



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

Company	Noble Energy	Location:	API # : 05-123-36679	Other Services
Well	Kummer PC LE 23-64HN	SEC 23 TWP 8N RGE 61W	1,980' FSL & 660' FEL	NONE
Field	Wattenberg	Permanent Datum	Ground Level	Elevation
County	Weld	Log Measured From	Kelly Bushing 24' Above P.D.	K.B. 5,006'
State	Colorado	Drilling Measured From	Kelly Bushing	D.F. 5,004'
Date	15-MAY-2013			G.L. 4,982'
Run Number	One			
Depth Driller	10,804'			
Depth Logger	6,790'			
Bottom Logged Interval	6,786'			
Top Log Interval	Surface			
Open Hole Size	8.75"			
Type Fluid	N/A			
Density / Viscosity	N/A			
Max. Recorded Temp.	217 Deg F			
Estimated Cement Top	630'			
Time Well Ready	07:00			
Time Logger on Bottom	13:49			
Equipment Number	12029			
Location	Brighton			
Recorded By	M. Schneider			
Witnessed By	B. Mansfield			
Run Number	Bit	From	To	Size
				Weight
				From
				To
Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	9.625"	36#	24'	756'
Prot. String				
Production String	7"	26#	24'	6,944'
Liner	4.5"	11.6#	6,802'	10,789'
		Short Joint	5,556'	5,569'

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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 5,556' - 5,569'
Estimated TOC At 630'


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

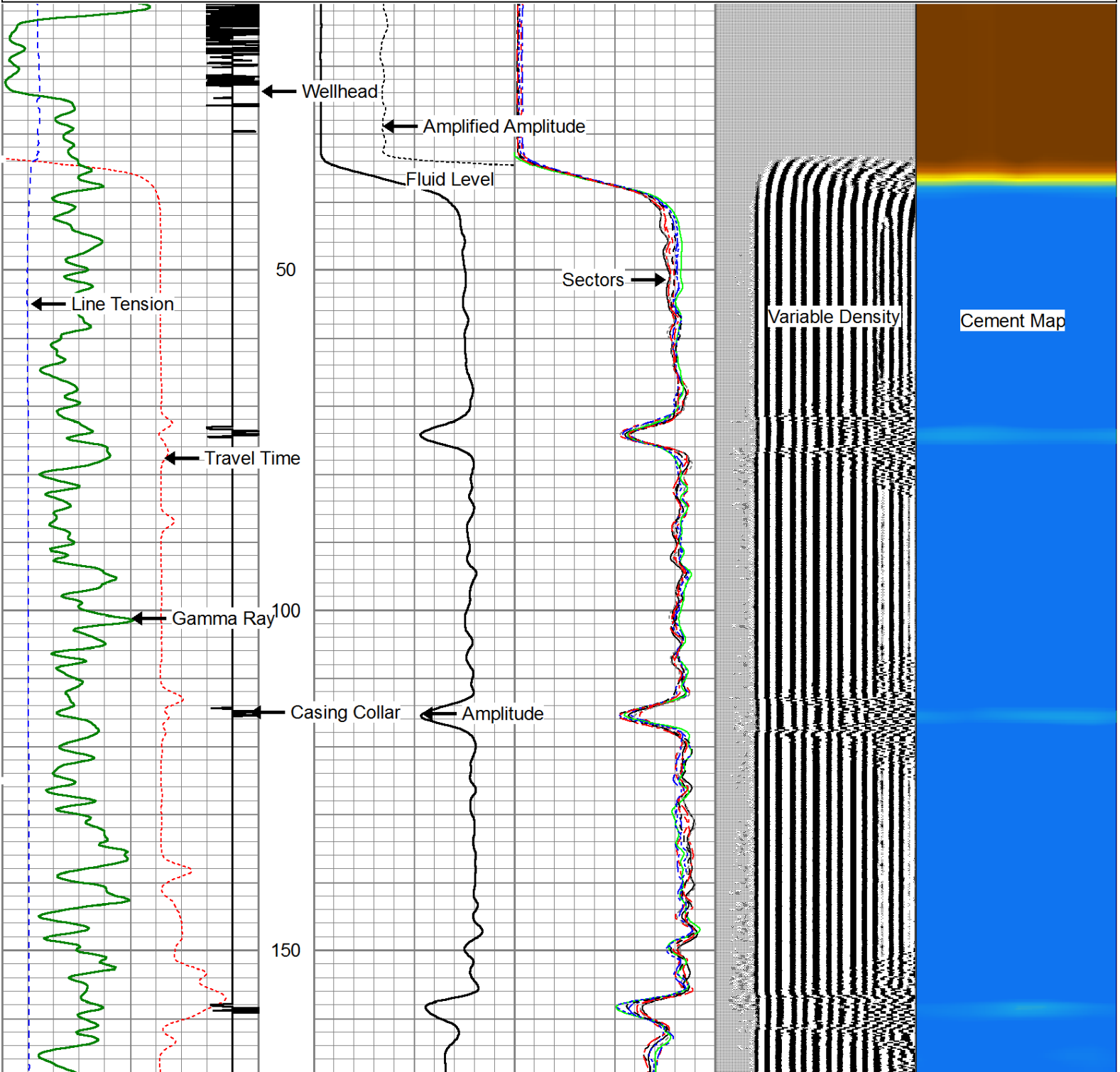
Thank You For Choosing Allied Wireline Services
(303) 659-4609

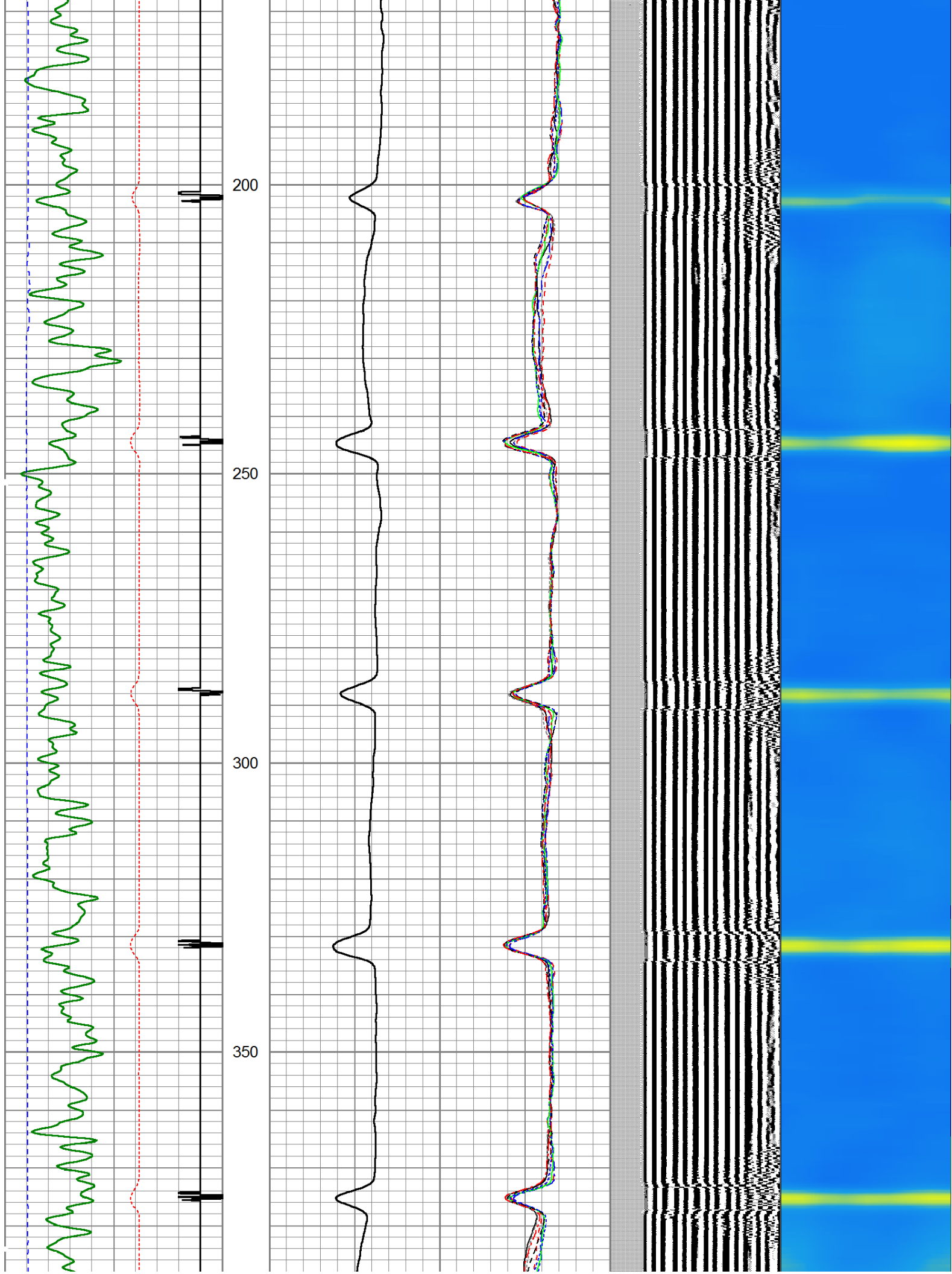


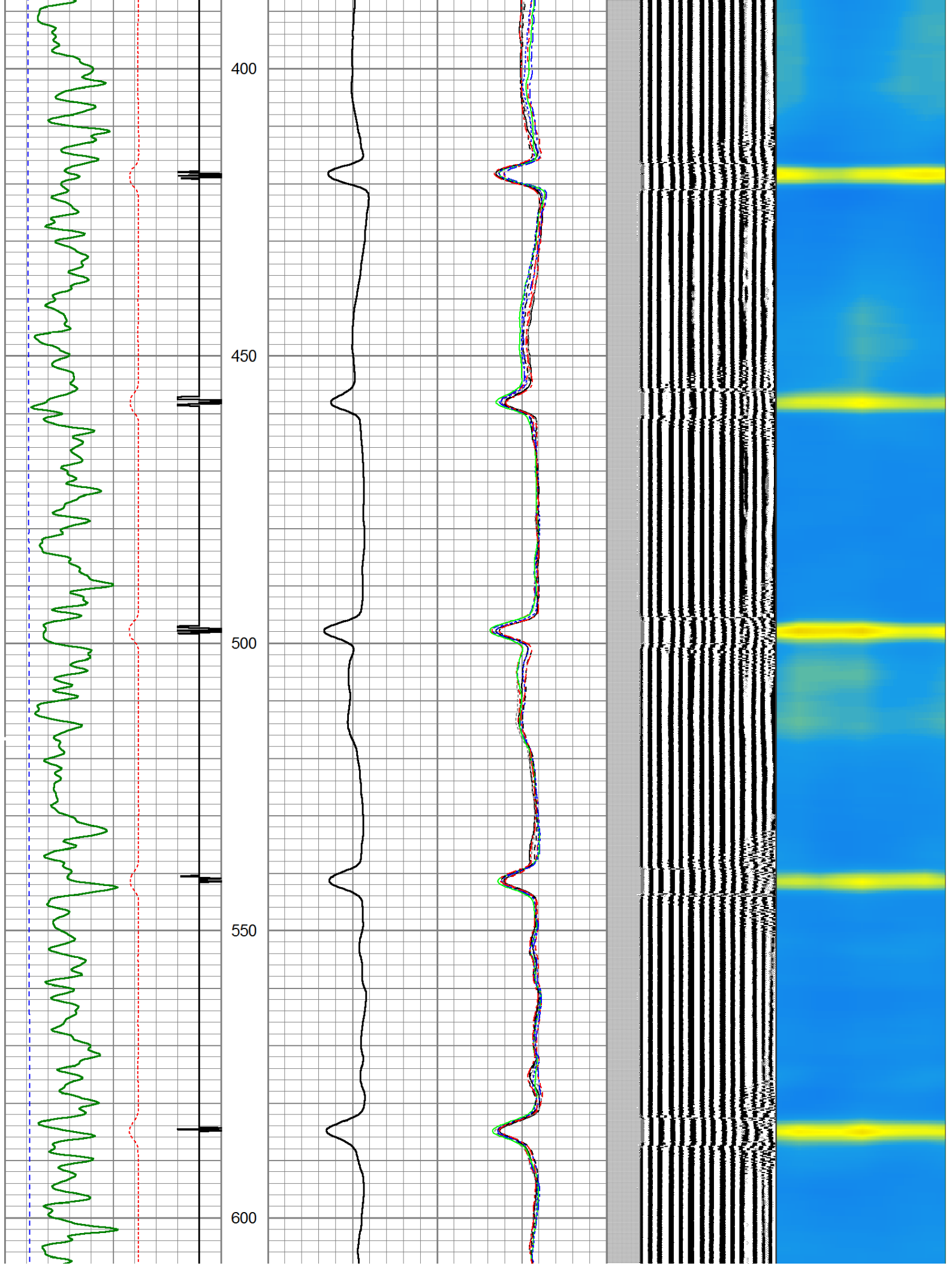
Main Pass (0 PSI)

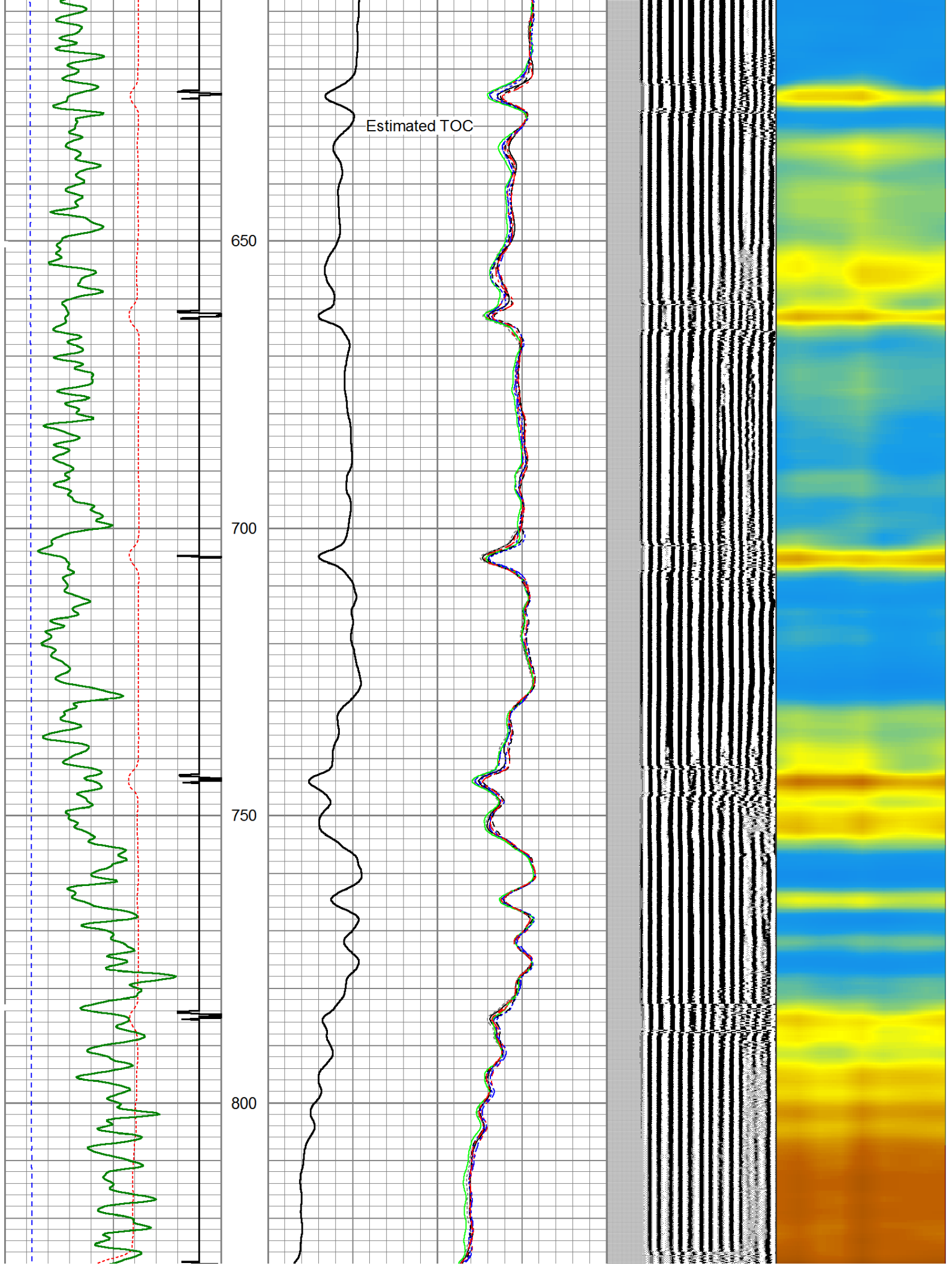
Database File: noble_kummer_pc_le23_64hn_rcbl.db
Dataset Pathname: RCBL/pass5
Presentation Format: scbl03
Dataset Creation: Wed May 15 13:47:59 2013 by Log SCH 120126
Charted by: Depth in Feet scaled 1:240

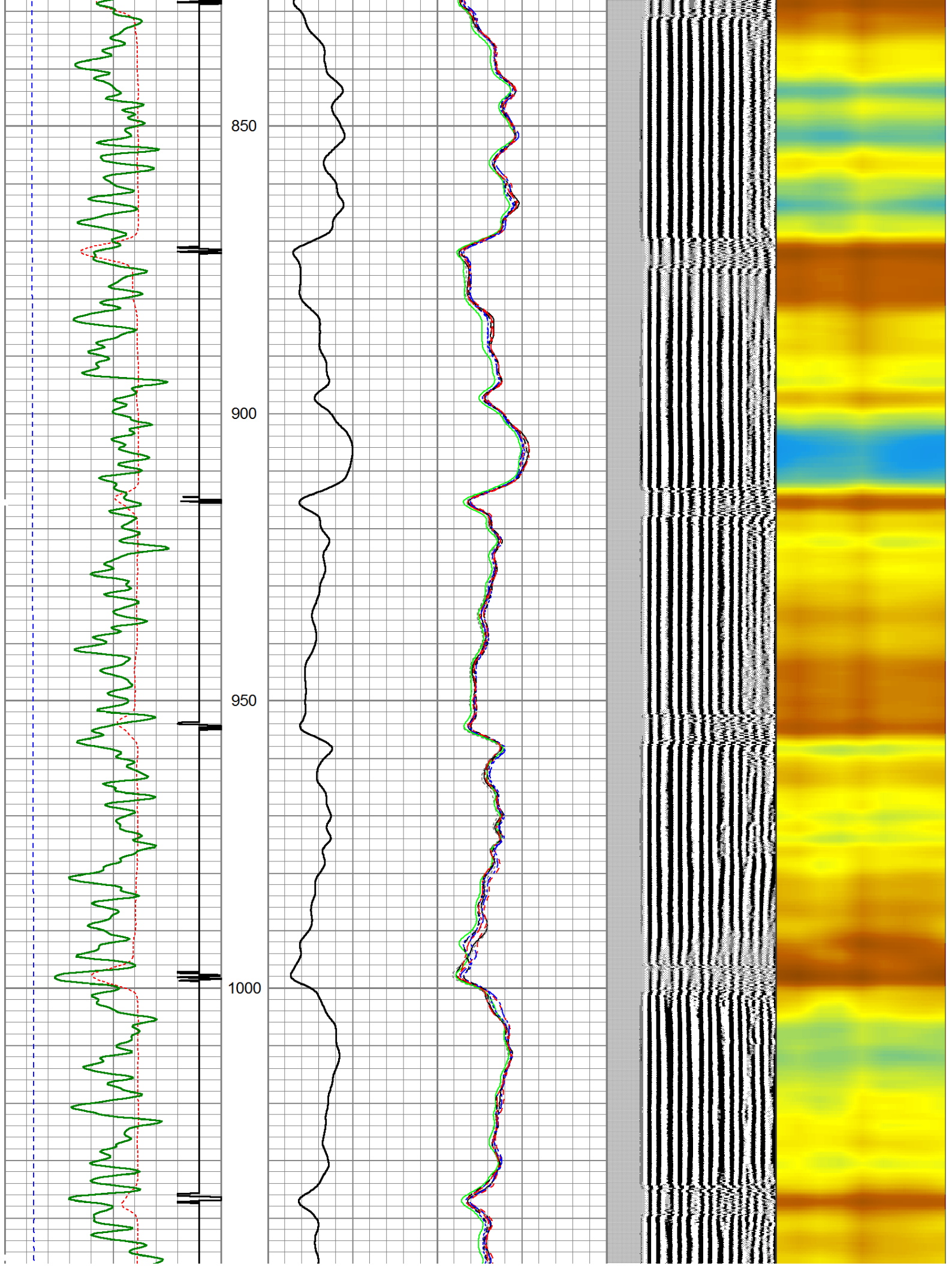
400	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	AMPS1	150	Variable Density		1	Cement Map	8			
9	Casing Collar	-1	Amplified Amplitude		-5	AMPS2	150	200	1200	0						
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	AMPS3	150								
0					-5	AMPS4	150									
					-5	AMPS5	150									
					-5	AMPS6	150							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

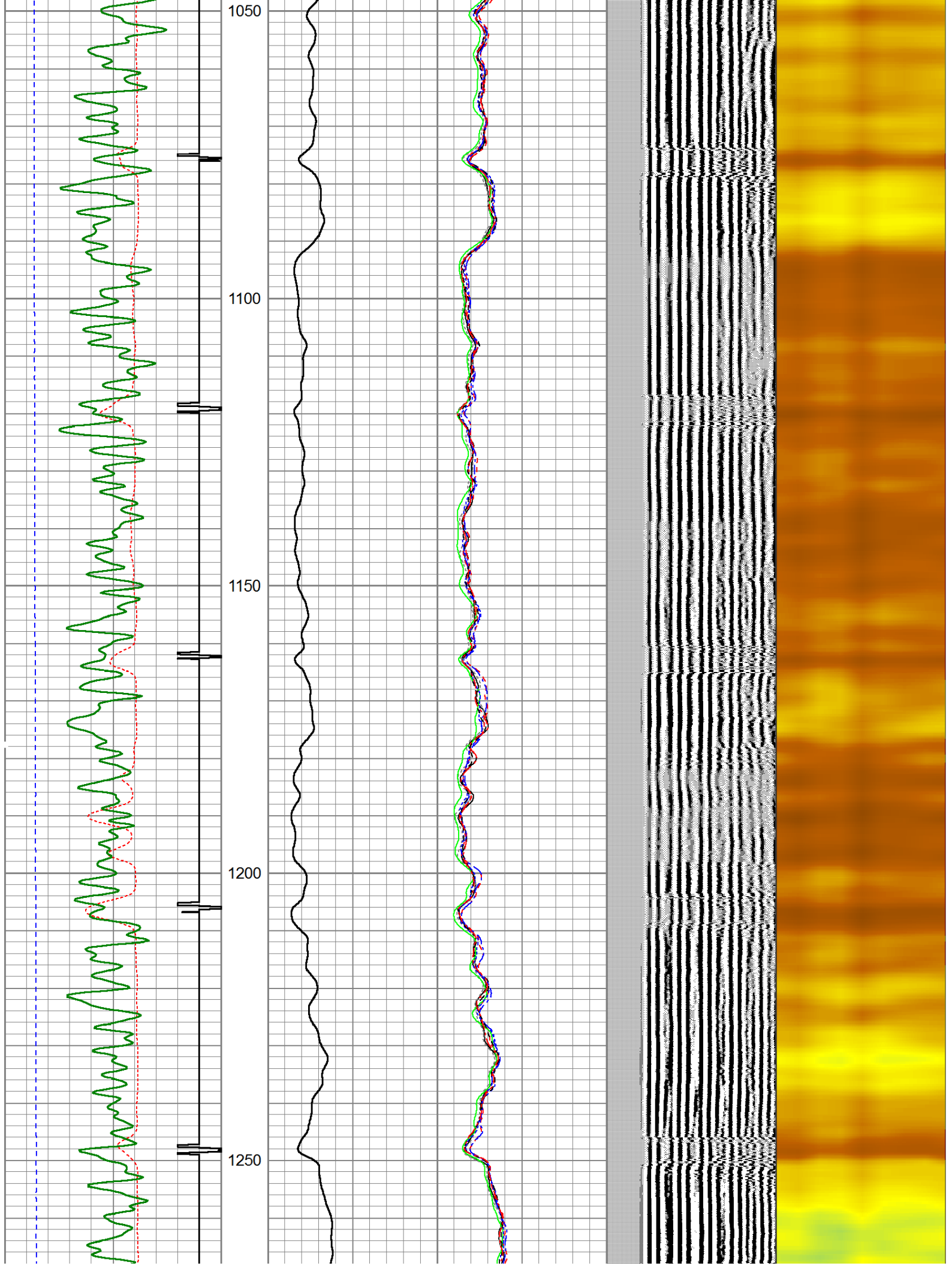


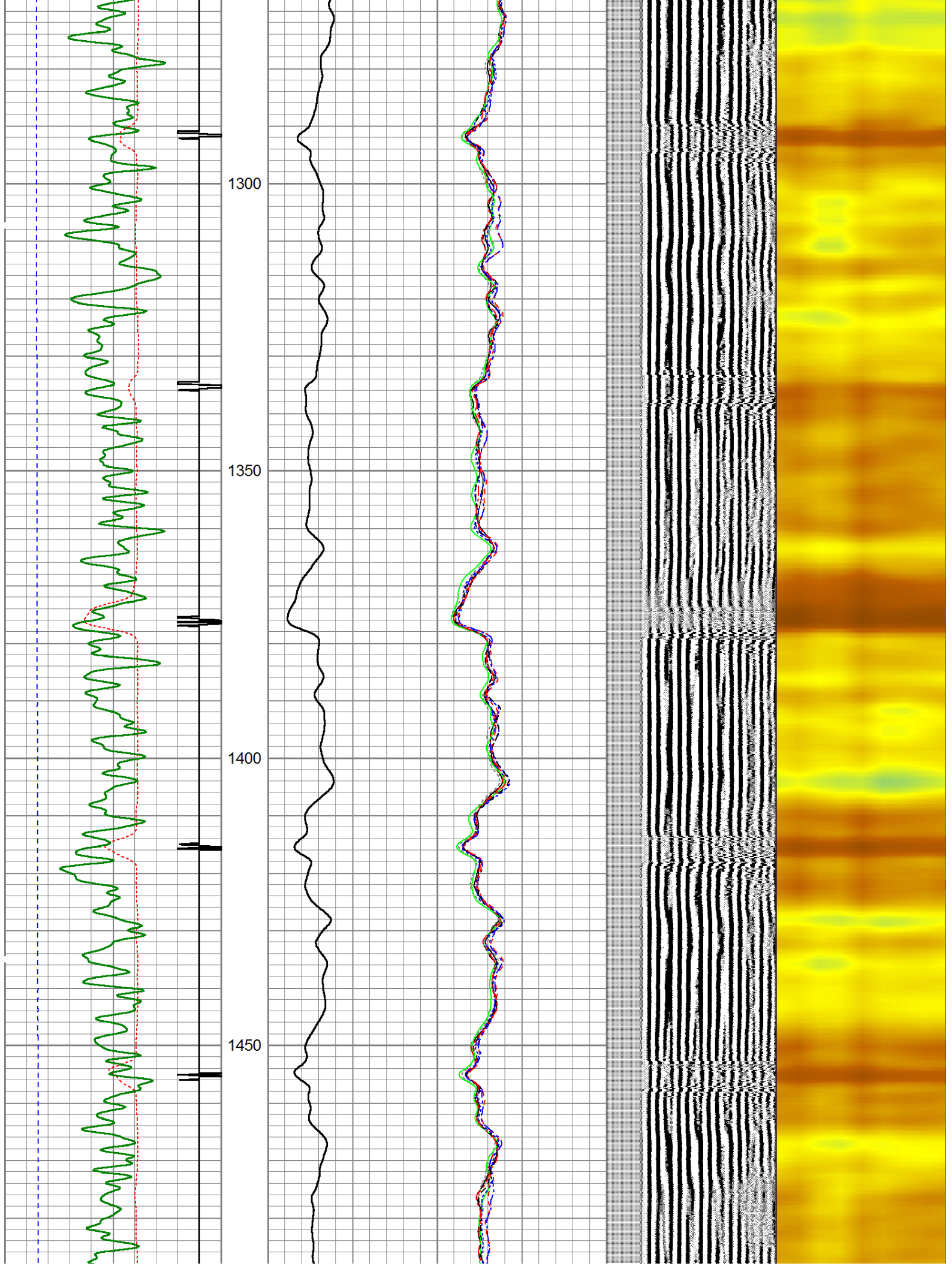


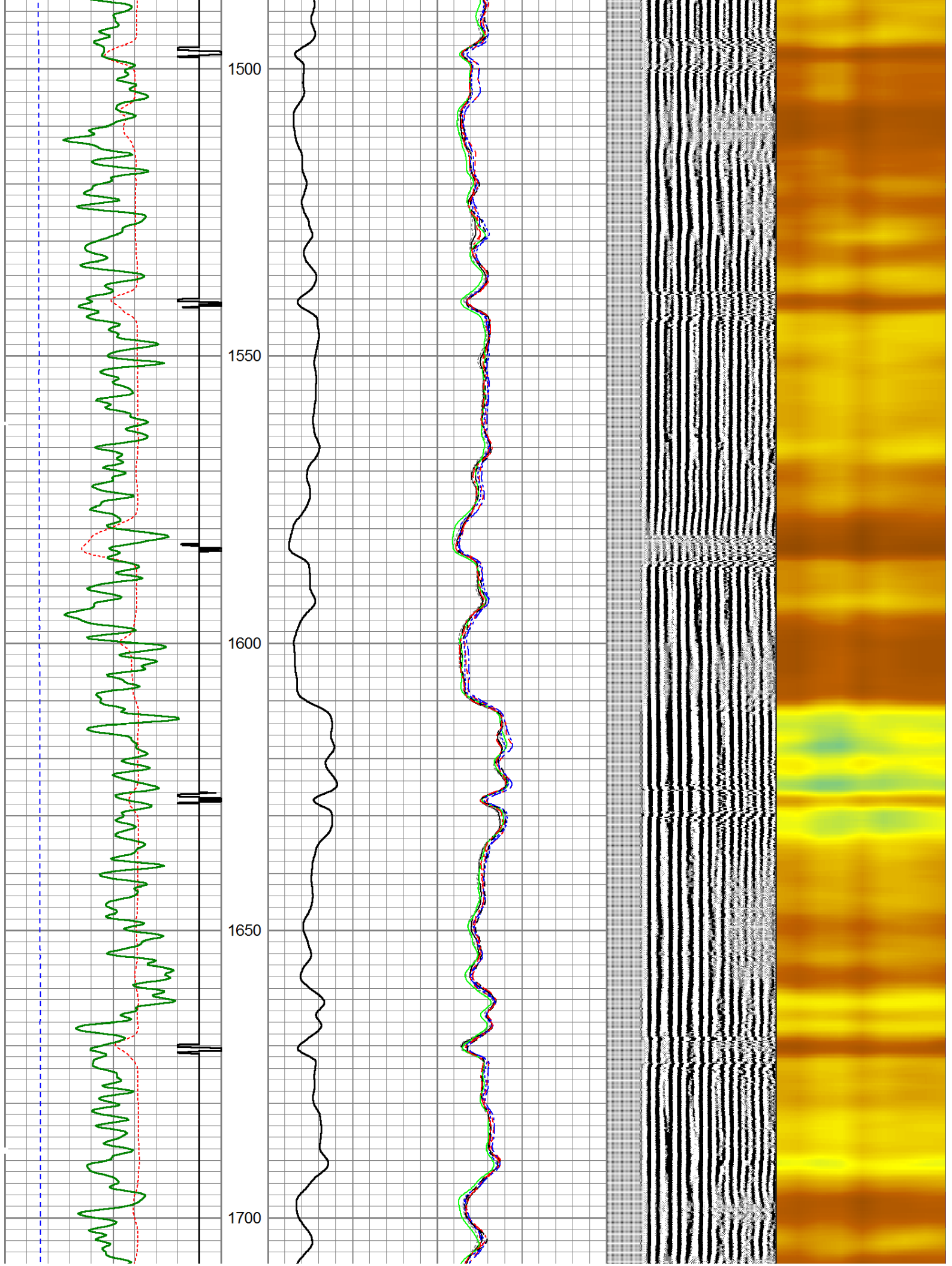


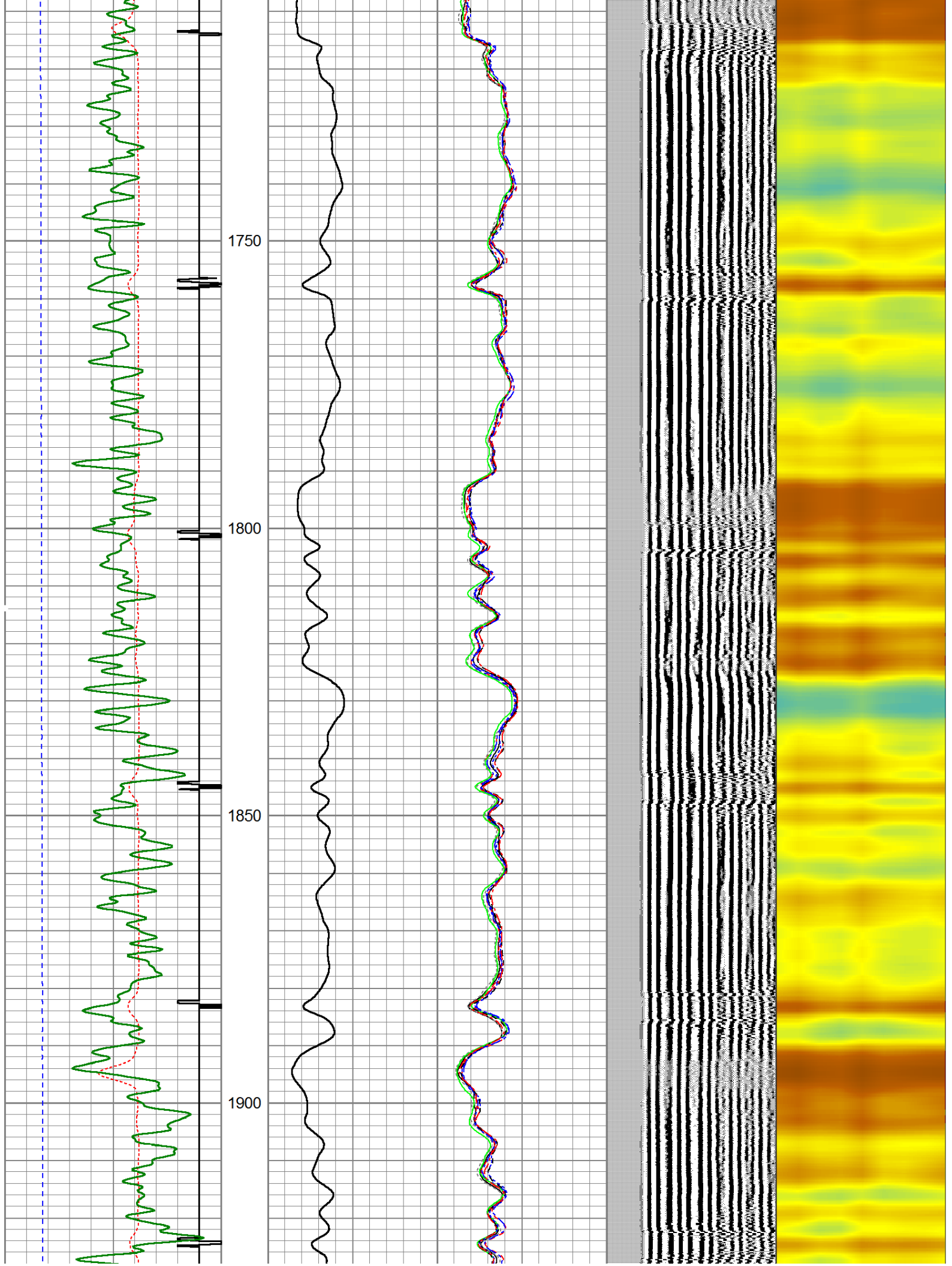


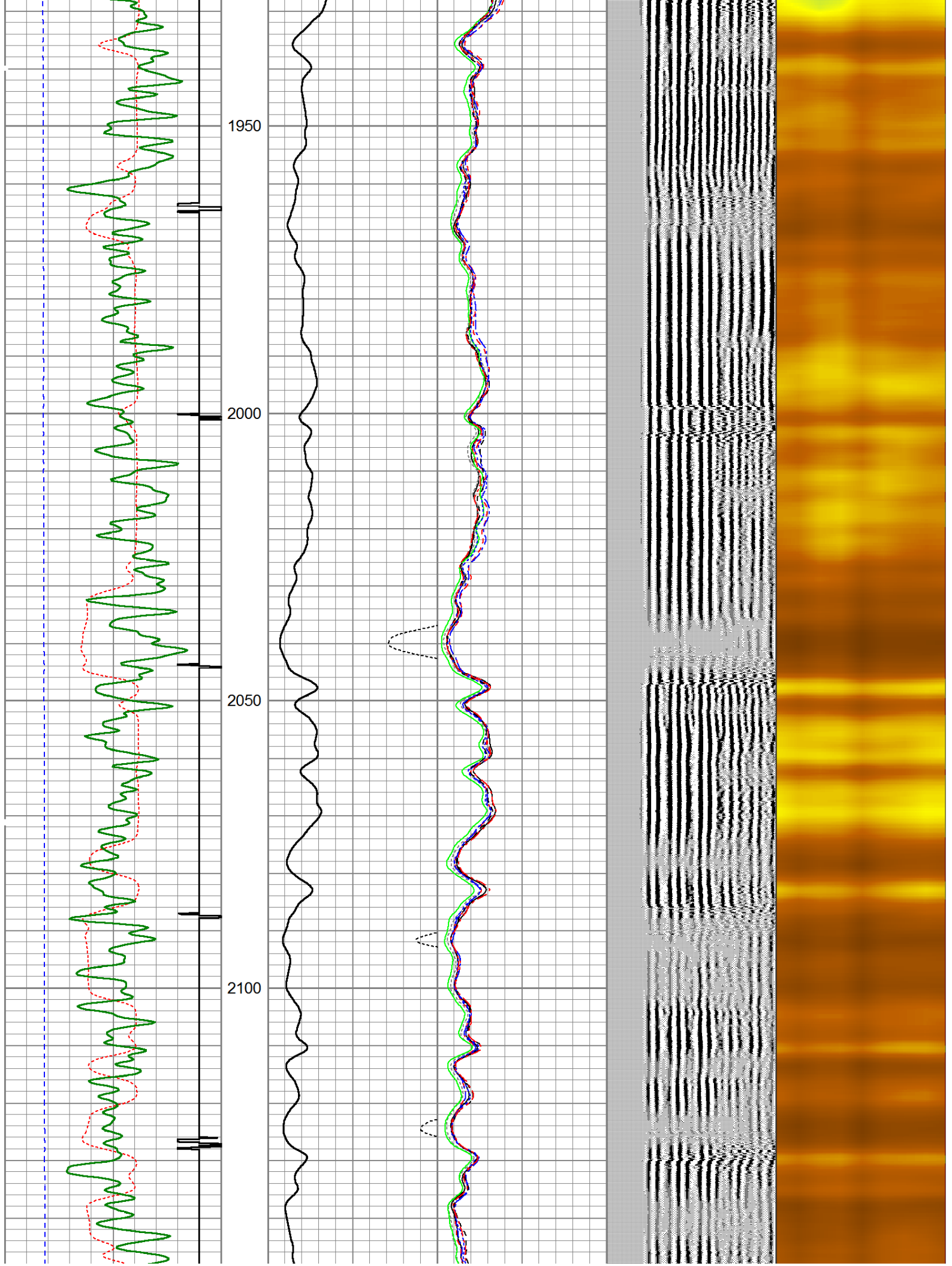


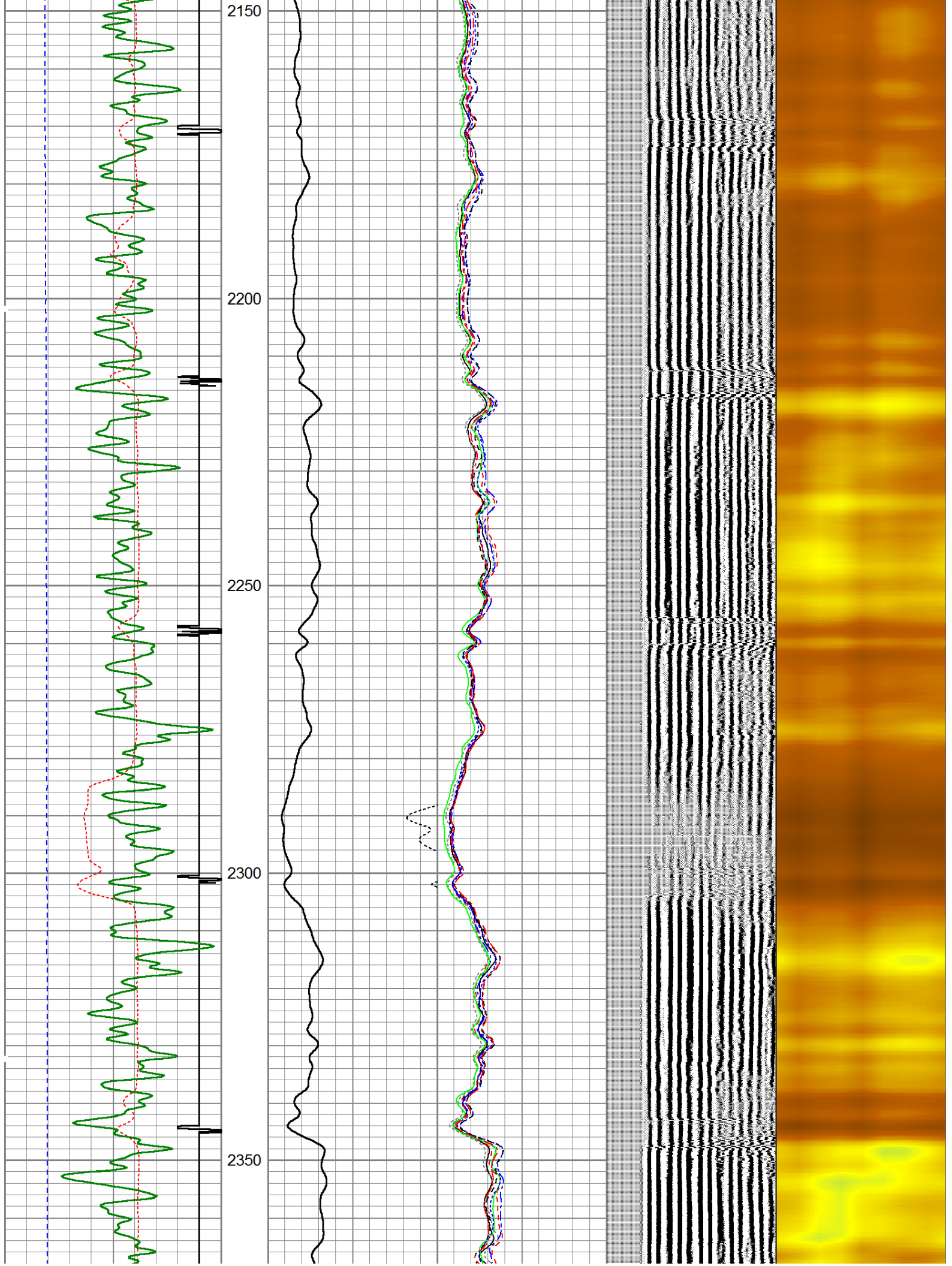


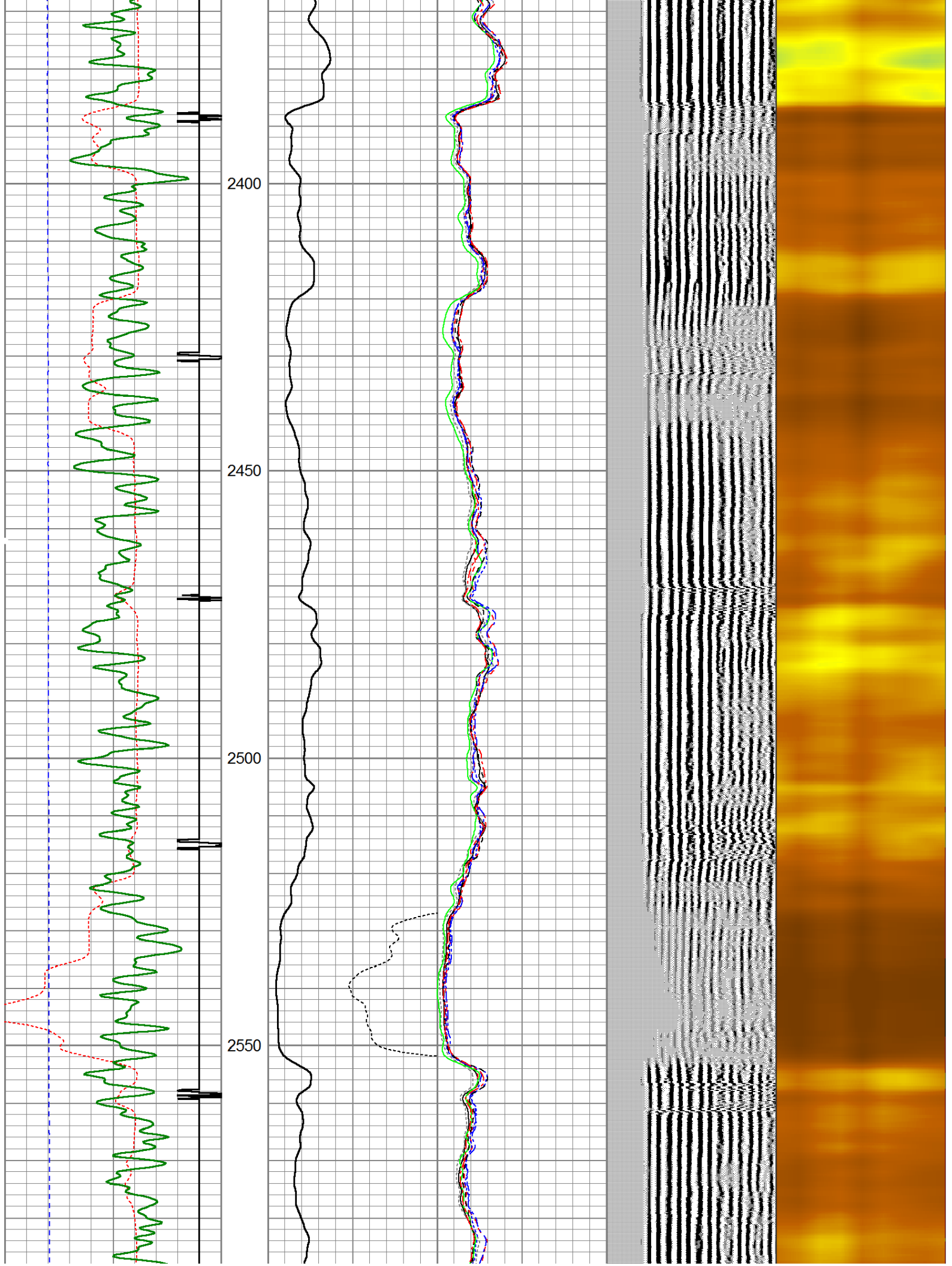


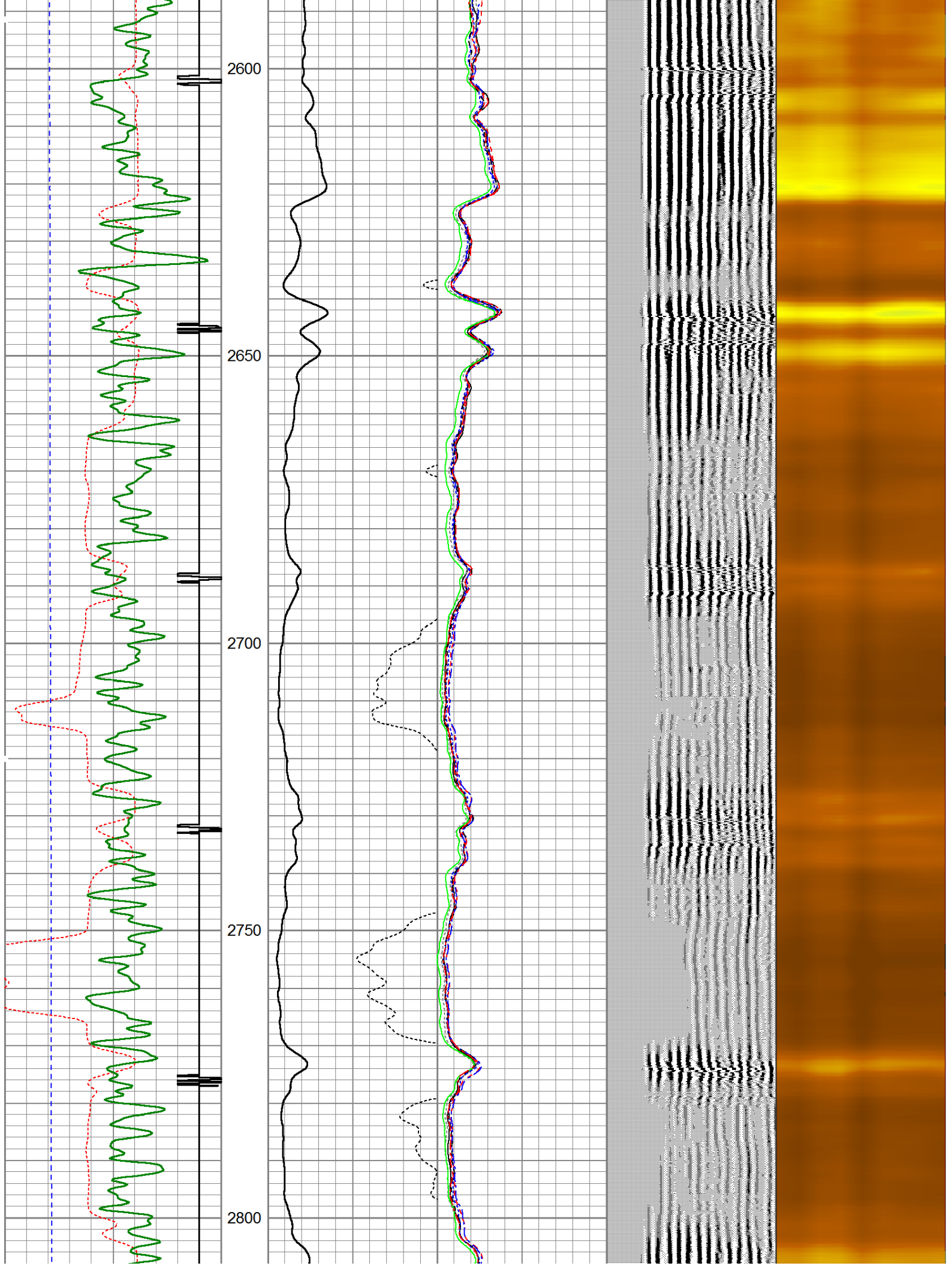


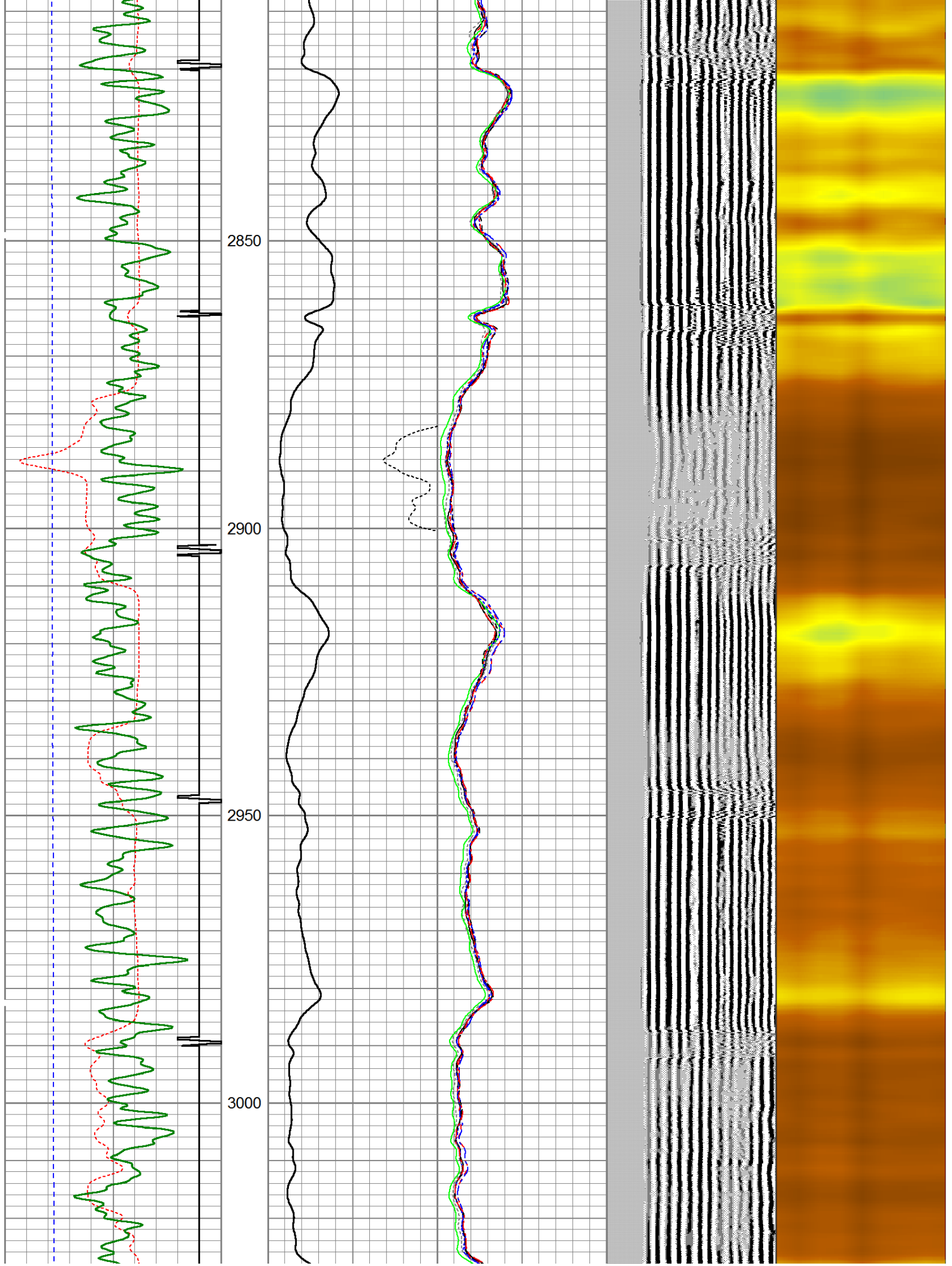


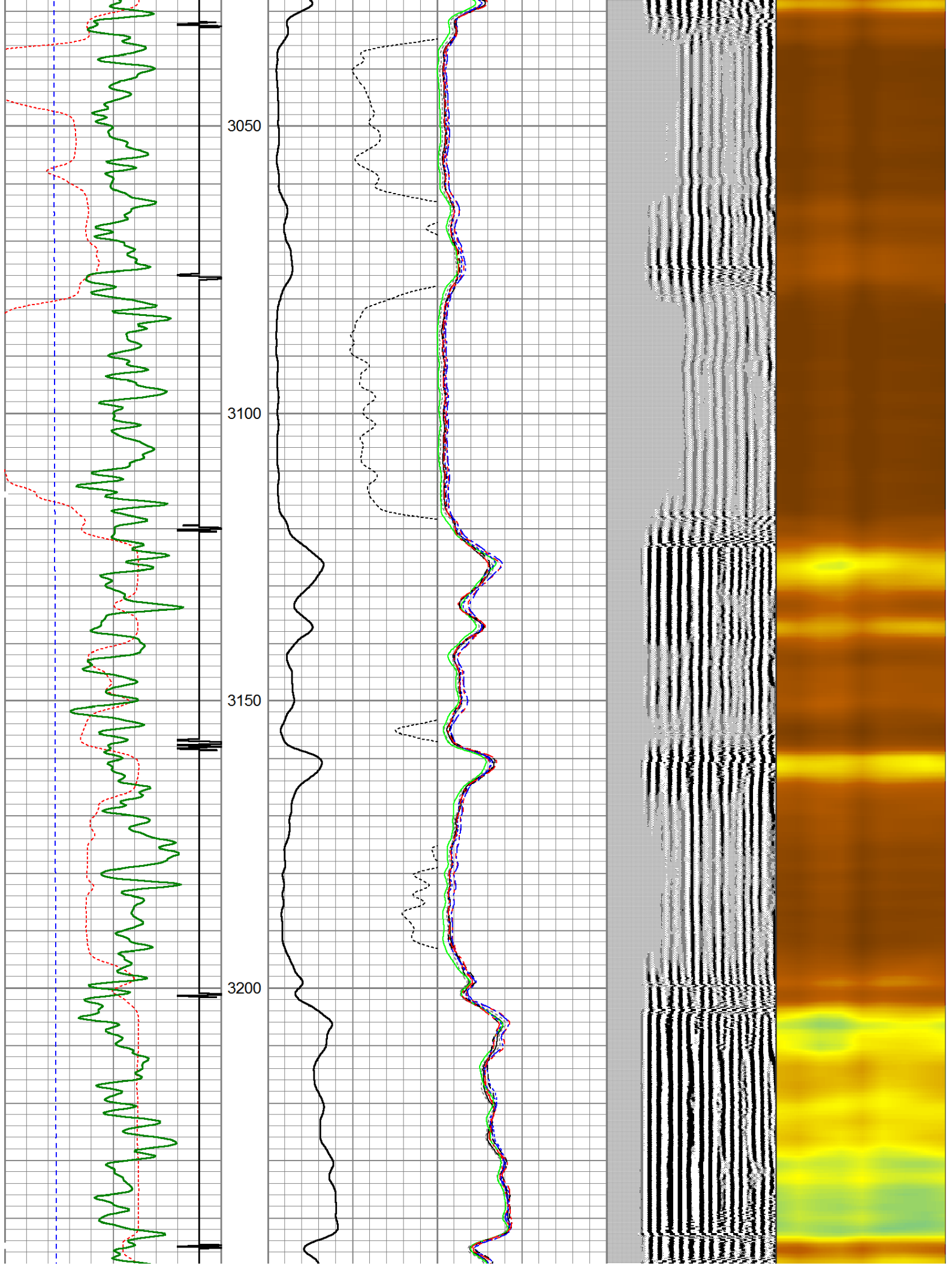


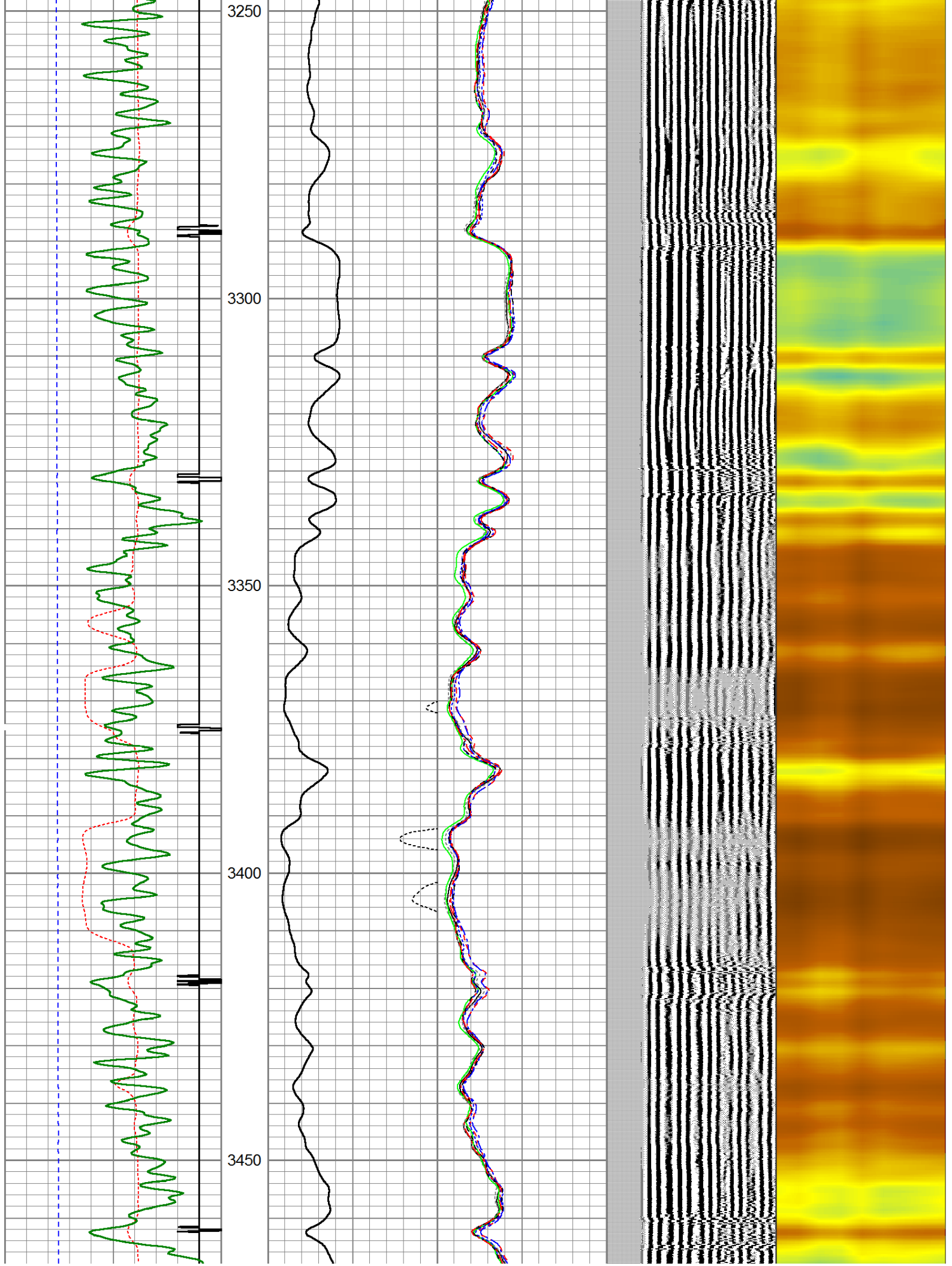


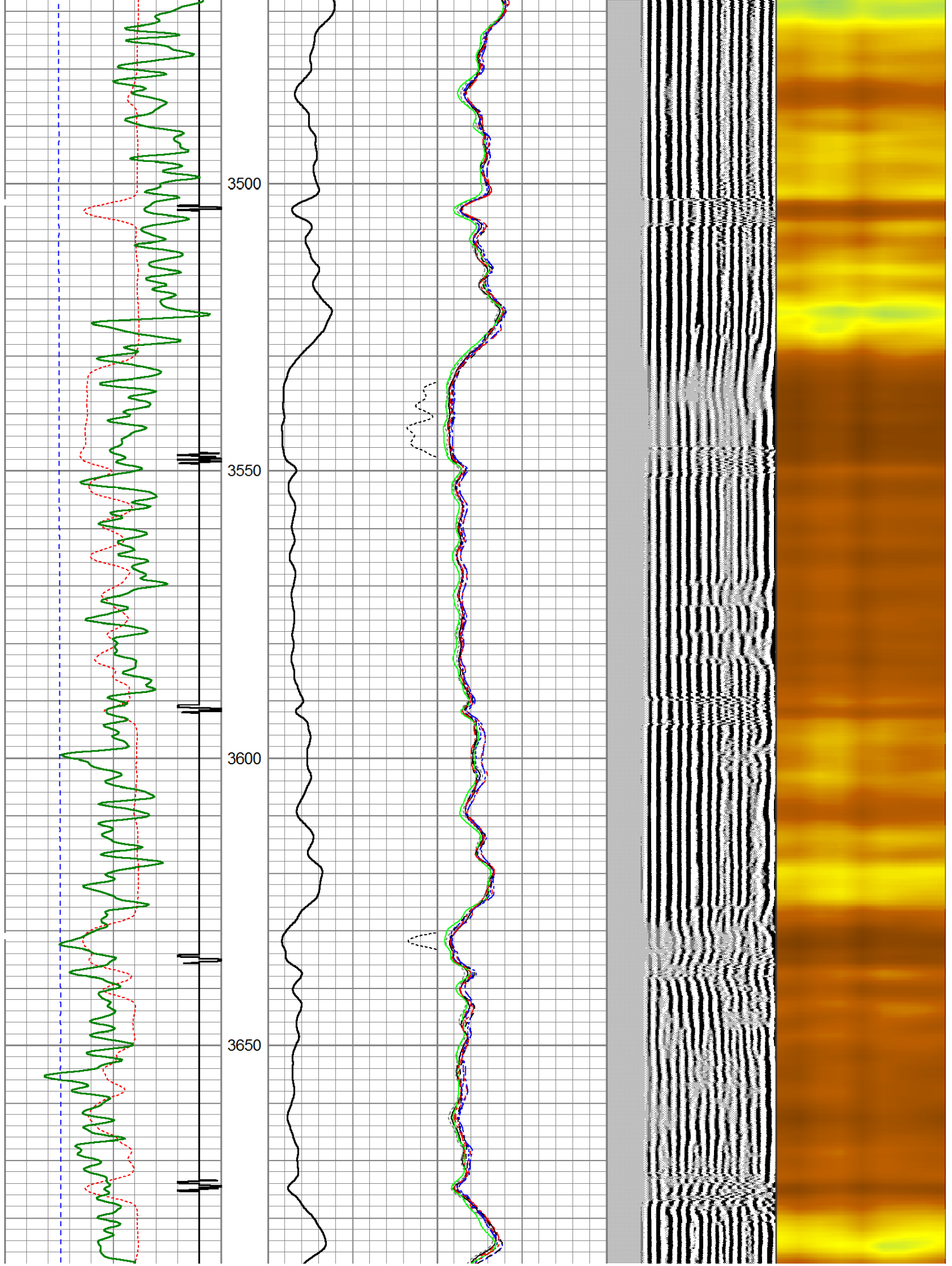


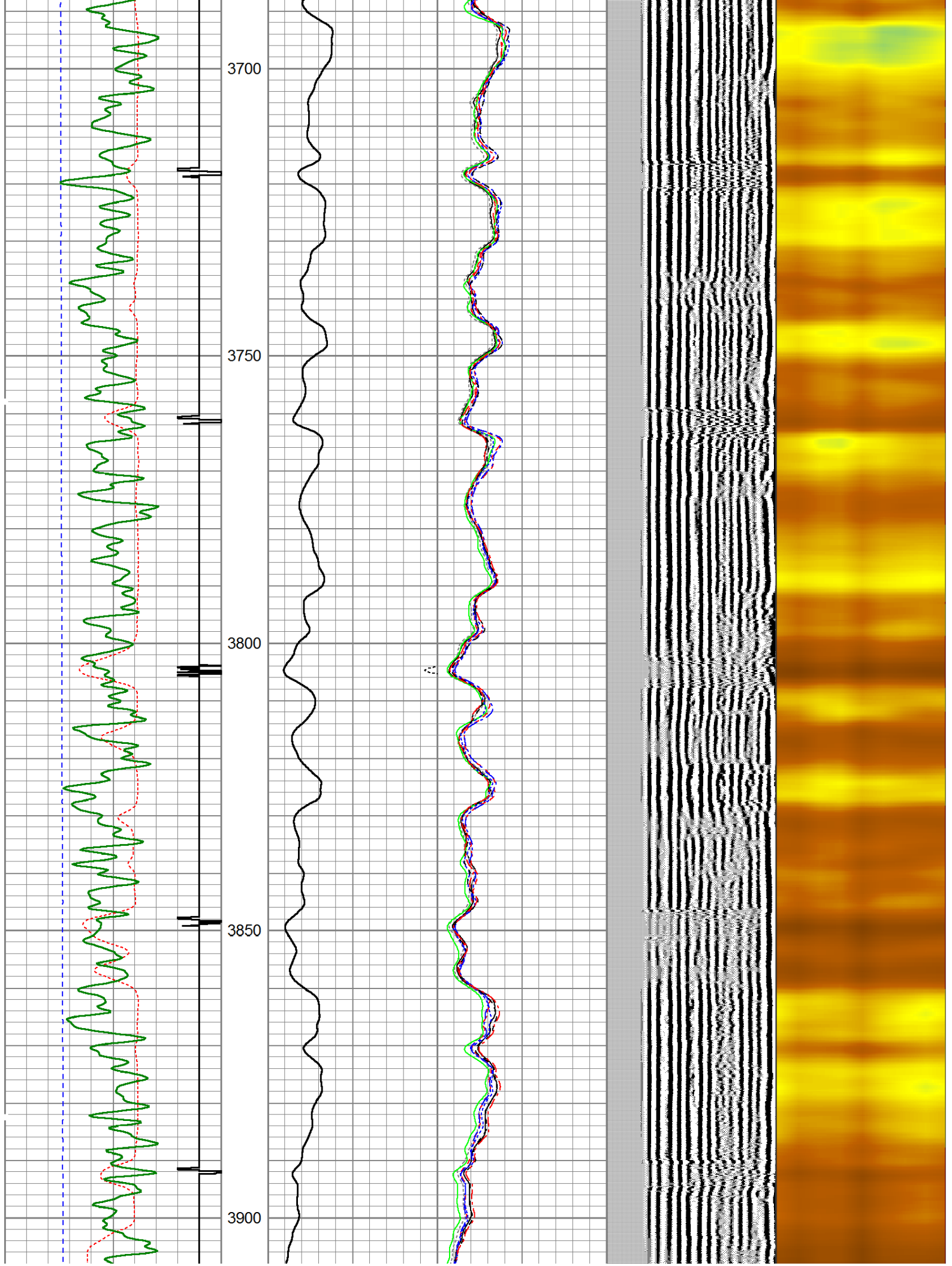


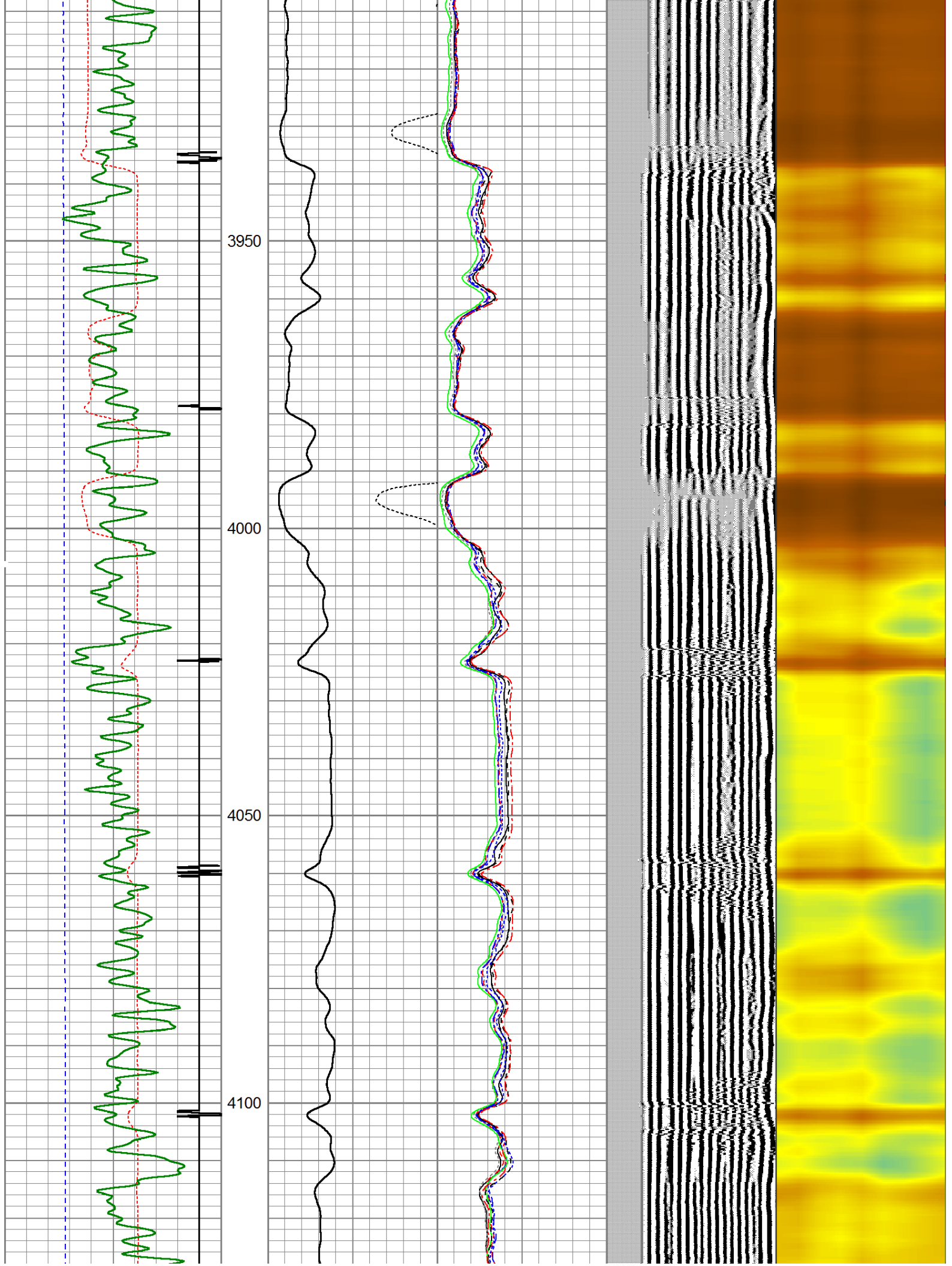


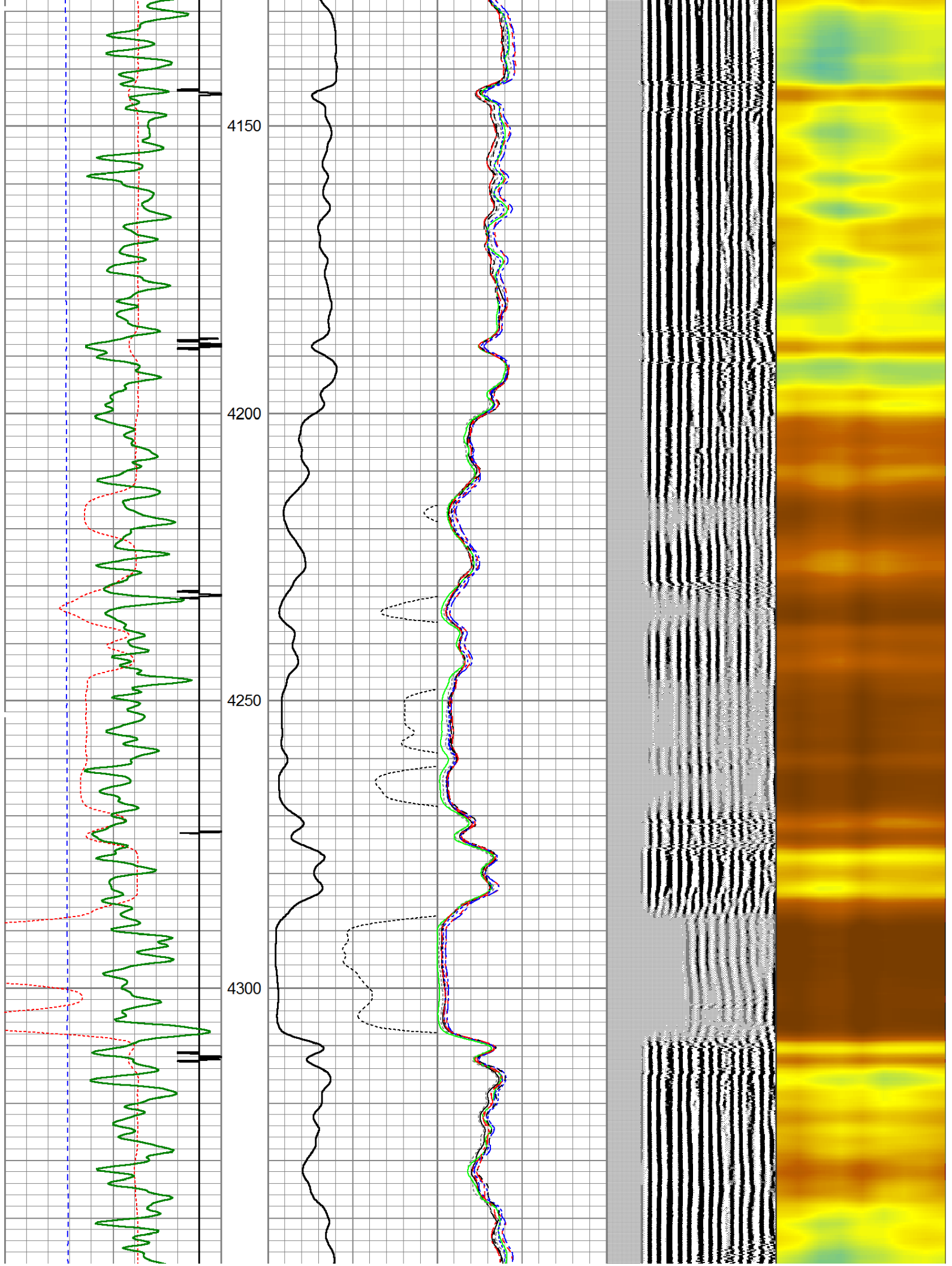


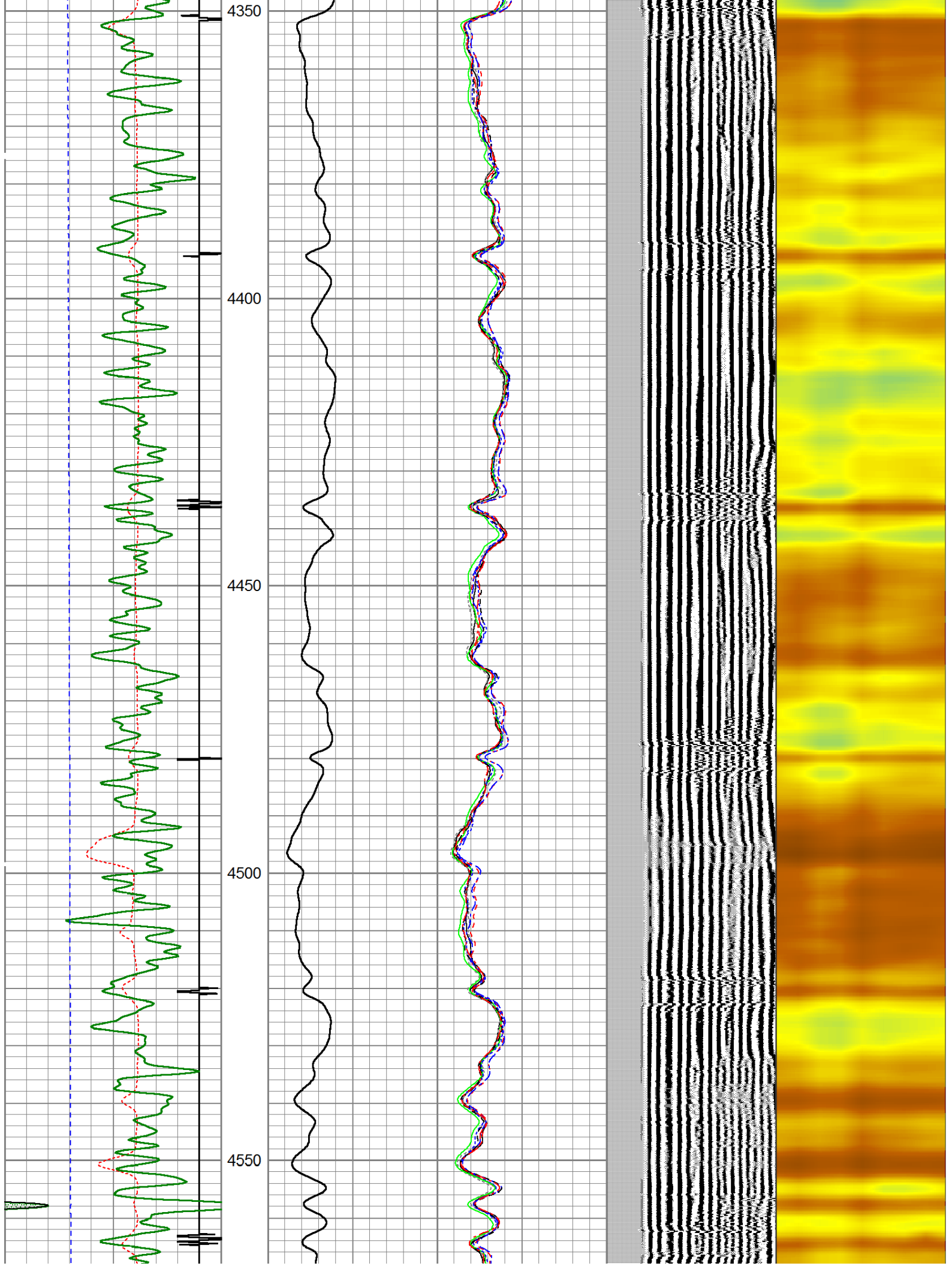


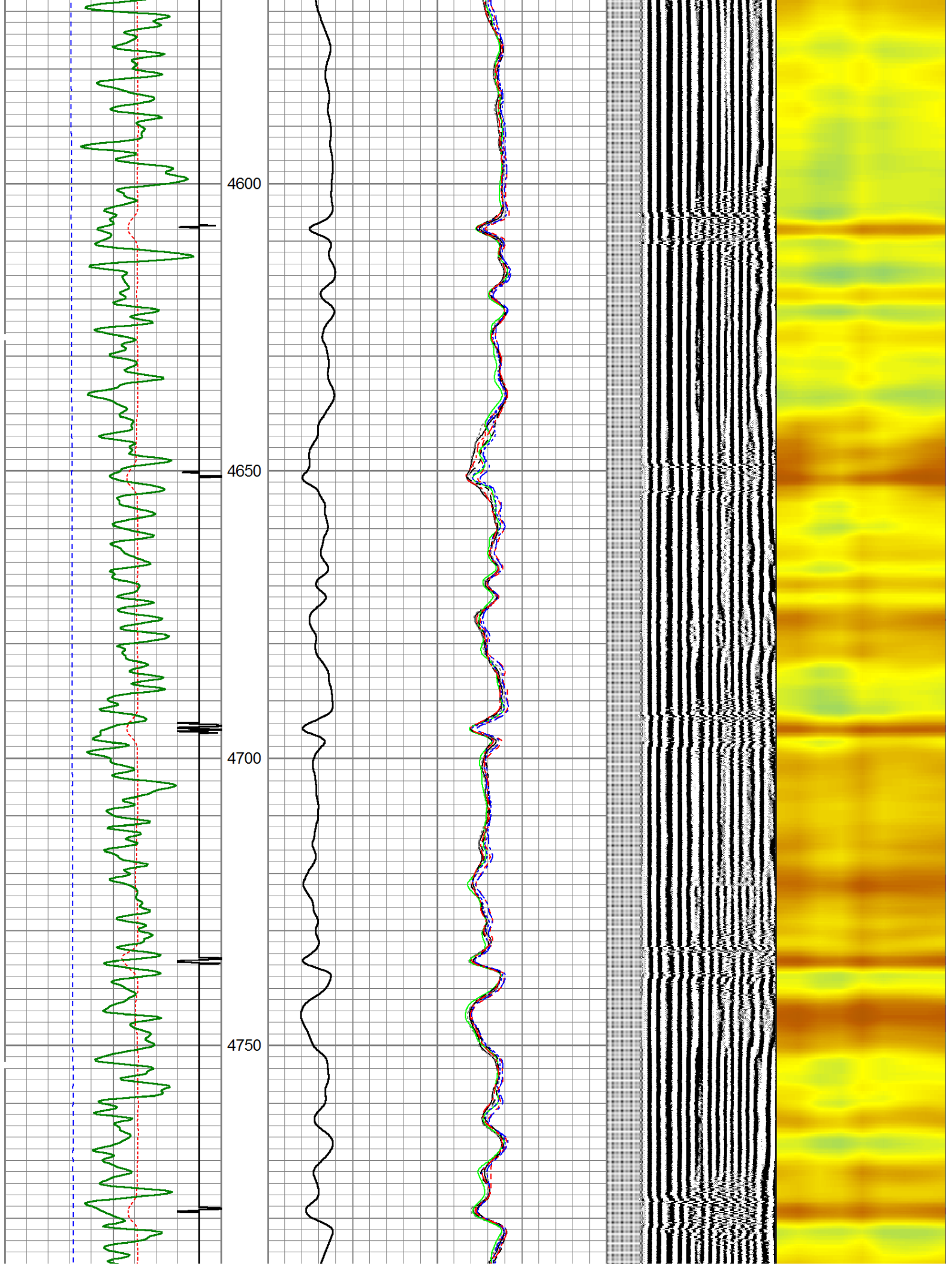


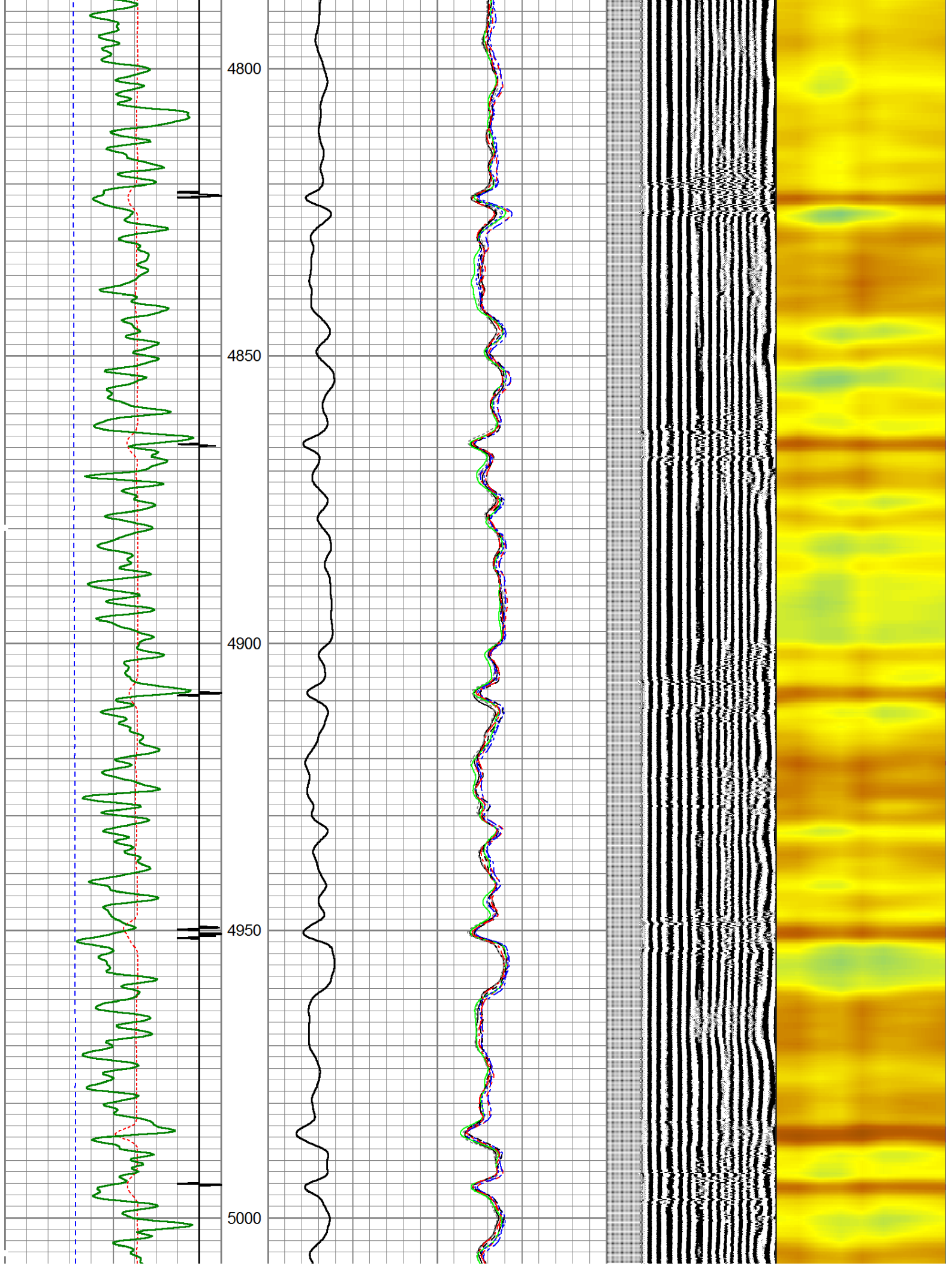


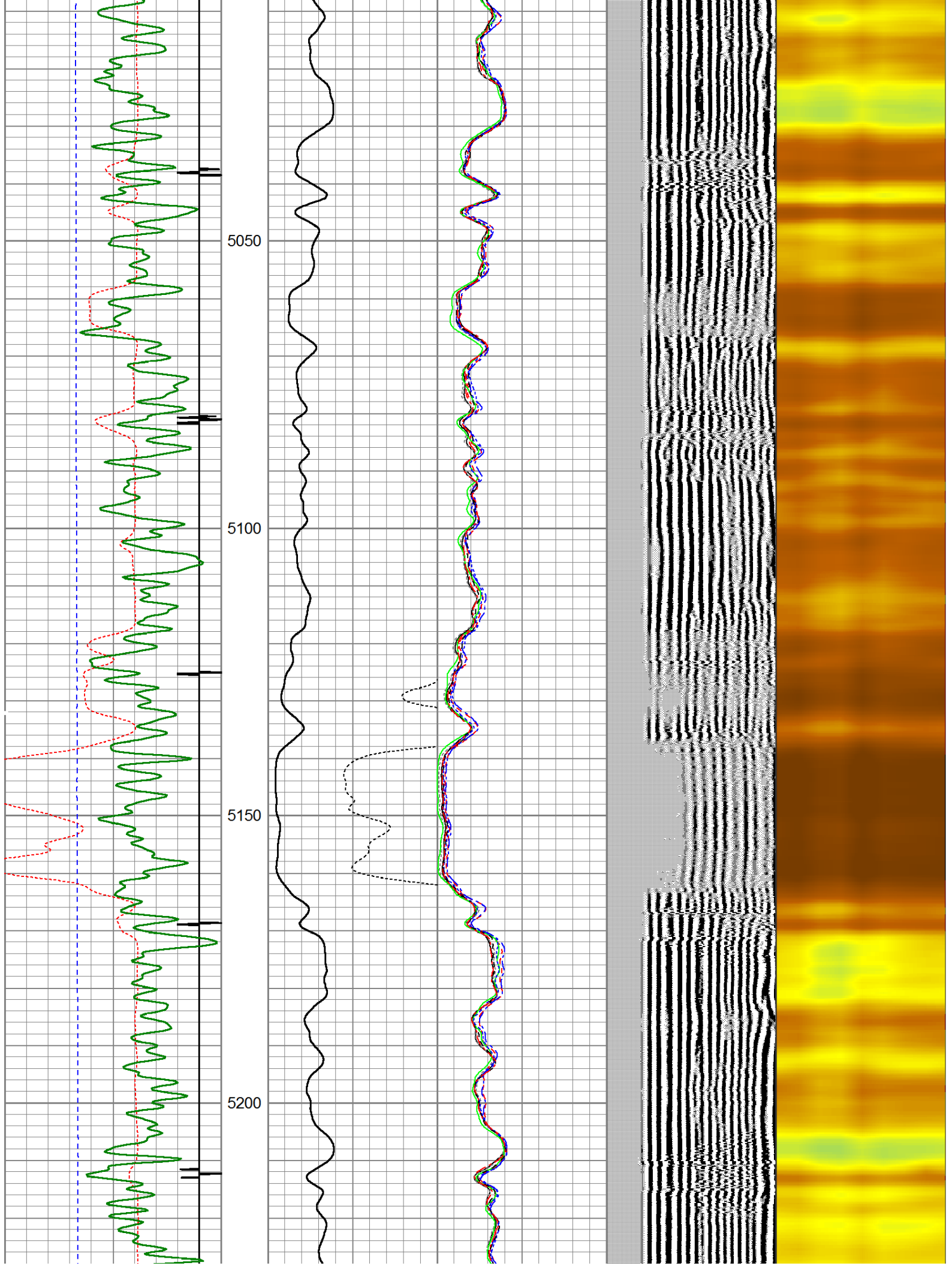


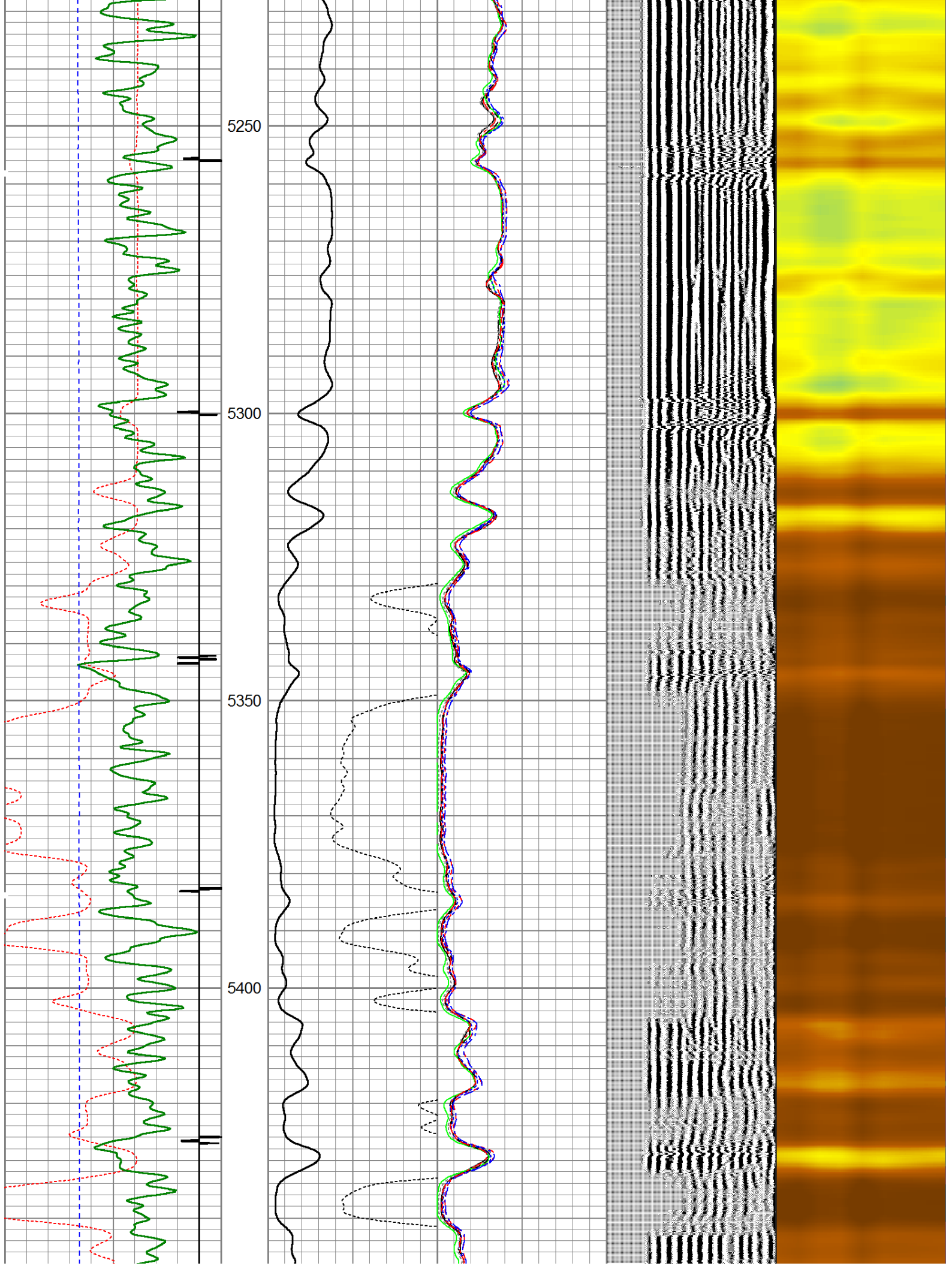


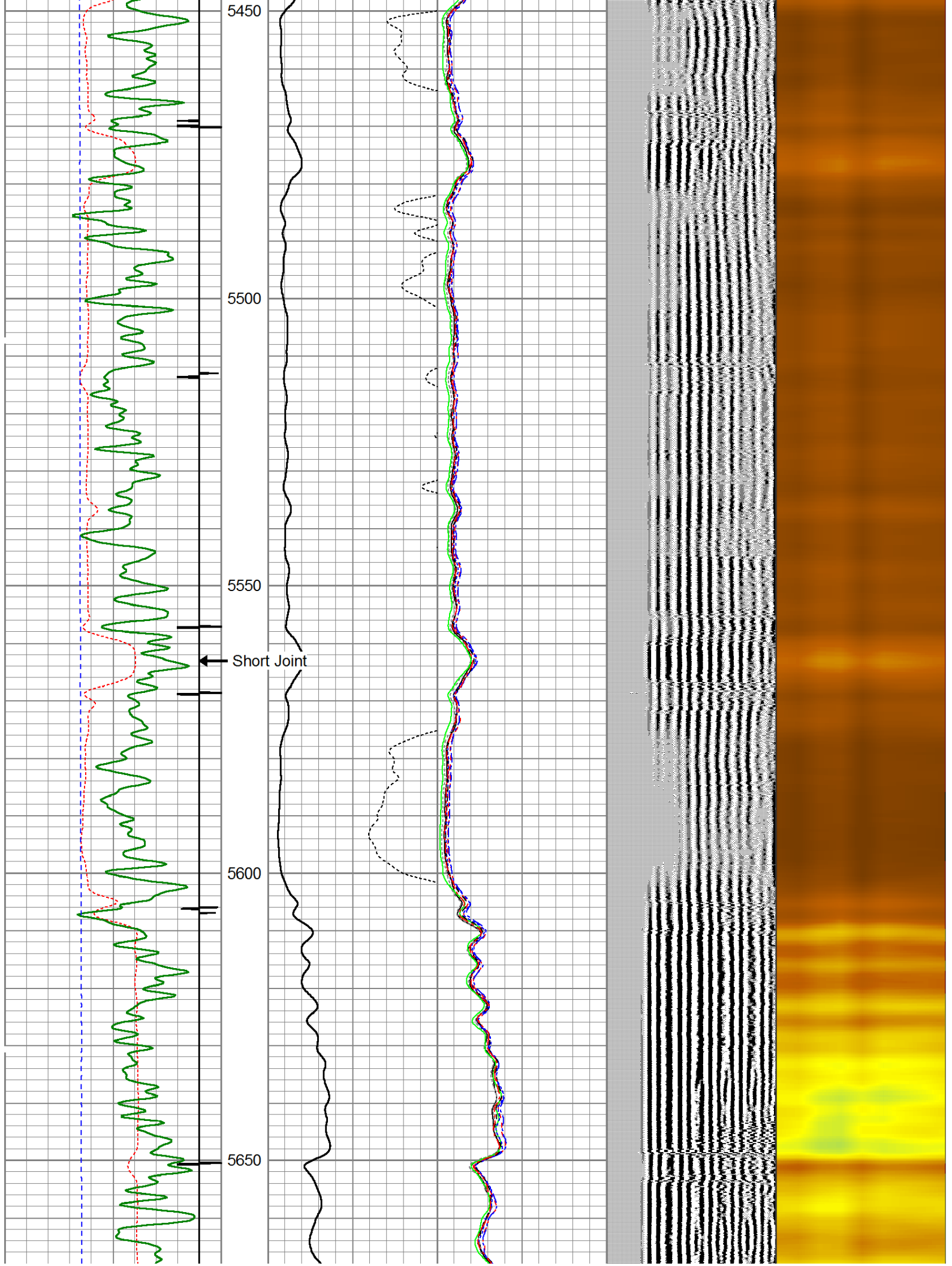


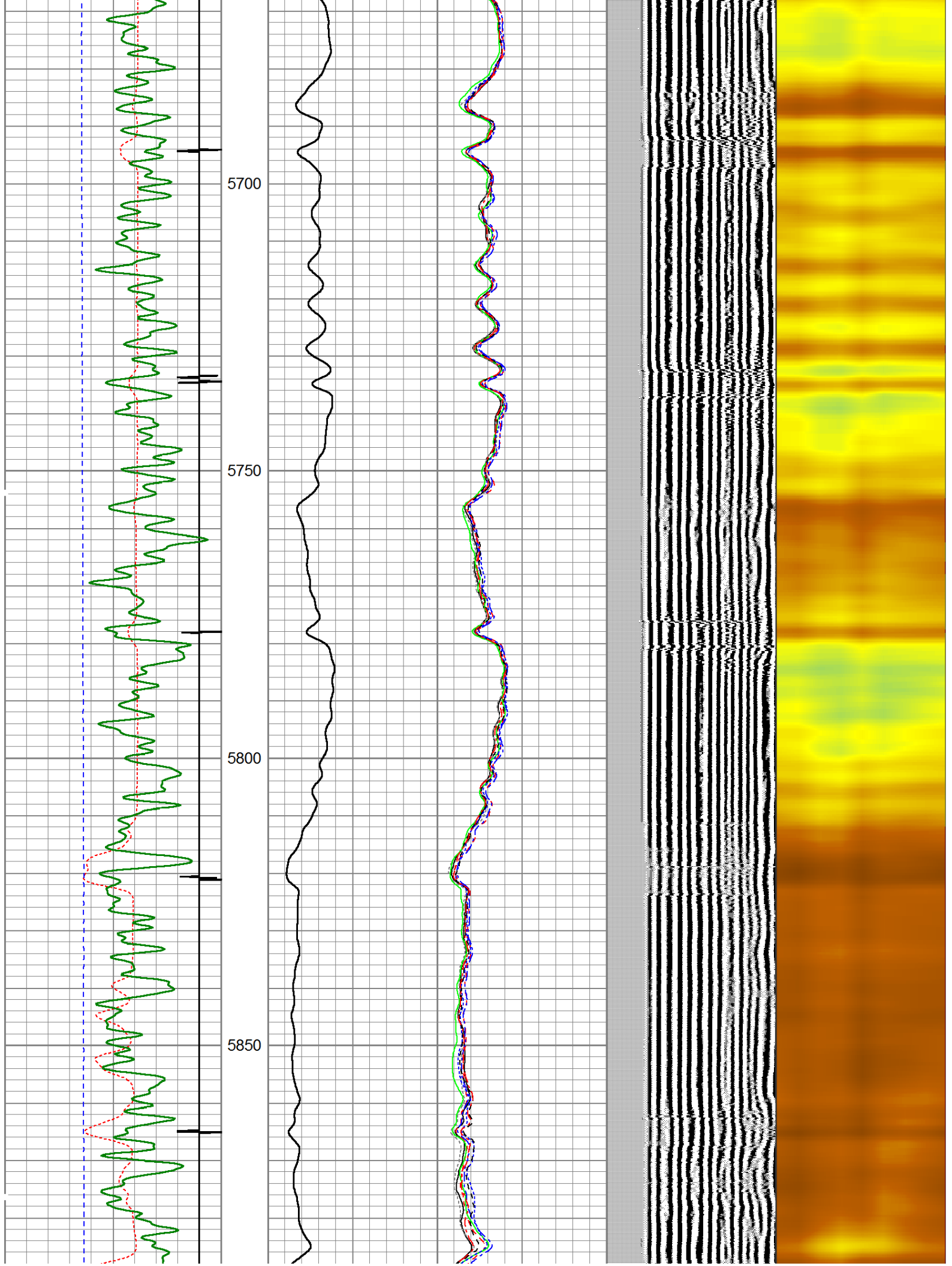


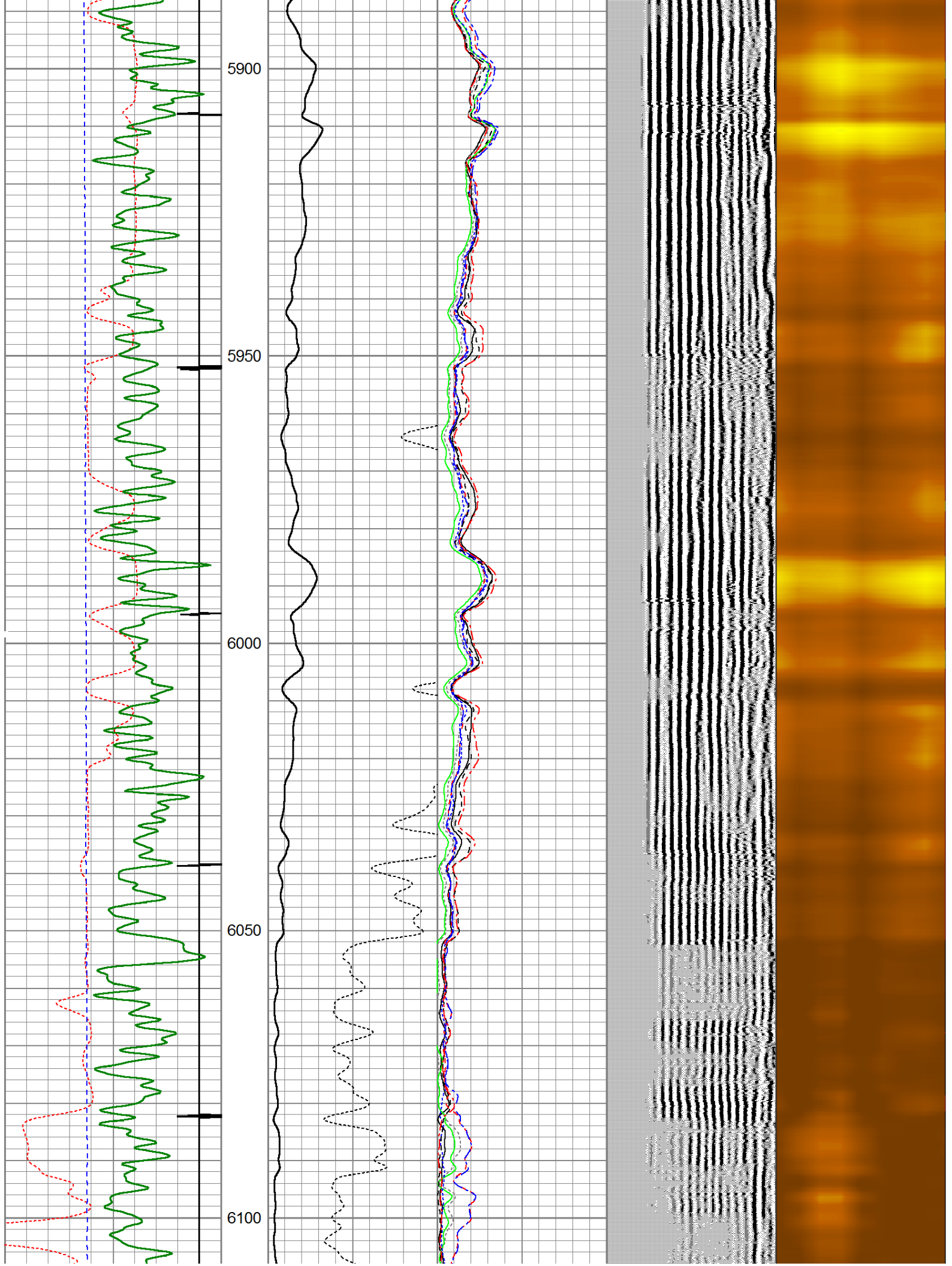


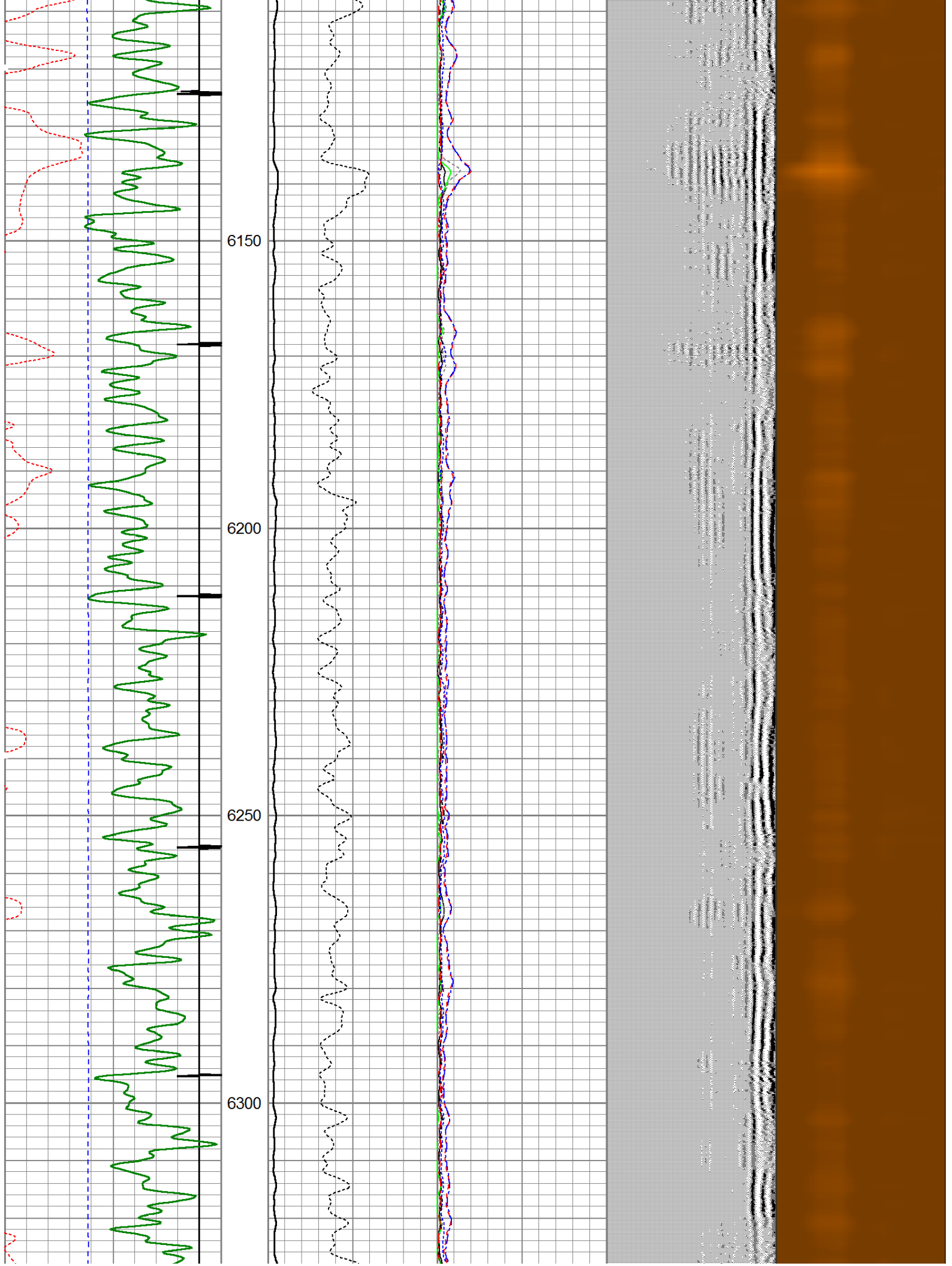


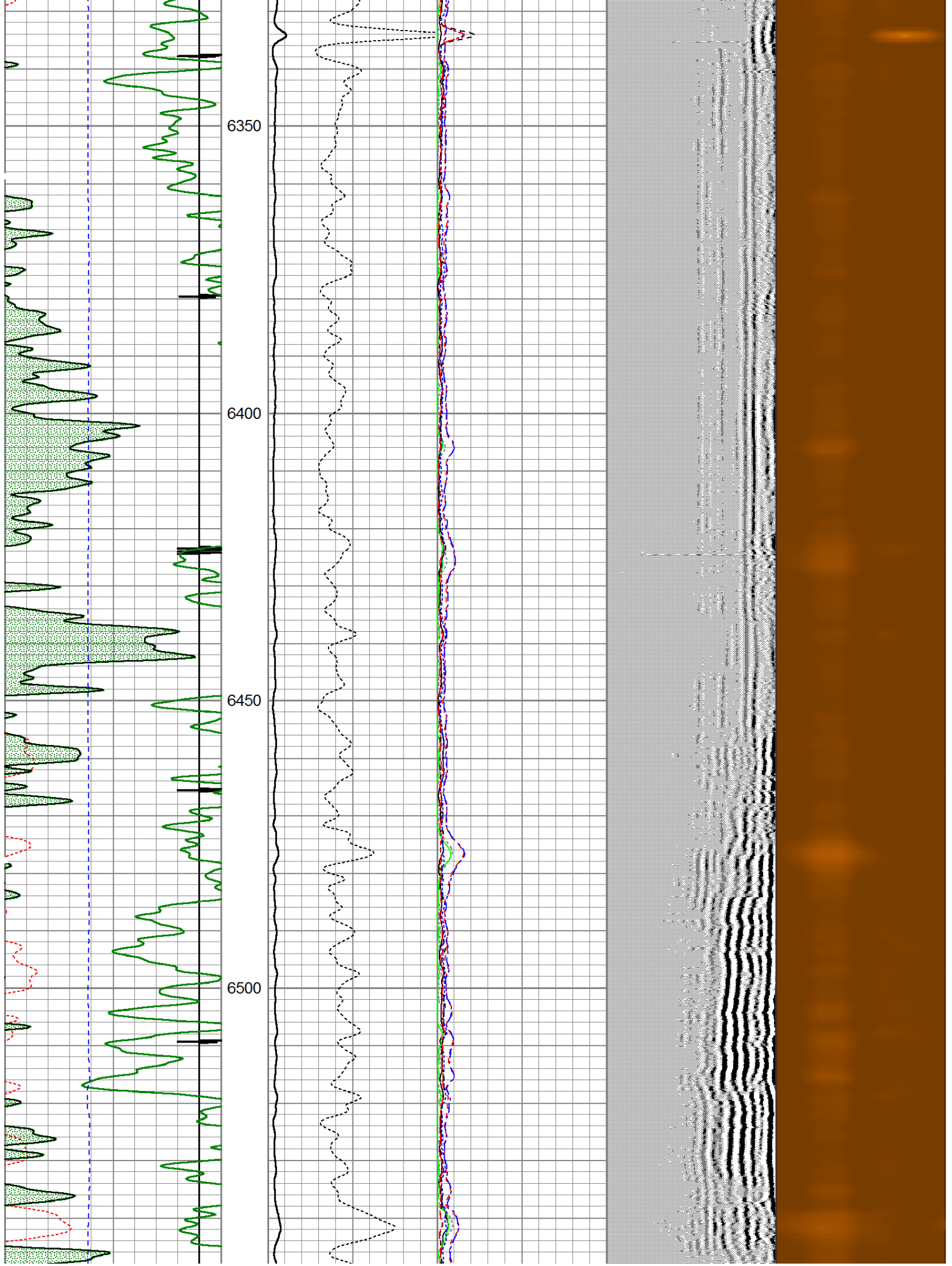


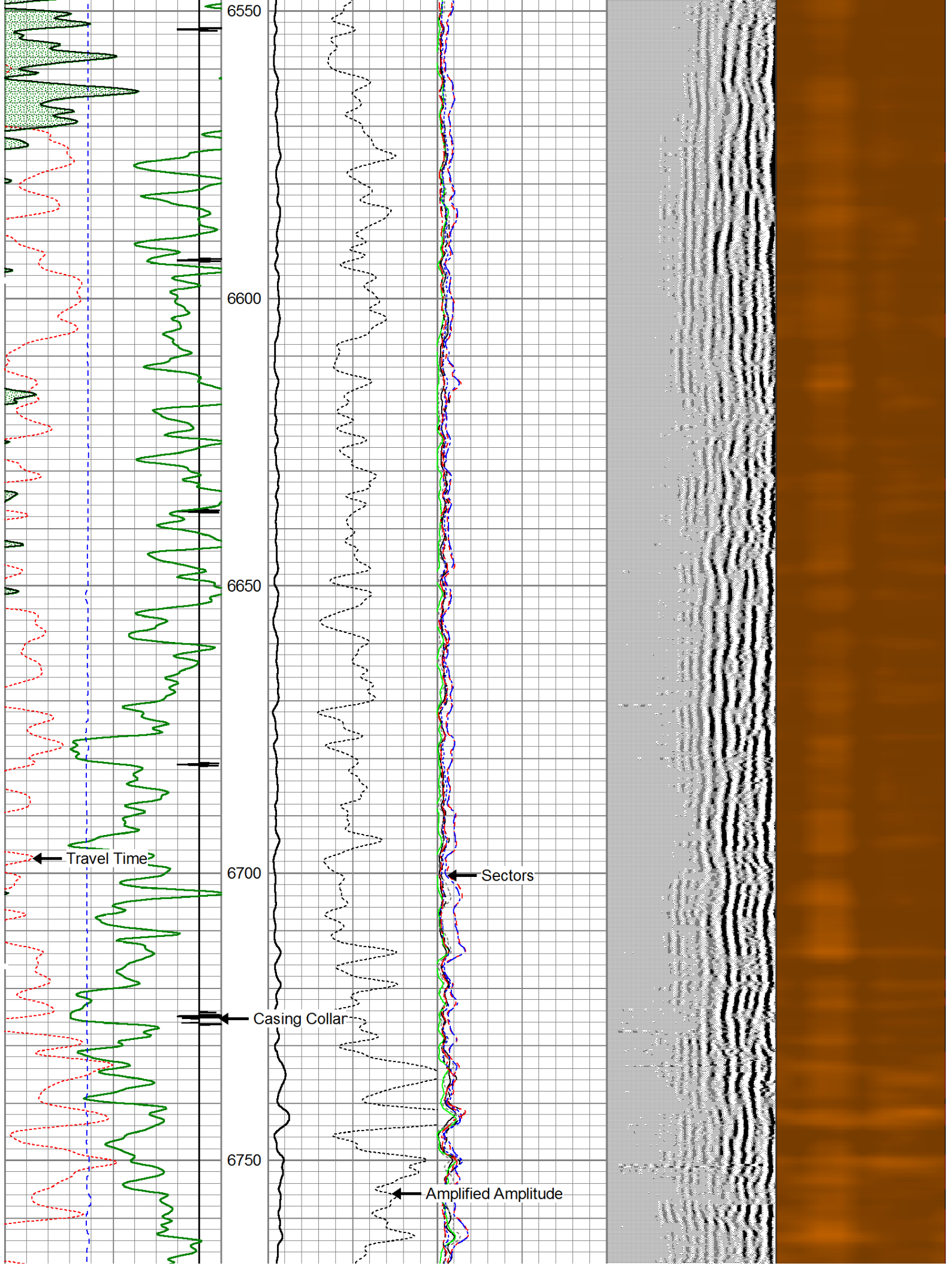


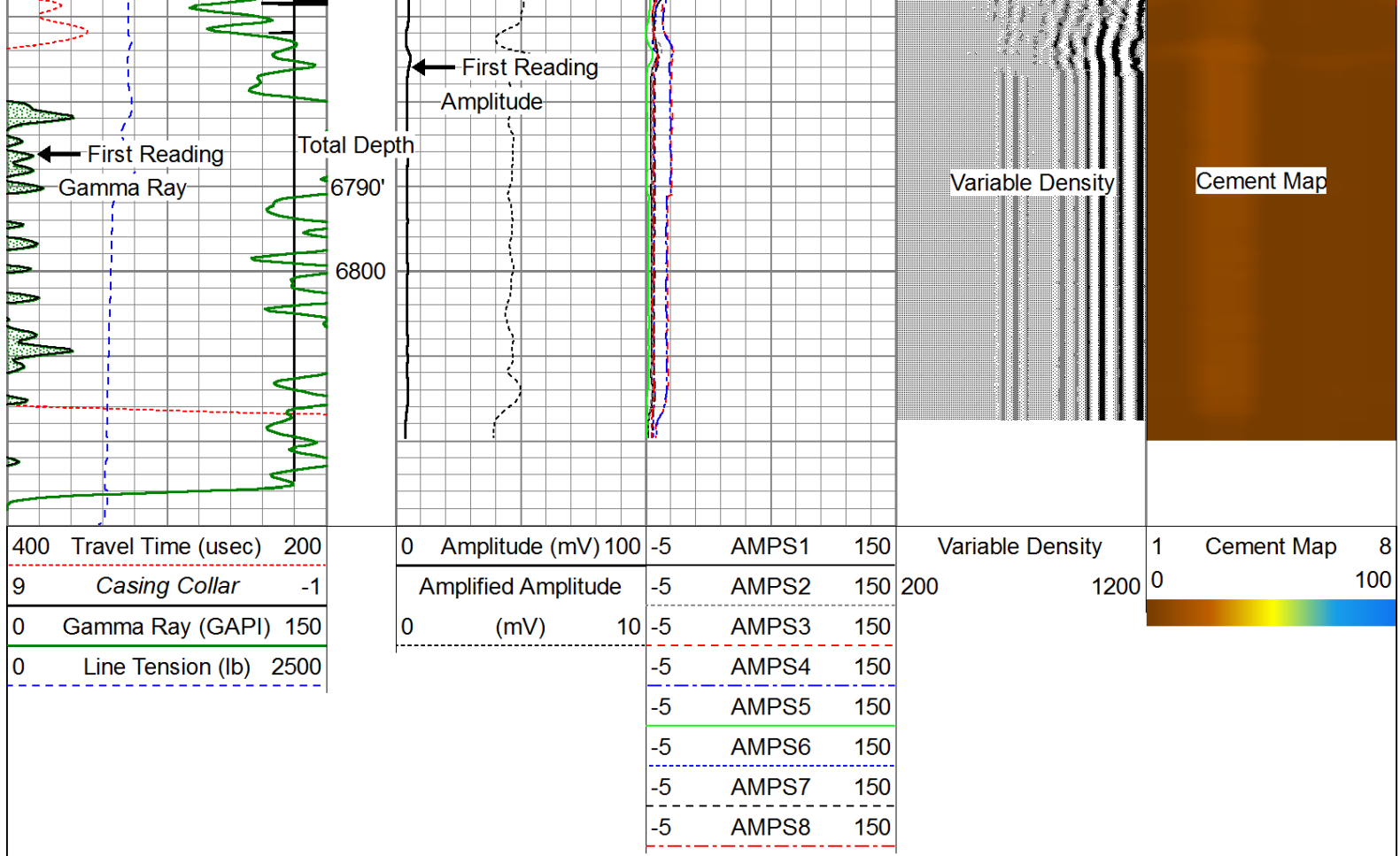






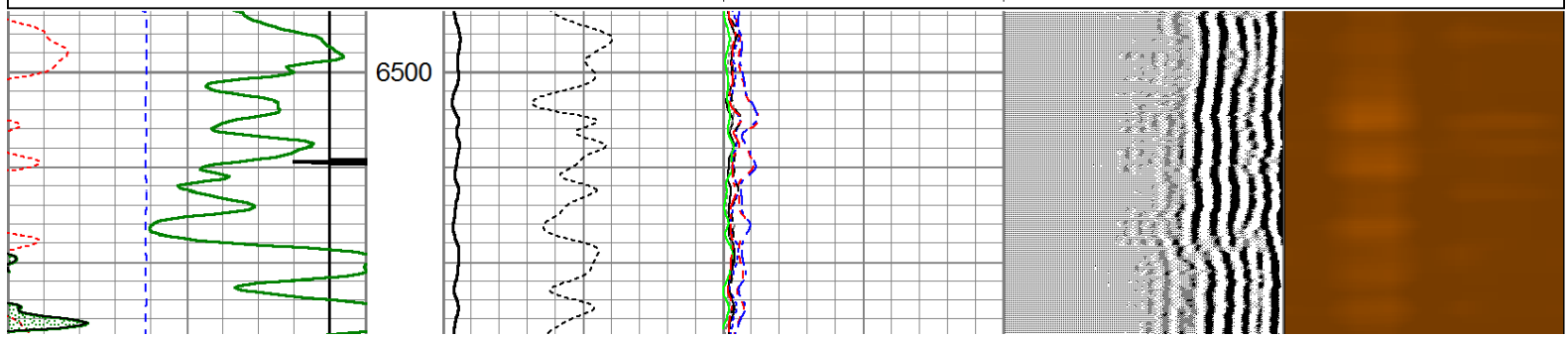
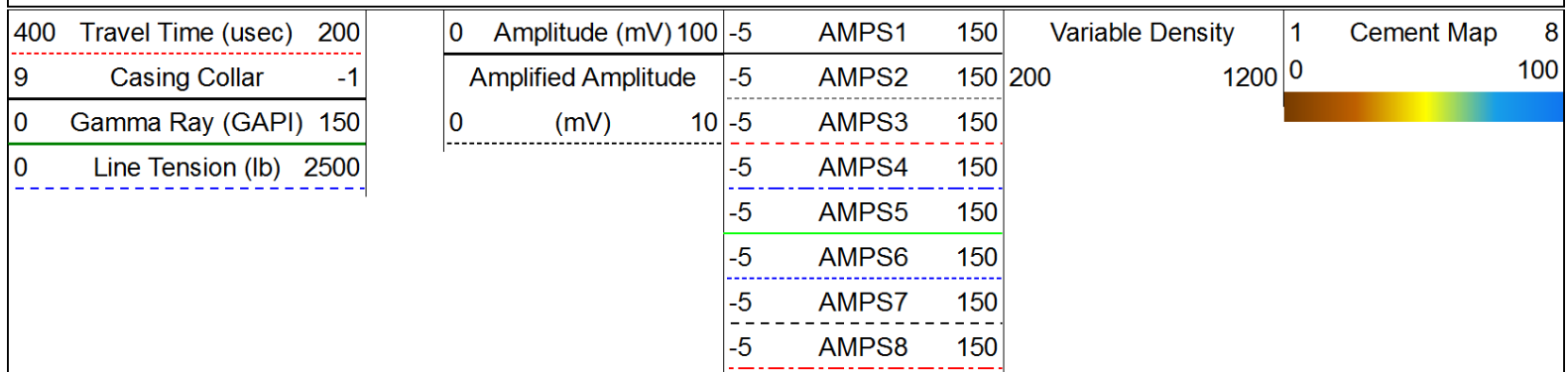


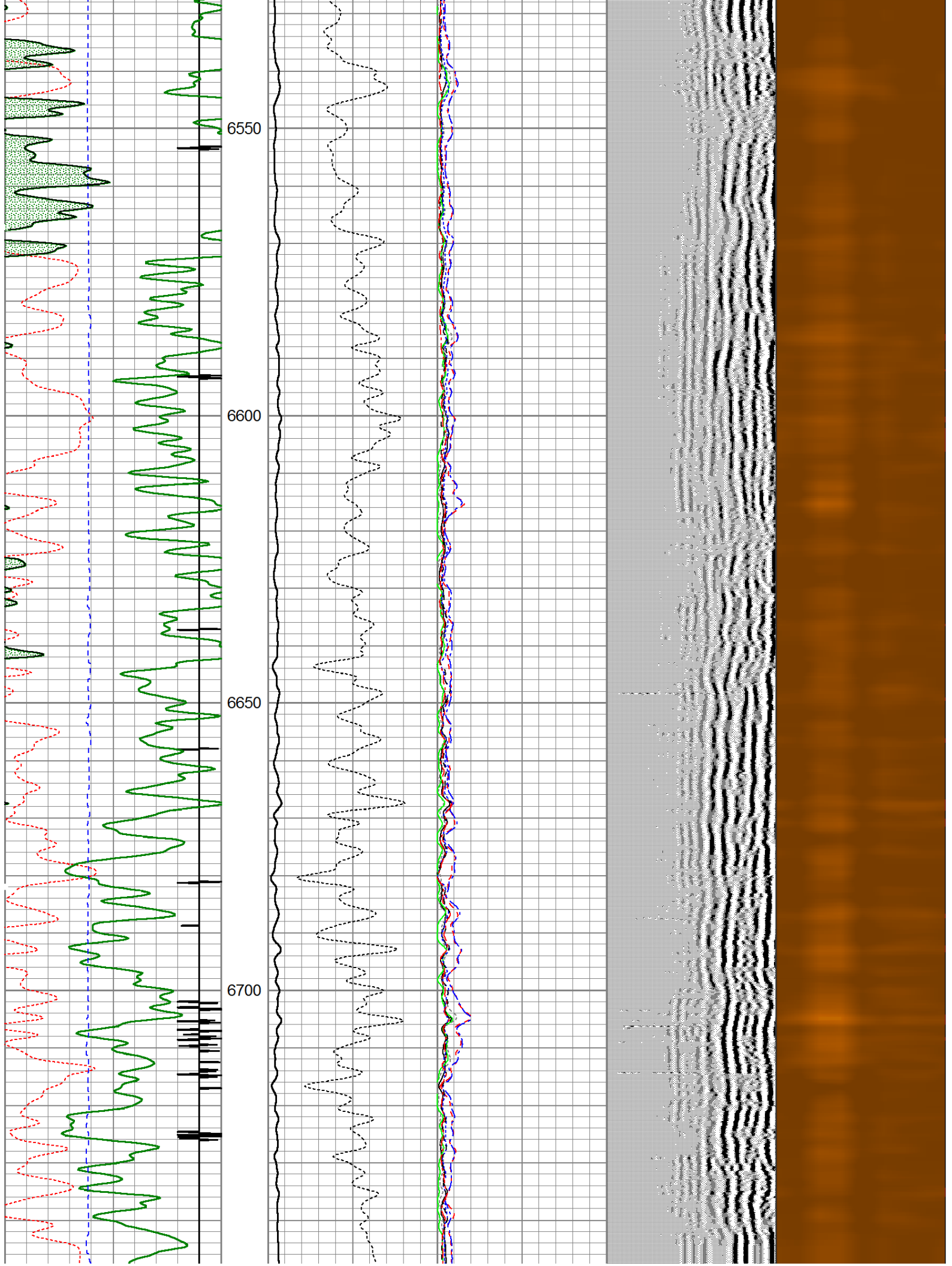


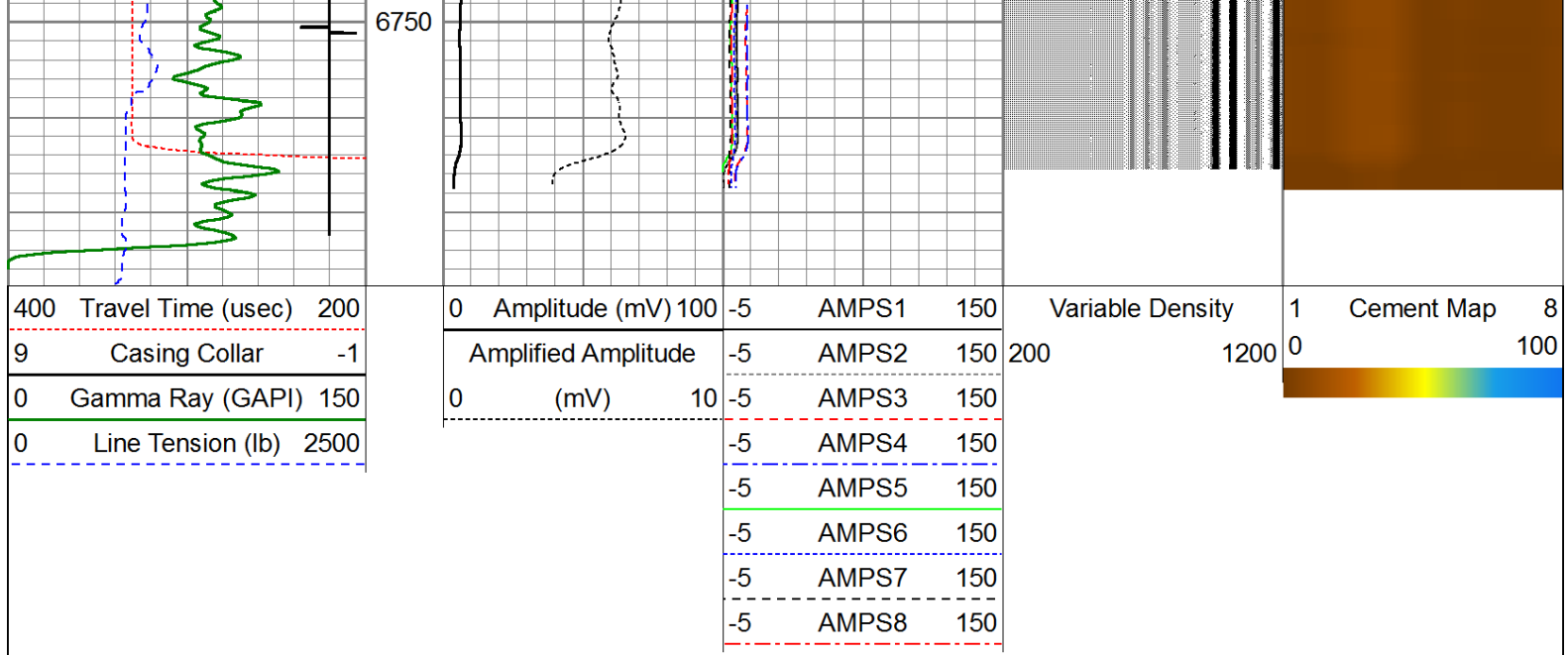


Repeat Pass (0 PSI)

Database File: noble_kummer_pc_le23_64hn_rcbl.db
 Dataset Pathname: RCBL/pass3
 Presentation Format: scbl03
 Dataset Creation: Wed May 15 13:41:04 2013 by Log SCH 120126
 Charted by: Depth in Feet scaled 1:240







Calibration Report

Database File: noble_kummer_pc_le23_64hn_rcbl.db
 Dataset Pathname: RCBL/pass5
 Dataset Creation: Wed May 15 13:47:59 2013 by Log 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: 271.477 ft

Master Calibration, performed Wed May 15 13:15:02 2013:

Raw (v)

Calibrated (mv)

Results

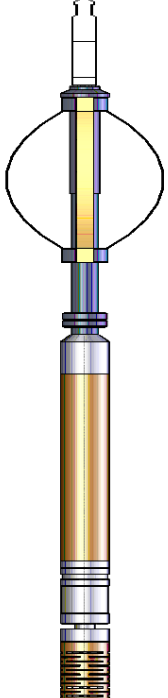
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.009	0.498	3.000	62.165	120.983	3.940
CAL	-0.008	0.517				
5'	-0.007	0.516	3.000	62.165	113.132	3.807
SUM						
S1	0.022	0.543	0.000	100.000	192.233	-4.308
S2	0.020	0.466	0.000	100.000	224.494	-4.519
S3	-0.007	0.415	0.000	100.000	236.777	1.734
S4	-0.010	0.426	0.000	100.000	229.140	2.364
S5	0.025	0.460	0.000	100.000	229.841	-5.841
S6	0.001	0.512	0.000	100.000	195.779	-0.253
S7	0.005	0.549	0.000	100.000	183.945	-0.972
S8	0.009	0.562	0.000	100.000	180.580	-1.536

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	0.517	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 2.75" Centralizer	2.88	2.75	20.00

