



Radial Cement Bond
Variable Density Log
W/ Gamma Ray/ CCL

Company	Noble Energy	Company	Noble Energy
Well	Kummer PC LE 23-65_1HN	Well	Kummer PC LE 23-65_1HN
Field	Wattenberg	Field	Wattenberg
County	Weld	County	Weld
State	Colorado	State	Colorado
Location:	API # : 05-123-36684		Other Services
	660' FSL & 660' FEL		NONE
Permanent Datum	SEC 23	TWP 8N	RGE 61W
Log Measured From	Ground Level	Elevation	4,982'
Drilling Measured From	Kelly Bushing 24' Above P.D.	Elevation	K.B. 5,006'
	Kelly Bushing	Elevation	D.F. 5,004'
		Elevation	G.L. 4,982'
Date	15-MAY-2013		
Run Number	One		
Depth Driller	10,630'		
Depth Logger	6,662'		
Bottom Logged Interval	6,604'		
Top Log Interval	Surface		
Open Hole Size	8.75"		
Type Fluid	N/A		
Density / Viscosity	N/A		
Max. Recorded Temp.	214 Deg F		
Estimated Cement Top	596'		
Time Well Ready	07:00		
Time Logger on Bottom	11:23		
Equipment Number	12029		
Location	Brighton		
Recorded By	M. Schneider		
Witnessed By	B. Mansfield		
Borehole Record		Tubing Record	
Run Number	Bit	From	To
		Size	Weight
			From
			To
Casing Record	Size	Wgt/Ft	Top
Surface String	9.625"	36#	24'
Prot. String			751'
Production String	7"	26#	6,890'
Liner	4.5"	11.6#	6,781'
			10,630'
			5,526'
			5,540'

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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

Primary Log On Well
Correlated Using 24' K.B.
Log Ran With 0 PSI

Short Joint At 5,526' - 5,540'
Estimated TOC At 596'


Your Crew: M. Schneider, S. Hughes, A. Hughes

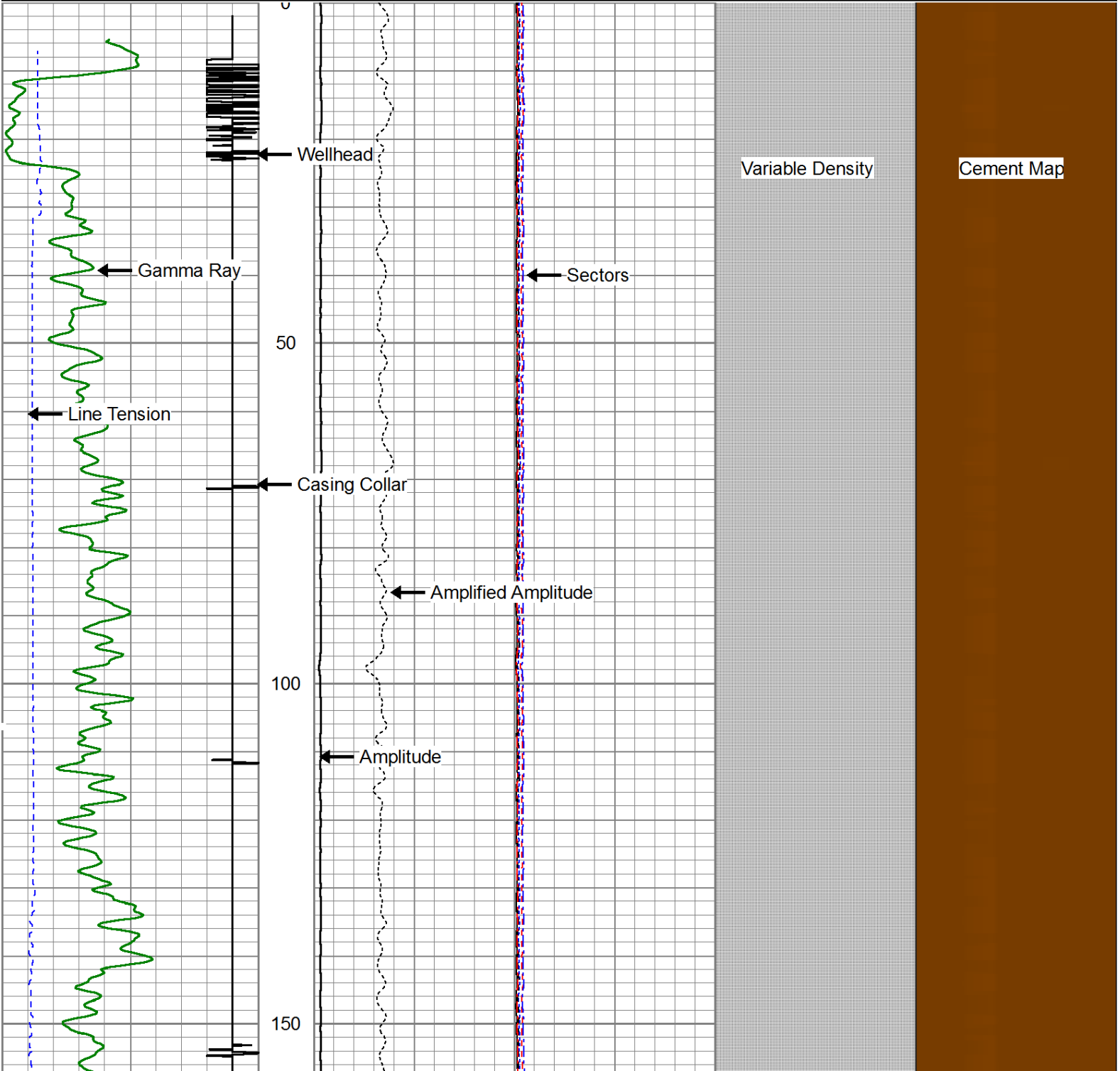
Thank You For Choosing Allied Wireline Services
(303) 659-4609

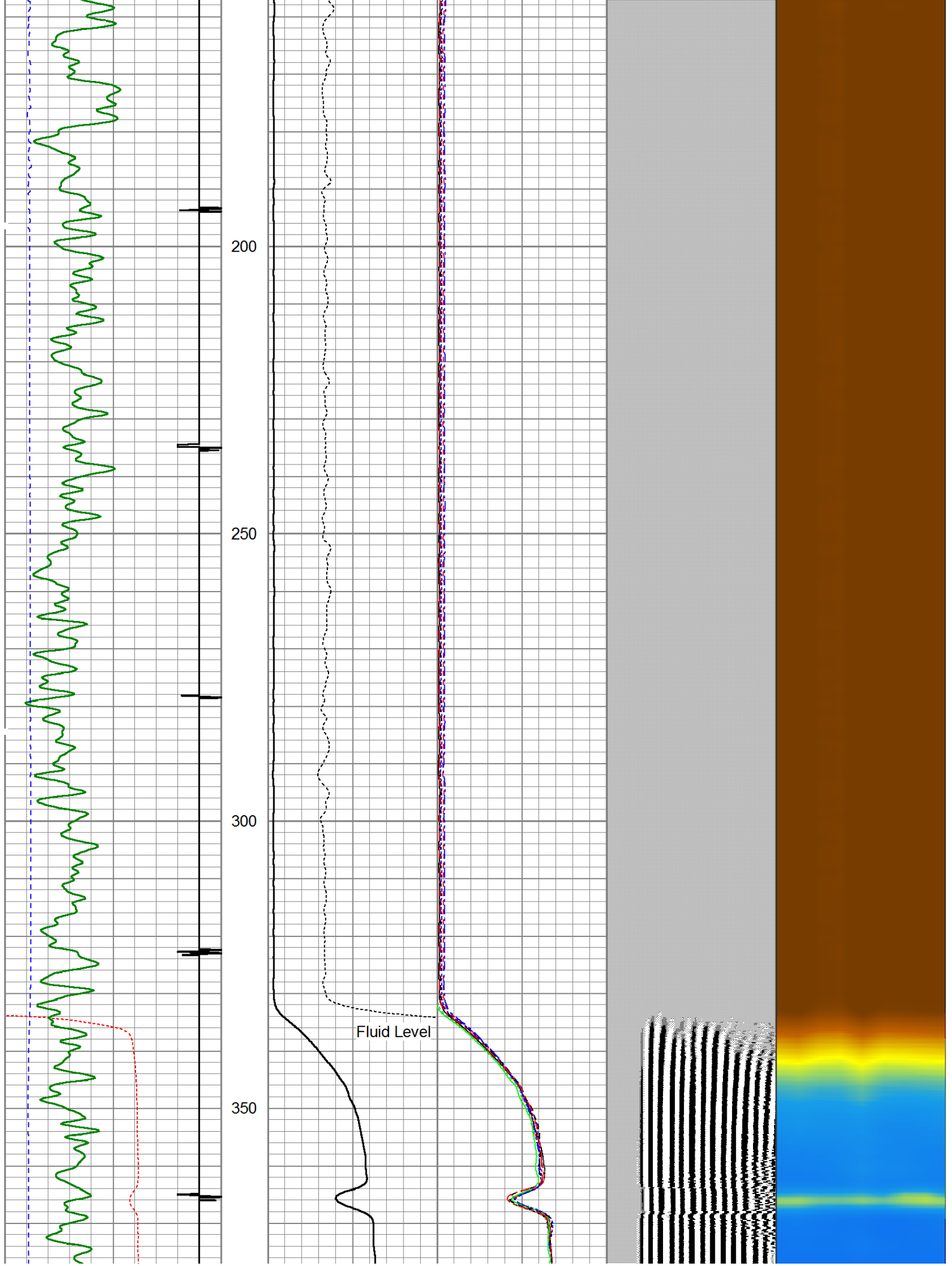


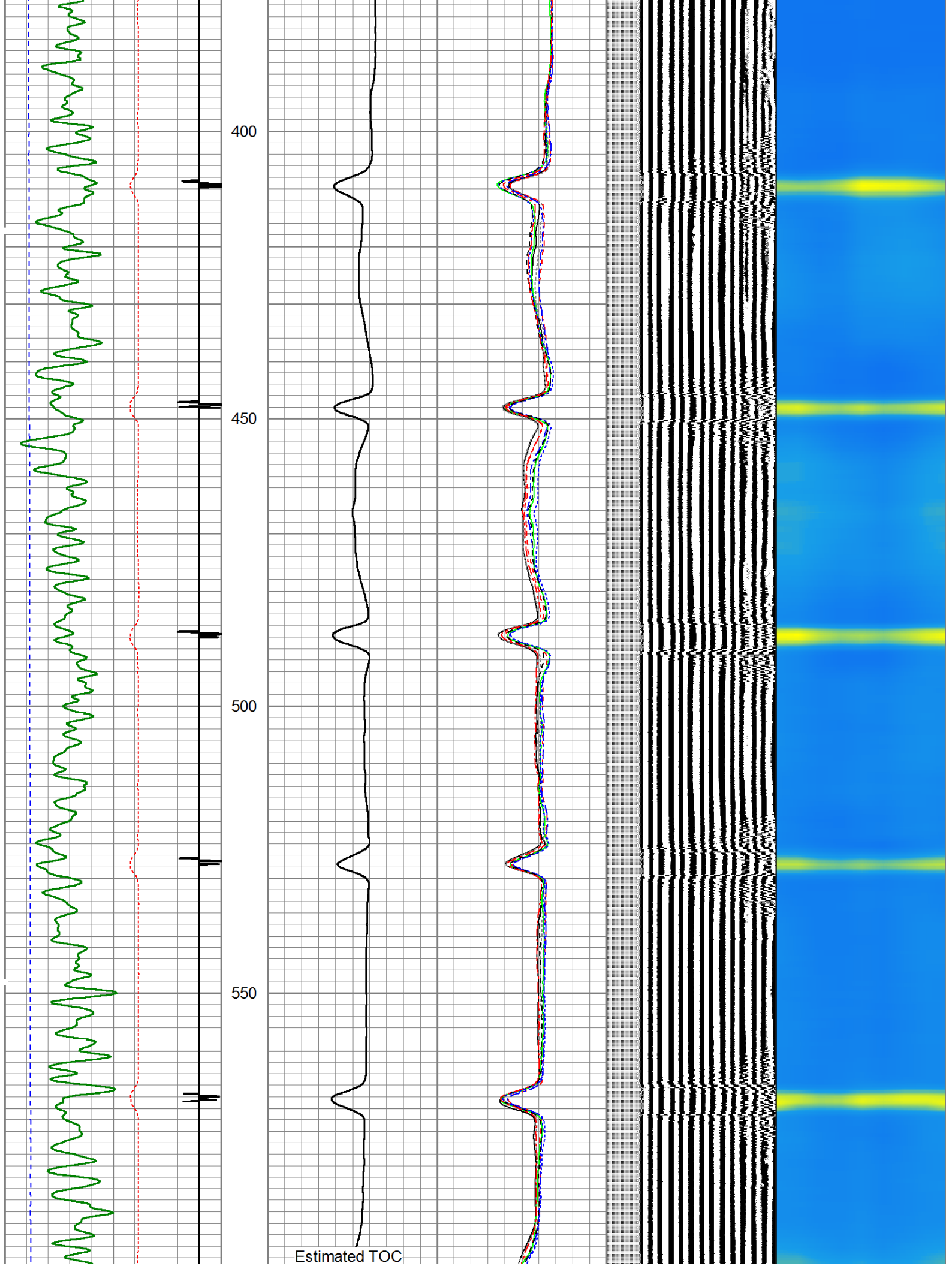
Main Pass (0PSI)

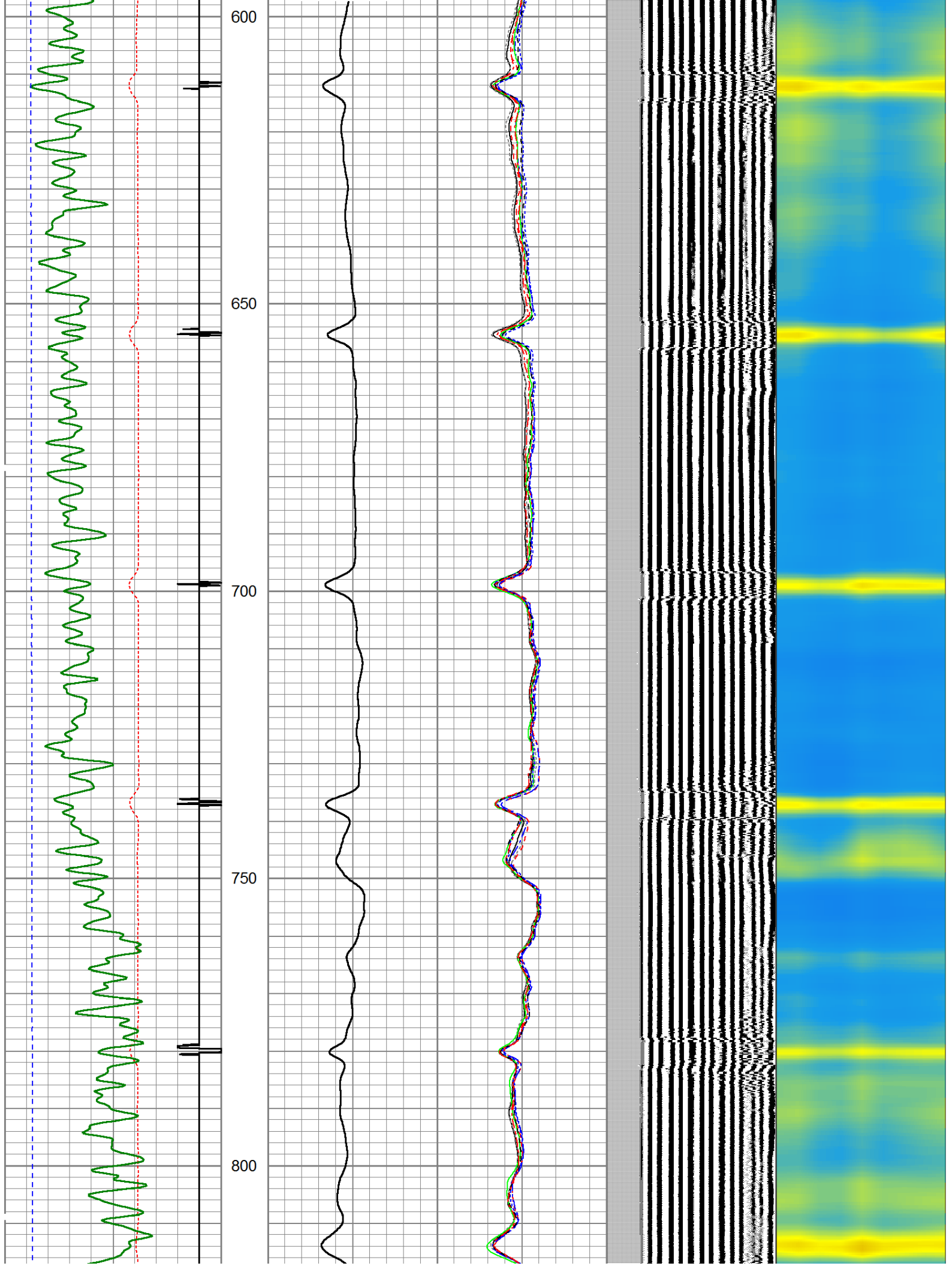
Database File: noble_kummer_pc_le23_65_1hn_rcbl.db
Dataset Pathname: RCBL/pass1.1
Presentation Format: scbl03
Dataset Creation: Wed May 15 12:46:04 2013 by Calc SCH 120126
Charted by: Depth in Feet scaled 1:240

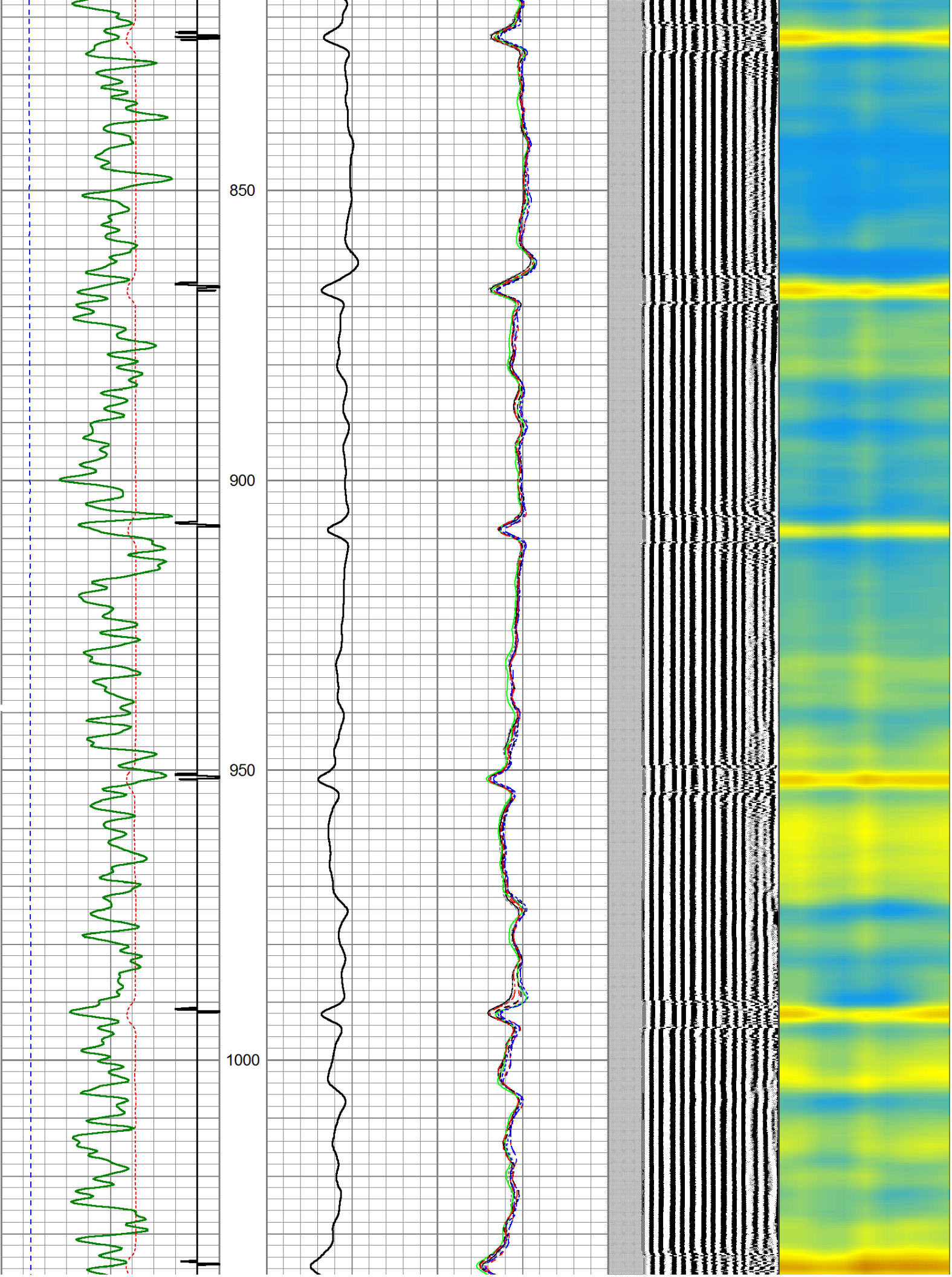
400	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	AMPS1	150	Variable Density		1	Cement Map	8
9	Casing Collar	-1	Amplified Amplitude			-5	AMPS2	150			0		100
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	AMPS3	150					
0	Line Tension (lb)	2500				-5	AMPS4	150					
						-5	AMPS5	150					
						-5	AMPS6	150					
						-5	AMPS7	150					
						-5	AMPS8	150					

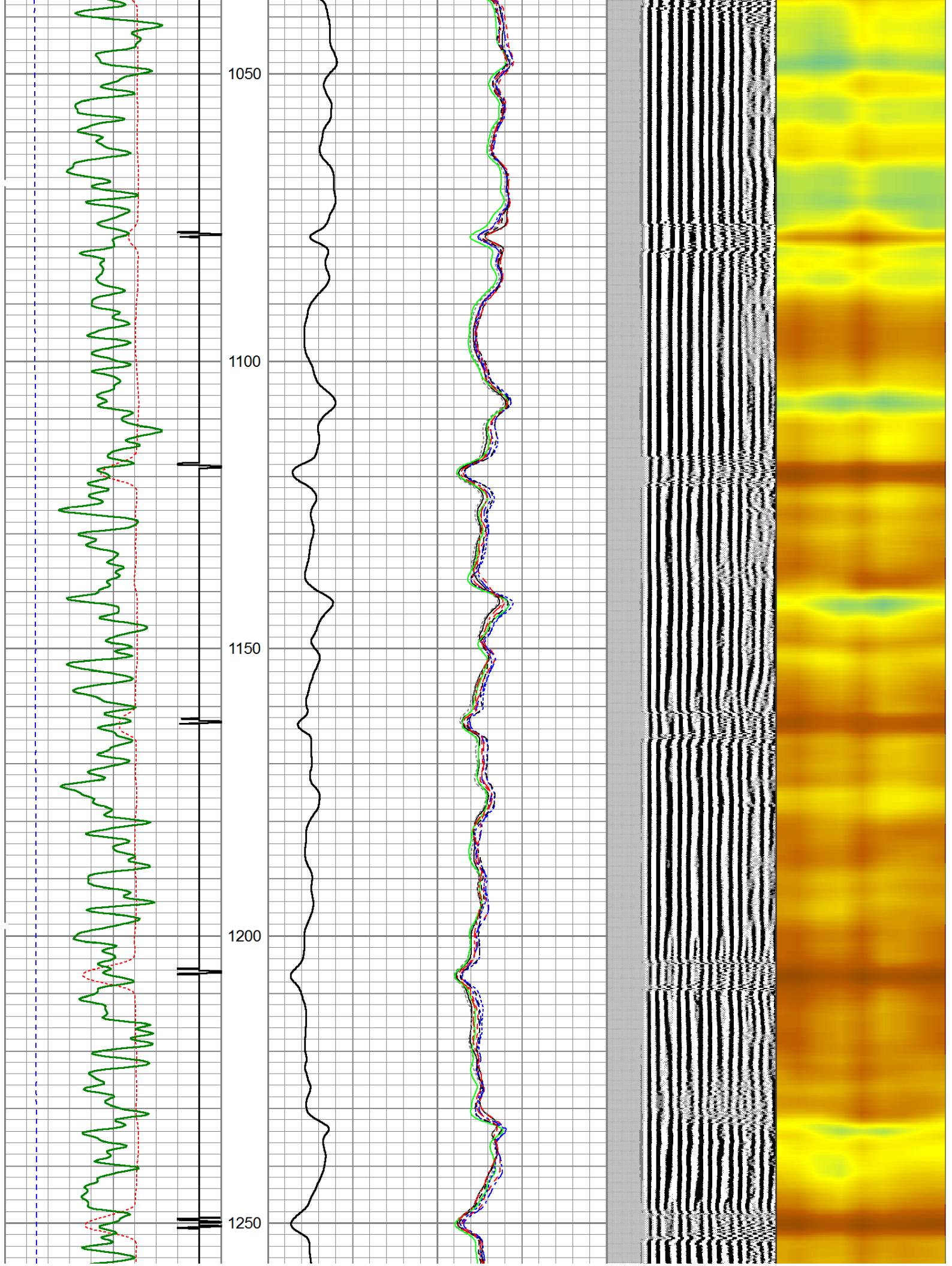


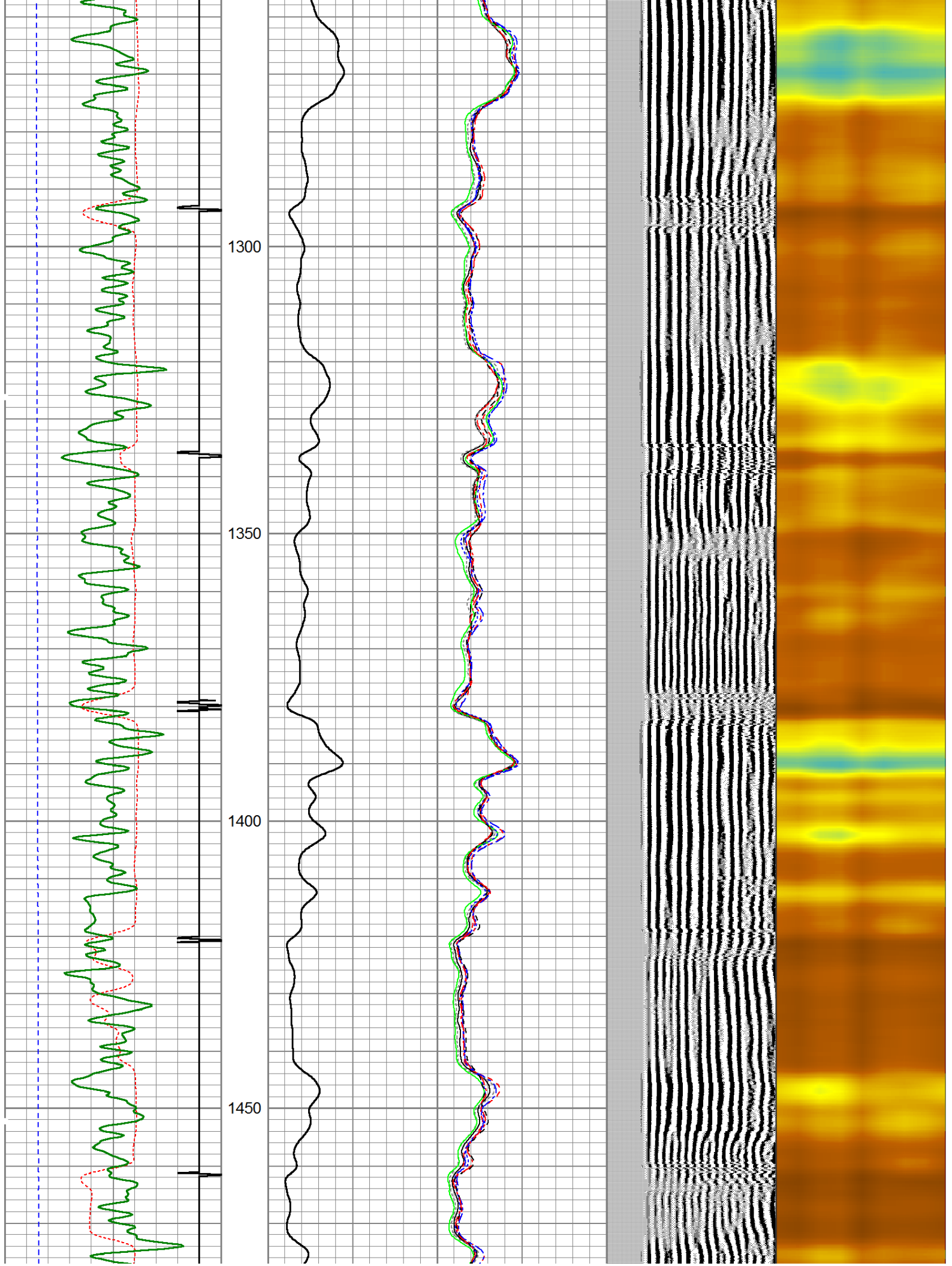


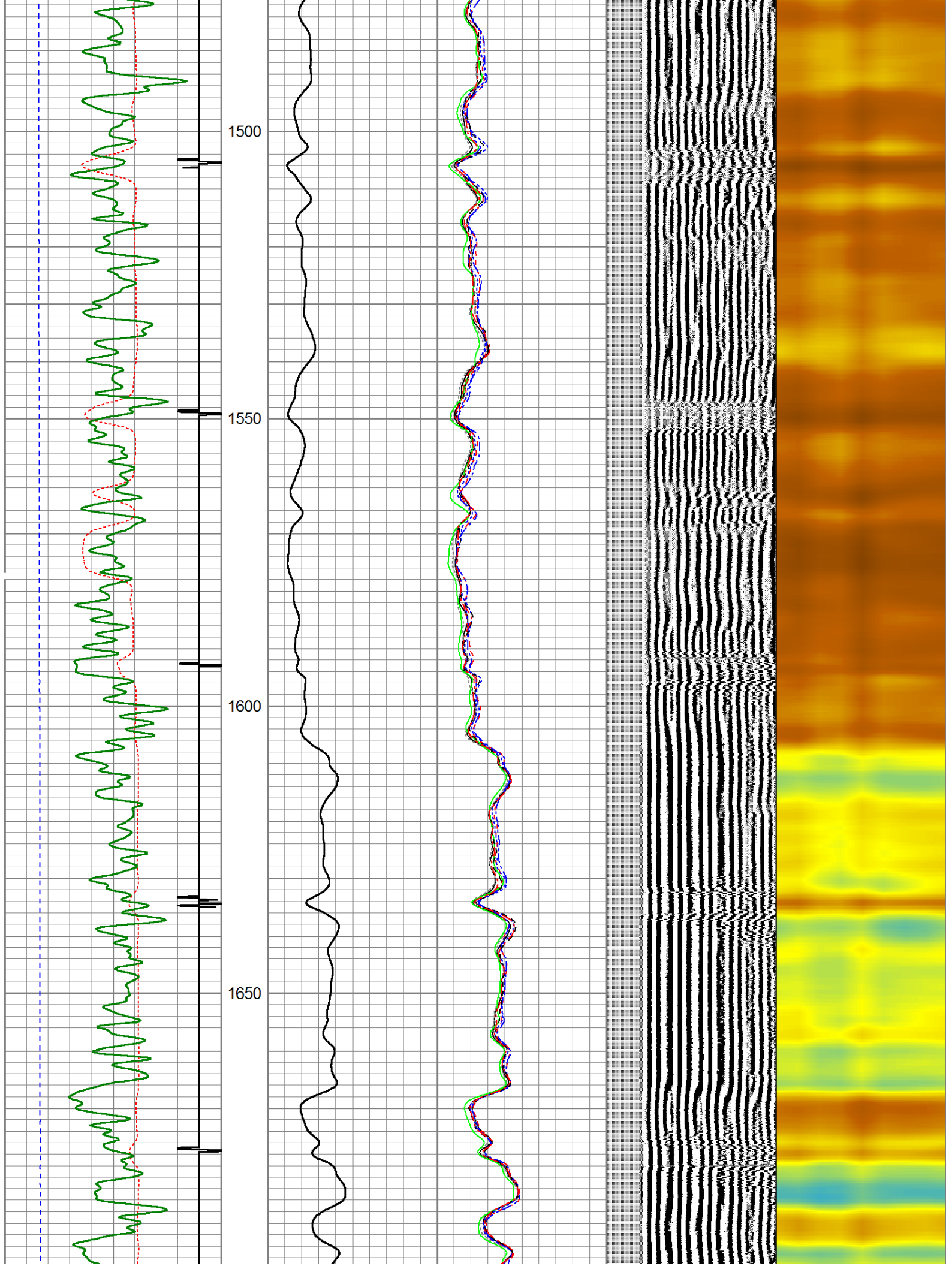


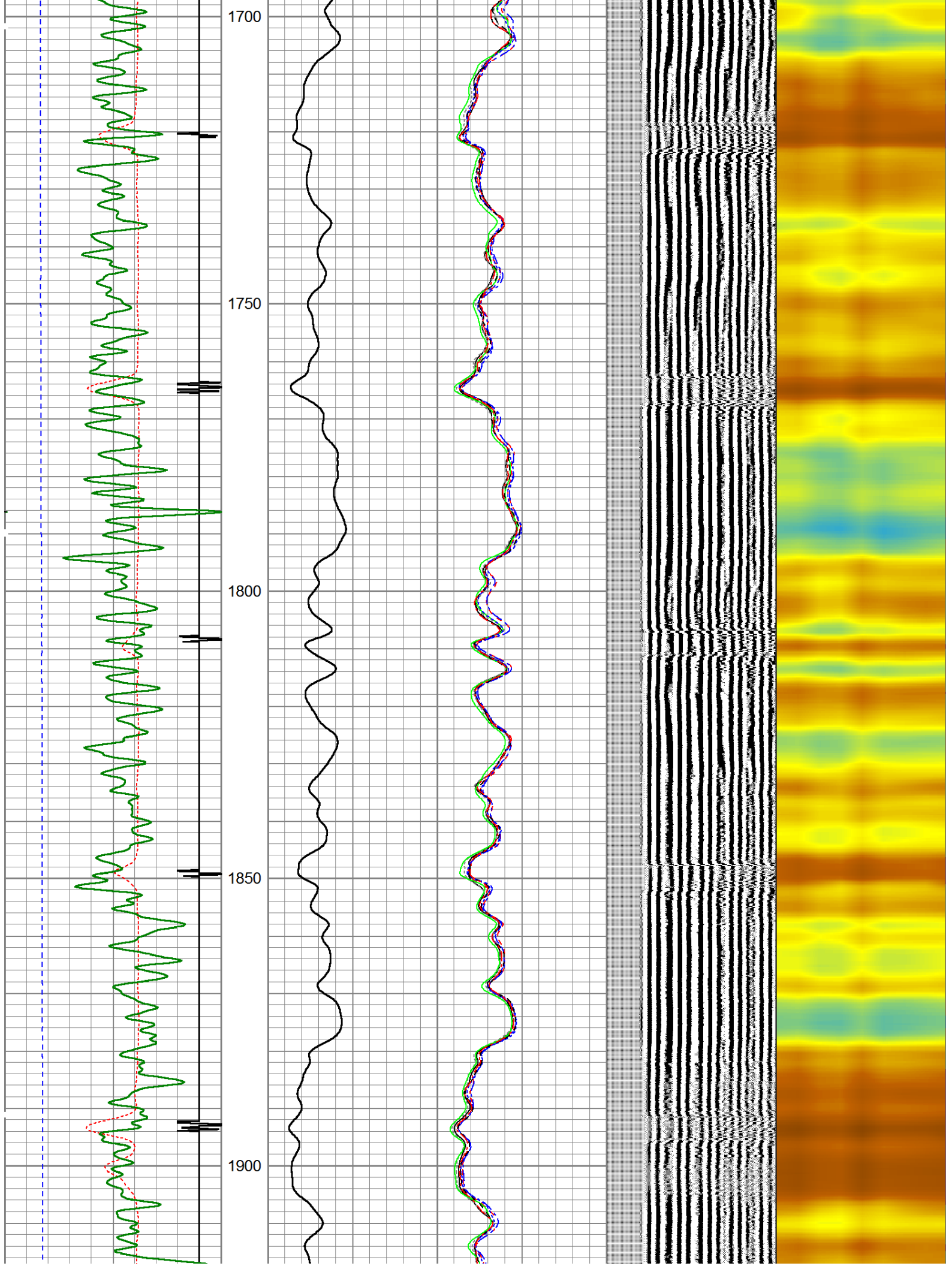


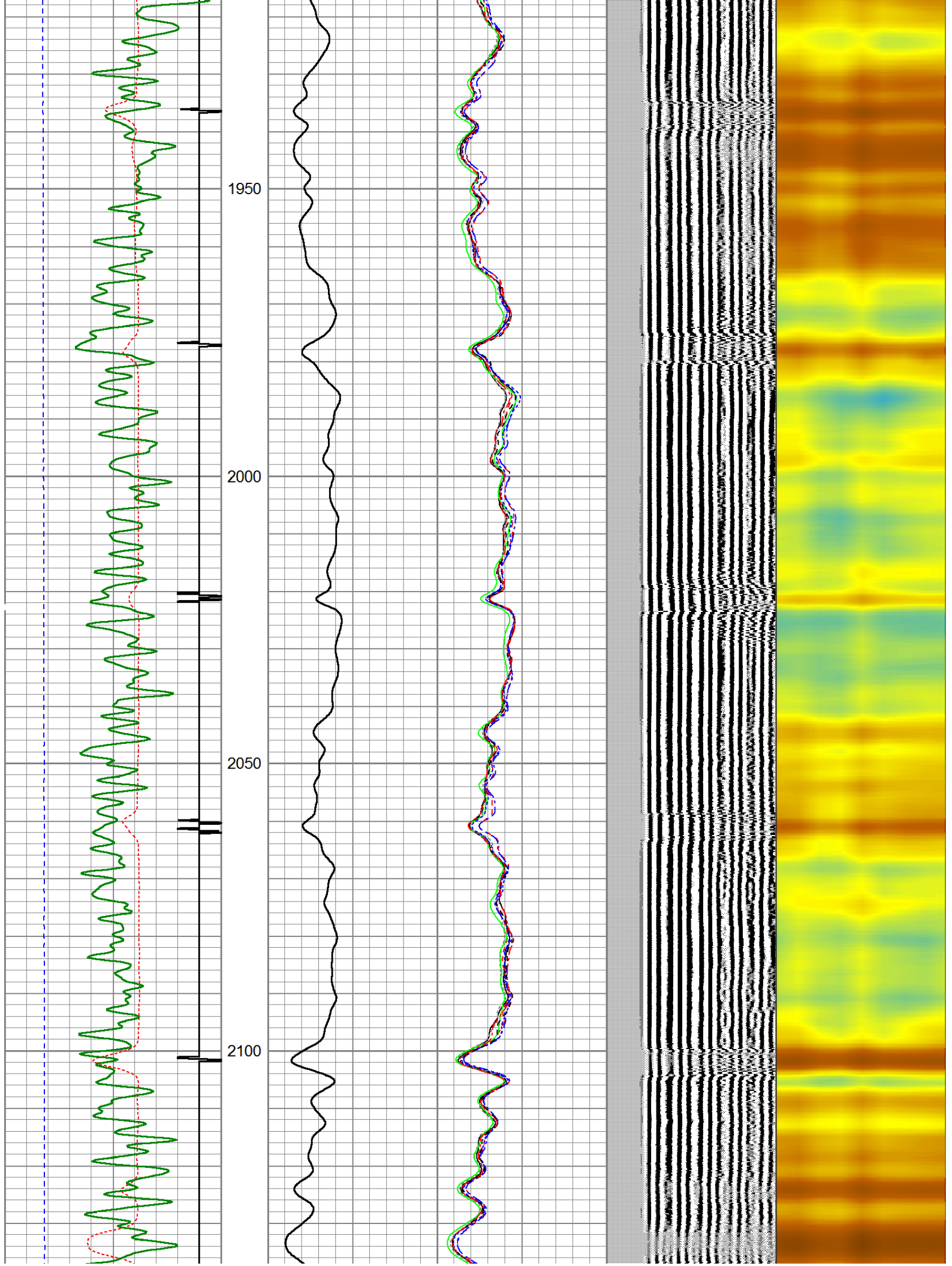


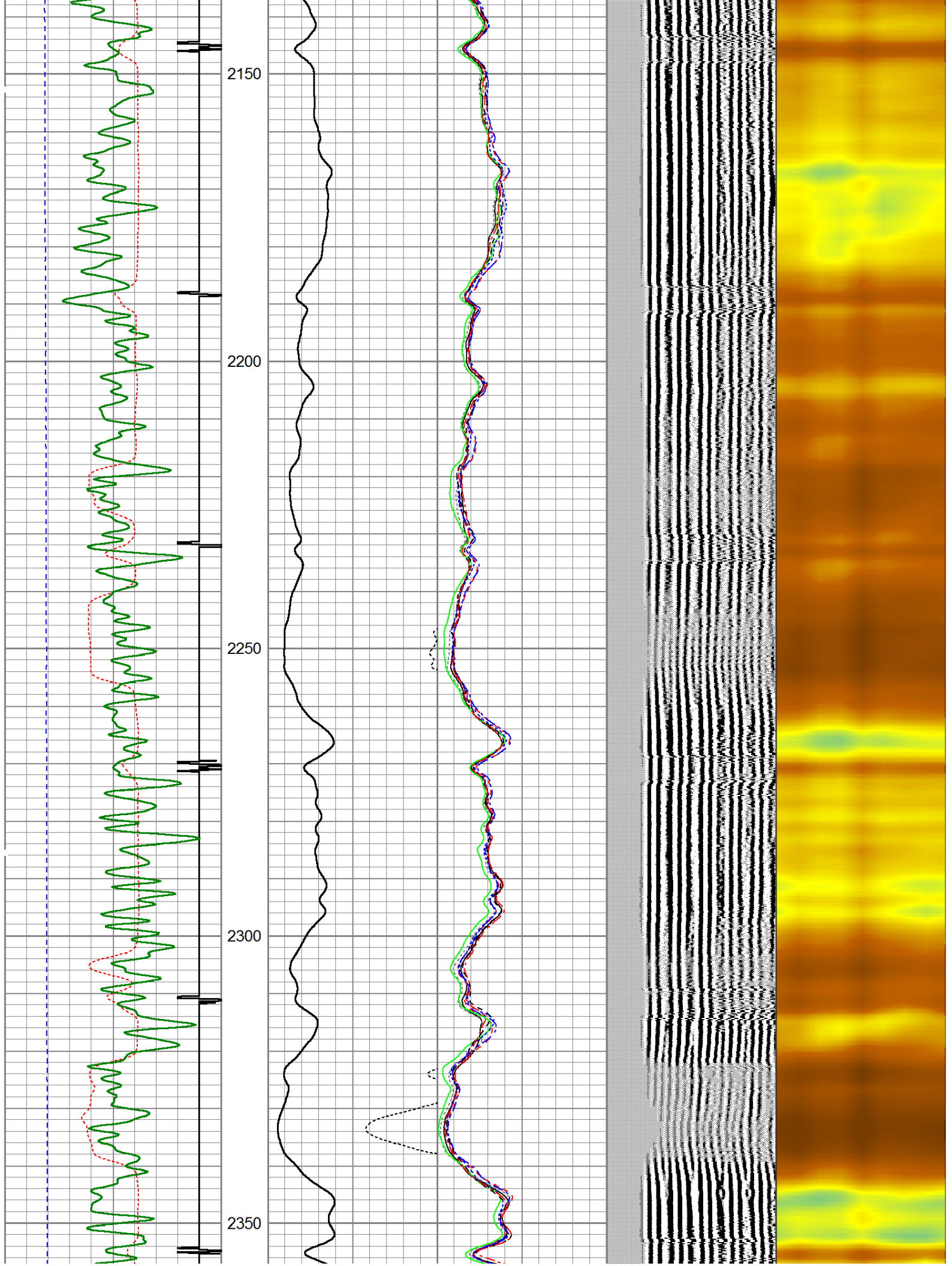


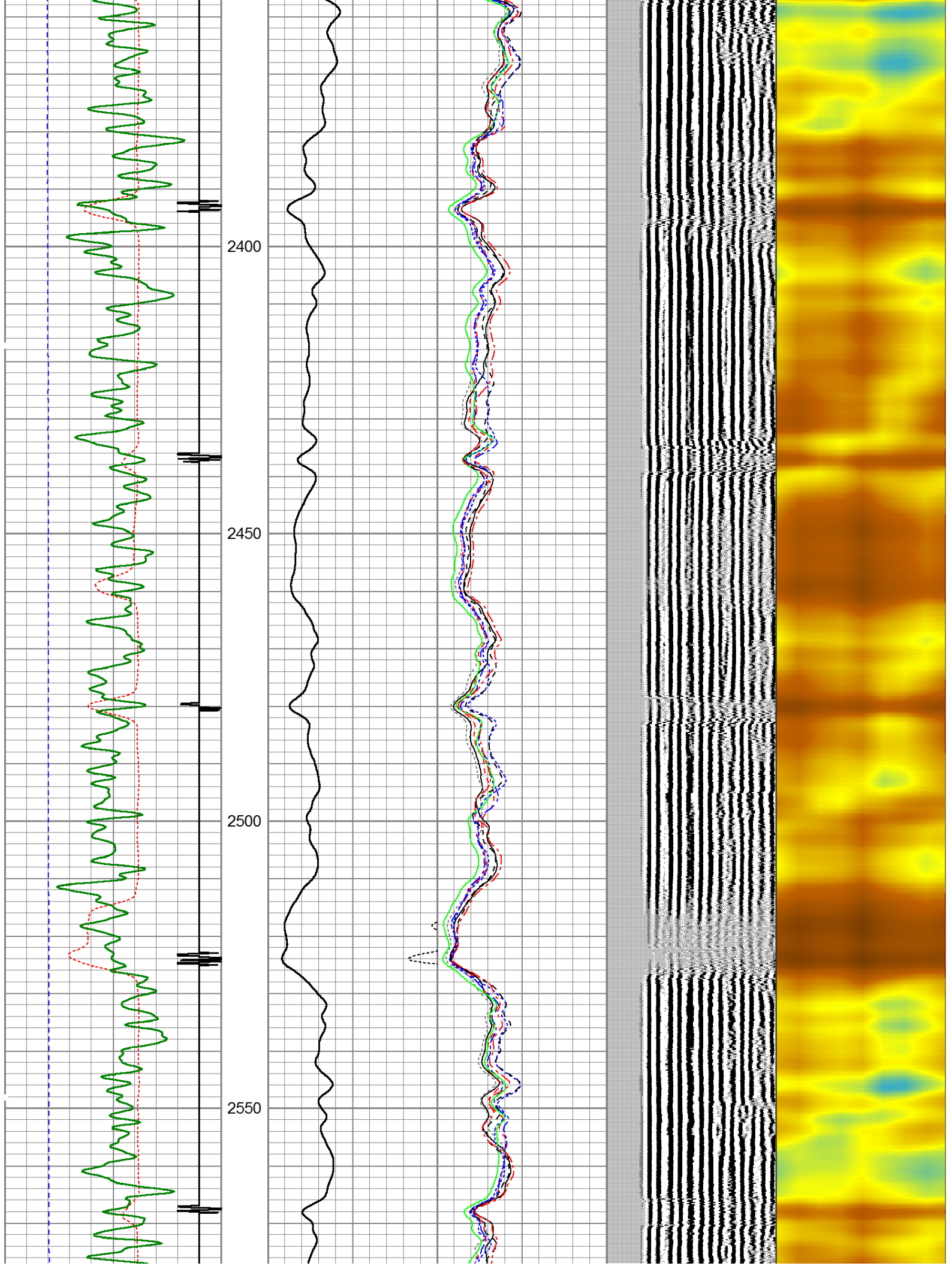


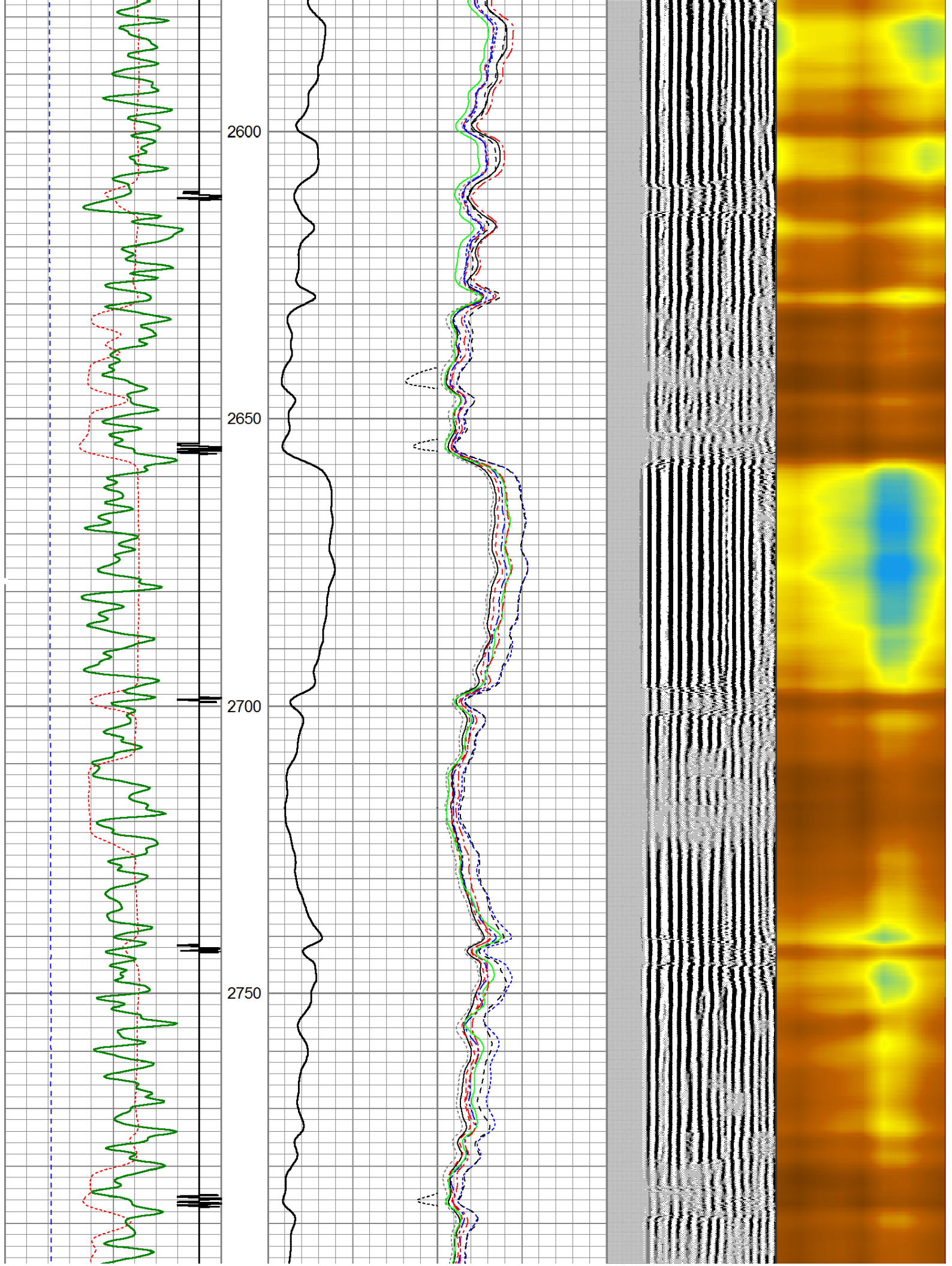


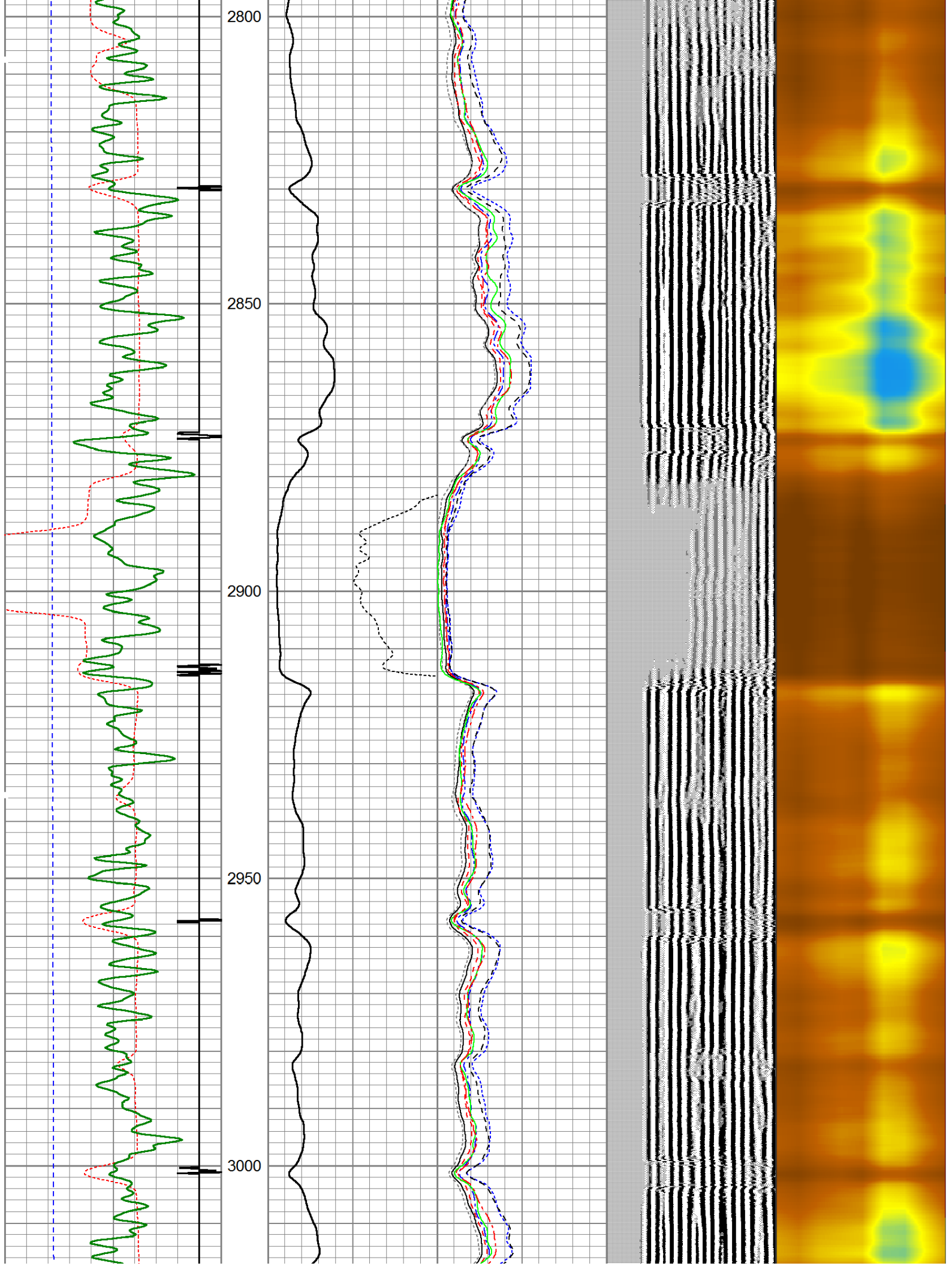


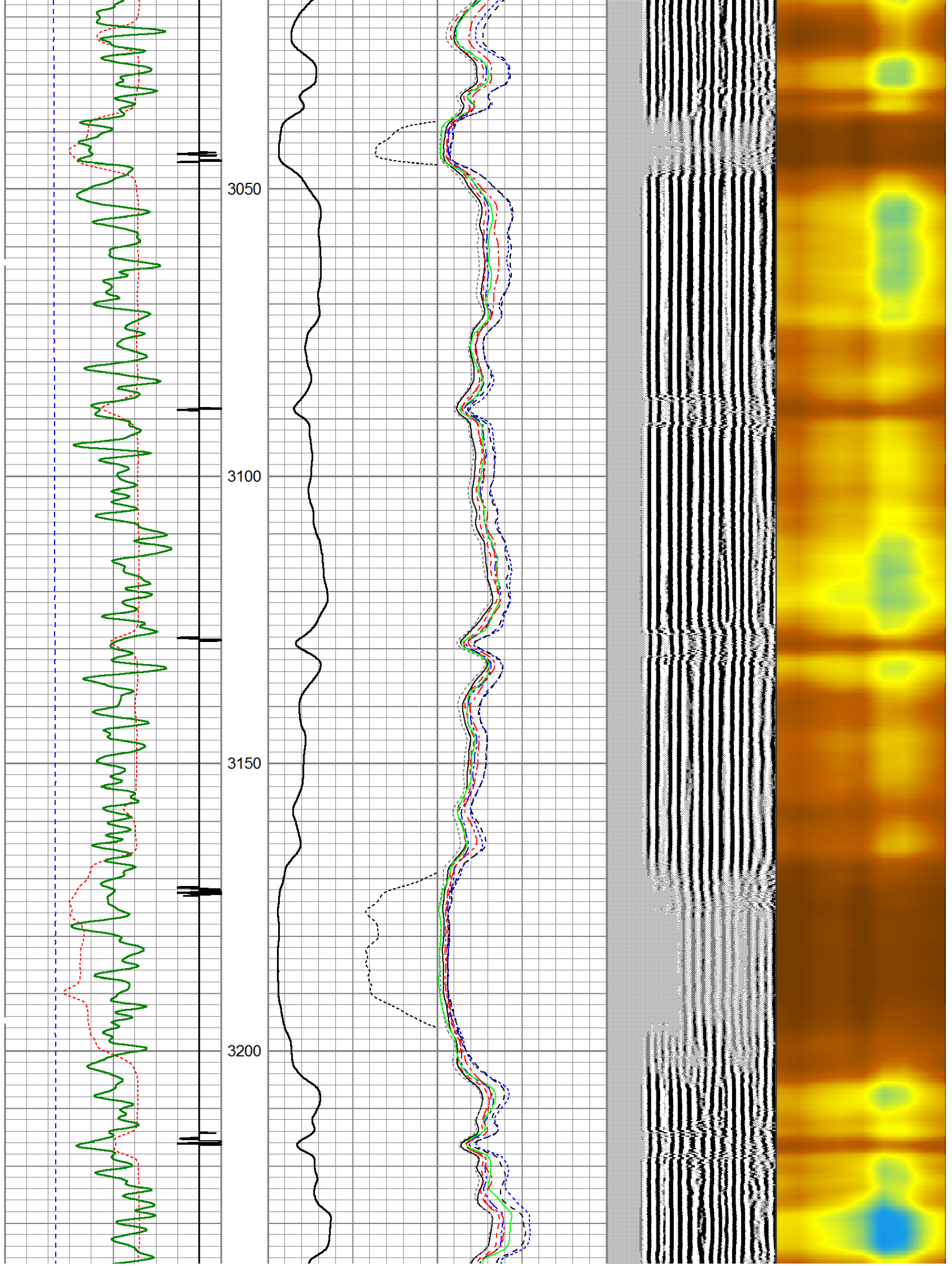


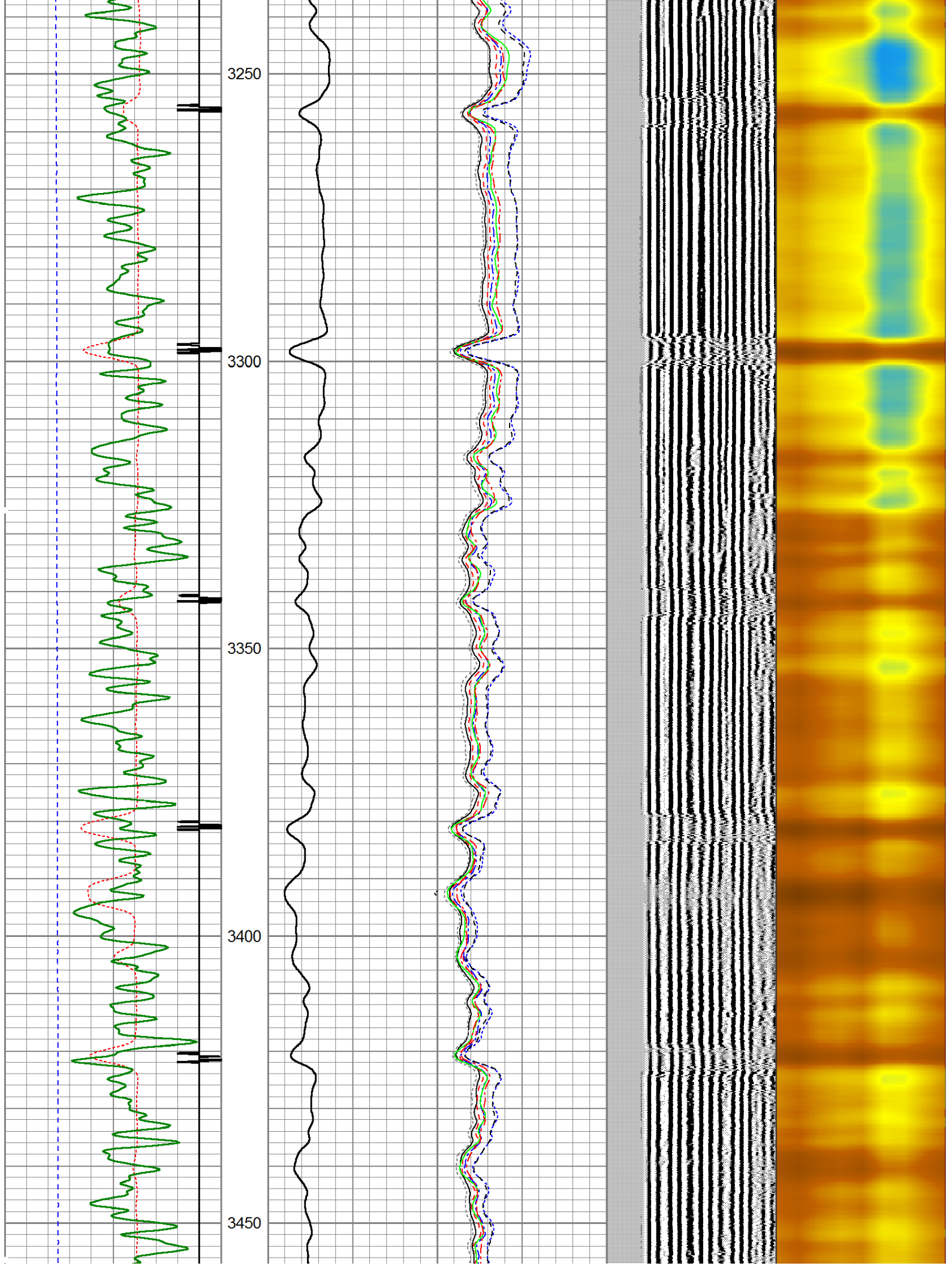


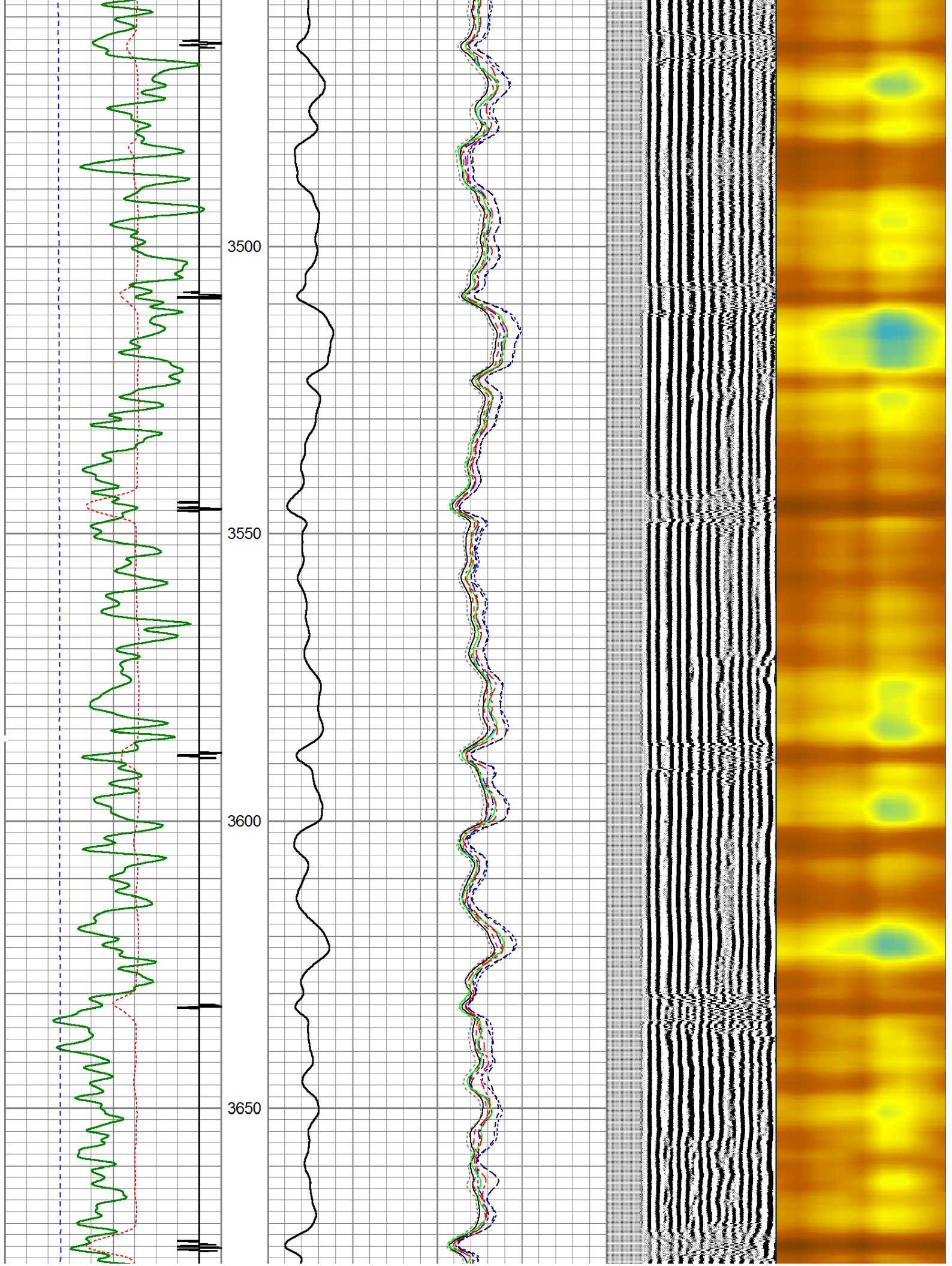


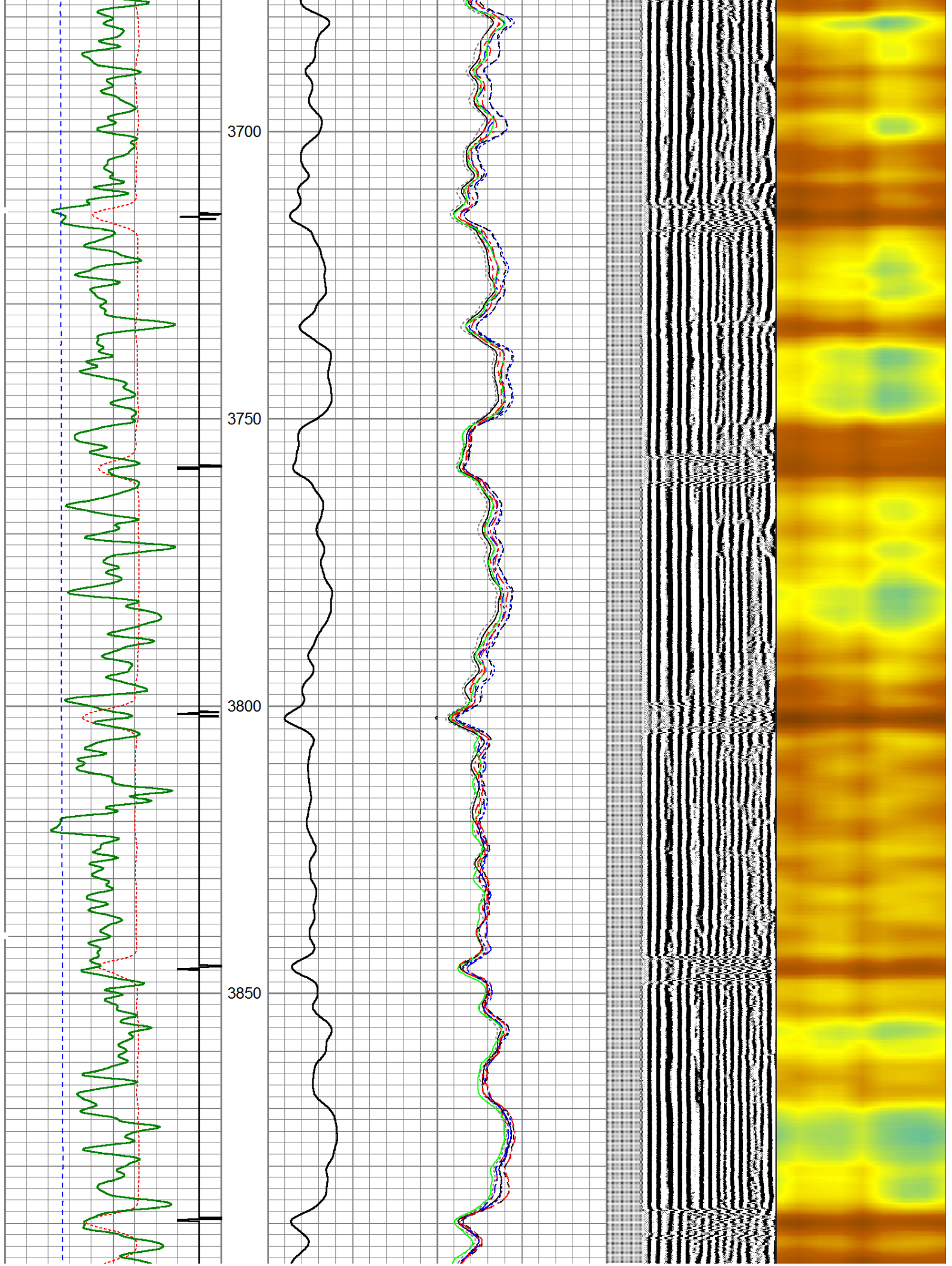


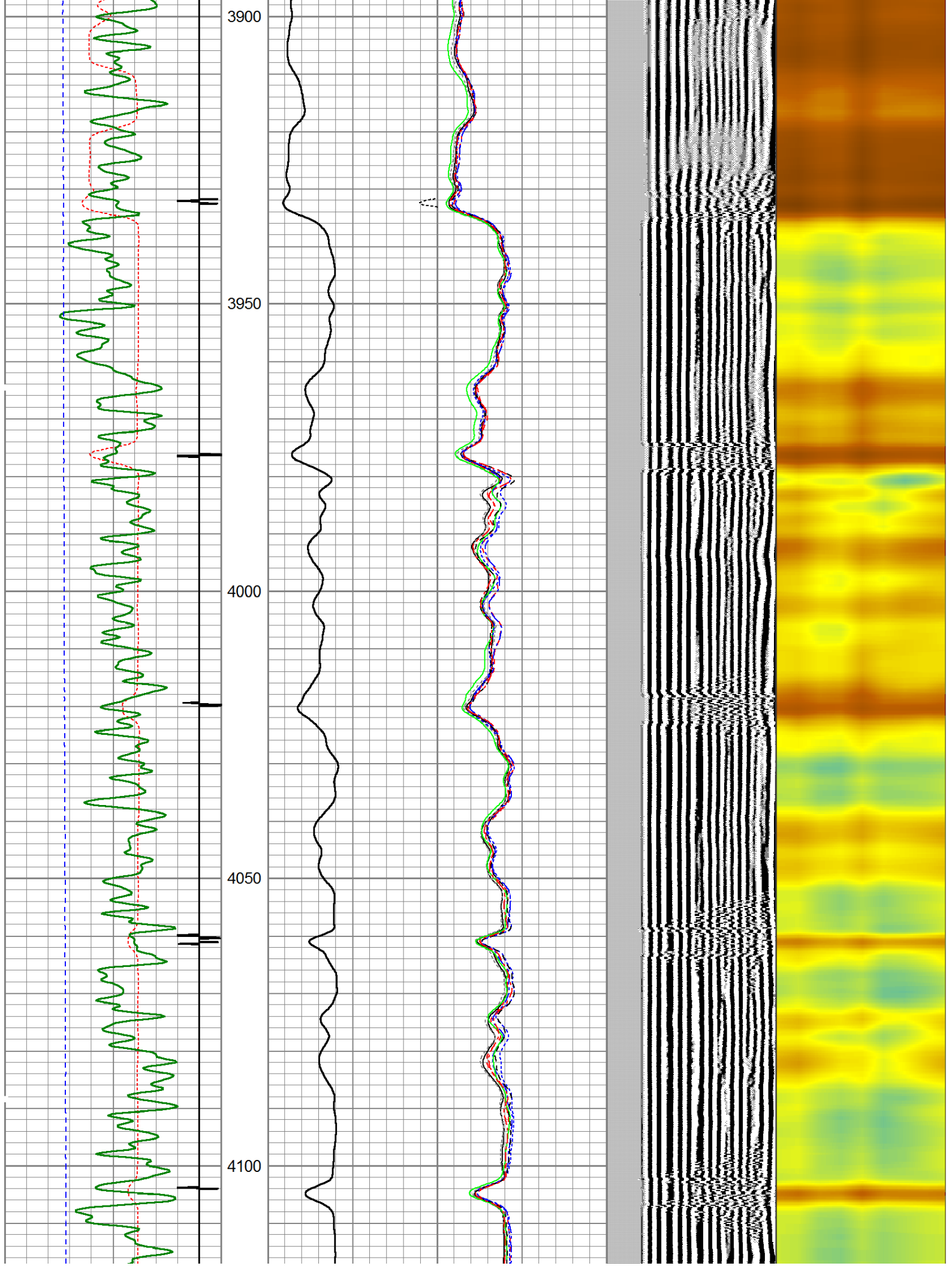


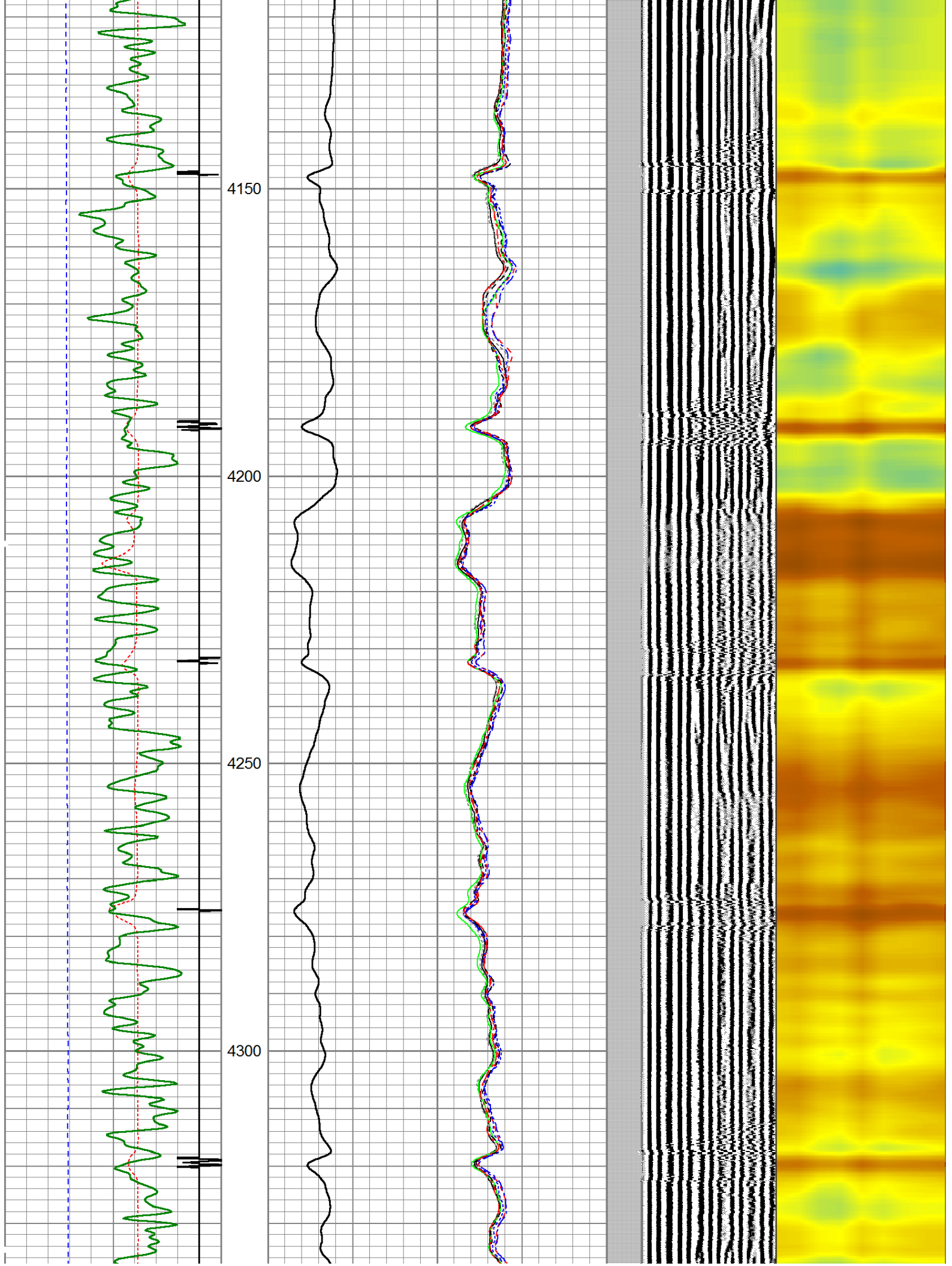


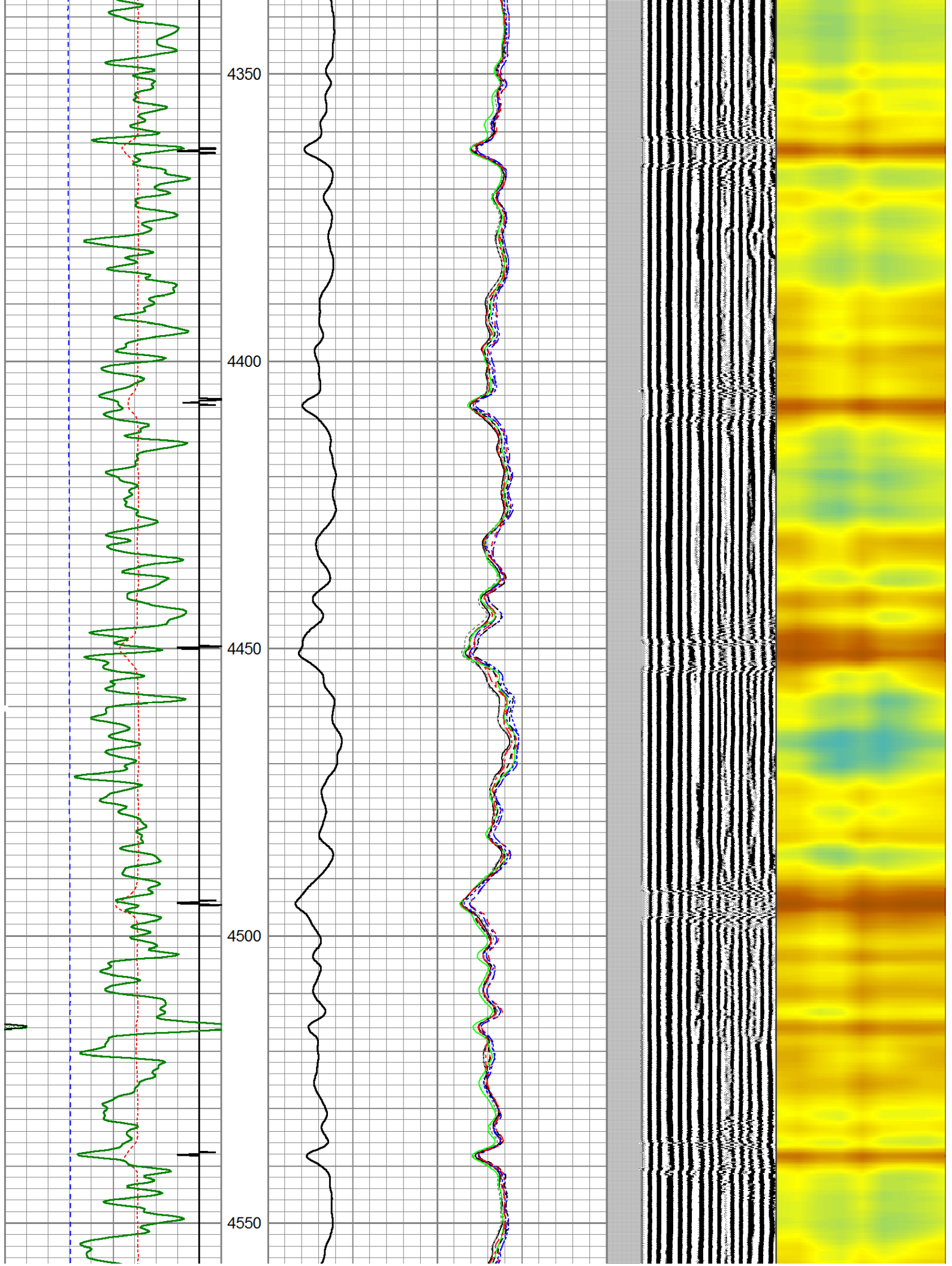


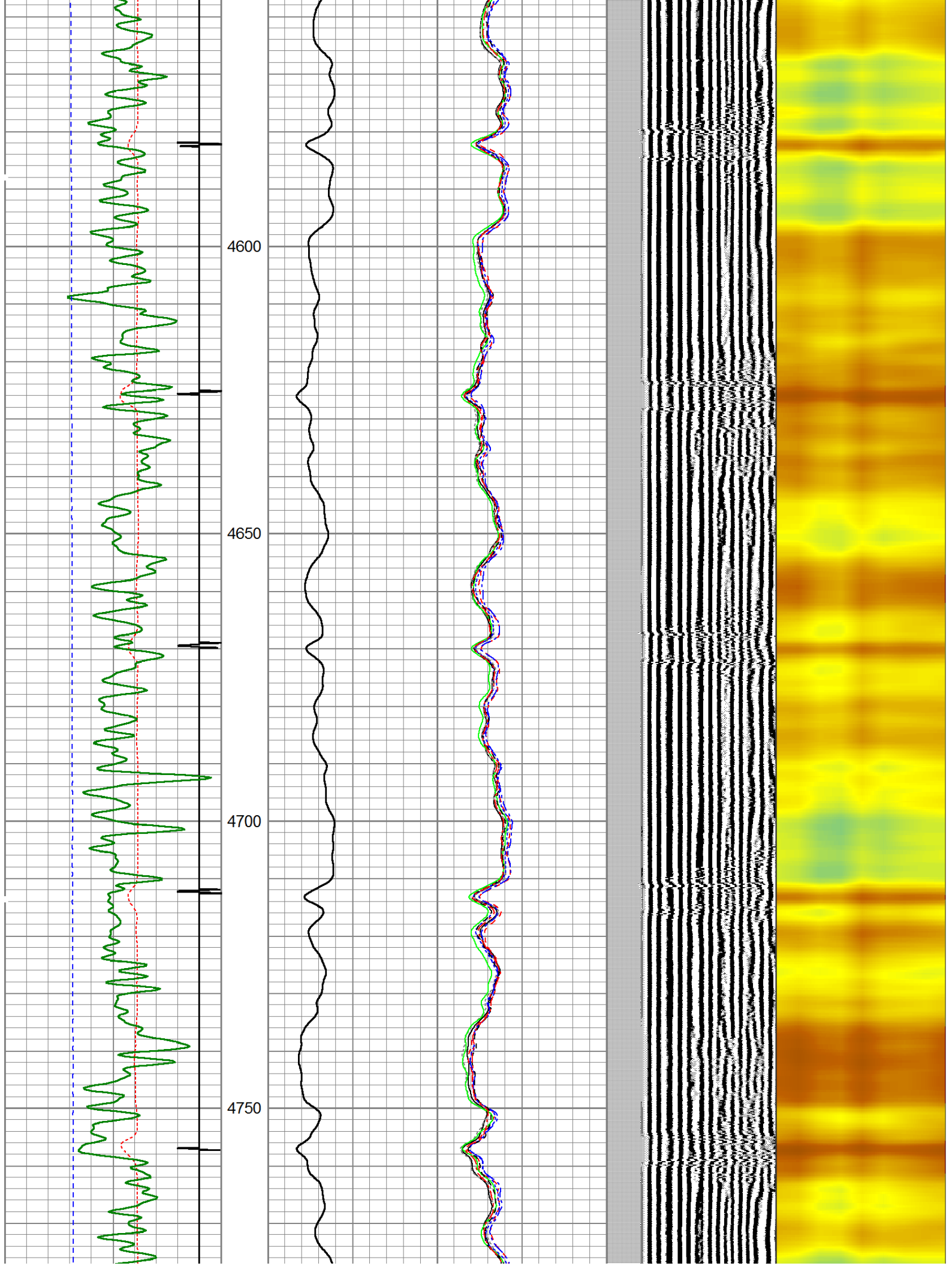


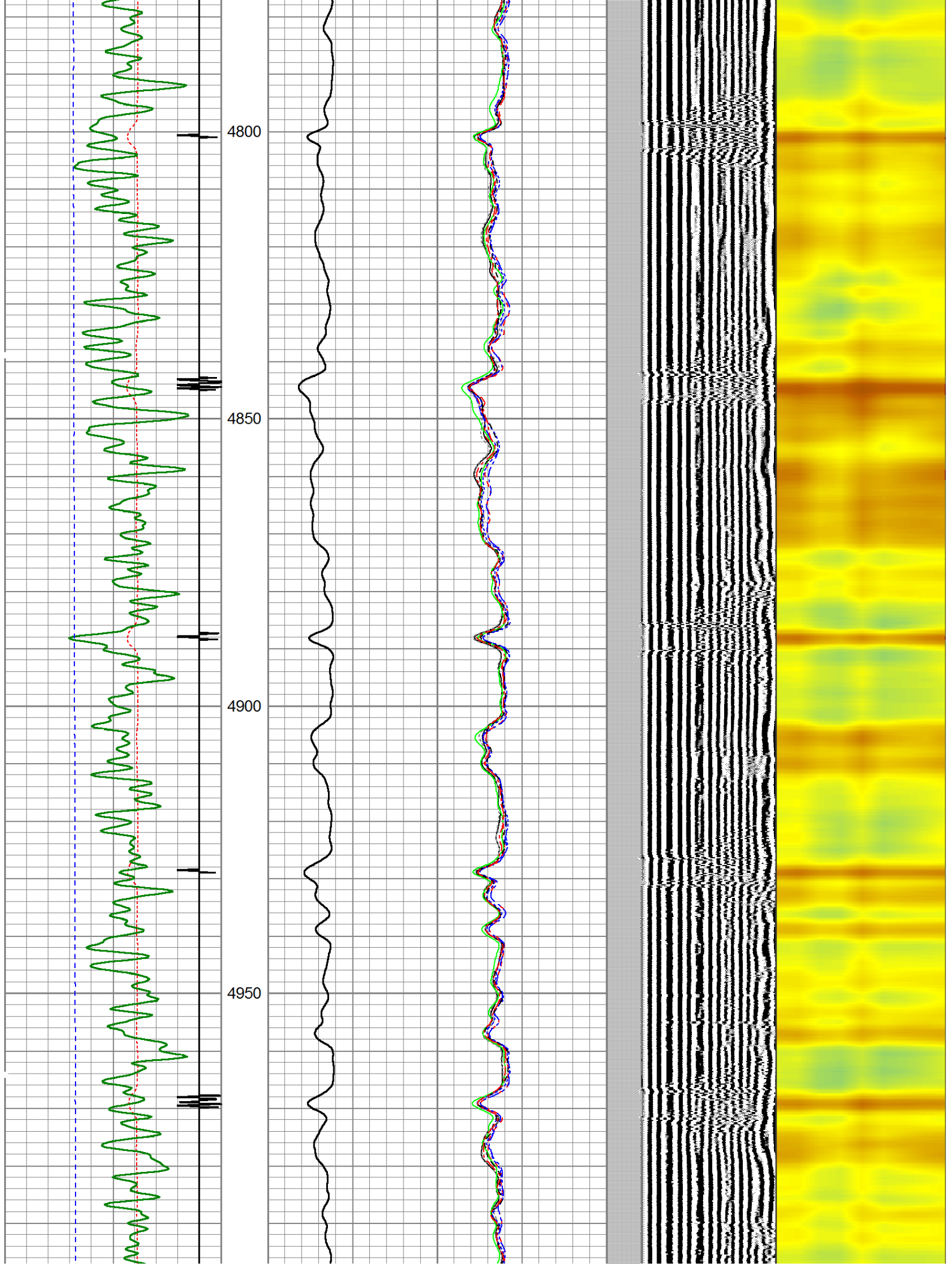


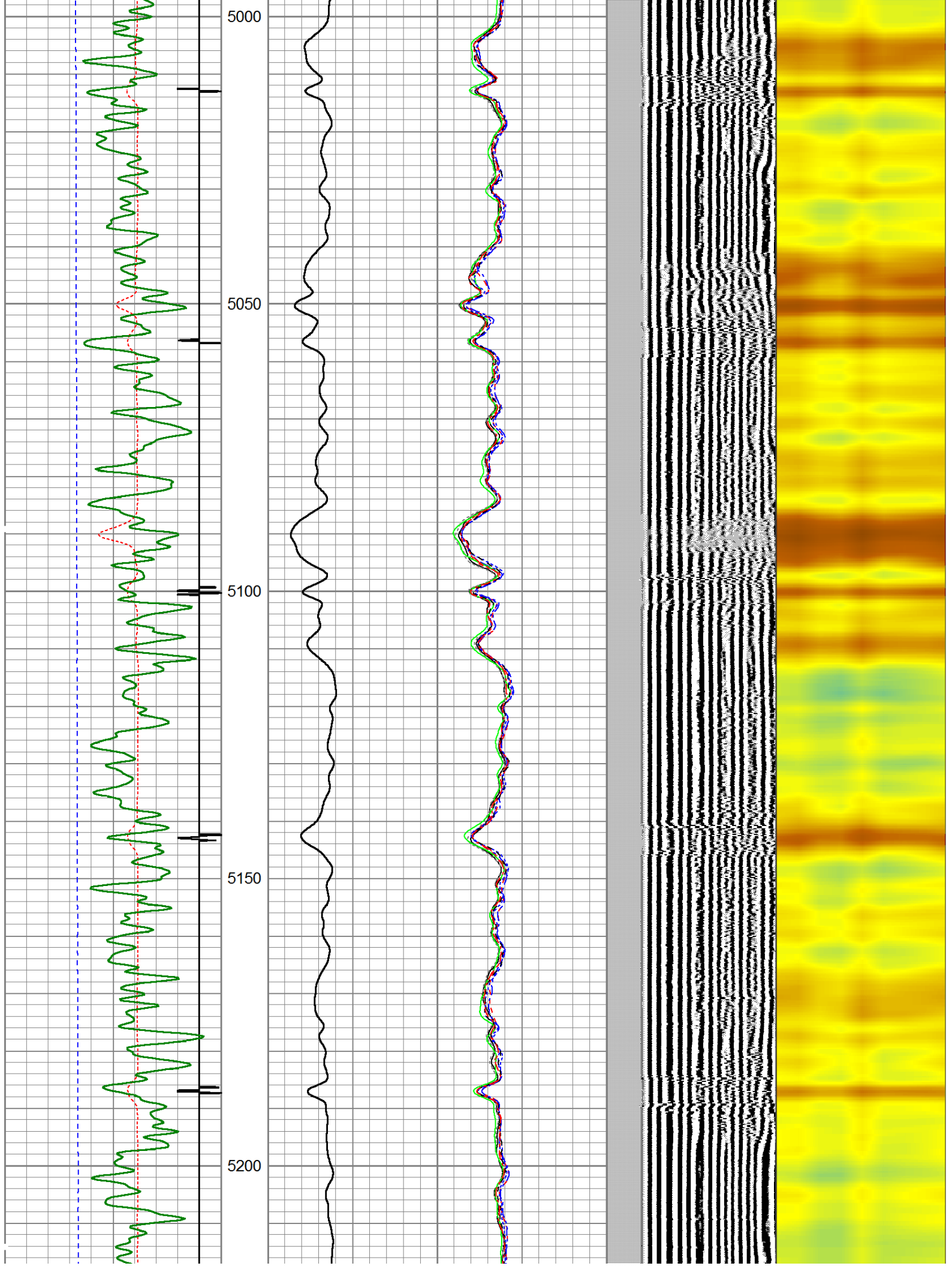


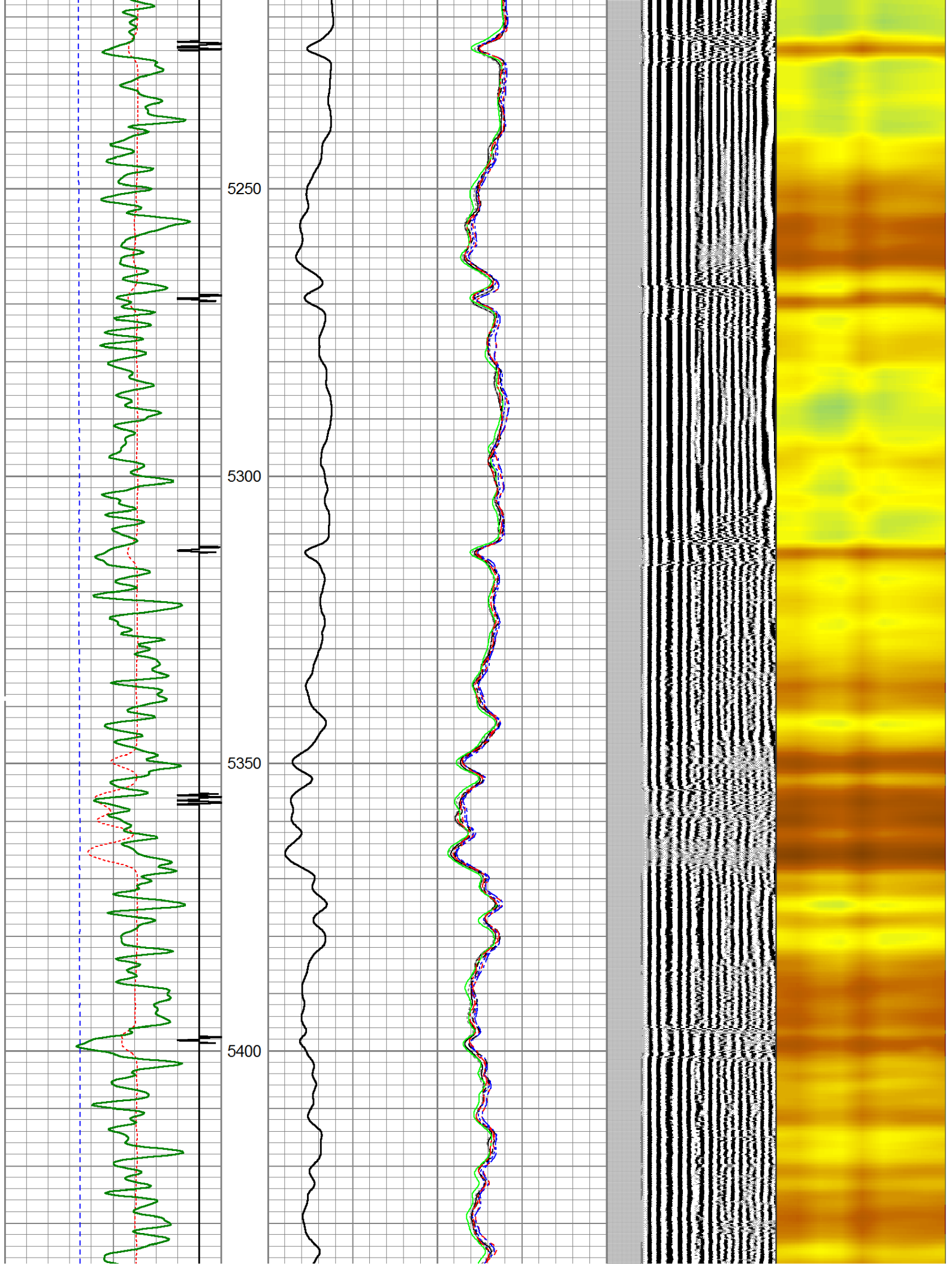


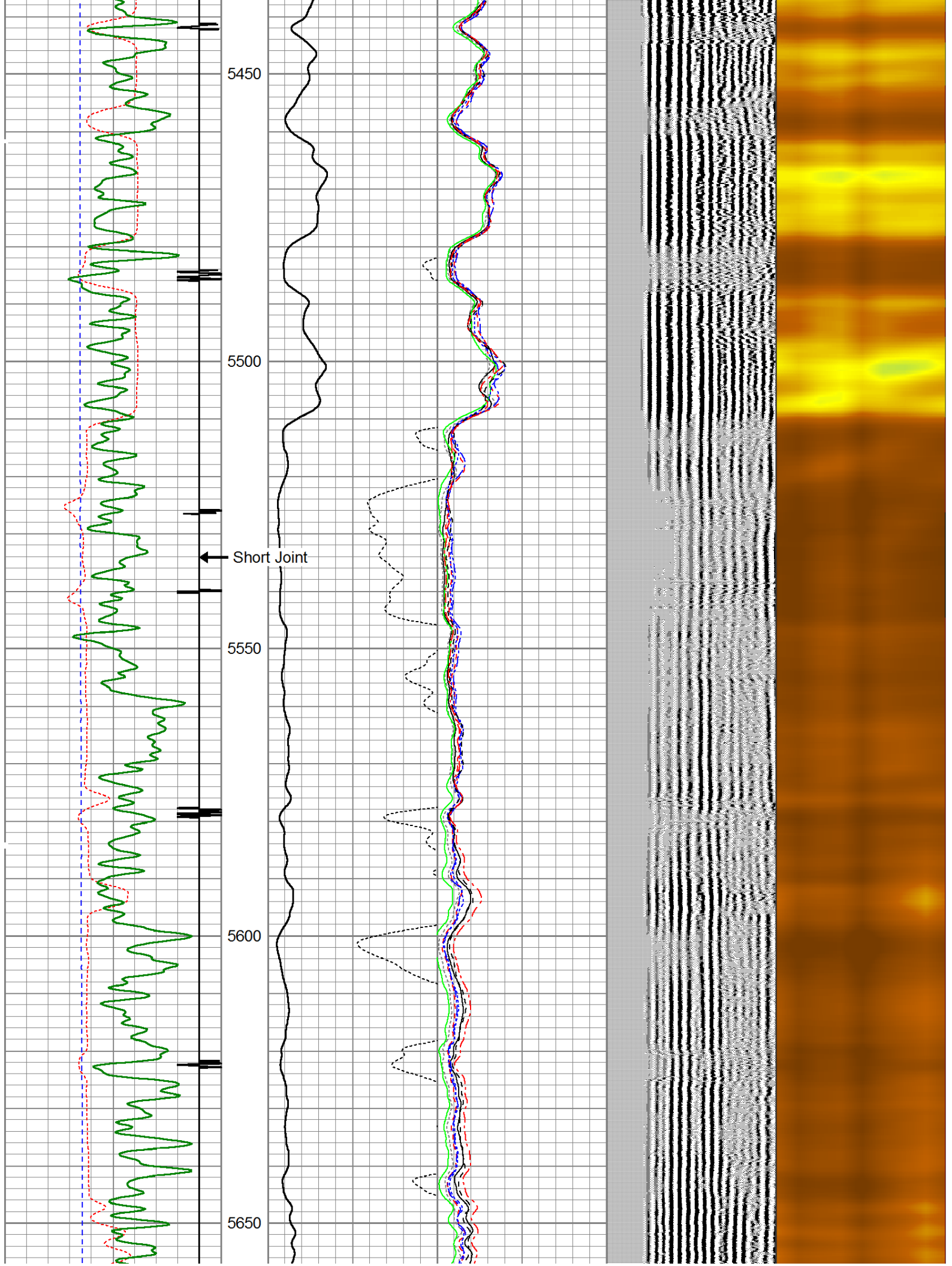


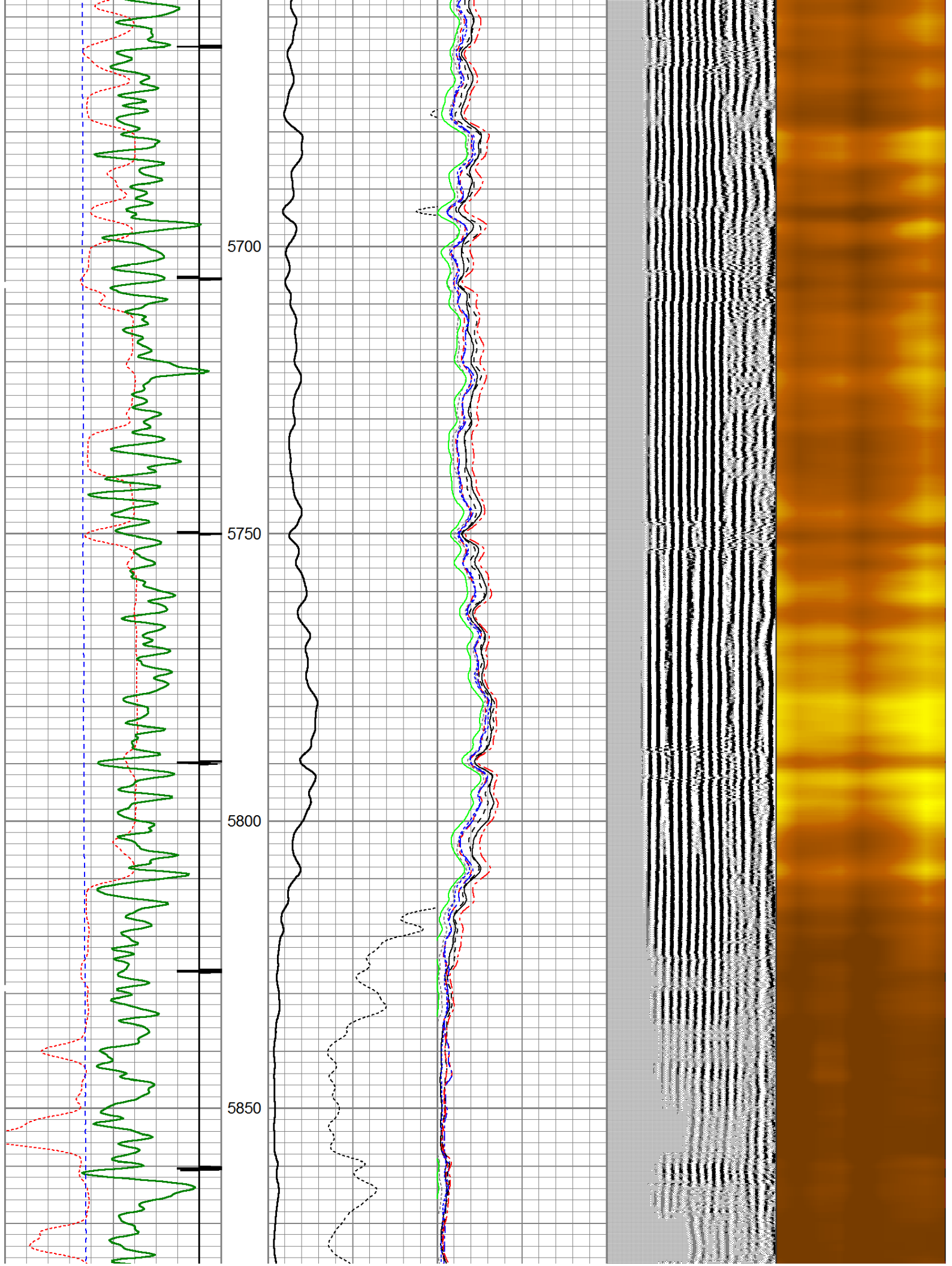


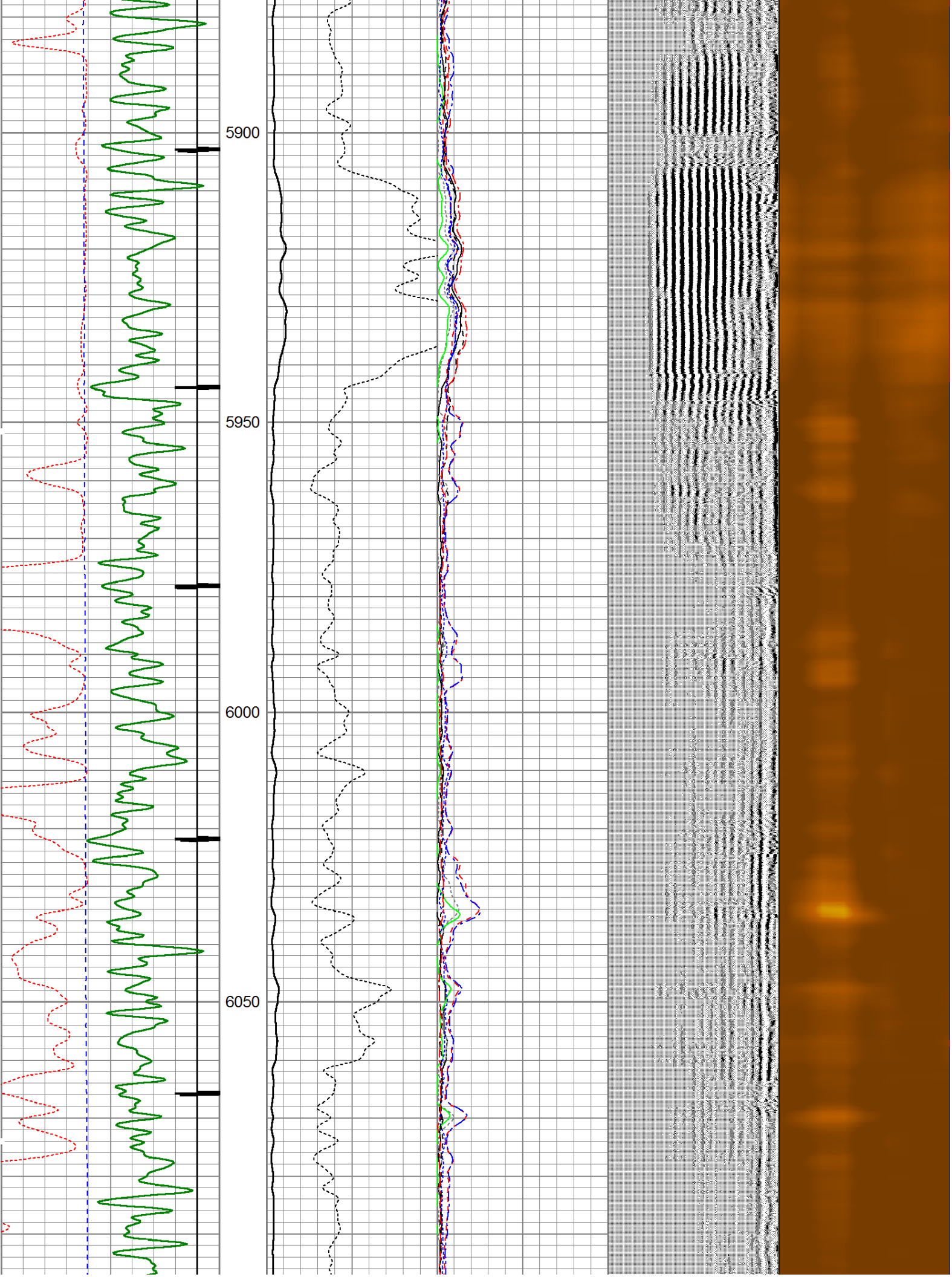


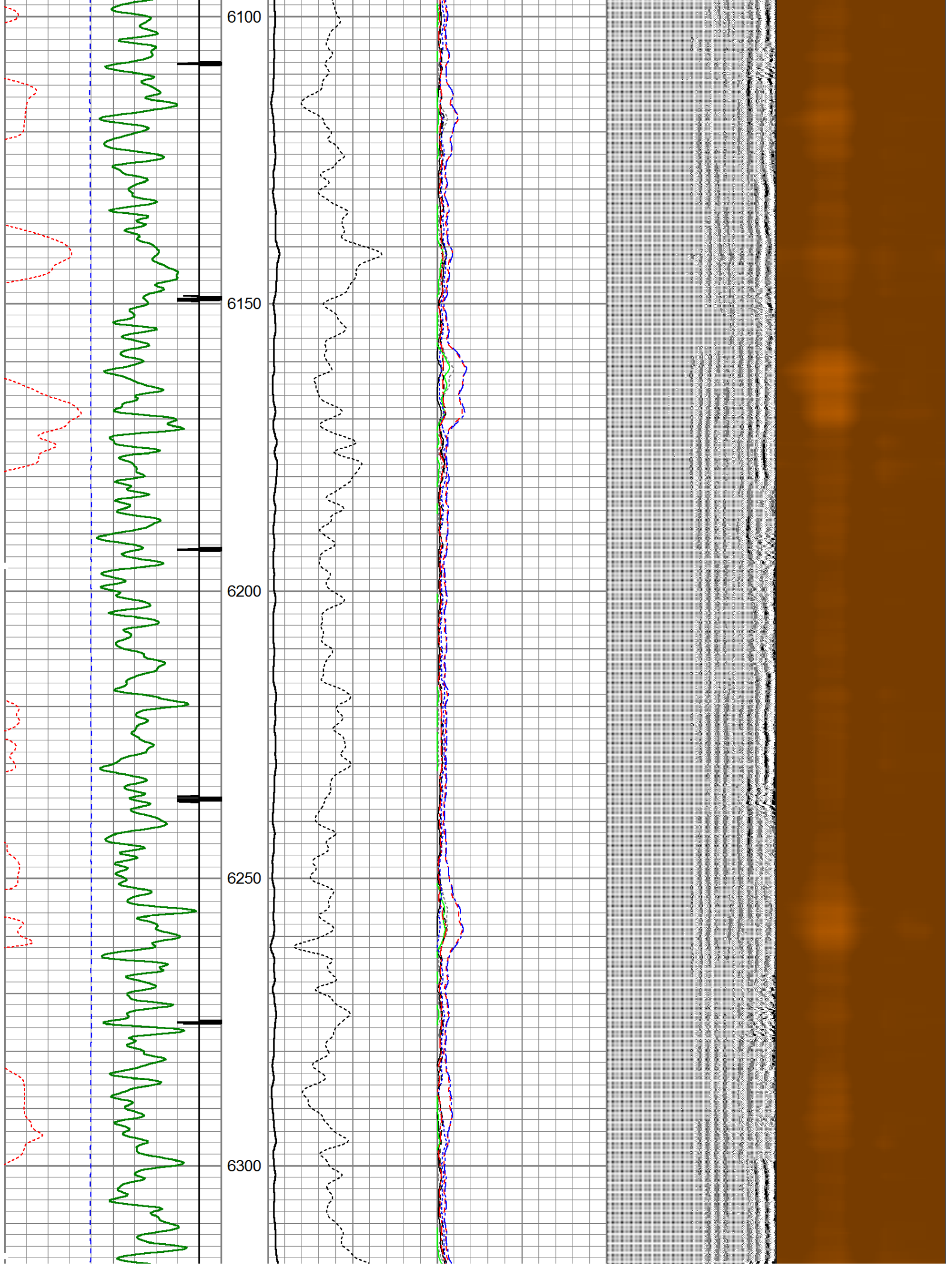


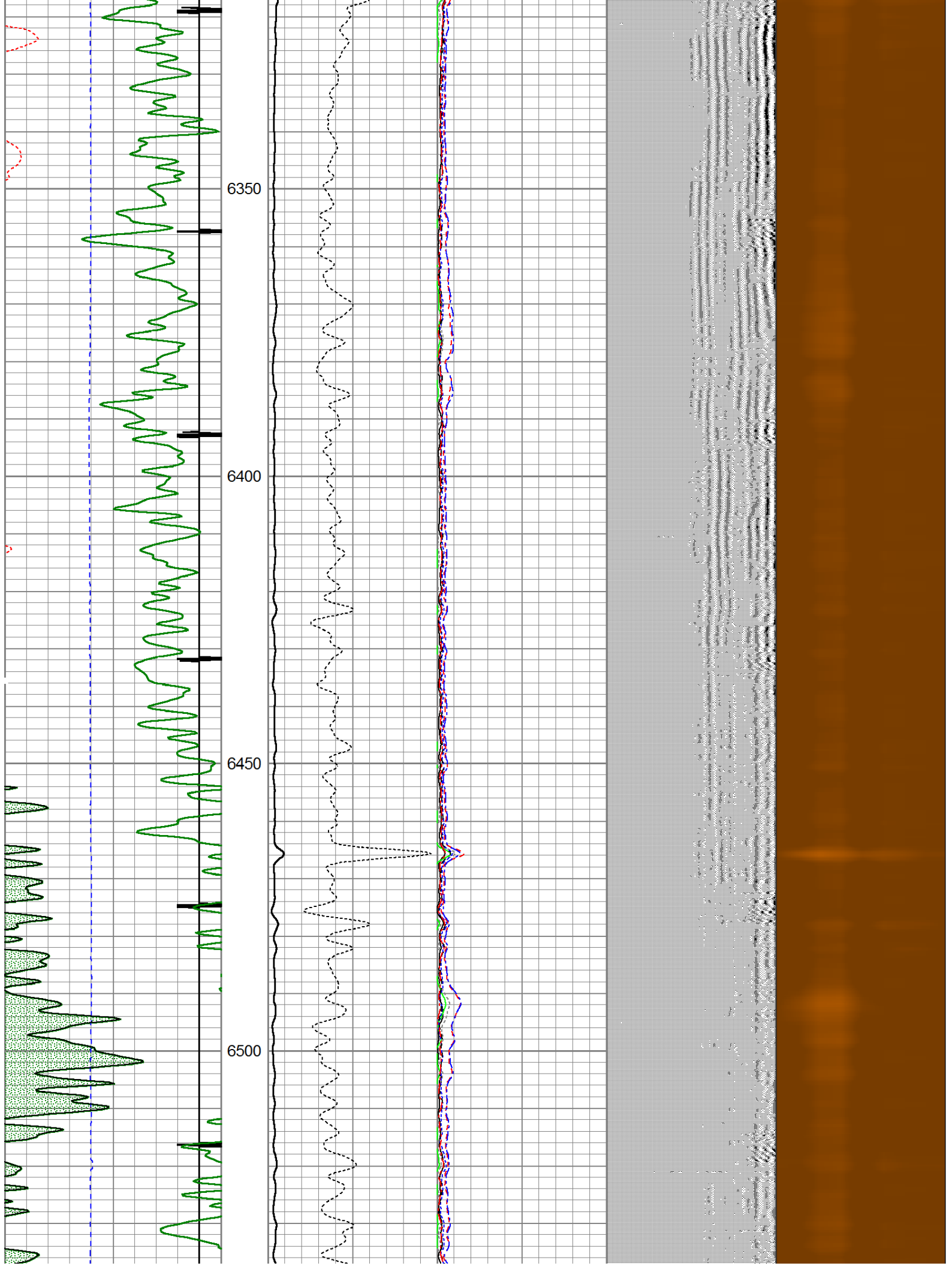


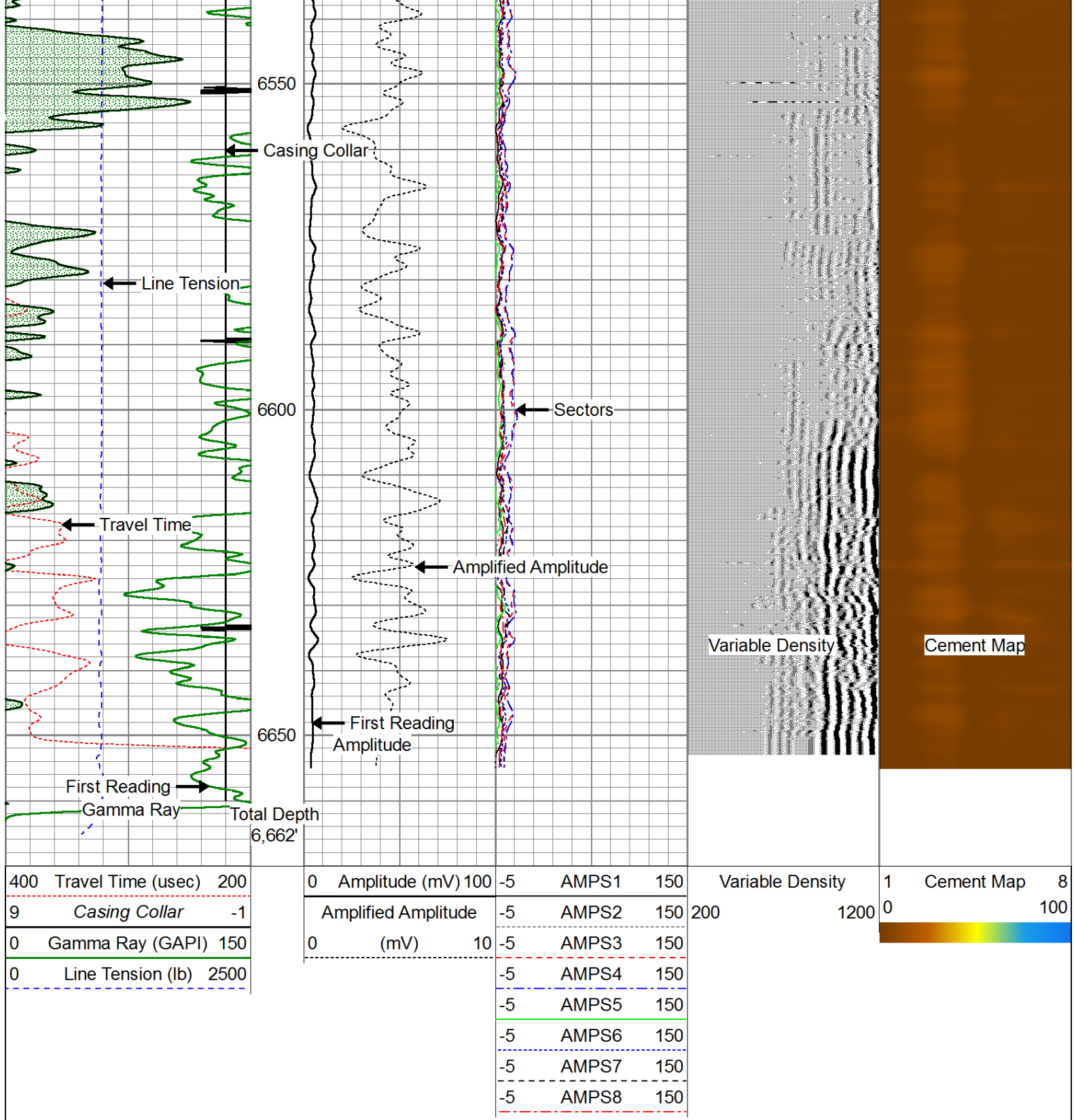








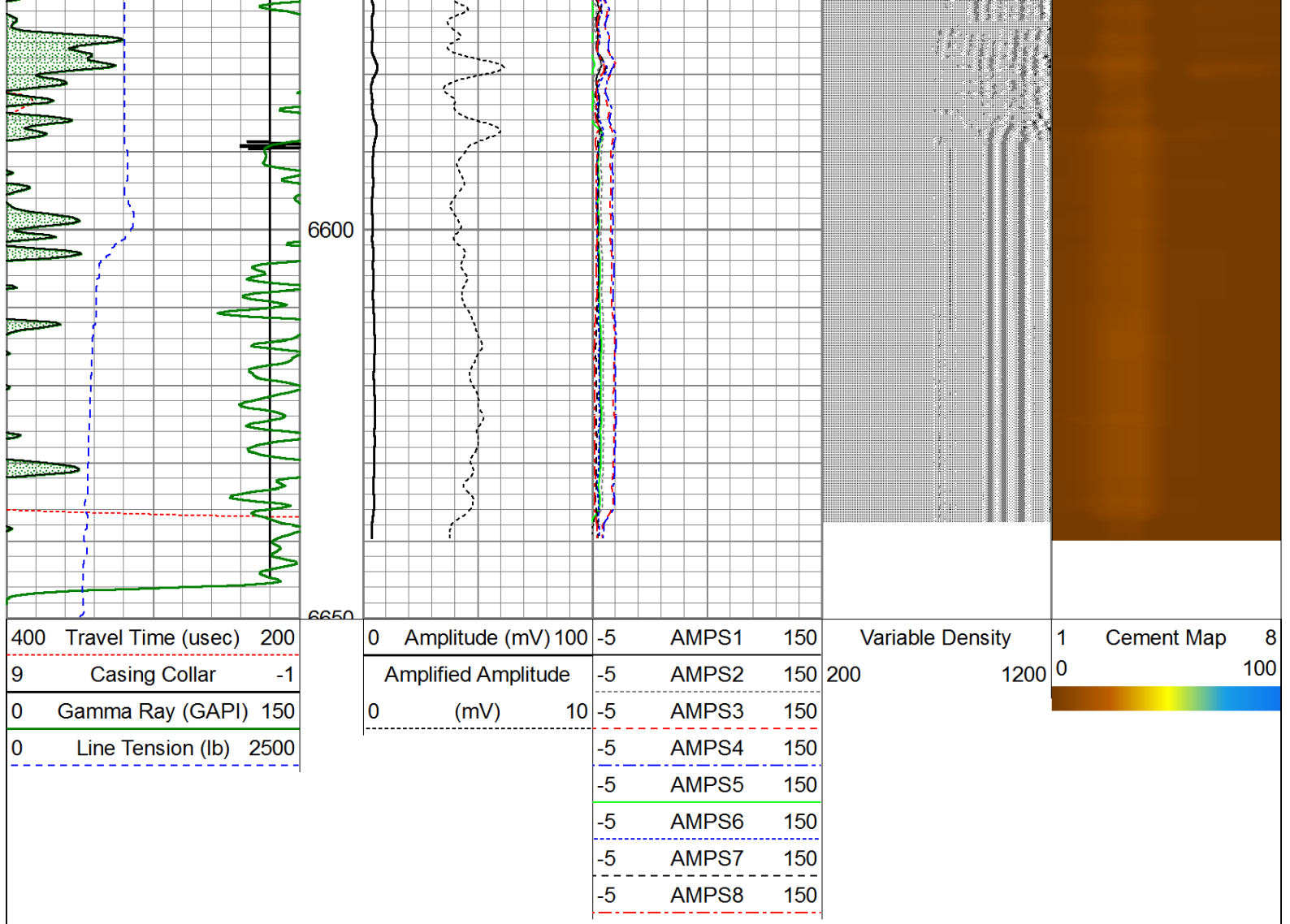




Repeat Pass (0 PSI)

Database File: noble_kummer_pc_le23_65_1hn_rcbl.db
 Dataset Pathname: RCBL/pass3
 Presentation Format: scbl03
 Dataset Creation: Wed May 15 11:14:42 2013 by Log SCH 120126
 Charted by: Depth in Feet scaled 1:240





Calibration Report					
Database File:	noble_kummer_pc_le23_65_1hn_rcbl.db				
Dataset Pathname:	RCBL/pass1.1				
Dataset Creation:	Wed May 15 12:46:04 2013 by Calc SCH 120126				
Temperature Calibration Report					
Serial Number:	101234				
Tool Model:	1.375TEMP				
Performed:	Fri May 10 10:53:29 2013				
	Reference		Reading		
Low Reference:	0.00	degF	0.00	cps	
High Reference:	1.00	degF	1.00	cps	
Gain:	0.10				
Offset:	-1.00				
Delta Spacing	2				
Gamma Ray Calibration Report					
Serial Number:	110108-Dig				
Tool Model:	Probe275				
Performed:	Fri May 10 07:56:42 2013				
Calibrator Value:	138.0		GAPI		
Background Reading:	37.7		cps		
Calibrator Reading:	241.8		cps		

Sensitivity: 0.8500 GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number: 101203
 Tool Model: Probe
 Calibration Casing Diameter: 7.000 in
 Calibration Depth: 555.861 ft

Master Calibration, performed Wed May 15 10:49:57 2013:

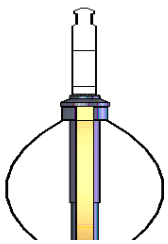
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.009	0.441	3.000	62.165	117.433	3.800
CAL	-0.008	0.522				
5'	-0.007	0.458	3.000	62.165	127.129	3.906
SUM						
S1	0.022	0.494	0.000	100.000	187.805	-4.756
S2	0.020	0.419	0.000	100.000	219.318	-5.052
S3	-0.007	0.364	0.000	100.000	231.507	1.971
S4	-0.010	0.367	0.000	100.000	225.011	2.732
S5	0.025	0.402	0.000	100.000	226.336	-6.753
S6	0.001	0.453	0.000	100.000	195.690	-0.286
S7	0.005	0.488	0.000	100.000	183.153	-1.095
S8	0.009	0.503	0.000	100.000	178.139	-1.720

Internal Reference Calibration, performed Sat Mar 26 08:06:02 2011:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	-0.008	0.522	1.000	0.000

Air Zero Calibration, performed Wed May 15 06:49:54 2013:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.000		0.000		0.000	
5'	0.000		0.000		0.000	
SUM						
S1	0.000		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	

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
CHD	21.71		Titan Cable_head	1.00	1.44	10.00
CENT	20.71		Probe275	2.88	2.75	20.00

