

HALLIBURTON

RADIAL CEMENT
BOND LOG

Company

Well

Field

County

EXTRACTION OIL & GAS INC
LIVINGSTON S19-25-10N
WATTENBERG
BROOMFIELD CO

Company

Well

Field

County

State

CO

EXTRACTION OIL & GAS INC
LIVINGSTON S19-25-10N
WATTENBERG
BROOMFIELD

API No.:

05142074800

Serv #:

906093559

Other Services

Location:

SURFACE HOLE LOCATION:
2331' FSL & 1366' FEL NWSE

LATITUDE:

39.978562

LONGITUDE:

-105.039544

NONE

Sec: 7

Twp: 1S

Rge: 68W

Permanent Datum

GROUND LEVEL

Elevation

5320

Elevation

Log Measured From

KB

29

Ft. above perm. datum

K.B. 5349
D.F. 5349
G.L. 5320

Drilling Measured From

KB

Date @ Time Logged

11/6/19 @ 10:30

Type Fluid in Hole

FRESH WATER

Run No.

ONE

Density of Fluid

8.4#

Depth - Driller

20985

Fluid Level

SURFACE

Depth - Logger

7549

Cement Top Est. Logged

SURFACE

Bottom - Logged Interval

7539

Equipment / Location

11014931 / BRIGHTON

Top - Log Interval

SURFACE

Recorded by

J. SCHMIDT

Max. Recorded Temp.

228 F

Witnessed by

M. PARRAS

CEMENTING DATA

Surface

Protection

M. Liner

String

String

Date / Time Cemented

Primary / Squeeze

Expected Compressive Strength

psi@

hrs

psi@

hrs

psi@

hrs

Cement Volume

Cement Type / Weight

/

/

/

/

/

/

Formulation

Mud Type / Mud Wgt.

/

/

/

/

/

/

Borehole Record

Run Number

Bit

From

To

Size

Weight

From

To

ONE

12.25

0

1500

9.625

36

0

1500

TWO

8.5

1500

20985

5.5

17

0

20985

<<< Fold Here >>>

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 7392.

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.	906093559	API No.	05142074800	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	

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		

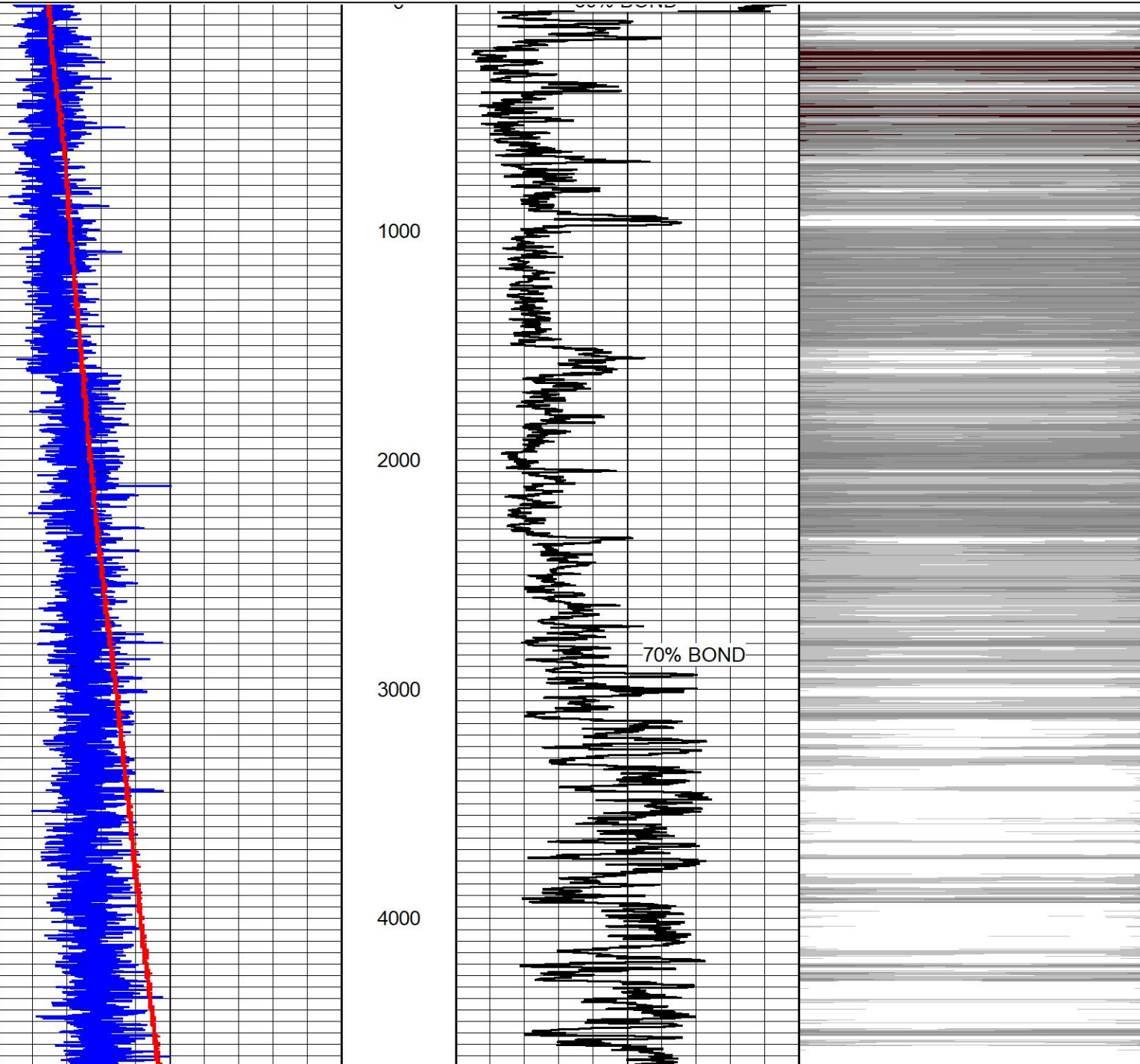
BOND INDEX

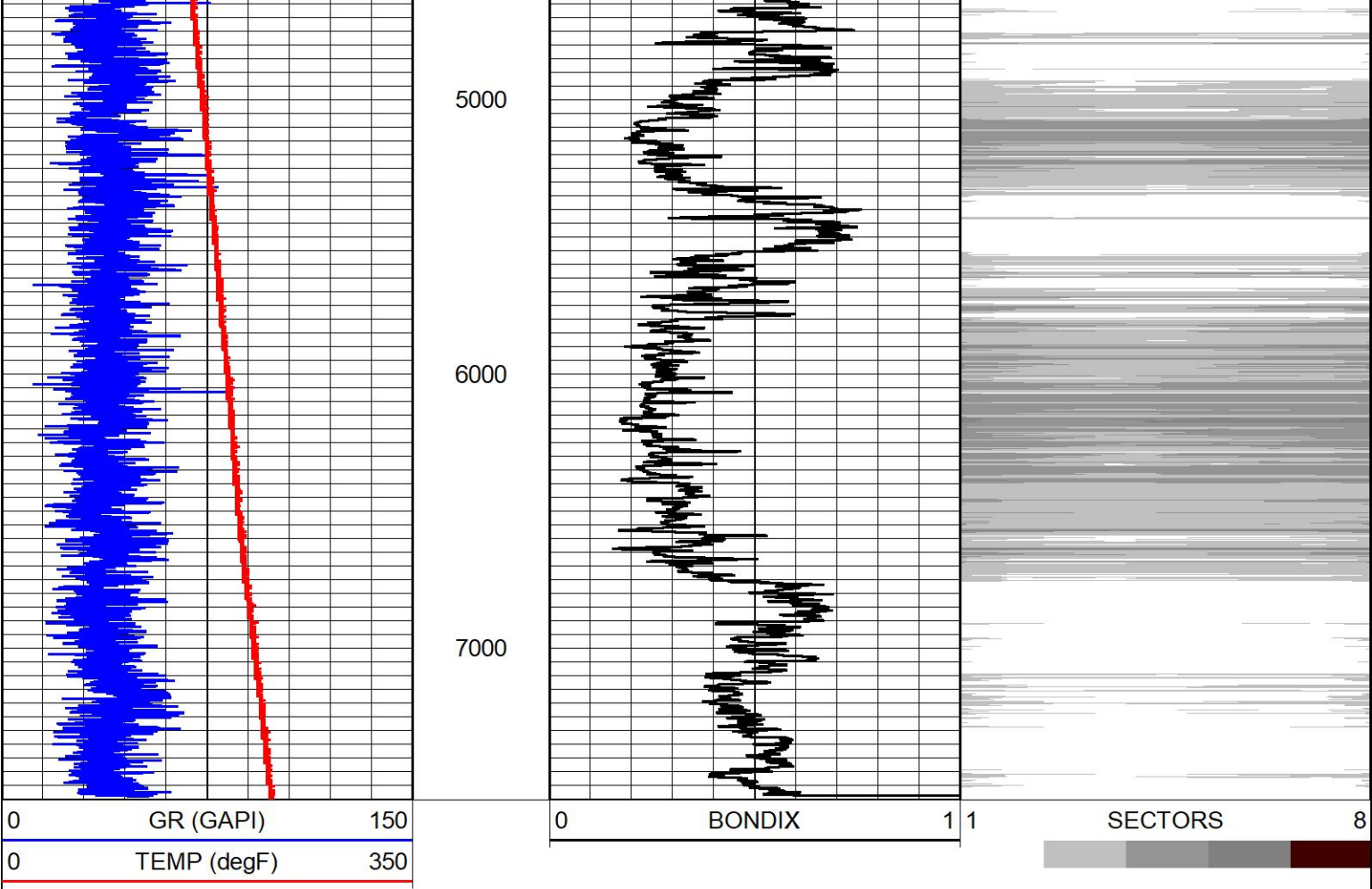
HALLIBURTON

1:7500

Database File livingston s19-25-10n.db
Dataset Pathname MAIN_PASS.1
Presentation Format EXTRAC~2
Dataset Creation Wed Nov 06 11:17:49 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

HALLIBURTON

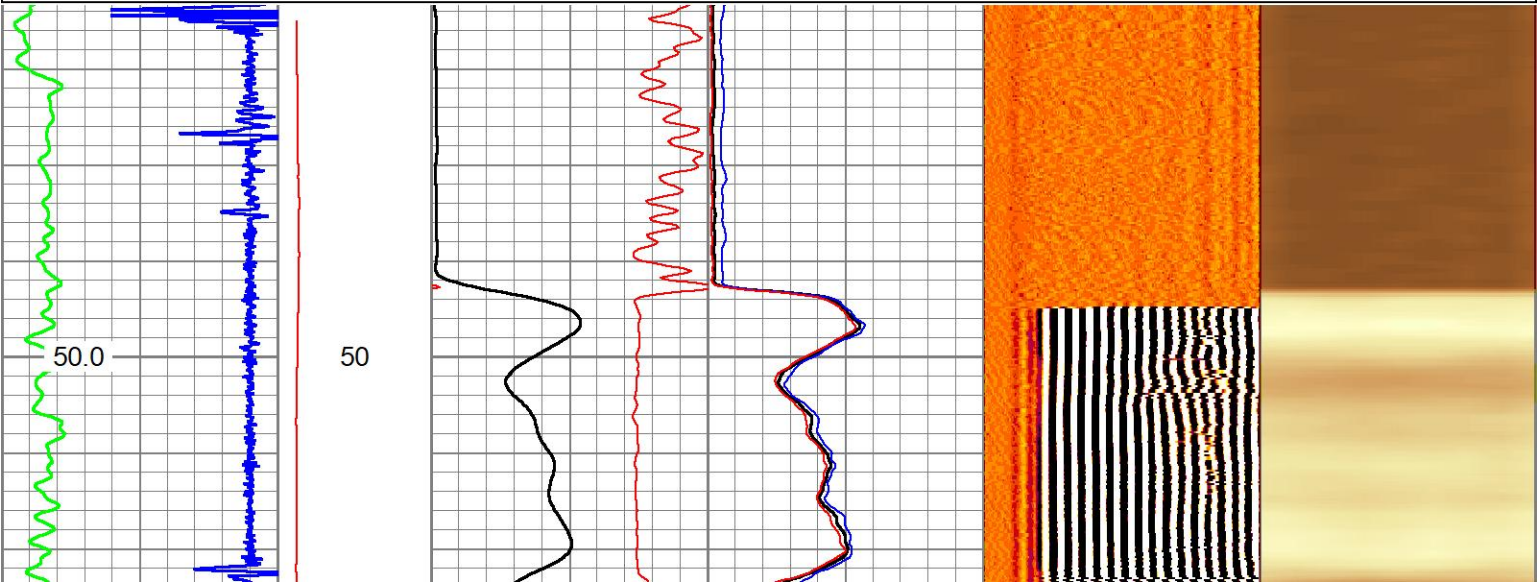
MAIN PASS

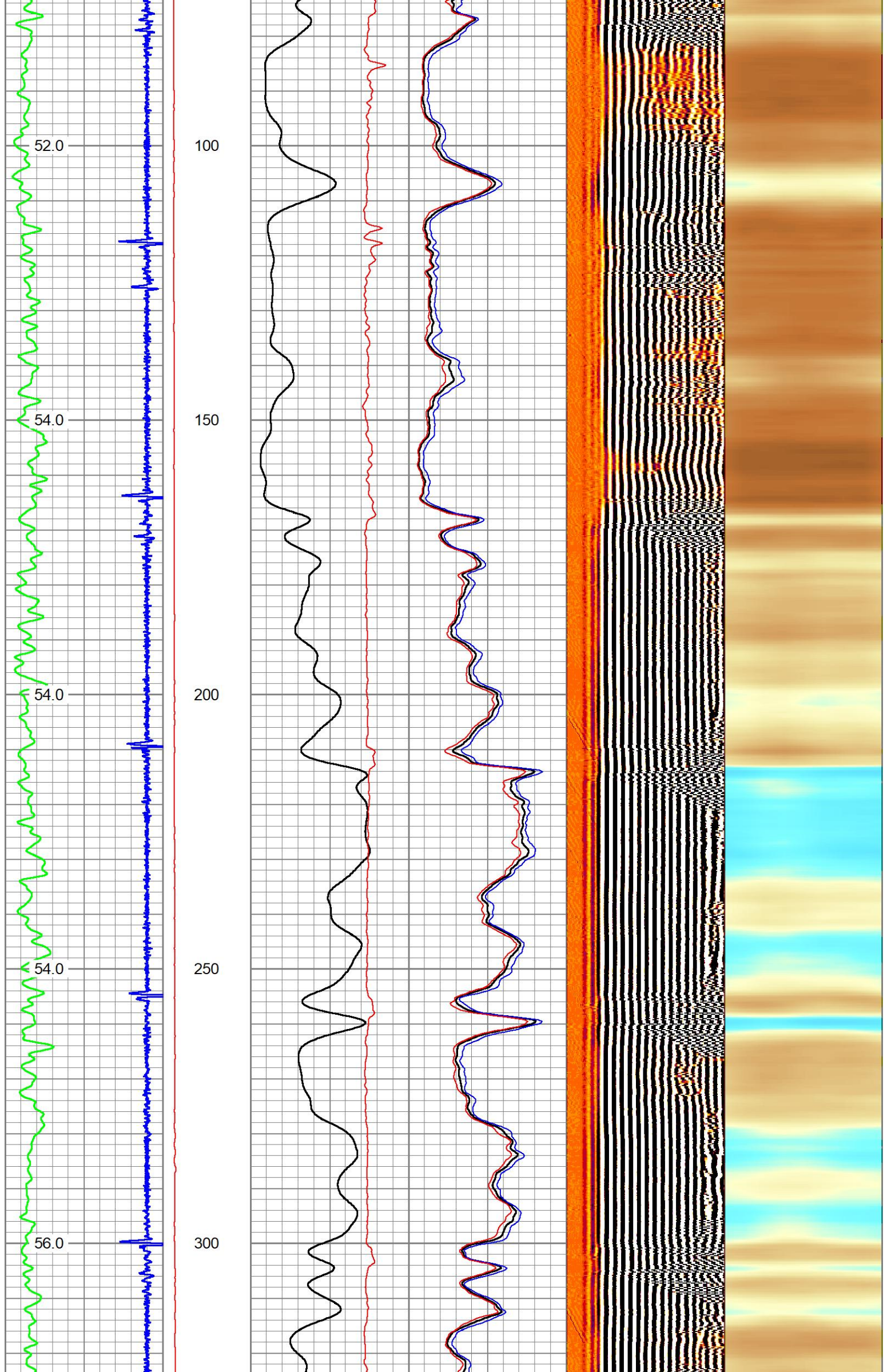
5" = 100'

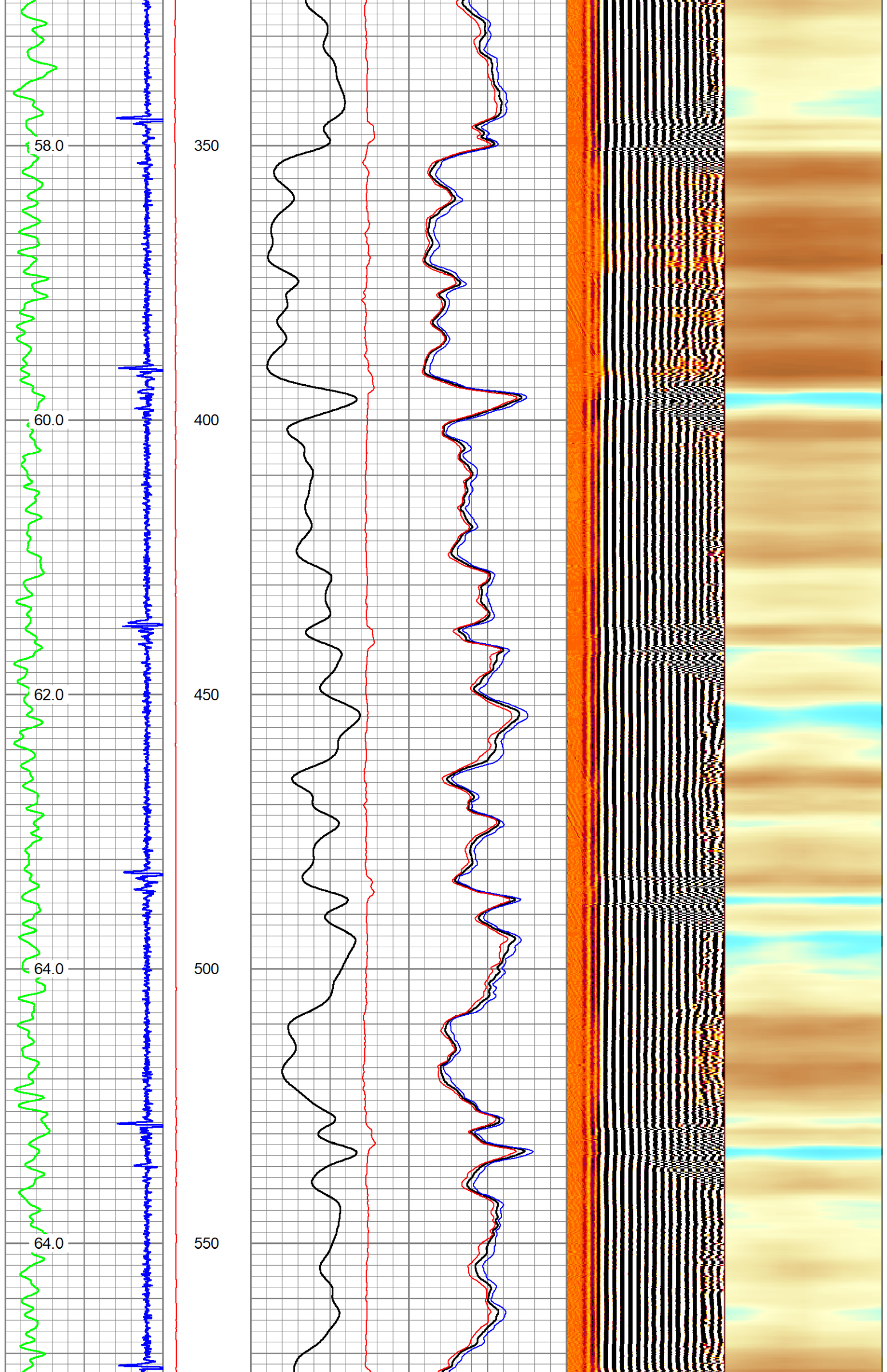
HALLIBURTON

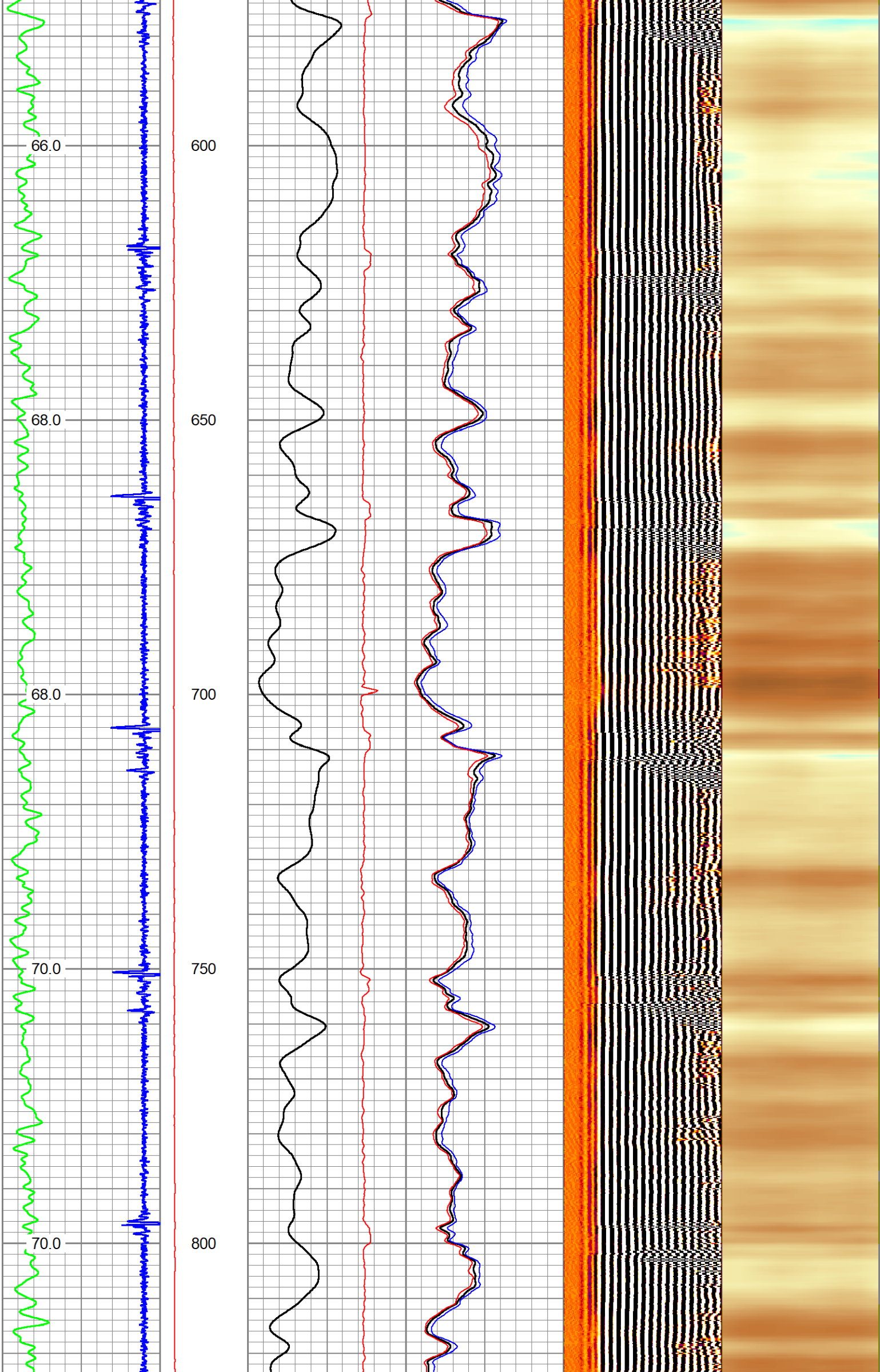
Database File livingston s19-25-10n.db
Dataset Pathname MAIN_PASS
Presentation Format extraction rcbl
Dataset Creation Wed Nov 06 10:17:23 2019
Charted by Depth in Feet scaled 1:240

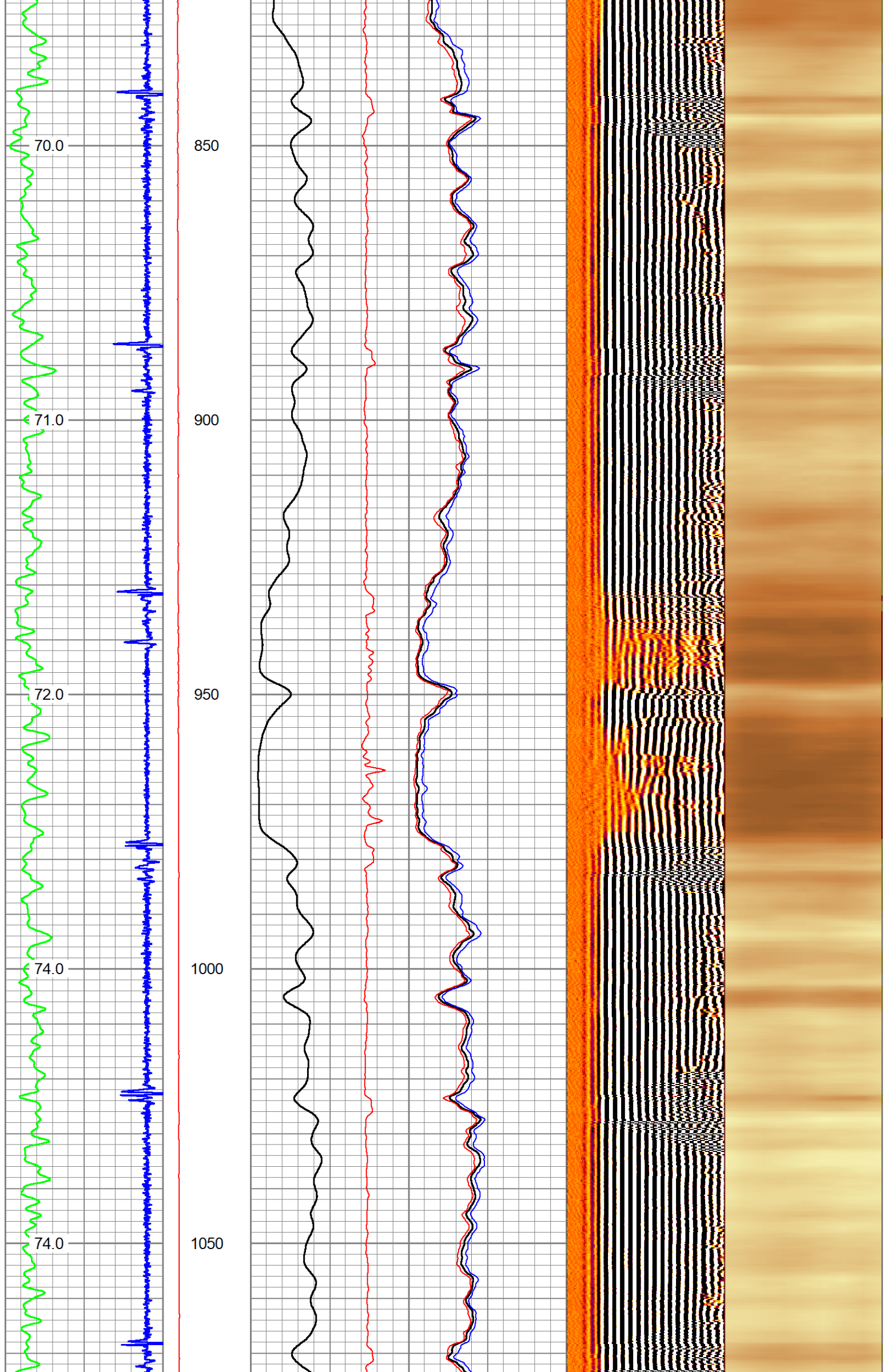
-18	CCL	2	LTEN	0	AMP3FT (mV) 100	0	AMPAVG	100	200	VDL (usec) 1200	1	RADIAL MAP	8
0	GR (GAPI)	150	0	(lb/2000)	3ft Travel Time	0	AMPMAX	100					
TEMP					200 (usec) 300	0	AMPMIN	100					
(degF)													

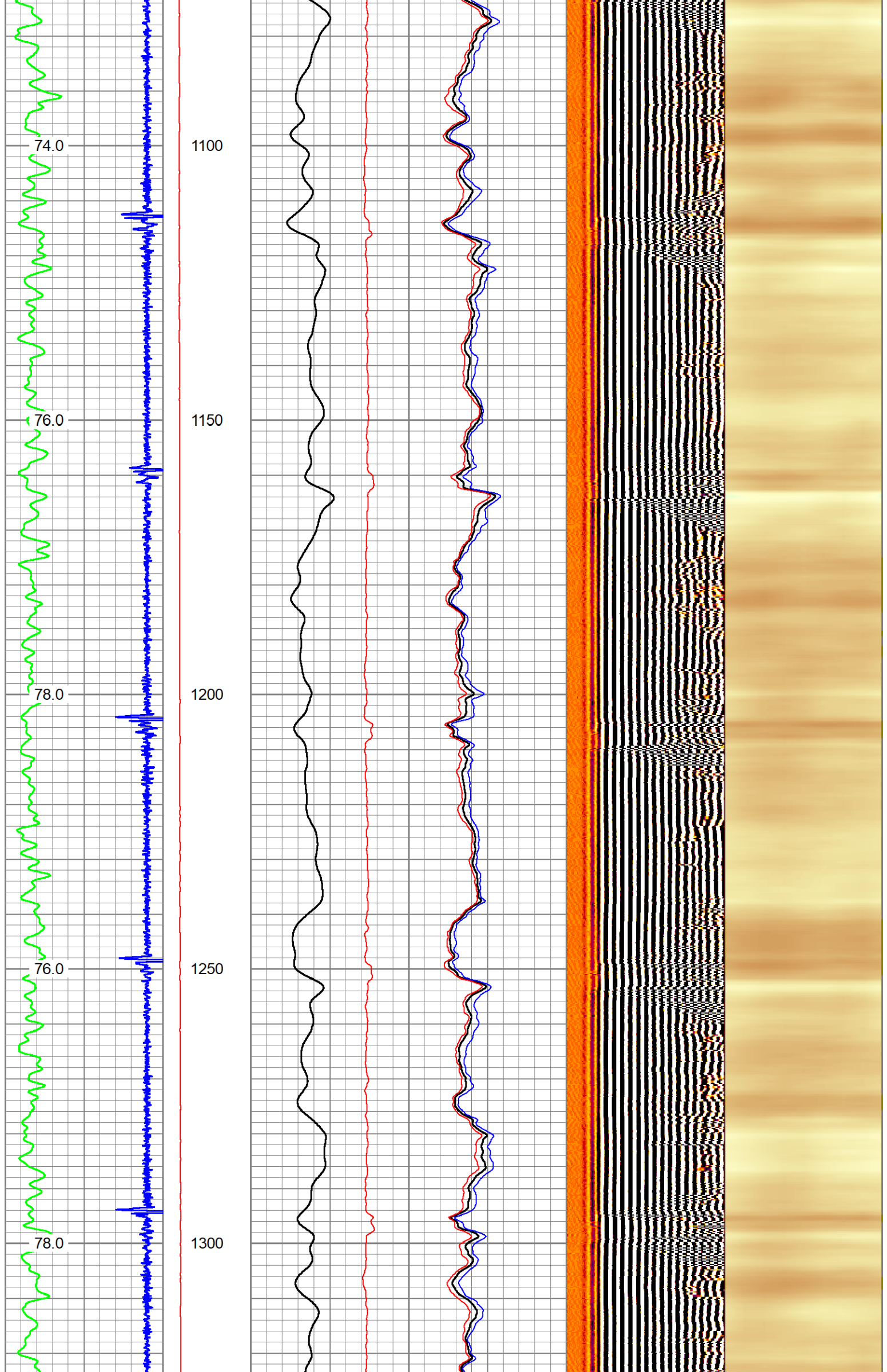


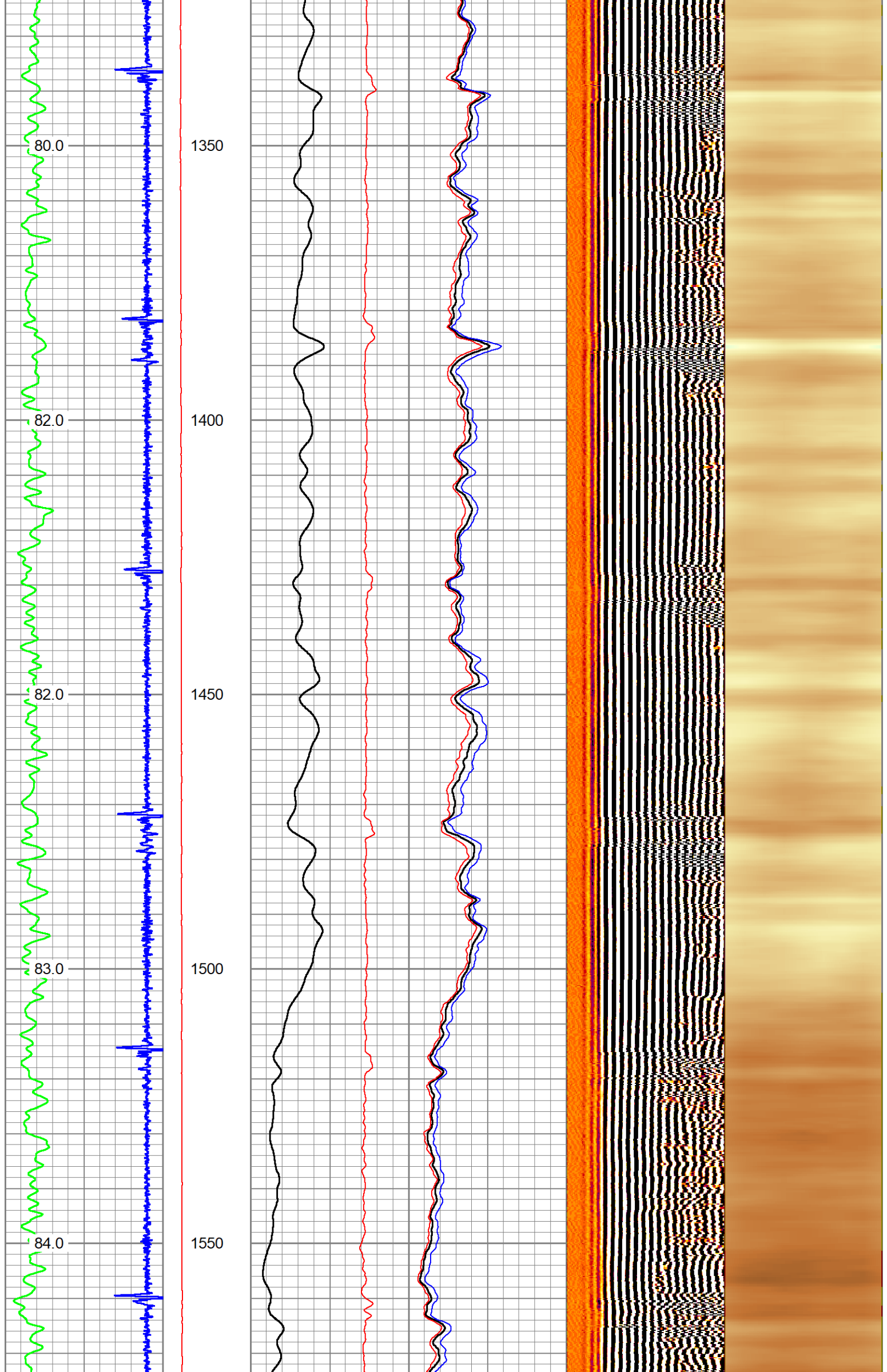


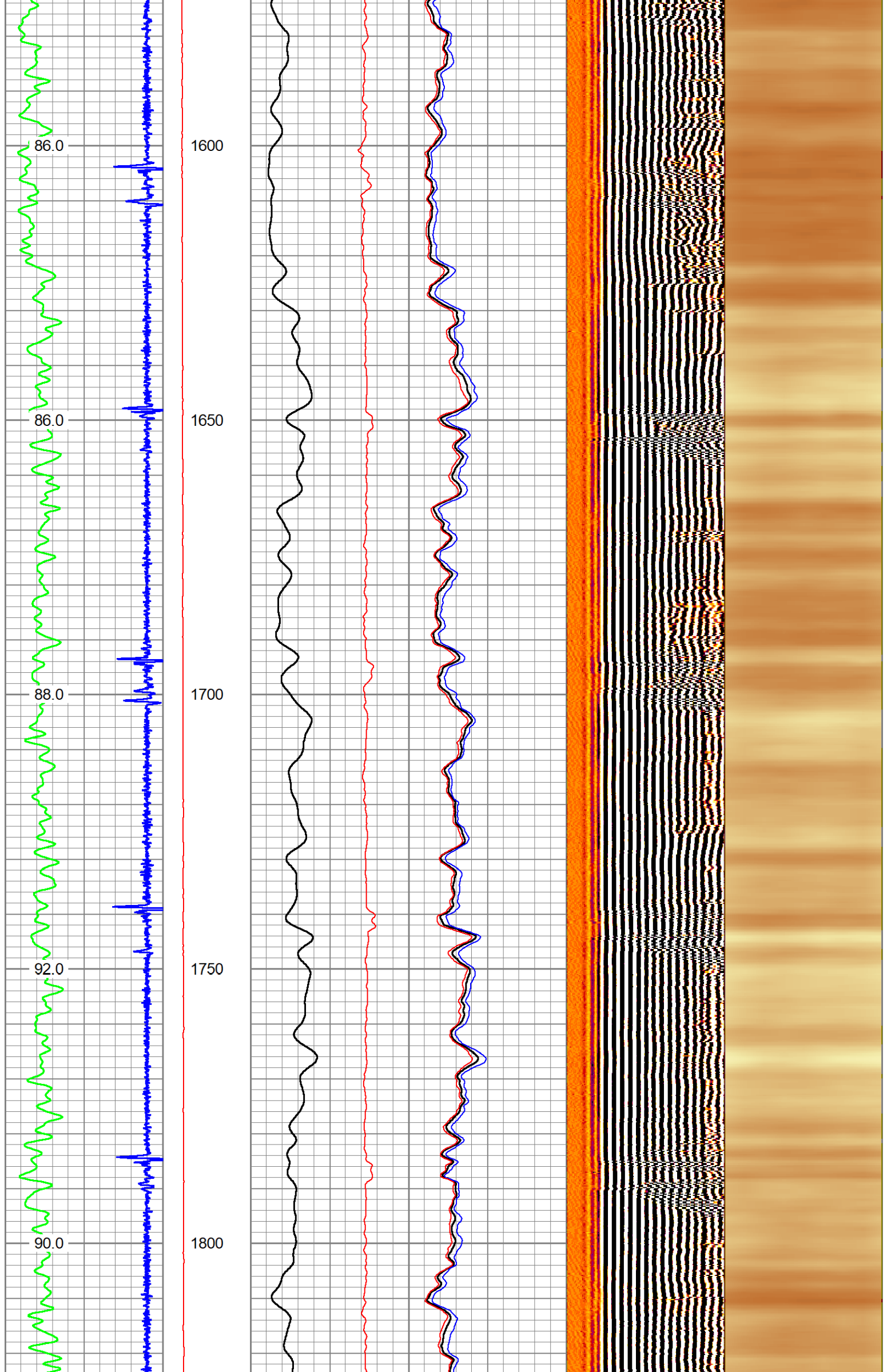


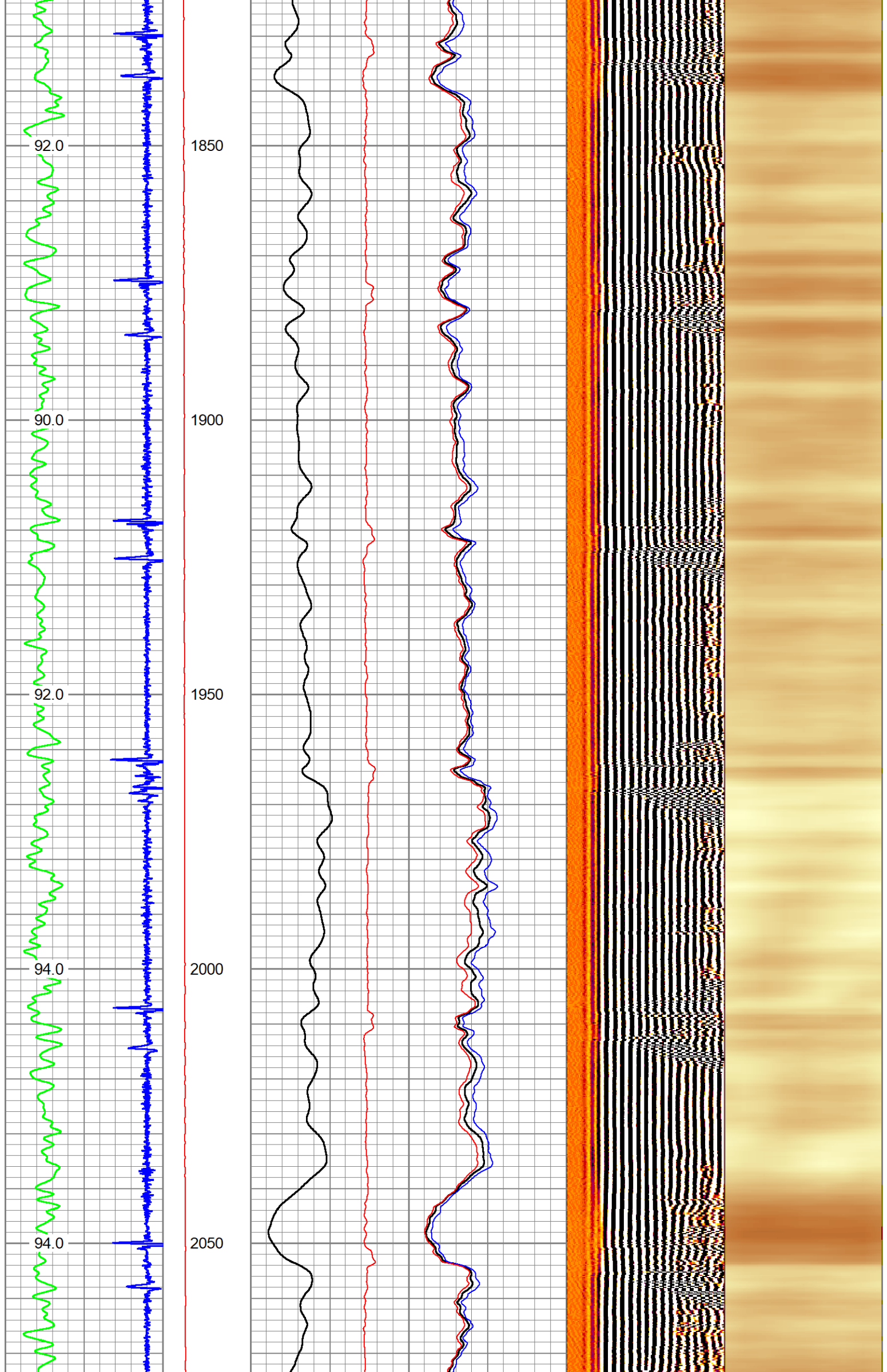


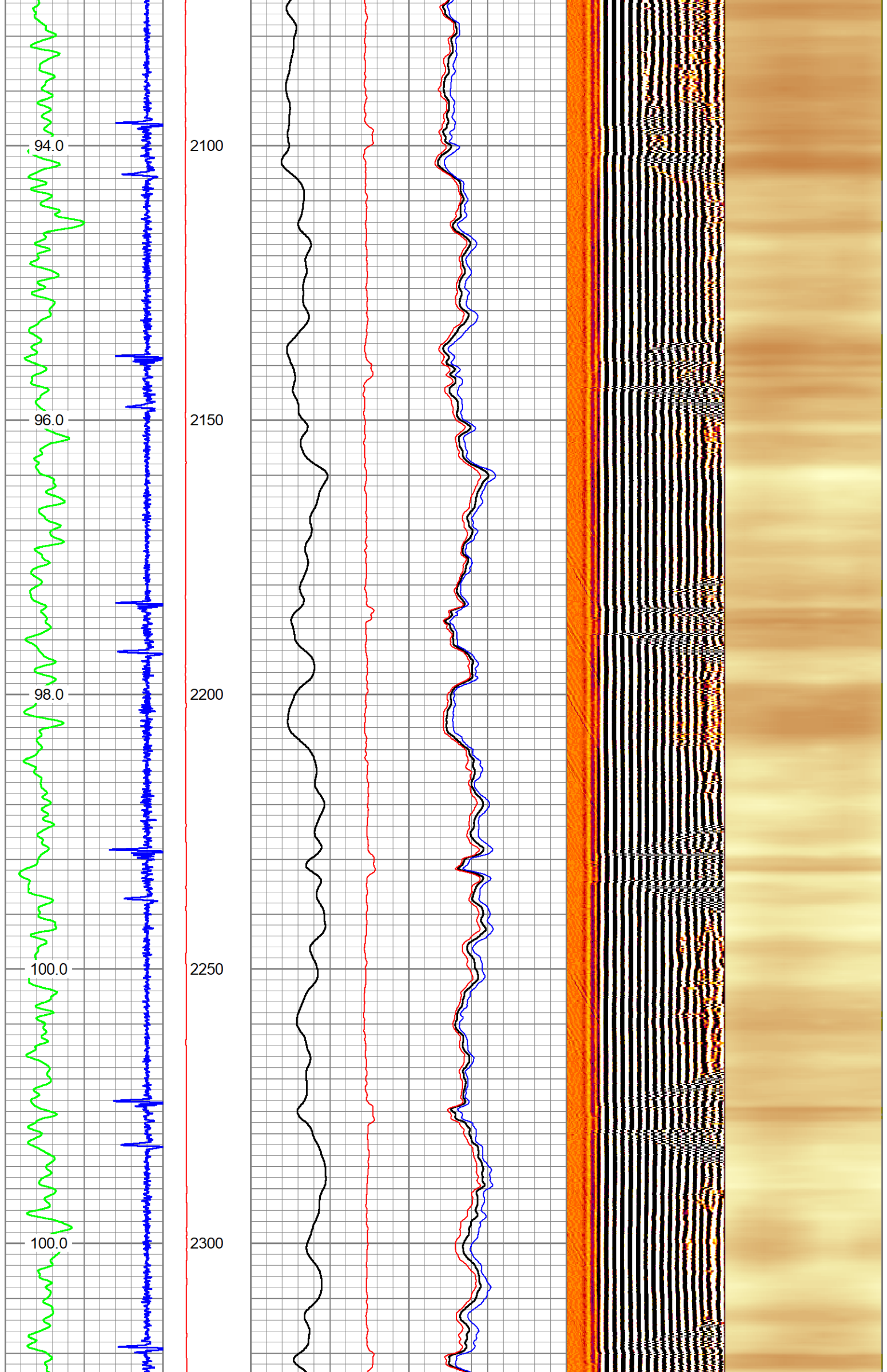


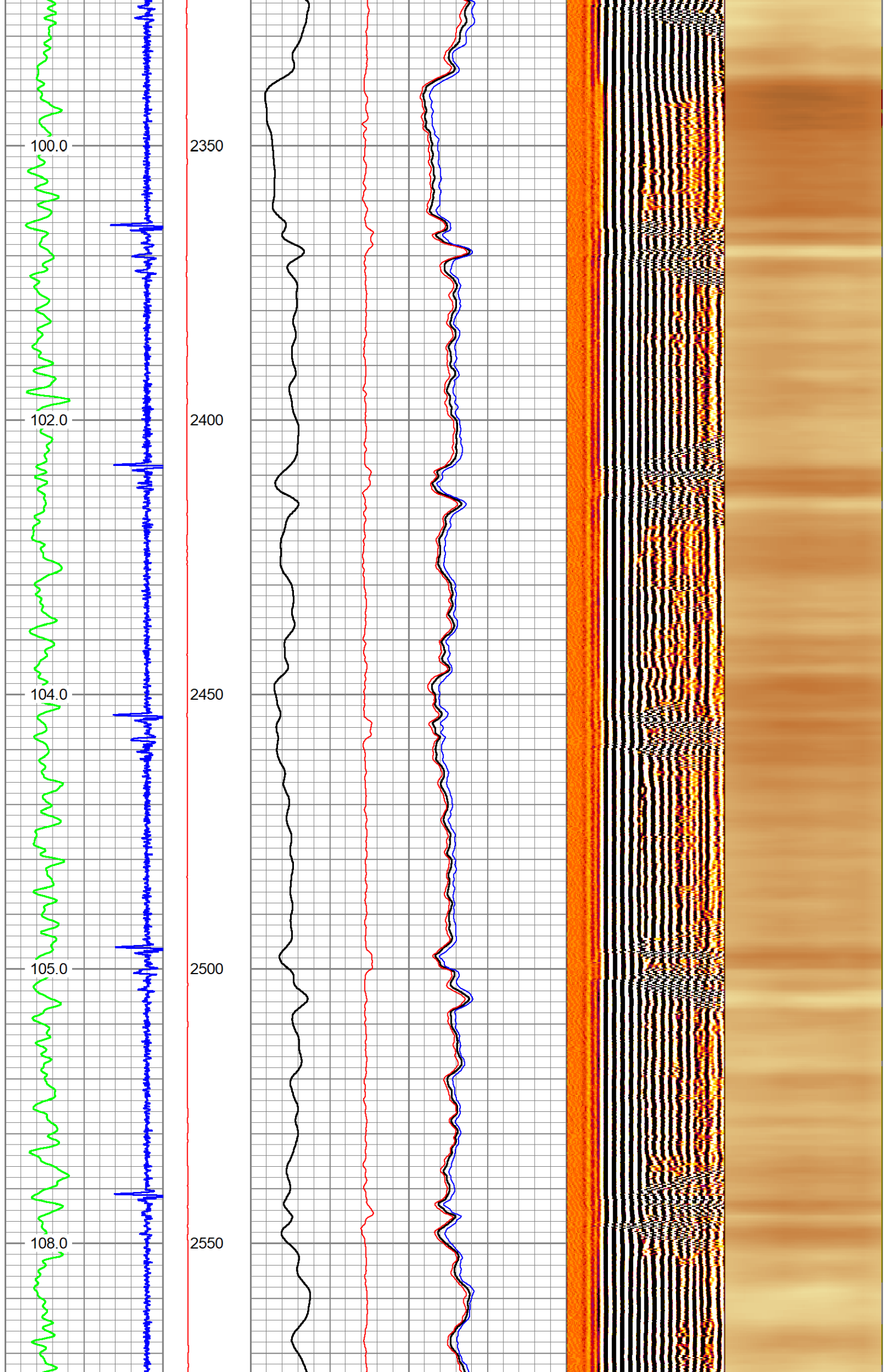


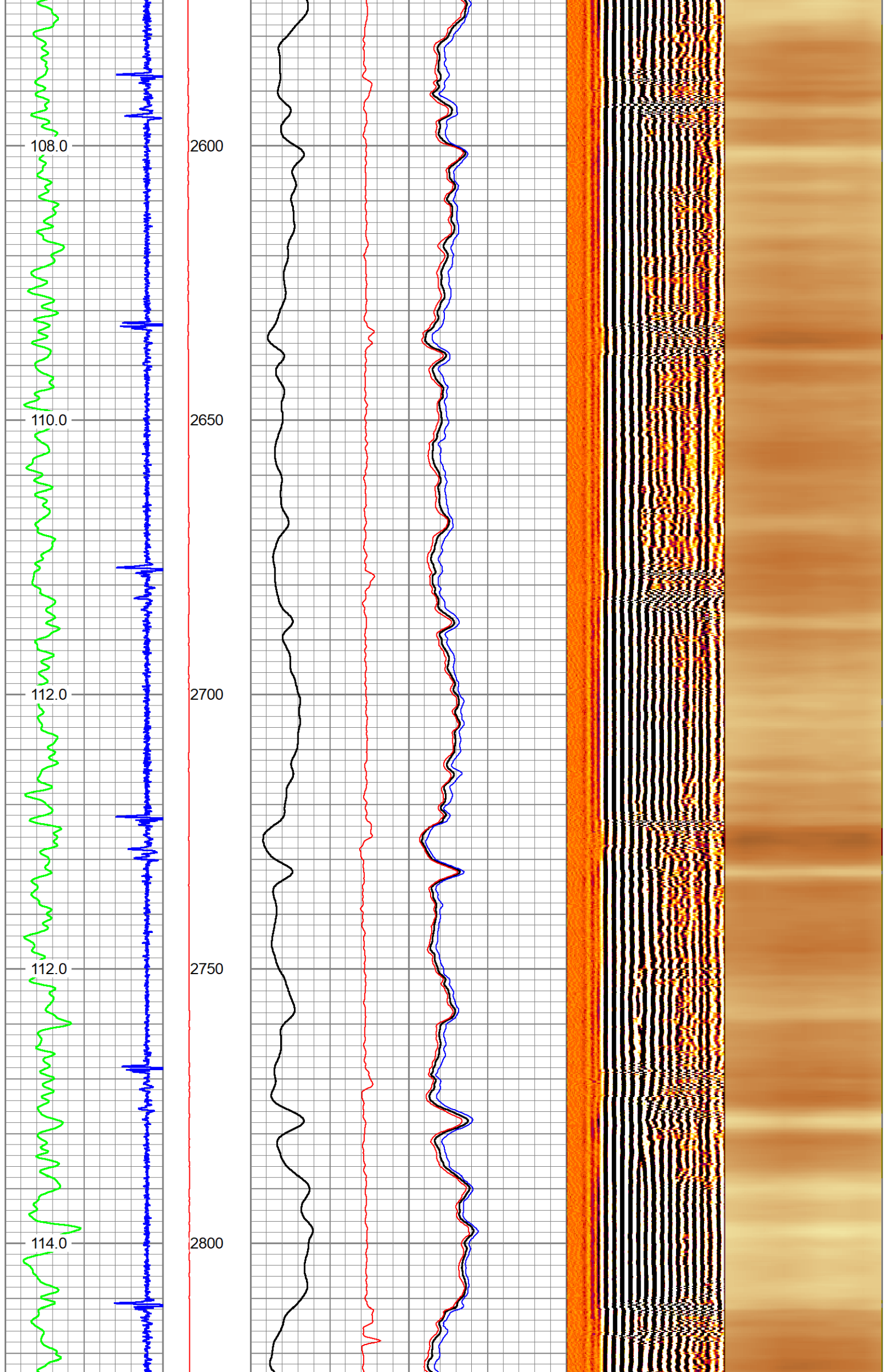


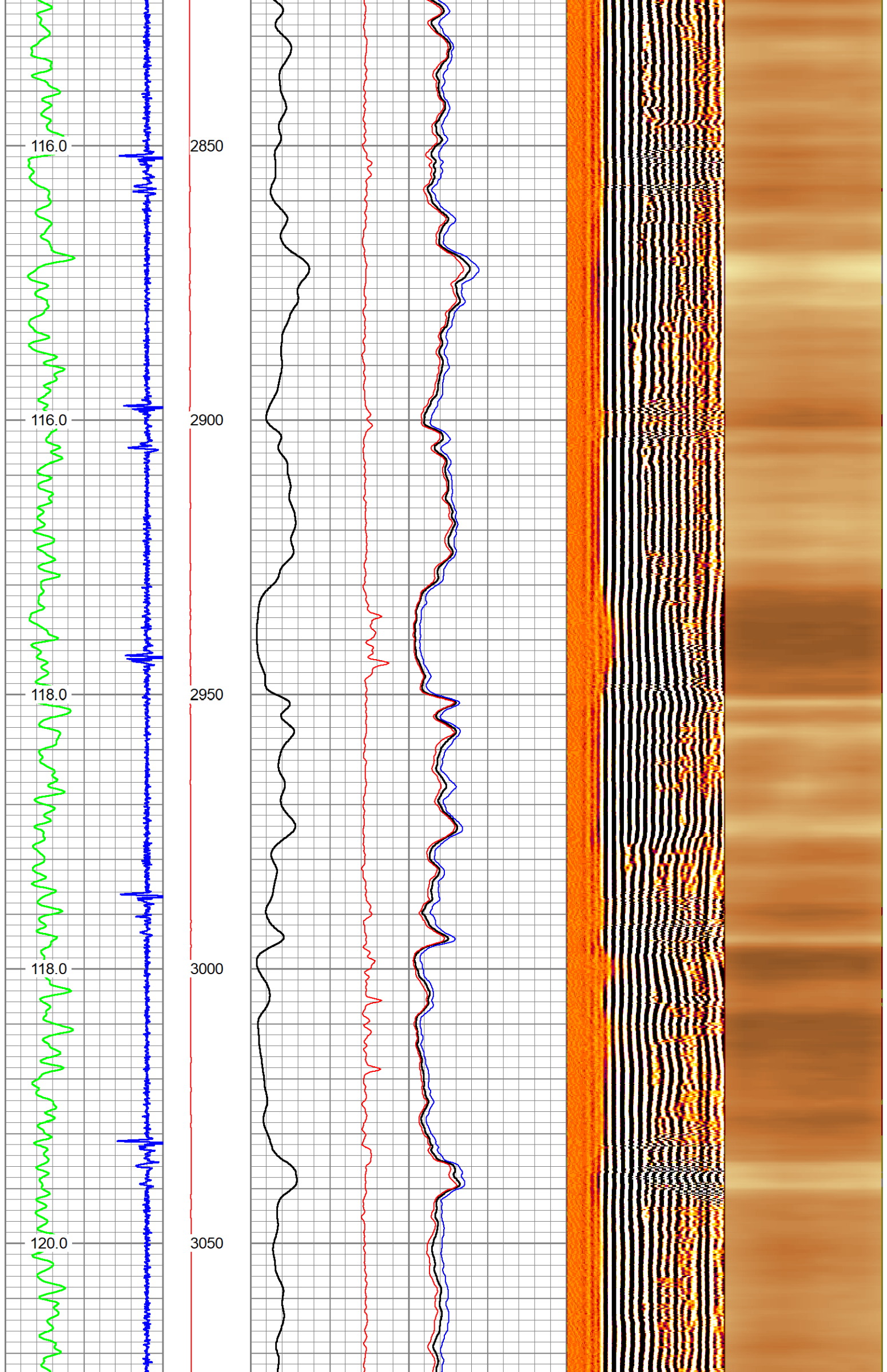


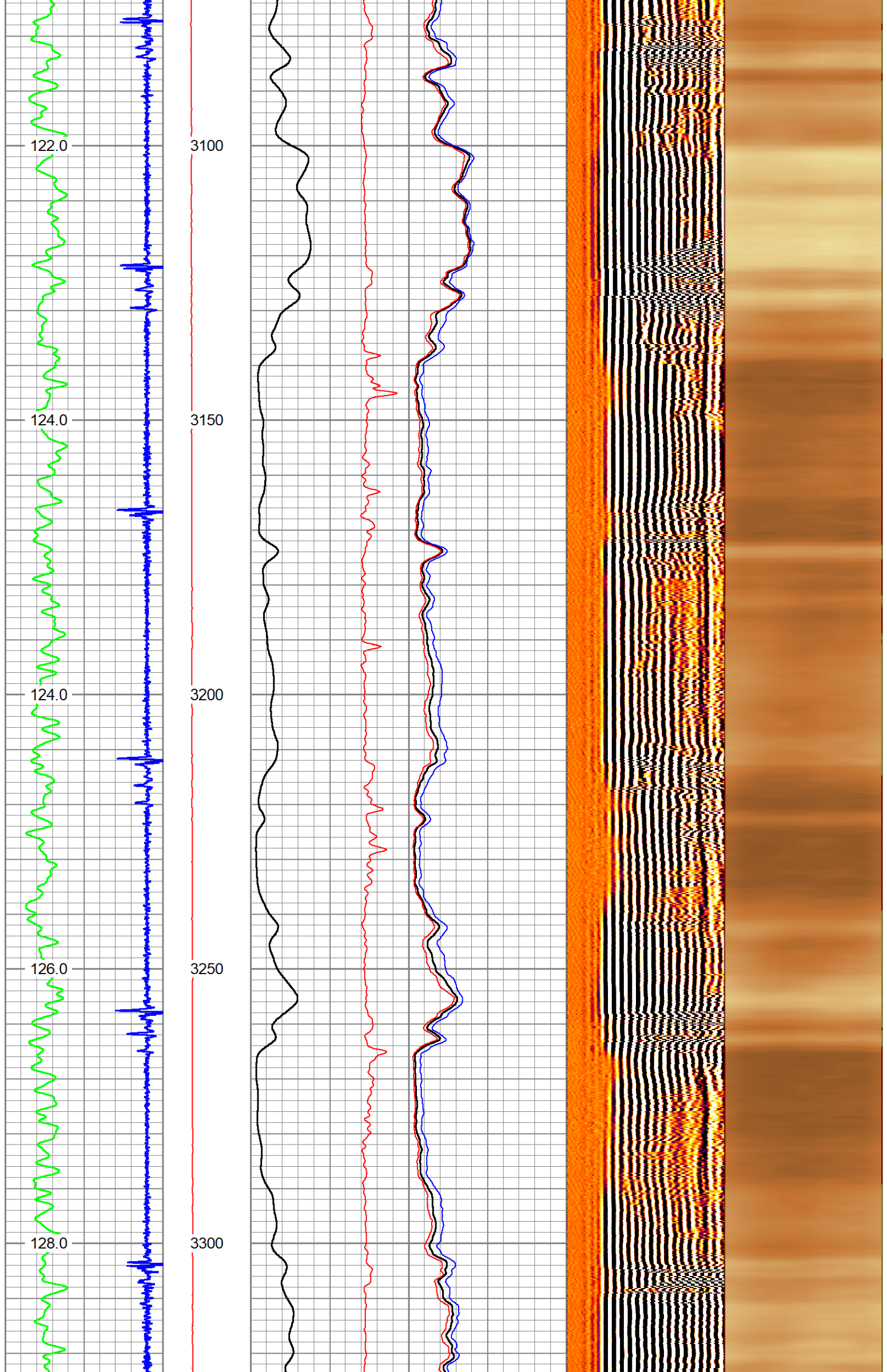


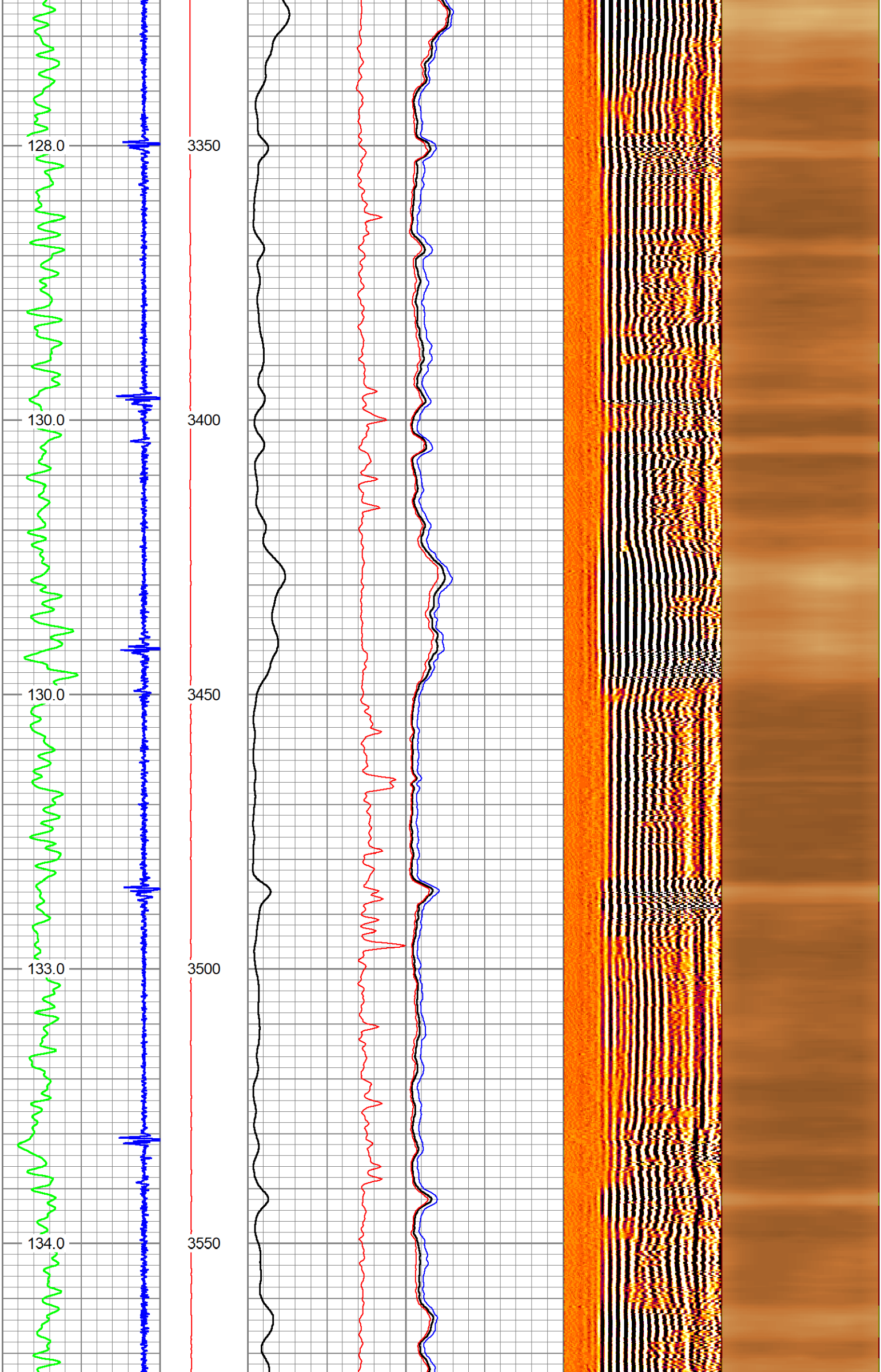


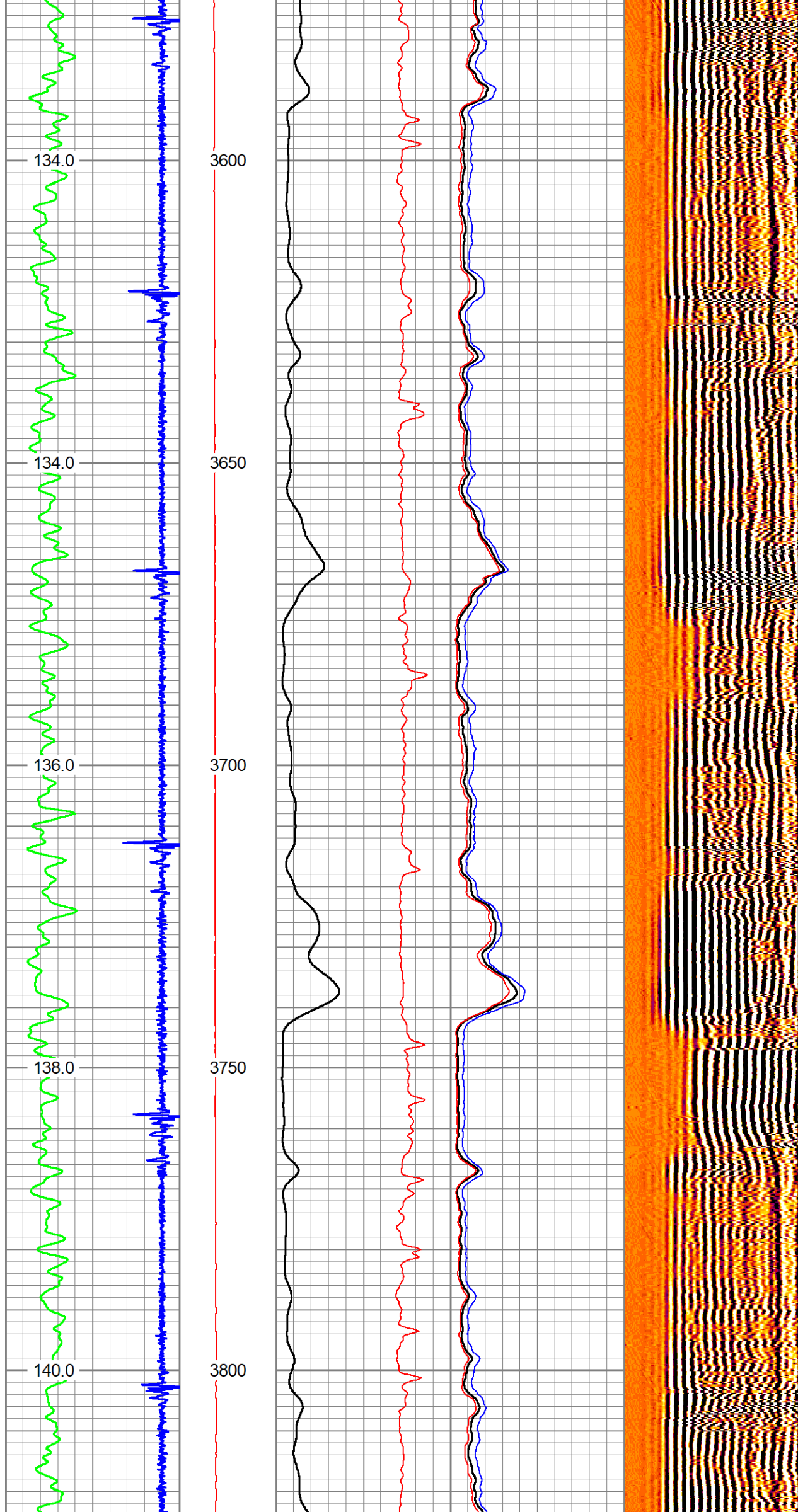


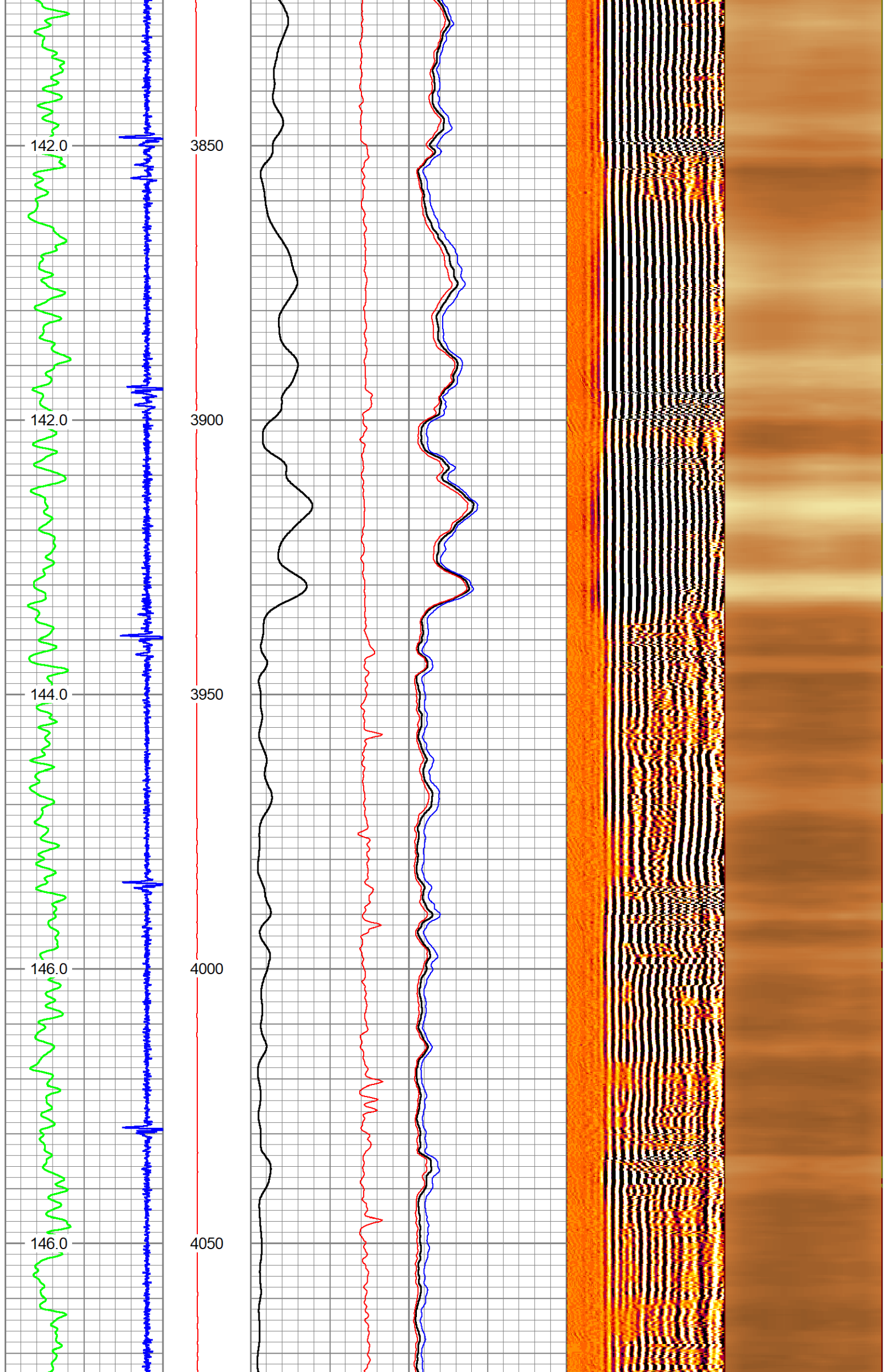


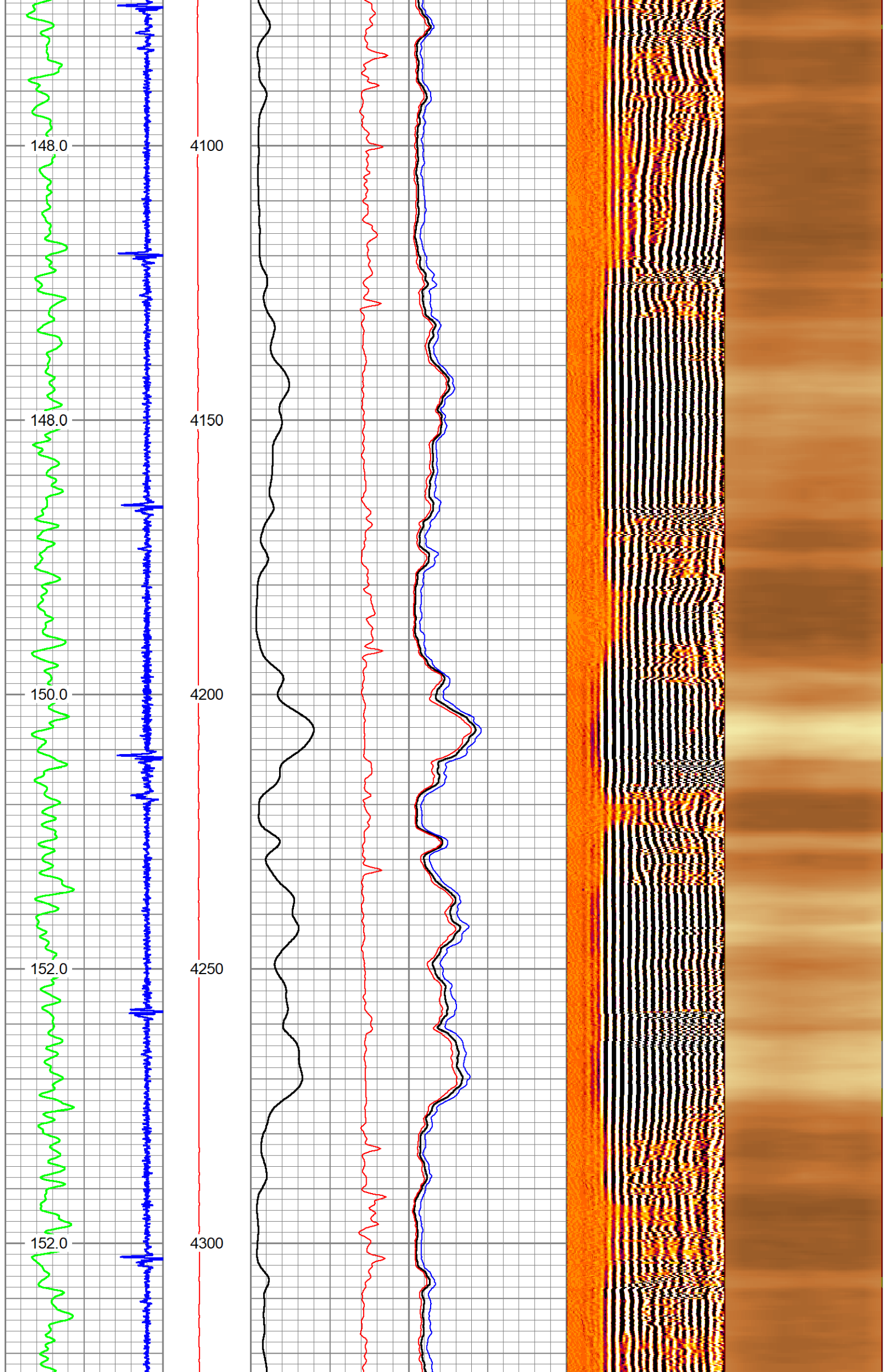


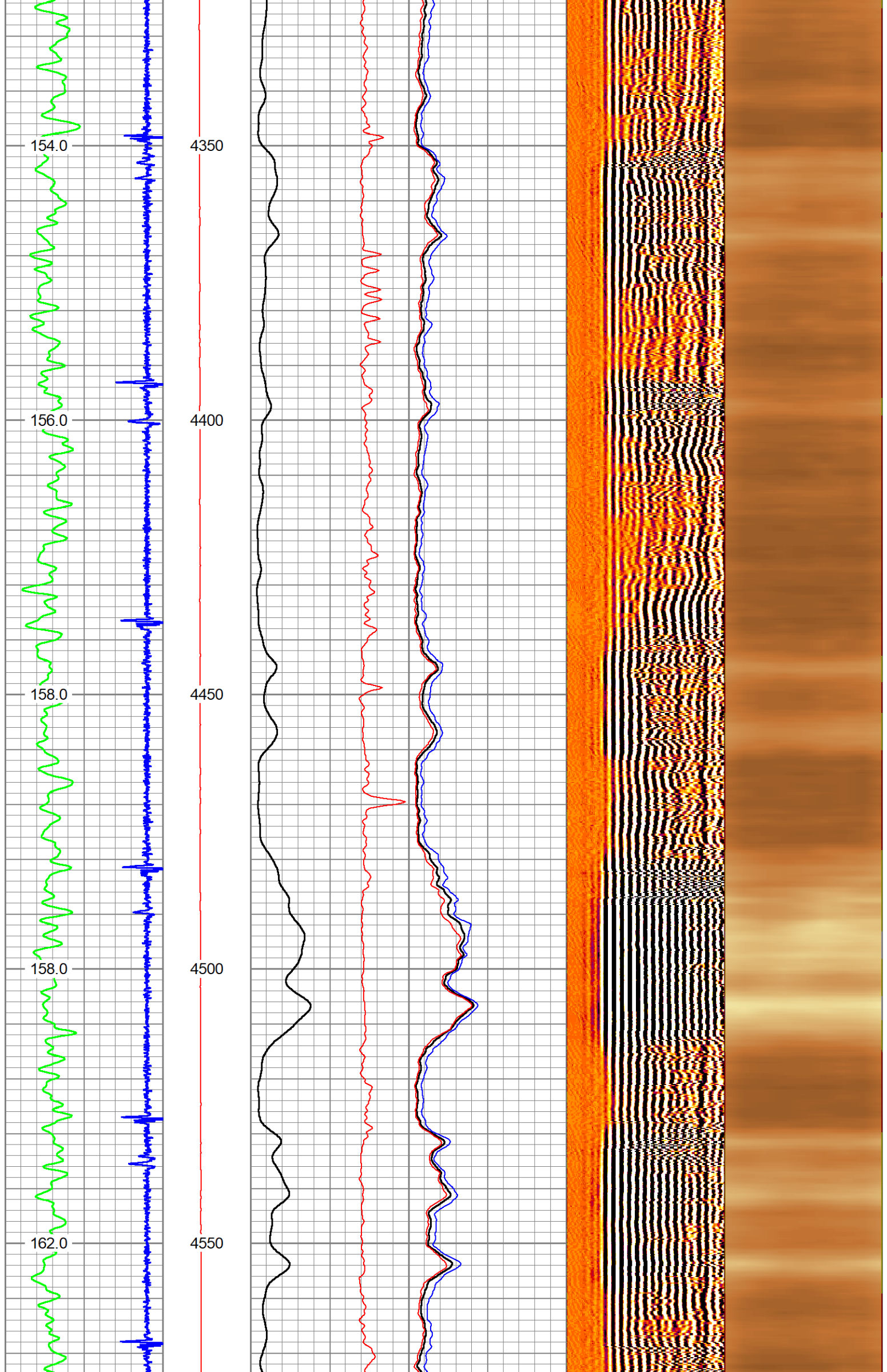


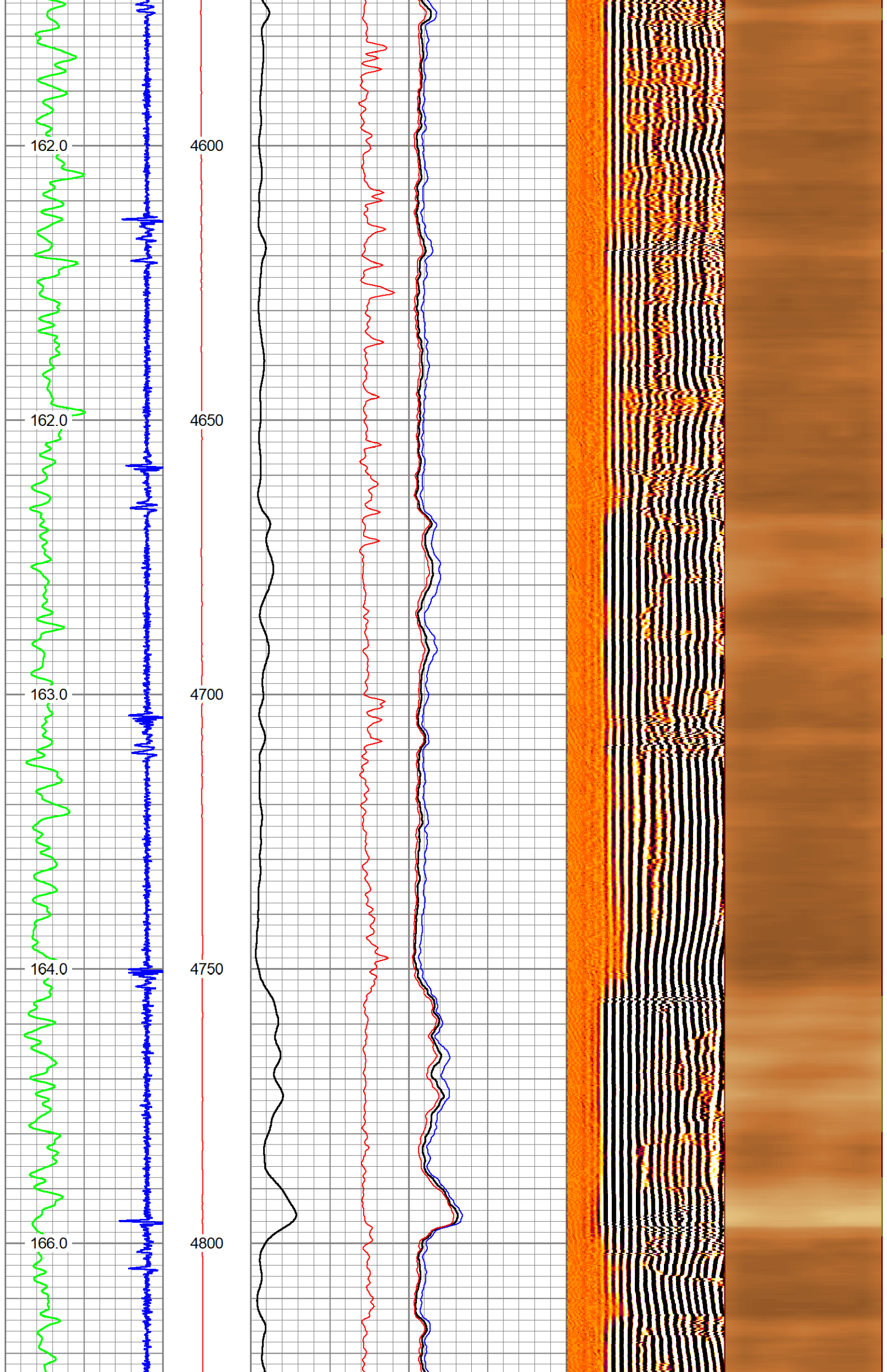


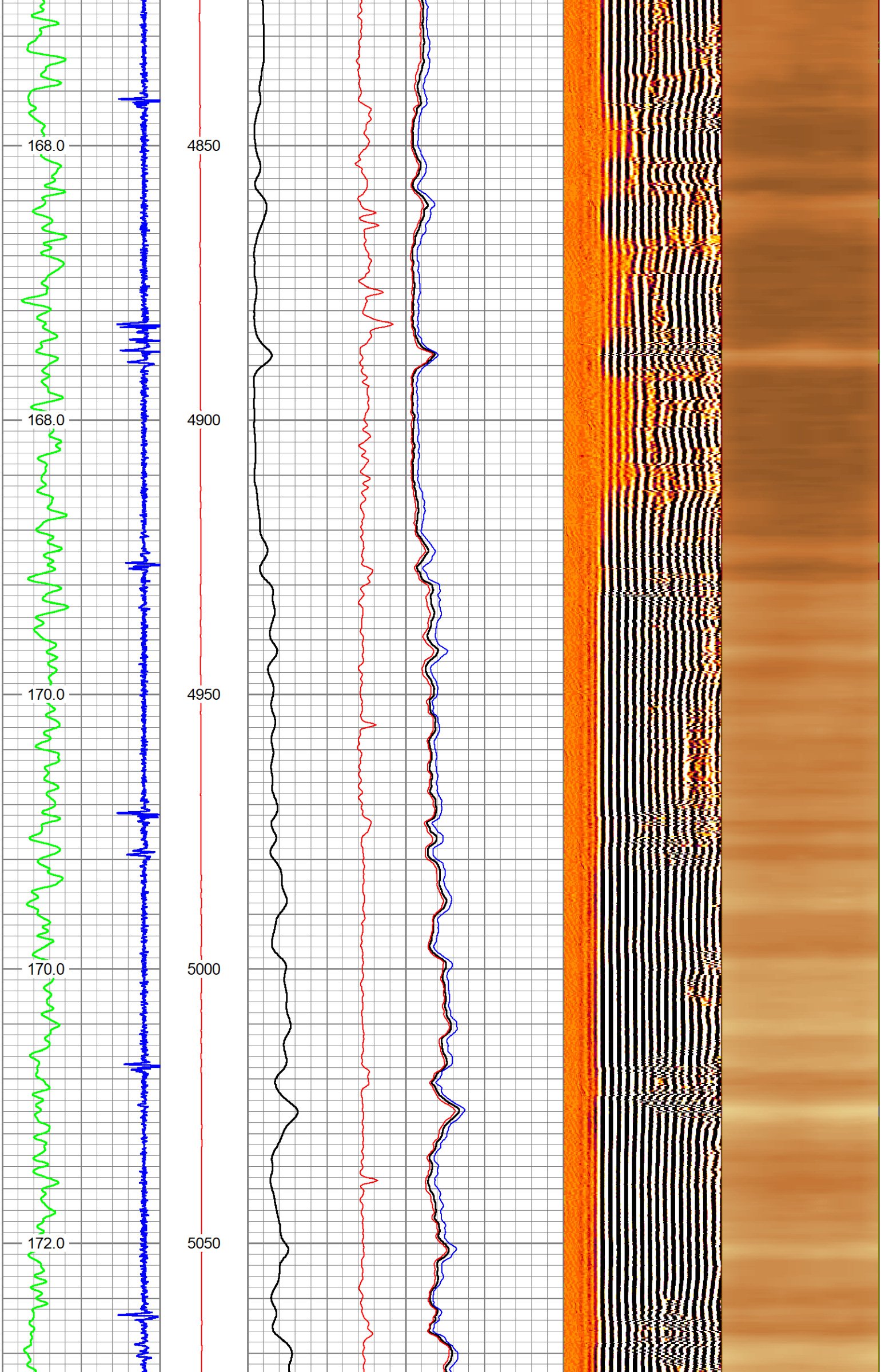


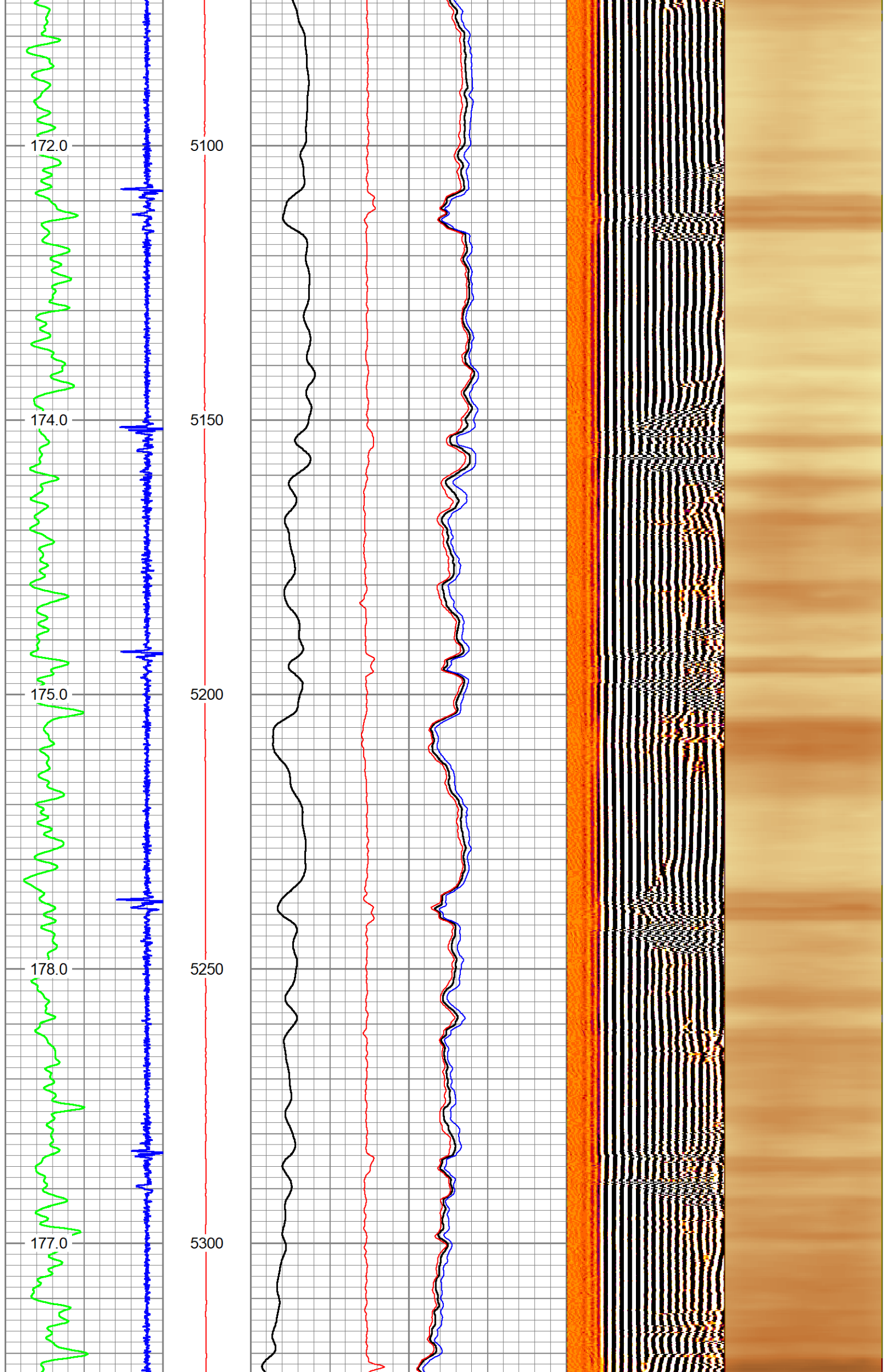


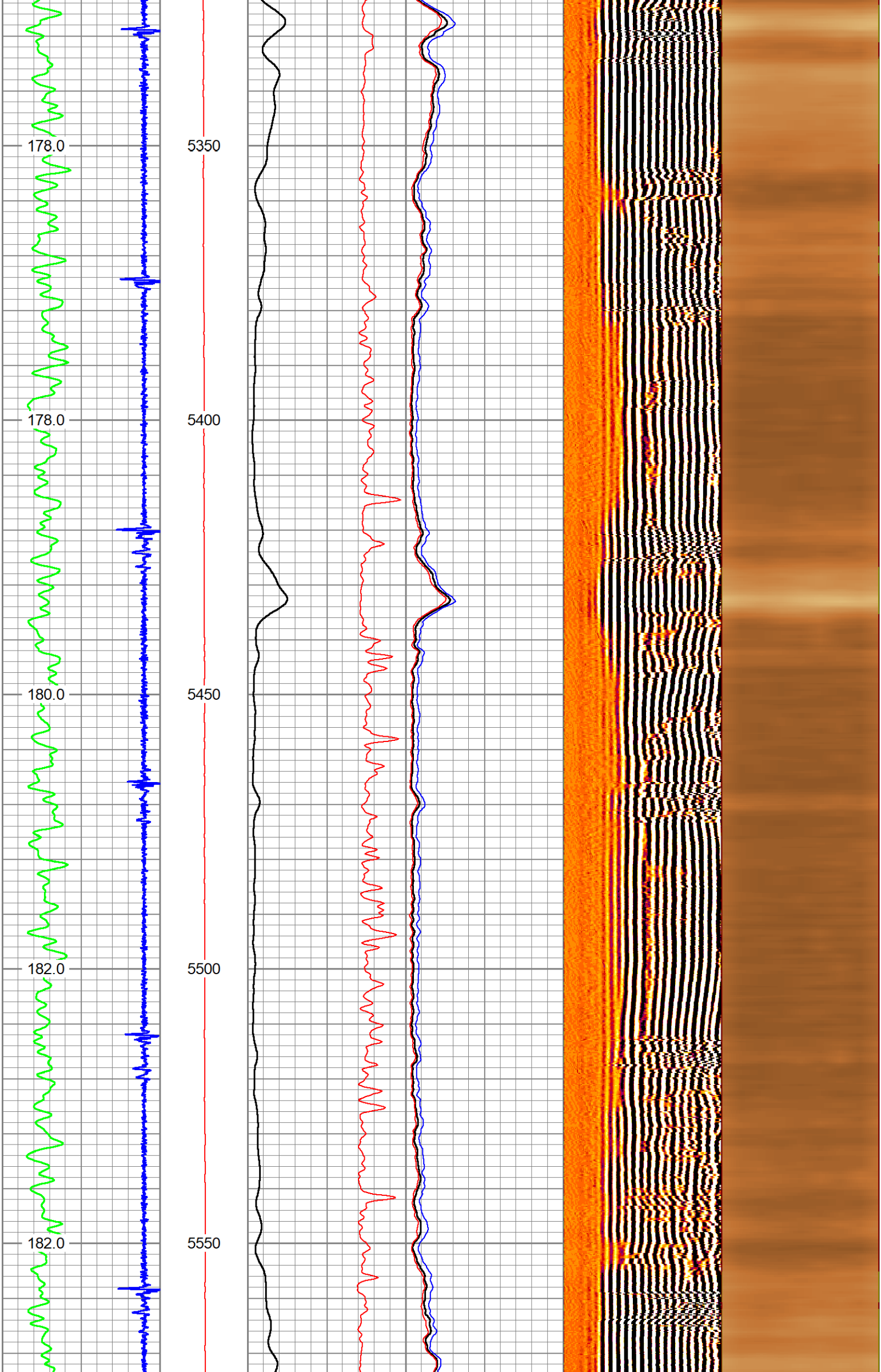


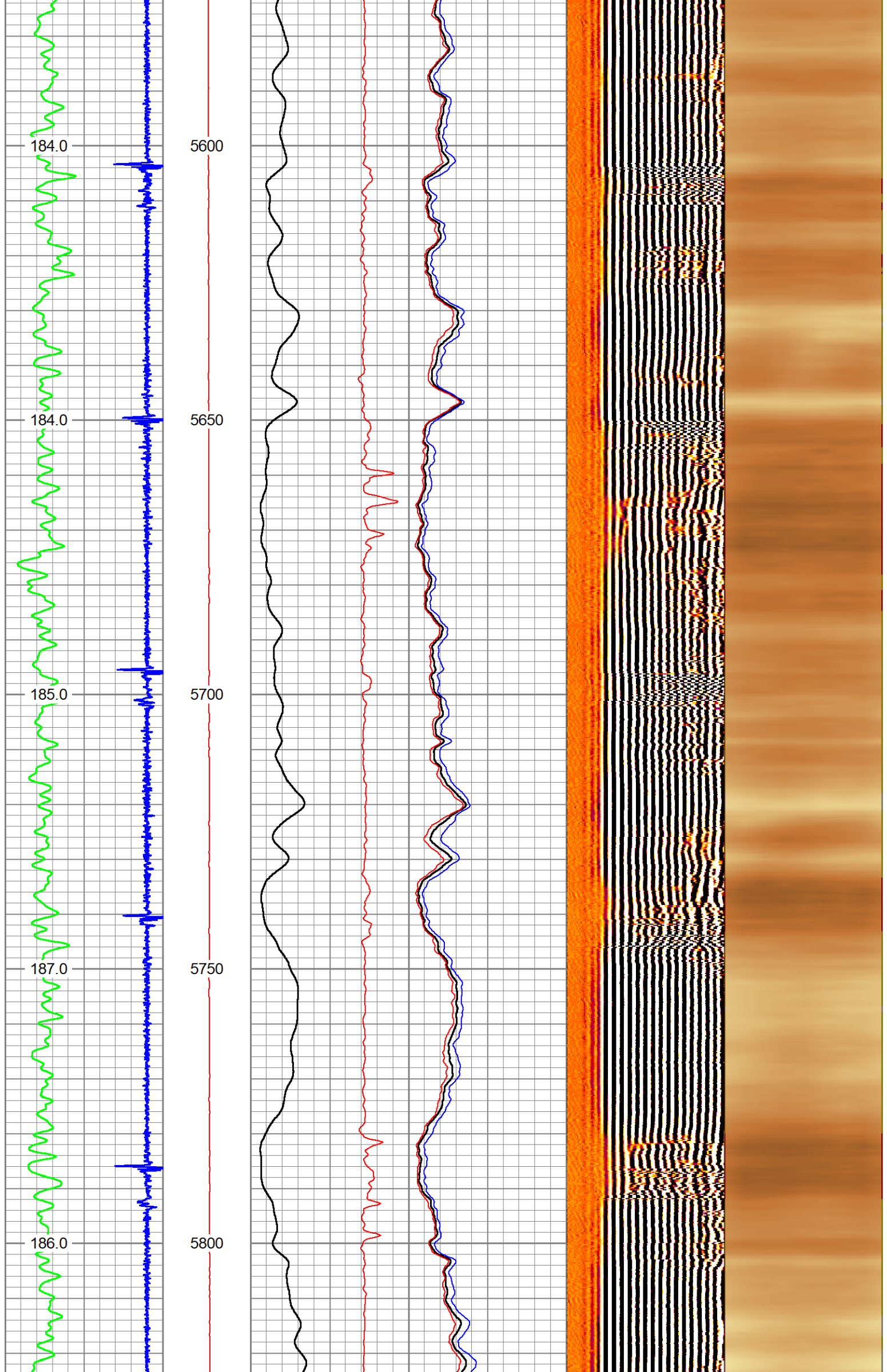


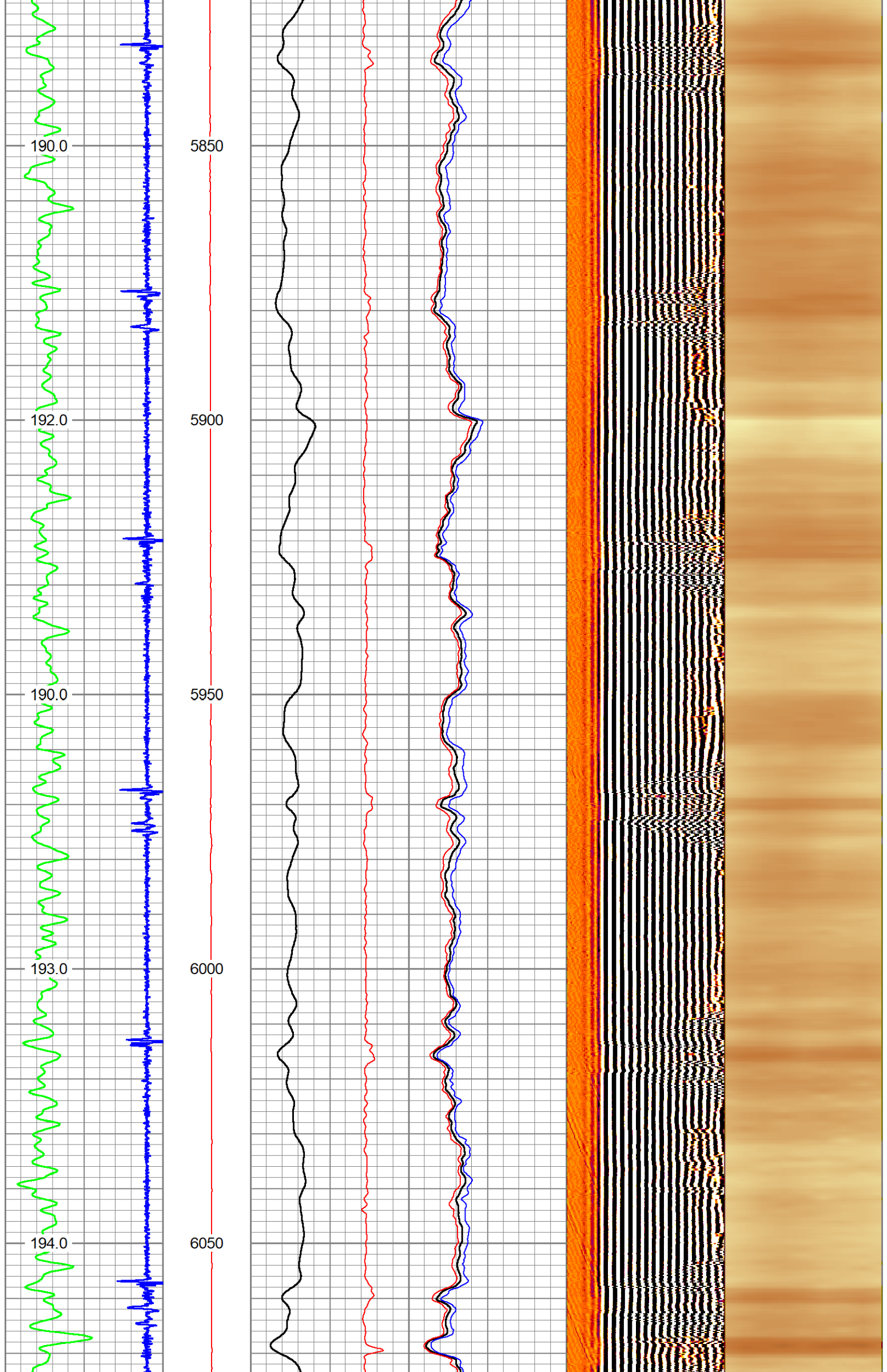


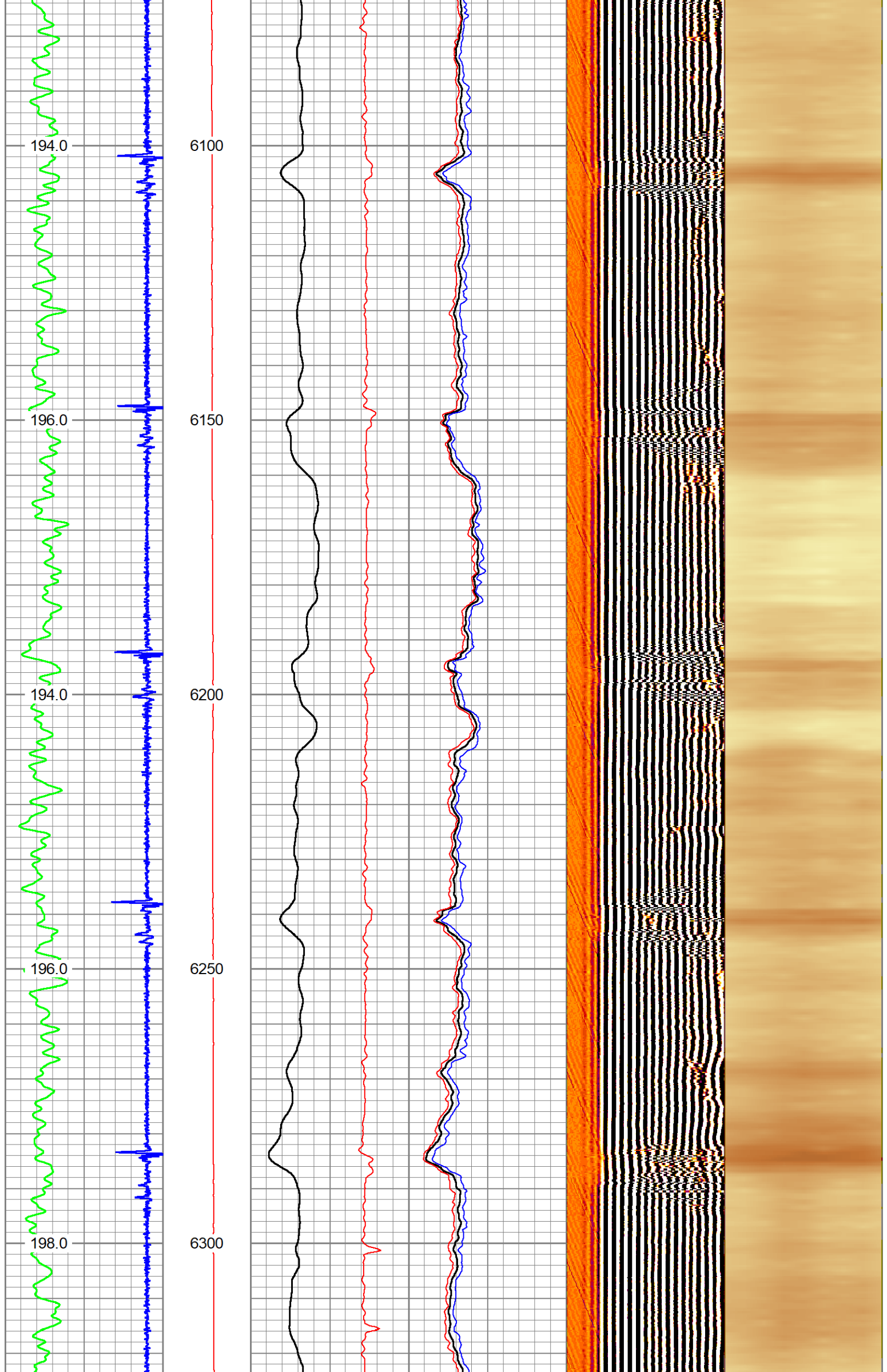


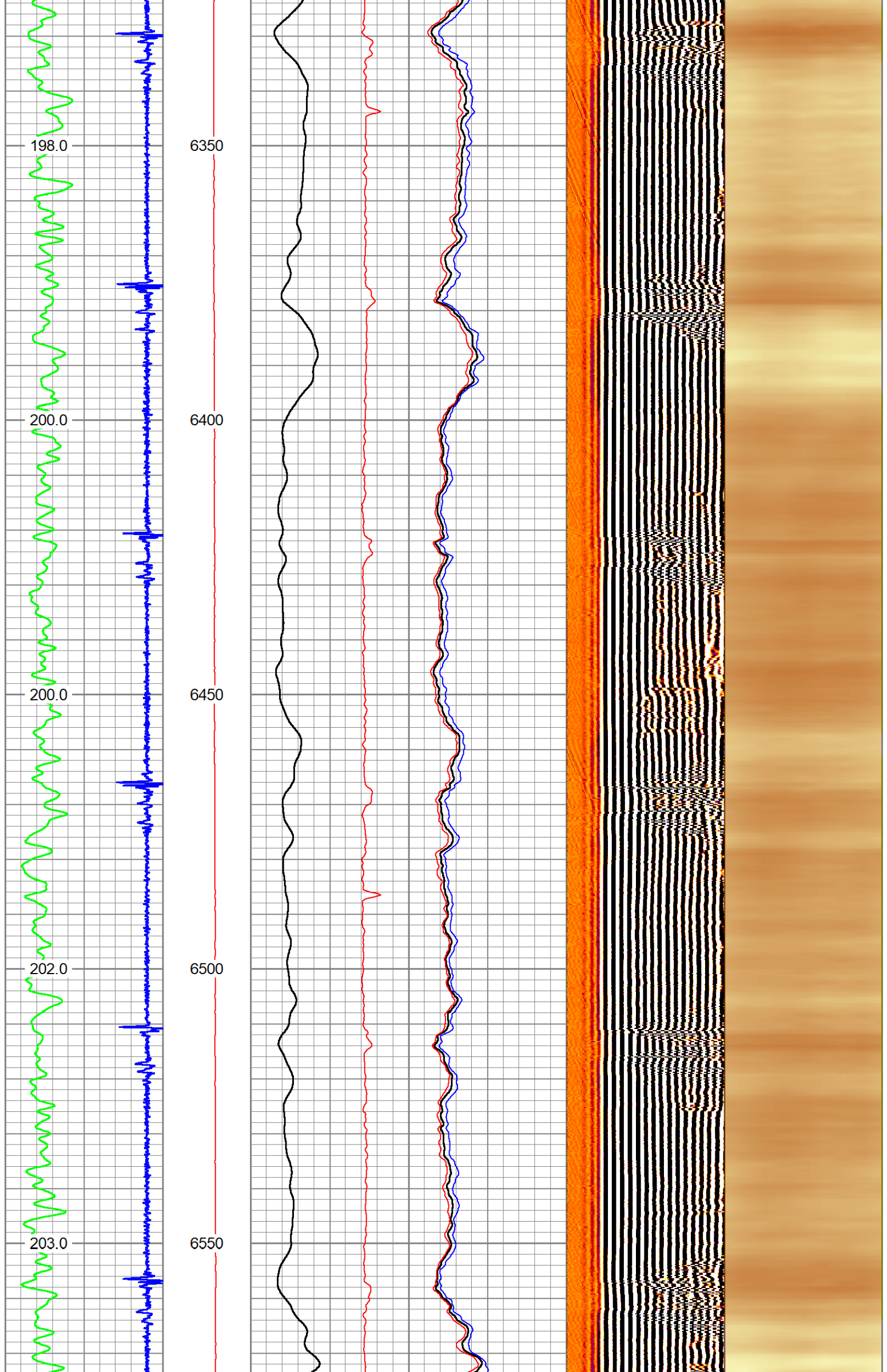


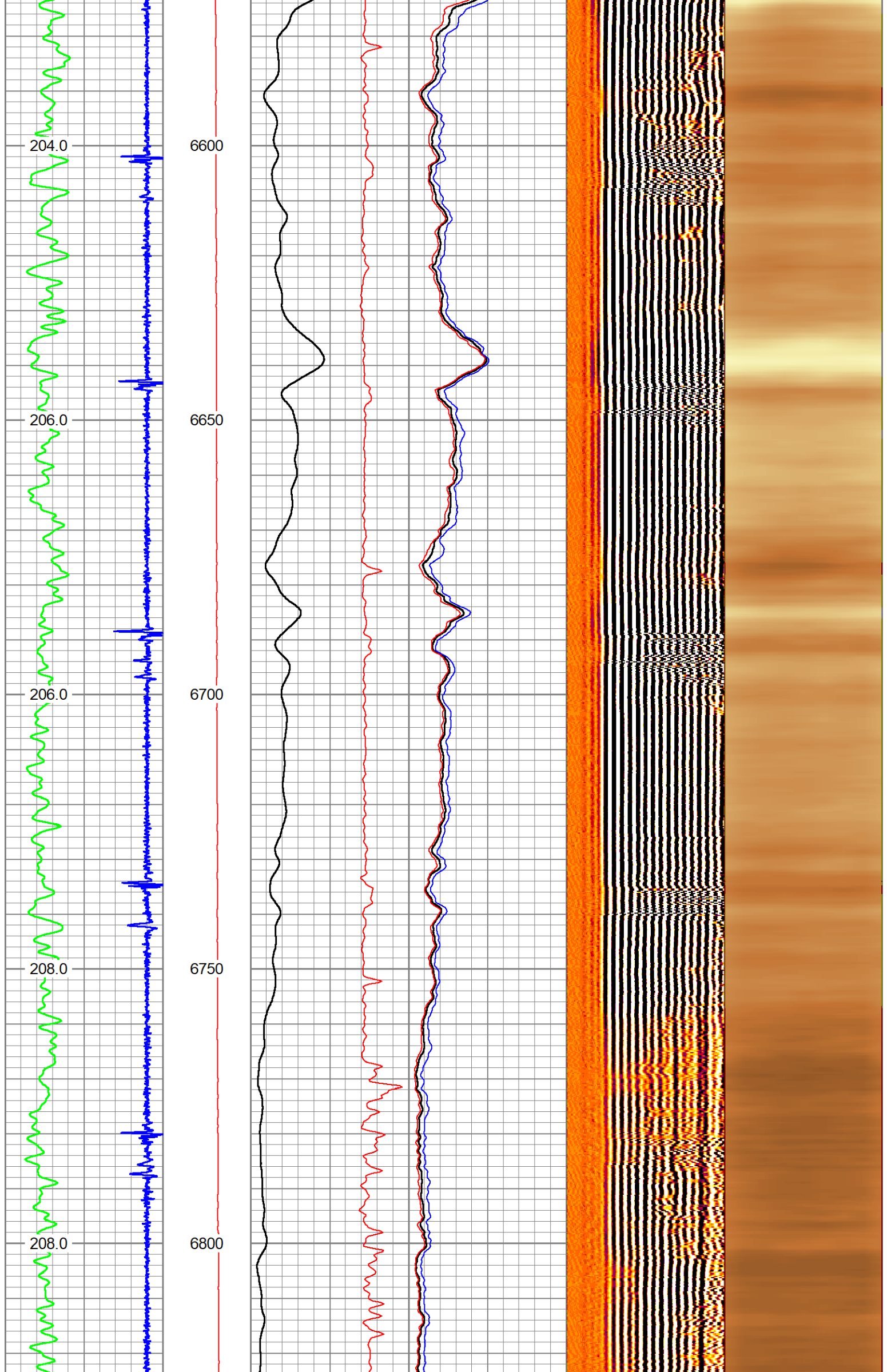


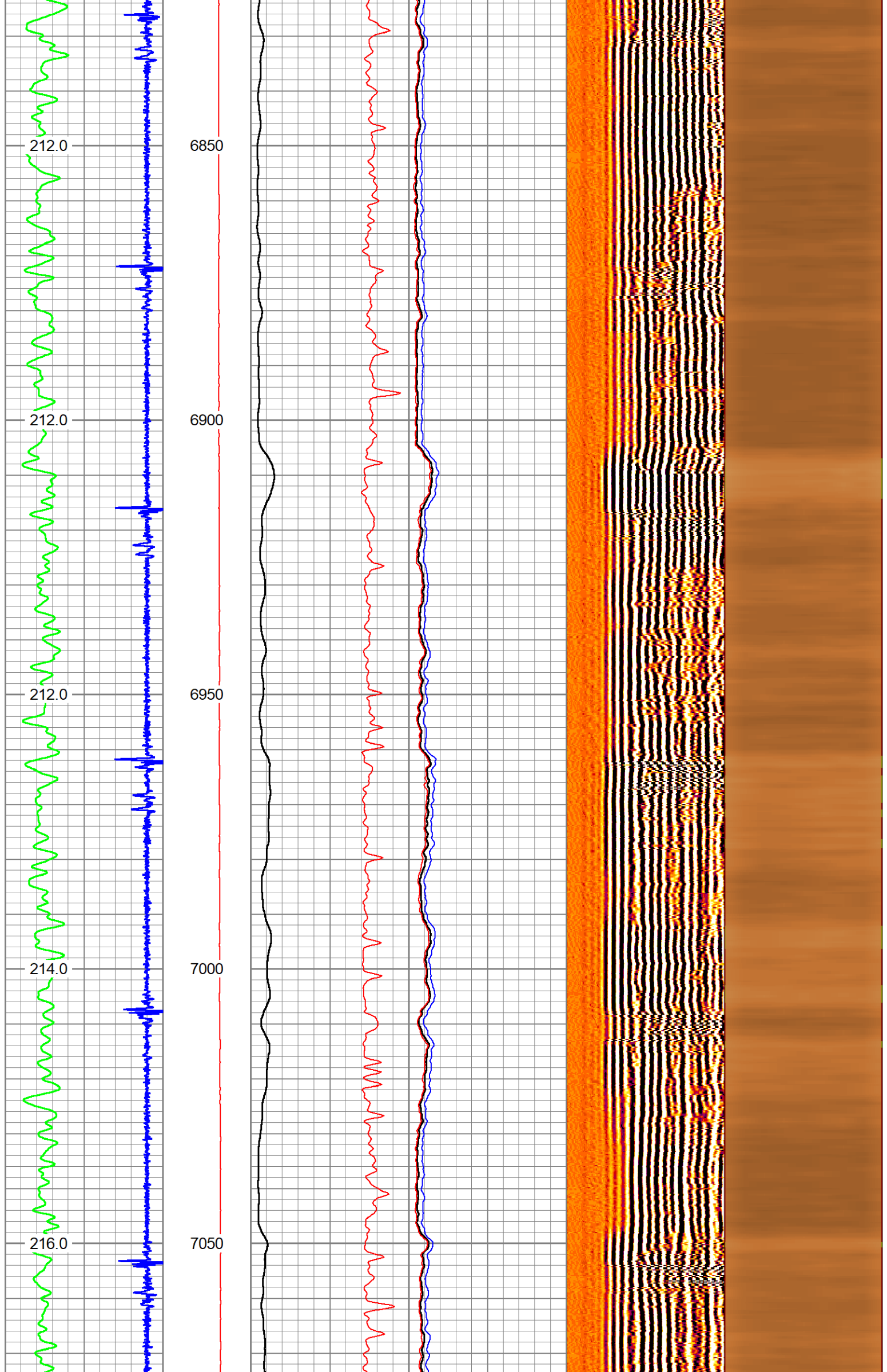


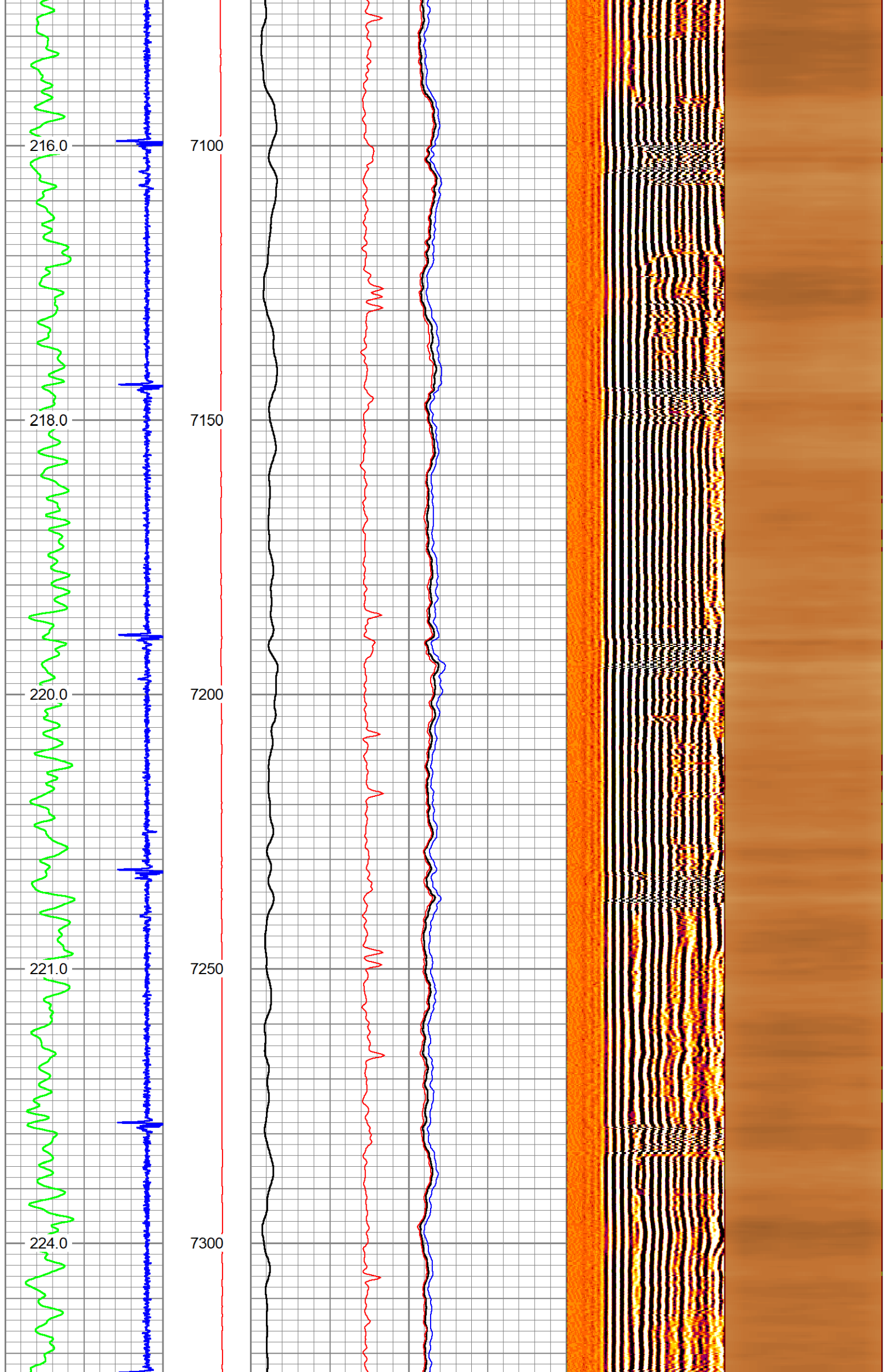


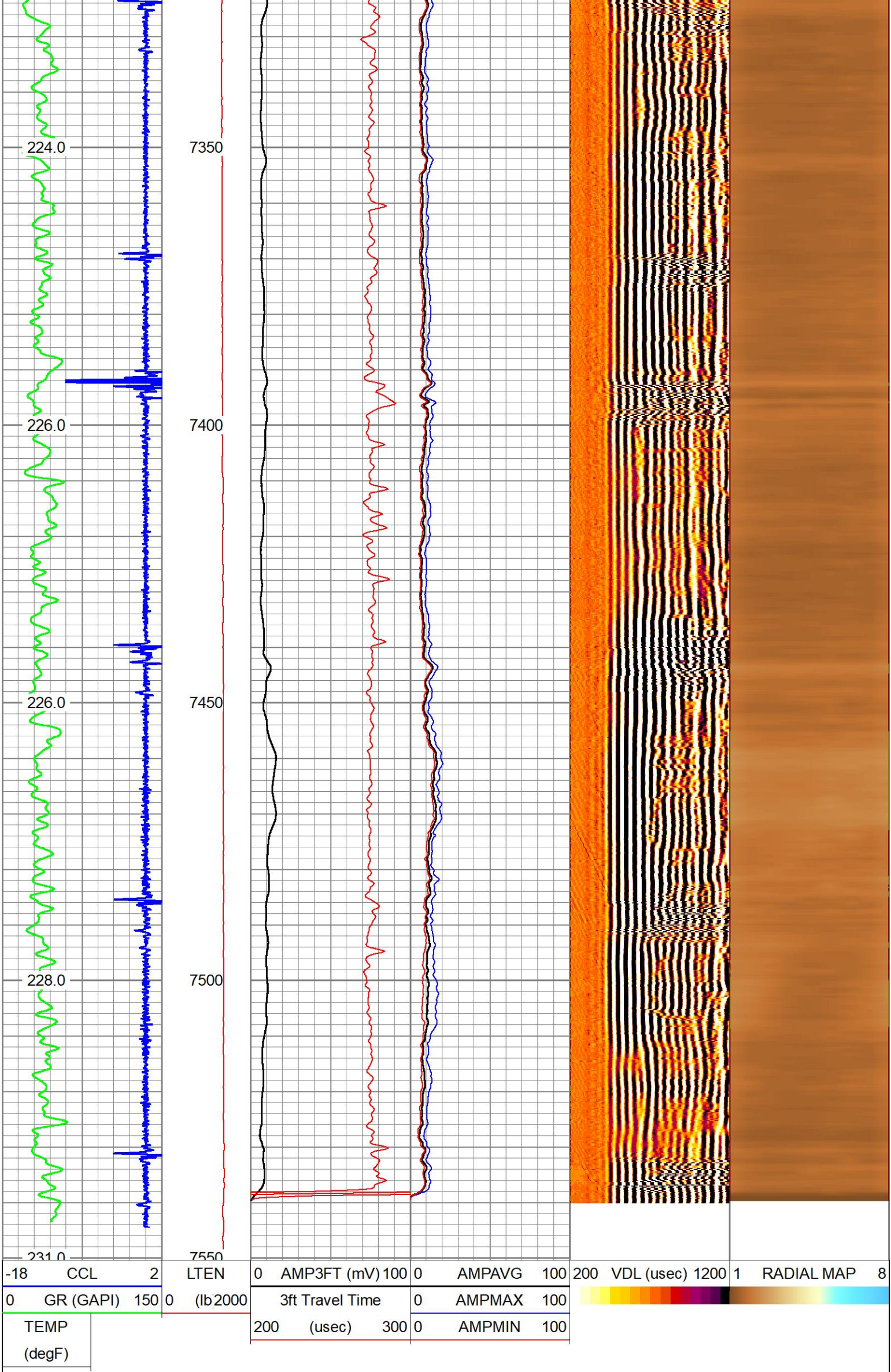







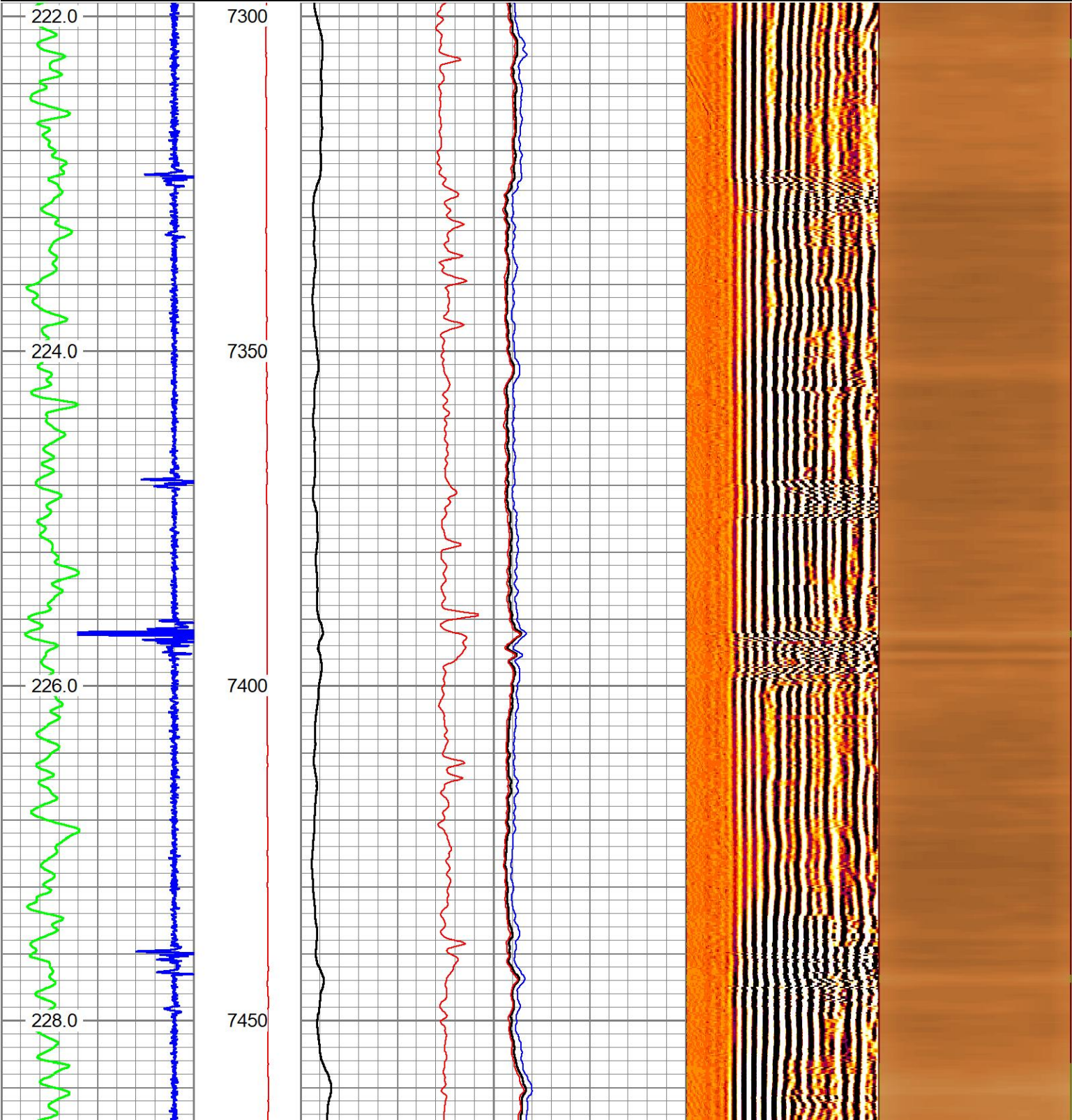


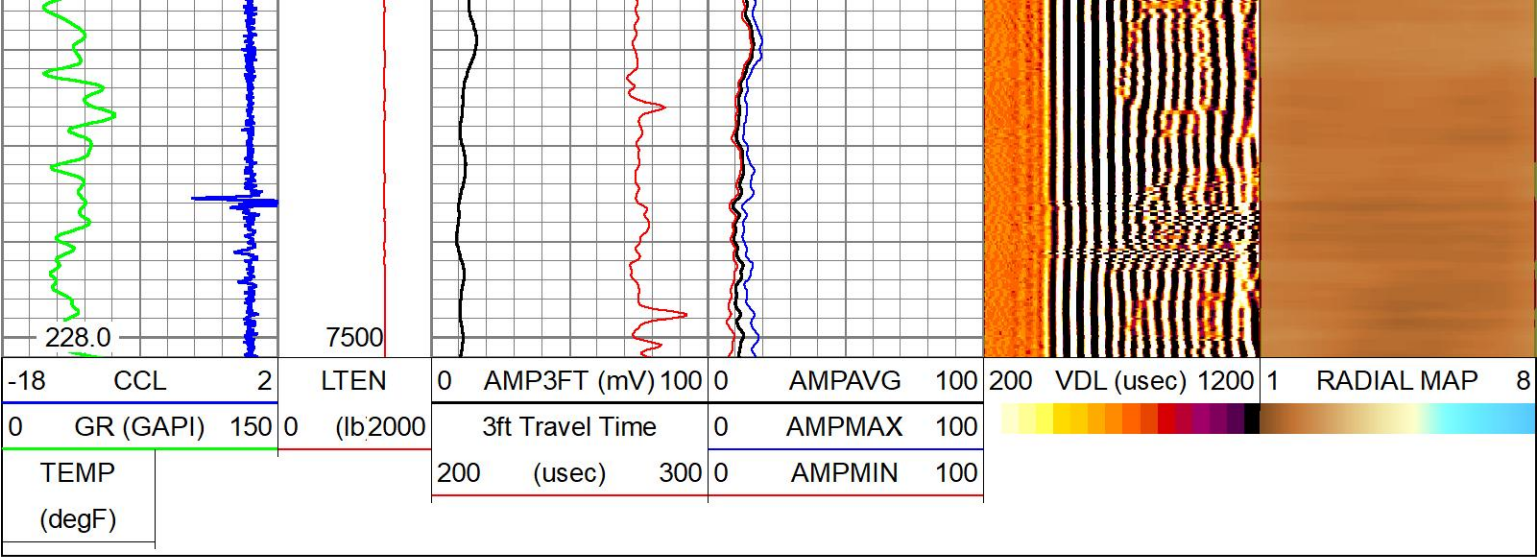




Database File livingston s19-25-10n.db
Dataset Pathname REPEAT_PASS
Presentation Format EXTRAC~1
Dataset Creation Wed Nov 06 10:13:03 2019
Charted by Depth in Feet scaled 1:240

-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)													





REPEAT PASS

HALLIBURTON

5" = 100'

Log Variables

DatabaseC:\ProgramData\Warrior\Data\livingston s19-25-10n.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 s19-25-10n.db
Dataset Pathname REPEAT_PASS
Dataset Creation Wed Nov 06 10:13:03 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			
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				cps
				240.2	GAPI


BEFORE SURVEY VERIFICATION		00:00:00		
Background	47.8			cps
Calibrator	290.6			cps
Difference			242.8	GAPI
AFTER SURVEY VERIFICATION		00:00:00		
Background	35.8			cps
Calibrator	286.1			cps
Difference			250.2	GAPI

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					
WVF3FT	12.58					
WVF5FT	10.58					
			CENT-Probe_275 Probe 2 3/4 Centralizer	2.88	2.75	20.00
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 s19-25-10n.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 S19-25-10N
Field	WATTENBERG
	PRODUCTION

County	BROOMFIELD	State	CO
HALLIBURTON	RADIAL CEMENT BOND LOG		