



**RADIAL CEMENT BOND LOG  
VARIABLE DENSITY LOG  
GAMMA/CCL/TEMP**

Company ANTERO RESOURCES  
Well PHEBE 2H  
Field WEST UNION  
County DODDRIDGE  
State WV

Company ANTERO RESOURCES  
Well PHEBE 2H  
Field WEST UNION  
County DODDRIDGE State WV

Location: API #: 47-017-06938

SEC	TWP	RGE	Elevation
Permanent Datum	GROUND LEVEL	Elevation	
Log Measured From	KELLY BUSHING 30'		K.B. 1,364'
Drilling Measured From	KELLY BUSHING		D.F. 1,364'
			G.L. 1,334'

Date	JANUARY 11, 2023		
Run Number	ONE		
Depth Driller	23,043'		
Depth Logger	7,942'		
Bottom Logged Interval	7,945'		
Top Log Interval	SURFACE		
Open Hole Size	NA		
Type Fluid	FRESH WATER		
Density / Viscosity	8.6 LB/GAL		
Max. Recorded Temp.	148.6		
Estimated Cement Top	1,994'		
Time Well Ready	UPON ARRIVAL		
Time Logger on Bottom	13:30		
Equipment Number	116		
Location	CHARLEROI, PA		
Recorded By	C. DRUMMOND		
Witnessed By	BRYAN HEMARD		
Borehole Record		Tubing Record	
Run Number	Bit	From	To
Casing Record	Size	Wgt/Ft	Top
Conductor String	13.375"	64.5 LBS.	SURFACE
Surface String	9.625"	36 LBS.	SURFACE
Intermediate String	5.5	23 LBS.	SURFACE
Intermediate String			
Production String			
			Bottom
			897'
			3,471'
			23,043'

<<< 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

LOG CORRELATED TO MARKER JOINT  
DEPTH SHIFT -7  
MARKER JOINT 6,897' - 6,907'  
MAIN PASS LOGGED WITH 1500 PSI  
REPEAT PASS LOGGED WITH 0 PSI

RECEIVED  
Office of Oil and Gas

JUN 2 2023

WV Department of  
Environmental Protection

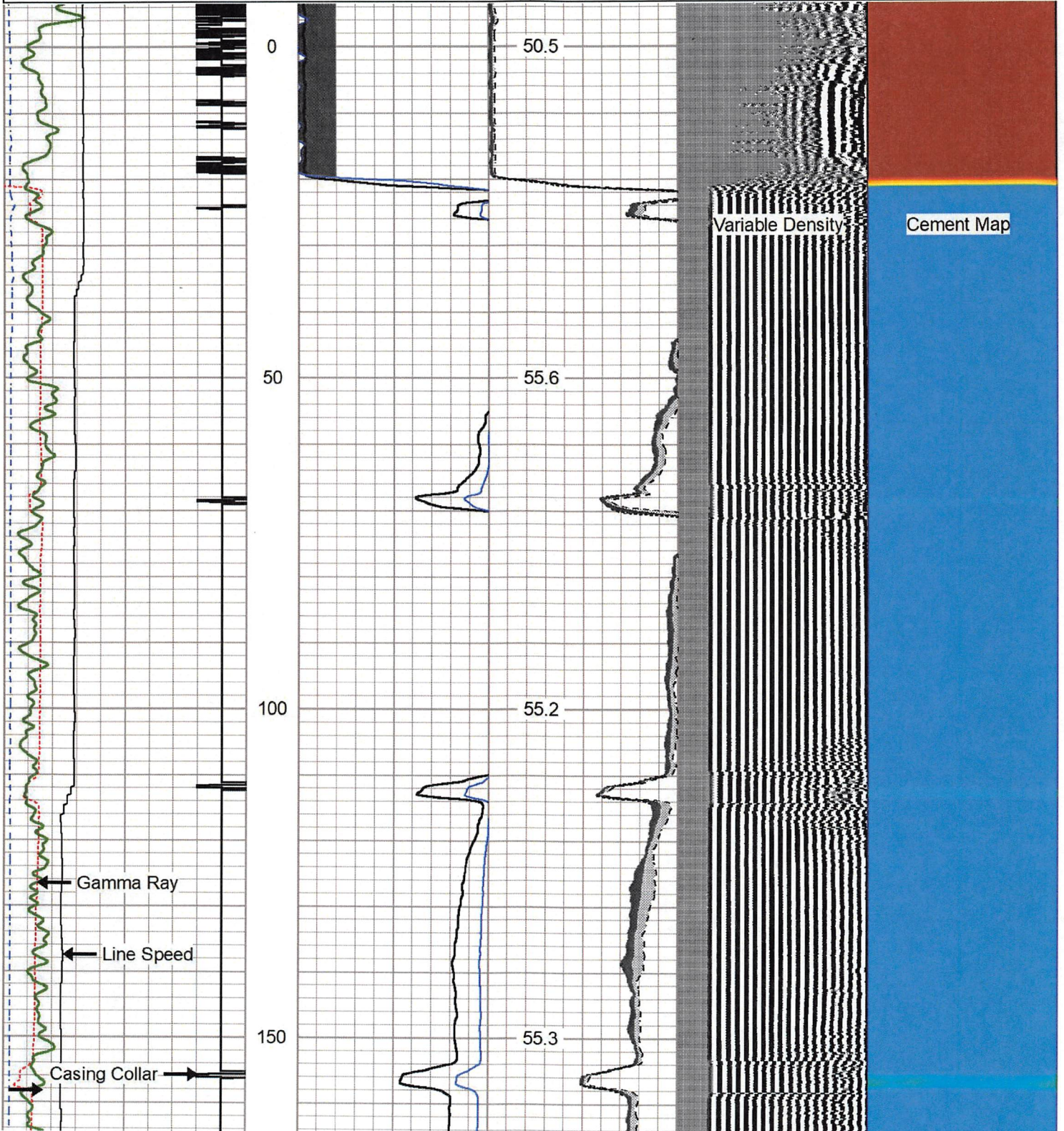
THANK YOU FOR USING NINE ENERGY SERVICES

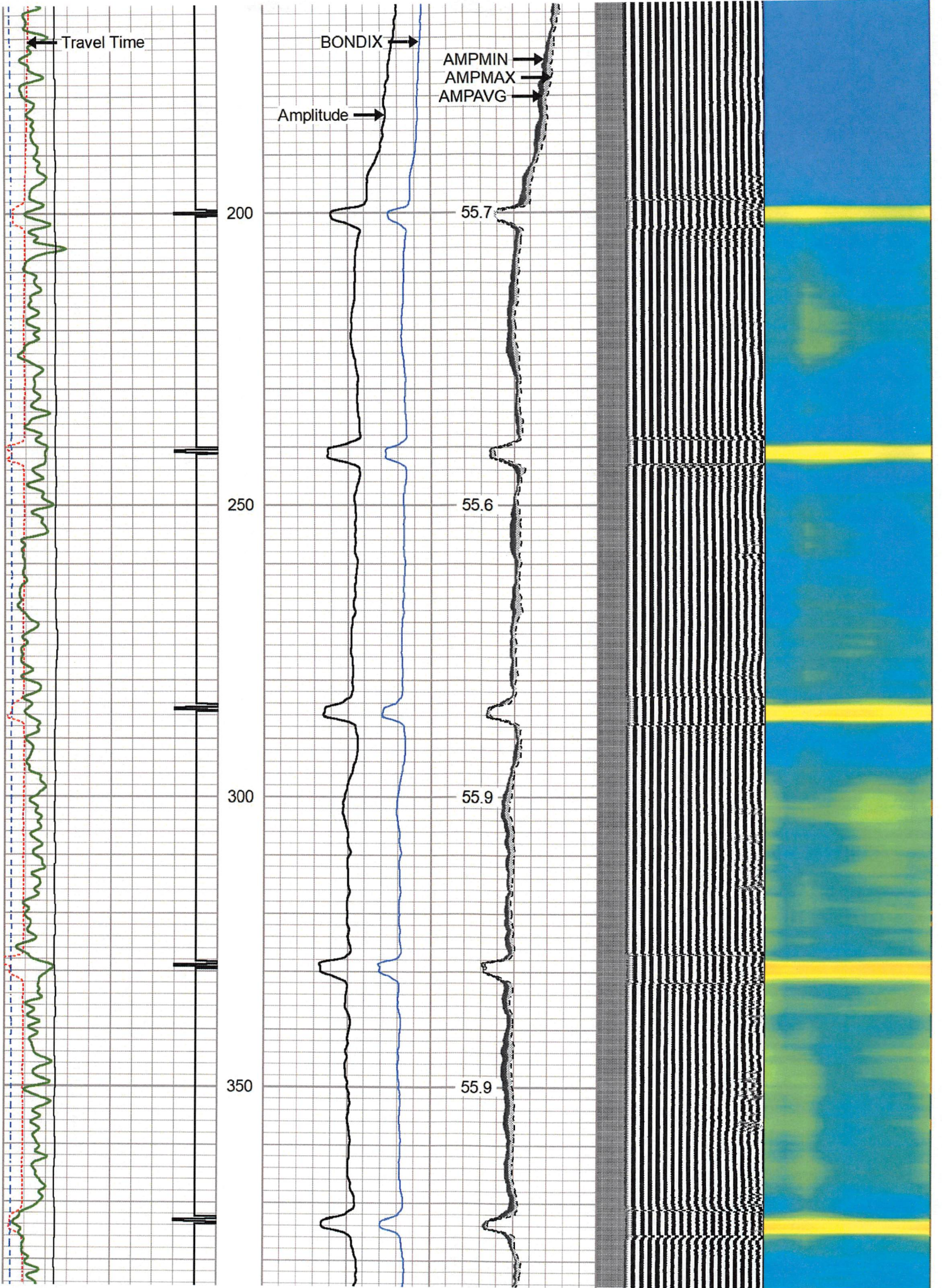


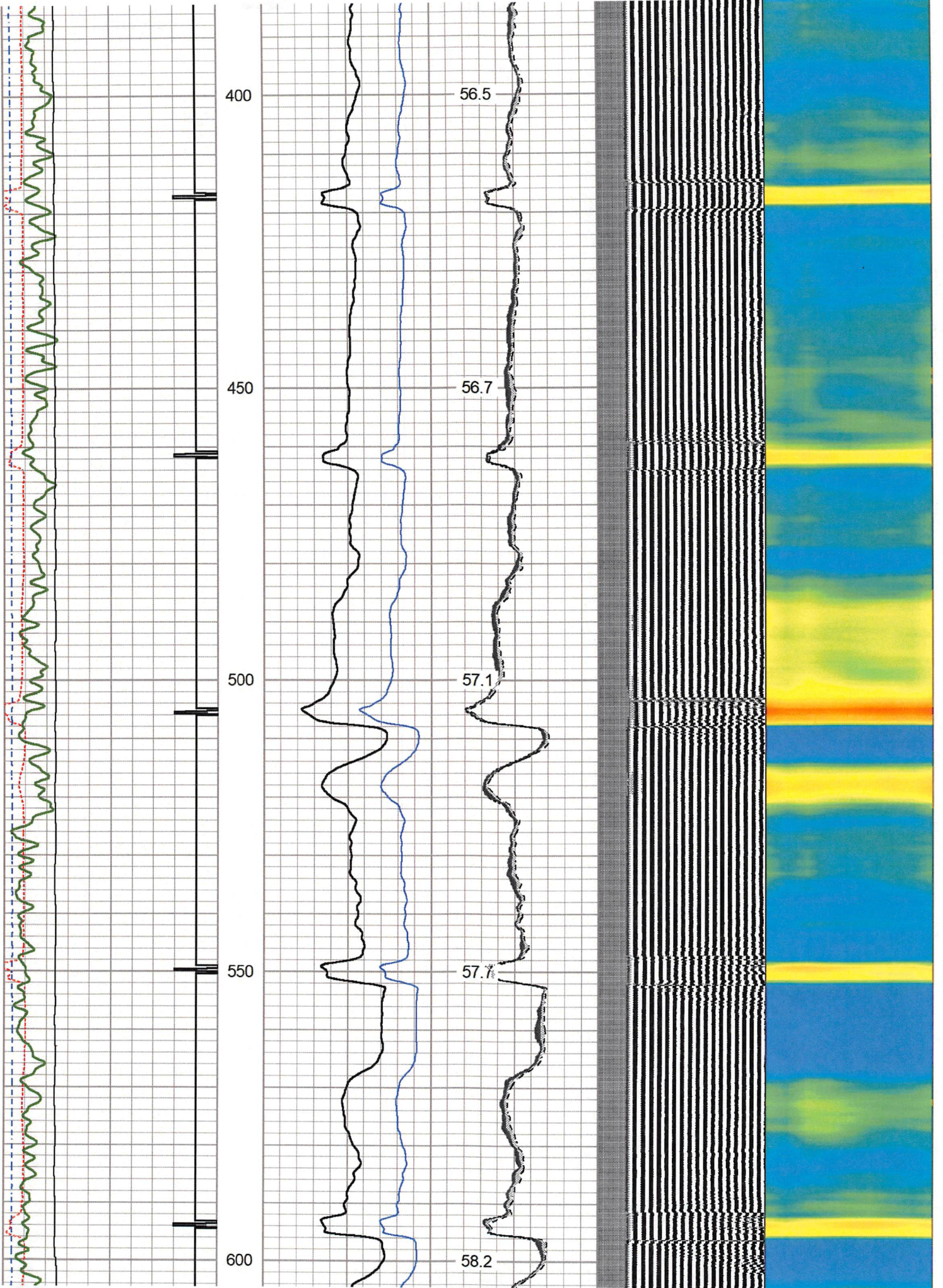
**Main Pass 1500 PSI**

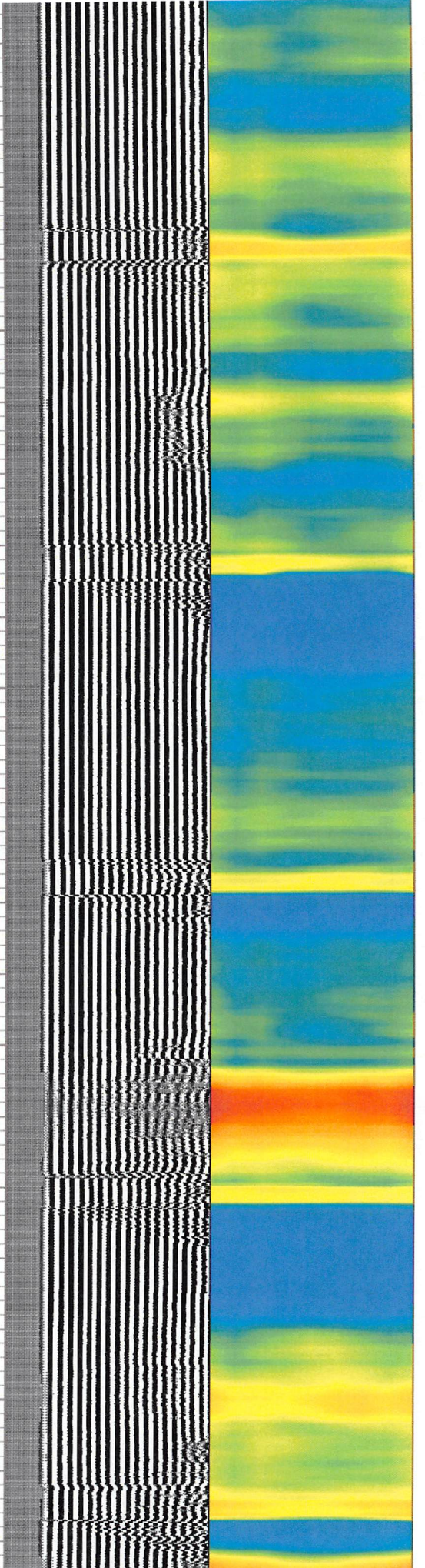
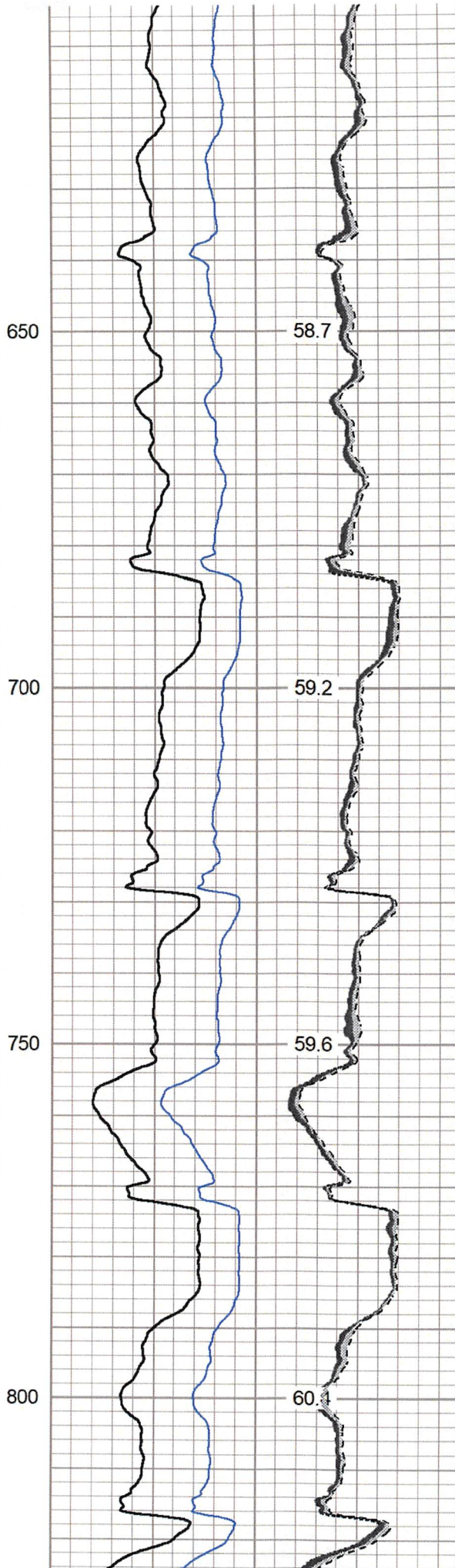
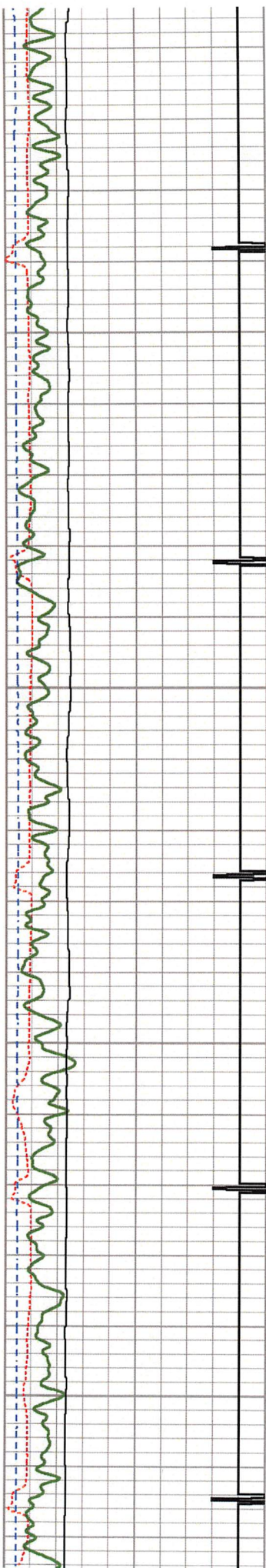
Database File antero\_phebe\_2h\_rcbl\_11\_jan\_2023.db  
 Dataset Pathname pass6  
 Presentation Format rcbl 2  
 Dataset Creation Wed Jan 11 16:15:10 2023  
 Charted by Depth in Feet scaled 1:240

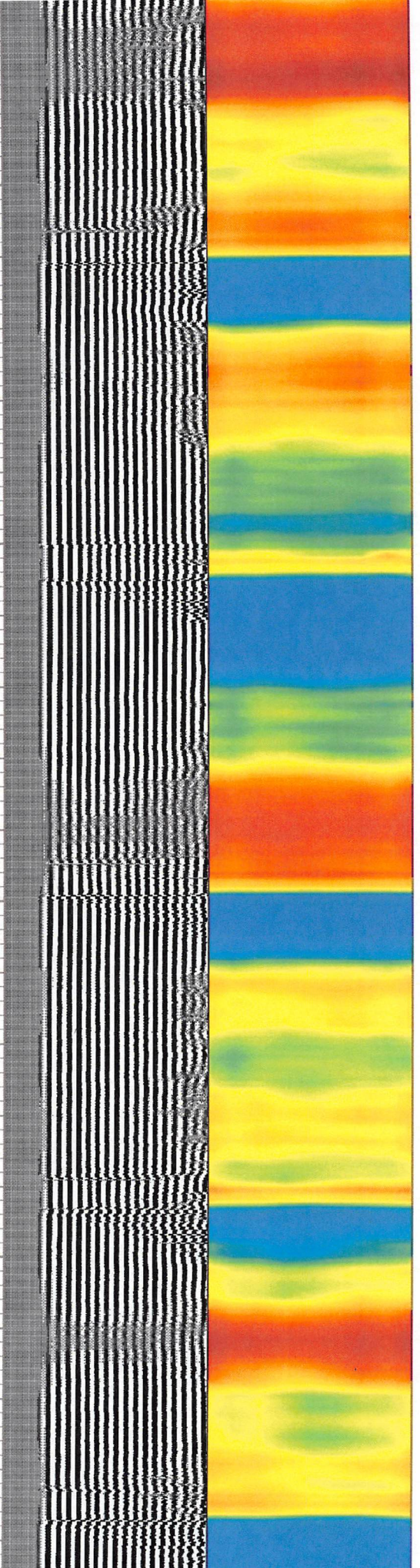
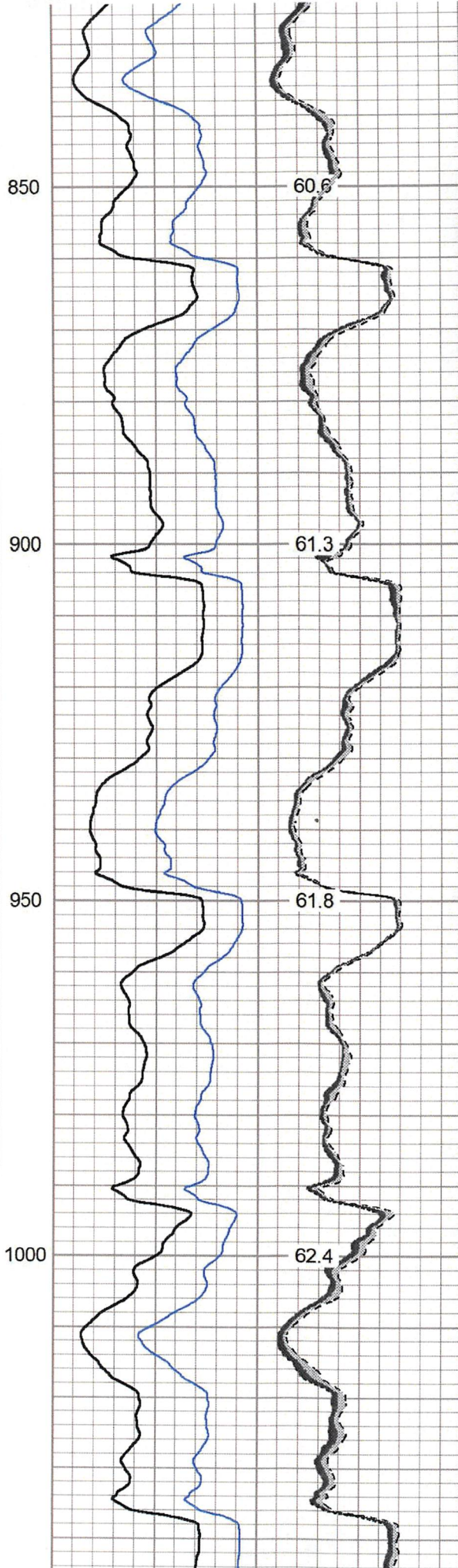
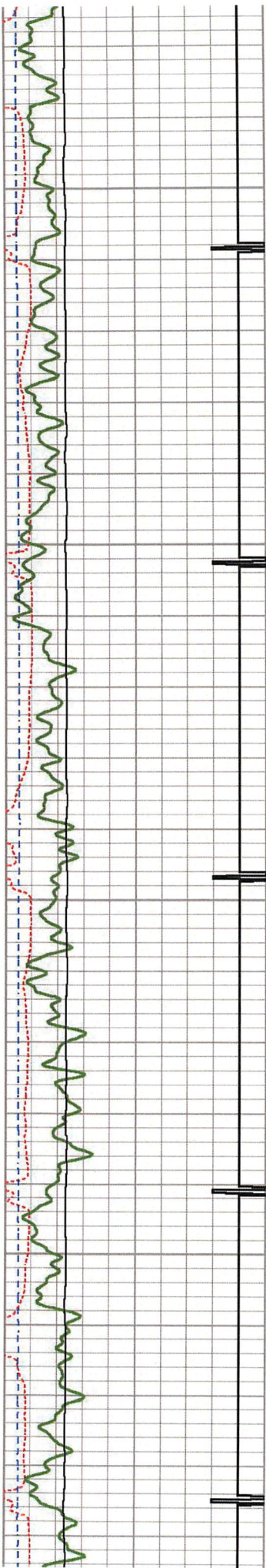
263	Travel Time (usec)	163	0	Amplitude (mV)	100	-5	AMPMIN	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1	1	BONDIX	0	-5	AMPMAX	150	200	(usec)	1200	
0	Gamma Ray (GAPI)	150				-5	AMPAVG	150				
	Line Speed						TEMP					
-200	(ft/min)	200					(degF)					
0	Line Tension (lb)	5000										

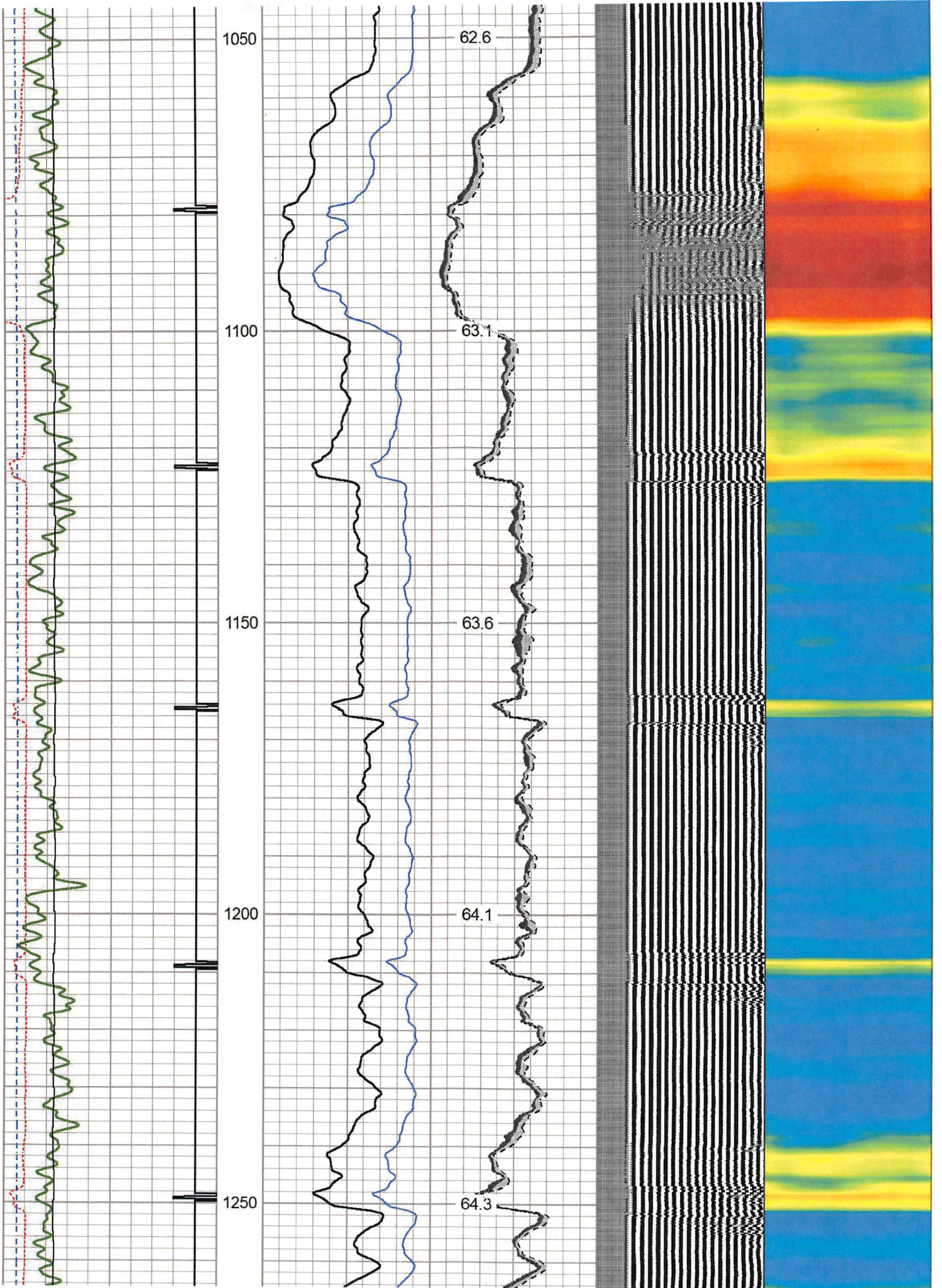


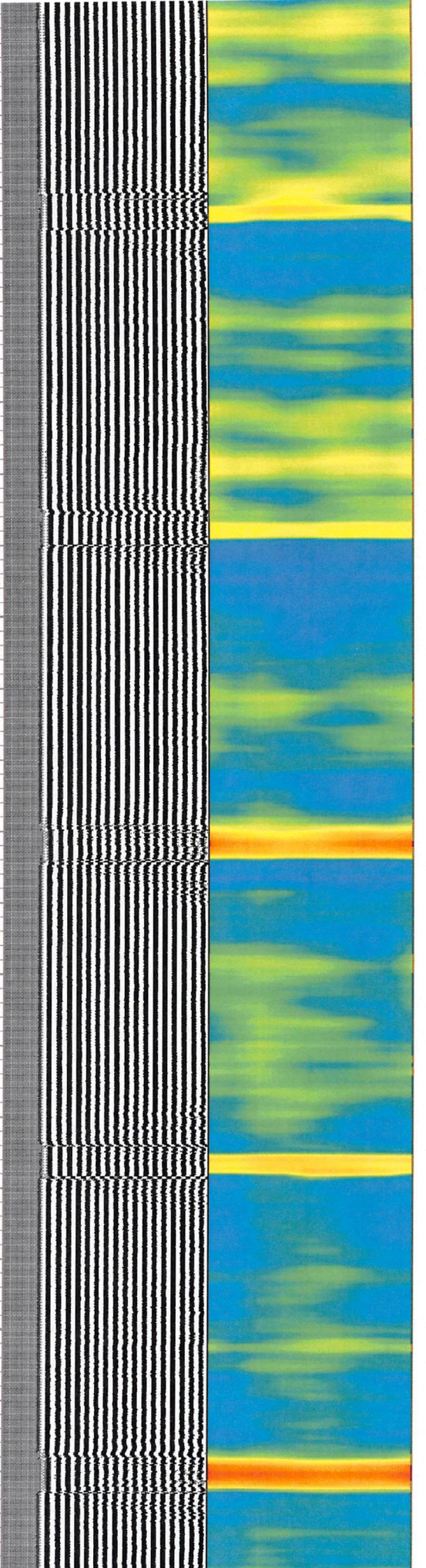
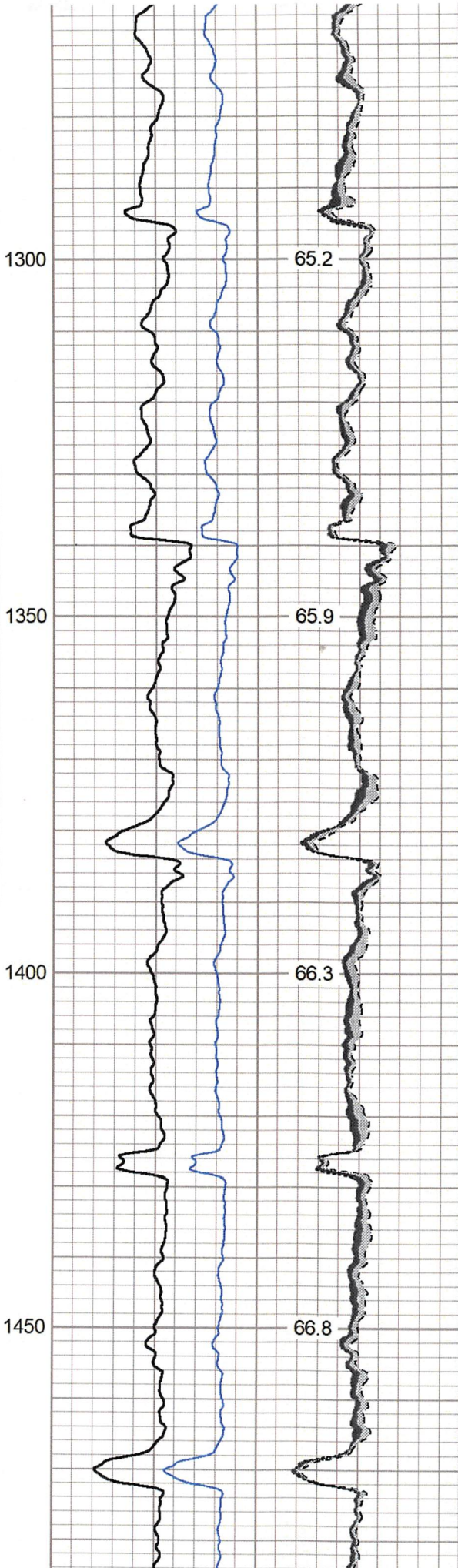
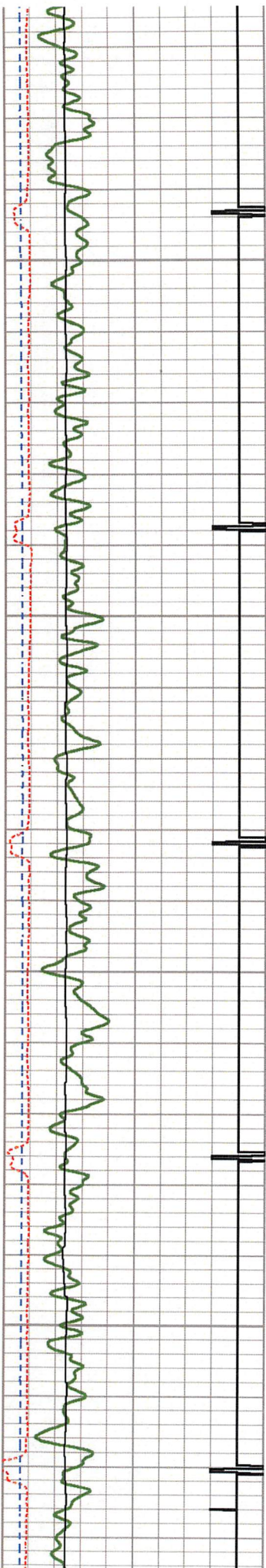




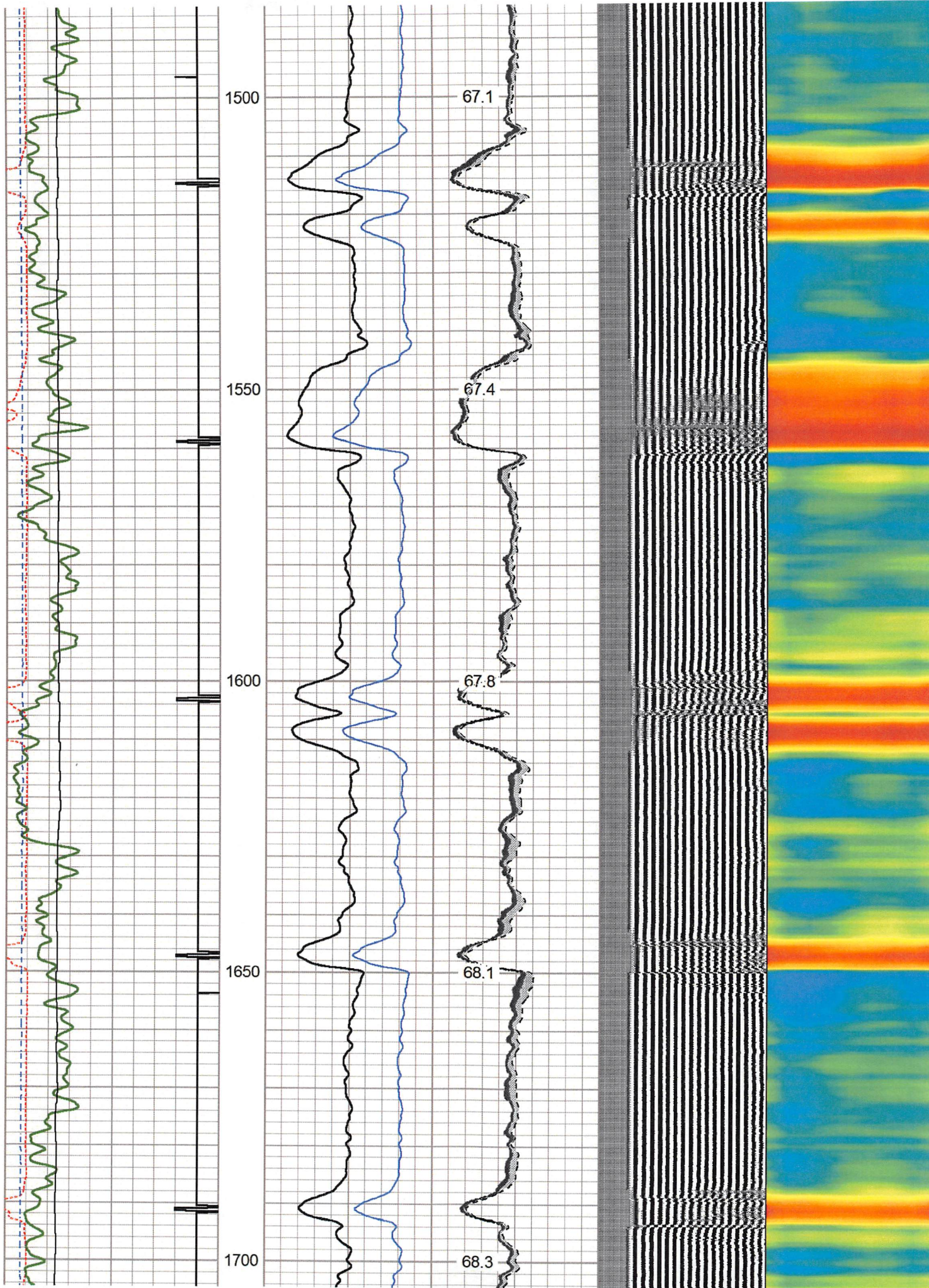


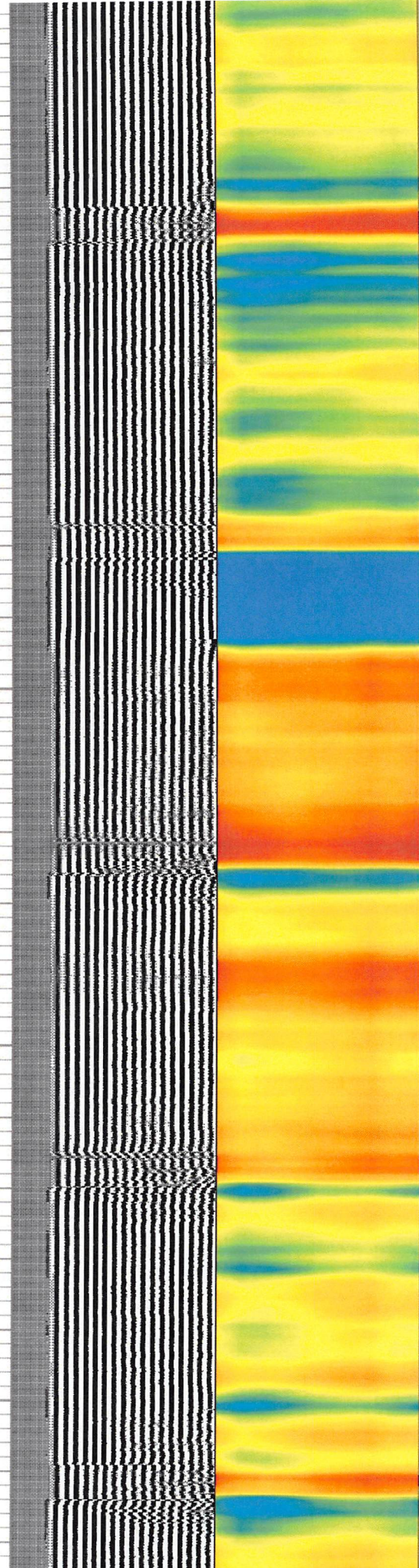
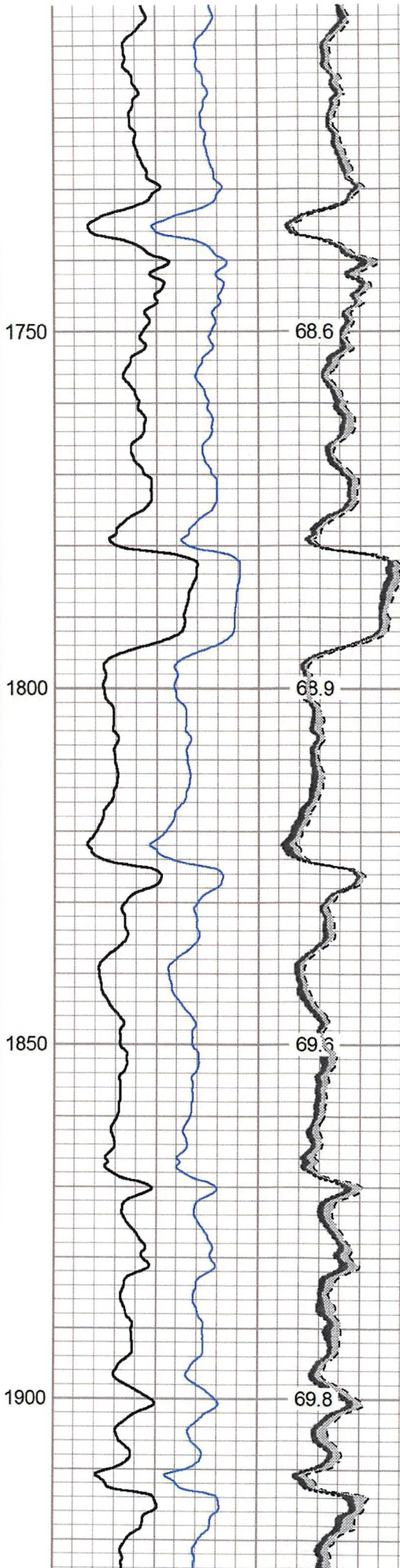
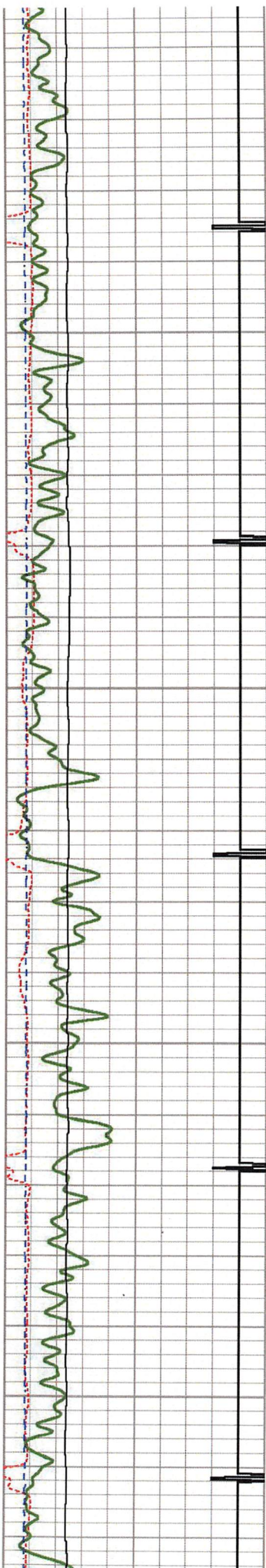


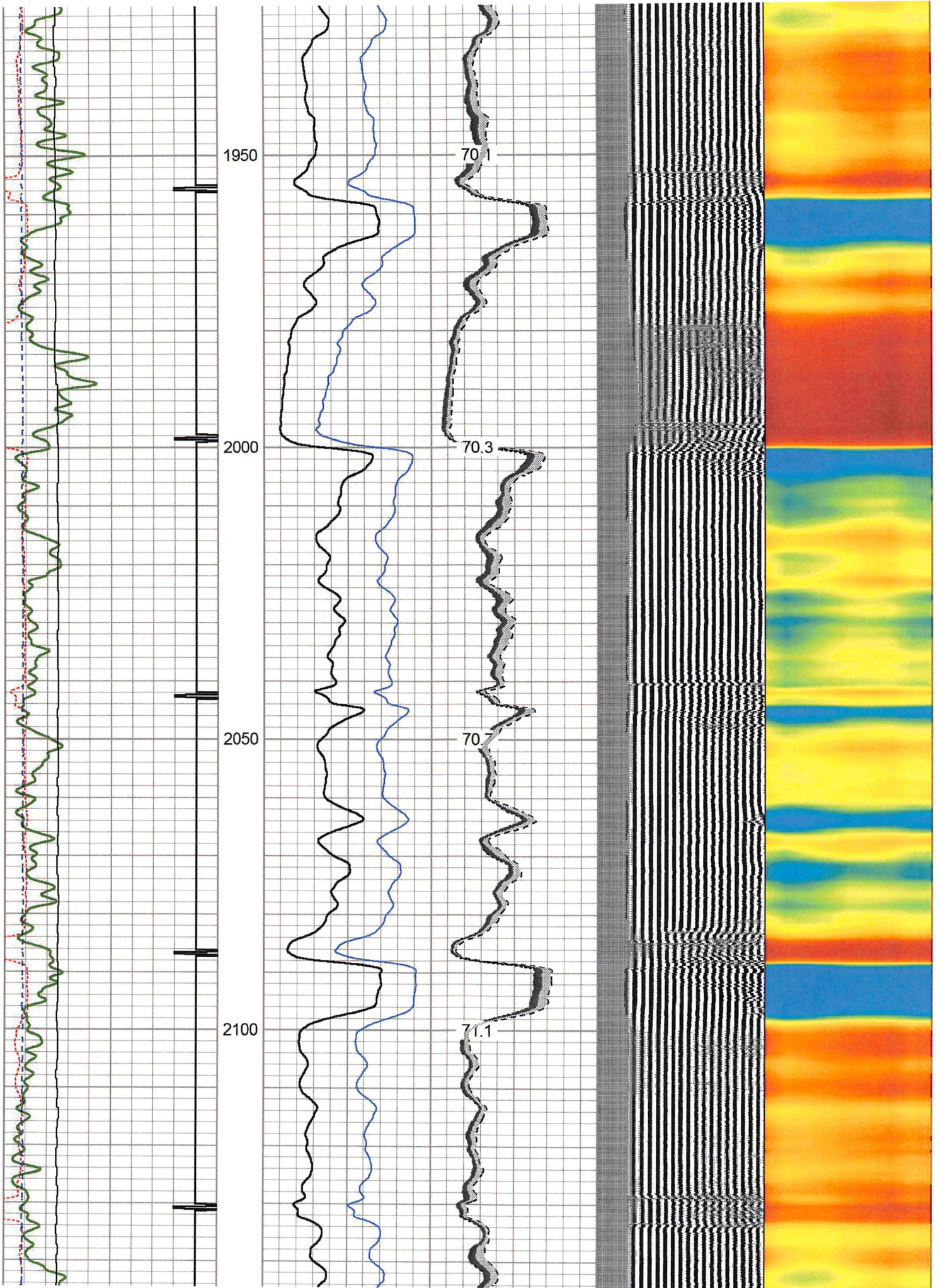


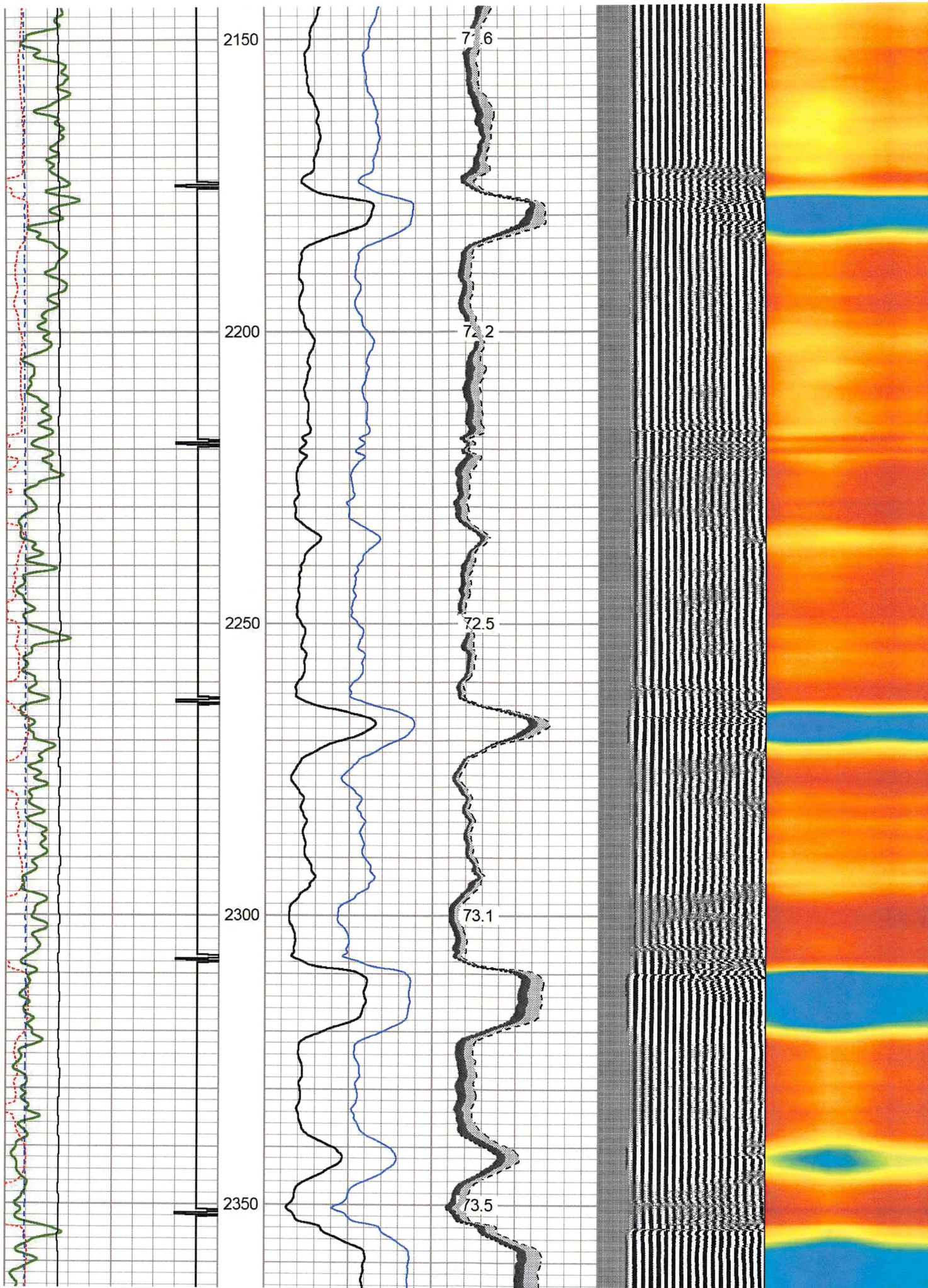


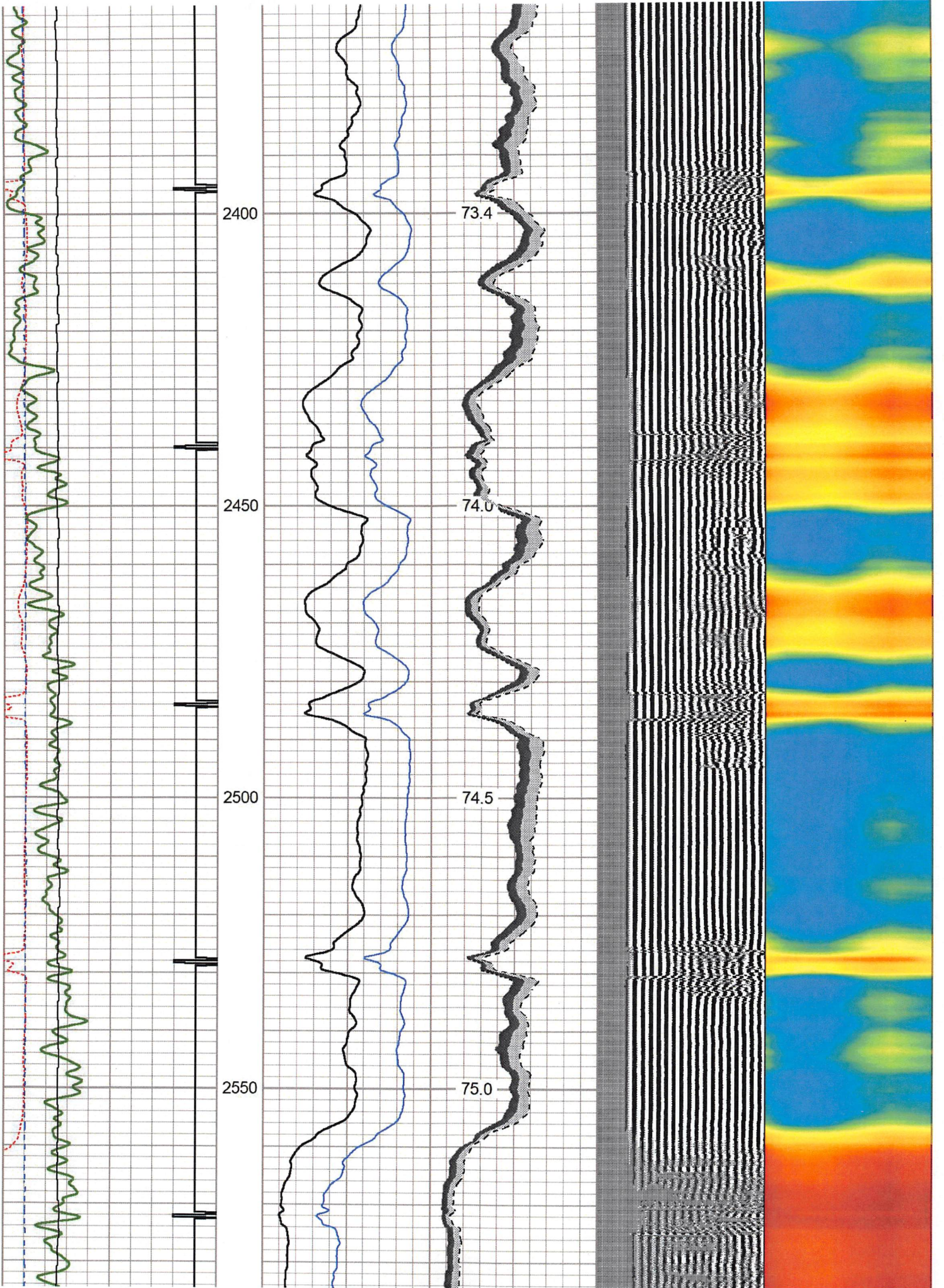


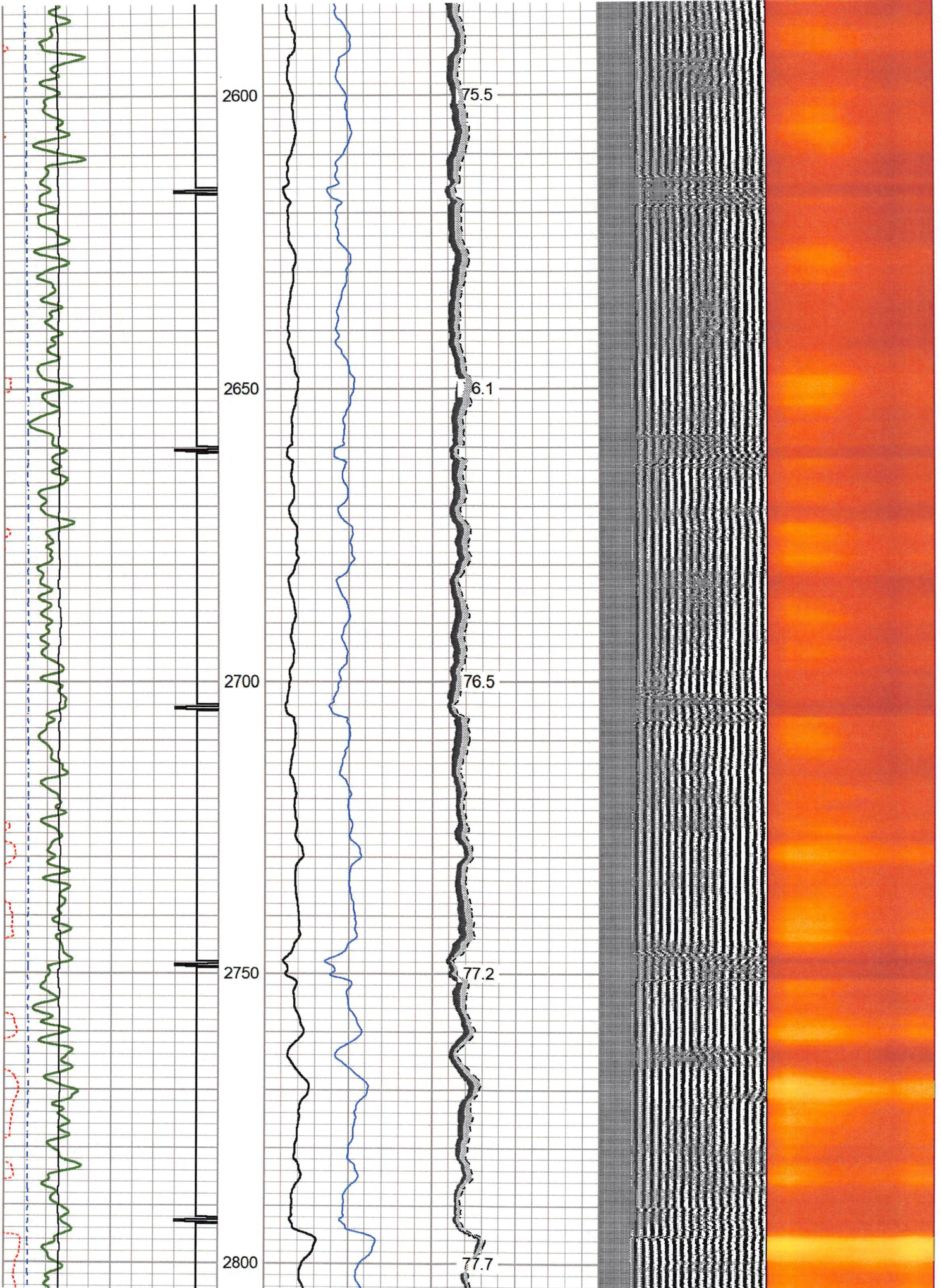


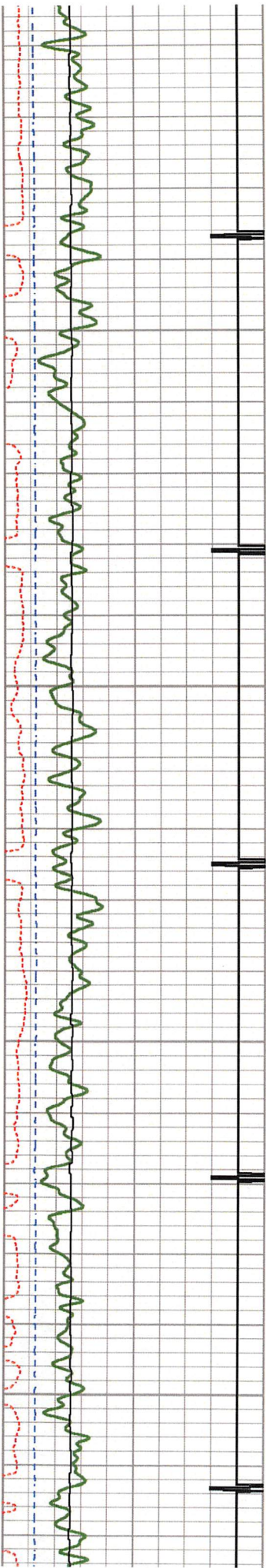










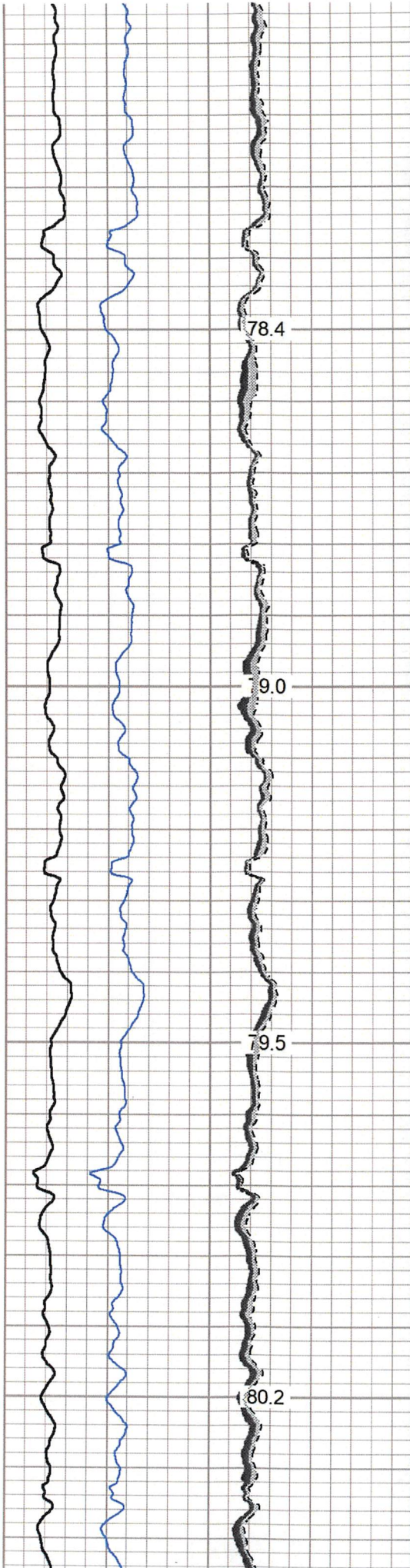


2850

2900

2950

3000

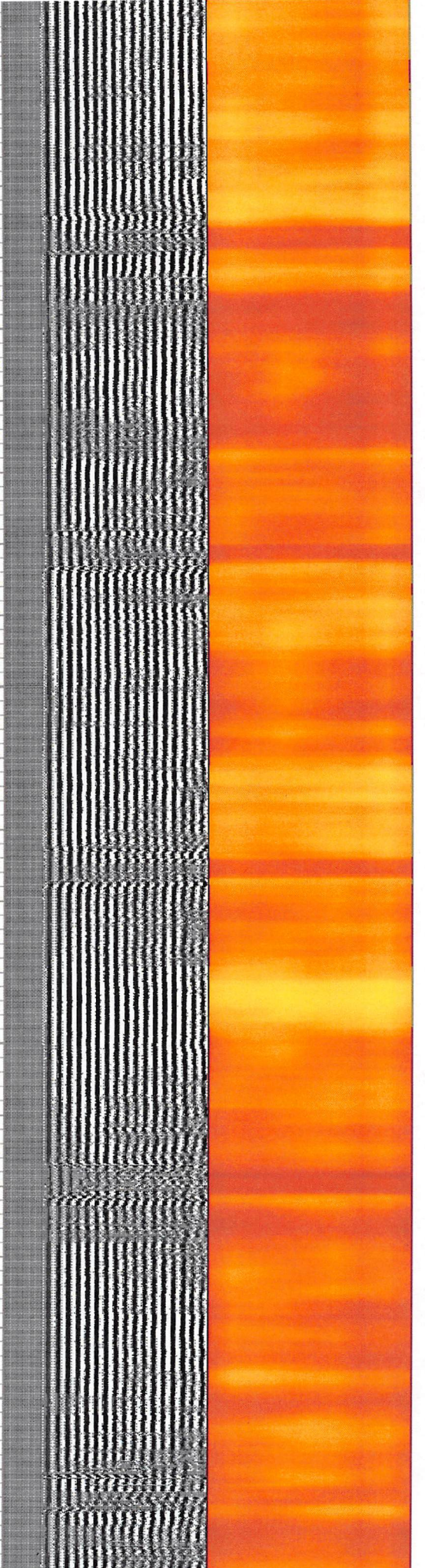


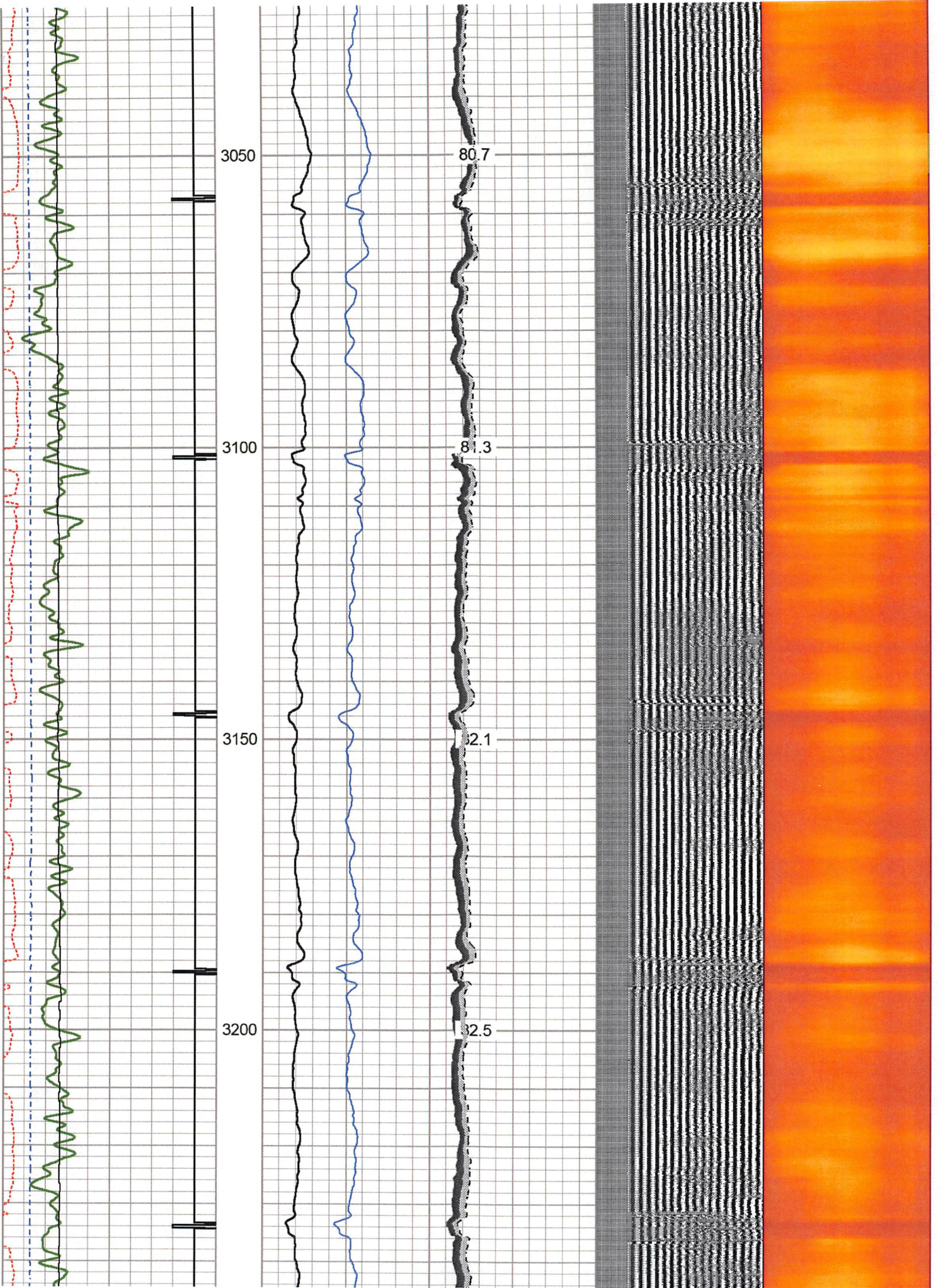
78.4

9.0

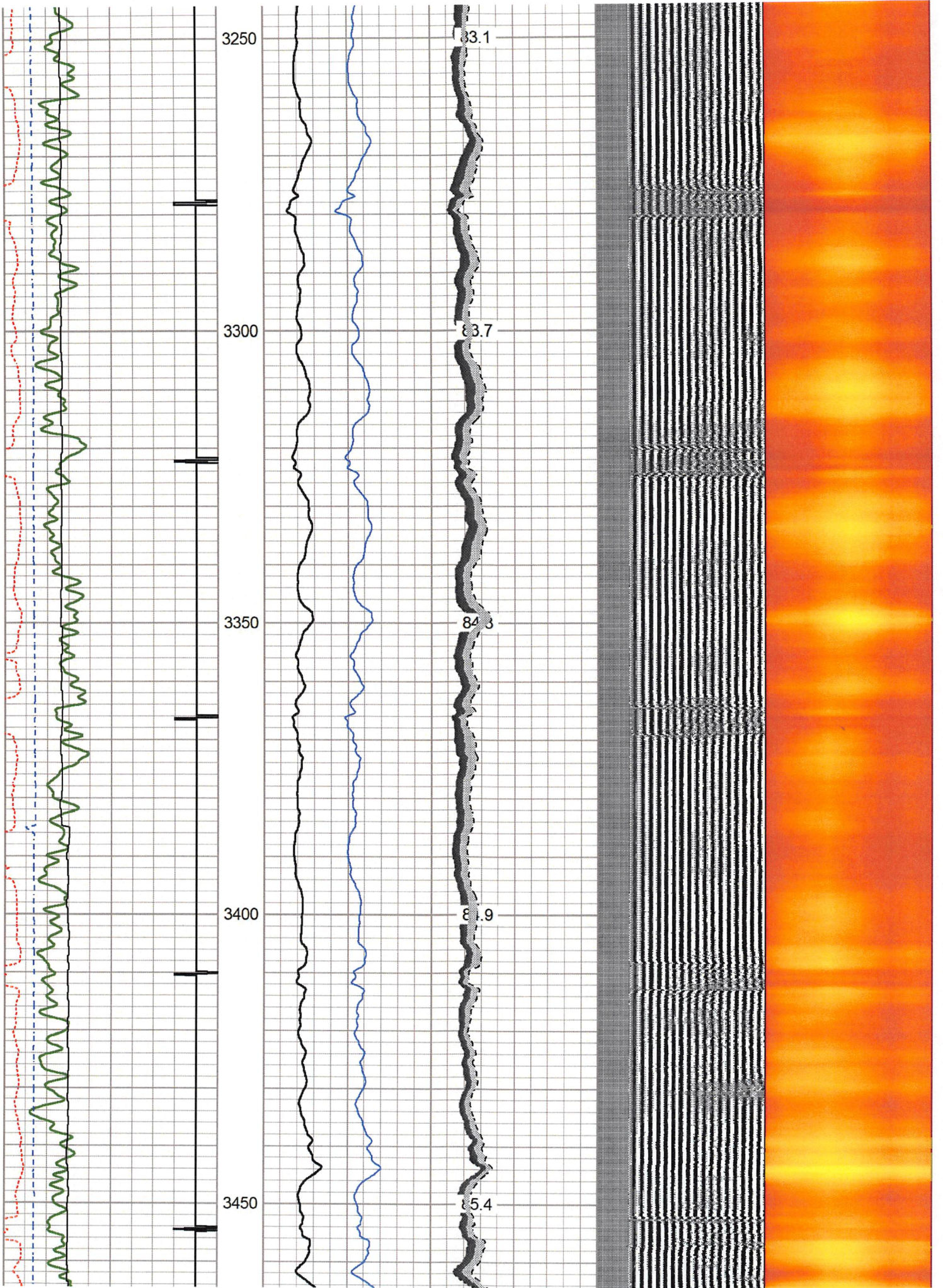
79.5

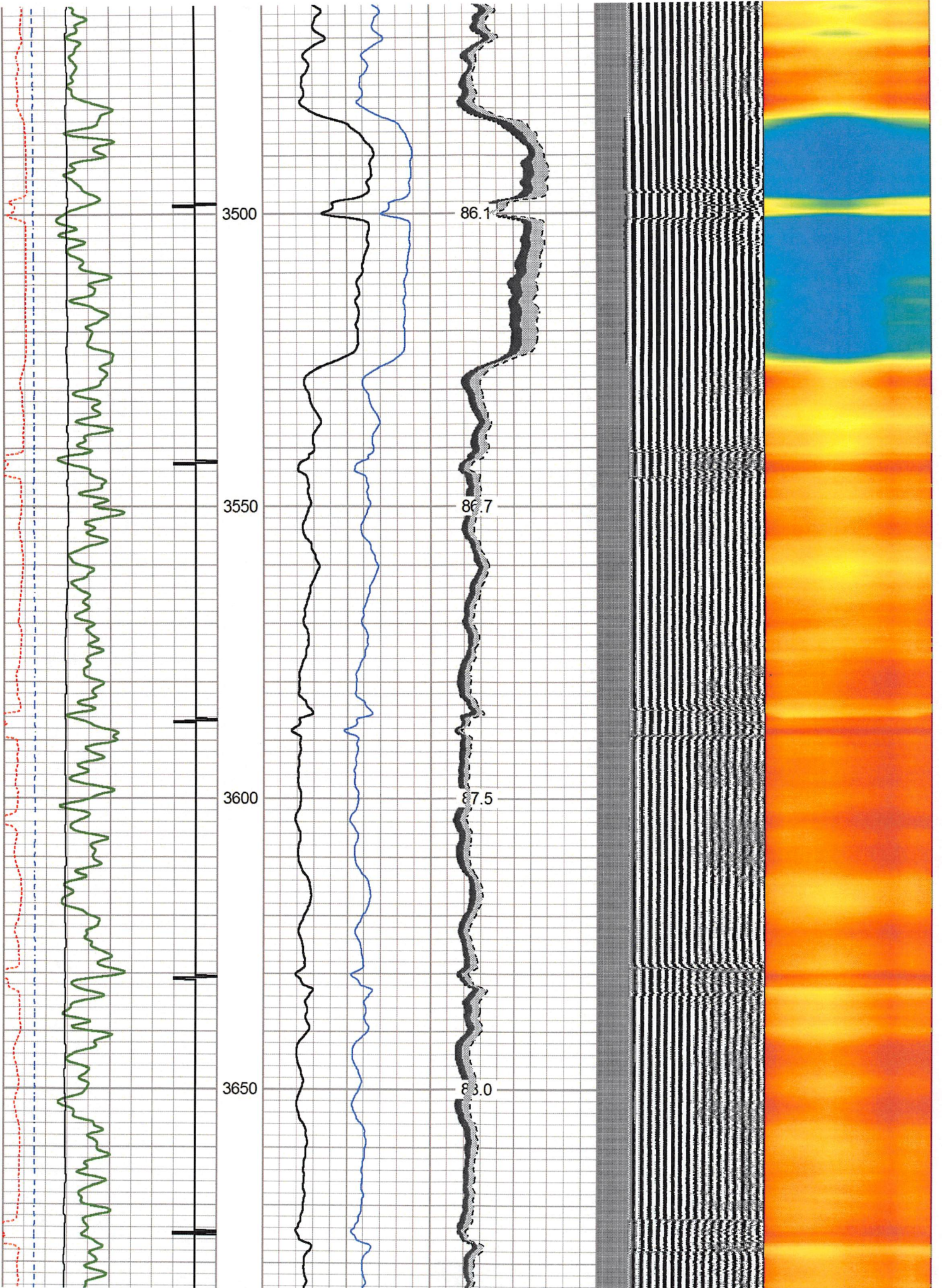
80.2

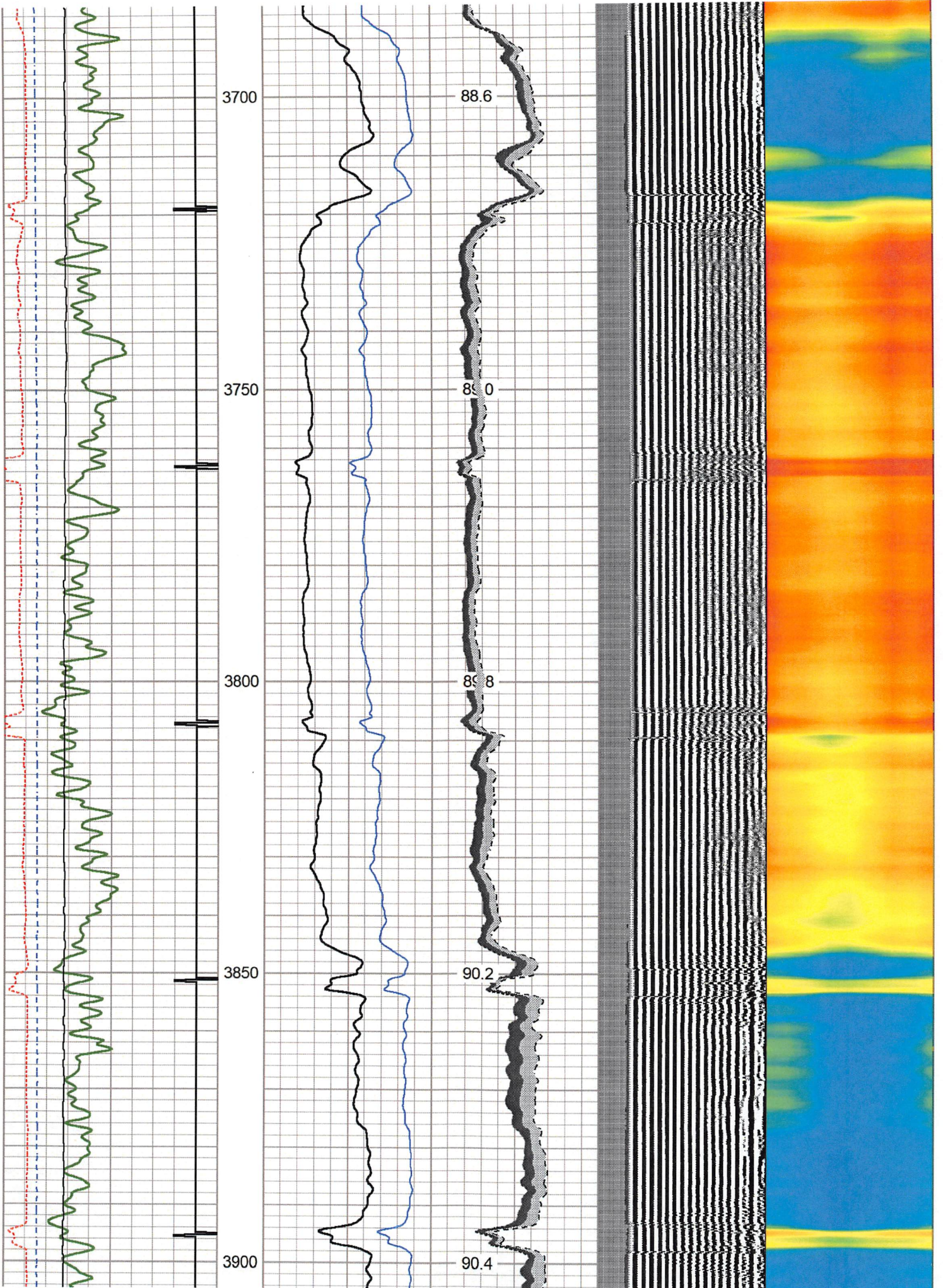


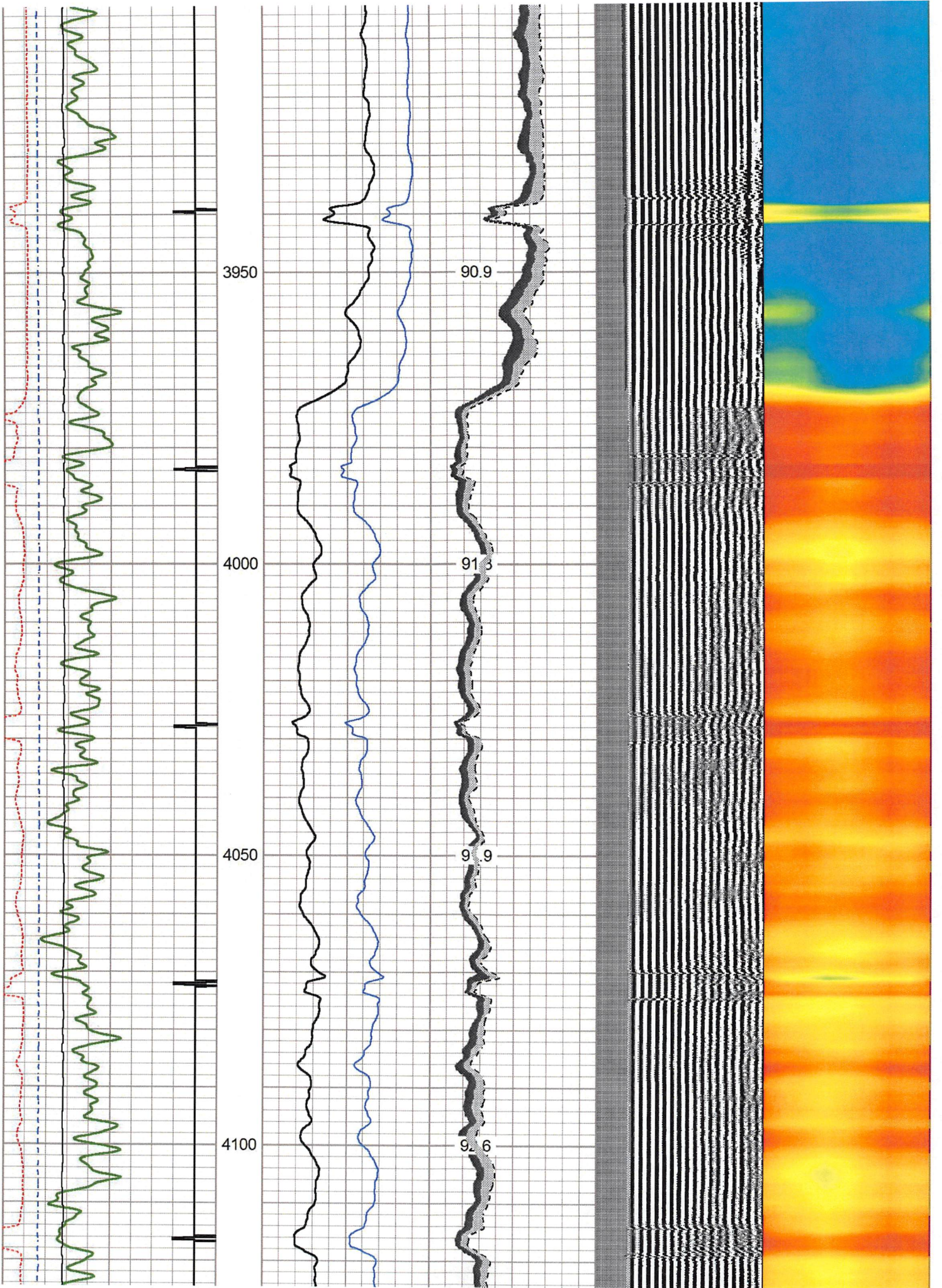


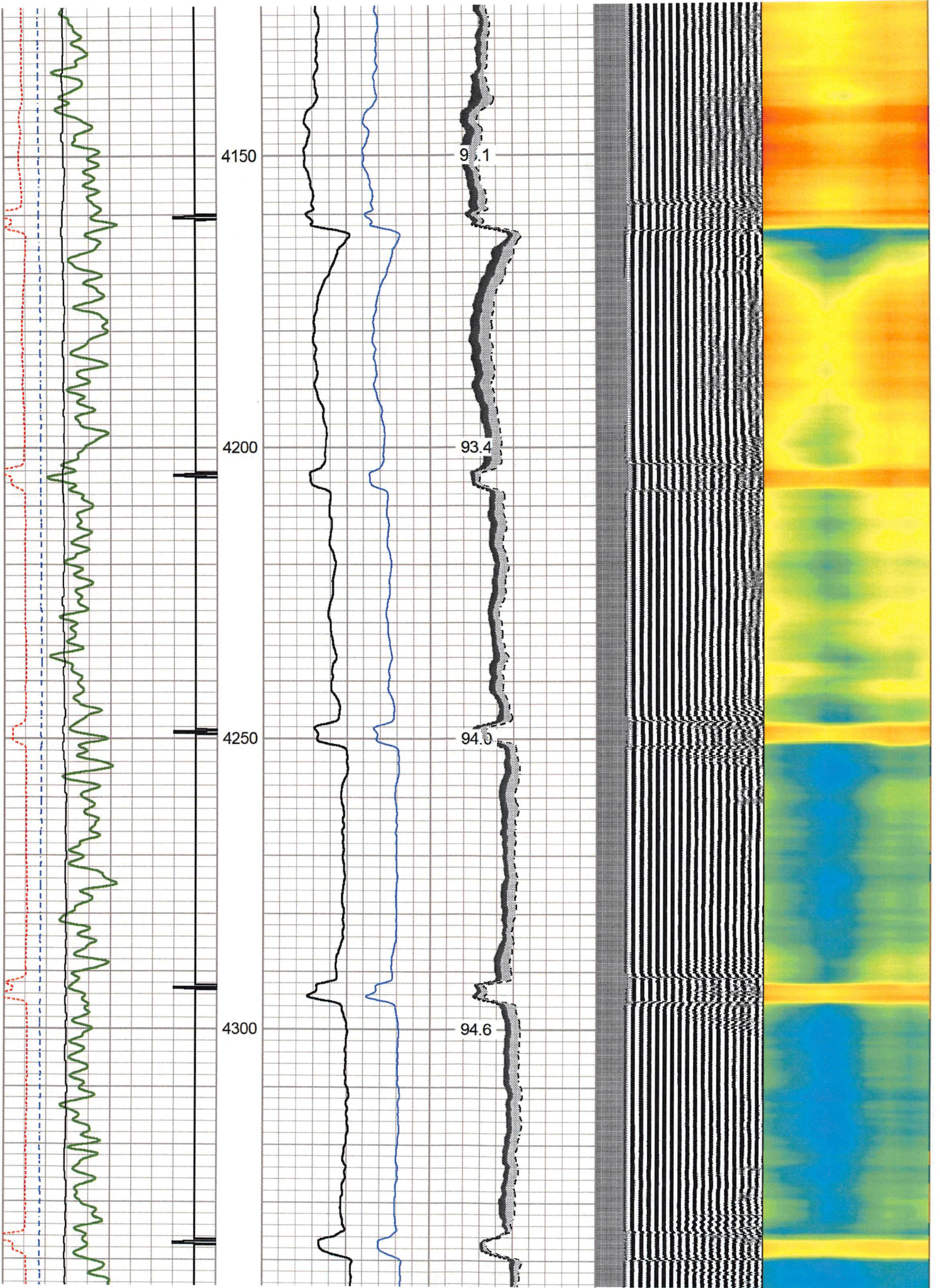


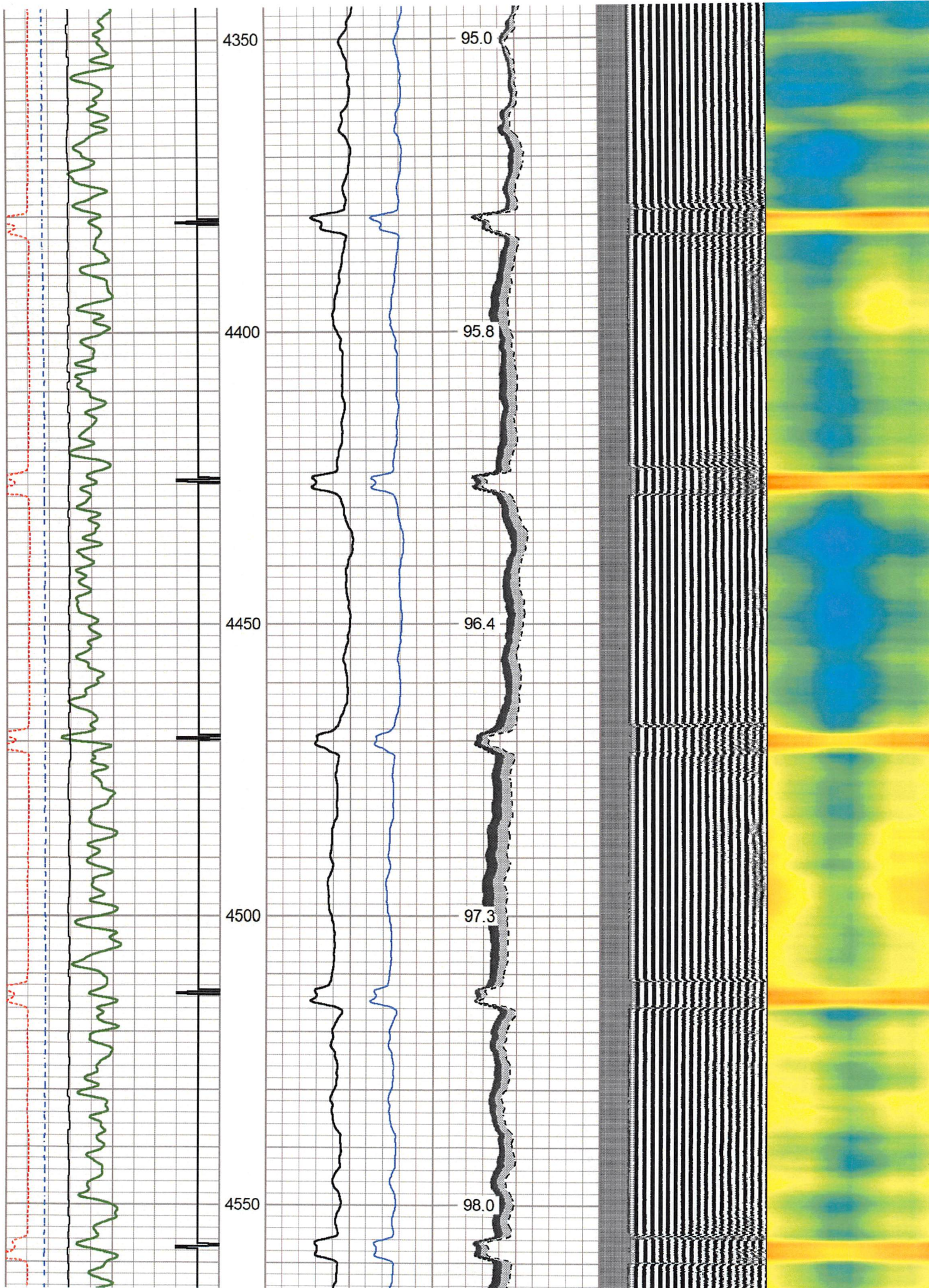


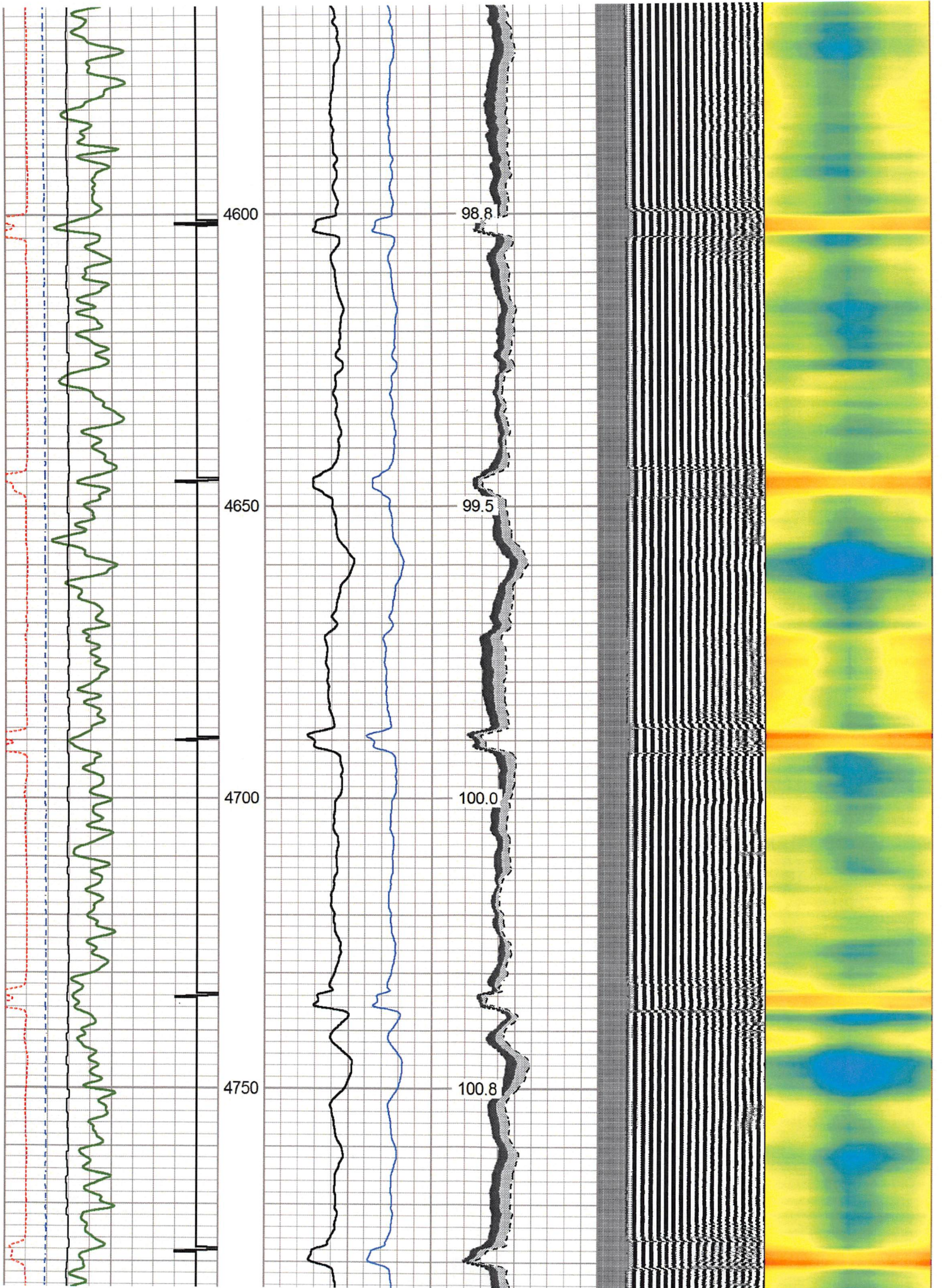


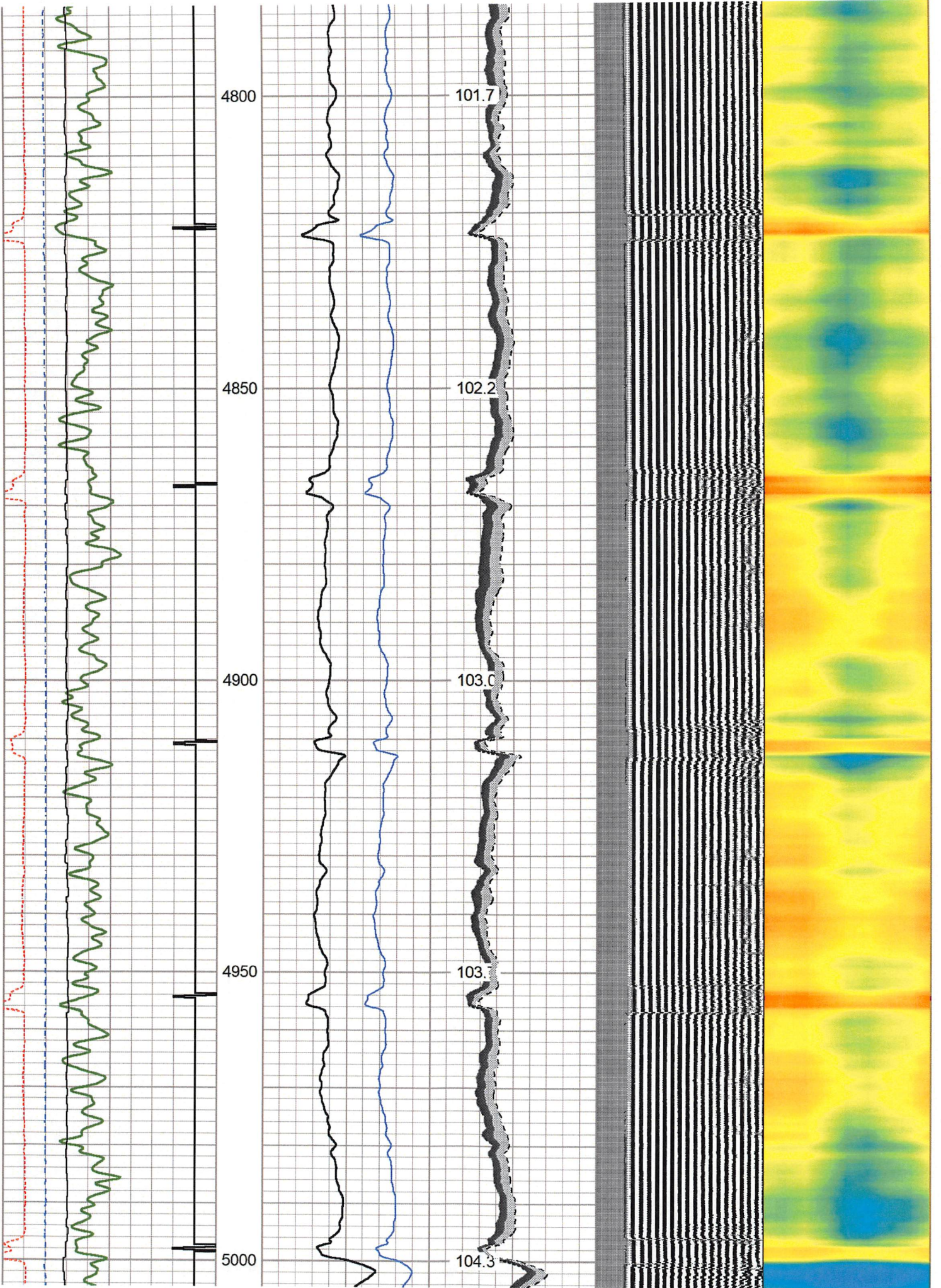




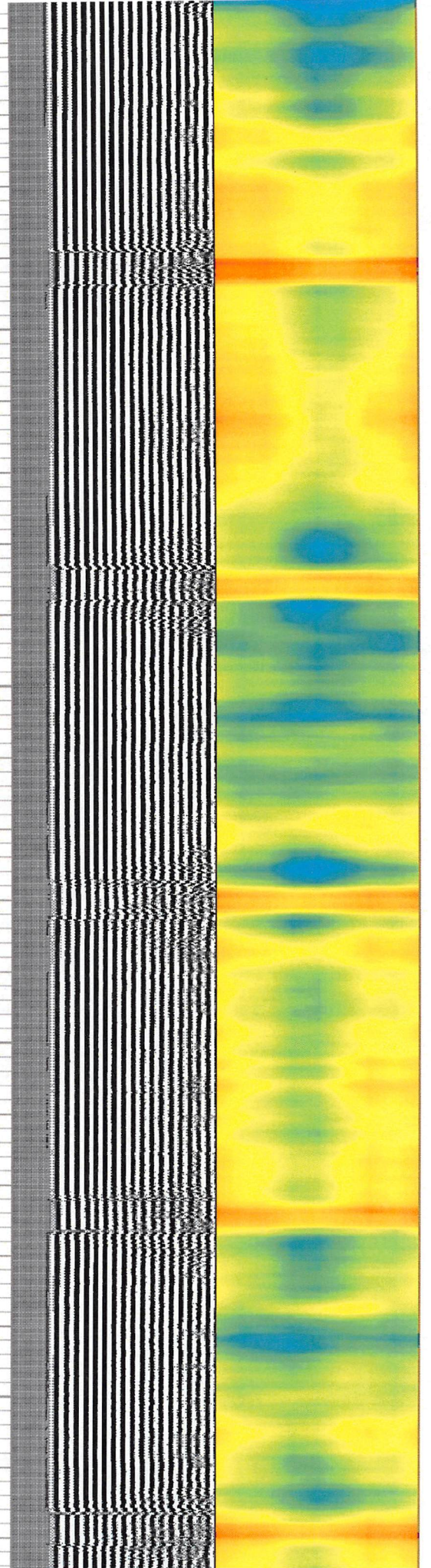
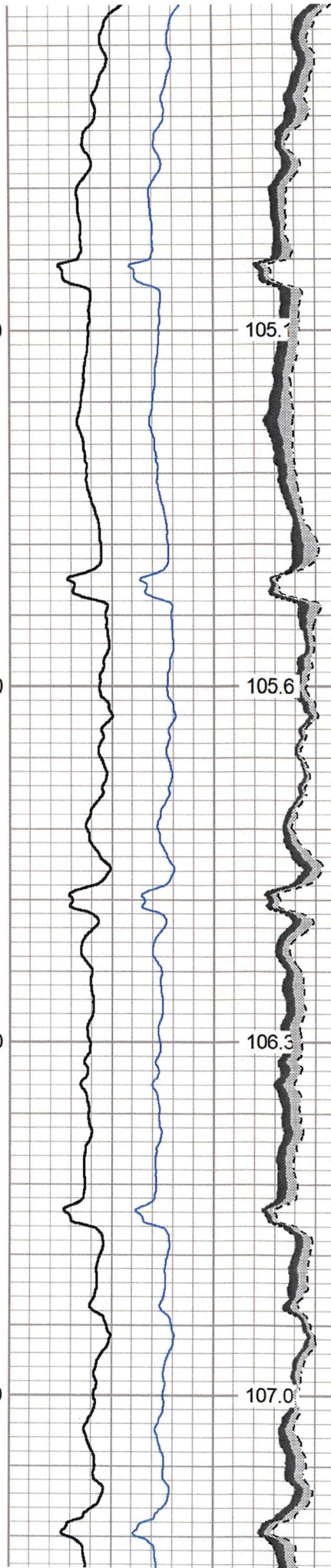
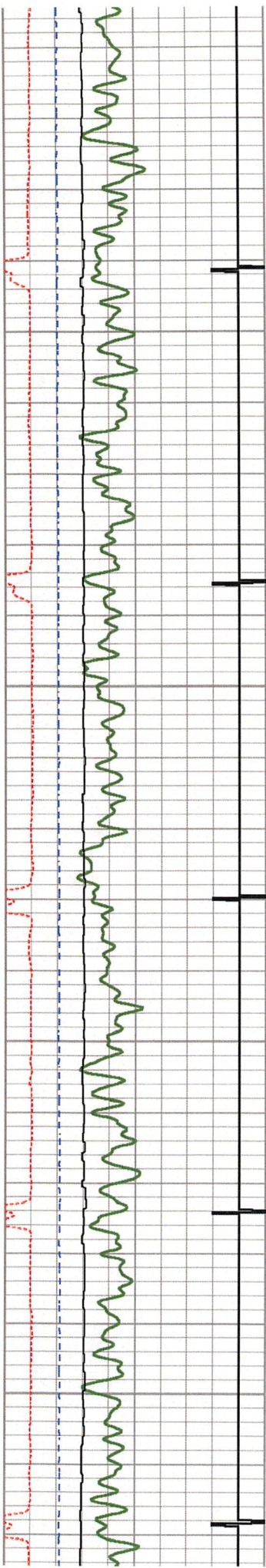


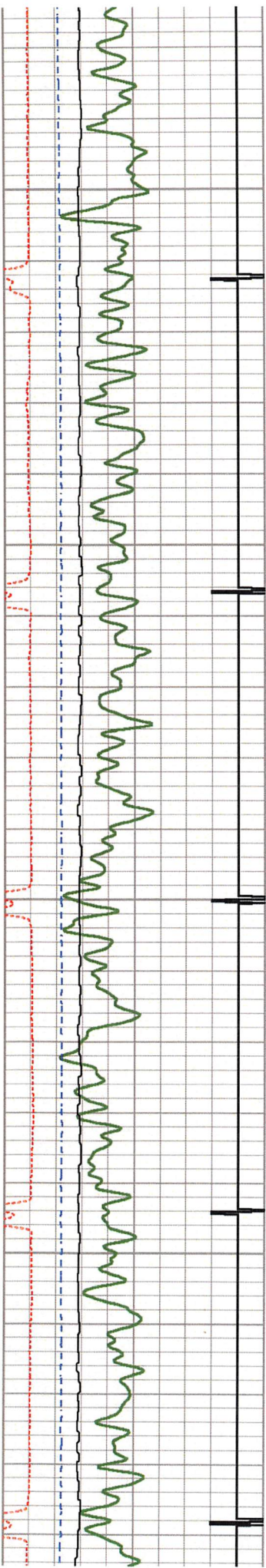










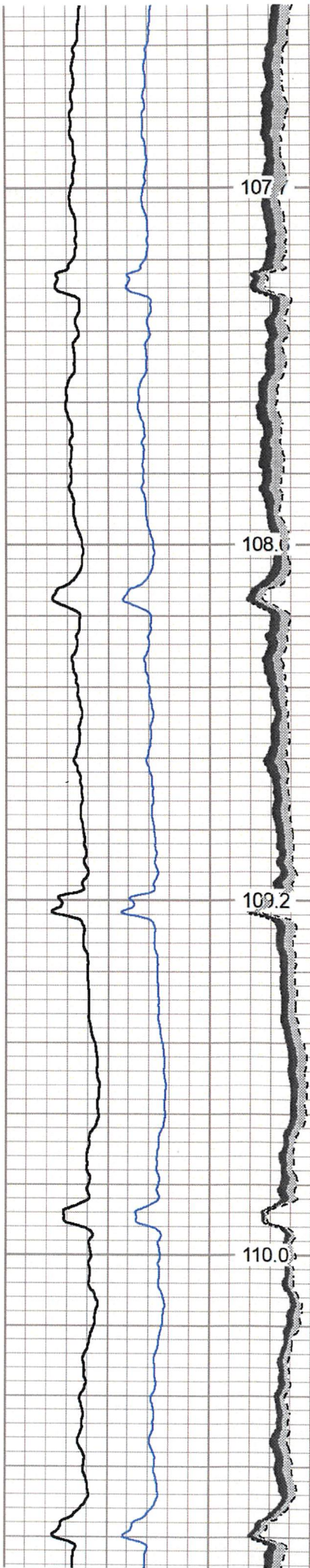


5250

5300

5350

5400

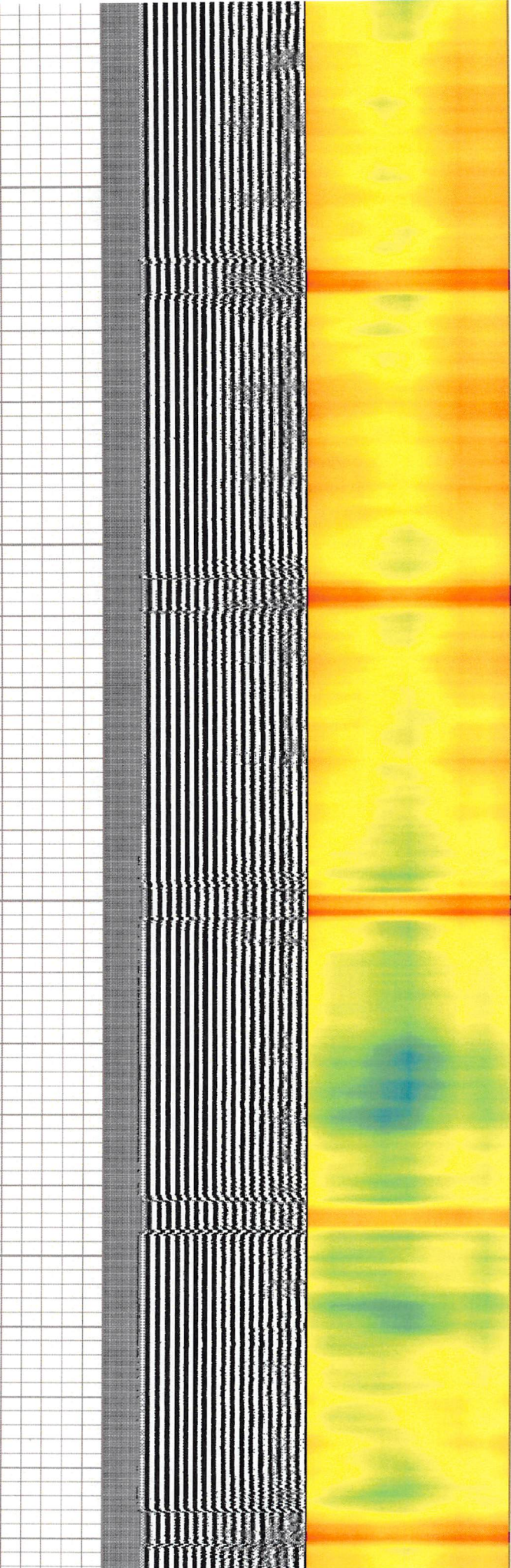


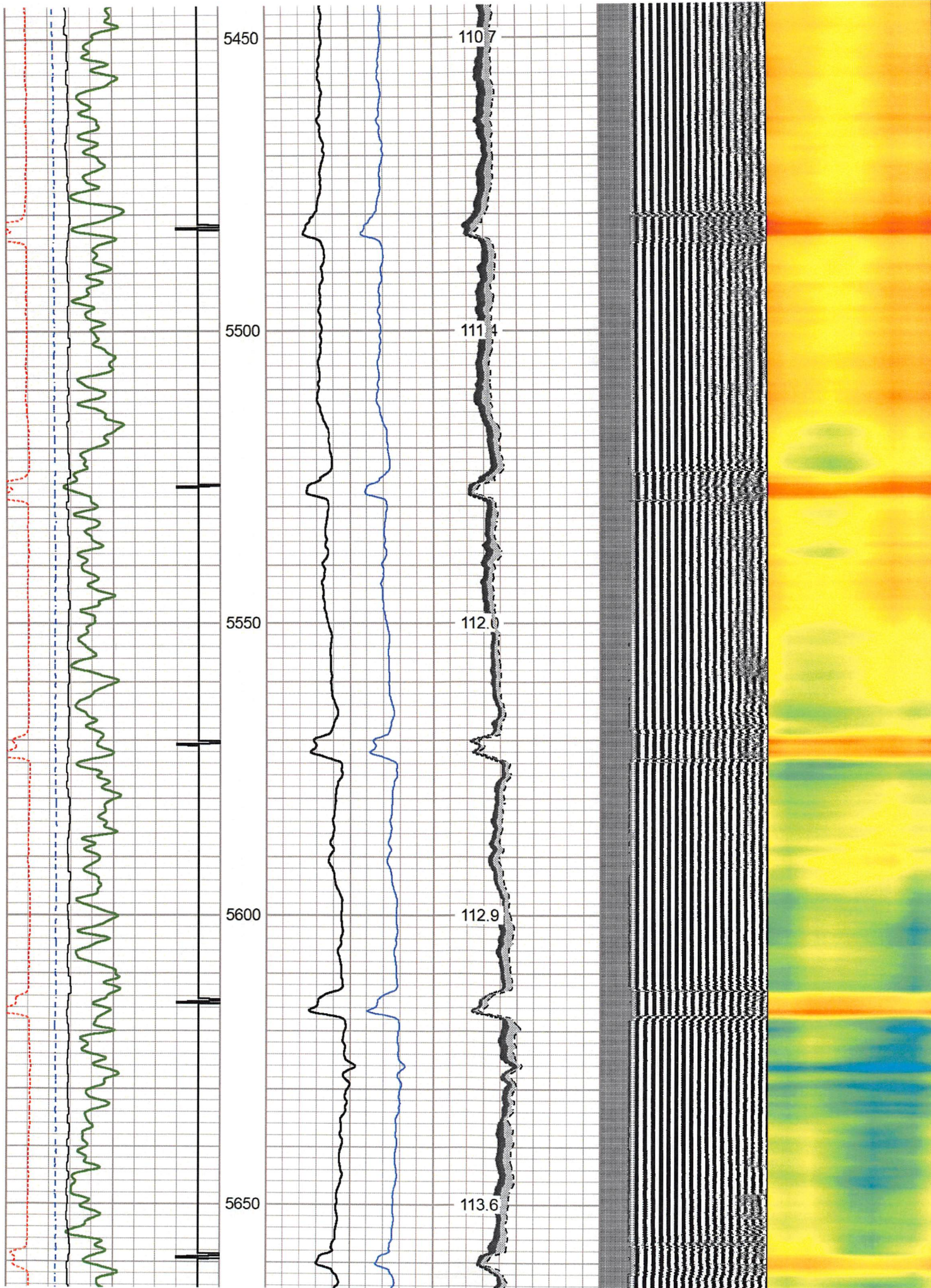
107

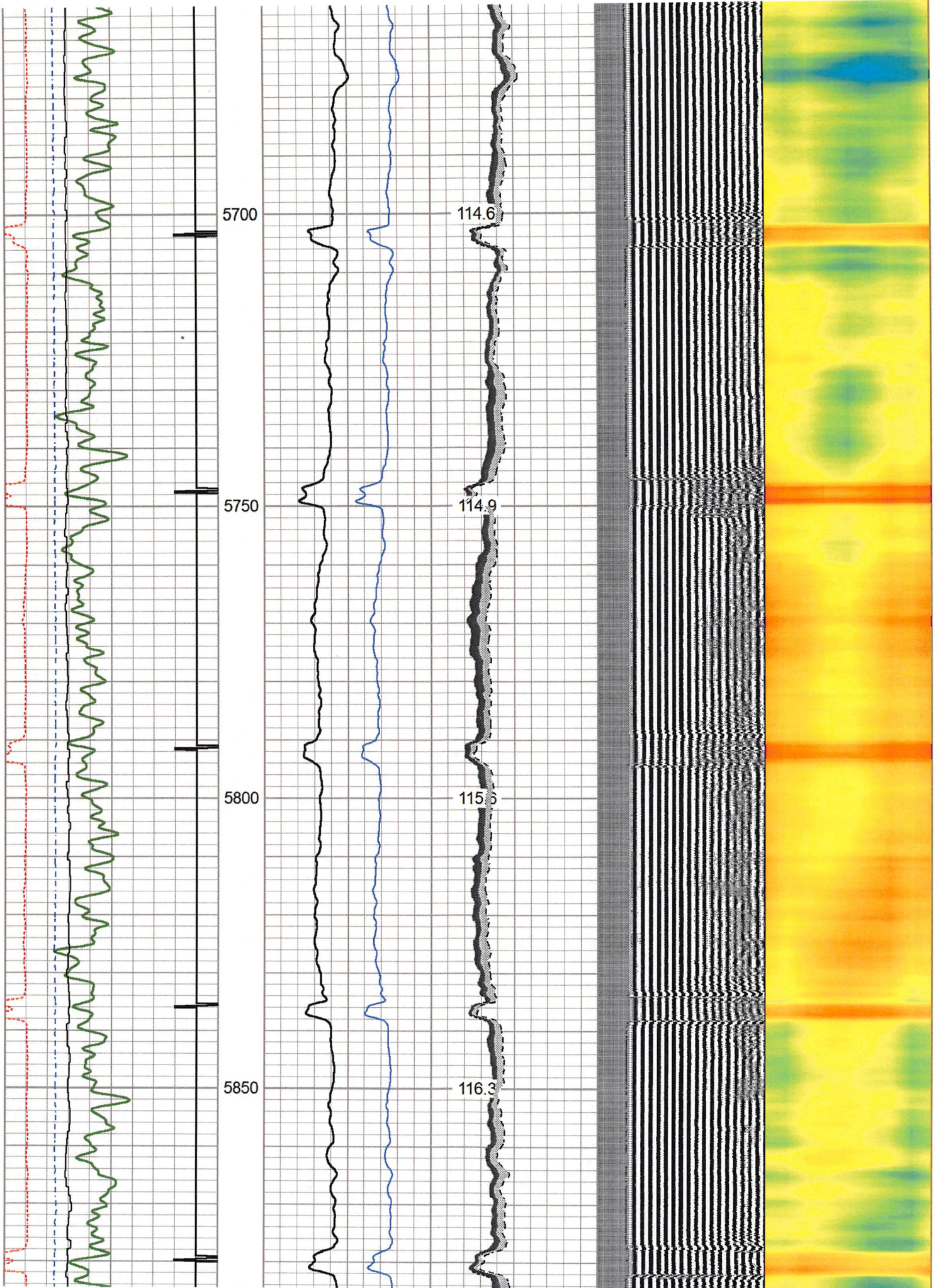
108

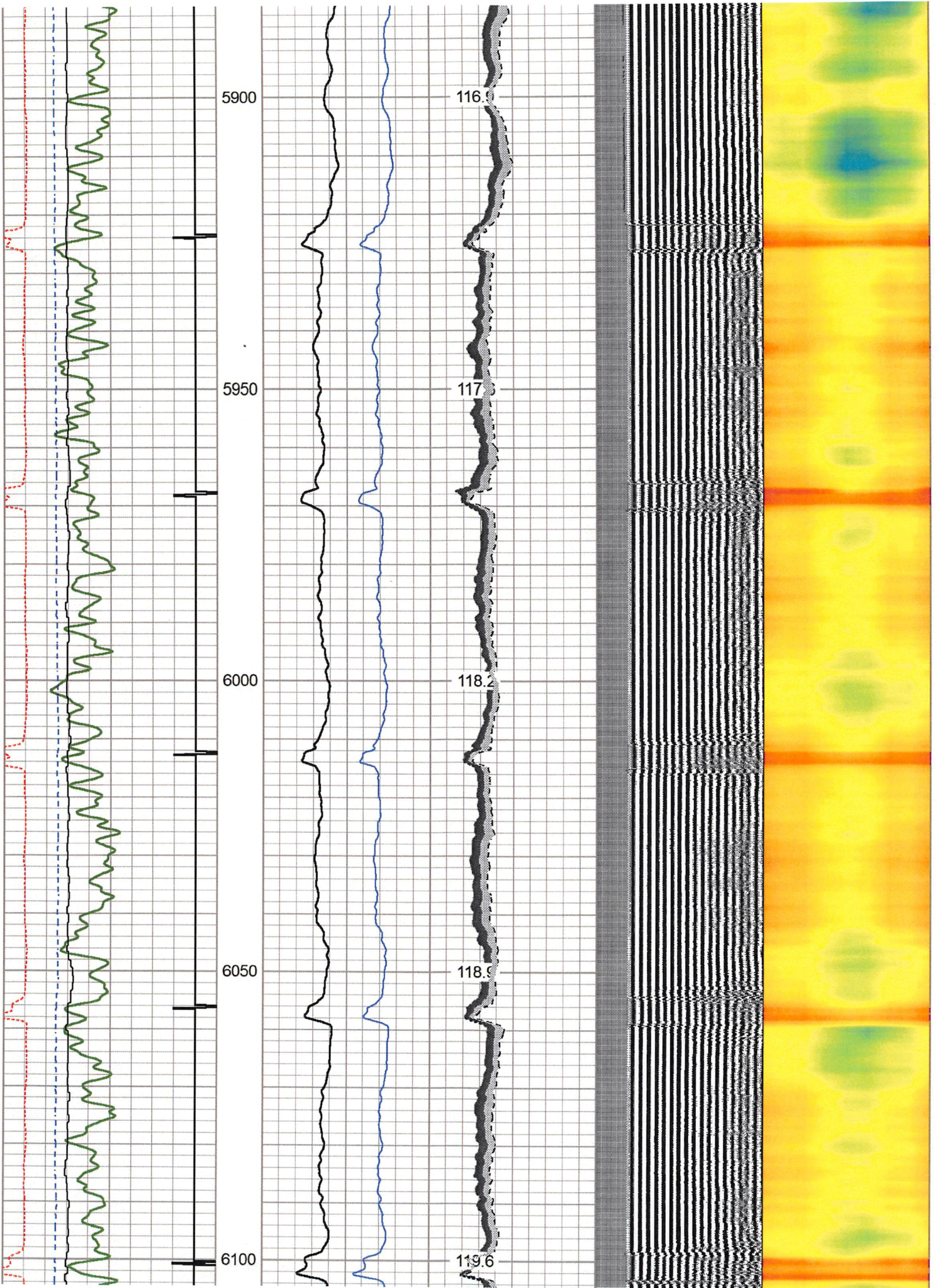
109.2

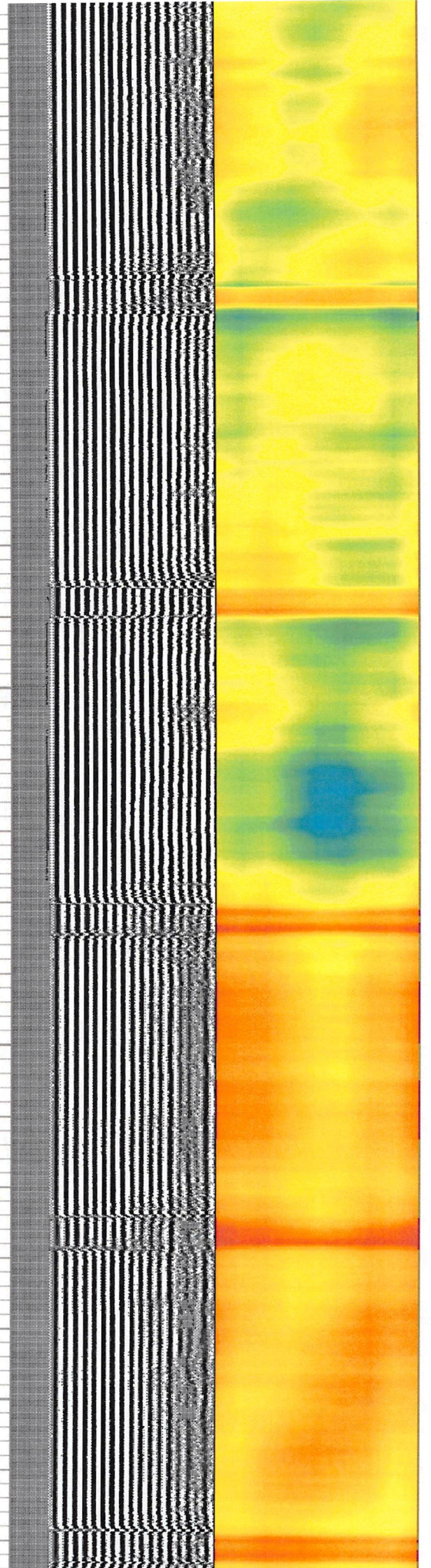
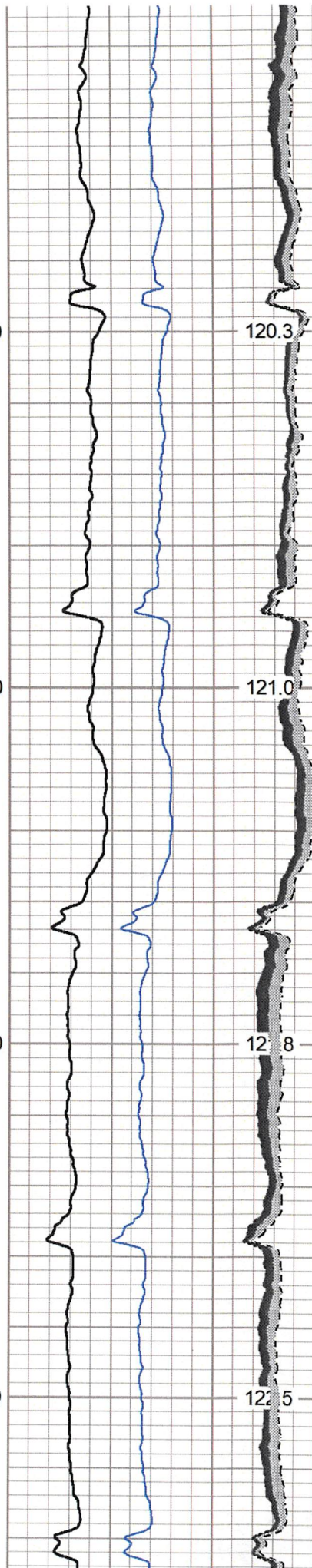
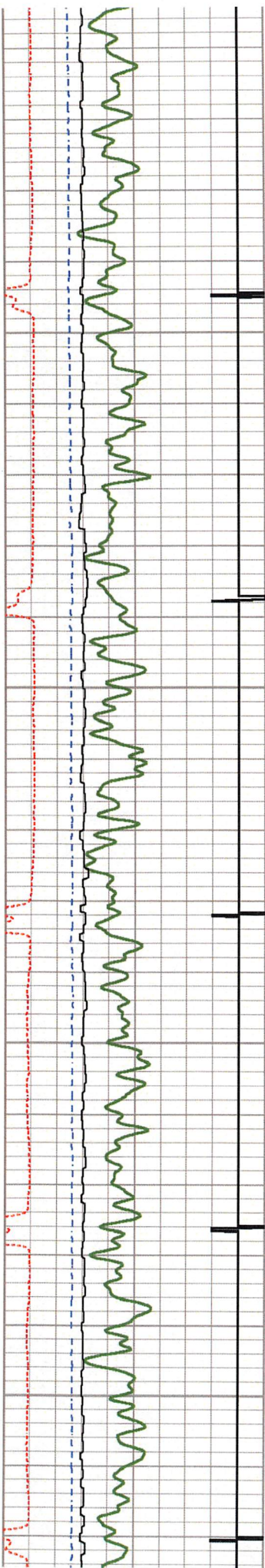
110.0

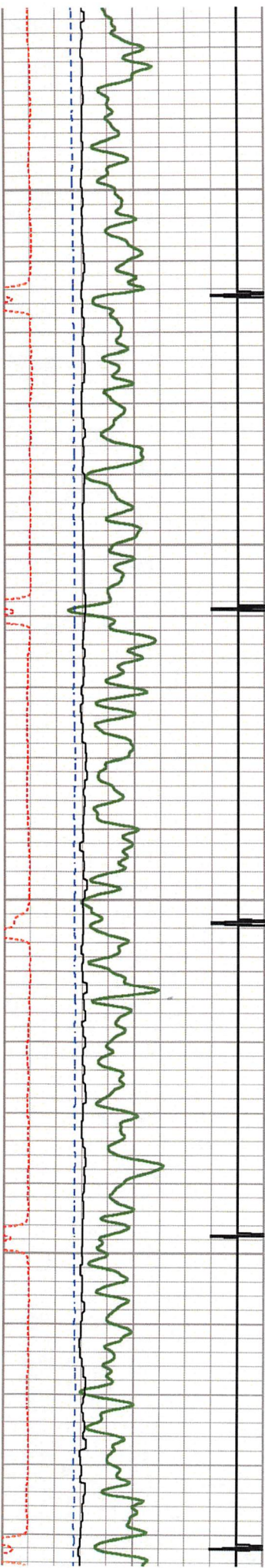










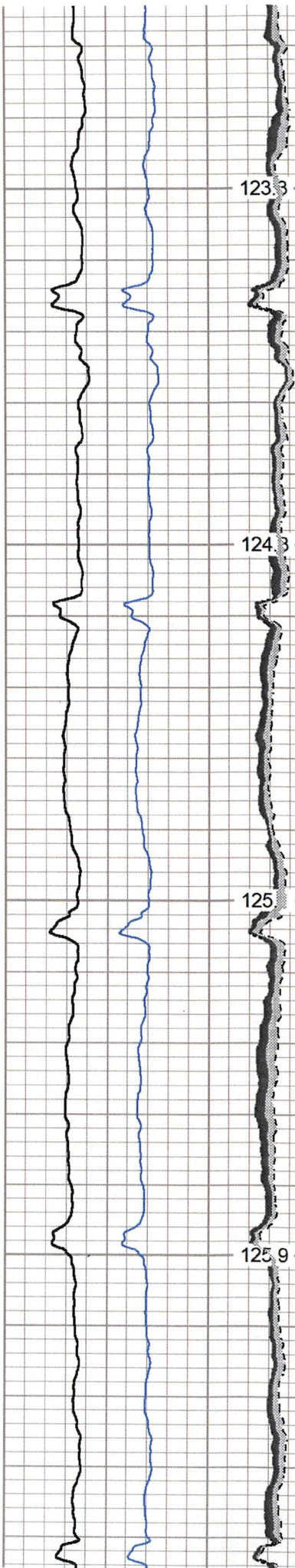


6350

6400

6450

6500

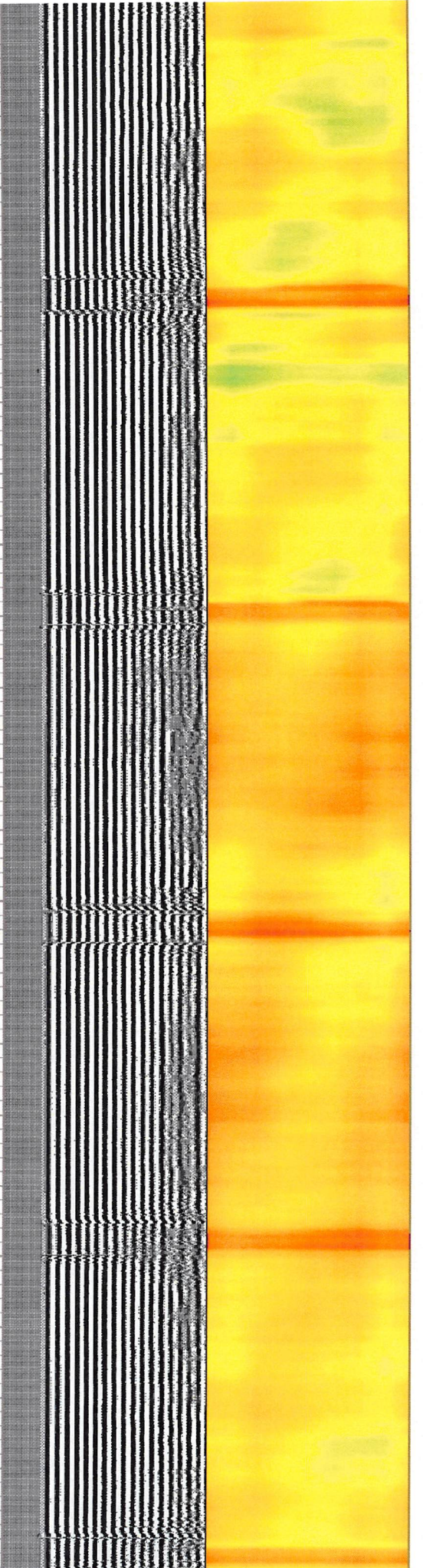


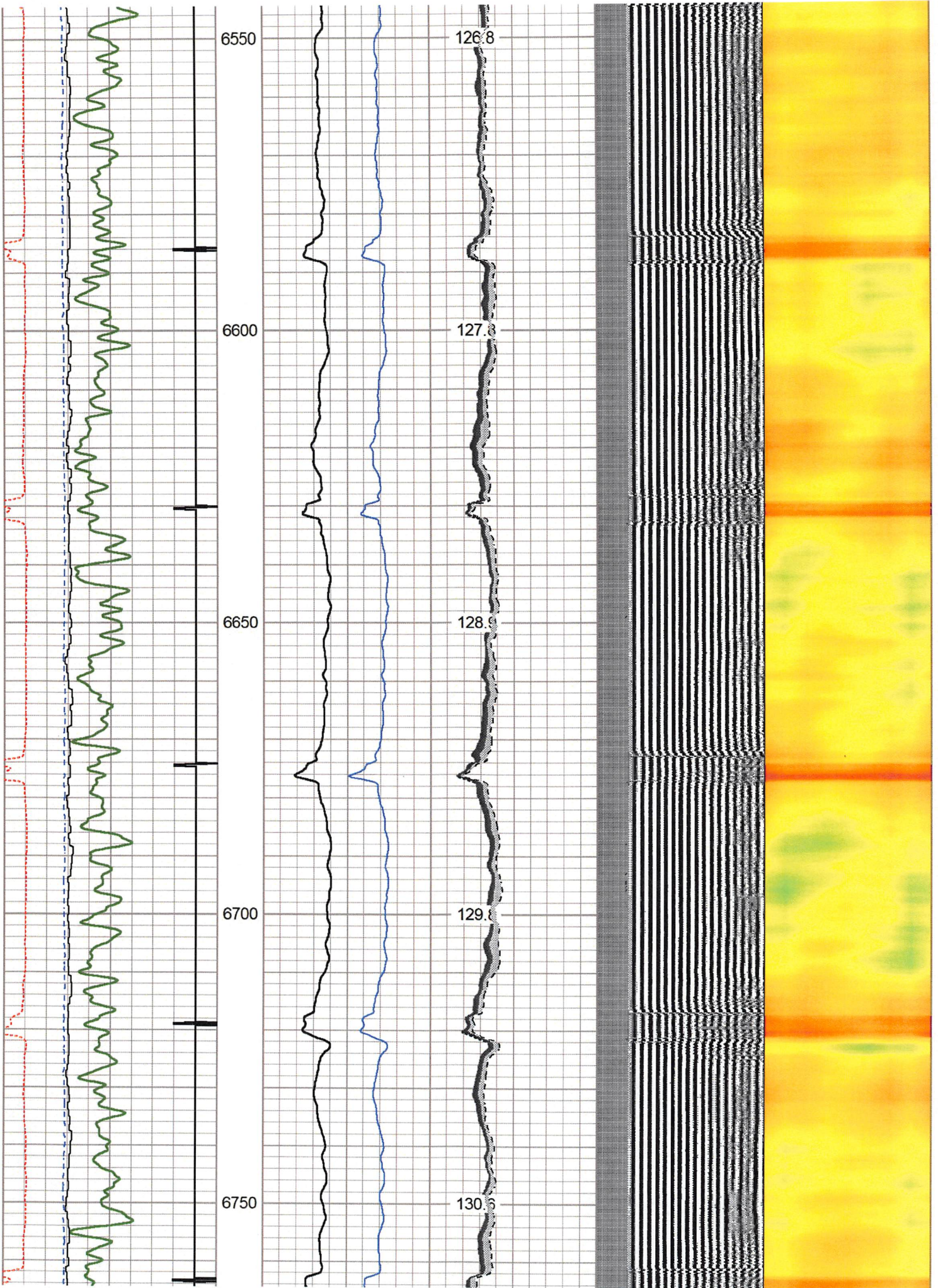
123.3

124.3

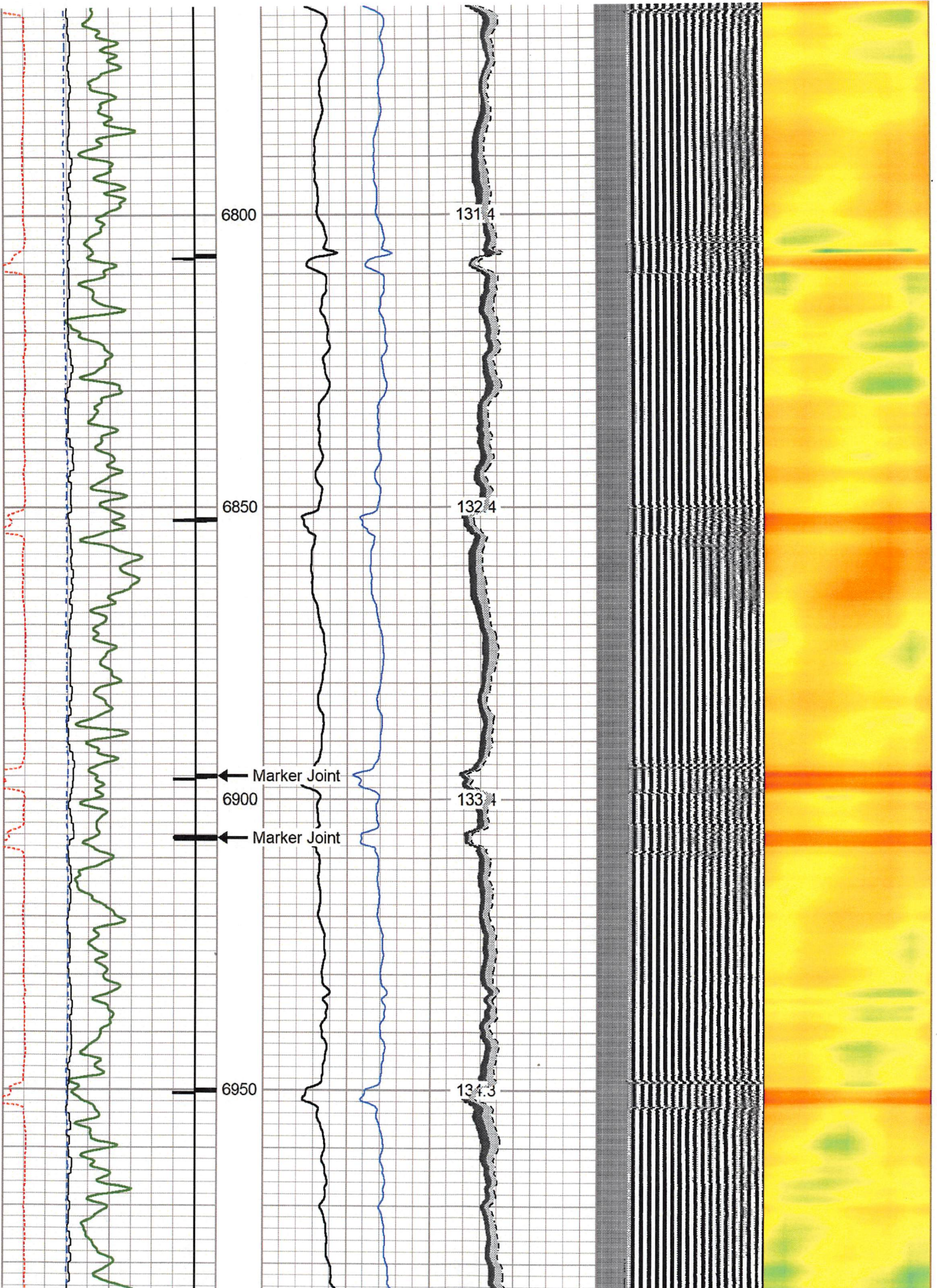
125

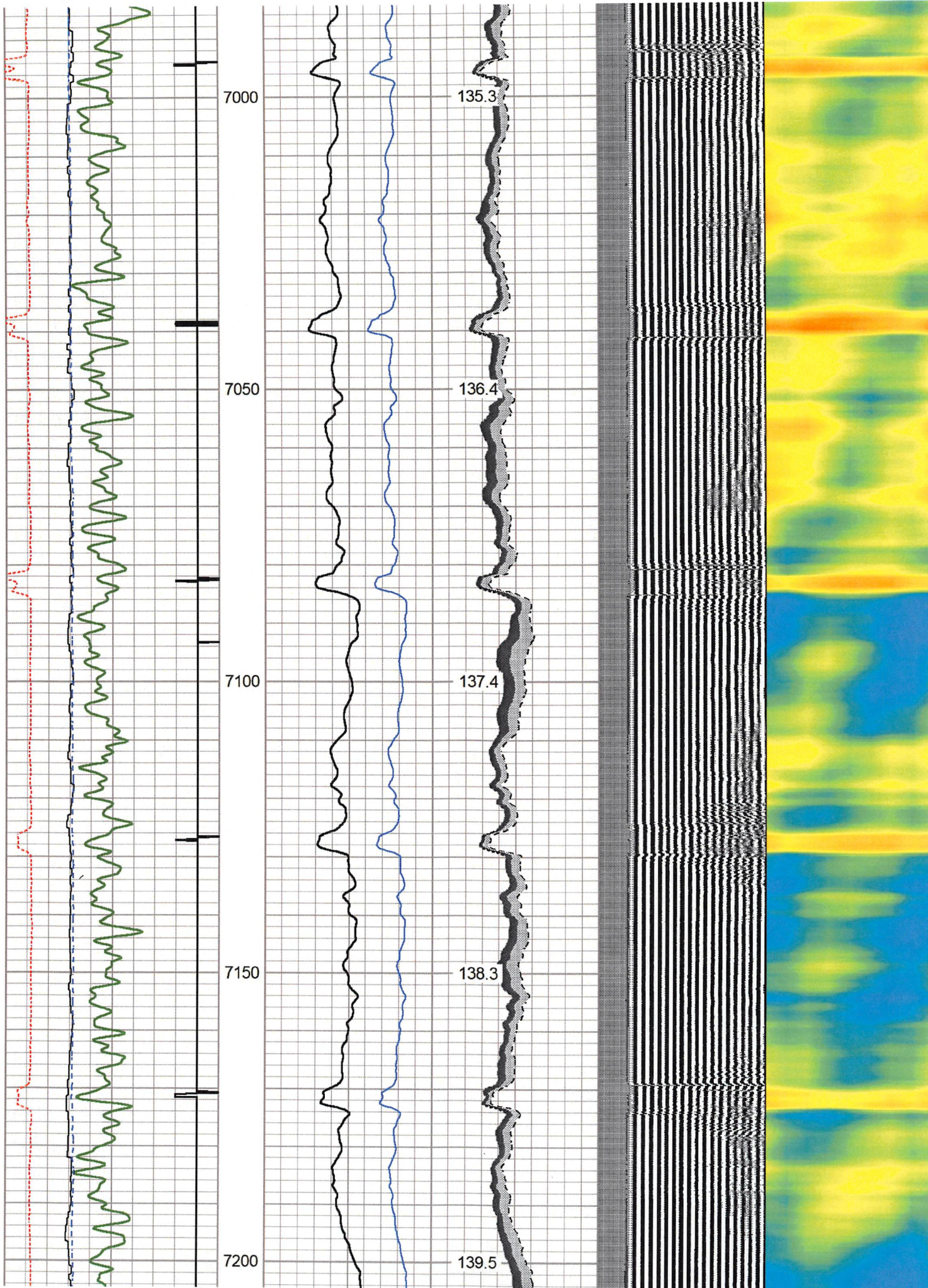
125.9

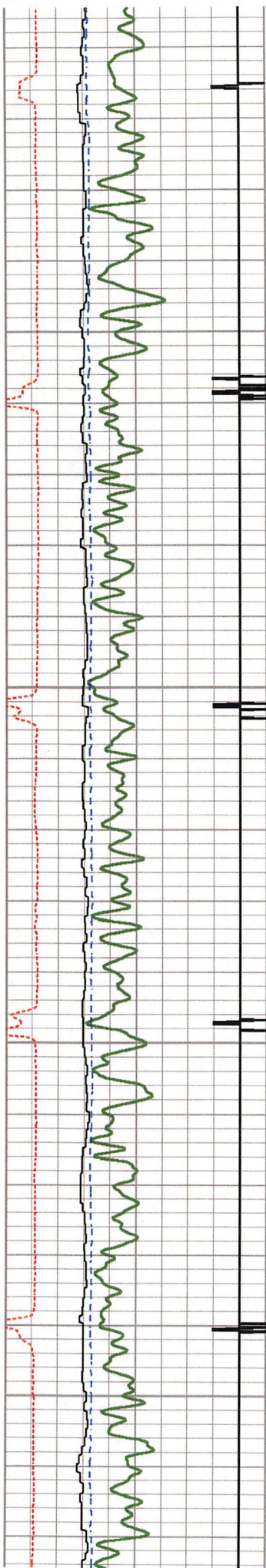










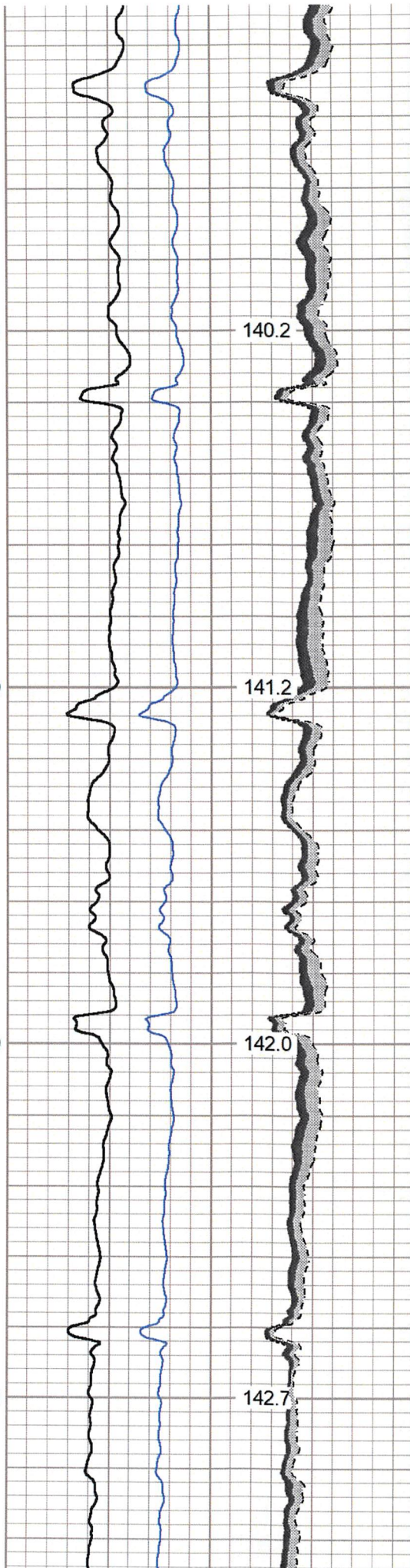


7250

7300

7350

7400

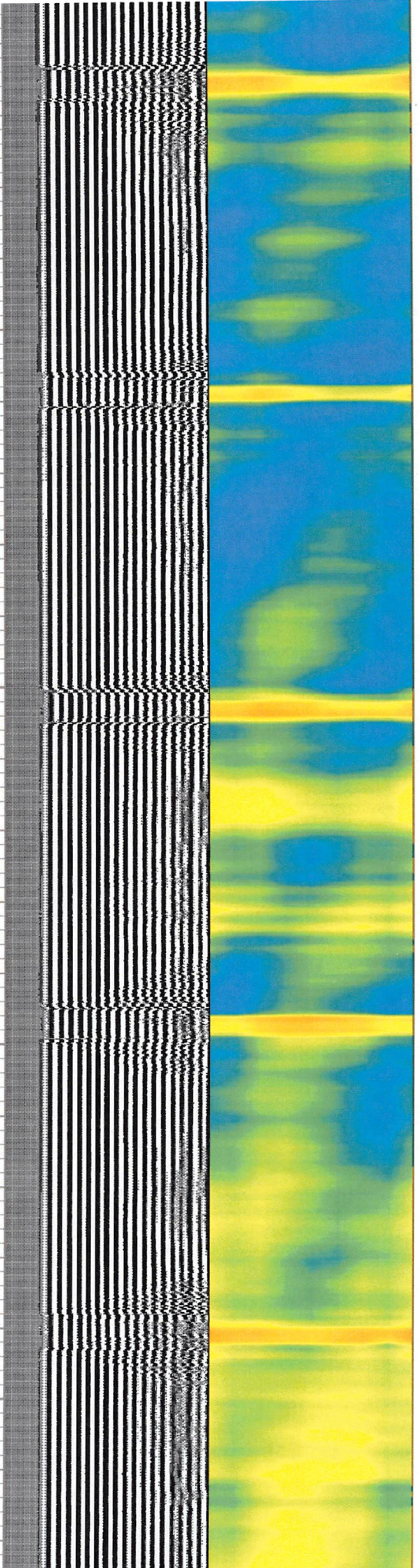


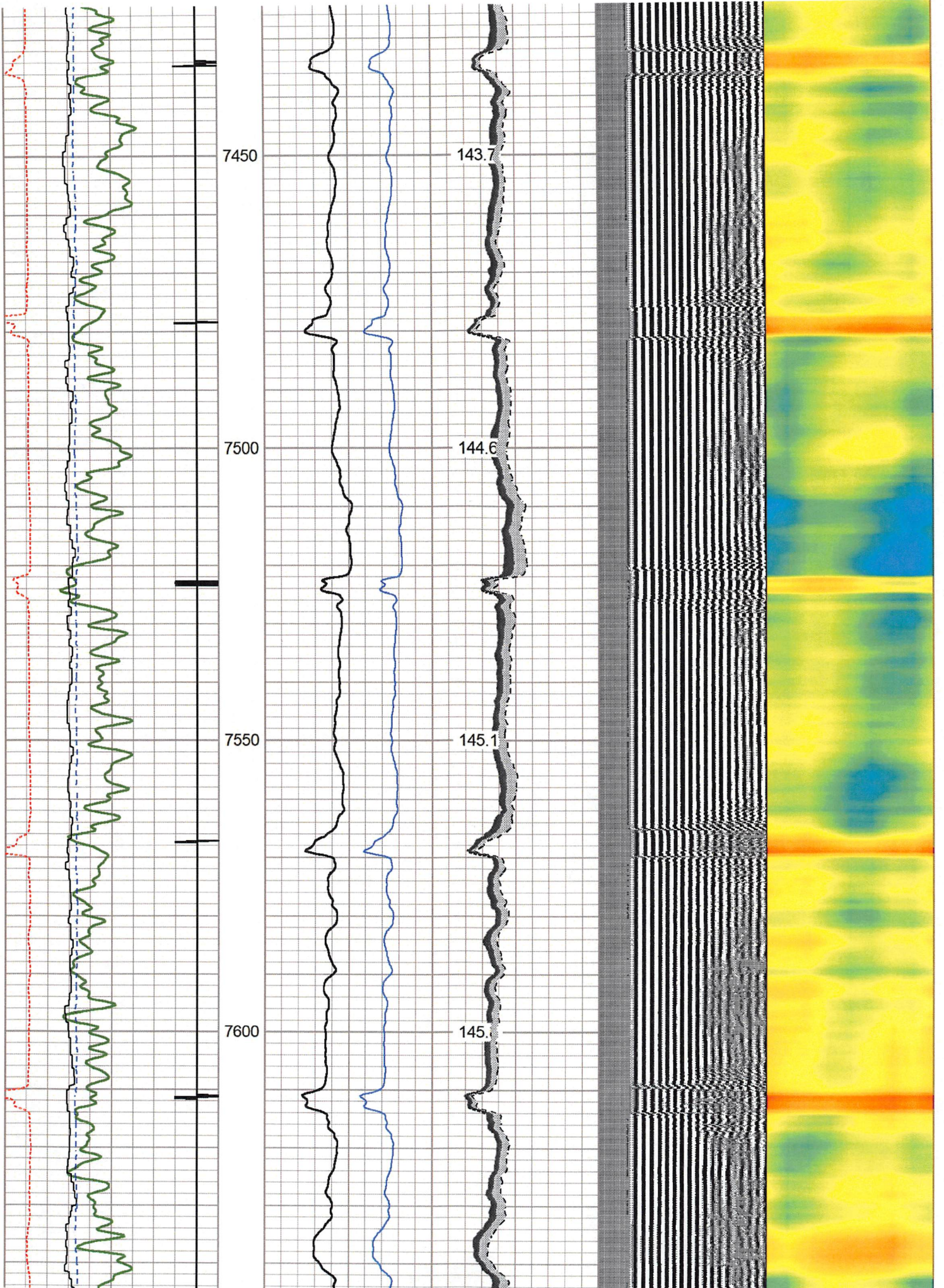
140.2

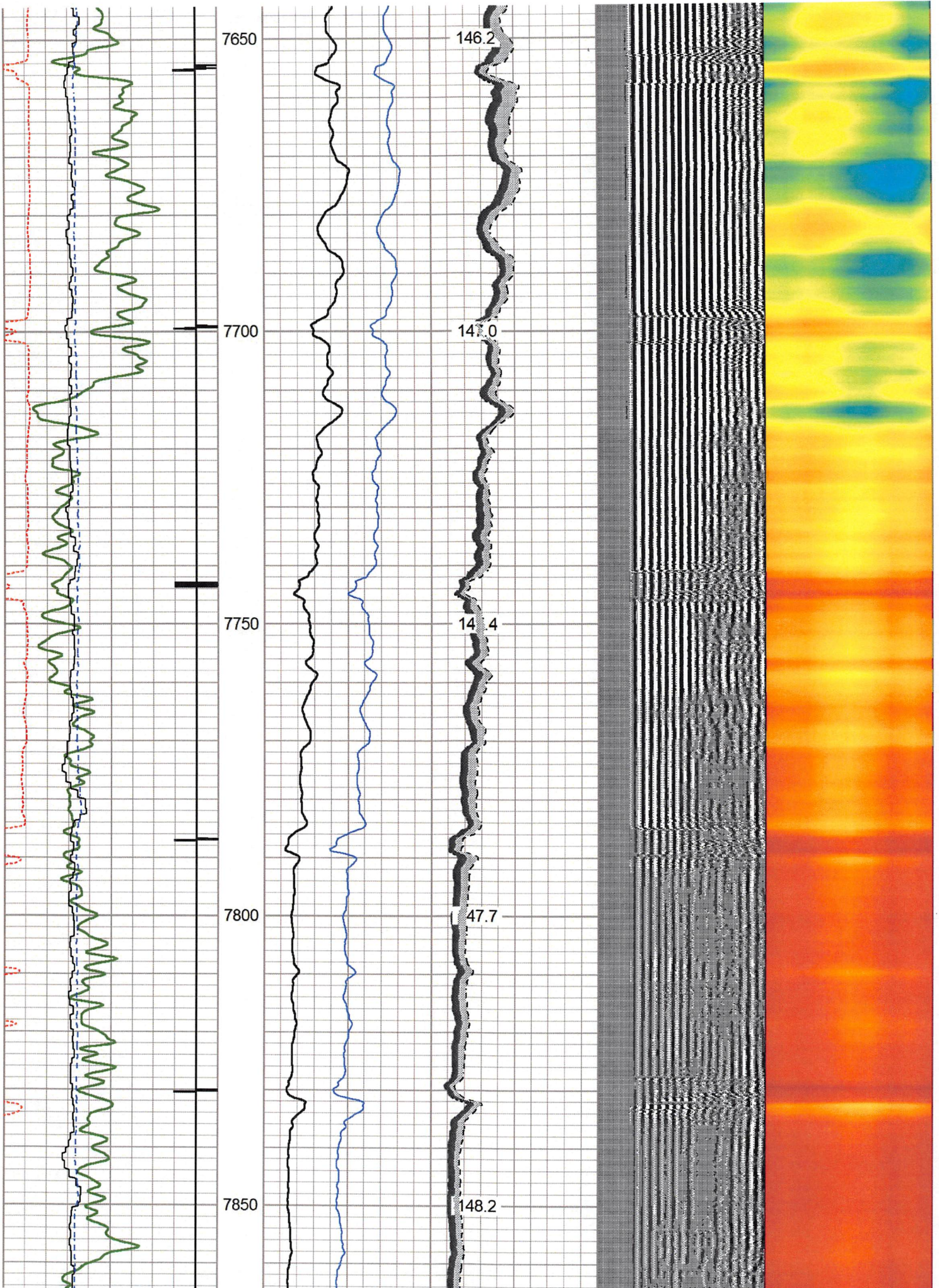
141.2

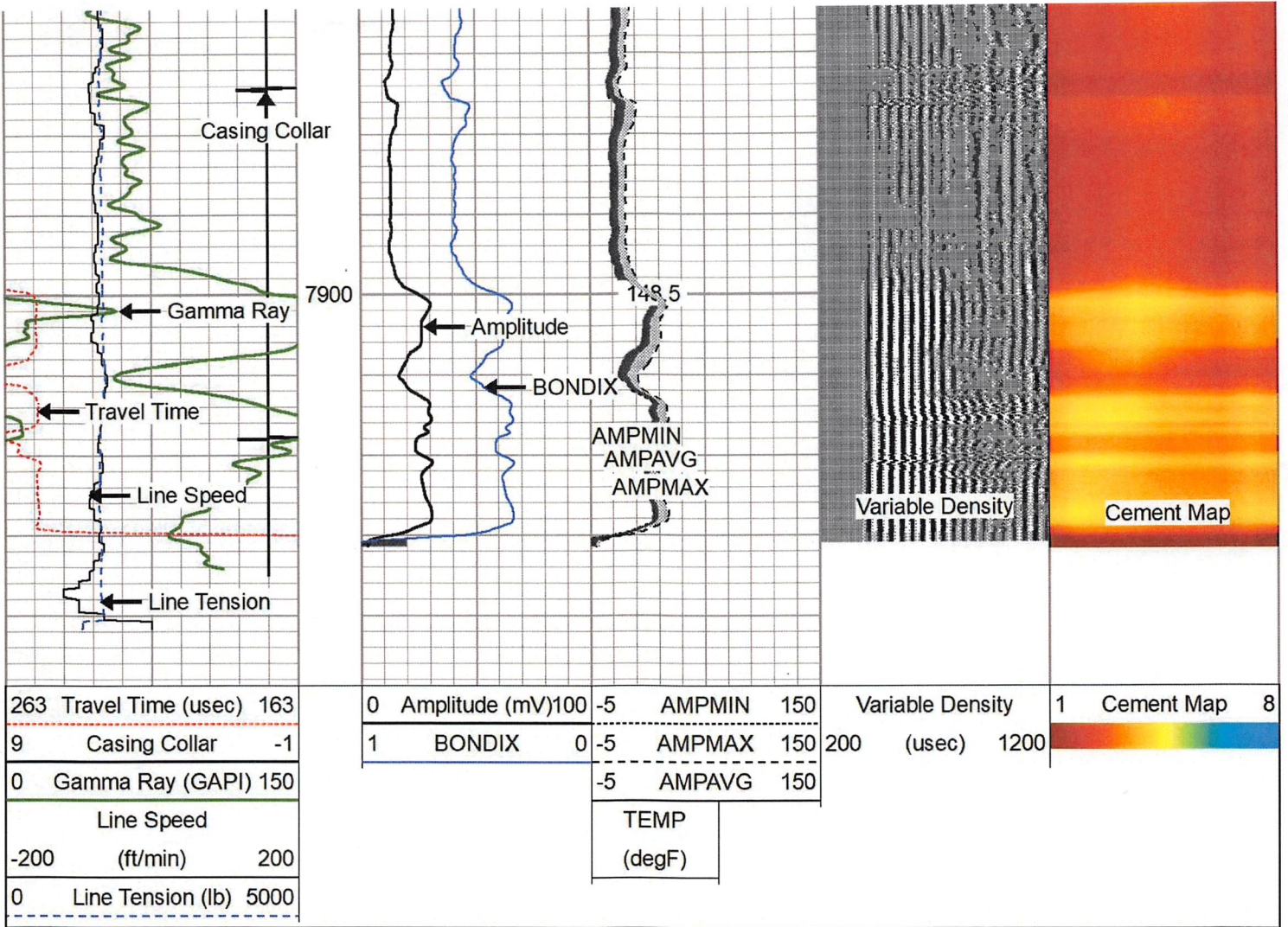
142.0

142.7



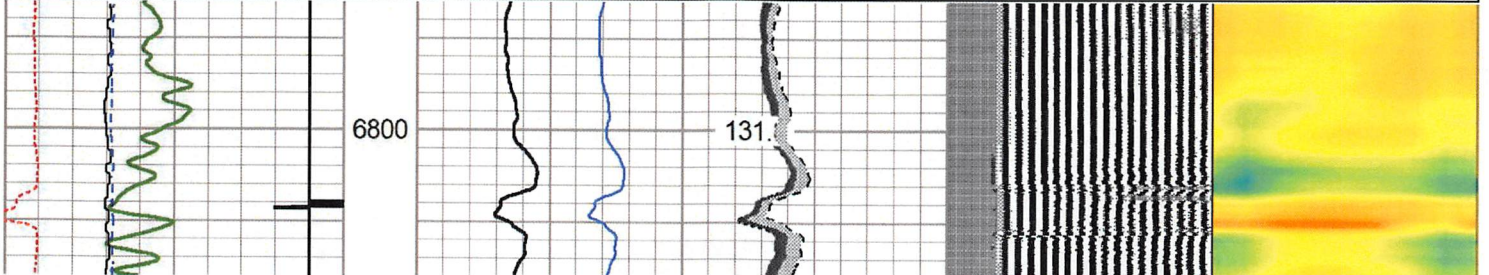
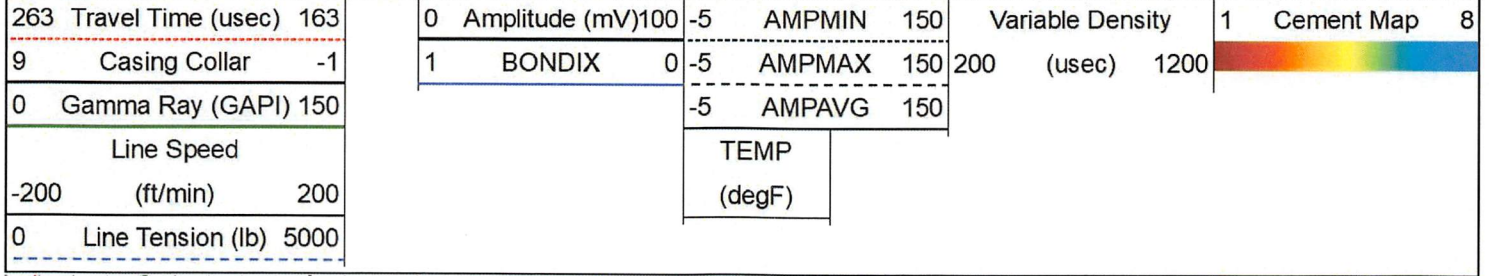


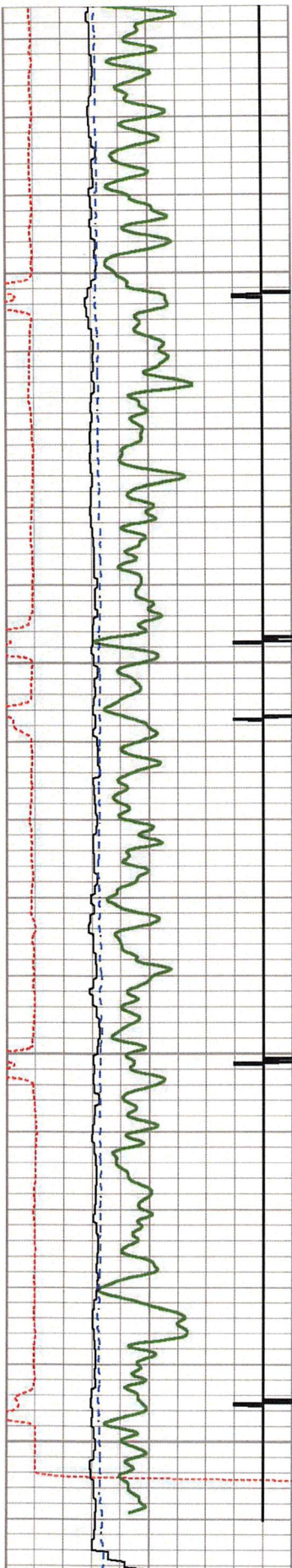




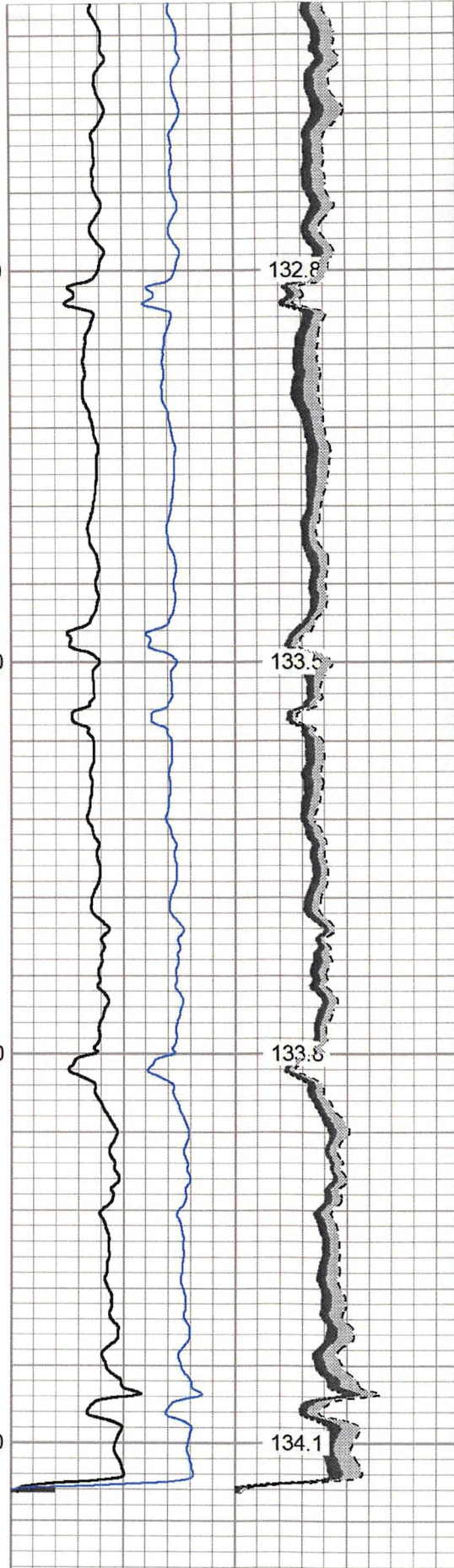

# Repeat Pass 0 PSI

Database File: antero\_phebe\_2h\_rcbl\_11\_jan\_2023.db  
 Dataset Pathname: pass4  
 Presentation Format: rcbl 2  
 Dataset Creation: Wed Jan 11 15:47:54 2023  
 Charted by: Depth in Feet scaled 1:240

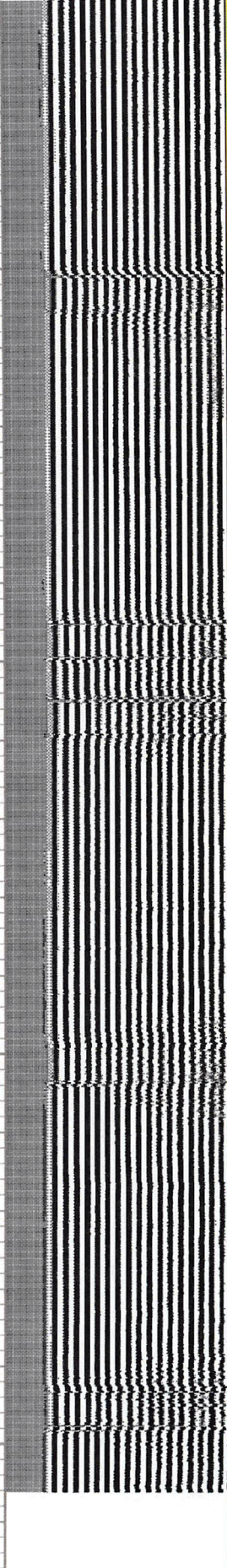




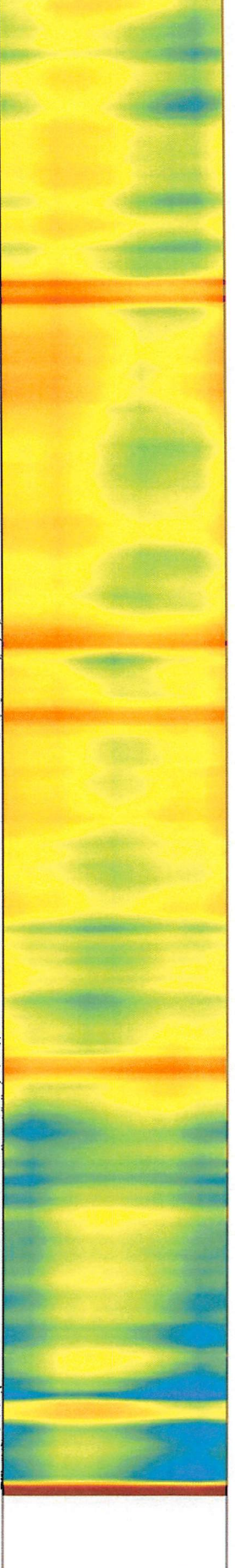
263	Travel Time (uSec)	163
9	Casing Collar	-1
0	Gamma Ray (GAPI)	150
Line Speed		



0	Amplitude (mV)	100	-5	AMPMIN	150
1	BONDIX	0	-5	AMPMAX	150
			-5	AMPAVG	150
TEMP					



Variable Density	1	Cement Map	8
200 (uSec)	1200		



1	Cement Map	8
---	------------	---

-200 (ft/min) 200  
 0 Line Tension (lb) 5000

(degF)

# Log Variables

DatabaseC:\ProgramData\Warrior\Data\antero\_phebe\_2h\_rcbl\_11\_jan\_2023.db  
 Dataset field/well/run1/pass6/\_vars\_

## Top - Bottom

BHTEMP_Src TEMP	BOREID in 7.875	BOTTEMP degF 100	CASEOD in 5.5	CASETHCK in 0.415	CASEWGHT lb/ft 23	MAXAMPL mV 71.9	MINAMPL mV 3.4
MINATTN db/ft 0.8	PERFS No	PPT usec 260	SRFTEMP degF 48	TDEPTH ft 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\_phebe\_2h\_rcbl\_11\_jan\_2023.db  
 Dataset Pathname pass6  
 Dataset Creation Wed Jan 11 16:15:10 2023

## Gamma Ray Calibration Report

Serial Number: FW1211-86  
 Tool Model: Probe  
 Performed: Sun Nov 13 11:04:25 2022  
 Calibrator Value: 1.0 GAPI  
 Background Reading: 0.0 cps  
 Calibrator Reading: 1.0 cps  
 Sensitivity: 0.5000 GAPI/cps

RECEIVED  
 Office of Oil and Gas

JUN 2 2023

WV Department of  
 Environmental Protection

## Segmented Cement Bond Log Calibration Report

Serial Number: 2.75"  
 Tool Model: Probe275T  
 Calibration Casing Diameter: 5.500 in  
 Calibration Depth: 574.792 ft

Master Calibration, performed Wed Jan 11 15:19:49 2023:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.004	0.568	3.400	71.921	121.493	2.967
CAL	0.998	0.995				
5'	-0.003	0.555	3.400	71.921	122.654	3.809
SUM						



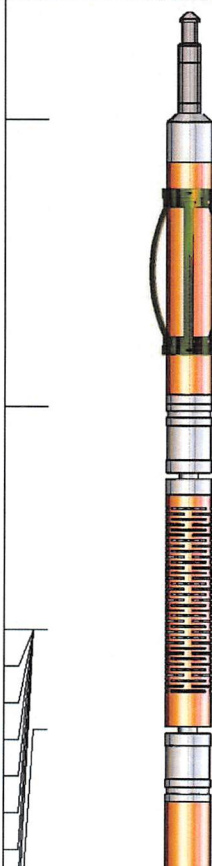
S1	0.068	0.577	0.000	100.000	196.507	-13.373
S2	-0.005	0.534	0.000	100.000	185.625	0.902
S3	-0.002	0.583	0.000	100.000	170.852	0.411
S4	-0.002	0.601	0.000	100.000	165.622	0.380
S5	-0.003	0.605	0.000	100.000	164.429	0.458
S6	-0.006	0.596	0.000	100.000	166.190	0.988
S7	0.006	0.561	0.000	100.000	180.111	-1.022
S8	-0.007	0.540	0.000	100.000	182.837	1.324

Internal Reference Calibration, performed Wed Nov 23 14:17:52 2011:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.998	0.995	1.000	0.000

Air Zero Calibration, performed Wed Jan 11 09:18:23 2023:

	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)
HeadVolt	16.95		CHD-Titan Standard 1 7/16" Cable Head	1.02	1.44	1.00
Temp	14.10		CENT-Overbody Antelope (SP-919-0233)	1.67	4.88	5.00
WVFS8	11.86		RBT-Probe275T (2.75") 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					

RECEIVED  
Office of Oil and Gas  
JUN 2 2023  
WV Department of  
Environmental Protection

WVFS1	11.86					
WVF3FT	11.86					
WVF5FT	10.86					
WVFCAL	7.61					
HEADVOLT	7.61					
CCL	6.71					
GR	5.38		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
			Centralizer-Probe_2.75 Bowspring Centralizer	2.83	2.75	24.00

Dataset: antero\_phebe\_2h\_rcbl\_11\_jan\_2023.db: field/well/run1/pass6  
 Total length: 18.03 ft  
 Total weight: 182.00 lb  
 O.D.: 4.88 in

	Company	ANTERO RESOURCES
	Well	PHEBE 2H
	Field	WEST UNION
	County	DODDRIDGE
	State	WV

RECEIVED  
Office of Oil and Gas

JUN 2 2023

WV Department of  
Environmental Protection