



**Radial Cement Bond
Variable Density Log
W/ Temp/GammaRay/CCL**

Company Antero Resources
Well Nuggets 1H
Field North Canton
County Tyler
State West Virginia

Company Antero Resources
Well Nuggets 1H
Field North Canton
County Tyler
State West Virginia

Location: SEC N/A TWP N/A RGE N/A
39.403892 -80.787906
API #: 47095026560000
Other Services N/A
Permanent Datum Ground Level Elevation
Log Measured From Kelly Bushing 25' A.P.D.
Drilling Measured From Kelly Bushing
Elevation
K.B.
D.F.
G.L.

Date	1-May-20	
Run Number	One	
Depth Driller	14,752 ft.	
Depth Logger	7,368 ft.	
Bottom Logged Interval	7,368 ft. Surface	
Top Log Interval	Surface	
Open Hole Size	n/a	
Type Fluid	Freshwater	
Density / Viscosity	n/a	
Max. Recorded Temp.	165 deg F	
Estimated Cement Top	5,706 ft.	
Time Well Ready	07:00	
Time Logger on Bottom	11:19	
Equipment Number	132	
Location	Marietta, Ohio	
Recorded By	Tom Weese	
Witnessed By	Chris Young	
Borehole Record		
Run Number	Bit	From To
Tubing Record		
Run Number	Size	Weight From To
Casing Record	Size	Vgt/Ft Top Bottom
Surface String	13 3/8 in.	54.5 # Surface 413 ft.
Prot String	9 5/8 in.	36 # Surface 3,357 ft.
Production String	5 1/2	20 # Surface 14,752 ft.
Liner		
Marker Joint		6,124 ft. 6,134 ft.

<<< Fold Here >>>

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

Log Correlated to Marker Joint at (6,124' - 6,134')
Depth Correction (-8)

Main Pass 0 PSI
Repeat Pass 0 PSI

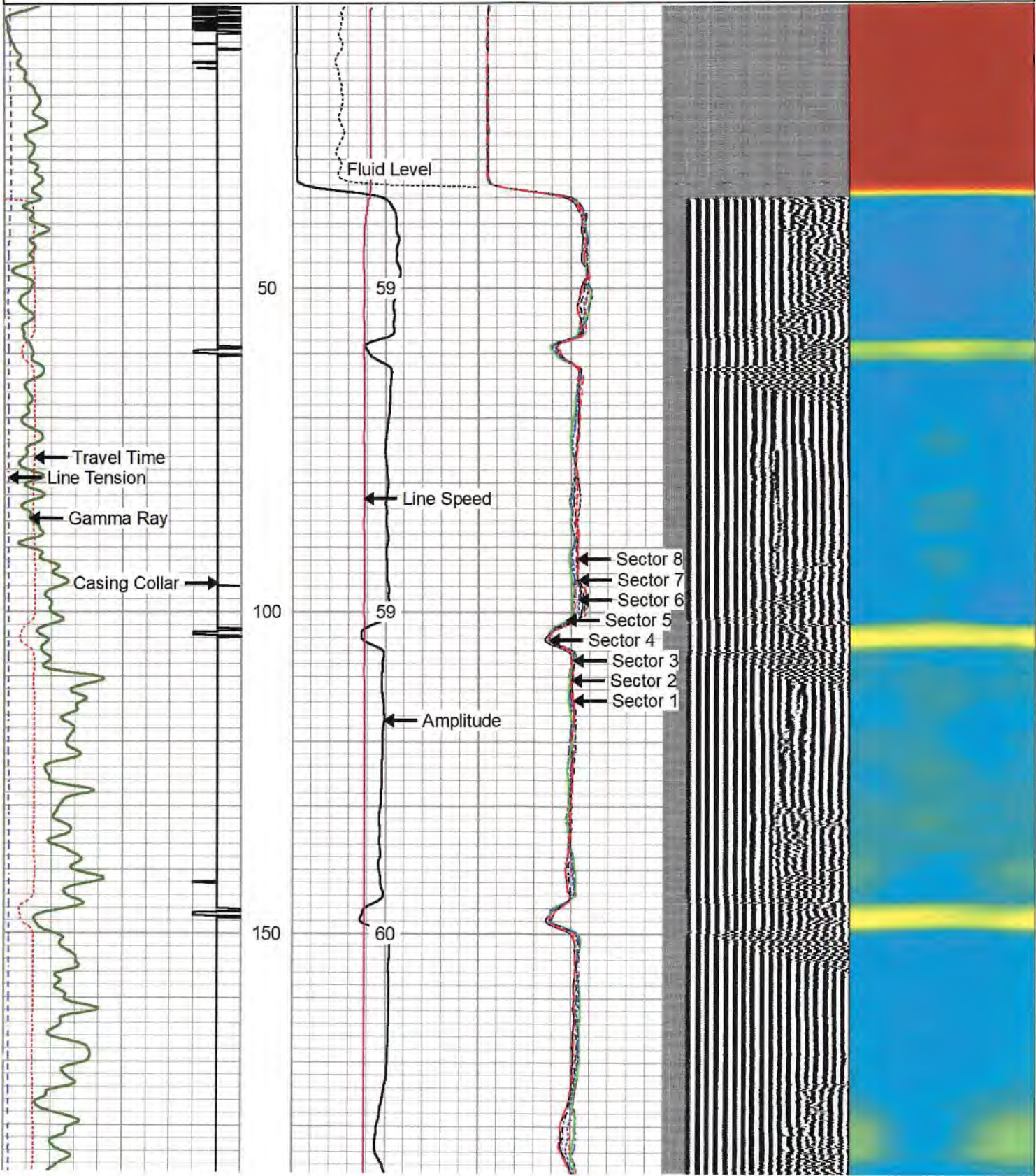
Thank You For Using Nine Energy Wireline of Marietta, Ohio

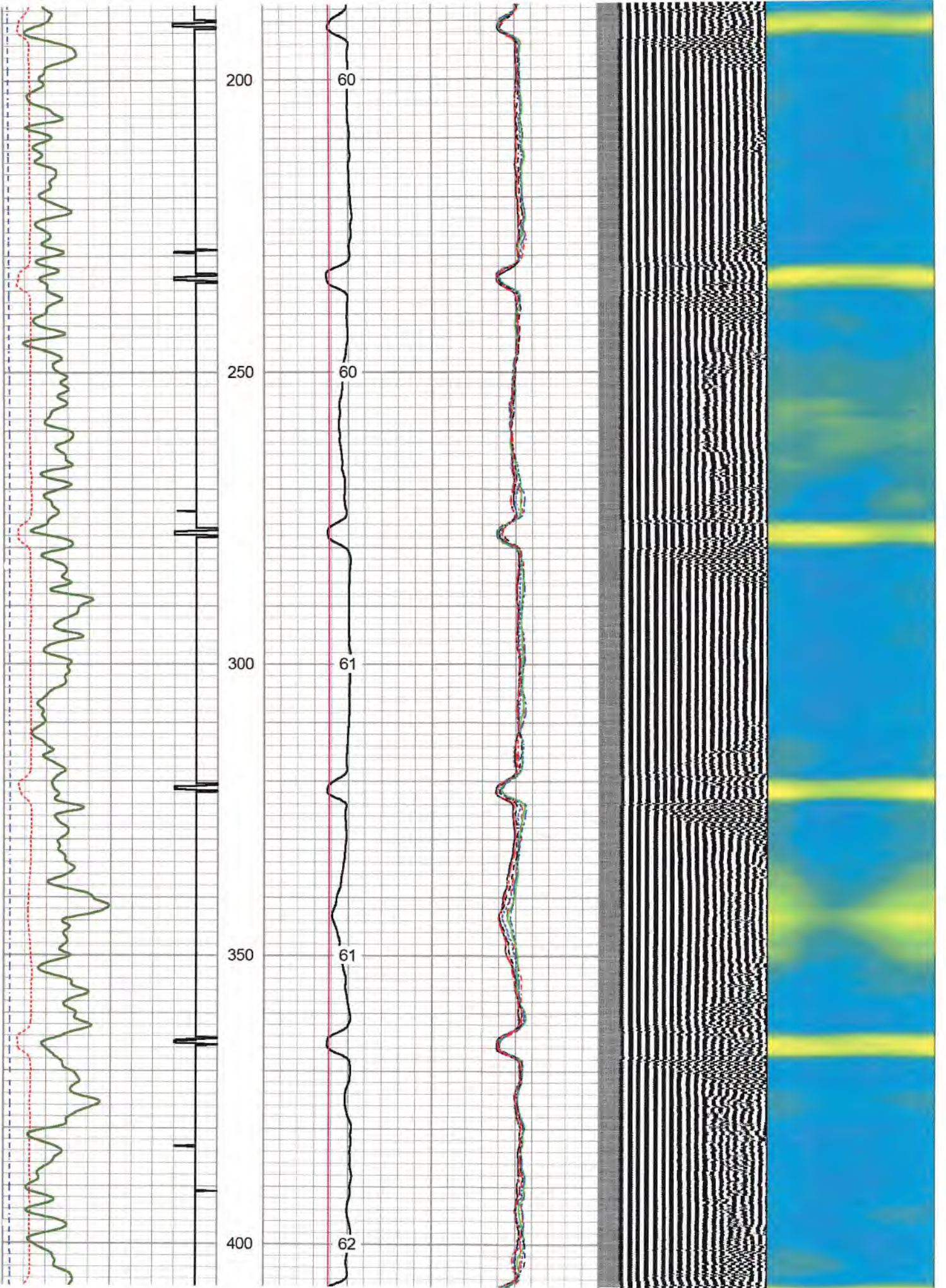
Database File	antero_coloradowest_nuggets_1h_rcbl_nineenergy_may_1_2020.db
Dataset Pathname	Marcellus/Nuggets_1H/RCBL_1/pass4
Presentation Format	9rcbl
Dataset Creation	Fri May 01 11:19:32 2020
Charted by	Depth in Feet scaled 1:240

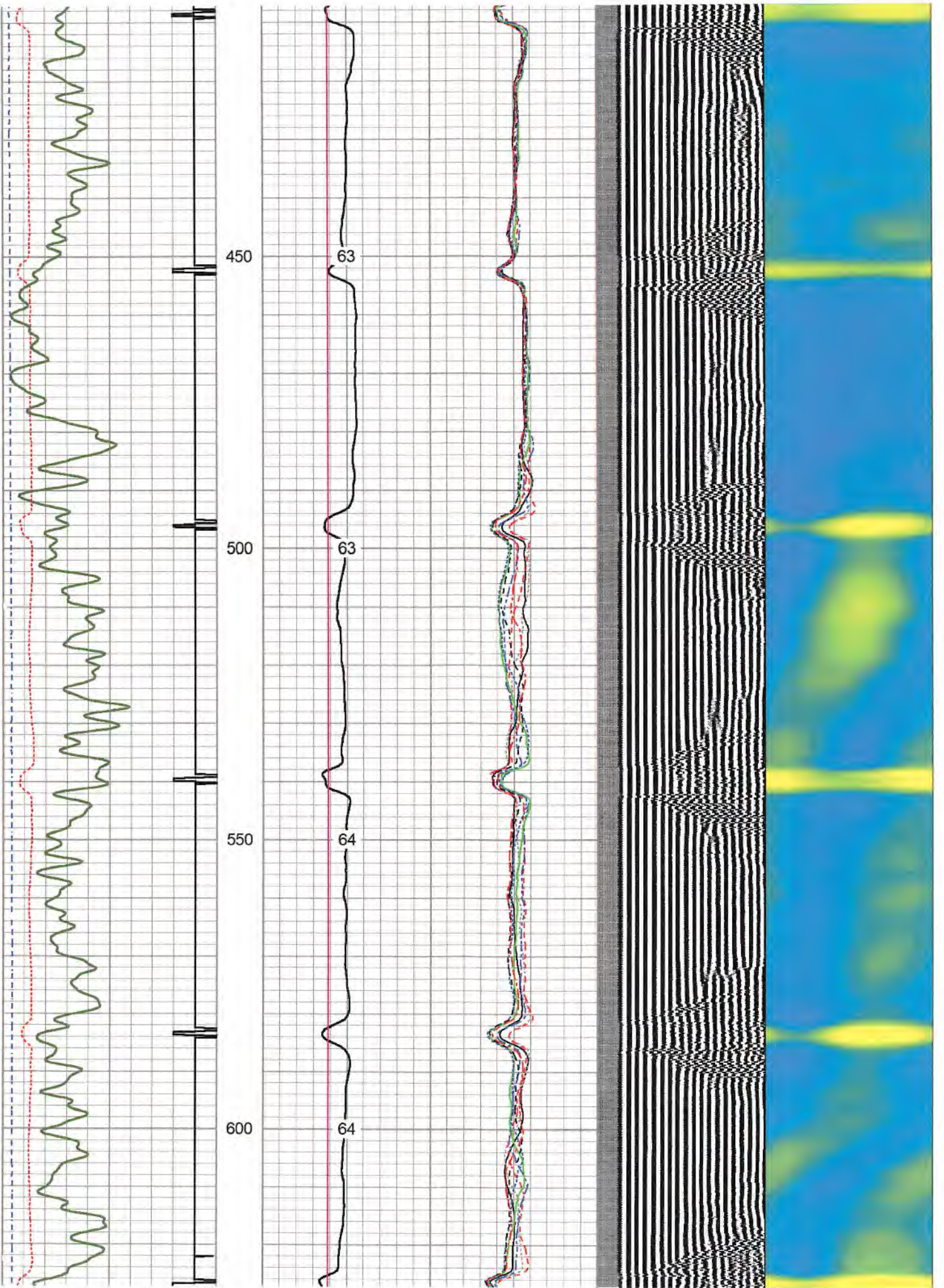
270	Travel Time (usec)	200
9	Casing Collar	-1
0	Gamma Ray (GAPI)	150
0	Line Tension (lb)	5000

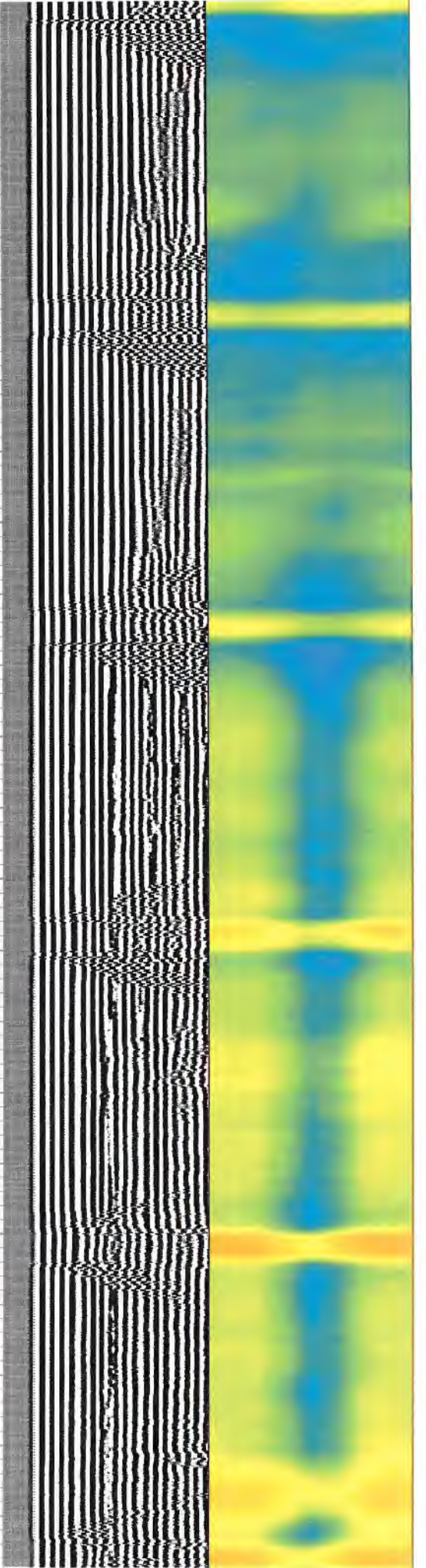
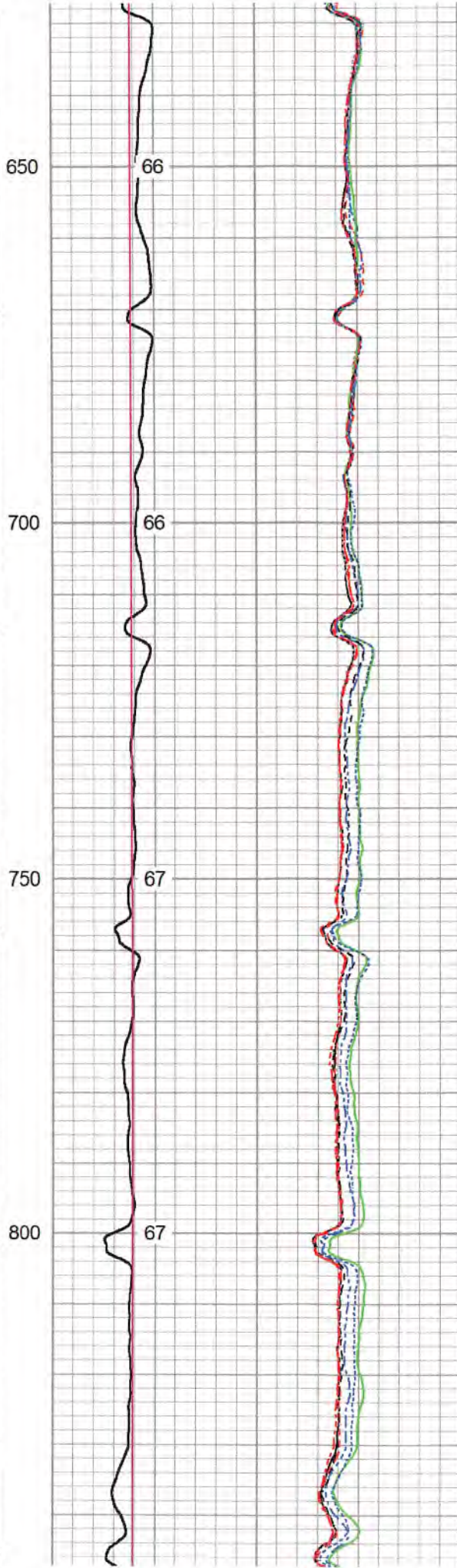
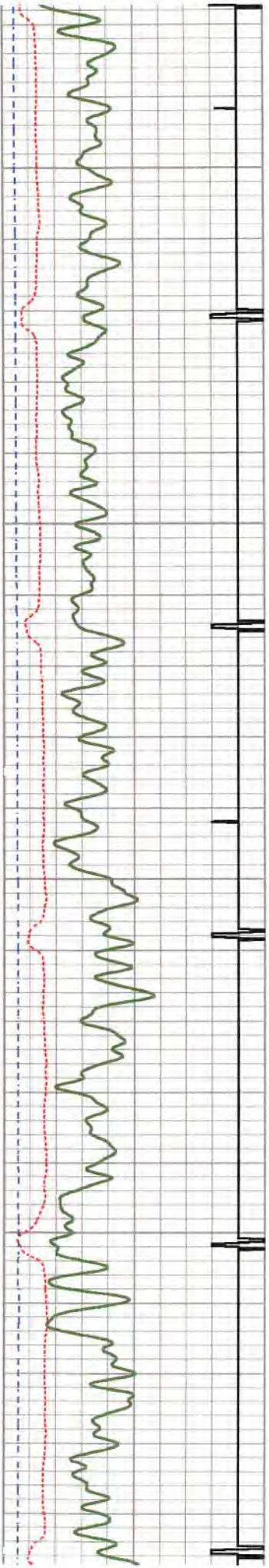
0	Amplitude (mV)	100	-5	Sector 1	150
	Amplified Amplitude		-5	Sector 2	150
0	(mV)	10	-5	Sector 3	150
	Line Speed		-5	Sector 4	150
-500	(ft/min)	500	-5	Sector 5	150
	TEMP		-5	Sector 6	150
	(degF)		-5	Sector 7	150
			-5	Sector 8	150

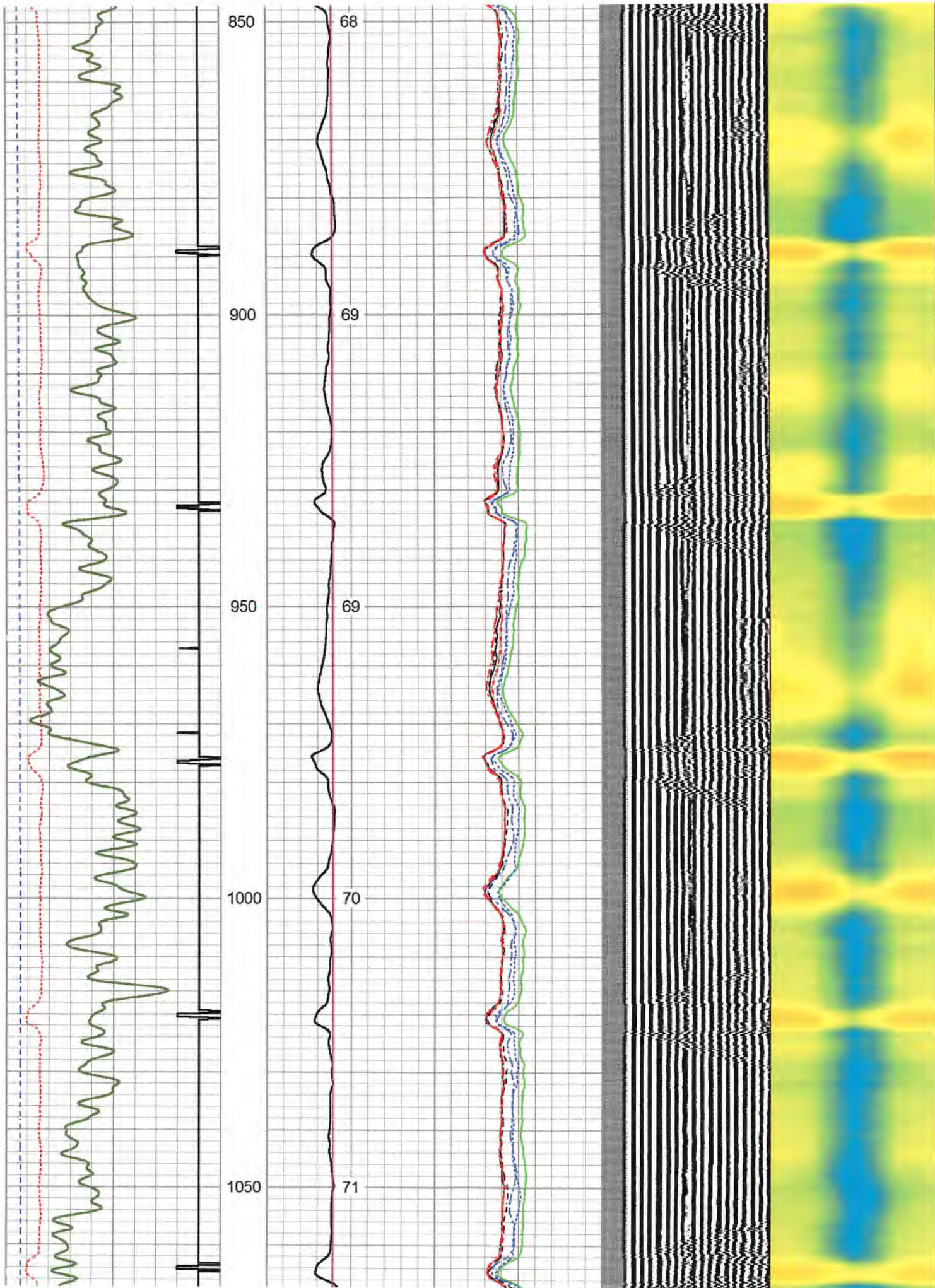
Variable Density 1 Cement Map 8

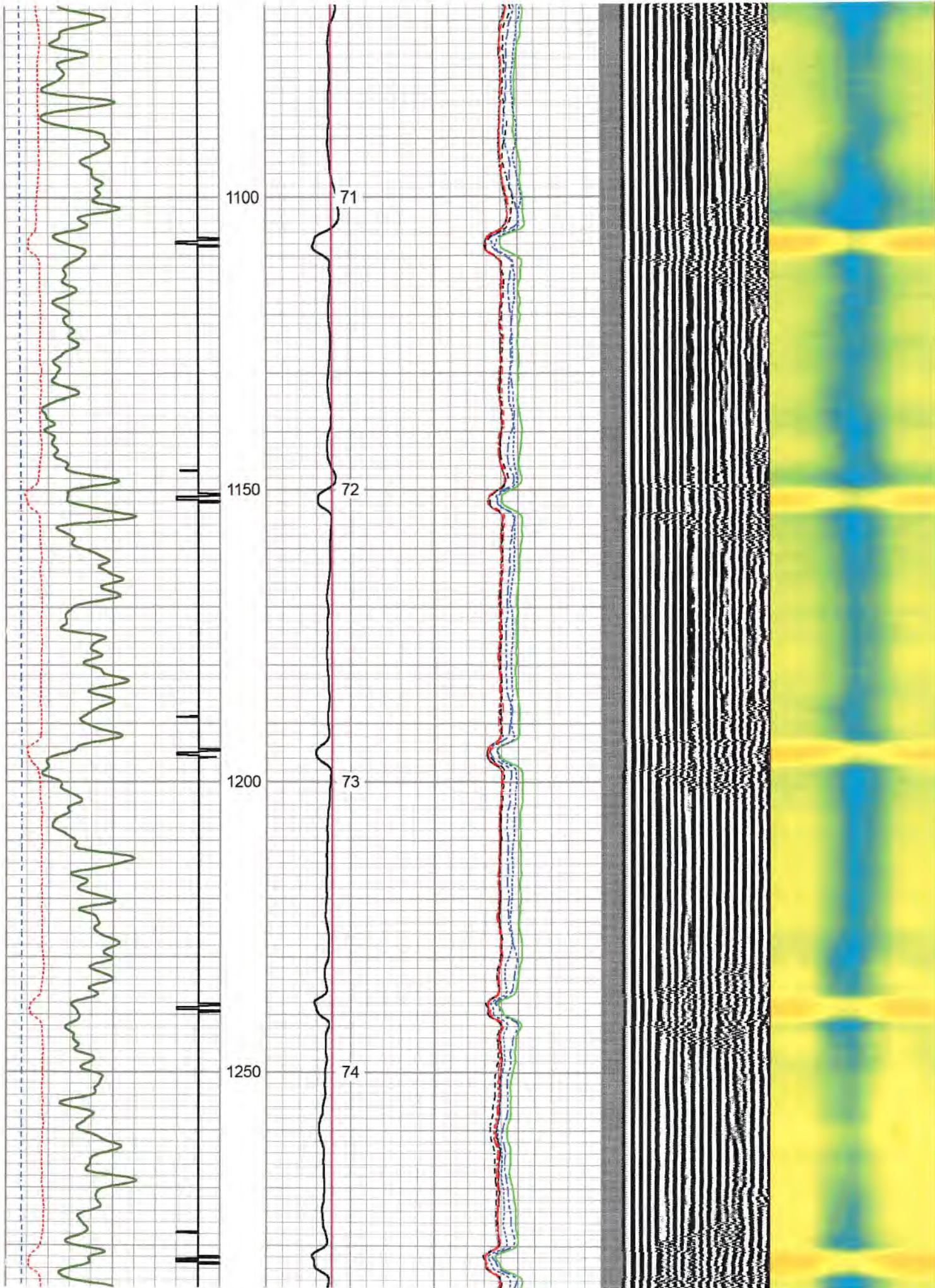


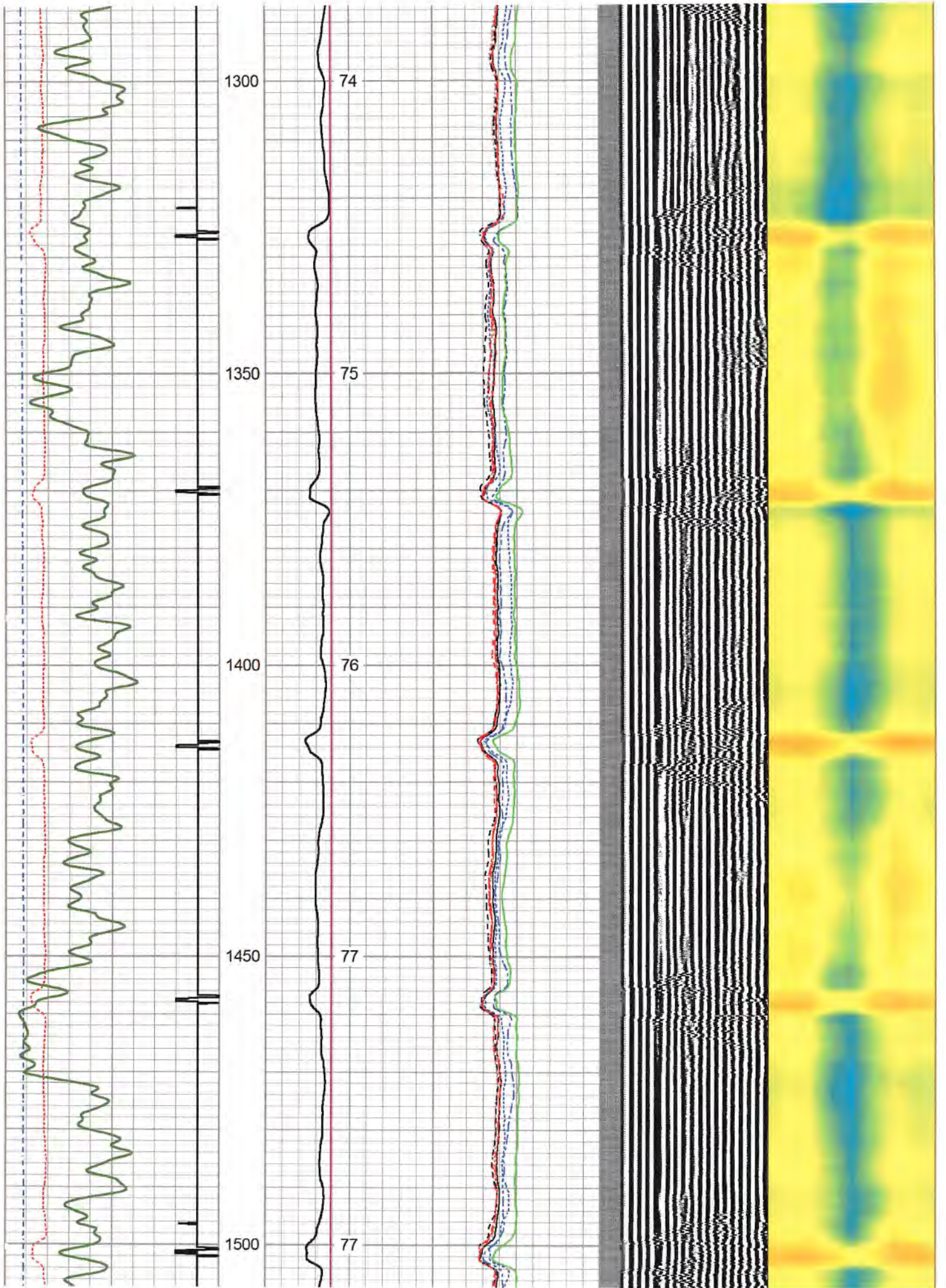


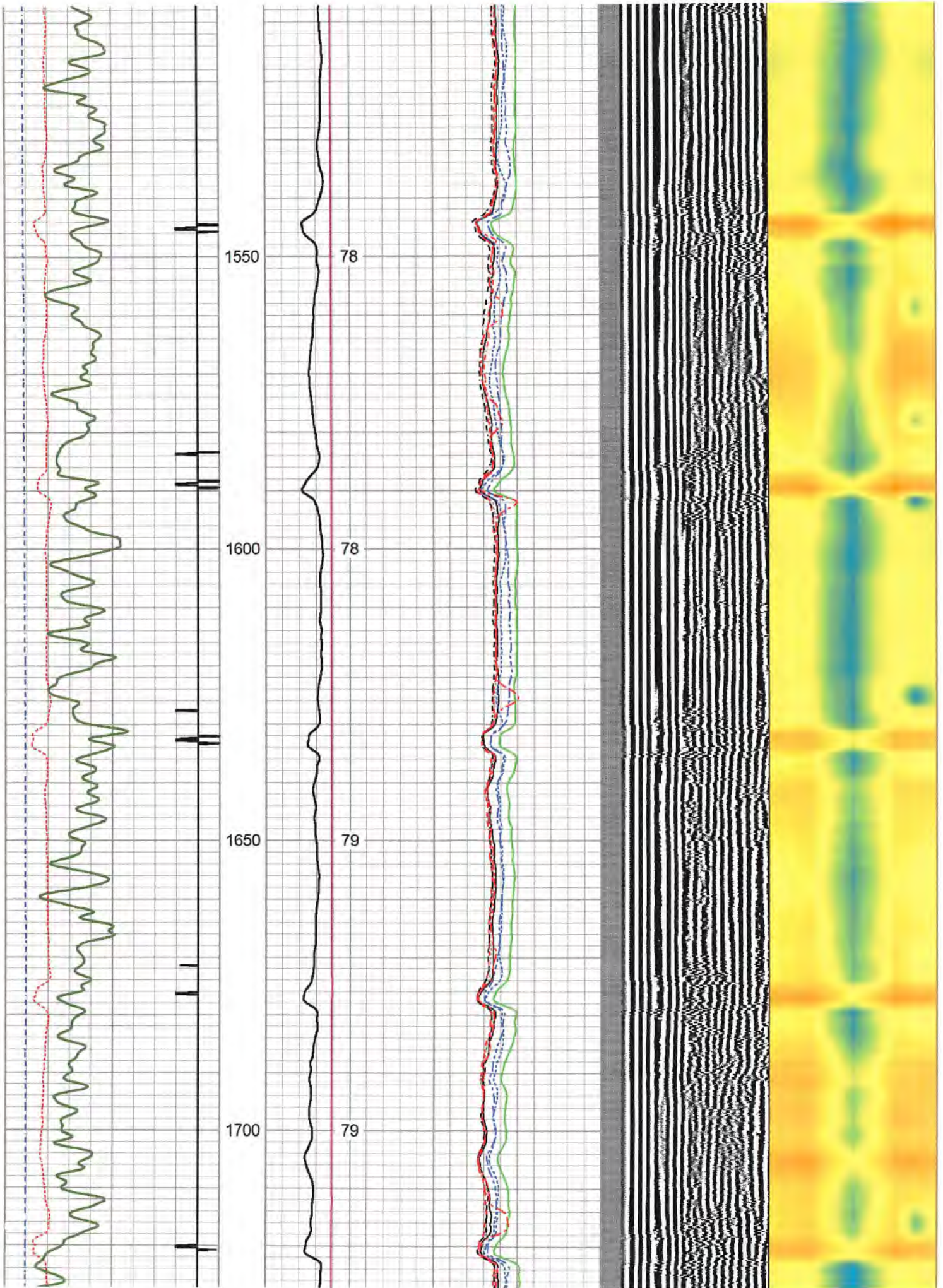


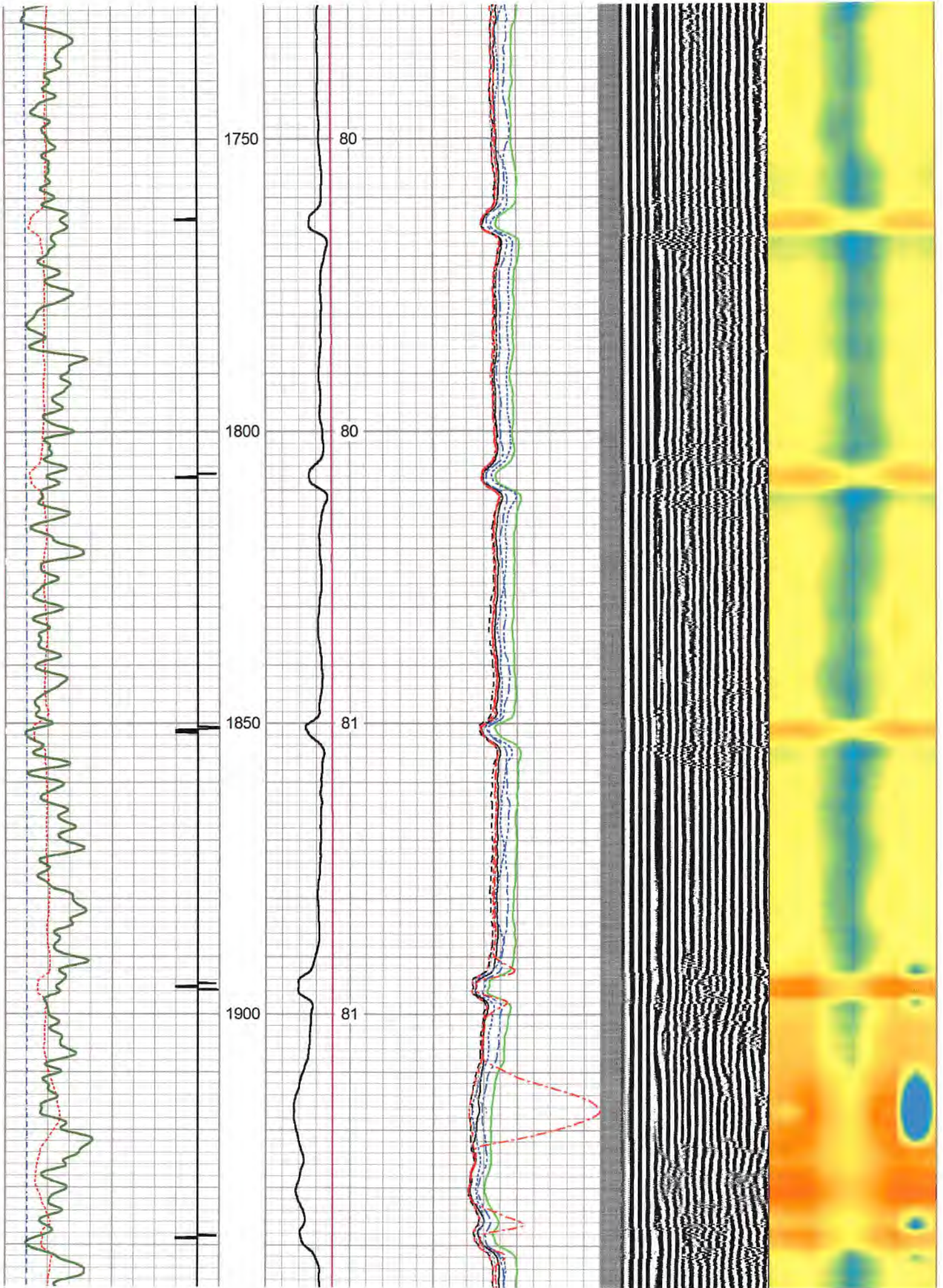


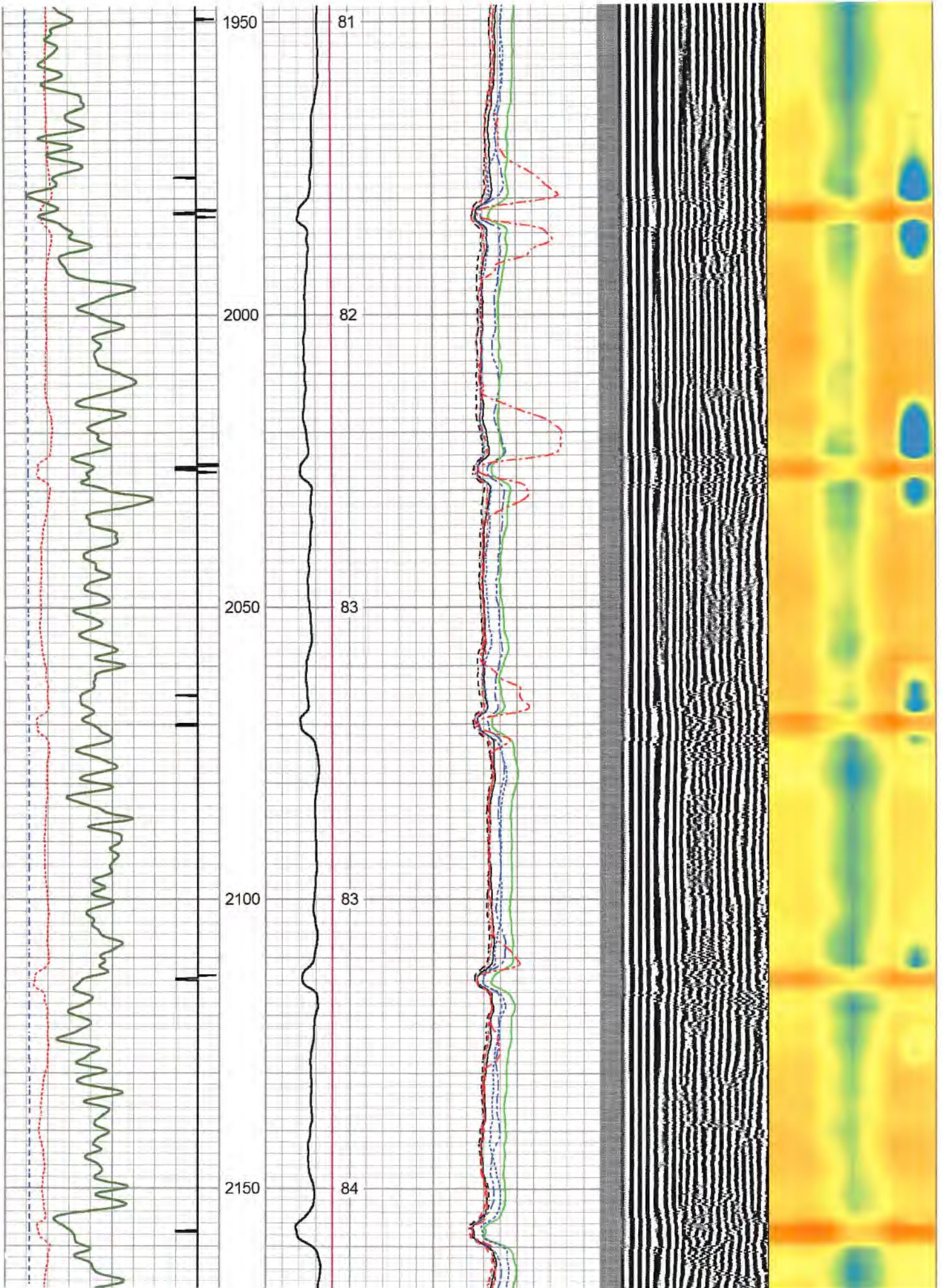


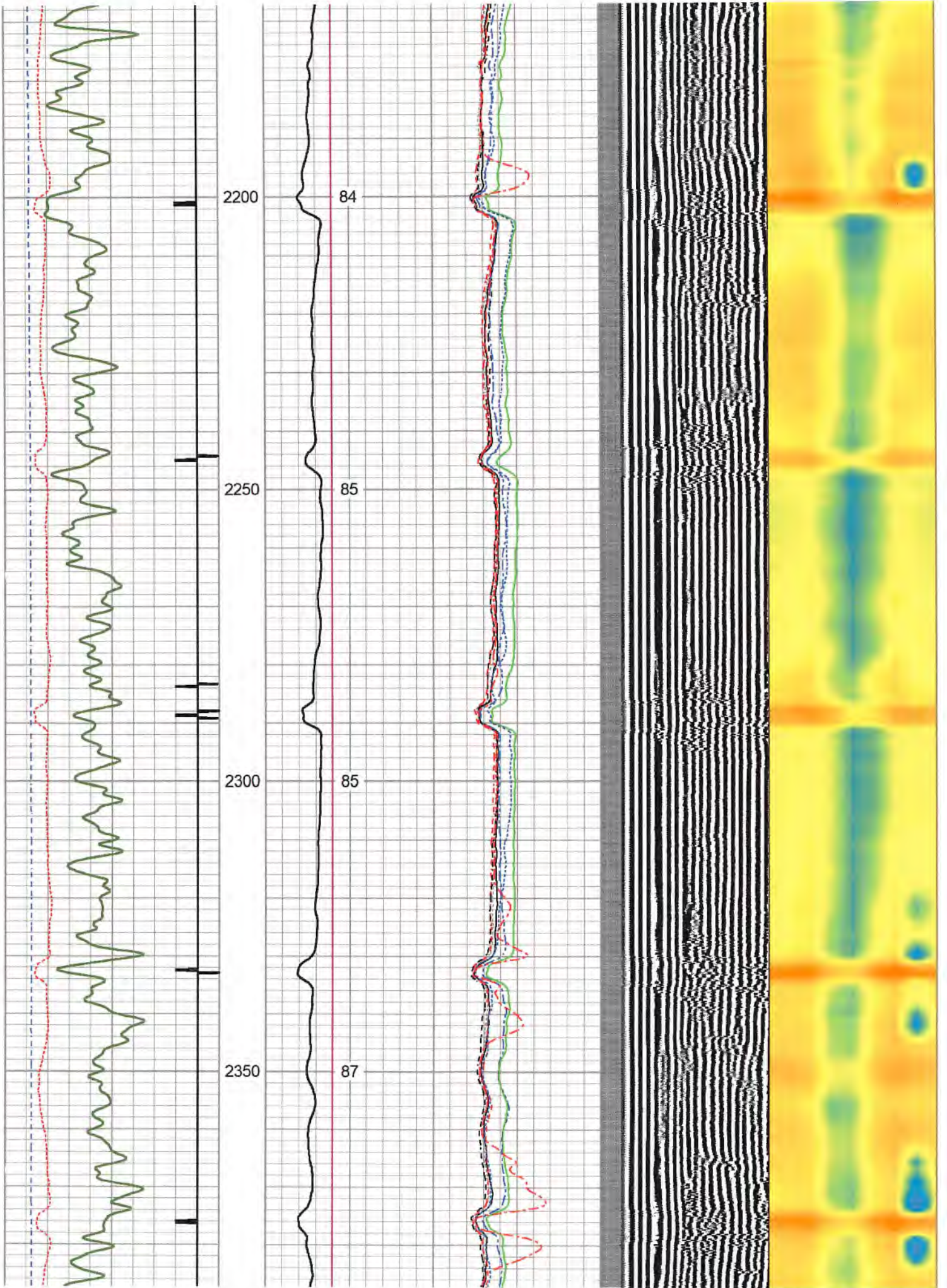


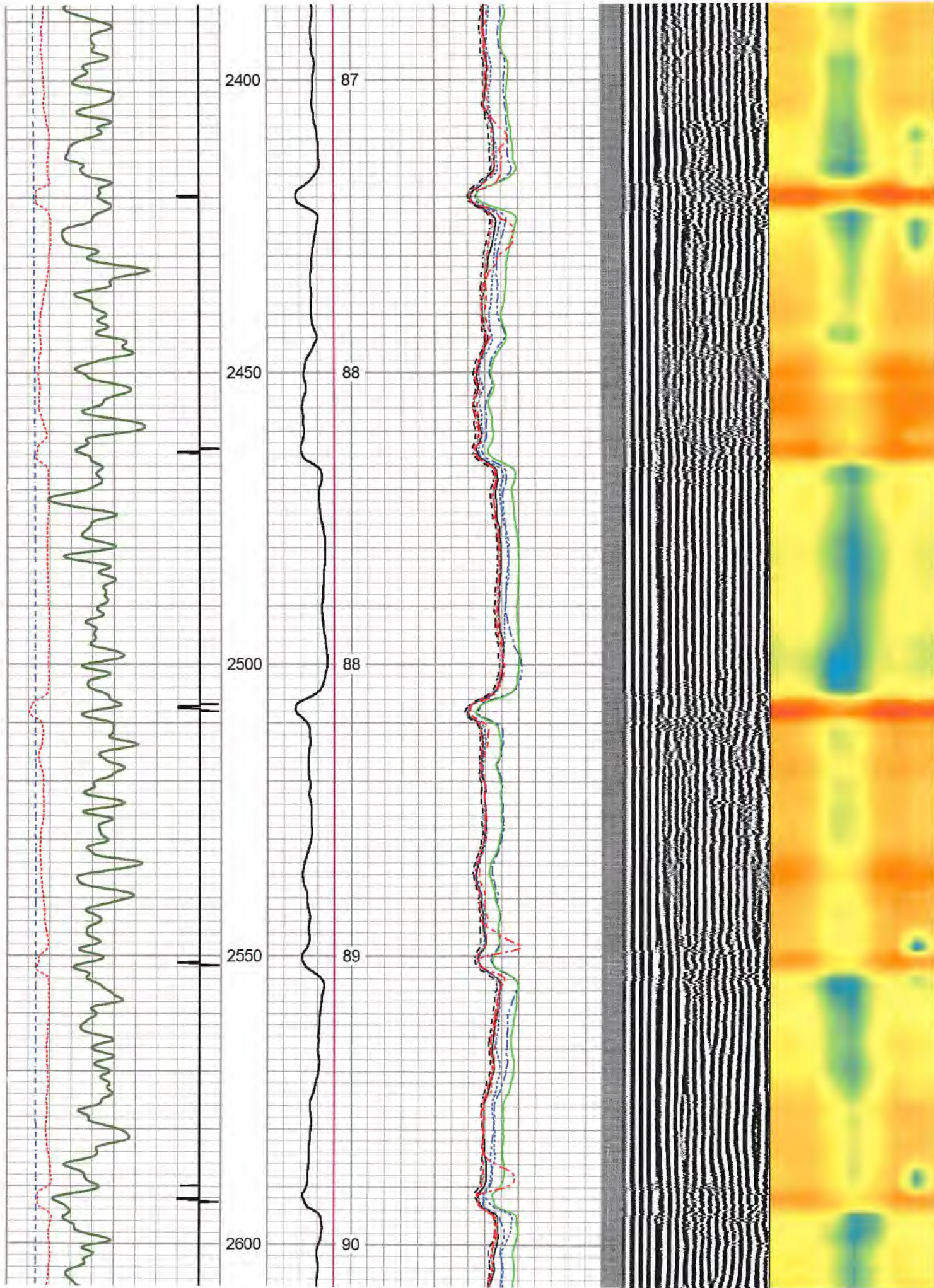


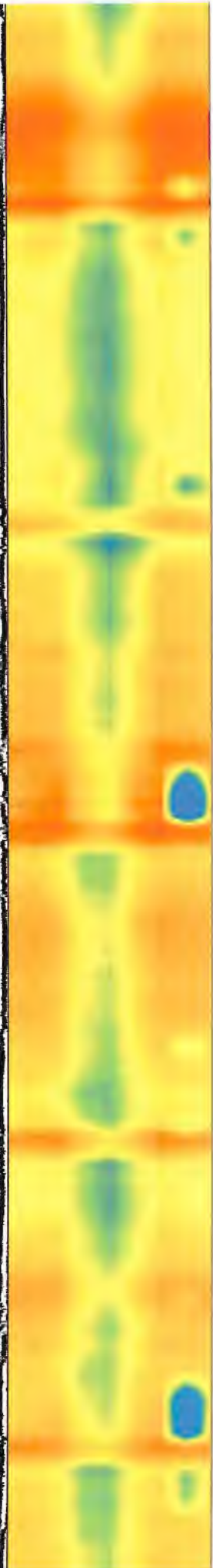
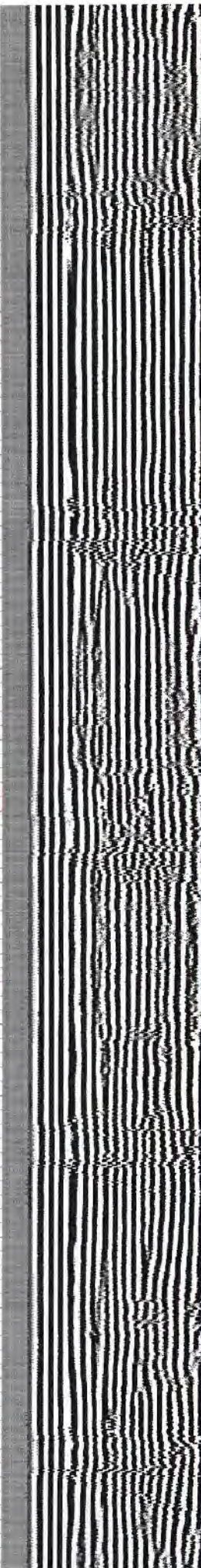
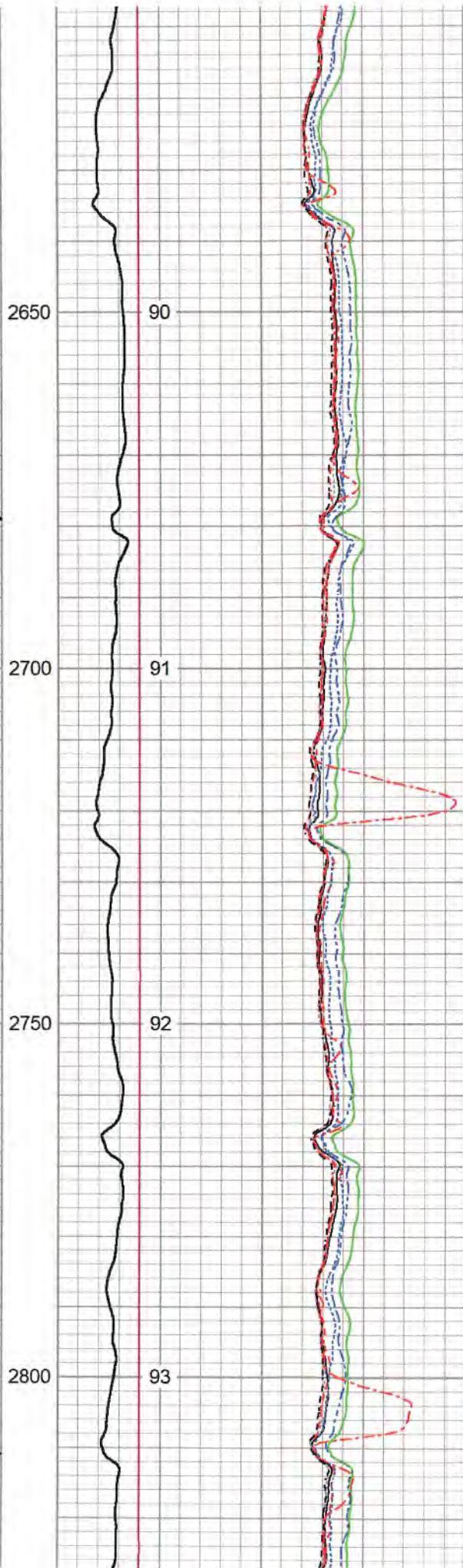
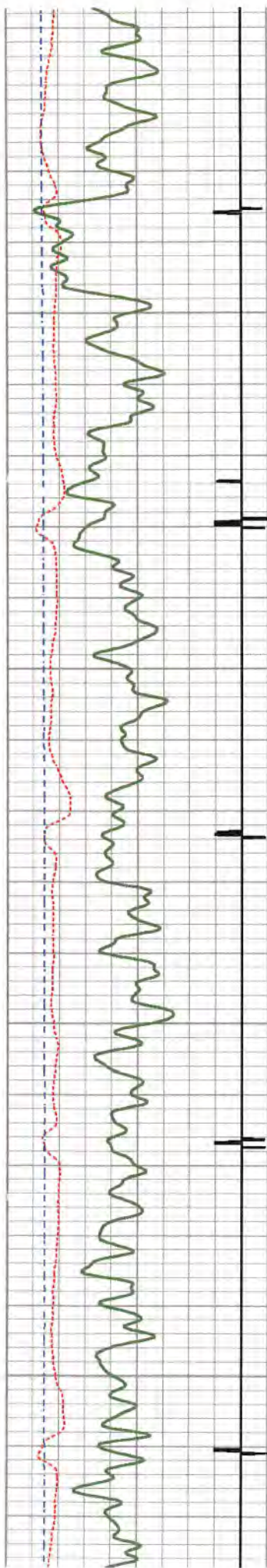


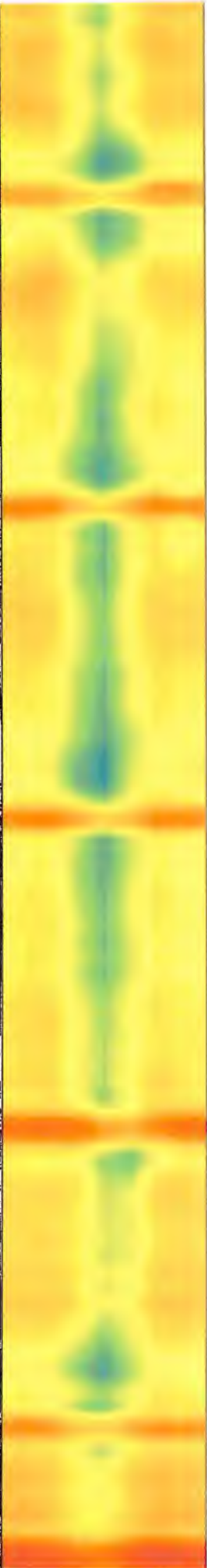
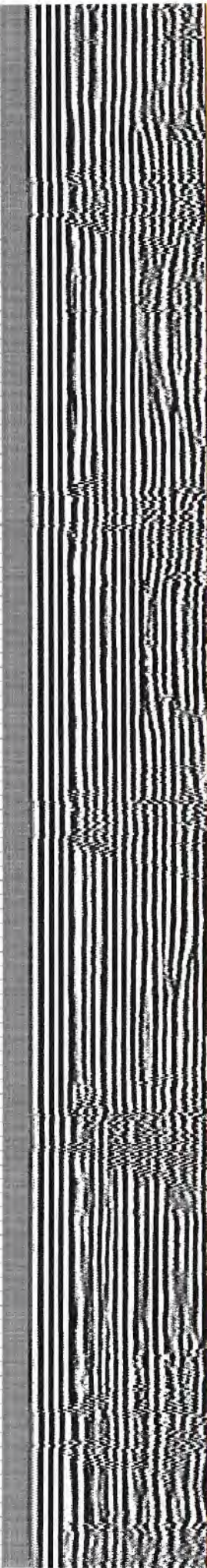
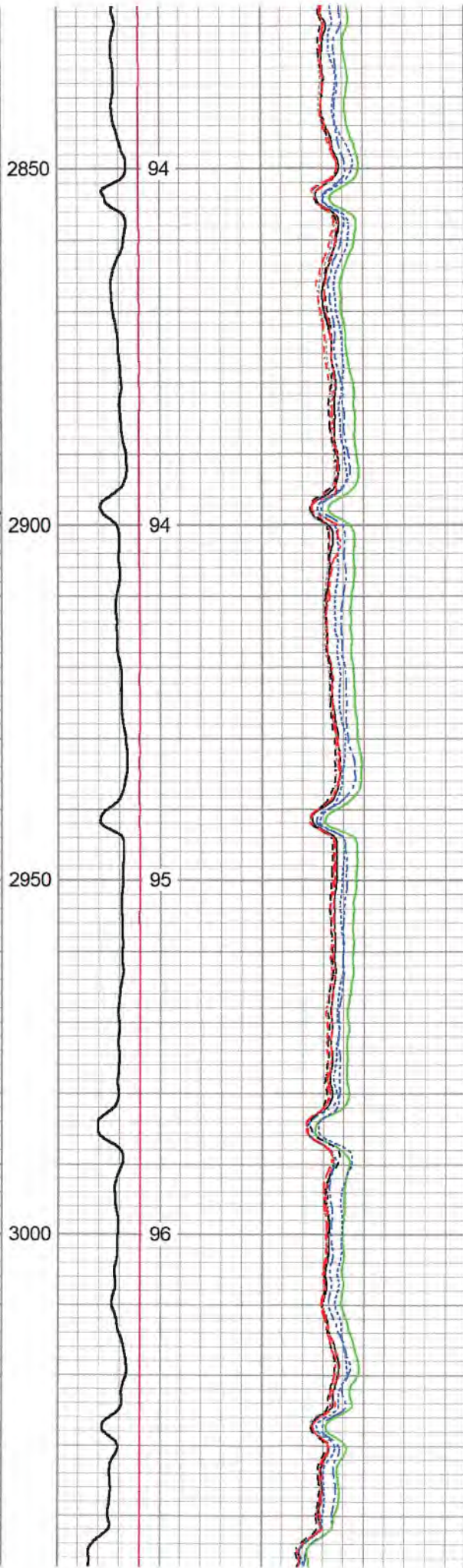
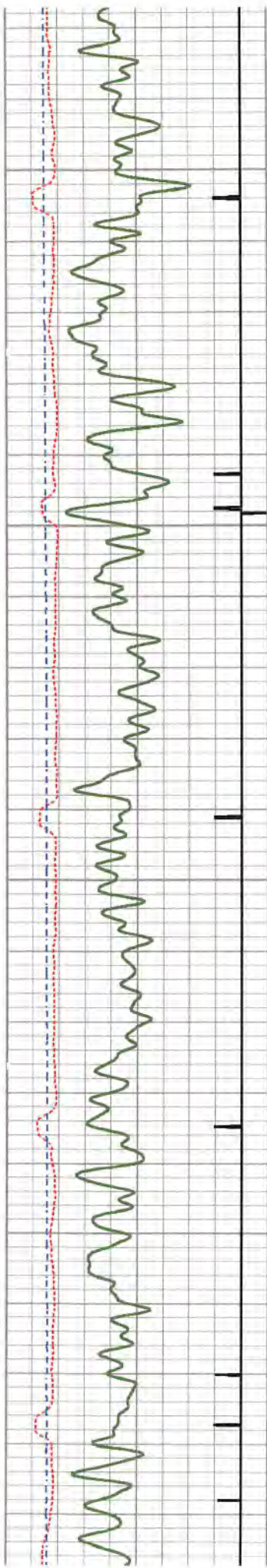


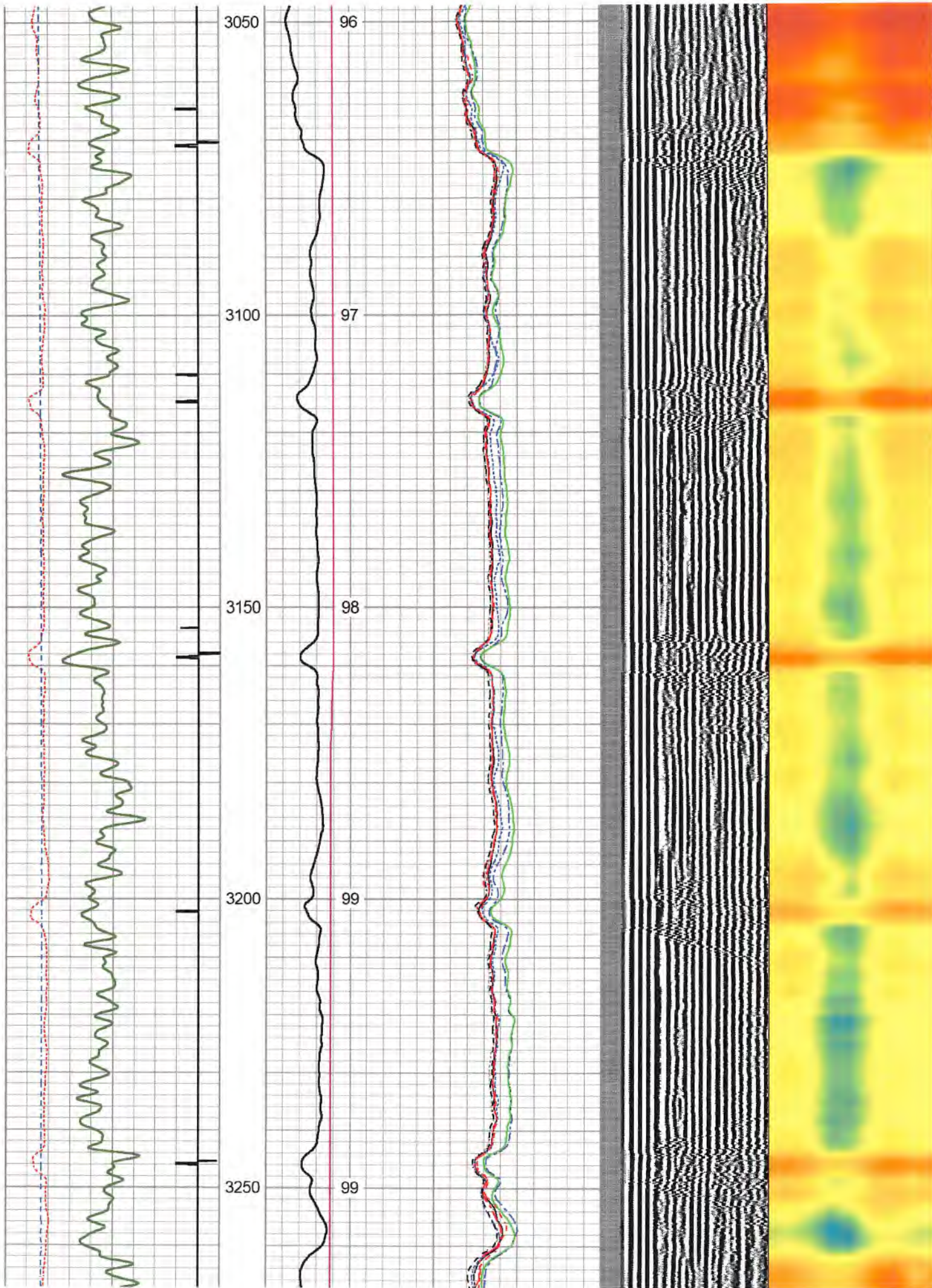


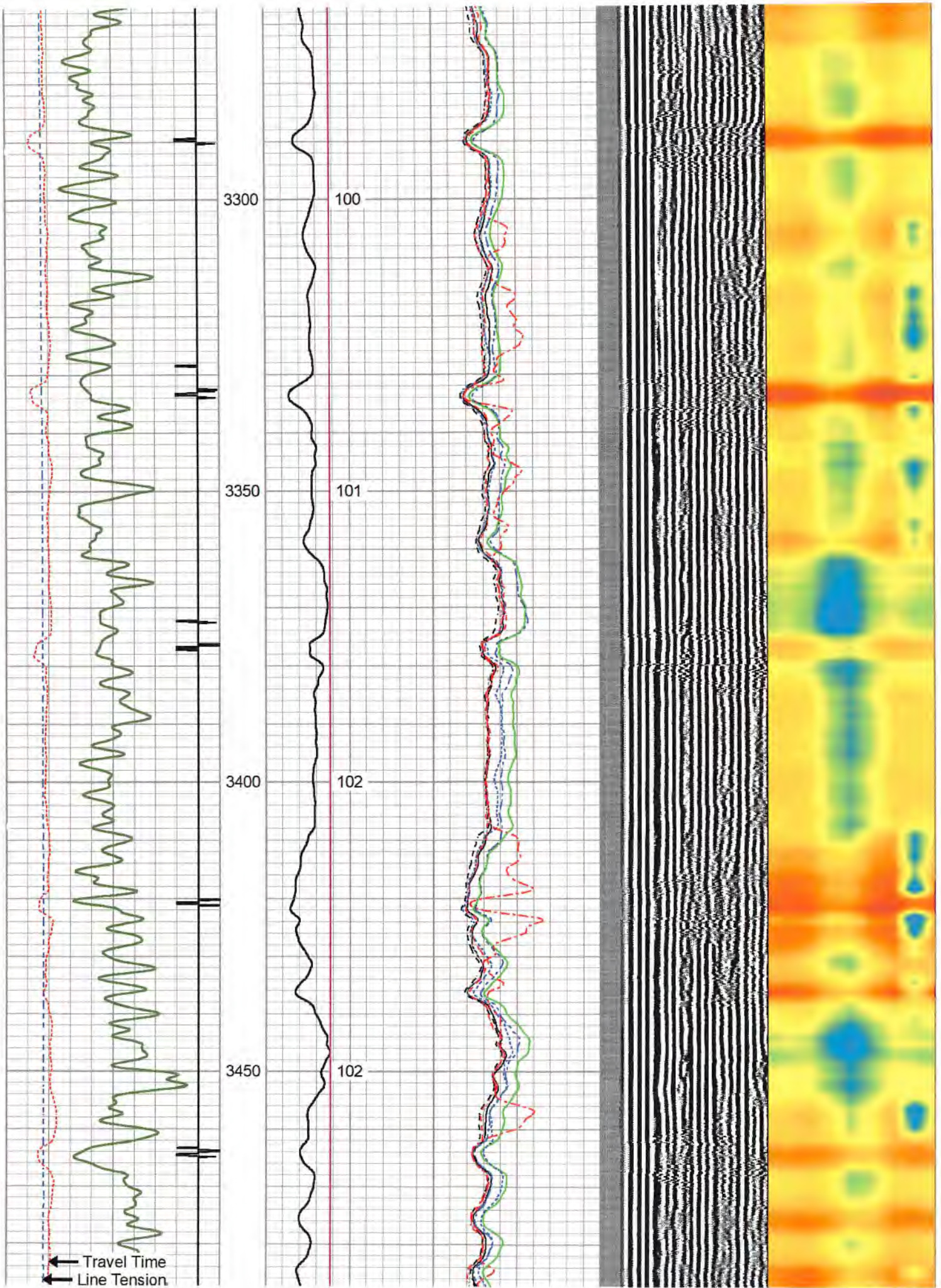




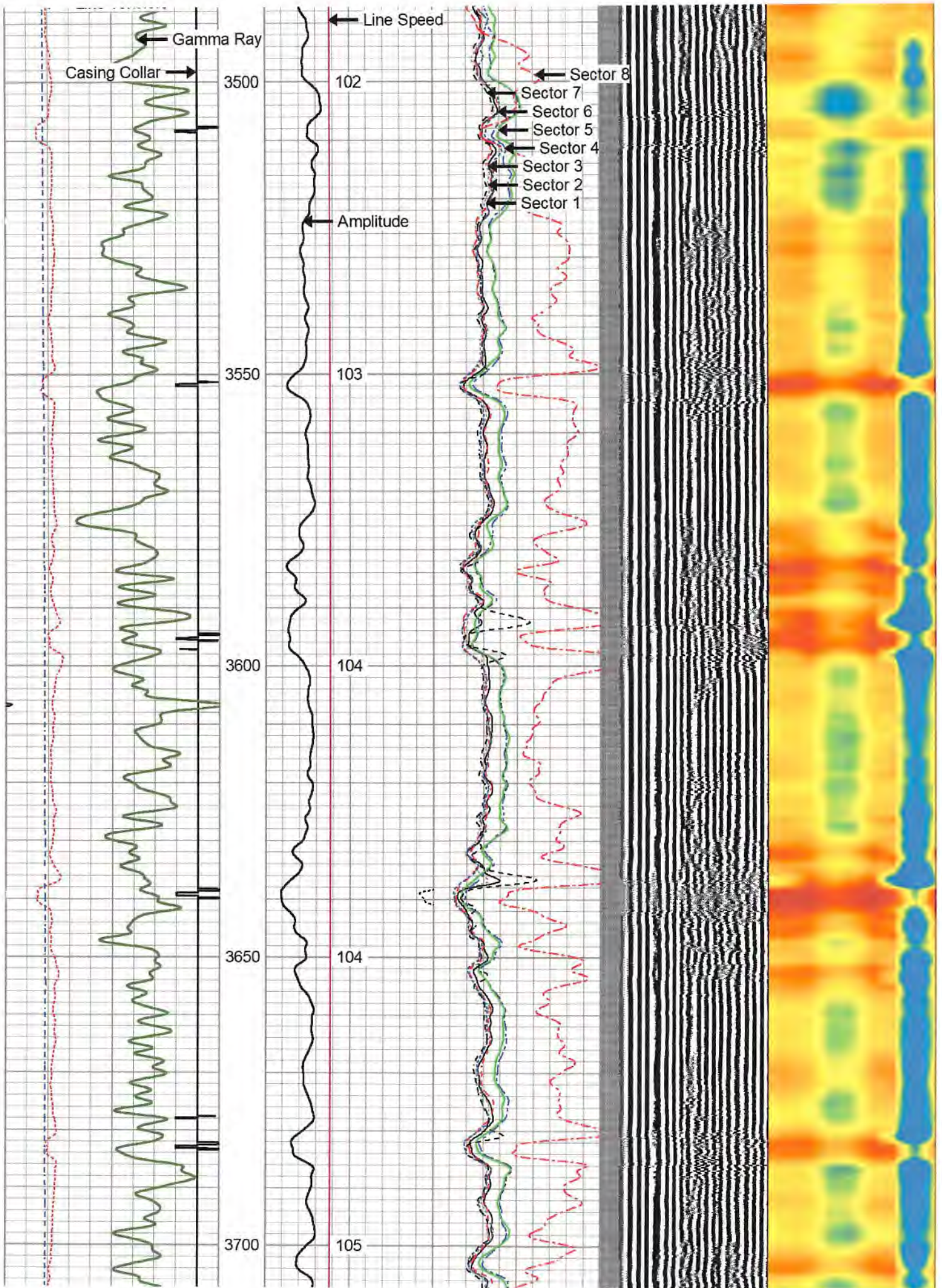


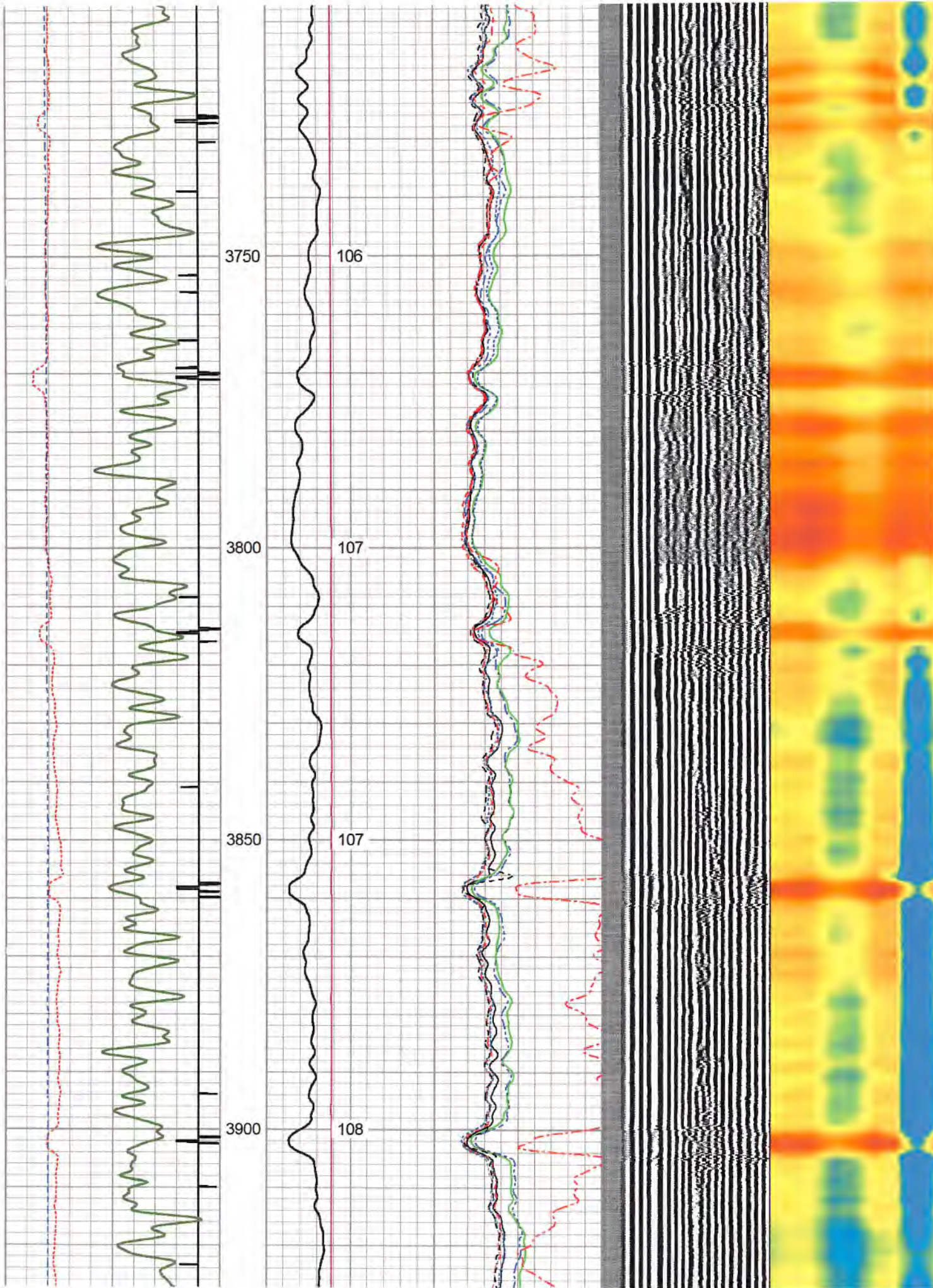


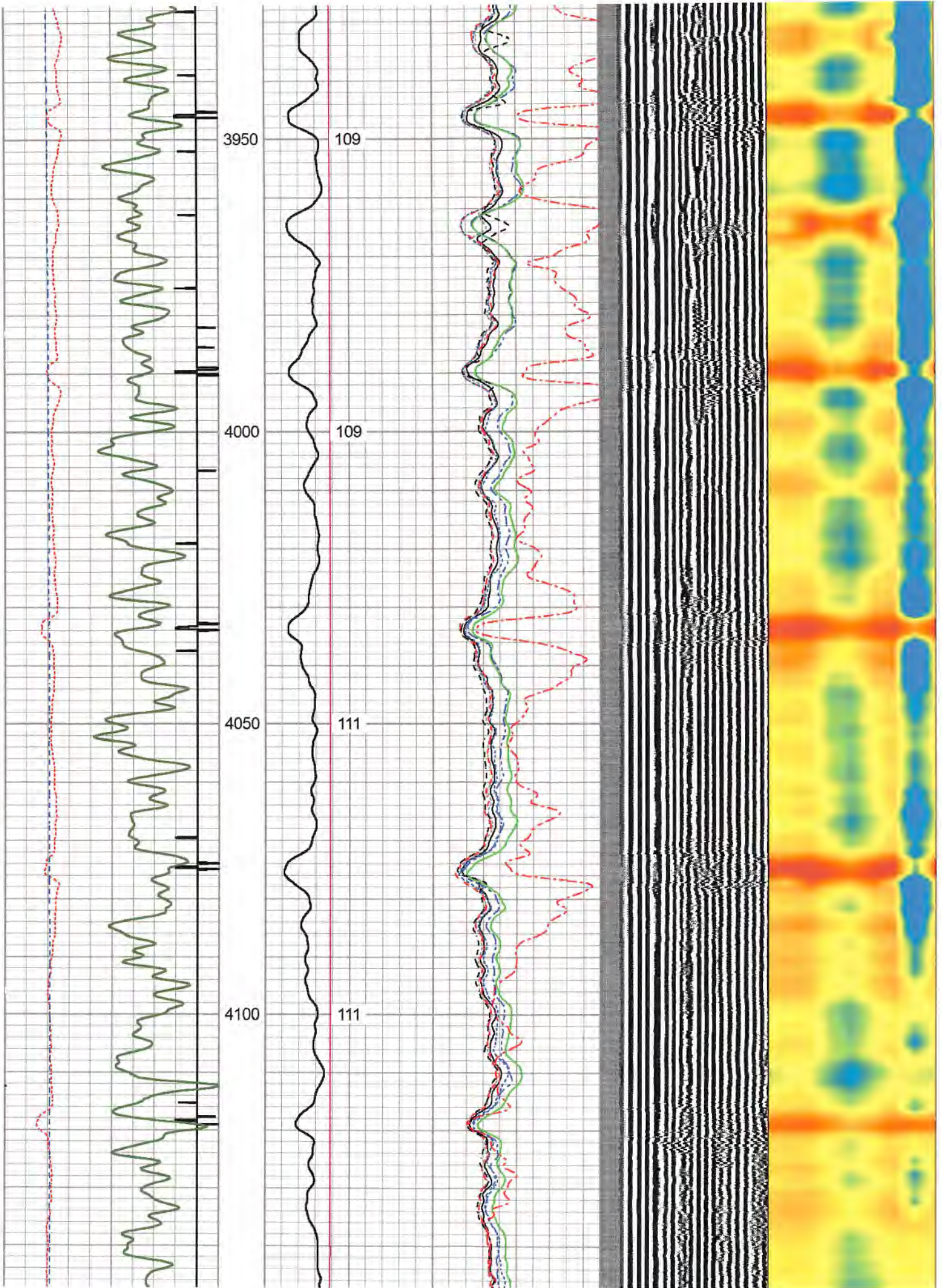


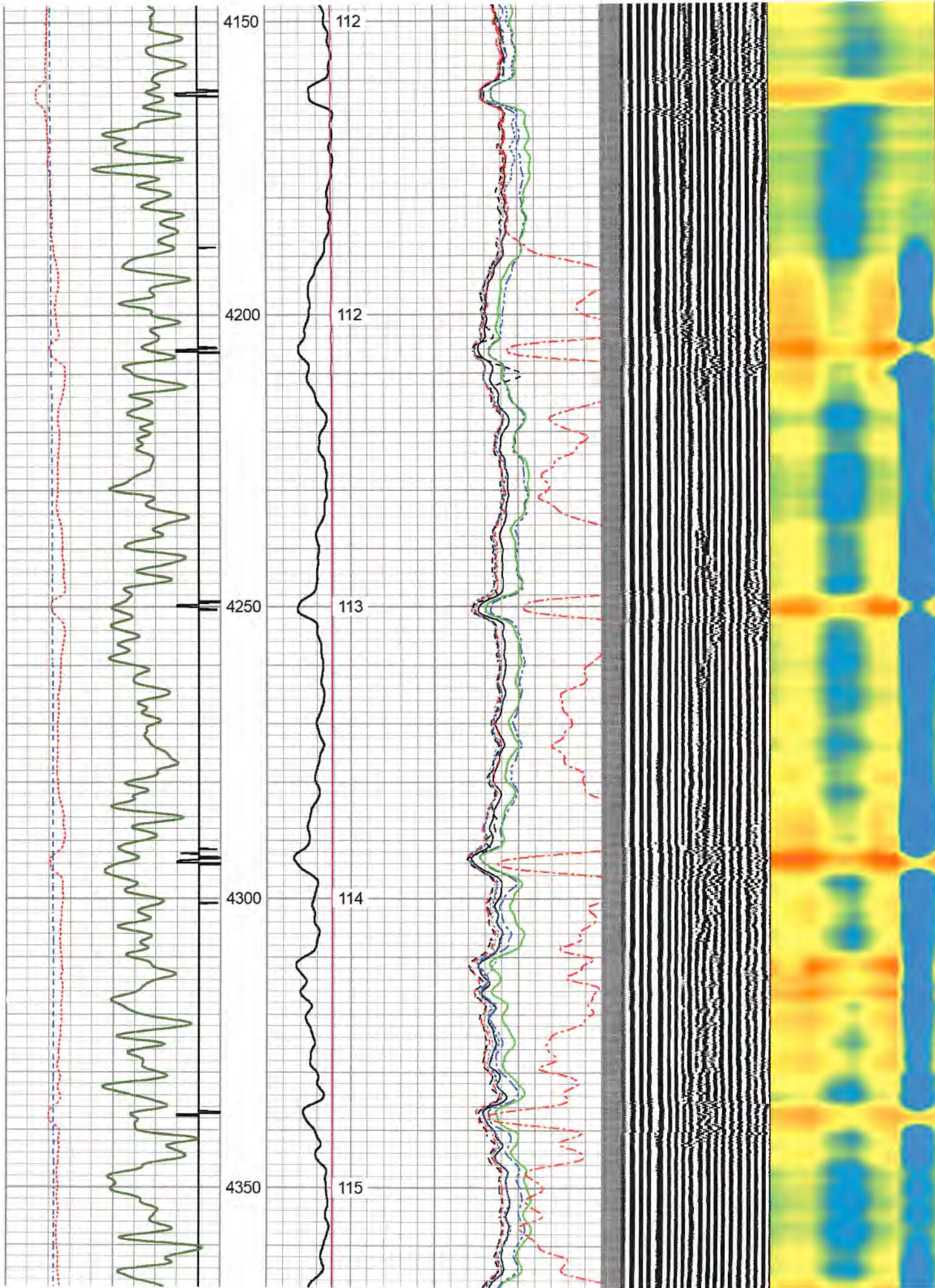


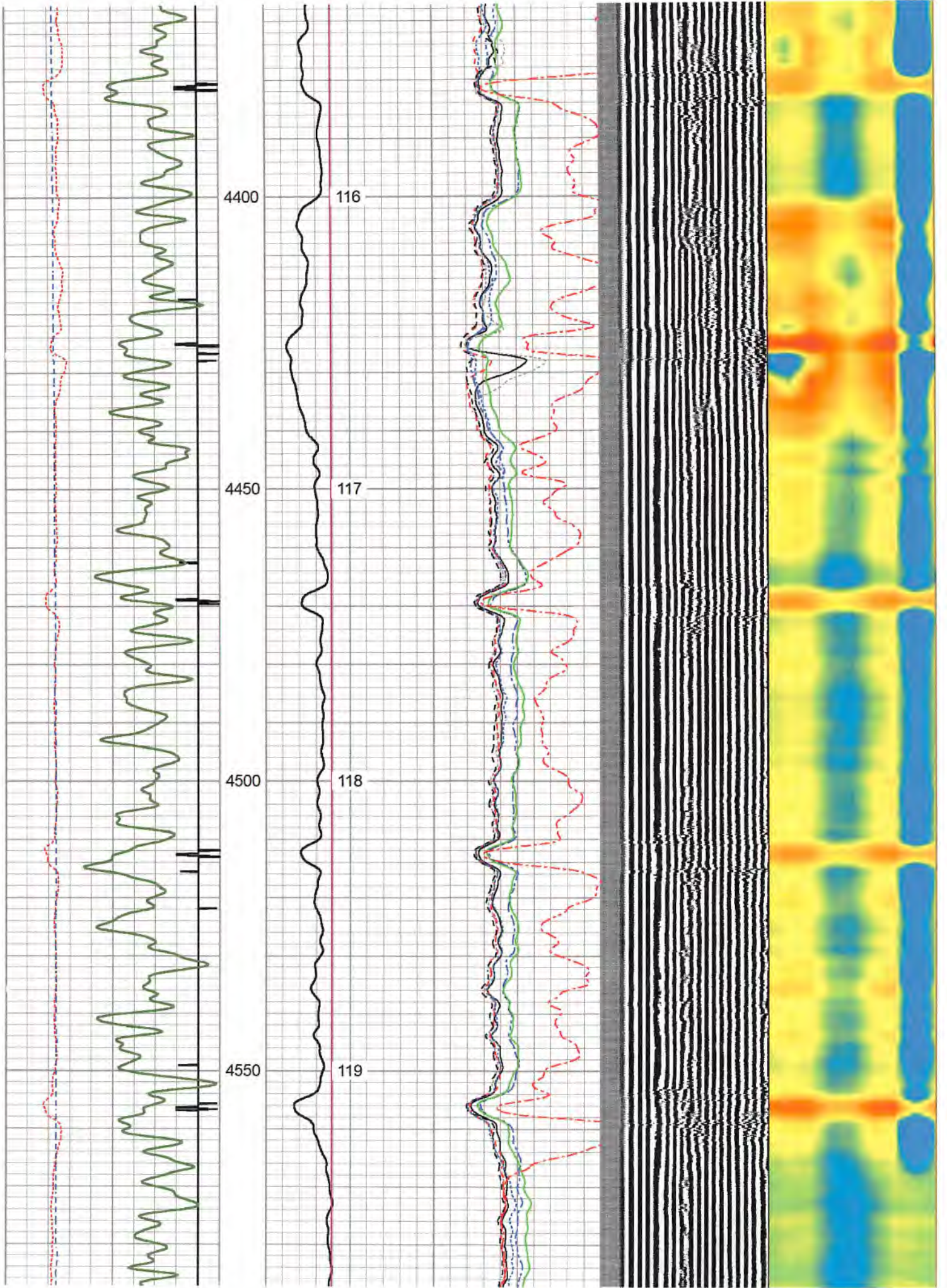
Travel Time
Line Tension

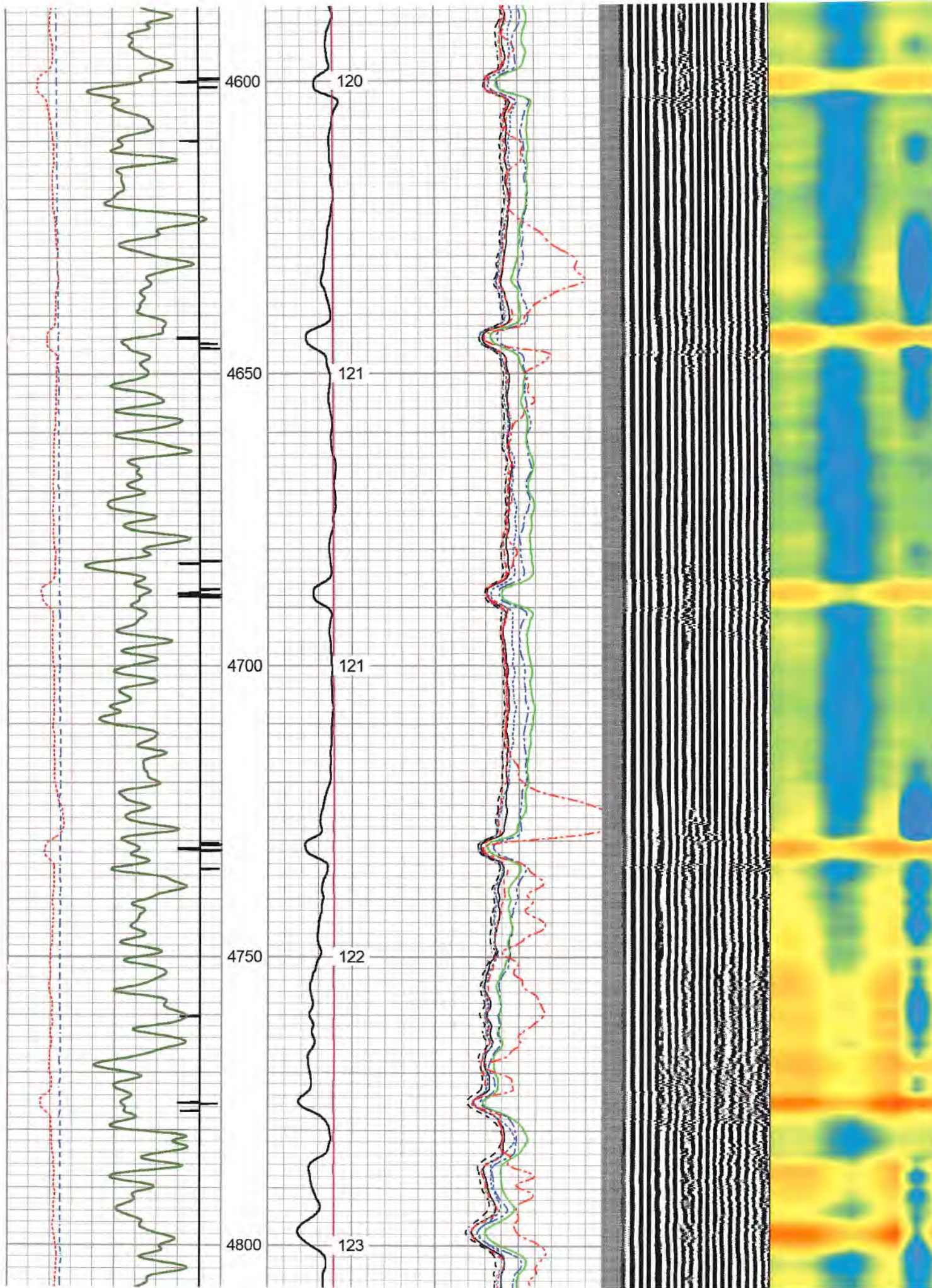


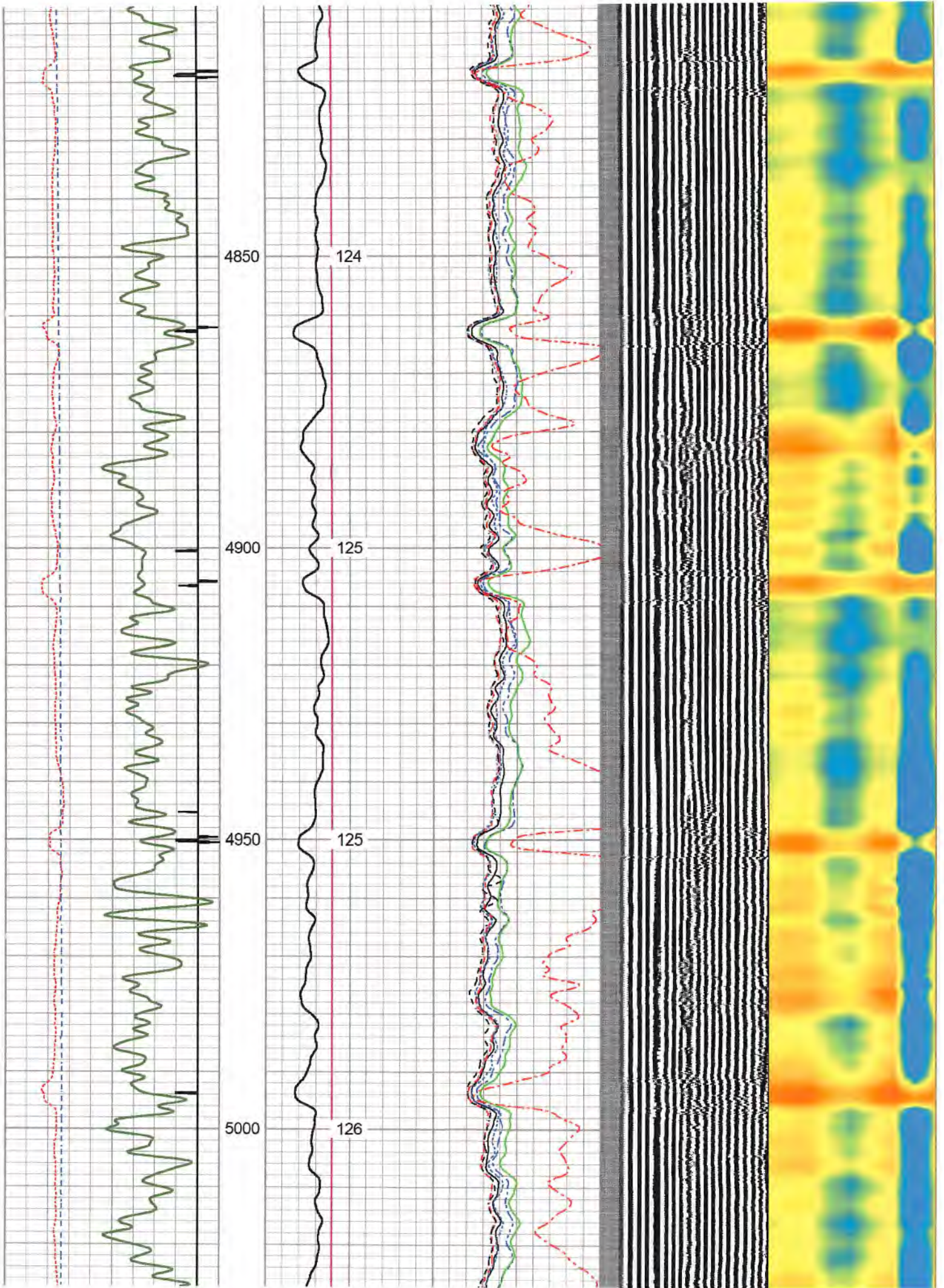


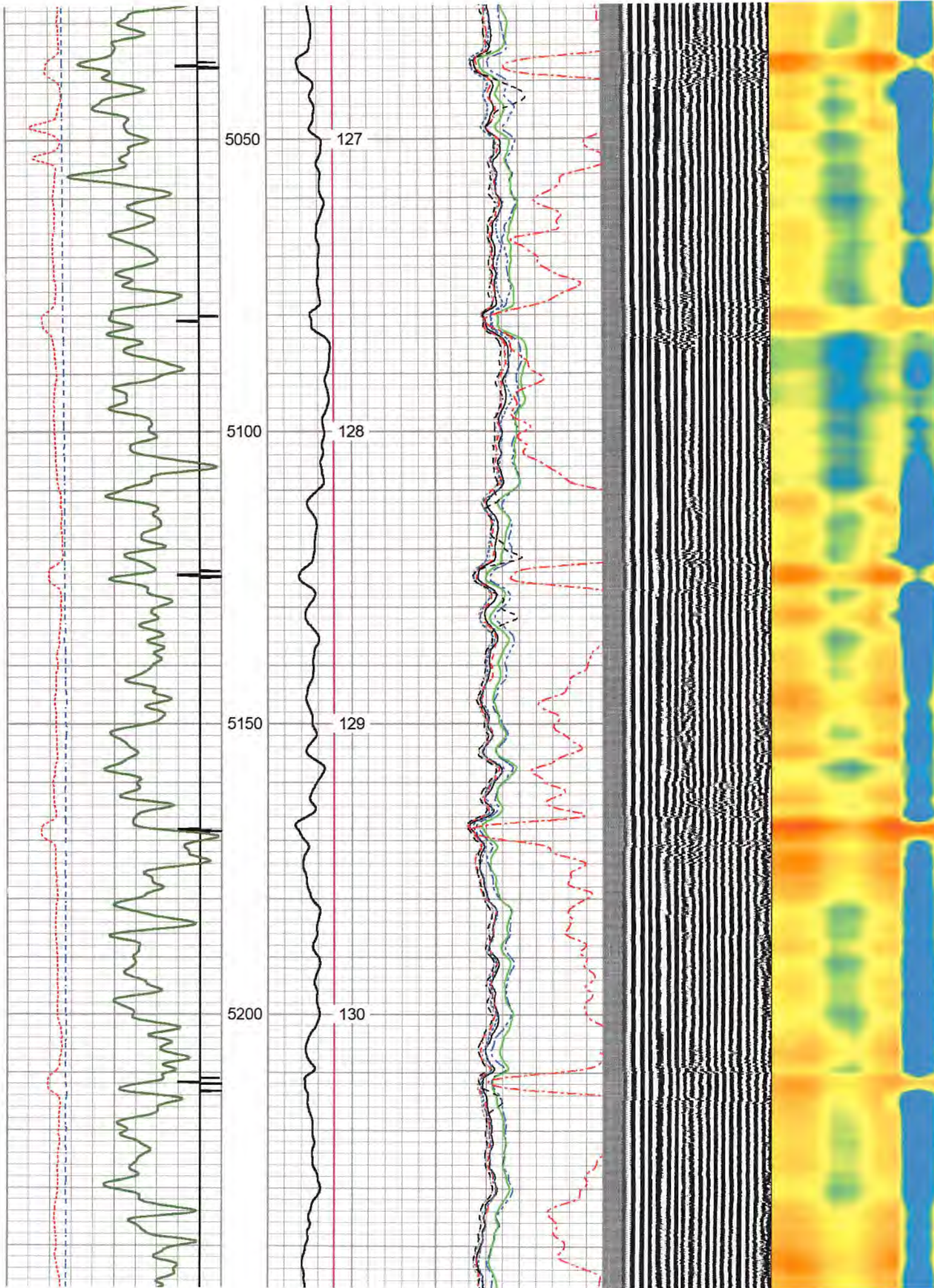


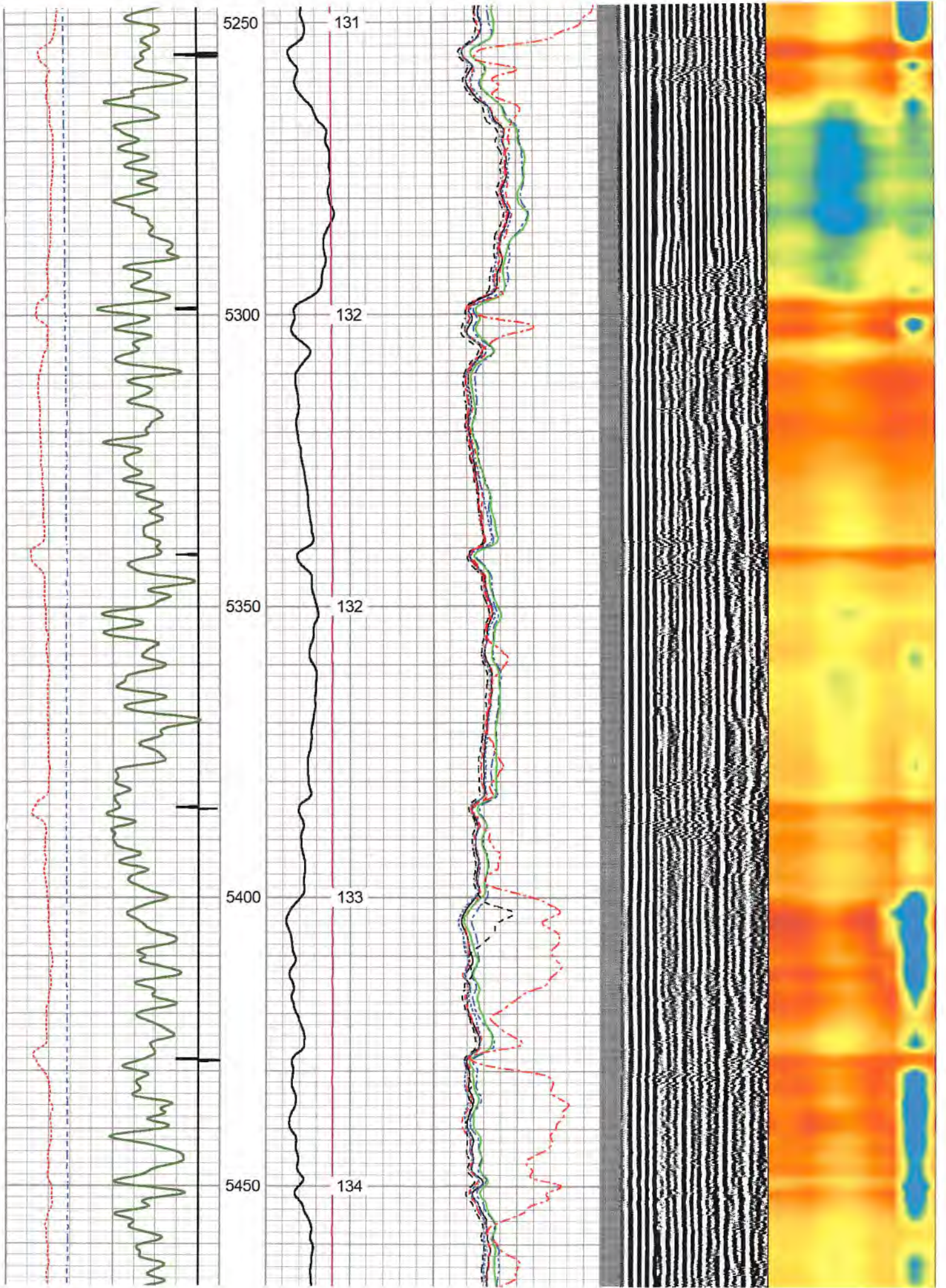


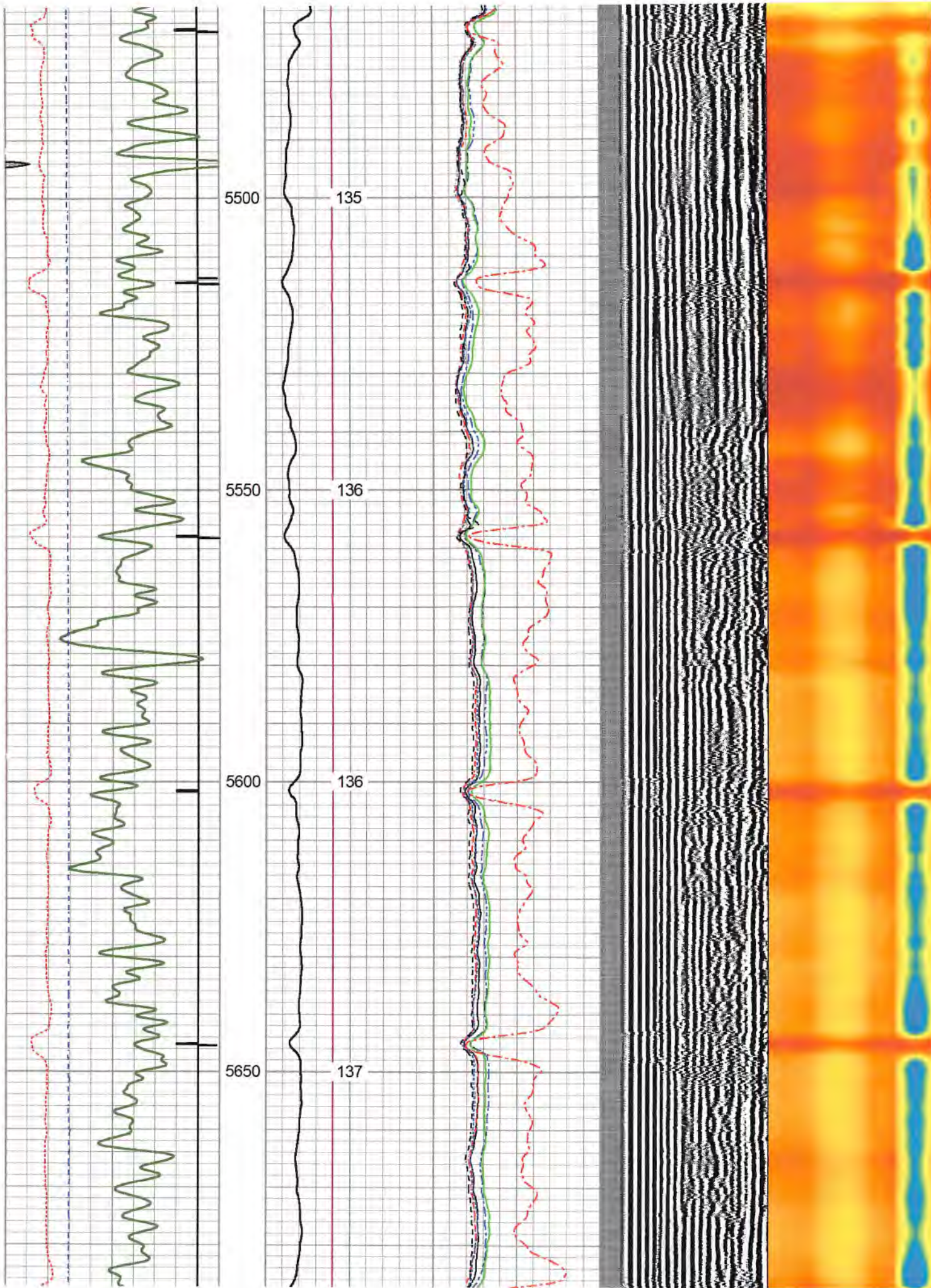


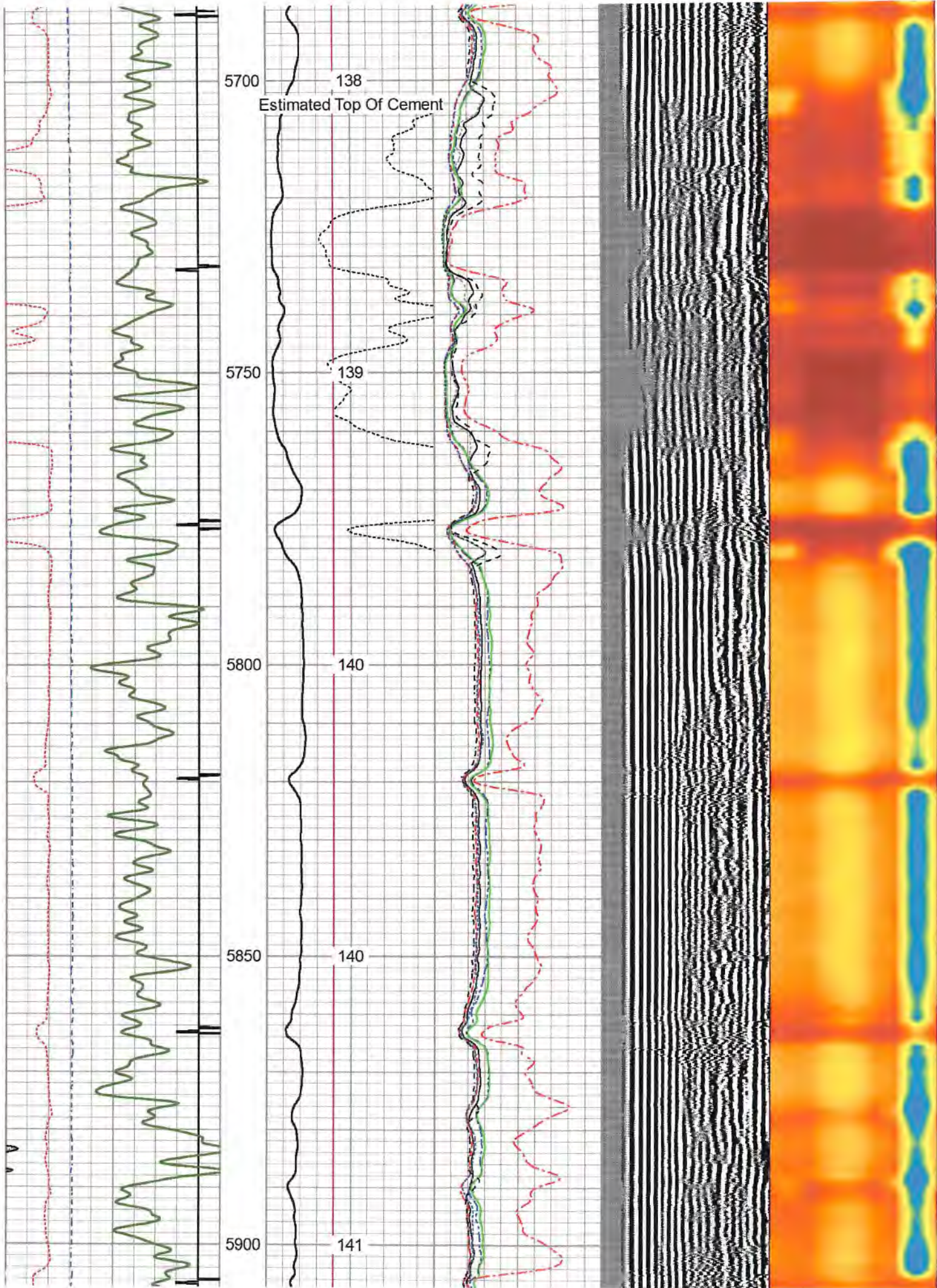


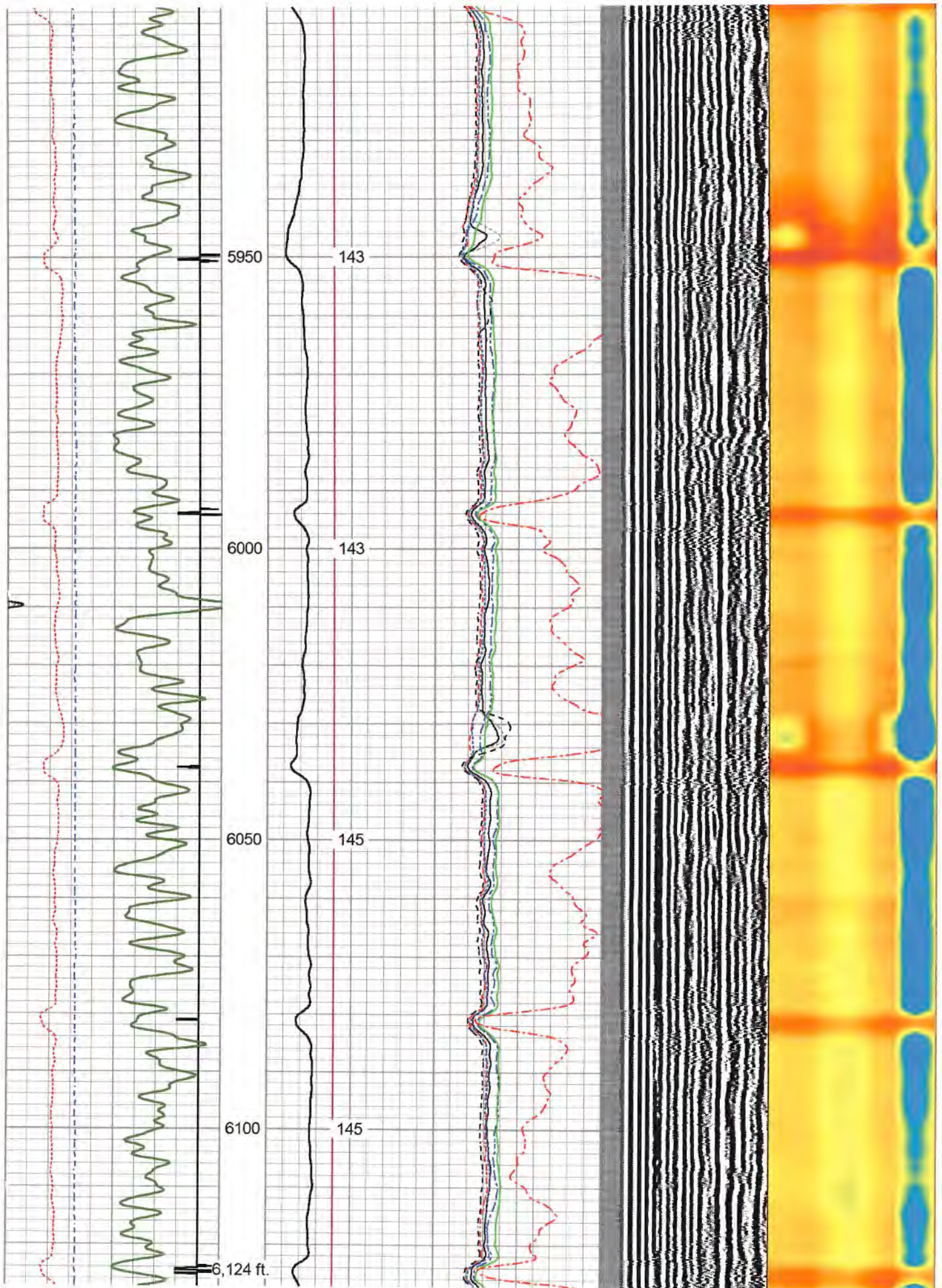


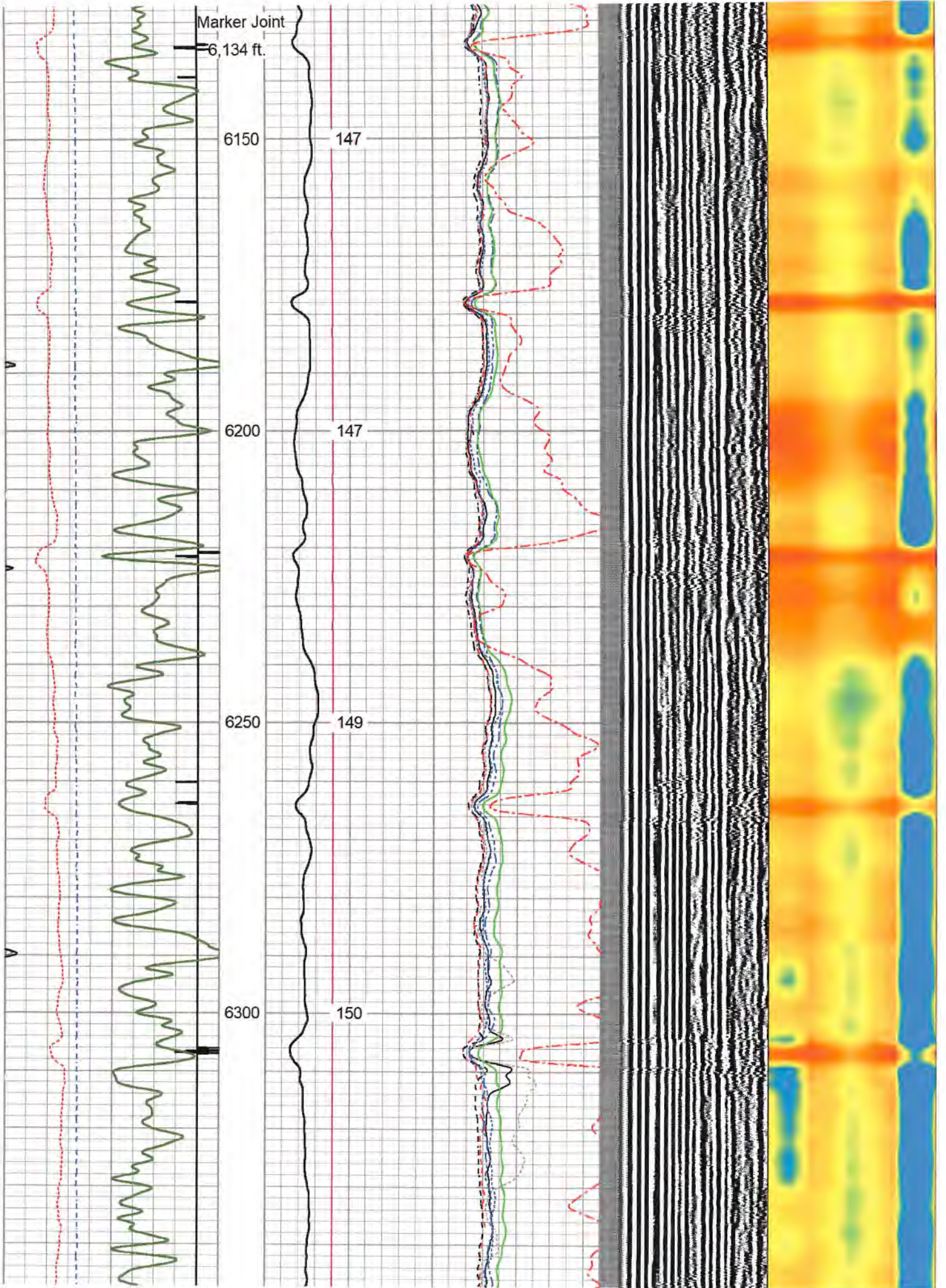


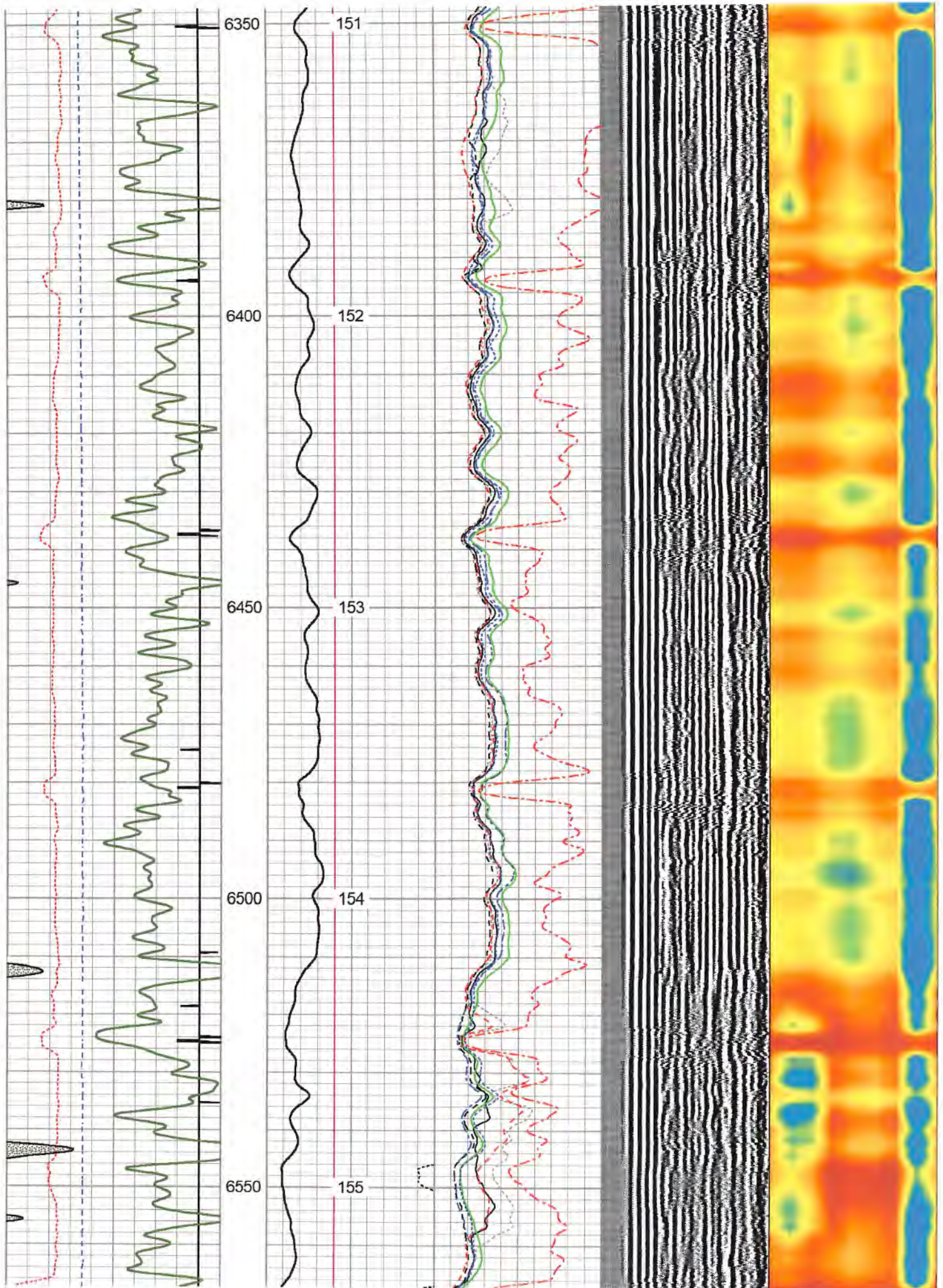


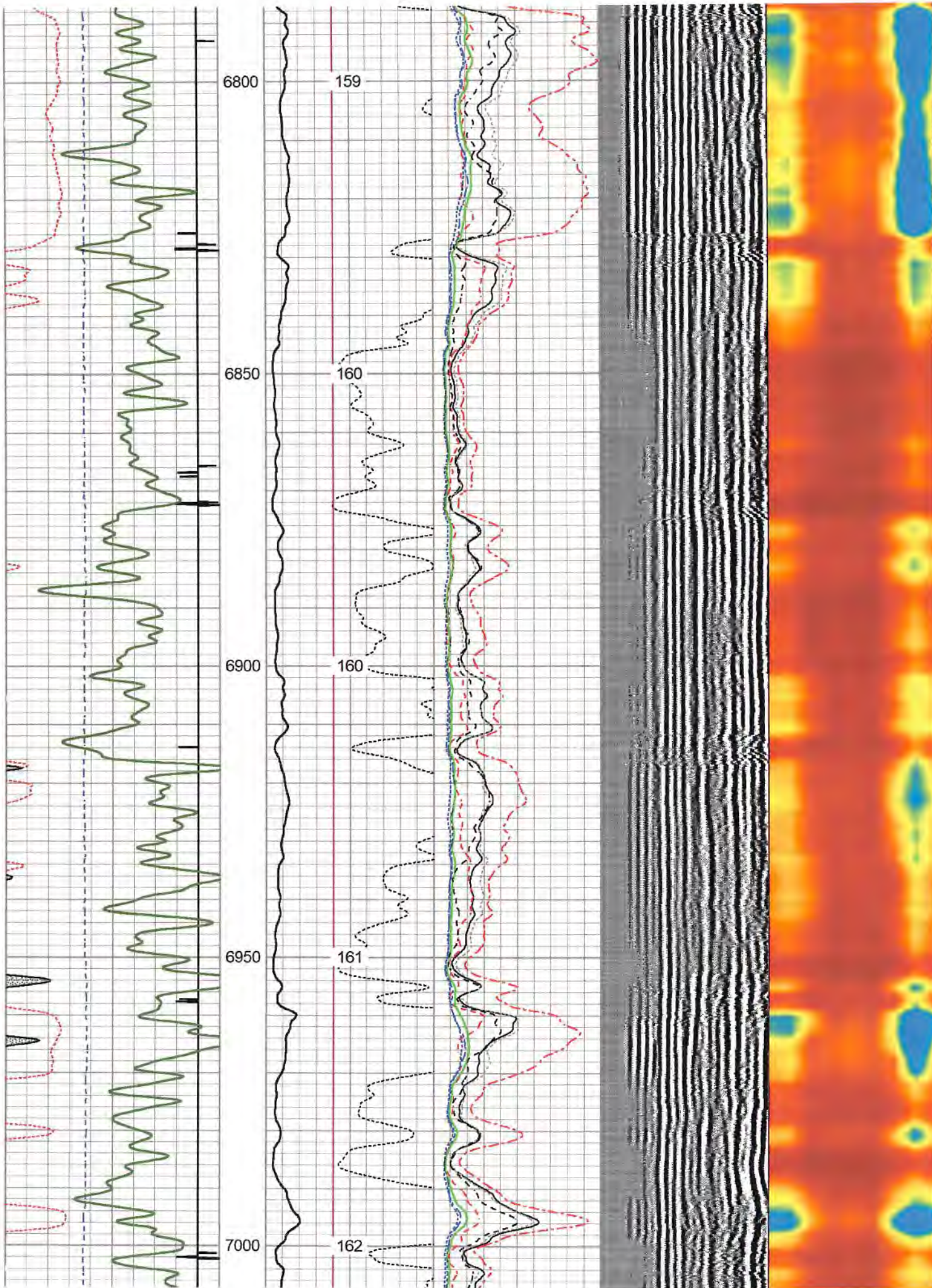


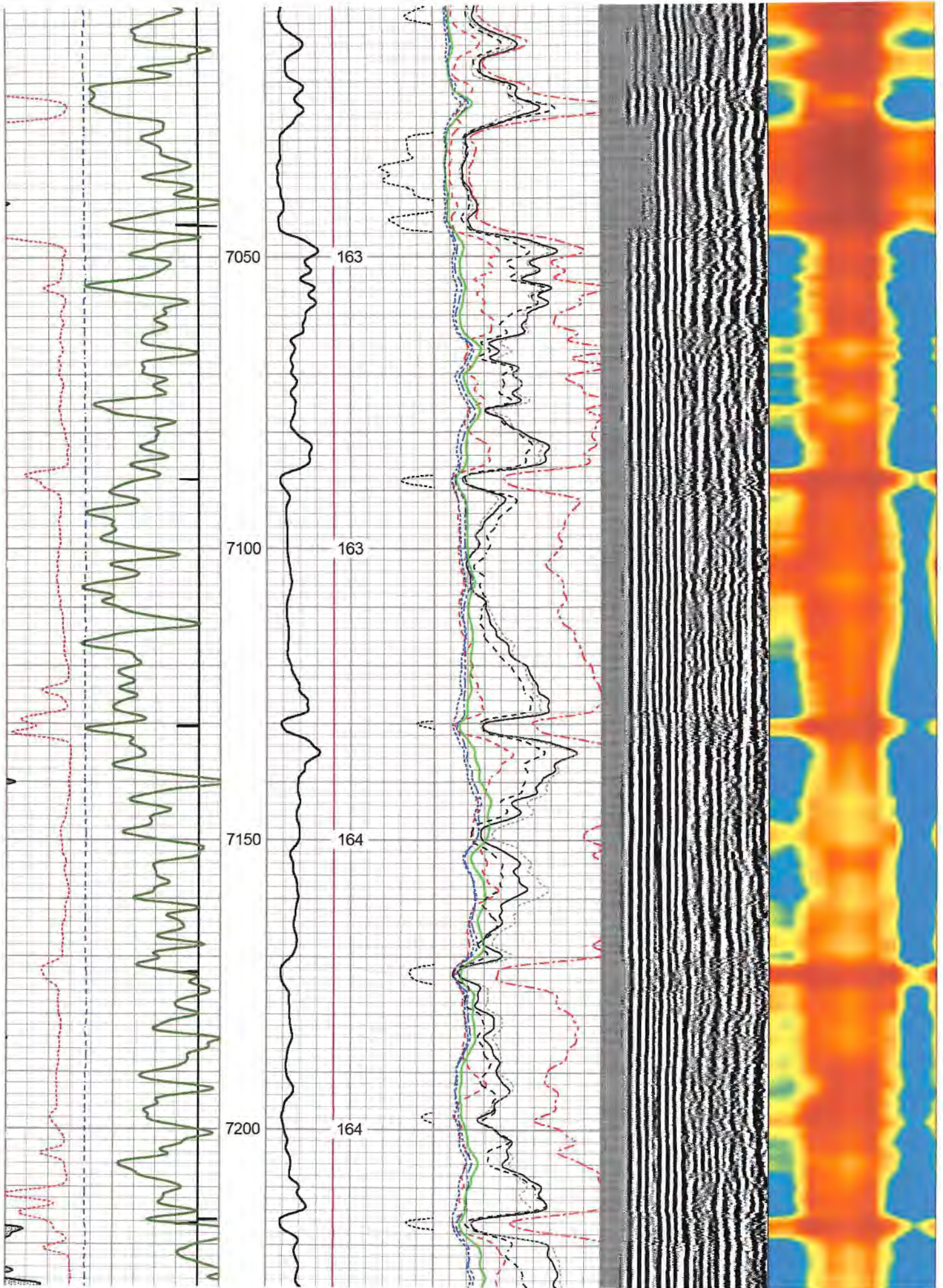


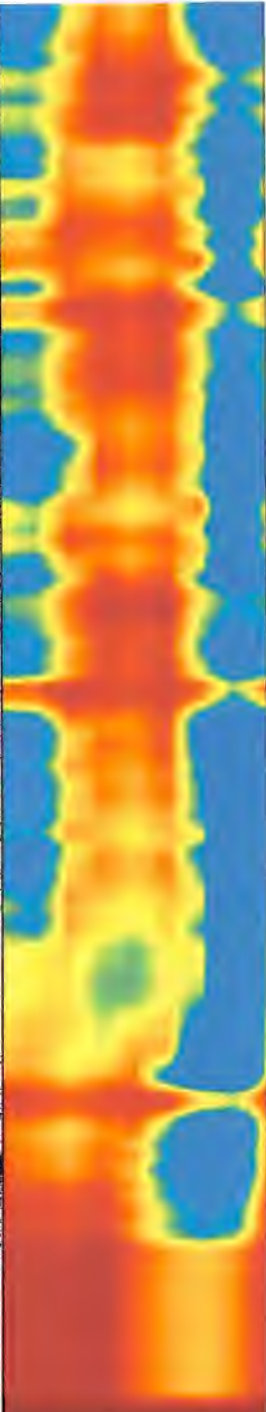
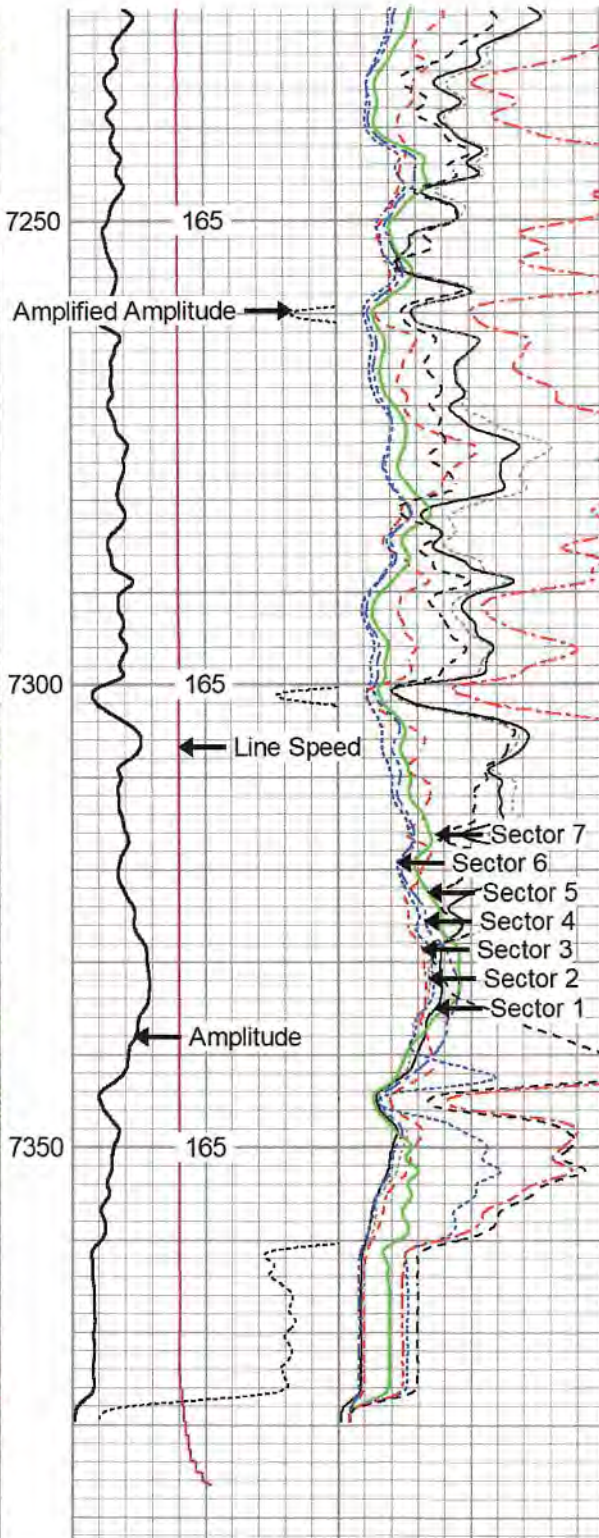
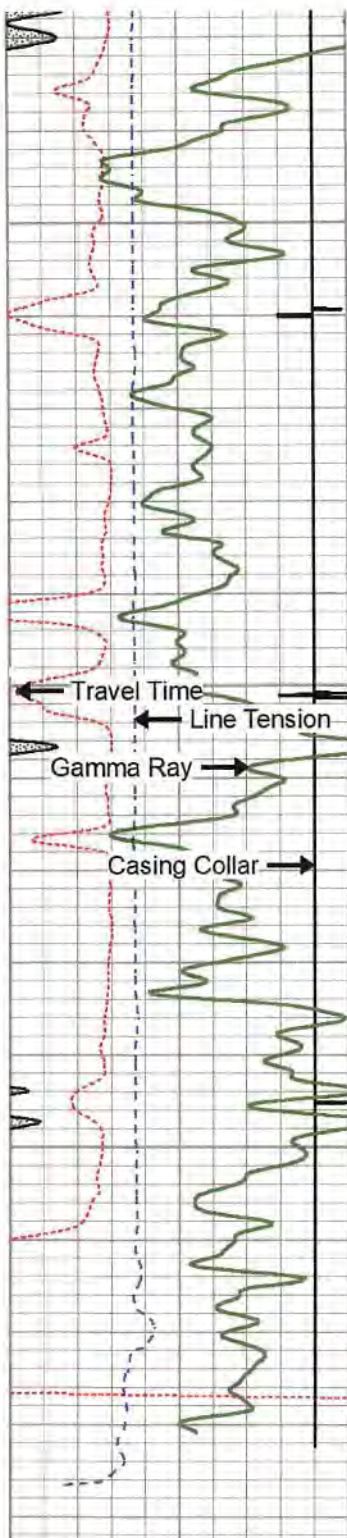












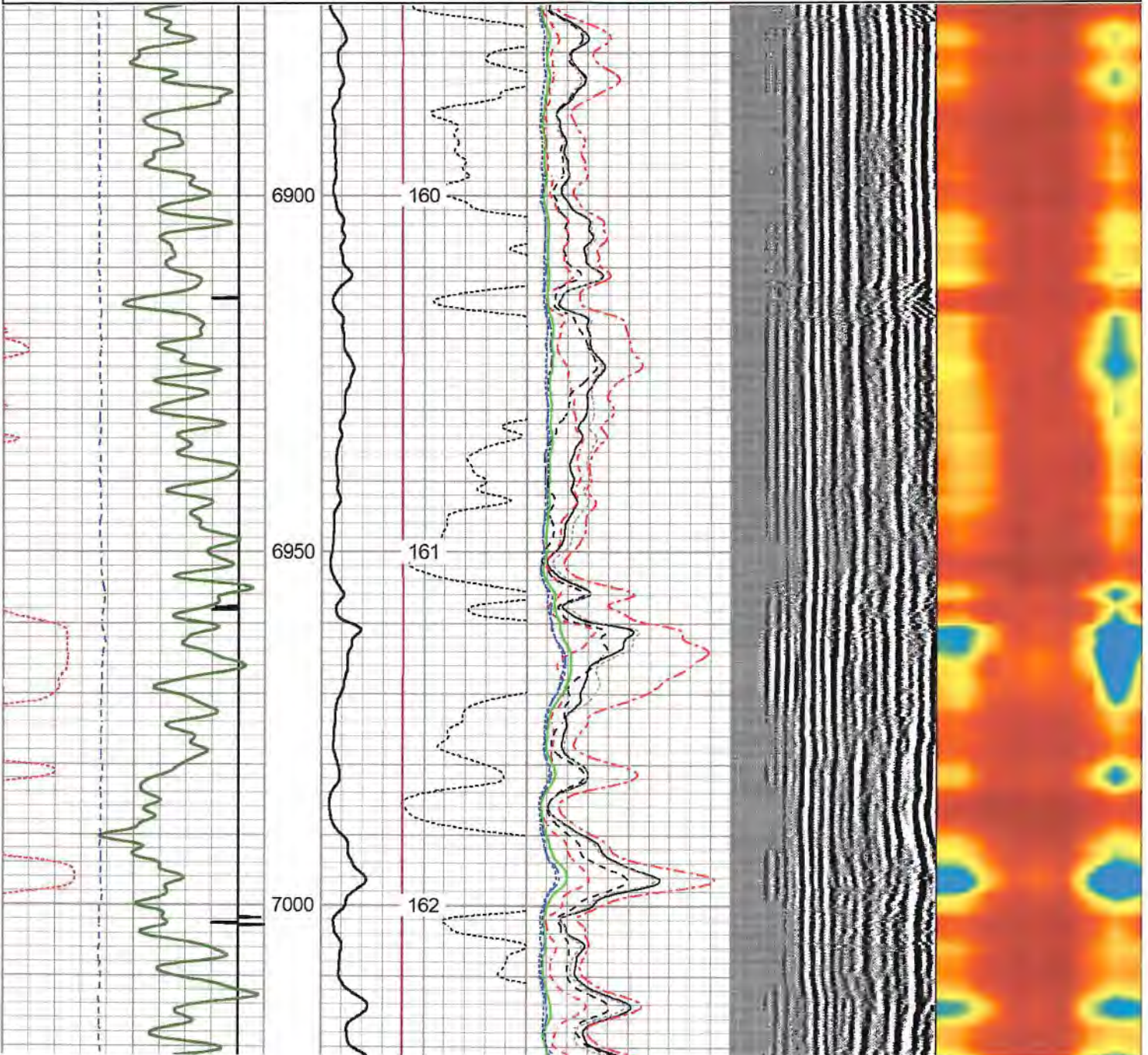
270	Travel Time (usec)	200
9	Casing Collar	-1
0	Gamma Ray (GAPI)	150
0	Line Tension (lb)	5000

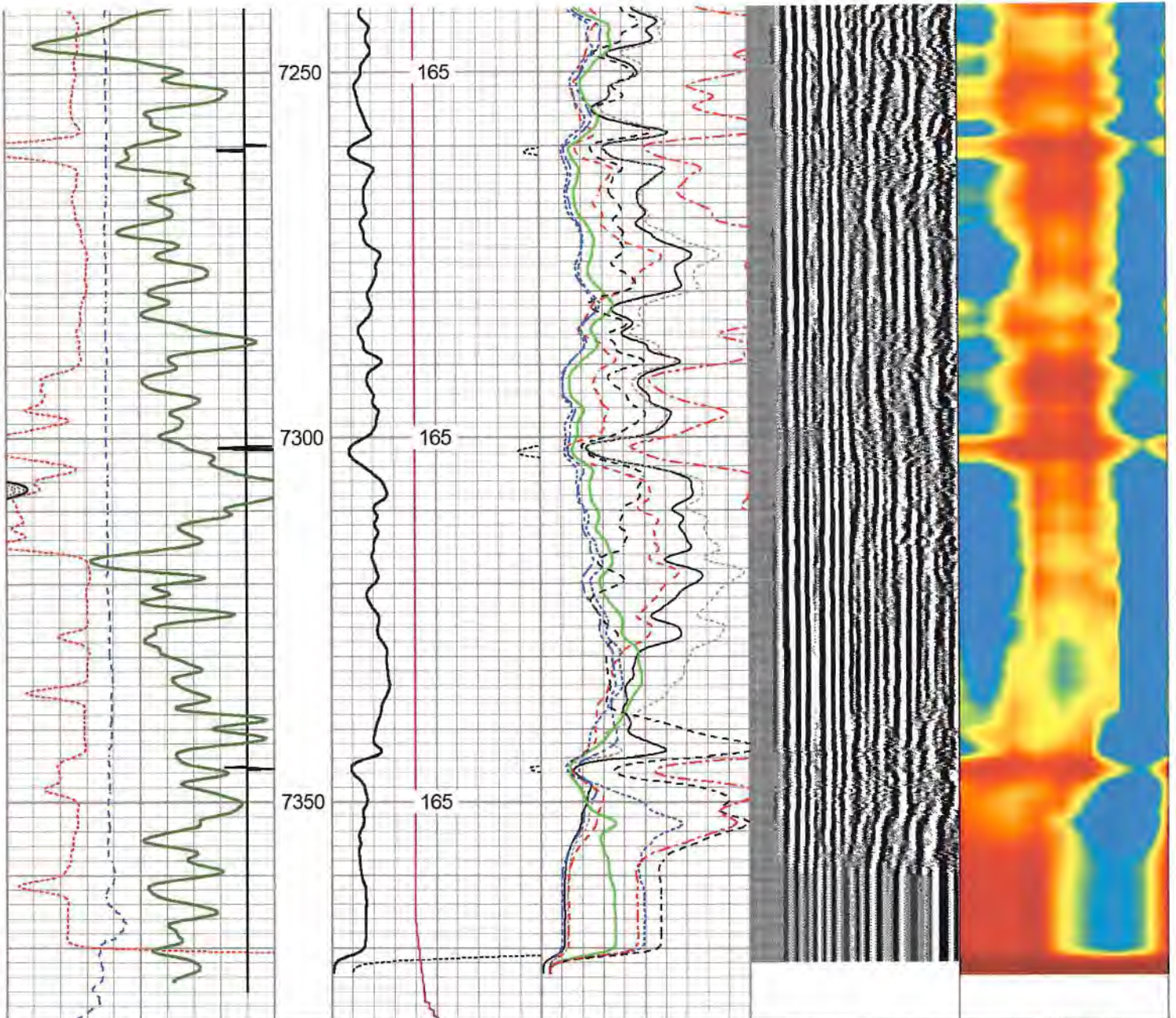
0	Amplitude (mV)	100	-5	Sector 1	150
	Amplified Amplitude		-5	Sector 2	150
0	(mV)	10	-5	Sector 3	150
	Line Speed		-5	Sector 4	150
-500	(ft/min)	500	-5	Sector 5	150
	TEMP		-5	Sector 6	150
	(degF)		-5	Sector 7	150
			-5	Sector 8	150

Variable Density	1	Cement Map	8
200	(usec)	1200	

Database File antero_coloradowest_nuggets_1h_rcbl_nineenergy_may_1_2020.db
 Dataset Pathname Marcellus/Nuggets_1H/RCBL_1/pass2
 Presentation Format 9rcbl
 Dataset Creation Fri May 01 11:12:10 2020
 Charted by Depth in Feet scaled 1:240

270	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1		Amplified Amplitude		-5	Sector 2	150	200	(usec)		
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	Sector 3	150				
0	Line Tension (lb)	5000		Line Speed		-5	Sector 4	150				
			-500	(ft/min)	500	-5	Sector 5	150				
				TEMP		-5	Sector 6	150				
				(degF)		-5	Sector 7	150				
						-5	Sector 8	150				





270	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1		Amplified Amplitude		-5	Sector 2	150	200	(usec)		
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	Sector 3	150				
0	Line Tension (lb)	5000		Line Speed		-5	Sector 4	150				
				(ft/min)	500	-5	Sector 5	150				
				TEMP		-5	Sector 6	150				
				(degF)		-5	Sector 7	150				
						-5	Sector 8	150				

Log Variables DatabaseC:\ProgramData\Warrior\Data\antero_coloradowest_nuggets_1h_rcbl_nineenergy_may_1 Dataset Marcellus/Nuggets_1H/RCBL_1/pass4/_vars_

Top - Bottom							
BHTEMP_Src	BOREID	BOTTEMP	CASEOD	CASETHCK	CASEWGHT	MAXAMPL	MINAMPL
TEMP	in	degF	in	in	lb/ft	mV	mV
	7.875	148	5.5	0.361	20	71.9	2.2
MINATTN	PERFS	PPT	SRFTEMP	TDEPTH			
db/ft		usec	degF	ft			

0.8	No	0	0	0
-----	----	---	---	---

Variable Description

BHTEMP_Src : BHTEMP Input Source Selector	MINAMPL : Minimum Amplitude
BOREID : Borehole I.D.	MINATTN : Minimum Attenuation
BOTTEMP : Bottom Hole Temperature	PERFS : Perforation Flag
CASEOD : Casing O.D.	PPT : Predicted Pipe Time
CASETHCK : Casing Thickness	SRFTEMP : Surface Temperature
CASEWGHT : Casing Weight	TDEPTH : Total Depth
MAXAMPL : Maximum Amplitude	

Calibration Report

Database File antero_coloradowest_nuggets_1h_rcbl_nineenergy_may_1_2020.db
Dataset Pathname Marcellus/Nuggets_1H/RCBL_1/pass4
Dataset Creation Fri May 01 11:19:32 2020

Gamma Ray Calibration Report

Serial Number: FW1211-86
Tool Model: Probe
Performed: Thu Dec 19 22:27:19 2019

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 0.8000 GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number: FW1312-32
Tool Model: Probe275T

Calibration Casing Diameter: 5.500 in
Calibration Depth: 14.308 ft

Master Calibration, performed Fri May 01 10:41:15 2020:

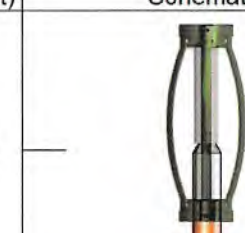
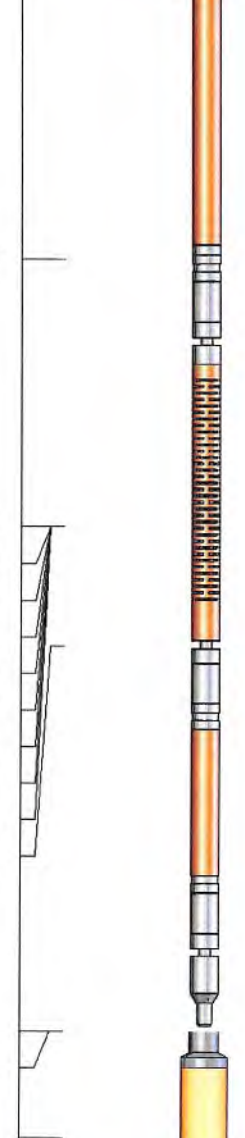
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.015	0.877	2.200	71.921	95.838	0.994
CAL	1.002	1.004				
5'	0.015	0.873	2.200	71.921	111.278	0.943
SUM						
S1	0.050	0.894	2.200	100.000	145.966	-3.637
S2	0.009	0.868	2.200	100.000	143.804	1.226
S3	0.007	0.853	2.200	100.000	145.618	1.391
S4	0.007	0.863	2.200	100.000	144.253	1.440
S5	0.007	0.868	2.200	100.000	143.560	1.450
S6	0.007	0.874	2.200	100.000	142.834	1.431
S7	0.006	0.865	2.200	100.000	143.893	1.485
S8	0.007	0.872	2.200	100.000	143.007	1.434


Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	1.002	1.004	1.000	0.000


Air Zero Calibration, performed Fri May 01 05:29:25 2020:

	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	Length (ft)	O.D. (in)	Weight (lb)
HeadVolt	14.11		CHD-Titan Titan 1 7/16" GO Cablehead	1.00	1.44	5.00
			CENT-Overbody Antelope (SP-919-0233)	1.67	4.88	5.00
Temp	11.27		RBT-Probe275T (FW1312-32) Probe 2.75" Radial with Integral Temperature Sub	9.39	2.75	90.00
WVFS8	9.03					
WVFS7	9.03					
WVFS6	9.03					
WVFS5	9.03					
WVFS4	9.03					
WVFS3	9.03					
WVFS2	9.03					
WVFS1	9.03					
WVF3FT	9.03					
WVF5FT	8.03					
WVFCAL	4.78					
HEADVOLT	4.78					
CCI	3.88					

GR	2.54		GR-Probe (FW1211-86) Probe 2 3/4" Logging Gamma Ray	4.78	2.75	57.00
			CENT-Overbody Antelope (SP-919-0233)	1.67	4.88	5.00

Dataset: antero_coloradowest_nuggets_1h_rcbl_nineenergy_may_1_2020.db: Marcellus/Nuggets_1H/RCBL_1/pass4
Total length: 15.17 ft
Total weight: 162.00 lb
O.D.: 4.88 in

	Company	Antero Resources
	Well	Nuggets 1H
	Field	North Canton
	County	Tyler
	State	West Virginia