



**Radial Cement Bond  
Gamma Ray  
Casing Collar Log**

Company Kerr-McGee Oil & Gas Onshore, L.P.  
Well Shake 11-12HZ  
Field Wattenberg  
County Weld  
State Colorado

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Location: SEC 11 TWP 4N RGE 68W  
API #: 05-123-51400  
GR/JB  
Other Services  
Permanent Datum Ground Level Elevation 4993'  
Log Measured From Ground Level 0 FT  
Drilling Measured From Kelly Bushing  
Elevation K.B. 5013'  
D.F. ---  
G.L. 4993'

Date	16-OCT-2021				
Run Number	Two				
Depth Driller	17419 FT				
Depth Logger	6550 FT				
Bottom Logged Interval	6536 FT				
Top Log Interval	Surface				
Open Hole Size	7.875"				
Type Fluid	Water				
Density / Viscosity	8.34 lb/gal				
Max. Recorded Temp.	206 °F				
Estimated Cement Top	See Log				
Time Well Ready	ROA				
Time Logger on Bottom	09:50				
Equipment Number	HD-0324				
Location	Platteville, CO				
Recorded By	M. Steinman				
Witnessed By	Ryan Schock				
Borehole Record					
Run Number	Bit	From	To	Size	To
Tubing Record					
Casing Record	Size (in)	Wgt (lbs/Ft)	Grade	Top	Bottom
Surface Casing	9 5/8	36	J-55	Surface	1898 FT
Intermediate #1	5 1/2	17	P-110	Surface	17361 FT
Intermediate #2					
Liner					

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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 6494 FT  
Adjusted -5 FT to correlate with Marker Joint  
Gauge Ring/Junk Basket ran to 6619 FT  
Log ran with 2800 PSI Surface Induced Pressure  
Logging tools were clean and free of 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

Parameter	Value	Diagram	Description	Length (ft)	Weight (lb)	O.D. (in)
TEMP	14.16		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	11.93		Probe Radii-2750 RBT (071220) Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub	9.39	2.75	105.00
WVFS7	11.93					
WVFS6	11.93					
WVFS5	11.93					
WVFS4	11.93					
WVFS3	11.93					
WVFS2	11.93					
WVFS1	11.93					
WVFCAL	11.93					
WVF3FT	11.93					
WVF5FT	10.93					
HEADVOLT	7.68					
CCL\$2	6.80					
CCL\$1	6.80					
GR	5.46		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
			Probe CENT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.88	2.75	20.00
LOCTIM	0.00					
UTCTIM	0.00					

Dataset: 0512351400\_oxy\_shake 11-12hz\_rbl\_10-16-21.db: field/well/main/pass1  
 Total length: 18.10 ft  
 Total weight: 203.60 lb  
 O.D.: 3.25 in

Calibration Report

Database File 0512351400\_oxy\_shake 11-12hz\_rbl\_10-16-21.db  
 Dataset Pathname main/pass1

### 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: 071220  
 Tool Model: 2750 RBT

Calibration Casing Diameter: 5.500                      in  
 Calibration Depth: 2.128                      ft

#### Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.000	0.676	0.800	71.921	105.287	0.782
CAL	0.654	0.655				
5'	0.000	0.604	0.800	71.921	117.821	0.788
SUM						
S1	0.001	0.678	0.000	100.000	147.872	-0.188
S2	0.001	0.665	0.000	100.000	150.687	-0.135
S3	0.001	0.677	0.000	100.000	147.826	-0.101
S4	0.001	0.721	0.000	100.000	138.885	-0.109
S5	0.000	0.730	0.000	100.000	136.996	-0.064
S6	0.001	0.732	0.000	100.000	136.718	-0.132
S7	0.001	0.742	0.000	100.000	134.978	-0.107
S8	0.000	0.717	0.000	100.000	139.466	-0.026

#### Air Zero Calibration, performed Fri Oct 15 12:32:36 2021:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.005		0.000			-0.000
5'	0.009		0.000			-0.000
SUM						
S1	0.009		0.000			0.001
S2	0.006		0.000			0.001
S3	0.006		0.000			0.000
S4	0.005		0.000			0.000
S5	0.006		0.000			0.000
S6	0.006		0.000			0.001
S7	0.006		0.000			0.000
S8	0.006		0.000			-0.000

### Temperature Calibration Report

Serial Number: 071220  
 Tool Model: 2750 RBT

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	

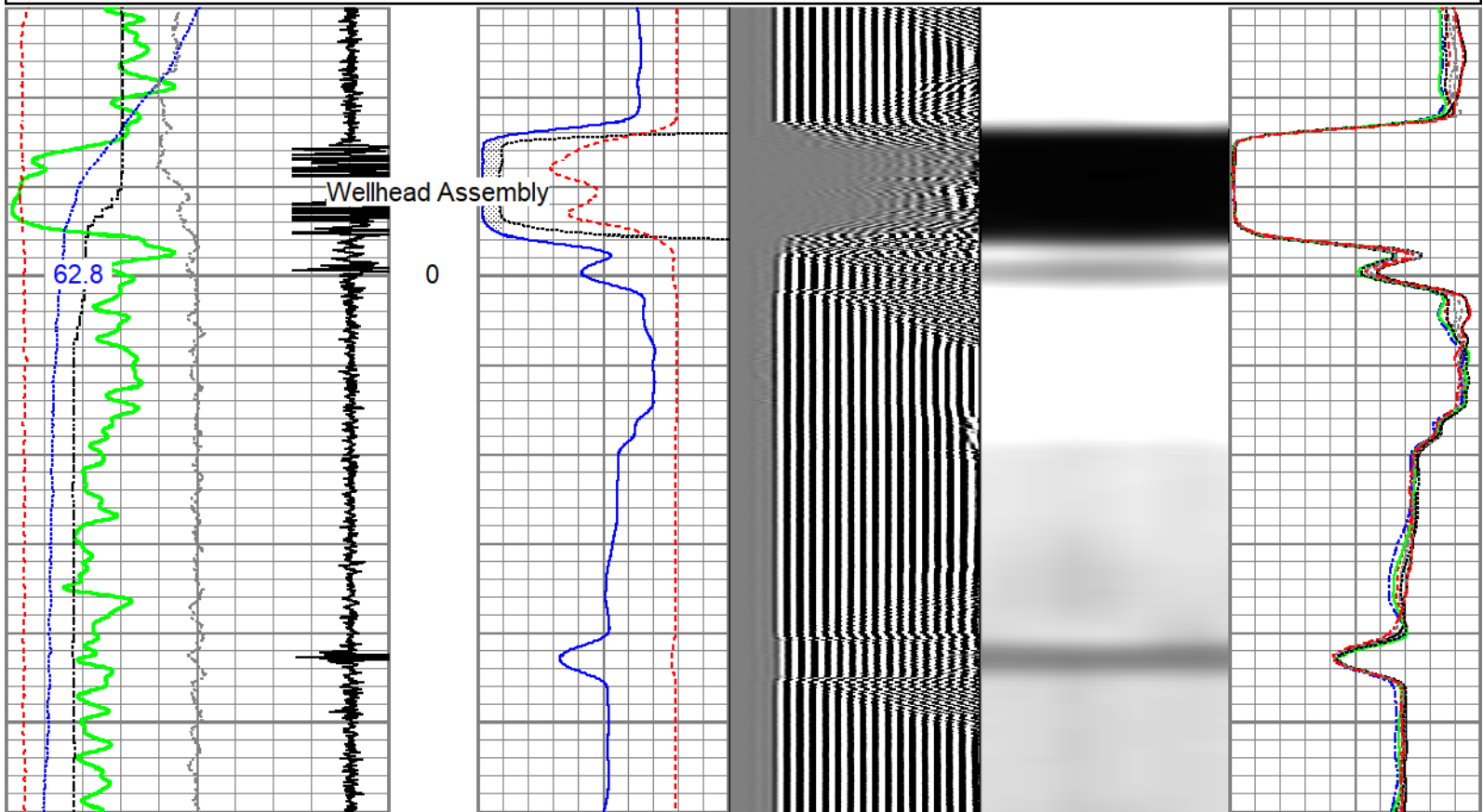


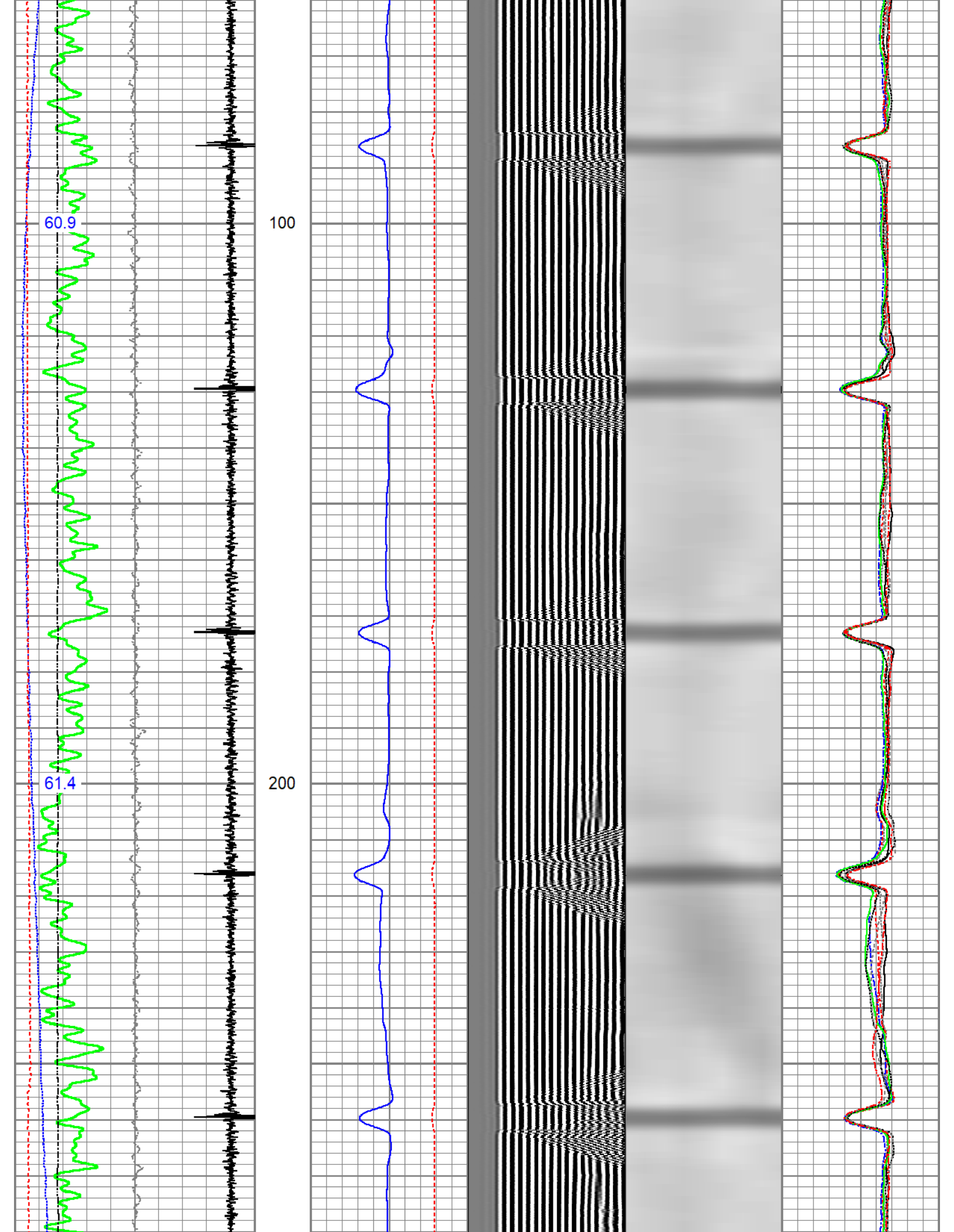
## Main Pass

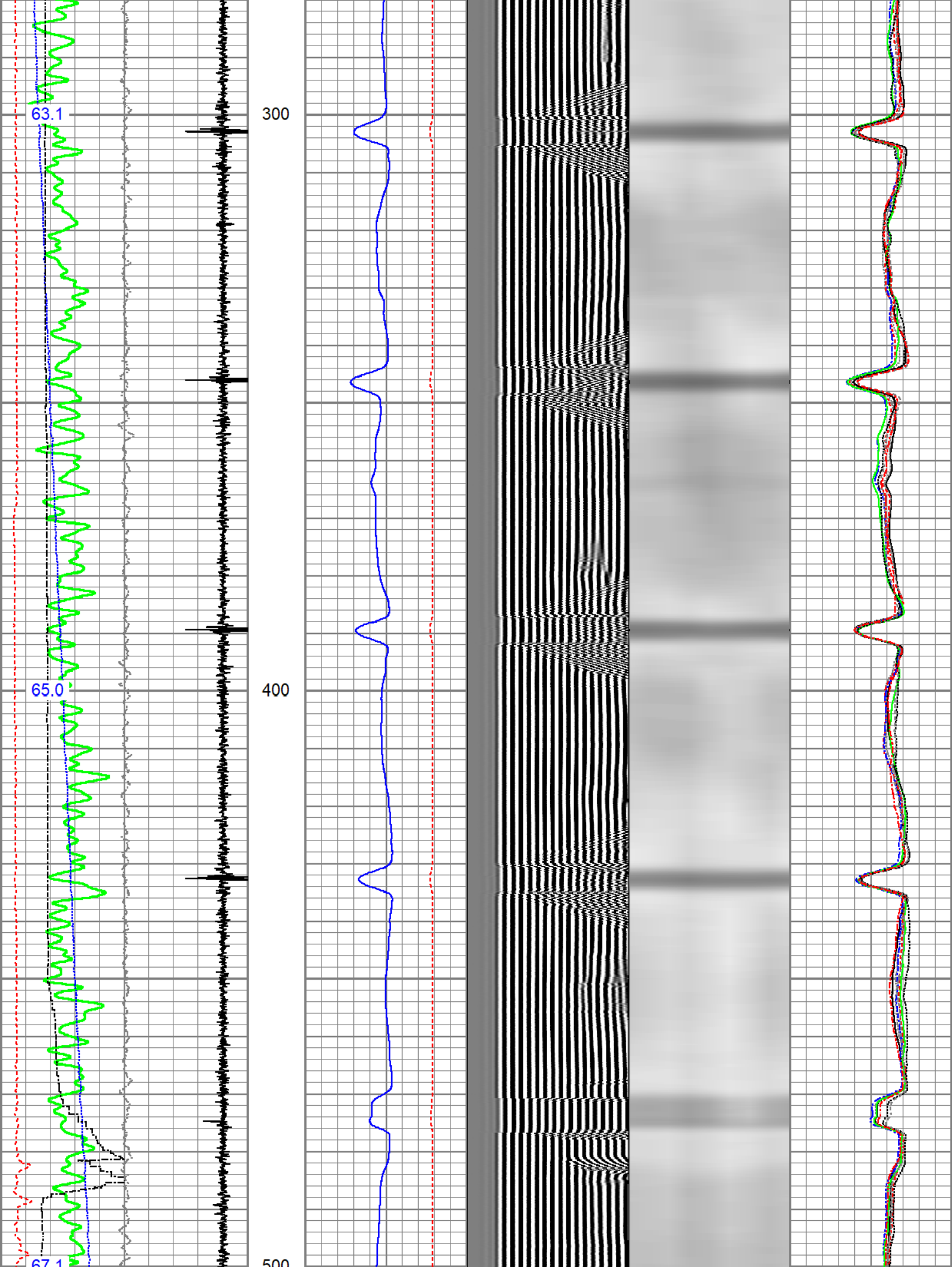
Recorded With 2800 PSI Surface Induced Pressure

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 Presentation Format edge\_rbl  
 Dataset Creation Sat Oct 16 10:08:23 2021  
 Charted by Depth in Feet scaled 1:240

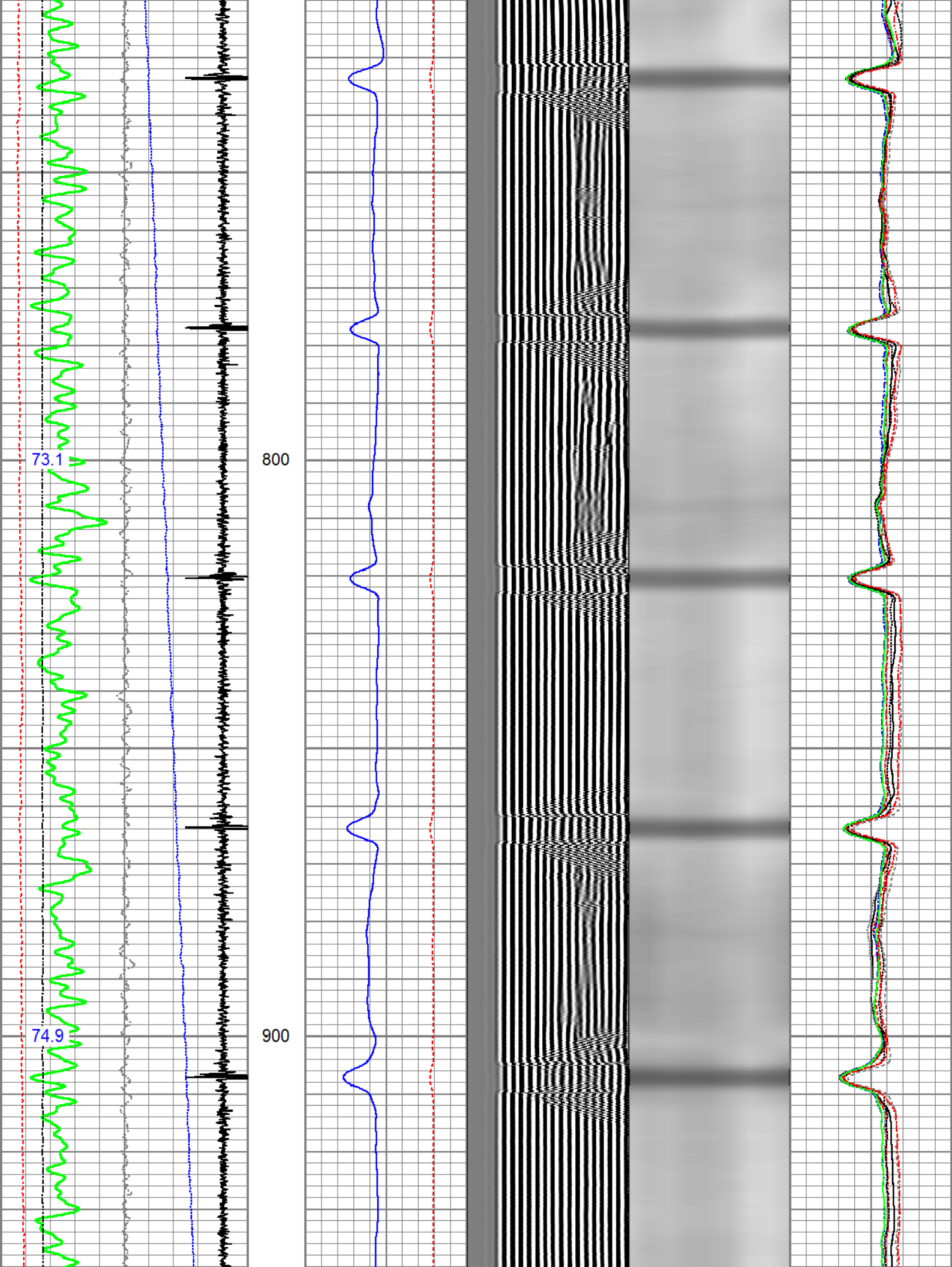
0	Gamma Ray (GAPI)	120	3' Amplitude	5' Variable Density	Sector Map	0	AMP S1	100
9	Casing Collar Locator	-1	0 (mV)	200 (usec)		0	AMP S2	100
0	Temperature (degF)	20	3' Amplitude x 5			0	AMP S3	100
-150	Line Speed (ft/min)	150	0 (mV)	20		0	AMP S4	100
0	Line Tension (lb)	2000	3' Travel Time			0	AMP S5	100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



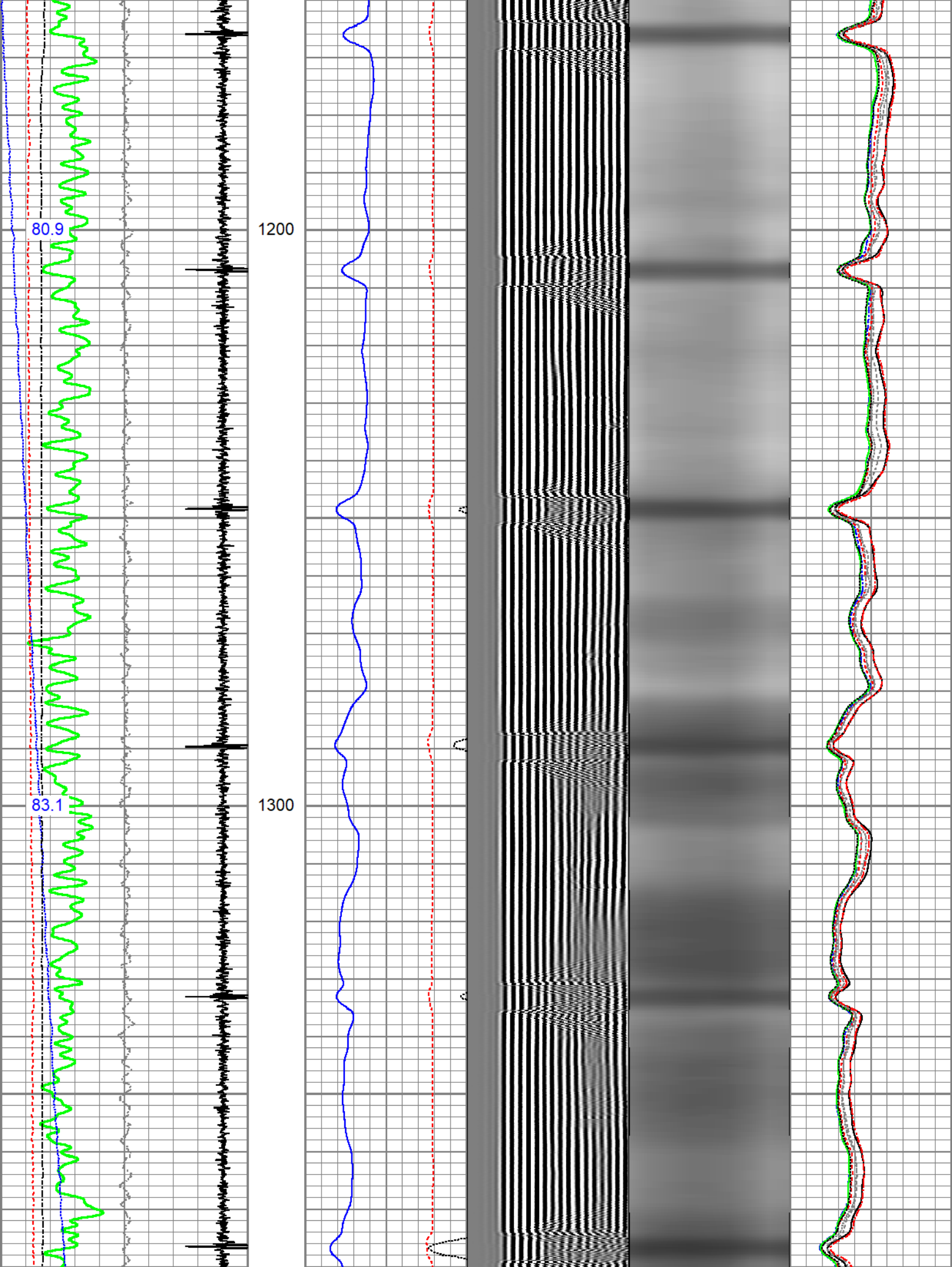


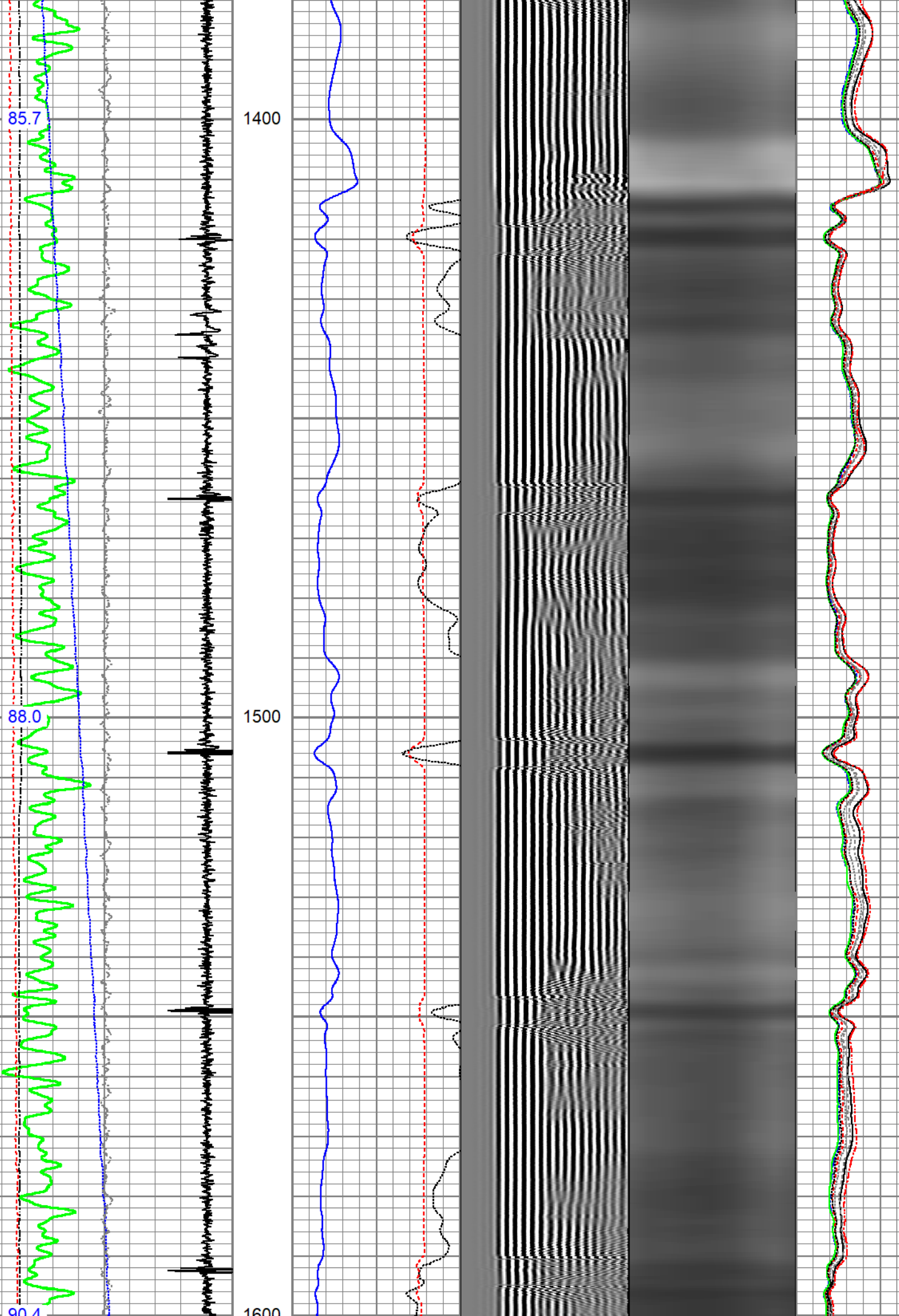




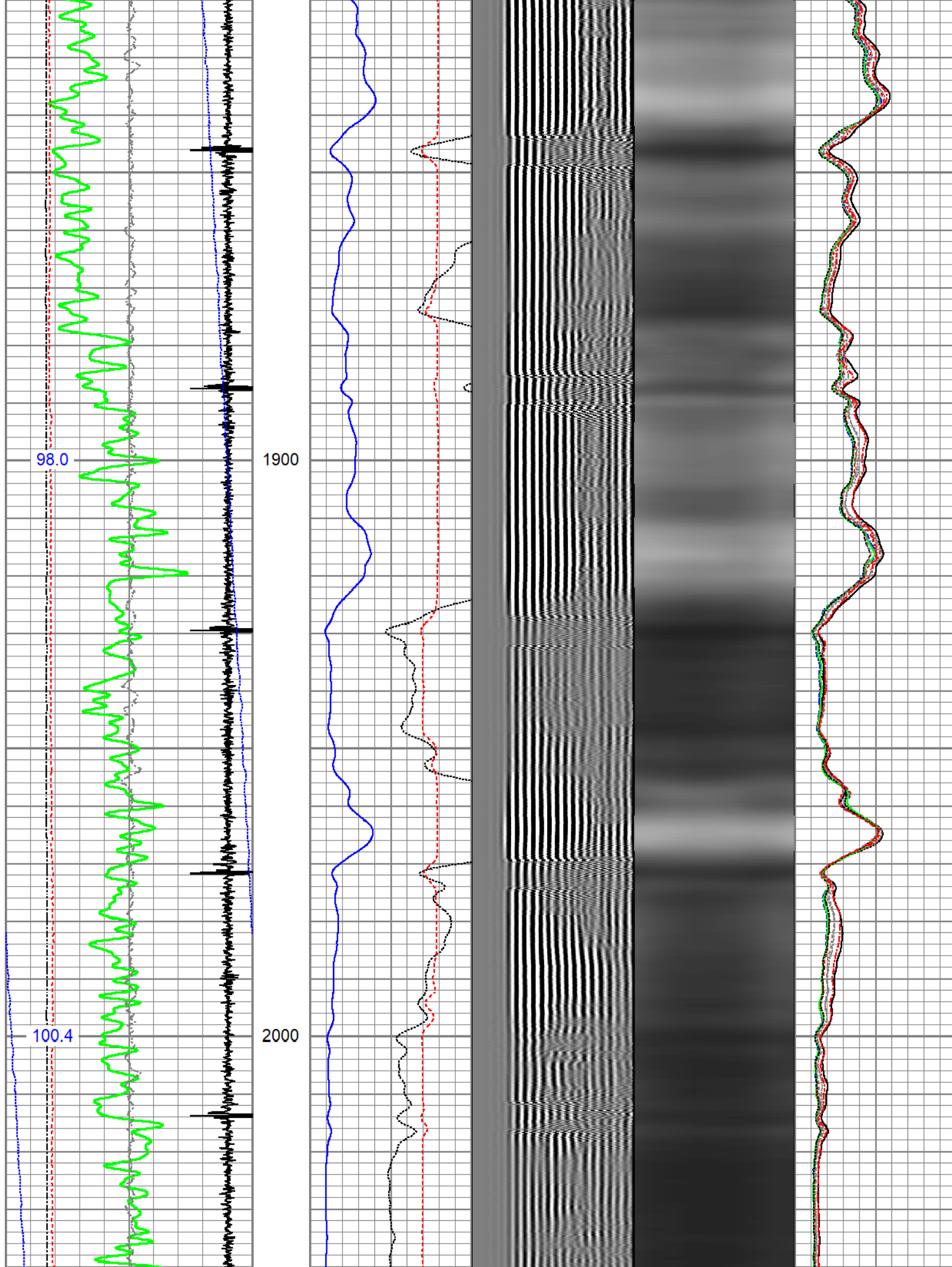


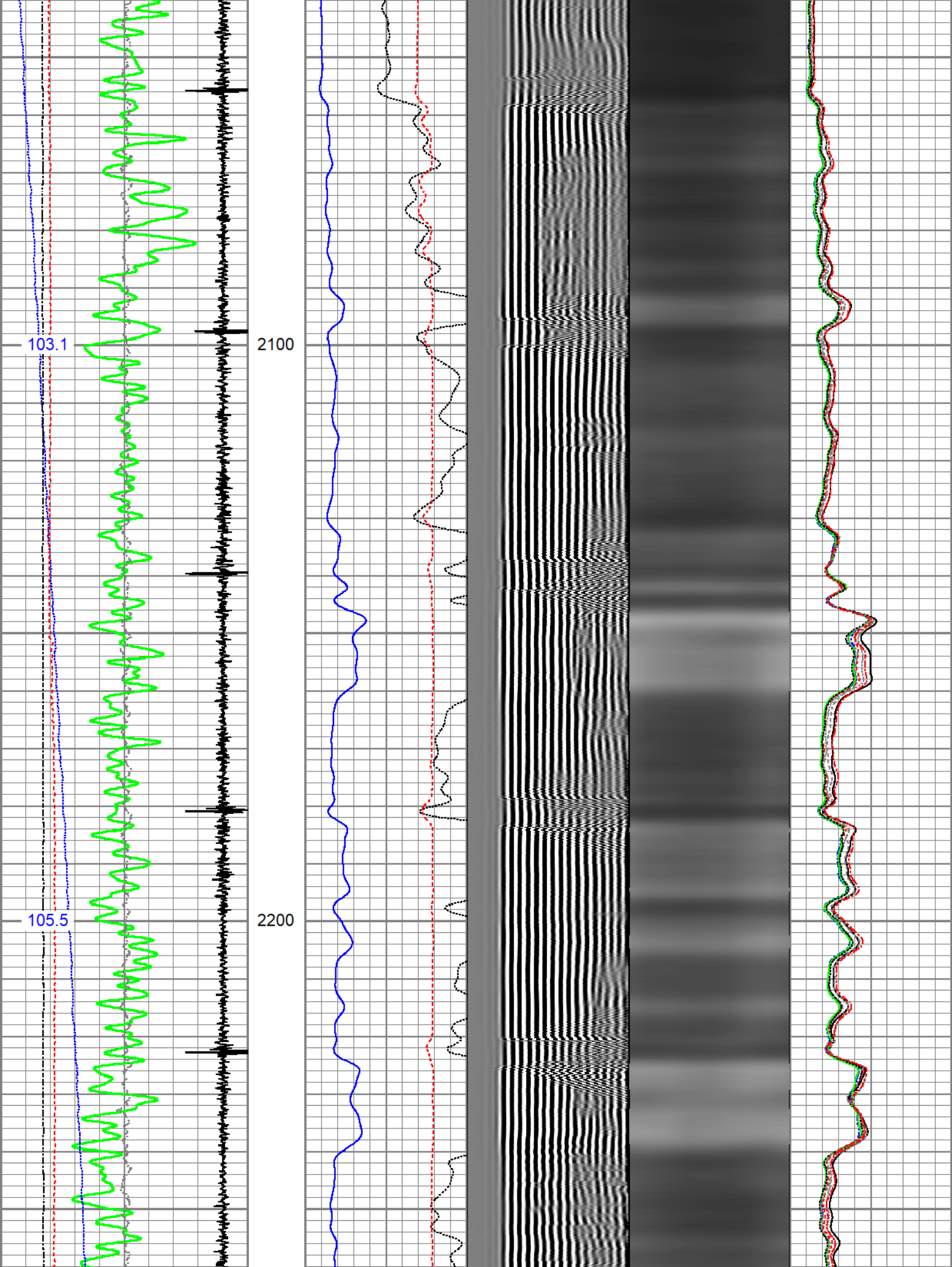


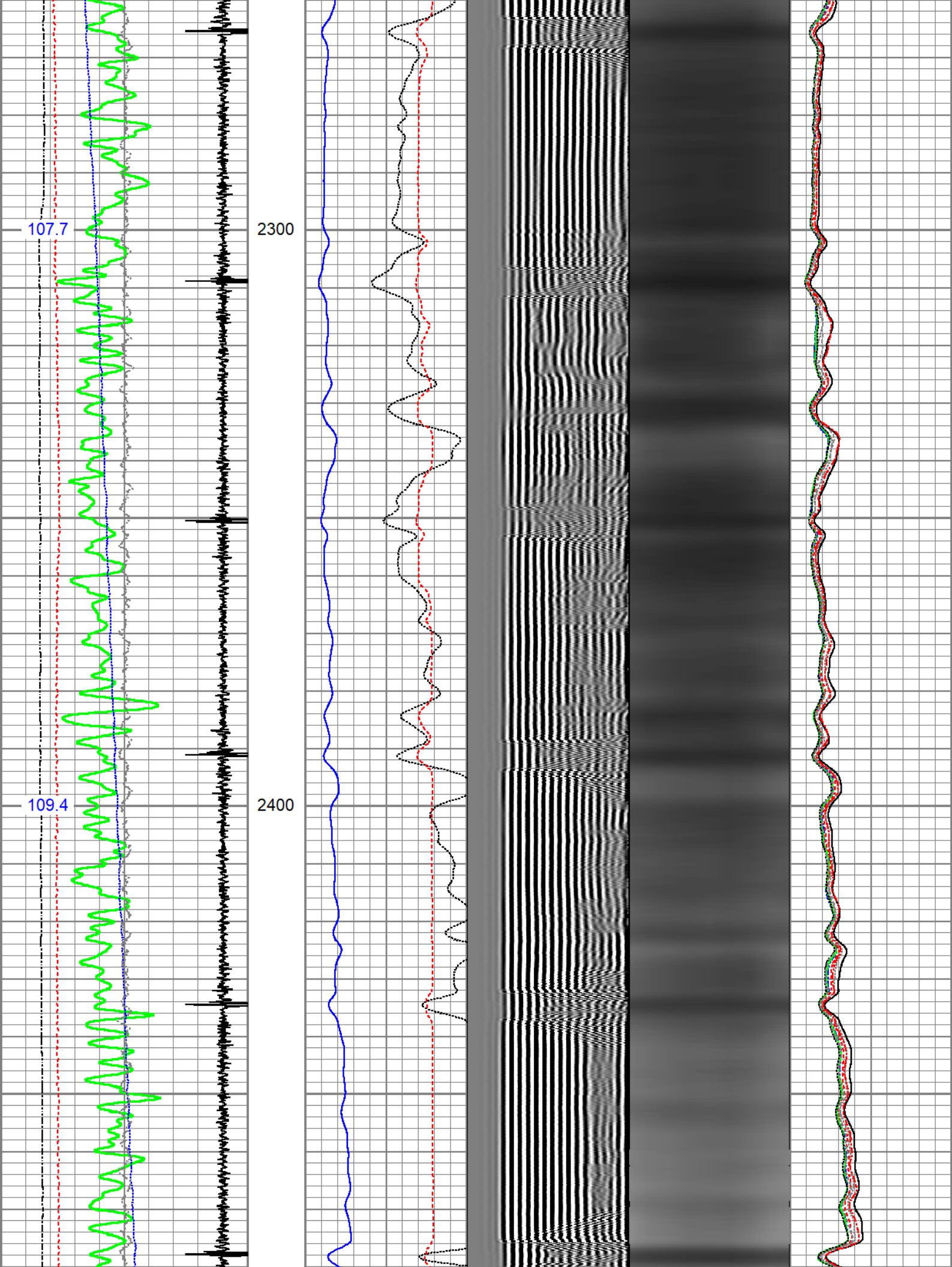




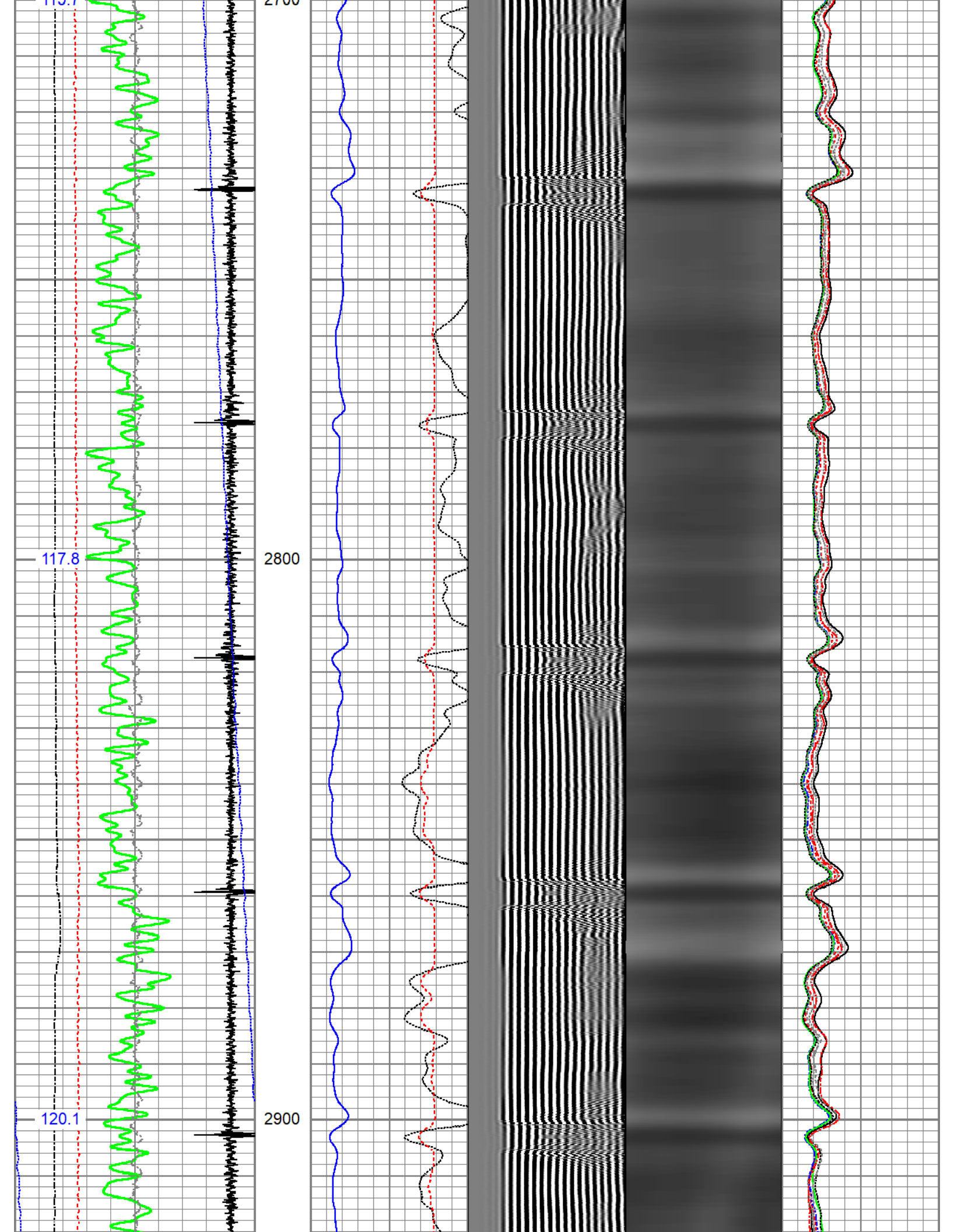


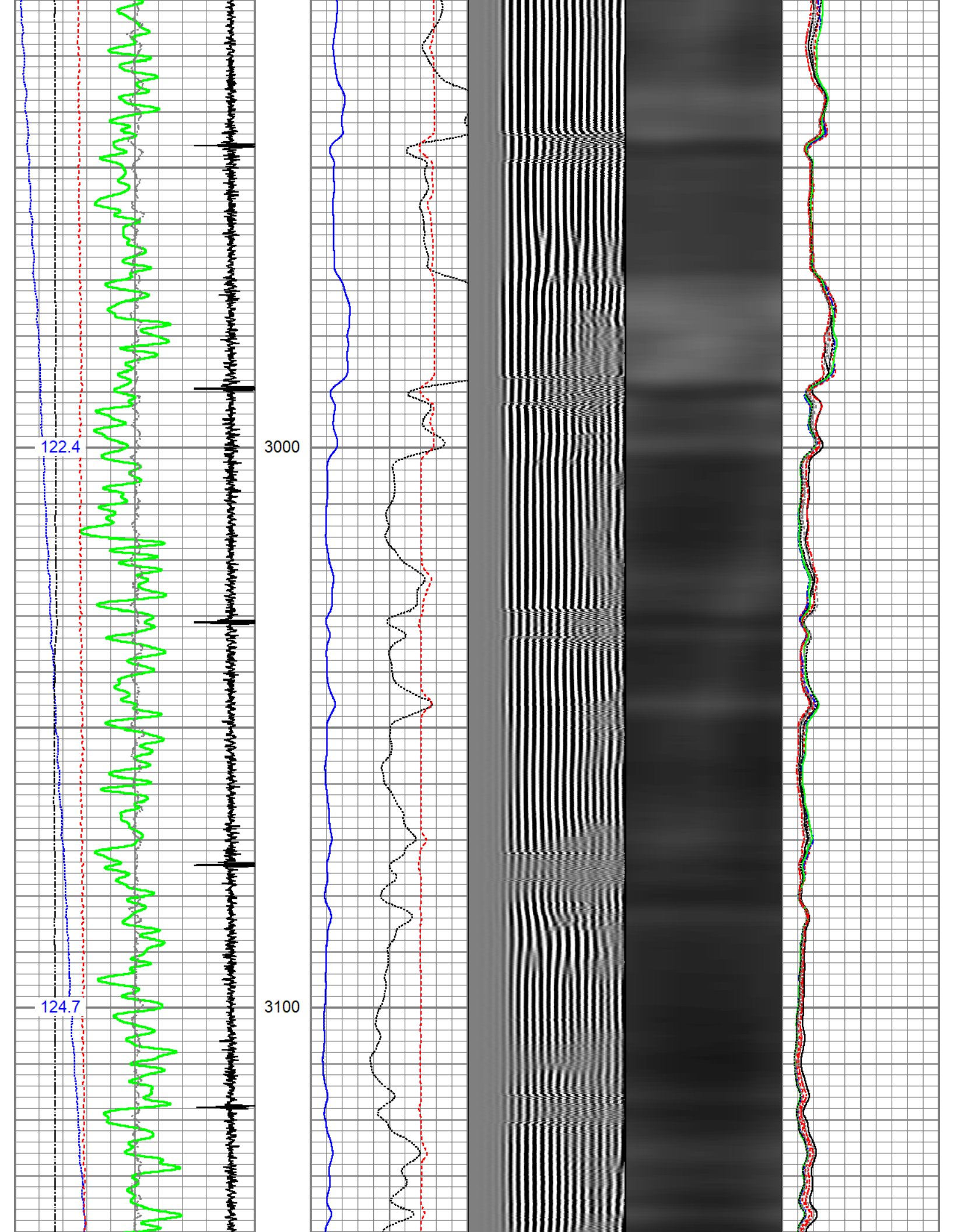


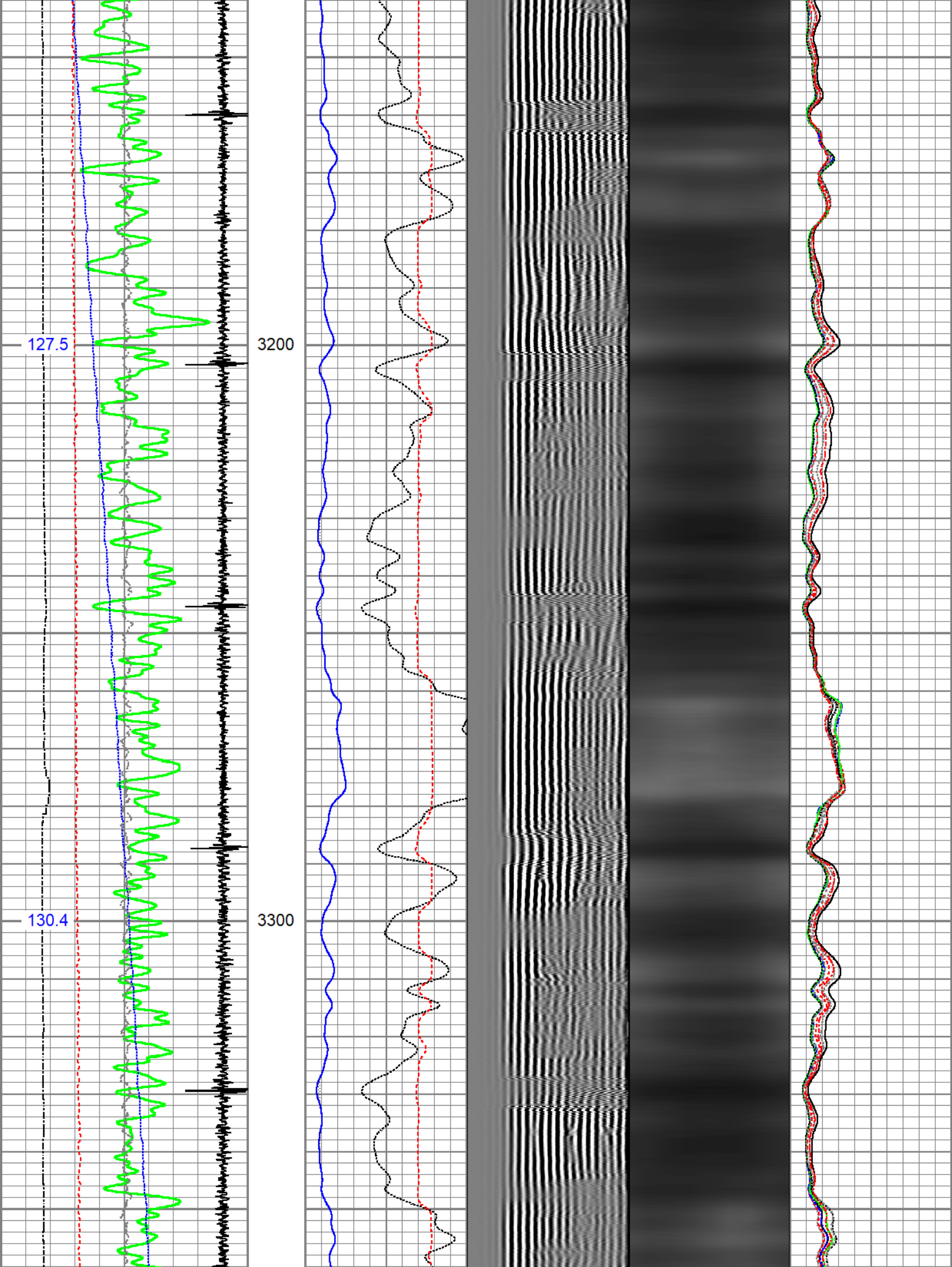


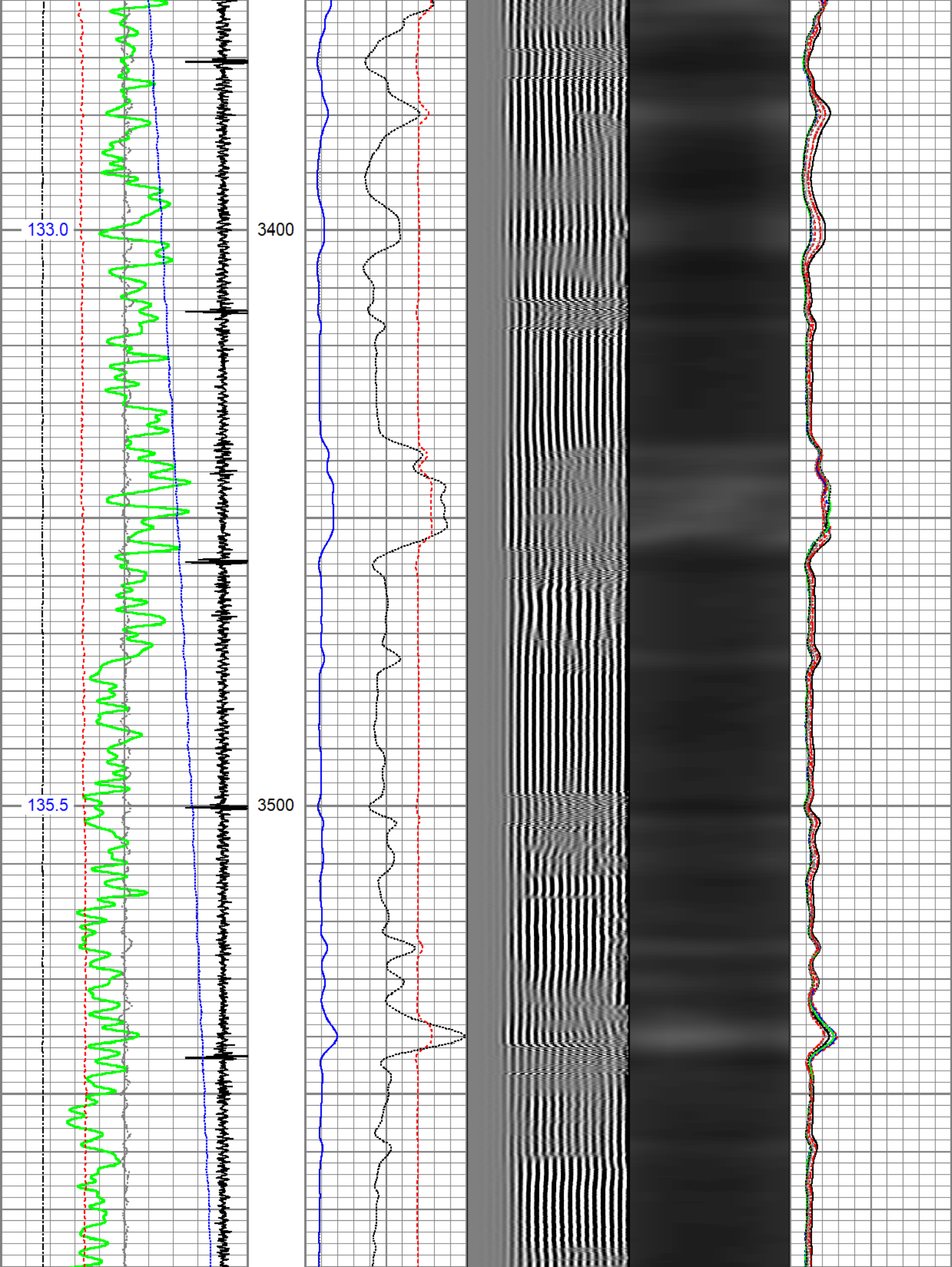


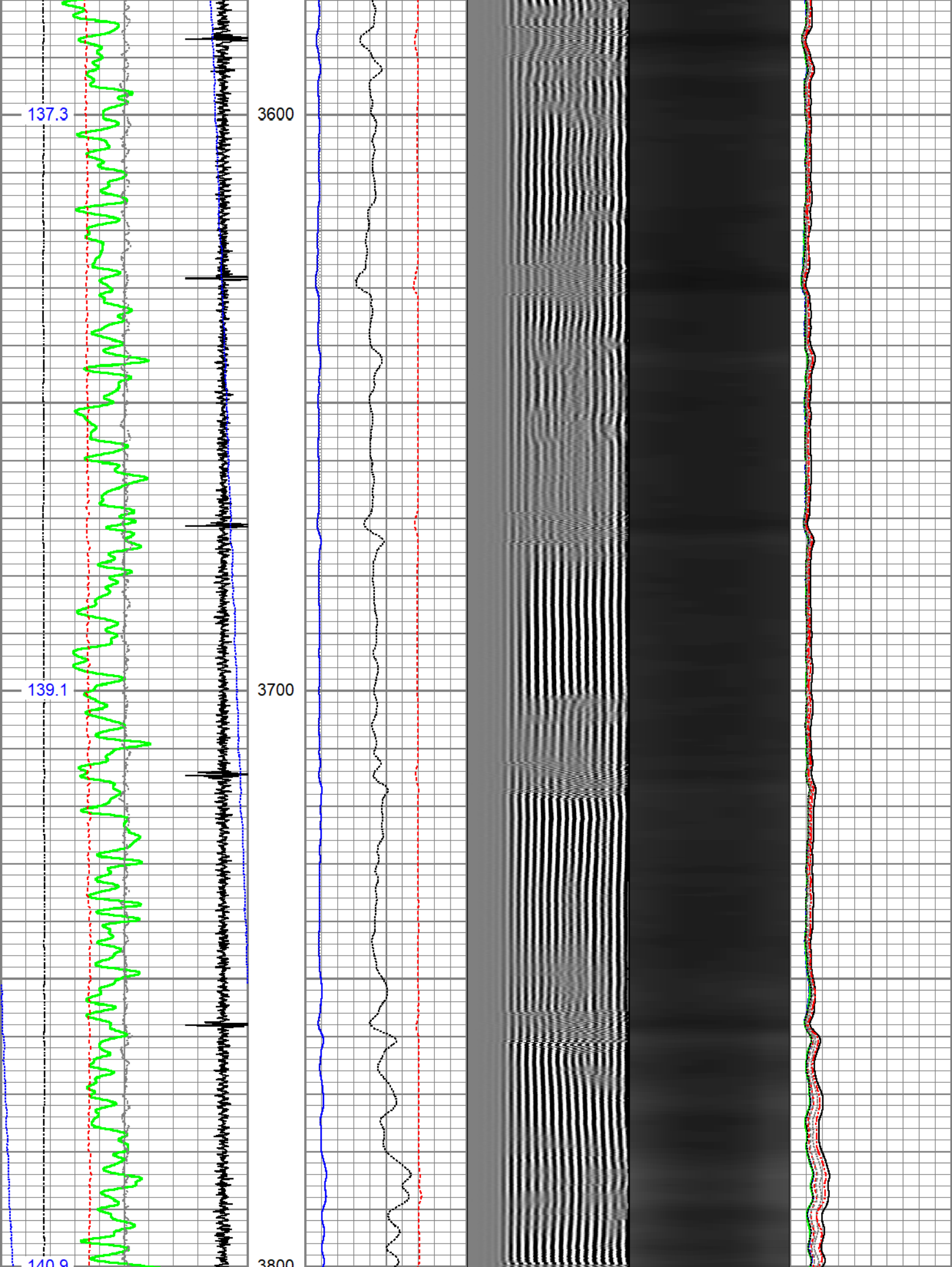


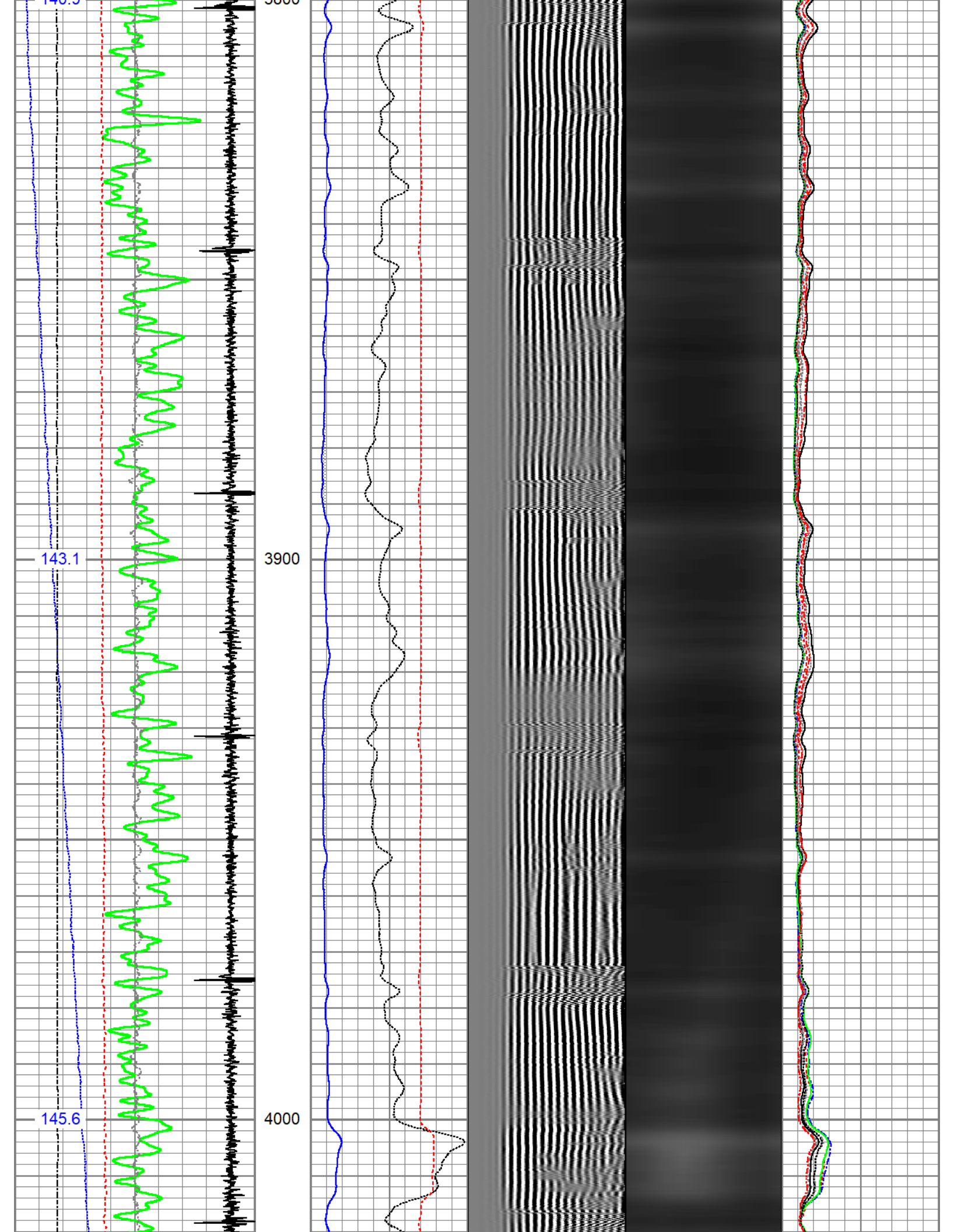


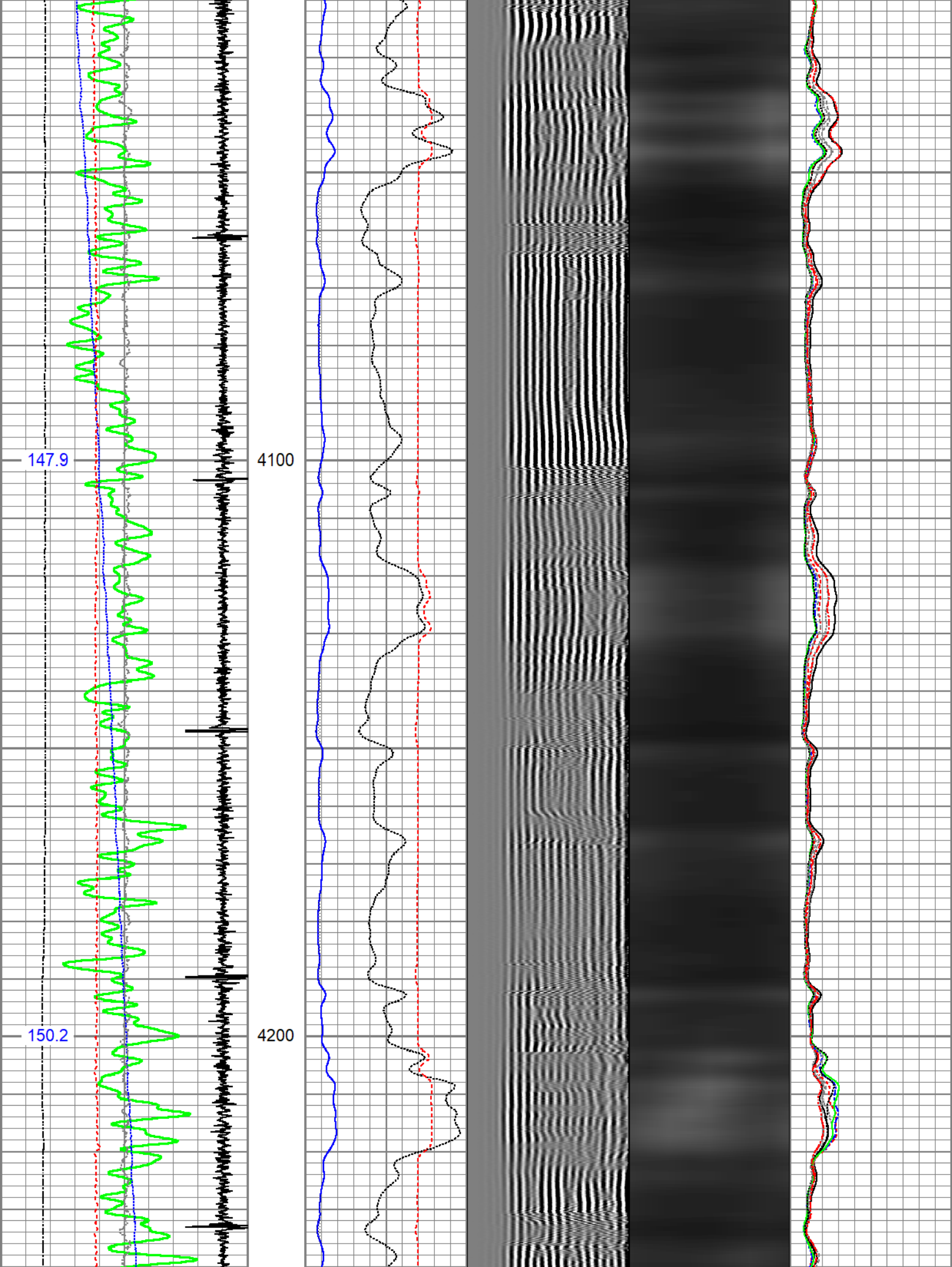


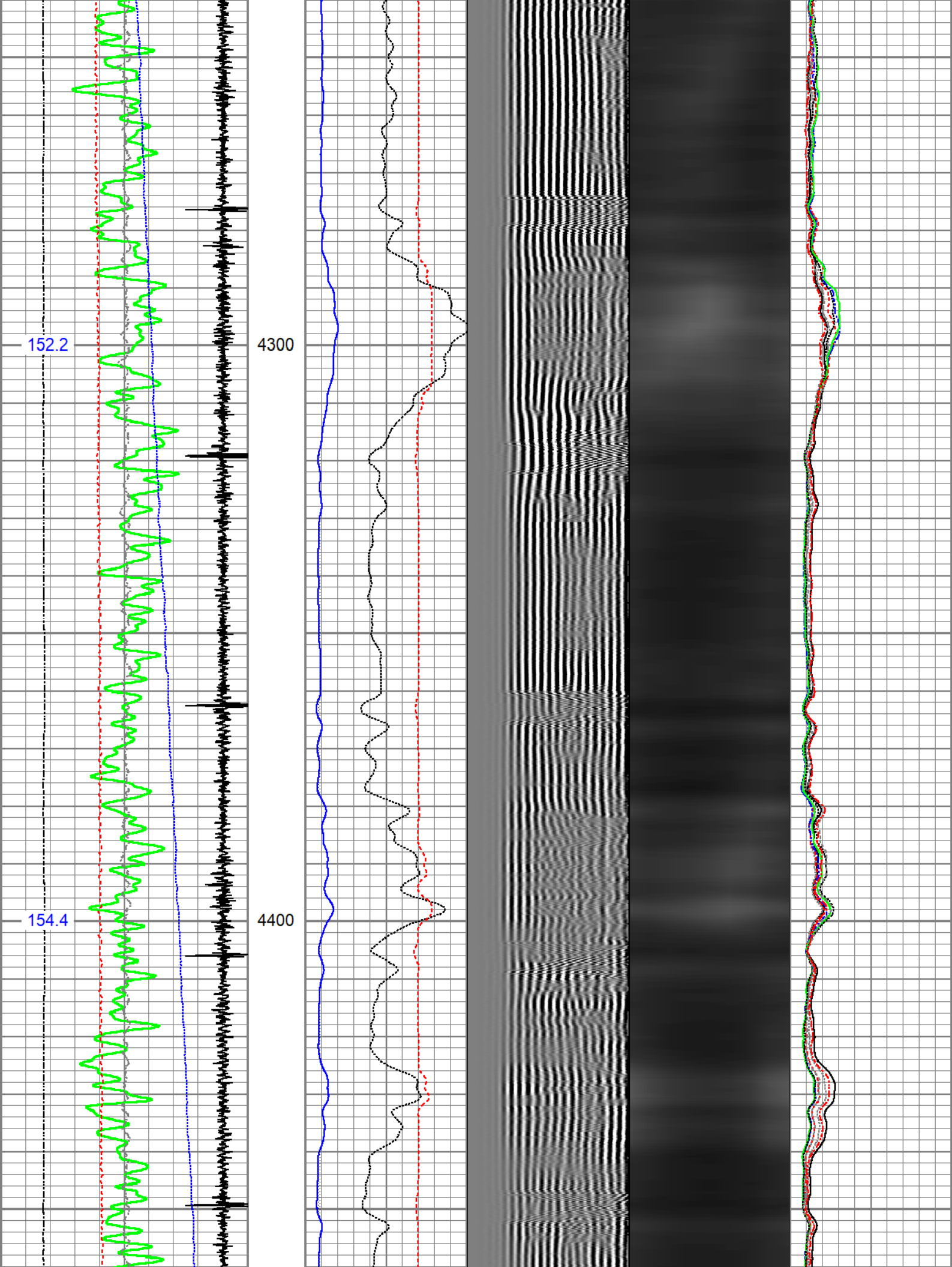




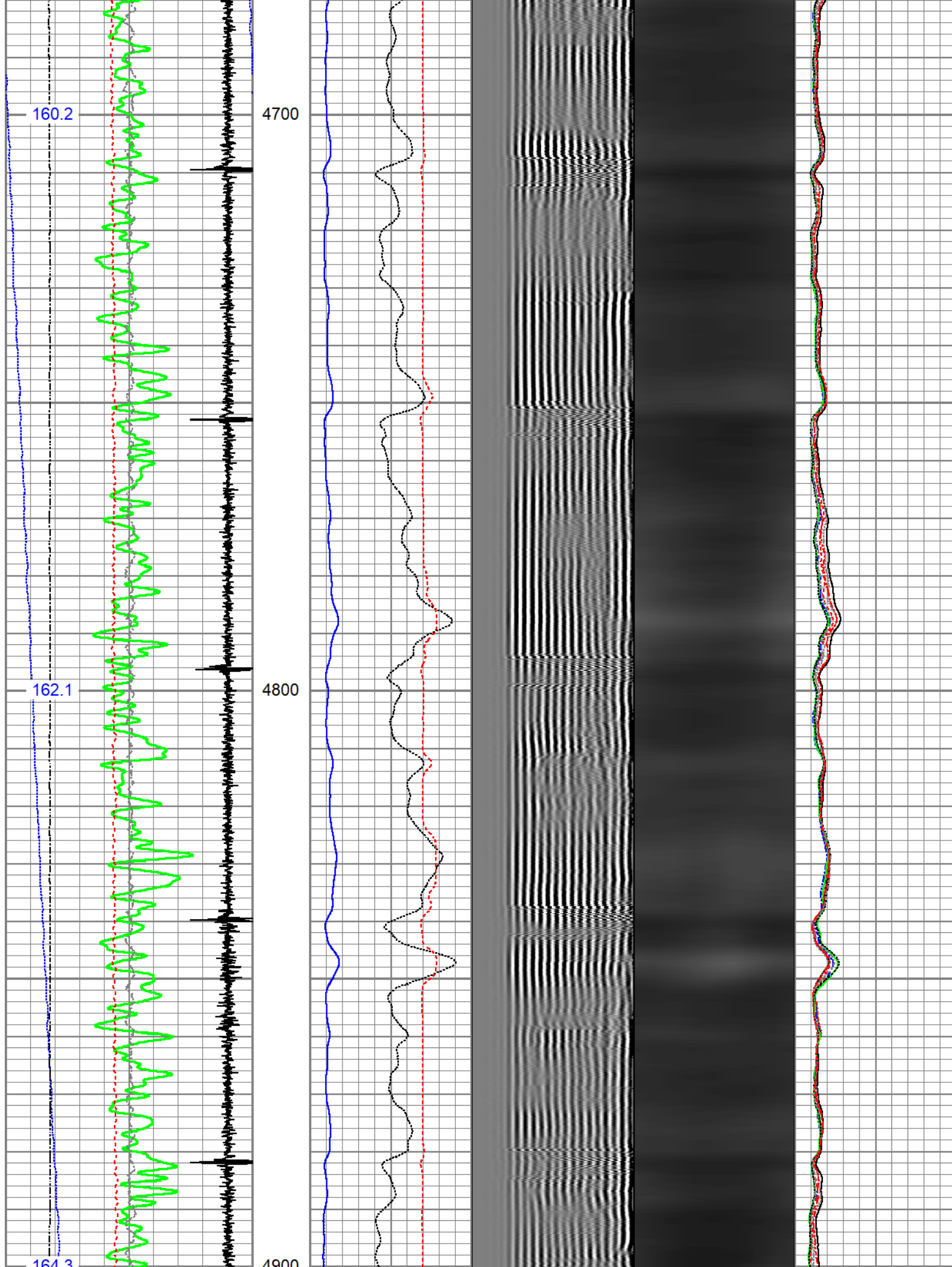


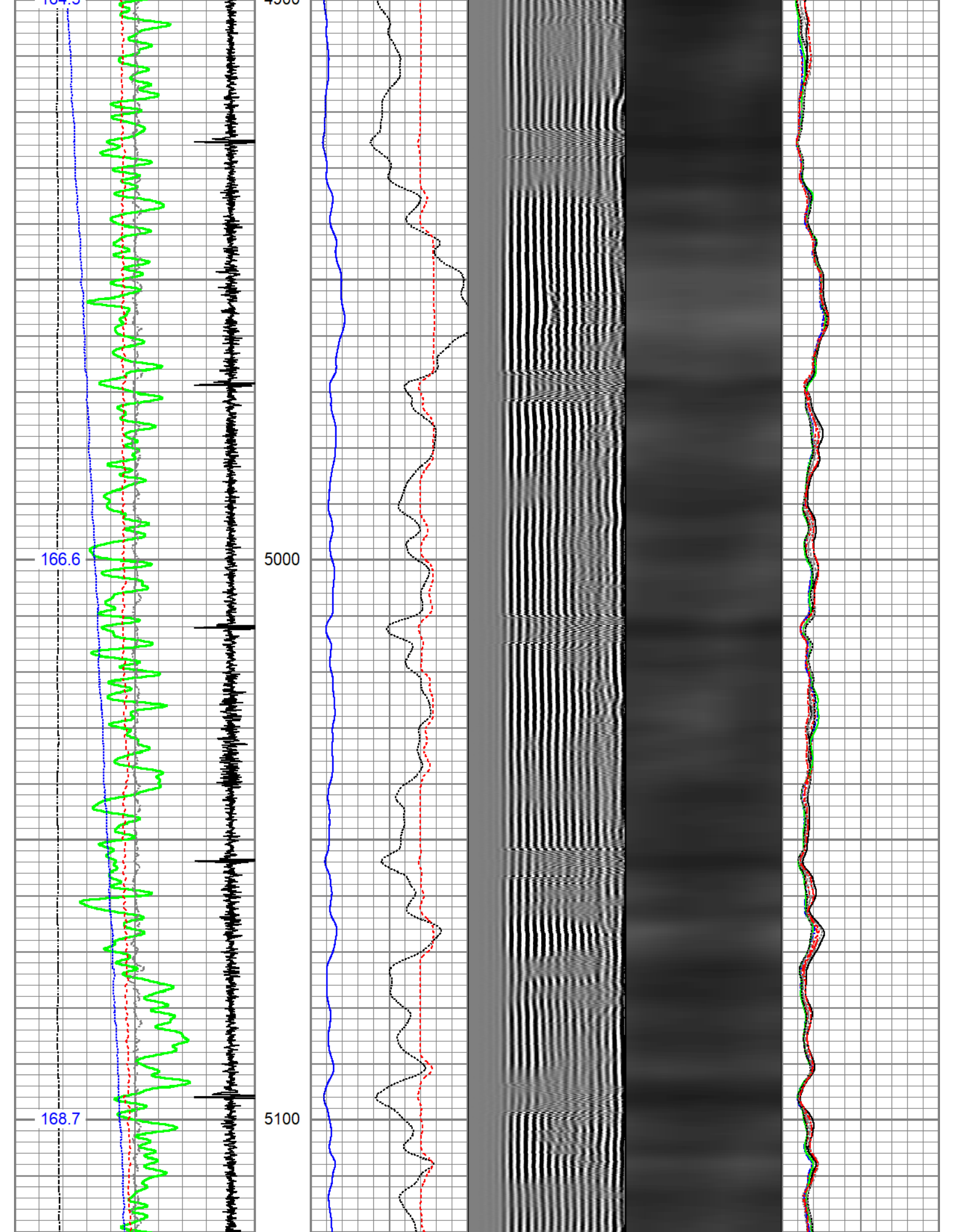


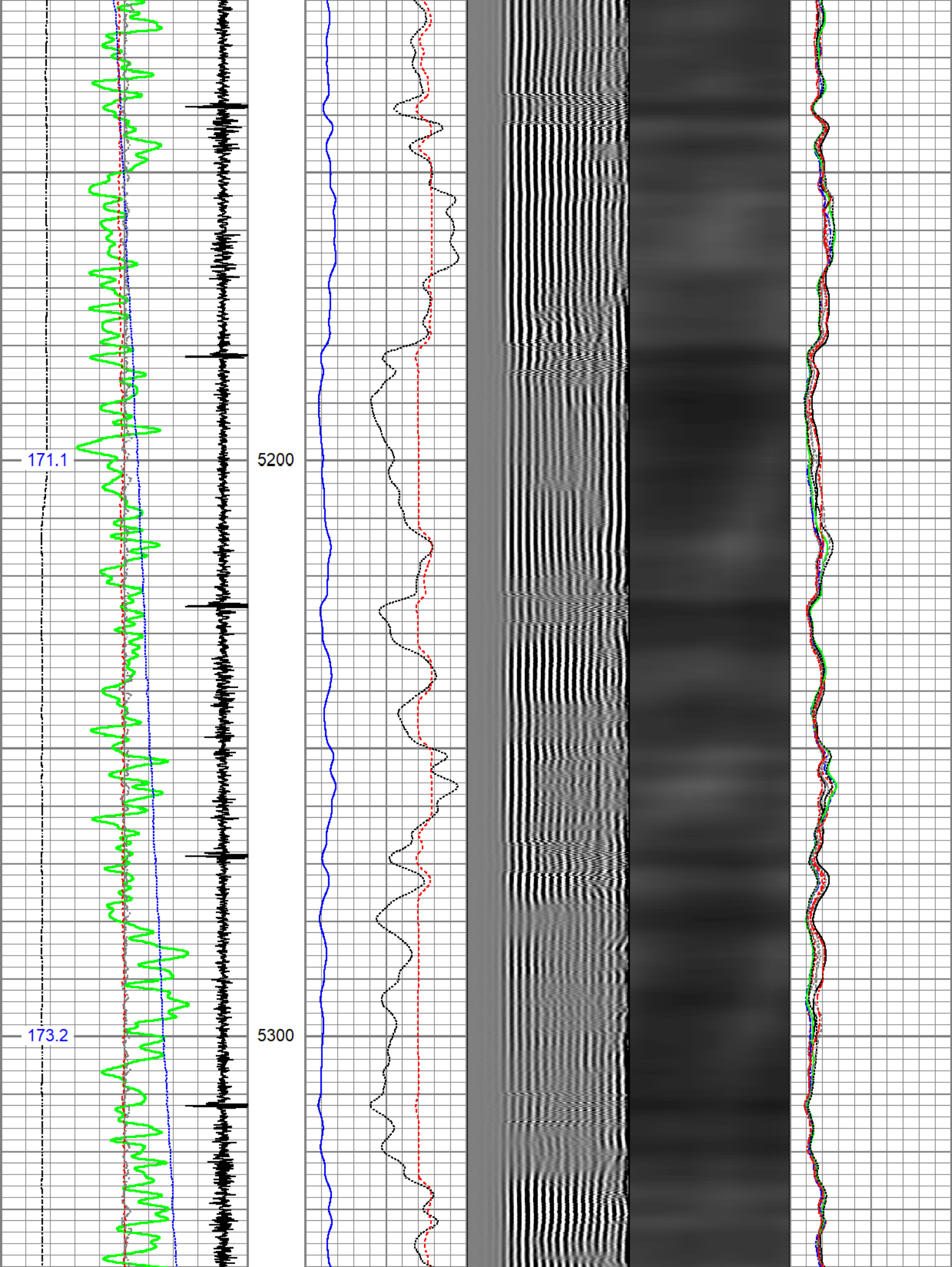


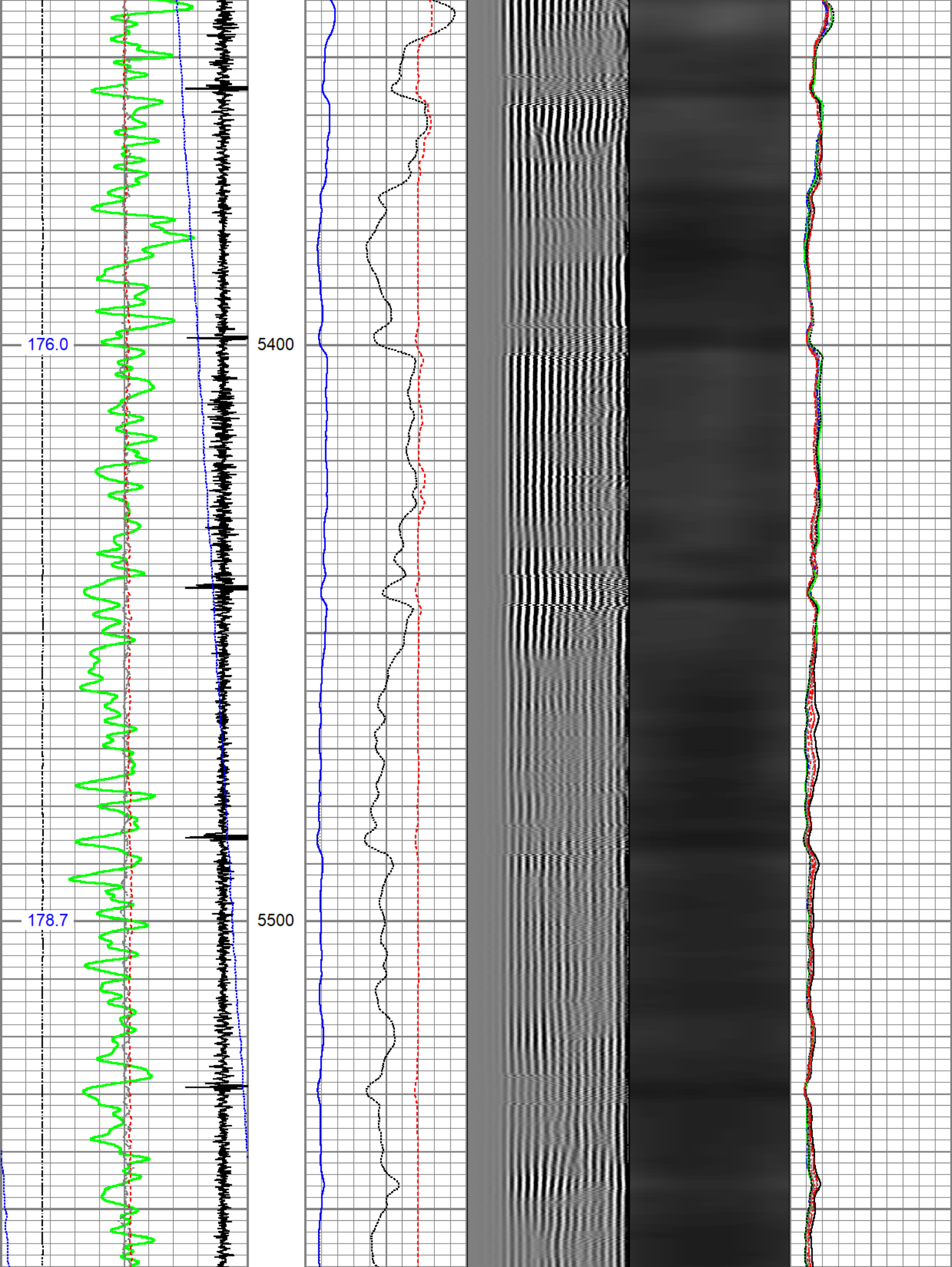


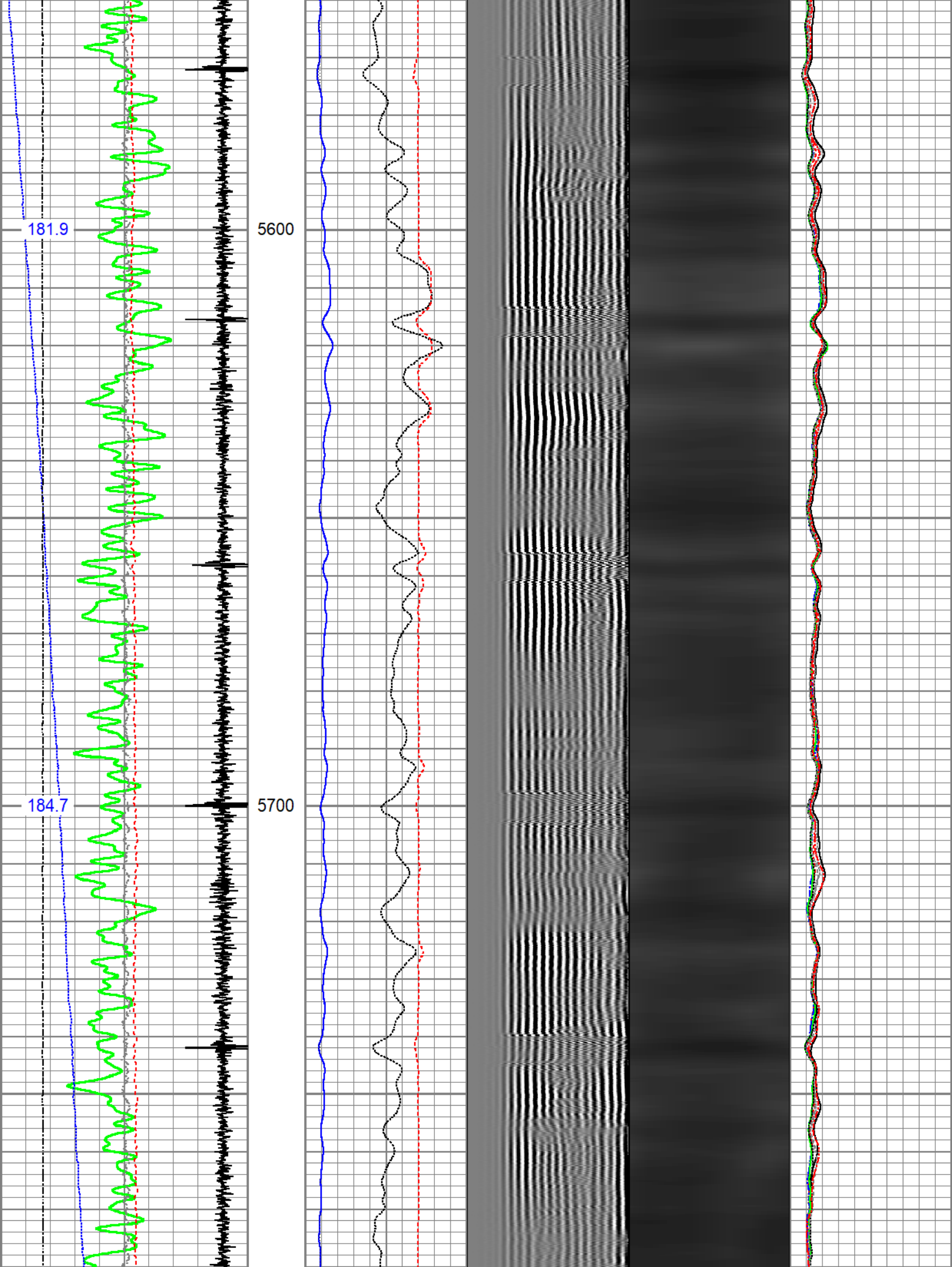












187.3

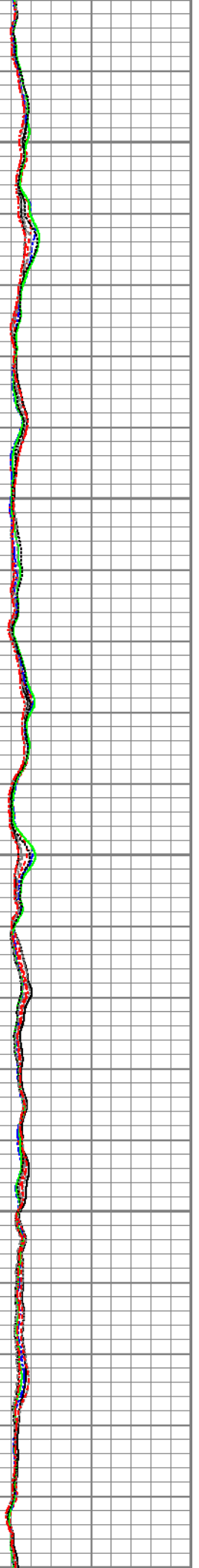
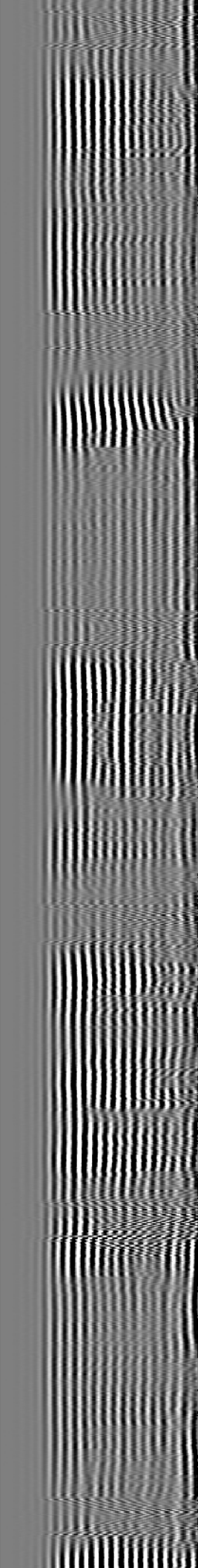
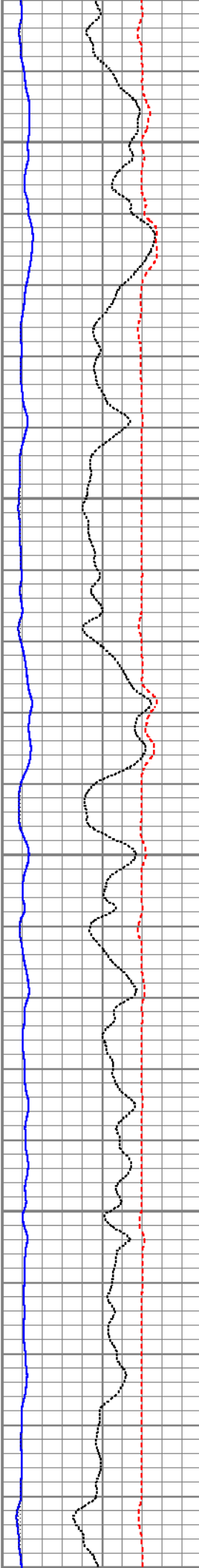
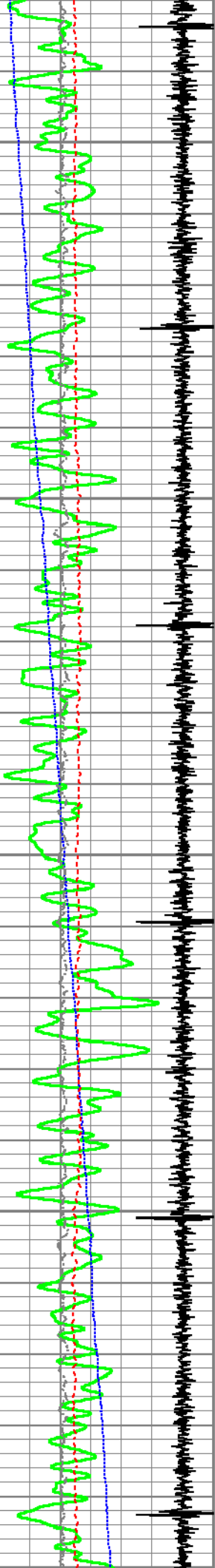
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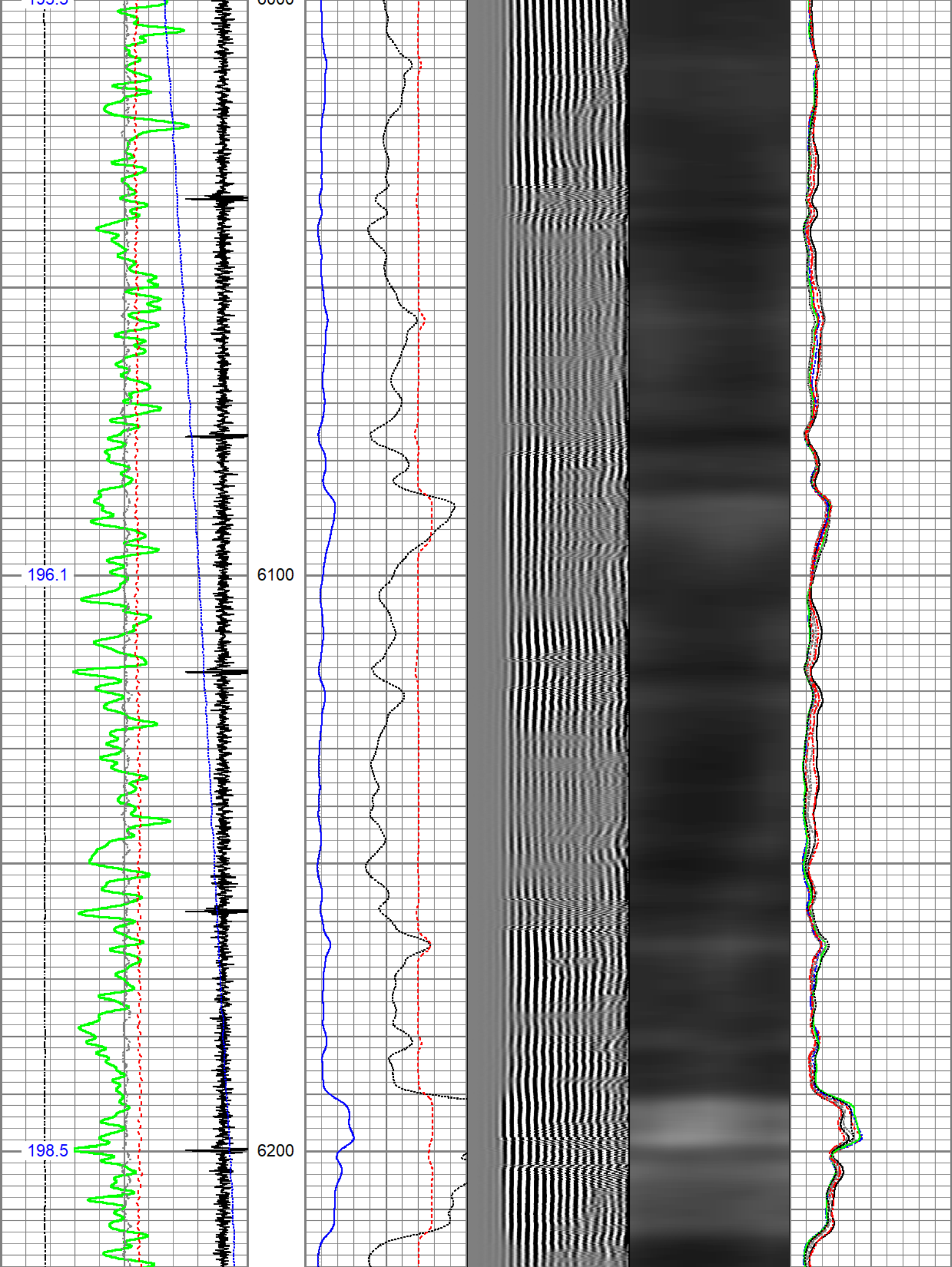
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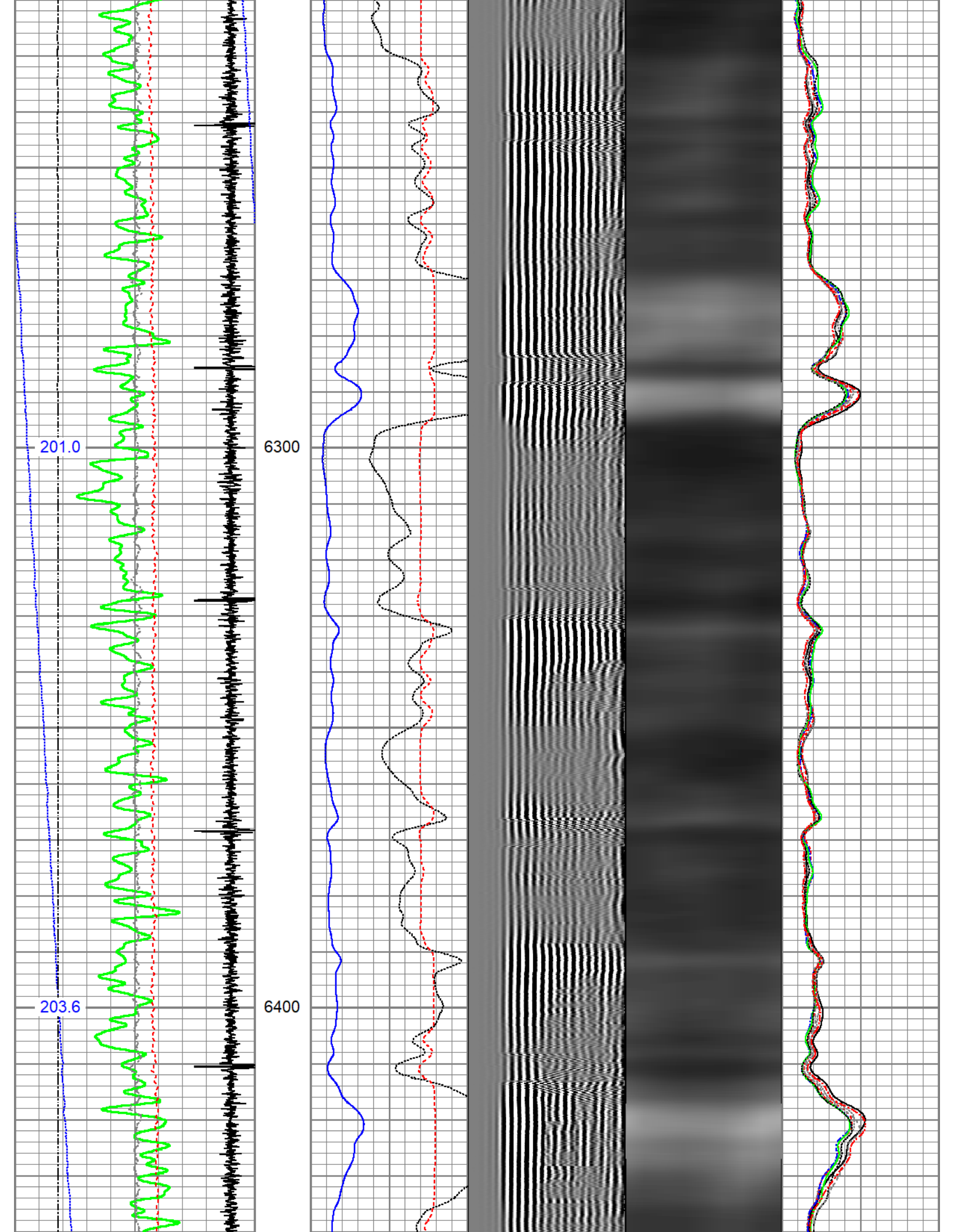
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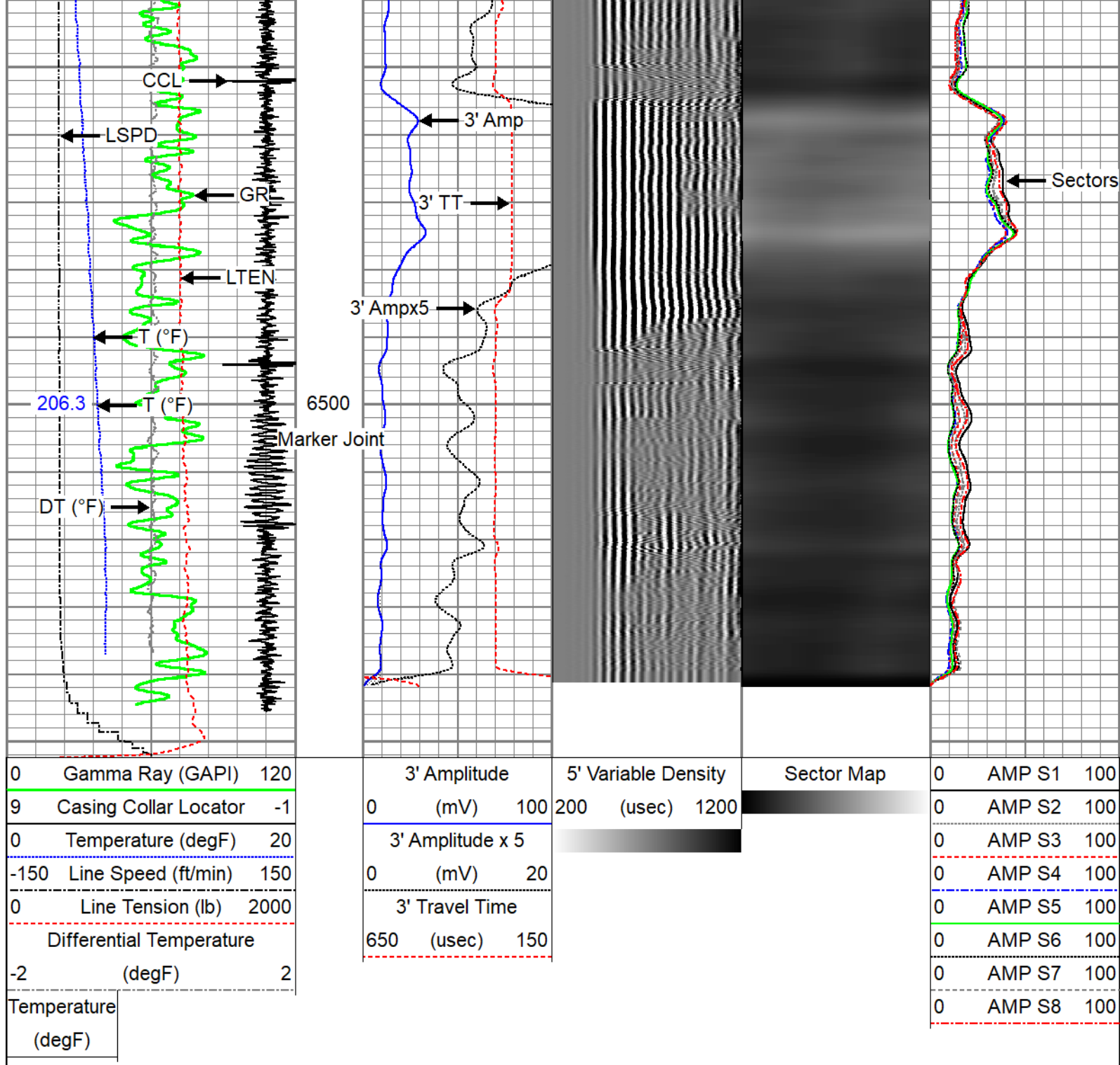
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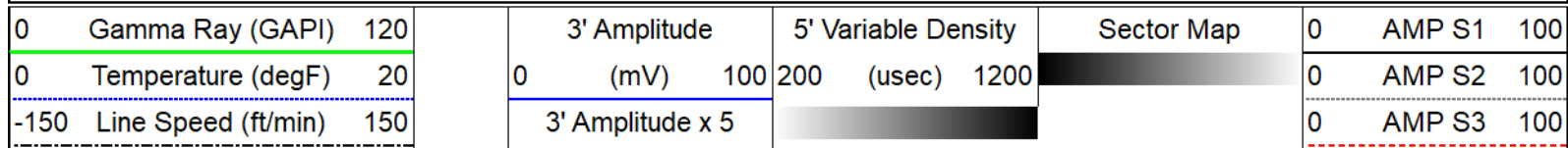


## Repeat Pass



Recorded With 2800 PSI Surface Induced Pressure

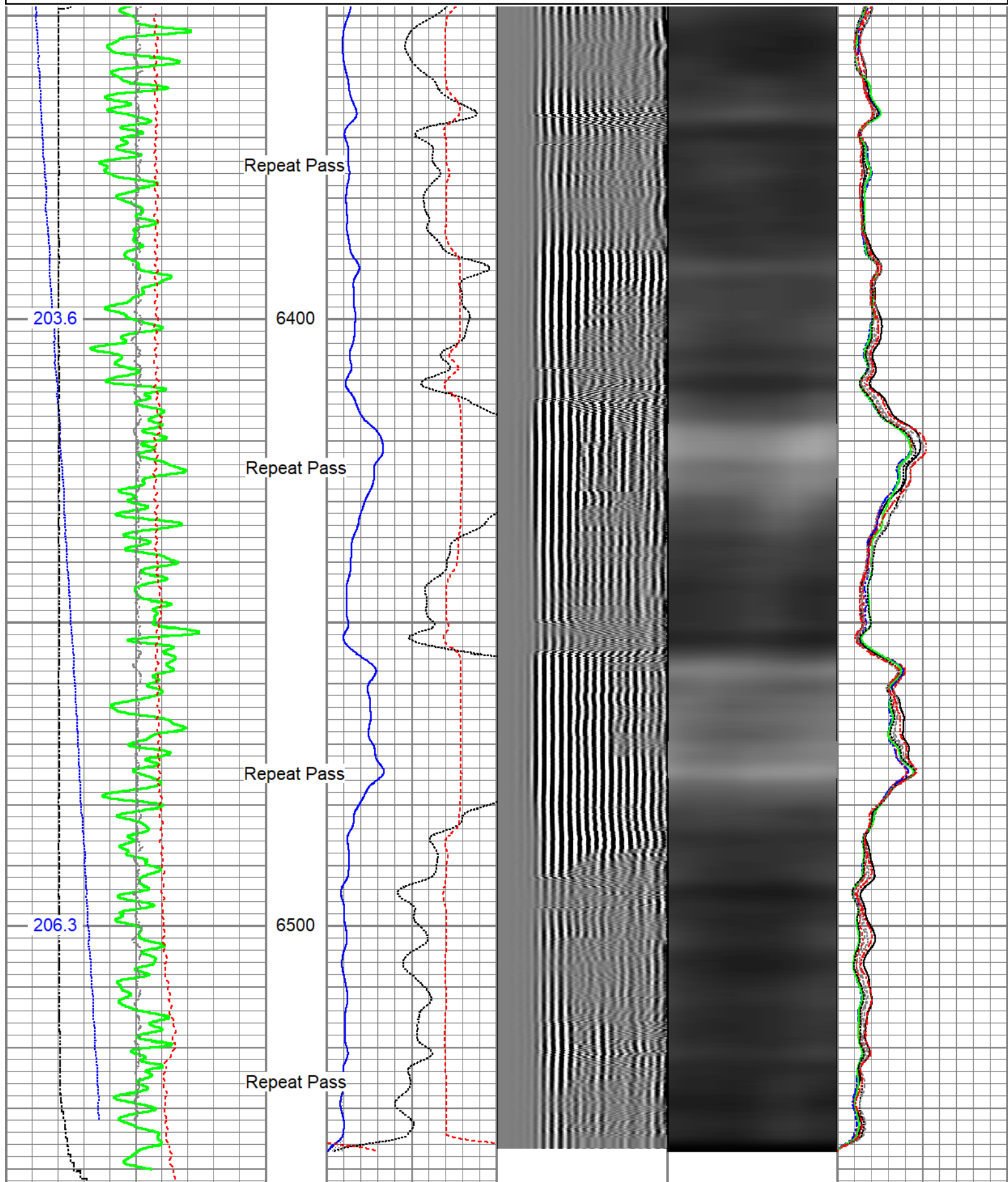
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 Dataset Pathname repeat/pass1  
 Presentation Format edge\_rbl  
 Dataset Creation Sat Oct 16 09:36:54 2021  
 Charted by Depth in Feet scaled 1:240



0	Line Tension (lb)	2000
Differential Temperature		
-2	(degF)	2
Temperature		
(degF)		

0	(mV)	20
3' Travel Time		
650	(usec)	150

0	AMP S4	100
0	AMP S5	100
0	AMP S6	100
0	AMP S7	100
0	AMP S8	100



0	Gamma Ray (GAPI)	120	3' Amplitude	5' Variable Density	Sector Map	0	AMP S1	100
0	Temperature (degF)	20	0 (mV) 100	200 (usec) 1200		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) 20			0	AMP S4	100
	Differential Temperature		3' Travel Time			0	AMP S5	100
-2	(degF)	2	650 (usec) 150			0	AMP S6	100
Temperature						0	AMP S7	100
(degF)						0	AMP S8	100



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