



Nine

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

Company Antero Resources

Well Forrest Fenn Unit 1H

Field Marcellus

County Tyler State WV

Location: API #: 47-095-02560

Rush Fork Pad Lat.: 39.4167
Long.: -80.9697

SEC TWP RGE

Permanent Datum
Log Measured From Kelly Bushing 25' A.P.D.
Drilling Measured From Kelly Bushing

Other Services
JB/GR
4.50"

Elevation
KB 1,011'
D.F. 1,010'
G.L. 986'

Date 22-Jun-19

Run Number One

Depth Driller 26,005'

Depth Logger 6,476'

Bottom Logged Interval 6,476'

Top Log Interval Surface

Open Hole Size N/A

Type Fluid Water

Density / Viscosity N/A

Max. Recorded Temp. 140 Deg.F.

Estimated Cement Top 5,115'

Time Well Ready 13:00

Time Logger on Bottom 13:40

Equipment Number 104 (P4) (G4)

Location Washington, PA

Recorded By Matt McNally

Witnessed By Marty Etcher

Run Number Bit From To Size Weight From To

Borehole Record

Run Number Bit From To Size Weight From To

Casing Record

Surface String Size Wgt/Ft Top Bottom

Prot. String

Production String 5 1/2" 23 LBS Surface 26,005'

Liner

Marker Joint 5,404' 5,414'

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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 Kelly Bushing
Marker Joint found at (5,404' - 5,414')
Casing Tally Marker Joint at (5,365' - 5,375')

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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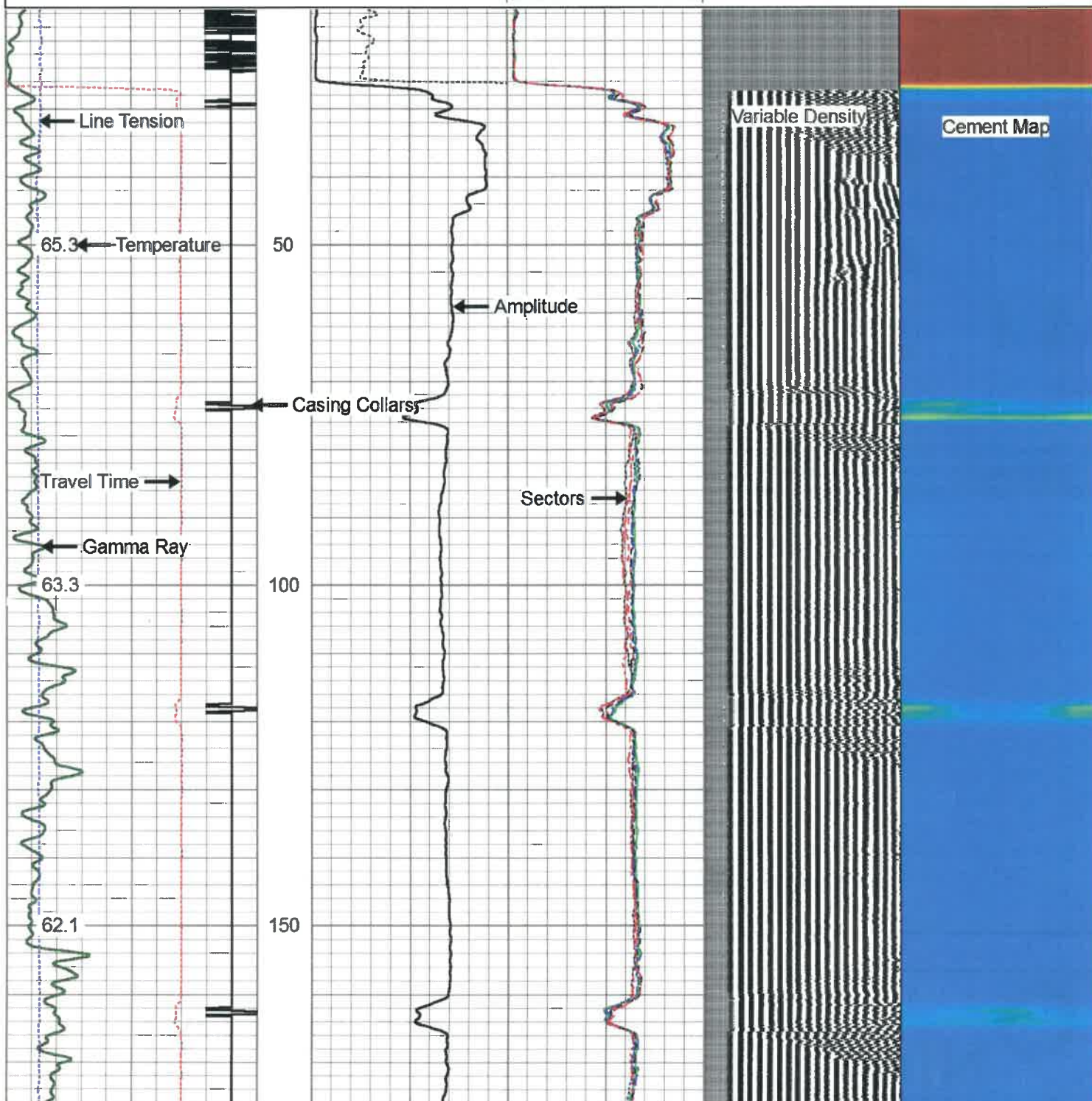
WV Department of
Environmental Protection

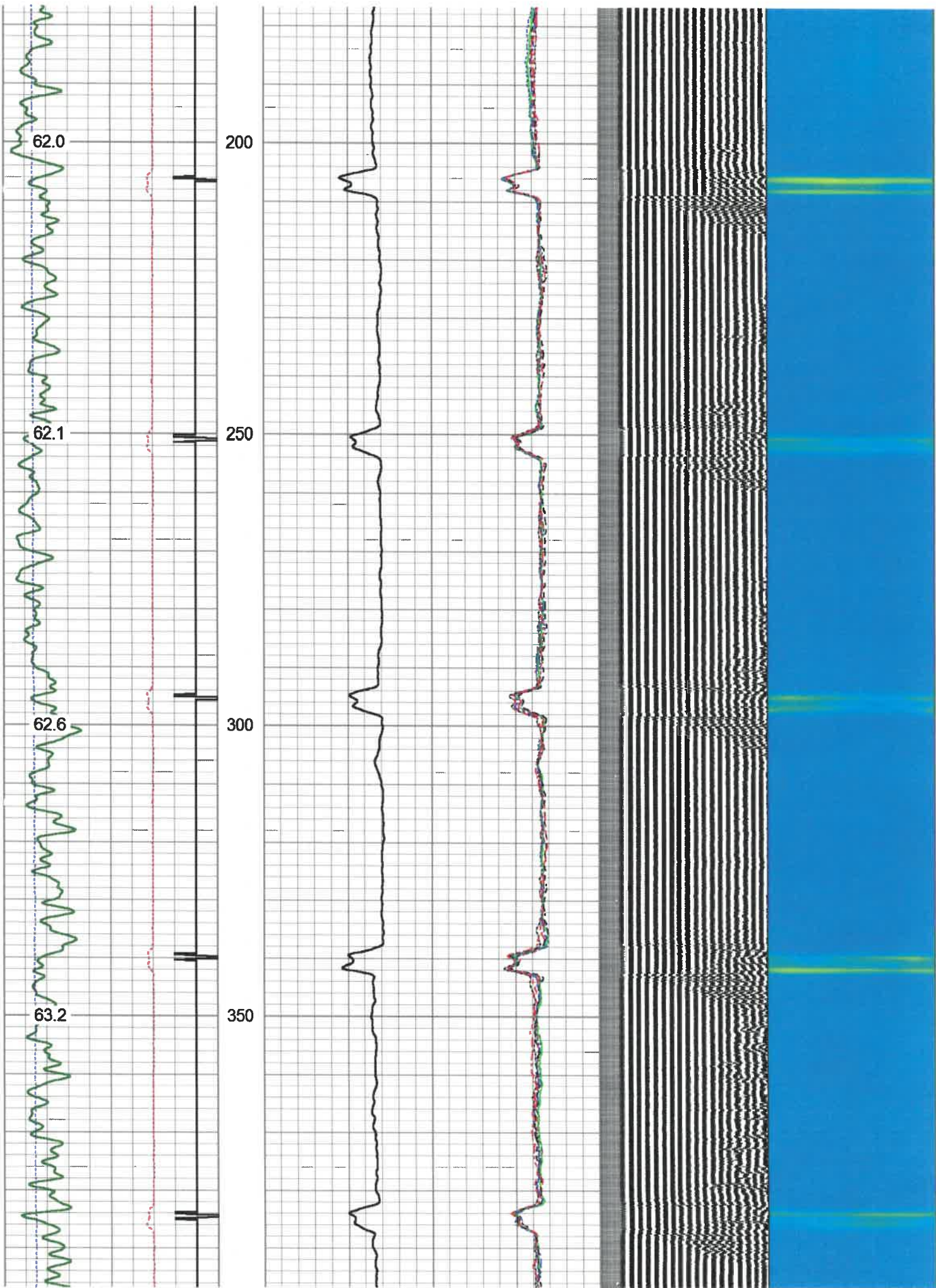


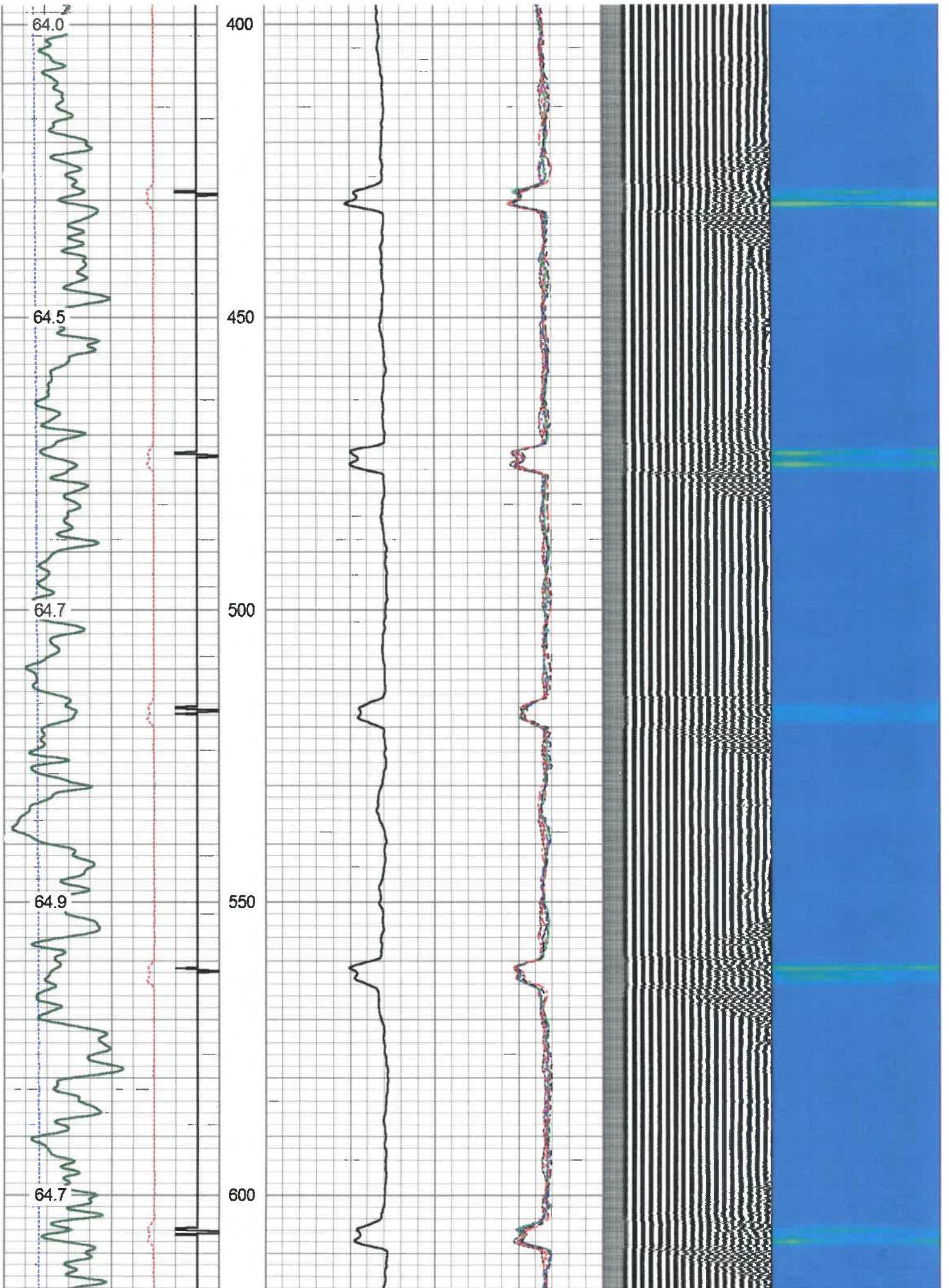
Main Pass 1,500 PSI

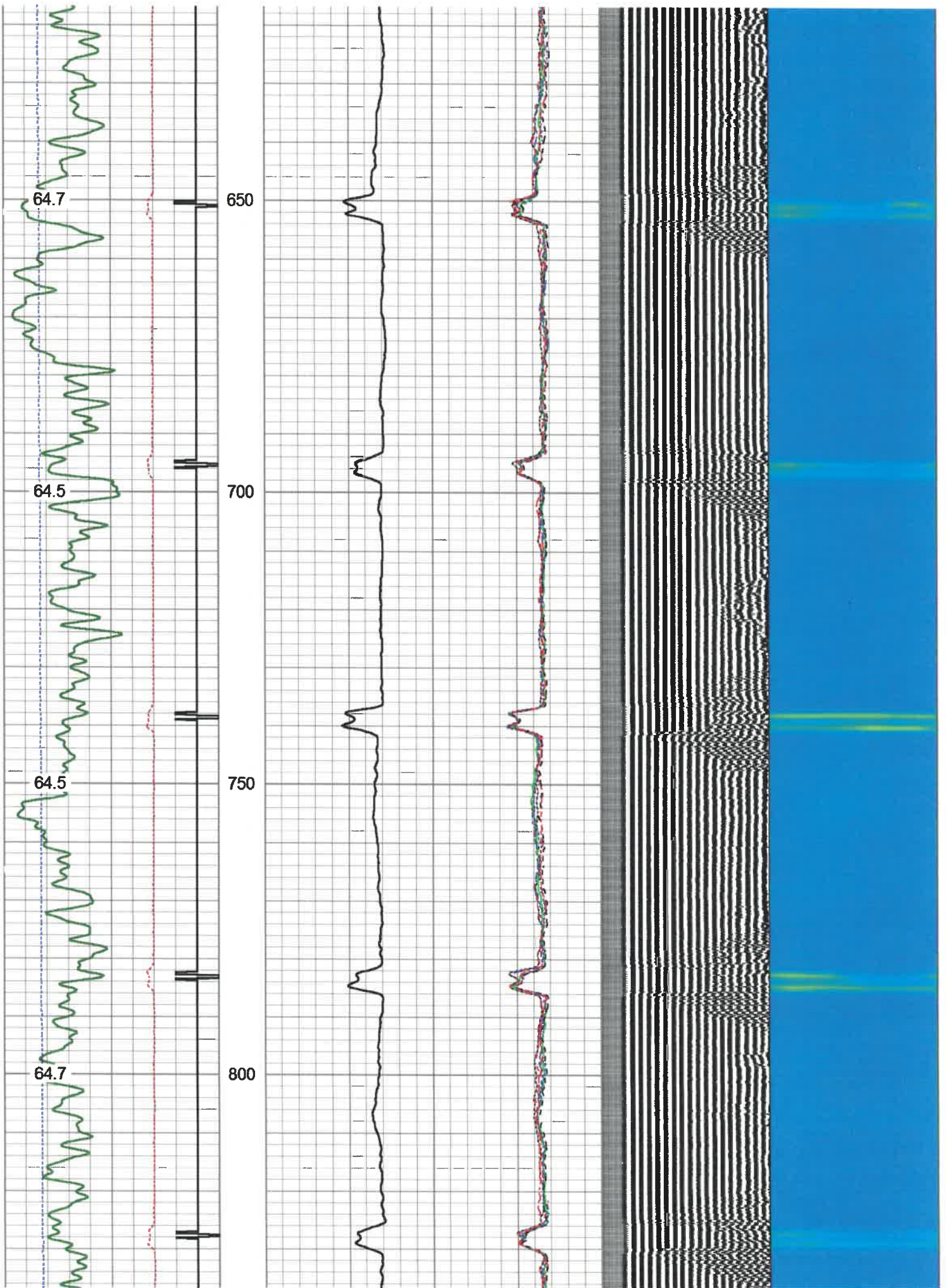
Database File antero_forrest_fenn_1h_rcbl_22_jun_19.db
 Dataset Pathname marcellus/1h/rcbl/pass8
 Presentation Format scbl03
 Dataset Creation Sat Jun 22 13:55:39 2019
 Charted by Depth in Feet scaled 1:240

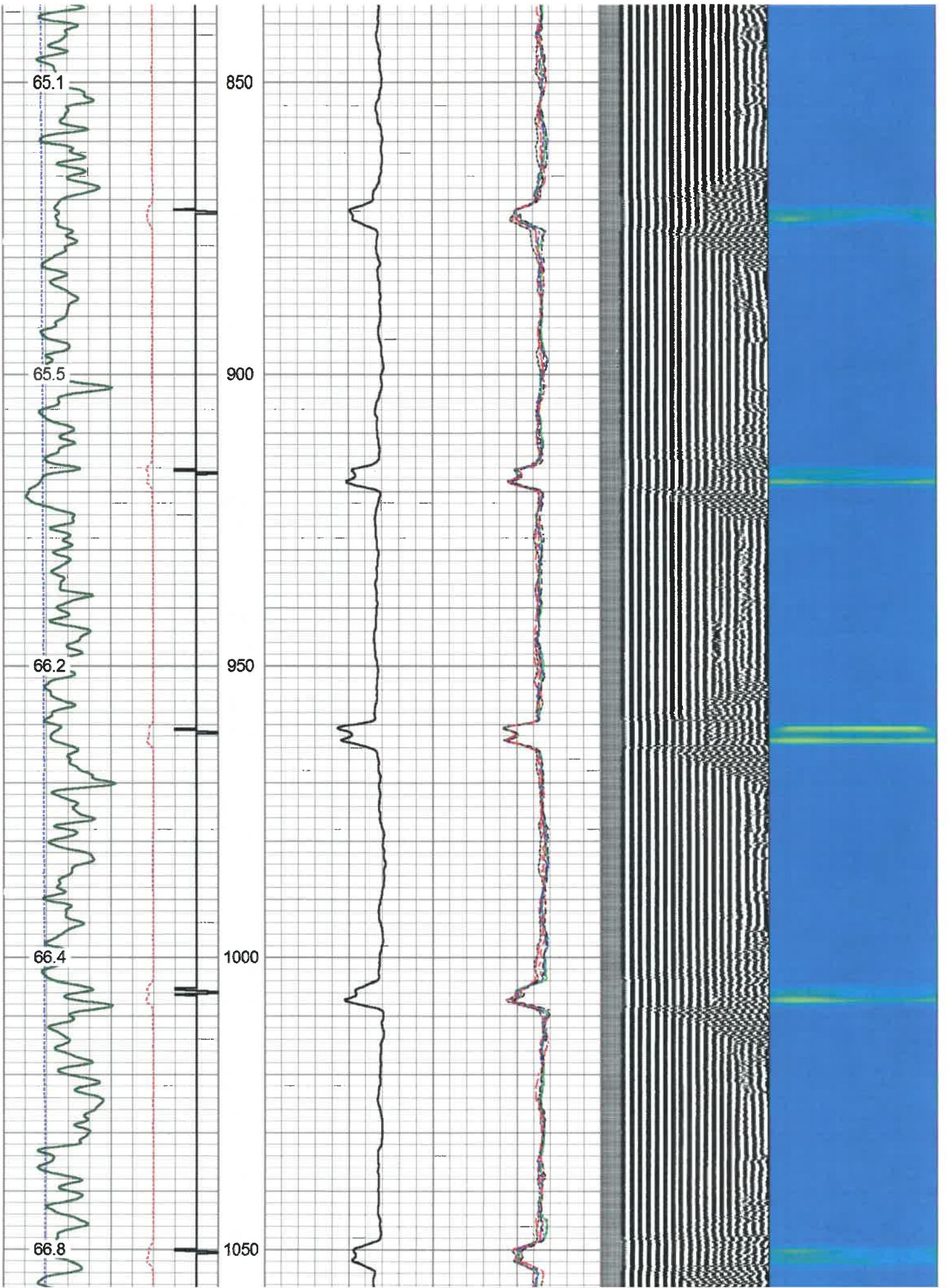
400	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
Casing Collar			Amplified Amplitude			-5	Sector 2	150	200	(usec)	1200	
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	Sector 3	150				
0	LTEN (lb)	2500				-5	Sector 4	150				
Temp (degF)						-5	Sector 5	150				
			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

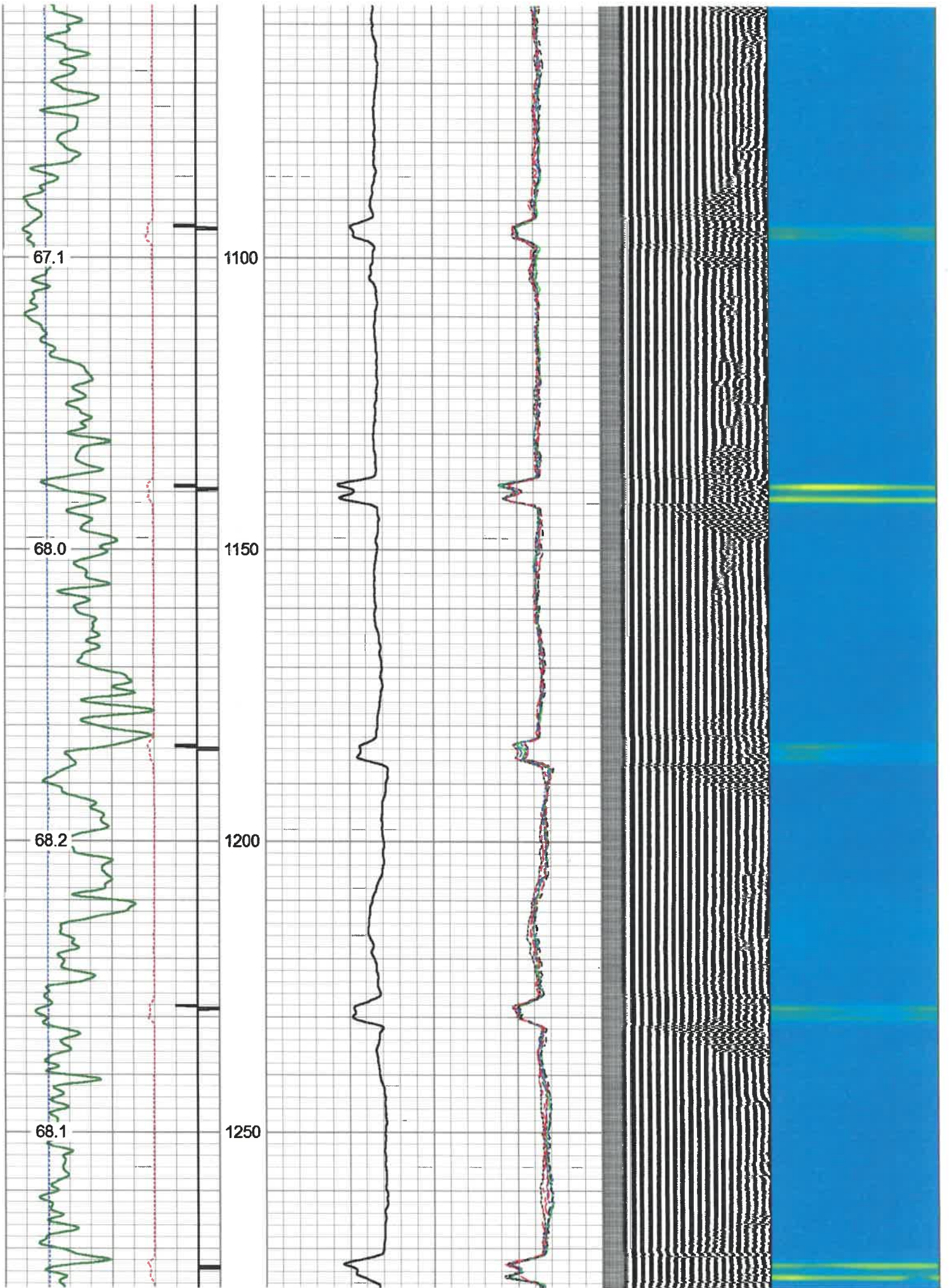


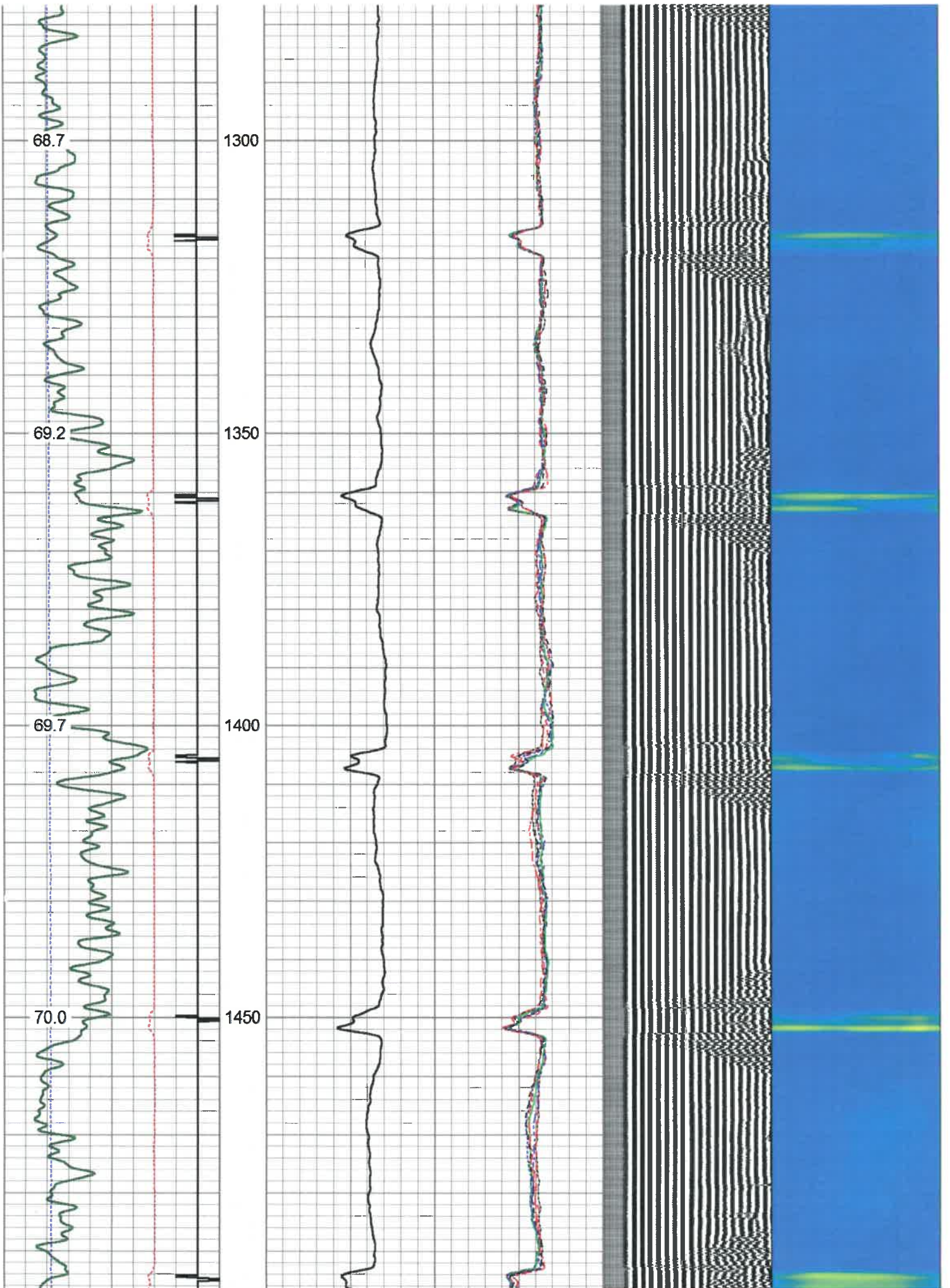


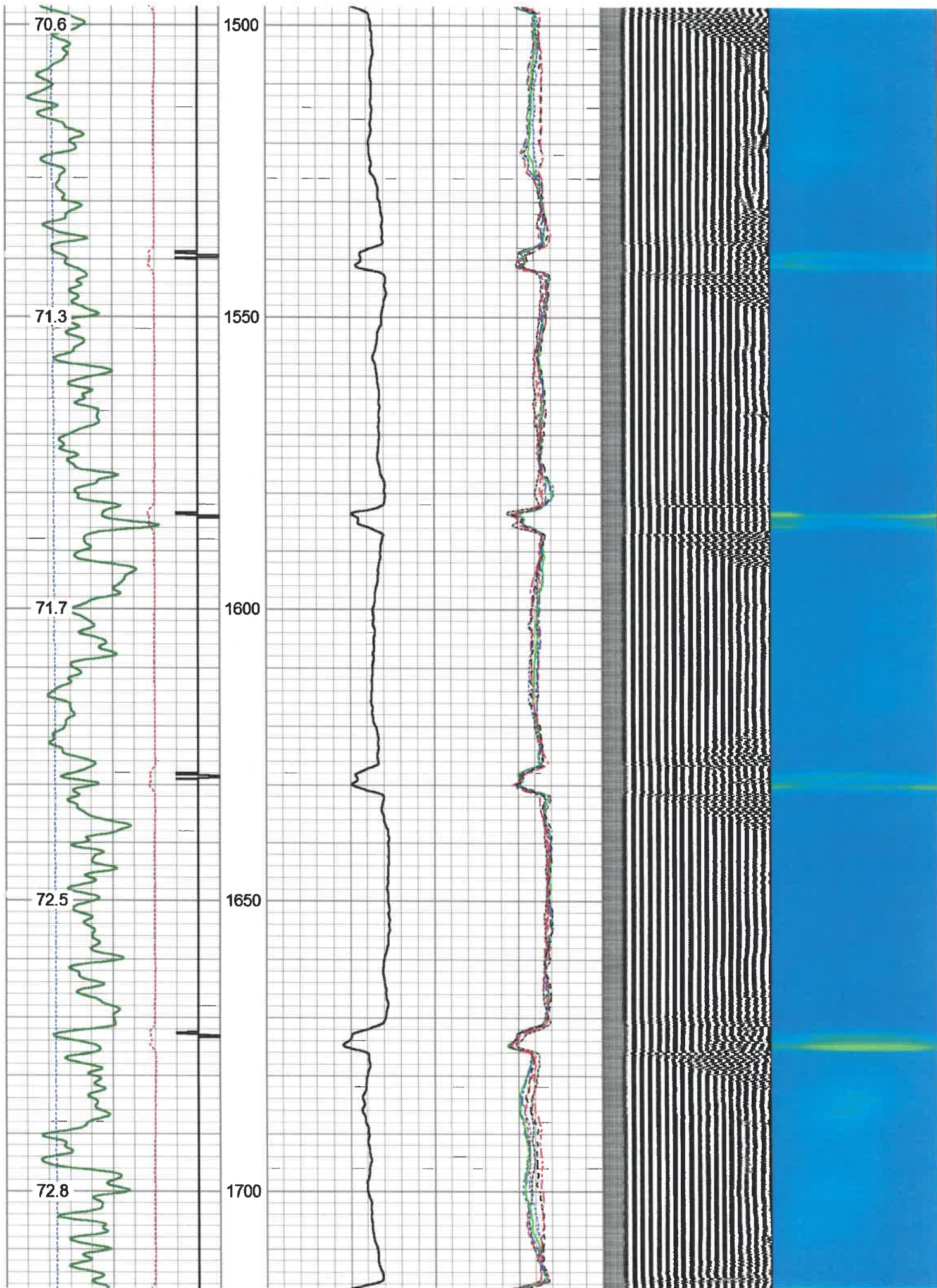


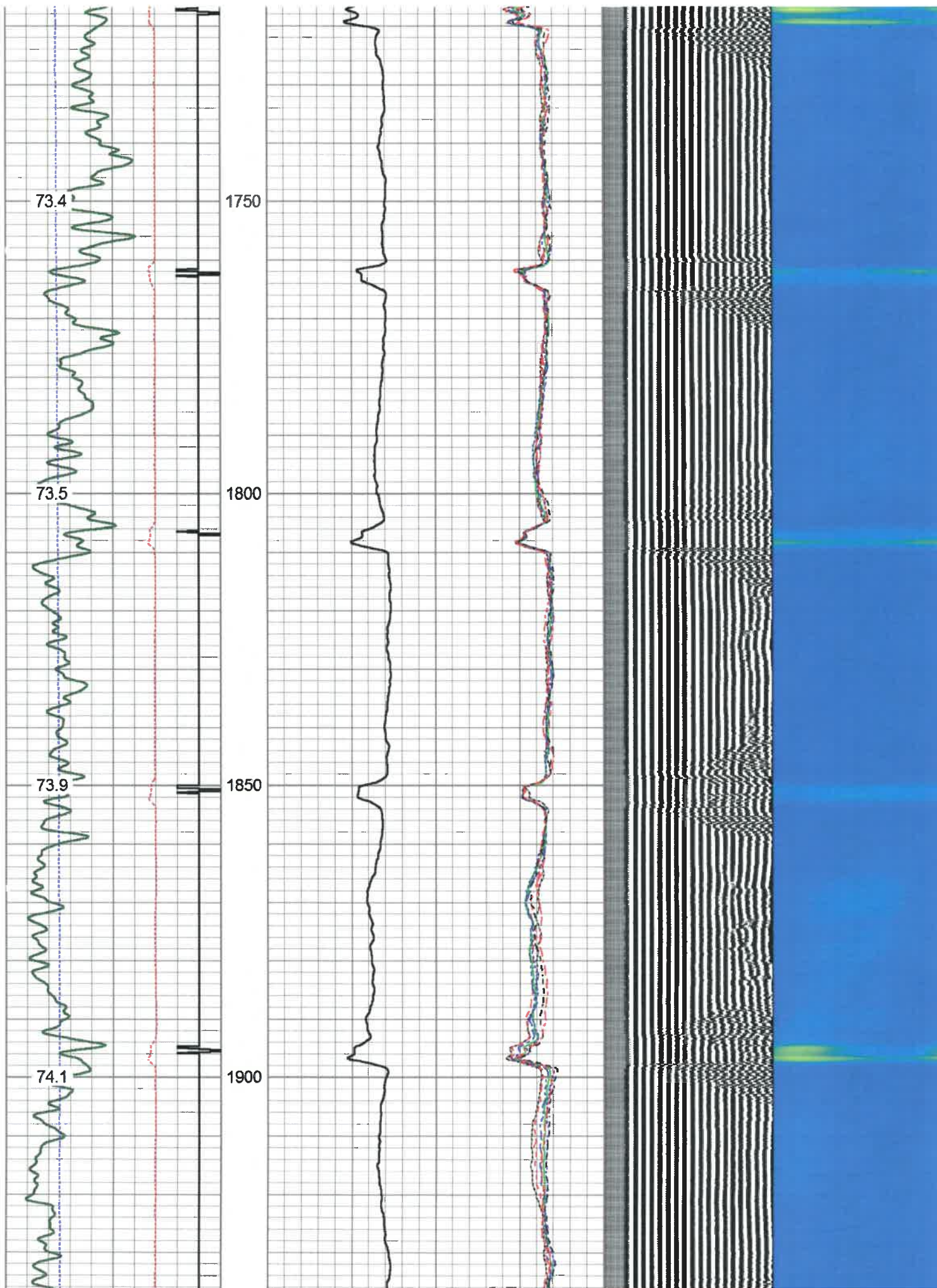


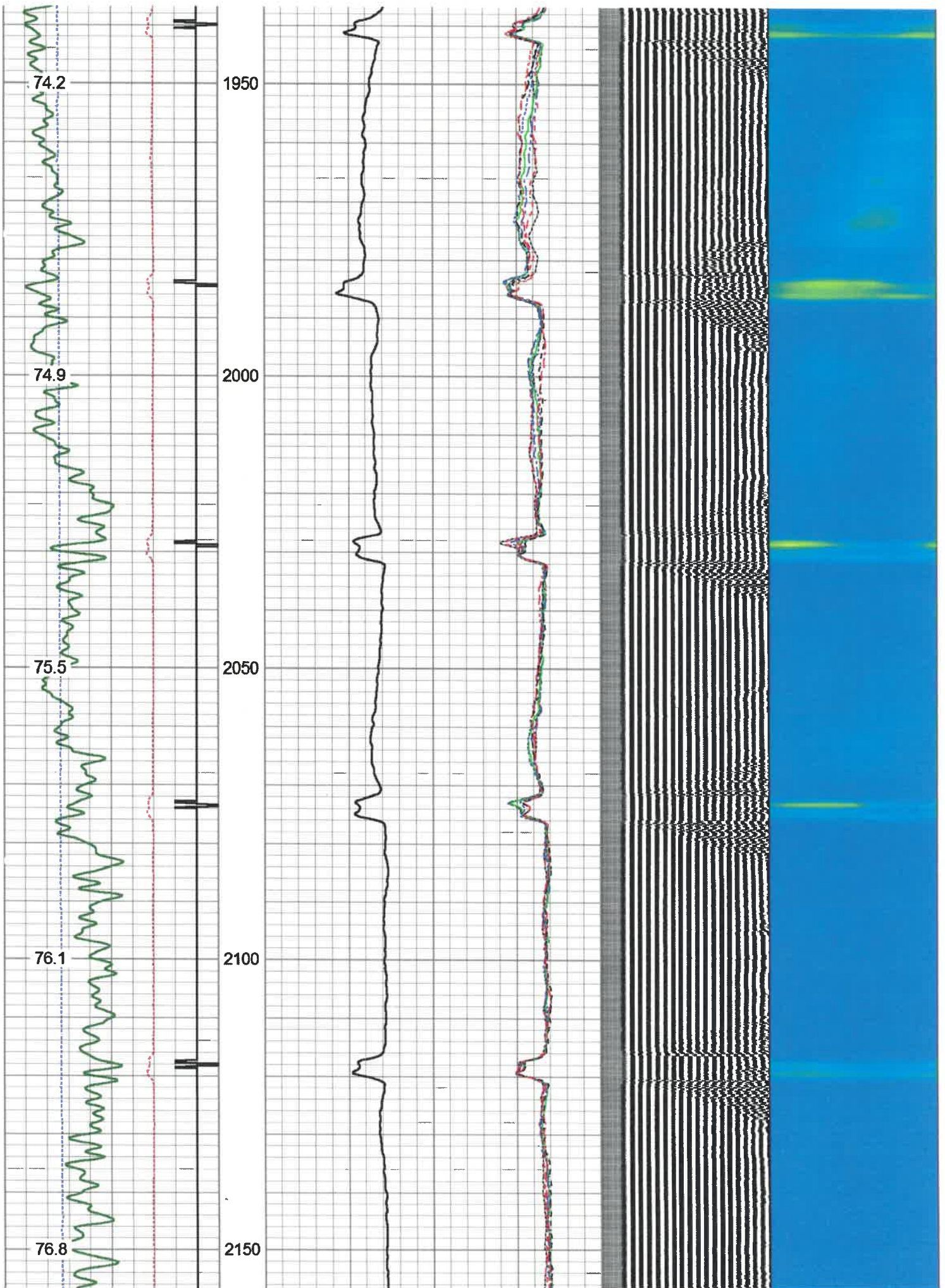


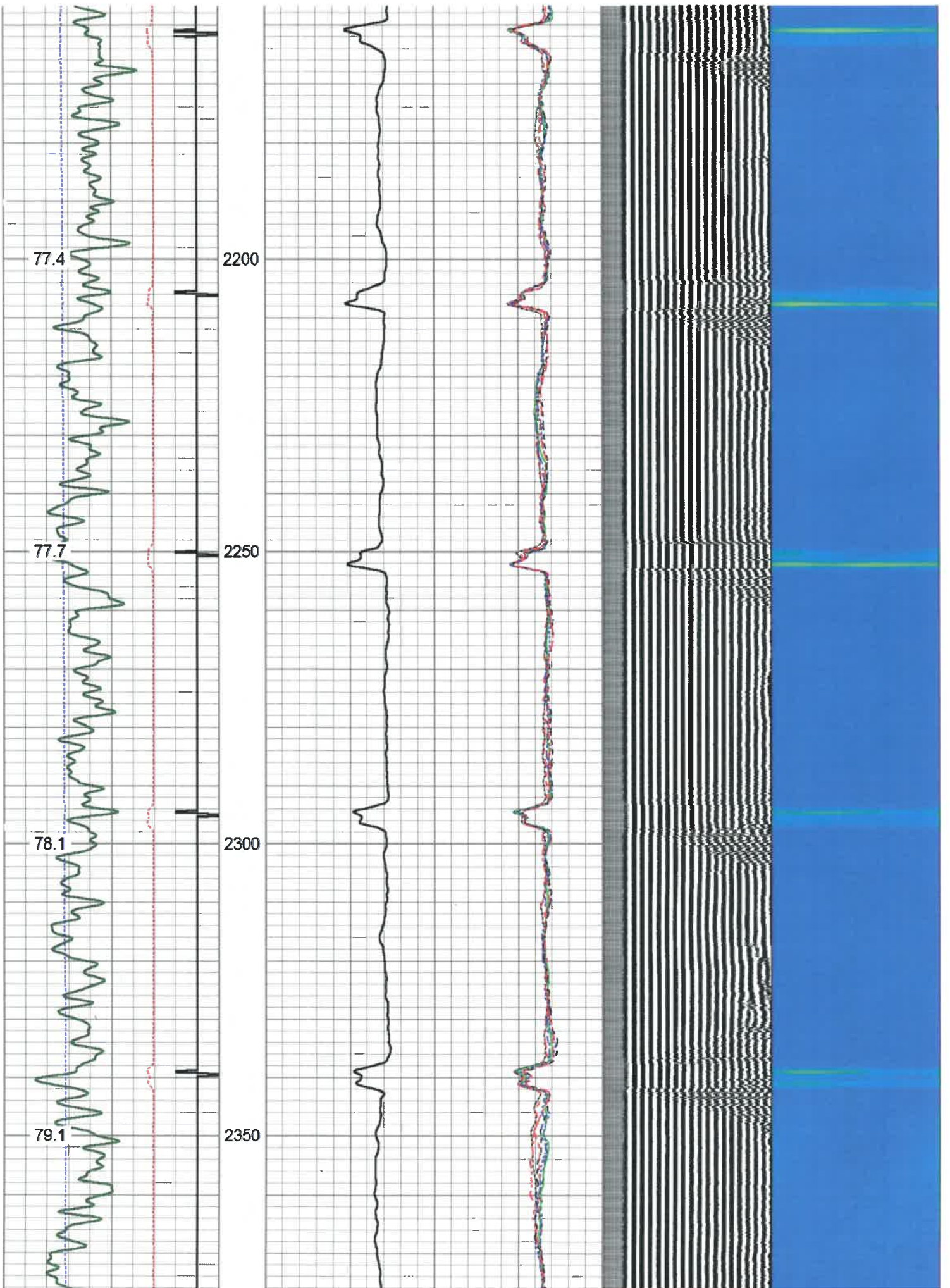


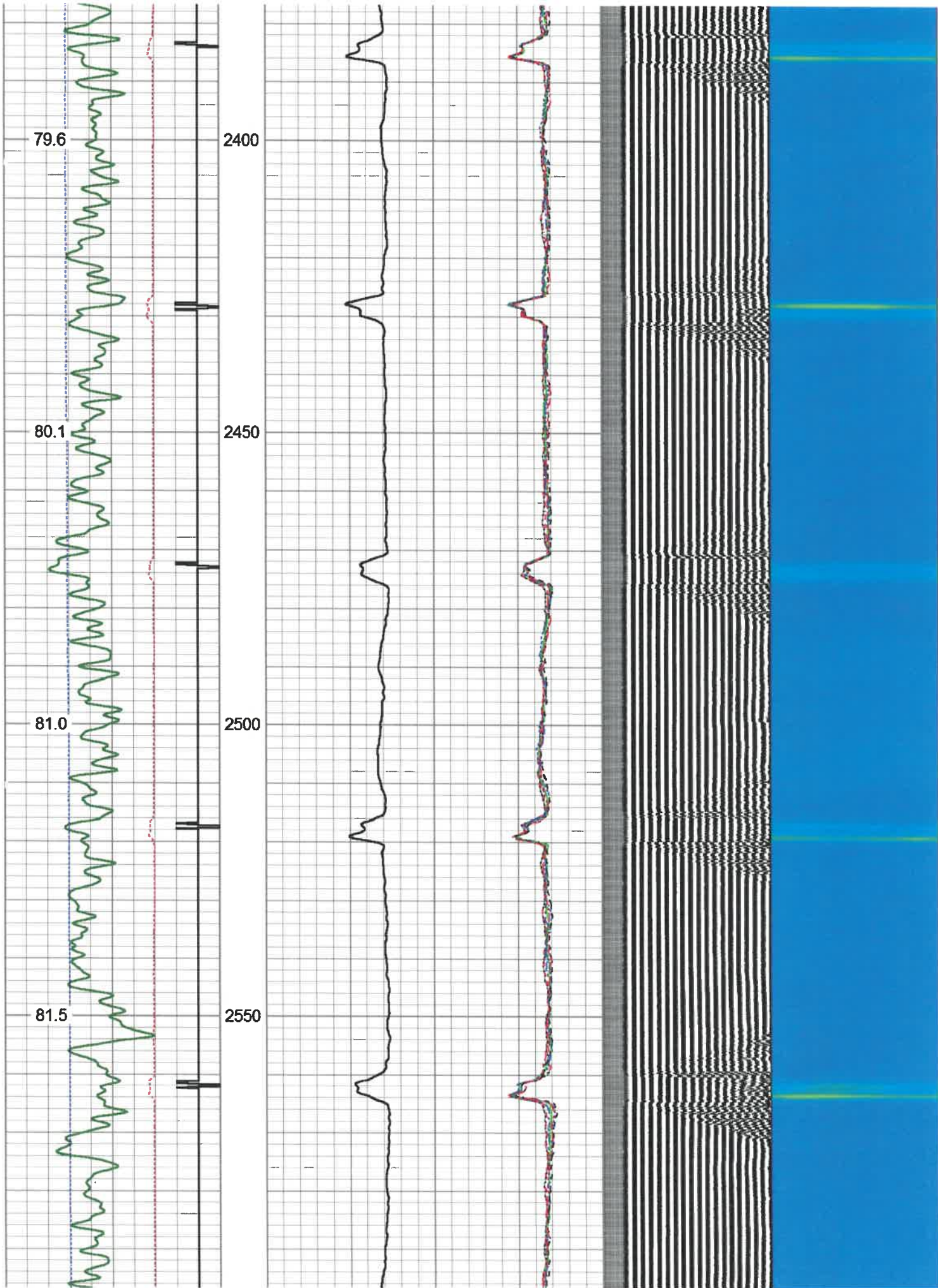


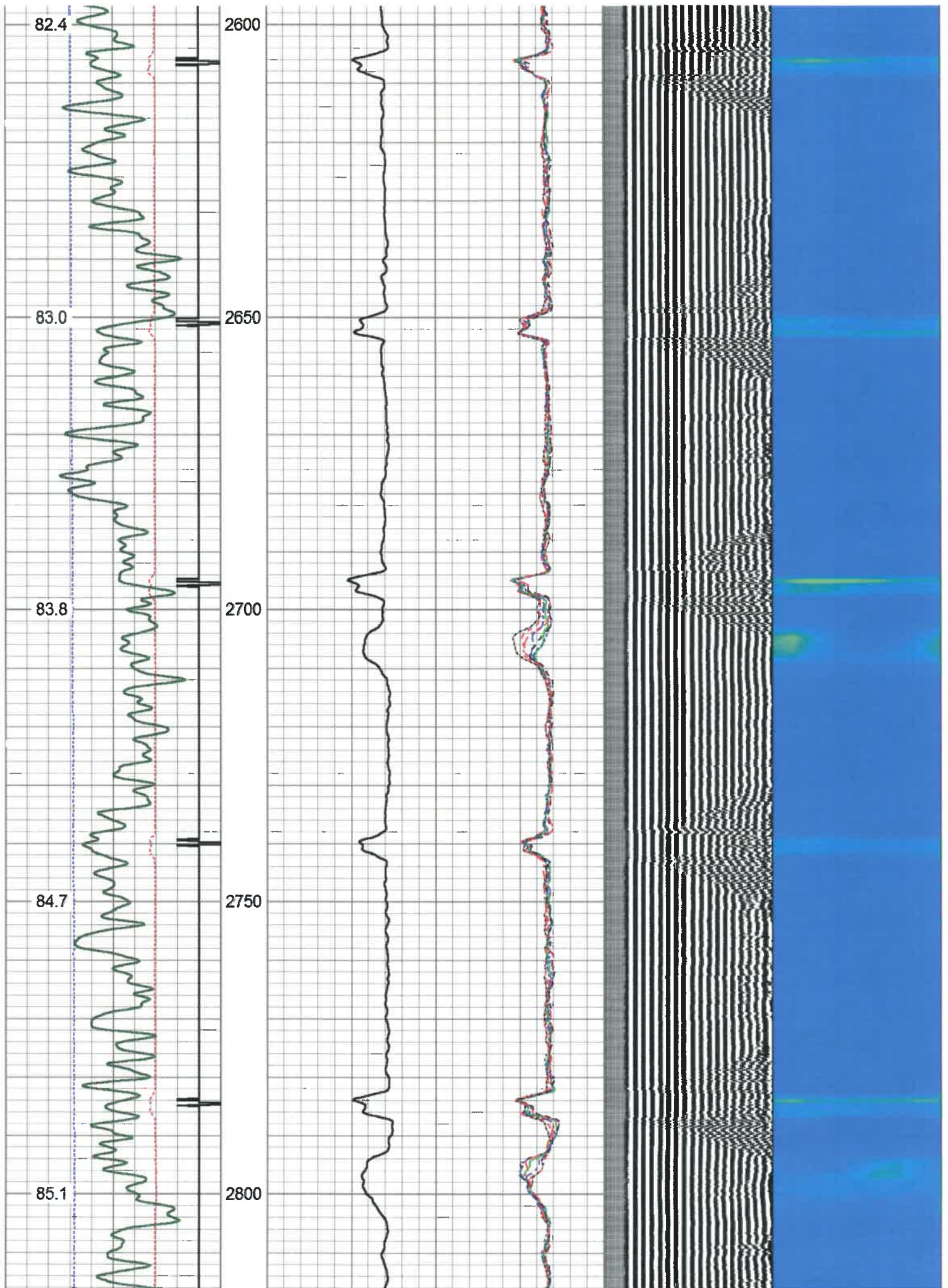


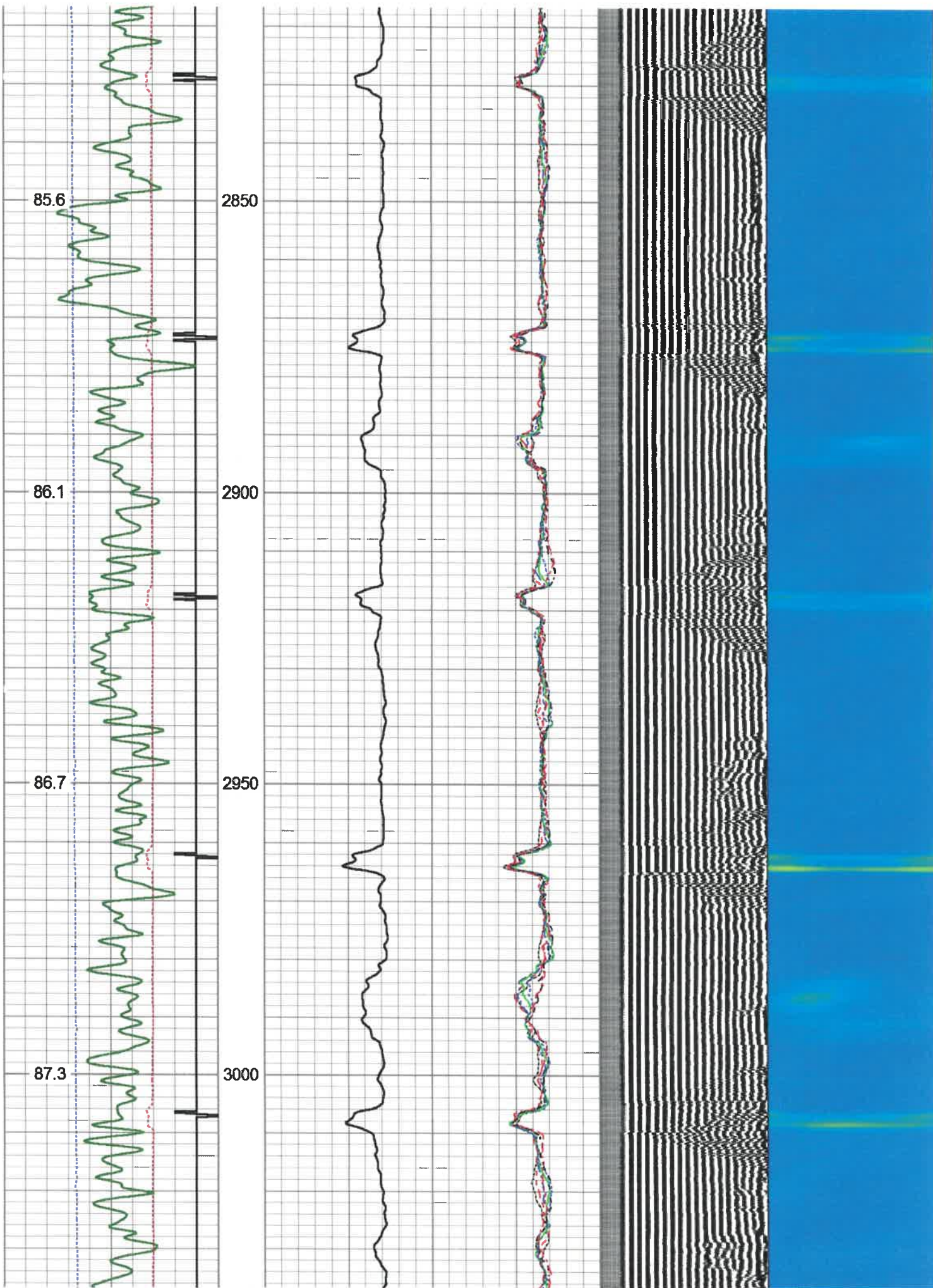


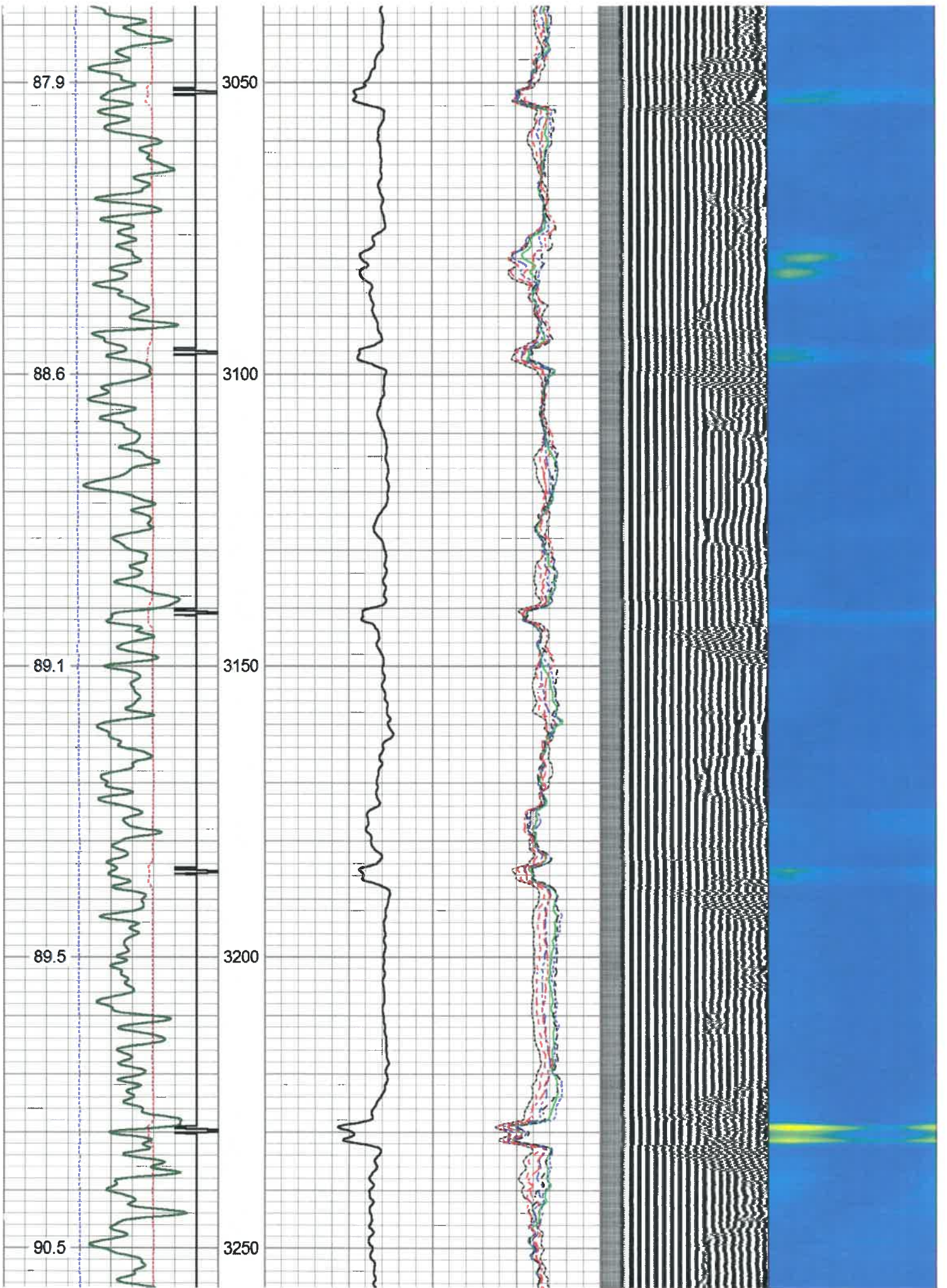


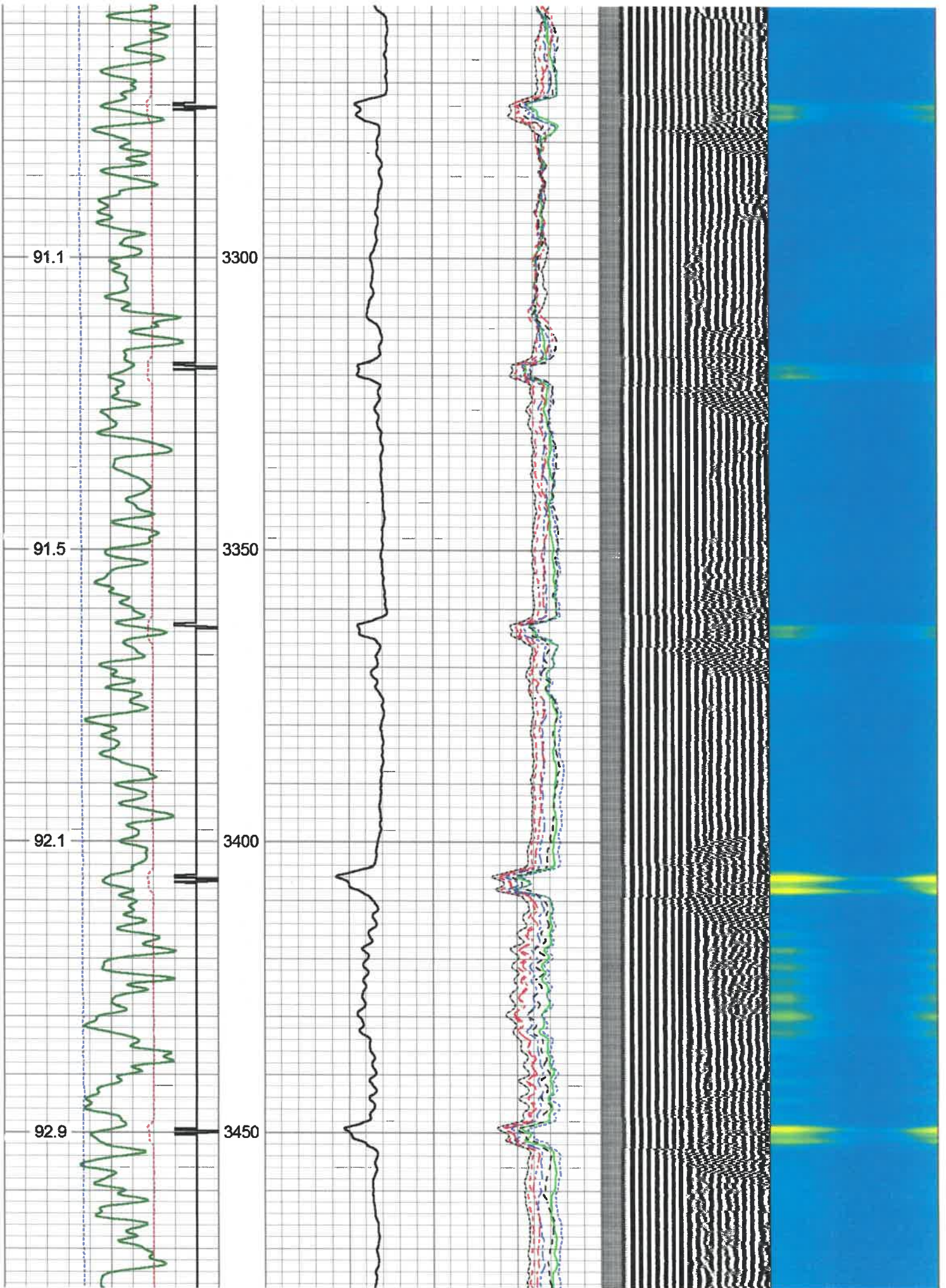


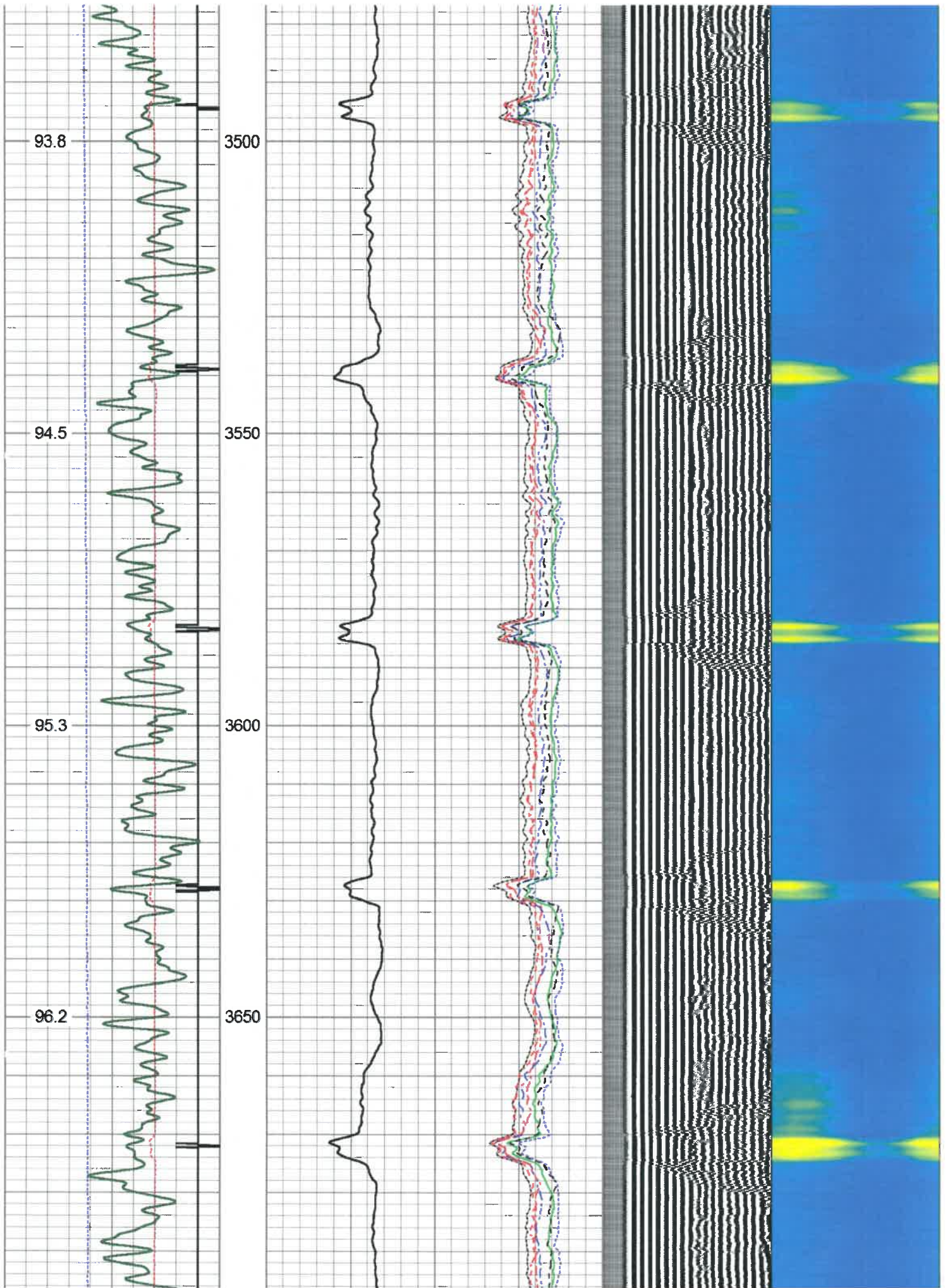


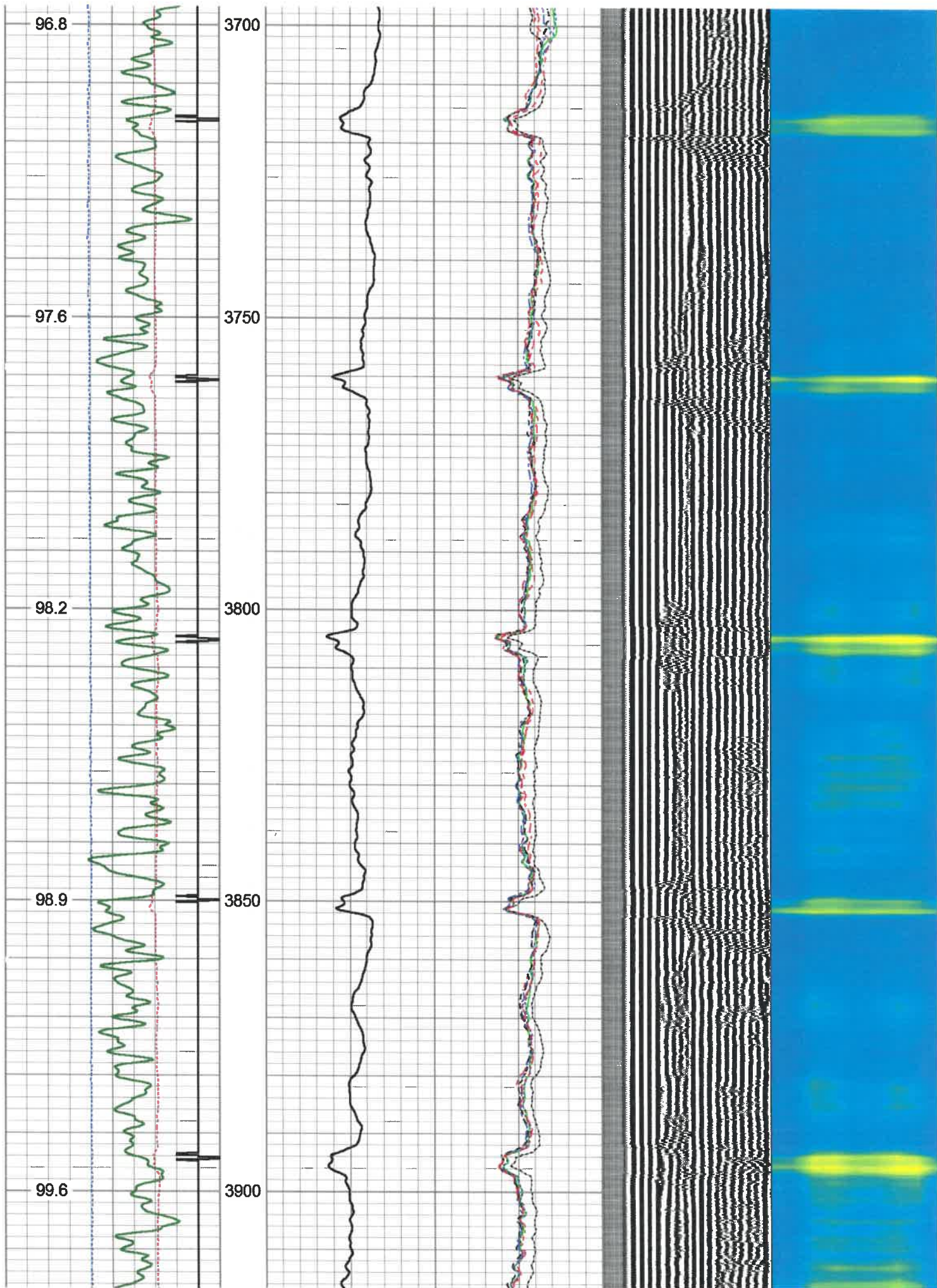


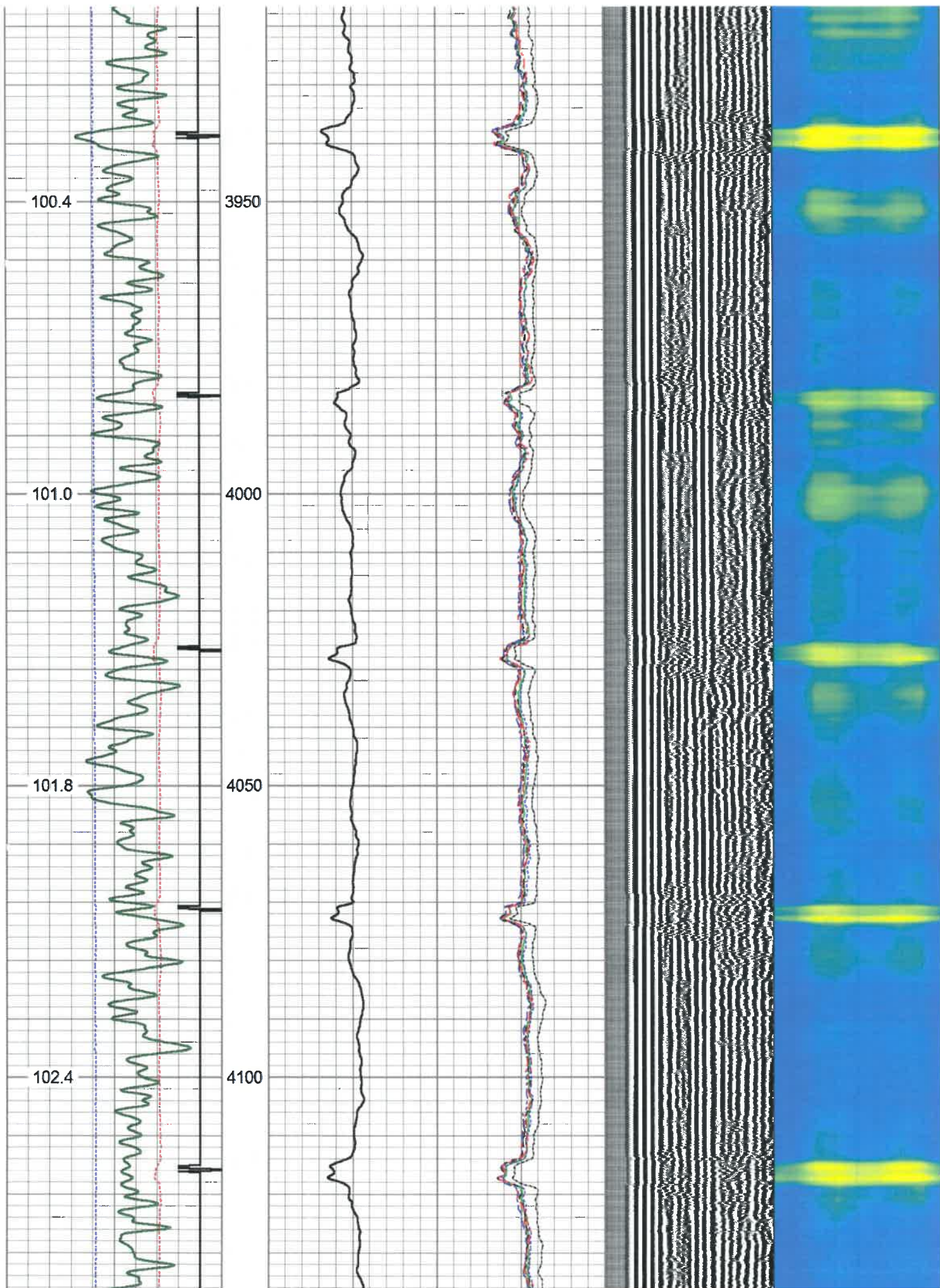


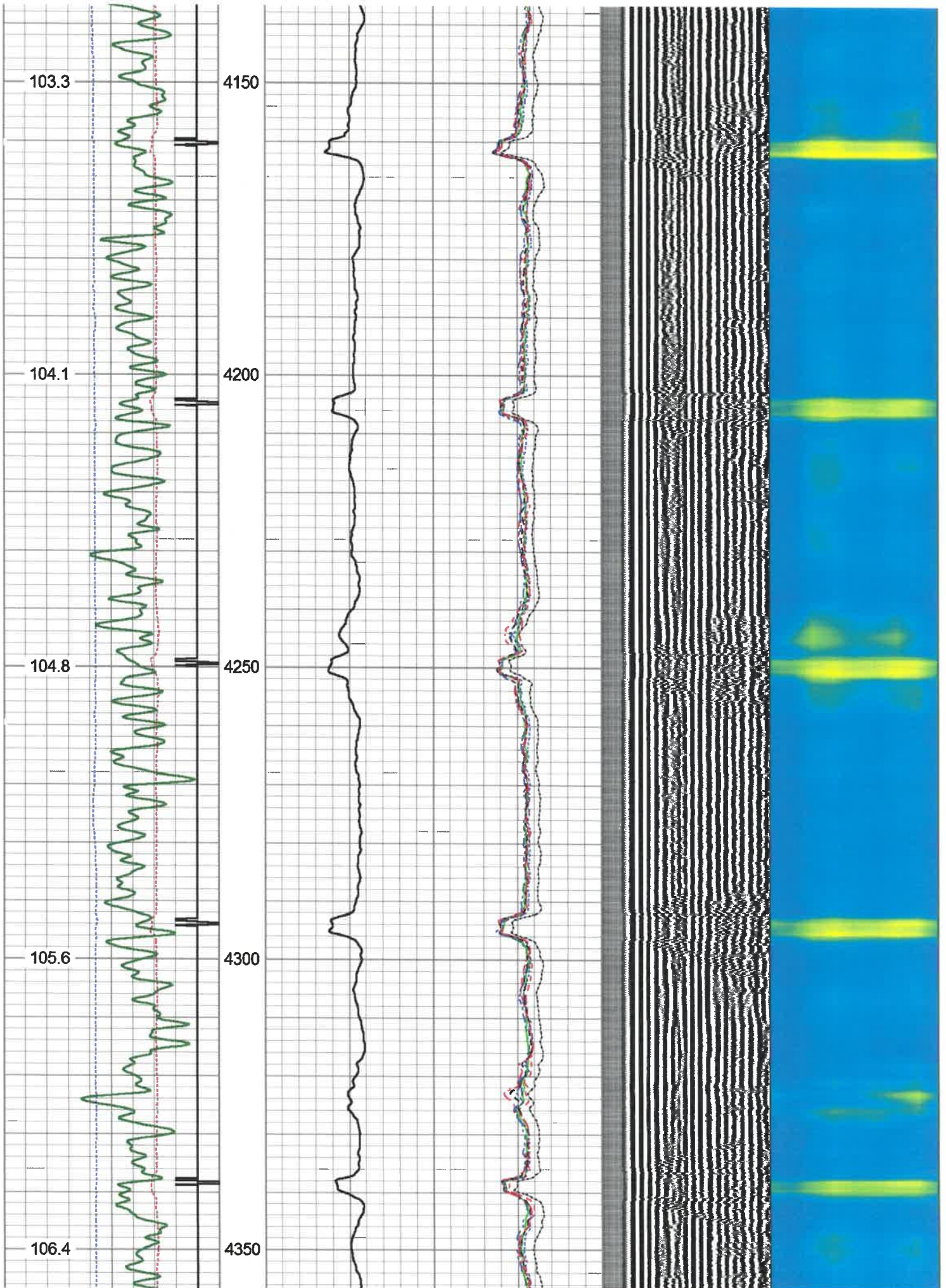


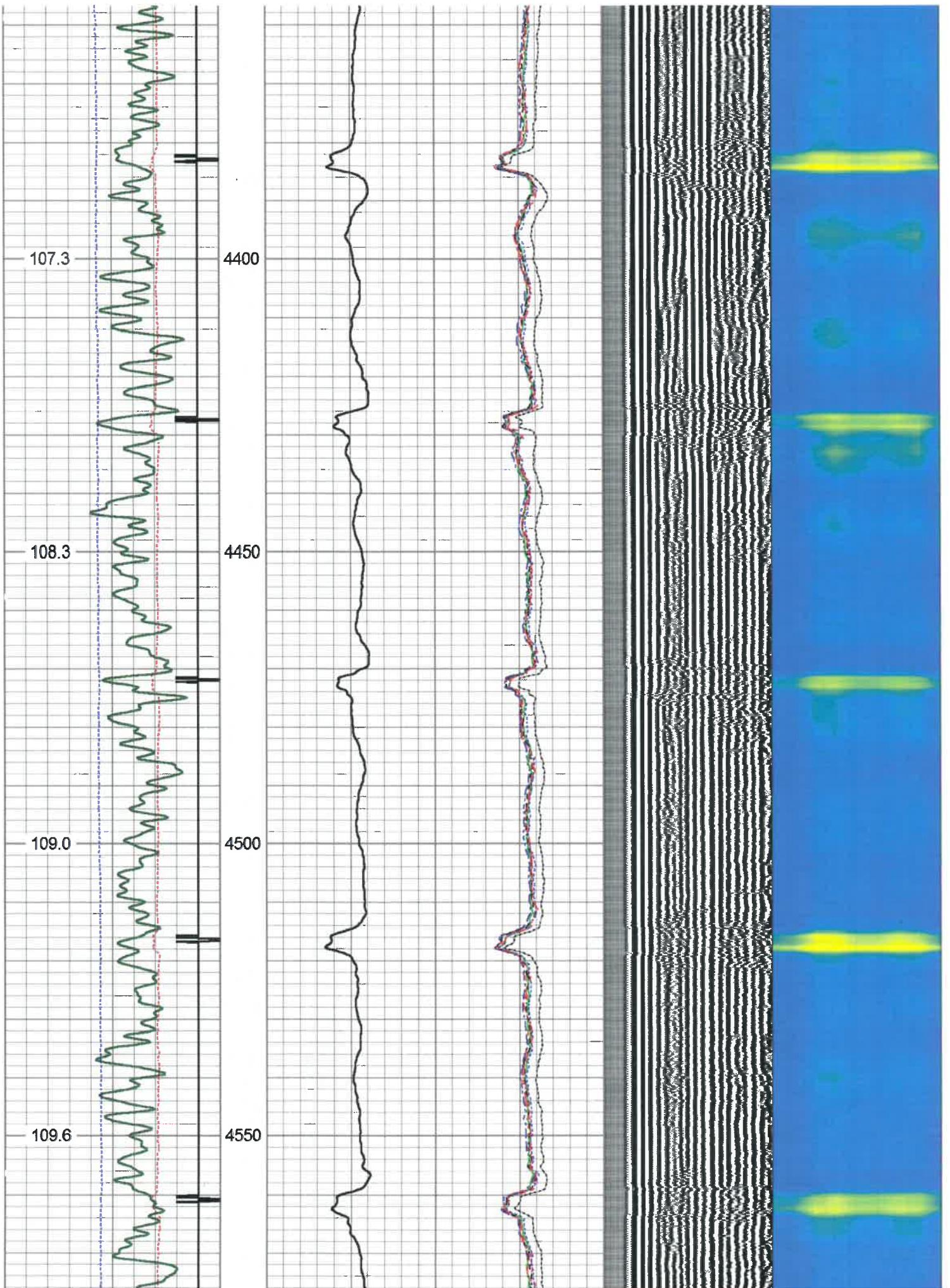


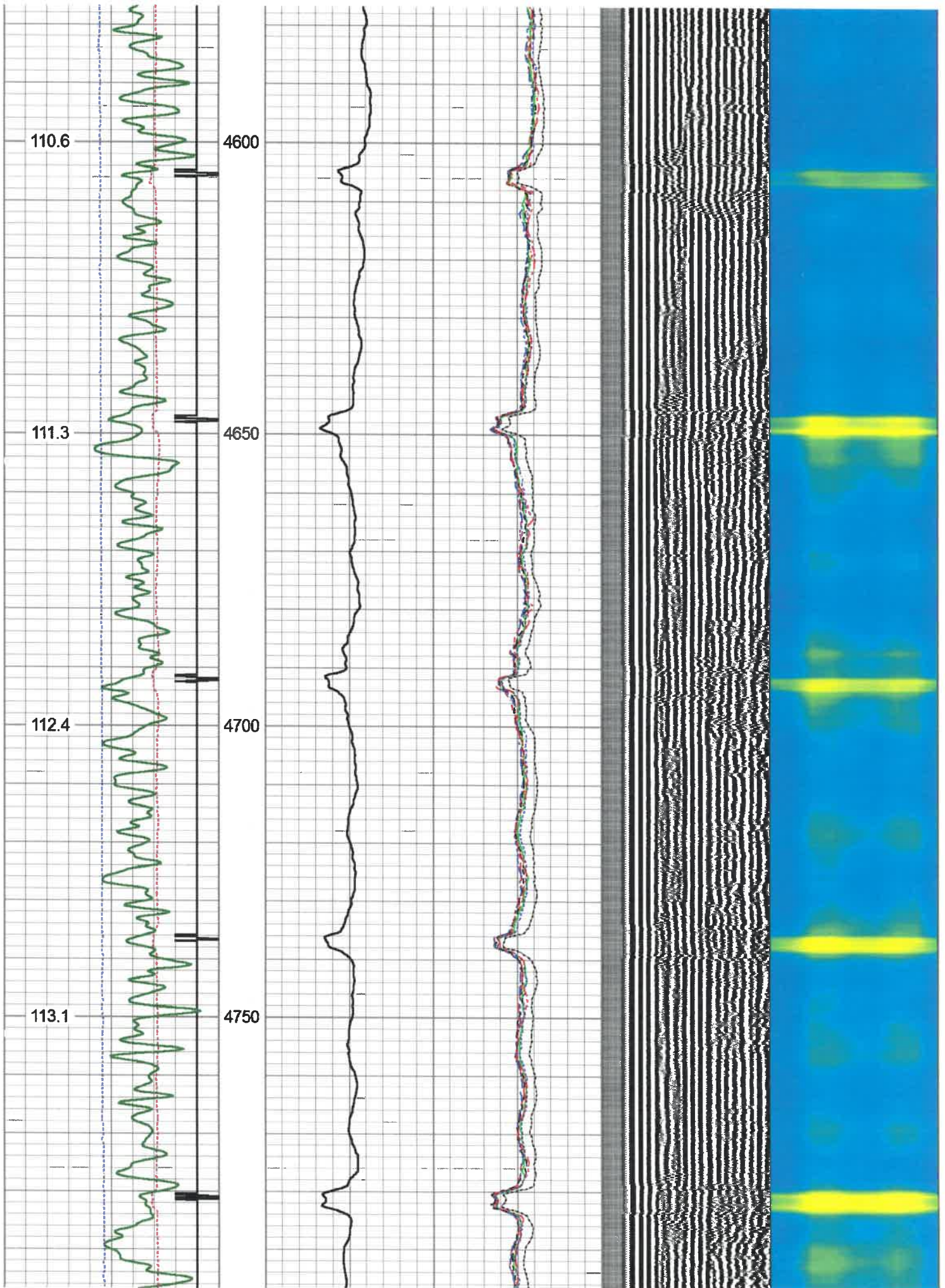


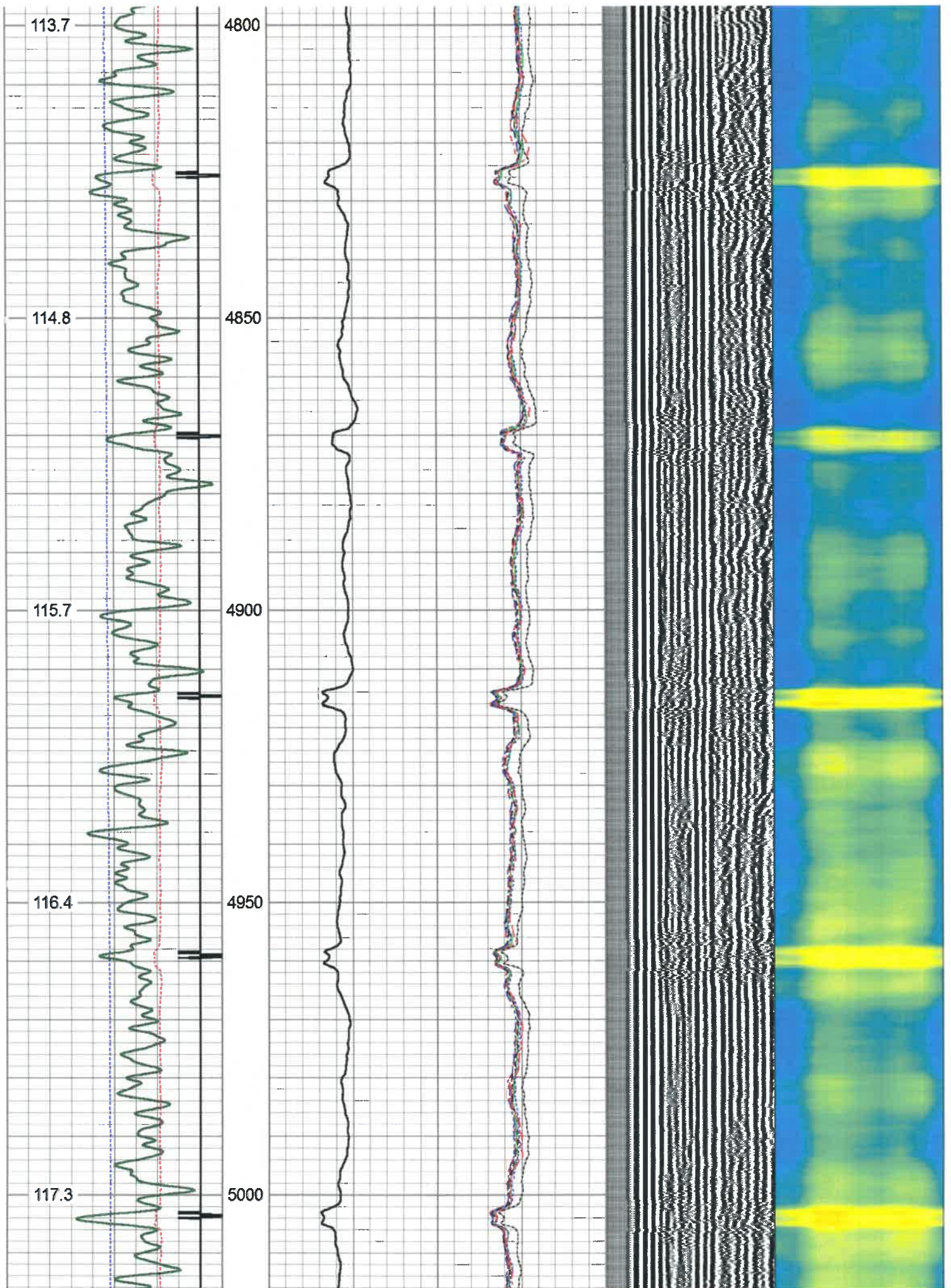


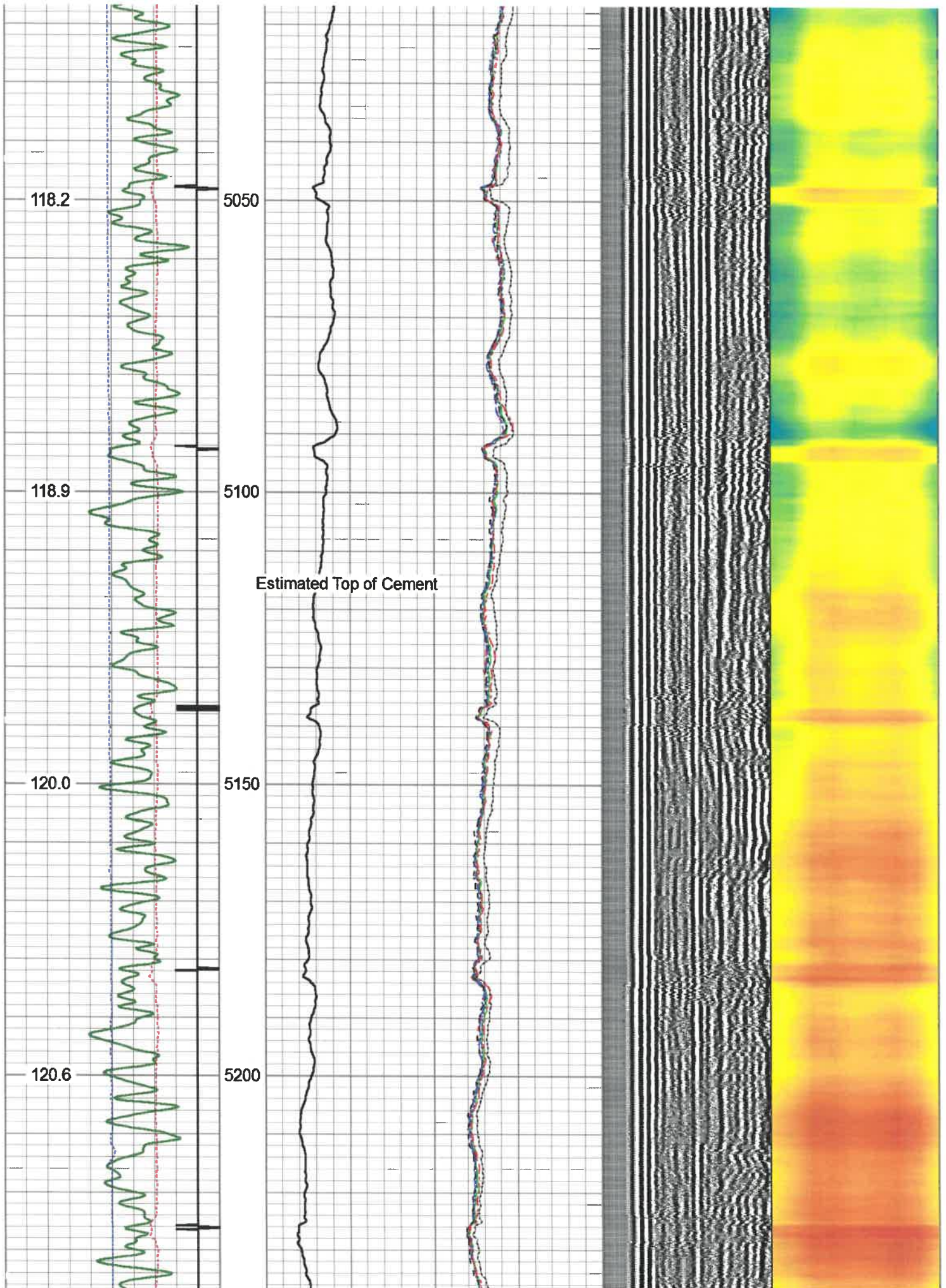


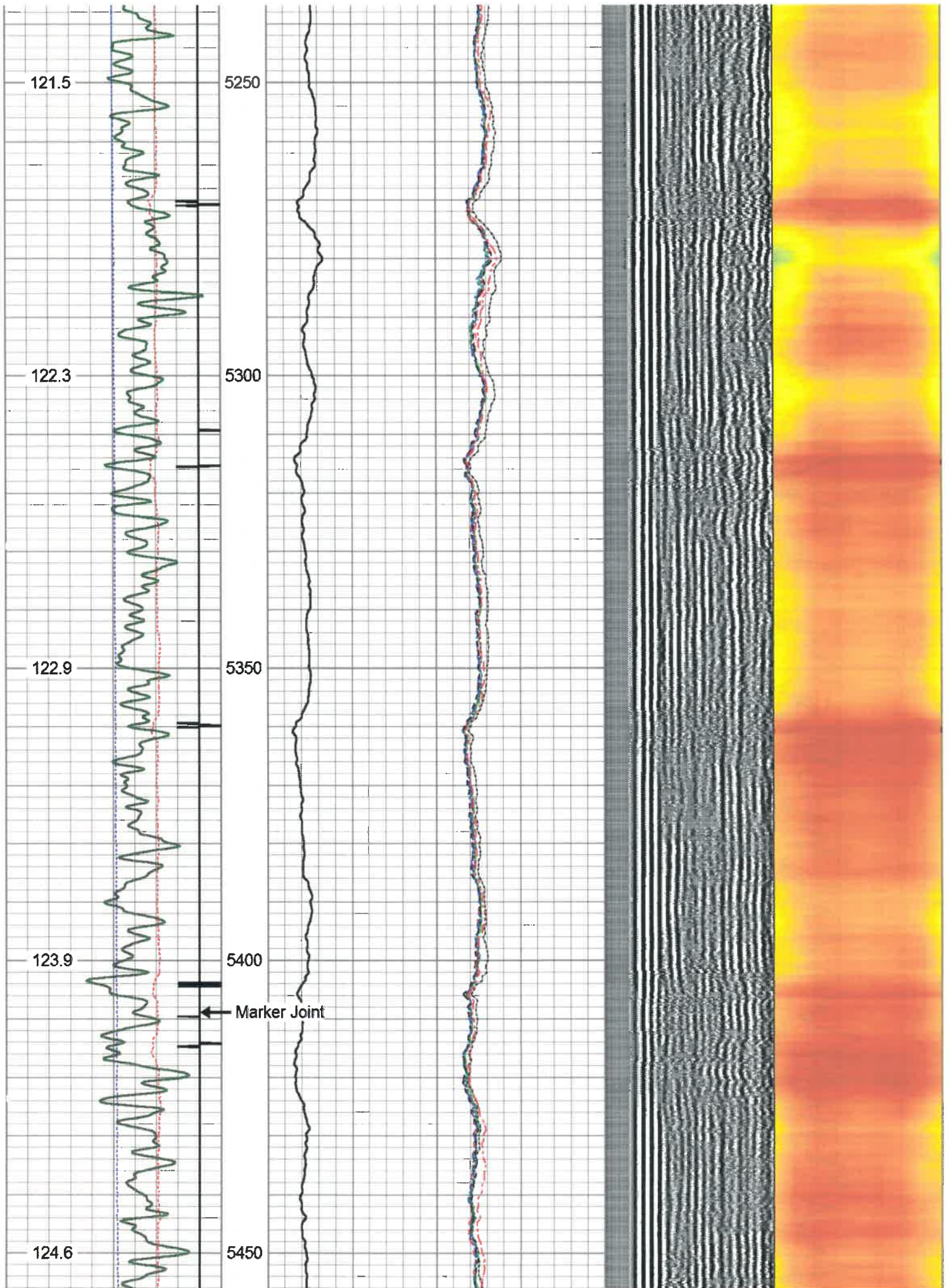


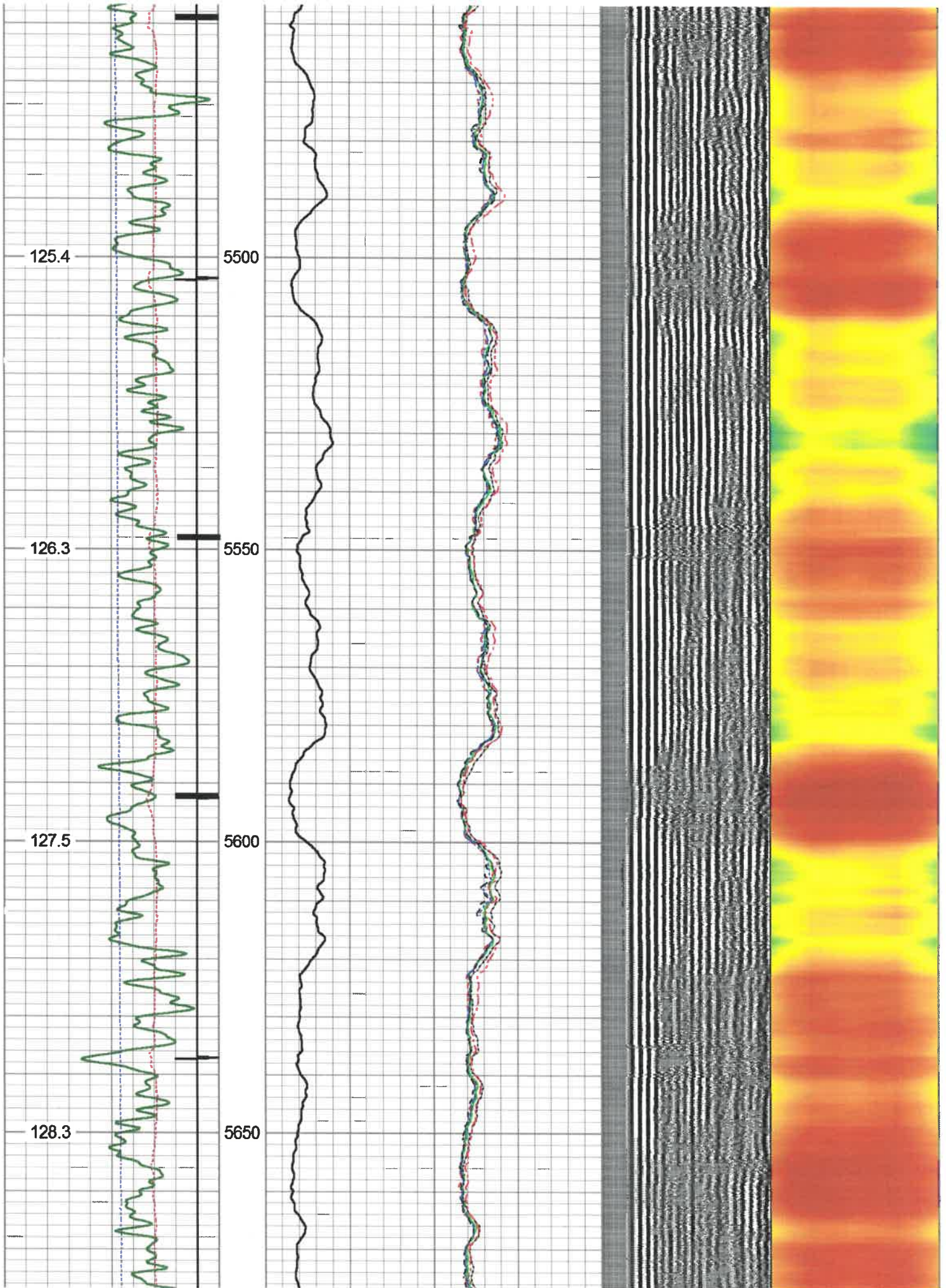


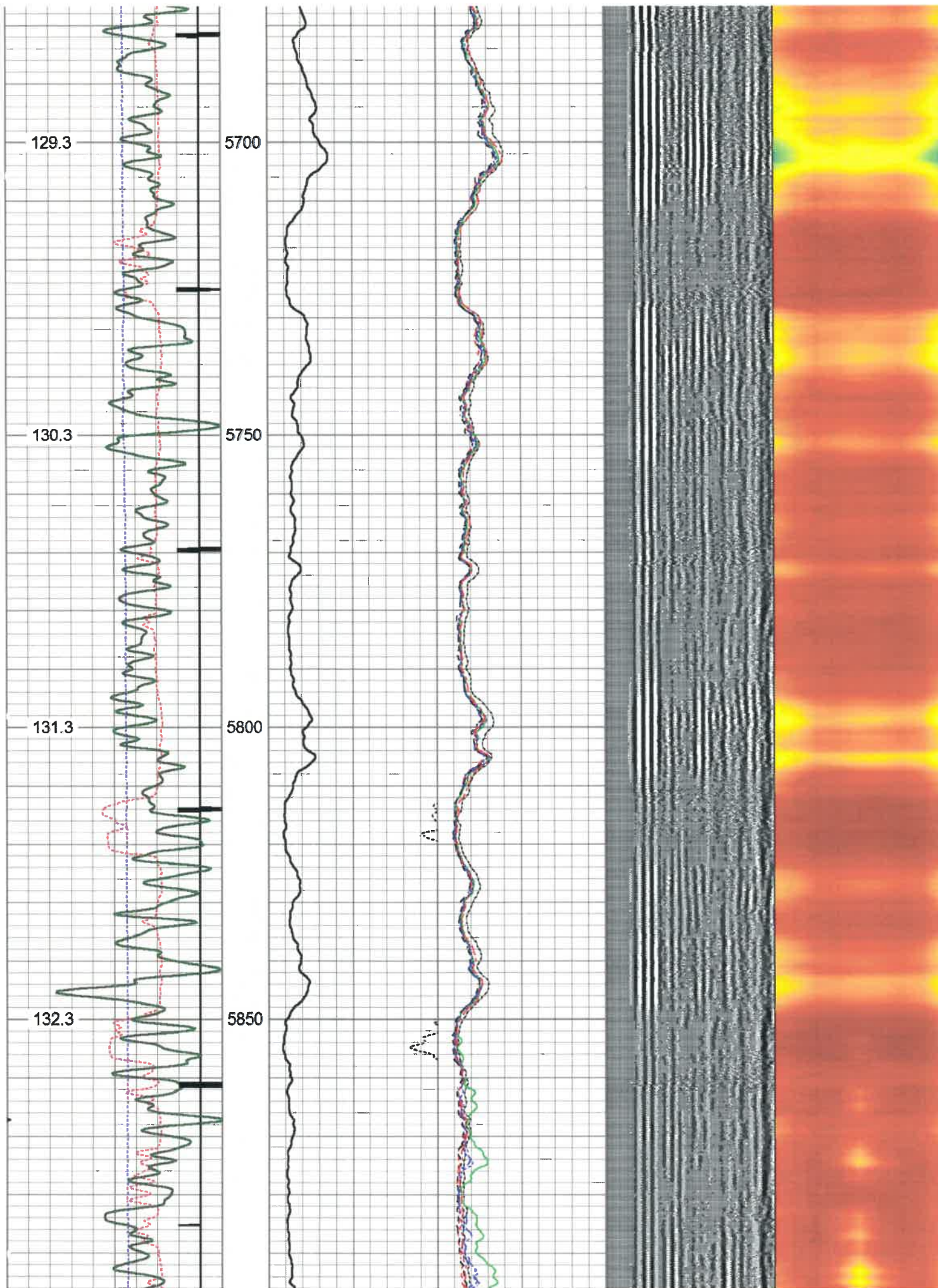


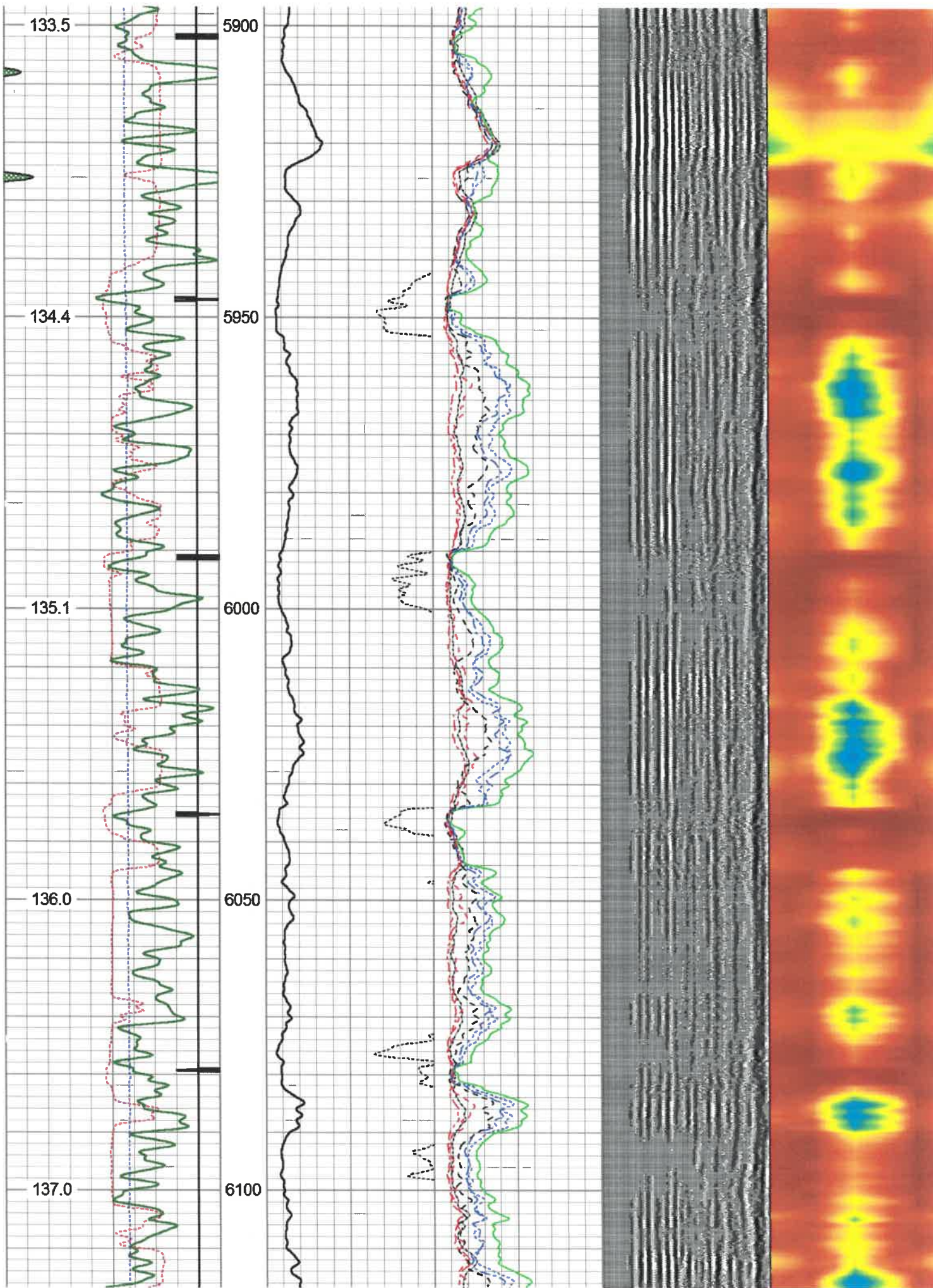


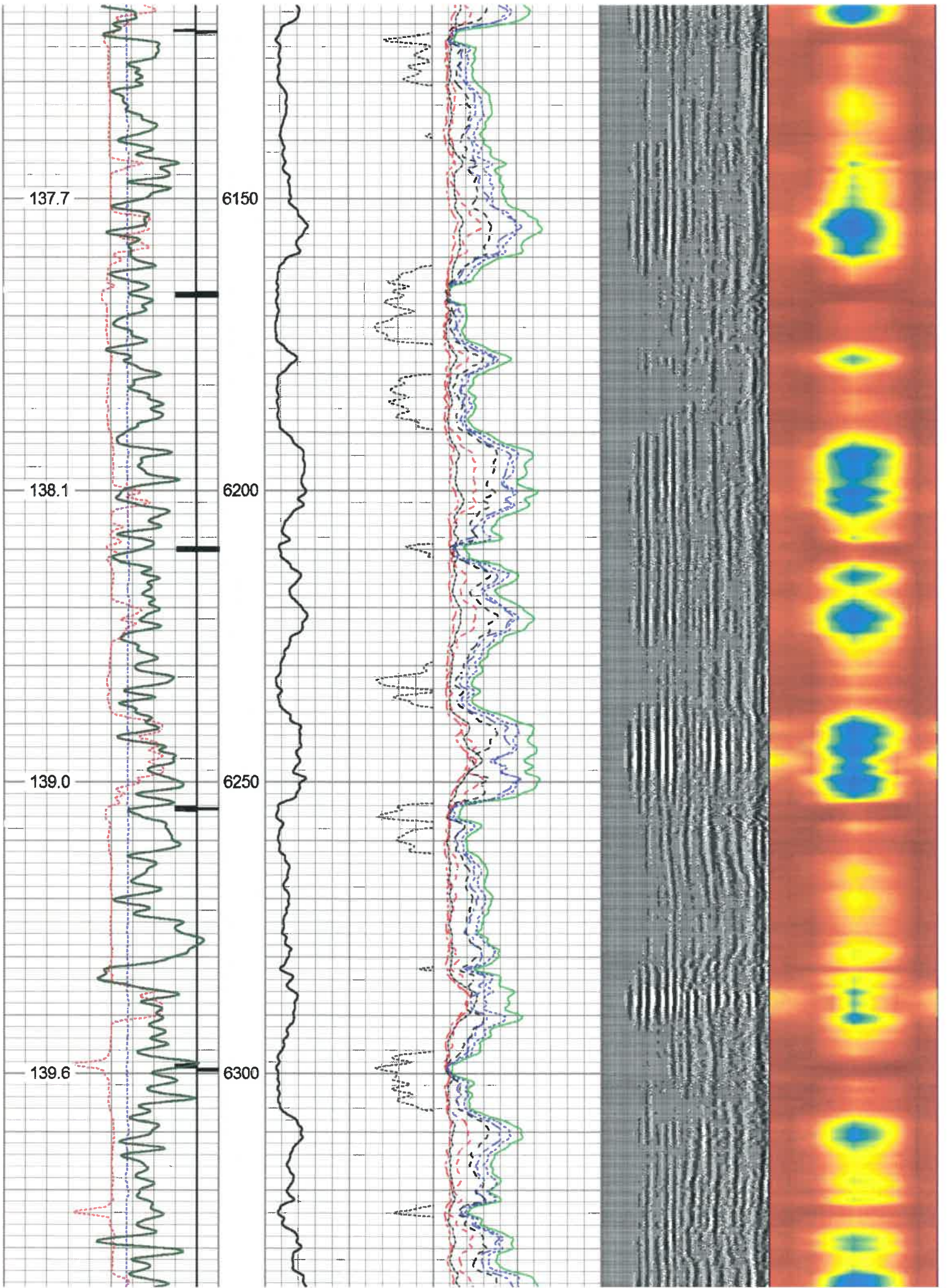


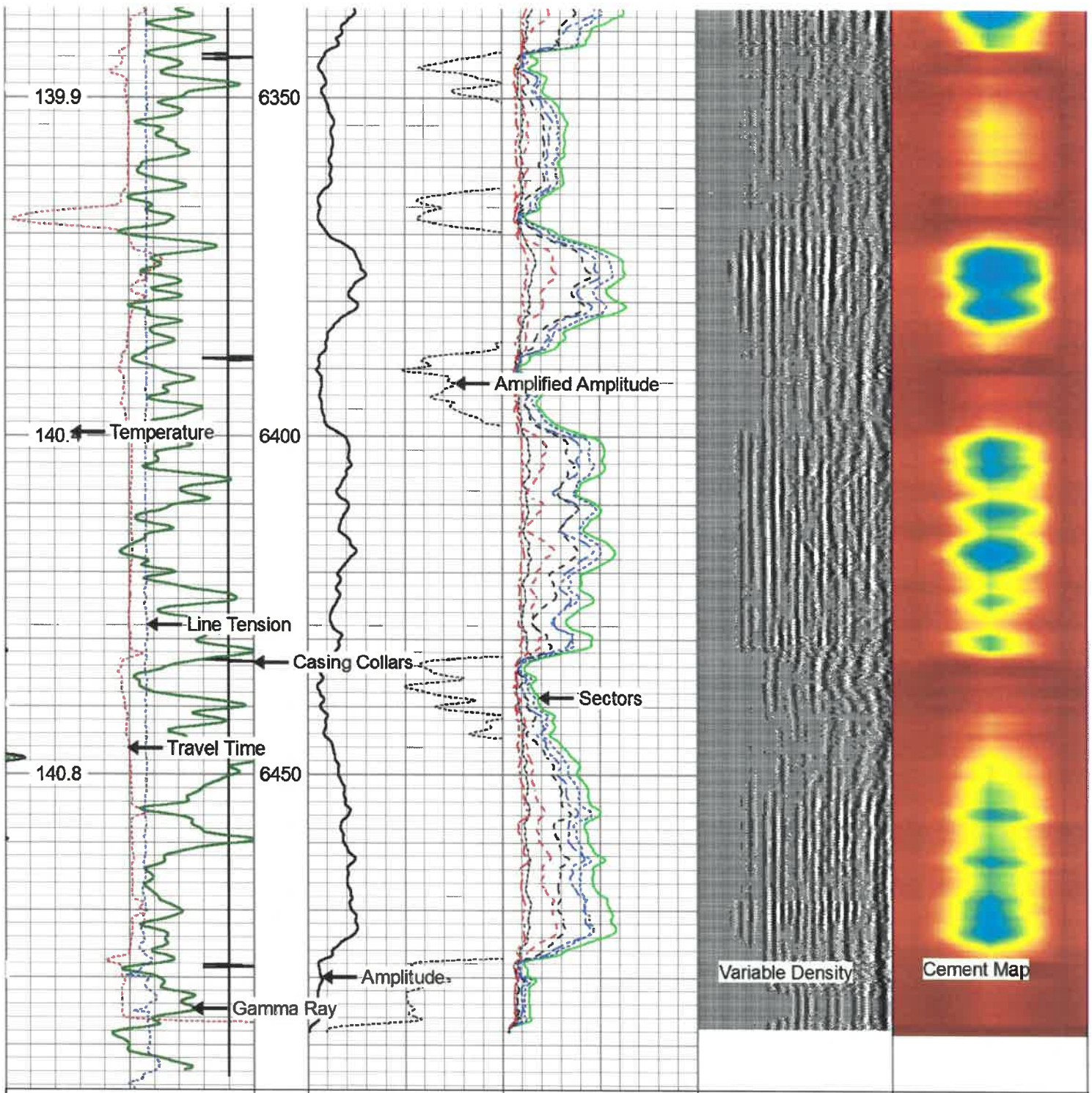












400	Travel Time (usec)	200
Casing Collar		
0	Gamma Ray (GAPI)	150
0	LTEN (lb)	2500
Temp		
(degF)		

0	Amplitude (mV)	100	-5	Sector 1	150
Amplified Amplitude					
0	(mV)	10	-5	Sector 2	150

-5	Sector 3	150			

-5	Sector 4	150			

-5	Sector 5	150			

-5	Sector 6	150			

-5	Sector 7	150			

-5	Sector 8	150			

Variable Density	1	Cement Map	8
200	(usec)	1200	

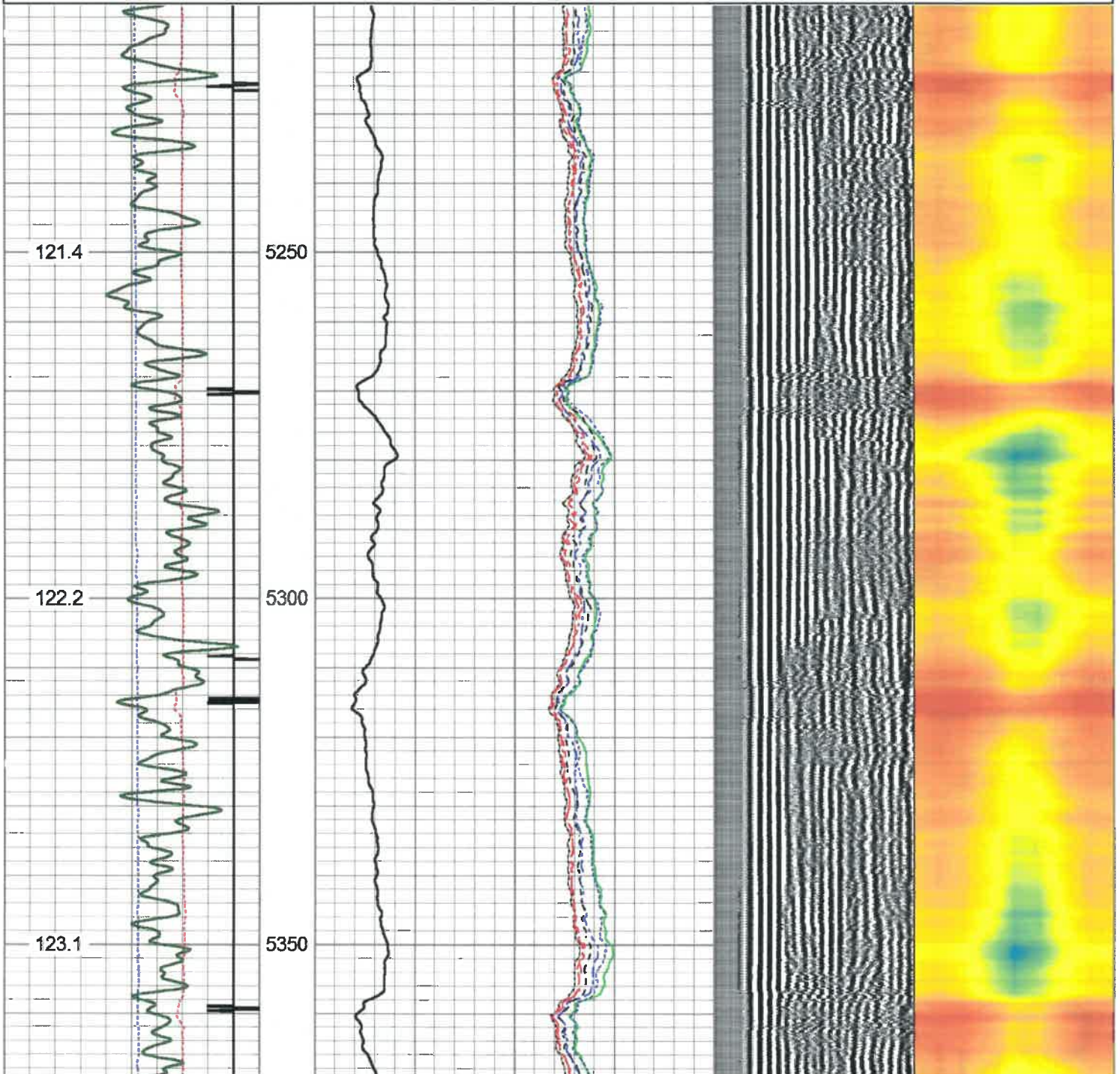
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WV Department of
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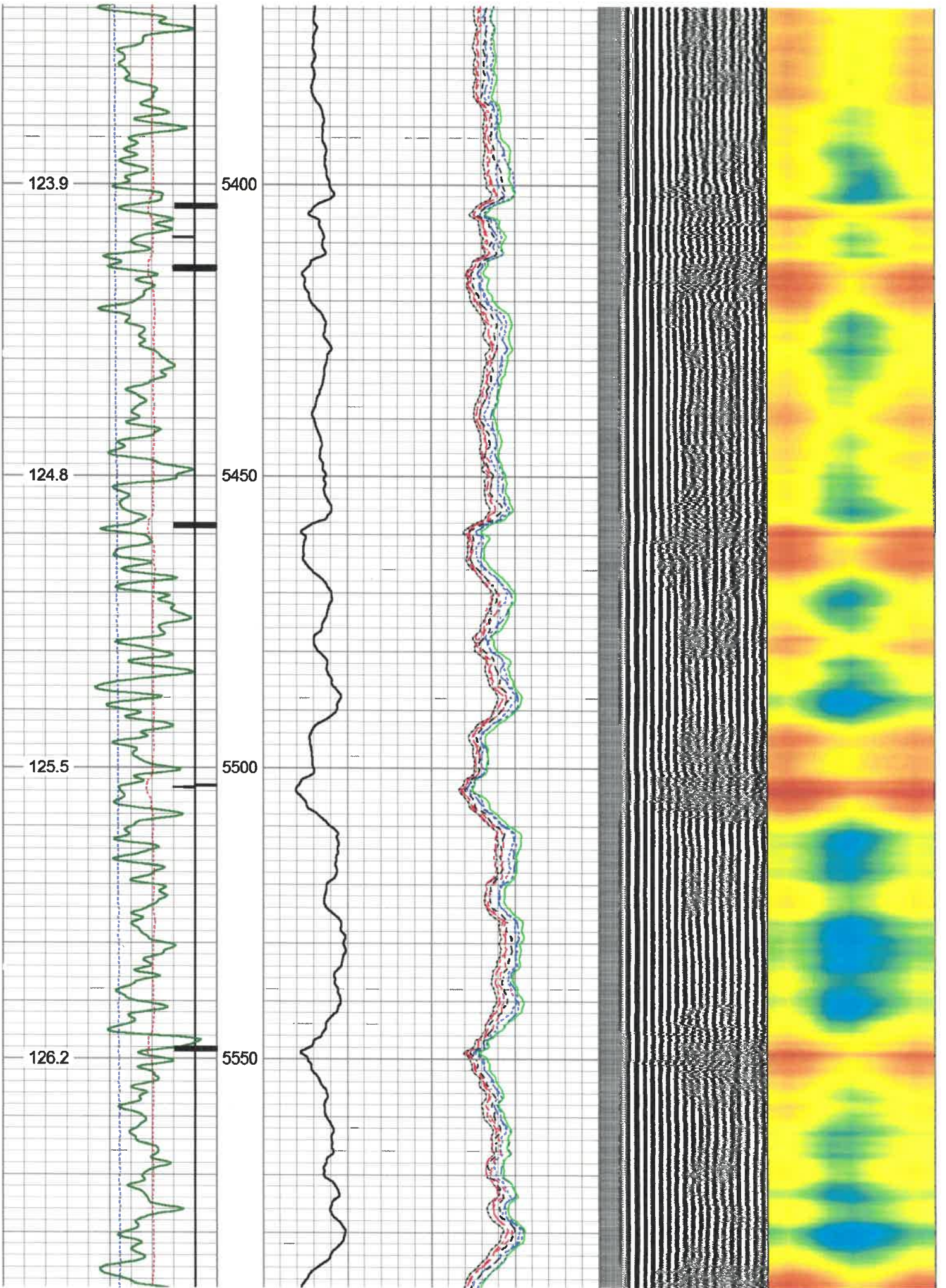


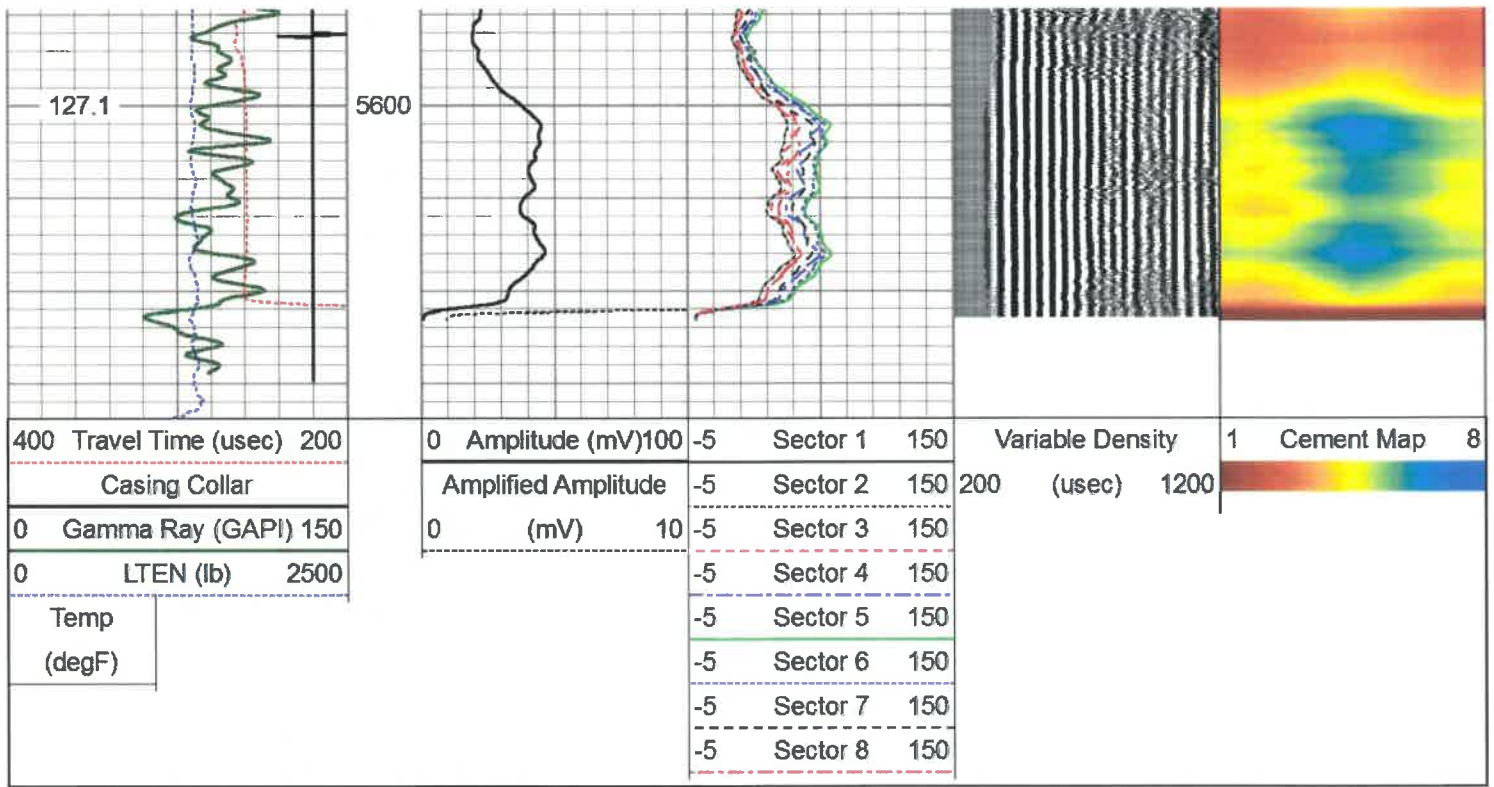
Repeat Pass 0 PSI

Database File antero_forrest_fenn_1h_rcbl_22_jun_19.db
 Dataset Pathname marcellus/1h/rcbl/pass4
 Presentation Format scbl03
 Dataset Creation Sat Jun 22 13:26:00 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						-5	Sector 4	150				
(degF)						-5	Sector 5	150				
						-5	Sector 6	150				
						-5	Sector 7	150				
						-5	Sector 8	150				







Calibration Report

Database File antero_forrest_fenn_1h_rcbl_22_jun_19.db
 Dataset Pathname marcellus/1h/rcbl/pass8
 Dataset Creation Sat Jun 22 13:55:39 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: 339.942 ft

Master Calibration, performed Sat Jun 22 13:05:29 2019:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.001	0.985	1.000	71.921	72.071	0.949
CAL	-0.046	1.873				
5'	0.005	0.893	1.000	71.921	79.841	0.589
SUM						
S1	0.076	1.049	0.000	100.000	102.731	-7.801
S2	0.008	0.999	0.000	100.000	100.811	-0.757
S3	0.002	0.970	0.000	100.000	103.279	-0.198

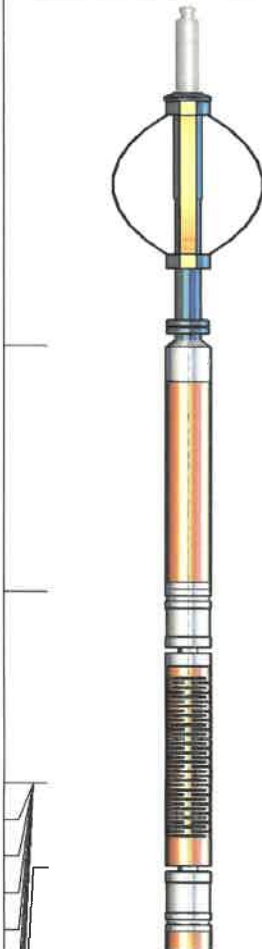
S4	0.000	0.943	0.000	100.000	106.118	-0.027
S5	0.002	0.957	0.000	100.000	104.722	-0.193
S6	0.003	0.991	0.000	100.000	101.203	-0.274
S7	0.003	0.994	0.000	100.000	100.931	-0.296
S8	0.002	1.017	0.000	100.000	98.553	-0.201

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	-0.046	1.873	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)
			CHD-Titan Titan 1 7/16" GO Cablehead	1.00	1.44	5.00
			CENT-Probe275 2.75" Centralizer	2.88	2.75	20.00
HeadVolt	16.99					
			RECEIVED Office of Oil and Gas AUG 31 2020 WV Department of Environmental Protection			
Temp	14.14					
WVFS8	11.91		RBT-Probe275T (FW1312-32) Probe 2.75" Radial with Integral Temperature Sub	9.39	2.75	90.00
WVFS7	11.91					
WVFS6	11.91					
WVFS5	11.91					
WVFS4	11.91					

WVFS3	11.91	<p>CENT-Probe275 2.75" Centralizer</p>	2.88	2.75	20.00
WVFS2	11.91				
WVFS1	11.91				
WVF3FT	11.91				
WVF5FT	10.91				
WVFCAL	7.66				
HEADVOLT	7.66				
CCL	3.88				
GR	2.54	<p>GR-Probe (FW1211-86) Probe 2 3/4" Logging Gamma Ray</p>	4.78	2.75	57.00

Dataset: antero_forrest_fenn_1h_rcbl_22_jun_19.db: marcellus/1h/rcbl/pass8
 Total length: 20.92 ft
 Total weight: 192.00 lb
 O.D.: 2.75 in



Company Antero Resources
Well Forrest Fenn Unit 1H
Field Marcellus
County Tyler
State WV