



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

Company Antero Resources
Well Carse 1H
Field Marcellus
County Tyler
State WV

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Field Marcellus
County Tyler State WV

Location: Rush Fork Pad API #: 47-095-02536
Lat.: 39.4167
Long.: -80.9697
SEC TWP RGE
Permanent Datum Ground Level Elevation
Log Measured From Kelly Bushing 25' A.P.D.
Drilling Measured From Kelly Bushing
Other Services
JB/GR
4.50"
Elevation
K.B. 1,011'
D.F. 1,010'
G.L. 986'

Date	24-Jun-19			
Run Number	One			
Depth Driller	18,743'			
Depth Logger	6,600'			
Bottom Logged Interval	6,600'			
Top Log Interval	Surface			
Open Hole Size	N/A			
Type Fluid	Water			
Density / Viscosity	N/A			
Max. Recorded Temp.	138 Deg.F.			
Estimated Cement Top	2,010'			
Time Well Ready	8:25			
Time Logger on Bottom	08:55			
Equipment Number	104 (P4) (G4)			
Location	Washington, PA			
Recorded By	Matt McNally			
Witnessed By	Barney Eicher			
Run Number	Borehole Record		Tubing Record	
	Bit	From	To	Weight
				From
				To
Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String				
Prot. String				
Production String	5 1/2"	23 LBS	Surface	18,743'
Liner				
Marker Joint			5,488'	5,498'

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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

Log Correlated To Marker Joint at (5,488' - 5,498')
Depth Correction (-6')

Main Pass Logged at 1,500 PSI
Repeat Pass Logged at 0 PSI

Thank you for using Nine Energy Wireline Service. Washington, PA

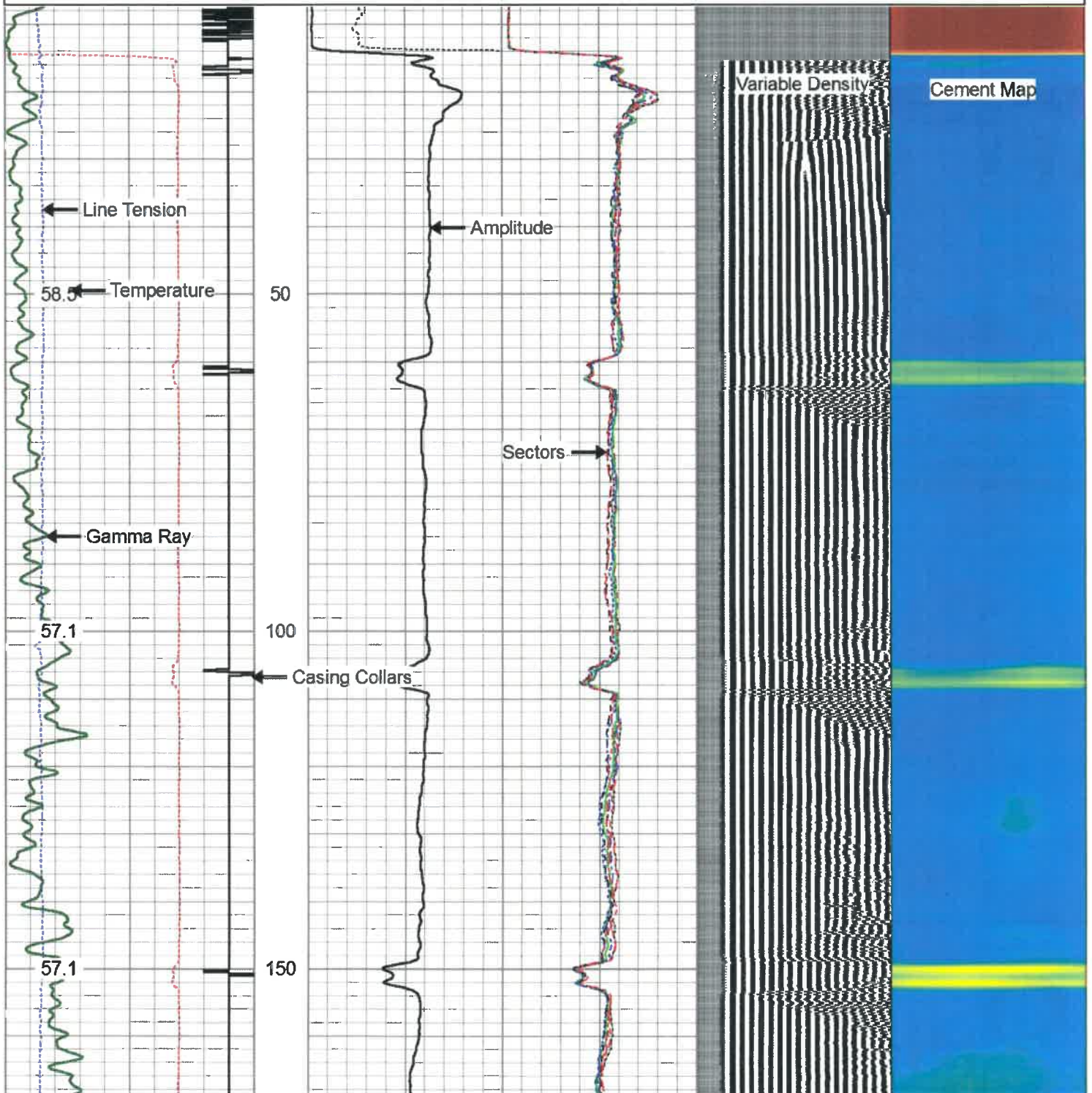
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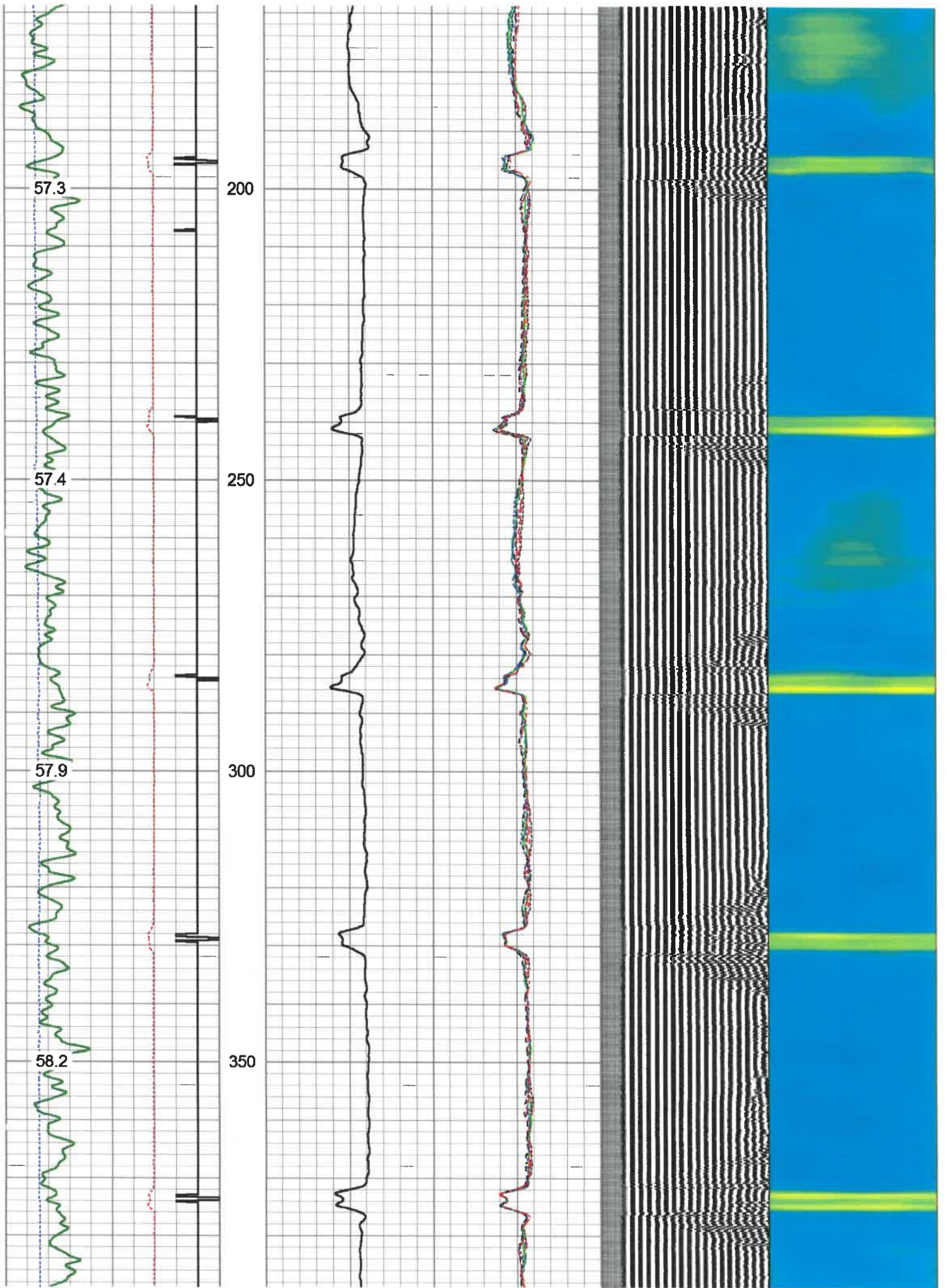


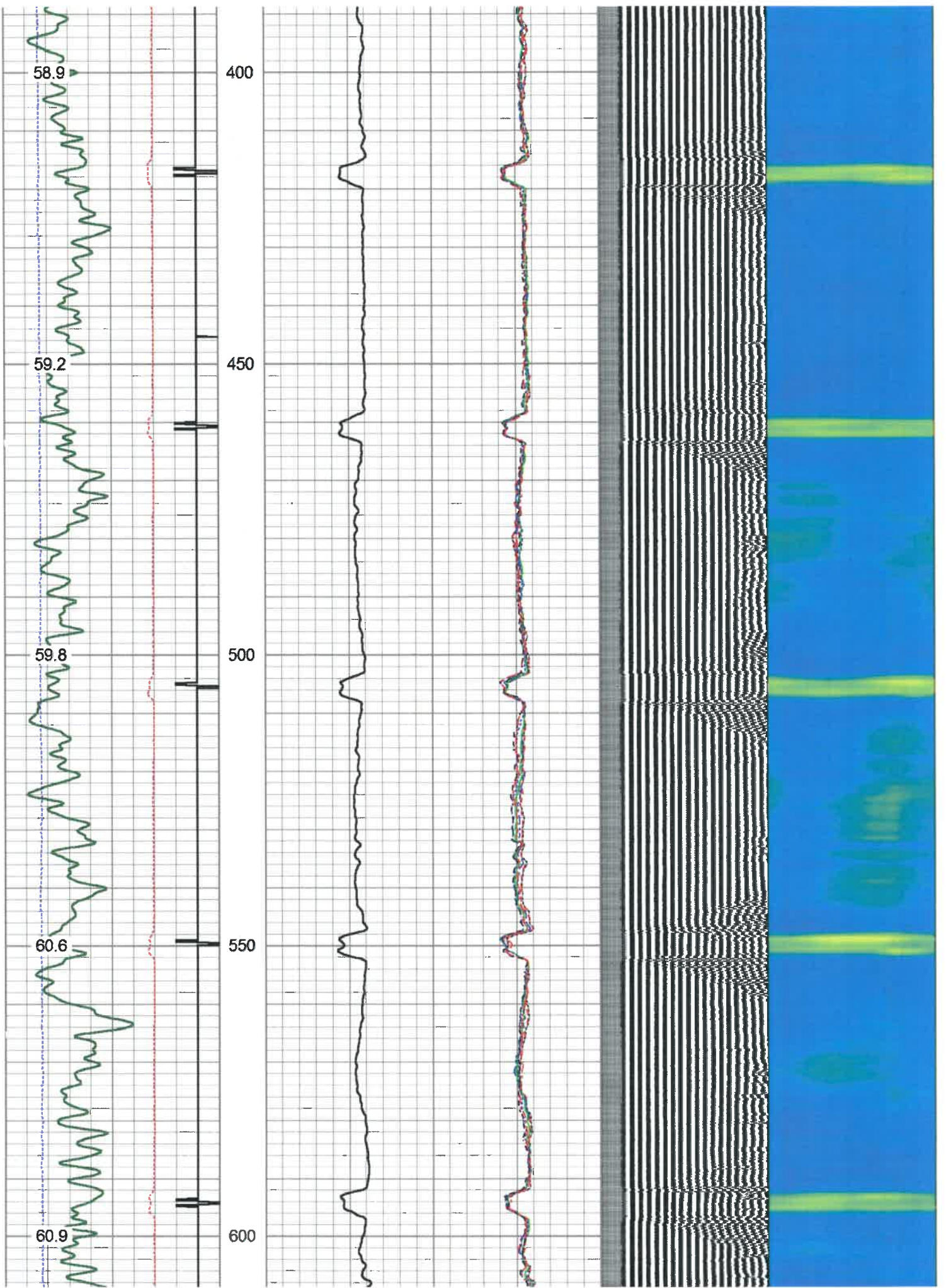
Main Pass 1,500 PSI

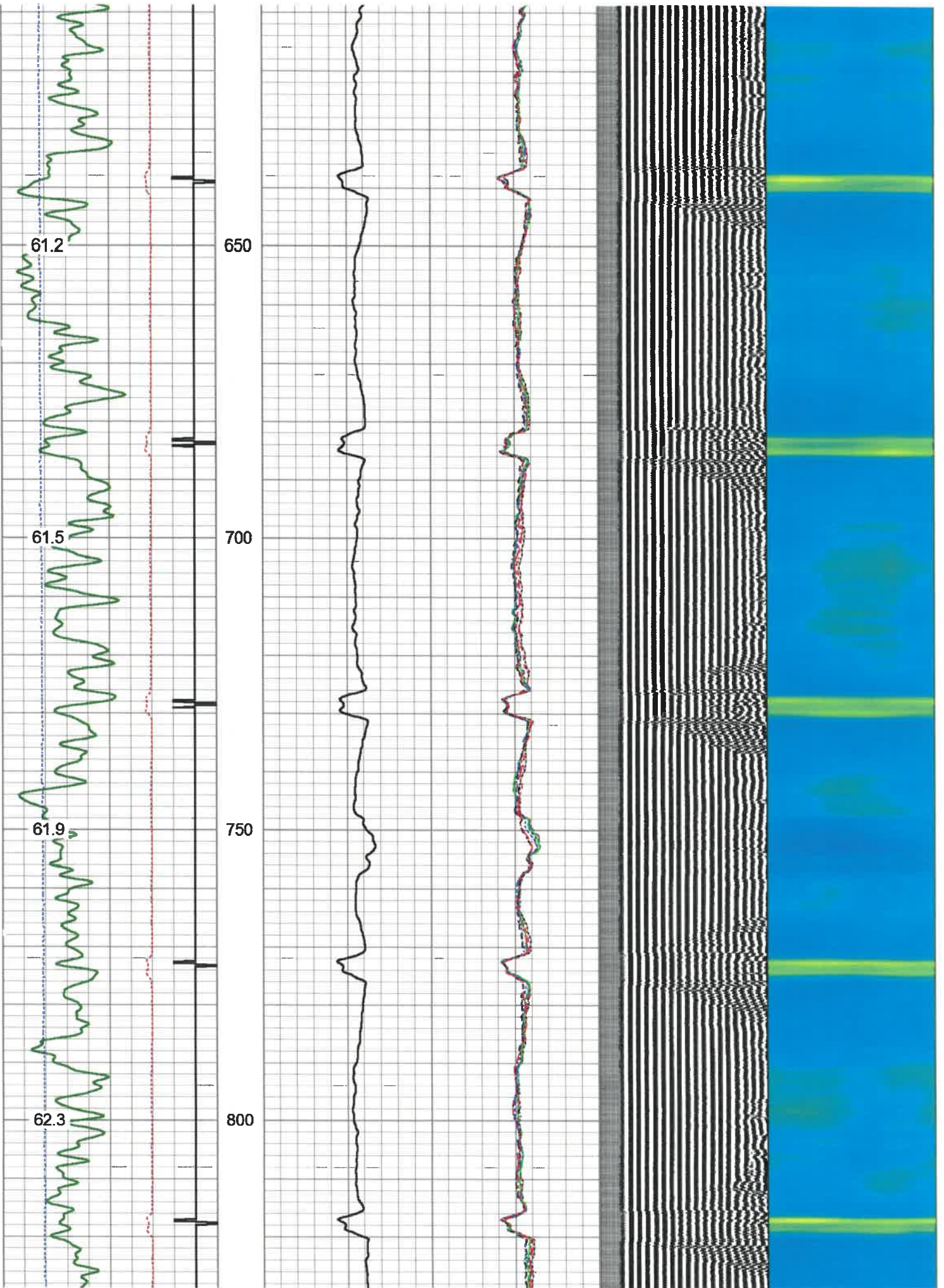
Database File antero_carse_1h_rcbl_24_jun_19.db
 Dataset Pathname marcellus/1h/rcbl/pass9
 Presentation Format scbl03
 Dataset Creation Mon Jun 24 08:55:51 2019
 Charted by Depth in Feet scaled 1:240

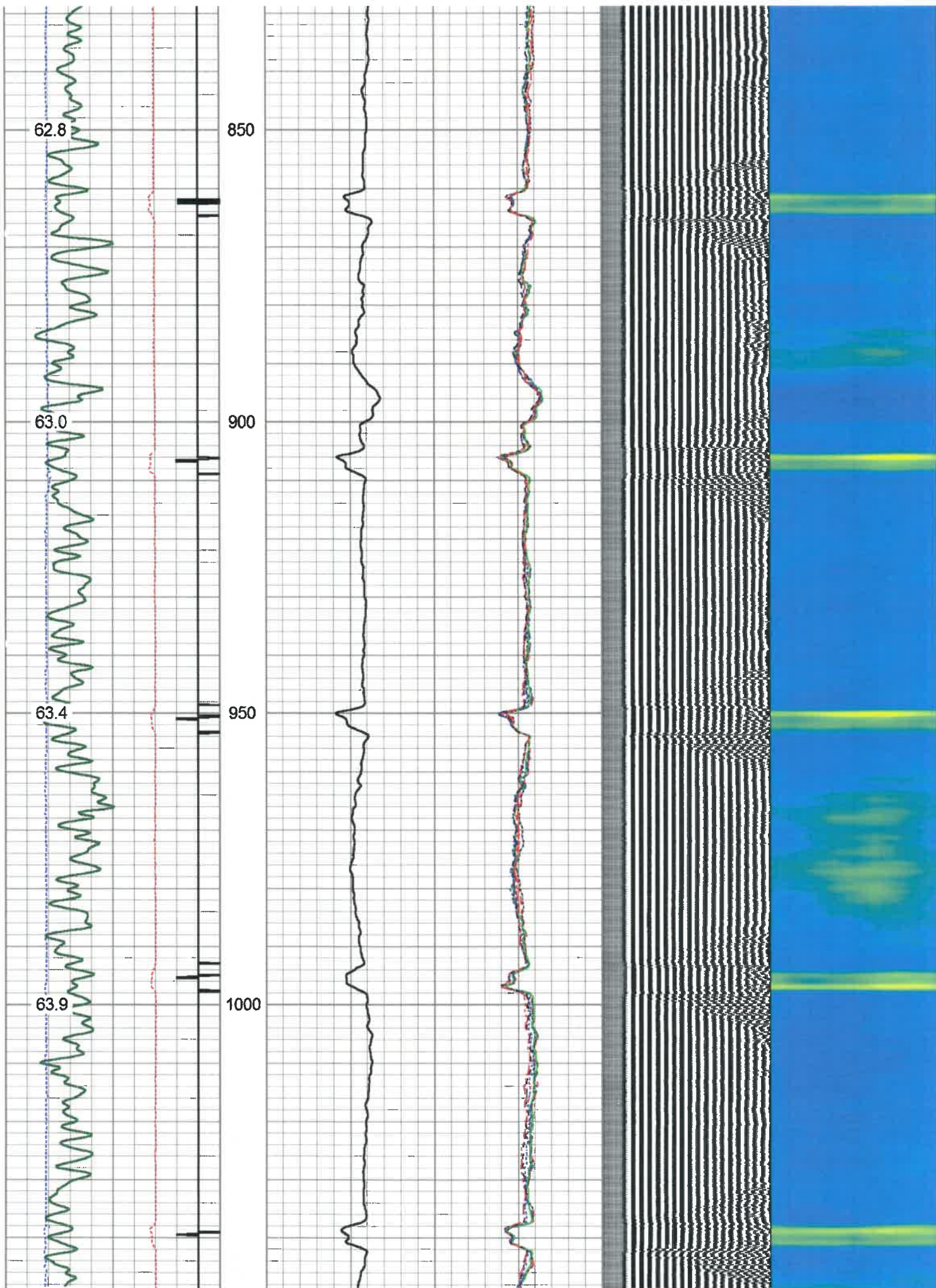
400	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
Casing Collar			Amplified Amplitude						200	(usec)	1200	
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	Sector 2	150				
0	LTEN (lb)	2500				-5	Sector 3	150				
Temp (degF)						-5	Sector 4	150				
						-5	Sector 5	150				
						-5	Sector 6	150				
						-5	Sector 7	150				
						-5	Sector 8	150				

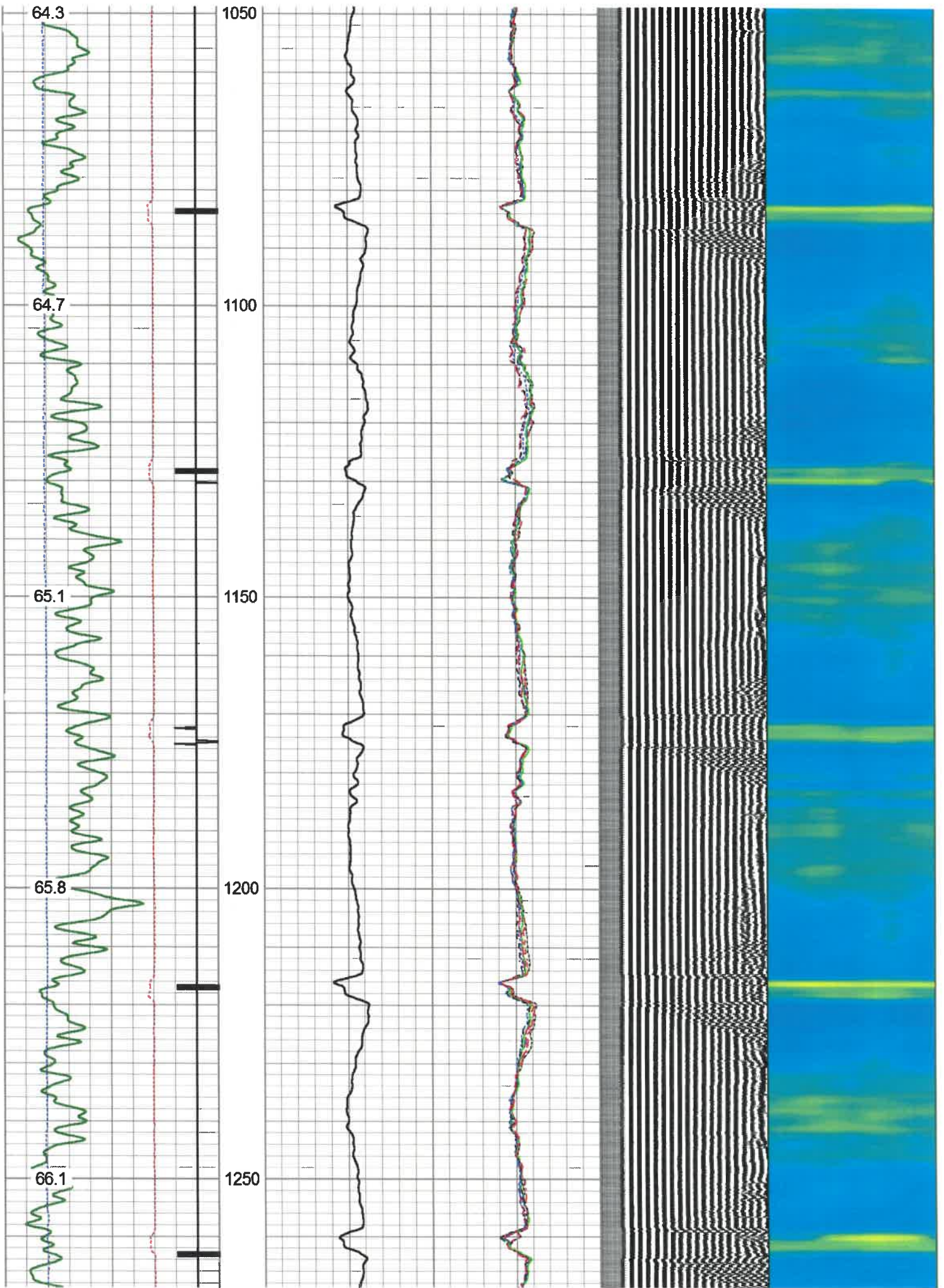


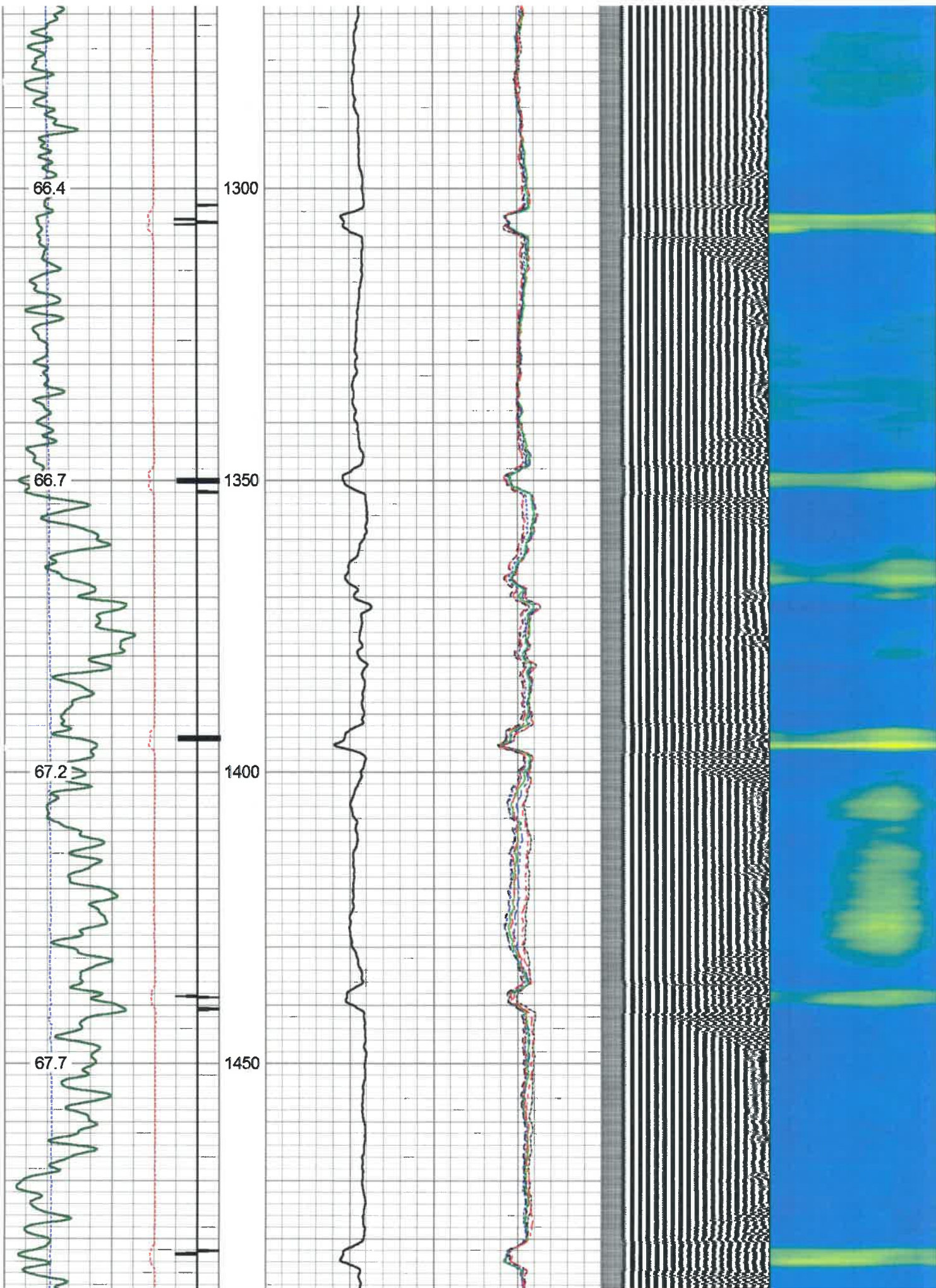


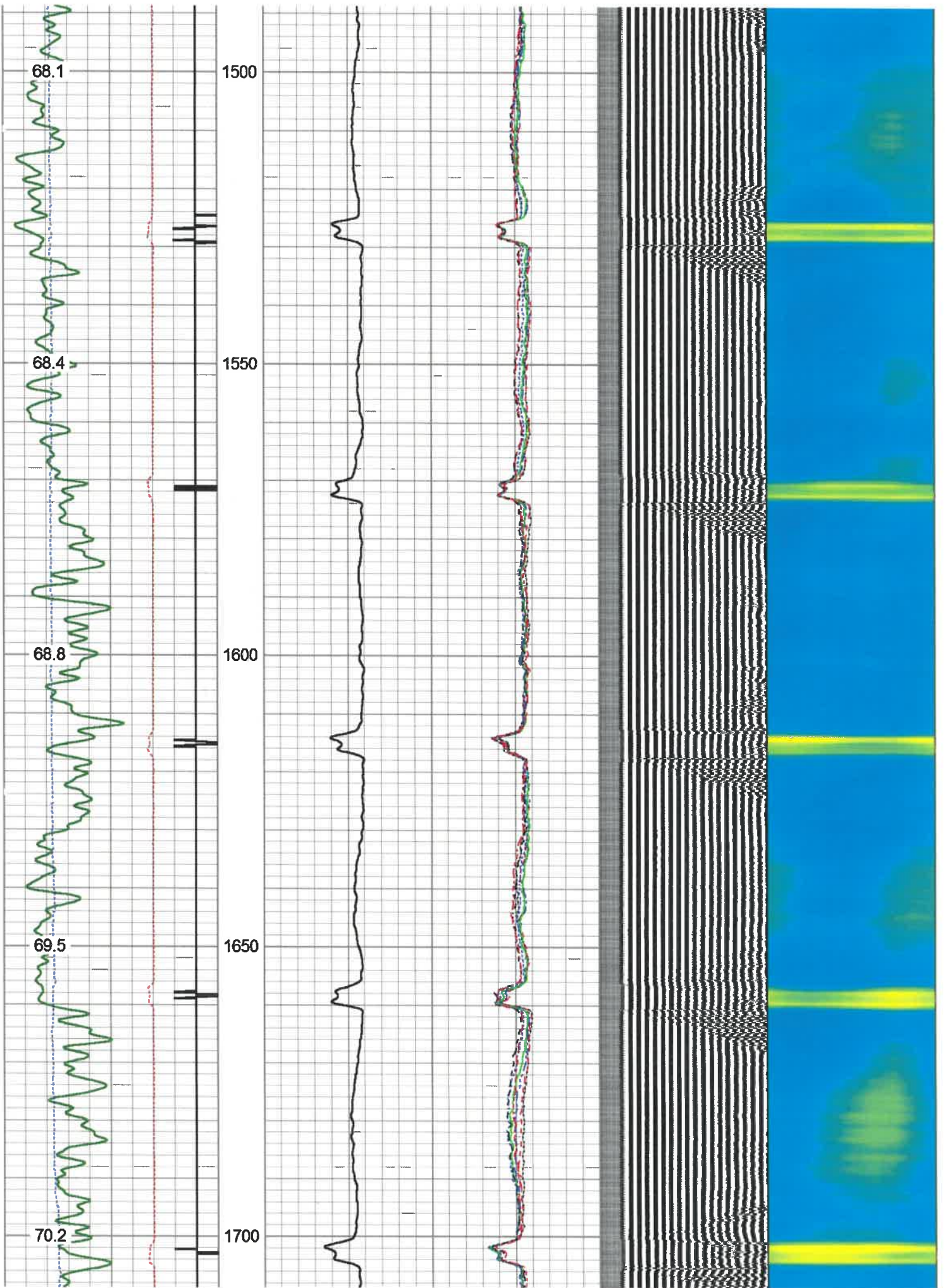


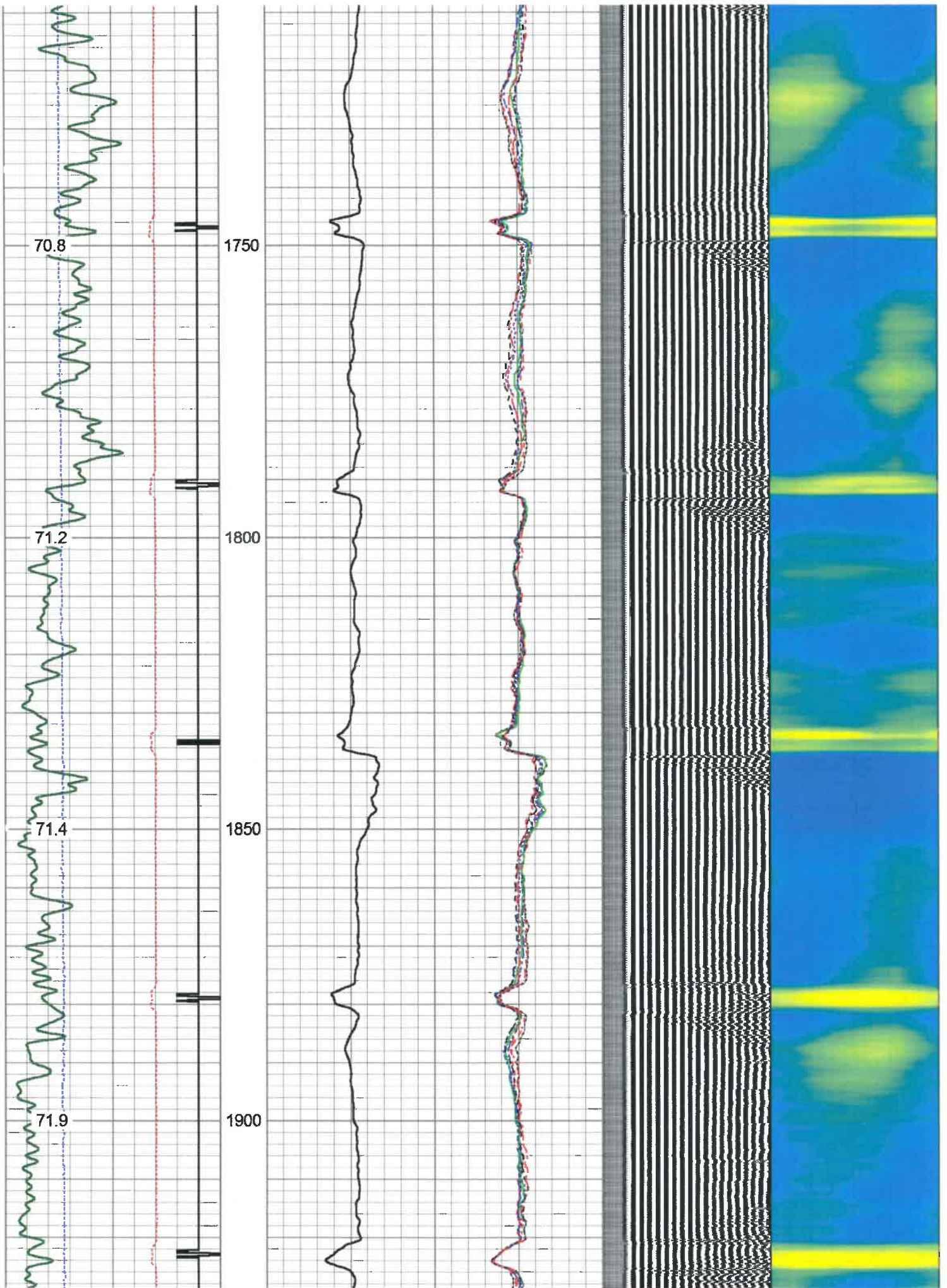


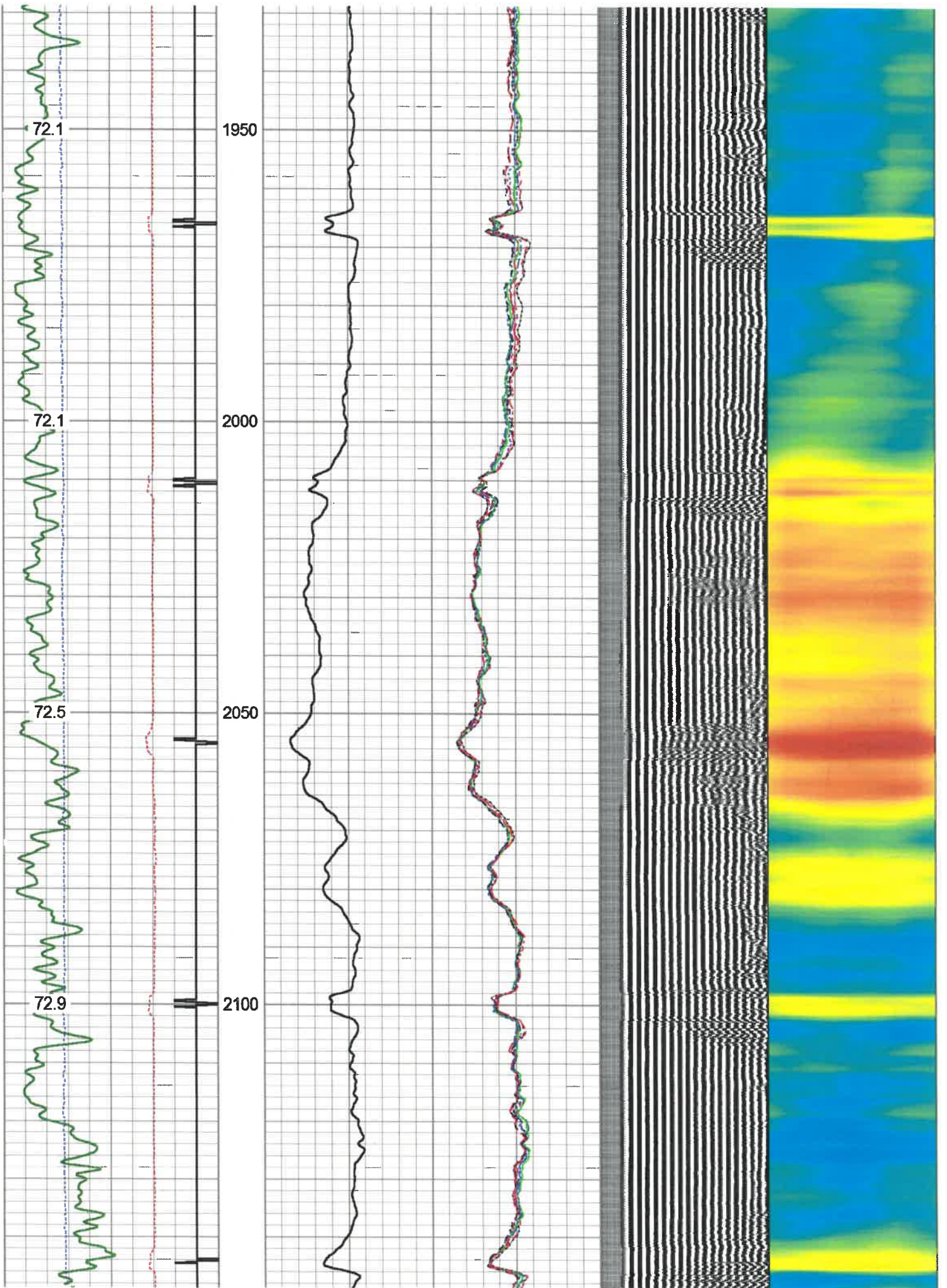


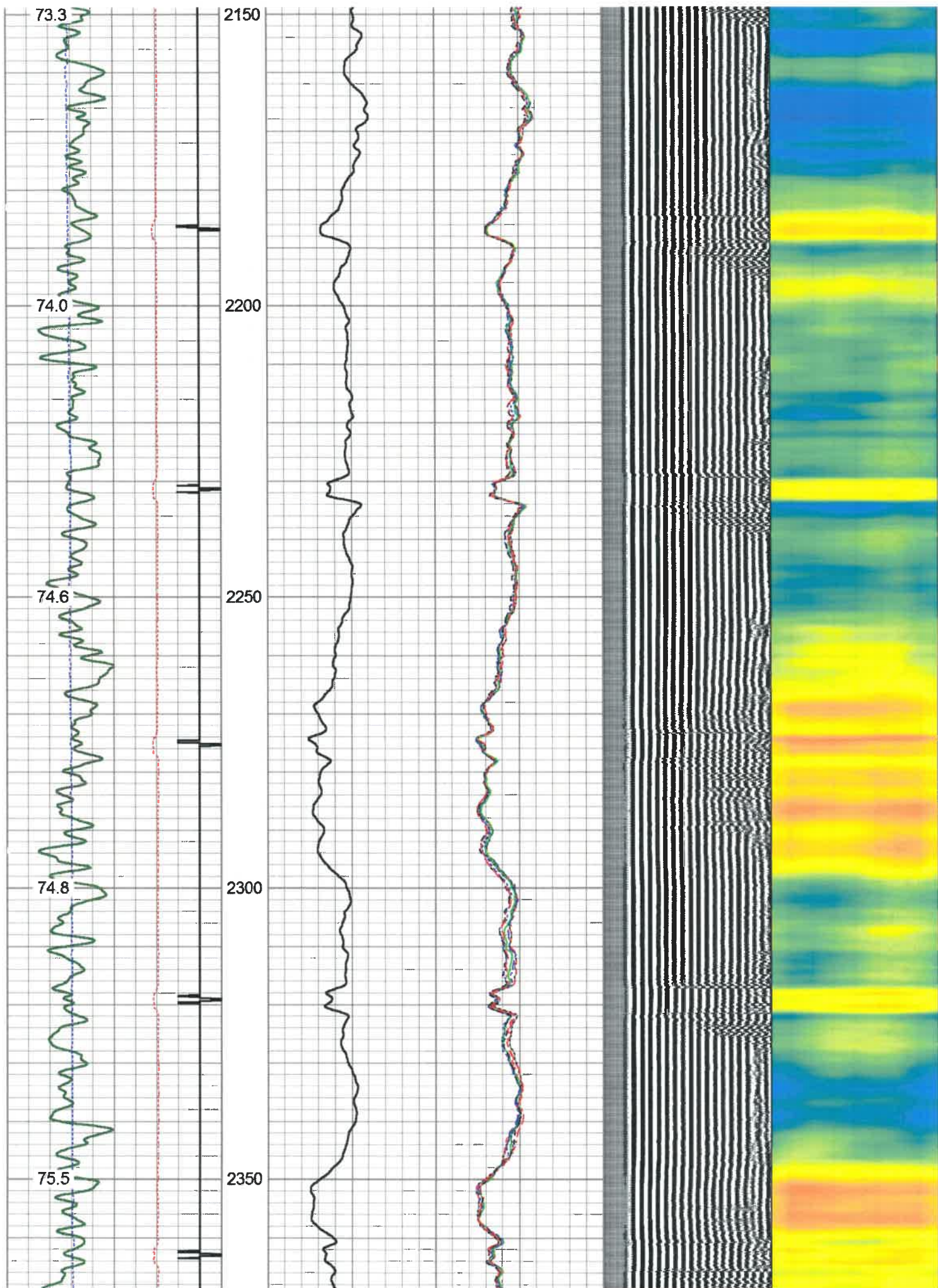


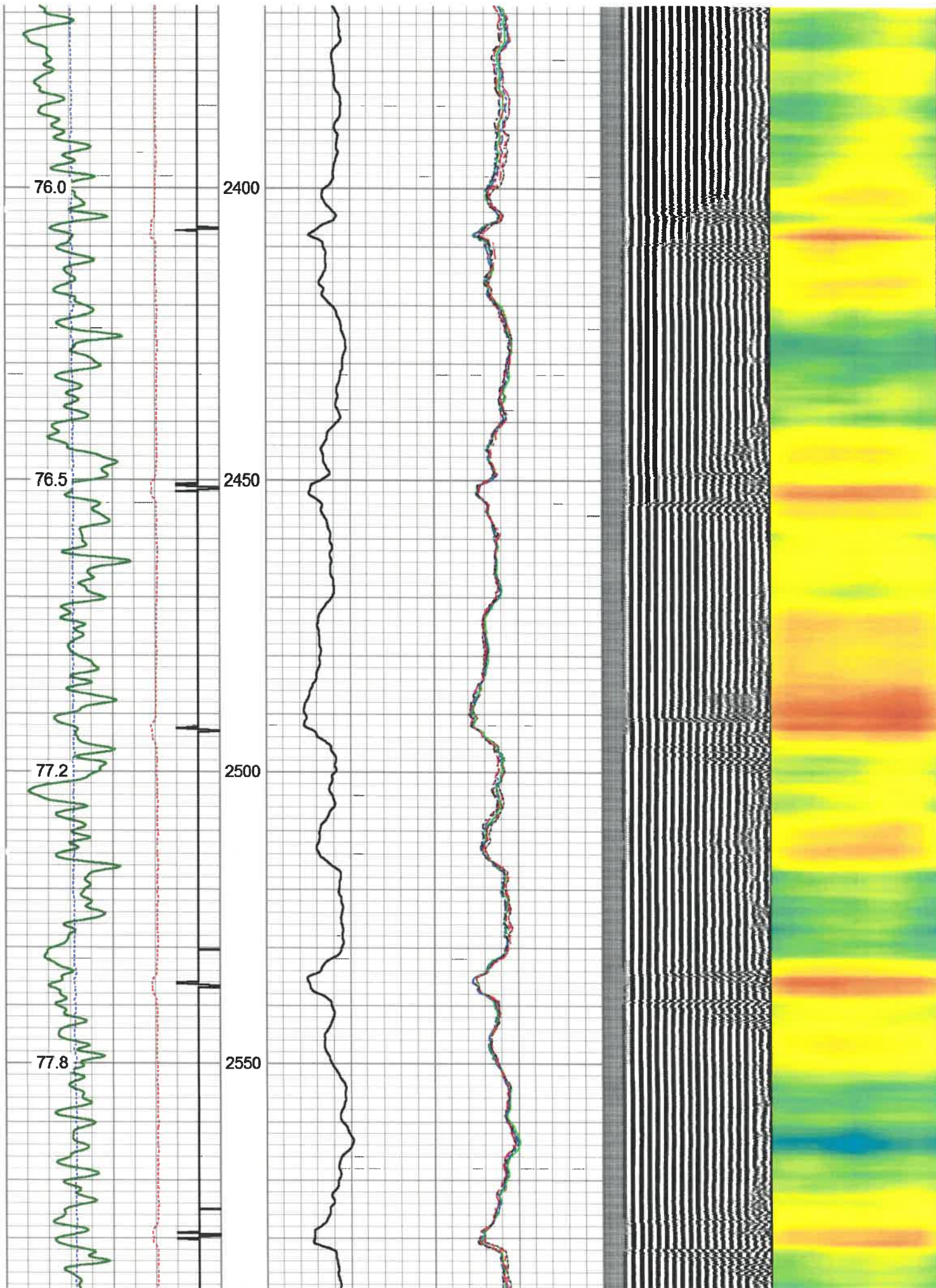


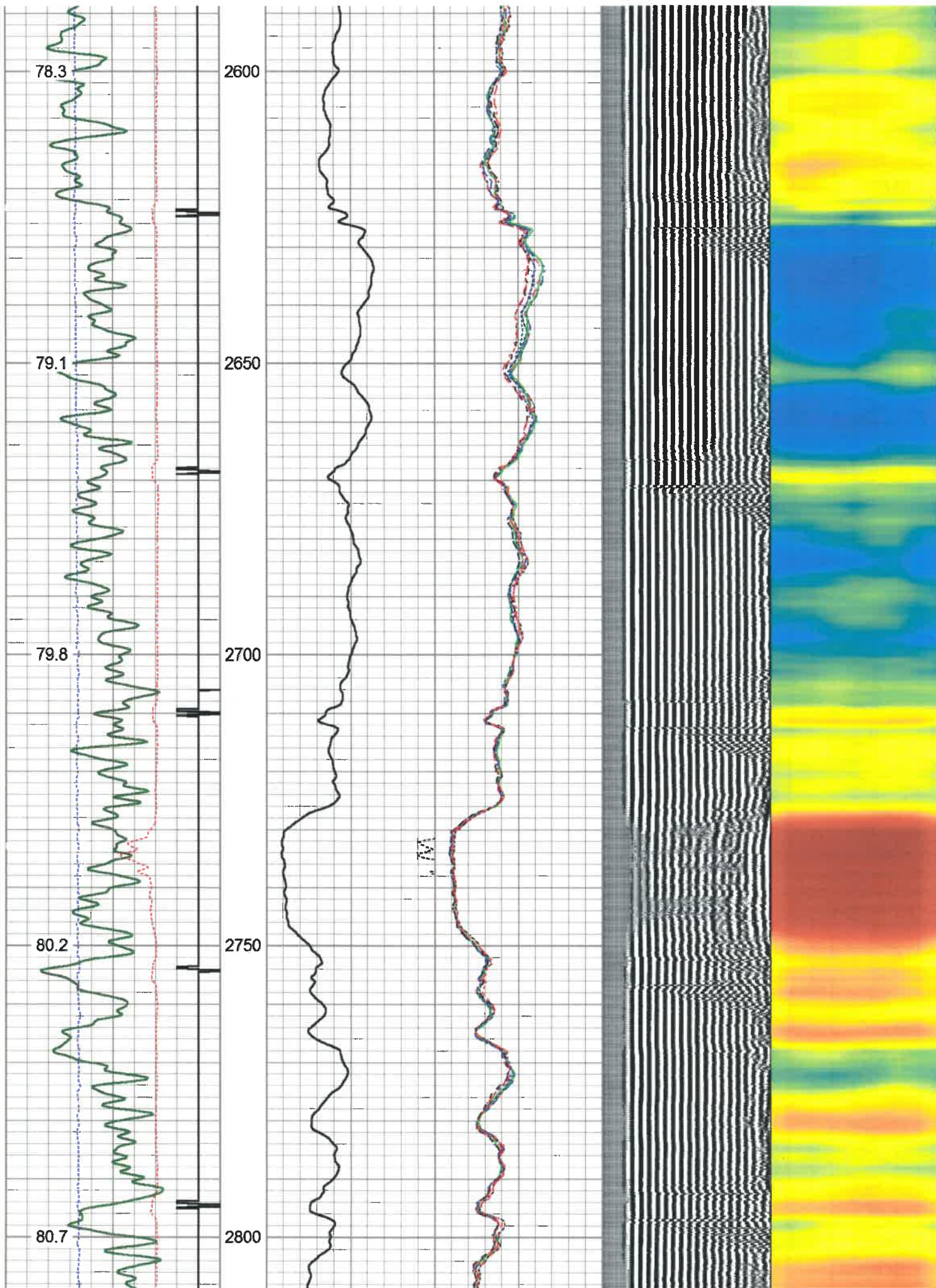


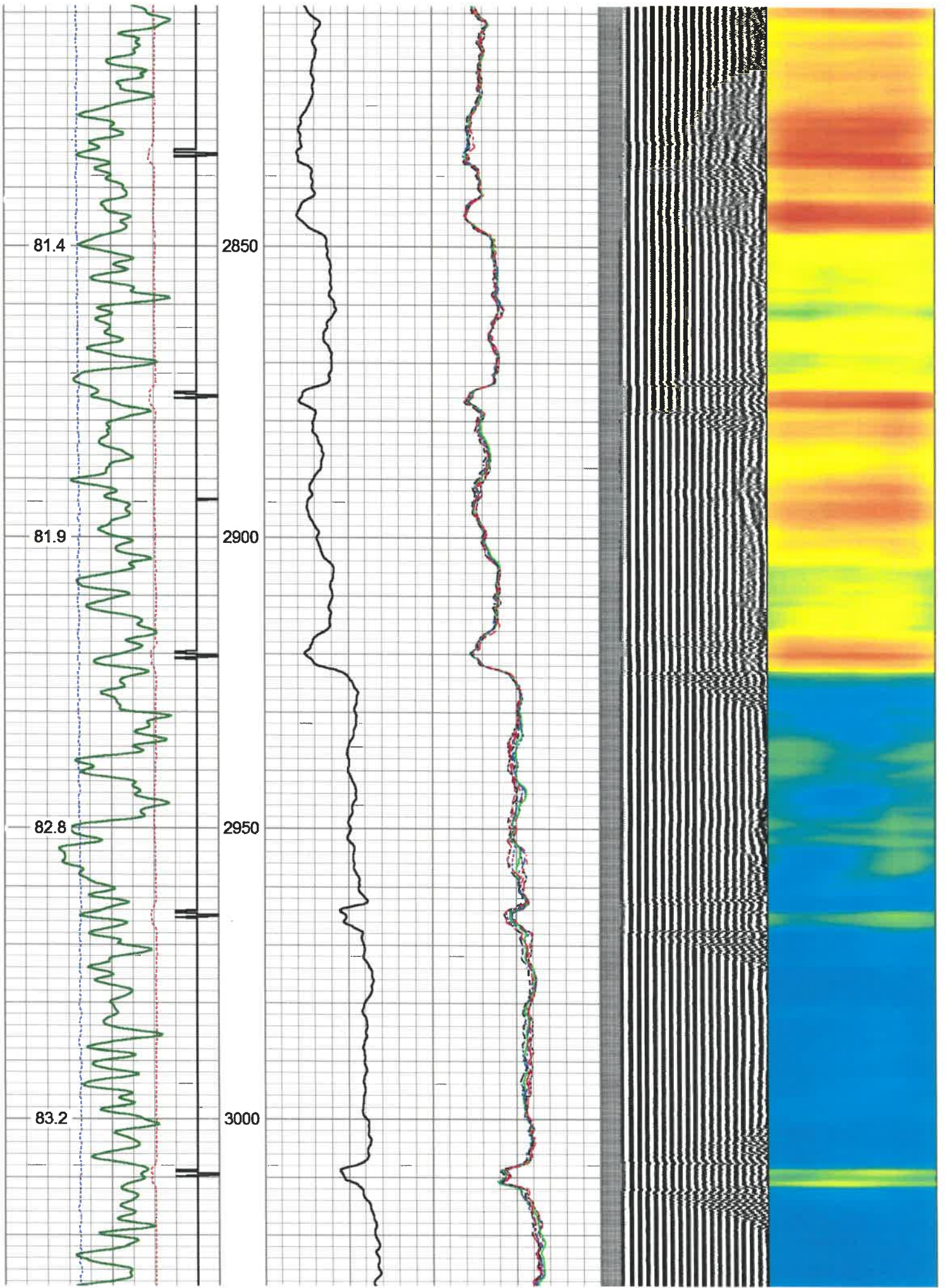


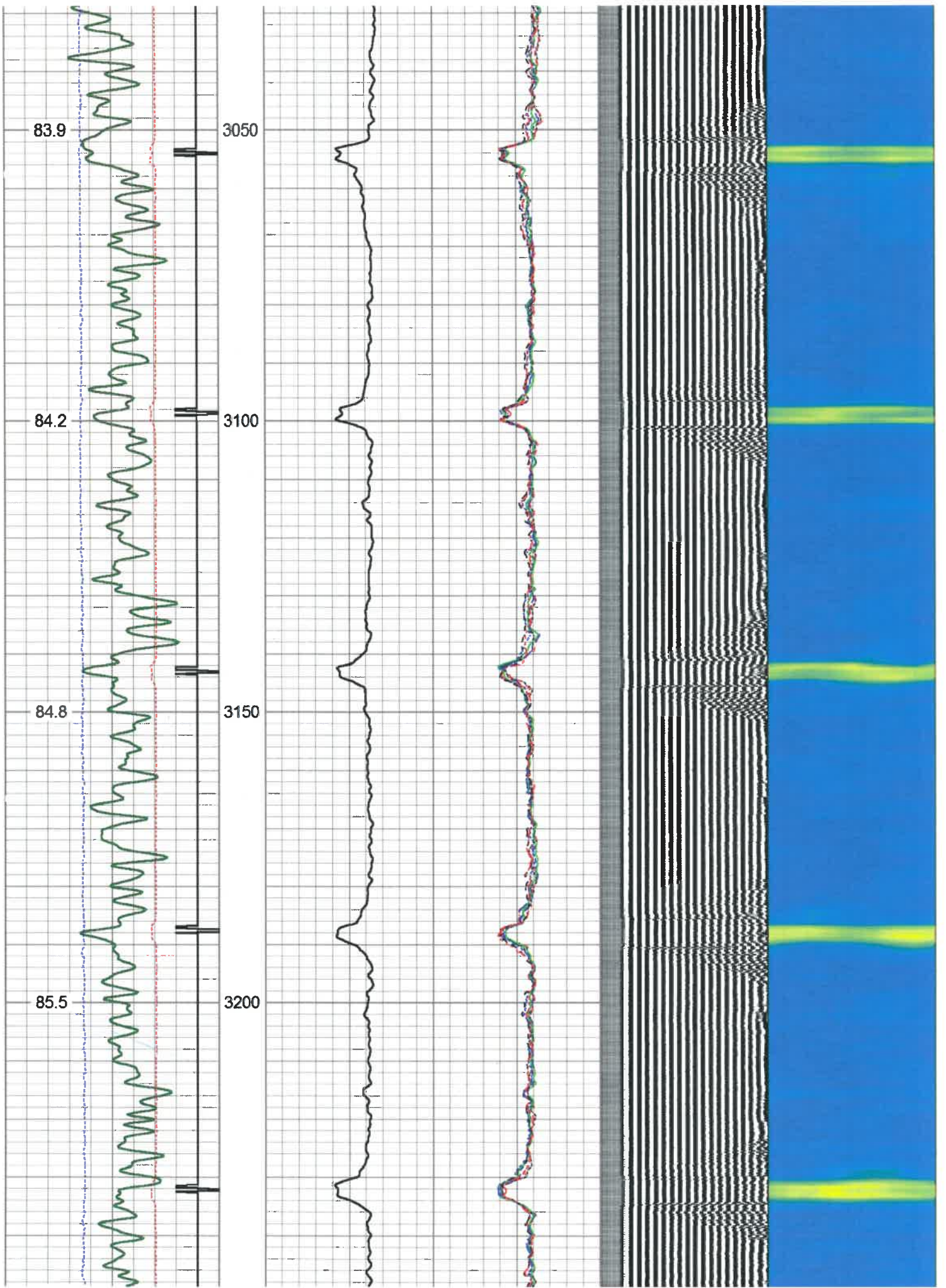


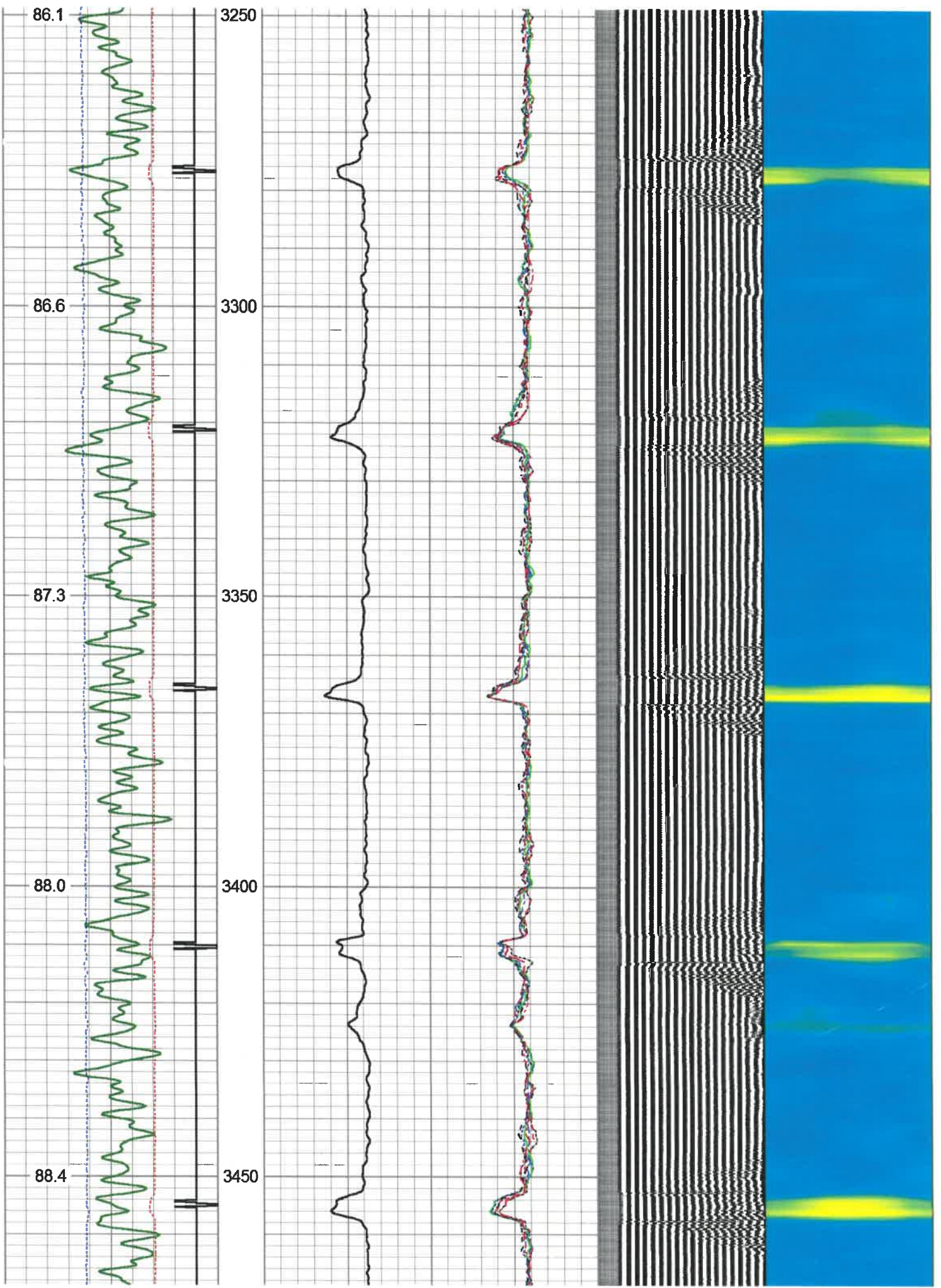


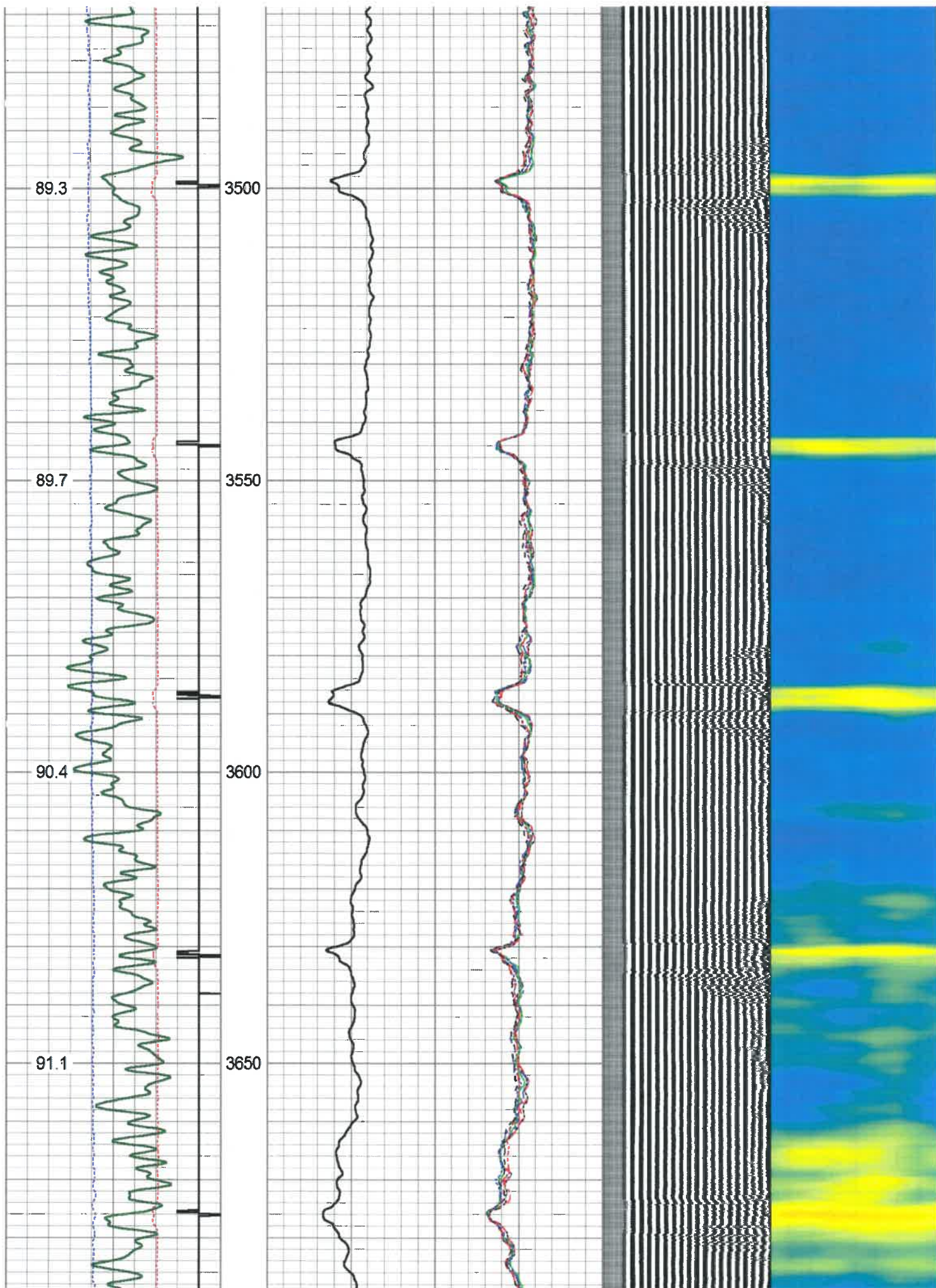


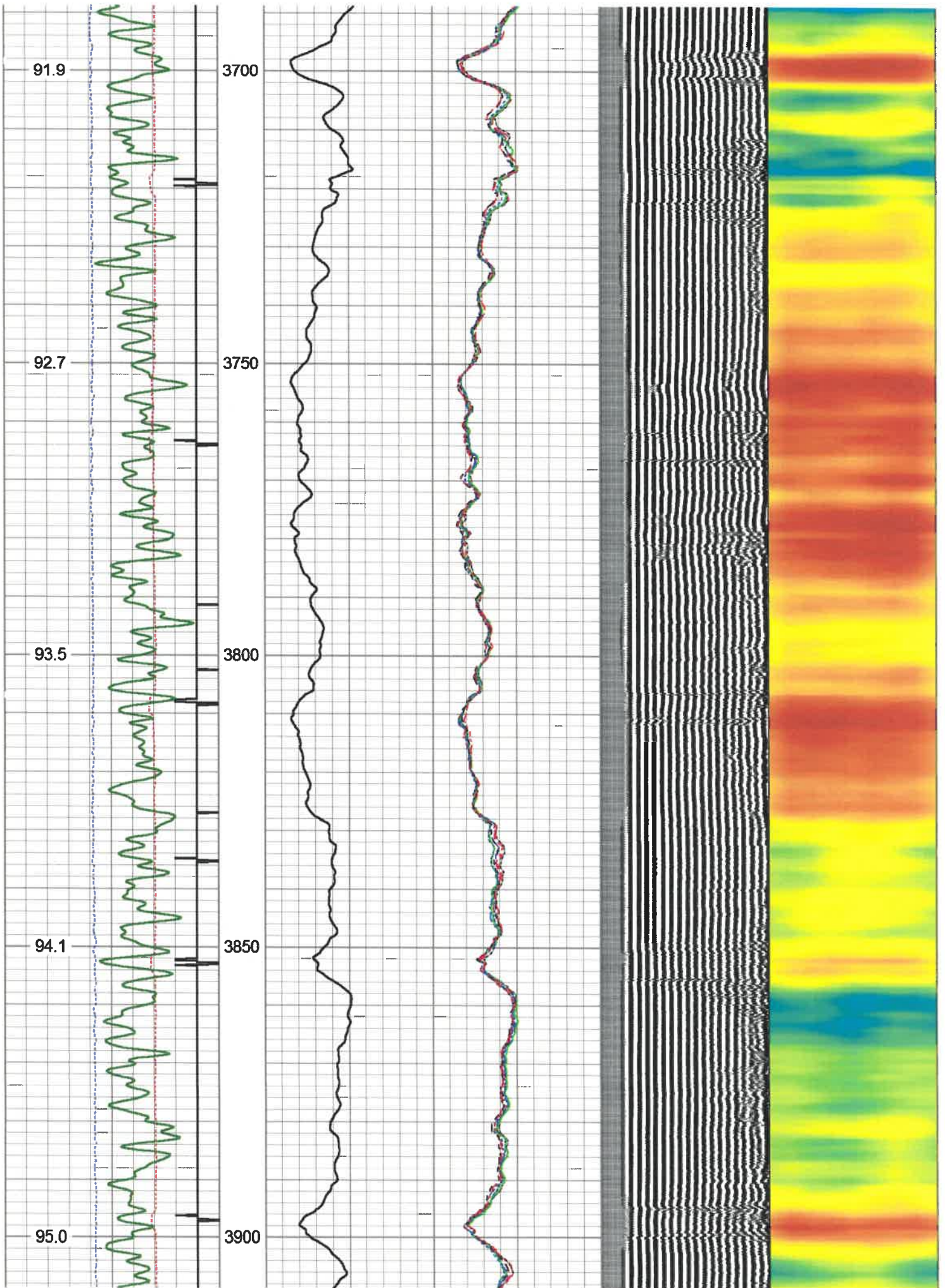


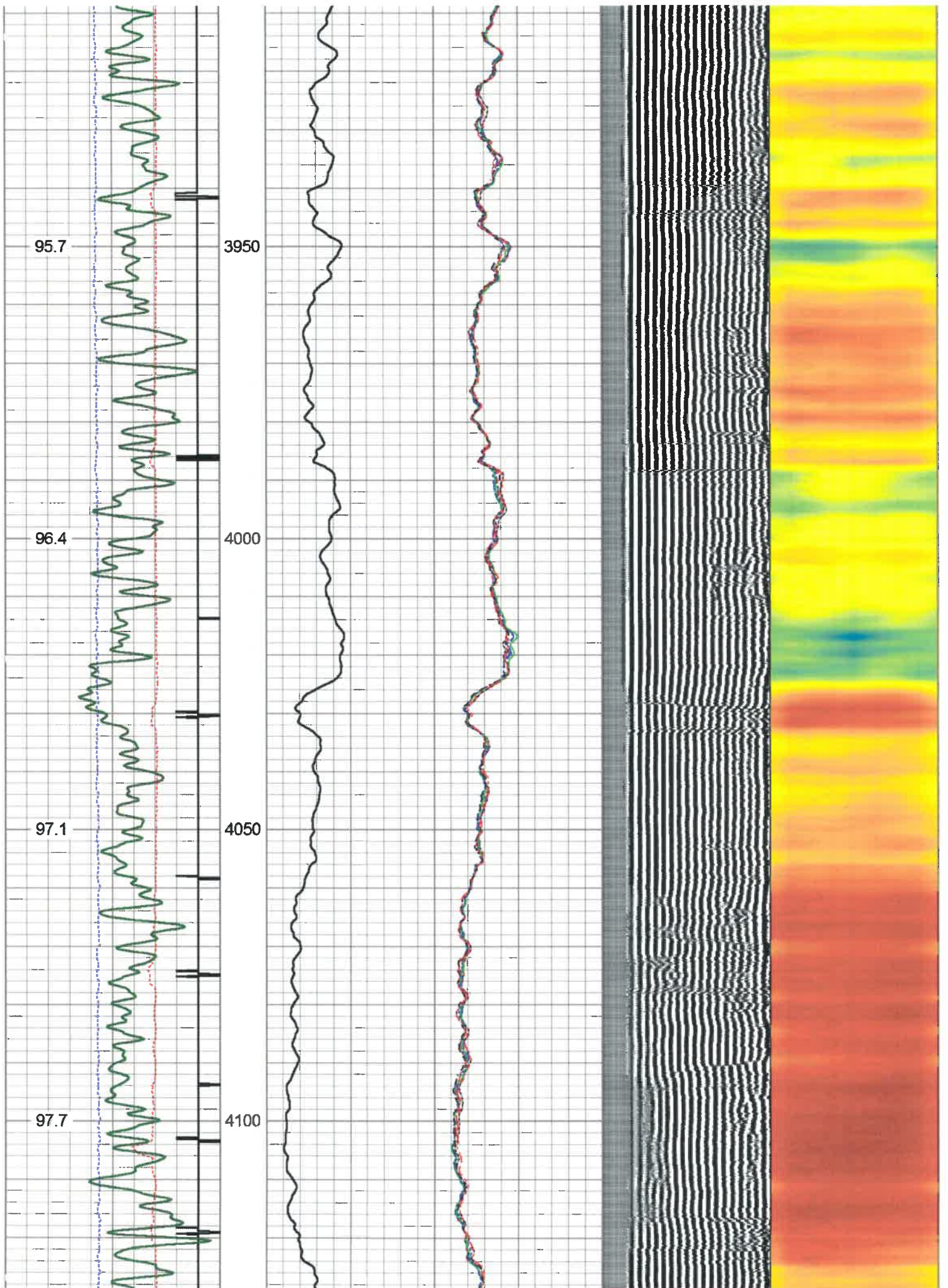


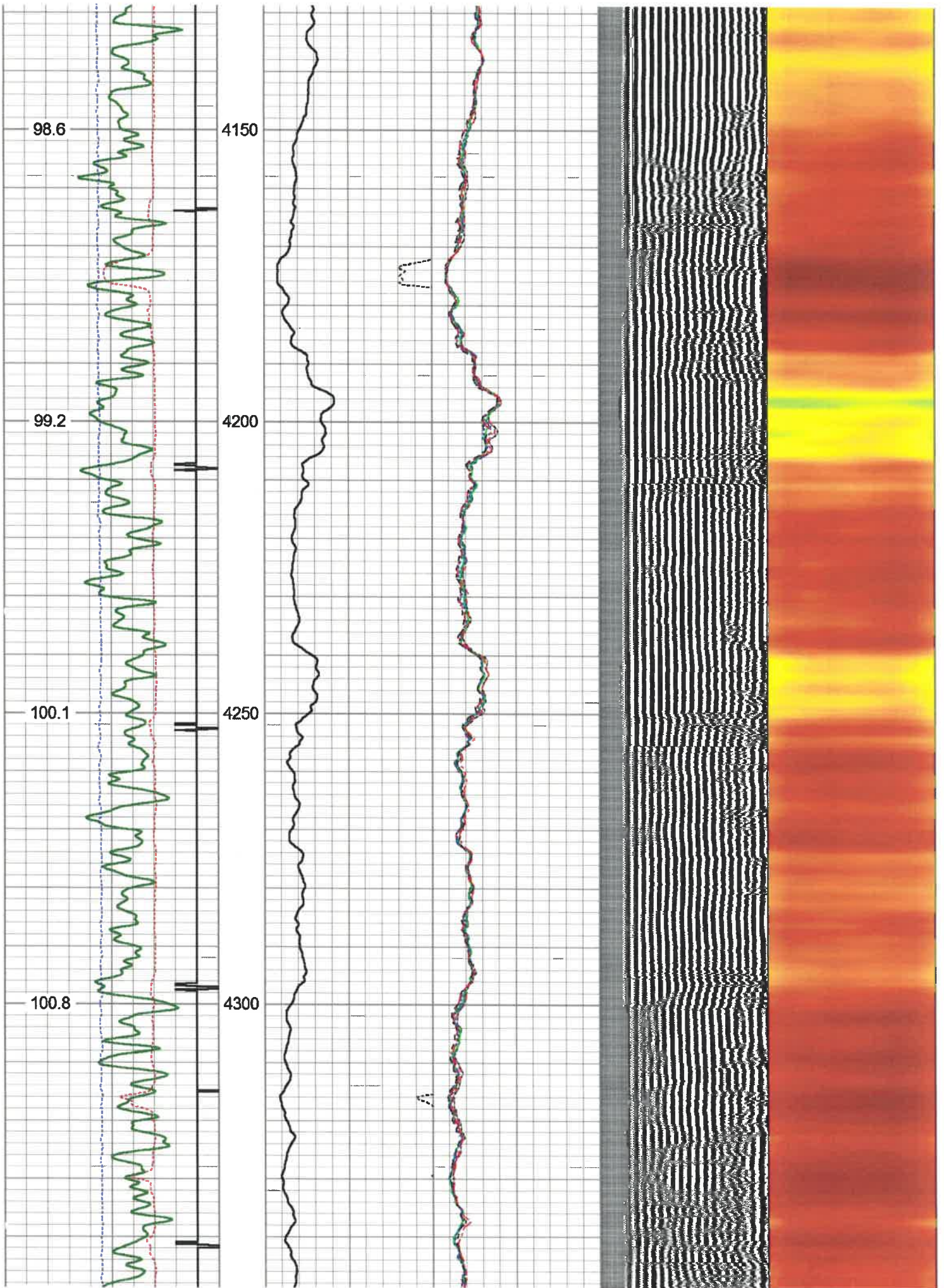


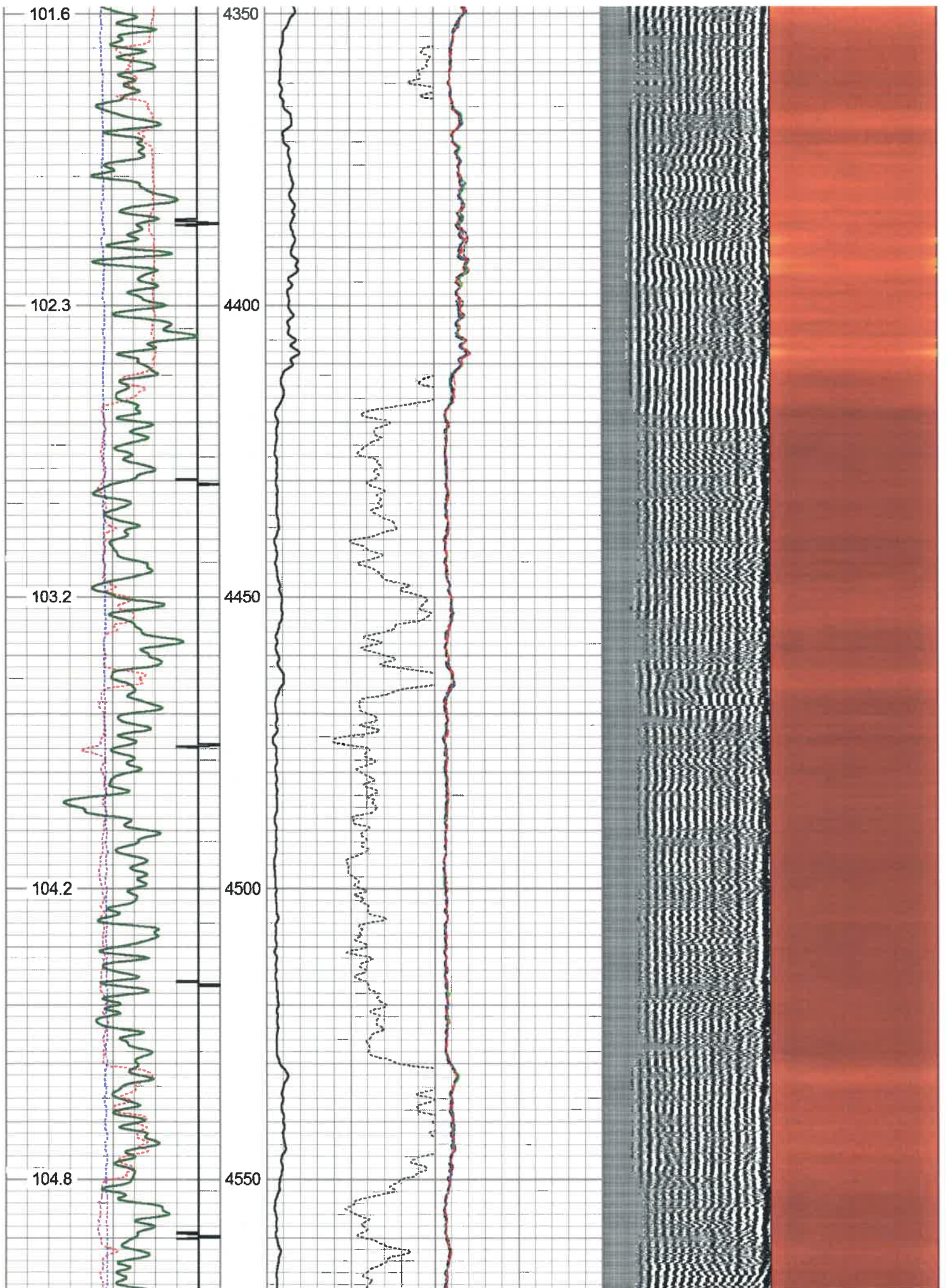


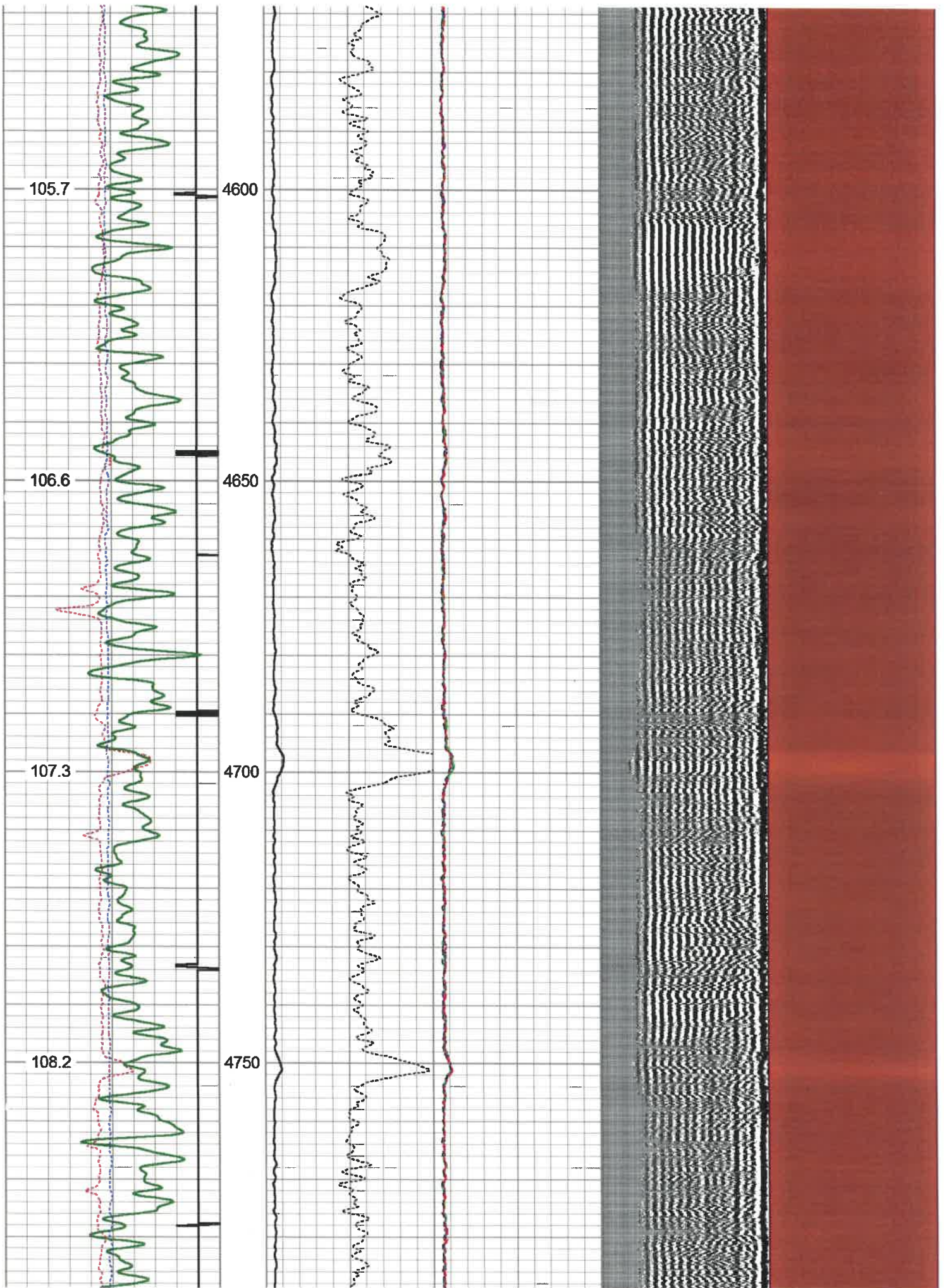


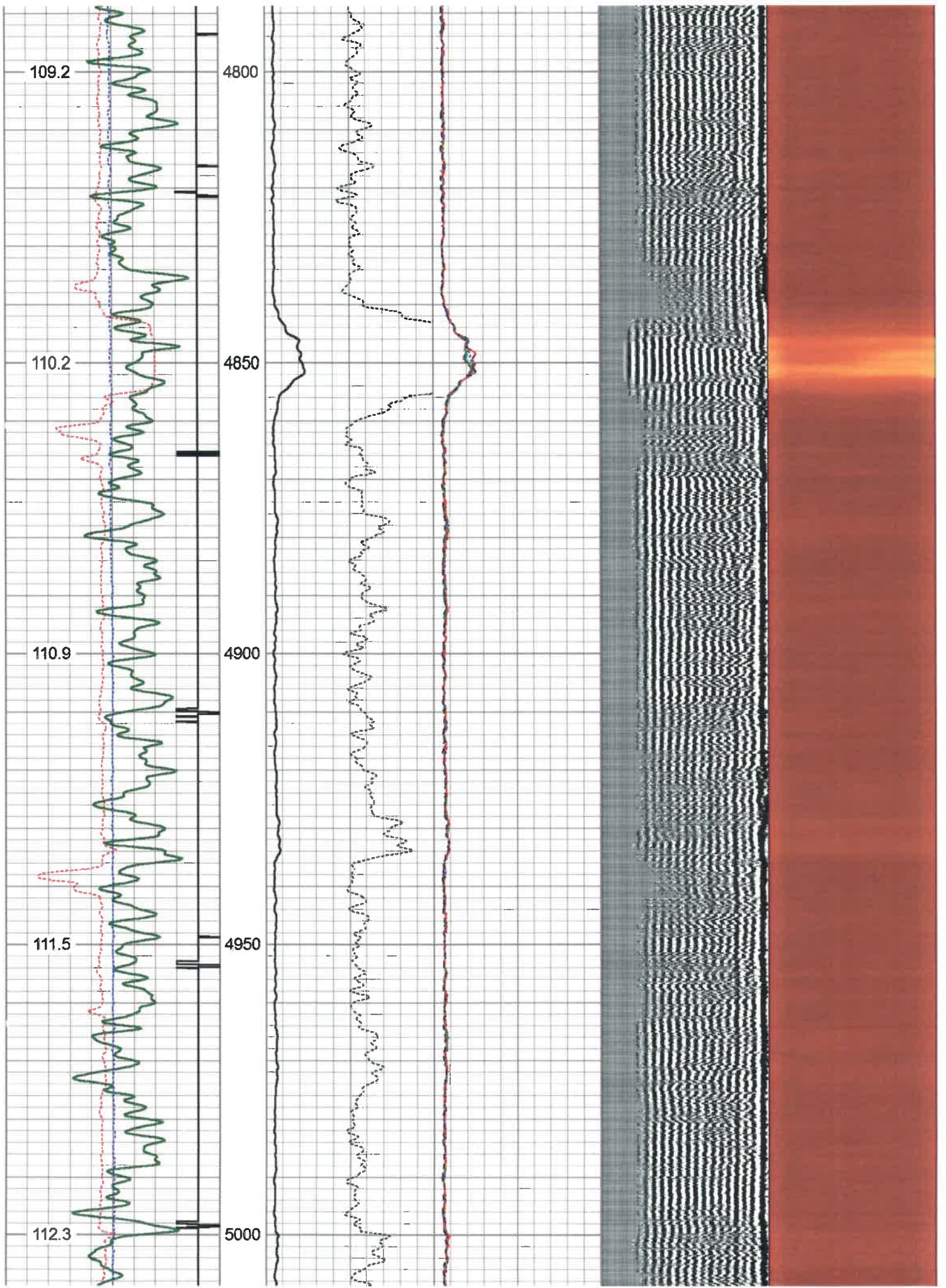


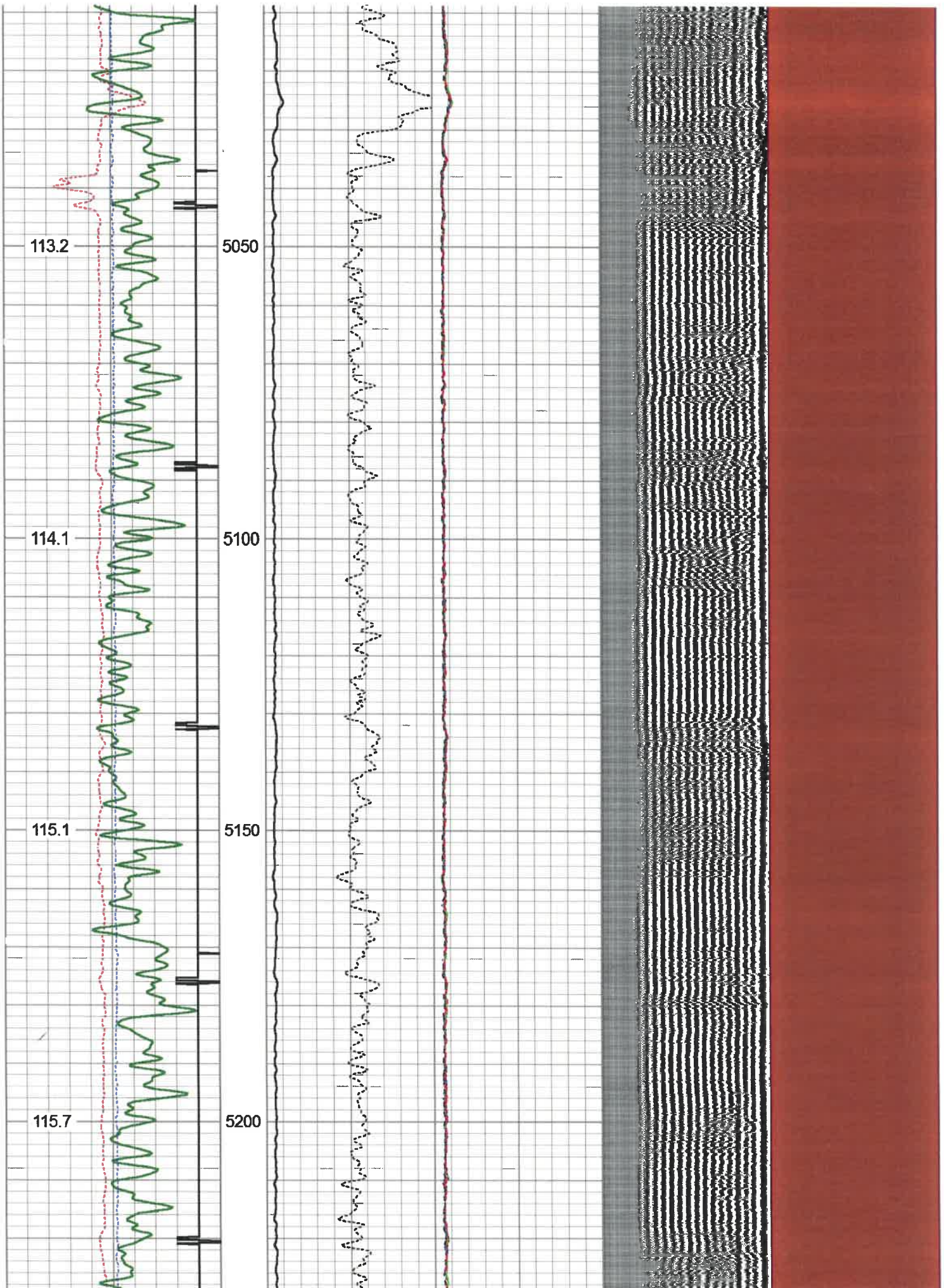


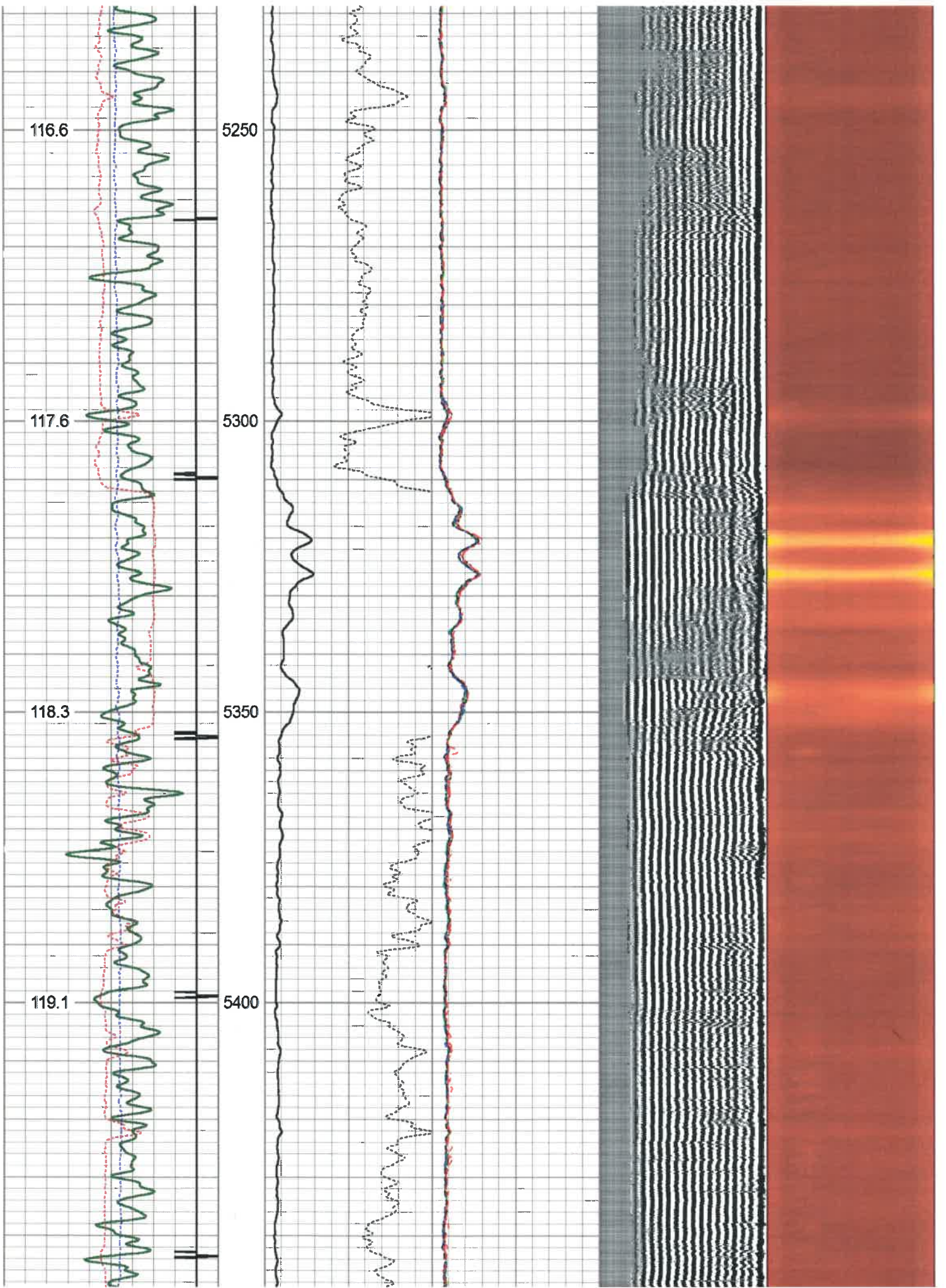


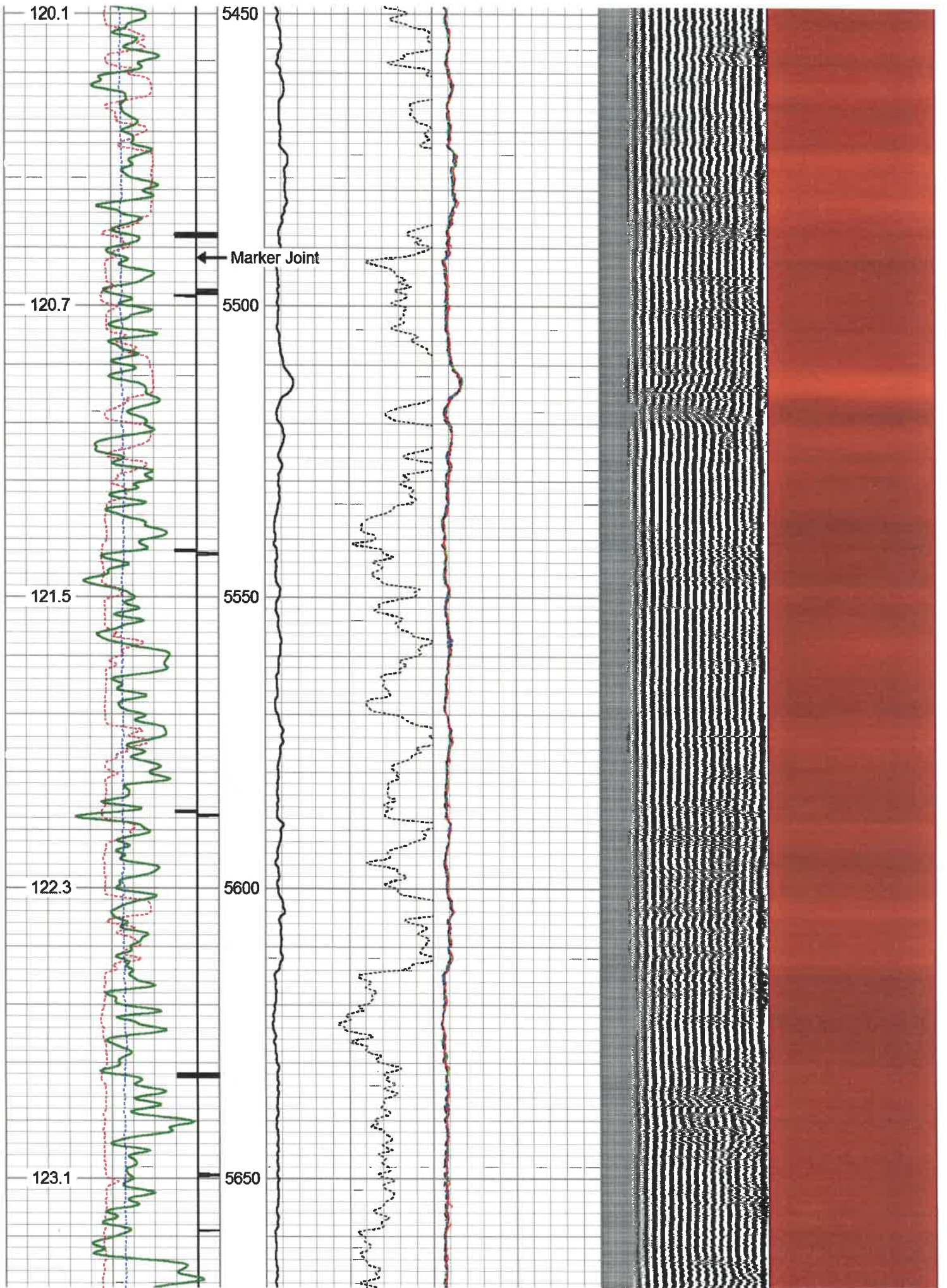


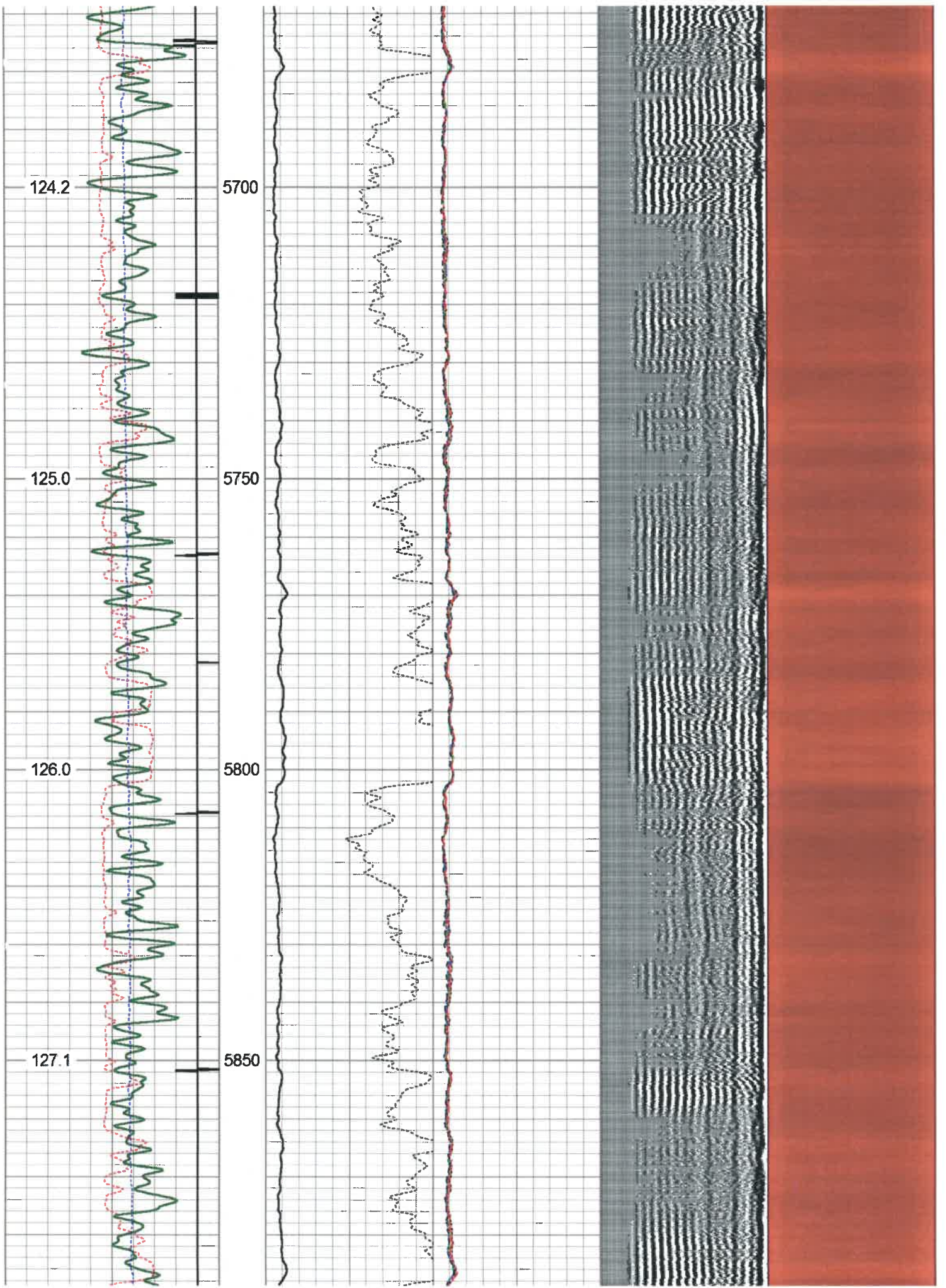


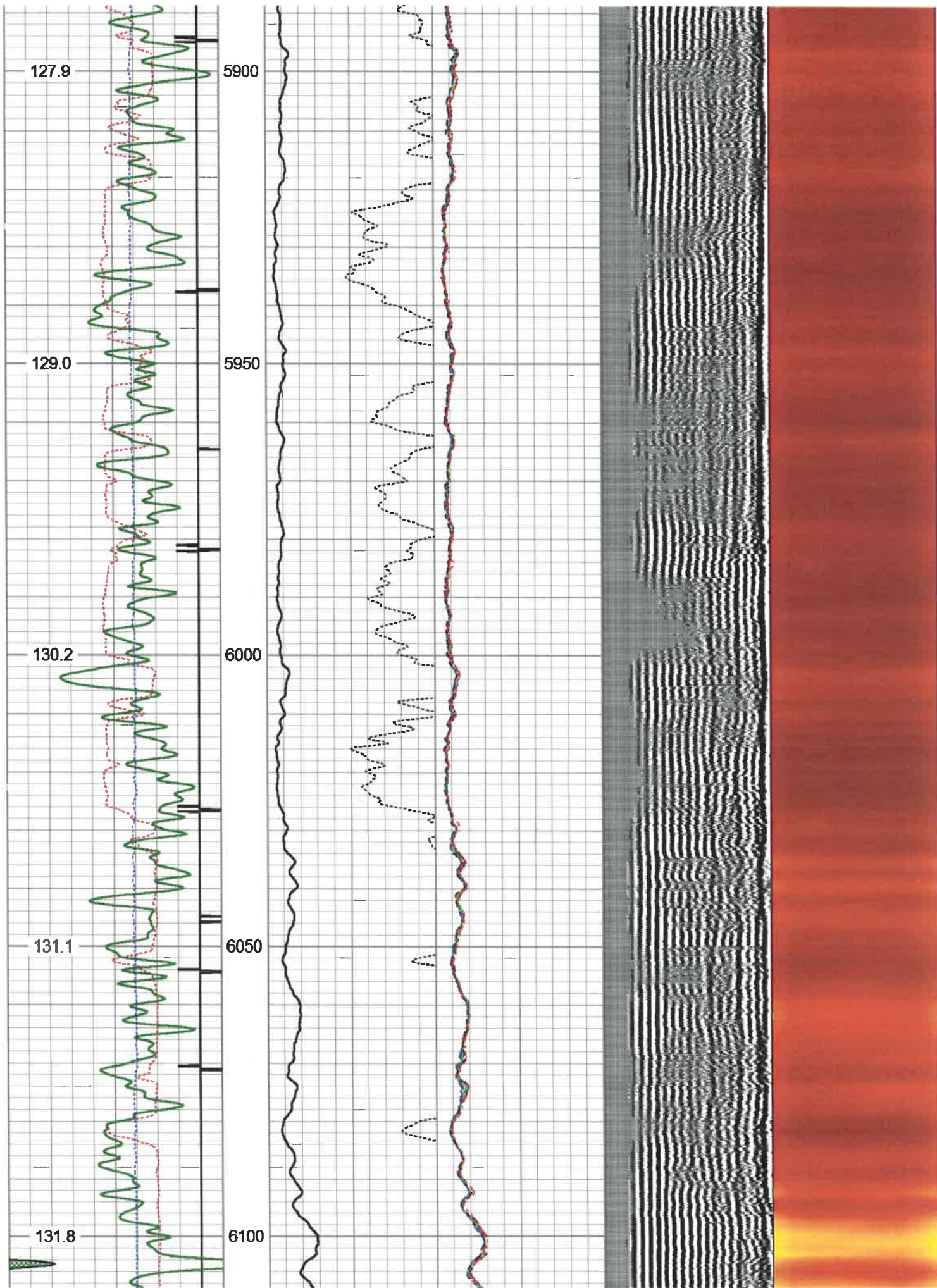


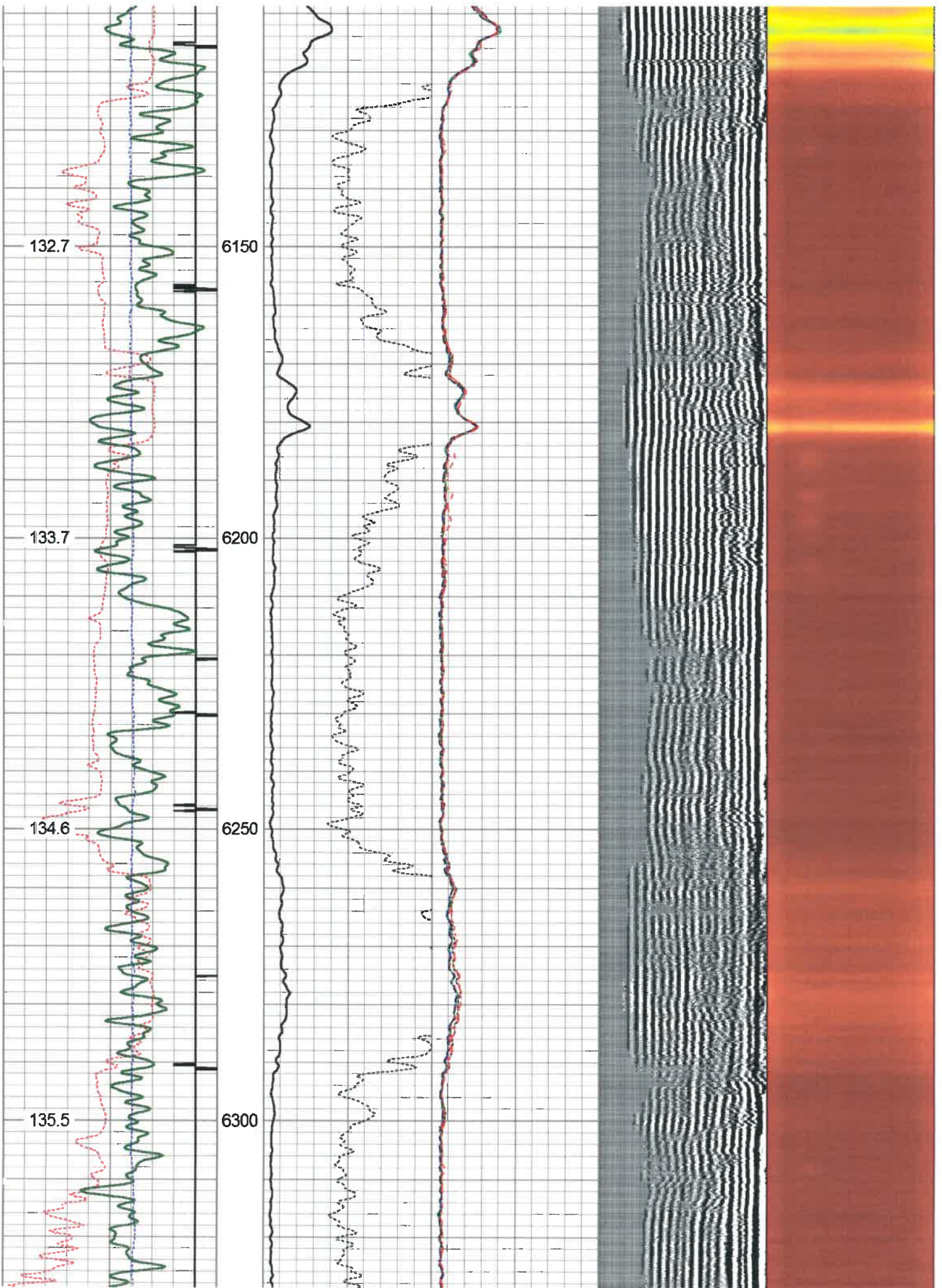


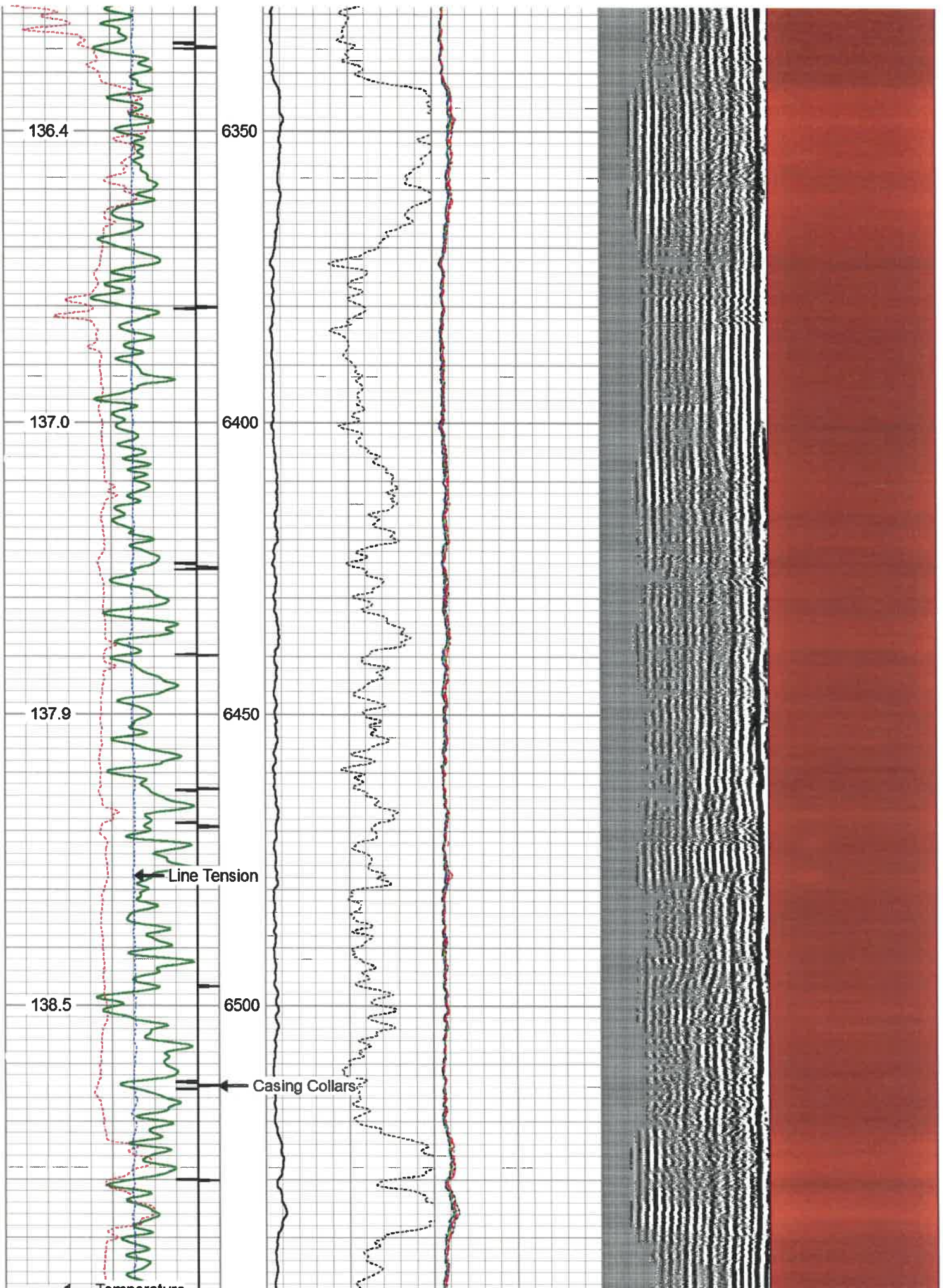


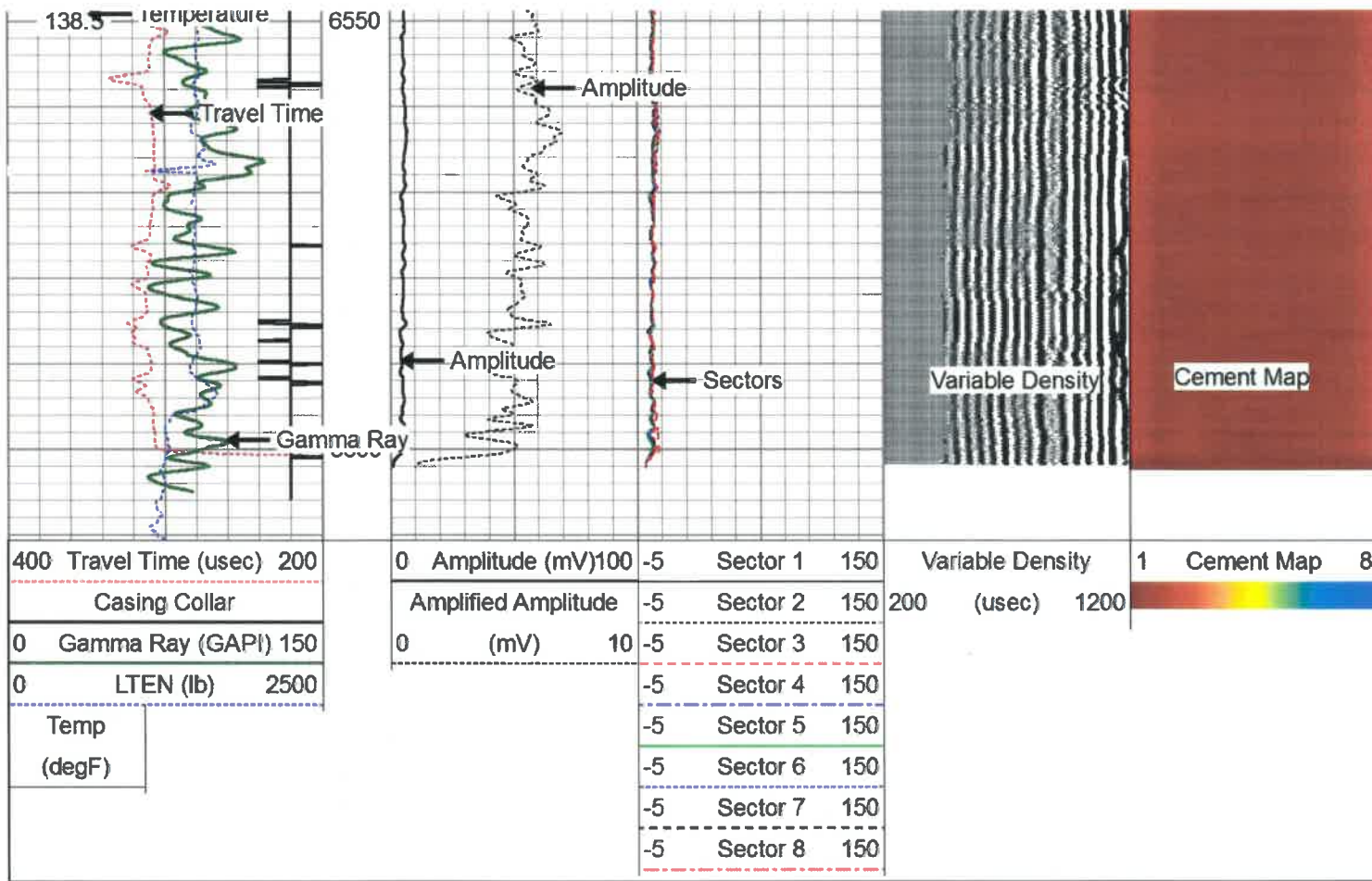






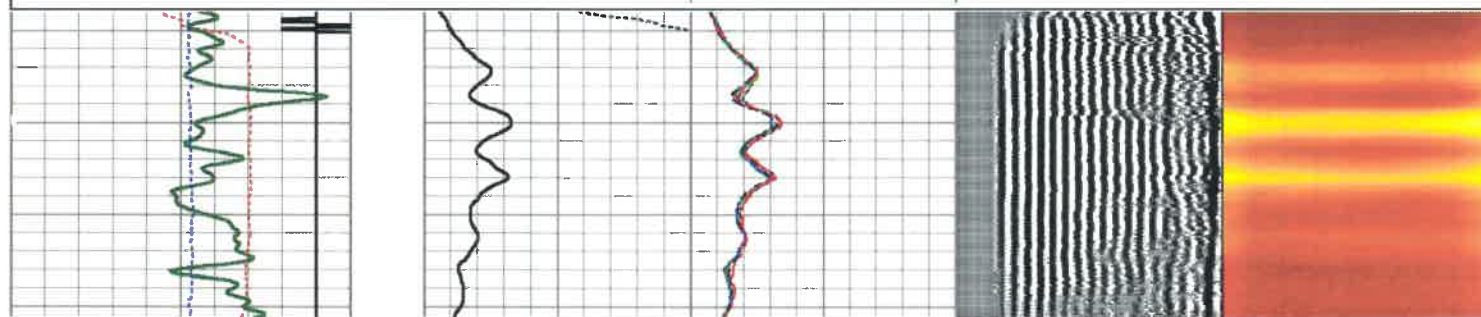
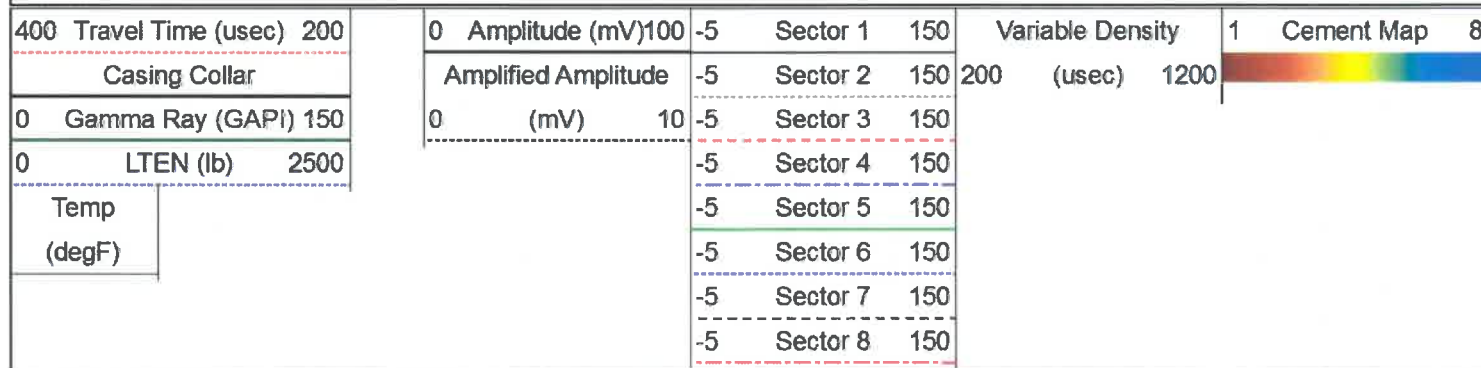


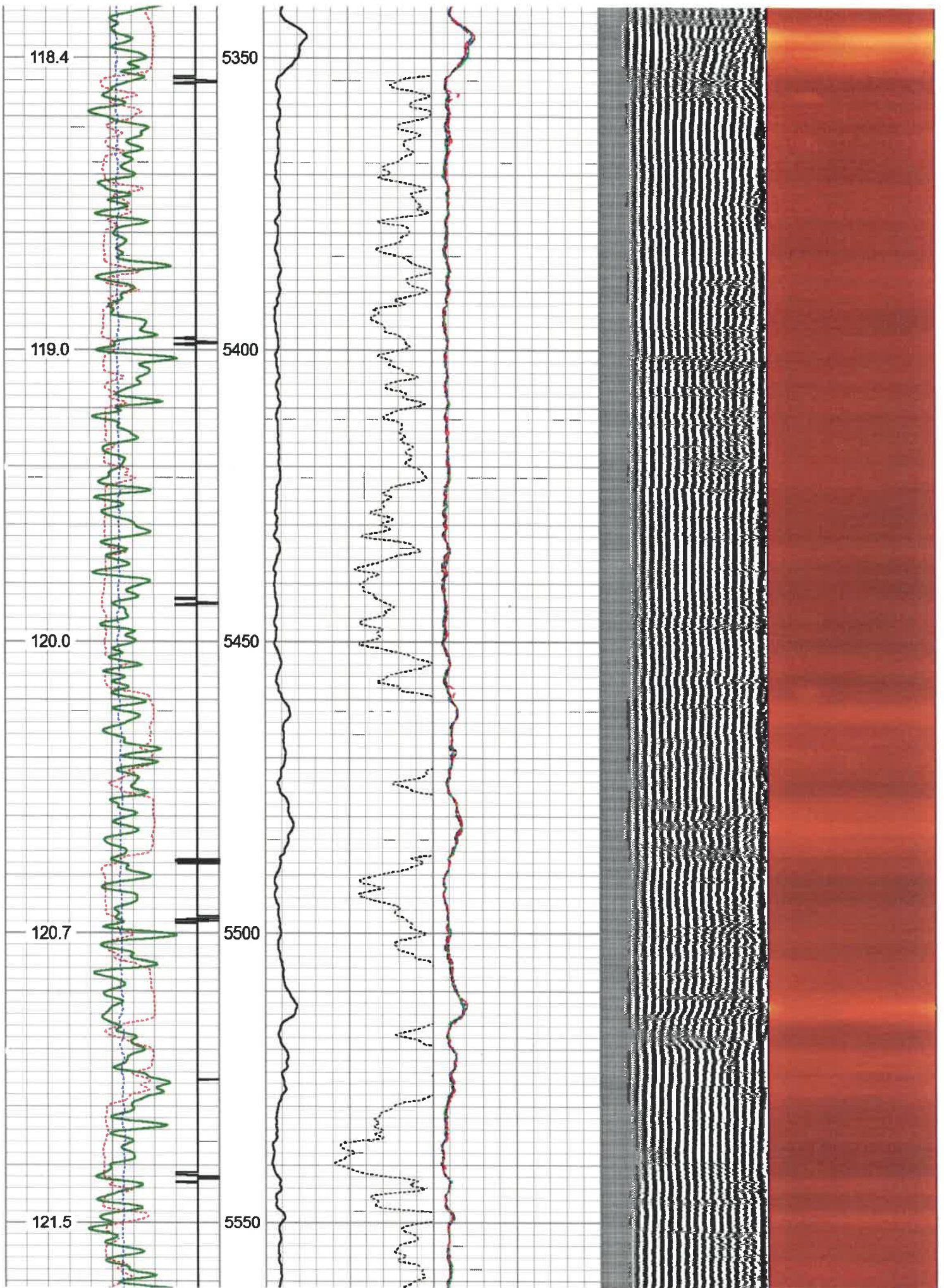


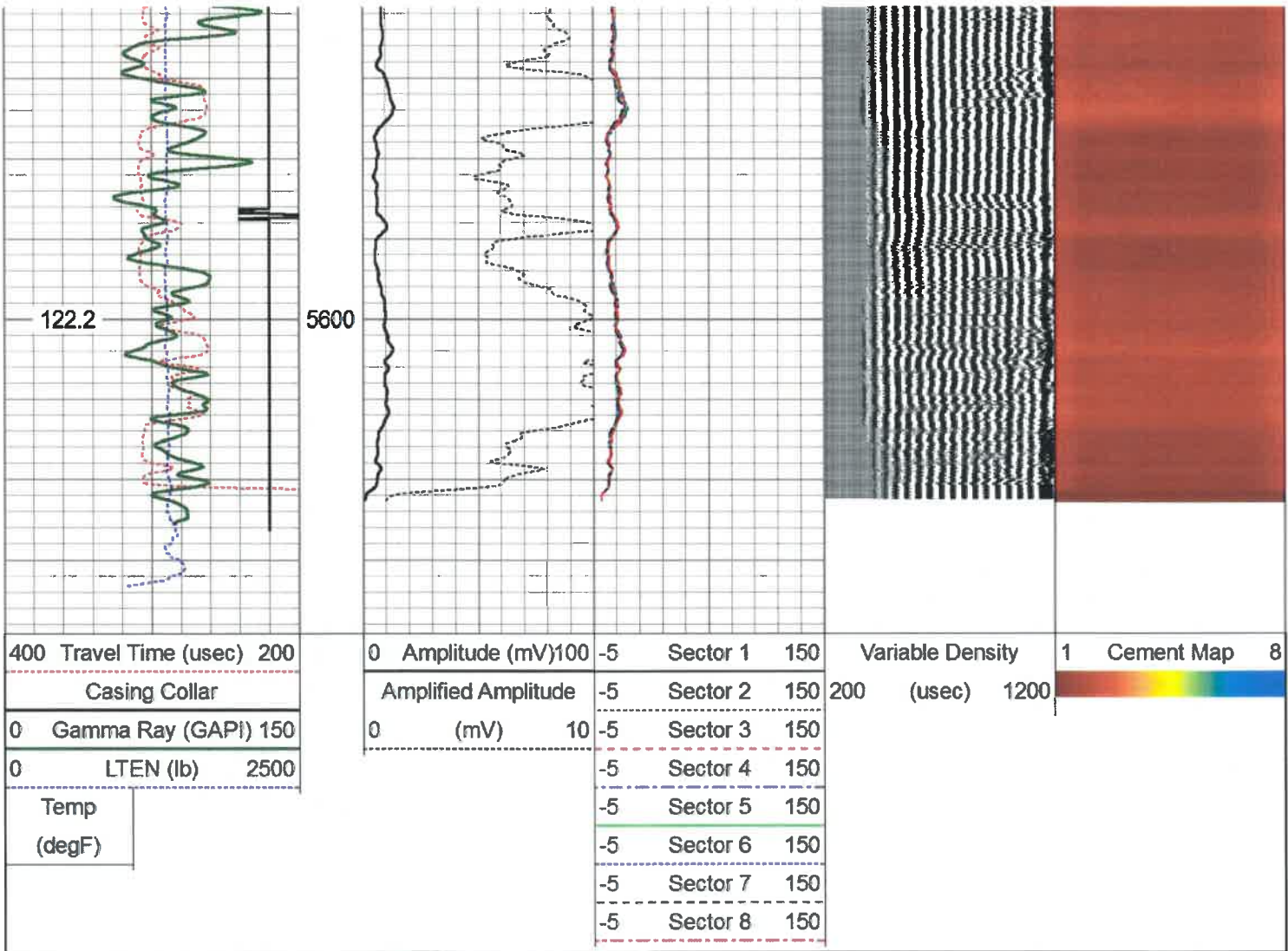



Repeat Pass 0 PSI

Database File antero_carse_1h_rcbl_24_jun_19.db
 Dataset Pathname marcellus/1h/rcbl/pass4
 Presentation Format scbl03
 Dataset Creation Mon Jun 24 08:45:25 2019
 Charted by Depth in Feet scaled 1:240







Calibration Report

Database File antero_carse_1h_rcbl_24_jun_19.db
Dataset Pathname marcellus/1h/rcbl/pass9
Dataset Creation Mon Jun 24 08:55:51 2019

Gamma Ray Calibration Report

Serial Number: FW1211-86
Tool Model: Probe
Performed: Sun May 19 12:22:44 2019

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 0.7000 GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number: FW1312-32
Tool Model: Probe275T

Calibration Casing Diameter: 5.500 in
Calibration Depth: 195.825 ft

Master Calibration, performed (Derived):

Raw (uV)	Calibrated (mV)	Results
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	Raw (v)		Calibrated (mV)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.000	1.119	1.000	71.921	63.356	0.998
CAL	-0.046	1.834				
5'	0.000	1.092	1.000	71.921	64.955	0.999
SUM						
S1	0.000	1.214	0.000	100.000	82.371	-0.003
S2	0.000	1.084	0.000	100.000	92.236	-0.003
S3	0.000	1.065	0.000	100.000	93.925	-0.003
S4	0.000	1.067	0.000	100.000	93.691	-0.003
S5	0.000	1.095	0.000	100.000	91.356	-0.003
S6	0.000	1.162	0.000	100.000	86.094	-0.003
S7	0.000	1.198	0.000	100.000	83.452	-0.003
S8	0.000	1.187	0.000	100.000	84.263	-0.003

Internal Reference Calibration, performed (Not Performed):


	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	-0.046	1.834	1.000	0.000


Air Zero Calibration, performed Sat Jun 22 12:51:05 2019:

	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	16.99		CHD-Titan Titan 1 7/16" GO Cablehead	1.00	1.44	5.00
Temp	14.14		CENT-Overbody Antelope (SP-919-0233)	1.67	4.88	5.00
WVFS8	11.91		RBT-Probe275T (FW1312-32) Probe 2.75" Radial with Integral Temperature Sub	9.39	2.75	90.00

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WVFS7	11.91					
WVFS6	11.91					
WVFS5	11.91					
WVFS4	11.91					
WVFS3	11.91					
WVFS2	11.91					
WVFS1	11.91					
WVF3FT	11.91					
WVF5FT	10.91					
WVFCAL HEADVOLT	7.66 7.66					
CCL	6.75					
GR	5.42					
			CENT-Overbody Antelope (SP-919-0233)	1.67	4.88	5.00
			GR-Probe (FW1211-86) Probe 2 3/4" Logging Gamma Ray	4.78	2.75	57.00
			CENT-Probe275 2.75" Centralizer	2.88	2.75	20.00
Dataset:			antero_carse_1h_rcbl_24_jun_19.db: marcellus/1h/rcbl/pass9			
Total length:			18.05 ft			
Total weight:			182.00 lb			
O.D.:			4.88 in			

	Company	Antero Resources
	Well	Carse 1H
	Field	Marcellus
	County	Tyler
	State	WV