

HALLIBURTON

RADIAL CEMENT
BOND LOG

Company		EXTRACTION OIL & GAS INC	
Well		LIVINGSTON S19-25-3N	
Field		WATTENBERG	
County		BROOMFIELD CO	
Company		EXTRACTION OIL & GAS INC	
Well		LIVINGSTON S19-25-3N	
Field		WATTENBERG	
County		BROOMFIELD State CO	
API No.: 050142075800		Serv #: 905594984	
Location: SURFACE HOLE LOCATION: 2332' FSL & 1492' FEL NWSE		Other Services	
LATITUDE: 39.978564 LONGITUDE: -105.039993		NONE	
Sec: 7 Twp: 1S Rge: 68W			
Permanent Datum		GROUND LEVEL Elevation 5317	
Log Measured From		KB , 29 Ft. above perm. datum	
Drilling Measured From		KB	
Date @ Time Logged		08/11/19 @ 20:30	
Run No.		ONE	
Depth - Driller		21396	
Depth - Logger		8006	
Bottom - Logged Interval		7996	
Top - Log Interval		SURFACE	
Max. Recorded Temp.		221 F	
CEMENTING DATA		Surface String	
Date / Time Cemented		Protection String	
Primary / Squeeze		Production String	
Expected Compressive Strength		Liner	
Cement Volume			
Cement Type / Weight			
Formulation			
Mud Type / Mud Wgt.			
Borehole Record			
Run Number		Casing & Tubing Record	
ONE		To	
TWO		From	
8.5		1500	
21396		9.625	
5.5		36	
17		0	
21396		1500	
		21396	

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HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.

Comments

CBL - GR - CCL RAN IN COMBINATION.

LOG RECORDED WITH 0 PSI WELLHEAD PRESSURE.

LOG CORRELATED TO MARKER JOINT AT 7837.

BOND INDEX CALCULATED FOR 3000 PSI COMPRESSIVE STRENGTH CEMENT.

THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES.

YOUR CREW TODAY WAS:

M.DEAL, R.MATHE, D. ABERNATHY

Service Ticket No.	905894984	API No.	050142075800	PGM Ver	WARRIOR 8
The Well Name, Location, Borehole Description, and / or Cementing Data Furnished by Client					
EQUIPMENT DATA					
RCBL		GAMMA CCL			
Run No.	ONE	Run No.	ONE	Run No.	
Serial No.	11577056	Serial No.	11021927	Serial No.	
Model No.	PROBE	Model No.	PROBE	Model No.	
Diameter	2.75	Diameter	2.75	Diameter	
LOGGING DATA					
General Data					
Pass	Depths		Well Head	Speed	Logging Run Comments
No	From	To	Pressure	Ft/Min	

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
ONE	0	100	0	100	200	1200	1
							8
DIRECTIONAL INFORMATION							
Maximum Deviation		90	deg. @		KOP	7939	

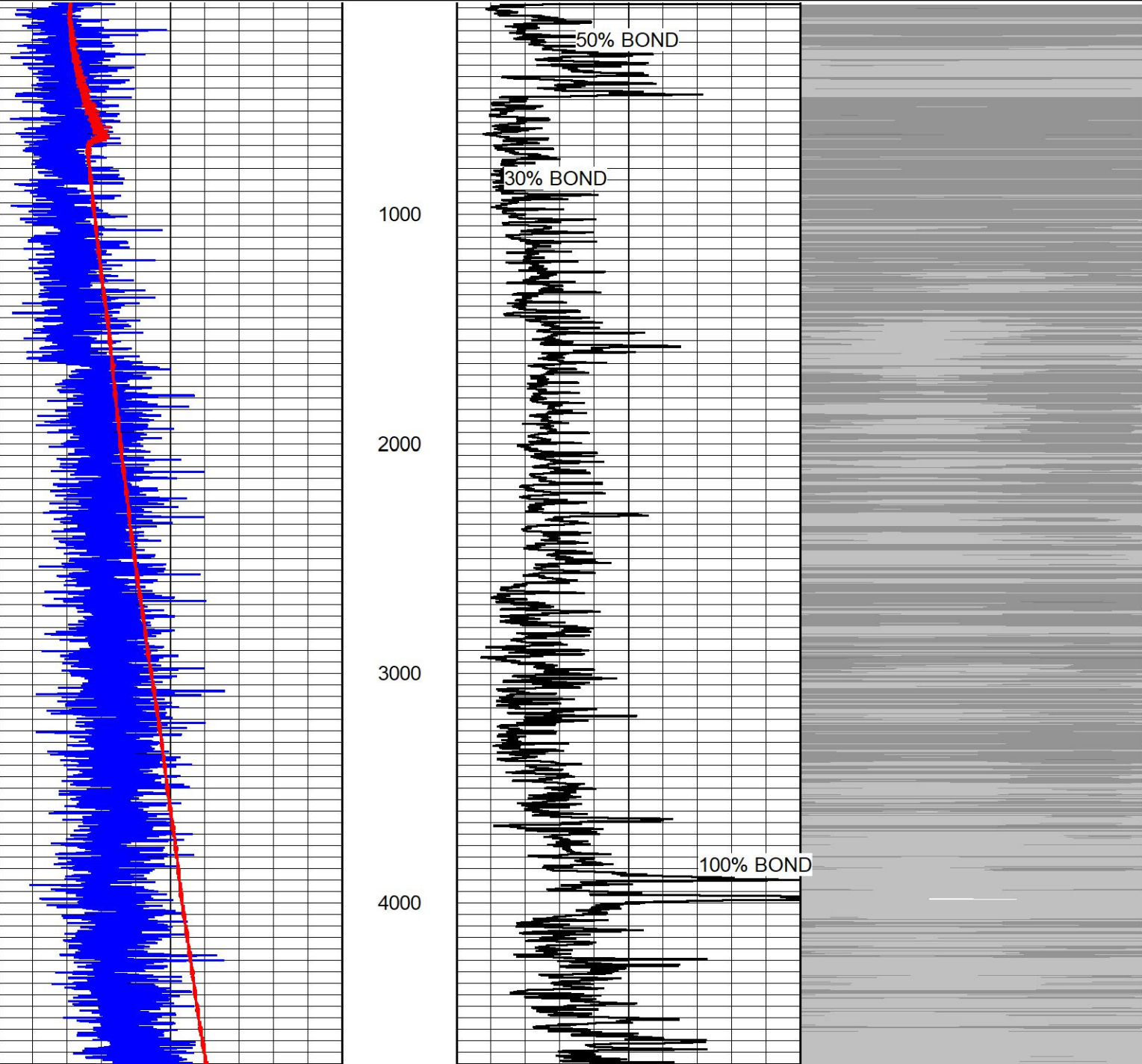
BOND INDEX

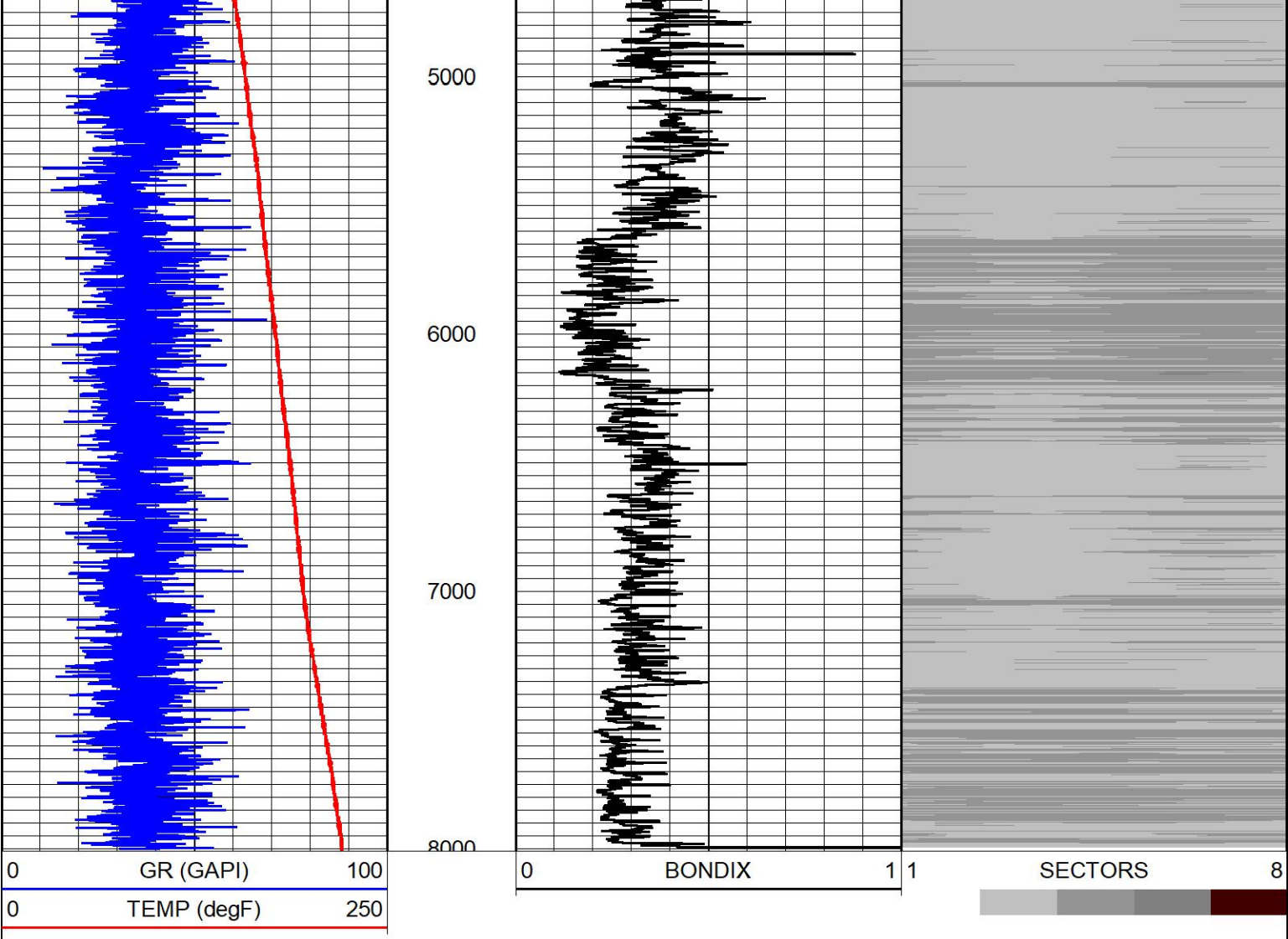
HALLIBURTON

1:7500

Database File livingston_s19-25-3n.db
Dataset Pathname MAIN.1
Presentation Format EXTRAC~2
Dataset Creation Sun Aug 11 22:09:06 2019
Charted by Depth in Feet scaled 1:7500

0	GR (GAPI)	100	0	BONDIX	1	1	SECTORS	8
0	TEMP (degF)	250						





BOND INDEX

HALLIBURTON

1:7500

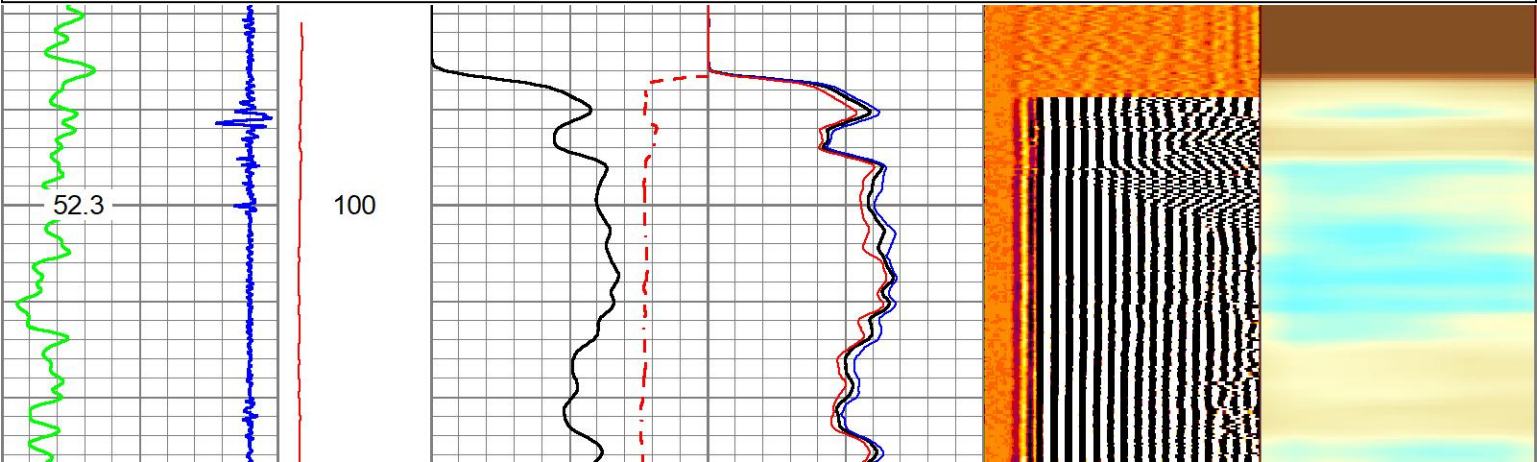
MAIN PASS

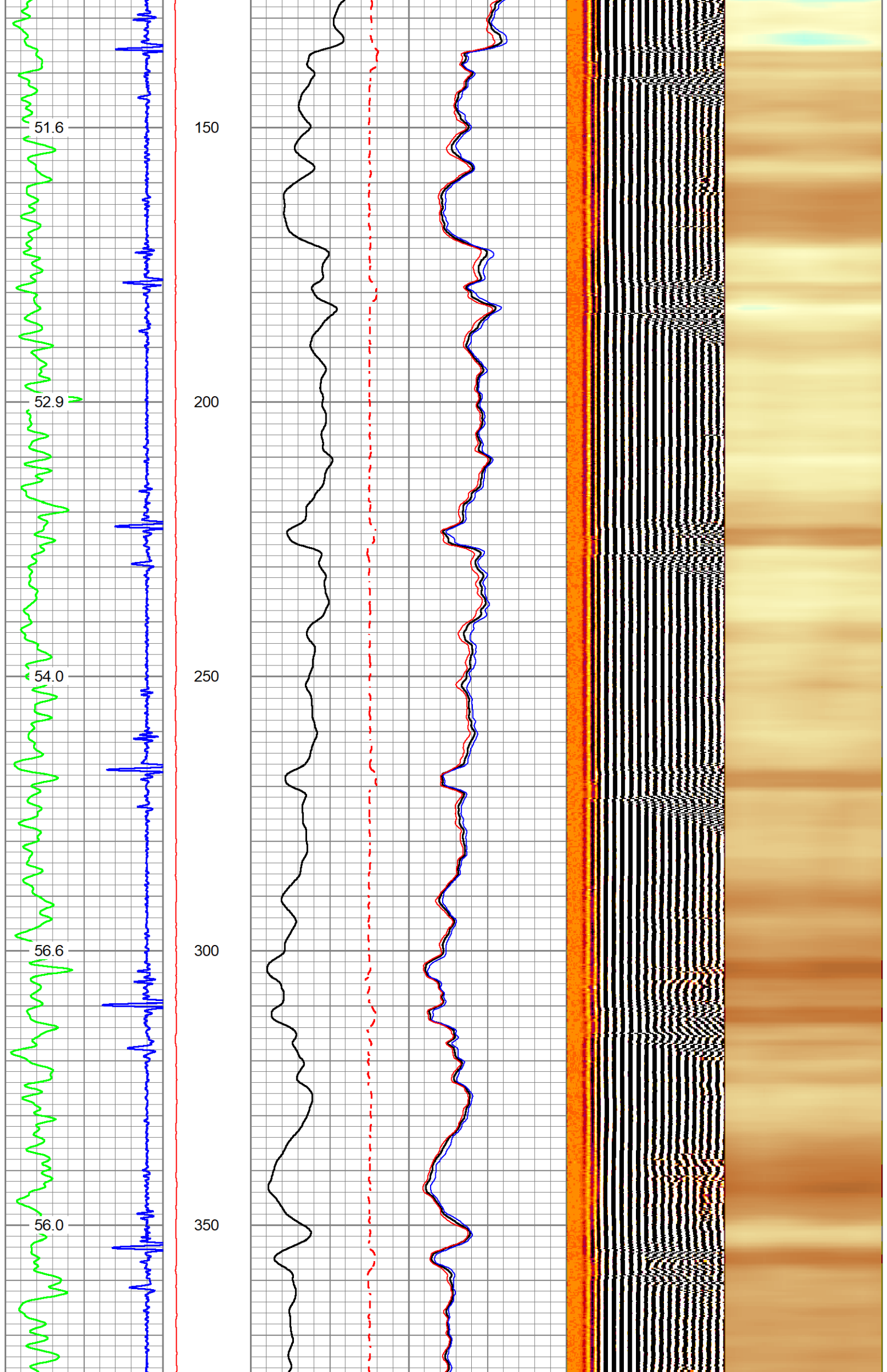
HALLIBURTON

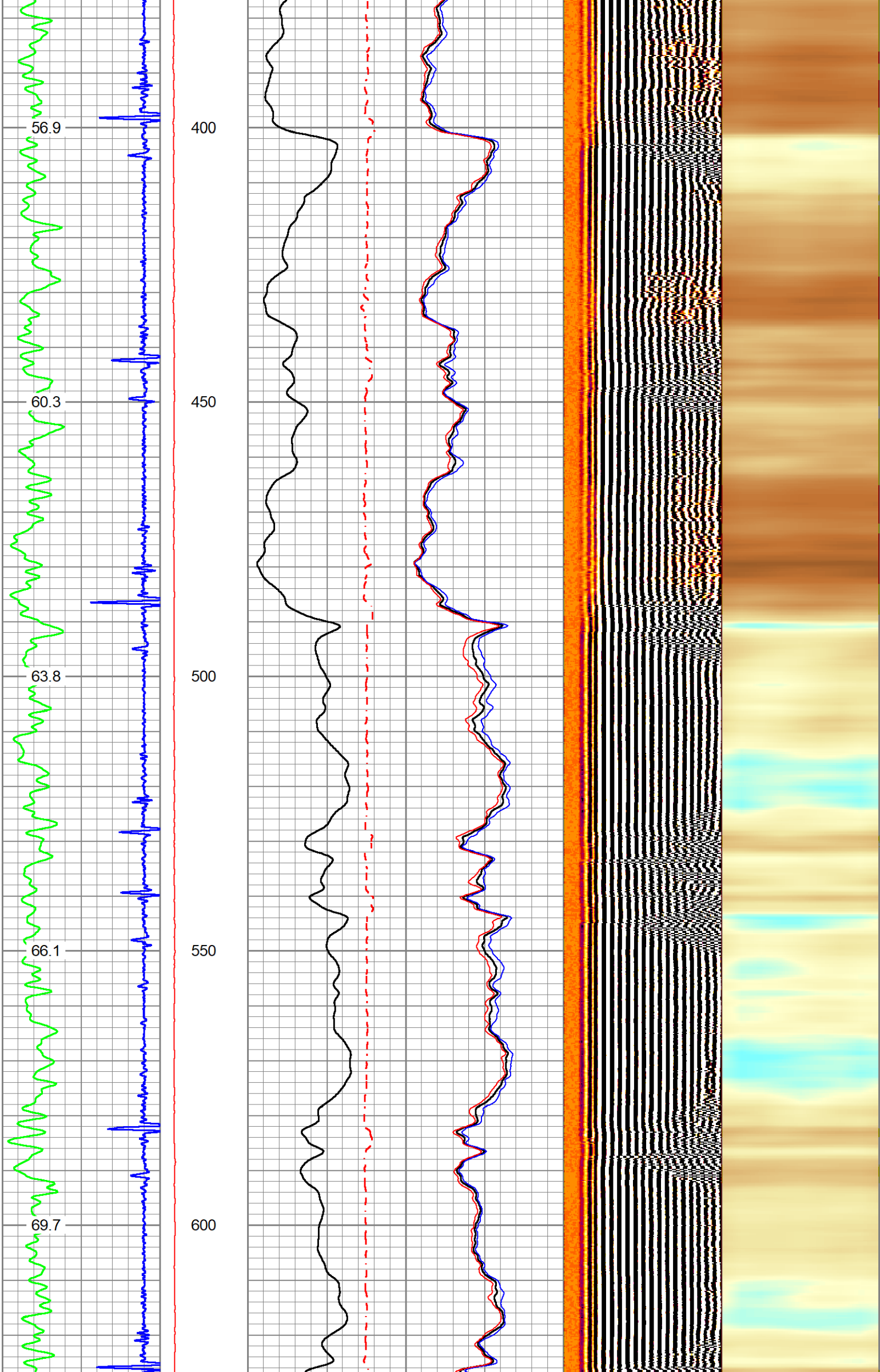
5" = 100'

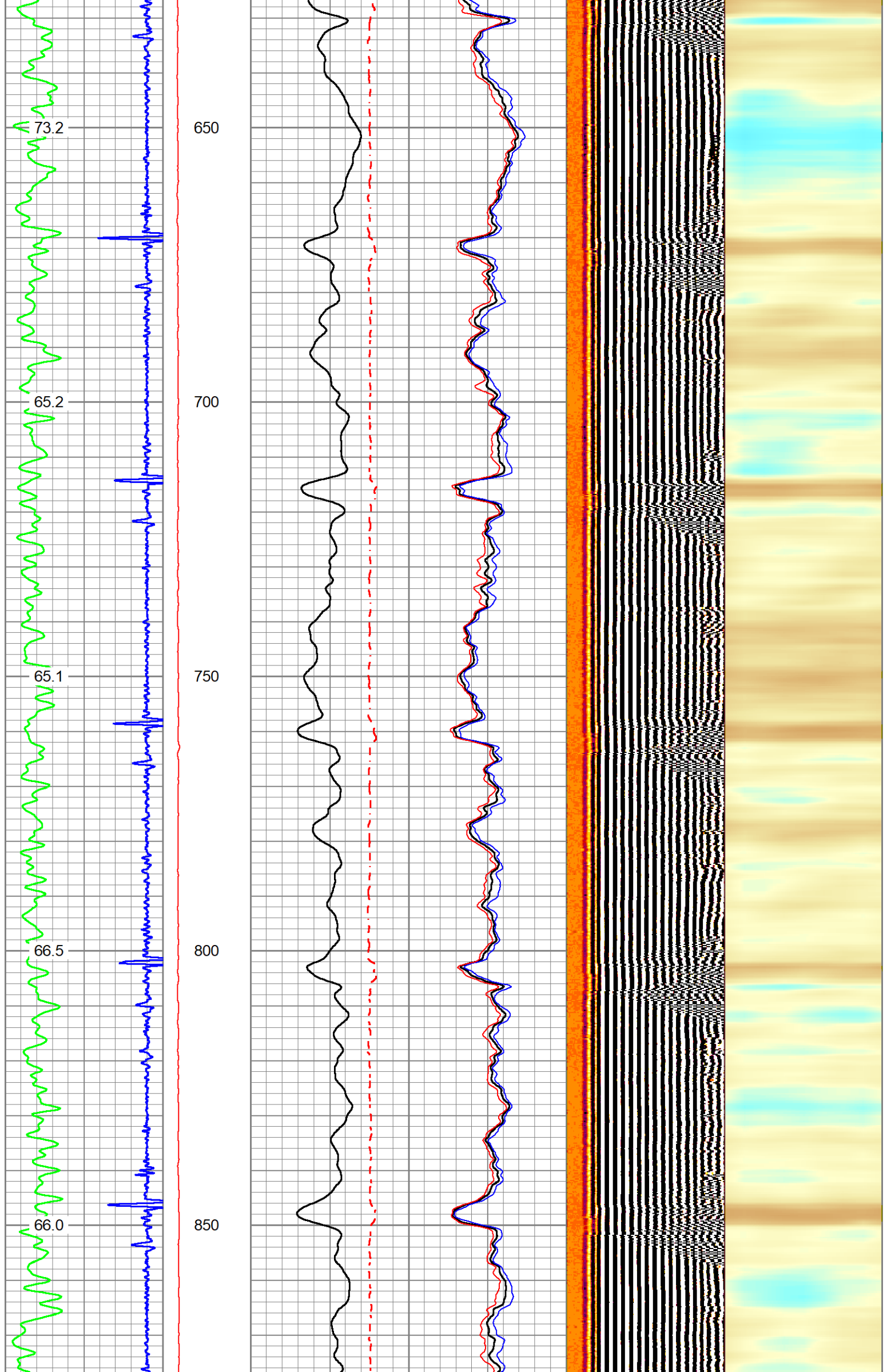
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Dataset Pathname MAIN
Presentation Format extraction rcbl
Dataset Creation Sun Aug 11 20:26:50 2019
Charted by Depth in Feet scaled 1:240

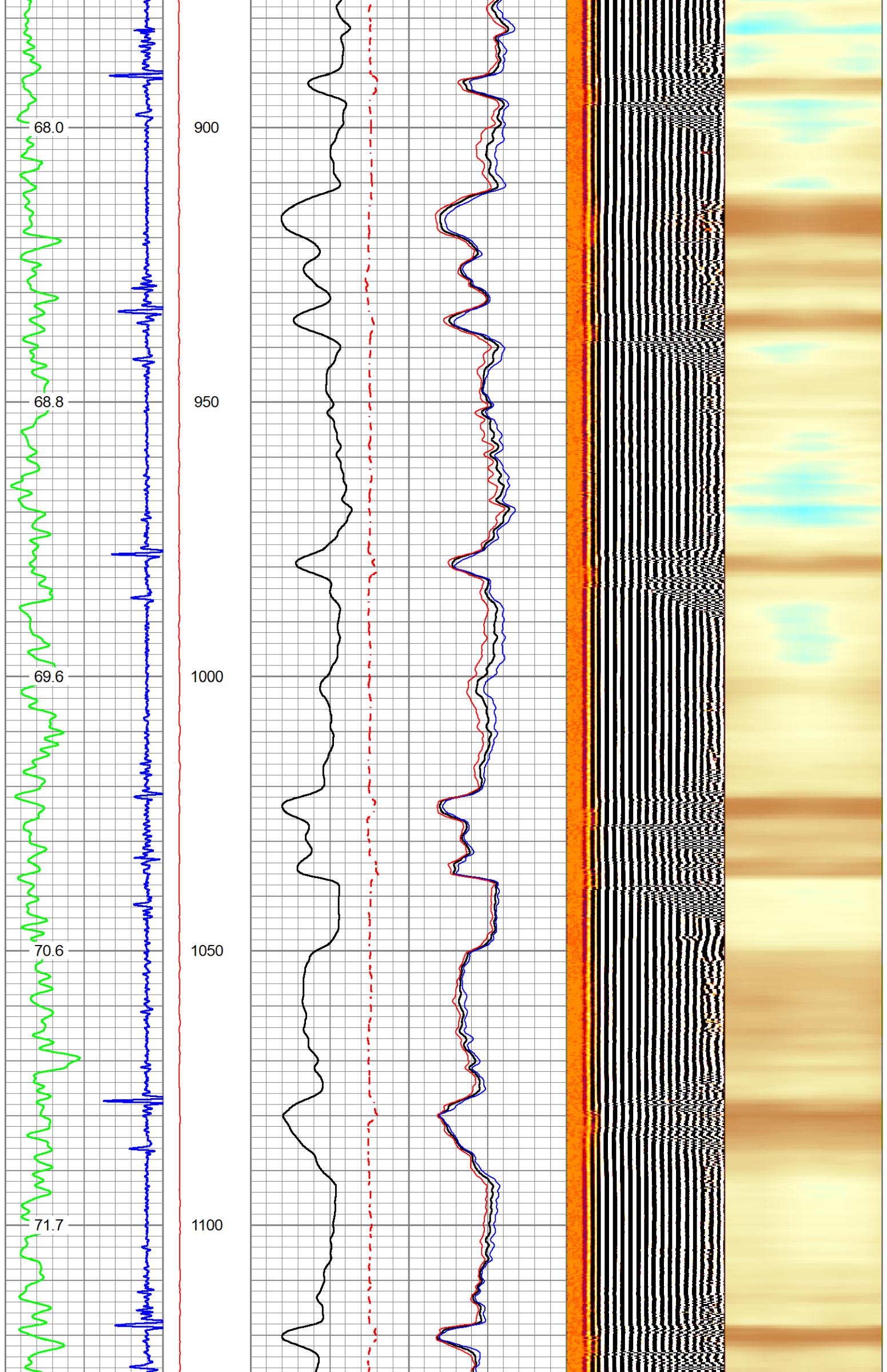
9	CCL	-1	LTEN	0	AMP (mV)	100	0	AMPAVG	100	200	VDL (usec)	1200	1	RADIAL MAP	8
0	GR (GAPI)	100	0	(lb/2000)	Travel Time		0	AMPMAX	100						
TEMP					(usec)	300	0	AMPMIN	100						
(degF)															

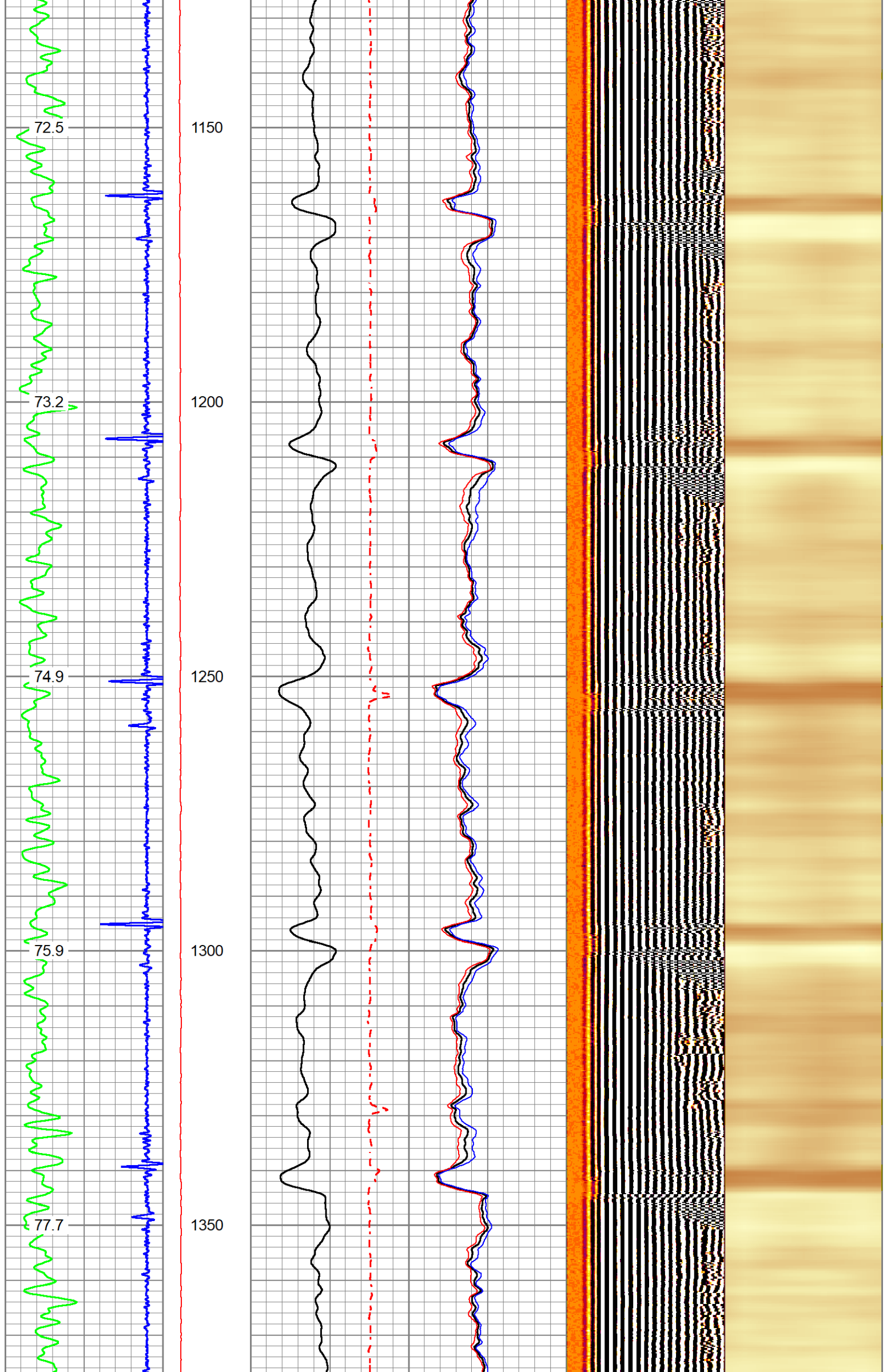


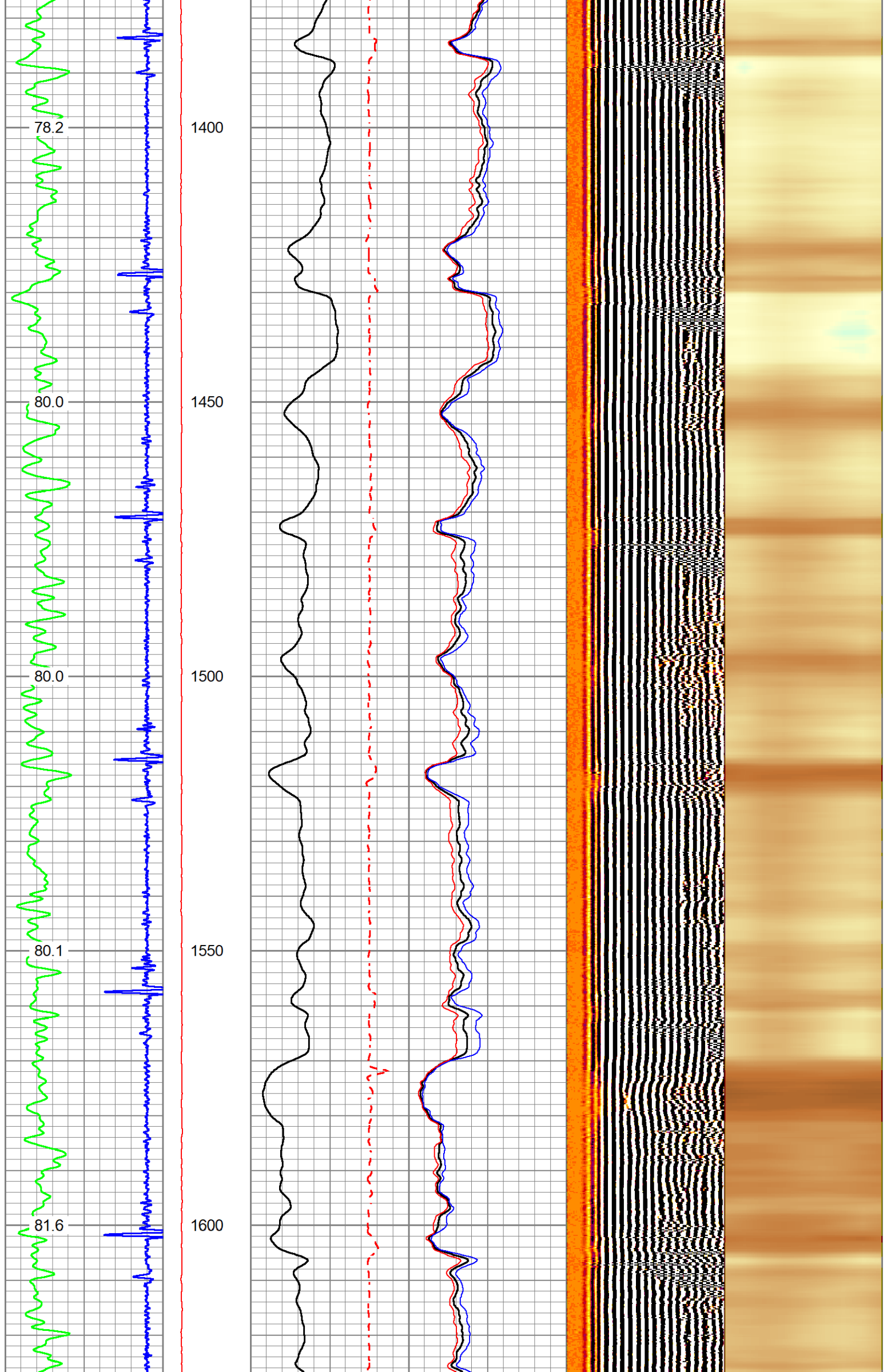


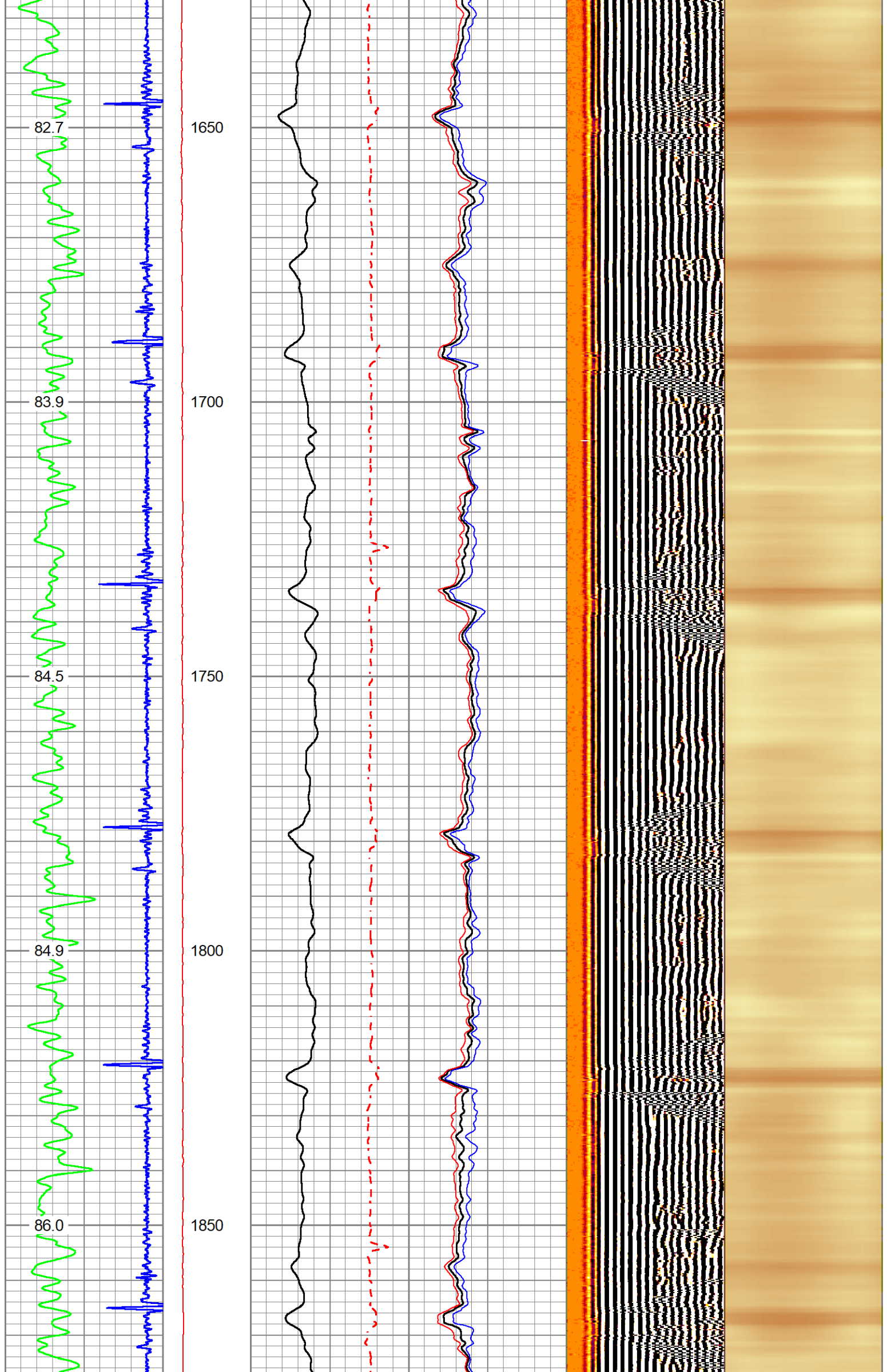


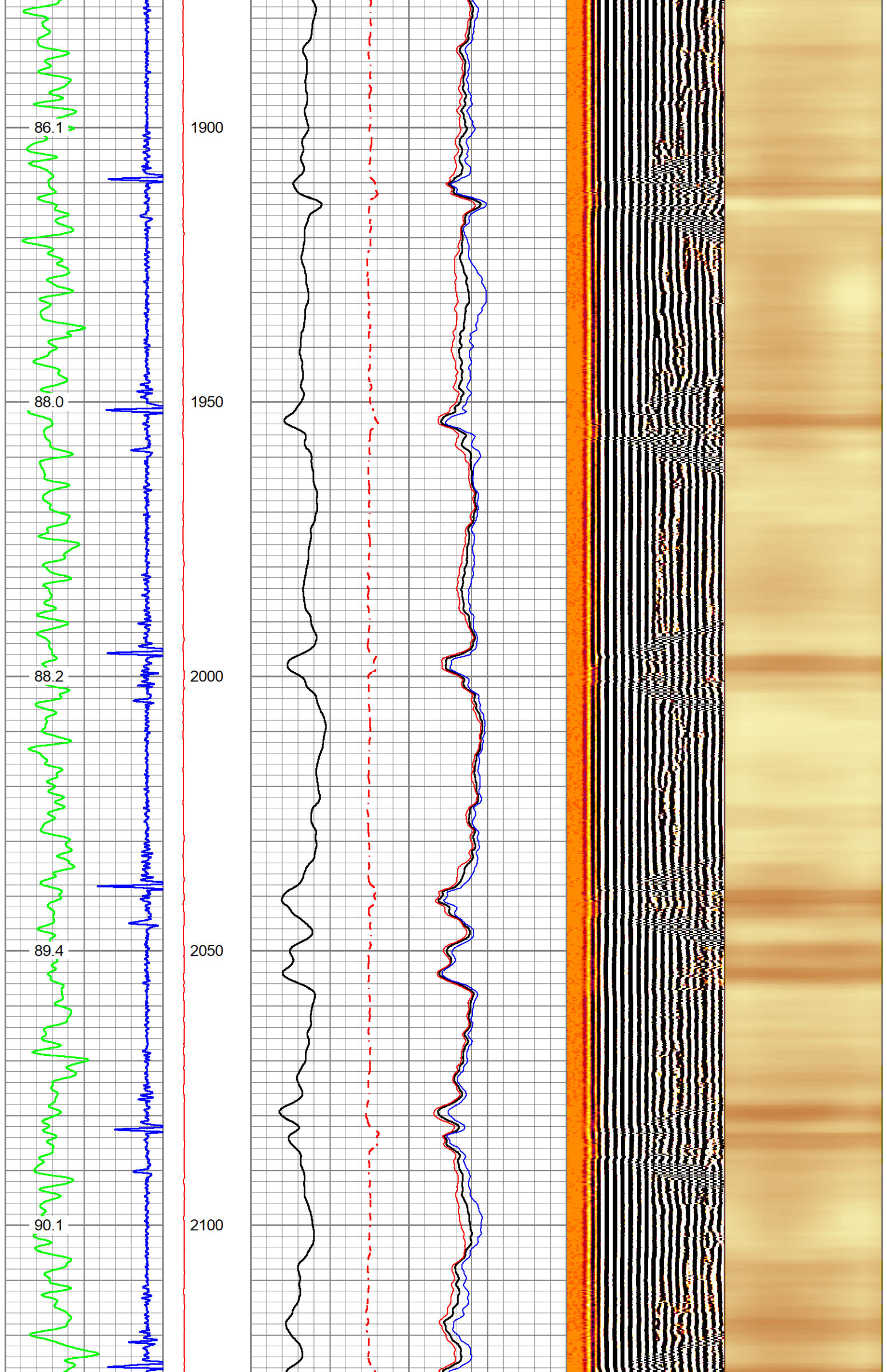


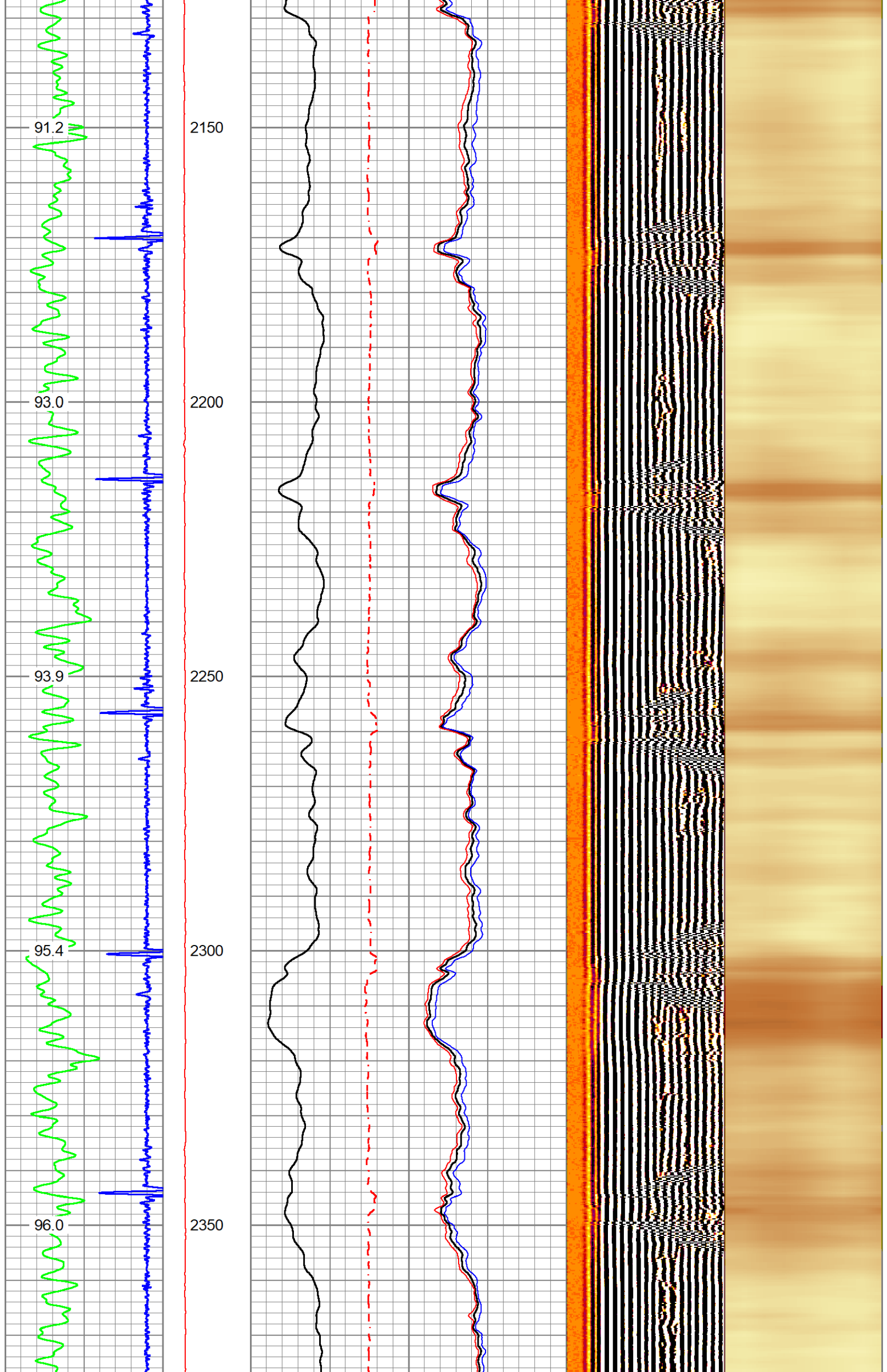


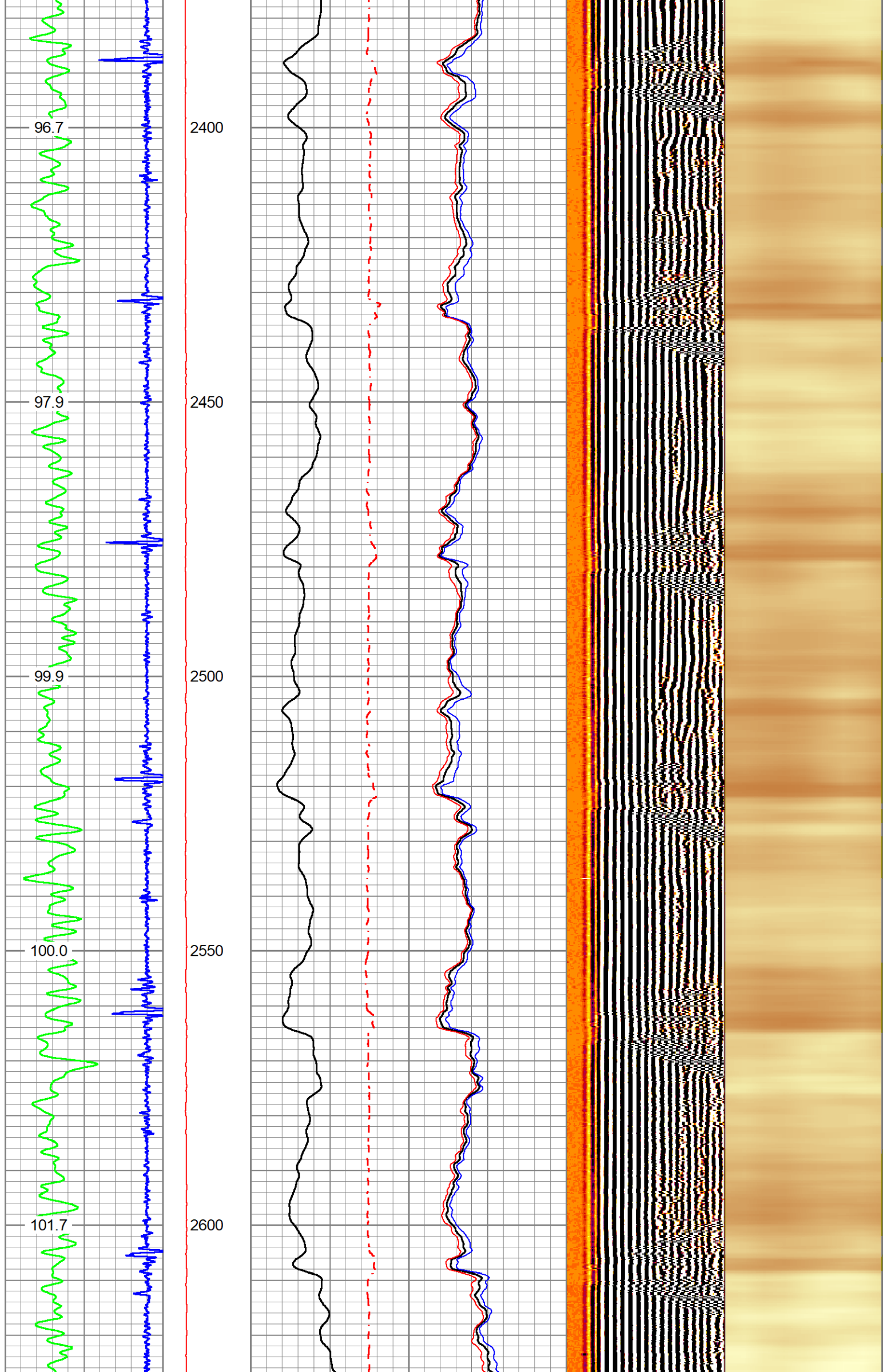


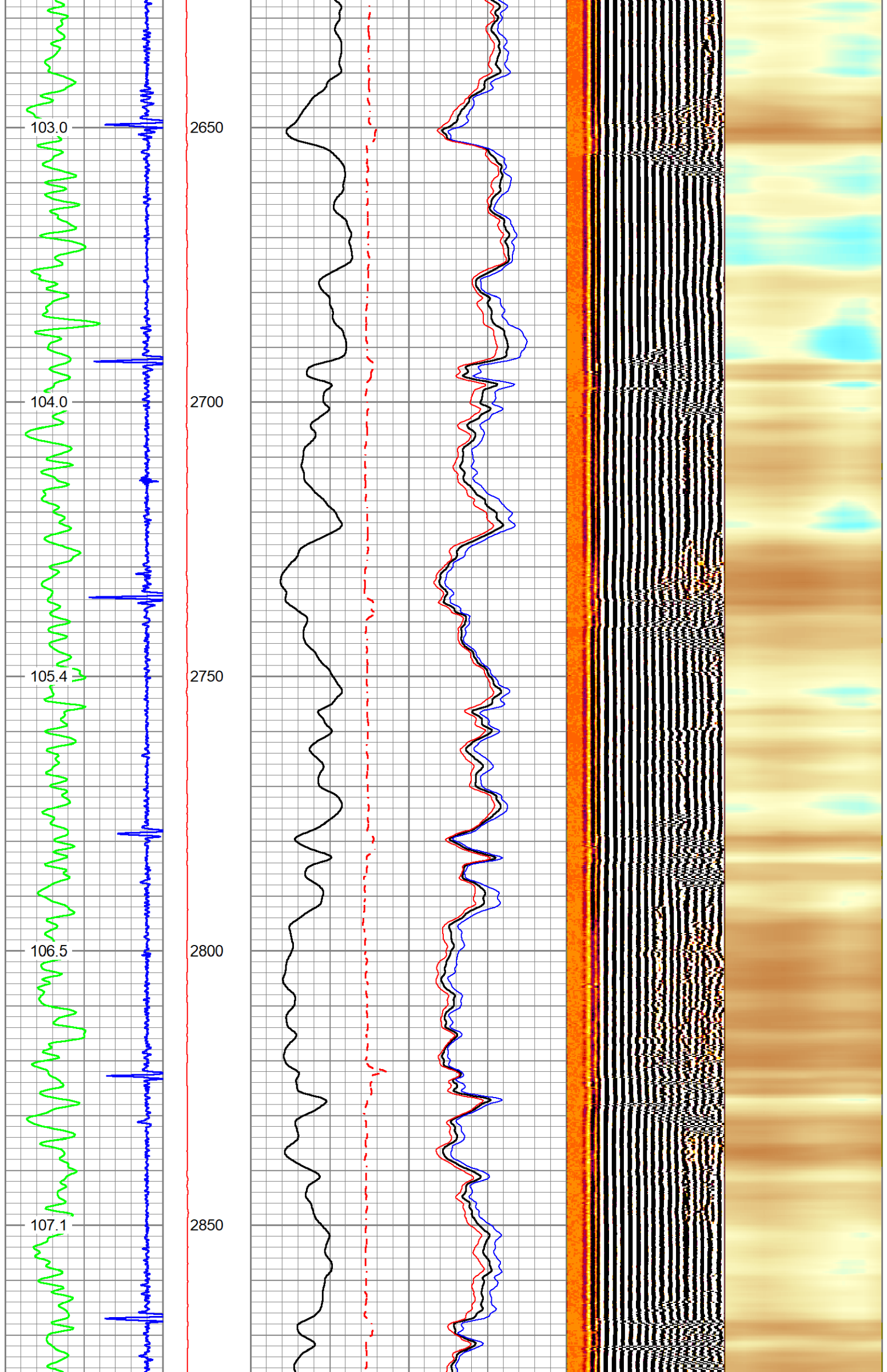


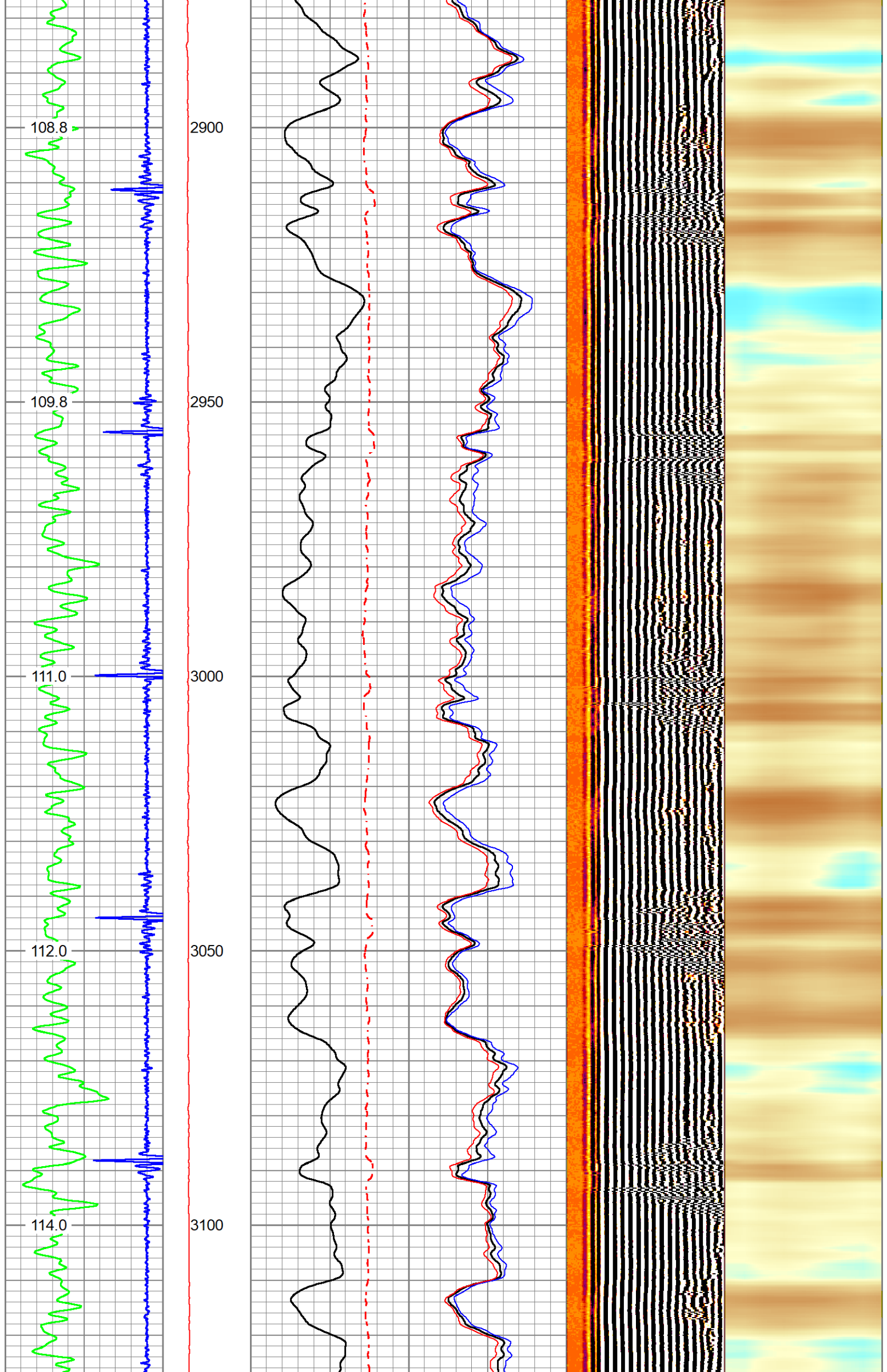


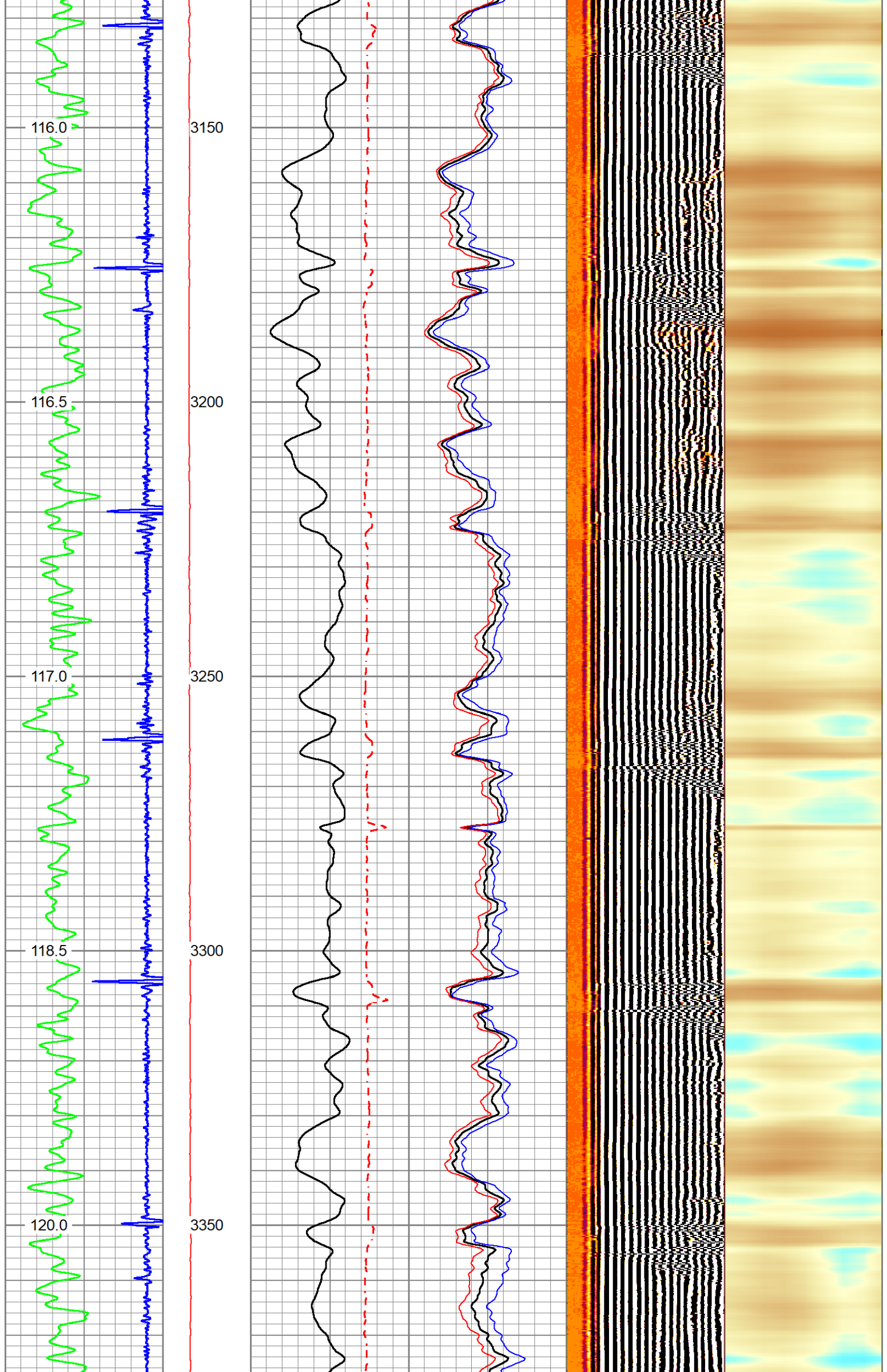


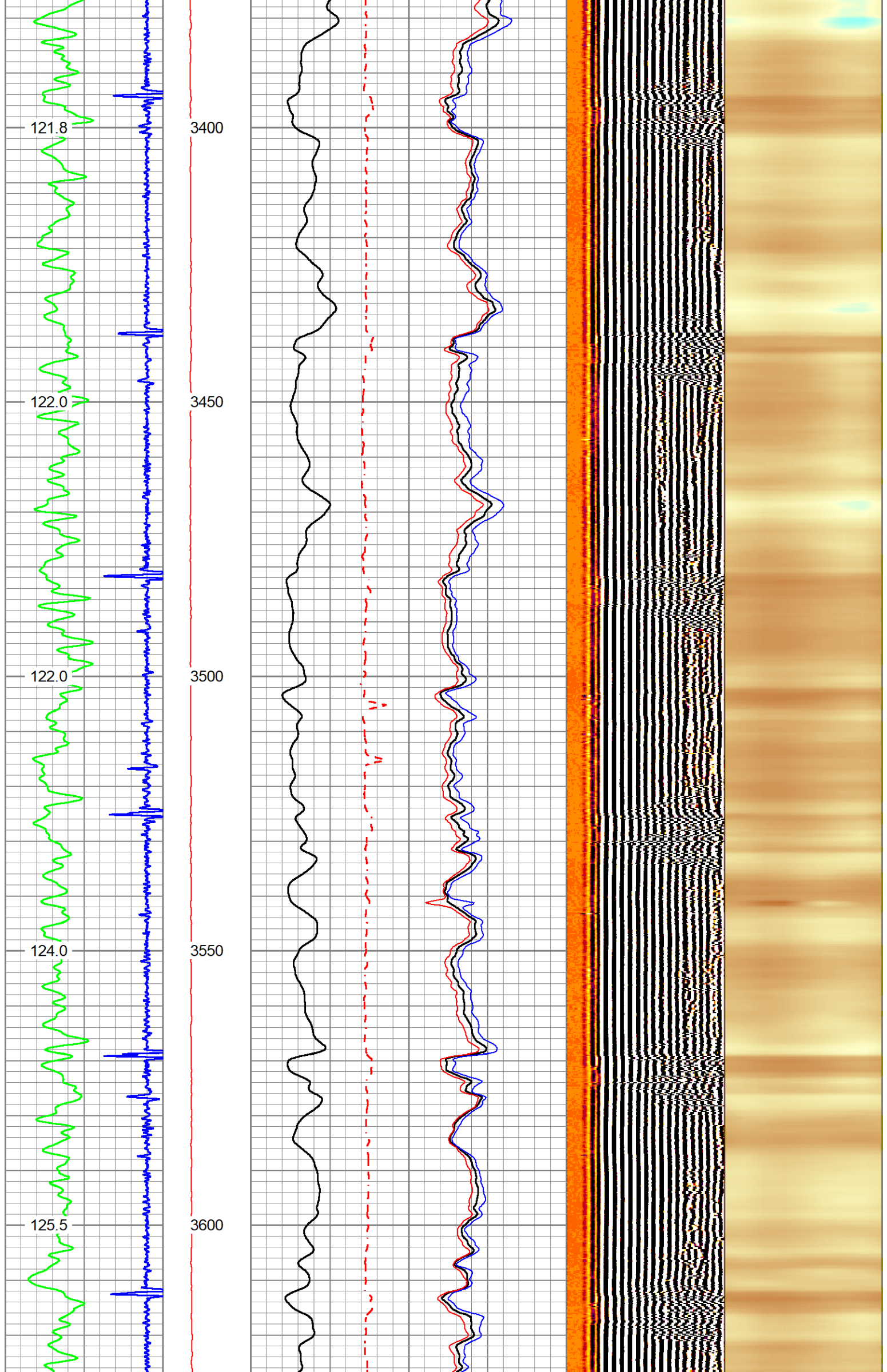


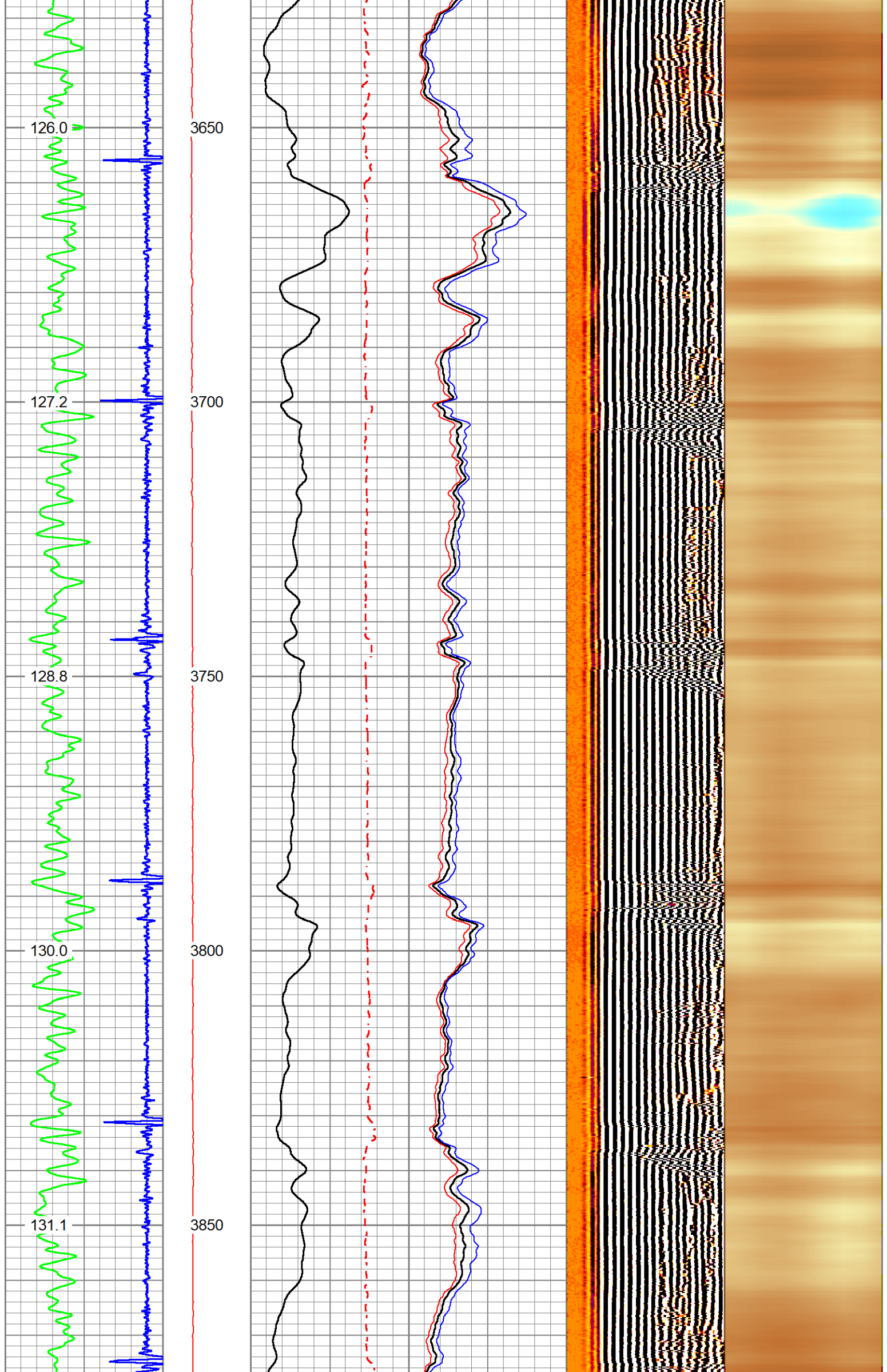


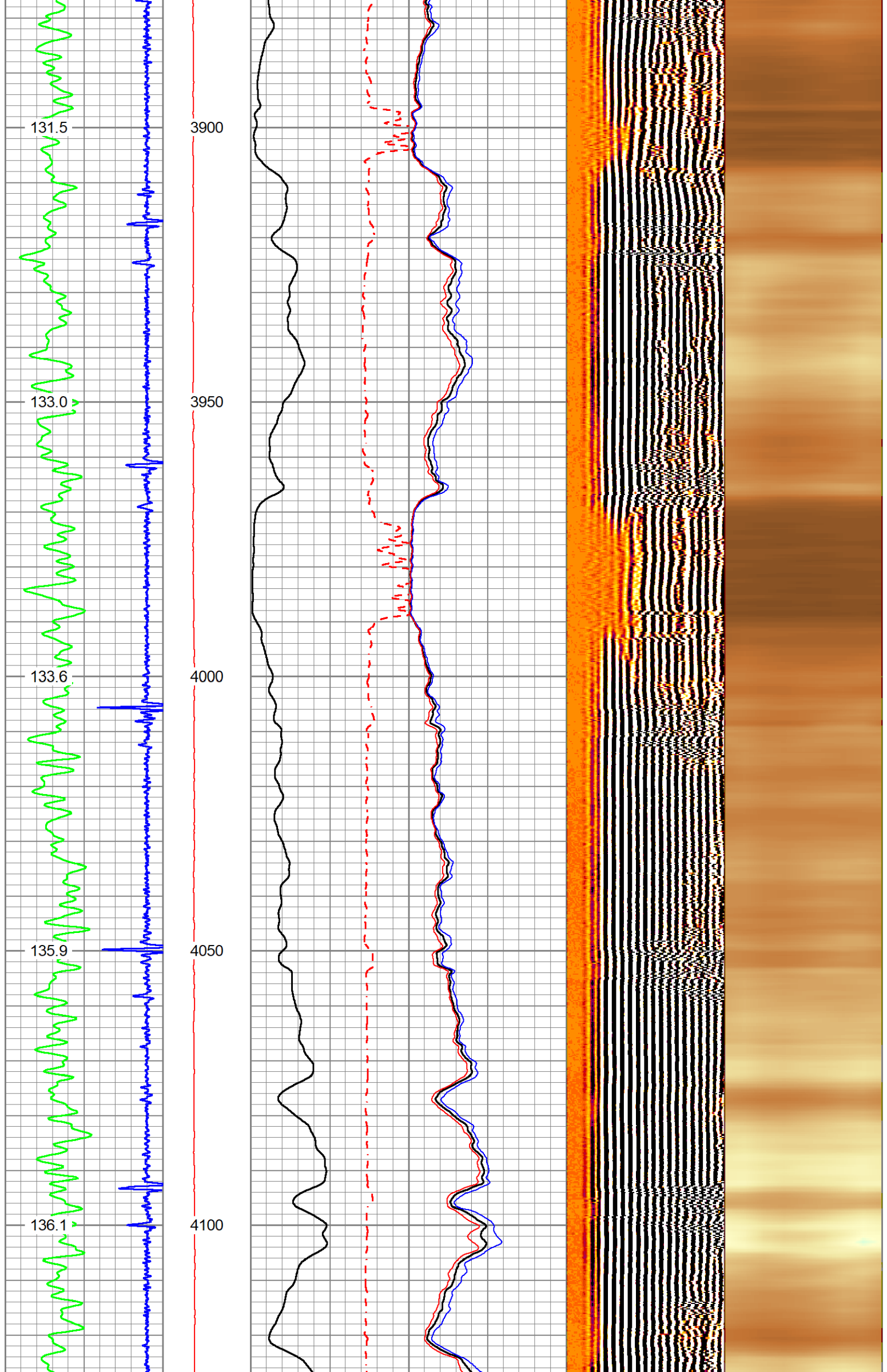


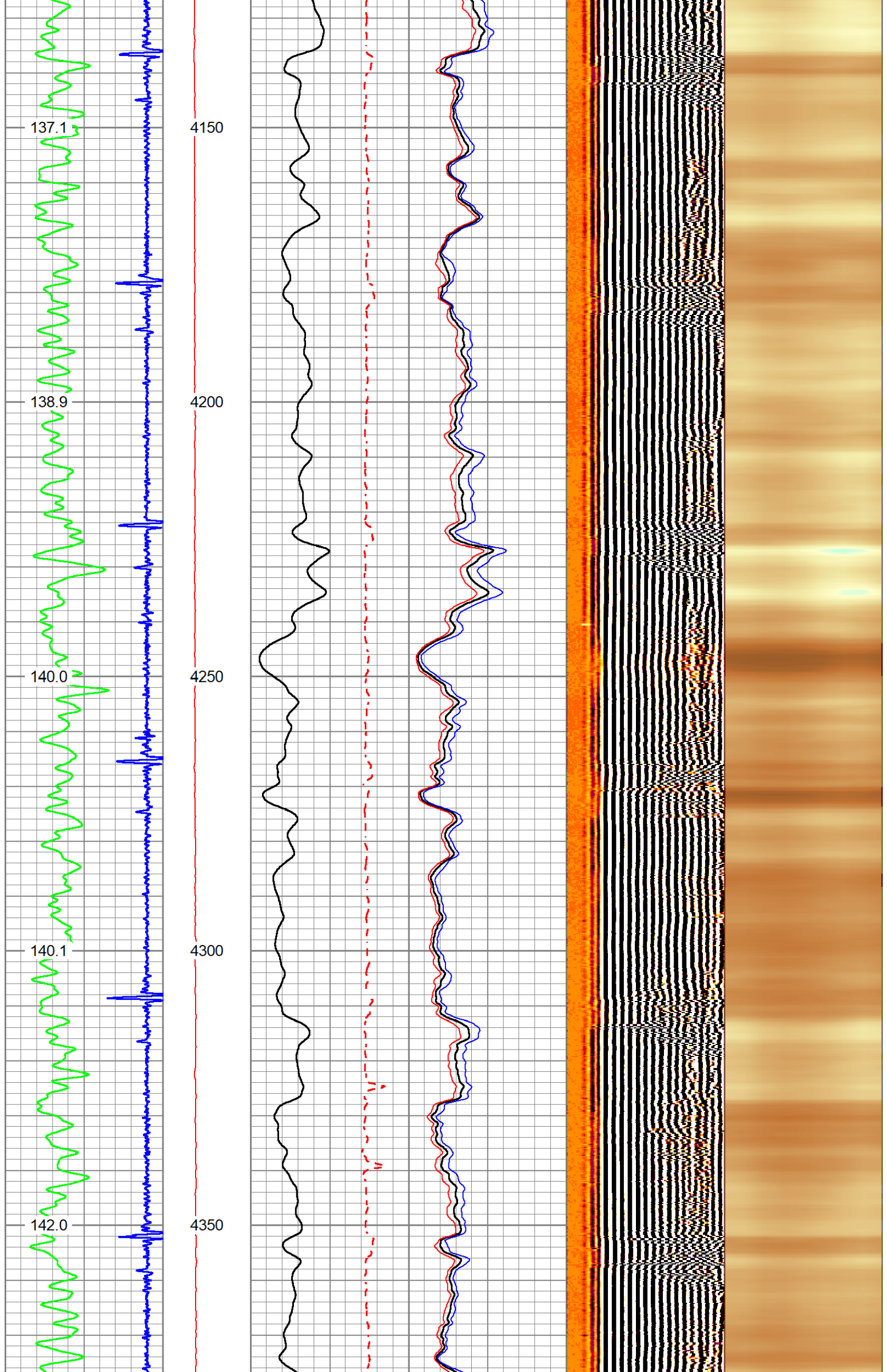


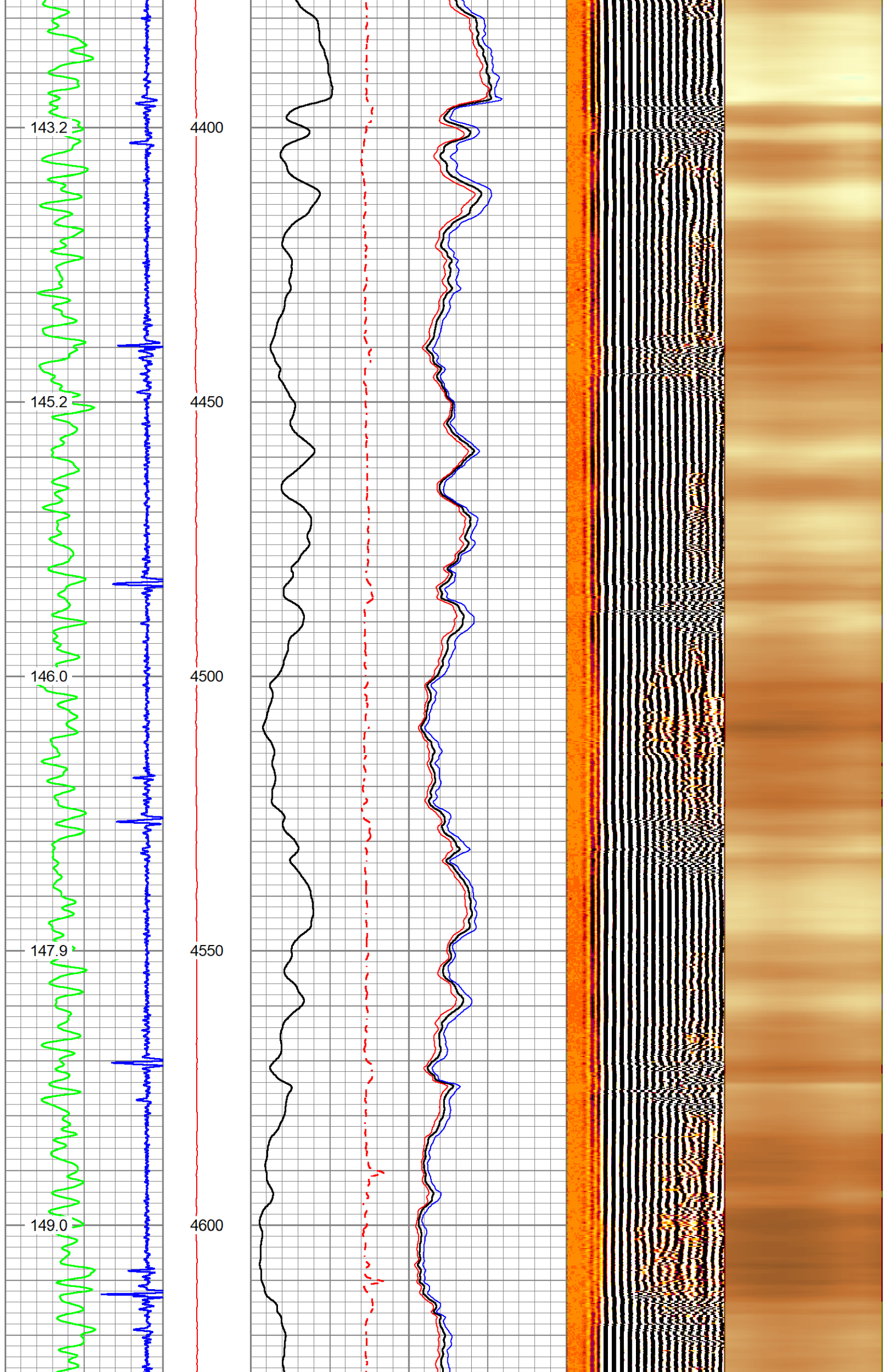


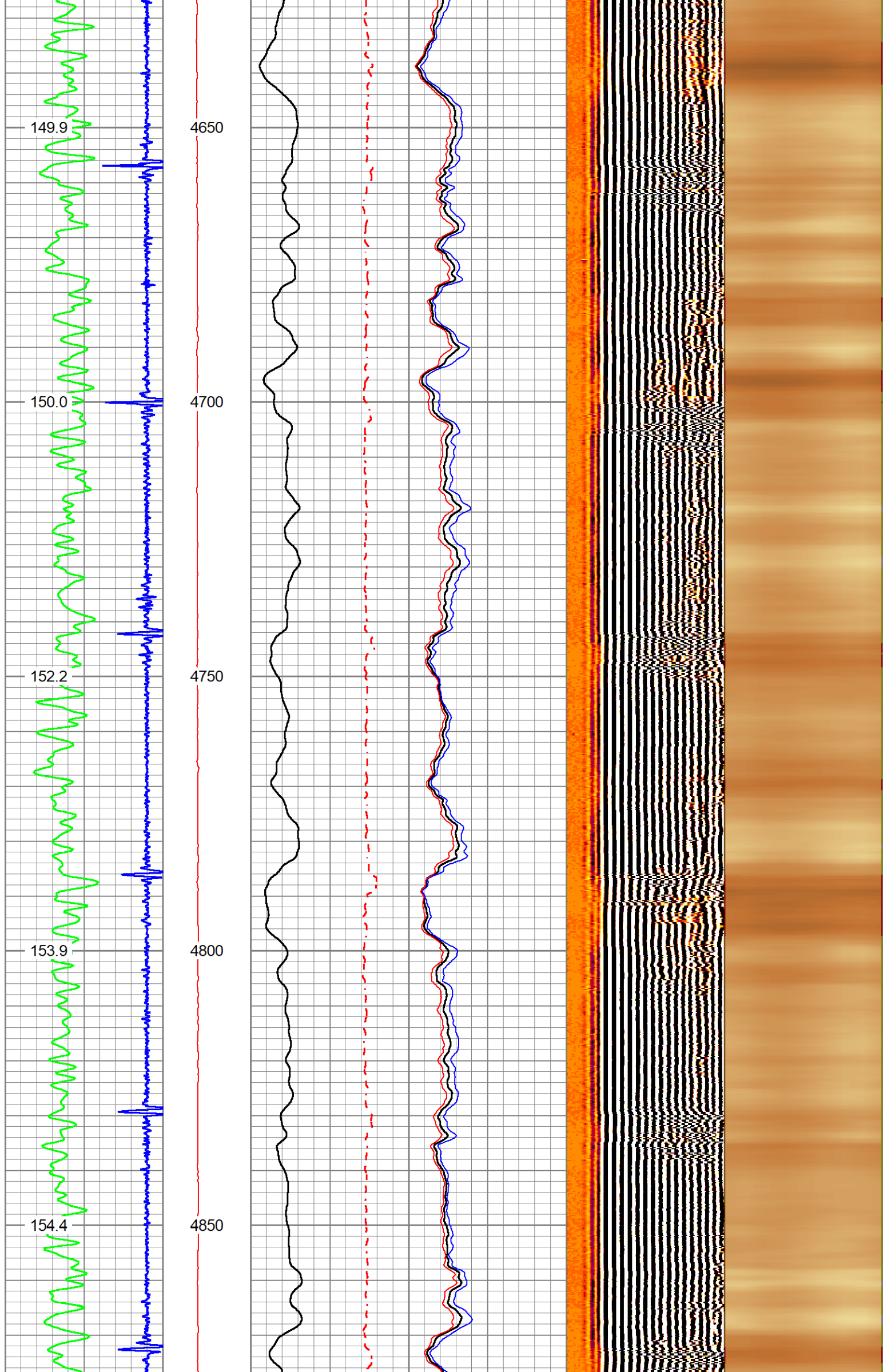


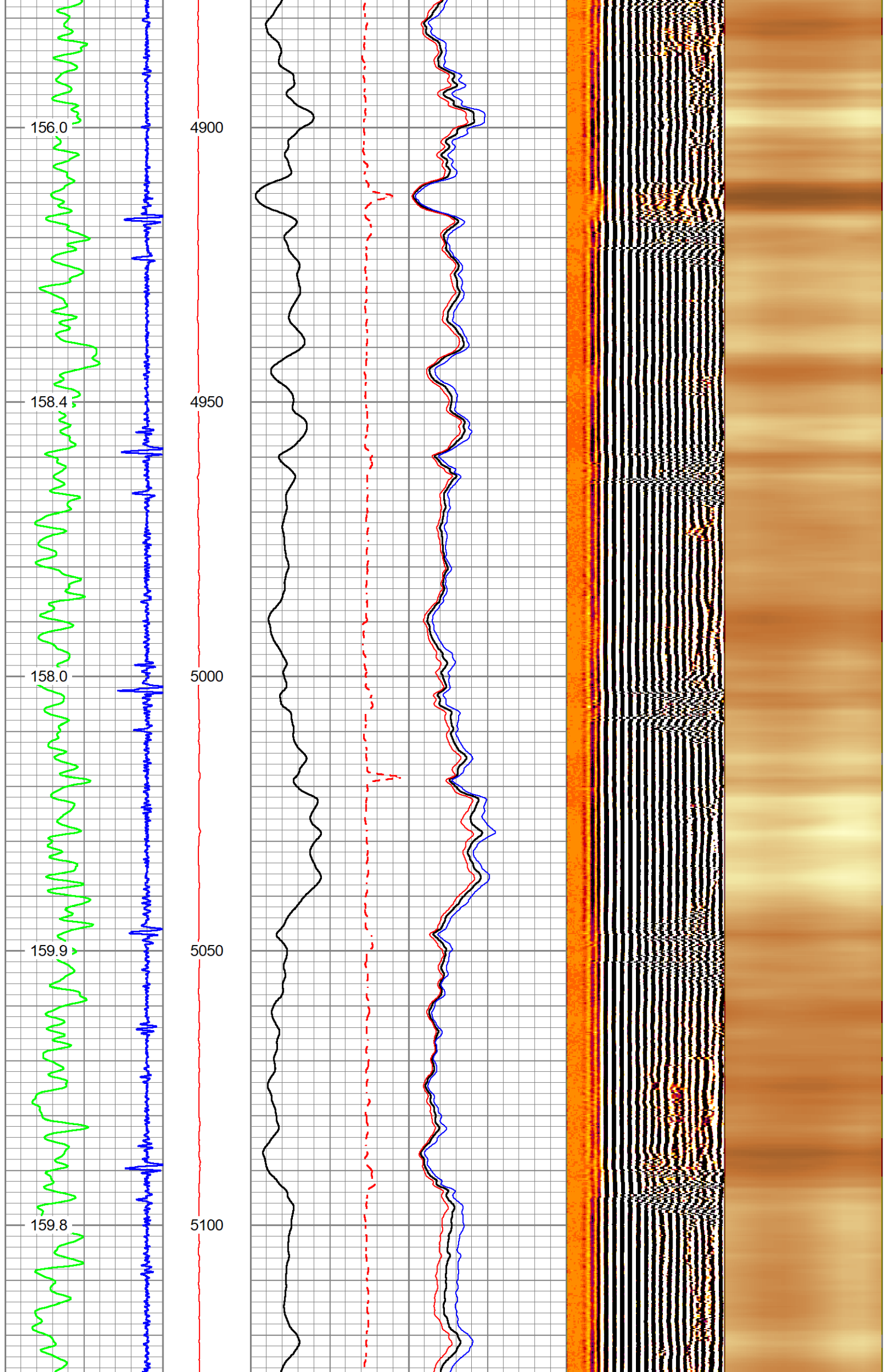


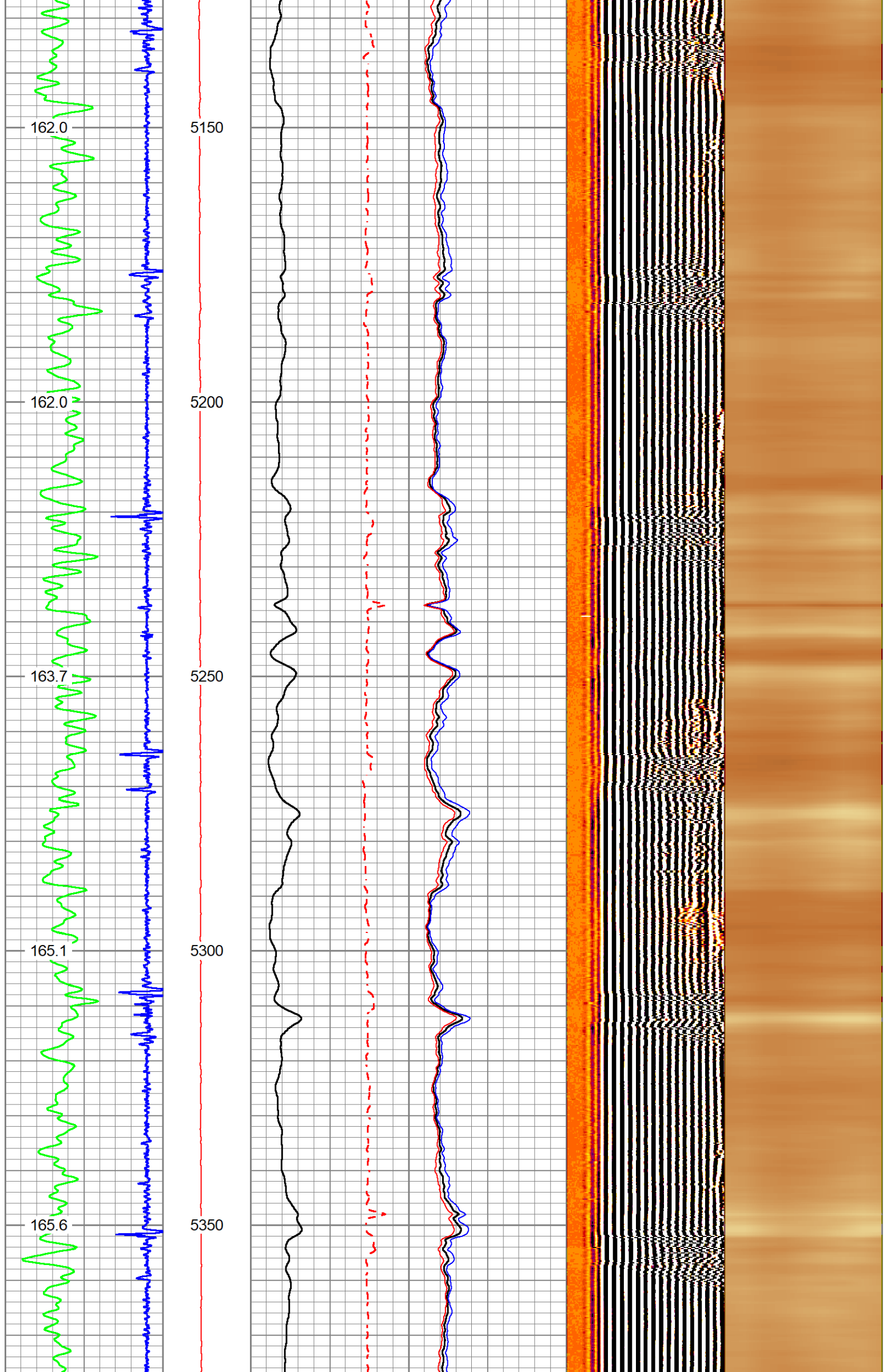


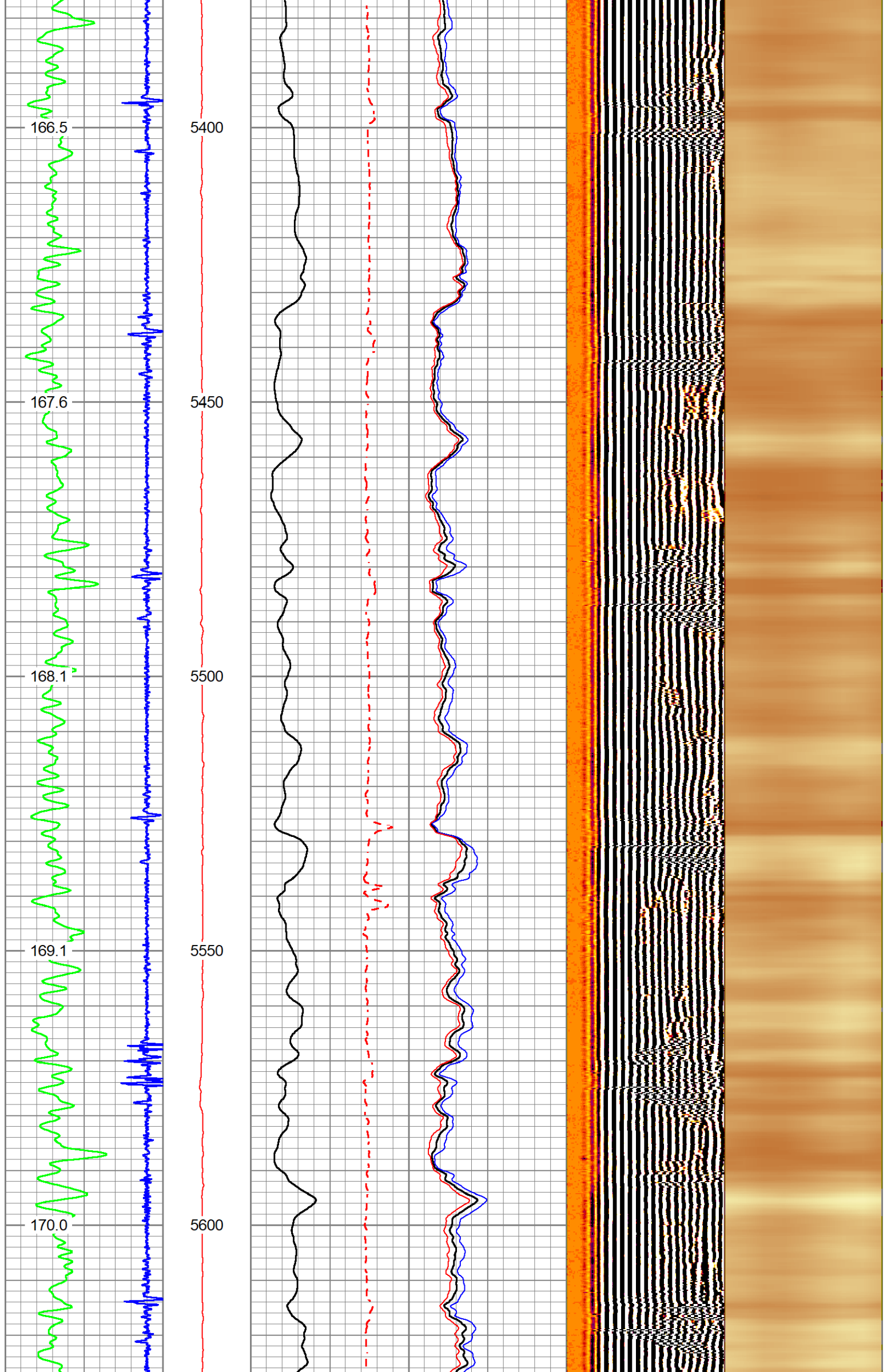


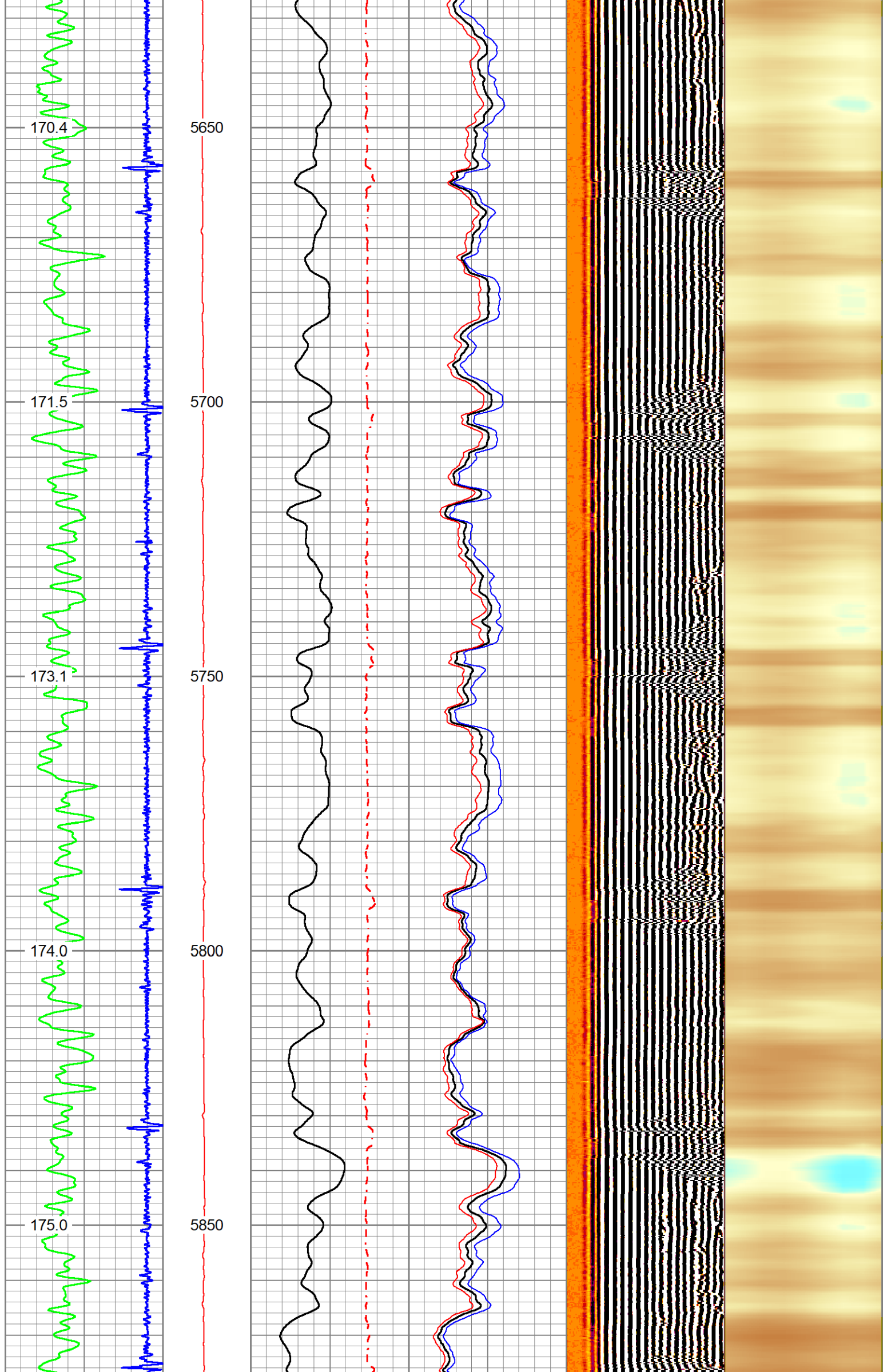


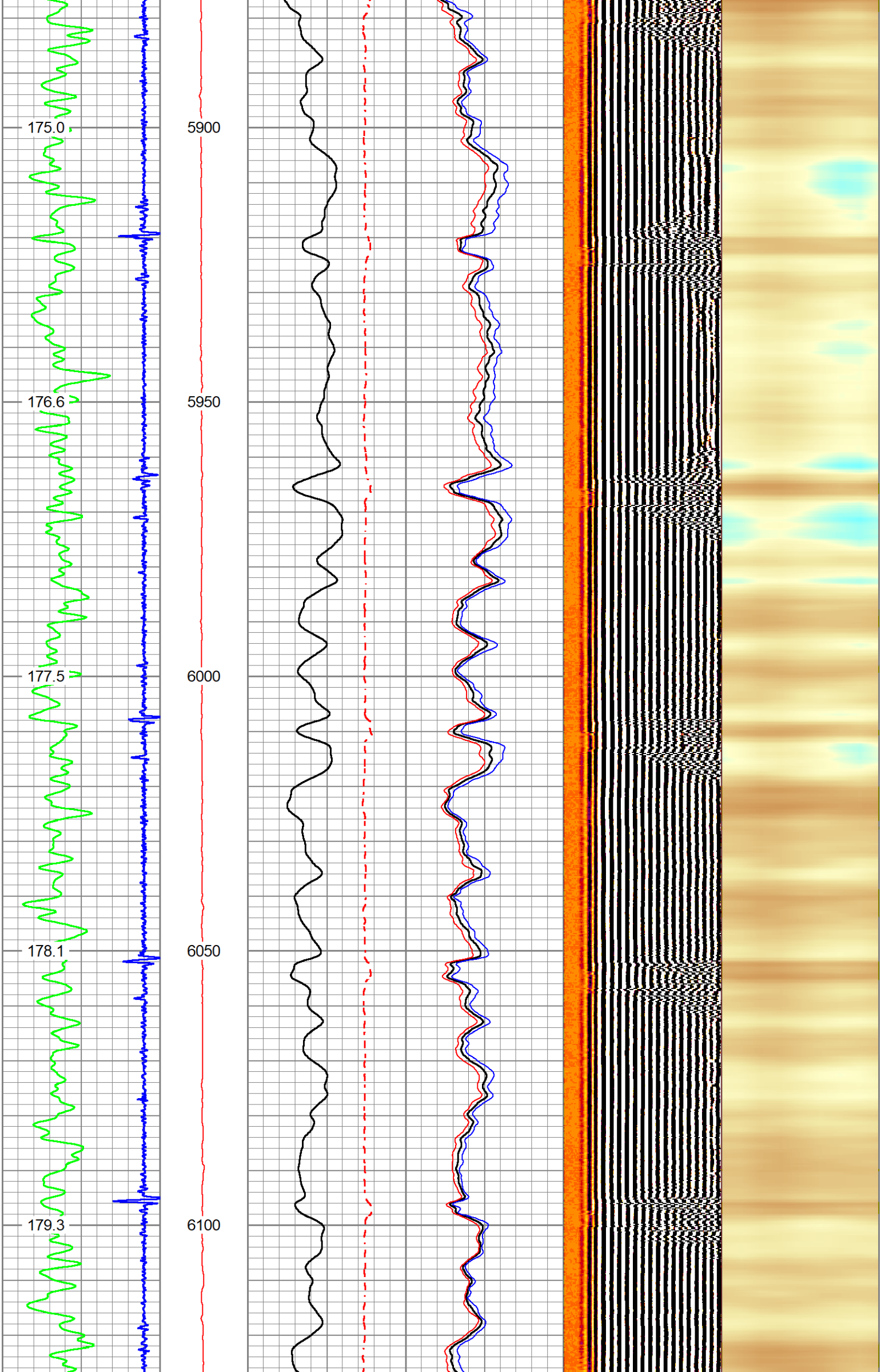


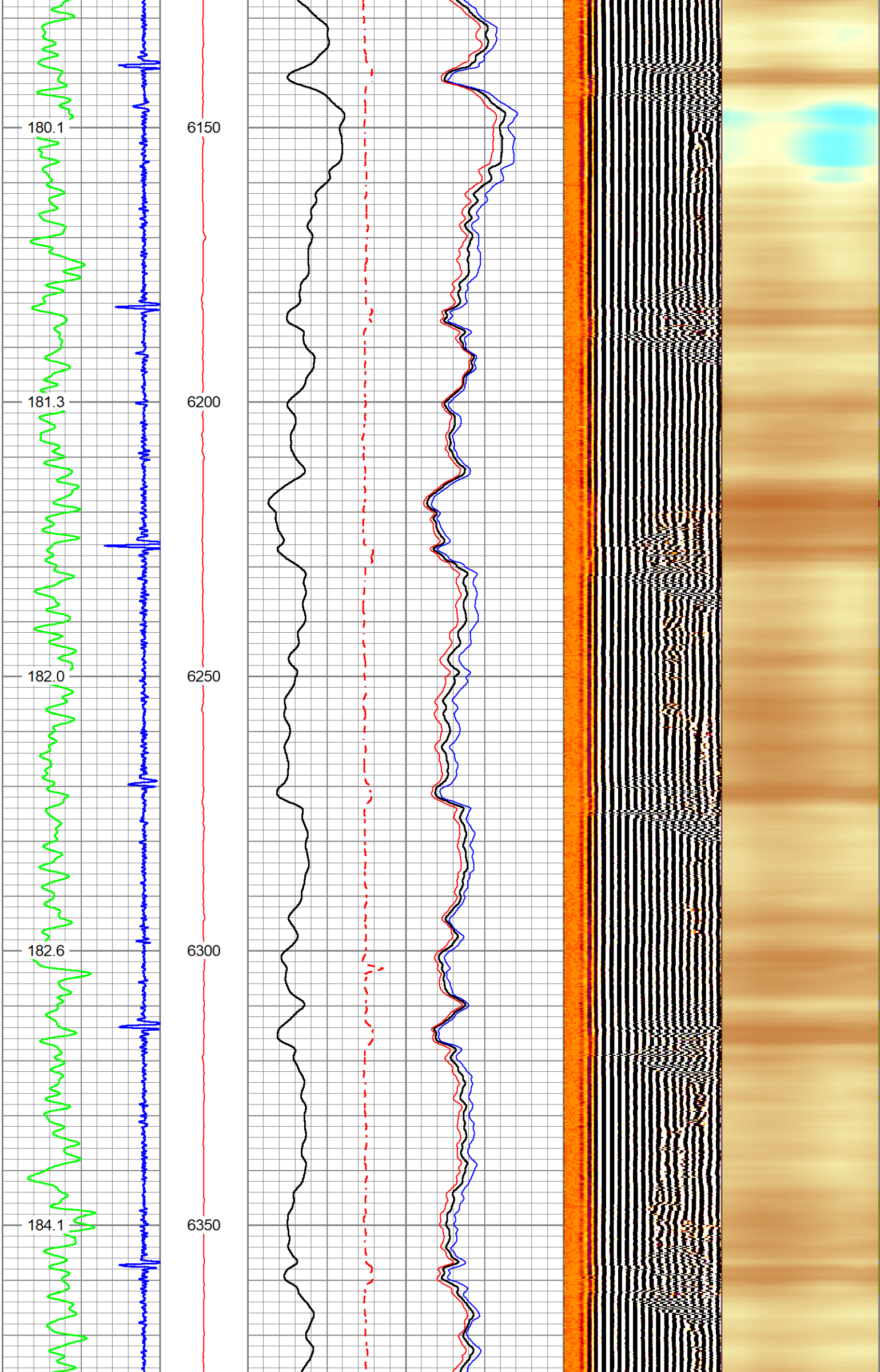


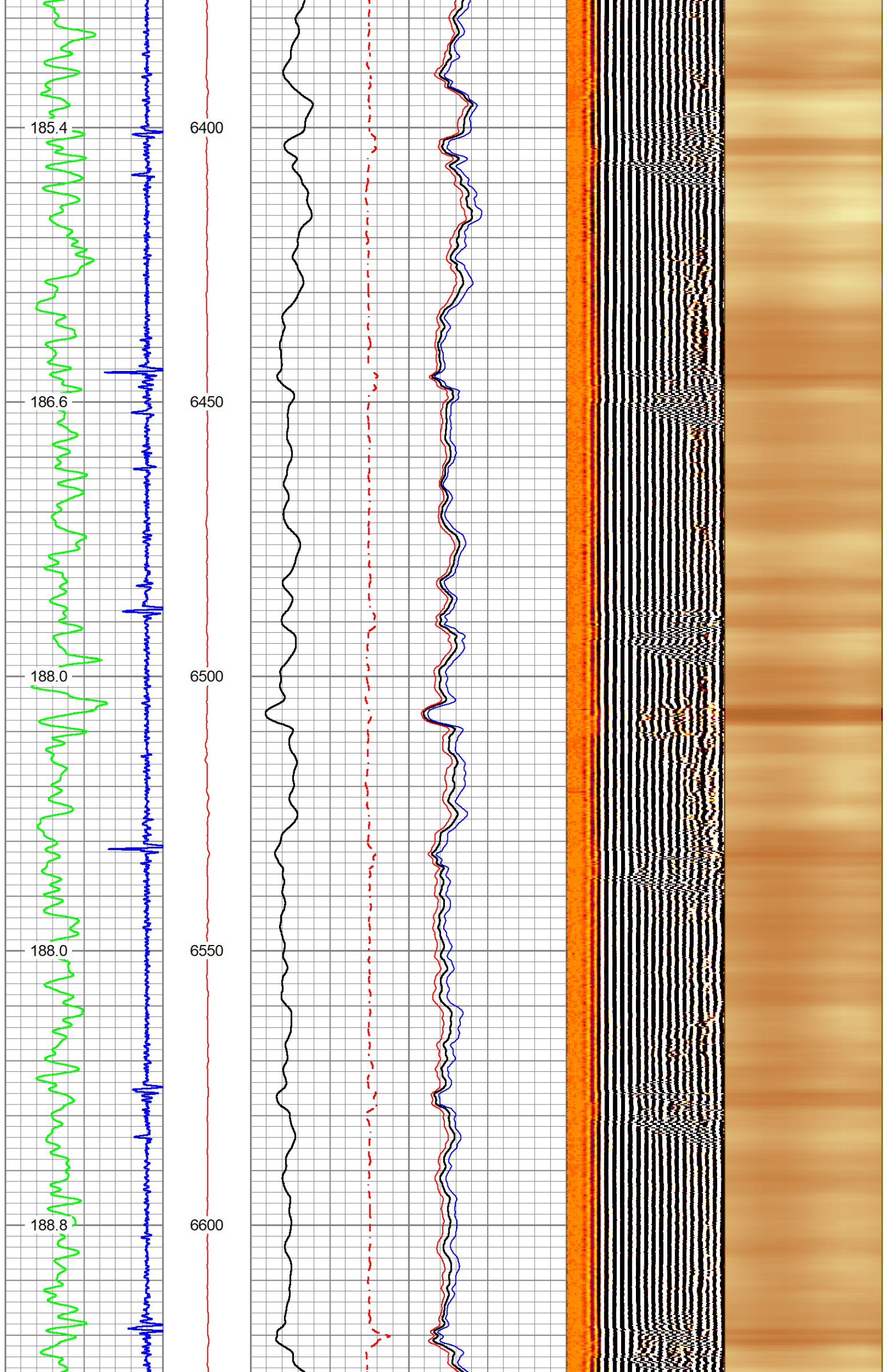


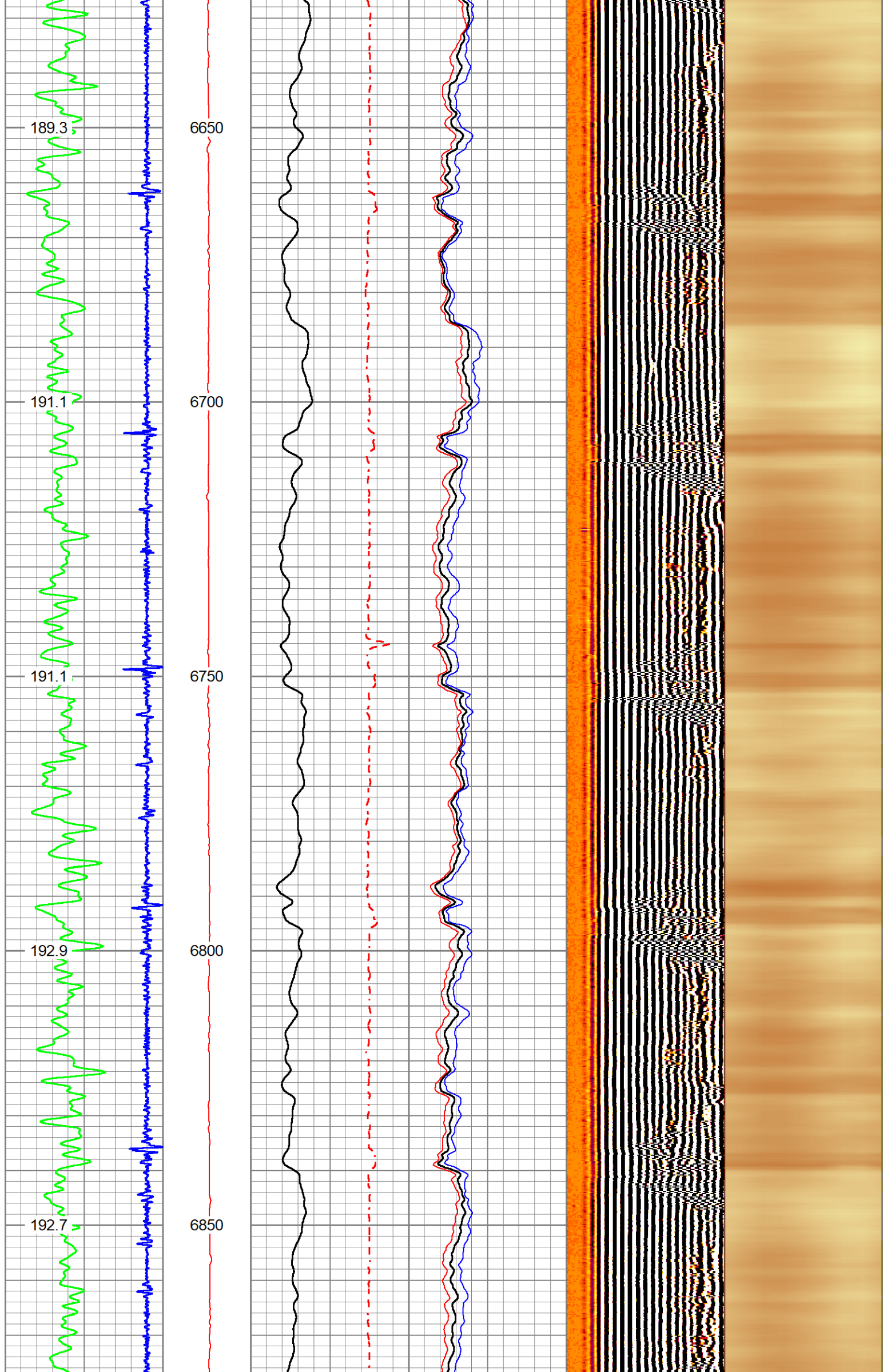


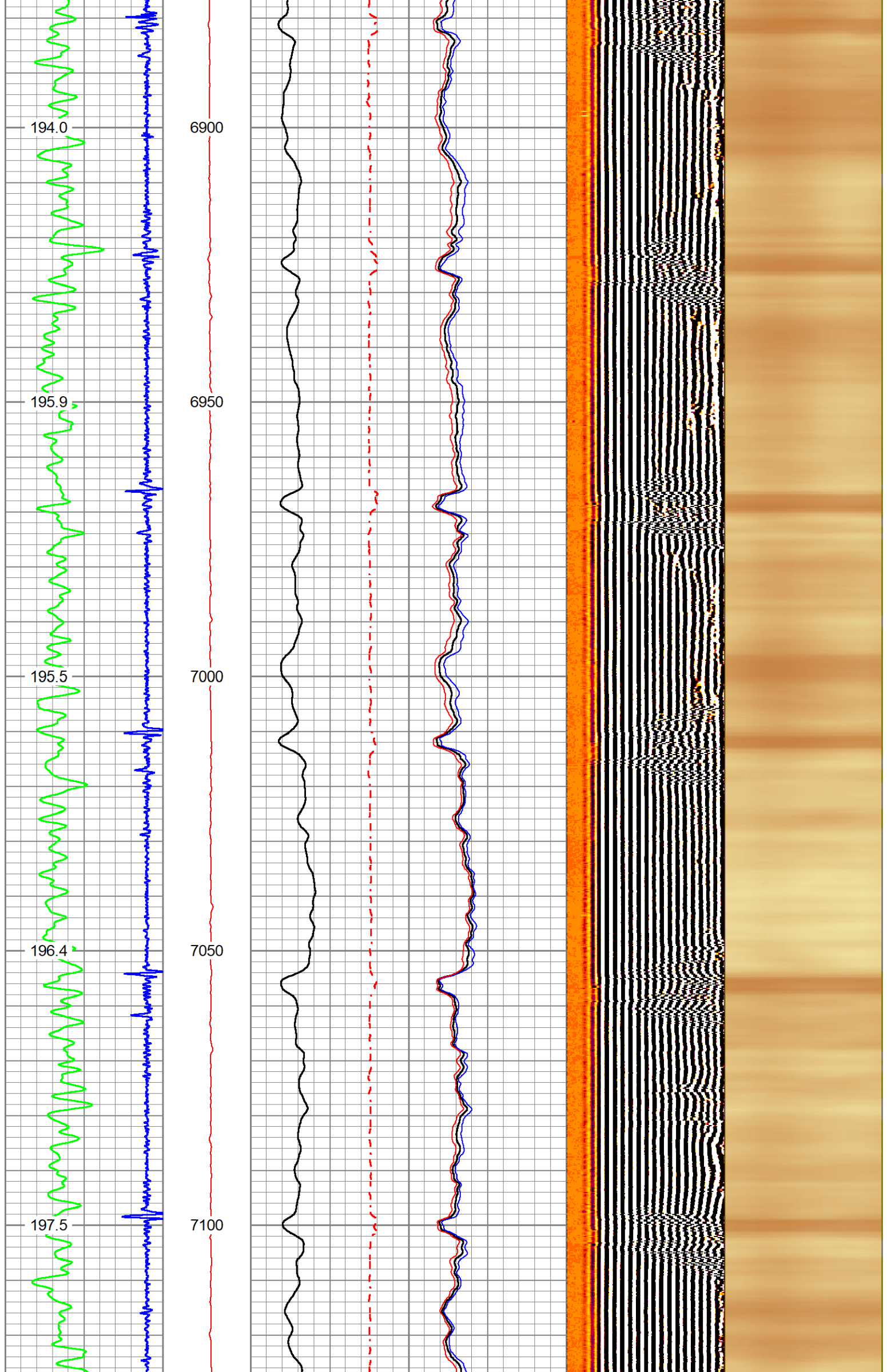


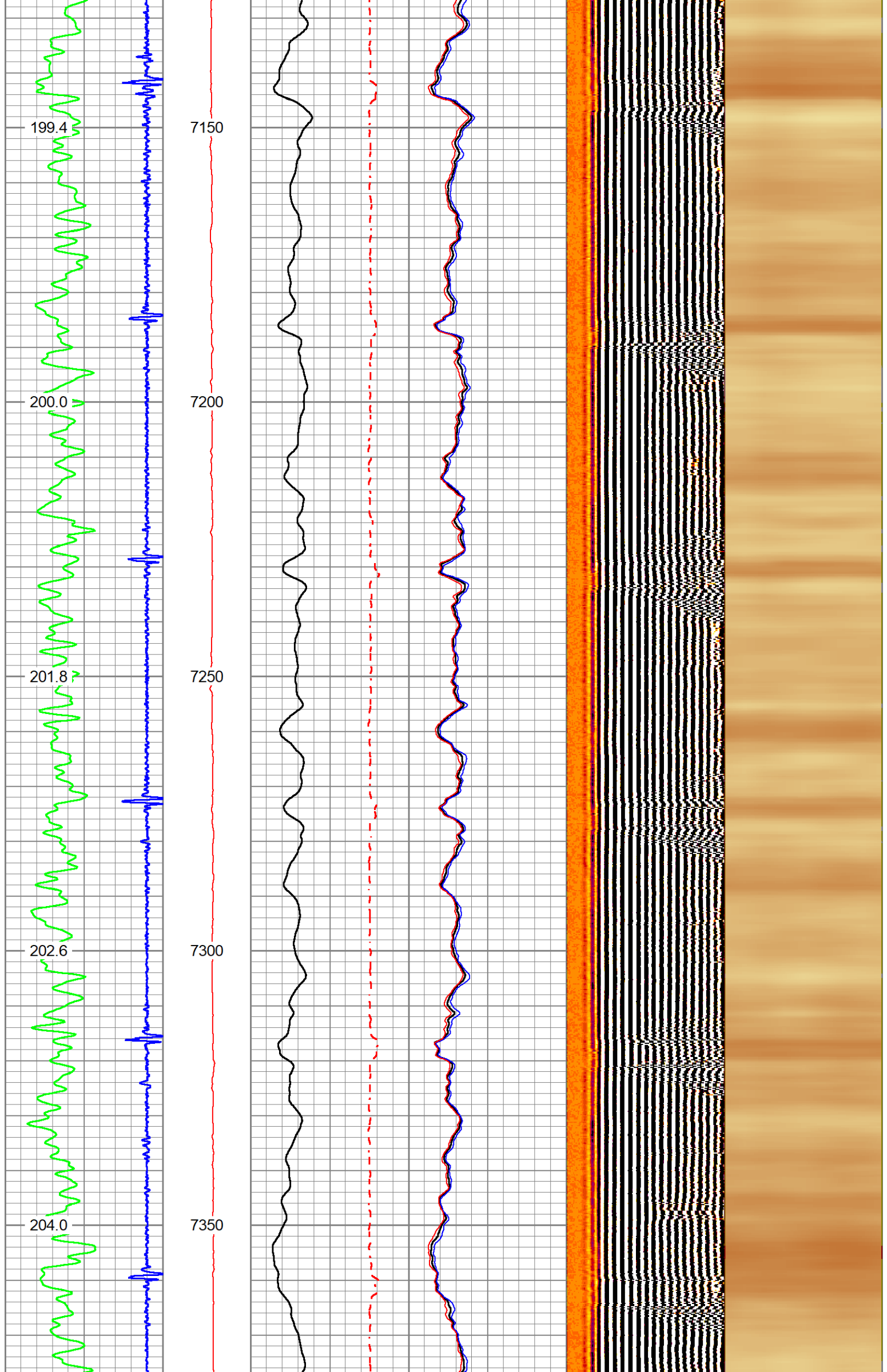


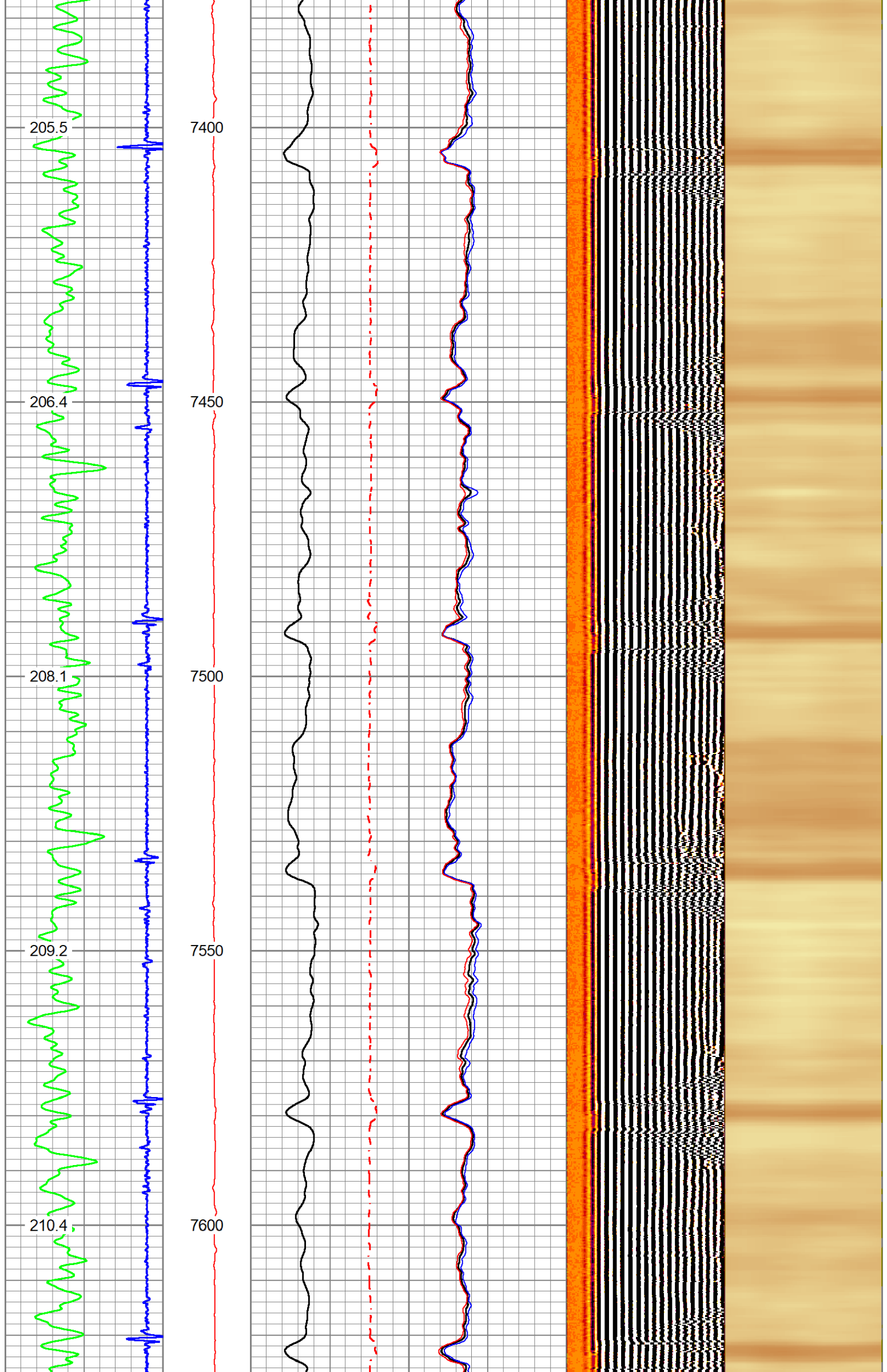


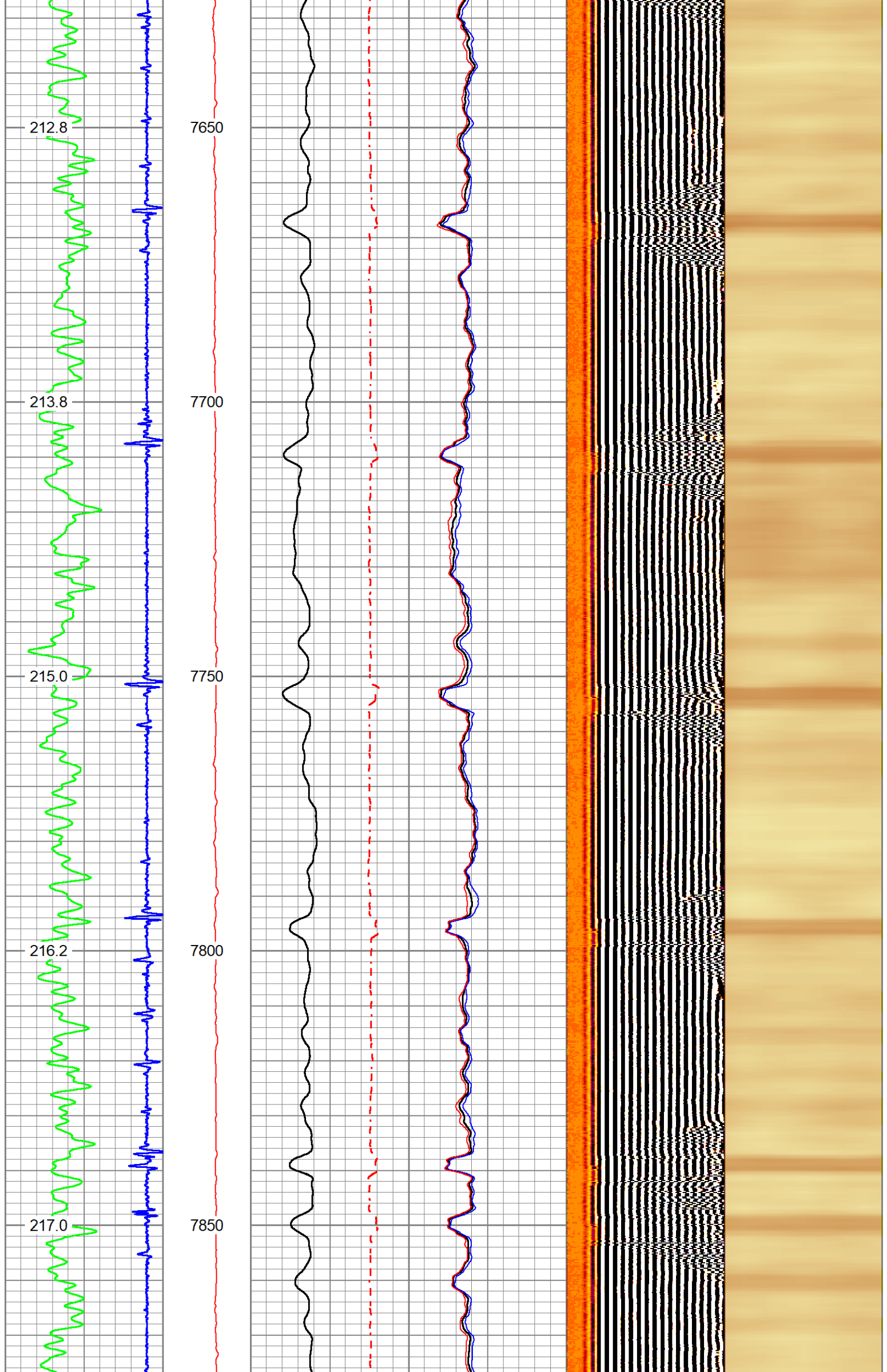


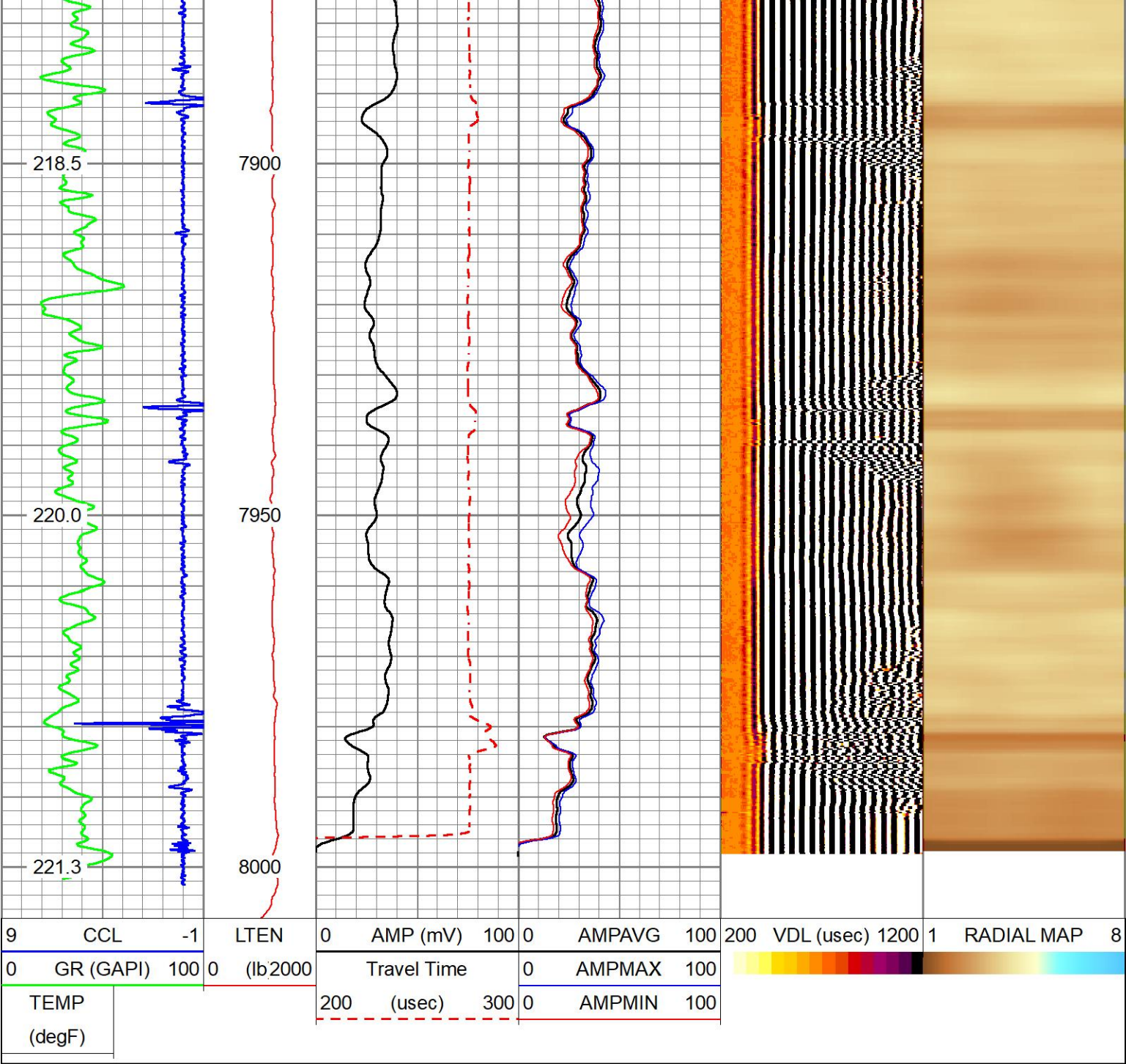












MAIN PASS

5" = 100'

HALLIBURTON

REPEAT PASS

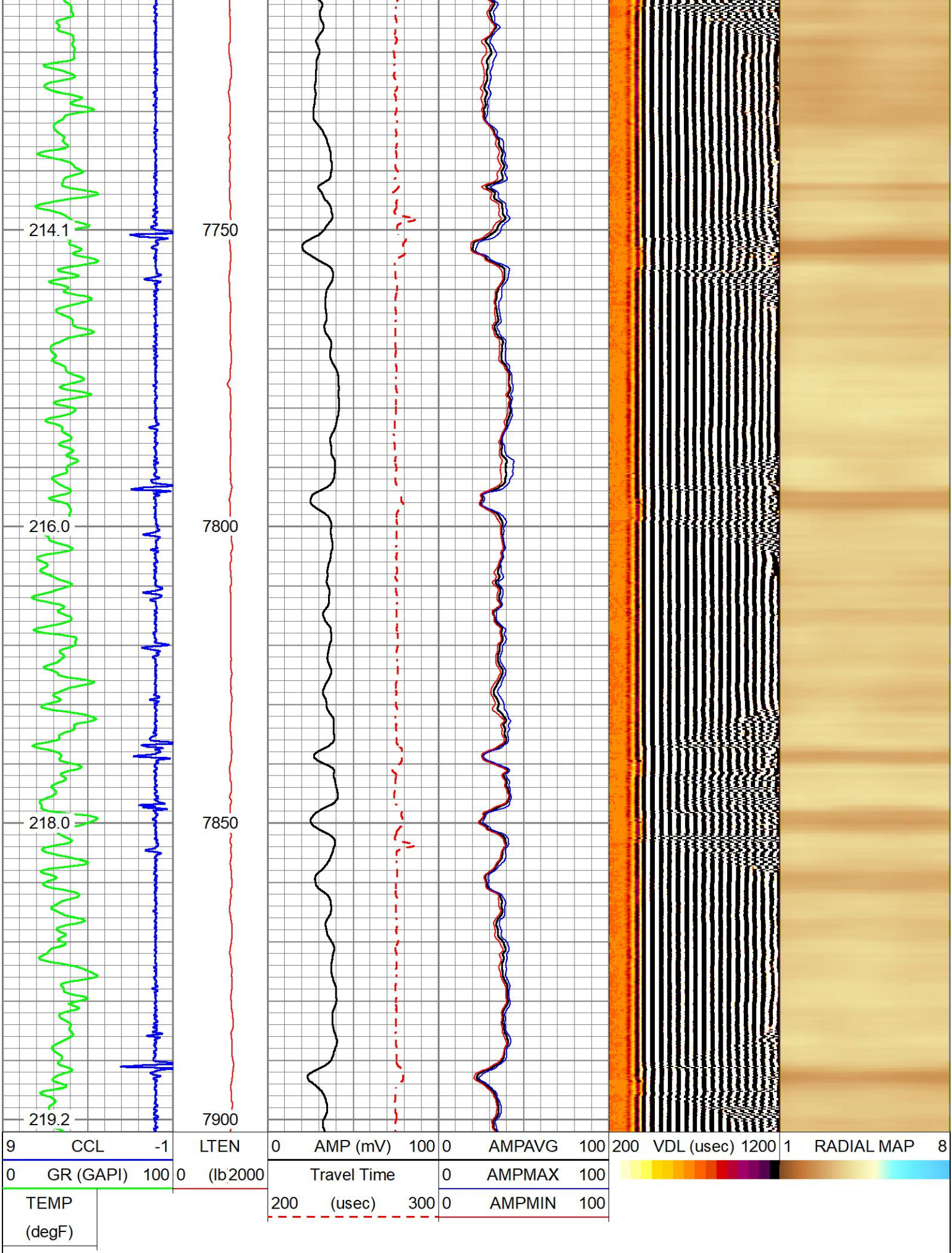
5" = 100'

HALLIBURTON

Database File	livingston_s19-25-3n.db														
Dataset Pathname	REPEAT														
Presentation Format	EXTRAC~1														
Dataset Creation	Sun Aug 11 20:19:42 2019														
Charted by	Depth in Feet scaled 1:240														

9	CCL	-1	LTEN	0	AMP (mV)	100	0	AMPAVG	100	200	VDL (usec)	1200	1	RADIAL MAP	8
0	GR (GAPI)	100	0	(lb2000)	Travel Time		0	AMPMAX	100						
TEMP				200	(usec)	300	0	AMPMIN	100						
(degF)															





REPEAT PASS

HALLIBURTON

5" = 100'

Log Variables


DatabaseC:\ProgramData\Warrior\Data\livingston_s19-25-3n.db
Dataset field/well/run1/MAIN/_vars_

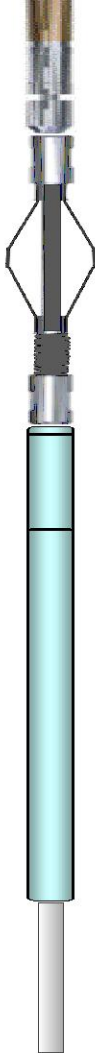
BHTEMP_Src TEMP	BITSIZE in 8.5	BOTTEMP degF 220	CASEOD in 5.5	CASETHCK in 0.304	CASEWGHT lb/ft 17	MAXAMPL mV 72	MINAMPL mV 2
MINATTN db/ft 0.8	MudWgt lb/gal 8.4	PERFS No	PPT usec 214	SRFTEMP degF 75	TDEPTH ft 0		

Calibration Report					
Database File	livingston_s19-25-3n.db				
Dataset Pathname	REPEAT				
Dataset Creation	Sun Aug 11 20:19:42 2019				
Temperature Calibration Report					
Serial Number:		001			
Tool Model:		T_Temp			
Performed:		Mon Apr 04 13:27:25 2011			
		Reference		Reading	
Low Reference:		0.00	degF	0.00	cps
High Reference:		1.00	degF	1.00	cps
Gain:		0.10			
Offset:		0.00			
Delta Spacing		1			
Gamma Ray Calibration Report					
Type / Serial:		probe275dig / pr050806			
SHOP CALIBRATION		Tue Nov 01 09:40:24 2005			
		Counts/Sec.	Gain	Offset	Jig
Background Calibrator		79.3			
		459.5			
			0.6312		
PRIMARY VERIFICATION		00:00:00			
Background Calibrator Difference		48.3			
		288.5			
				240.2	
BEFORE SURVEY VERIFICATION		00:00:00			
Background Calibrator Difference		47.8			
		290.6			
				242.8	
AFTER SURVEY VERIFICATION		00:00:00			
Background Calibrator Difference		35.8			
		286.1			
				250.2	
Segmented Cement Bond Log Calibration Report					
Serial Number:		051010B			
Tool Model:		Probe			
Calibration Casing Diameter:		5.500	in		
Calibration Depth:		209.883	ft		

Master Calibration, performed Sun Aug 11 18:18:12 2019:							
		Raw (v)		Calibrated (mv)		Results	
		Zero	Cal	Zero	Cal	Gain	Offset
3'		0.000	1.545	0.000	72.000	46.605	0.000
CAL		0.000	1.507				

5'	0.000	1.231	0.000	72.000	58.496	0.000
SUM						
S1	0.000	1.774	0.000	72.000	40.592	0.000
S2	0.000	1.775	0.000	72.000	40.566	0.000
S3	0.000	1.757	0.000	72.000	40.978	0.000
S4	0.000	1.660	0.000	72.000	43.361	0.000
S5	0.000	1.513	0.000	72.000	47.585	0.000
S6	0.000	1.378	0.000	72.000	52.252	0.000
S7	0.000	1.386	0.000	72.000	51.957	0.000
S8	0.000	1.507	0.000	72.000	47.766	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	1.507	1.000	0.000
Air Zero Calibration, performed Sun Aug 11 18:21:28 2019:						
	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.009		0.000		-0.009	
5'	0.010		0.000		-0.010	
SUM						
S1	0.108		0.000		-0.108	
S2	0.013		0.000		-0.013	
S3	0.011		0.000		-0.011	
S4	0.011		0.000		-0.011	
S5	0.010		0.000		-0.010	
S6	0.010		0.000		-0.010	
S7	0.009		0.000		-0.009	
S8	0.011		0.000		-0.011	

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
WVFCAL WVF3FT	11.94 11.94		CHD-1-7/16 (12345678) Monocable Head Assembly	1.28	1.44	1.50
			CENT-Probe_275 Probe 2 3/4 Centralizer	2.88	2.75	20.00
			RBT_PRB275-Probe (051010B) Probe Radii Bond Tool with Digital Telemetry	8.33	2.75	90.00

WVF5FT	9.94					
			CENT-Probe_275 Probe 2 3/4 Centralizer	2.88	2.75	20.00
CCL	5.40					
GR	4.02		GR_PRB275-probe275dig (pr050806) Probe Digital Gamma CCL	4.75	2.75	57.00
TEMP LLMTEN	0.42 0.00	TEMP-T_Temp (001) Titan 1.375 Temp Tool	1.48	1.38	5.00	
Dataset: livingston_s19-25-3n.db: field/well/run1/MAIN Total length: 21.59 ft Total weight: 193.50 lb O.D.: 2.75 in						

Company	EXTRACTION OIL & GAS INC				
Well	LIVINGSTON S19-25-3N				
Field	WATTENBERG				
County	BROOMFIELD			State	CO
HALLIBURTON	RADIAL CEMENT BOND LOG				