



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

Company Antero Resources

Well OXFD 13 IHS

Field N/A

County Doddridge State West Virginia

Location: API #: 47-017-06631

Other Services

SEC TWP RGE

Elevation

Permanent Datum Ground Level Elevation

Log Measured From Kelly Bushing 30 ft.

Drilling Measured From Kelly Bushing

K.B.

D.F.

G.L.

Company Antero Resources
Well OXFD 13 IHS
Field N/A
County Doddridge
State West Virginia

Date	12-Feb-2020	
Run Number	One	
Depth Driller	N/A	
Depth Logger	7,140 ft.	
Bottom Logged Interval	7,140 ft.	
Top Log Interval	Surface	
Open Hole Size	N/A	
Type Fluid	Water	
Density / Viscosity	N/A	
Max. Recorded Temp.	152 Deg. F.	
Estimated Cement Top	1,070 ft.	
Time Well Ready	09:00	
Time Logger on Bottom	19:01	
Equipment Number	143	
Location	Marietta, Ohio	
Recorded By	Tom Weese	
Witnessed By	Jay	
Borehole Record		
Run Number	Bit	From To
Tubing Record		
Run Number	Size	Weight
From	To	From To
Casing Record	Size	Wgt/Ft
Surface String		Top
Prot. String		Bottom
Production String	5 1/2 in.	20 lbs. Surface
Liner		N/A

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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 @ 6,603 - 6,614

Main Pass 1,500 PSI
Repeat Pass 0 PSI

RECEIVED
Office of Oil and Gas
AUG 10 2020
WV Department of
Environmental Protection

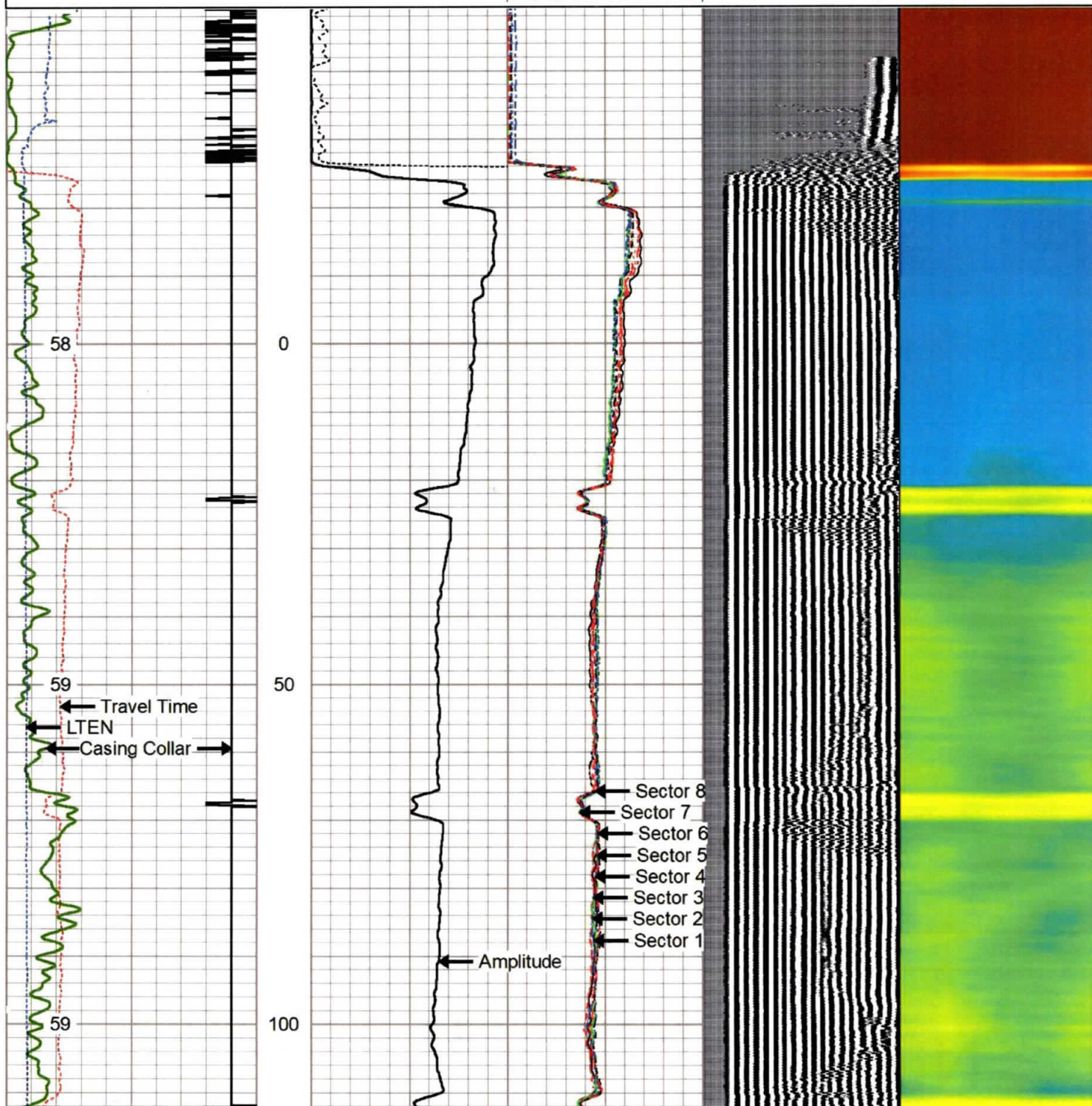
Thank You For Choosing Nine Energy Service Wireline. Marietta, Ohio

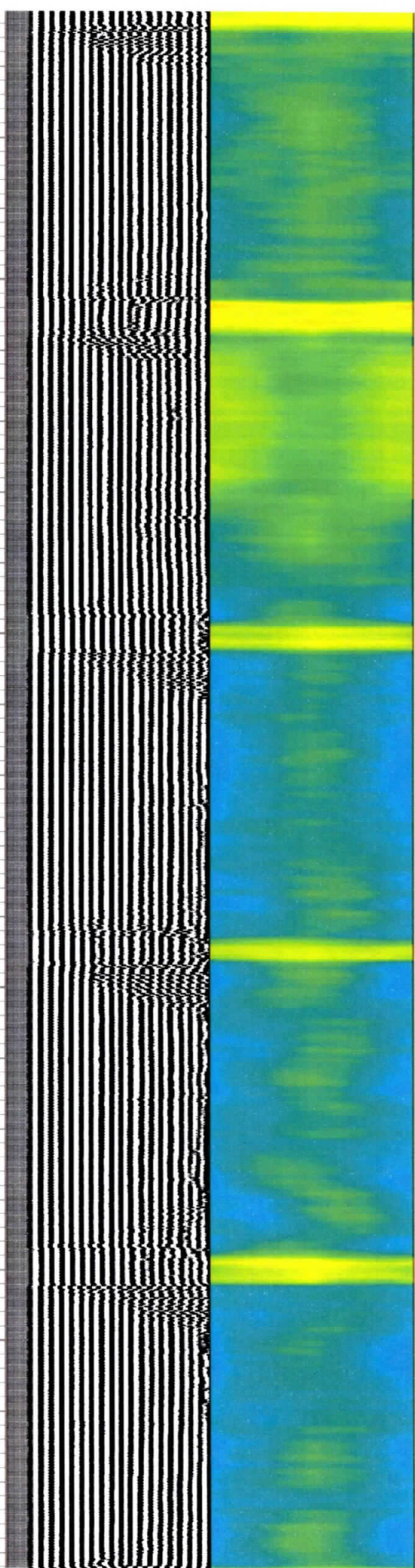
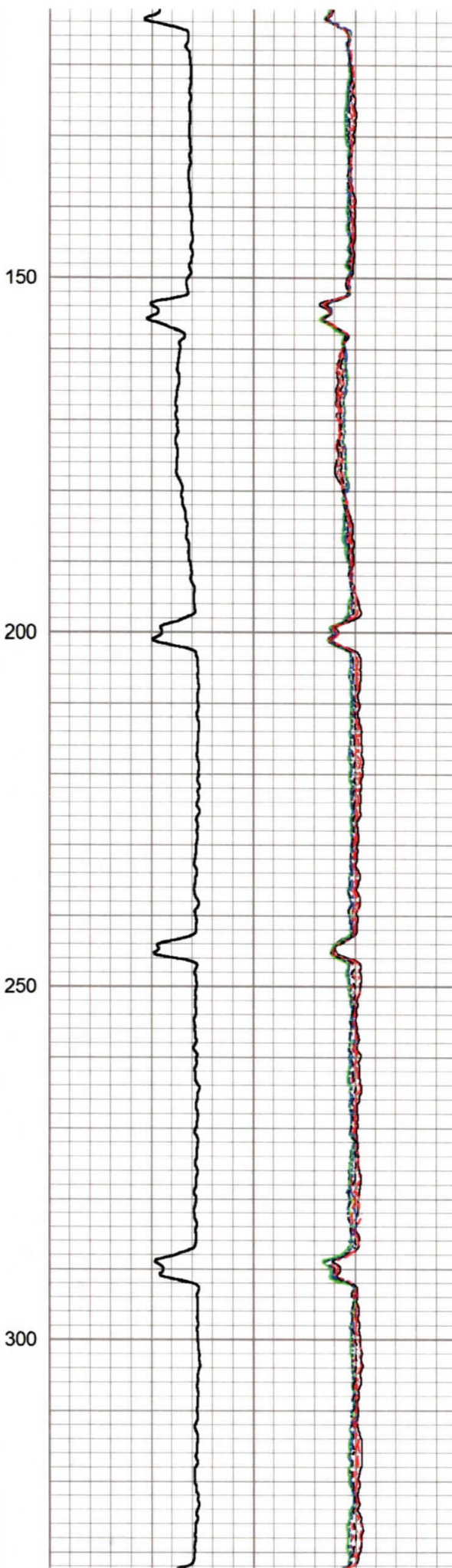
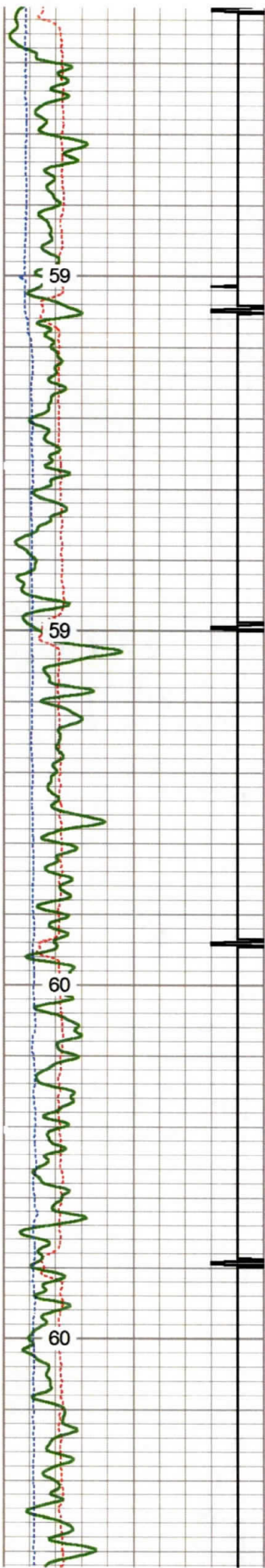


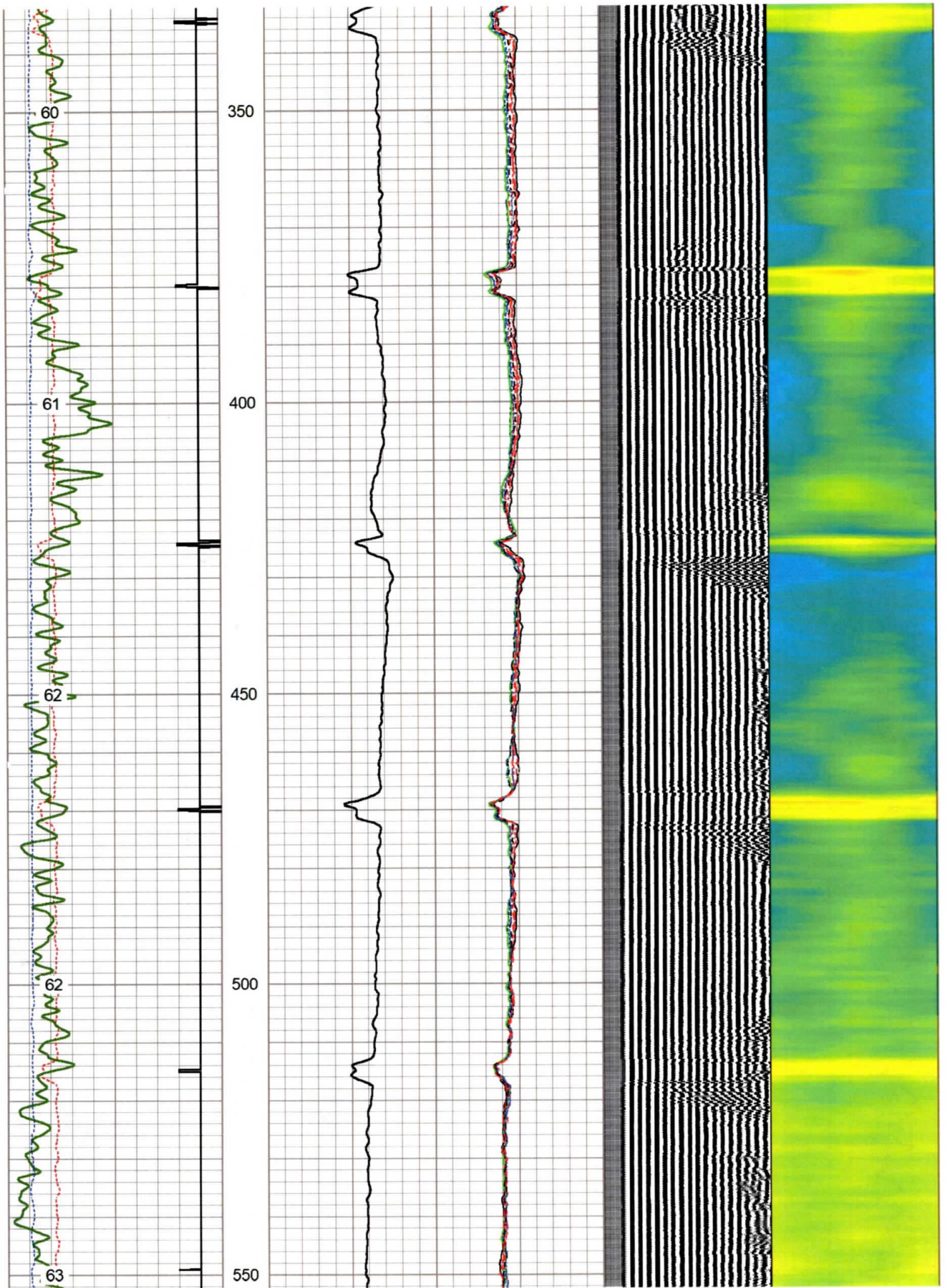
Main Pass 1,500 PSI

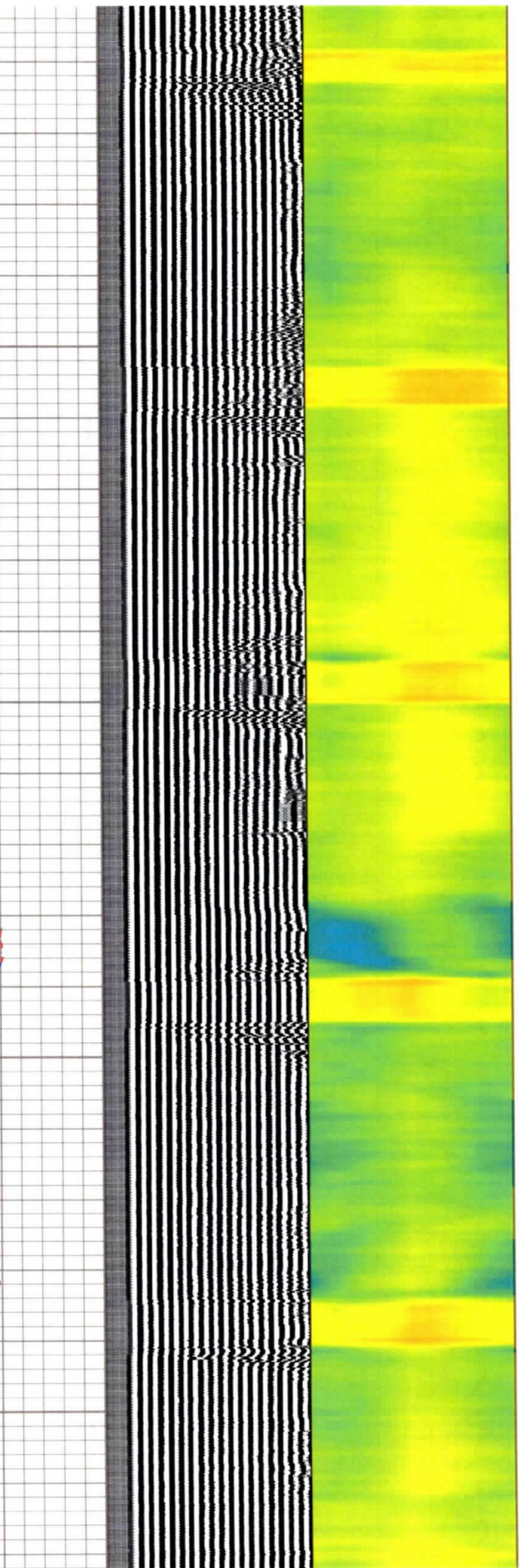
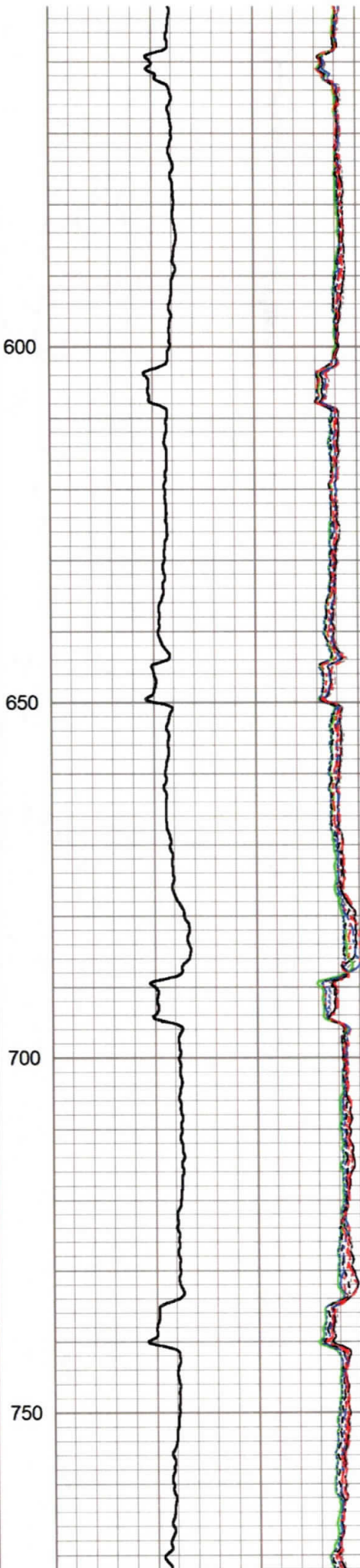
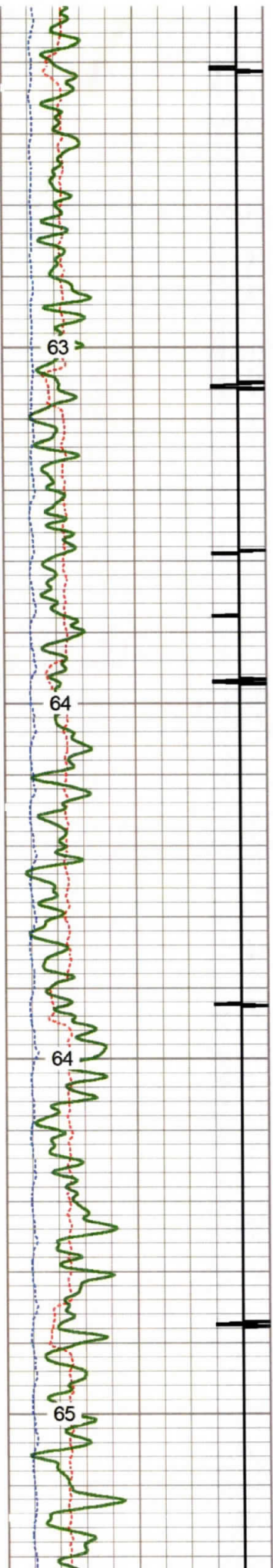
Database File antero_oxfd_13_ihs_rcbl_nineenergy_12_feb_2020.db
 Dataset Pathname Marcellus/OXFD_13_IHS/run1/pass3.1
 Presentation Format scbl03
 Dataset Creation Wed Feb 12 20:26:44 2020
 Charted by Depth in Feet scaled 1:240

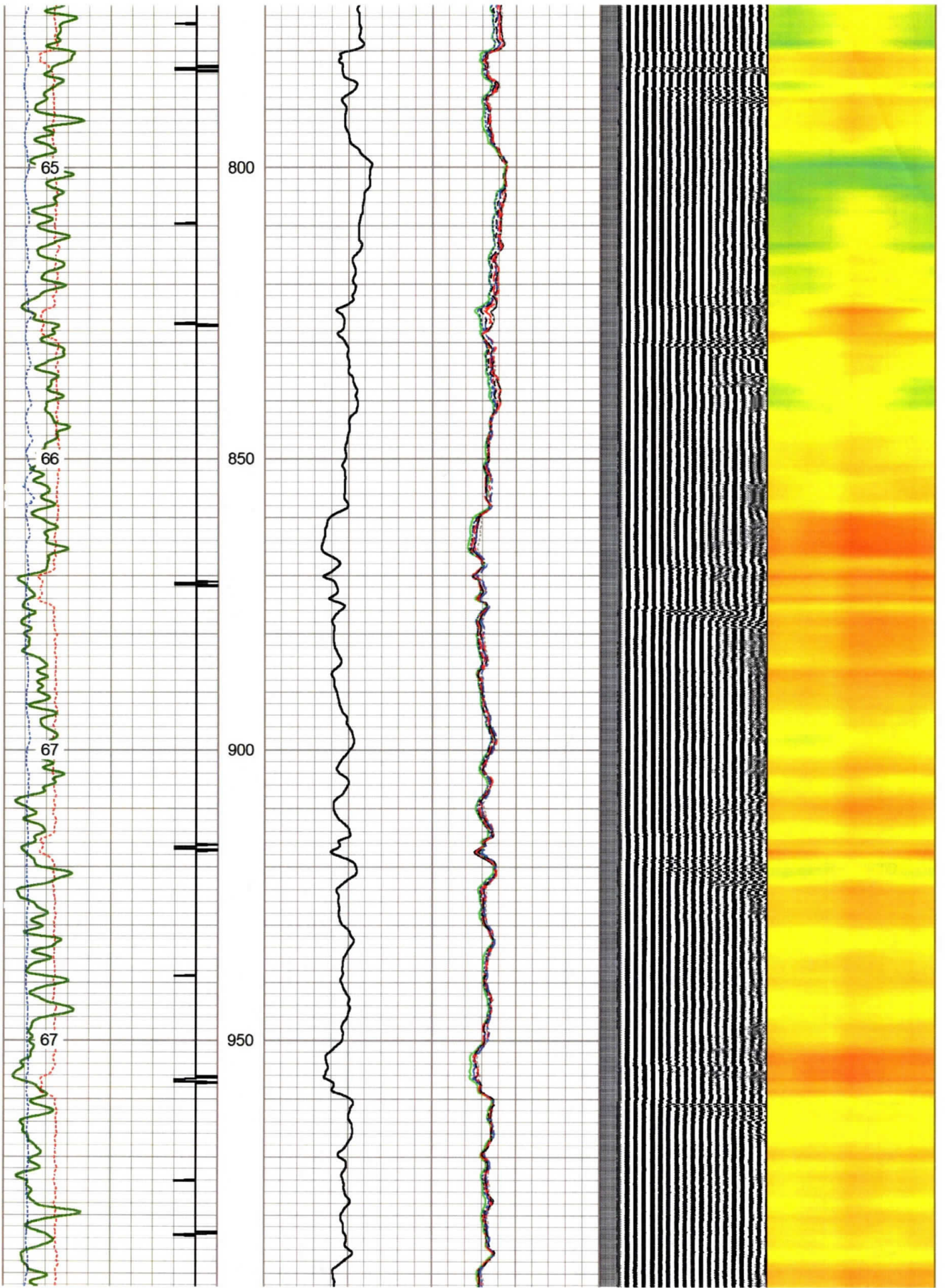
250	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
Casing Collar			Amplified Amplitude			-5	Sector 2	150	200	(usec)	1200	
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	Sector 3	150				
0	LTEN (lb)	2500				-5	Sector 4	150				
Temp (degF)						-5	Sector 5	150				
			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

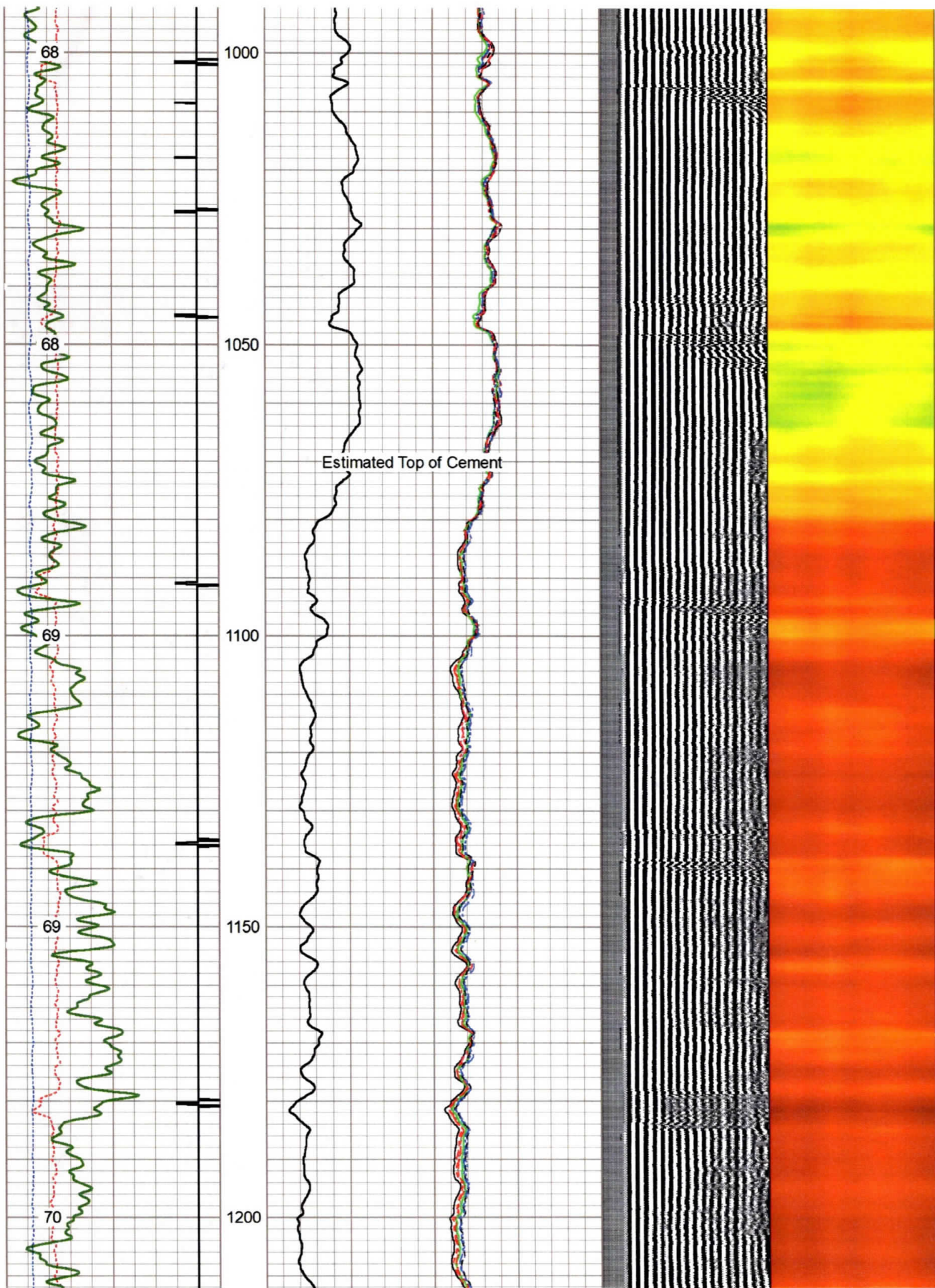


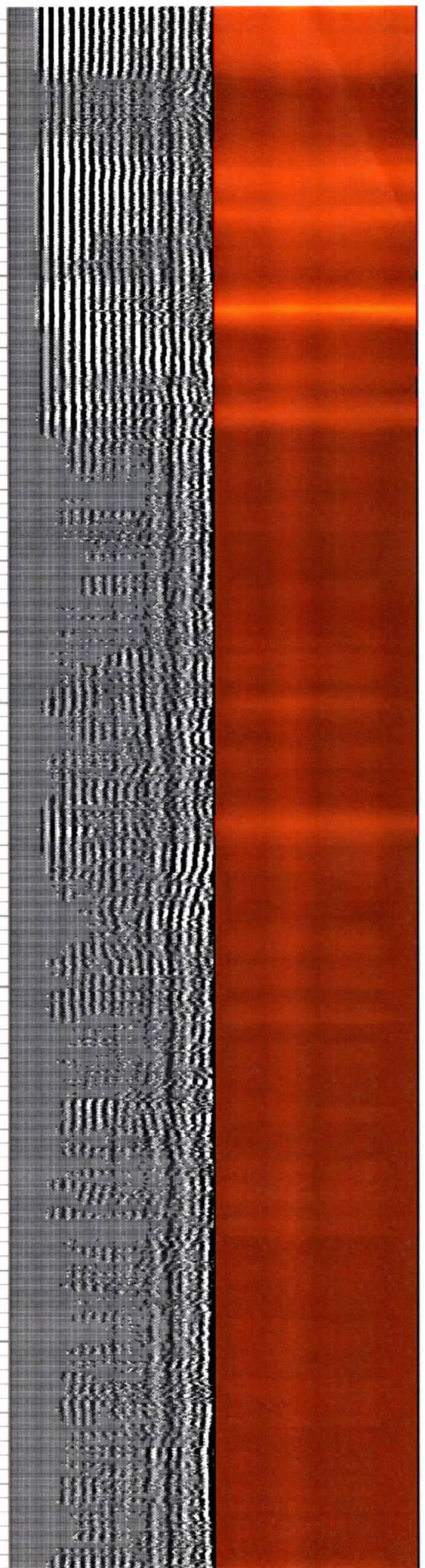
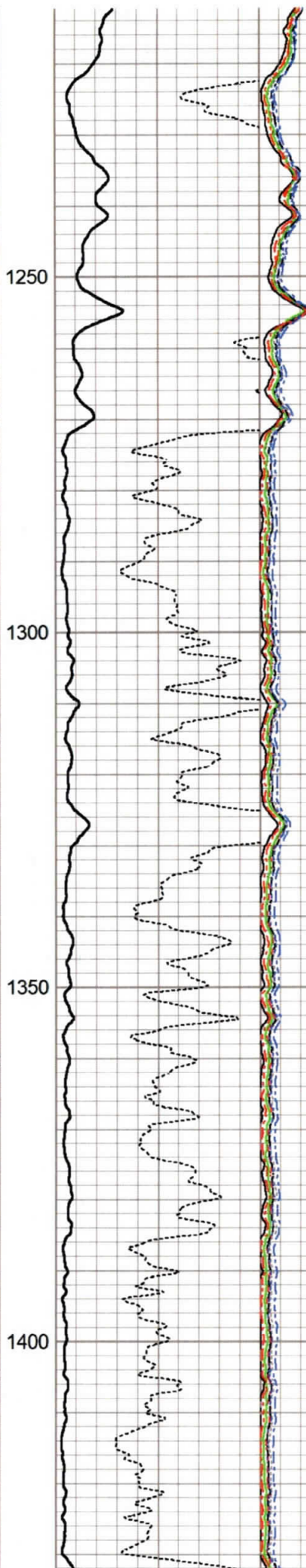
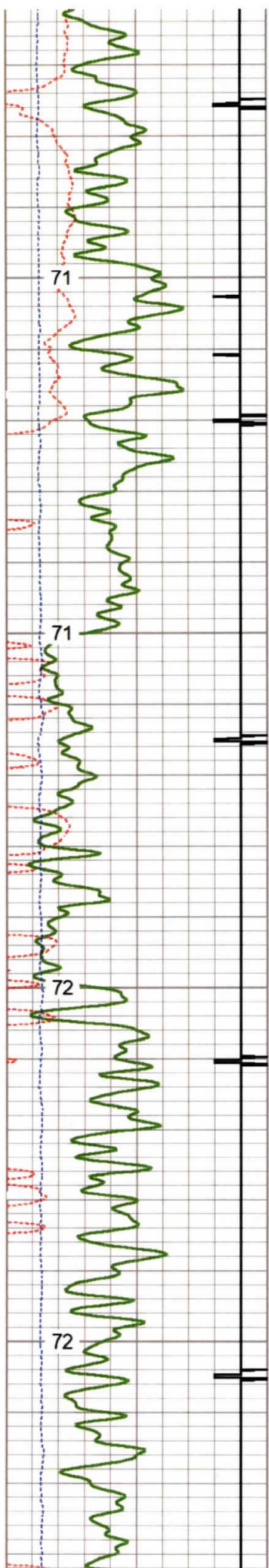


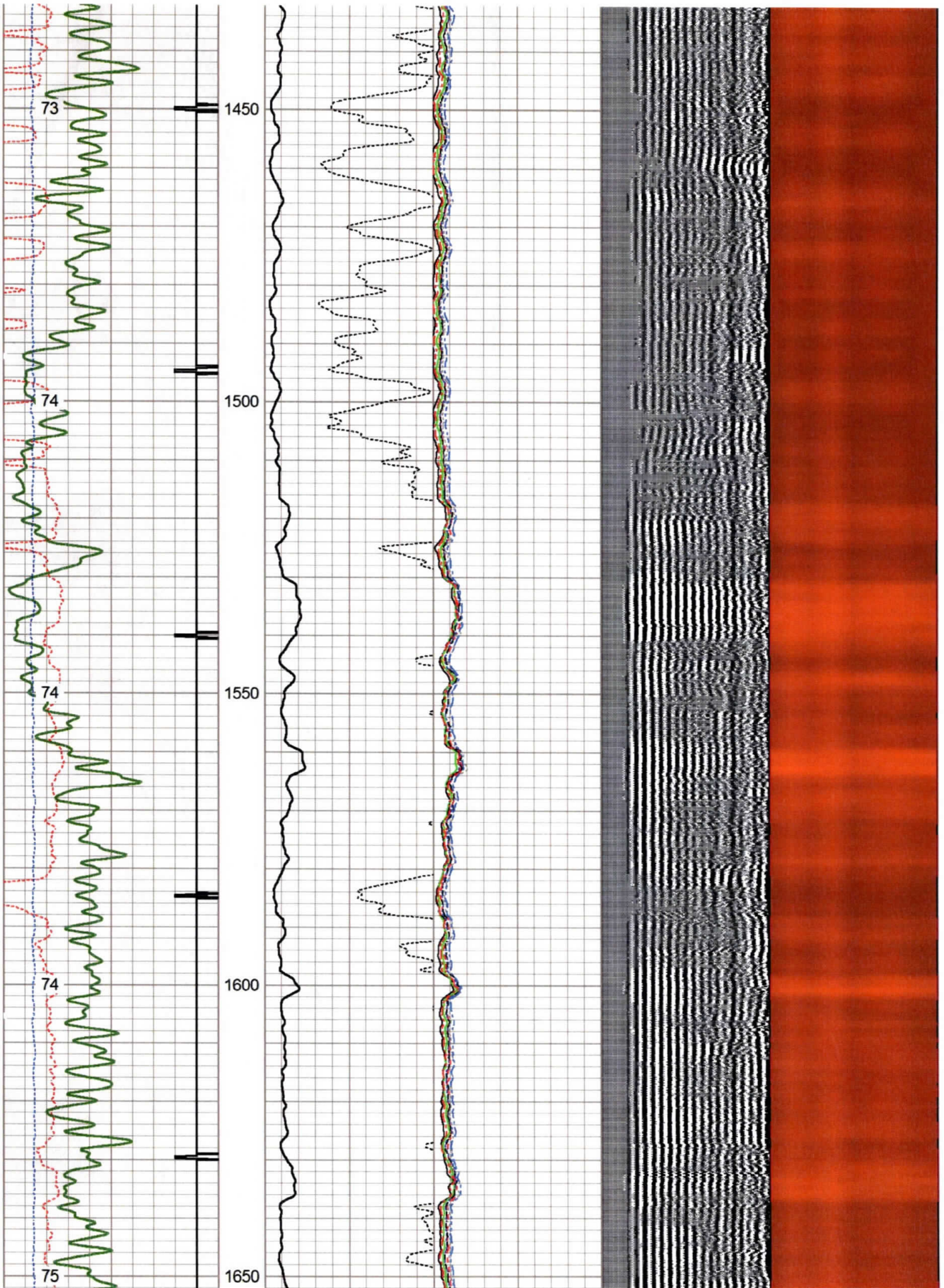


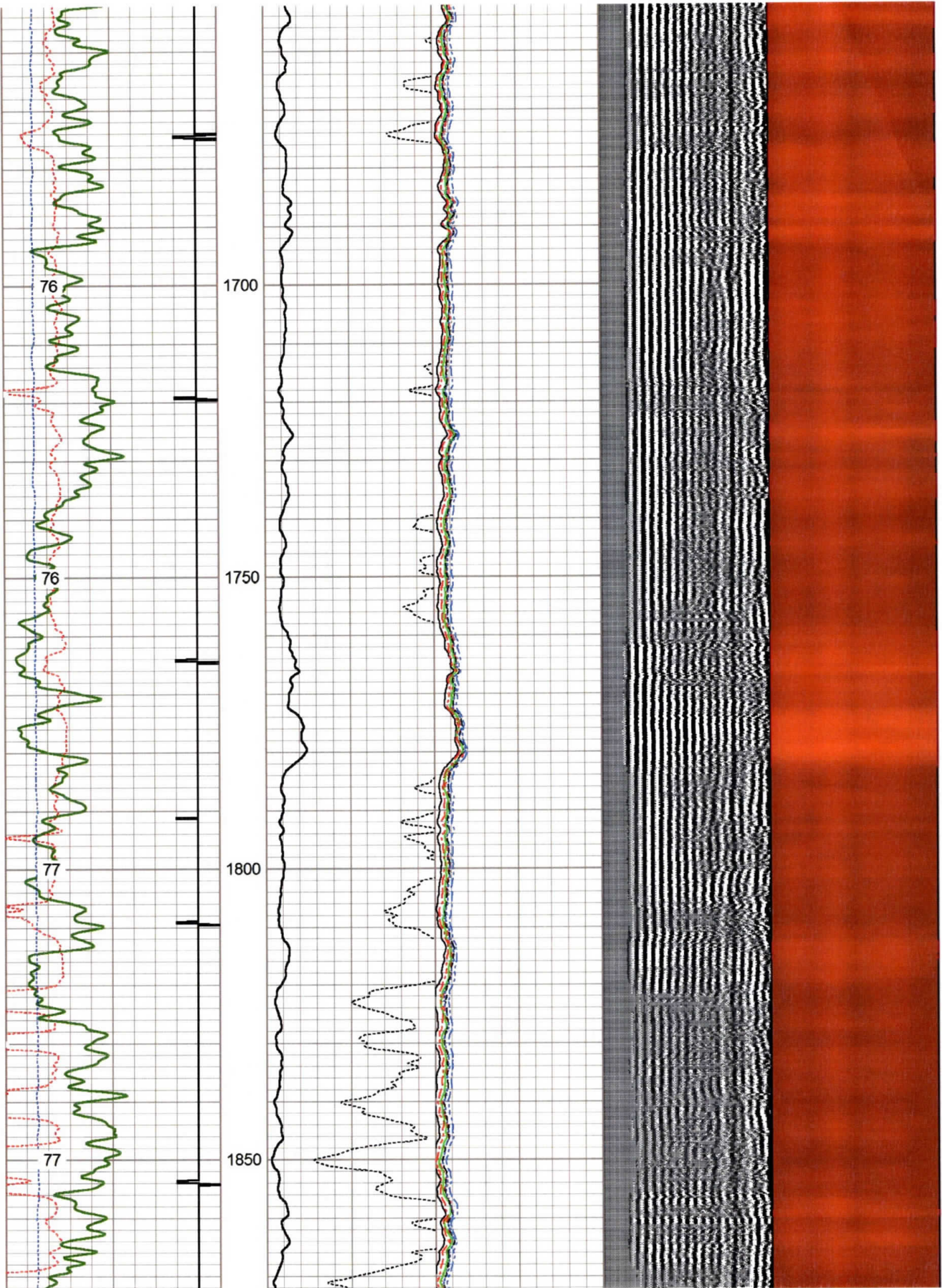


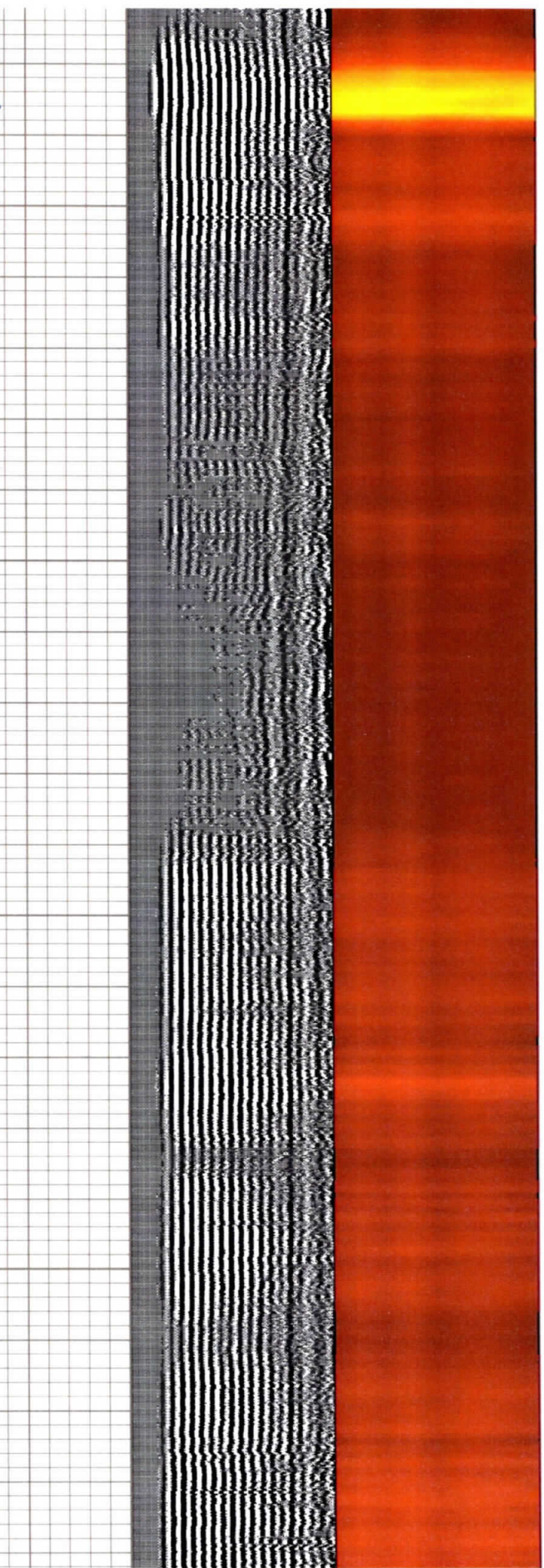
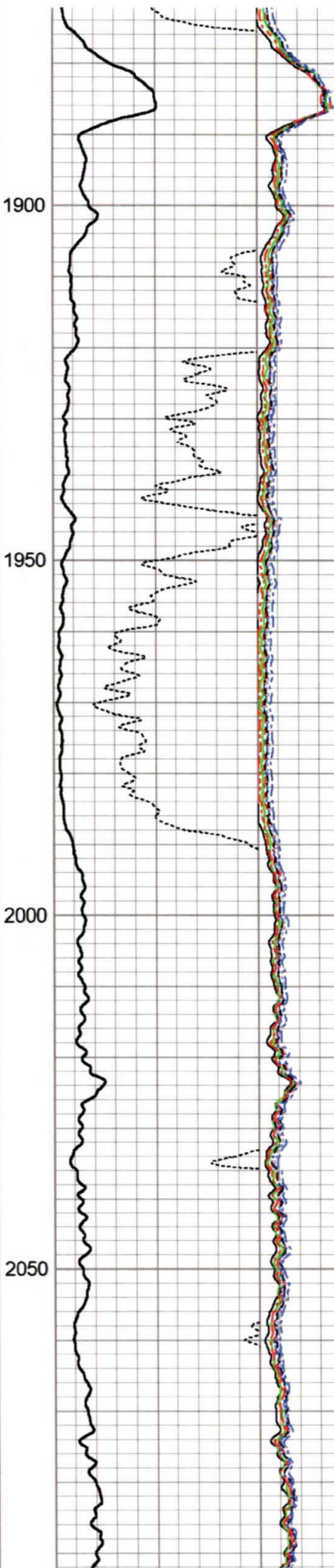
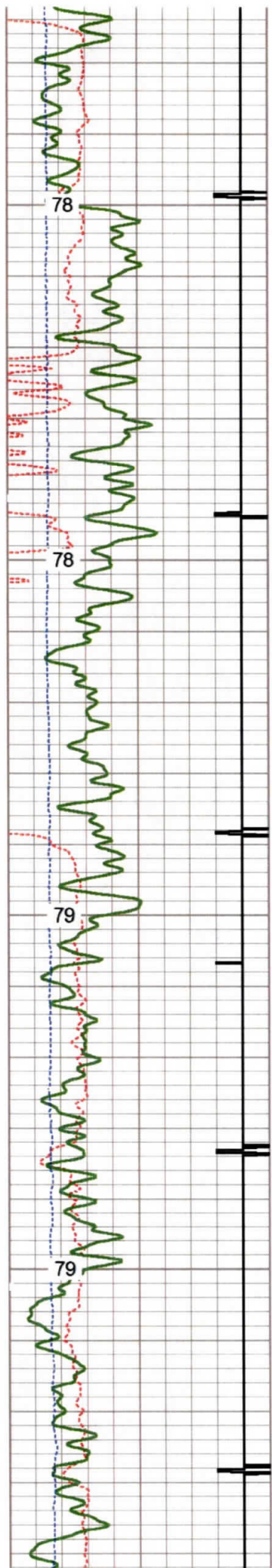


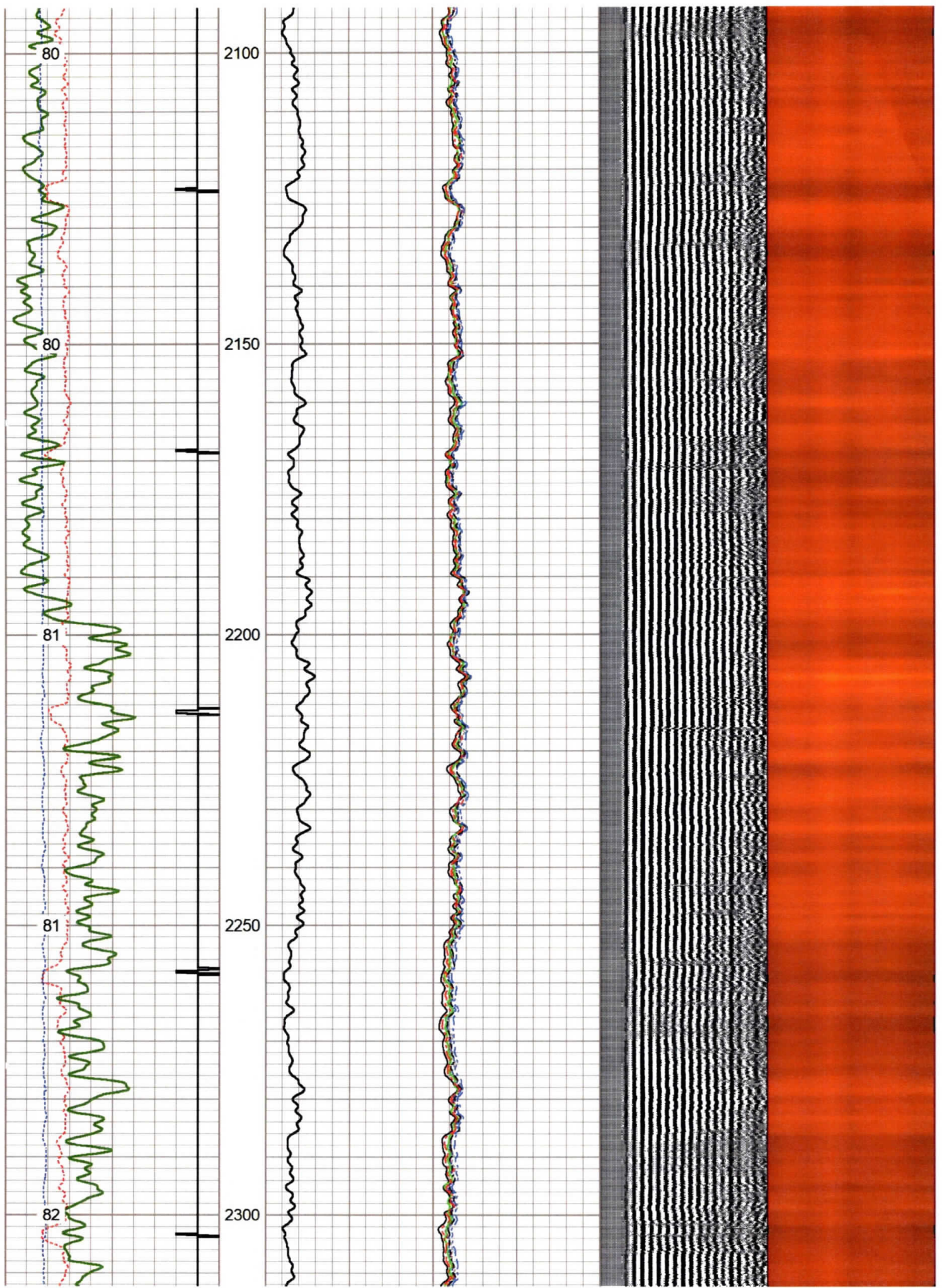


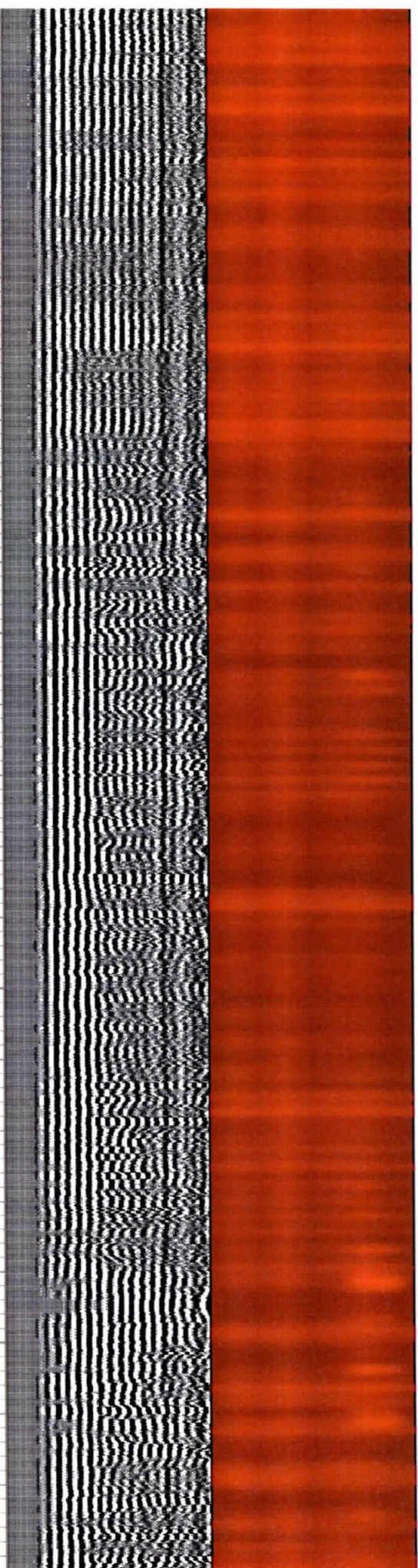
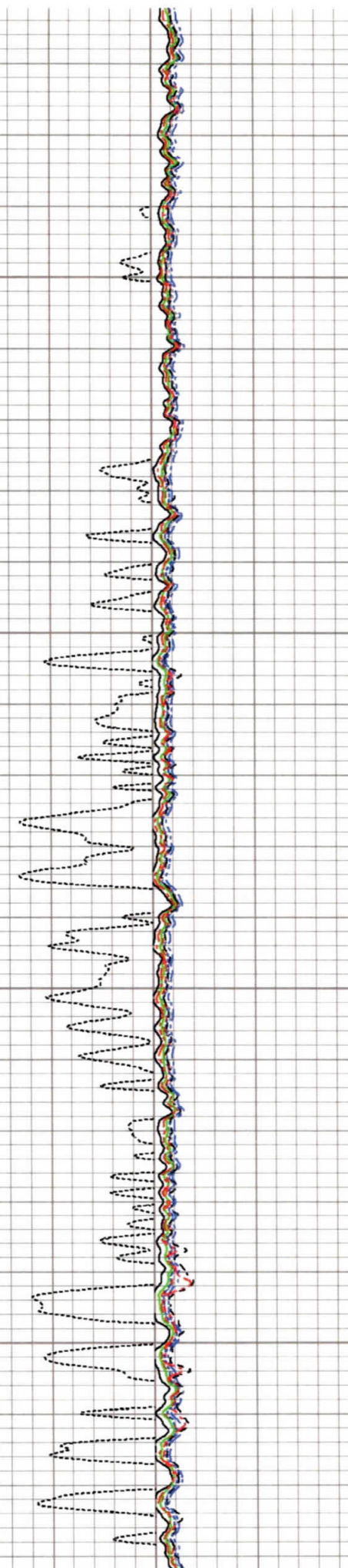
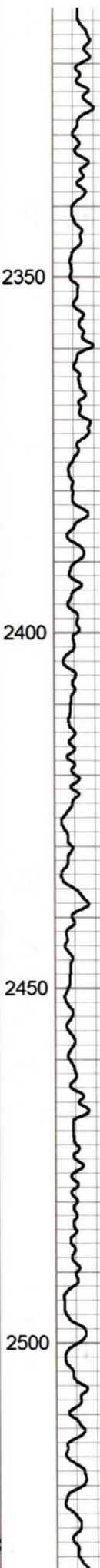
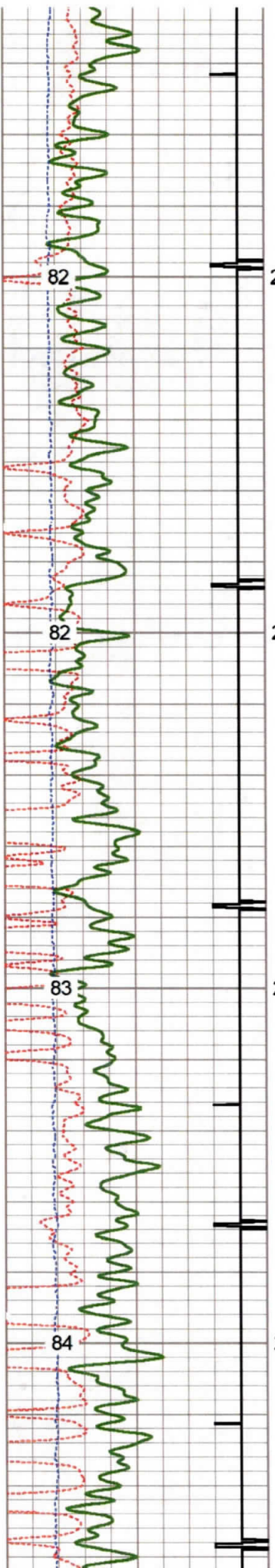


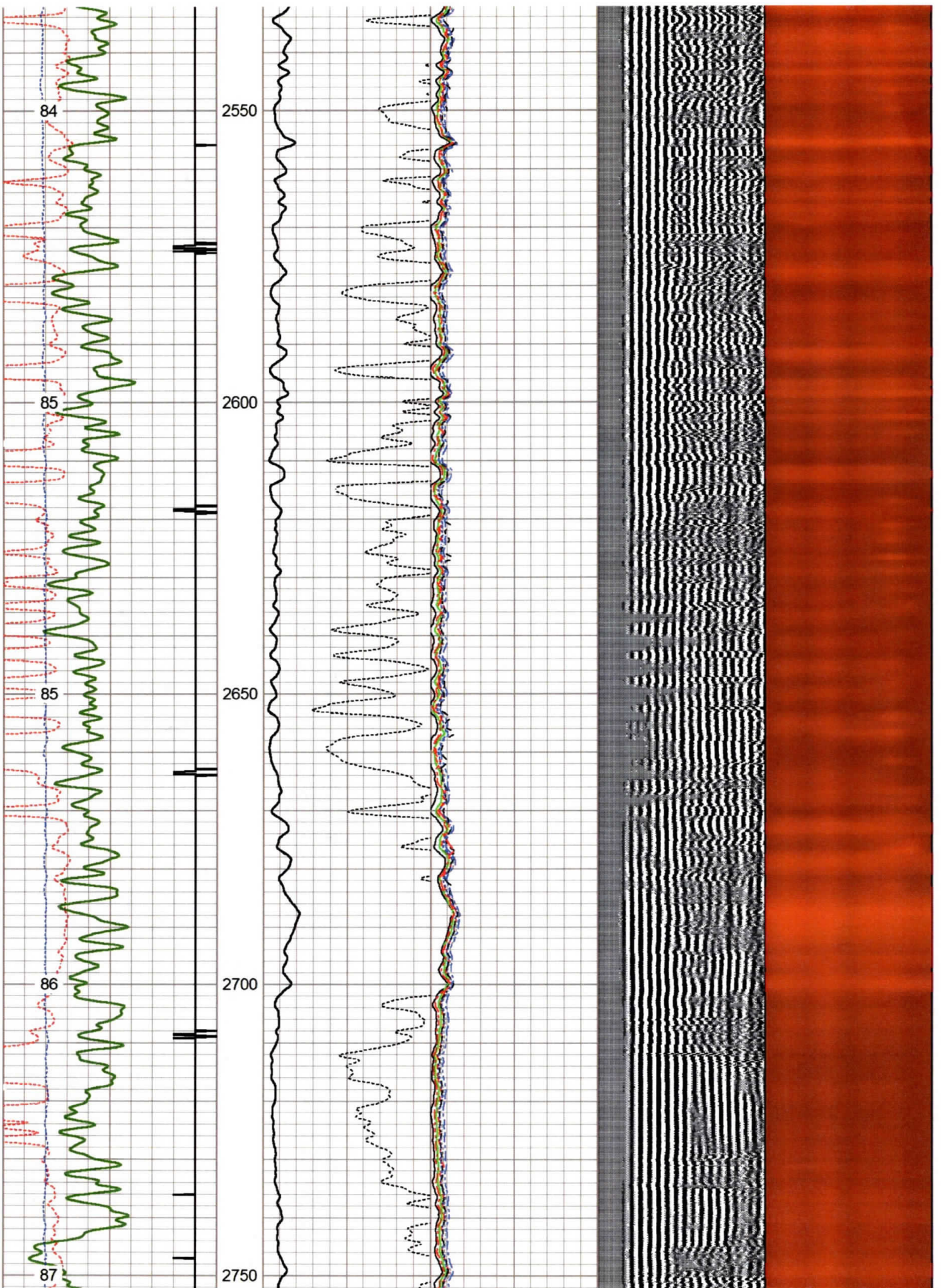


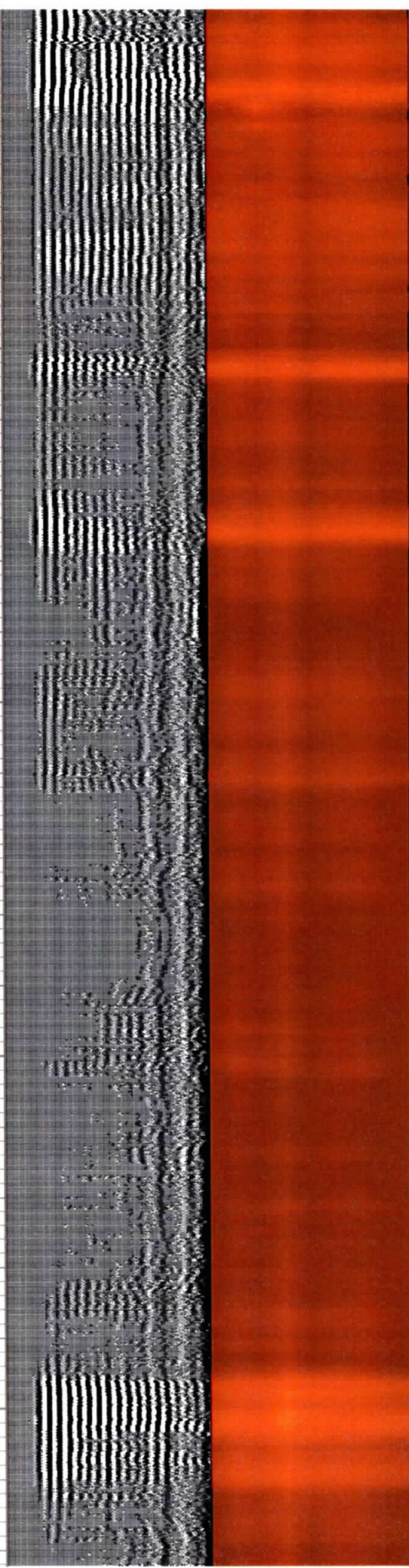
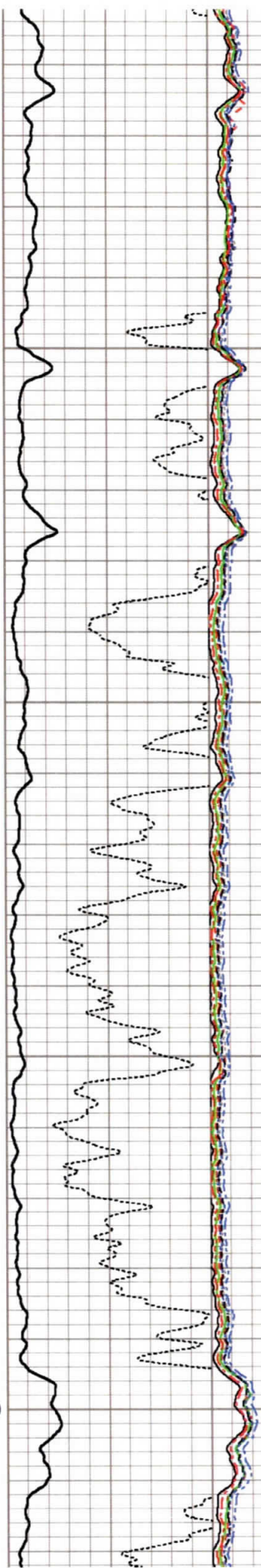
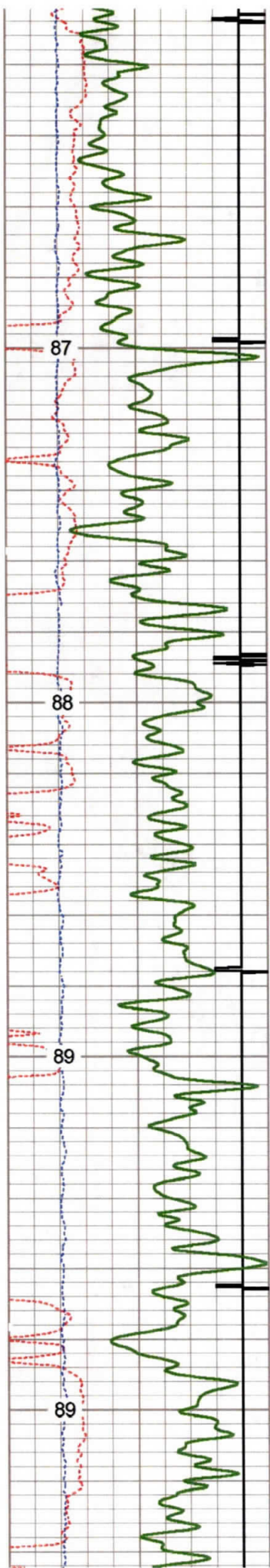


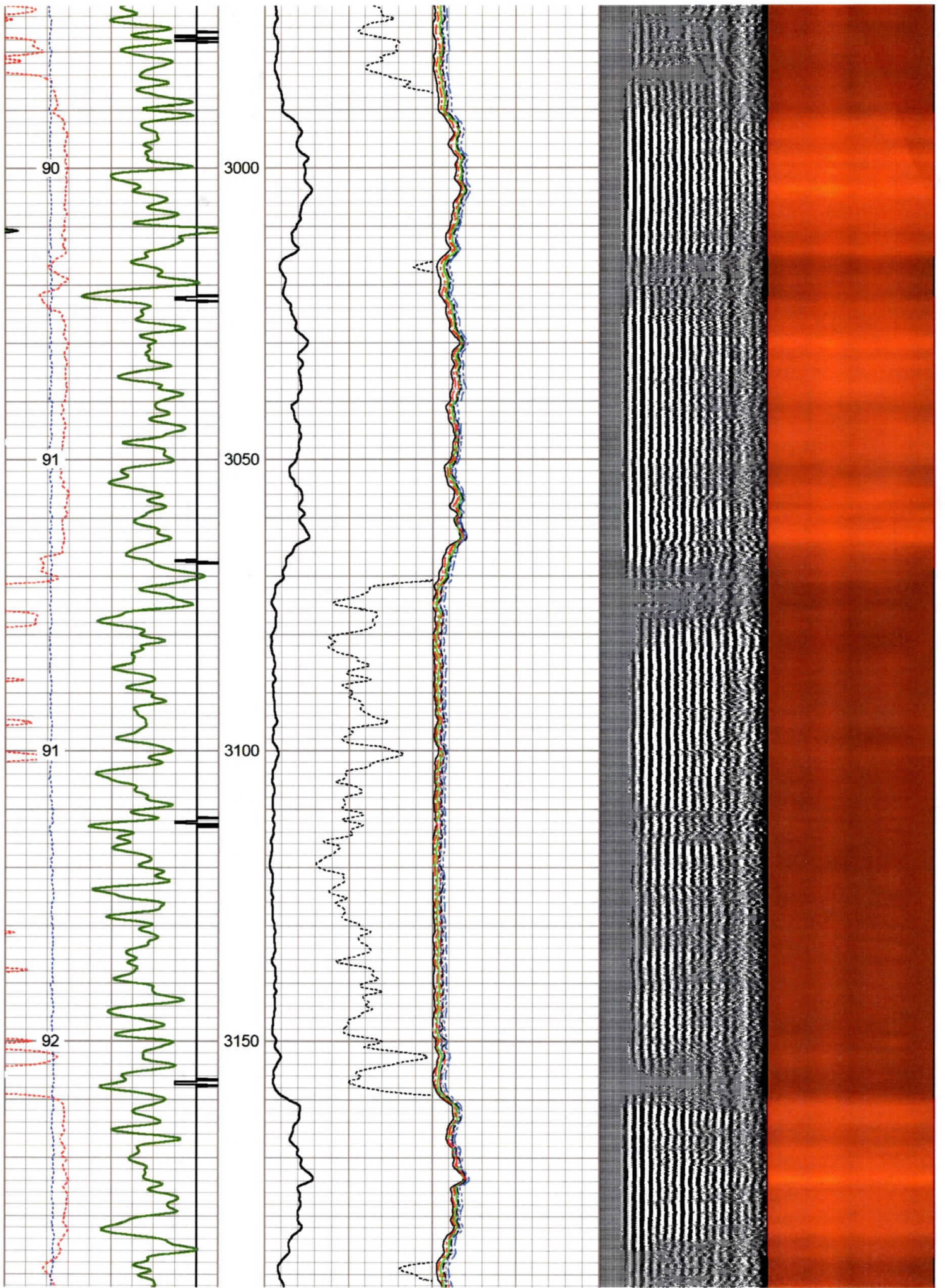


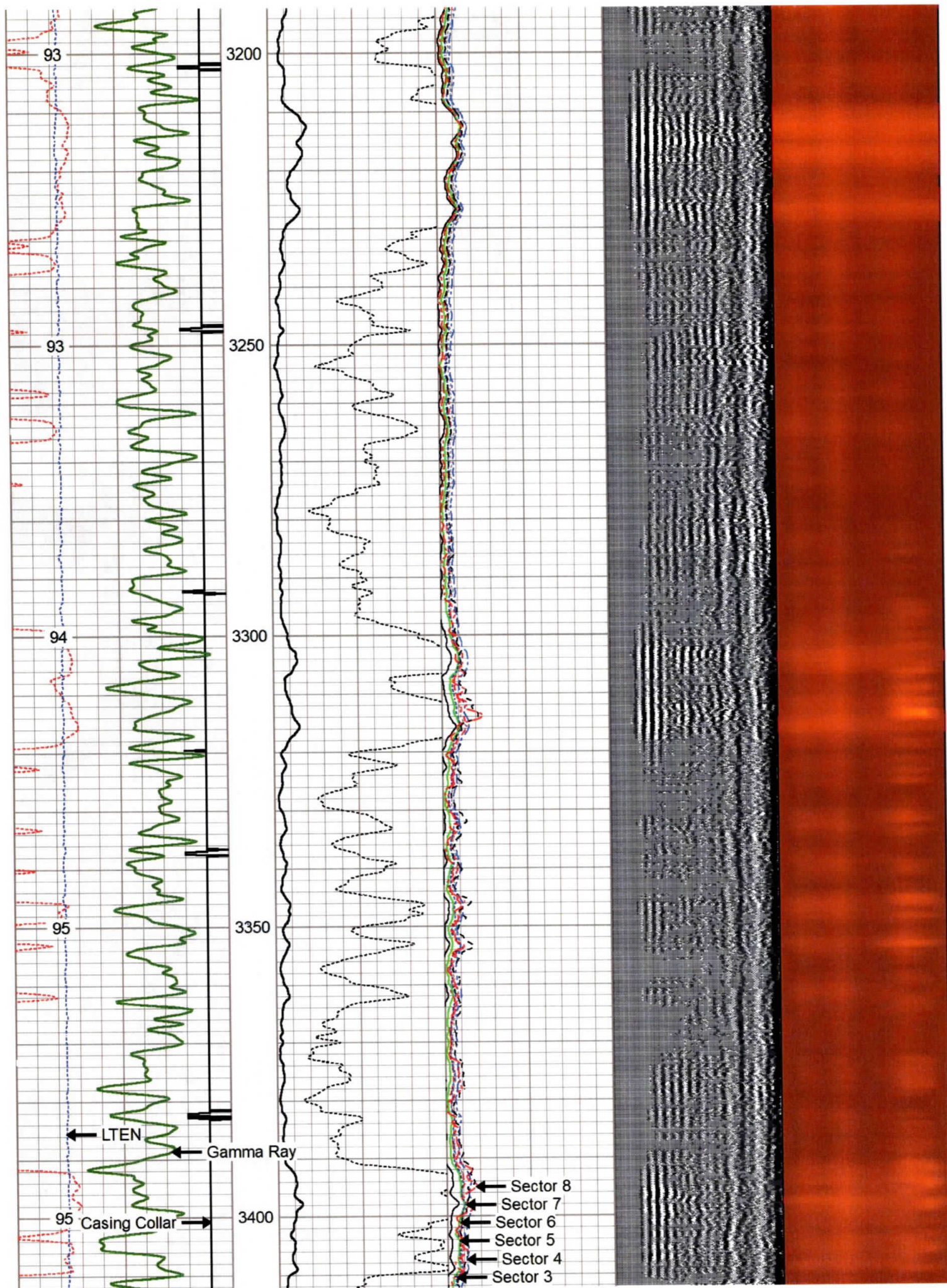


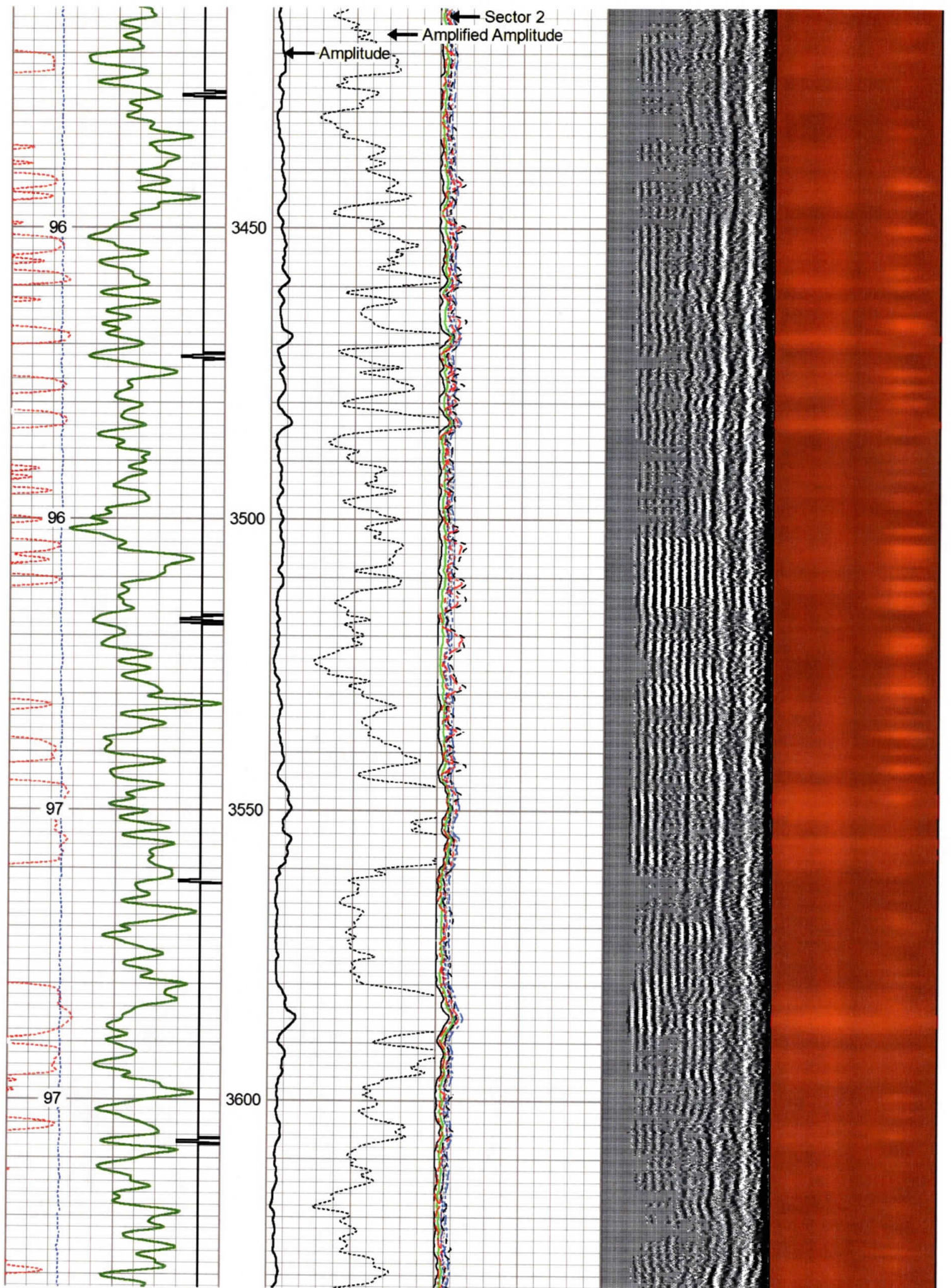


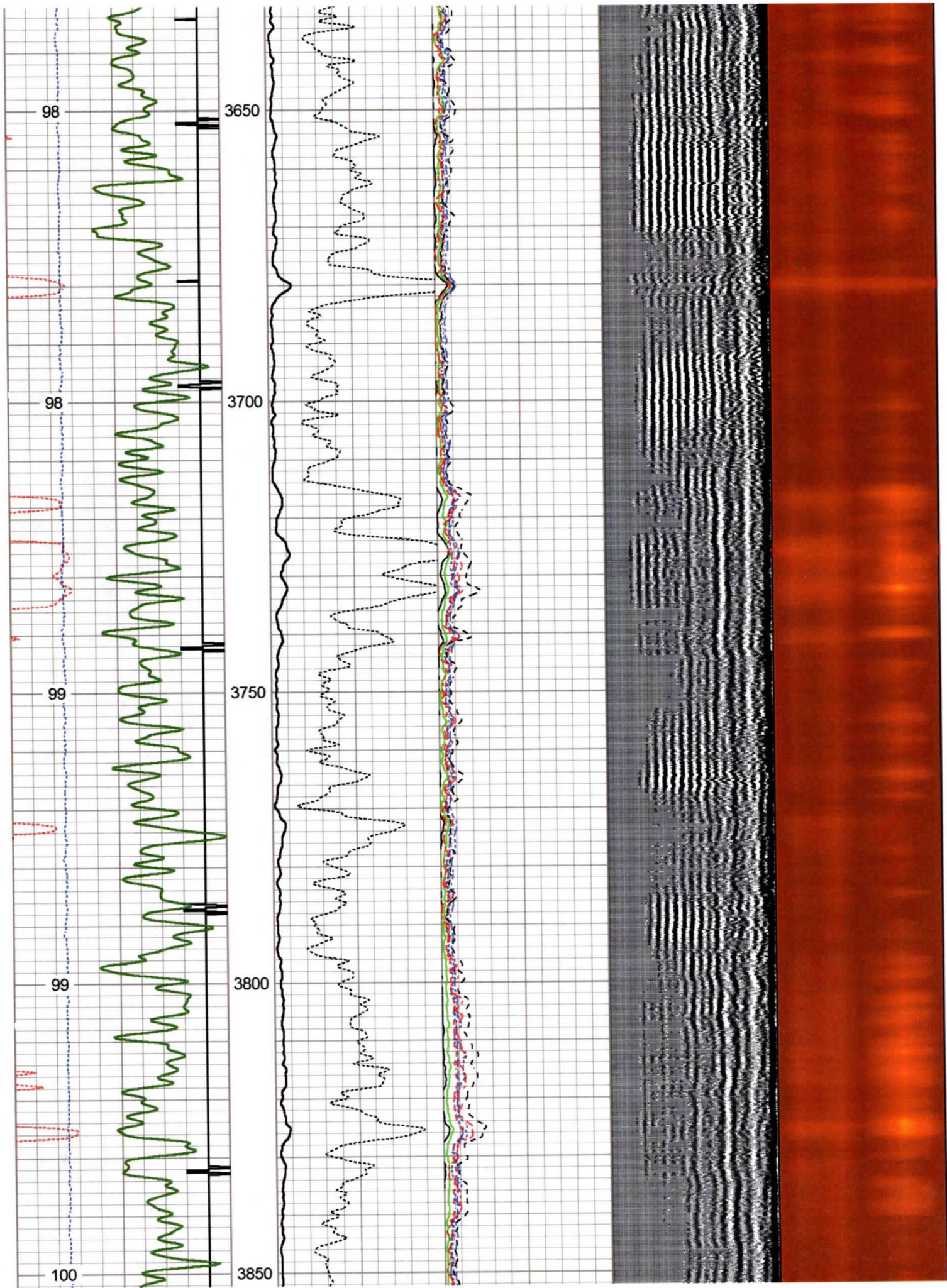


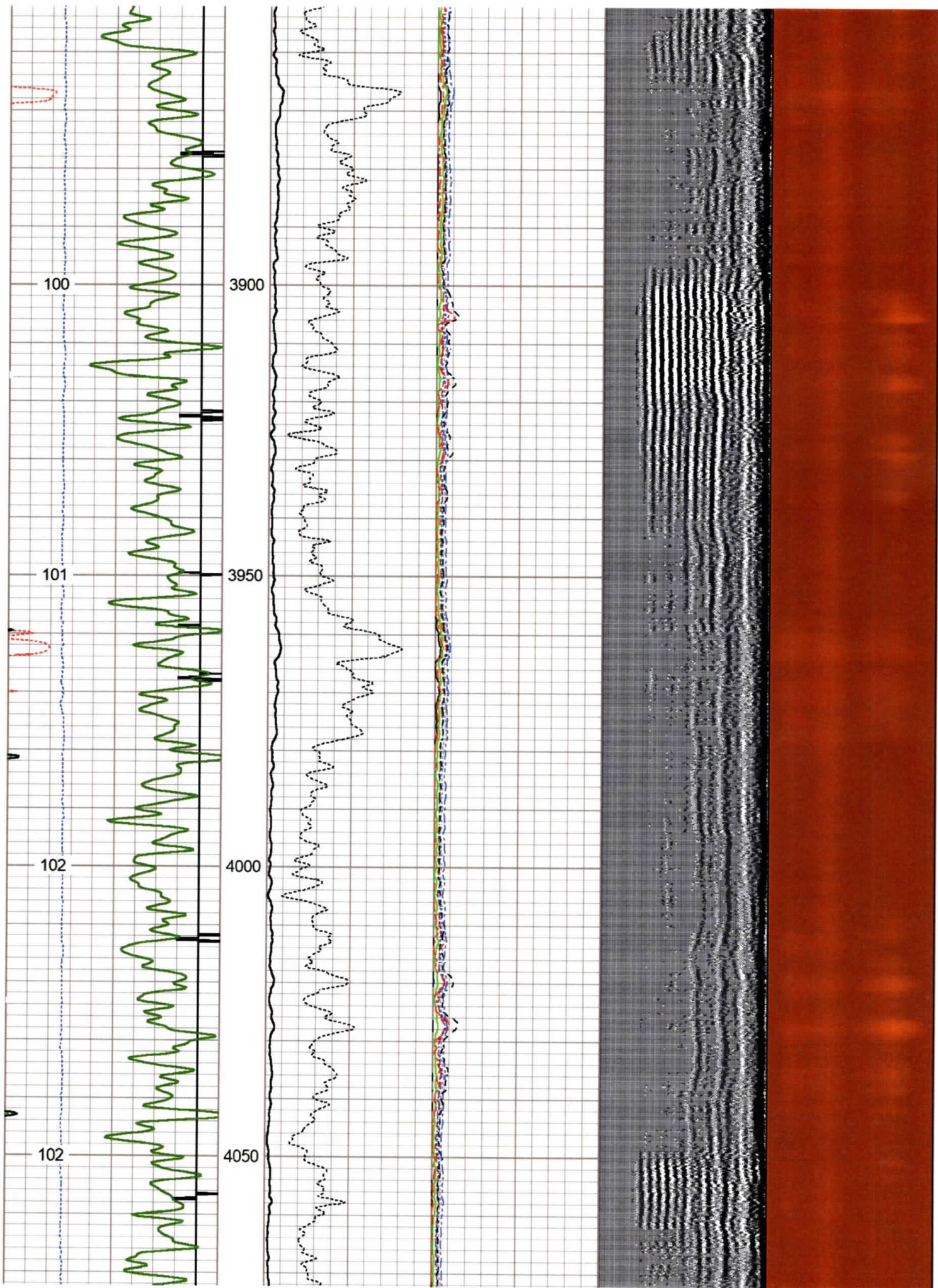


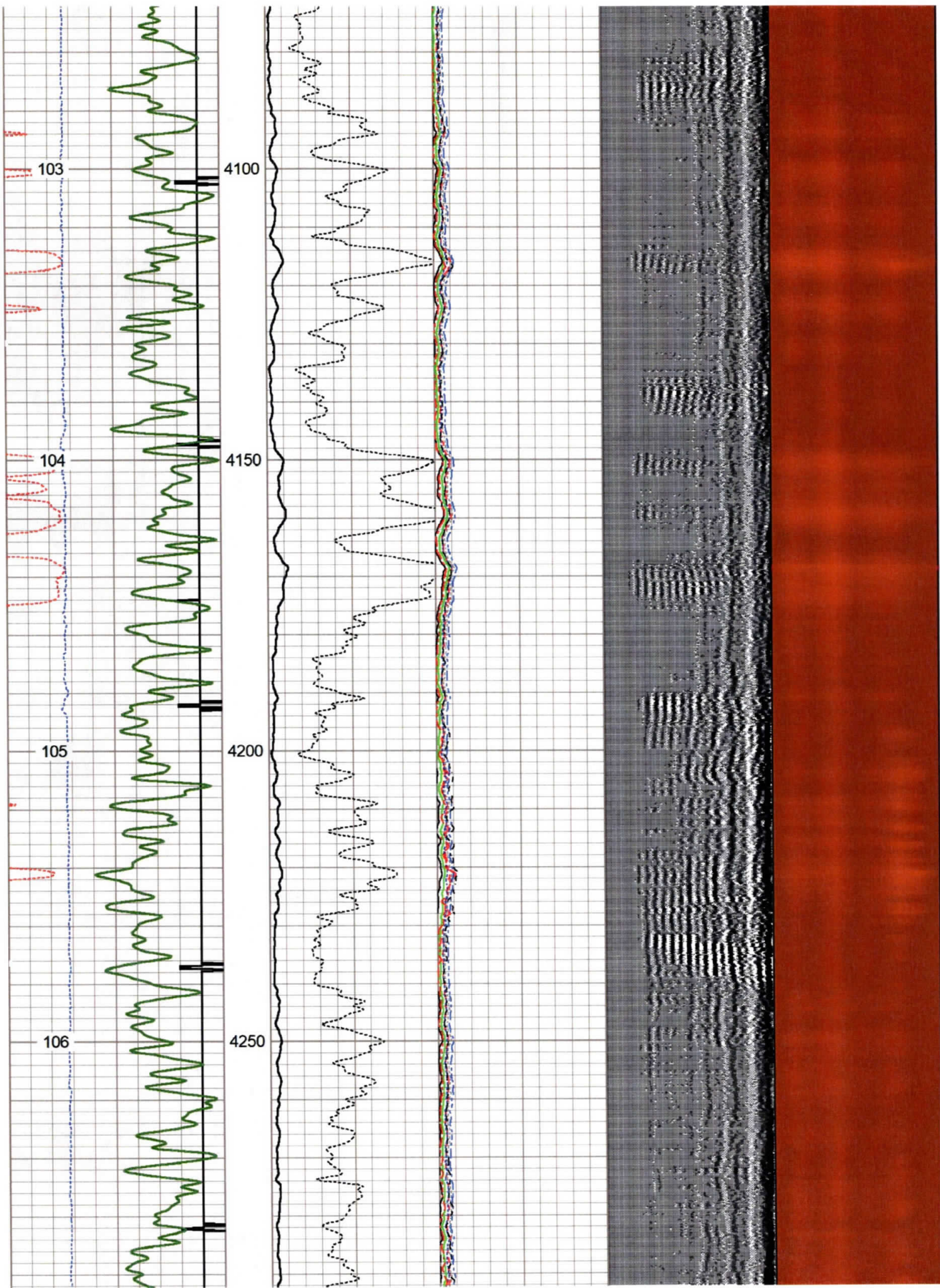


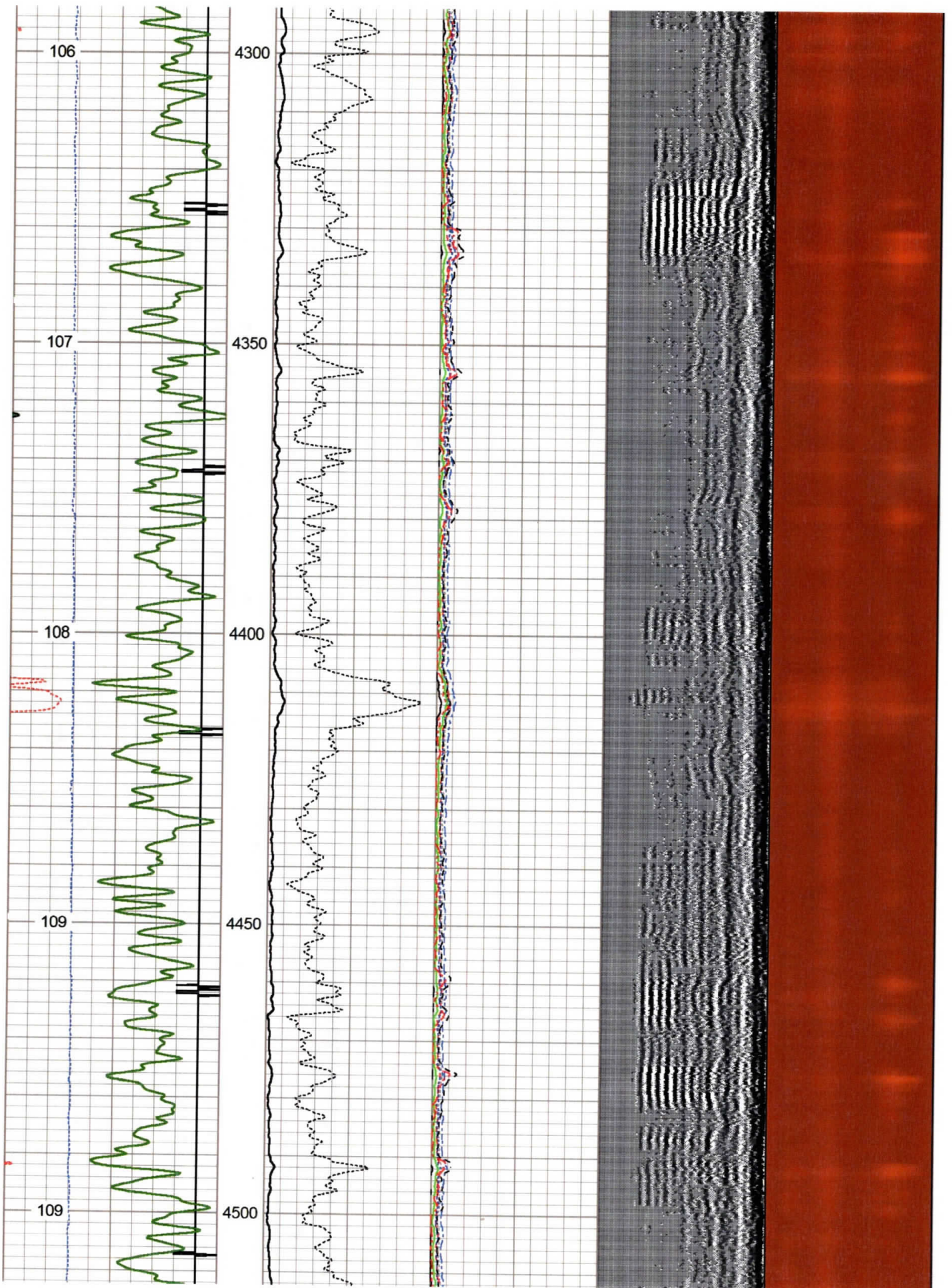


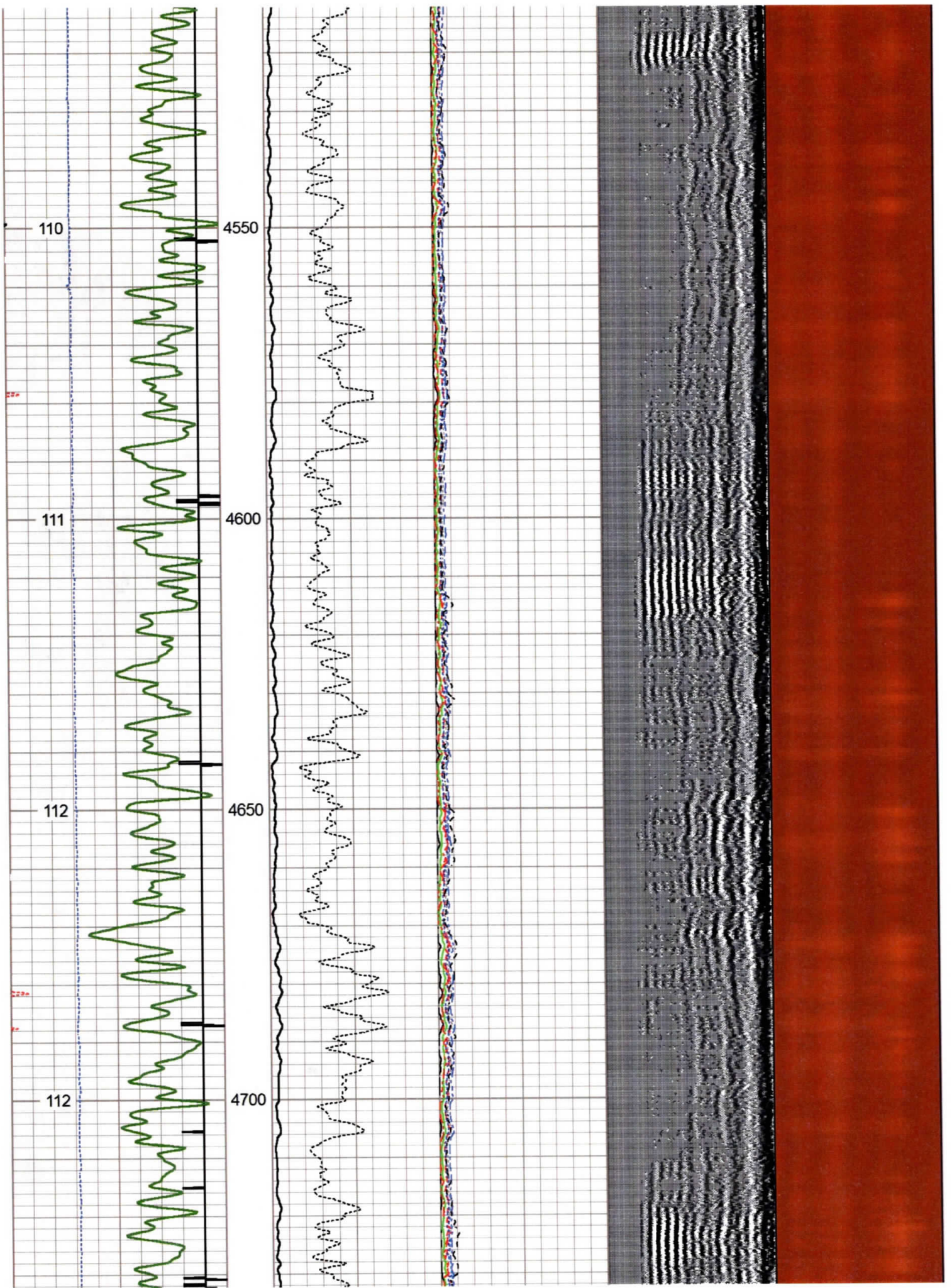


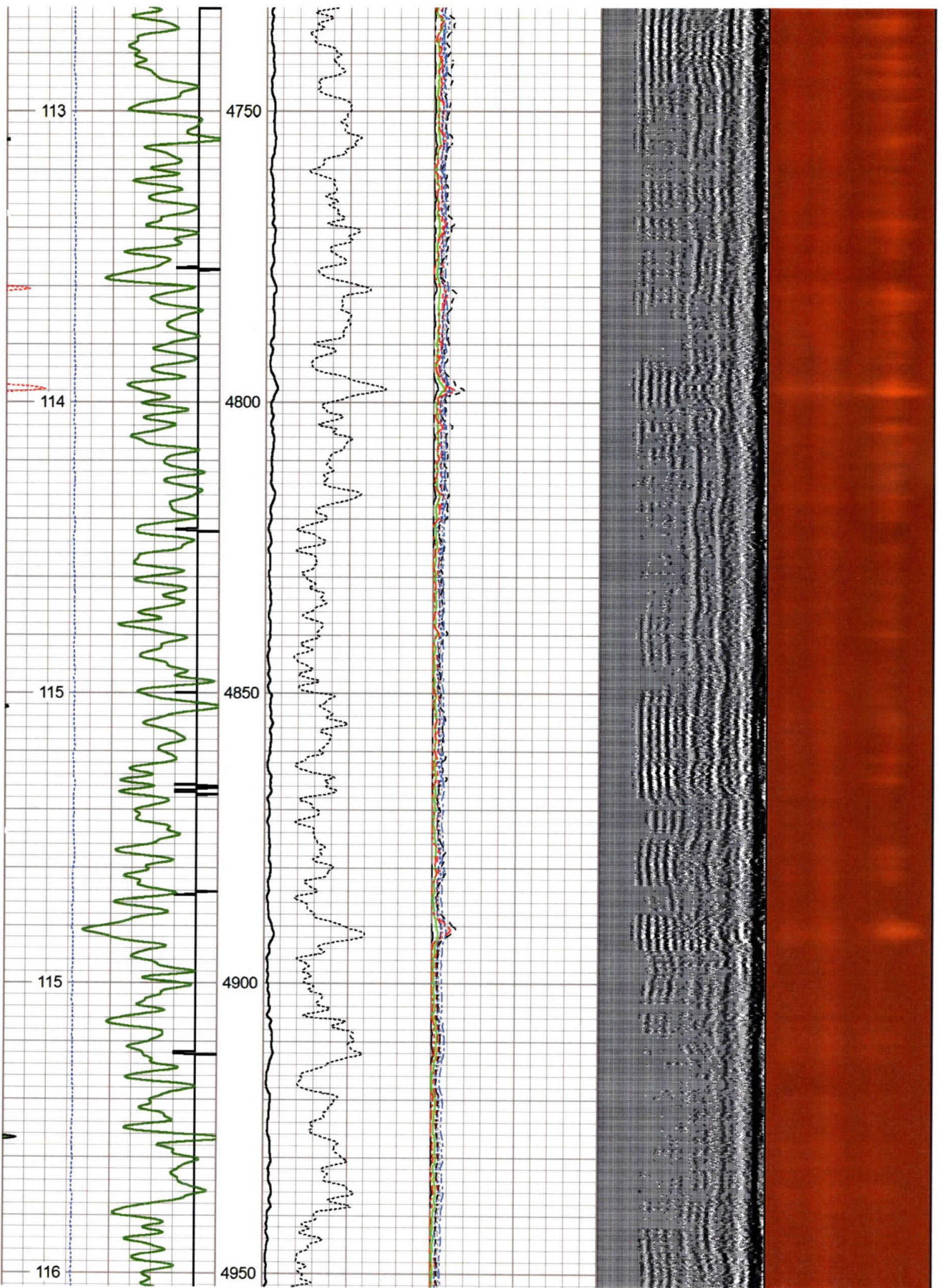


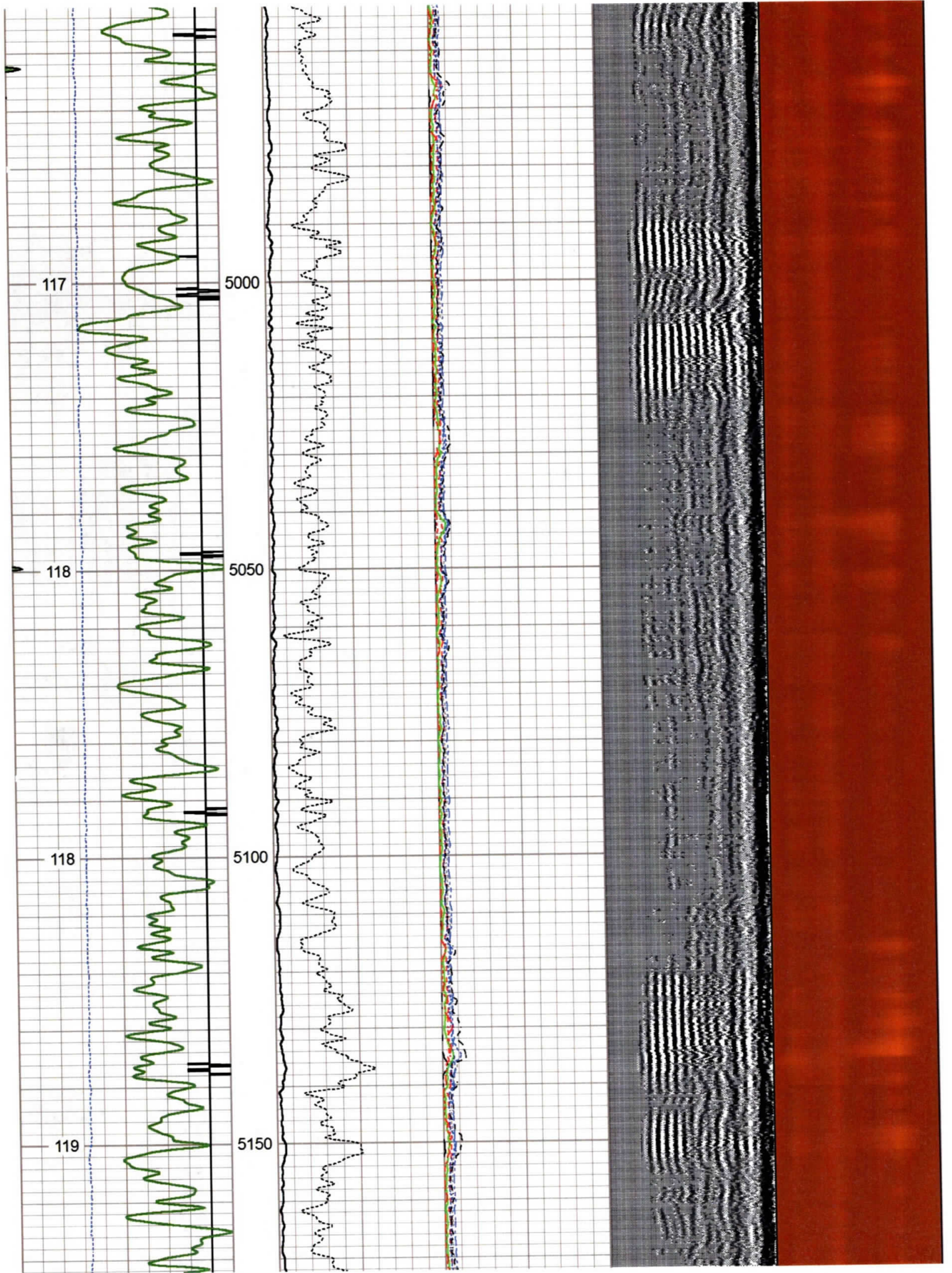


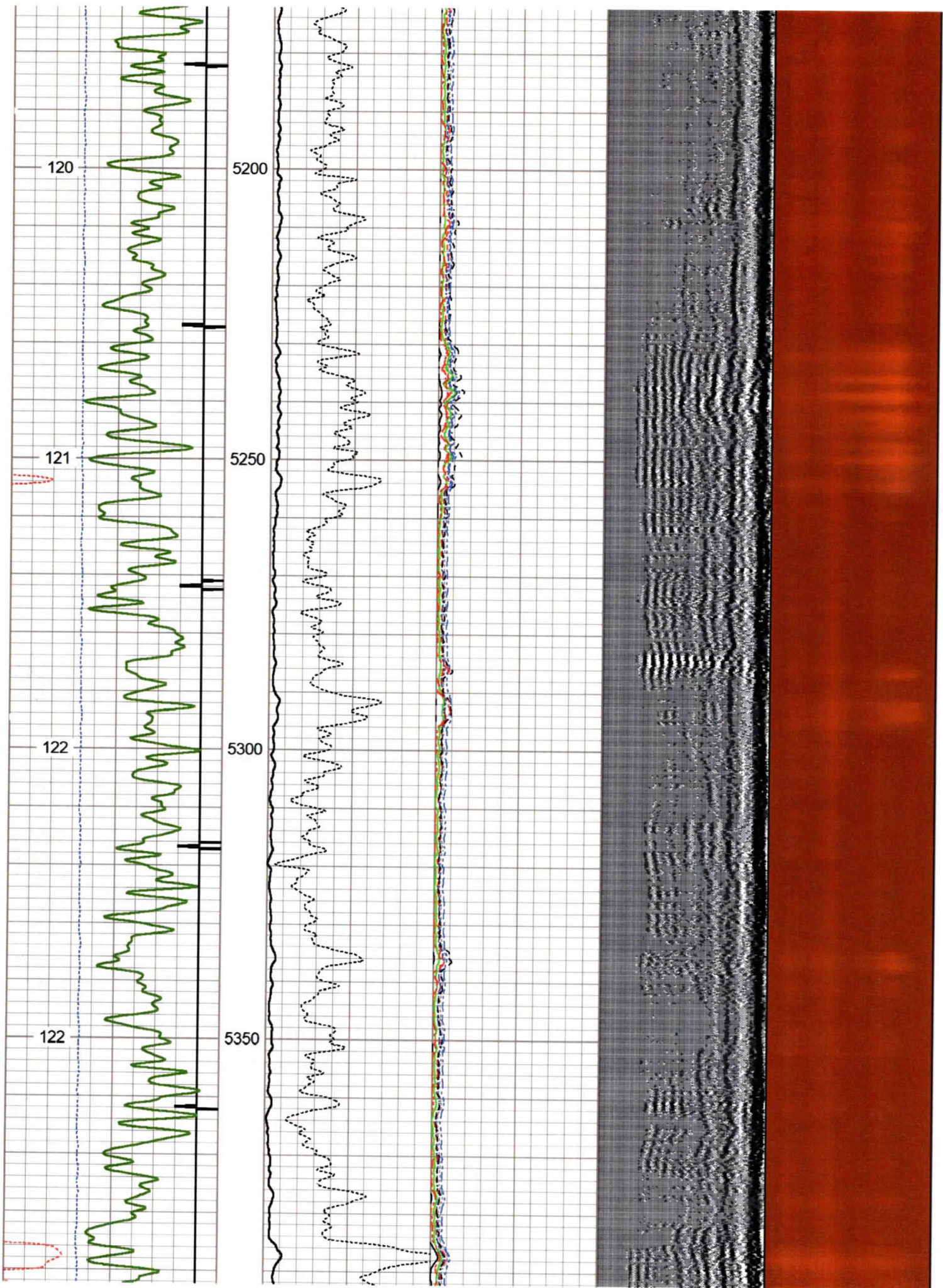


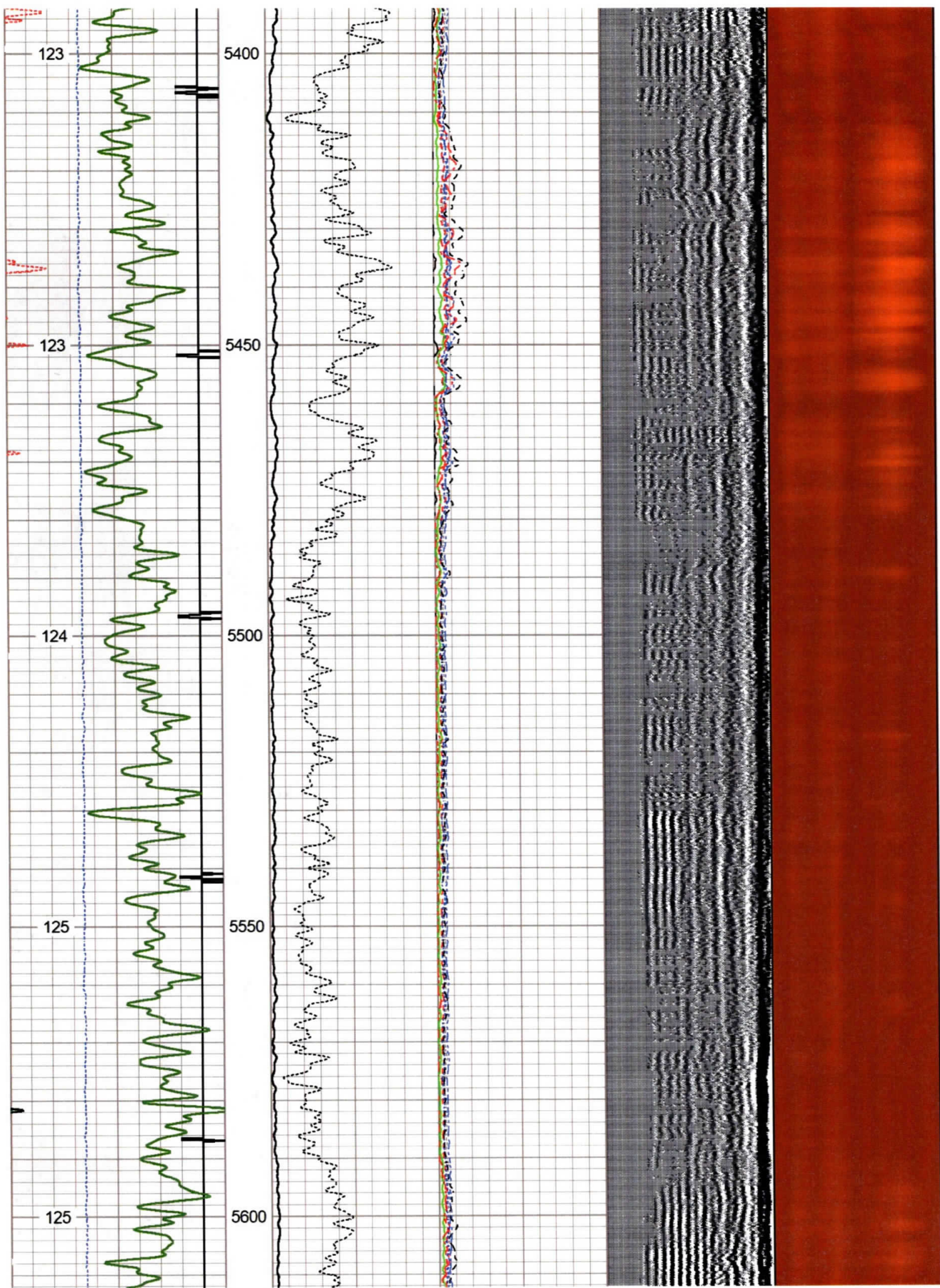


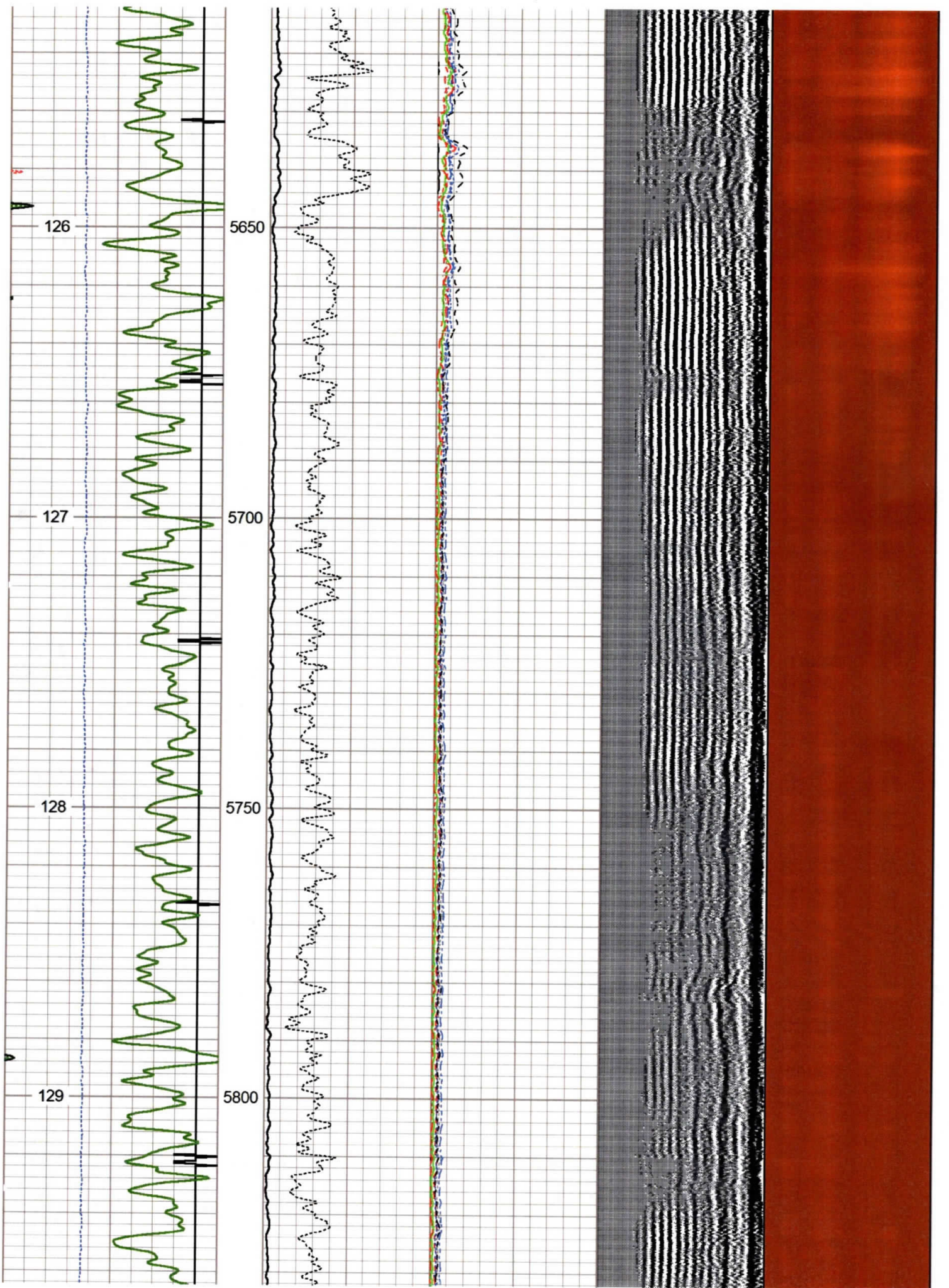


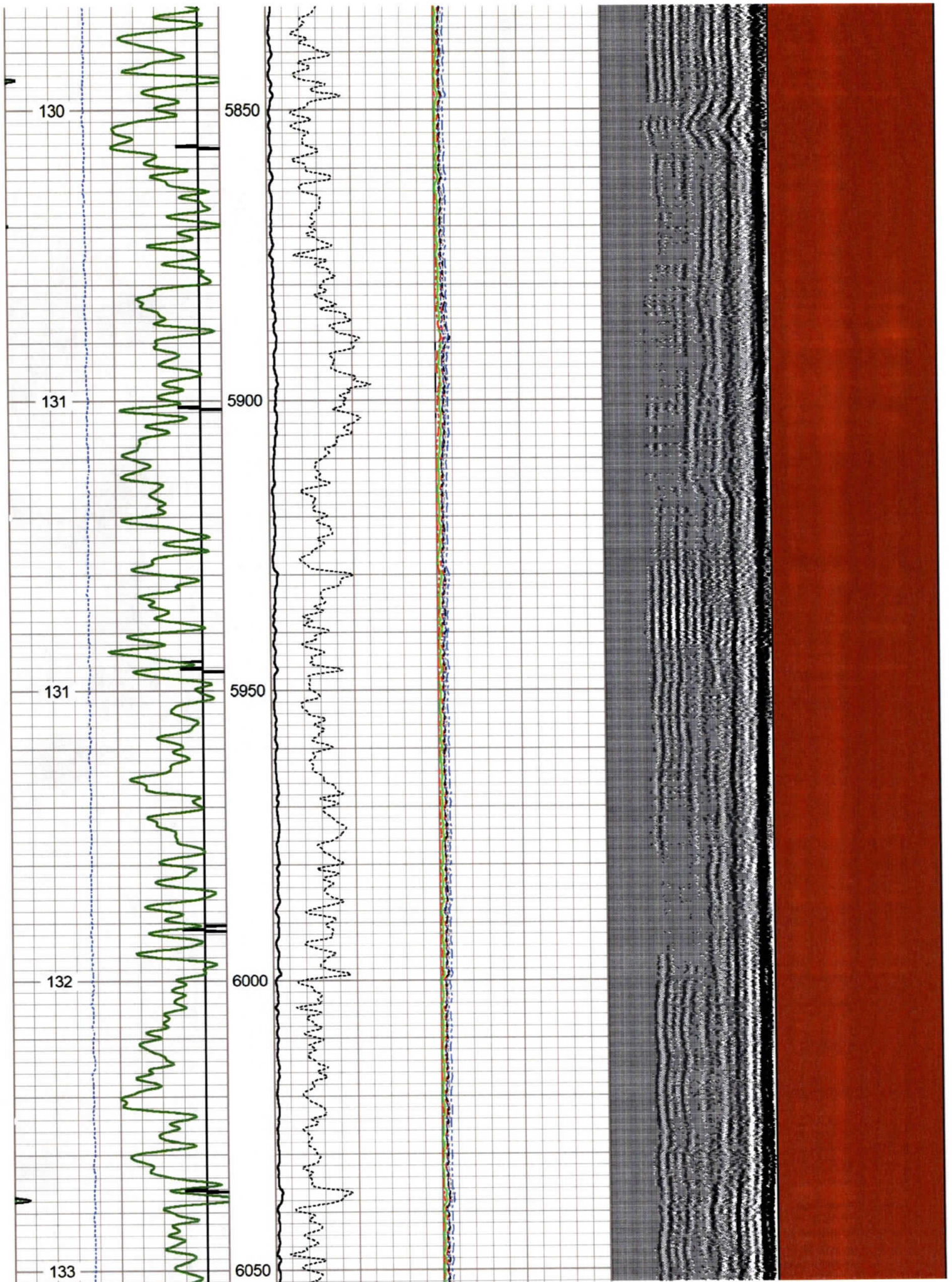


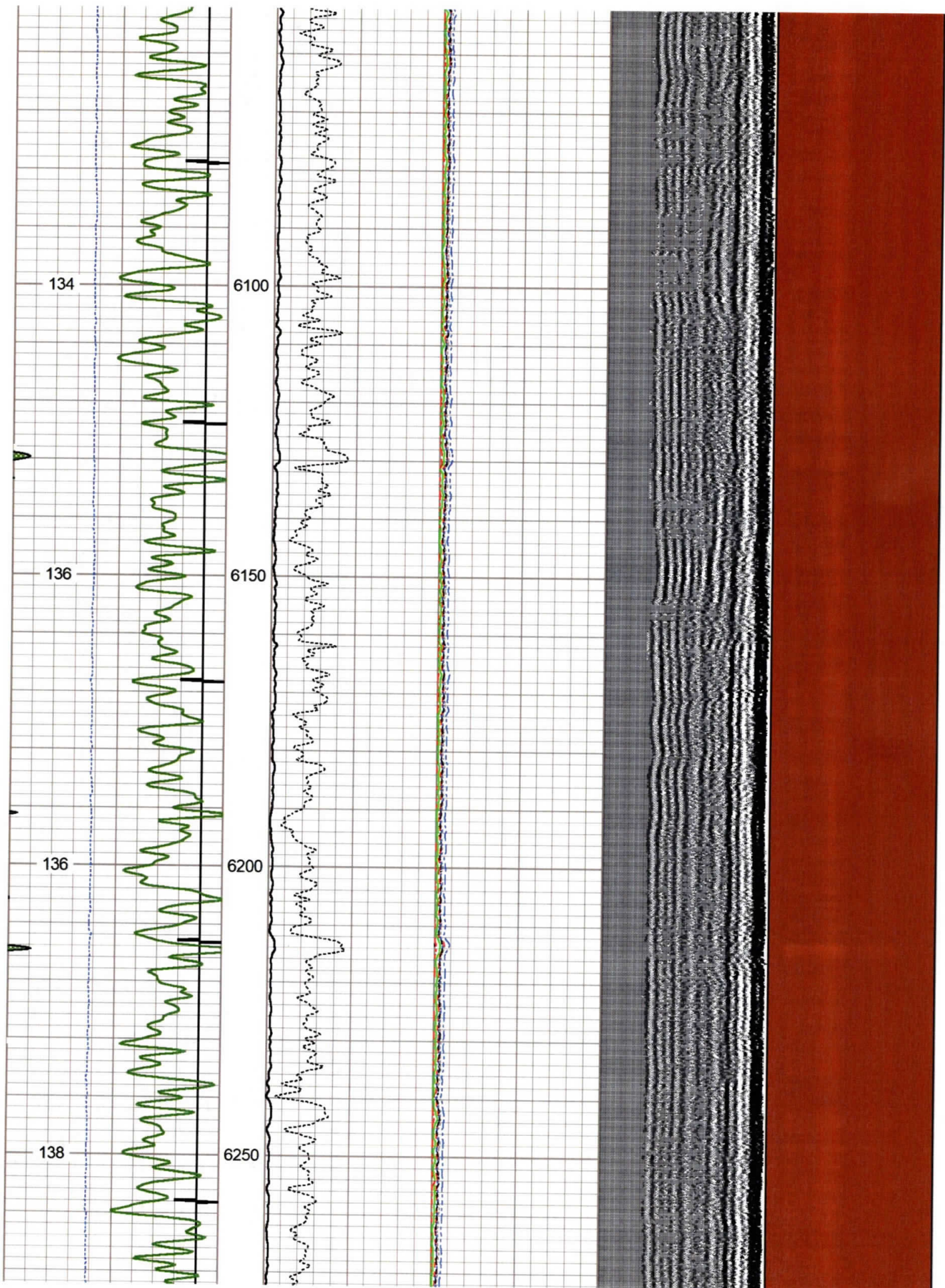


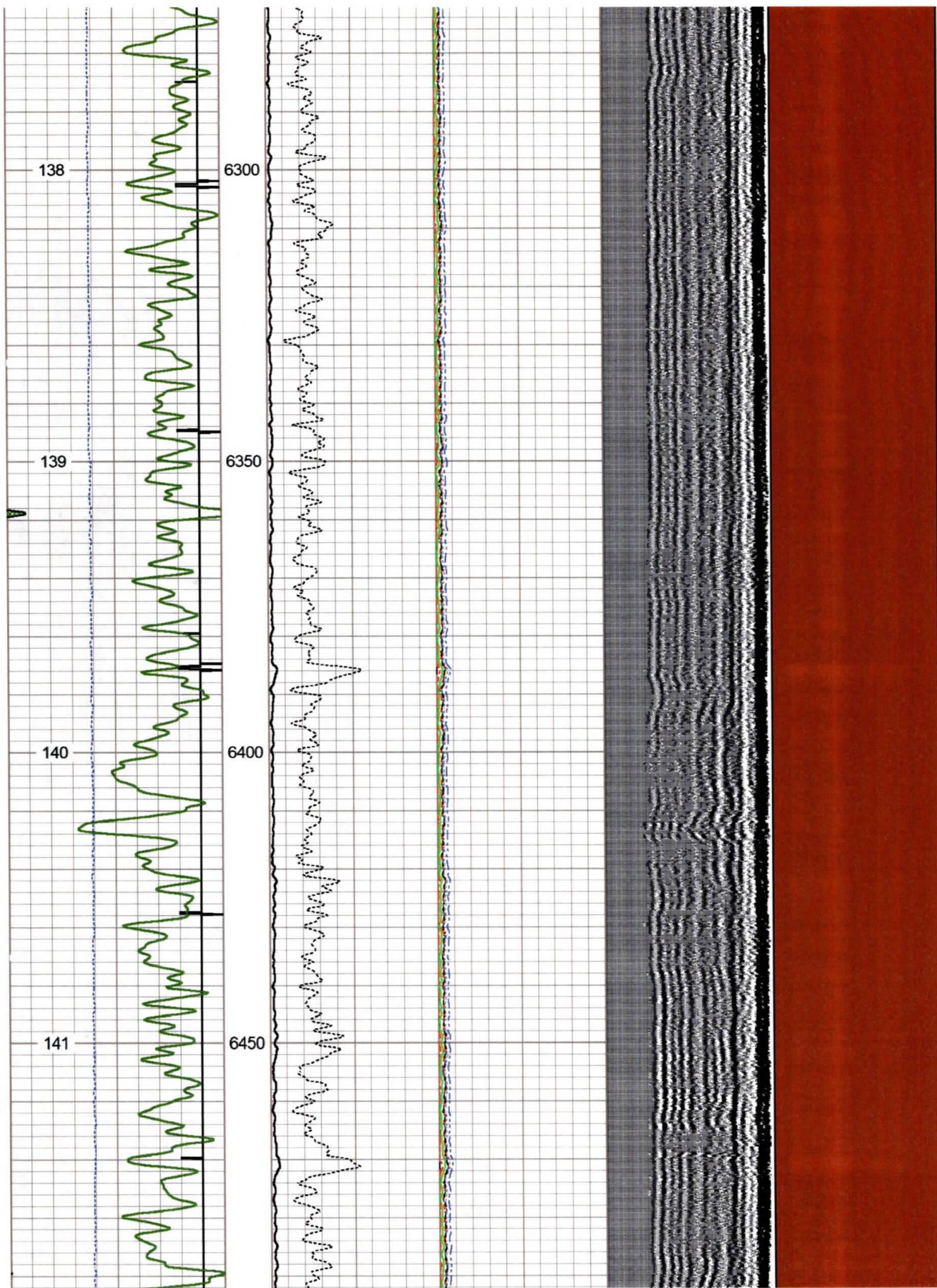


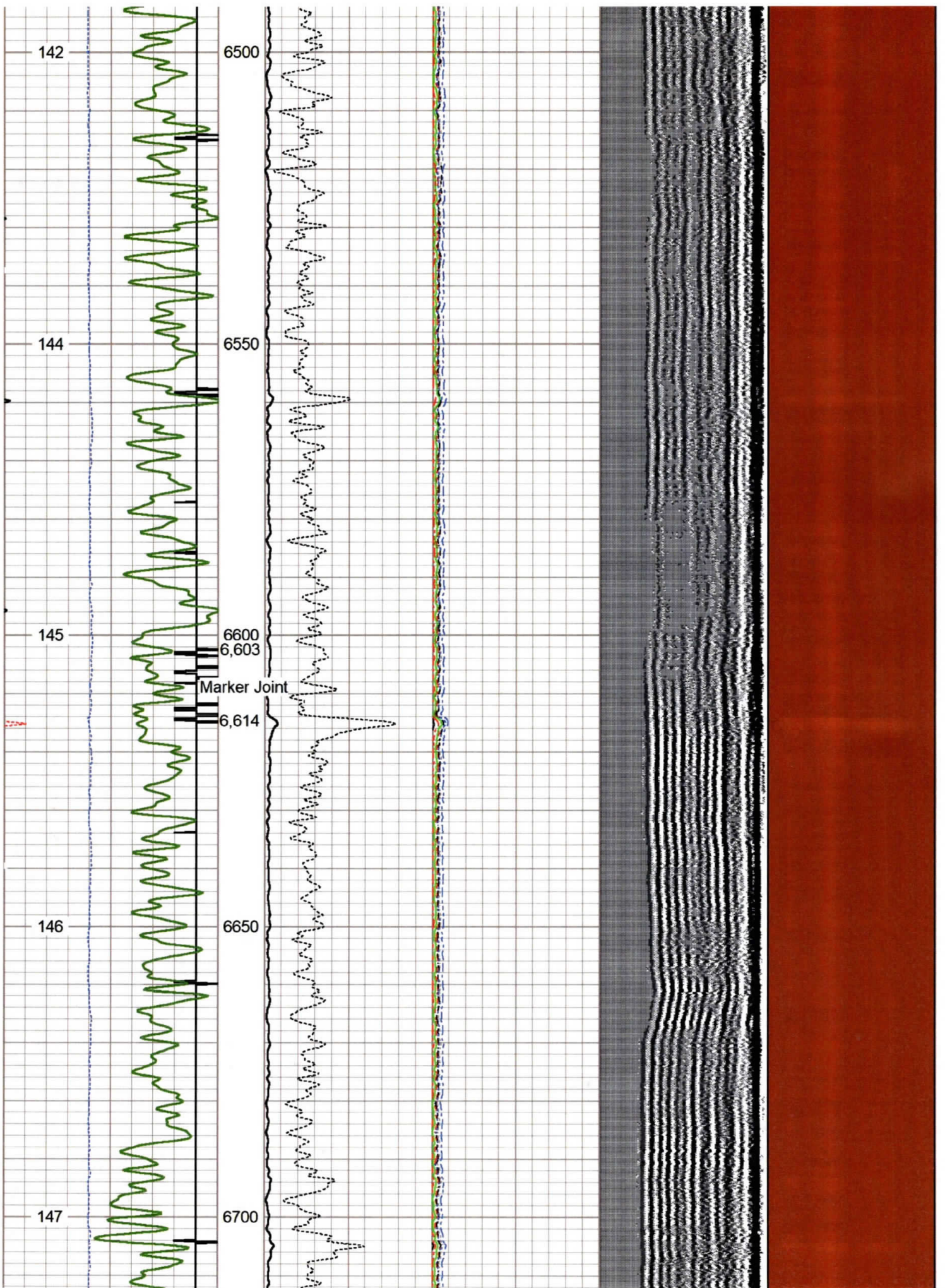


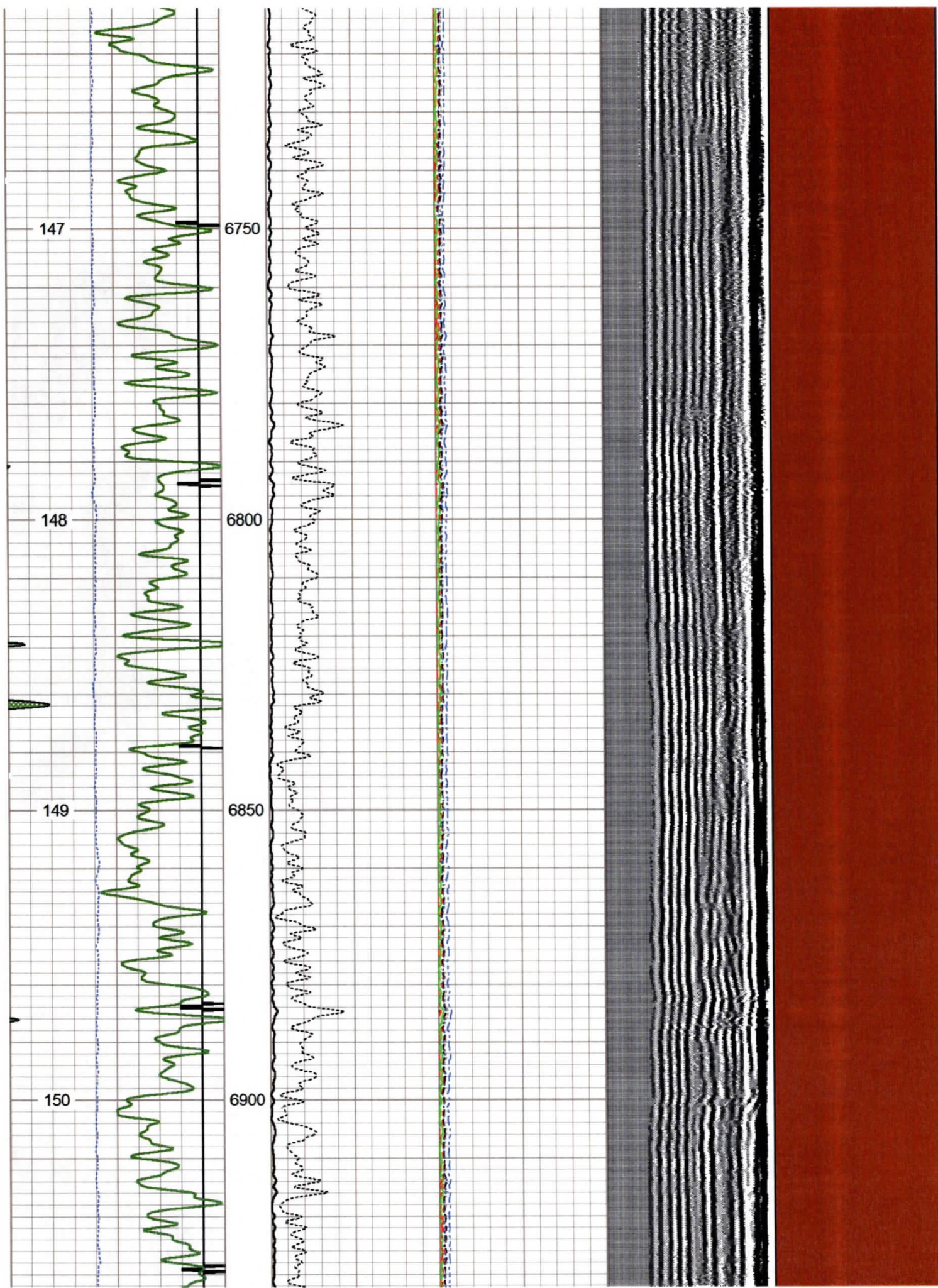


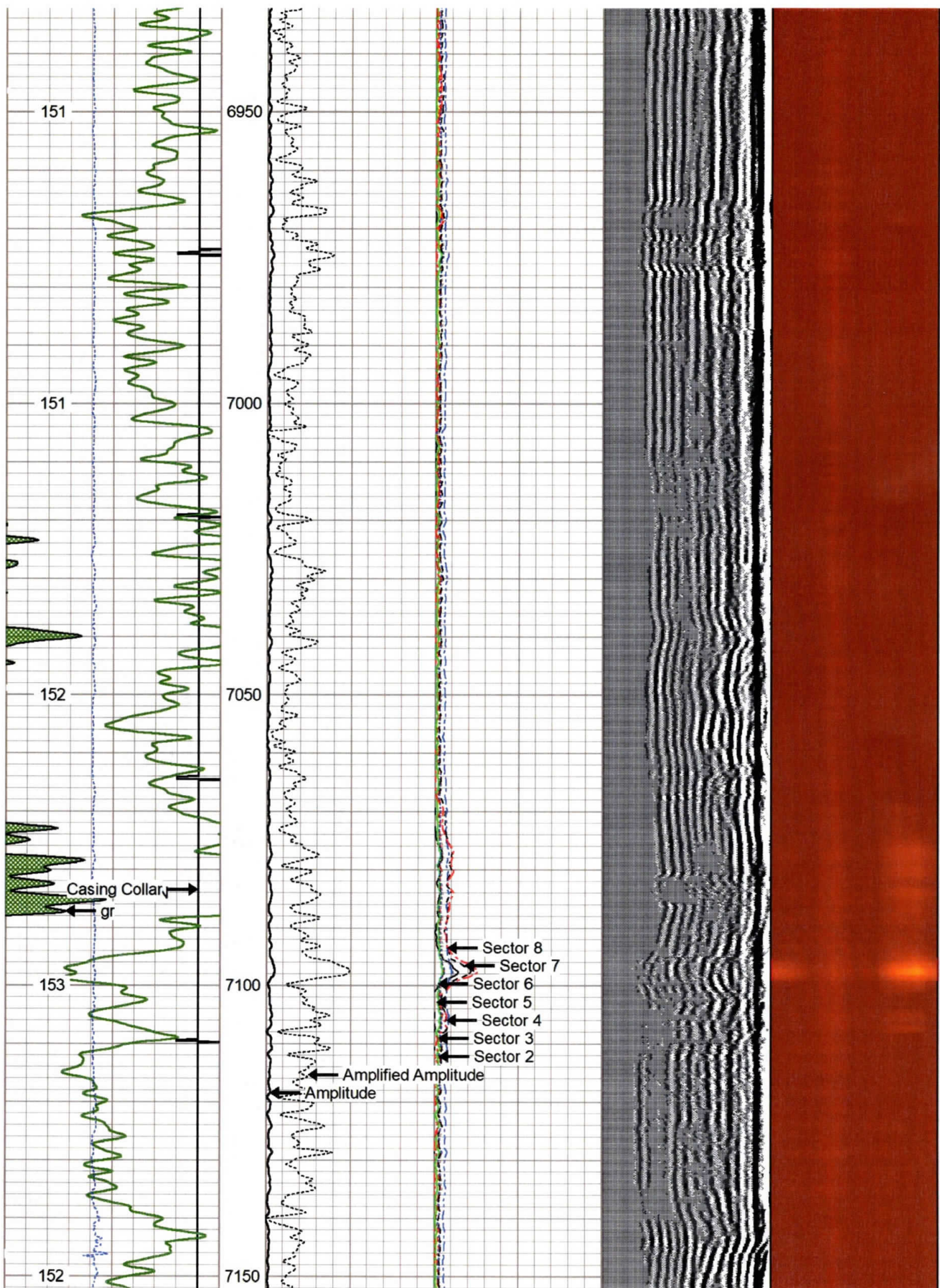


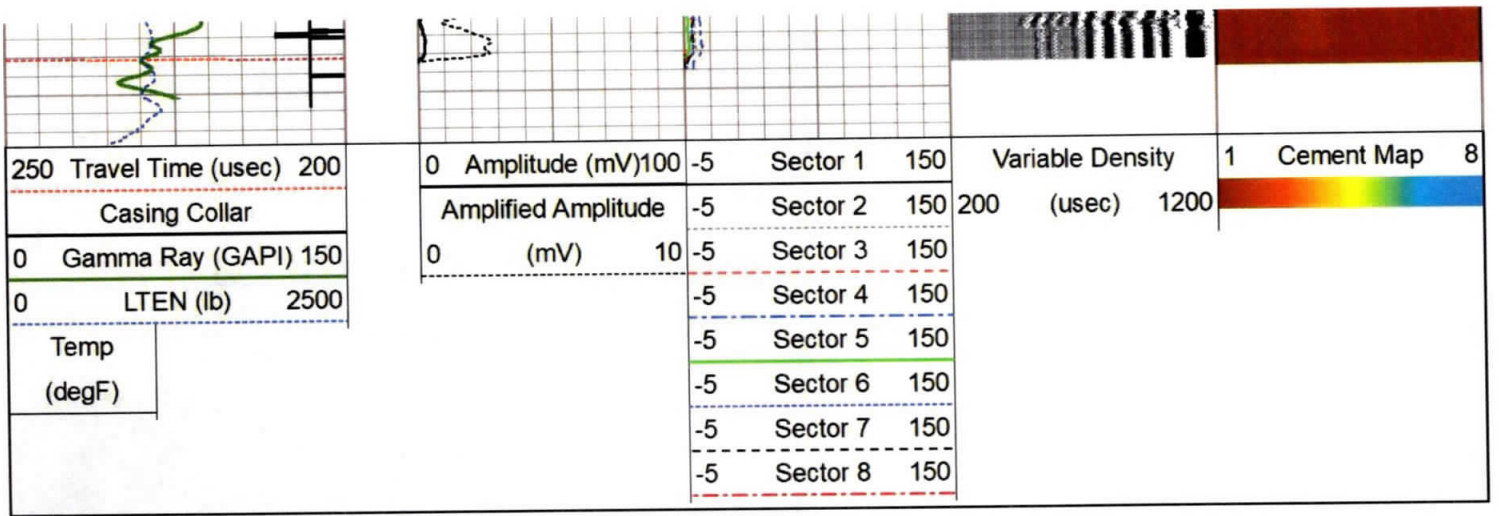






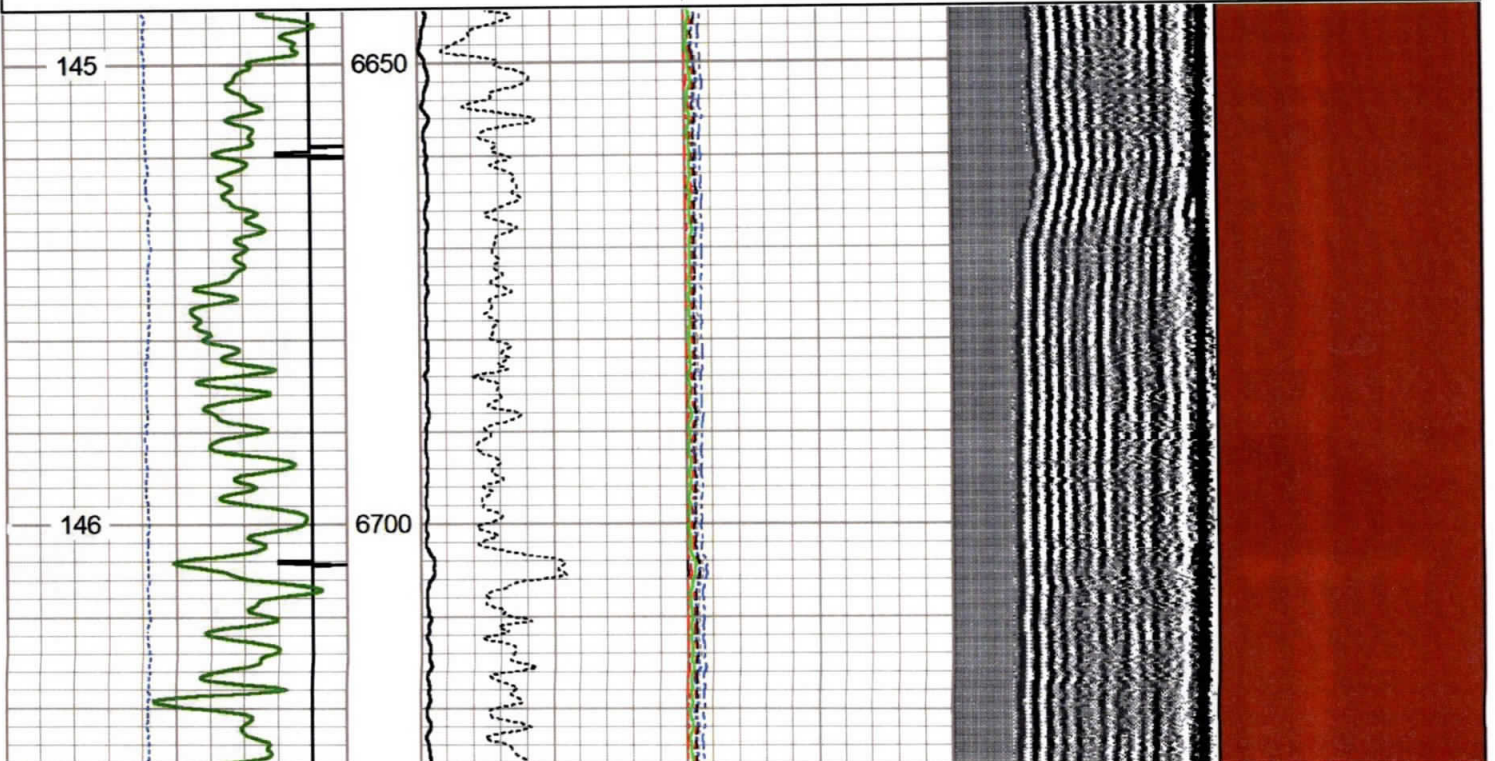
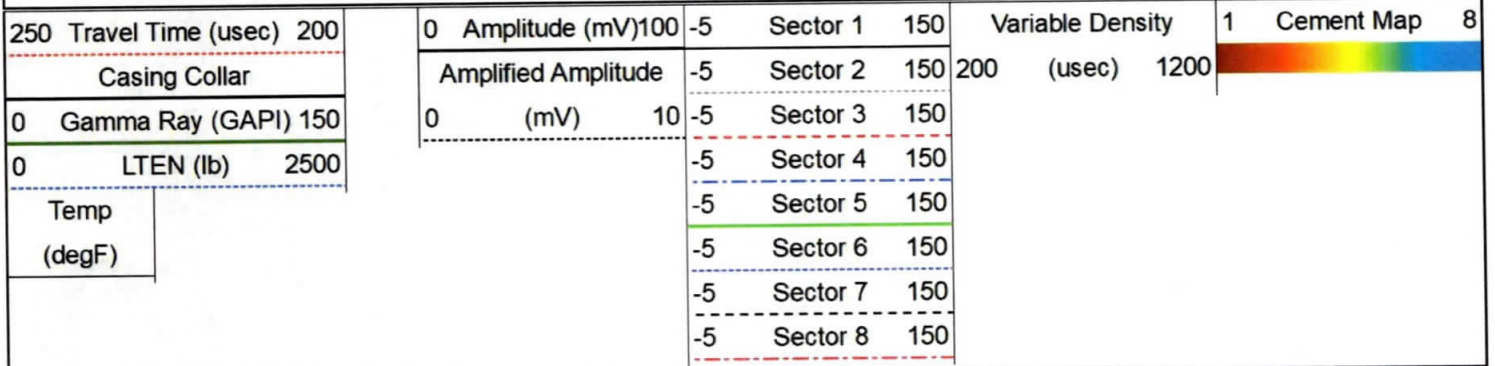


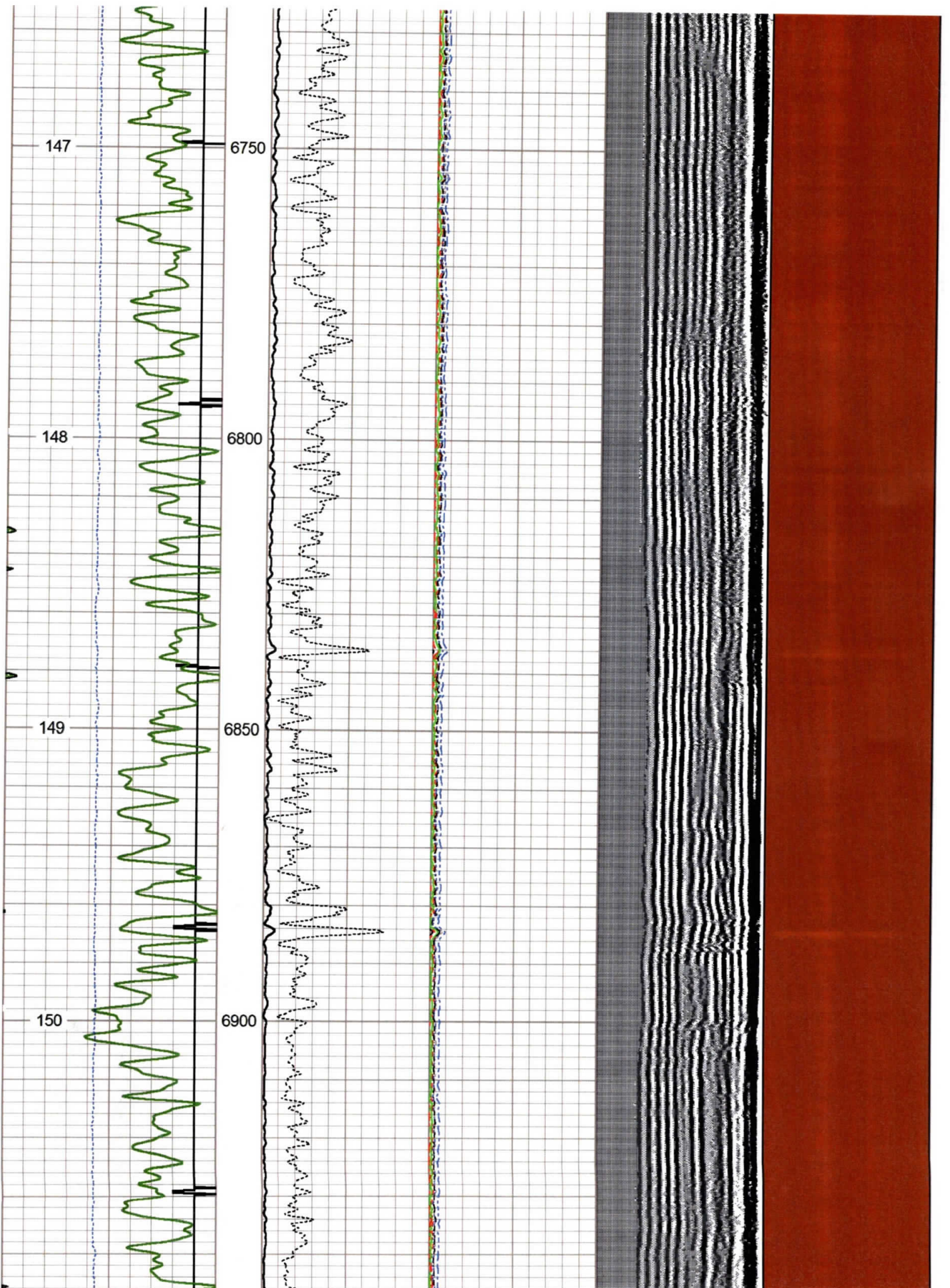


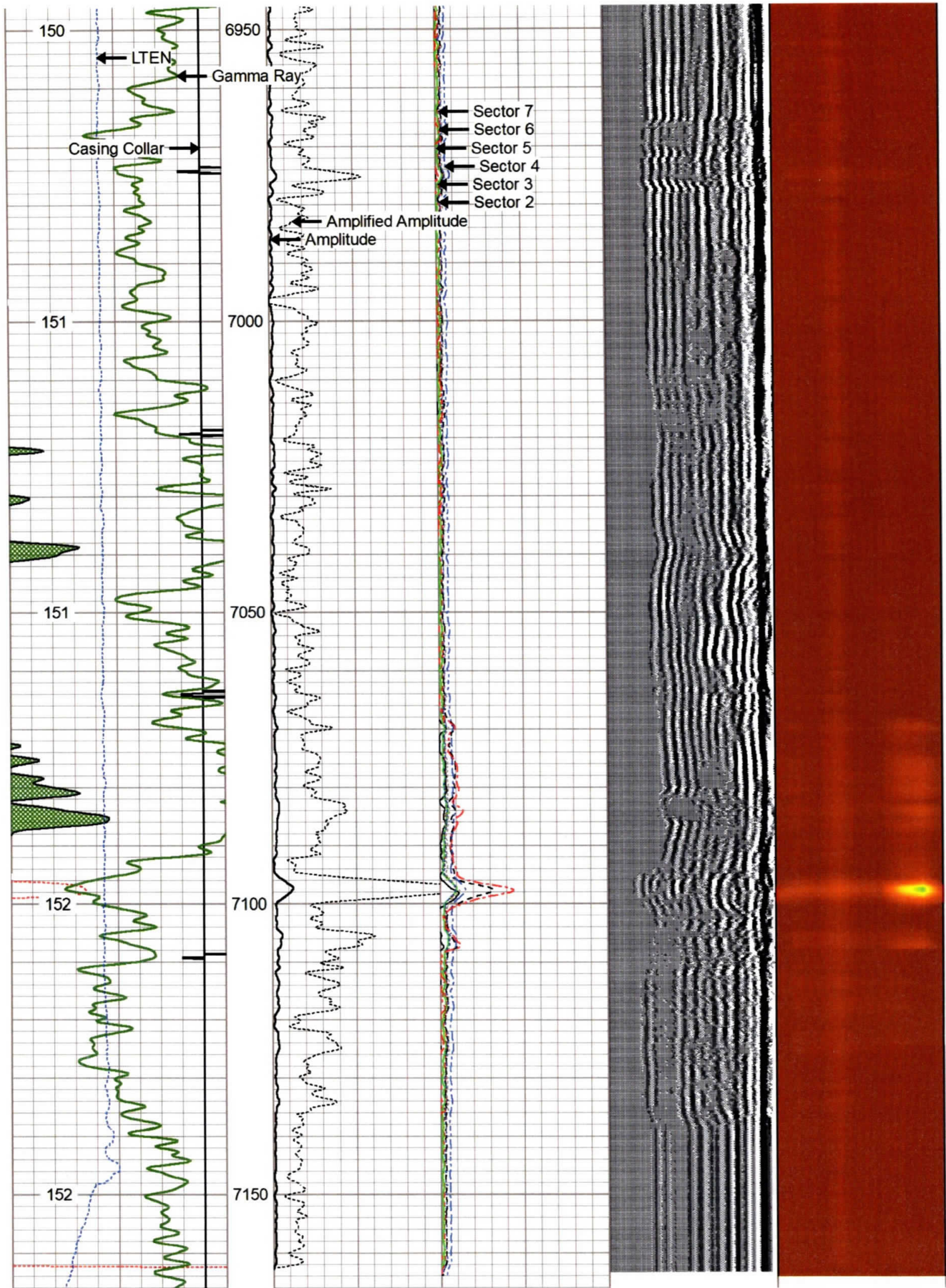


Repeat Pass 0 PSI

Database File antero_oxfd_13_ihs_rcbl_nineenergy_12_feb_2020.db
 Dataset Pathname Marcellus/OXFD_13_IHS/run1/pass1
 Presentation Format scbl03
 Dataset Creation Wed Feb 12 18:53:04 2020
 Charted by Depth in Feet scaled 1:240







250 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		-5	Sector 5	150				
(degF)		-5	Sector 6	150				
		-5	Sector 7	150				
		-5	Sector 8	150				

Log Variables DatabaseC:\ProgramData\Warrior\Data\antero_oxfd_13_ihs_rcbl_nineenergy_12_feb_2020.db
Dataset Marcellus/OXFD_13_IHS/run1/pass3.1/_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	11.5	0	1
MINATTN	PERFS	PPT	SRFTEMP	TDEPTH			
db/ft		usec	degF	ft			
0.8	No	0	0	0			

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_oxfd_13_ihs_rcbl_nineenergy_12_feb_2020.db
Dataset Pathname Marcellus/OXFD_13_IHS/run1/pass3.1
Dataset Creation Wed Feb 12 20:26:44 2020

Gamma Ray Calibration Report

Serial Number:	FW1211-86
Tool Model:	Probe
Performed:	Mon Feb 03 13:18:32 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:	2653.808 ft

Master Calibration, performed Wed Feb 12 17:04:26 2020:


	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.086	0.841	1.000	71.921	87.884	-1.065
CAL	0.606	1.005				
5'	0.030	0.717	1.000	71.921	103.253	-2.082
SUM						
S1	0.067	0.798	0.000	71.921	98.319	-4.583
S2	0.045	0.888	0.000	71.921	85.359	-3.842
S3	0.055	0.859	0.000	71.921	89.517	-4.943
S4	0.000	0.858	0.000	71.921	83.827	0.000
S5	0.078	0.839	0.000	71.921	94.457	-7.354
S6	0.037	0.805	0.000	71.921	93.633	-3.456
S7	0.037	0.783	0.000	71.921	96.455	-3.571
S8	0.092	0.795	0.000	71.921	102.409	-9.470

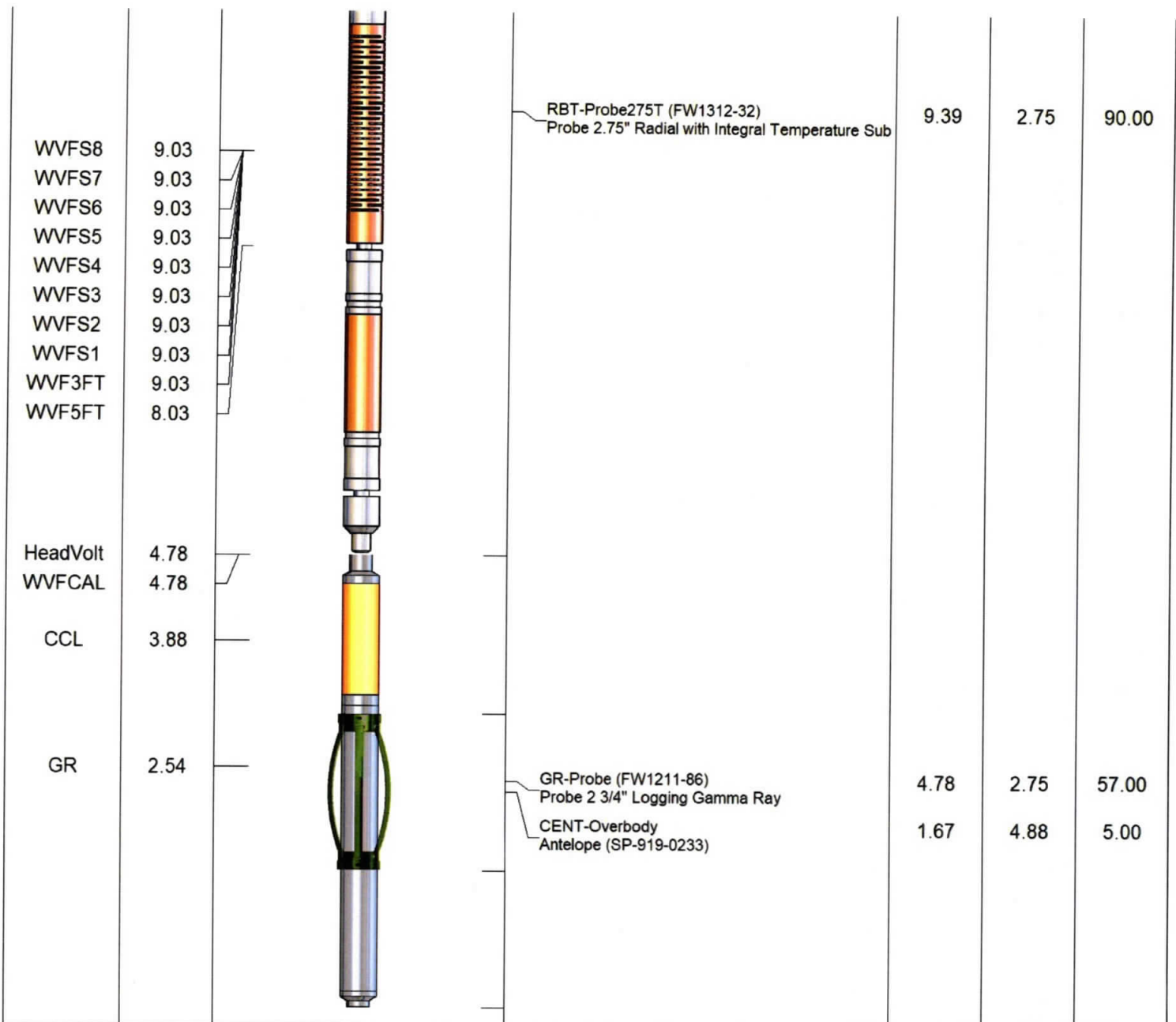
Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.606	1.005	1.000	0.000

Air Zero Calibration, performed Wed Feb 12 07:58:38 2020:

	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)
Temp	11.27		CHD-Titan Titan 1 7/16" GO Cablehead	1.00	1.44	5.00
			RECEIVED Office of Oil and Gas AUG 10 2020 WV Department of Environmental Protection			
			CENT-Overbody Antelope (SP-919-0233)	1.67	4.88	5.00



Dataset: antero_oxfd_13_ihs_rcbl_nineenergy_12_feb_2020.db: Marcellus/OXFD_13_IHS/run1/pass3.1
 Total length: 15.17 ft
 Total weight: 162.00 lb
 O.D.: 4.88 in



Company Antero Resources
Well OXFD 13 IHS
Field N/A
County Doddridge
State West Virginia