



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

Company		Noble Energy	
Well		Wells Ranch AE20-64HN	
Field		Wattenberg	
County		Weld	
State		Colorado	
Location:		API # : 05-123-37210	
SEC 20 TWP 6N RGE 62W		TEMP	
Permanent Datum		Ground Level	
Log Measured From		24' Kelly Bushing	
Drilling Measured From		Kelly Bushing	
Elevation		4785'	
Other Services		Elevation	
K.B. 4809'		D.F. 4808'	
G.L. 4785'			
Date		November 27, 2013	
Run Number		1	
Depth Driller		10665'	
Depth Logger		6739'	
Bottom Logged Interval		6727'	
Top Log Interval		Surface	
Open Hole Size		8.125	
Type Fluid		Fresh Water	
Density / Viscosity		8.33	
Max. Recorded Temp.		210 Deg F	
Estimated Cement Top		419'	
Time Well Ready		10:50	
Time Logger on Bottom		11:26	
Equipment Number		13033	
Location		Brighton	
Recorded By		C. Rail	
Witnessed By		Bill Mansfield	
Borehole Record		Tubing Record	
Run Number		Bit	
From		To	
Size		Weight	
From		To	
One			
Two			
Three			
Four			
Casing Record		Wgt/Ft	
Surface String		36#	
Top		Surface	
Bottom		932'	
Prot. String			
Production String		26#	
Surface		6854'	
Liner		11 6#	
10650'		5452'	
Short Joint		5468'	

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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. Well Logged using 24' KB.

Main Pass and Repeat Pass Logged with Zero Pressure on Surface

Estimated Top of Cement @ 419'

Short Joint @ 5452' To 5468'

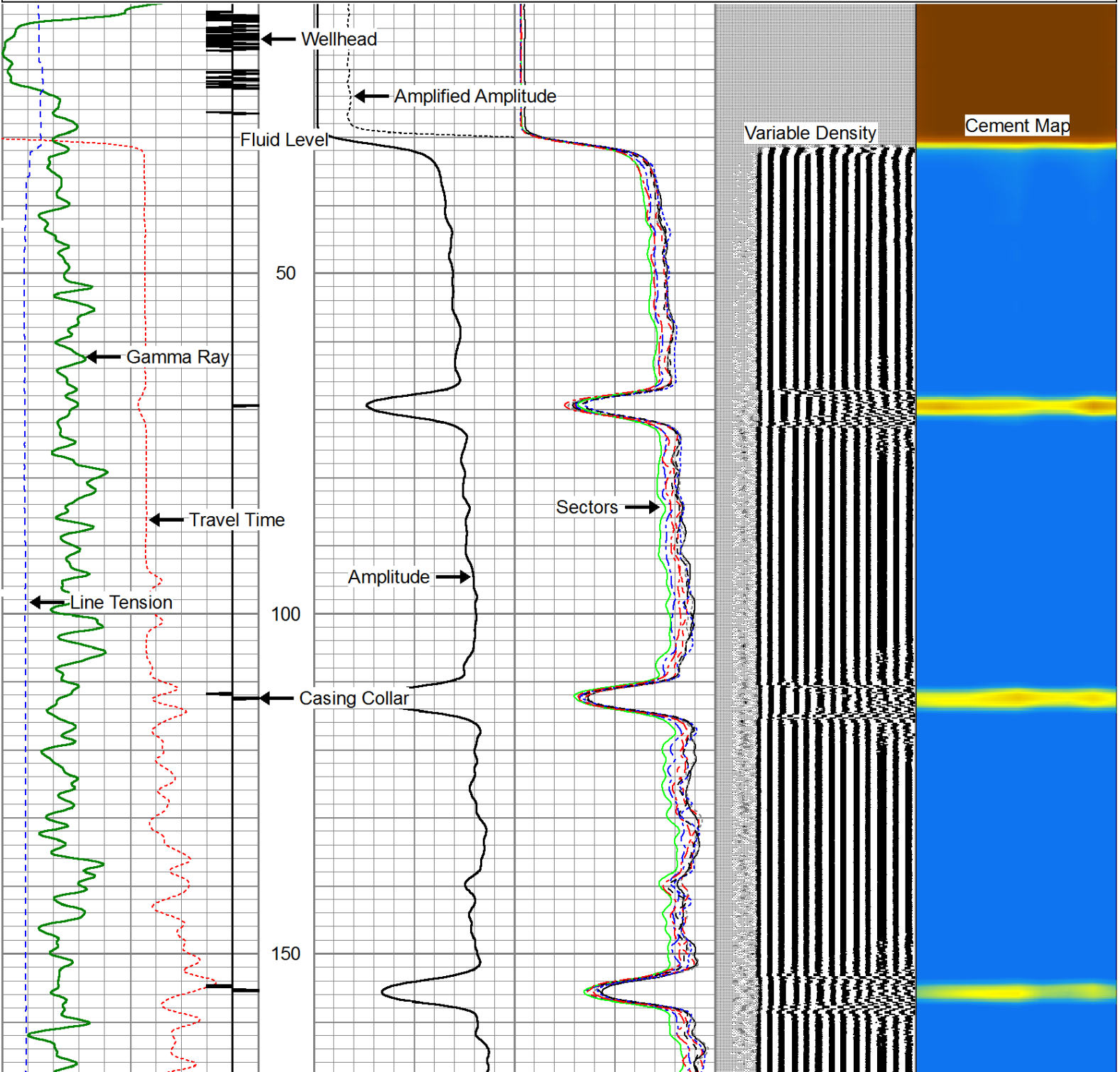
Thank you for using Allied Wireline.
(303)659-4609

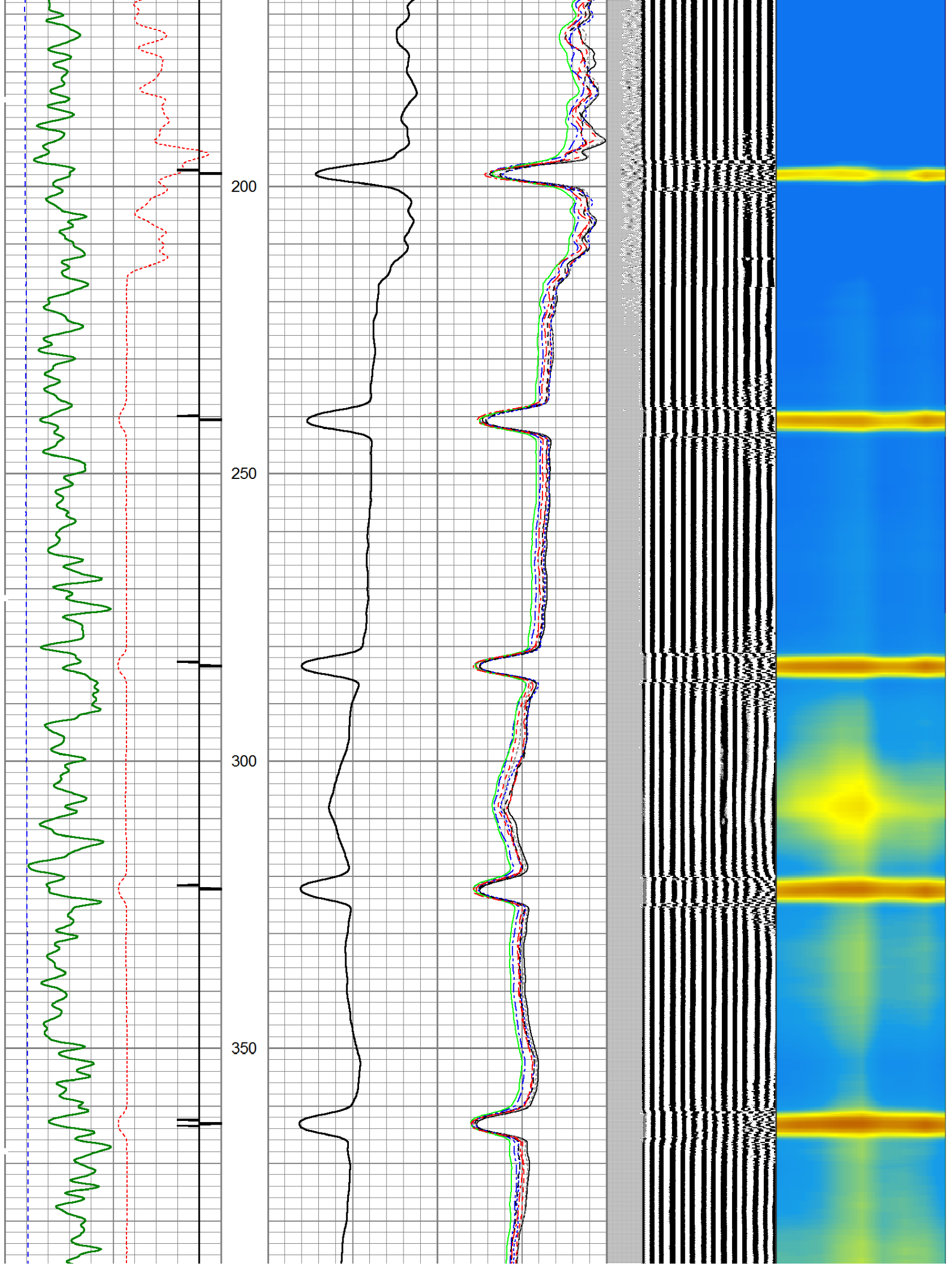


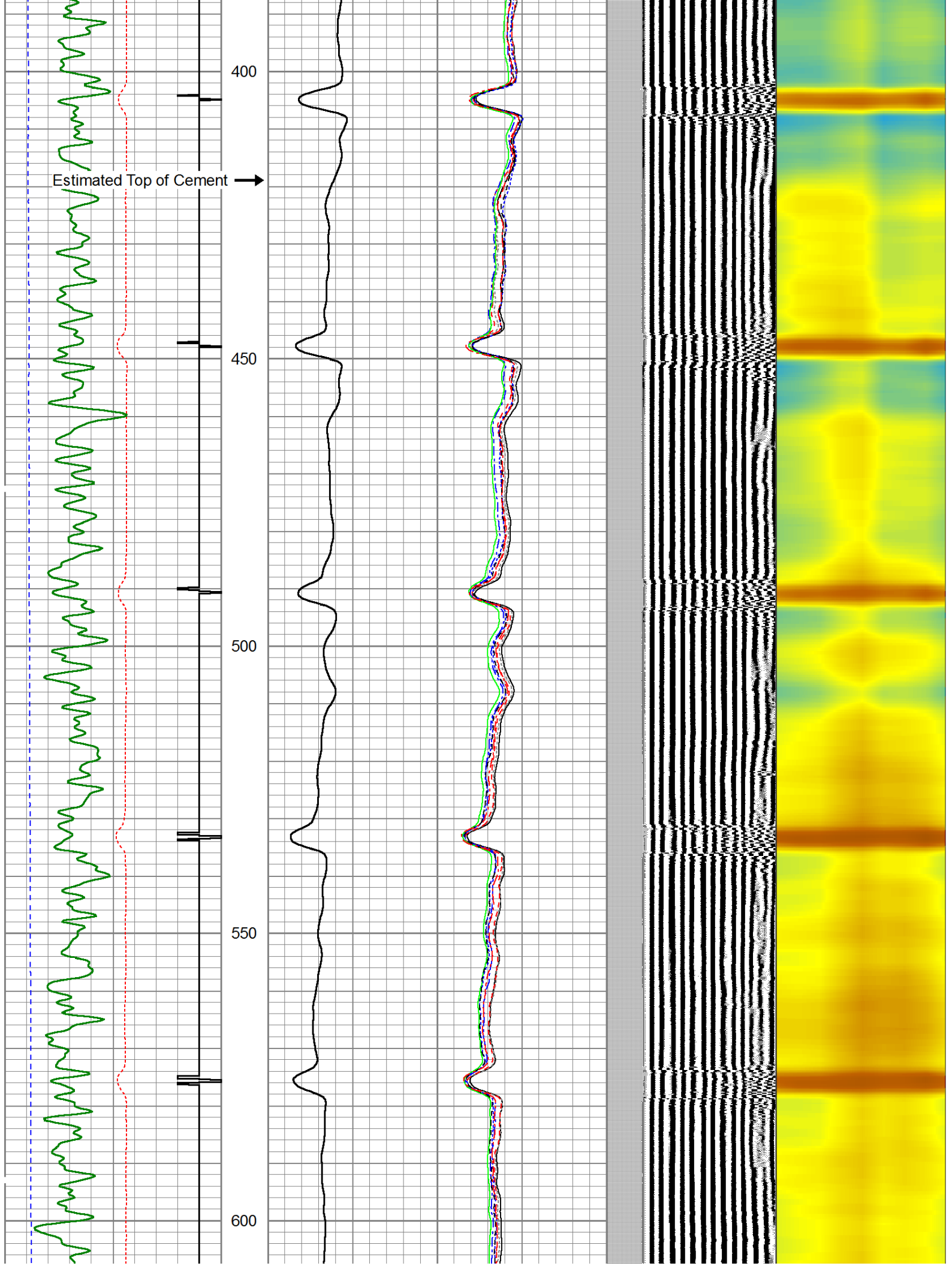
Main Pass (0 PSI)

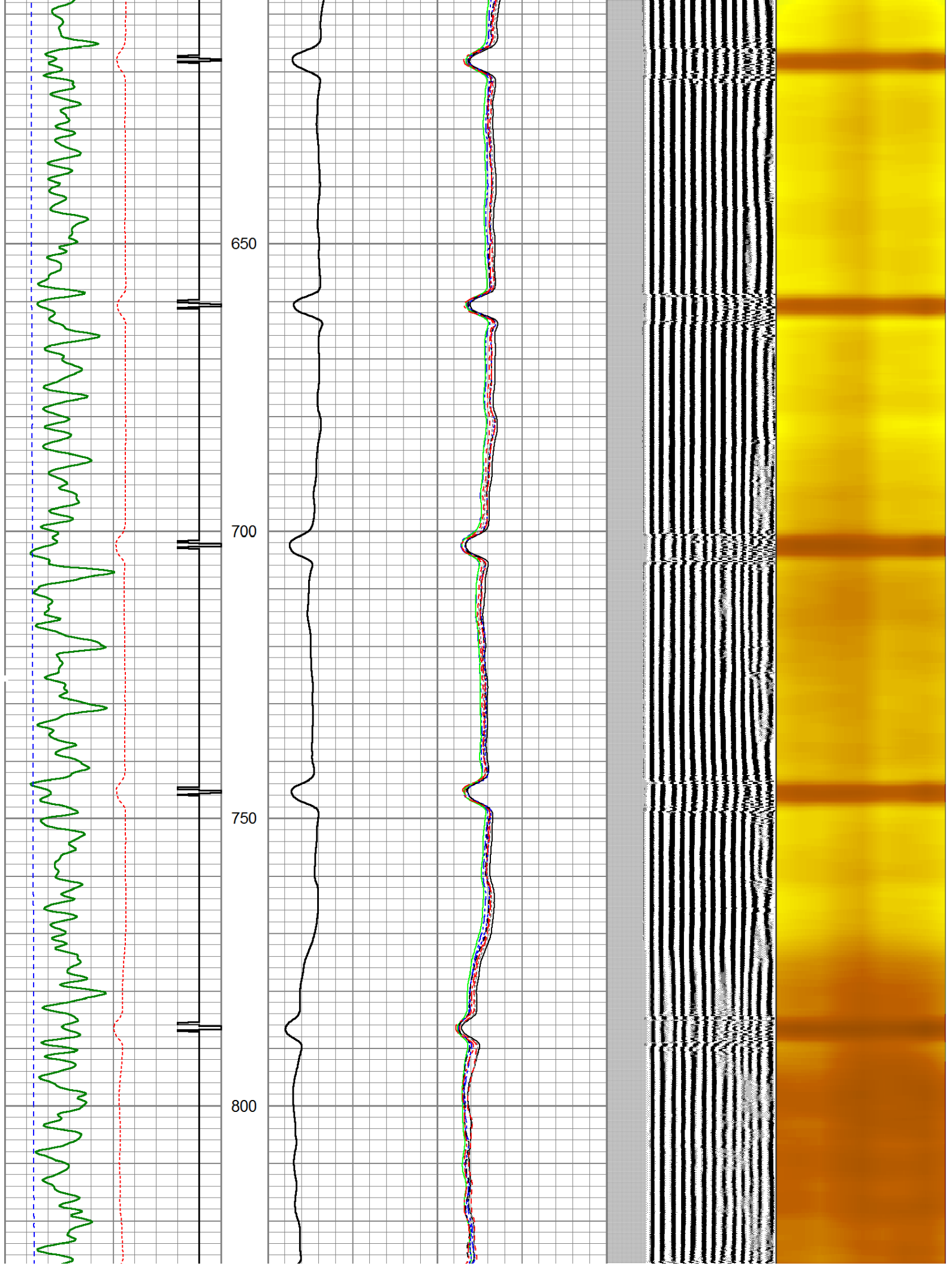
Database File: noble energy wells ranch ae20-64hn_rcbl.db
Dataset Pathname: pass5
Presentation Format: scbl03
Dataset Creation: Wed Nov 27 11:36:08 2013 by Log 0
Charted by: Depth in Feet scaled 1:240

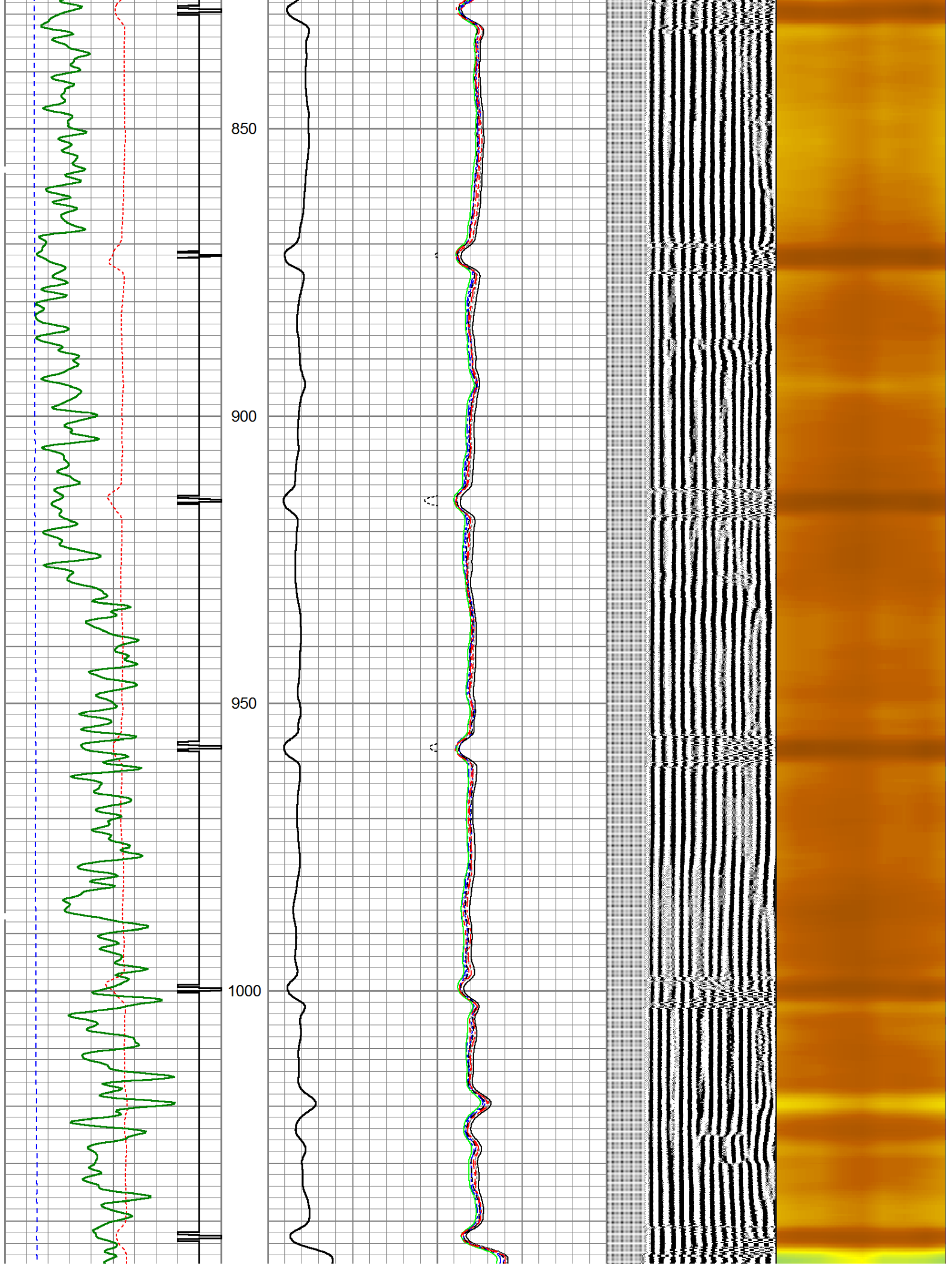
400	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	AMPS1	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1		Amplified Amplitude		-5	AMPS2	150	200	1200	0	100
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	AMPS3	150				
0	Line Tension (lb)	2000				-5	AMPS4	150				
						-5	AMPS5	150				
						-5	AMPS6	150				
						-5	AMPS7	150				
						-5	AMPS8	150				

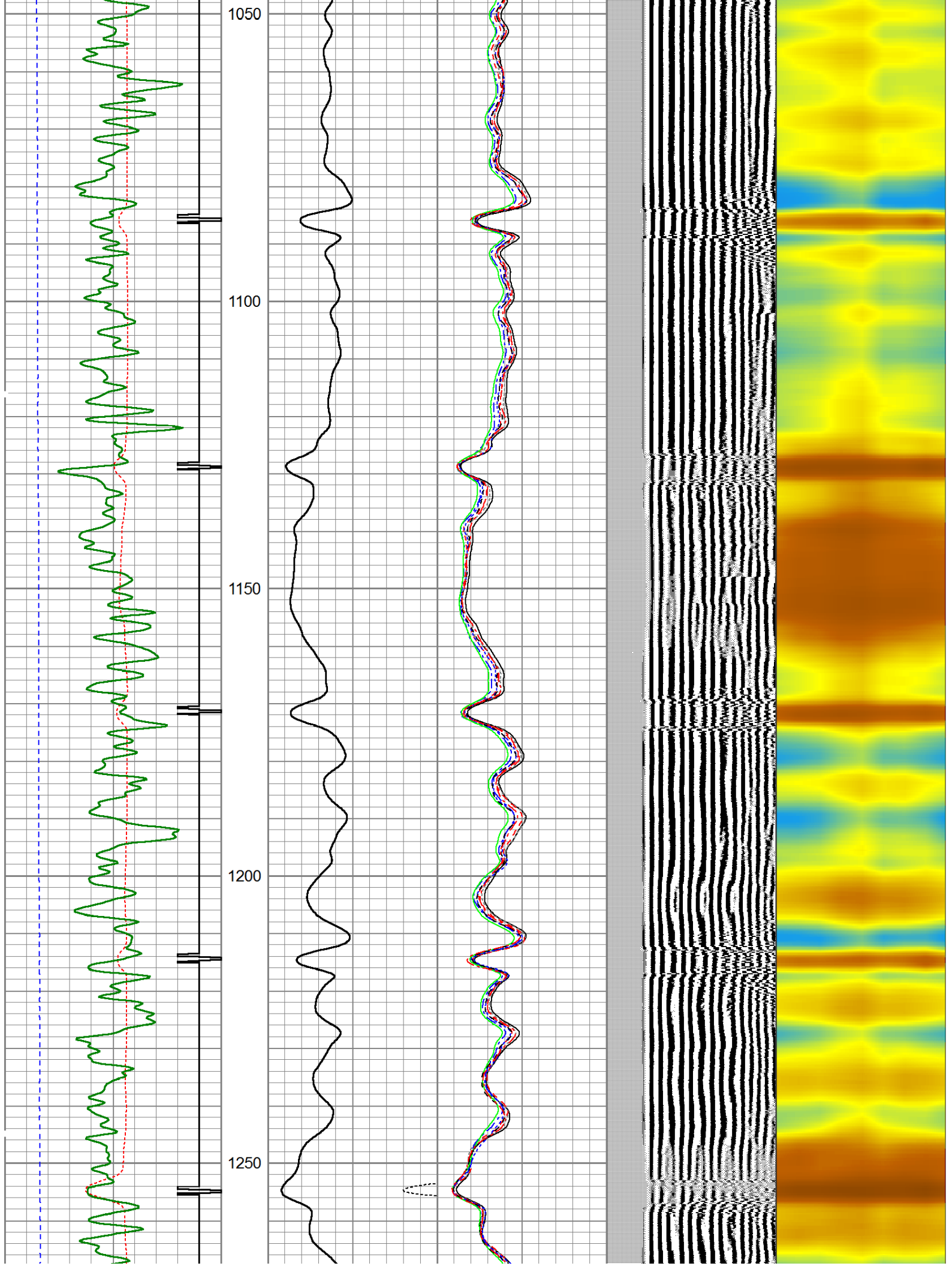


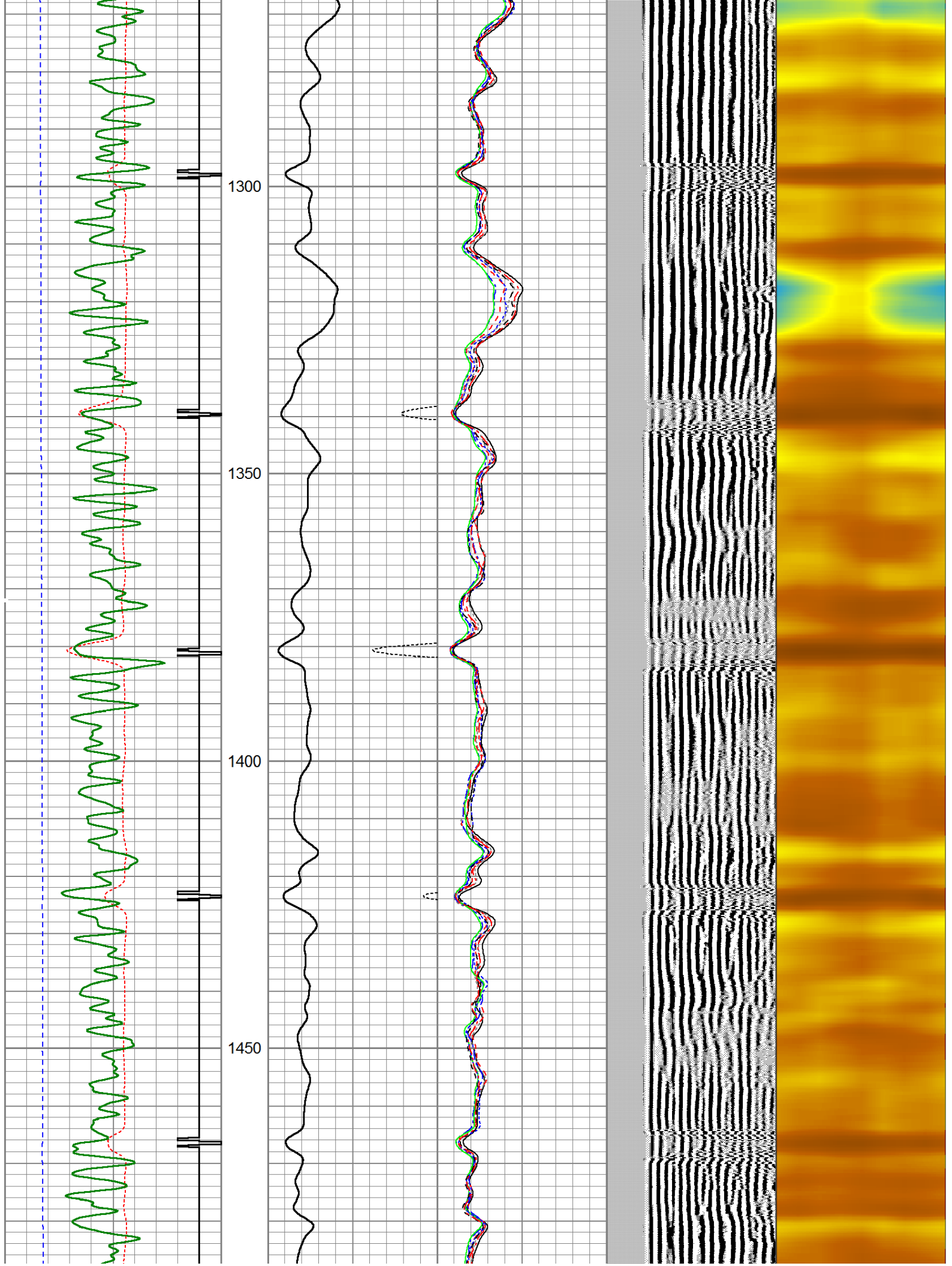


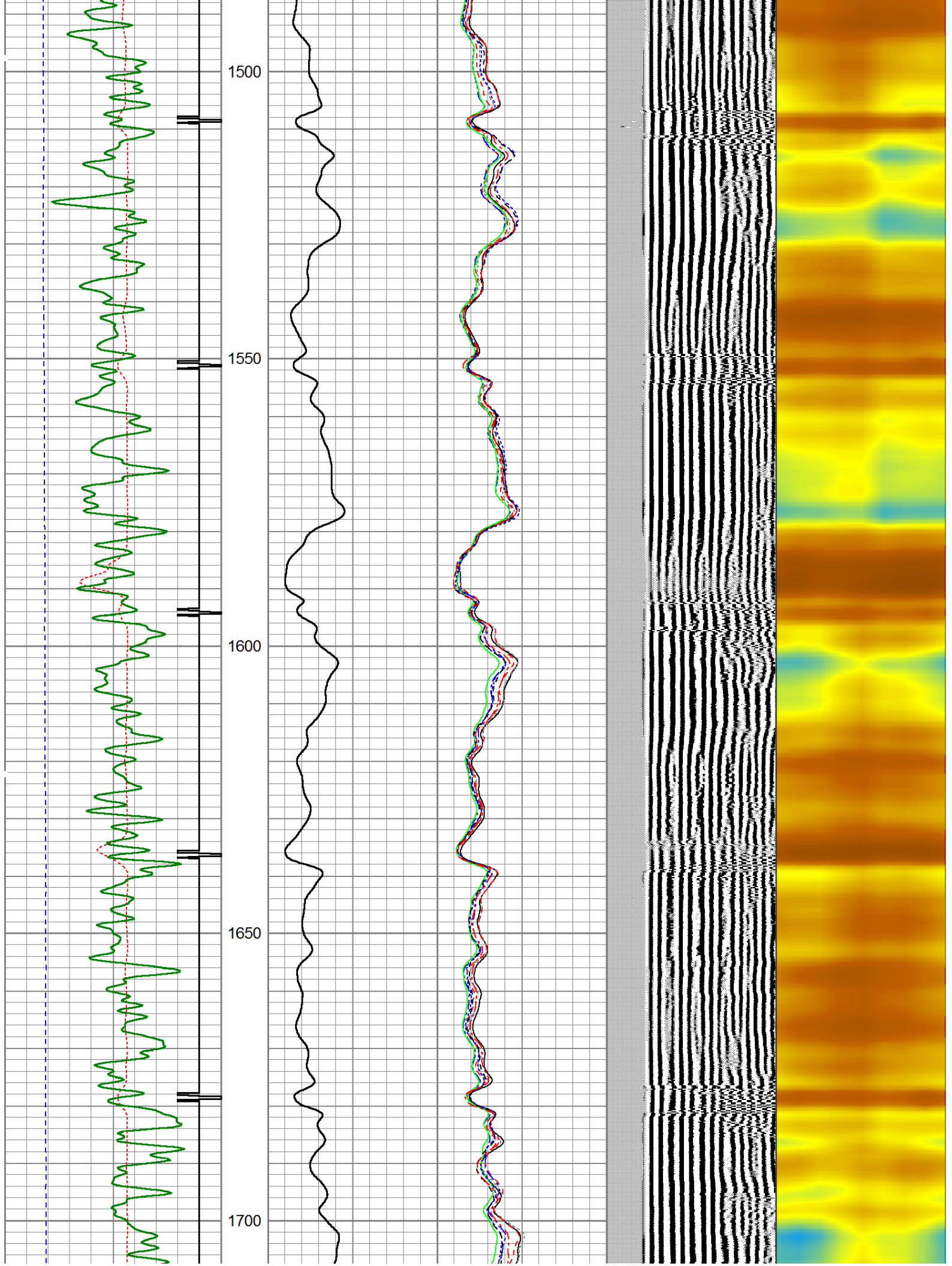


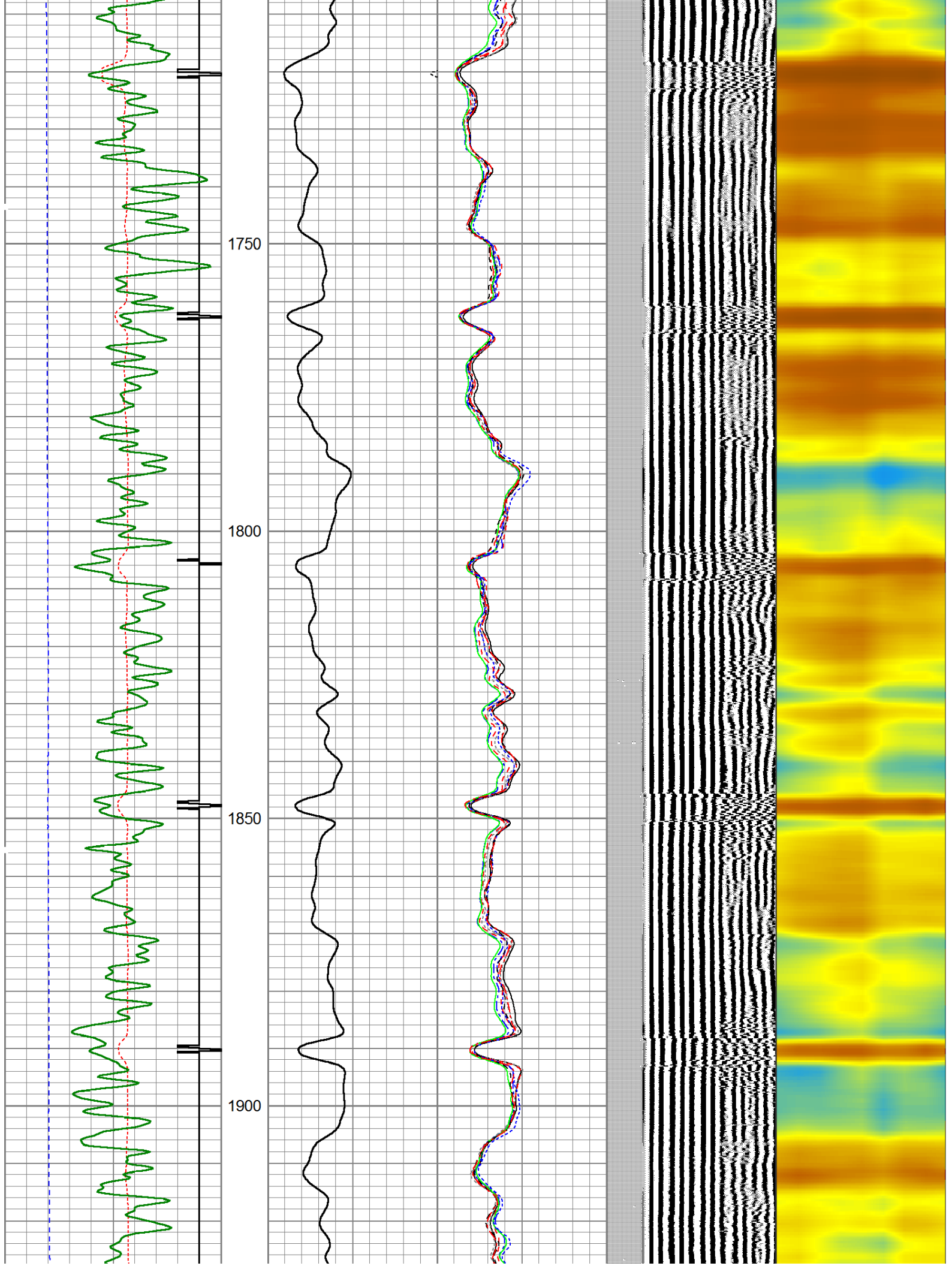


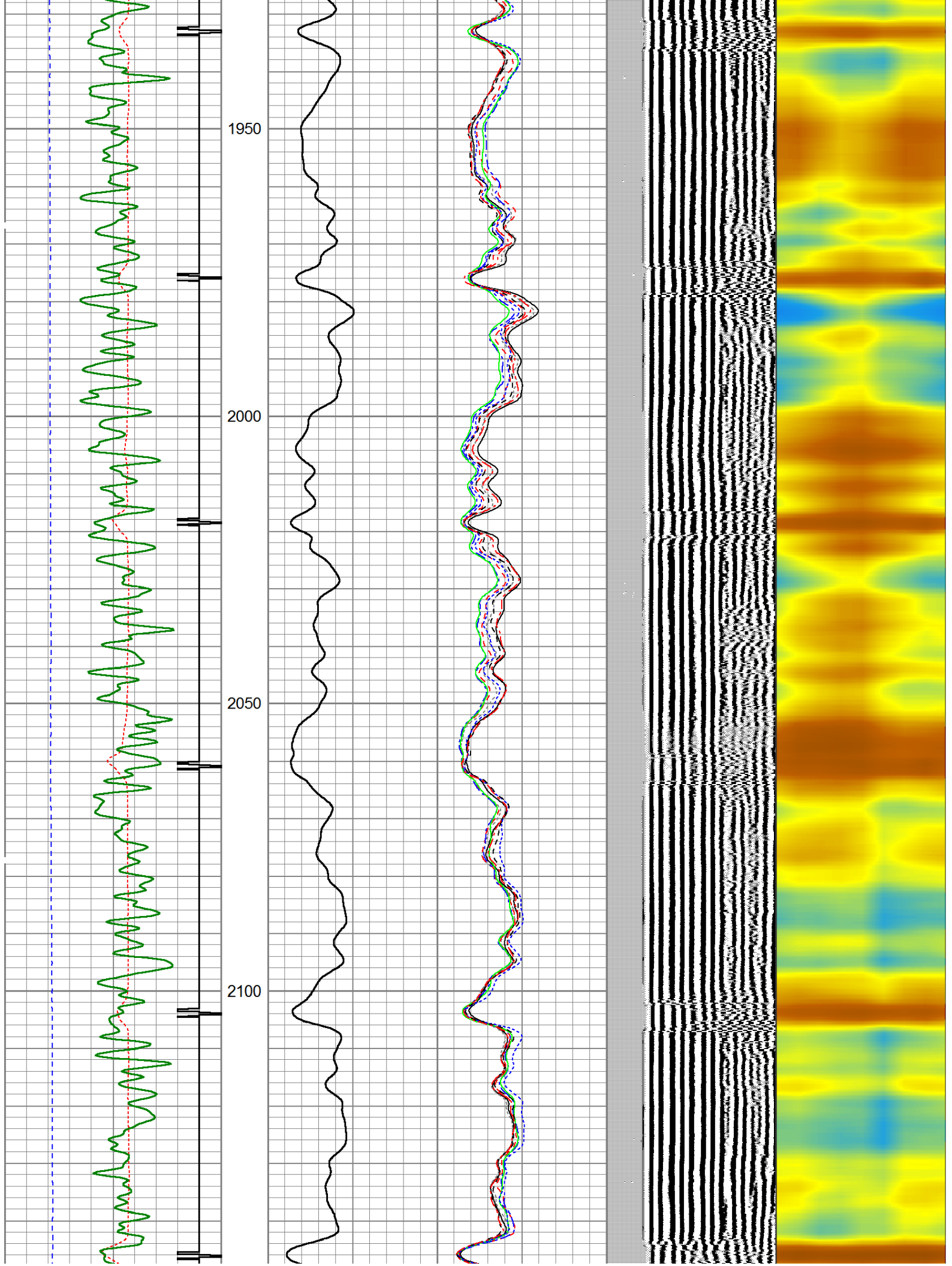


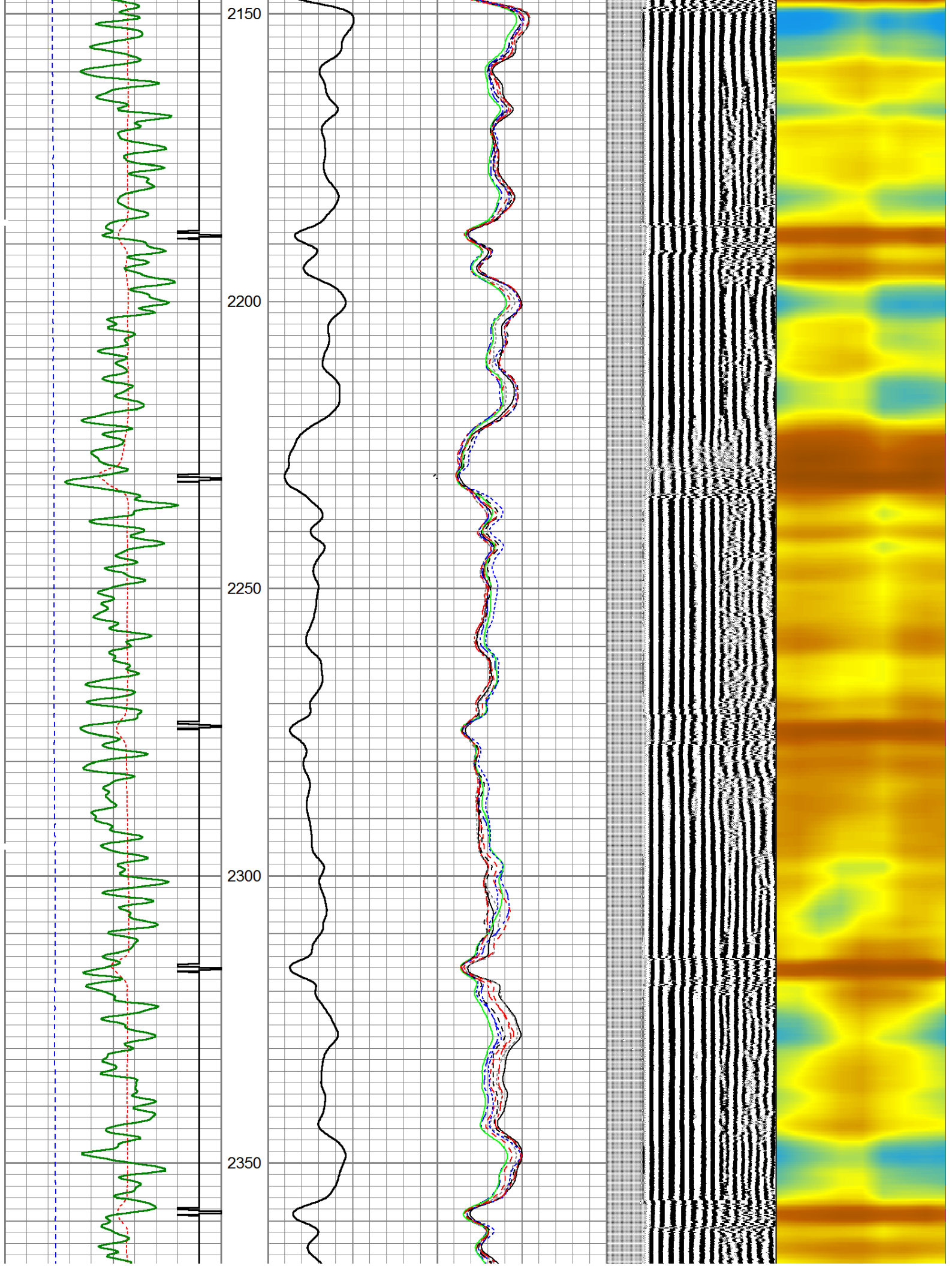


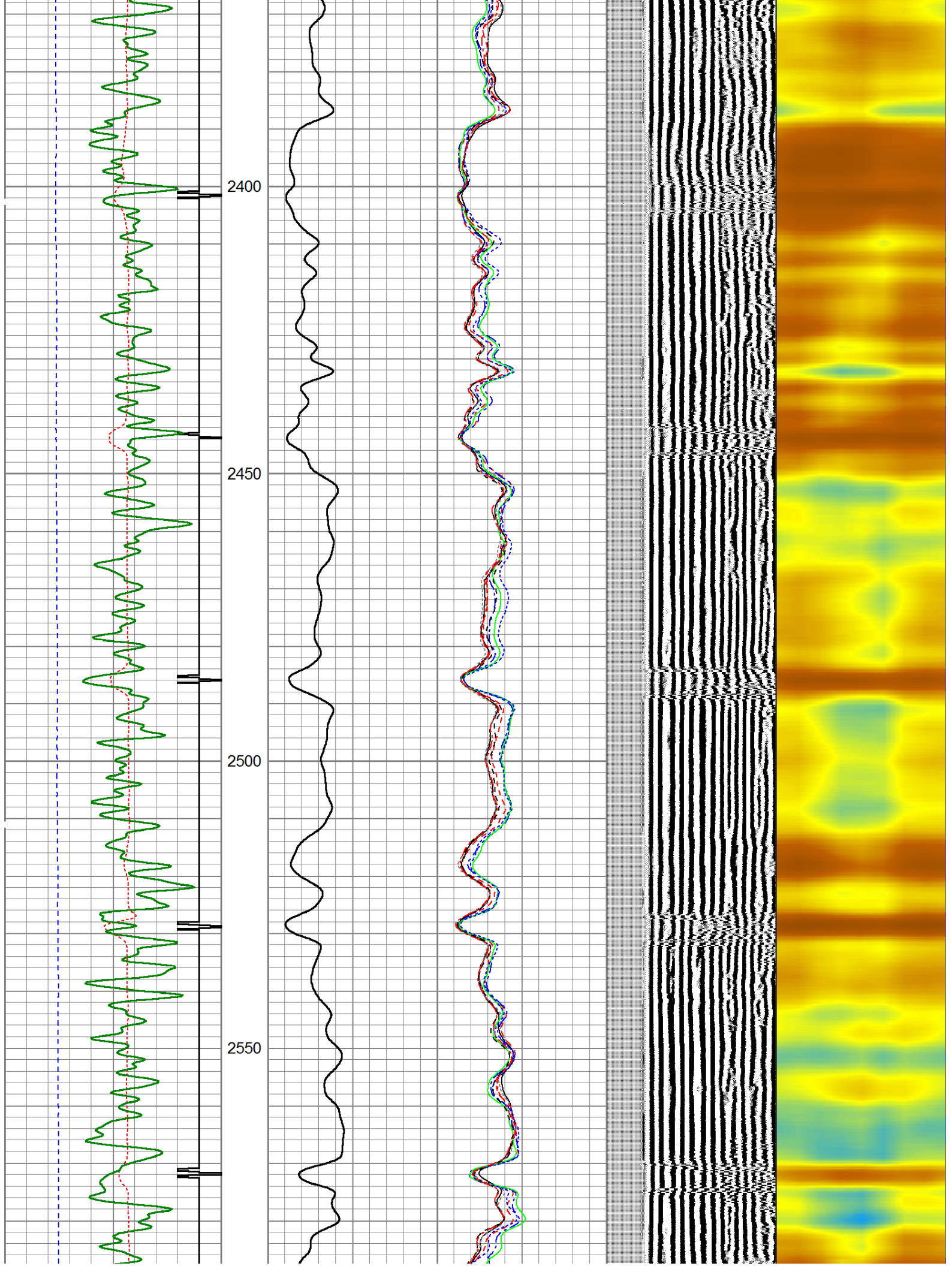


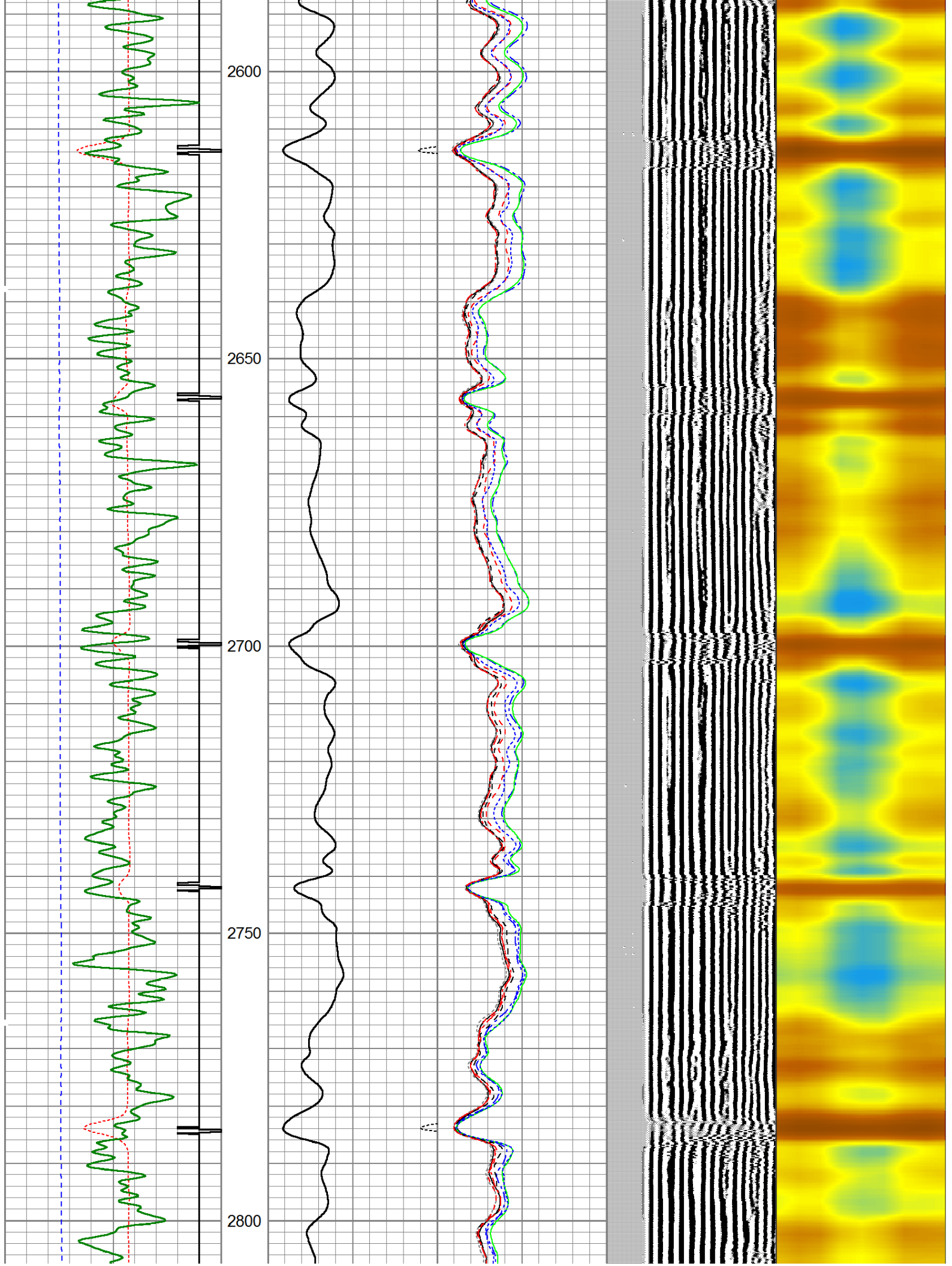


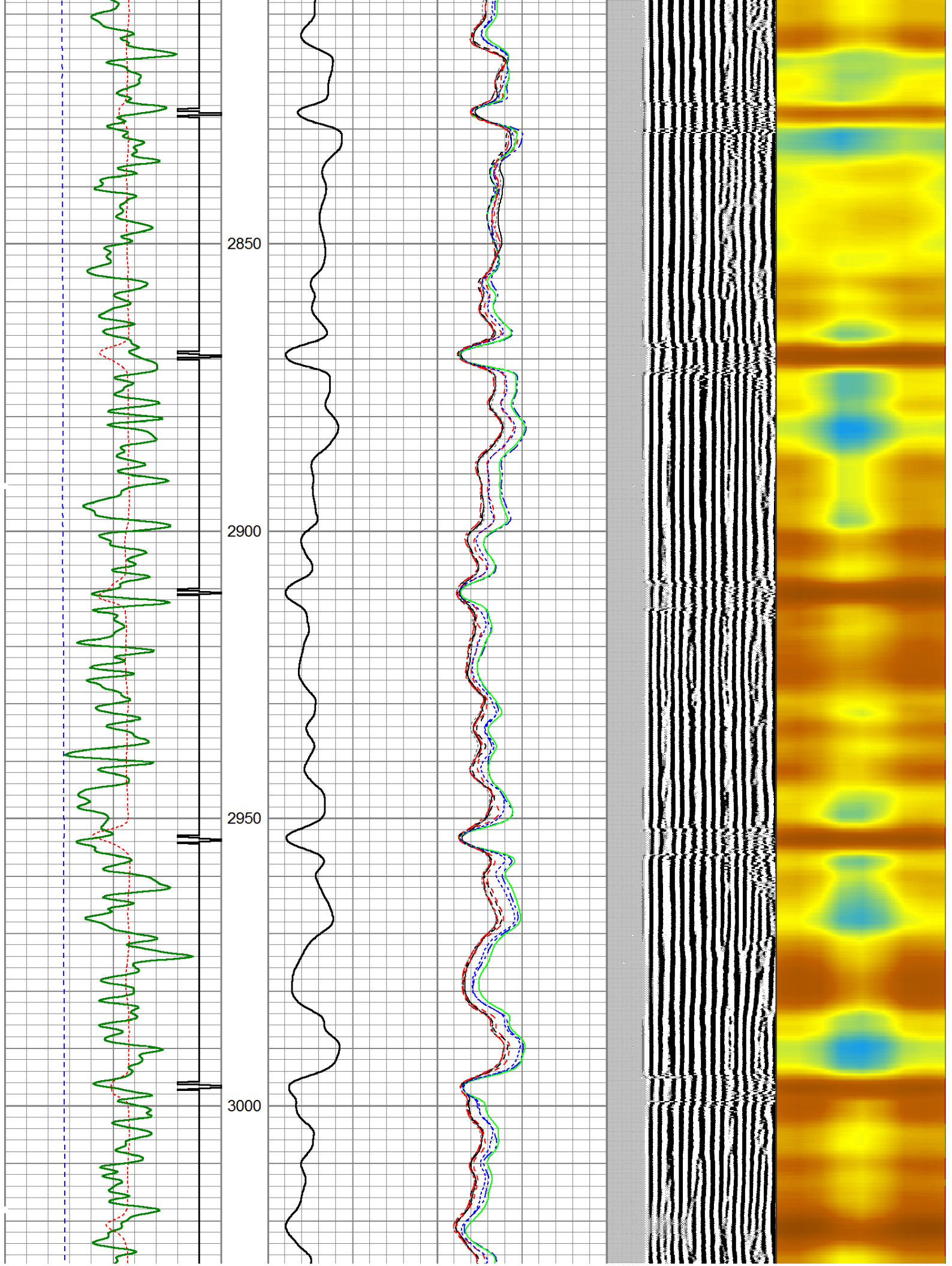


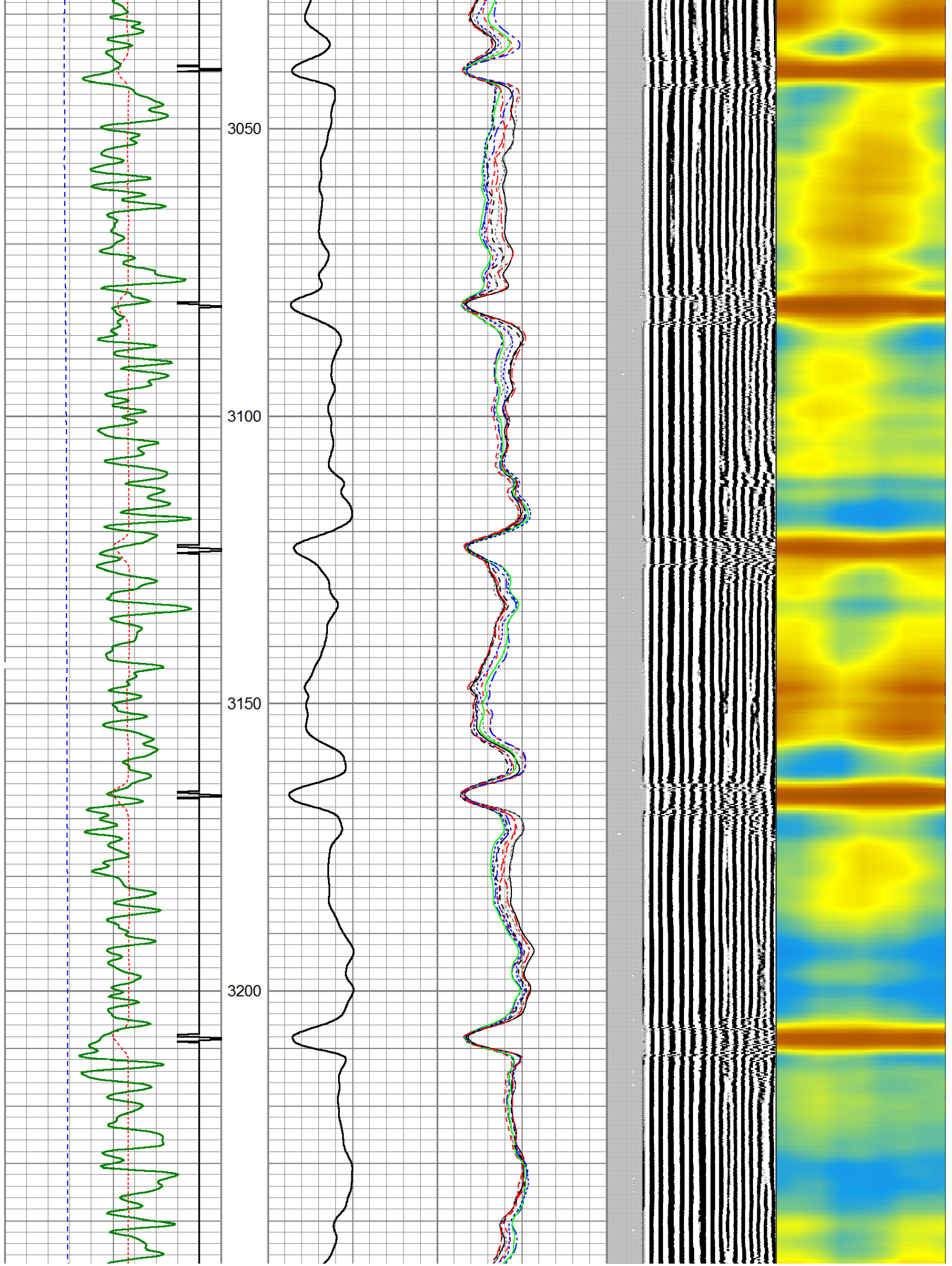


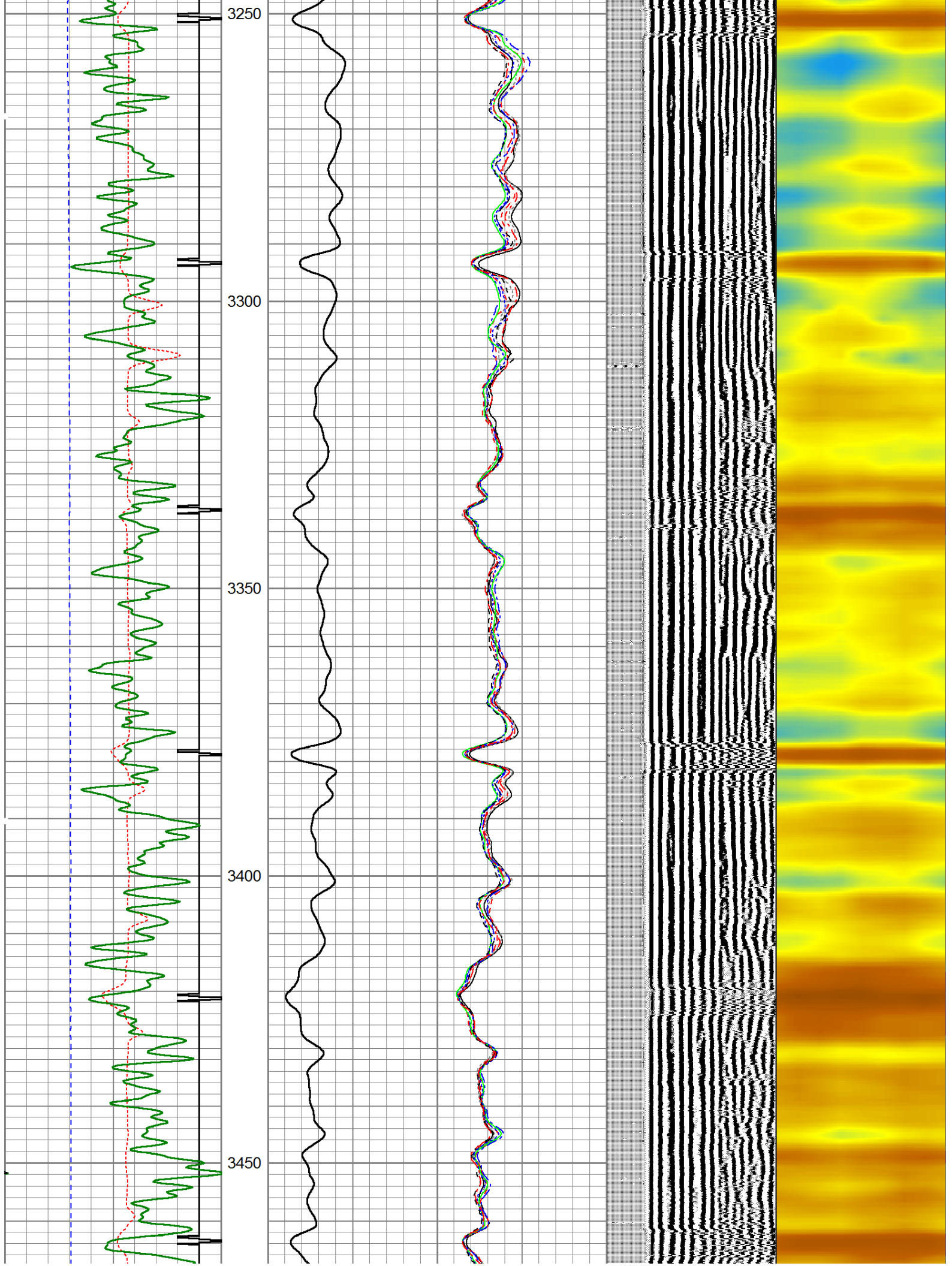


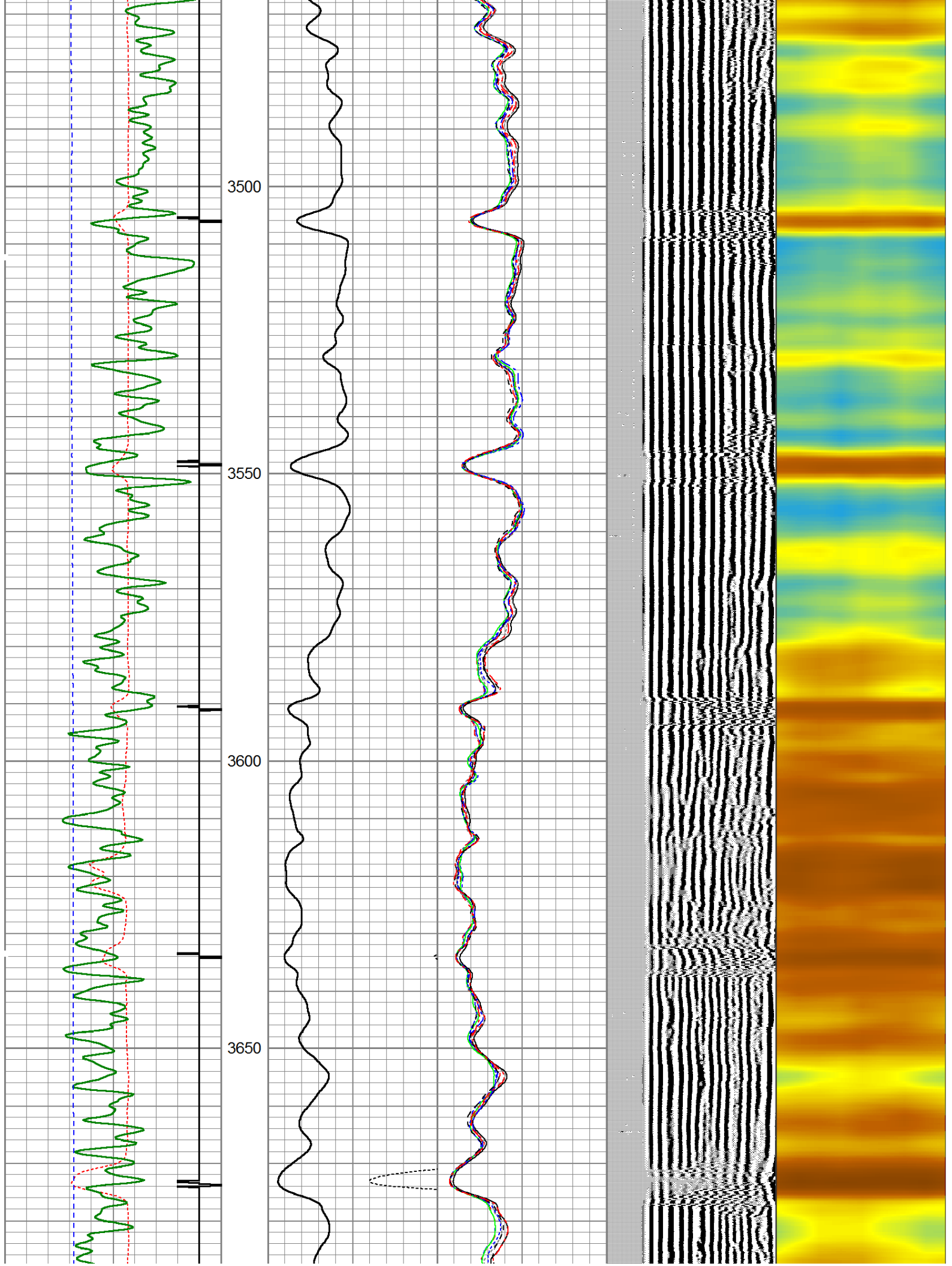


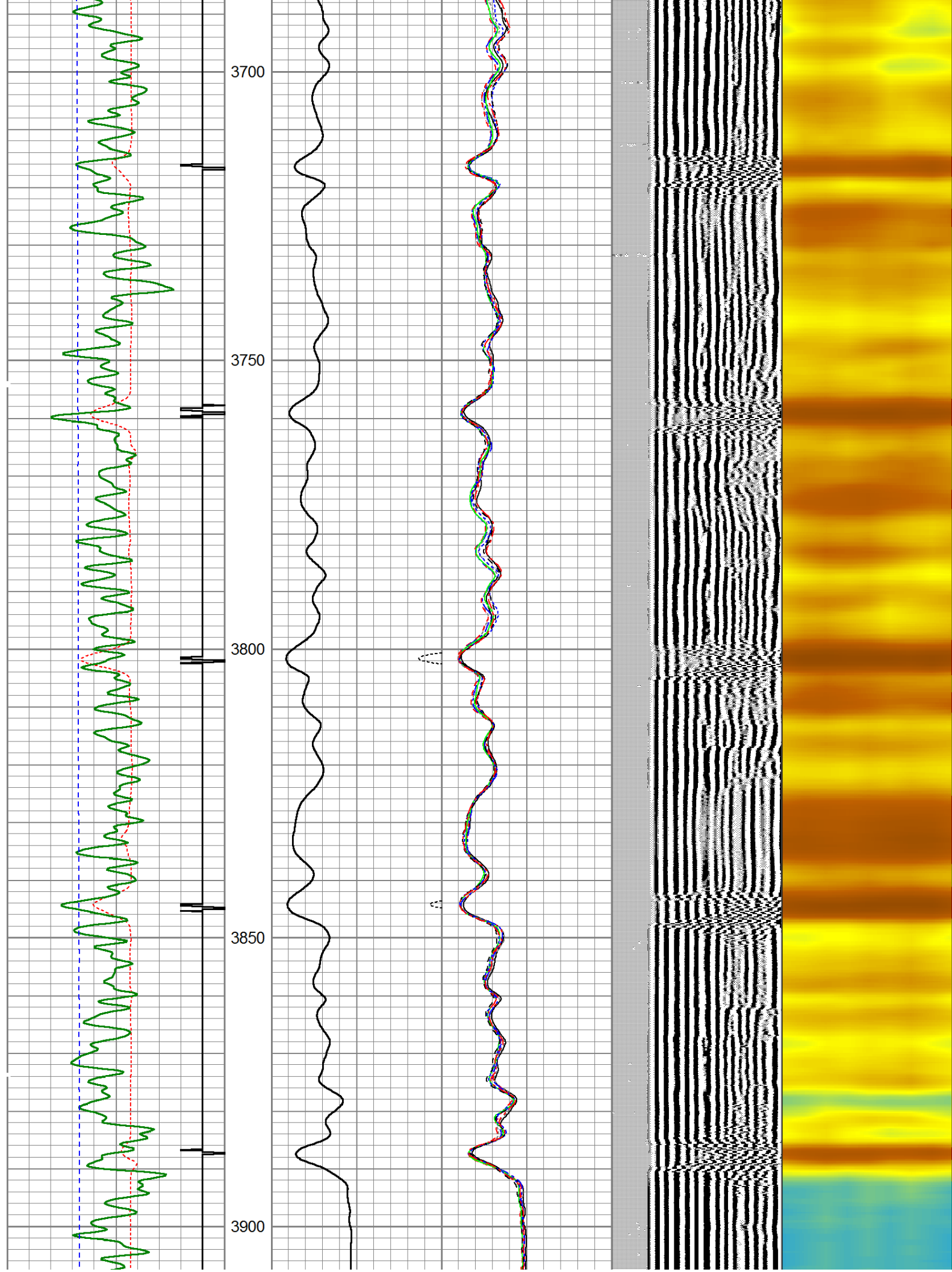


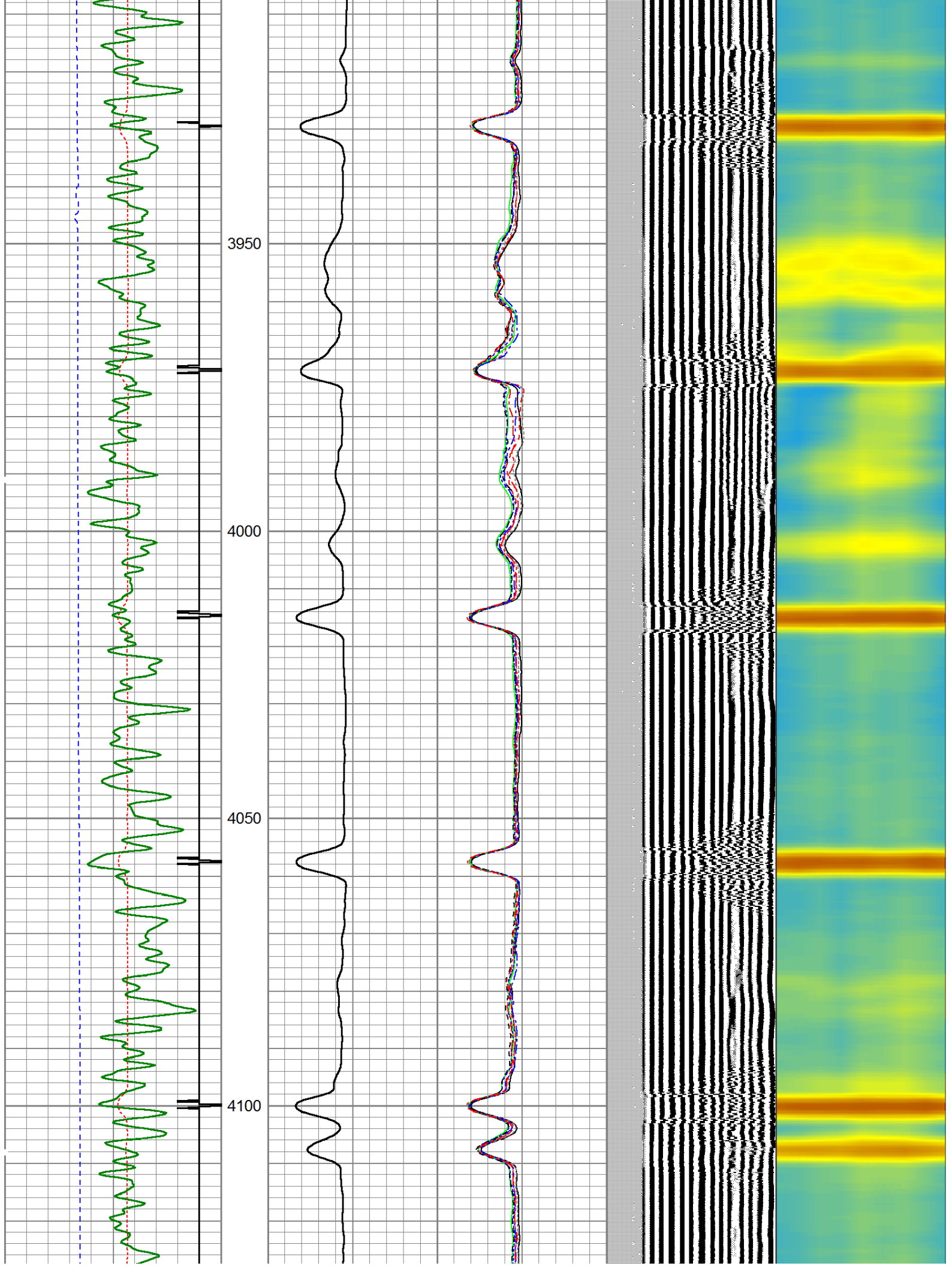


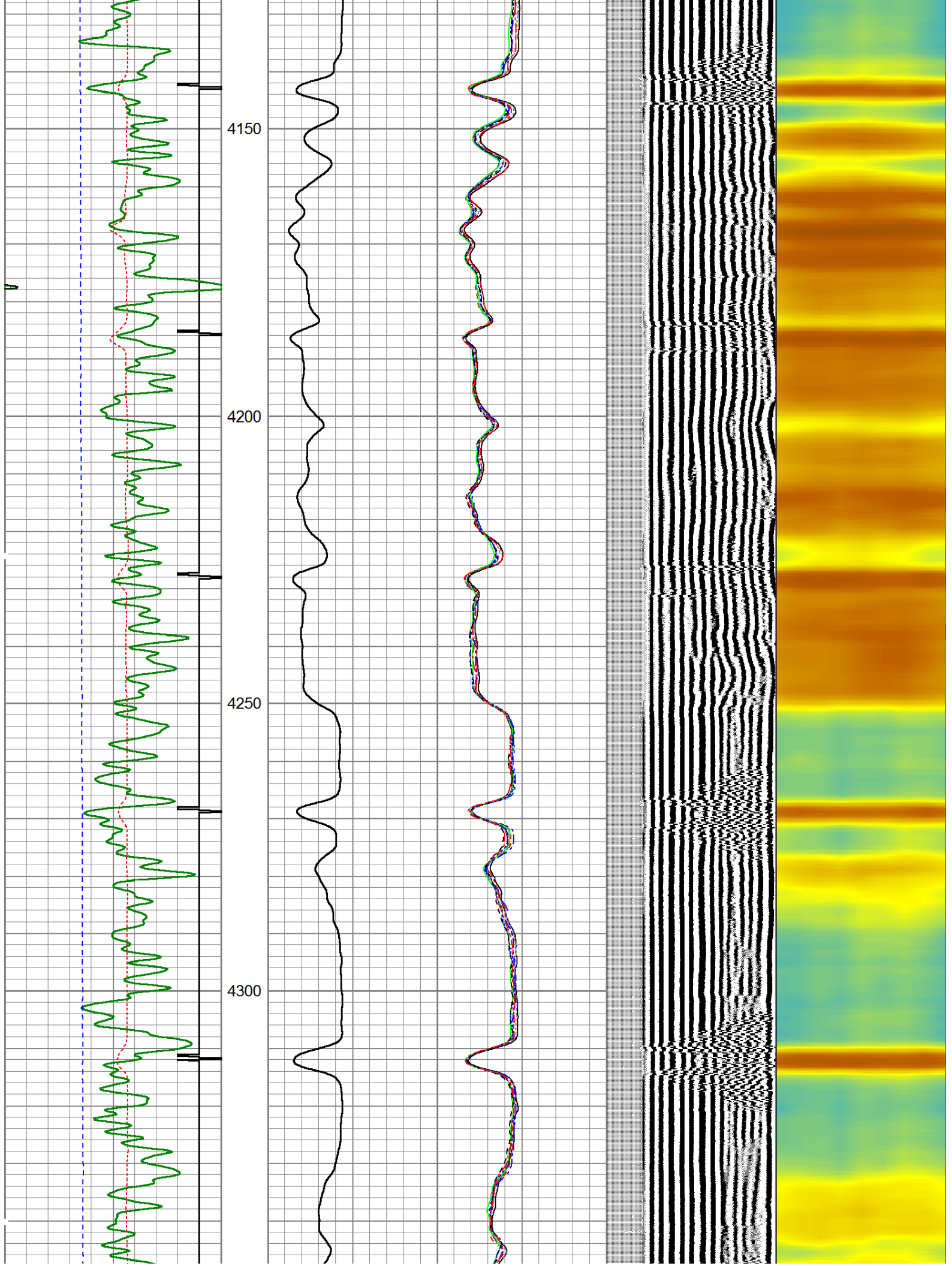


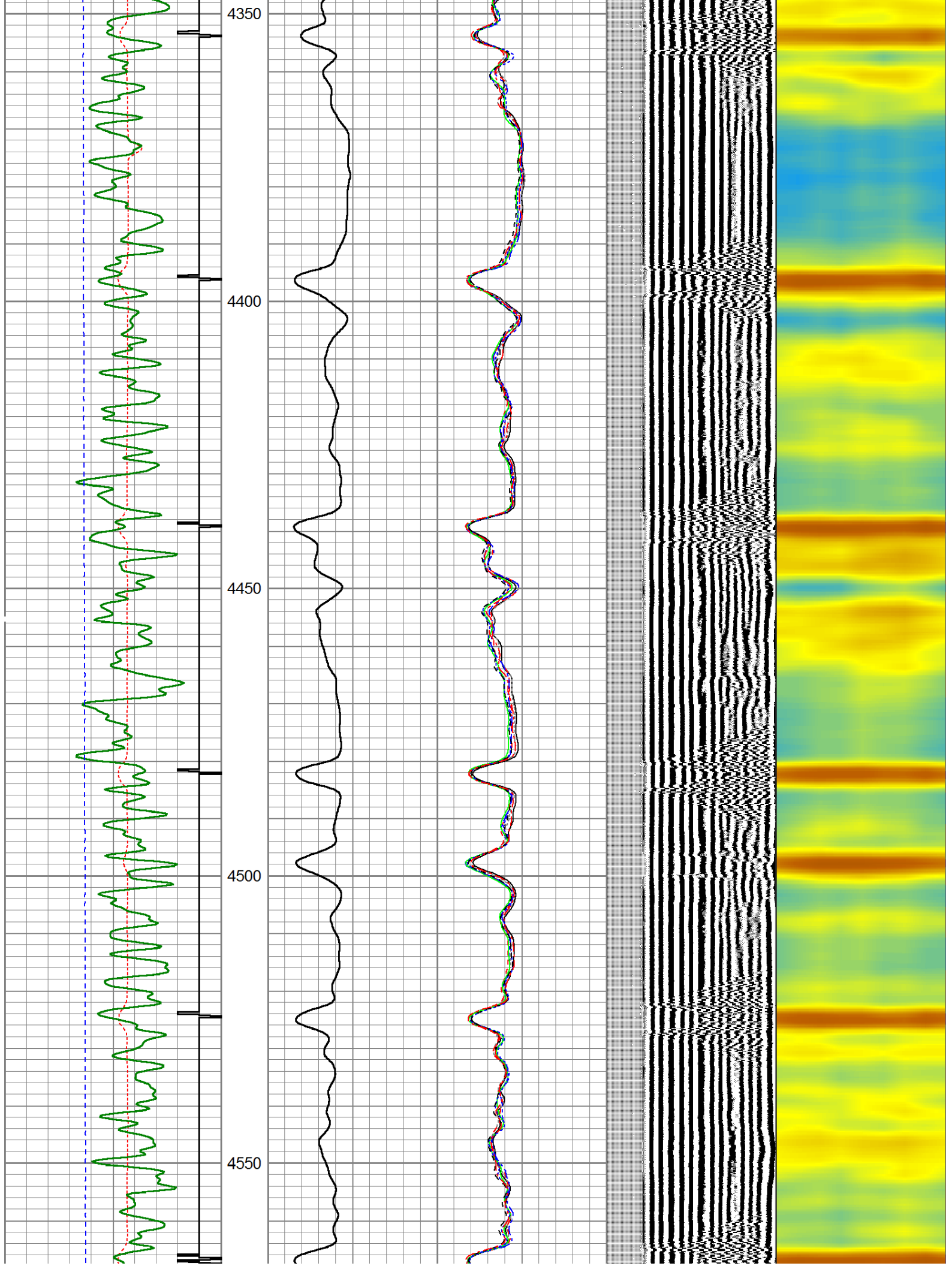


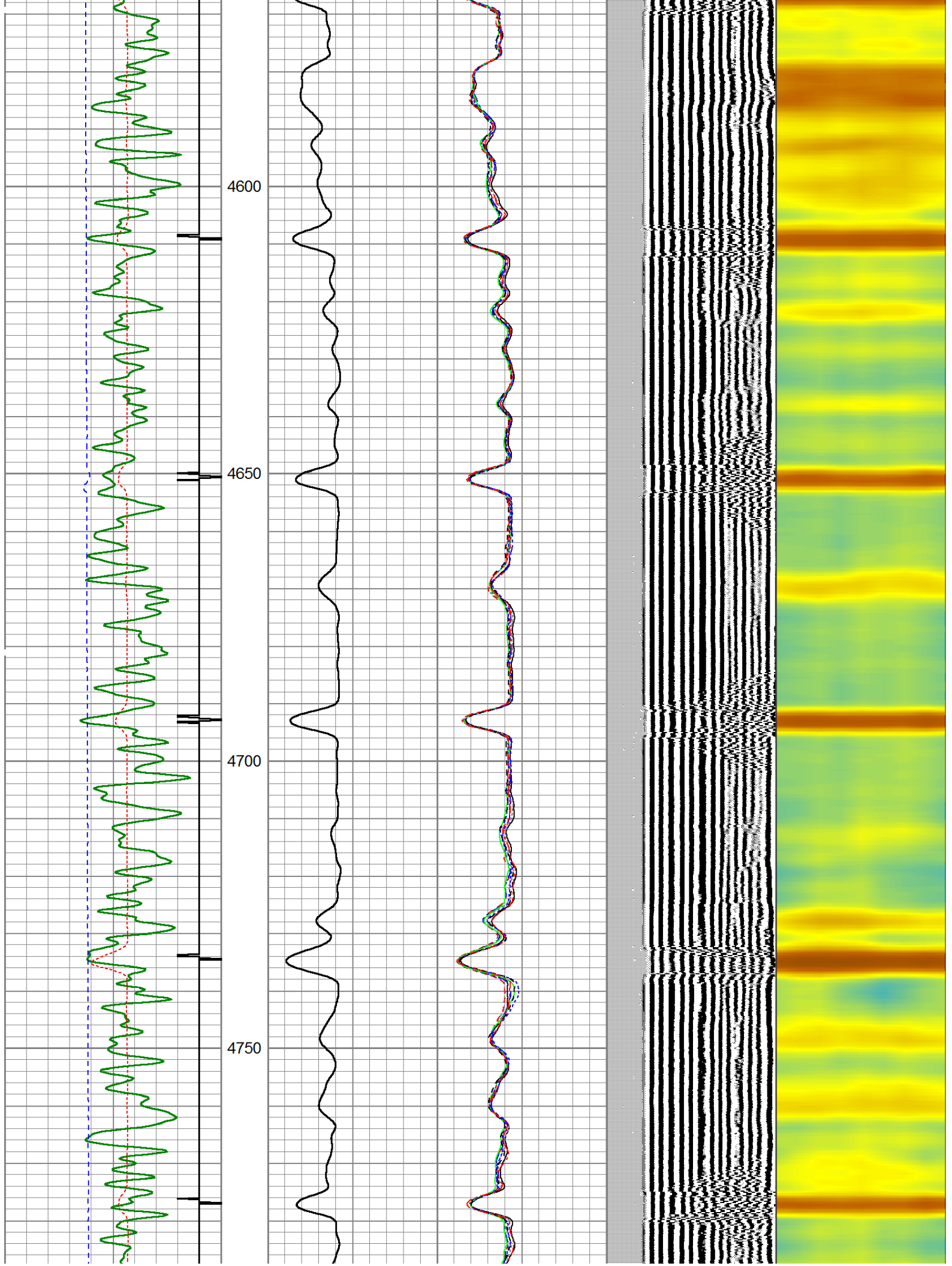


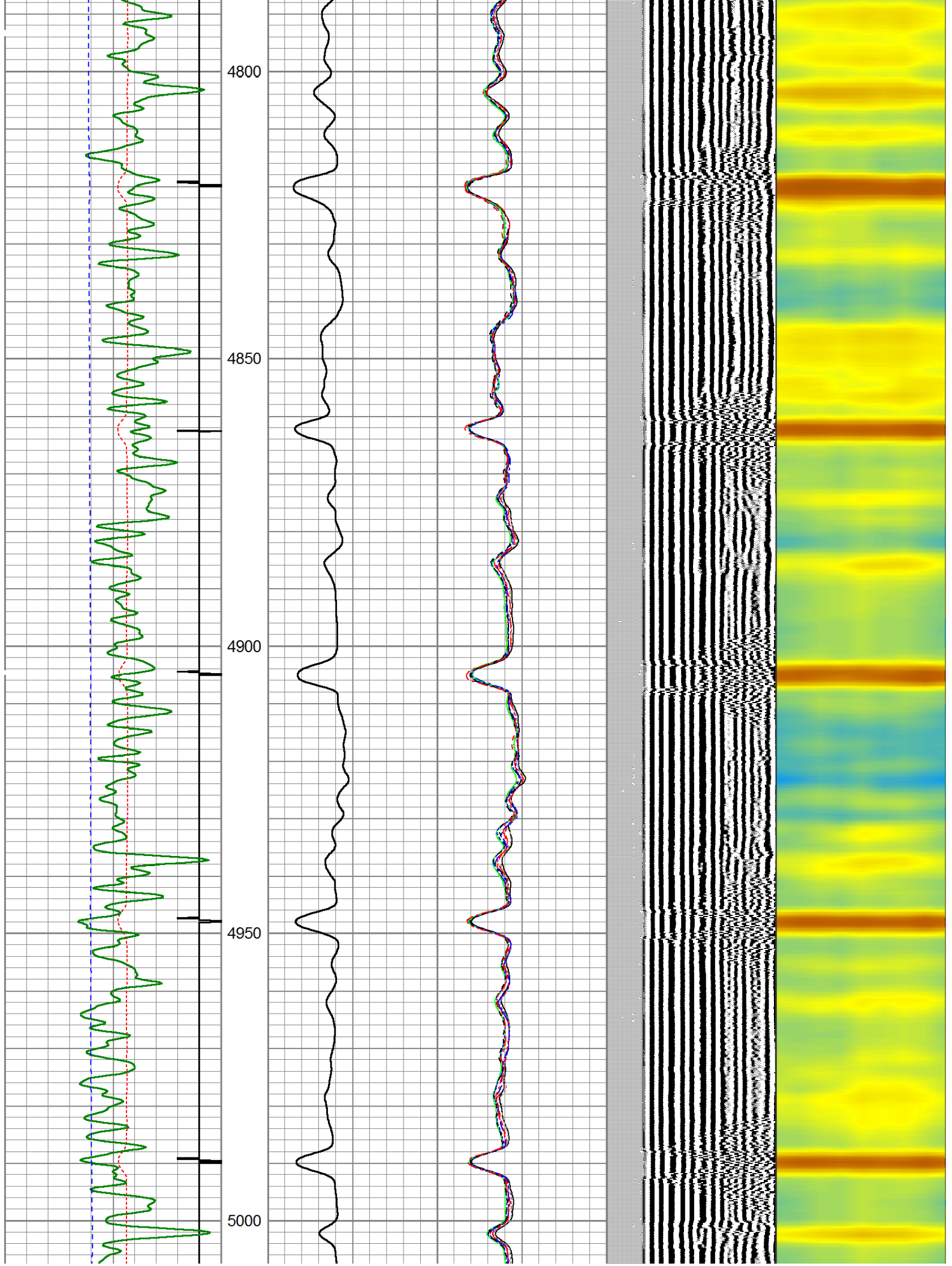


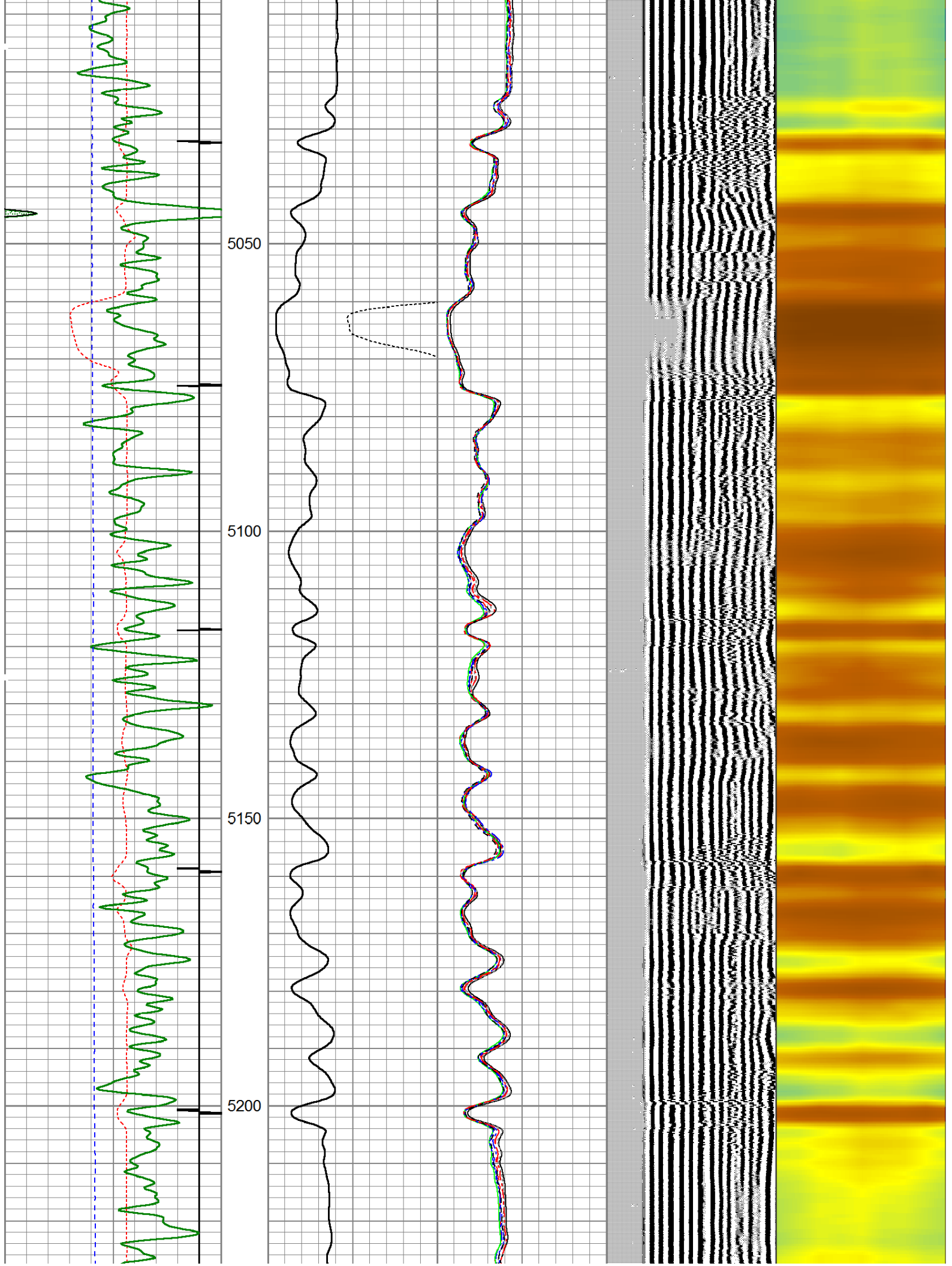


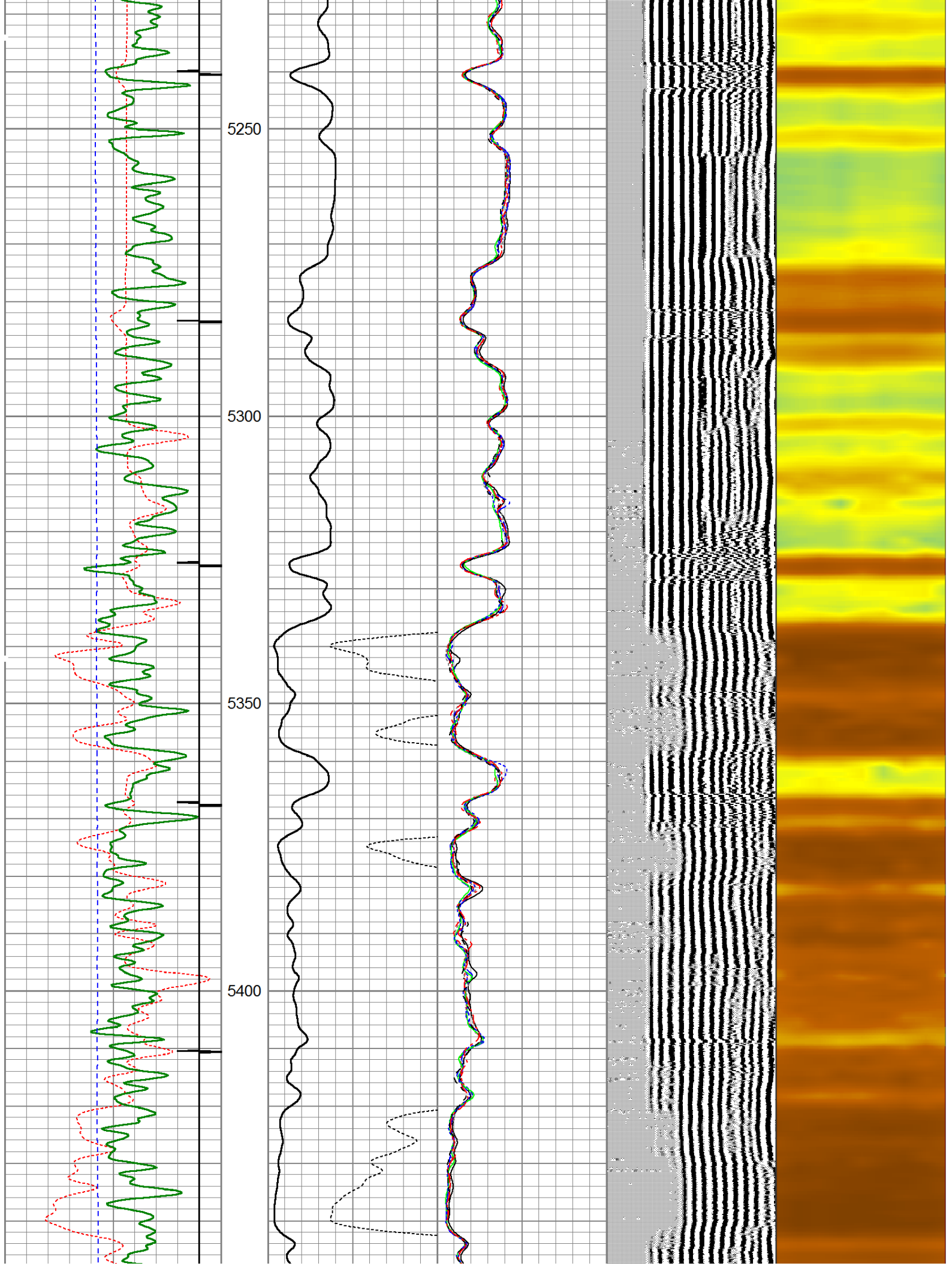


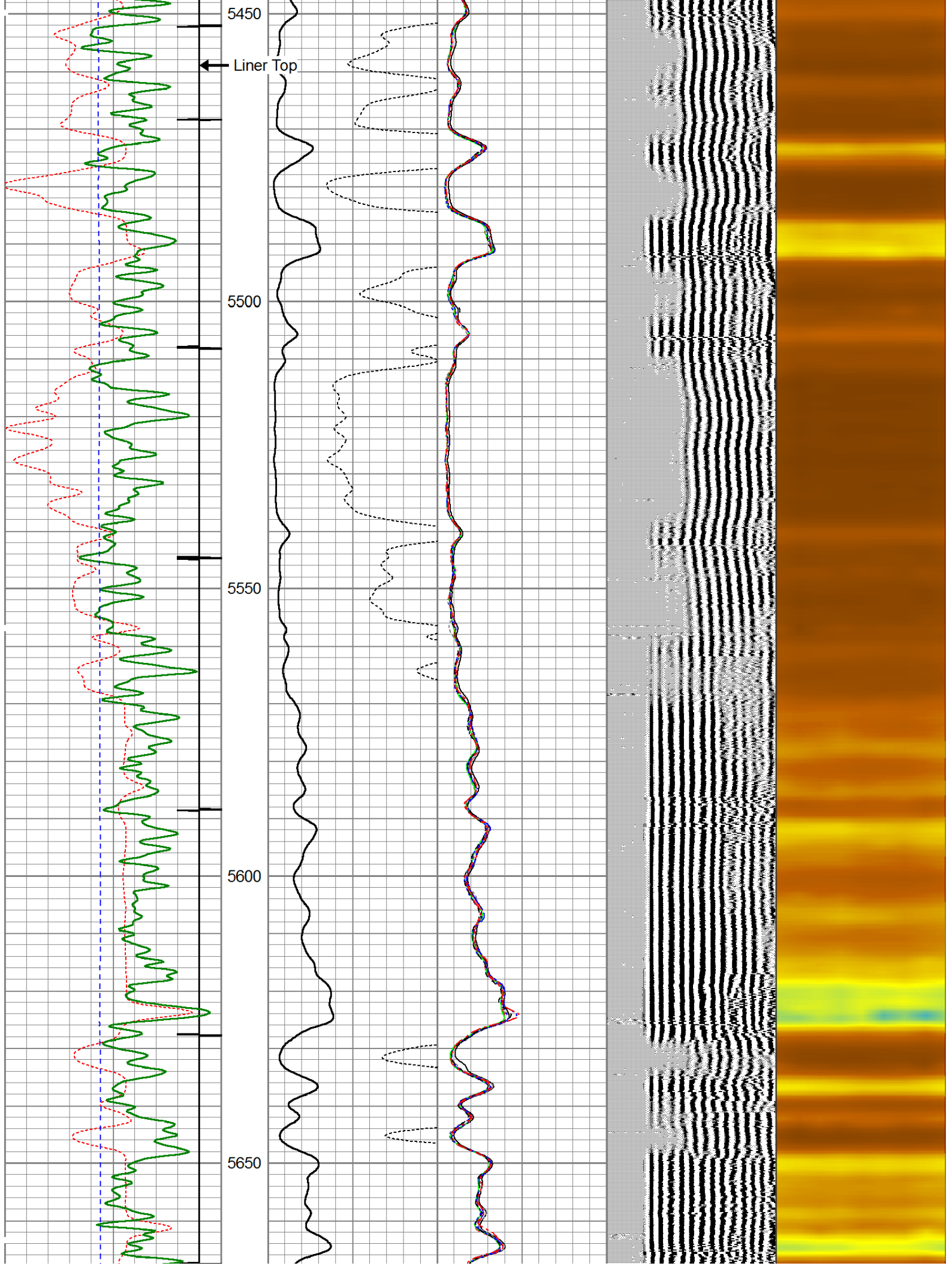


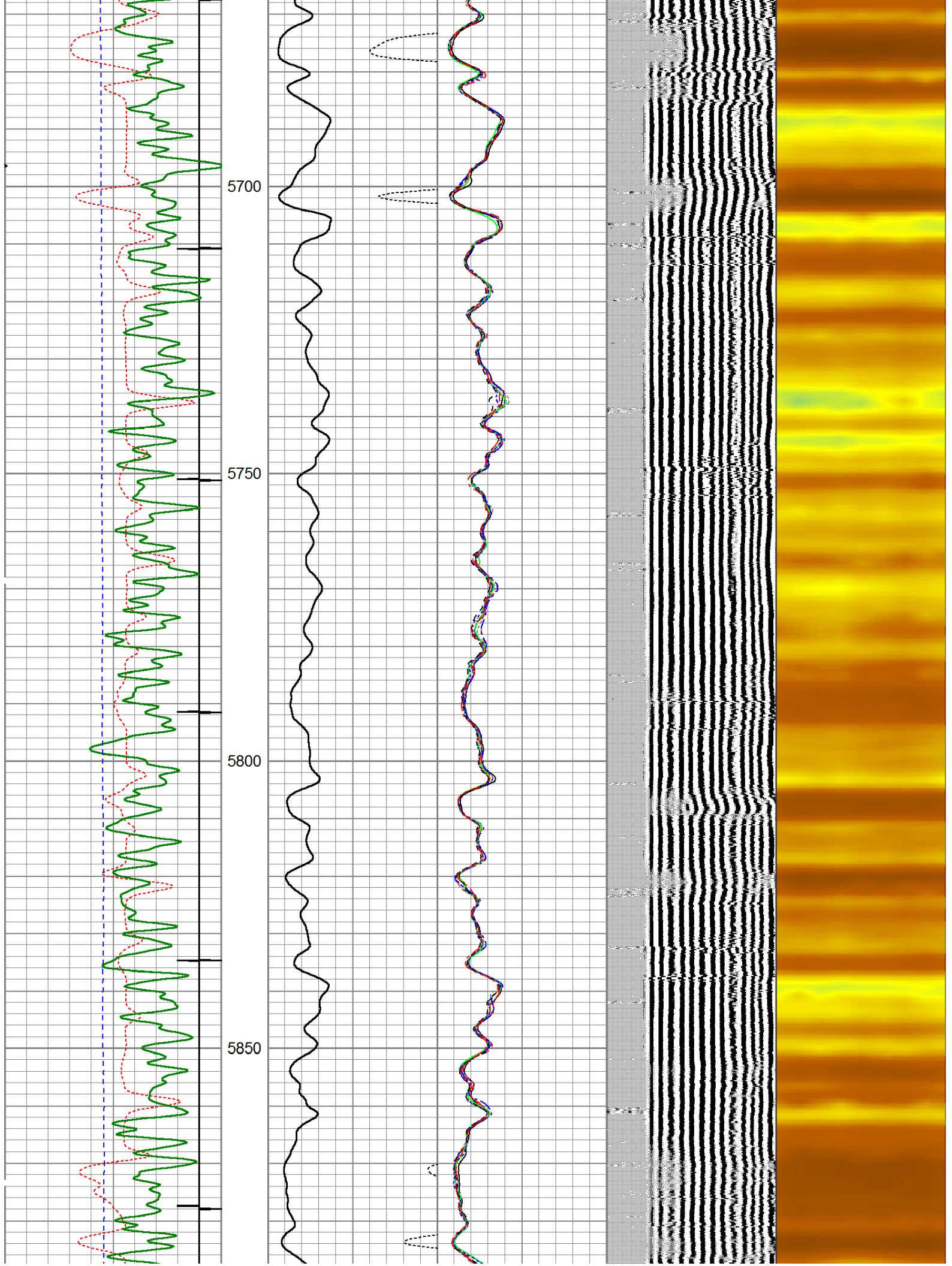


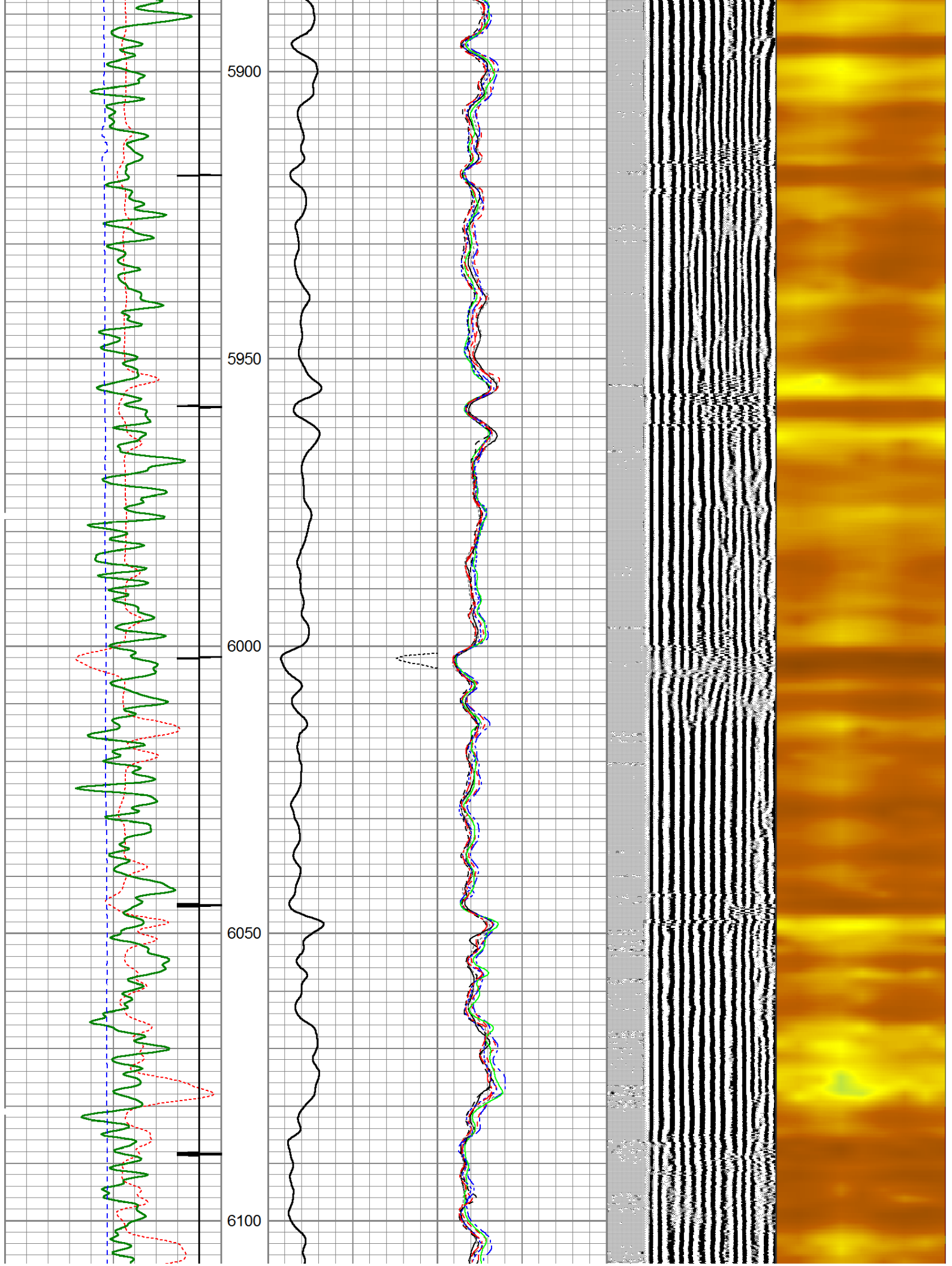


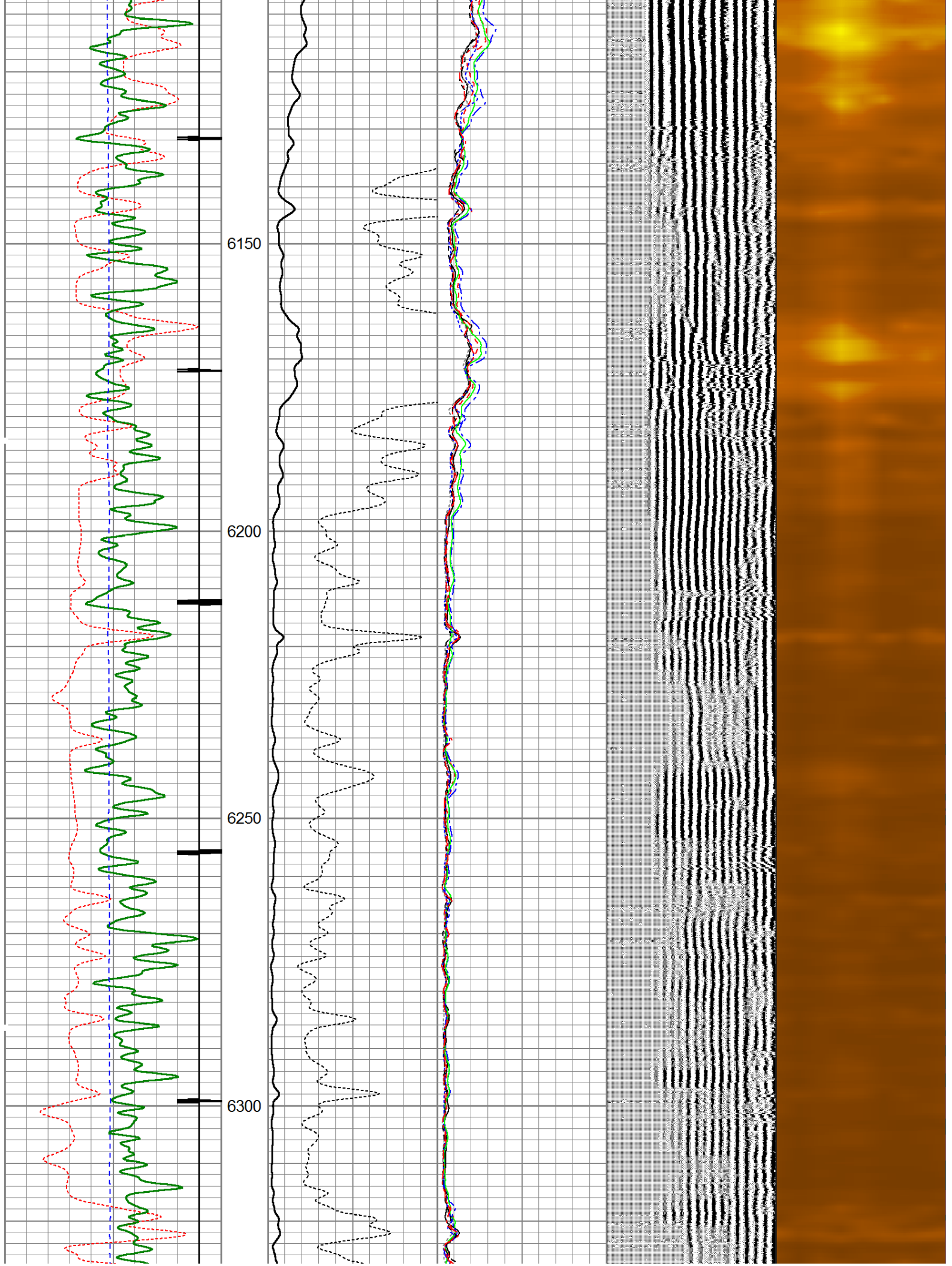


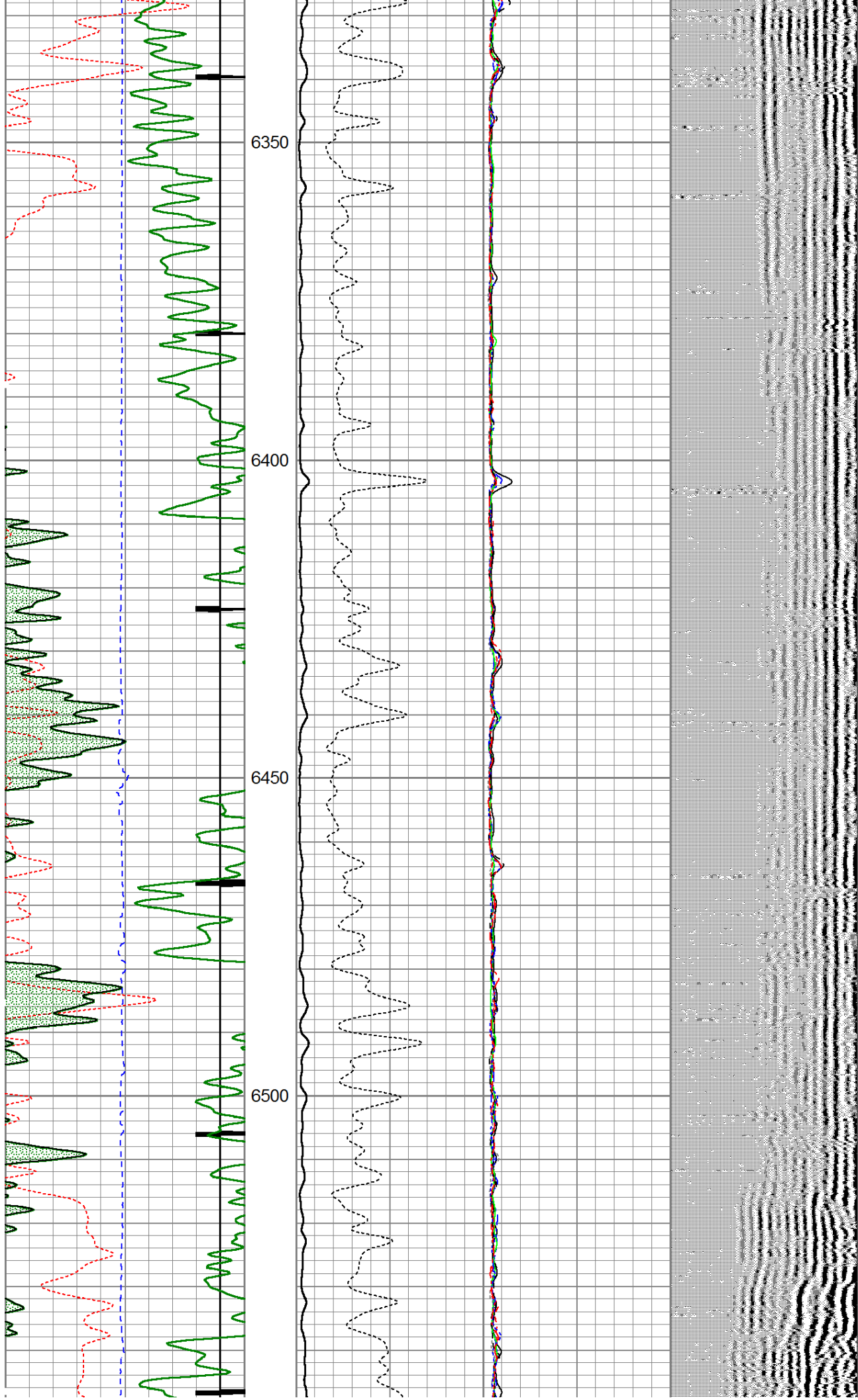


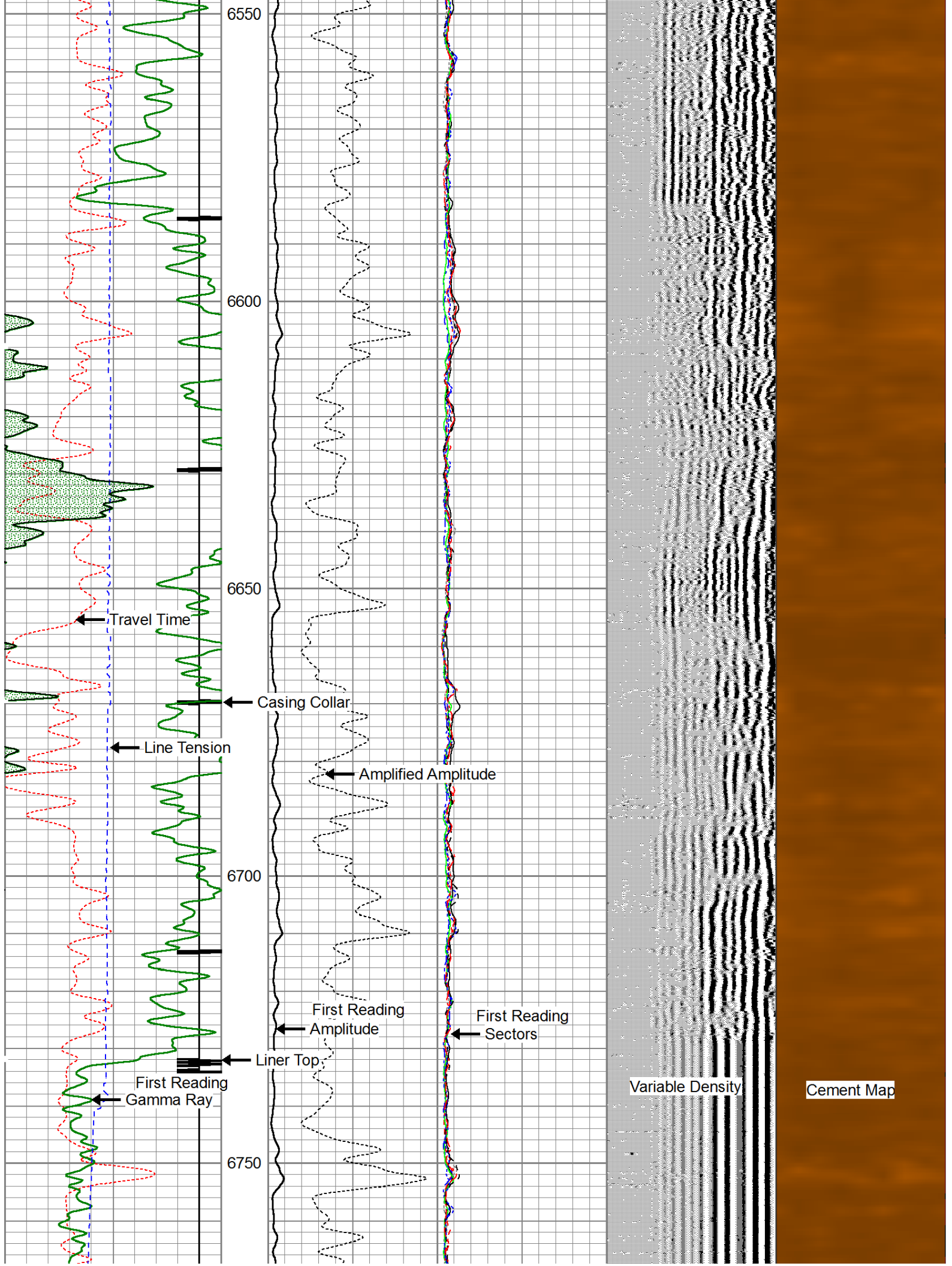


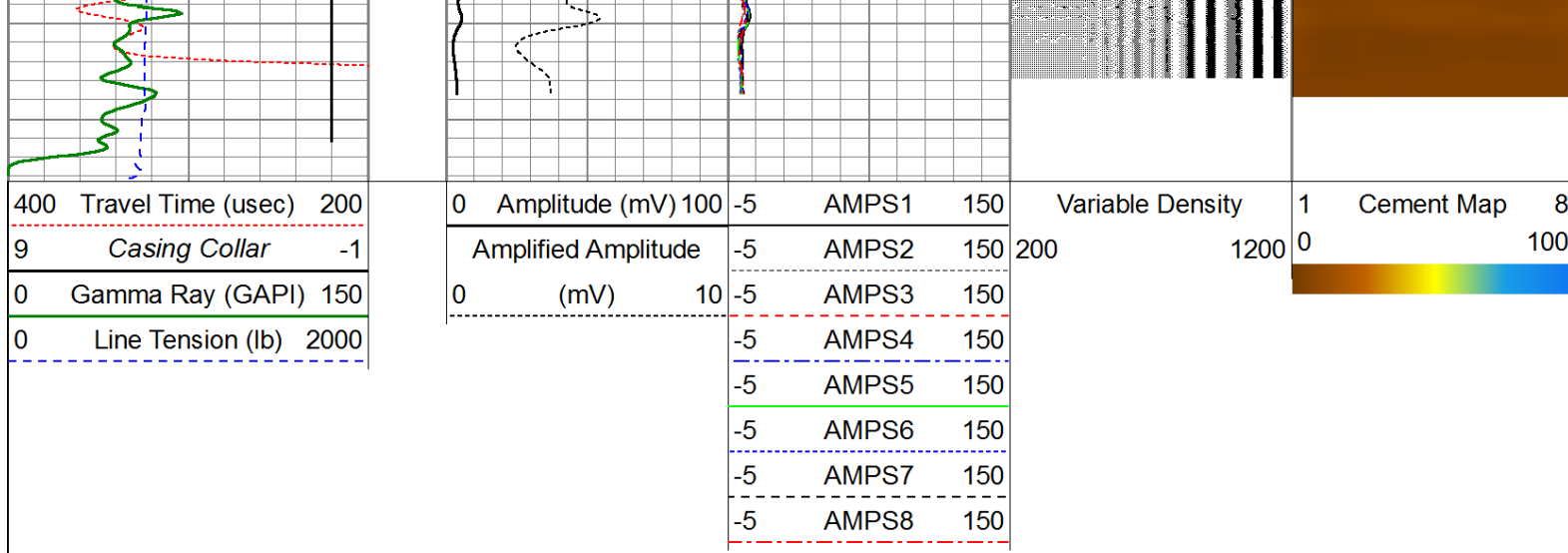






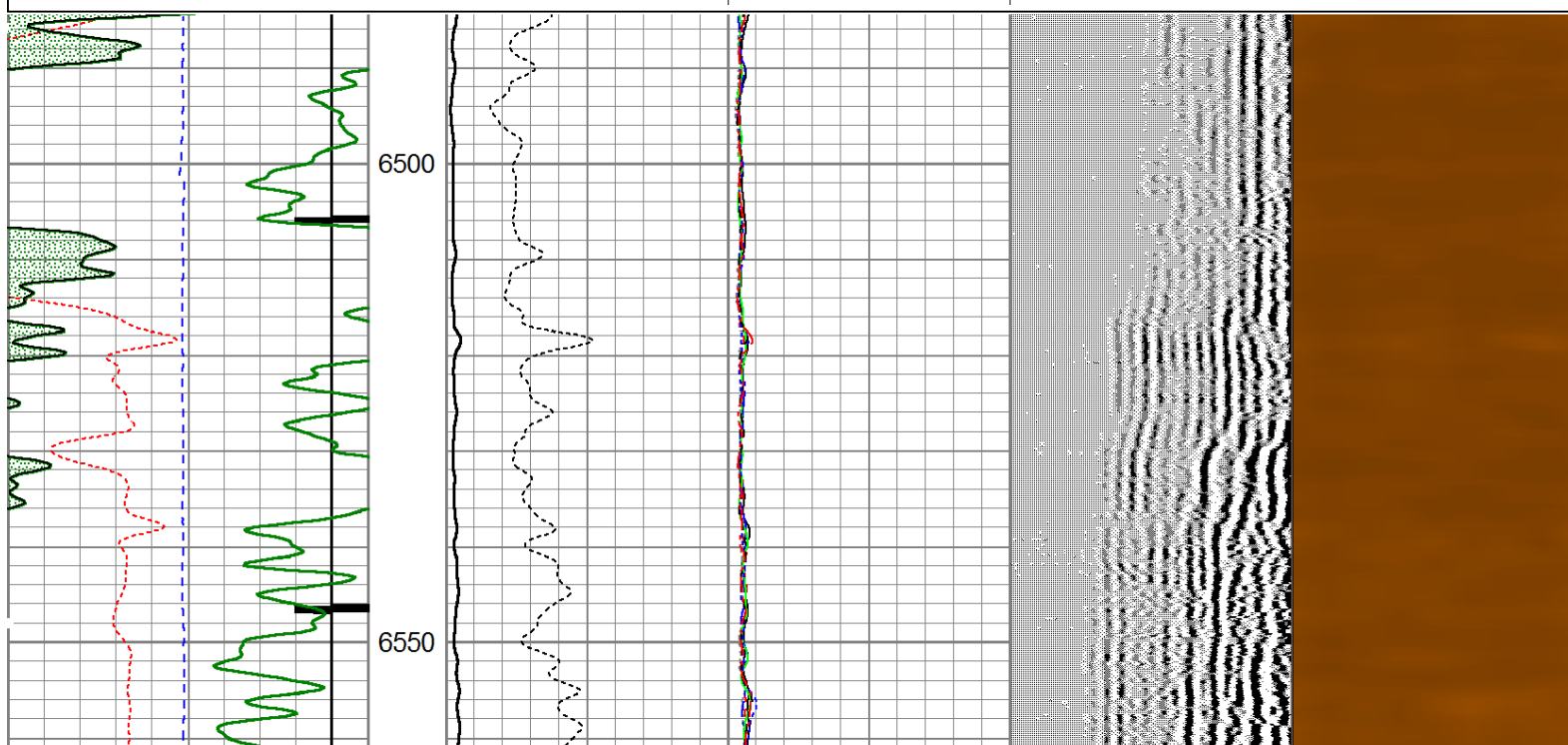
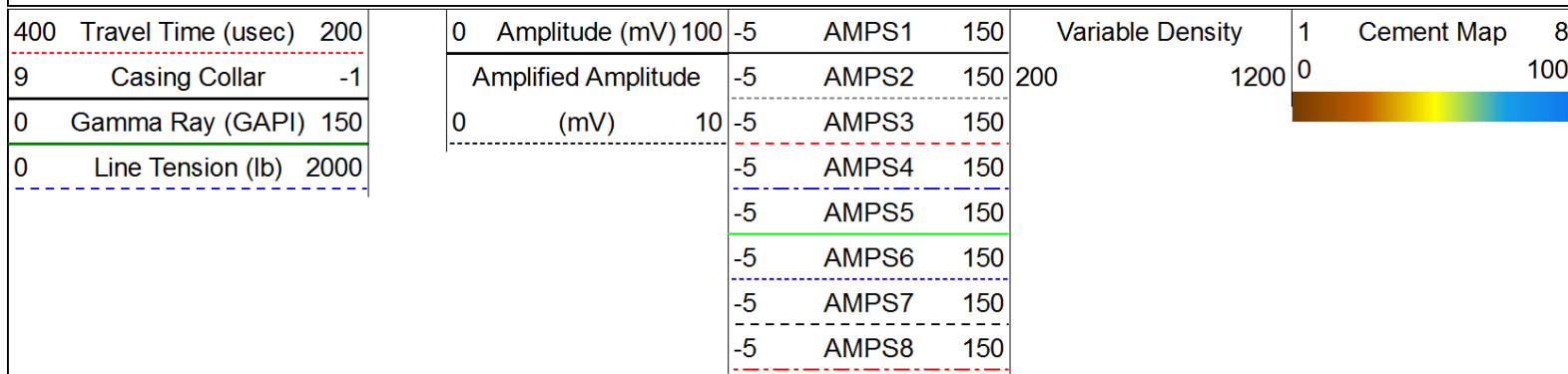


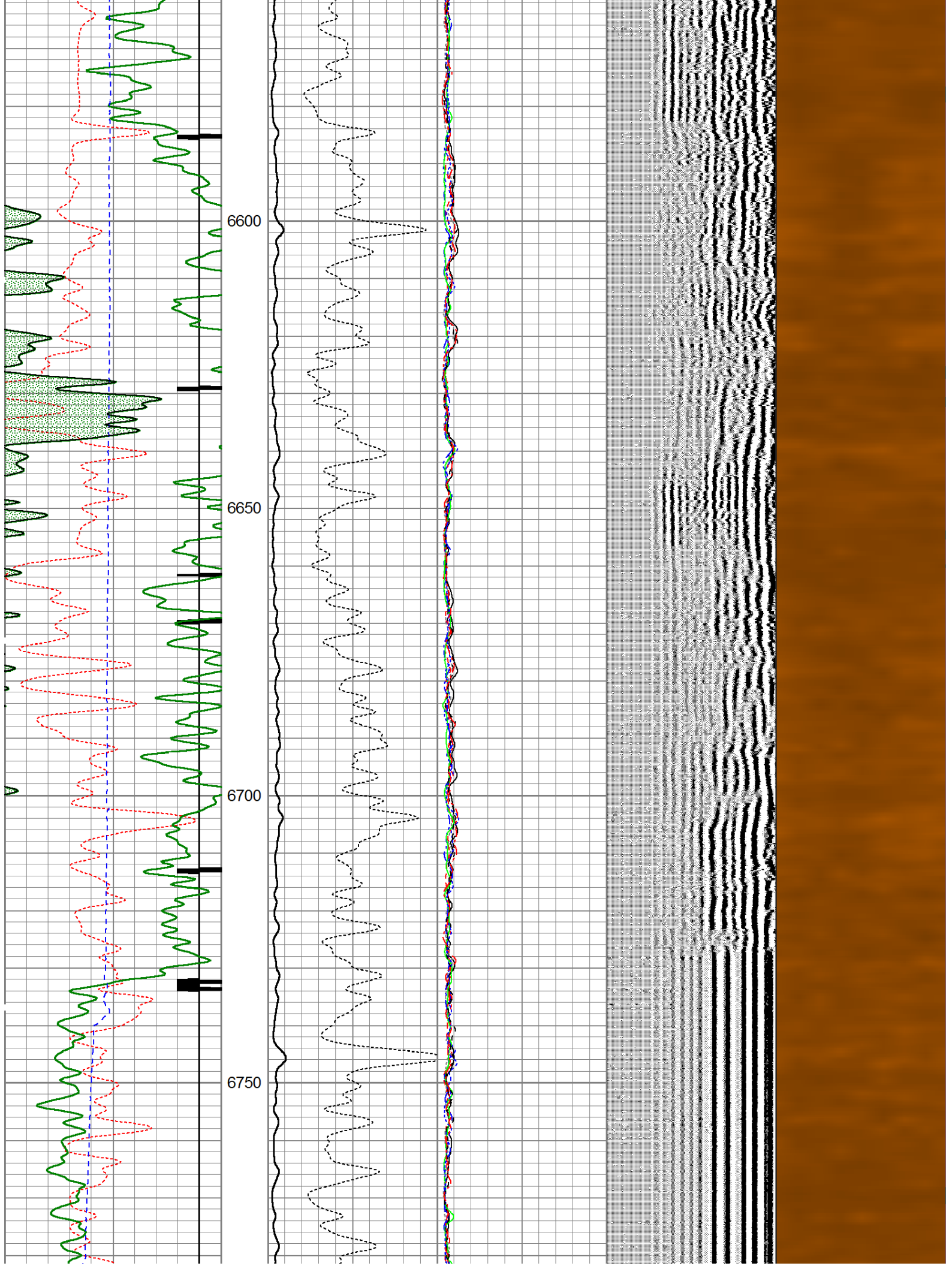


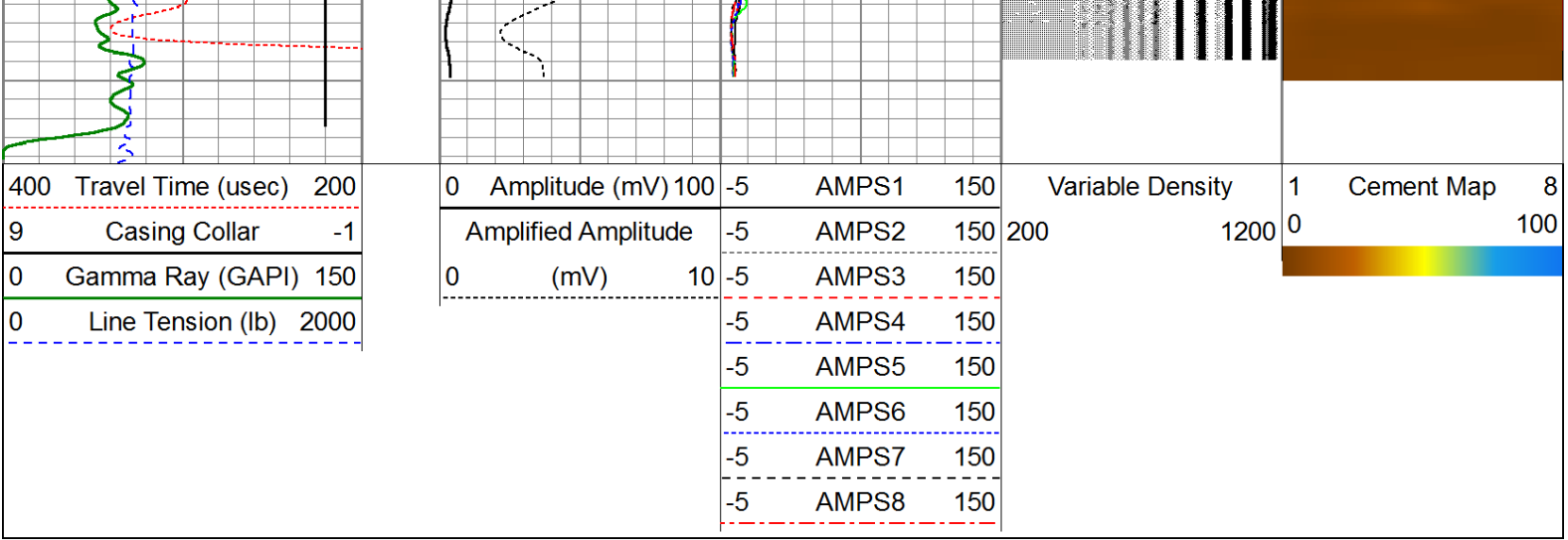


Repeat Pass (0 PSI)

Database File: noble energy wells ranch ae20-64hn_rcbl.db
 Dataset Pathname: pass3
 Presentation Format: scbl03
 Dataset Creation: Wed Nov 27 11:28:37 2013 by Log 0
 Charted by: Depth in Feet scaled 1:240







Calibration Report		
Database File:	noble energy wells ranch ae20-64hn_rcbl.db	
Dataset Pathname:	pass5	
Dataset Creation:	Wed Nov 27 11:36:08 2013 by Log 0	

Gamma Ray Calibration Report		
Serial Number:	110108-Dig	
Tool Model:	Probe275	
Performed:	Wed Nov 20 14:47:41 2013	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.8500	GAPI/cps

Temperature Calibration Report		
Serial Number:	110108-Dig	
Tool Model:	Probe275	
Performed:	Sun Jun 13 13:33:21 1993	
	Reference	Reading
Low Reference:	0.00 degF	0.00 cps
High Reference:	1.00 degF	1.00 cps
Gain:	1.00	
Offset:	0.00	
Delta Spacing	2	

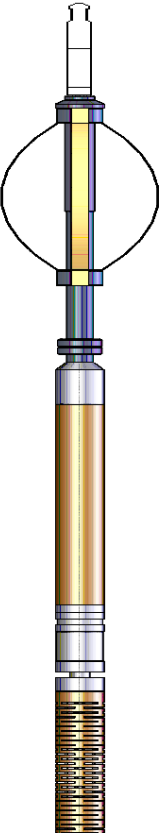
Segmented Cement Bond Log Calibration Report		
Serial Number:	111107	
Tool Model:	Probe	
Calibration Casing Diameter:	7.000	in
Calibration Depth:	1071.333	ft

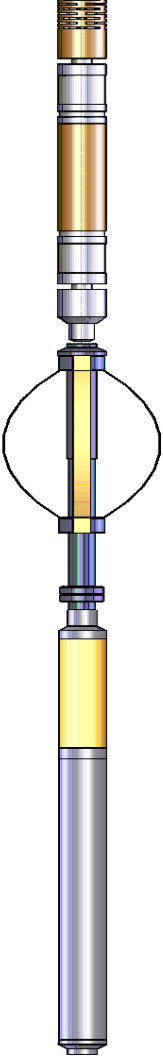
Master Calibration, performed Tue Nov 26 12:03:27 2013:						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.029	0.614	1.000	62.165	95.232	3.718

CAL	-0.028	0.834	1.000	62.165	109.446	3.343
5'	-0.021	0.537				
SUM						
S1	-0.017	0.654	0.000	100.000	149.057	2.575
S2	-0.016	0.687	0.000	100.000	137.286	2.256
S3	-0.022	0.681	0.000	100.000	130.326	3.075
S4	-0.018	0.661	0.000	100.000	125.298	2.704
S5	-0.020	0.614	0.000	100.000	130.666	3.162
S6	-0.021	0.575	0.000	100.000	162.914	3.470
S7	-0.022	0.547	0.000	100.000	170.964	3.823
S8	-0.021	0.545	0.000	100.000	170.689	3.721

Internal Reference Calibration, performed Wed Dec 31 17:00:00 1969:						
	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	-0.028	0.834	1.000	0.000

Air Zero Calibration, performed Thu Oct 17 08:50:08 2013:			
	Raw (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)
			Titan Cable_head	1.00	1.44	10.00
			Probe275 2.75" Centralizer	2.88	2.75	20.00
WVF3FT WVFCAI	11.84 11.84		RBT-Probe (111107) Probe Radii Bond Tool with Digital Telemetry	8.75	2.75	90.00

WVFS1	11.84				
WVFS2	11.84				
WVFS3	11.84				
WVFS4	11.84				
WVFS5	11.84				
WVFS6	11.84				
WVFS7	11.84				
WVFS8	11.84				
WVFS5T	10.84				
		Probe275 2.75" Centralizer	2.88	2.75	20.00
CCL	3.88				
TEMP	3.00				
GR	2.54	GR-Probe275 (110108-Dig) Probe 2 3/4" Logging Gamma Ray	4.78	2.75	57.00
Dataset: noble energy wells ranch ae20-64hn_rcbl.db: field/well/run1/pass5 Total Length: 20.28 ft Total Weight: 197.00 lb O.D. 2.75 in					