

# RADIAL CEMENT BOND LOG

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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	
RCBL - GR - CCL RAN IN COMBINATION.	
LOG RECORDED WITH 0 PSI WELLHEAD PRESSURE.	
LOG CORRELATED TO MARKER JOINT AT 7532.	
BOND INDEX CALCULATED FOR 3000 PSI COMPRESSIVE STRENGTH CEMENT.	
***THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES.***	
YOUR CREW TODAY WAS:	
C. KLEINSASSER & E. GOOD	

Service Ticket No.	906092283	API No.	050142075100	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.	11568129	Serial No.	50806	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	

No.	FROM	TO	Pressure	Temp				
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			

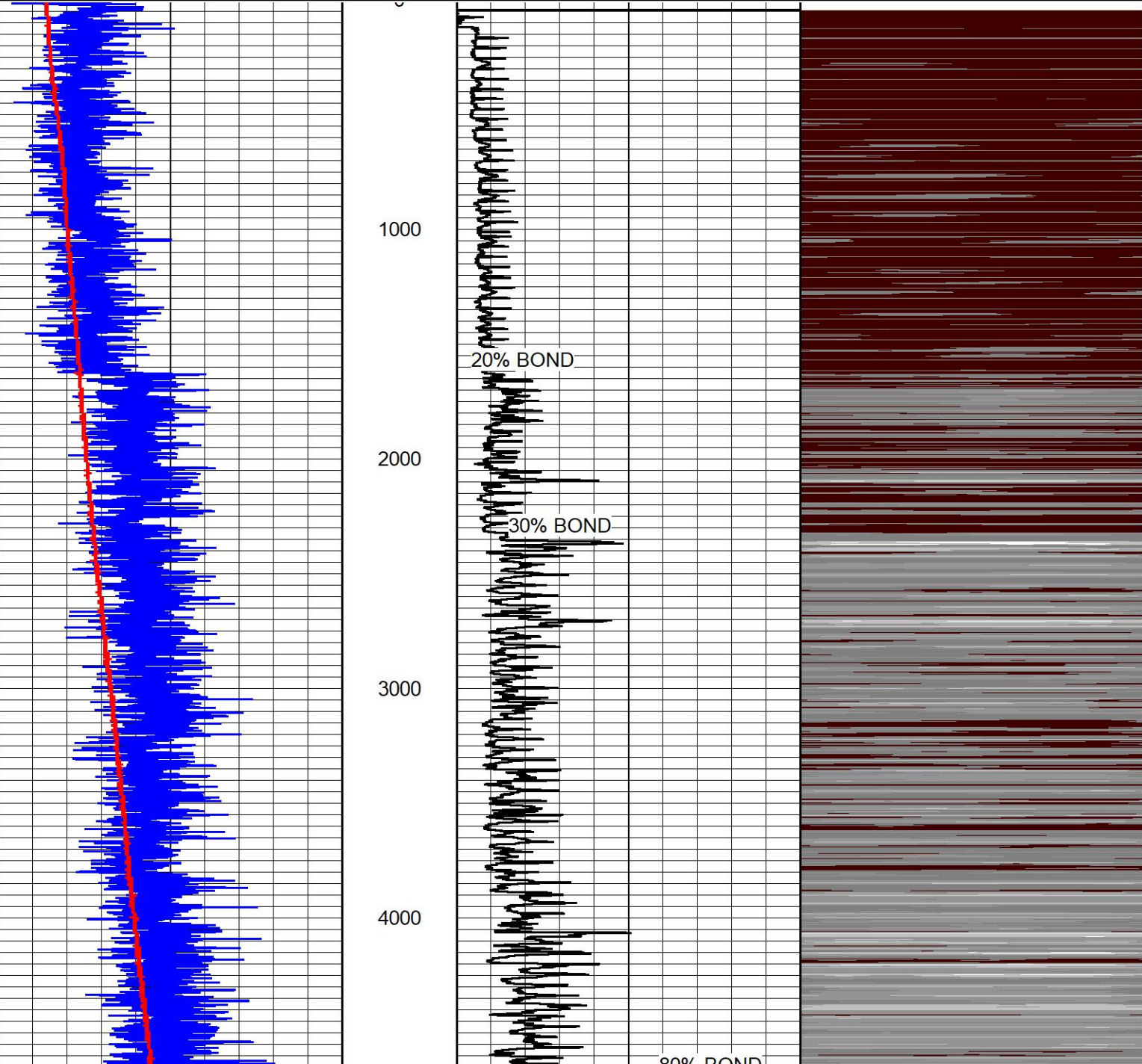
BOND INDEX

HALLIBURTON

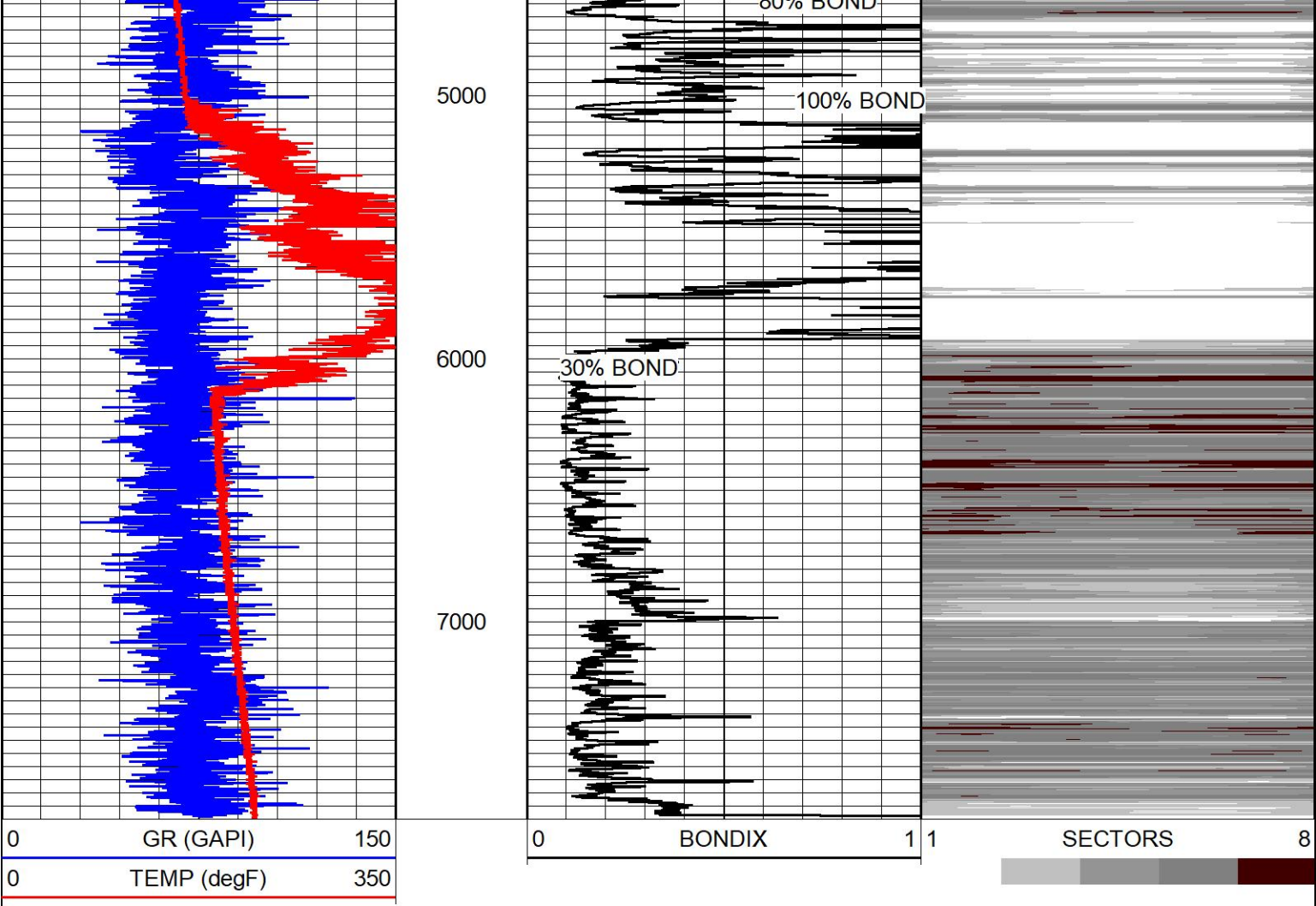
1:7500

Database File      livingston s19-25-7n.db  
Dataset Pathname    MAIN\_PASS.1  
Presentation Format   EXTRAC~2  
Dataset Creation     Tue Nov 05 19:03:35 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

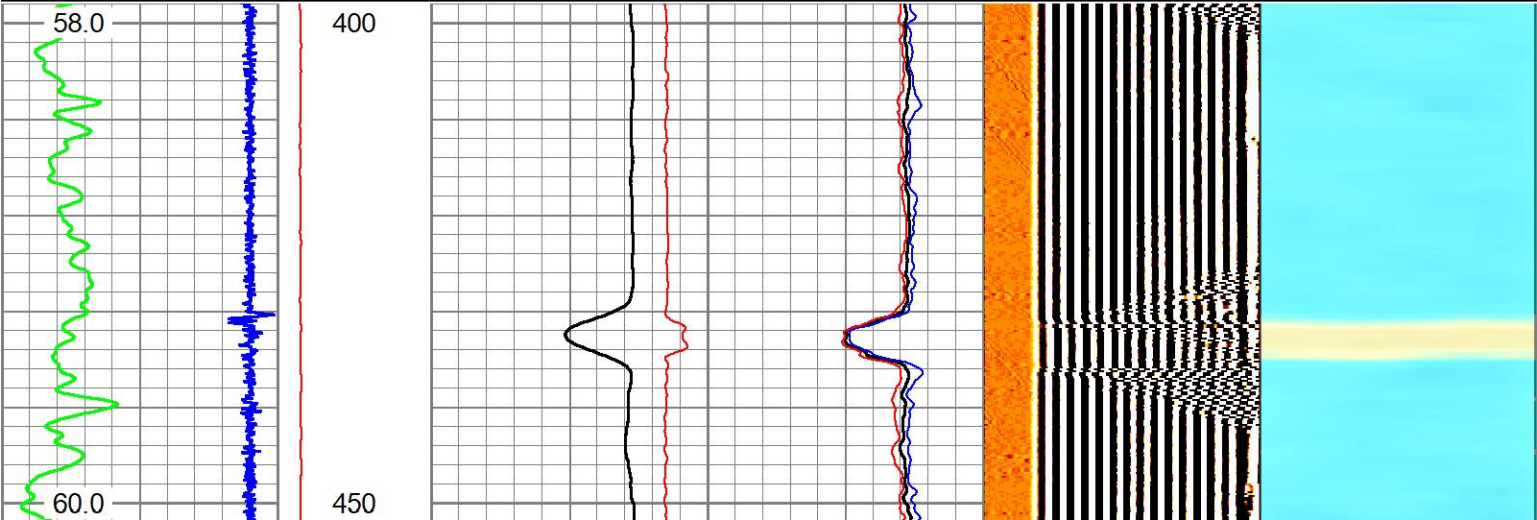
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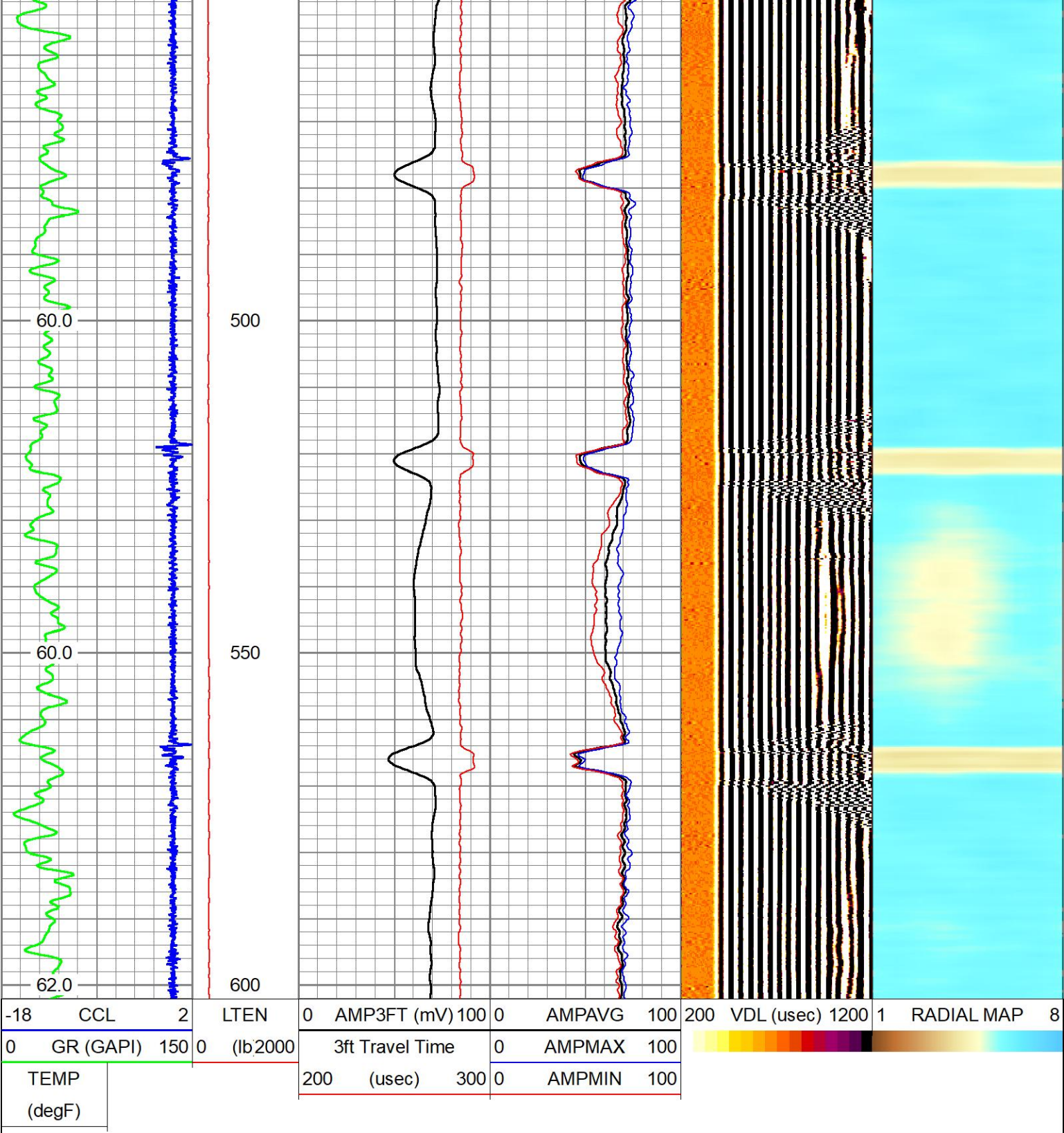
FREE PIPE PASS

5" = 100'

Database File livingston s19-25-7n.db  
Dataset Pathname FREE\_PIPE\_PASS  
Presentation Format EXTRAC~1  
Dataset Creation Tue Nov 05 17:37:00 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)														





FREE PIPE PASS

HALLIBURTON

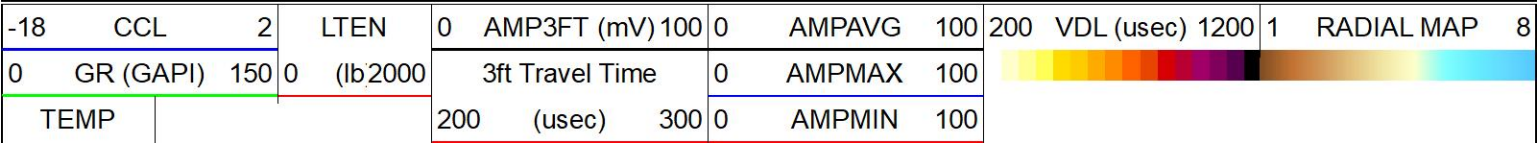
5" = 100'

MAIN PASS

HALLIBURTON

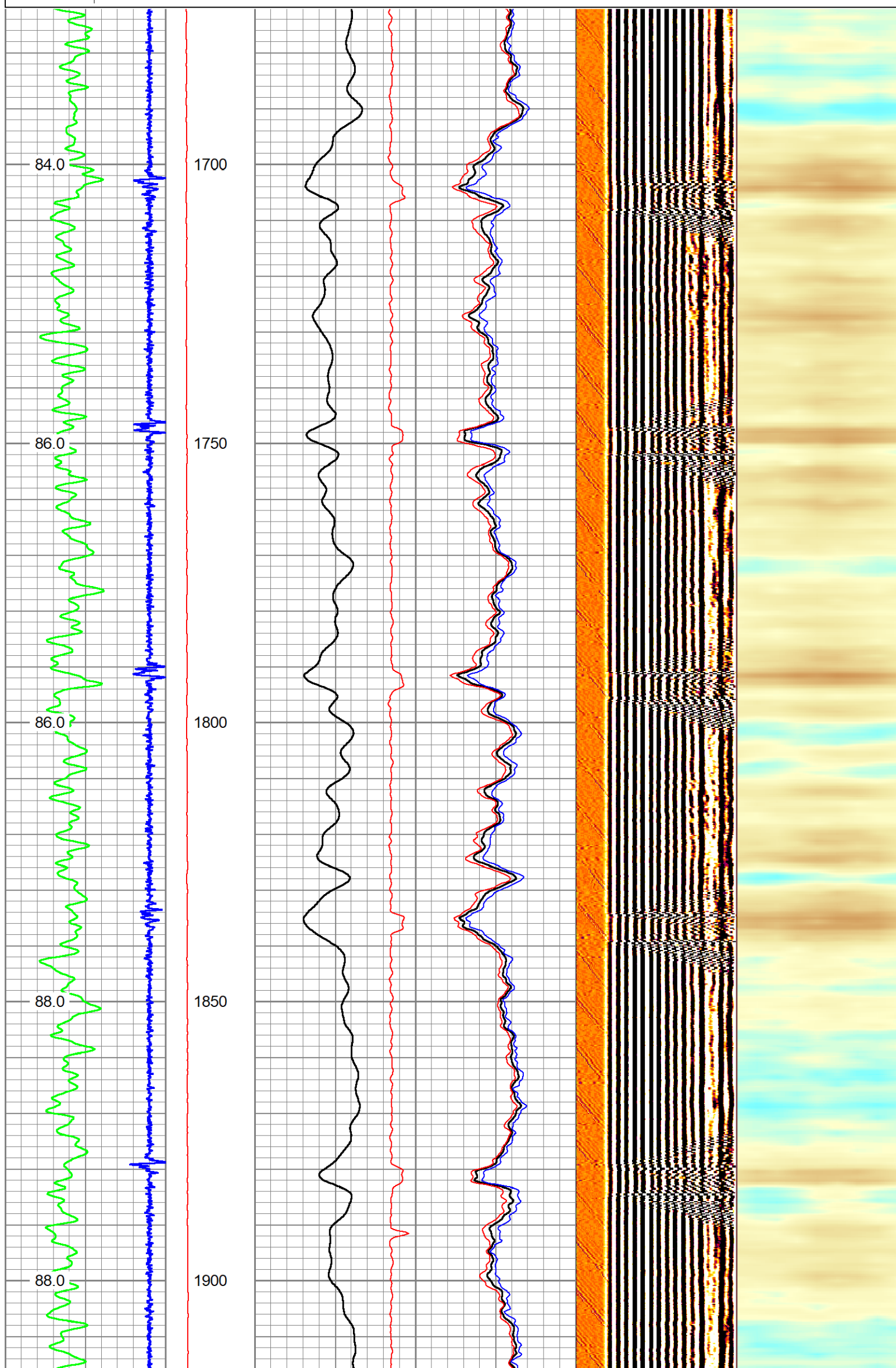
5" = 100'

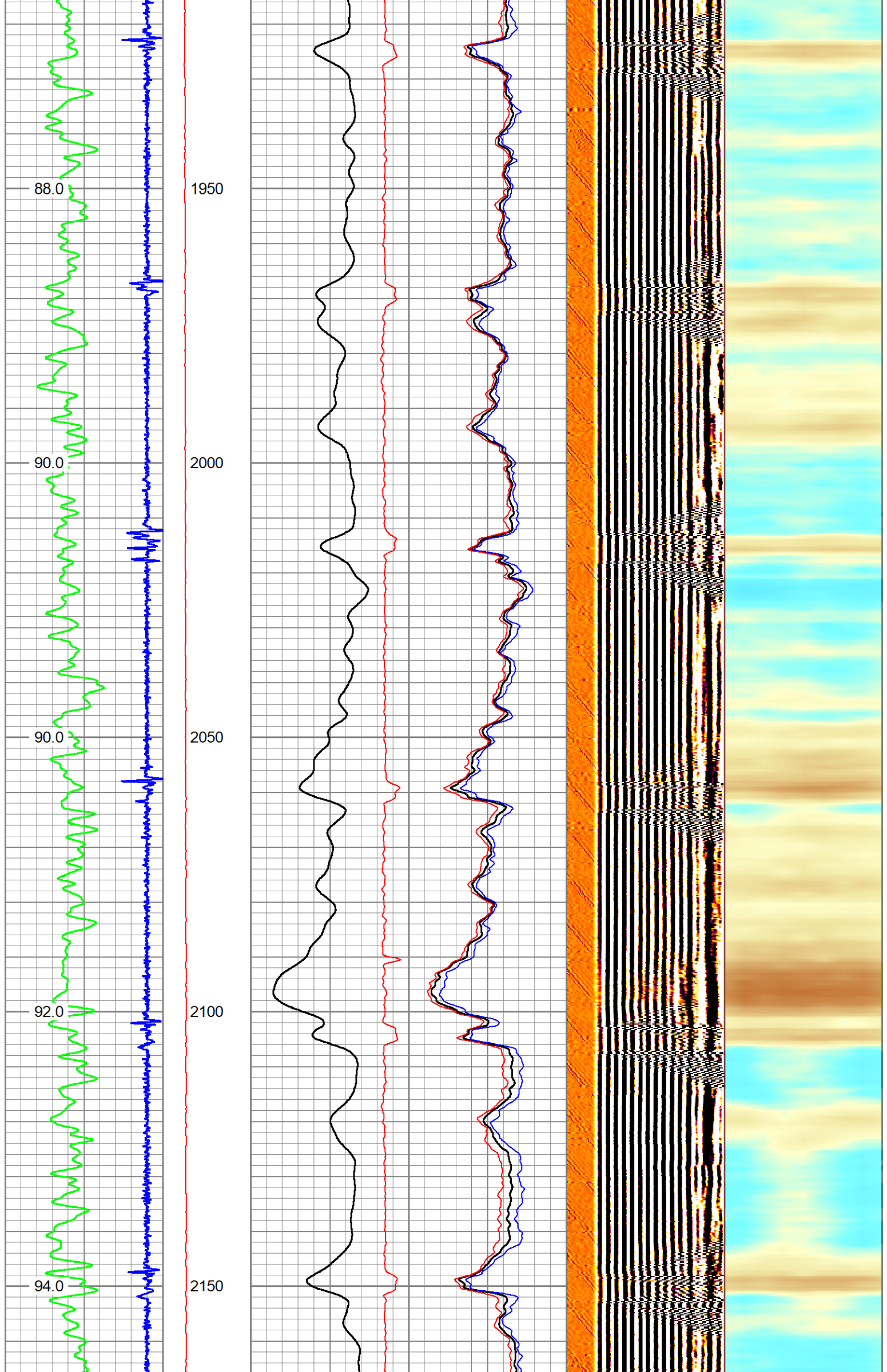
Database File	livingston s19-25-7n.db
Dataset Pathname	MAIN_PASS
Presentation Format	EXTRAC~1
Dataset Creation	Tue Nov 05 18:04:11 2019
Charted by	Depth in Feet scaled 1:240

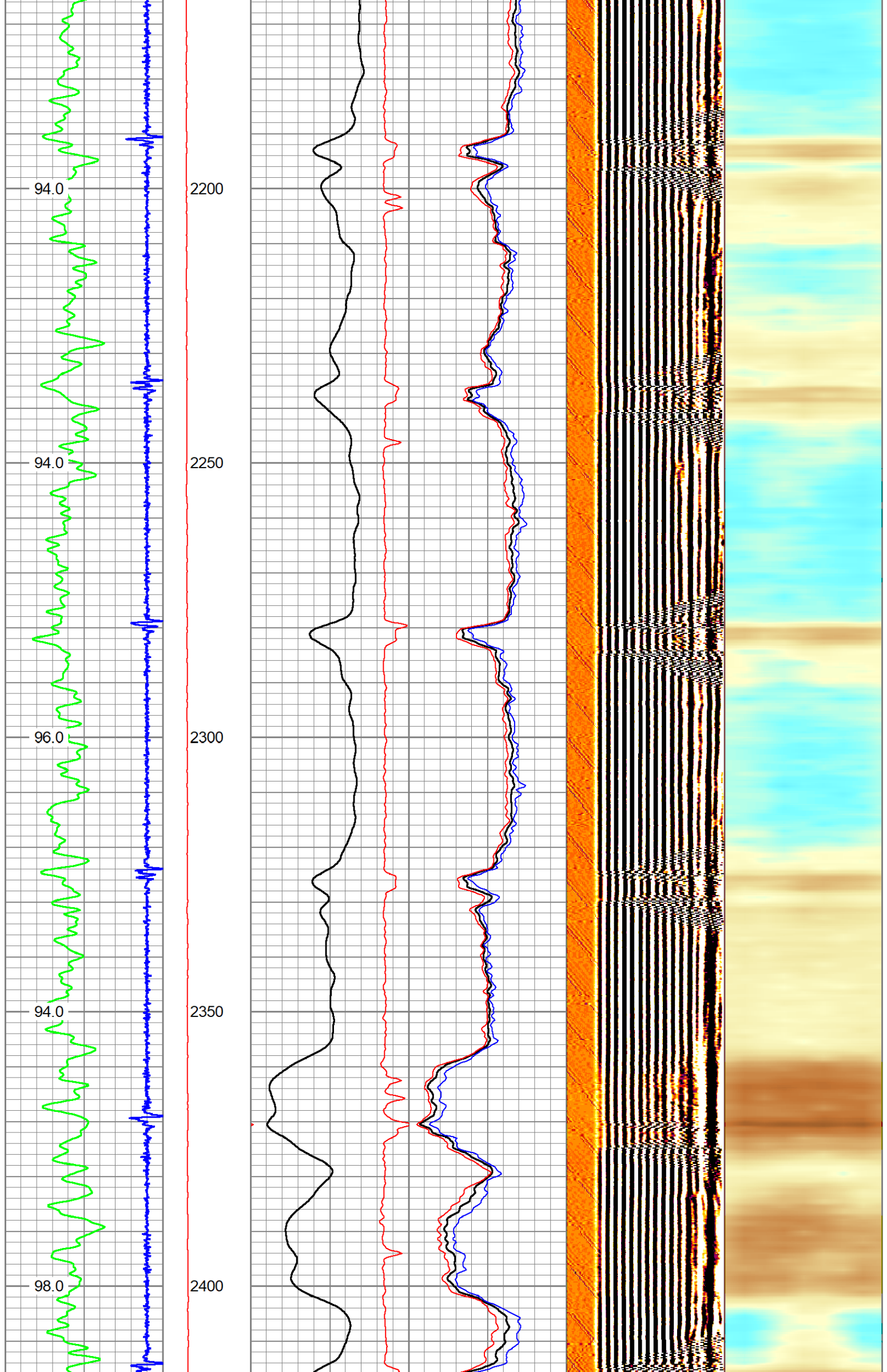




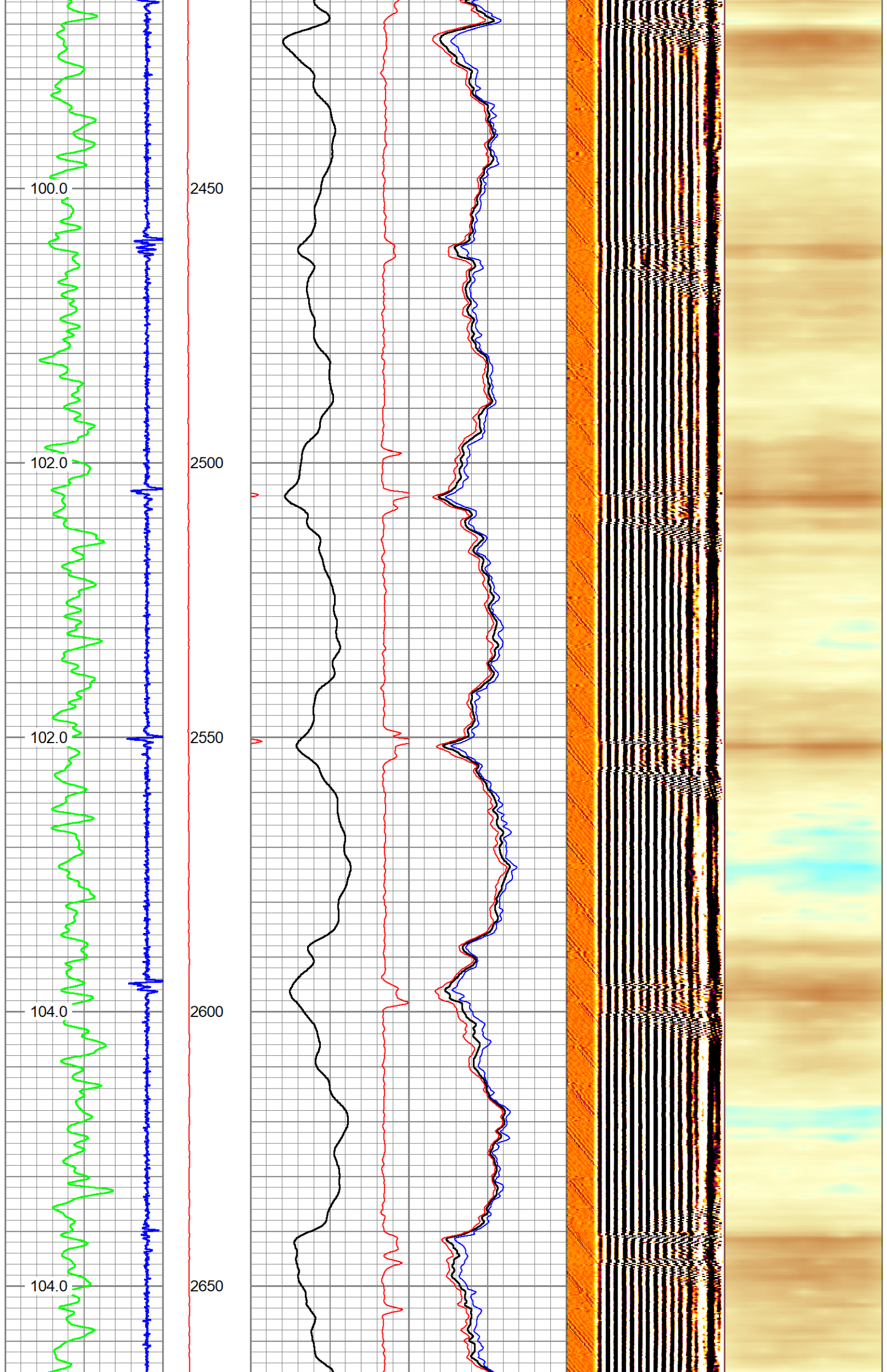
(degF)



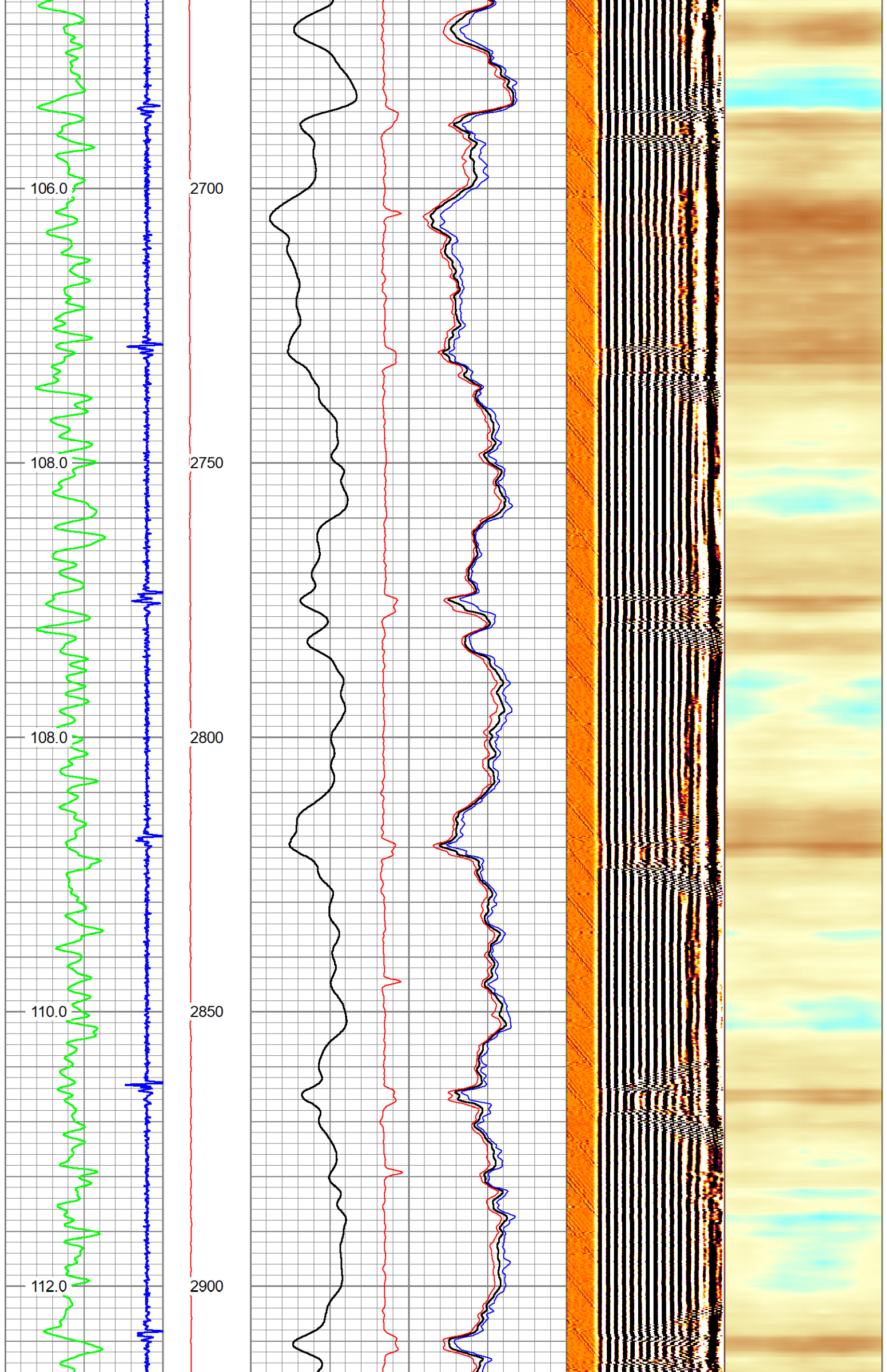


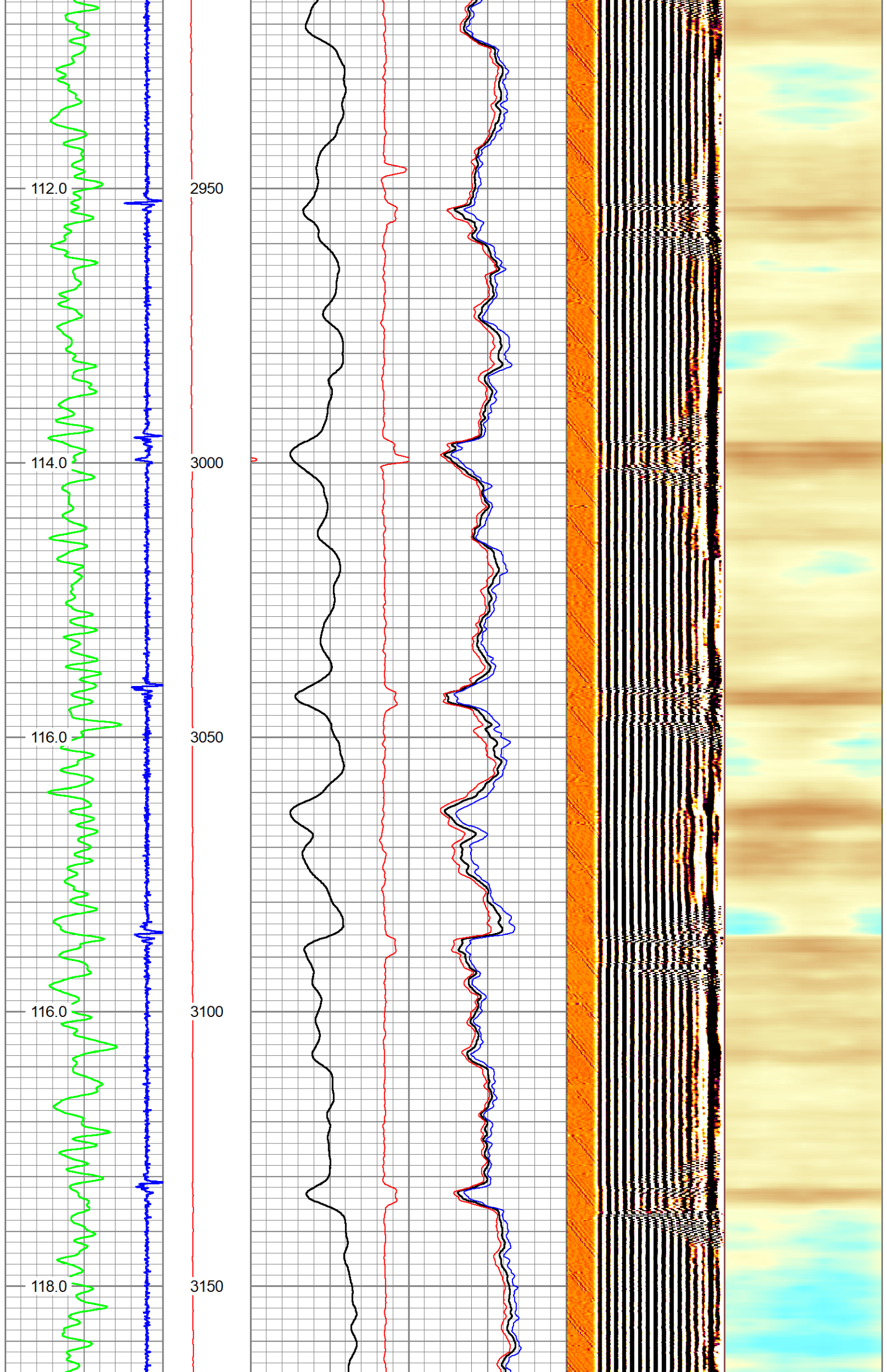




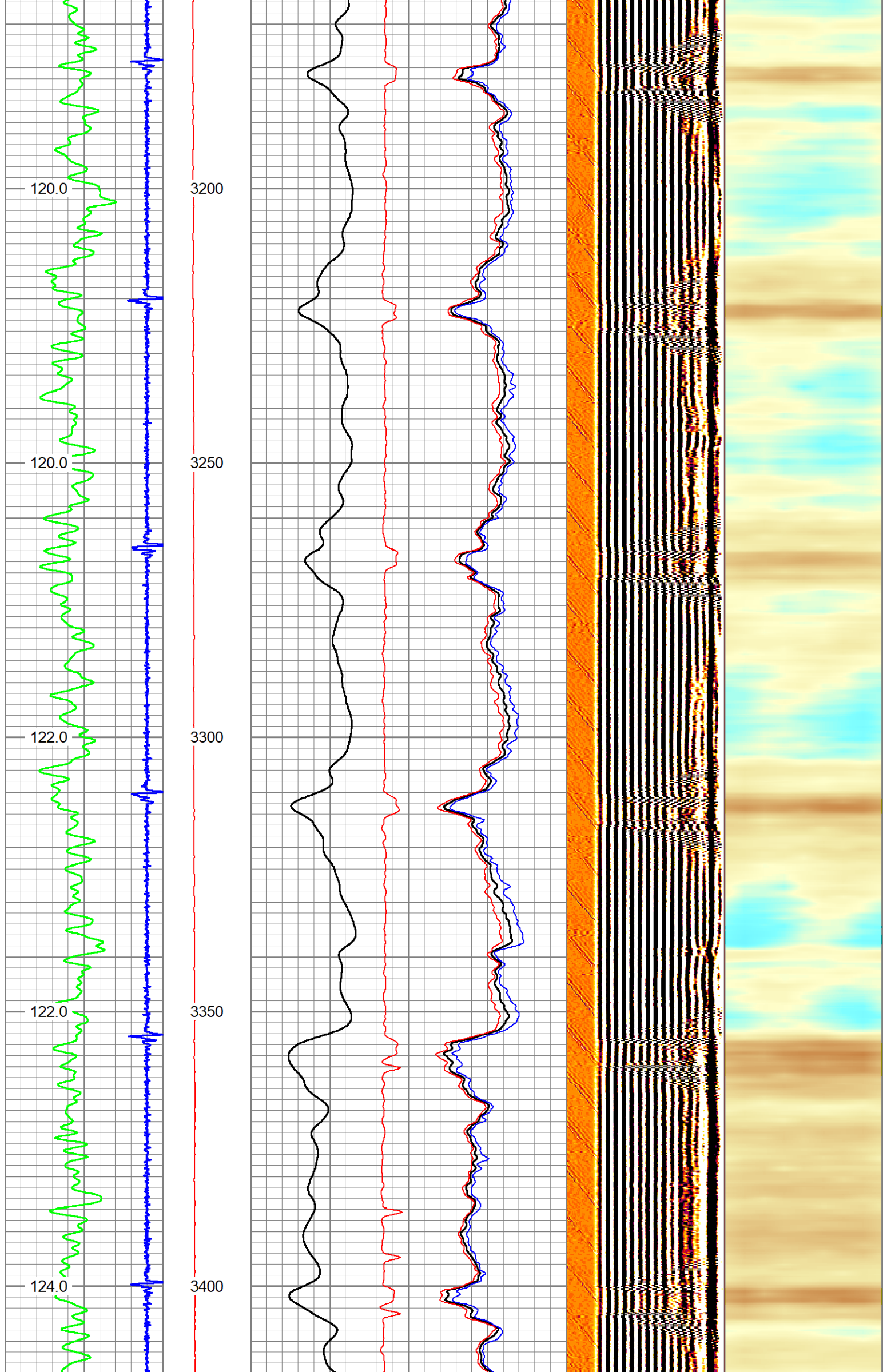


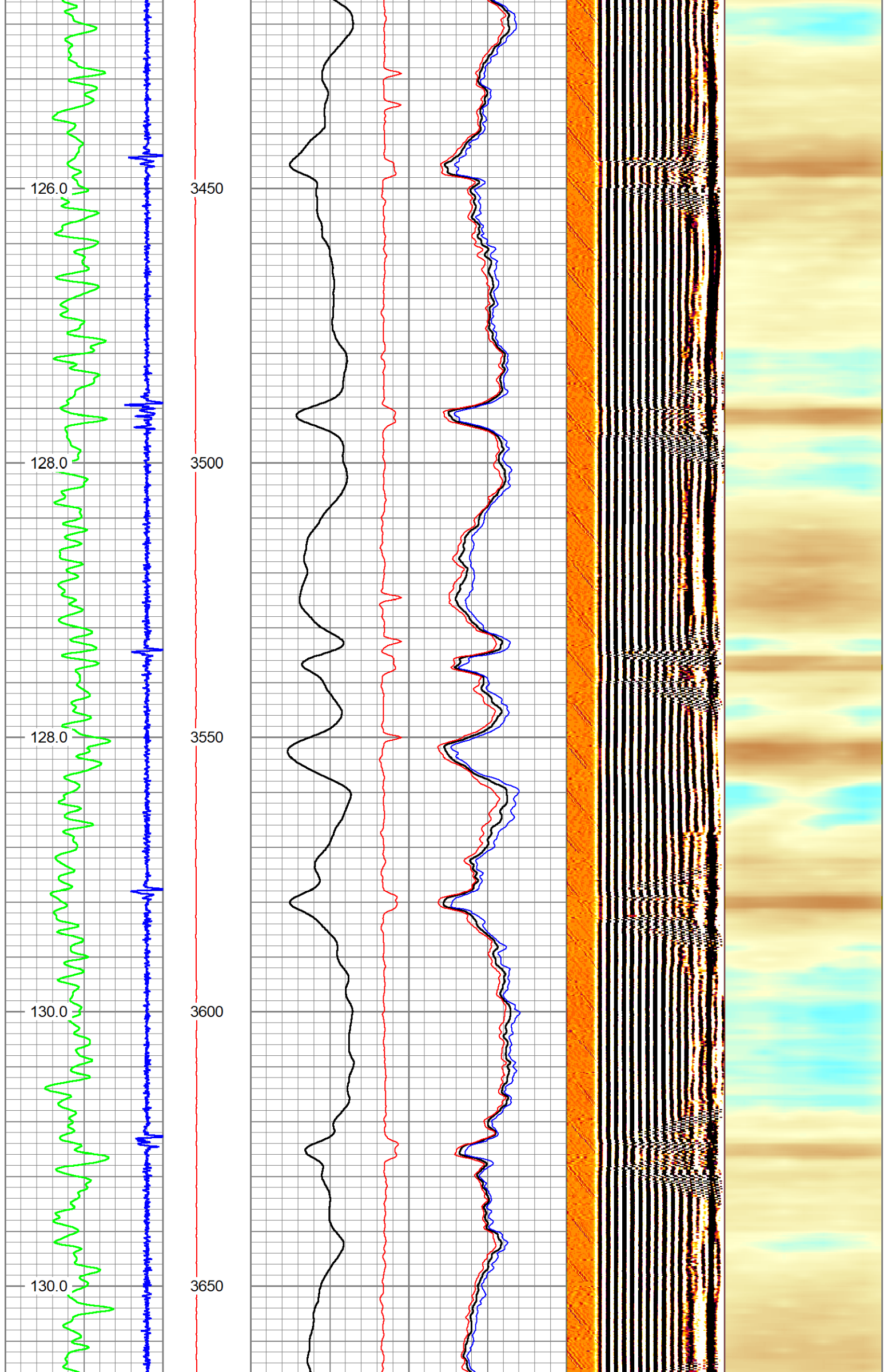




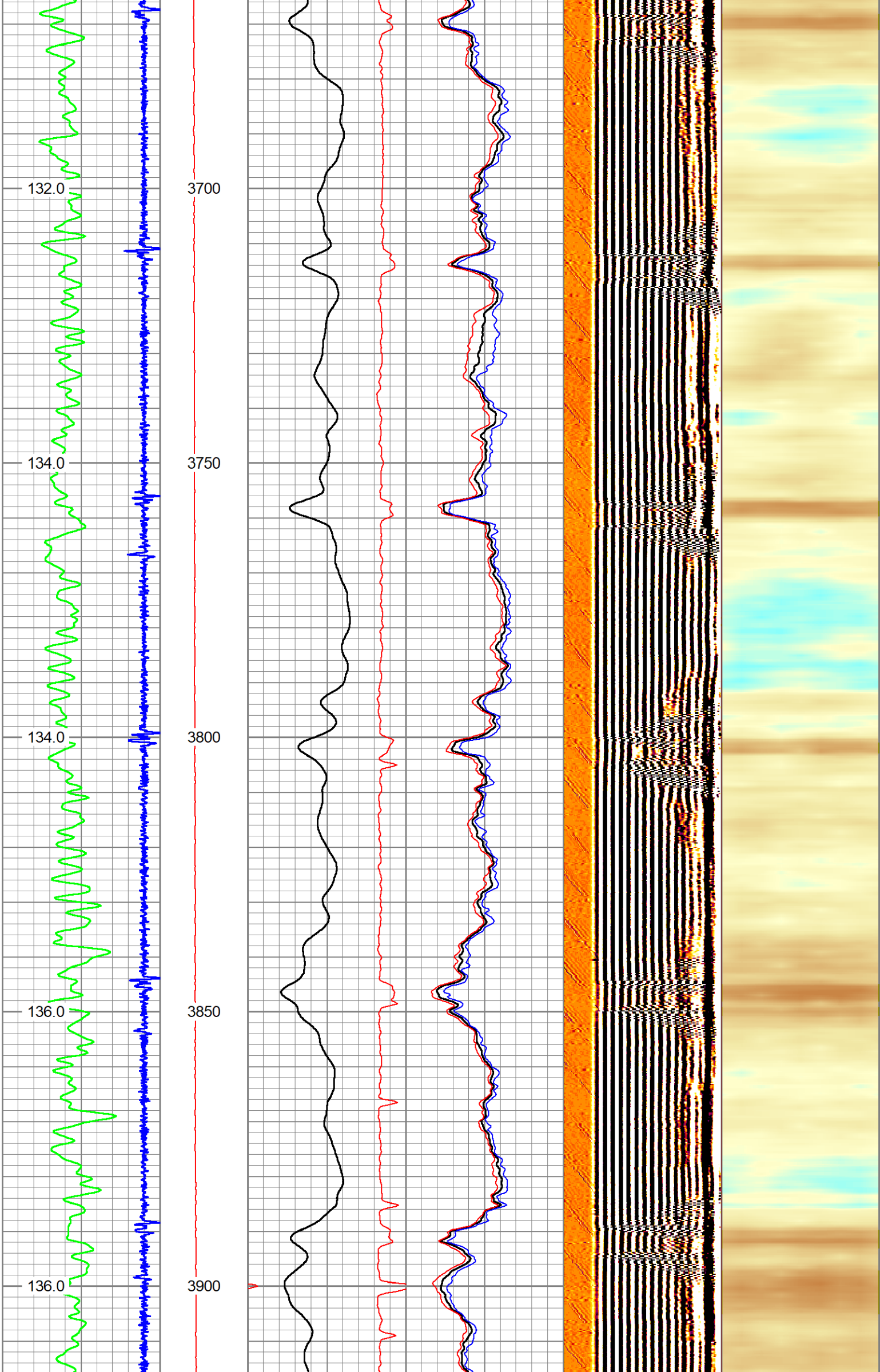


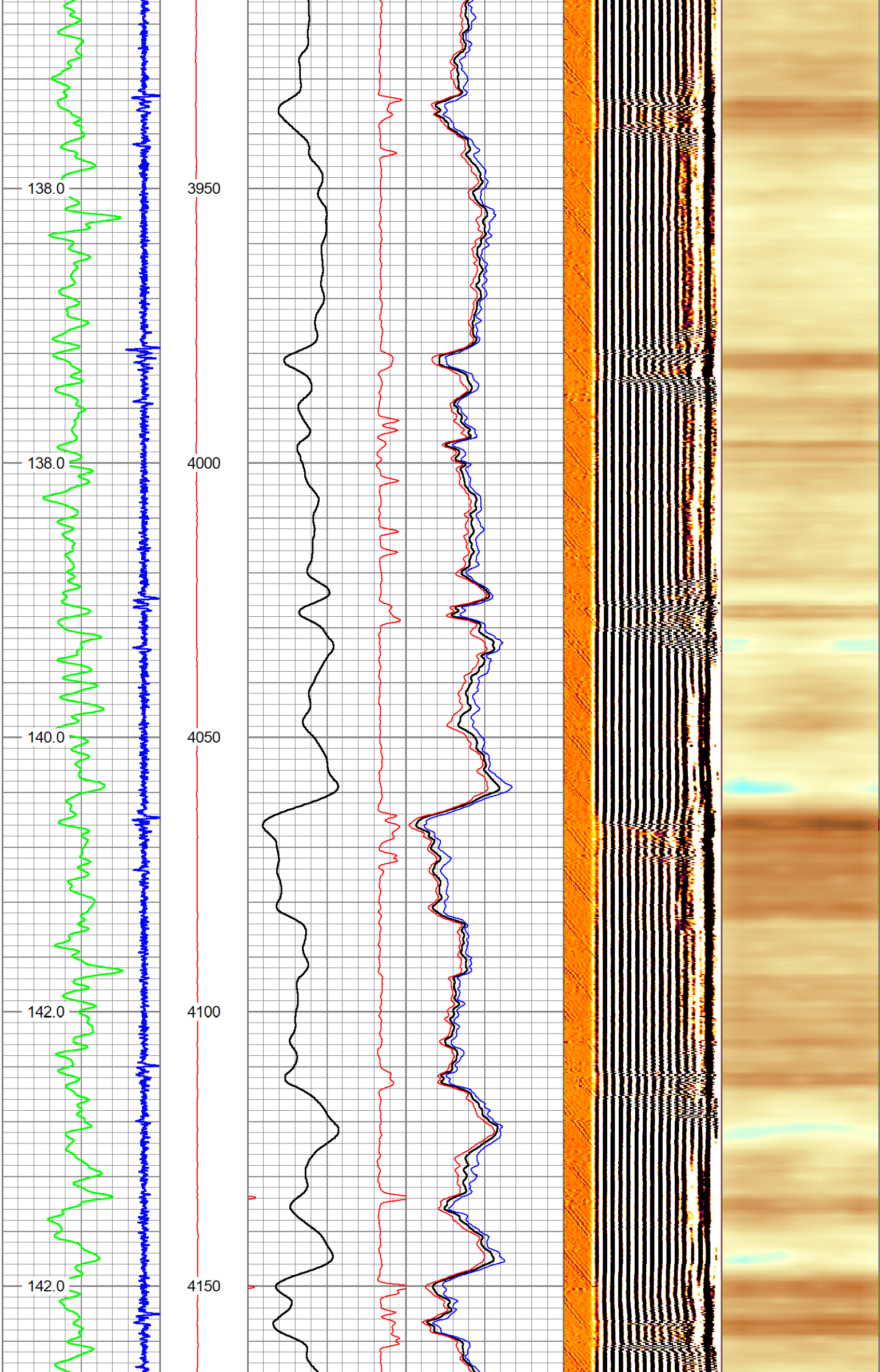




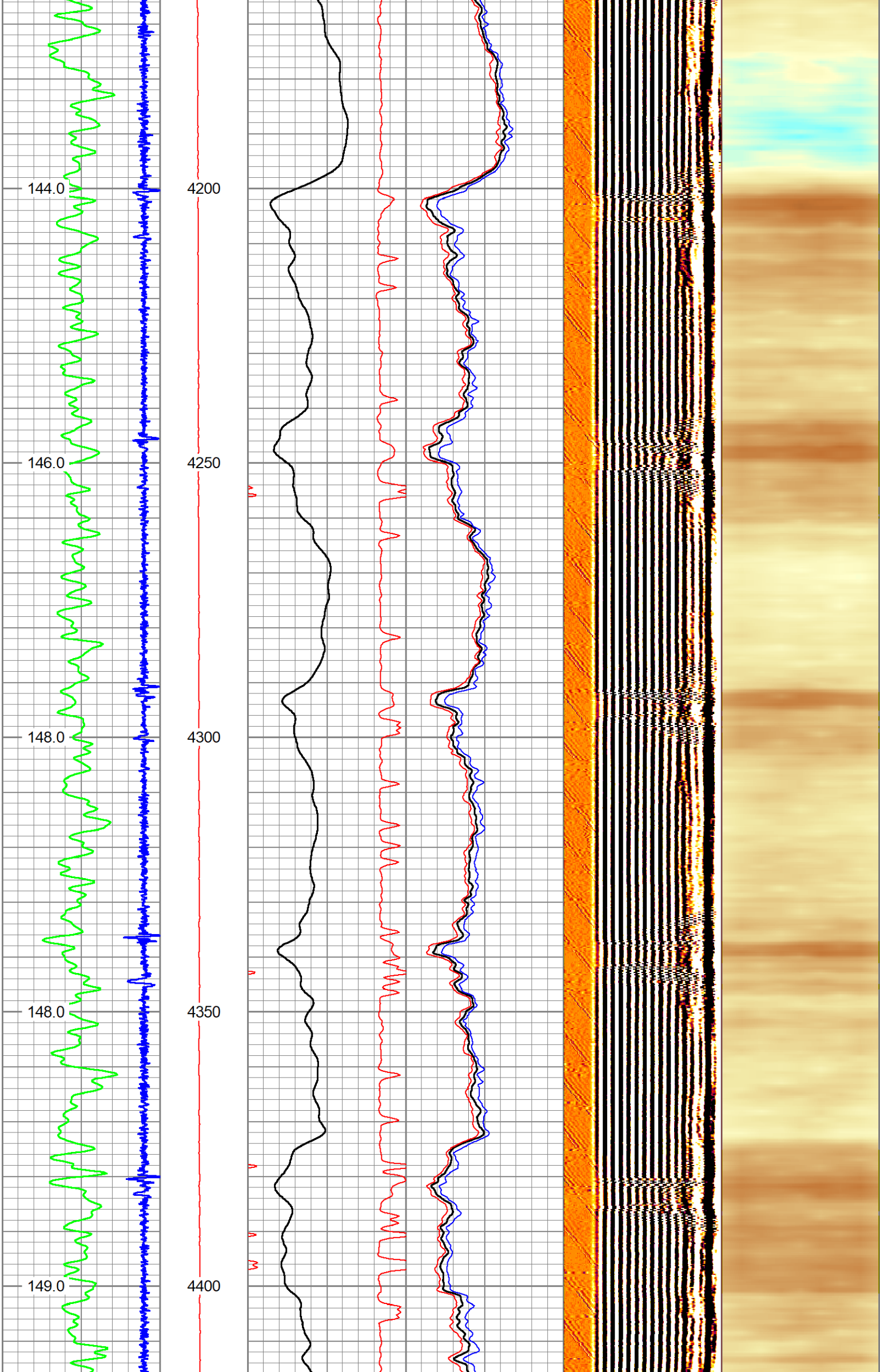


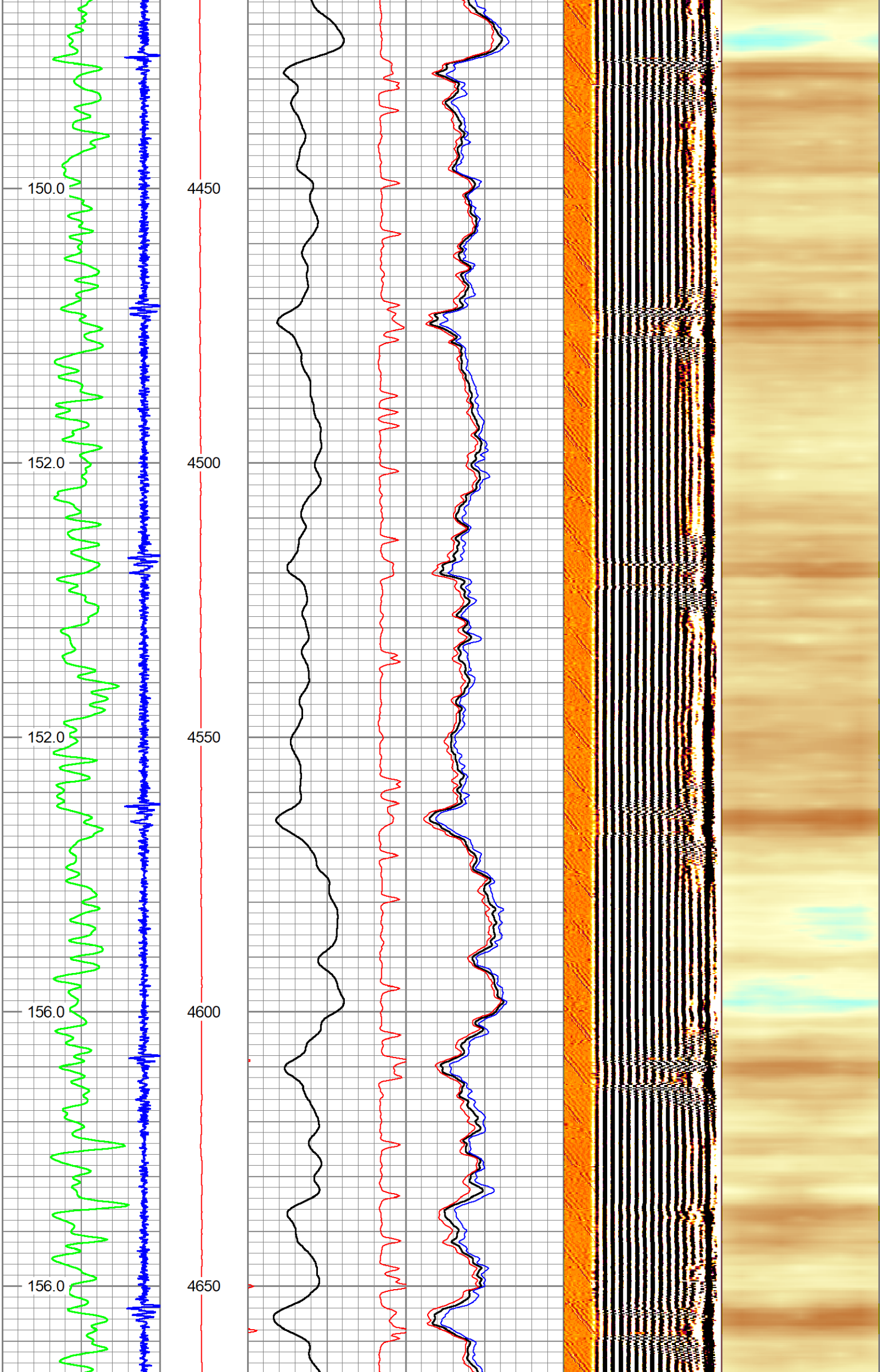




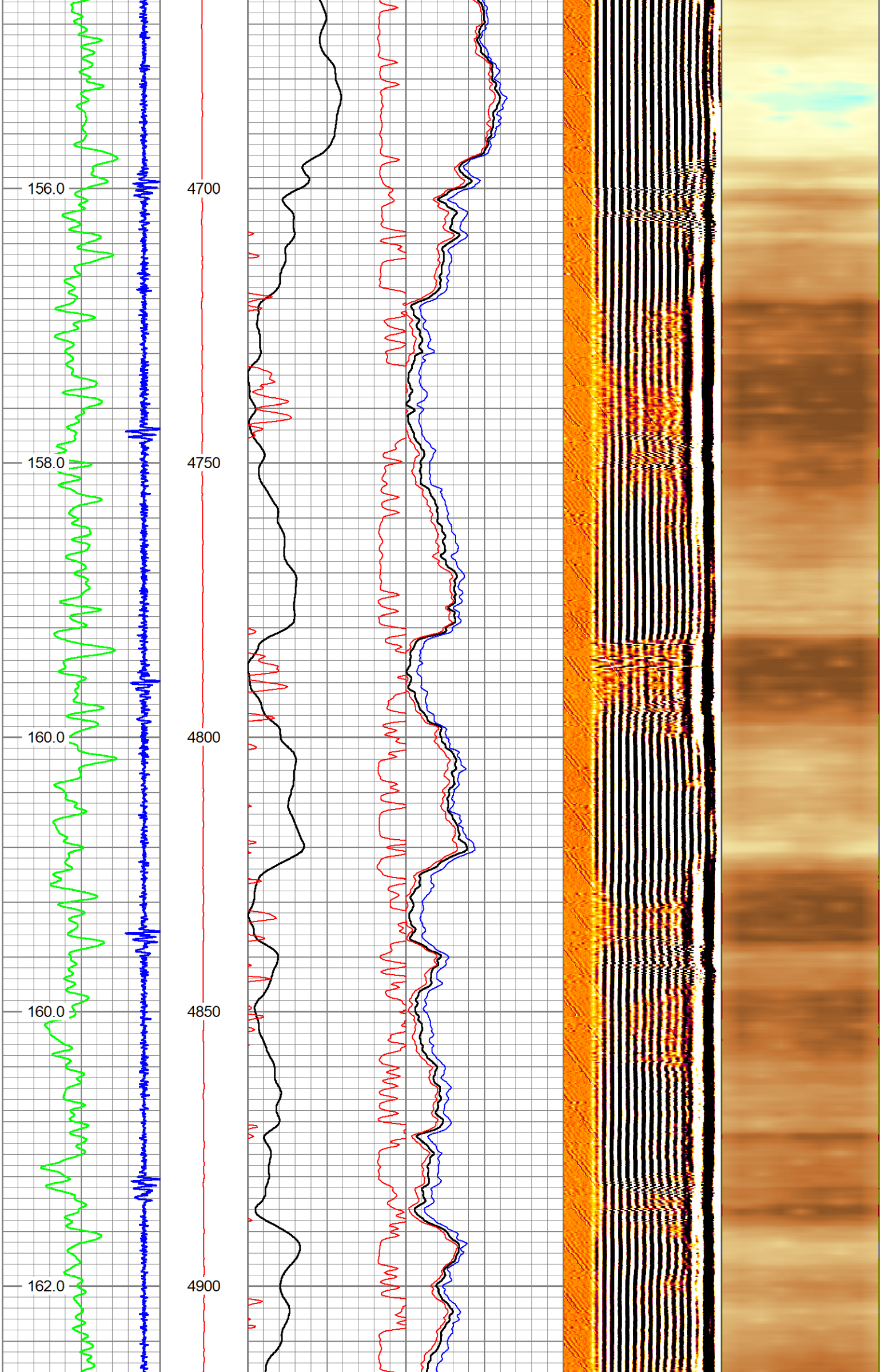


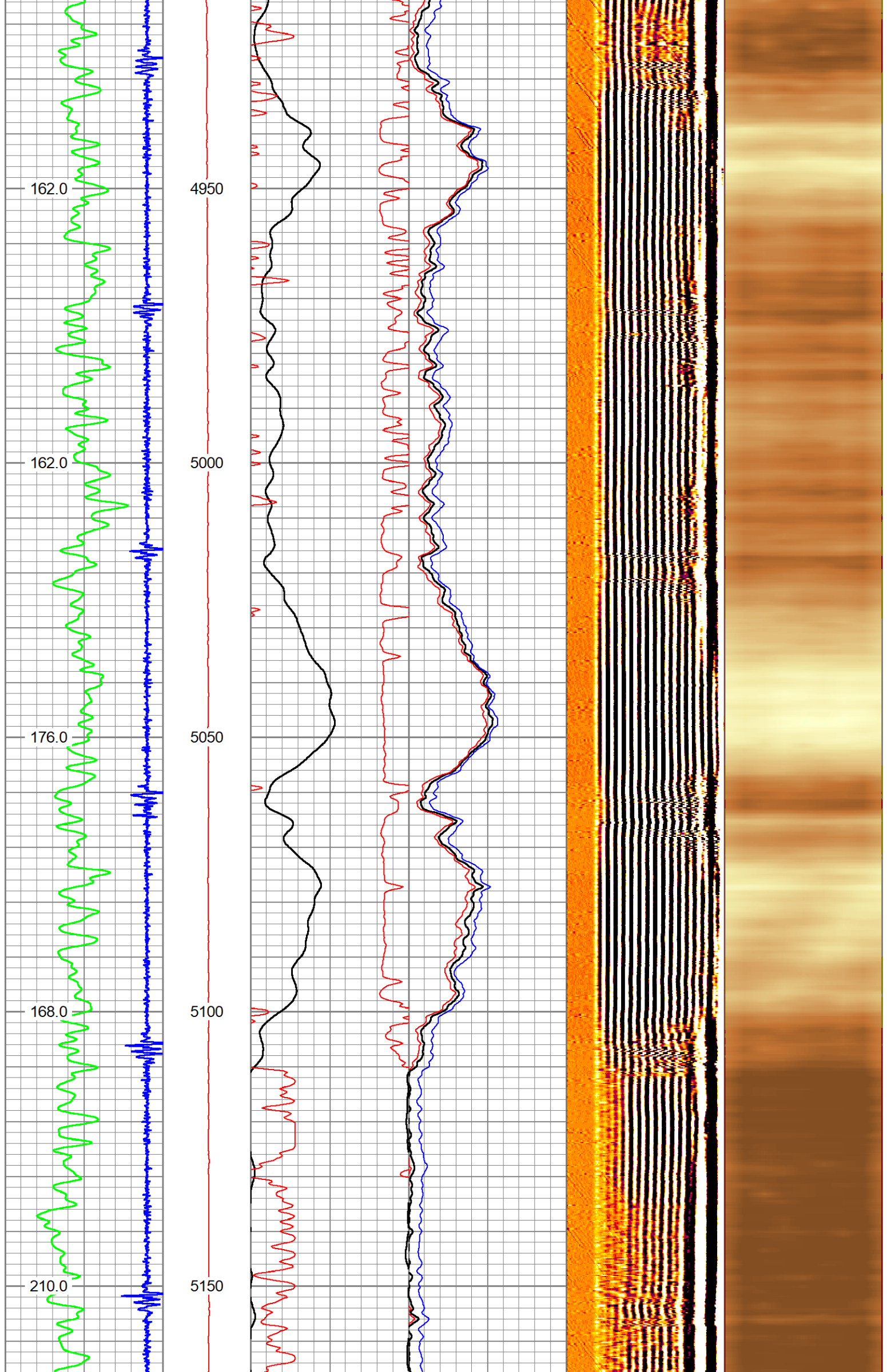


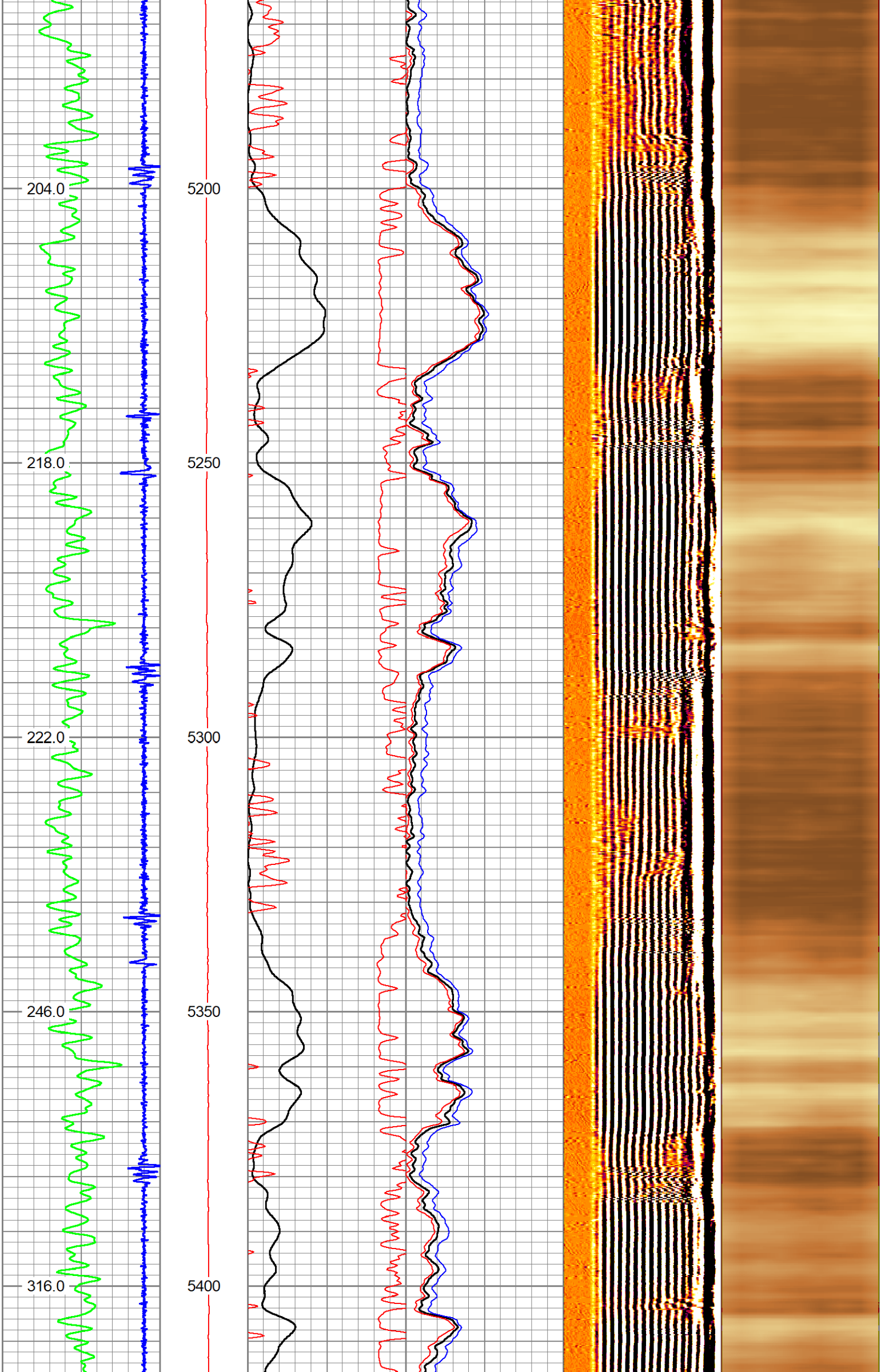




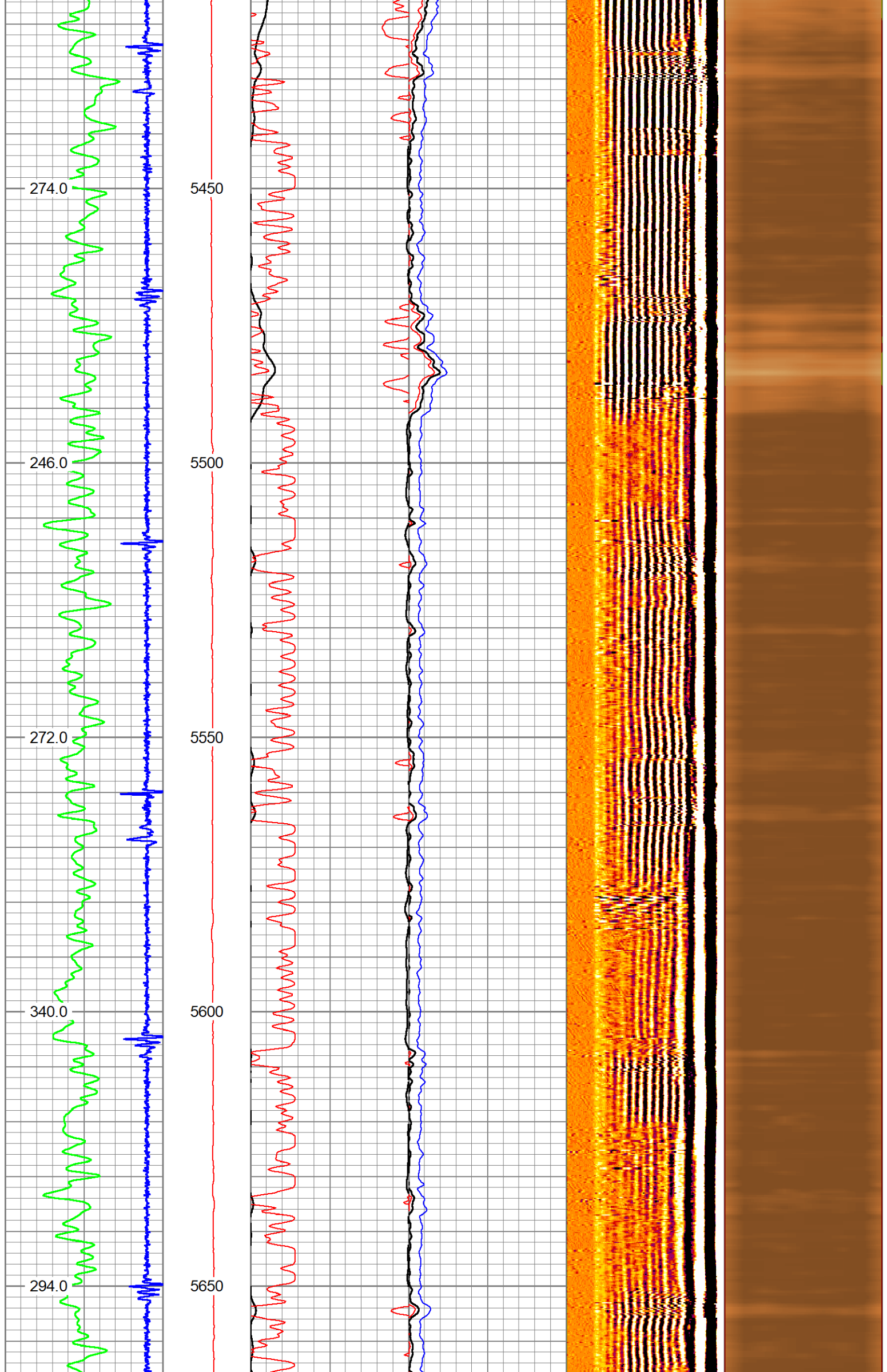


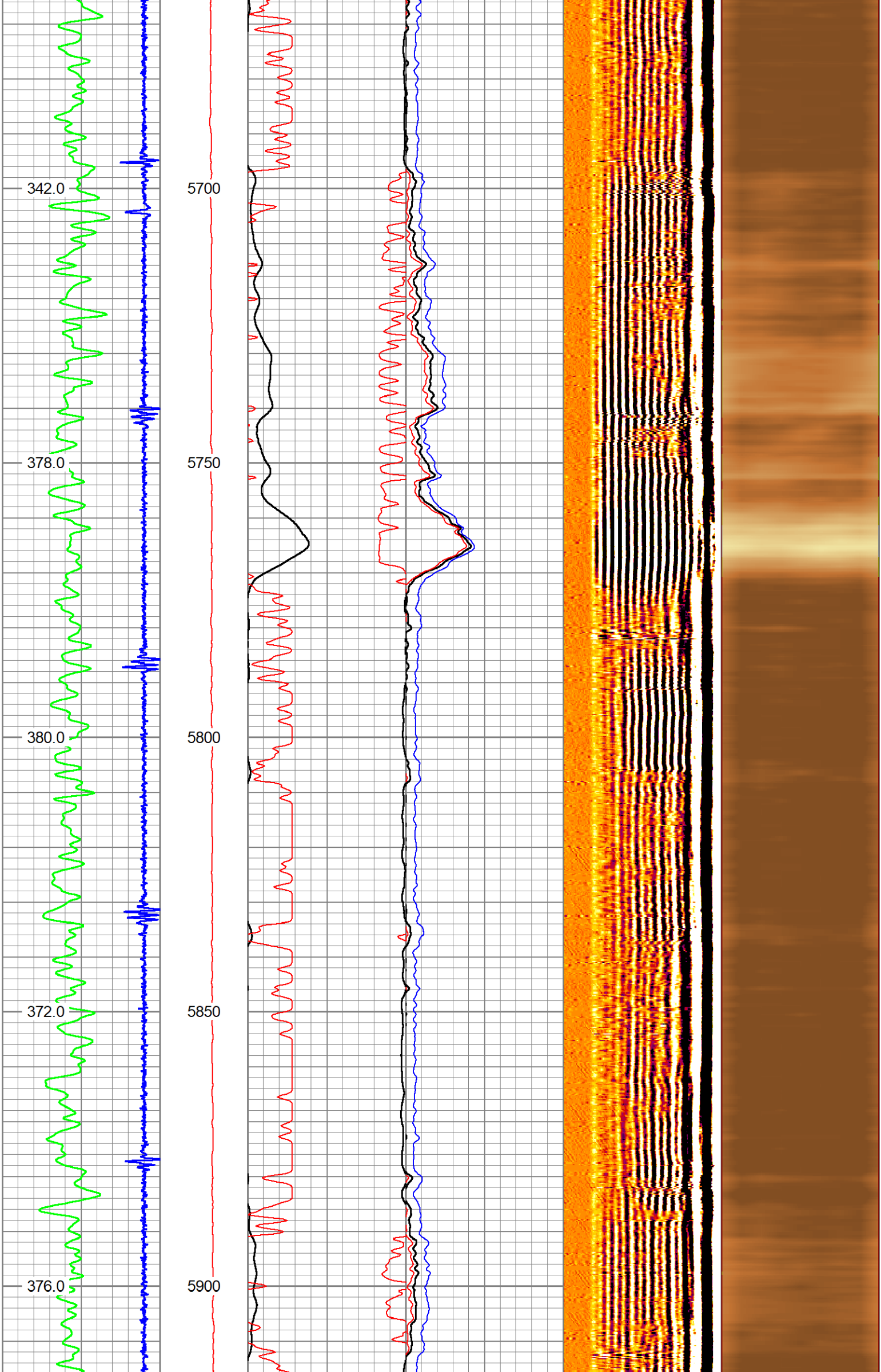


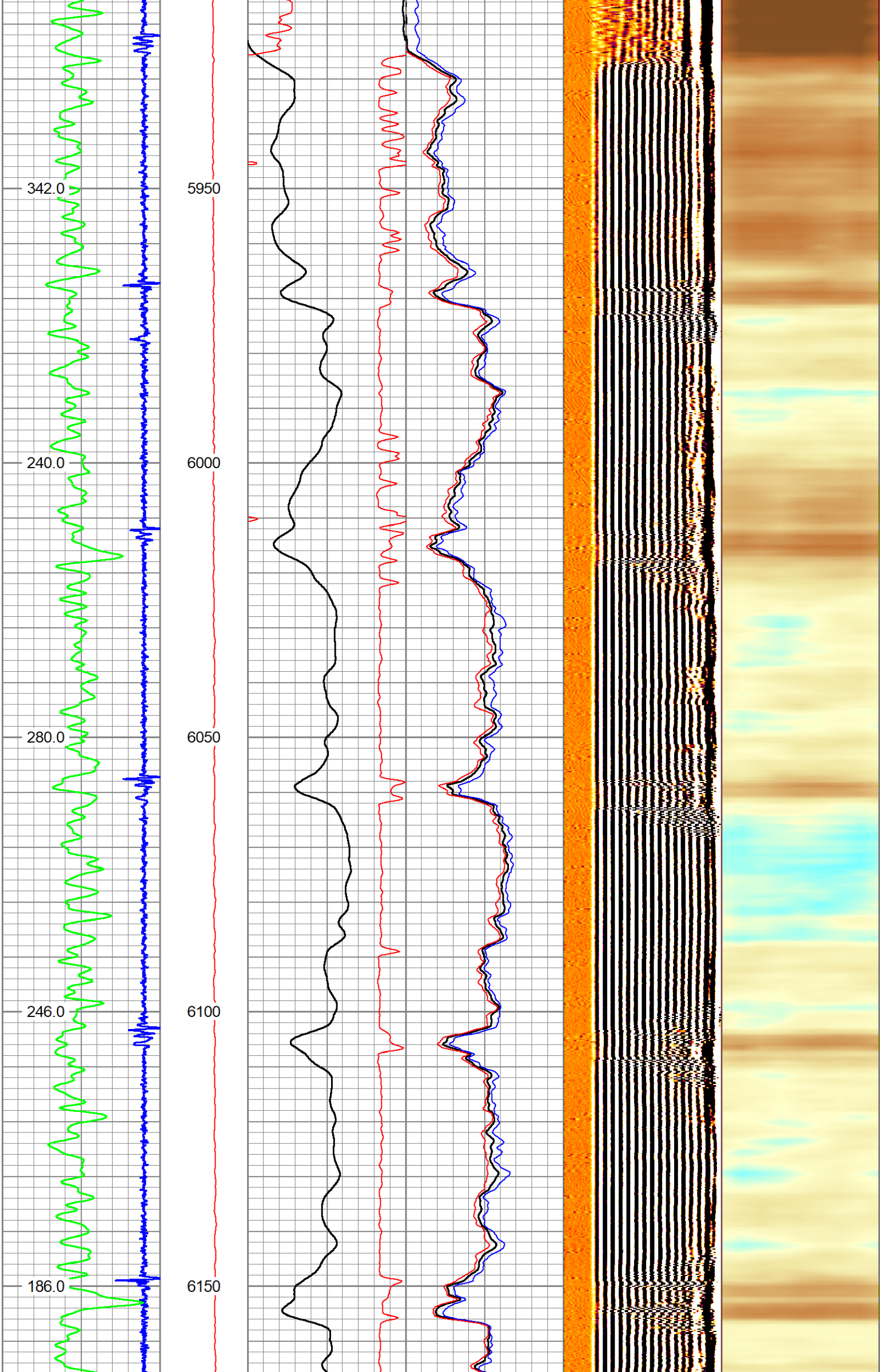




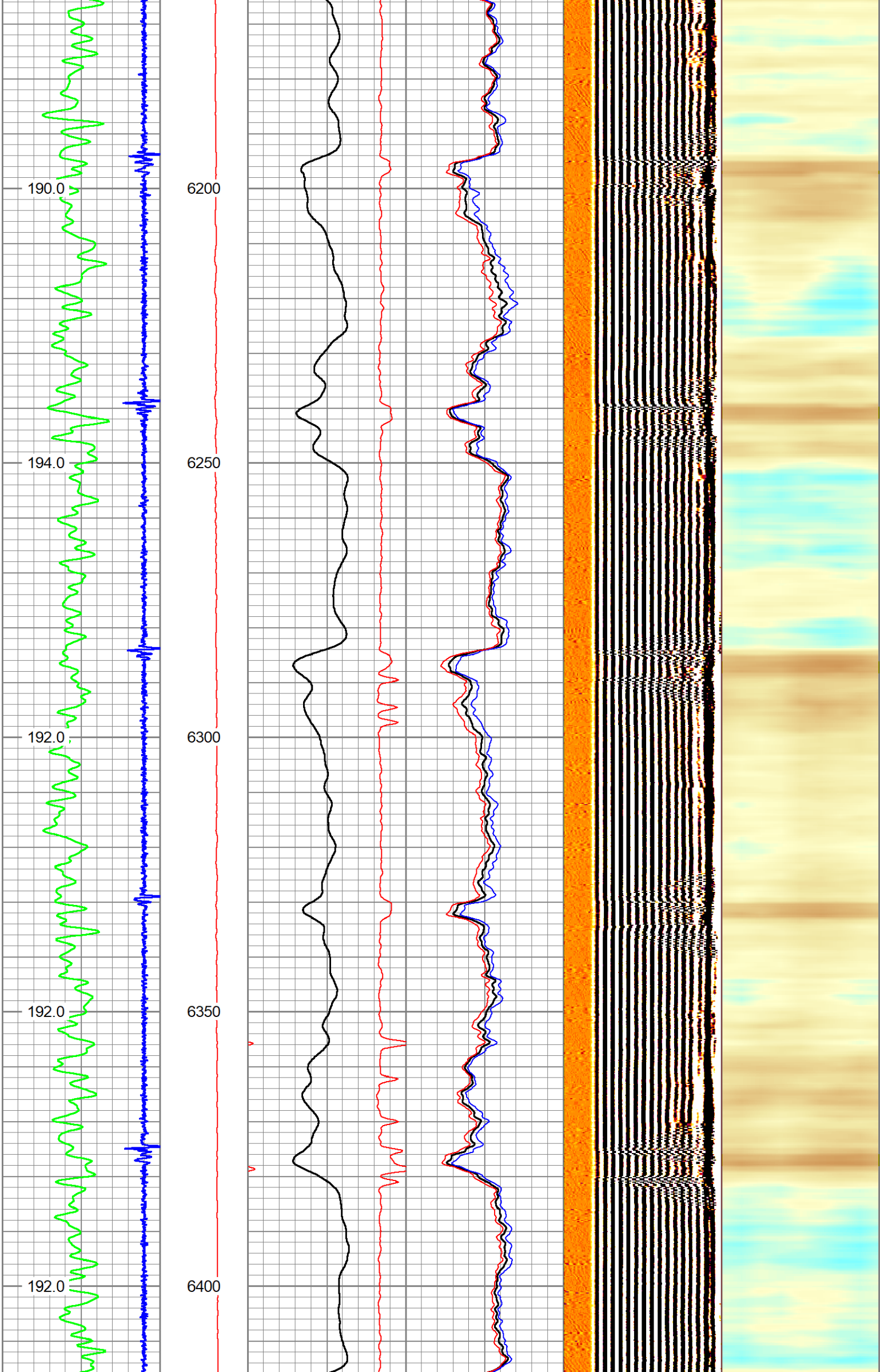


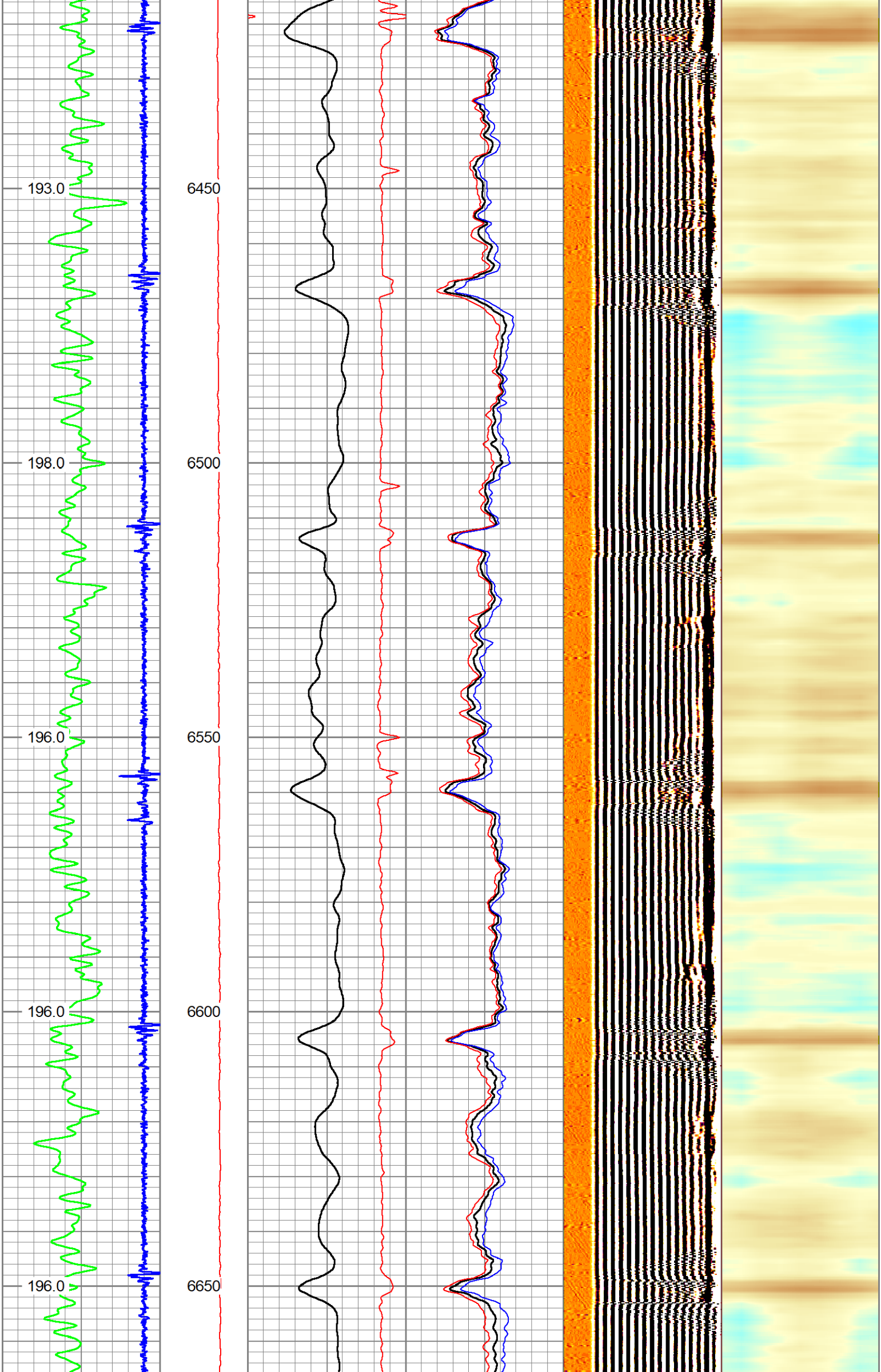


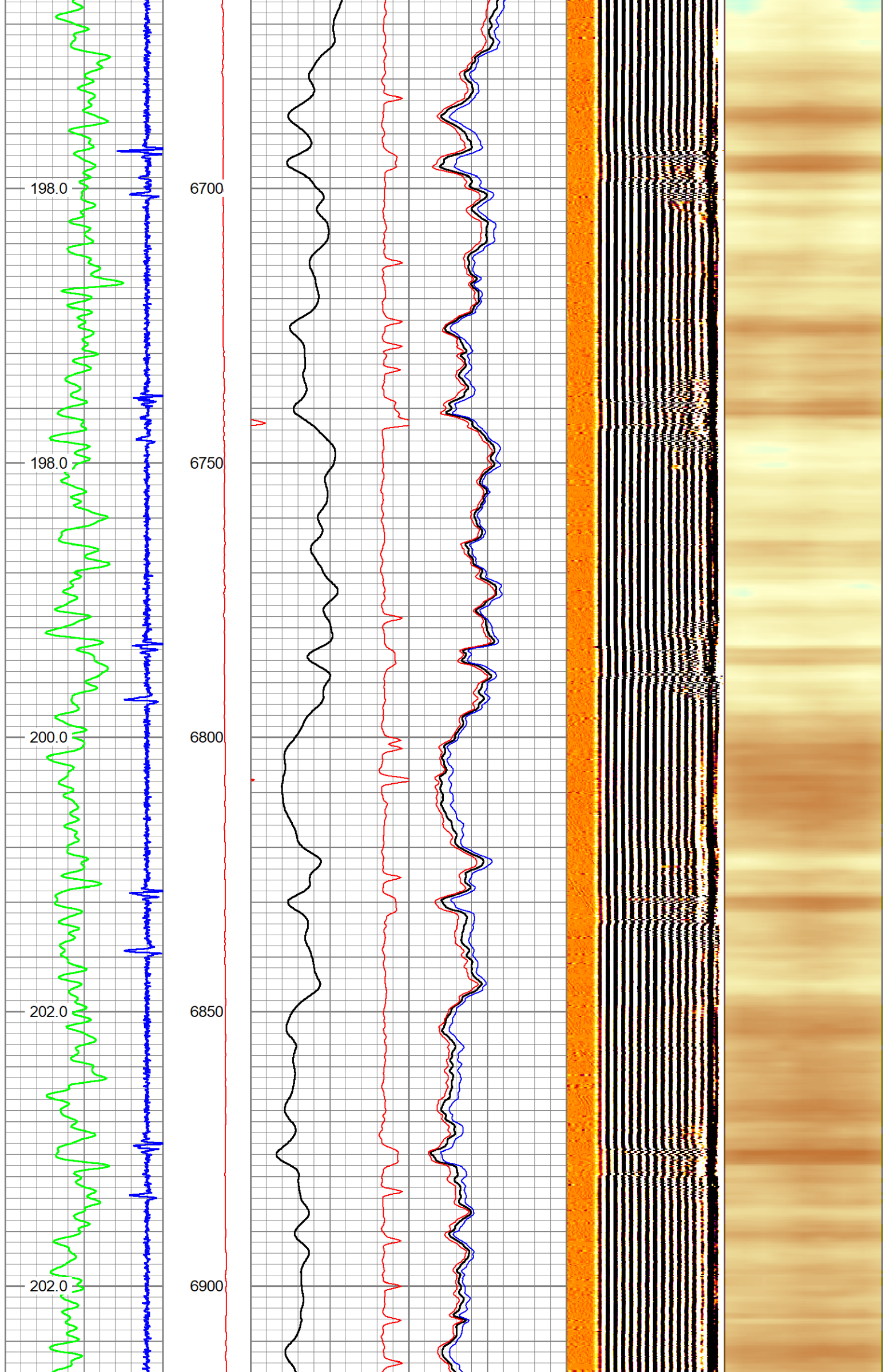




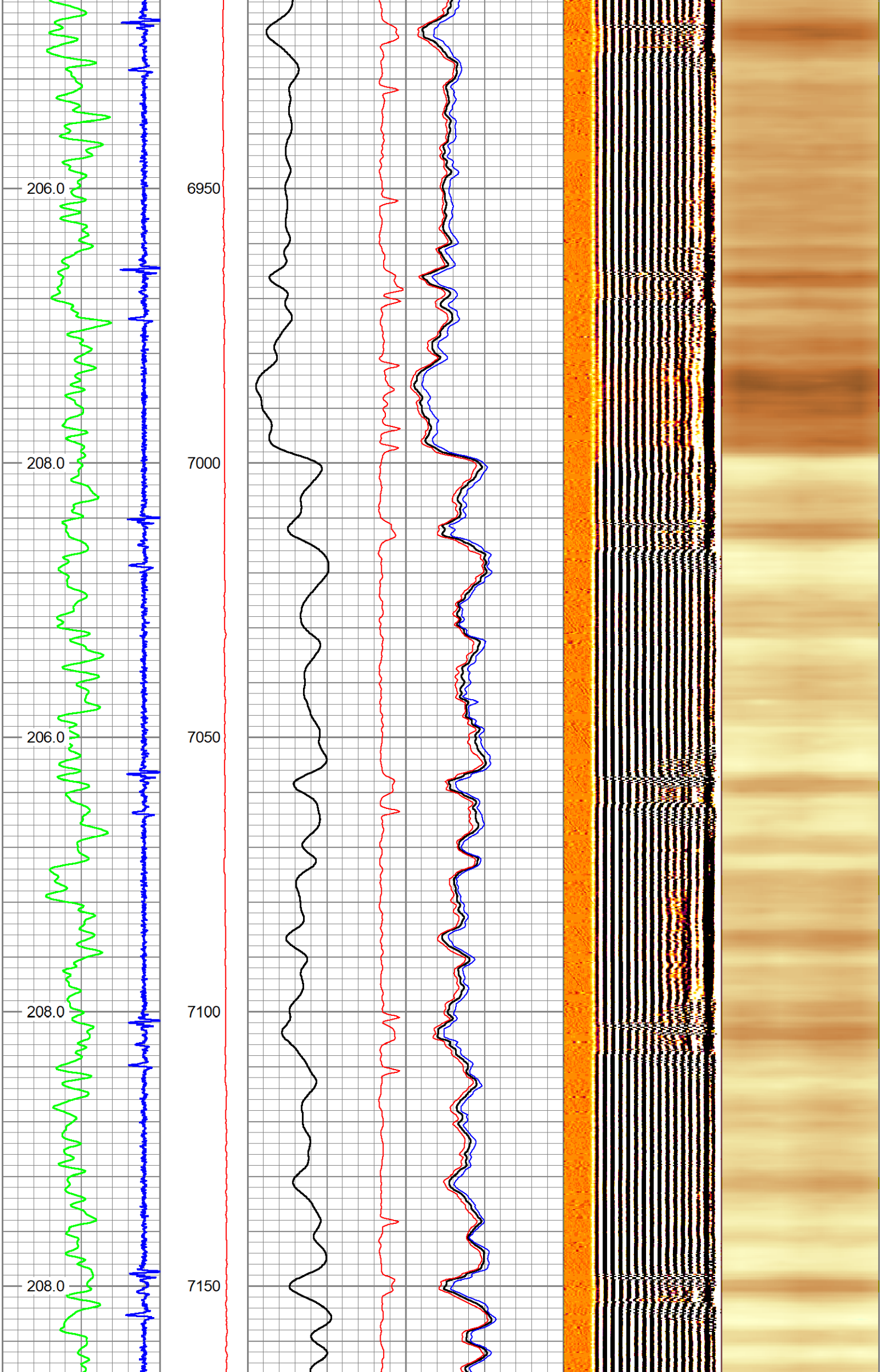


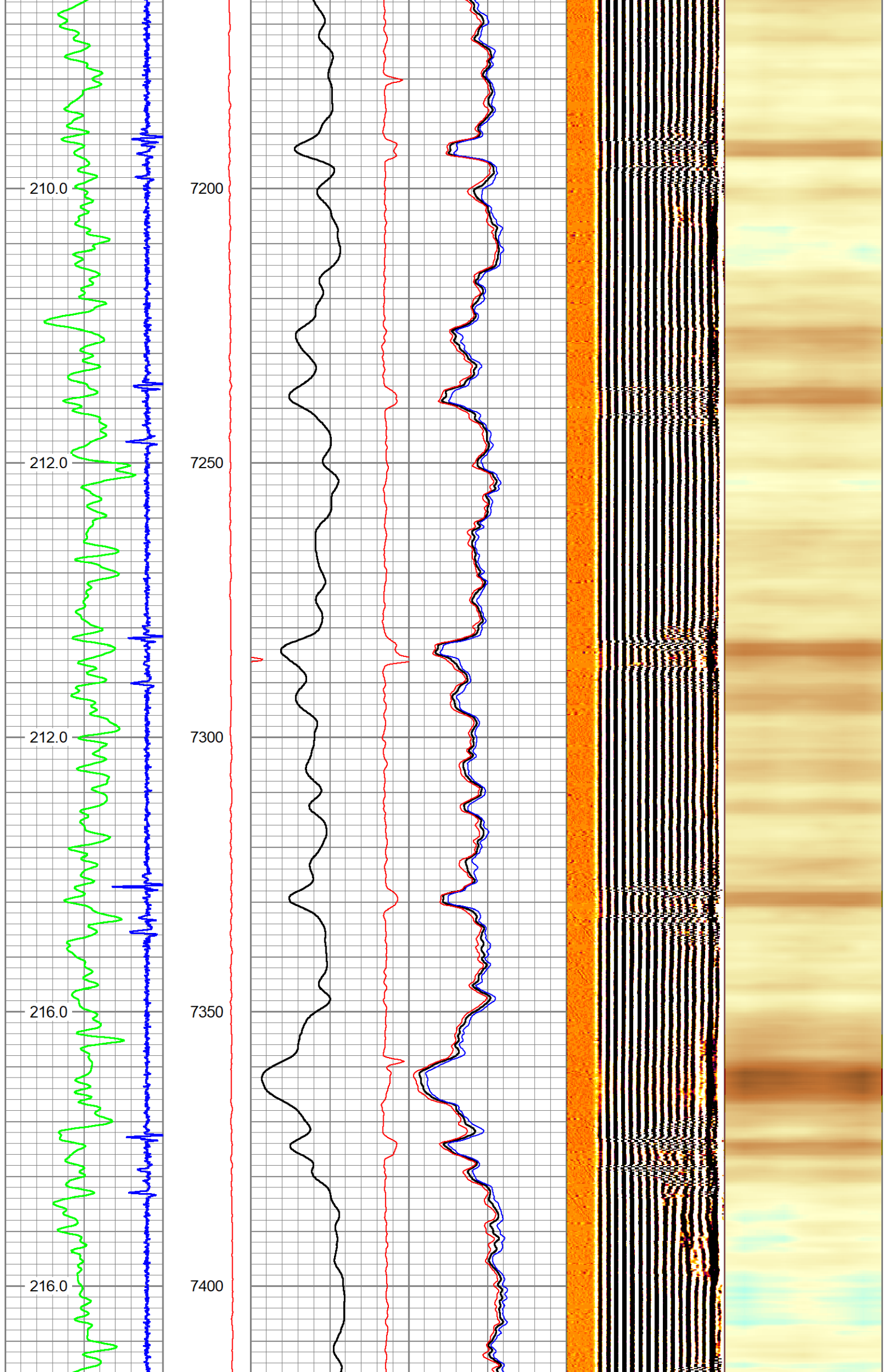


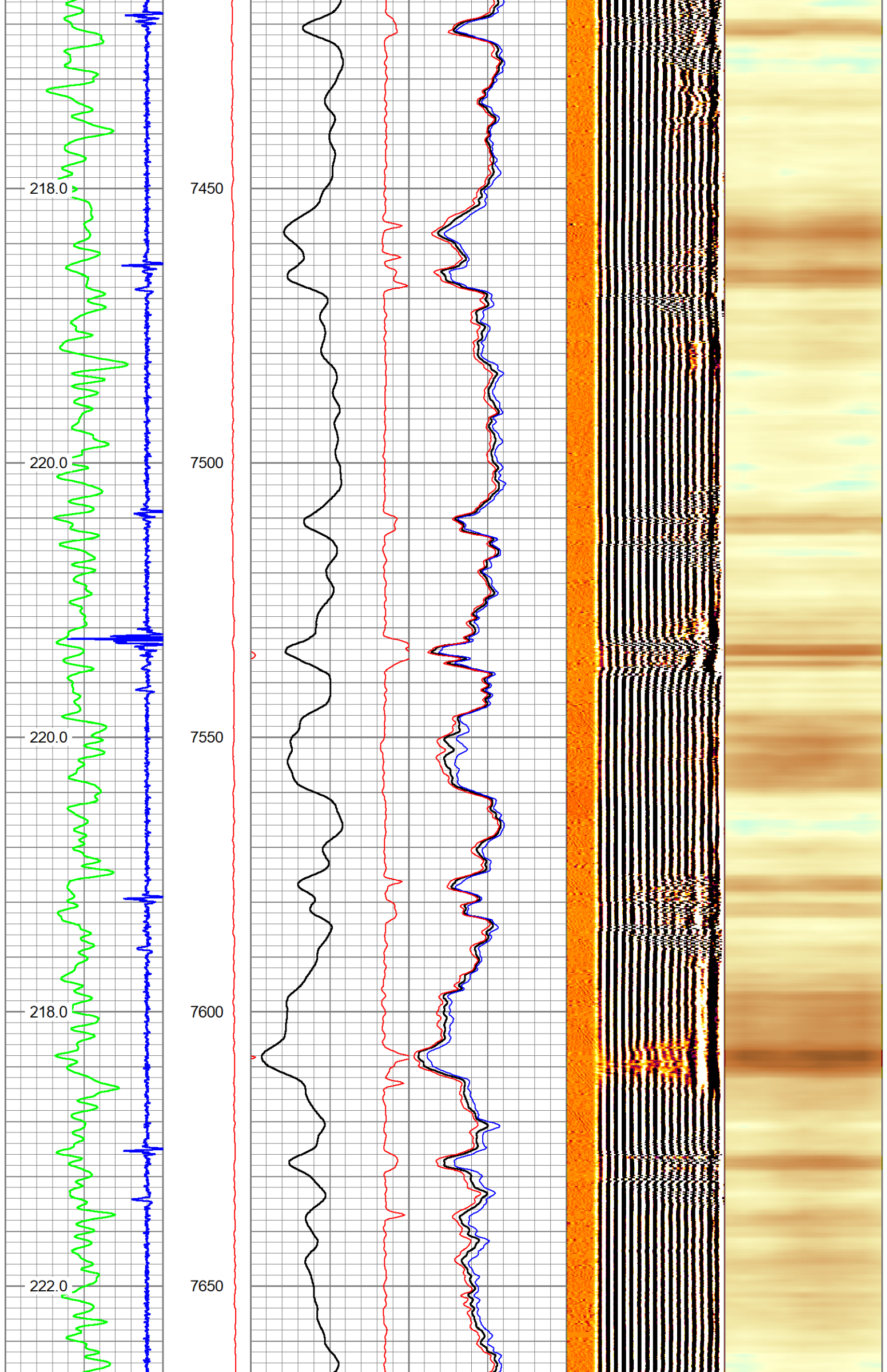




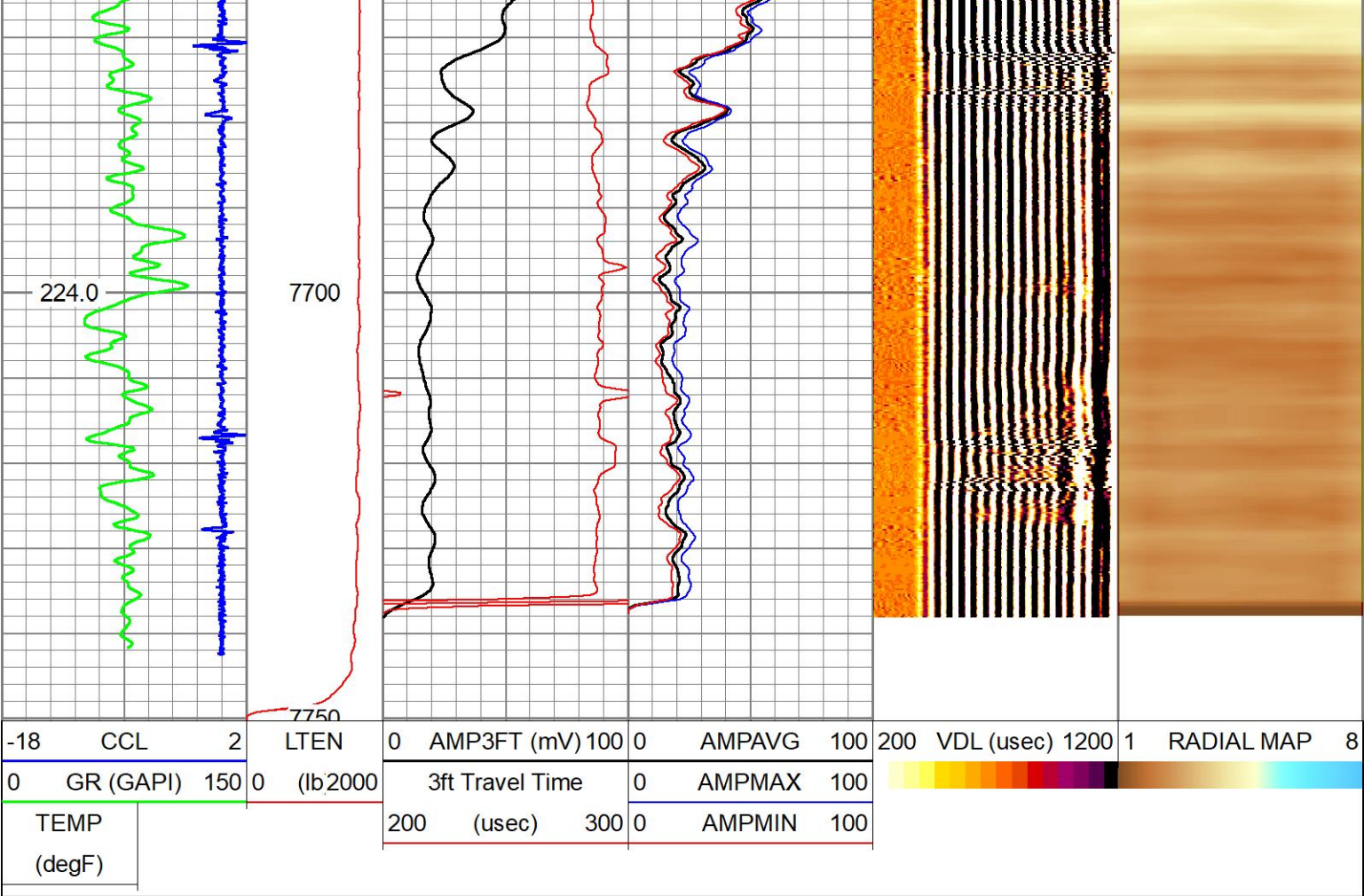






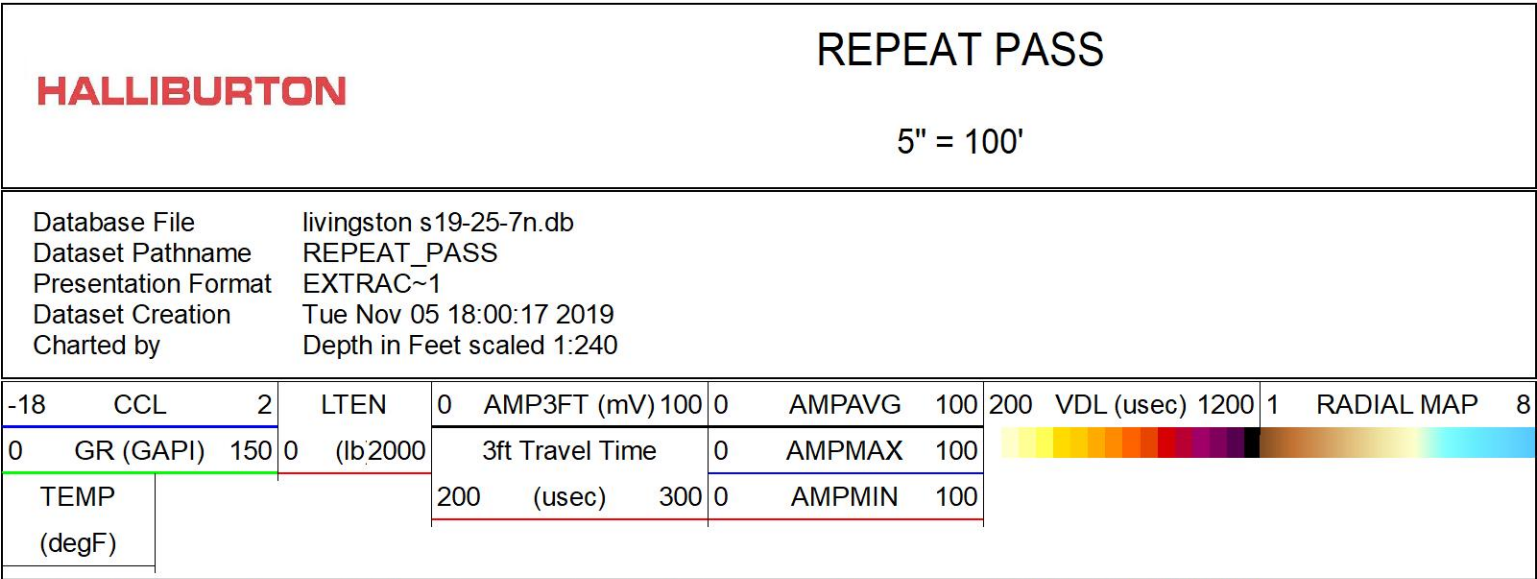




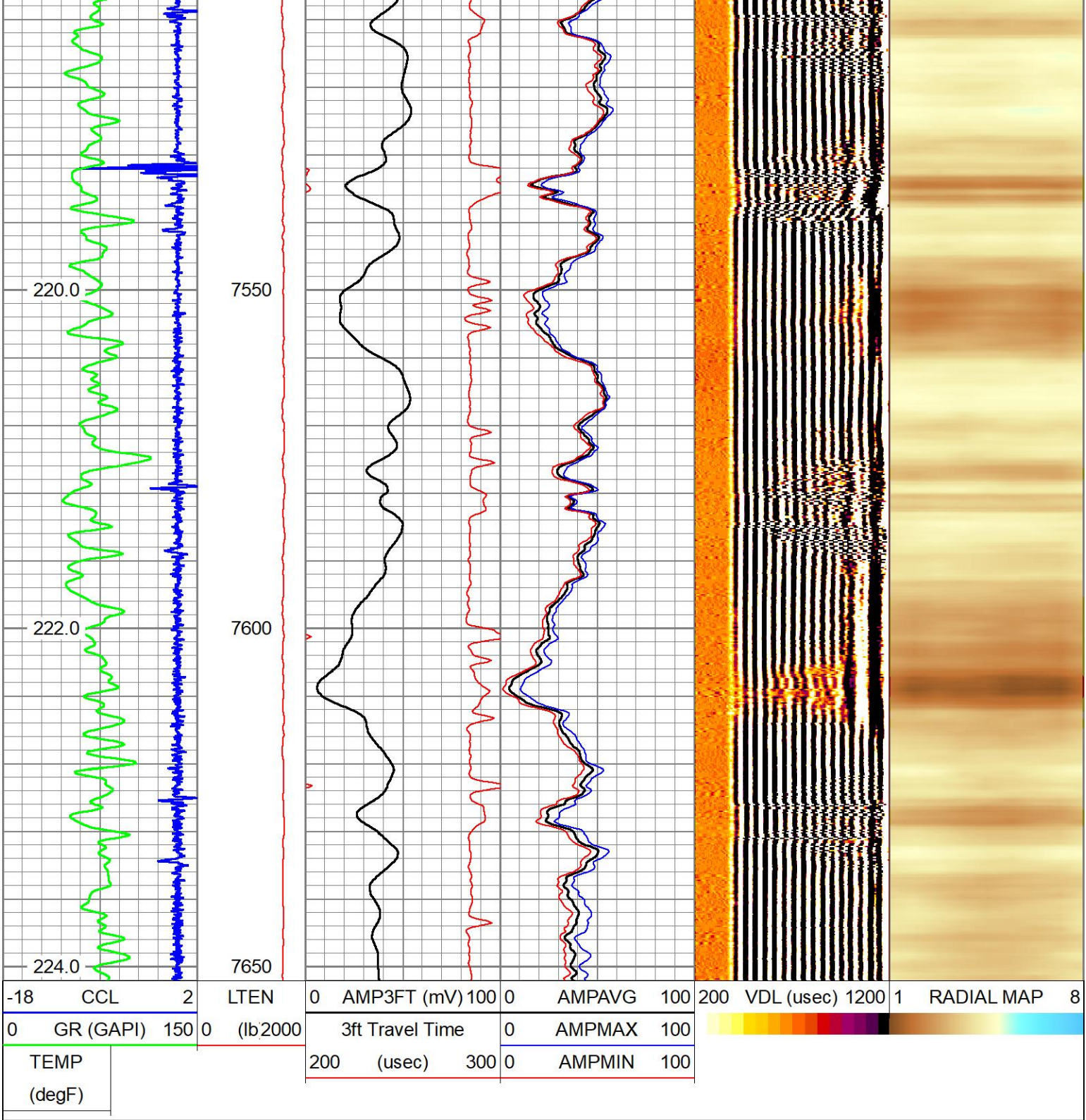


MAIN PASS

5" = 100'







REPEAT PASS

HALLIBURTON

5" = 100'

Log Variables

DatabaseC:\ProgramData\Warrior\Data\livingston s19-25-7n.db  
Dataset field/well/run1/MAIN\_PASS/\_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		usec	degF	ft		
0.8	8.4	No	214	40	7500		

Calibration Report

Database File livingston s19-25-7n.db  
Dataset Pathname REPEAT\_PASS

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			
Offset:		0.00			
Delta Spacing		2			

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

Segmented Cement Bond Log Calibration Report					
Serial Number:		11568129			
Tool Model:		Probe			
Calibration Casing Diameter:		5.500		in	
Calibration Depth:		642.102		ft	

Master Calibration, performed Tue Nov 05 15:36:02 2019:						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.000	0.786	0.000	72.000	91.627	0.000
CAL	0.000	2.251				
5'	0.000	0.661	0.000	72.000	108.858	0.000
SUM						
S1	0.000	0.995	0.000	72.000	72.386	0.000
S2	0.000	0.816	0.000	72.000	88.248	0.000
S3	0.000	0.816	0.000	72.000	88.207	0.000
S4	0.000	0.734	0.000	72.000	98.121	0.000
S5	0.000	0.689	0.000	72.000	104.466	0.000
S6	0.000	0.688	0.000	72.000	104.623	0.000
S7	0.000	0.733	0.000	72.000	98.281	0.000
S8	0.000	0.789	0.000	72.000	91.200	0.000

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



		Raw (v)		Calibrated (v)		Results	
		Zero	Cal	Zero	Cal	Gain	Offset
CAL		0.000	0.000	0.000	2.251	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	
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	

Company	EXTRACTION OIL & GAS INC		
Well	LIVINGSTON S19-25-7N		
Field	WATTENBERG		
County	BROOMFIELD	State	CO
HALLIBURTON	RADIAL CEMENT BOND LOG		