

HALLIBURTON

RADIAL CEMENT  
BOND LOG

Company				EXTRACTION OIL & GAS INC			
Well				LIVINGSTON S20-25-4N			
Field				WATTENBERG			
County				BROOMFIELD CO			
Company				EXTRACTION OIL & GAS INC			
Well				LIVINGSTON S20-25-4N			
Field				WATTENBERG			
County				BROOMFIELD State CO			
API No.: 050142079900				Serv #: 906105463			
Location: SURFACE HOLE LOCATION: 2330' FSL & 1222' FEL NESE				Other Services			
LATITUDE: 39.978560 LONGITUDE: -105.039030				NONE			
Sec: 7 Twp: 1S Rge: 68W							
Permanent Datum				GROUND LEVEL Elevation 5328			
Log Measured From				KB , 29 Ft. above perm. datum			
Drilling Measured From				KB			
Date @ Time Logged				11/19/19 @ 22:15			
Run No.				ONE			
Depth - Driller				21546			
Depth - Logger				8444			
Bottom - Logged Interval				8432			
Top - Log Interval				SURFACE			
Max. Recorded Temp.				226 F			
CEMENTING DATA				Surface			
Date / Time Cemented				String			
Primary / Squeeze				Protection			
Expected				String			
Compressive Strength				psi@ hrs			
Cement Volume				psi@ hrs			
Cement Type / Weight				psi@ hrs			
Formulation				psi@ hrs			
Mud Type / Mud Wgt.				/			
Borehole Record				Casing & Tubing Record			
Run Number				Bit From To Size Weight From To			
ONE				12.25 0 1500 9.625 36 0 1500			
TWO				8.5 1500 21546 5.5 17 0 21546			

No.	FROM	TO	Pressure	Flow				
ONE	KOP	SURFACE	0 PSI	100				
	GAMMA RAY		AMPLITUDE		VDL		RADIAL MAP	
Pass	Scale		Scale		Scale		Scale	
No.	L	R	L	R	L	R	L	L
ONE	0	150	0	100	200	1200	1	8
DIRECTIONAL INFORMATION								
Maximum Deviation		90	deg. @		KOP			

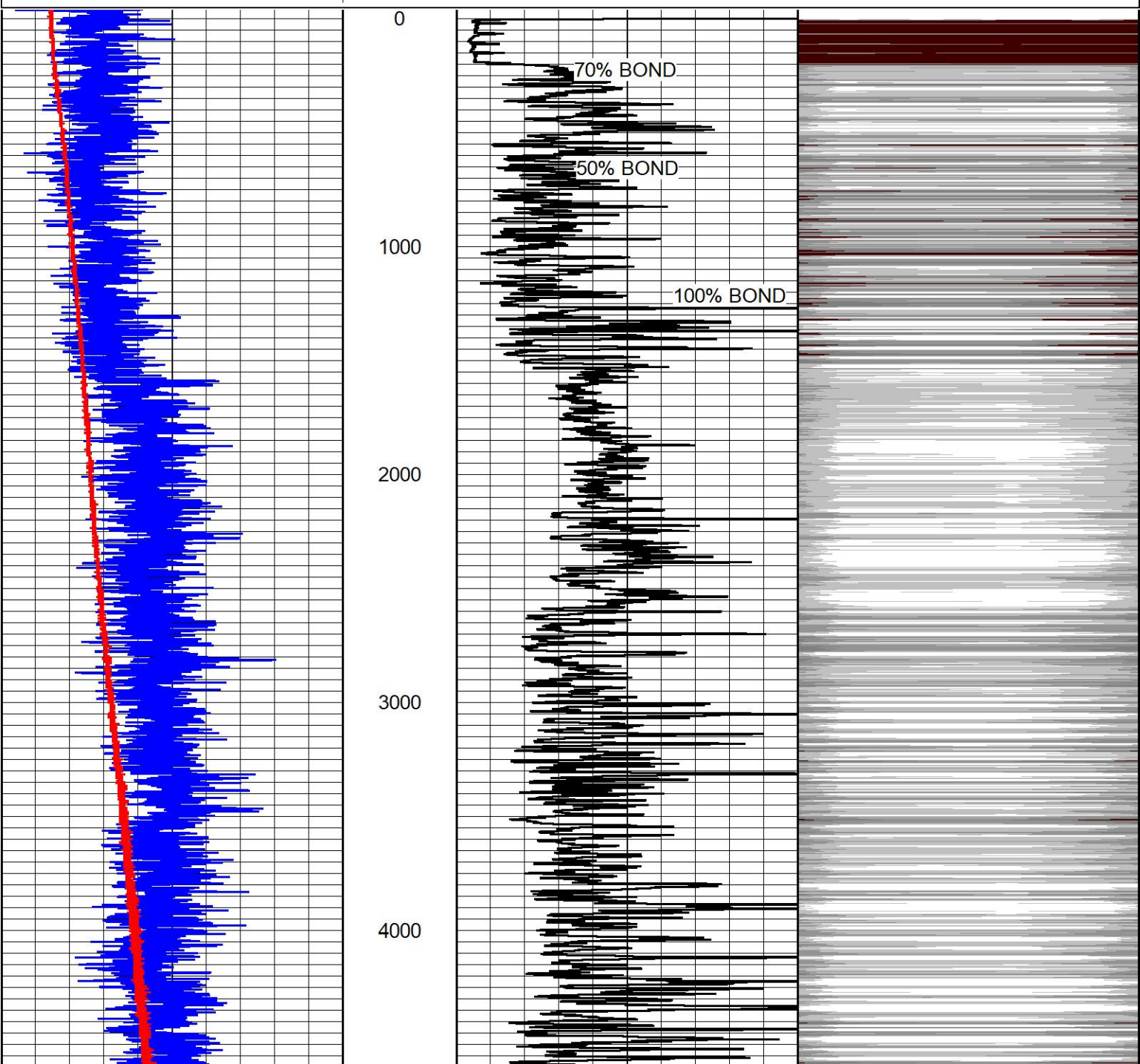
HALLIBURTON

BOND INDEX

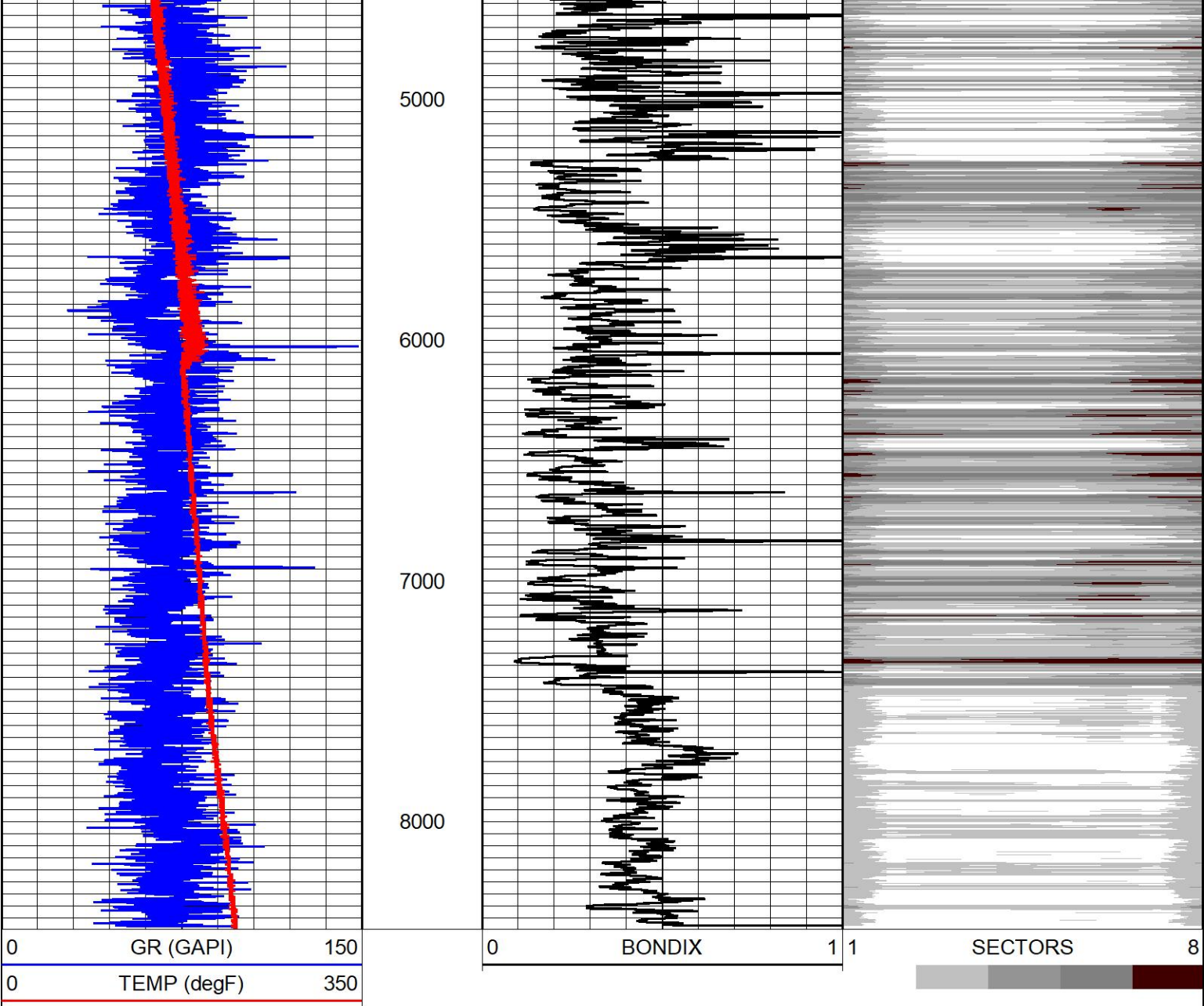
1:7500

Database File	livingston s20-25-4n.db
Dataset Pathname	MAIN.1
Presentation Format	EXTRAC~2
Dataset Creation	Tue Nov 19 23:30:53 2019
Charted by	Depth in Feet scaled 1:7500

0	GR (GAPI)	150	0	BONDIX	1	1	SECTORS	8
0	TEMP (degF)	350						







BOND INDEX

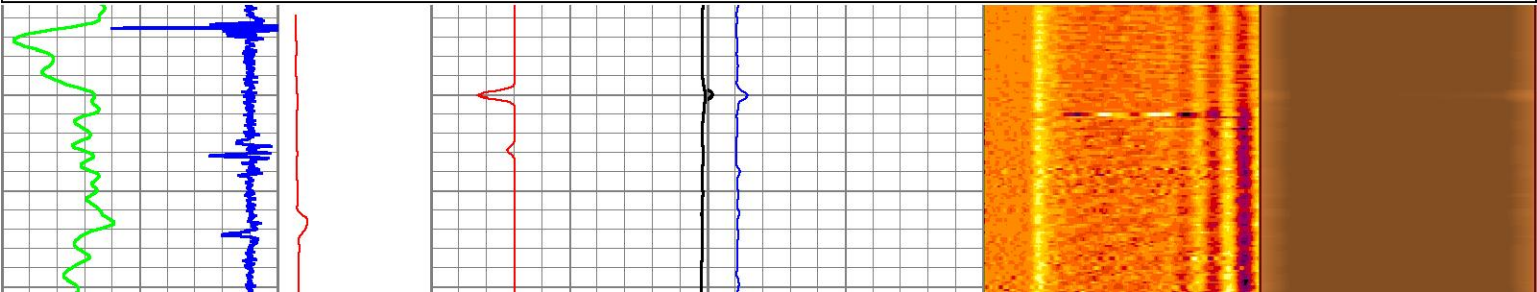
1:7500

MAIN PASS

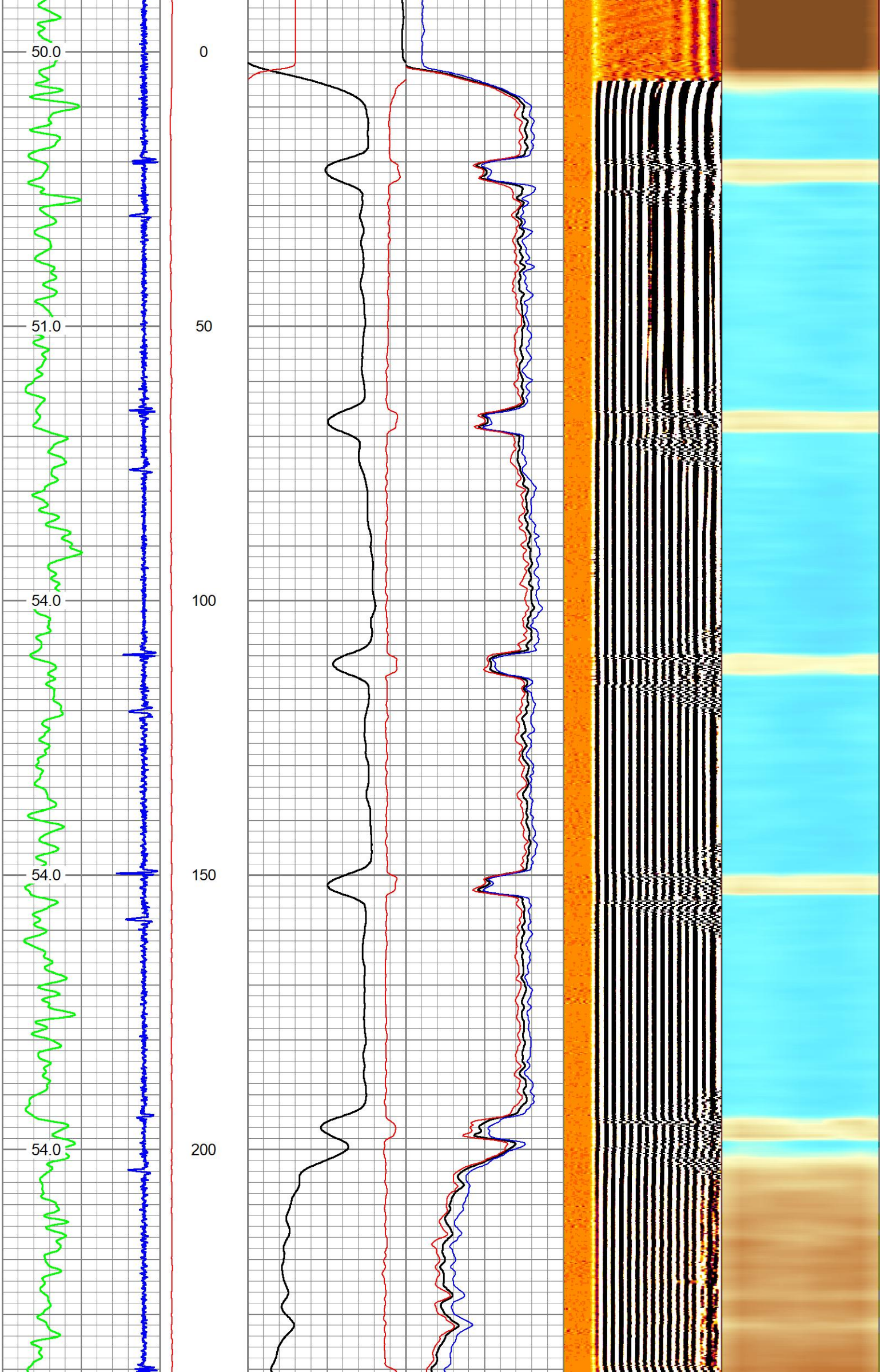
5" = 100'

Database File        livingston s20-25-4n.db  
Dataset Pathname    MAIN  
Presentation Format   extraction rcbl  
Dataset Creation     Tue Nov 19 22:10:47 2019  
Charted by           Depth in Feet scaled 1:240

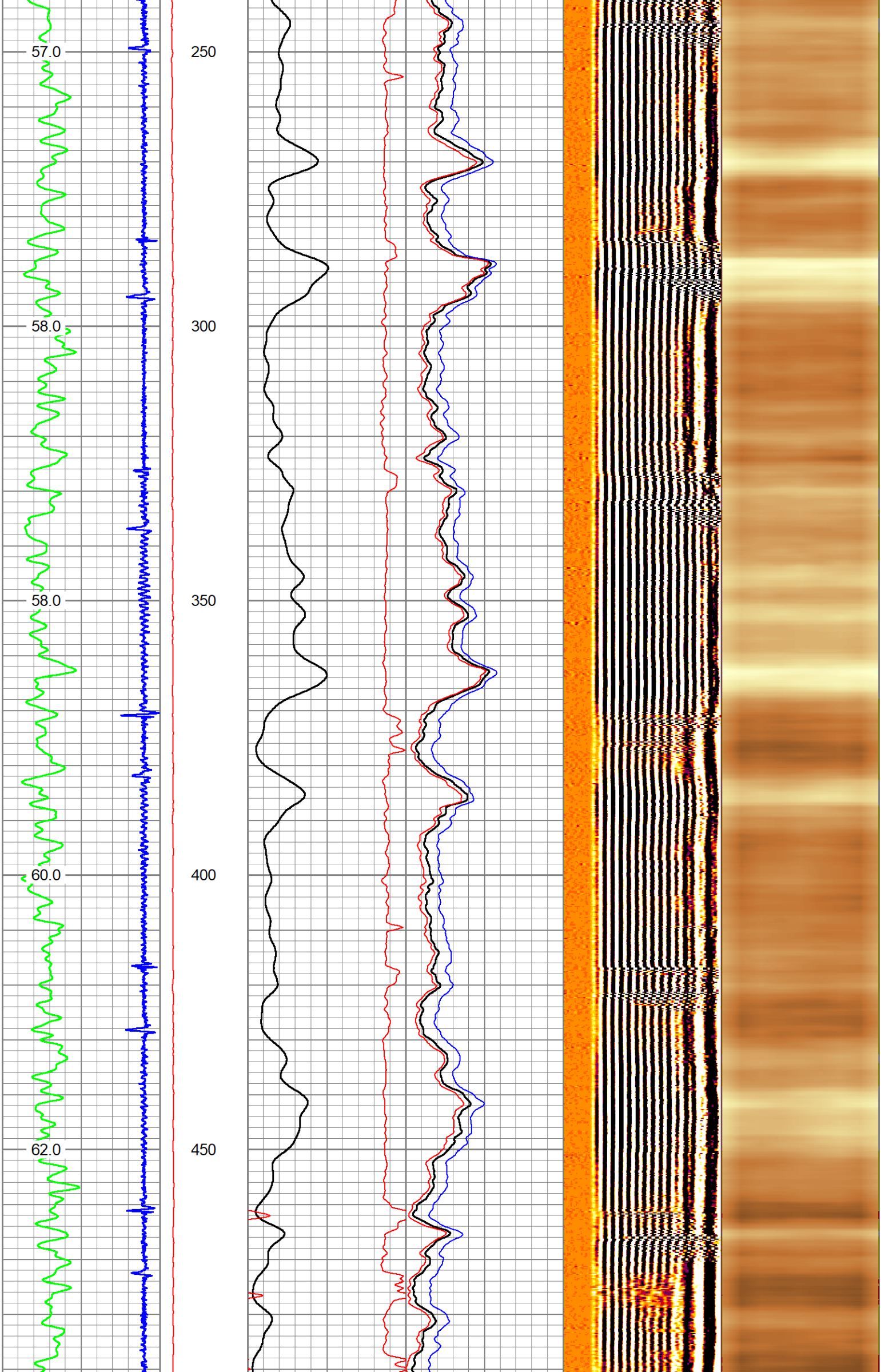
-18	CCL	2	LTEN	0	AMP3FT (mV)	100	0	AMPAVG	100	200	VDL (usec)	1200	1	RADIAL MAP	8
0	GR (GAPI)	150	0	(lb/2000)	3ft Travel Time		0	AMPMAX	100						
TEMP					200	(usec)	300	0	AMPMIN	100					
(degF)															

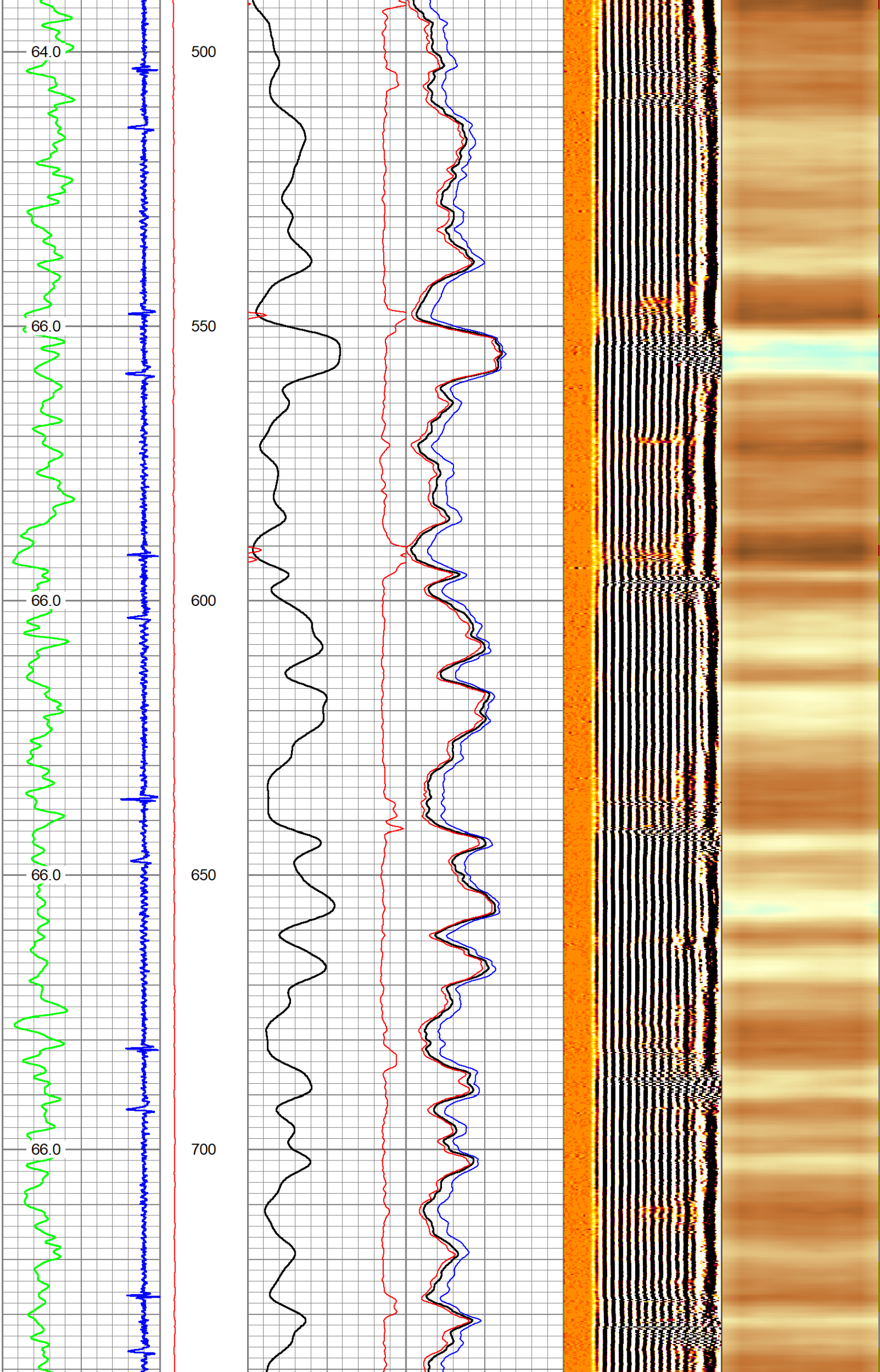




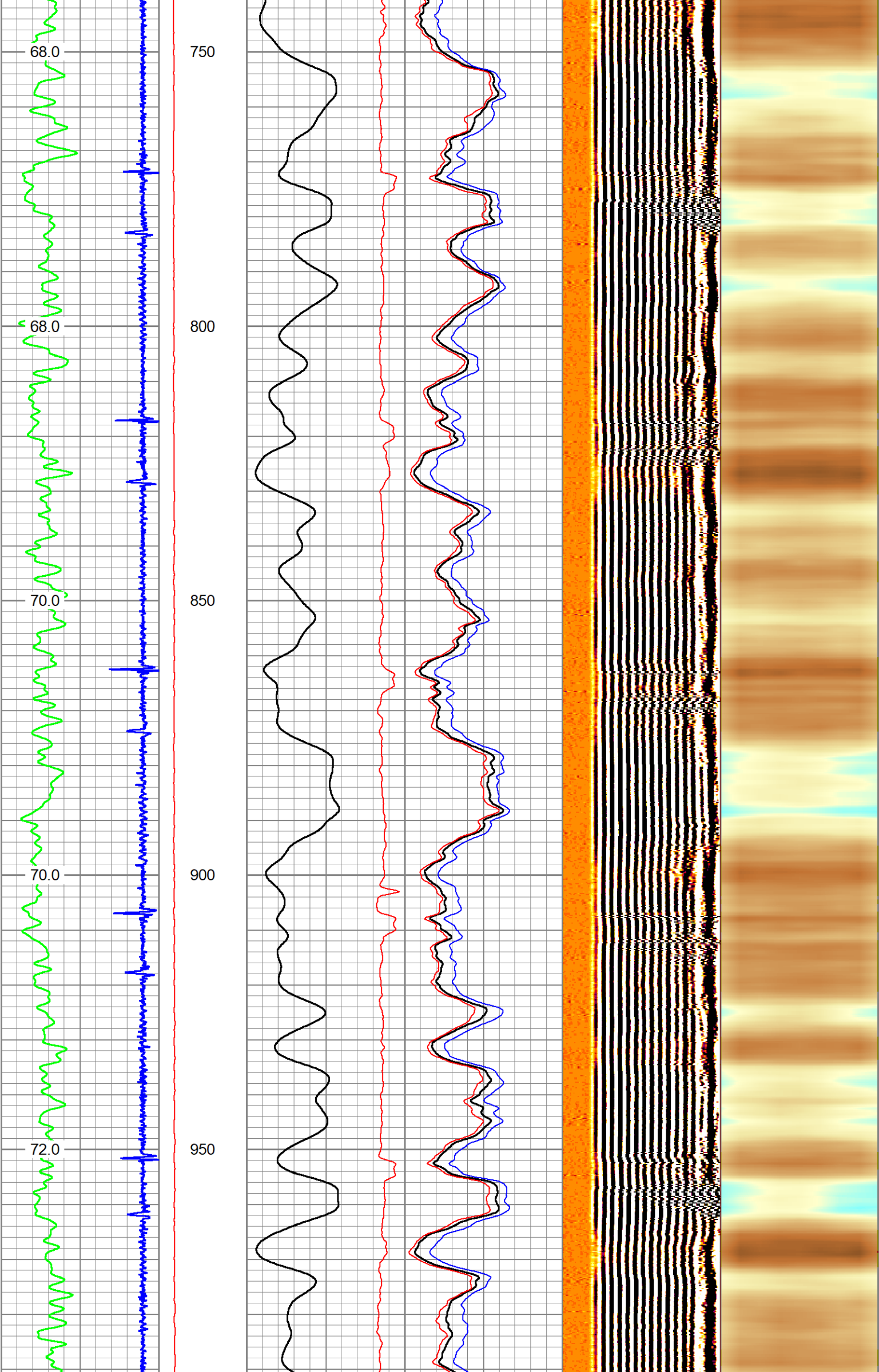


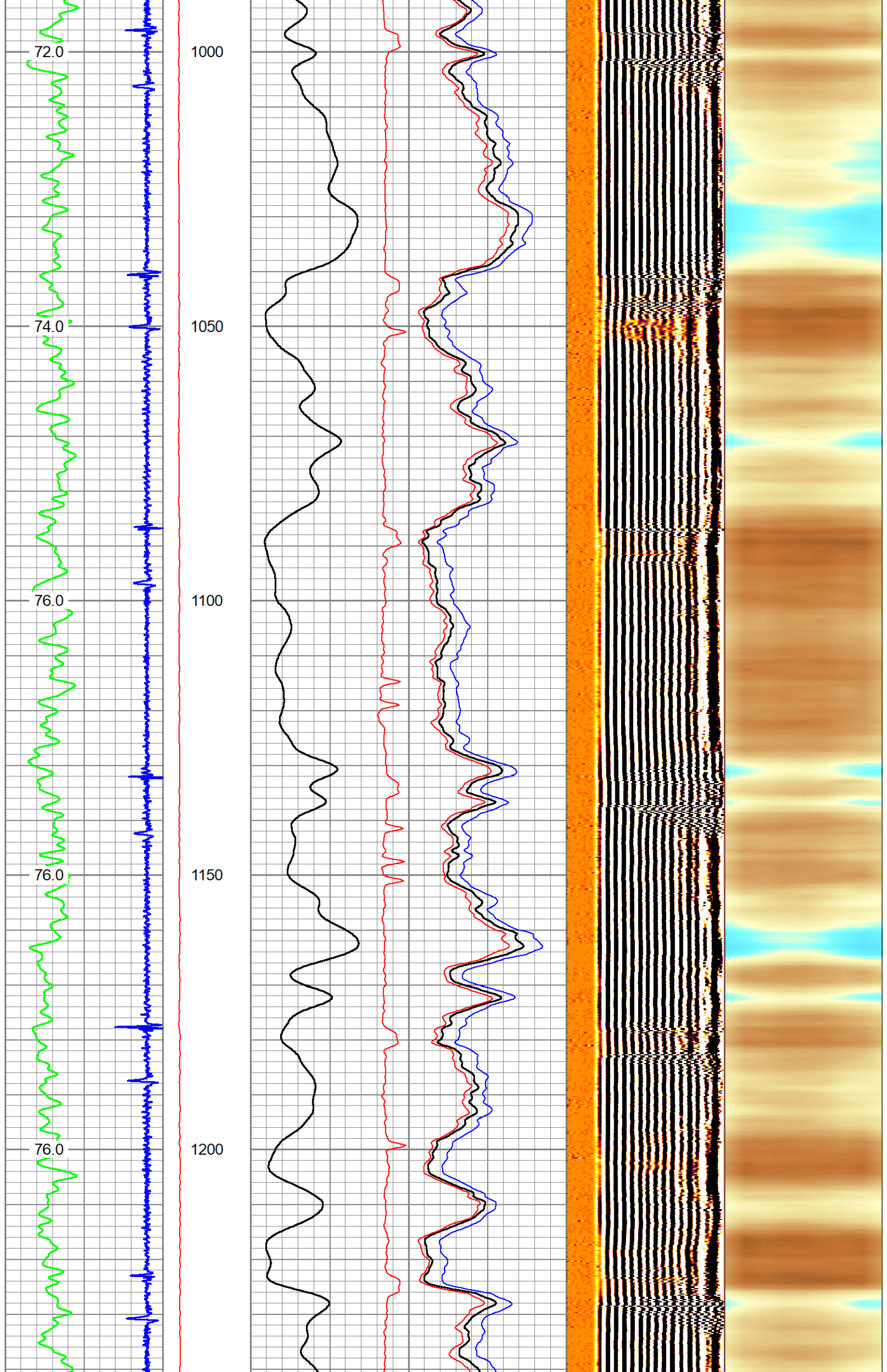




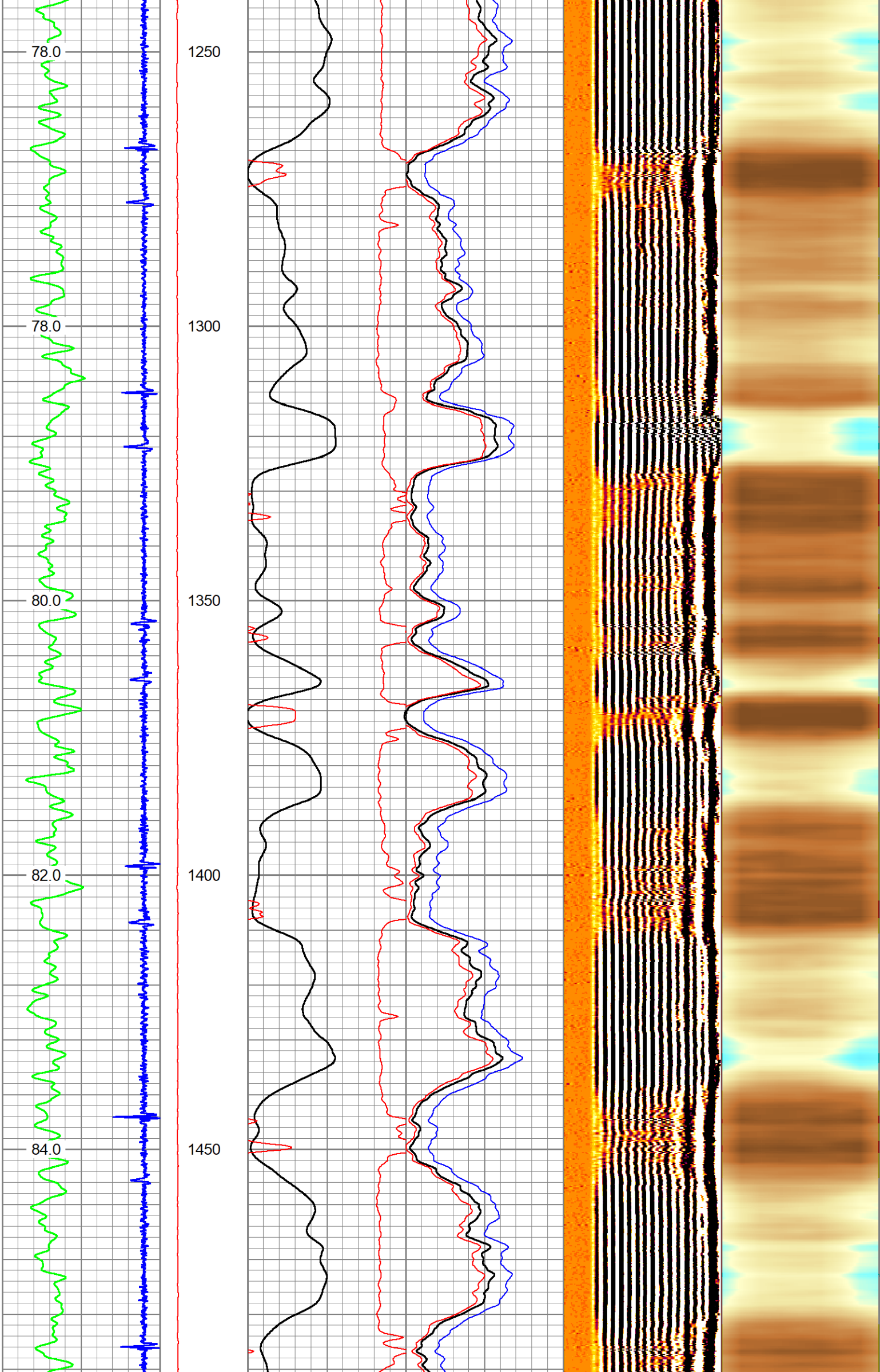


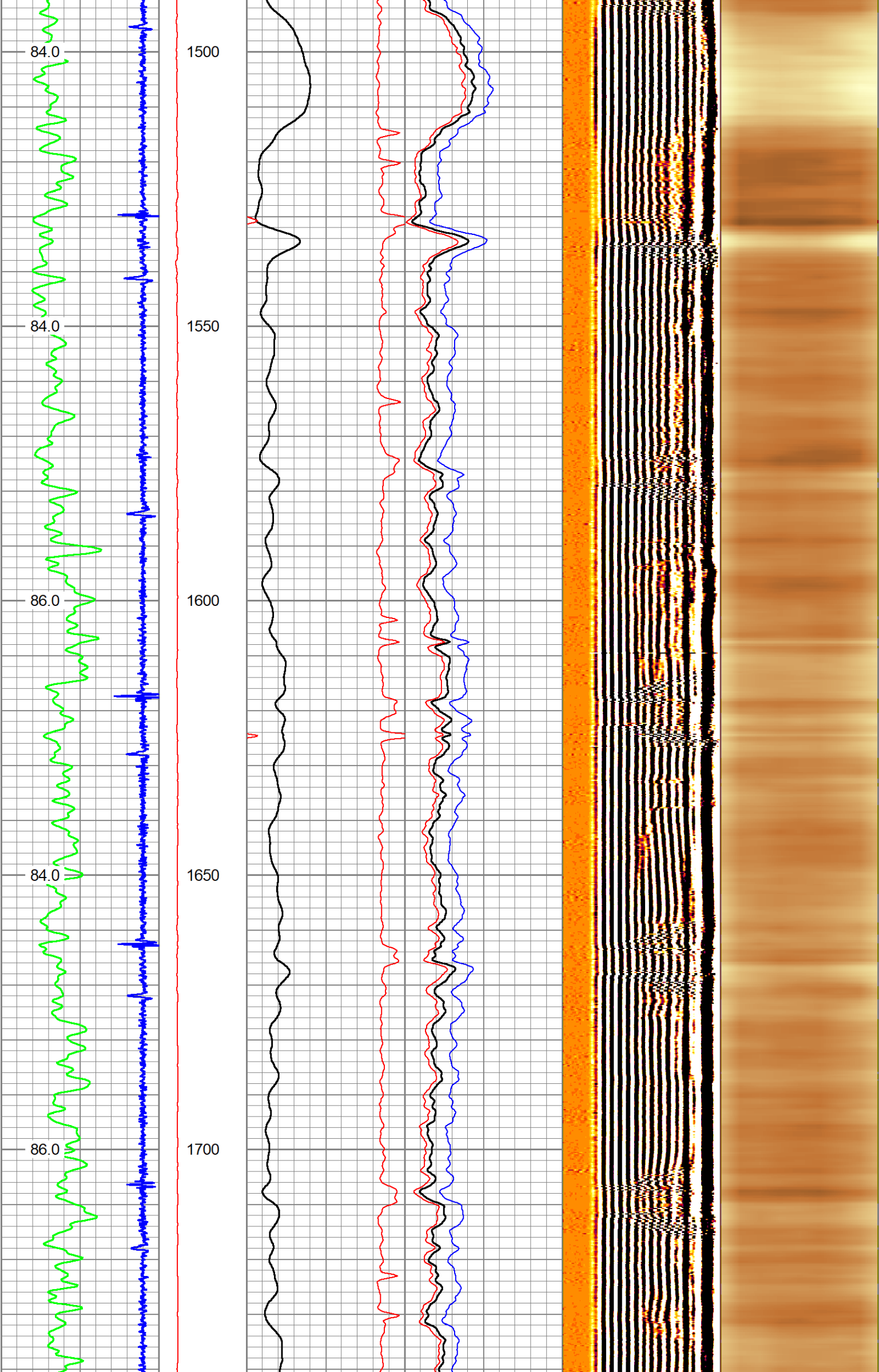




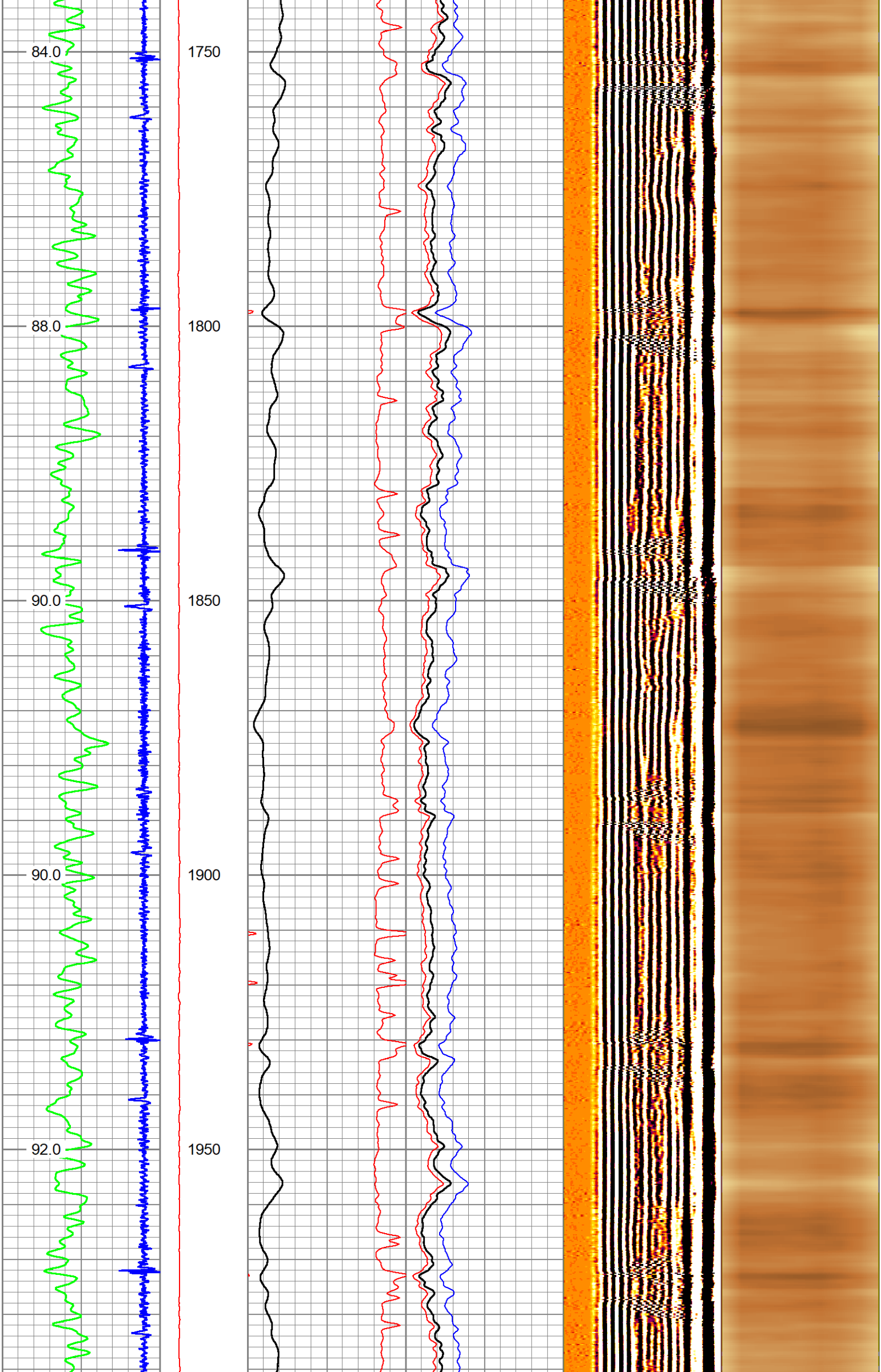


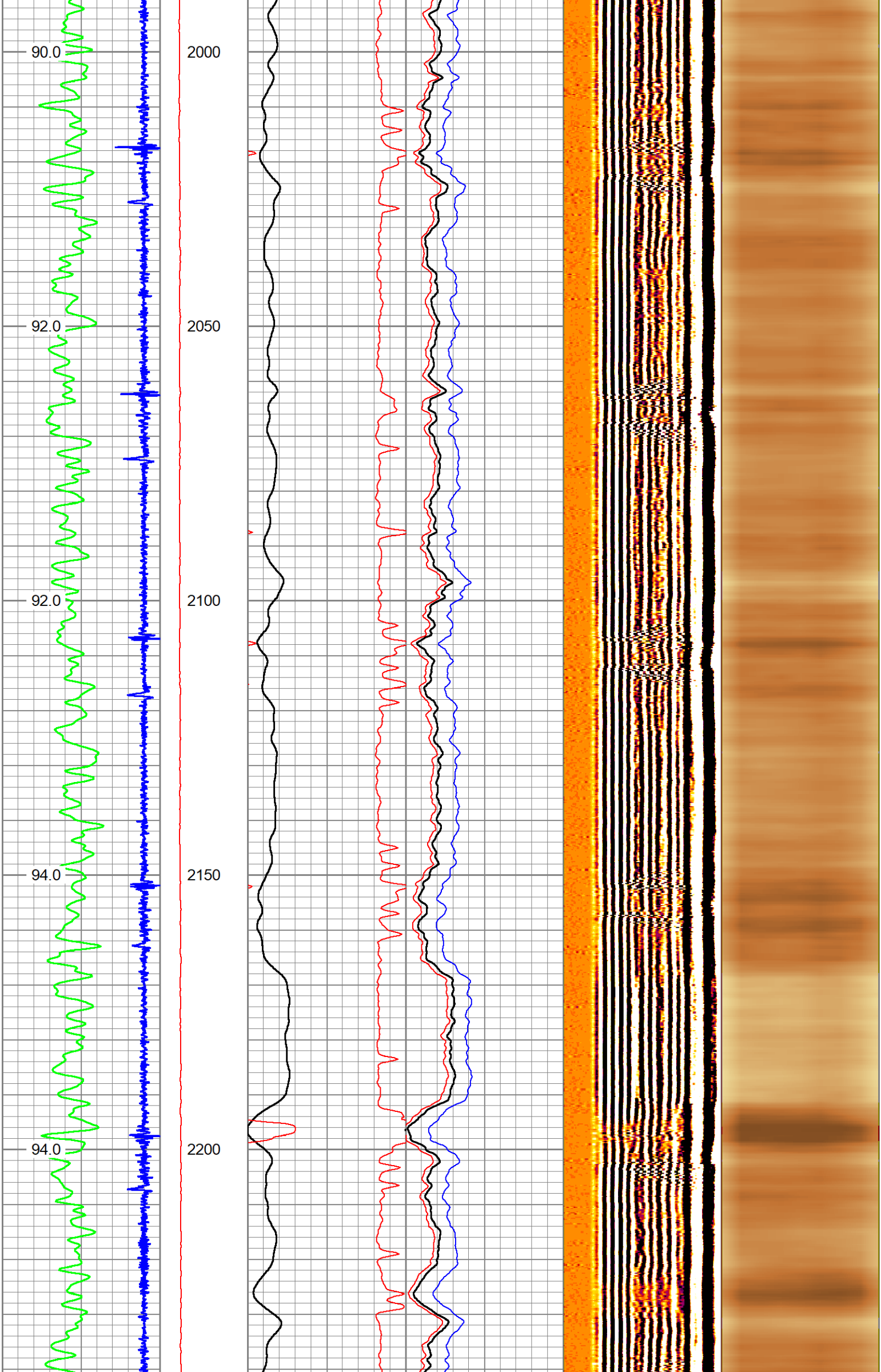




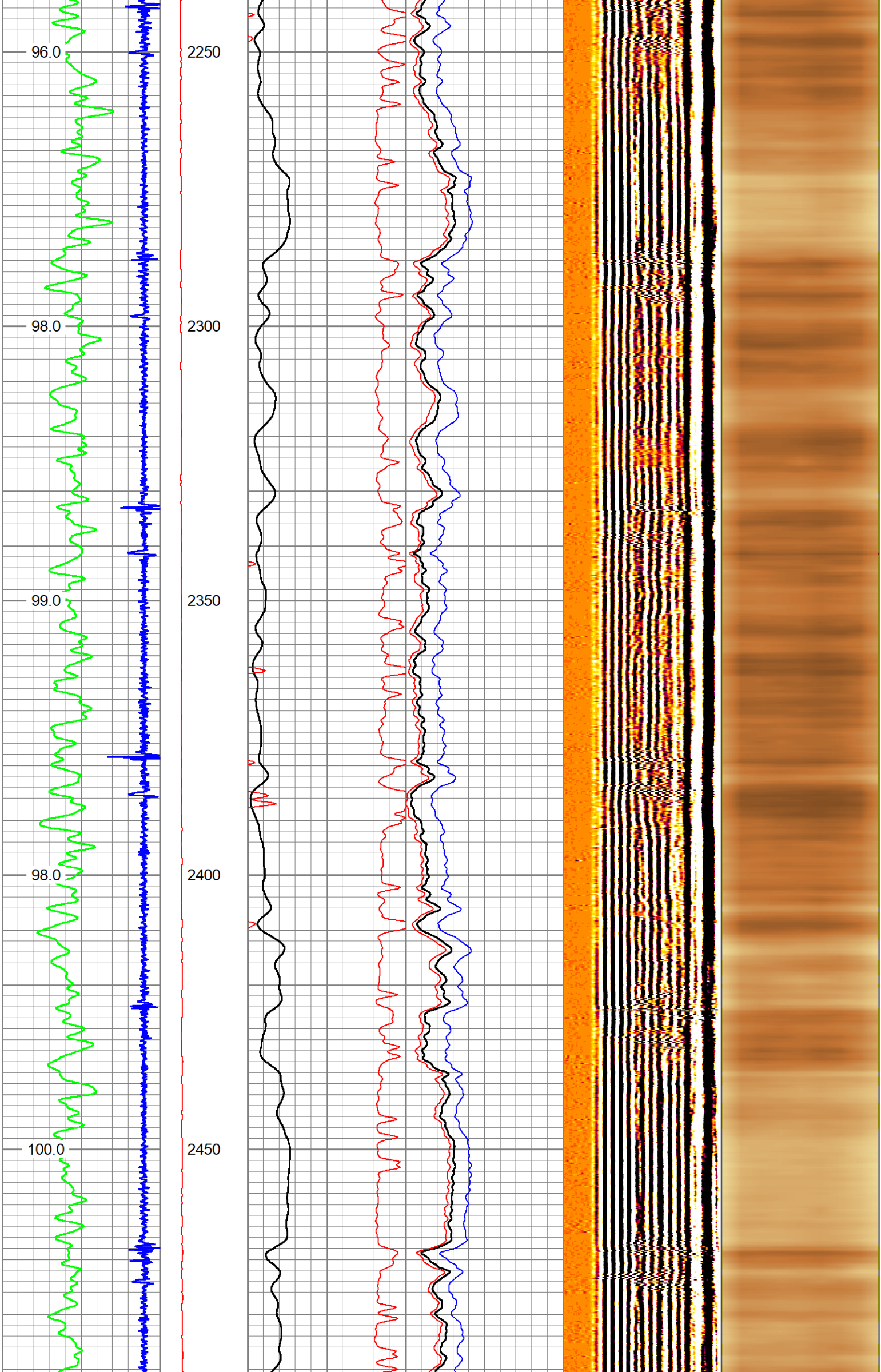


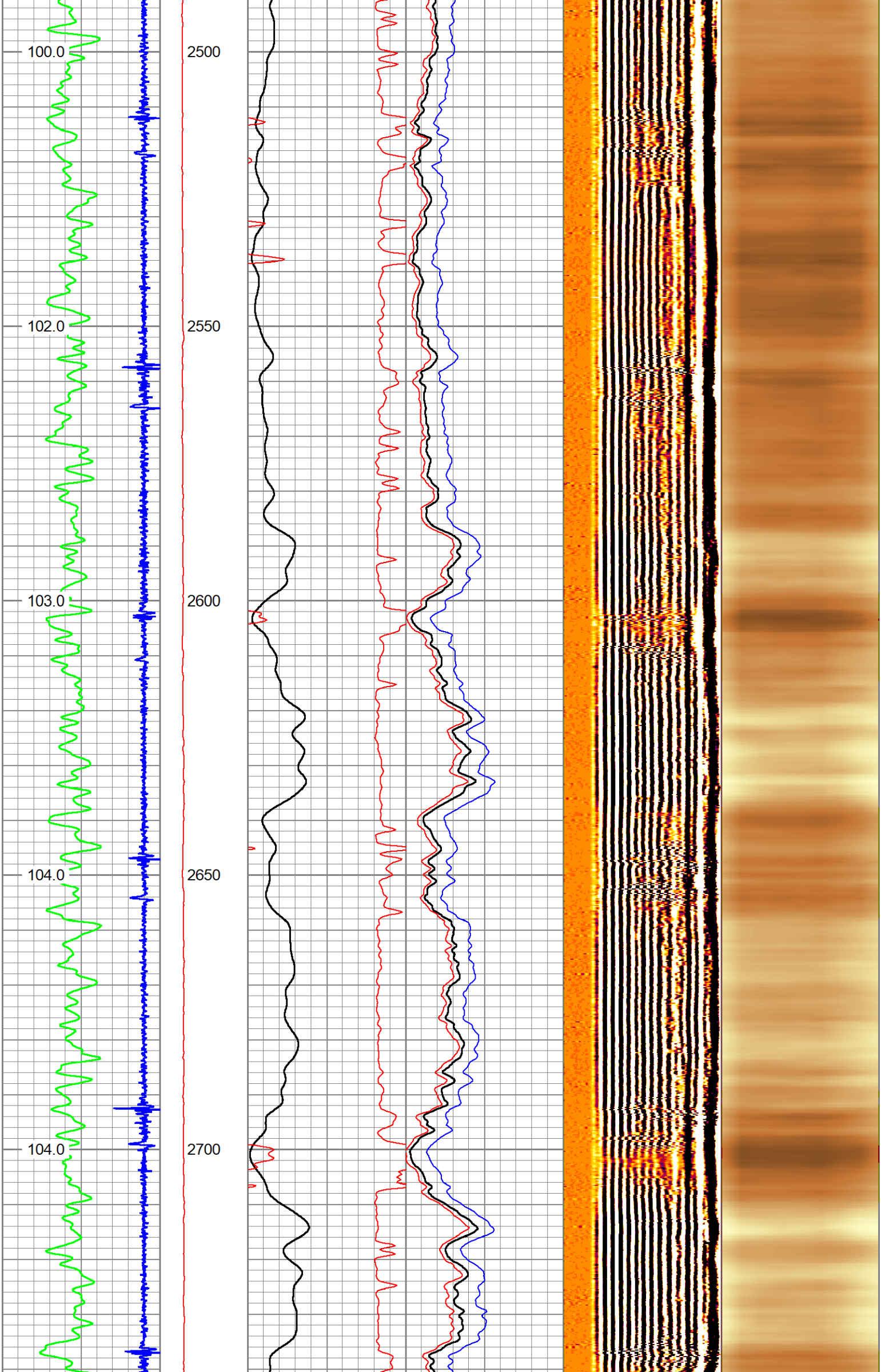




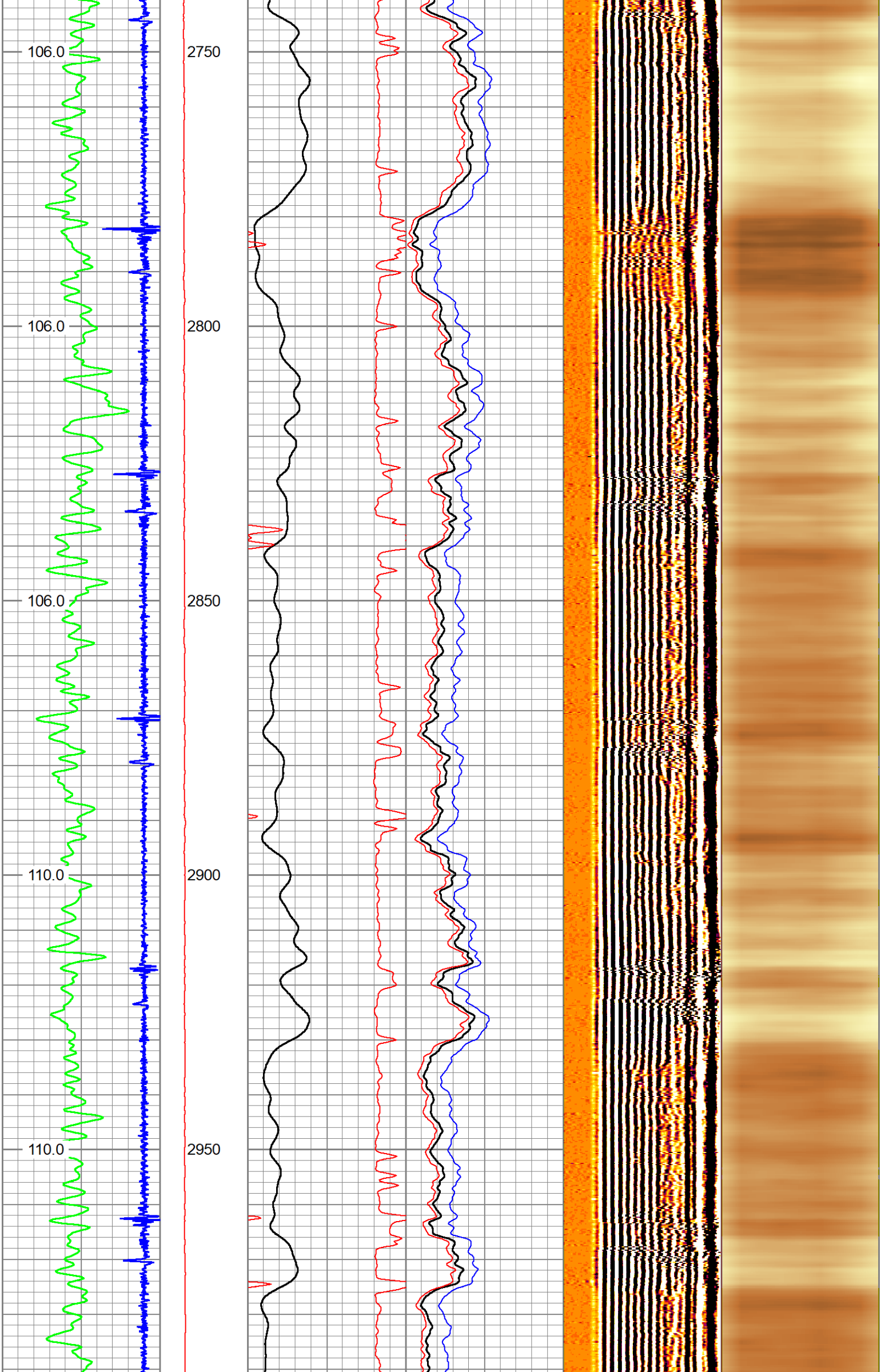


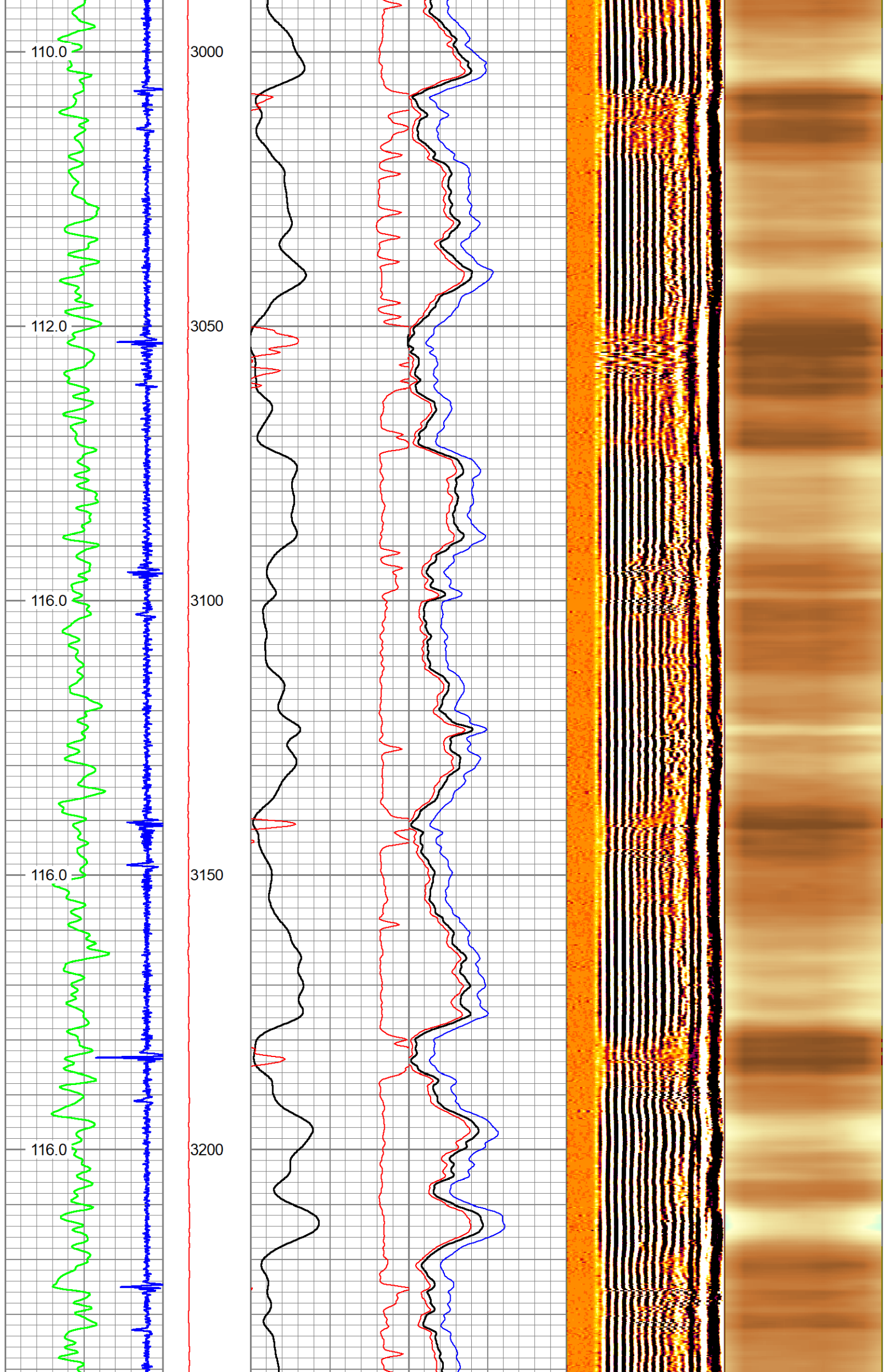




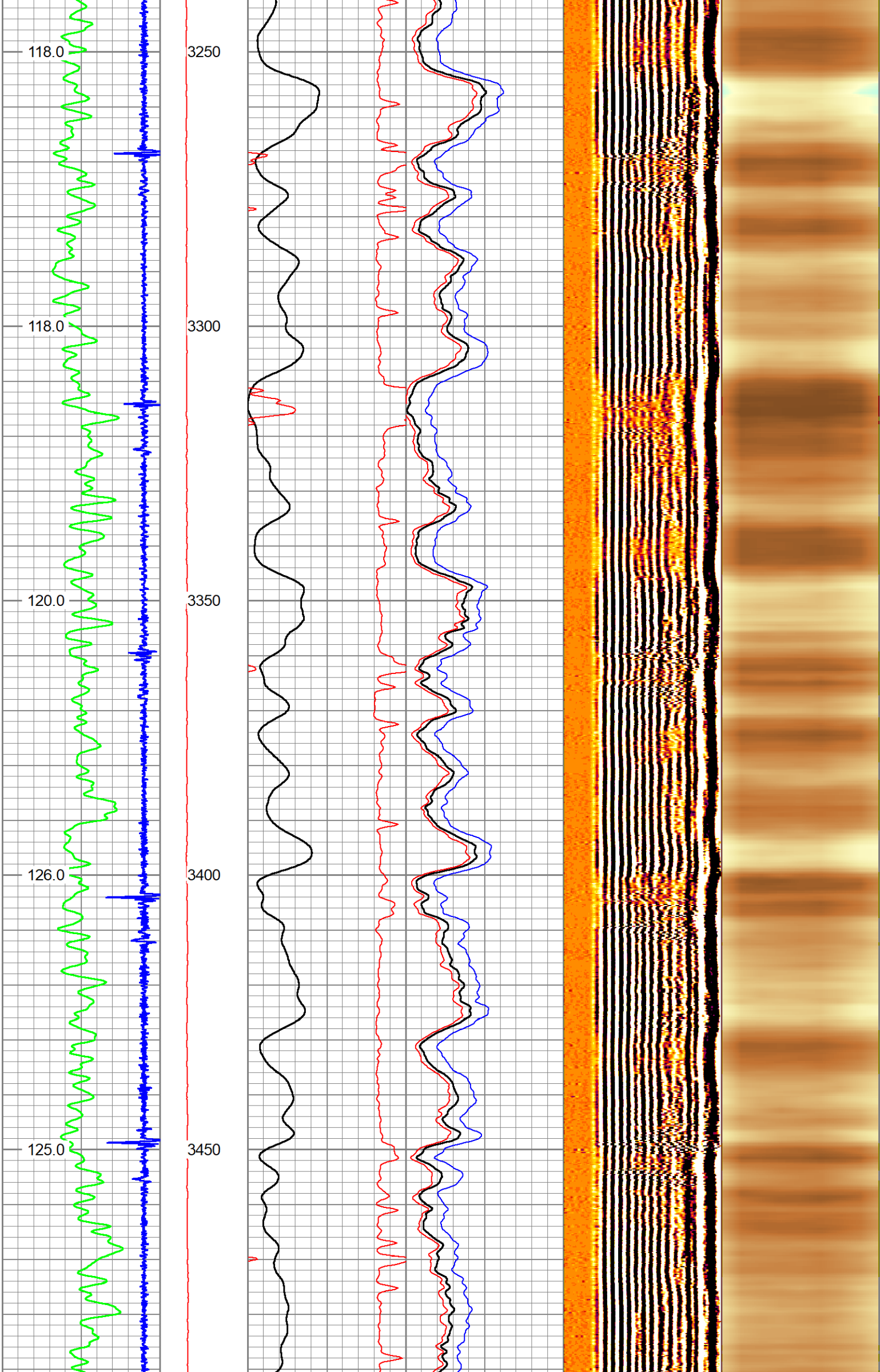


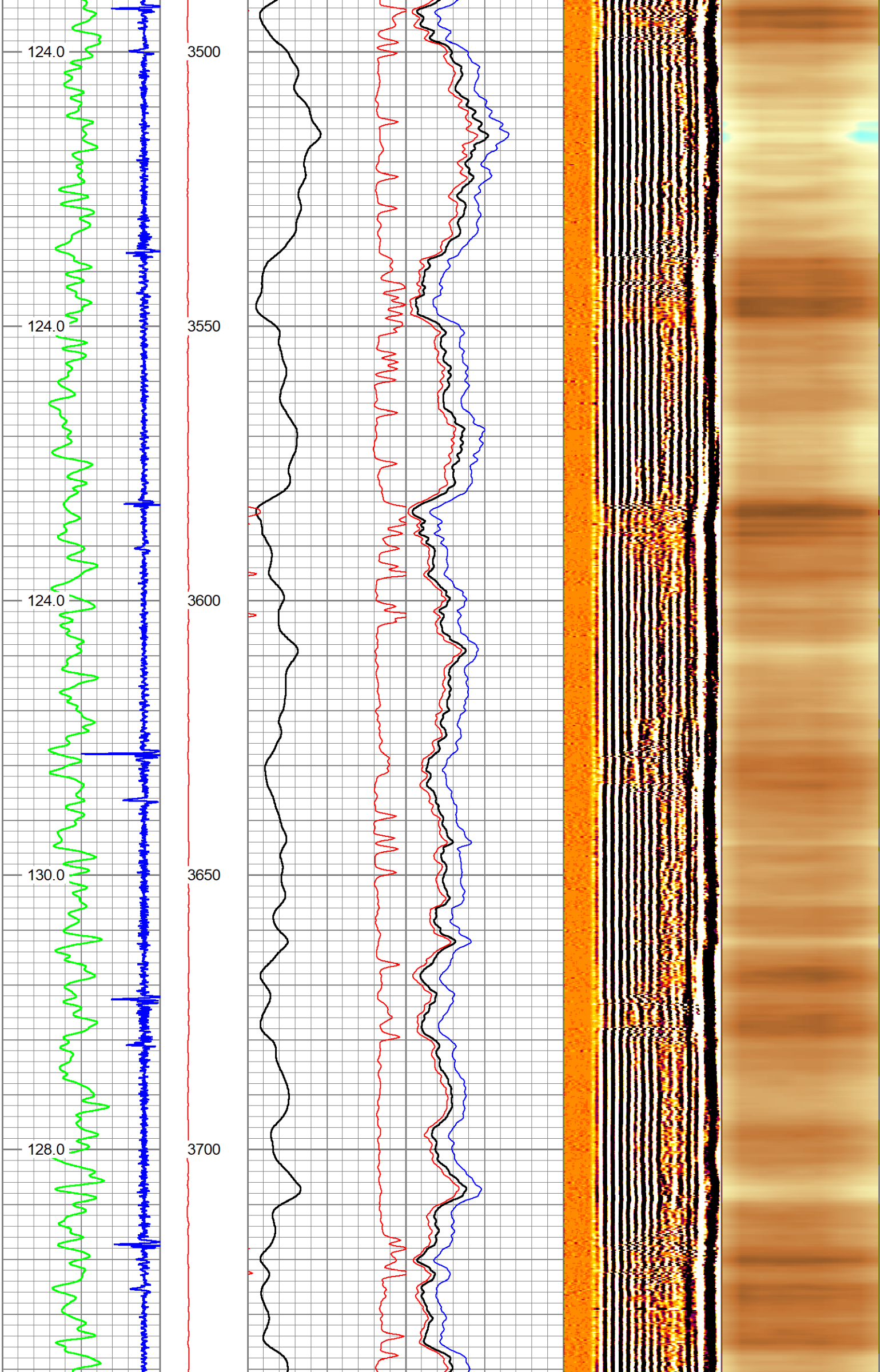




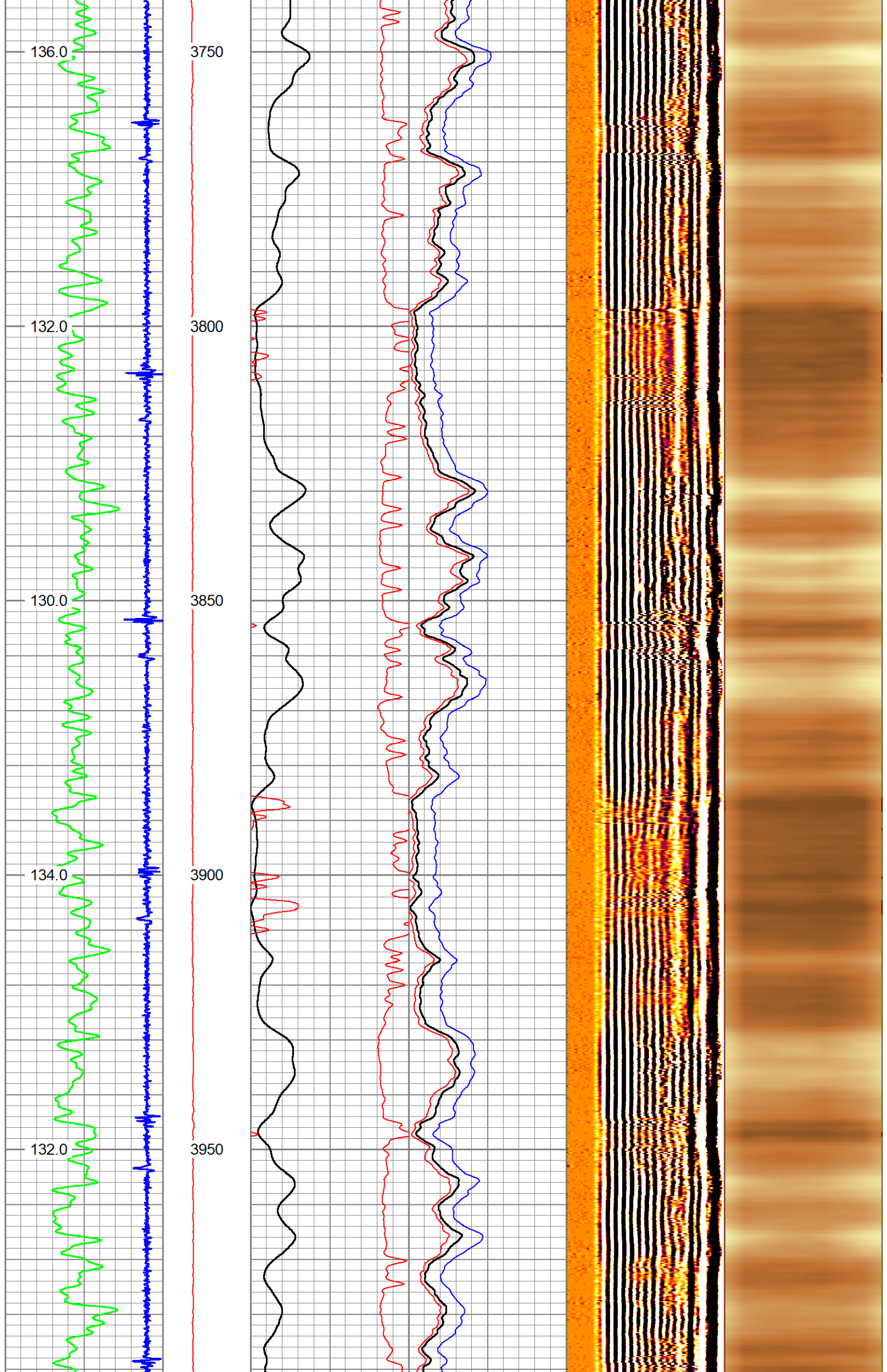


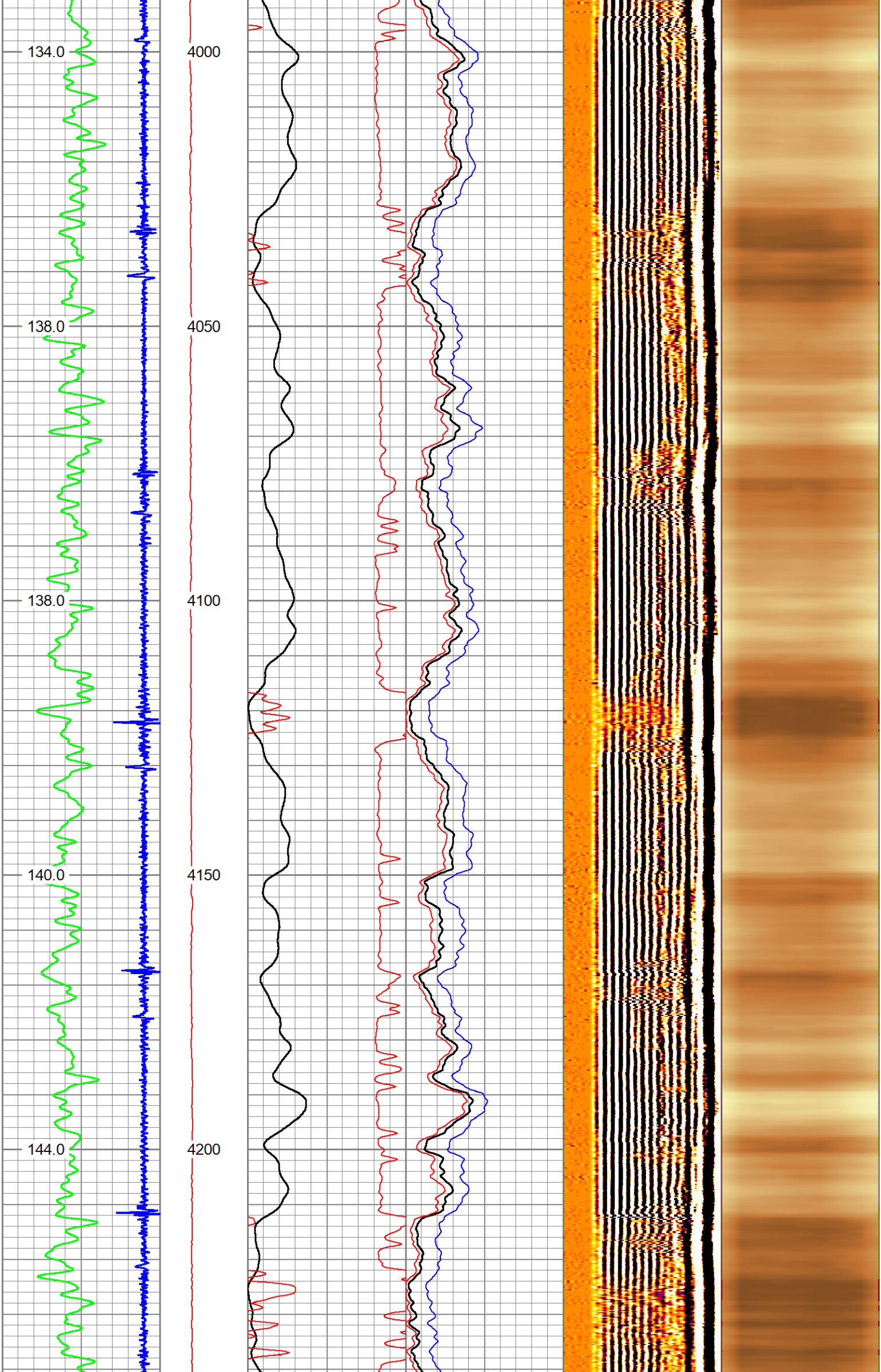




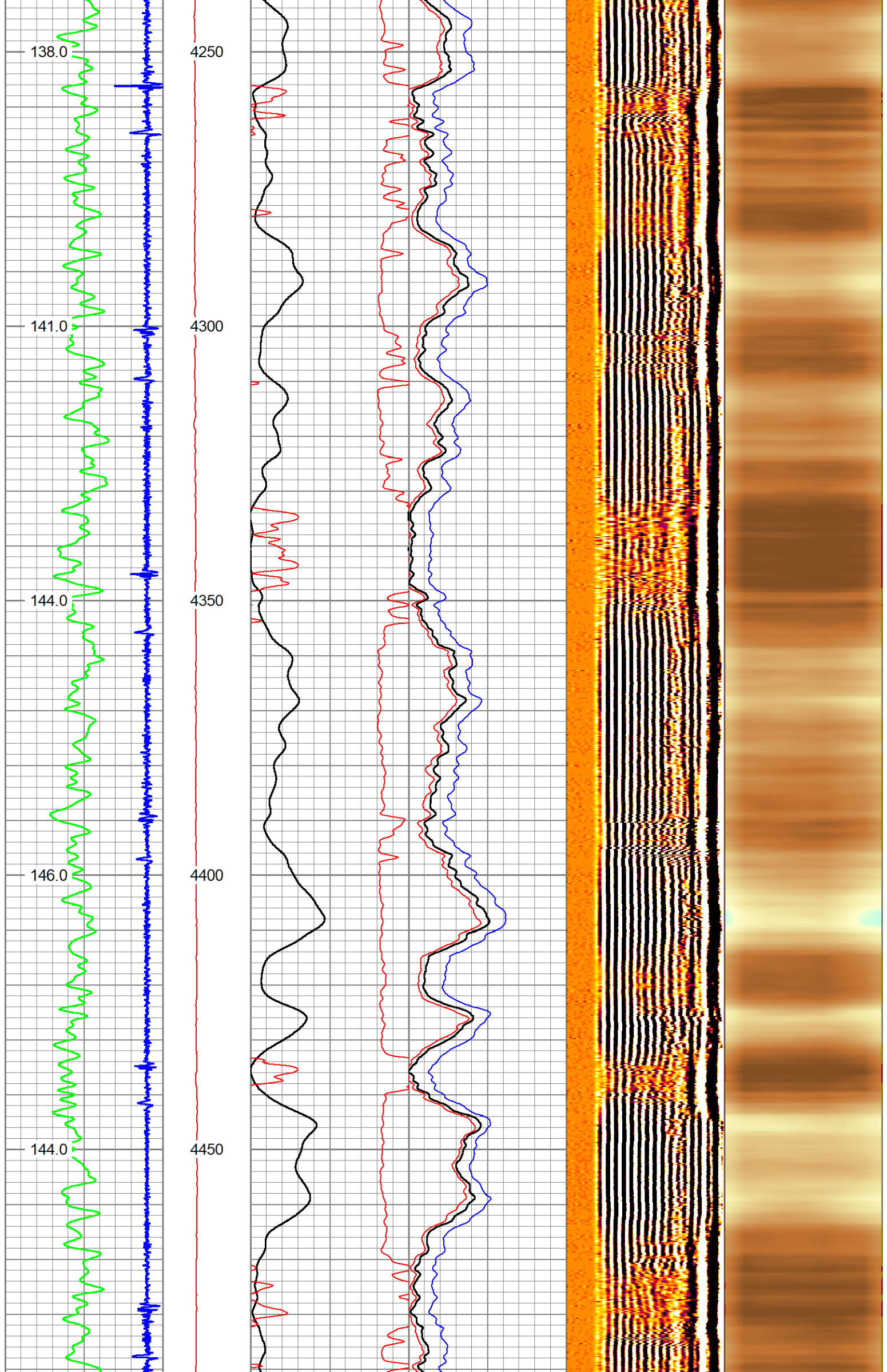


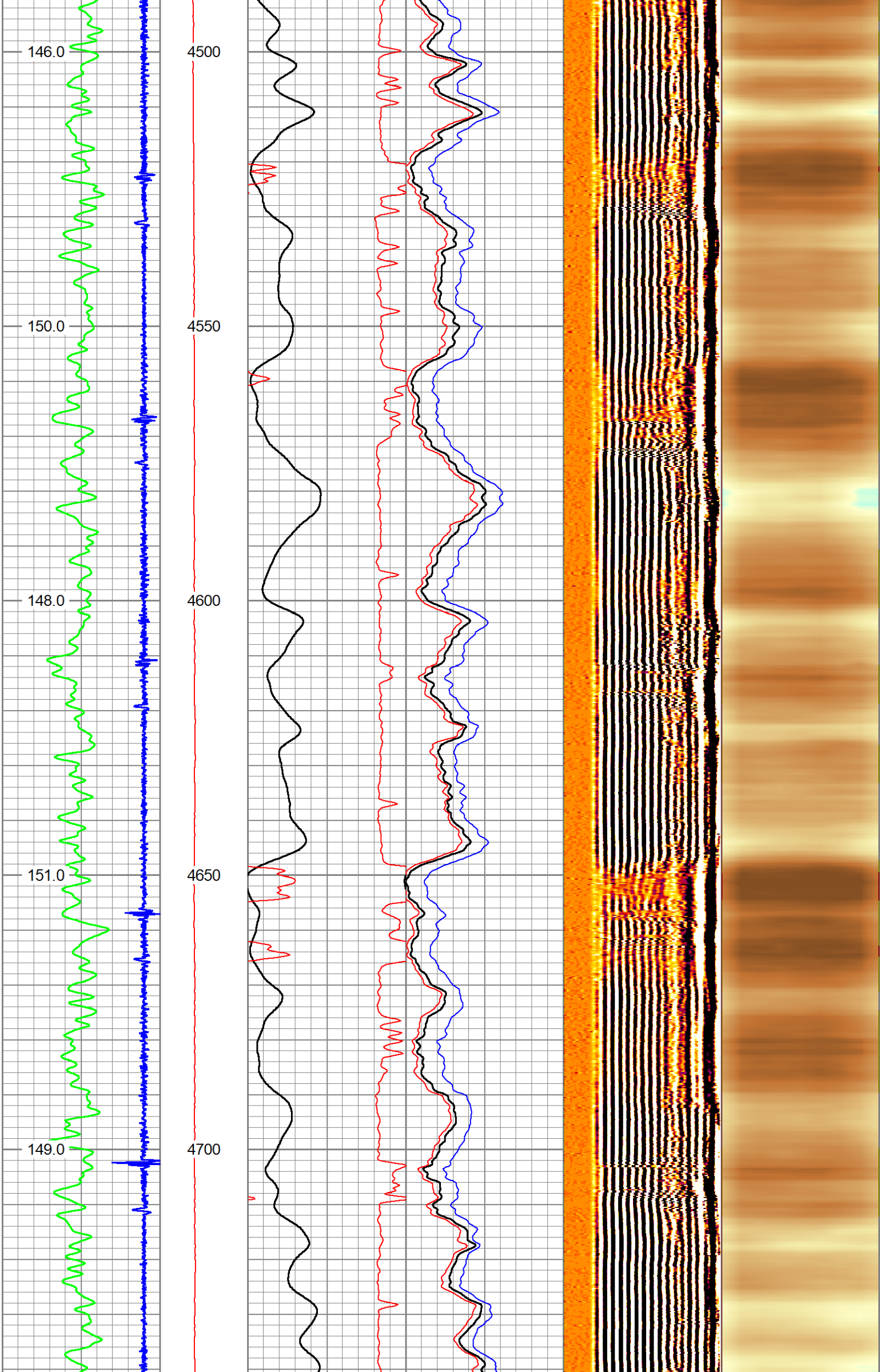




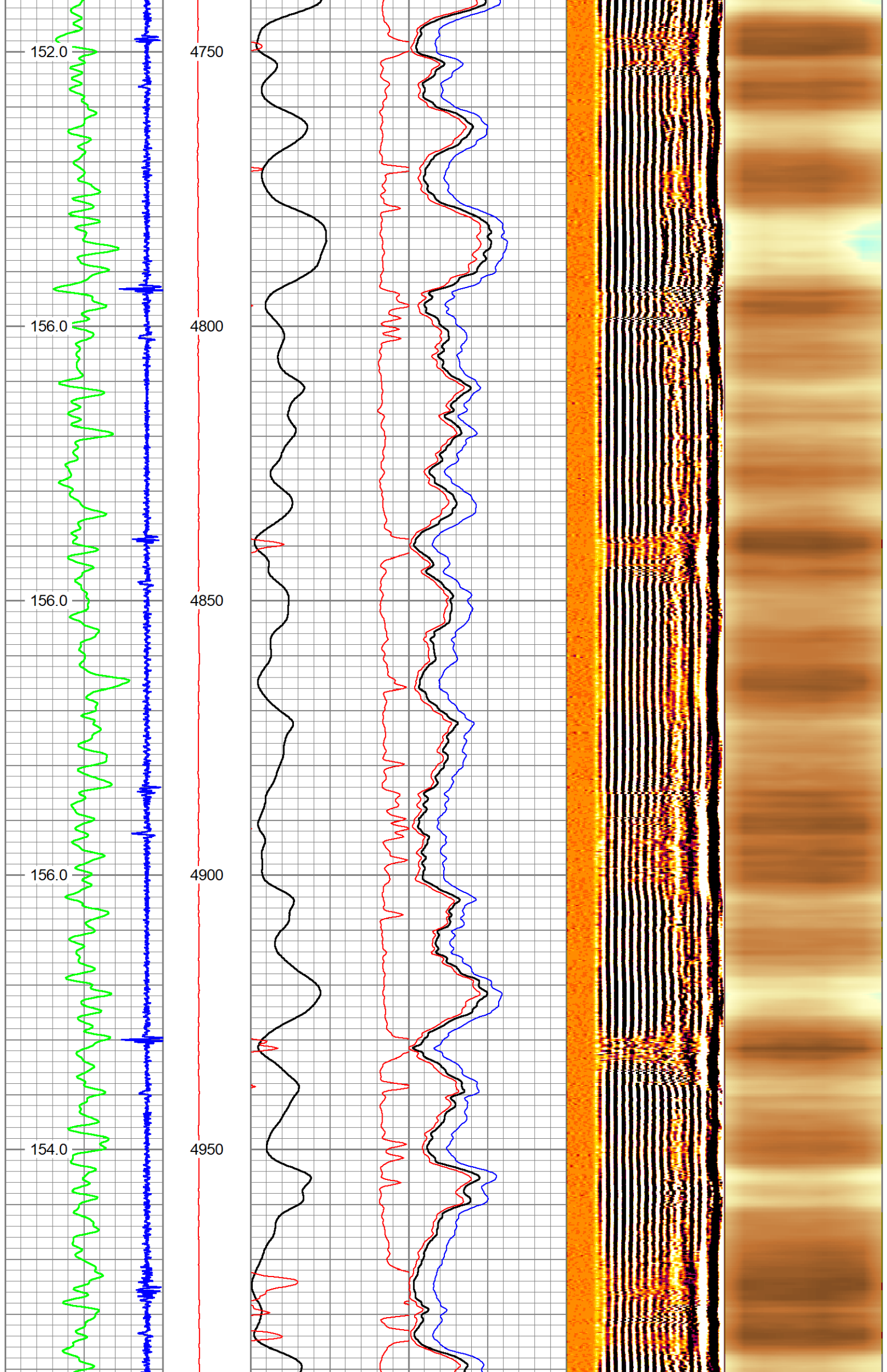


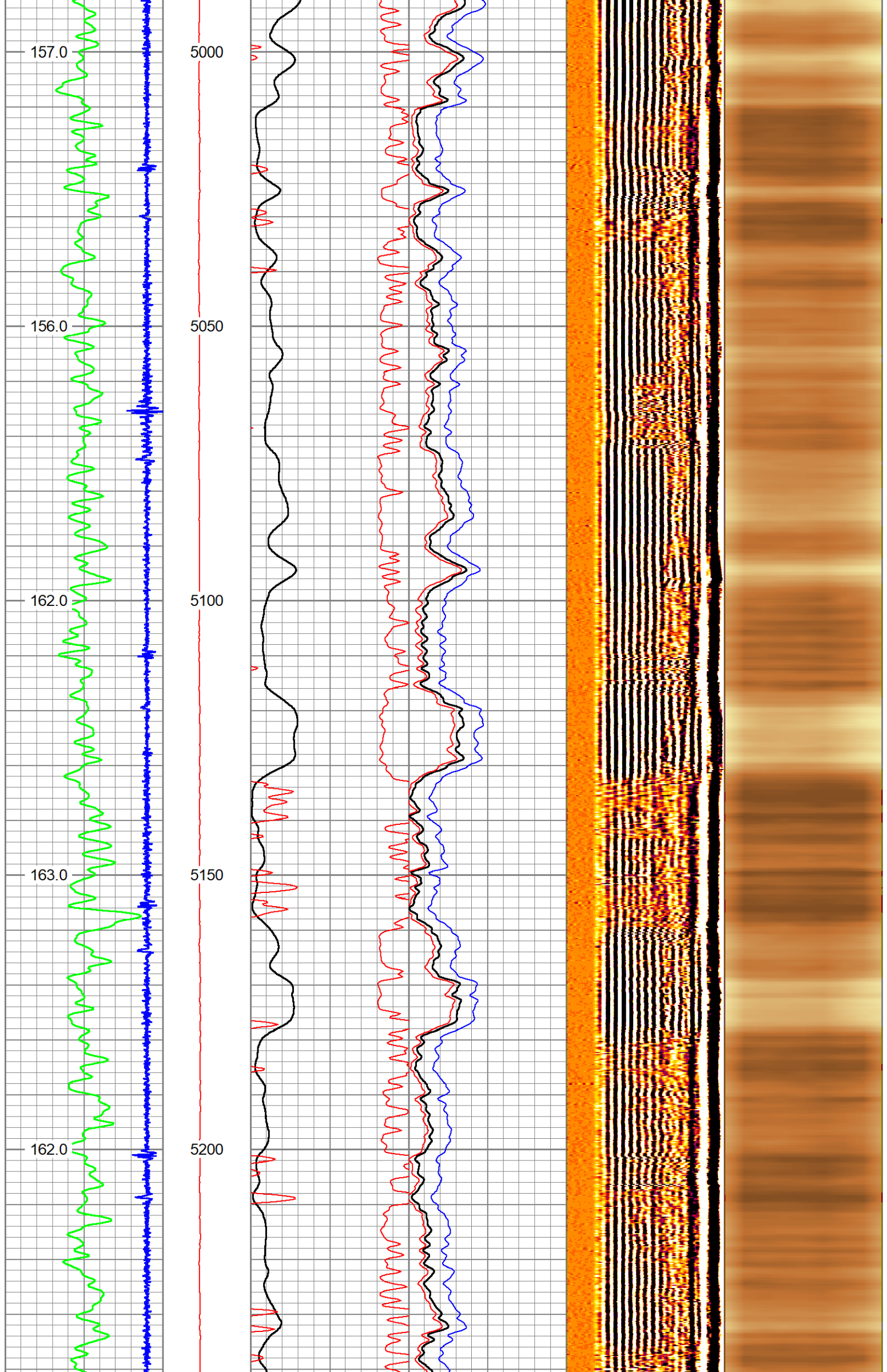




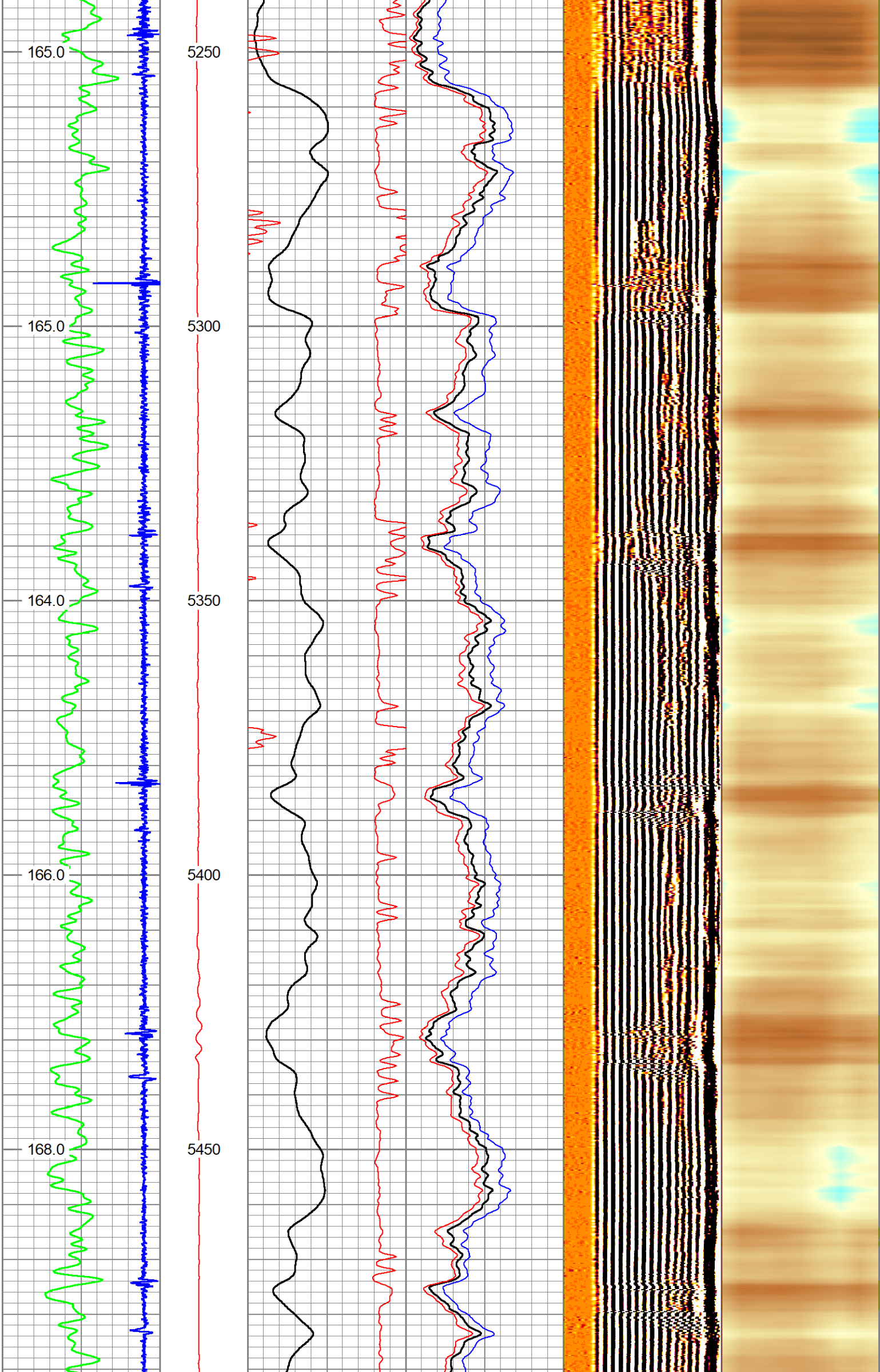


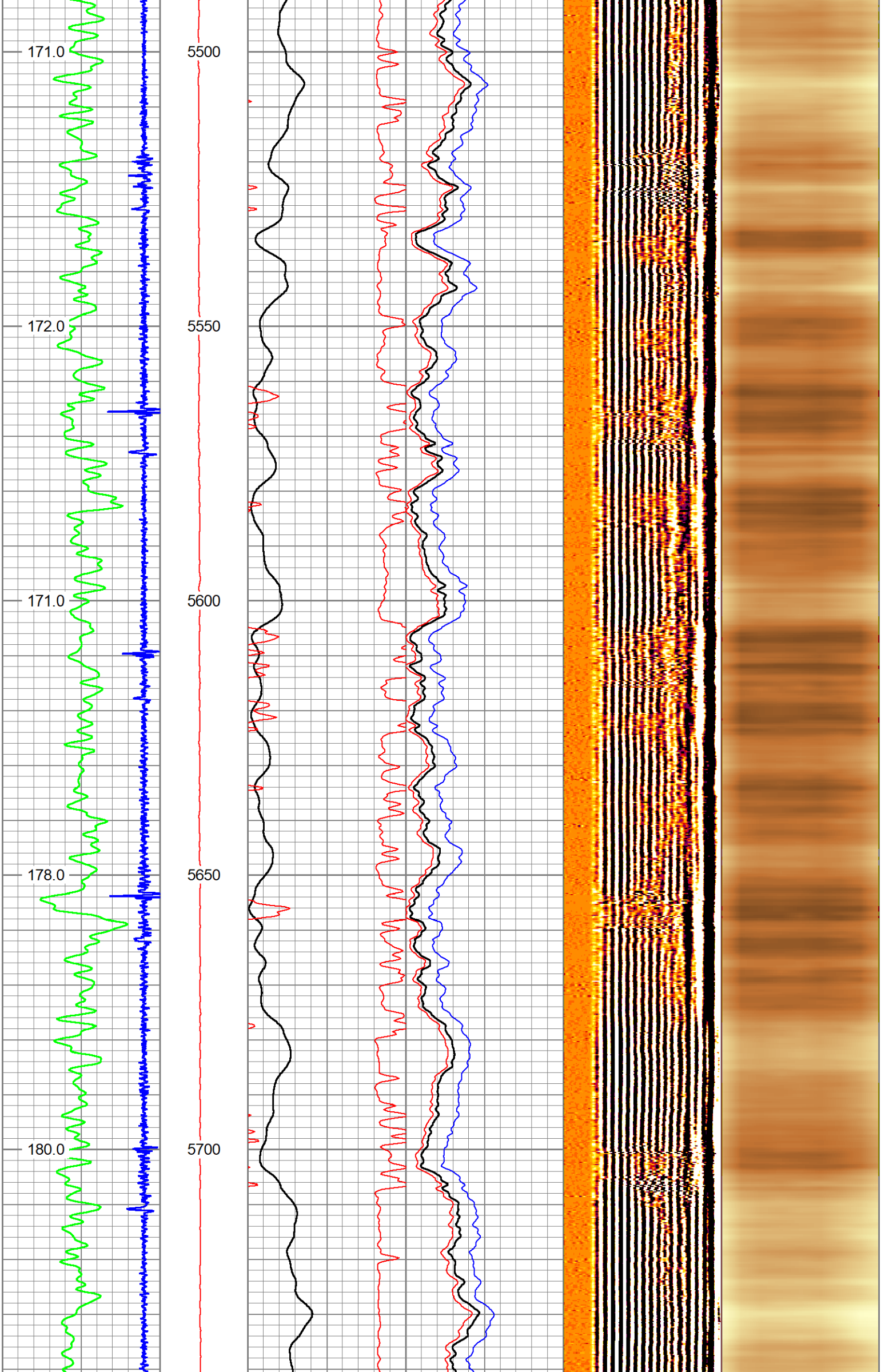


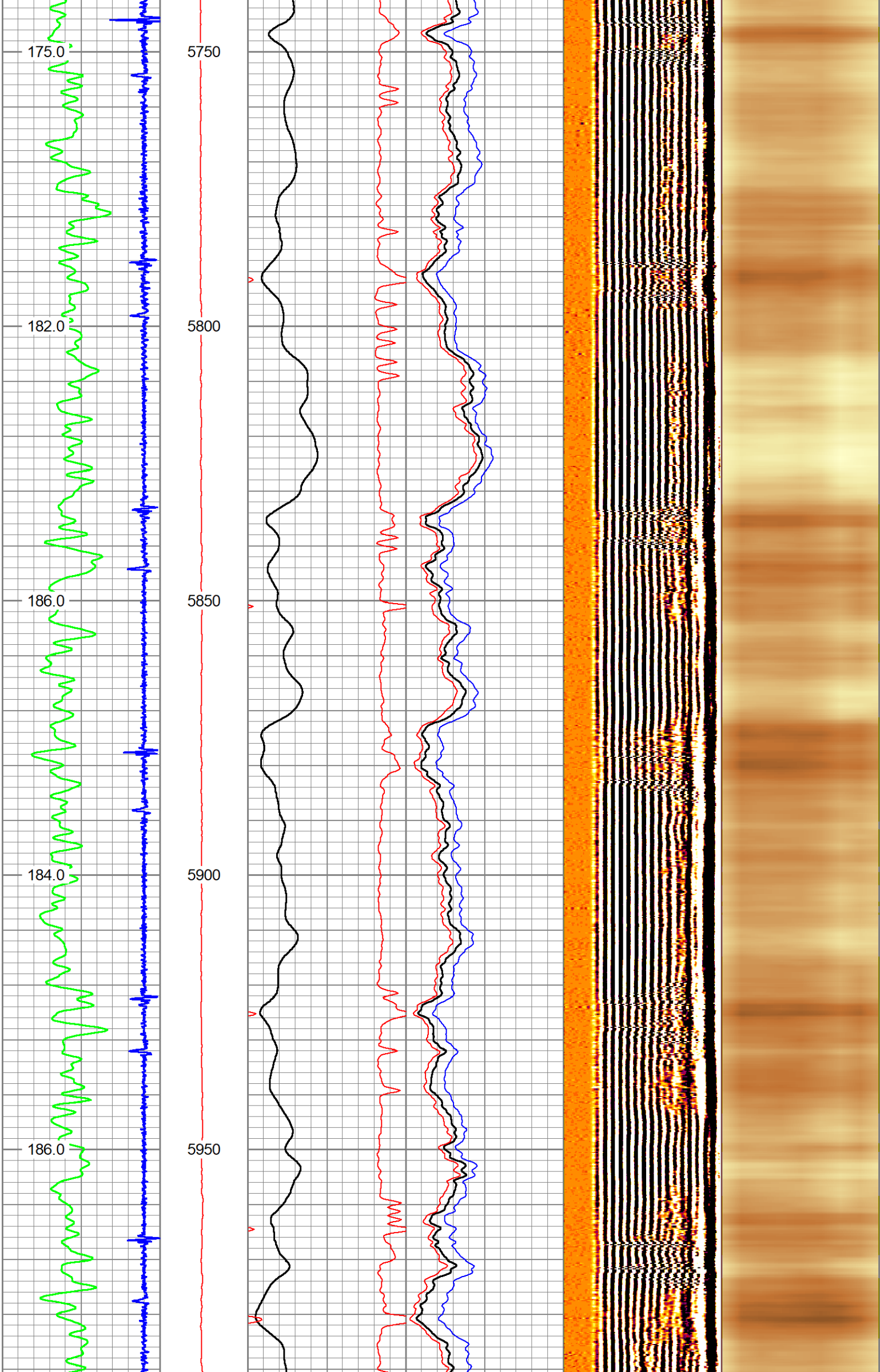




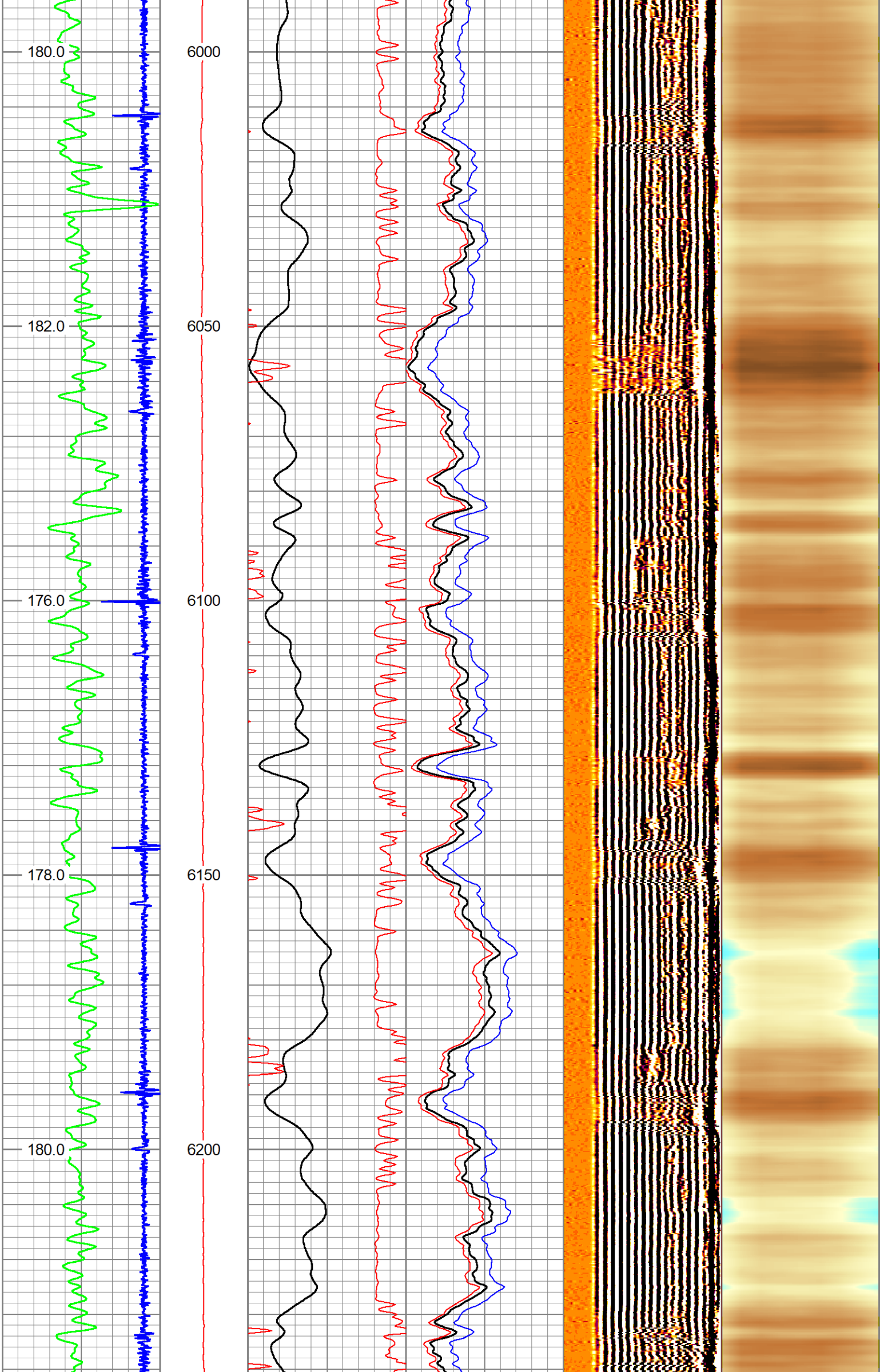


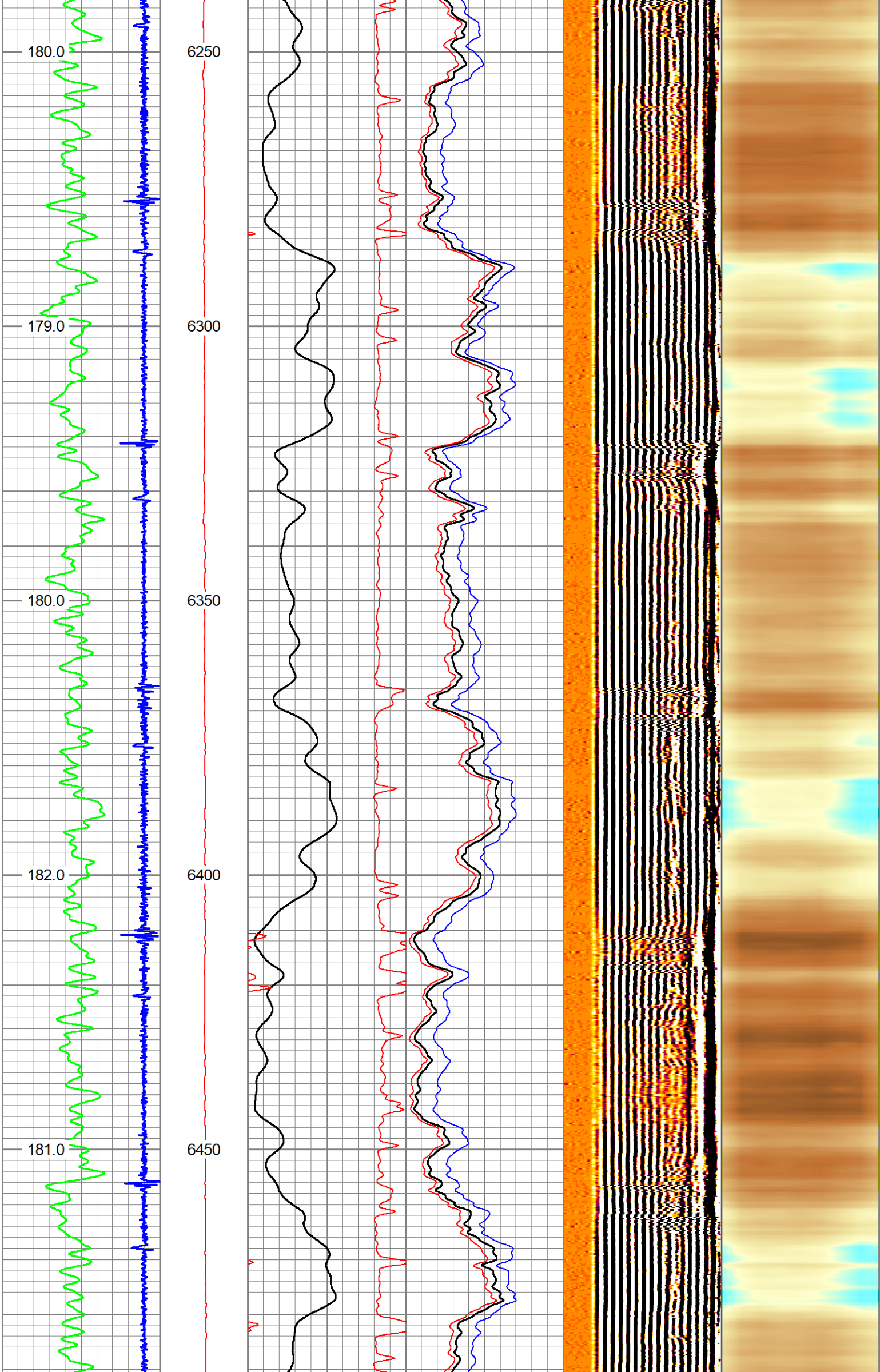


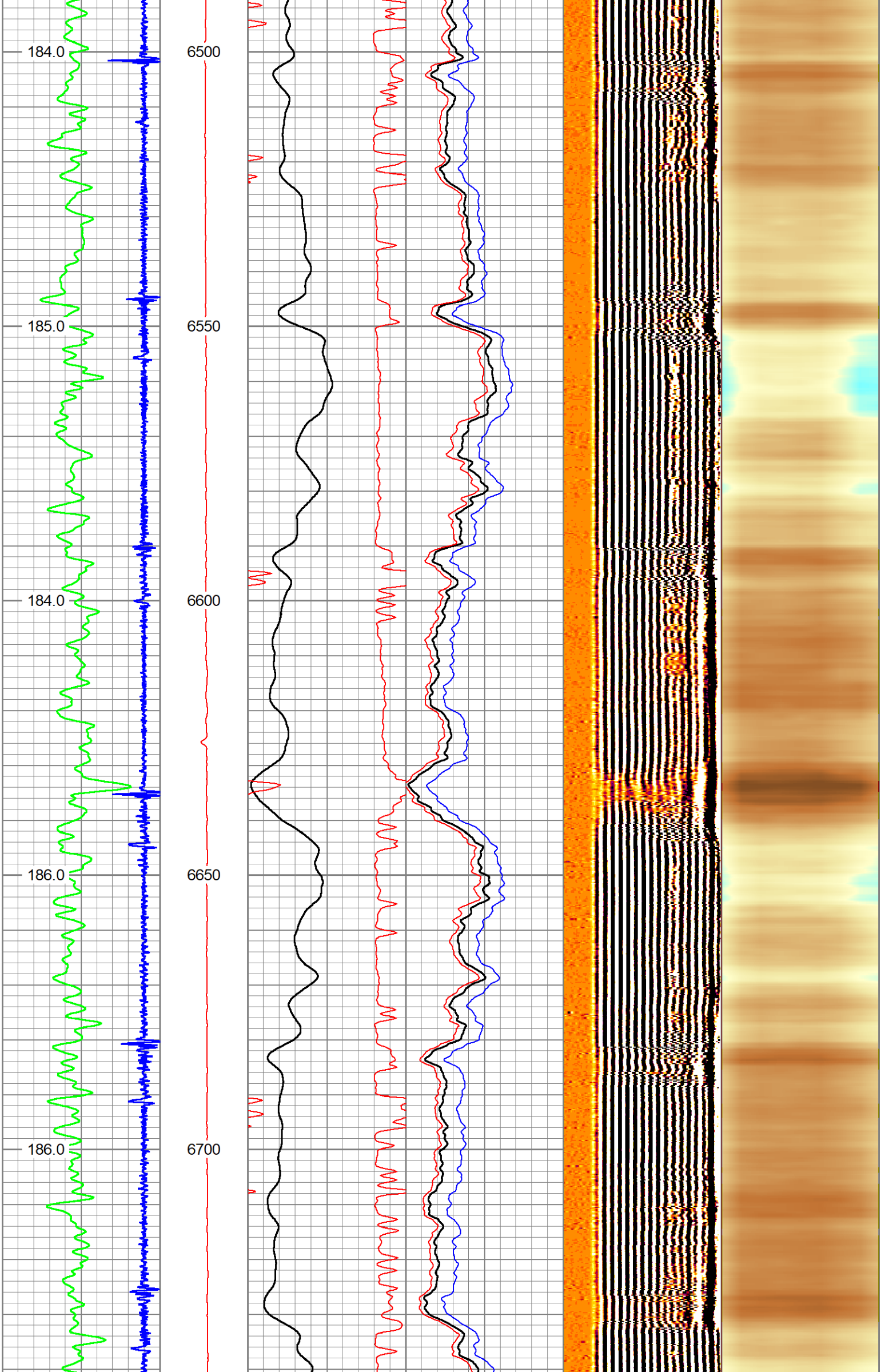




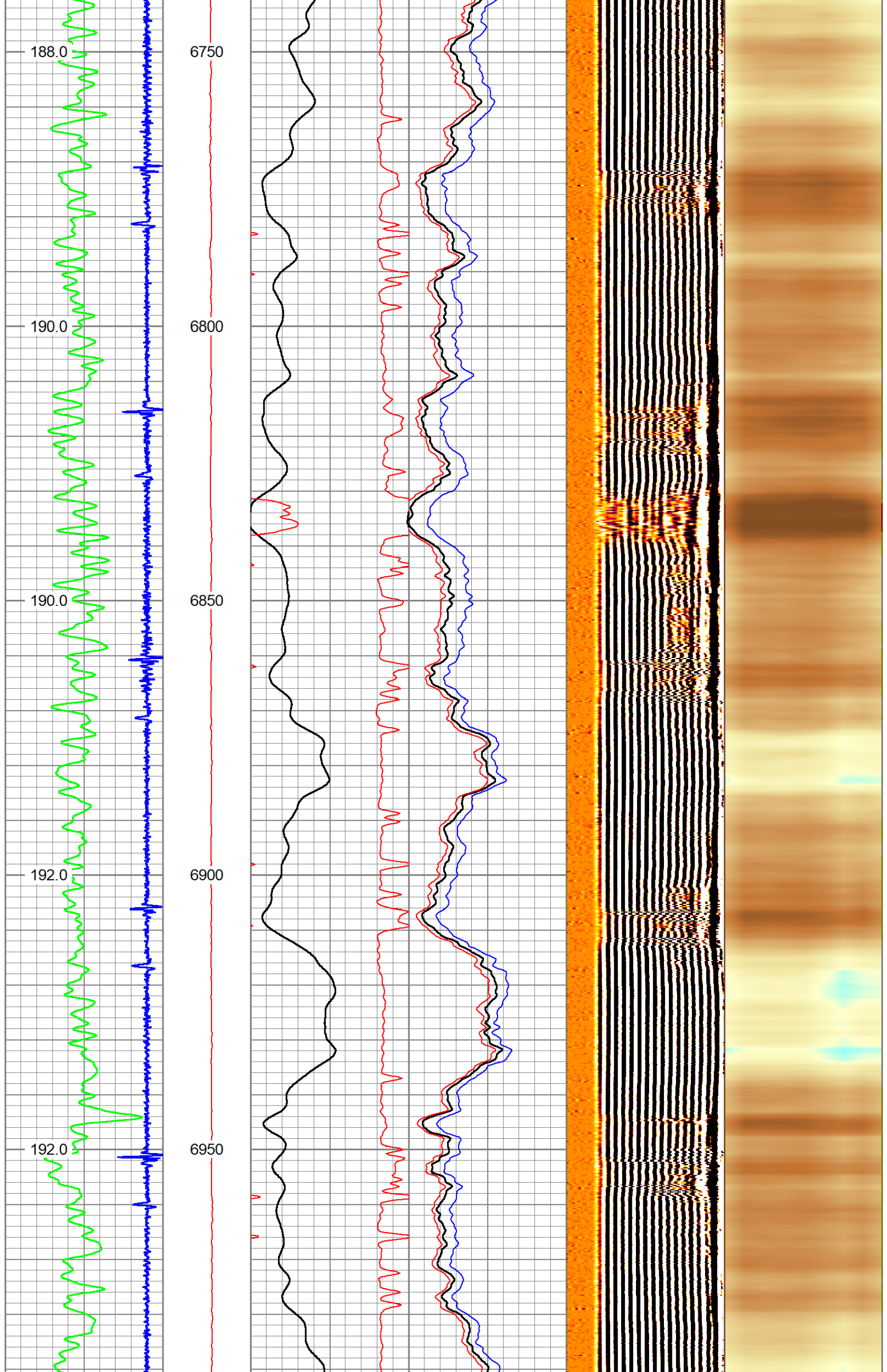


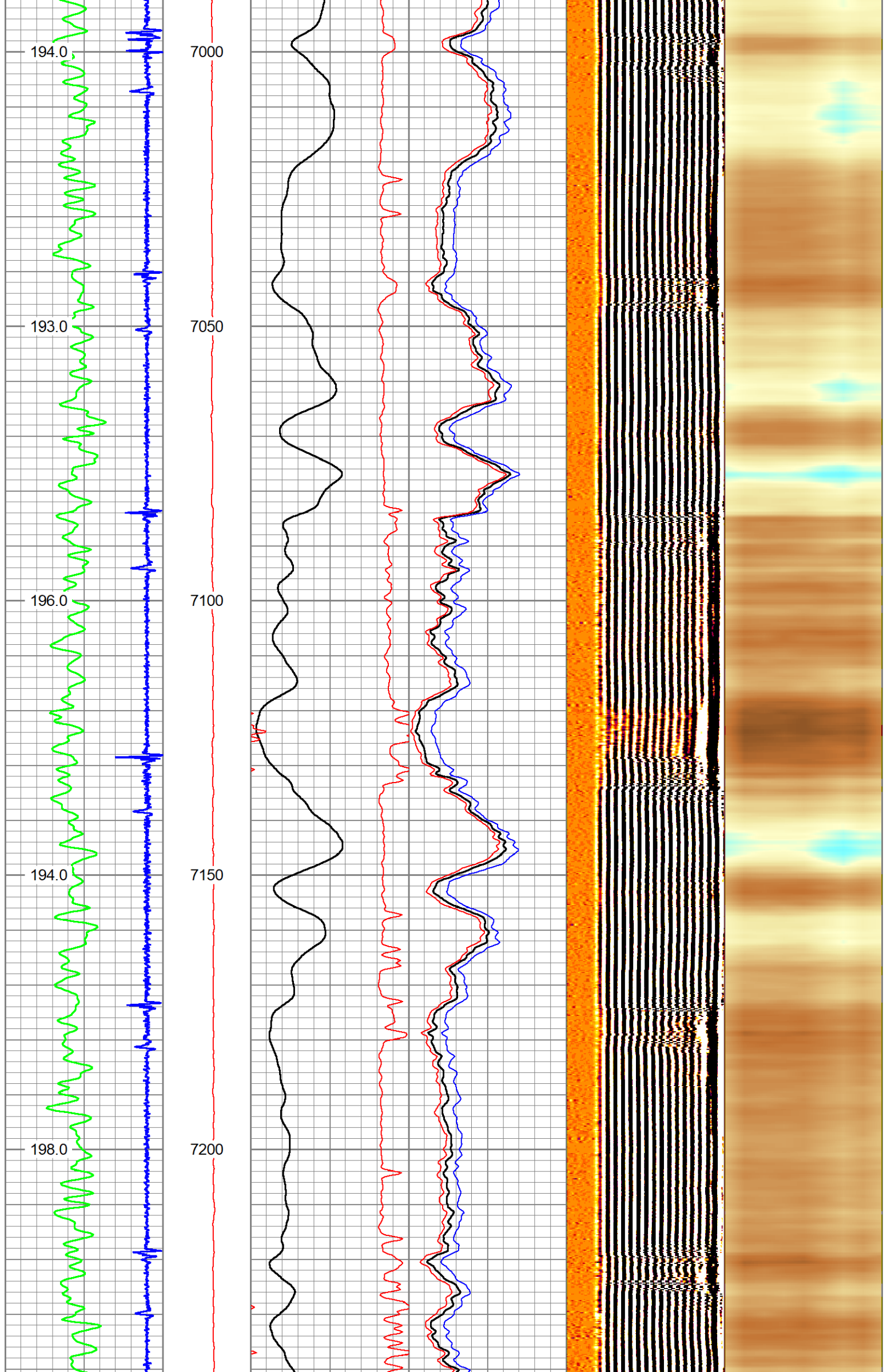


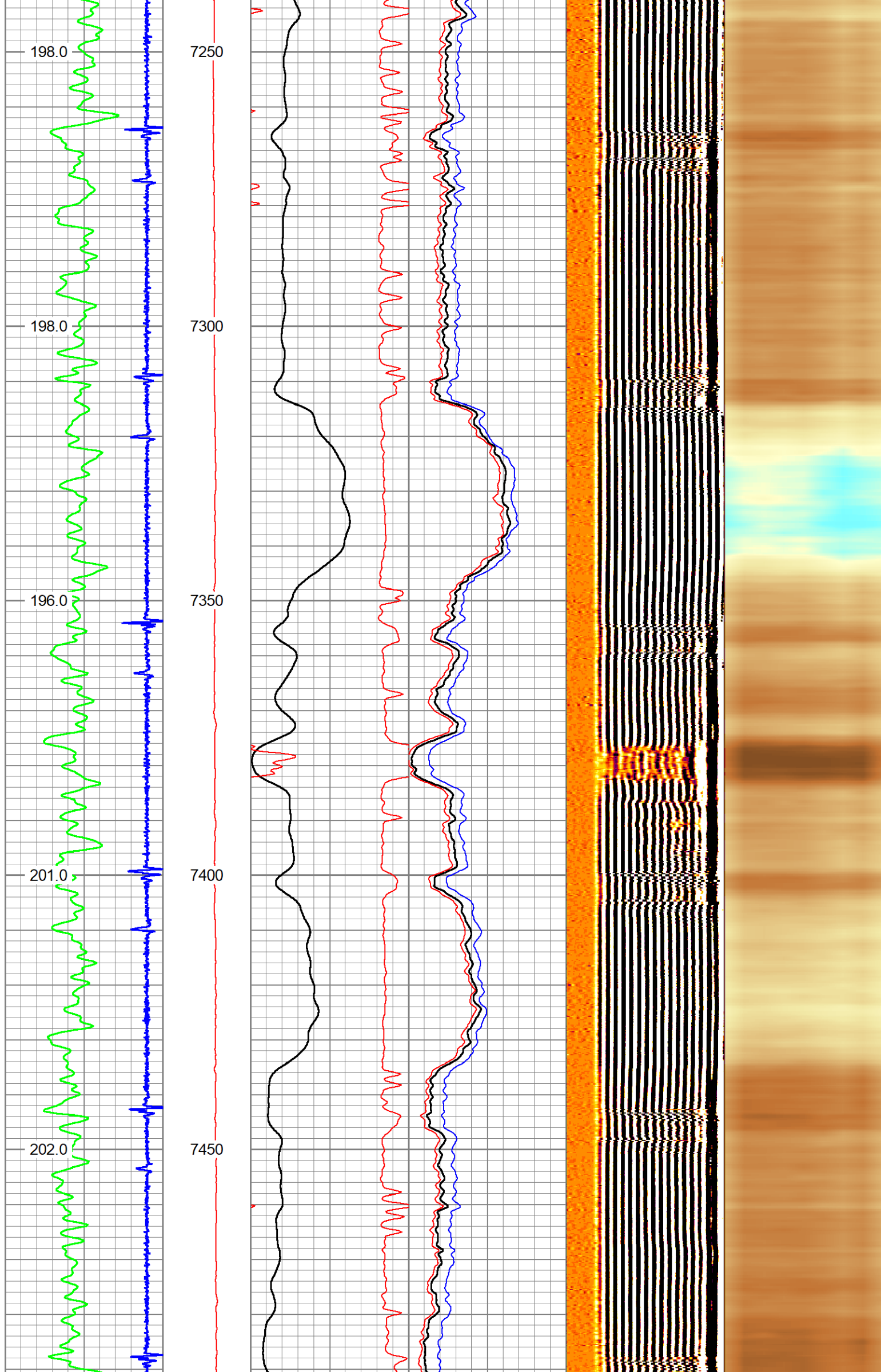




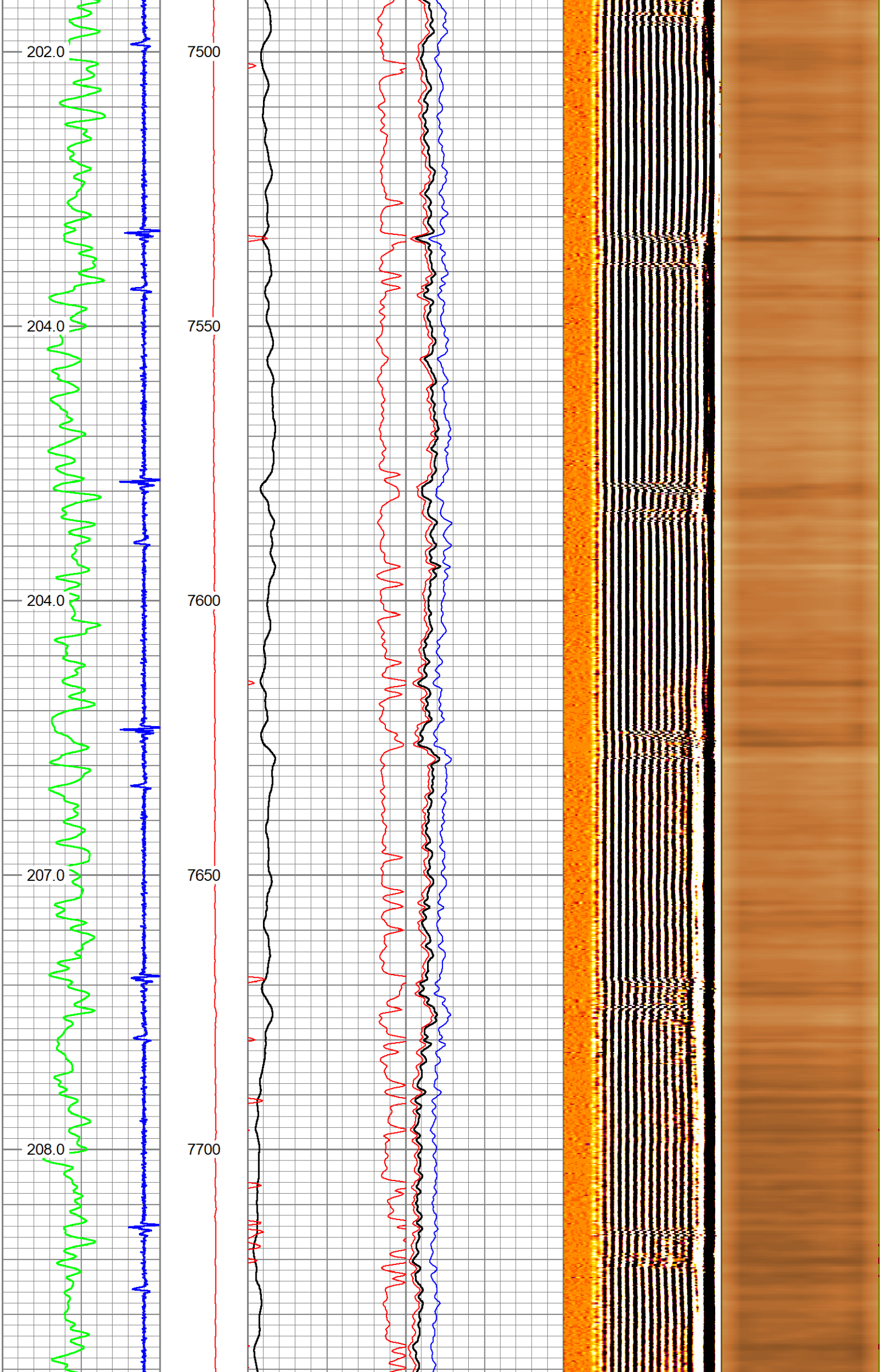


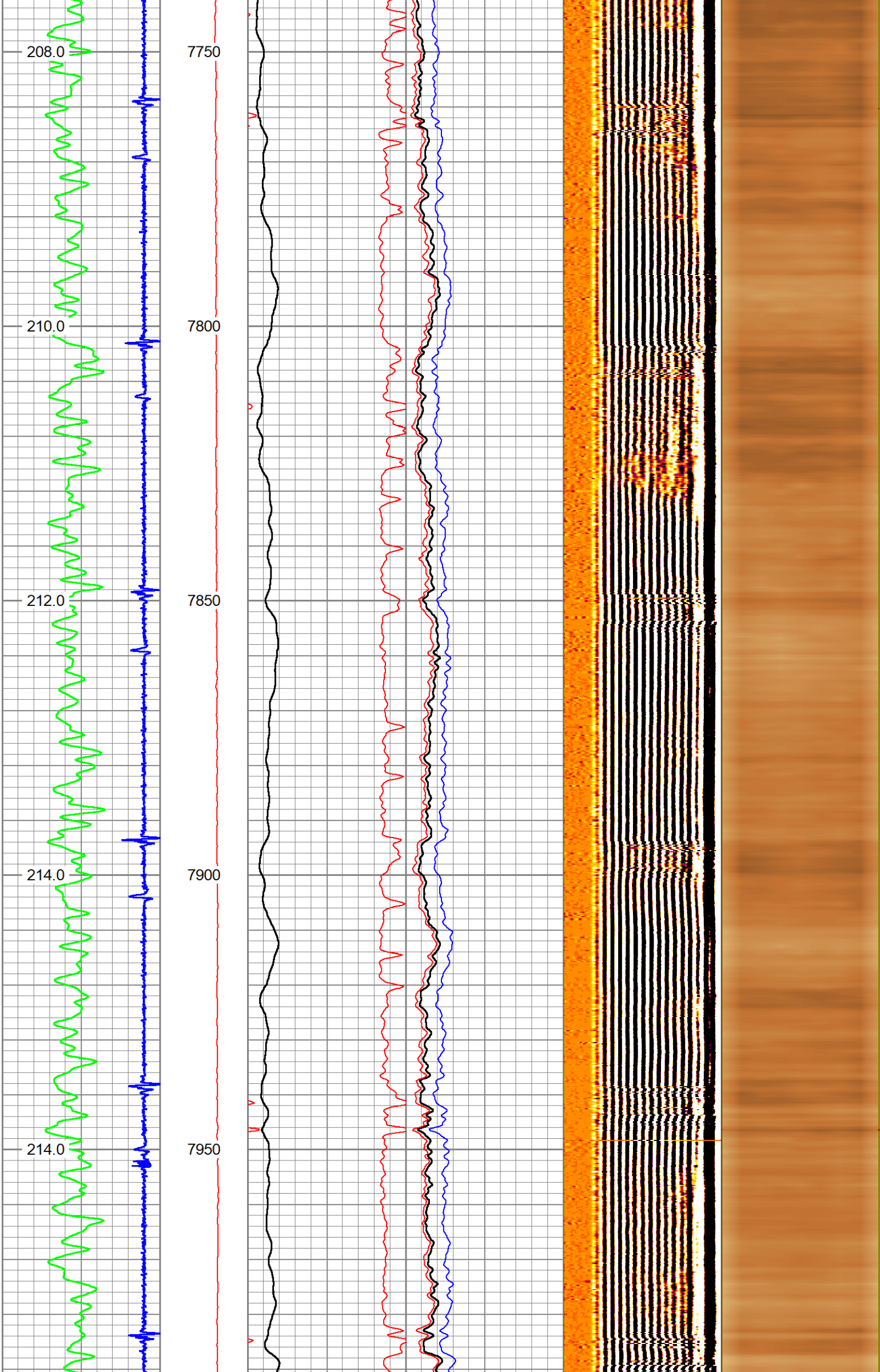


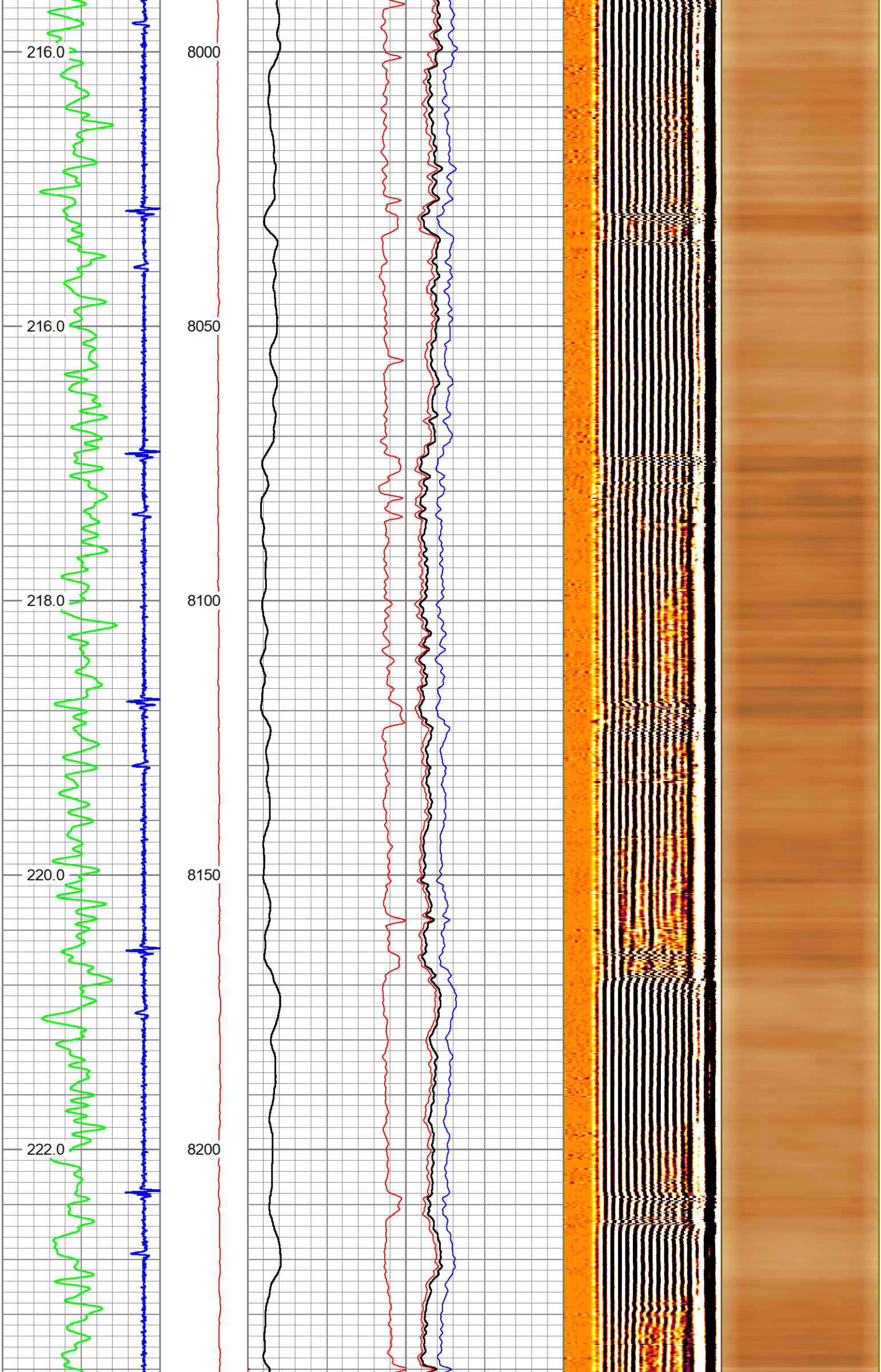




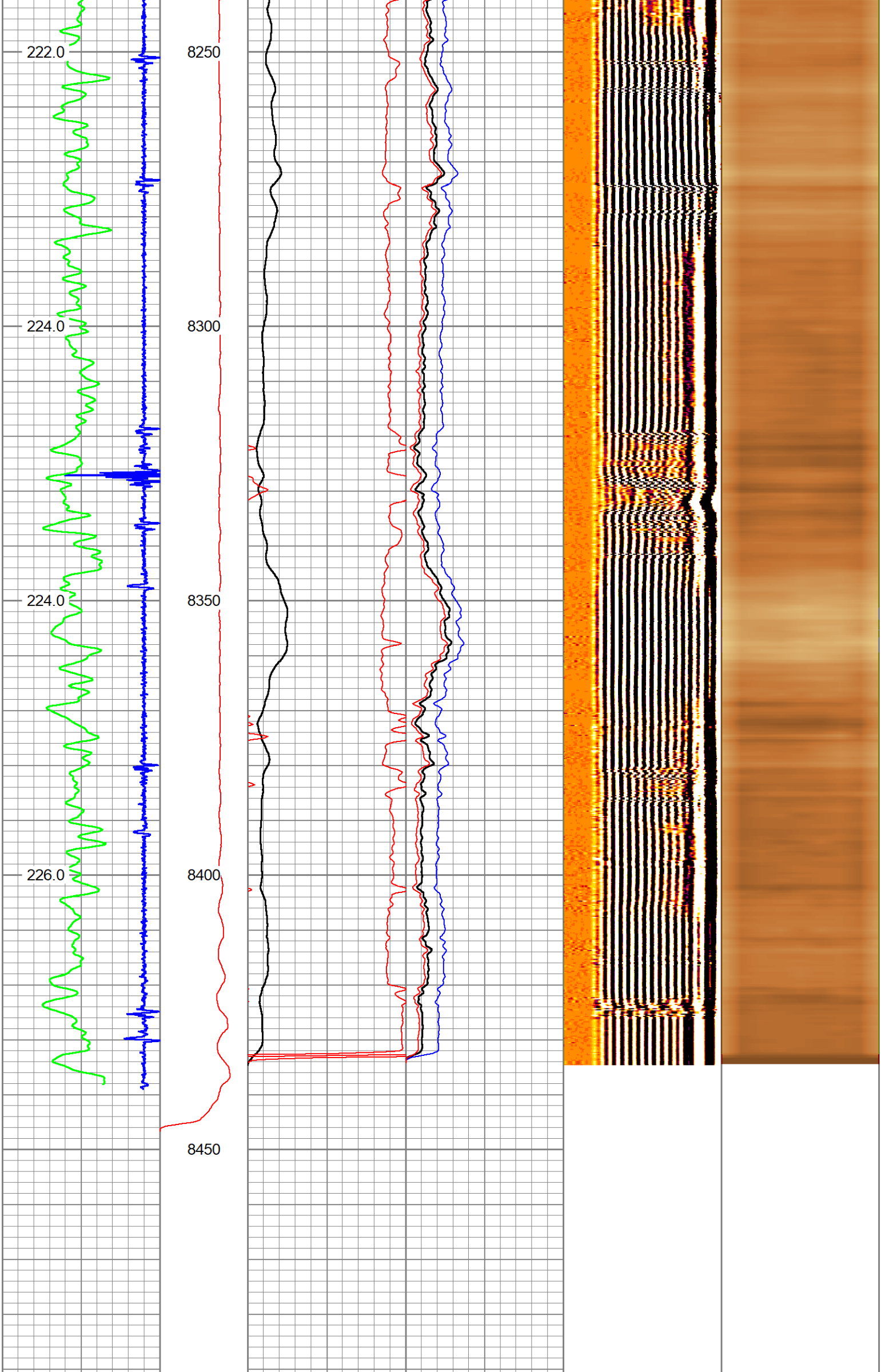


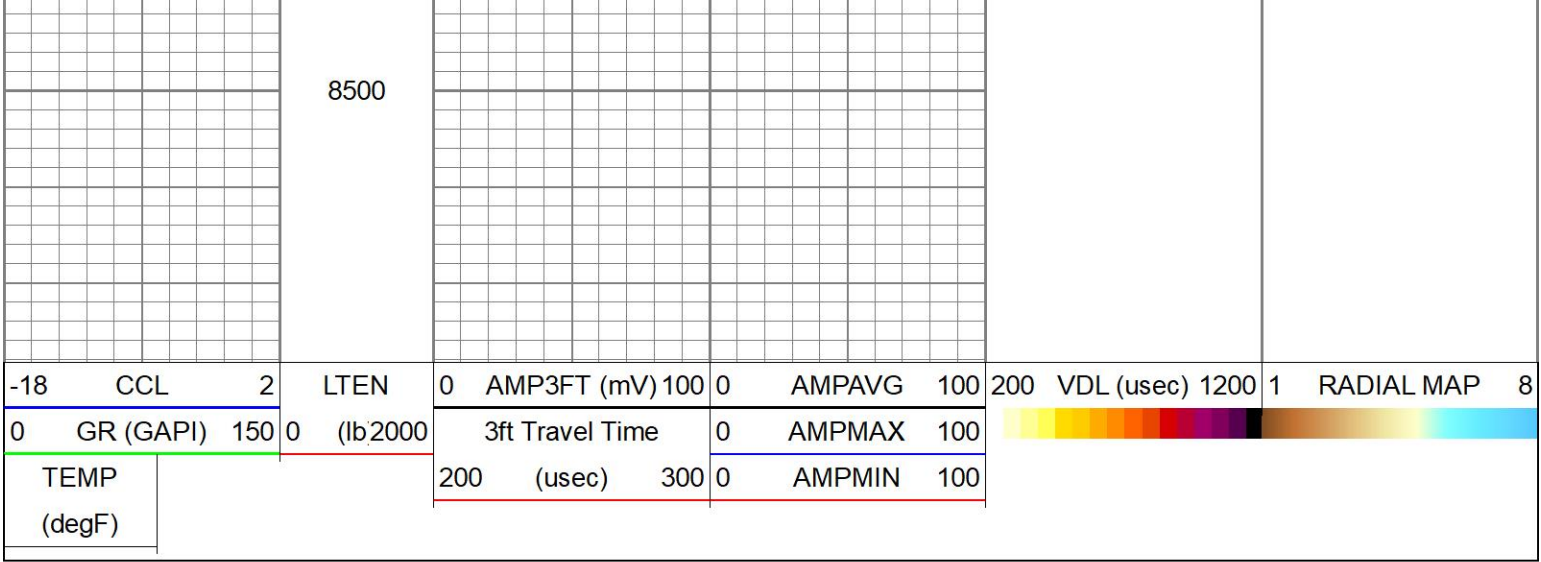












MAIN PASS

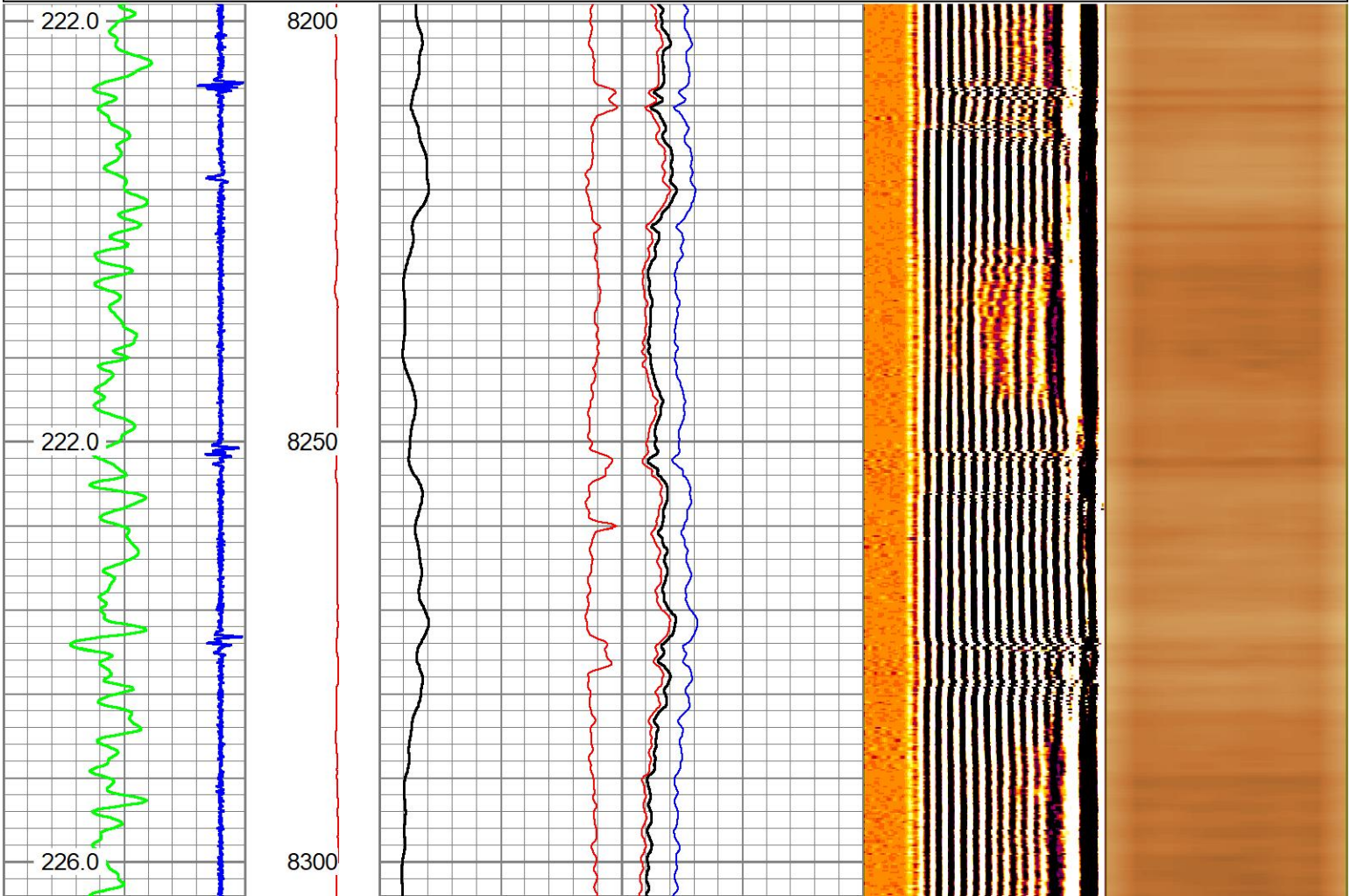
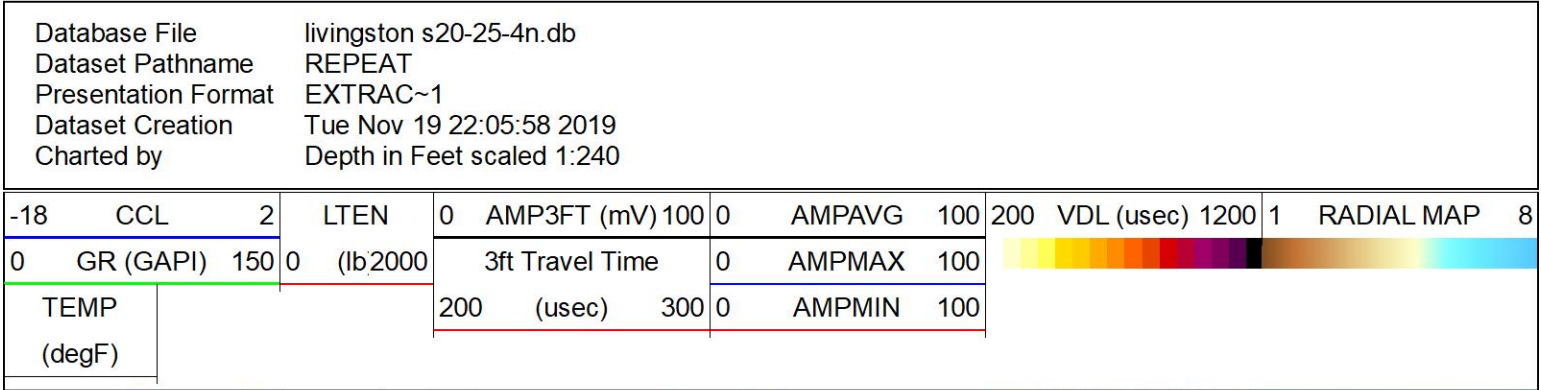
HALLIBURTON

5" = 100'

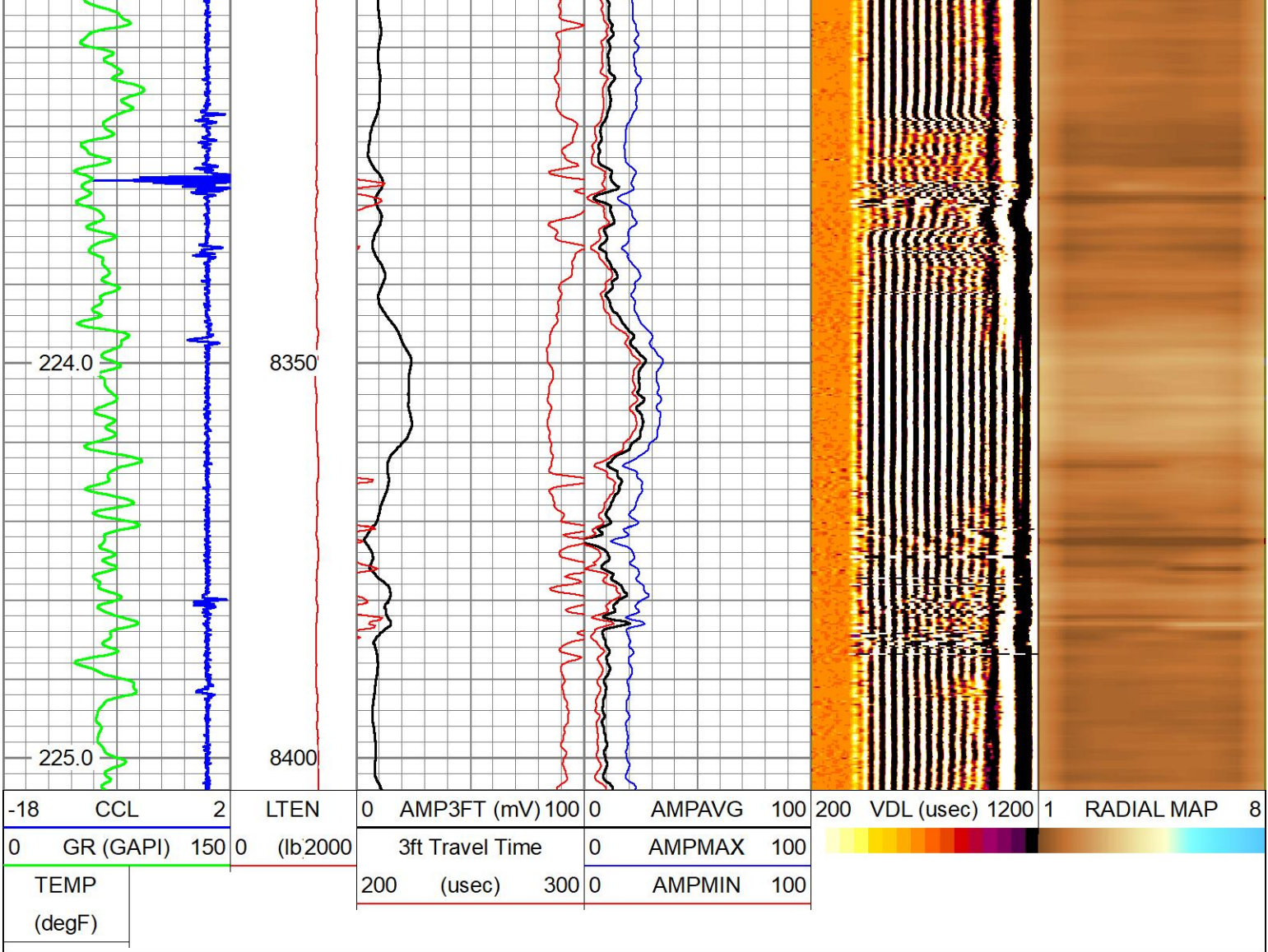
REPEAT PASS

HALLIBURTON

5" = 100'







REPEAT PASS

HALLIBURTON

5" = 100'

Log Variables

DatabaseC:\ProgramData\Warrior\Data\livingston s20-25-4n.db  
Dataset field/well/run1/MAIN/\_vars\_

Top - Bottom

BHTEMP_Src	BITSIZE	BOTTEMP	CASEOD	CASETHCK	CASEWGHT	MAXAMPL	MINAMPL
TEMP	in	degF	in	in	lb/ft	mV	mV
	8.5	220	5.5	0.304	17	72	1
MINATTN	MudWgt	PERFS	PPT	SRFTEMP	TDEPTH		
db/ft	lb/gal		u sec	degF	ft		
0.8	8.4	No	214	40	7500		

Calibration Report

Database File livingston s20-25-4n.db  
Dataset Pathname REPEAT  
Dataset Creation Tue Nov 19 22:05:58 2019

Temperature Calibration Report

Serial Number: Tit1.3\_02  
Tool Model: Titan  
Performed: Fri Jan 04 06:55:24 2002

	Reference		Reading	
Low Reference:	0.00	degF	0.00	cps
High Reference:	1.00	degF	1.00	cps

Gain: 0.10



Gain:	0.10
Offset:	0.00
Delta Spacing	2

Gamma Ray Calibration Report
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Type / Serial:	Probe275dig / pr050806
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SHOP CALIBRATION		Tue Nov 01 09:40:24 2005			
	Counts/Sec.	Gain	Offset	Jig	Units
Background Calibrator	79.3				cps
	459.5				cps
		0.6312			GAPI/cps
PRIMARY VERIFICATION		00:00:00			
Background Calibrator Difference	48.3				cps
	288.5				cps
				240.2	GAPI
BEFORE SURVEY VERIFICATION		00:00:00			
Background Calibrator Difference	47.8				cps
	290.6				cps
				242.8	GAPI
AFTER SURVEY VERIFICATION		00:00:00			
Background Calibrator Difference	35.8				cps
	286.1				cps
				250.2	GAPI

Segmented Cement Bond Log Calibration Report
----------------------------------------------


Serial Number:	11568129		
Tool Model:	Probe		
Calibration Casing Diameter:	5.500	in	
Calibration Depth:	1243.945	ft	

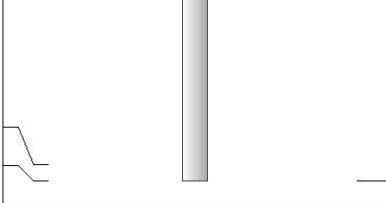
Master Calibration, performed Tue Nov 19 18:52:02 2019:						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.000	0.914	0.000	72.000	78.762	0.000
CAL	0.000	1.846				
5'	0.000	0.626	0.000	72.000	114.973	0.000
SUM						
S1	0.000	1.194	0.000	72.000	60.299	0.000
S2	0.000	0.970	0.000	72.000	74.242	0.000
S3	0.000	0.954	0.000	72.000	75.477	0.000
S4	0.000	0.845	0.000	72.000	85.173	0.000
S5	0.000	0.785	0.000	72.000	91.700	0.000
S6	0.000	0.783	0.000	72.000	92.003	0.000
S7	0.000	0.826	0.000	72.000	87.158	0.000
S8	0.000	0.915	0.000	72.000	78.678	0.000

Internal Reference Calibration, performed (Not Performed):						
	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.000	1.846	1.000	0.000

Air Zero Calibration, performed Tue Nov 05 15:10:51 2019:						
	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.000		0.000		0.000	
5'	0.000		0.000		0.000	

S	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)
WVFCAL WVF3FT   WVF5FT	12.58		STNDCH-1_11_16_CH 1.6875 IN CABLE HEAD	1.50	1.44	1.00
	12.58		CENT-Probe_275 Probe 2 3/4 Centralizer	2.88	2.75	20.00
			RBT_PRB275-Probe (11568129) Probe Radii Bond Tool with Digital Telemetry	8.33	2.75	90.00
	10.58		CENT-Probe_275 Probe 2 3/4 Centralizer	2.88	2.75	20.00
	6.13		CCL			
	4.75		GR_PRB275-probe275dig (pr050806) Probe Digital Gamma CCL	4.75	2.75	57.00

TEMP LLMTEN	0.17 0.00		TEMP-Titan (Tit1.3_02) Titan Temp 1.3875	2.21	1.39	10.00
Dataset: livingston s20-25-4n.db: field/well/run1/MAIN Total length: 22.54 ft Total weight: 198.00 lb O.D.: 2.75 in						

Company	EXTRACTION OIL & GAS INC				
Well	LIVINGSTON S20-25-4N				
Field	WATTENBERG				
County	BROOMFIELD		State	CO	
HALLIBURTON	RADIAL CEMENT BOND LOG				