



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

Company Antero Resources
Well Laser 2H
Field South Canton
County Doddridge
State West Virginia

Company Antero Resources

Well Laser 2H

Field South Canton

County Doddridge State West Virginia

Location: API # :

Lat: 39.3078
Long: -80.7335

Other Services

Permanent Datum SEC TWP RGE
Log Measured From Ground Level Elevation
Drilling Measured From Kelly Bushing 25.5' A.P.D.
Kelly Bushing

Elevation
K.B.
D.F.
G.L.

Date 03-Jan-2020

Run Number One

Depth Driller 7,220'

Bottom Logged Interval 7,220'

Top Log Interval Surface

Open Hole Size NA

Type Fluid Water

Density / Viscosity NA

Max. Recorded Temp. 153 Deg. F.

Estimated Cement Top 3,646'

Time Well Ready 16:00

Time Logger on Bottom 16:56

Equipment Number 104 (P1X)G3)

Location Bentleyville, PA

Recorded By Matt McNally

Witnessed By Chad Roy

Run Number Bit From To Size Weight From To

Borehole Record

Size Wgt/Ft Top Bottom

Casing Record

Surface String

Prot. String

Production String

Liner

<<< 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 Kelly Bushing

Casing Tally Marker Joint at (6,020' - 6,030')
Marker Joint found at (6,058' - 6,068')

Main Pass 1,500 PSI
Repeat Pass 0 PSI

RECEIVED
Office of Oil and Gas
OCT 28 2020

WV Department of
Environmental Protection

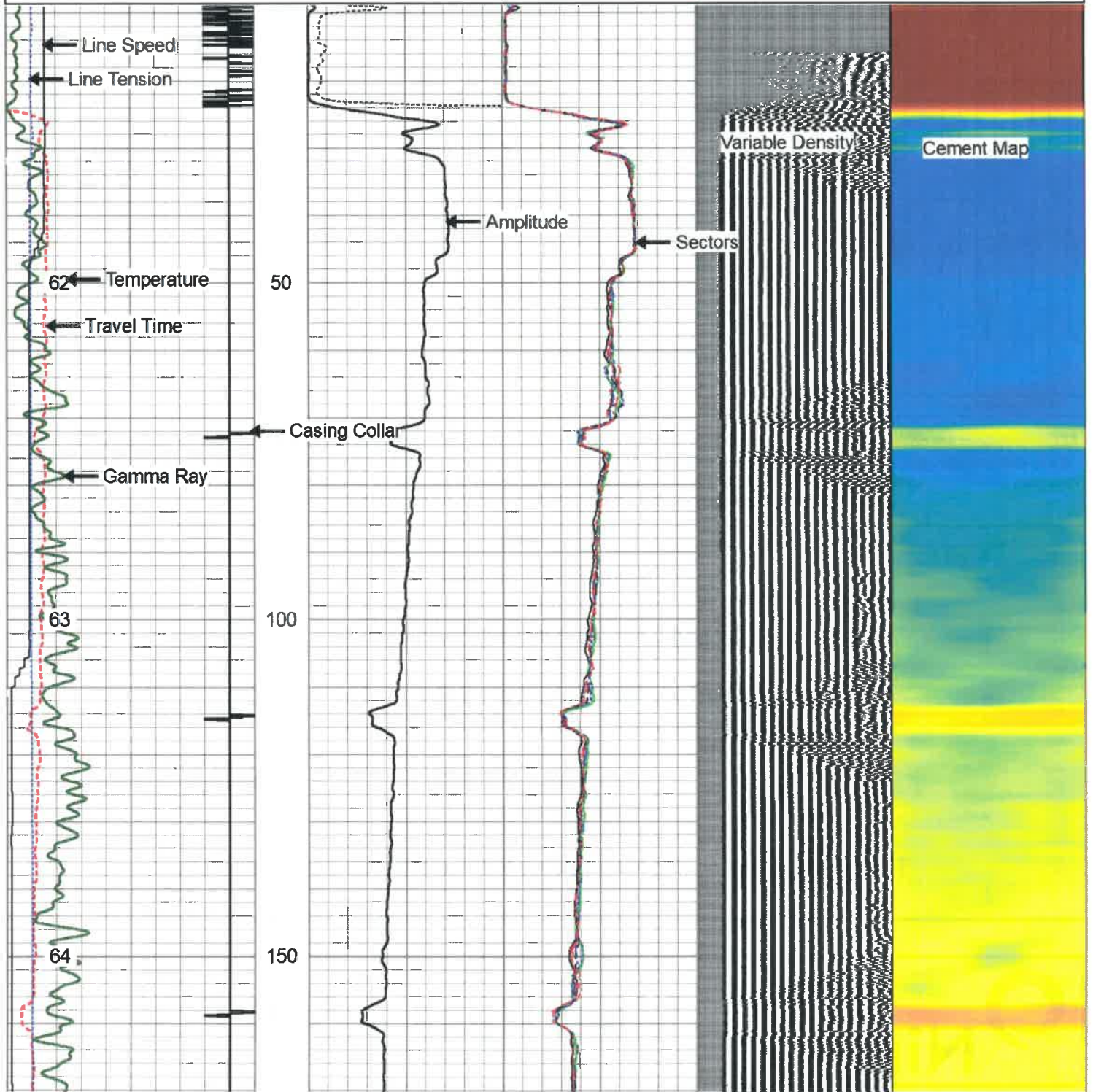
Thank You For Choosing Nine Energy Service Wireline Bentleyville, PA

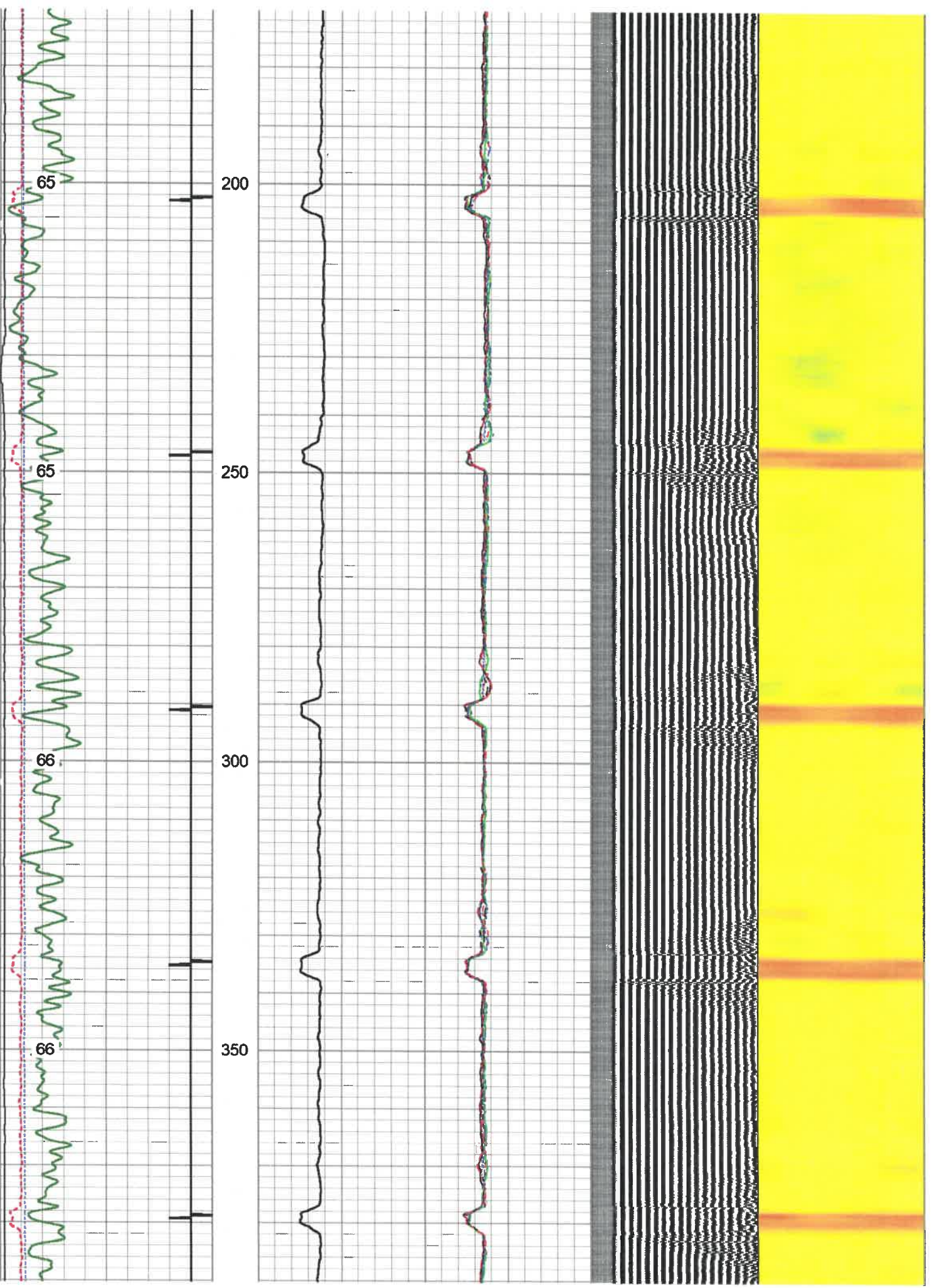


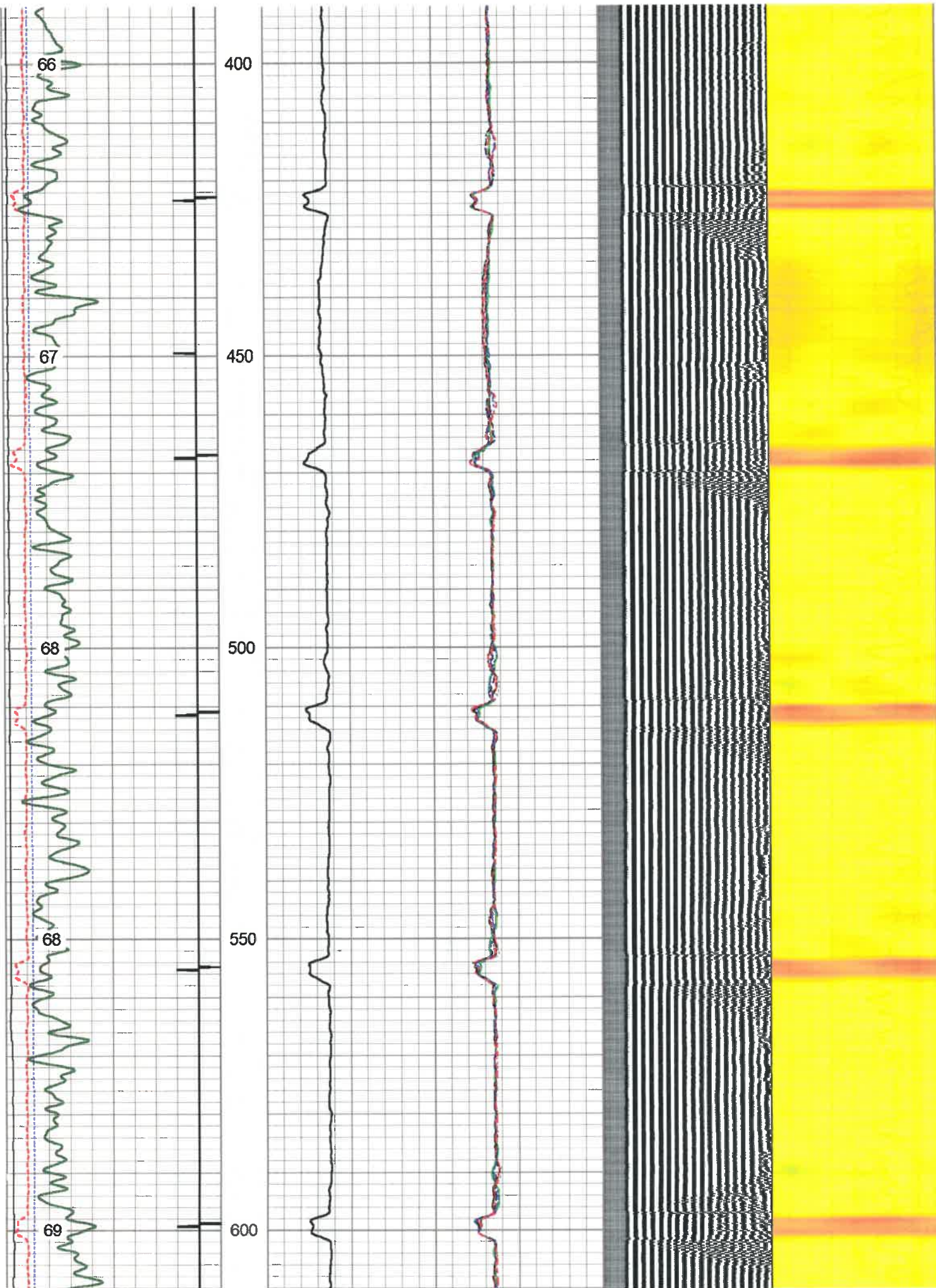
Main Pass 1,500 PSI

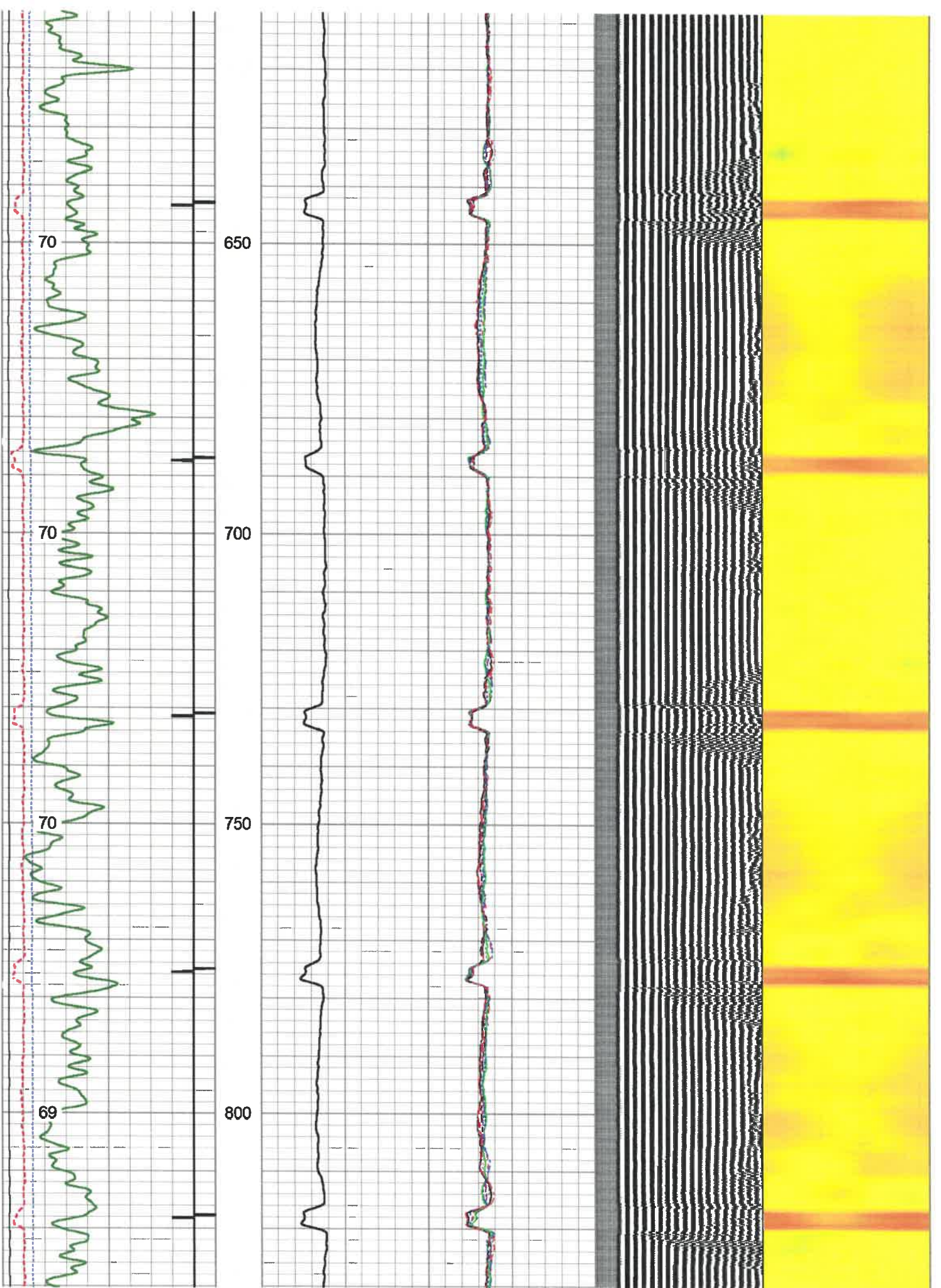
Database File antero_george_scott_laser_2h_rcbl_nineenergy_03_dec_2020.db
 Dataset Pathname south_canton/laser2h/rcbl/pass8.2
 Presentation Format rcbl 2.75 919
 Dataset Creation Fri Jan 03 18:30:37 2020
 Charted by Depth in Feet scaled 1:240

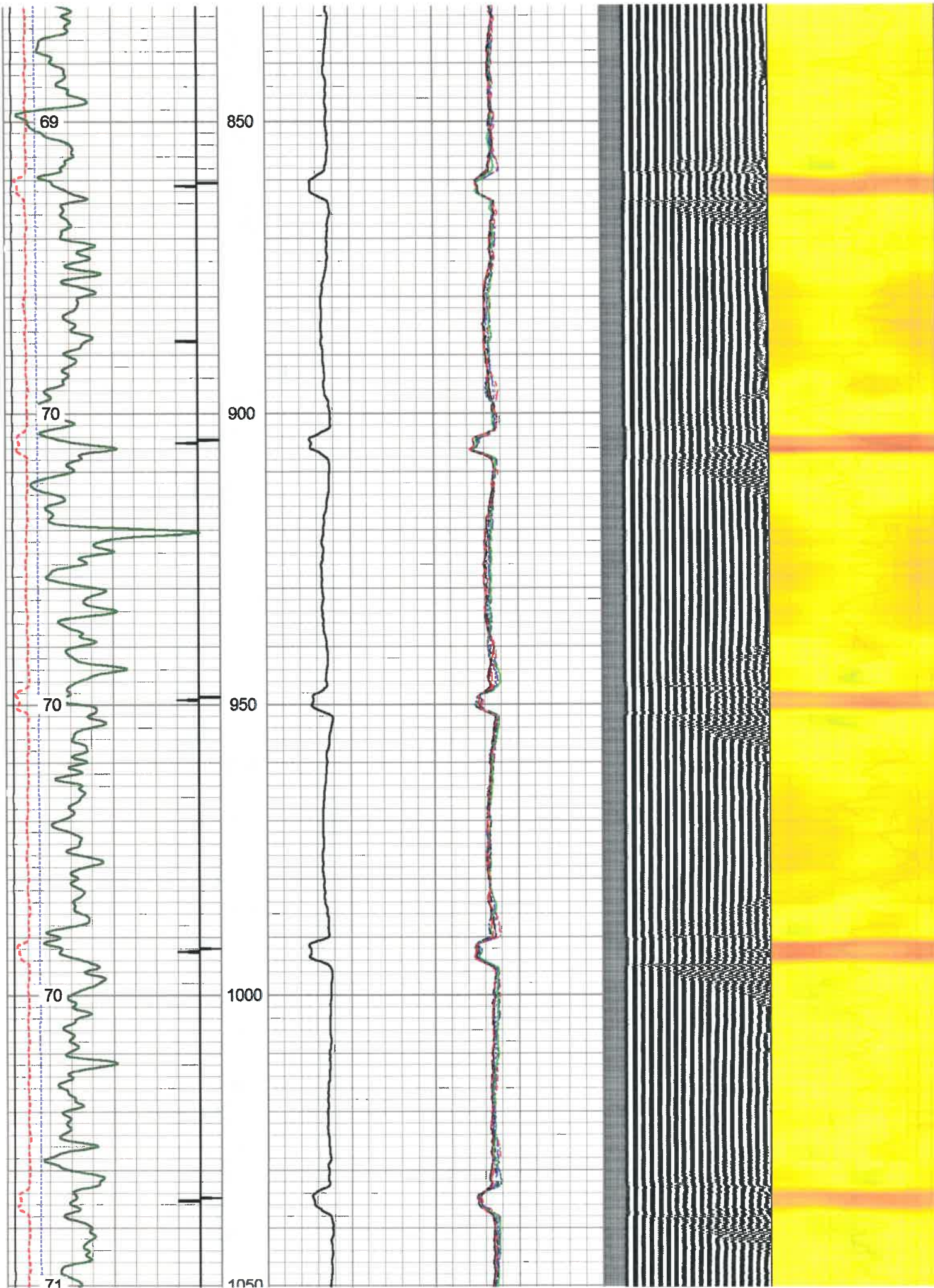
270	Travel Time (usec)	170	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
Casing Collar			Amplified Amplitude		-5	Sector 2	150	200	(usec)	1200	[Color Scale]	
0	Gamma Ray (GAPI)	120	0	(mV)	10	-5	Sector 3	150				
0	LTEN (lb)	2500			-5	Sector 4	150					
-100	LSPD (ft/min)	100			-5	Sector 5	150					
Temp (degF)					-5	Sector 6	150					
					-5	Sector 7	150					
					-5	Sector 8	150					

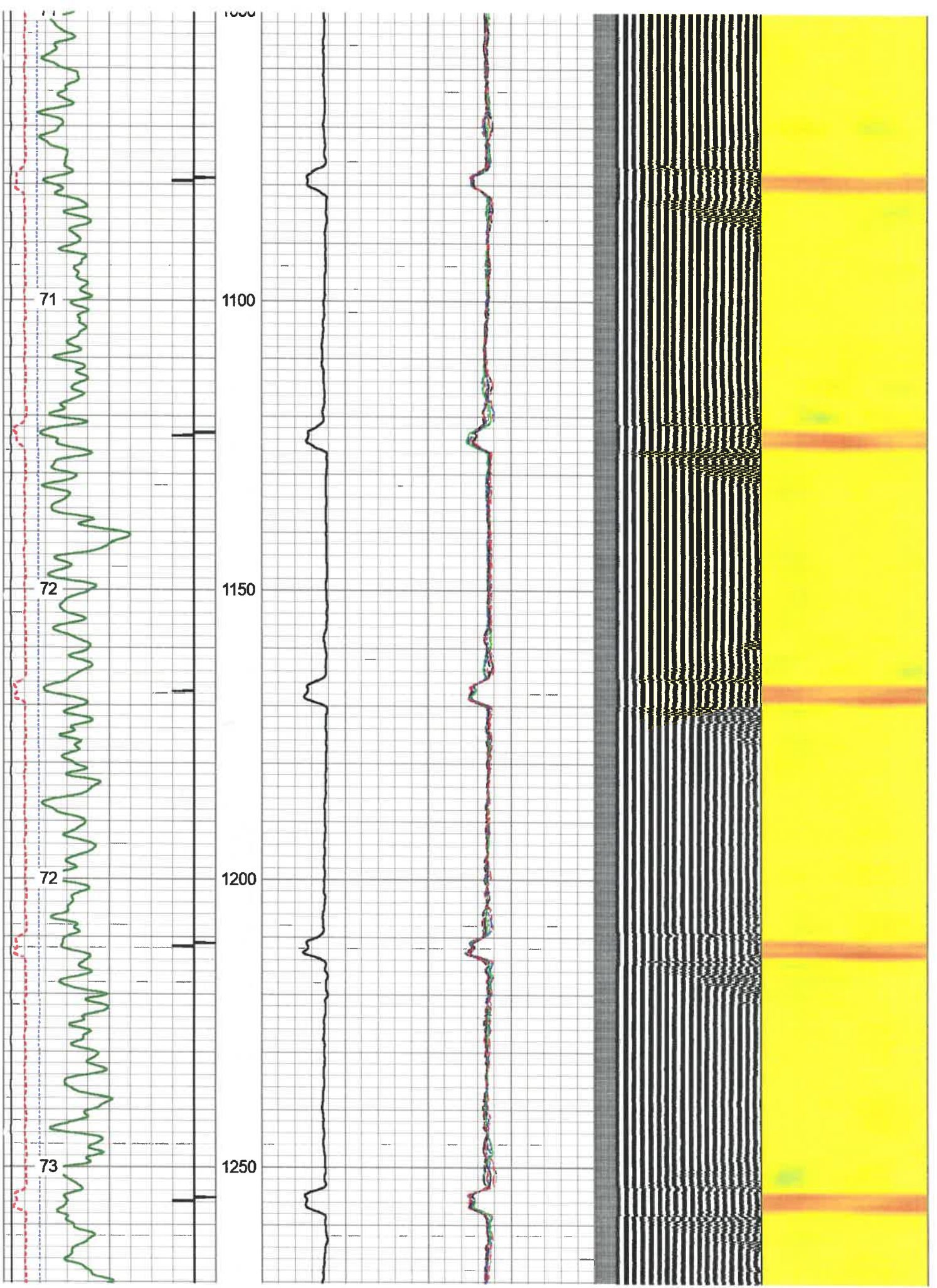


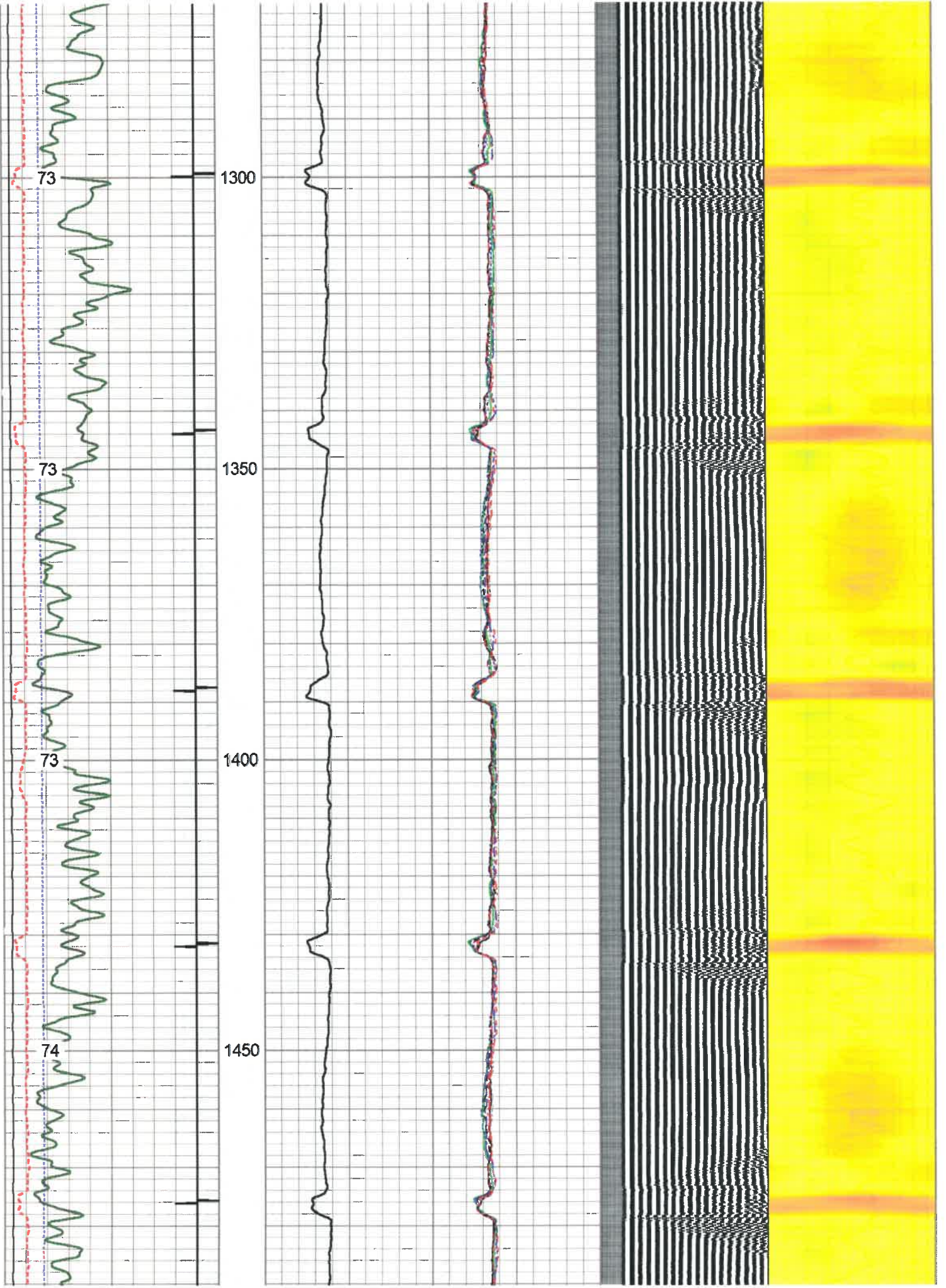


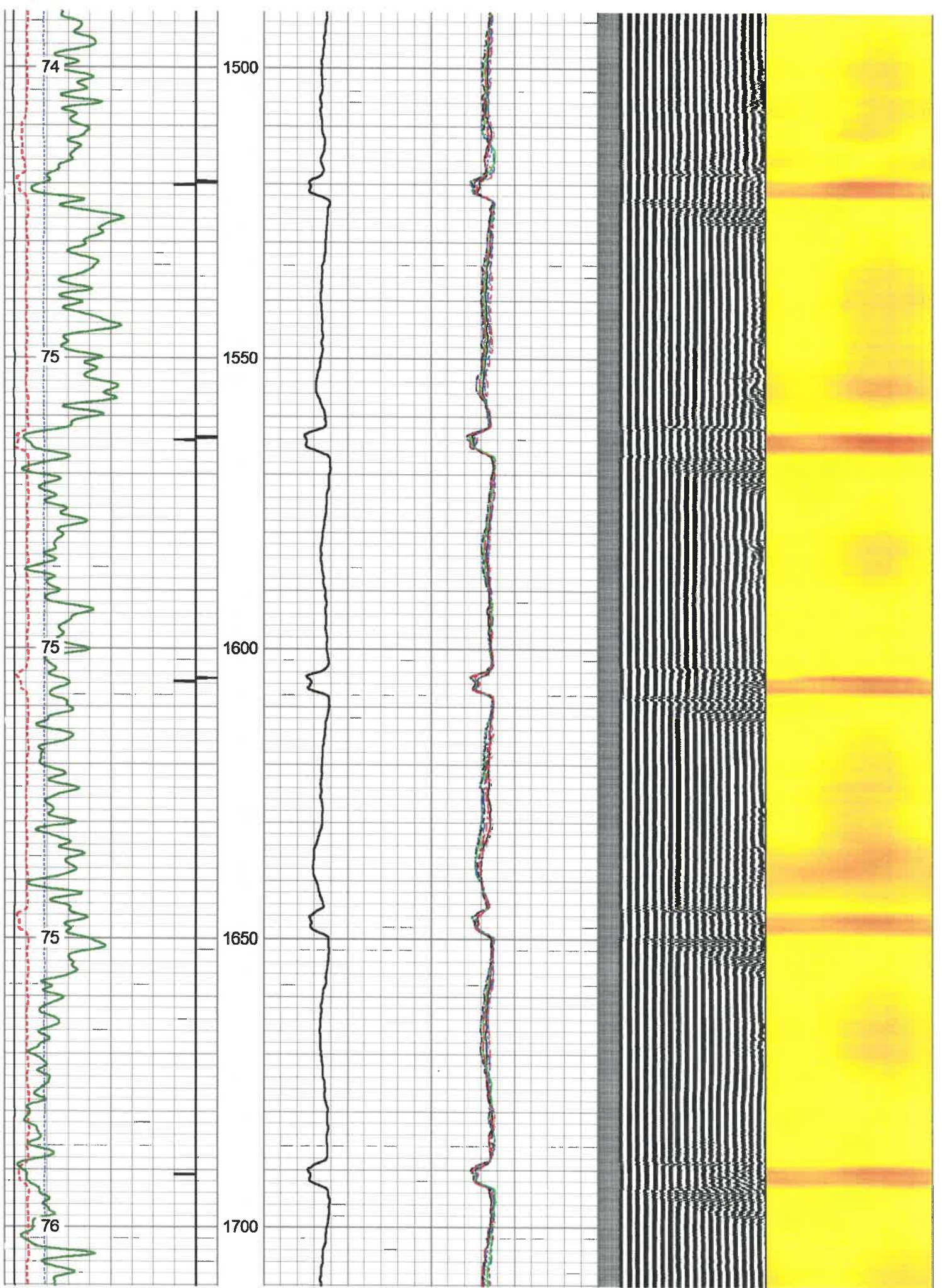


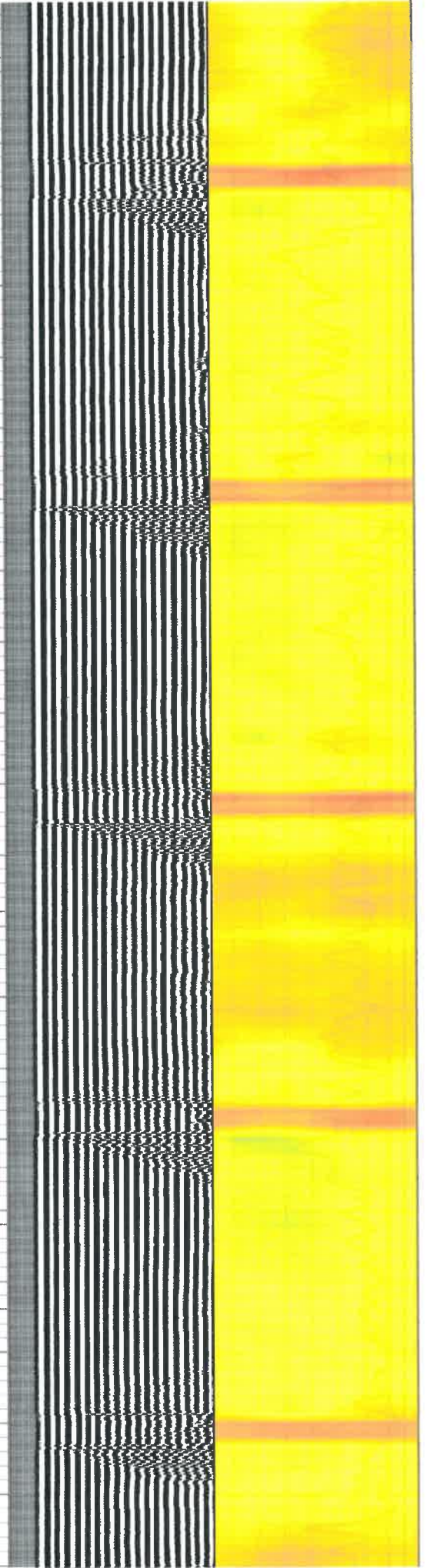
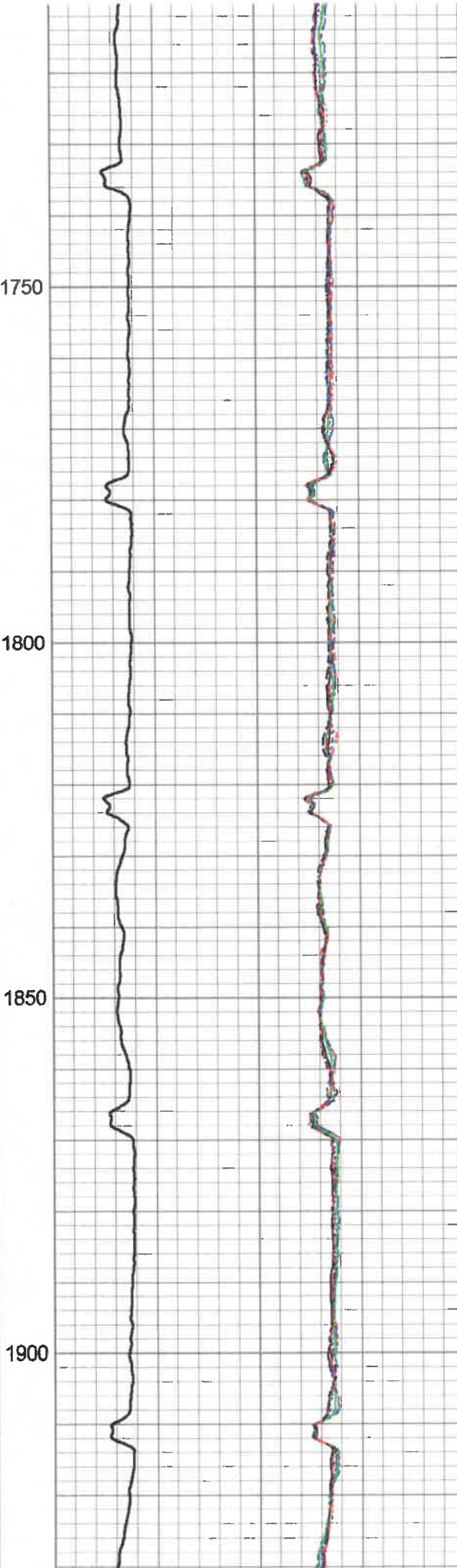
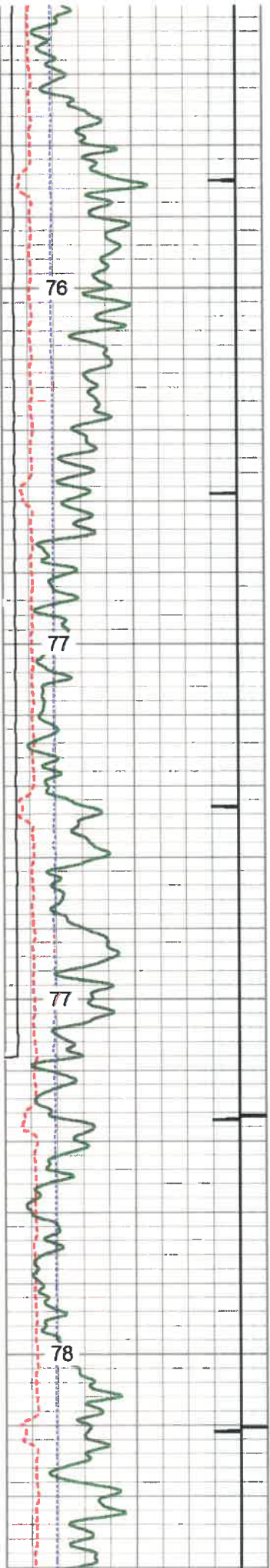


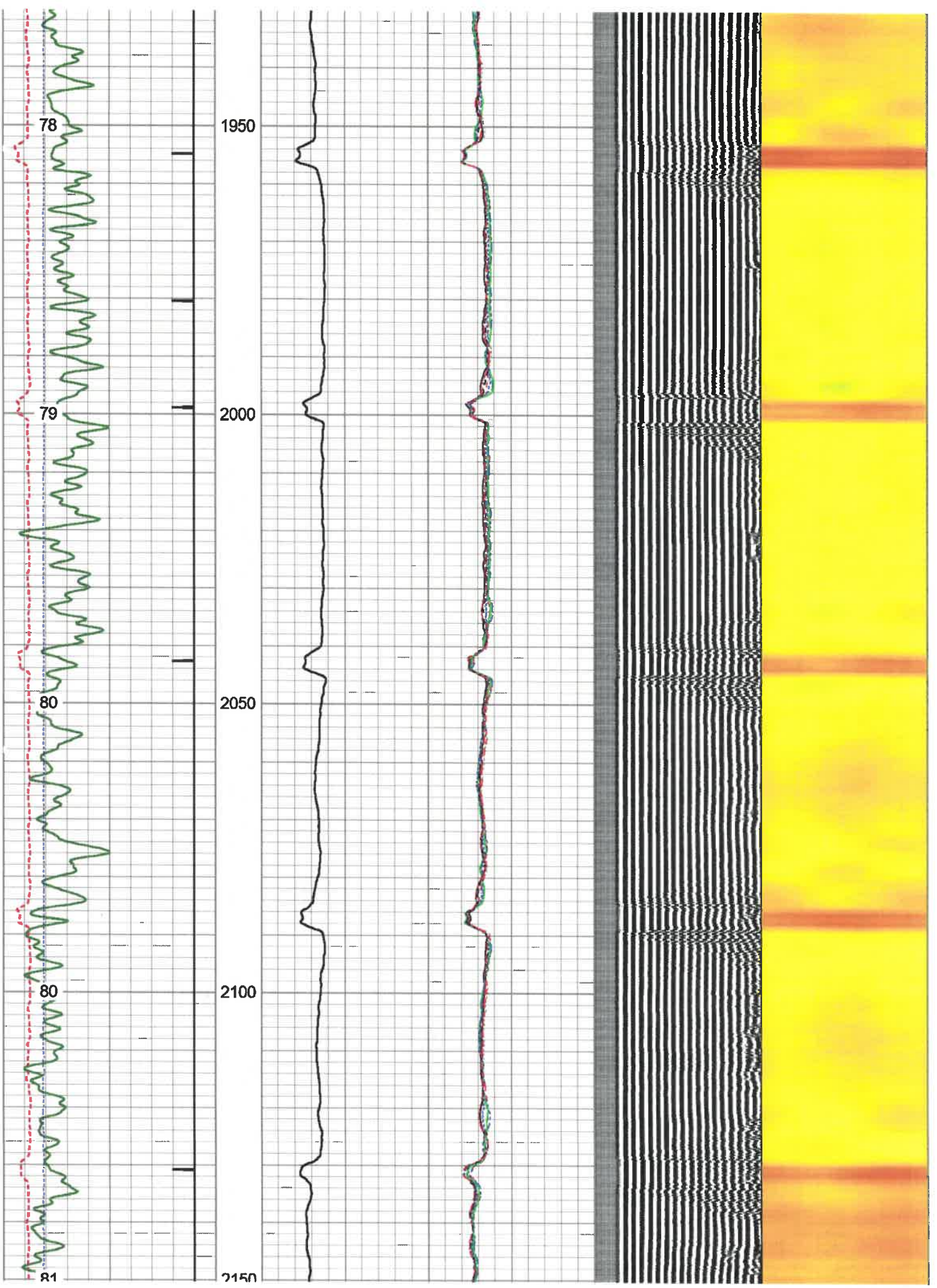


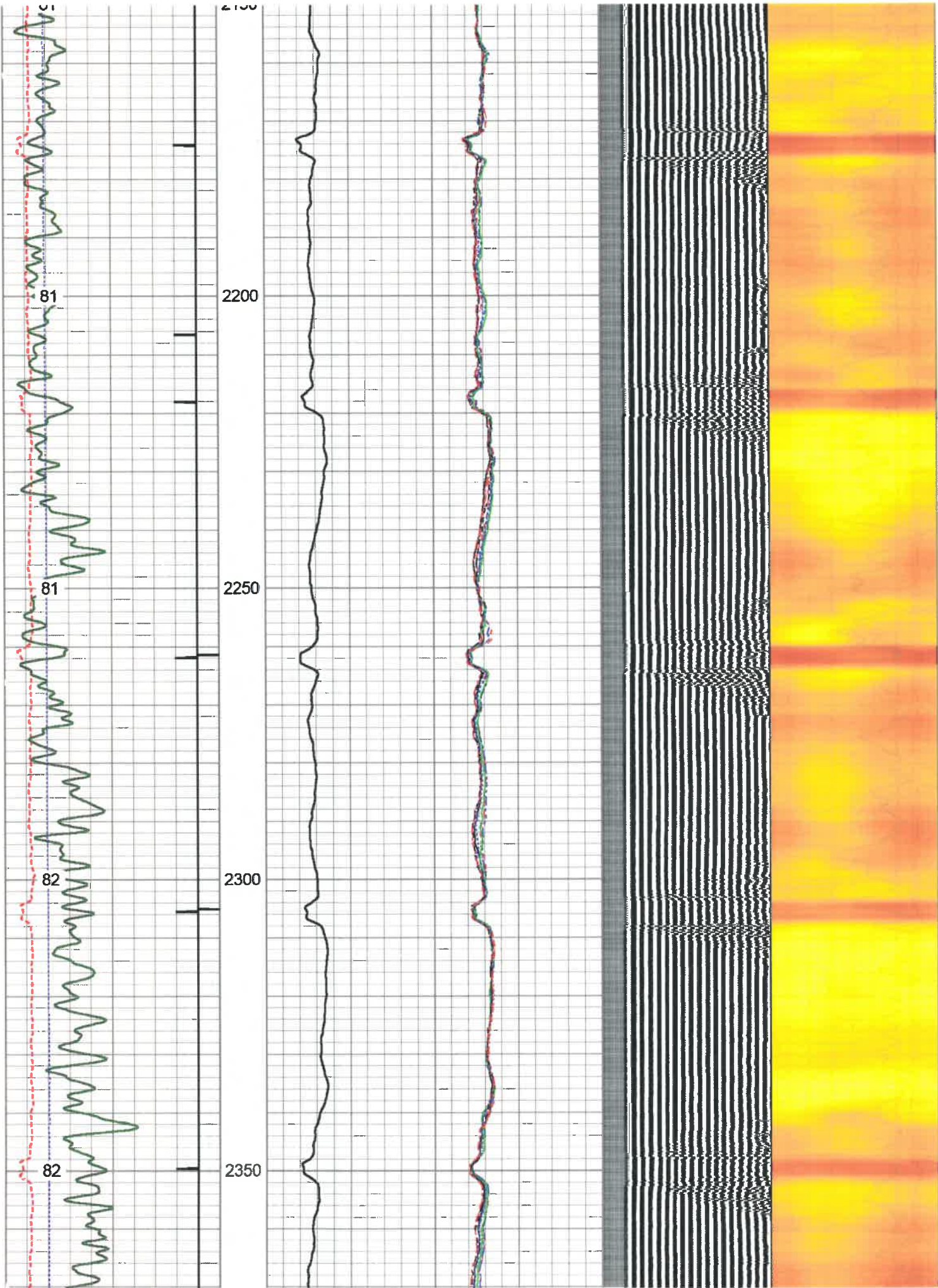


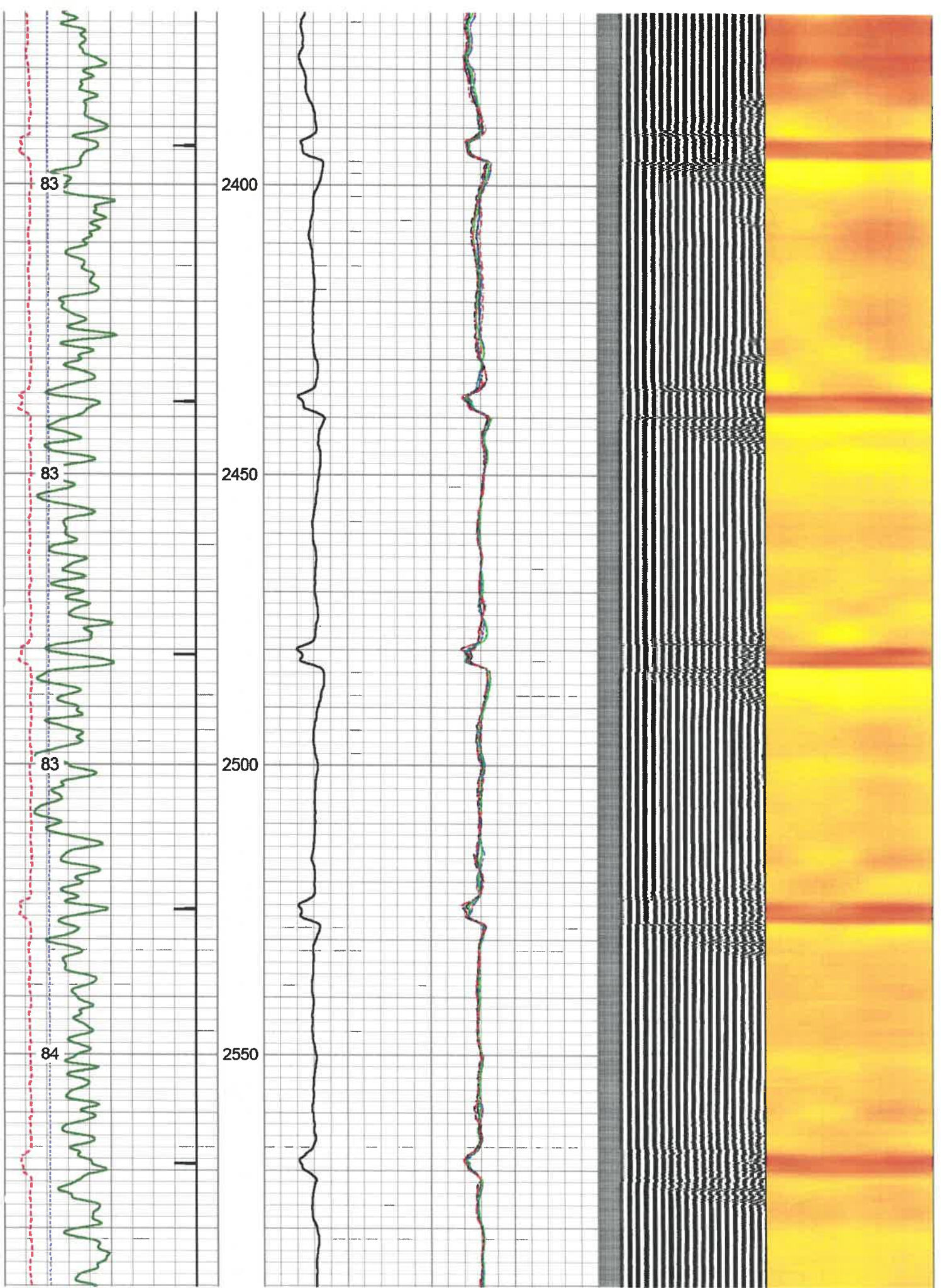


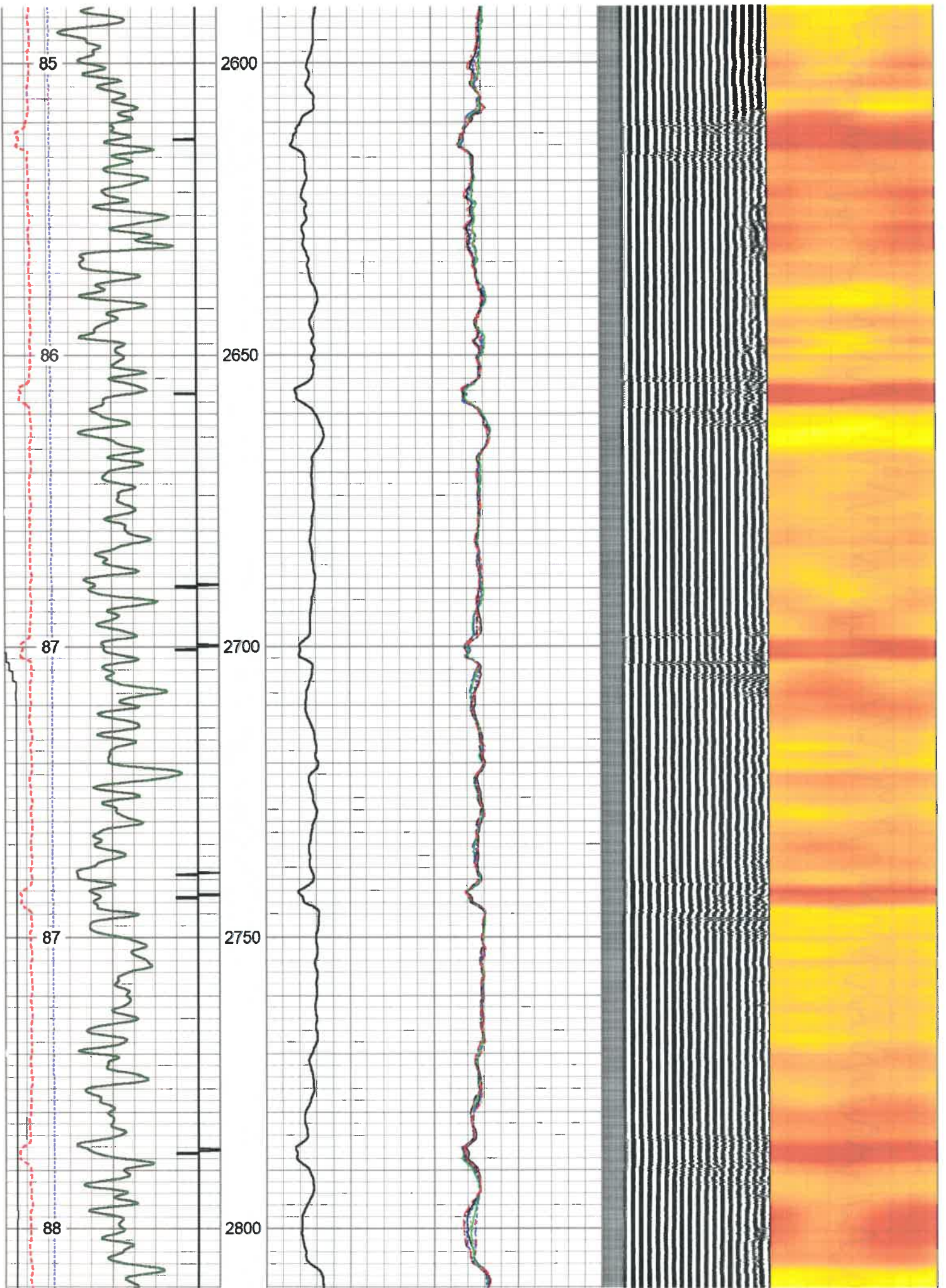


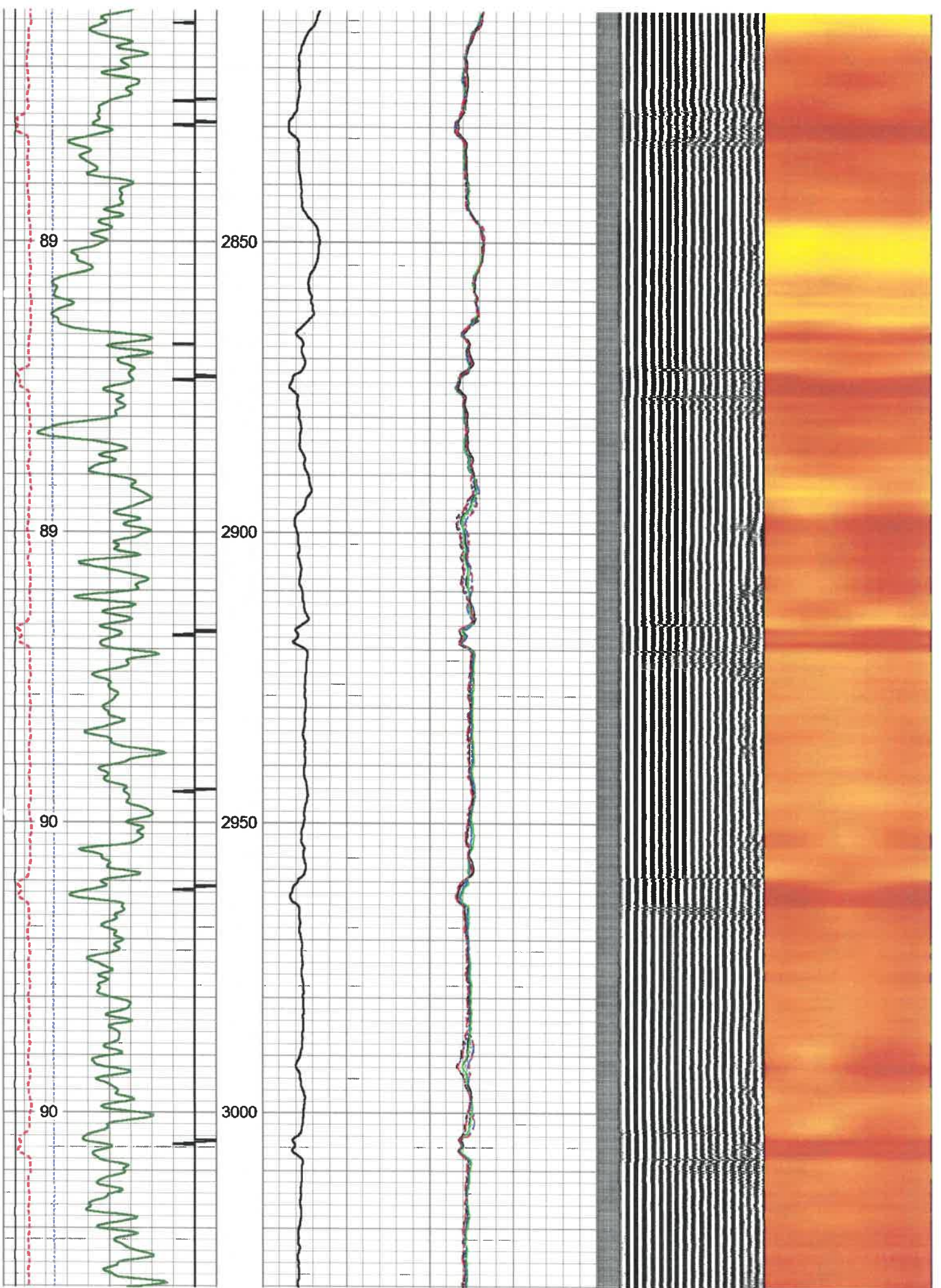


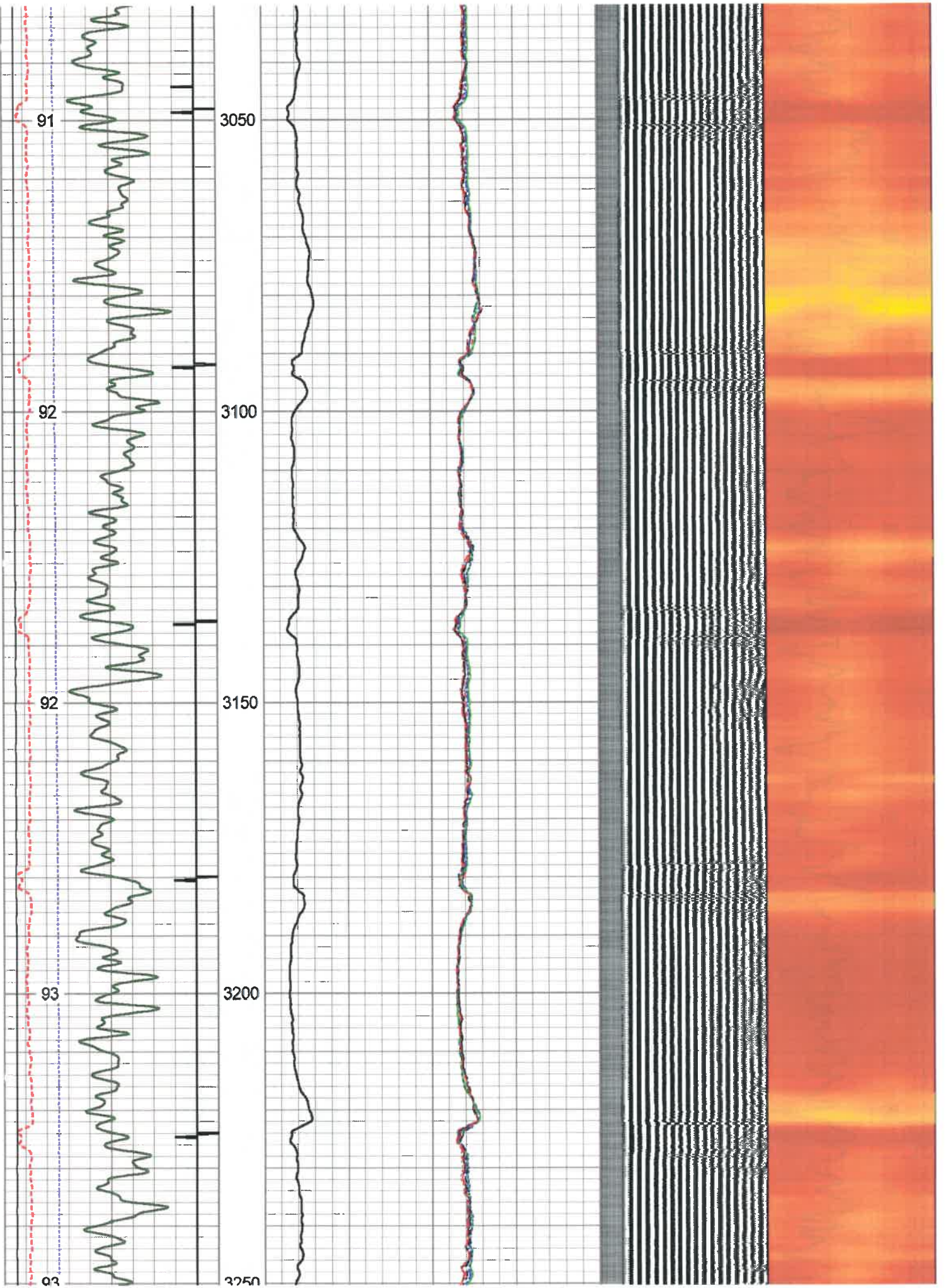


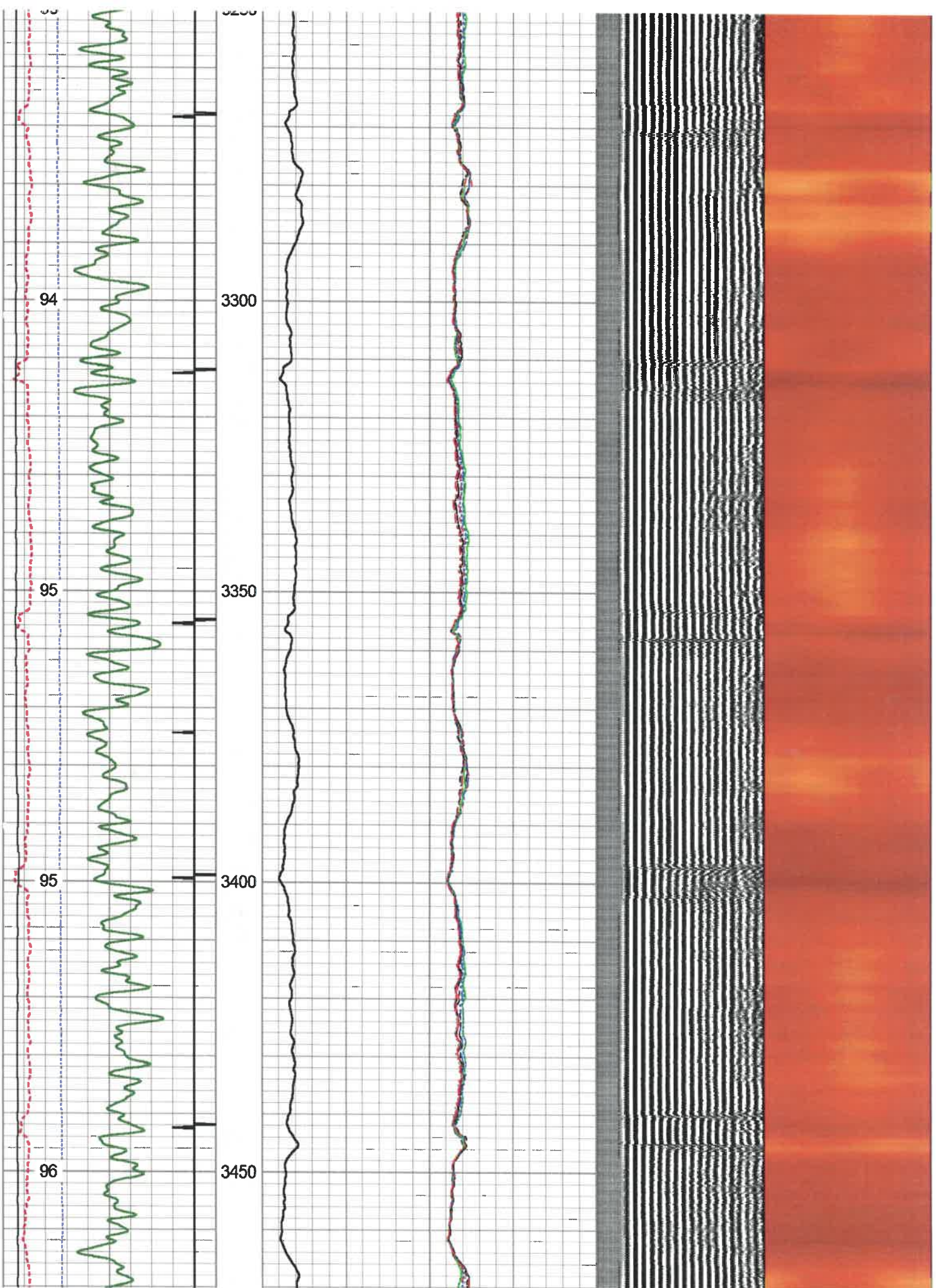


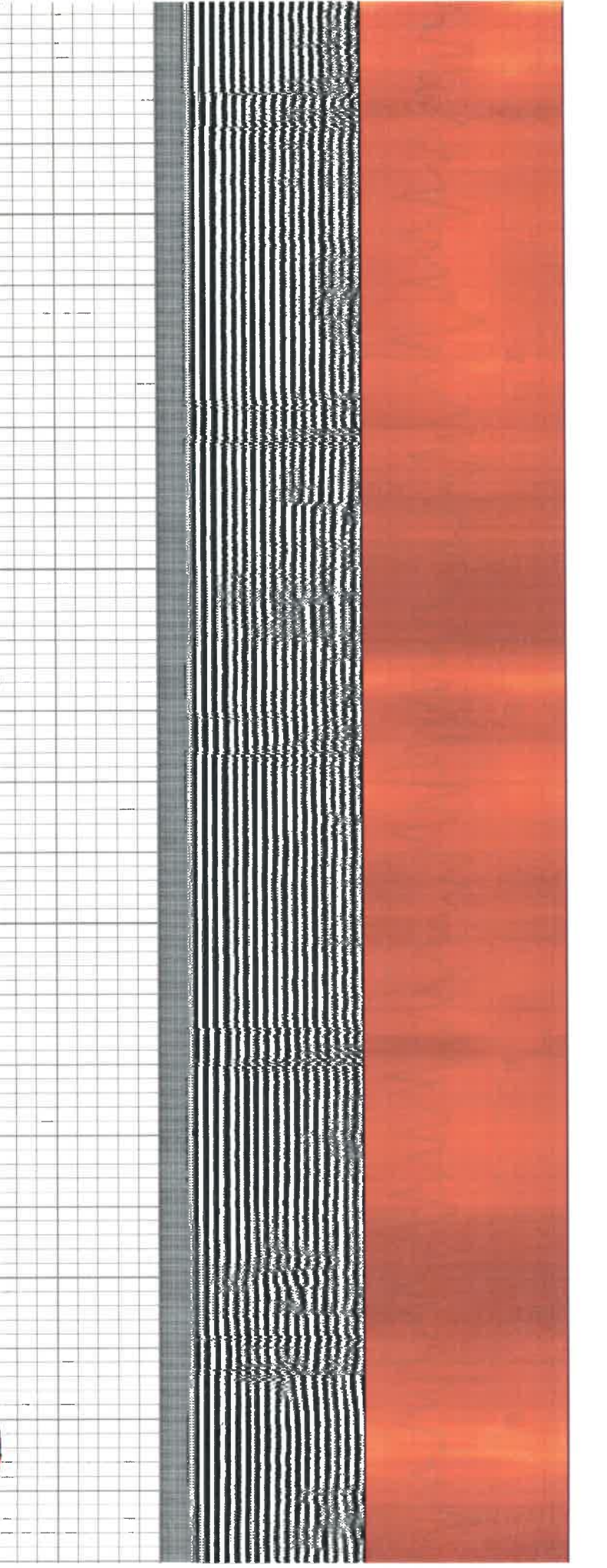
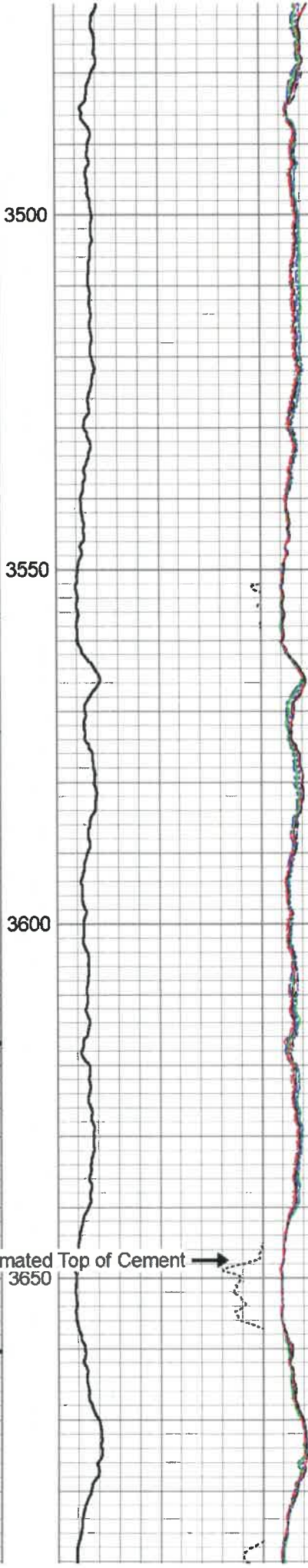
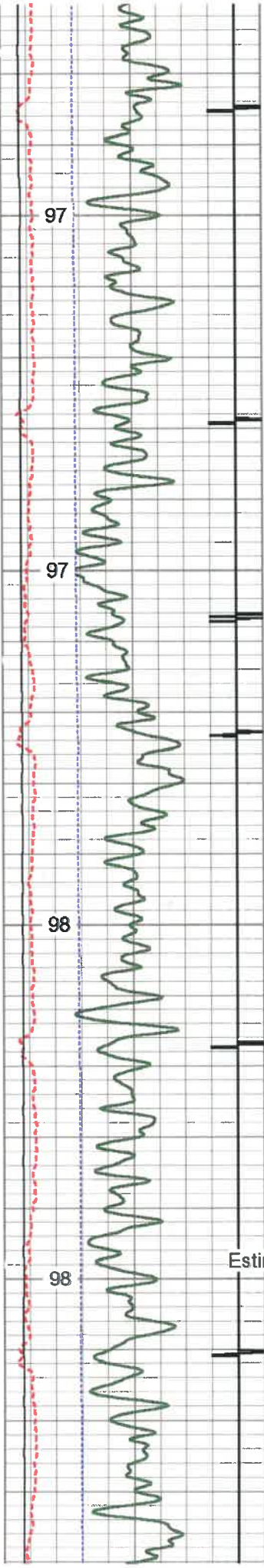


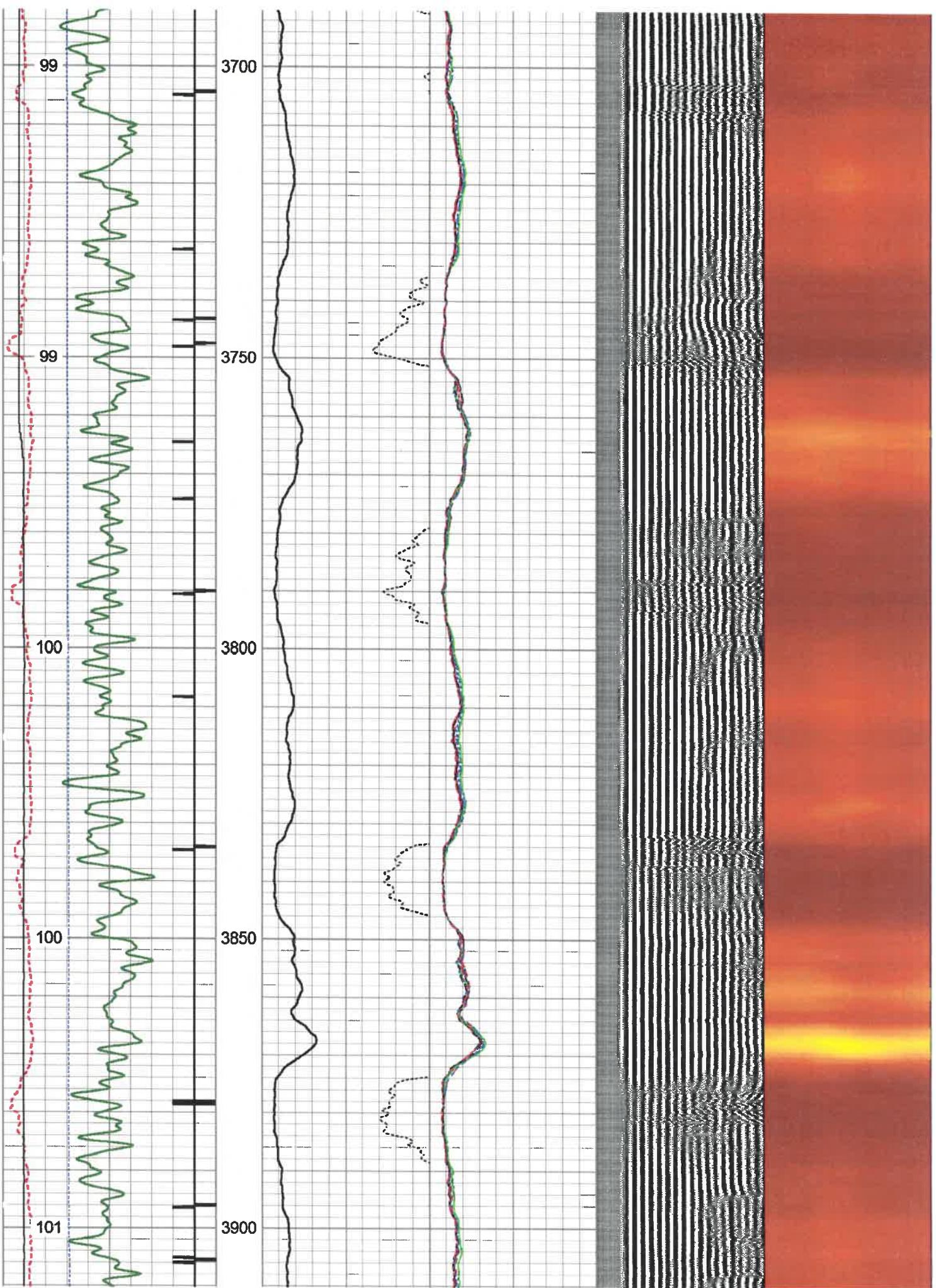


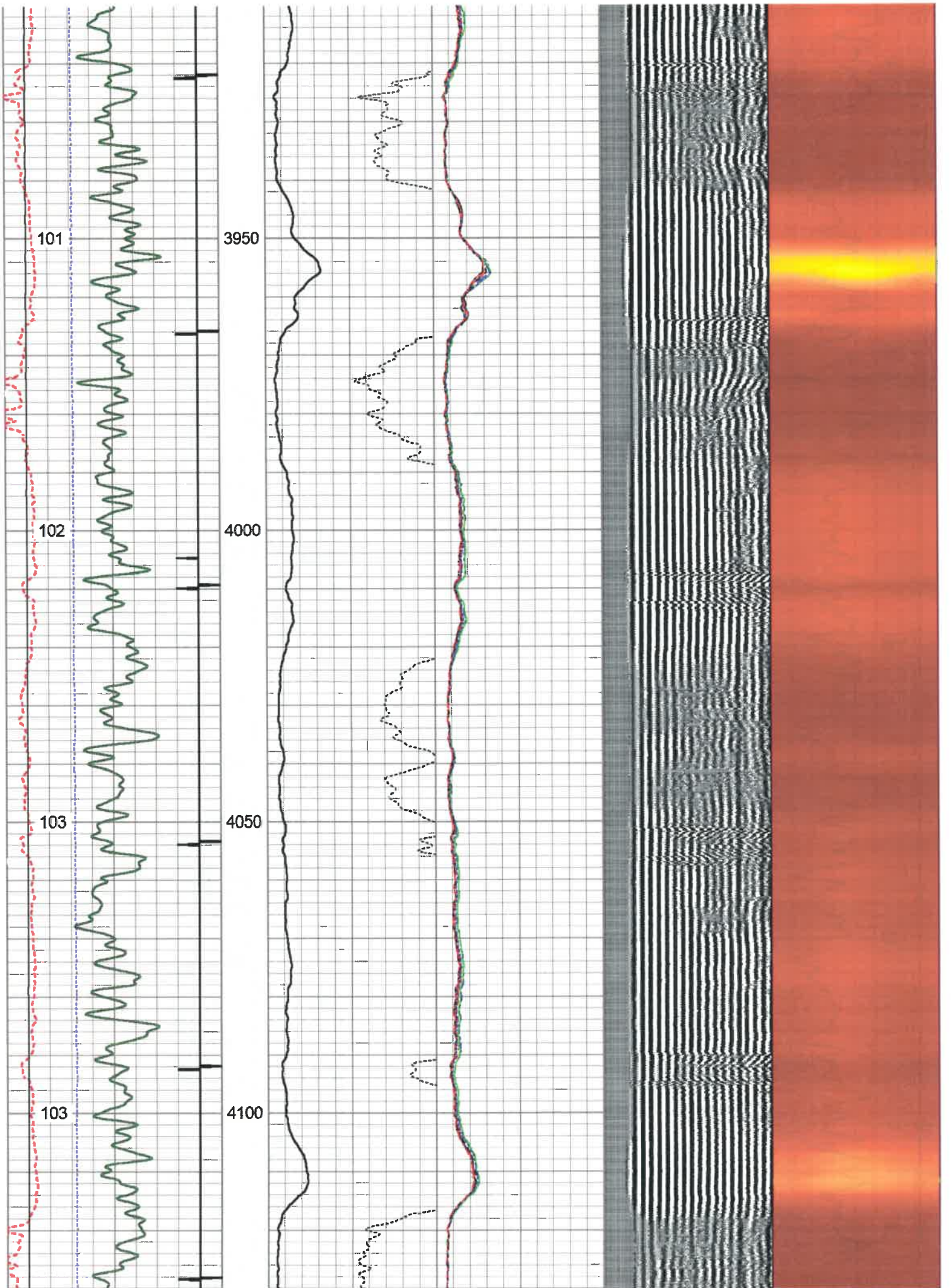


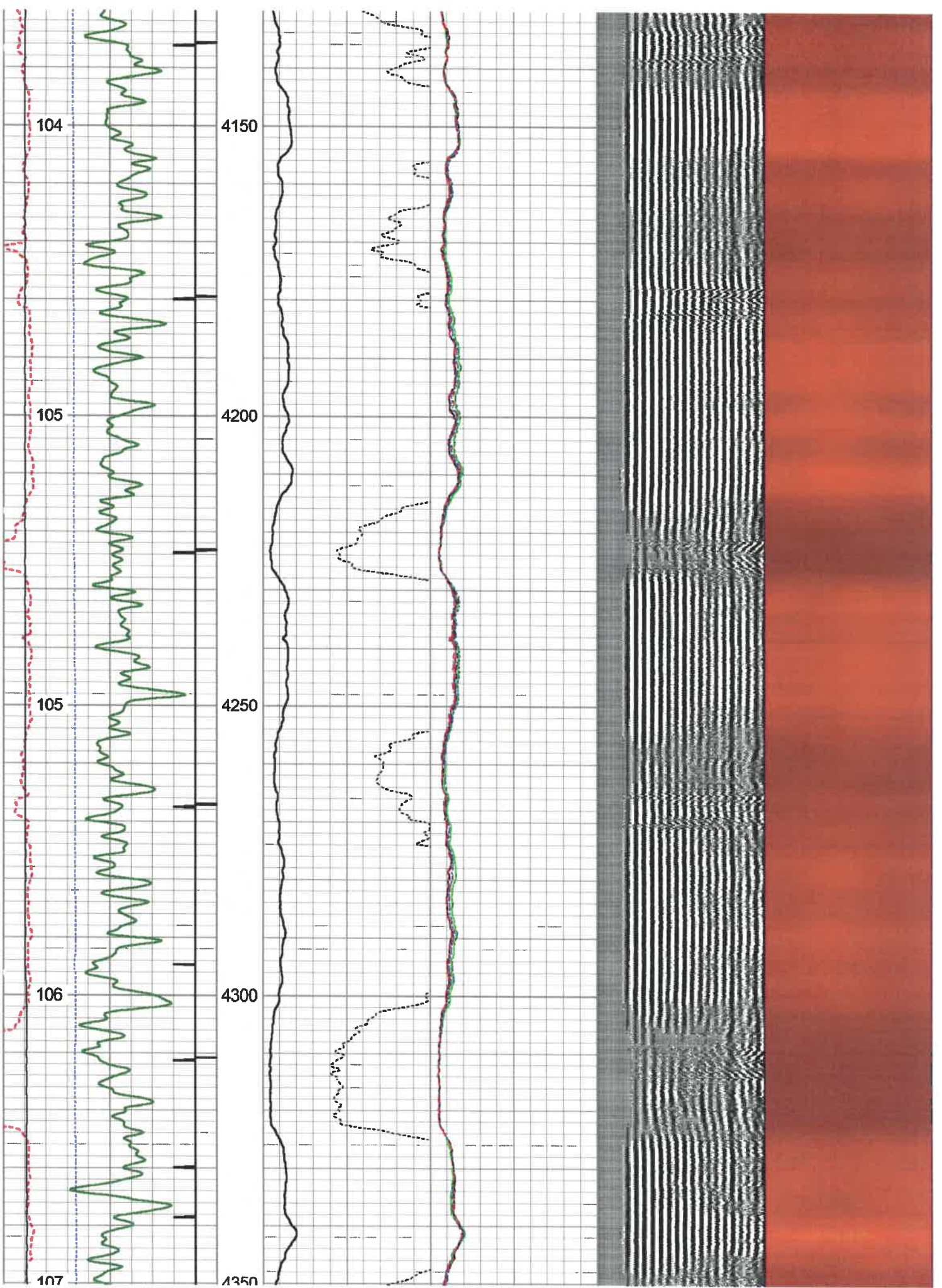


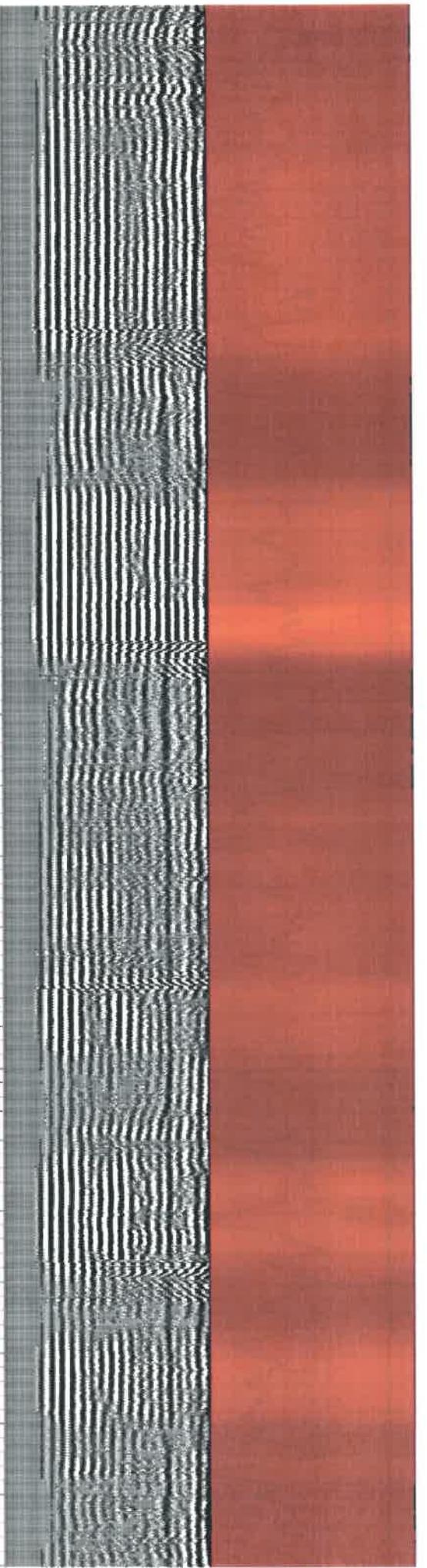
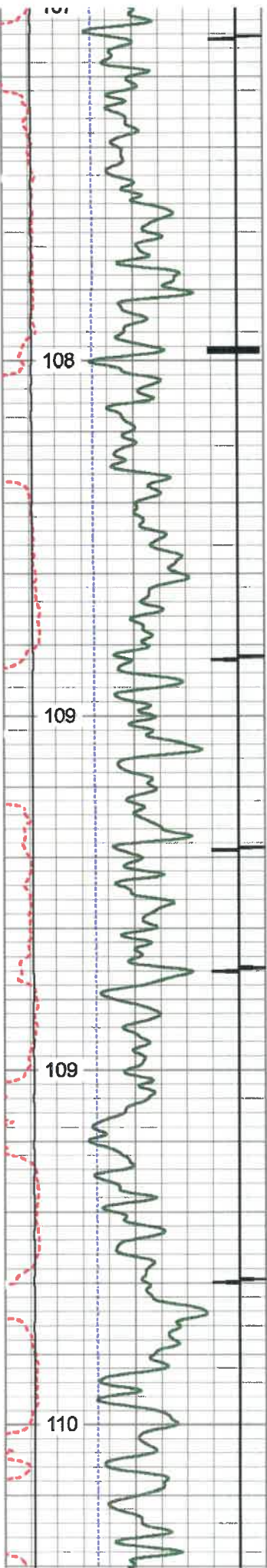


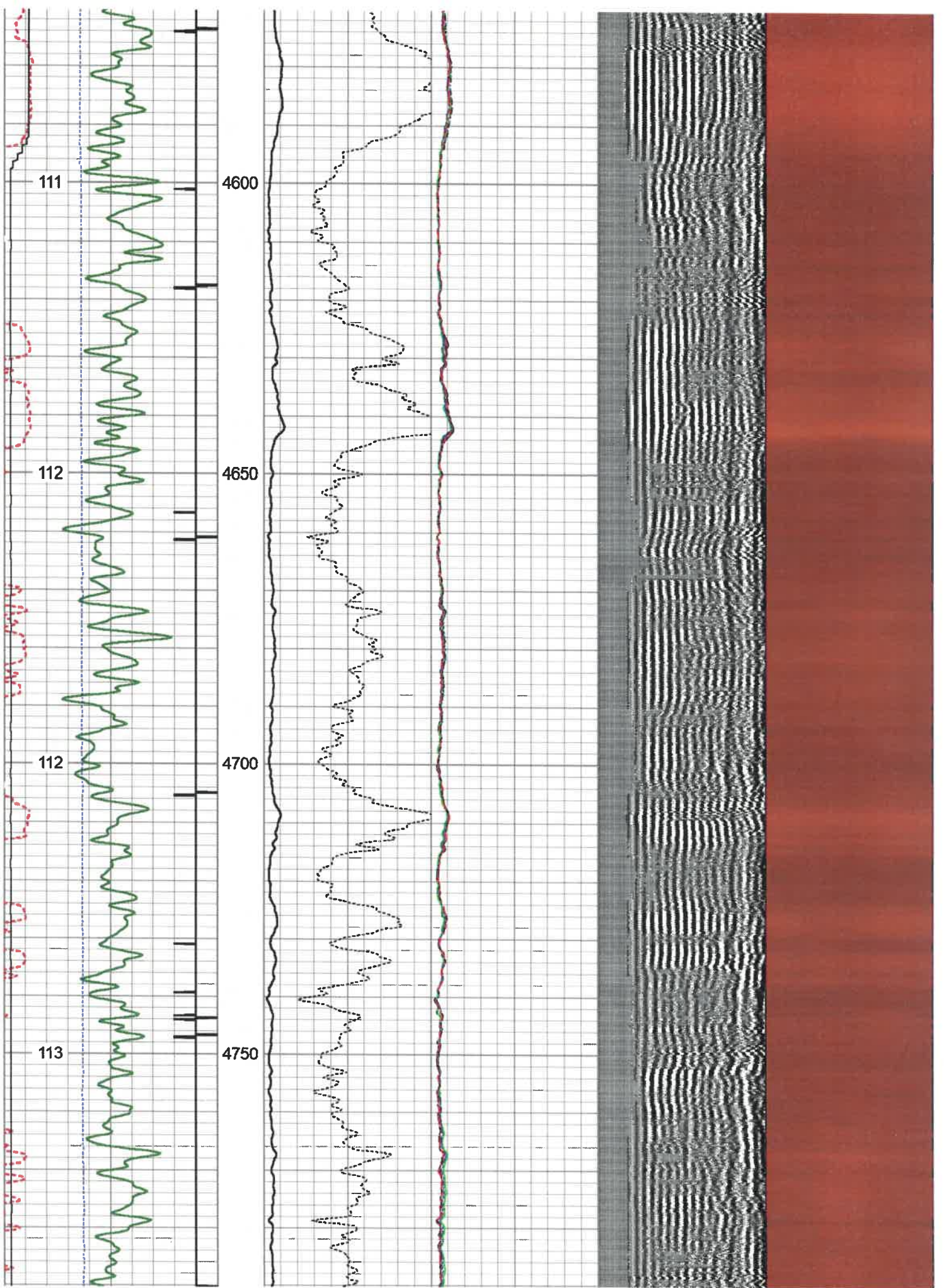


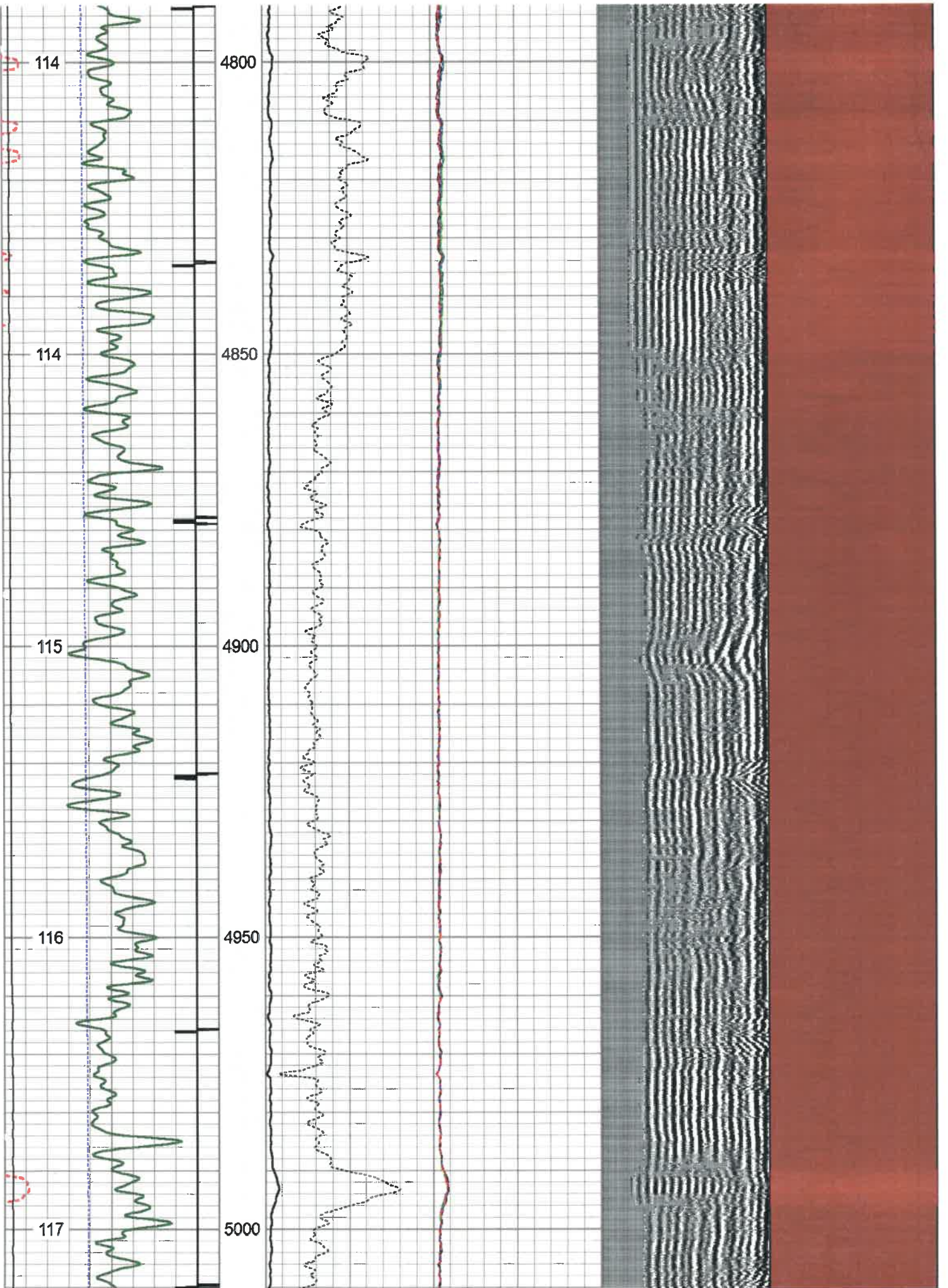


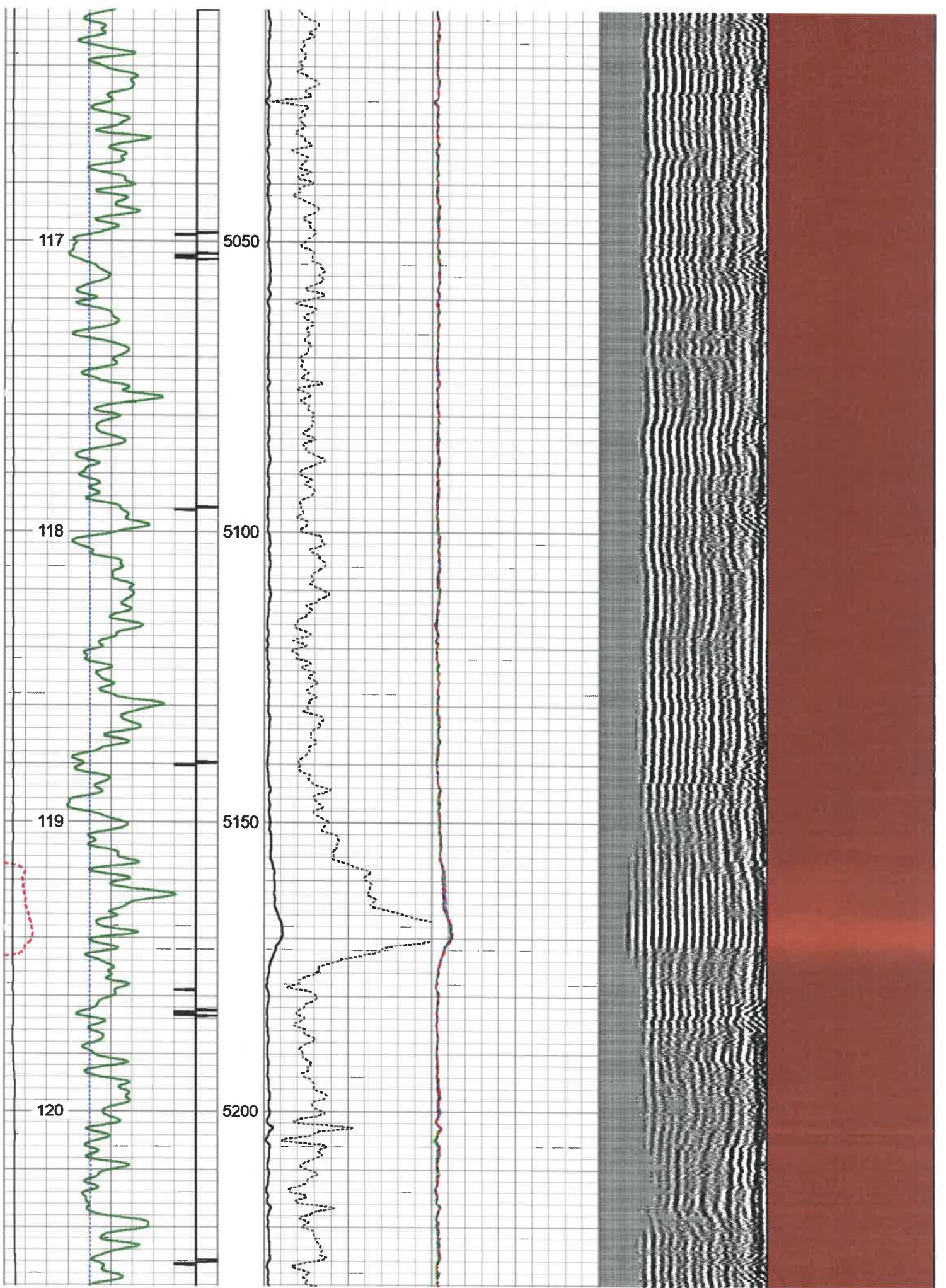


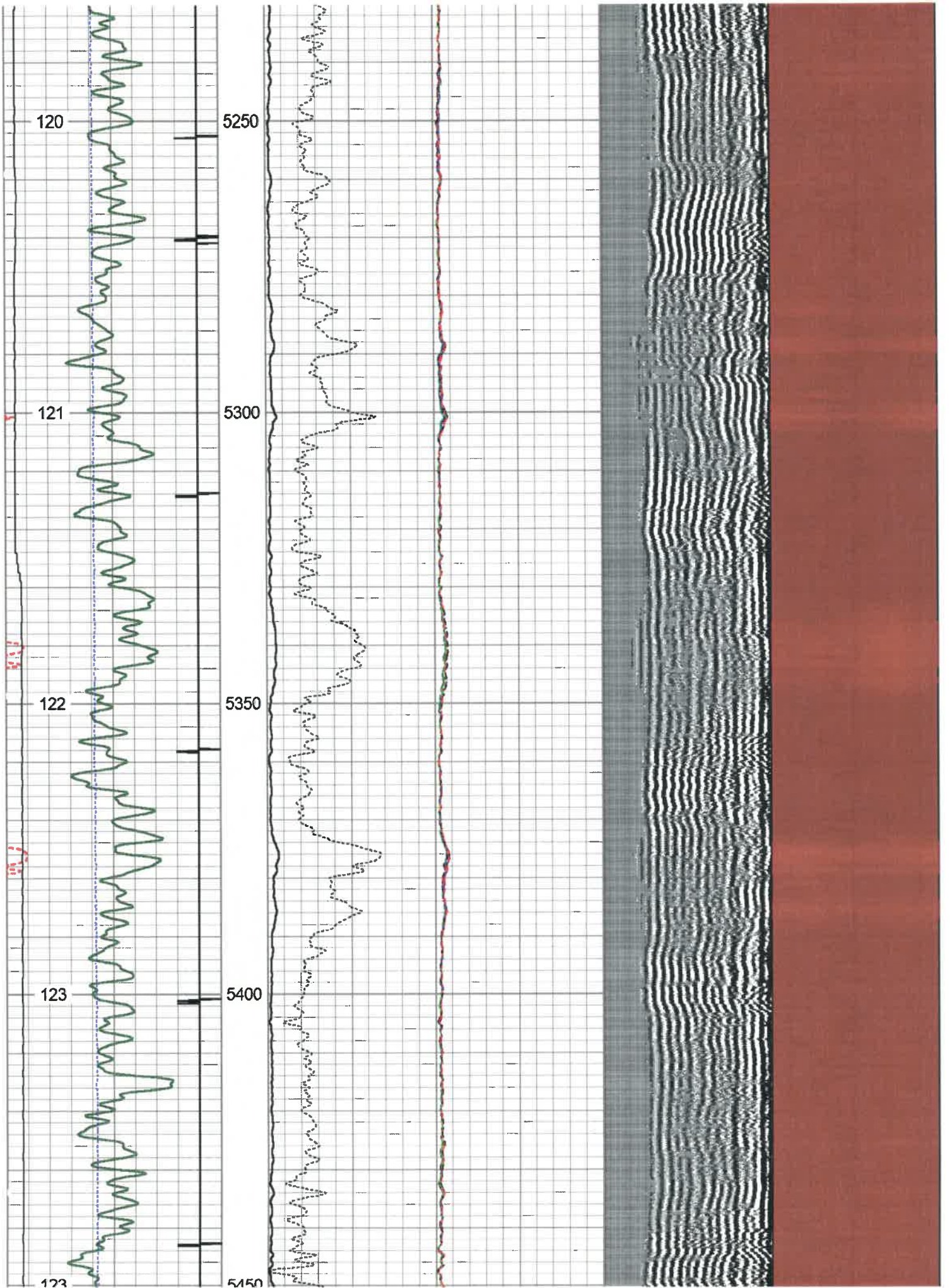


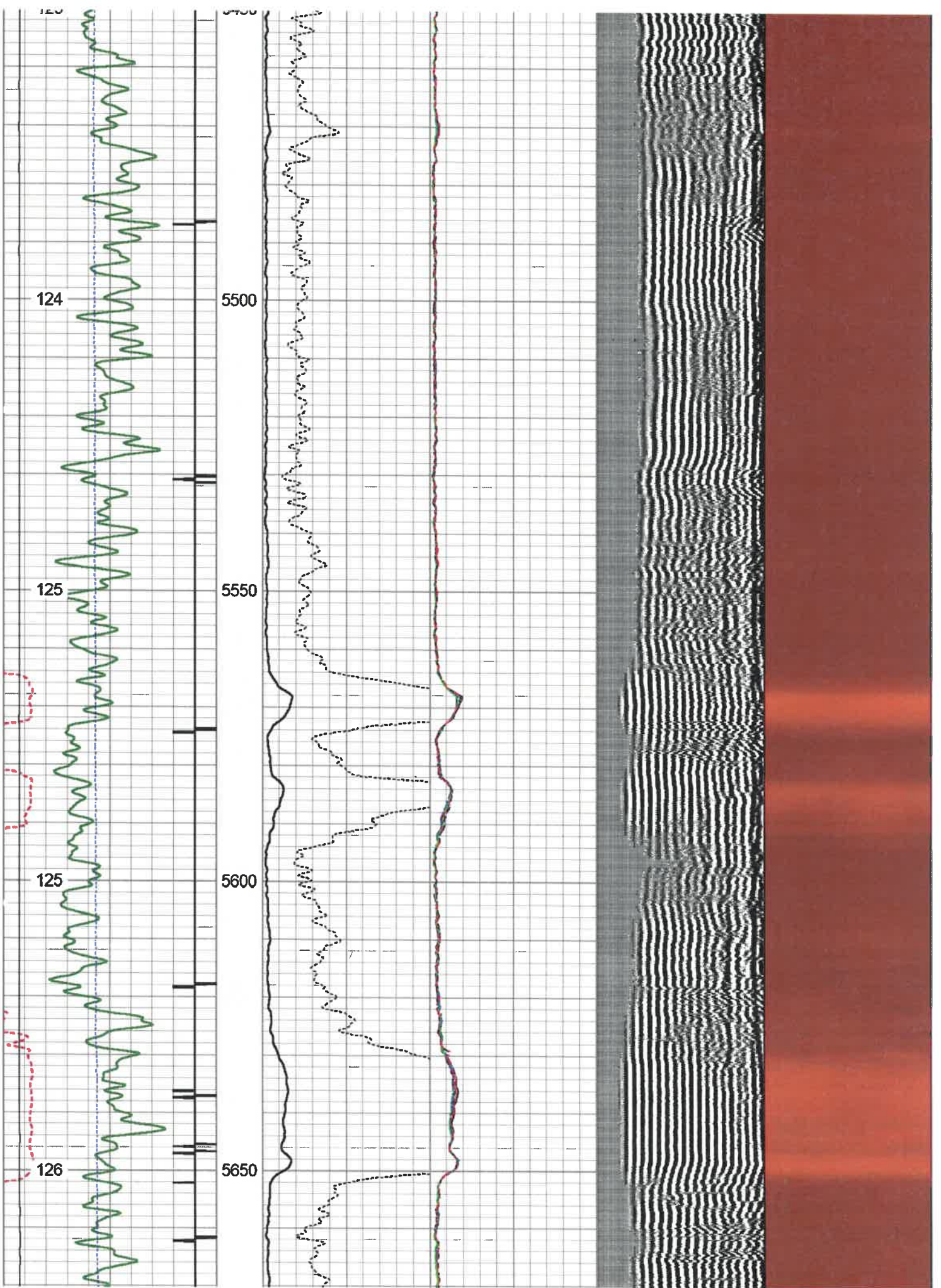


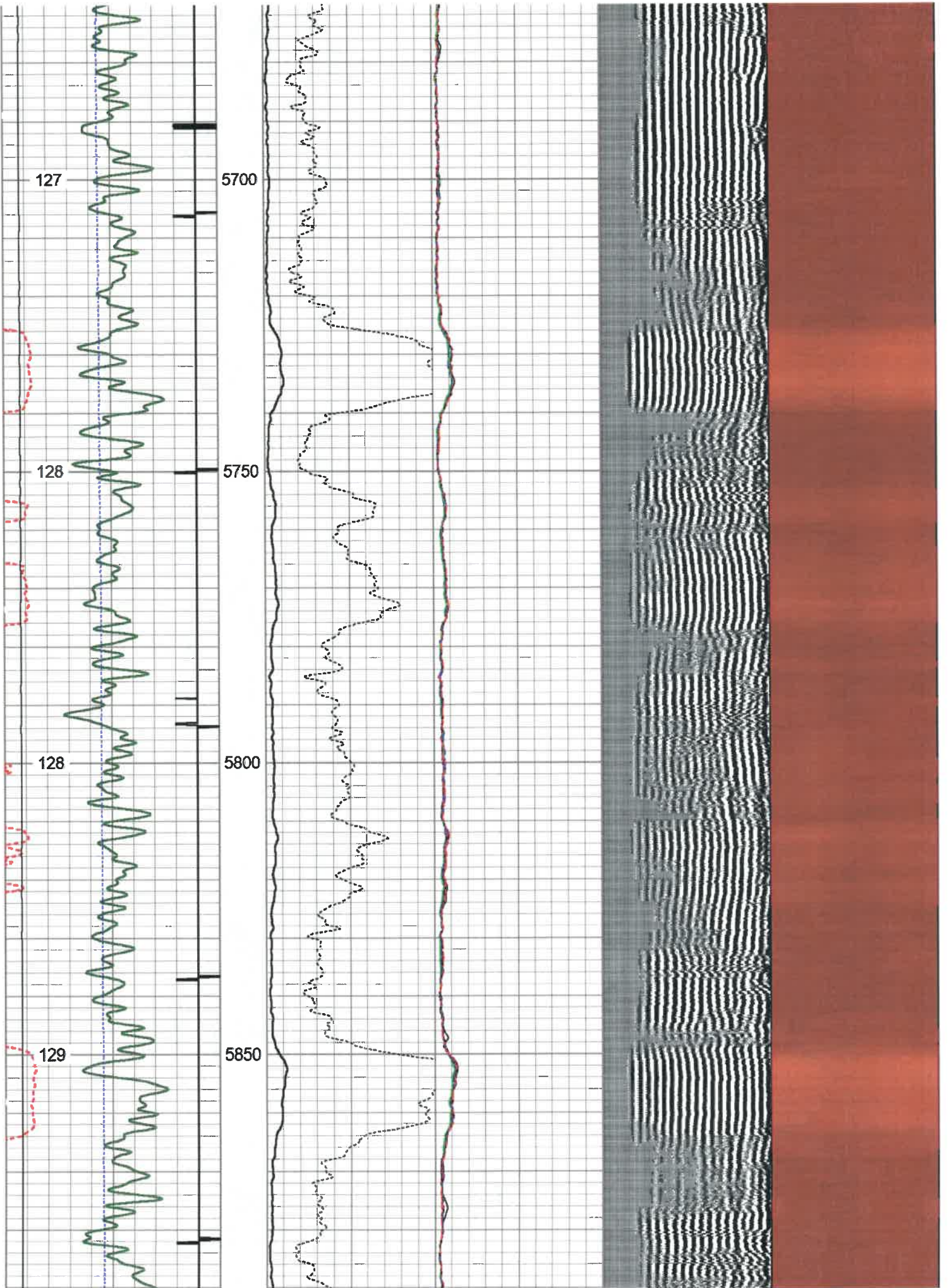


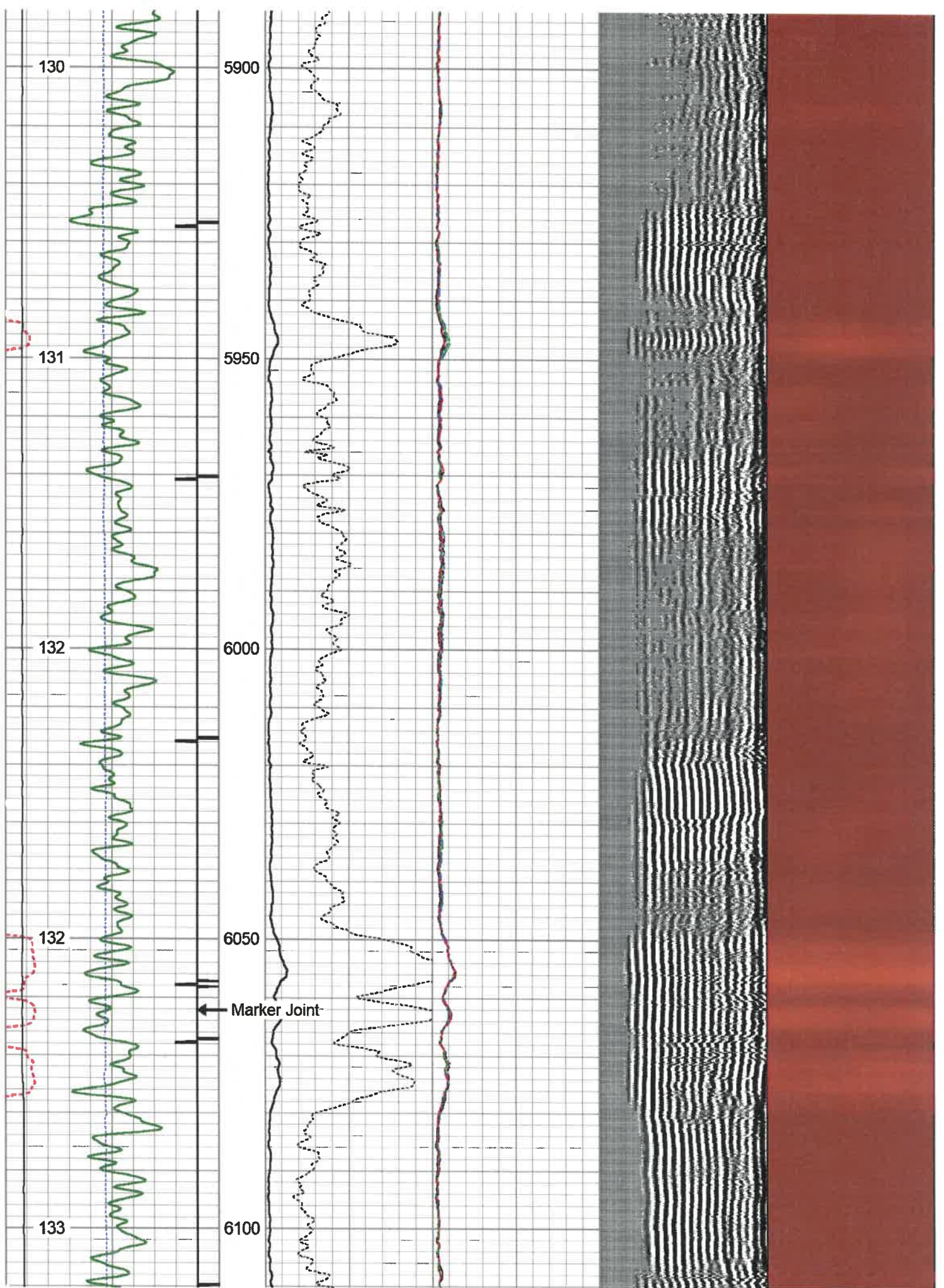


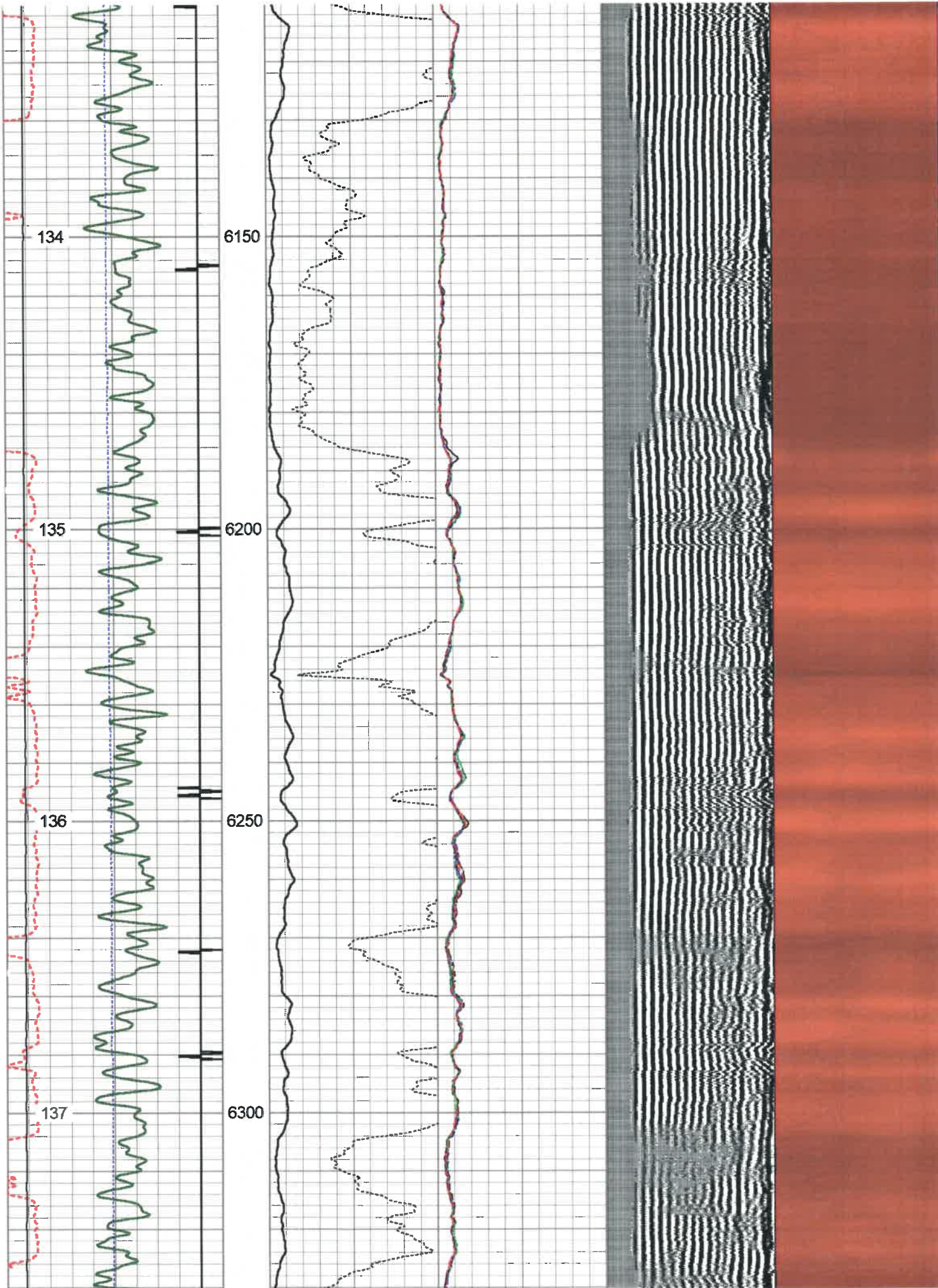


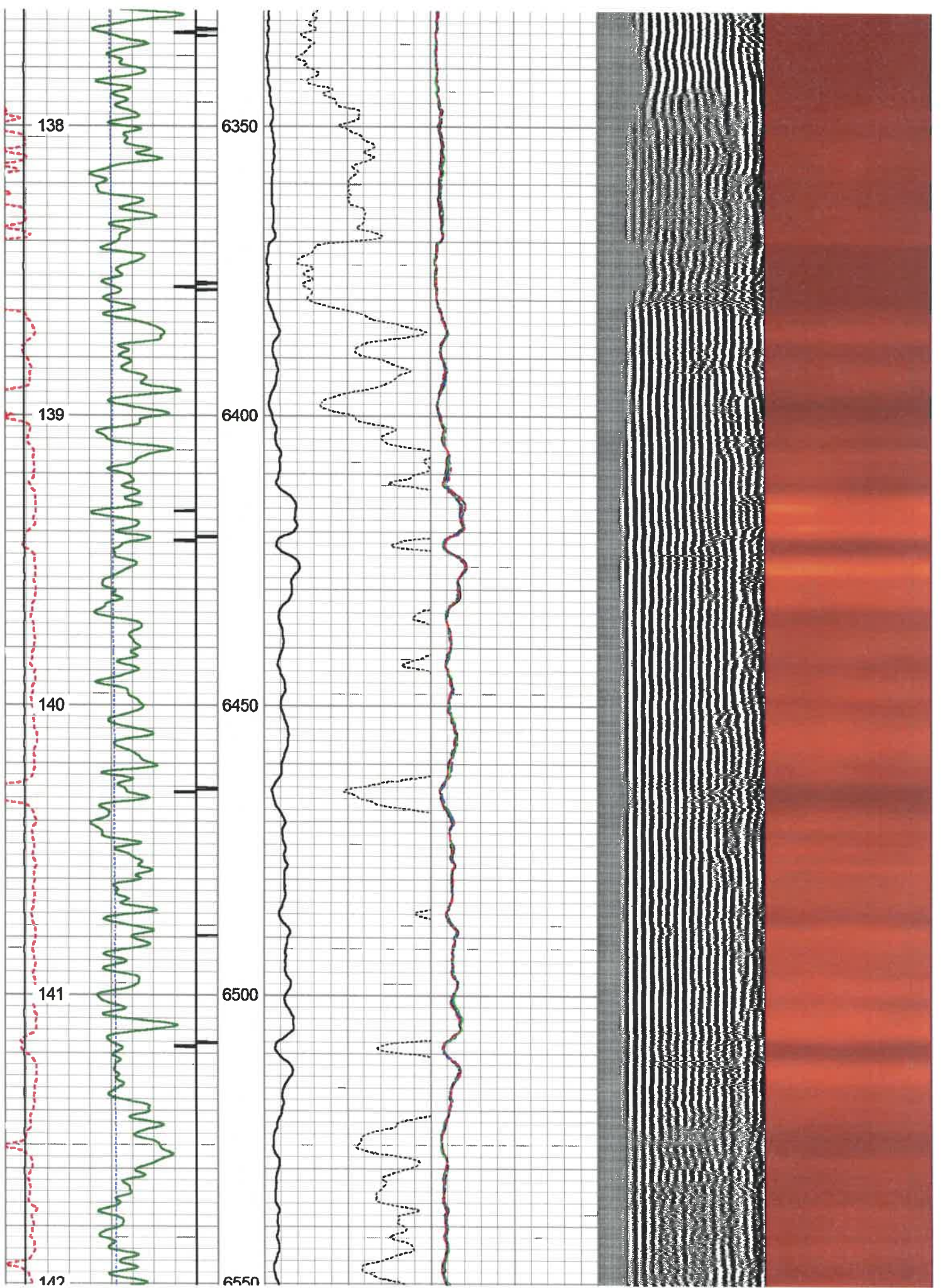


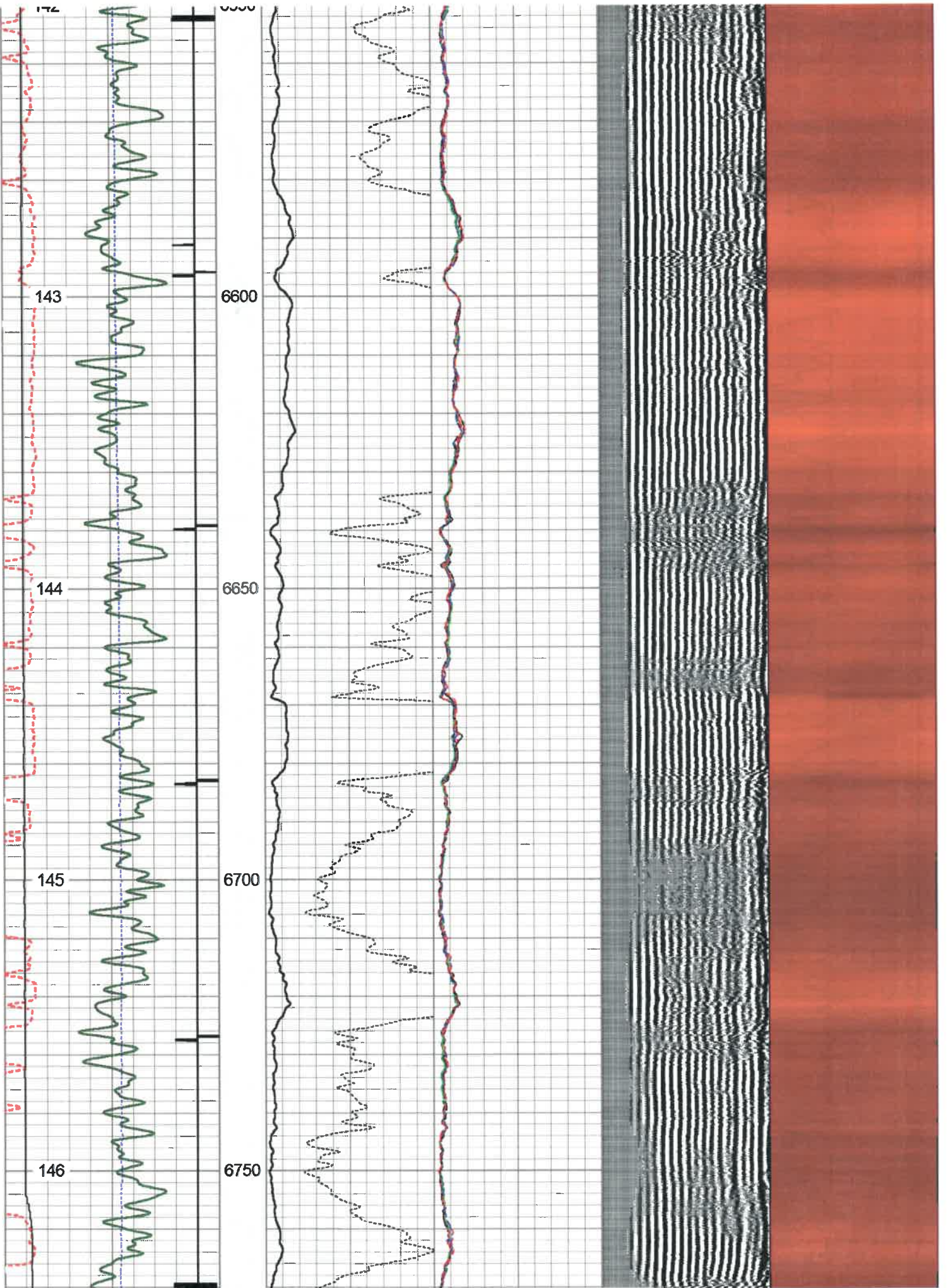


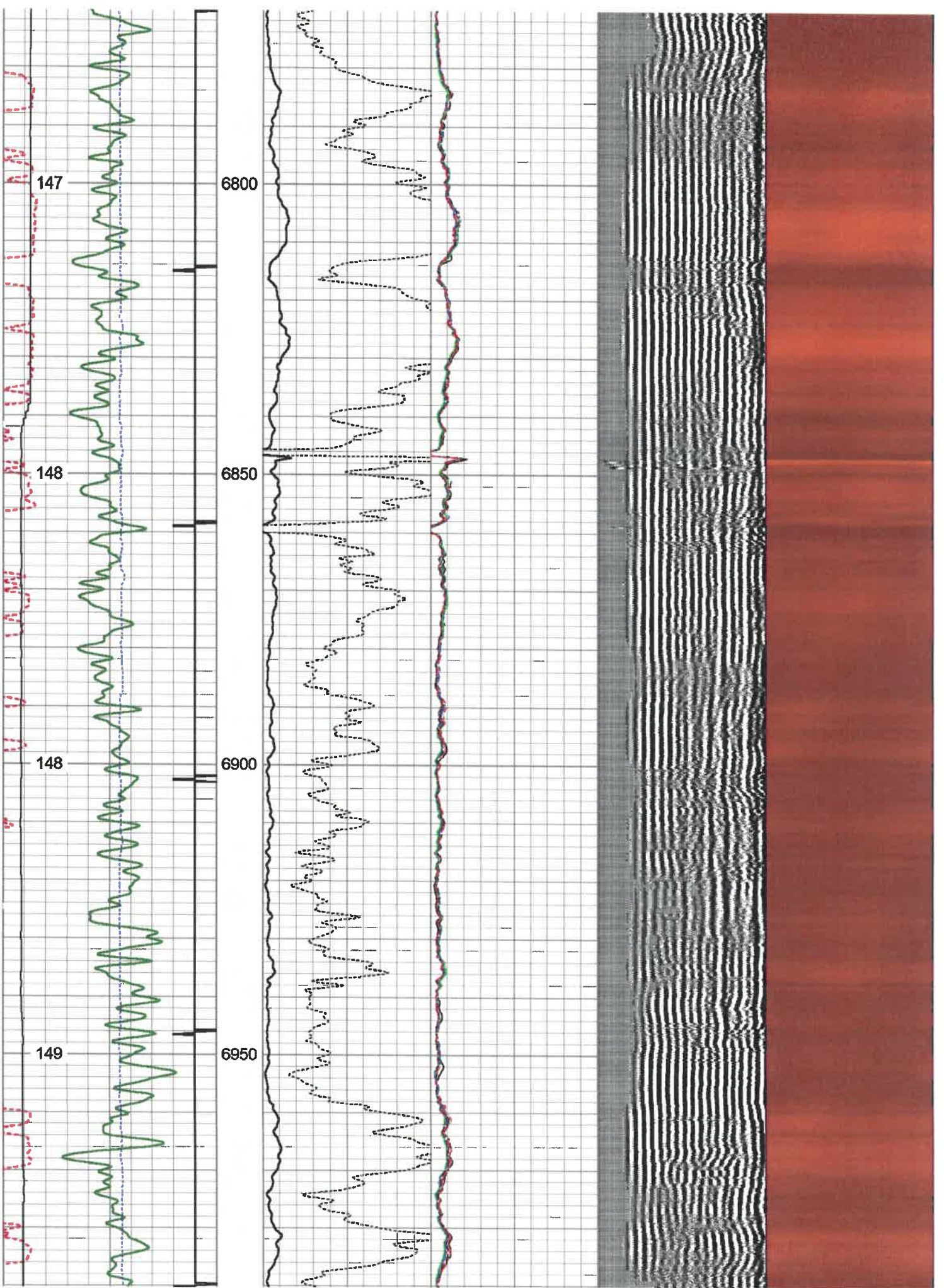


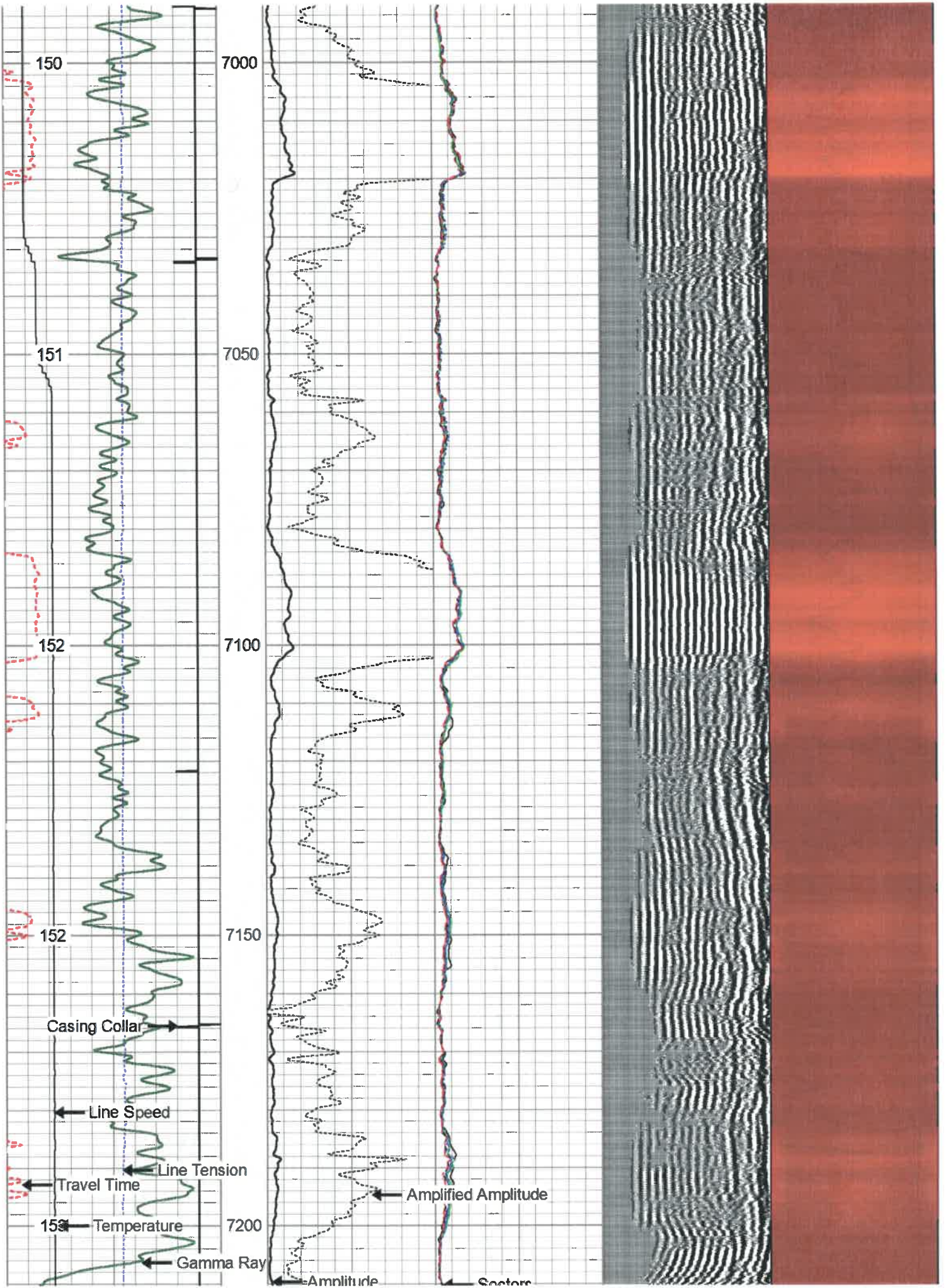


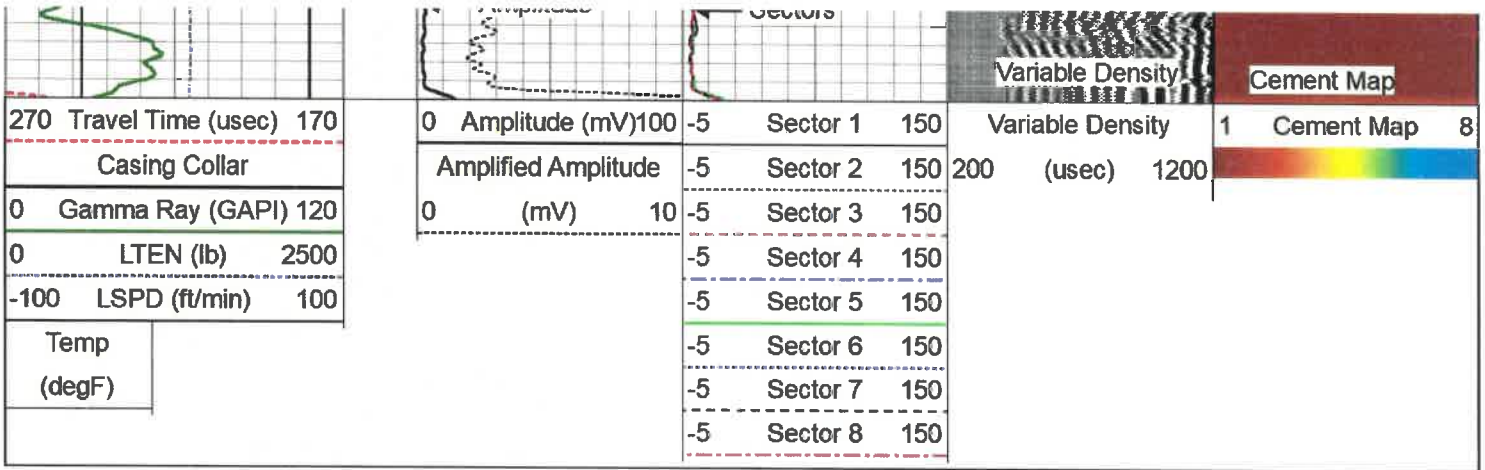






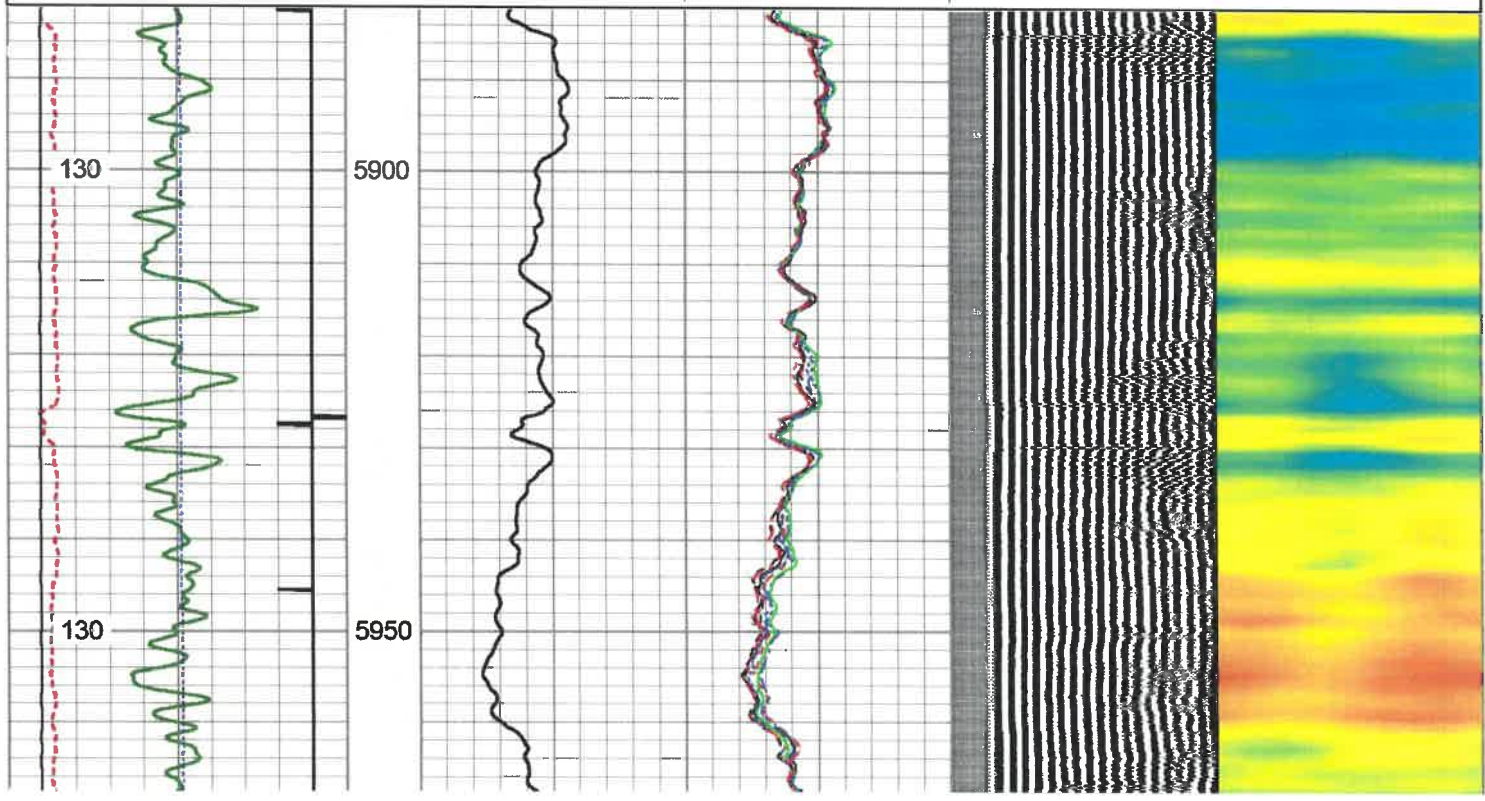
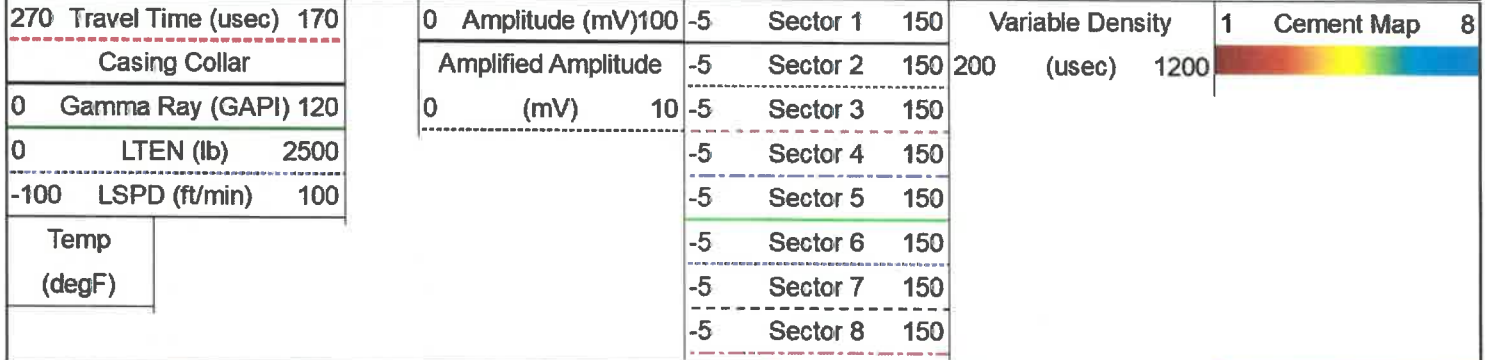


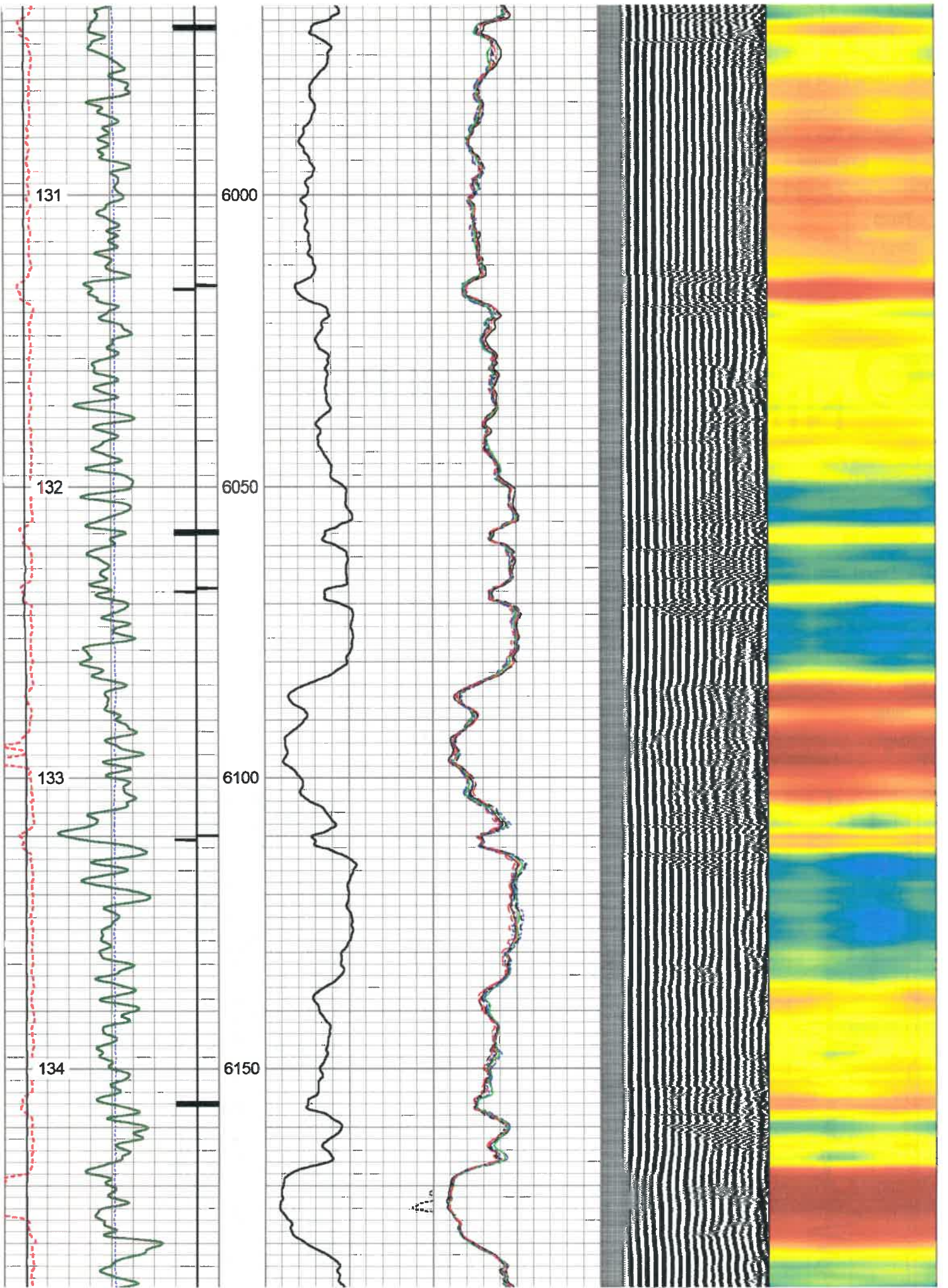


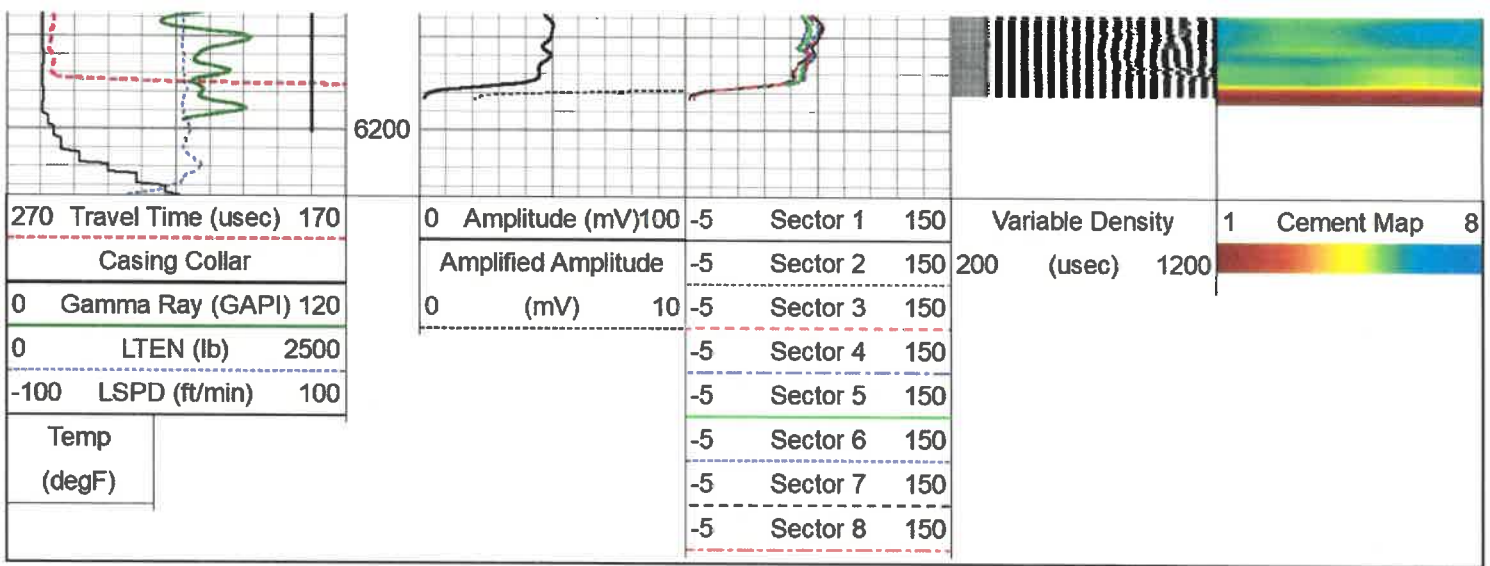



Repeat Pass 0 PSI

Database File antero_george_scott_laser_2h_rcbl_nineenergy_03_dec_2020.db
 Dataset Pathname south_canton/laser2h/rcbl/pass6
 Presentation Format rcbl 2
 Dataset Creation Fri Jan 03 16:31:18 2020
 Charted by Depth in Feet scaled 1:240







Log Variables

DatabaseC:\ProgramData\Warrior\Data\antero_george_scott_laser_2h_rcbl_nineenergy_03_dec_2020
 Dataset south_canton/laser2h/rcbl/pass8.2/_vars_

Top - Bottom

BHTEMP_Src	BOREID	BOTTEMP	CASEOD	CASETHCK	CASEWGHT	MAXAMPL	MINAMPL
TEMP	in	degF	in	in	lb/ft	mV	mV
	8.75	153	5.5	0.361	20	72	2.2
MINATTN	PERFS	PPT	SRFTEMP	TDEPTH			
db/ft		usec	degF	ft			
10.6	No	261	55	7220			

Variable Description

BHTEMP_Src : BHTEMP Input Source Selector
 BOREID : Borehole I.D.
 BOTTEMP : Bottom Hole Temperature
 CASEOD : Casing O.D.
 CASETHCK : Casing Thickness
 CASEWGHT : Casing Weight
 MAXAMPL : Maximum Amplitude

MINAMPL : Minimum Amplitude
 MINATTN : Minimum Attenuation
 PERFS : Perforation Flag
 PPT : Predicted Pipe Time
 SRFTEMP : Surface Temperature
 TDEPTH : Total Depth

Calibration Report

Database File antero_george_scott_laser_2h_rcbl_nineenergy_03_dec_2020.db
 Dataset Pathname south_canton/laser2h/rcbl/pass8.2
 Dataset Creation Fri Jan 03 18:30:37 2020

Gamma Ray Calibration Report

Serial Number: FW1211-86
 Tool Model: Probe
 Performed: Fri Jan 03 15:15:35 2020

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: 250.233 ft

Master Calibration, performed (Derived):


	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.047	1.840	2.200	71.921	38.887	0.364
CAL	0.419	1.222				
5'	0.017	1.560	2.200	71.921	45.185	1.433
SUM						
S1	0.058	1.743	0.000	100.000	59.357	-3.441
S2	0.062	1.914	0.000	100.000	54.005	-3.340
S3	0.047	1.928	0.000	100.000	53.185	-2.526
S4	0.052	1.920	0.000	100.000	53.527	-2.788
S5	0.063	1.860	0.000	100.000	55.653	-3.506
S6	0.054	1.778	0.000	100.000	58.016	-3.142
S7	0.046	1.718	0.000	100.000	59.803	-2.732
S8	0.049	1.744	0.000	100.000	58.965	-2.860

Internal Reference Calibration, performed Thu Sep 27 16:01:58 2018:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.419	1.222	1.000	0.000

Air Zero Calibration, performed Fri Jan 03 15:06:42 2020:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Gain	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-Overbody Antelope (SP-919-0233)	1.67	4.88	5.00
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					
WVFS2	11.91					
WVFS1	11.91					
WVF3FT	11.91					
WVF5FT	10.91					
HeadVolt	7.66					
WVFCAL	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_george_scott_laser_2h_rcbl_nineenergy_03_dec_2020.db: south_canton/laser2h/rcbl/pass8.2
 Total length: 18.05 ft
 Total weight: 182.00 lb
 O.D.: 4.88 in



Company Antero Resources
Well Laser 2H
Field South Canton
County Doddridge
State West Virginia

