



**Radial Cement Bond
Variable Density Log
W/ Temp/GammaRay/CCL**

Company Antero Resources
Well Flames1H
Field North Canton
County Tyler
State West Virginia

Company Antero Resources
Well Flames1H
Field North Canton
County Tyler
State West Virginia

Location: 39.403892 -80.787906
API #: 47095026630000
Other Services: N/A
SEC N/A TWP N/A RGE N/A
Permanent Datum Ground Level Elevation
Log Measured From Kelly Bushing 25' A.P.D.
Drilling Measured From Kelly Bushing
Elevation: K.B., D.F., G.L.

Date	30-Apr-20	
Run Number	One	
Depth Driller	18,581 ft.	
Depth Logger	6,702 ft.	
Bottom Logged Interval	6,702 ft. Surface	
Top Log Interval	Surface	
Open Hole Size	n/a	
Type Fluid	Freshwater	
Density / Viscosity	n/a	
Max. Recorded Temp.	166 deg F	
Estimated Cement Top	5,645 ft.	
Time Well Ready	07:00	
Time Logger on Bottom	15:37	
Equipment Number	132	
Location	Marietta, Ohio	
Recorded By	Tom Weese	
Witnessed By	Chris Young	
Borehole Record		
Run Number	Bit	From To
Tubing Record		
Run Number	Weight	From To
Casing Record		
Surface String	Size	Wgt/Ft
13 3/8 in.	54.5 #	Top Surface
9 5/8 in.	36 #	Surface
5 1/2	20#	Surface
Marker Joint		5,566 ft. Bottom 438 ft. 3,103 ft. 18,581 ft.

<<< Fold Here >>>

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

Primary Log on Well
Log Correlated to Marker Joint at (5,566' - 5,575')
Depth Correction (+25)
Main Pass 0 PSI
Repeat Pass 0 PSI
Thank You For Using Nine Energy Wireline of Marietta, Ohio


RECEIVED
Office Of Oil and Gas
FEB 09 2023
WV Department of
Environmental Protection

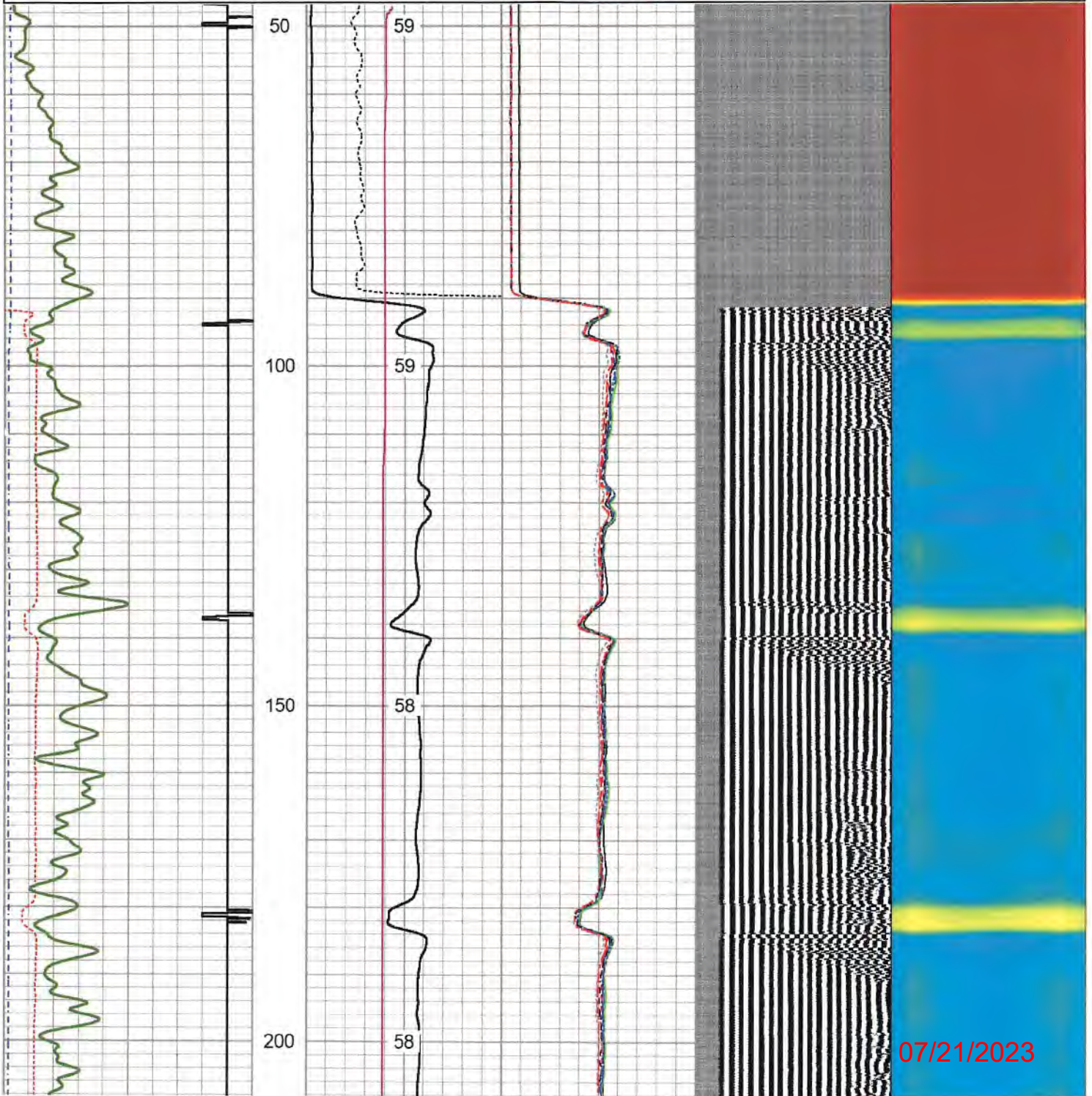


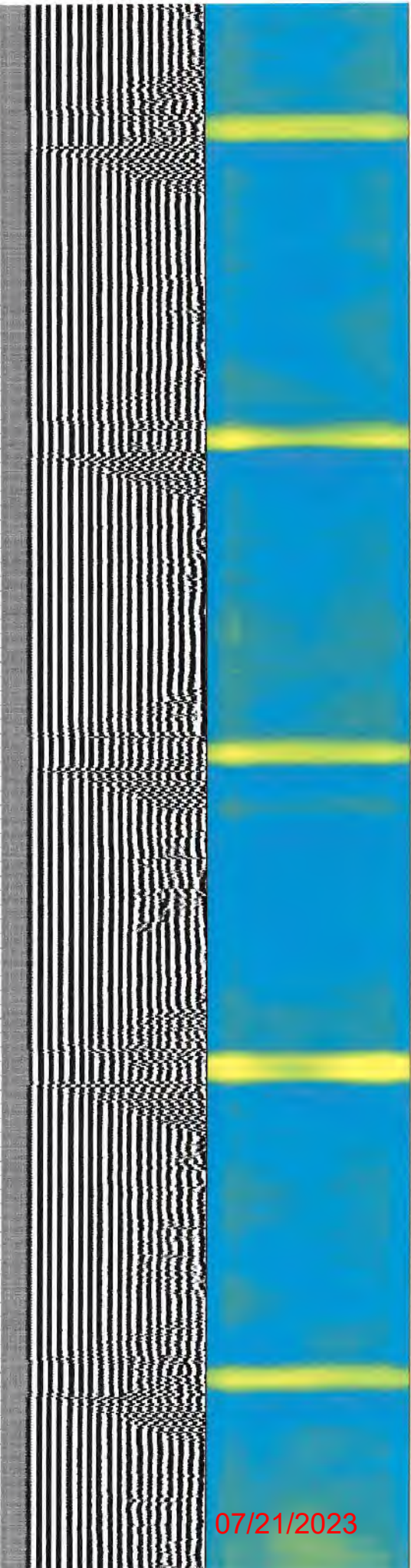
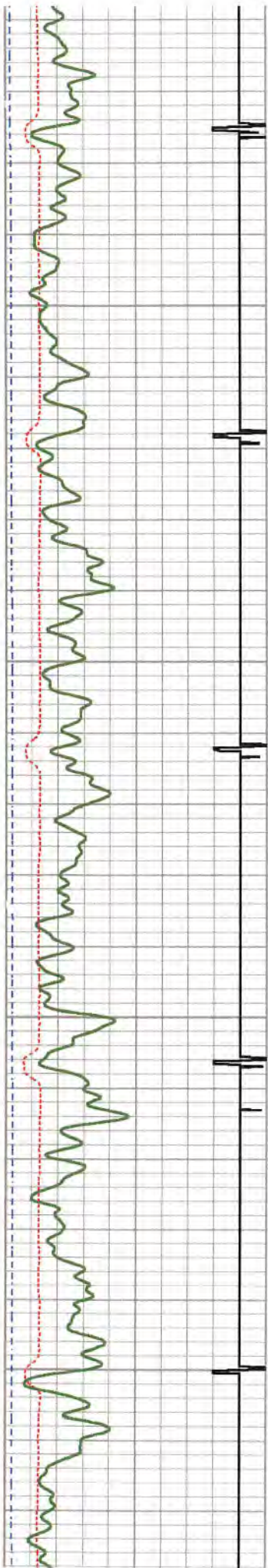
Main Pass 0 PSI

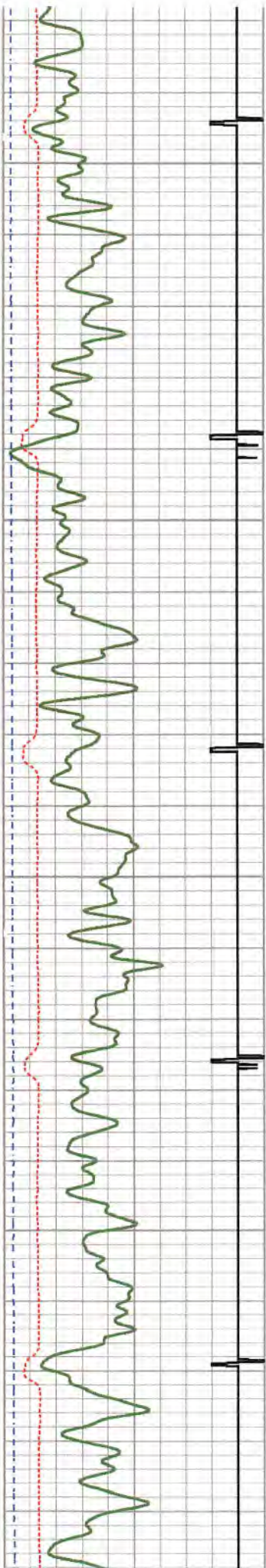
Handwritten mark

Database File antero_coloradowest_flames_1h_rcbl_nineenergy_apr_30_2020.db
 Dataset Pathname Marcellus/Flames_1H/RCBL_1/pass4
 Presentation Format 9rcbl
 Dataset Creation Thu Apr 30 14:37:11 2020
 Charted by Depth in Feet scaled 1:240

270	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1	Amplified Amplitude			-5	Sector 2	150	200 (usec)	1200		
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	Sector 3	150				
0	Line Tension (lb)	5000	Line Speed			-5	Sector 4	150				
			-500	(ft/min)	500	-5	Sector 5	150				
			TEMP			-5	Sector 6	150				
			(degF)			-5	Sector 7	150				
						-5	Sector 8	150				







450

500

550

600

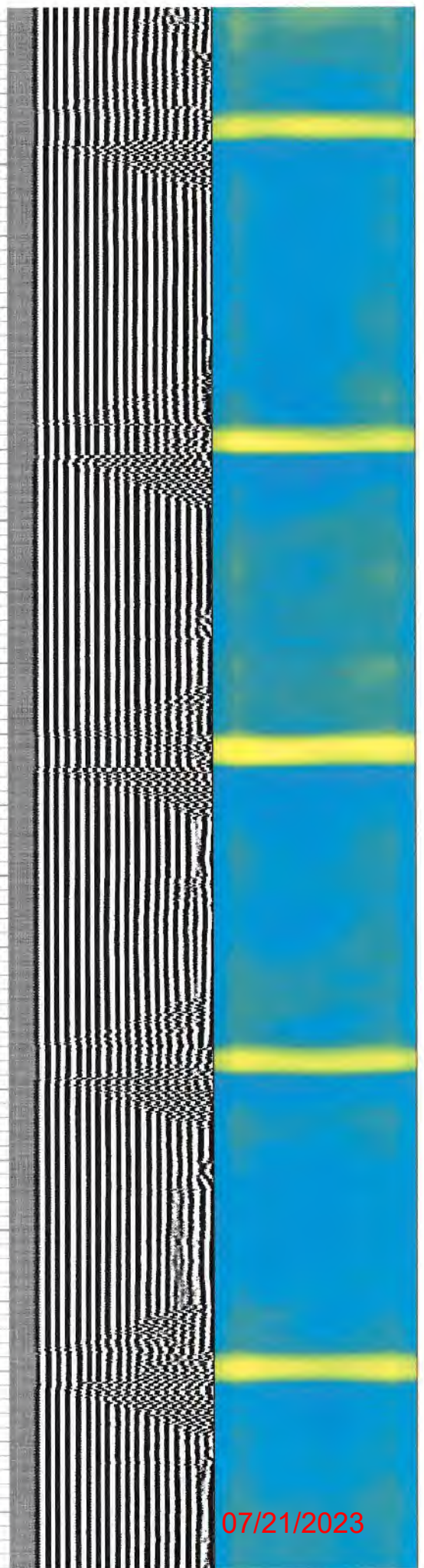


61

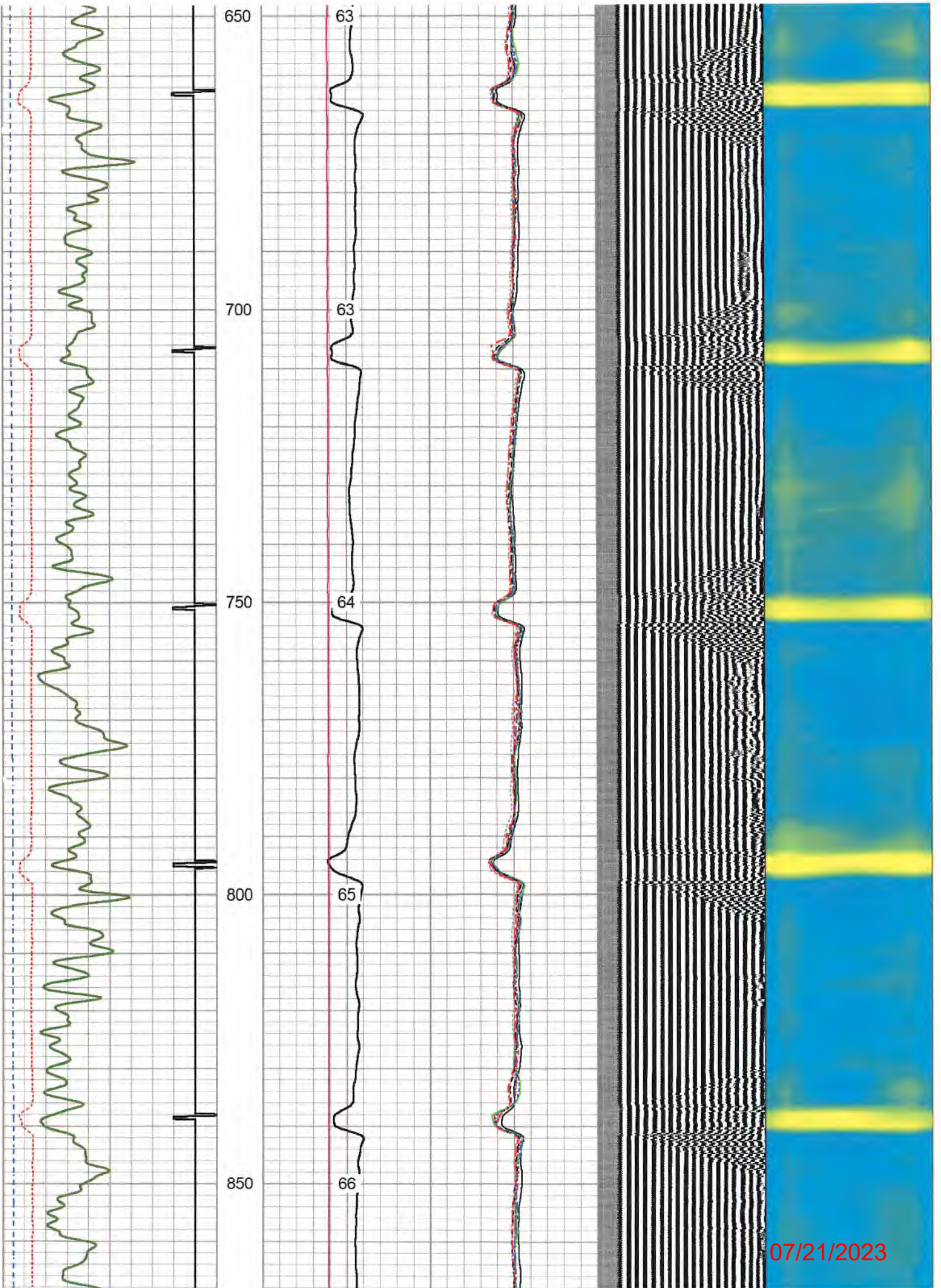
61

62

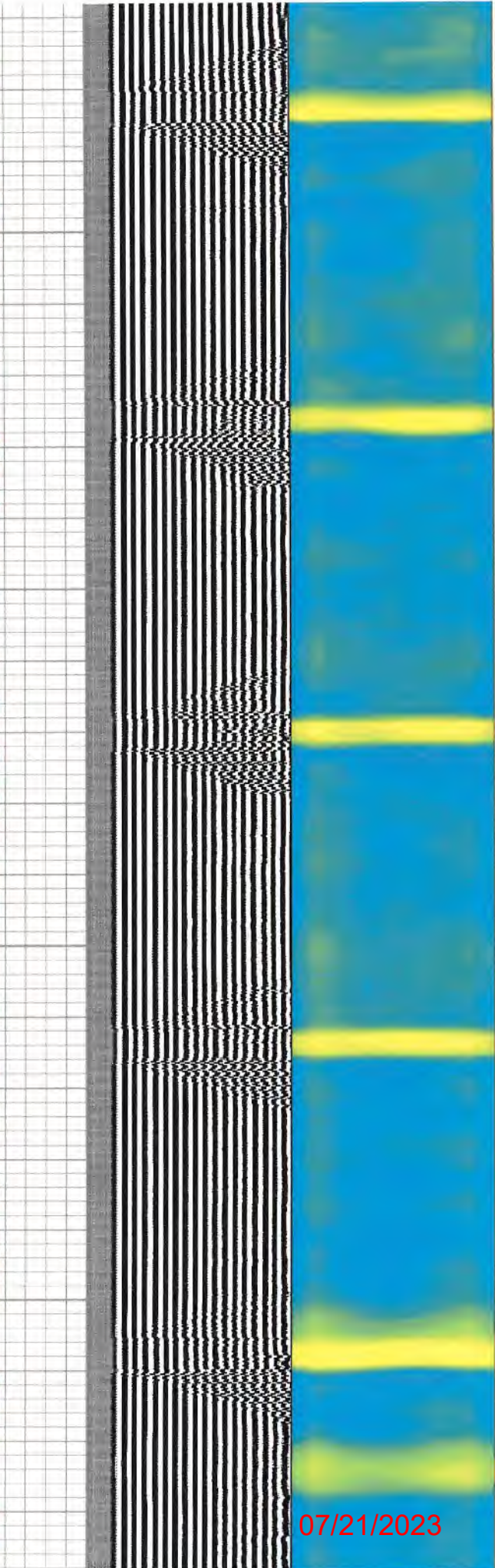
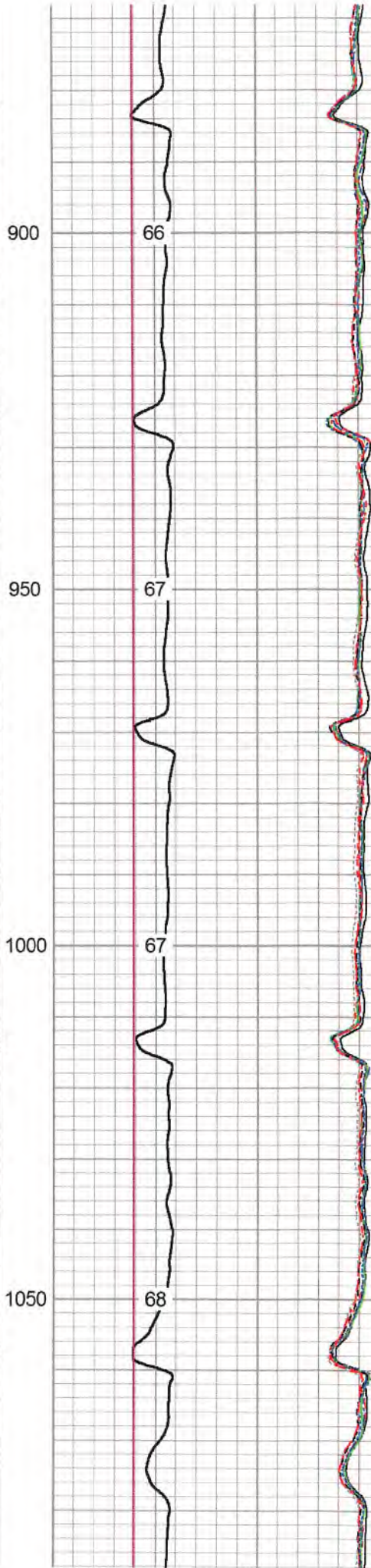
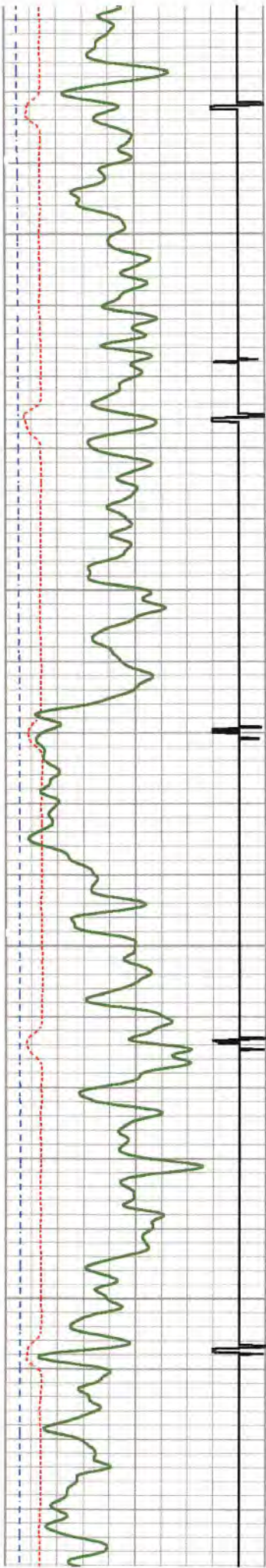
62



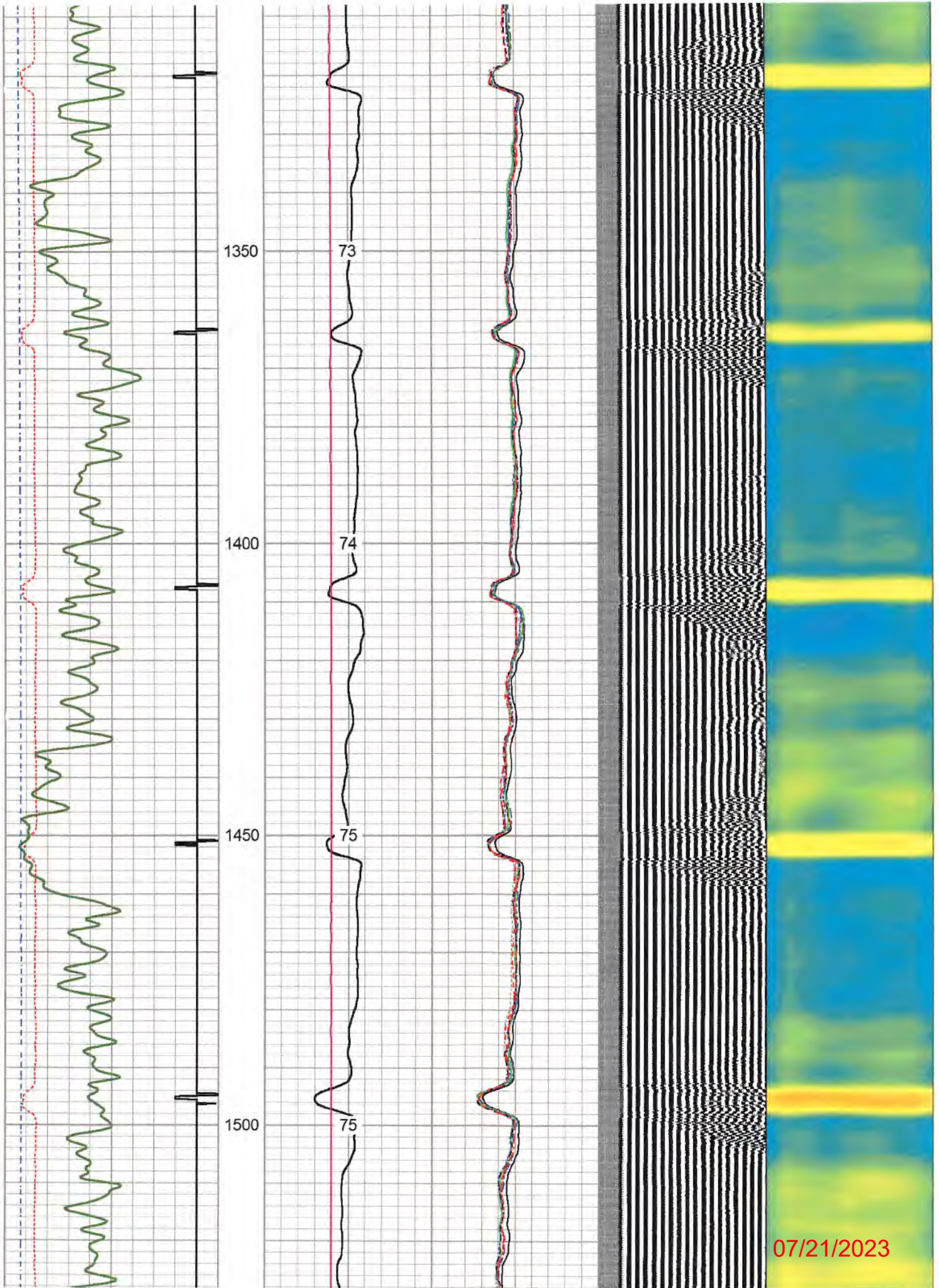
07/21/2023

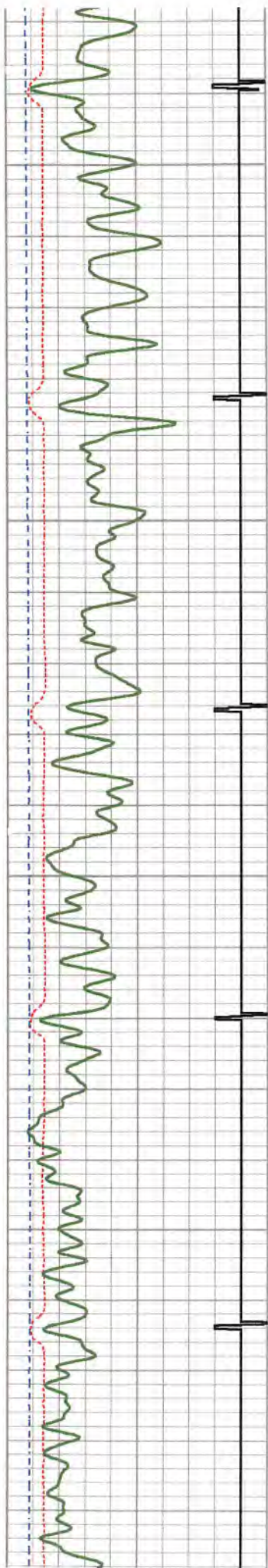


07/21/2023



07/21/2023





1550

1600

1650

1700

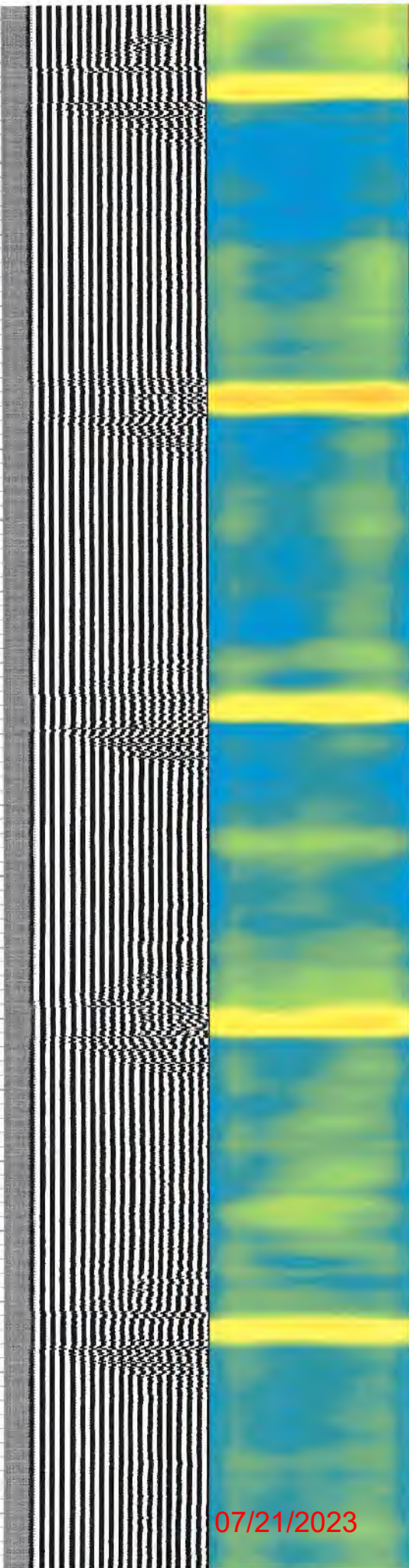


77

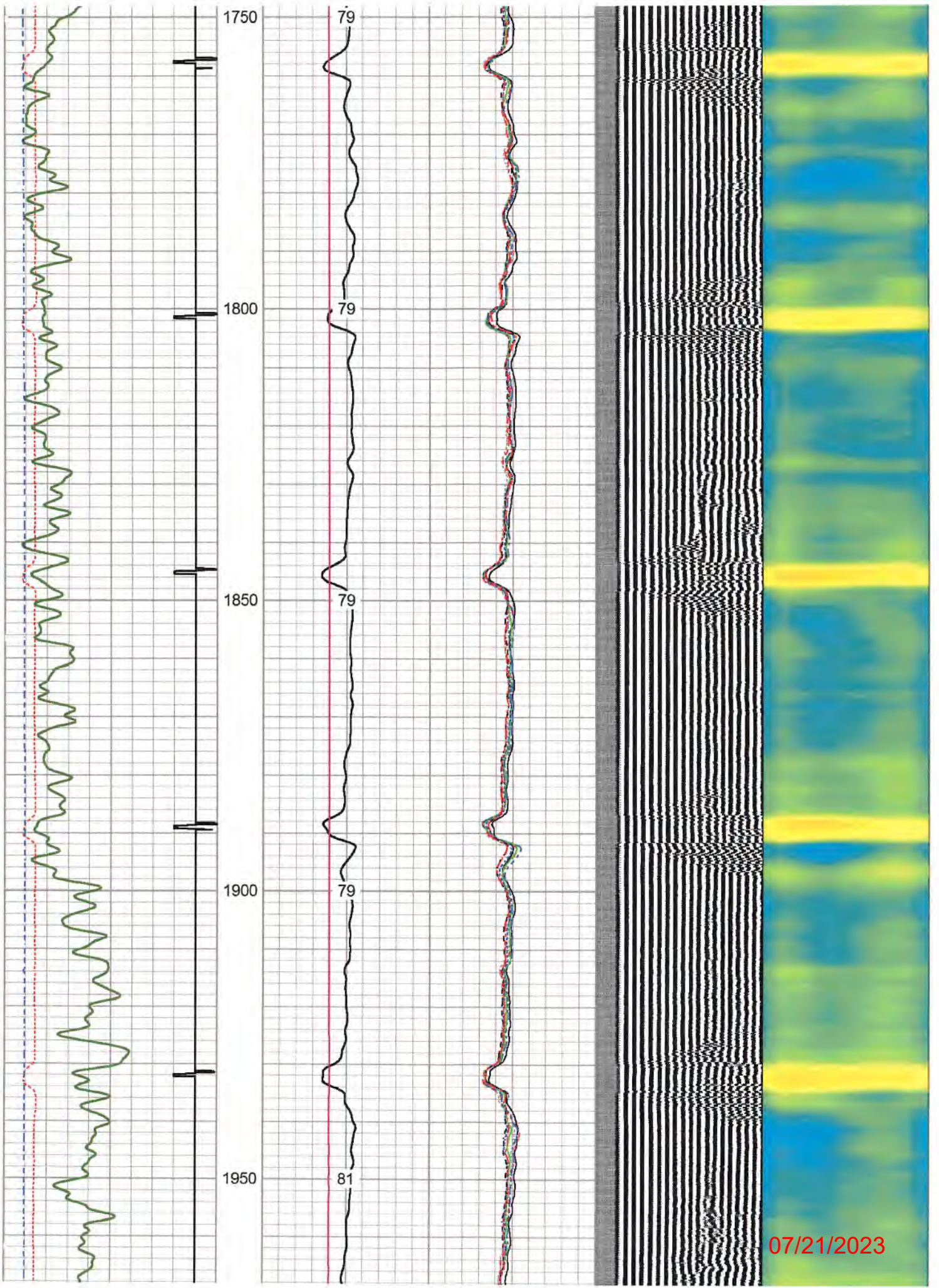
77

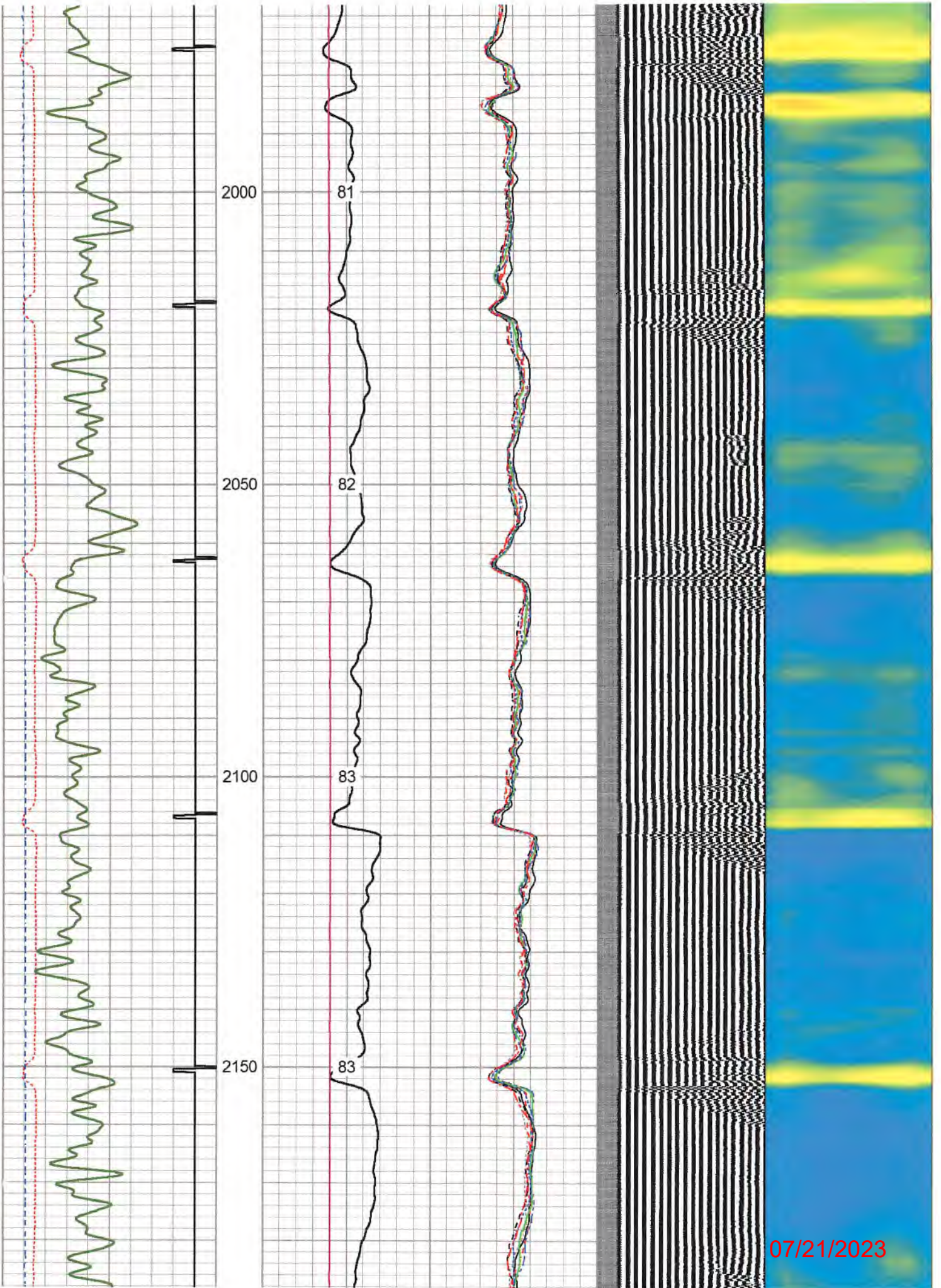
78

78

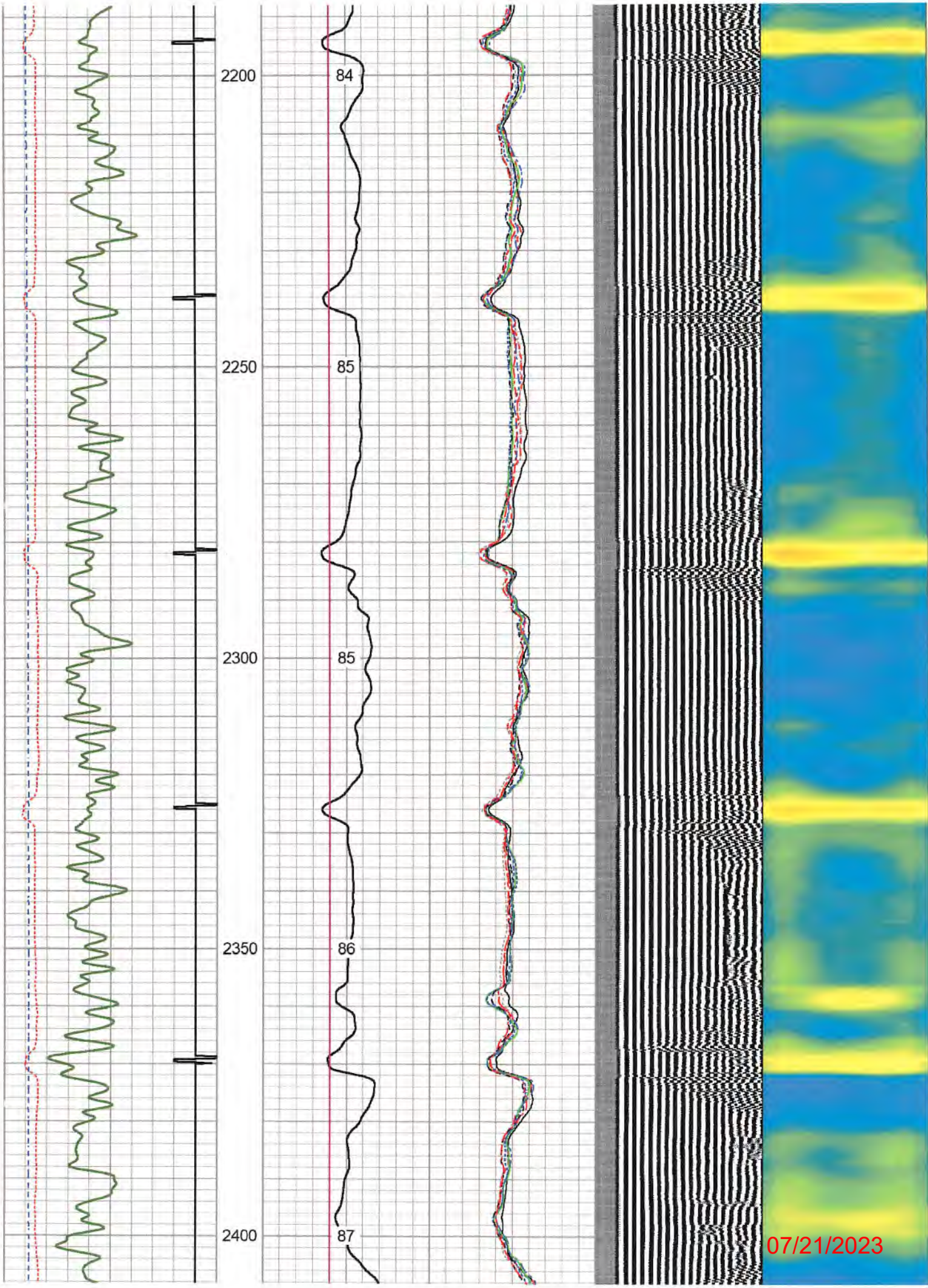


07/21/2023

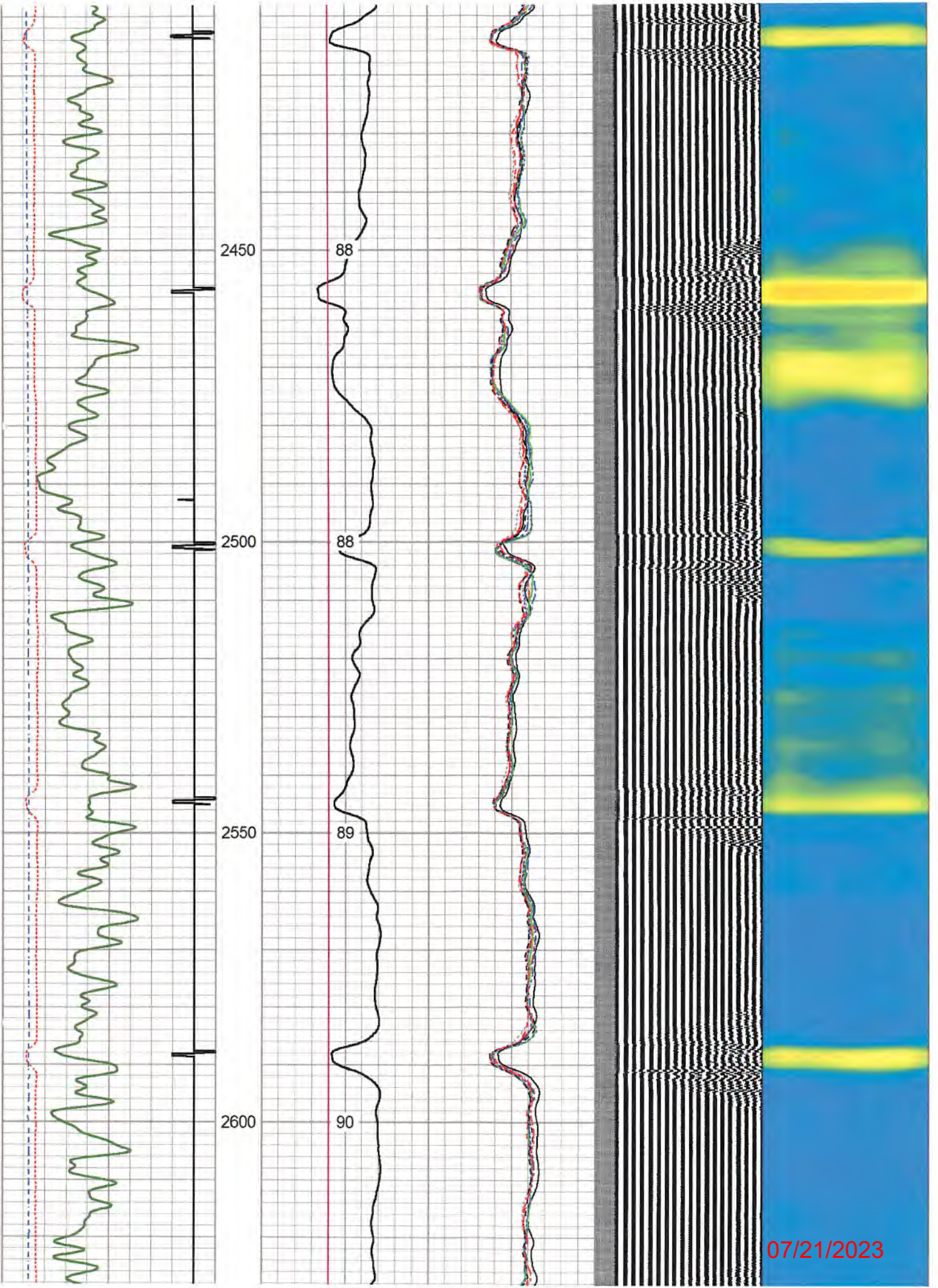




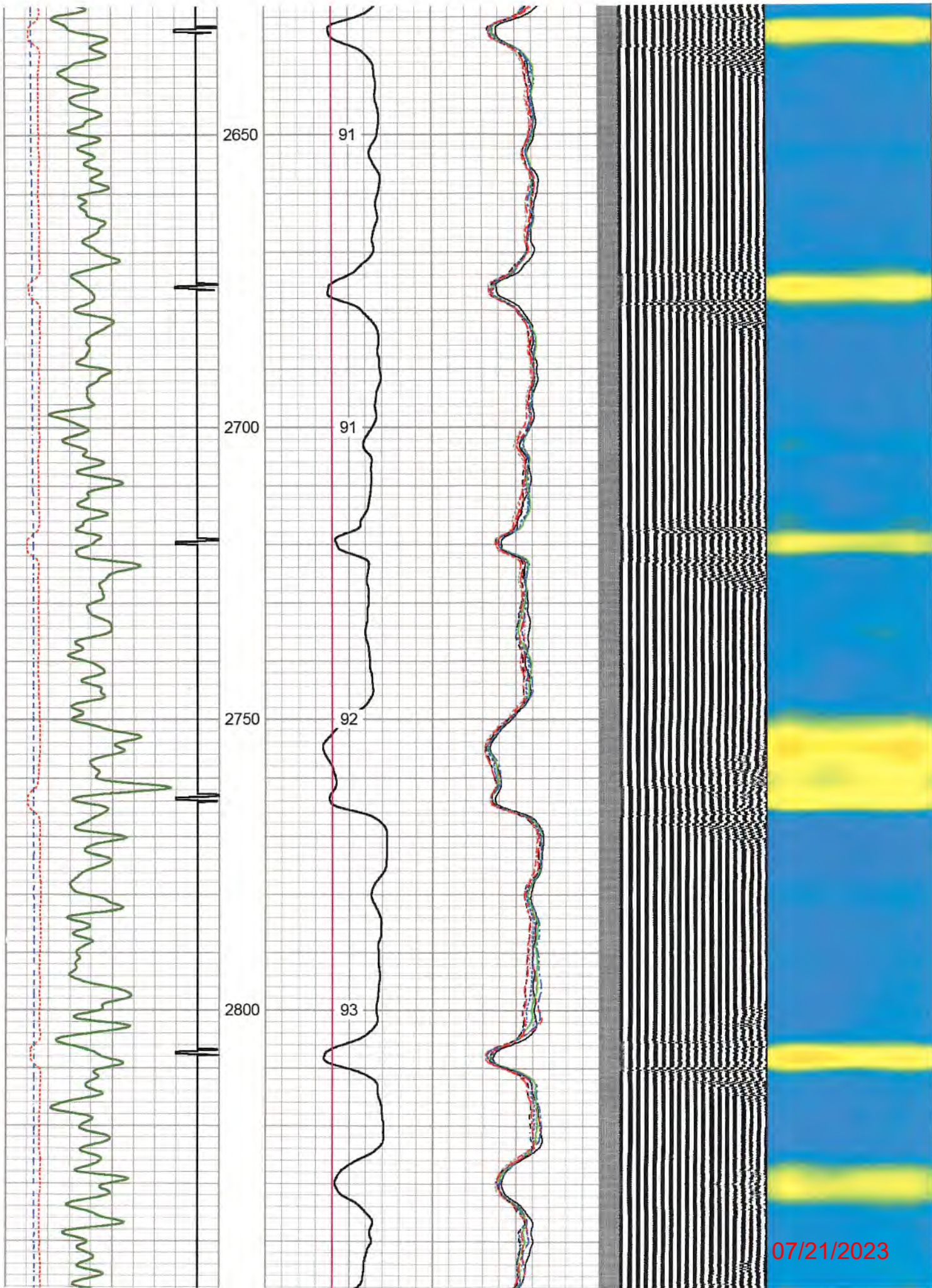
07/21/2023

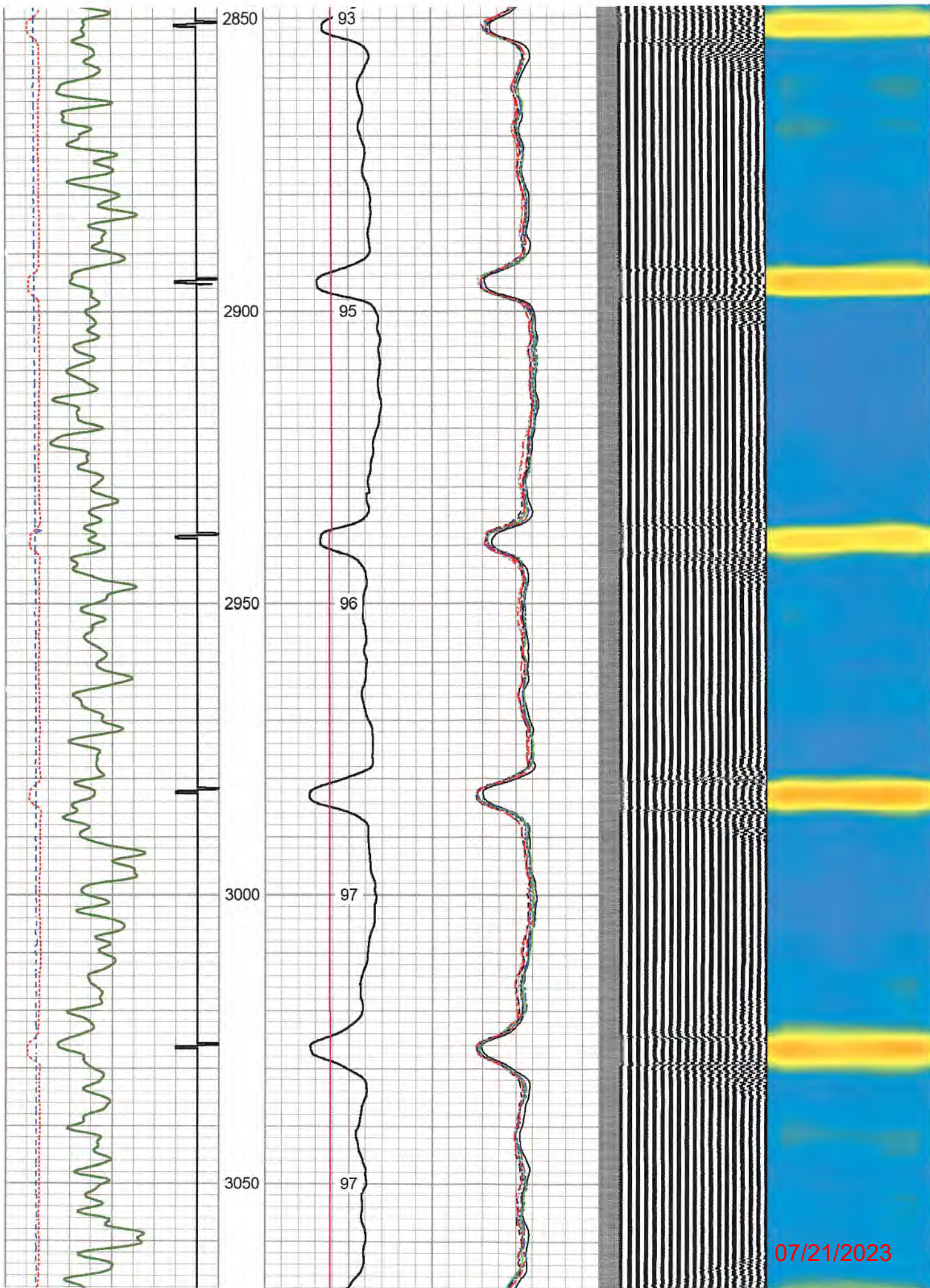


07/21/2023

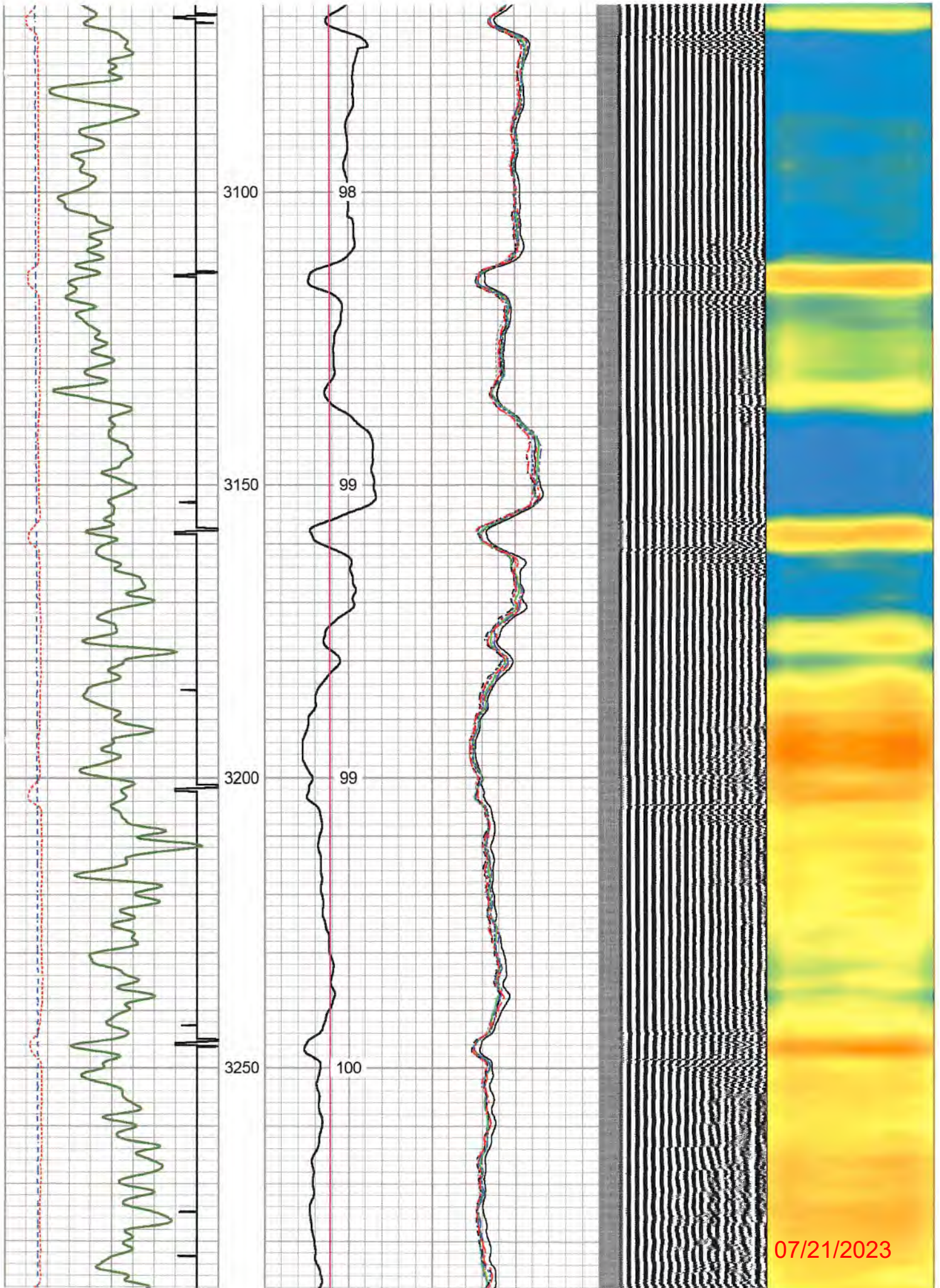


07/21/2023

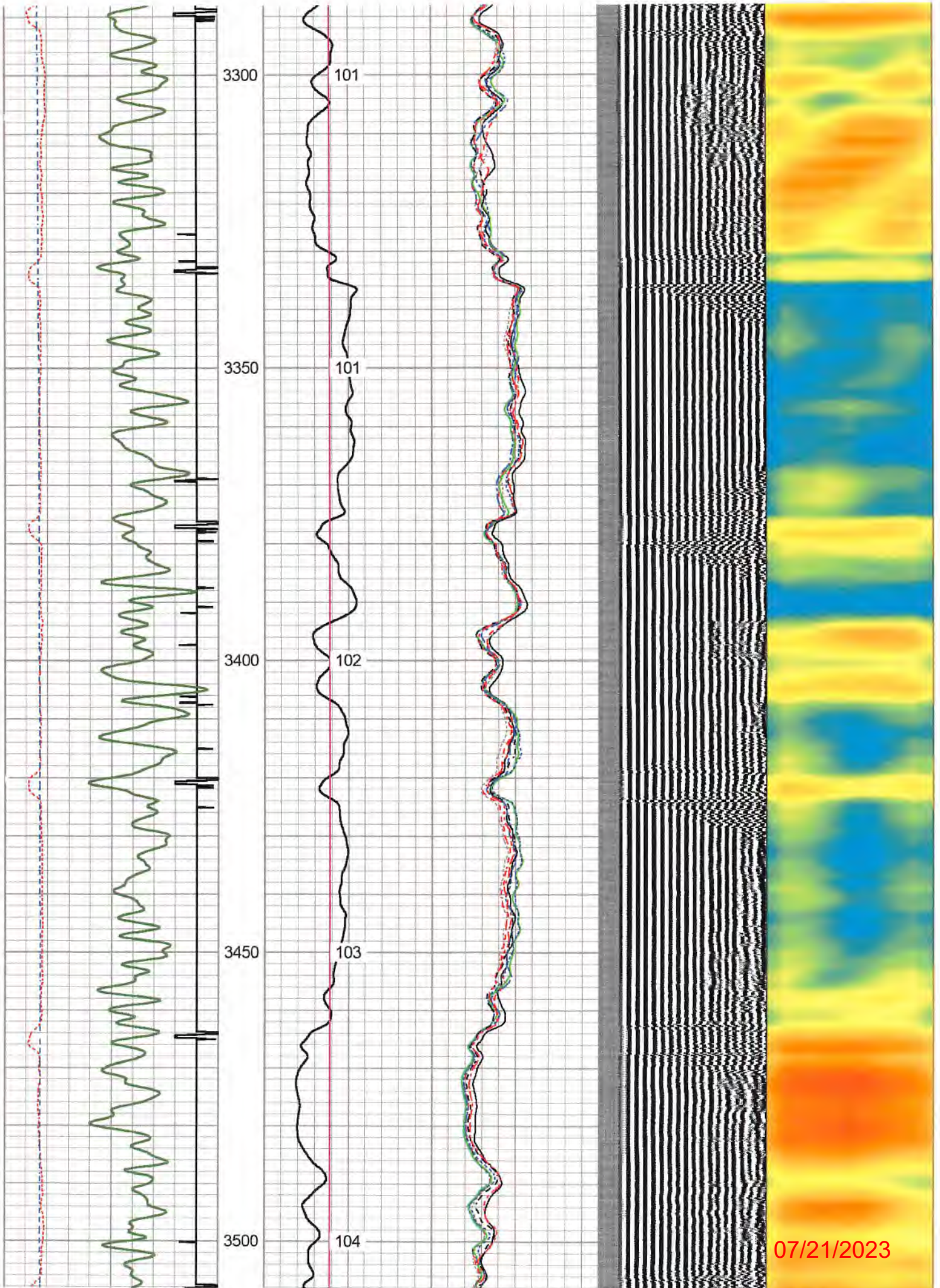


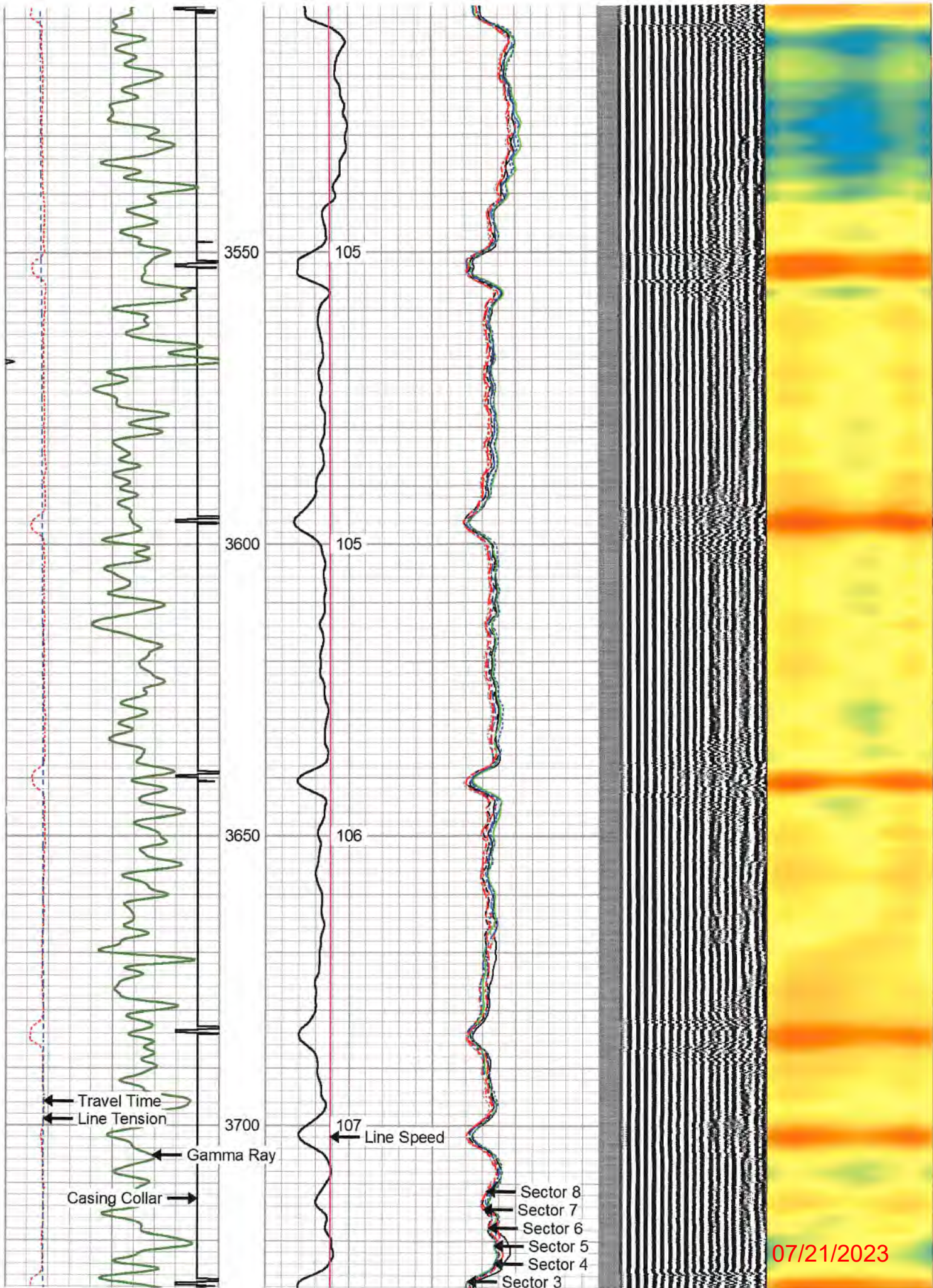


07/21/2023

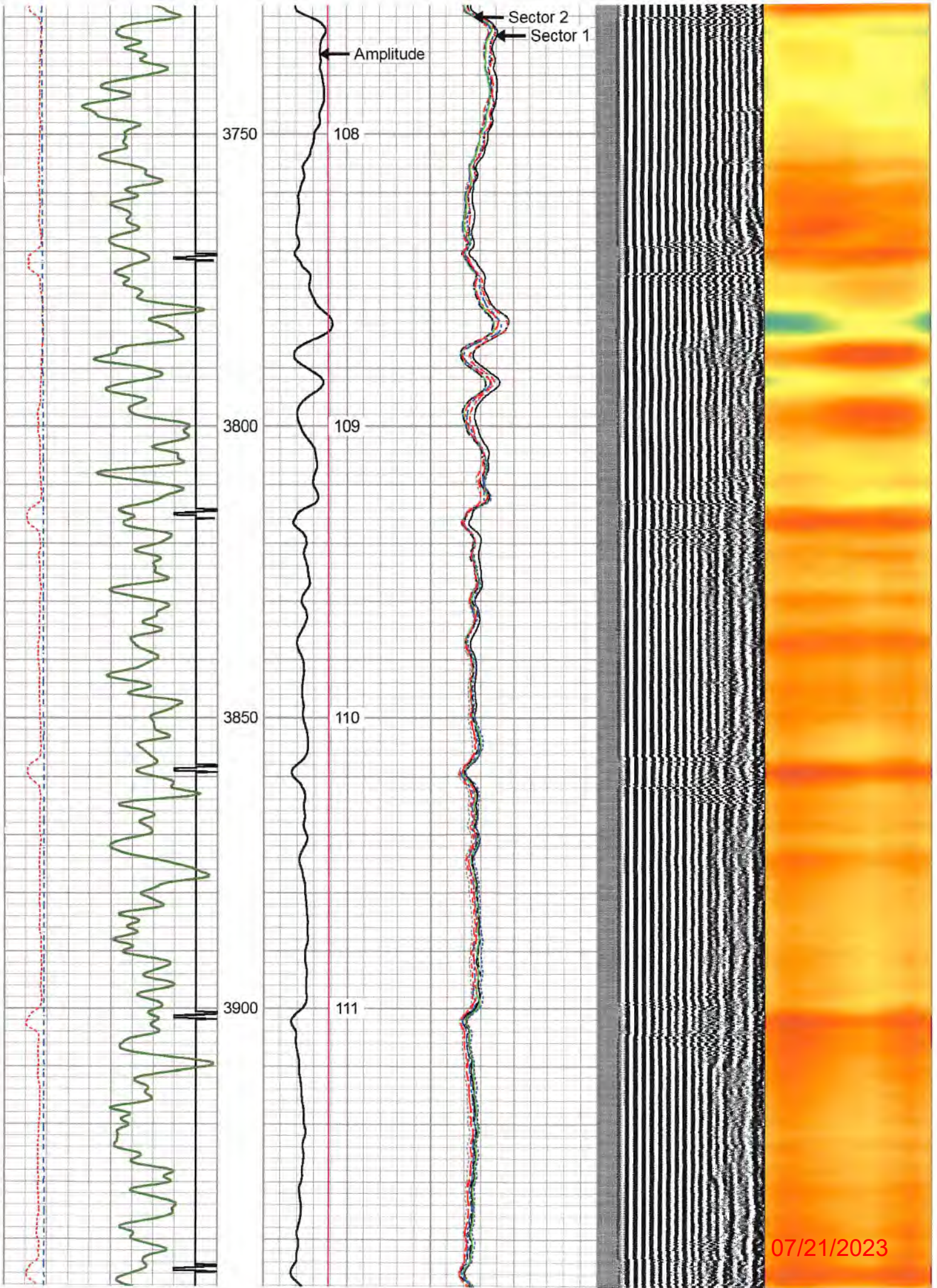


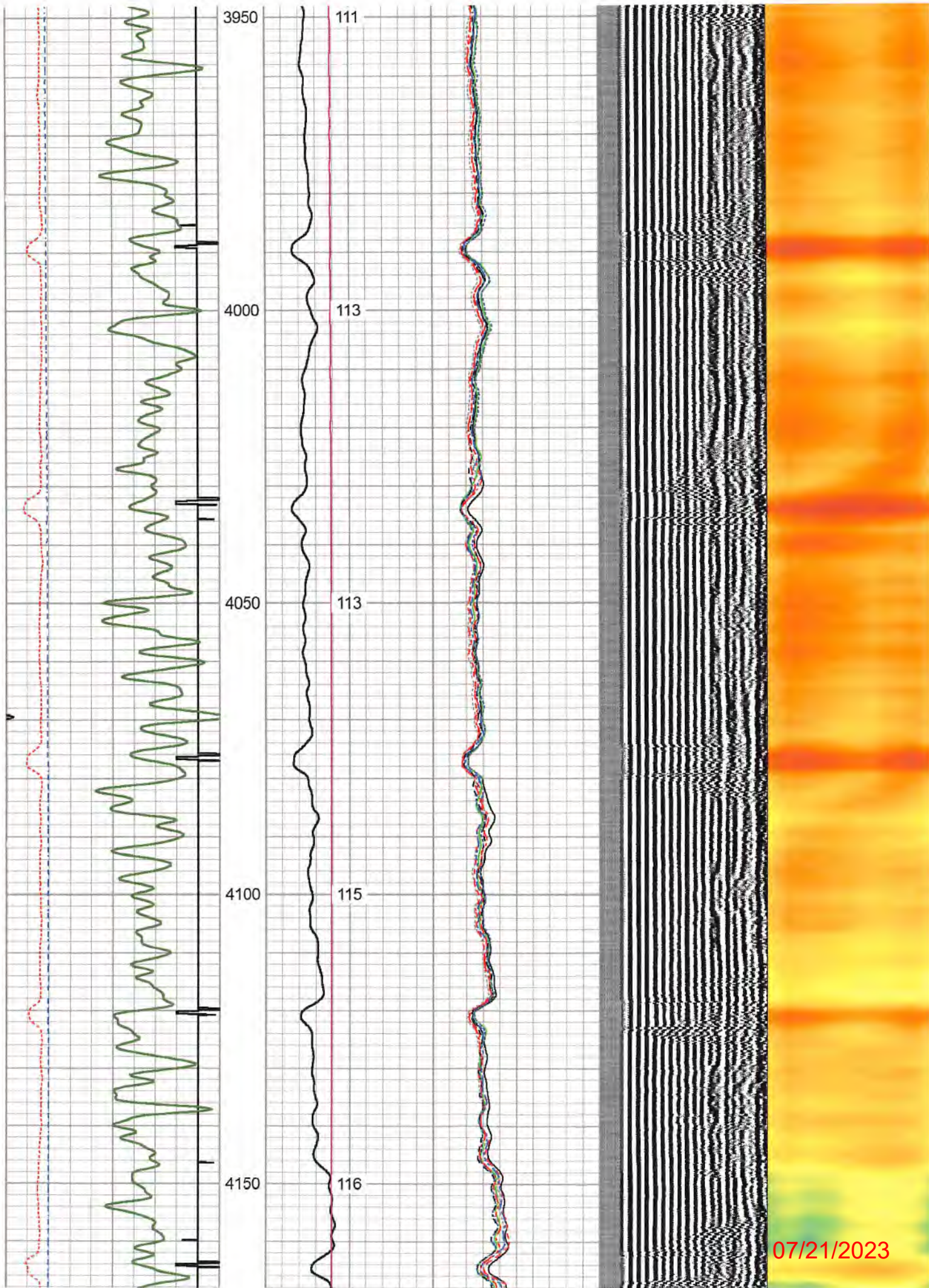
07/21/2023



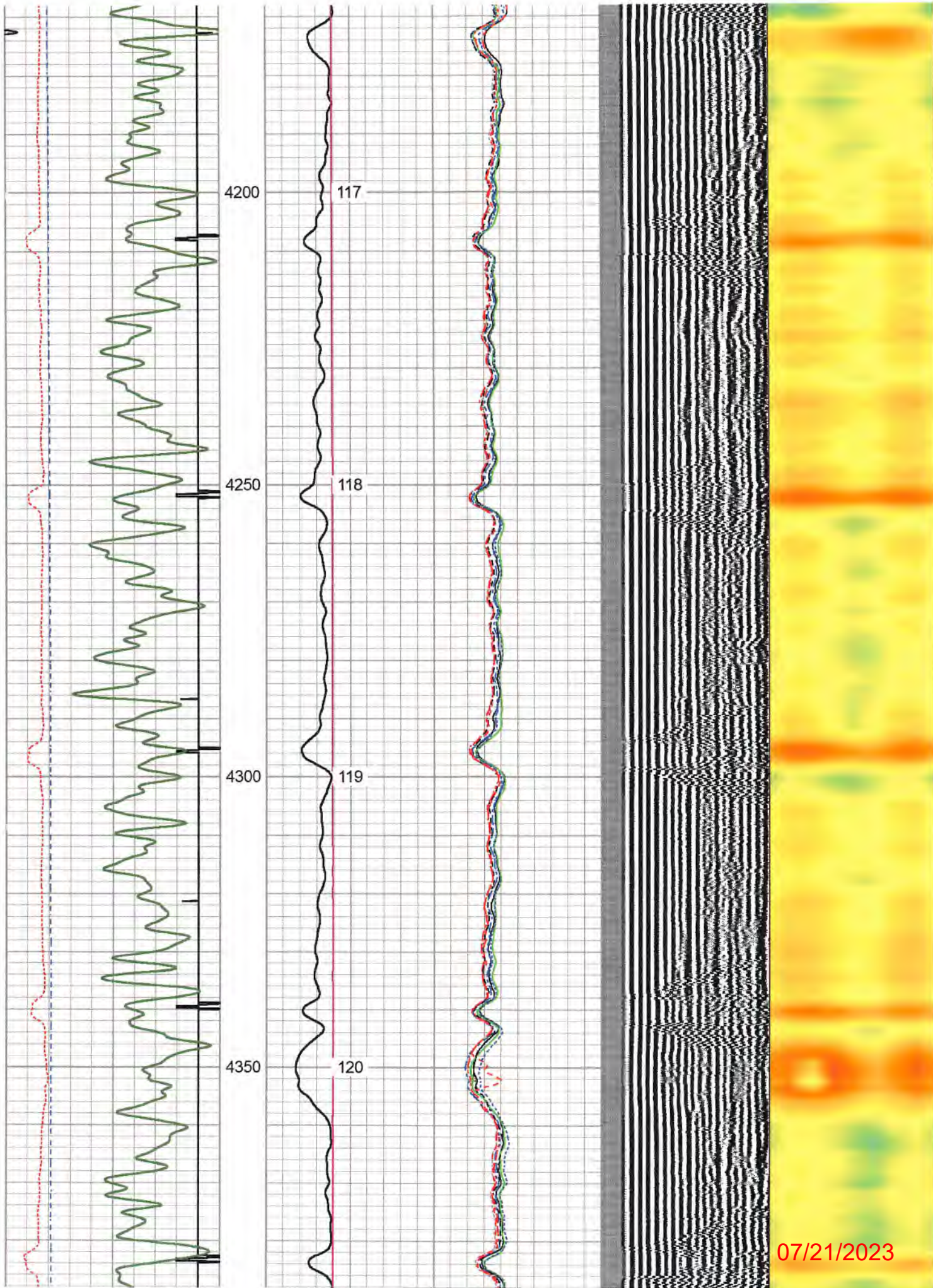


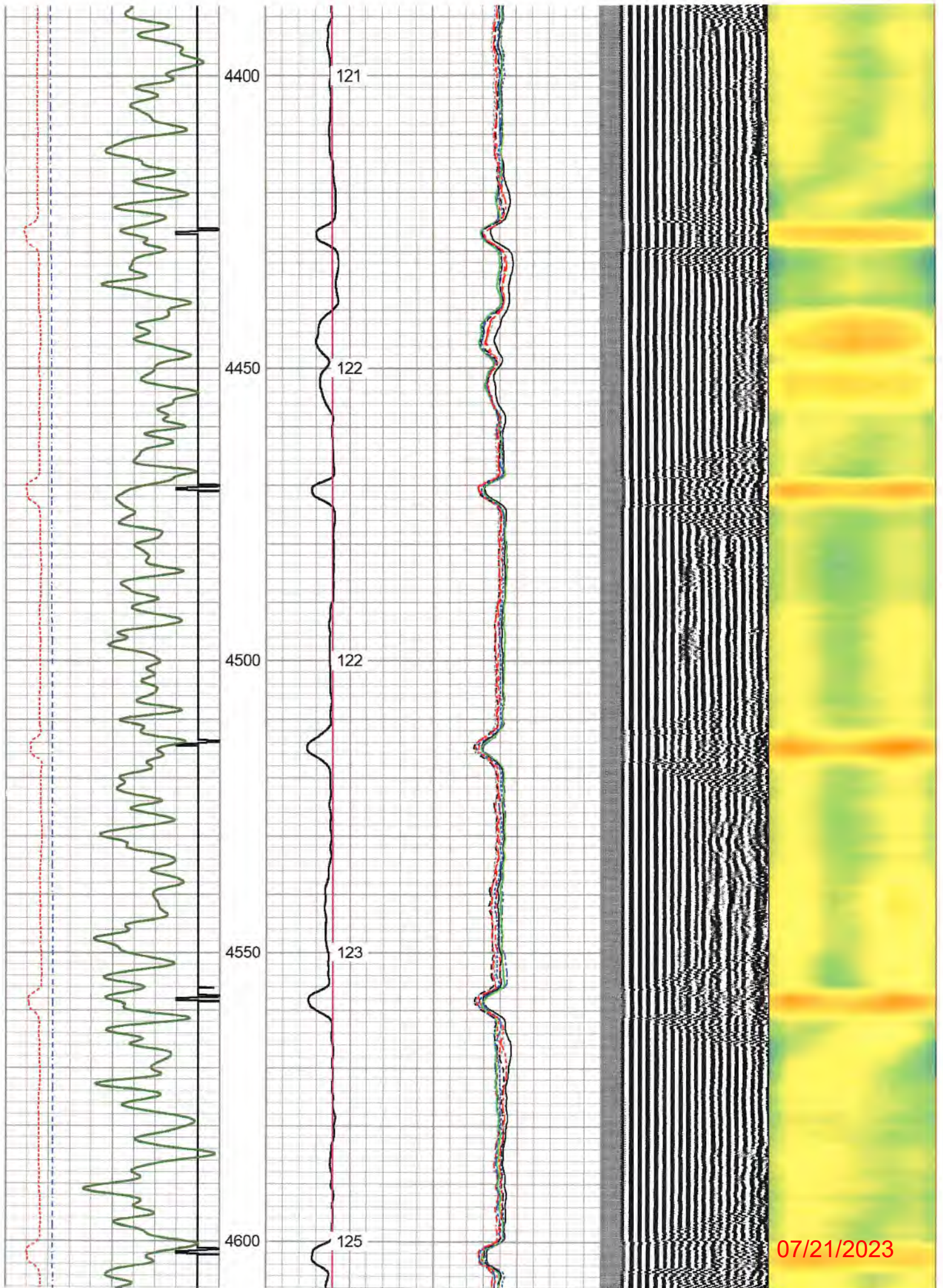
07/21/2023



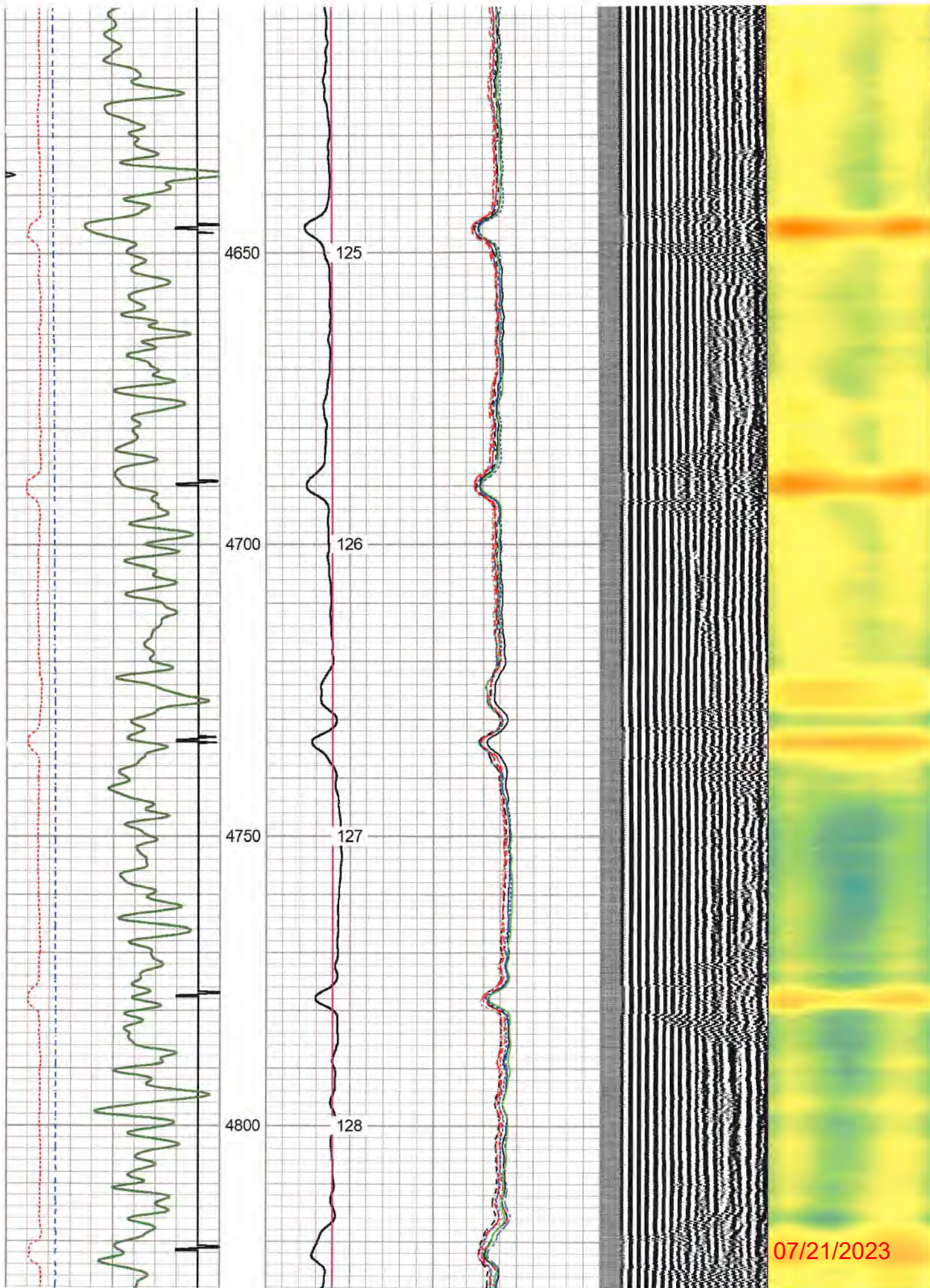


07/21/2023

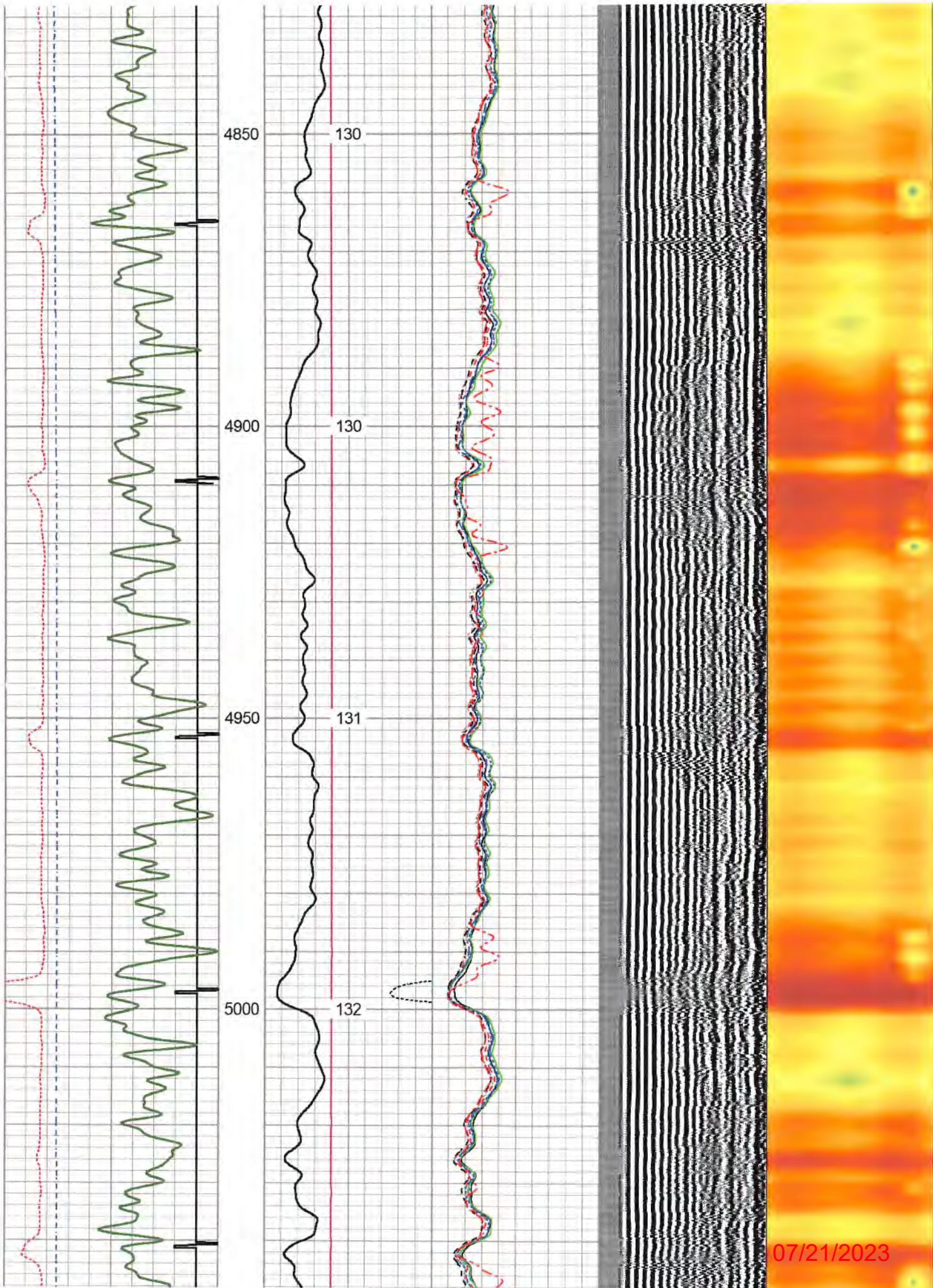




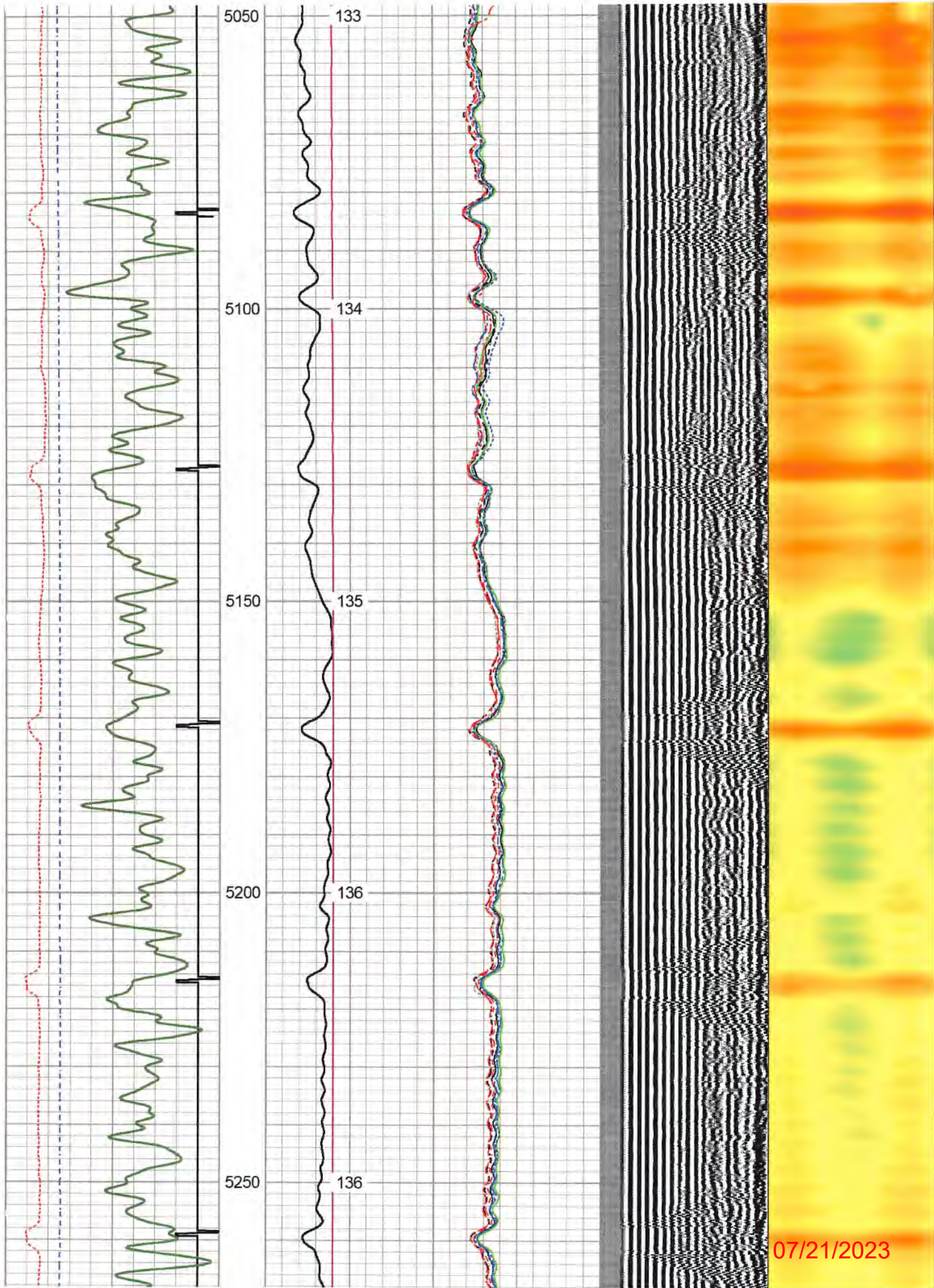
07/21/2023



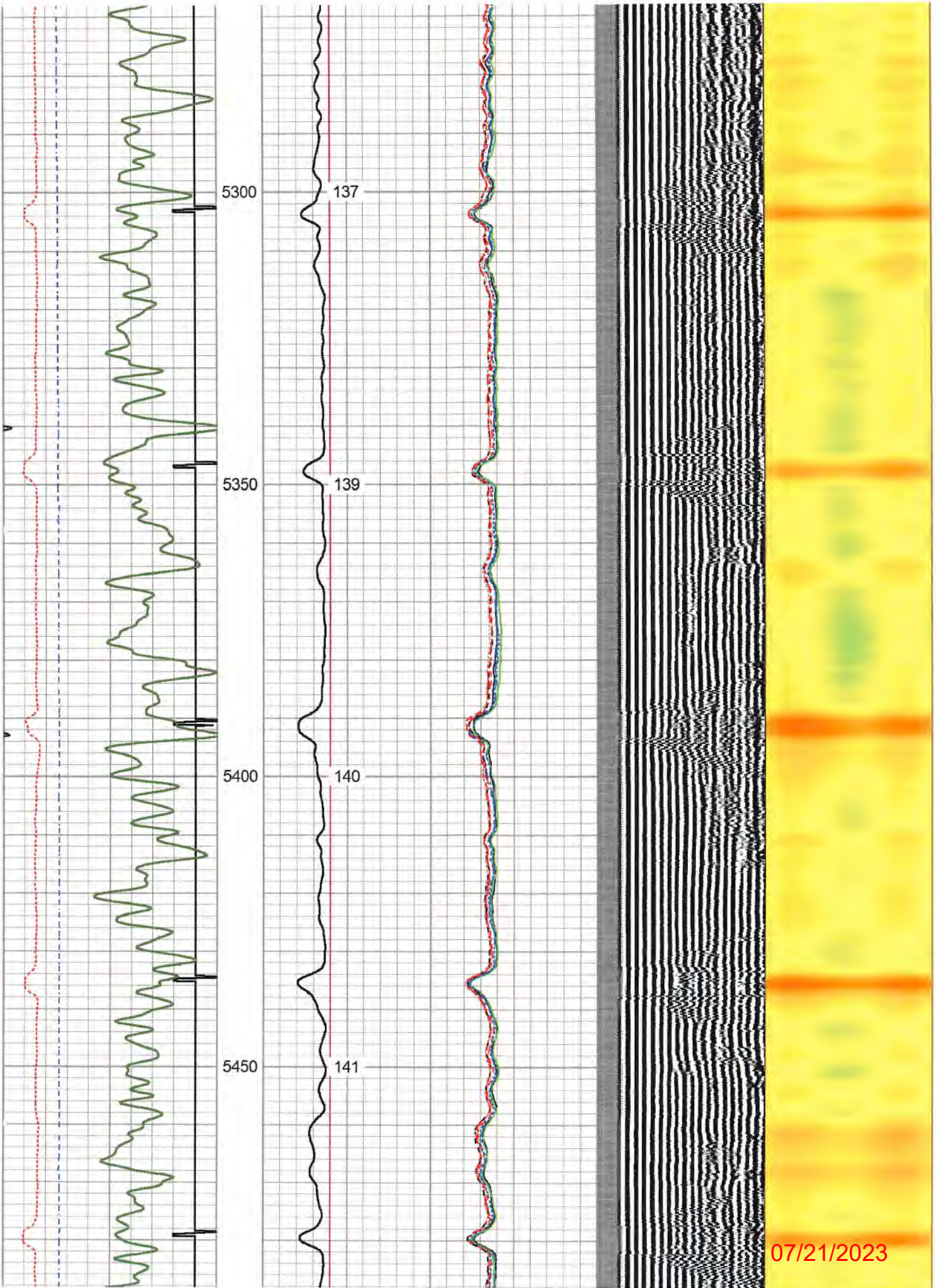
07/21/2023

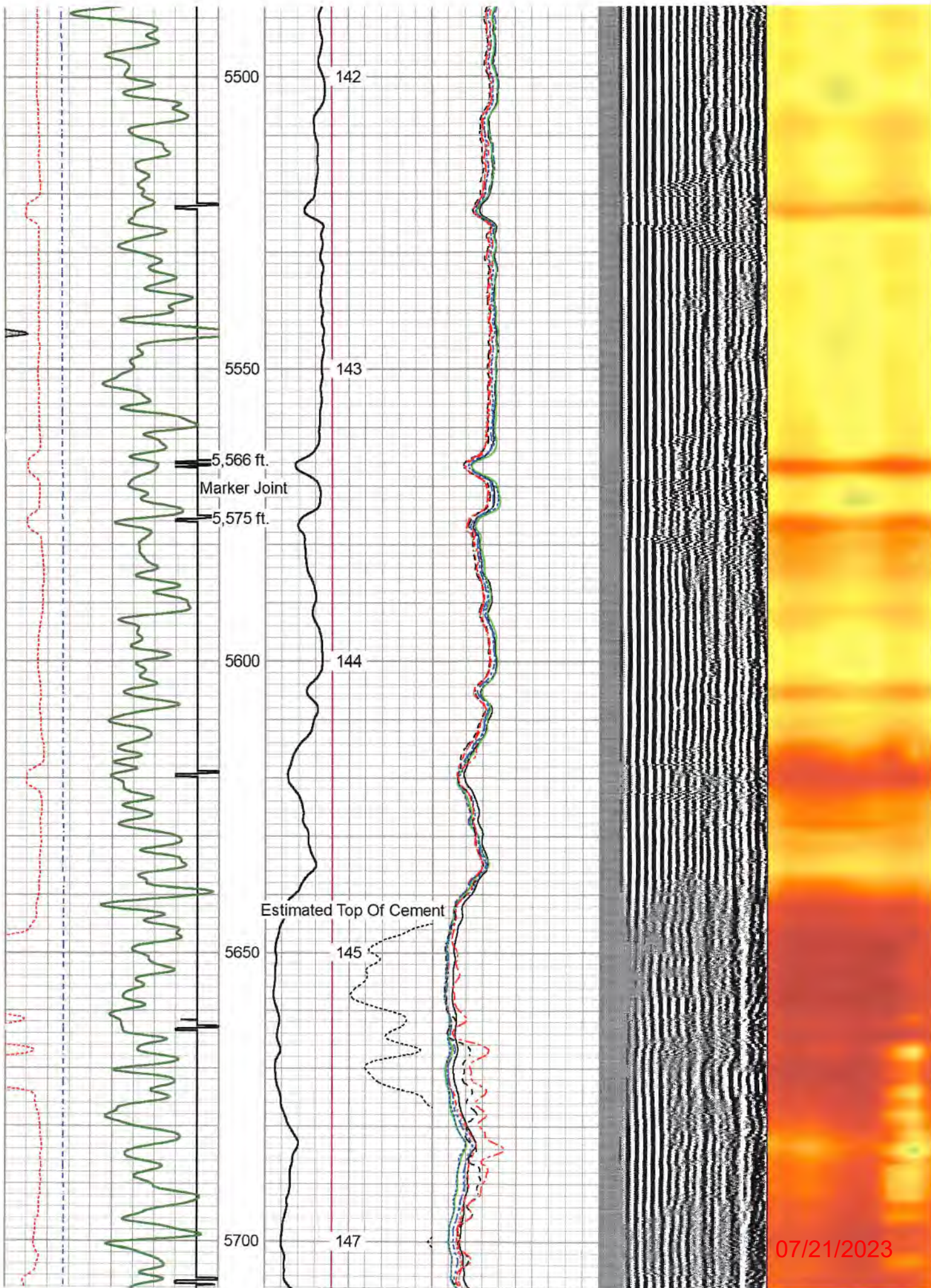


07/21/2023

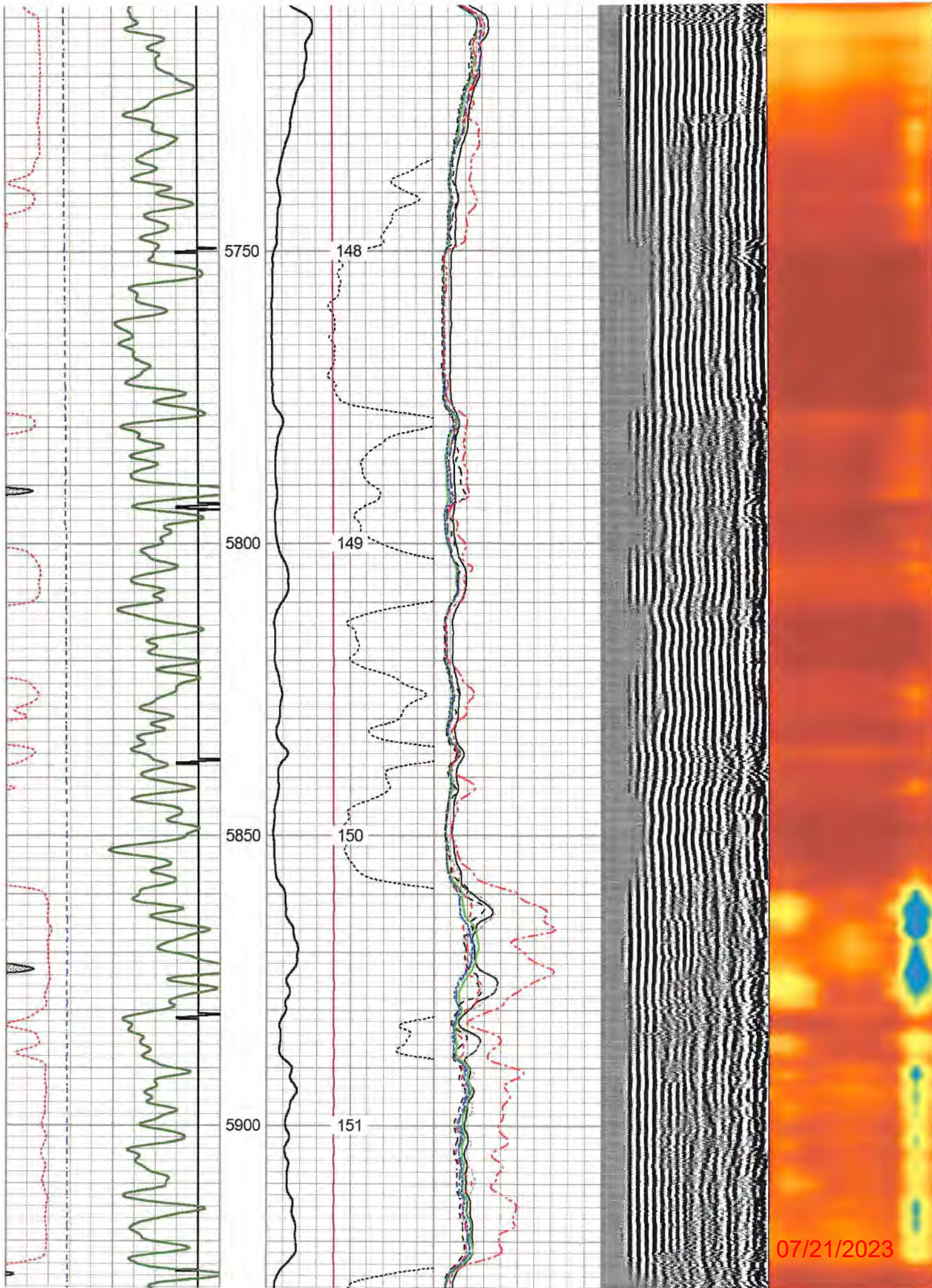


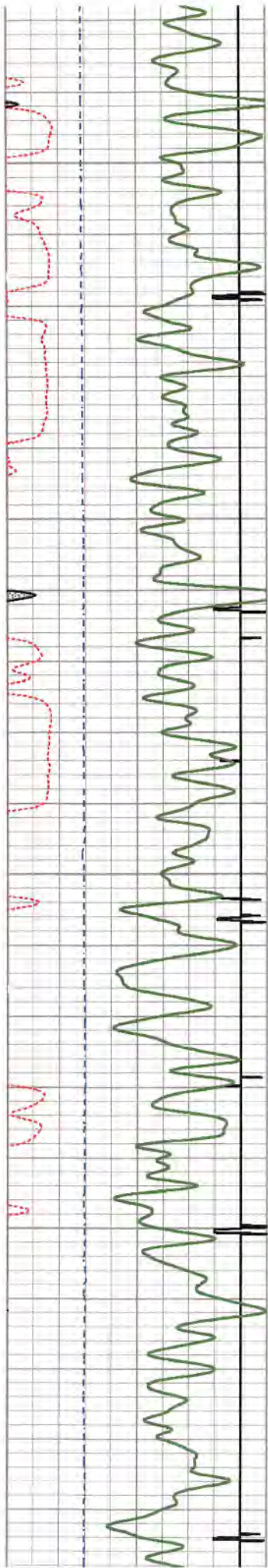
07/21/2023



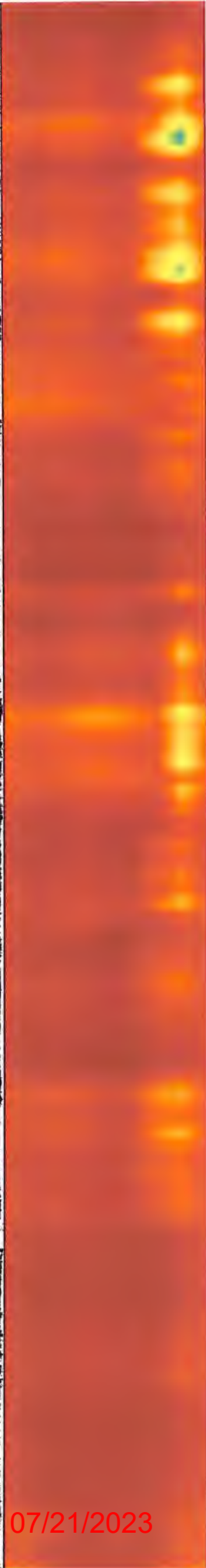
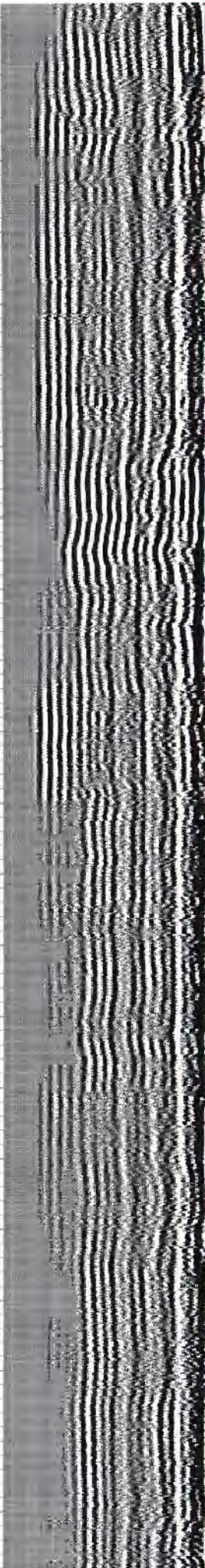
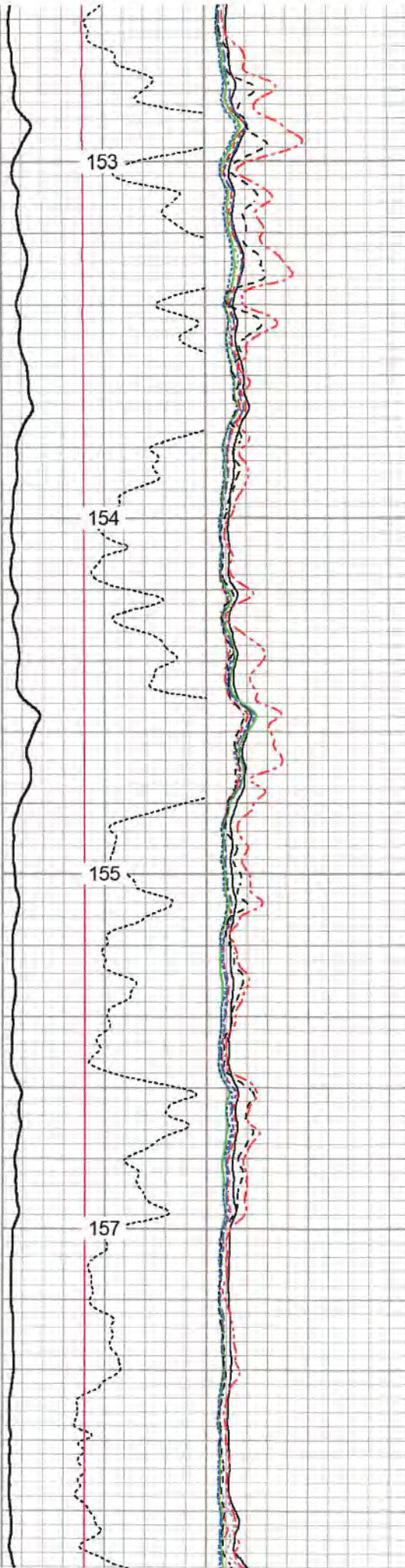


07/21/2023

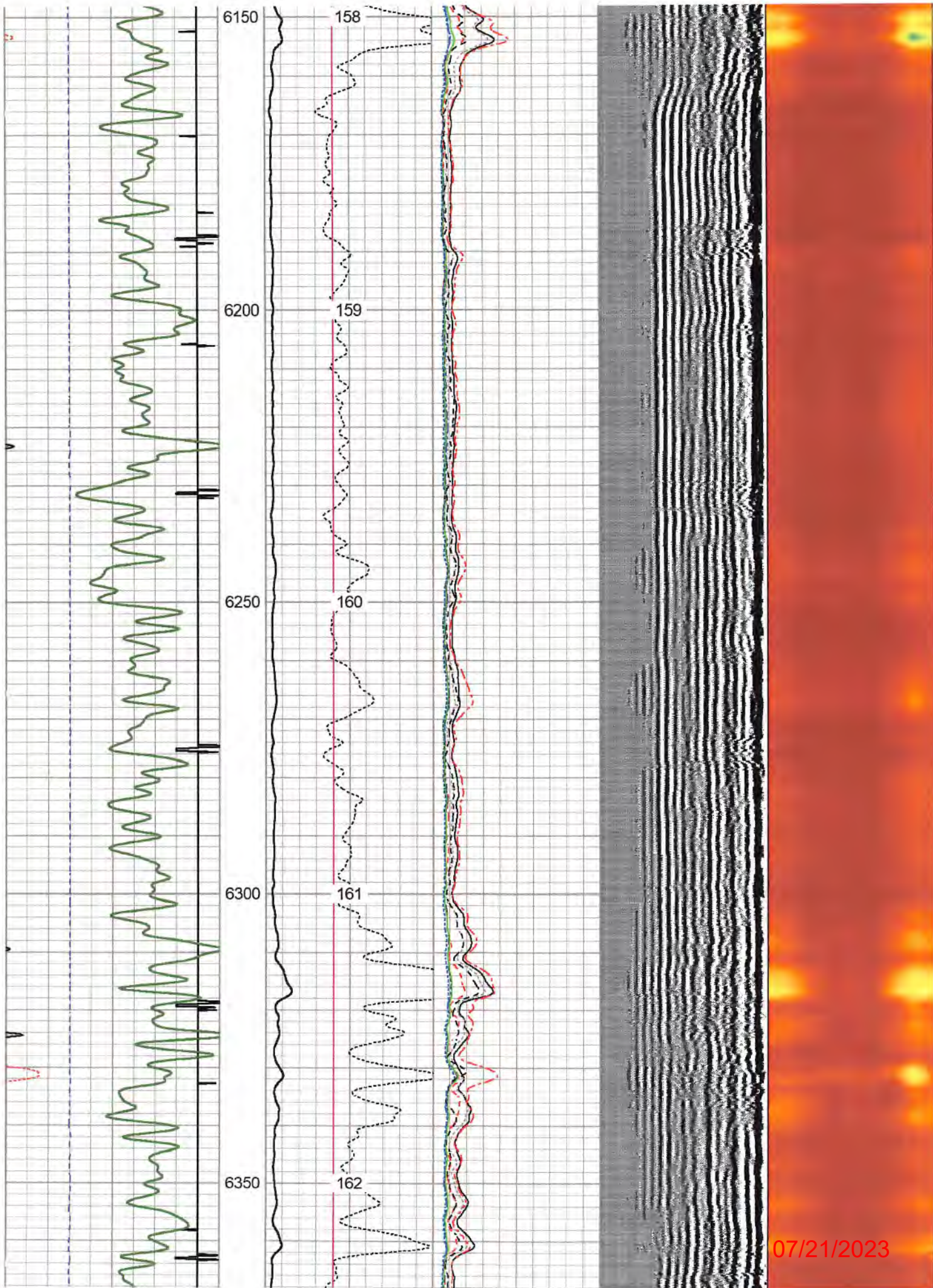


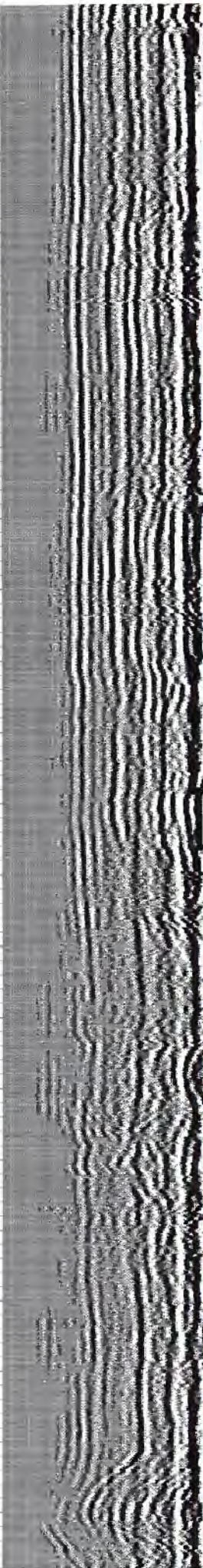
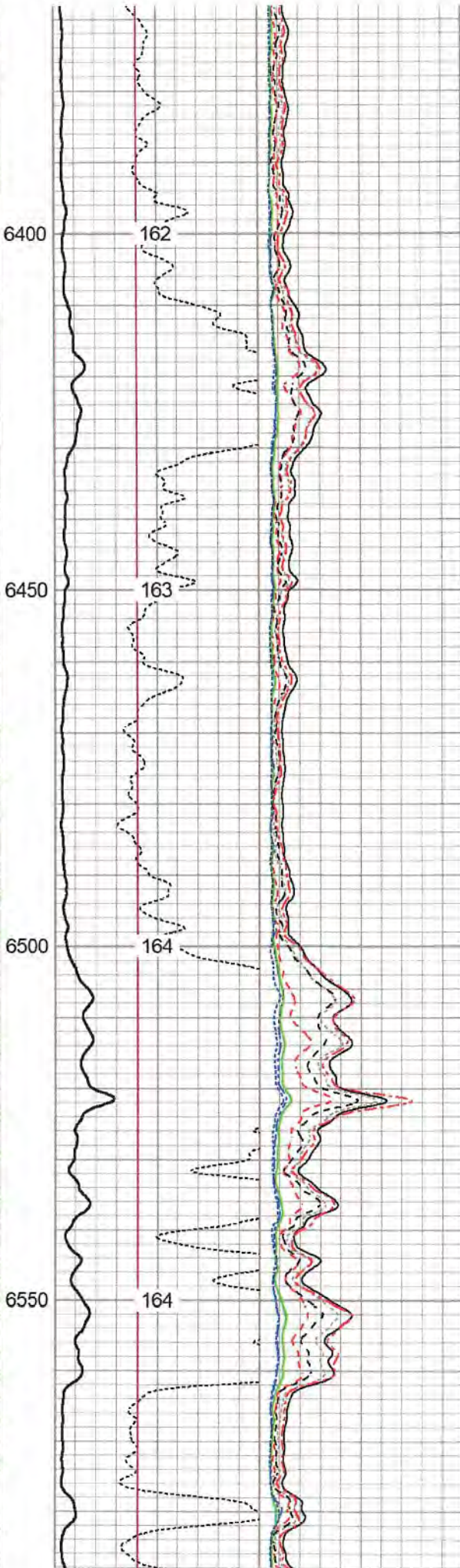
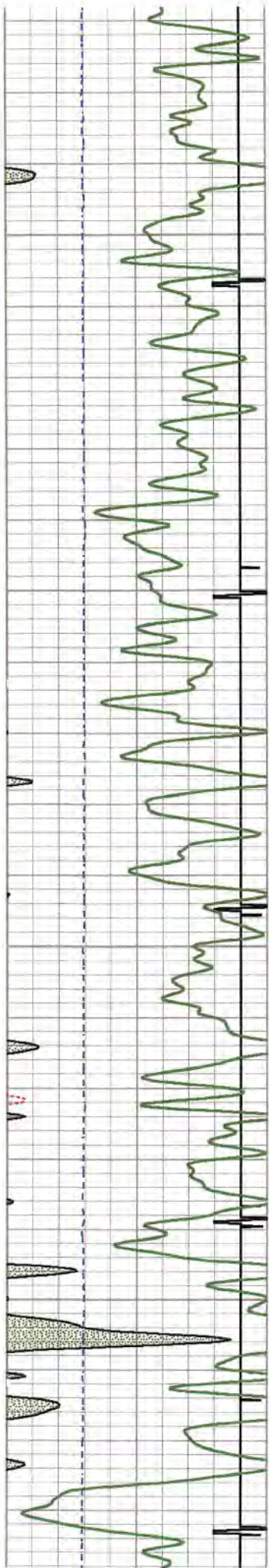


5950
6000
6050
6100

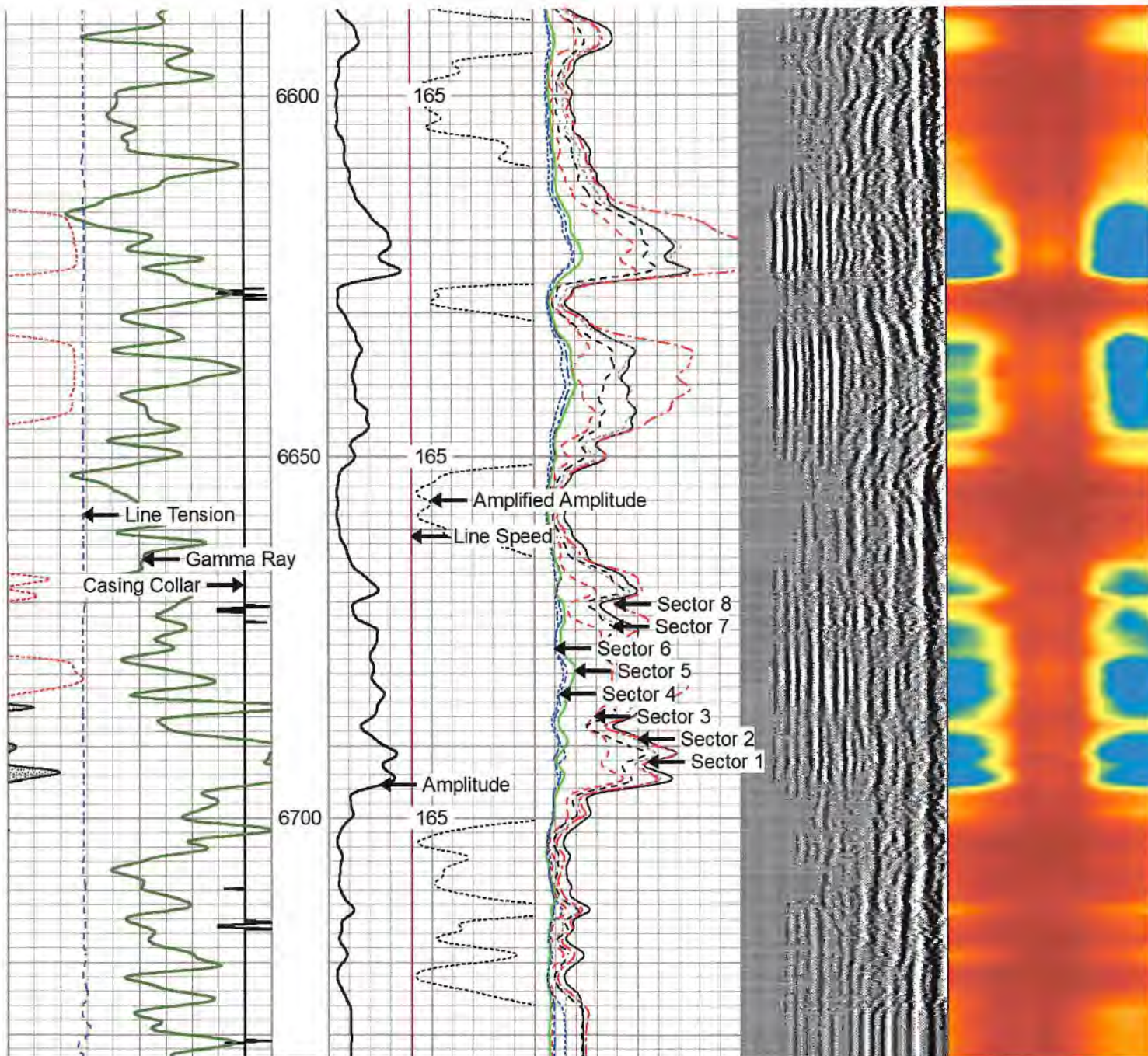


07/21/2023







07/21/2023

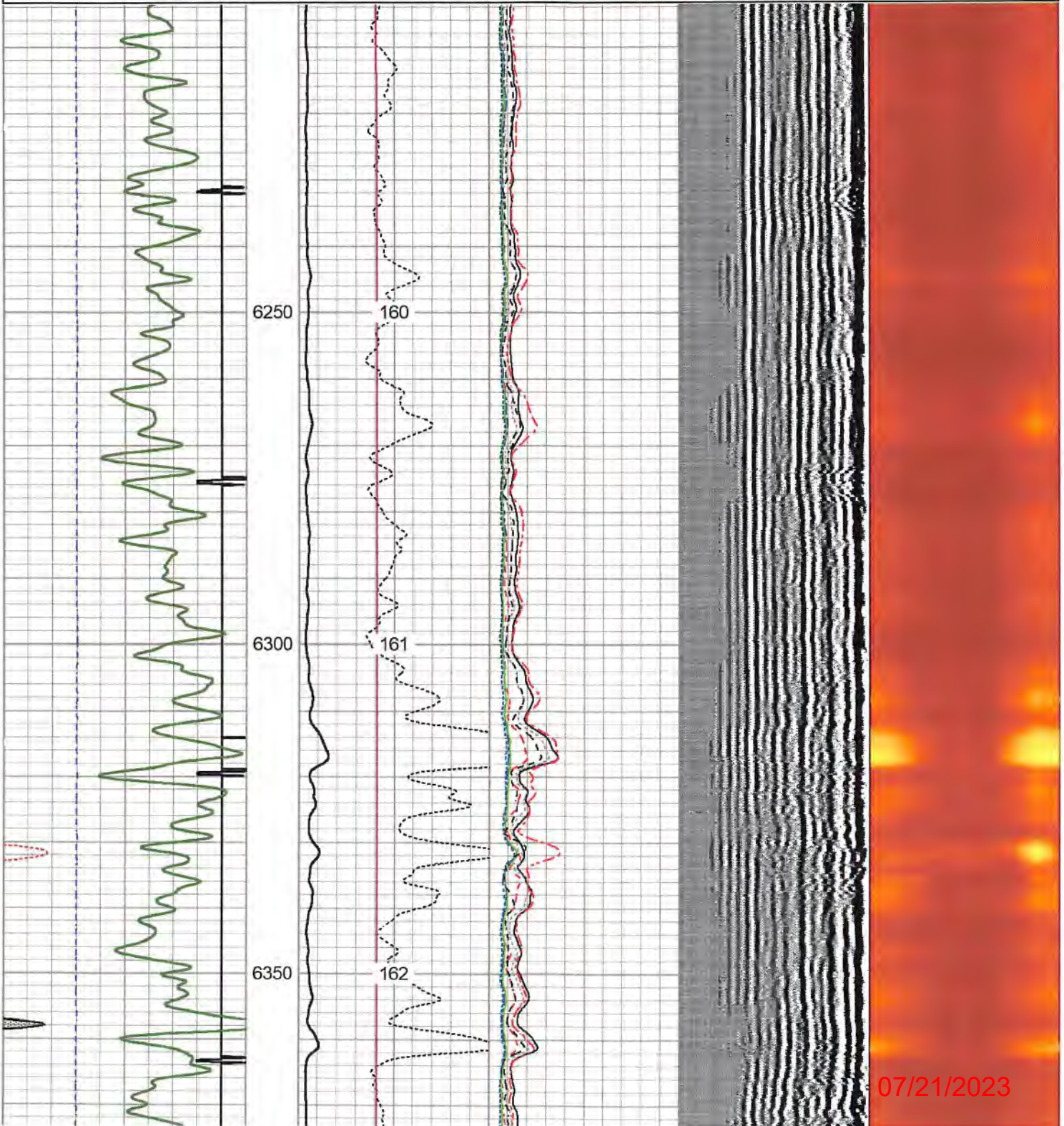


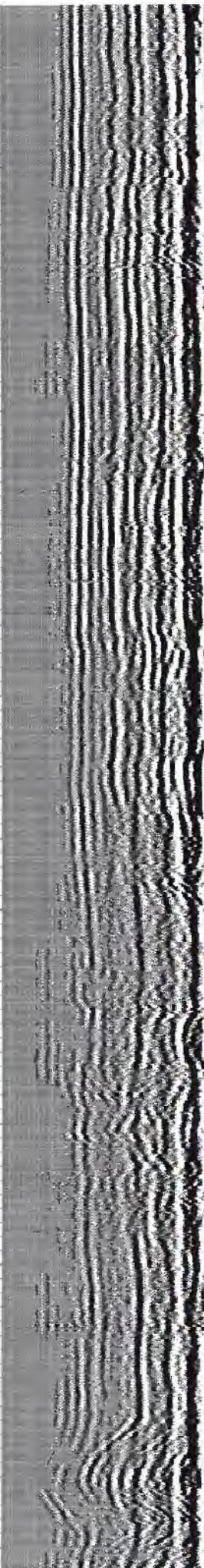
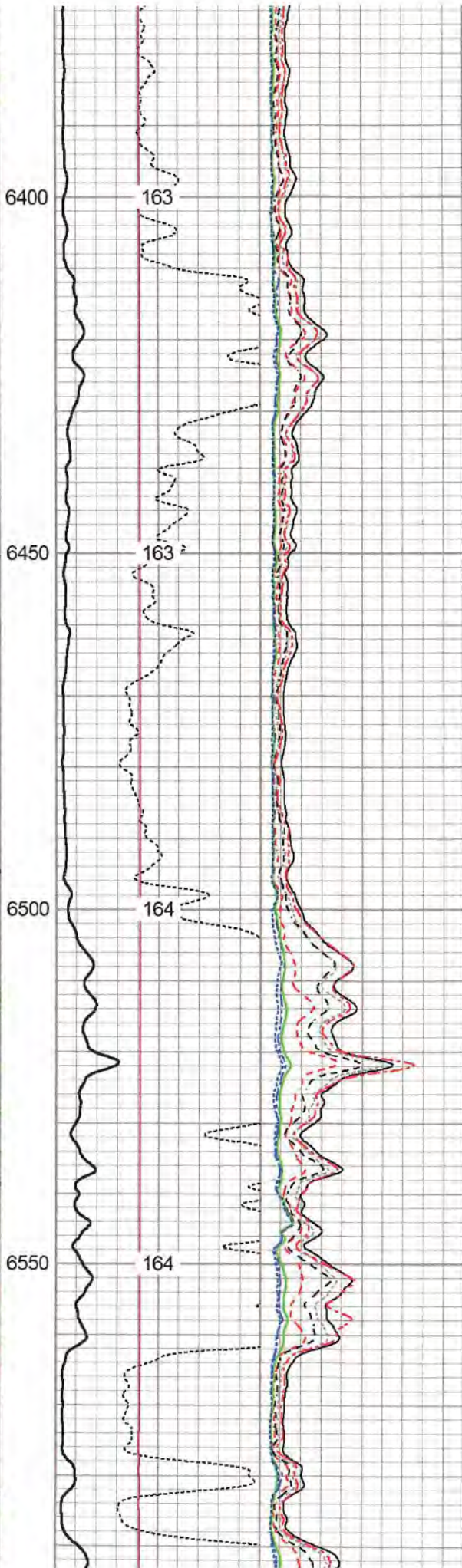
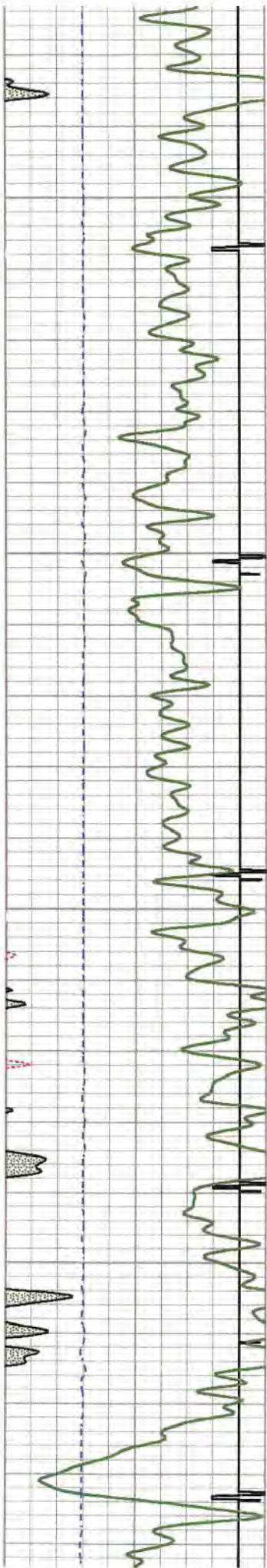
270	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1		Amplified Amplitude		-5	Sector 2	150	200	(usec)	1200	
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	Sector 3	150				
0	Line Tension (lb)	5000		Line Speed		-5	Sector 4	150				
				(ft/min)	500	-5	Sector 5	150				
				TEMP		-5	Sector 6	150				
				(degF)		-5	Sector 7	150				
						-5	Sector 8	150				



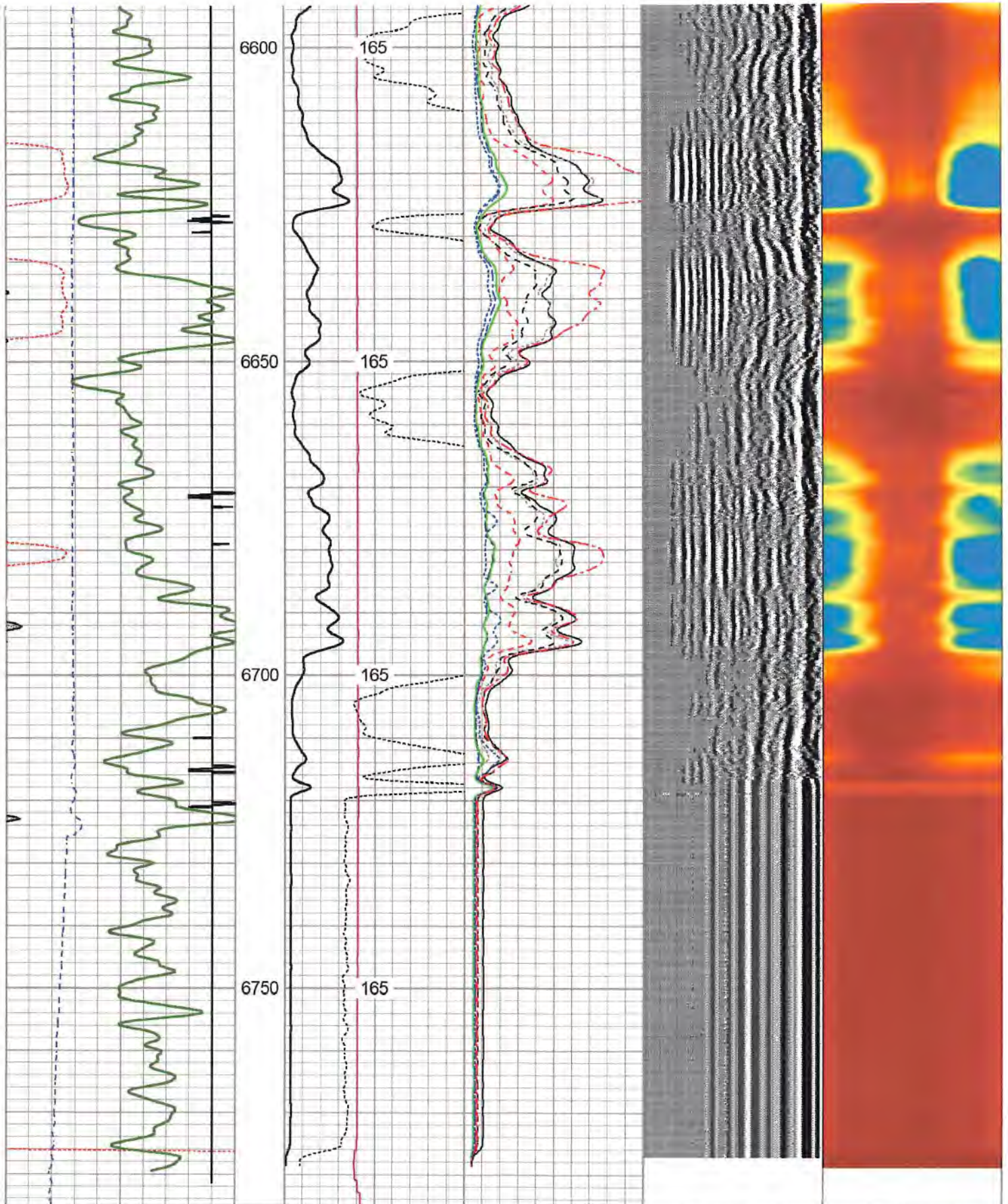
Repeat Pass 0 PSI

270	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1		Amplified Amplitude		-5	Sector 2	150				
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	Sector 3	150	200	(usec)	1200	
0	Line Tension (lb)	5000		Line Speed		-5	Sector 4	150				
			-500	(ft/min)	500	-5	Sector 5	150				
				TEMP		-5	Sector 6	150				
				(degF)		-5	Sector 7	150				
						-5	Sector 8	150				





07/21/2023



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

0	Amplitude (mV)	100	-5	Sector 1	150
	Amplified Amplitude		-5	Sector 2	150
0	(mV)	10	-5	Sector 3	150
	Line Speed		-5	Sector 4	150
-500	(ft/min)	500	-5	Sector 5	150
	TEMP		-5	Sector 6	150

Variable Density	1	Cement Map	8
200	(usec)	1200	

07/21/2023

(degF)

-5	Sector 7	150
-5	Sector 8	150

Log Variables

DatabaseC:\ProgramData\Warrior\Data\antero_coloradowest_flames_1h_rcbl_nineenergy_apr_30
 Dataset Marcellus/Flames_1H/RCBL_1/pass4/_vars_

Top - Bottom

BHTEMP_Src TEMP	BOREID in 7.875	BOTTEMP degF 148	CASEOD in 5.5	CASETHCK in 0.361	CASEWGHT lb/ft 20	MAXAMPL mV 71.9	MINAMPL mV 2.2
MINATTN db/ft 0.8	PERFS No	PPT usec 0	SRFTEMP degF 0	TDEPTH ft 0			

Variable Description

BHTEMP_Src : BHTEMP Input Source Selector
 BOREID : Borehole I.D.
 BOTTEMP : Bottom Hole Temperature
 CASEOD : Casing O.D.
 CASETHCK : Casing Thickness
 CASEWGHT : Casing Weight
 MAXAMPL : Maximum Amplitude

MINAMPL : Minimum Amplitude
 MINATTN : Minimum Attenuation
 PERFS : Perforation Flag
 PPT : Predicted Pipe Time
 SRFTEMP : Surface Temperature
 TDEPTH : Total Depth

Calibration Report

Database File antero_coloradowest_flames_1h_rcbl_nineenergy_apr_30_2020.db
 Dataset Pathname Marcellus/Flames_1H/RCBL_1/pass4
 Dataset Creation Thu Apr 30 14:37:11 2020

Gamma Ray Calibration Report

Serial Number: FW1211-86
 Tool Model: Probe
 Performed: Thu Dec 19 22:27:19 2019

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
 Calibrator Reading: 1.0 cps

Sensitivity: 0.8000 GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number: FW1312-32
 Tool Model: Probe275T

Calibration Casing Diameter: 5.500 in
 Calibration Depth: 225.917 ft

Master Calibration, performed Thu Apr 30 15:14:23 2020:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.017	0.865	2.200	71.921	113.212	0.834
CAL	0.994	0.997				
5'	0.015	0.861	2.200	71.921	112.418	0.960
SUM						

07/21/2023

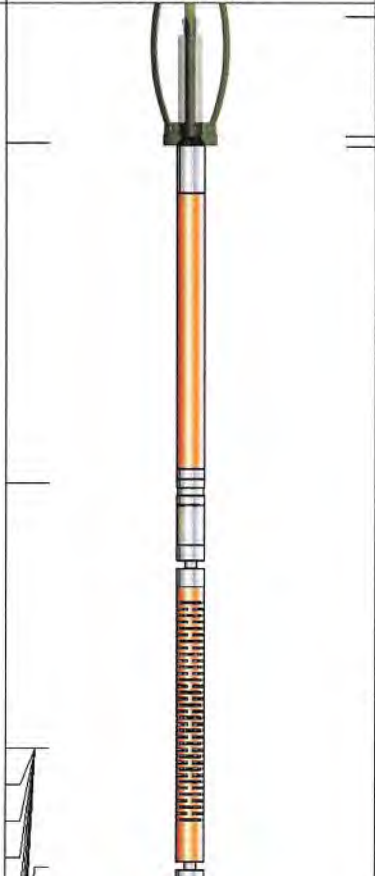
S1	0.051	0.881	2.200	100.000	147.874	1.790
S2	0.008	0.857	2.200	100.000	145.249	1.262
S3	0.007	0.844	2.200	100.000	146.897	1.365
S4	0.007	0.849	2.200	100.000	146.123	1.389
S5	0.008	0.856	2.200	100.000	145.264	1.290
S6	0.007	0.863	2.200	100.000	144.333	1.365
S7	0.006	0.856	2.200	100.000	145.143	1.463
S8	0.007	0.857	2.200	100.000	145.113	1.403

Internal Reference Calibration, performed (Not Performed):

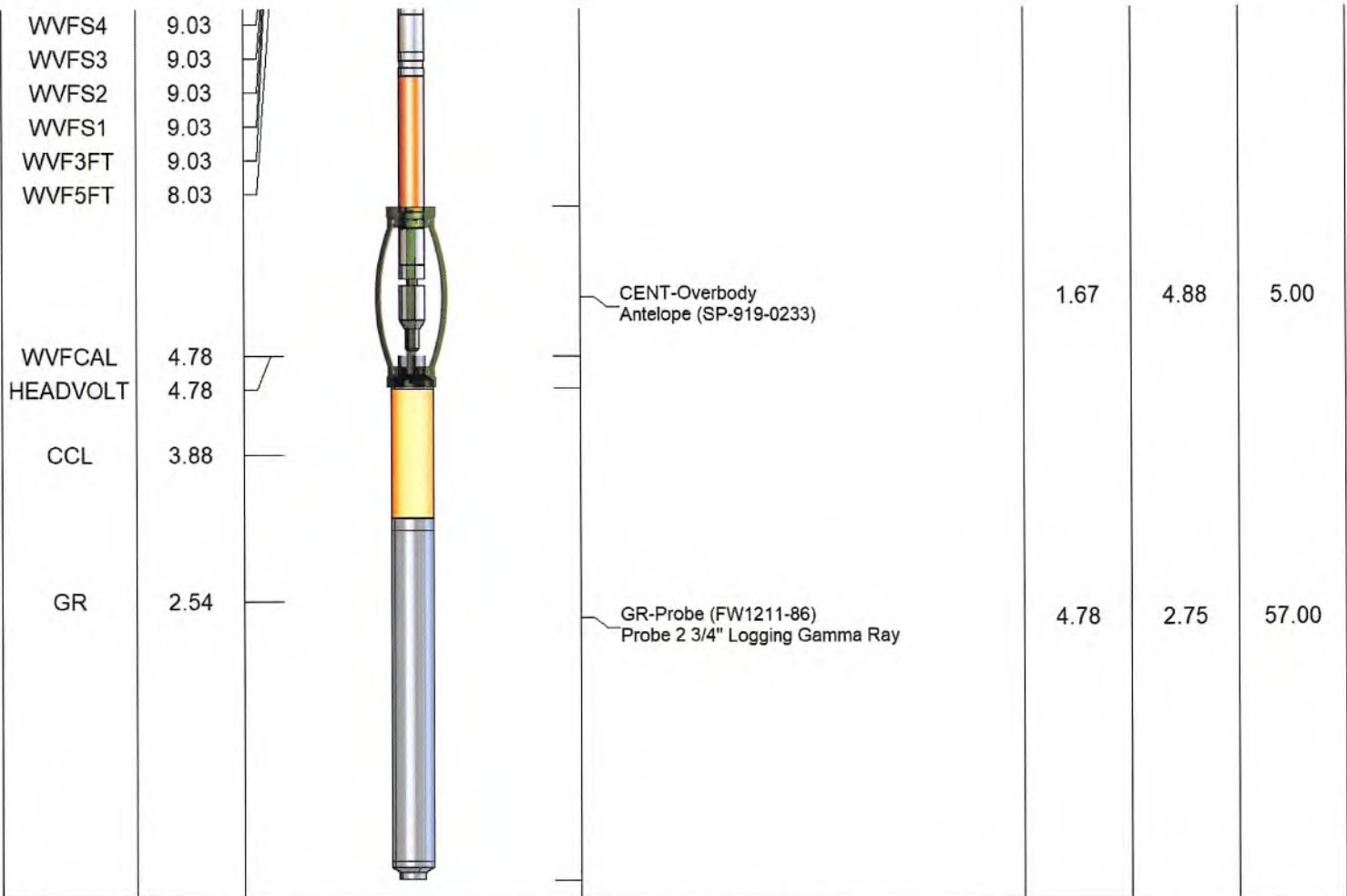
	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.994	0.997	1.000	0.000

Air Zero Calibration, performed Thu Apr 30 06:34:50 2020:

	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)
HeadVolt	14.11		CENT-Overbody Antelope (SP-919-0233)	1.67	4.88	5.00
			CHD-Titan Titan 1 7/16" GO Cablehead	1.00	1.44	5.00
Temp	11.27					
WVFS8	9.03		RBT-Probe275T (FW1312-32) Probe 2.75" Radial with Integral Temperature Sub	9.39	2.75	90.00
WVFS7	9.03					
WVFS6	9.03					
WVFS5	9.03					

07/21/2023



Dataset: antero_coloradowest_flames_1h_rcbl_nineenergy_apr_30_2020.db: Marcellus/Flames_1H/RCBL_1/pass4
 Total length: 15.17 ft
 Total weight: 162.00 lb
 O.D.: 4.88 in

	Company	Antero Resources
	Well	Flames1H
	Field	North Canton
	County	Tyler
	State	West Virginia