



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

Company		Antero Resources	
Well		George Scott Cortina Unit 3H	
Field		South Canton	
County		Doddridge	
State		West Virginia	
Location:		APL #: 47-017-06891	
Permanent Datum		SEC TWP RGE	
Log Measured From		Ground Level	
Drilling Measured From		Elevation	
Date		04-Jan-2020	
Run Number		One	
Depth Driller		19,038'	
Depth Logger		7,710'	
Bottom Logged Interval		7,710'	
Top Log Interval		Surface	
Open Hole Size		NA	
Type Fluid		Water	
Density / Viscosity		NA	
Max. Recorded Temp.		153 Deg. F.	
Estimated Cement Top		2,769'	
Time Well Ready		12:45	
Time Logger on Bottom		14:03	
Equipment Number		104 (P1)(G3)	
Location		Bentleyville, PA	
Recorded By		Matt McNally	
Witnessed By		Chad Roy	
Run Number		To	
Borehole Record		Tubing Record	
Bit		From	
Size		Weight	
From		From	
To		To	
Casing Record		Bottom	
Surface String		554'	
Size		2,664'	
13 3/8"		19,038'	
Prot. String			
9 5/8"			
Production String			
5 1/2"			
Liner			

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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 (6,423' - 6,433')
Depth Correction (-15')
Main Pass 1,500 PSI
Repeat Pass 0 PSI


Thank You For Choosing Nine Energy Service Wireline. Bentleyville, PA

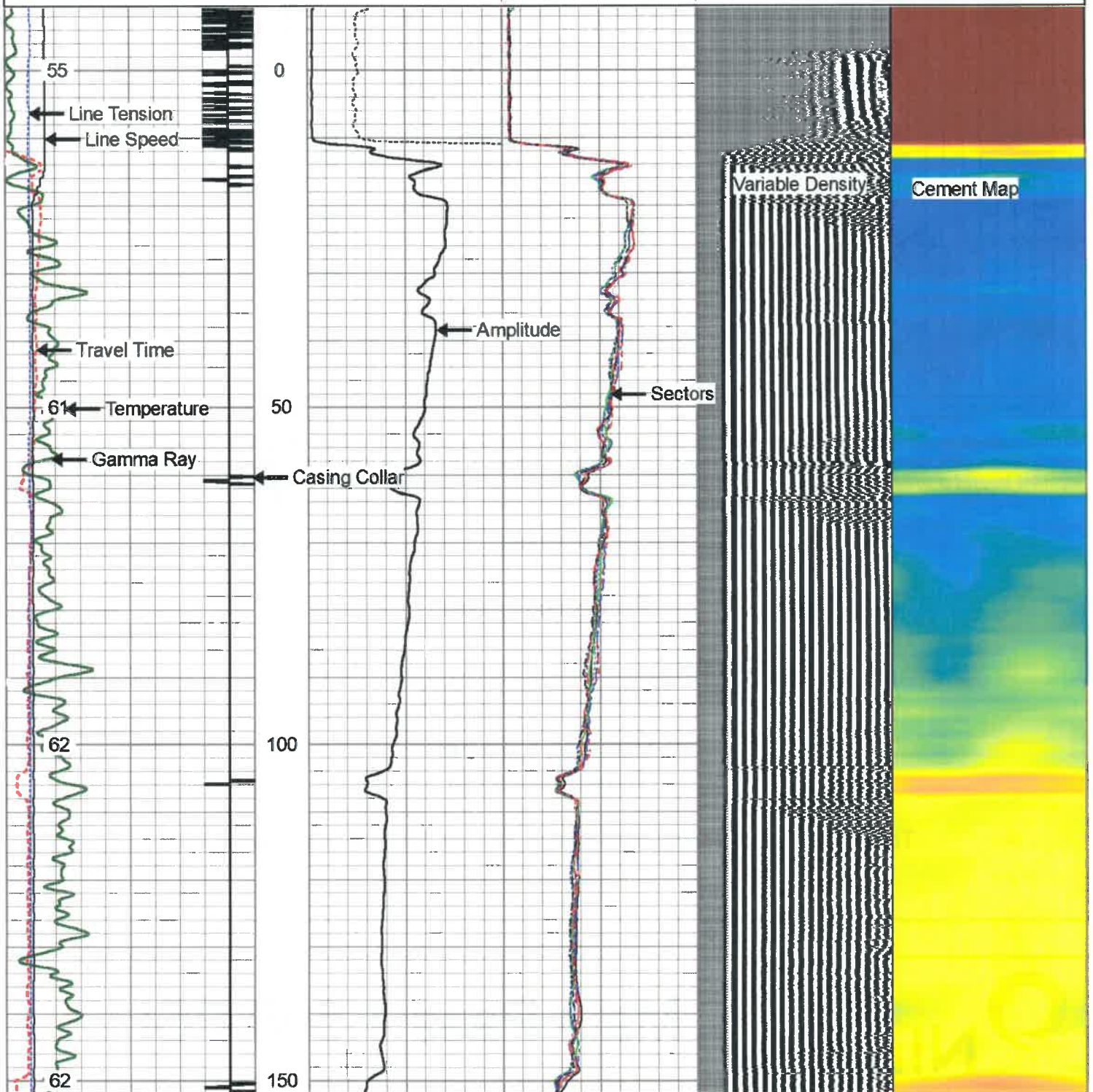
RECEIVED
 Office of Oil and Gas
 OCT 28 2020
 WV Department of
 Environmental Protection

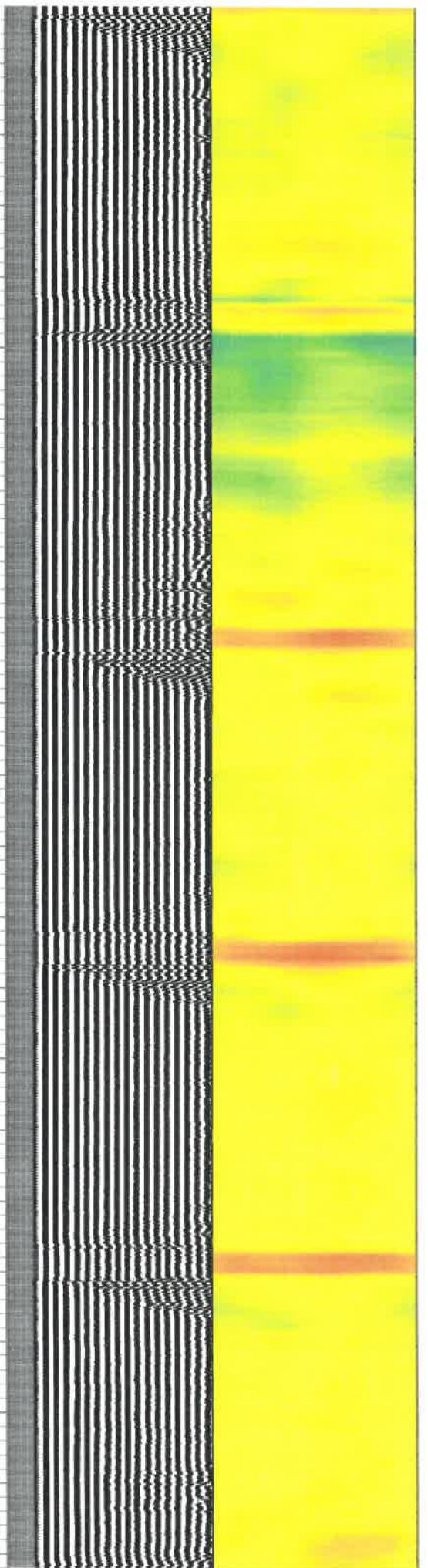
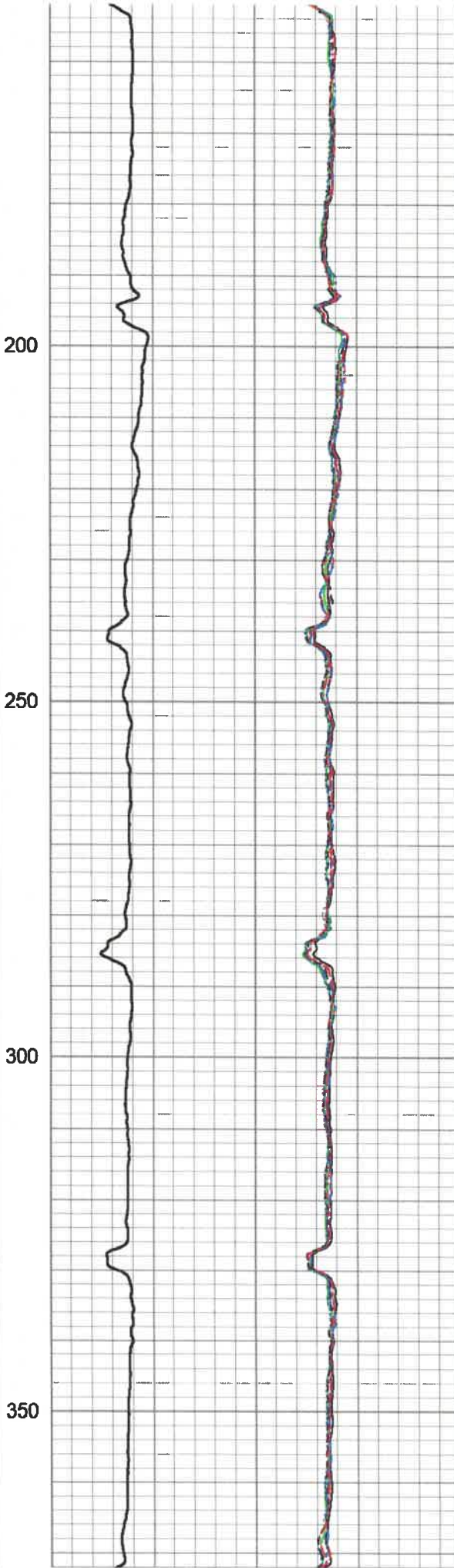
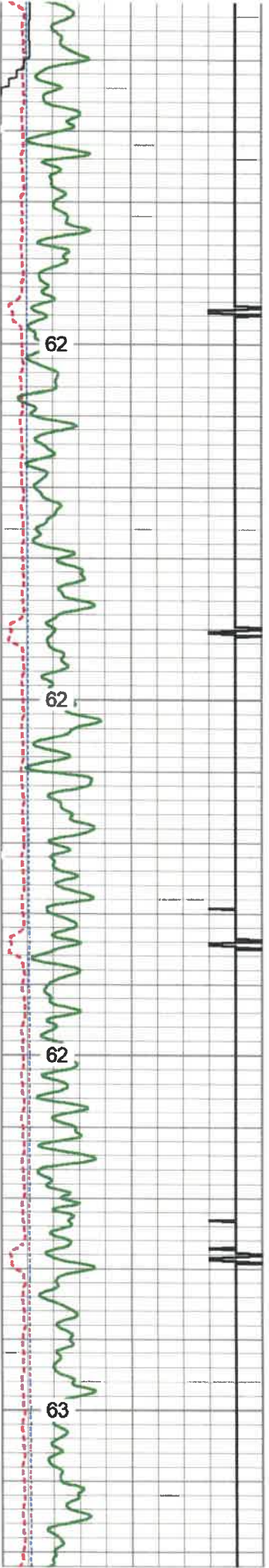


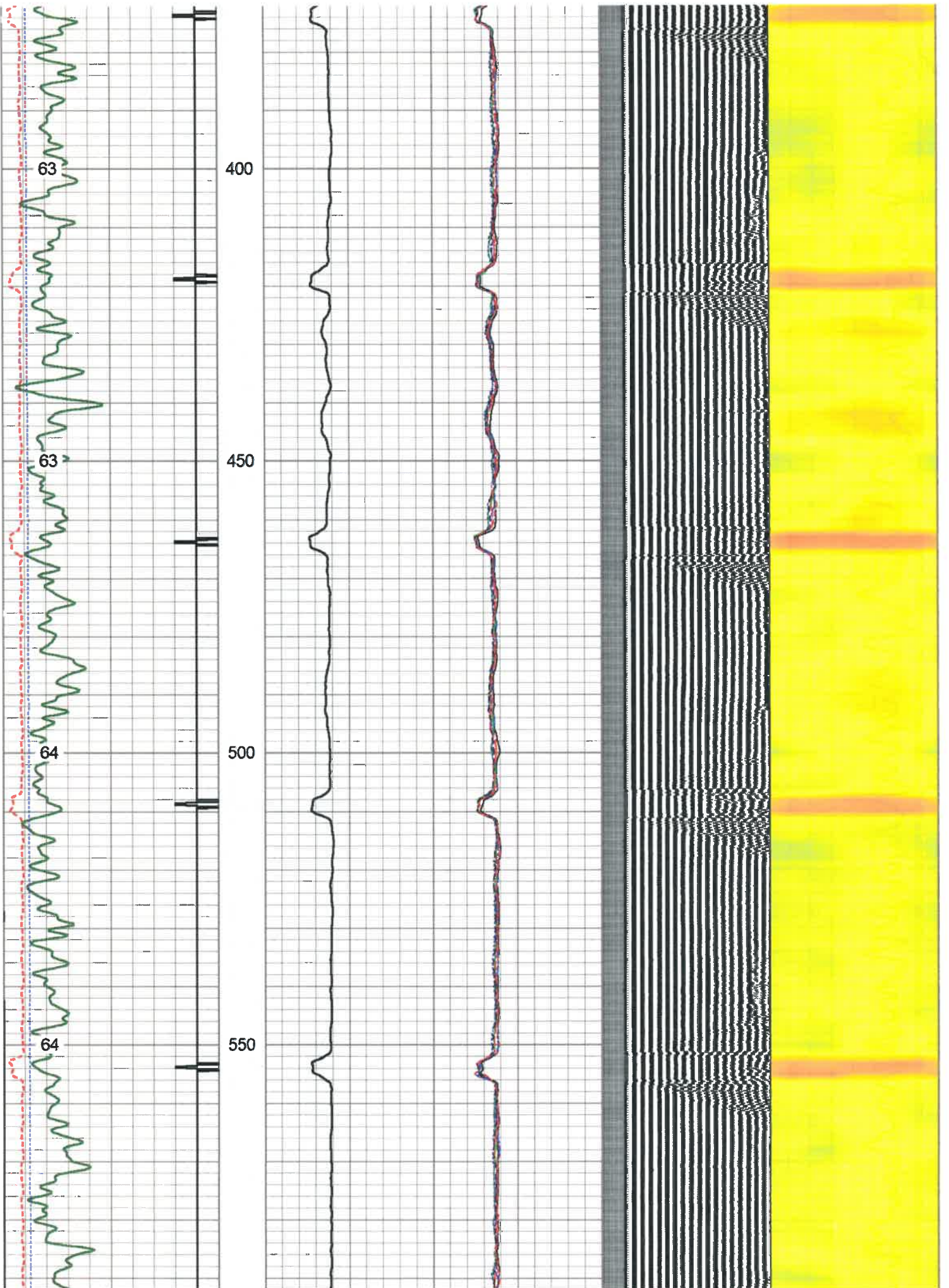
Main Pass 1,500 PSI

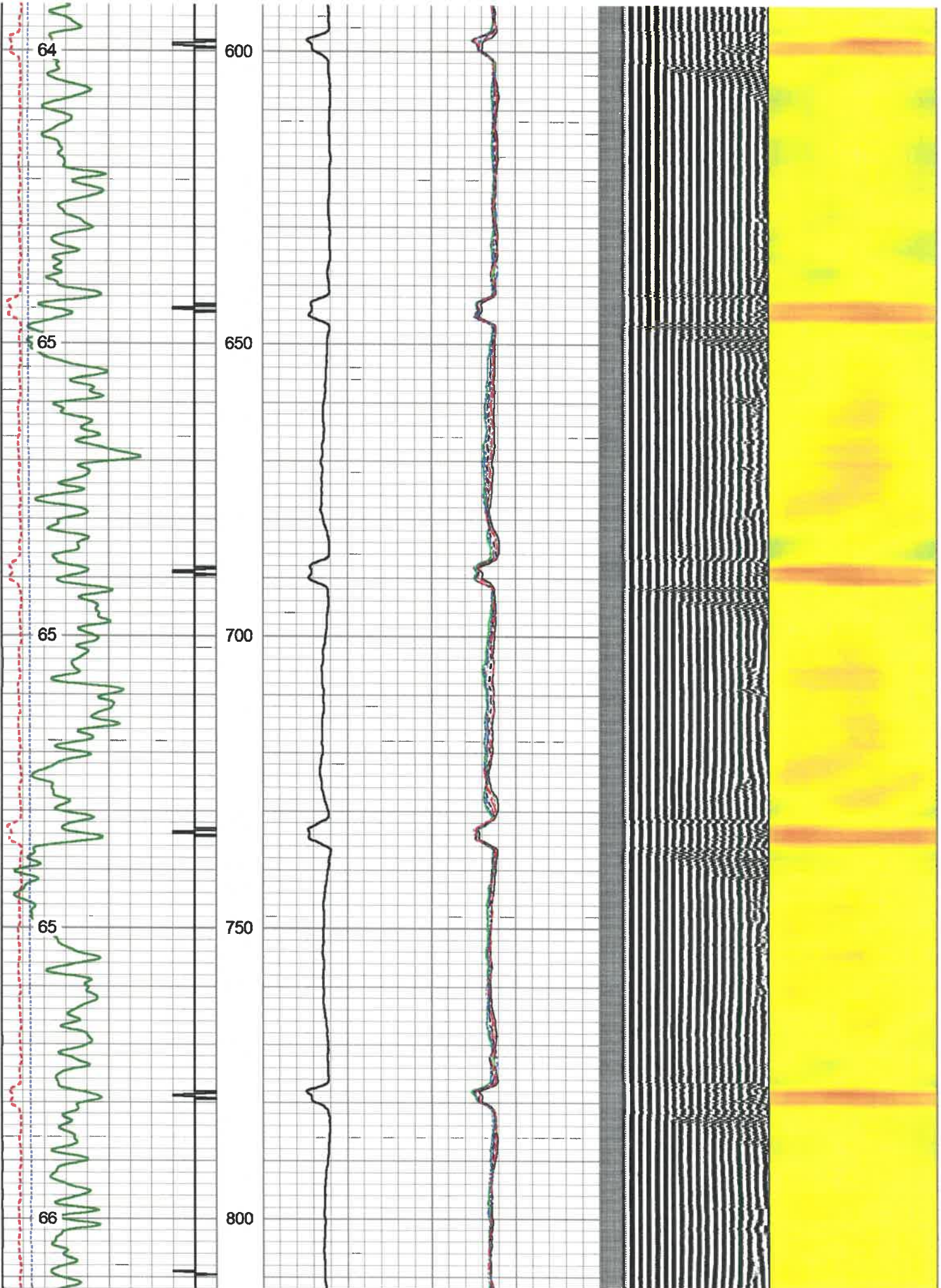
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 Dataset Pathname south_canton/cortina3h/rcbl/pass5.1
 Presentation Format rcbl 2
 Dataset Creation Sat Jan 04 15:32:30 2020
 Charted by Depth in Feet scaled 1:240

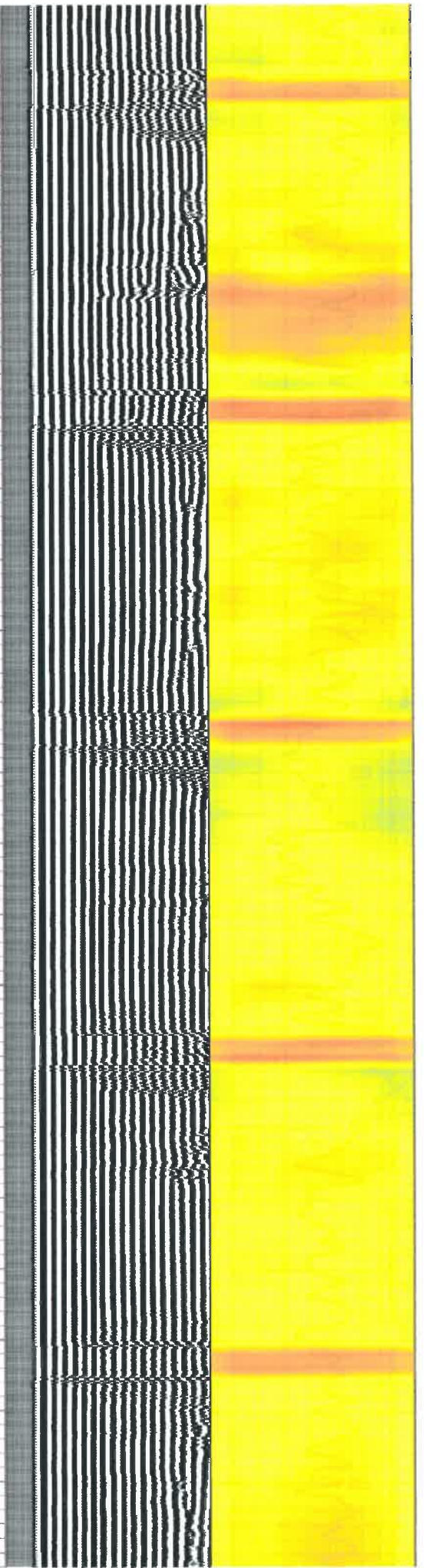
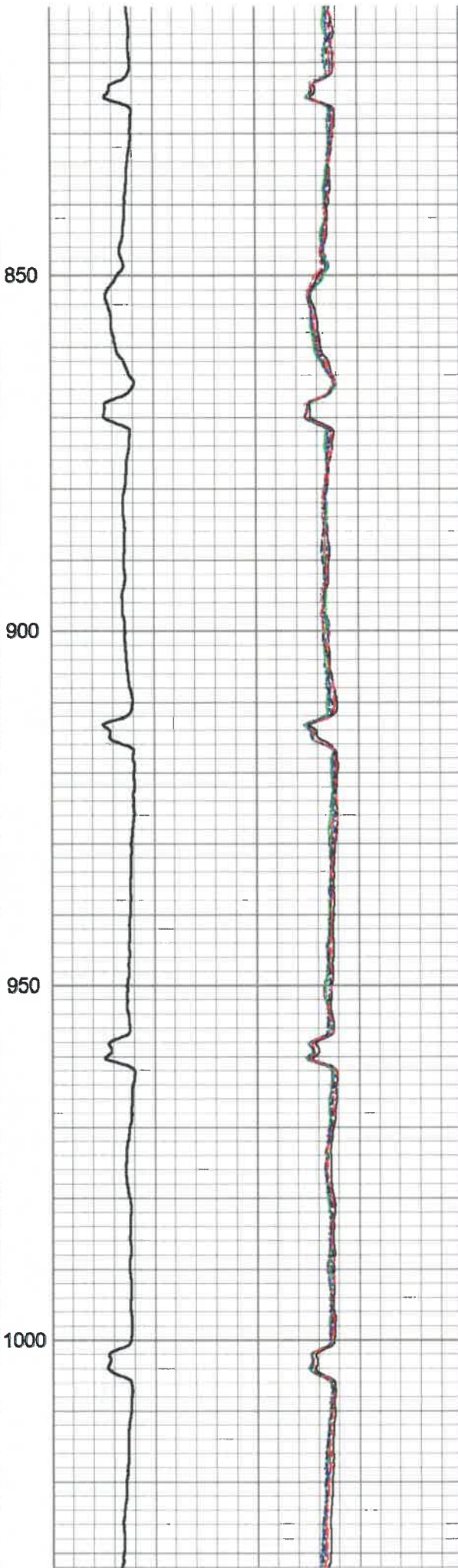
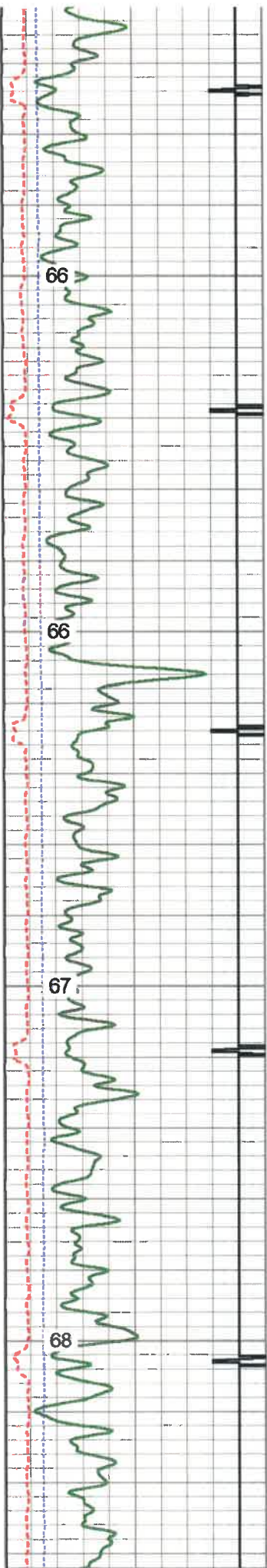
270	Travel Time (usec)	170	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
Casing Collar			Amplified Amplitude		-5	Sector 2	150	200	(usec)	1200		
0	Gamma Ray (GAPI)	120	0	(mV)	10	-5	Sector 3	150				
0	LTEN (lb)	2500										
-100	LSPD (ft/min)	100										
Temp												
(degF)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

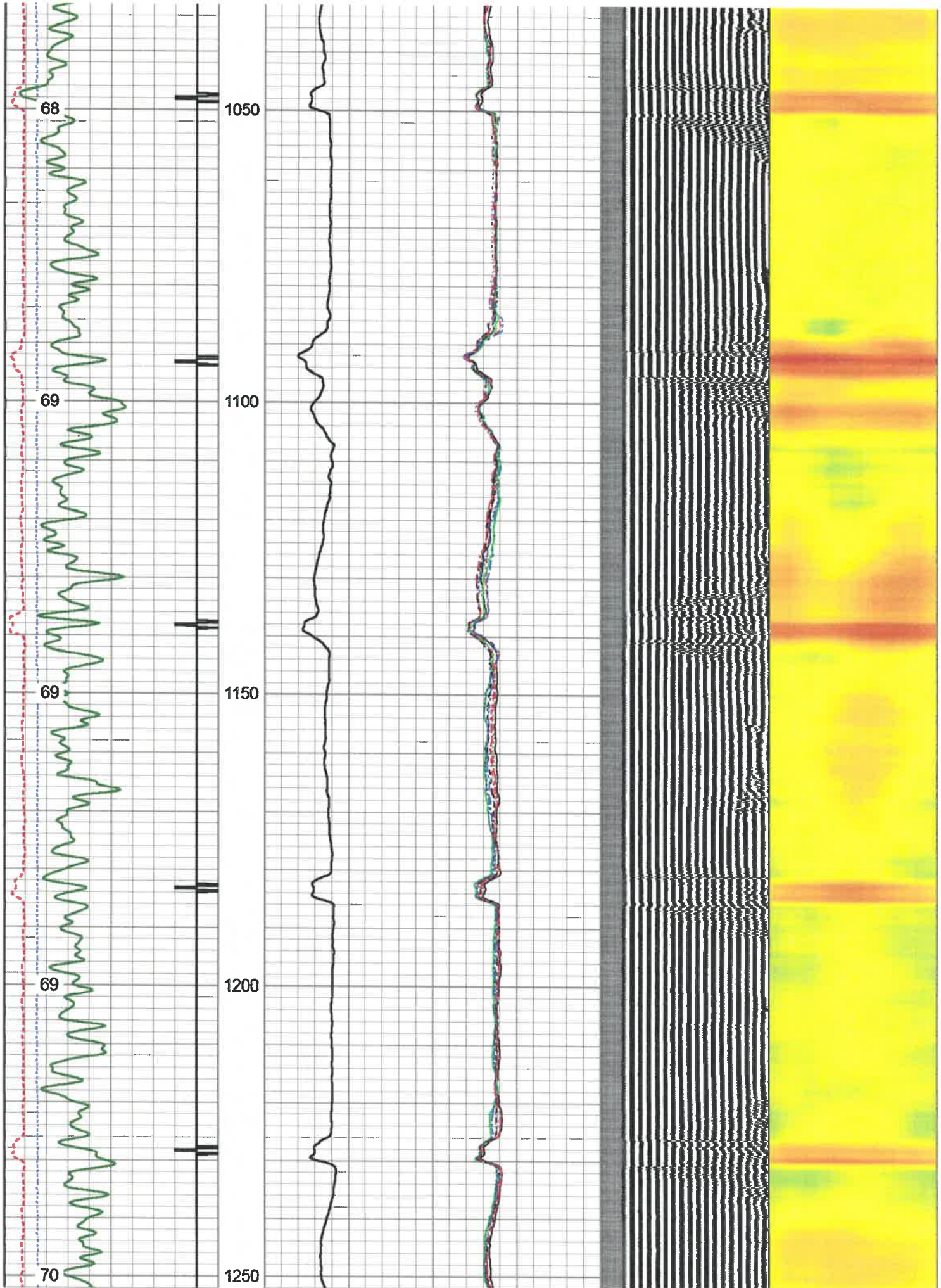


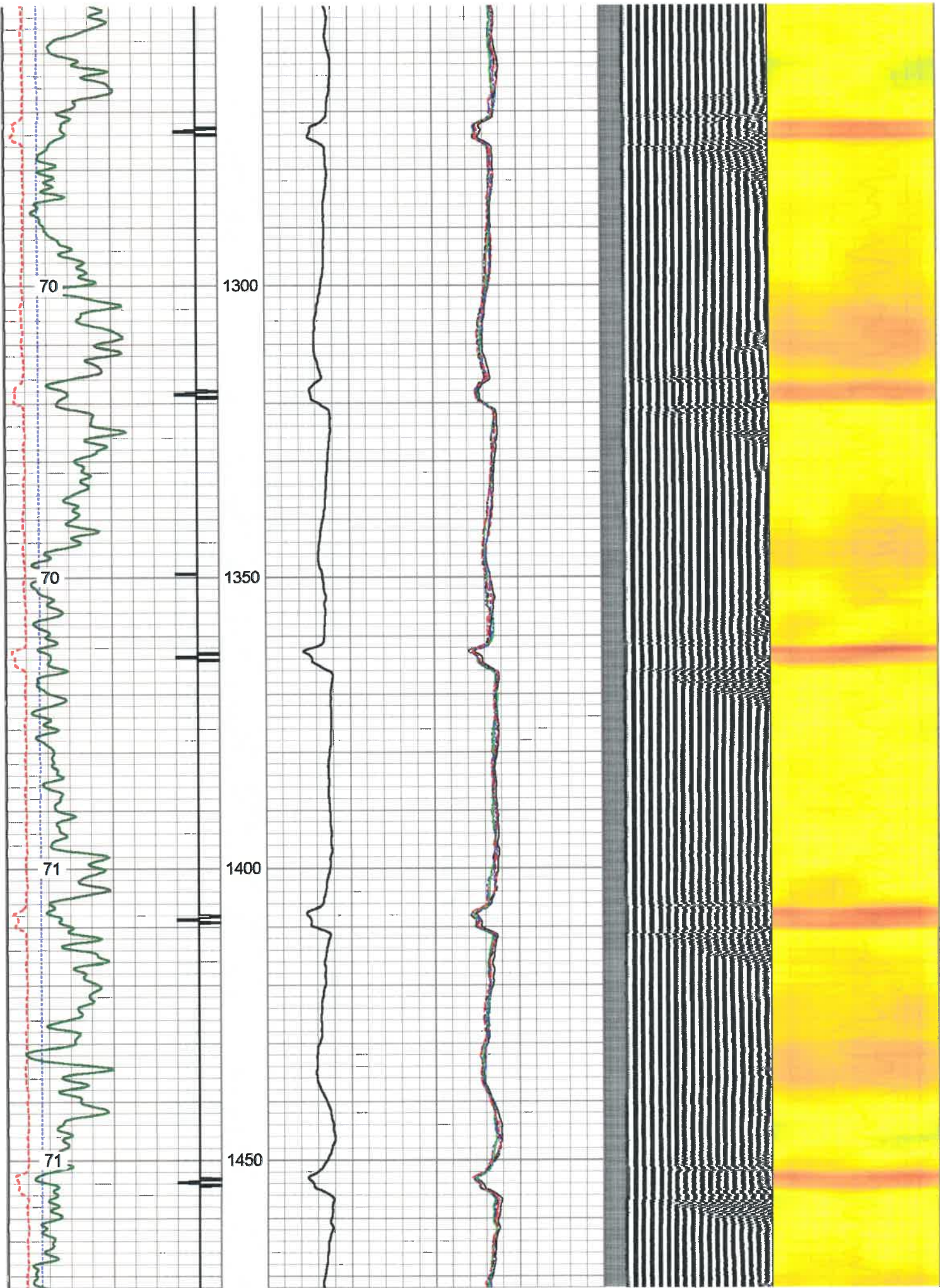


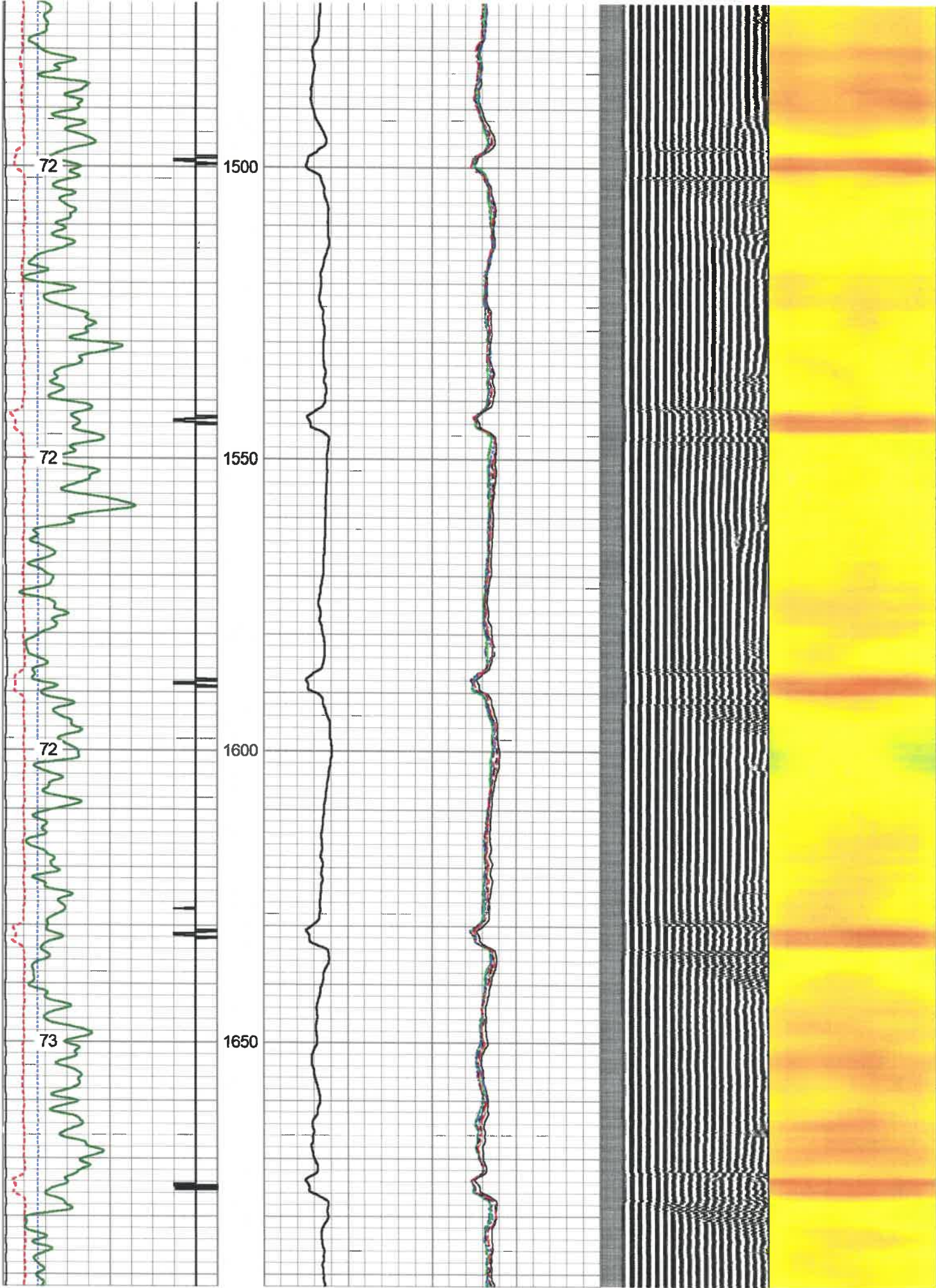


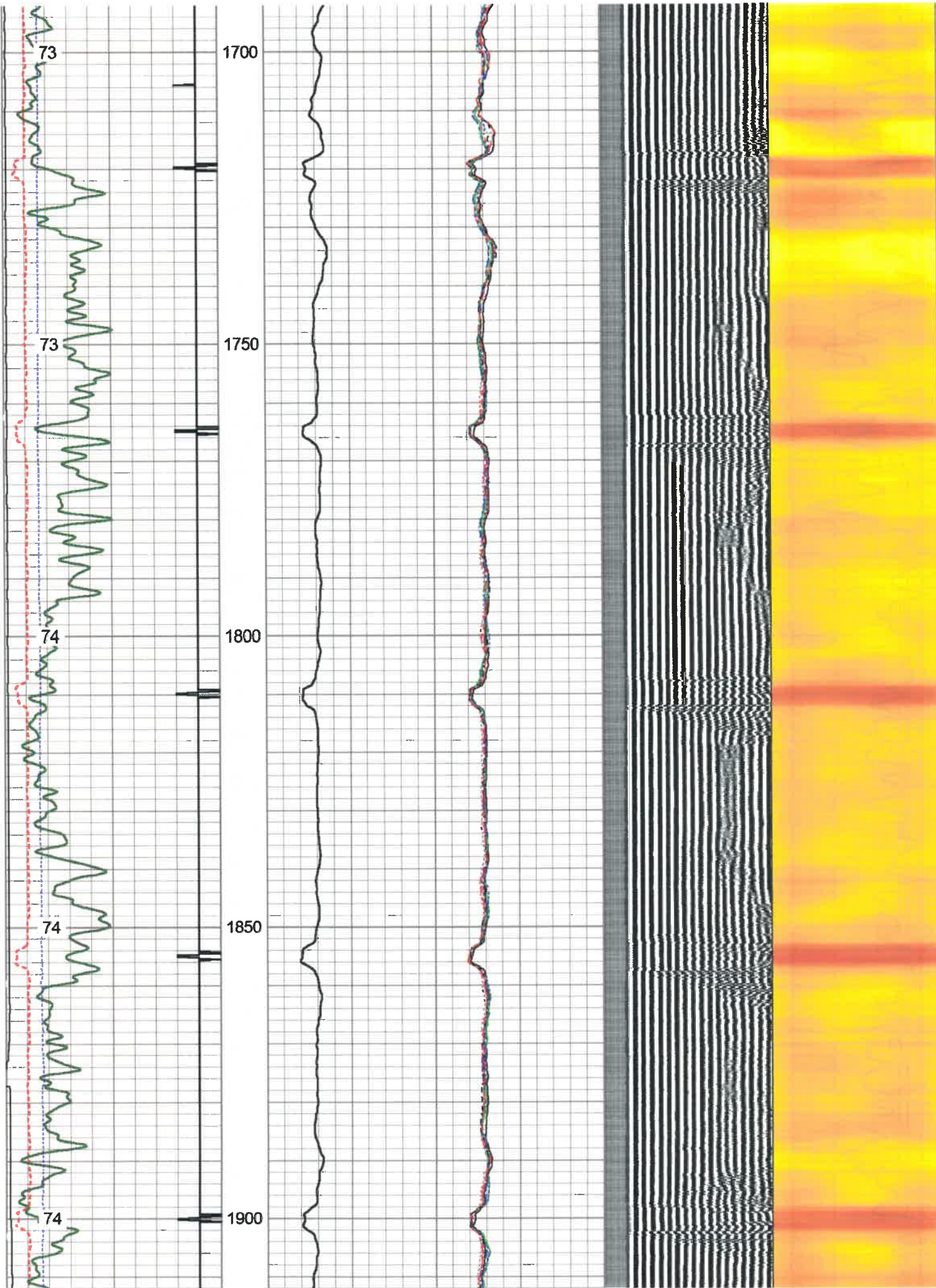


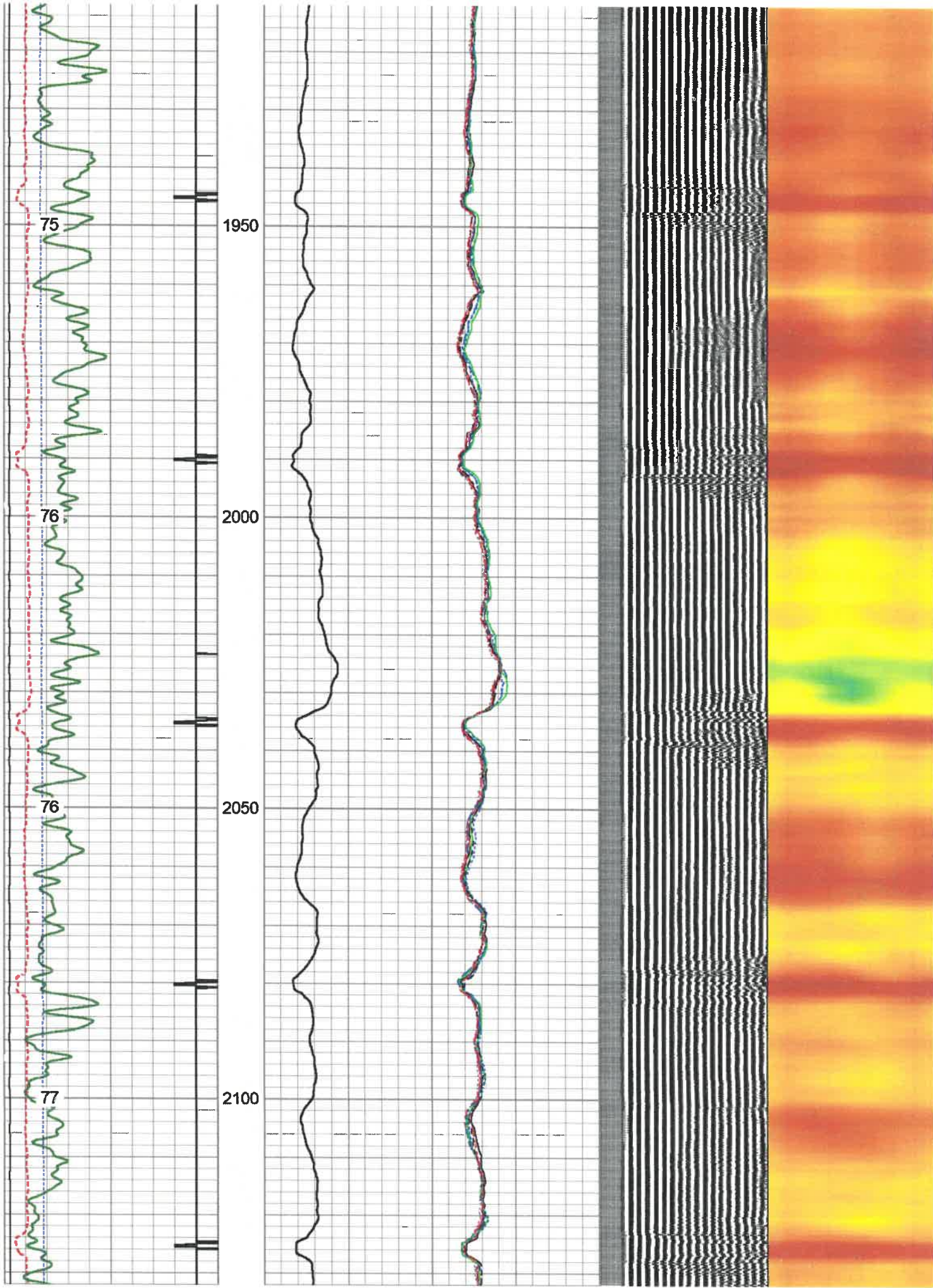


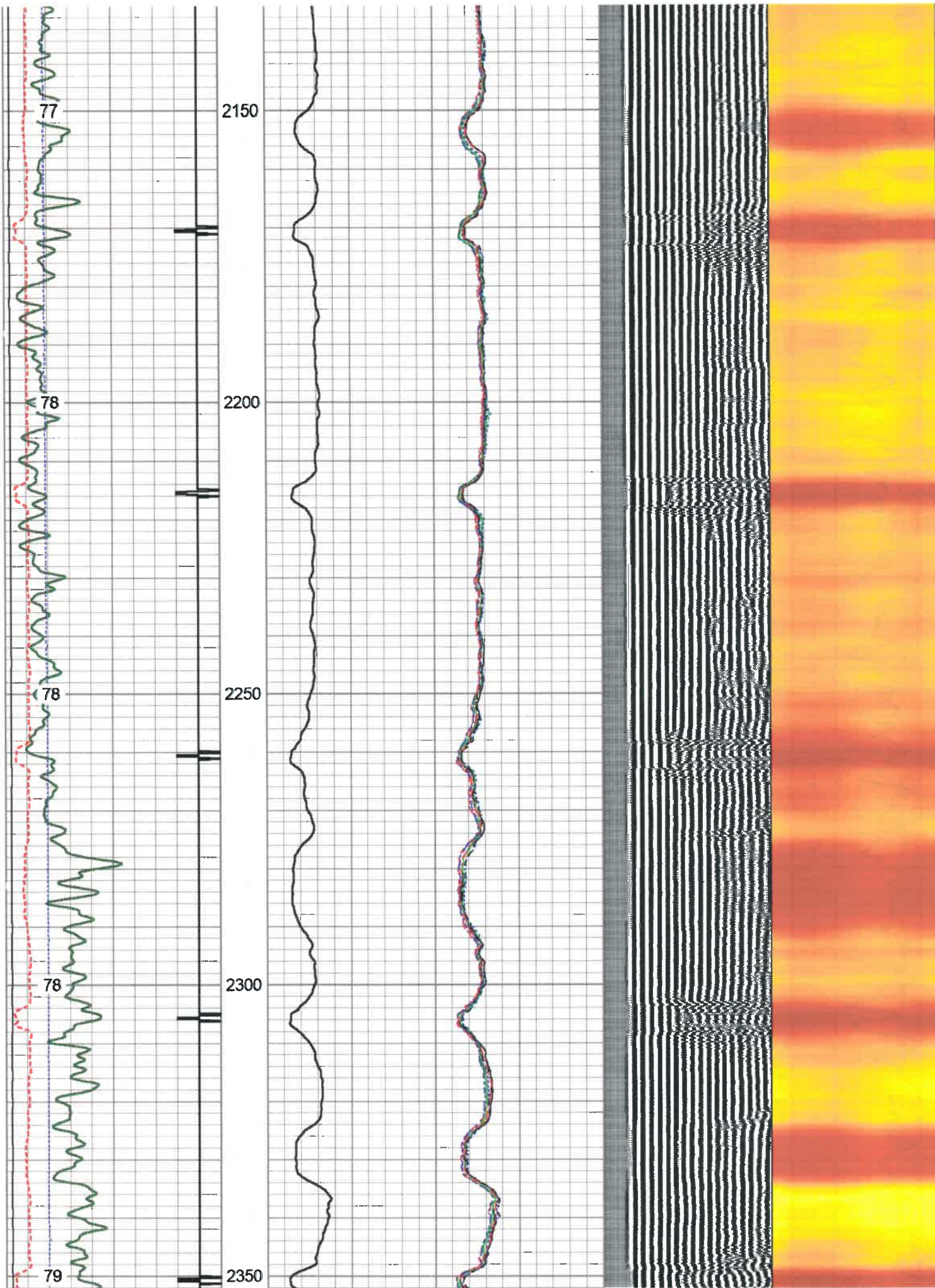


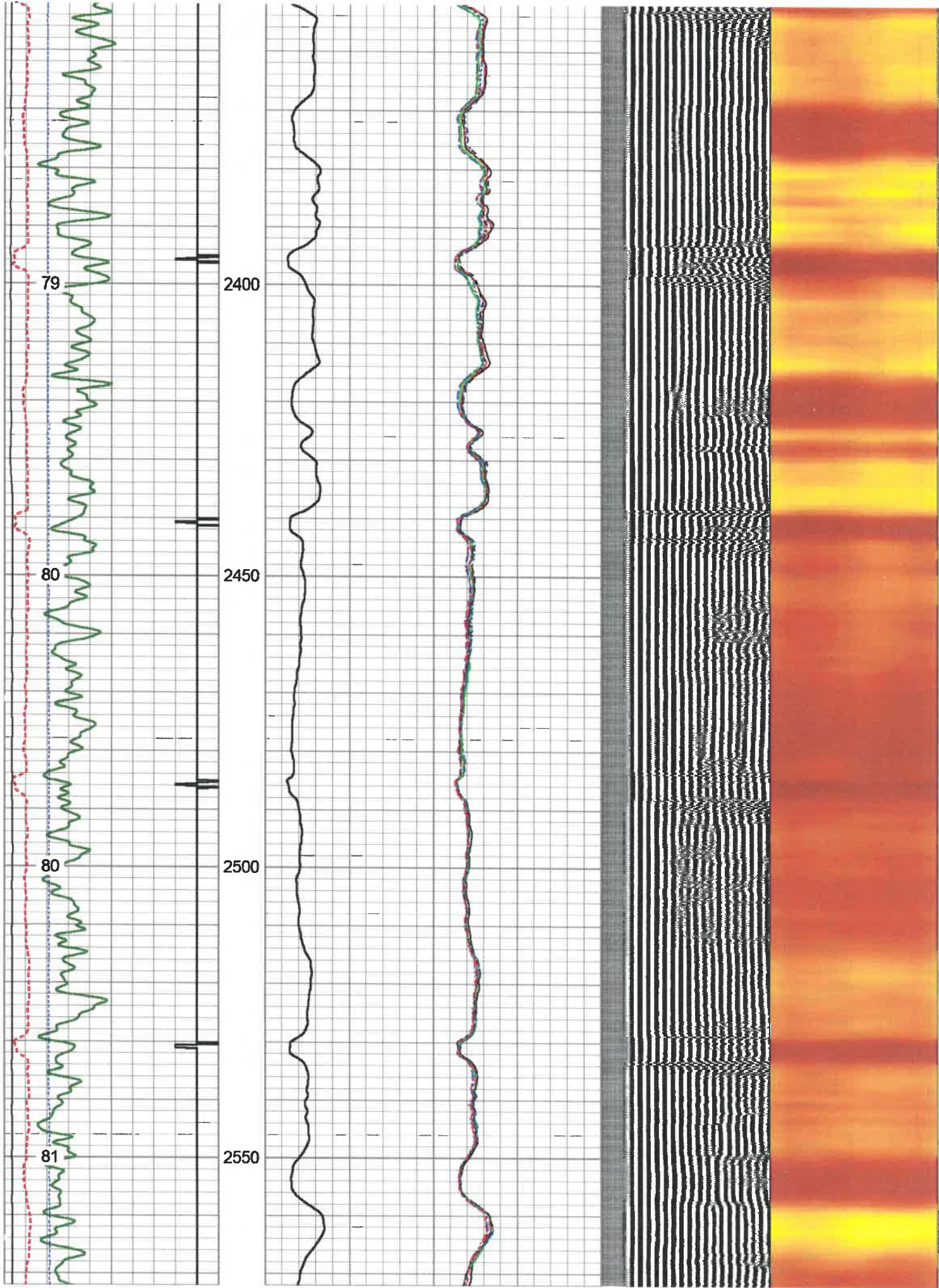


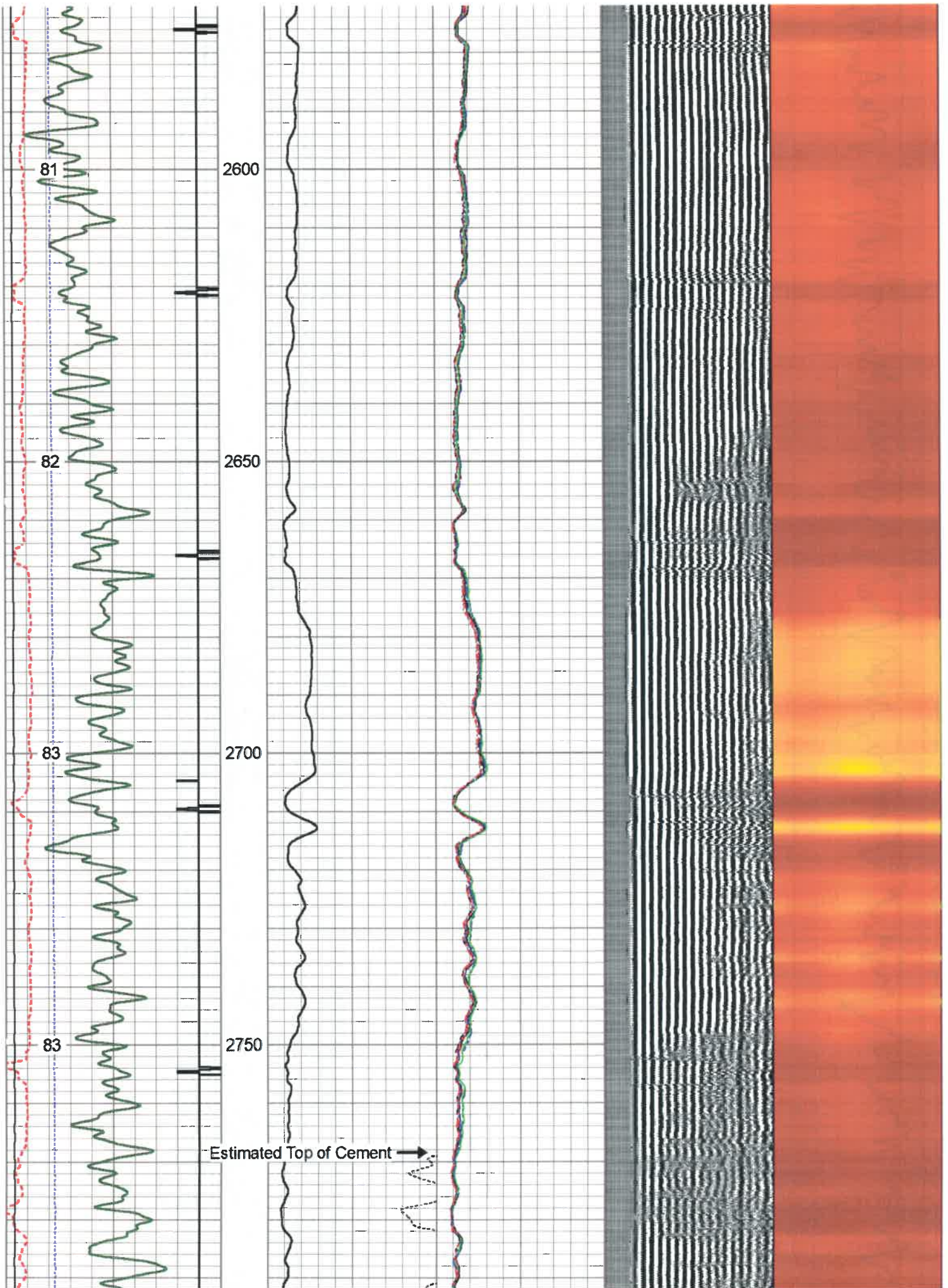


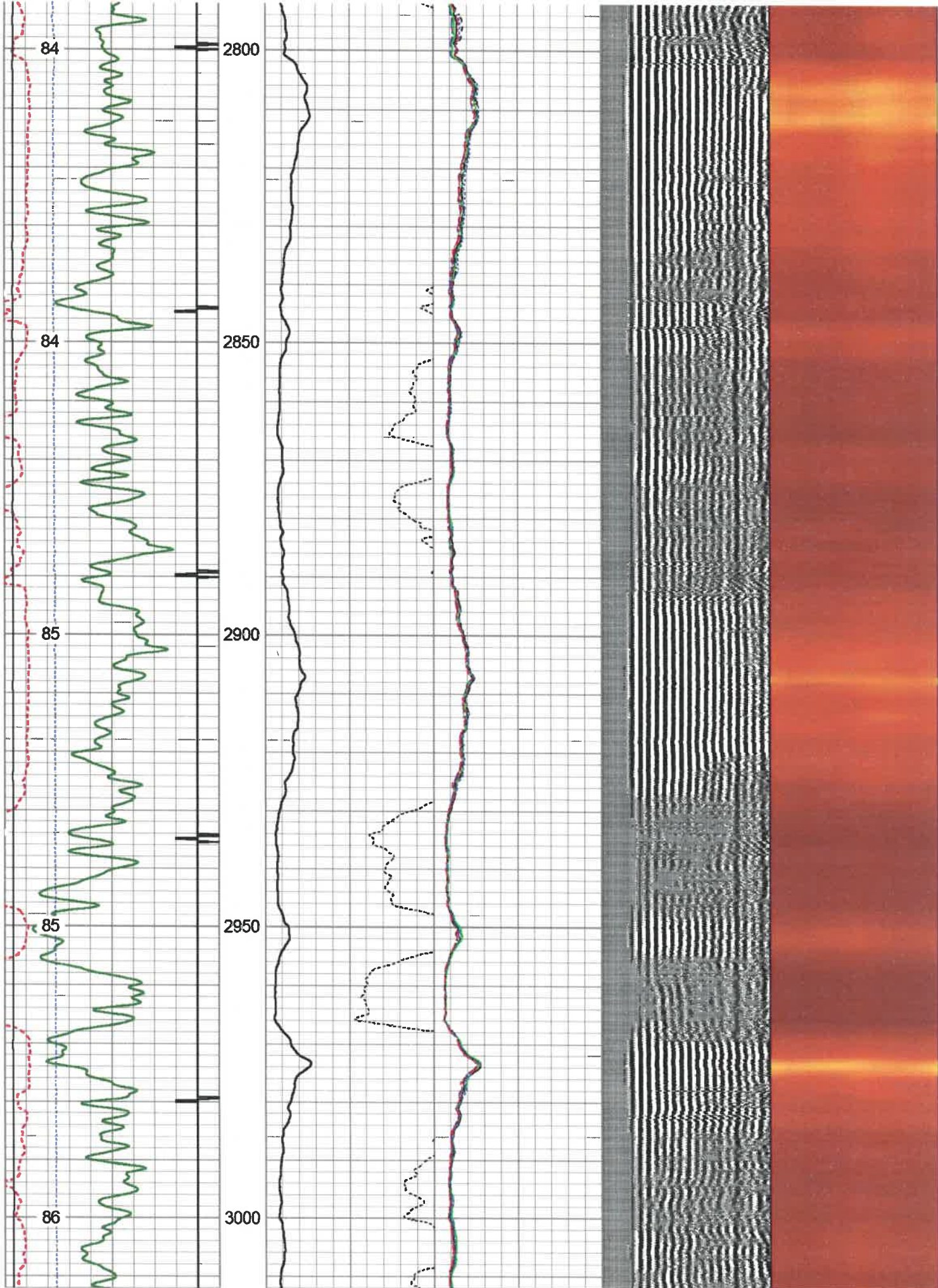


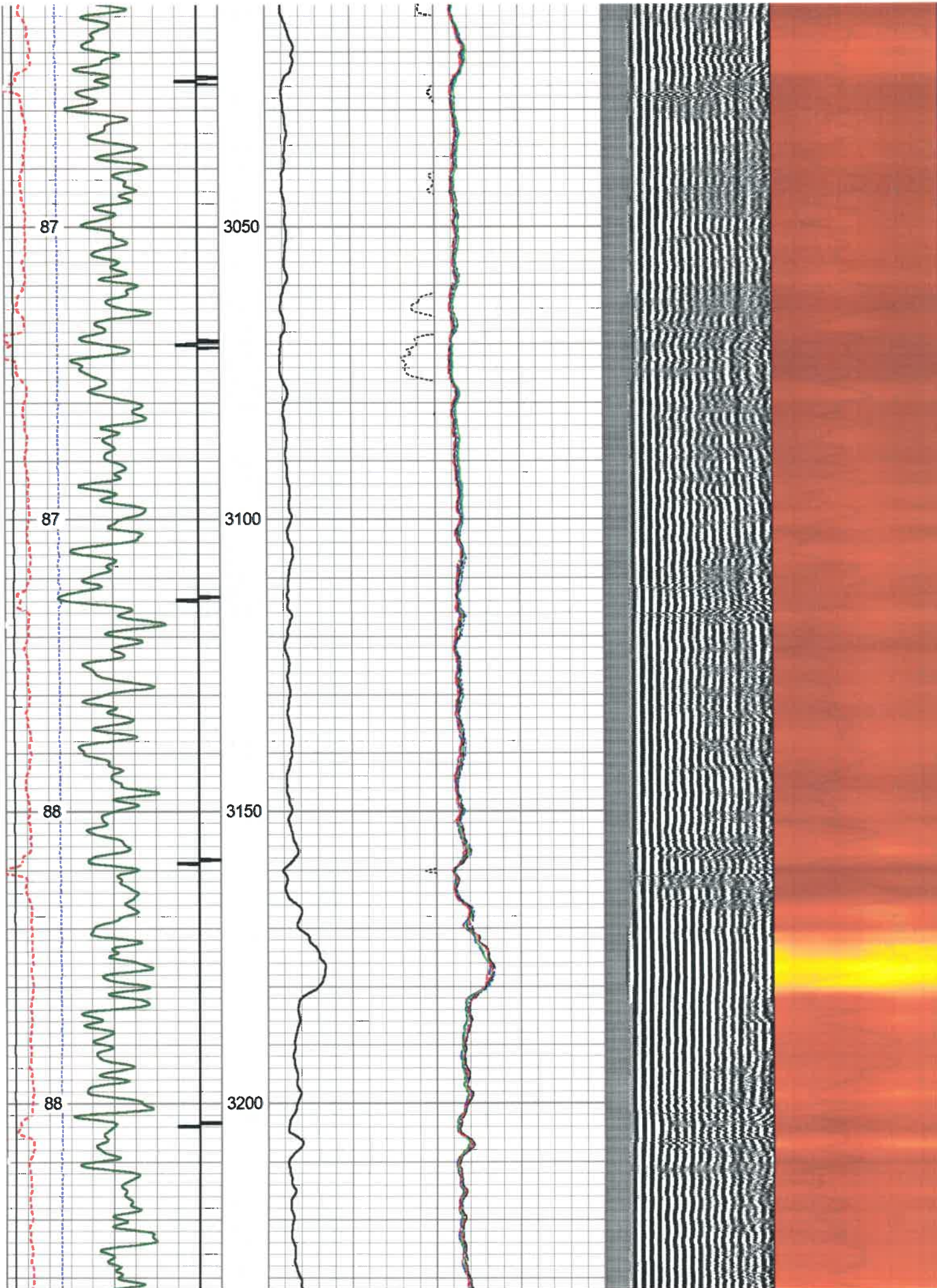


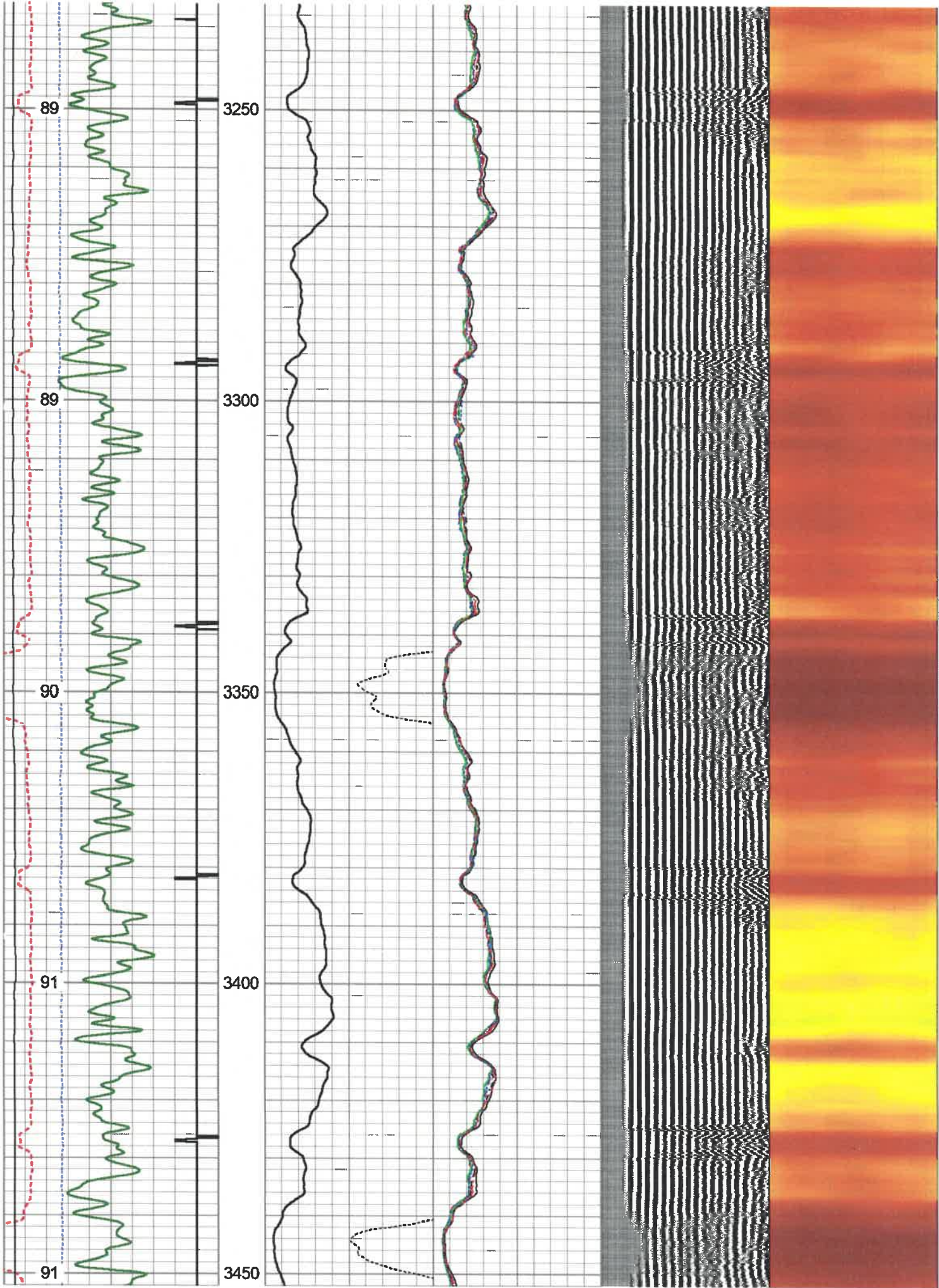


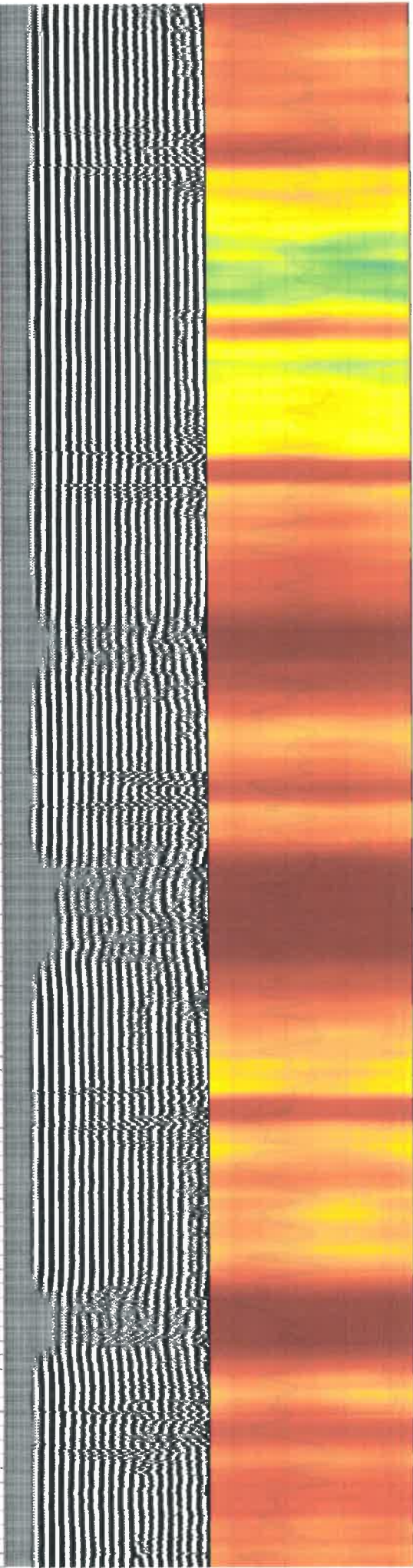
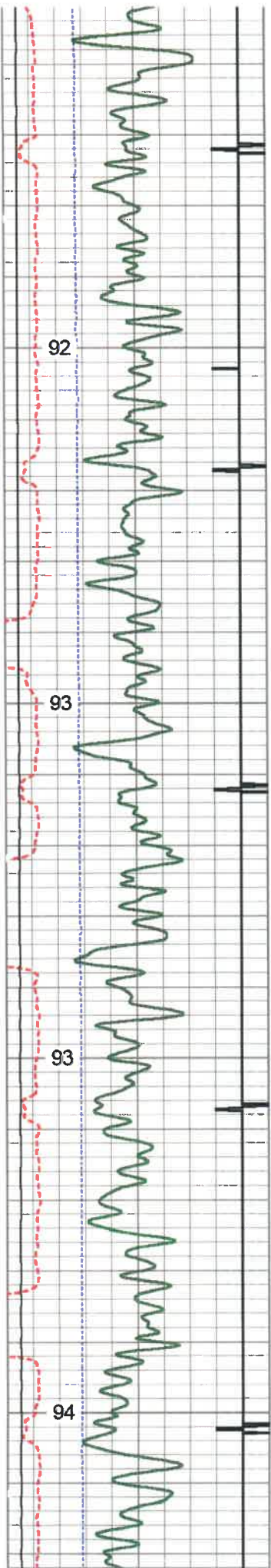


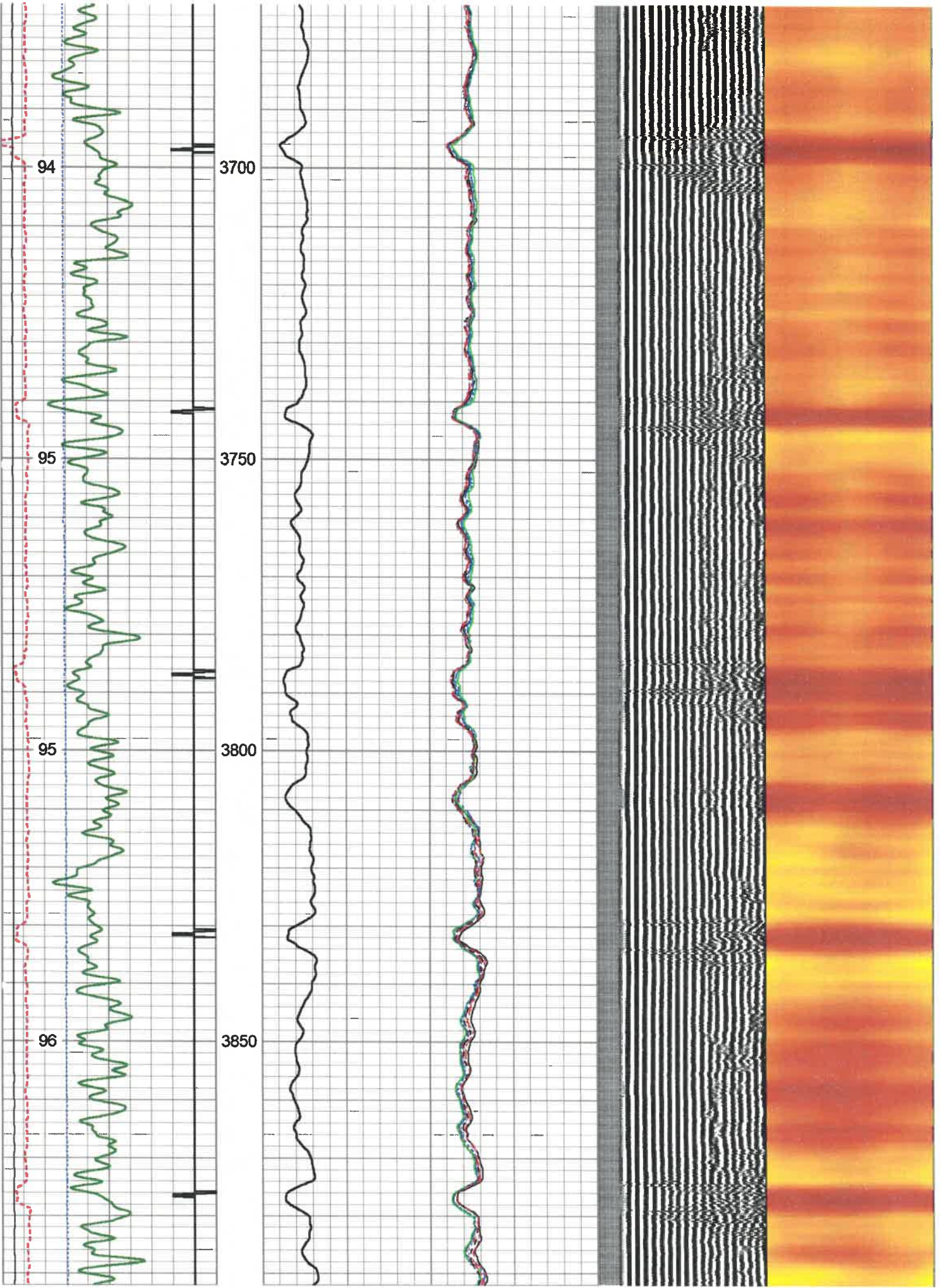


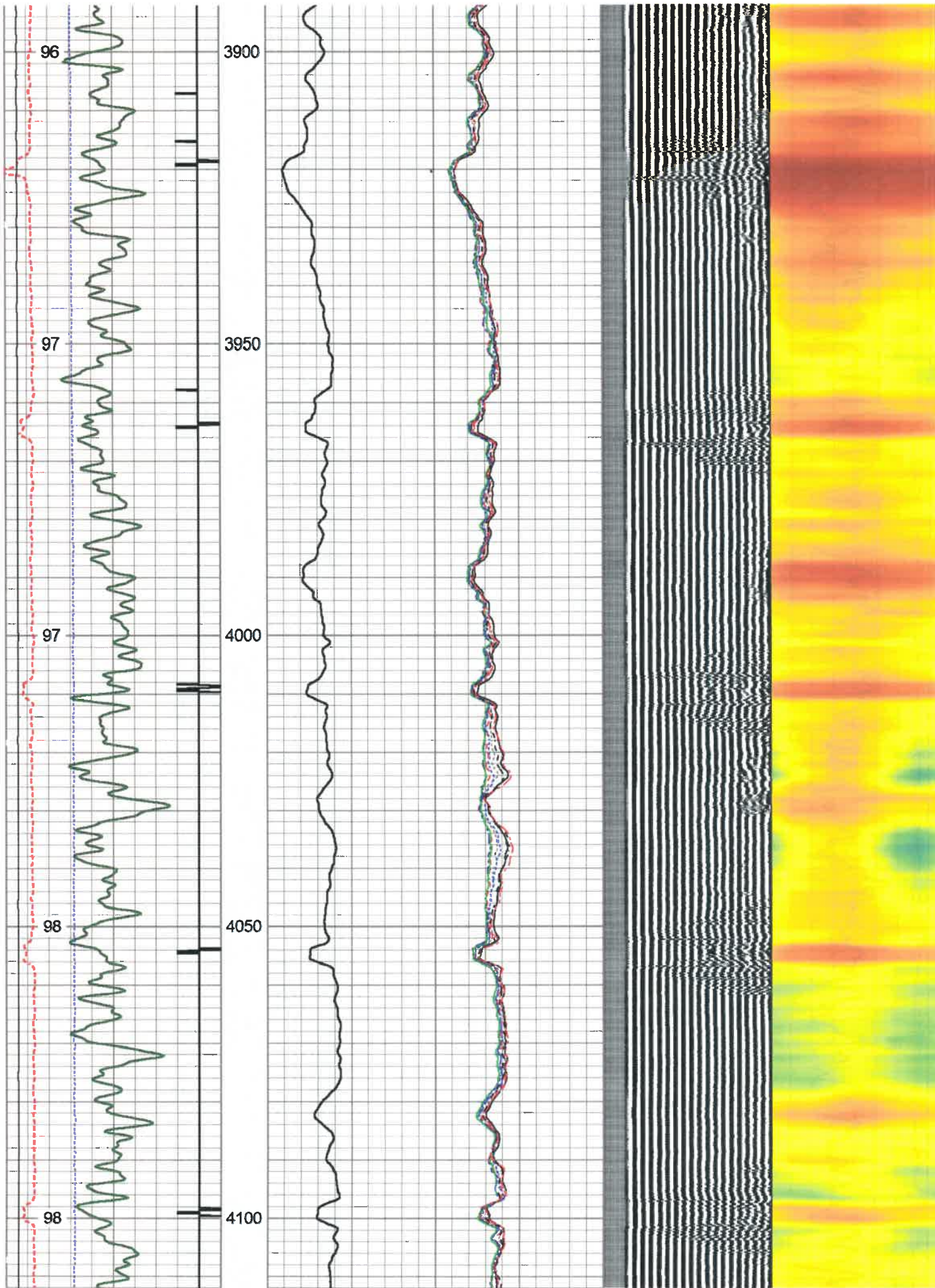


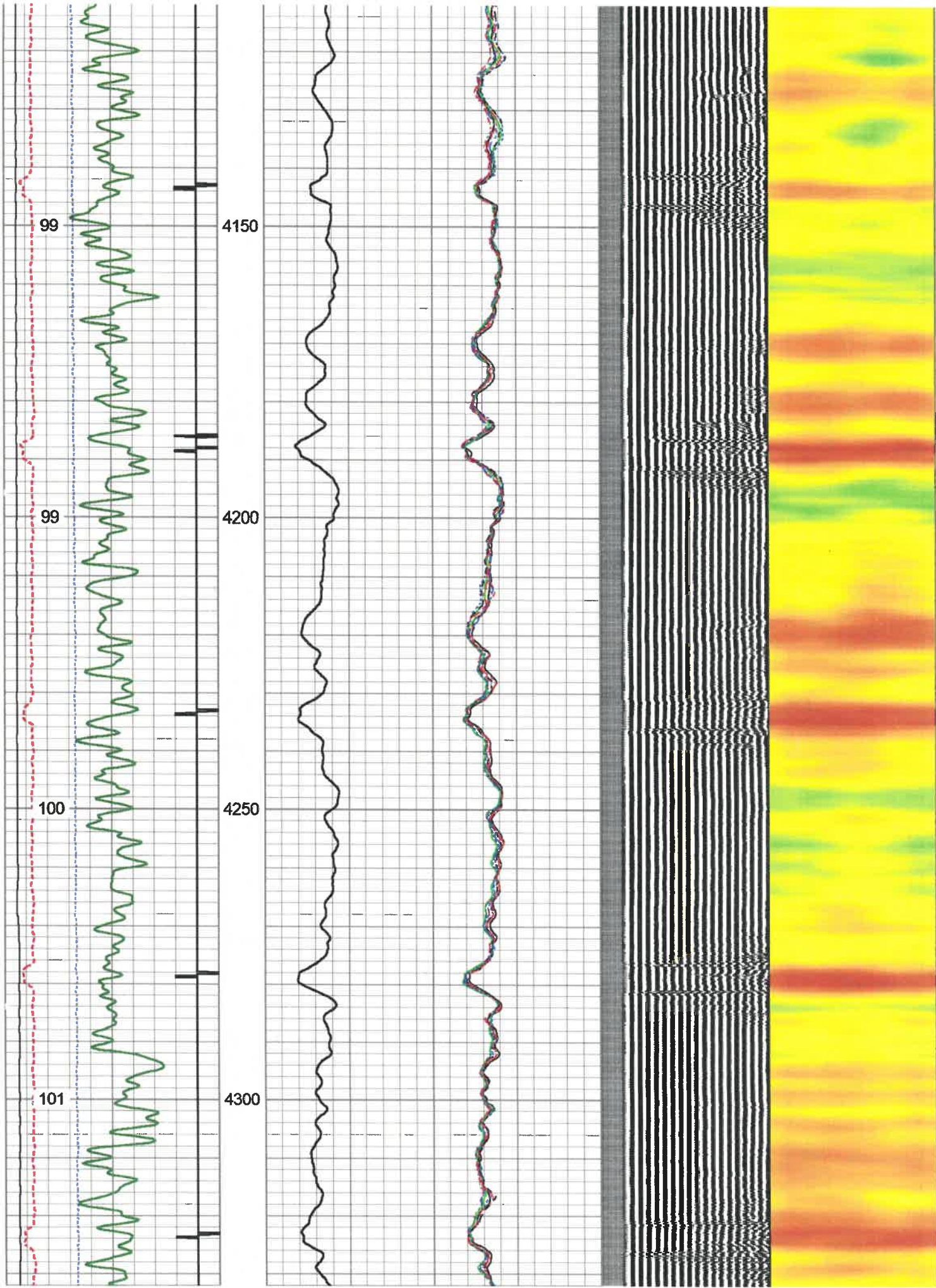


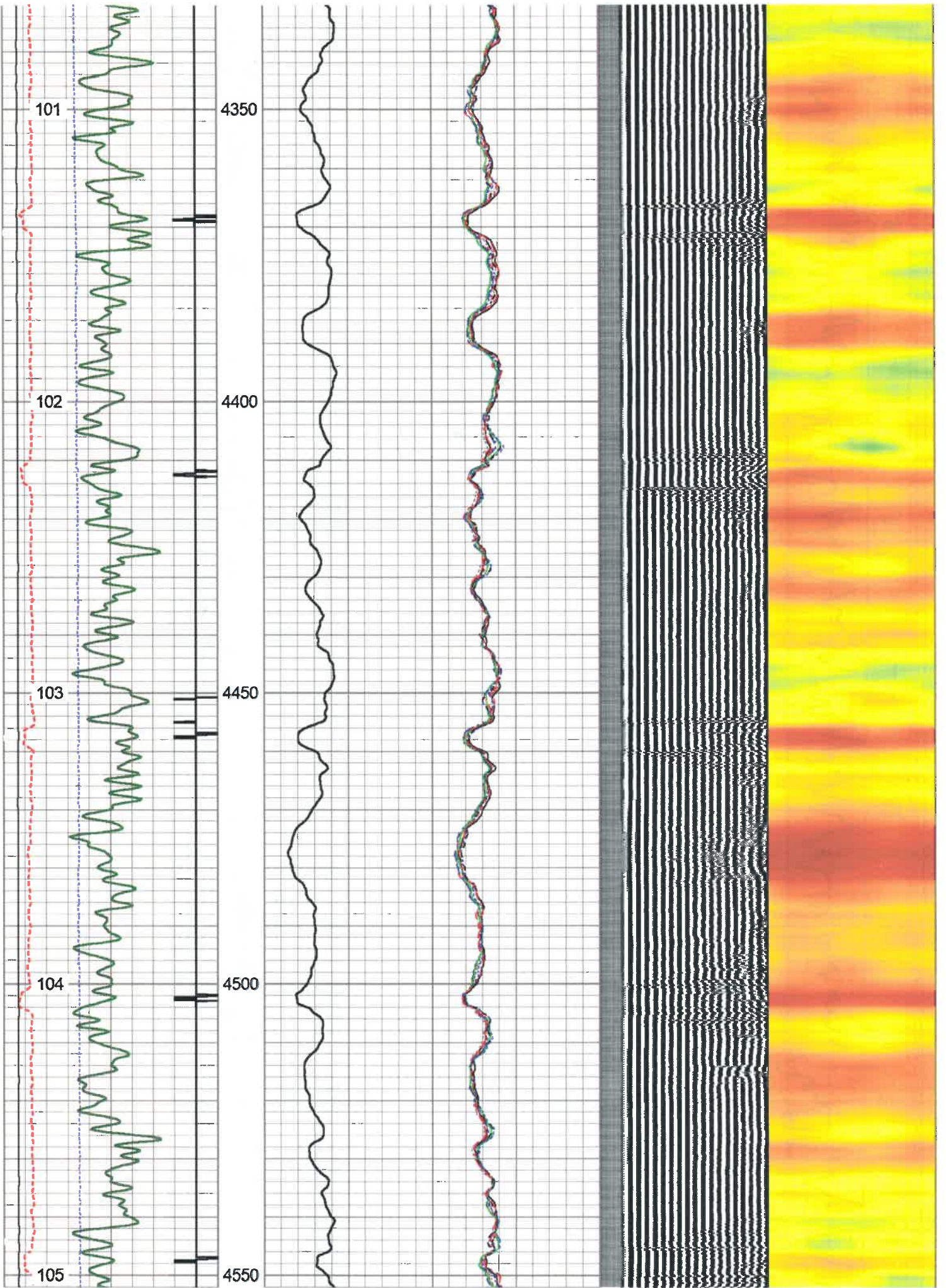


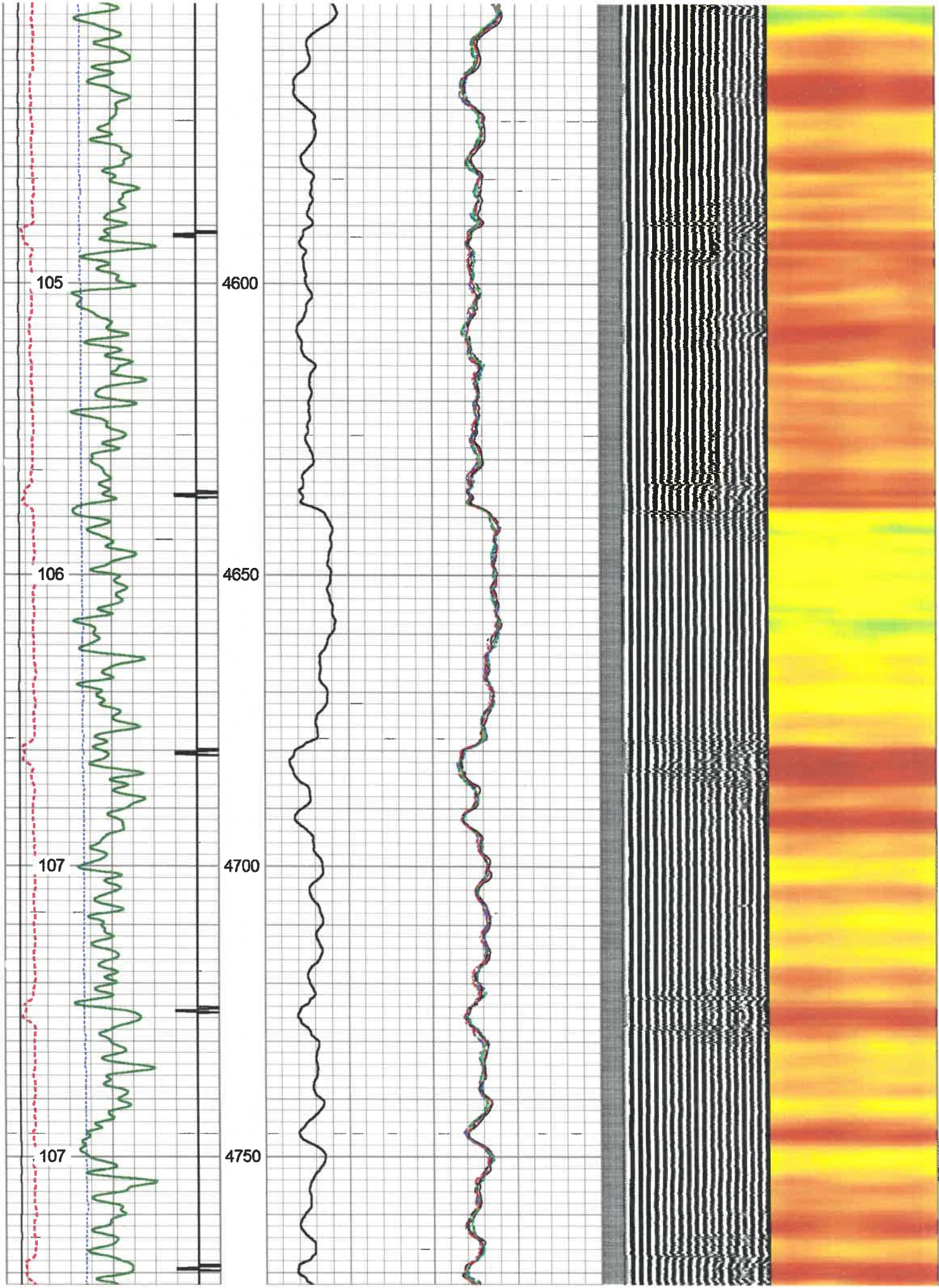


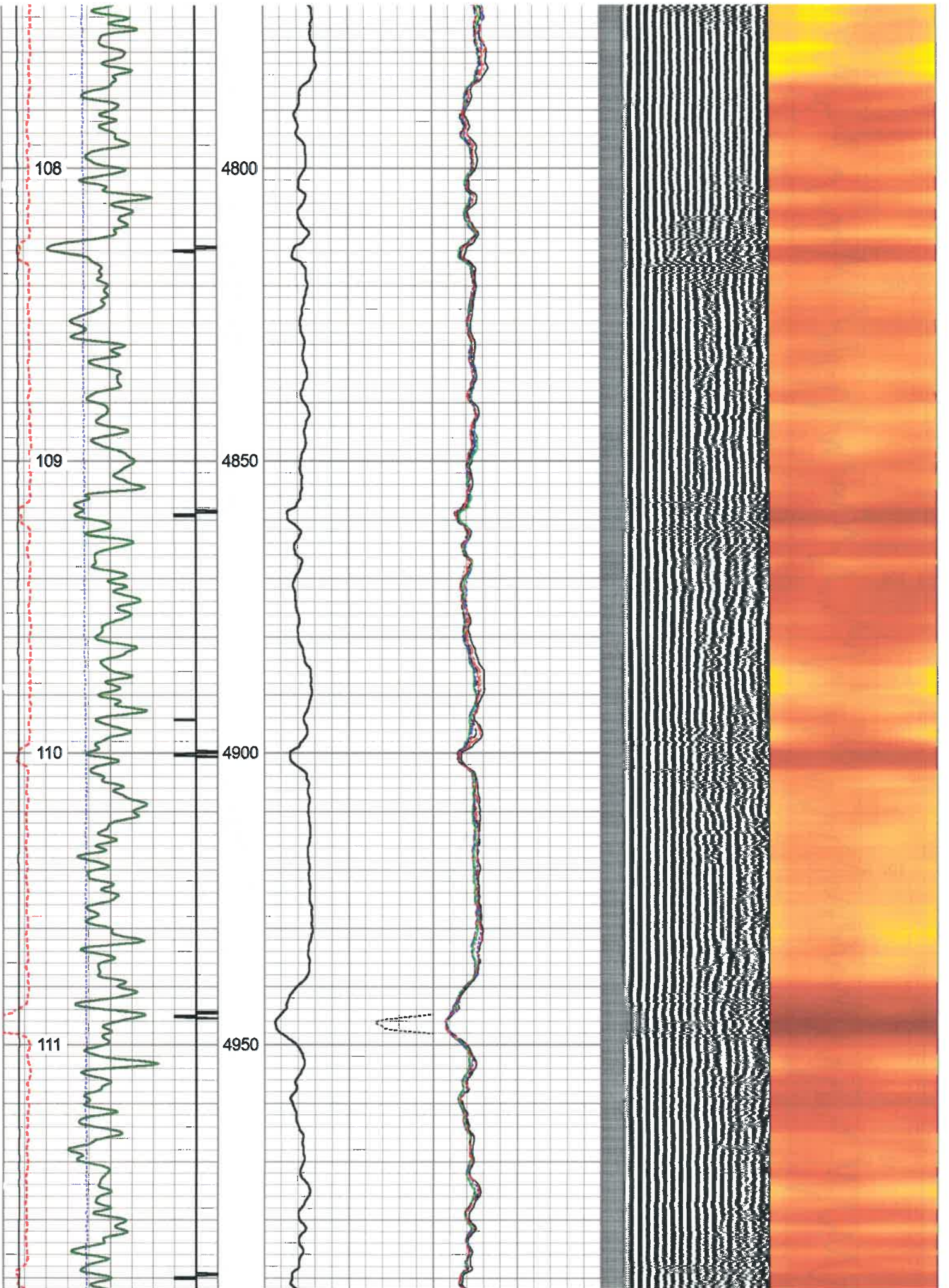


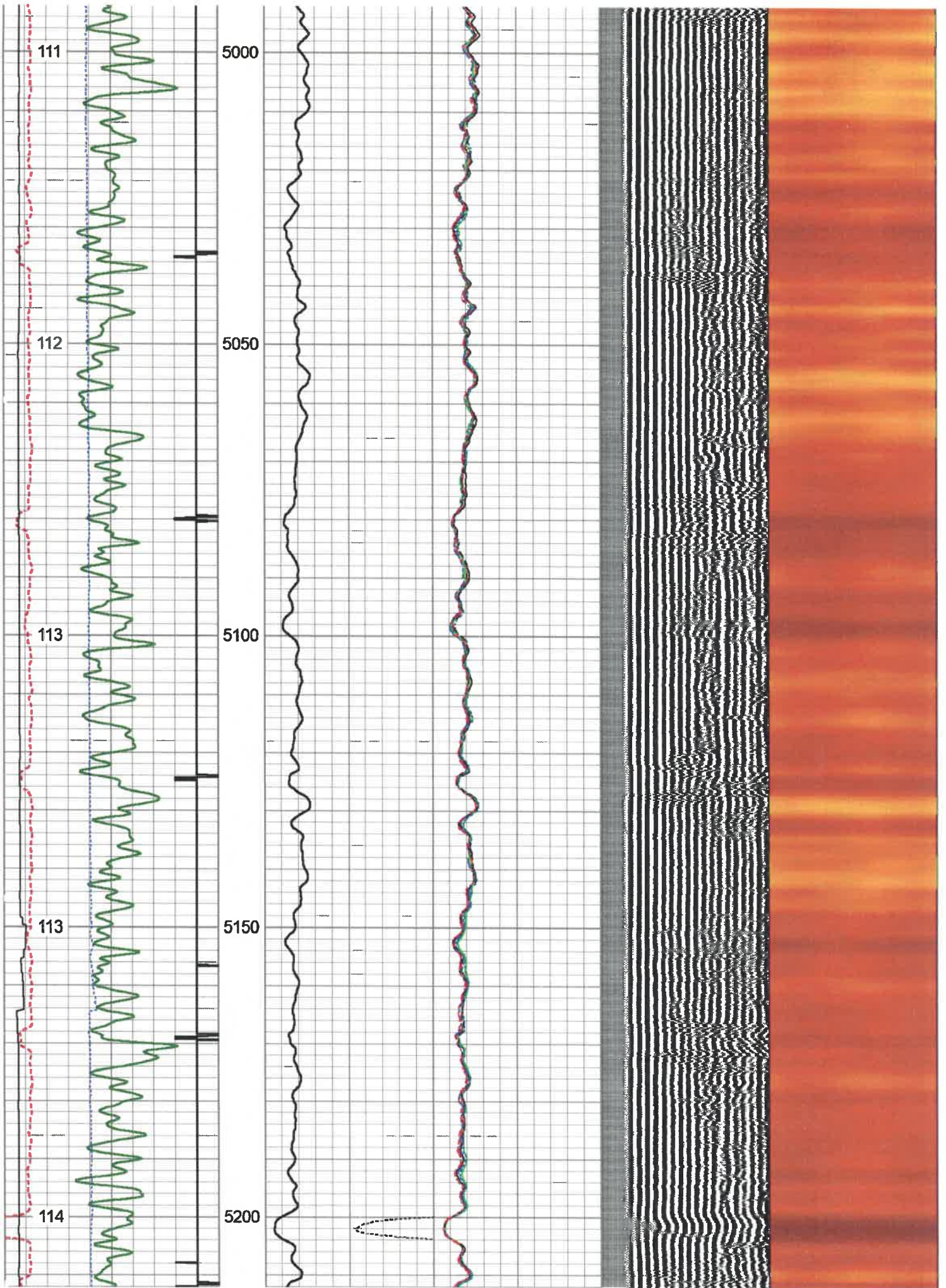


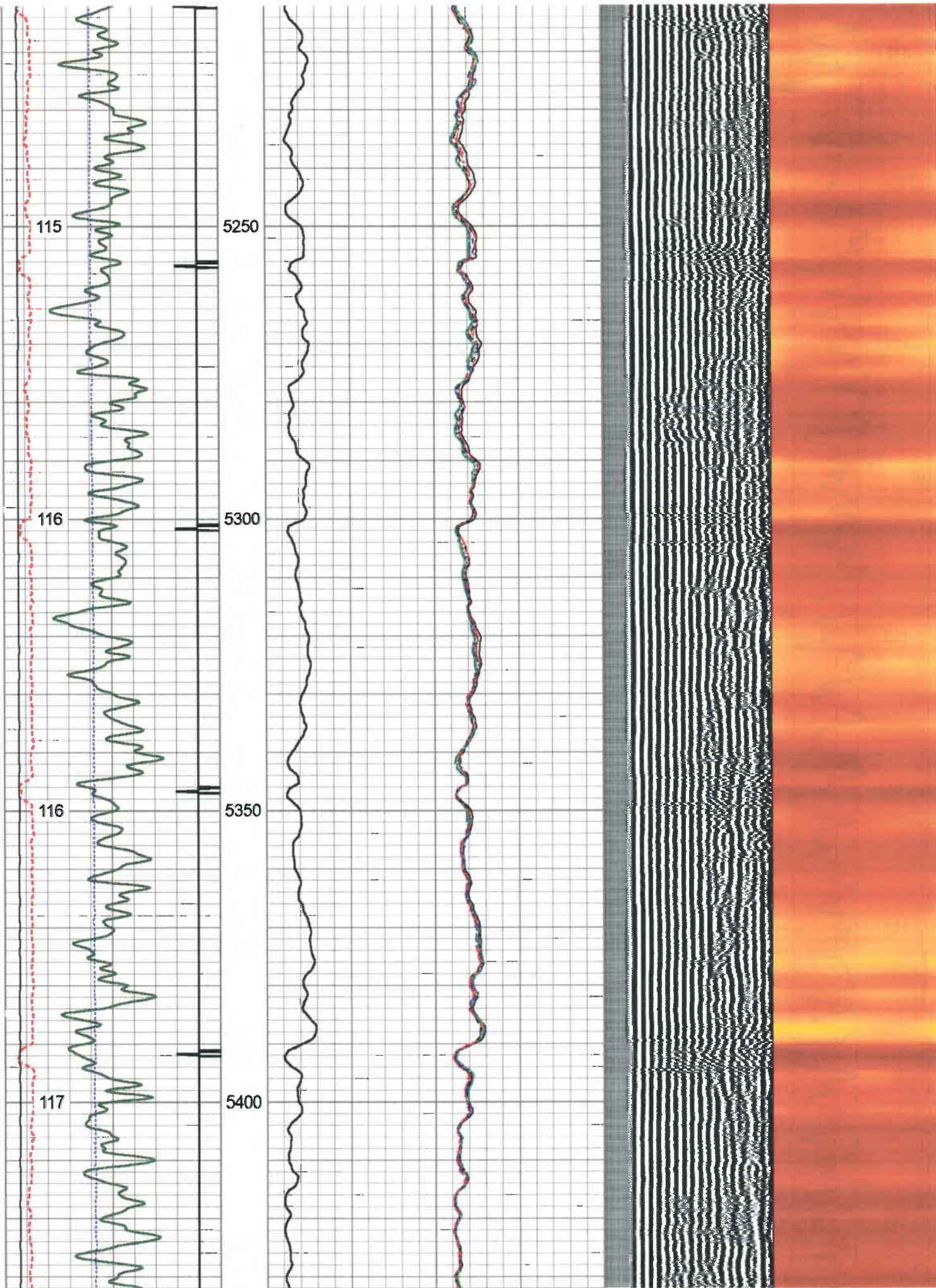


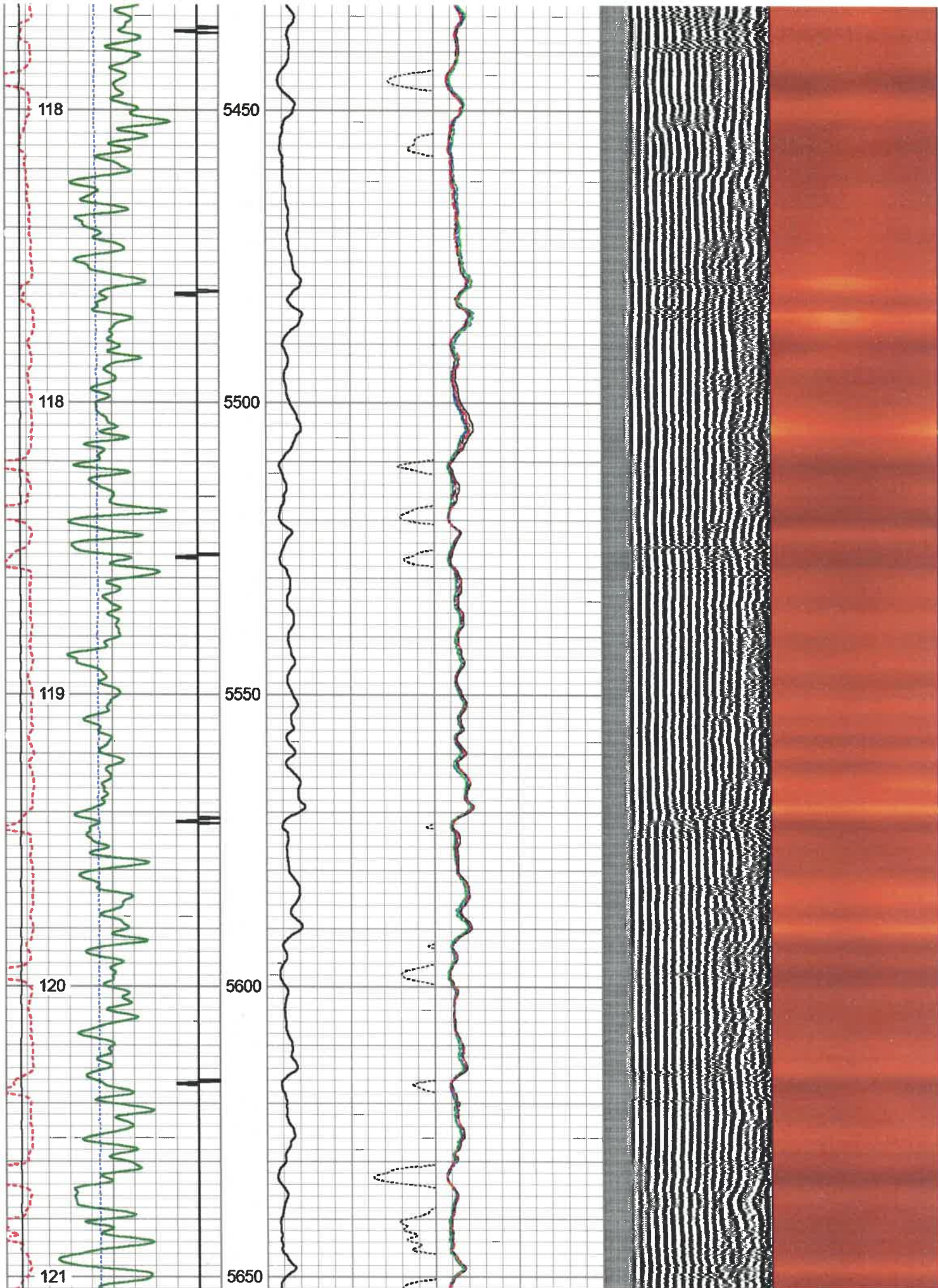


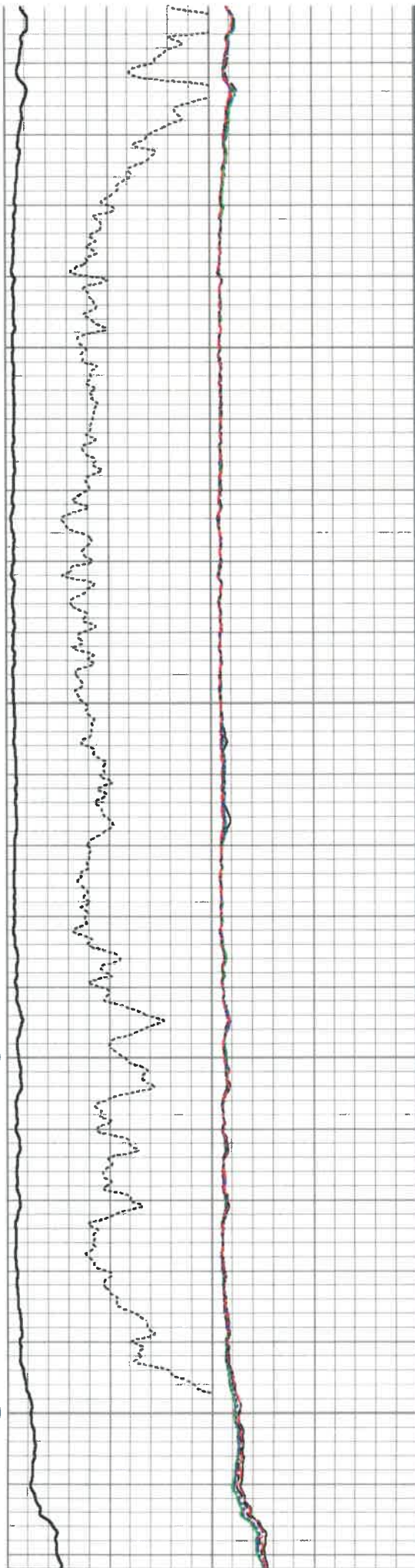
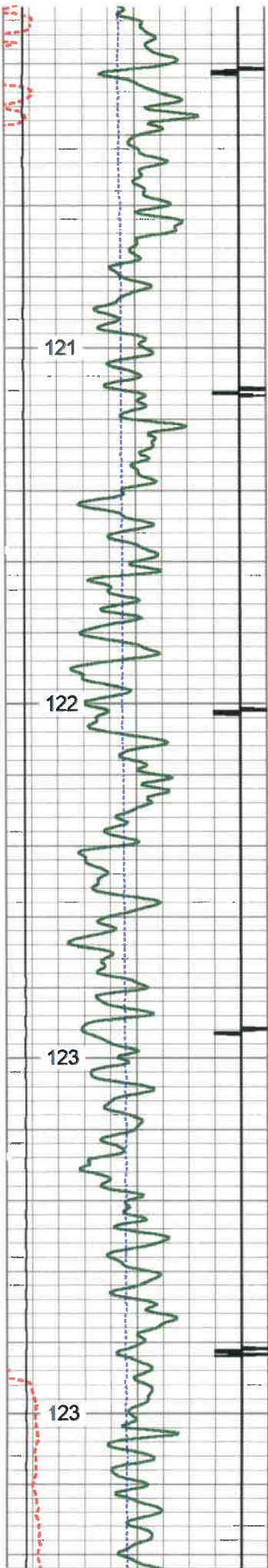


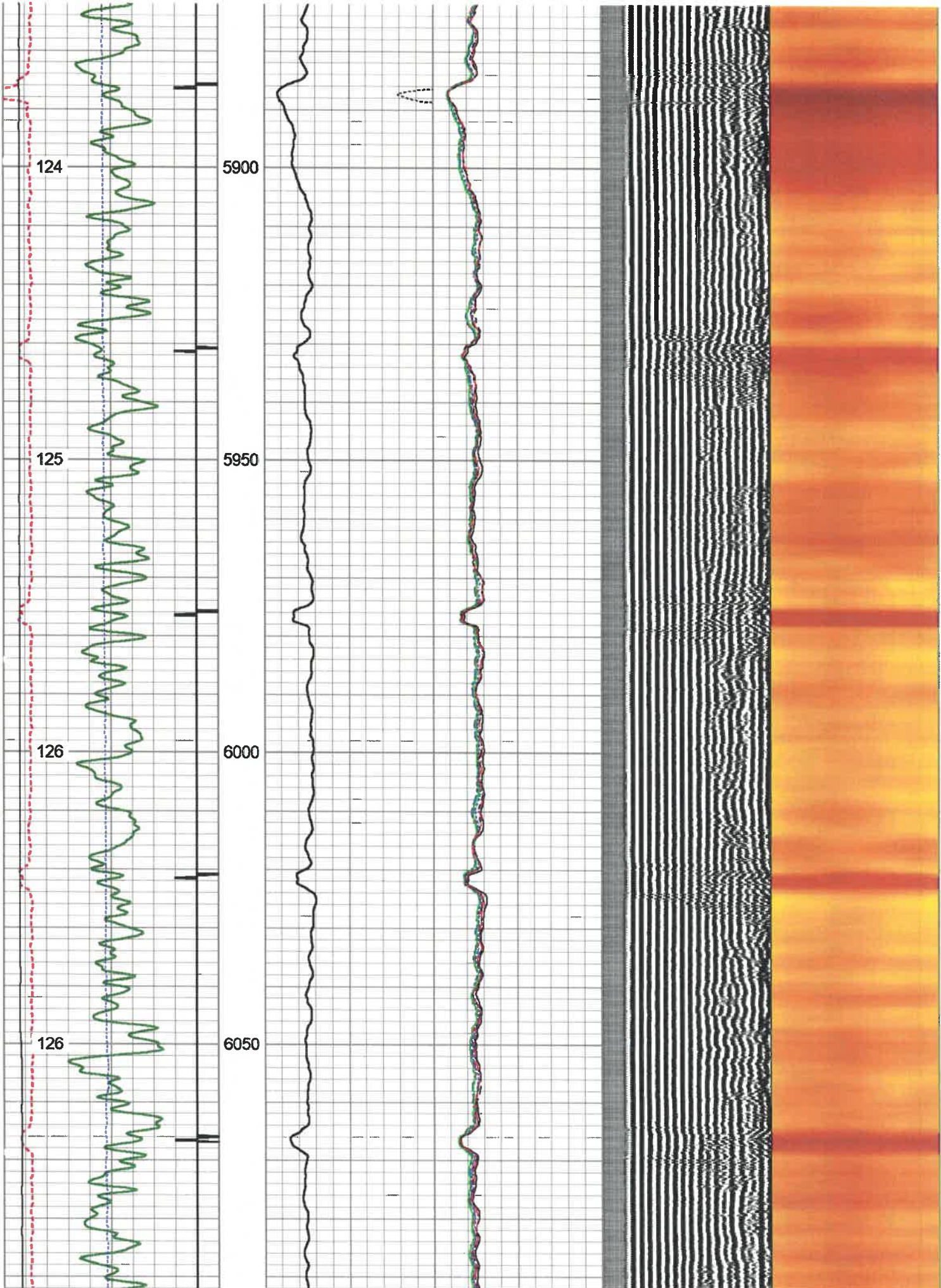


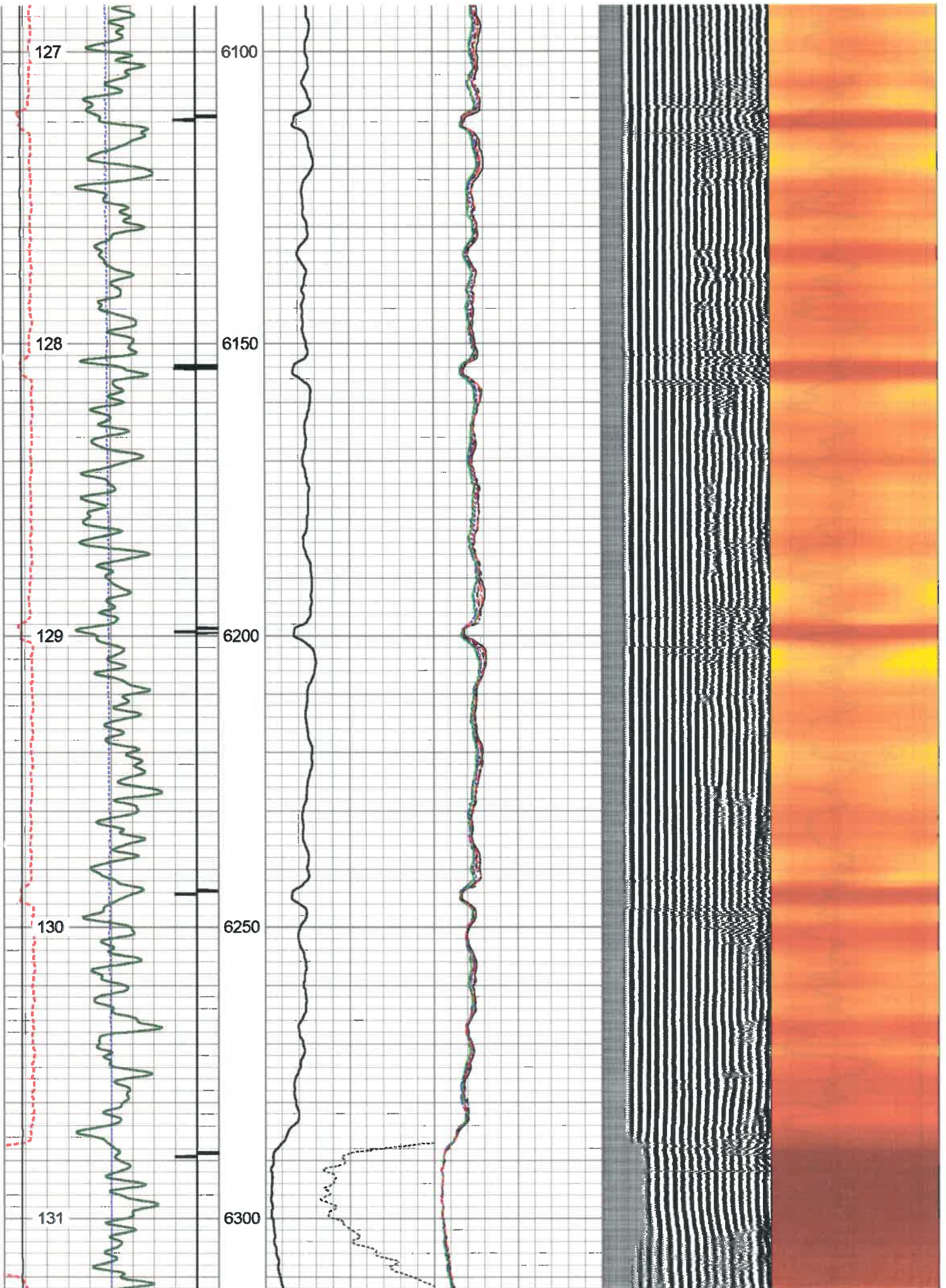


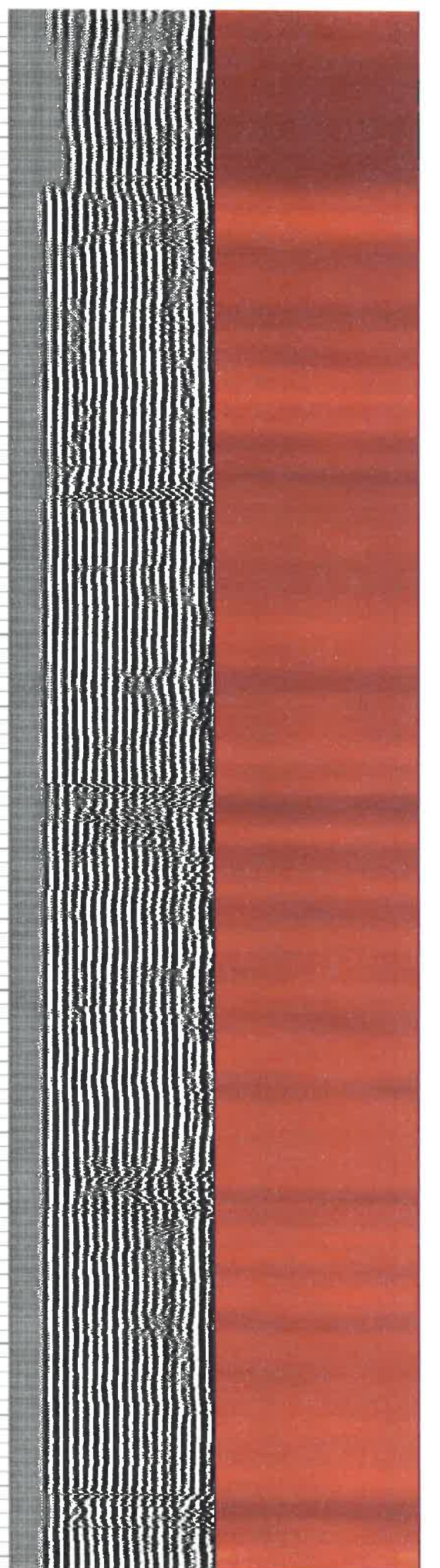
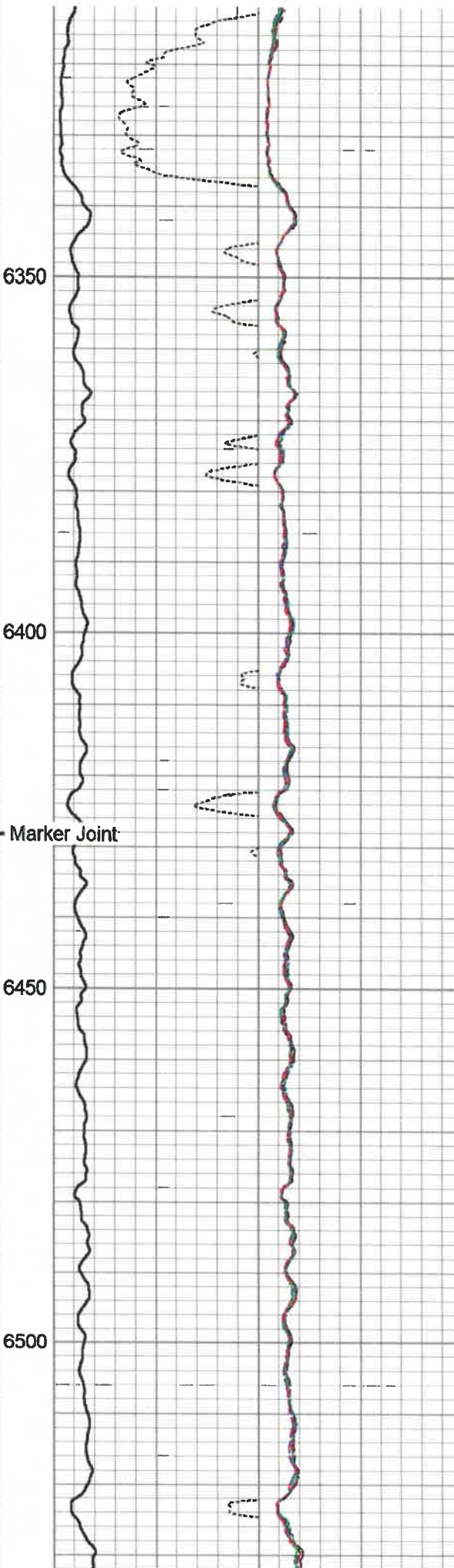
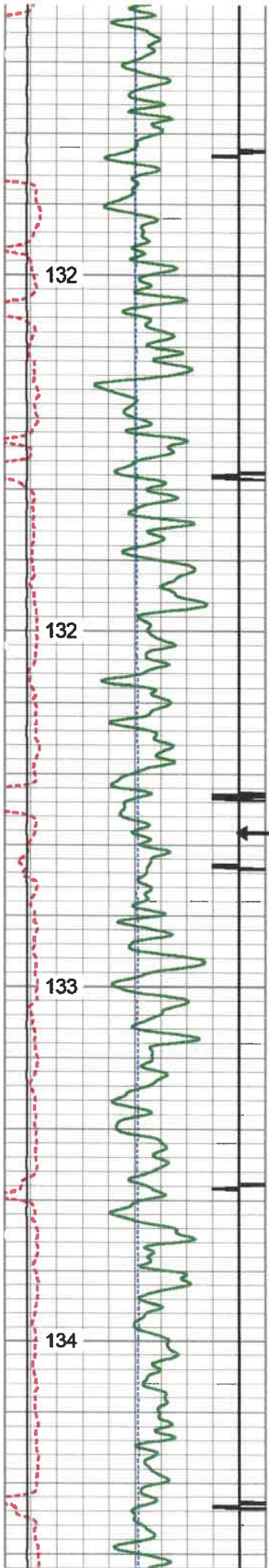


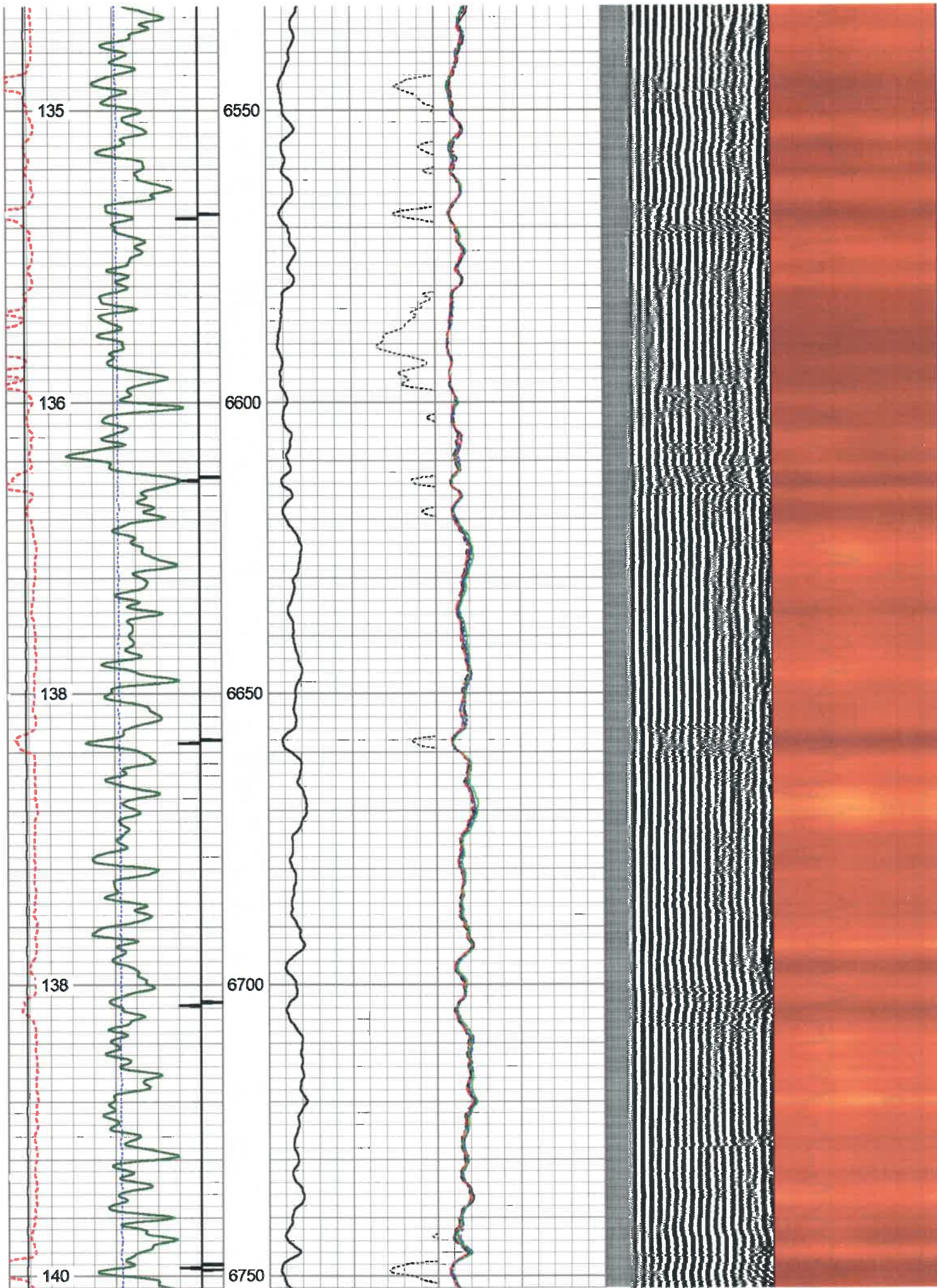


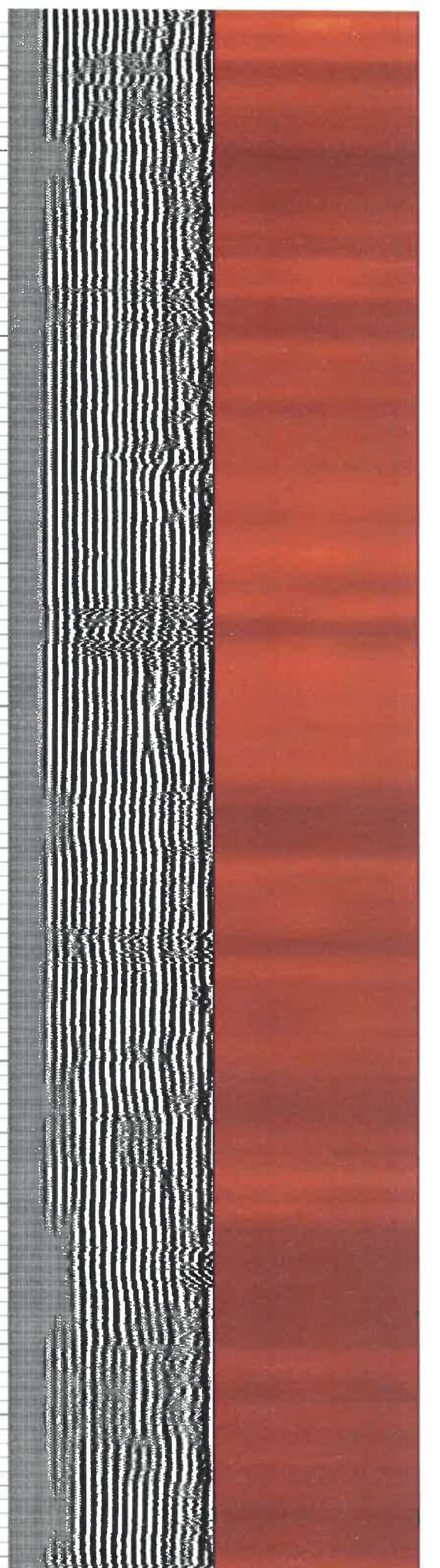
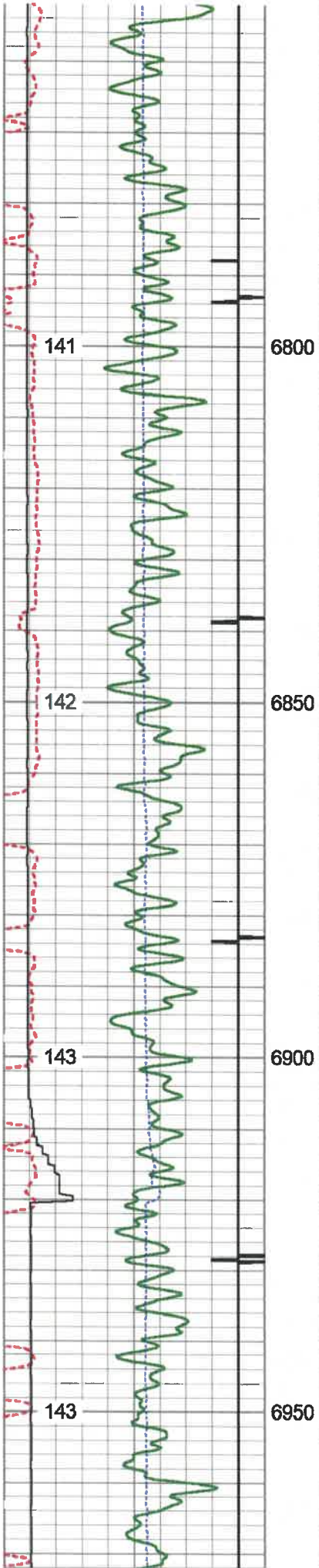


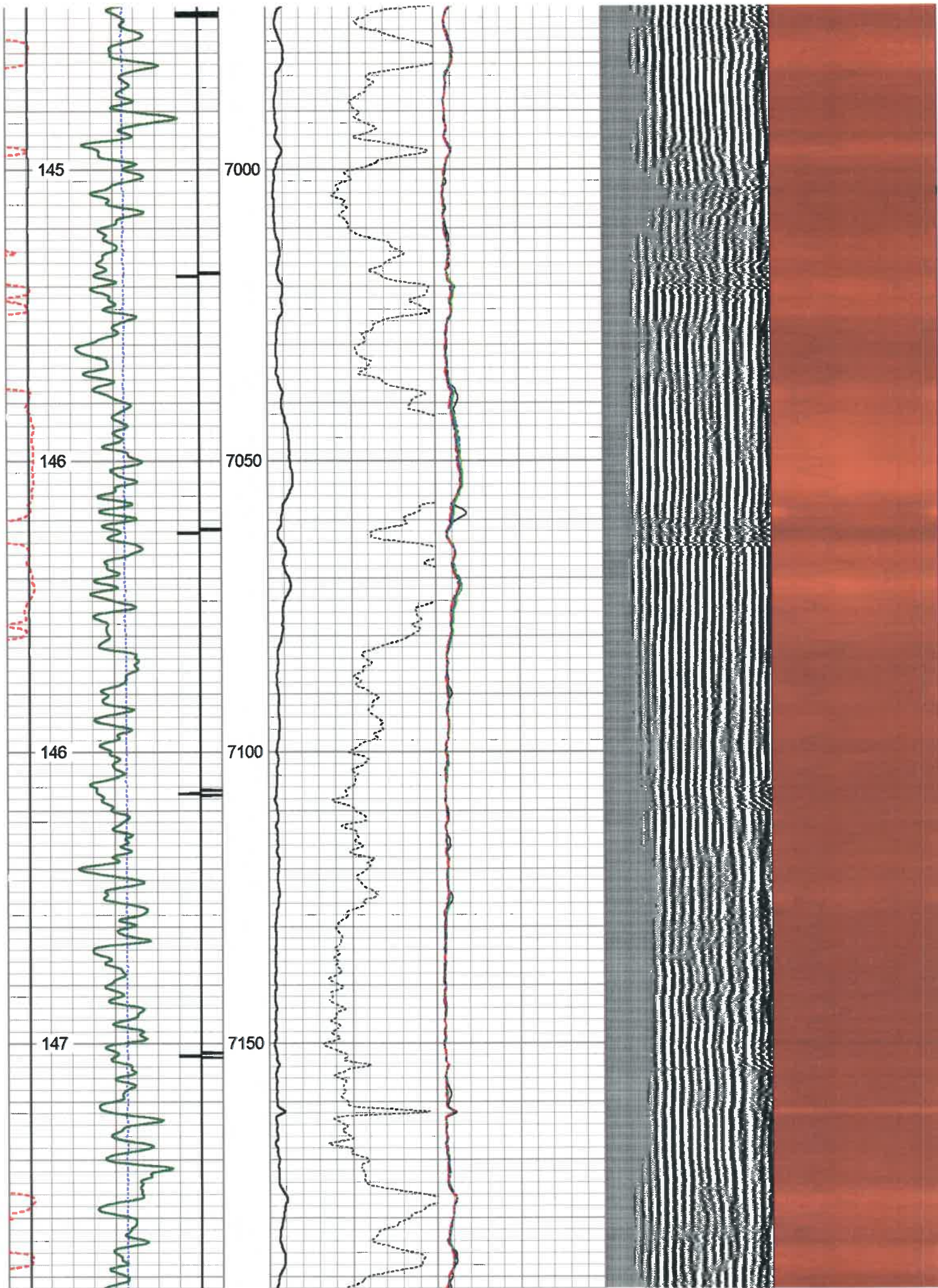


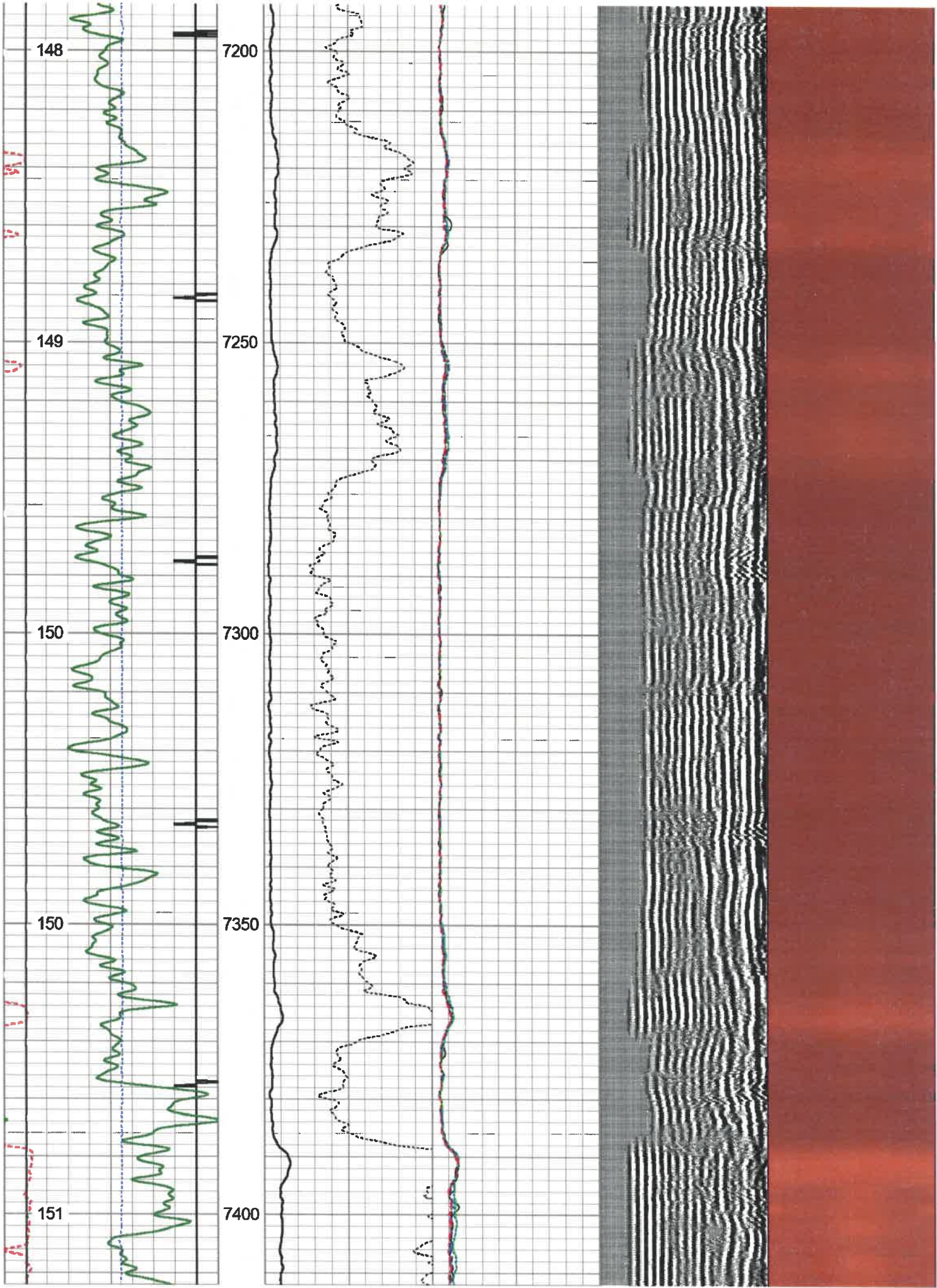


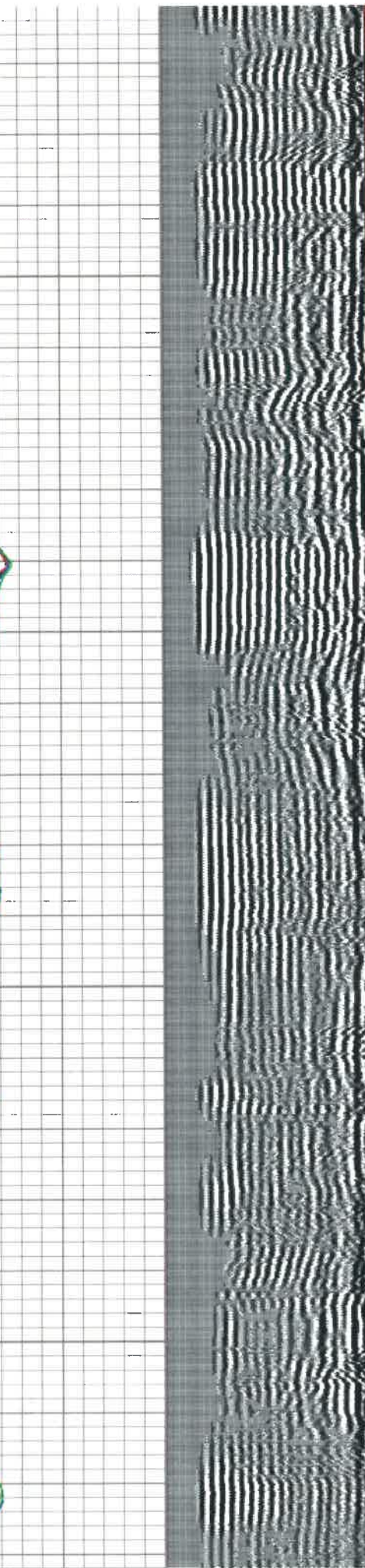
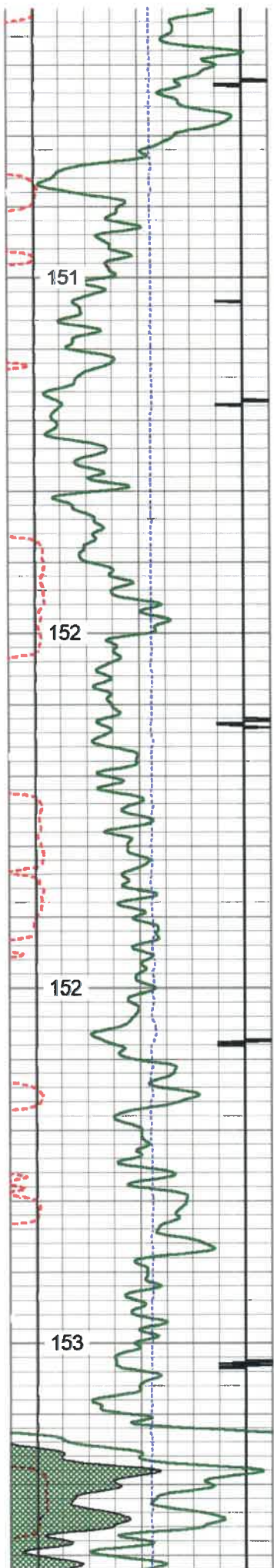


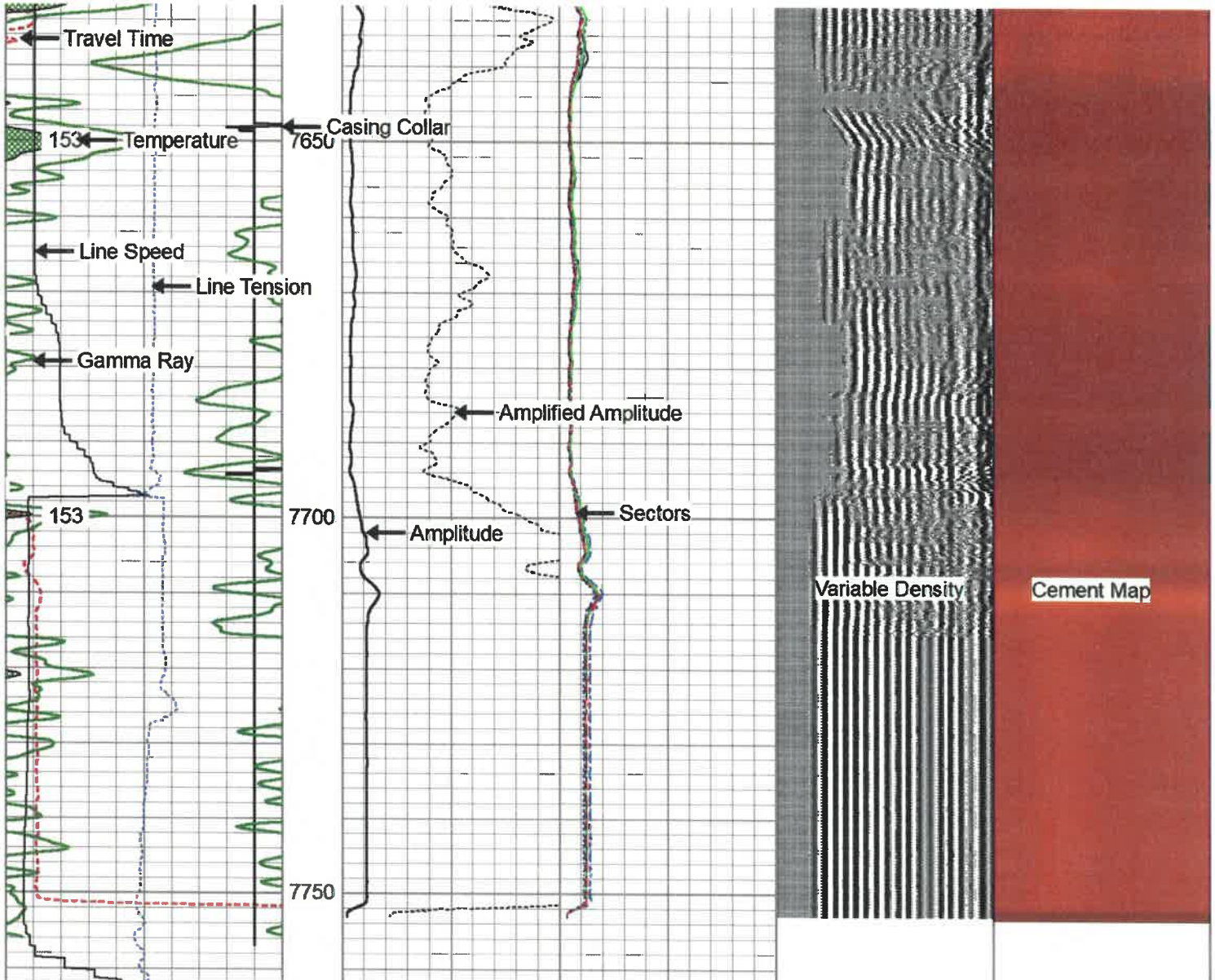












270	Travel Time (usec)	170	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
Casing Collar			Amplified Amplitude			-5	Sector 2	150	200	(usec)	1200	
0	Gamma Ray (GAPI)	120	0	(mV)	10	-5	Sector 3	150				
0	LTEN (lb)	2500				-5	Sector 4	150				
-100	LSPD (ft/min)	100				-5	Sector 5	150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



Repeat Pass 0 PSI

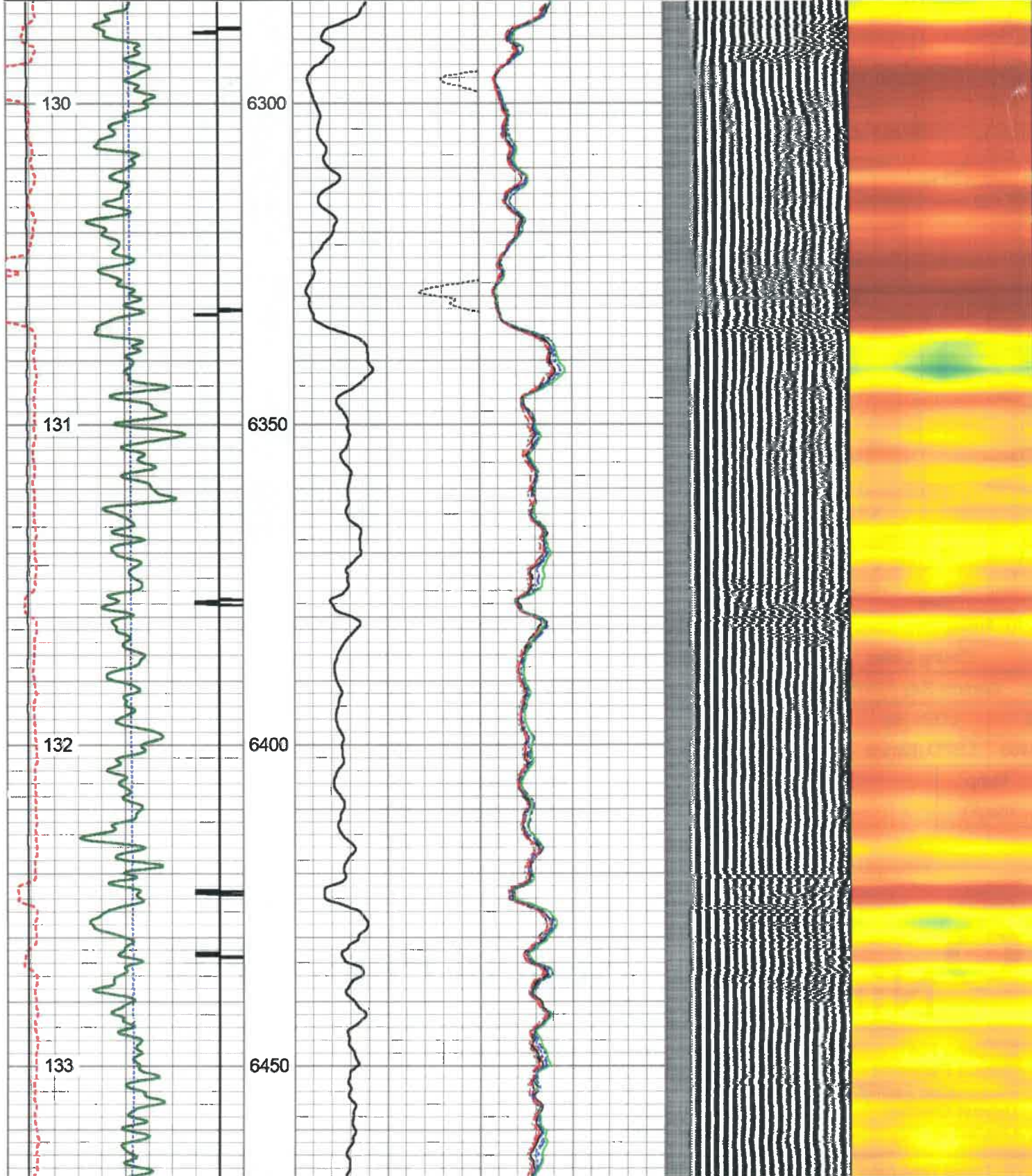
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 Dataset Pathname: south_canton/cortina3h/rcbl/pass3
 Presentation Format: rcbl 2
 Dataset Creation: Sat Jan 04 13:10:10 2020
 Charted by: Depth in Feet scaled 1:240

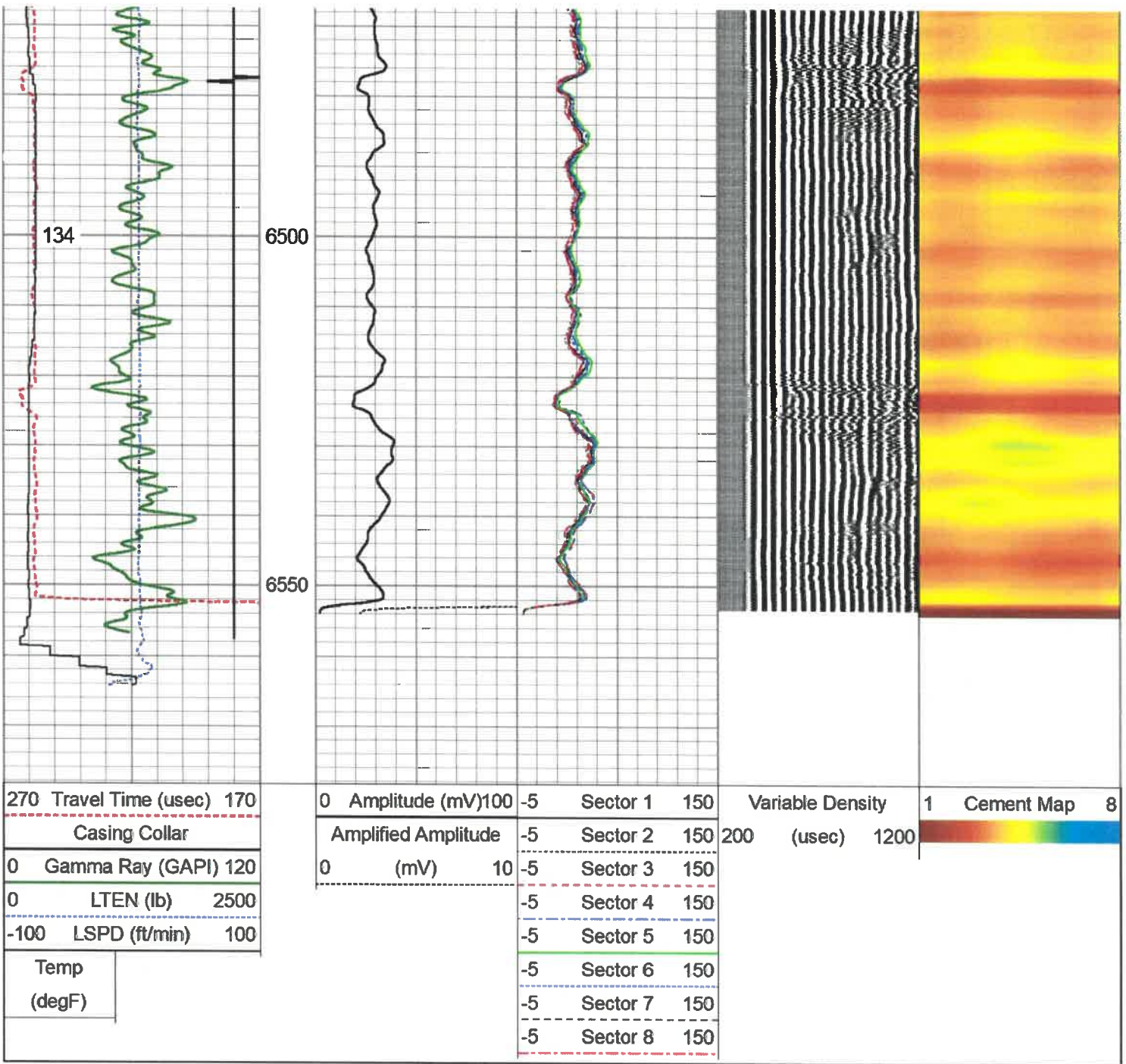
270	Travel Time (usec)	170	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
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Casing Collar		
0	Gamma Ray (GAPI)	120
0	LTEN (lb)	2500
-100	LSPD (ft/min)	100
Temp		
(degF)		

Amplified Amplitude	-5	Sector 2	150
0 (mV)	10	Sector 3	150
		Sector 4	150
		Sector 5	150
		Sector 6	150
		Sector 7	150
		Sector 8	150

200 (usec) 1200





Log Variables

Database: C:\ProgramData\Warrior\Data\antero_george_scott_cortina_3h_rcbl_nineenergy_04_jan :
Dataset: south_canton/cortina3h/rcbl/pass5.1/_vars_

Top - Bottom

BHTEMP_Src	BOREID	BOTTEMP	CASEOD	CASETHCK	CASEWGHT	MAXAMPL	MINAMPL
TEMP	in 8.75	degF 153	in 5.5	in 0.361	lb/ft 20	mV 72	mV 2.2
MINATTN	PERFS	PPT	SRFTEMP	TDEPTH			
db/ft 10.6	No	usec 261	degF 45	ft 7710			

Variable Description

BHTEMP_Src : BHTEMP Input Source Selector
BOREID : Borehole I.D.
BOTTEMP : Bottom Hole Temperature
CASEOD : Casing O.D.

MINAMPL : Minimum Amplitude
MINATTN : Minimum Attenuation
PERFS : Perforation Flag
PPT : Predicted Pore Time

CASETHCK : Casing Thickness
 CASEWGHT : Casing Weight
 MAXAMPL : Maximum Amplitude

SRFTEMP : Surface Temperature
 TDEPTH : Total Depth

Calibration Report

Database File antero_george_scott_cortina_3h_rcbl_nineenergy_04_jan_2020.db
 Dataset Pathname south_canton/cortina3h/rcbl/pass5.1
 Dataset Creation Sat Jan 04 15:32:30 2020

Gamma Ray Calibration Report

Serial Number: FW1211-86
 Tool Model: Probe
 Performed: Sat Jan 04 04:26:07 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: 101.700 ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.000	1.487	2.200	71.921	46.874	2.199
CAL	0.419	1.062				
5'	0.000	1.287	2.200	71.921	54.168	2.200
SUM						
S1	0.000	1.404	0.000	100.000	71.247	-0.001
S2	0.000	1.600	0.000	100.000	62.500	-0.001
S3	-0.001	1.568	0.000	100.000	63.737	0.076
S4	0.000	1.574	0.000	100.000	63.535	-0.002
S5	0.000	1.573	0.000	100.000	63.567	-0.001
S6	0.000	1.498	0.000	100.000	66.736	-0.001
S7	0.000	1.418	0.000	100.000	70.509	-0.001
S8	0.000	1.423	0.000	100.000	70.287	-0.001

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	1.062	1.000	0.000

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

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.000		0.000		0.000	

J	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



Company	Antero Resources
Well	George Scott Cortina Unit 3H
Field	South Canton
County	Doddridge
State	West Virginia

