



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

Company	Noble Energy	
Well	Wells Ranch AE20-65HN	
Field	Wattenberg	
County	Weld	State
State	Colorado	Colorado
Location:	API # : 05-123-37218	
SEC 20 TWP 6N RGE 62W		Other Services
BHL: 2640' FNL & 535' FEL		TEMP
Permanent Datum	Ground Level	Elevation
Log Measured From	24' Kelly Bushing	4785'
Drilling Measured From	Kelly Bushing	Elevation
		K.B. 4809'
		D.F. 4808'
		G.L. 4785'
Date	November 27, 2013	
Run Number	1	
Depth Driller	10826'	
Depth Logger	6297'	
Bottom Logged Interval	6284'	
Top Log Interval	Surface	
Open Hole Size	8.125	
Type Fluid	Fresh Water	
Density / Viscosity	8.33	
Max. Recorded Temp.	208 Deg F	
Estimated Cement Top	1240'	
Time Well Ready	7.30	
Time Logger on Bottom	7.52	
Equipment Number	13033	
Location	Brighton	
Recorded By	C. Rail	
Witnessed By	Bill Mansfield	
Borehole Record		
Run Number	Bit	From
One	To	Size
Two	Weight	From
Three	To	Bottom
Four	Size	Wgt/Ft
Casing Record	9 5/8	36#
Surface String		Surface
Prot. String		967'
Production String	7	26#
Liner	4 1/2	11 6#
Short Joint		Surface
		6299'
		5564'
		5578'

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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 @ 1240'

Short Joint @ 5564' to 5578'

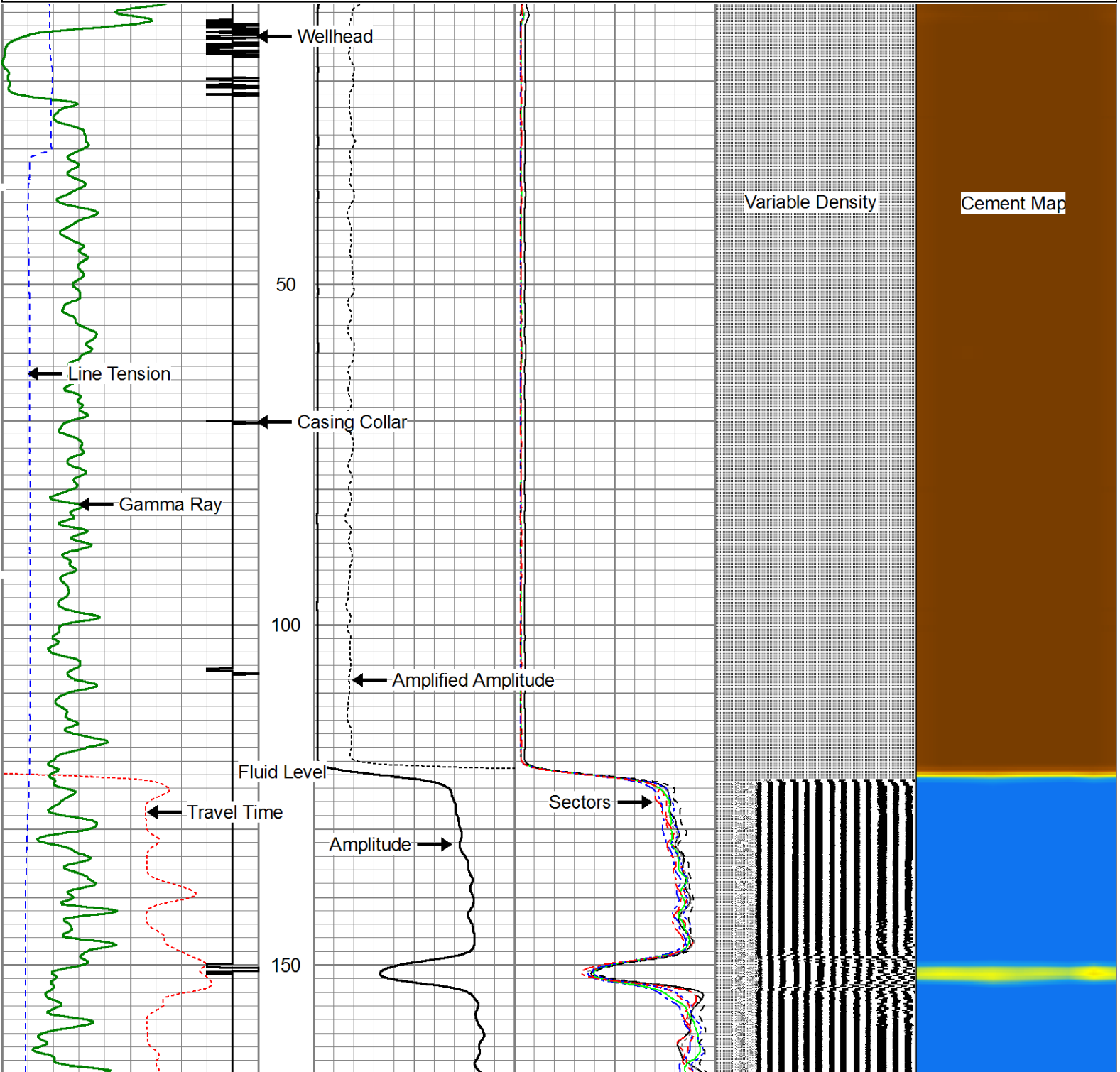
Thank you for using Allied Wireline.
(303)659-4609

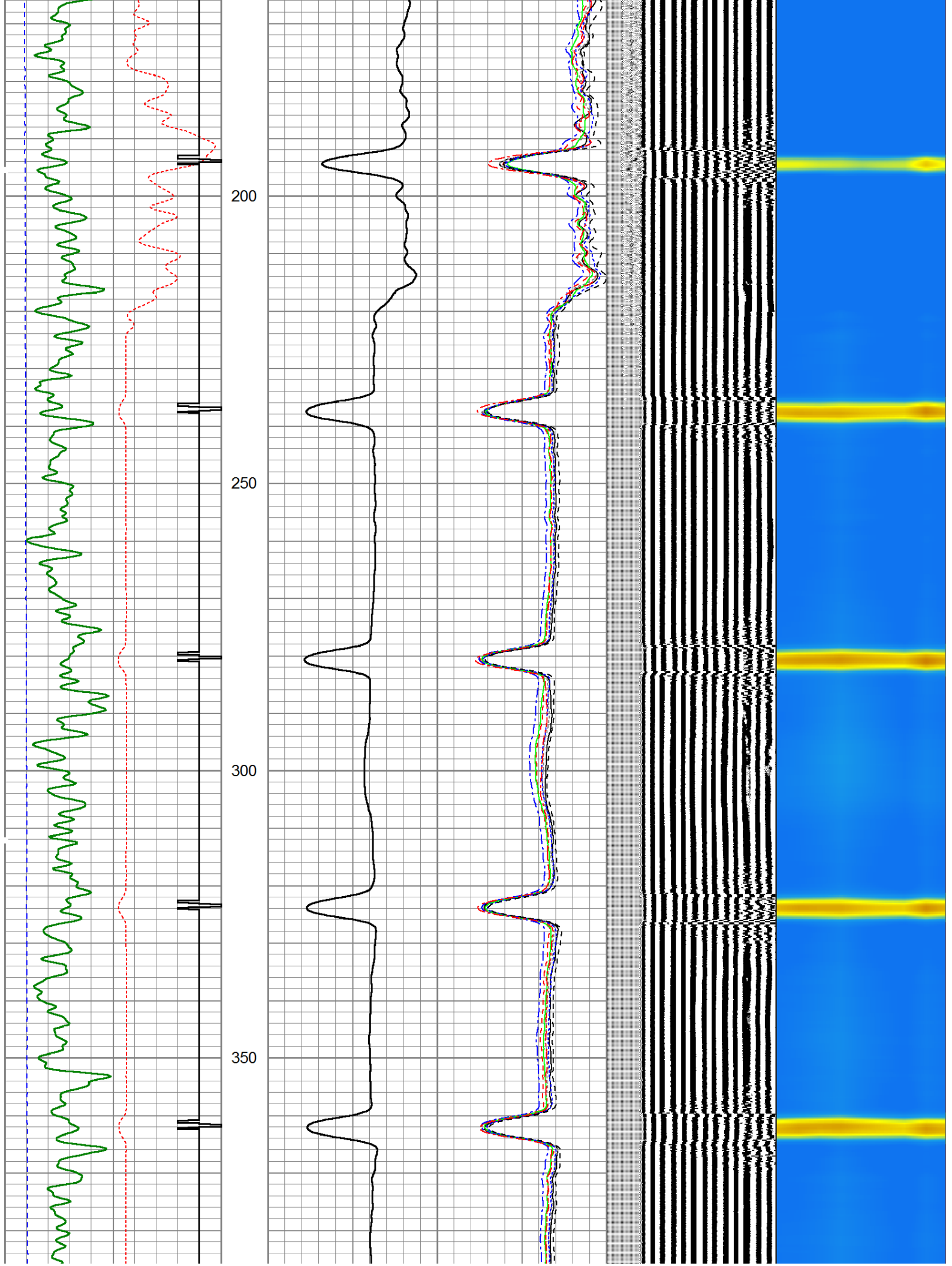


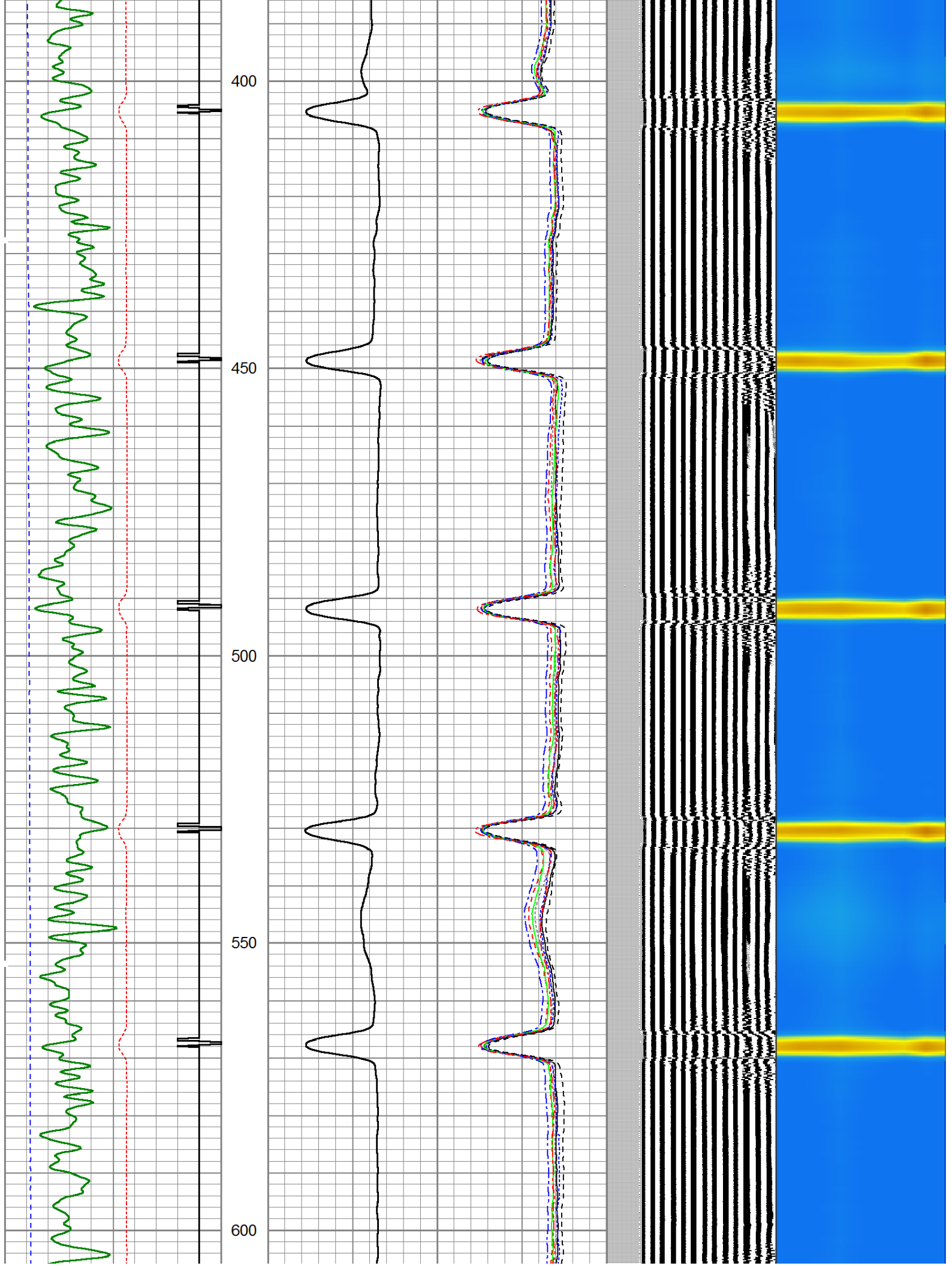
Main Pass (0 PSI)

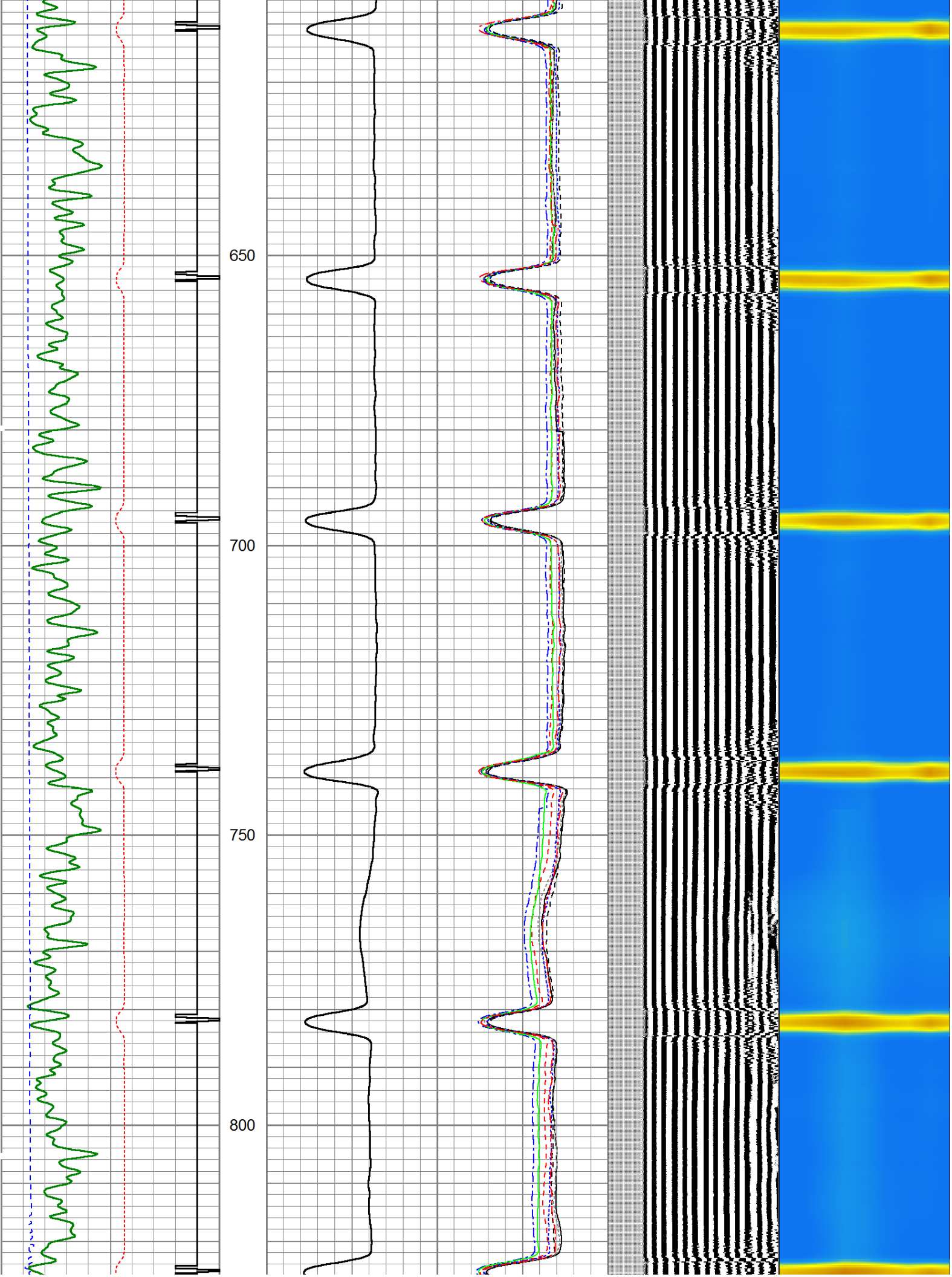
Database File: noble energy wells ranch ae20-65hn_rcbl.db
Dataset Pathname: pass4
Presentation Format: scbl03
Dataset Creation: Wed Nov 27 07:58:31 2013 by Log 0
Charted by: Depth in Feet scaled 1:240

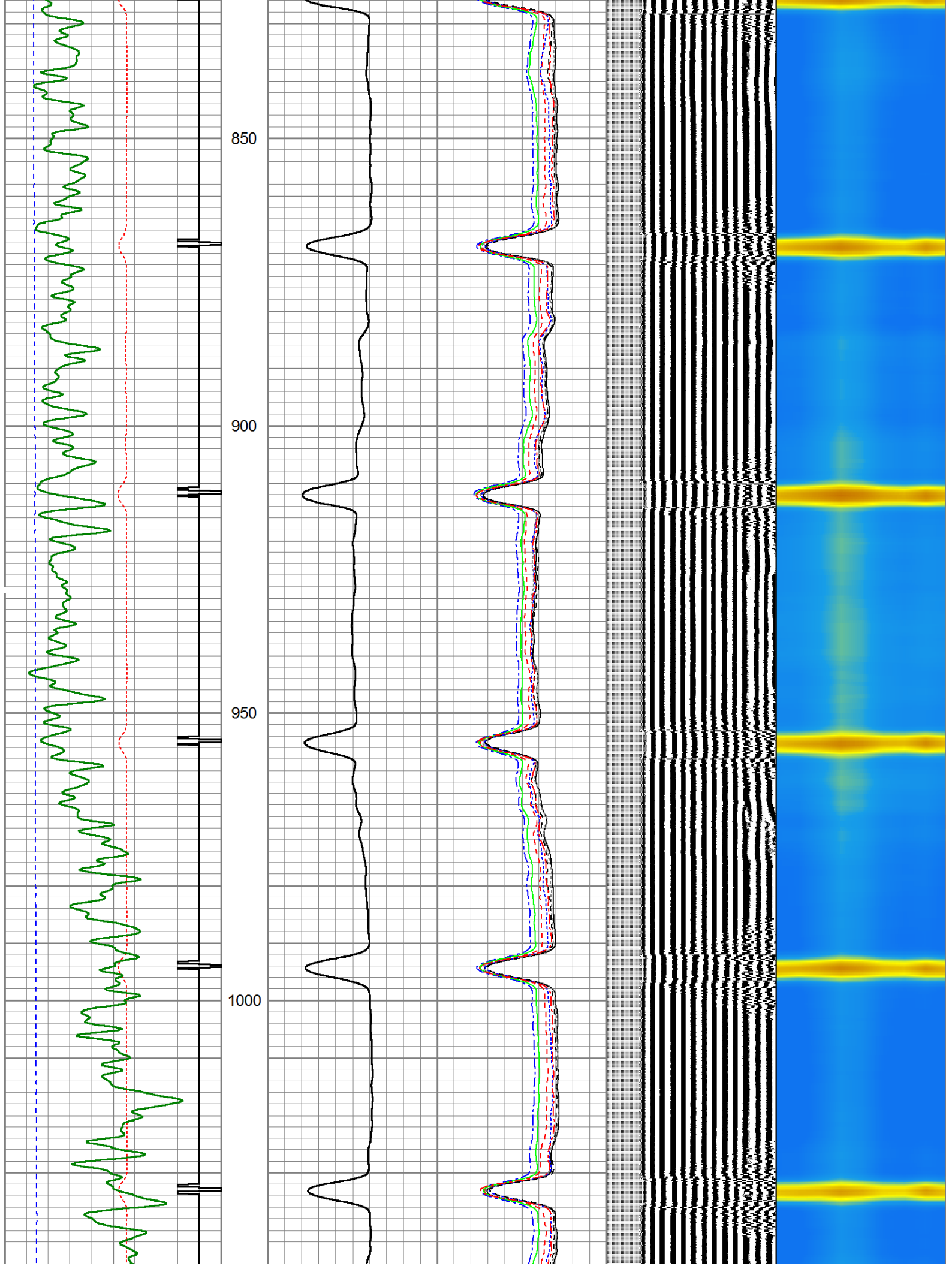
400	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	AMPS1	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1		Amplified Amplitude		-5	AMPS2	150	200	1200	0	100
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	AMPS3	150				
0	Line Tension (lb)	2000				-5	AMPS4	150				
						-5	AMPS5	150				
						-5	AMPS6	150		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

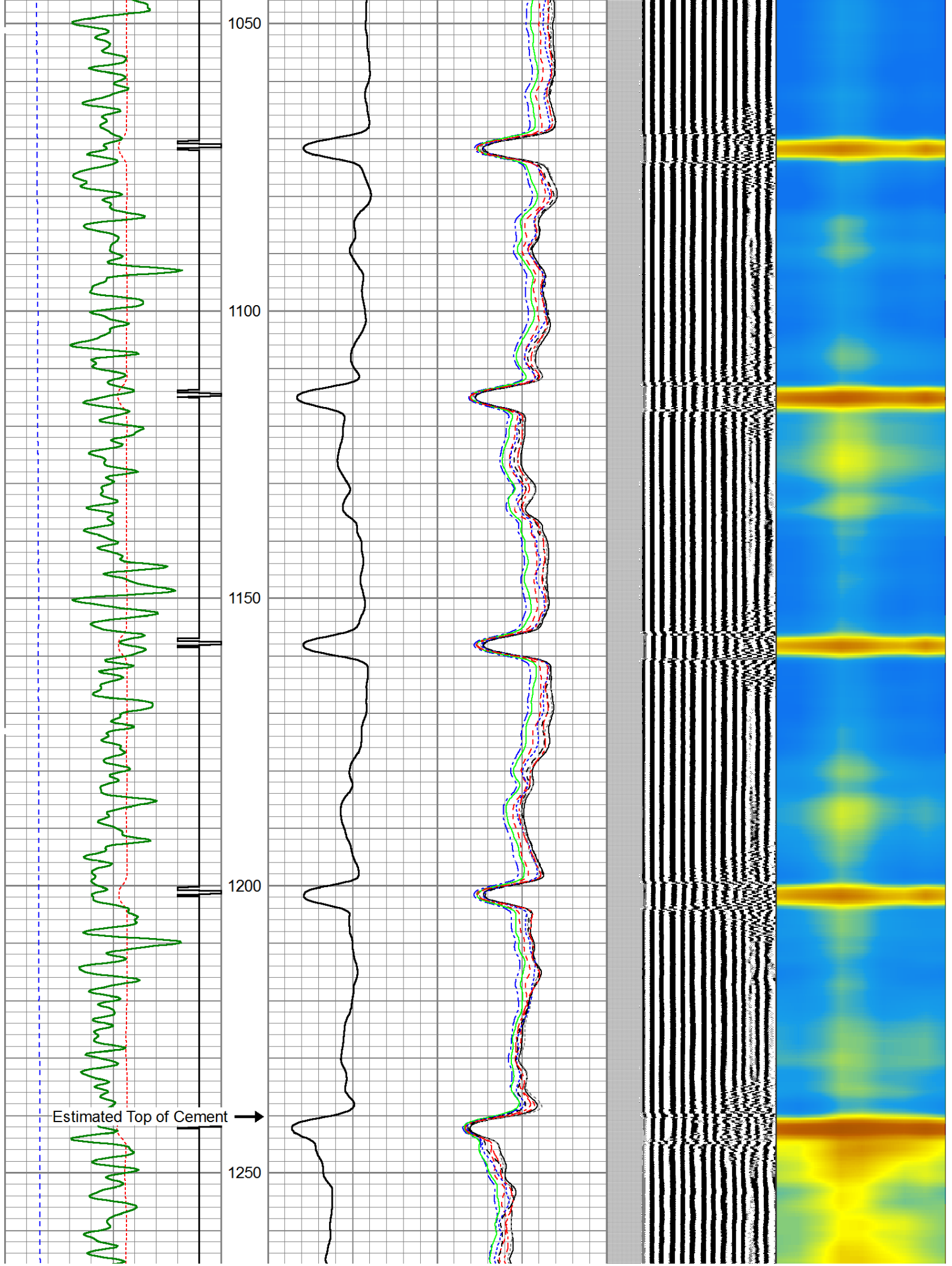


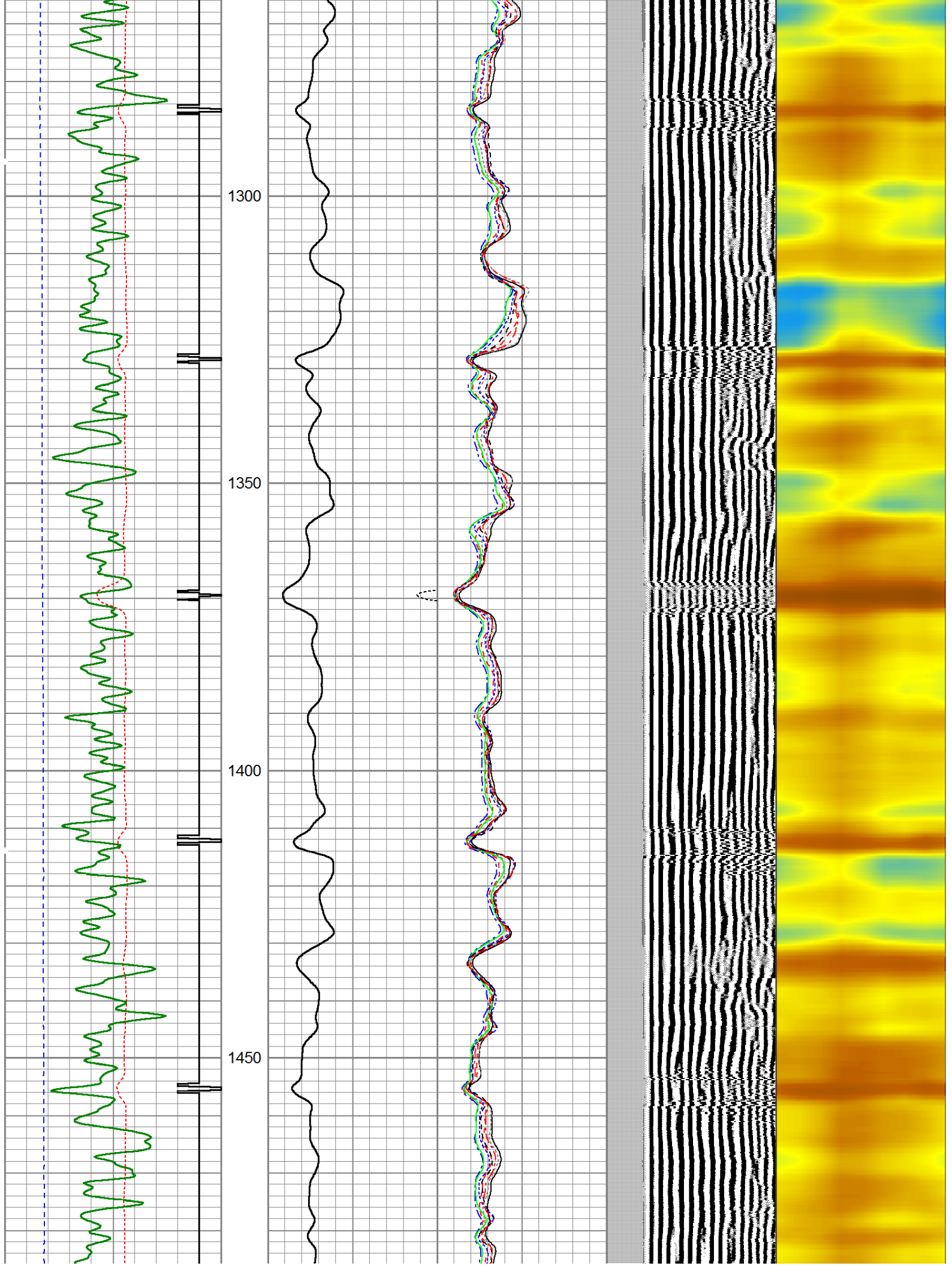


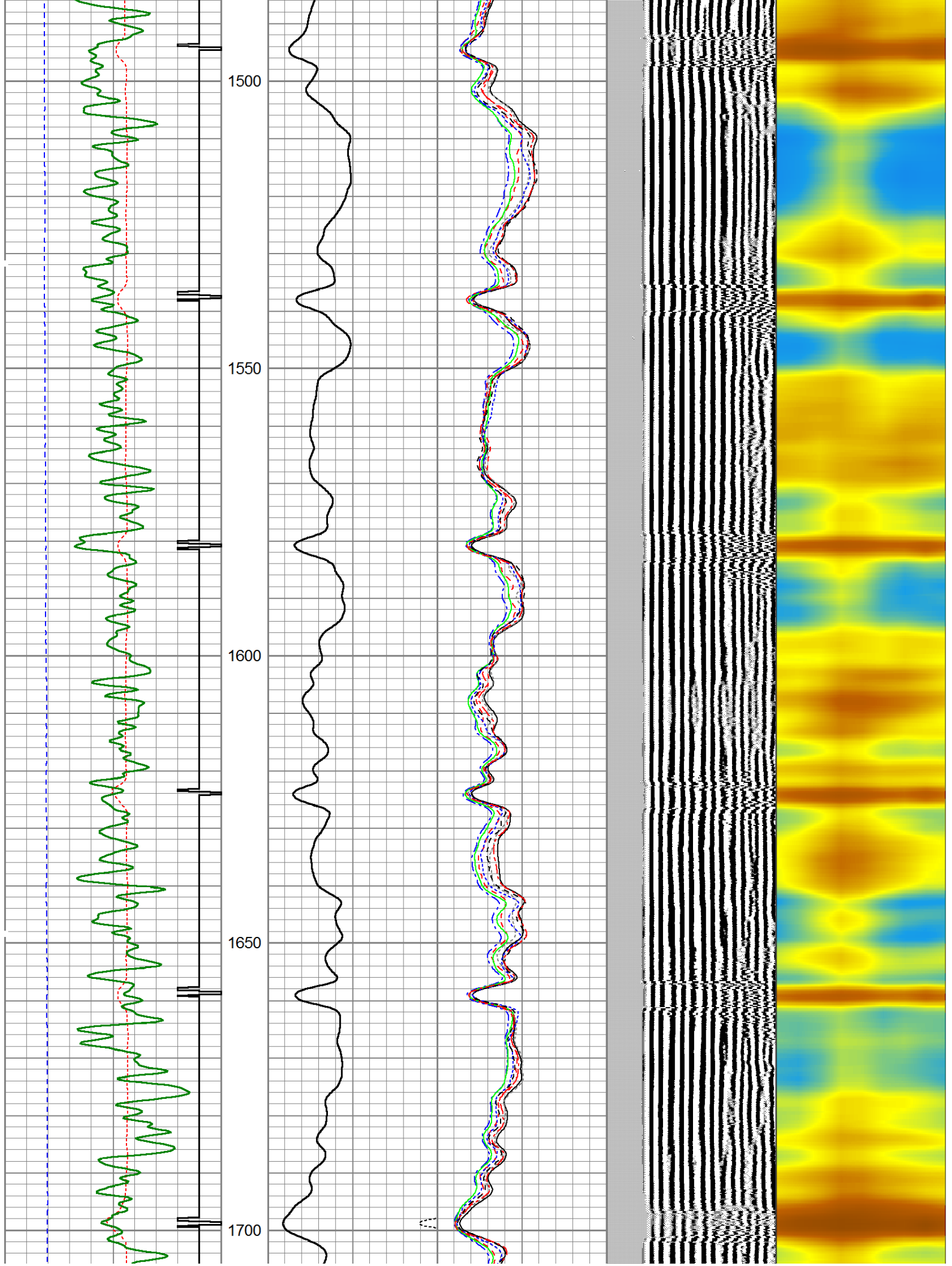


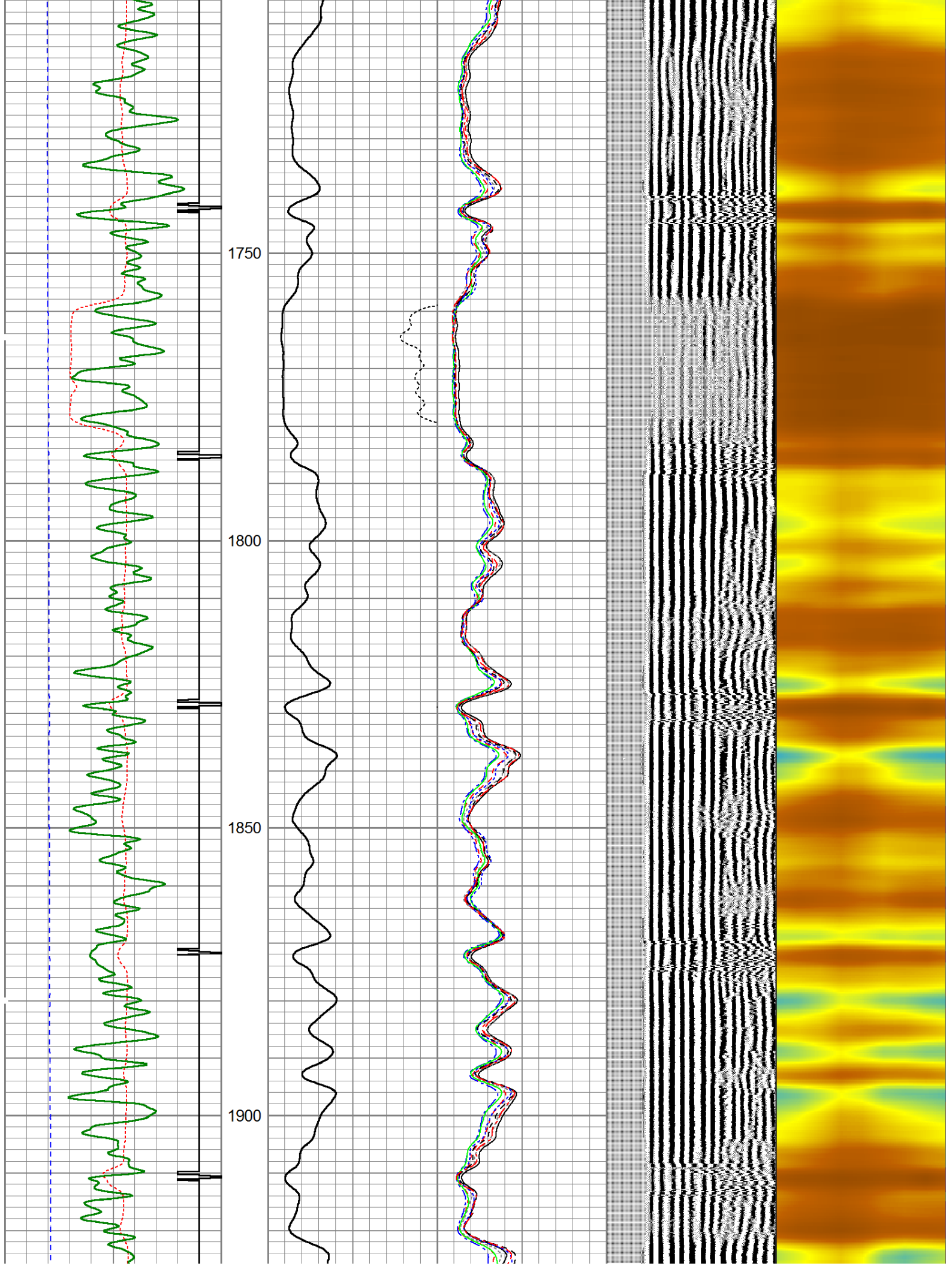


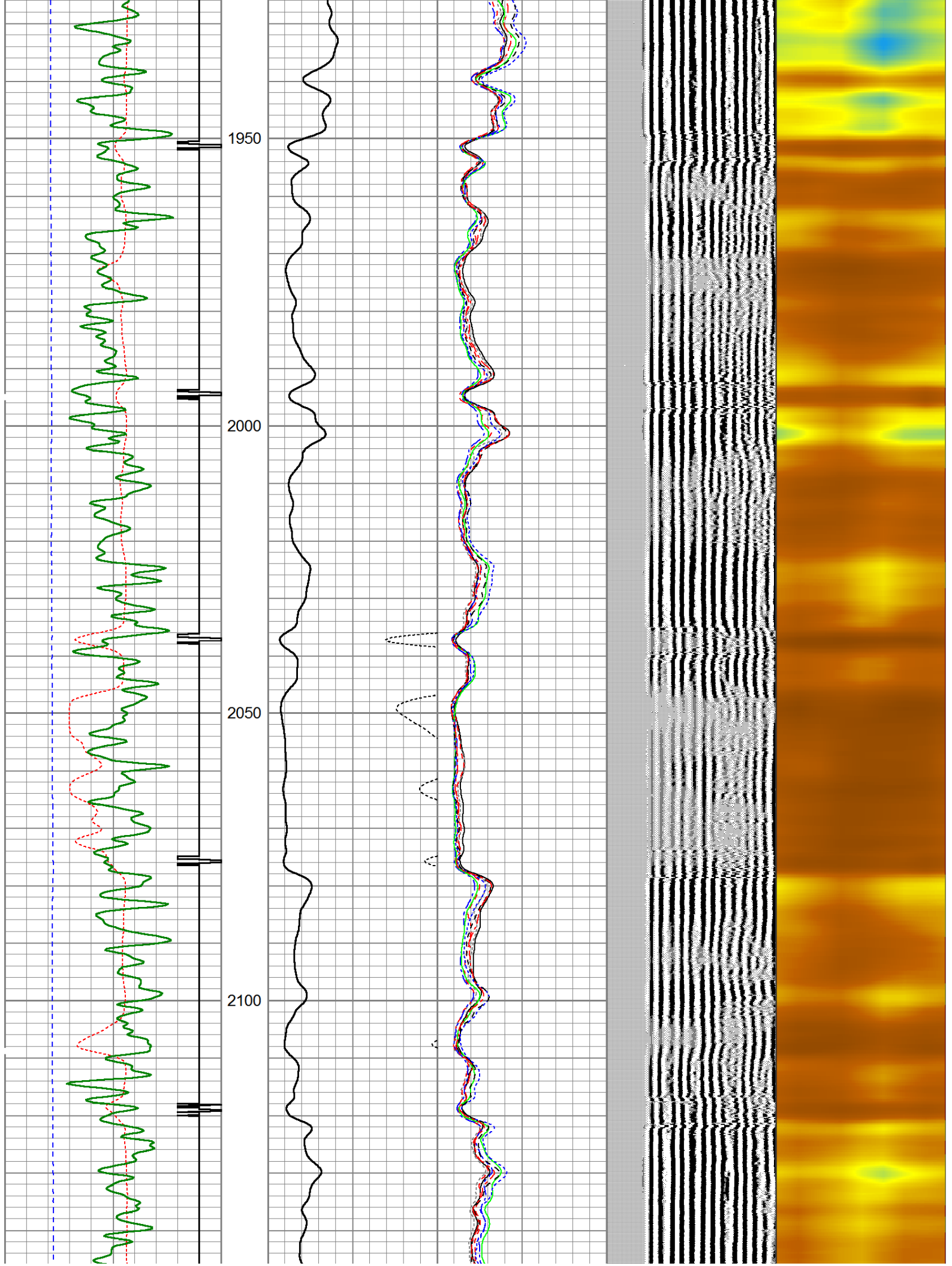


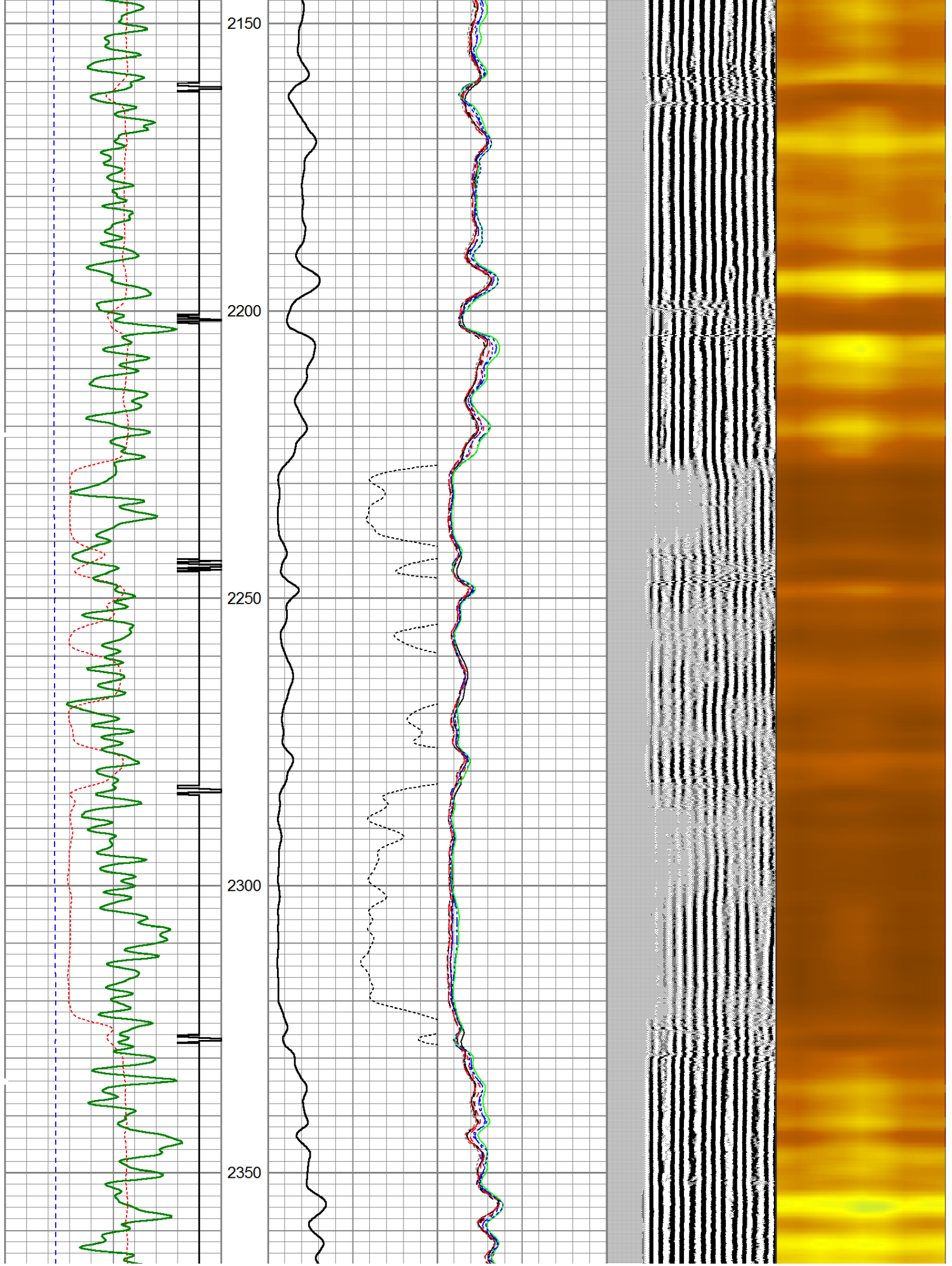


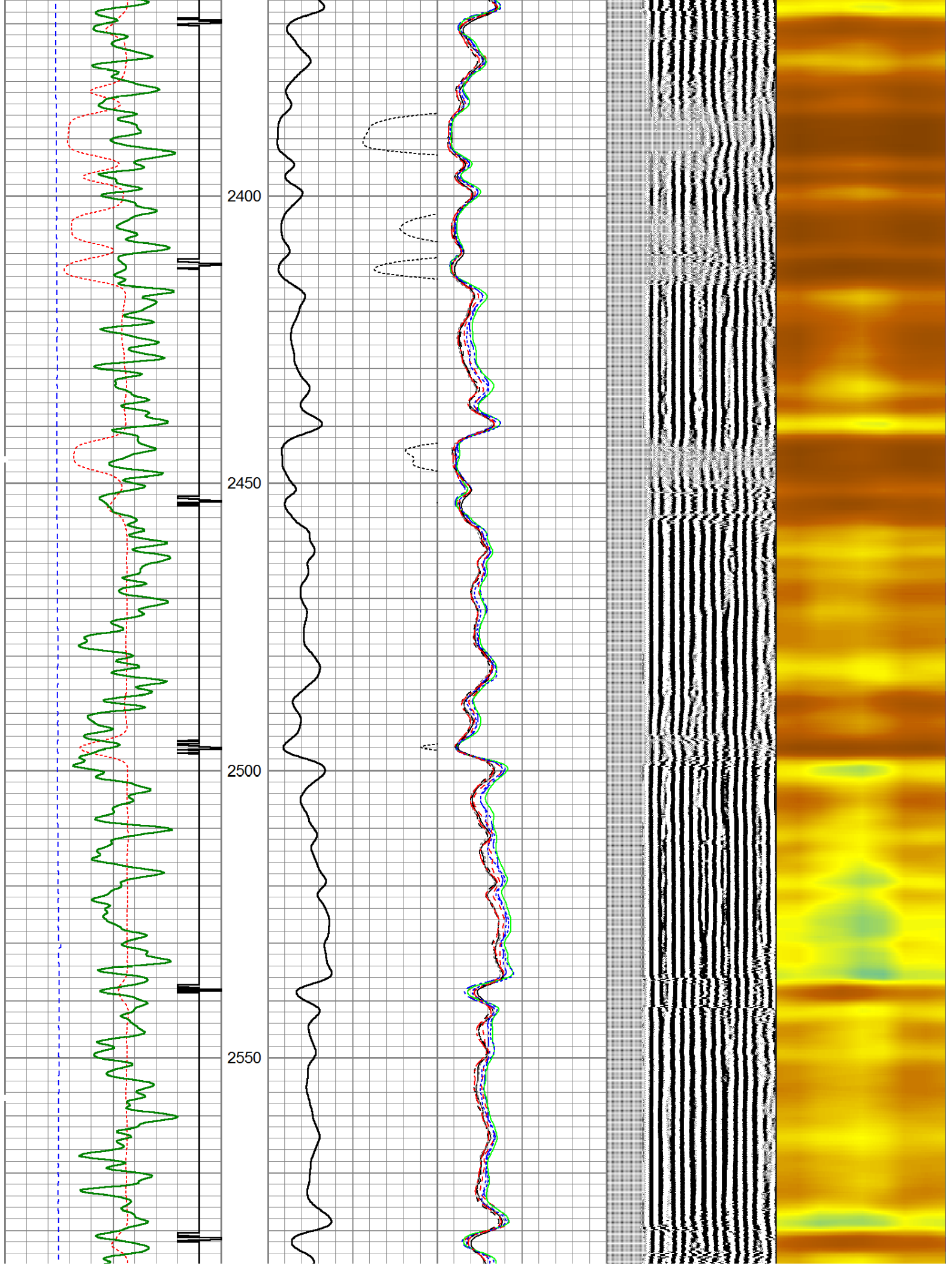


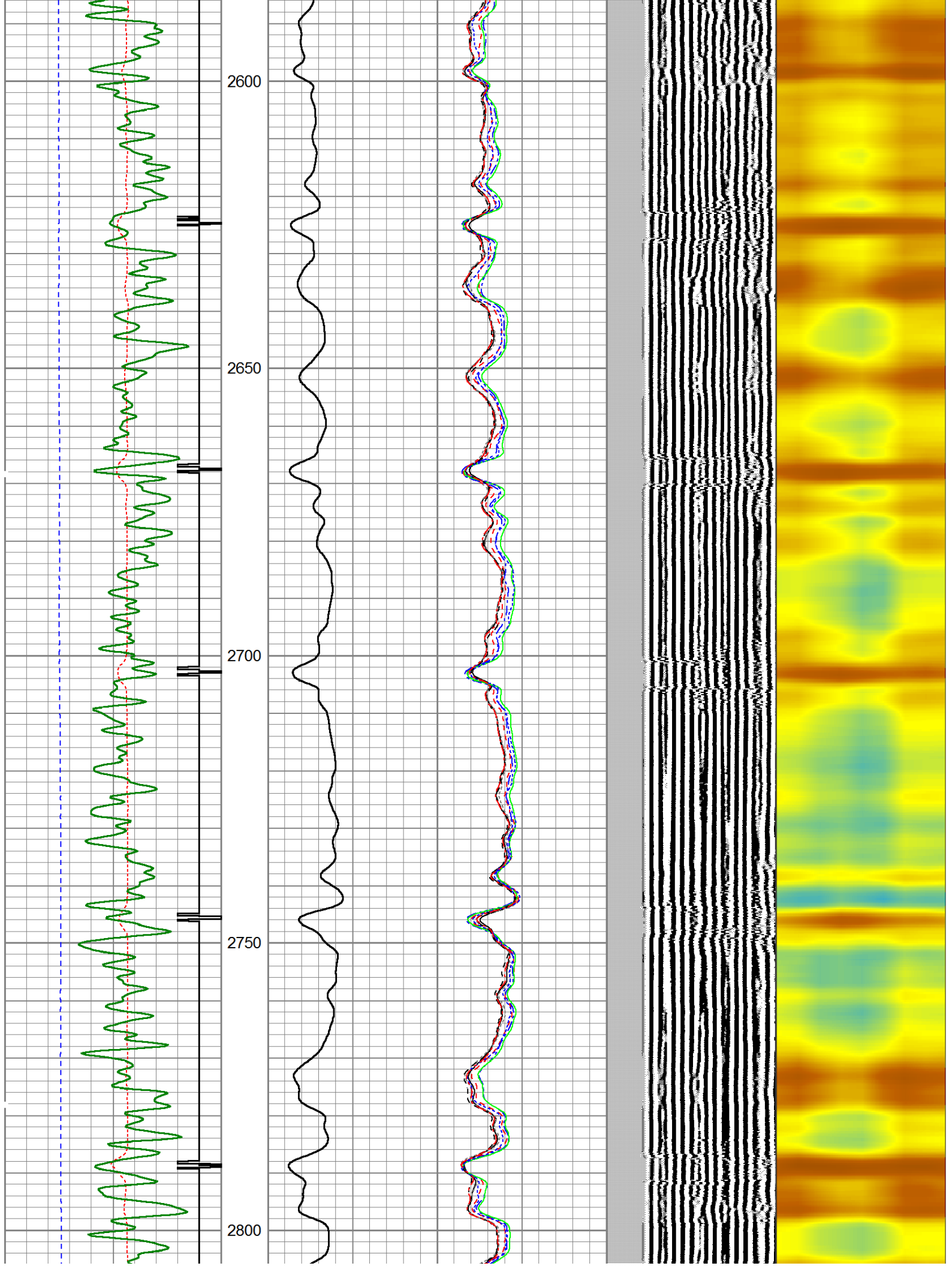


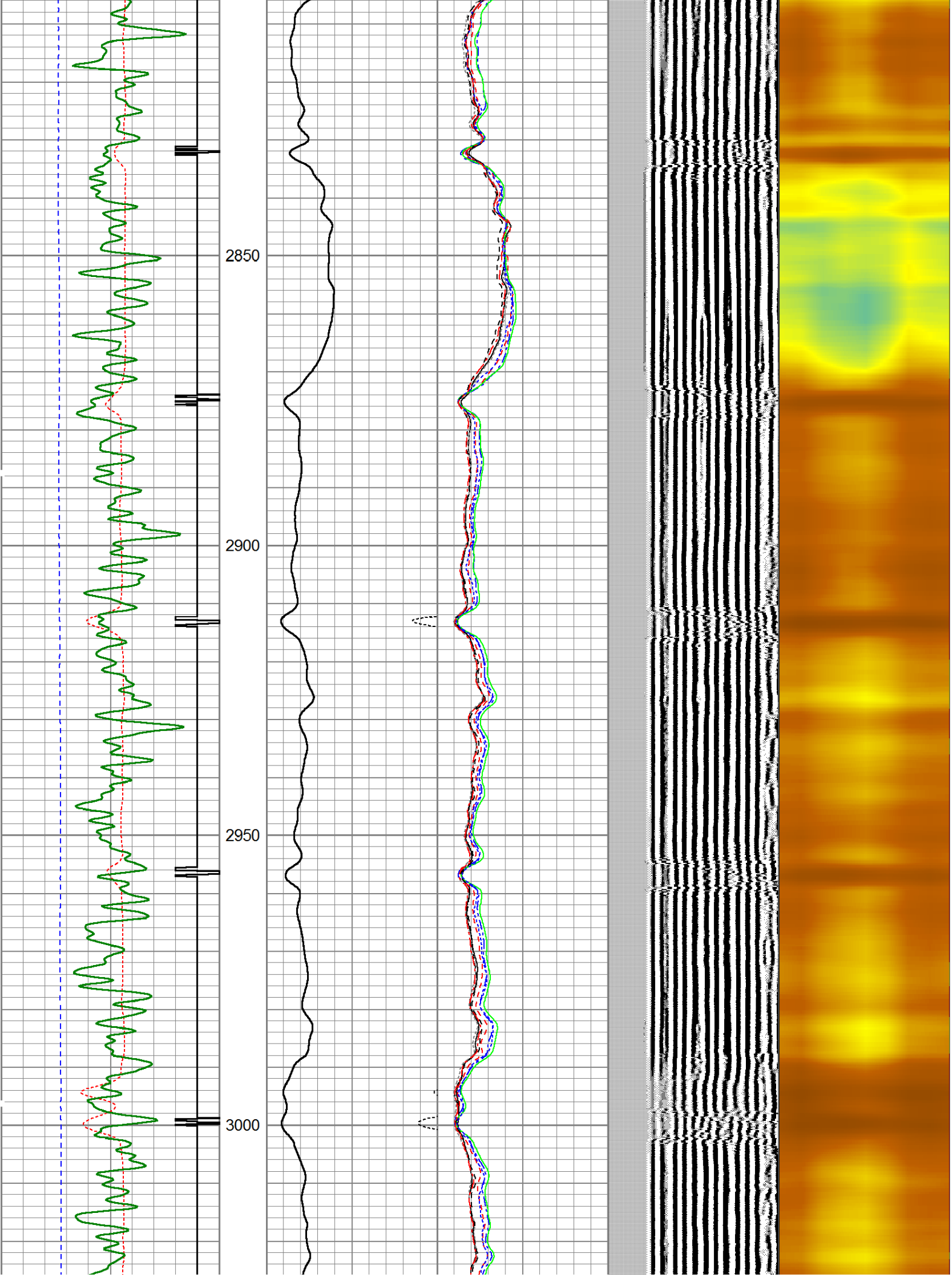


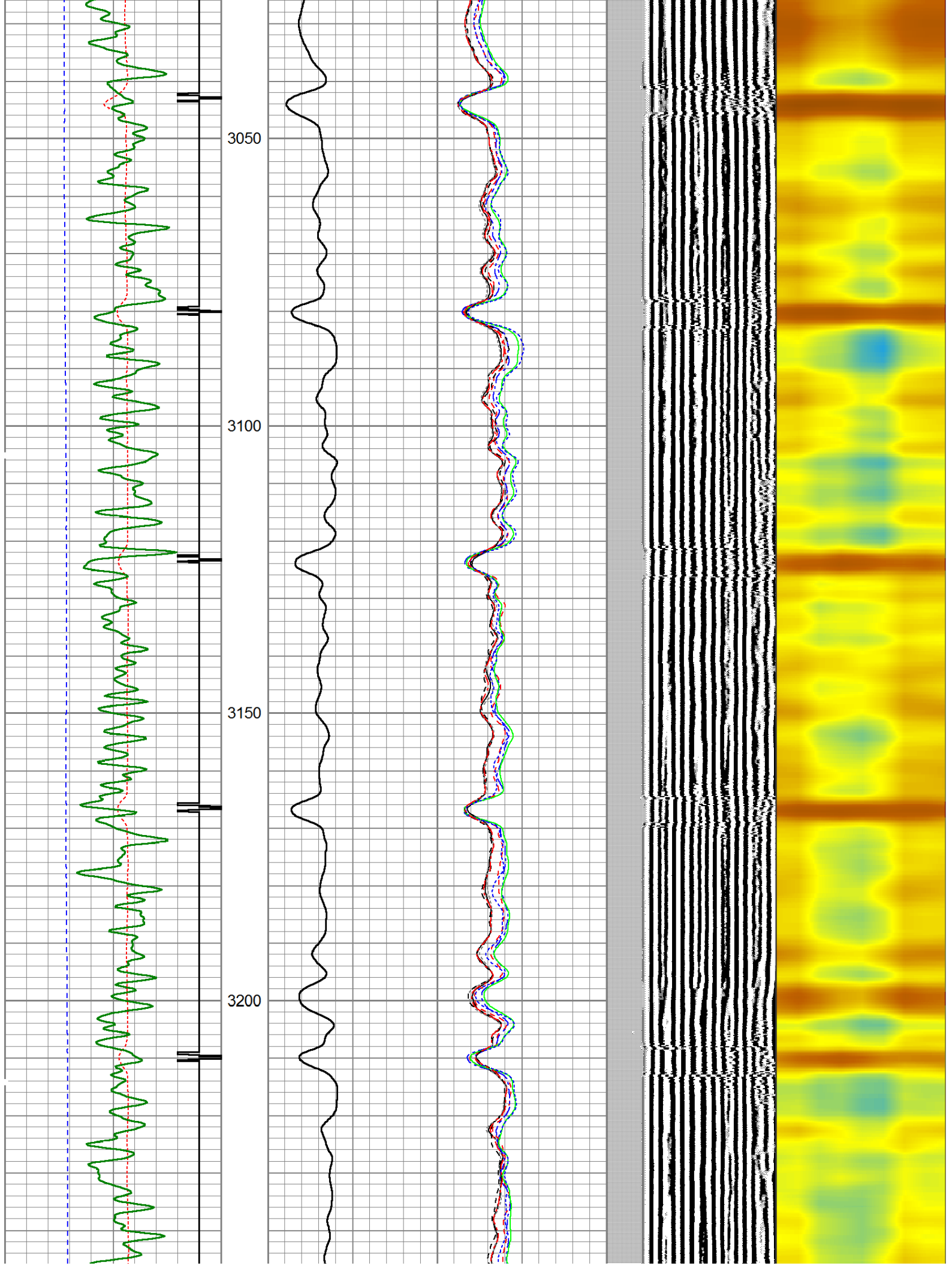


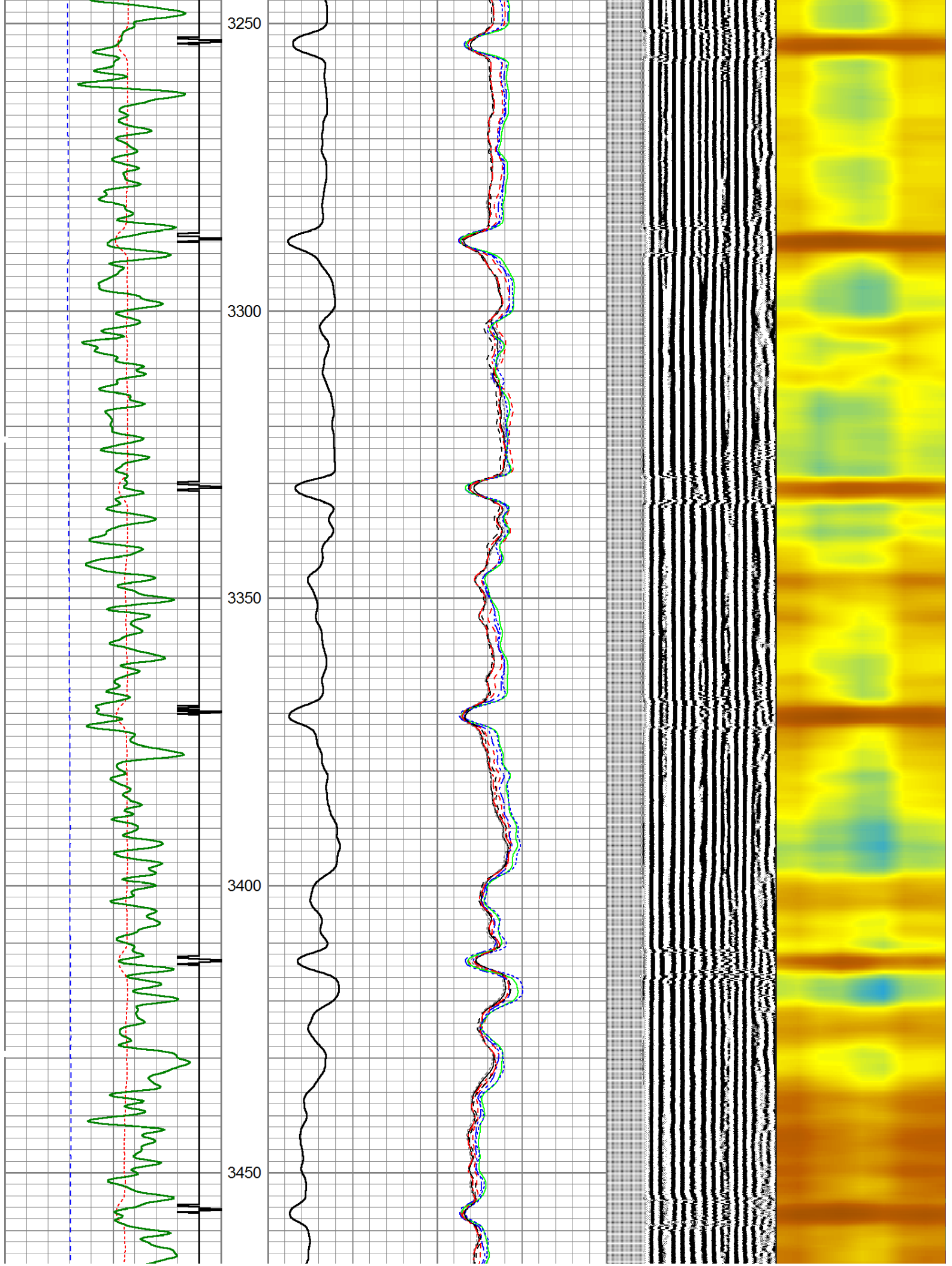


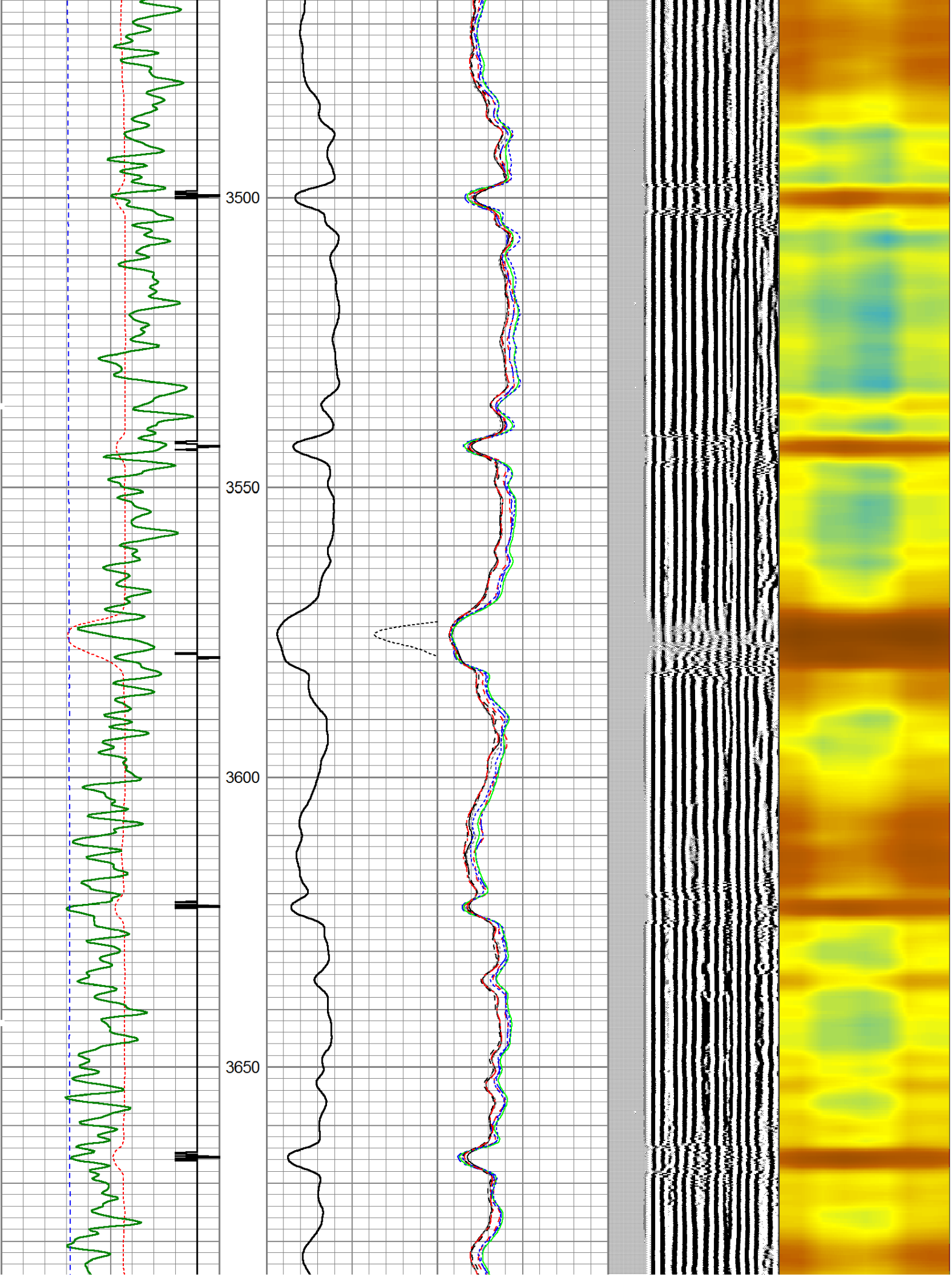


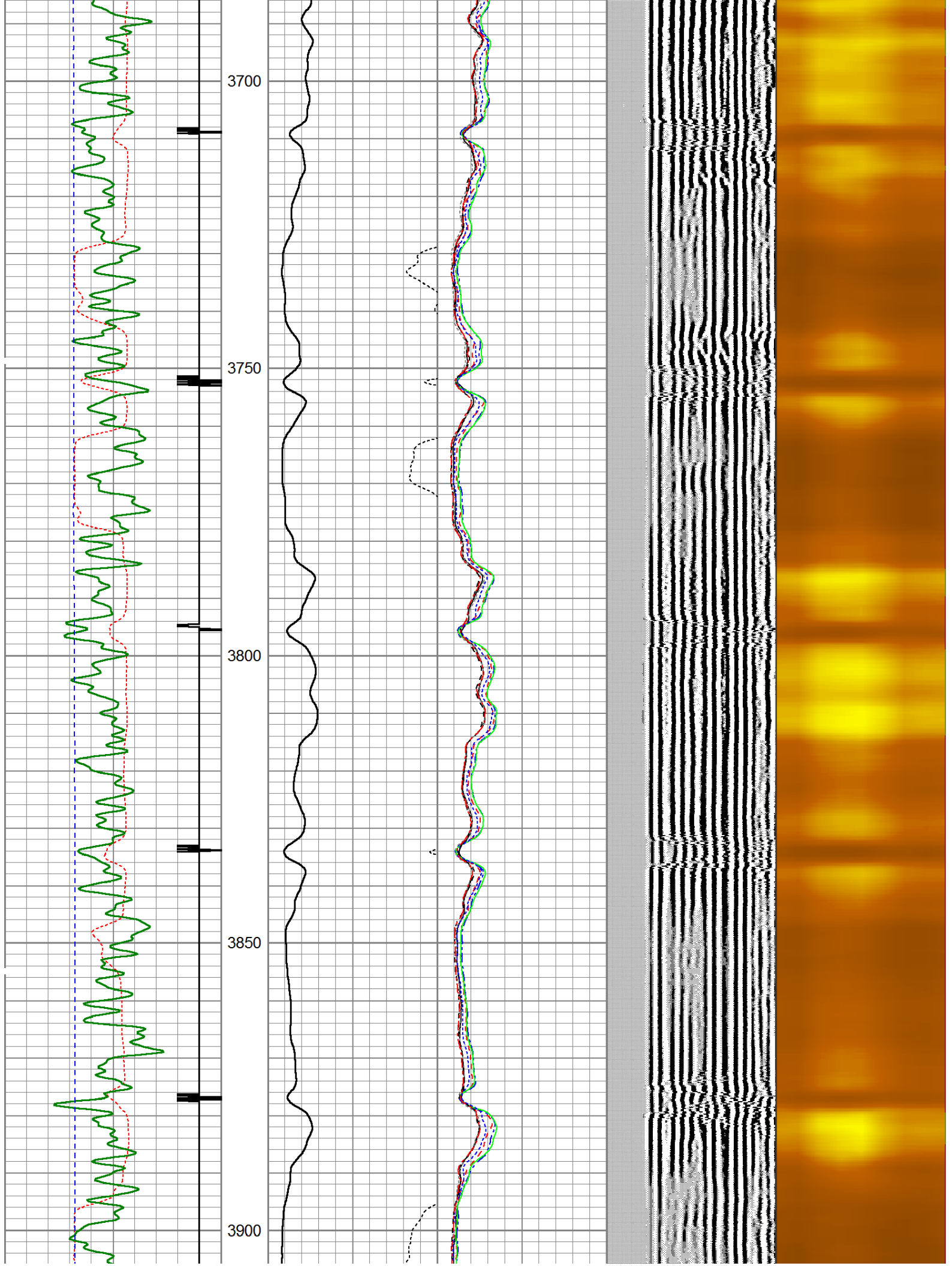


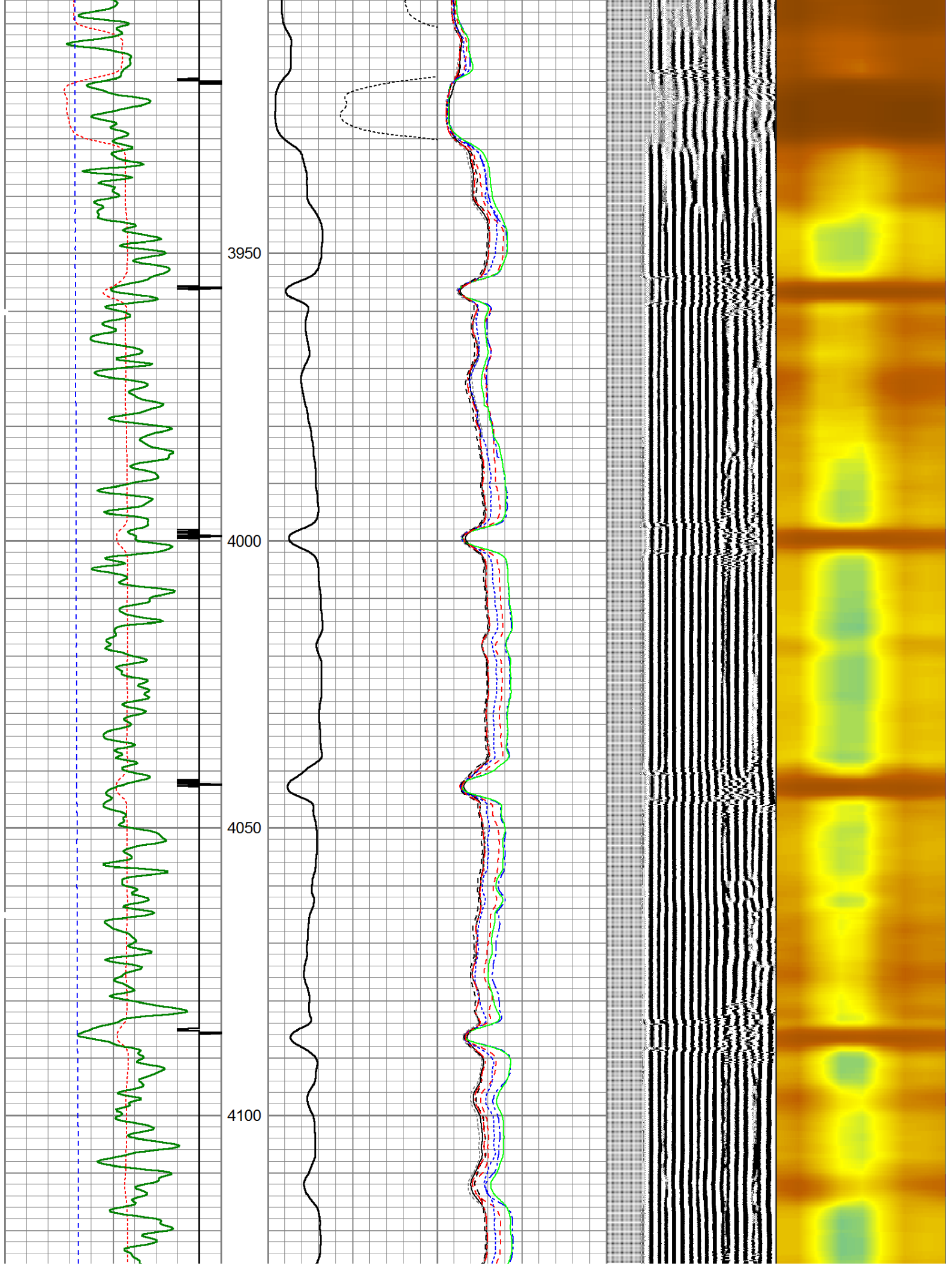


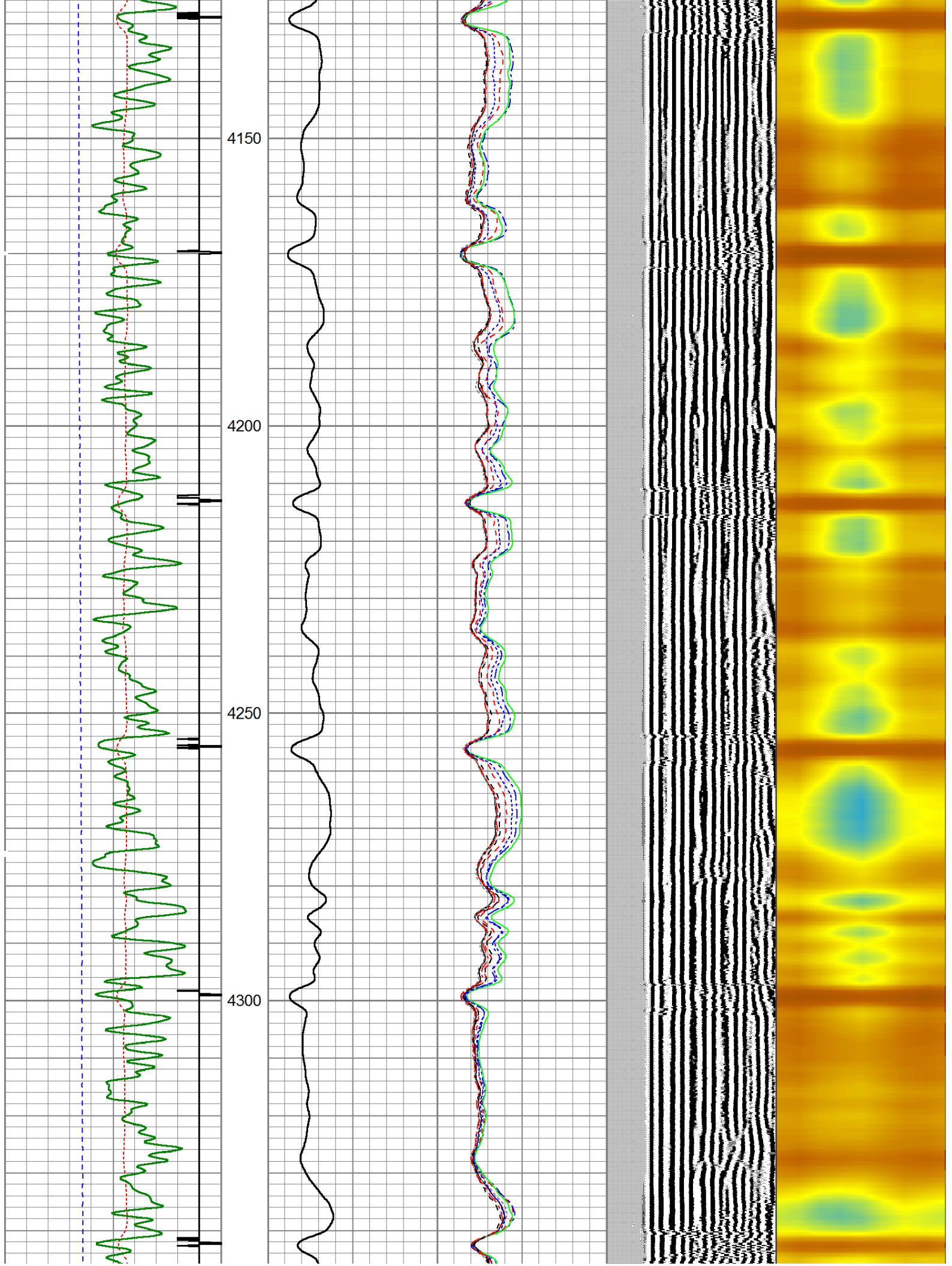


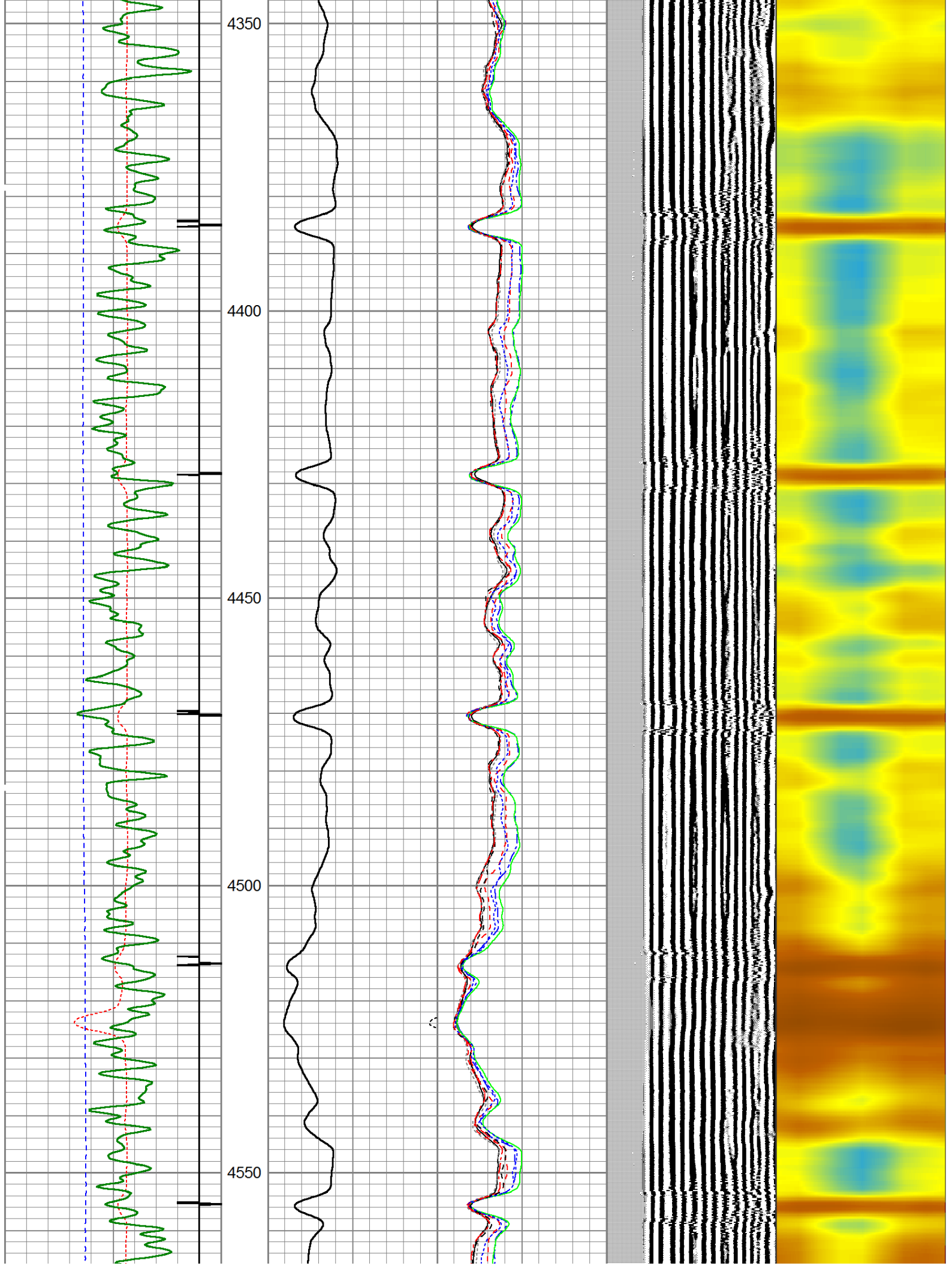


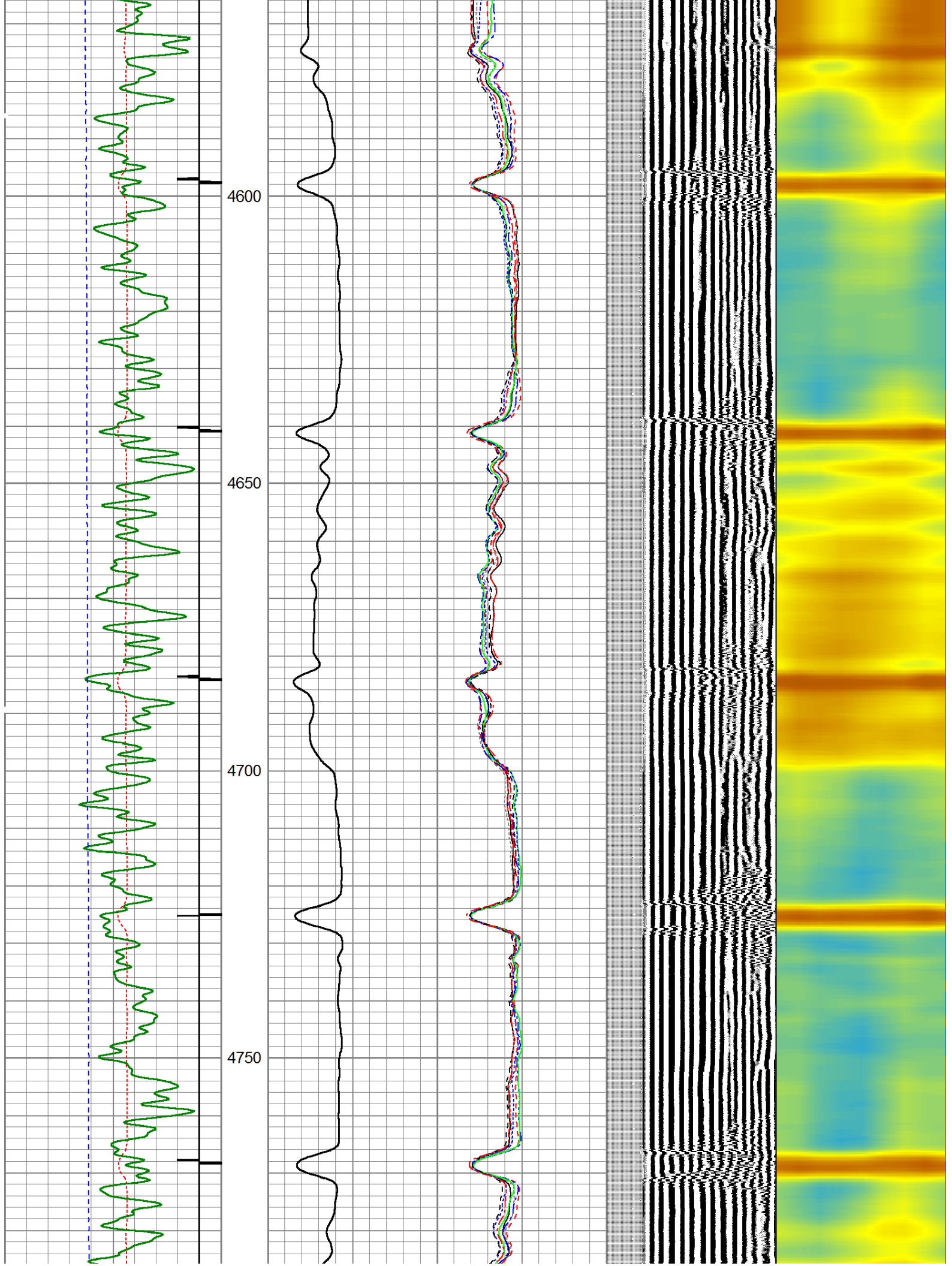


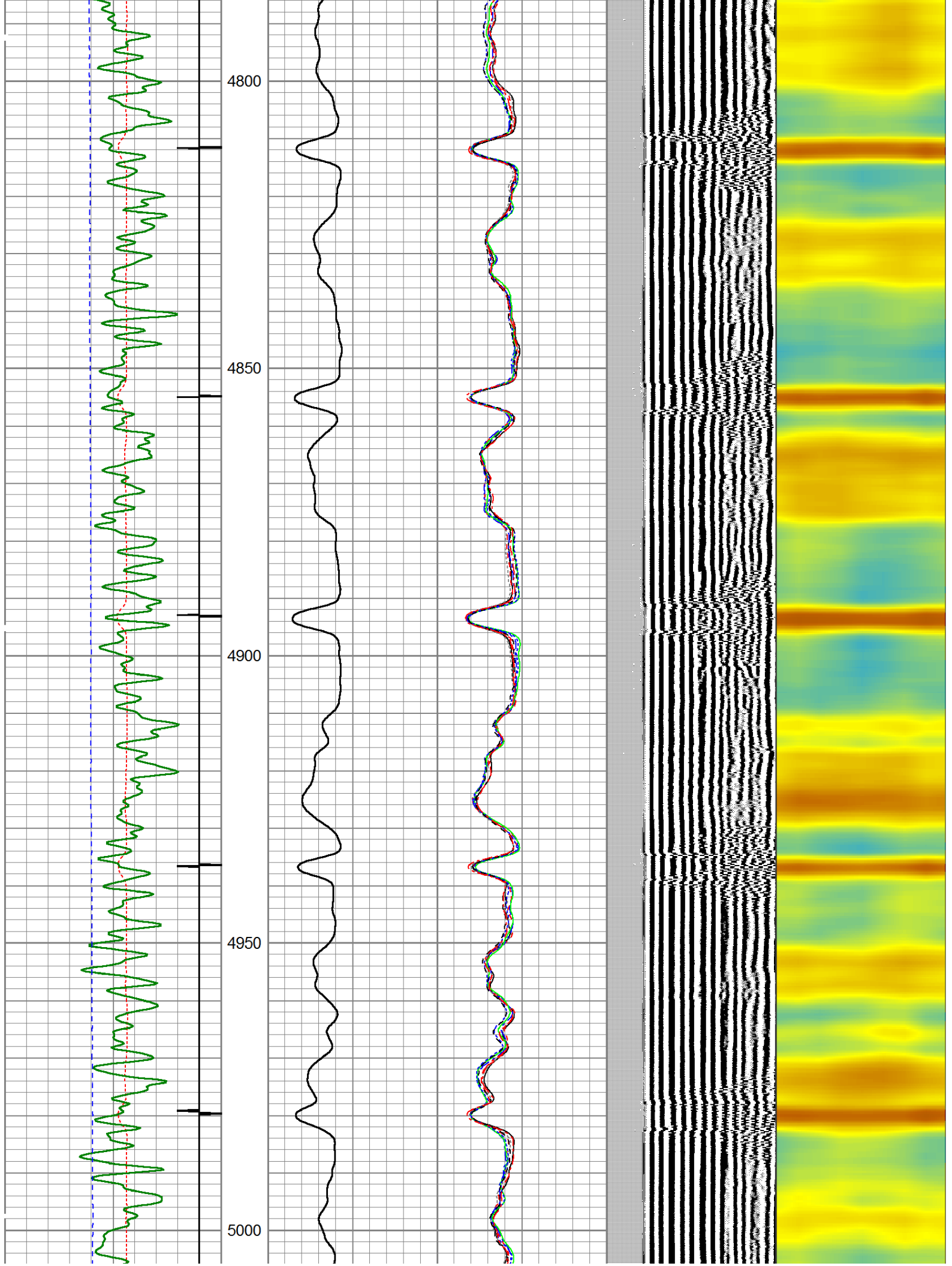


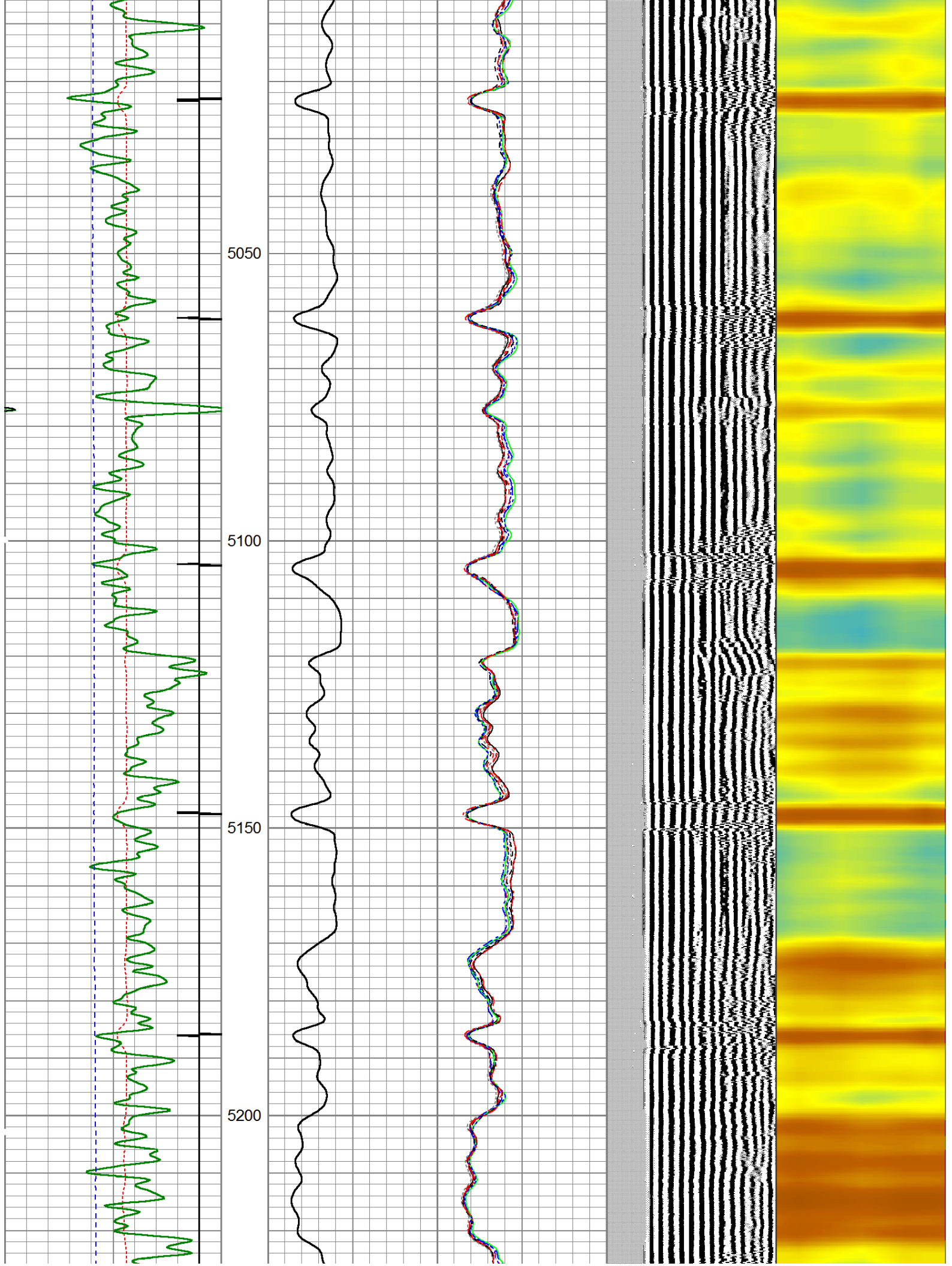


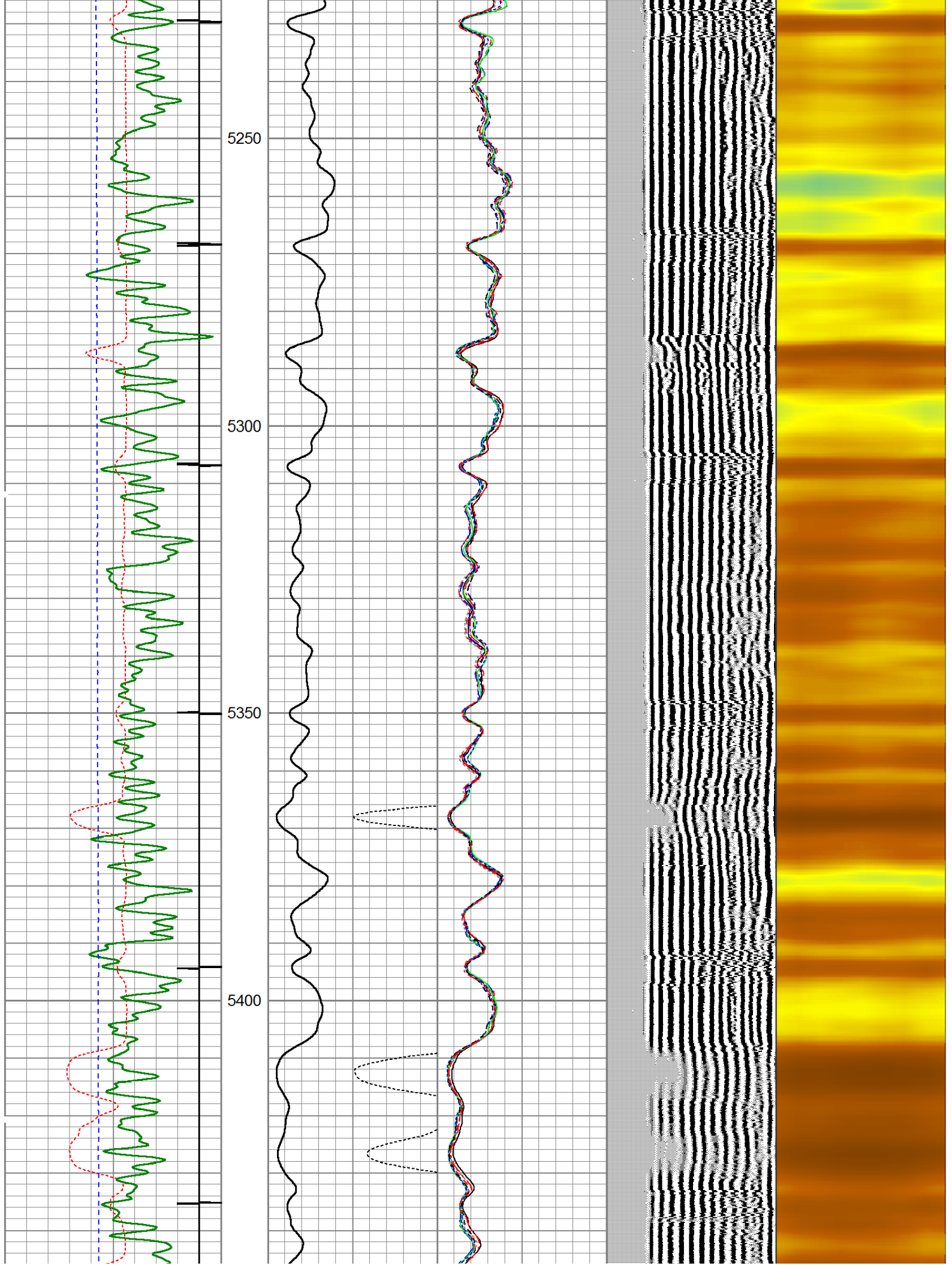






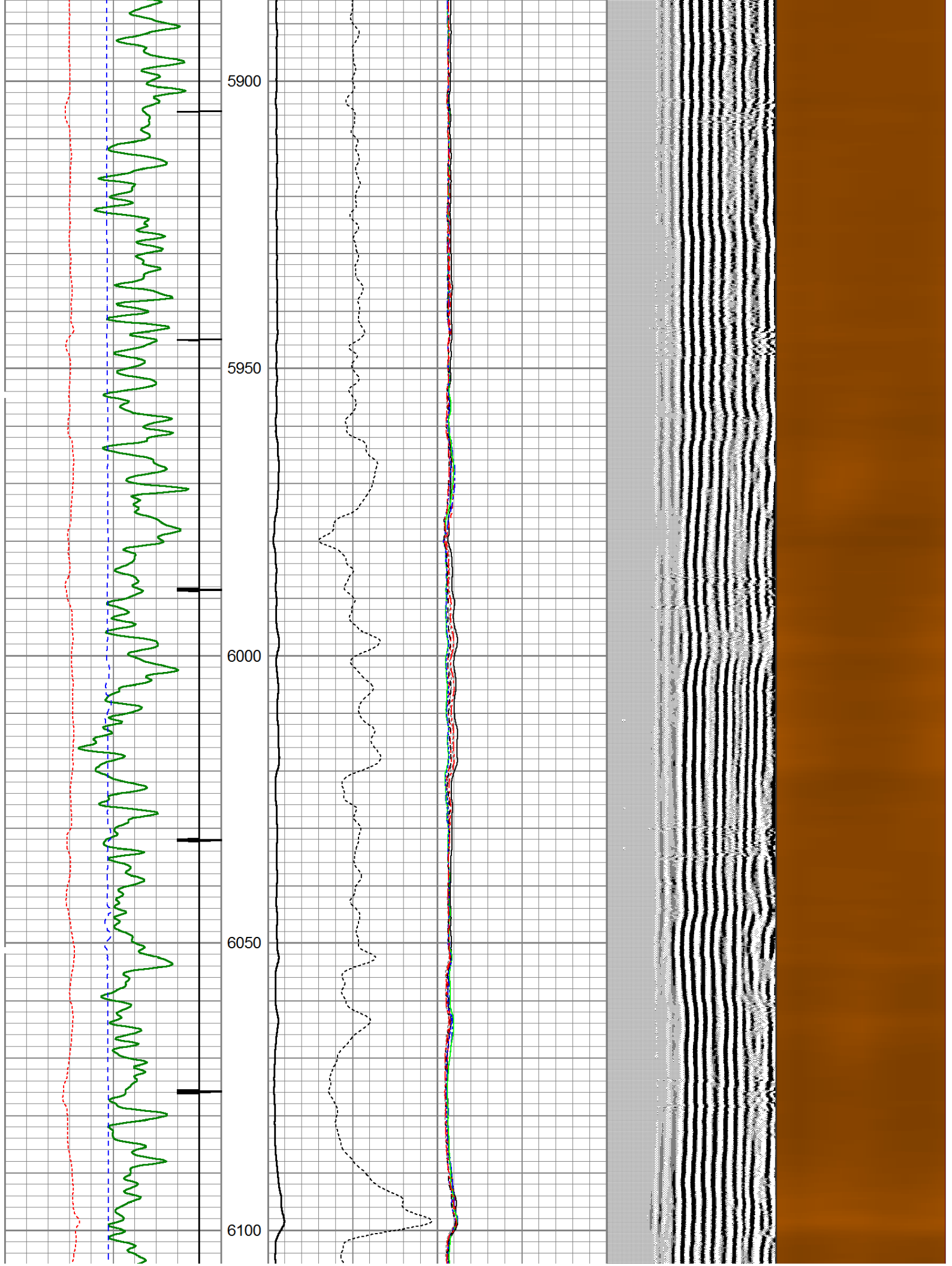


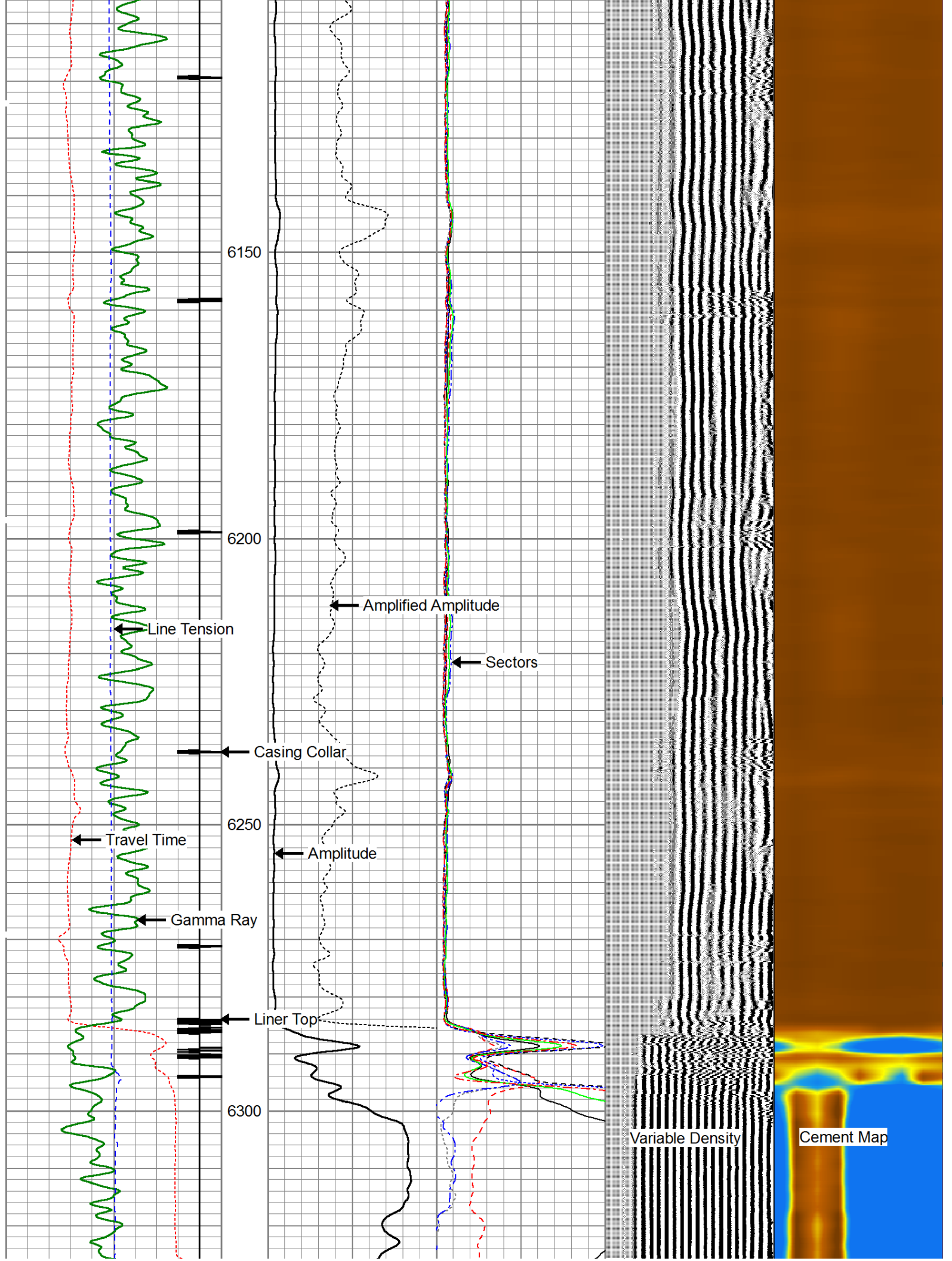


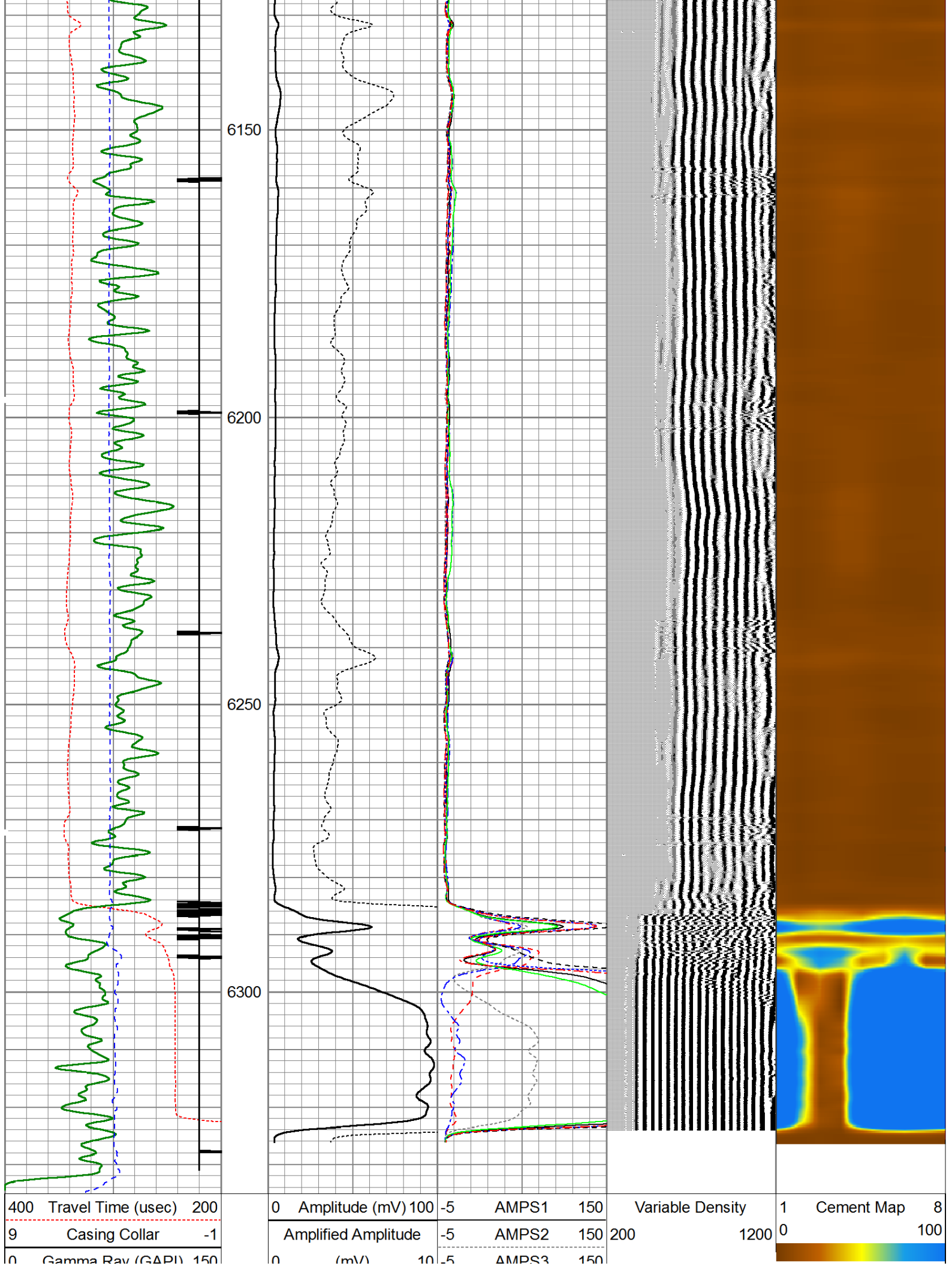








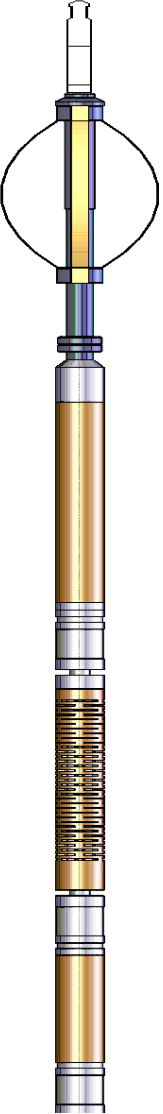
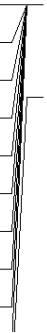




Gamma Ray (GAPI) 100	0	Line Tension (lb) 2000	-5	AMPS4	150
			-5	AMPS5	150
			-5	AMPS6	150
			-5	AMPS7	150
			-5	AMPS8	150

Calibration Report						
Database File:	noble energy wells ranch ae20-65hn_rcbl.db					
Dataset Pathname:	pass4					
Dataset Creation:	Wed Nov 27 07:58:31 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				
5'	-0.021	0.537	1.000	62.165	109.446	3.343
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	128.298	2.704
S5	-0.020	0.614	0.000	100.000	145.666	3.162
S6	-0.021	0.575	0.000	100.000	162.914	3.470
S7	-0.022	0.547	0.000	100.000	180.964	3.823

S8	-0.021	0.545	0.000	100.000	176.689	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)		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)
			Titan Cable_head	1.00	1.44	10.00
			Probe275 2.75" Centralizer	2.88	2.75	20.00
			RBT-Probe (111107) Probe Radii Bond Tool with Digital Telemetry	8.75	2.75	90.00
WVF3FT	11.84					
WVFCAL	11.84					
WVFS1	11.84					
WVFS2	11.84					
WVFS3	11.84					
WVFS4	11.84					
WVFS5	11.84					
WVFS6	11.84					
WVFS7	11.84					

