

RADIAL CEMENT BOND LOG

<<< Fold Here >>>	<p>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.</p>
	<p>Comments</p>
	<p>RCBL - GR - CCL RAN IN COMBINATION.</p>
	<p>LOG RECORDED WITH 0 PSI WELLHEAD PRESSURE.</p>
	<p>LOG CORRELATED TO MARKER JOINT AT 7746.</p>
	<p>BOND INDEX CALCULATED FOR 3000 PSI COMPRESSIVE STRENGTH CEMENT.</p>
	<p>***THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES.***</p>
	<p>YOUR CREW TODAY WAS:</p>
	<p>C. KLEINSASSER & E. GOOD</p>

Service Ticket No.	906092286	API No.	05142074900	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			

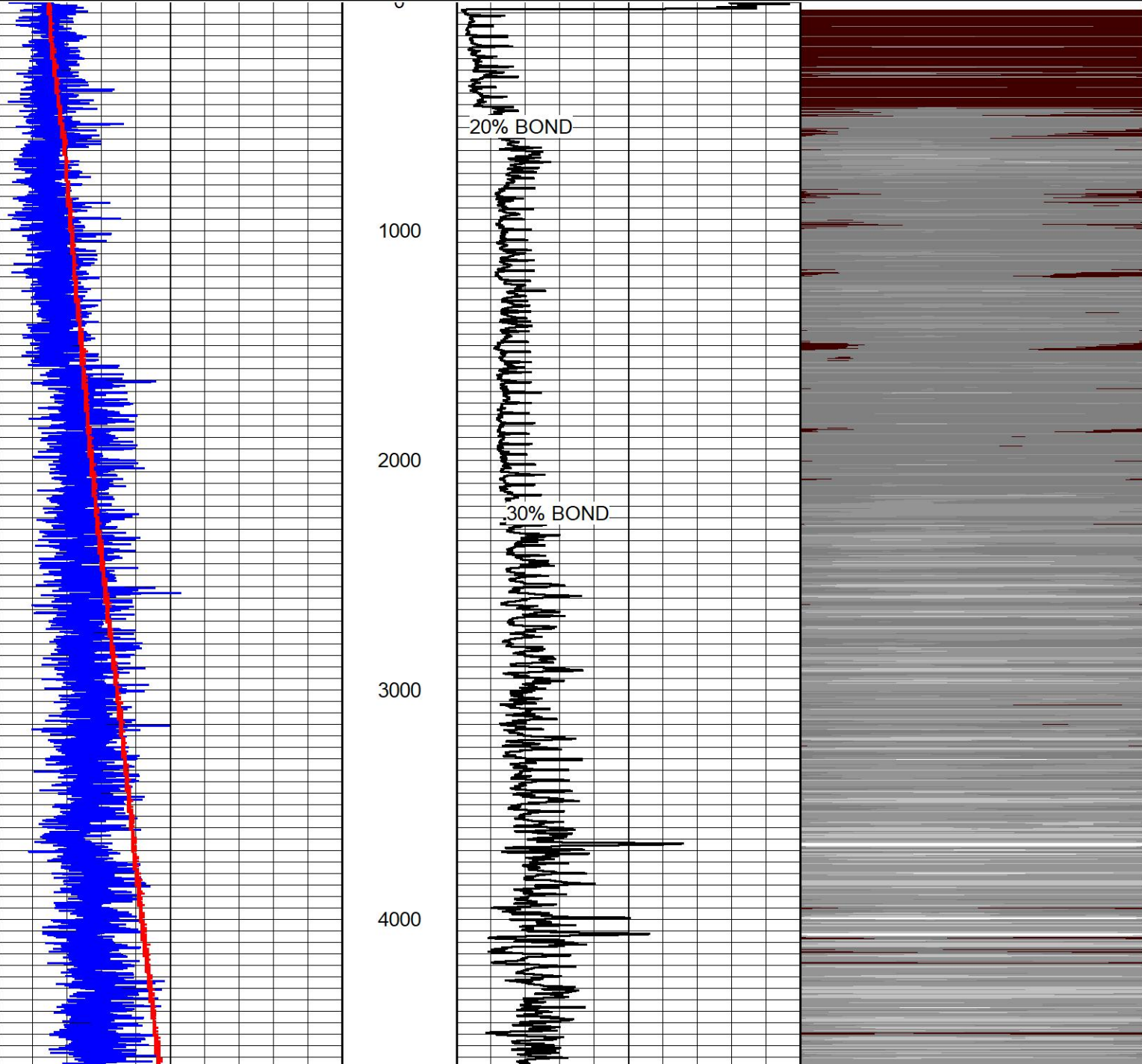
HALLIBURTON

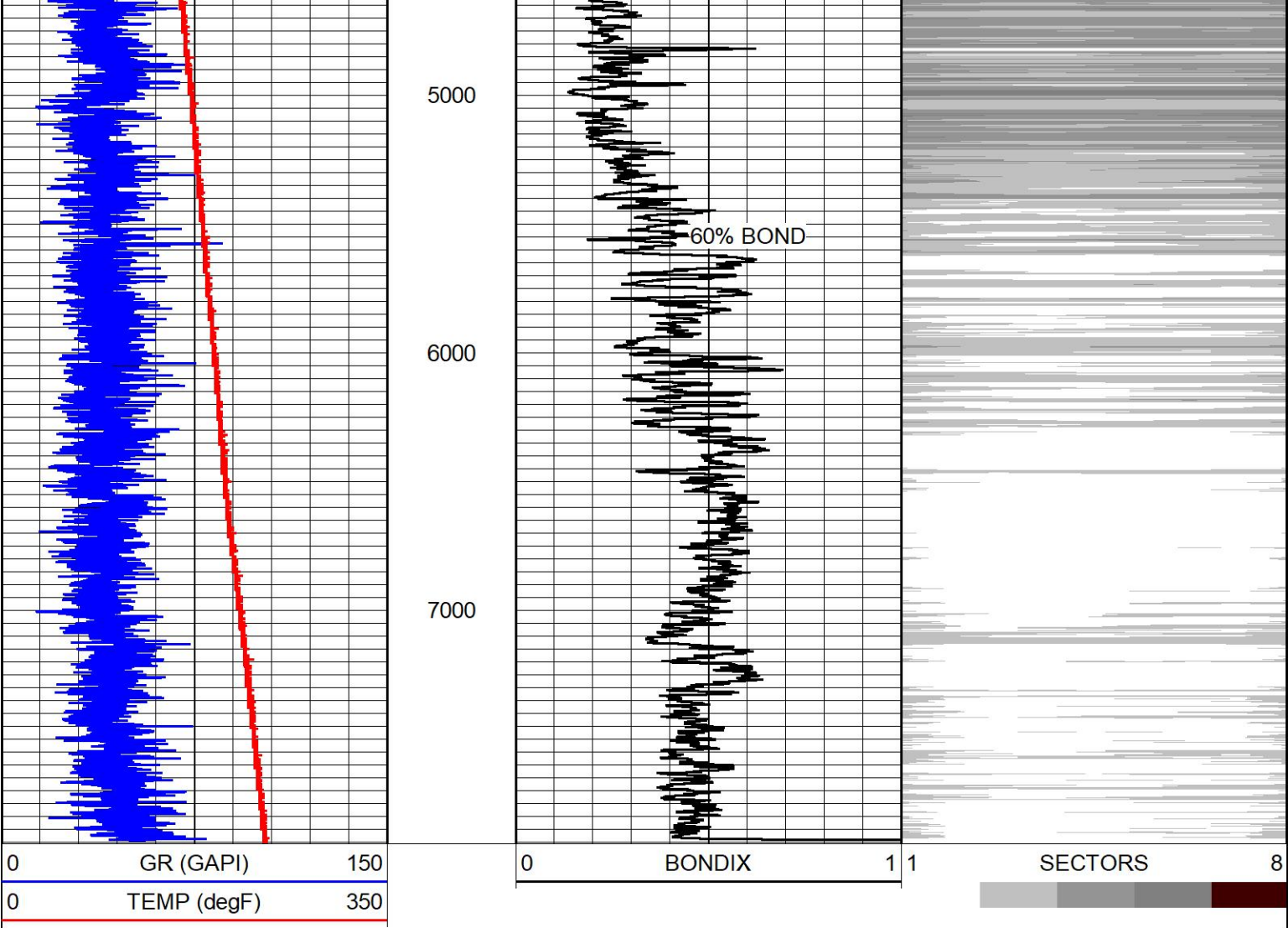
BOND INDEX

1:7500

Database File livingston s19-25-11c.db
Dataset Pathname MAIN_PASS.1
Presentation Format EXTRAC~2
Dataset Creation Wed Nov 06 12:47:36 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

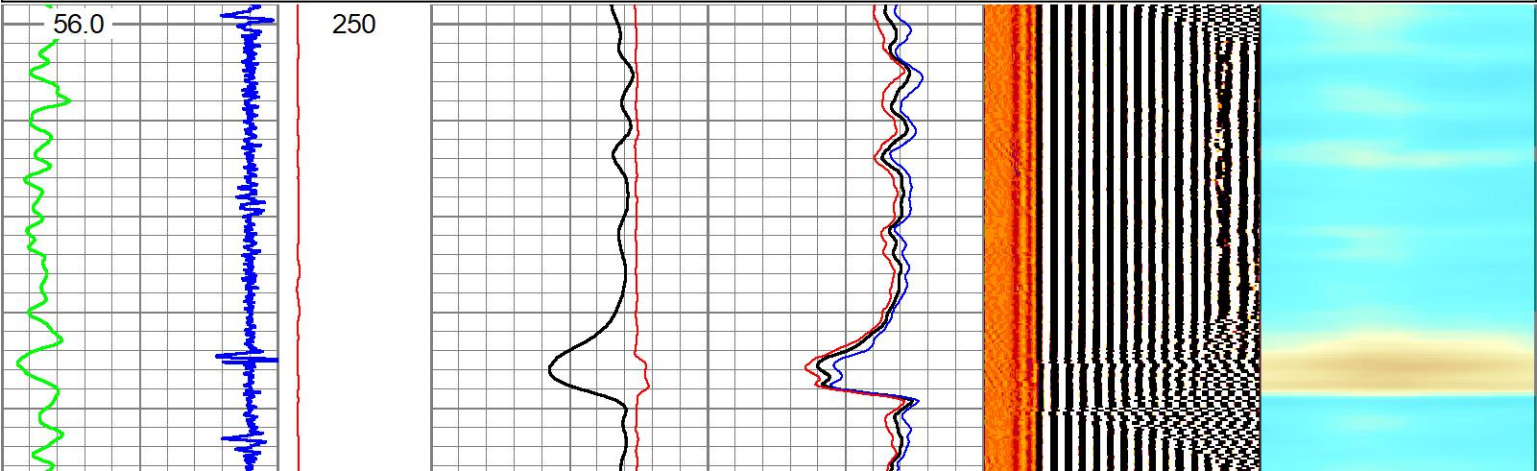
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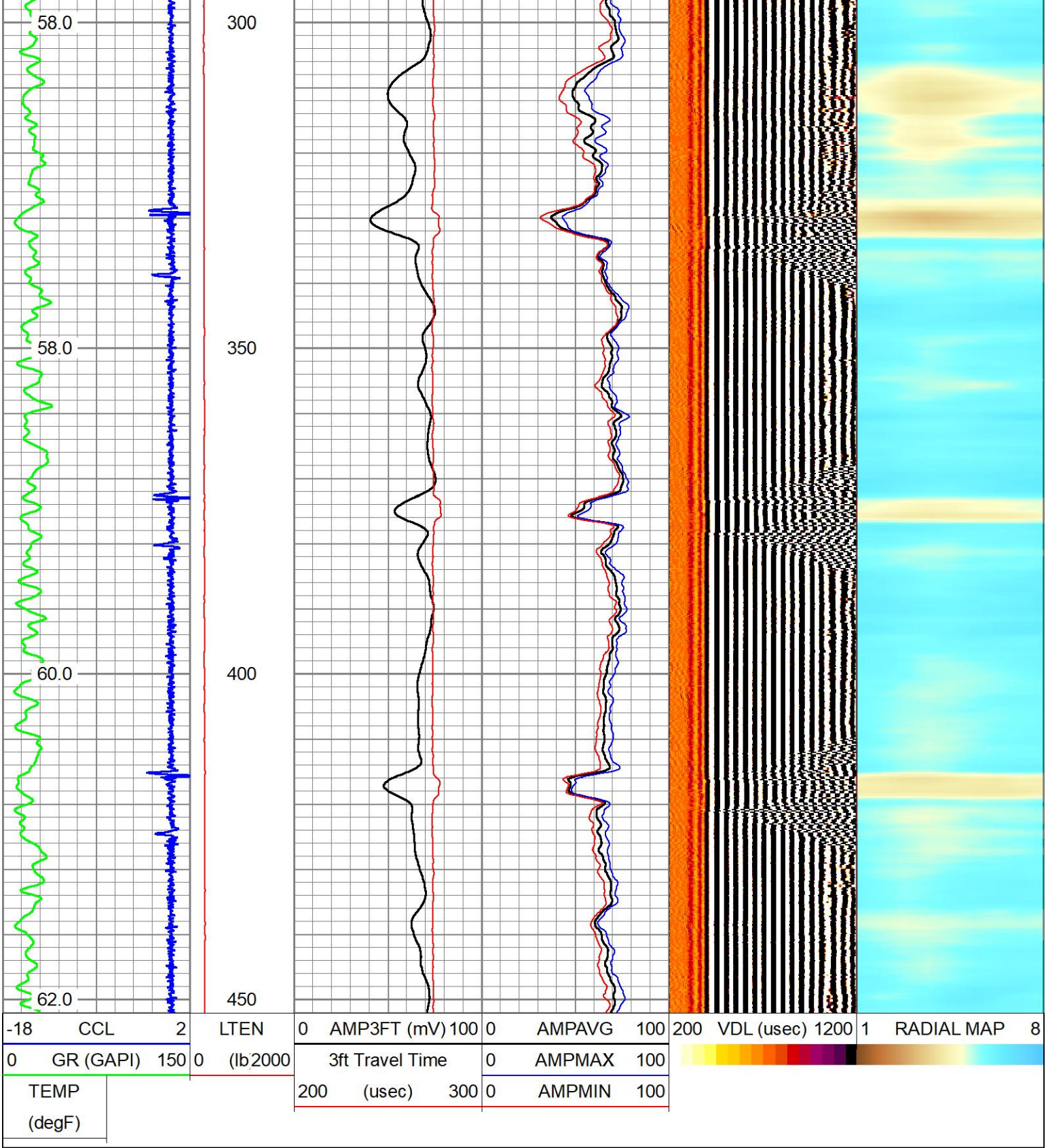
FREE PIPE PASS

5" = 100'

Database File		livingston s19-25-11c.db	
Dataset Pathname		FREE_PIPE_PASS	
Presentation Format		EXTRAC~1	
Dataset Creation		Wed Nov 06 11:23:51 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					(usec)	300	0	AMPMIN	100						
(degF)															





FREE PIPE PASS

HALLIBURTON

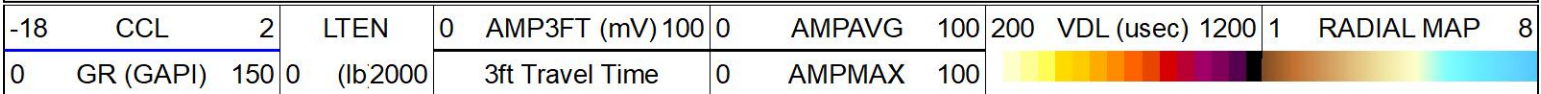
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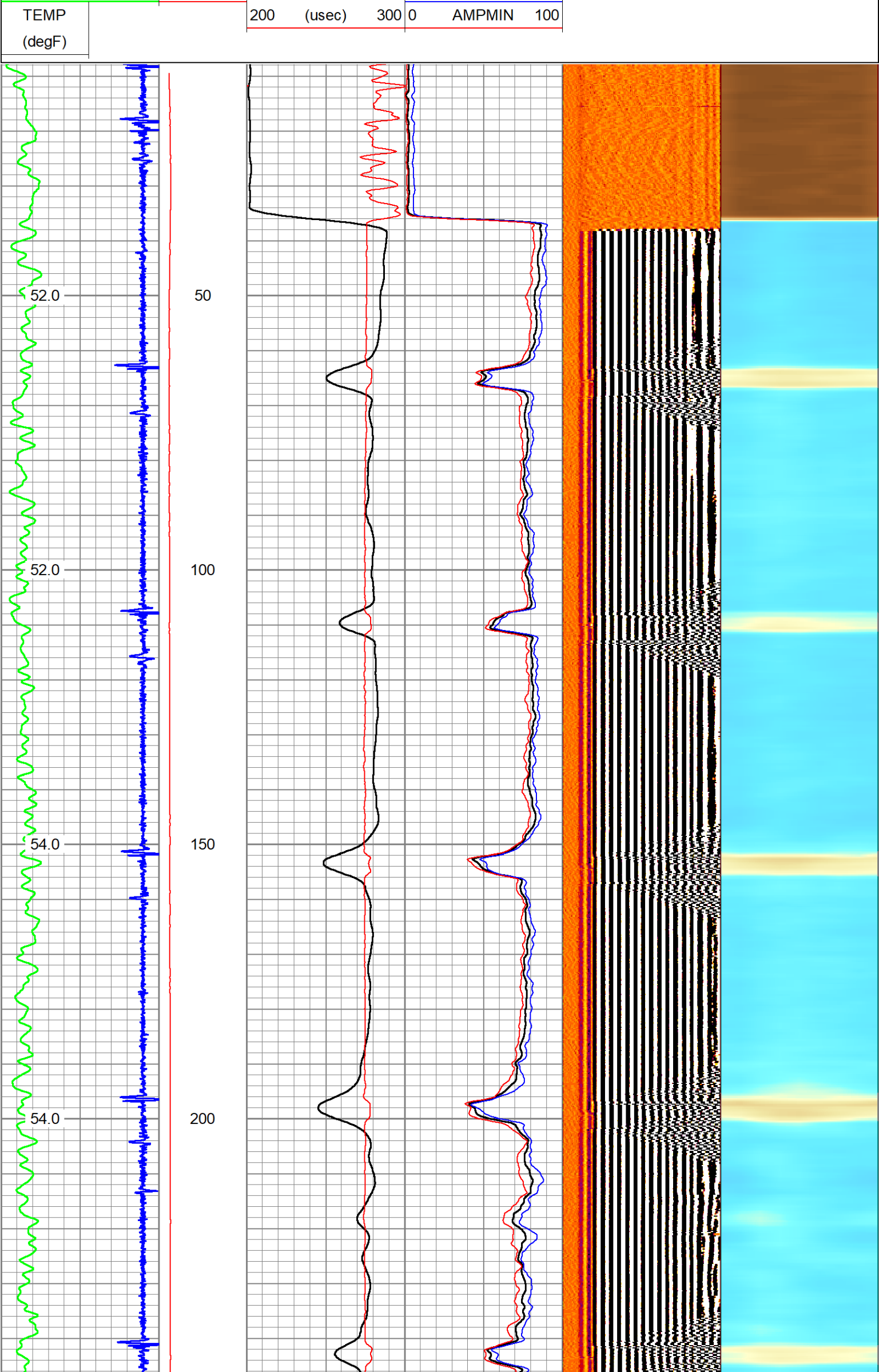
MAIN PASS

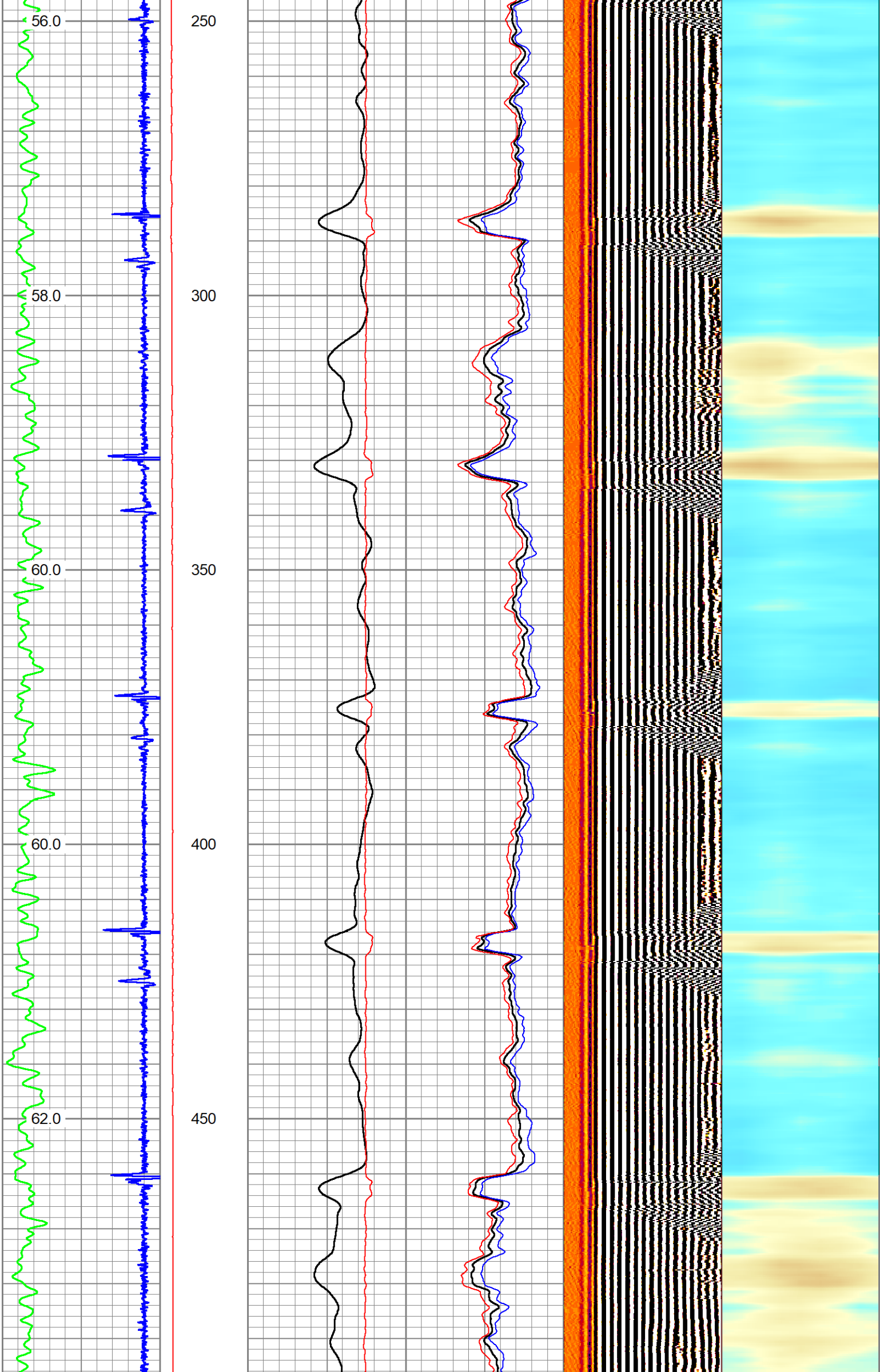
HALLIBURTON

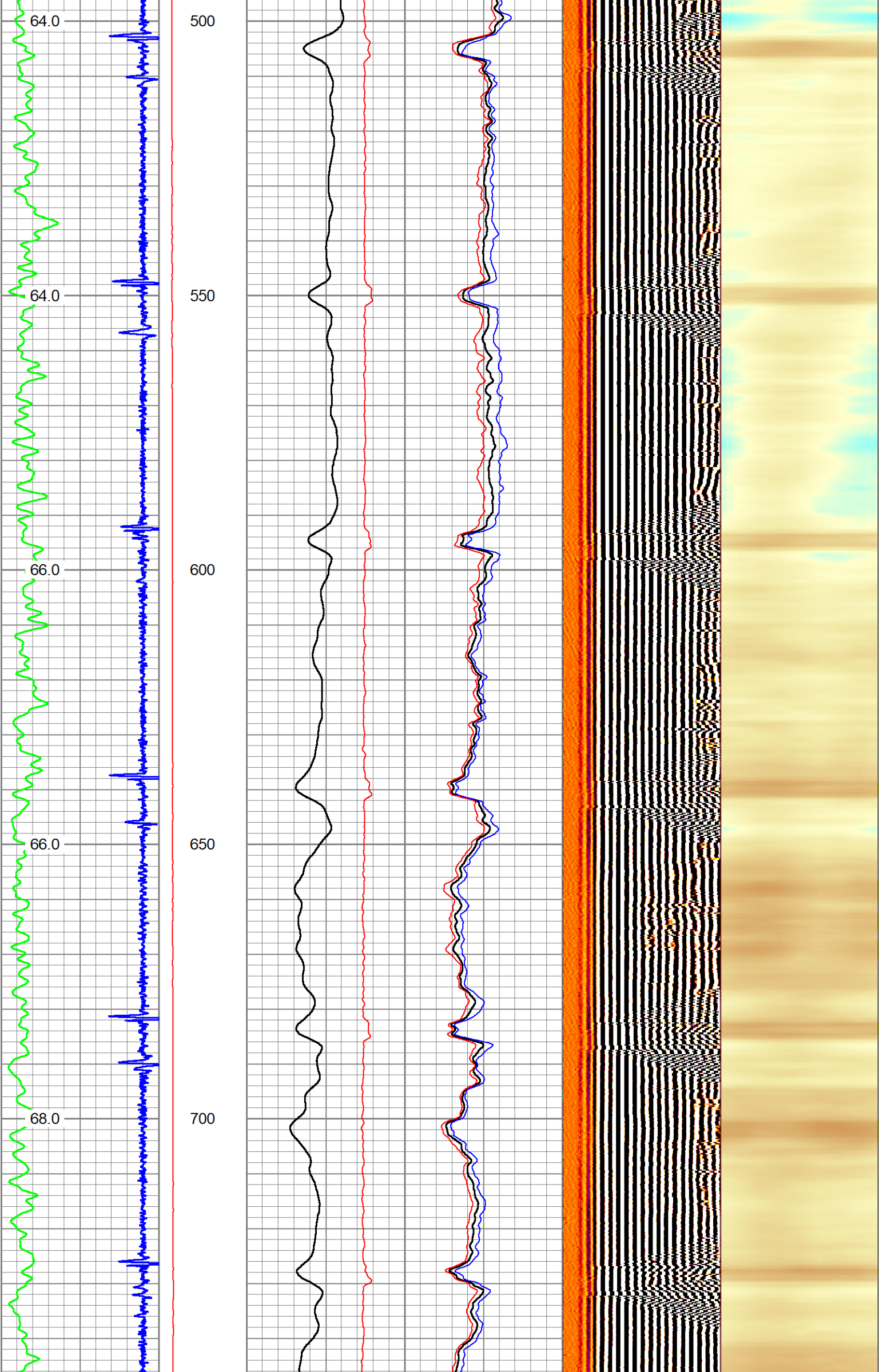
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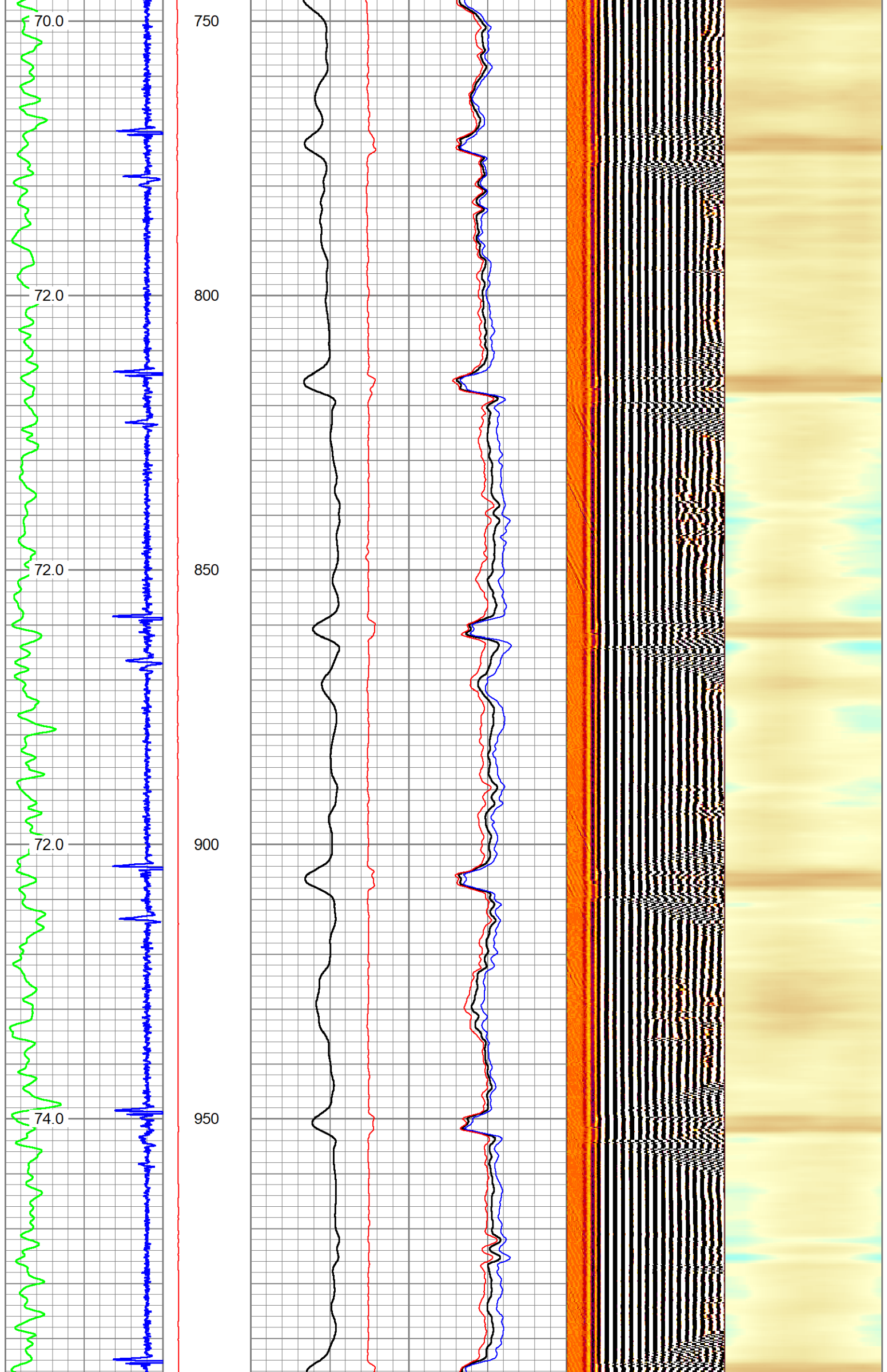
Database File	livingston s19-25-11c.db
Dataset Pathname	MAIN_PASS
Presentation Format	extraction rcbl
Dataset Creation	Wed Nov 06 11:50:13 2019
Charted by	Depth in Feet scaled 1:240

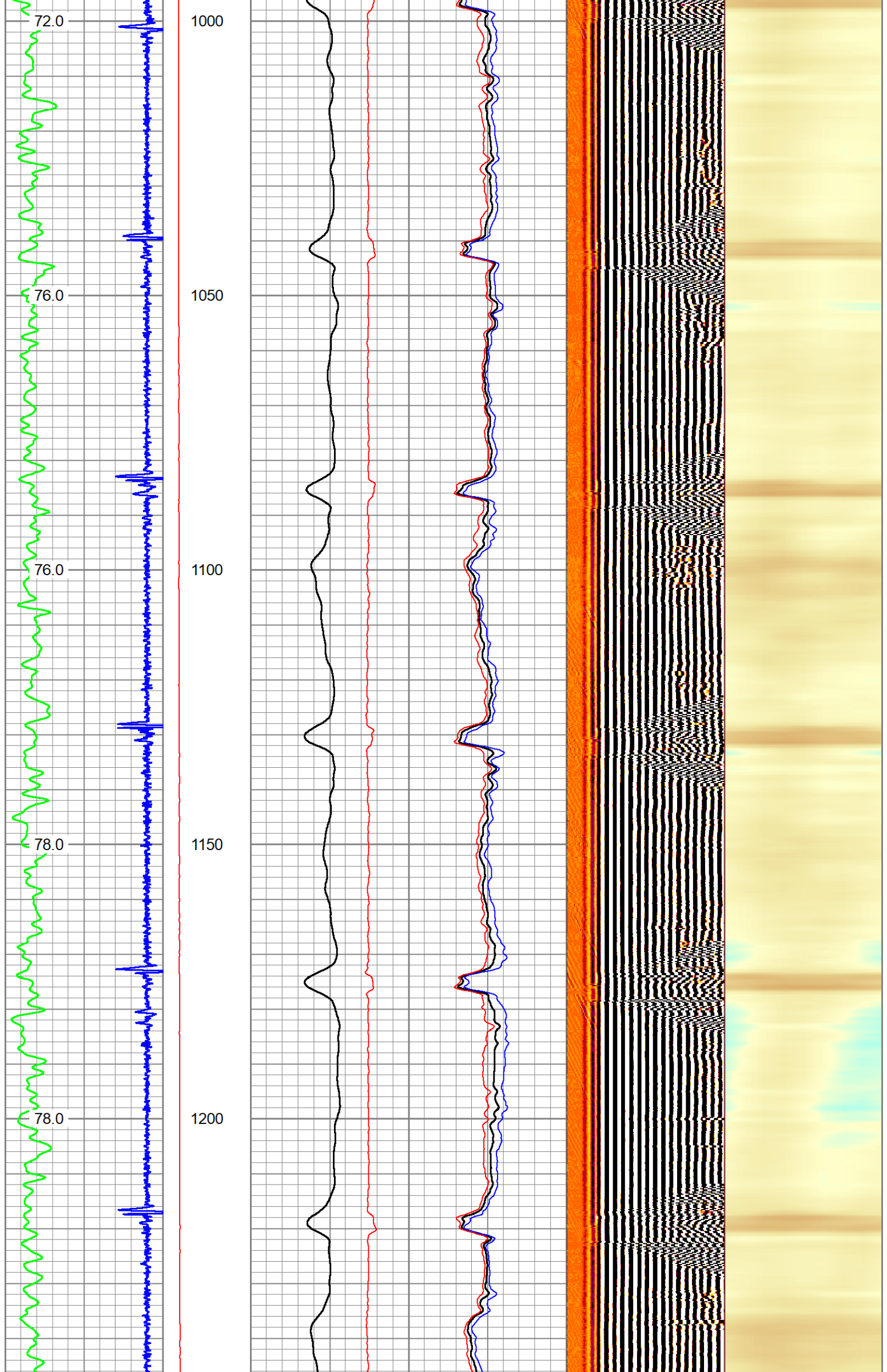


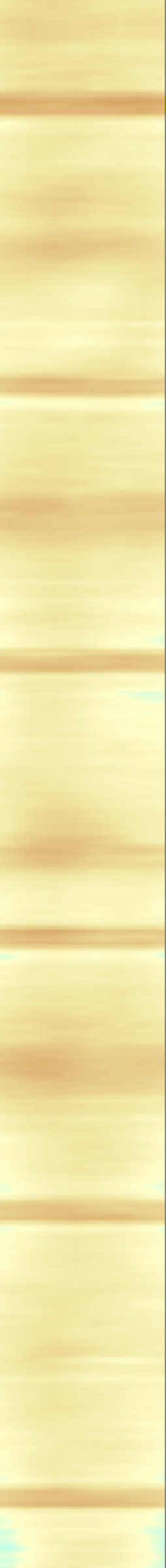
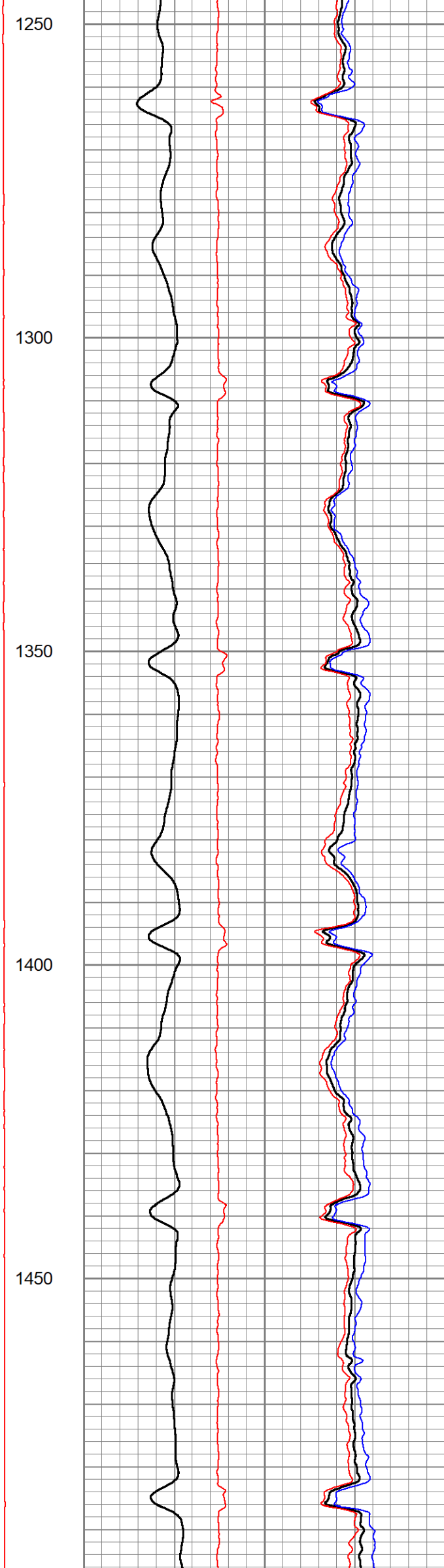
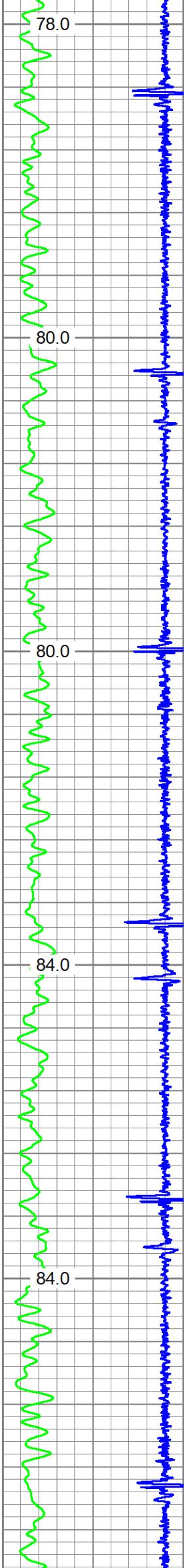


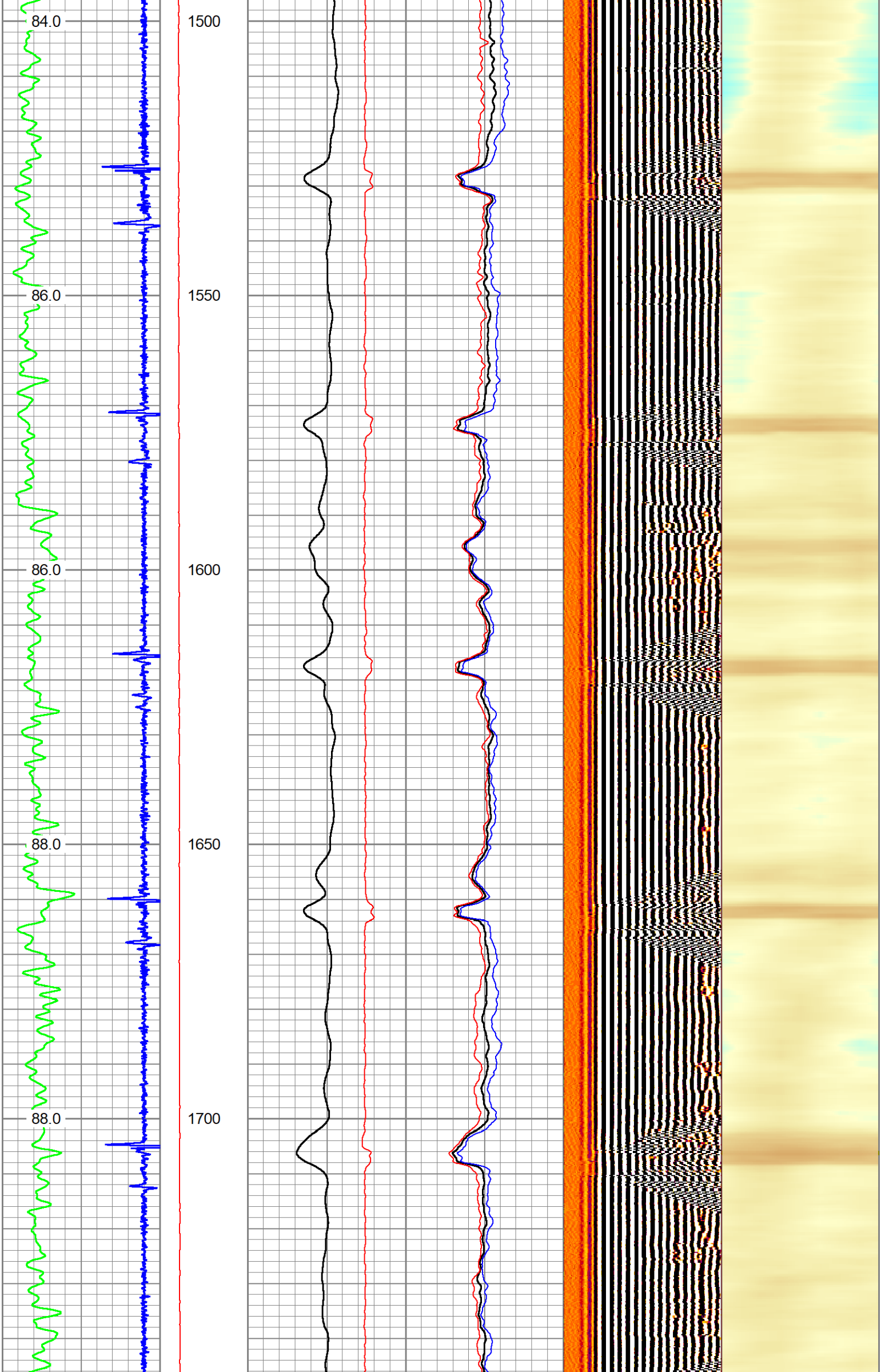


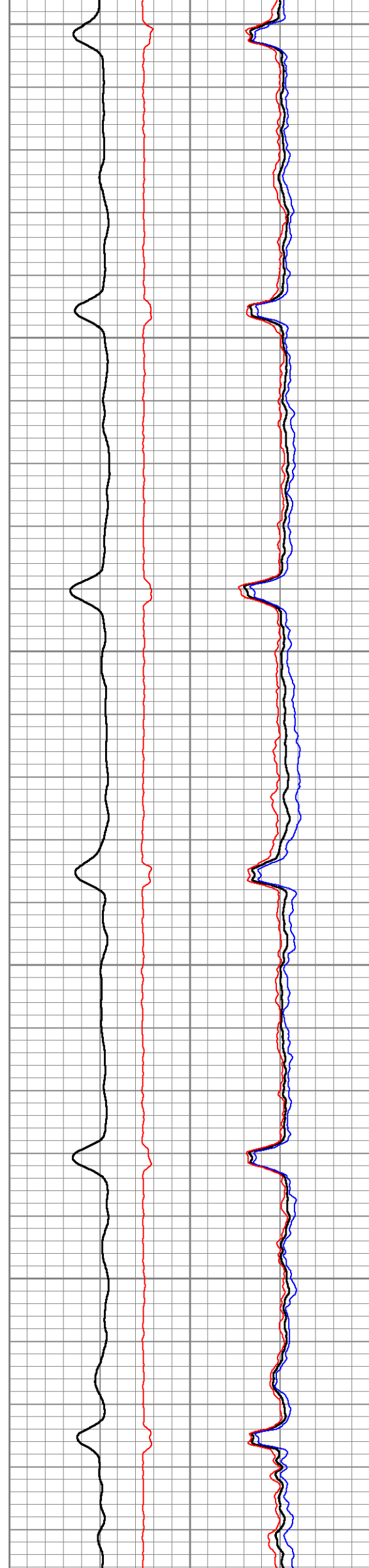
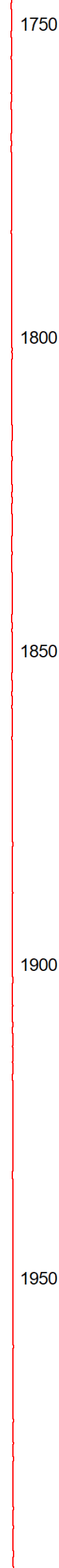
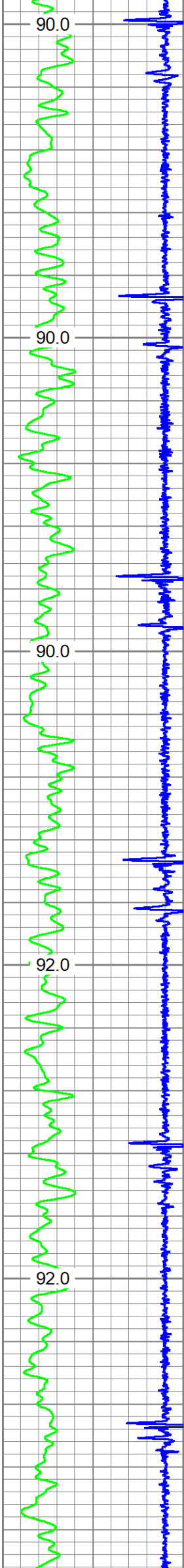


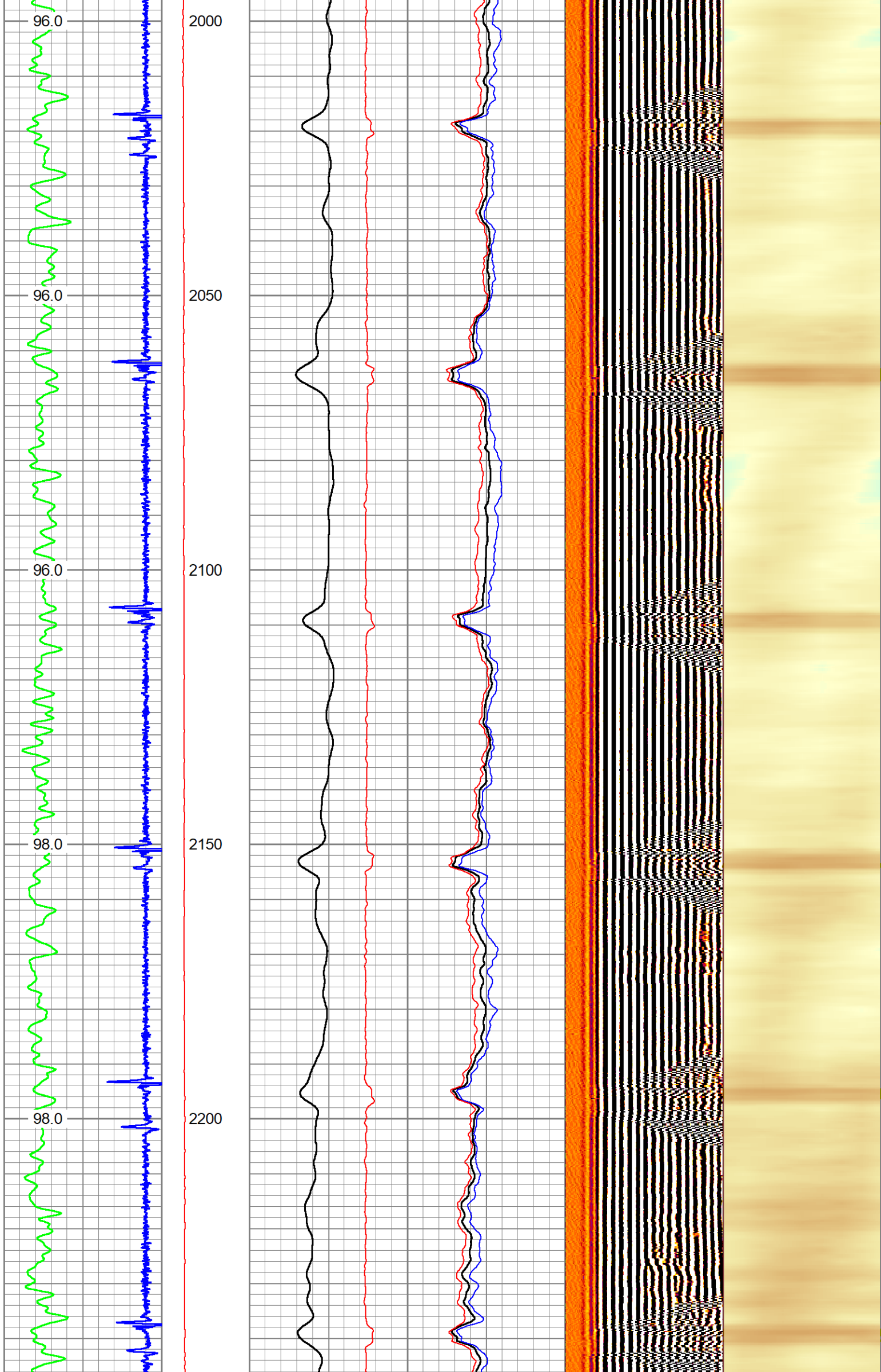


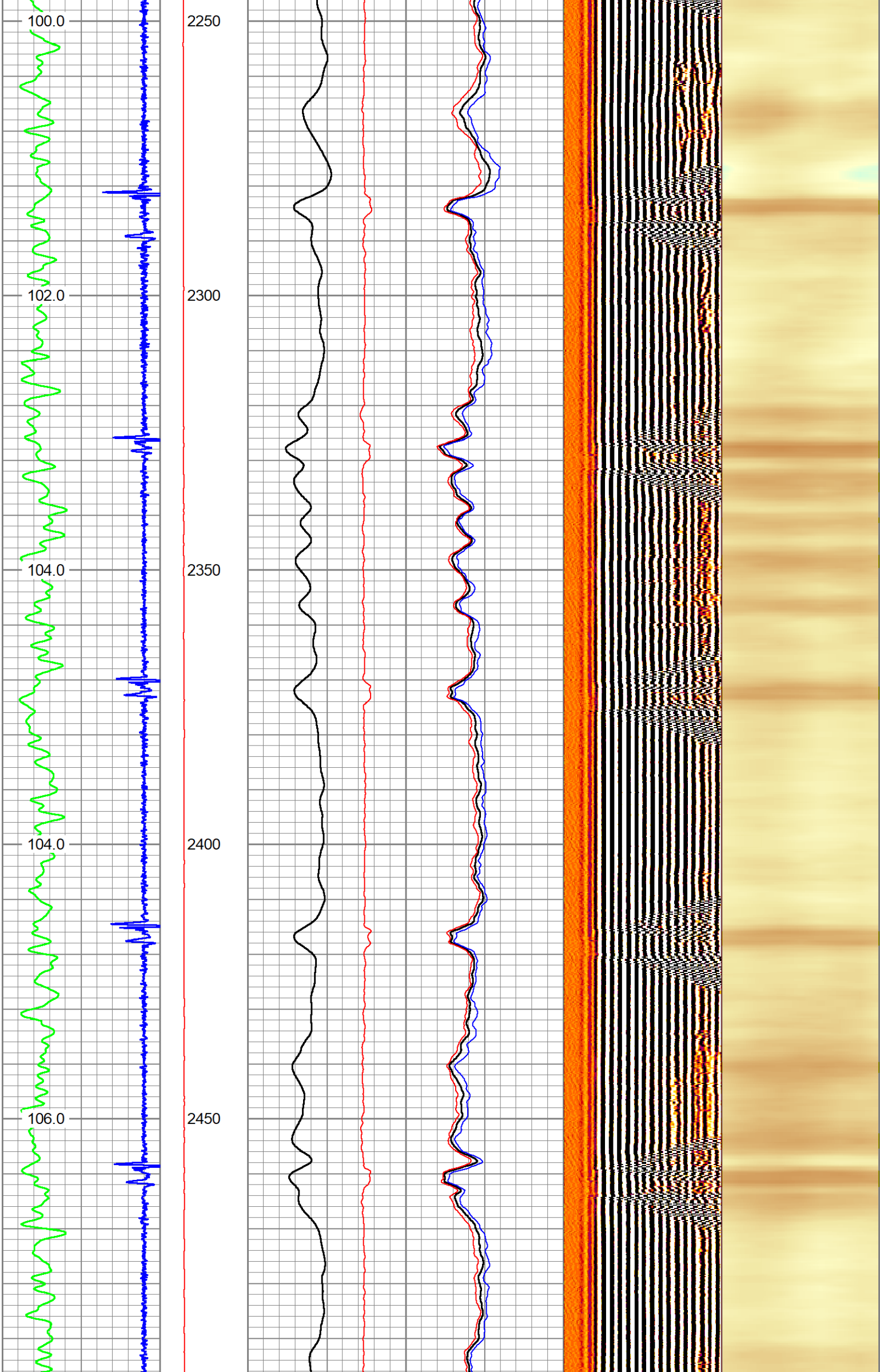


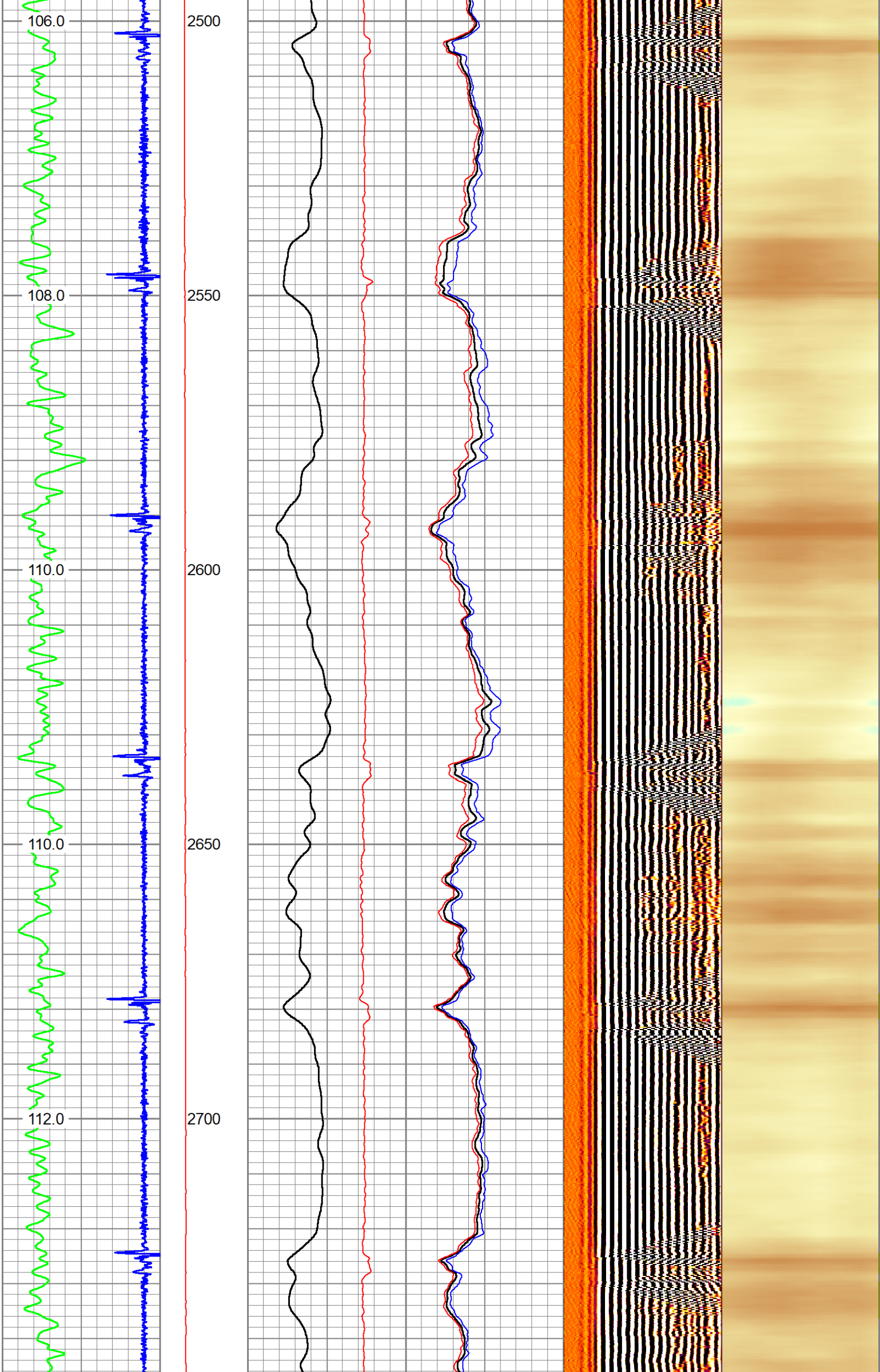


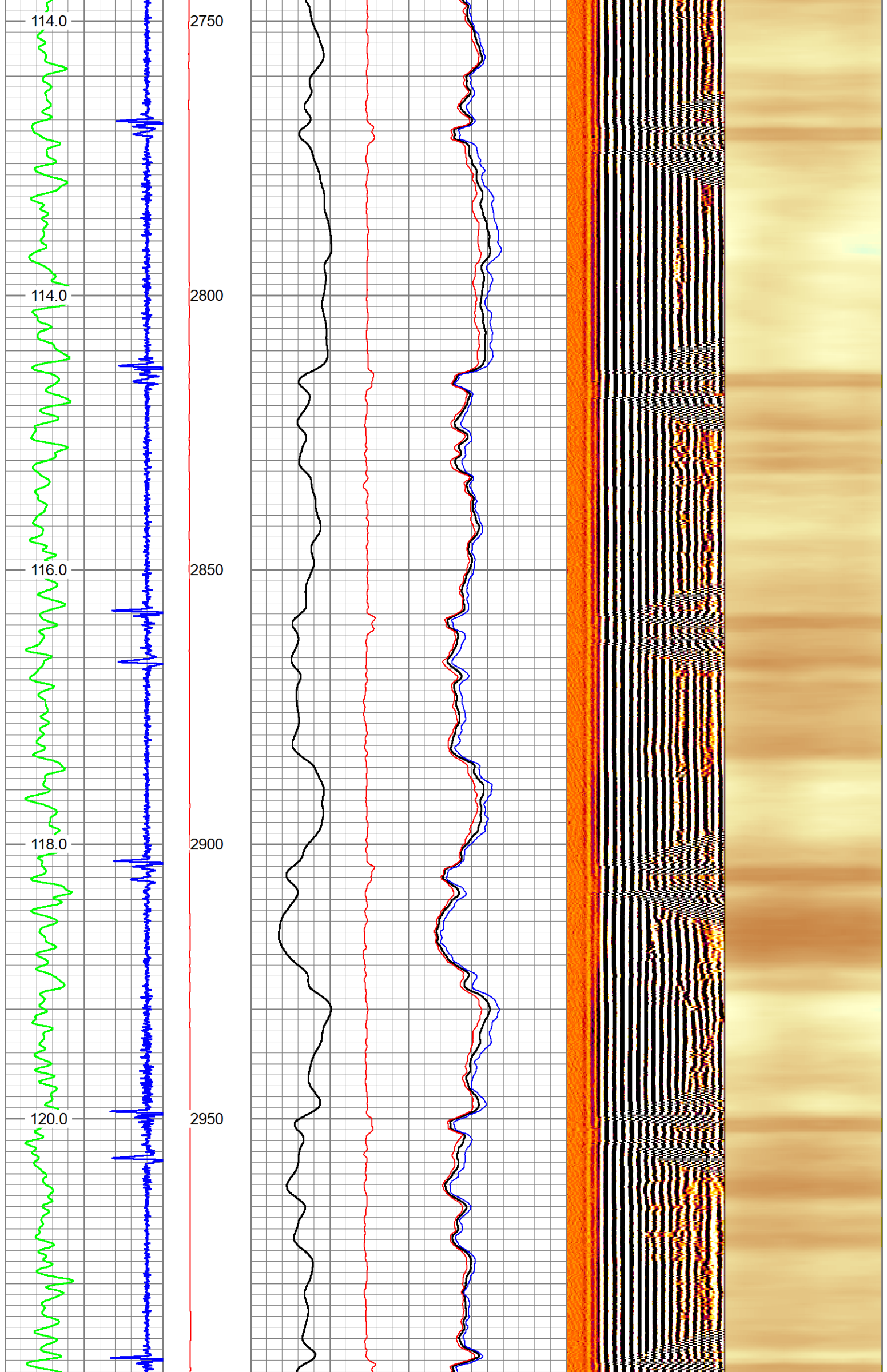


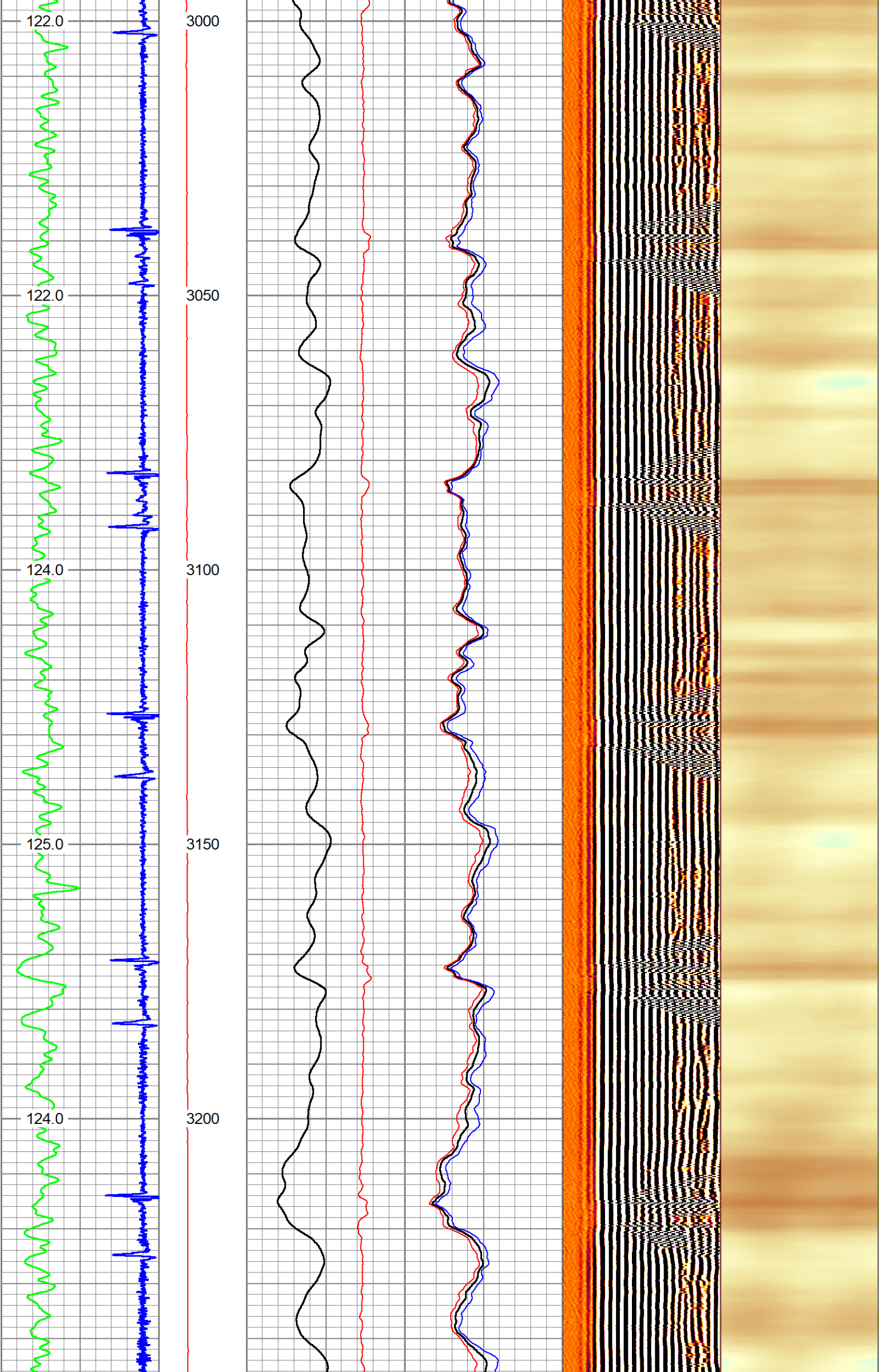


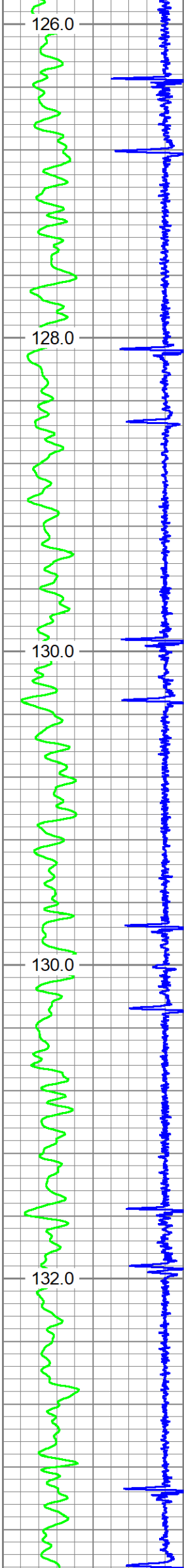




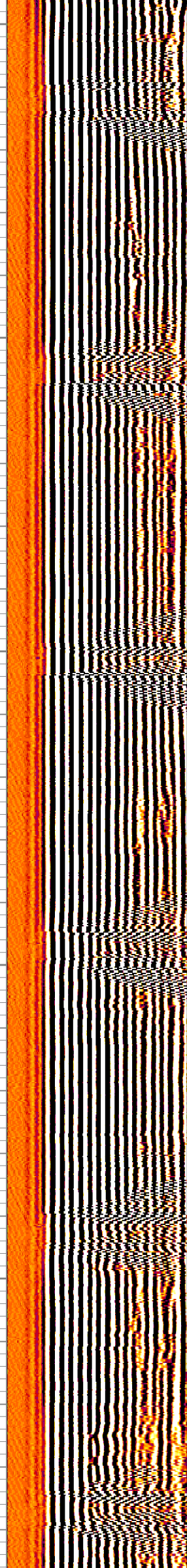
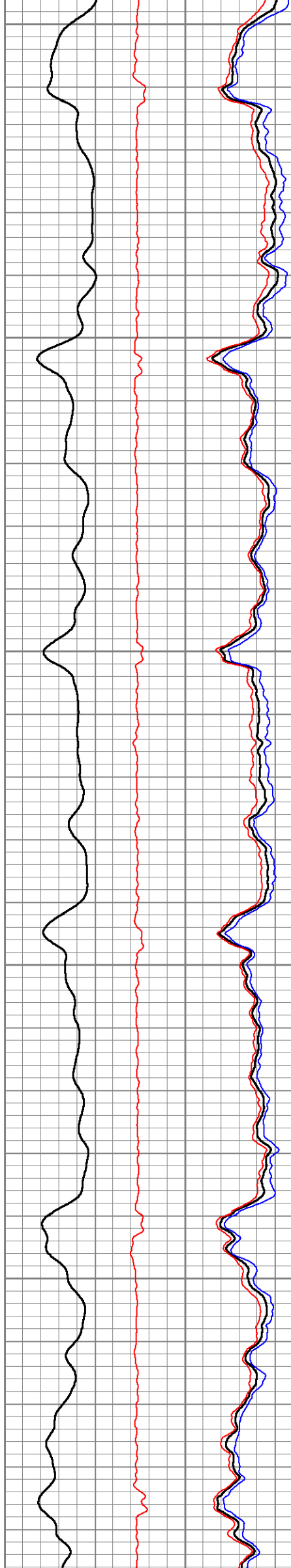


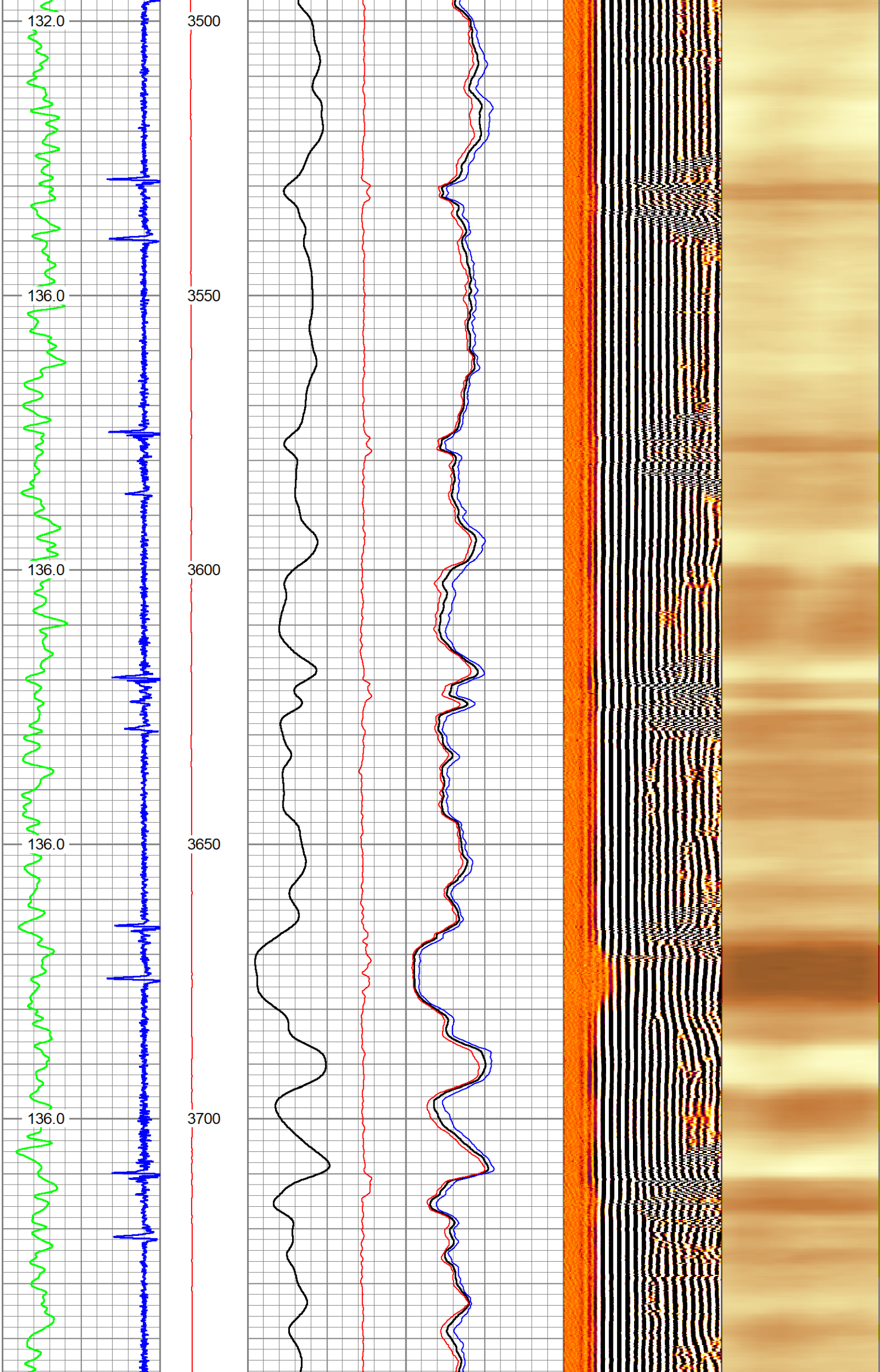


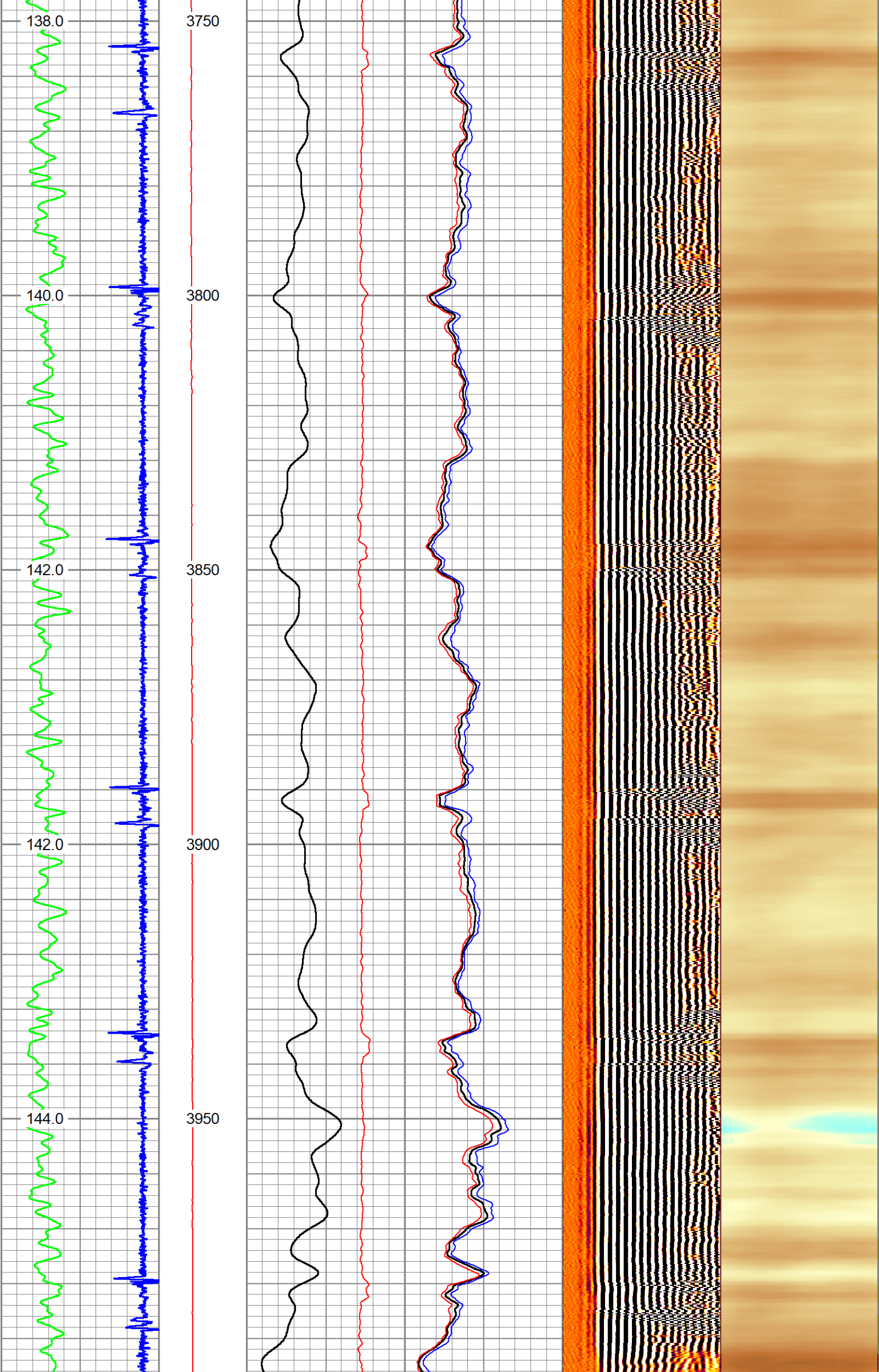


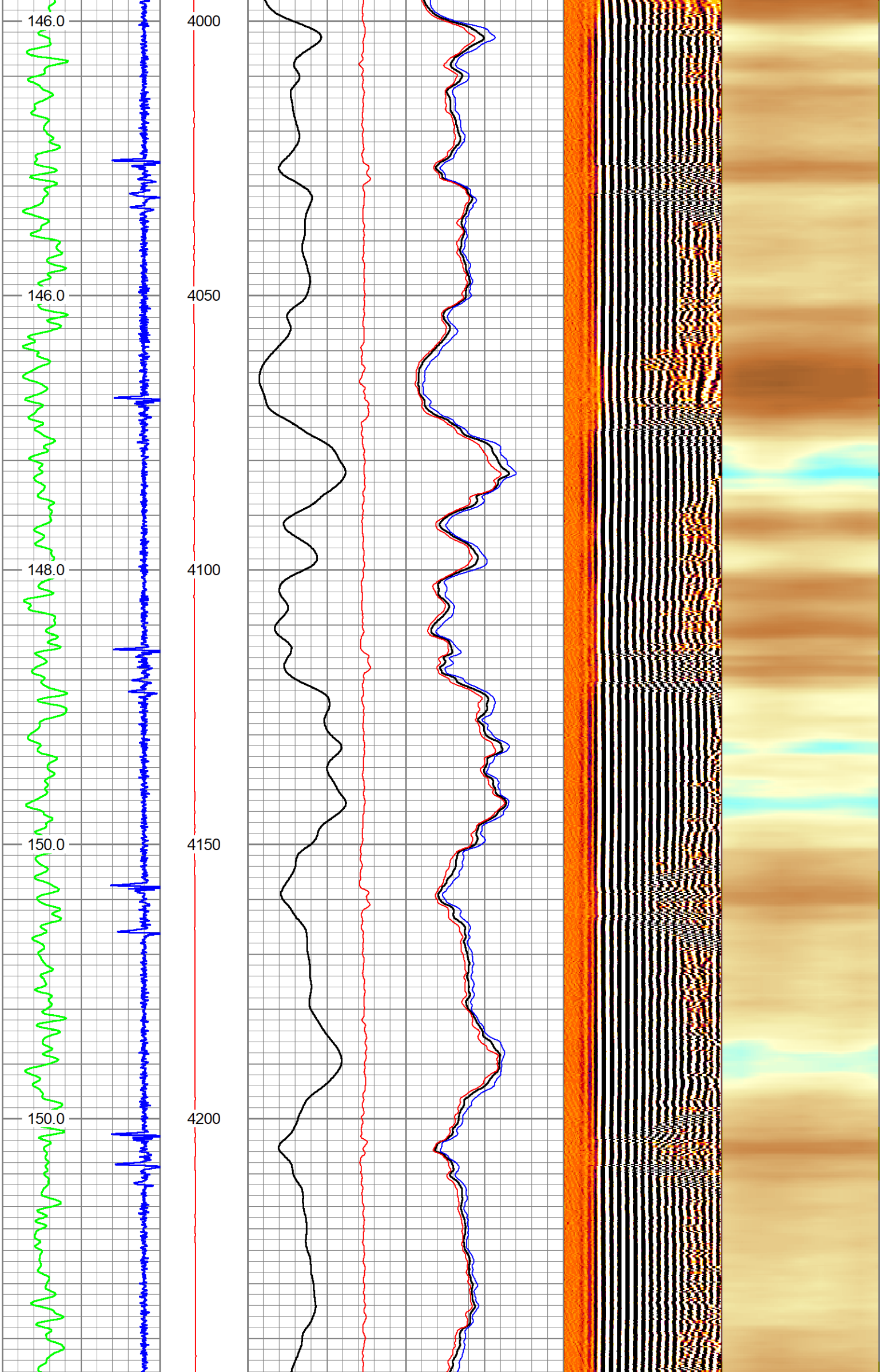


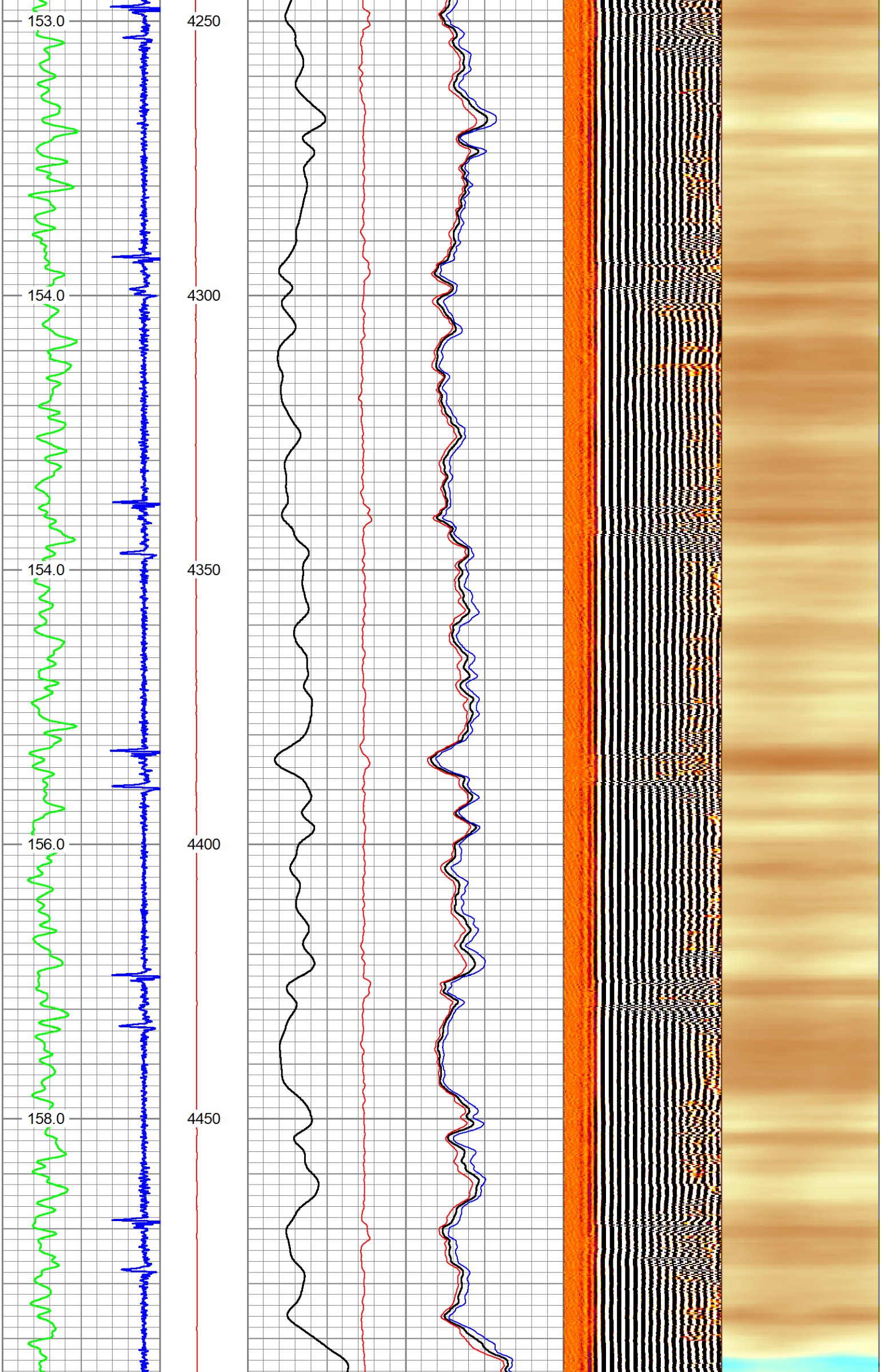
3250
3300
3350
3400
3450

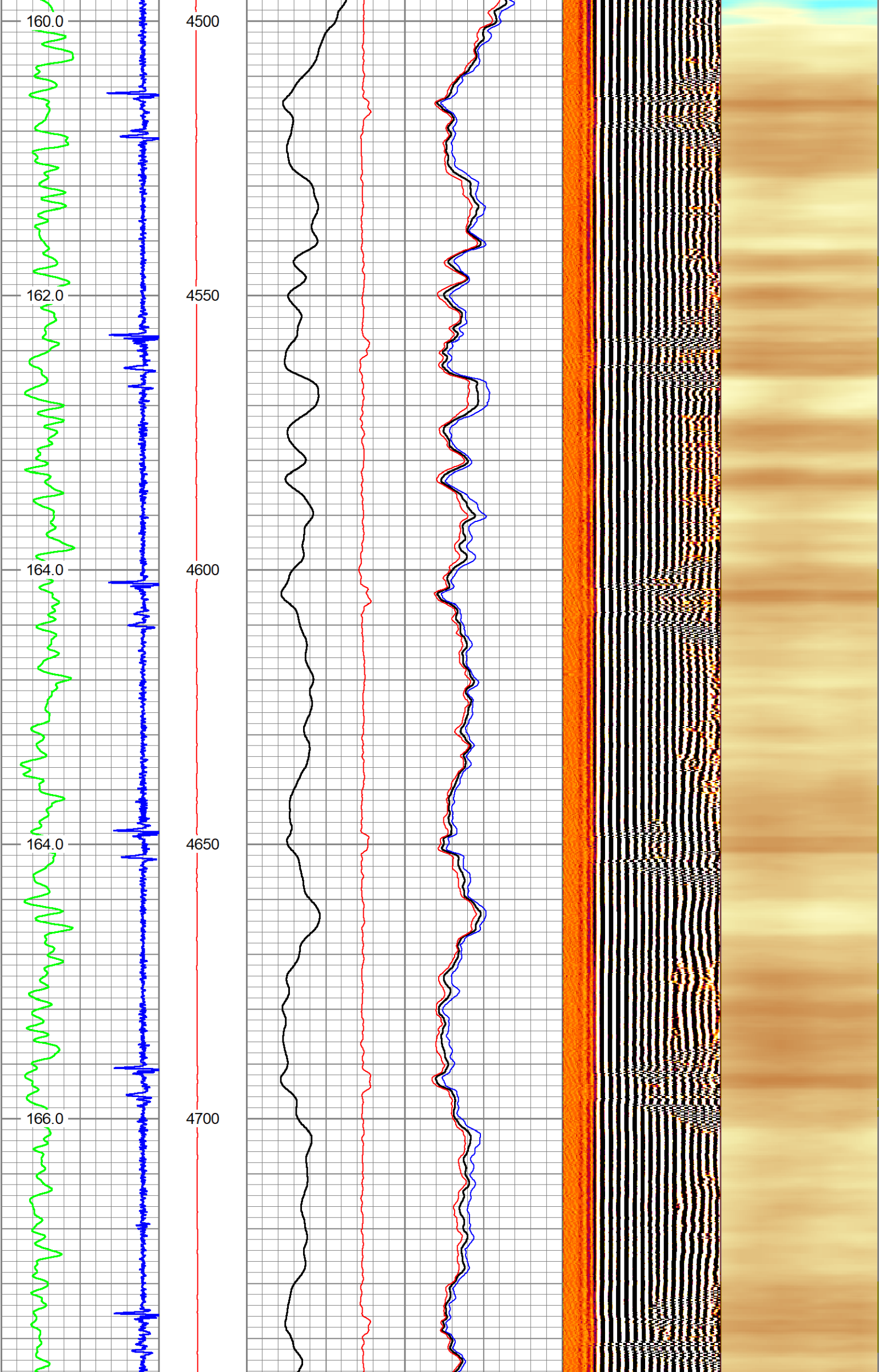


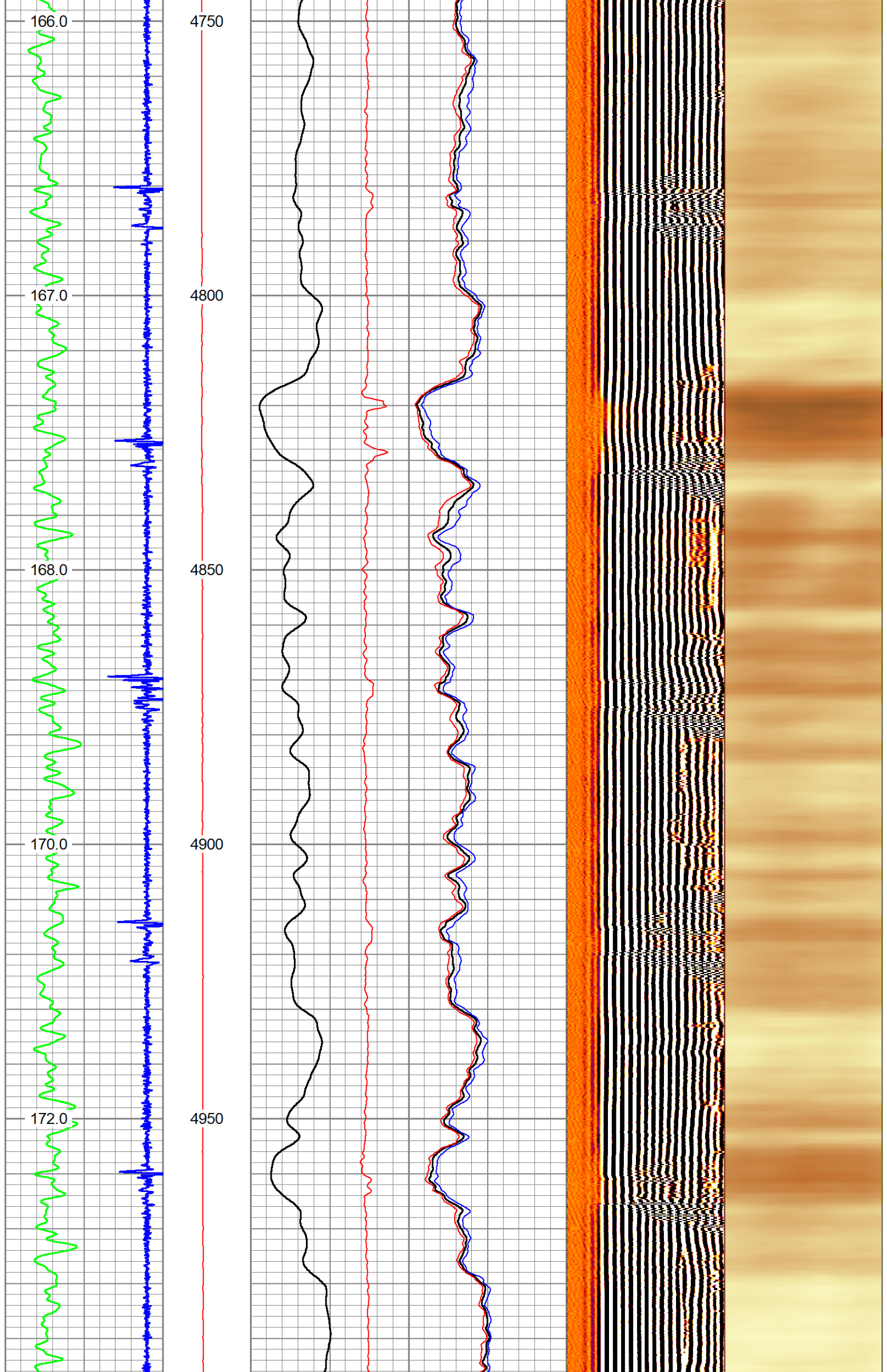


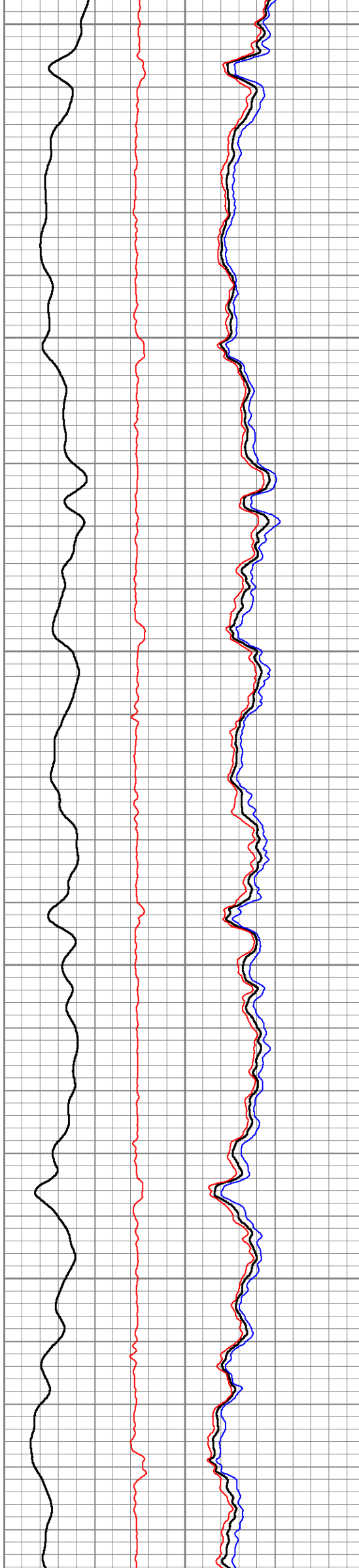
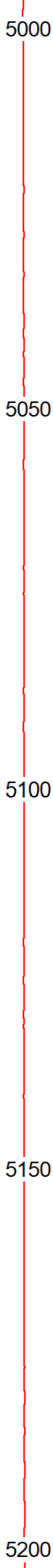
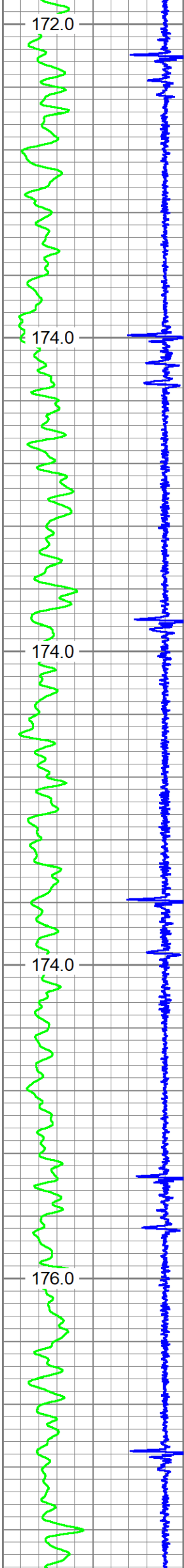


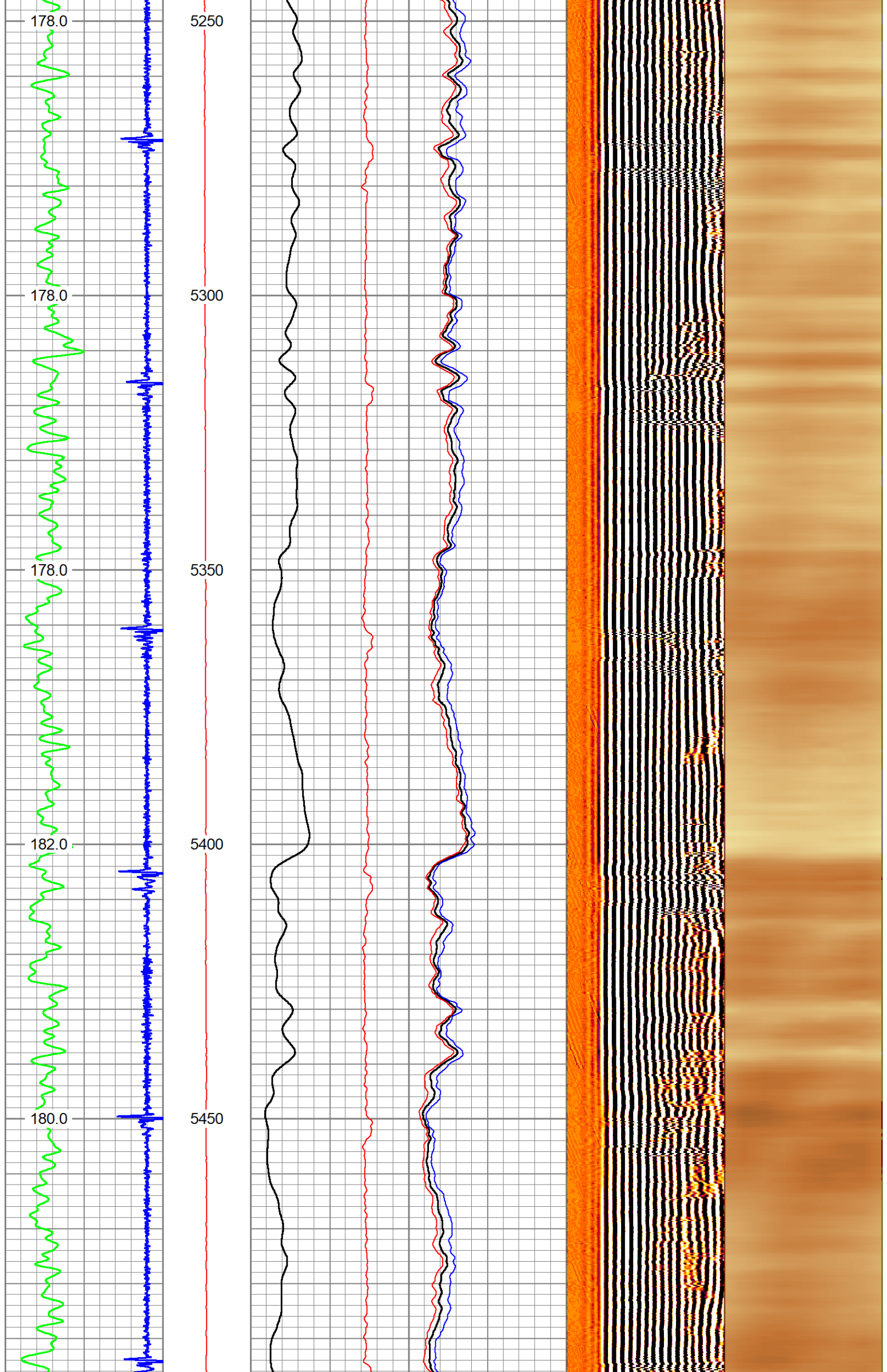


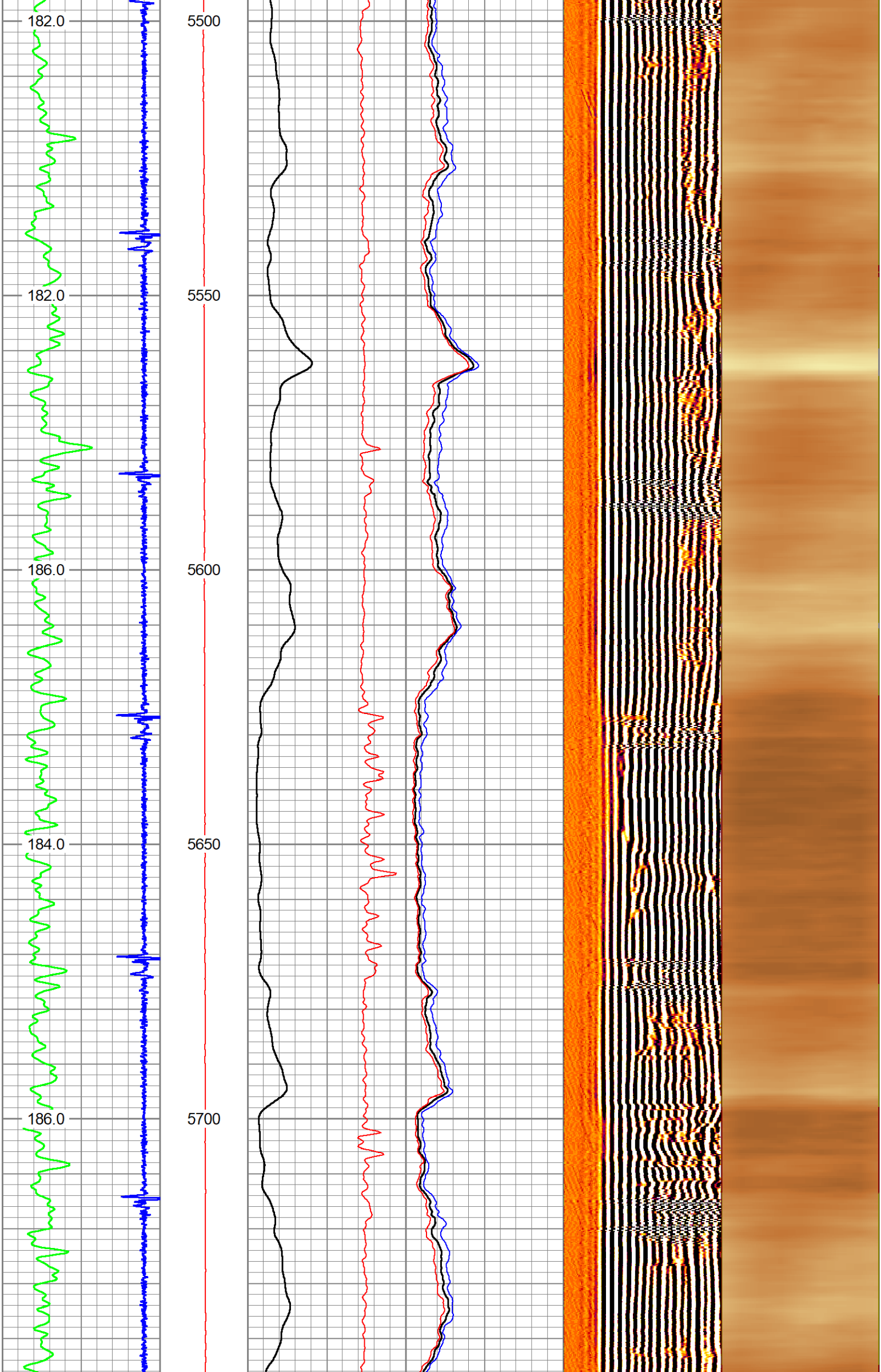


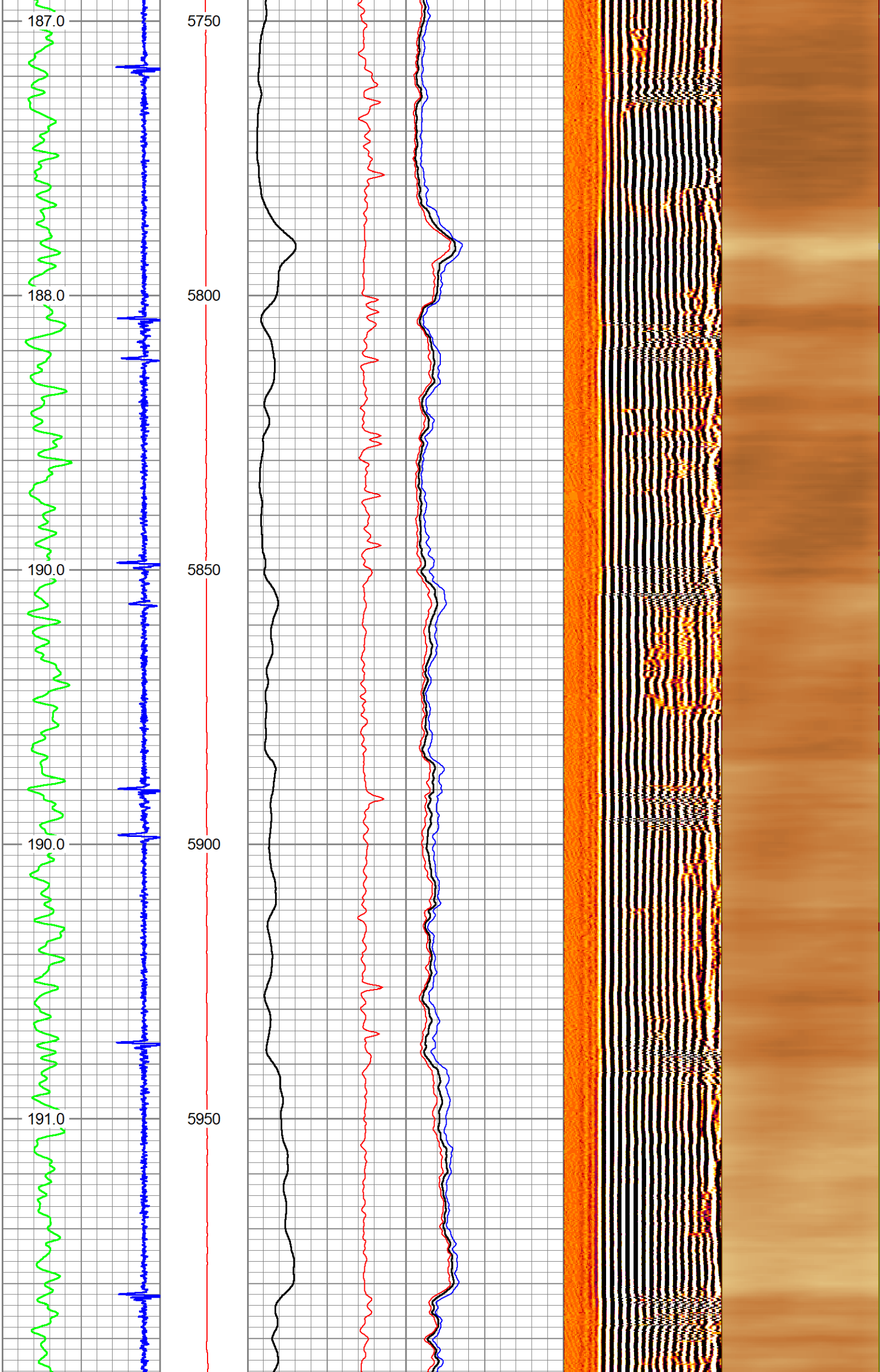


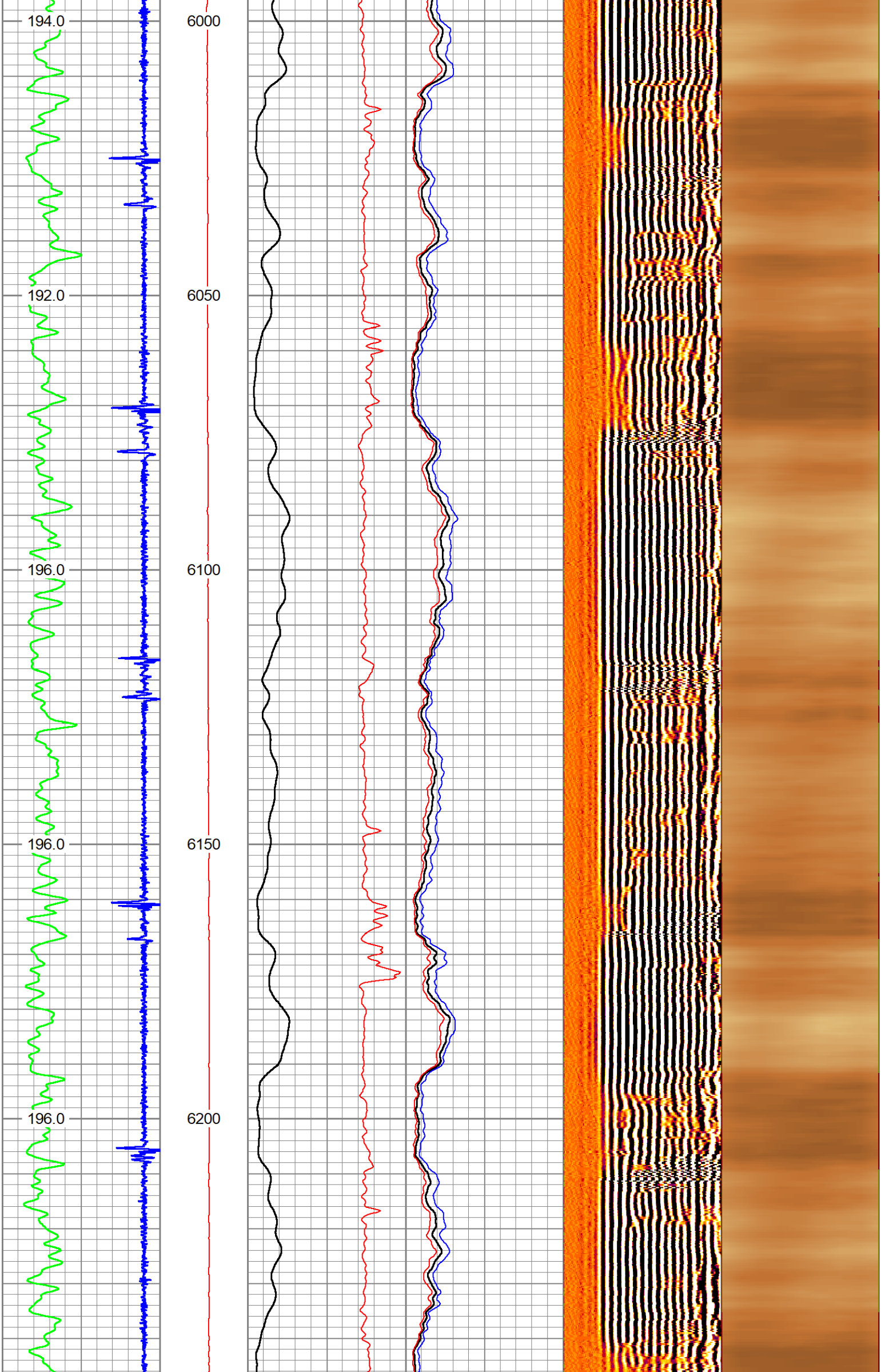


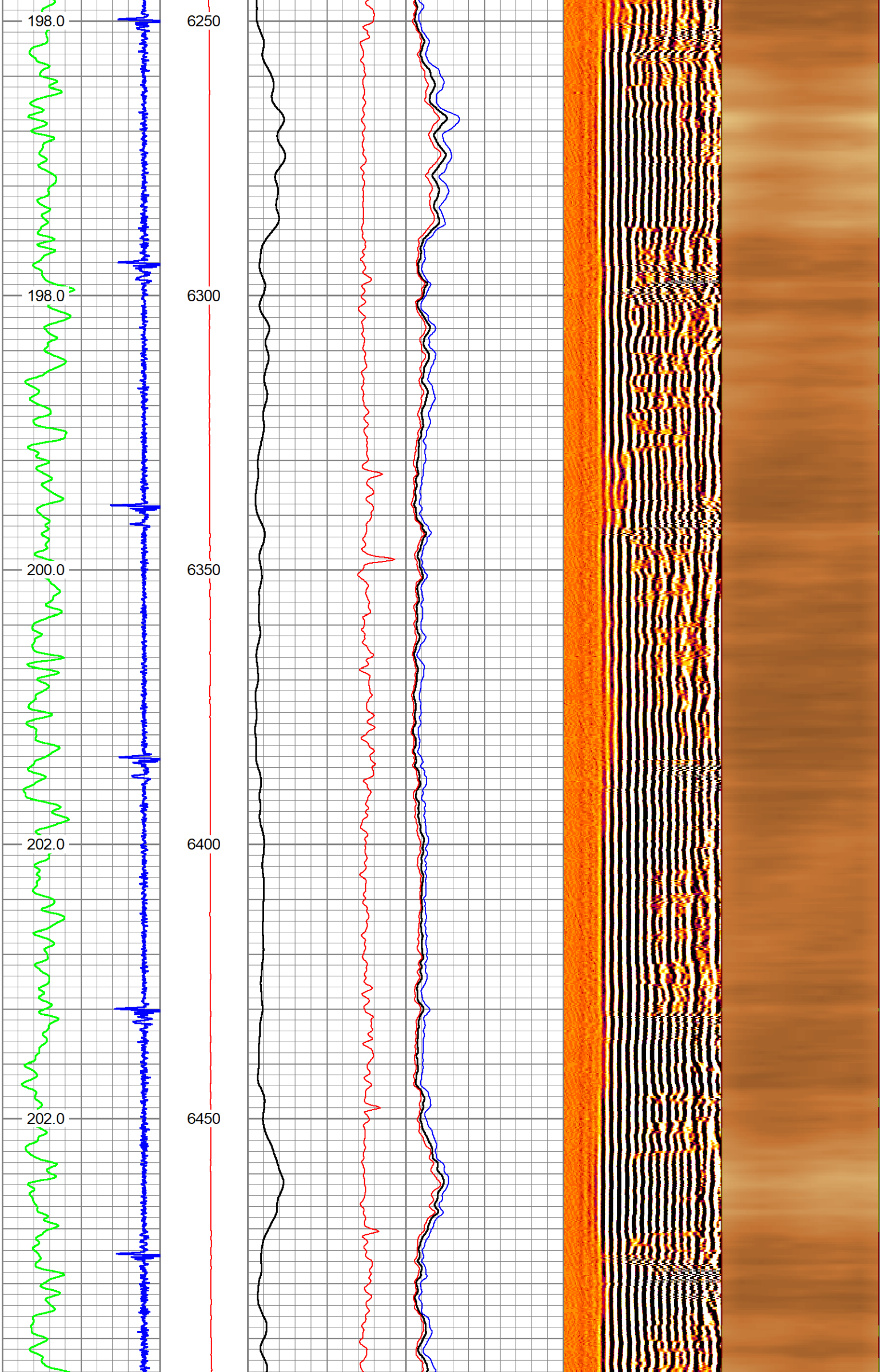


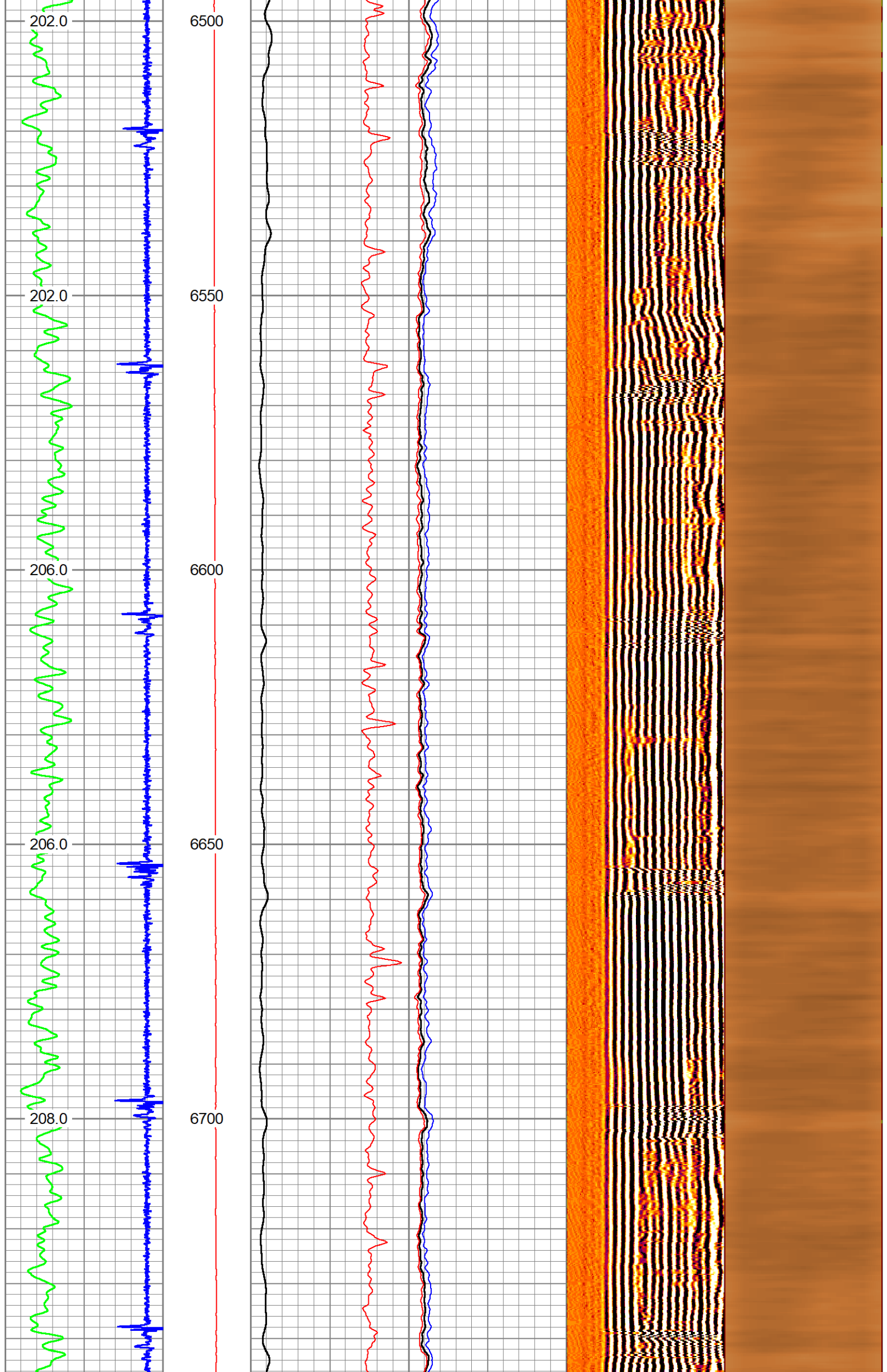


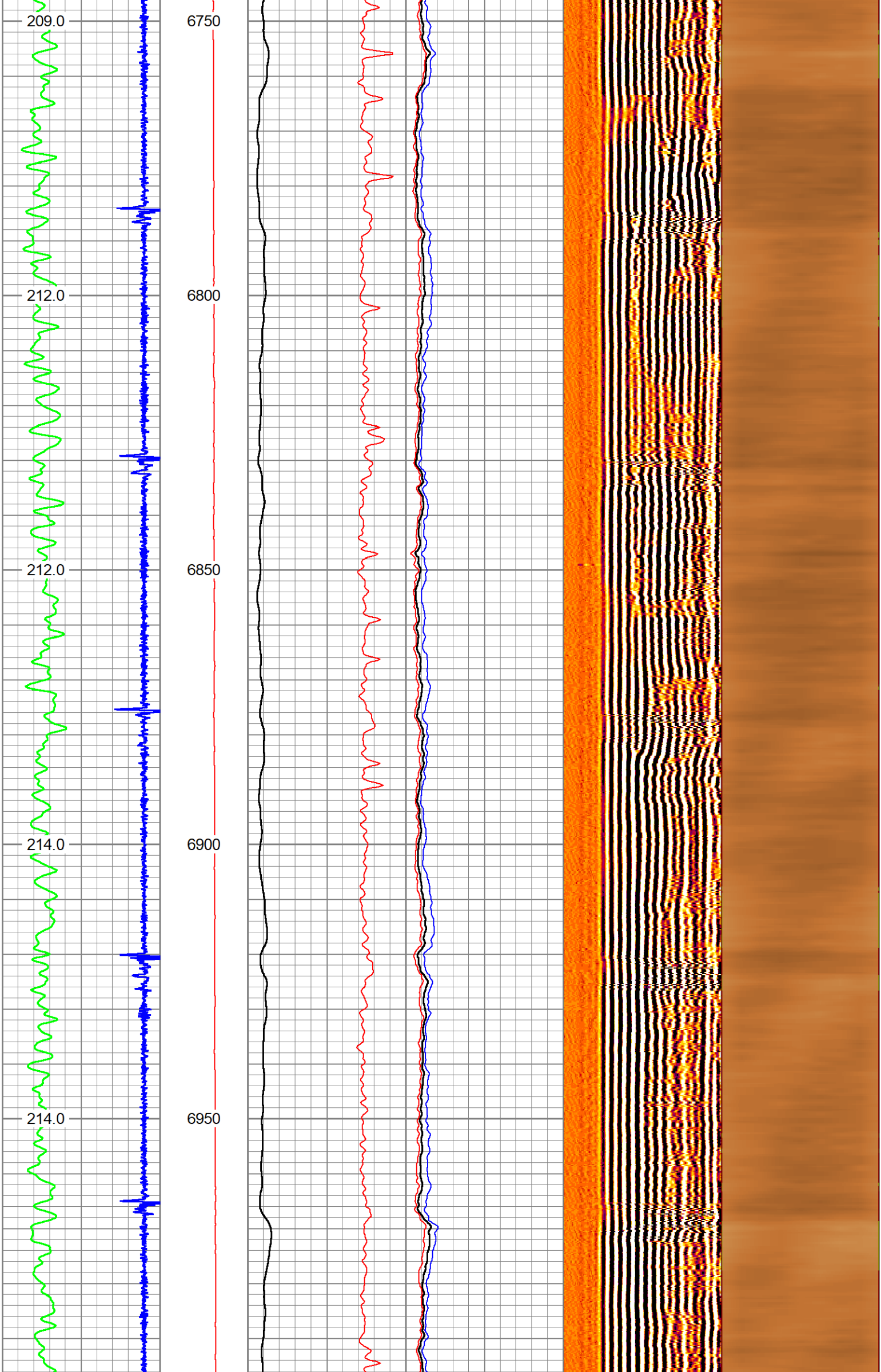


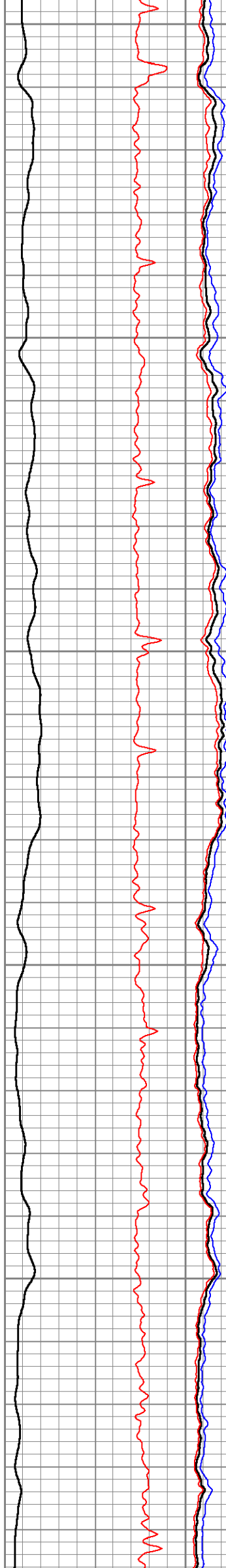
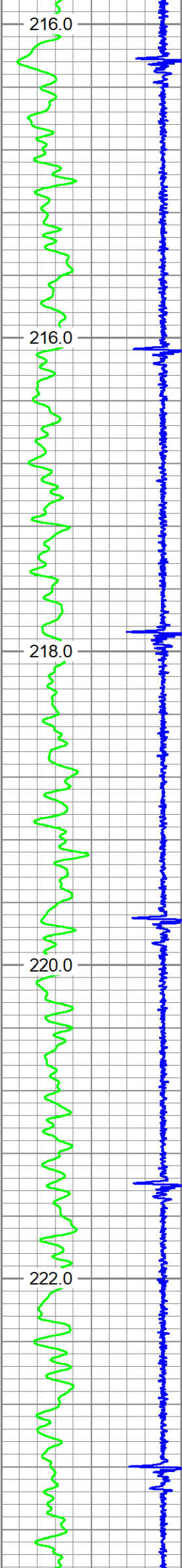


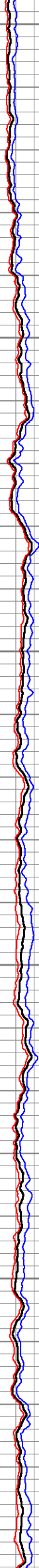
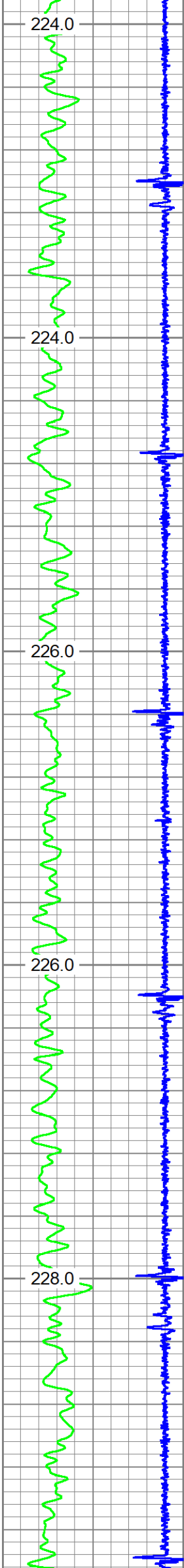


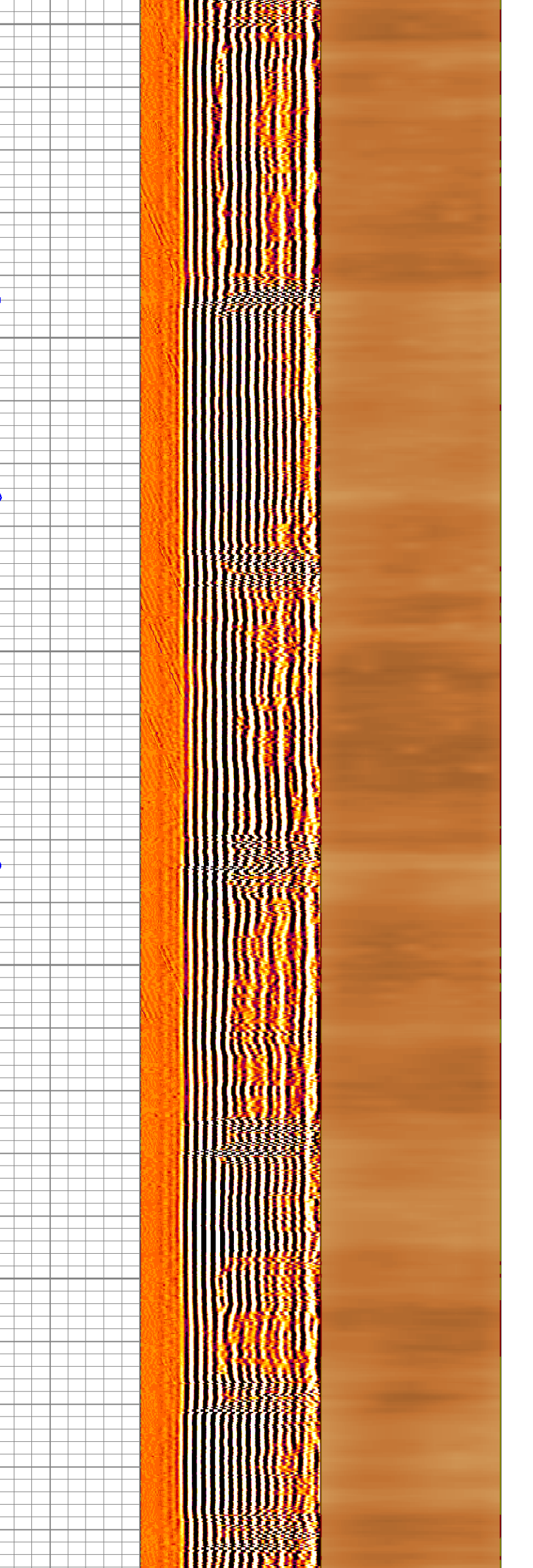
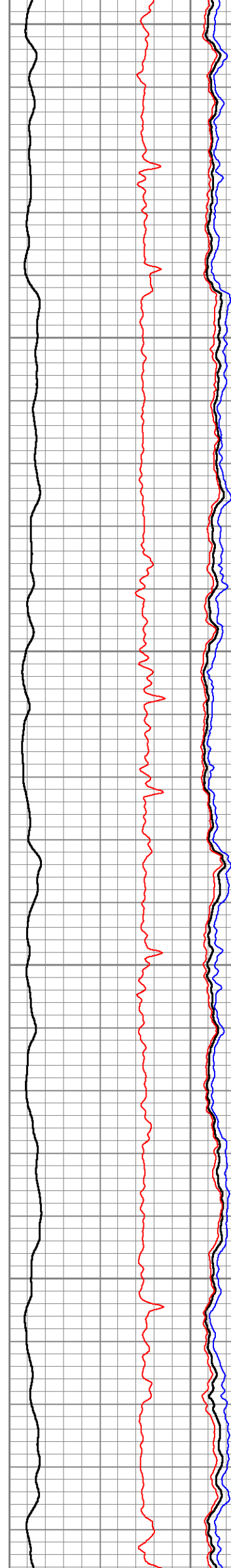
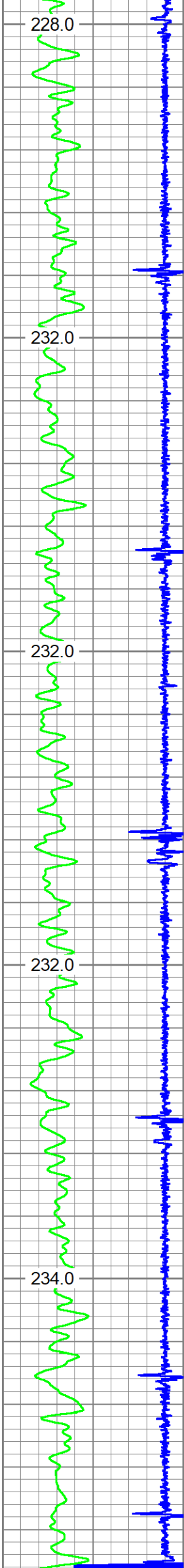


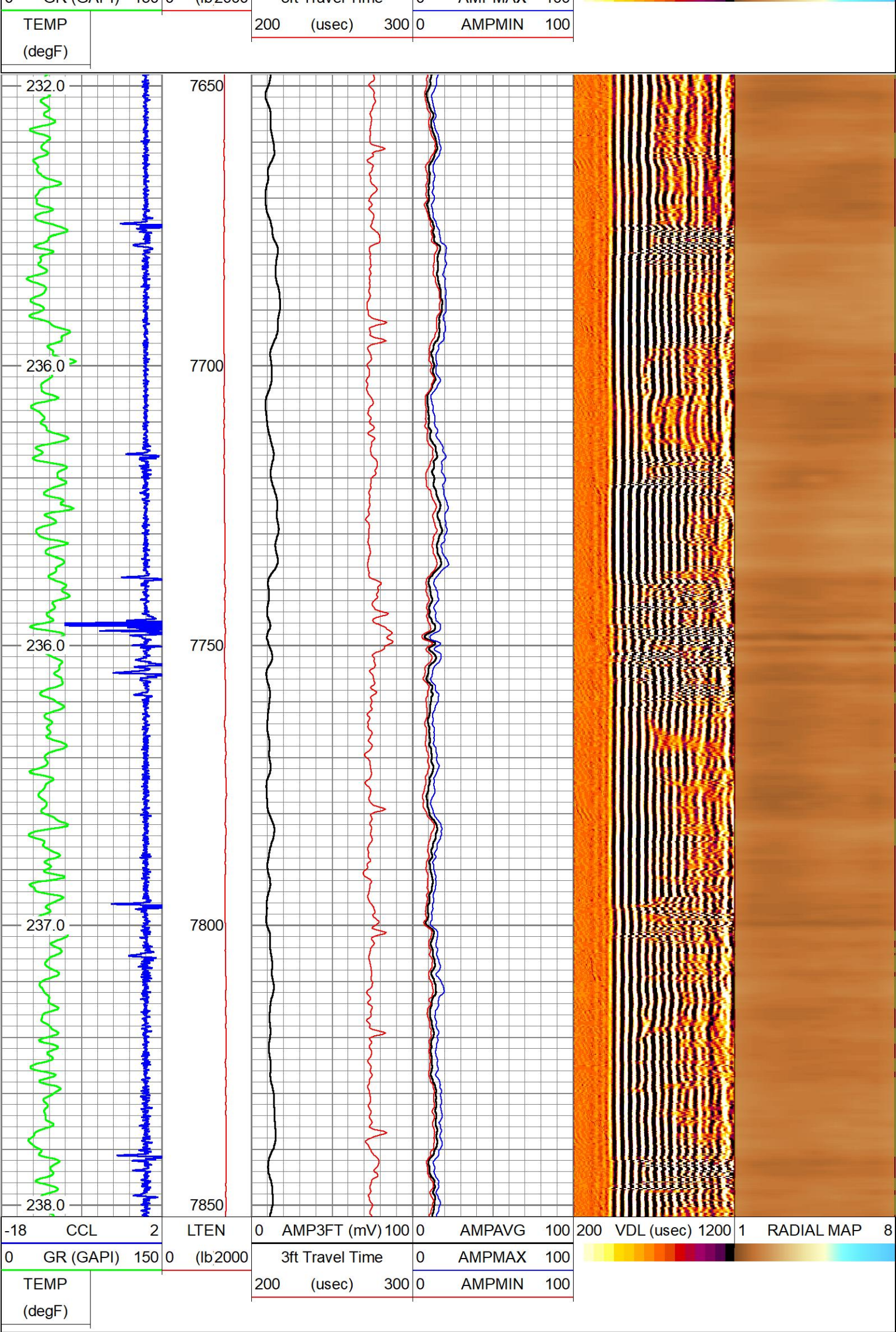












REPEAT PASS

Log Variables

DatabaseC:\ProgramData\Warrior\Data\livingston s19-25-11c.db
Dataset field/well/run1/MAIN_PASS/_vars_

Top - Bottom

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 1
MINATTN db/ft 0.8	MudWgt lb/gal 8.4	PERFS No	PPT usec 214	SRFTEMP degF 40	TDEPTH ft 7500		

Calibration Report					
Database File	livingston s19-25-11c.db				
Dataset Pathname	REPEAT_PASS				
Dataset Creation	Wed Nov 06 11:46:29 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			
Offset:		0.00			
Delta Spacing		2			
Gamma Ray Calibration Report					
Type / Serial:		Probe275dig / pr050806			
SHOP CALIBRATION		Tue Nov 01 09:40:24 2005			
		Counts/Sec.	Gain	Offset	Jig
Background		79.3			
	Calibrator	459.5			
			0.6312		
PRIMARY VERIFICATION		00:00:00			
Background		48.3			
	Calibrator	288.5			
Difference				240.2	
BEFORE SURVEY VERIFICATION		00:00:00			
Background		47.8			
	Calibrator	290.6			
Difference				242.8	
AFTER SURVEY VERIFICATION		00:00:00			
Background		35.8			
	Calibrator	286.1			
Difference				250.2	
Segmented Cement Bond Log Calibration Report					
Serial Number:		11577056			
Tool Model:		Probe			
Calibration Casing Diameter:		5.500	in		
Calibration Depth:		456.272	ft		

Master Calibration, performed Wed Nov 06 06:54:45 2019:


	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.000	0.767	0.000	72.000	93.866	0.000
CAL	0.000	0.874				
5'	0.000	0.640	0.000	72.000	112.506	0.000
SUM						
S1	0.000	0.865	0.000	72.000	83.246	0.000
S2	0.000	0.896	0.000	72.000	80.375	0.000
S3	0.000	0.925	0.000	72.000	77.805	0.000
S4	0.000	0.884	0.000	72.000	81.407	0.000
S5	0.000	0.781	0.000	72.000	92.182	0.000
S6	0.000	0.676	0.000	72.000	106.551	0.000
S7	0.000	0.665	0.000	72.000	108.278	0.000
S8	0.000	0.720	0.000	72.000	99.985	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	0.874	1.000	0.000

Air Zero Calibration, performed Wed Nov 06 06:40:25 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	

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
			STNDCH-1_11_16_CH 1.6875 IN CABLE HEAD	1.50	1.44	1.00
			CENT-Probe_275 Probe 2 3/4 Centralizer	2.88	2.75	20.00
			RBT_PRB275-Probe (11577056) Probe Radii Bond Tool with Digital Telemetry	8.33	2.75	90.00

WVFCAL	12.58		CENT-Probe_275 Probe 2 3/4 Centralizer	2.88	2.75	20.00
WVF3FT	12.58					
WVF5FT	10.58					
CCL	6.13					
GR	4.75					
			GR_PRB275-probe275dig (pr050806) Probe Digital Gamma CCL	4.75	2.75	57.00
			TEMP-Titan (Tit1.3_02) Titan Temp 1.3875	2.21	1.39	10.00
TEMP	0.17					
LLMTEN	0.00					
Dataset: livingston s19-25-11c.db: field/well/run1/MAIN_PASS Total length: 22.54 ft Total weight: 198.00 lb O.D.: 2.75 in						

Company	EXTRACTION OIL & GAS INC				
Well	LIVINGSTON S19-25-11C				
Field	WATTENBERG				
County	BROOMFIELD	State	CO		
HALLIBURTON	RADIAL CEMENT BOND LOG				