



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

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

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Well ASPEN 2H
Field WEST UNION
County DODDRIDGE State WV

Location: 39.256436, -80.791916 (ENTERANCE)
API #: 47-017-06927

Permanent Datum GROUND LEVEL Elevation 25.5"
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

SEC TWP RGE
Elevation
K.B. 1155.5
D.F. 1145.5
G.L. 1121

Date	NOVEMBER 14, 2022						
Run Number	ONE						
Depth Driller	16,008'						
Depth Logger	7,638'						
Bottom Logged Interval	7,626'						
Top Log Interval	SURFACE						
Open Hole Size	NA						
Type Fluid	FRESH WATER						
Density / Viscosity	8.6 LB/GAL						
Max. Recorded Temp.	144.4						
Estimated Cement Top	3,164'						
Time Well Ready	UPON ARRIVAL						
Time Logger on Bottom	12:35						
Equipment Number	116						
Location	CHARLEROI, PA						
Recorded By	C. DRUMMOND						
Witnessed By	Keith Stansbury						
Borehole Record		Tubing Record					
Run Number	Bit	From	To	Size	Weight	From	To
Casing Record	Size	Mq/ft		Top	Bottom		
Conductor String	13.375"	54.5 LBS.		SURFACE	328'		
Surface String	9.625"	36 LBS.		SURFACE	2,764'		
Intermediate String	5.5	20 LBS.		SURFACE	16,008'		
Intermediate String							
Production String							

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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
DEPTH SHIFT -6
MARKER JOINT 6,400' - 6,410'
MAIN PASS LOGGED WITH 1500 PSI
REPEAT PASS LOGGED WITH 0 PSI

THANK YOU FOR USING NINE ENERGY SERVICES

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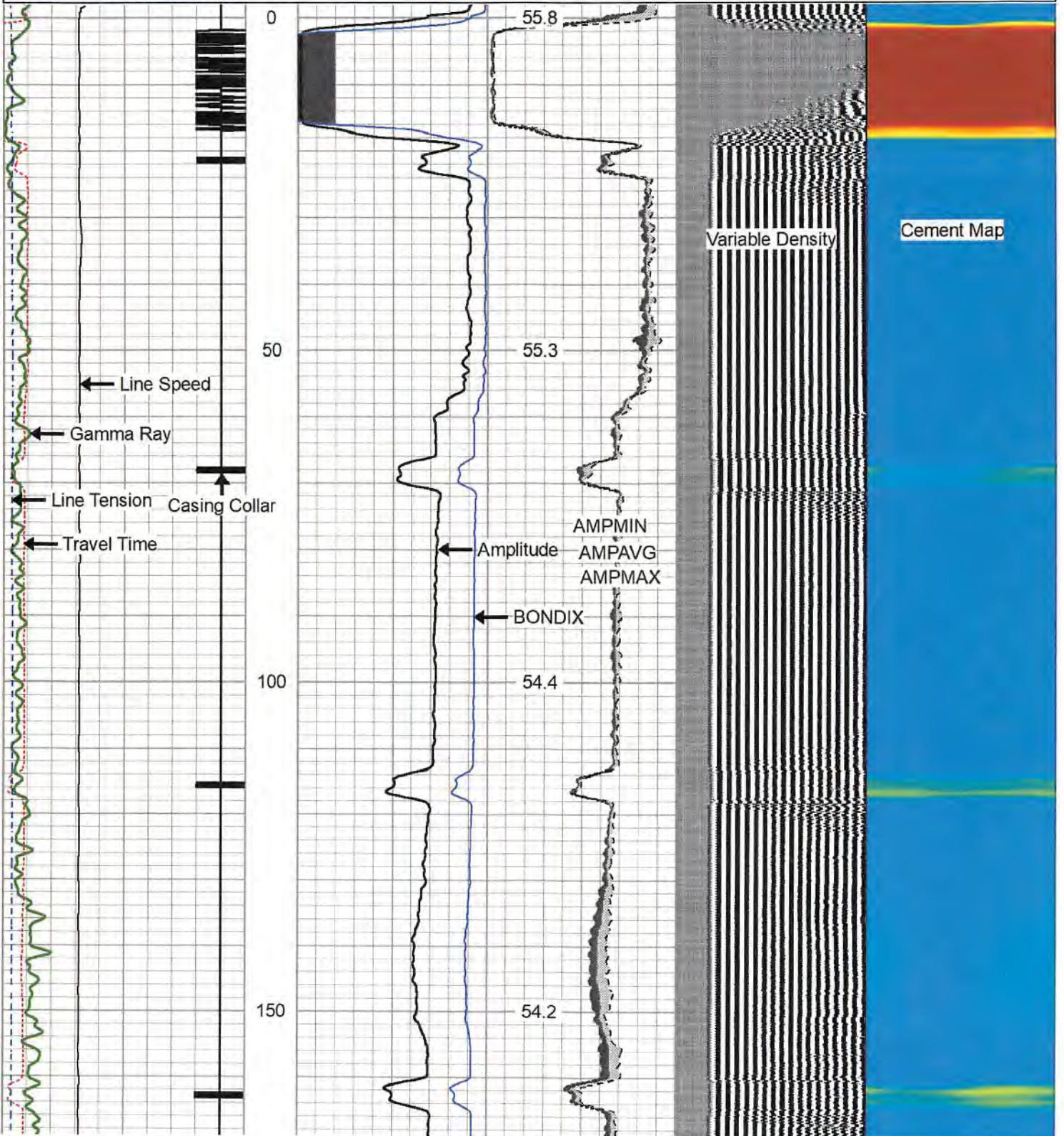
Main Pass 1500 PSI

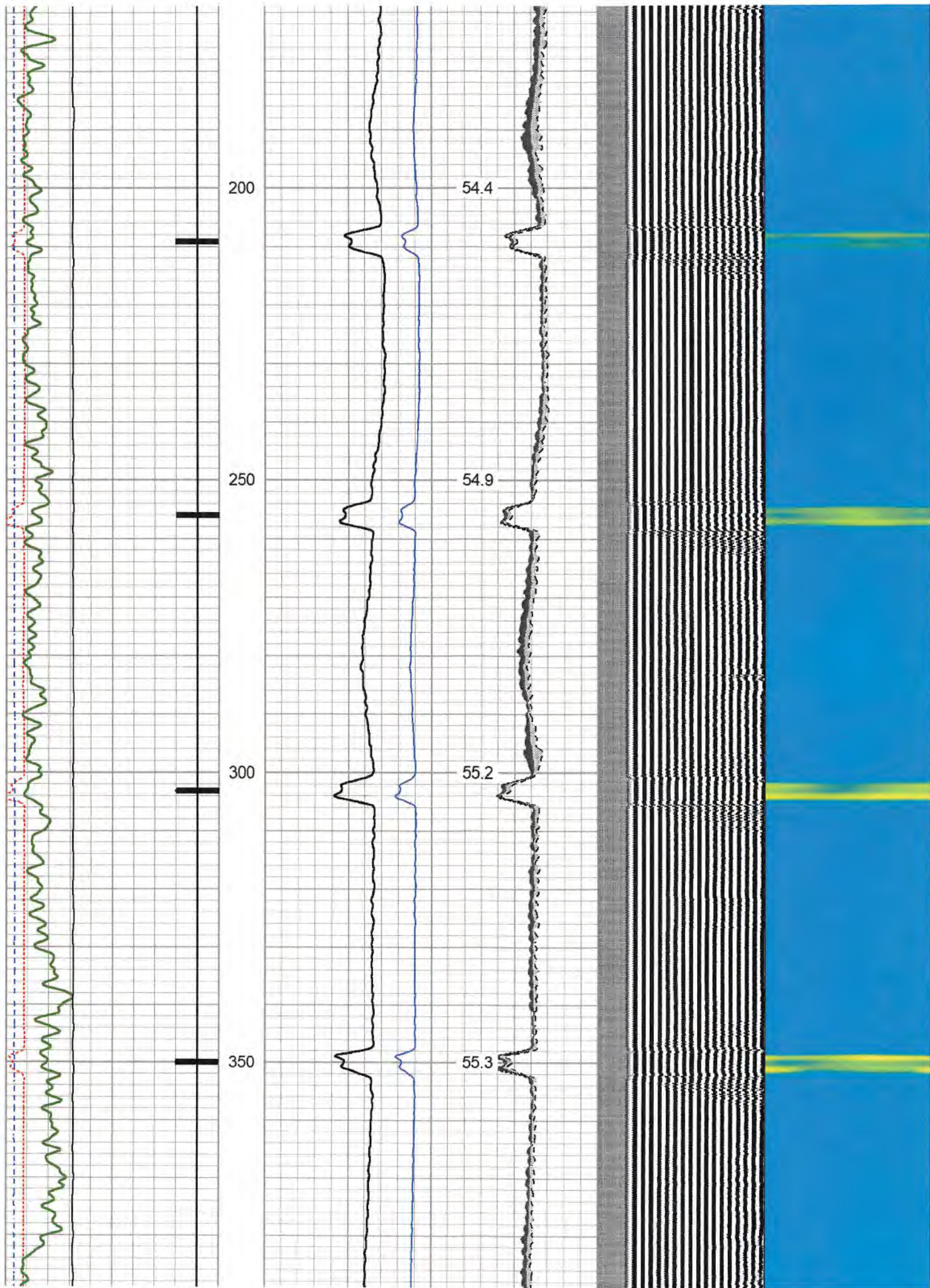
Database File antero_aspen_2h_rcbl_14_nov_2022.db
 Dataset Pathname pass5
 Presentation Format rcbl-bond index for antero 1020
 Dataset Creation Mon Nov 14 12:22:20 2022
 Charted by Depth in Feet scaled 1:240

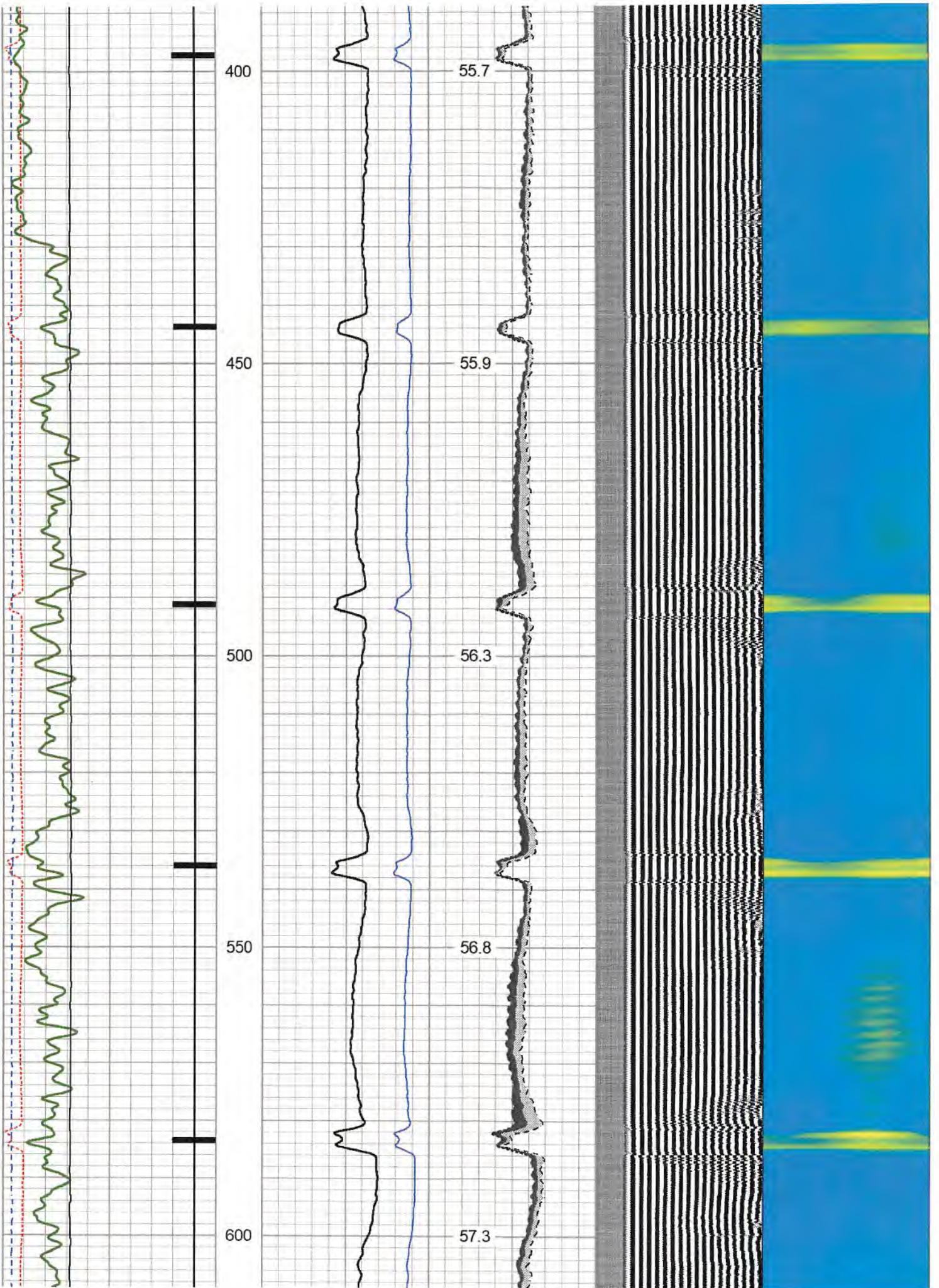
265	Travel Time (usec)	165
9	Casing Collar	-1
0	Gamma Ray (GAPI)	150
Line Speed		
-200	(ft/min)	200
0	Line Tension (lb)	5000

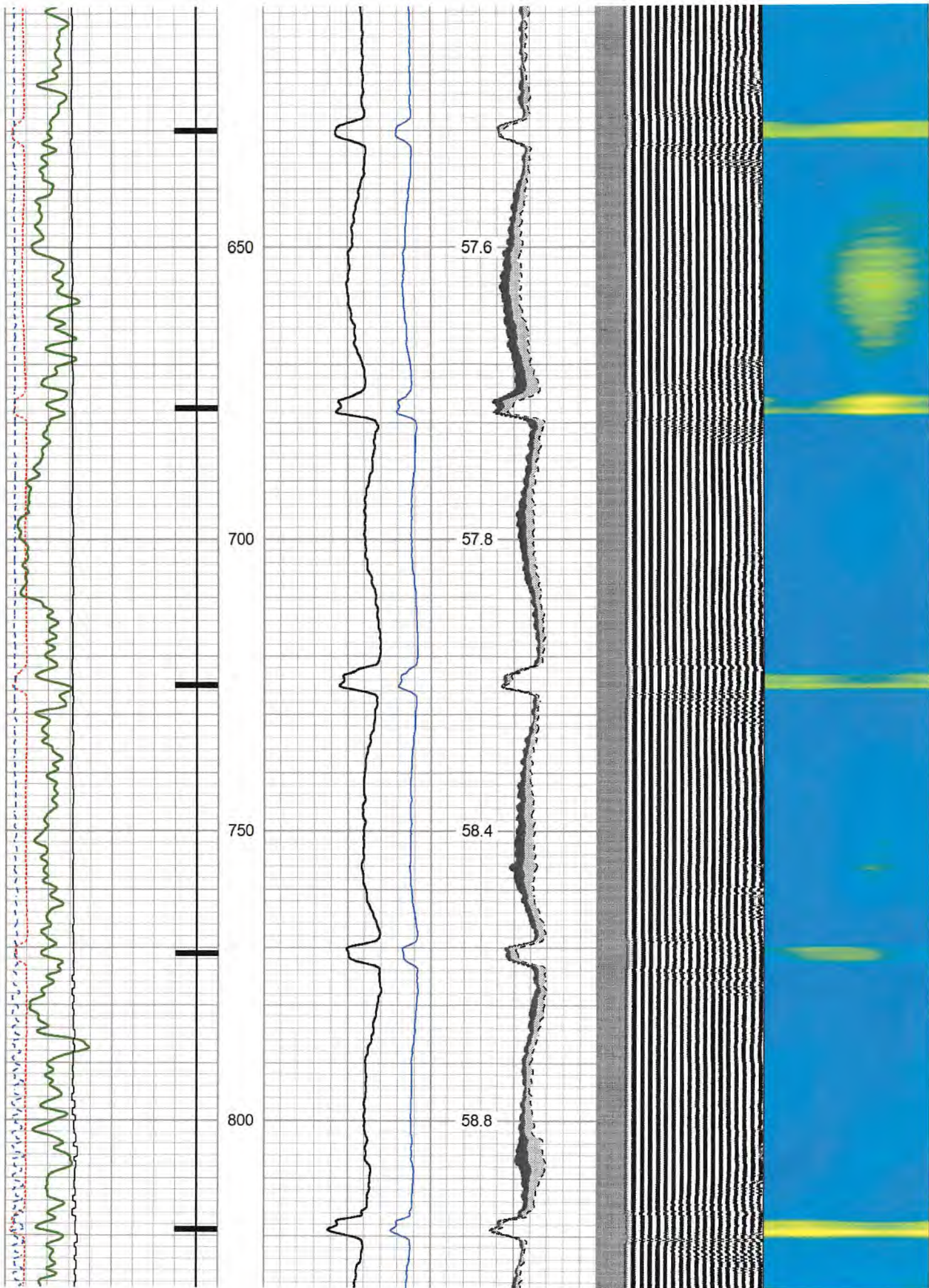
0	Amplitude (mV)	100	-5	AMPMIN	150
1	BONDIX	0	-5	AMPMAX	150
			-5	AMPAVG	150
TEMP					
(degF)					

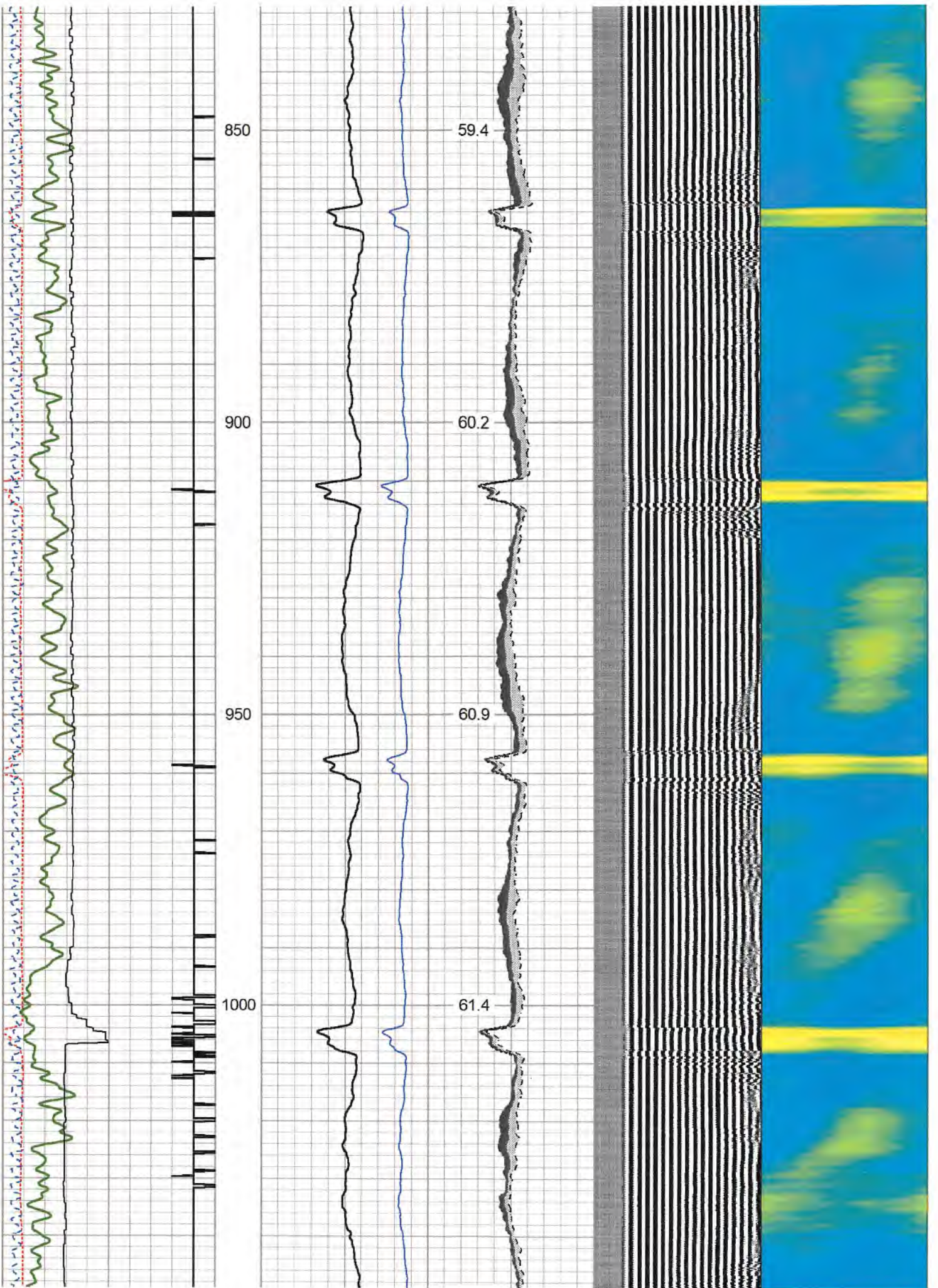
Variable Density	1	Cement Map	8
200	(usec)	1200	

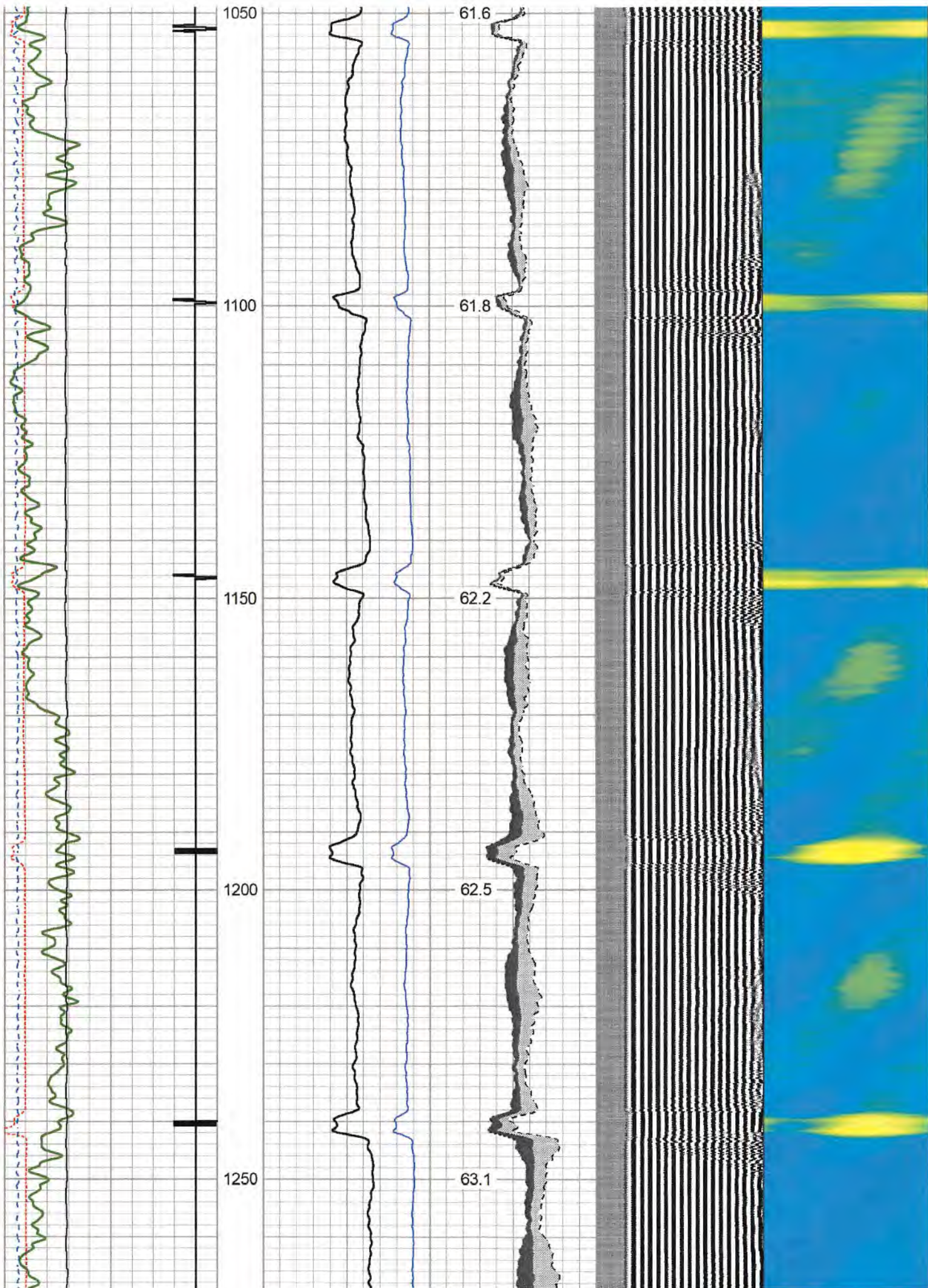


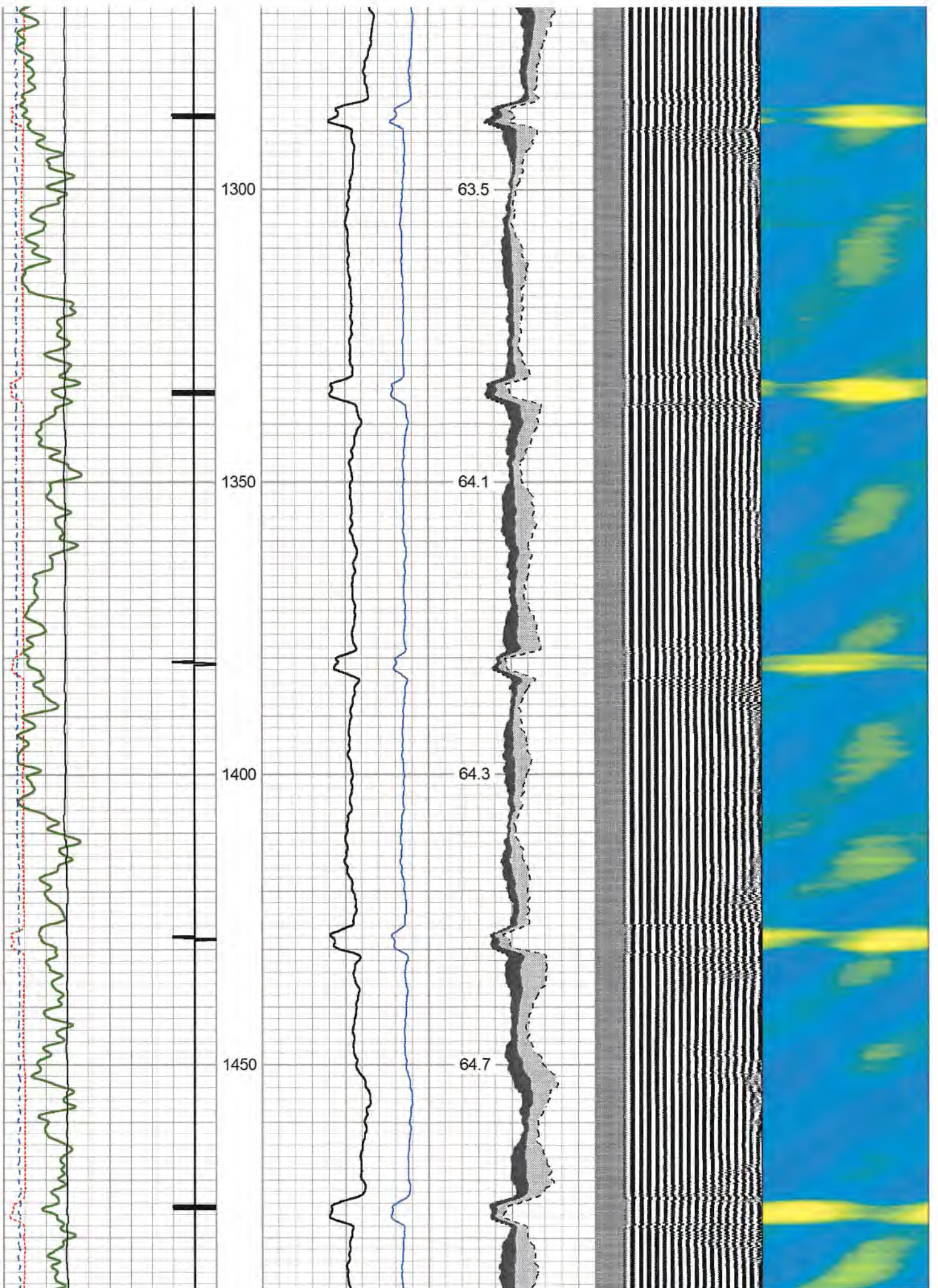


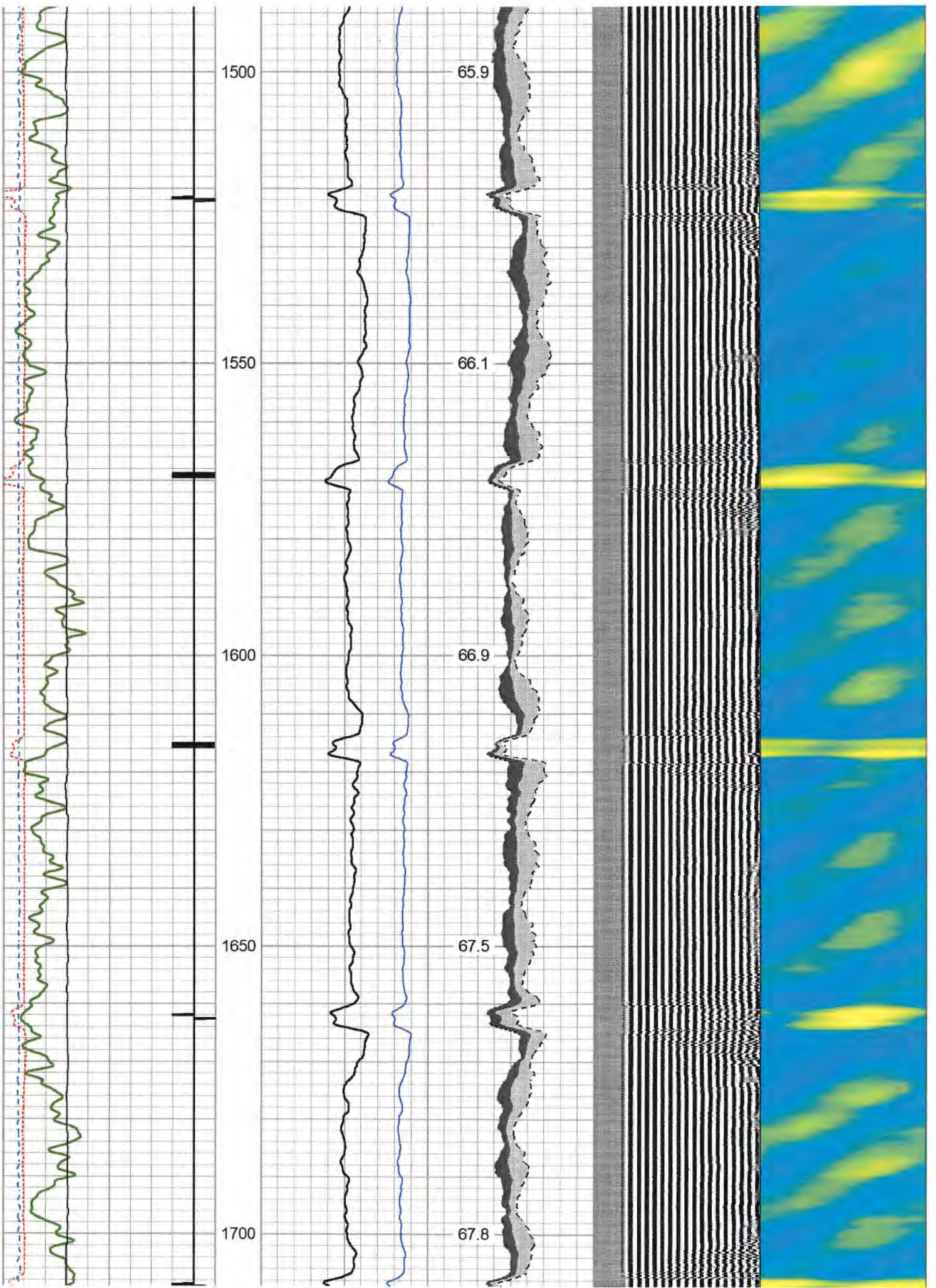


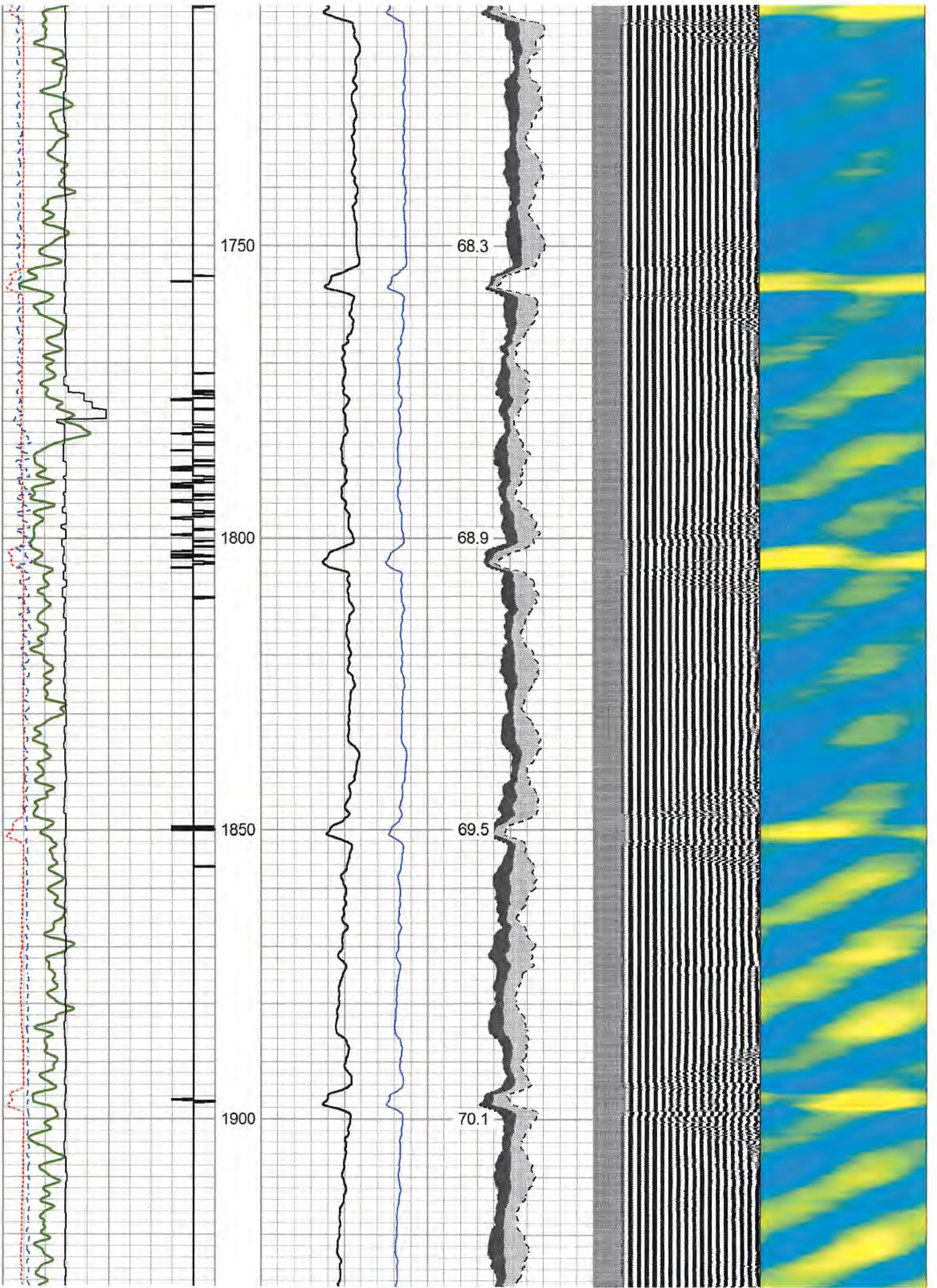


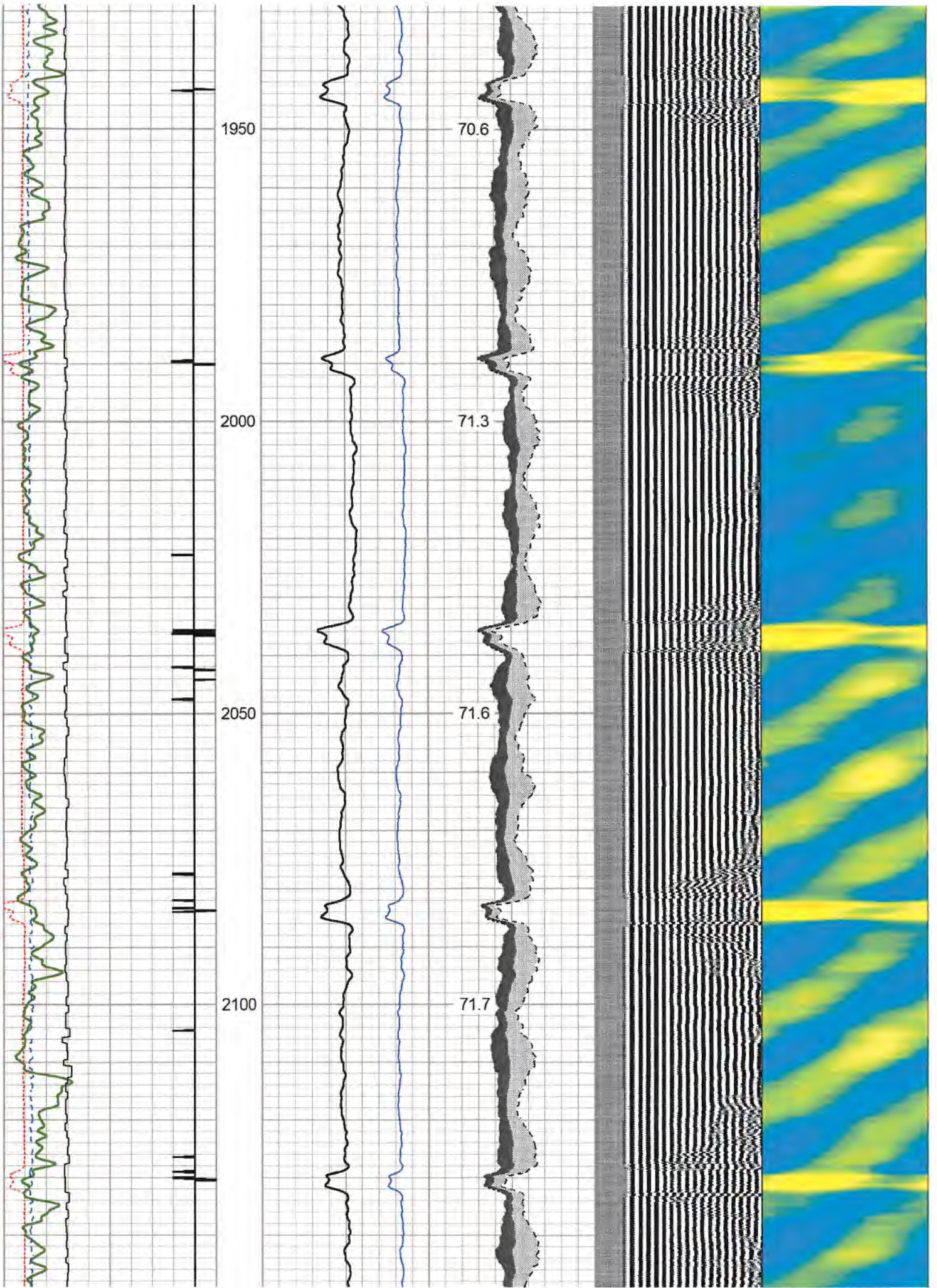


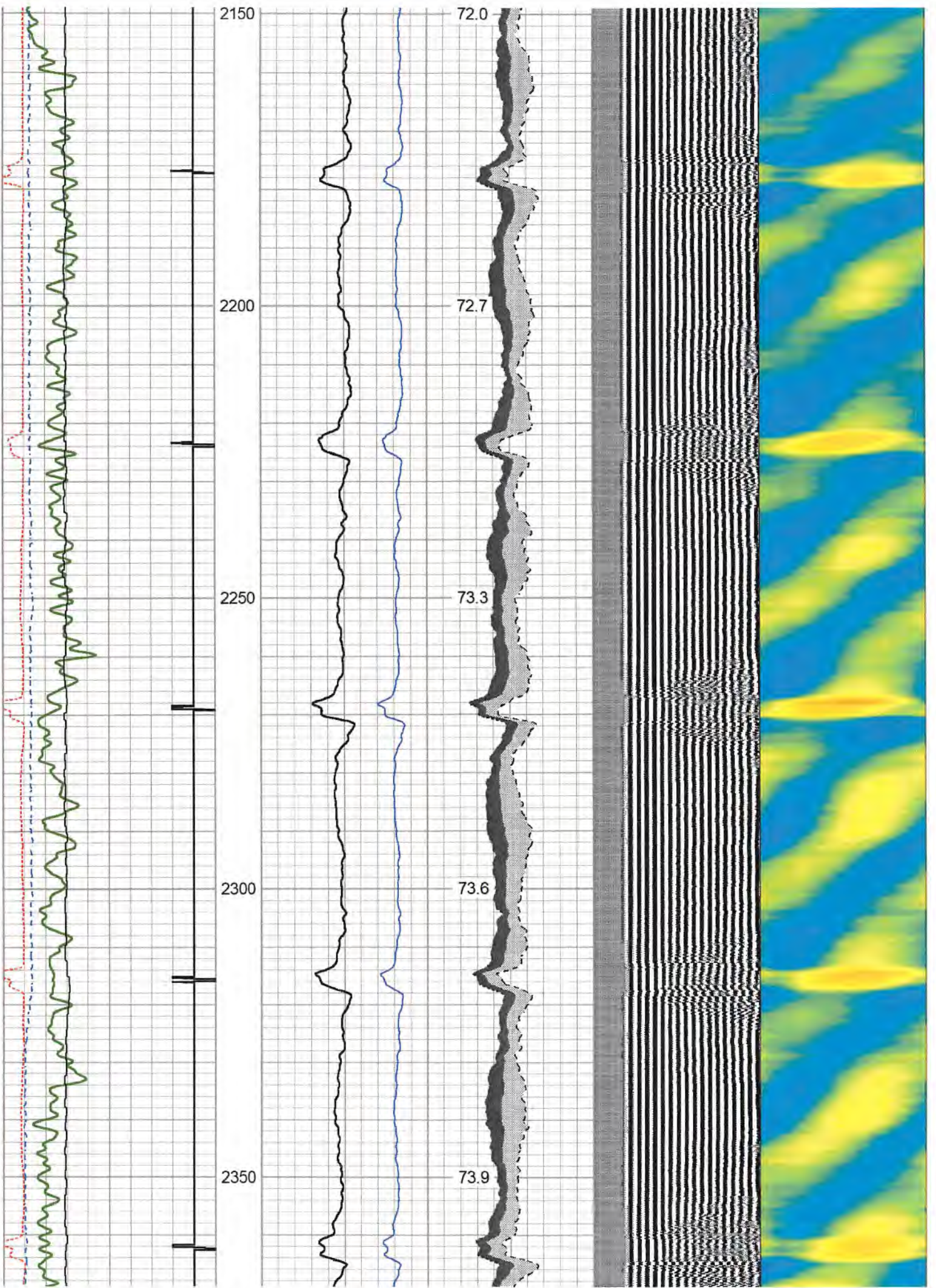


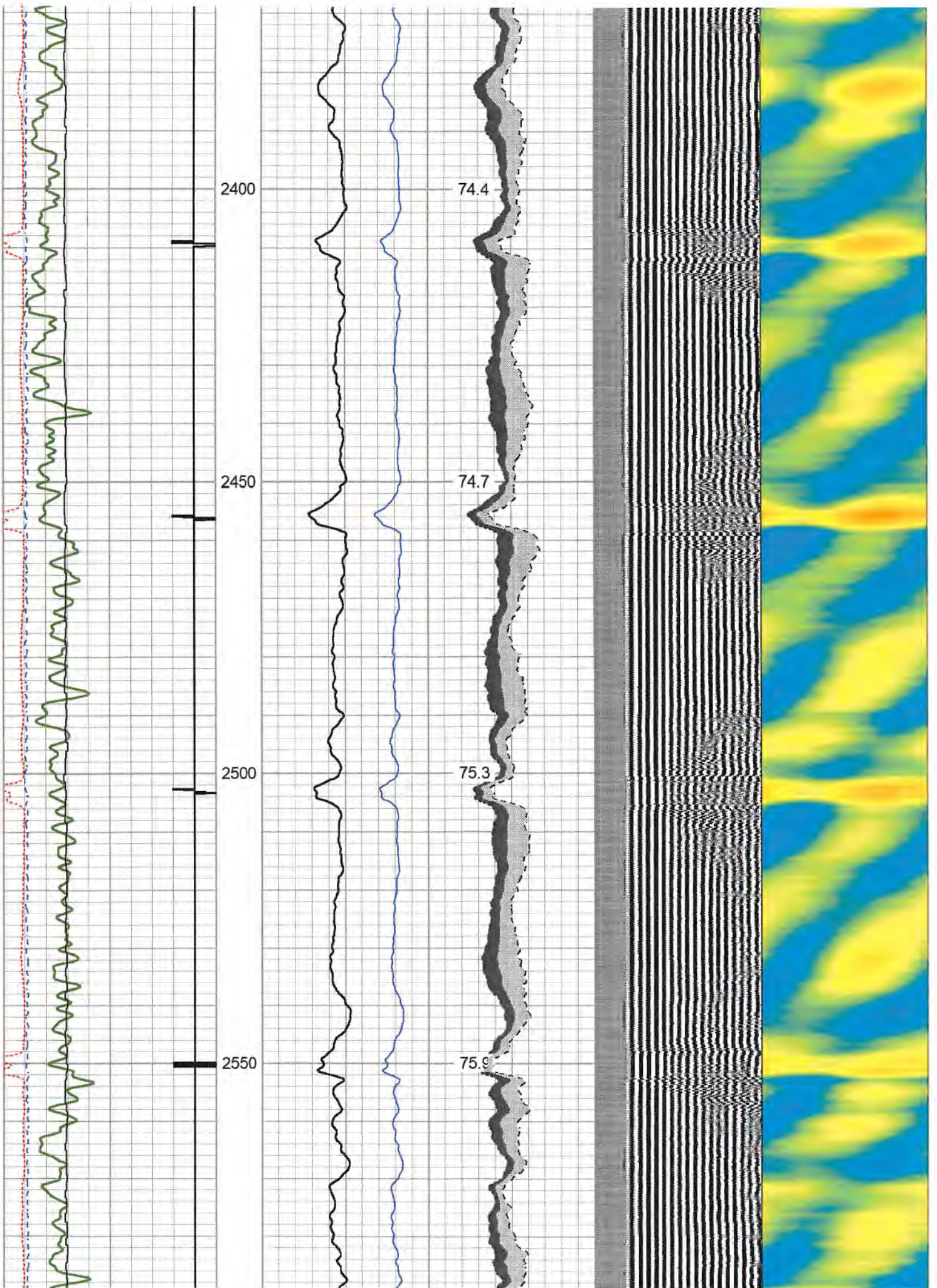


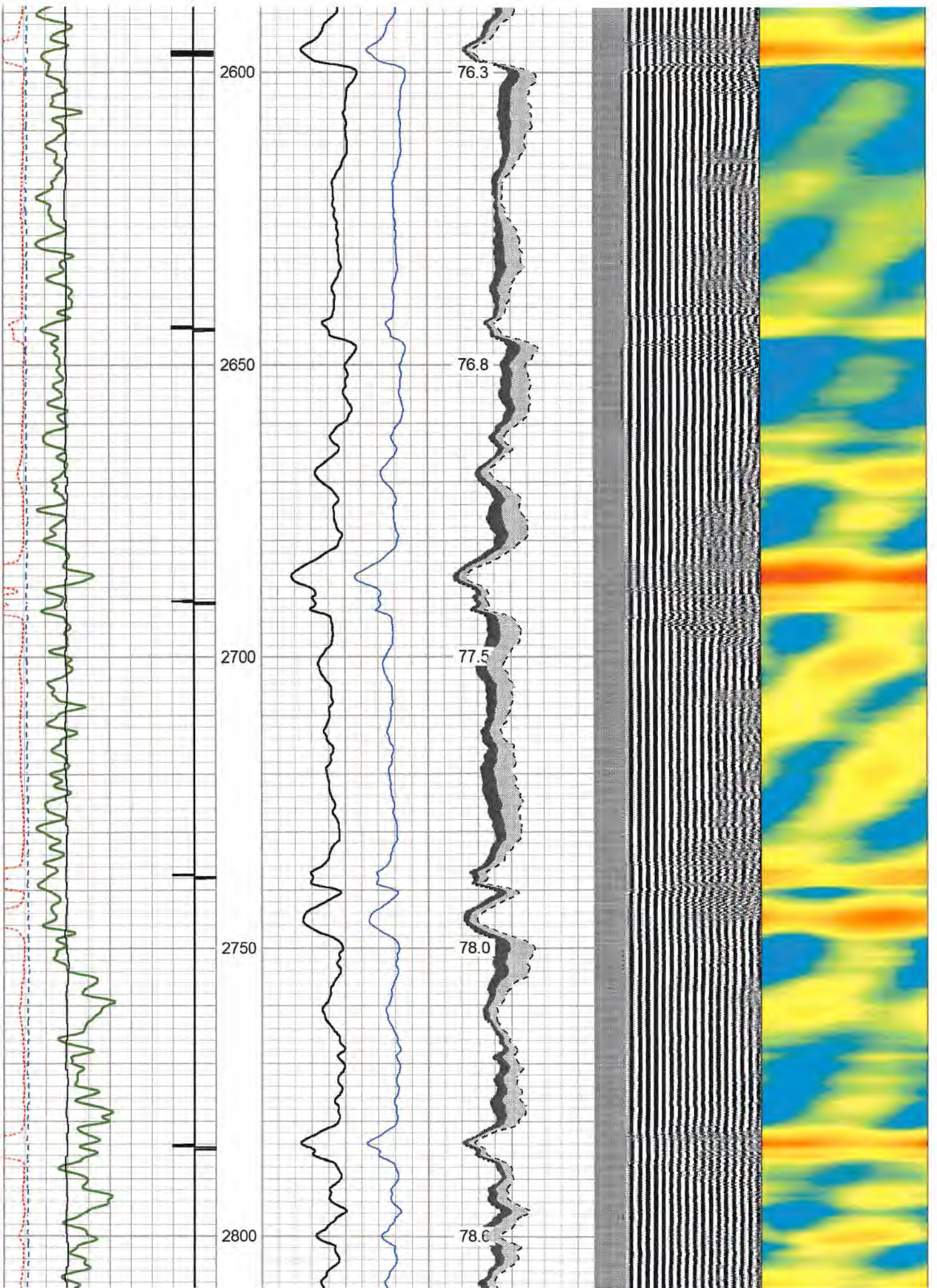


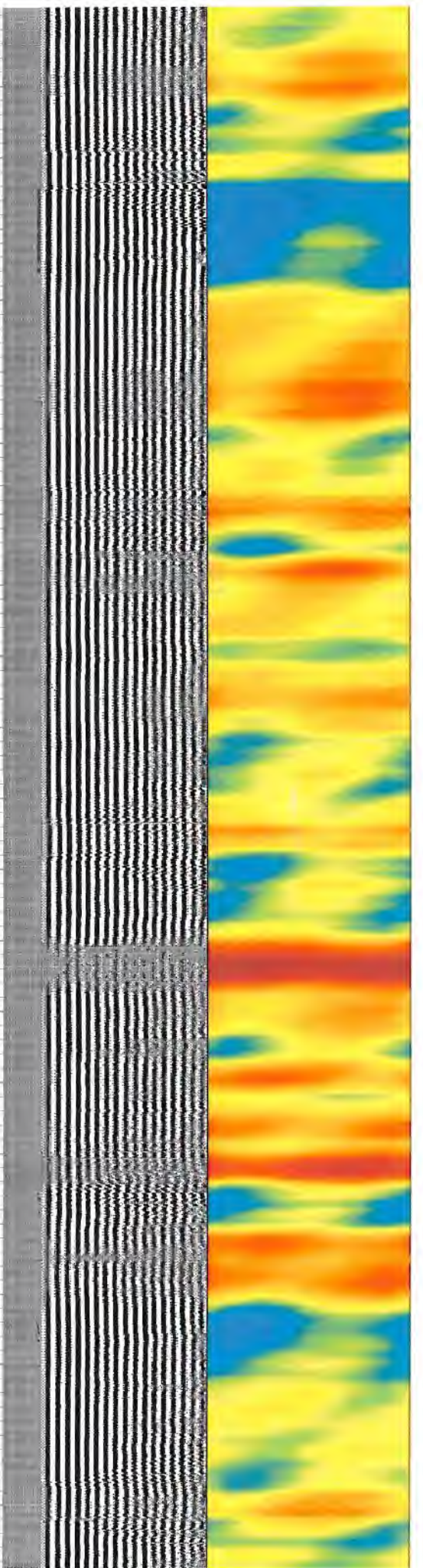
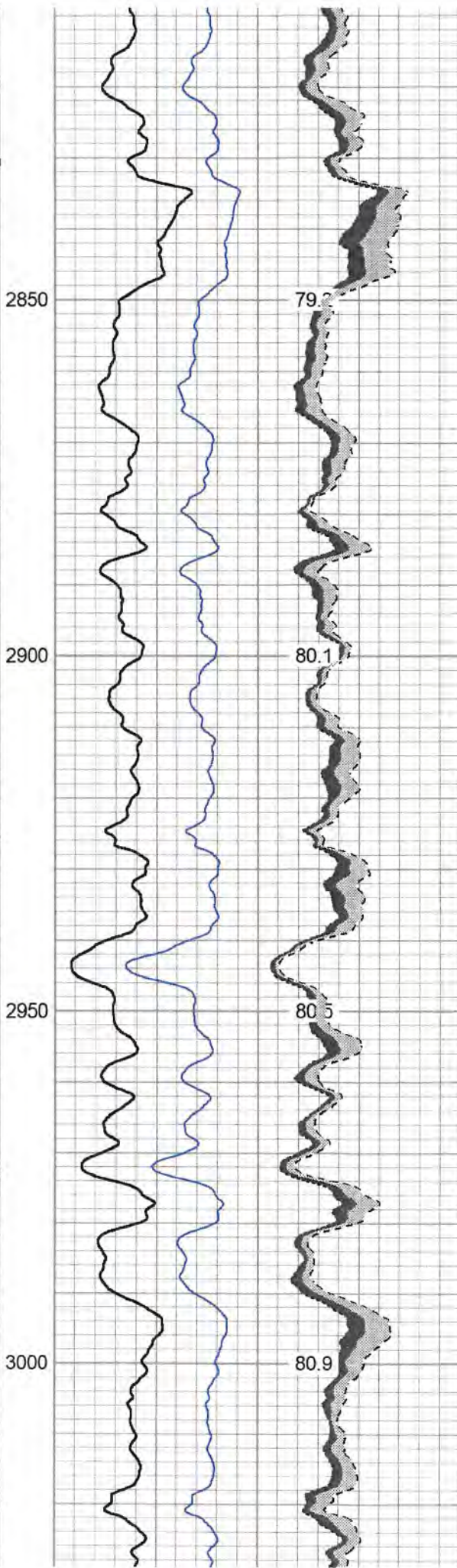
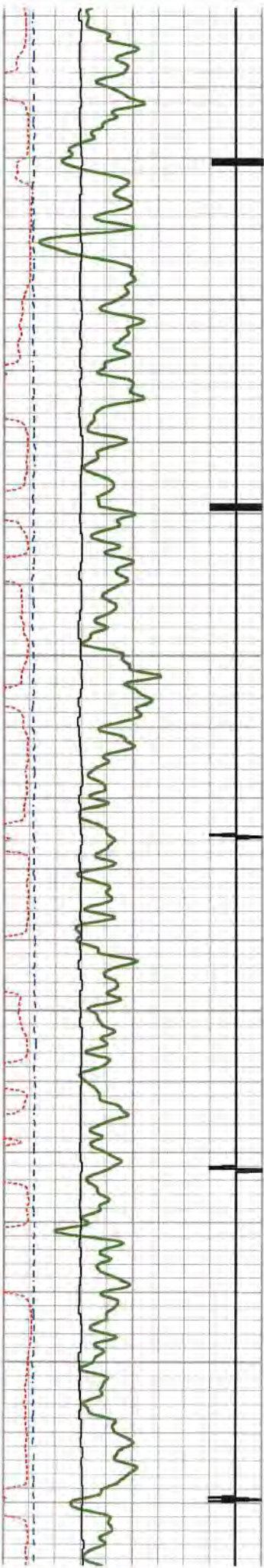


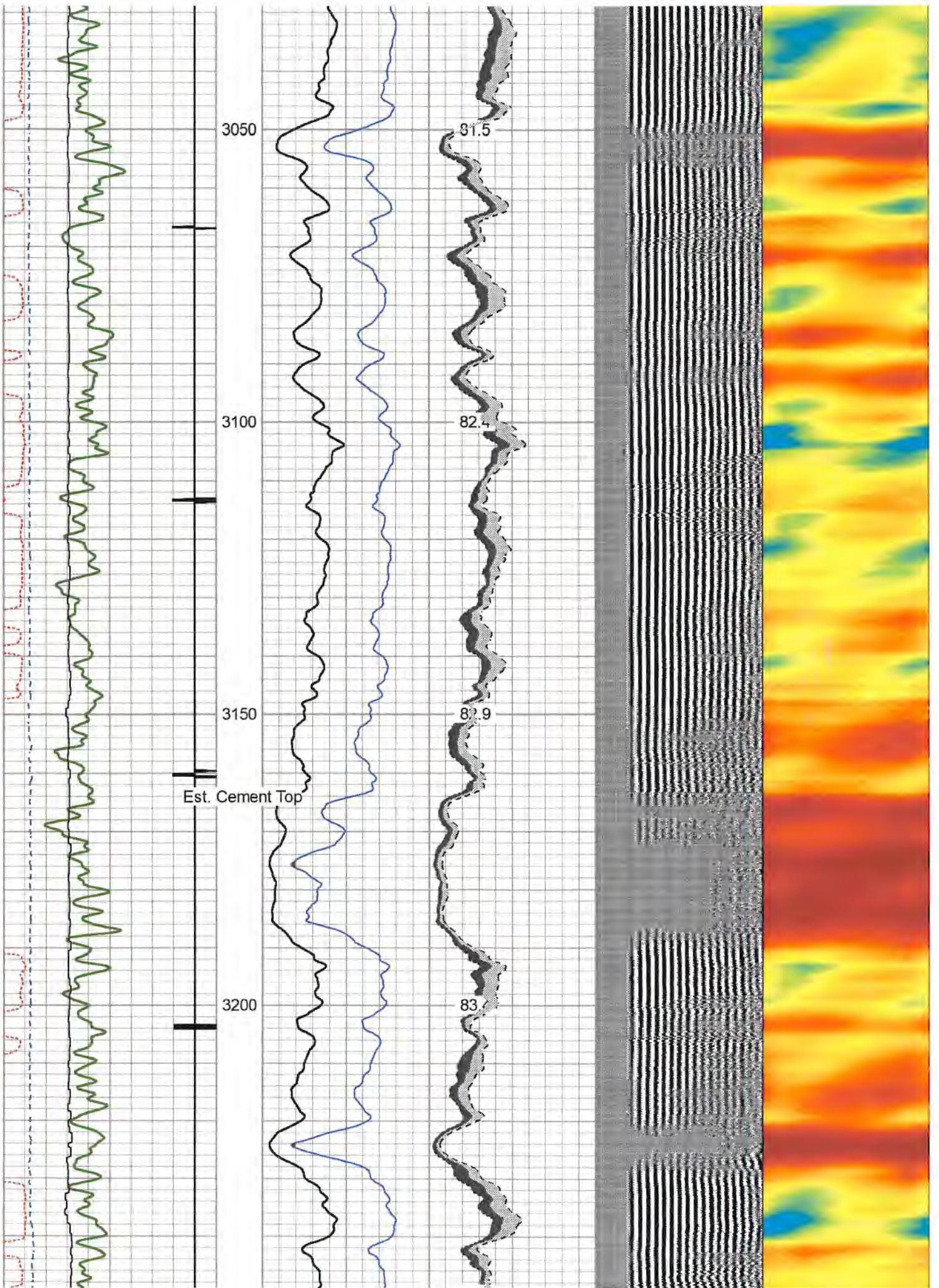


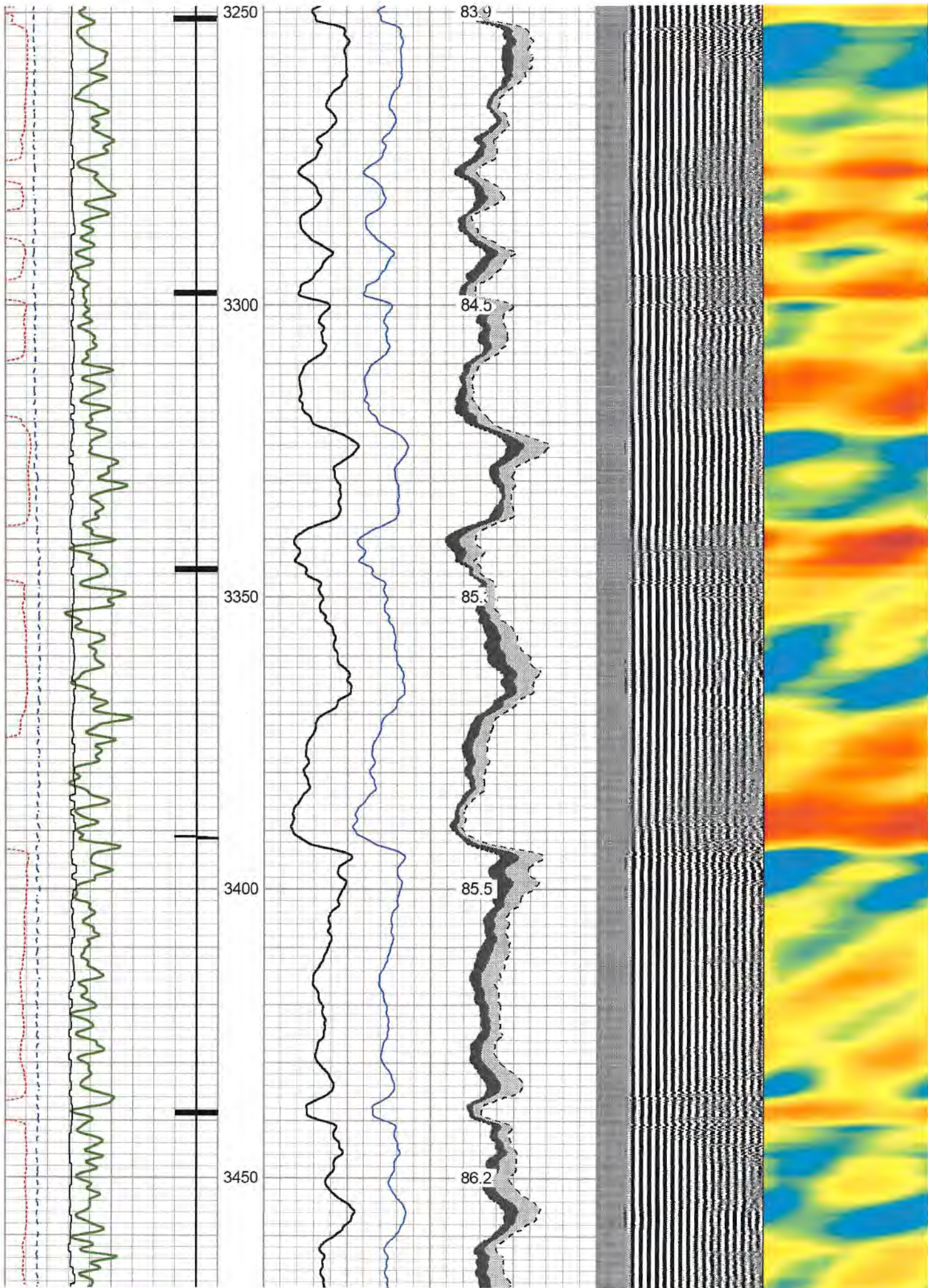


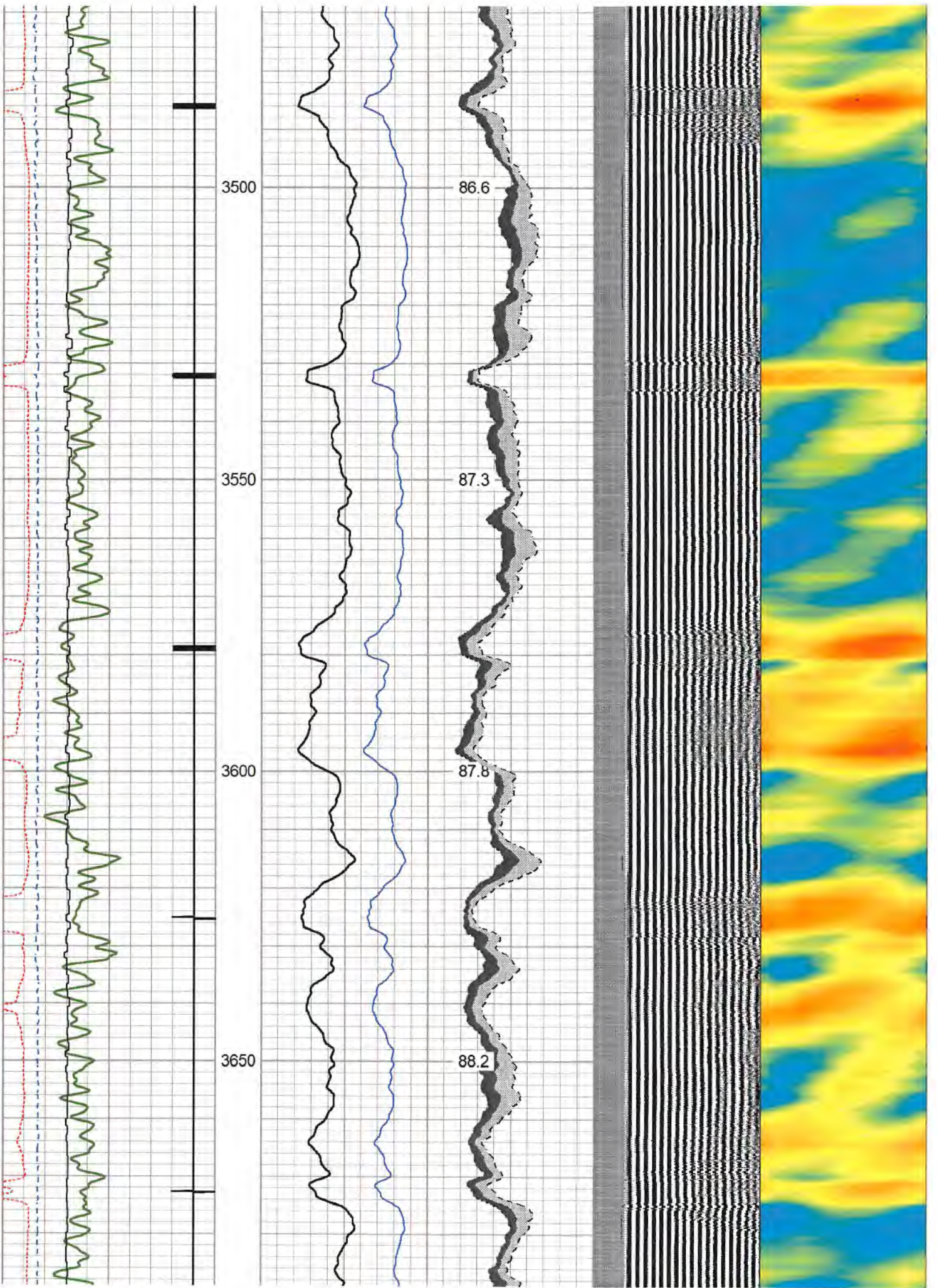


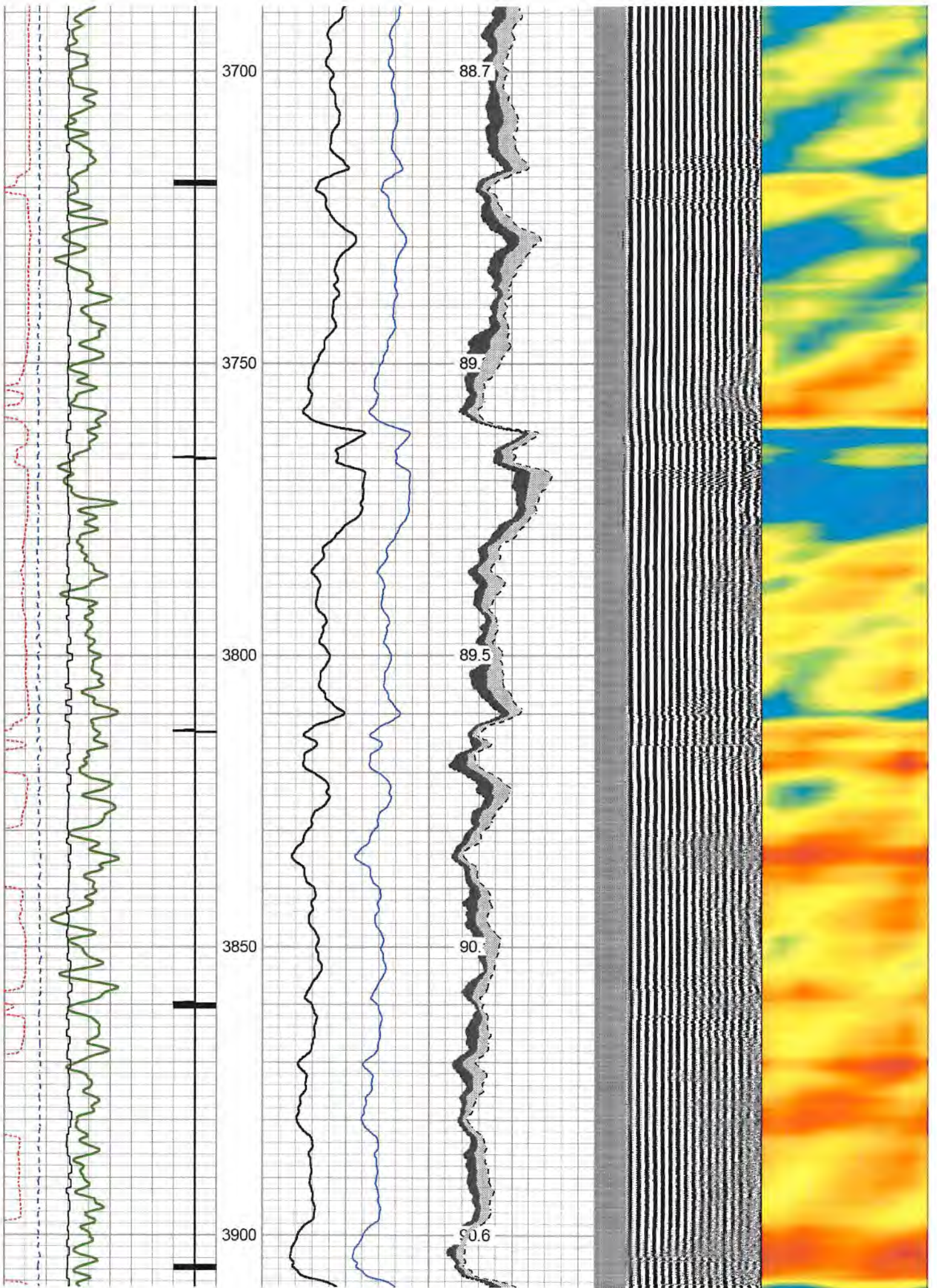


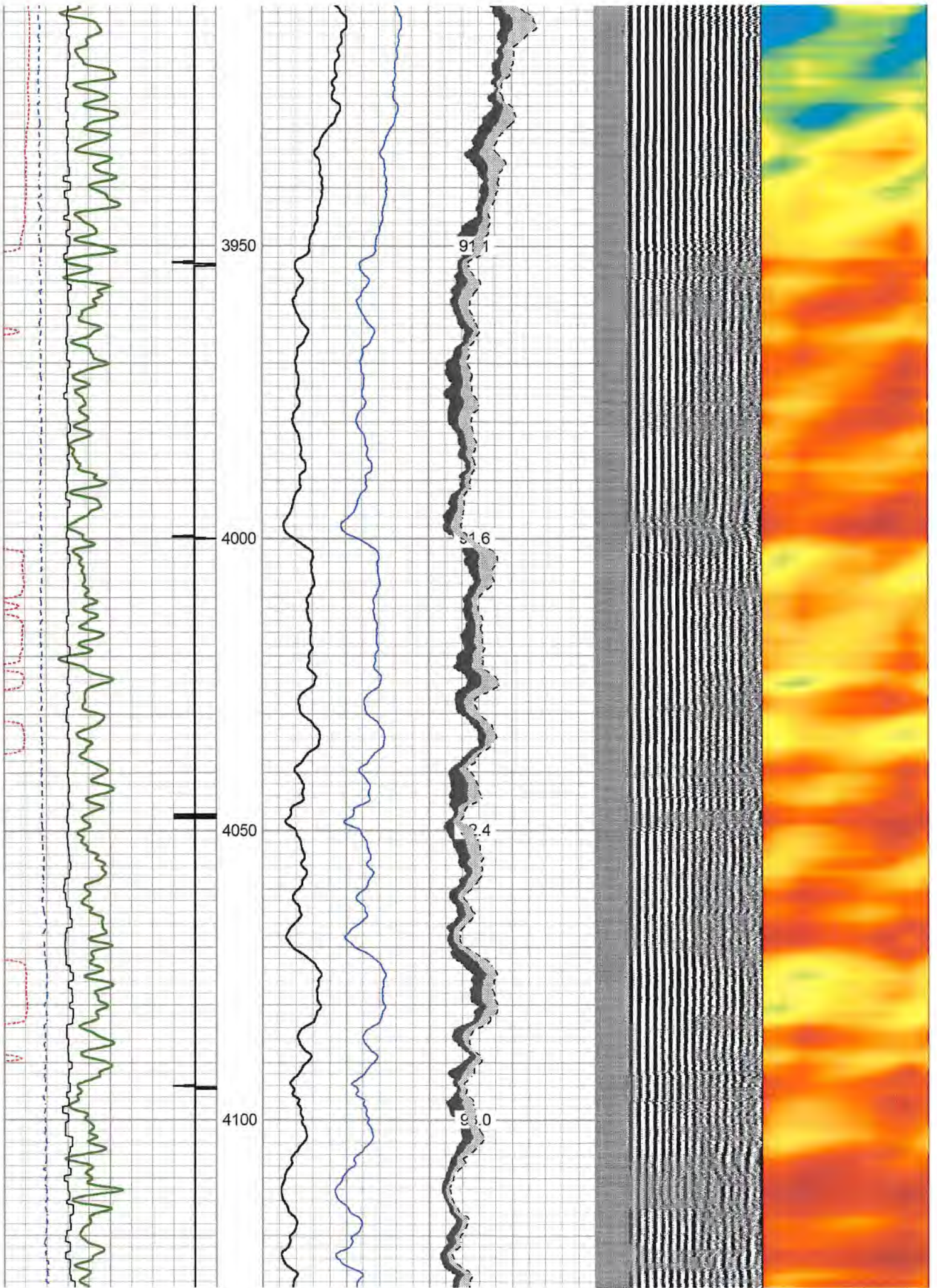


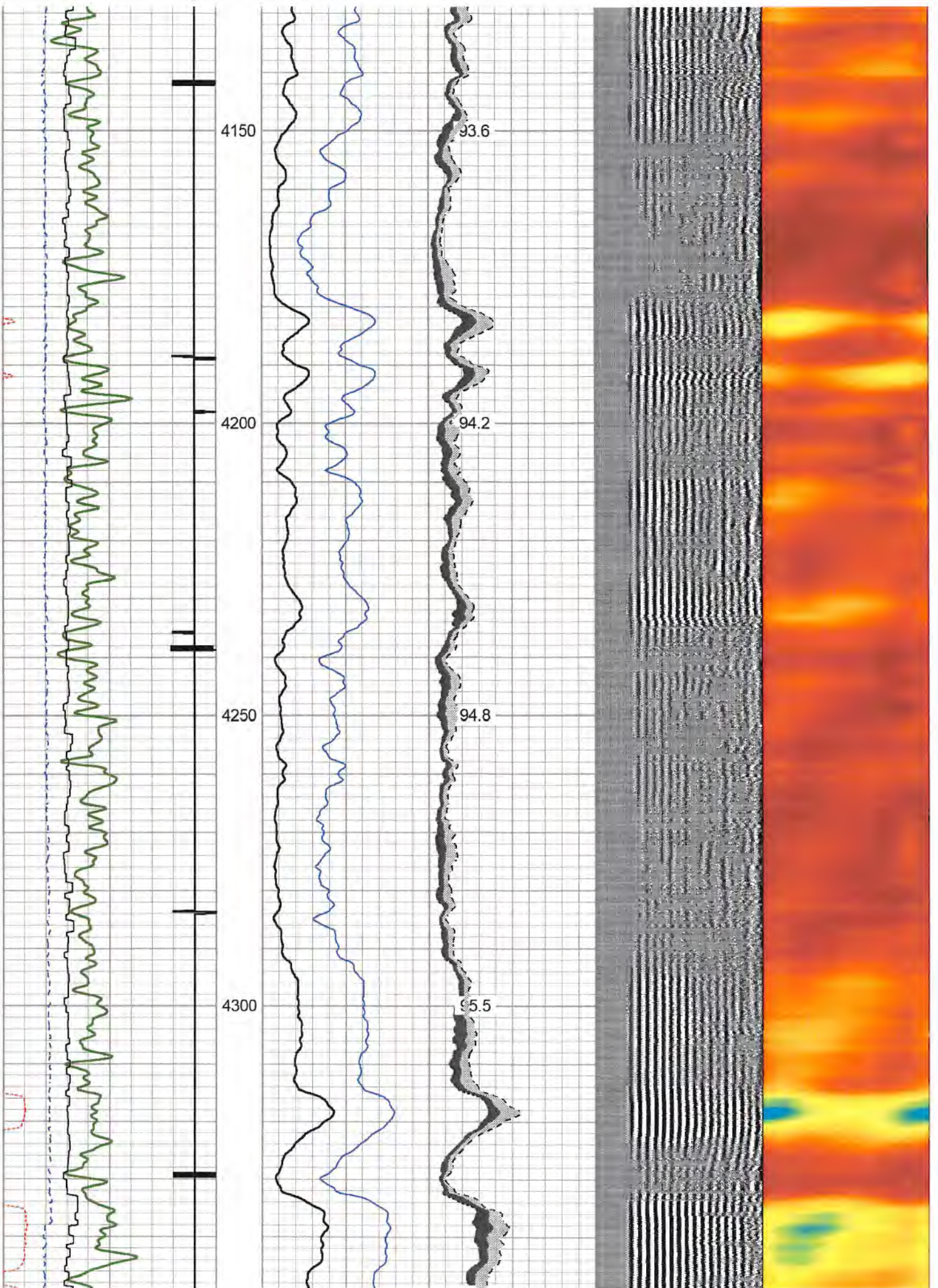


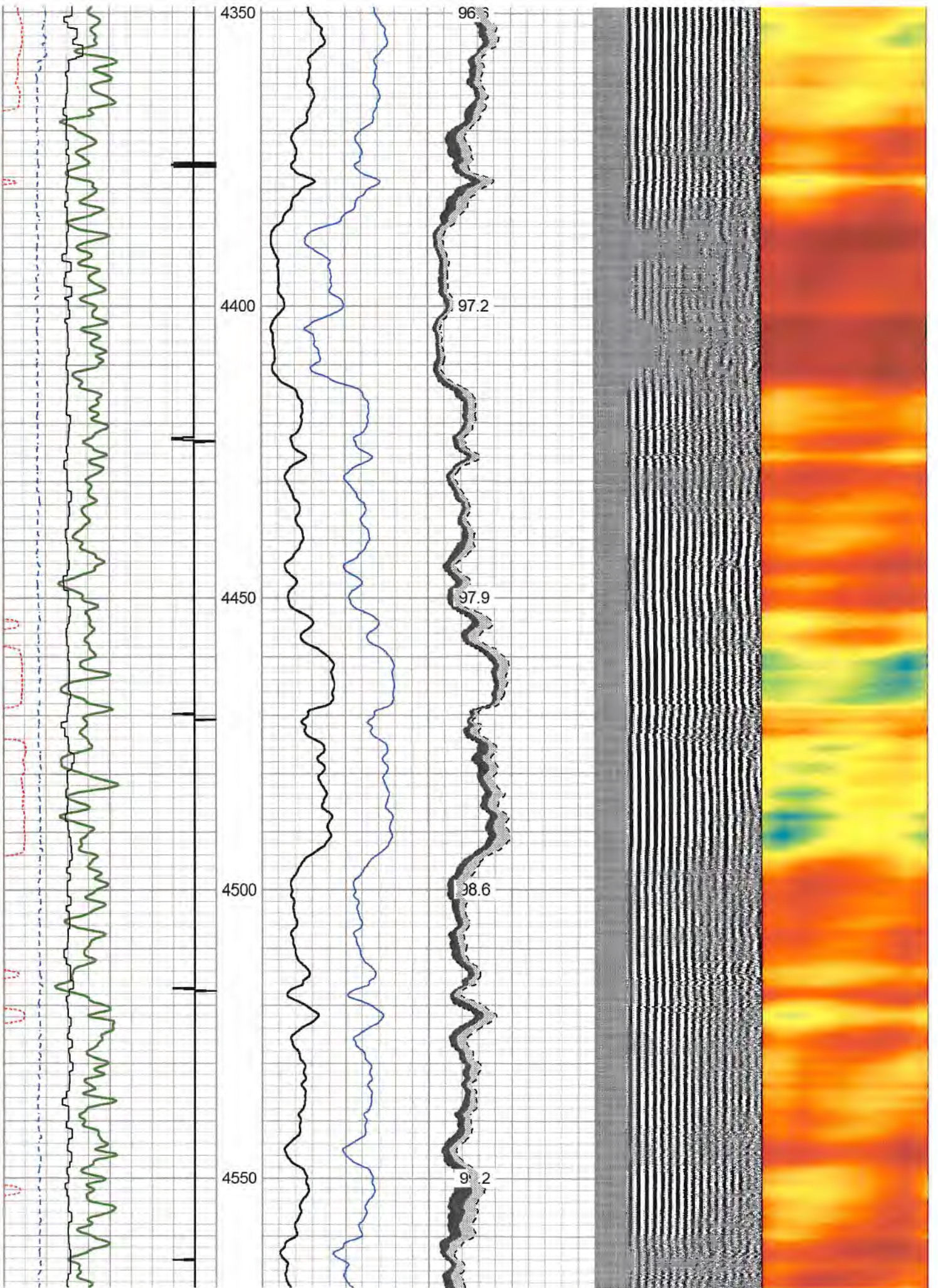


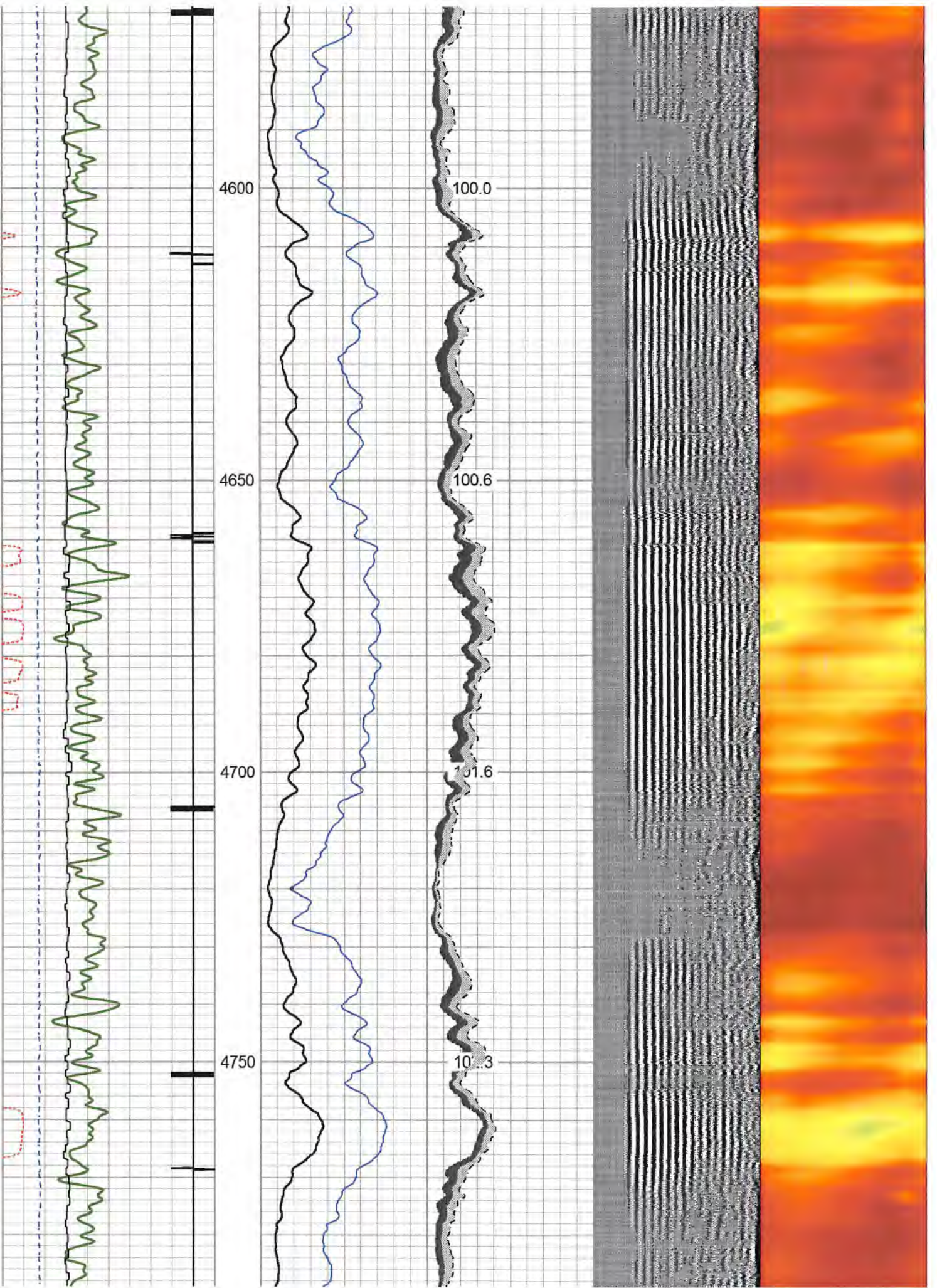


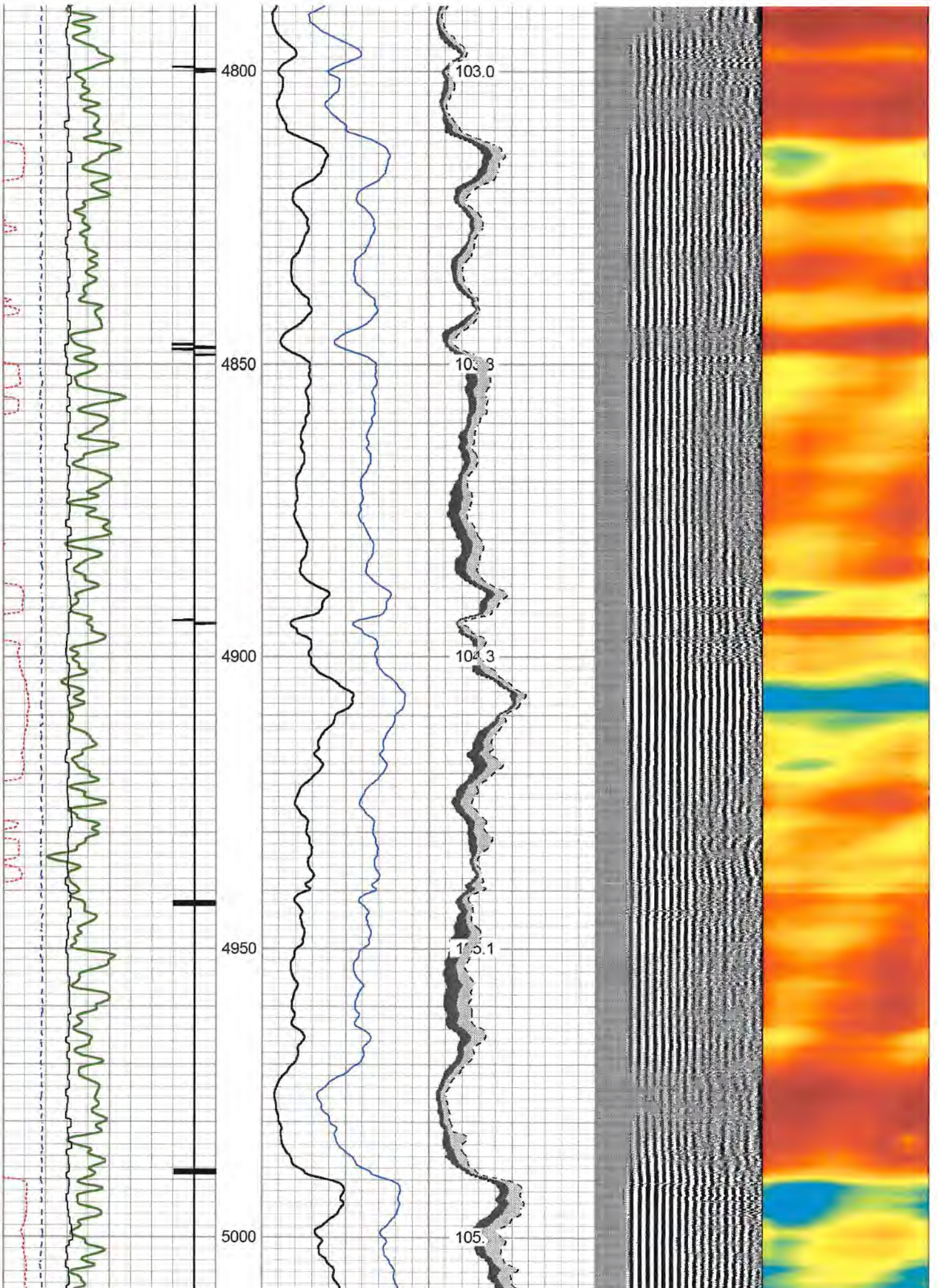


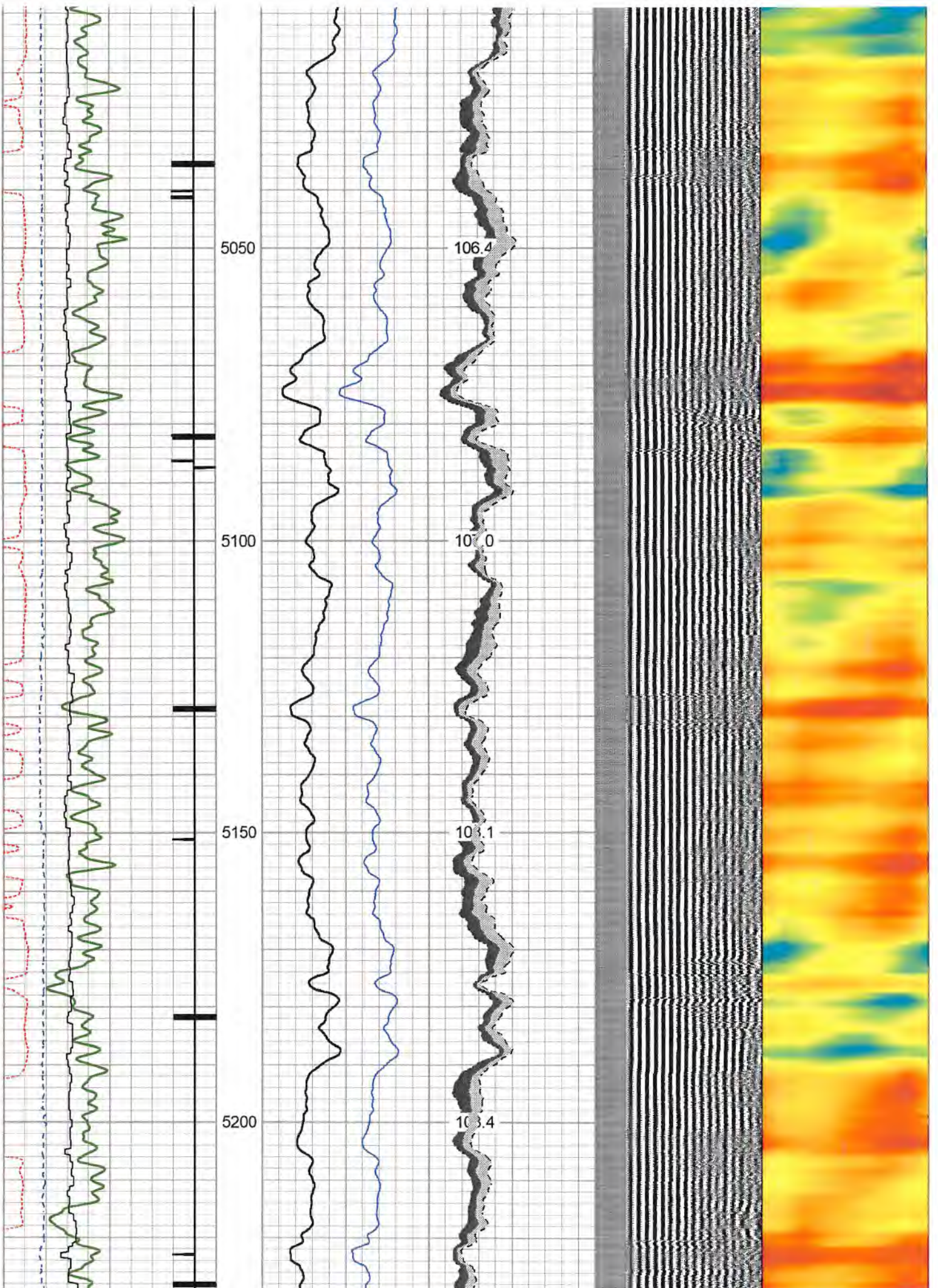


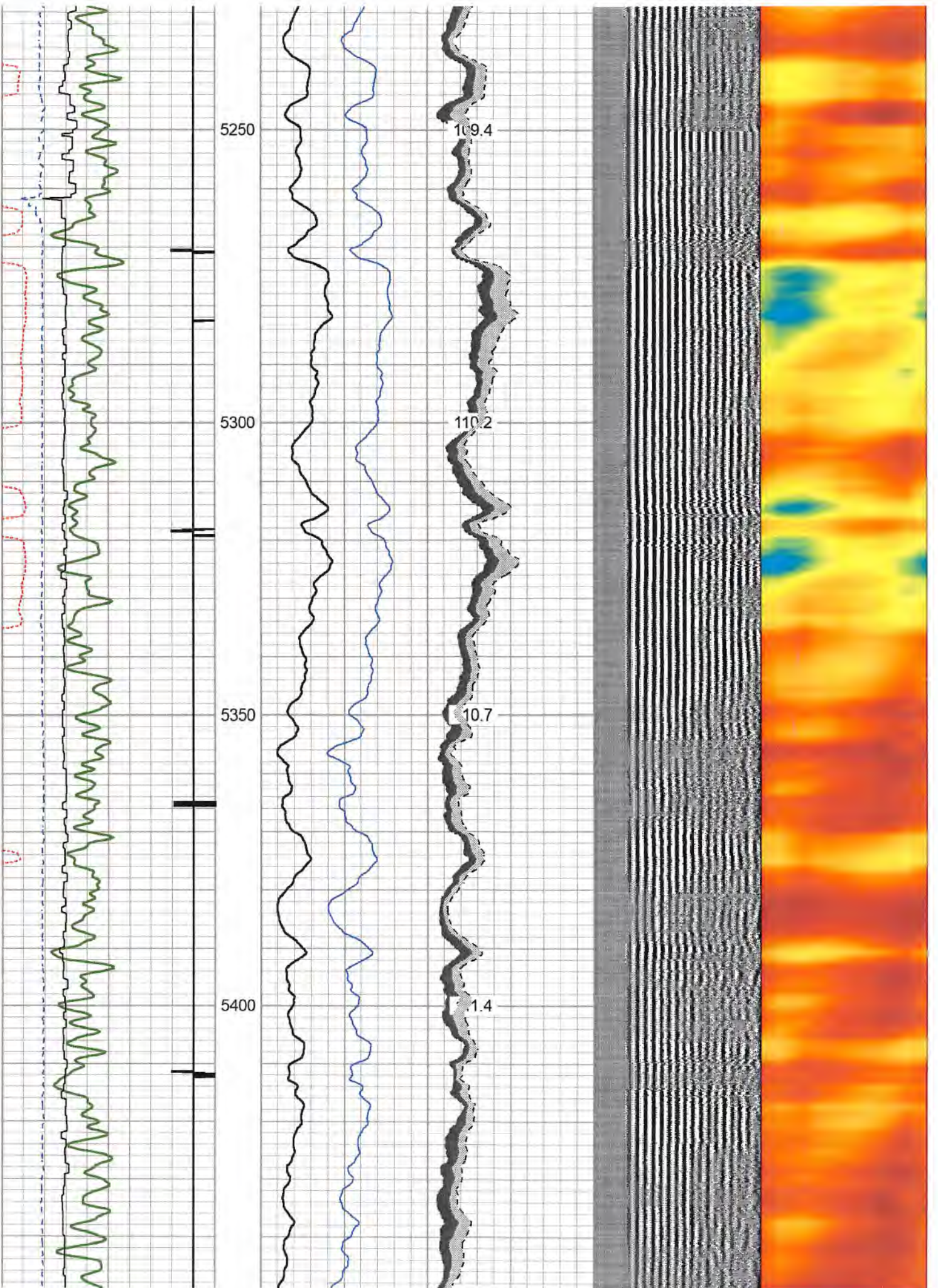


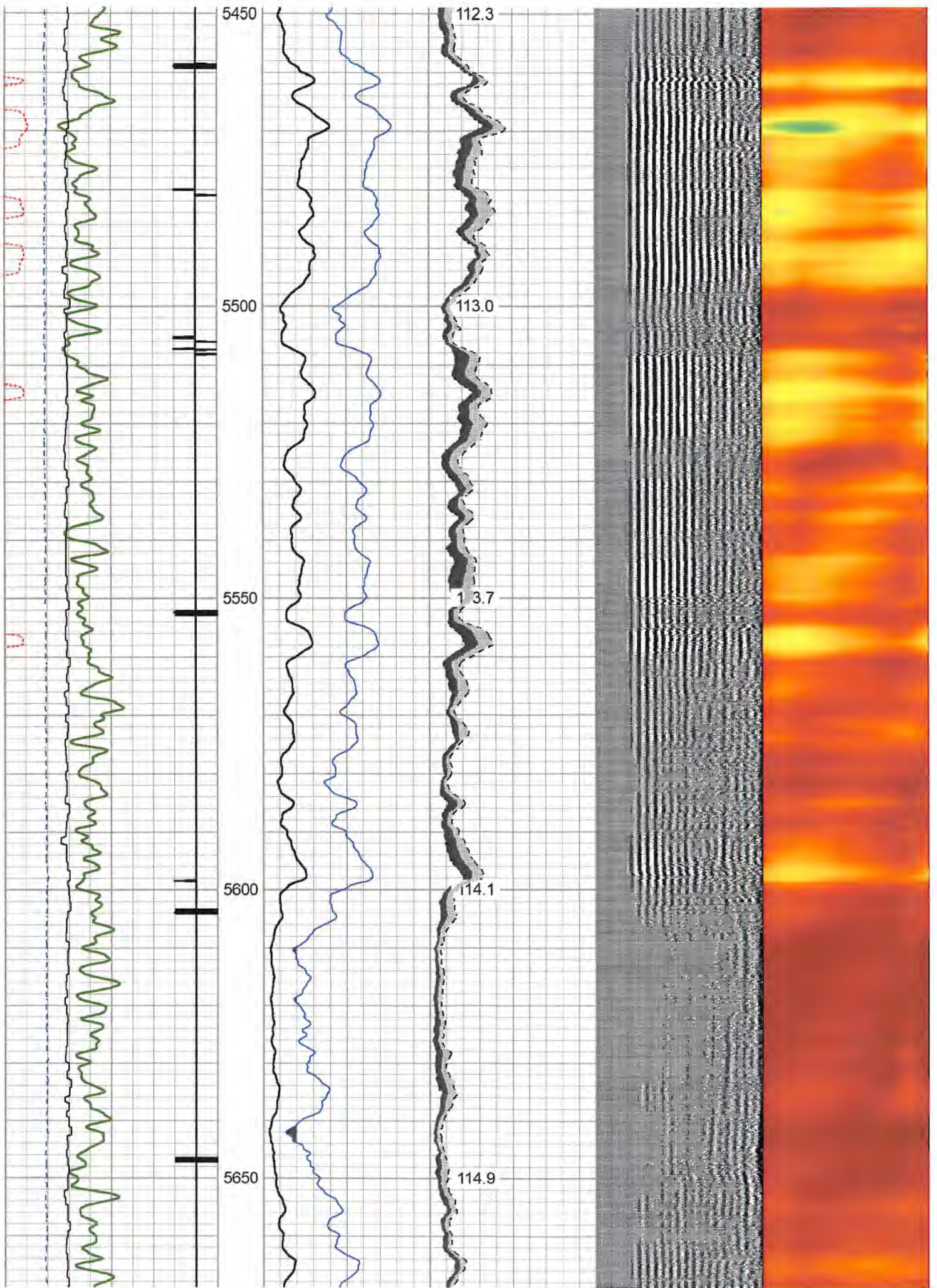


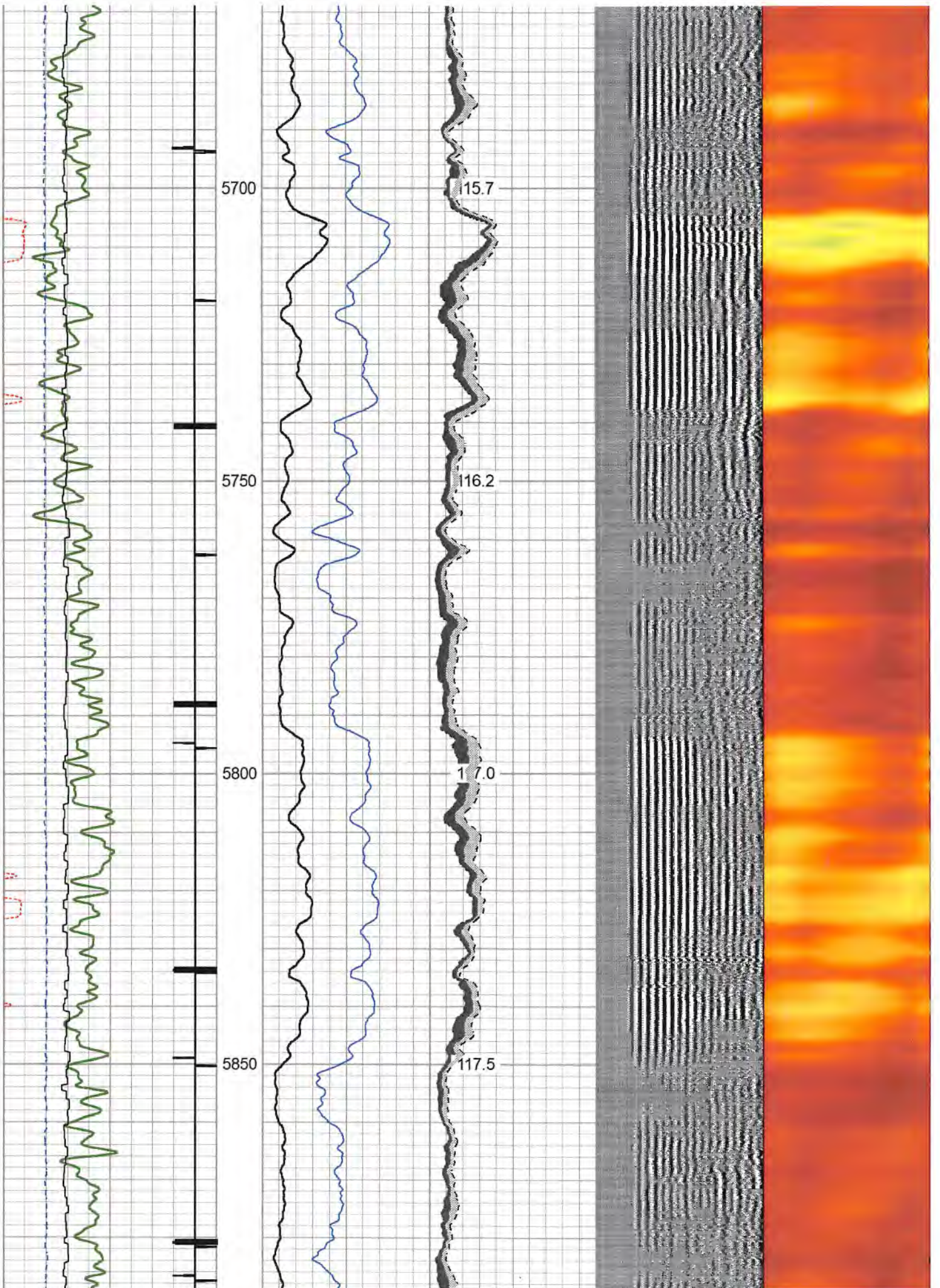


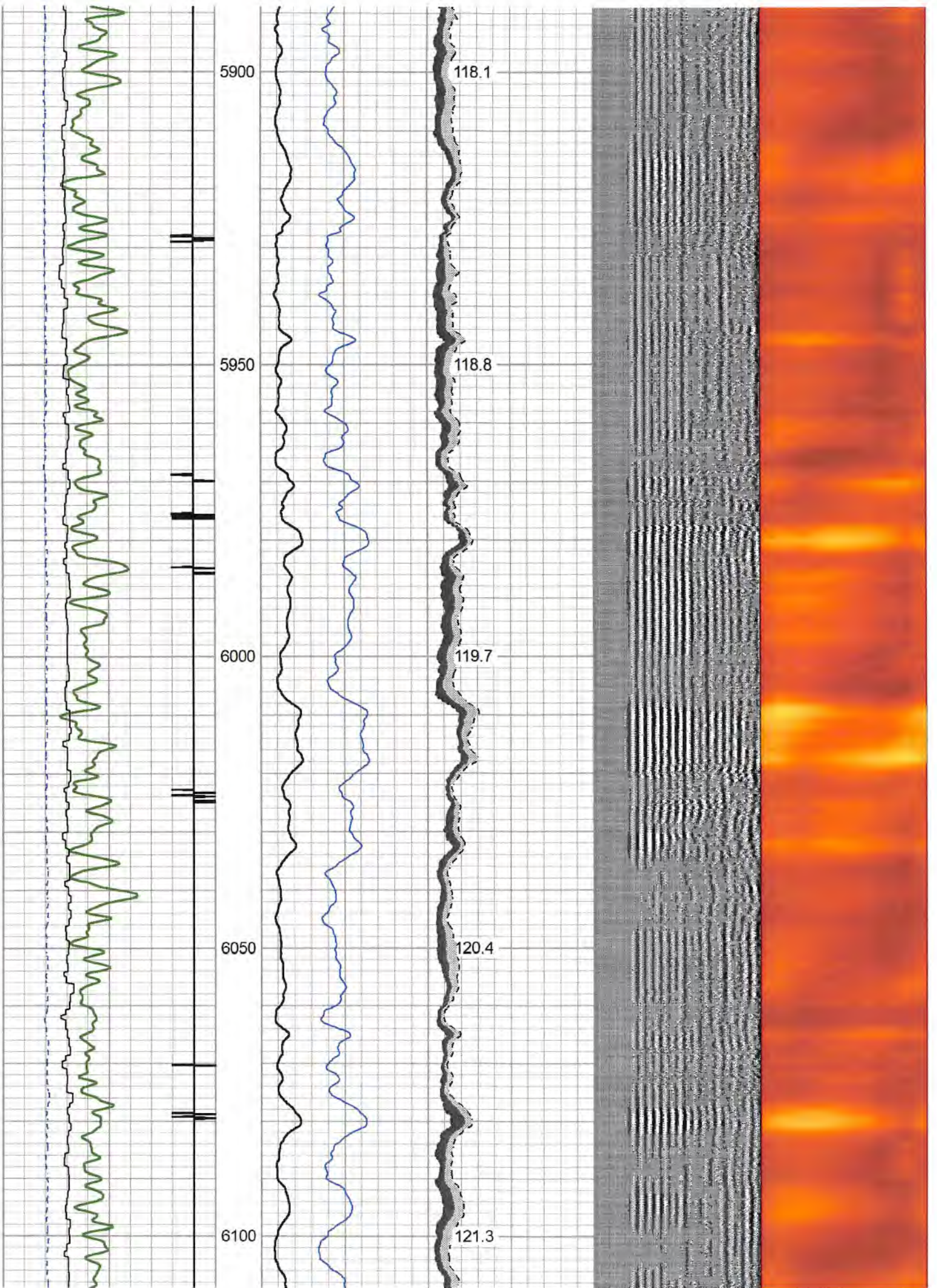


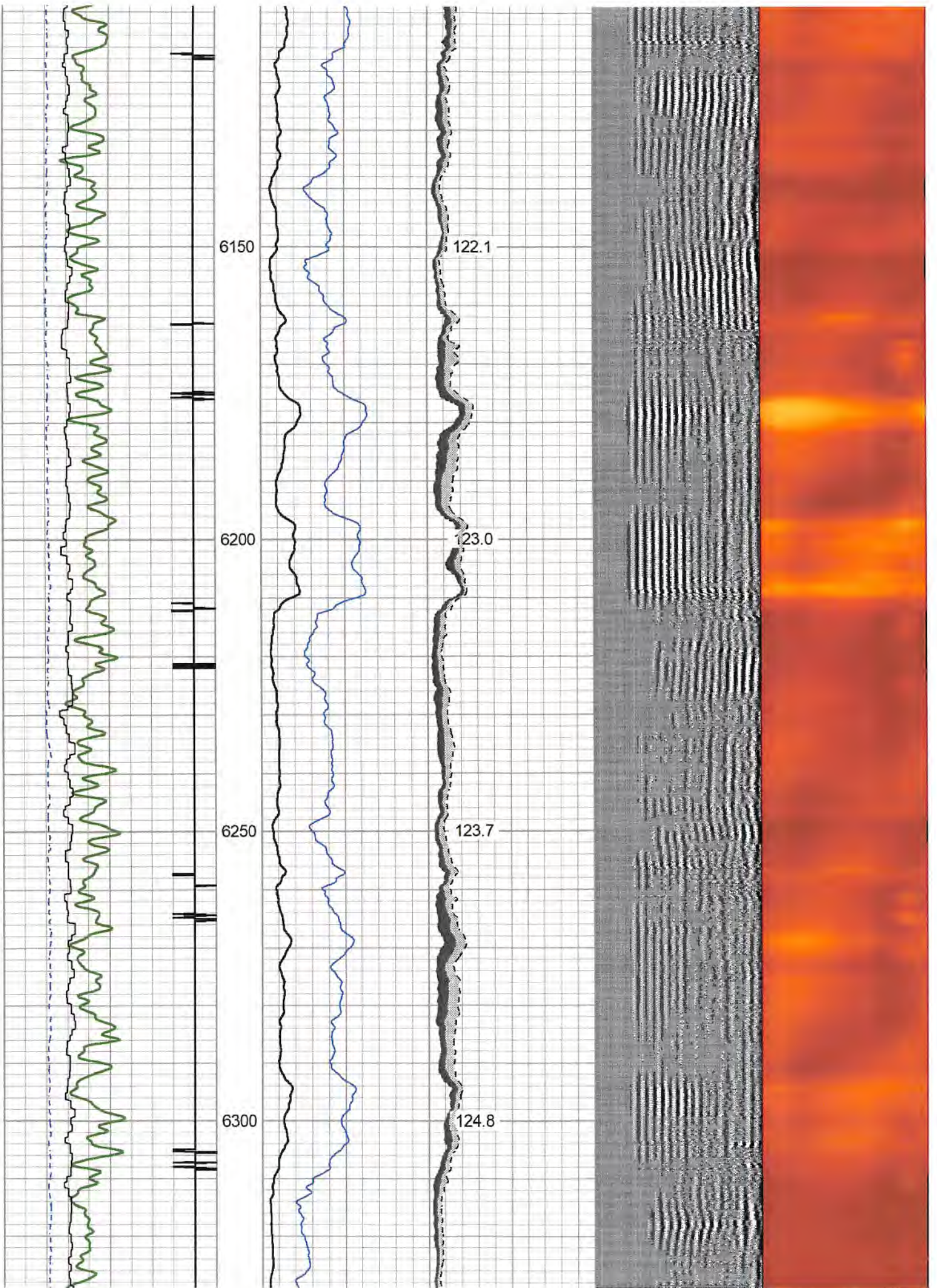


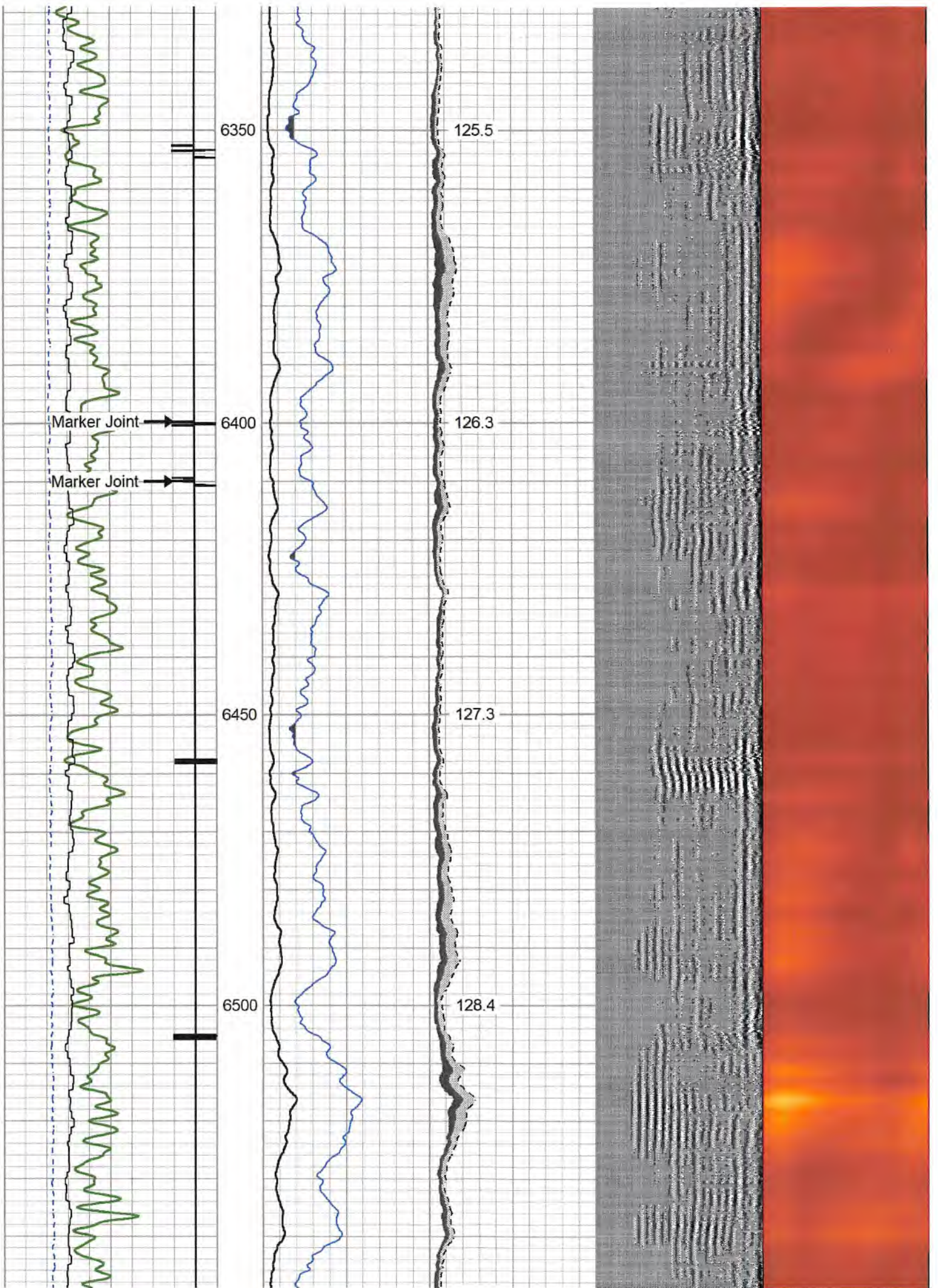


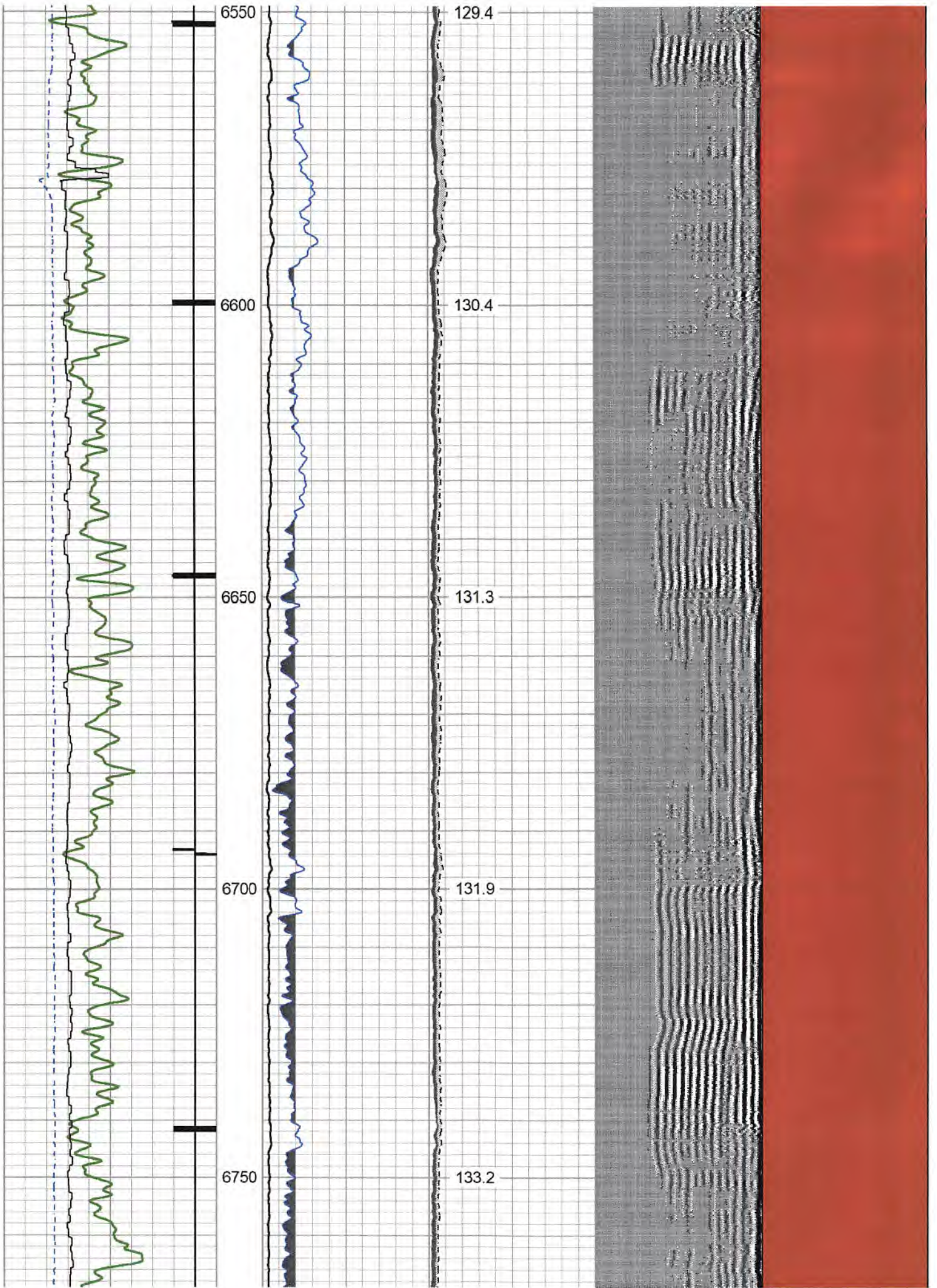


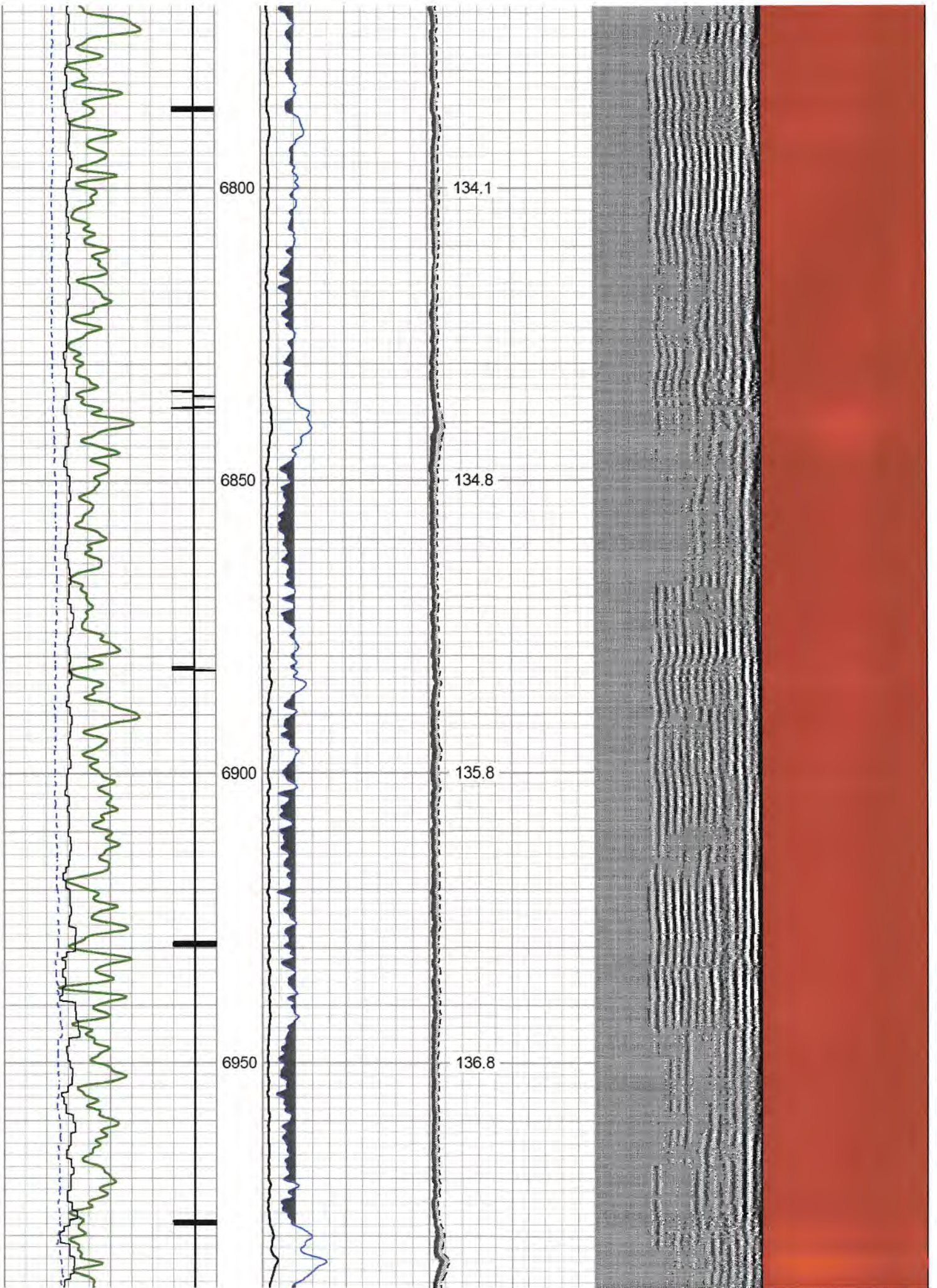


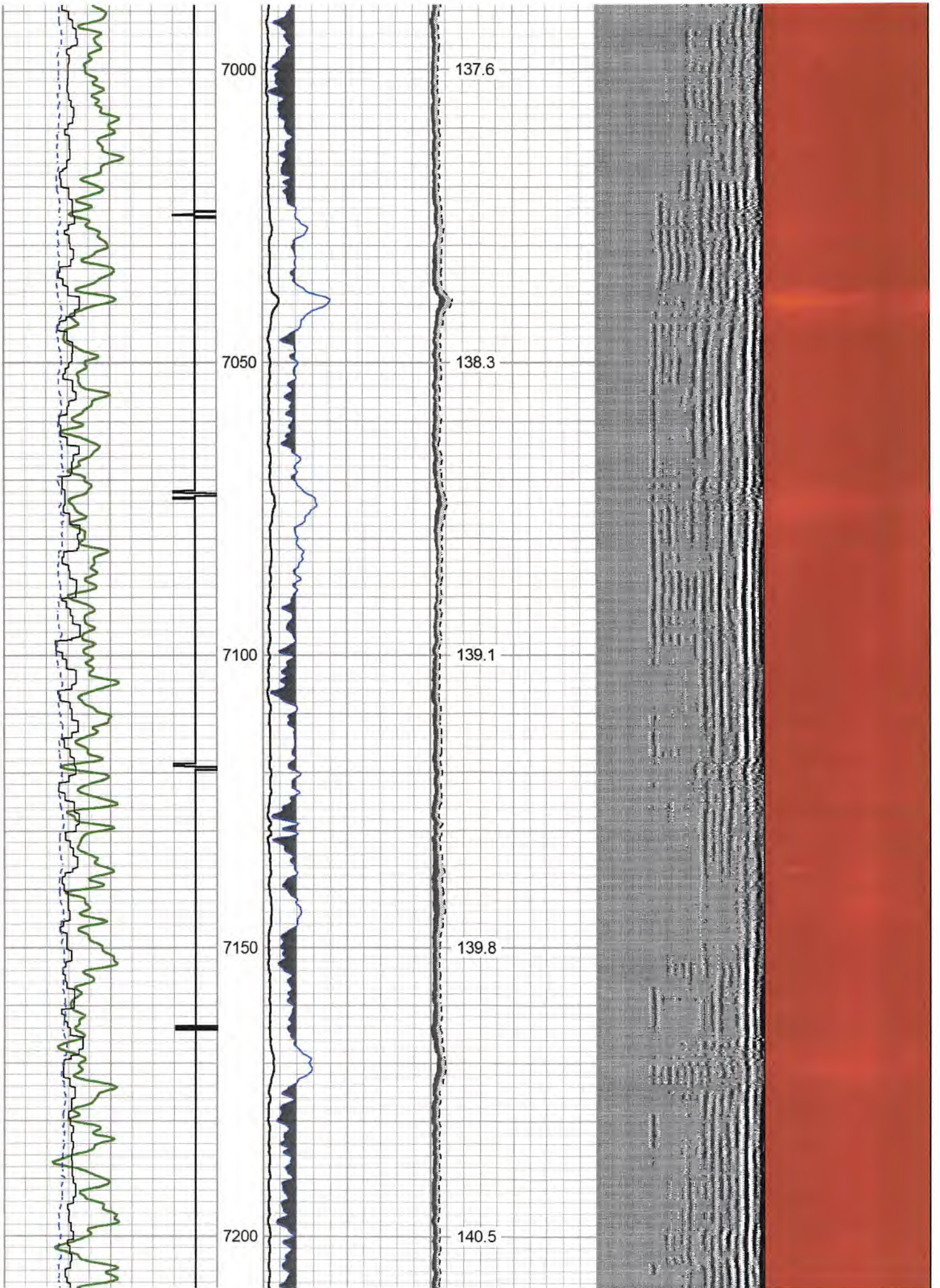


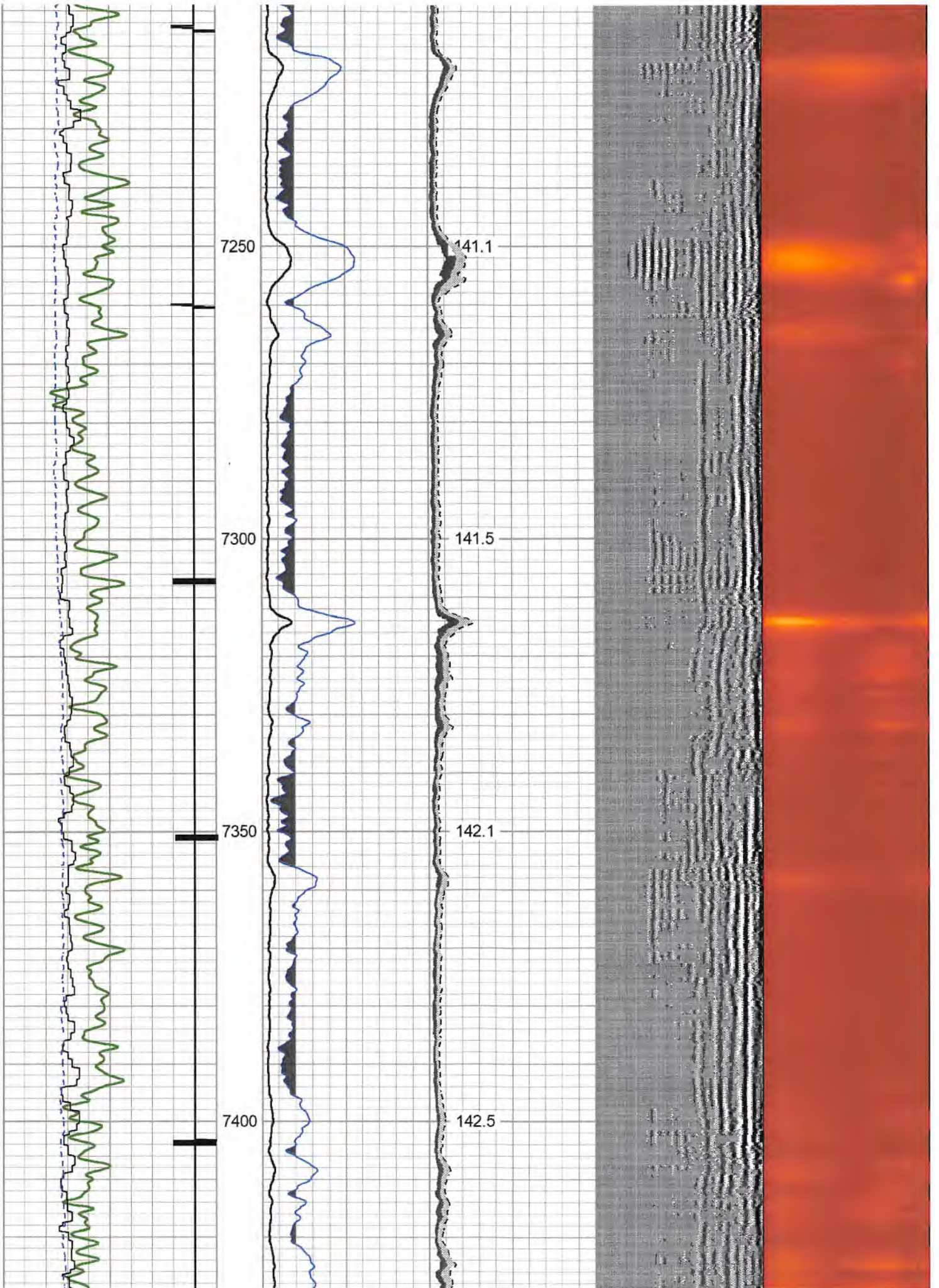


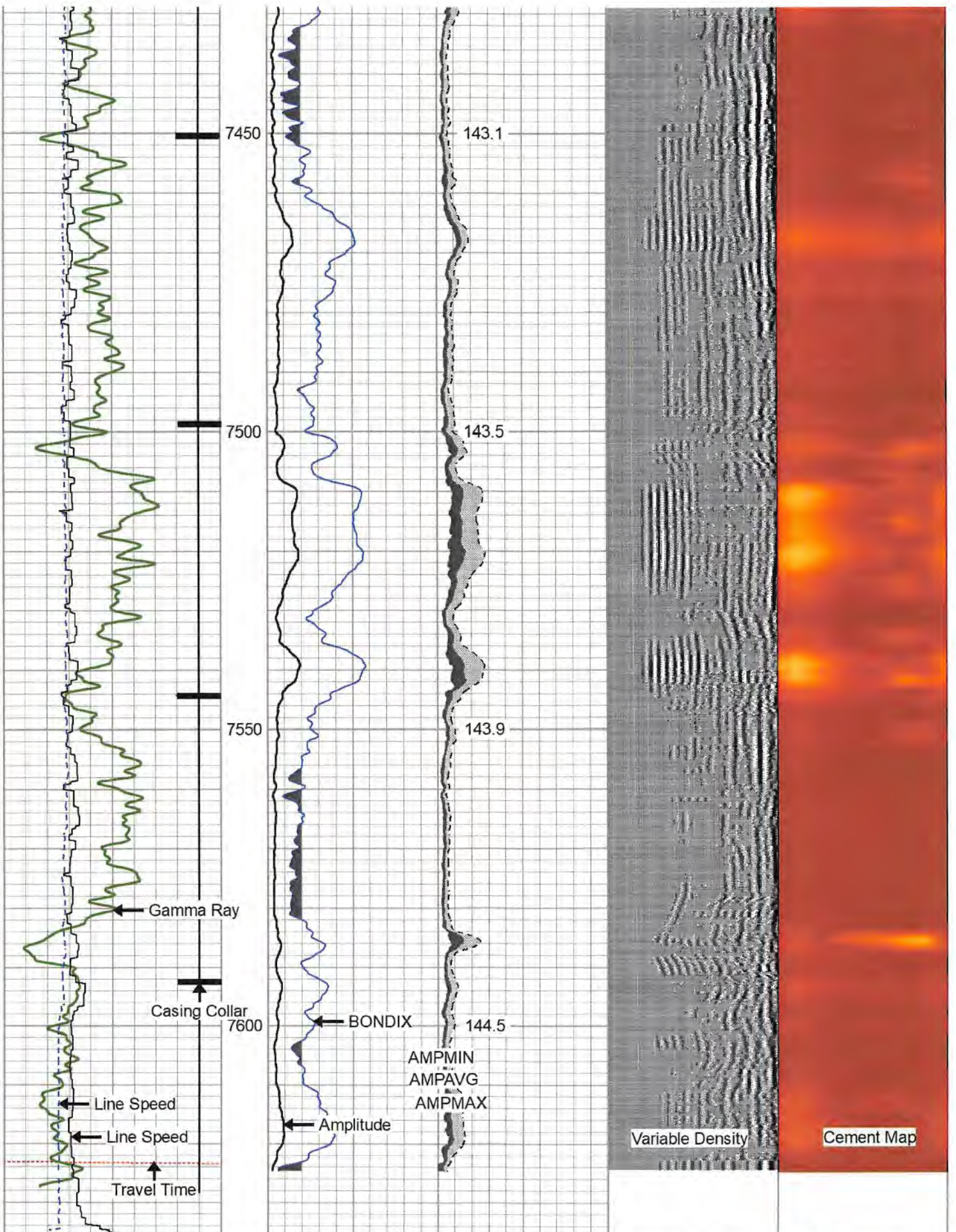












265	Travel Time (usec)	165
9	Casing Collar	-1
0	Gamma Rav (GAPI)	150

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

Variable Density	1	Cement Map	8
200	(usec)	1200	

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

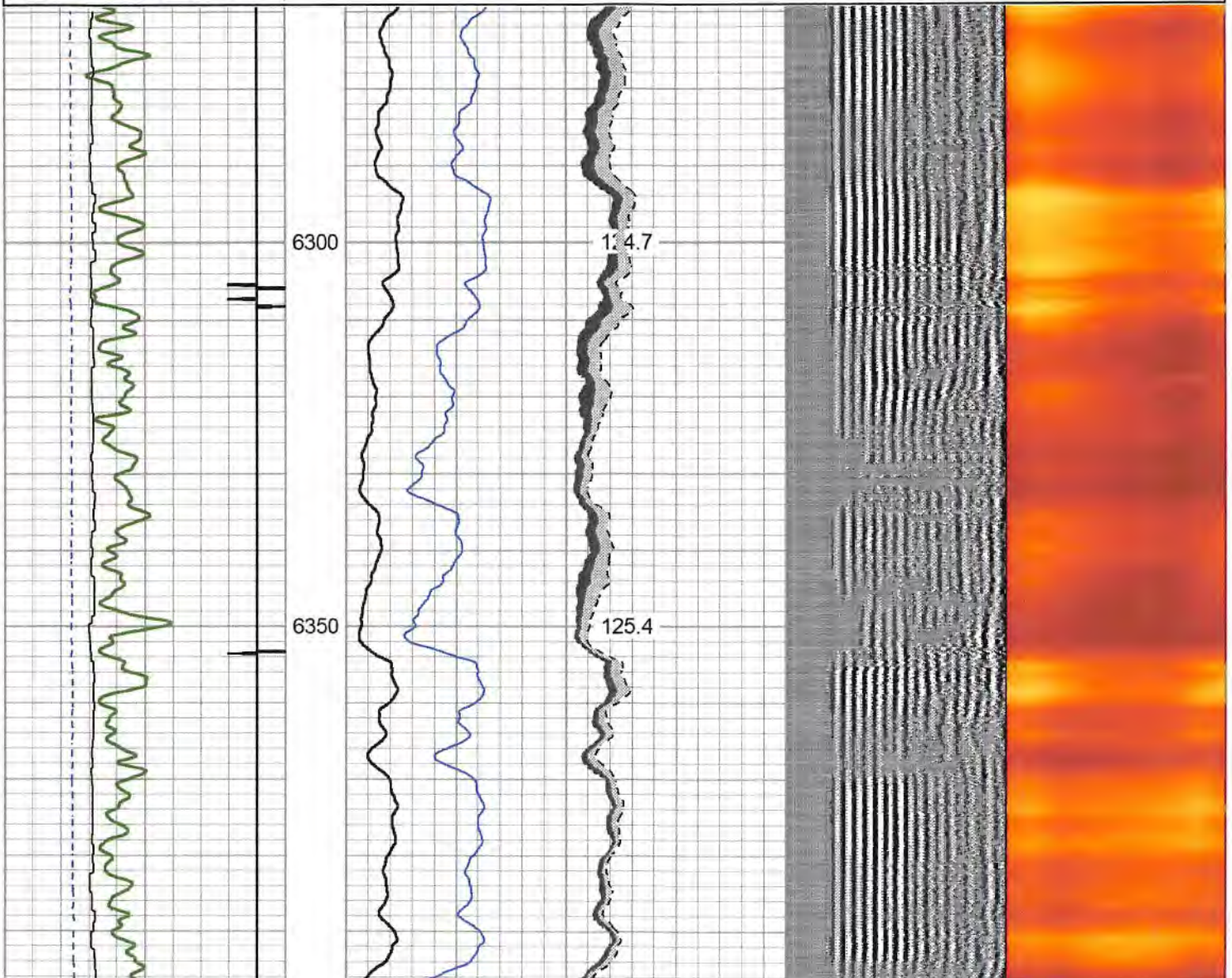
TEMP
(degF)

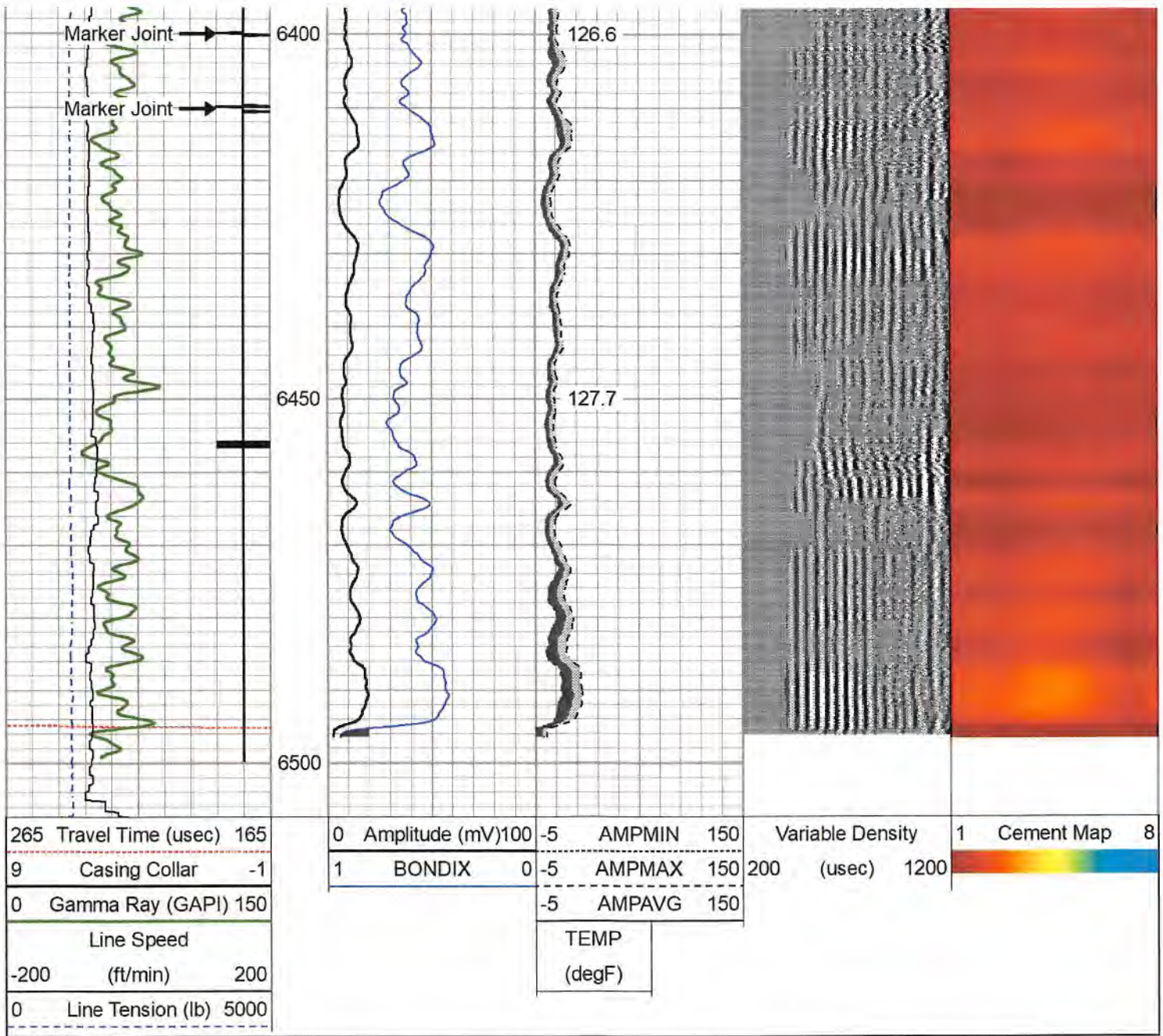


Repeat Pass 0 PSI

Database File antero_aspen_2h_rcbl_14_nov_2022.db
 Dataset Pathname pass3
 Presentation Format rcbl-bond index for antero 1020
 Dataset Creation Mon Nov 14 12:09:03 2022
 Charted by Depth in Feet scaled 1:240

265 Travel Time (usec) 165	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				





Log Variables

Database: C:\ProgramData\Warrior\Data\antero_aspen_2h_rcbl_14_nov_2022.db
 Dataset: field/well/run1/pass5/_vars_

Top - Bottom

BHTEMP_Src	BOREID	BOTTEMP	CASEOD	CASETHCK	CASEWGHT	MAXAMPL	MINAMPL
TEMP	7.875	100	5.5	0	20	71.9	2.2
MINATTN	PERFS	PPT	SRFTEMP	TDEPTH			
0.8	No	261	0	0			

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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

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Calibration Report

Database File antero_aspen_2h_rcbl_14_nov_2022.db
 Dataset Pathname pass5
 Dataset Creation Mon Nov 14 12:22:20 2022

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

Segmented Cement Bond Log Calibration Report

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Serial Number: 2.75"
 Tool Model: Probe275T
 Calibration Casing Diameter: 5.500 in
 Calibration Depth: 249.675 ft

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Master Calibration, performed Mon Nov 14 11:49:21 2022:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.003	0.367	2.200	71.921	188.425	2.759
CAL	0.596	0.594				
5'	-0.009	0.366	2.200	71.921	185.959	3.803
SUM						
S1	0.033	0.363	0.000	100.000	302.835	-10.059
S2	-0.011	0.328	0.000	100.000	295.026	3.256
S3	-0.006	0.351	0.000	100.000	279.743	1.731
S4	-0.007	0.370	0.000	100.000	265.156	1.787
S5	-0.006	0.397	0.000	100.000	247.747	1.609
S6	-0.009	0.410	0.000	100.000	238.757	2.183
S7	-0.004	0.390	0.000	100.000	253.622	0.994
S8	-0.009	0.361	0.000	100.000	270.551	2.368

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	0.596	0.594	1.000	0.000

Air Zero Calibration, performed Mon Nov 14 09:33:23 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

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	17.53		CHD-Titan Standard 1 7/16" Cable Head	1.02	1.44	1.00
			Centralizer-2.75_Overbody	1.67	3.12	5.00
Temp	14.68		RBT-Probe275T (2.75") Probe 2.75" Radial with Integral Temperature Sub	9.39	2.75	90.00
WVFS8	12.45					
WVFS7	12.45					
WVFS6	12.45					
WVFS5	12.45					
WVFS4	12.45					
WVFS3	12.45					
WVFS2	12.45					
WVFS1	12.45					
WV3FT	12.45					
WV5FT	11.45					
WVFCAL HEADVOLT	8.20					
CCL	7.29					
GR	5.96	GR-Probe (FW1211-86) Probe 2 3/4" Logging Gamma Ray	4.78	2.75	57.00	
		Centralizer-2.75_Overbody	1.67	3.12	5.00	
		Centralizers-5419-312-S600 Titan 3 1/8" Adjustable Centralizer	3.42	3.13	34.00	

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Dataset:	antero_aspen_2h_rcbl_14_nov_2022.db: field/well/run1/pass5
Total length:	18.61 ft
Total weight:	192.00 lb
O.D.:	3.13 in



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

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