

# Radial Cement Bond Log with Gamma Ray and CCL 1,500 psi

Company	Noble Energy		
Well	Wells Ranch AA11-632		
Field	DJ Basin		
County	Weld		
State	Colorado		
Location:	API # : 05-123-41256		Other Services
SEC	TWP	RGE	Elevation
Permanent Datum			K.B. 4884
Log Measured From	KB		D.F. 4884
Drilling Measured From			G.L. 4854

Date 6/30/2015

Run Number	1
Depth Driller	13,885
Depth Logger	8,844
Bottom Logged Interval	6,833
Top Log Interval	22
Open Hole Size	8-3/4
Type Fluid	WATER
Density / Viscosity	8.4
Max. Recorded Temp.	-
Estimated Cement Top	1,718
Time Well Ready	14:55
Time Logger on Bottom	15:48
Equipment Number	BL 13034
Location	BRIGHTON, CO
Recorded By	I.KRUGOV
Witnessed By	B.MANSFIELD

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	9-5/8	36	SURFACE	1,853
Prot. String				
Production String	5-1/2	20	SURFACE	13,885
Liner				

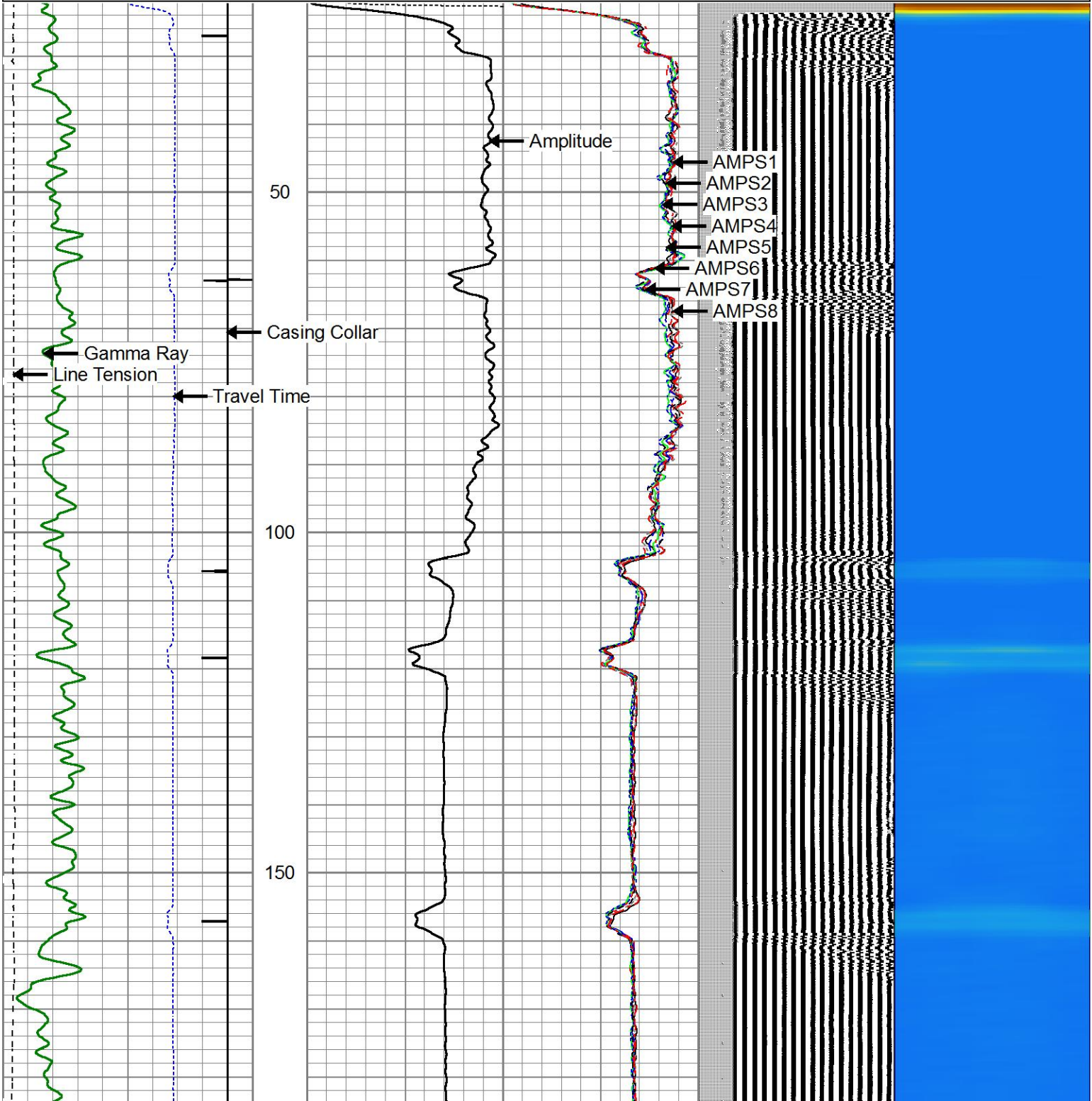
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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

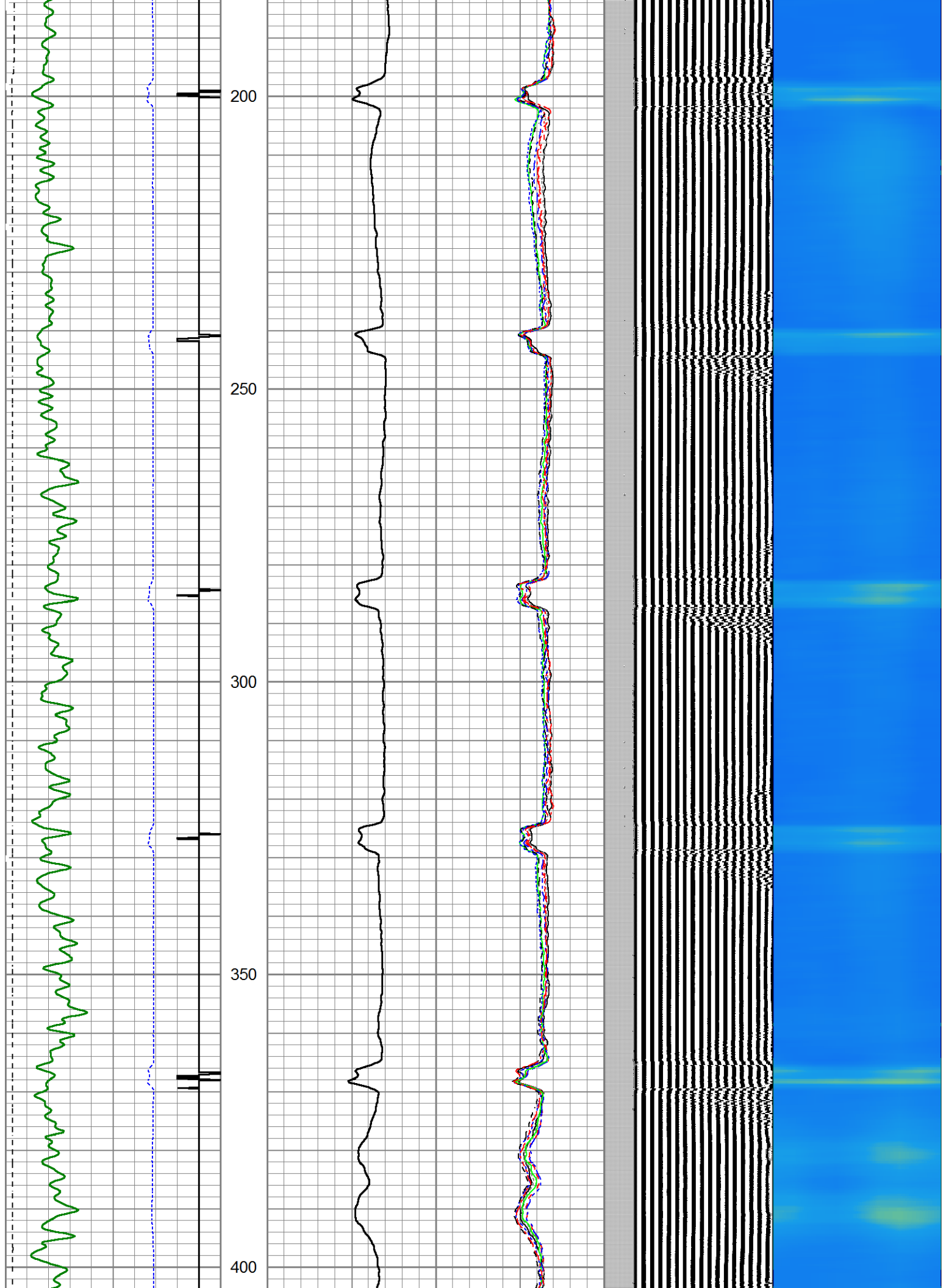
## Comments

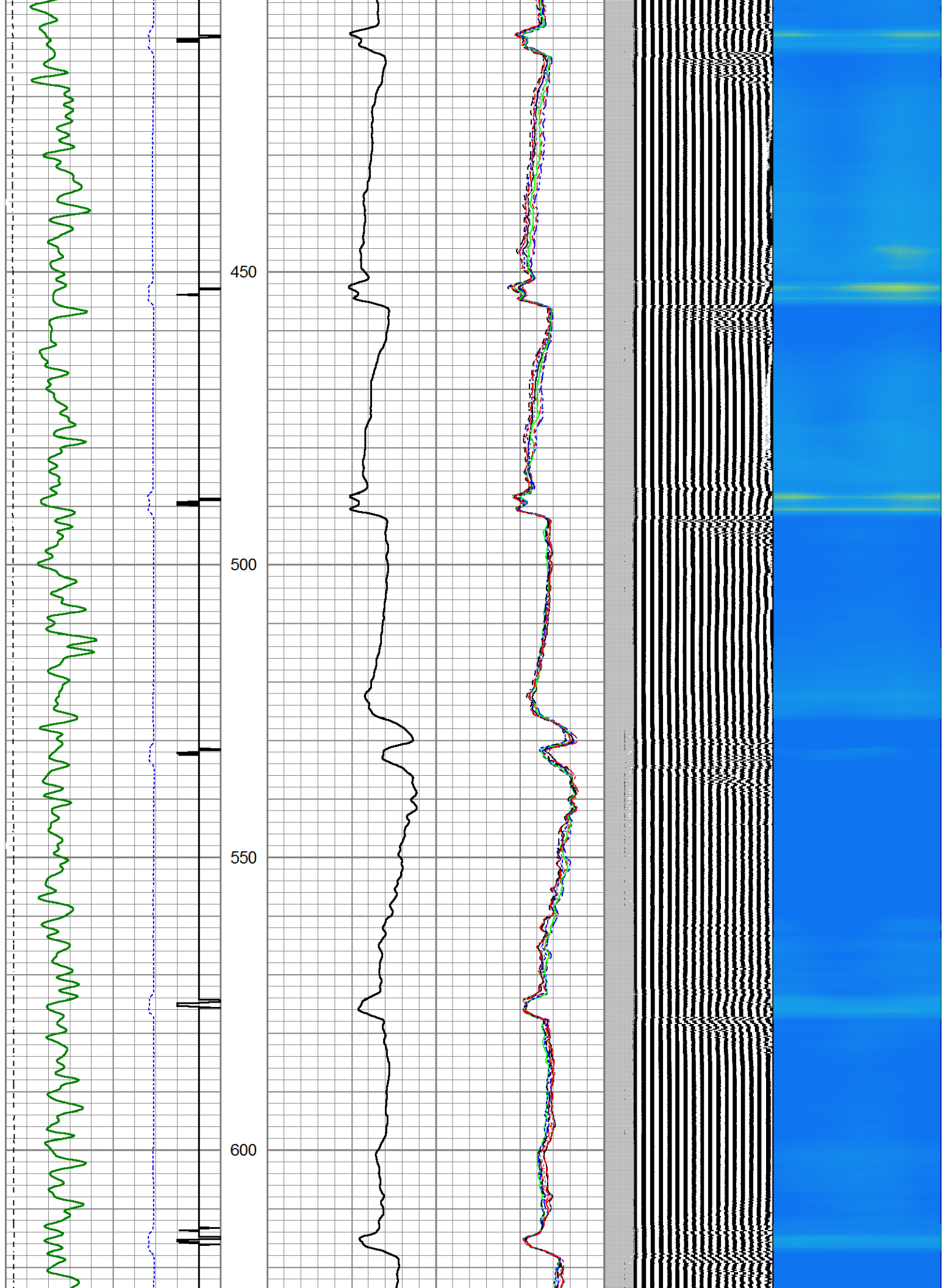
TOOL ZEROED AT GROUND LEVEL AND ADJUSTED FOR KB (30ft)  
 NO OTHER DEPTH ADJUSTMENTS MADE DOWNHOLE  
 NO DEVIATION INFORMATION PROVIDED  
 TOOL RAN WITH TWO IN-LINE CENTRALIZERS  
 ESTIMATED TOP OF CEMENT AT 1,718ft

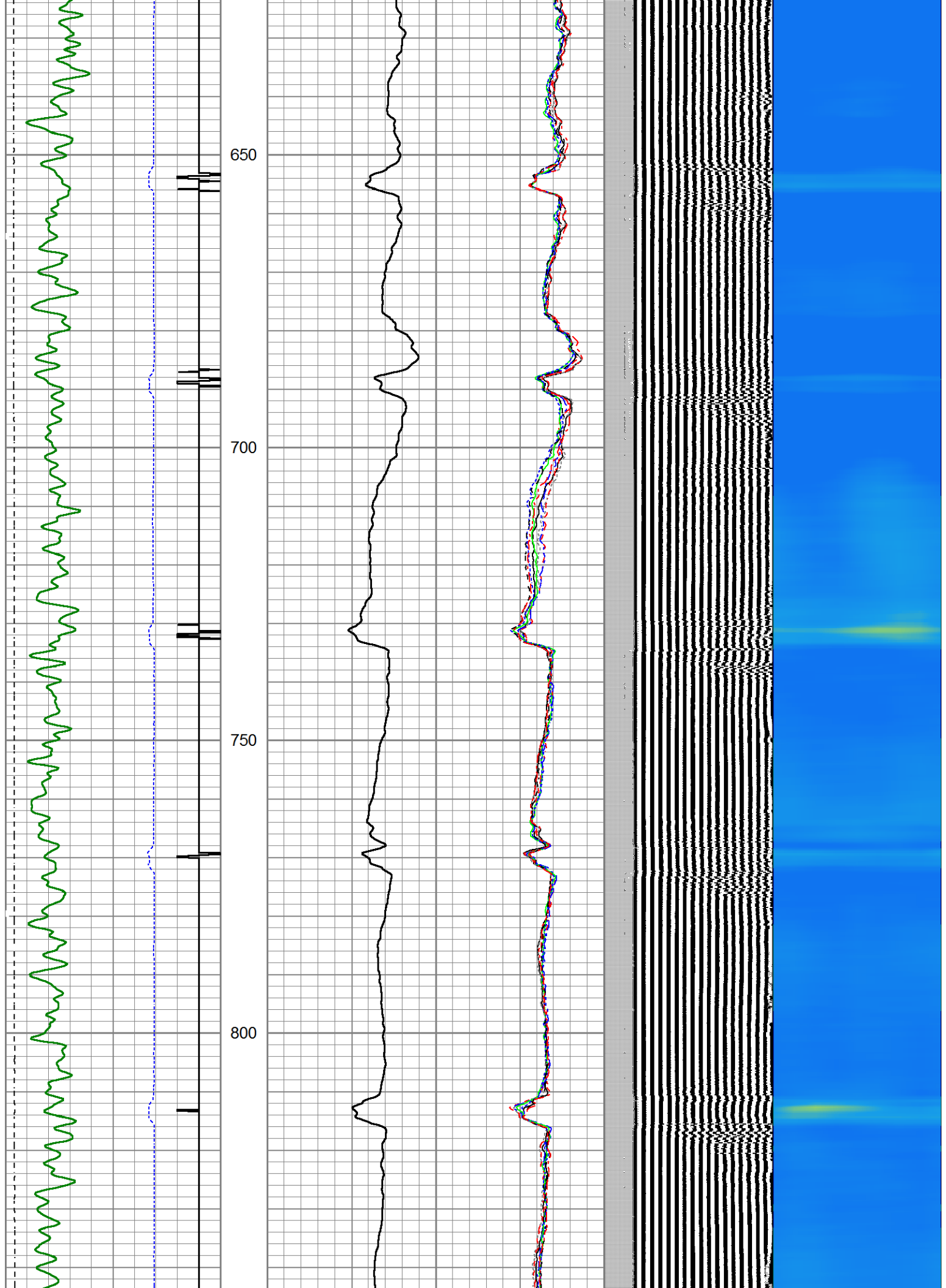
400	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	AMPS1	150	Variable Density		1	Cement Map	8
9	Casing Collar	-1	Amplified Amplitude			-5	AMPS2	150	200	1200	0	100	
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	AMPS3	150					
Line Tension (lb)		5000				-5	AMPS4	150					
						-5	AMPS5	150					
						-5	AMPS6	150					
						-5	AMPS7	150					
						-5	AMPS8	150					

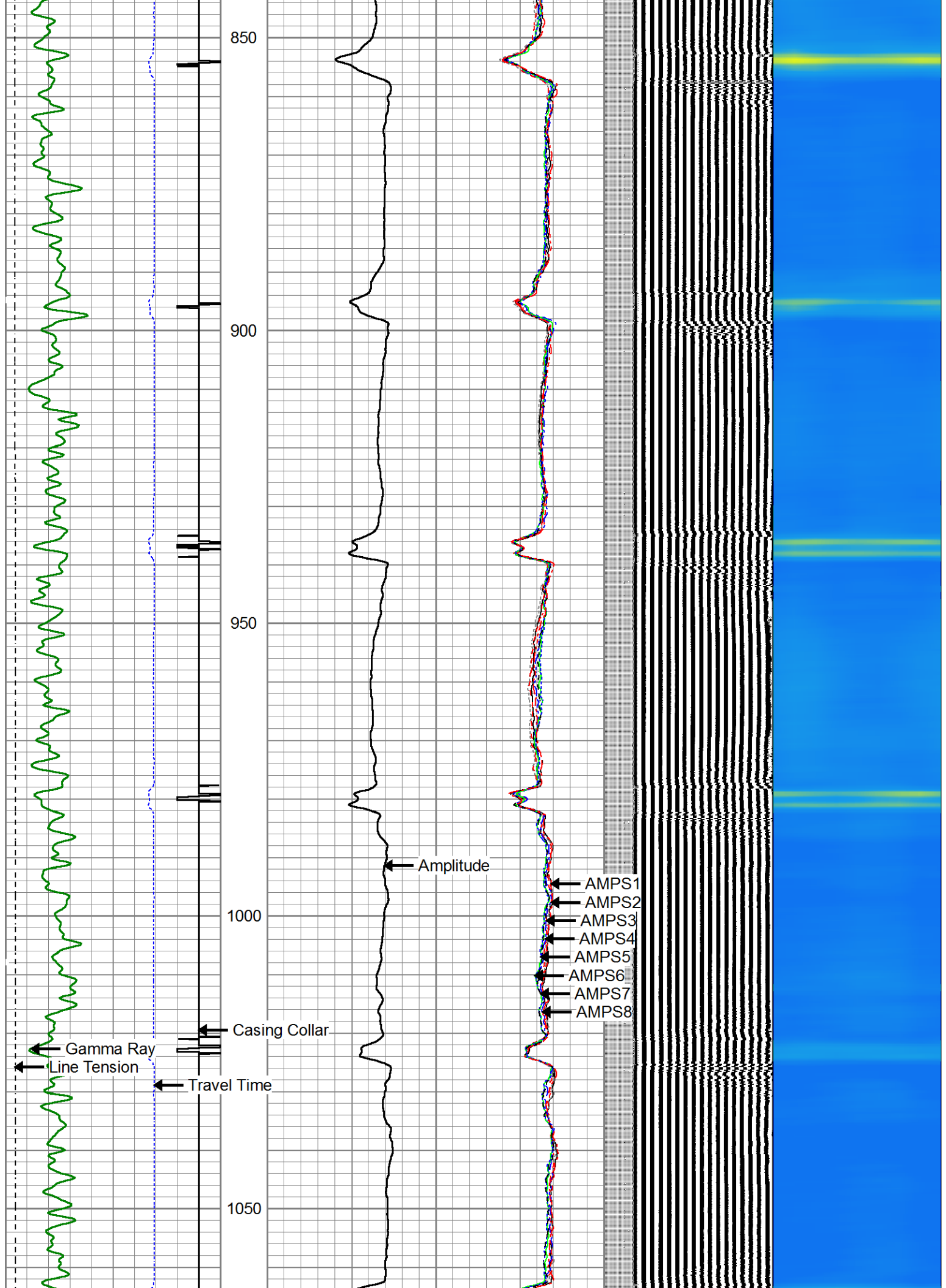




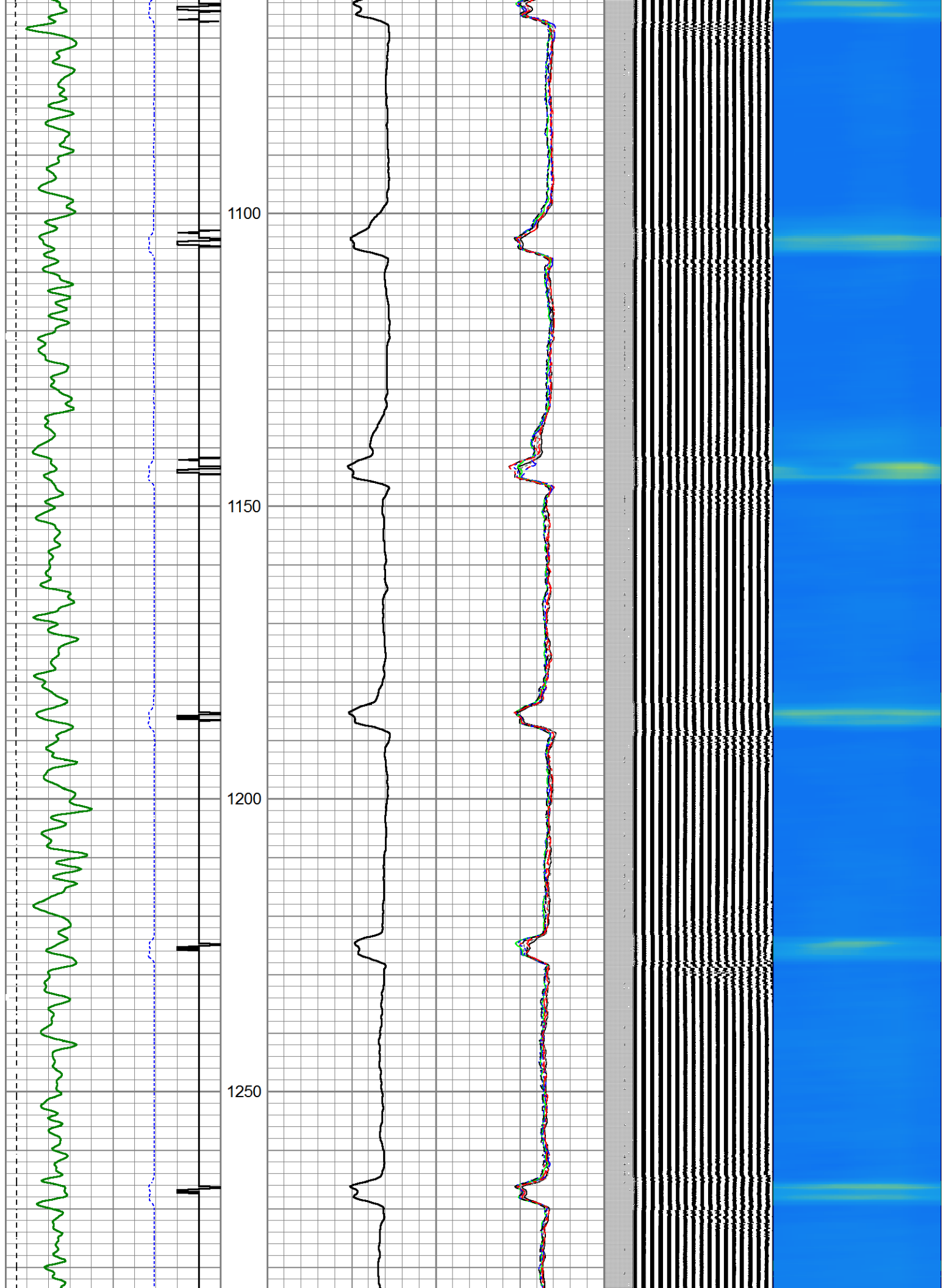


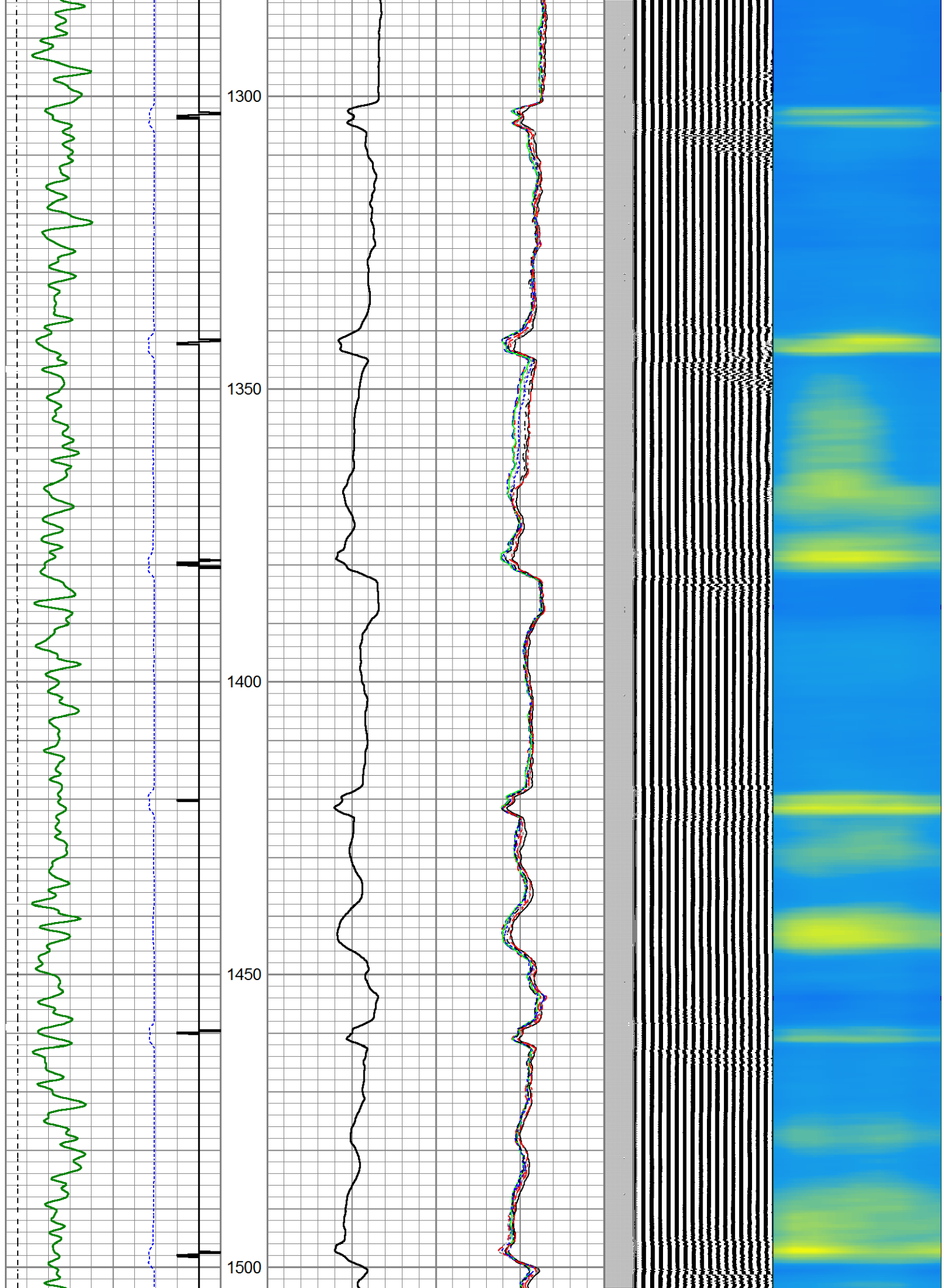




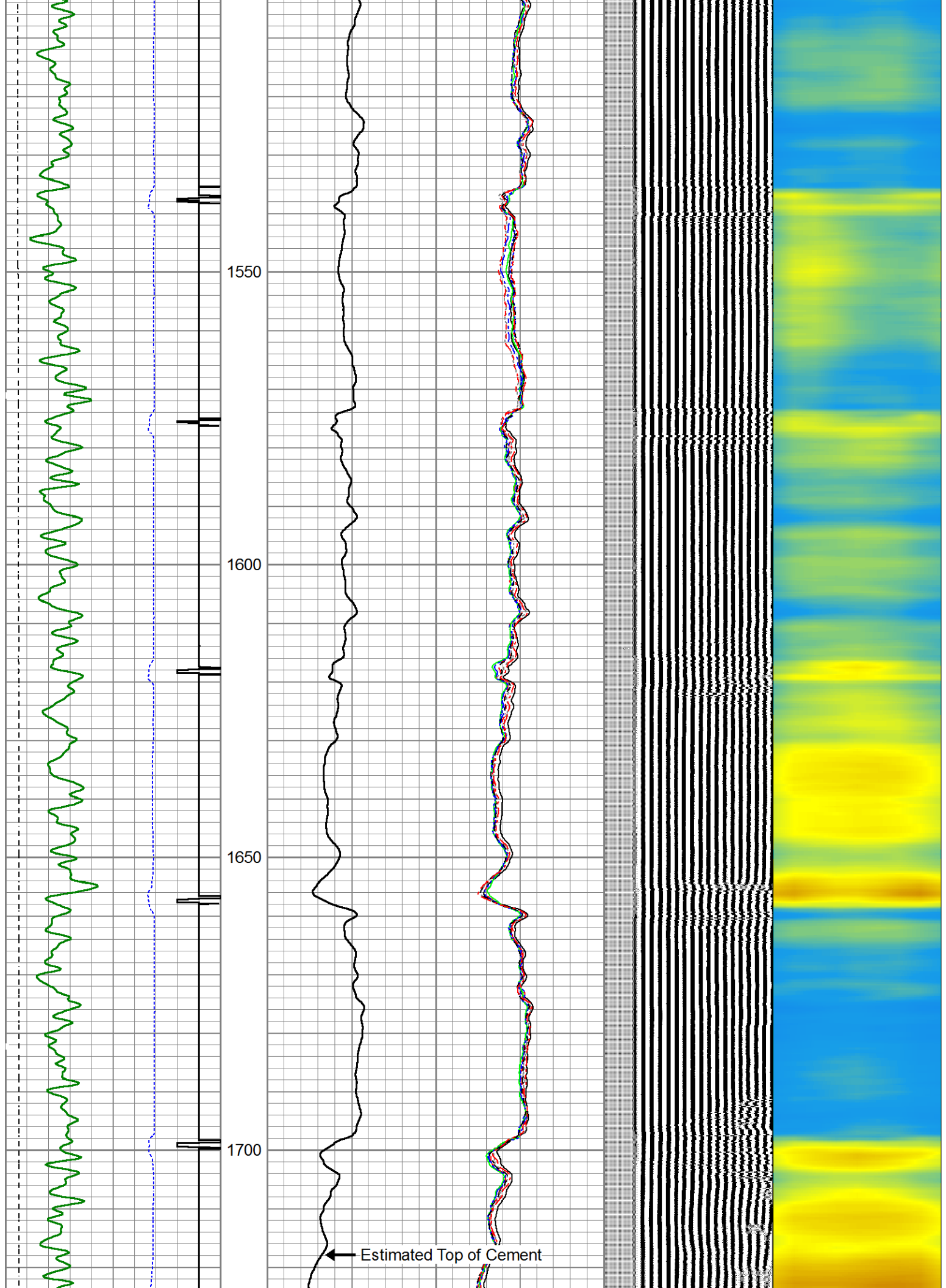


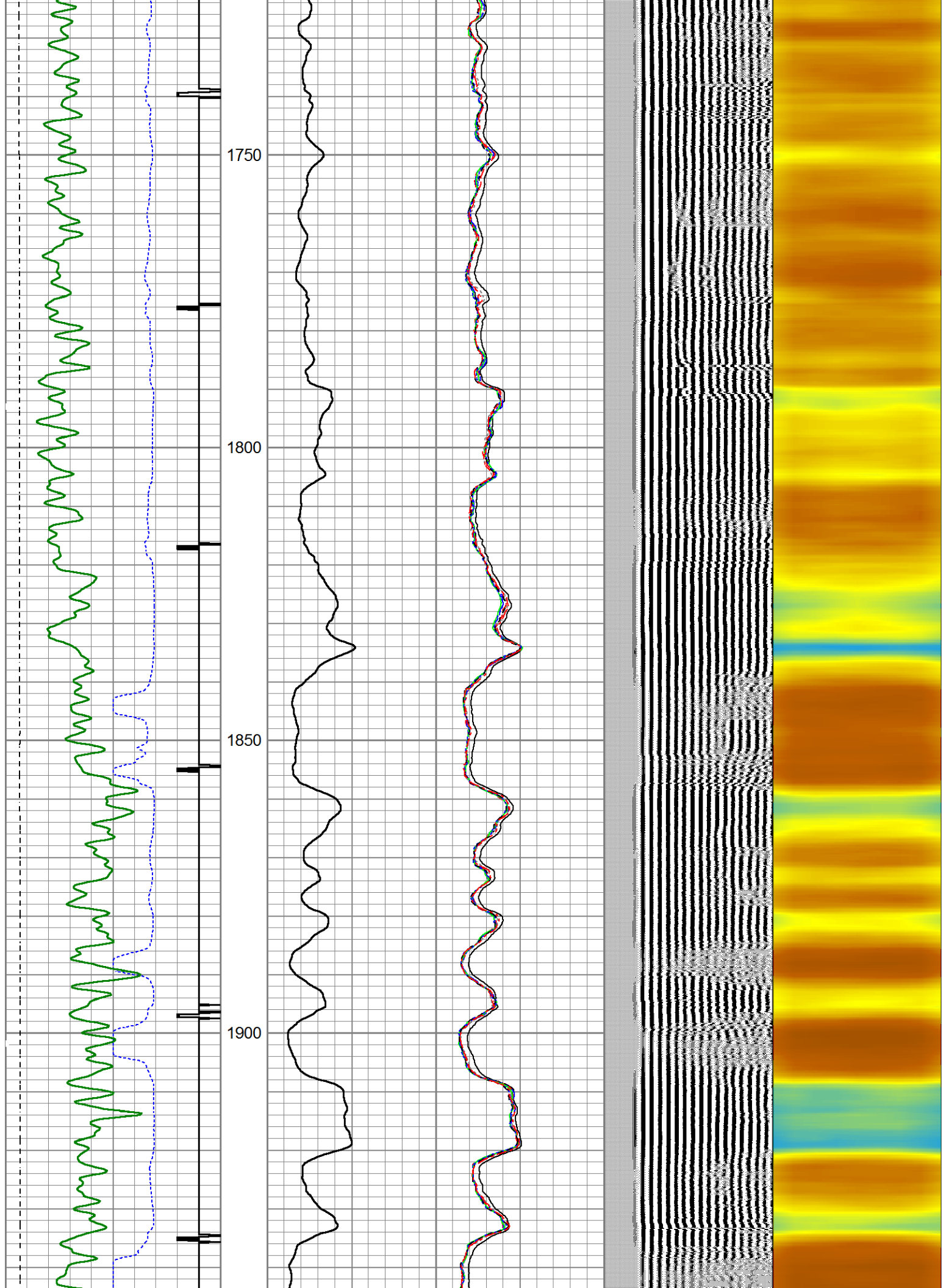


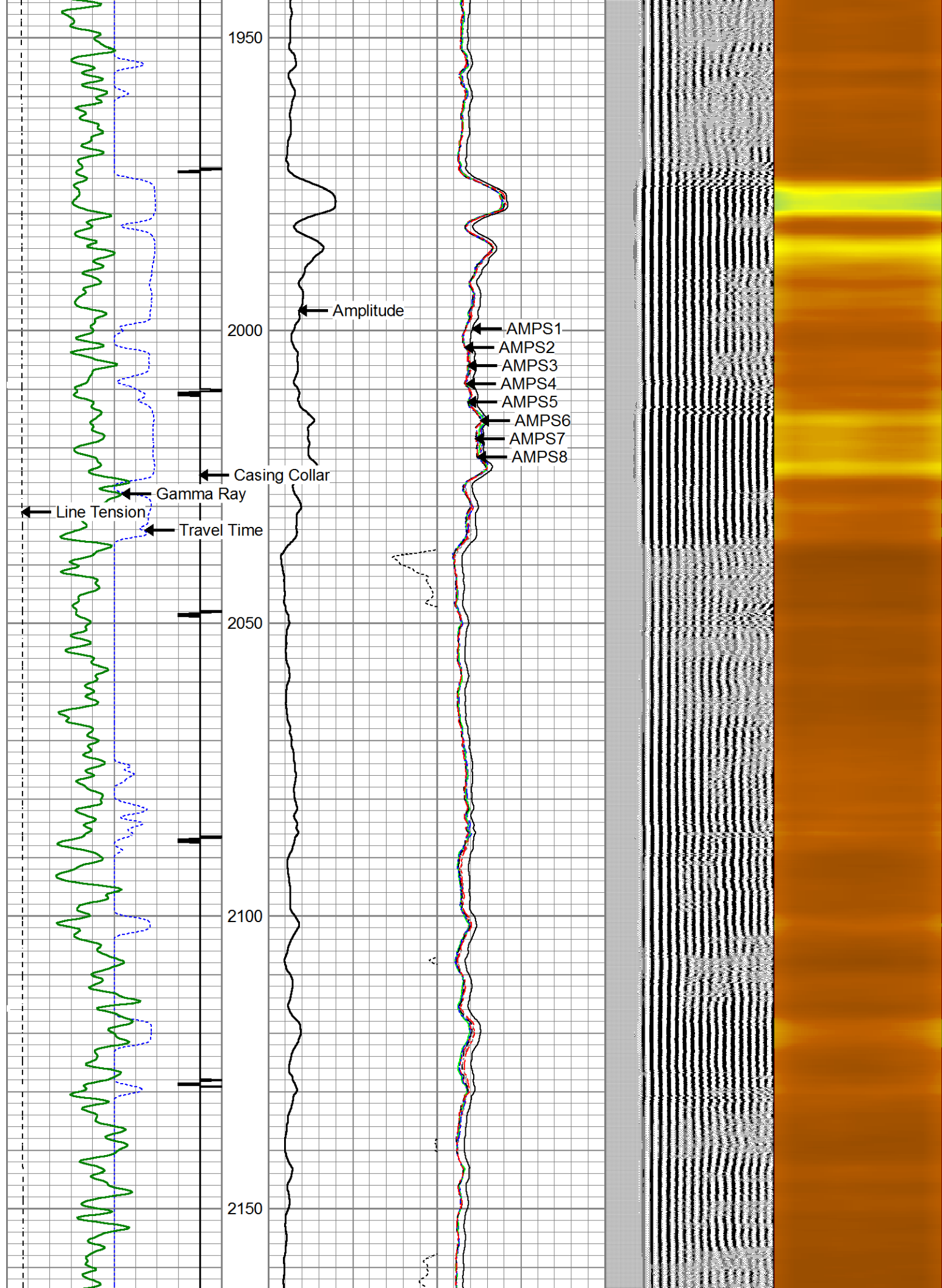




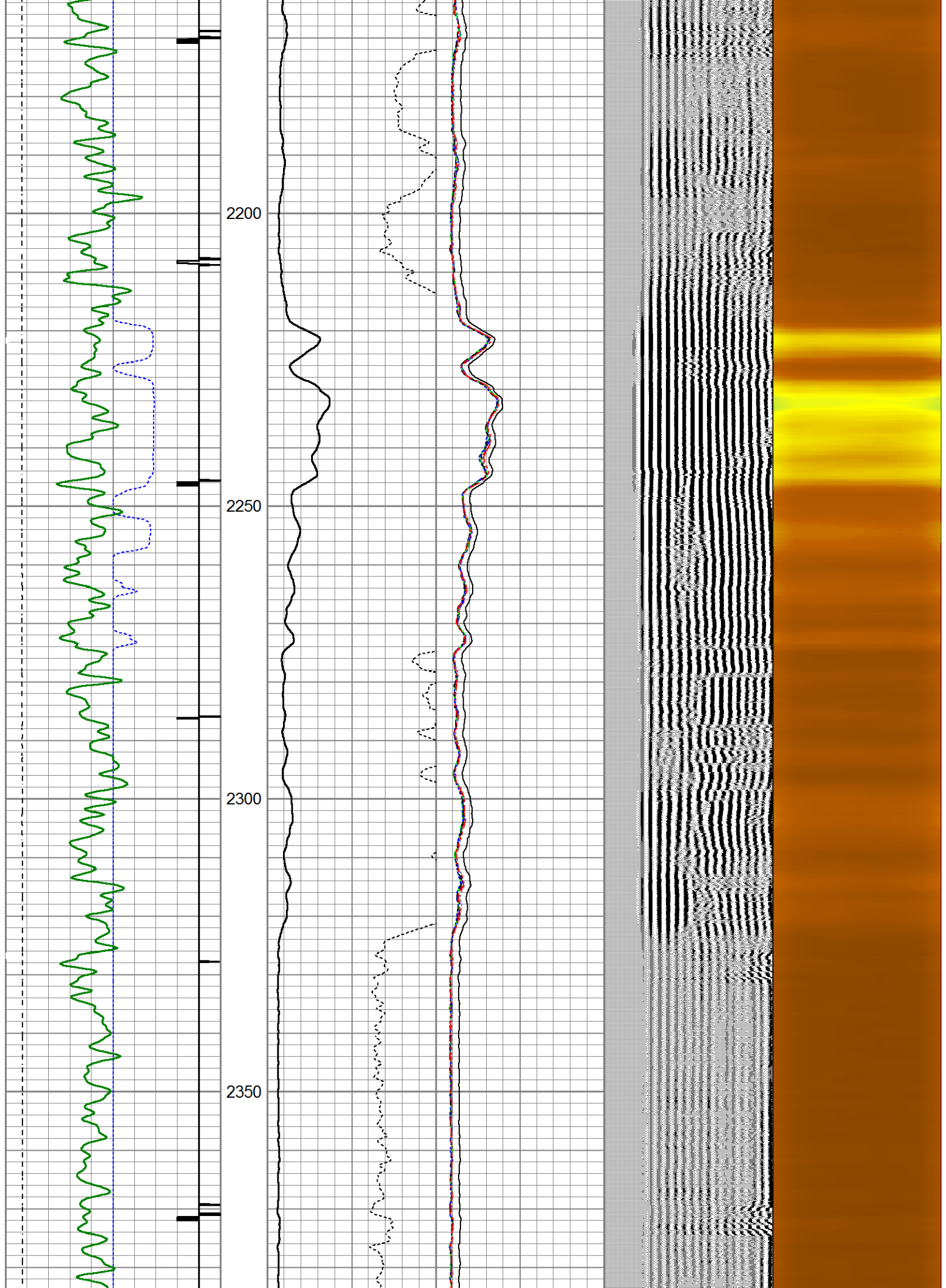


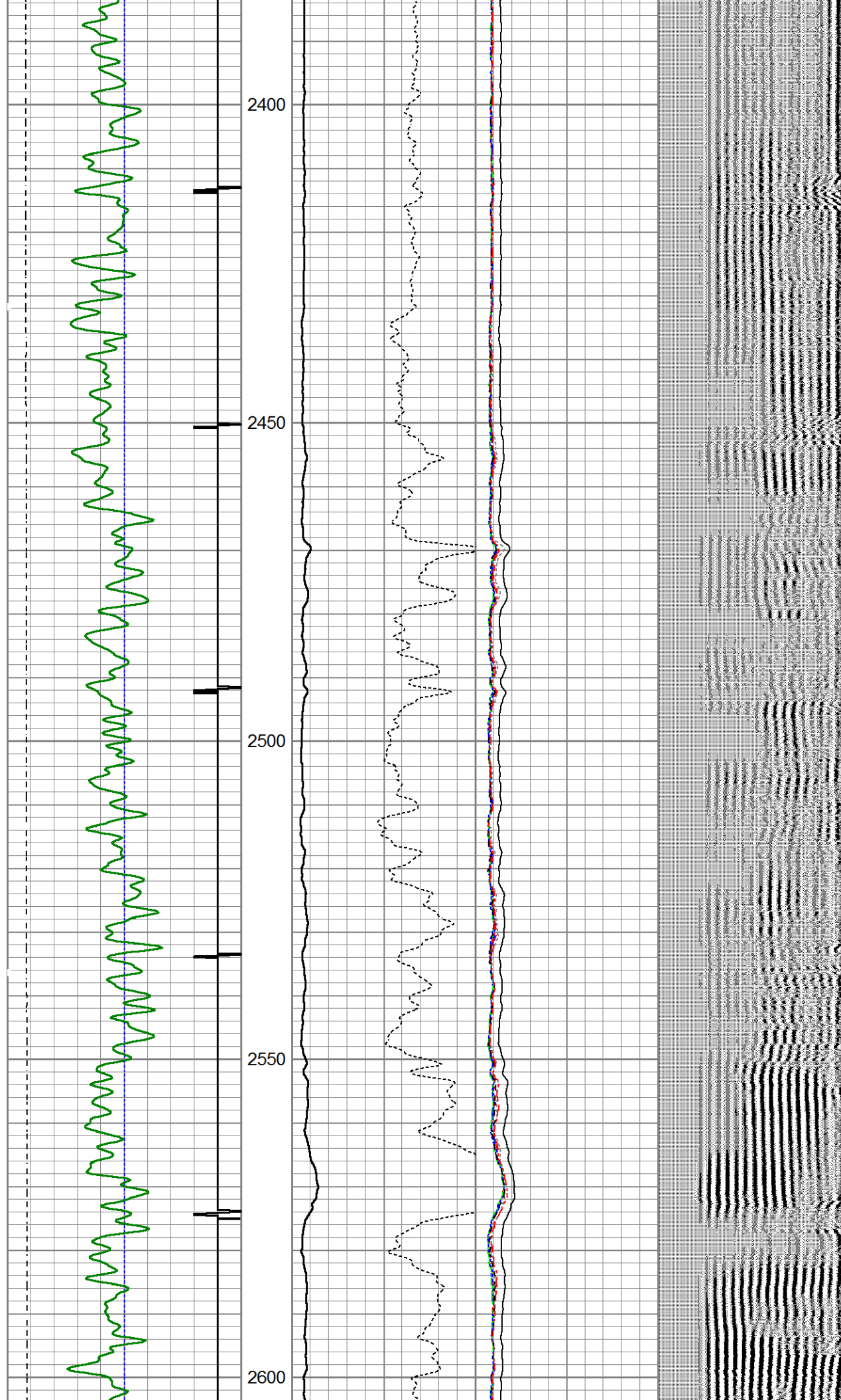




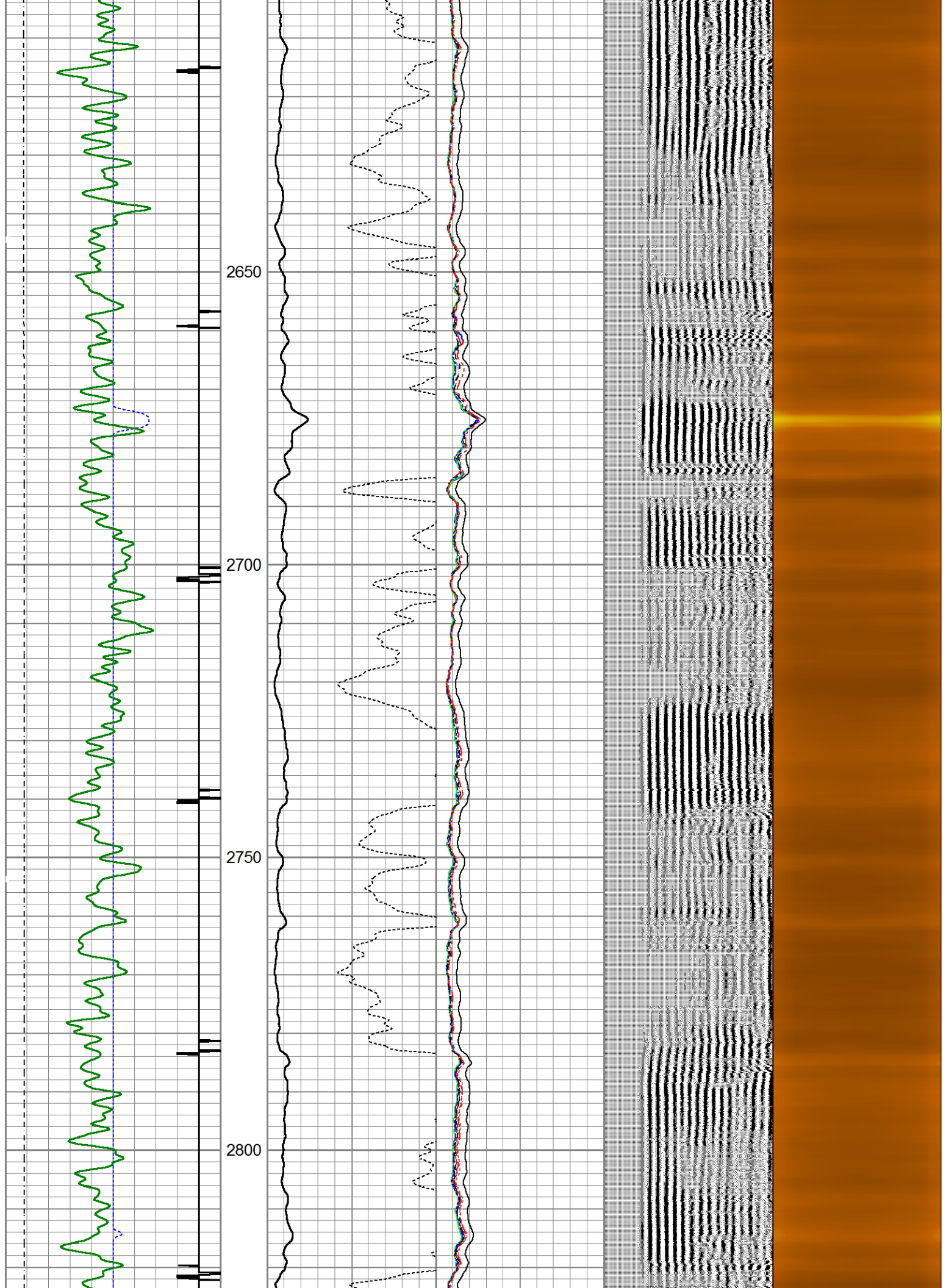




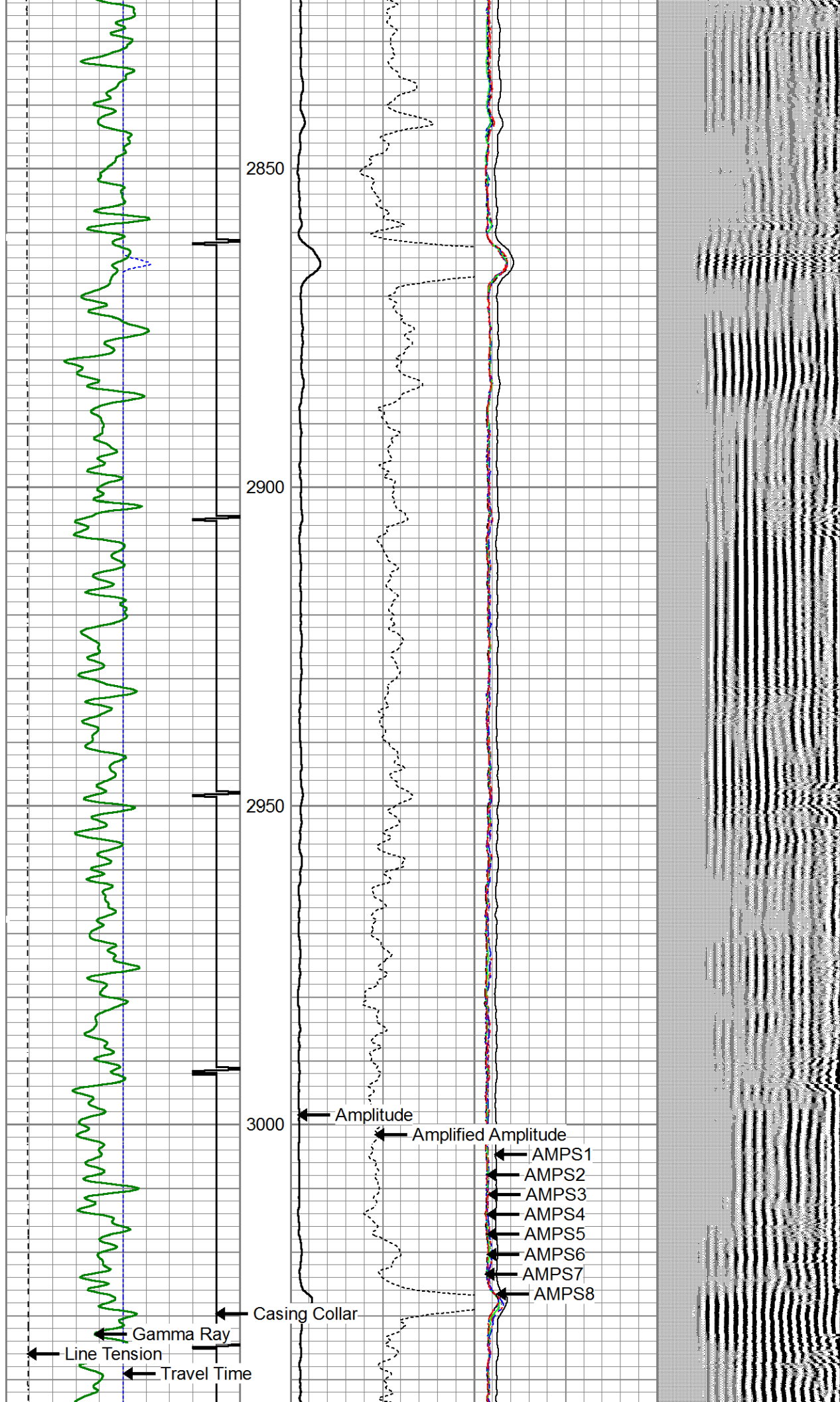


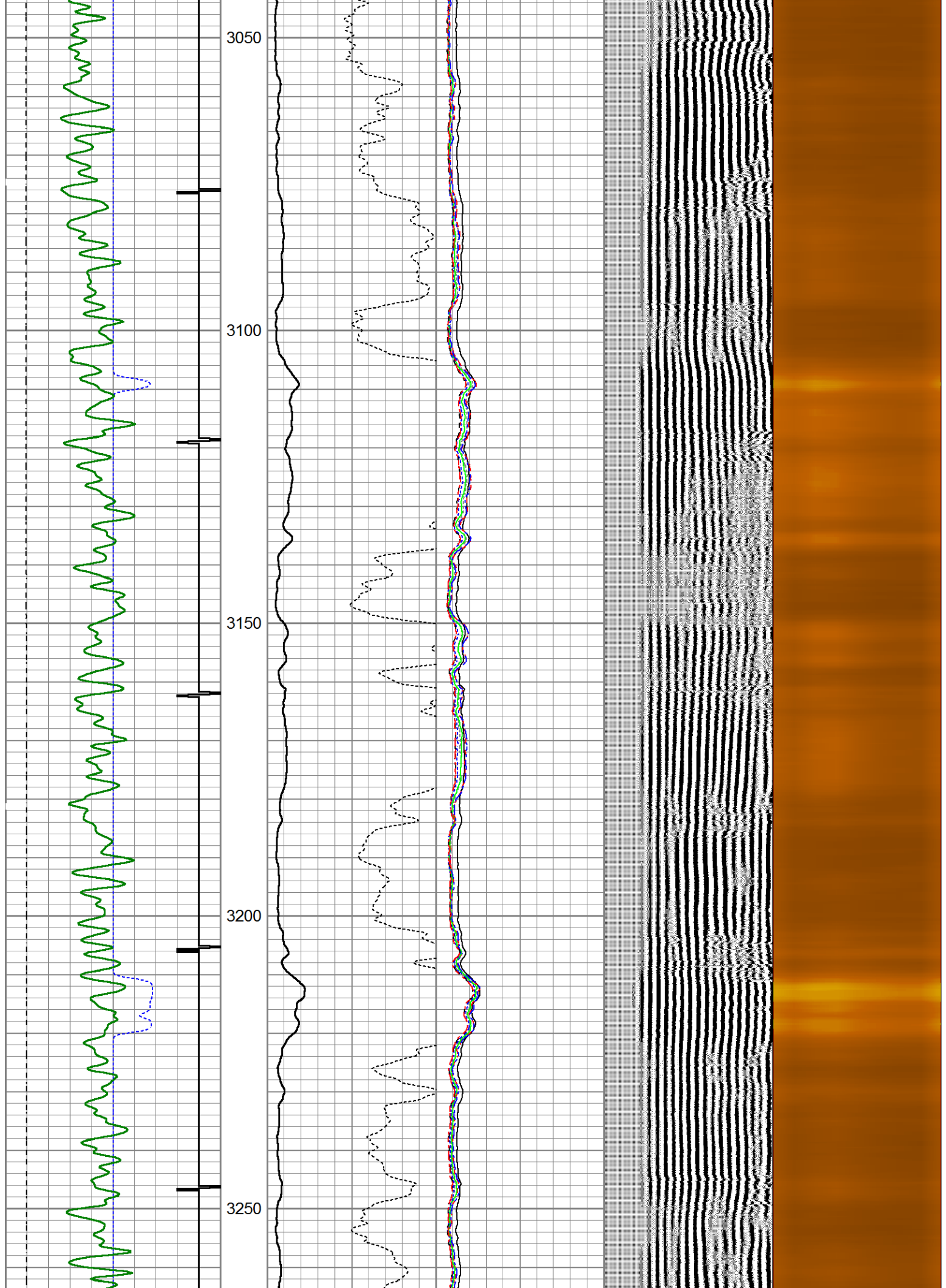


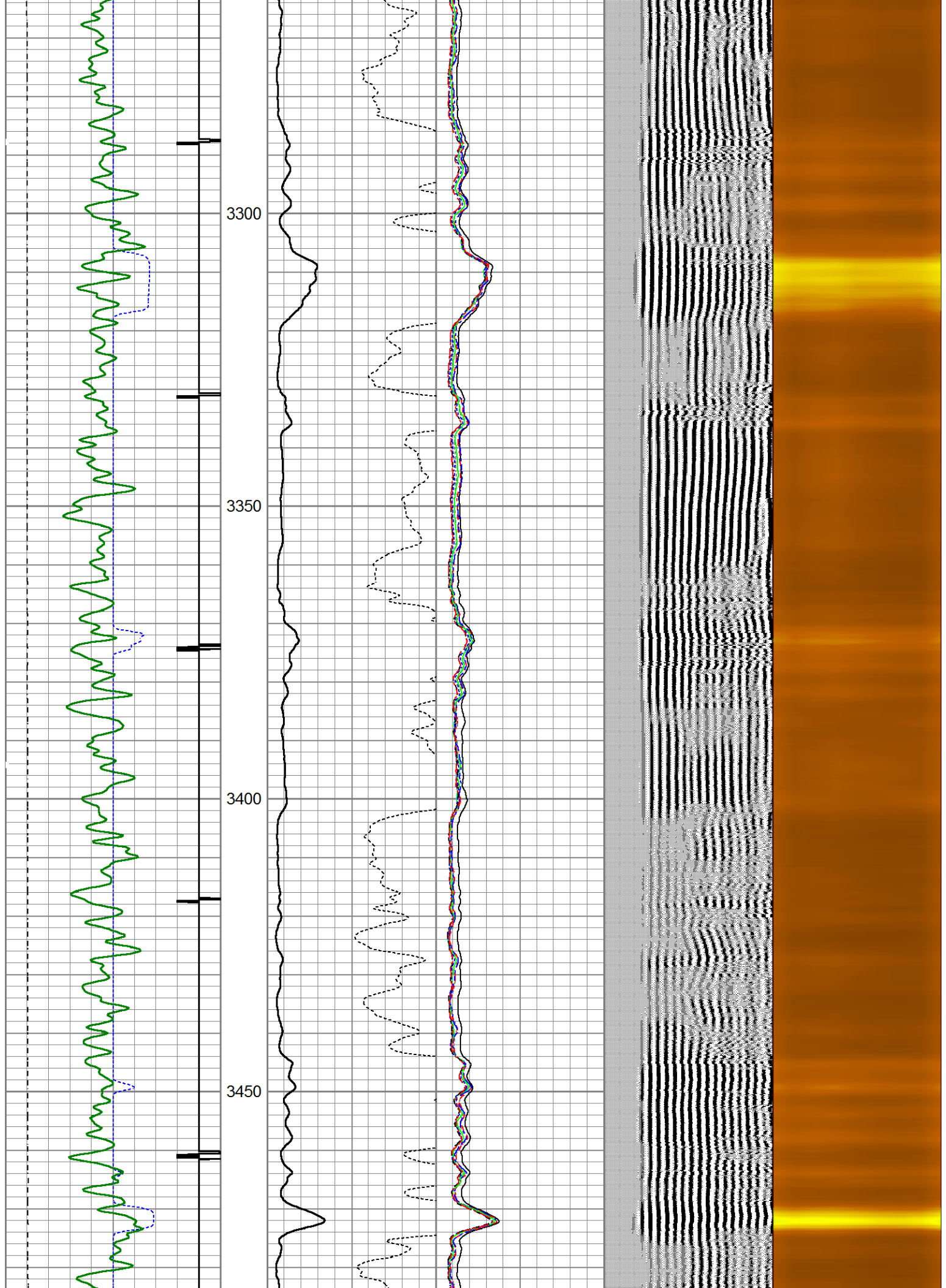




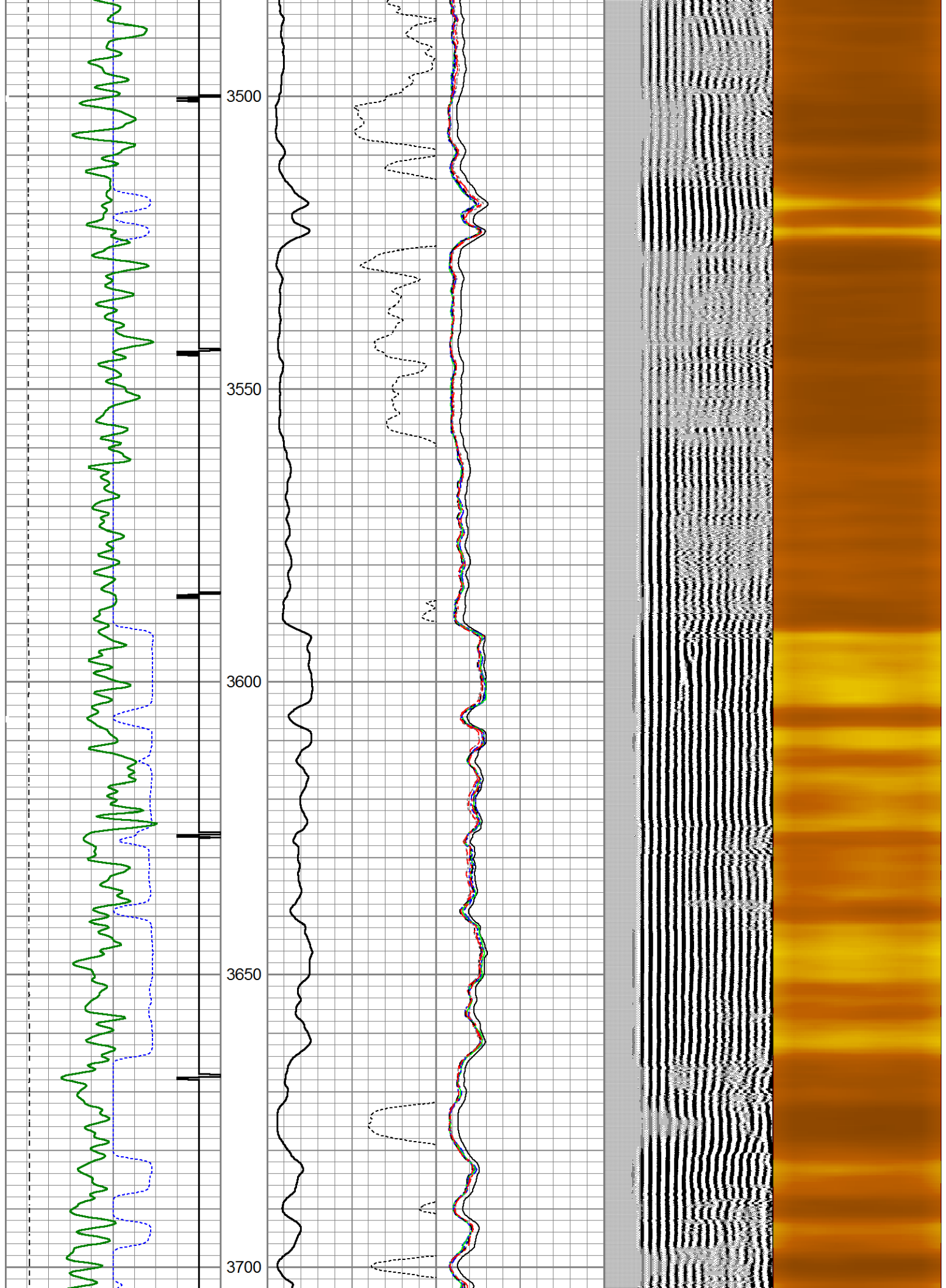


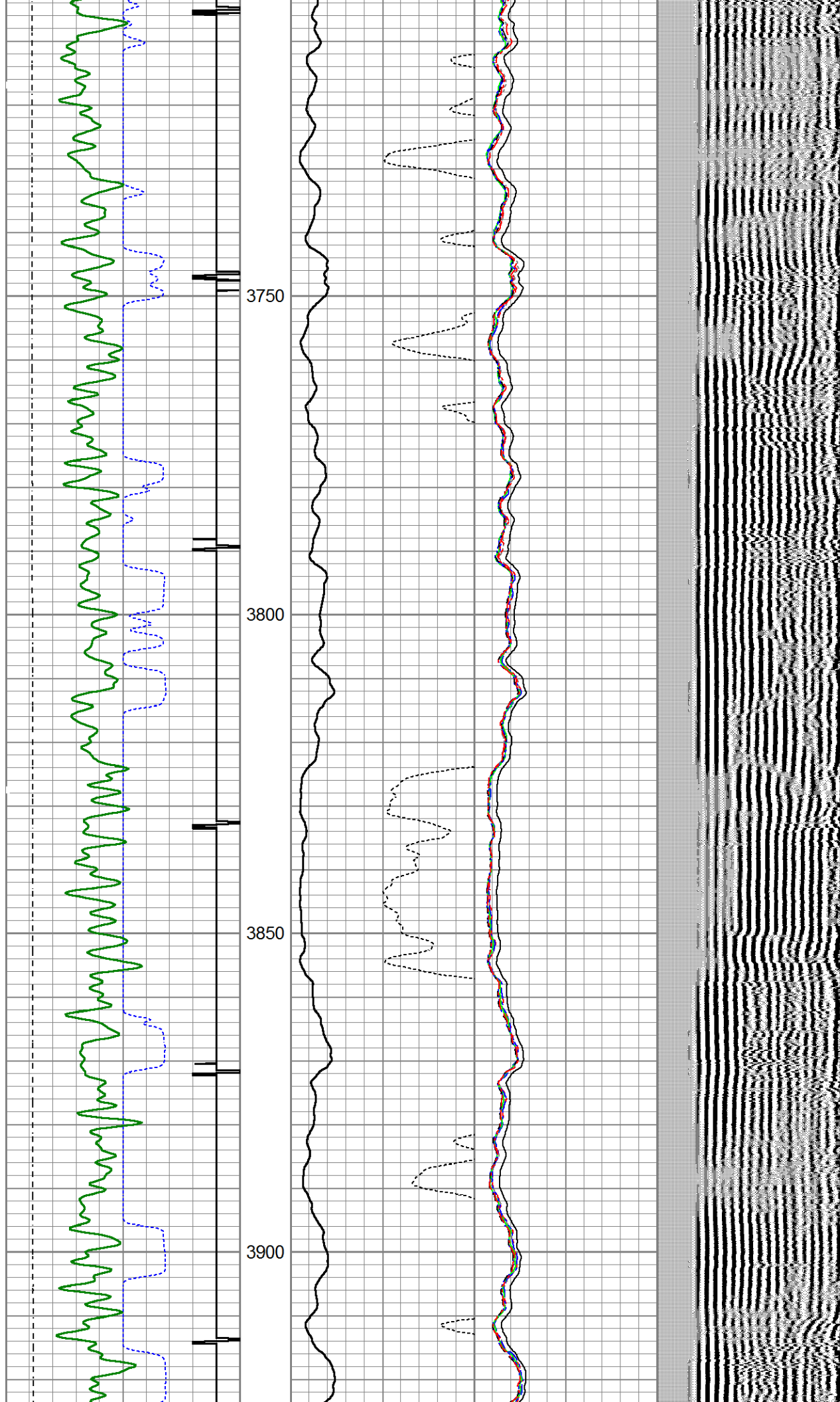




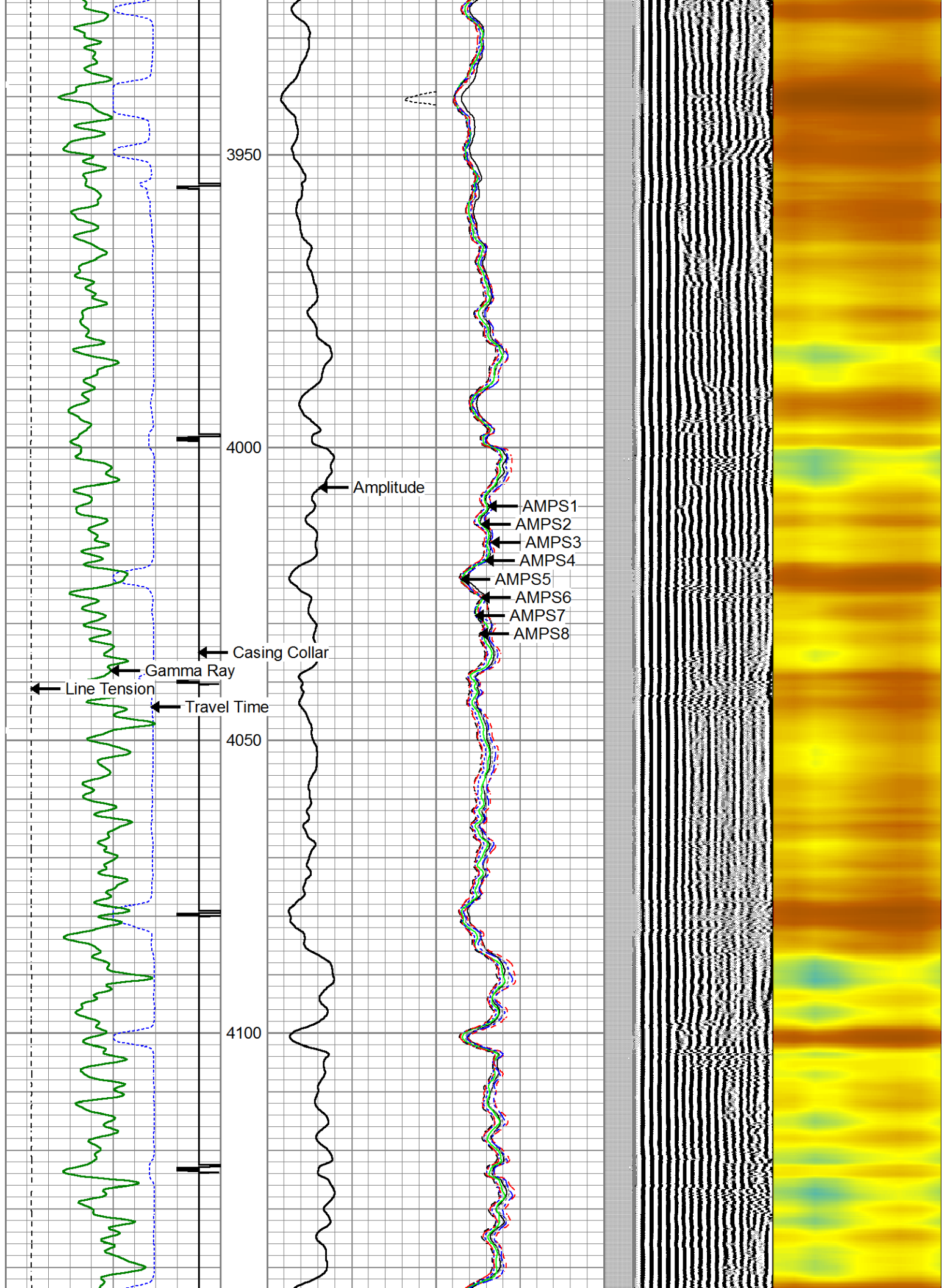




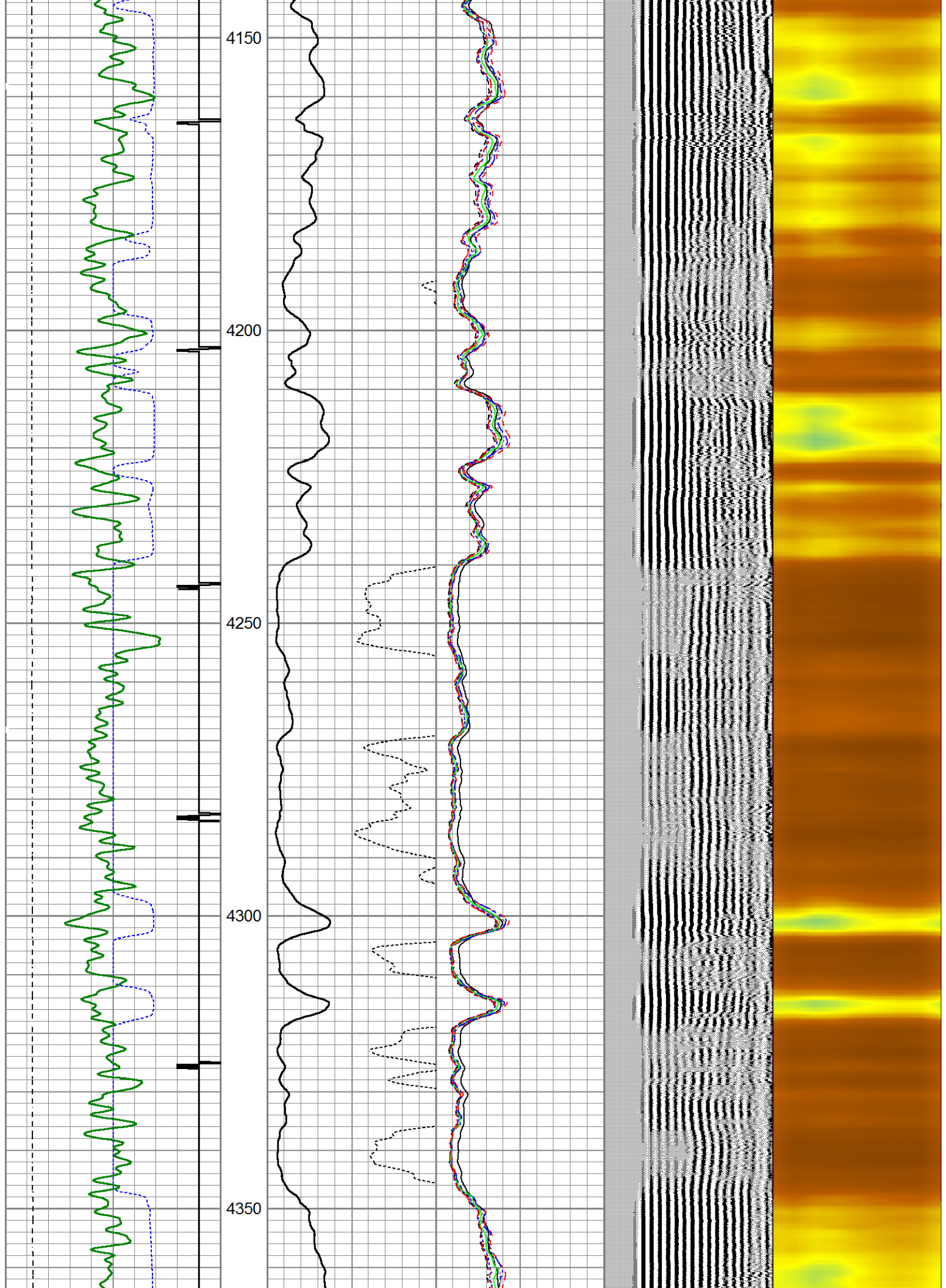


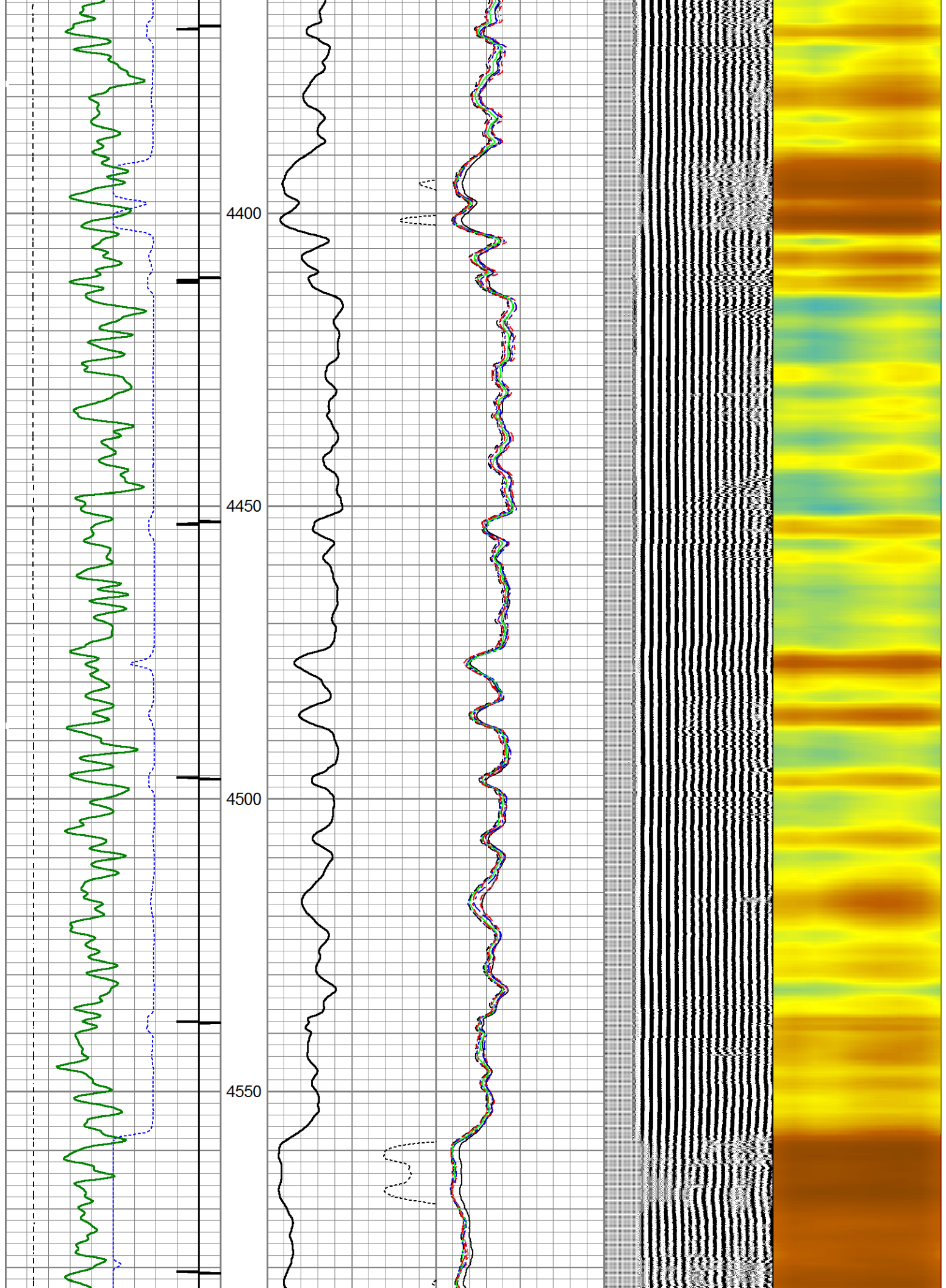


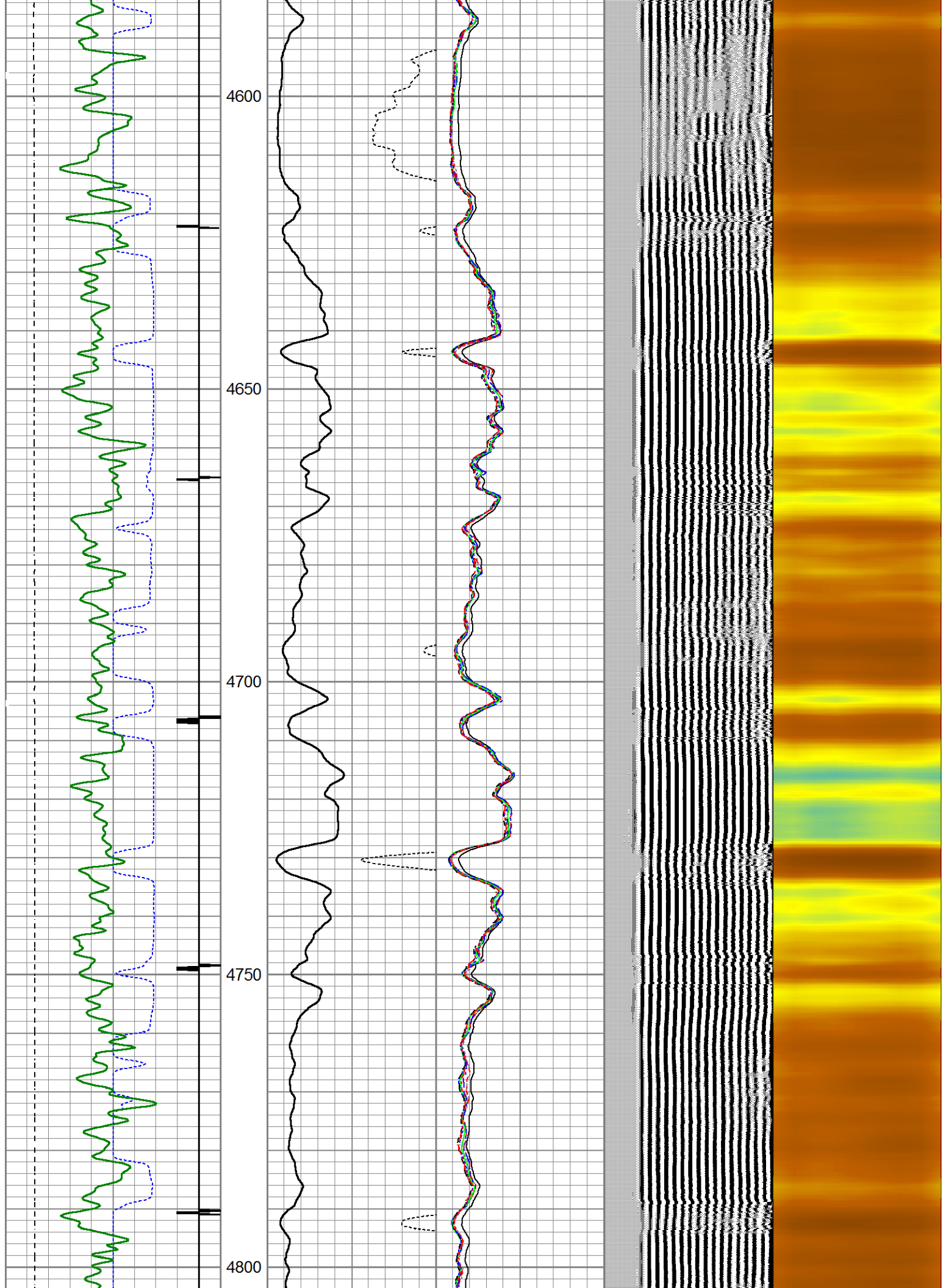




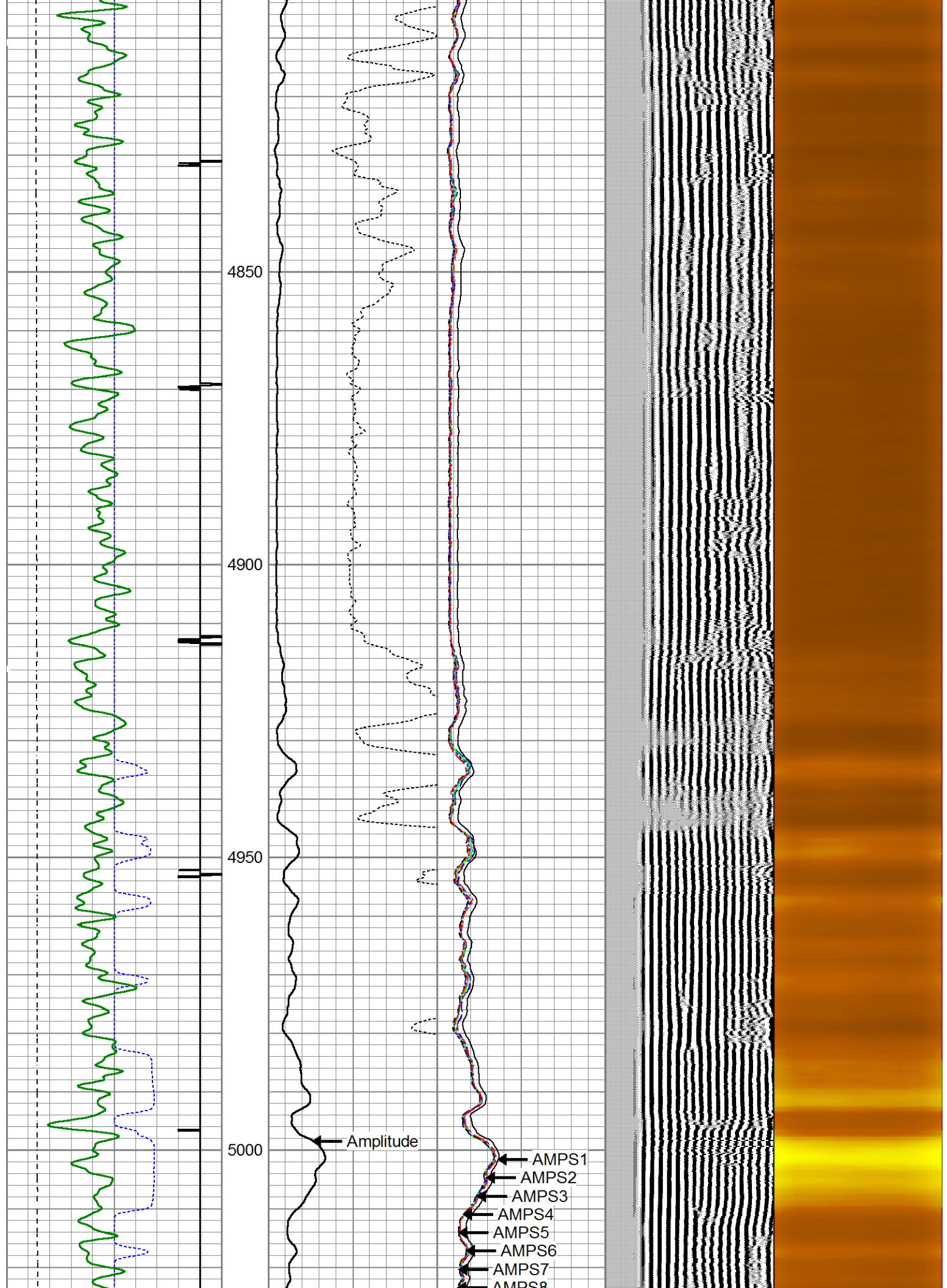


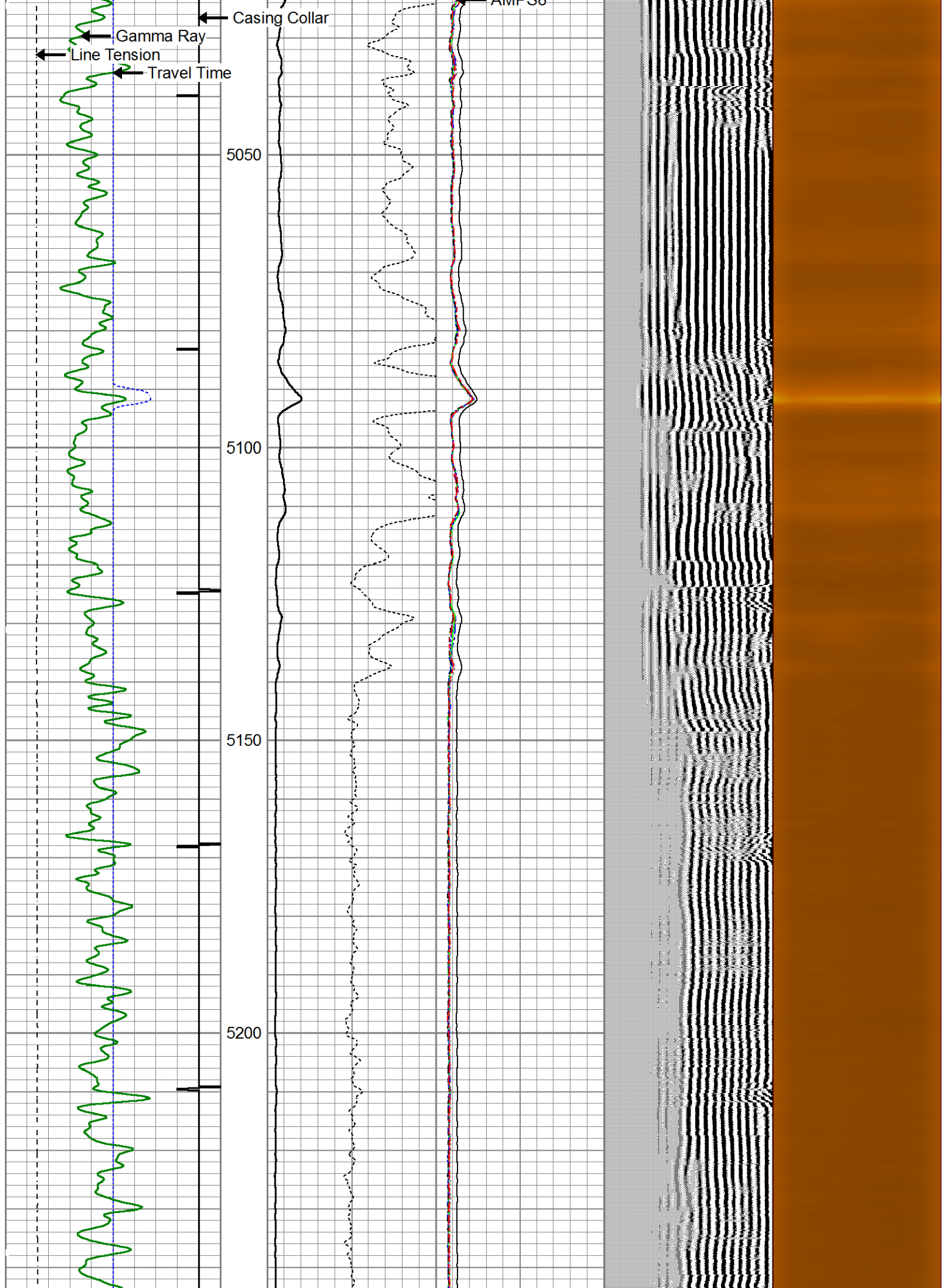


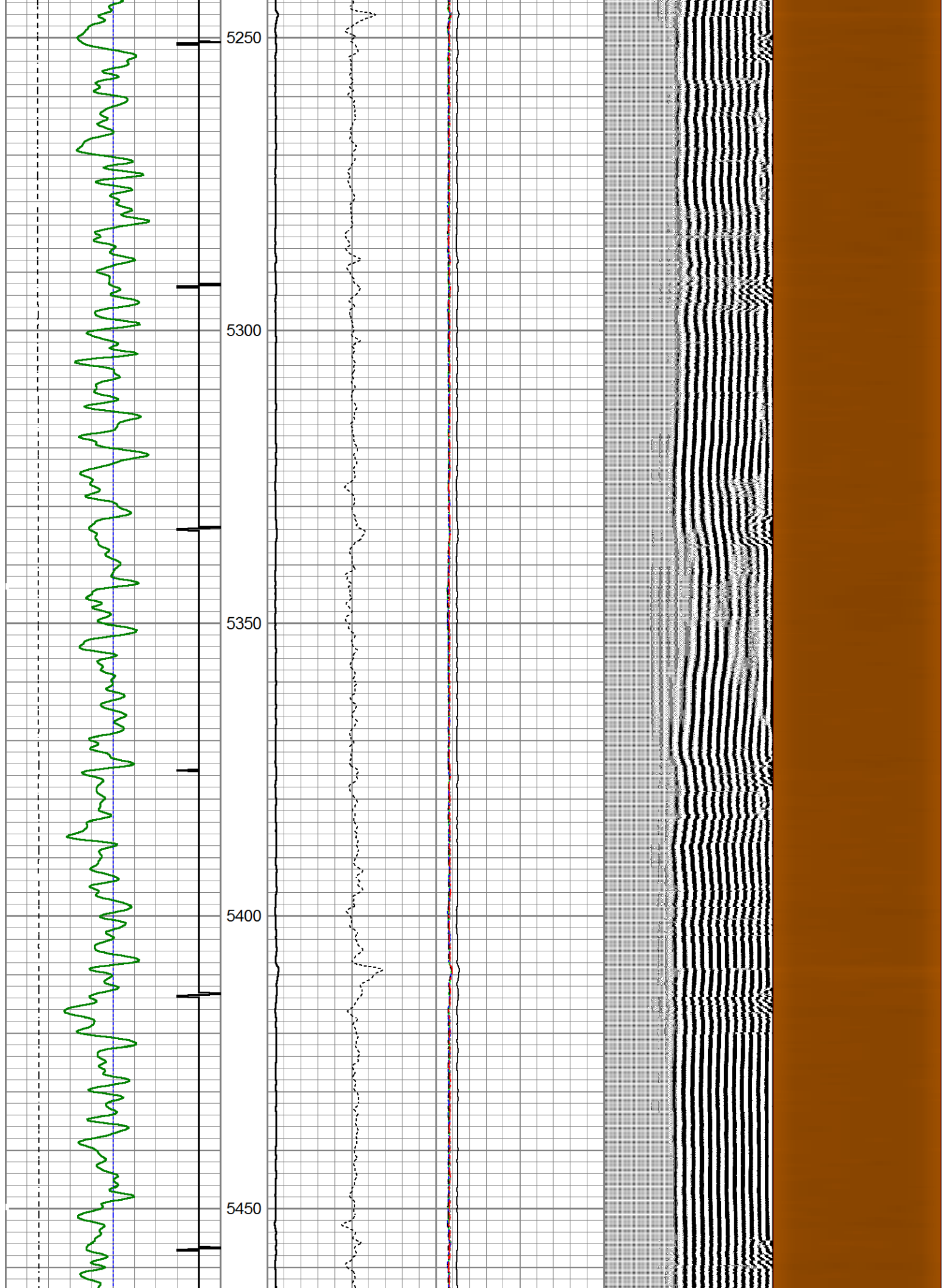




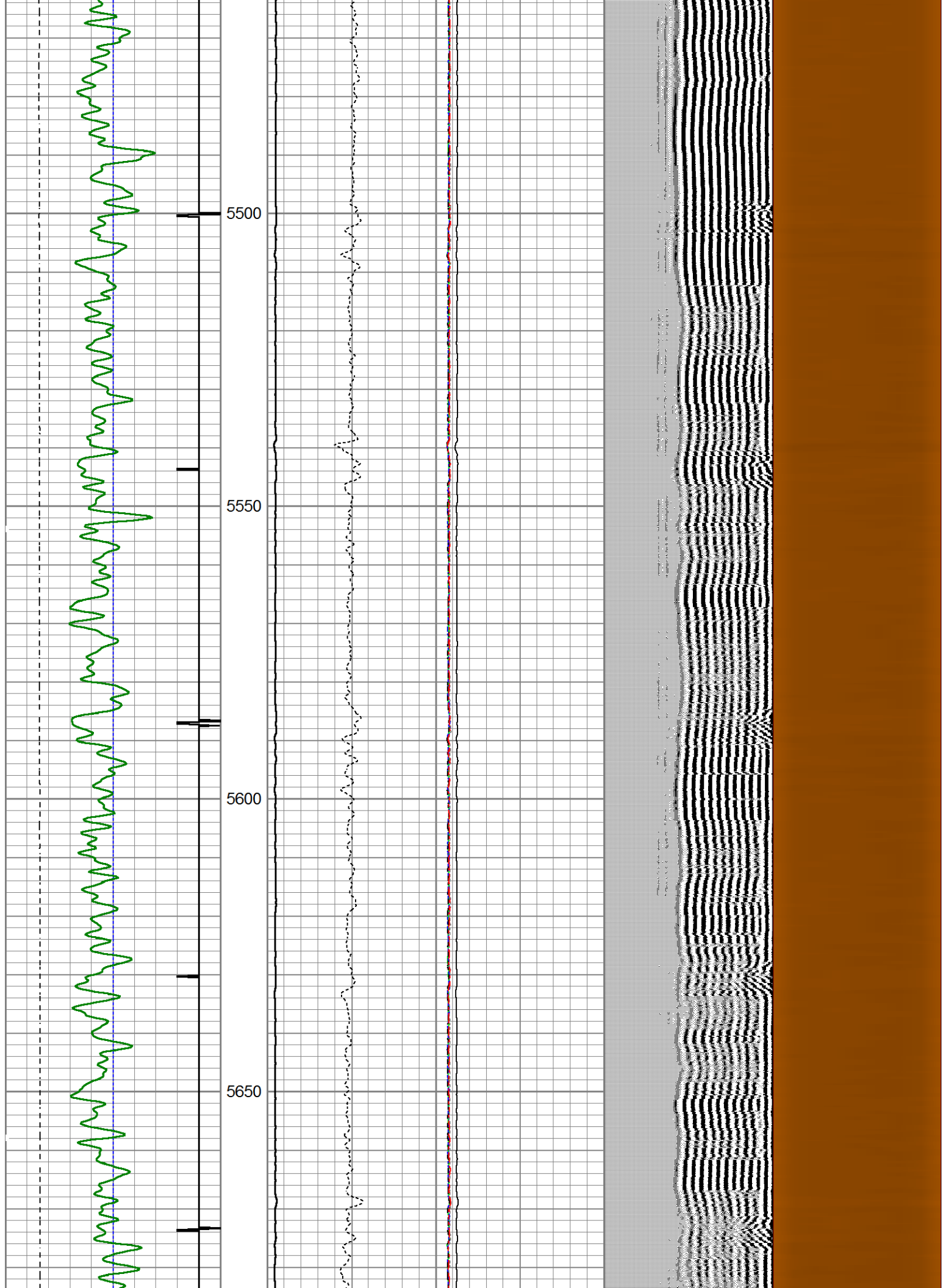


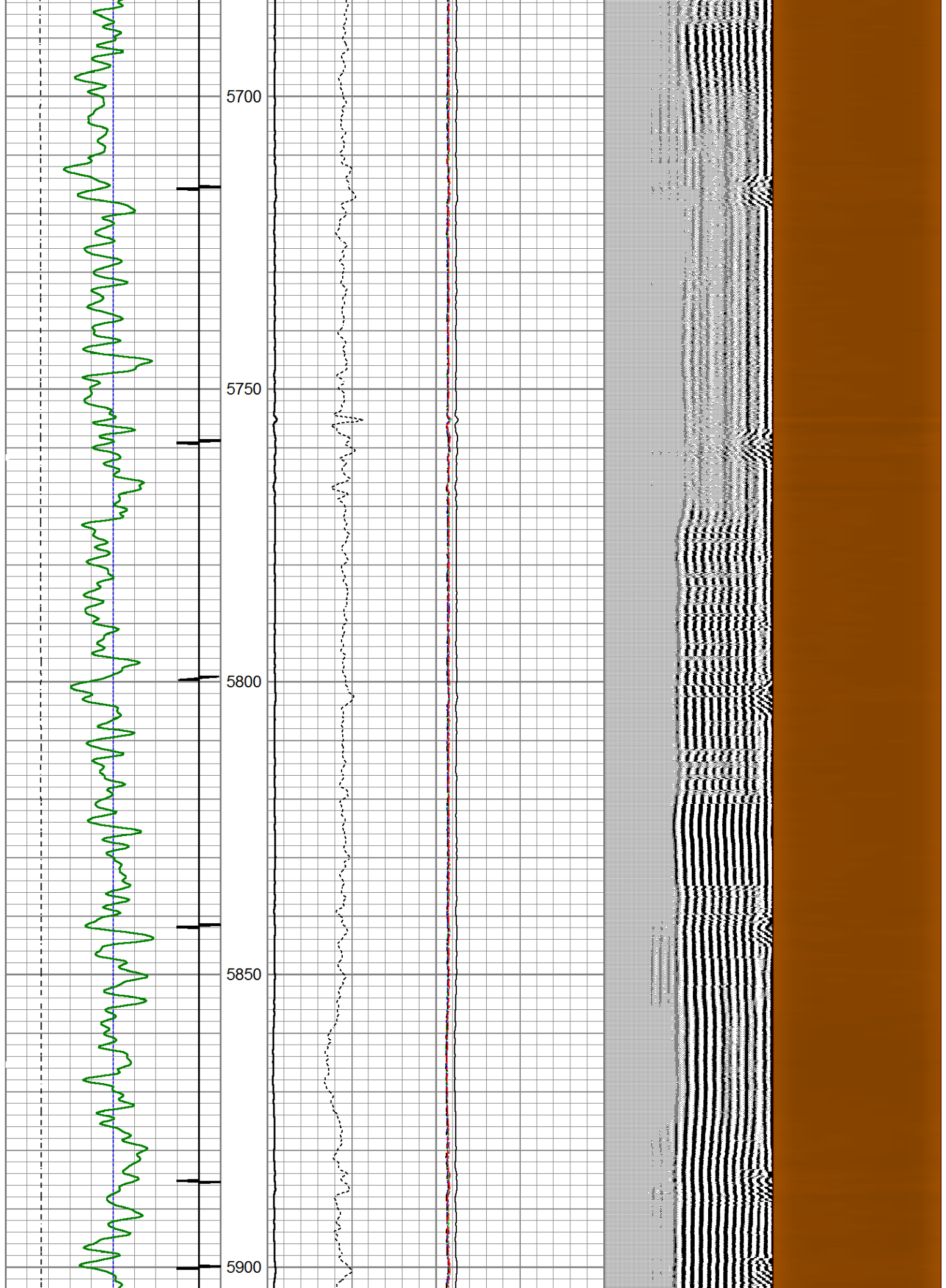


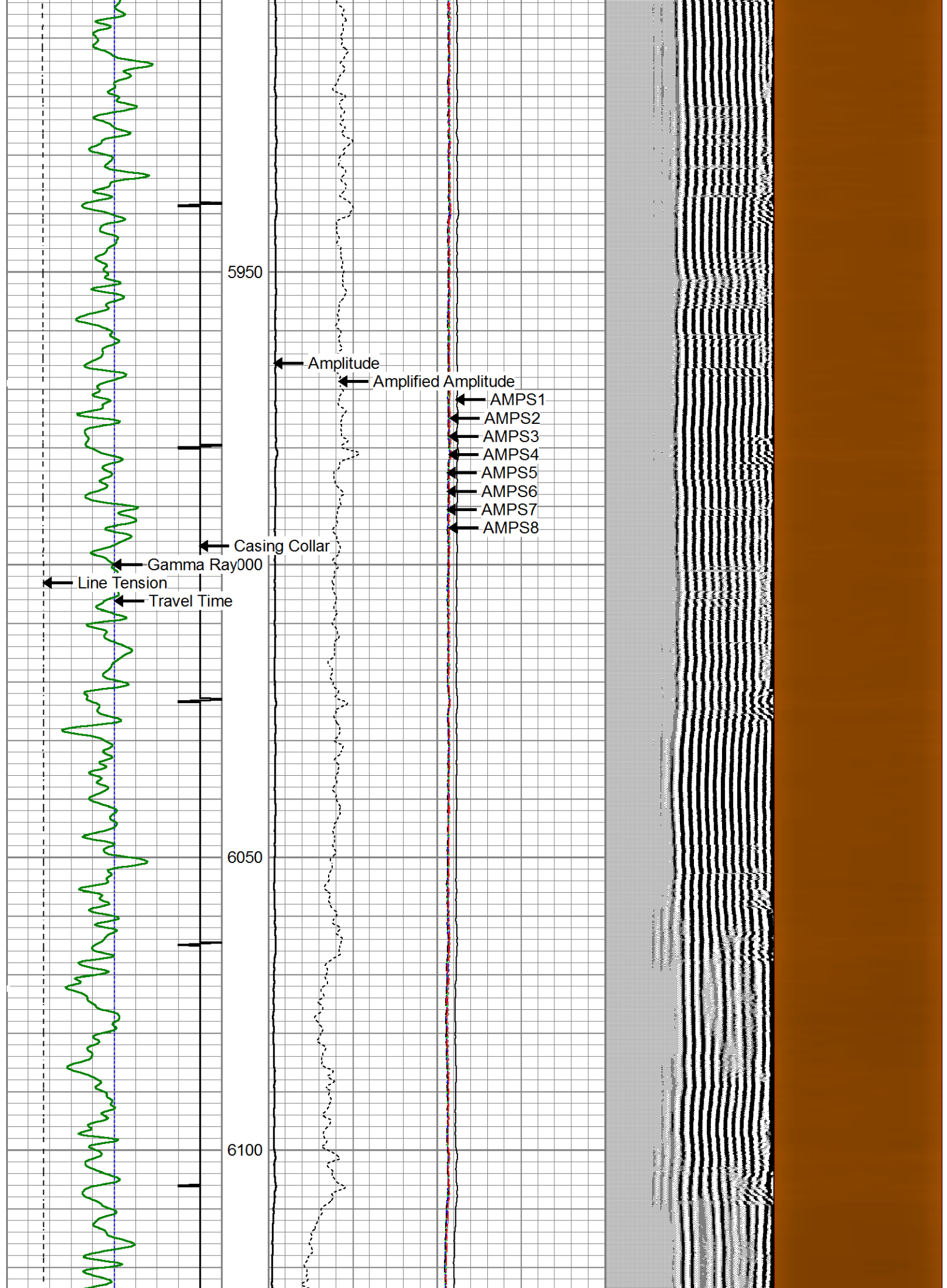




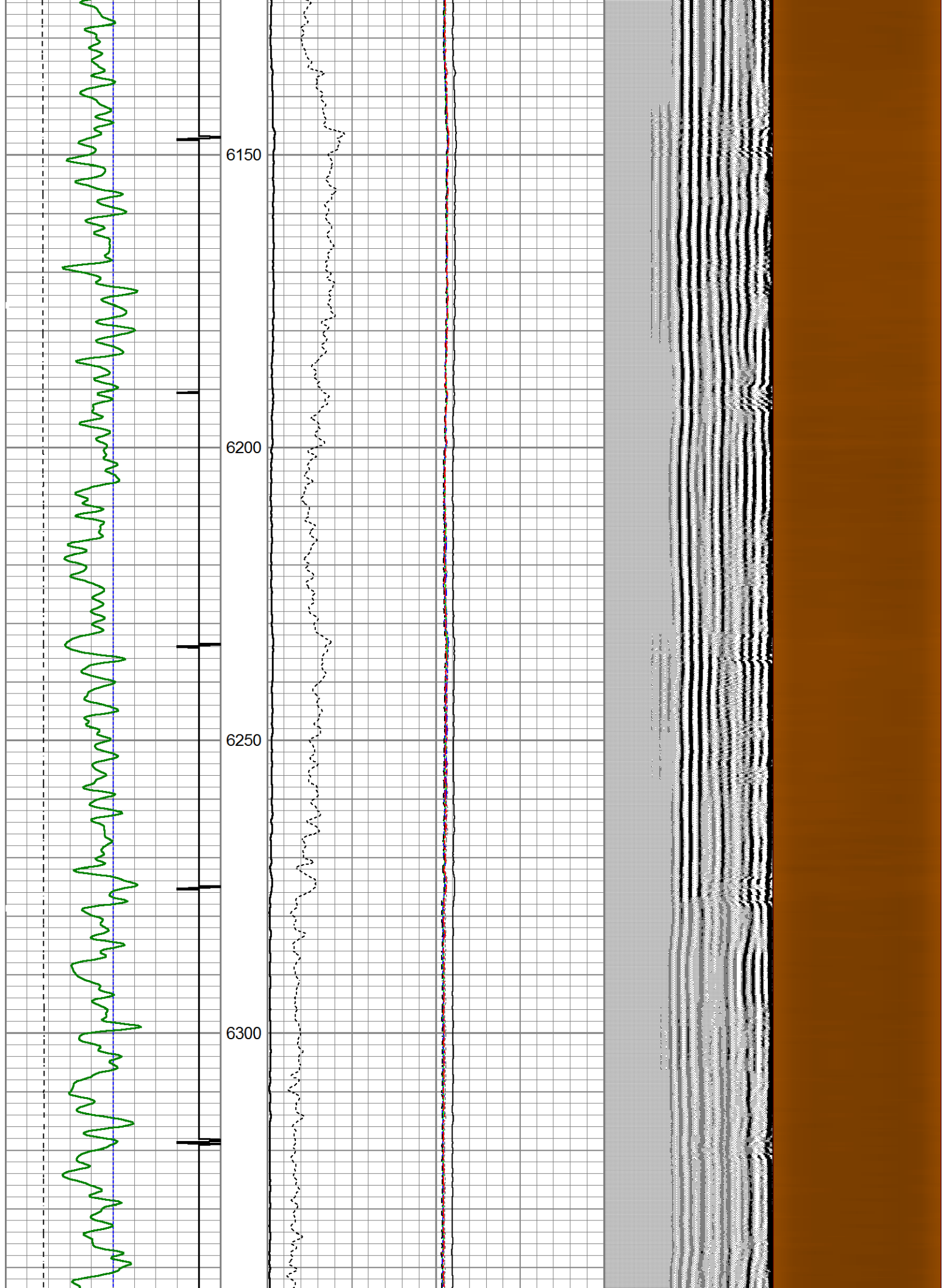


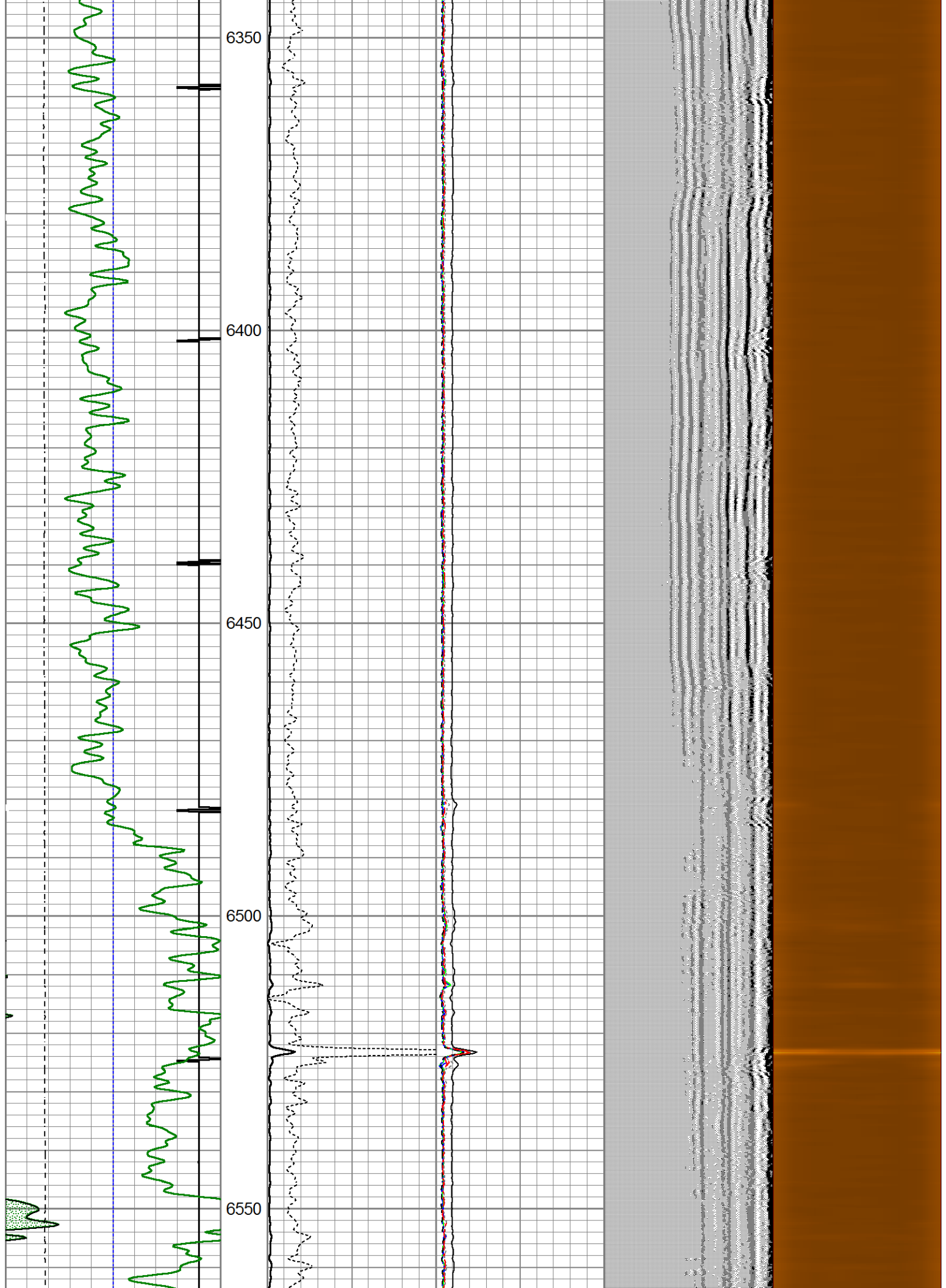




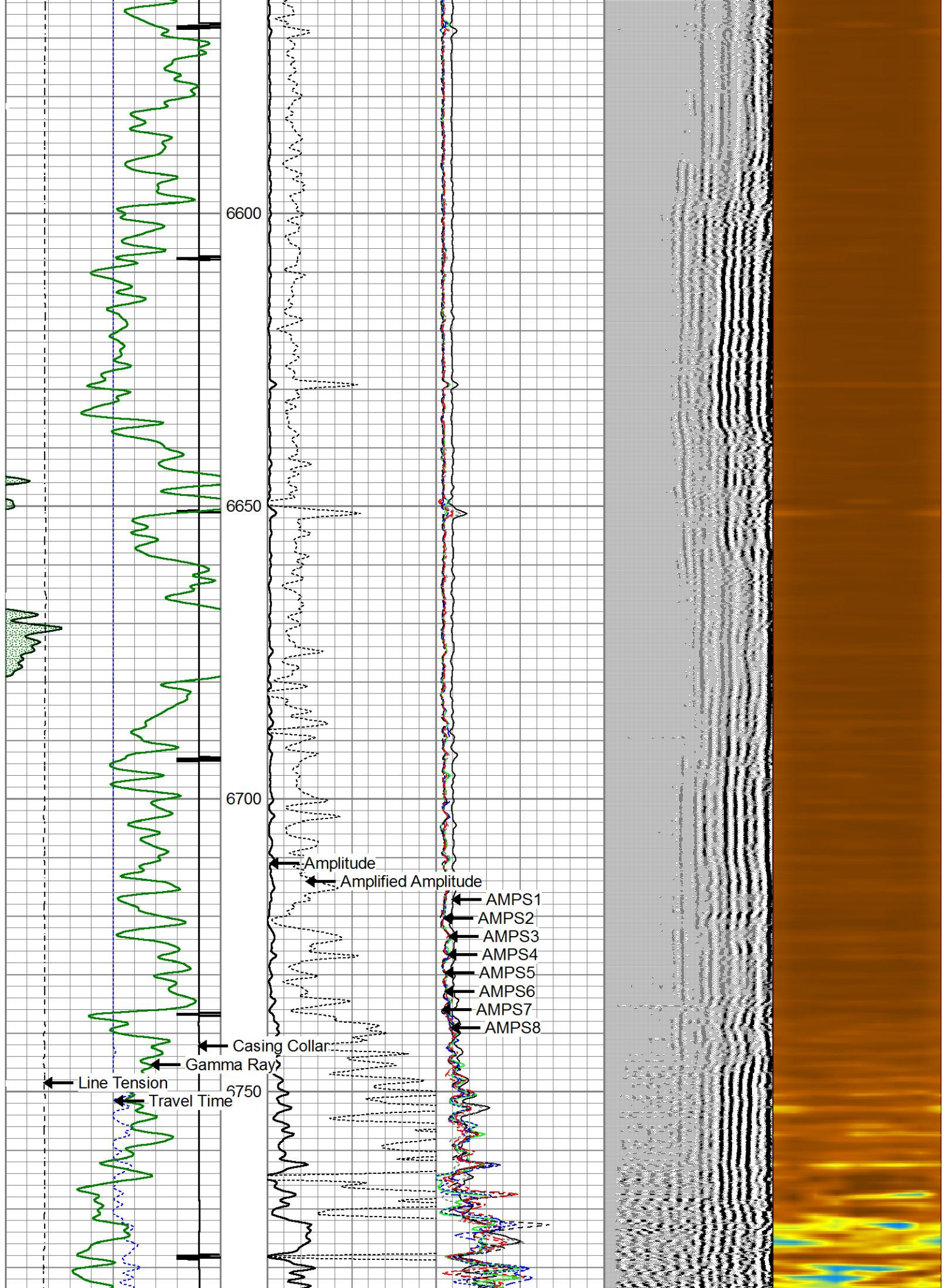




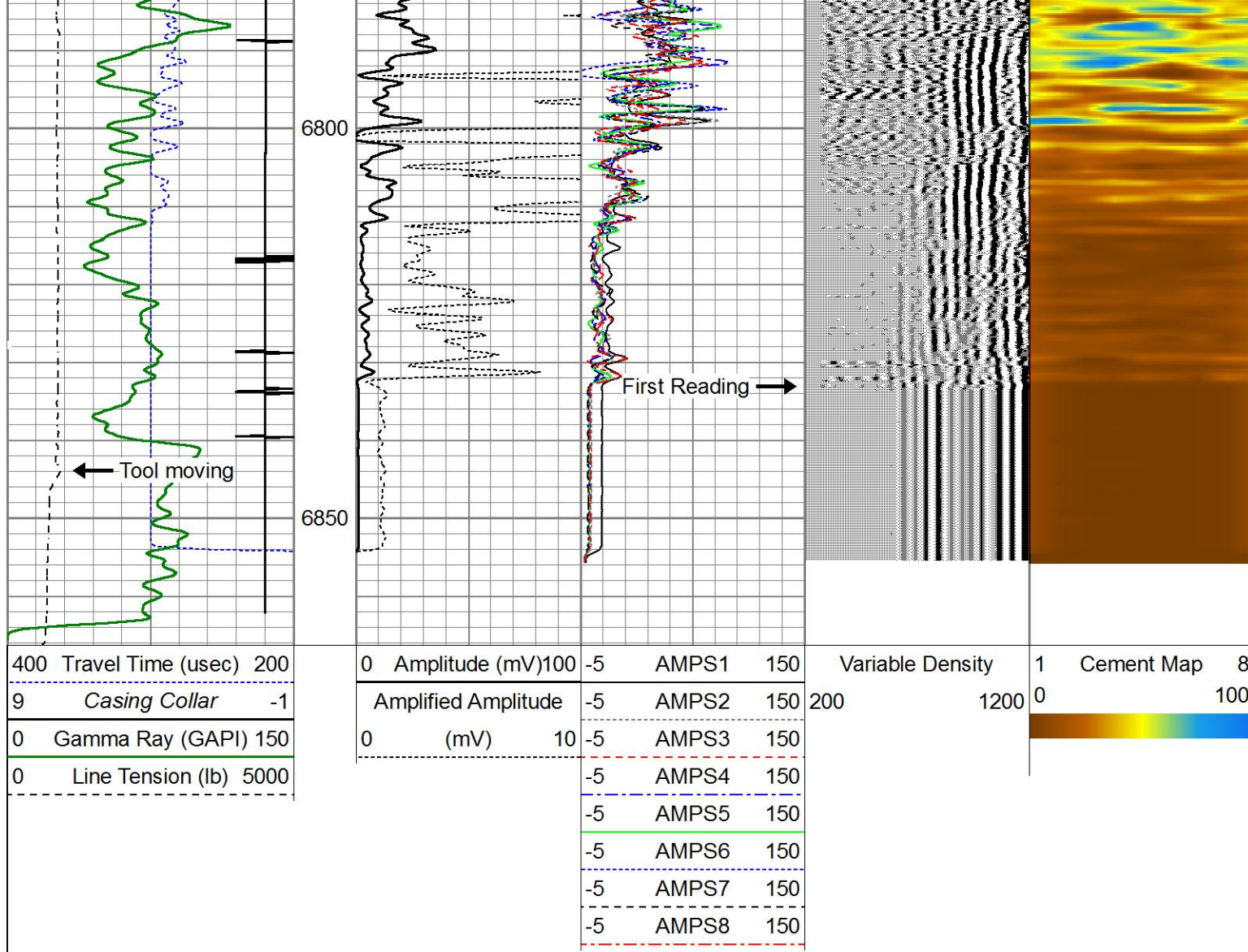






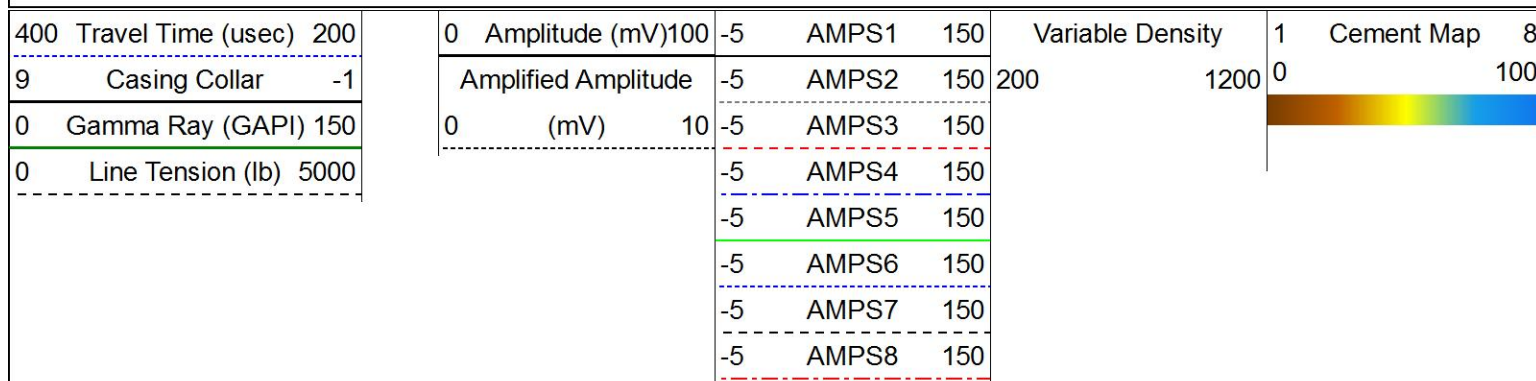




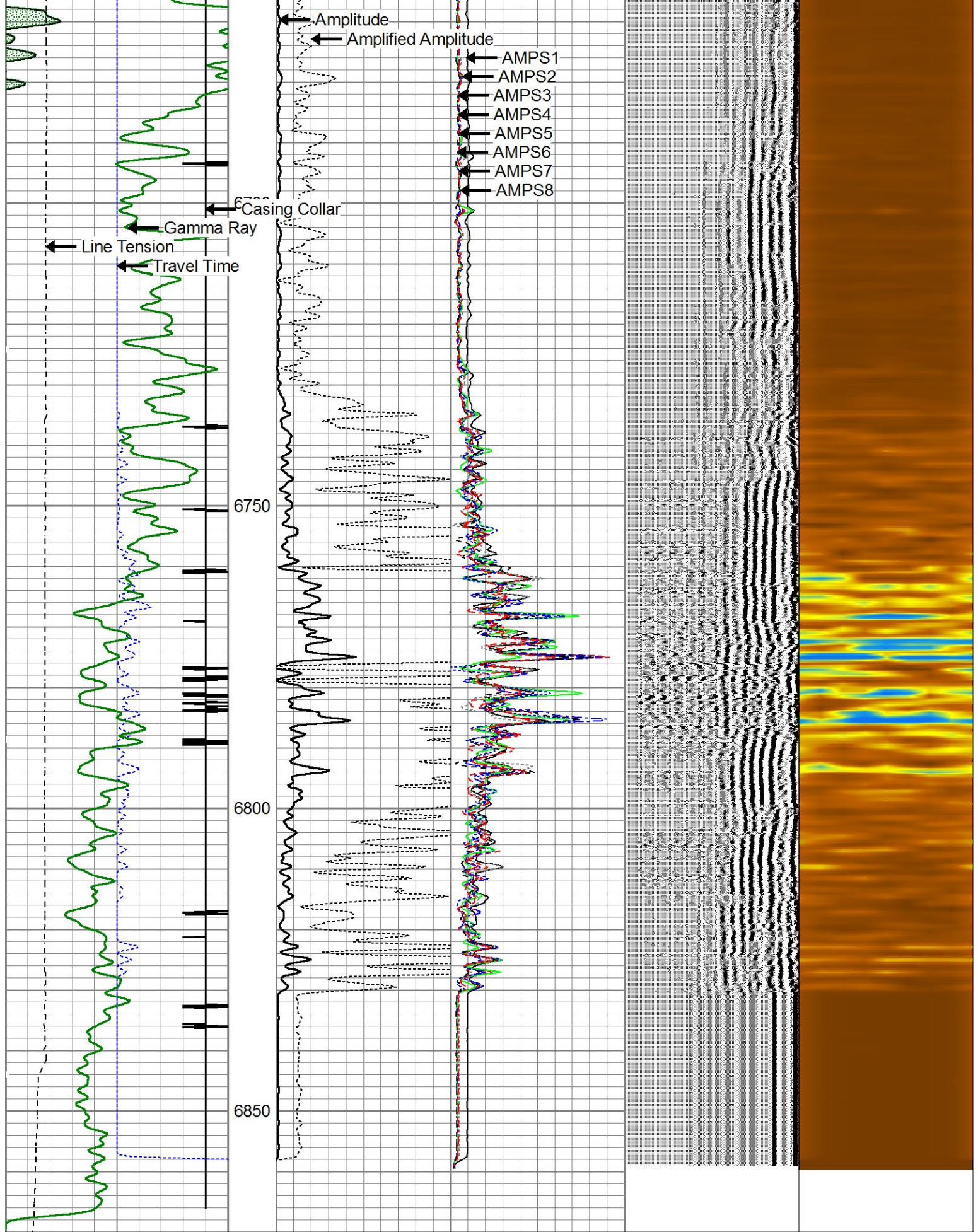


# Repeat Pass

Database File c:\users\user\desktop\co sq\job paperwork\noble cbl 06302015\noble wells ranch aa11-632-646w8.db  
 Dataset Pathname DJ\WellsRanc/run1/pass19  
 Presentation Format scbl03  
 Dataset Creation Wed Jul 01 08:21:47 2015  
 Charted by Depth in Feet scaled 1:240







400	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	AMPS1	150	Variable Density	1200	1	Cement Map	8
9	Casing Collar	-1		Amplified Amplitude		-5	AMPS2	150			0		100
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	AMPS3	150					
0	Line Tension (lb)	5000				5	AMPS4	150					



Line Tension (lb) 5000

-5	AMPS4	150
-5	AMPS5	150
-5	AMPS6	150
-5	AMPS7	150
-5	AMPS8	150



# Free Pipe Pass

Database File c:\users\user\desktop\co sq\job paperwork\noble cbl 06302015\noble wells ranch aa11-632-646w8.db  
Dataset Pathname DJ/WellsRanc/run1/pass17  
Presentation Format scbl03  
Dataset Creation Wed Jul 01 08:20:29 2015  
Charted by Depth in Feet scaled 1:240

400 Travel Time (usec) 200  
9 Casing Collar -1  
0 Gamma Ray (GAPI) 150  
0 Line Tension (lb) 5000

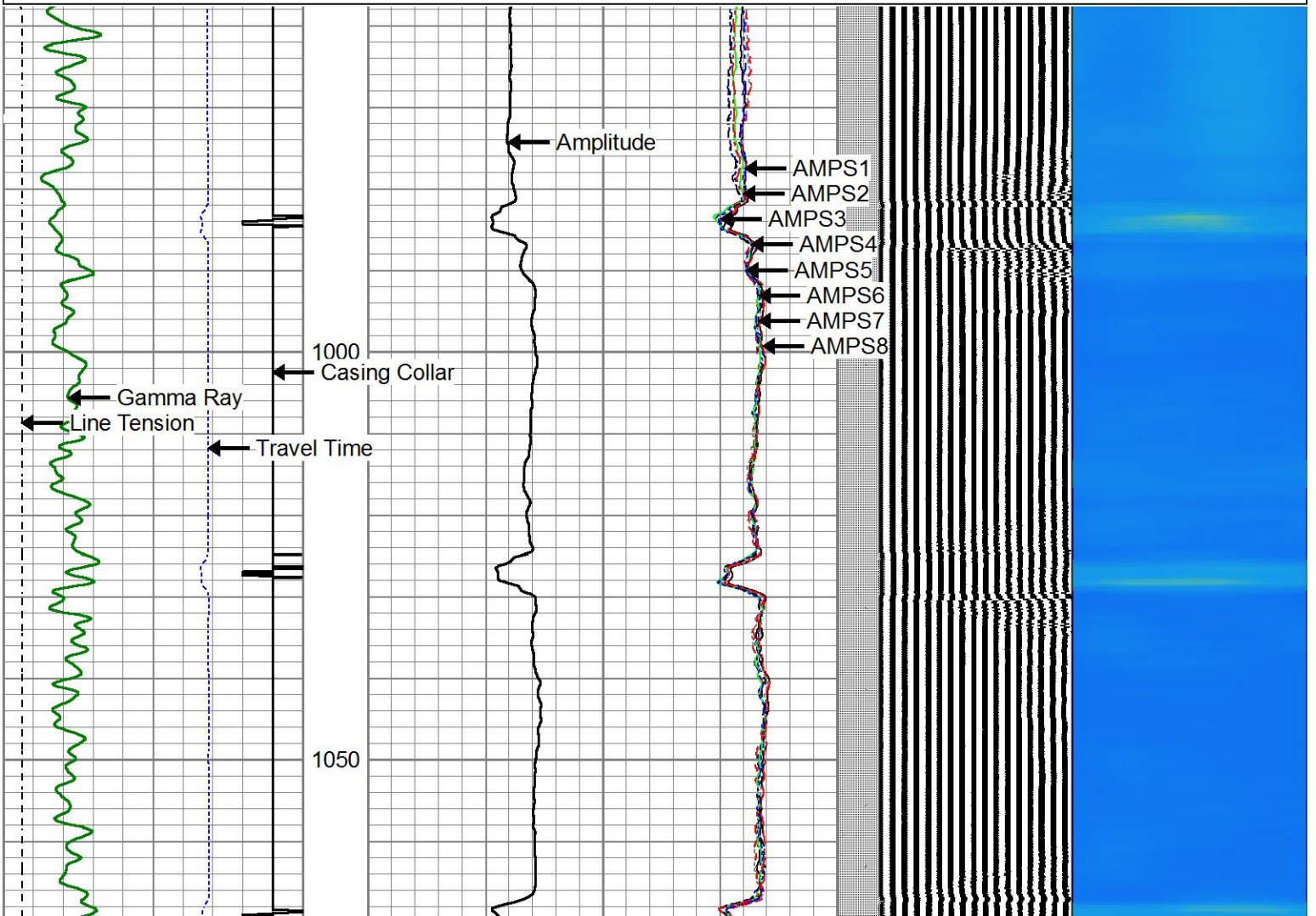
0 Amplitude (mV) 100  
Amplified Amplitude  
0 (mV) 10

-5	AMPS1	150
-5	AMPS2	150
-5	AMPS3	150
-5	AMPS4	150
-5	AMPS5	150
-5	AMPS6	150
-5	AMPS7	150
-5	AMPS8	150

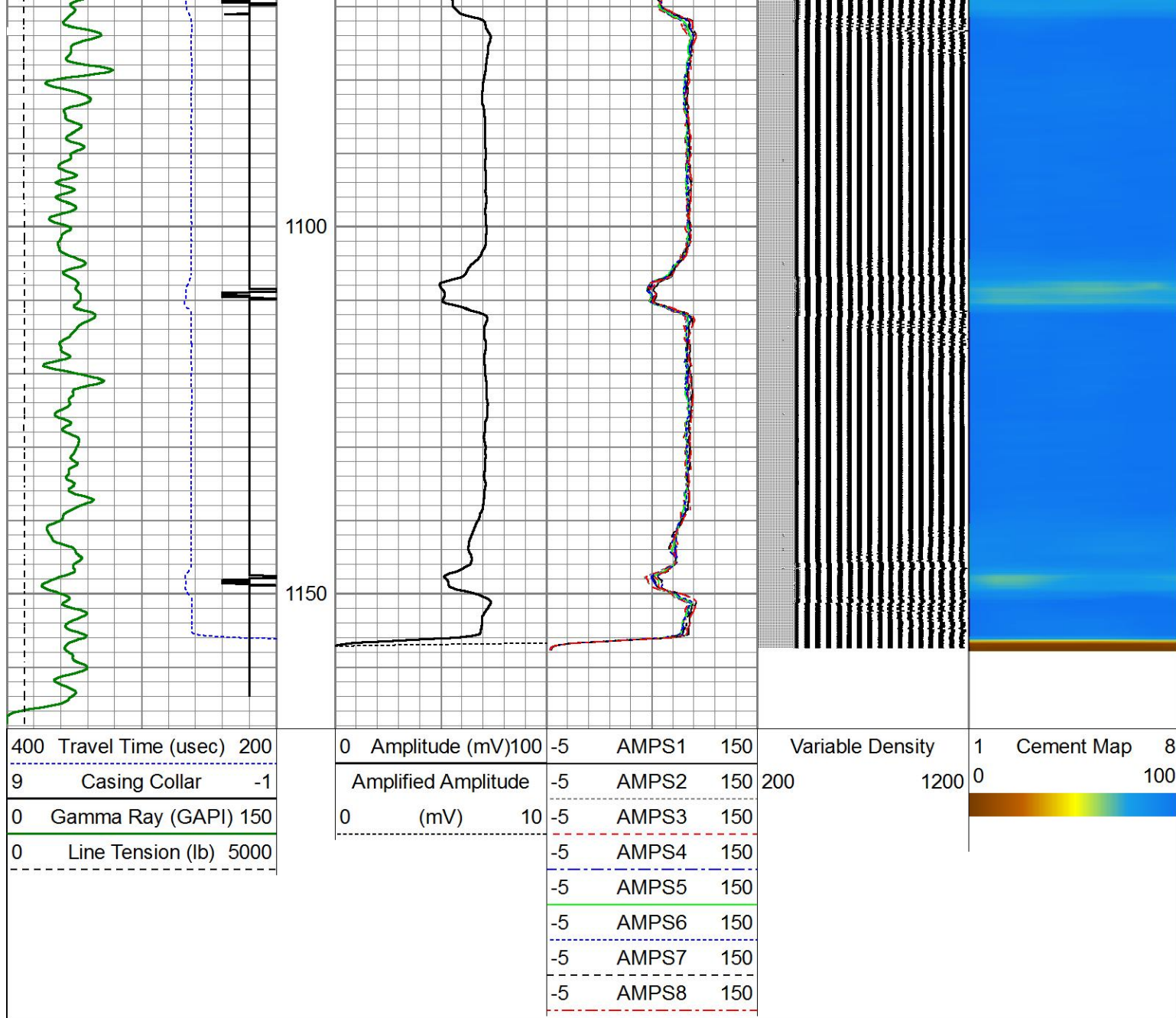
Variable Density

200 1200

1 Cement Map 8  
0 100







## Log Variables

Database: c:\users\user\desktop\co sq\job paperwork\noble cbl 06302015\noble wells ranch aa11-632-646w8.db  
Dataset DJ/WellsRanc/run1/pass21

### Top - Bottom

BOREID in 7.875	BOTTEMP degF 100	TDEPTH ft 0	PERFS 0	CASEOD in 5.5	SRFTEMP degF 0	MINATTN db/ft 0.8	MINAMPL mV 0
MAXAMPL mV 72	CASEWGHT lb/ft 20	PPT usec 0					

### Calibration Report

Database File c:\users\user\desktop\co sq\job paperwork\noble cbl 06302015\noble wells ranch aa11-632-646w8.db  
Dataset Pathname DJ/WellsRanc/run1/pass21  
Dataset Creation Wed Jul 01 08:21:49 2015

### Gamma Ray Calibration Report

Serial Number:

FW1305 89 Corrosion

Serial Number: 1 W1503-09-Comission  
Tool Model: Probe275  
Performed: Tue Jun 30 11:49:49 2015

Calibrator Value: 1022.0 GAPI  
Background Reading: 149.4 cps  
Calibrator Reading: 1775.7 cps  
Sensitivity: 0.6285 GAPI/cps

### Segmented Cement Bond Log Calibration Report

Serial Number: 101224  
Tool Model: Probe  
Calibration Casing Diameter: 5.500 in  
Calibration Depth: 1111.300 ft

Master Calibration, performed Tue Jun 30 15:21:18 2015:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.014	0.624	0.000	71.921	117.934	-1.635
CAL	0.014	0.987				
5'	0.015	0.560	0.000	71.921	131.993	-2.001
SUM						
S1	0.010	0.698	0.000	100.000	145.400	-1.512
S2	0.012	0.641	0.000	100.000	159.056	-1.909
S3	0.014	0.636	0.000	100.000	160.889	-2.317
S4	0.014	0.616	0.000	100.000	166.085	-2.281
S5	0.014	0.618	0.000	100.000	165.659	-2.311
S6	0.016	0.630	0.000	100.000	162.675	-2.524
S7	0.015	0.633	0.000	100.000	161.916	-2.477
S8	0.015	0.649	0.000	100.000	157.739	-2.322

Internal Reference Calibration, performed Mon Oct 10 09:42:03 2005:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.014	0.987	1.000	0.000

Air Zero Calibration, performed Mon Oct 10 09:41:05 2005:

	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)
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