



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

Company	Noble Energy	Location:	API # : 05-123-36682	Other Services			
Well	Kummer PC LE 23-65HN	SEC 23 TWP 8N RGE 61W	2,640' FSL & 660' FEL	NONE			
Field	Wattenberg						
County	Weld						
State	Colorado						
Permanent Datum	Ground Level	Elevation	4,982'	Elevation			
Log Measured From	Kelly Bushing 24' Above P.D.			K.B. 5,006'			
Drilling Measured From	Kelly Bushing			D.F. 5,004'			
				G.L. 4,982'			
Date	15-MAY-2013						
Run Number	One						
Depth Driller	10,727'						
Depth Logger	6,808'						
Bottom Logged Interval	6,804'						
Top Log Interval	Surface						
Open Hole Size	8.75"						
Type Fluid	N/A						
Density / Viscosity	N/A						
Max. Recorded Temp.	218 Deg F						
Estimated Cement Top	414'						
Time Well Ready	07:00						
Time Logger on Bottom	09:35						
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		Bottom
Surface String	9.625"			36#	24'		757'
Prot. String							
Production String	7"			26#	24'		6,875'
Liner	4.5"			11.6#	6,793'		10,727'
					5,434'		5,445'

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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 5,434' - 5,445'
Estimated TOC At 414'

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

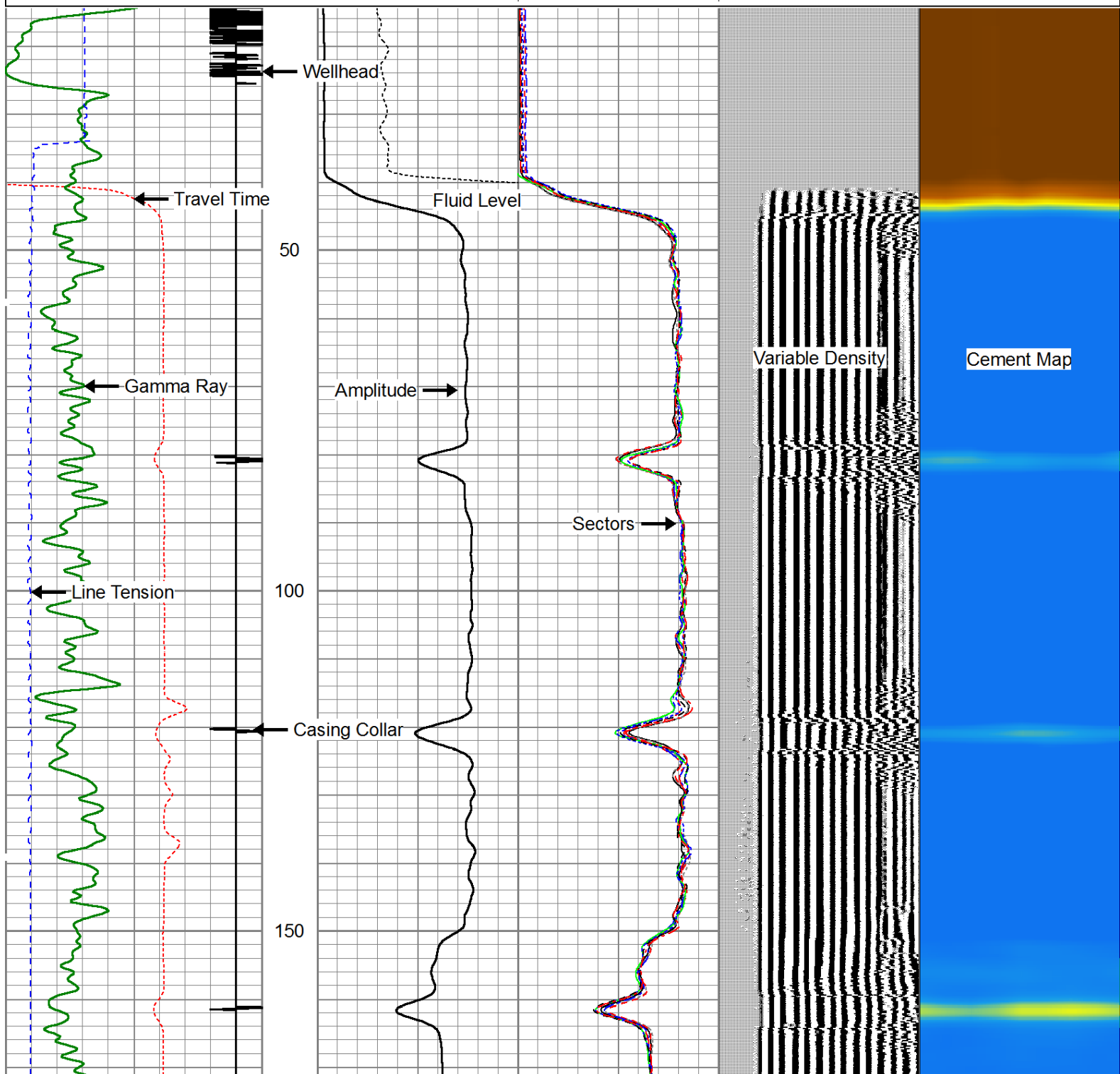
Thank You For Choosing Allied Wireline Services
(303) 659-4609

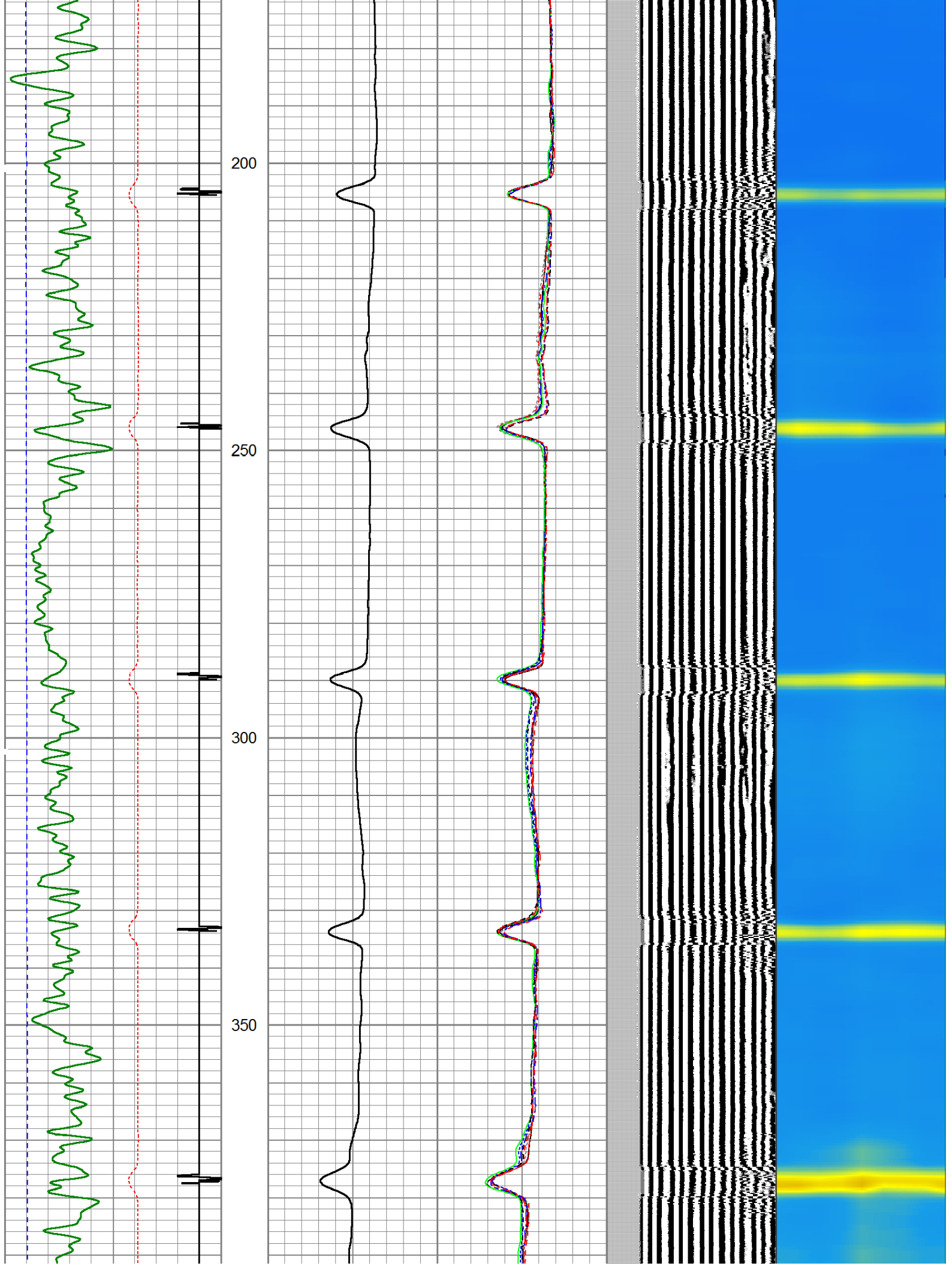


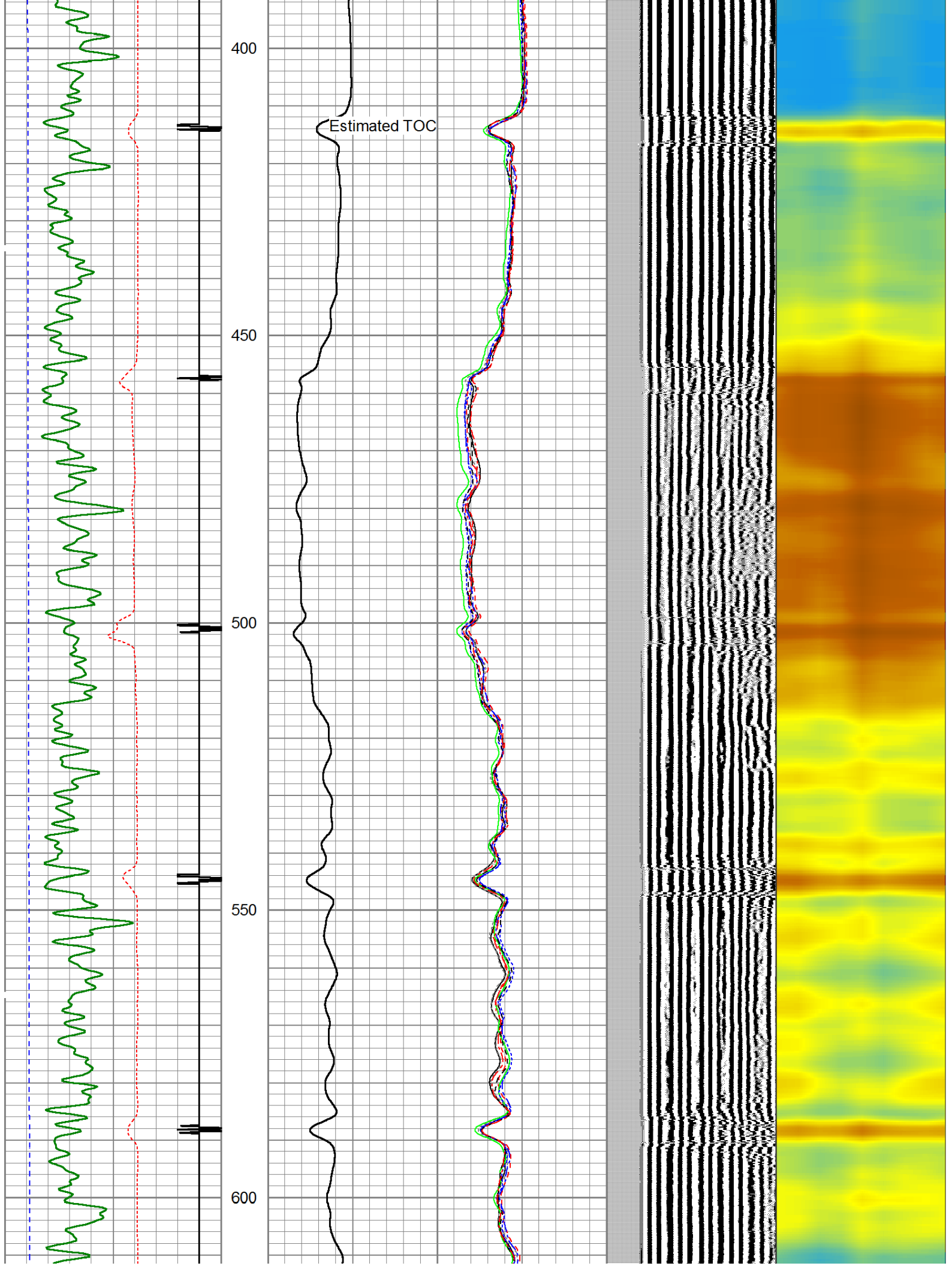
Main Pass (0 PSI)

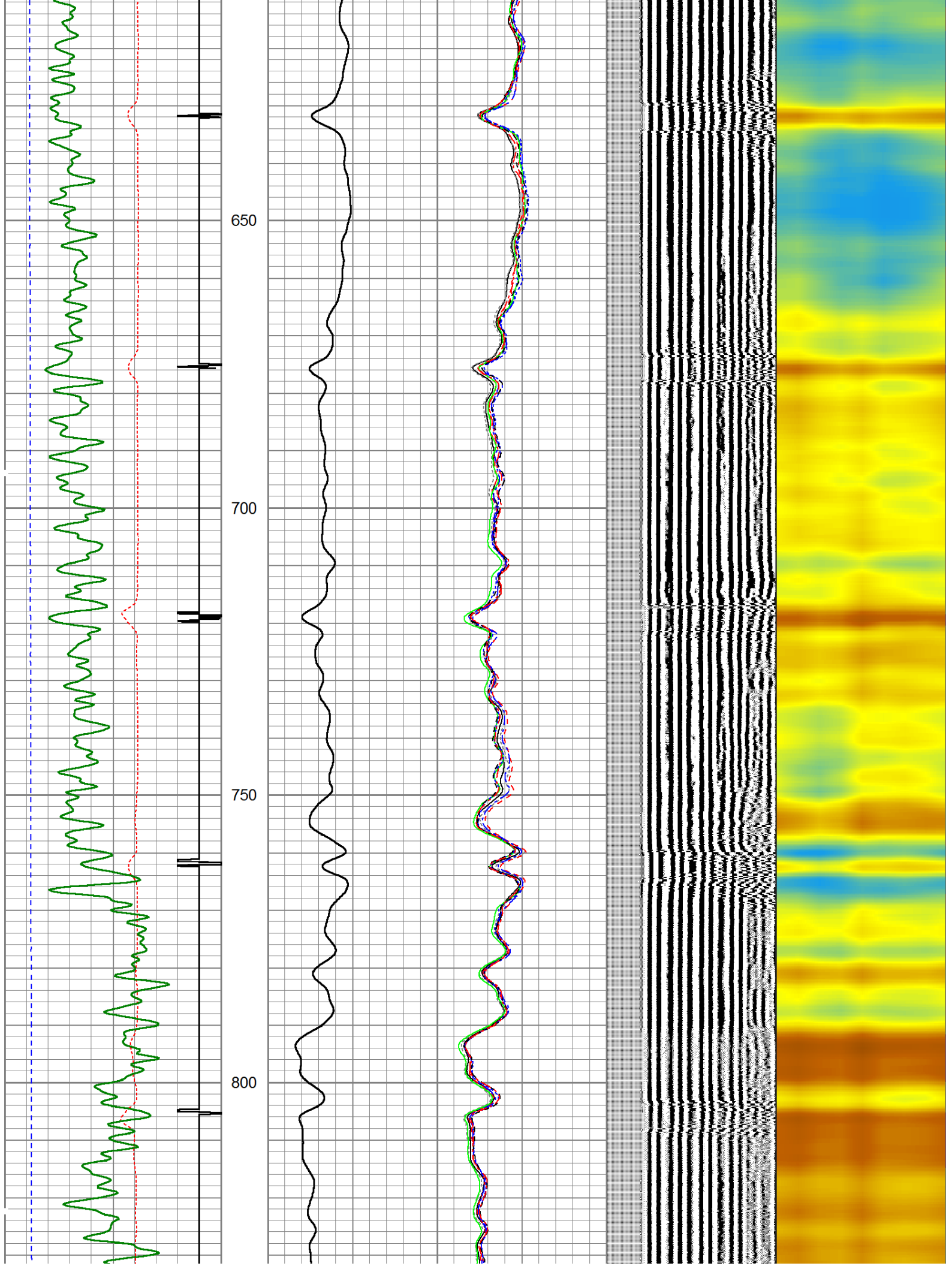
Database File: noble_kummer_pc_le23_65_hn_rcbl.db
Dataset Pathname: RCBL/pass4.1
Presentation Format: scbl03
Dataset Creation: Wed May 15 11:11:03 2013 by Calc SCH 120126
Charted by: Depth in Feet scaled 1:240

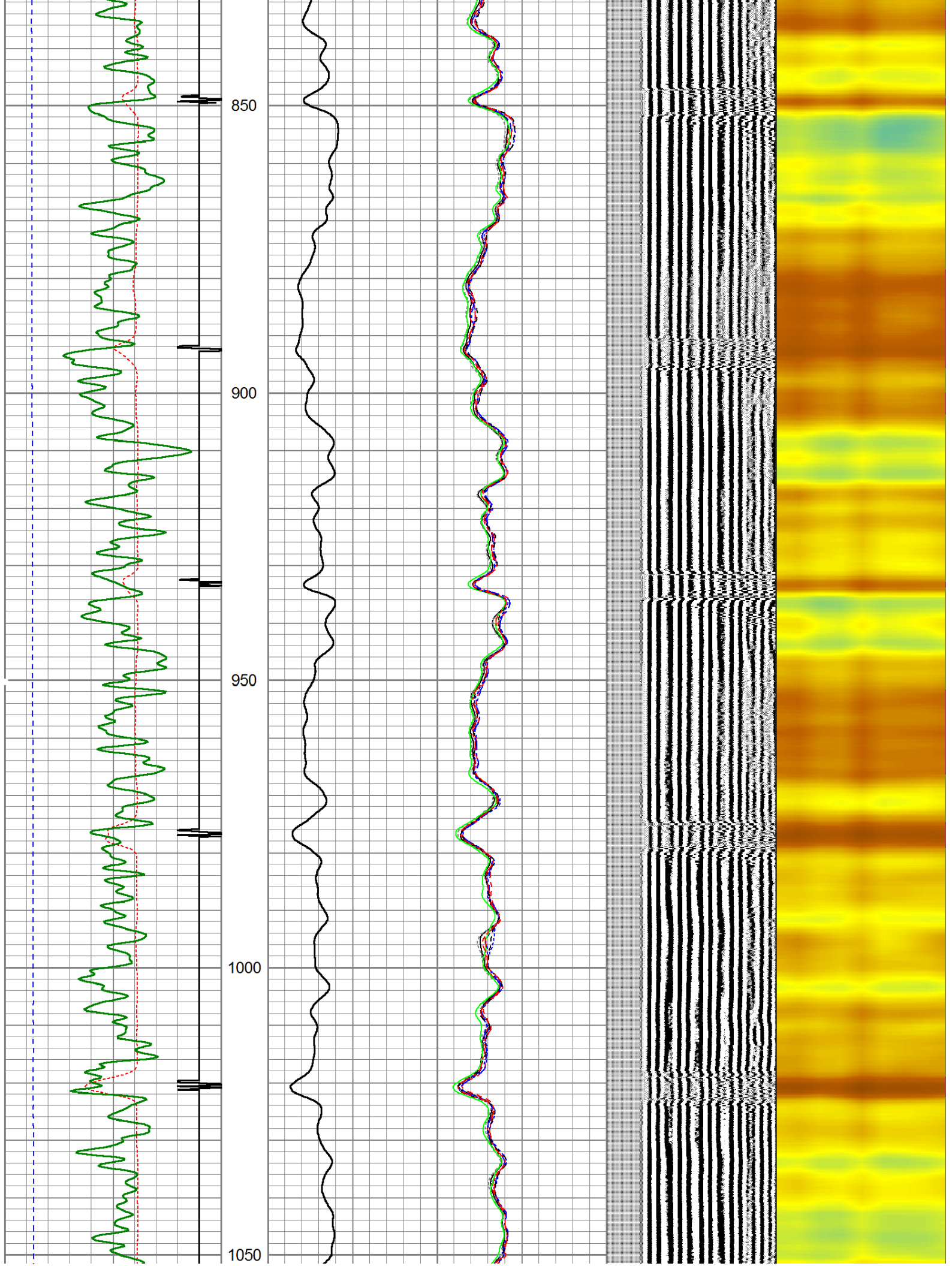
400	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	AMPS1	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1		Amplified Amplitude		-5	AMPS2	150	200	1200	0	100
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	AMPS3	150				
0	Line Tension (lb)	2500				-5	AMPS4	150				
						-5	AMPS5	150				
						-5	AMPS6	150				
						-5	AMPS7	150				
						-5	AMPS8	150				

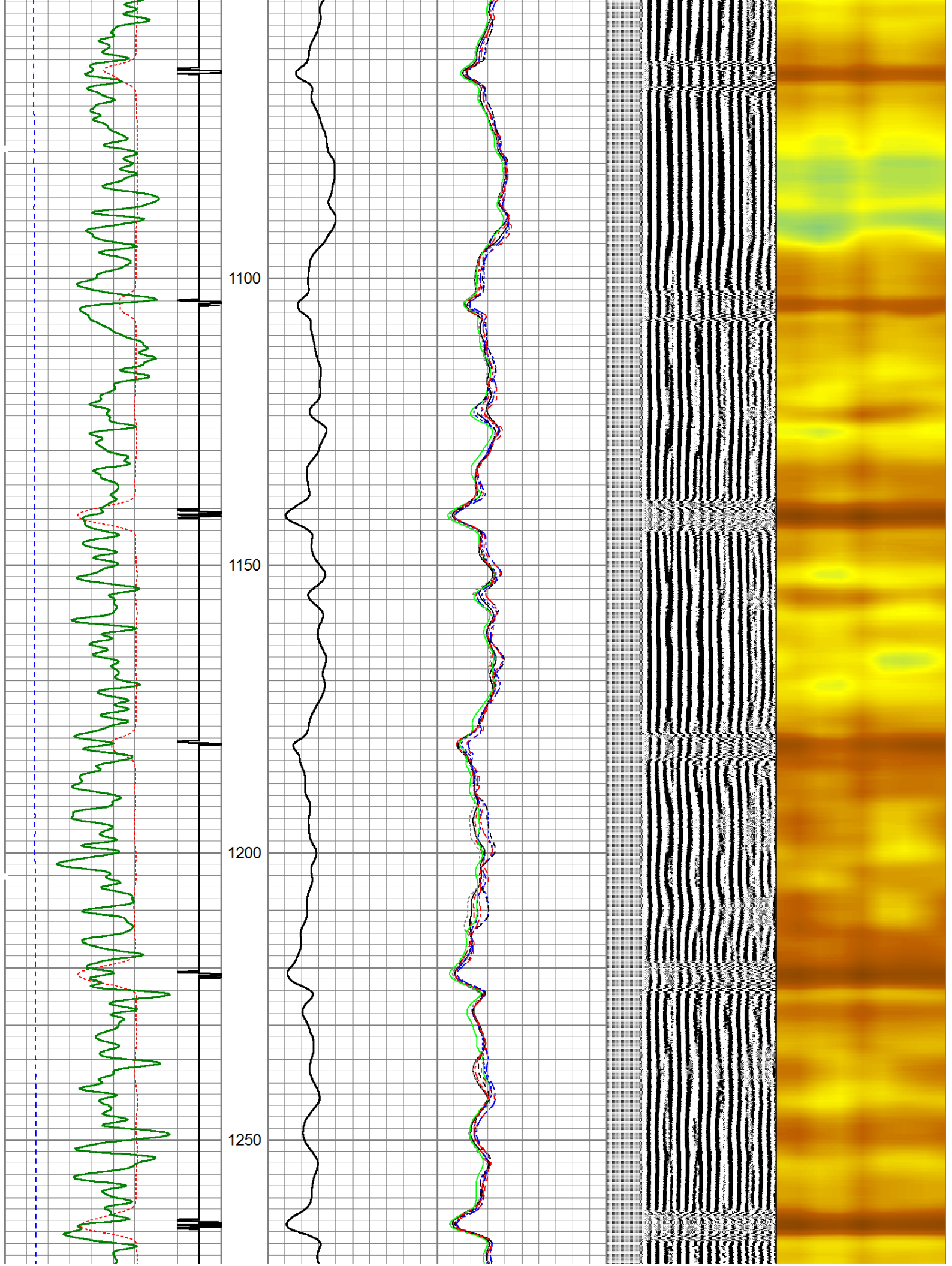


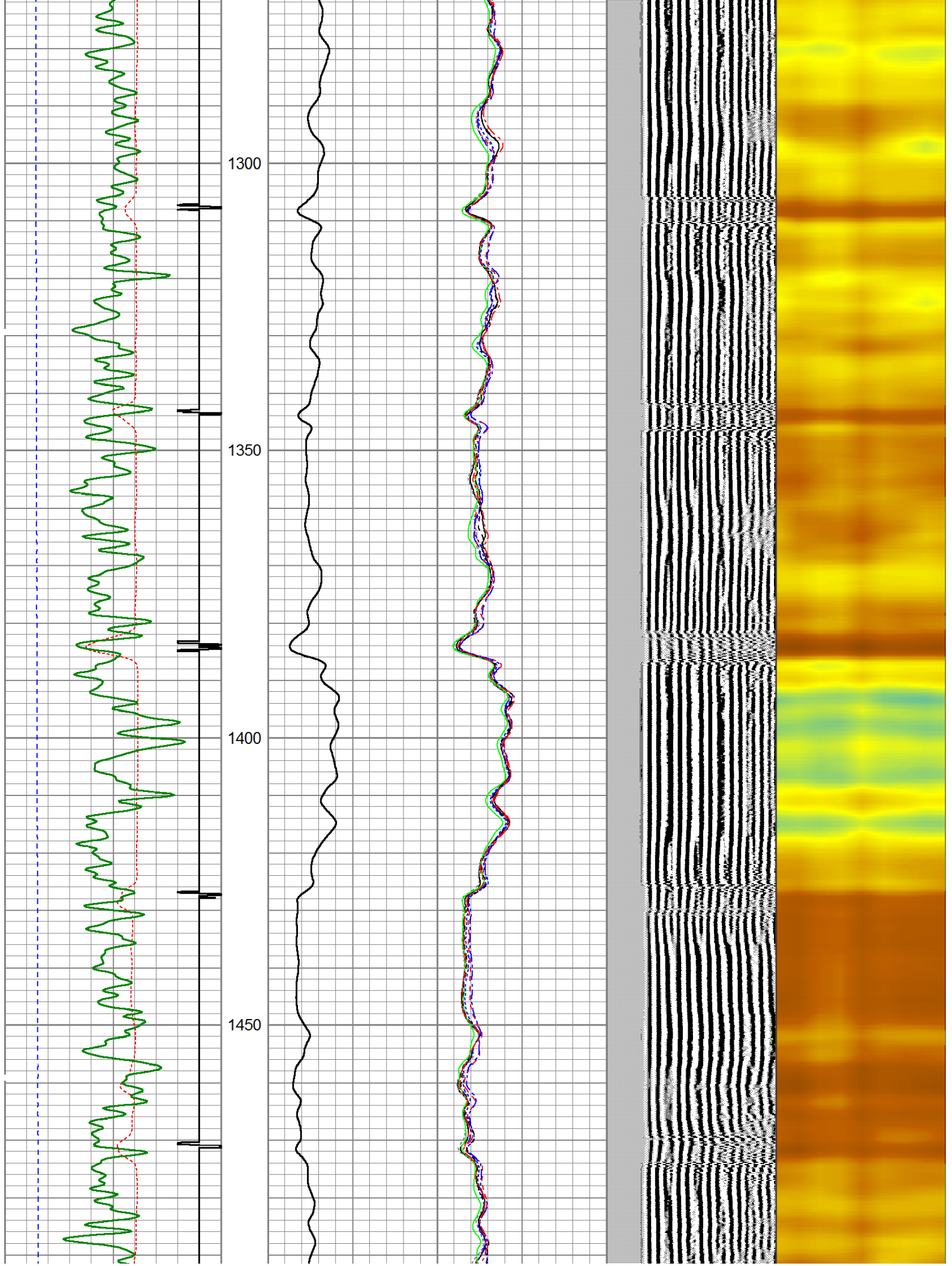


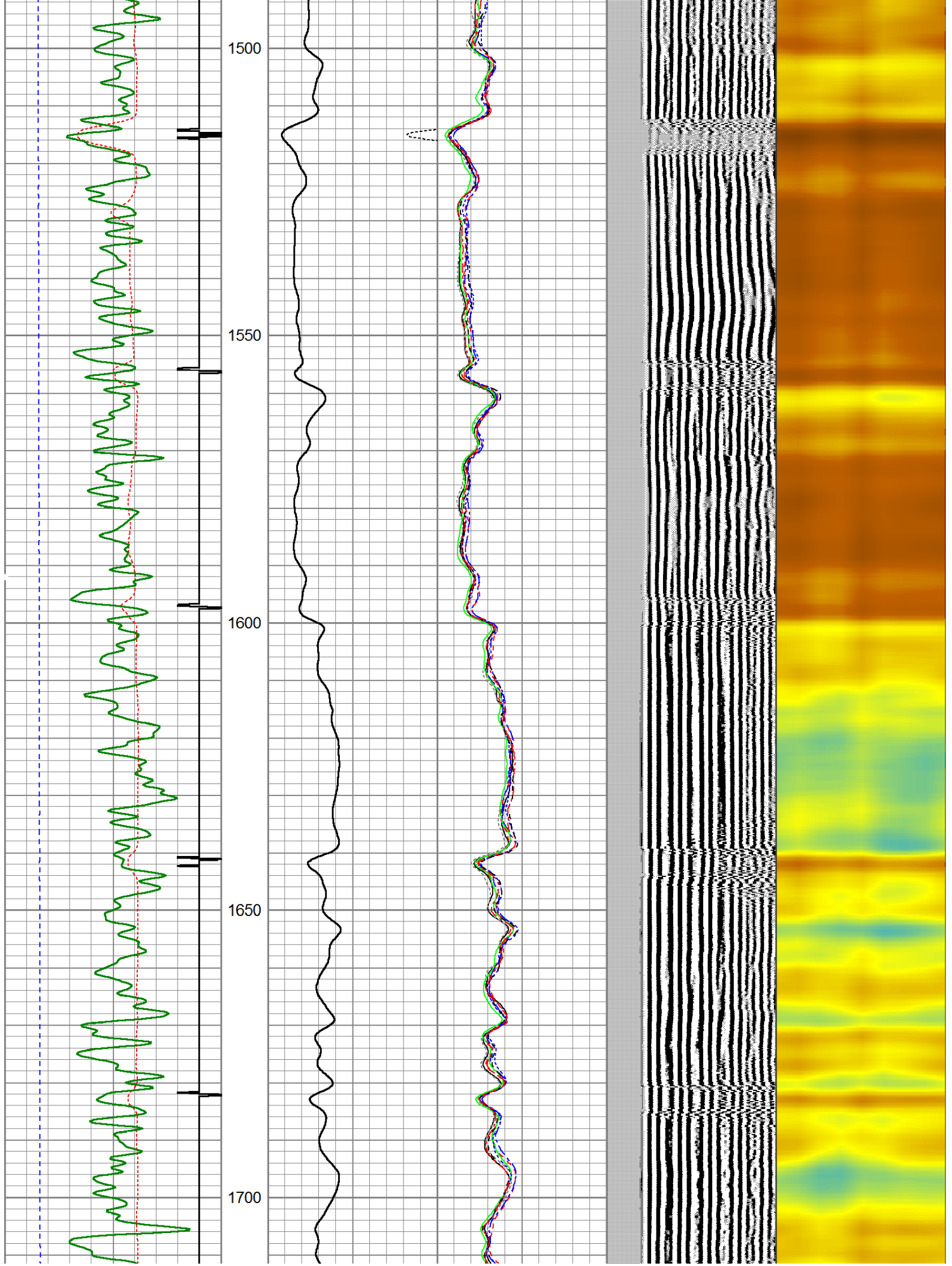


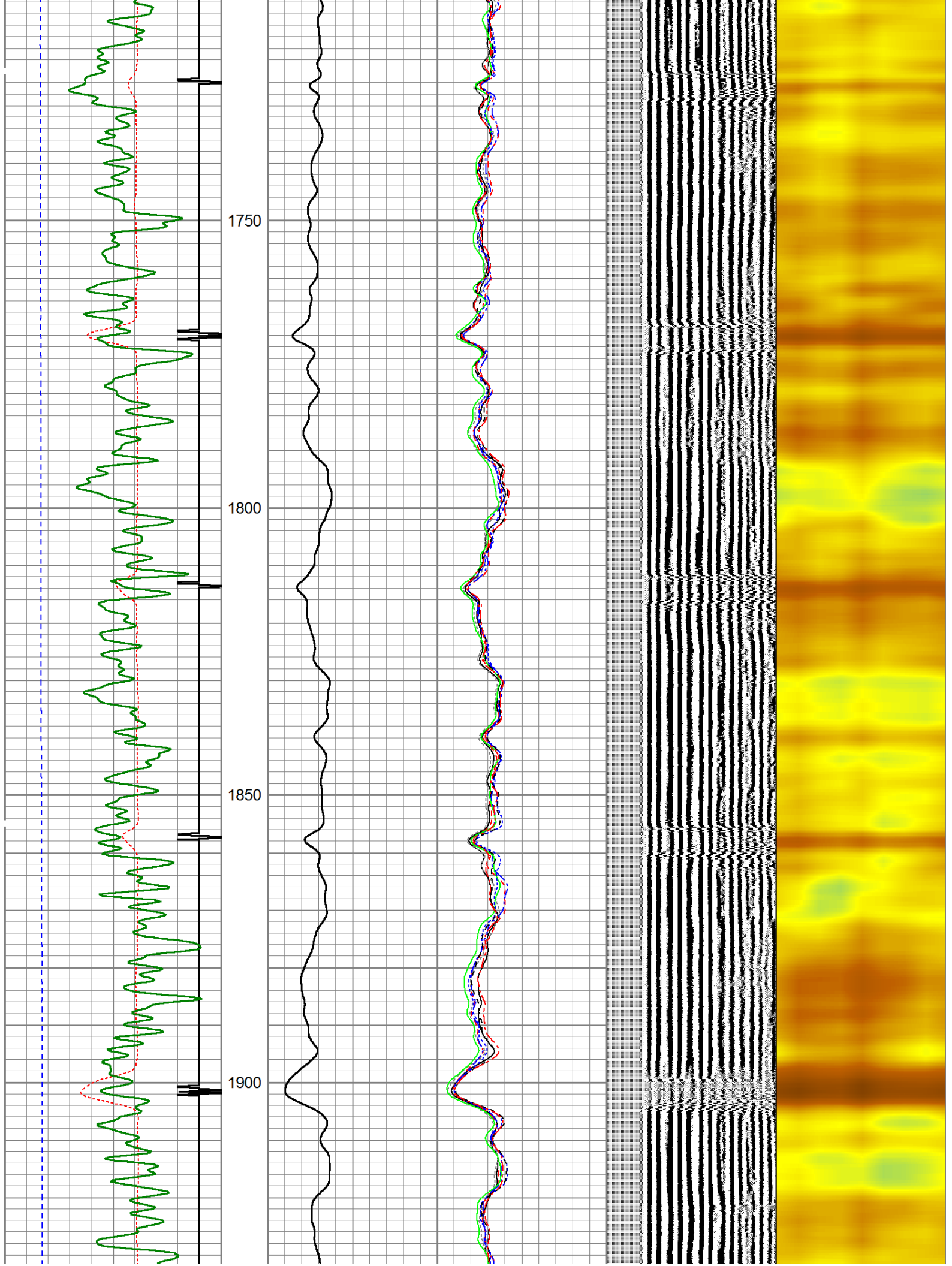


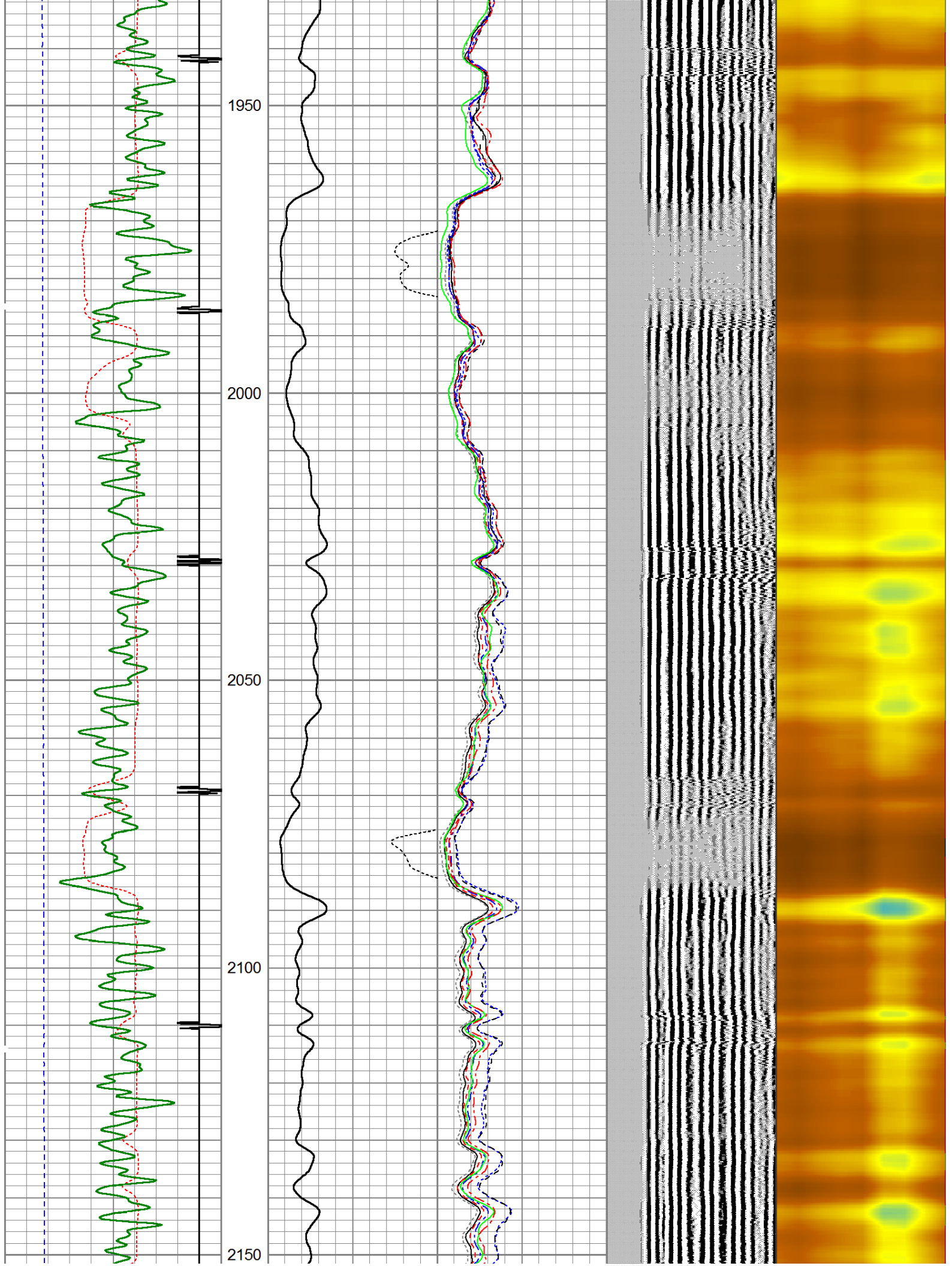


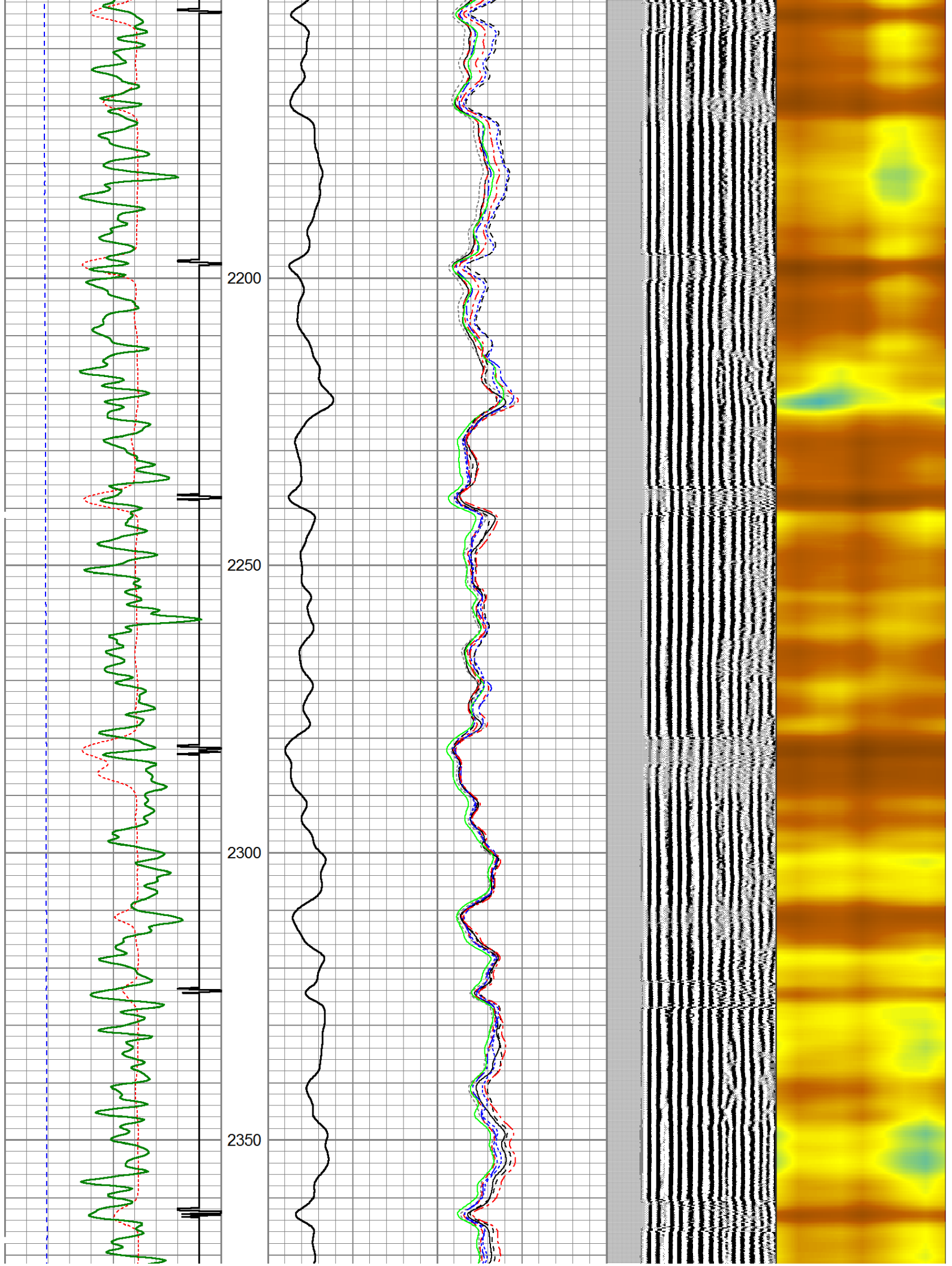


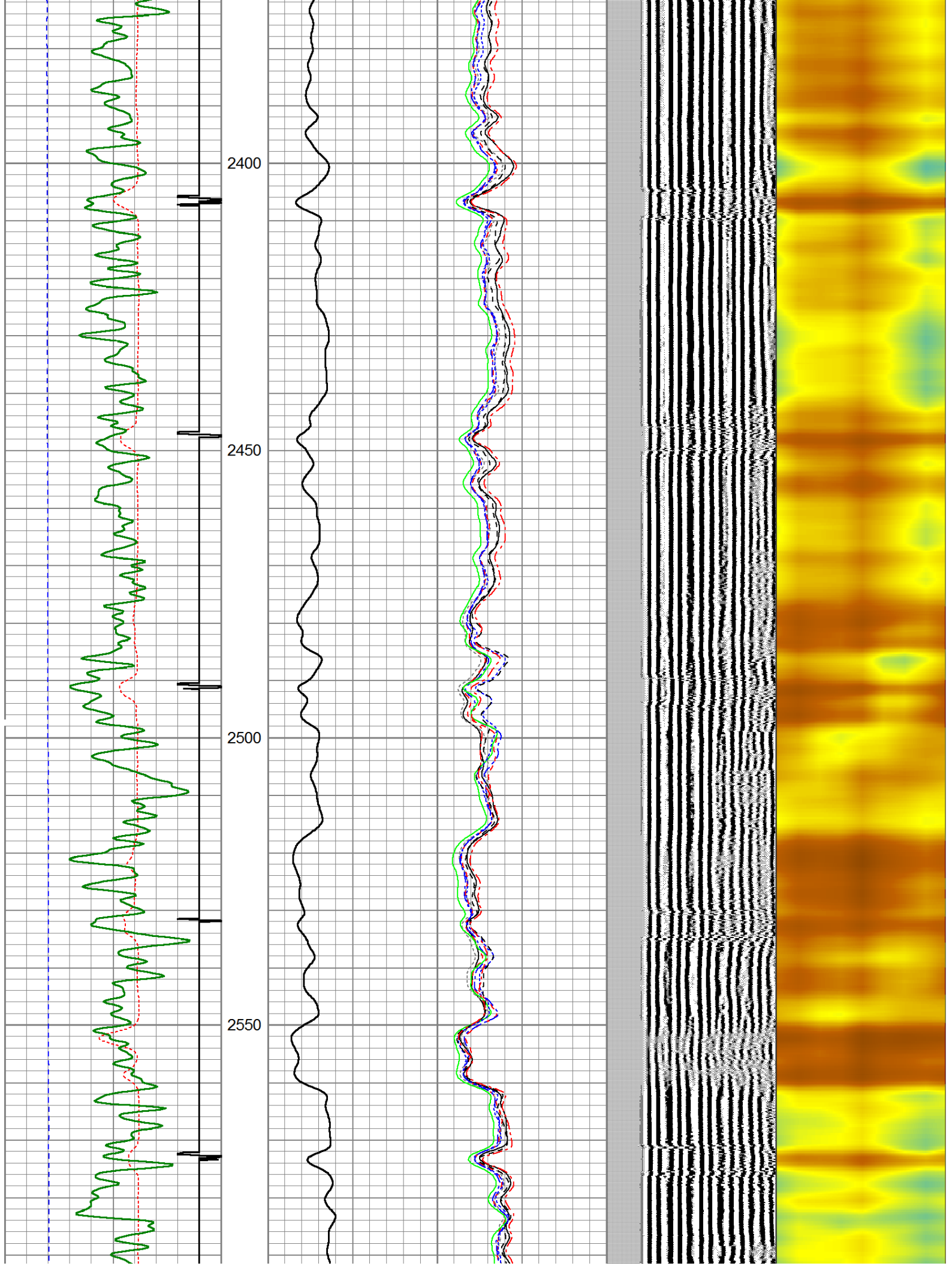


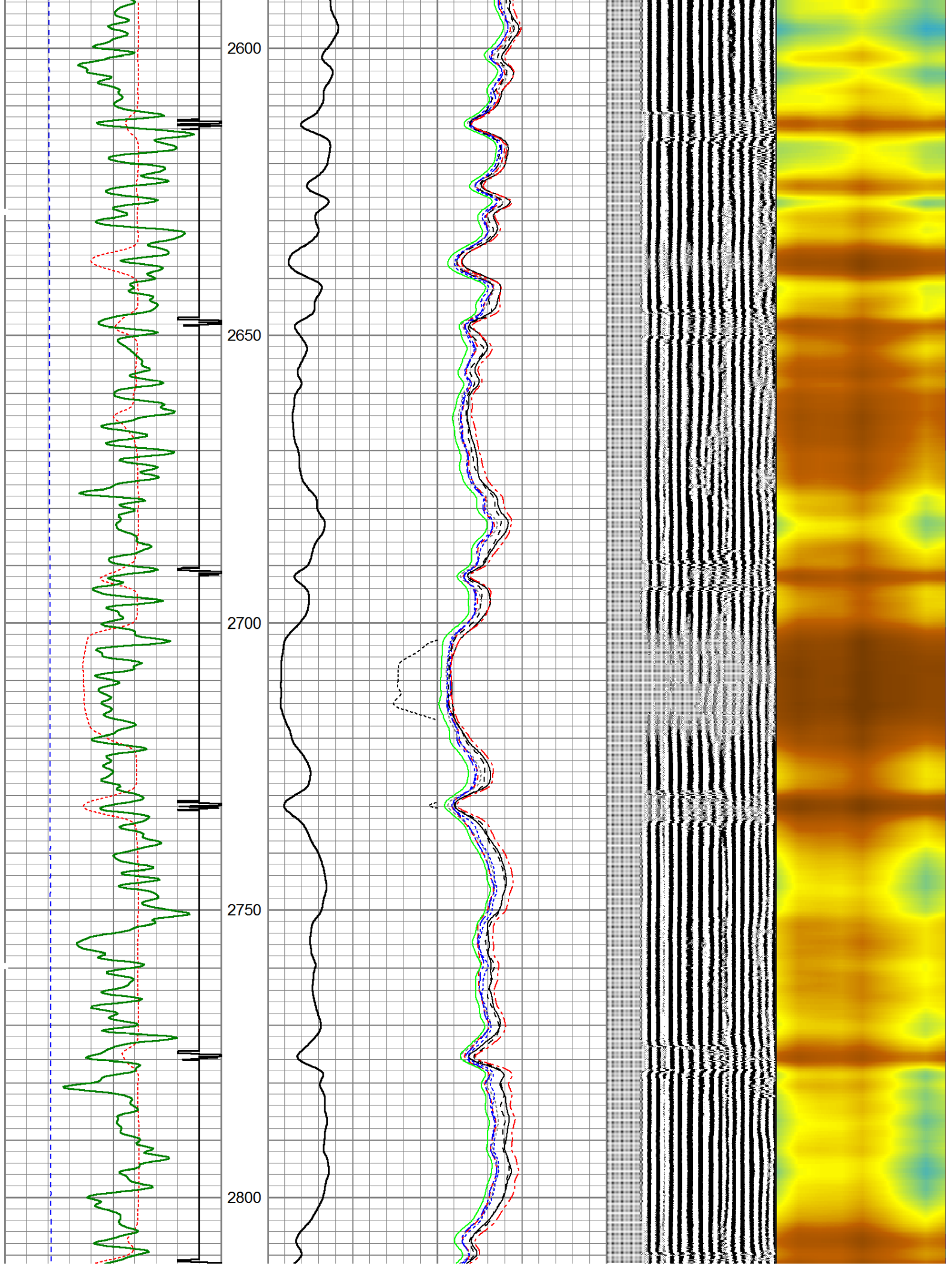


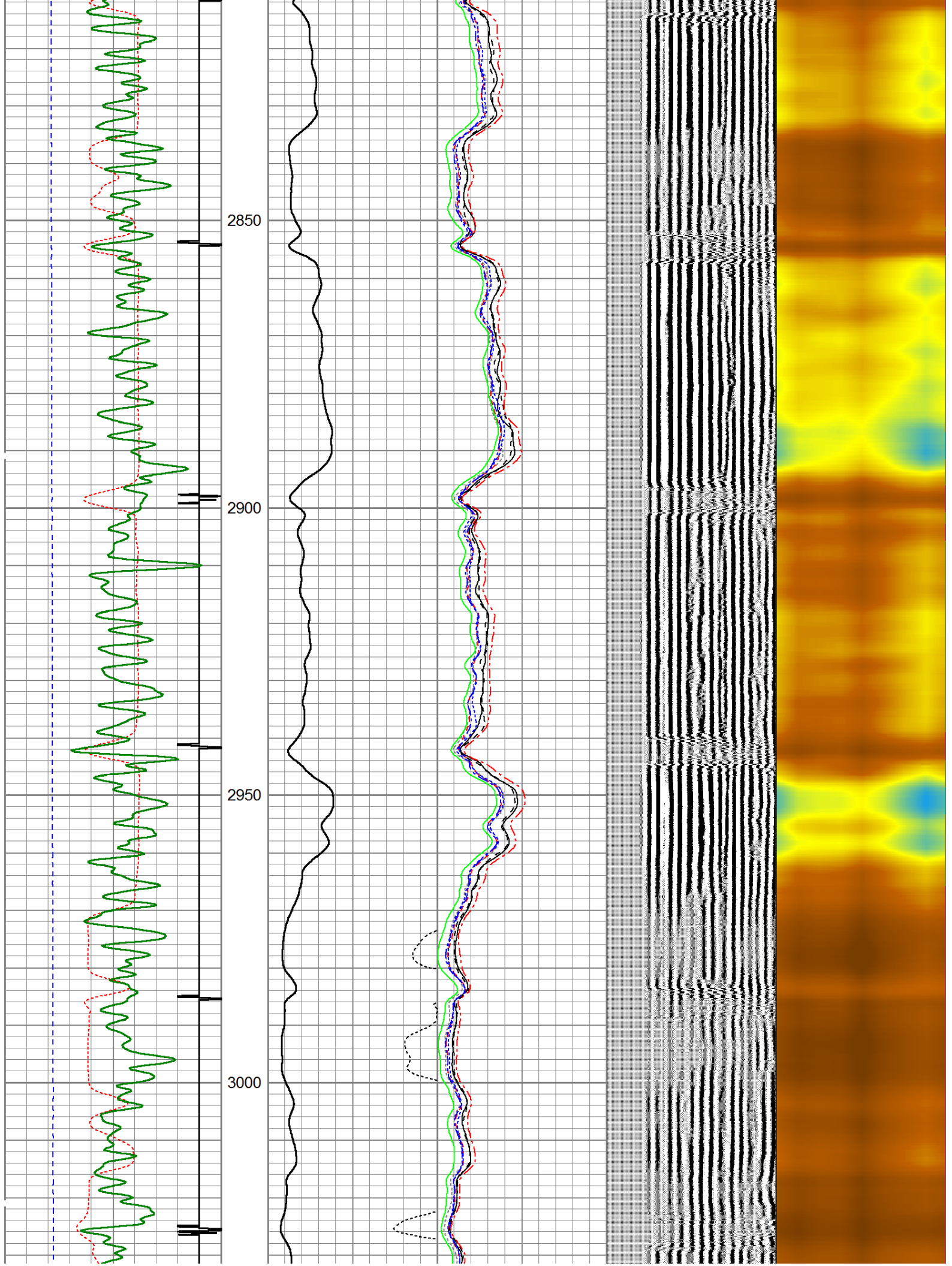


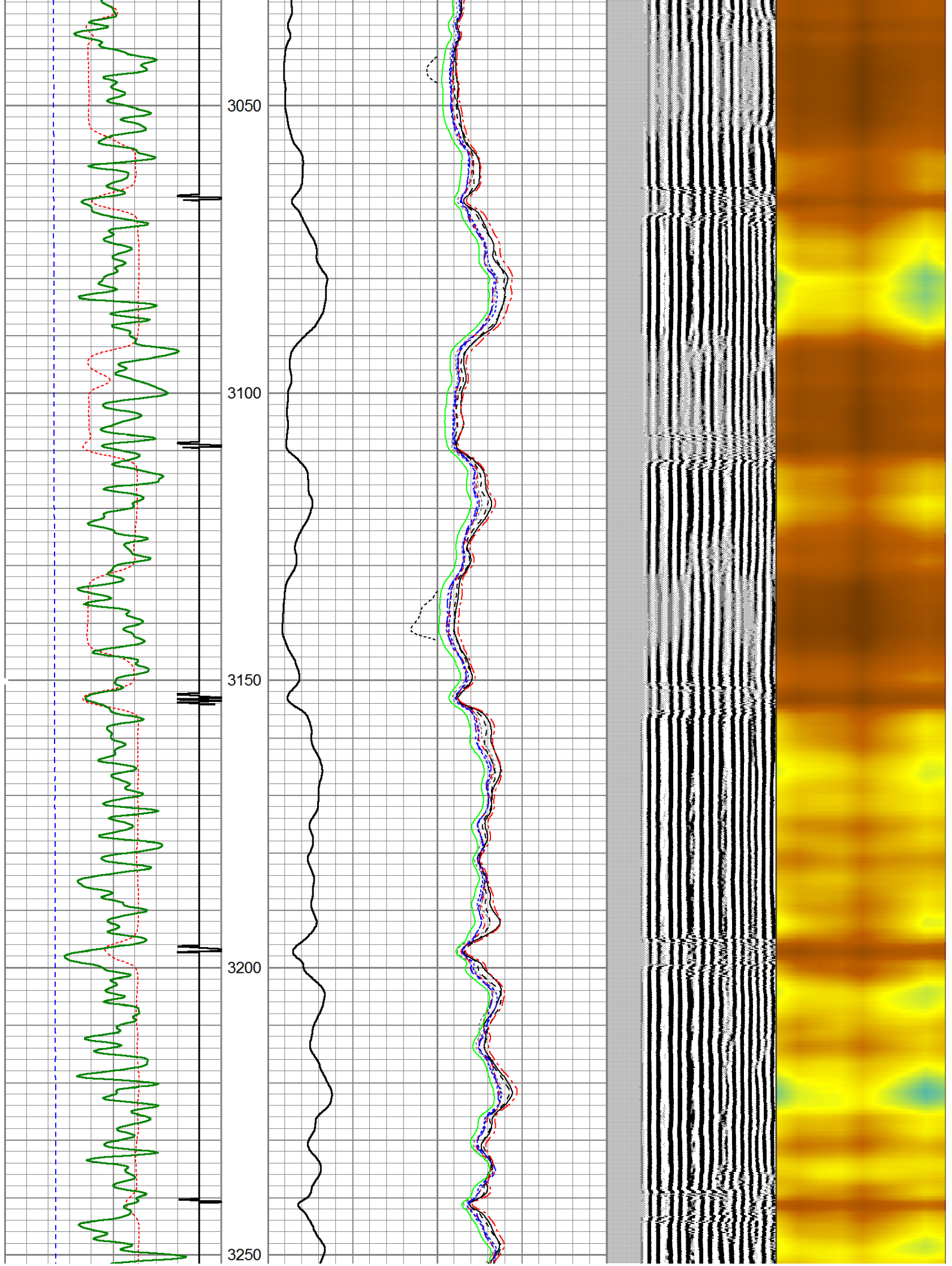


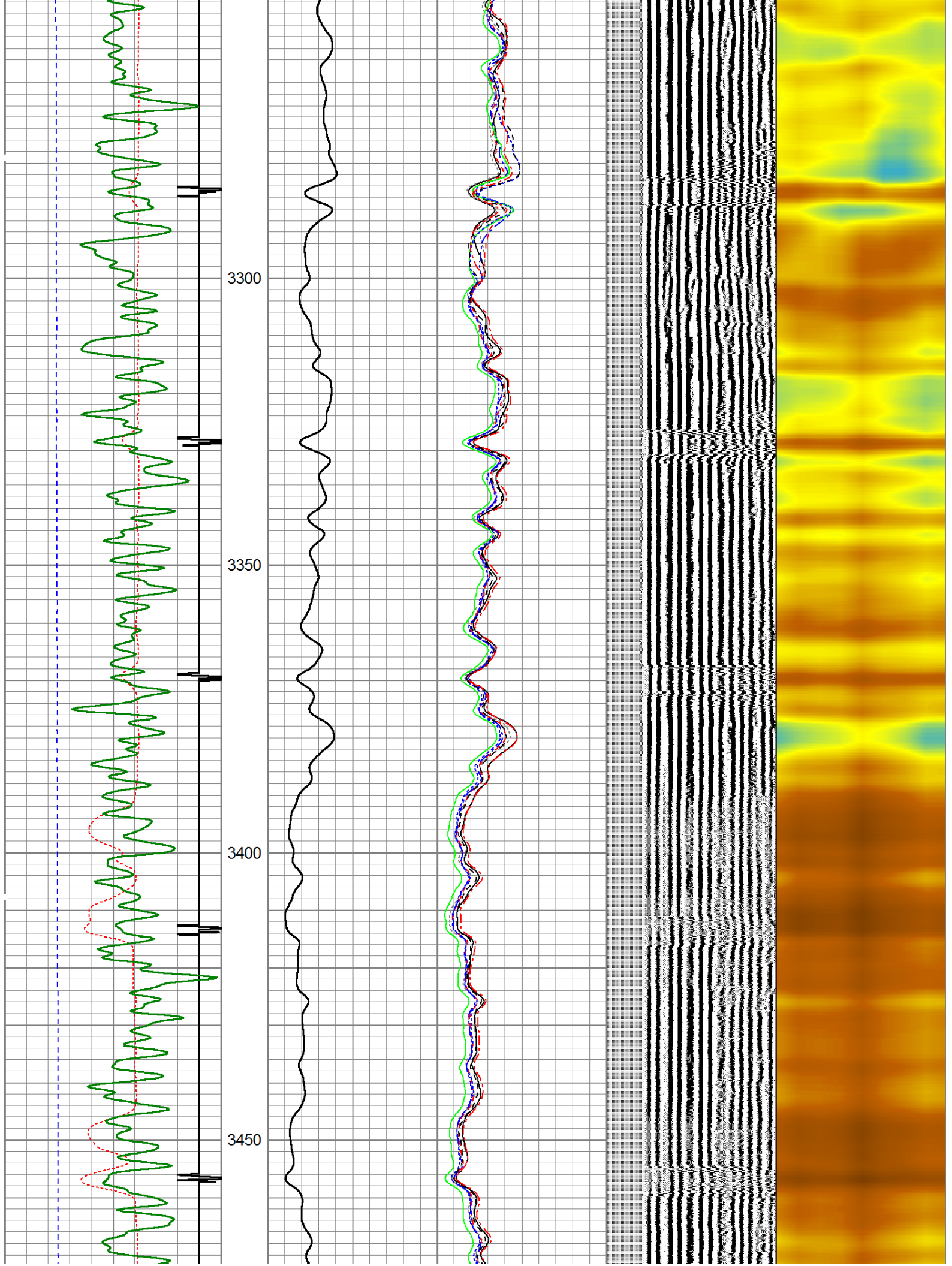


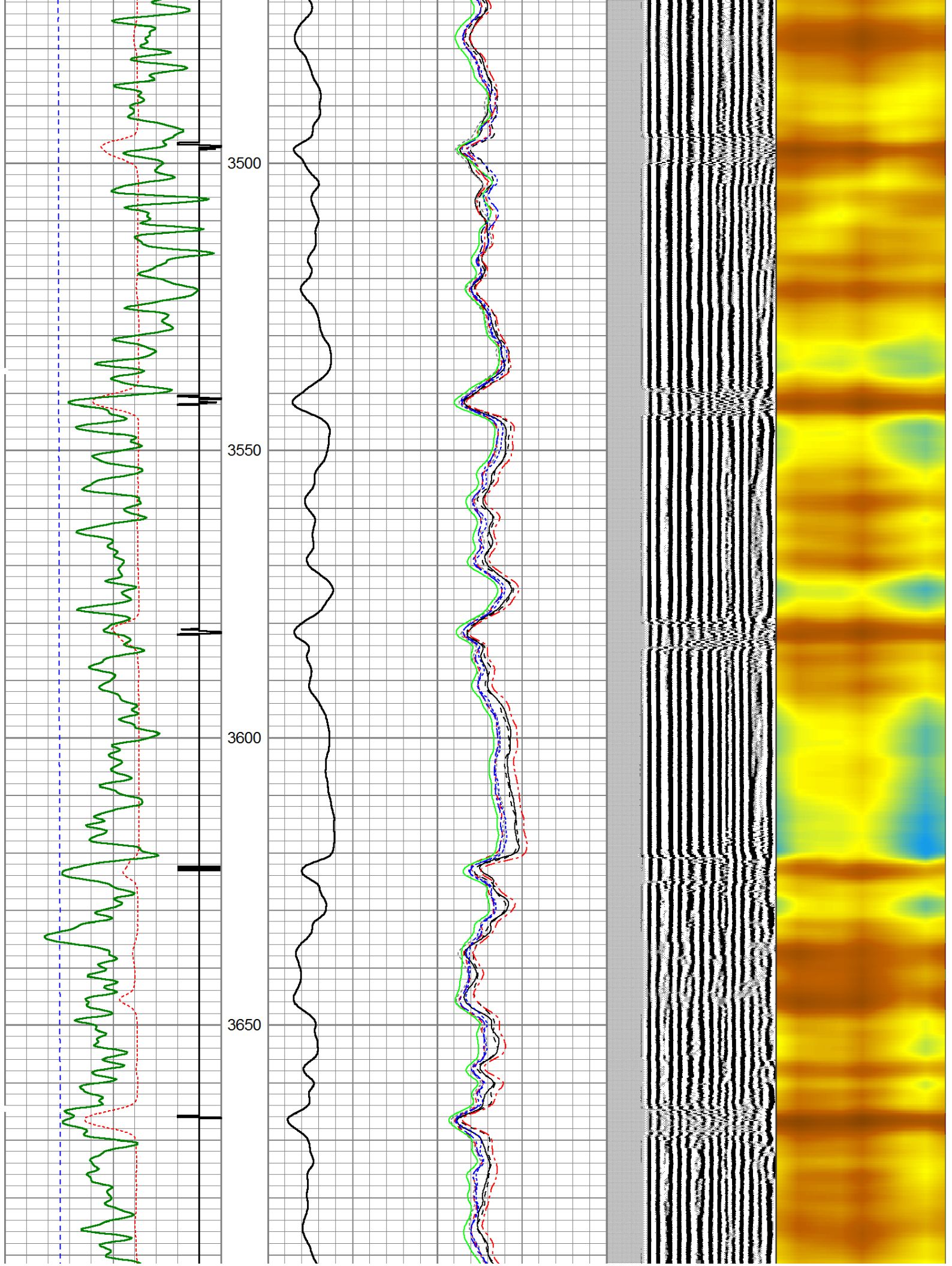


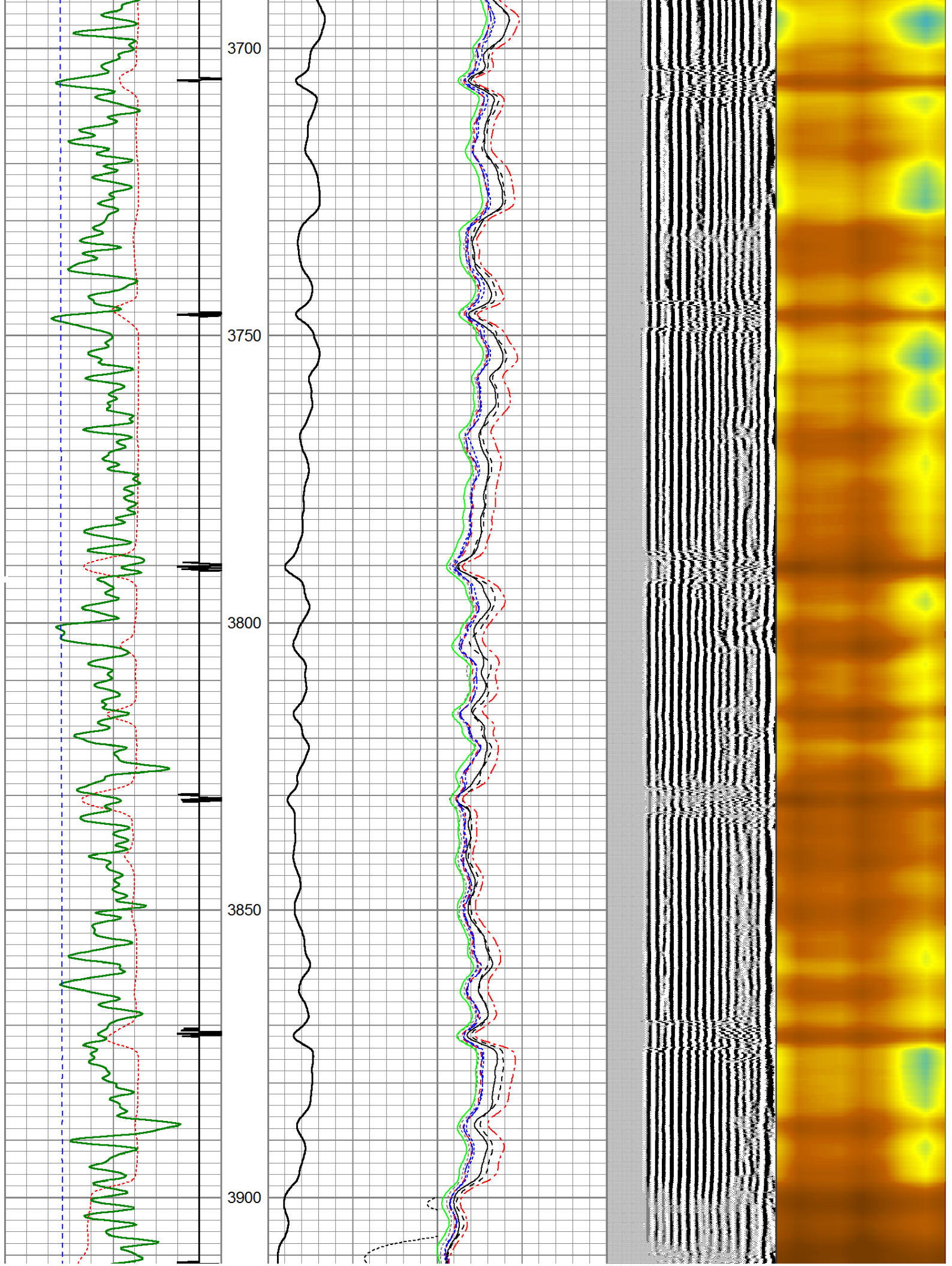


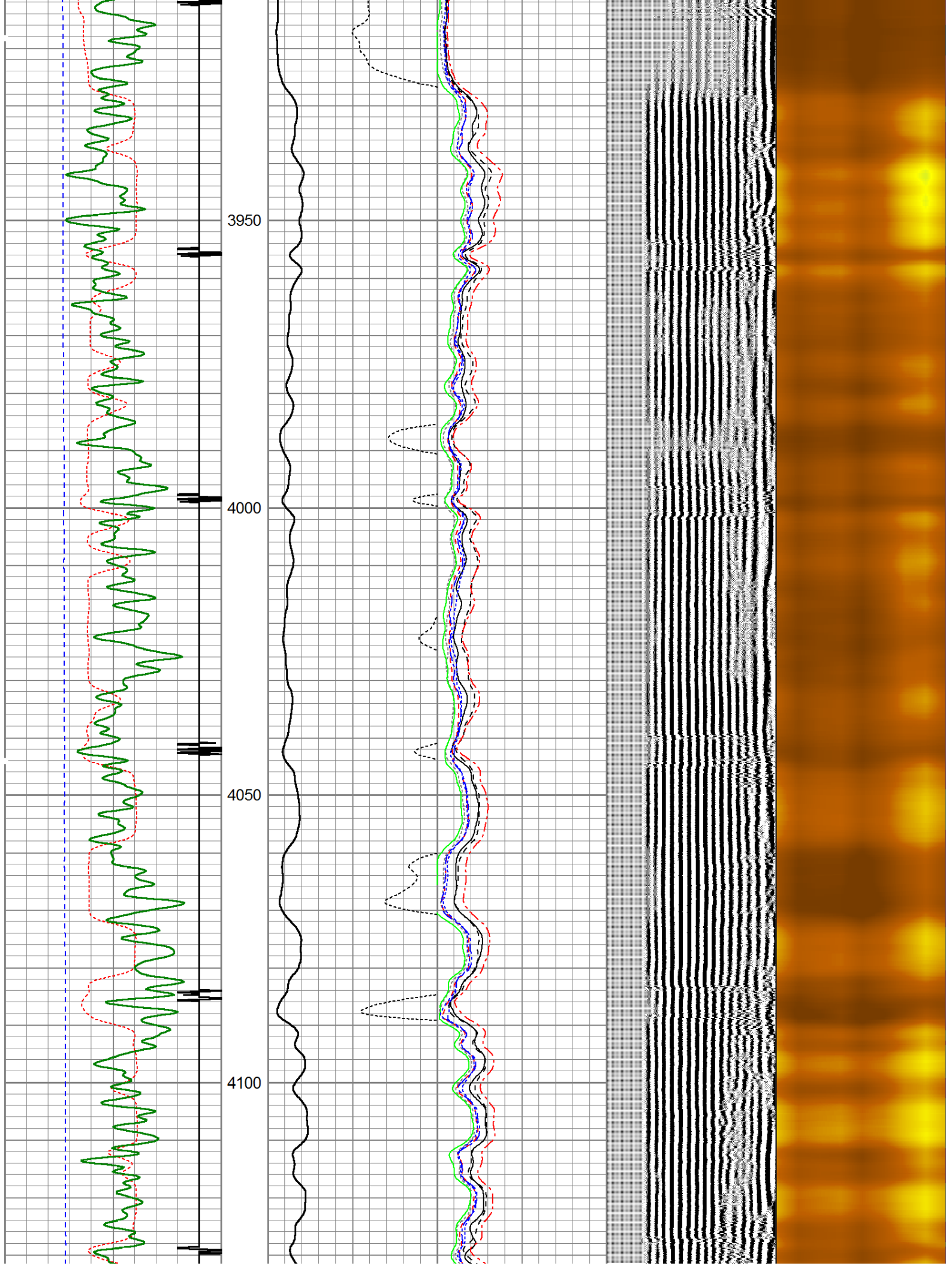


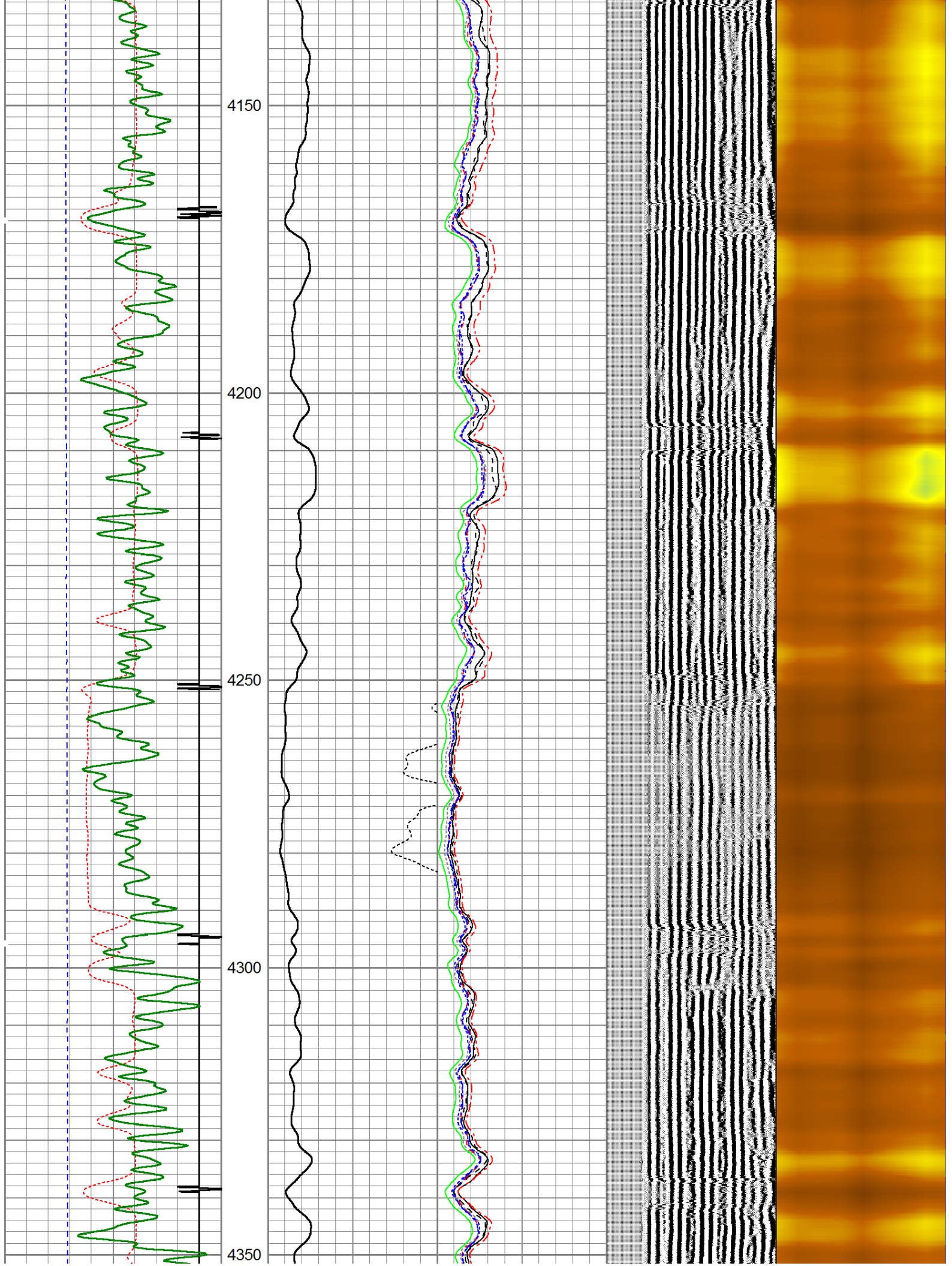


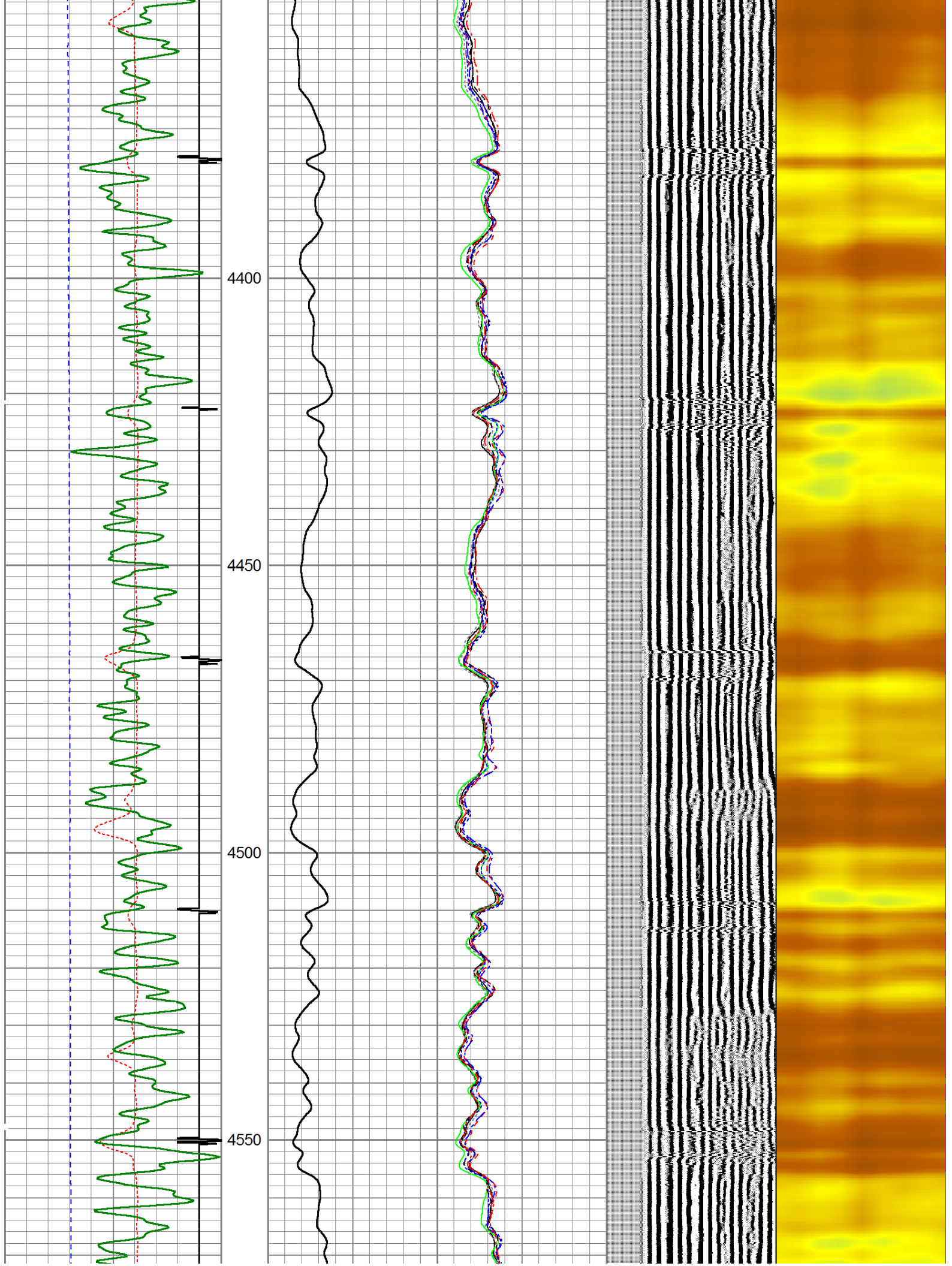


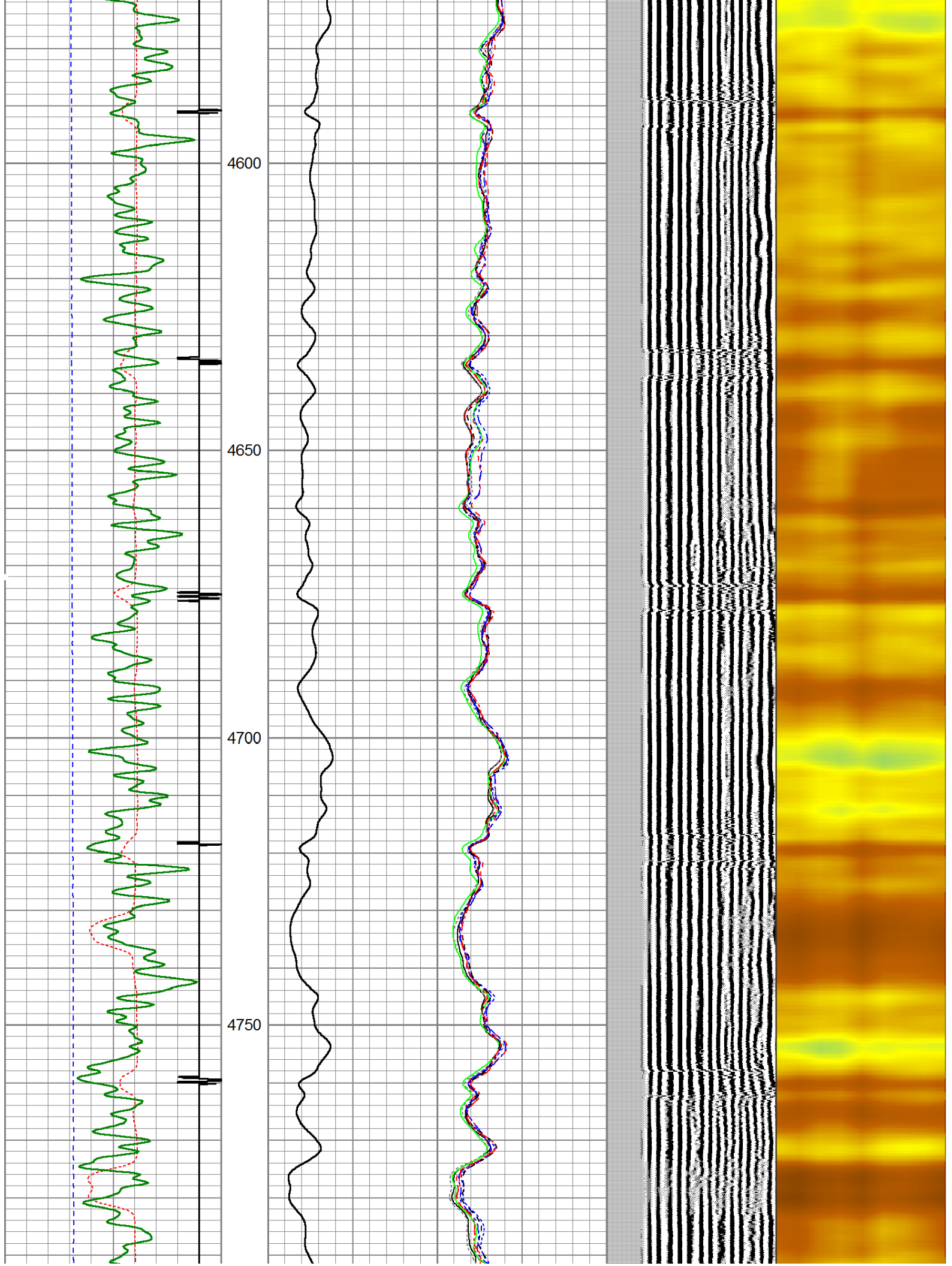


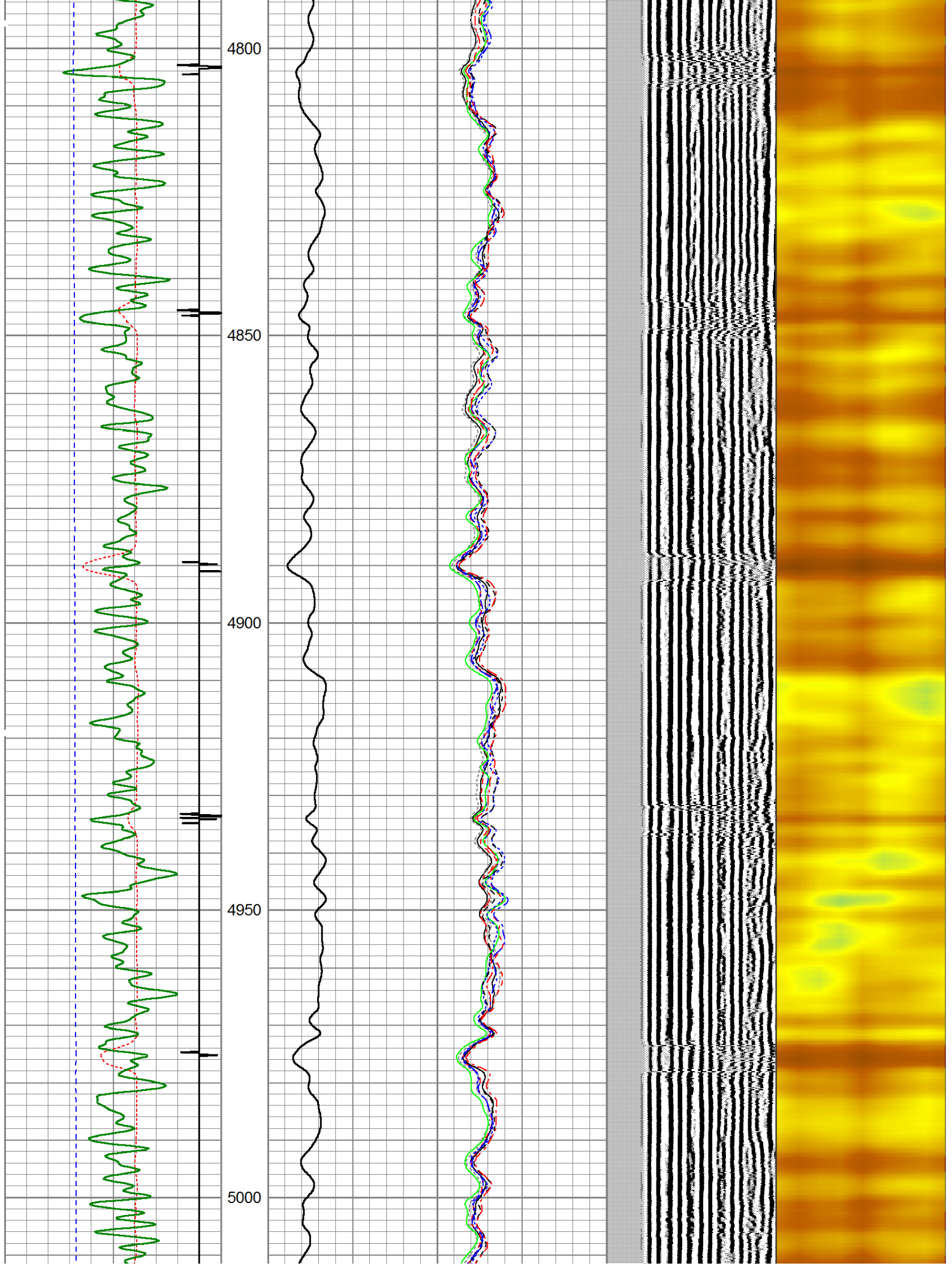


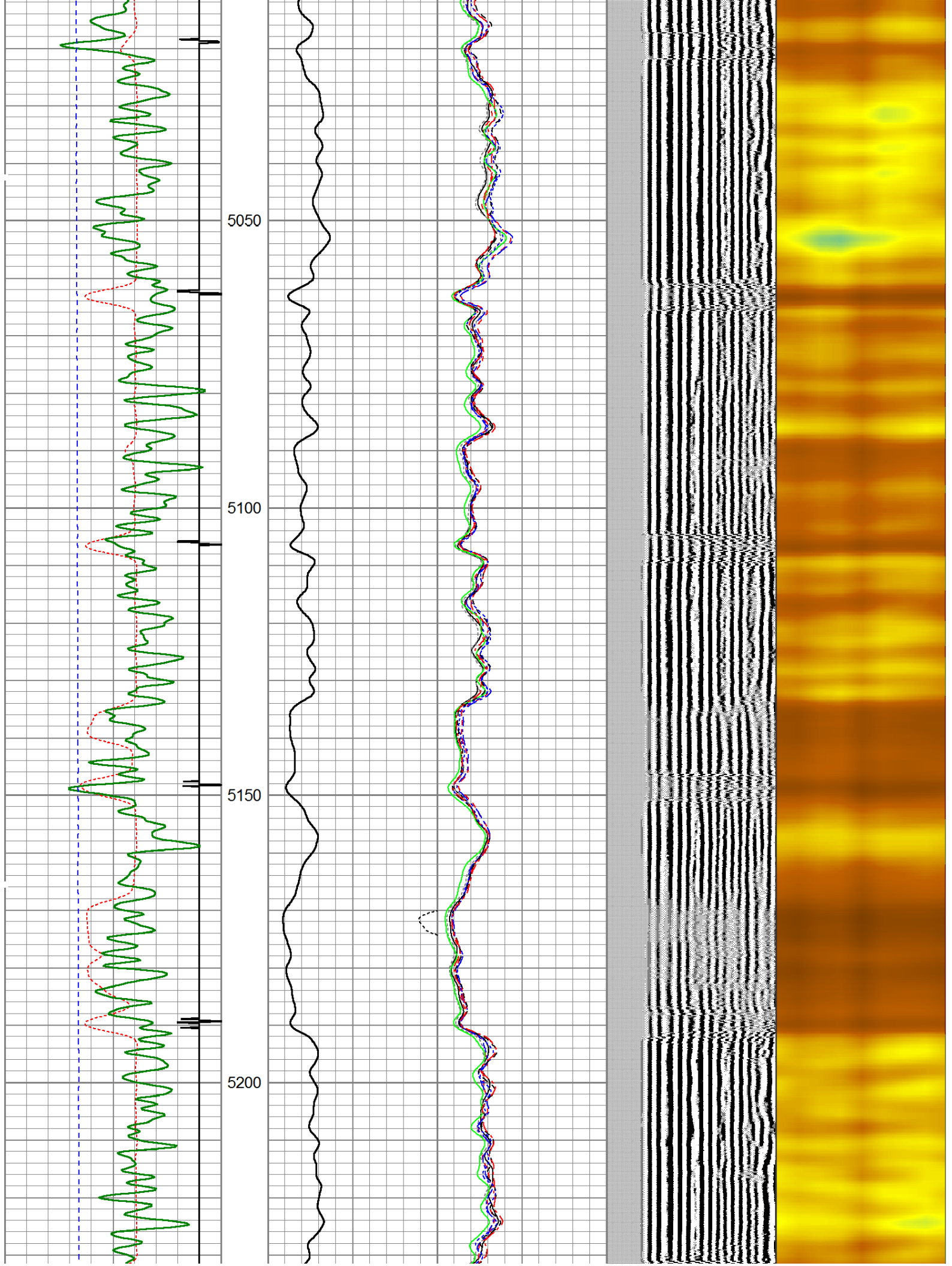


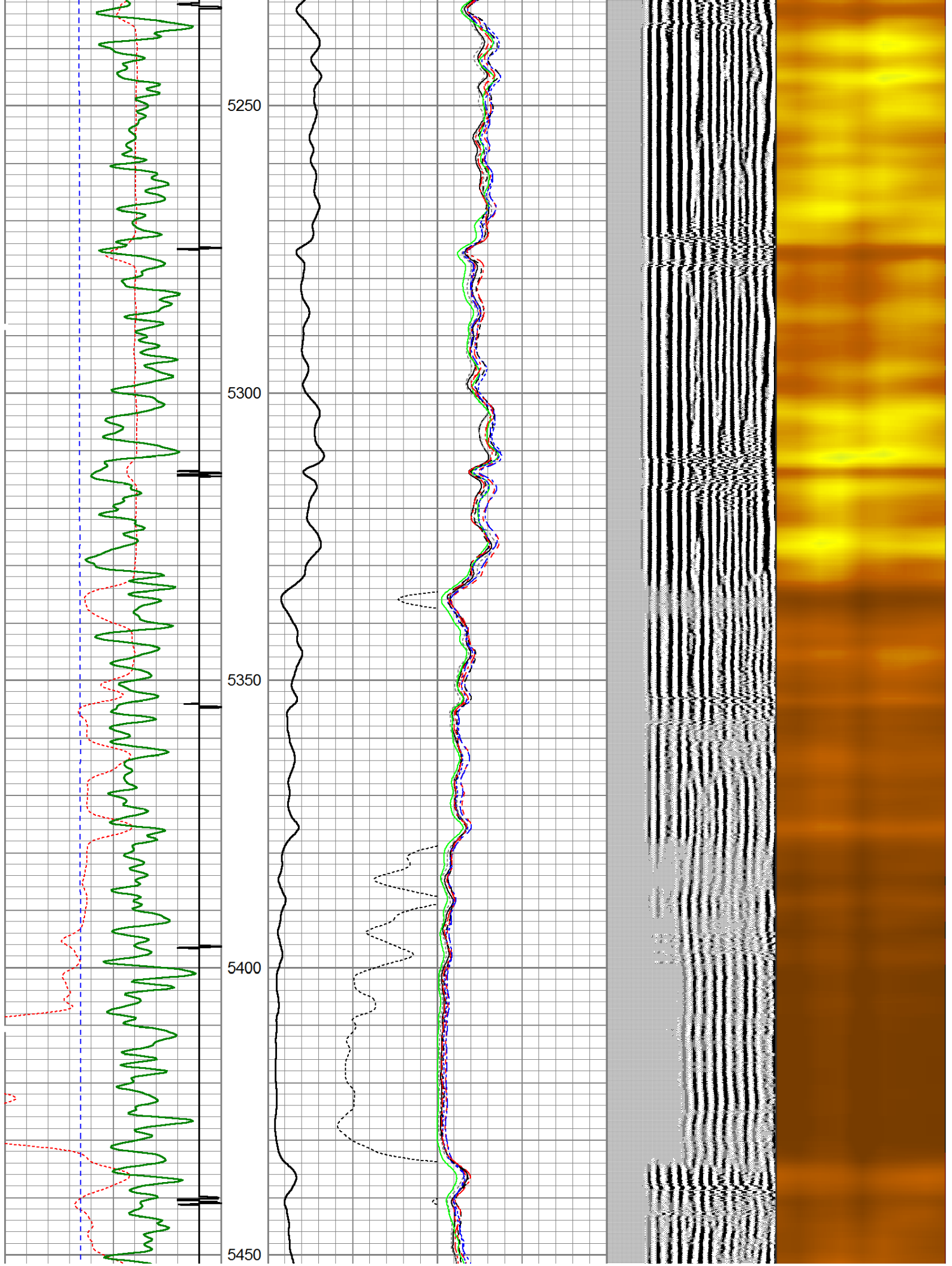


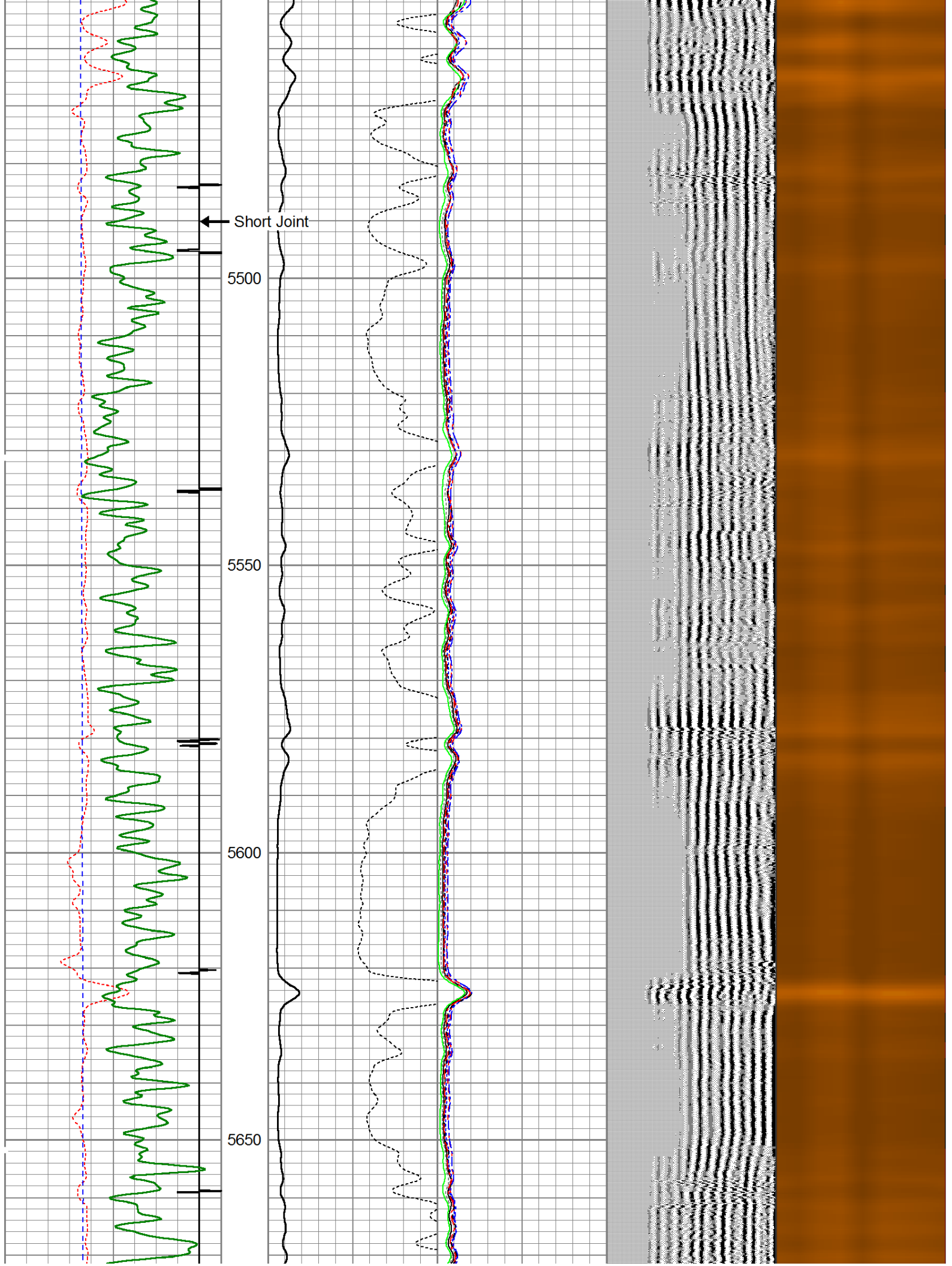


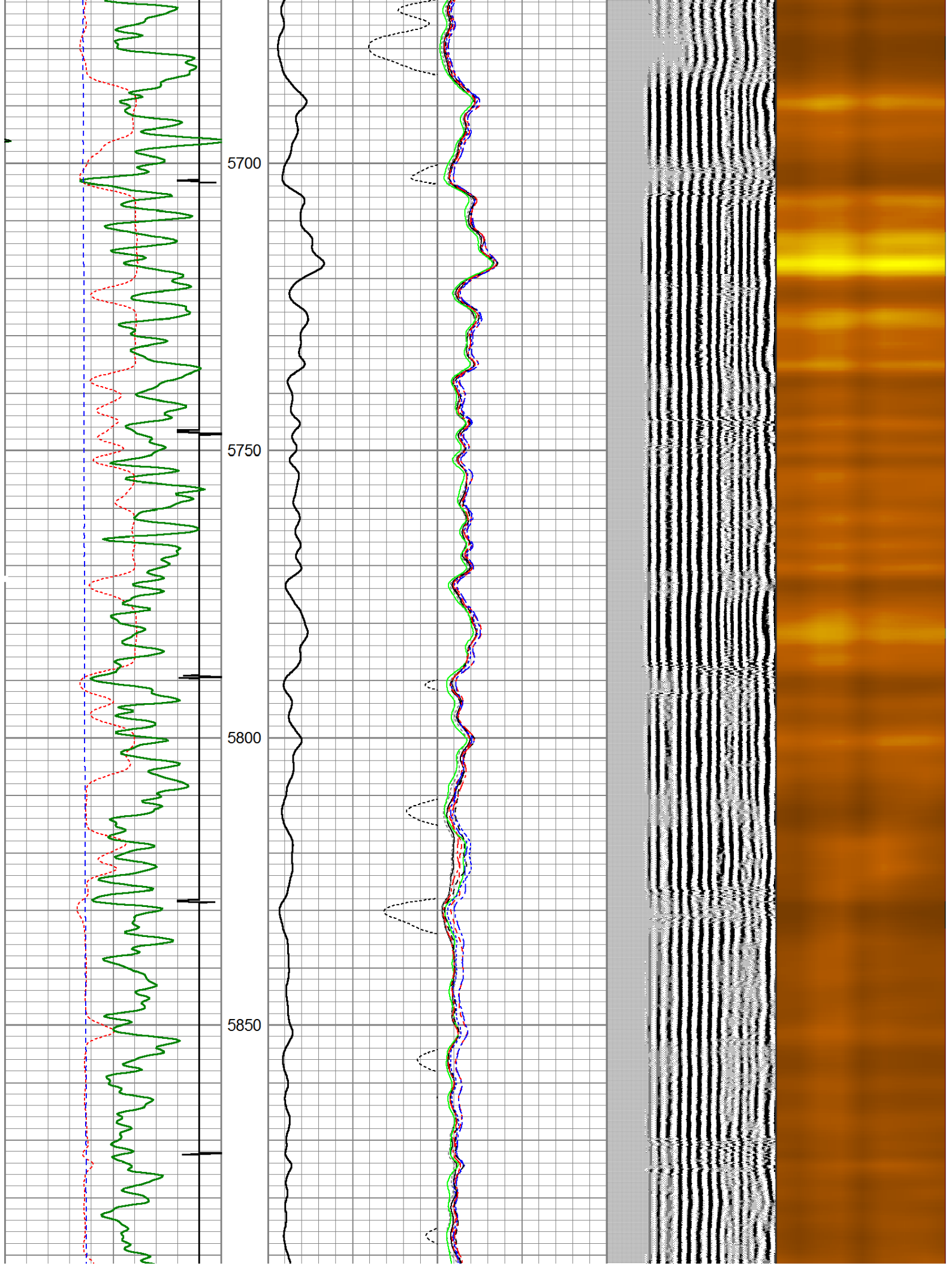


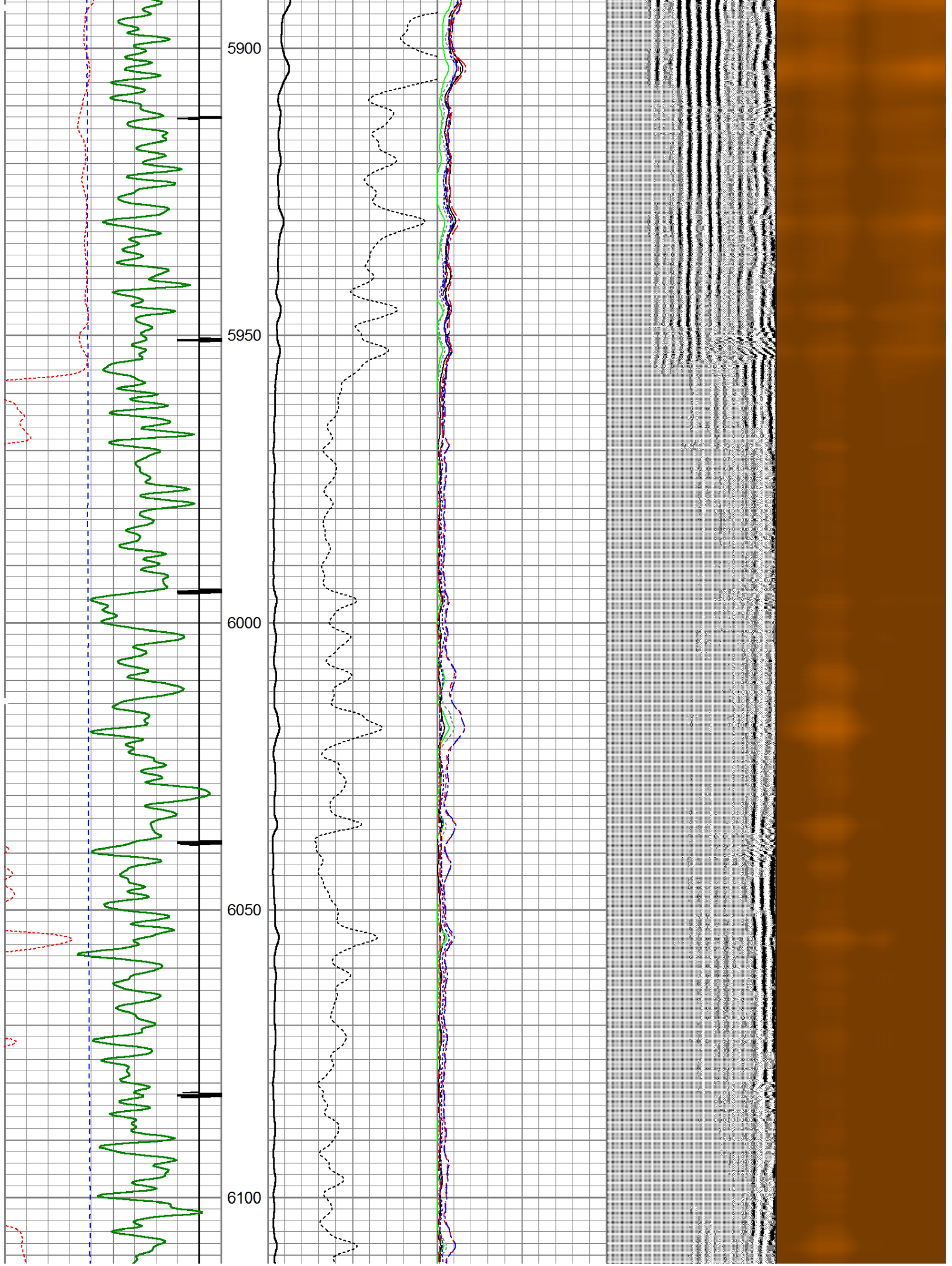


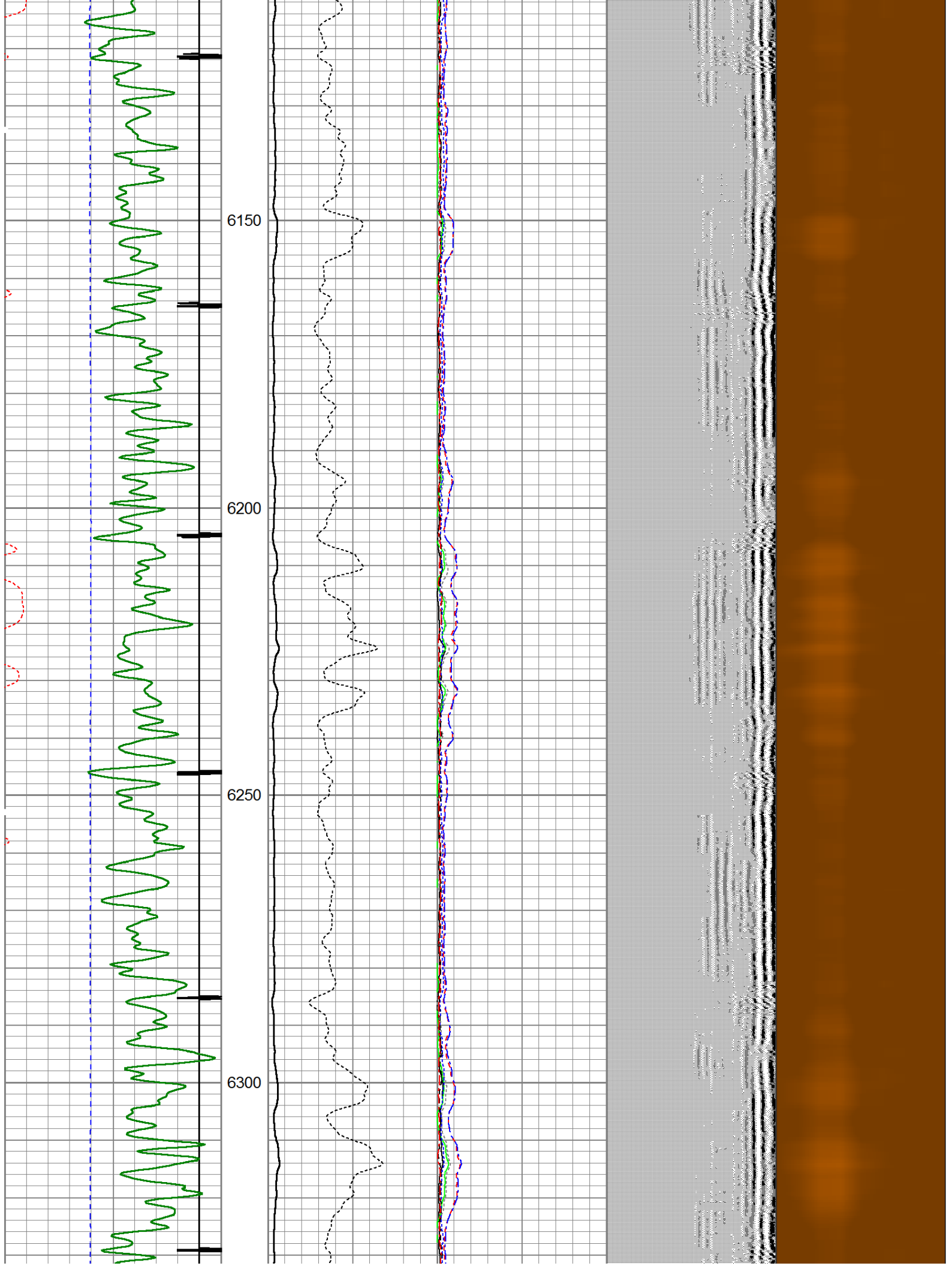


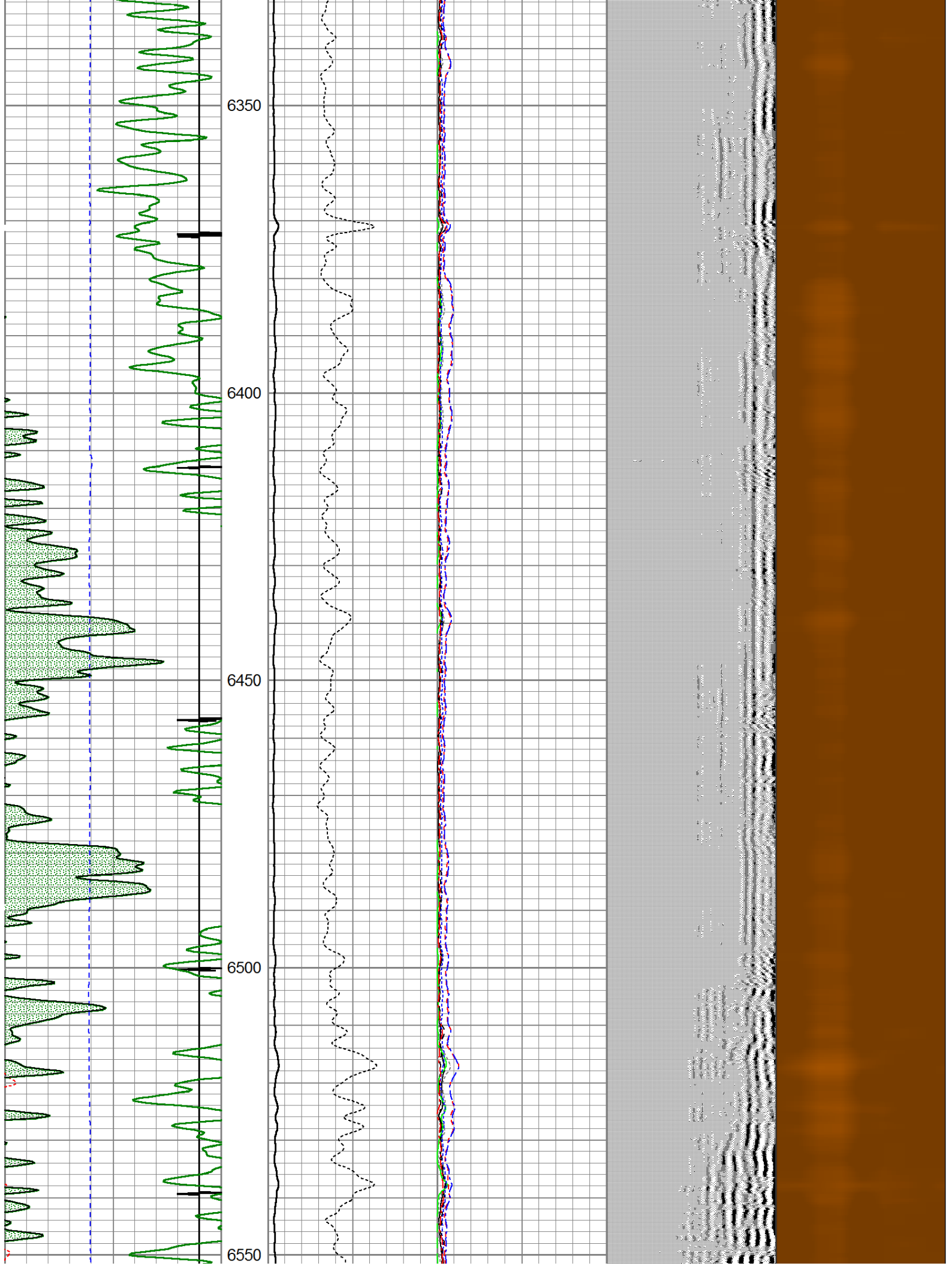


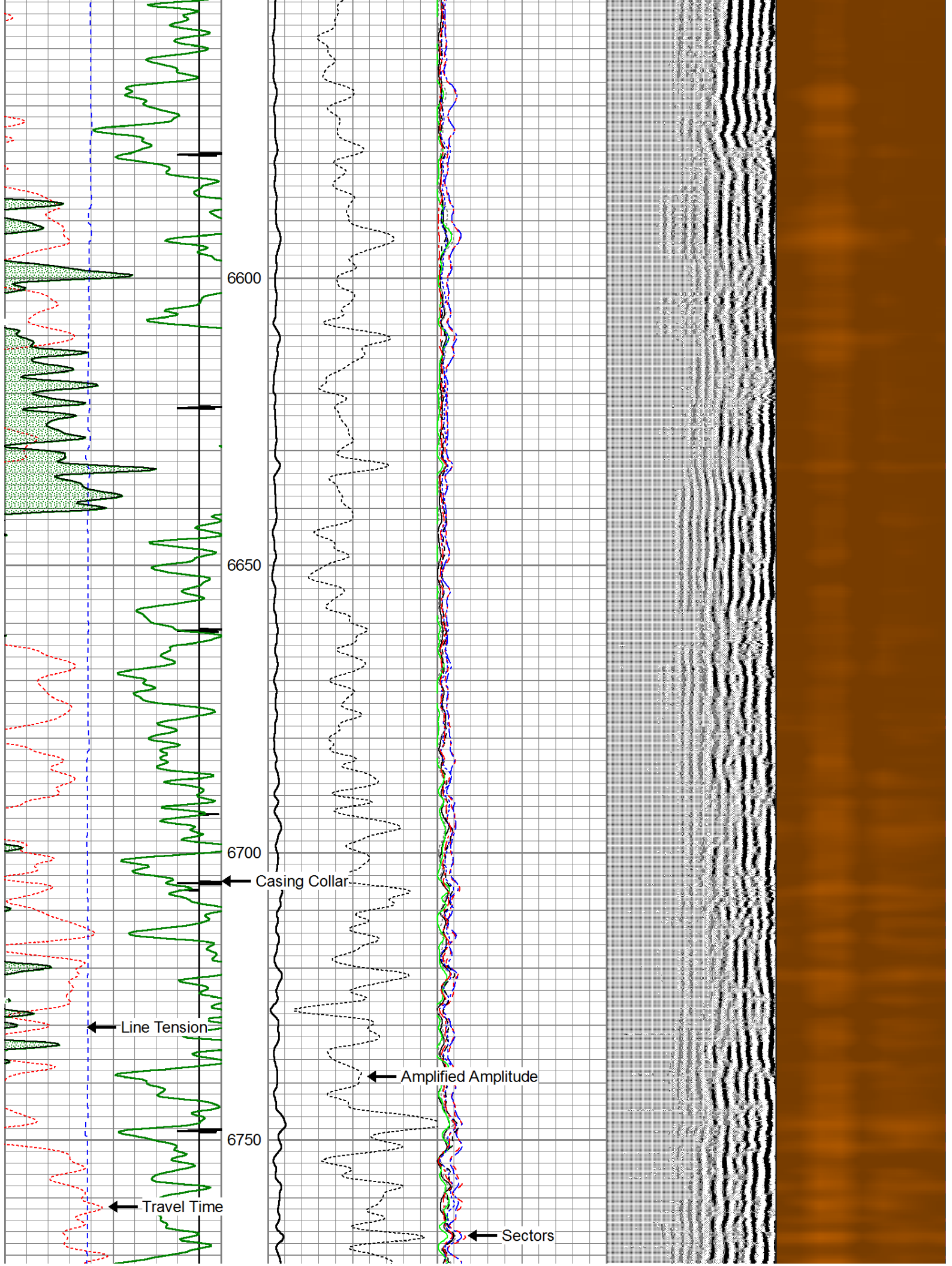


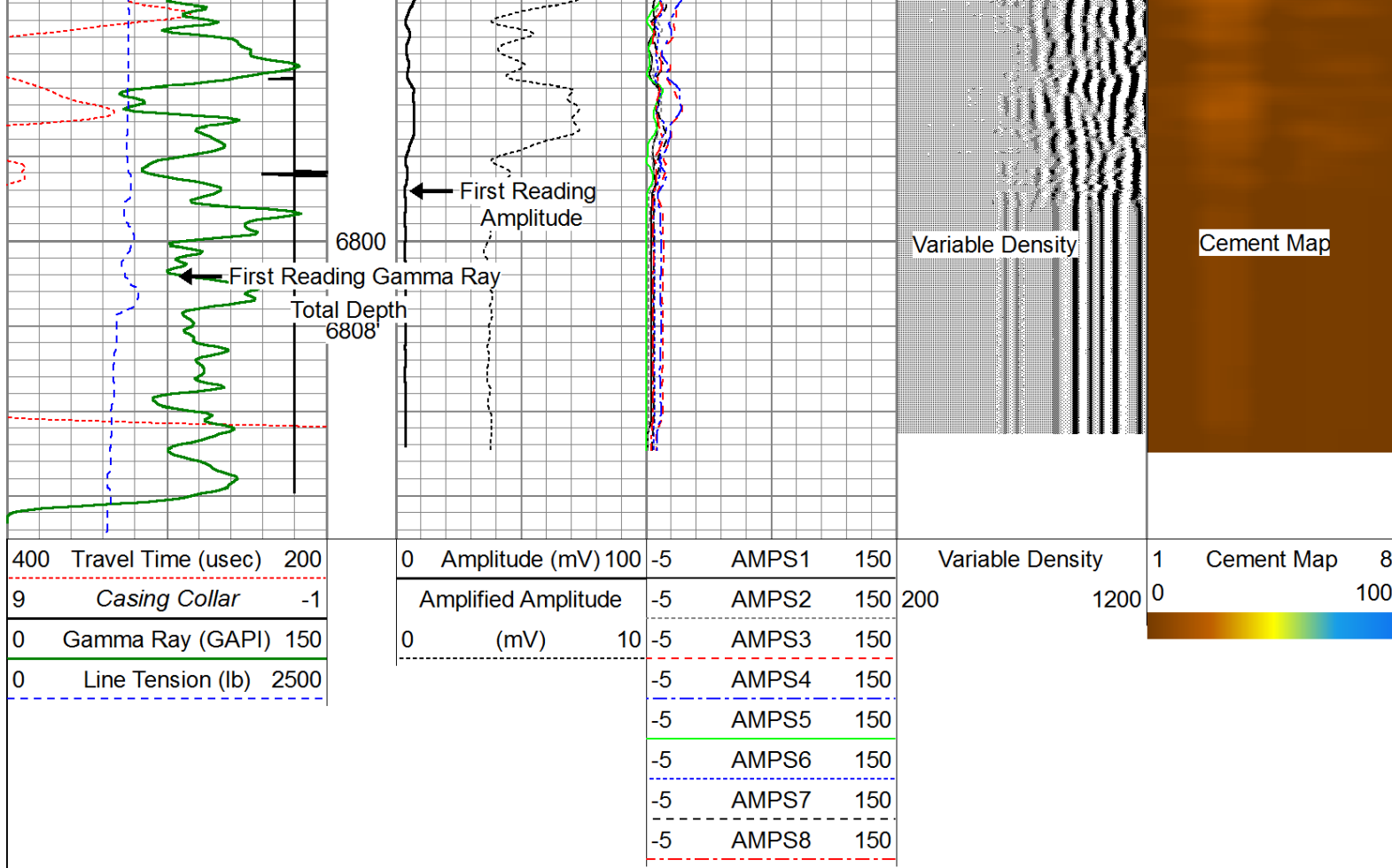






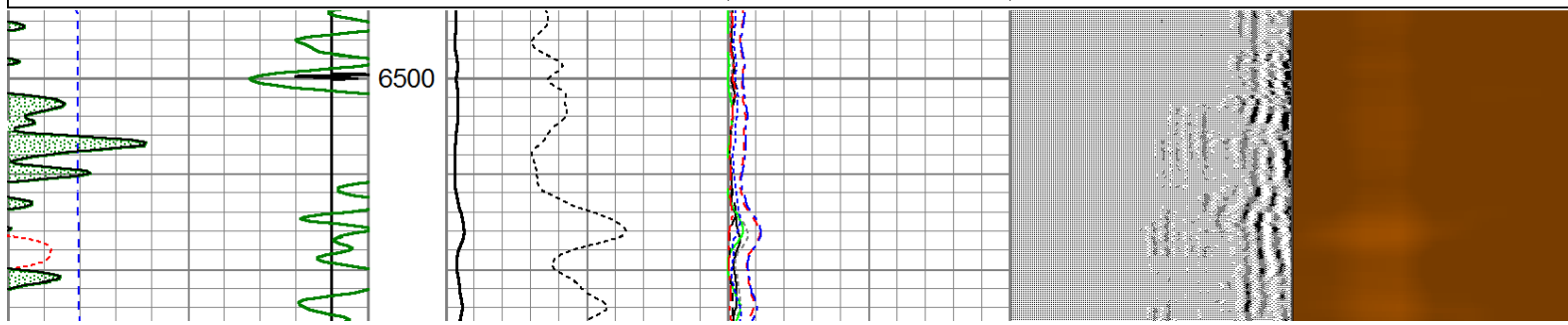
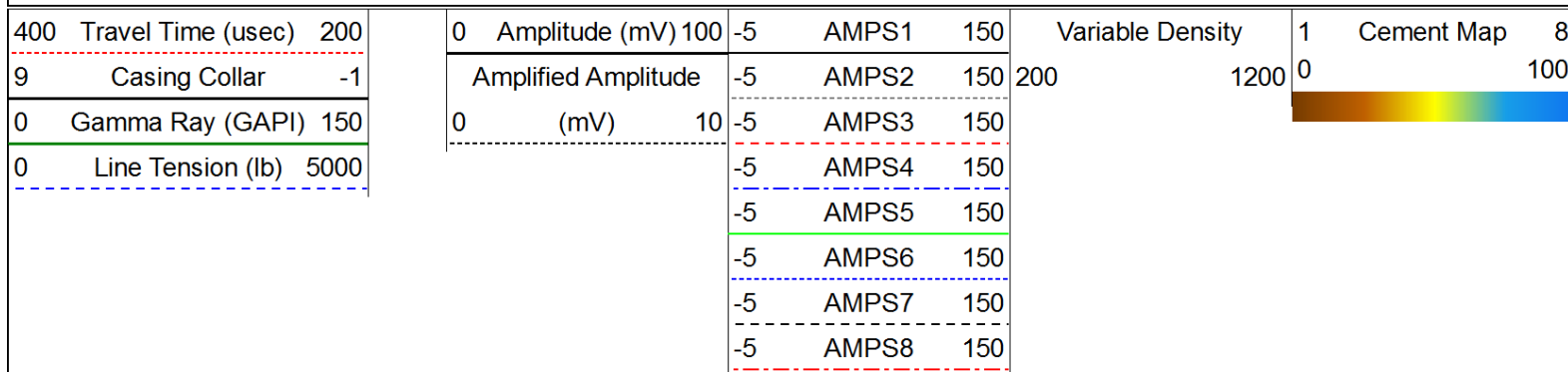


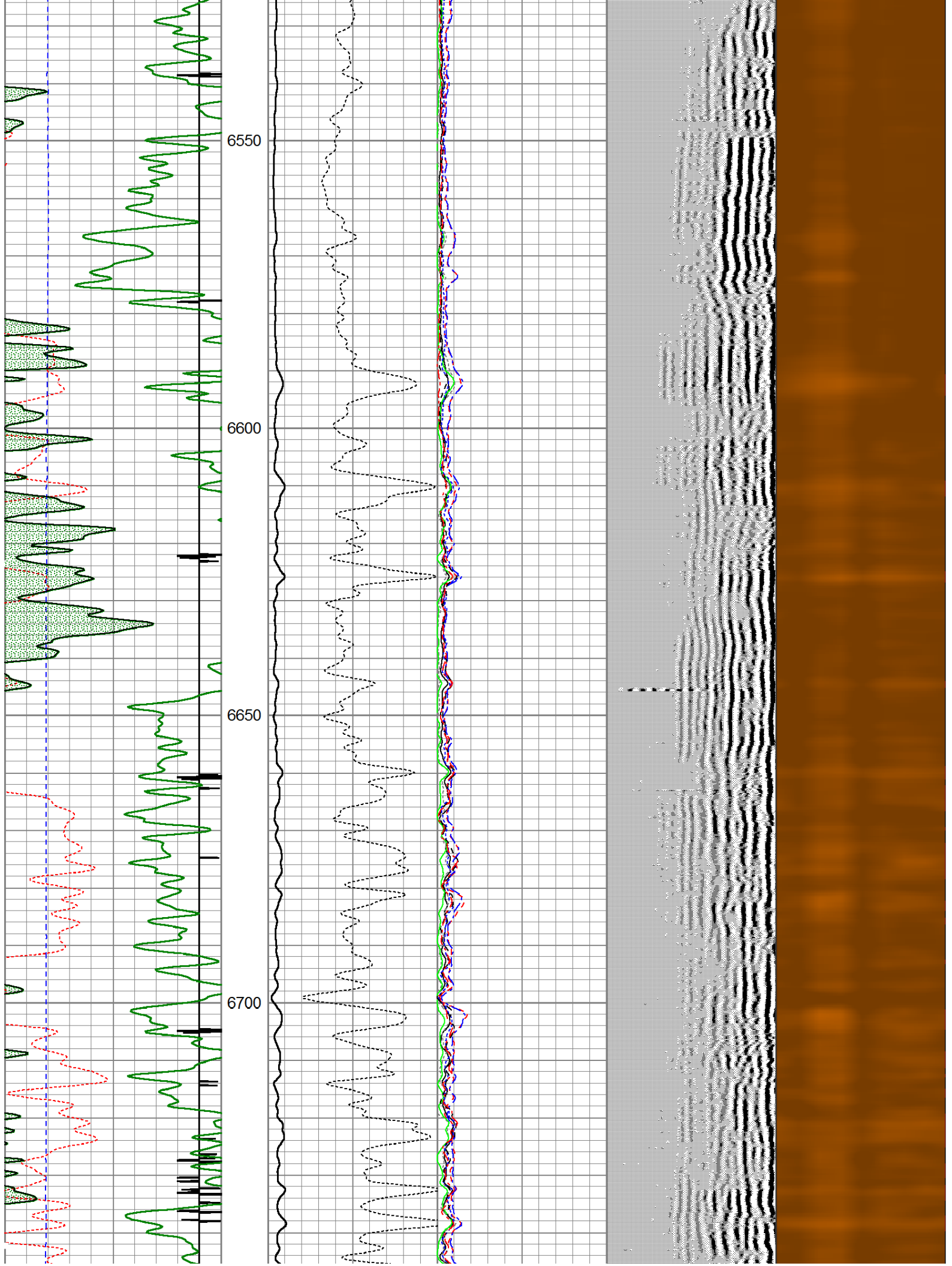


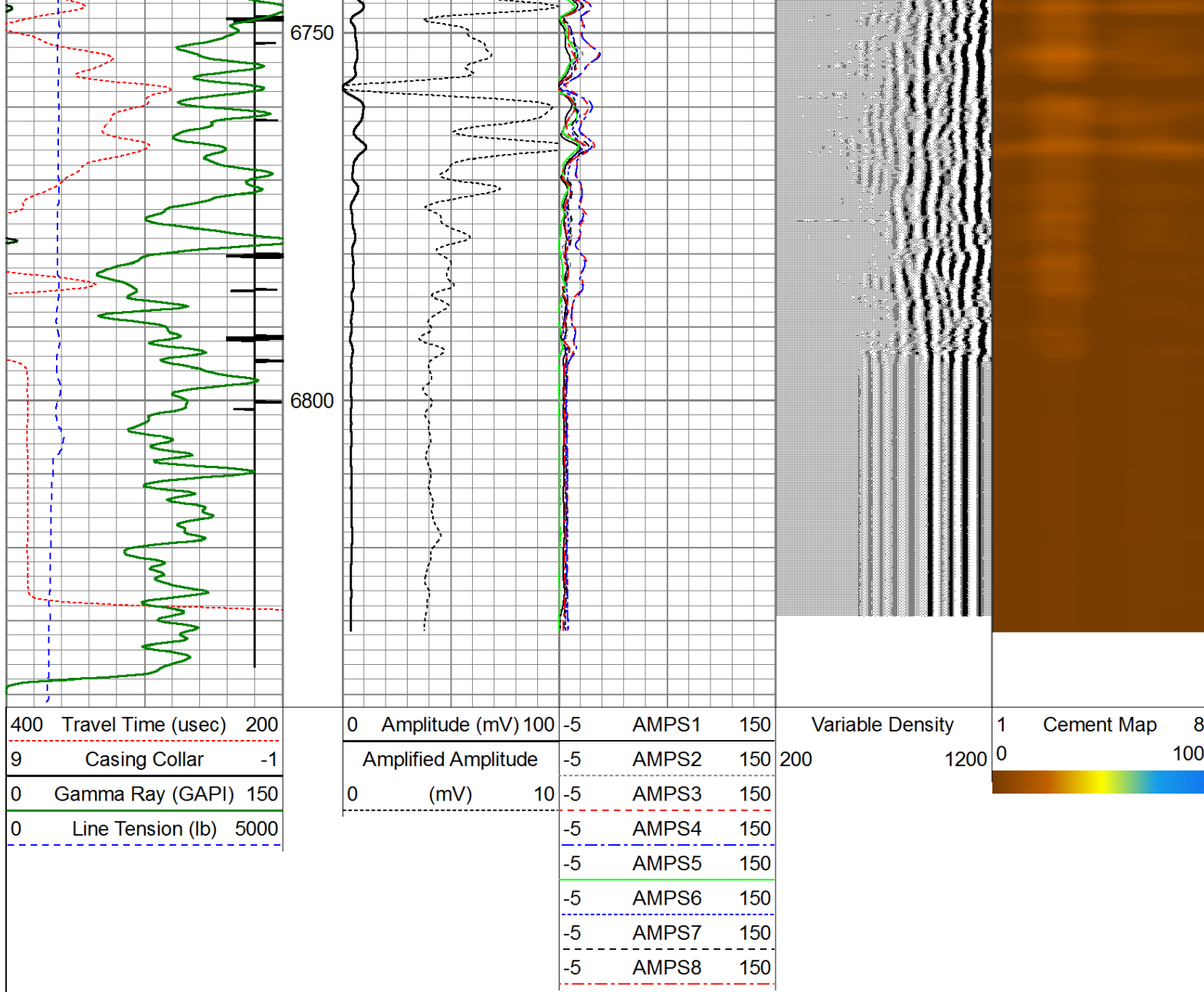


Repeat Pass (0 PSI)

Database File: noble_kummer_pc_le23_65_hn_rcbl.db
 Dataset Pathname: RCBL/pass2
 Presentation Format: scbl03
 Dataset Creation: Wed May 15 09:26:57 2013 by Log SCH 120126
 Charted by: Depth in Feet scaled 1:240







Calibration Report

Database File: noble_kummer_pc_le23_65_hn_rcbl.db
Dataset Pathname: RCBL/pass4.1
Dataset Creation: Wed May 15 11:11:03 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 07:50:40 2013

Performed: Fri May 10 07:36:42 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:	5.500	in
Calibration Depth:	-0.100	ft

Master Calibration, performed Wed May 15 06:52:22 2013:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.009	0.516	3.000	71.921	117.296	3.808
CAL	-0.008	0.523				
5'	-0.007	0.559	1.000	71.921	125.223	1.893
SUM						
S1	0.022	0.537	0.000	100.000	163.307	-4.354
S2	0.020	0.517	0.000	100.000	190.008	-4.049
S3	-0.007	0.504	0.000	100.000	200.143	1.433
S4	-0.010	0.508	0.000	100.000	192.992	1.989
S5	0.025	0.520	0.000	100.000	193.003	-5.139
S6	0.001	0.518	0.000	100.000	166.308	-0.251
S7	0.005	0.513	0.000	100.000	157.138	-1.042
S8	0.009	0.519	0.000	100.000	155.708	-1.666

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	0.523	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

