



**Radial Cement Bond  
Variable Density Log  
W/Gamma Ray/CCLTemp**

Company Antero Resources  
Well Capitol Unit 1H  
Field Utica  
County Tyler  
State WV

Company Antero Resources  
Well Capitol Unit 1H  
Field Utica  
County Tyler State WV

Location: API #: 47095027540000

Other Services

None

SEC N/A TWP N/A RGE N/A

Permanent Datum Ground Level Elevation  
Log Measured From RKB 25'  
Drilling Measured From RKB

Date 22-Mar-2022

Run Number One

Depth Driller 24393'

Depth Logger 7690'

Bottom Logged Interval 7690'

Top Log Interval Surface

Open Hole Size 8.5

Type Fluid FW

Density / Viscosity 8.6

Max. Recorded Temp. 150 degF

Estimated Cement Top 3780'

Time Well Ready 22:20

Time Logger on Bottom 23:00

Equipment Number 138 (P1 G4)

Location Charleroi, PA

Recorded By Steven Butler

Witnessed By Chris Young

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
One							
Two							
Three							

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String				
Prot. String	5.5	23 #	Surface	24393'
Production String				
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**

Log Correlated to RKB  
Marker Joint Found at 6499' - 6509'  
Casing Tally Marker Joint at 6473' - 6483  
Corrected 26'

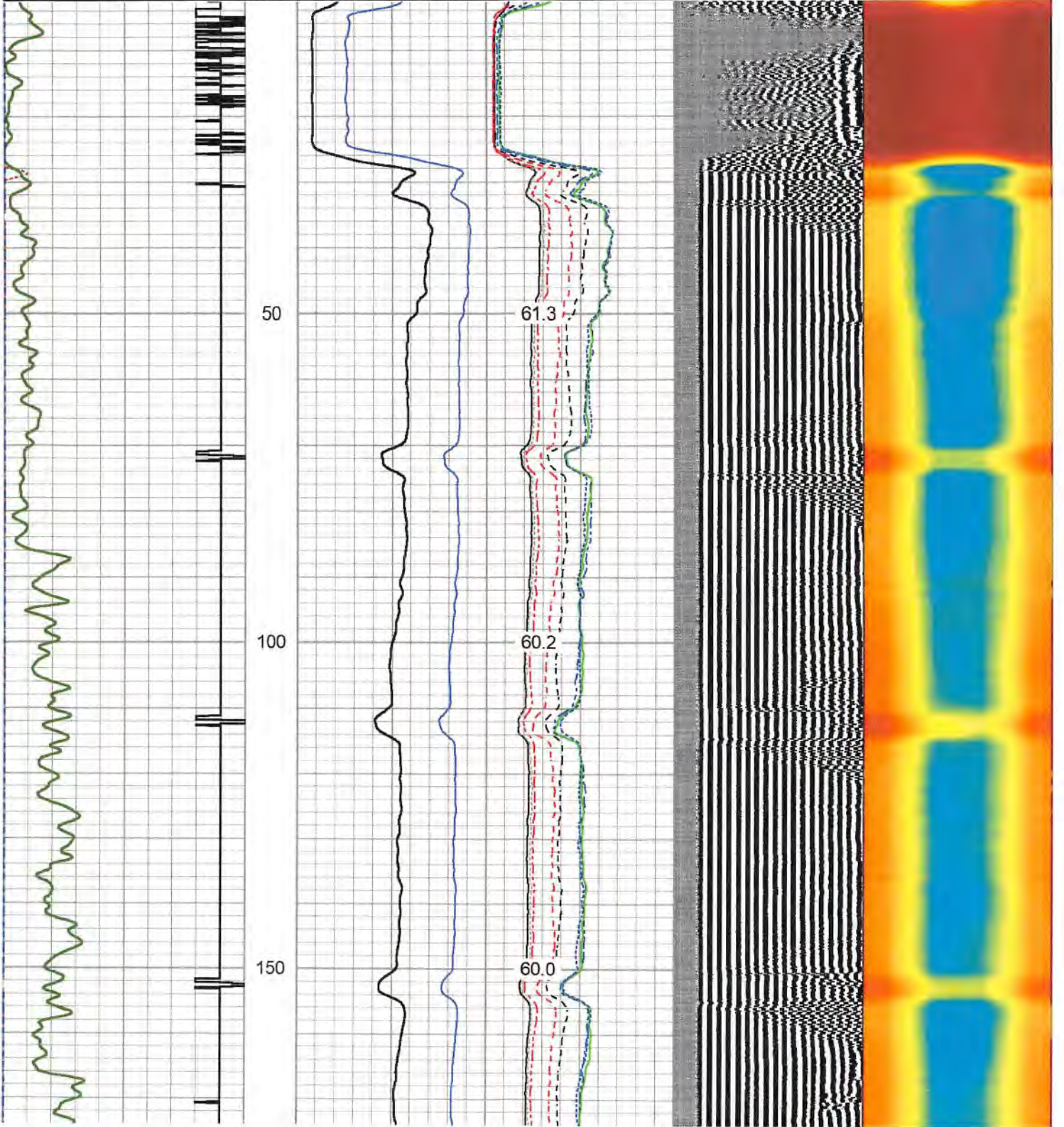
Database File antero\_thin\_air\_capital\_1hblack\_rcbl\_22\_march\_2022.db  
Dataset Pathname pass4.5  
Presentation Format rcbl-bond index for antero 1020  
Dataset Creation Thu Mar 24 15:45:03 2022  
Charted by Depth in Feet scaled 1:240

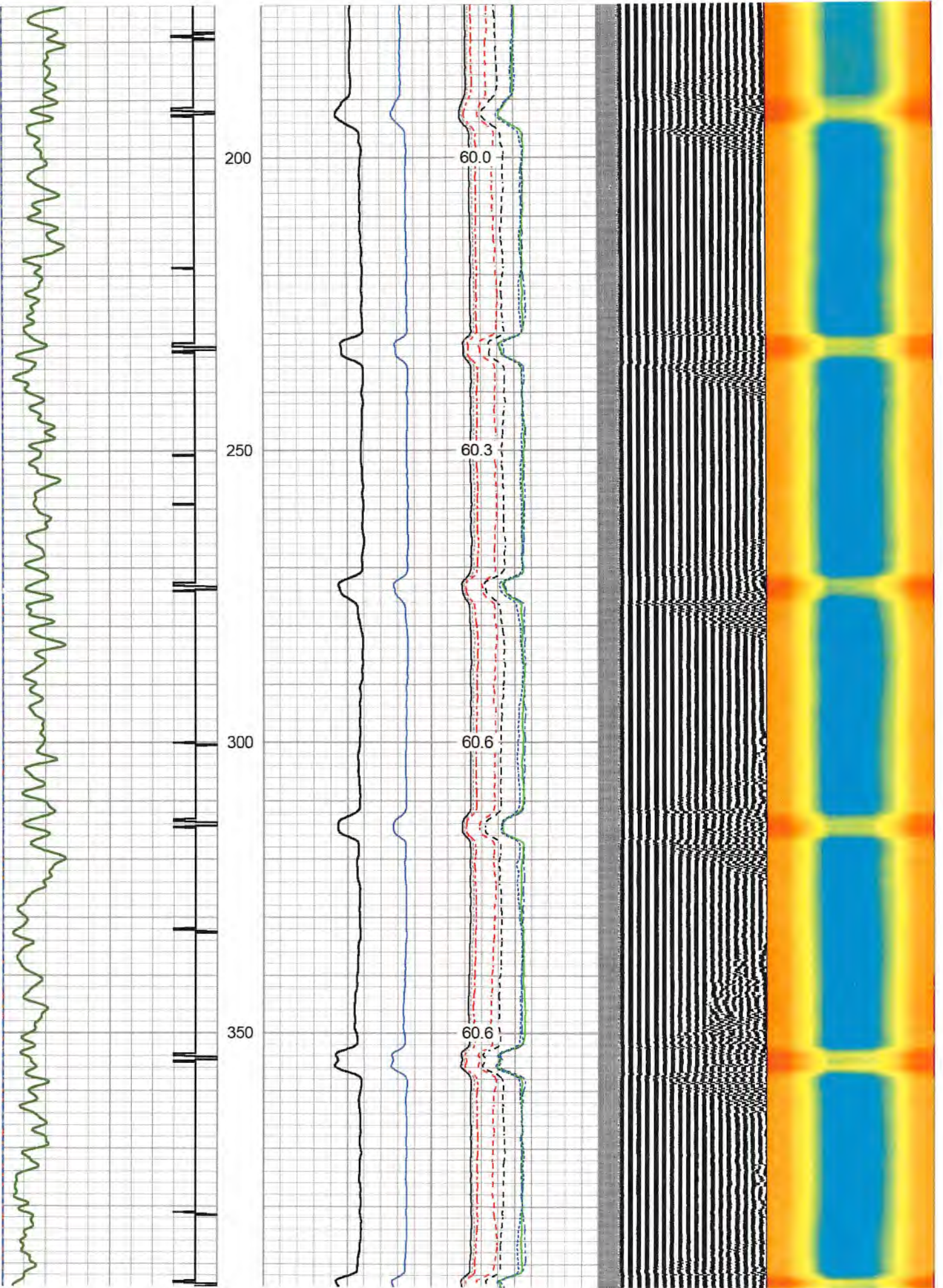
262	Travel Time (usec)	62
9	Casing Collar	-1
0	Gamma Ray (GAPI)	150
0	Line Tension (lb)	5000
-100	LSPD (ft/min)	100

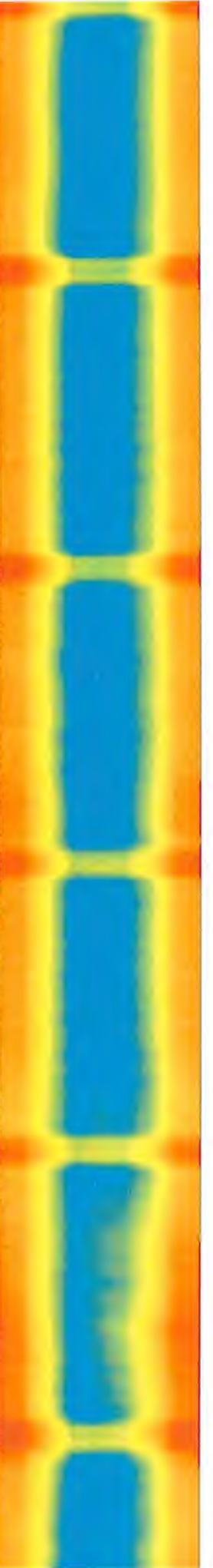
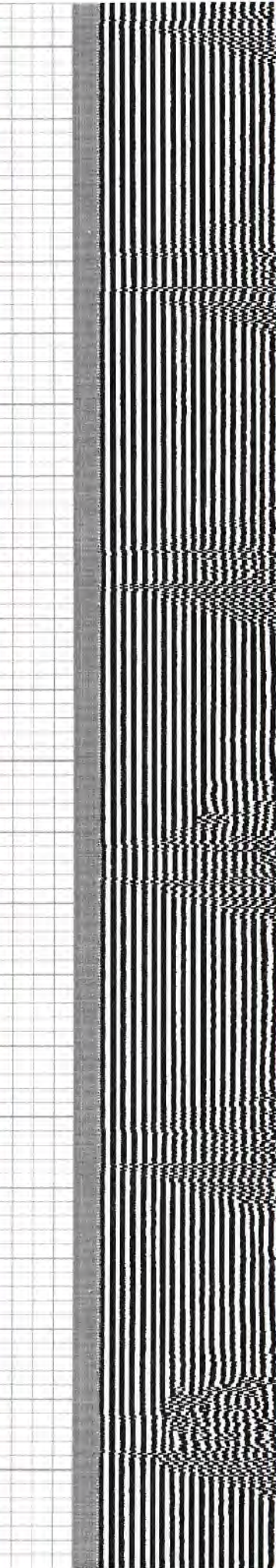
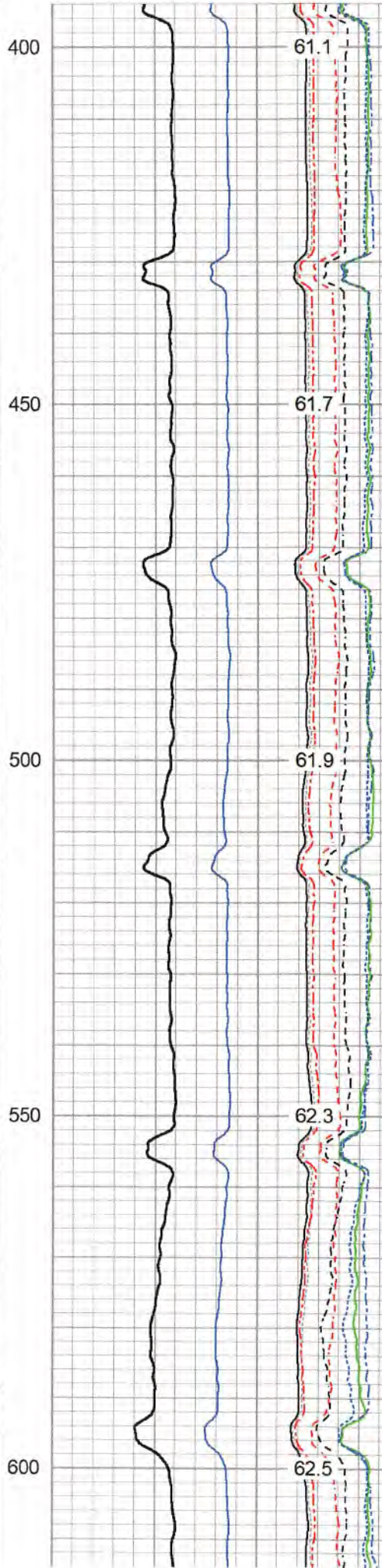
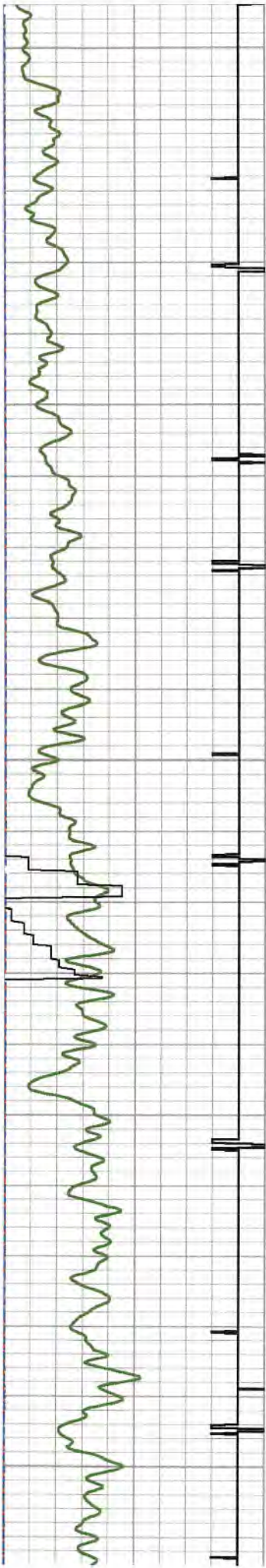
0	Amplitude (mV)	100	-5	Sector 1	150
1	BONDIX	0	-5	Sector 2	150
			-5	Sector 3	150
			-5	Sector 4	150
			-5	Sector 5	150
			-5	Sector 6	150
			-5	Sector 7	150
			-5	Sector 8	150

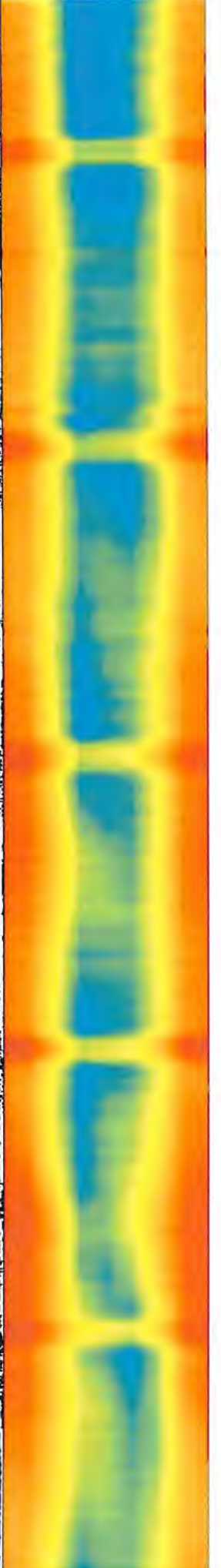
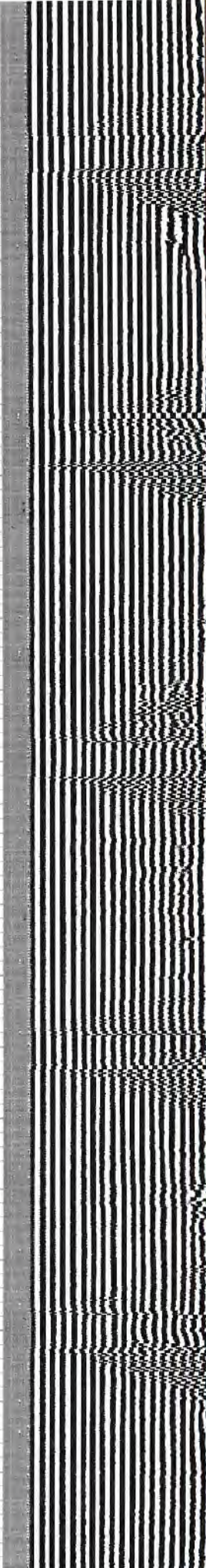
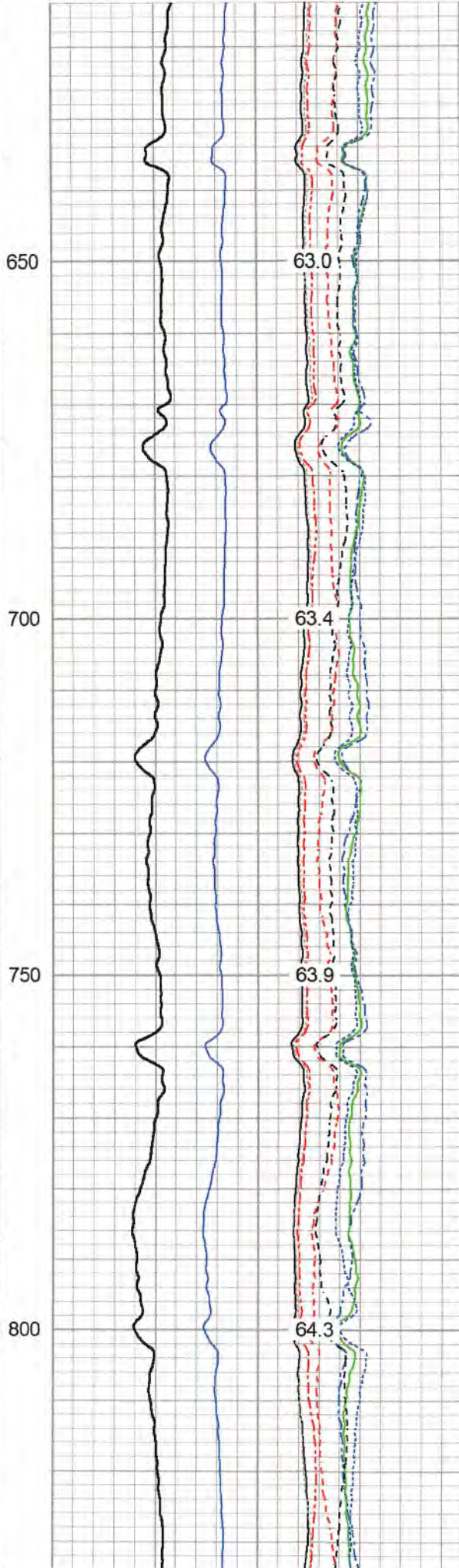
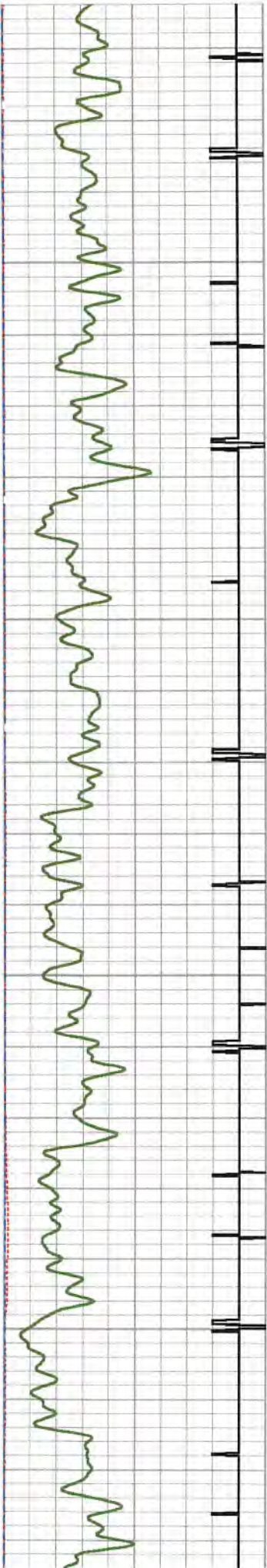
Variable Density 1 Cement Map 8  
 200 (usec) 1200

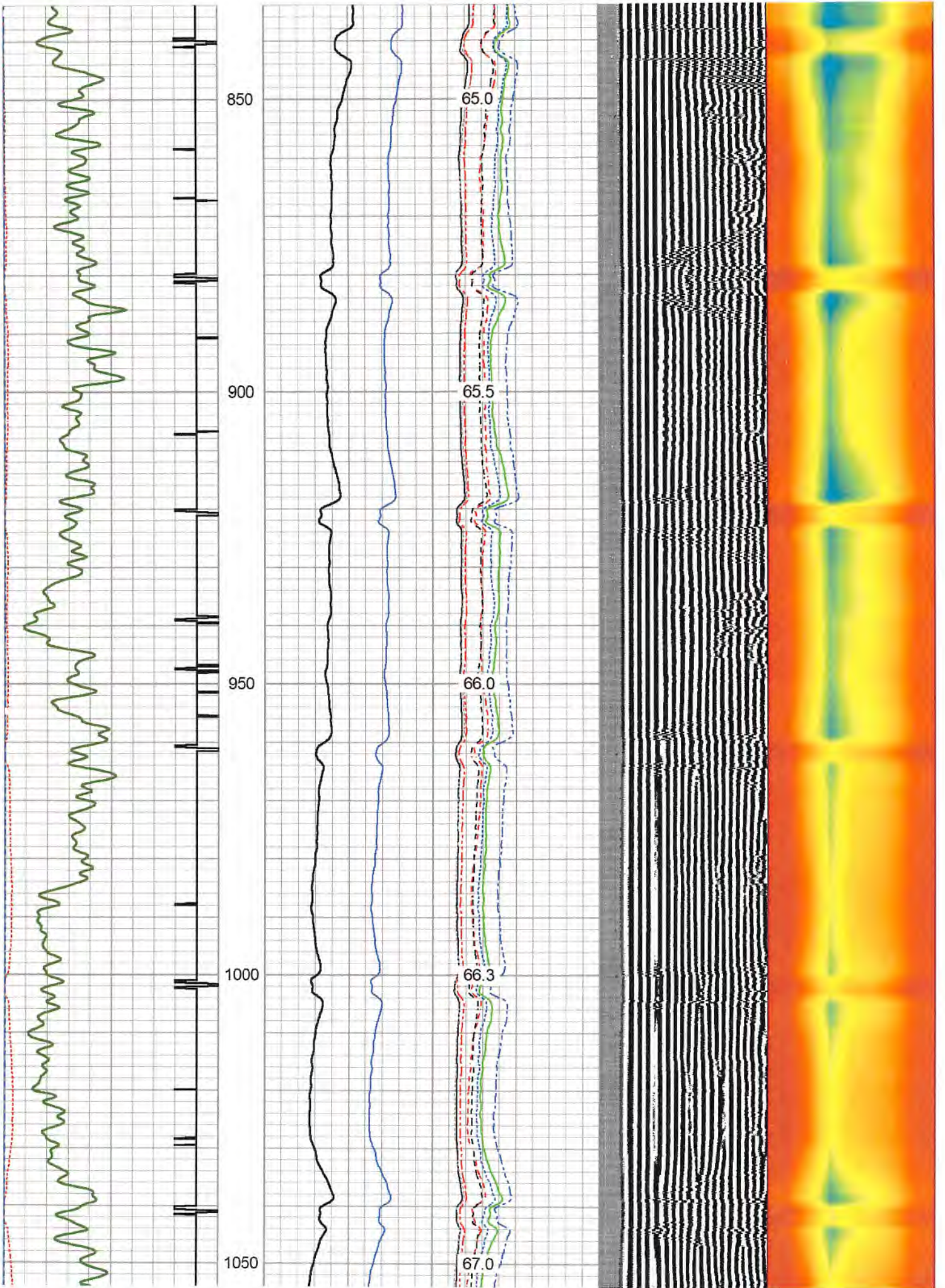
TEMP  
(degF)

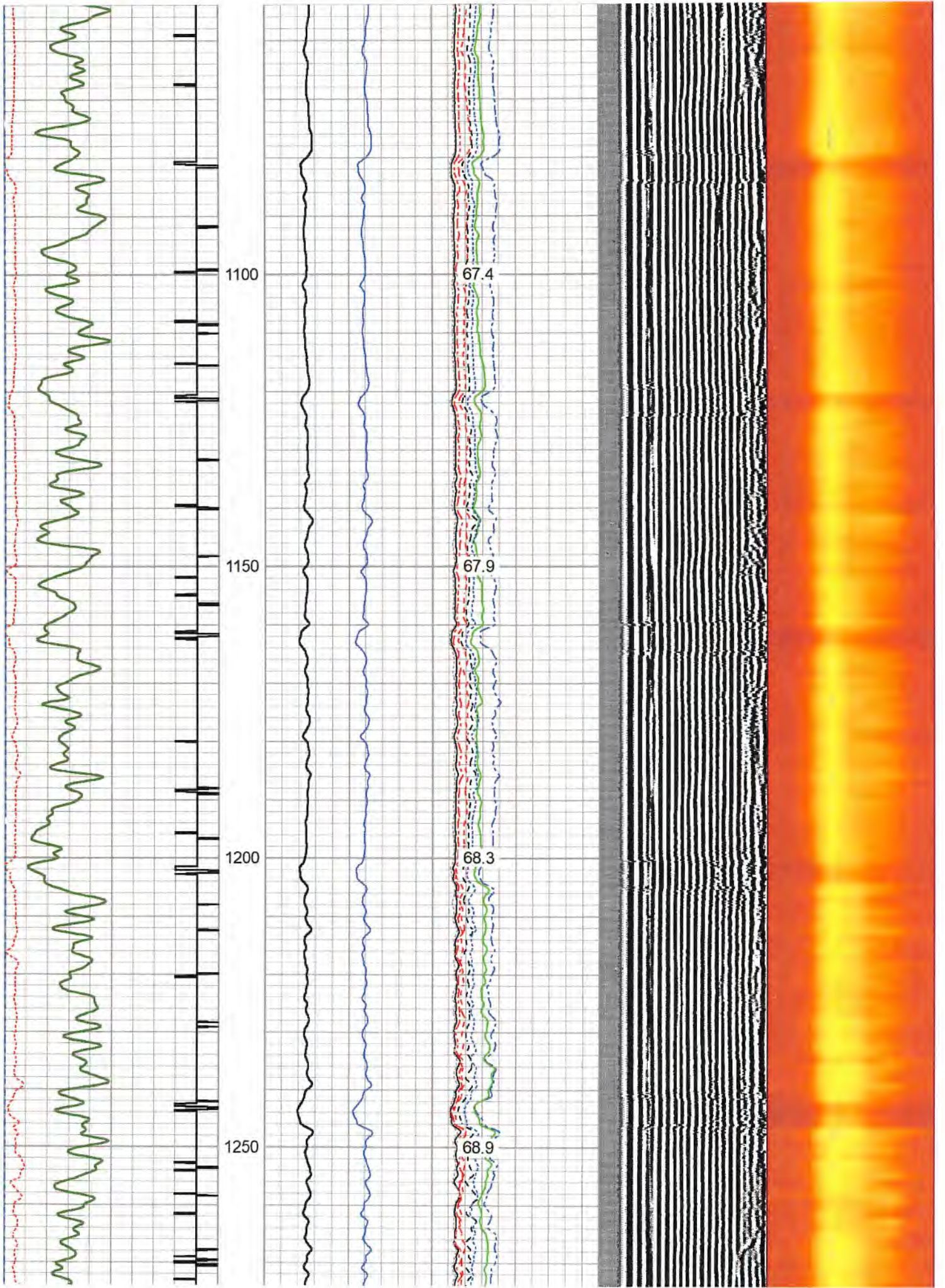


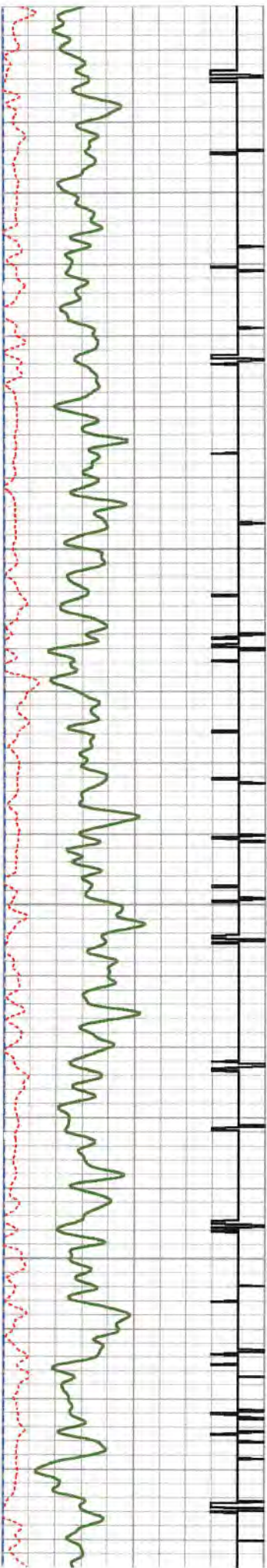










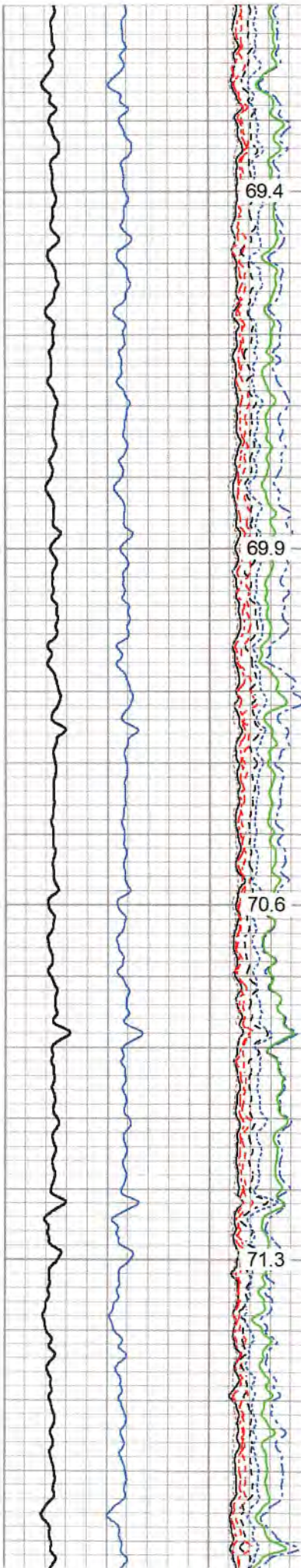


1300

1350

1400

1450

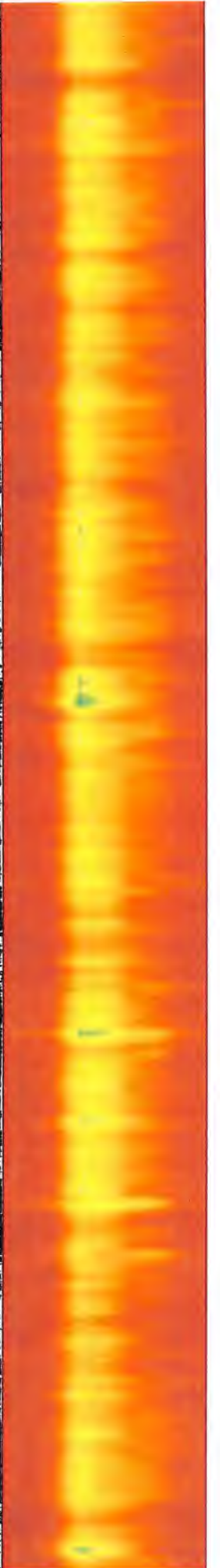
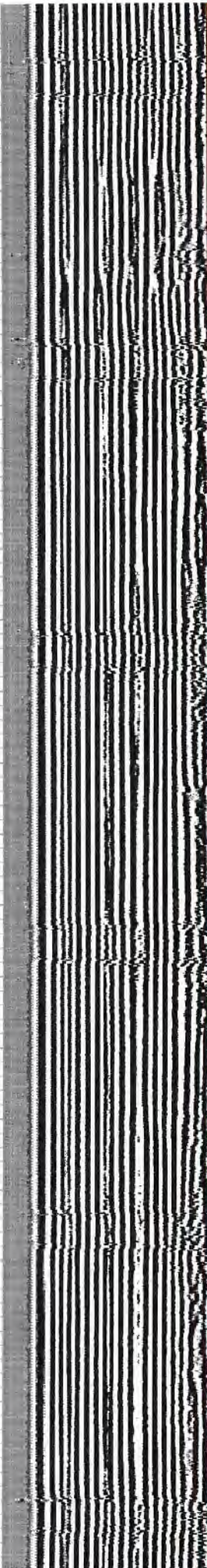


69.4

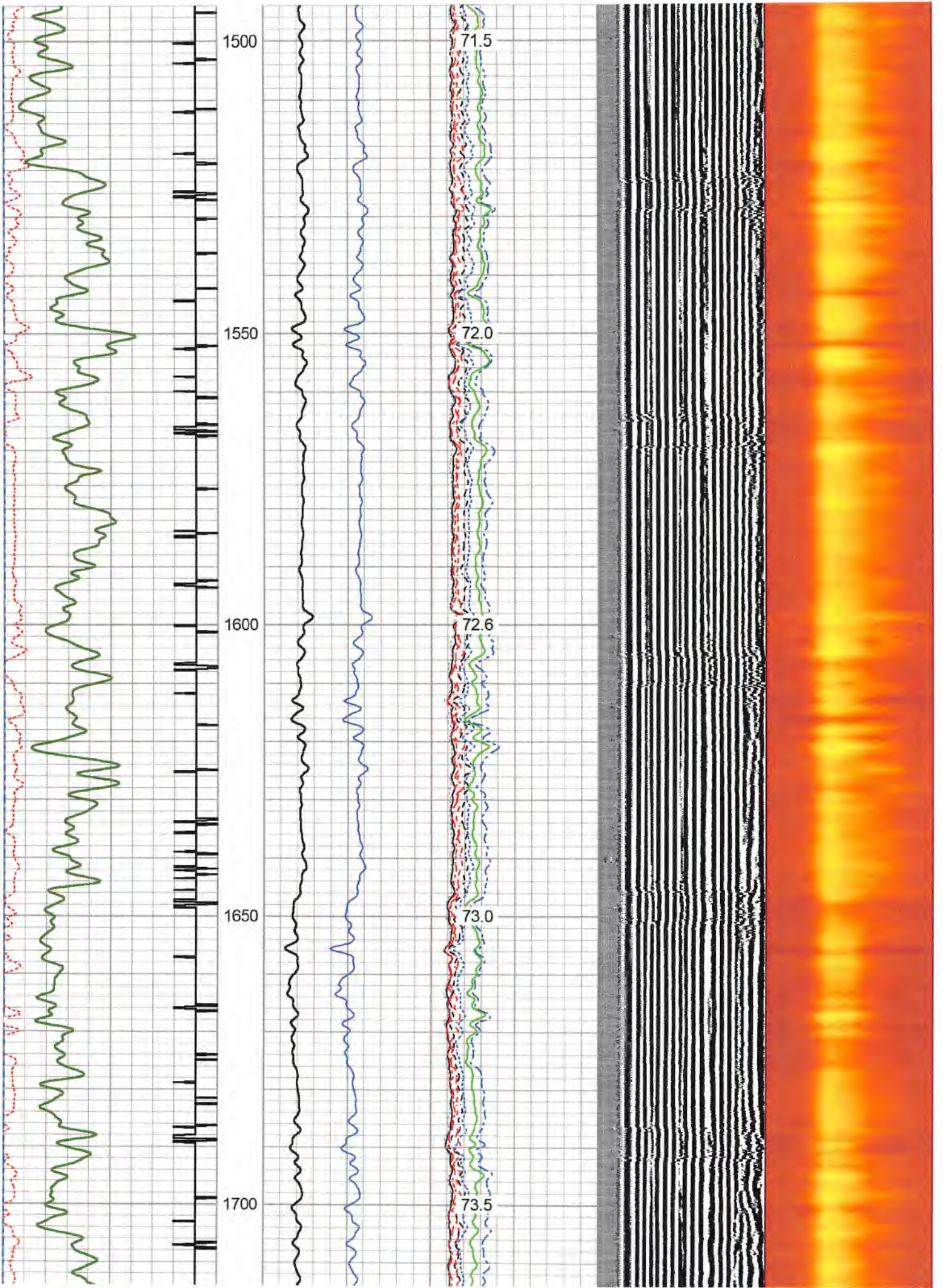
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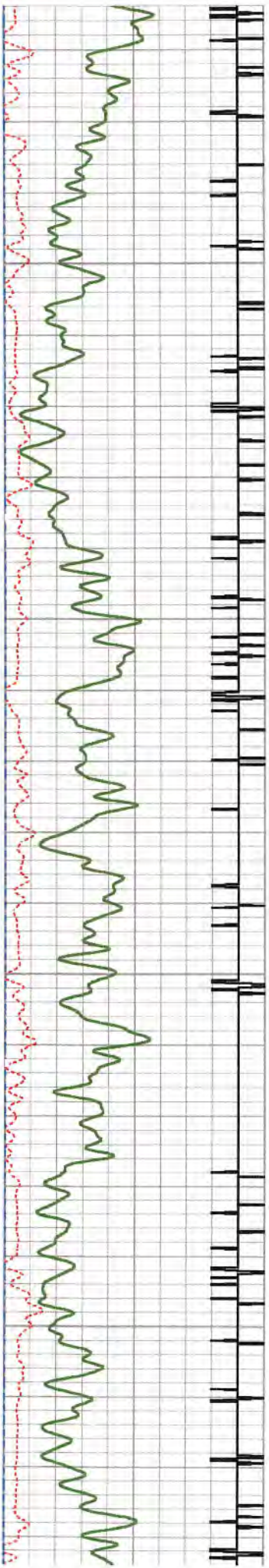
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71.3

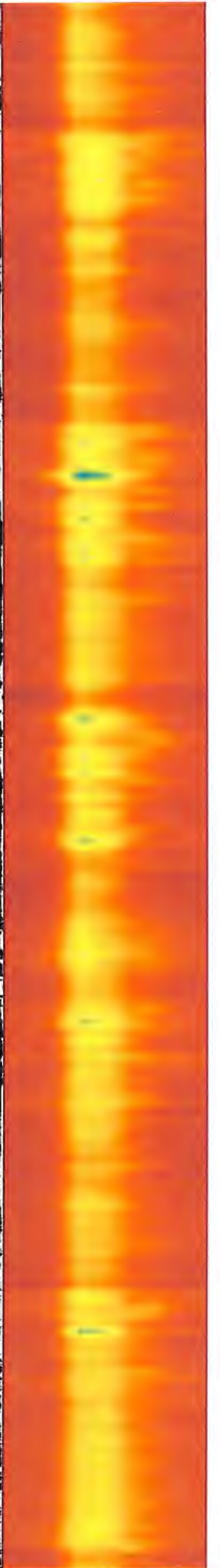
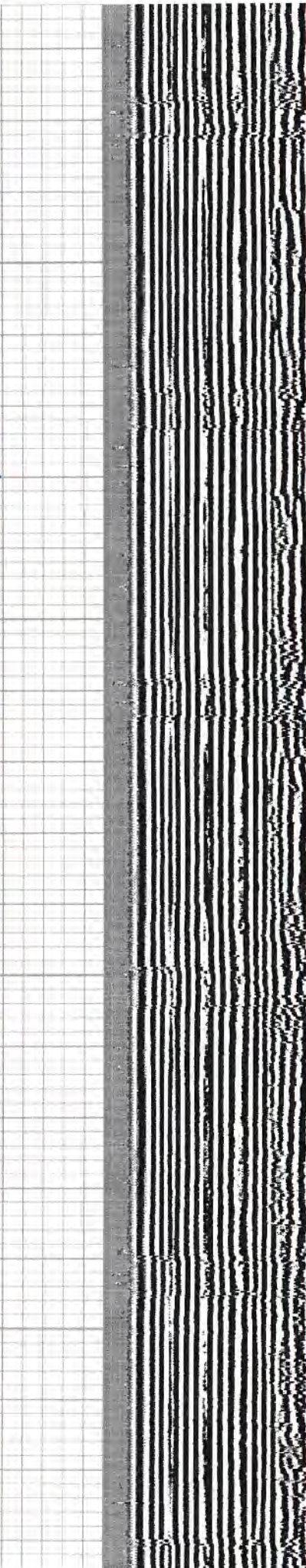
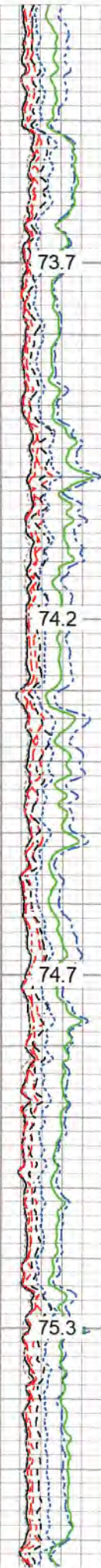
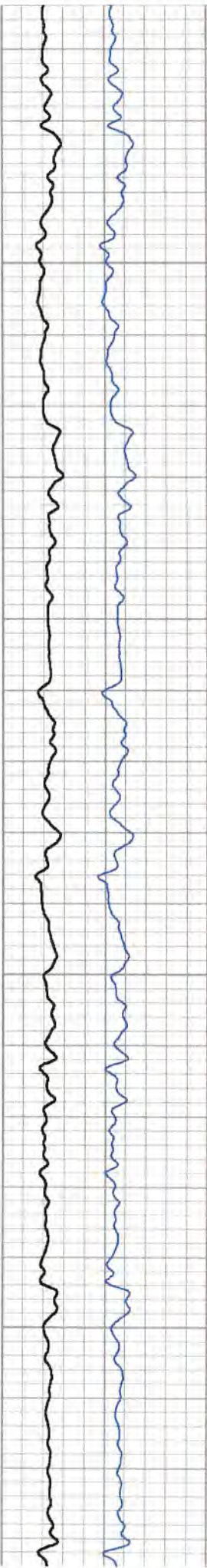


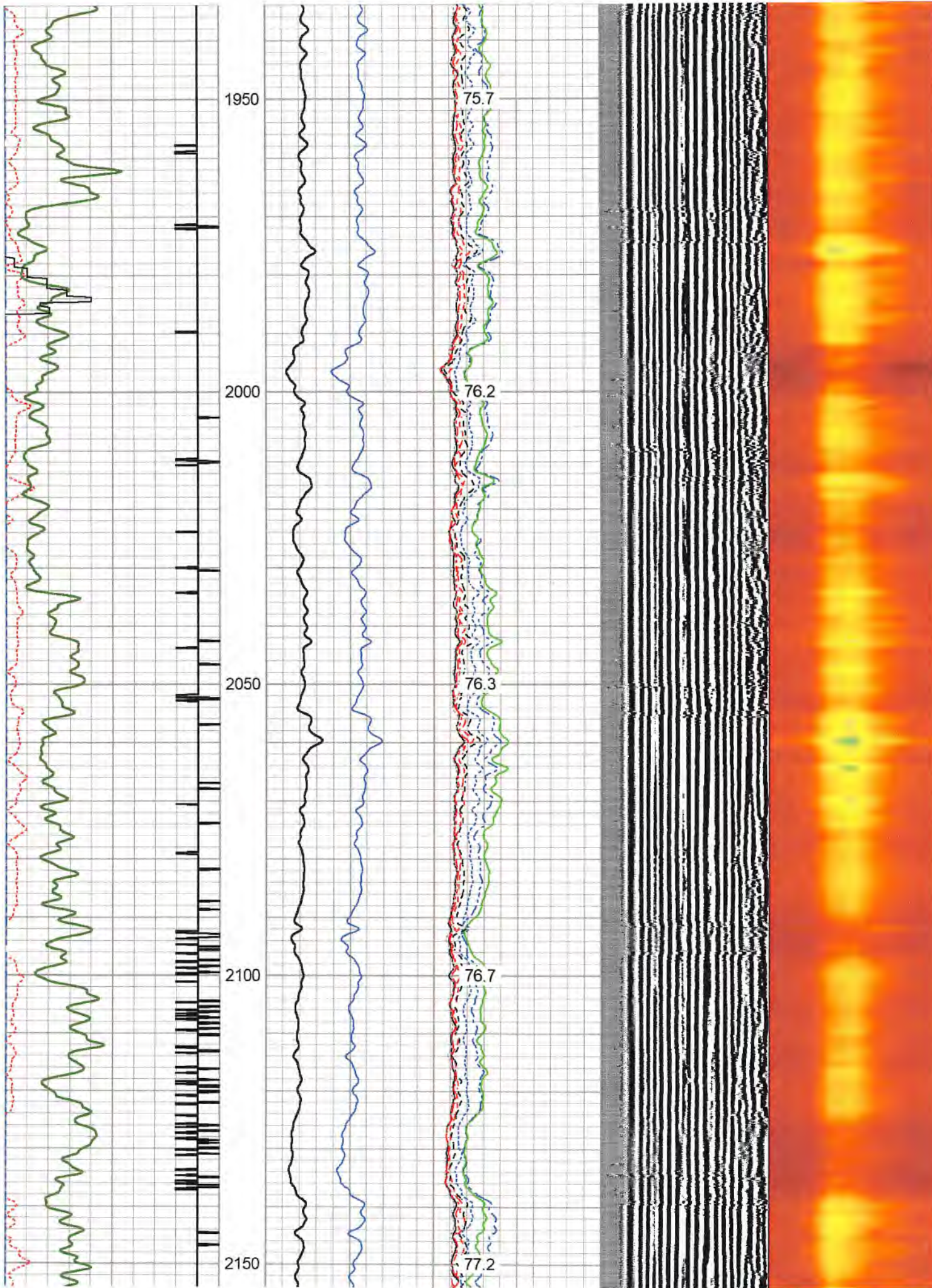


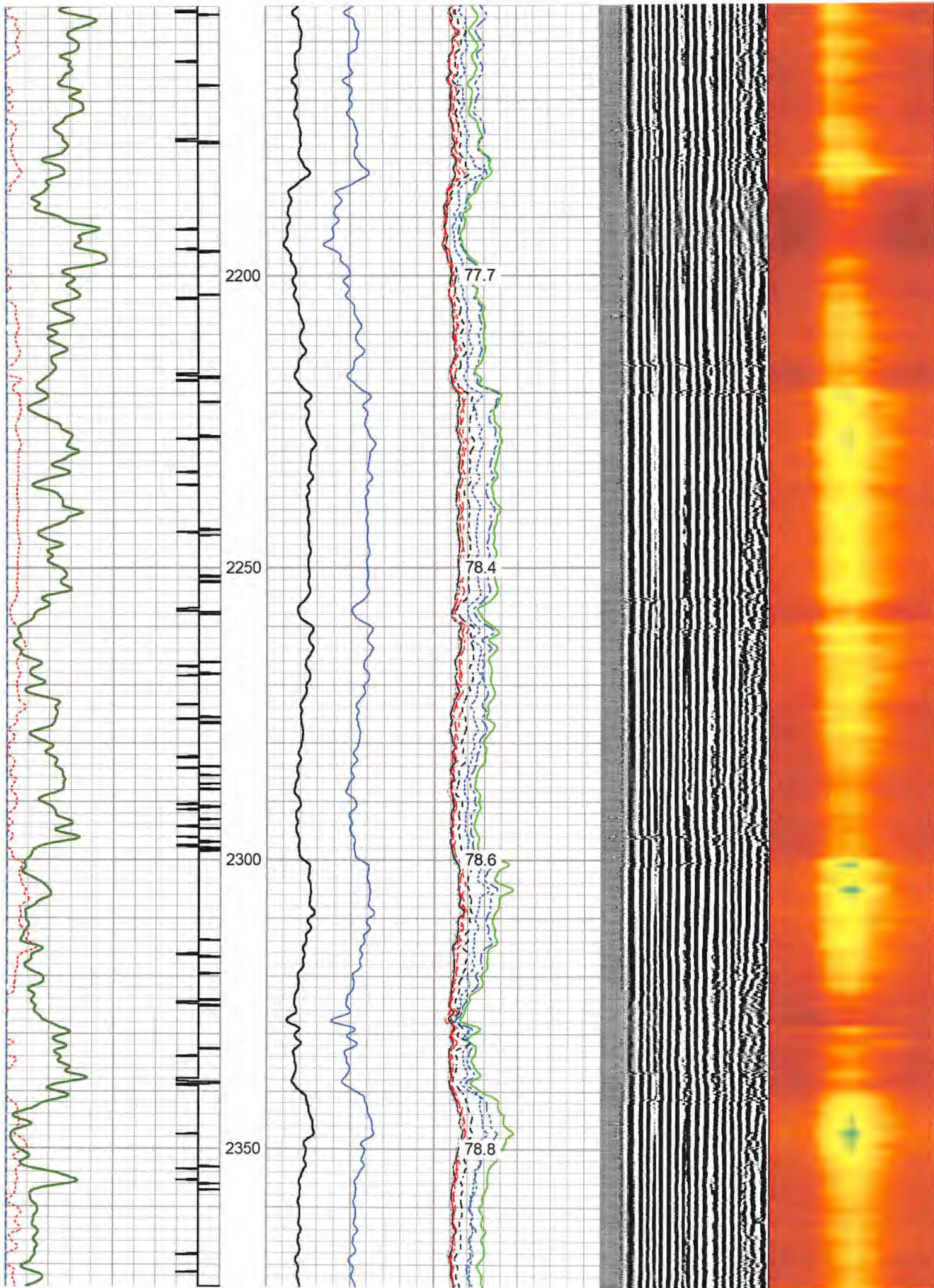


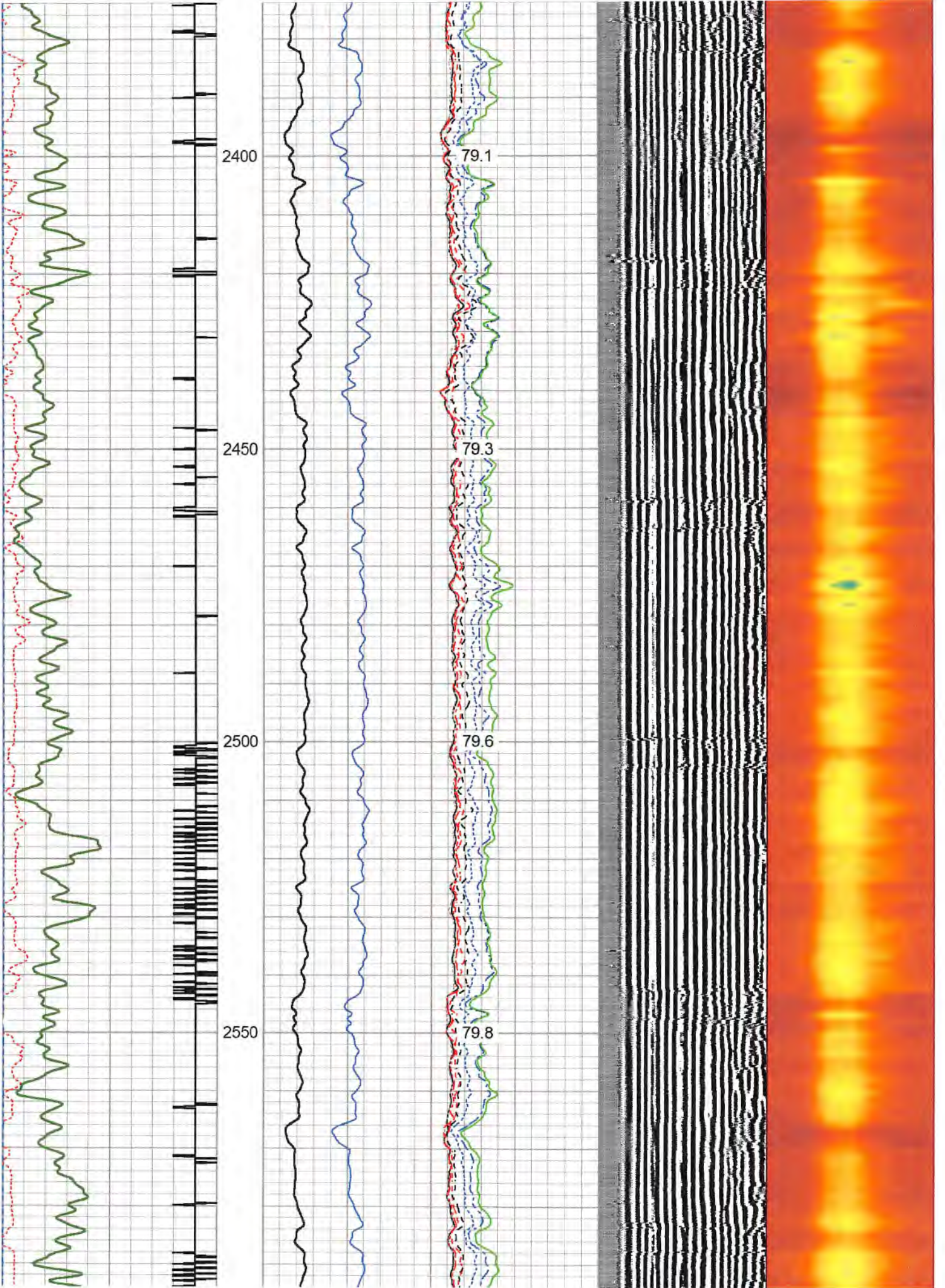


1750  
1800  
1850  
1900

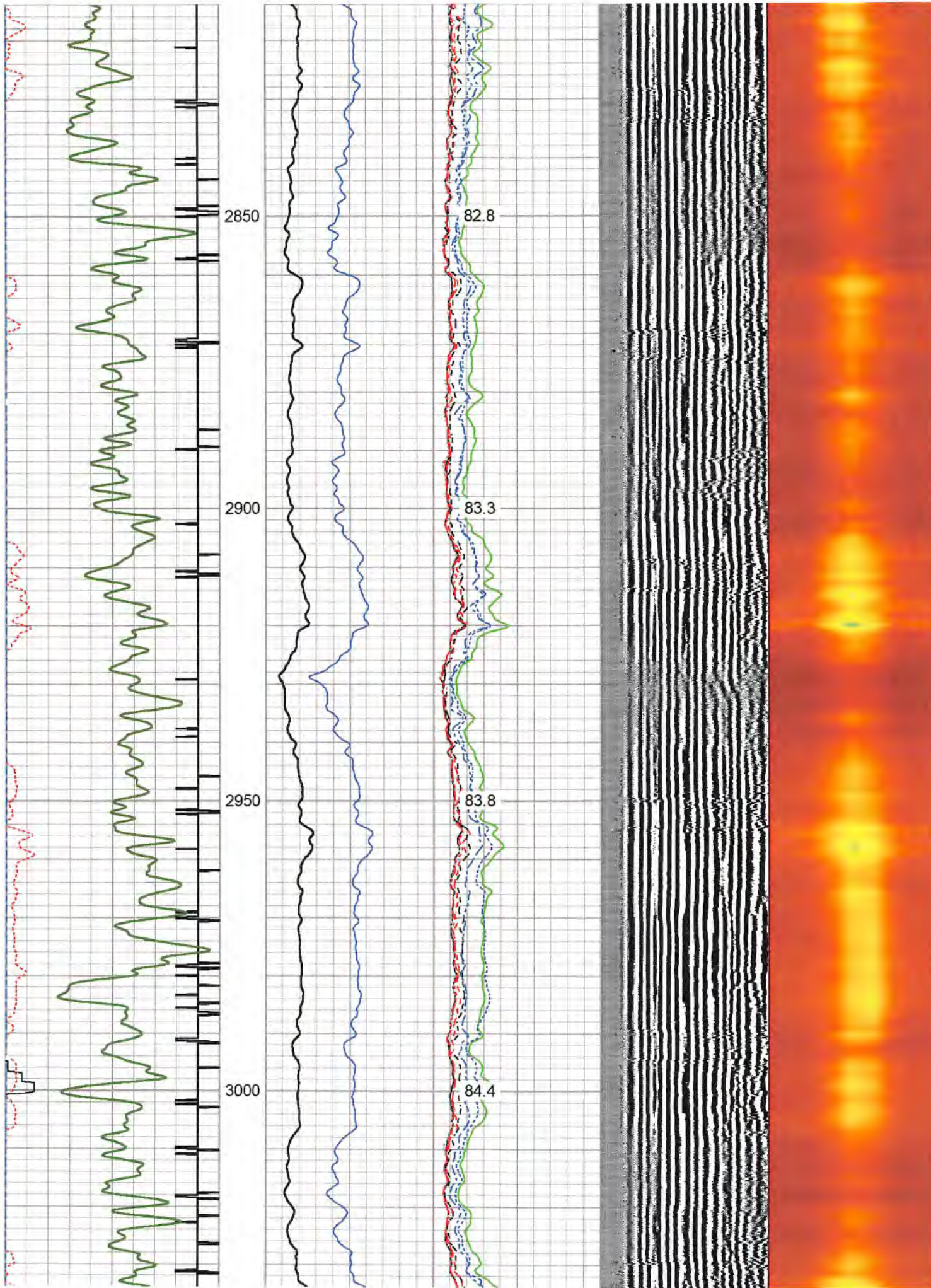


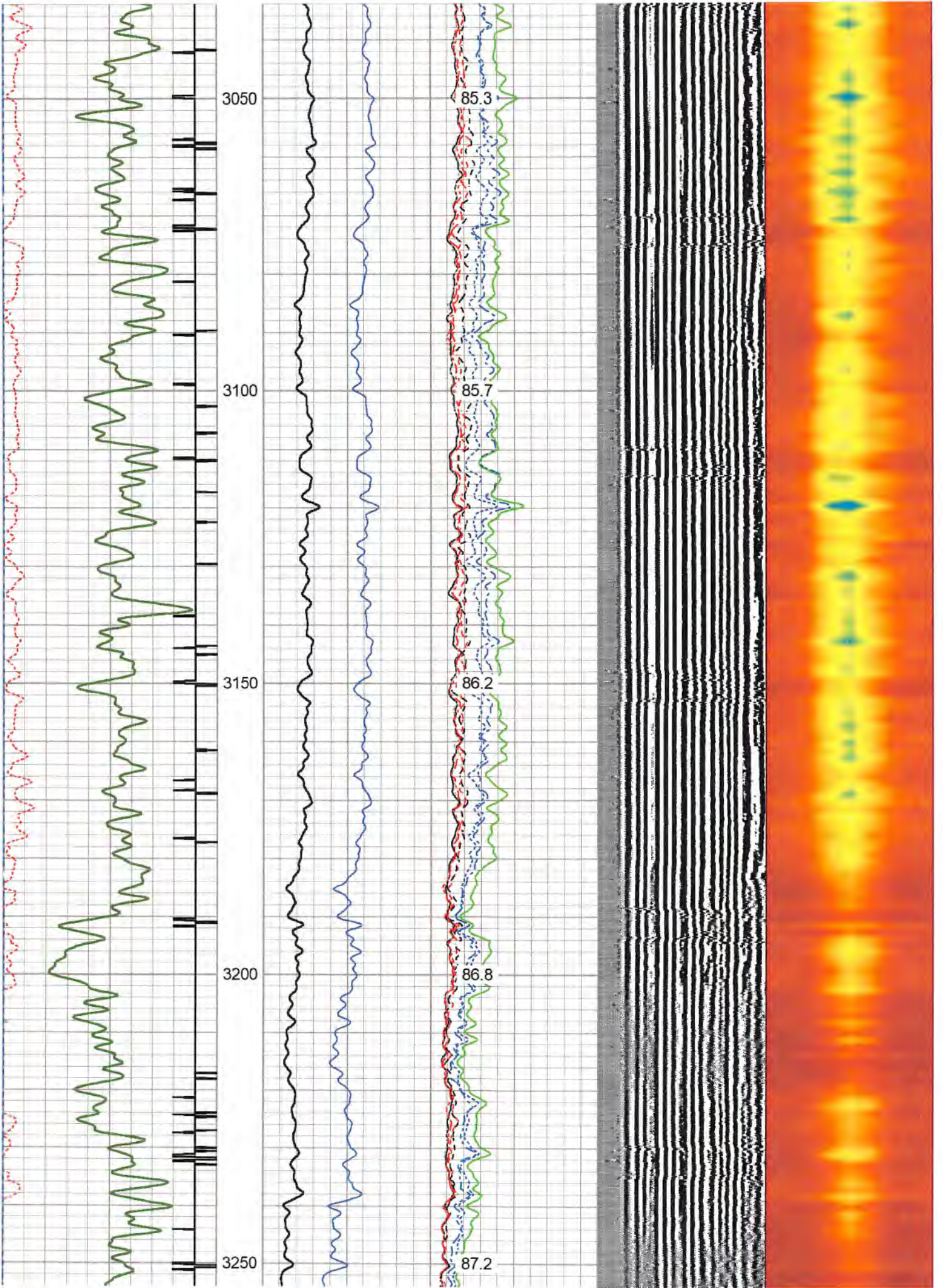




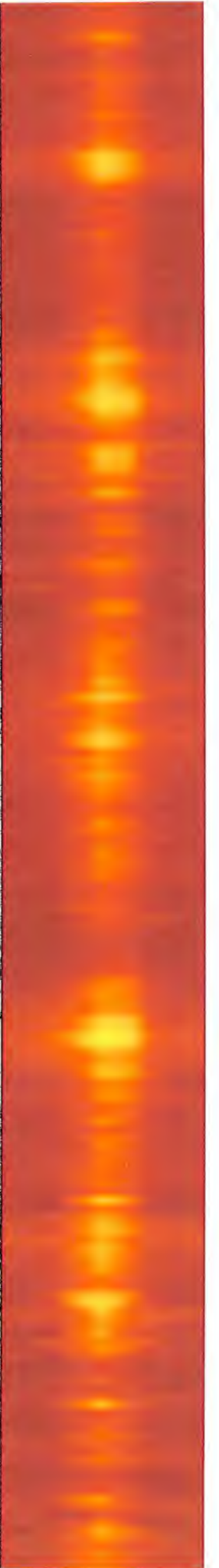
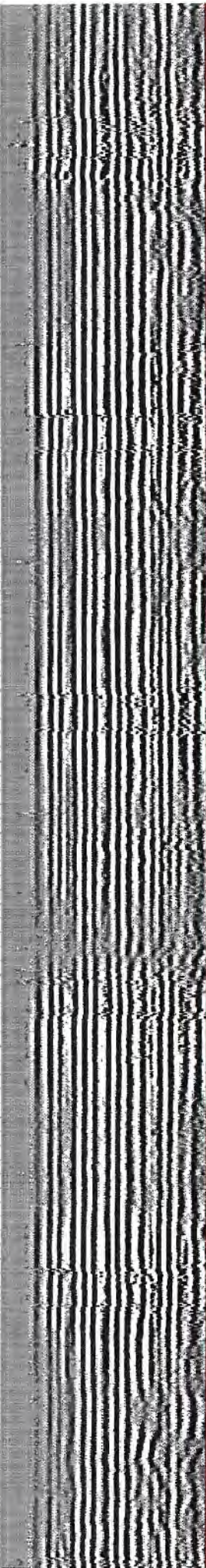
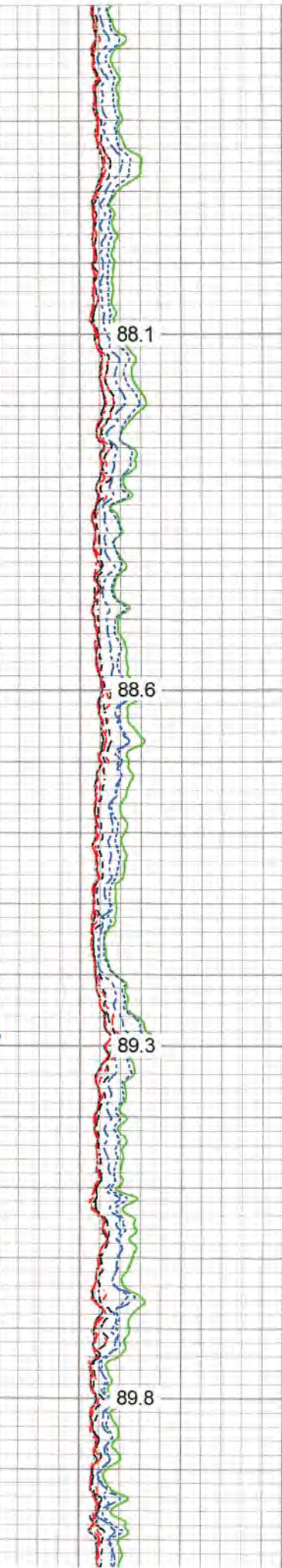
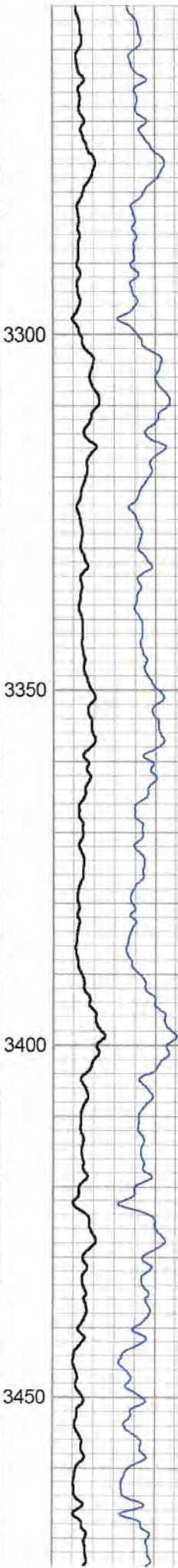
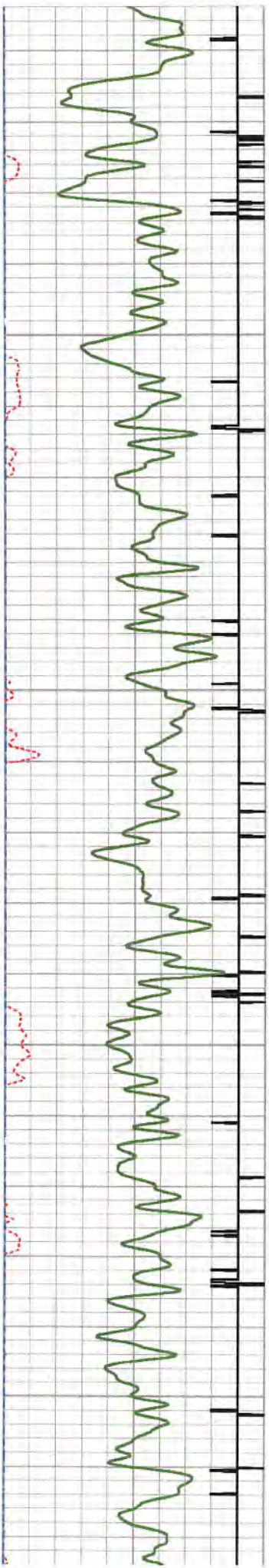


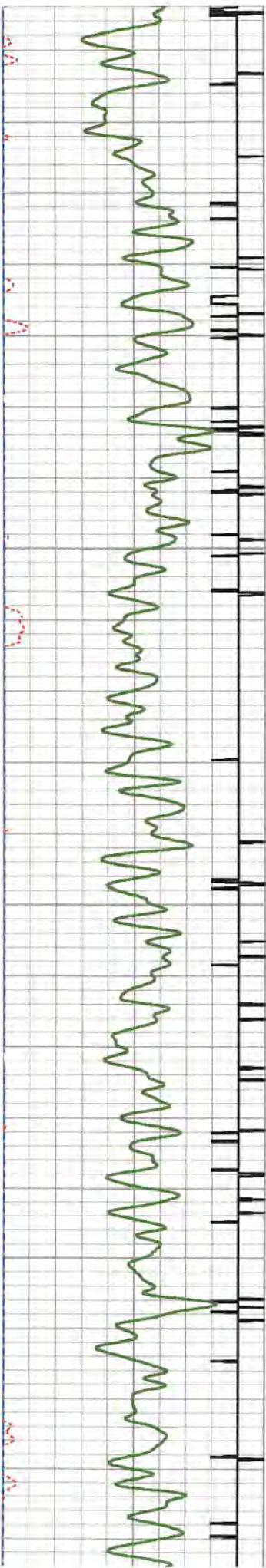










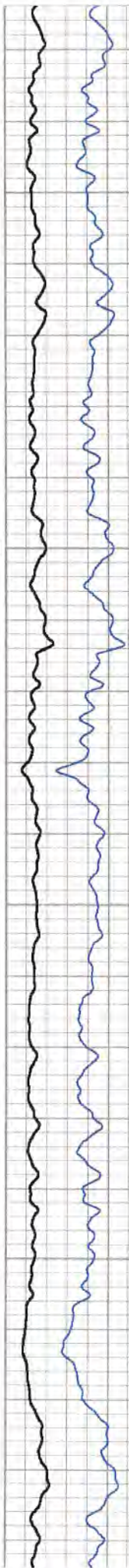


3500

3550

3600

3650

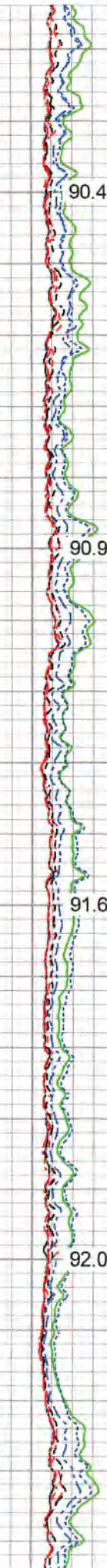


3500

3550

3600

3650

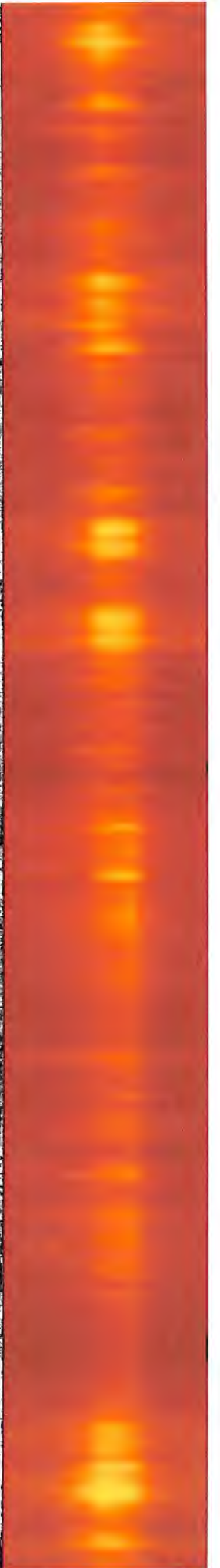
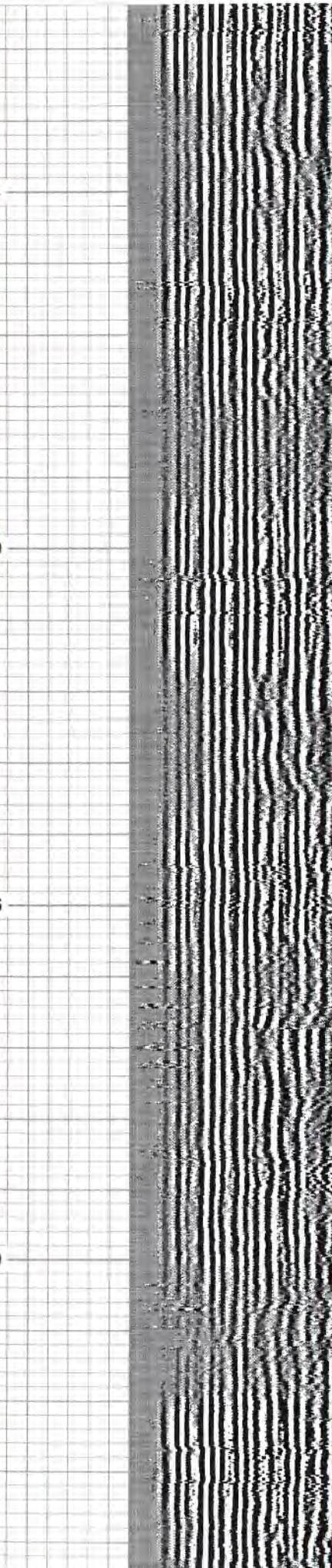


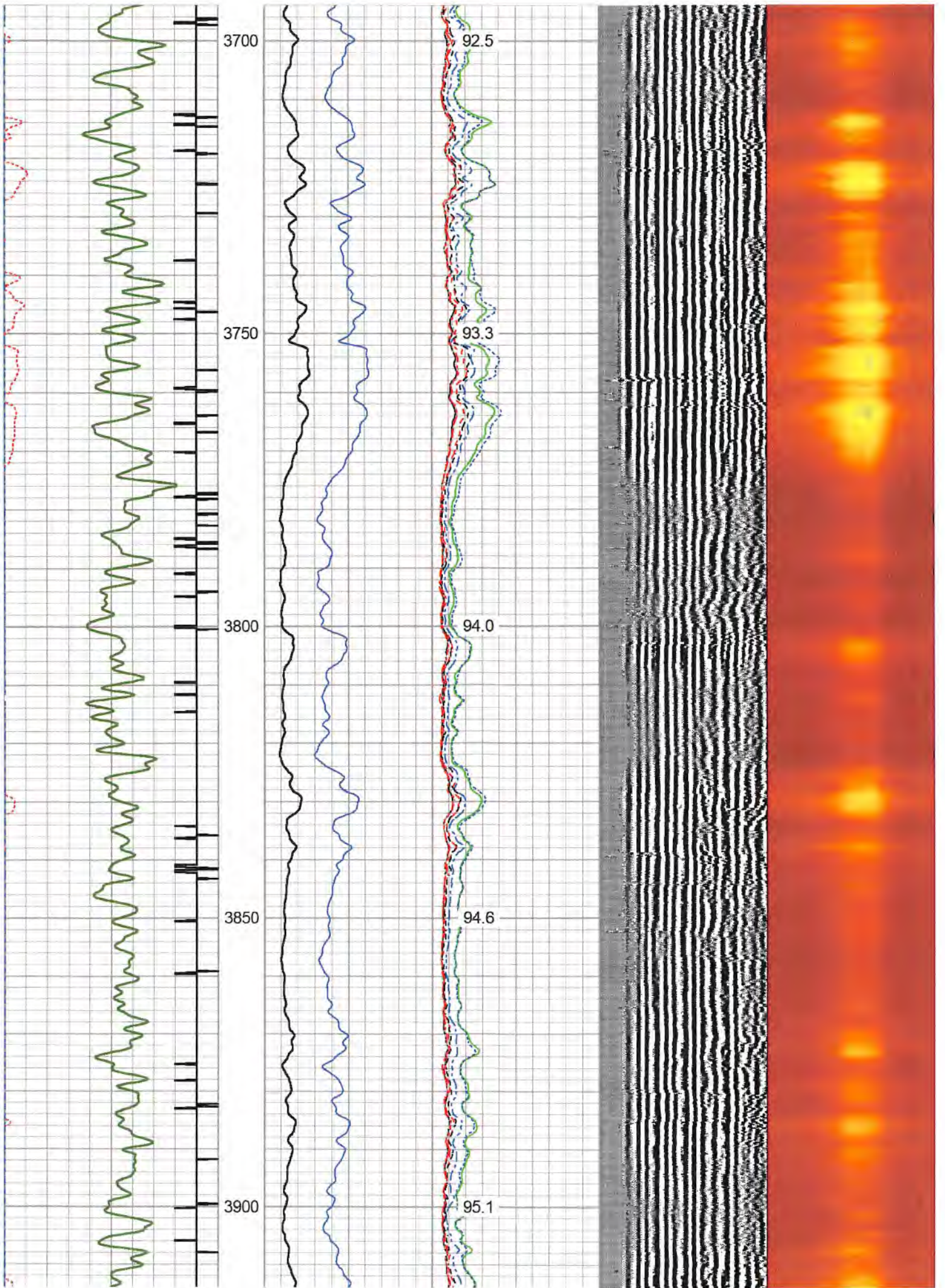
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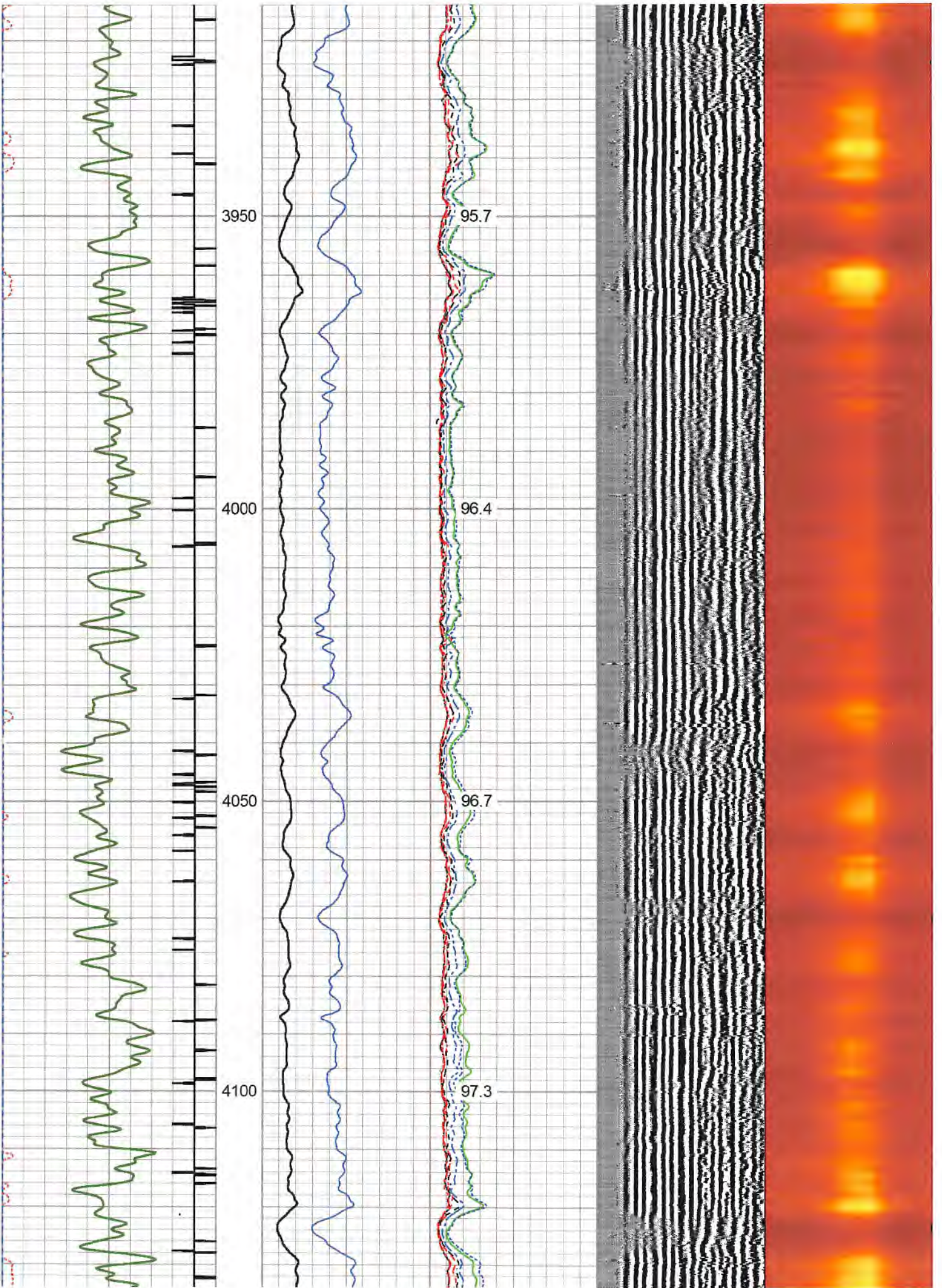
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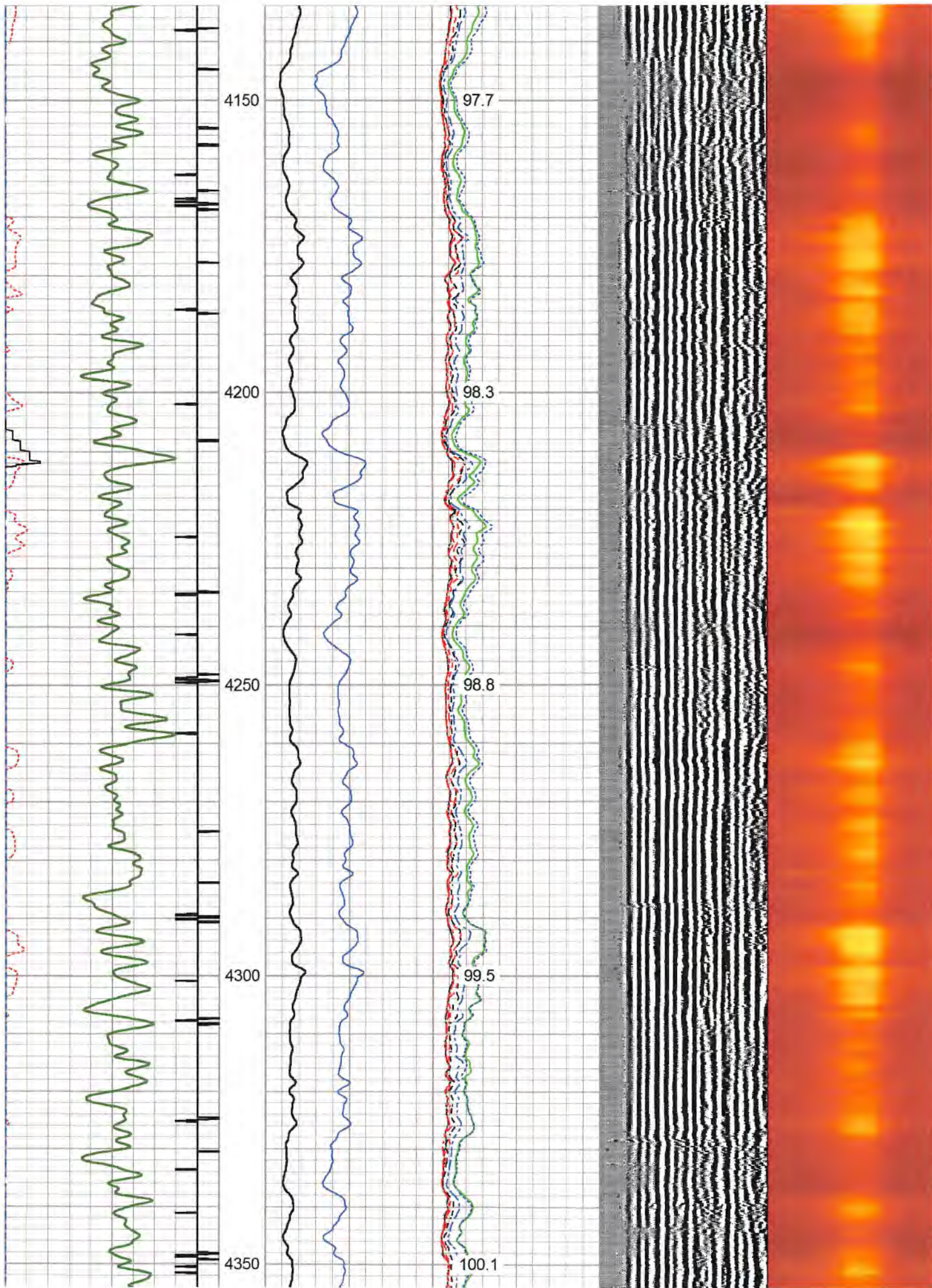
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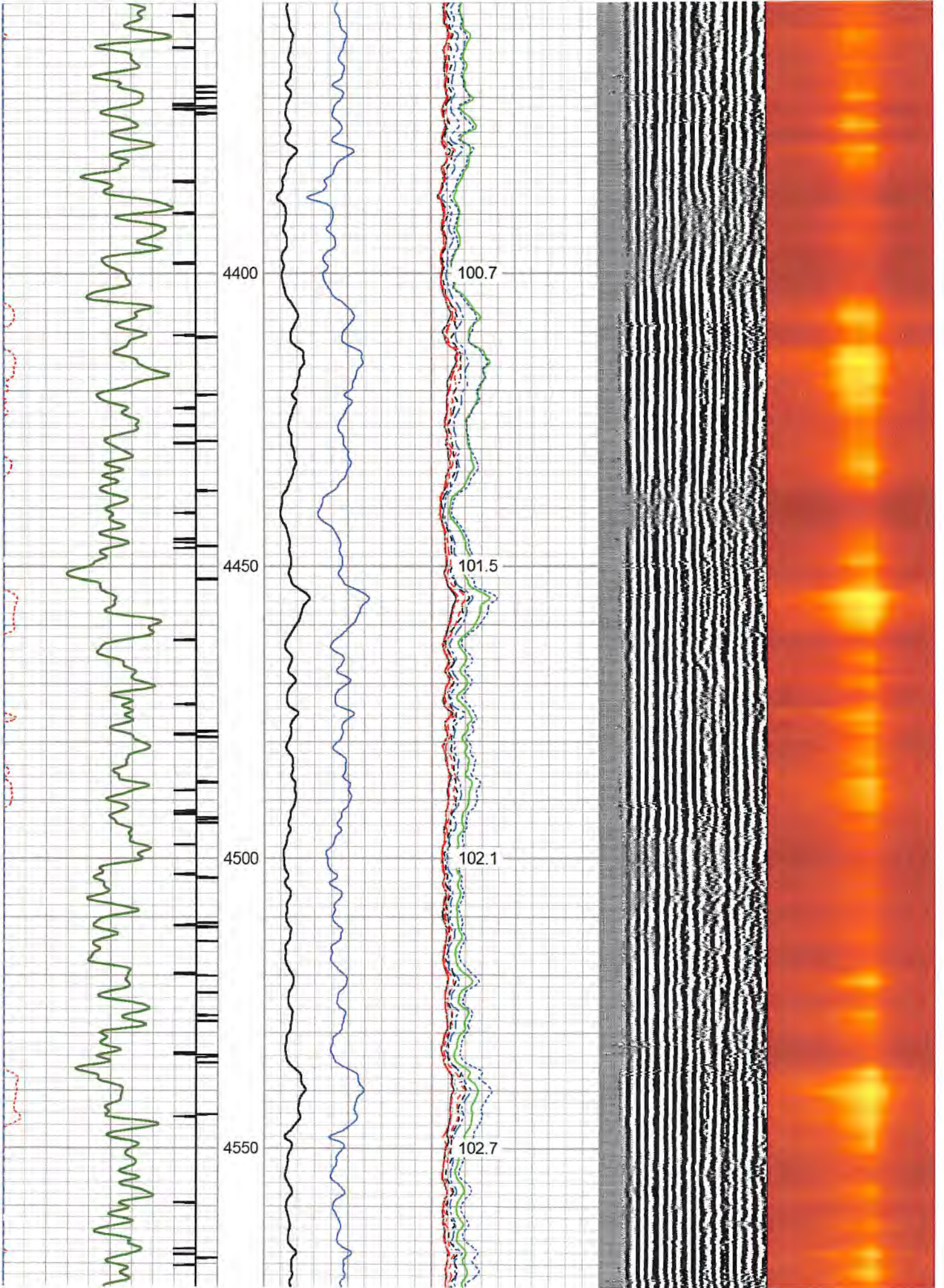
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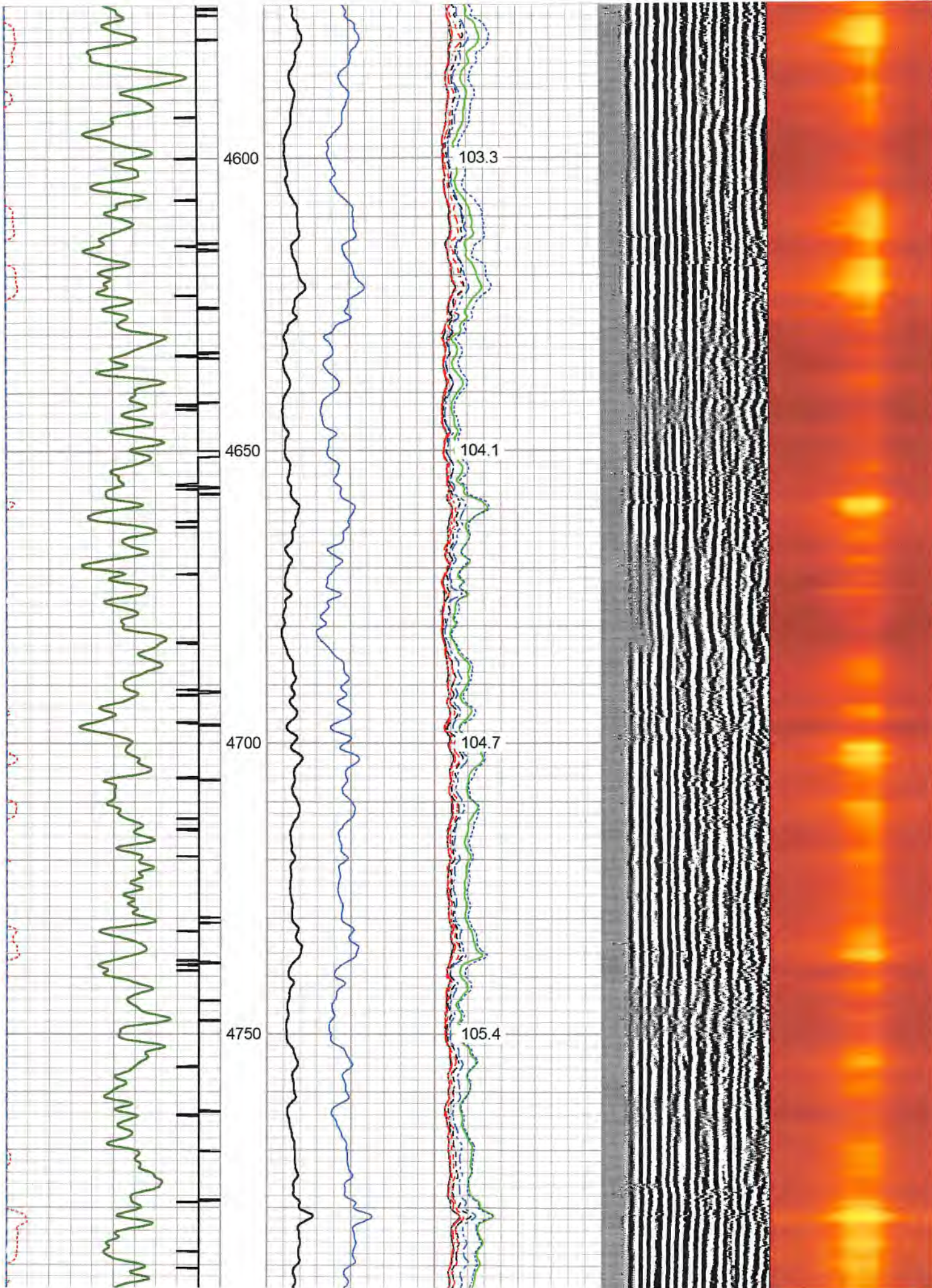


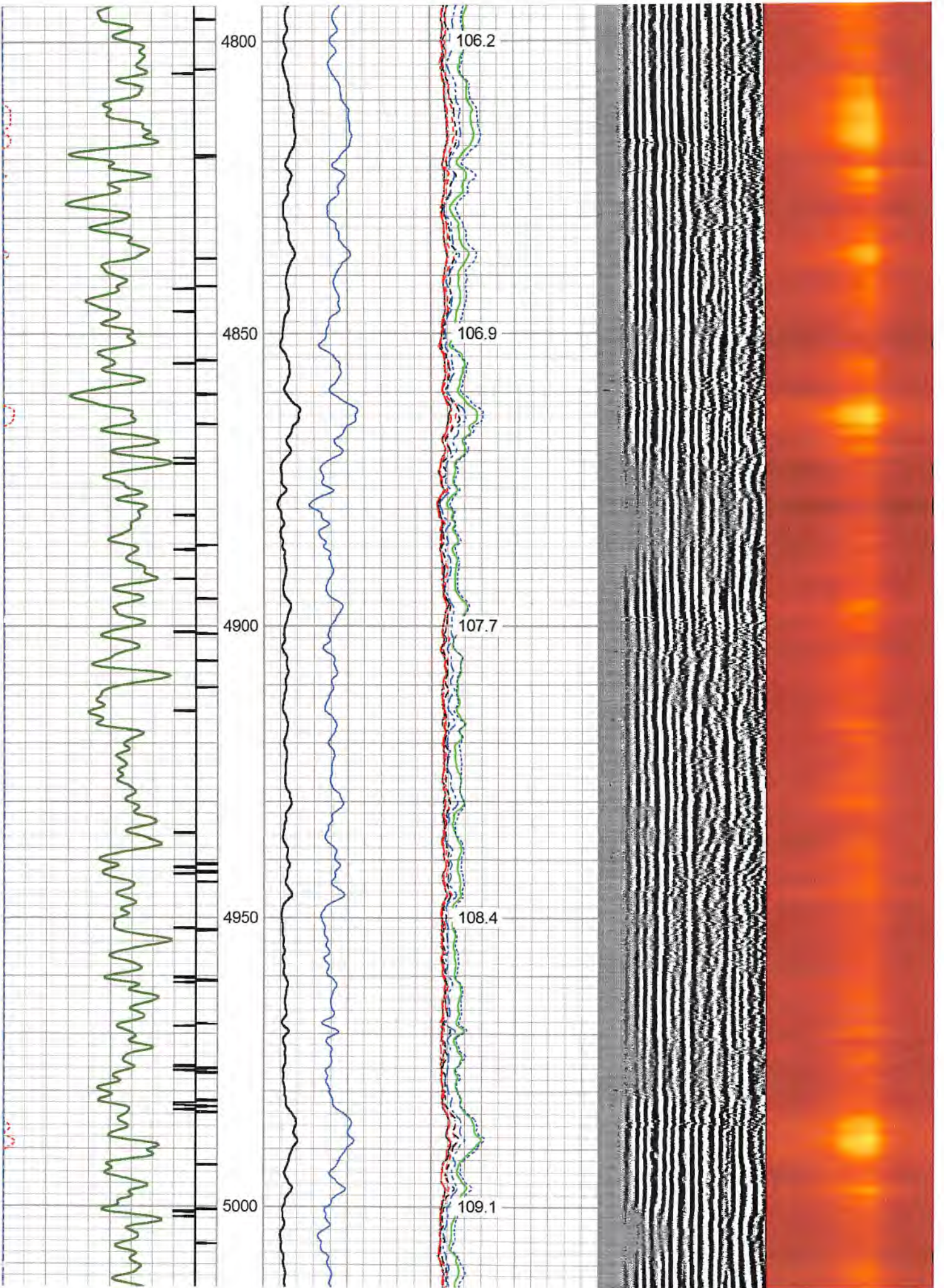




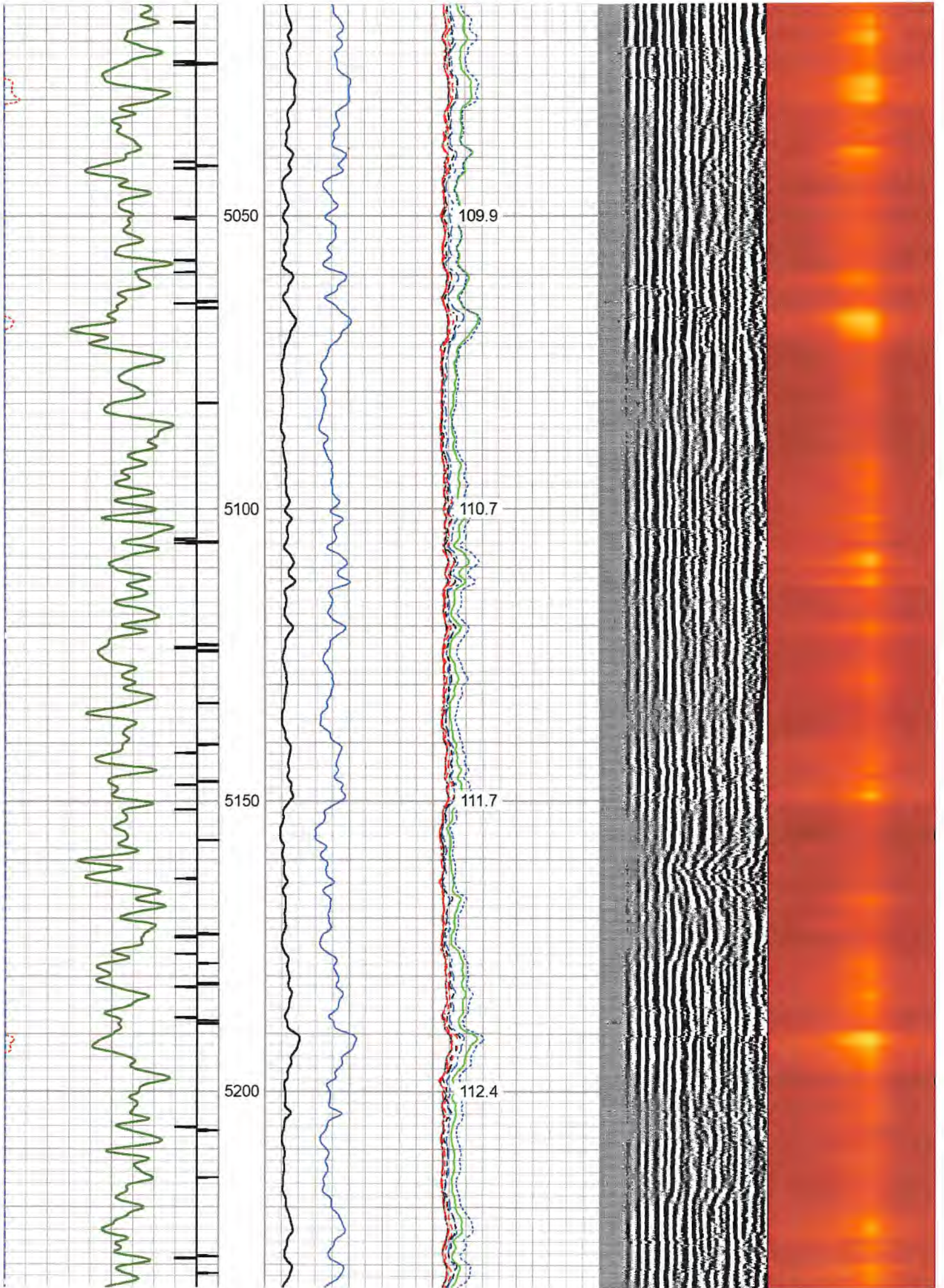


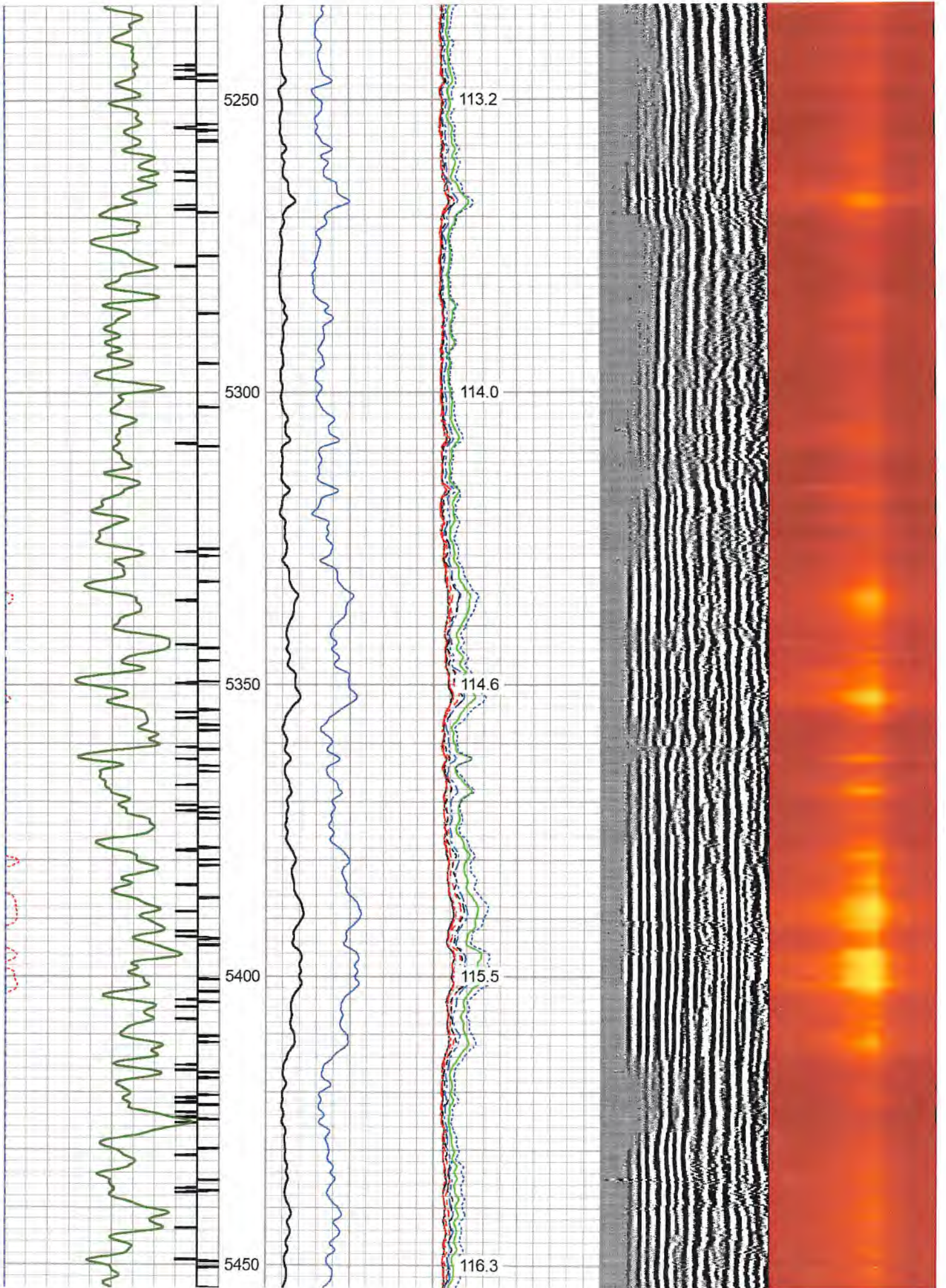


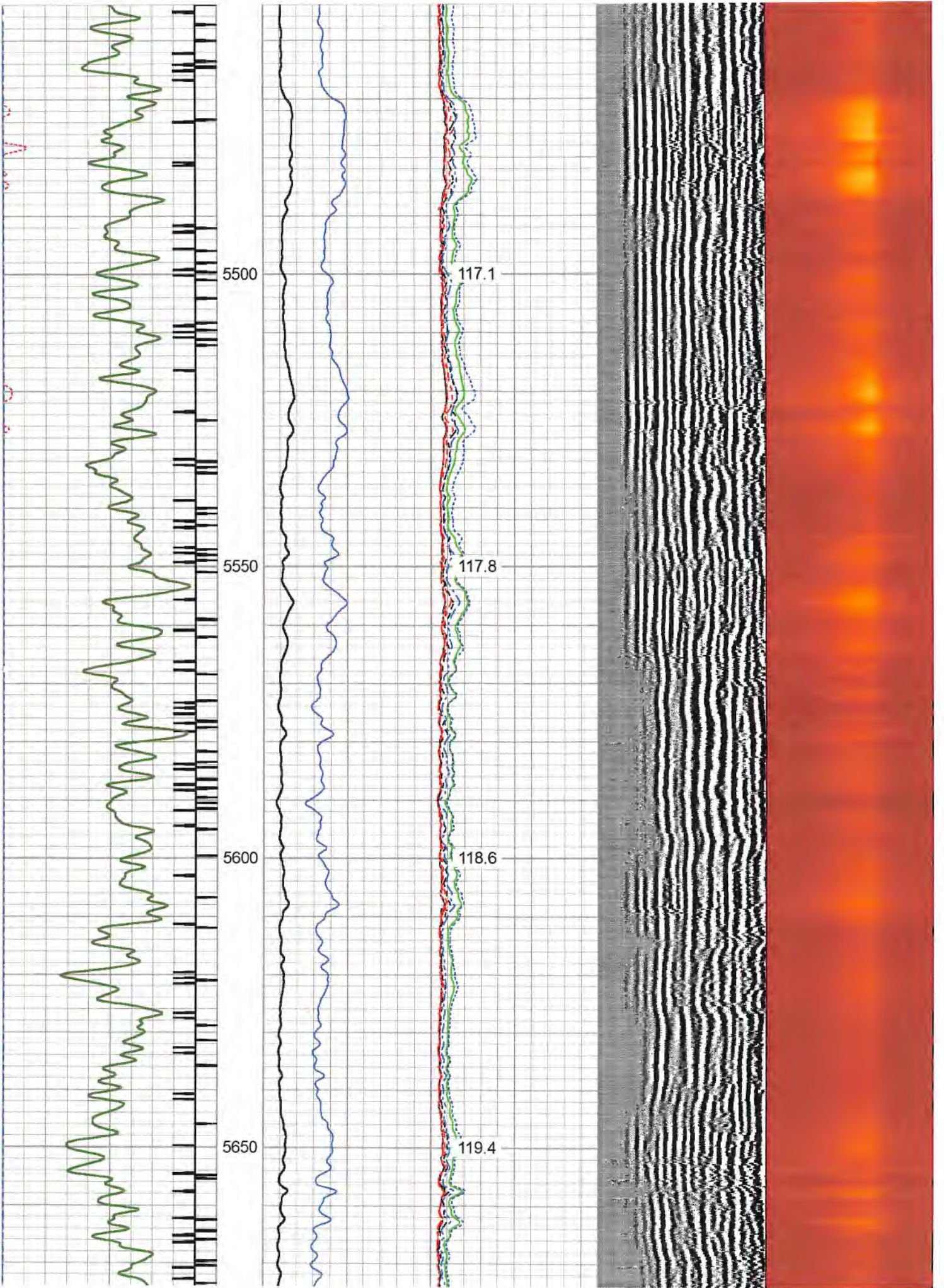


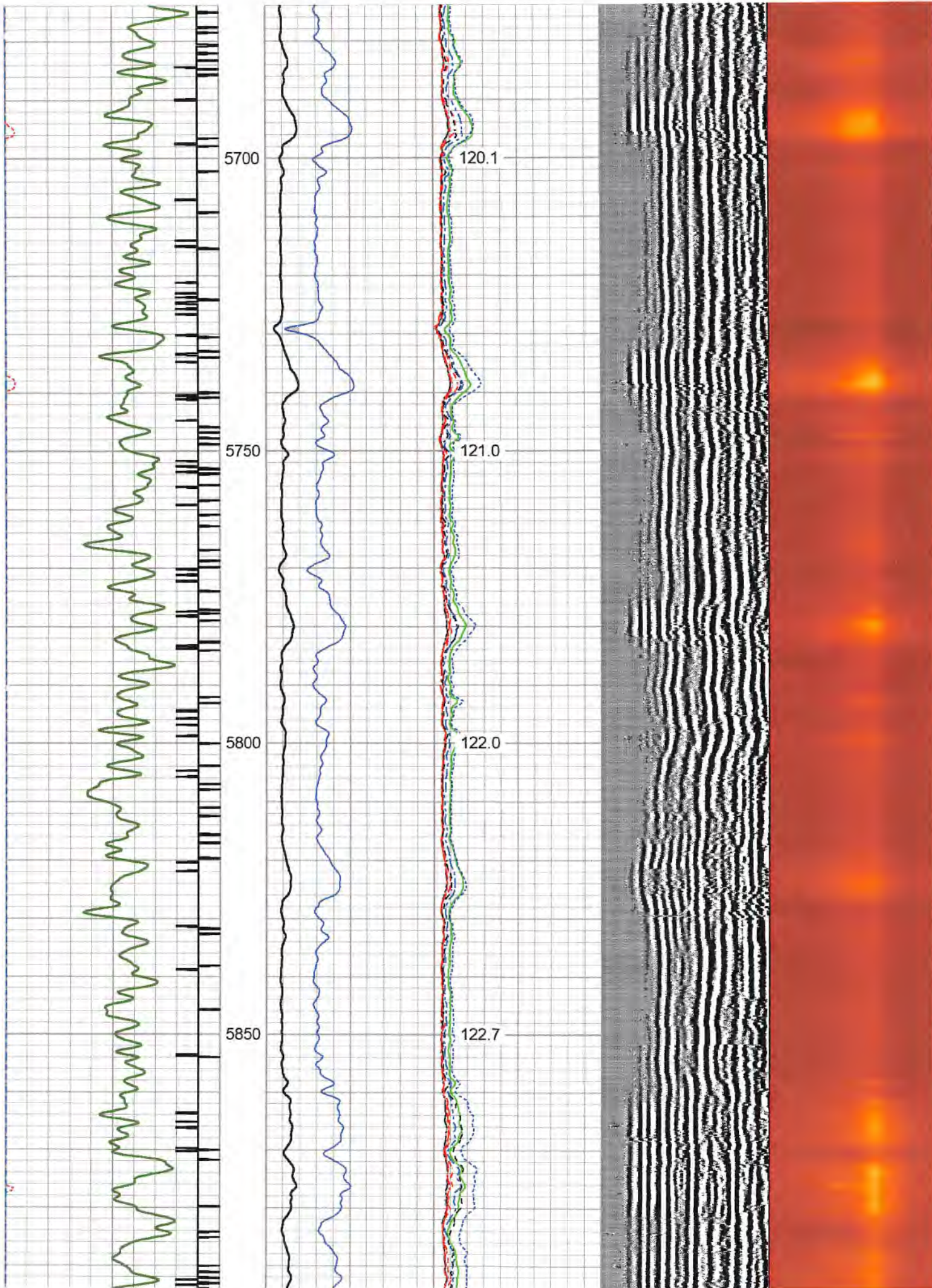


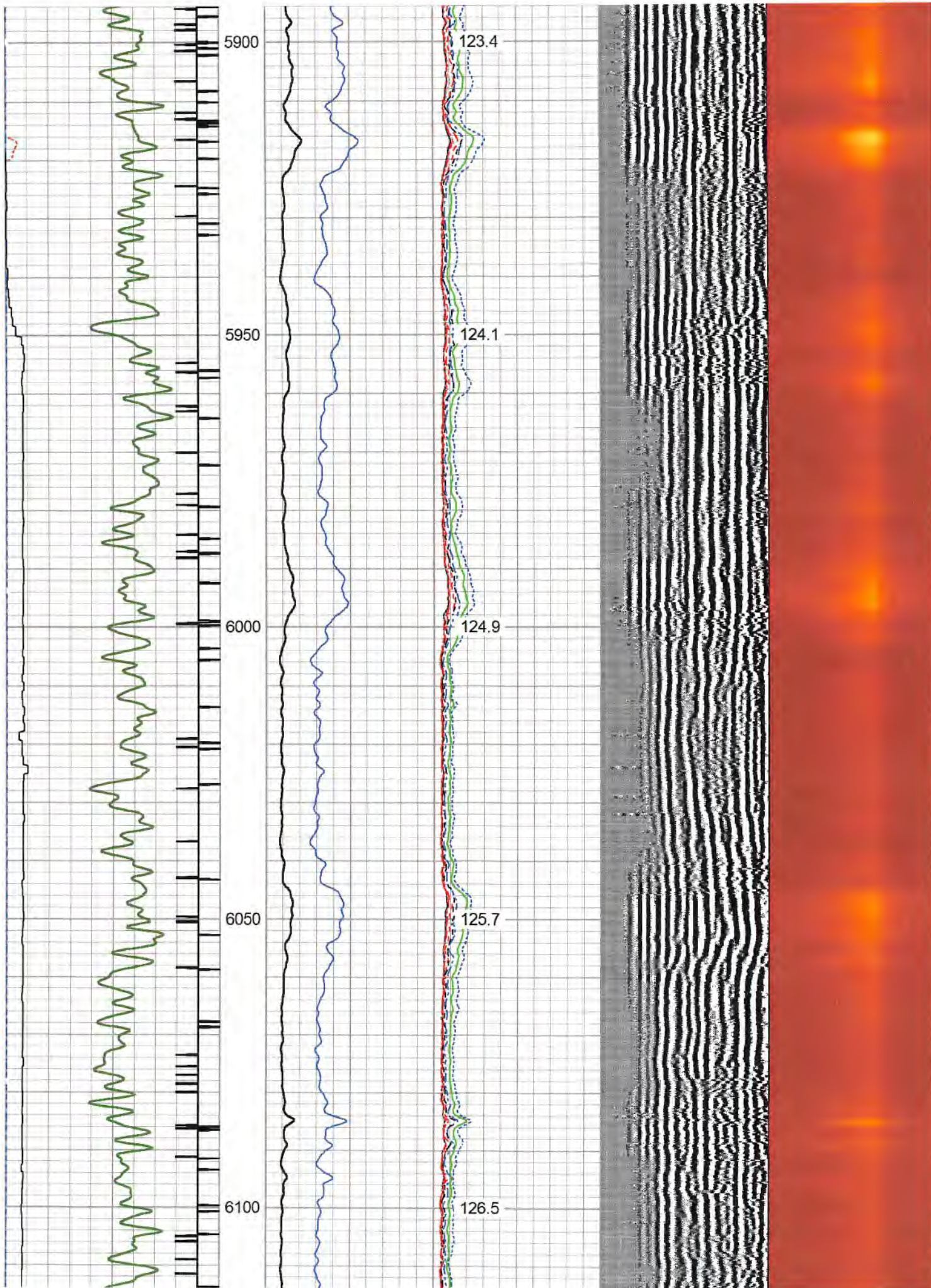


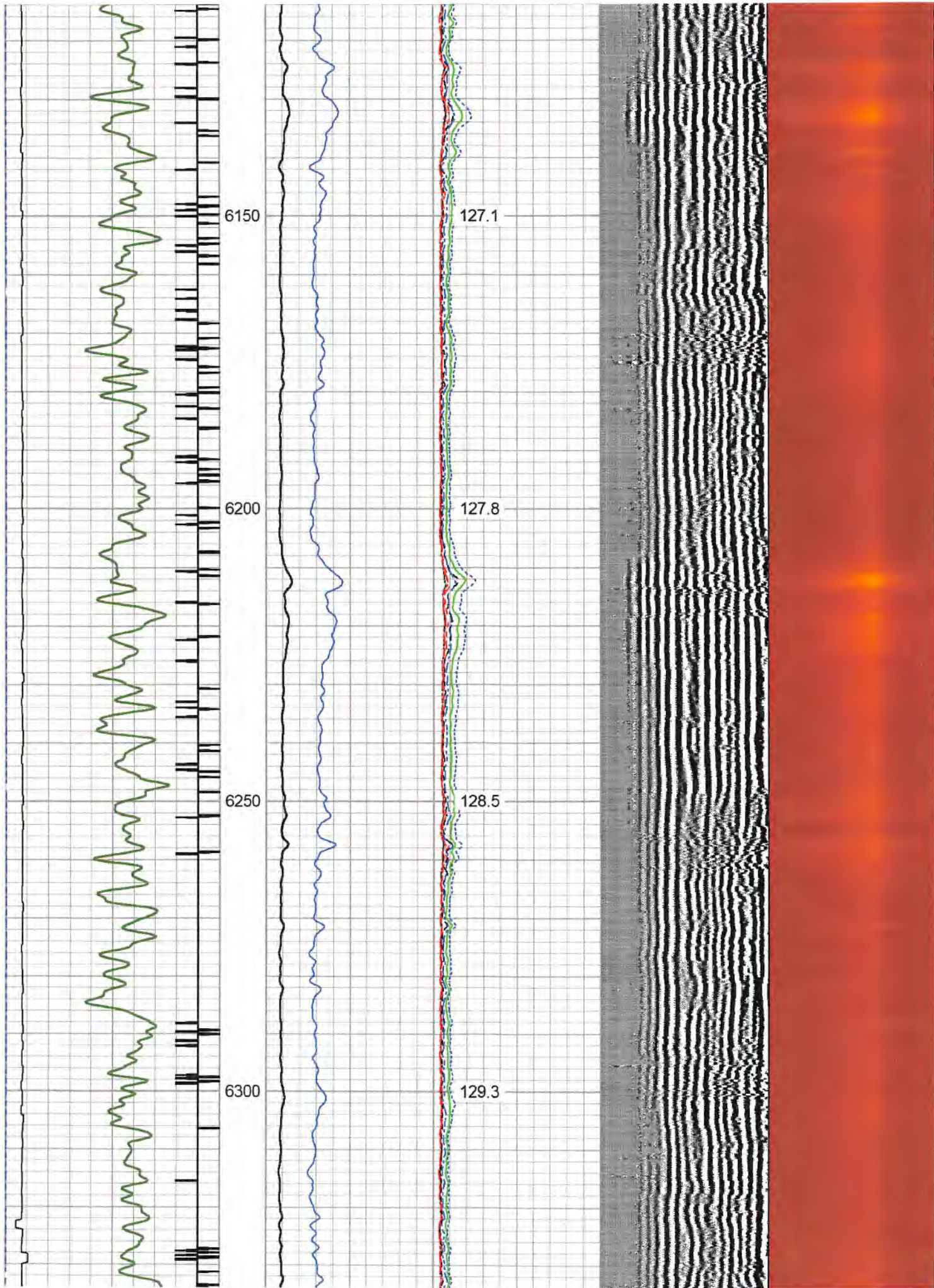


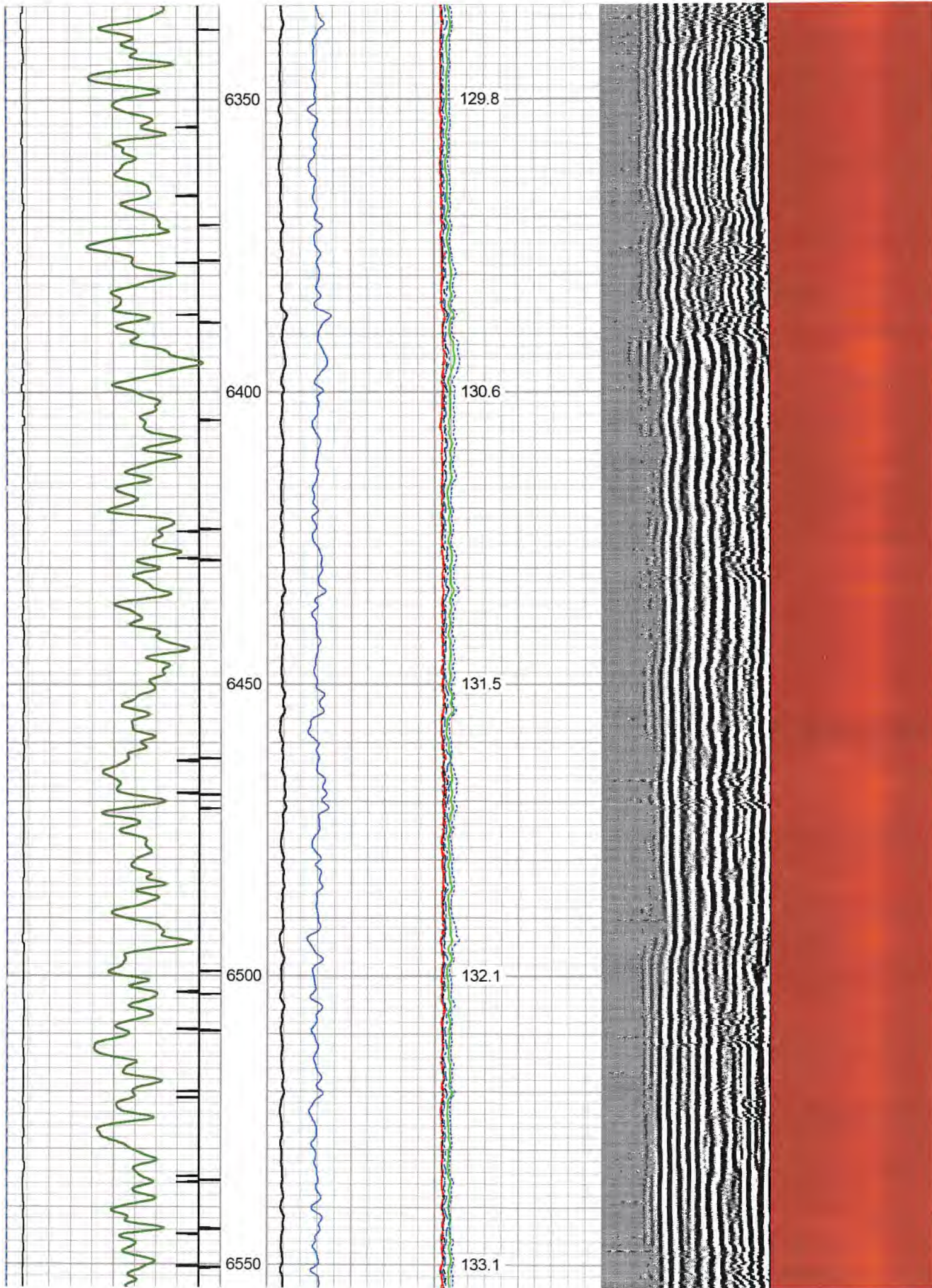


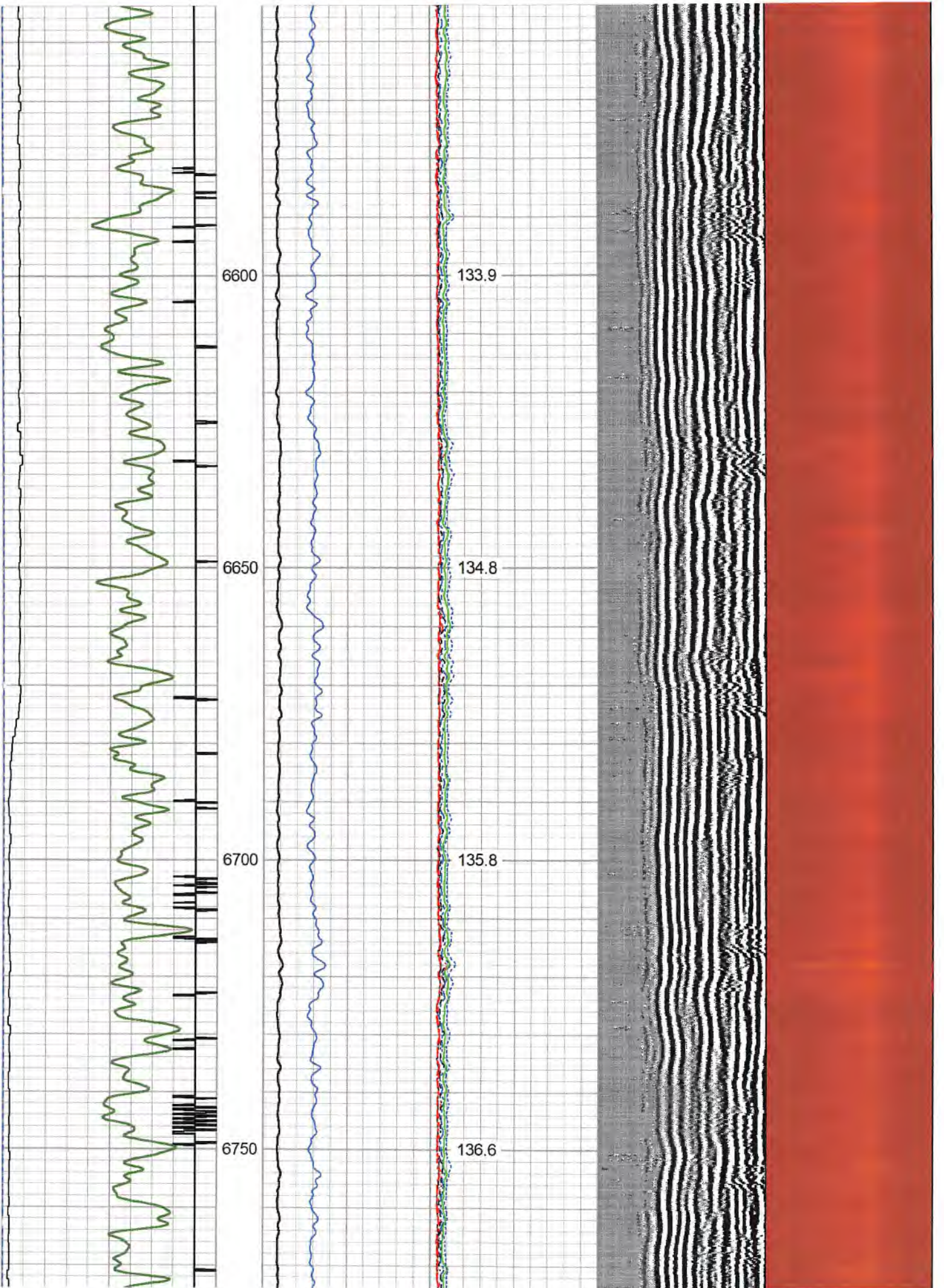




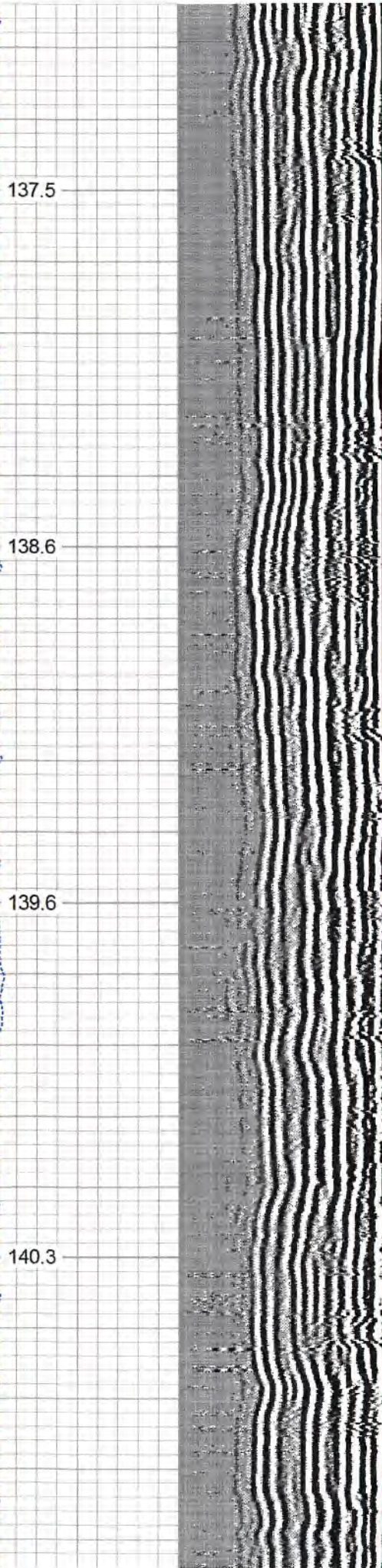
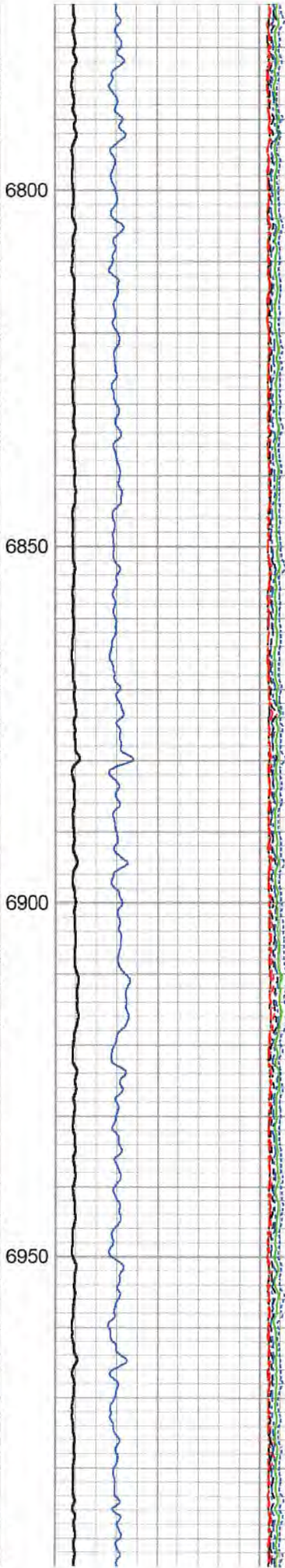
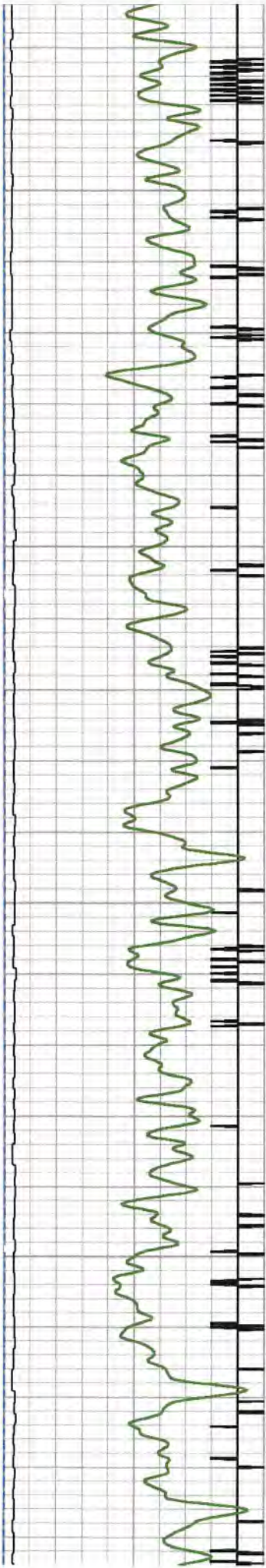


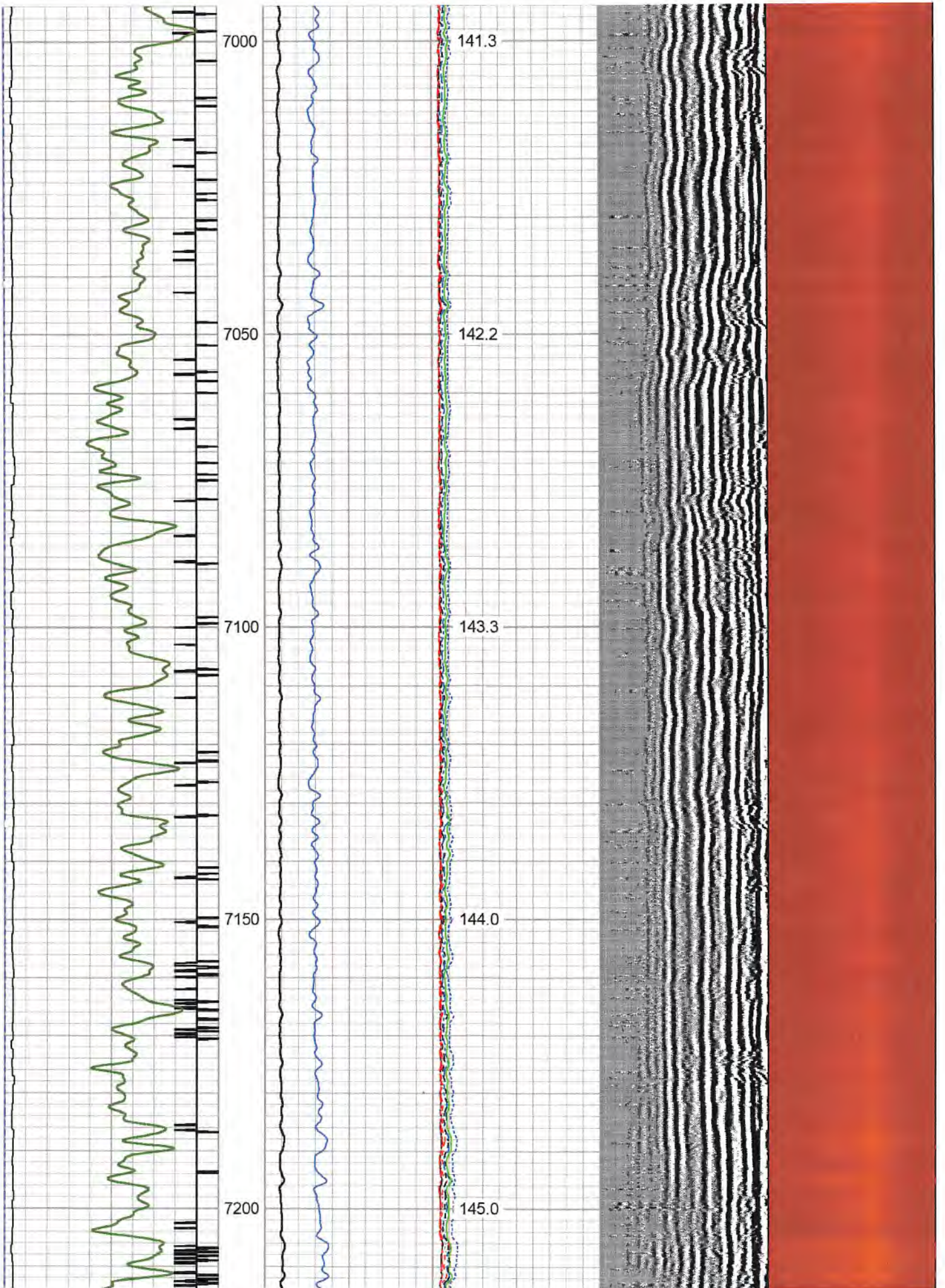


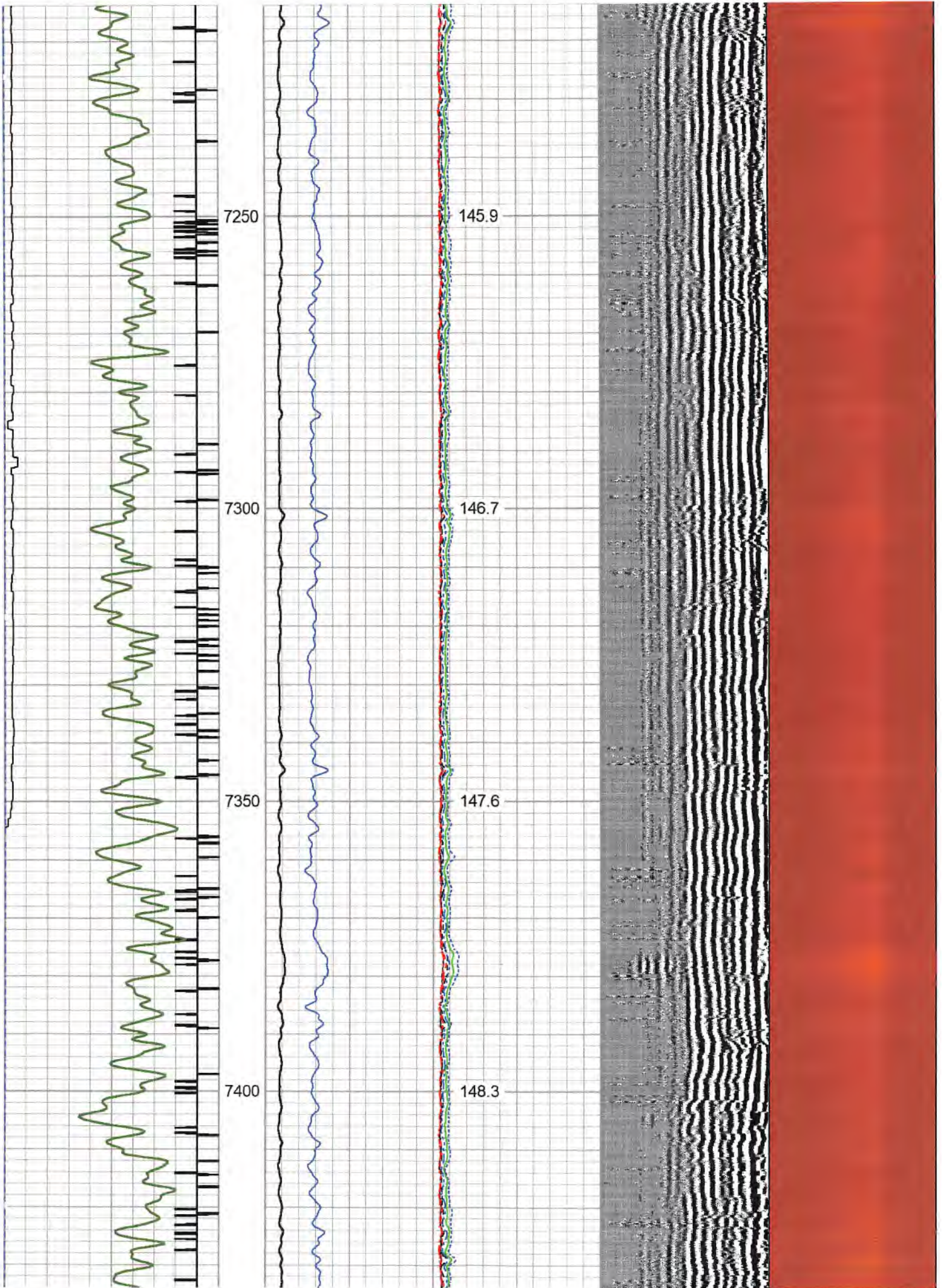


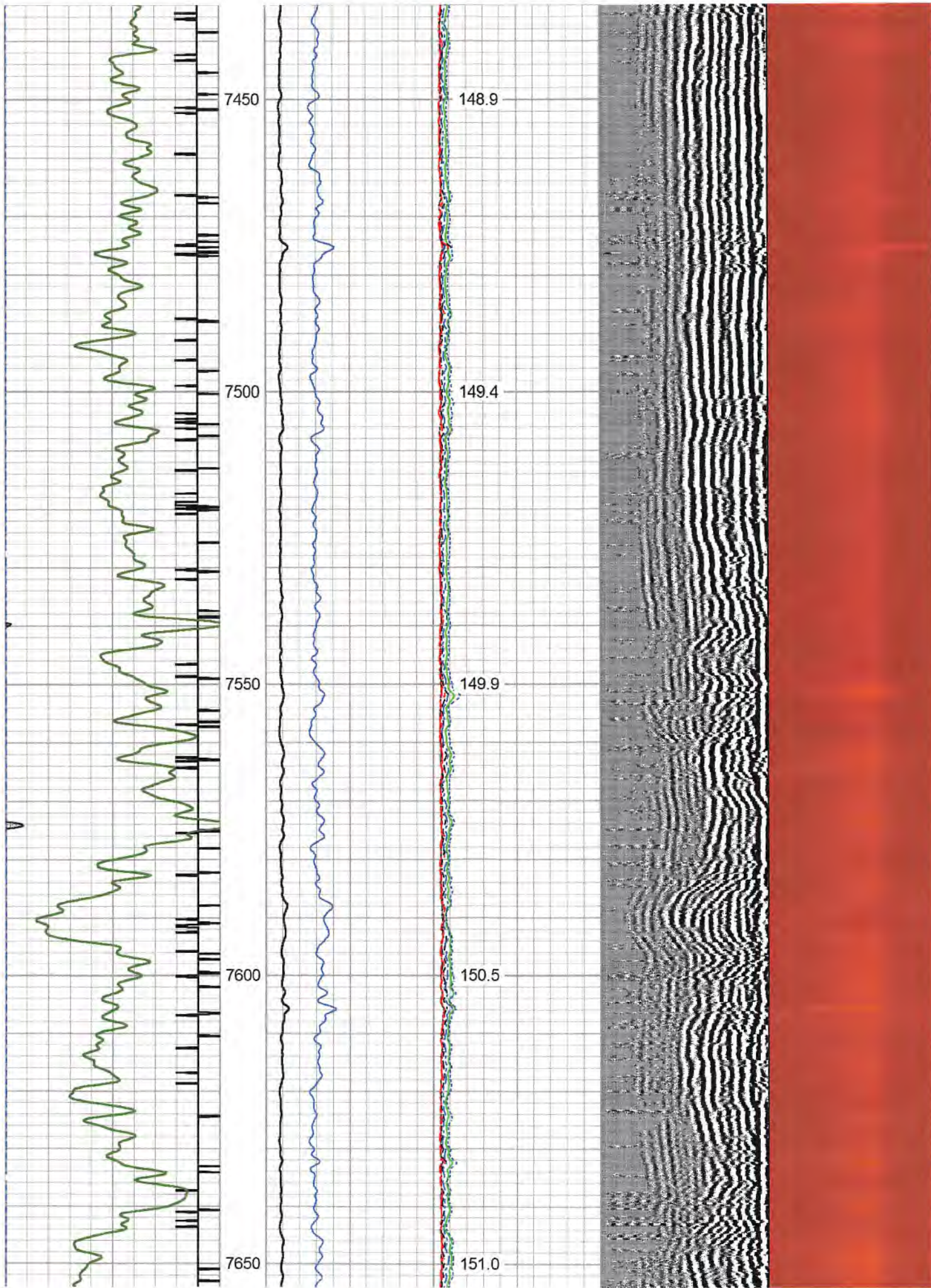


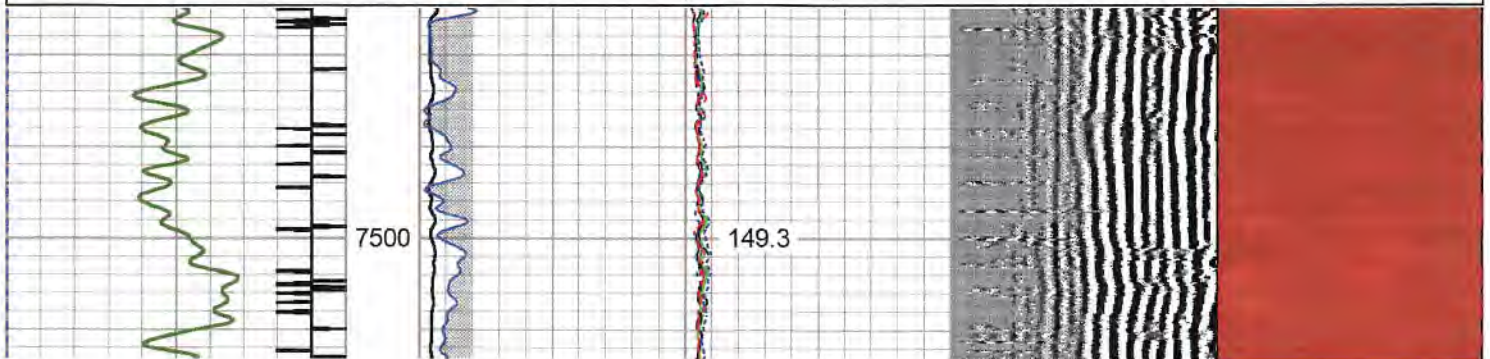
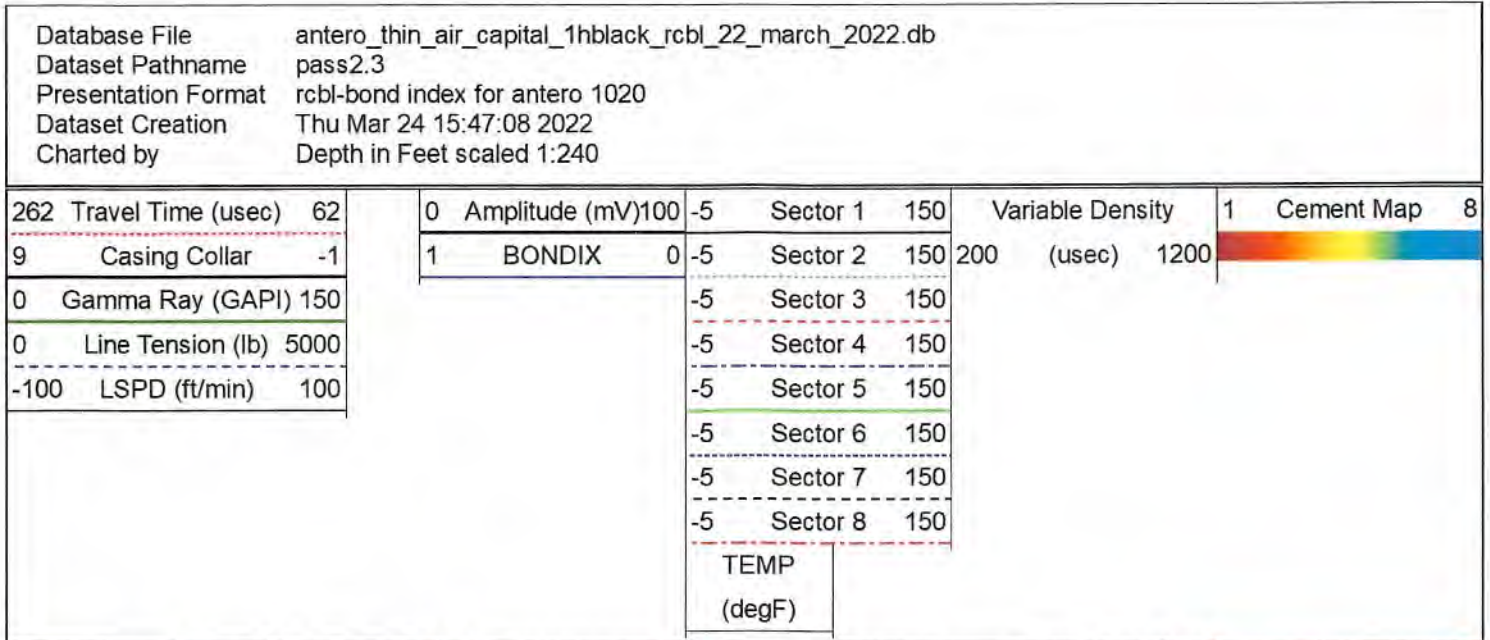
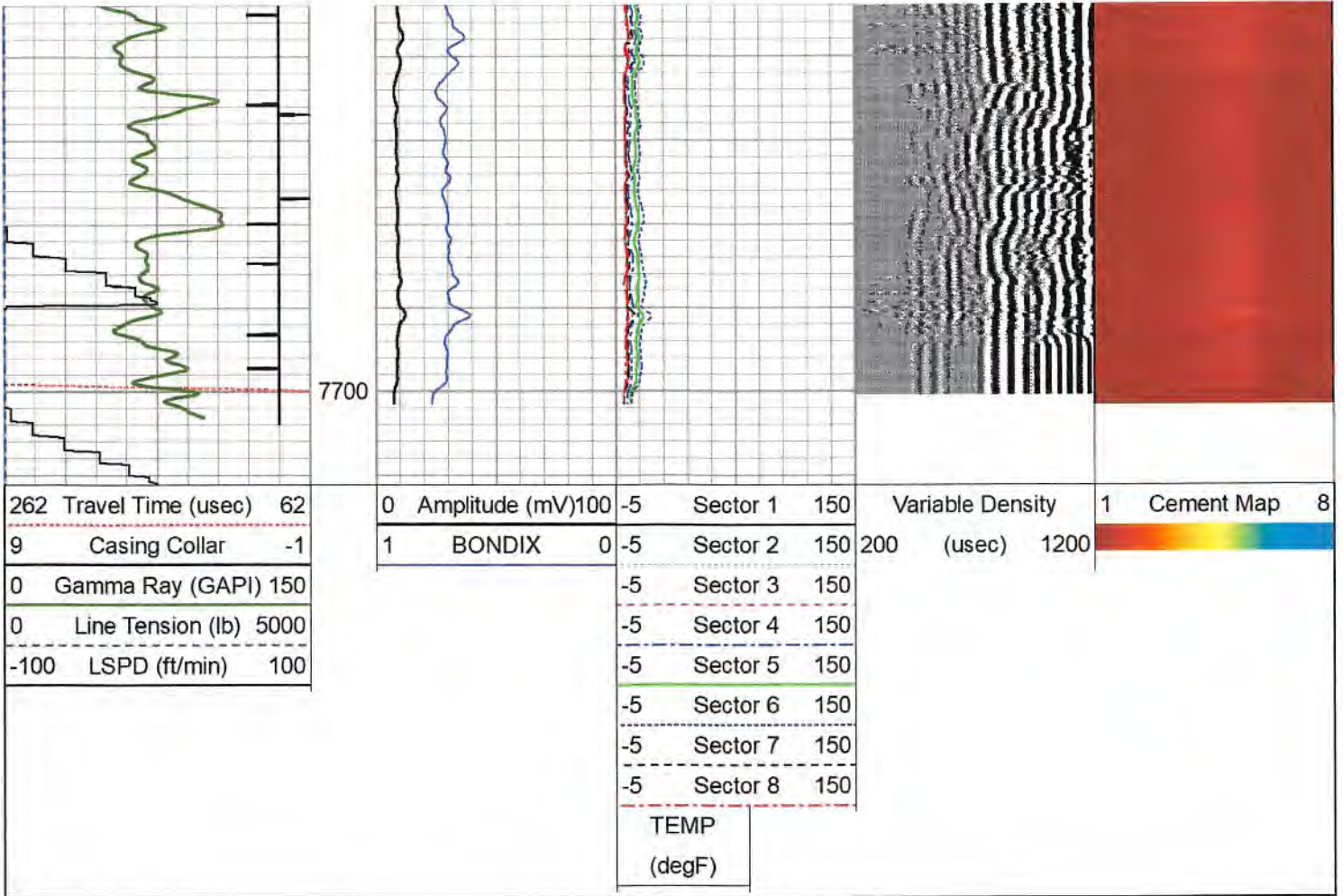


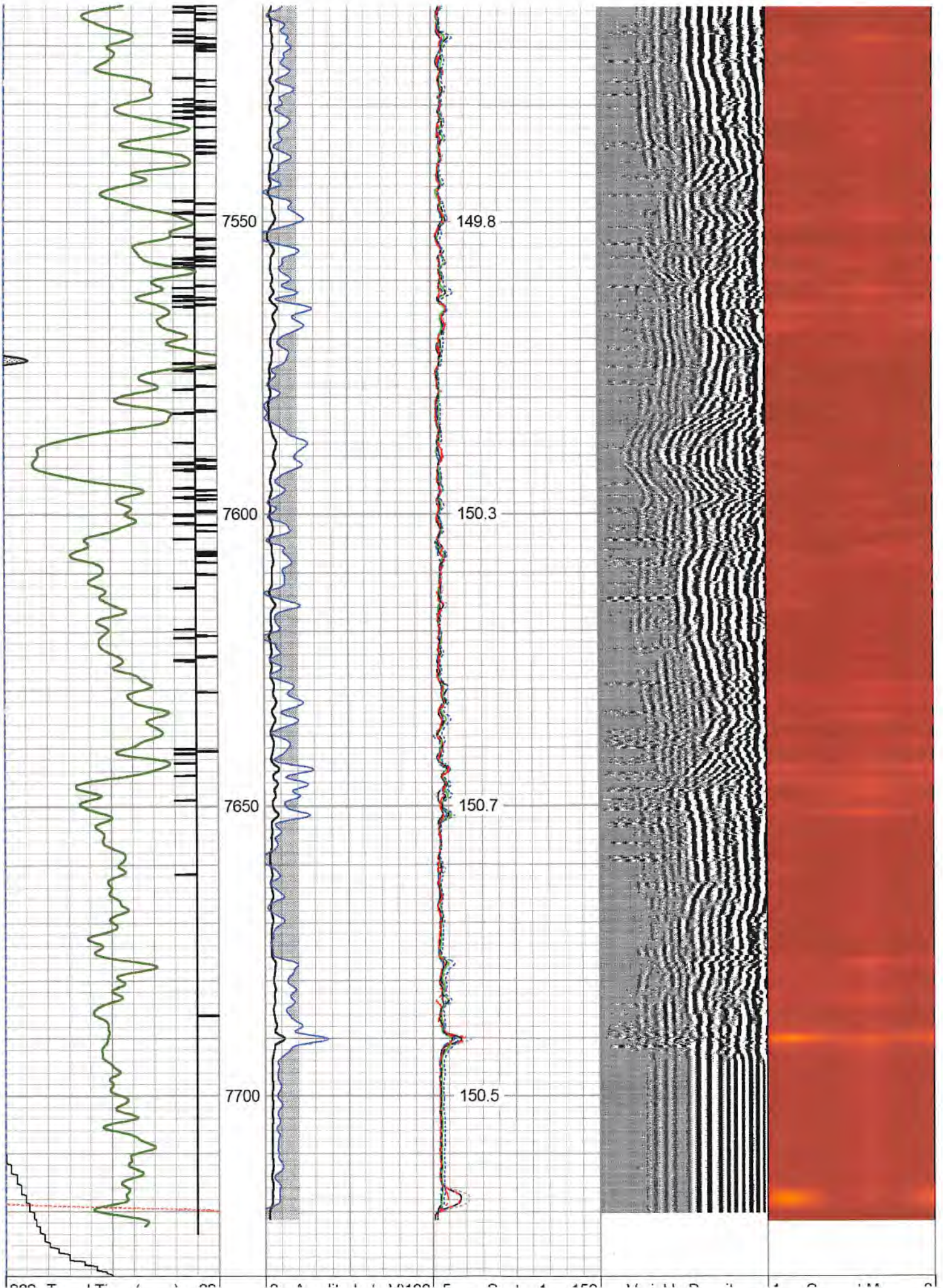












262	Travel Time (usec)	62
9	Casing Collar	-1
0	Gamma Ray (GAPI)	150
0	Line Tension (lb)	5000
-100	LSPD (ft/min)	-100

0	Amplitude (mV)	100	-5	Sector 1	150
1	BONDIX	0	-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
	TEMP				
	(degF)				

Variable Density 1 Cement map 8  
 200 (usec) 1200

## Log Variables

DatabaseC:\ProgramData\Warrior\Data\antero\_thin\_air\_capital\_1hblack\_rcbl\_22\_march\_2022.db  
 Dataset field/well/run1/pass2.3/\_vars\_

### Top - Bottom

BHTEMP_Src	BOREID	BOTTEMP	CASEOD	CASETHCK	CASEWGHT	MAXAMPL	MINAMPL
TEMP	in	degF	in	in	lb/ft	mV	mV
	7.875	100	5.5	0	23	72	3.4
MINATTN	PERFS	PPT	SRFTEMP	TDEPTH			
db/ft		usec	degF	ft			
0.8	No	0	0	0			

### 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\_thin\_air\_capital\_1hblack\_rcbl\_22\_march\_2022.db  
 Dataset Pathname pass3  
 Dataset Creation Tue Mar 22 23:07:54 2022

### Gamma Ray Calibration Report

Serial Number: 275  
 Tool Model: Probe  
 Performed: Mon Mar 21 14:37:34 2022  
 Calibrator Value: 100.0 GAPI  
 Background Reading: 35.0 cps  
 Calibrator Reading: 160.0 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: 214.542 ft

Master Calibration, performed Tue Mar 22 15:33:45 2022:

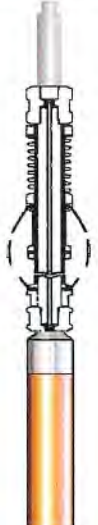
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.011	1.026	3.400	71.921	67.512	2.637
CAL	1.109	1.483				
5'	0.012	0.913	3.400	71.921	75.976	2.525
SUM						
S1	0.028	0.936	0.000	100.000	110.121	-3.098
S2	0.012	0.951	0.000	100.000	106.478	-1.280
S3	0.012	0.991	0.000	100.000	102.132	-1.198
S4	0.012	1.059	0.000	100.000	95.491	-1.121
S5	0.014	1.108	0.000	100.000	91.407	-1.243
S6	0.013	1.128	0.000	100.000	89.666	-1.155
S7	0.012	1.064	0.000	100.000	95.080	-1.132
S8	0.015	1.022	0.000	100.000	99.250	-1.481

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	1.109	1.483	1.000	0.000

Air Zero Calibration, performed Mon Mar 21 15:14:33 2022:

	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-Titn275Adj Titan 2 3/4" Adjustable Centralizer	2.86	2.75	35.00



Temp	14.10					
WVFS8	11.86		RBT-Probe275T (FW1312-32) Probe 2.75" Radial with Integral Temperature Sub	9.39	2.75	90.00
WVFS7	11.86					
WVFS6	11.86					
WVFS5	11.86					
WVFS4	11.86					
WVFS3	11.86					
WVFS2	11.86					
WVFS1	11.86					
WVF3FT	11.86					
WVF5FT	10.86					
HeadVolt	7.61					
WVFCAL	7.61					
CCL	6.71					
GR	5.38	GR-Probe (275) Probe 2 3/4" Logging Gamma Ray	4.78	2.75	57.00	
		CENT-PTS275 2 3/4" Probe Centralizer	2.83	2.75	20.00	

Dataset: antero\_thin\_air\_capital\_1hblack\_rcbl\_22\_march\_2022.db: field/well/run1/pass4  
 Total length: 20.87 ft  
 Total weight: 207.00 lb  
 O.D.: 2.75 in

	Company	Antero Resources
	Well	Capitol Unit 1H
	Field	Utica
	County	Tyler
	State	WV