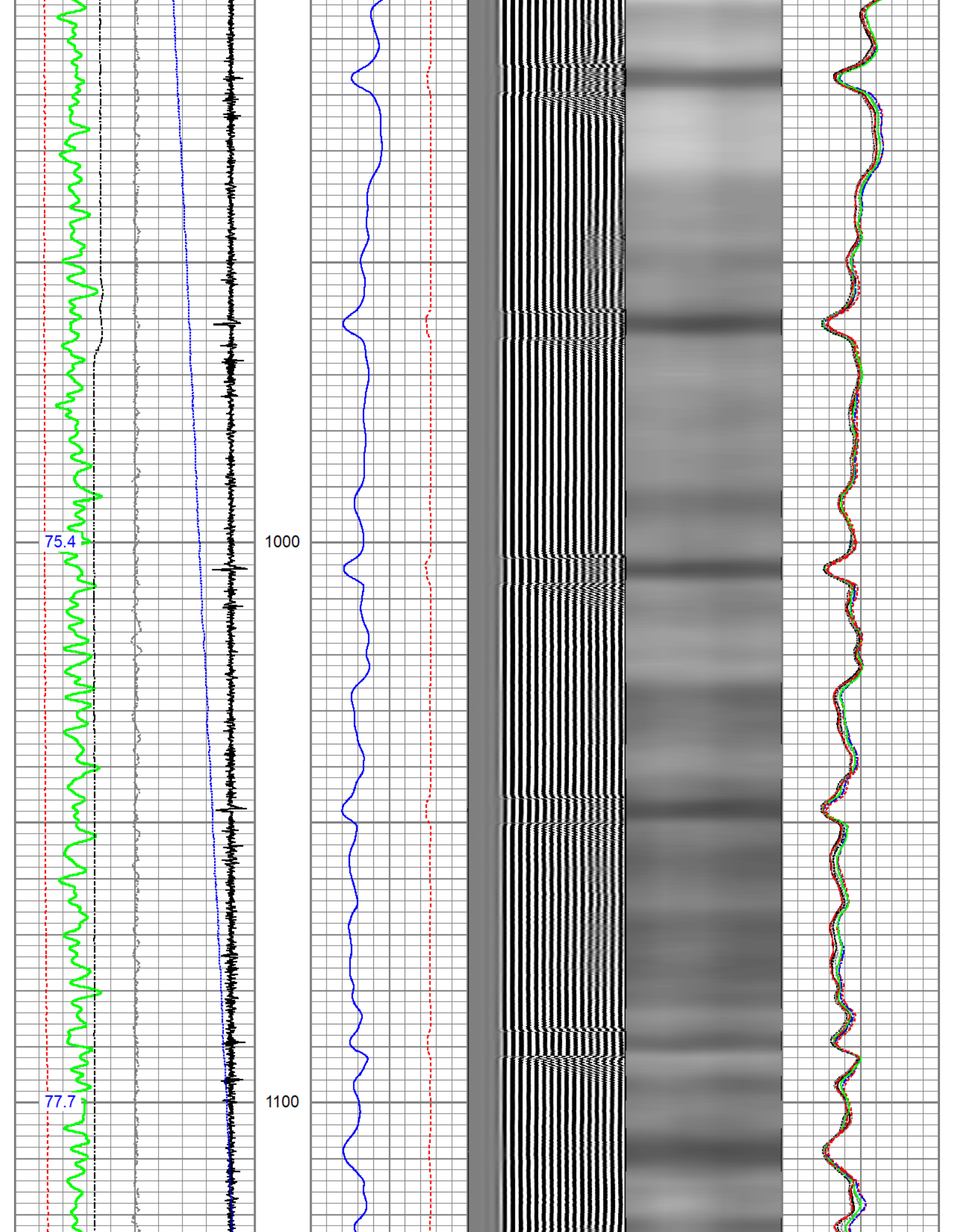


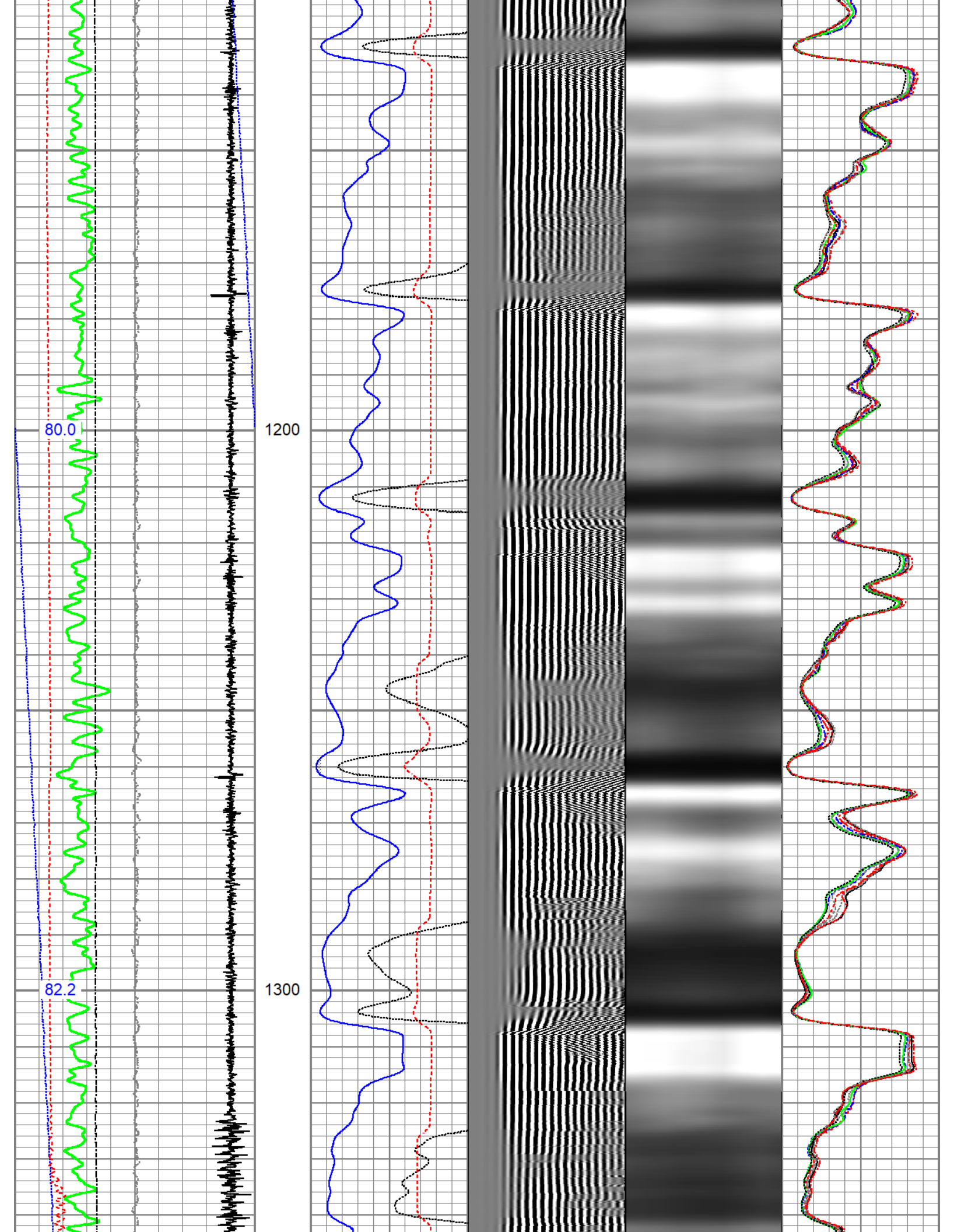


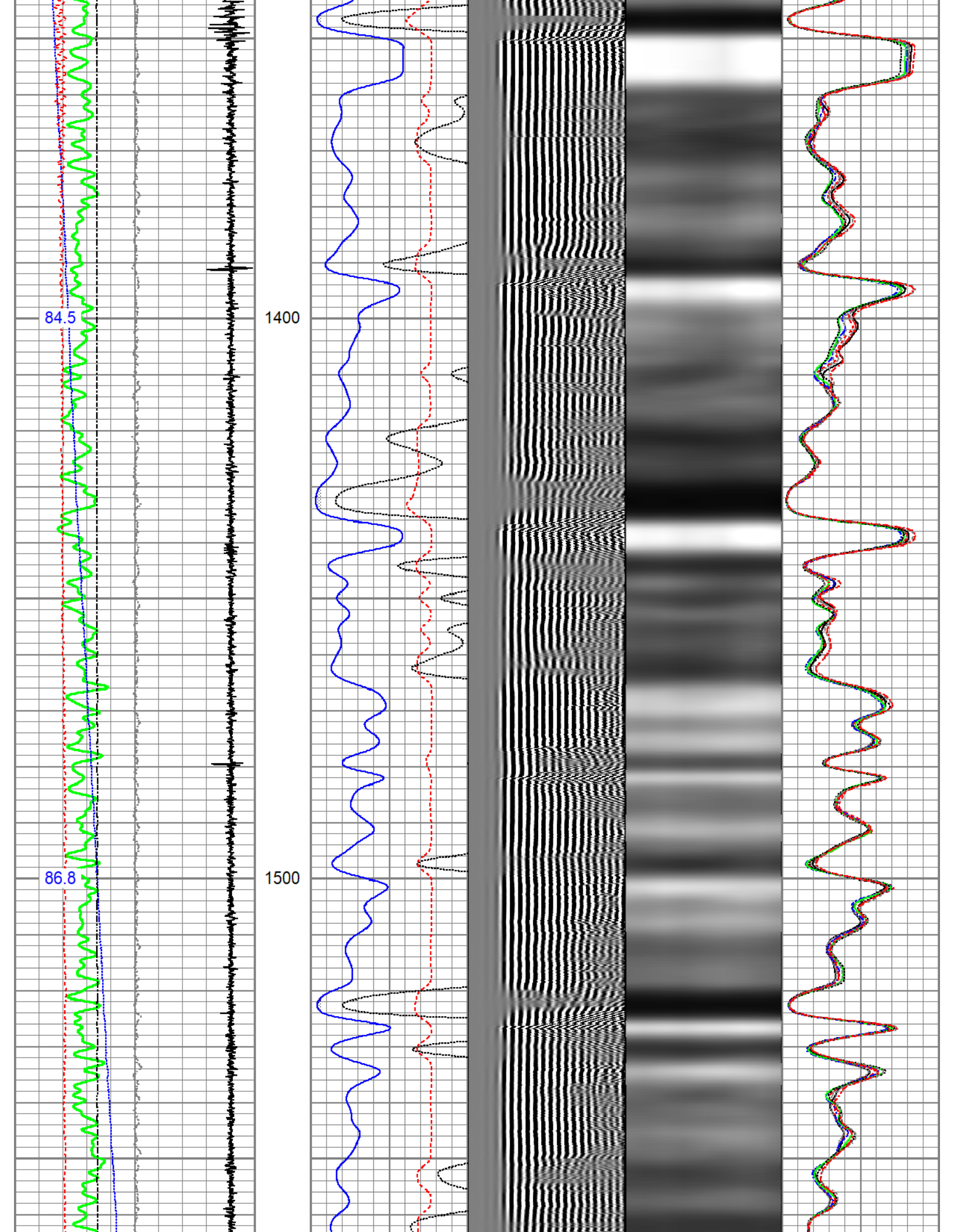


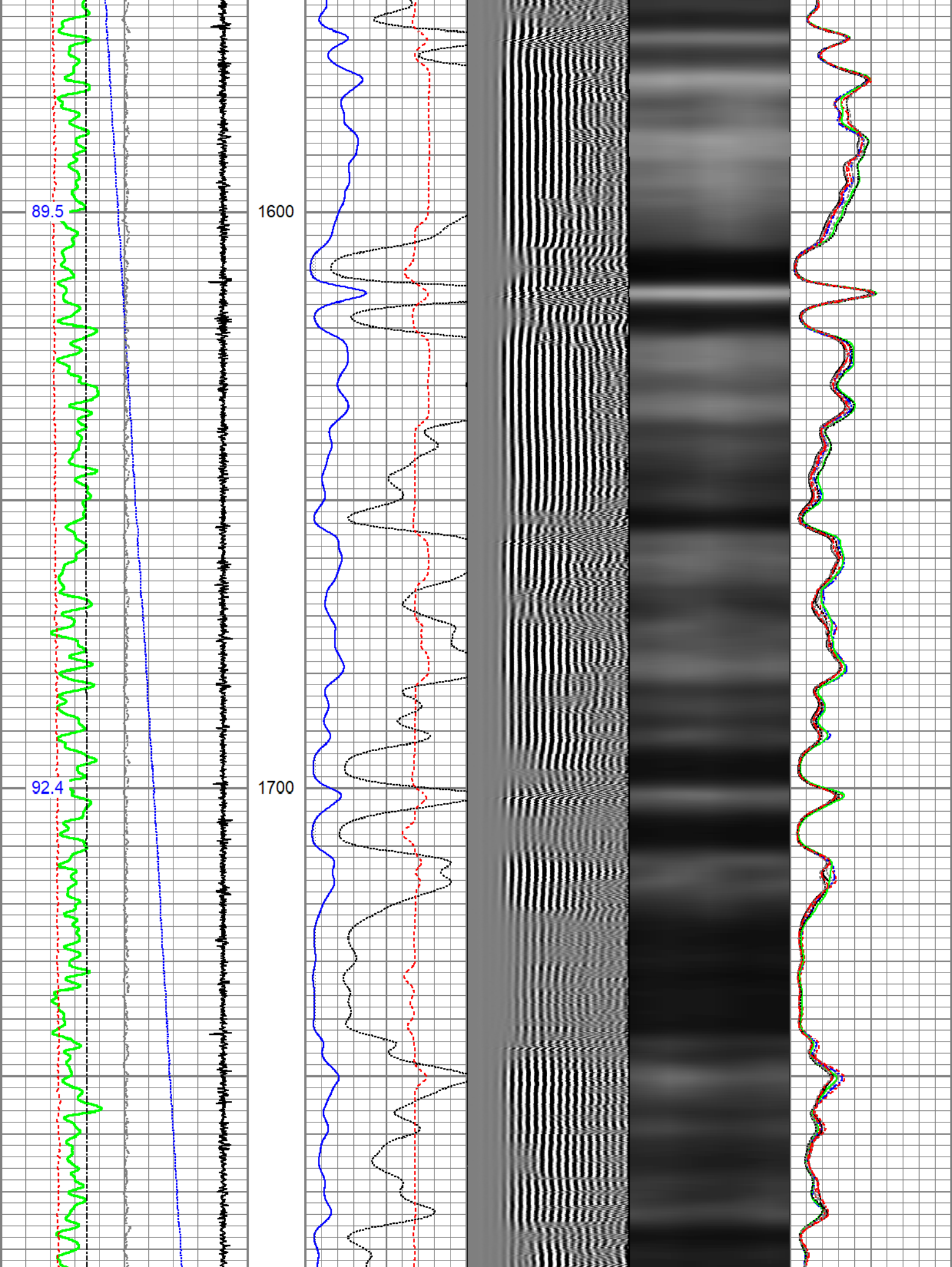


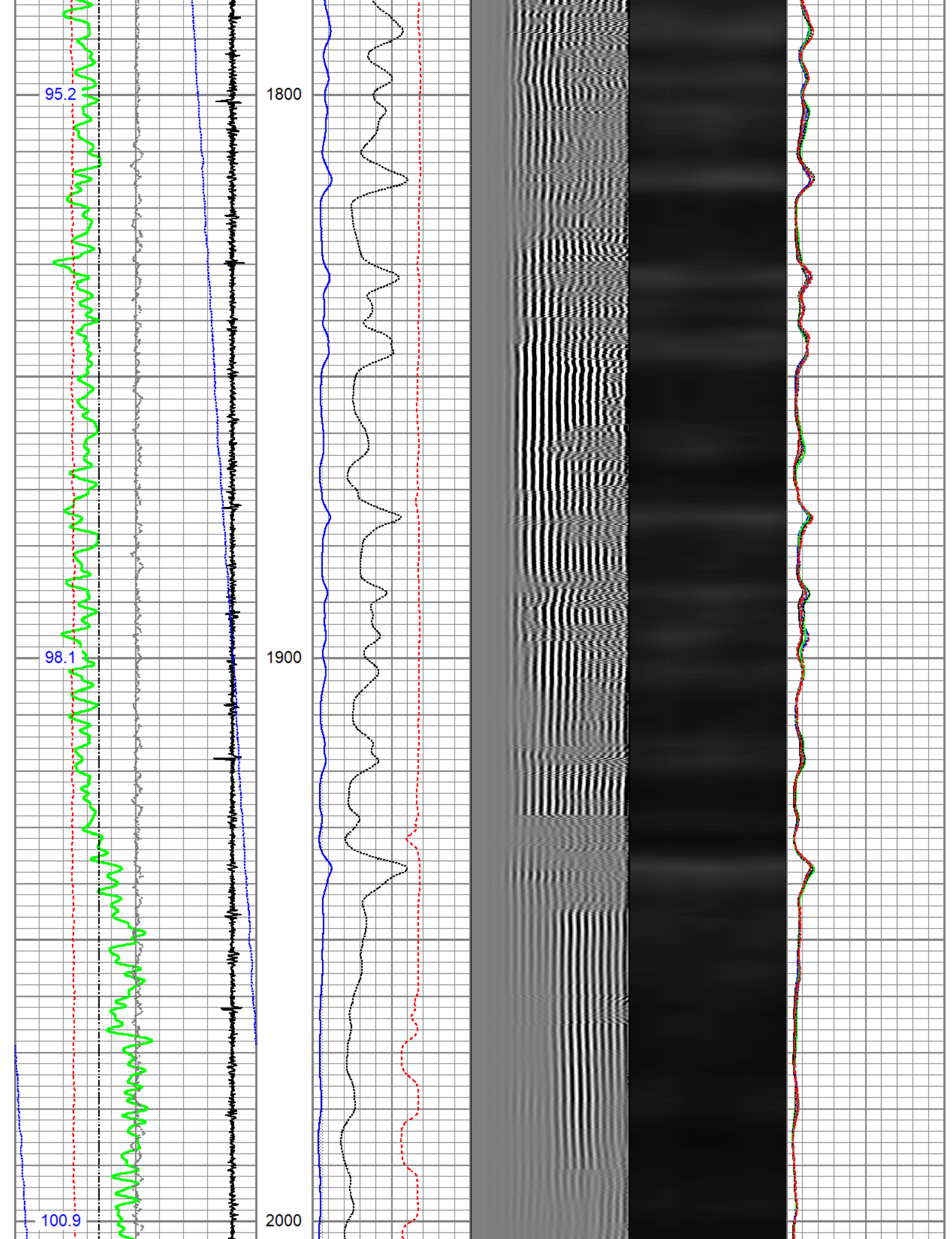


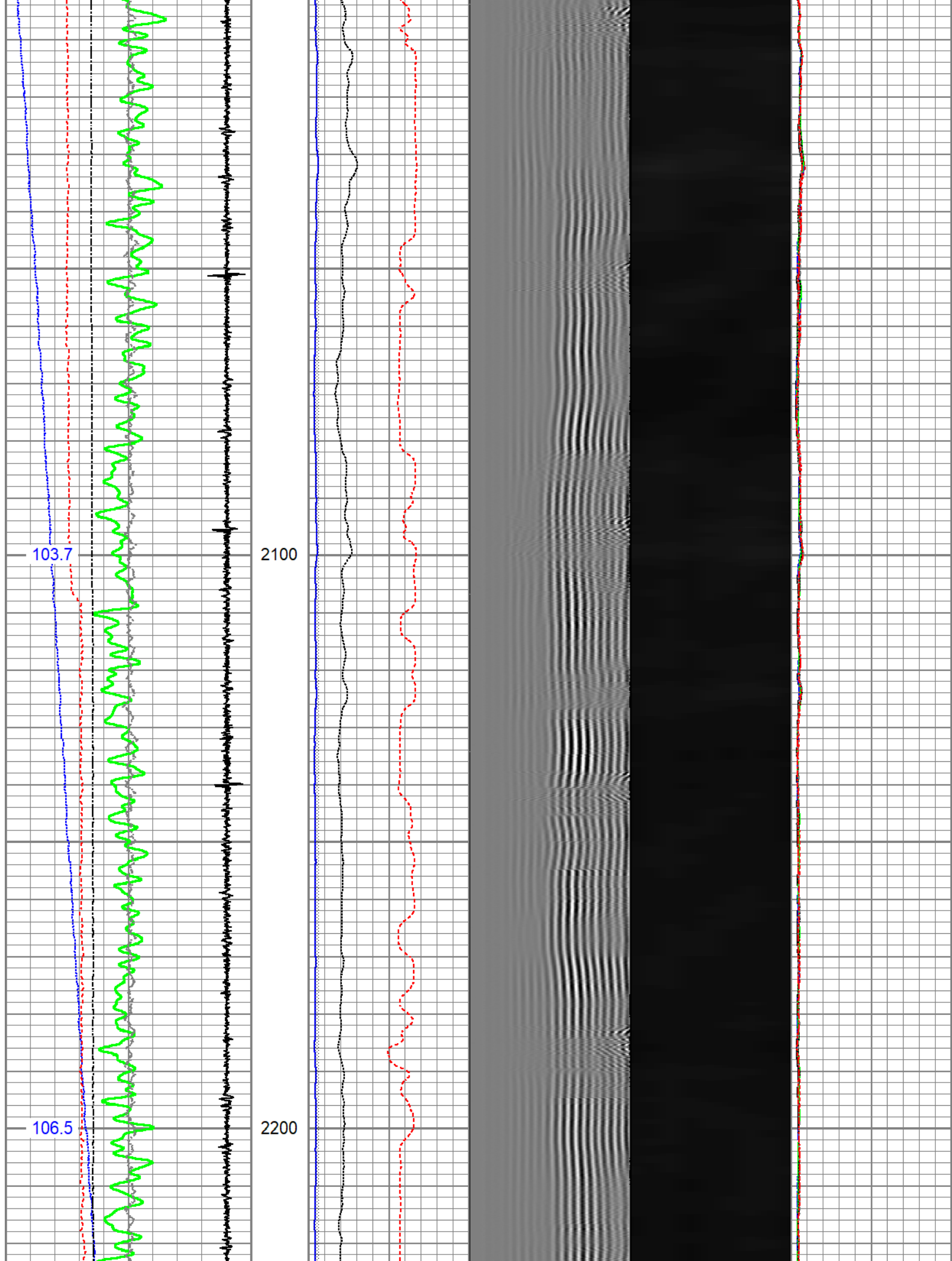


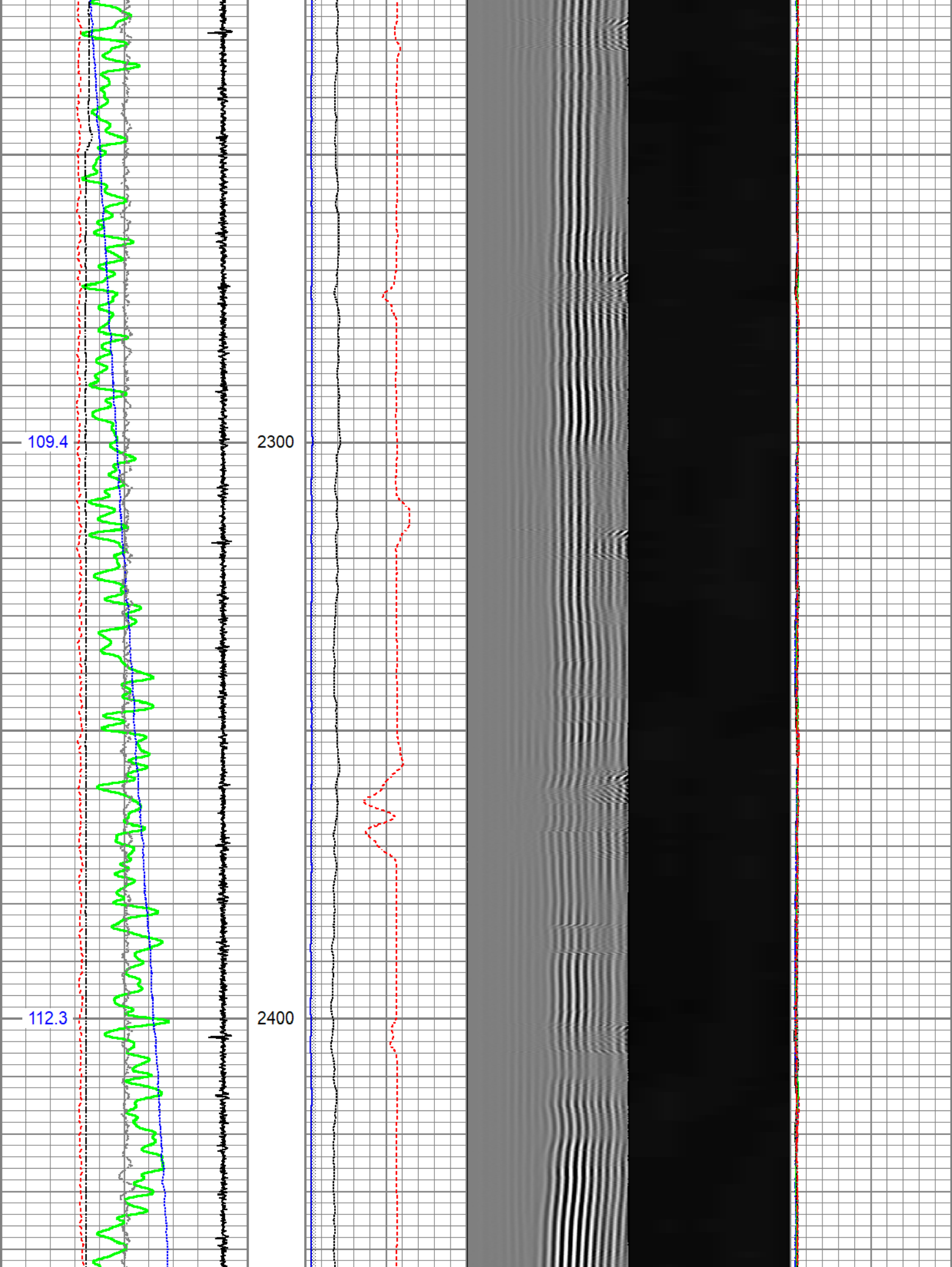


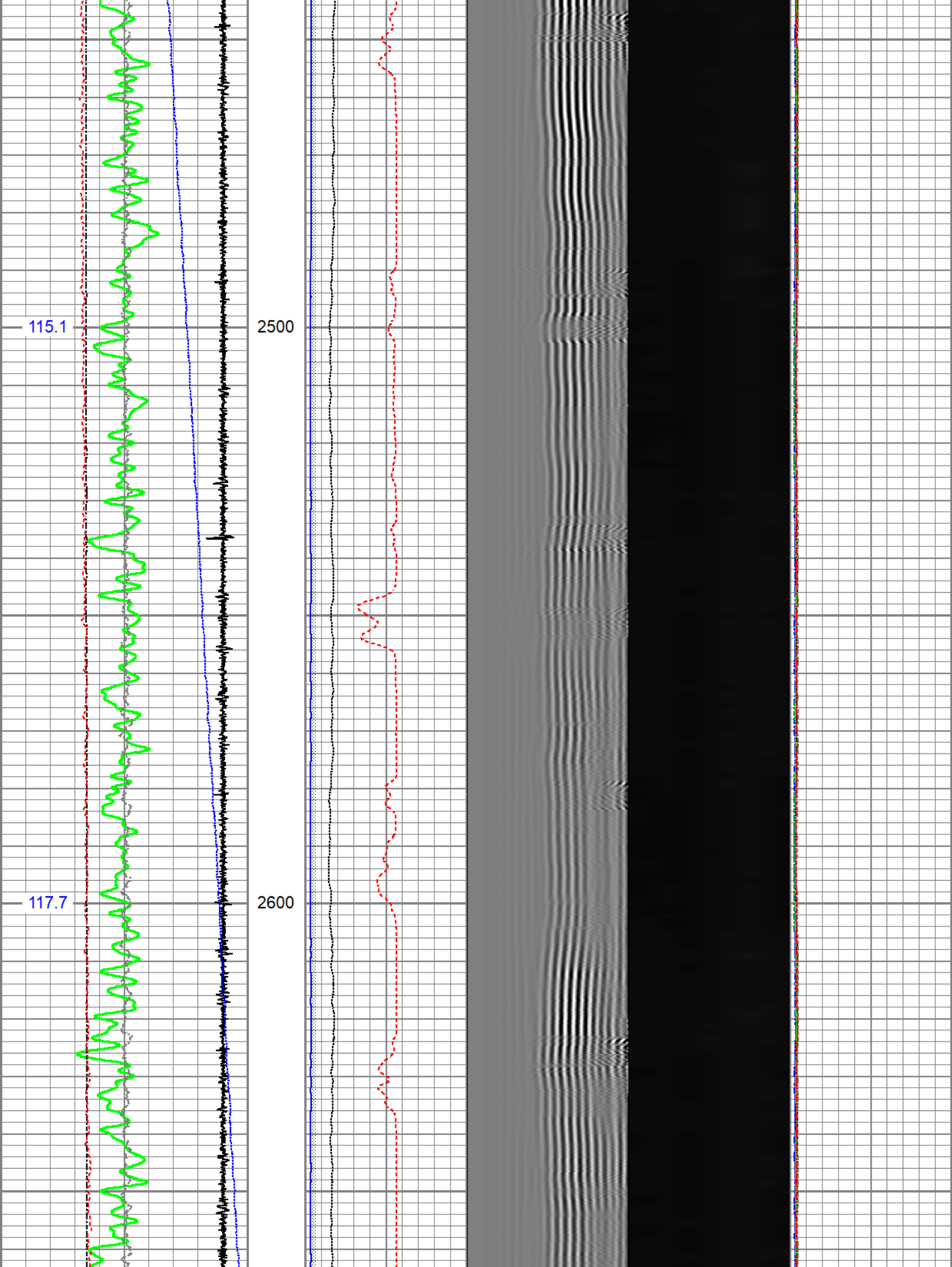


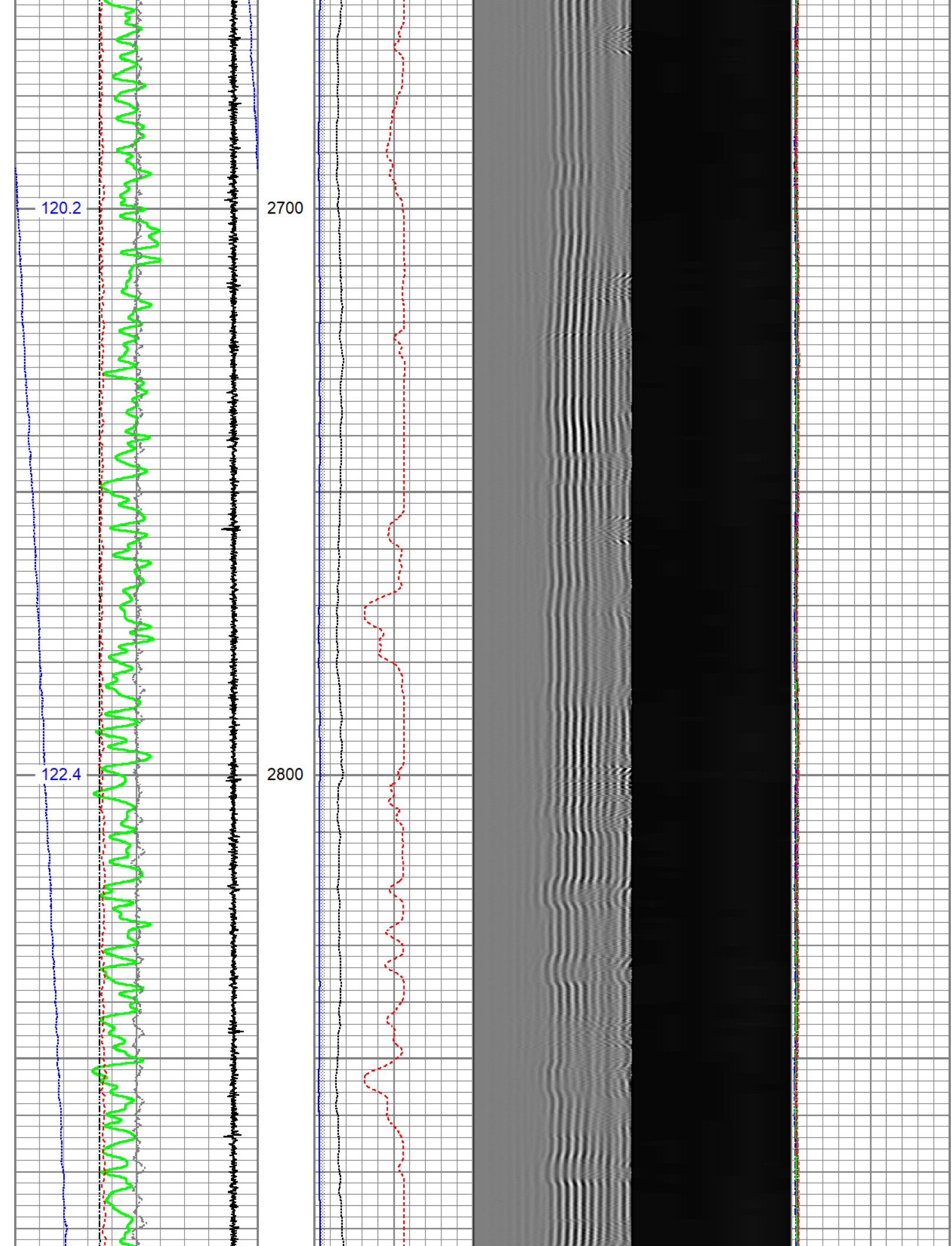


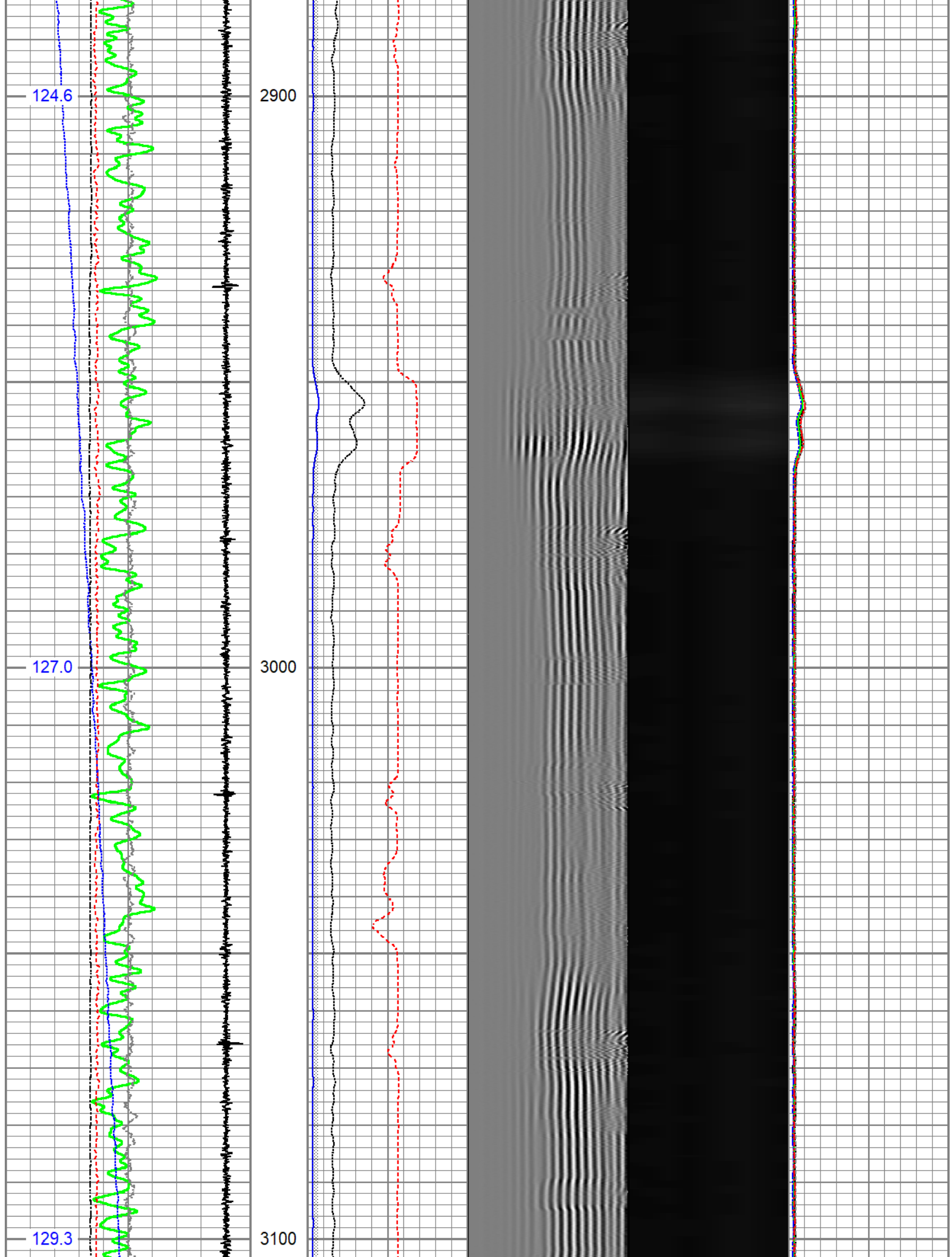


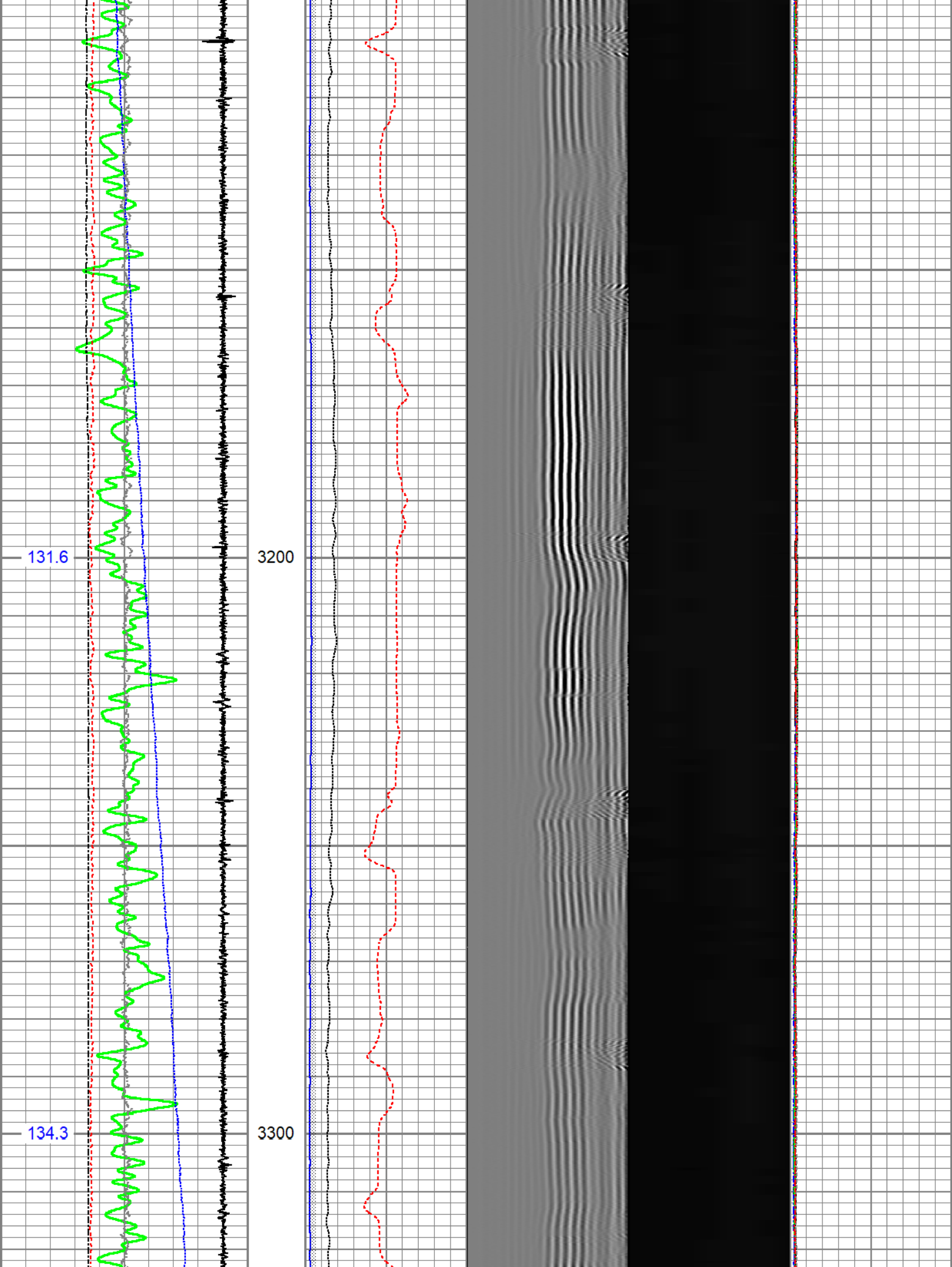


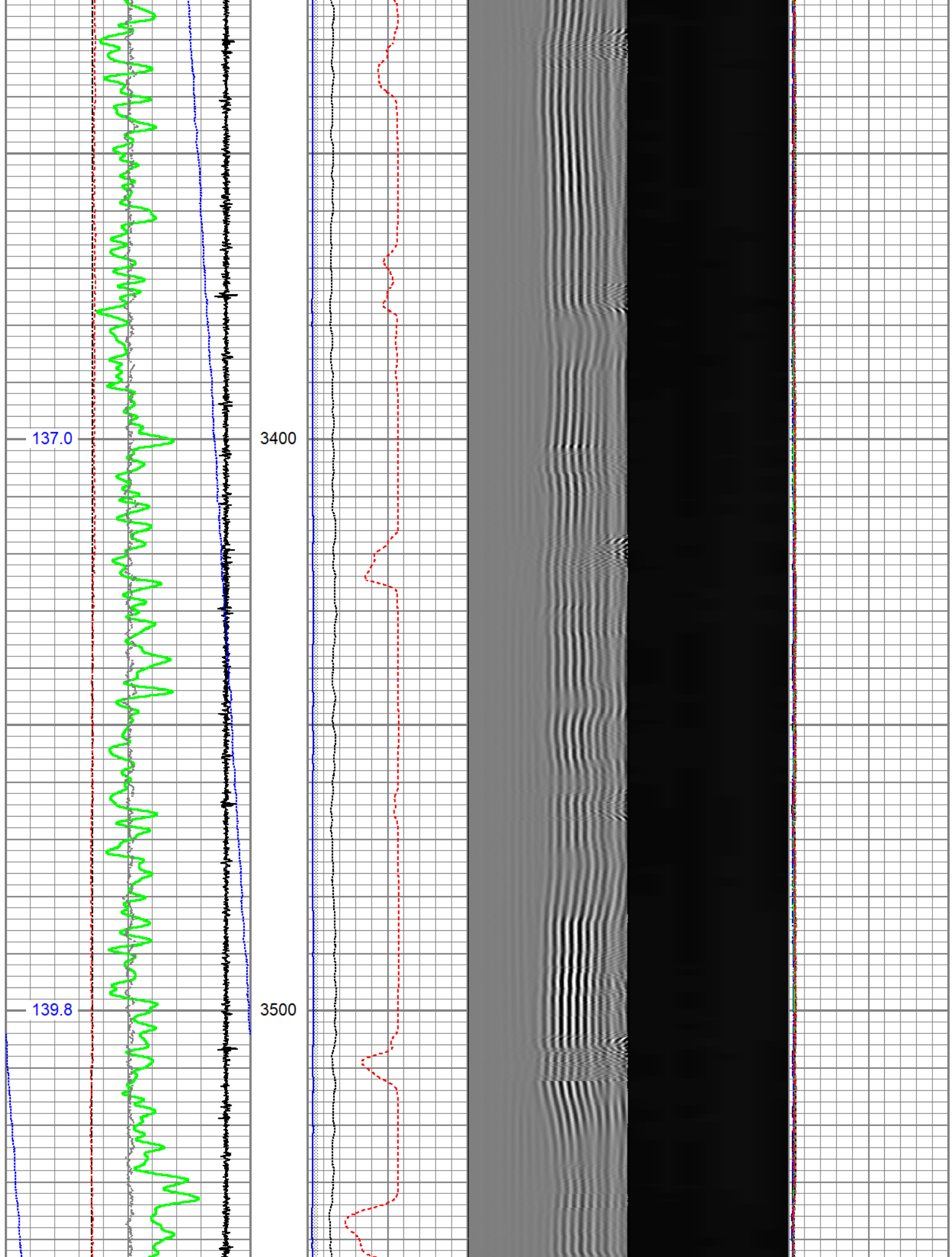


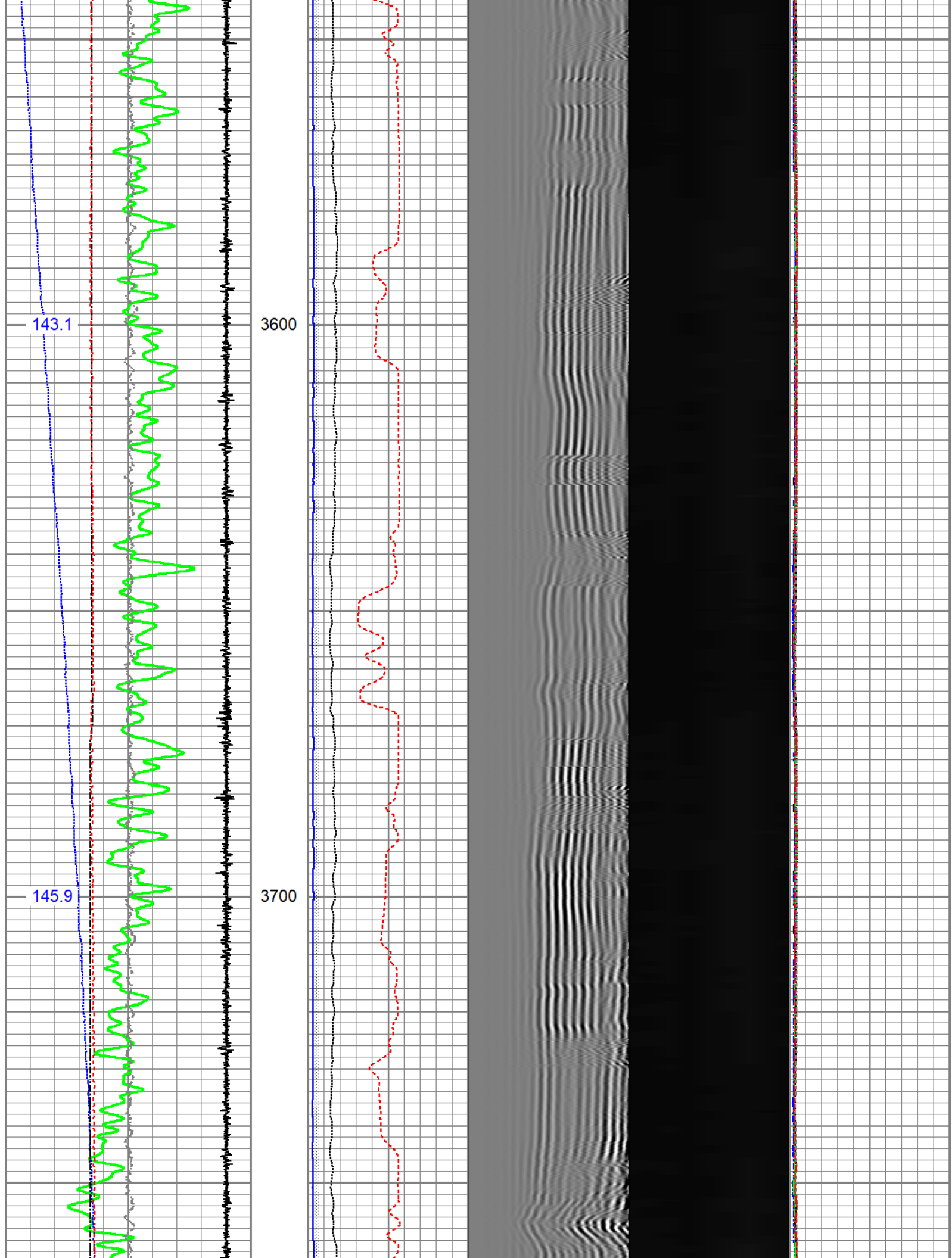


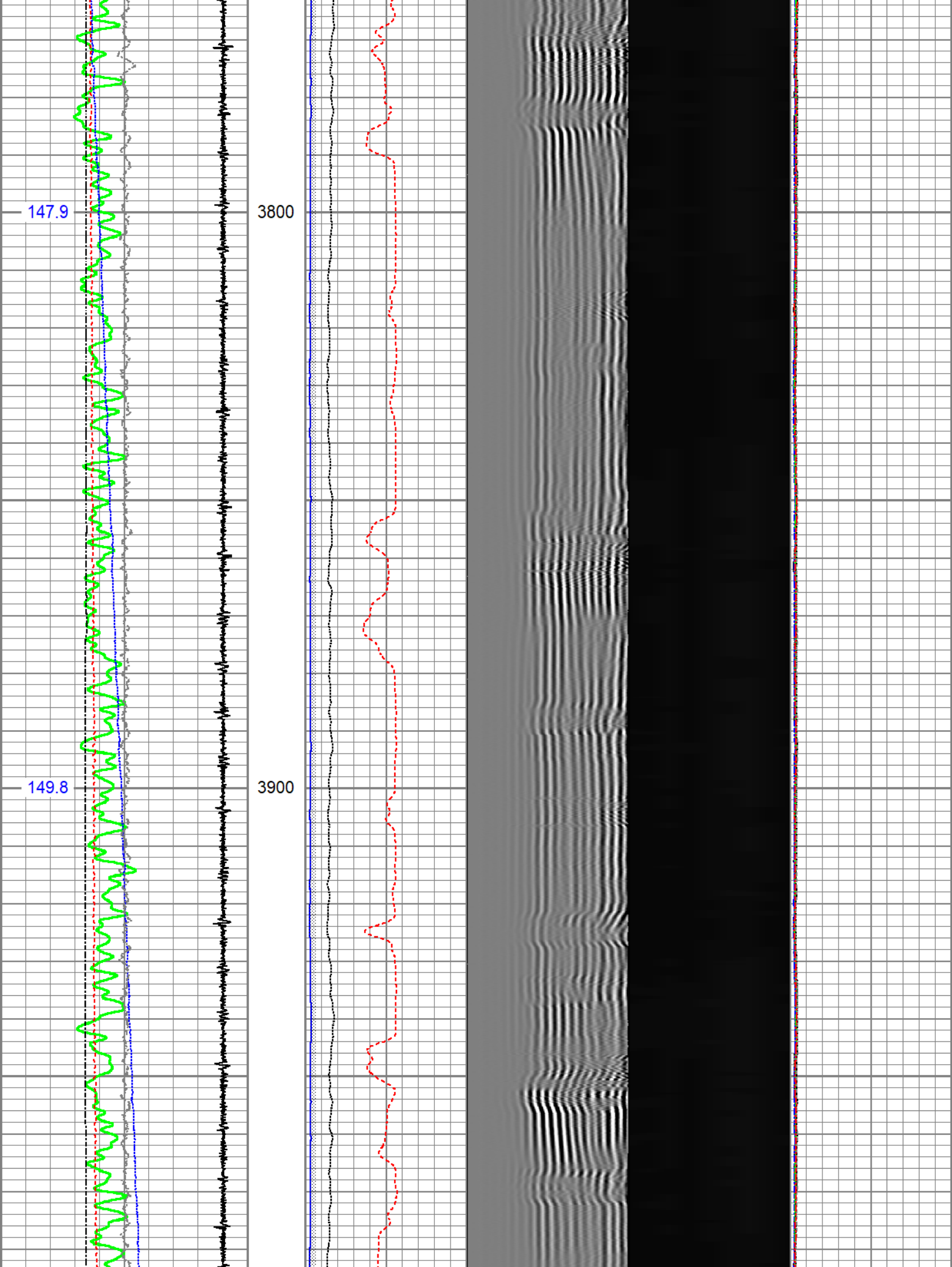


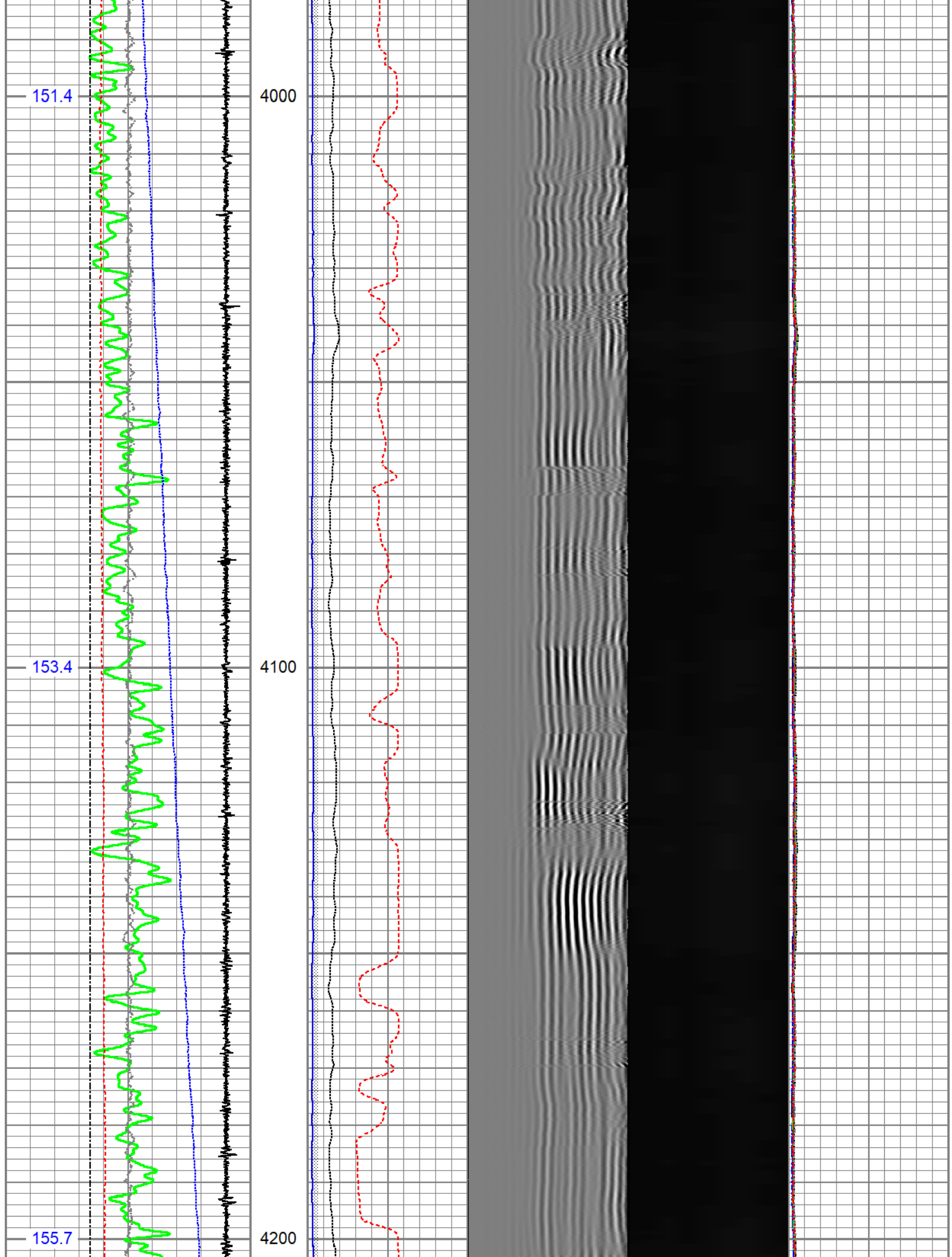


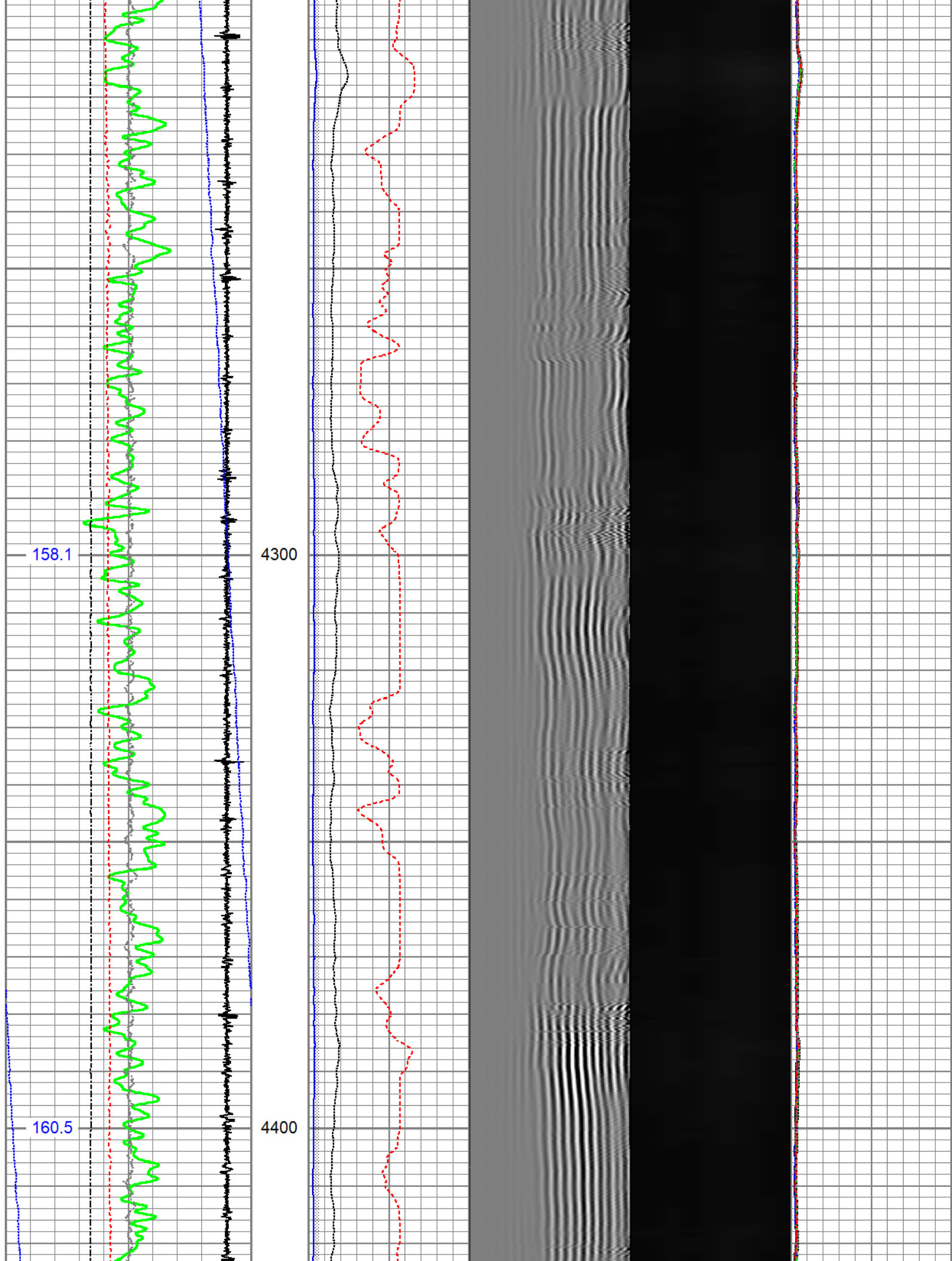


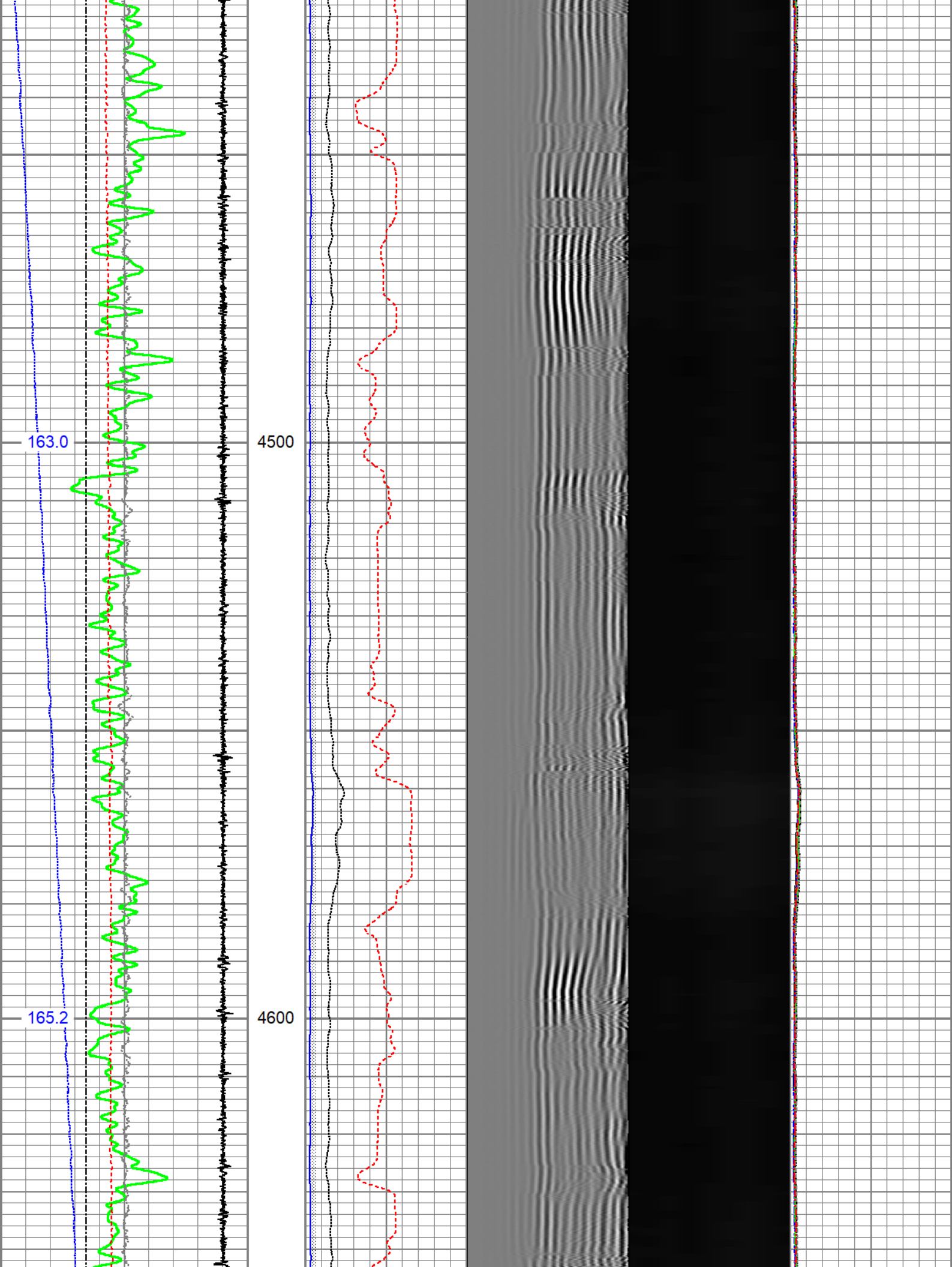


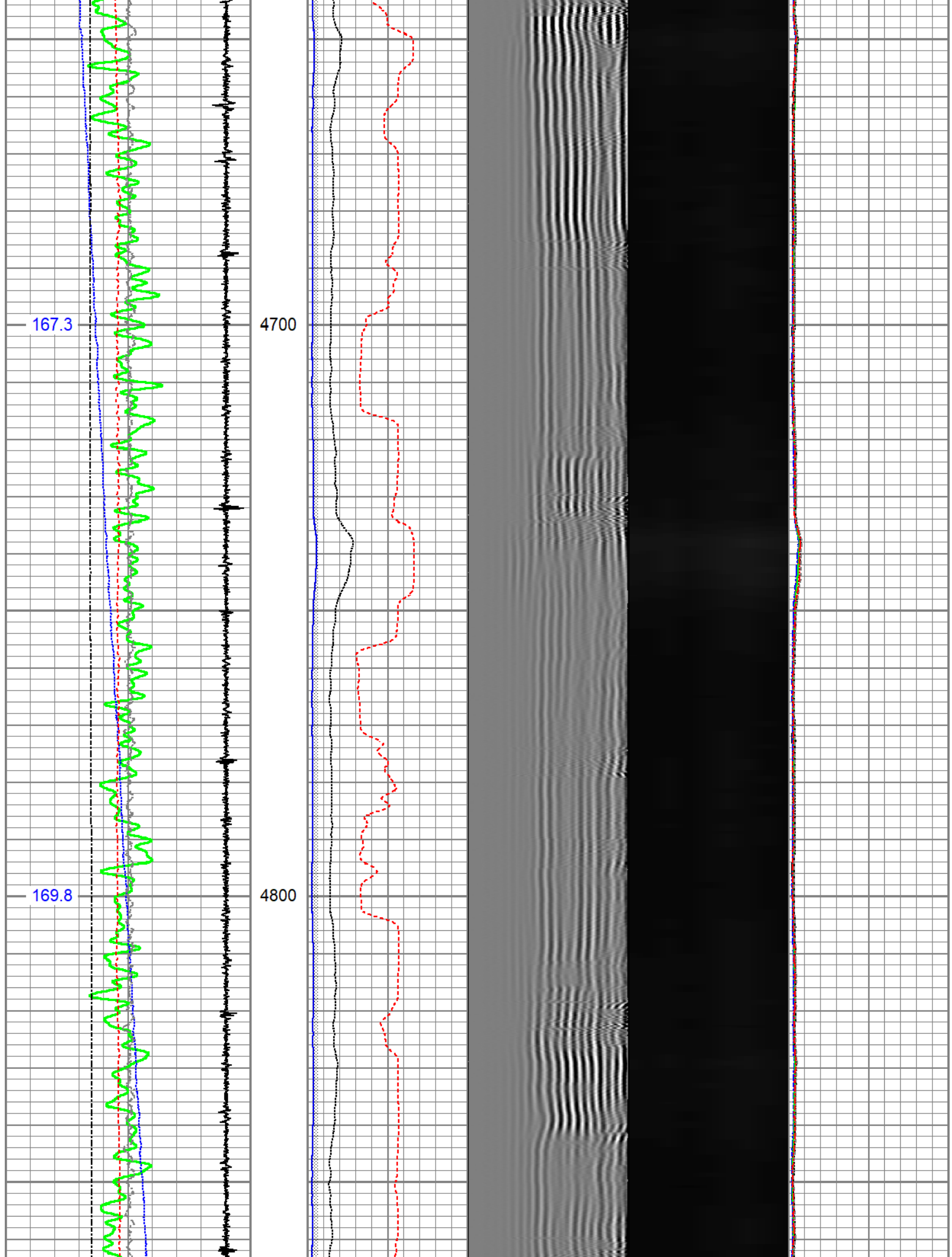


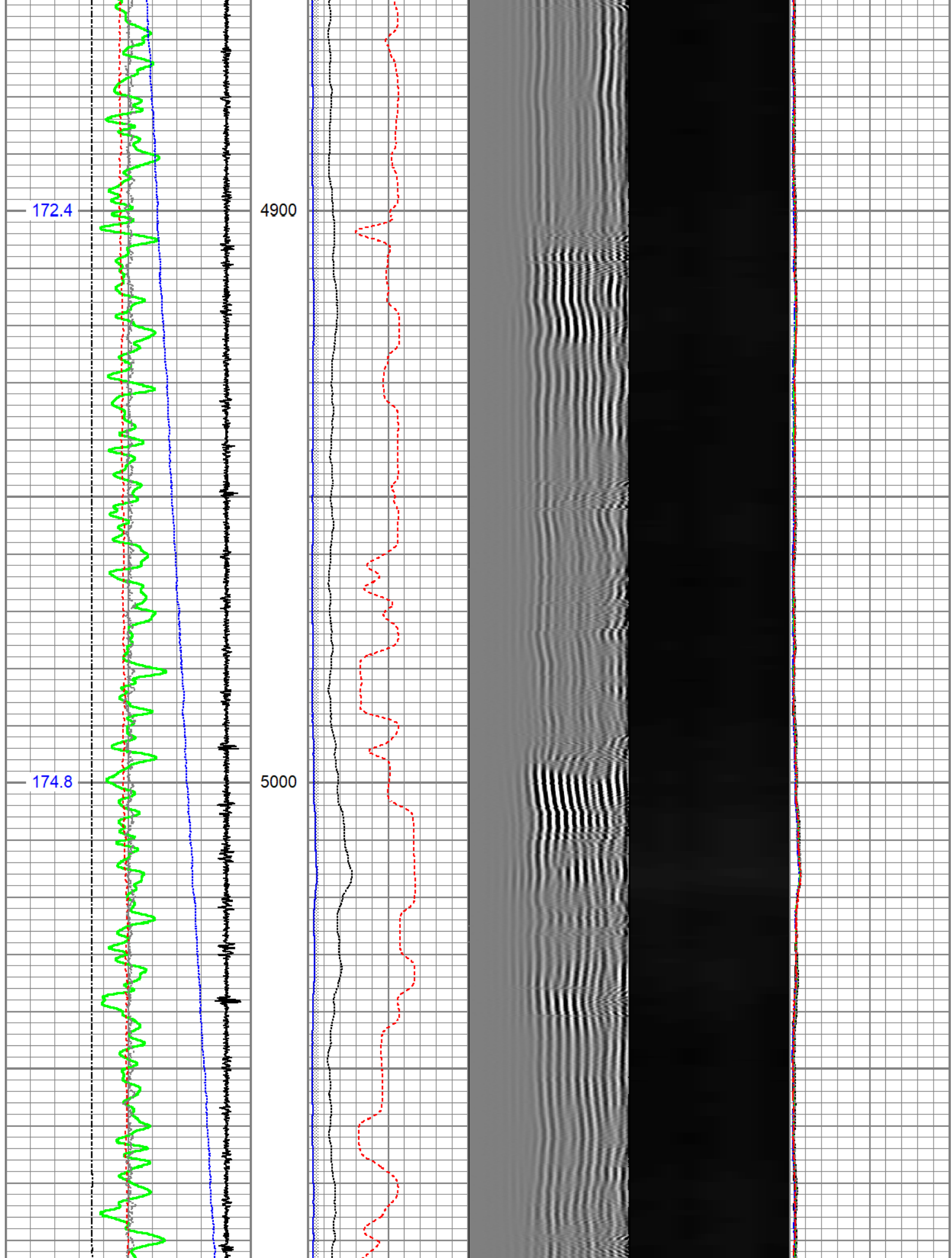


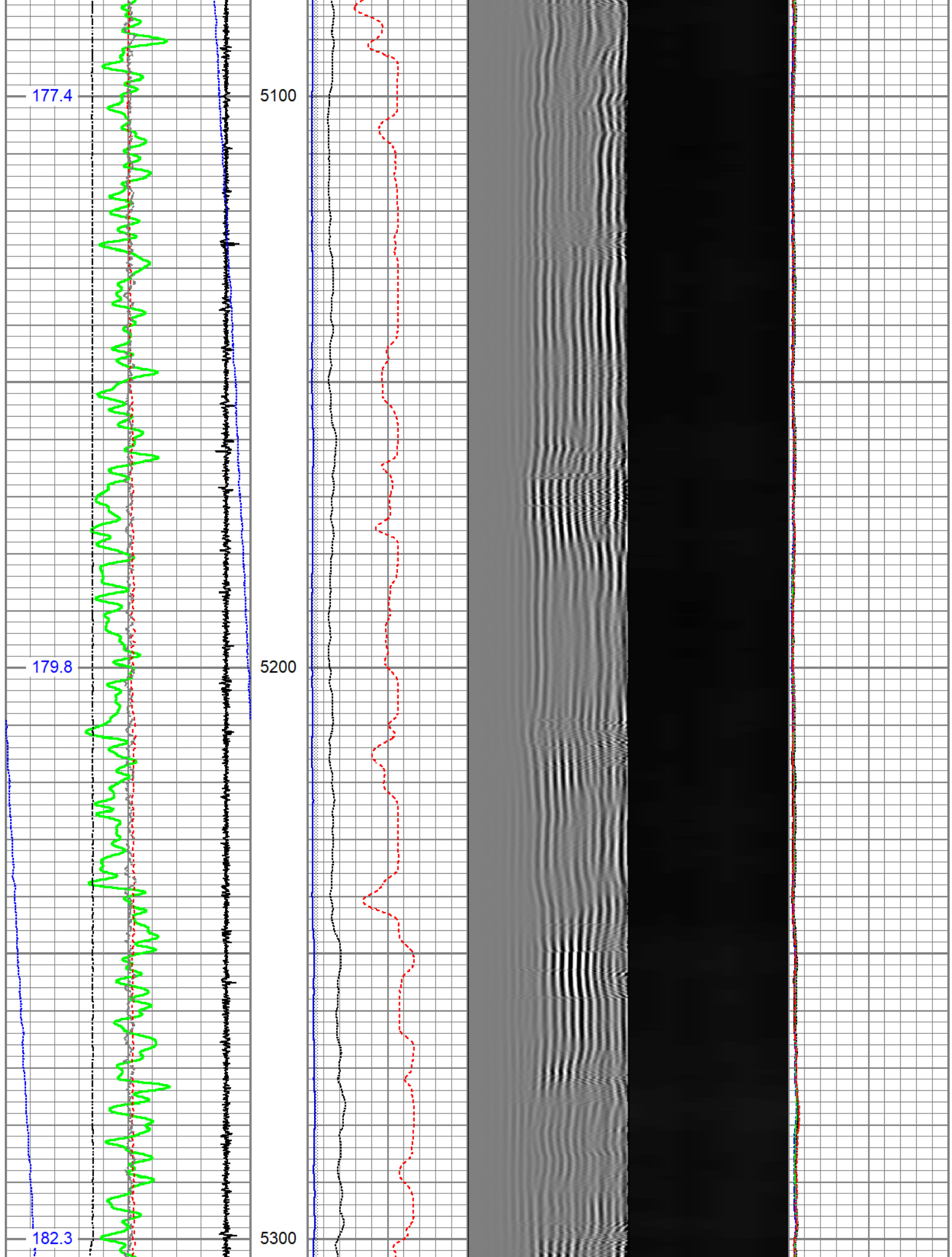


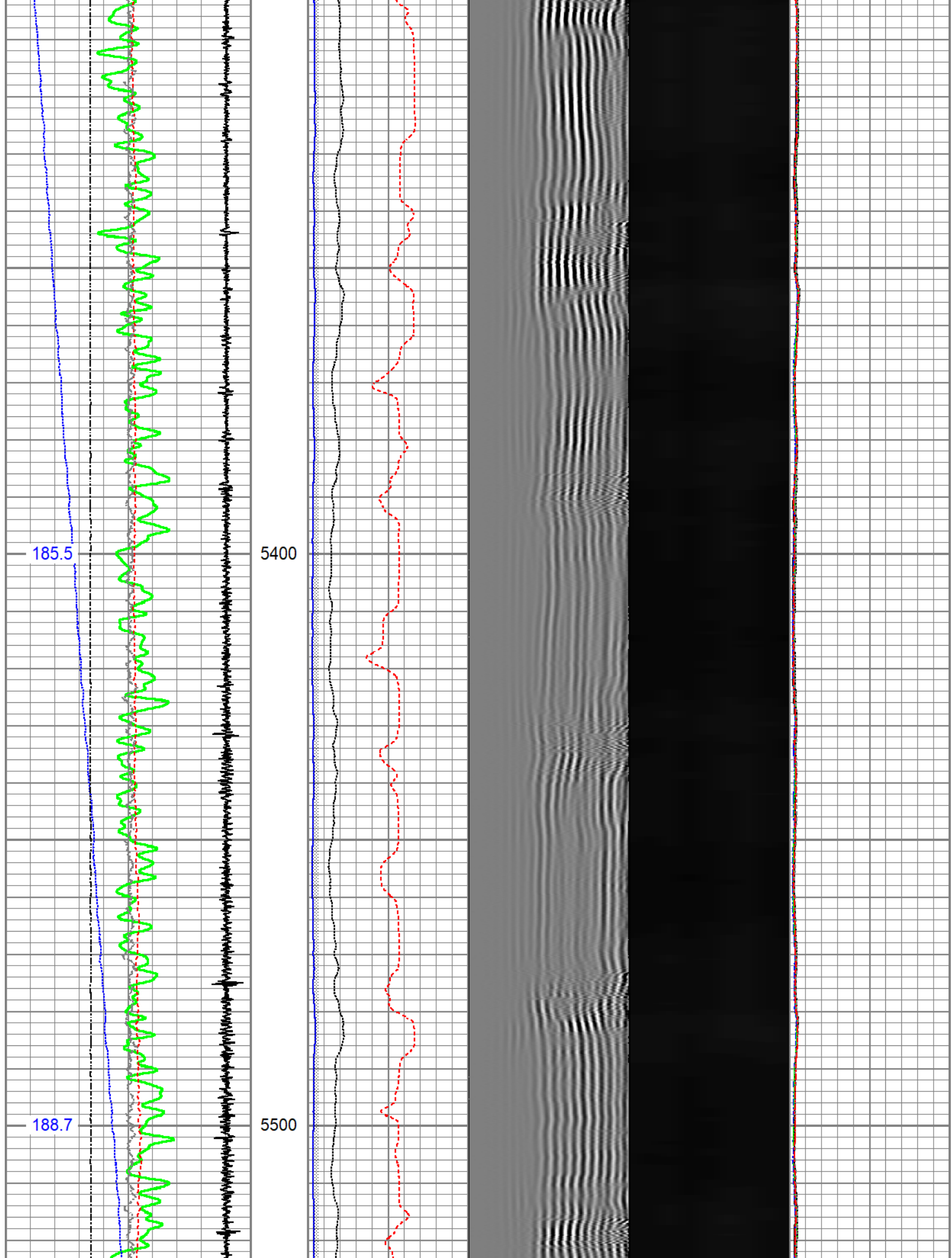


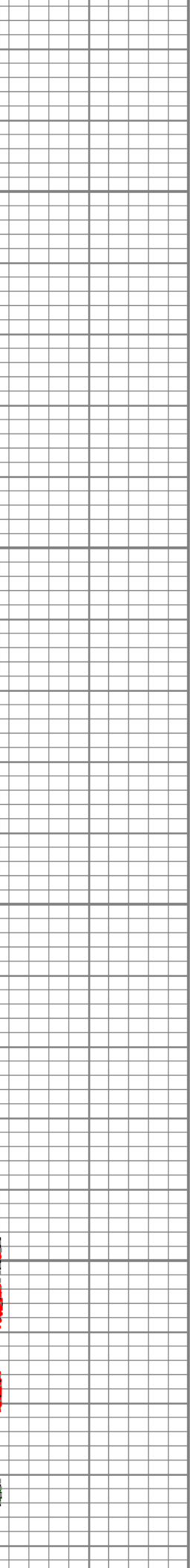
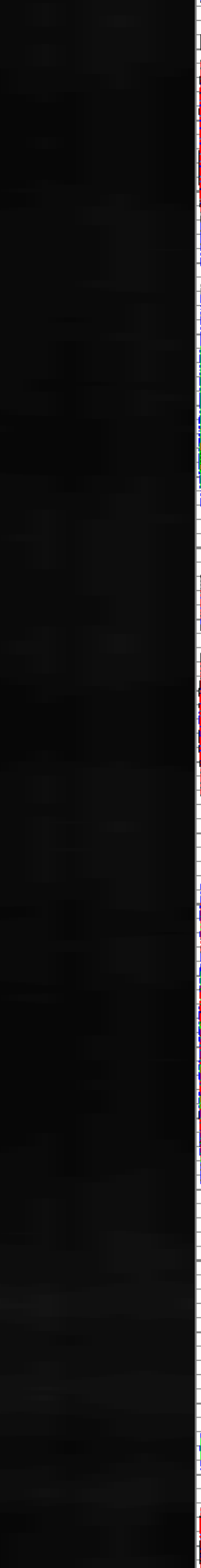
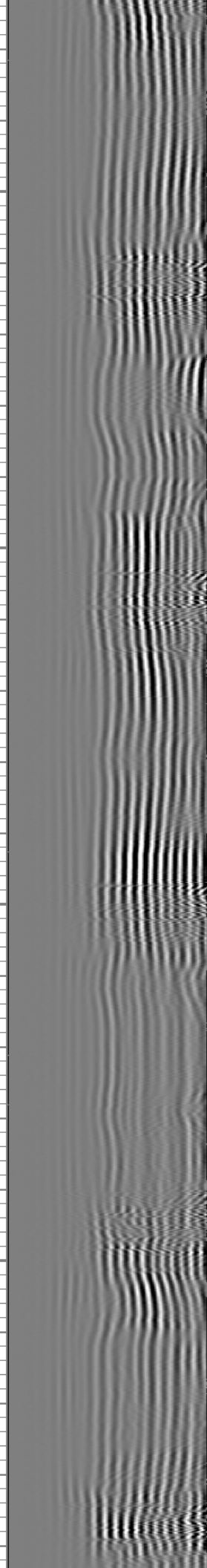
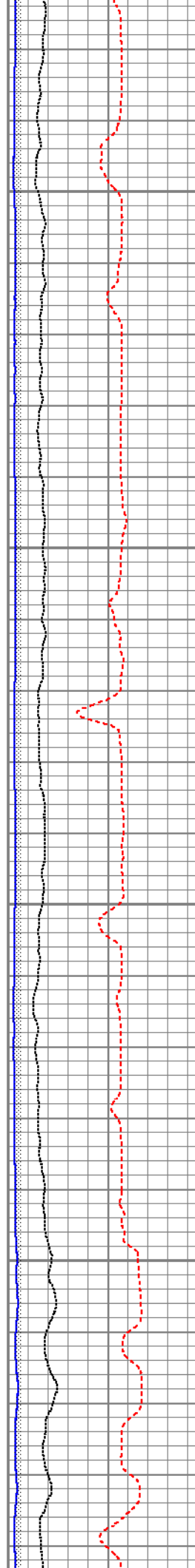
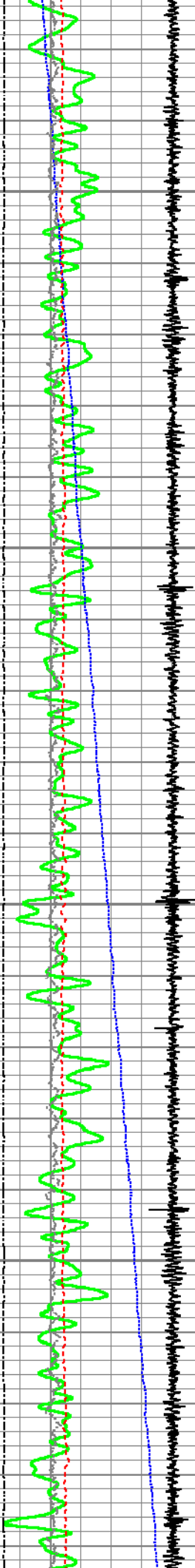


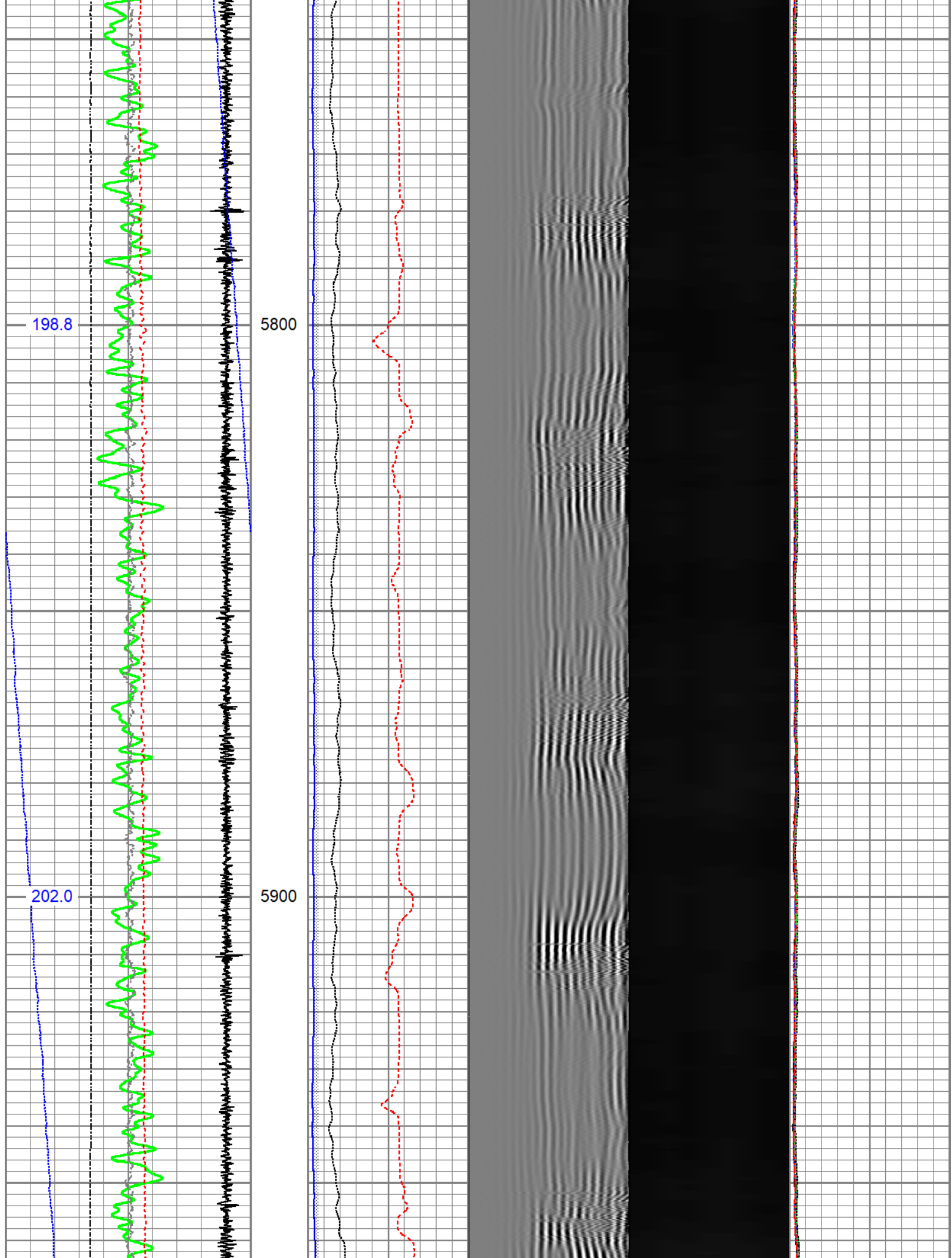


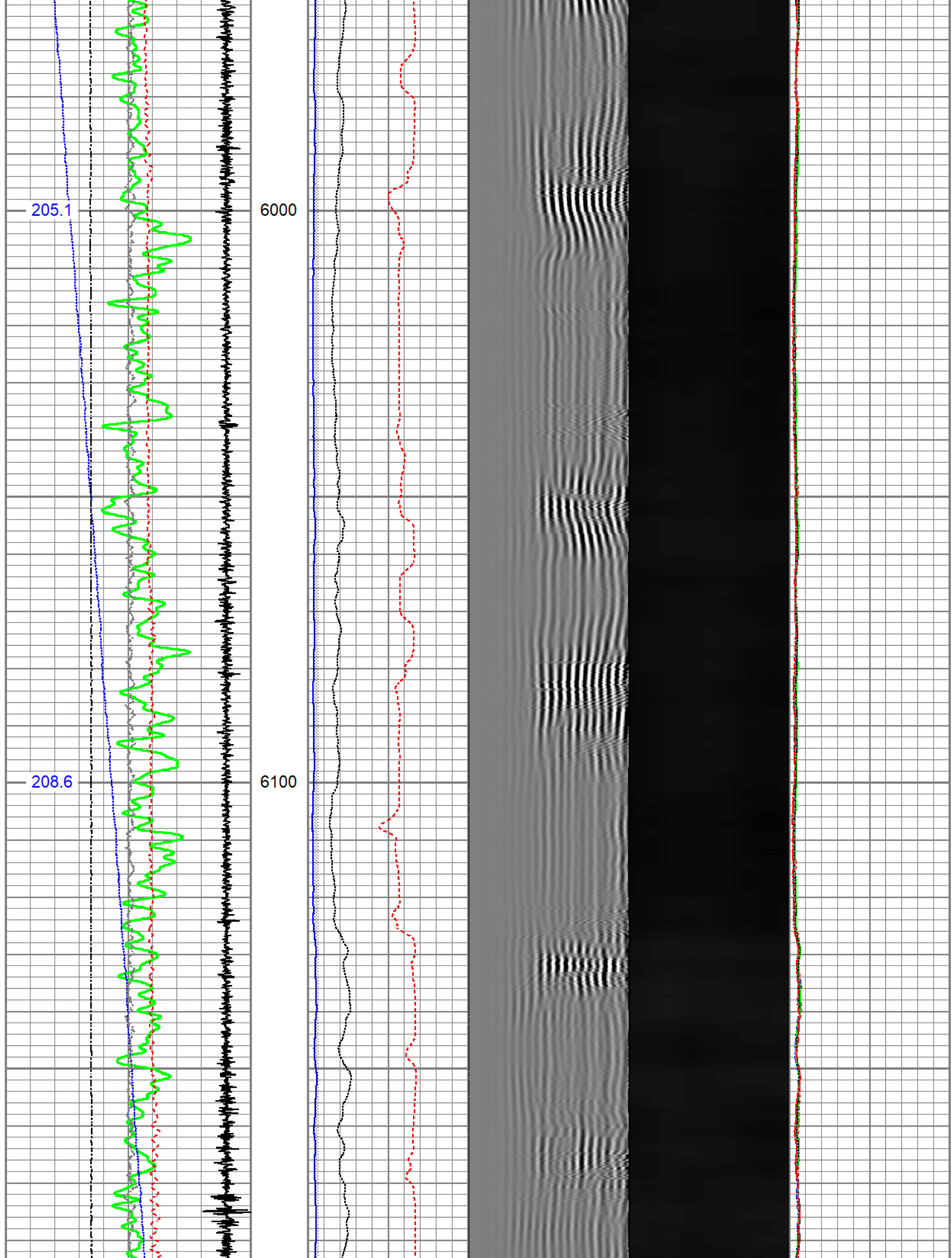


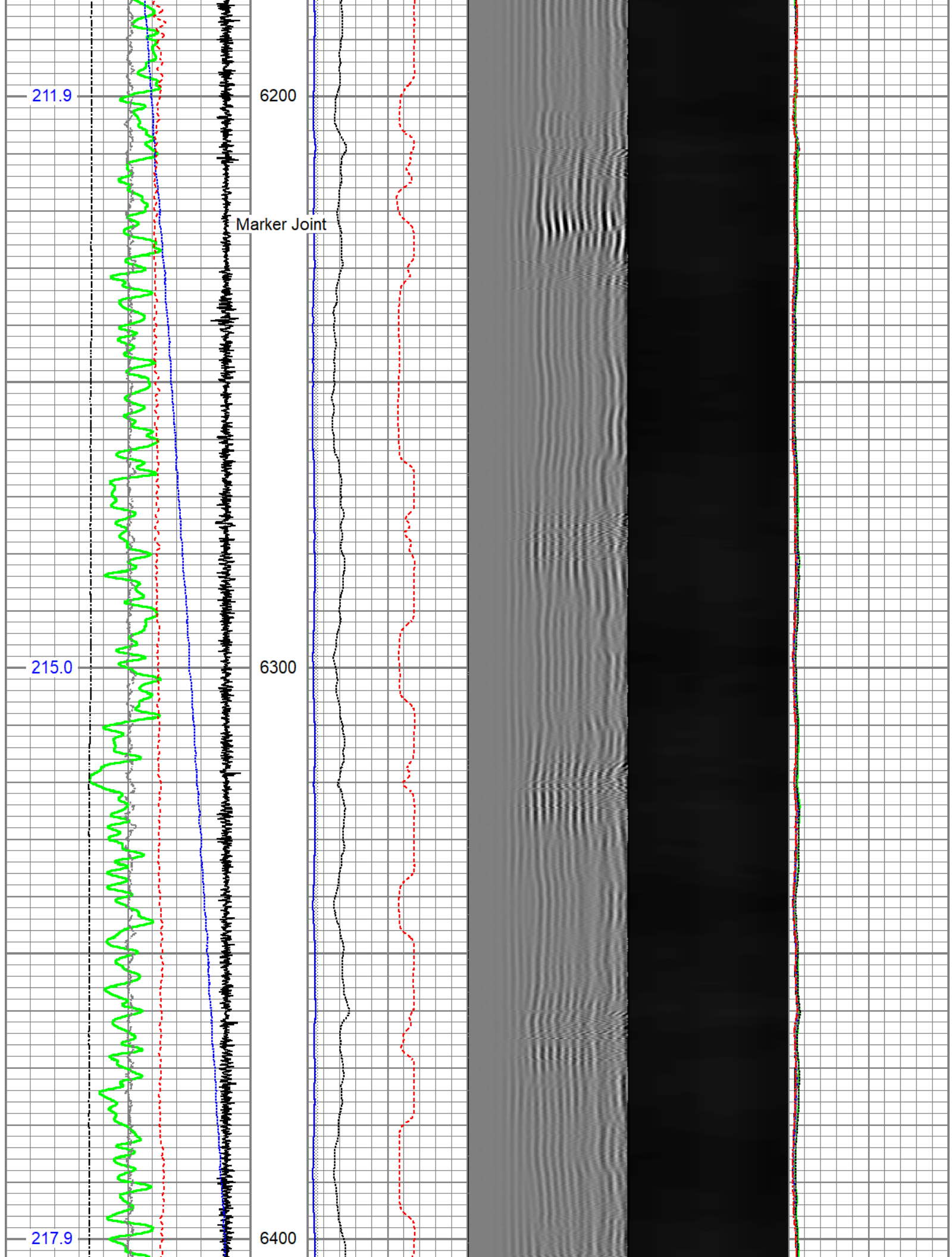


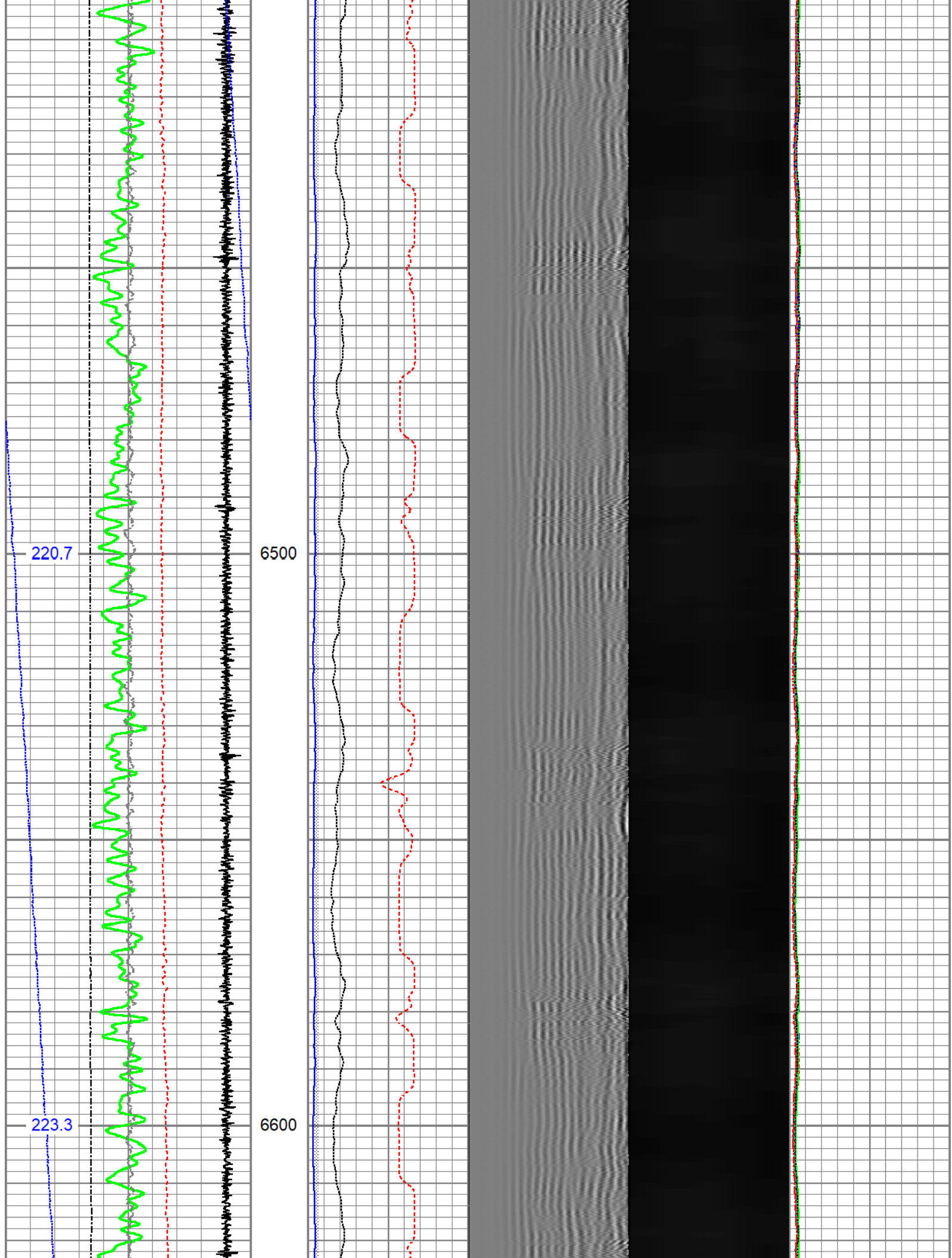


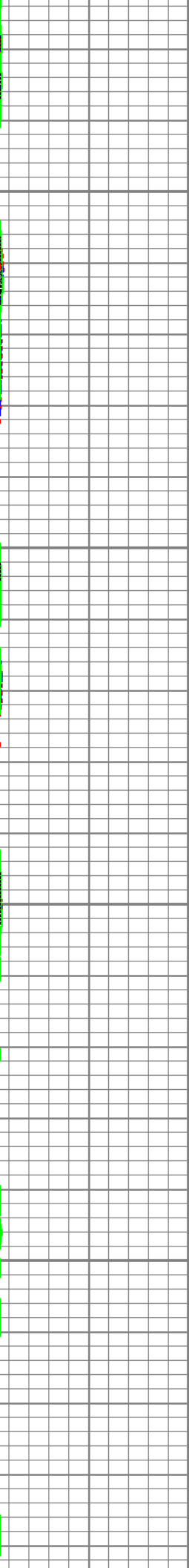
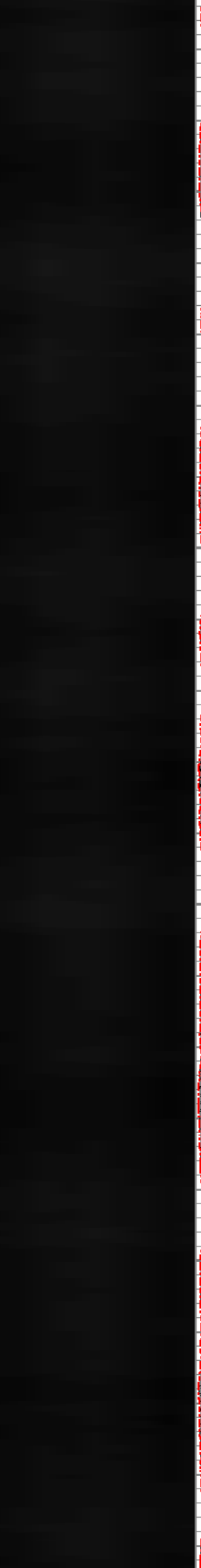
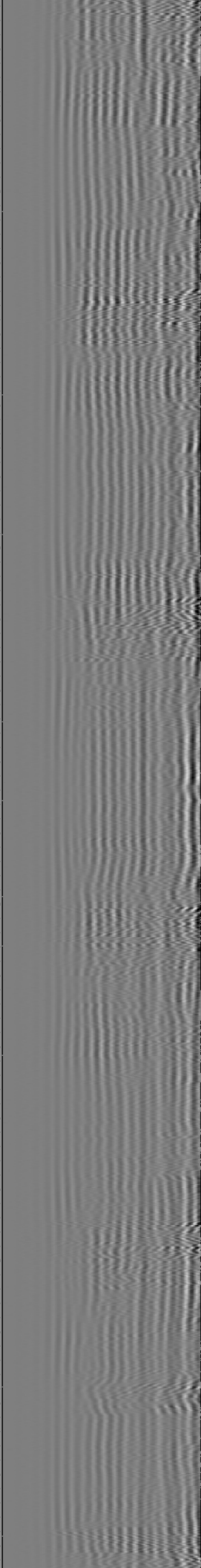
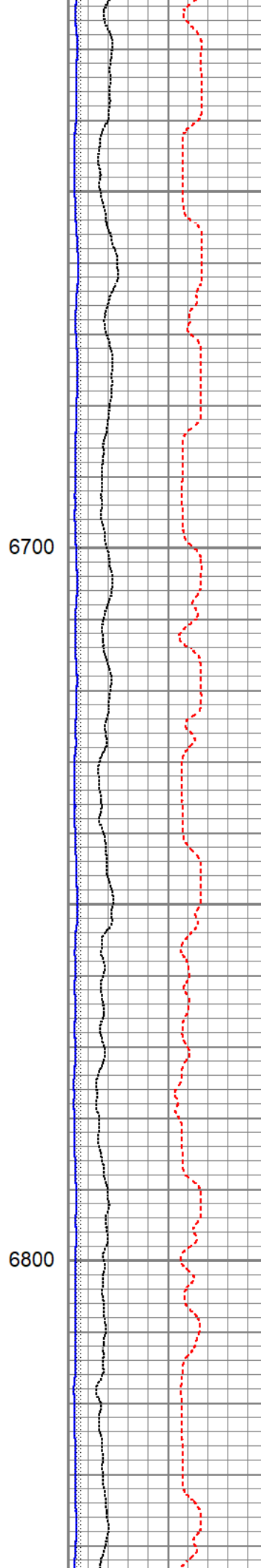
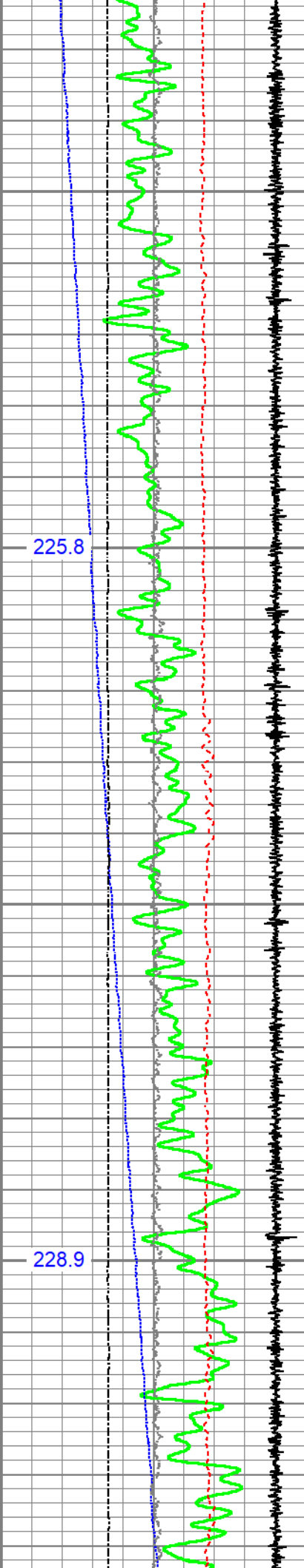


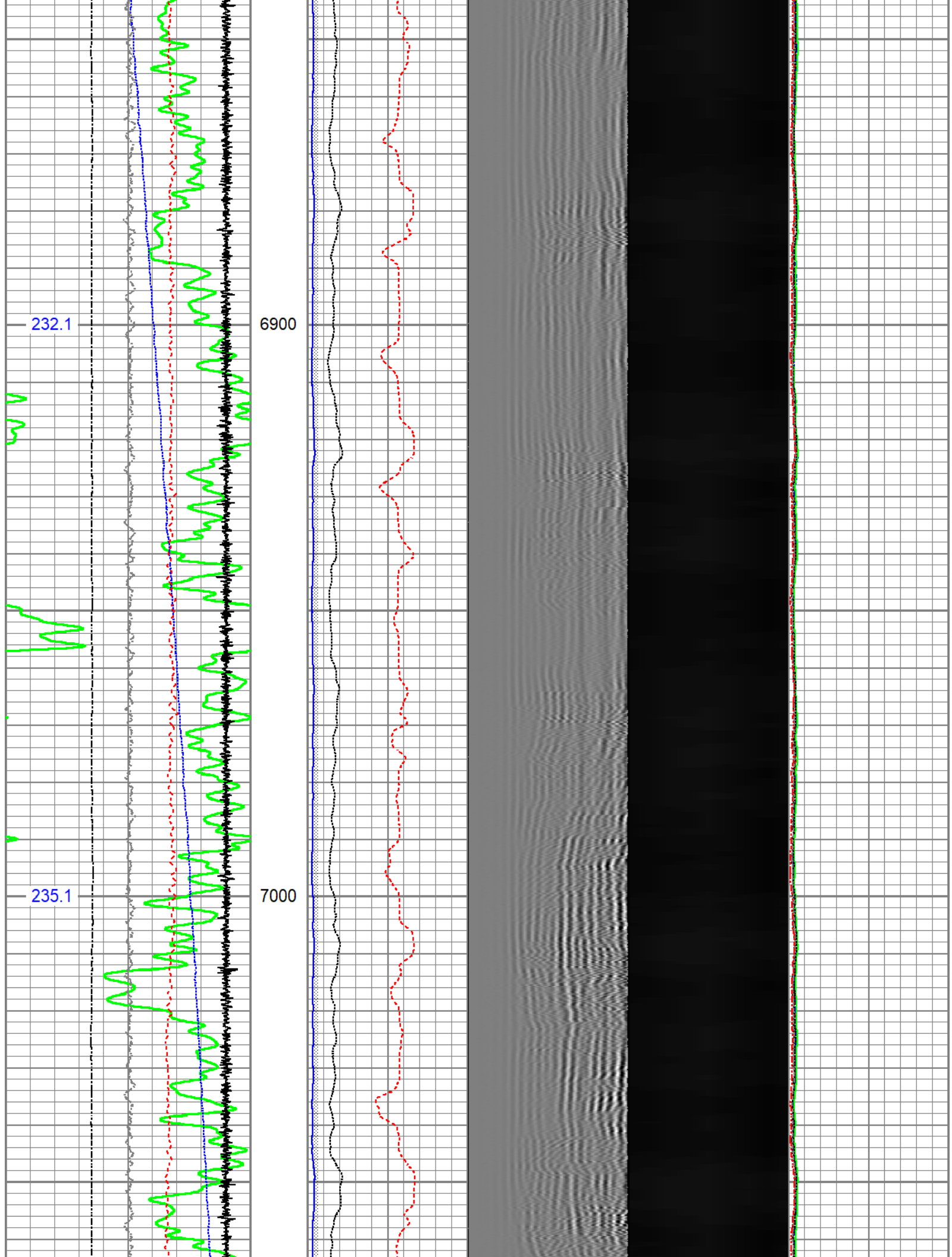


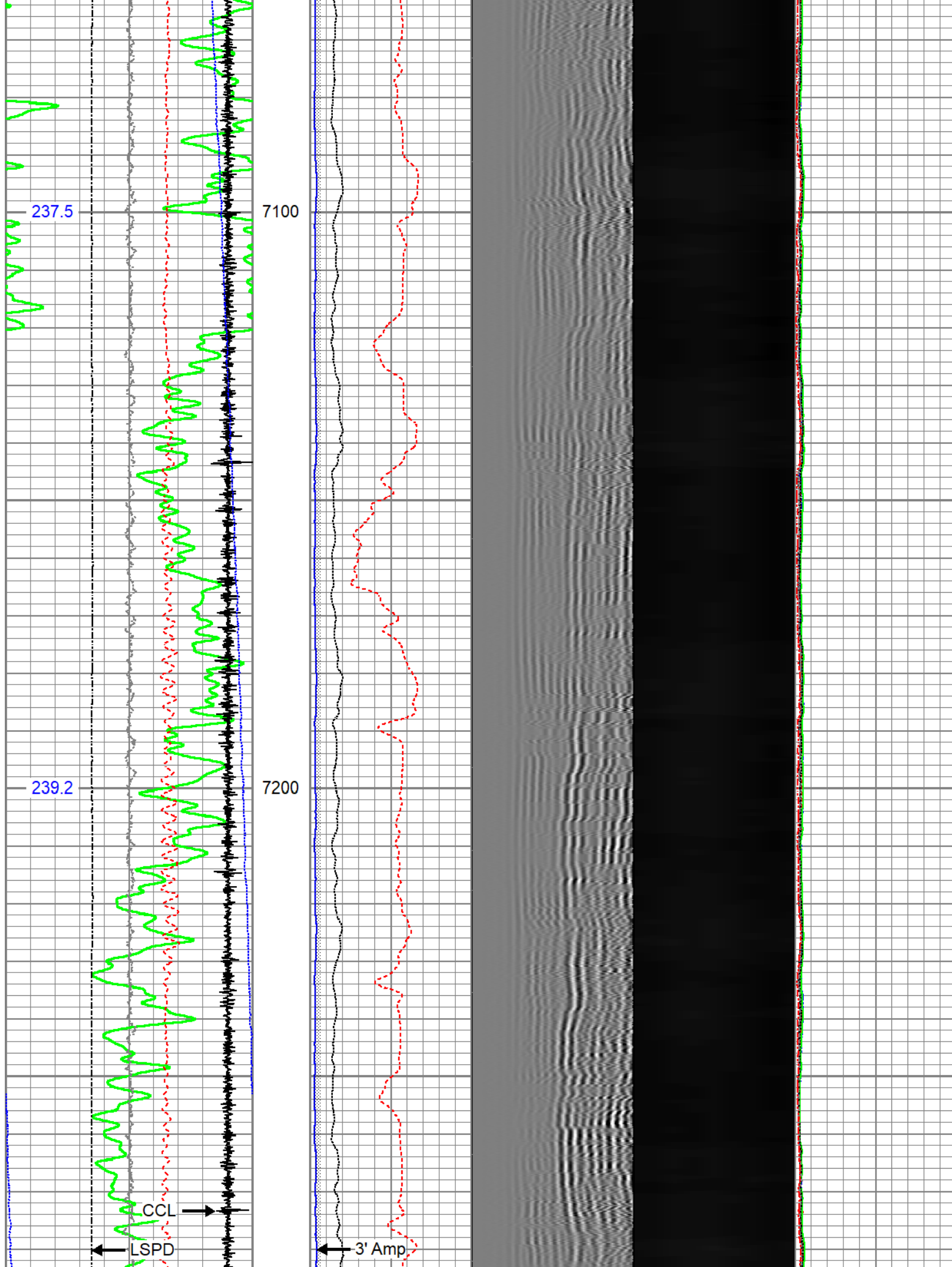


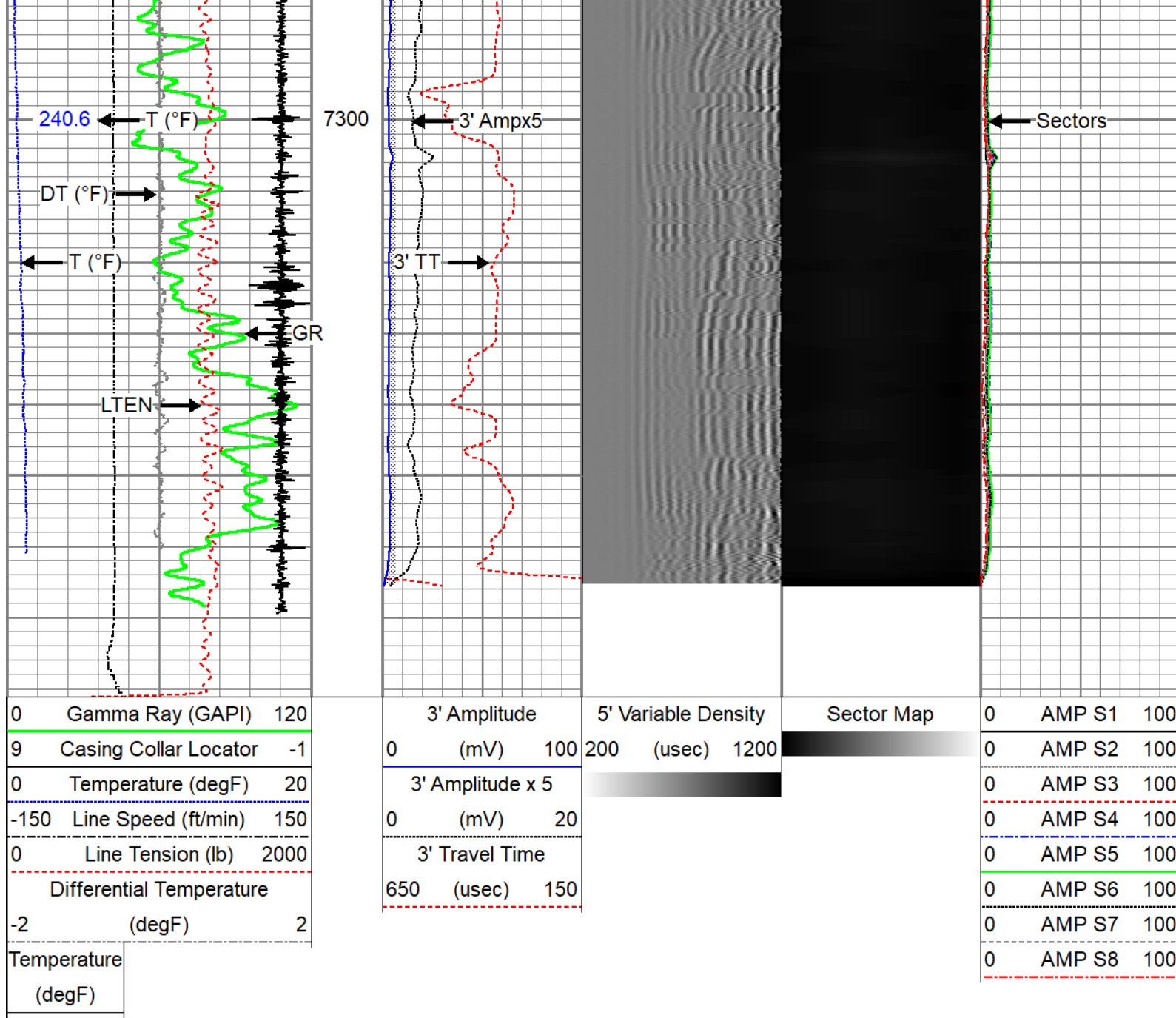












Repeat Pass

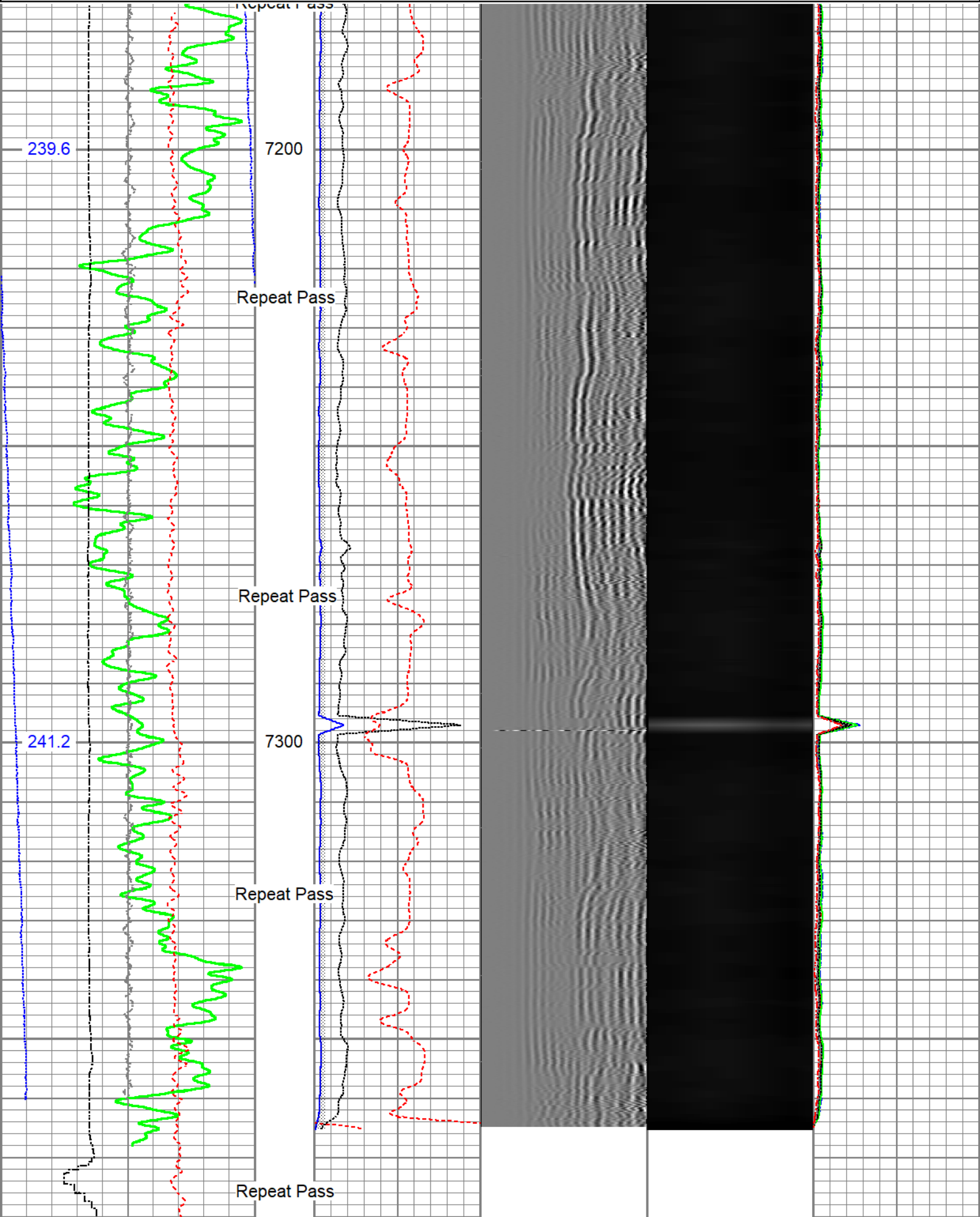
Recorded With 2500 PSI Surface Induced Pressure

Database File	noble_roth a31-730_rbl_cnl_11-19-21.db
Dataset Pathname	repeat
Presentation Format	edge_rbl_noble
Dataset Creation	Fri Nov 19 12:14:52 2021
Charted by	Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	120	3' Amplitude	5' Variable Density	Sector Map	0	AMP S1	100
0	Temperature (degF)	20	0 (mV)	200 (usec)		0	AMP S2	100
-150	Line Speed (ft/min)	150	3' Amplitude x 5			0	AMP S3	100
0	Line Tension (lb)	2000	0 (mV)			0	AMP S4	100
	Differential Temperature		3' Travel Time			0	AMP S5	100
-2	(degF)	2	650 (usec)	150		0	AMP S6	100

Temperature
(degF)

0	AMP S7	100
0	AMP S8	100



Gamma Ray (GAPI)	120	3' Amplitude	0	(mV)	100	3' variable Density	200	(usec)	1200	Sector Map	0	AMP S1	100
Temperature (degF)	20	3' Amplitude x 5	0	(mV)	20						0	AMP S2	100
Line Speed (ft/min)	150	3' Travel Time	650	(usec)	150						0	AMP S3	100
Line Tension (lb)	2000										0	AMP S4	100
Differential Temperature											0	AMP S5	100
(degF)	2										0	AMP S6	100
Temperature											0	AMP S7	100
(degF)											0	AMP S8	100

	Company	Noble Energy Inc.
	Well	Roth A31-730
	Field	Wattenberg
	County	Weld
	State	Colorado