



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

Company Antero Resources
Well Shimano Unit 2H
Field Rabbit Ears
County Tyler
State West Virginia

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Field Rabbit Ears
County Tyler
State West Virginia

Location: API #: 47-095-02617
Other Services

Permanent Datum SEC N/A TWP N/A RGE N/A
Log Measured From Ground Level Elevation
Drilling Measured From Kelly Bushing (30')
Kelly Bushing

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

Date	22-Feb-2020			
Run Number	One			
Depth Driller	15,420 ft.			
Depth Logger	7,320 ft.			
Bottom Logged Interval	7,320 ft.			
Top Log Interval	Surface			
Open Hole Size	N/A			
Type Fluid	Water			
Density / Viscosity	N/A			
Max. Recorded Temp.	148 Deg. F.			
Estimated Cement Top	6,520 ft.			
Time Well Ready	07:00			
Time Logger on Bottom	08:20			
Equipment Number	132			
Location	Marietta, Ohio			
Recorded By	Tom Weese			
Witnessed By	James Carter			
Run Number	Bit		Tubing Record	
	From	To	Size	Weight
				From
				To
Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	13 3/8 in.	54.5 lbs.	Surface	387.5 ft.
Prod. String	9 5/8 in.	36 lbs.	Surface	2,762.5 ft.
Production String	5 1/2 in.	20 lbs.	Surface	15,420 ft.
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

Marker Joint @ 6,033 to 6,043 ft. Wireline Depth

**Main Pass 1,500 PSI
Repeat Pass 0 PSI**

Thank You For Choosing Nine Energy Service Wireline. Marietta, Ohio

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



Main Pass 1,500 PSI

Database File antero_shimano_2h_rcbl_nineenergy_22_feb_202.db
 Dataset Pathname Rabbit_Ears/Shimano_2H/RCBL_1/pass4.1
 Presentation Format scbl03
 Dataset Creation Sat Feb 22 09:34:14 2020
 Charted by Depth in Feet scaled 1:240

260	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					

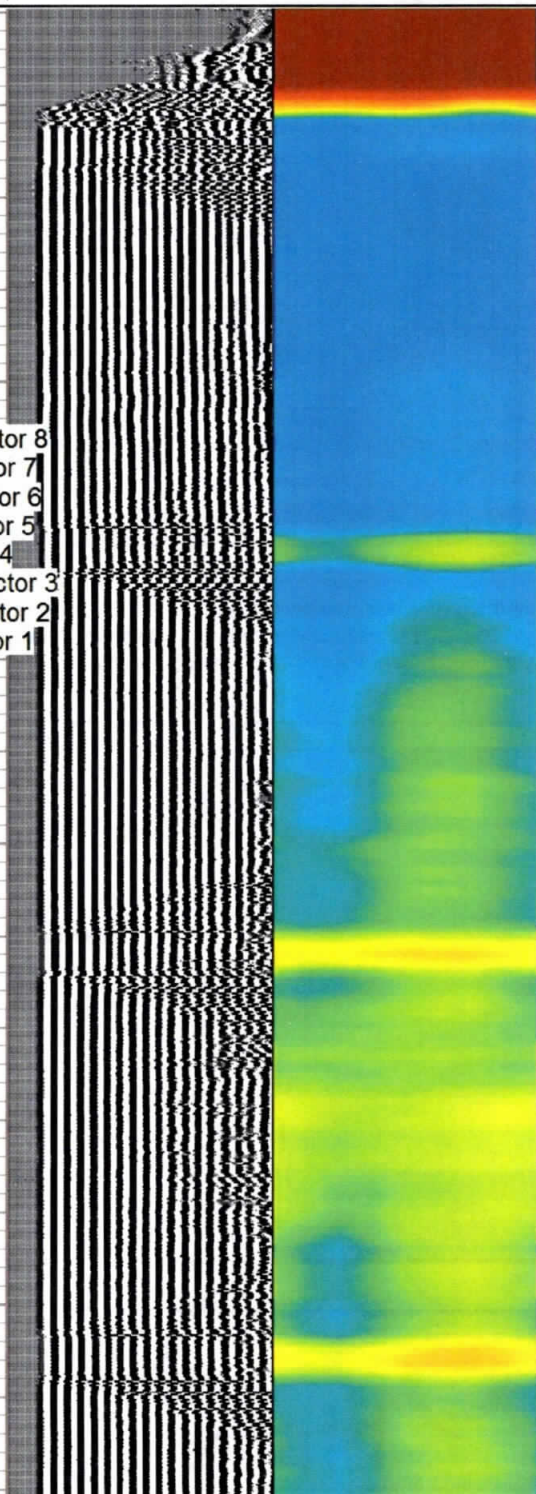
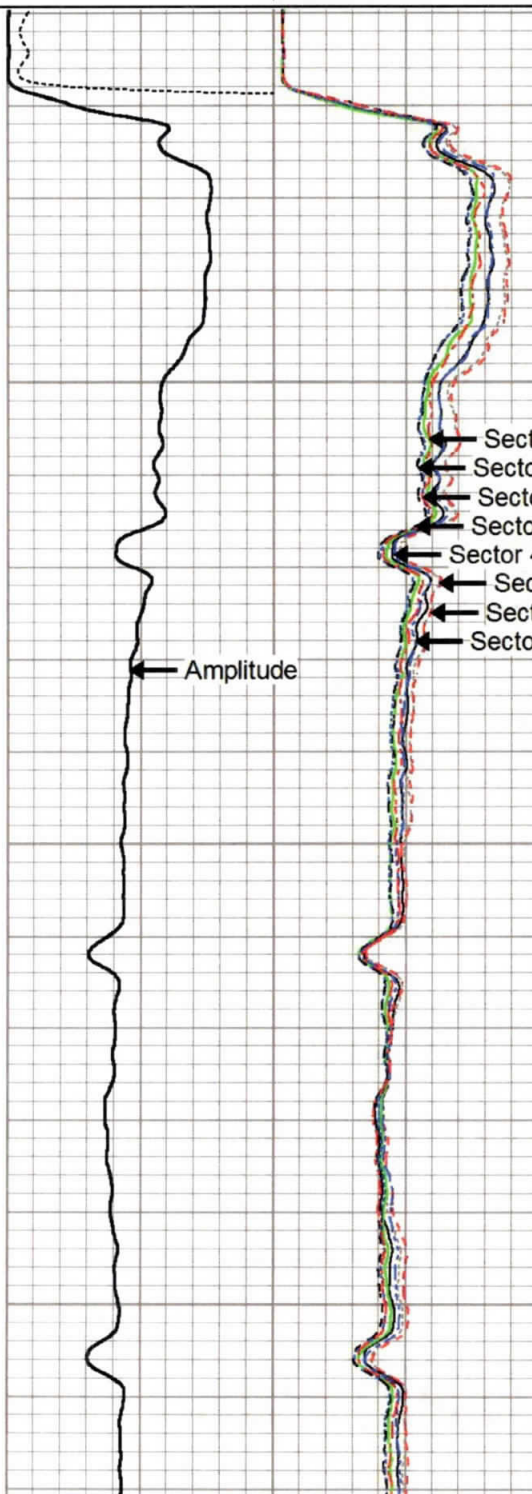
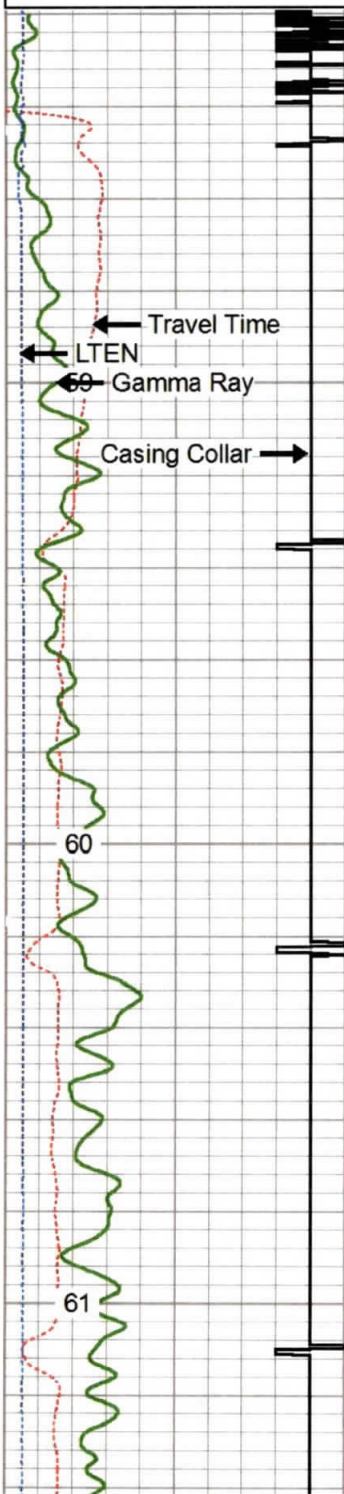
-5 Sector 5 150					

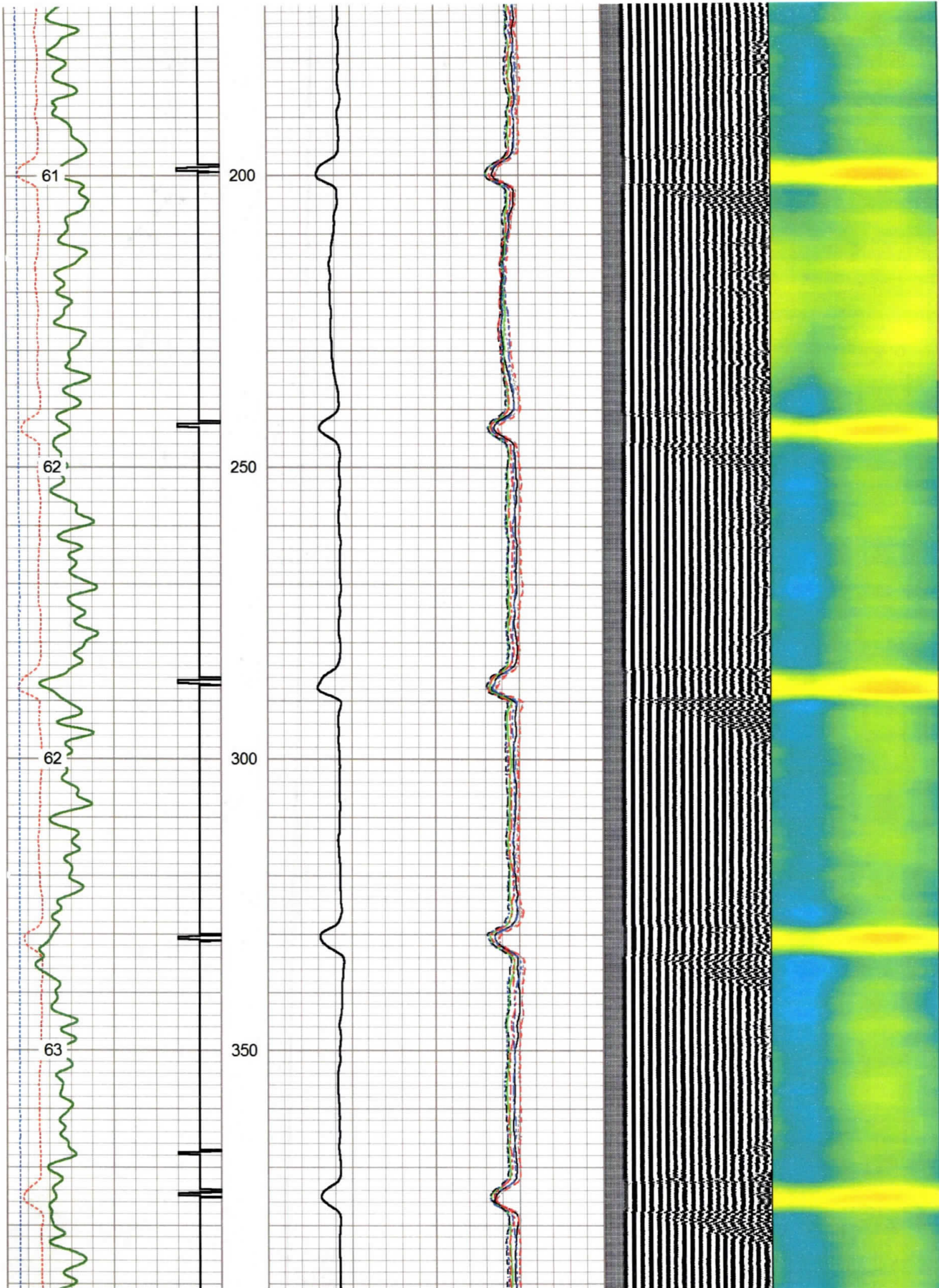
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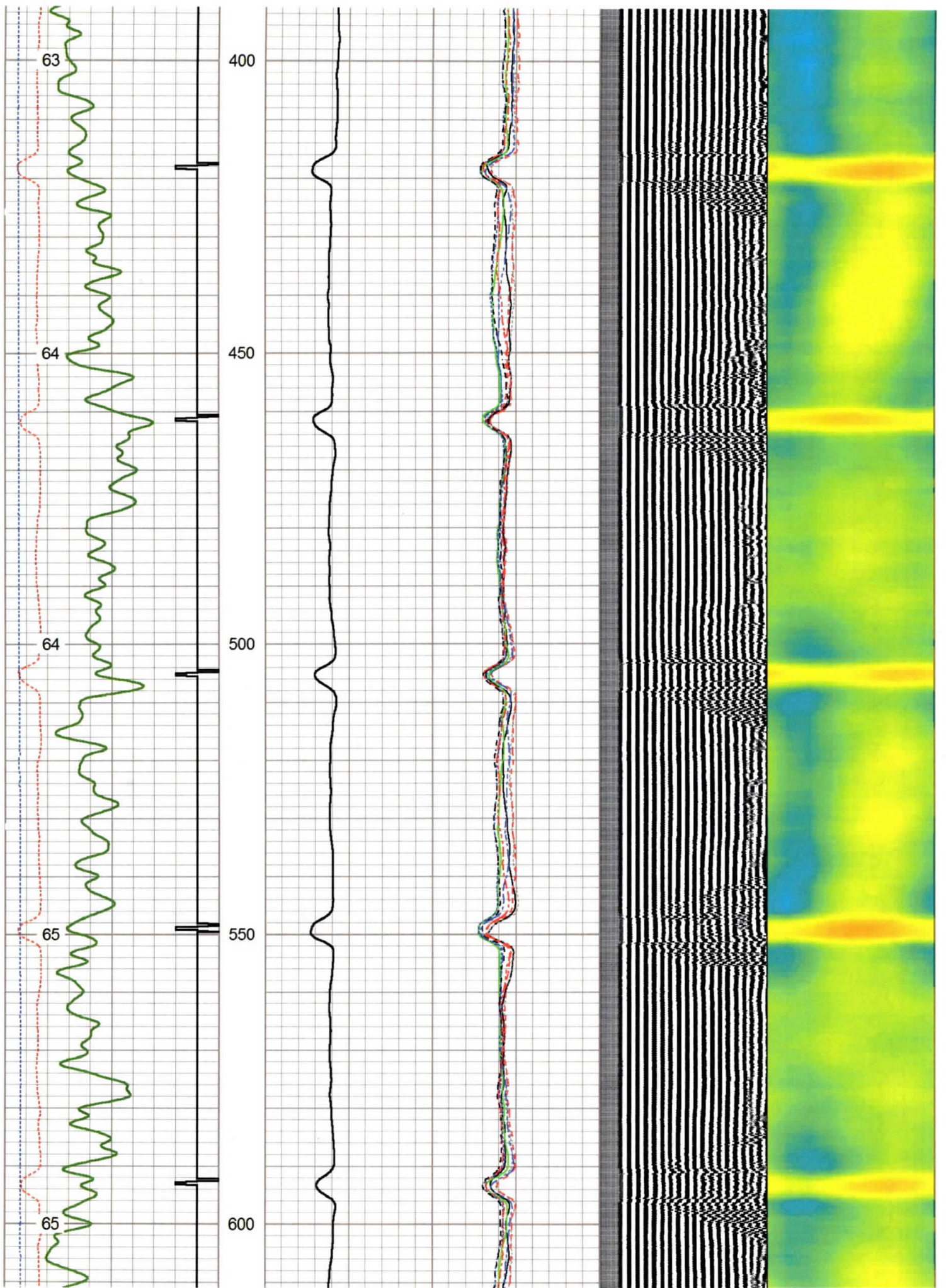
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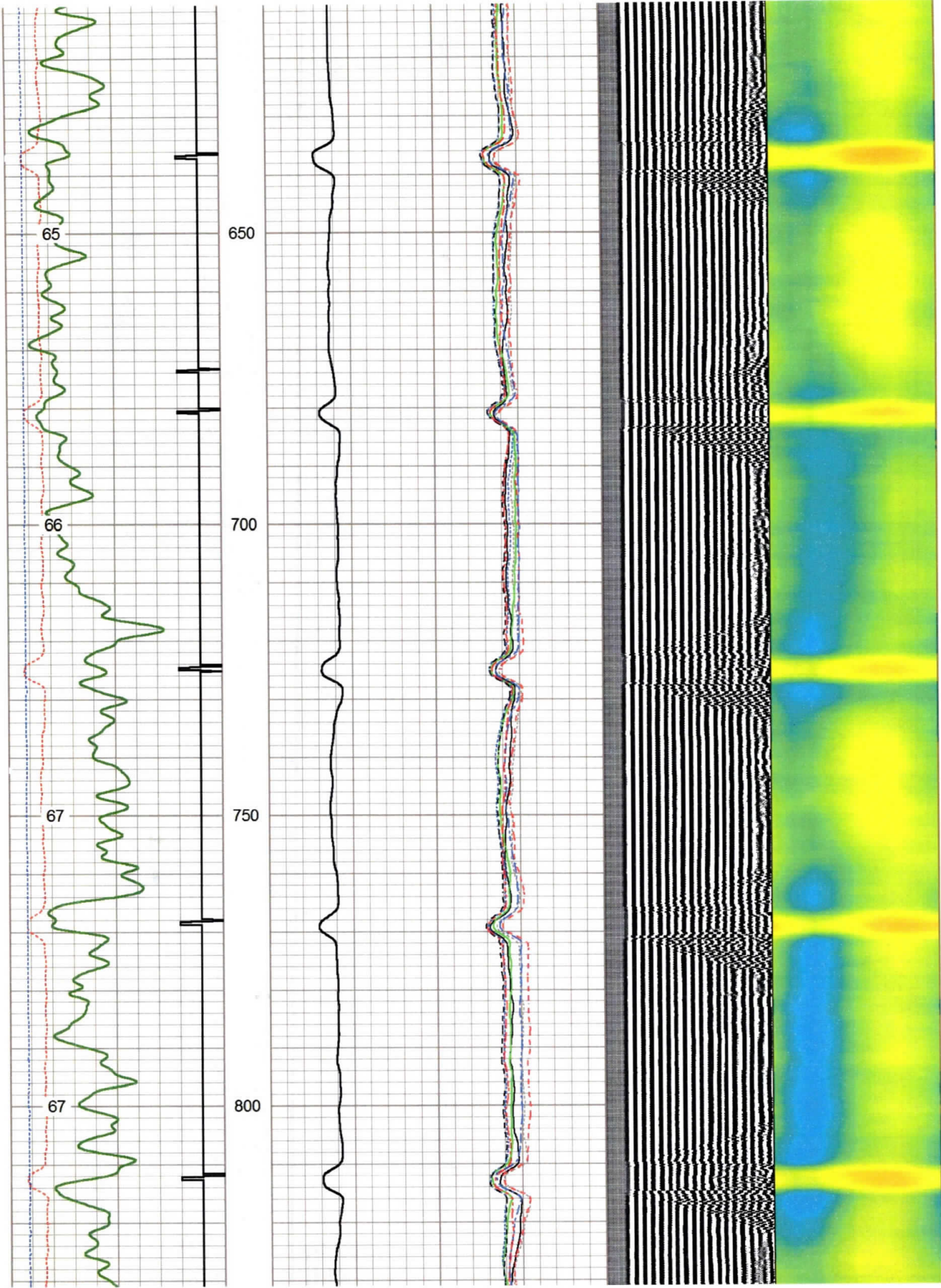
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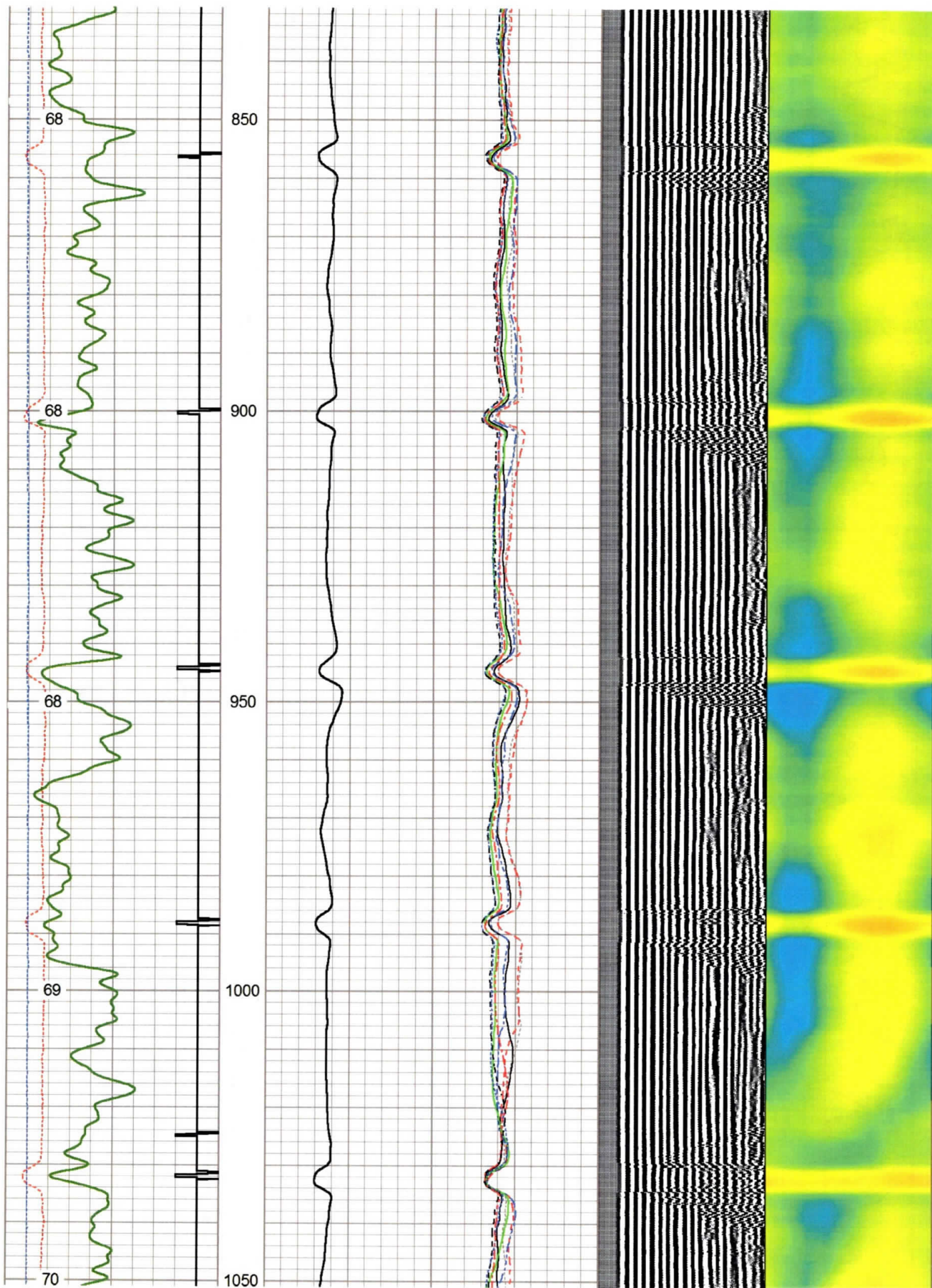
Variable Density	1	Cement Map	8
200	(usec)	1200	

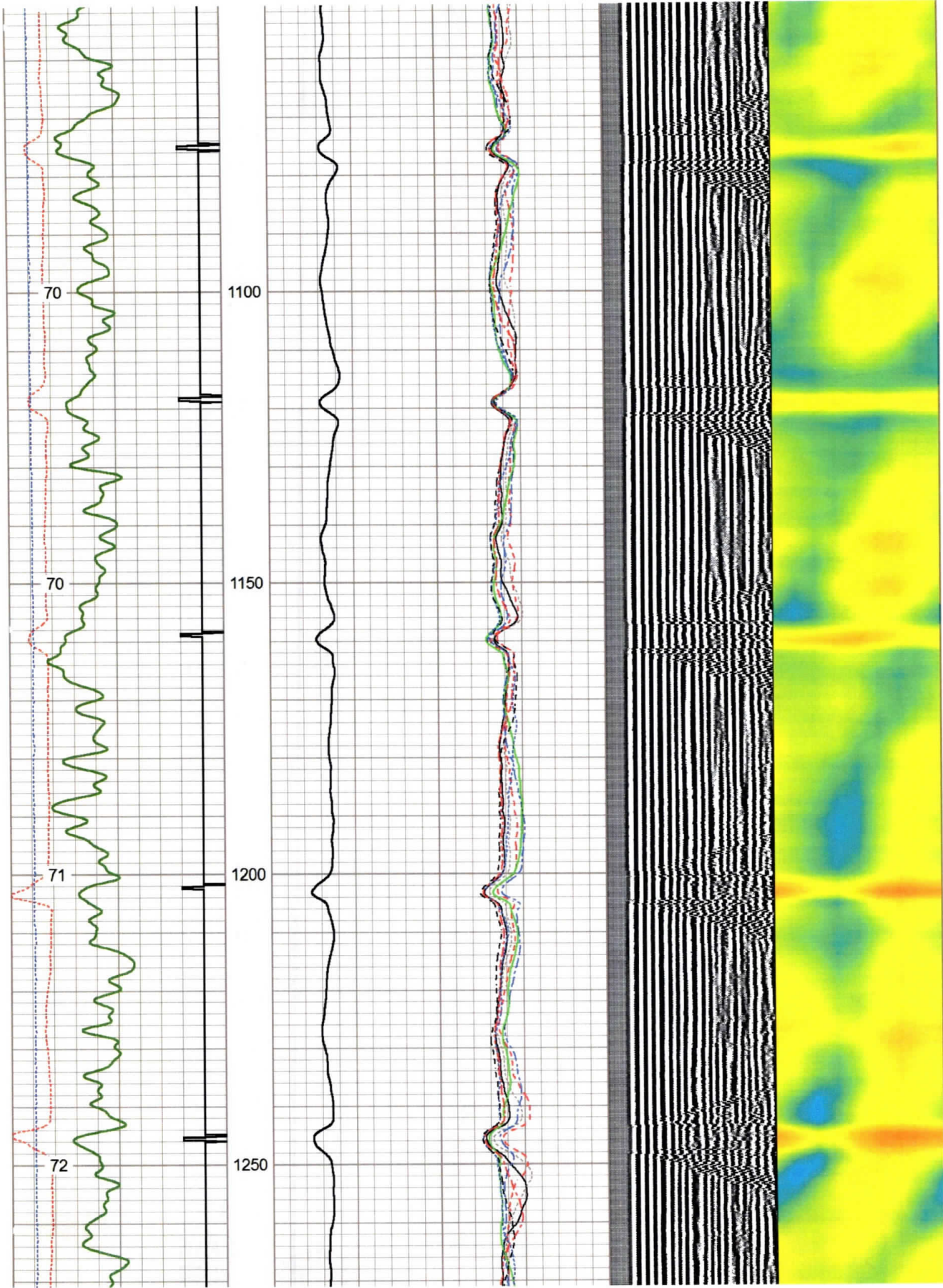


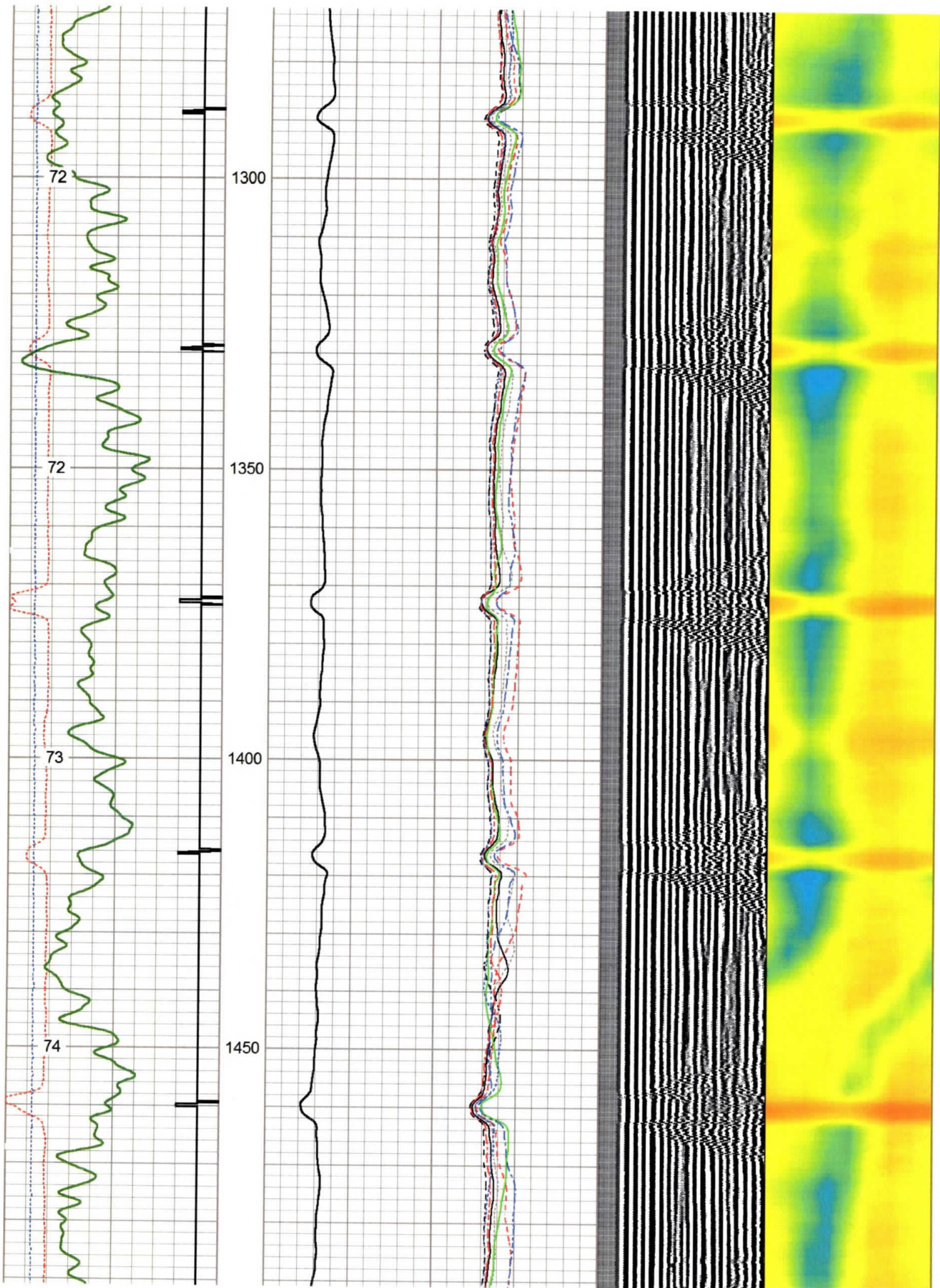


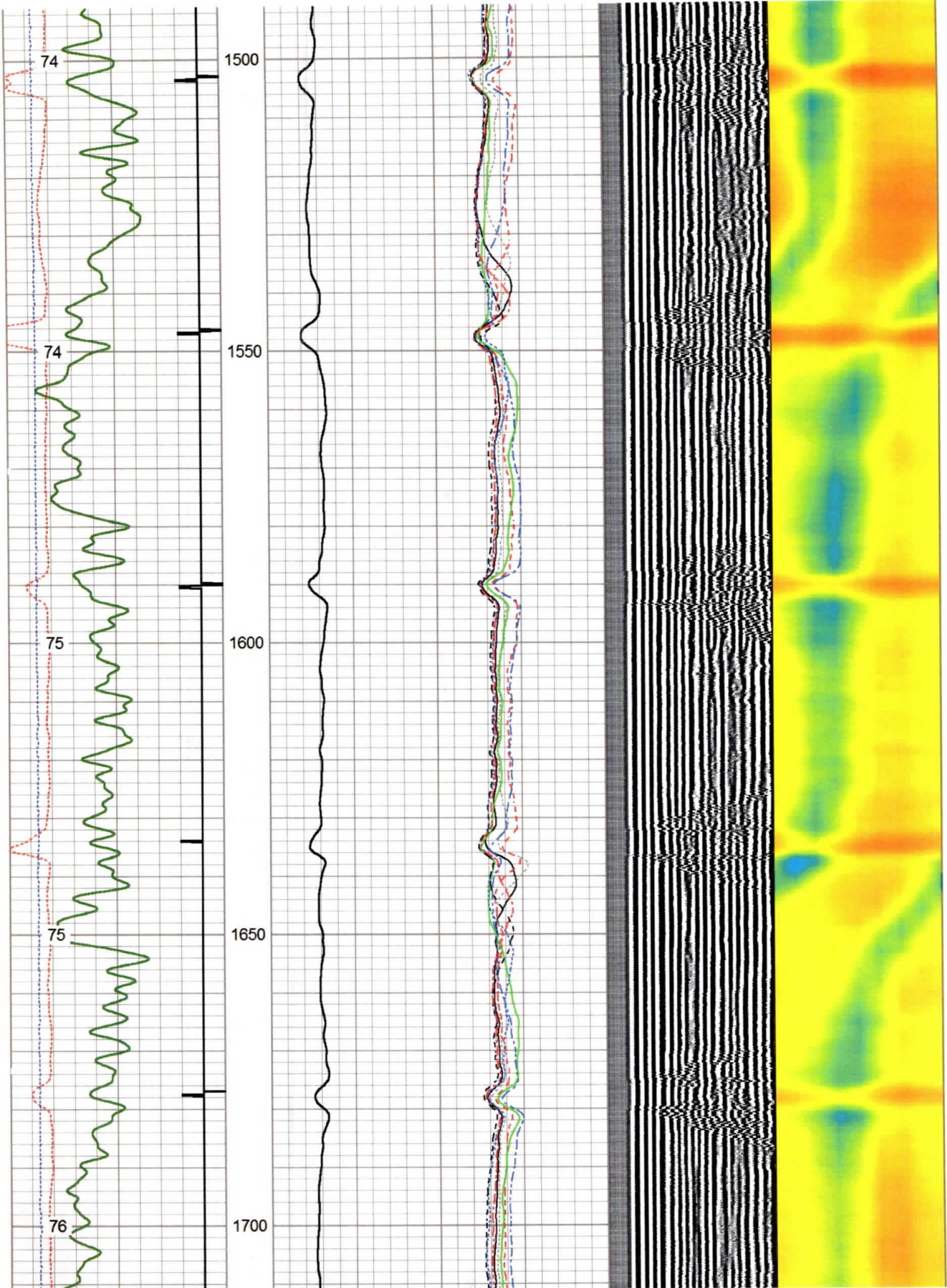


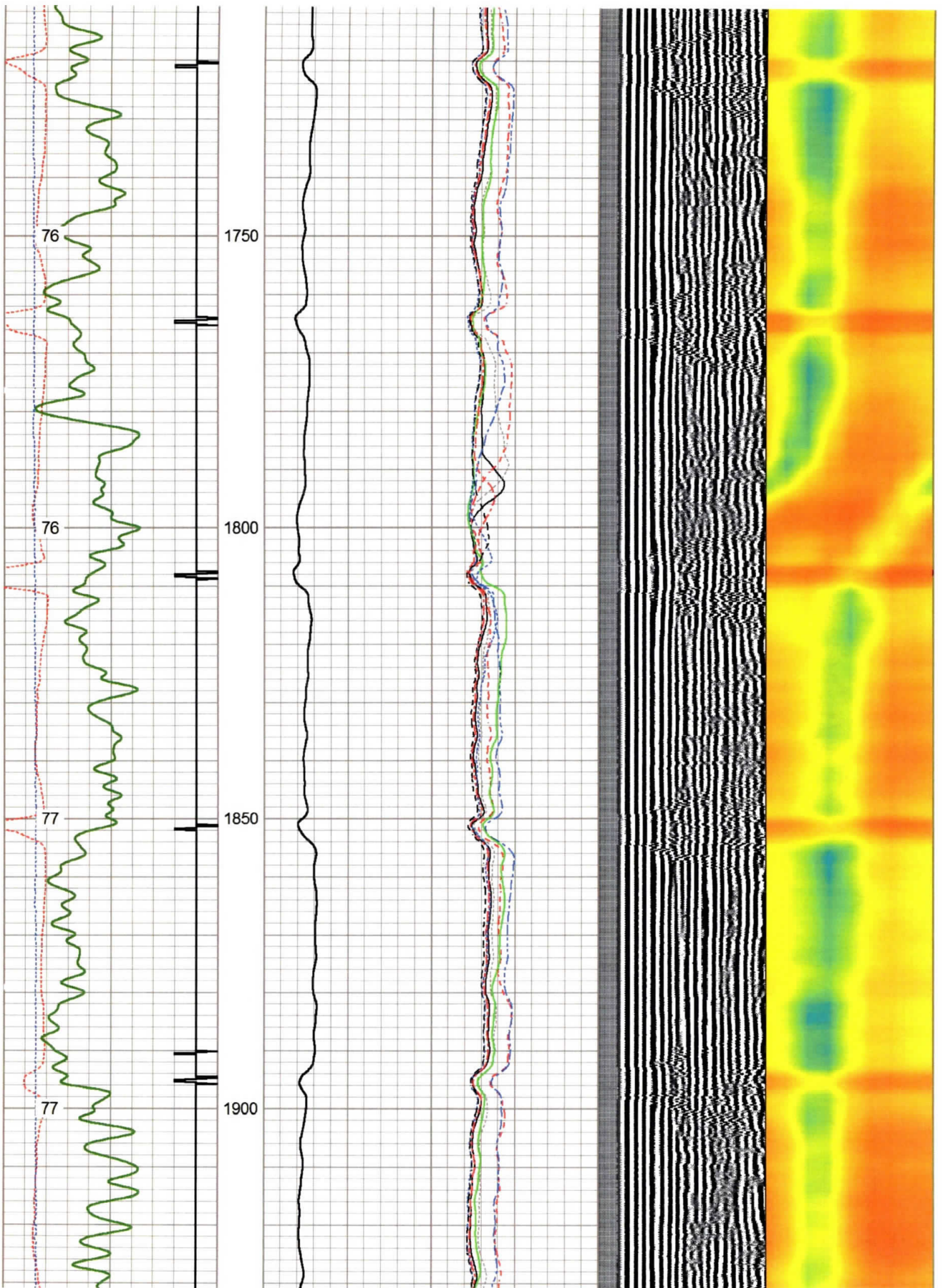


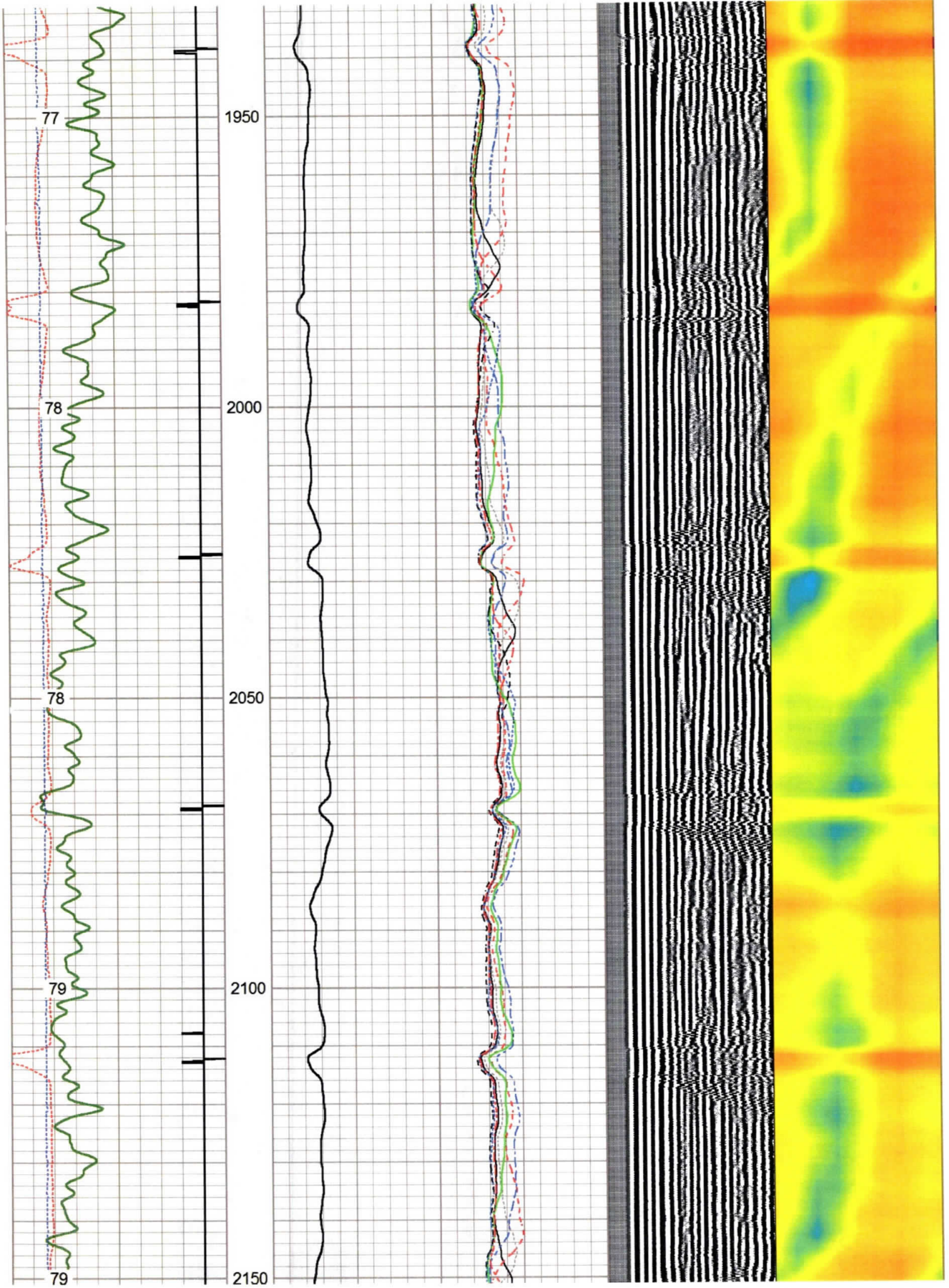


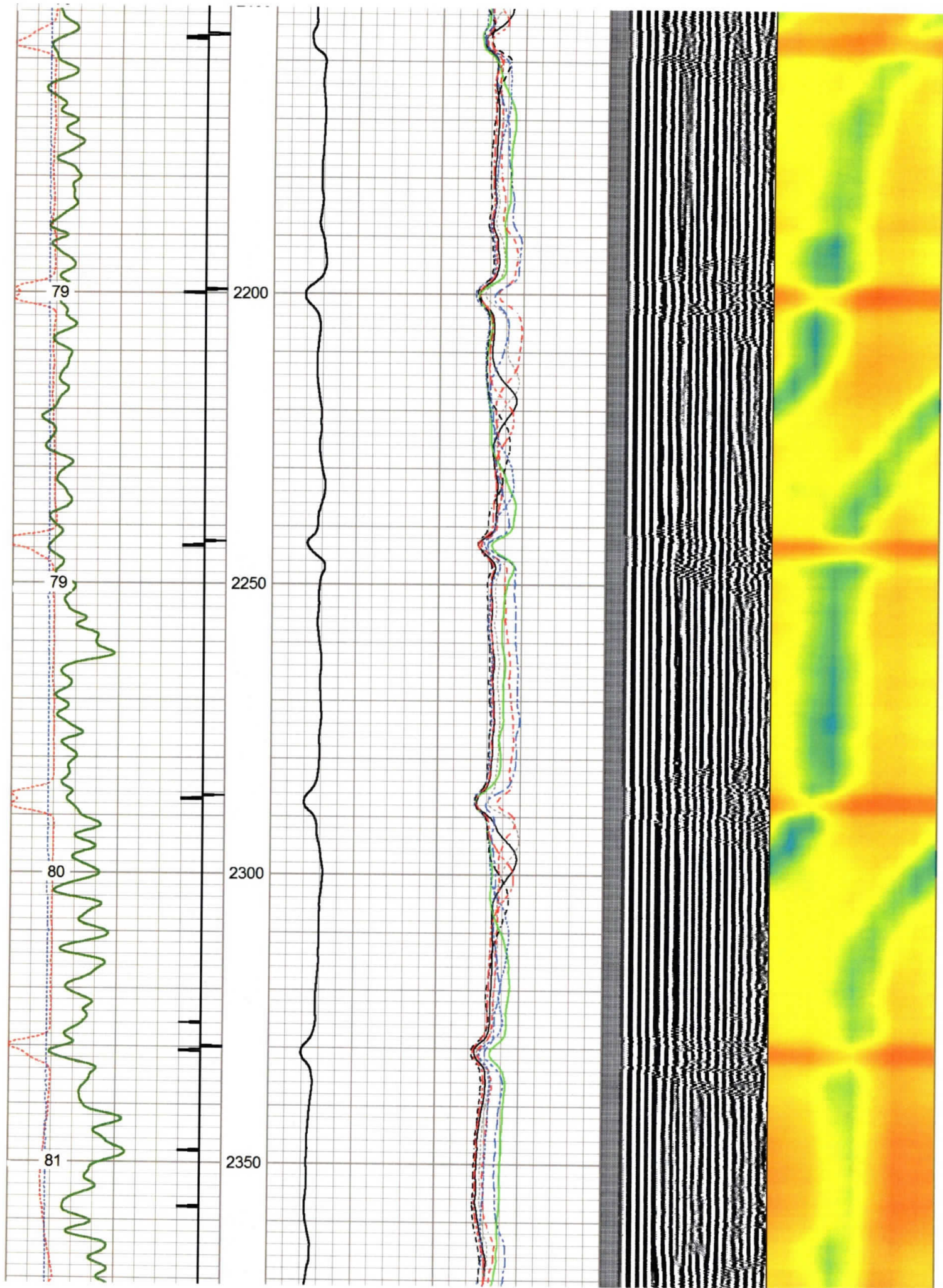


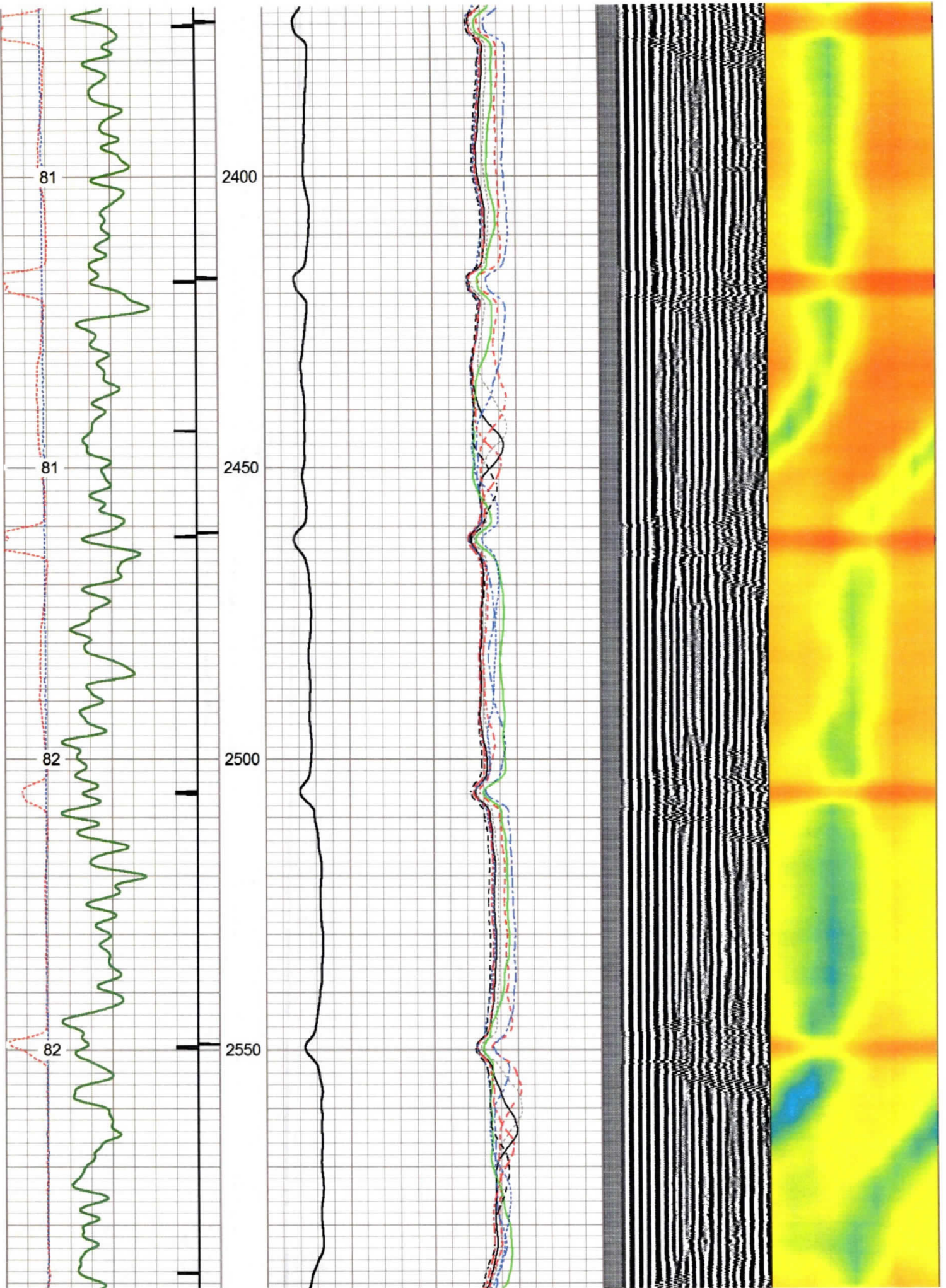


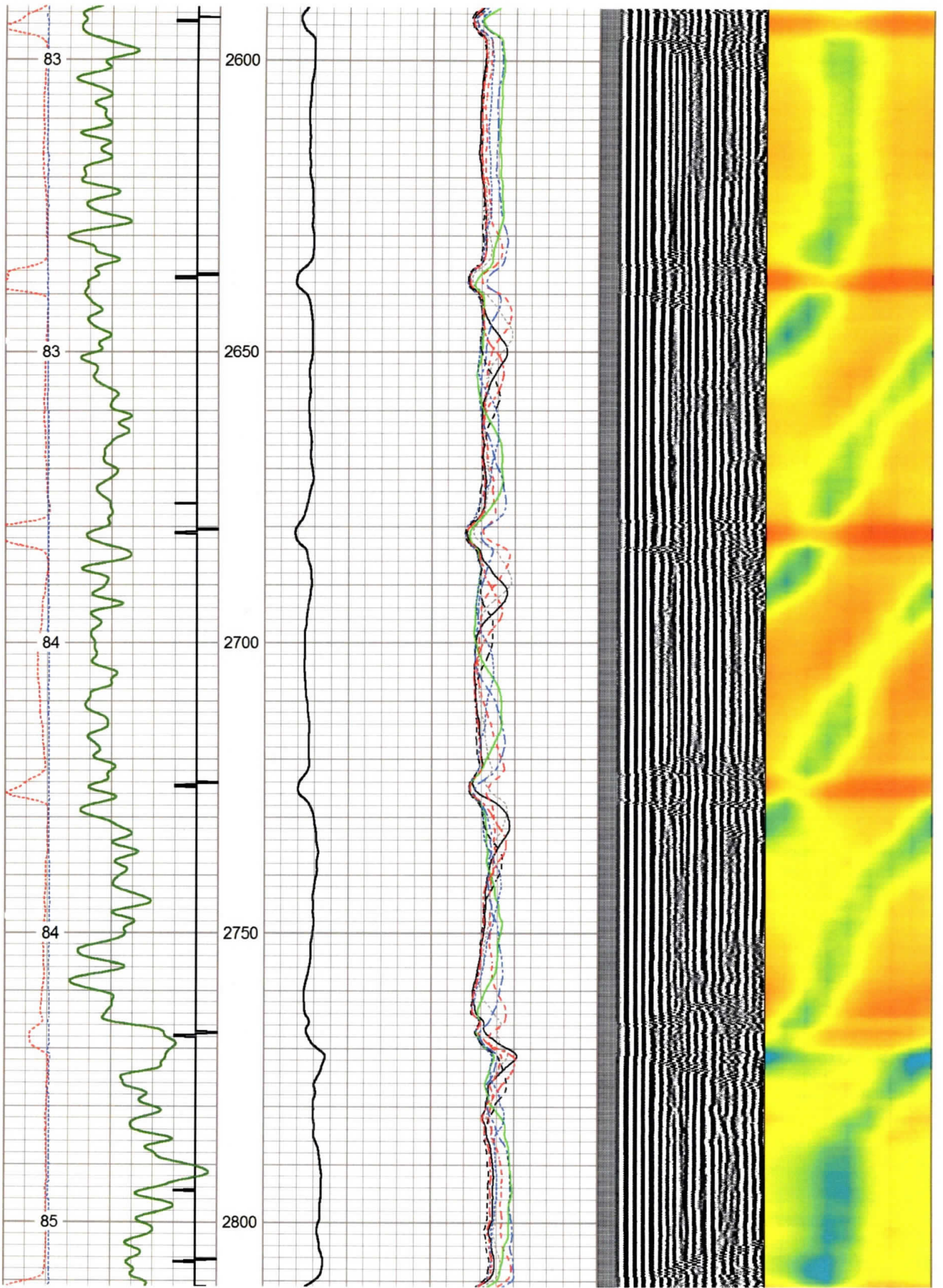


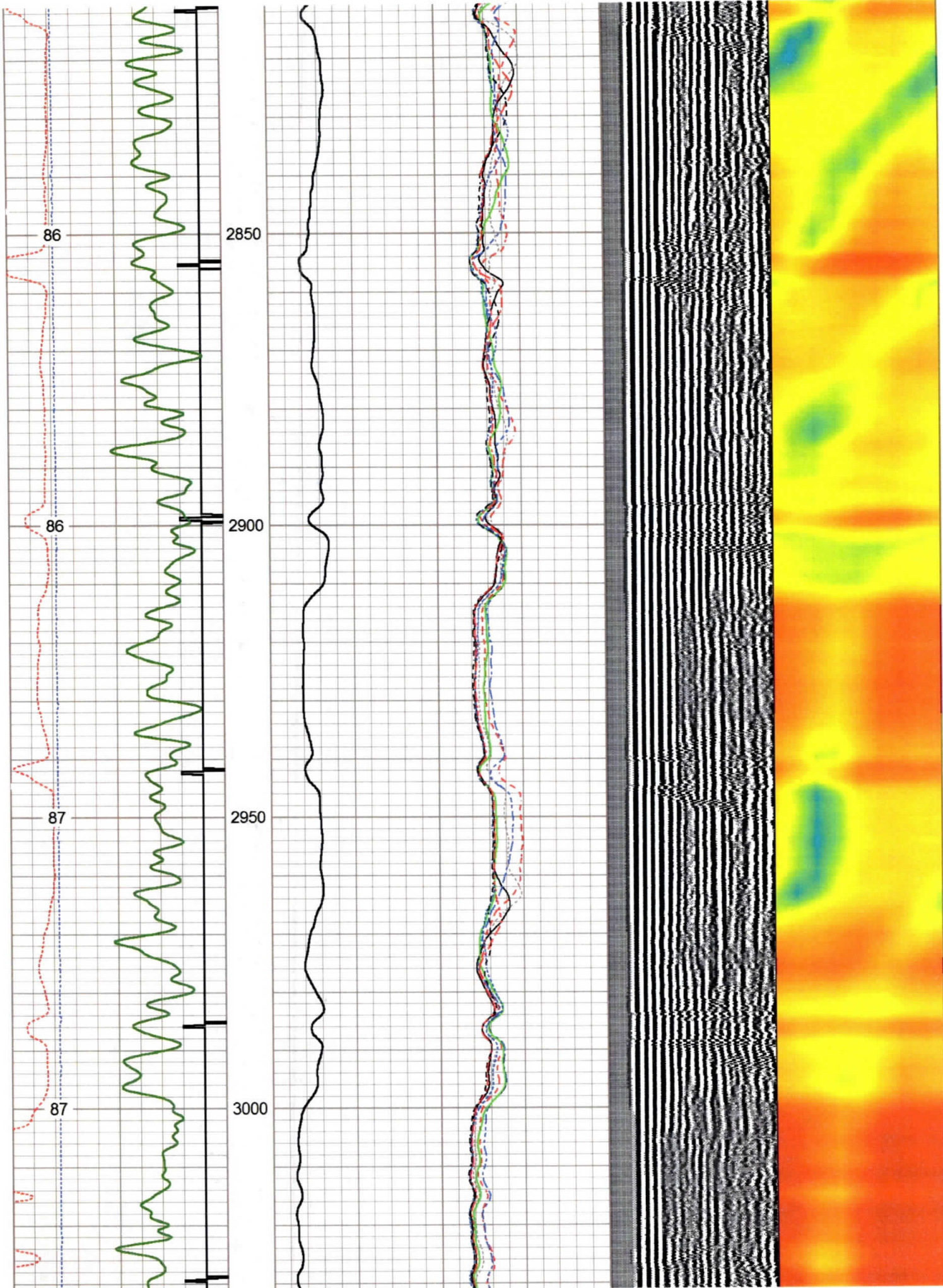


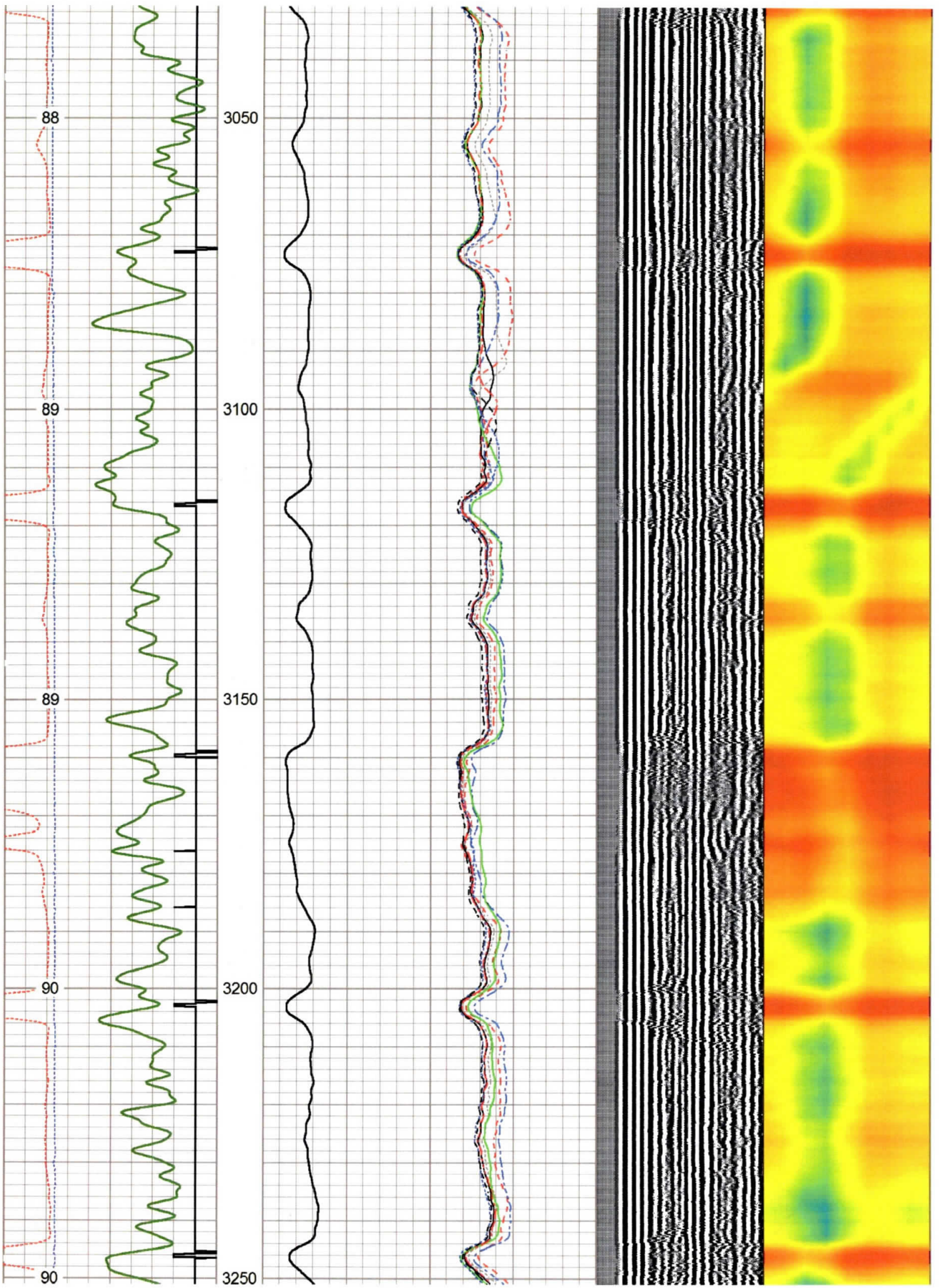


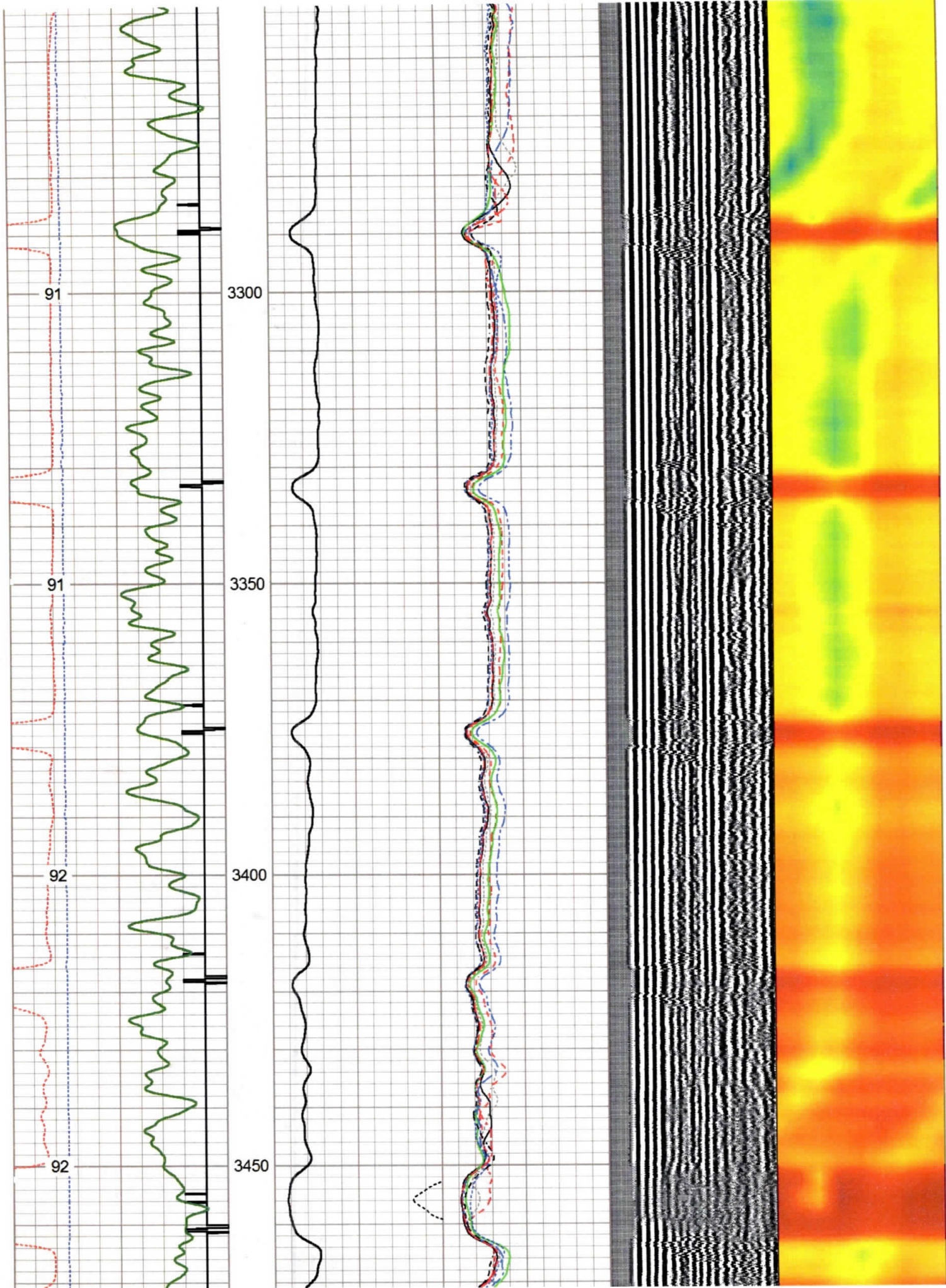


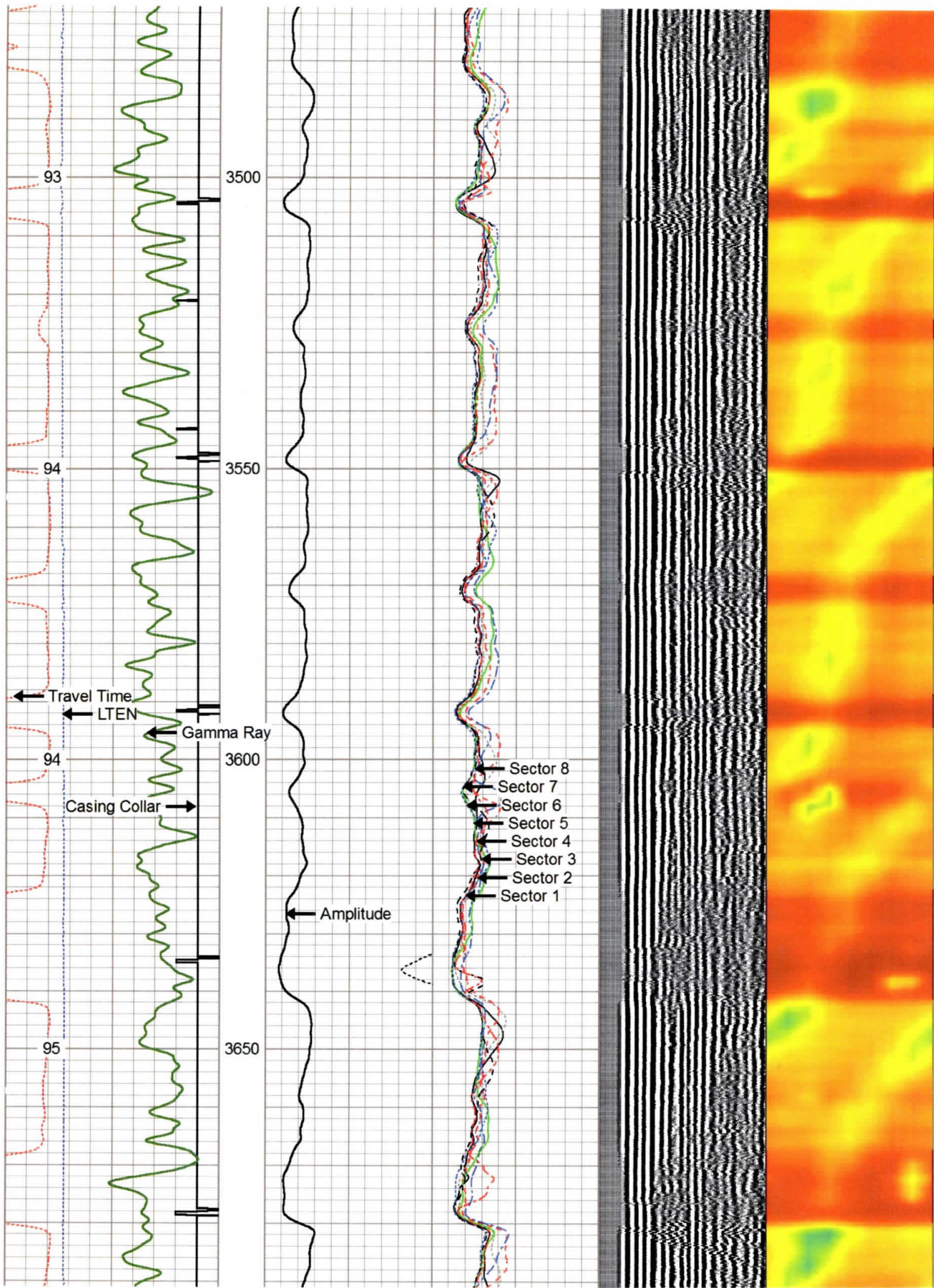


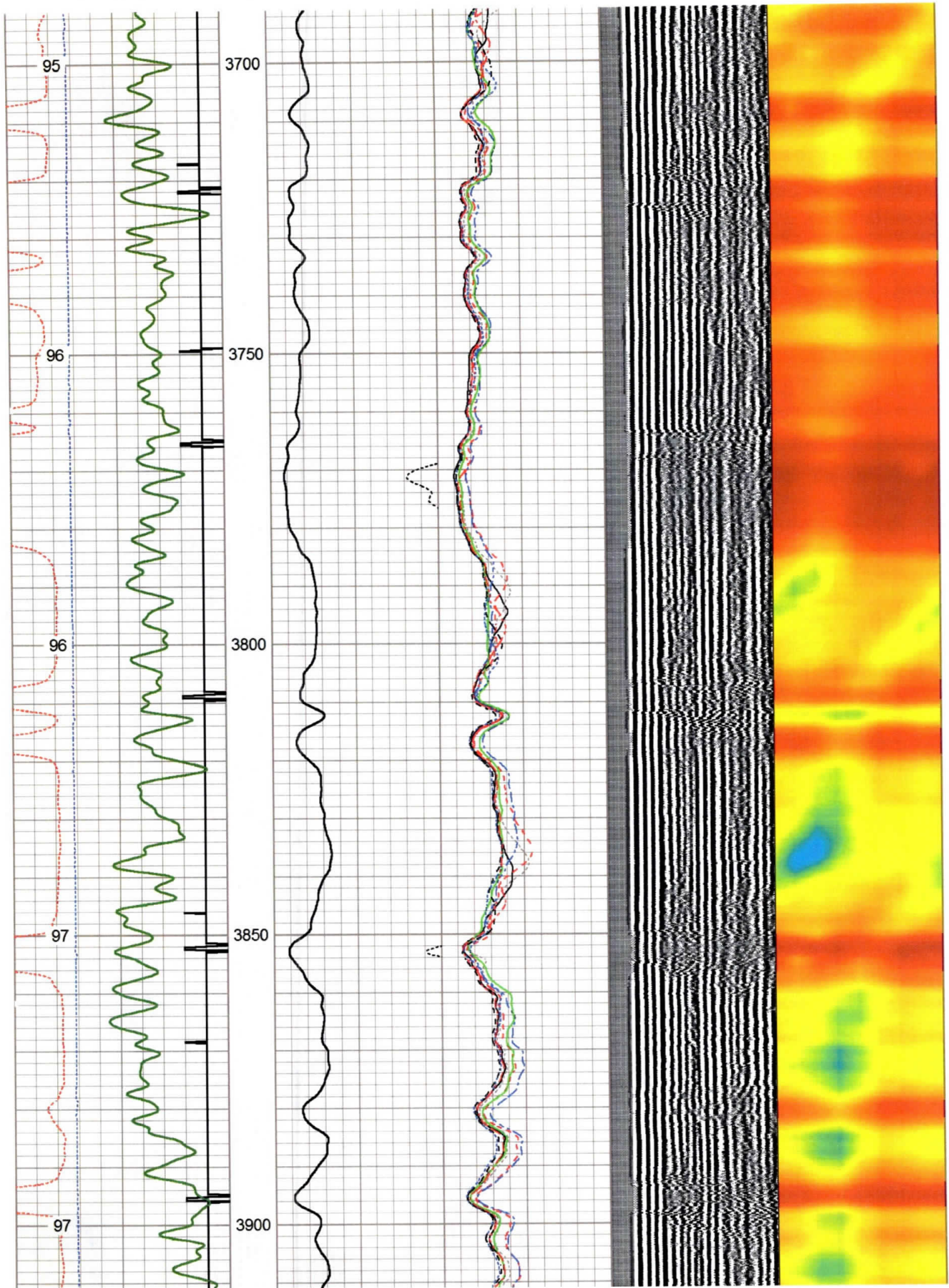


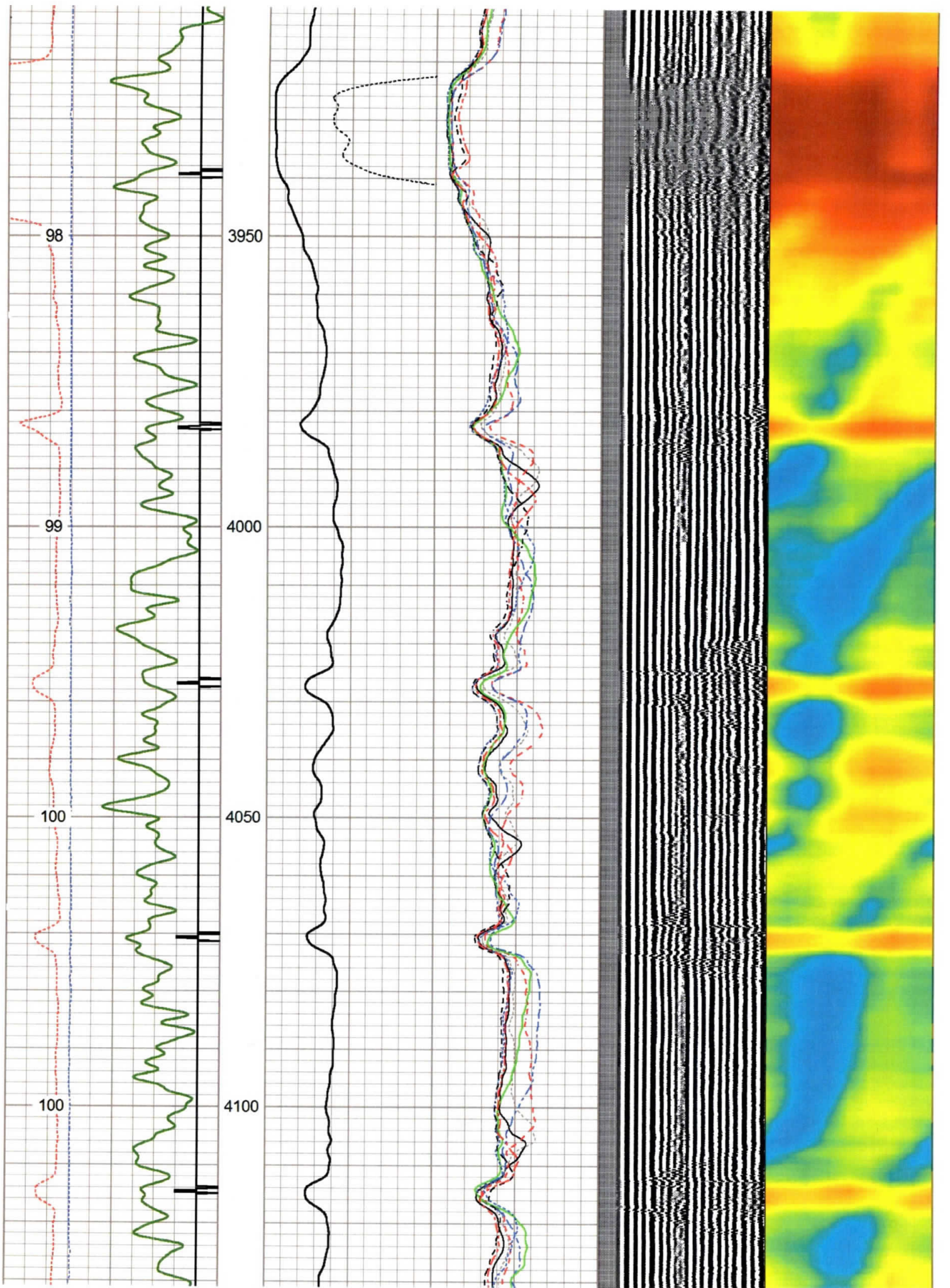


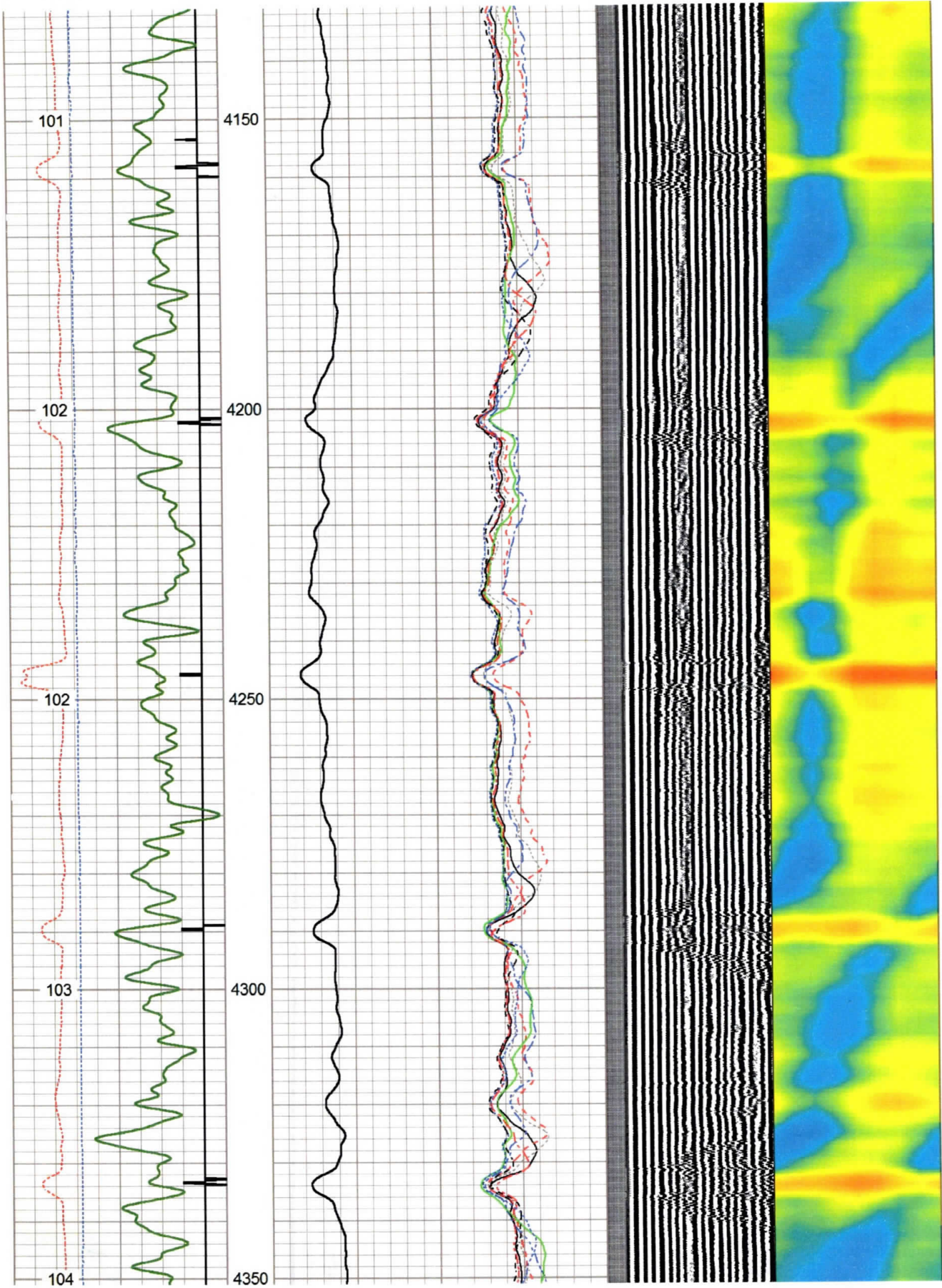


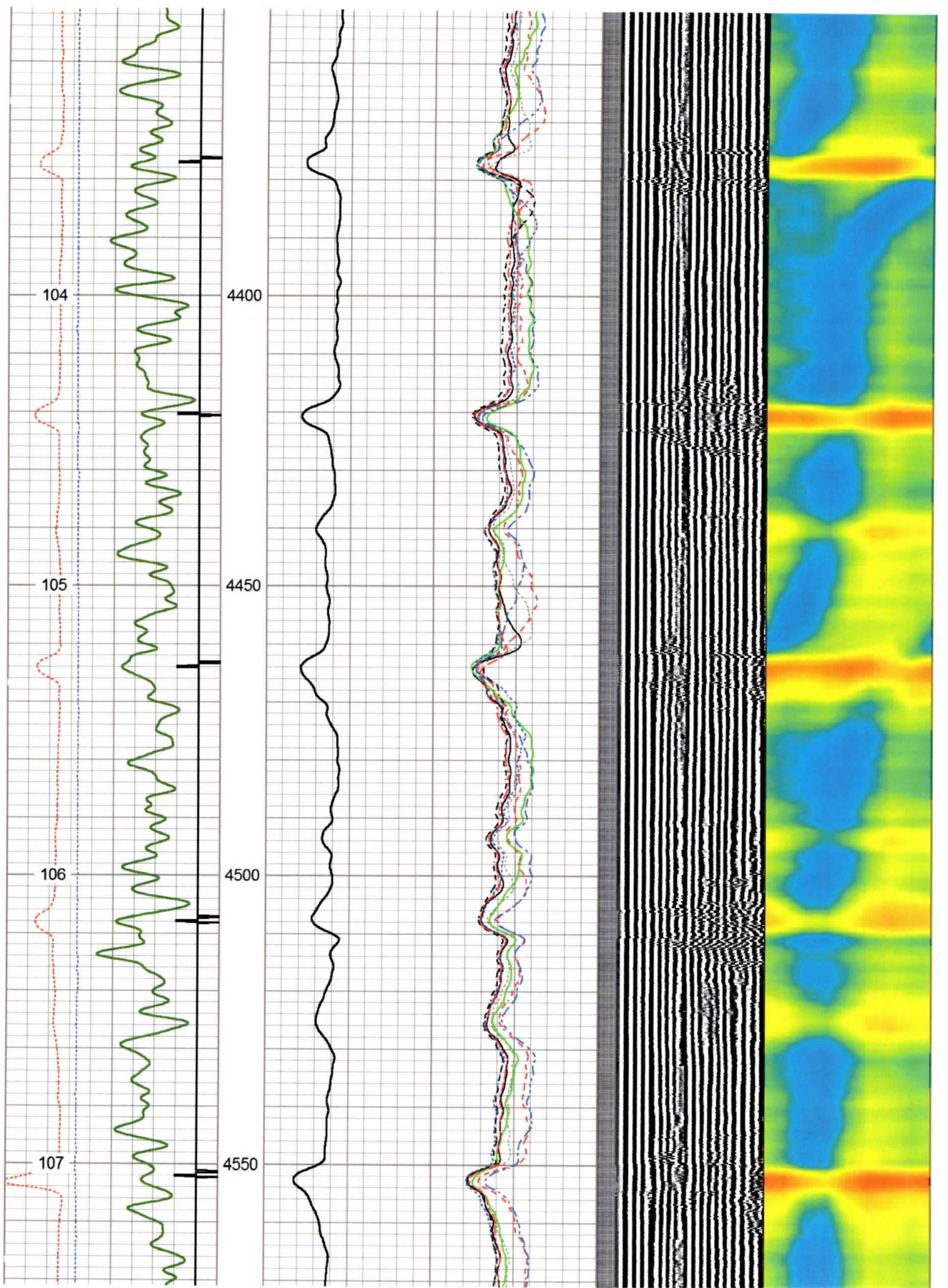


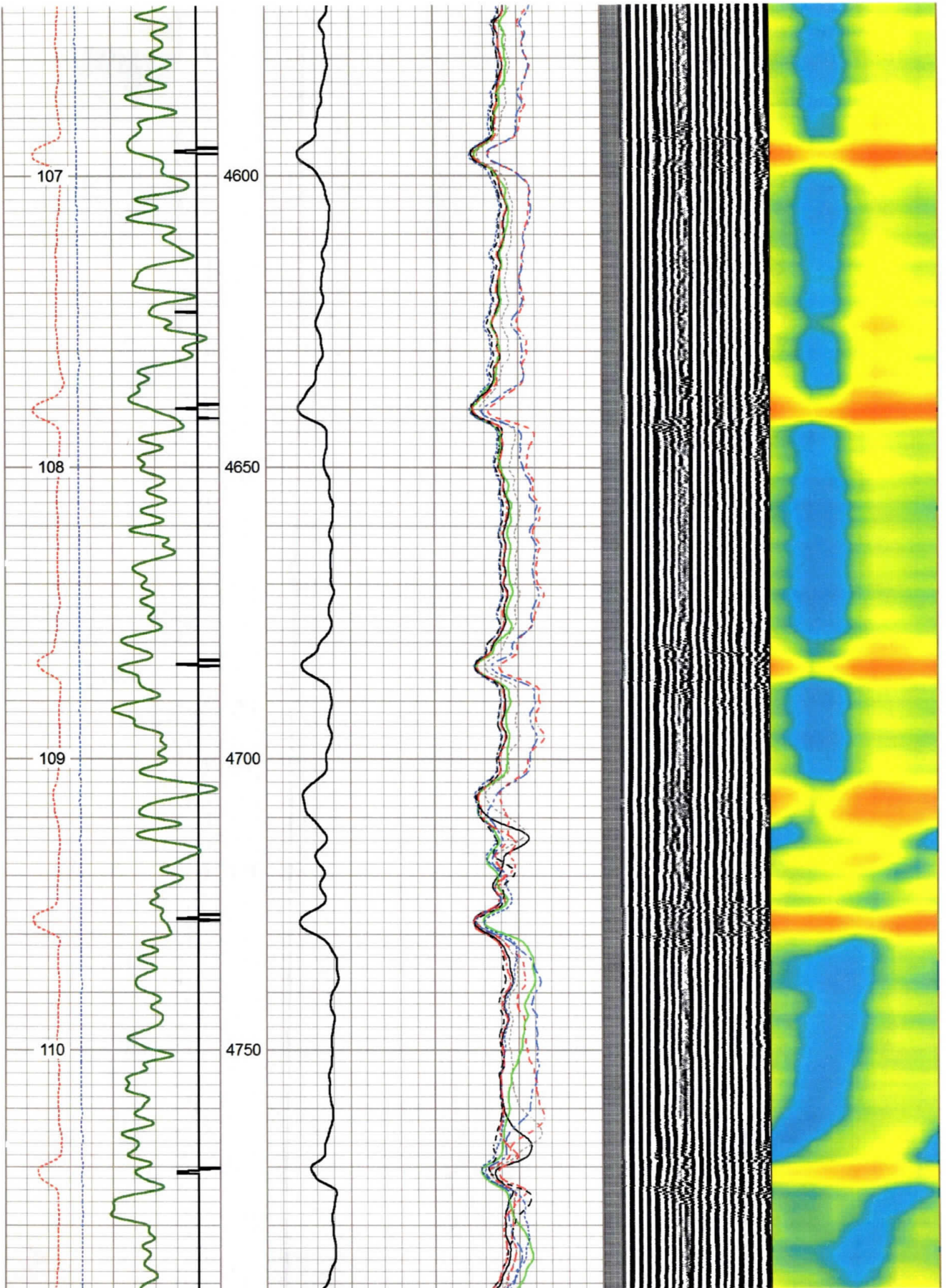


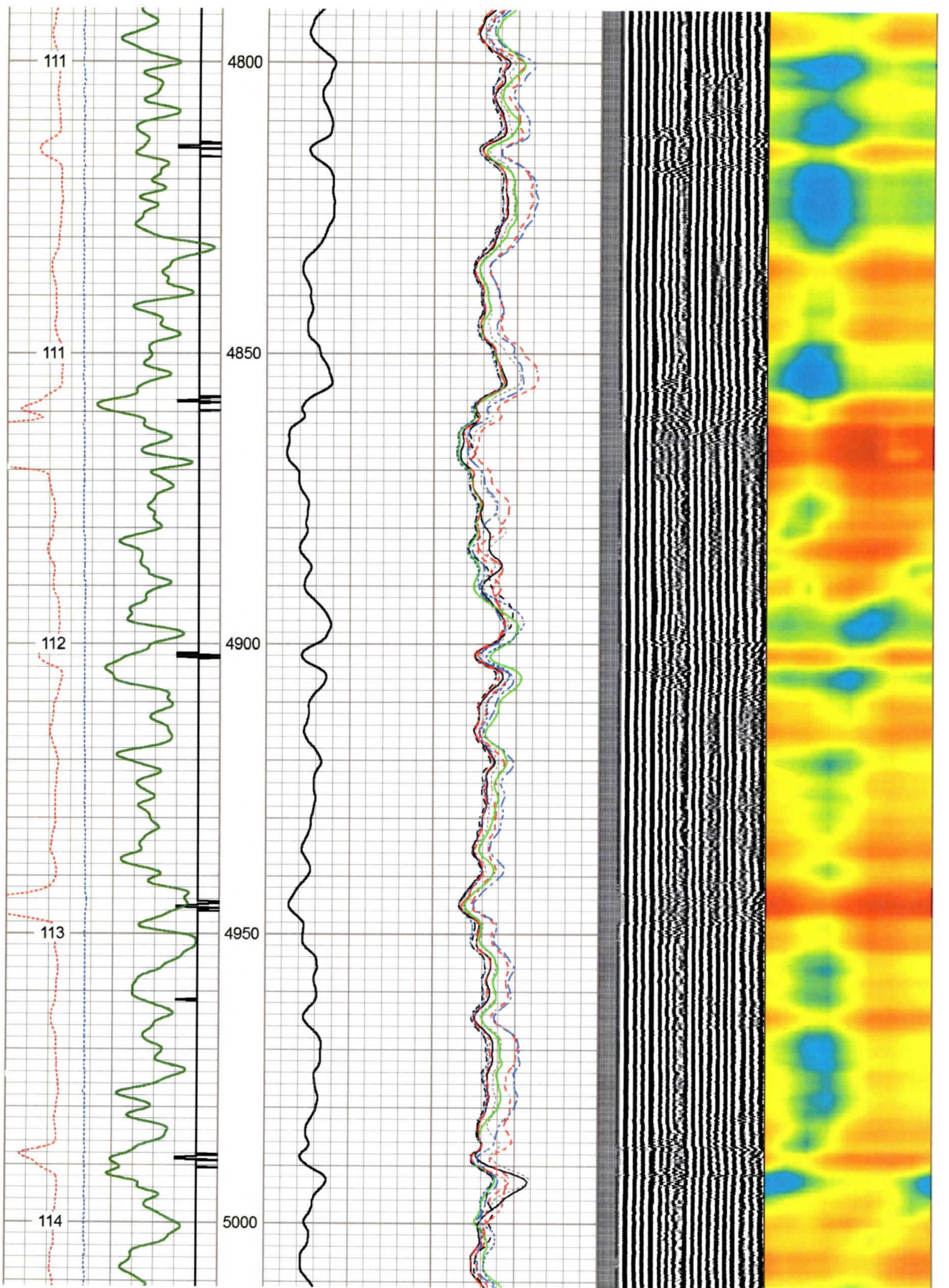


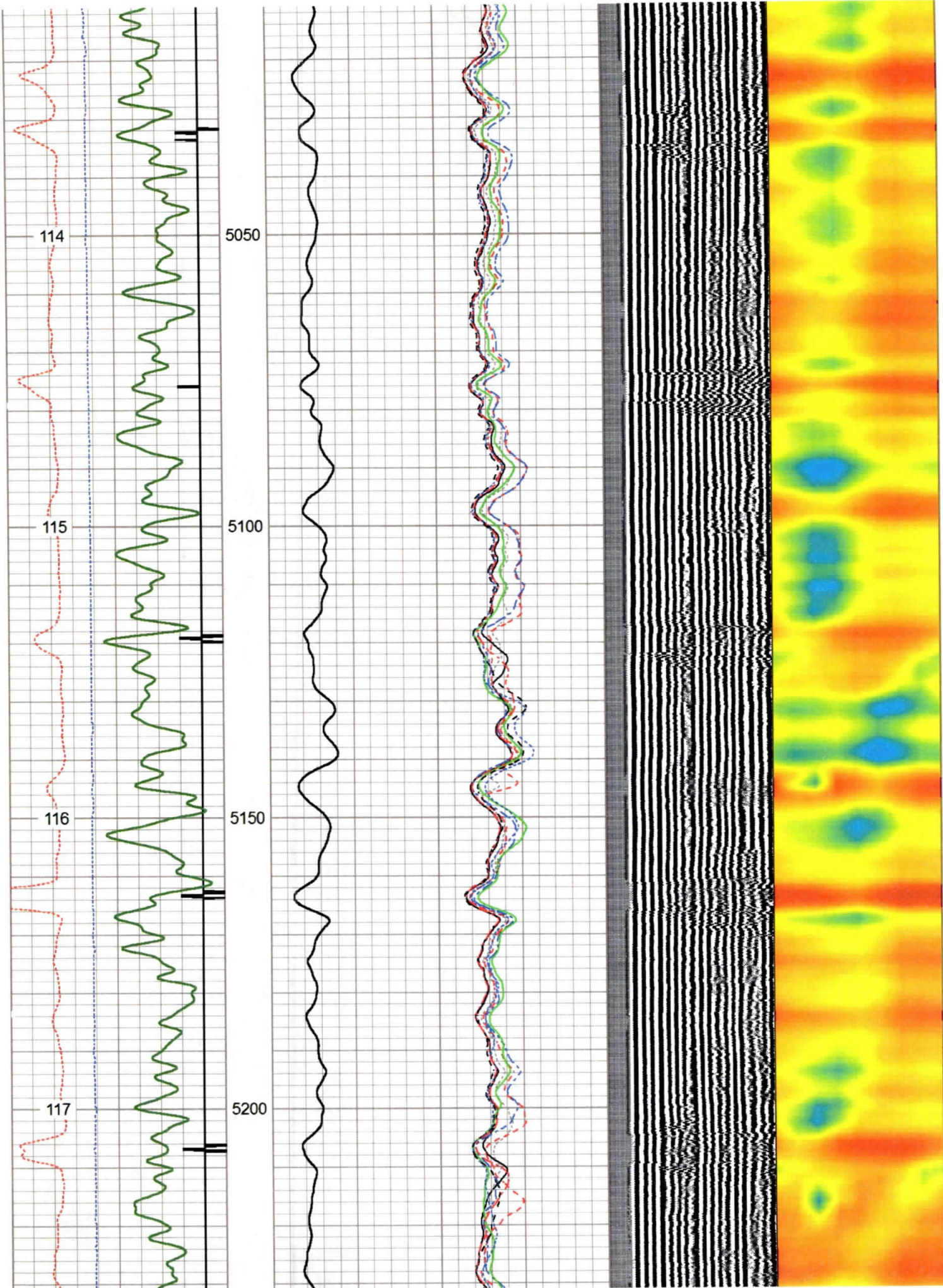


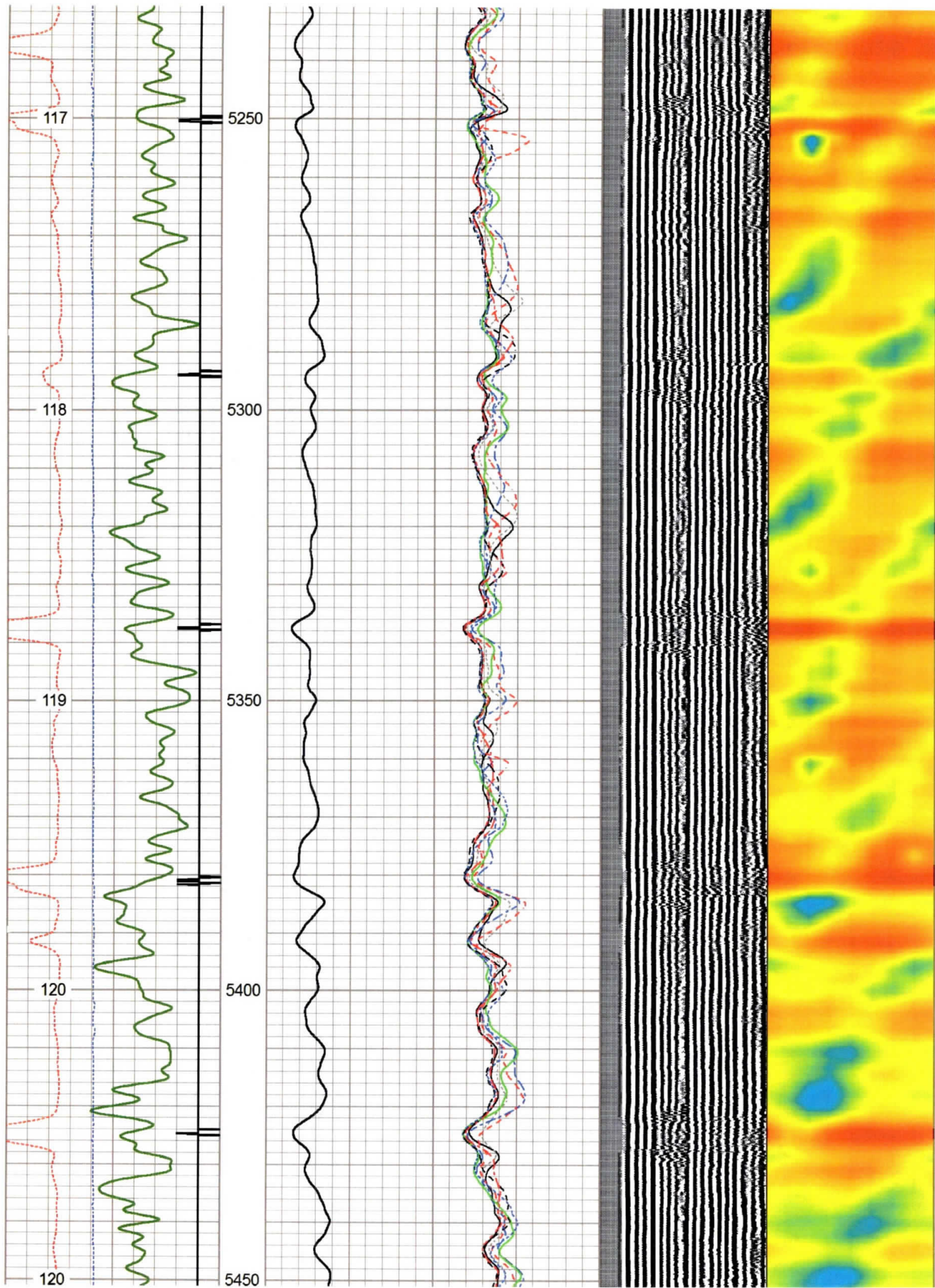


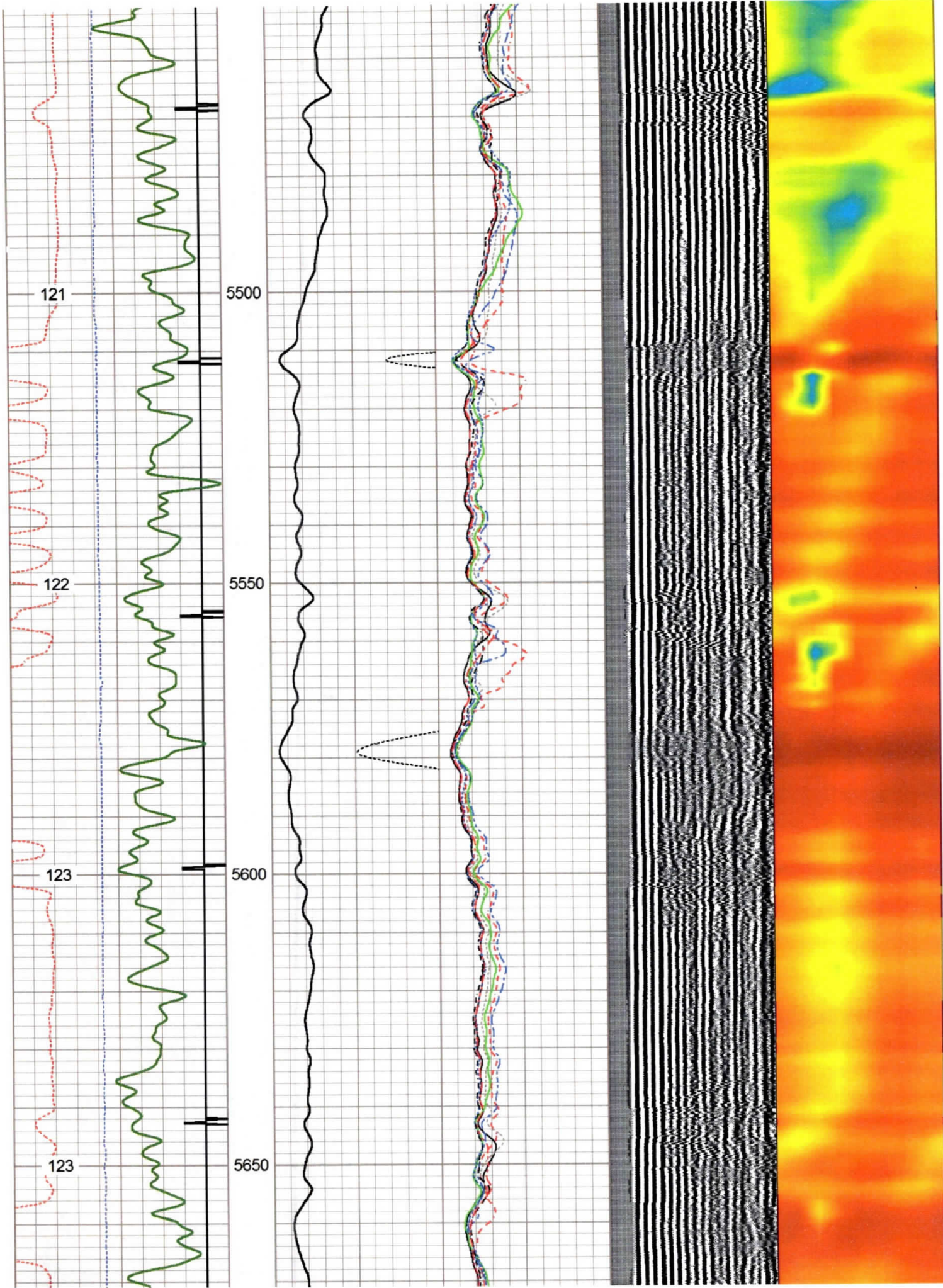


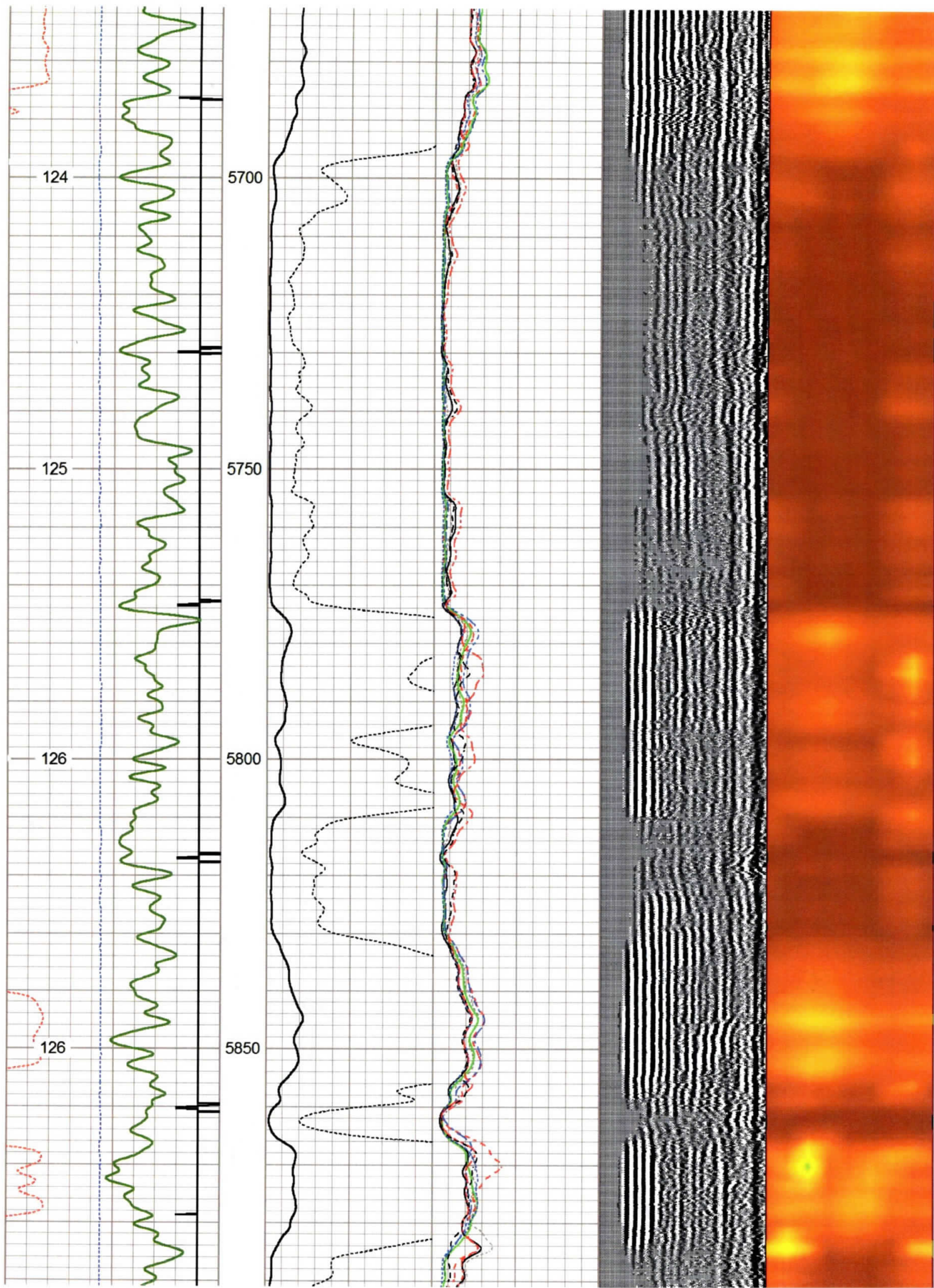


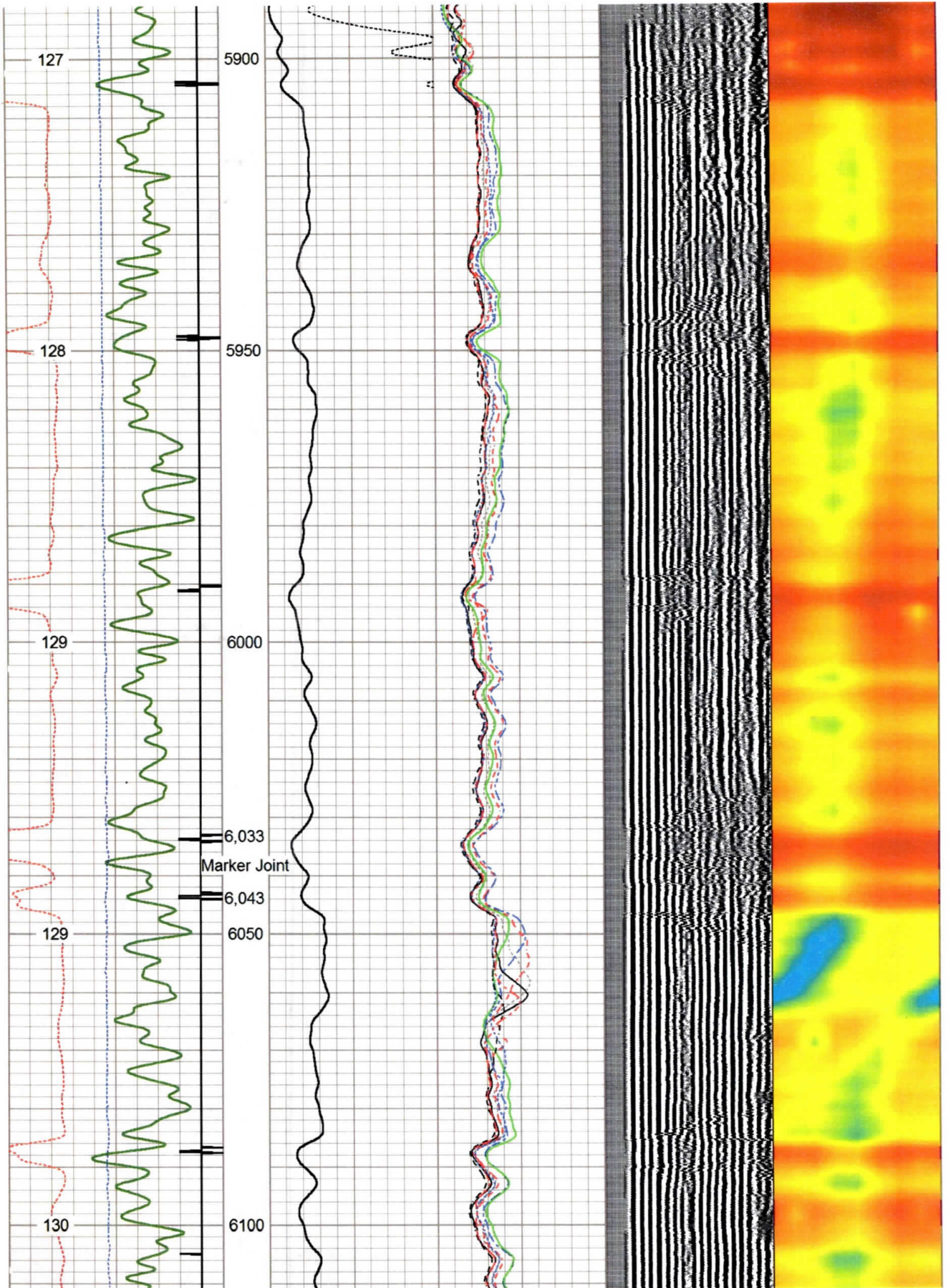


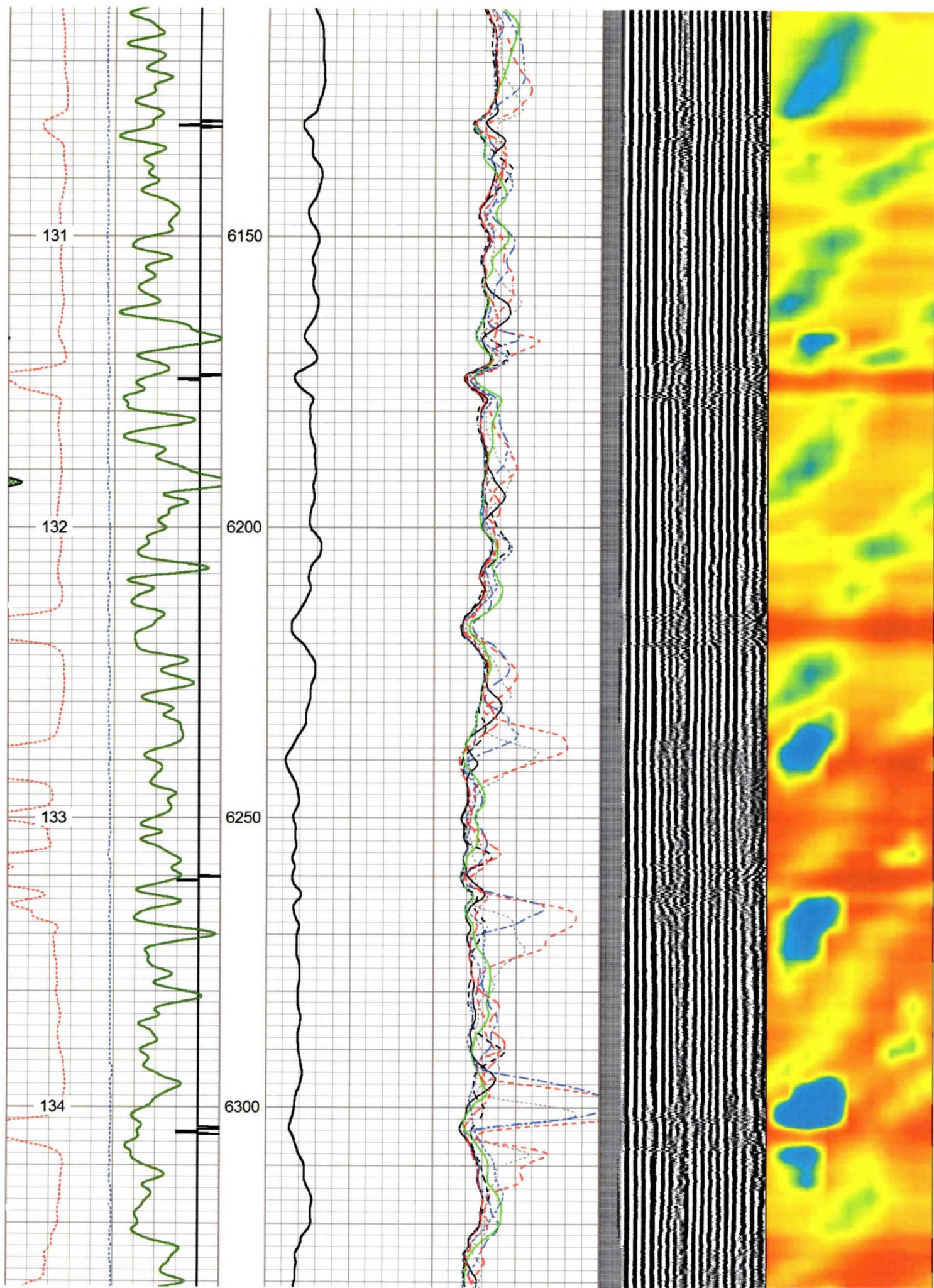


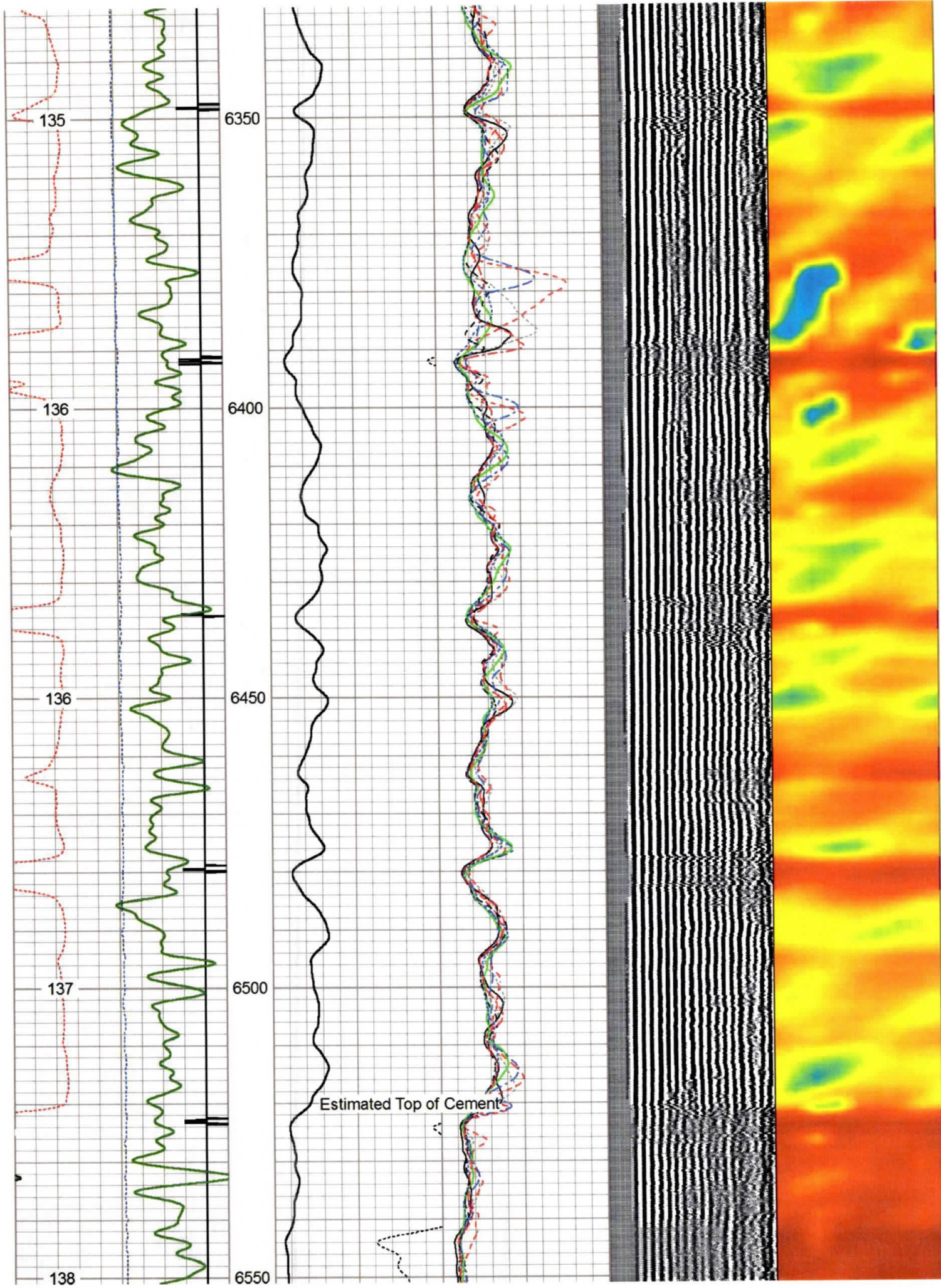


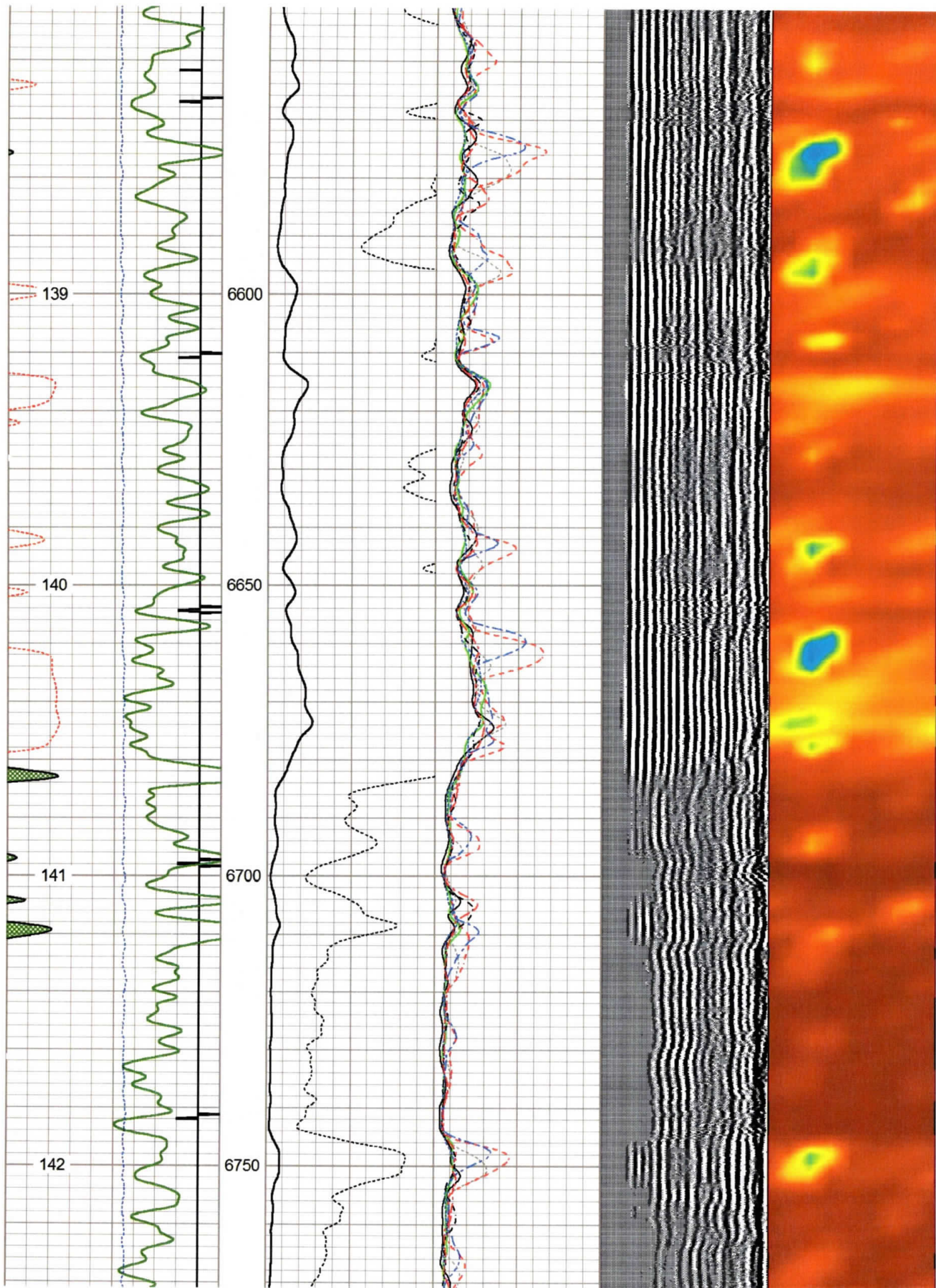


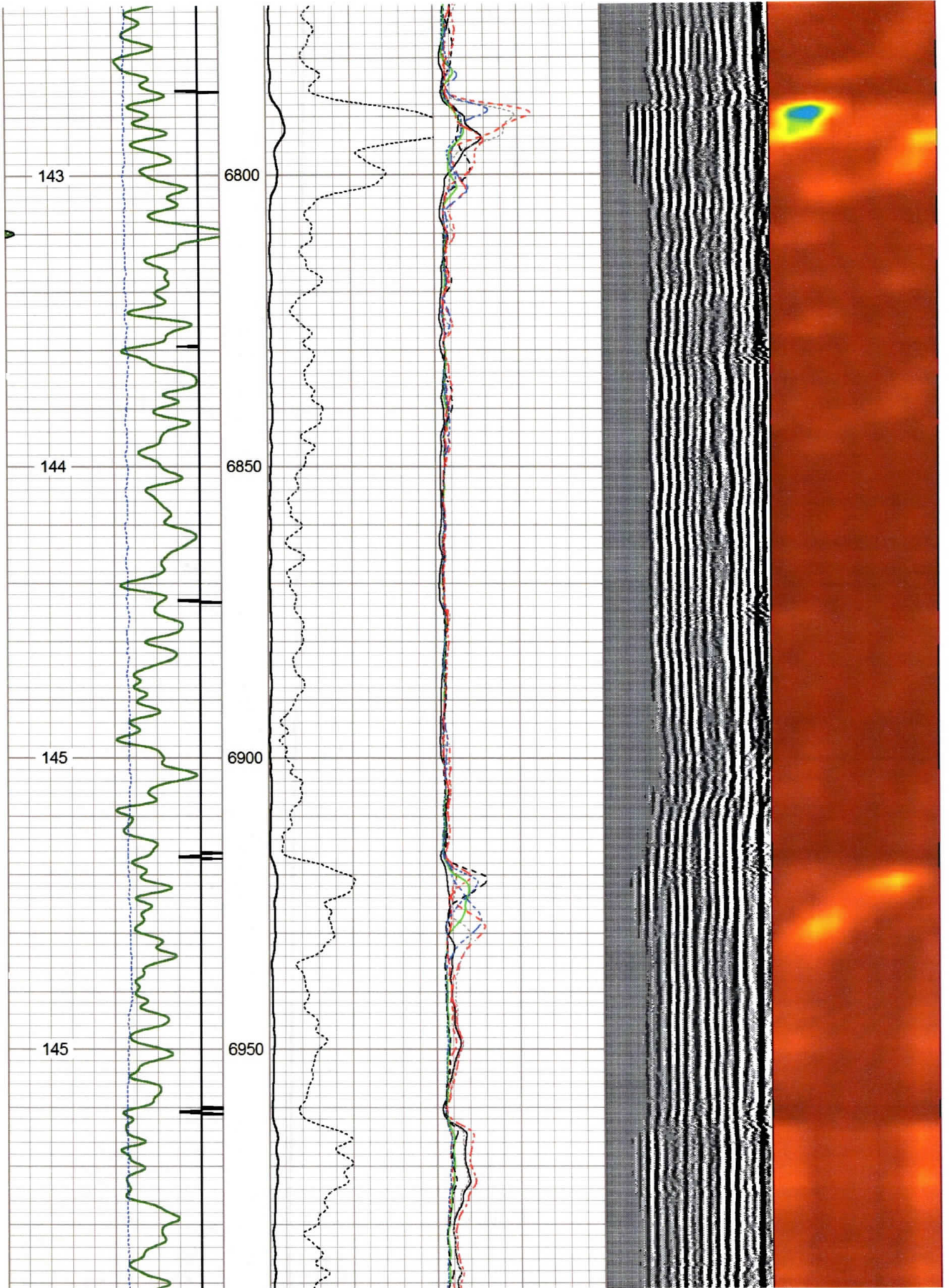


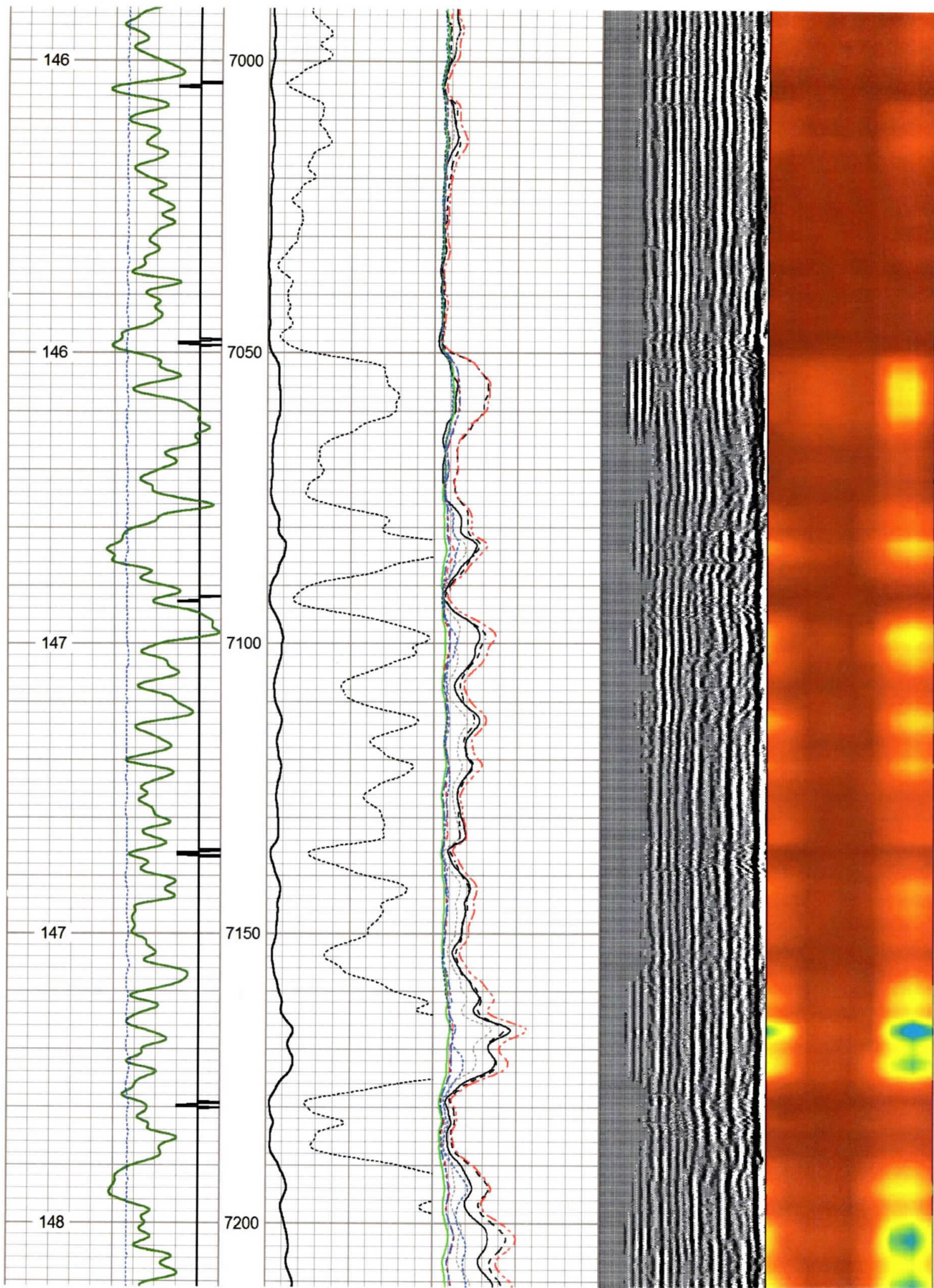


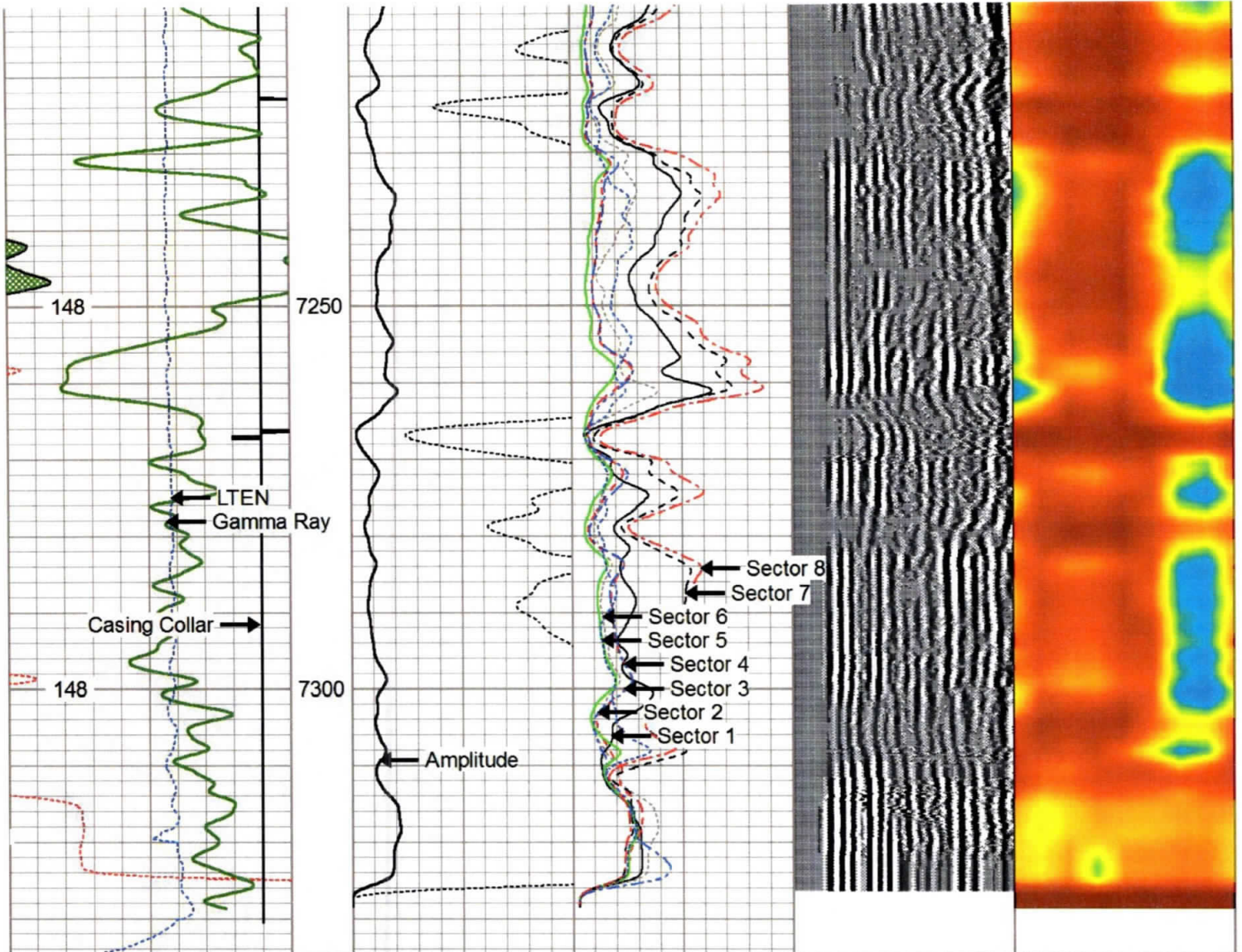












260	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
Casing Collar			Amplified Amplitude	-5	Sector 2	150	200	(usec)	1200			
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	Sector 3	150				
0	LTEN (lb)	2500				-5	Sector 4	150				
Temp												
(degF)												
				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



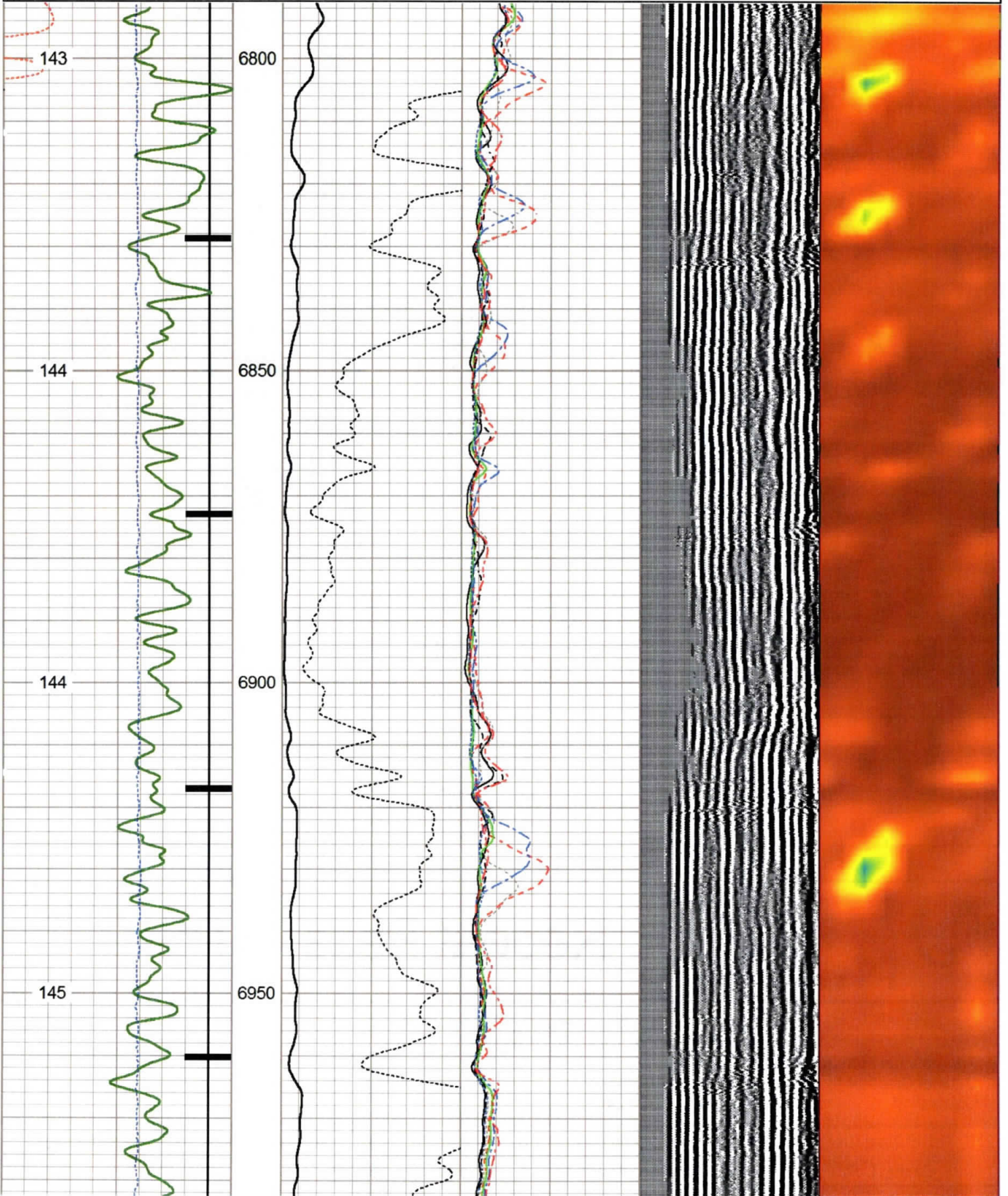
Repeat Pass 0 PSI

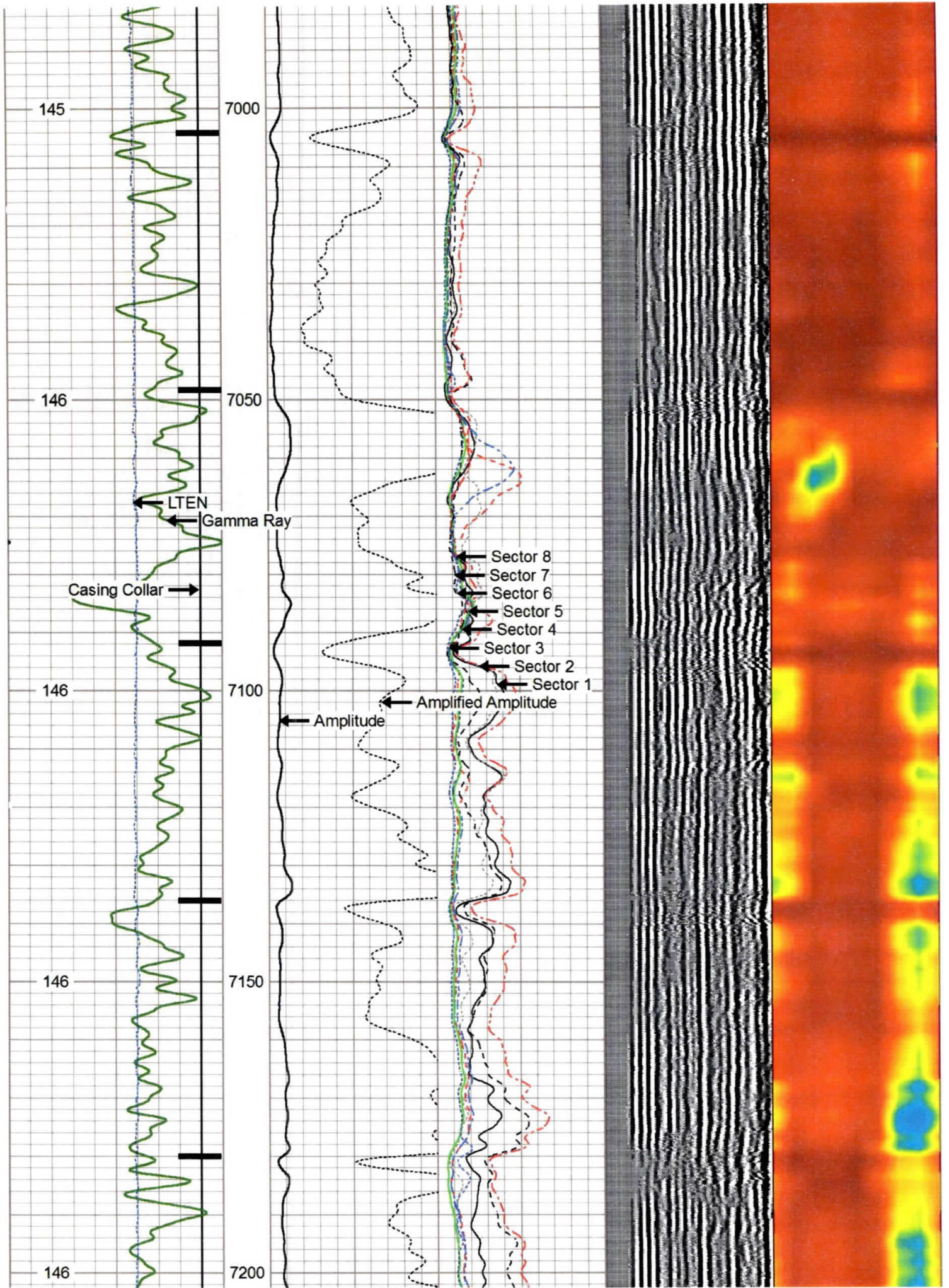
Database File antero_shimano_2h_rcbl_nineenergy_22_feb_202.db
 Dataset Pathname Rabbit_Ears/Shimano_2H/RCBL_1/pass2.1
 Presentation Format scbl03
 Dataset Creation Sat Feb 22 09:55:55 2020
 Charted by Depth in Feet scaled 1:240

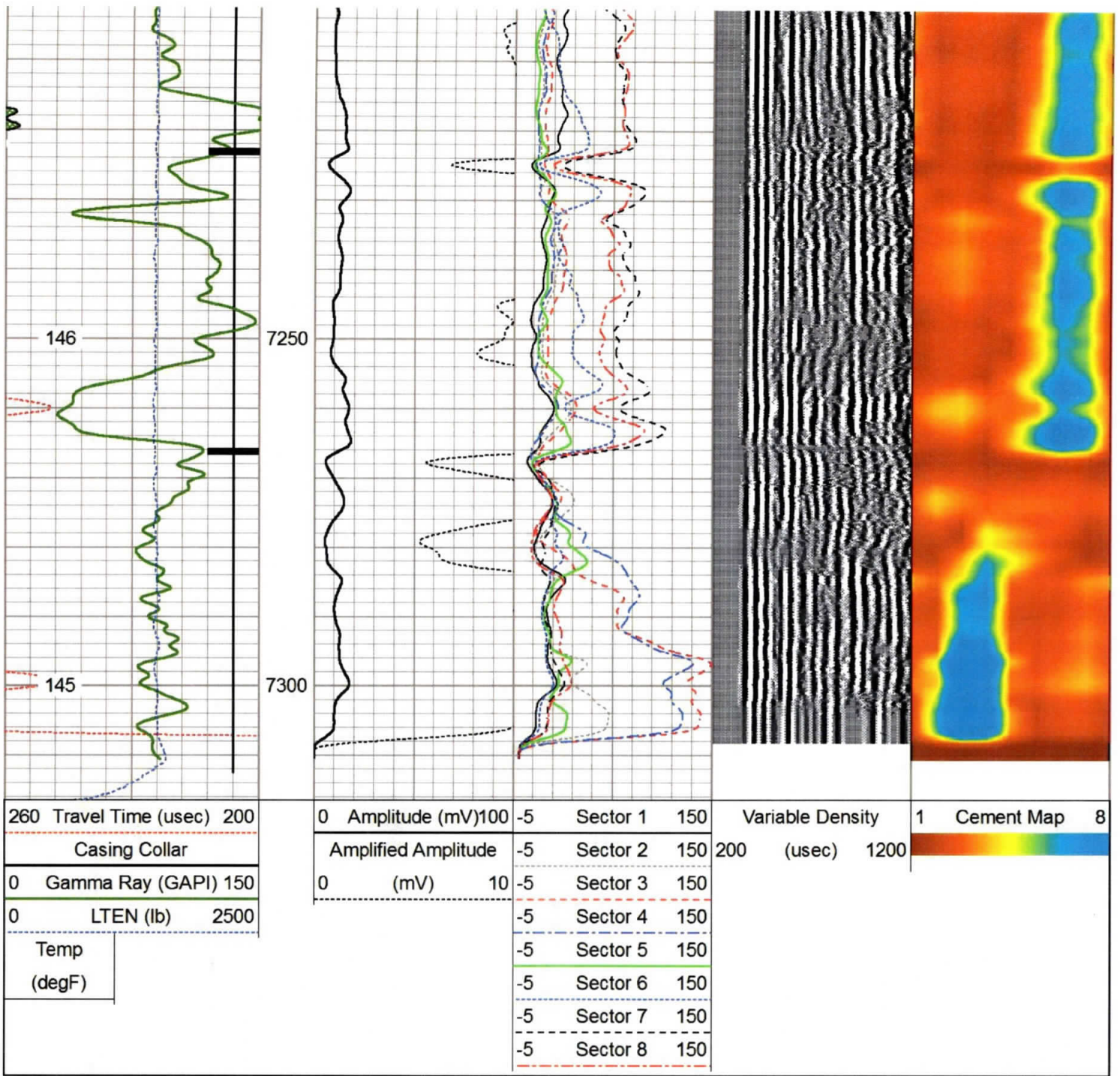
260	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
Casing Collar			Amplified Amplitude	-5	Sector 2	150	200	(usec)	1200			
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	Sector 3	150				

0	Gamma Ray (GAPI) 150	
0	LTEN (lb)	2500
	Temp	
	(degF)	

0	(mv)	10	-5	Sector 3	150
				Sector 4	150
				Sector 5	150
				Sector 6	150
				Sector 7	150
				Sector 8	150







Log Variables

DatabaseC:\ProgramData\Warrior\Data\antero_shimano_2h_rcbl_nineenergy_22_feb_202.db
 Dataset Rabbit_Ears/Shimano_2H/RCBL_1/pass4.1/_vars_

Top - Bottom

BHTEMP_Src	BOREID	BOTTEMP	CASEOD	CASETHCK	CASEWGHT	MAXAMPL	MINAMPL
TEMP	in 7.875	degF 148	in 5.5	in 0.361	lb/ft 20	mV 72	mV 1
MINATTN	PERFS	PPT	SRFTEMP	TDEPTH			
db/ft 0.8	No	usec 0	degF 0	ft 0			

Variable Description

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

MINAMPL : Minimum Amplitude
 MINATTN : Minimum Attenuation
 PERFS : Perforation Flag

CASEOD : Casing O.D.
 CASETHCK : Casing Thickness
 CASEWGHT : Casing Weight
 MAXAMPL : Maximum Amplitude

PPT : Predicted Pipe Time
 SRFTEMP : Surface Temperature
 TDEPTH : Total Depth

Calibration Report

Database File antero_shimano_2h_rcbl_nineenergy_22_feb_202.db
 Dataset Pathname Rabbit_Ears/Shimano_2H/RCBL_1/pass4.1
 Dataset Creation Sat Feb 22 09:34:14 2020

Gamma Ray Calibration Report

Serial Number: FW1211-86
 Tool Model: Probe
 Performed: Mon Feb 03 15:18:32 2014

 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: 38.475 ft

Master Calibration, performed Sat Feb 22 07:02:55 2020:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.012	0.993	0.020	71.921	53.281	-0.259
CAL	1.015	1.021				
5'	0.015	1.077	0.020	71.921	67.681	-0.975
SUM						
S1	0.009	0.993	0.000	72.000	83.224	-0.677
S2	0.020	0.975	0.000	72.000	85.383	-1.474
S3	0.012	0.933	0.000	72.000	88.119	-0.908
S4	0.015	0.975	0.000	72.000	85.025	-1.143
S5	0.015	1.016	0.000	72.000	81.906	-1.066
S6	0.012	1.017	0.000	72.000	81.665	-0.892
S7	0.012	1.012	0.000	72.000	81.973	-0.847
S8	0.012	0.991	0.000	72.000	83.524	-0.882

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	1.015	1.021	1.000	0.000

Air Zero Calibration, performed Sat Feb 22 07:01:26 2020:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset

3'	0.000	0.000	0.000
5'	0.000	0.000	0.000
SUM			0.000
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
Temp	11.27		CENT-Overbody Antelope (SP-919-0233)	1.67	4.88	5.00
			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					
HeadVolt	4.78					
WVFCAL	4.78					
CCL	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_shimano_2h_rcbl_nineenergy_22_feb_202.db: Rabbit_Ears/Shimano_2H/RCBL_1/pass4.1
Total length: 15.17 ft
Total weight: 162.00 lb
O.D.: 4.88 in



Nine

Company Antero Resources
Well Shimano Unit 2H
Field Rabbit Ears
County Tyler
State West Virginia