



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

Company ANTERO  
Well Margery Specter 2H  
Field RABBIT EARS  
County TYLER  
State WEST VIRGINIA  
Country USA

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Country USA

Location: API #: 47-095-02706-0000  
Other Services

Permanent Datum	GL	Elevation	25'	K.B. N/A
Log Measured From	KB			D.F. N/A
Drilling Measured From	KB			G.L. N/A

Date	08-Jan-2021			
Run Number	ONE			
Depth Driller	18,827'			
Depth Logger	7,170'			
Bottom Logged Interval	7,207'			
Top Log Interval	SURFACE			
Open Hole Size	8.50"			
Type Fluid	FRESH WATER			
Density / Viscosity	8.4#			
Max. Recorded Temp.	150 Deg. F.			
Estimated Cement Top	4,262'			
Time Well Ready	15:33			
Time Logger on Bottom	16:05			
Equipment Number	TK-104 / P1, G2			
Location	CHARLEROI, PA			
Recorded By	Matt McNally			
Witnessed By	Ryan Rivera			
	Borehole Record		Tubing Record	
Run Number	Bit	From	To	Size
				Weight
				From
				To
Casing Record	Size	Wgt/ft	Top	Bottom
Surface String				
Prot. String				
Production String	5 1/2"	20#	SURFACE	19,056'
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 MARKER JOINT @ 5,903' -5,915'  
Depth Correction -19'

100%FREE PIPE=71.9mv  
100%BOND=2.2mv

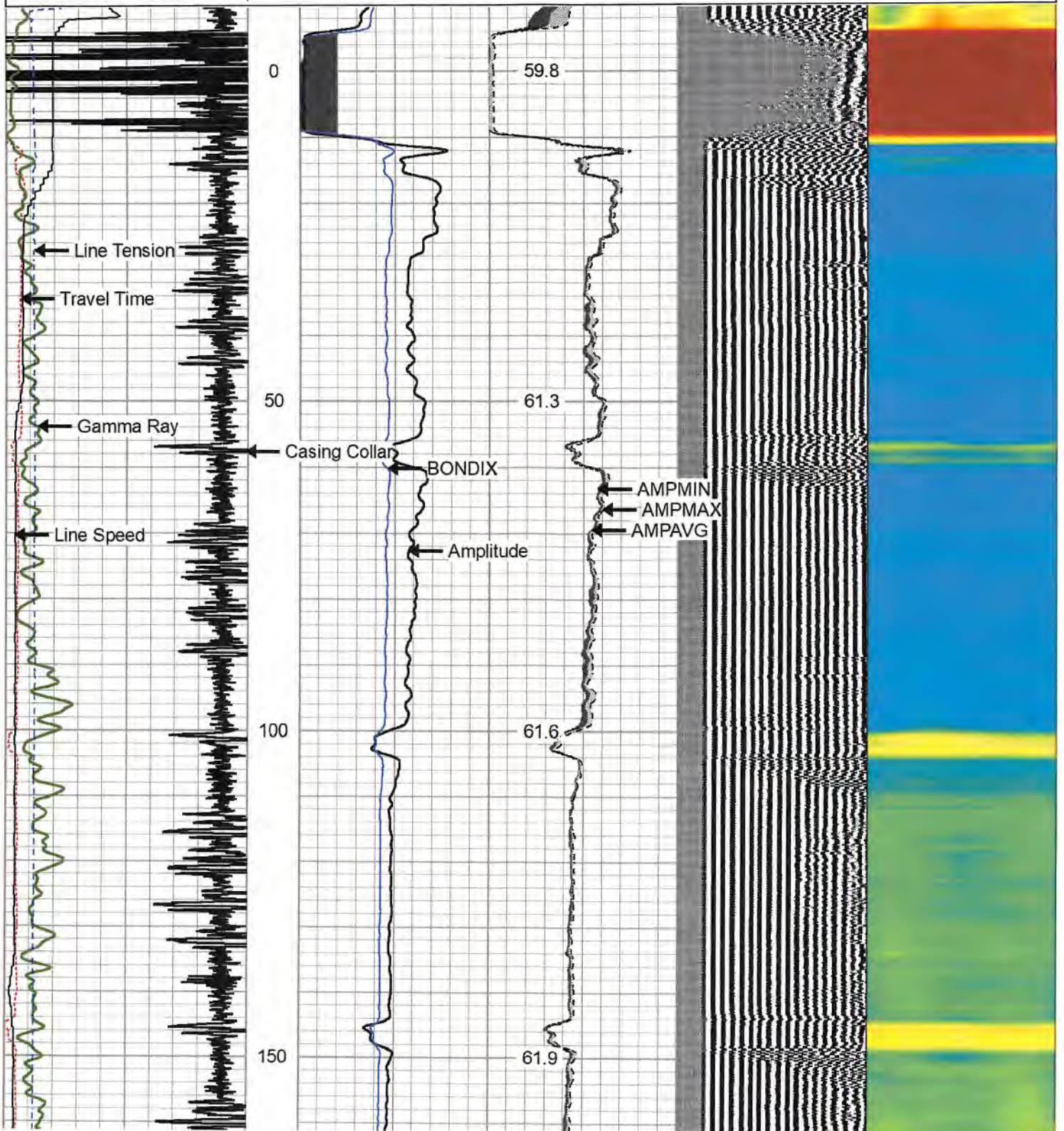
Thank You for Choosing Nine Energy Service.Charleroi, PA

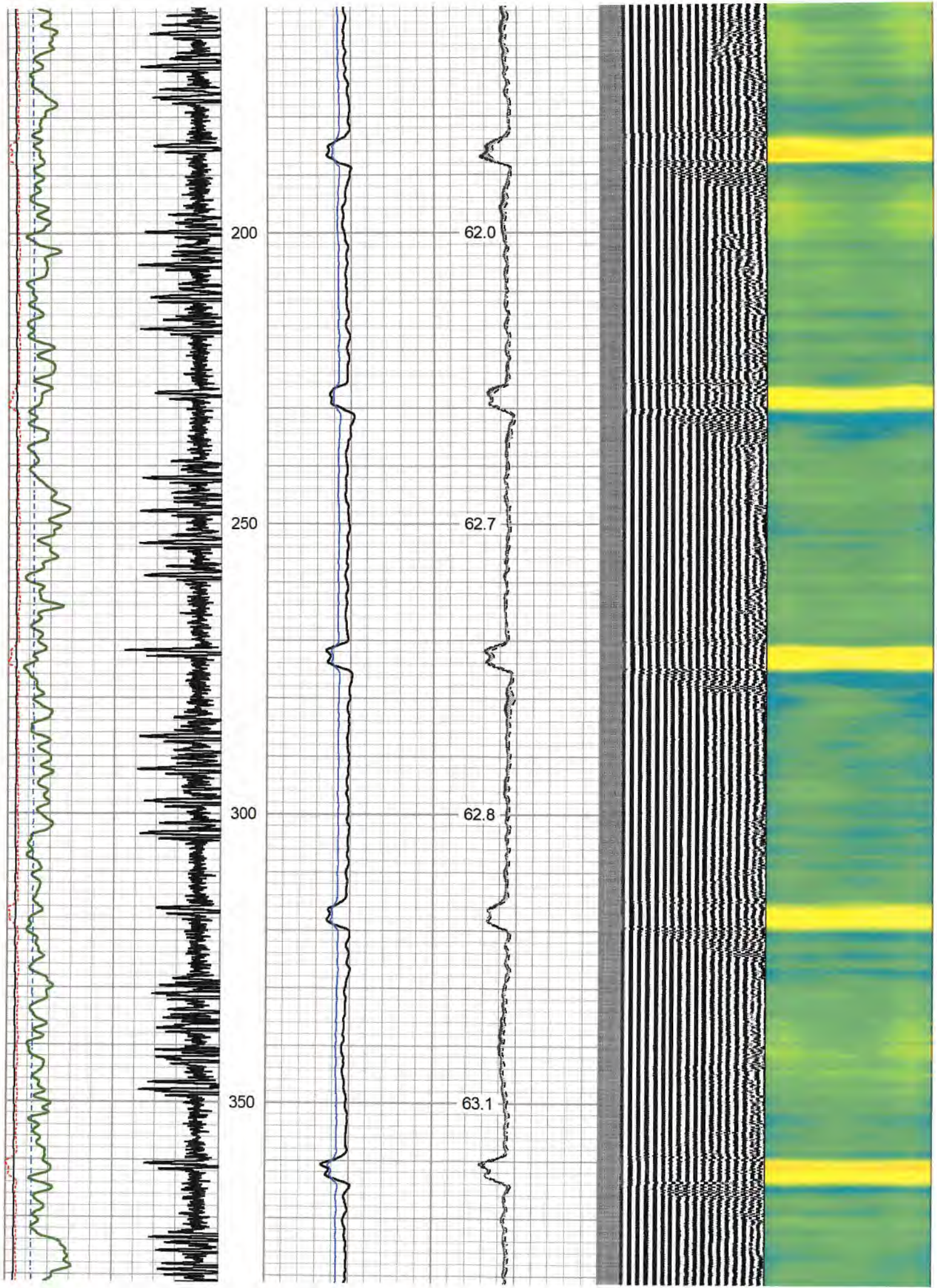


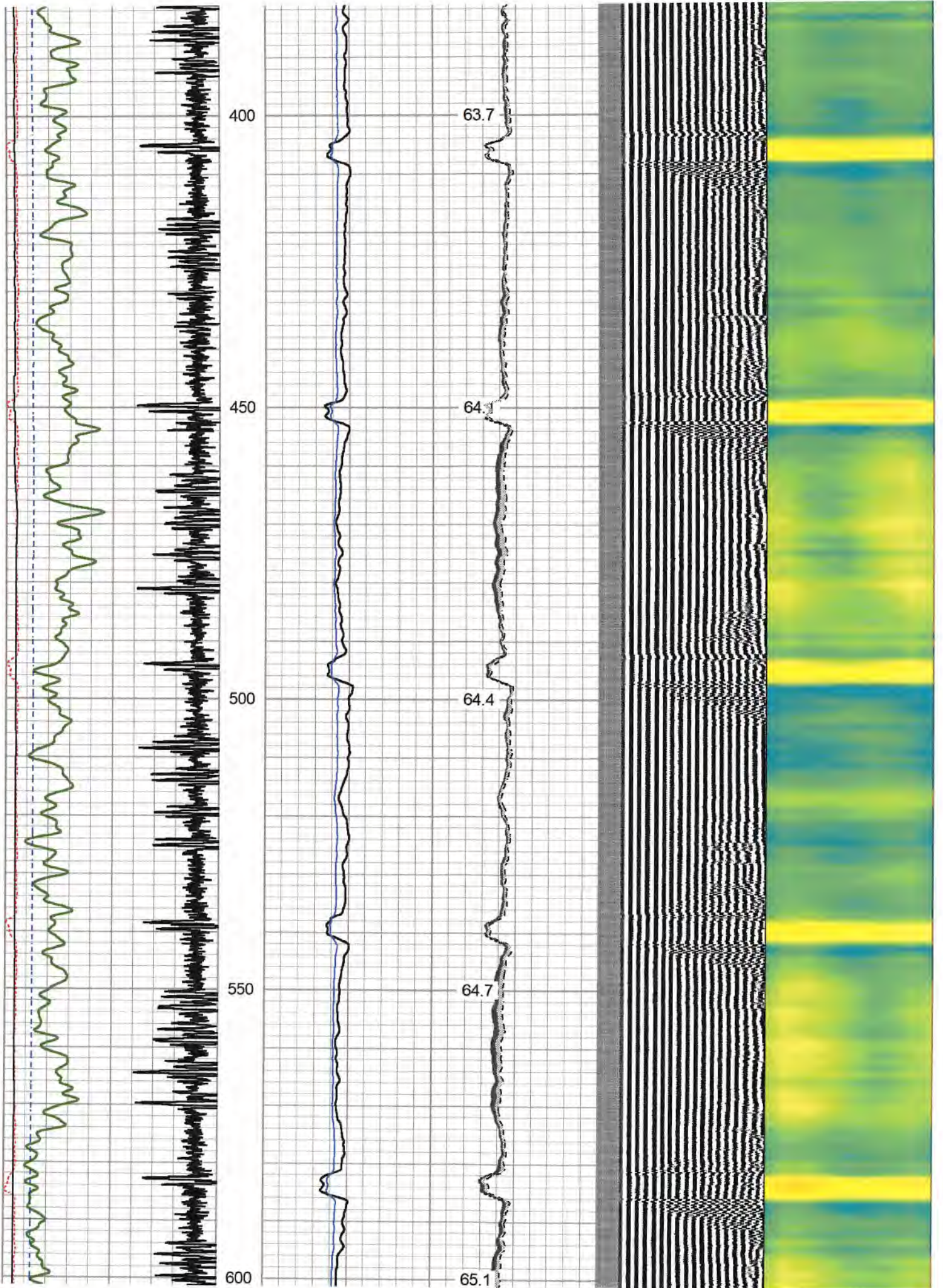
**Main Pass 1,500 PSI**

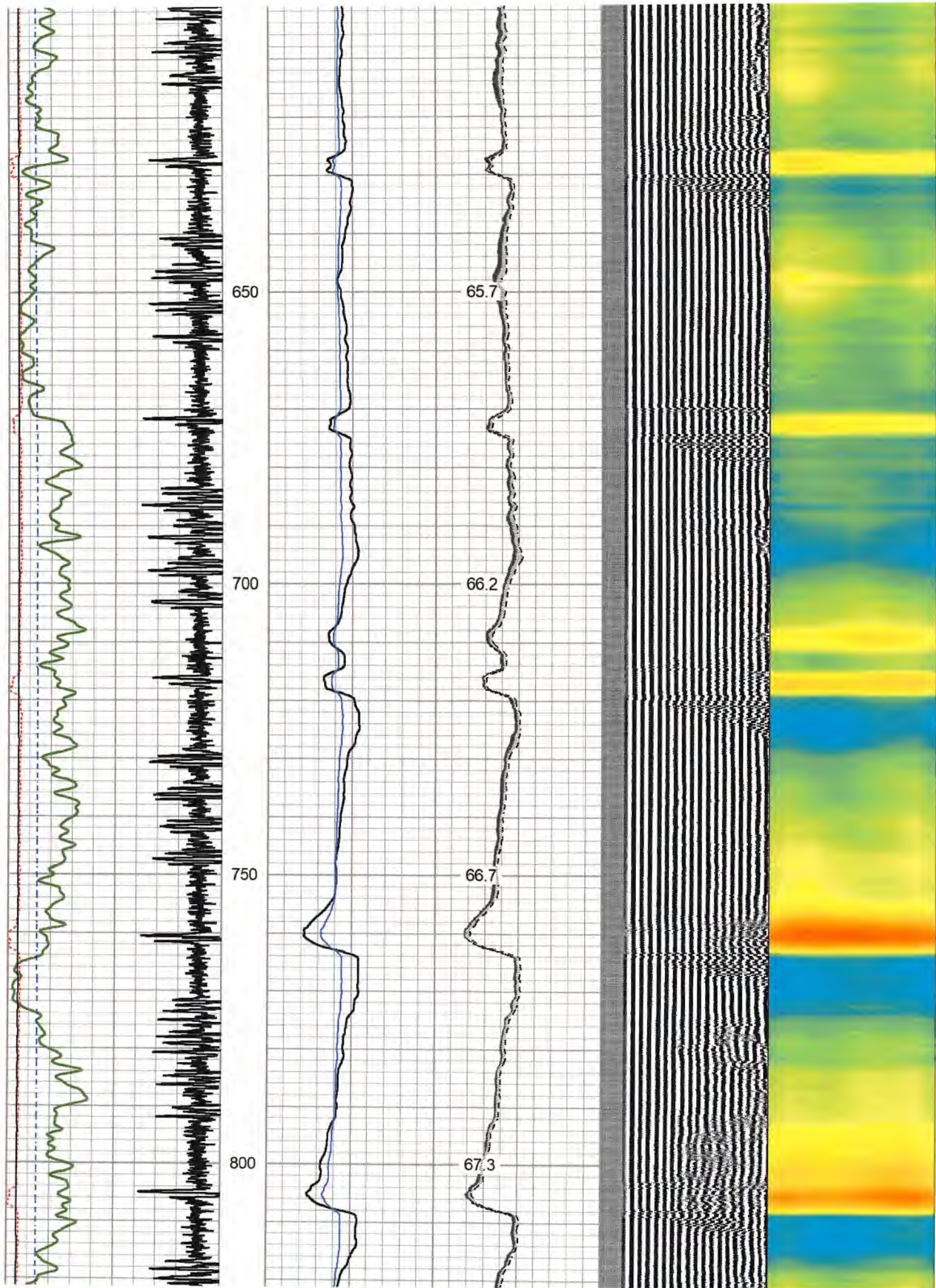
Database File antero\_specter\_2h\_rcbl\_08\_jan\_2021.db  
 Dataset Pathname rabbit\_ears/Lemon1H/run1/pass4  
 Presentation Format rcbl-bond index for antero 1020  
 Dataset Creation Fri Jan 08 16:05:20 2021  
 Charted by Depth in Feet scaled 1:240

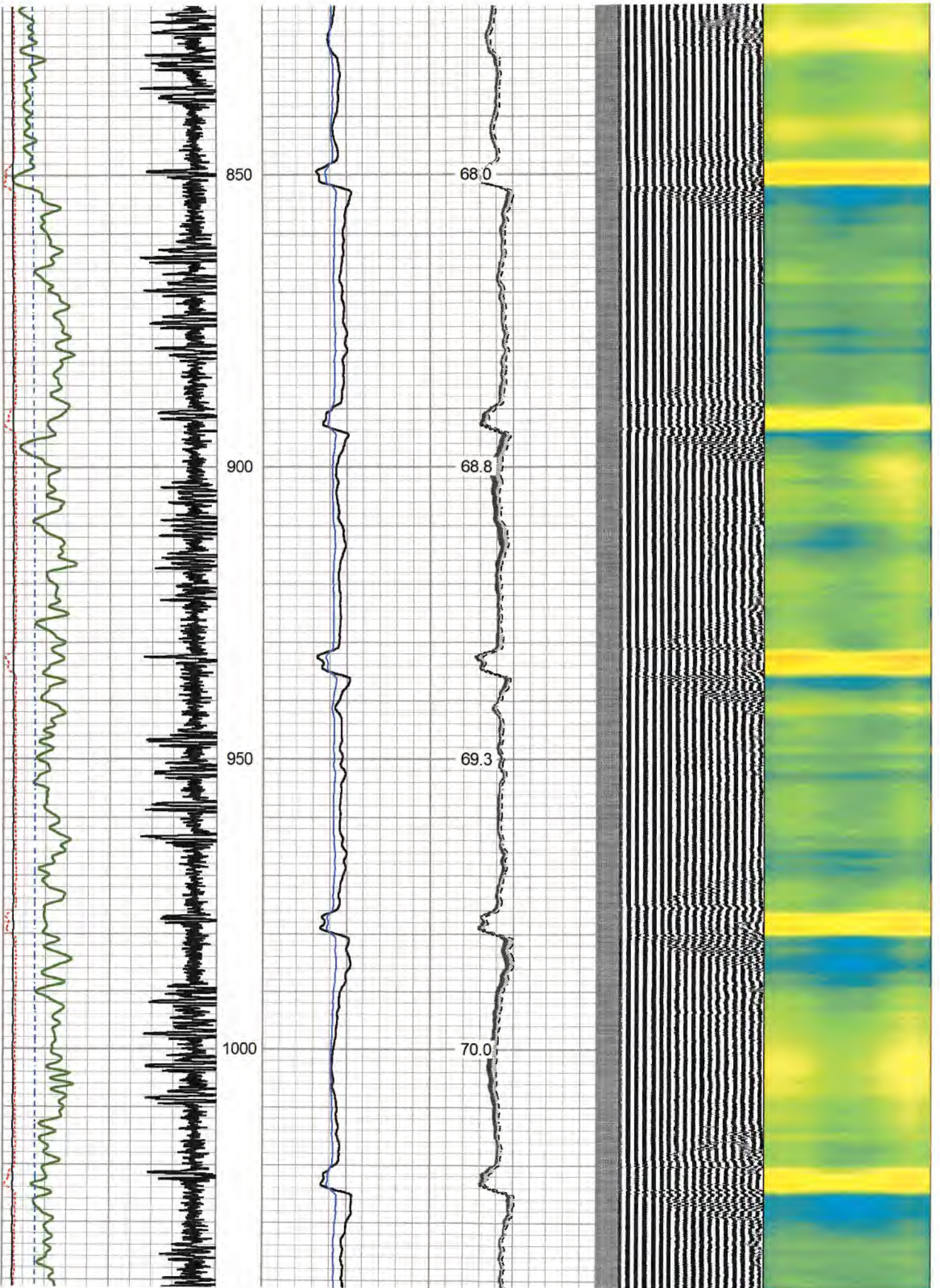
270	Travel Time (usec)	160	0	Amplitude (mV)	100	0	AMPMIN	150	Variable Density 200 (usec) 1200	1	Cement Map	8
9	Casing Collar	-1	1	BONDIX	0	0	AMPMAX	150				
0	Gamma Ray (GAPI)	150	0			0	AMPAVG	150				
Line Speed -100 (ft/min) 100			TEMP (degF)									
0	Line Tension (lb)	2000										

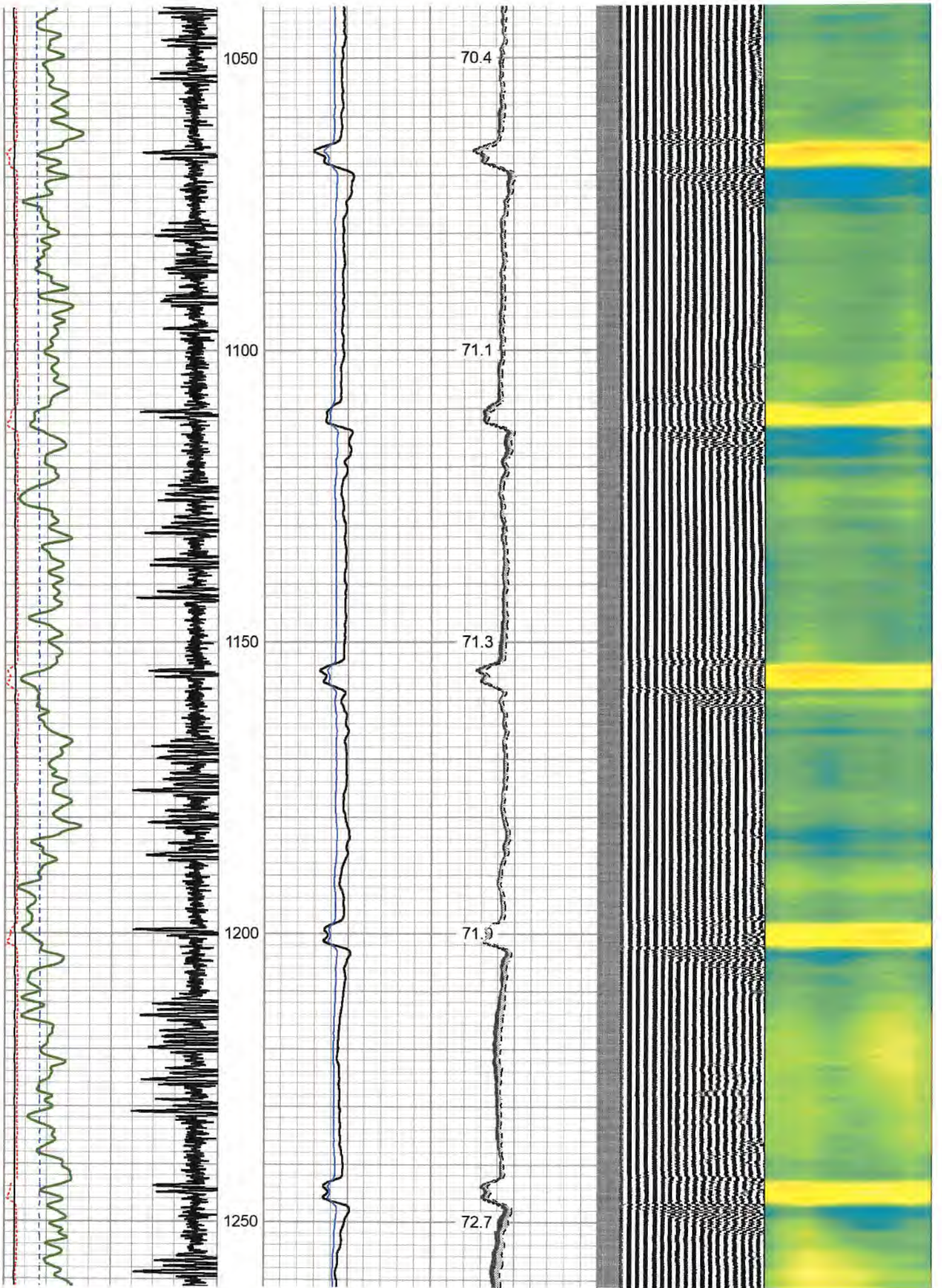


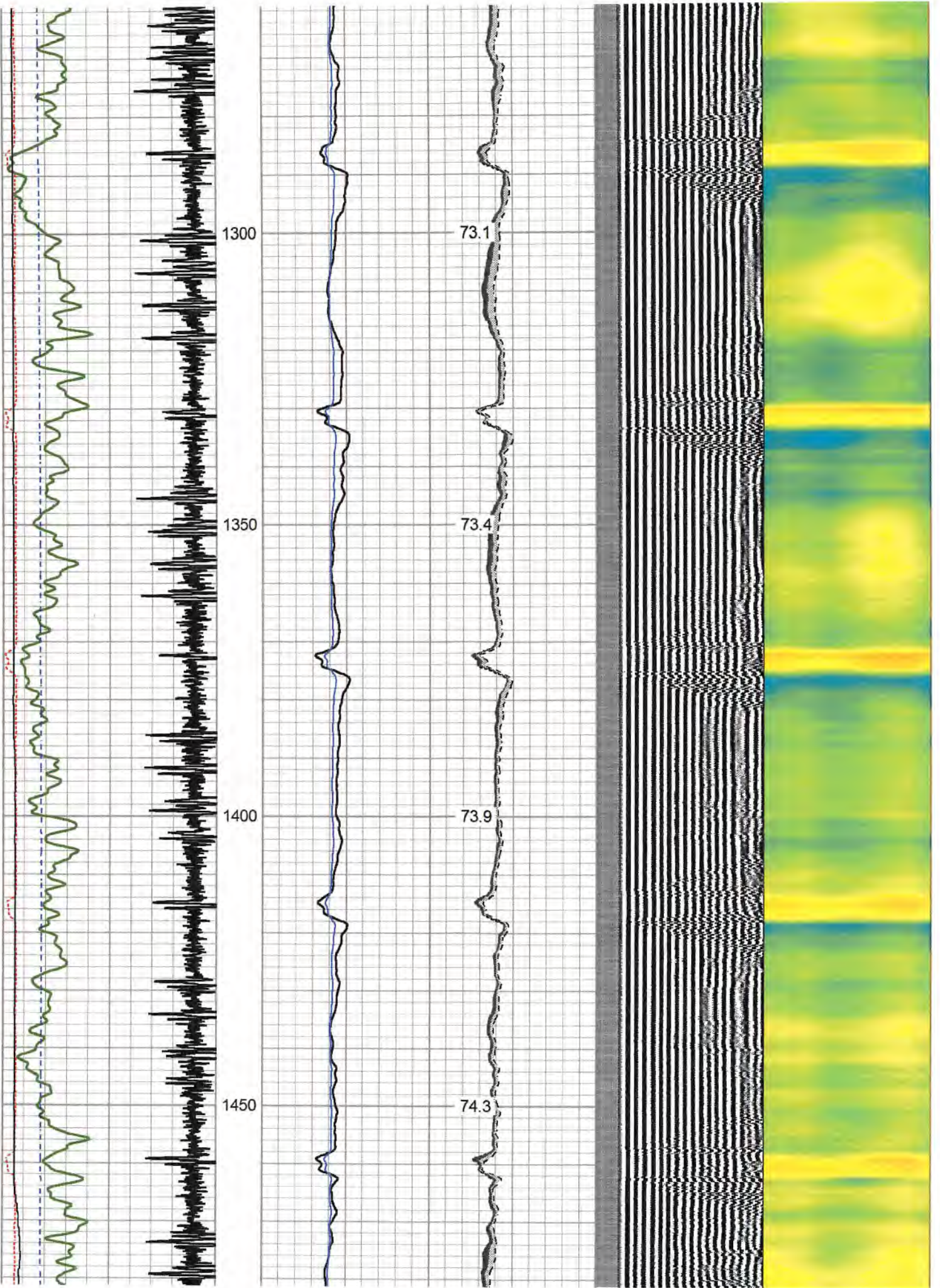




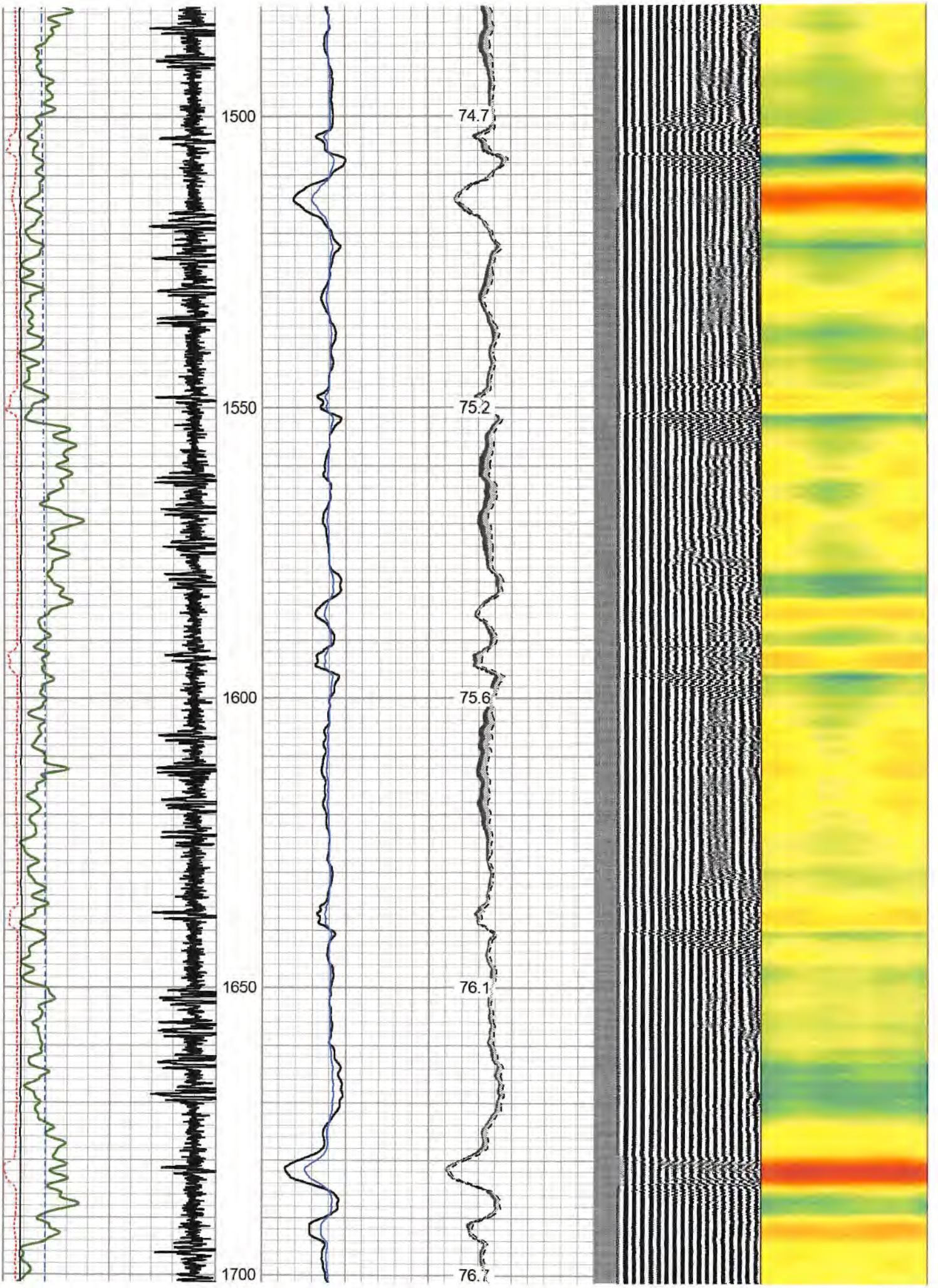


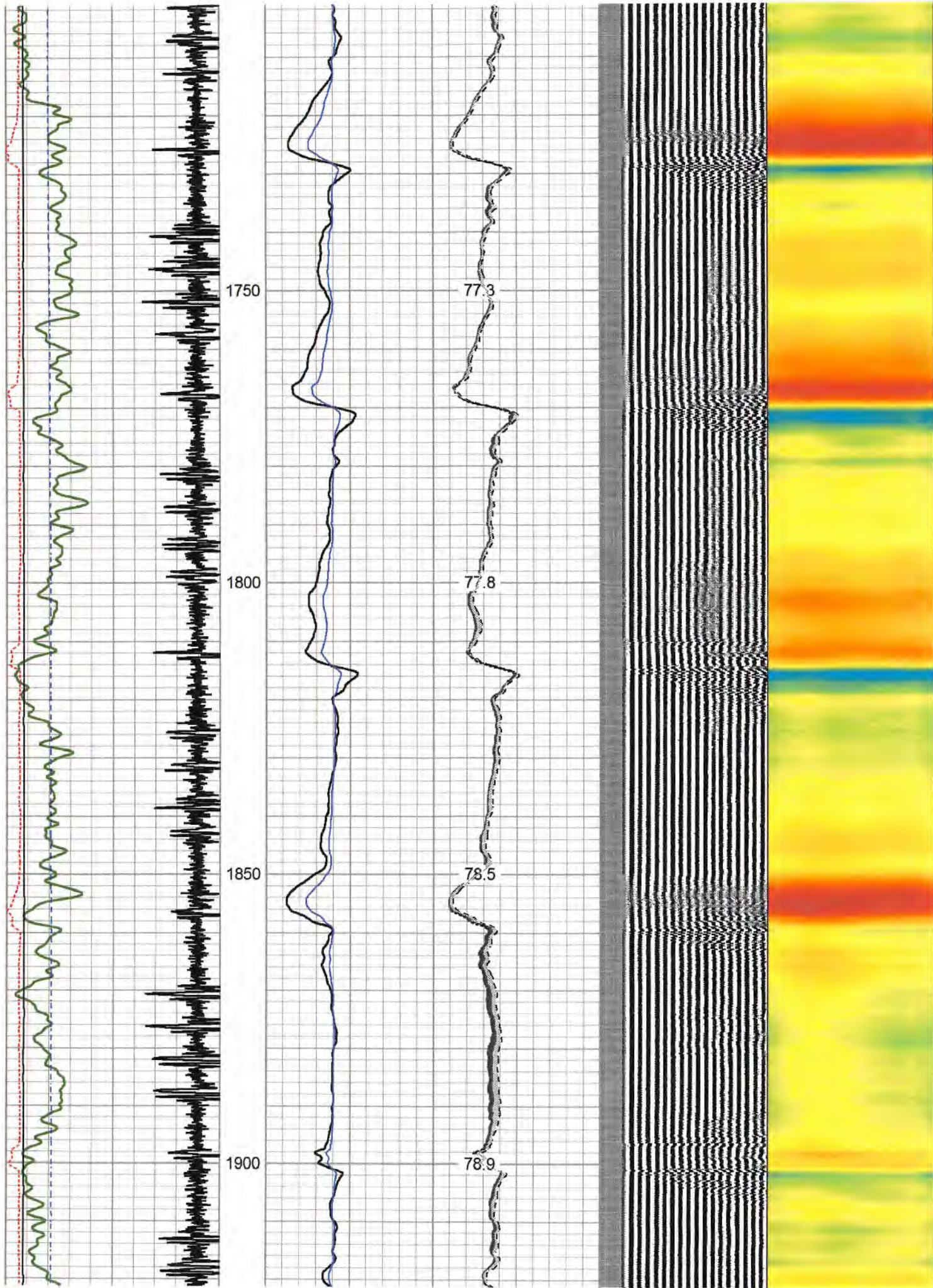


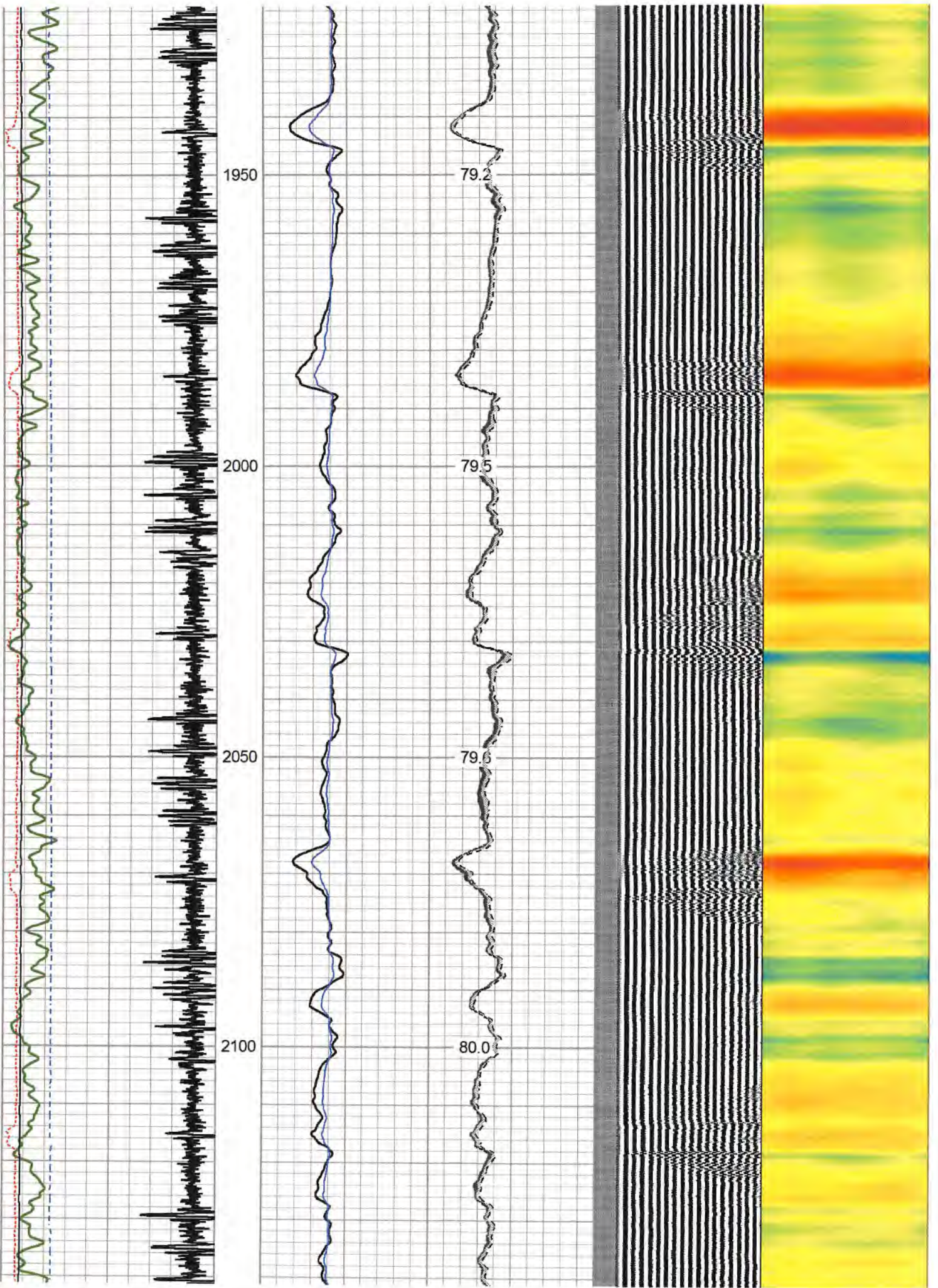


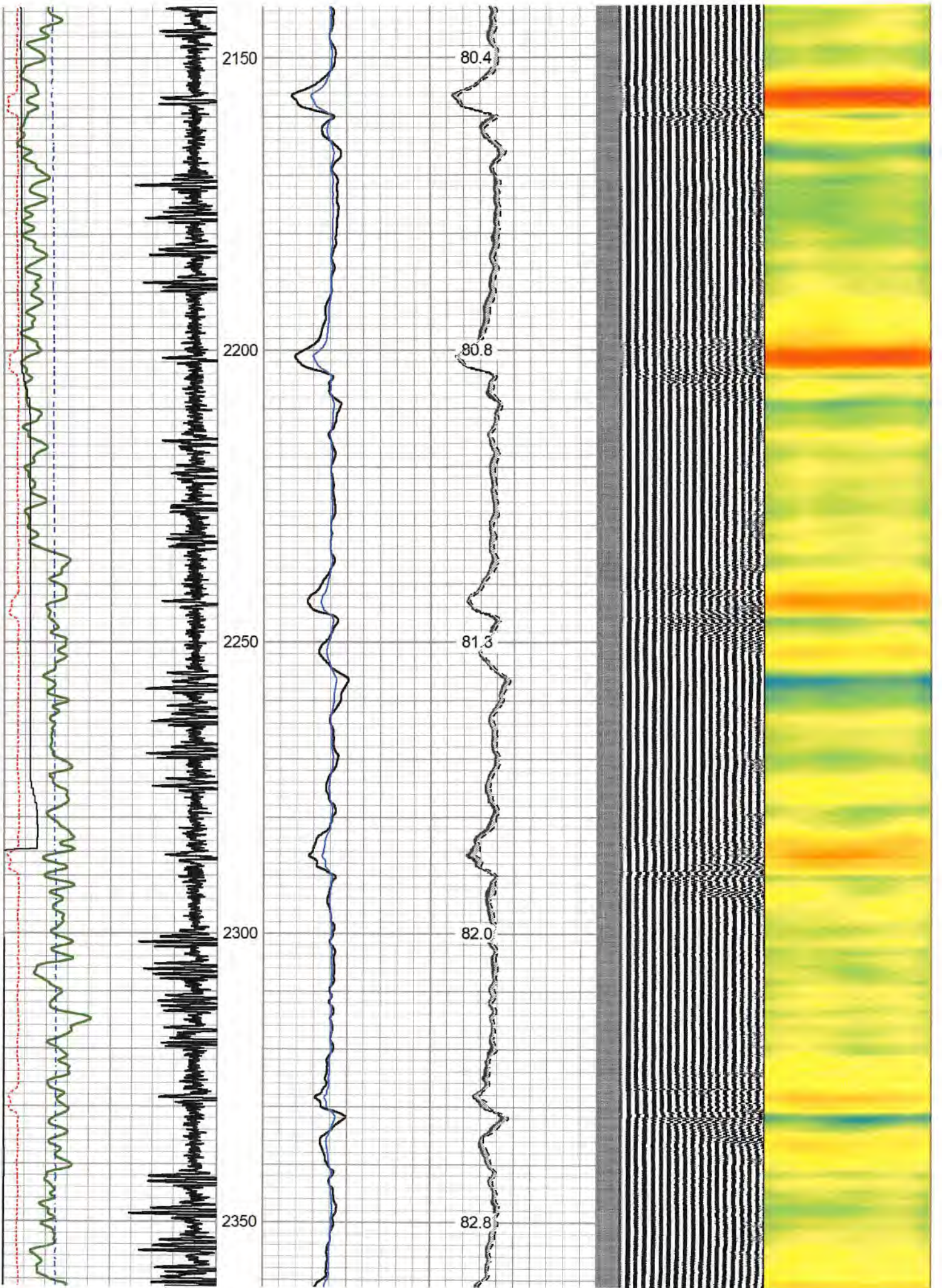


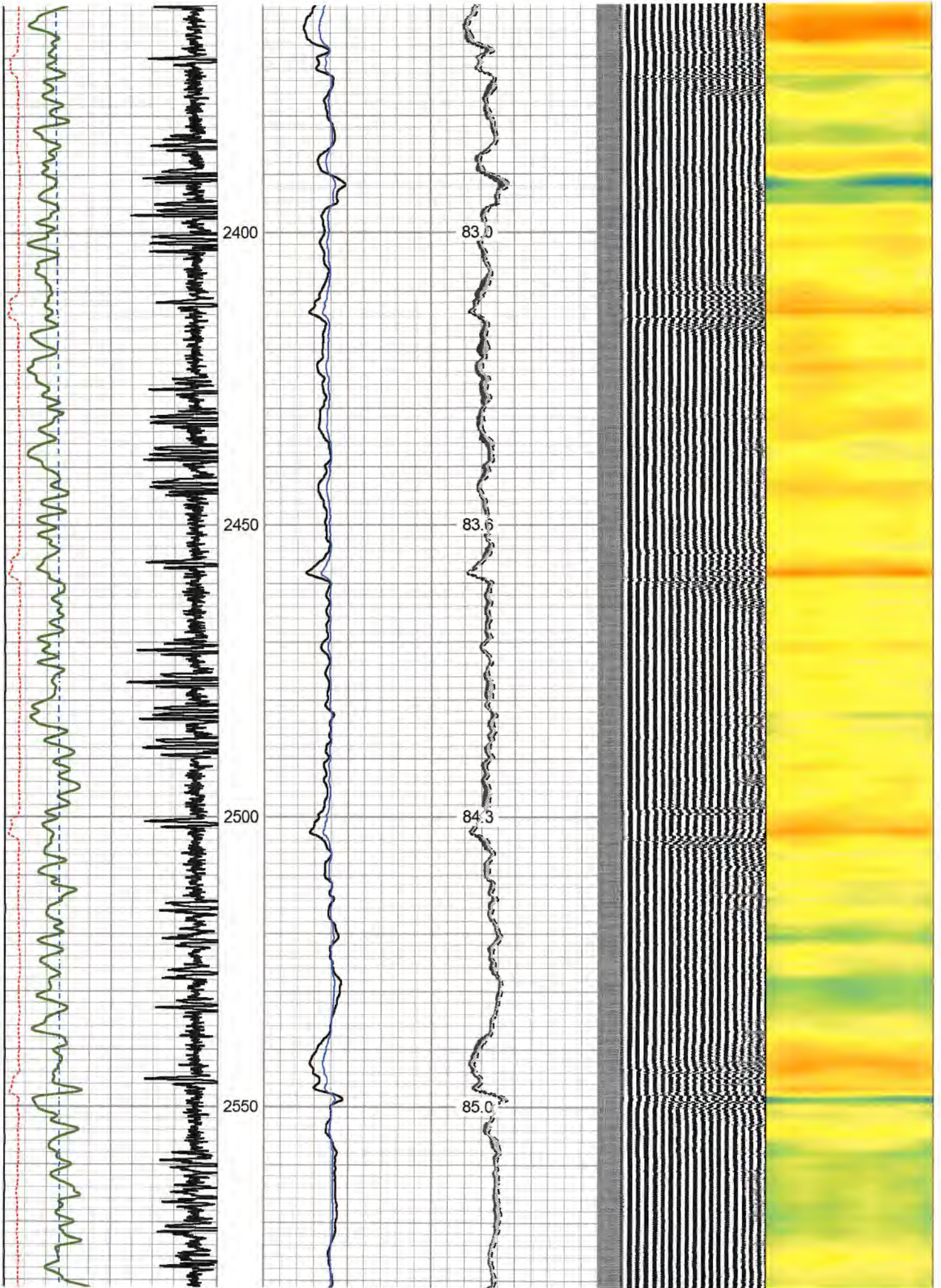


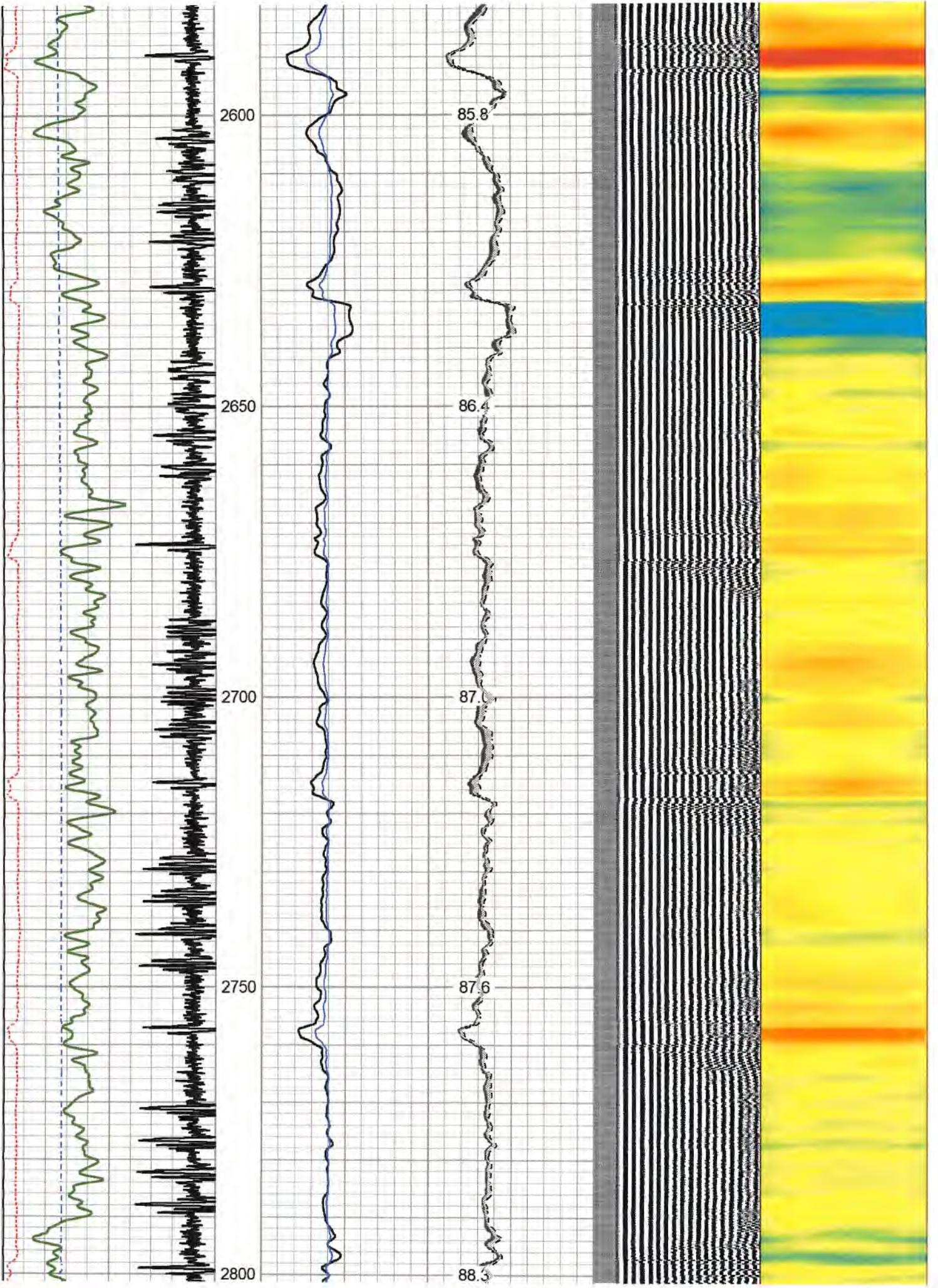


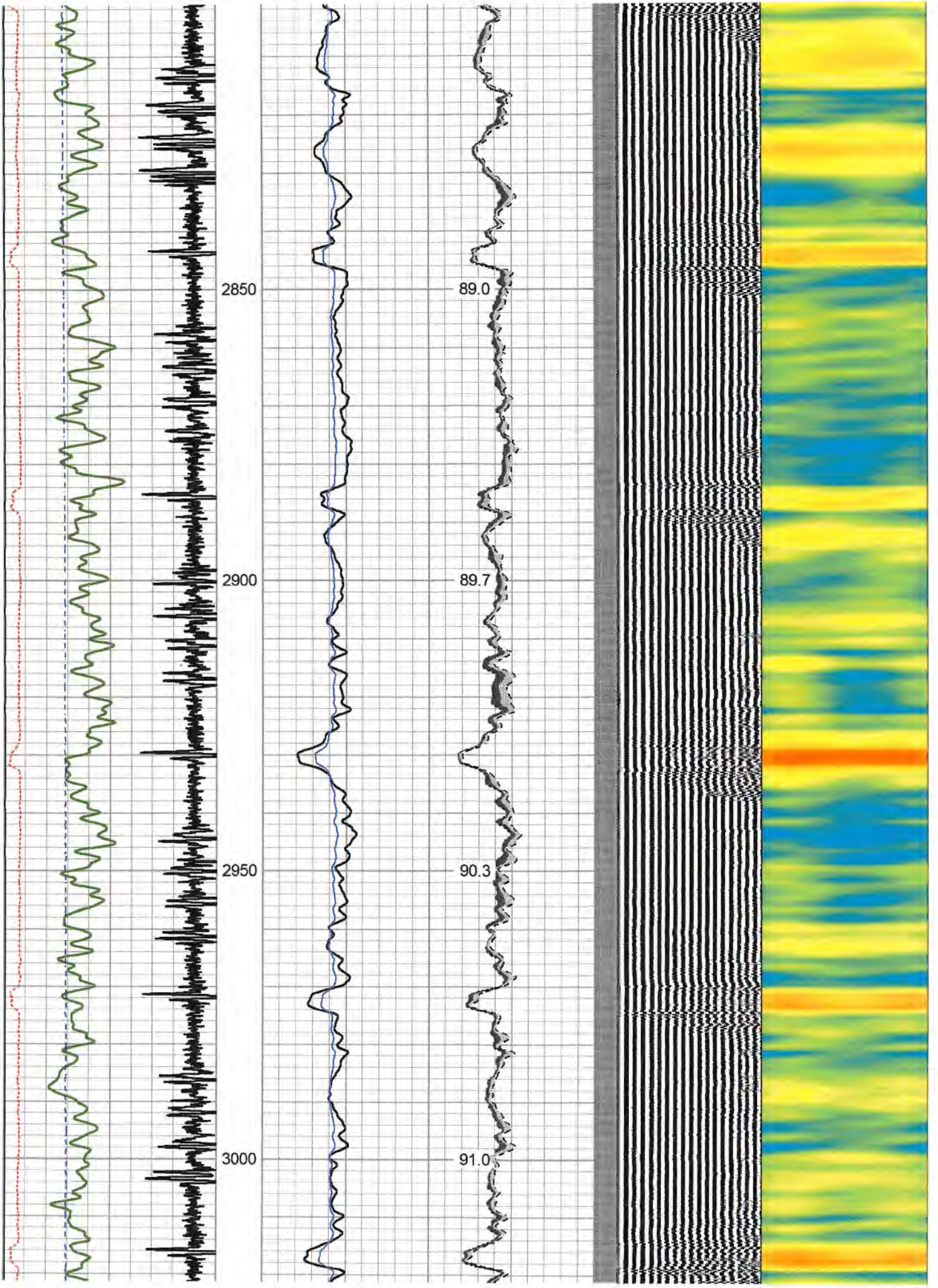


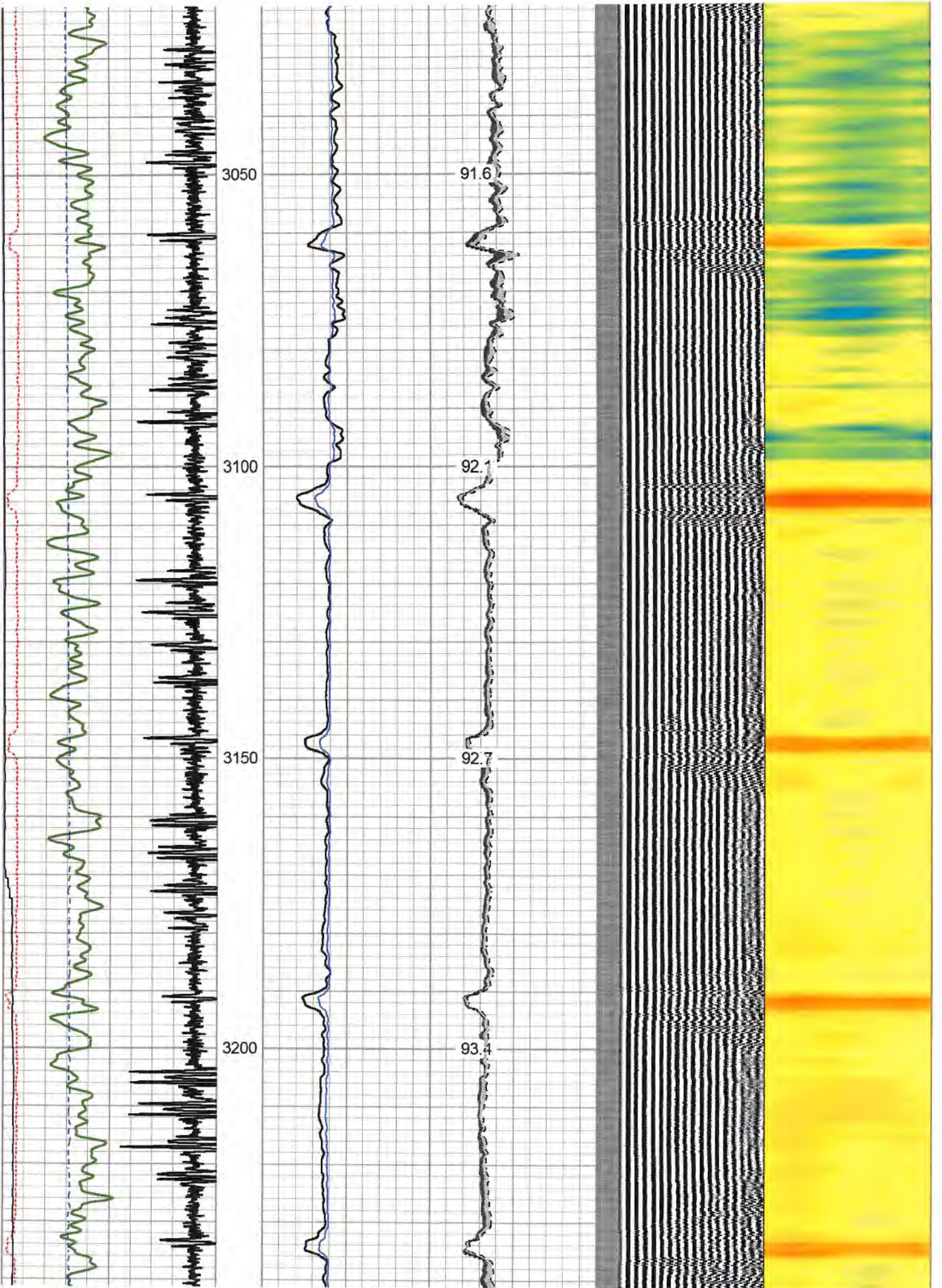




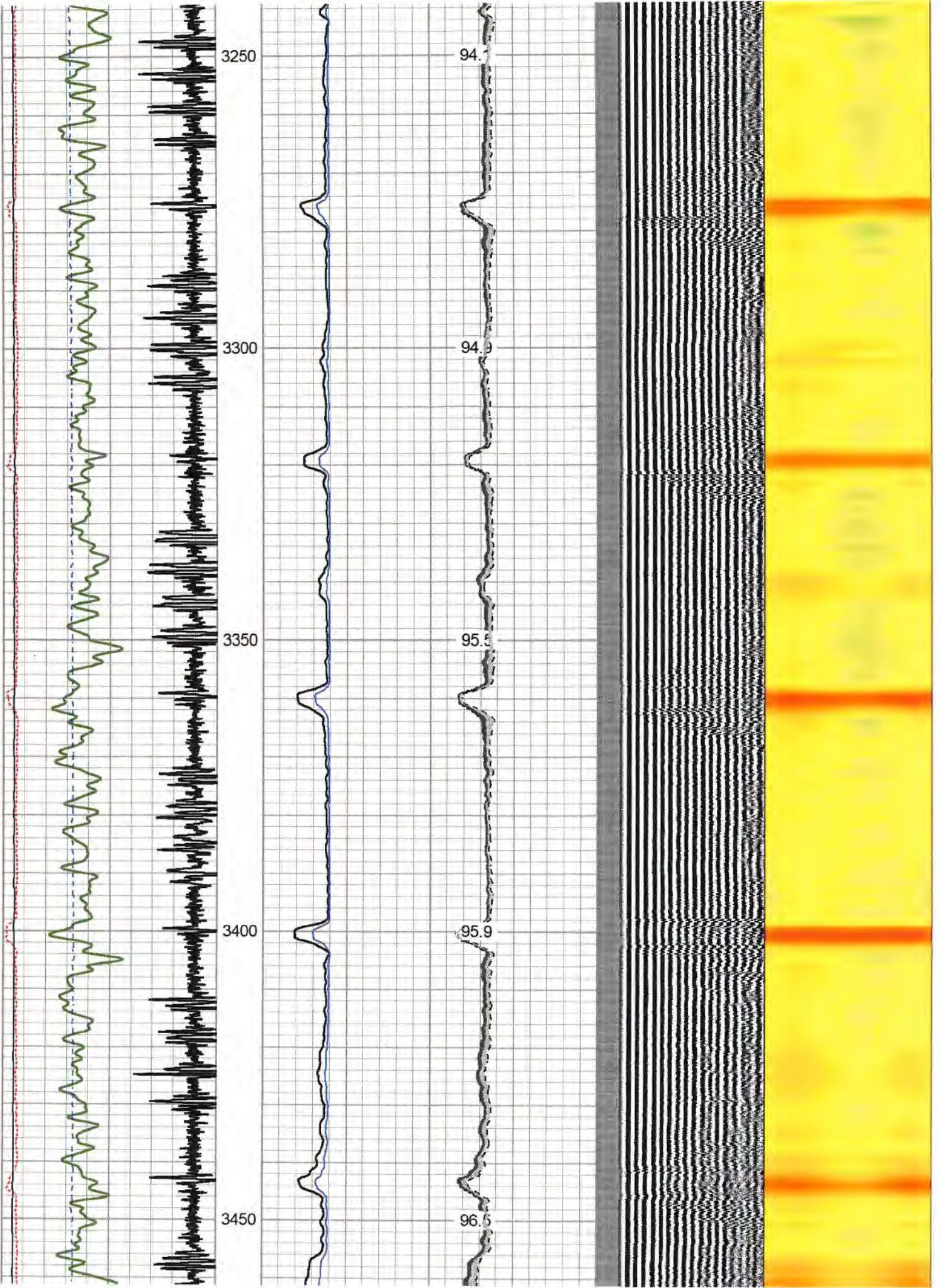


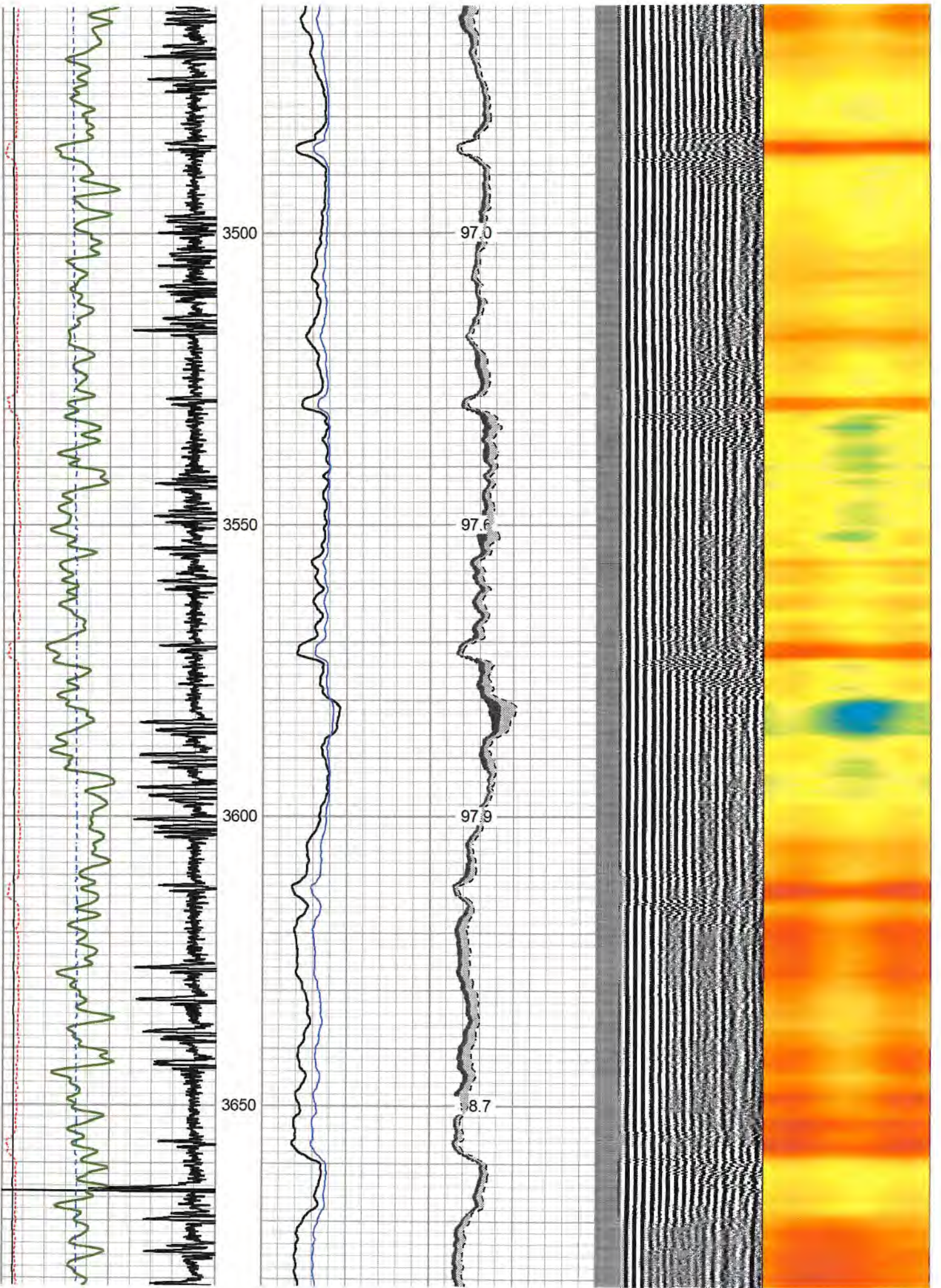


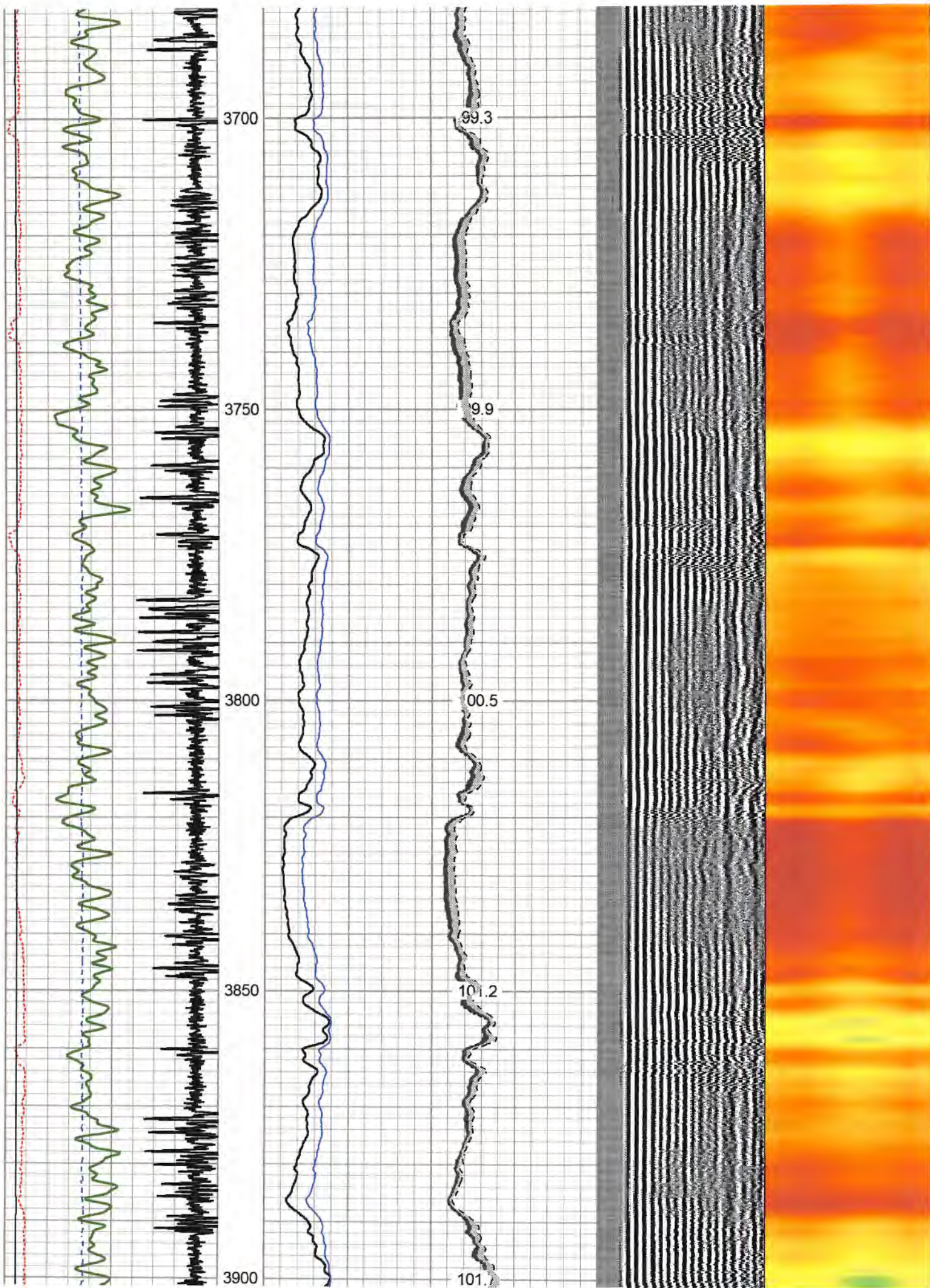


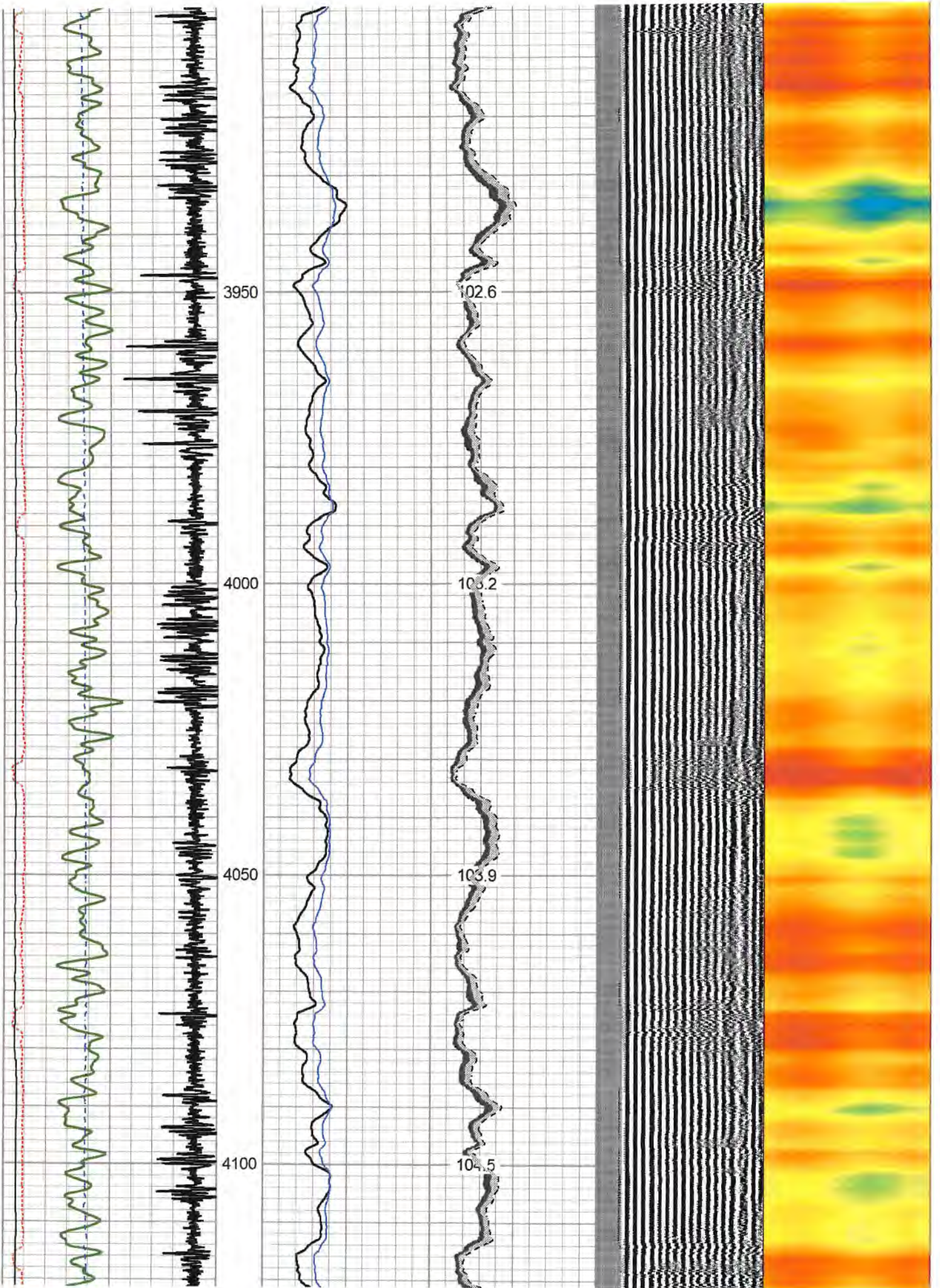


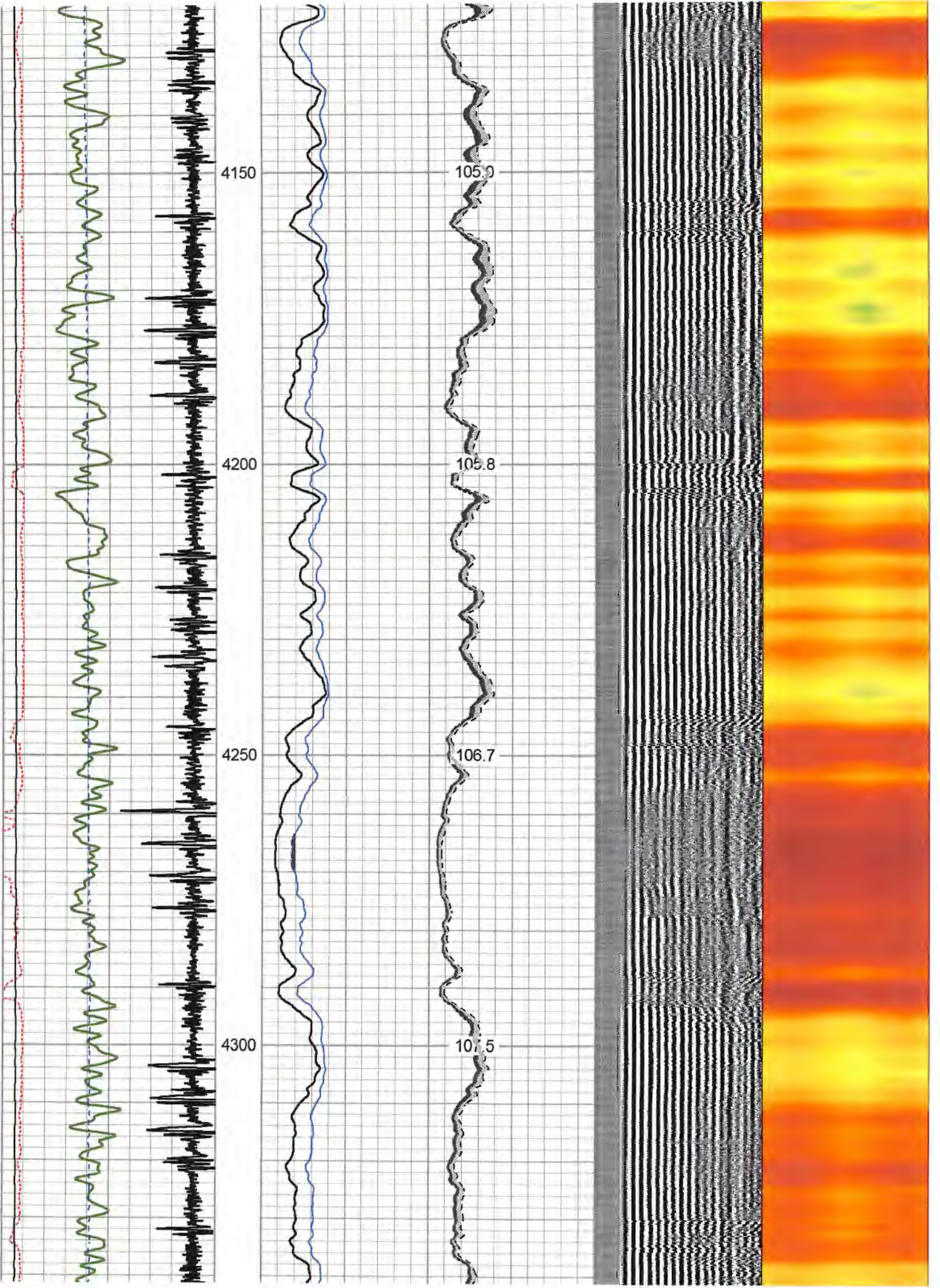


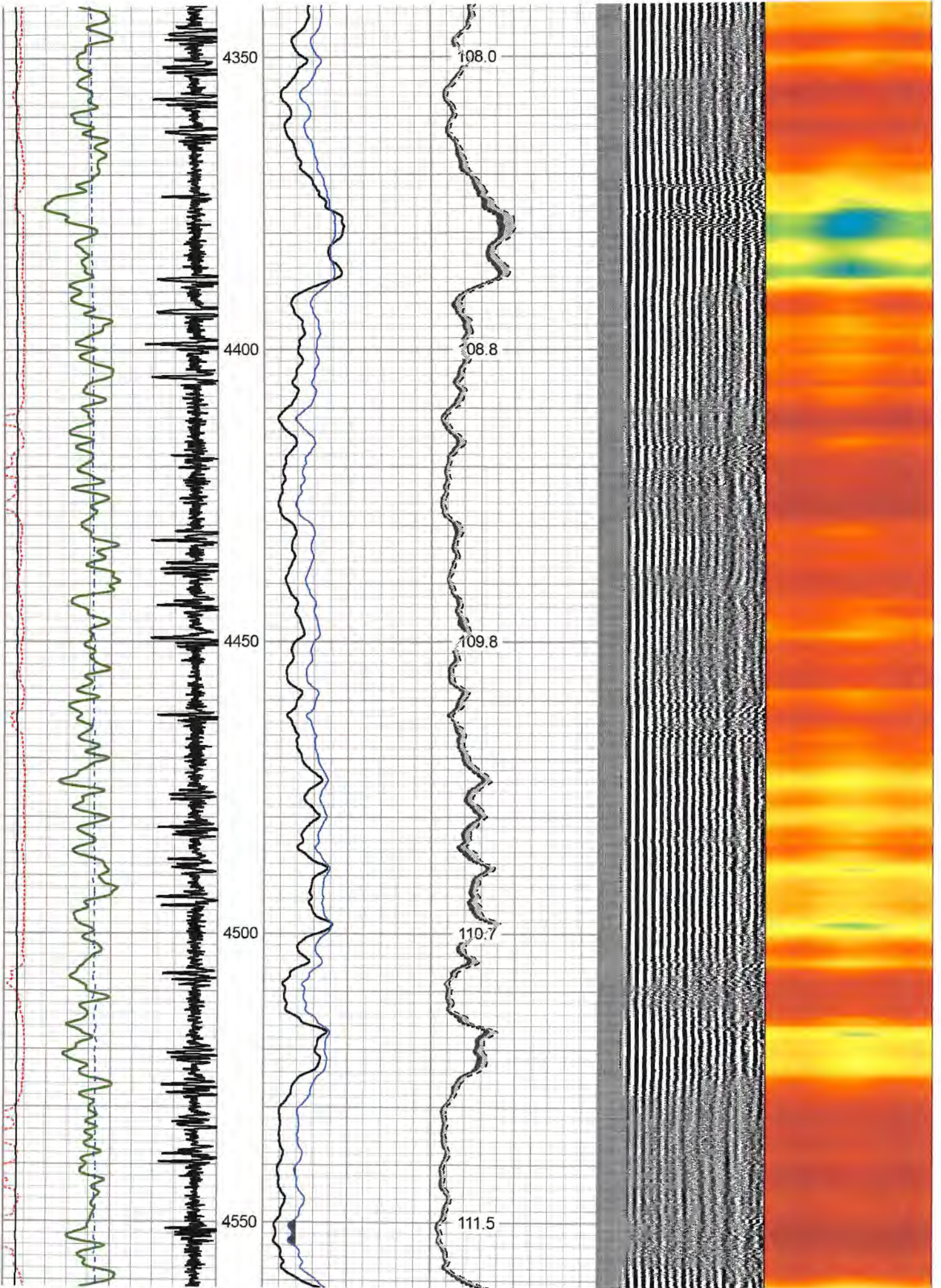


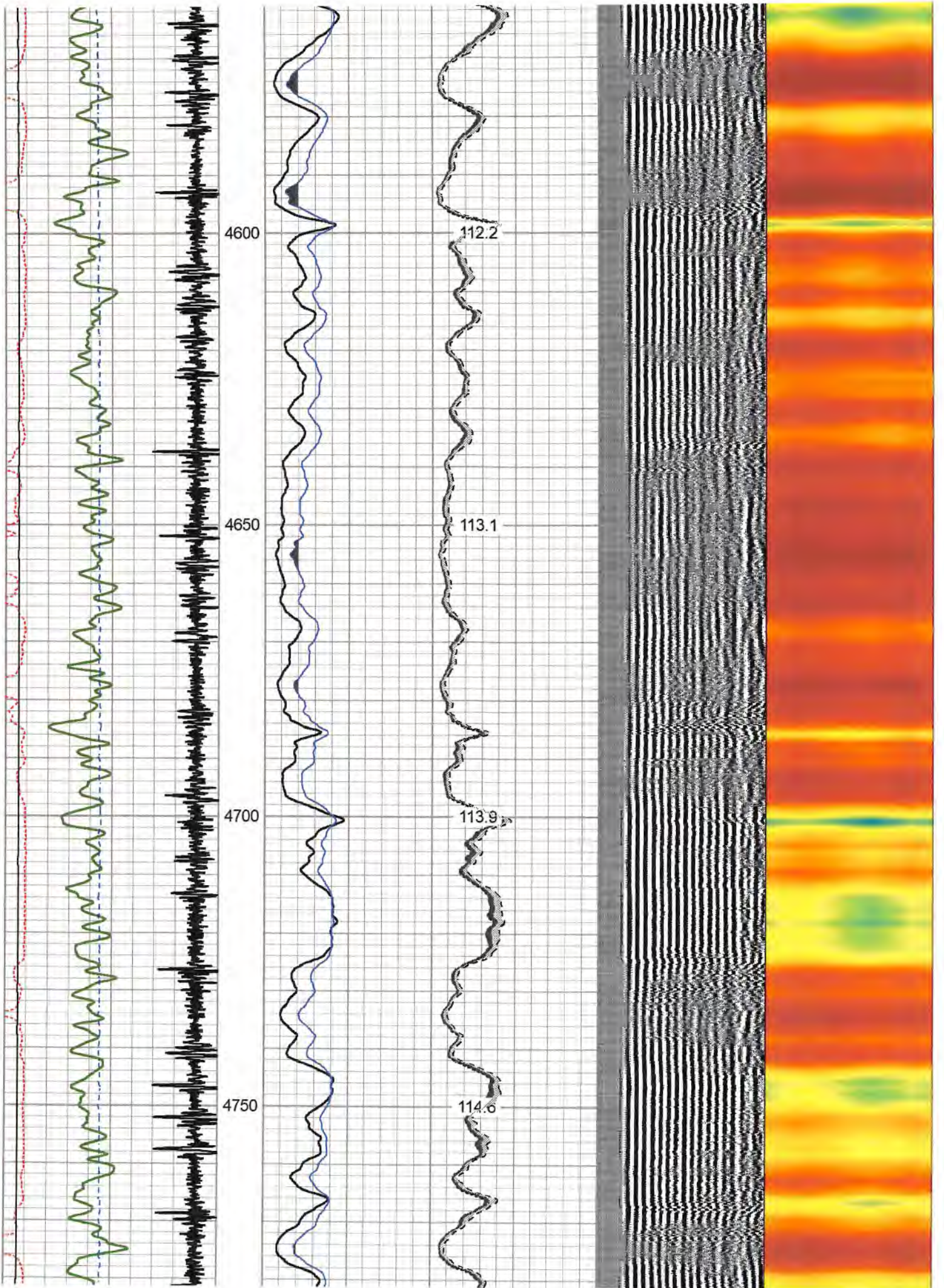


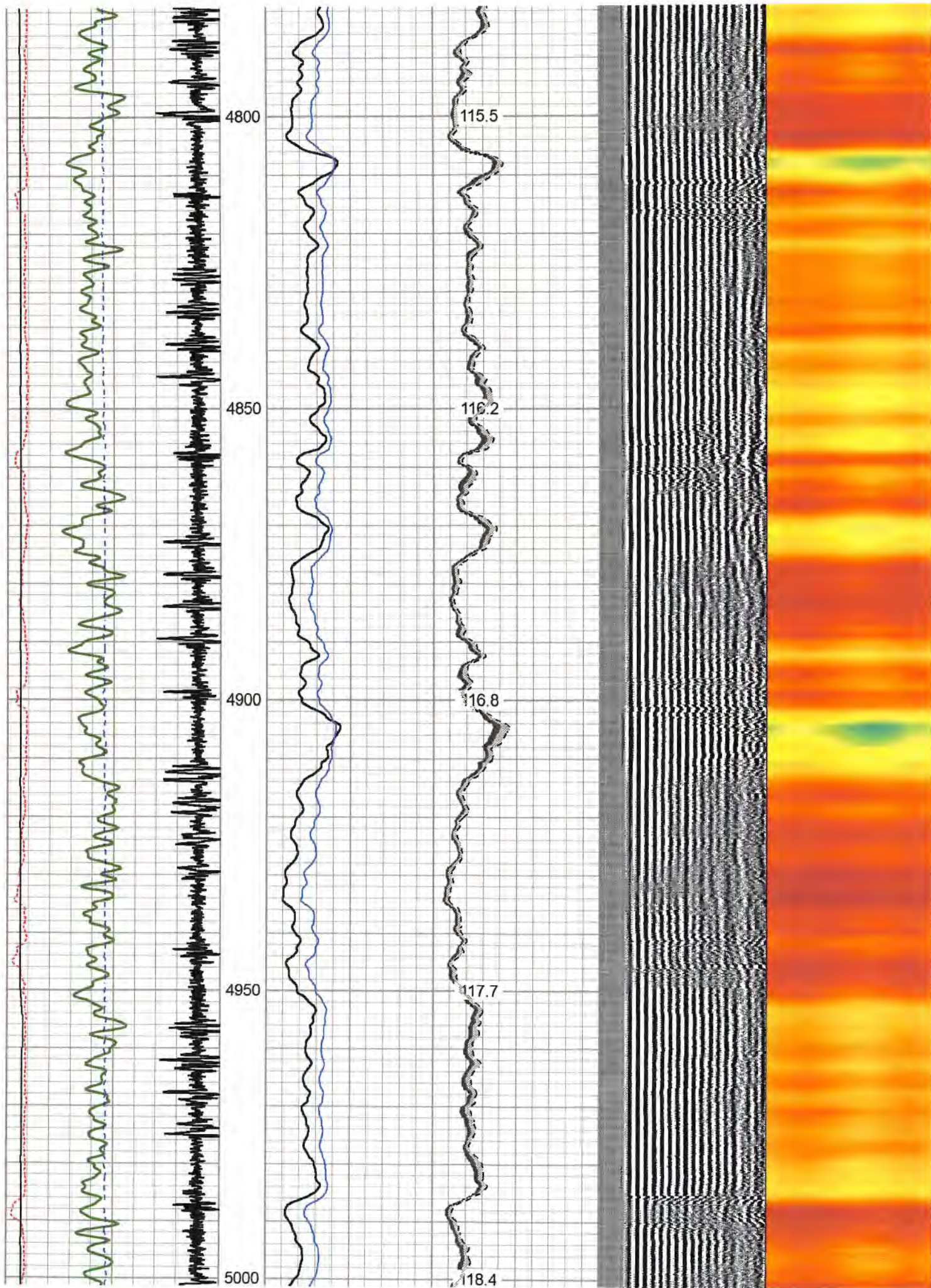




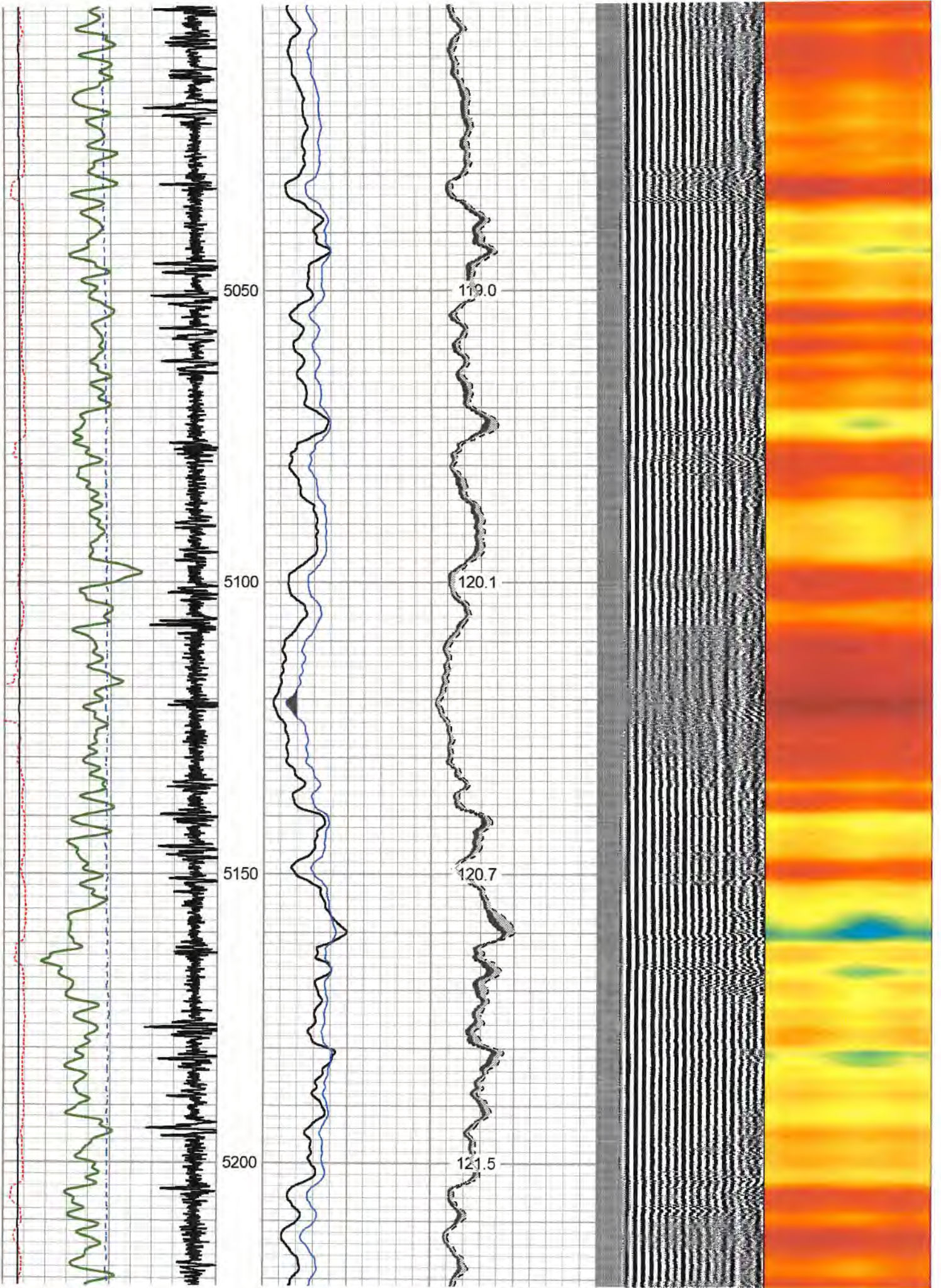


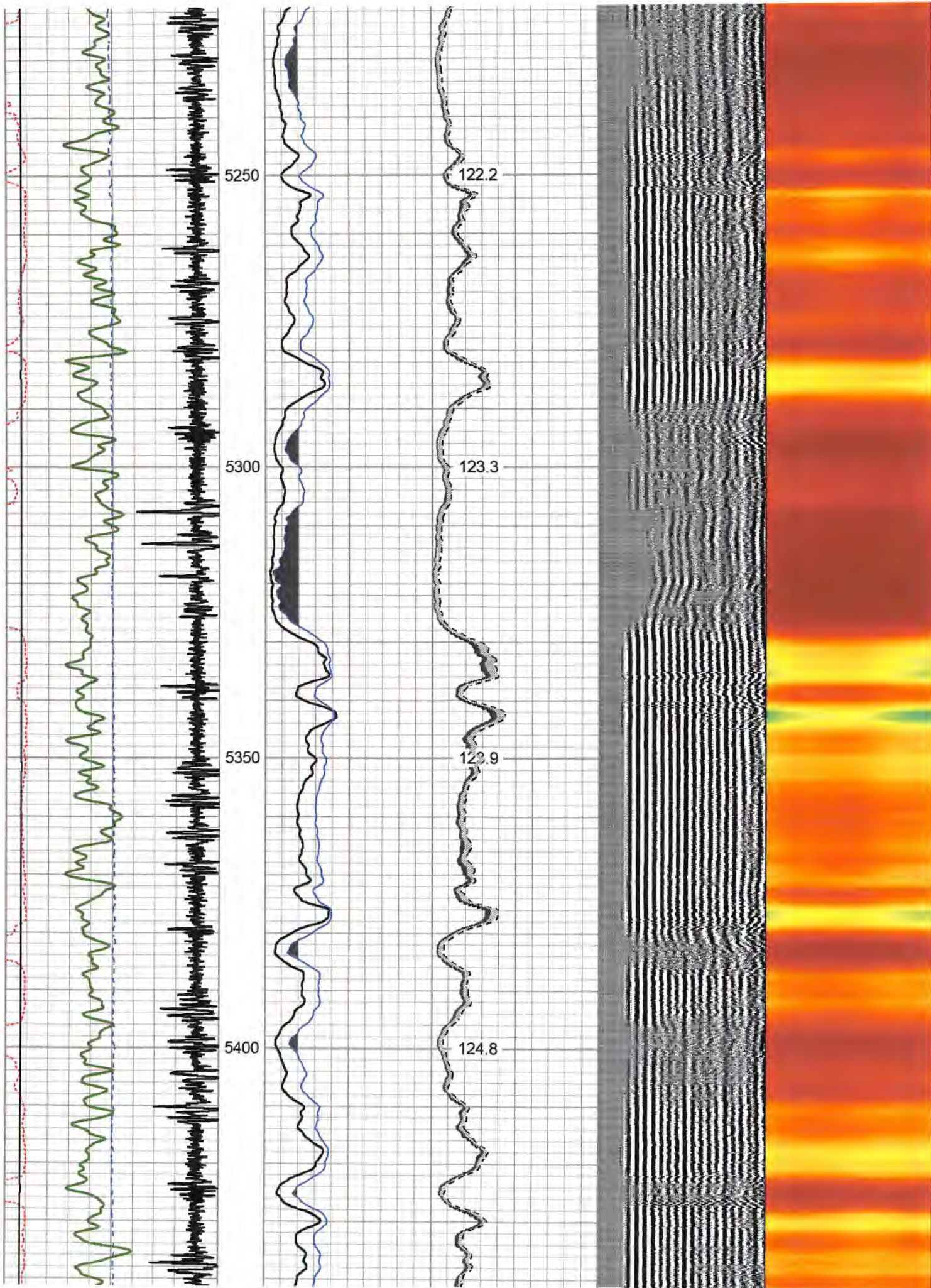


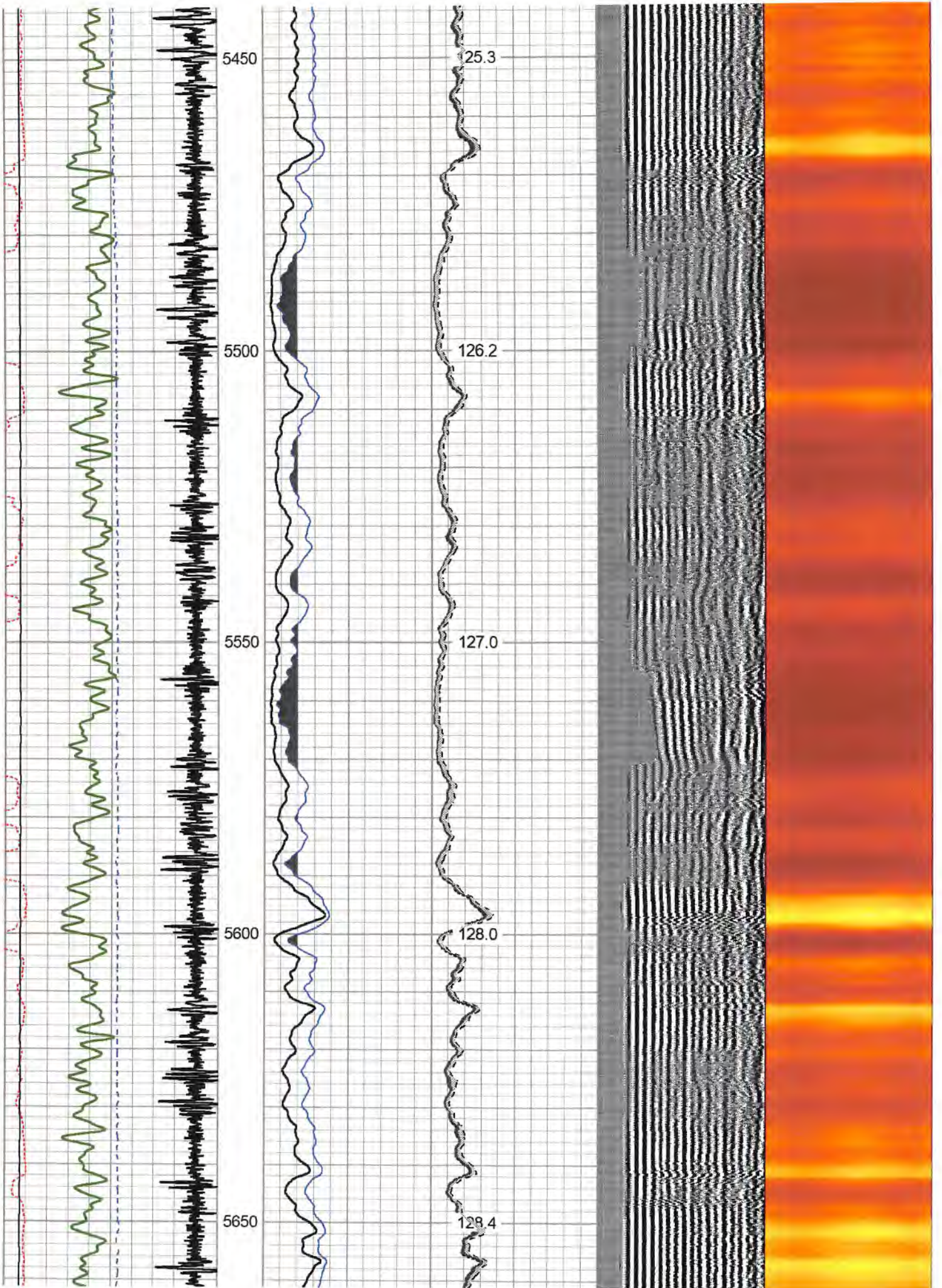


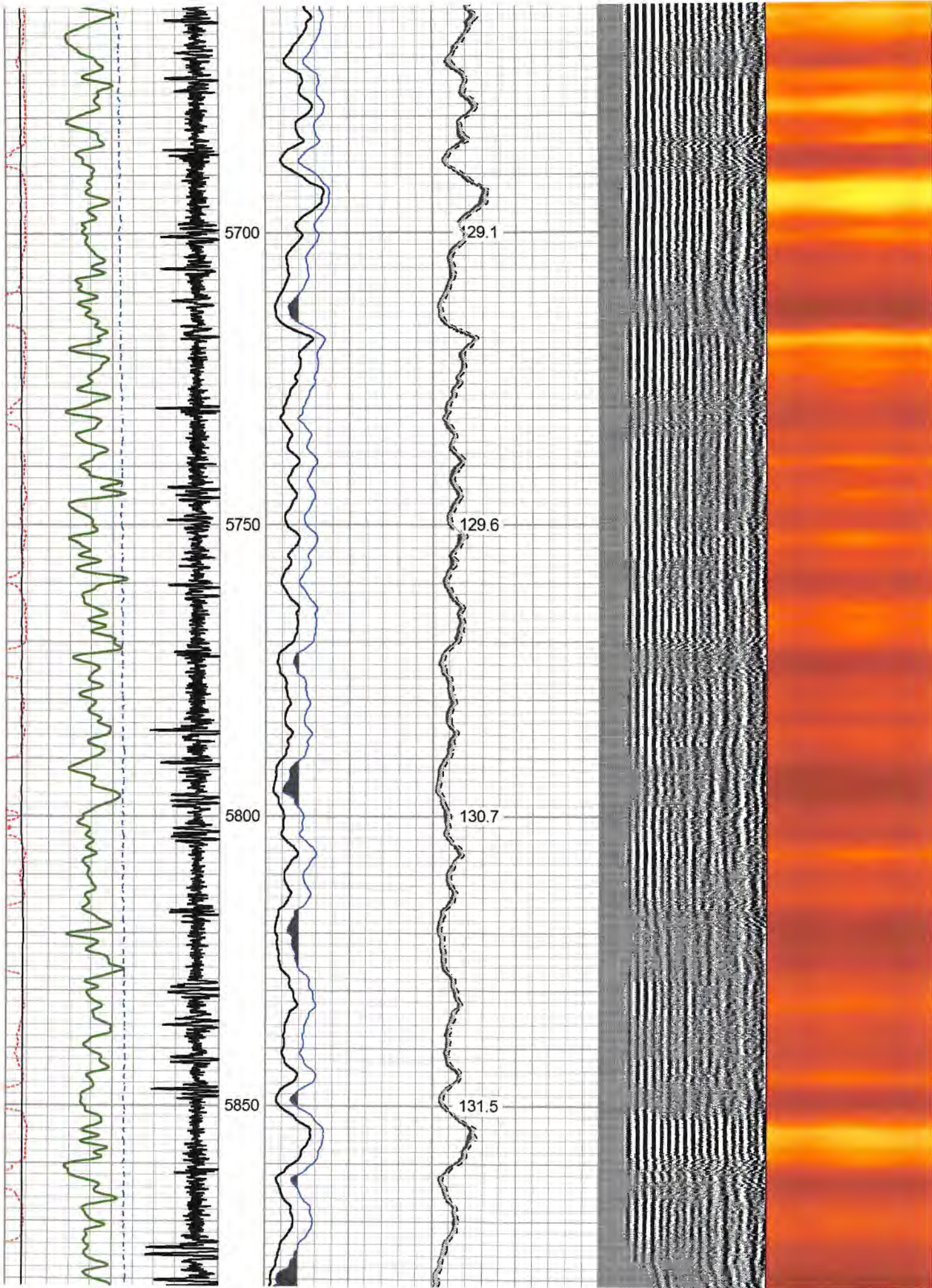


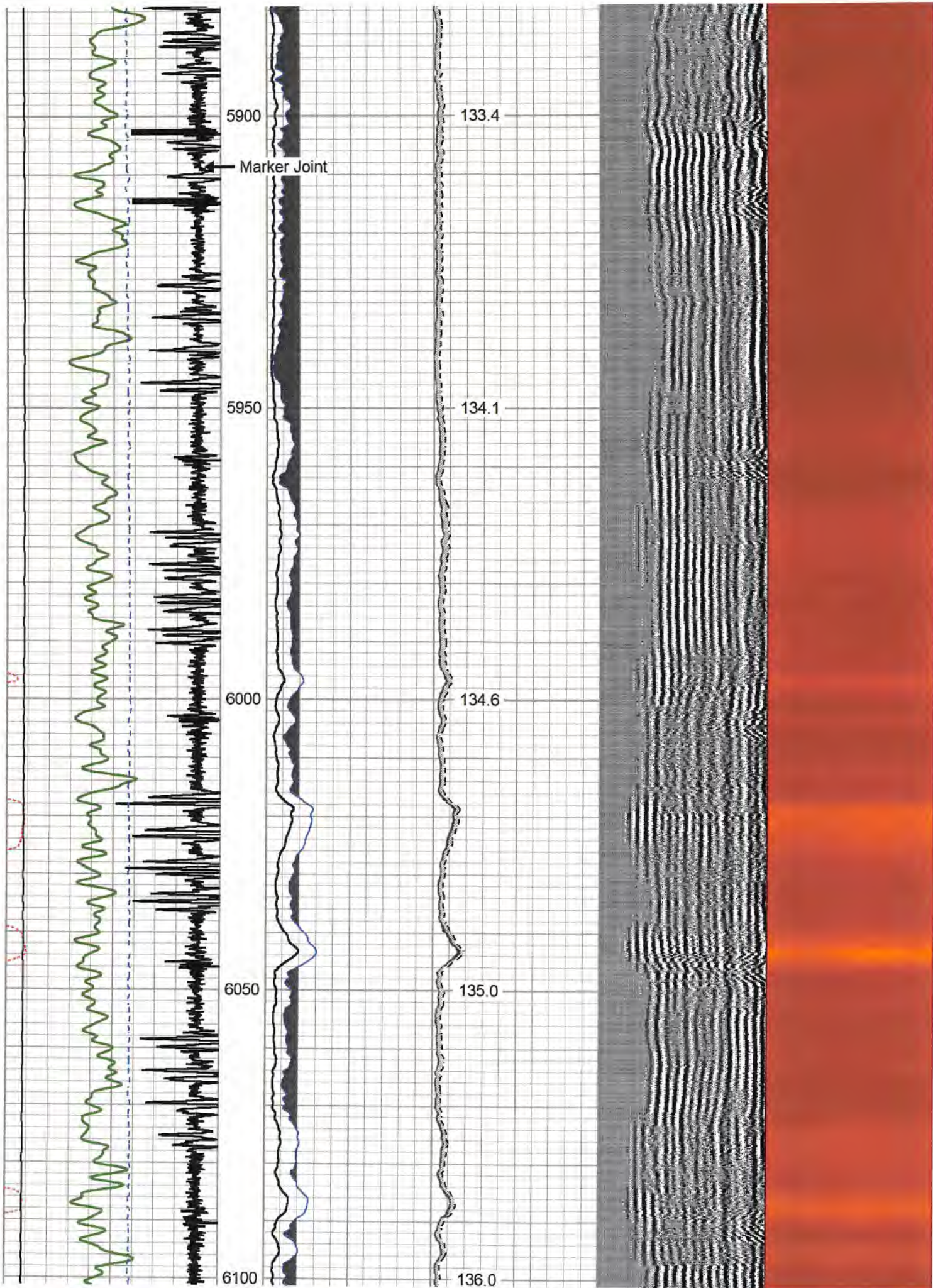




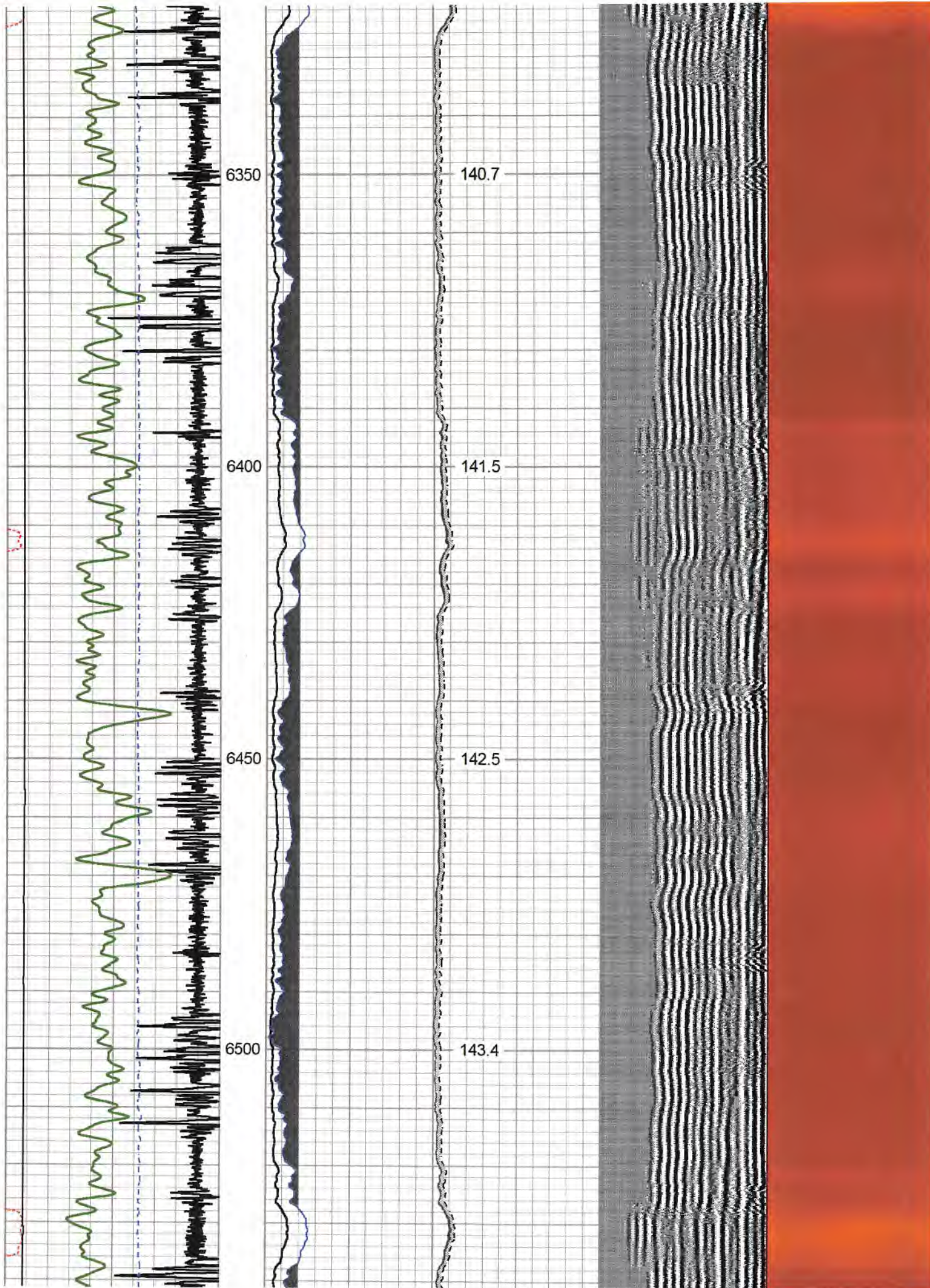


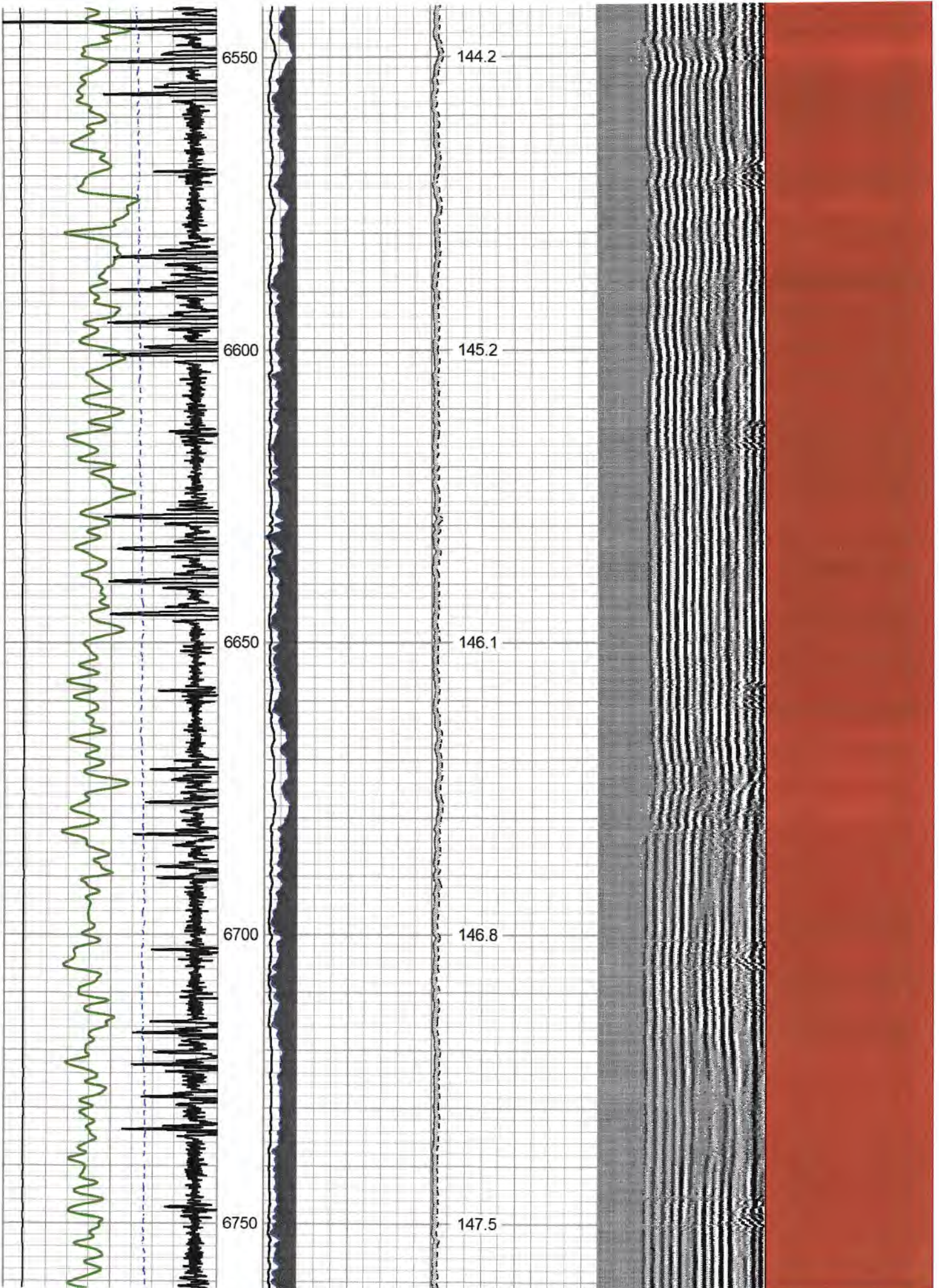




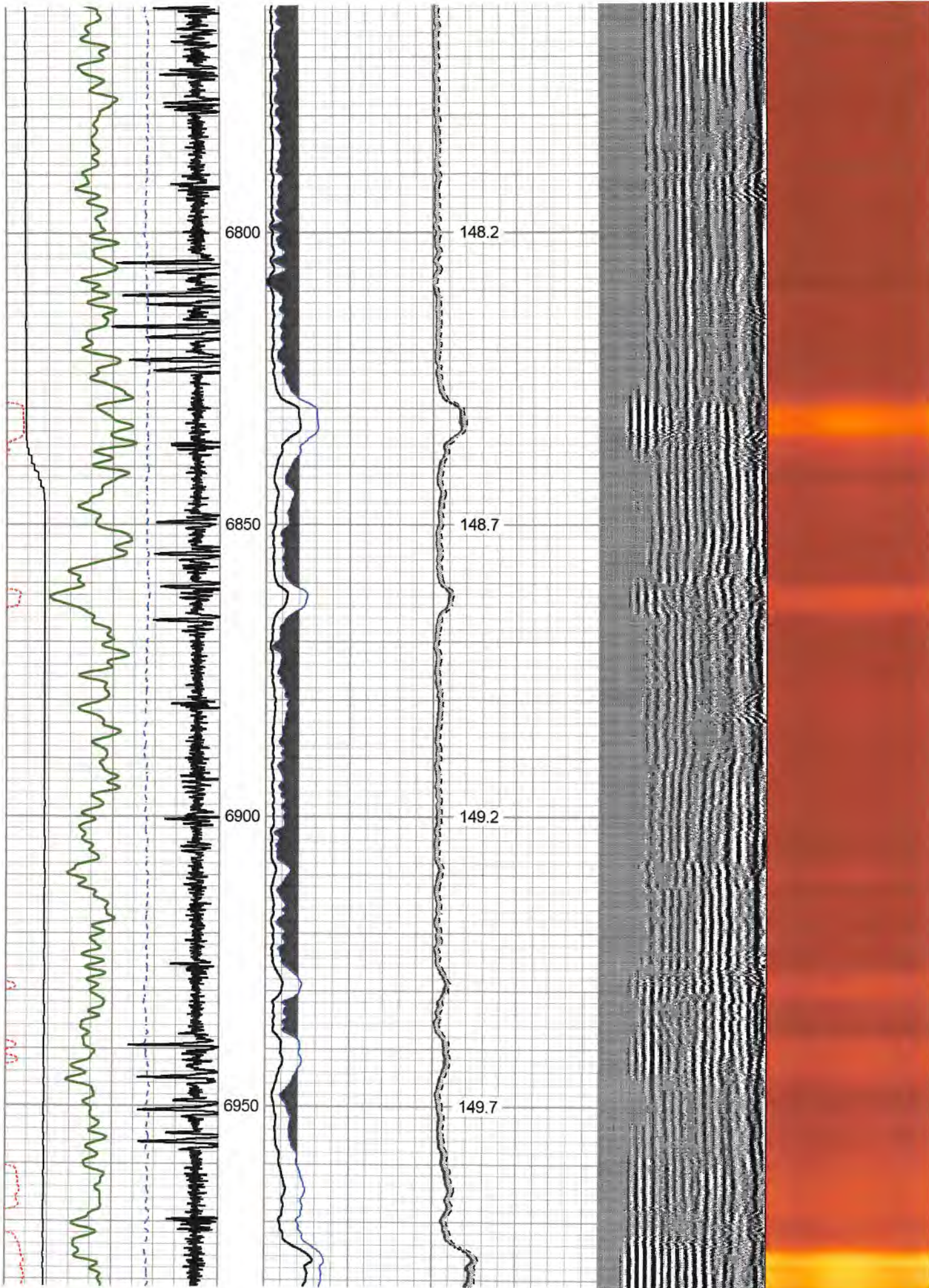


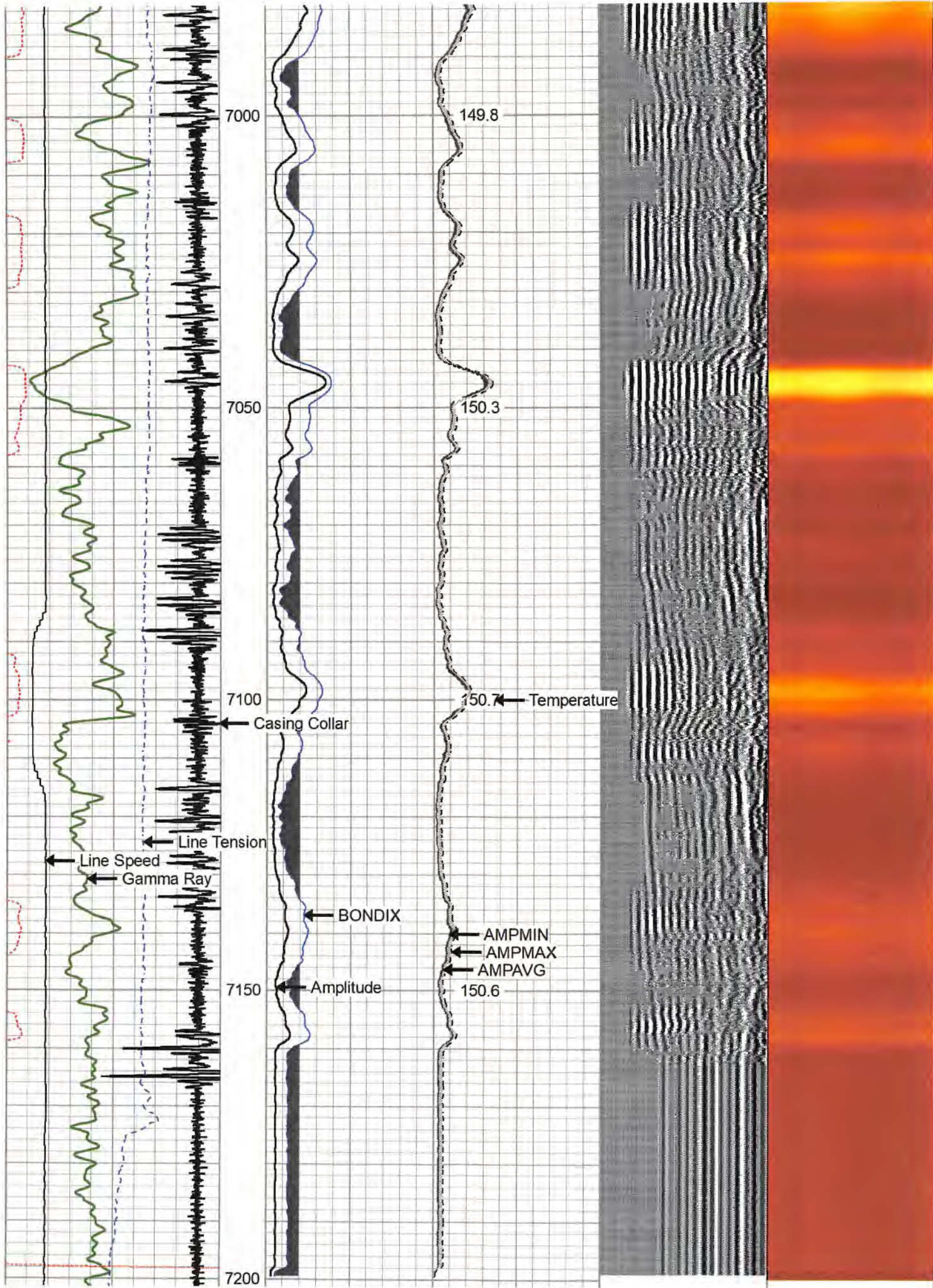












270	Travel Time (usec)	160
9	Casing Collar	-1
0	Gamma Ray (GAPI)	150
Line Speed		
-100	(ft/min)	100
0	Line Tension (lb)	2000

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

Variable Density	1	Cement Map	8
200 (usec)	1200		



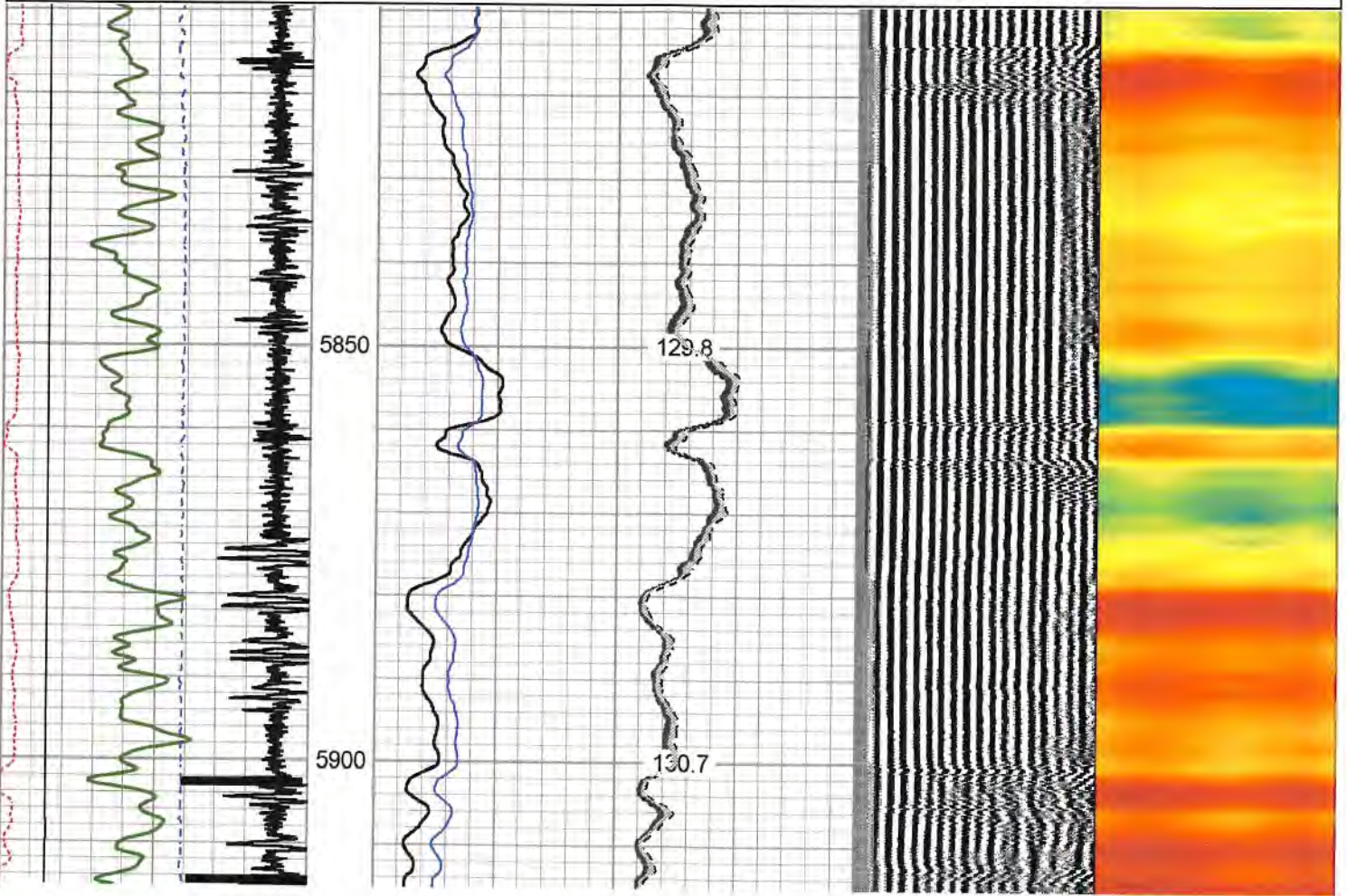
# Repeat Pass 1,500 PSI

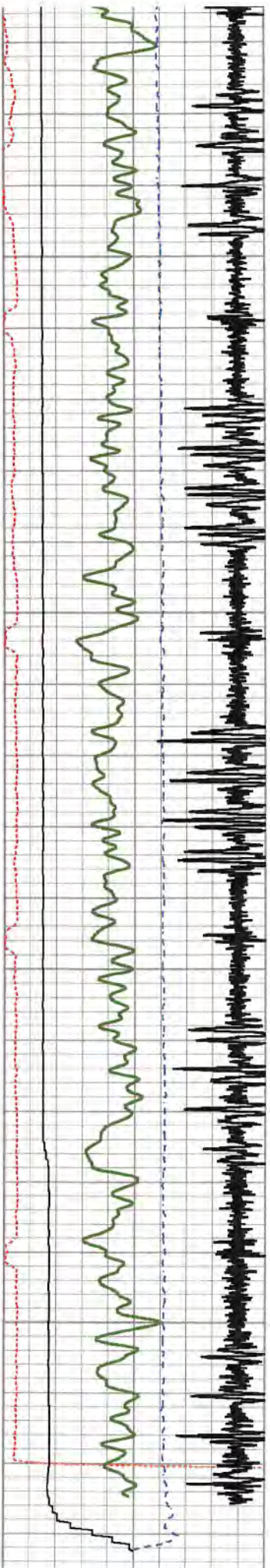
Database File antero\_specter\_2h\_rcbl\_08\_jan\_2021.db  
 Dataset Pathname rabbit\_ears/Lemon1H/run1/pass2  
 Presentation Format rcbl-bond index for antero 1020  
 Dataset Creation Fri Jan 08 15:54:05 2021  
 Charted by Depth in Feet scaled 1:240

265	Travel Time (usec)	165
9	Casing Collar	-1
0	Gamma Ray (GAPI)	150
Line Speed		
-100	(ft/min)	100
0	Line Tension (lb)	2000

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

Variable Density	1	Cement Map	8
300 (usec)	1200		



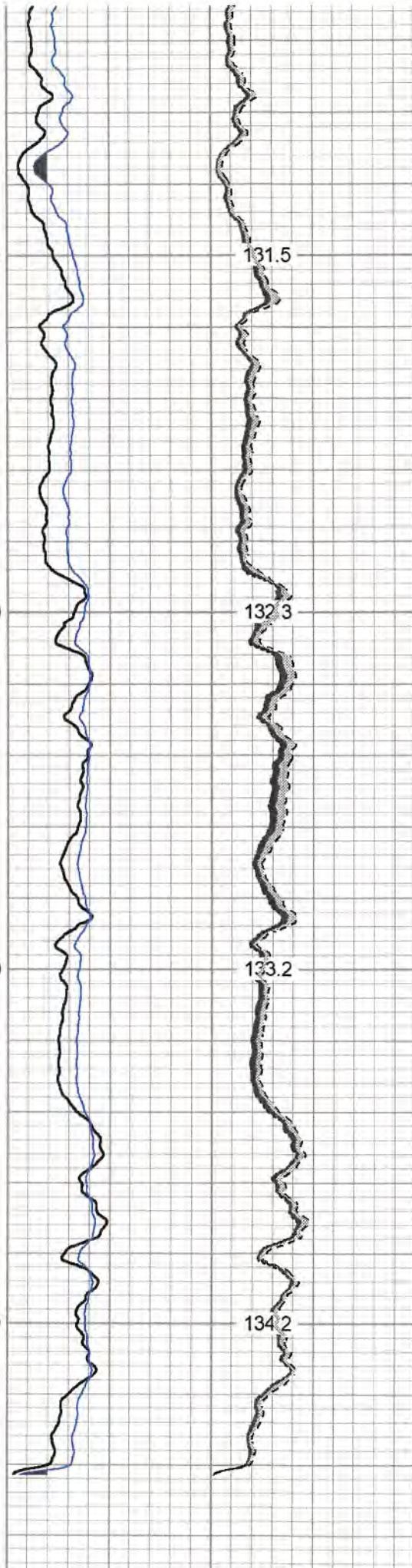


5950

6000

6050

6100

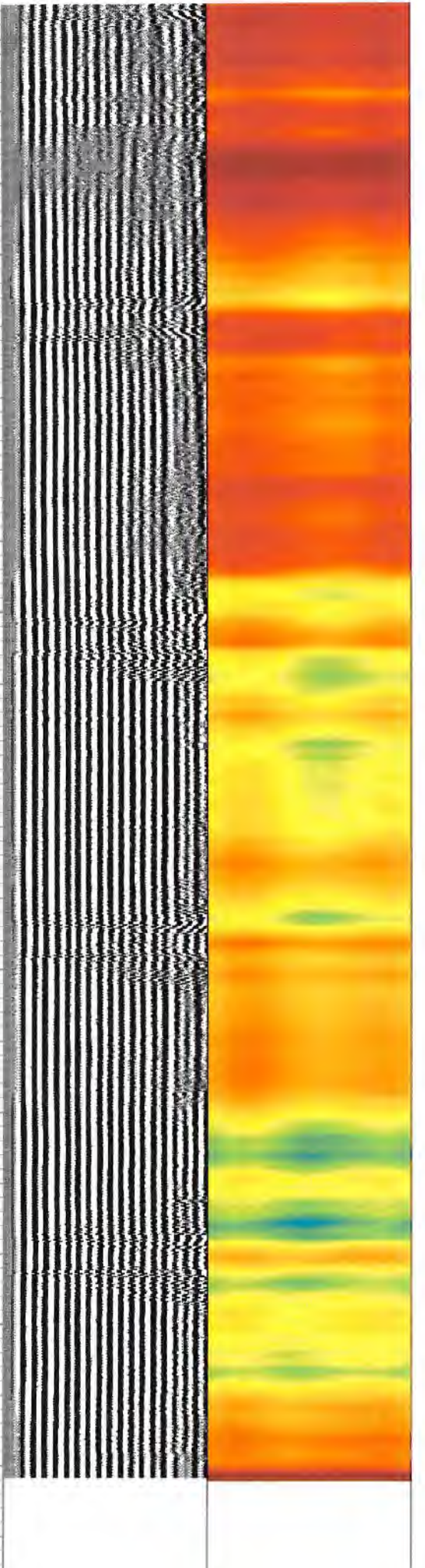



131.5

132.3

133.2

134.2



265	Travel Time (usec)	165	6150	0	Amplitude (mV)	100	0	AMPMIN	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1		1	BONDIX	0	0	AMPMAX	150	(usec)	1200		
0	Gamma Ray (GAPI)	150					0	AMPAVG	150				
	Line Speed							TEMP					
-100	(ft/min)	100						(degF)					
0	Line Tension (lb)	2000											

**Log Variables** DatabaseC:\ProgramData\Warrior\Data\antero\_specter\_2h\_rcbl\_08\_jan\_2021.db  
Dataset rabbit\_ears/Lemon1H/run1/pass4.1/\_vars\_

**Top - Bottom**

BHTEMP_Src	BOREID	BOTTEMP	CASEOD	CASETHCK	CASEWGHT	MAXAMPL	MINAMPL
TEMP	in	degF	in	in	lb/ft	mV	mV
	7.875	150	5.5	0.361	20	71.9	2.2
MINATTN	PERFS	PPT	SRFTEMP	TDEPTH			
db/ft		usec	degF	ft			
10.8	No	261	36	7170			

**Variable Description**

BHTEMP_Src : BHTEMP Input Source Selector	MINAMPL : Minimum Amplitude
BOREID : Borehole I.D.	MINATTN : Minimum Attenuation
BOTTEMP : Bottom Hole Temperature	PERFS : Perforation Flag
CASEOD : Casing O.D.	PPT : Predicted Pipe Time
CASETHCK : Casing Thickness	SRFTEMP : Surface Temperature
CASEWGHT : Casing Weight	TDEPTH : Total Depth
MAXAMPL : Maximum Amplitude	

**Calibration Report**

Database File antero\_specter\_2h\_rcbl\_08\_jan\_2021.db  
Dataset Pathname rabbit\_ears/Lemon1H/run1/pass4  
Dataset Creation Fri Jan 08 16:05:20 2021

**Gamma Ray Calibration Report**

Serial Number:	FW1211-86
Tool Model:	Probe
Performed:	Mon Nov 30 11:58:15 2020
Calibrator Value:	1.0 GAPI
Background Reading:	0.0 cps
Calibrator Reading:	1.0 cps
Sensitivity:	0.5000 GAPI/cps

**Segmented Cement Bond Log Calibration Report**

Serial Number:	FW1312-32
Tool Model:	Probe275T
Calibration Casing Diameter:	5.500 in
Calibration Depth:	115.425 ft

Master Calibration, performed Fri Jan 08 10:39:23 2021:


	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.015	0.996	2.200	71.921	68.939	3.242
CAL	0.081	0.845				
5'	-0.015	0.891	2.200	71.921	76.918	3.359
SUM						
S1	-0.015	1.036	0.000	100.000	95.160	1.415
S2	-0.014	1.056	0.000	100.000	93.488	1.266
S3	-0.011	1.052	0.000	100.000	94.048	1.050
S4	-0.012	1.015	0.000	100.000	97.390	1.164
S5	-0.013	0.991	0.000	100.000	99.647	1.249
S6	-0.013	0.962	0.000	100.000	102.594	1.297
S7	-0.015	0.941	0.000	100.000	104.564	1.570
S8	-0.013	0.971	0.000	100.000	101.663	1.335

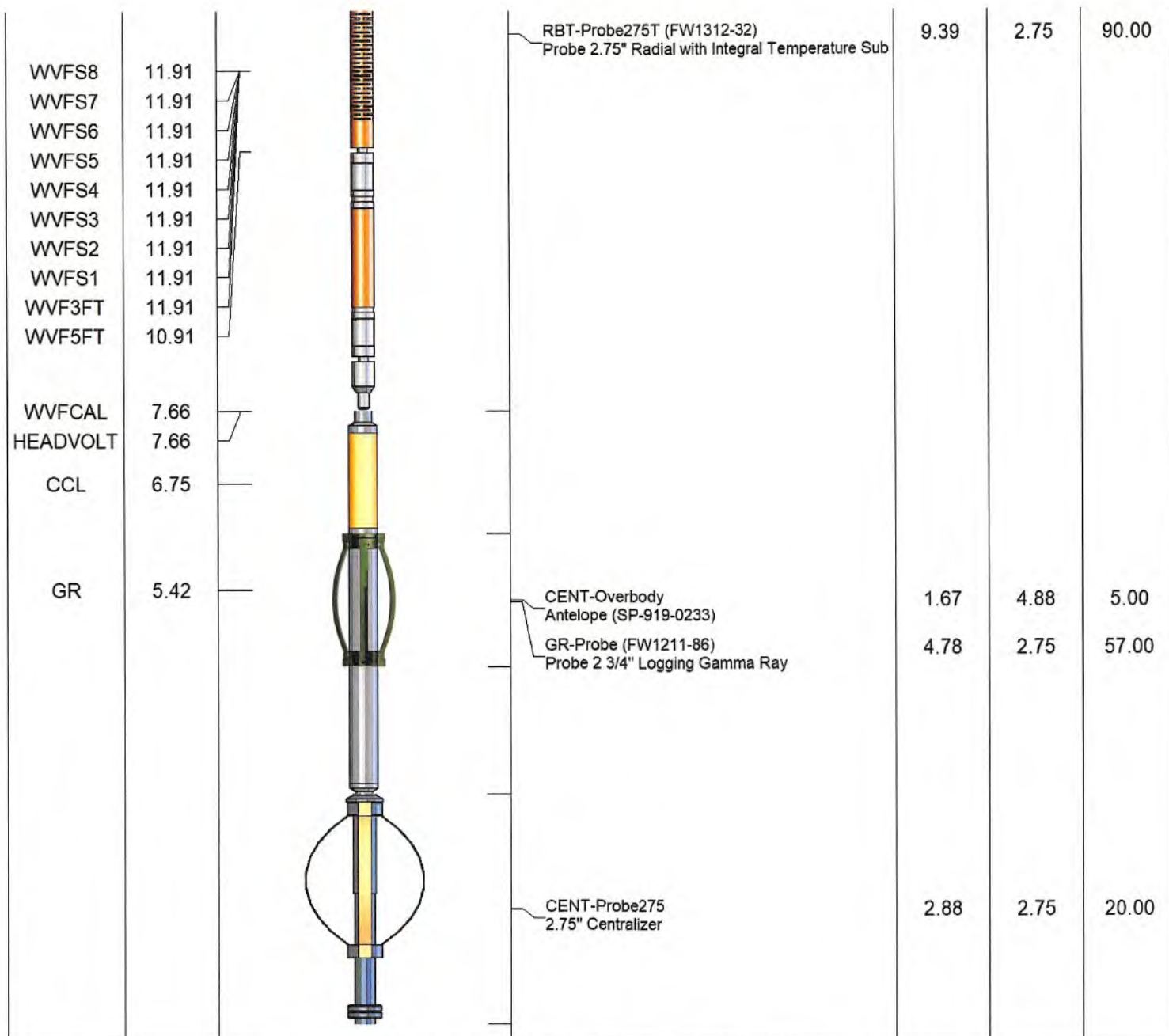
Internal Reference Calibration, performed Thu Sep 27 16:01:58 2018:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.081	0.845	1.000	0.000

Air Zero Calibration, performed Fri Jan 08 09:44:33 2021:

	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)
HeadVolt	16.99		CHD-Titan Titan 1 7/16" GO Cablehead	1.00	1.44	5.00
Temp	14.14		CENT-Overbody Antelope (SP-919-0233)	1.67	4.88	5.00



Dataset: antero\_specter\_2h\_rcbl\_08\_jan\_2021.db: rabbit\_ears/Lemon1H/run1/pass4  
 Total length: 18.05 ft  
 Total weight: 182.00 lb  
 O.D.: 4.88 in

	Company	ANTERO	
	Well	Margery Specter 2H	
	Field	RABBIT EARS	
	County	TYLER	
	State	WEST VIRGINIA	Country