



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

Company Antero Resources

Well Rockies 2H

Field North Canton

County Tyler

State West Virginia

Location: SEC N/A TWP N/A RGE N/A

API #: 47095026590000

Other Services
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.

Company Antero Resources
Well Rockies 2H
Field North Canton
County Tyler
State West Virginia

Date	30-Apr-20		One		
Run Number			19,441 ft.		
Depth Driller			6,810 ft.		
Depth Logger			6,810 ft.		
Bottom Logged Interval			Surface		
Top Log Interval			n/a		
Open Hole Size			Freshwater		
Type Fluid			n/a		
Density / Viscosity			166 deg F		
Max. Recorded Temp.			3,748 ft.		
Estimated Cement Top			07:00		
Time Well Ready			17:17		
Time Logger on Bottom			132		
Equipment Number			Marietta, Ohio		
Location			Tom Weese		
Recorded By			Chrs Young		
Witnessed By					
Borehole Record			Tubing Record		
Run Number	Bit	From	To	Size	Weight
					From
					To
Casing Record	Size	Wgt/Ft	Top	Bottom	
Surface String	13 3/8 in.	54.5 #	Surface	441 ft.	
Prot. String	9 5/8 in.	36 #	Surface	3,060 ft.	
Production String	5 1/2	20#	Surface	19,441 ft.	
Liner					
Marker Joint			5,478 ft.	5,488 ft.	

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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

Primary Log on Well

Log Correlated to Marker Joint at (5,478' - 5,488')
Depth Correction (-12)

Main Pass 0 PSI
Repeat Pass 0 PSI

Thank You For Using Nine Energy Wireline of Marietta, Ohio

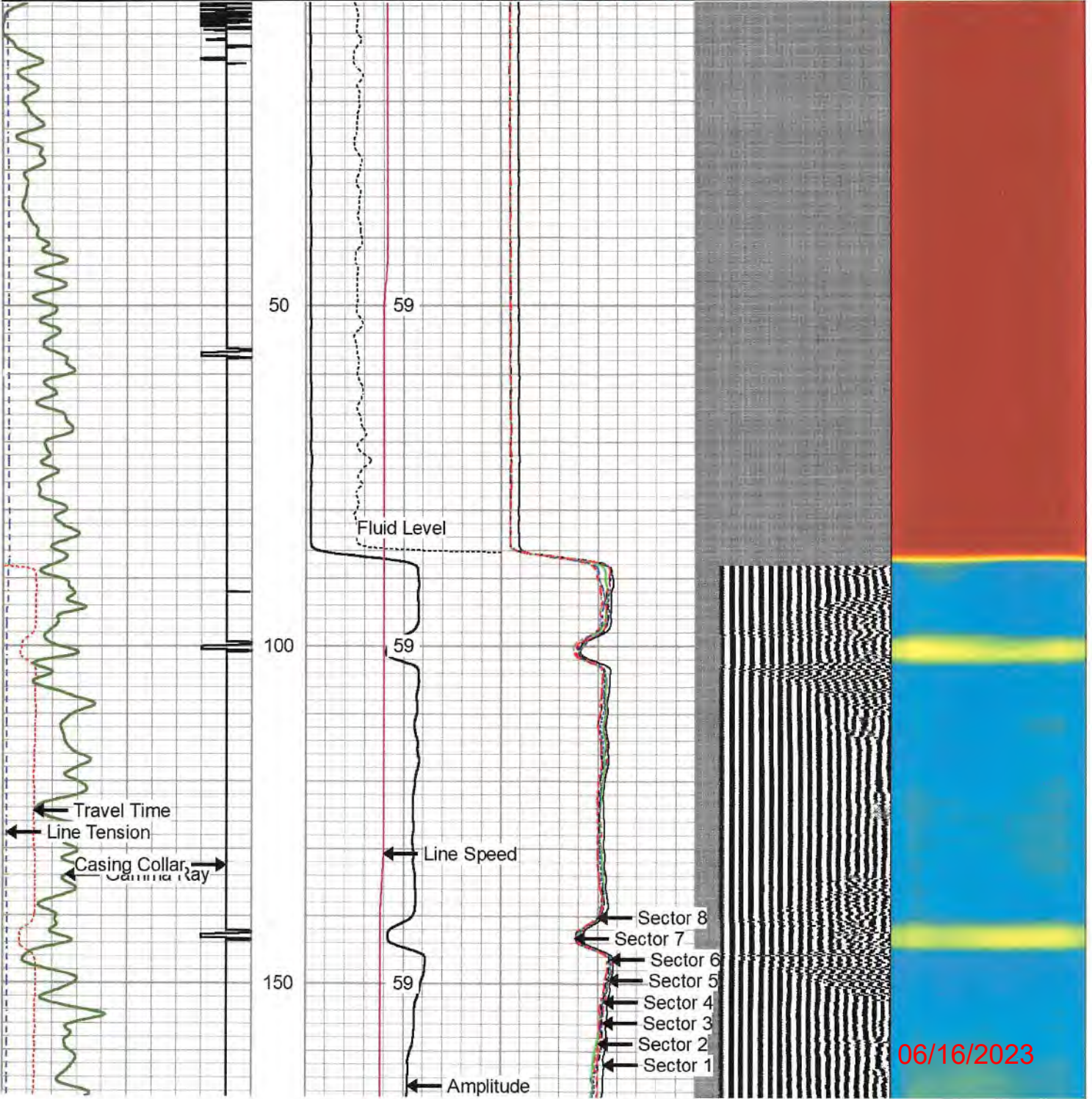


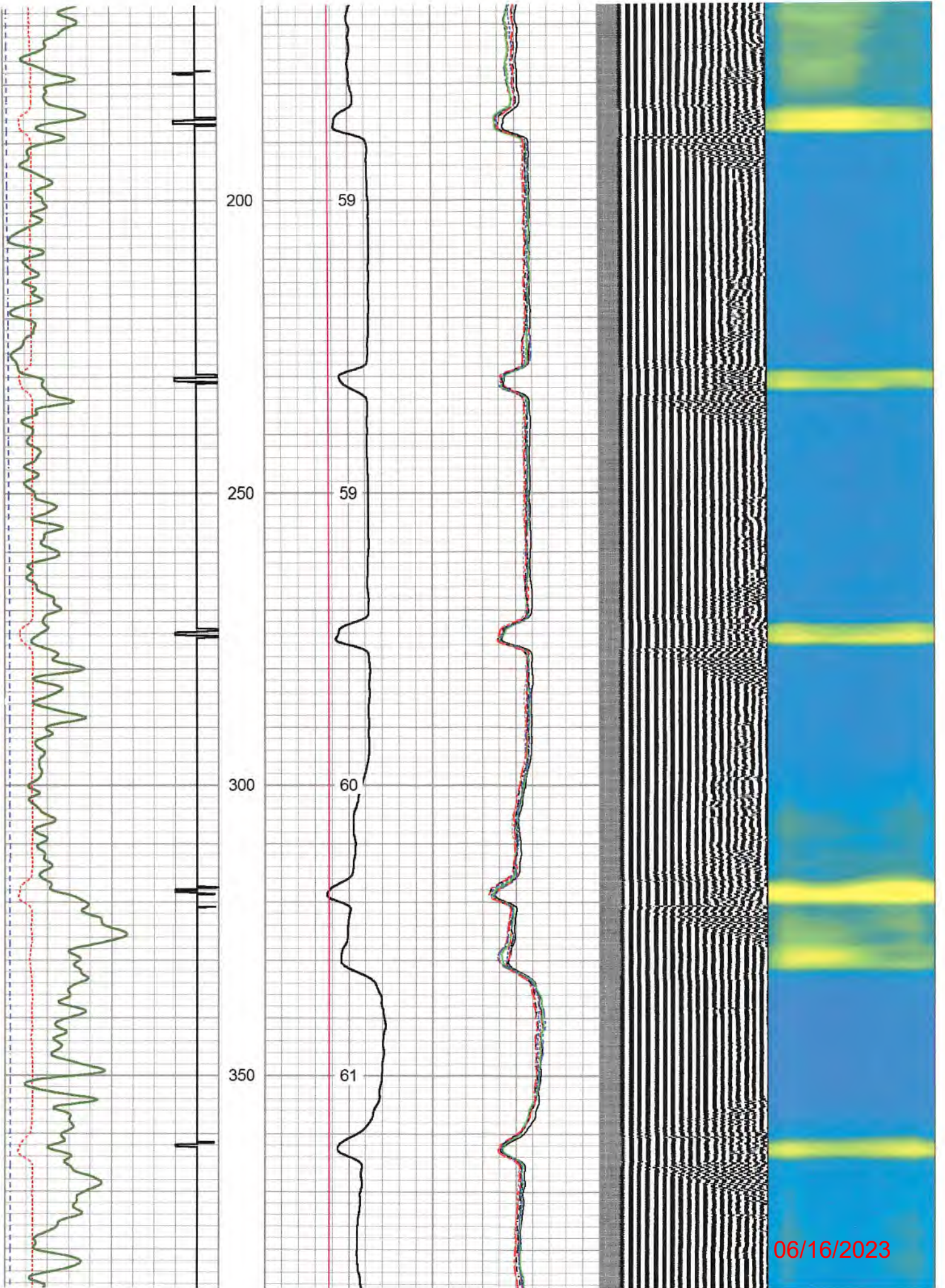
Main Pass 0 PSI

Handwritten initials

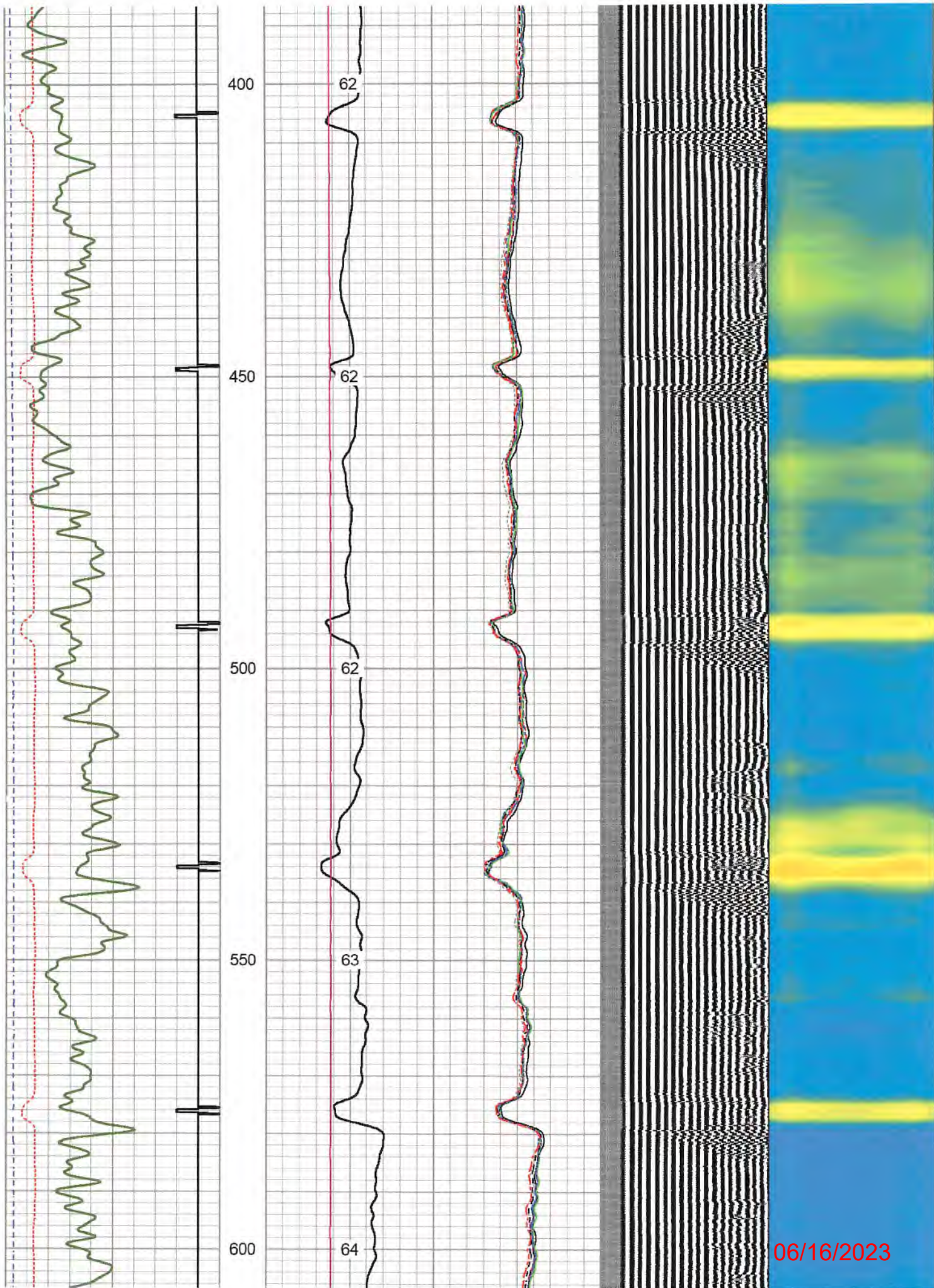
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 Dataset Pathname Marcellus/Rockies_2H/RCBL_1/pass4.3
 Presentation Format 9rcbl
 Dataset Creation Thu Apr 30 17:24:15 2020
 Charted by Depth in Feet scaled 1:240

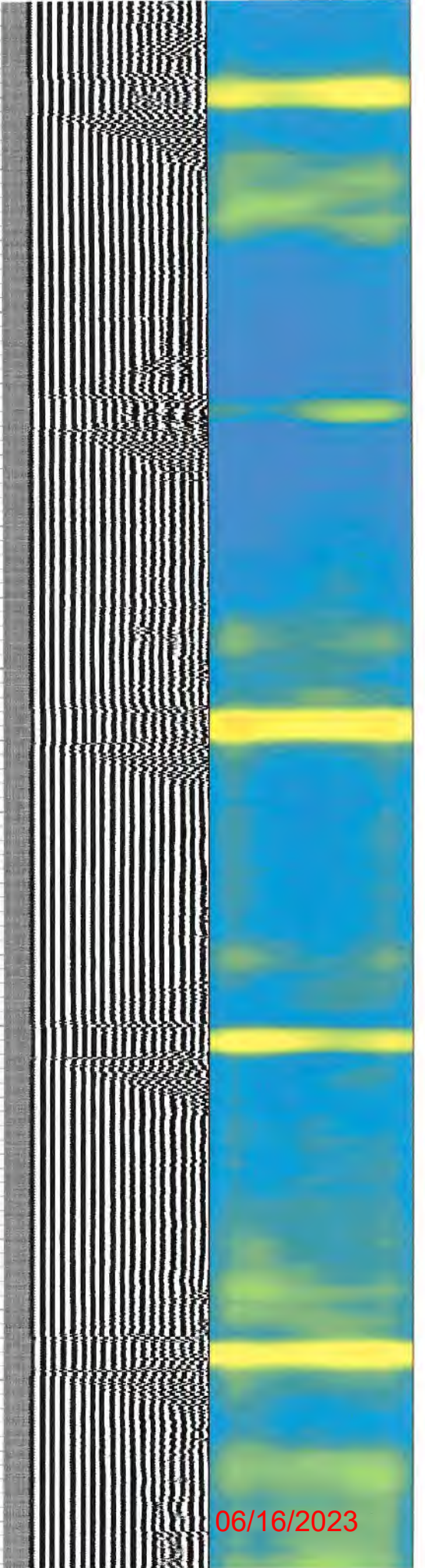
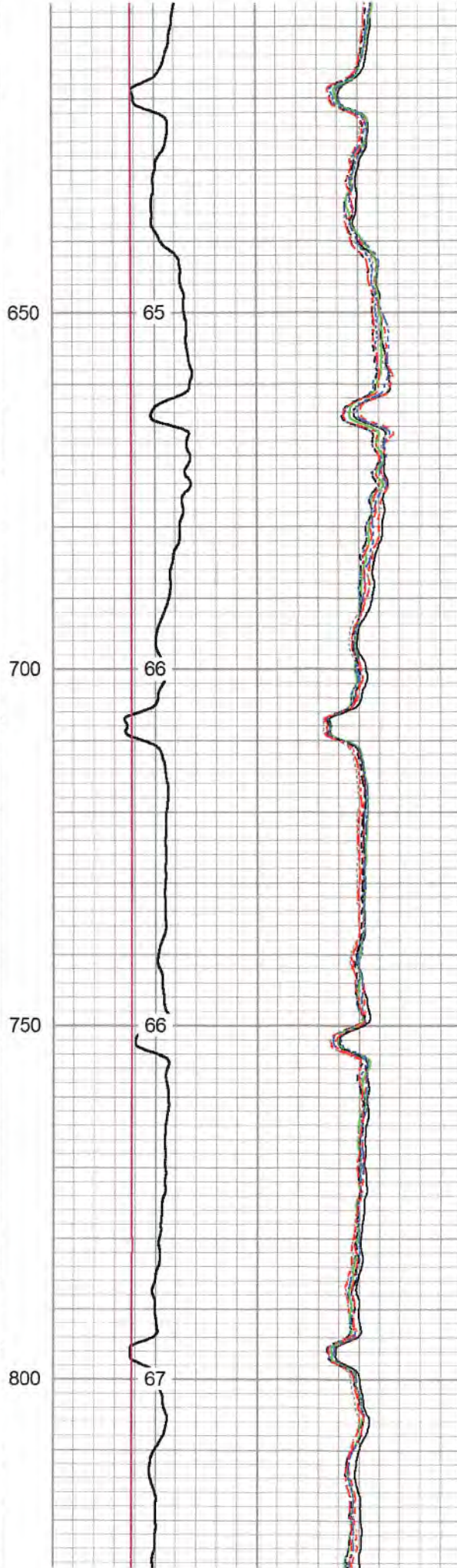
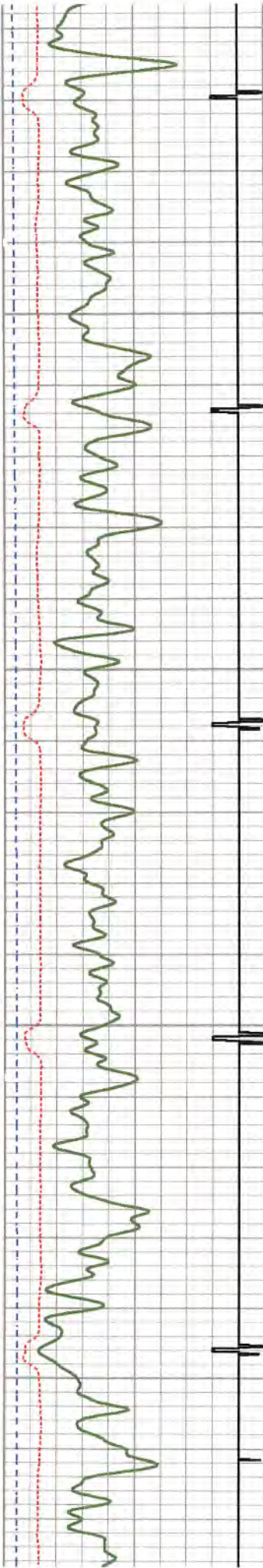
270	Travel Time (usec)	200	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1		Amplified Amplitude		-5	Sector 2	150	200	(usec)		
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	Sector 3	150				
0	Line Tension (lb)	5000		Line Speed		-5	Sector 4	150				
				(ft/min)	500	-5	Sector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



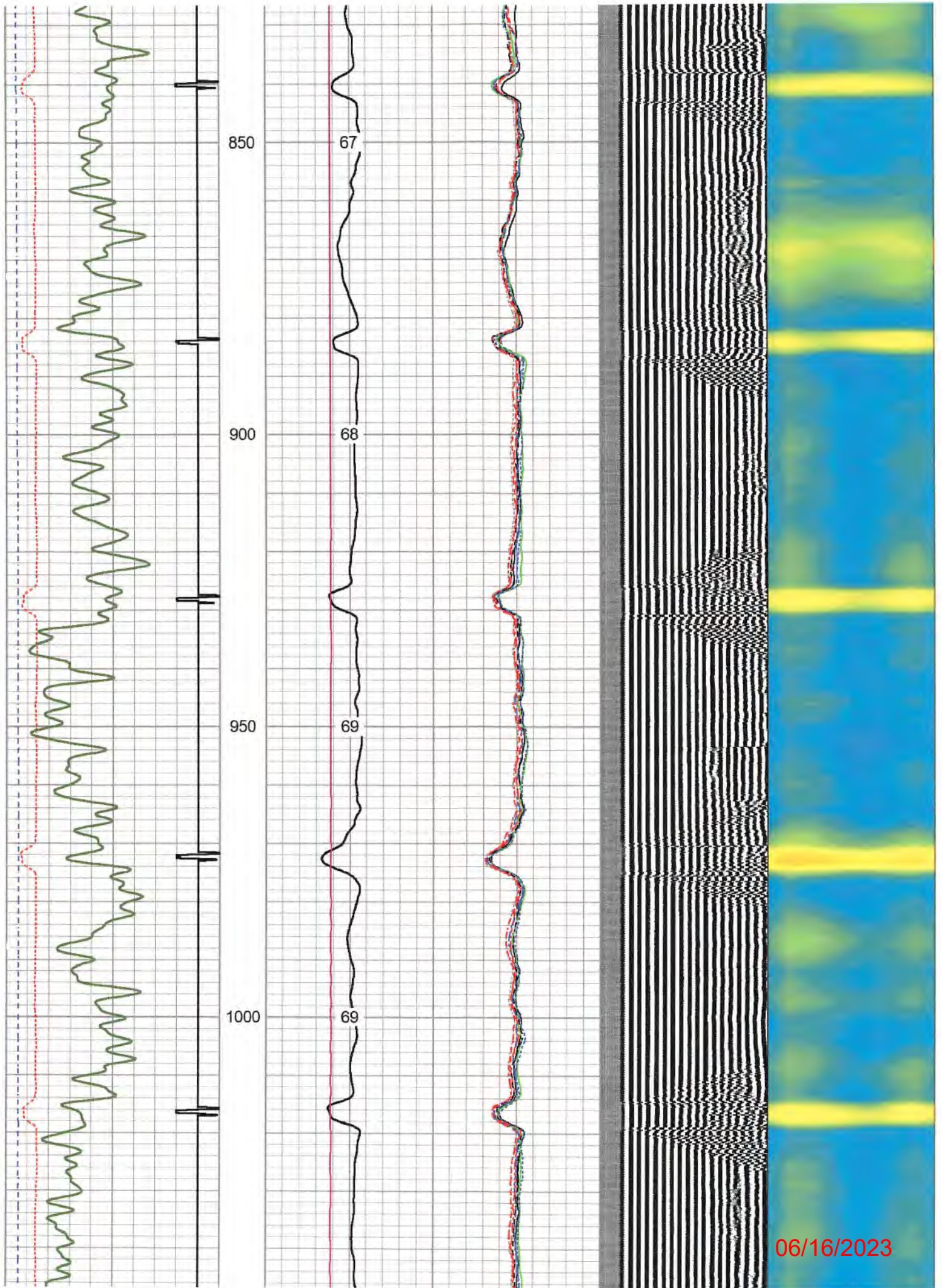


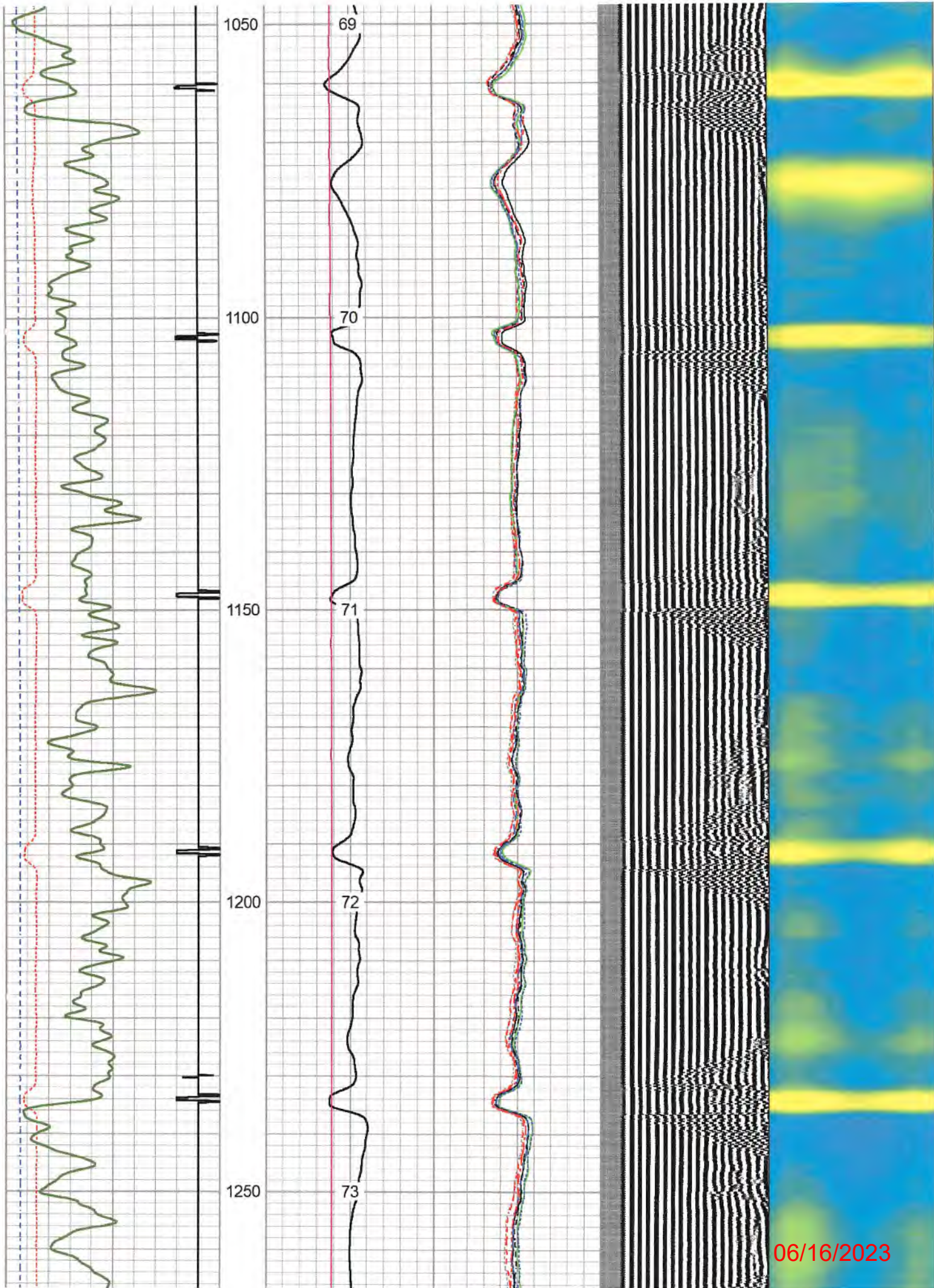
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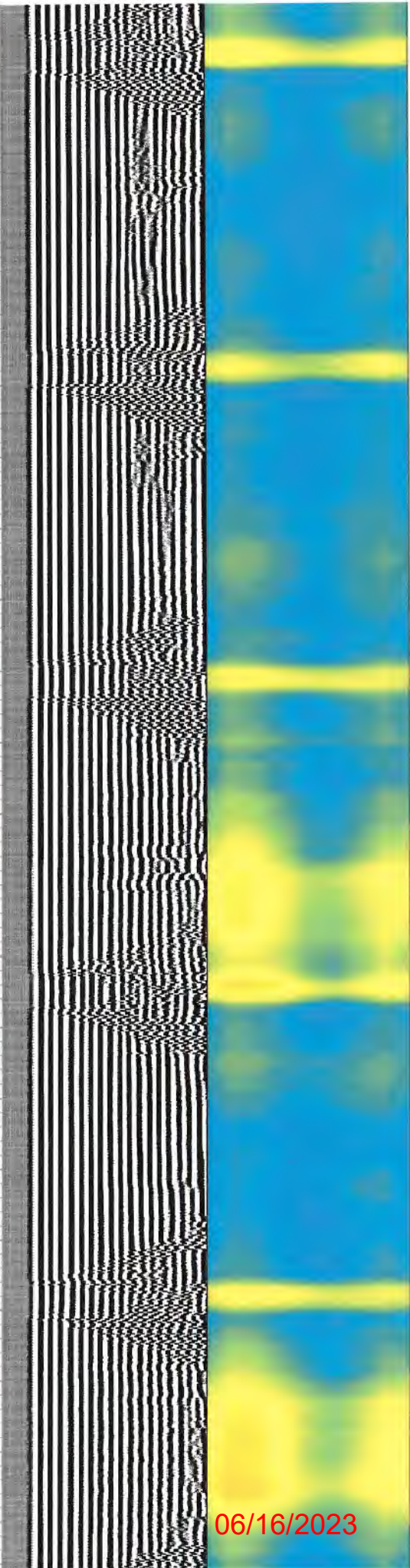
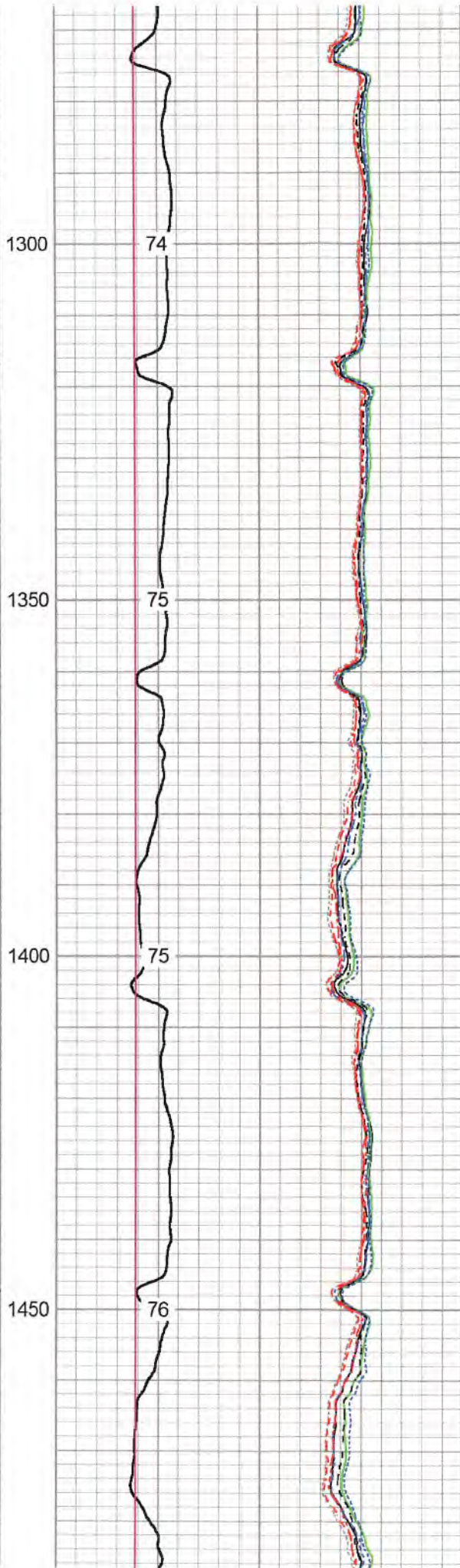
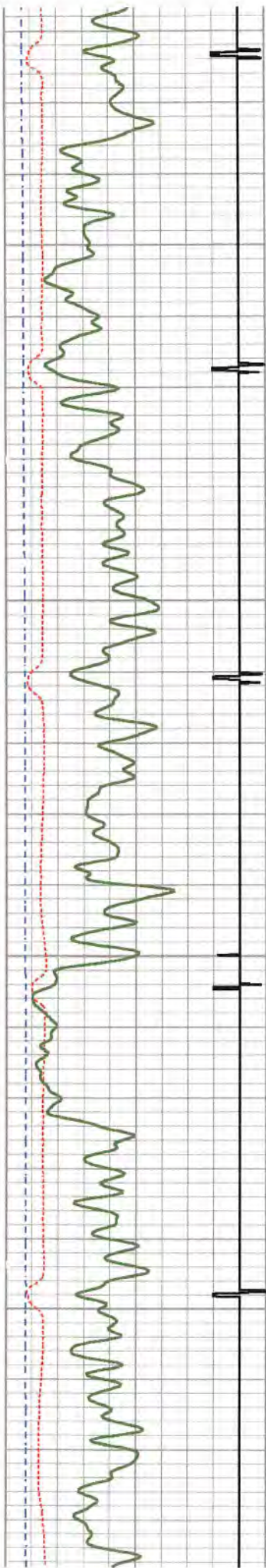




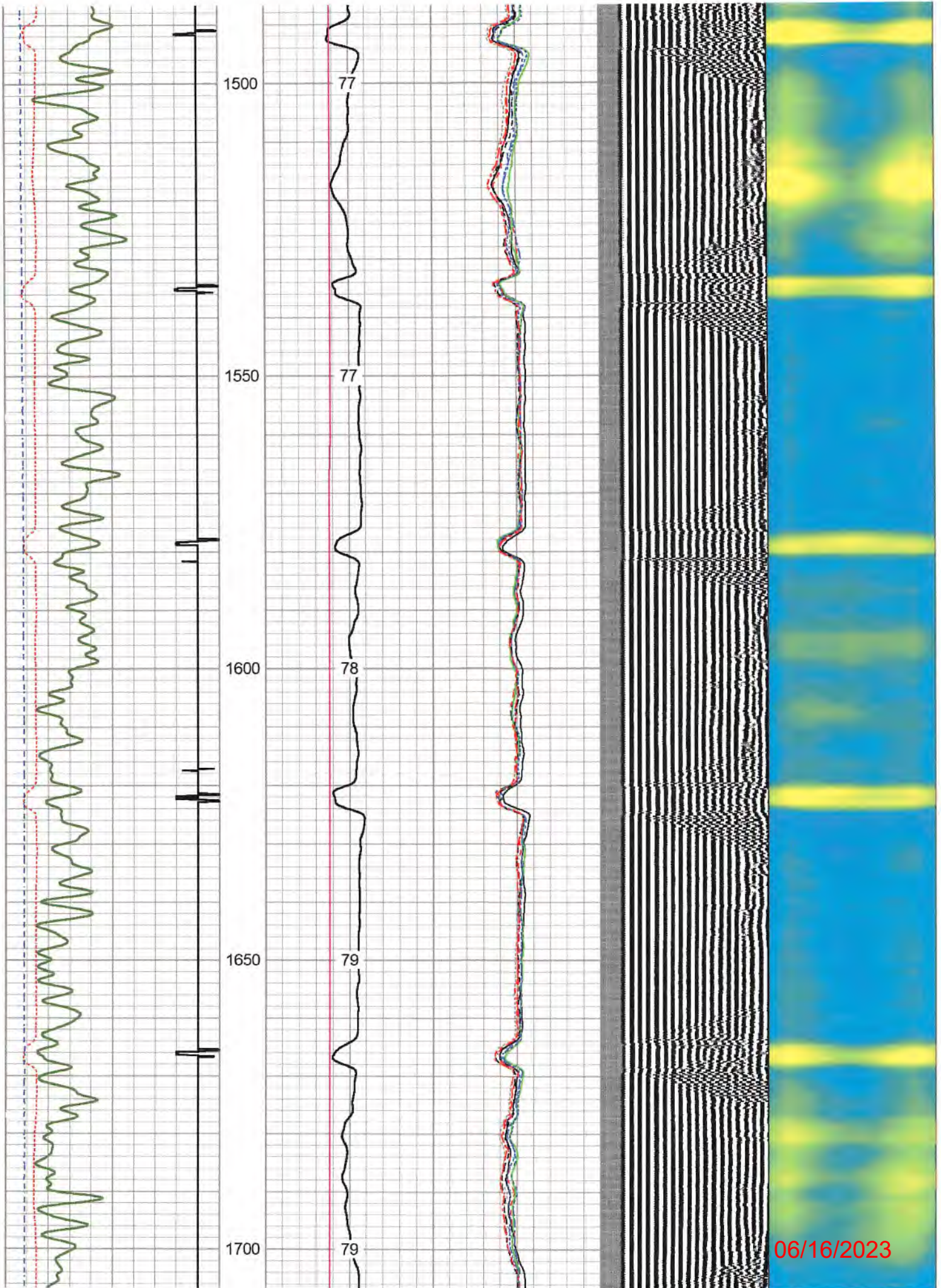
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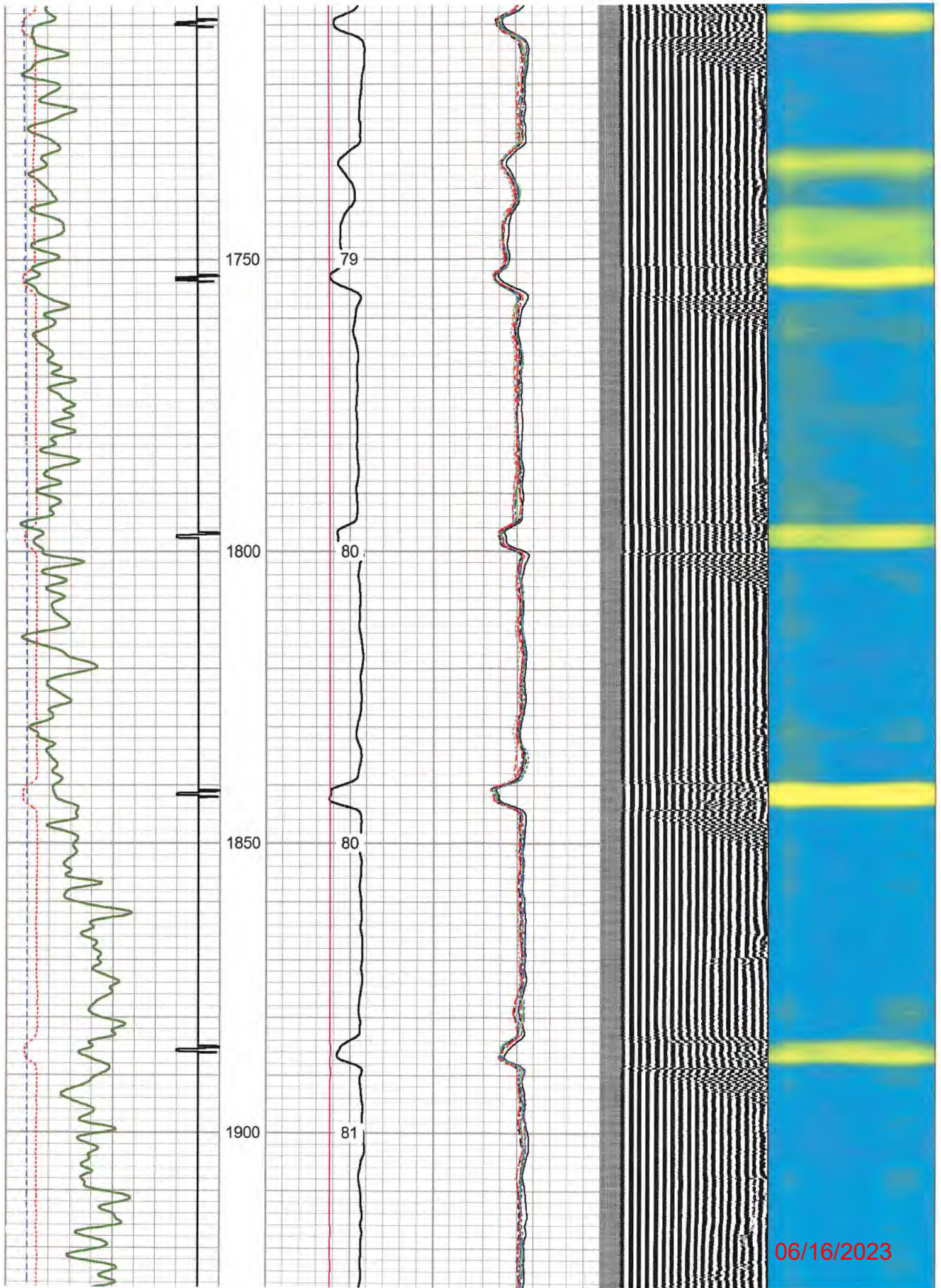




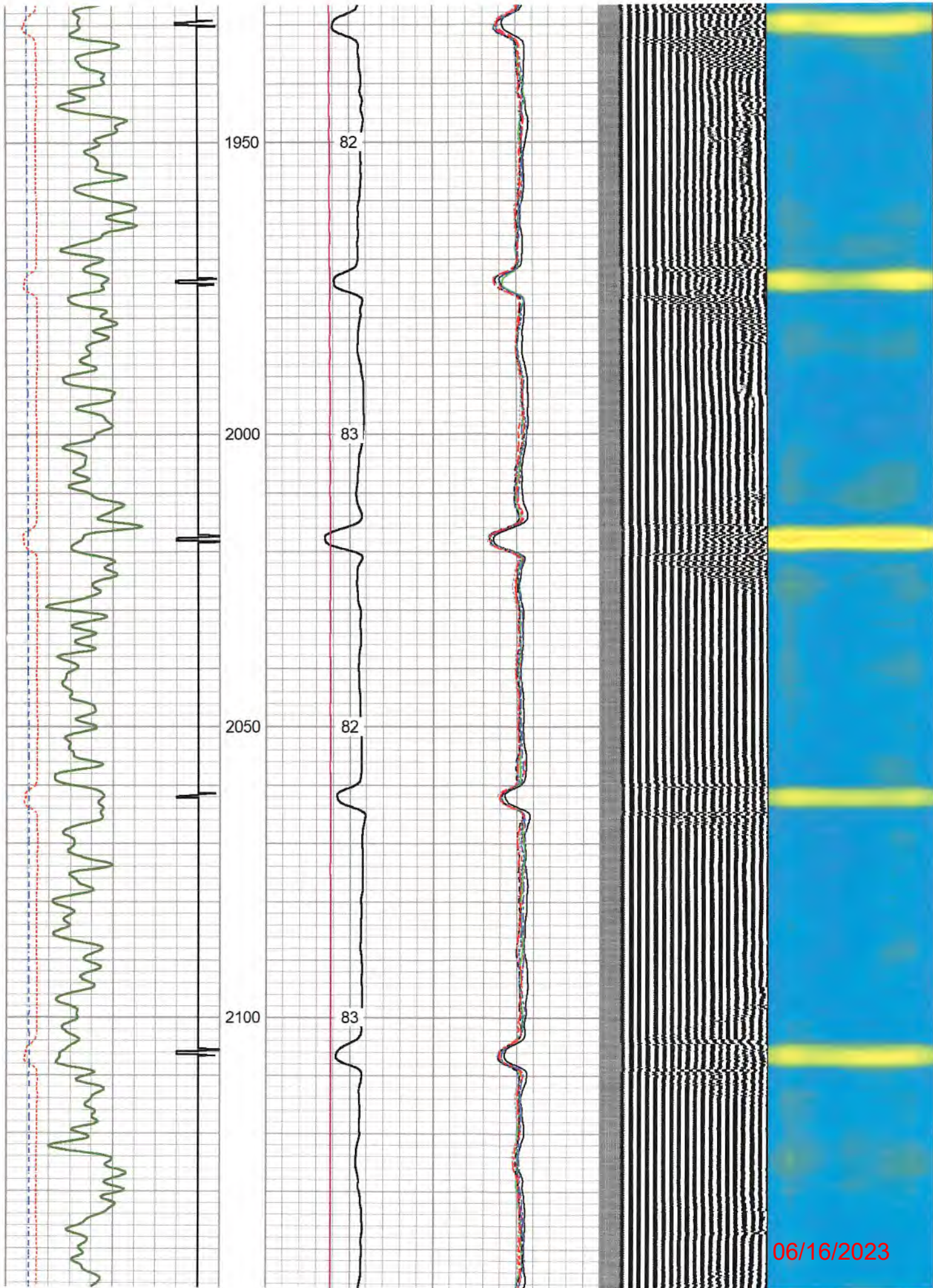


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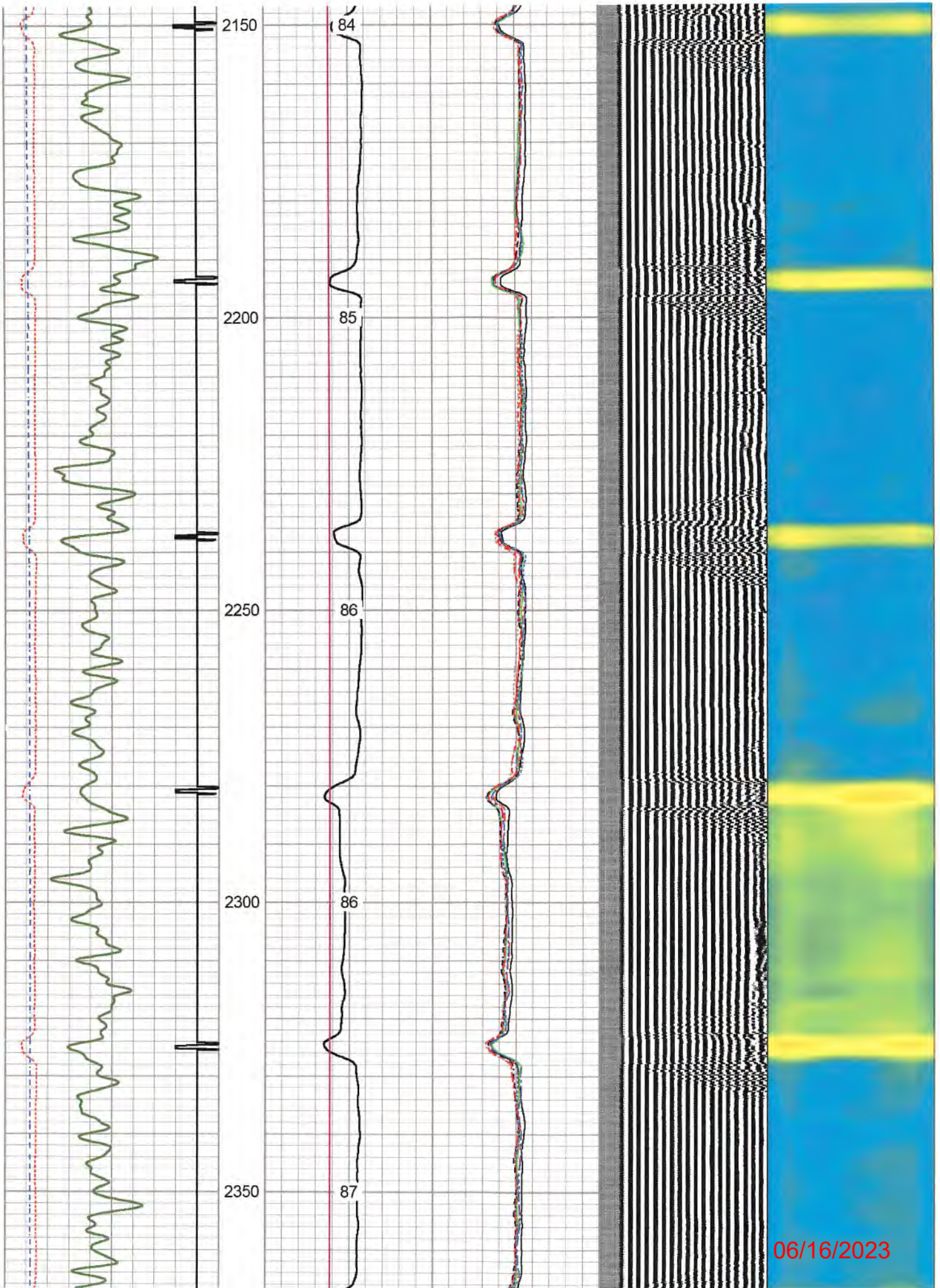


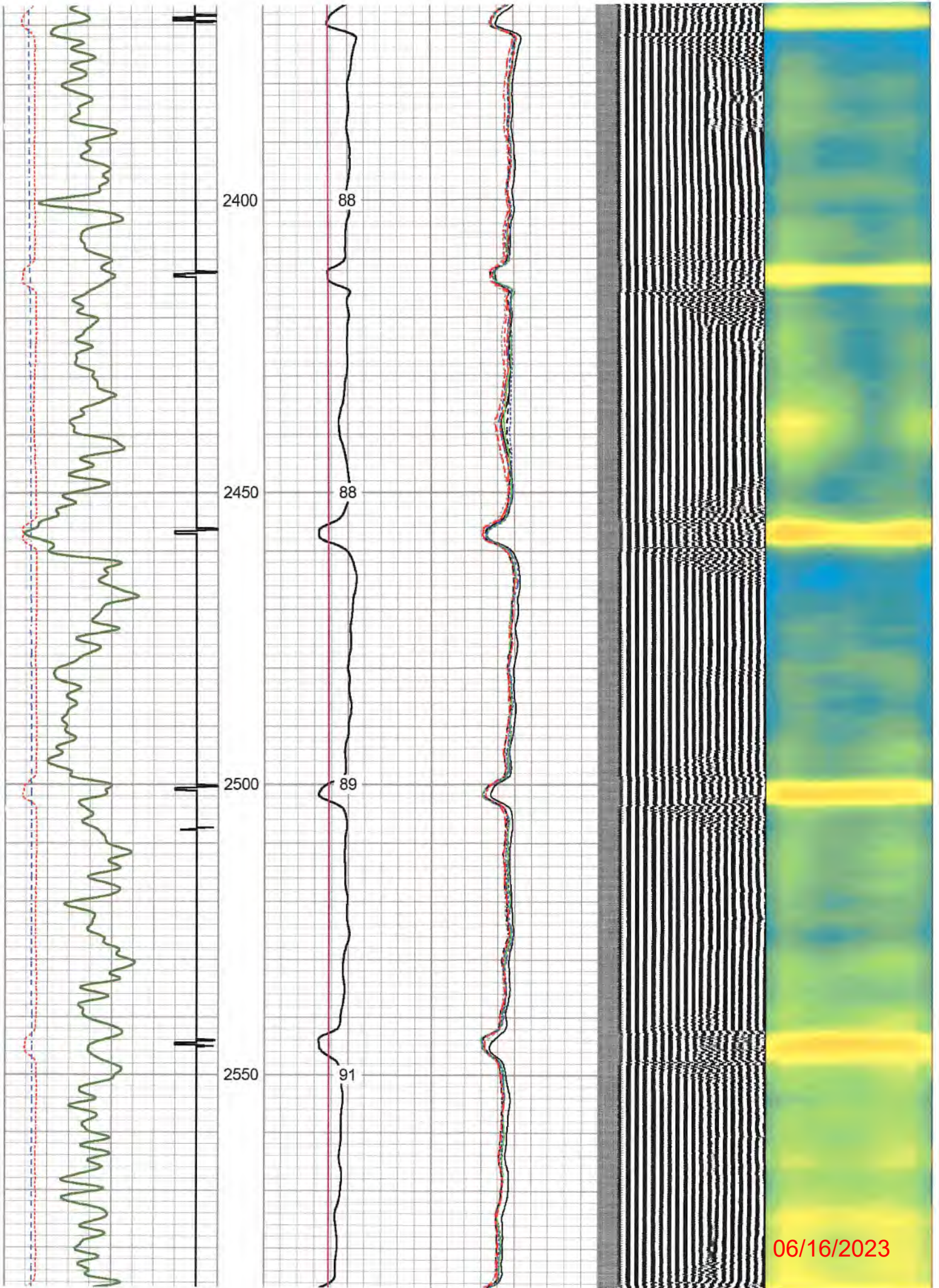


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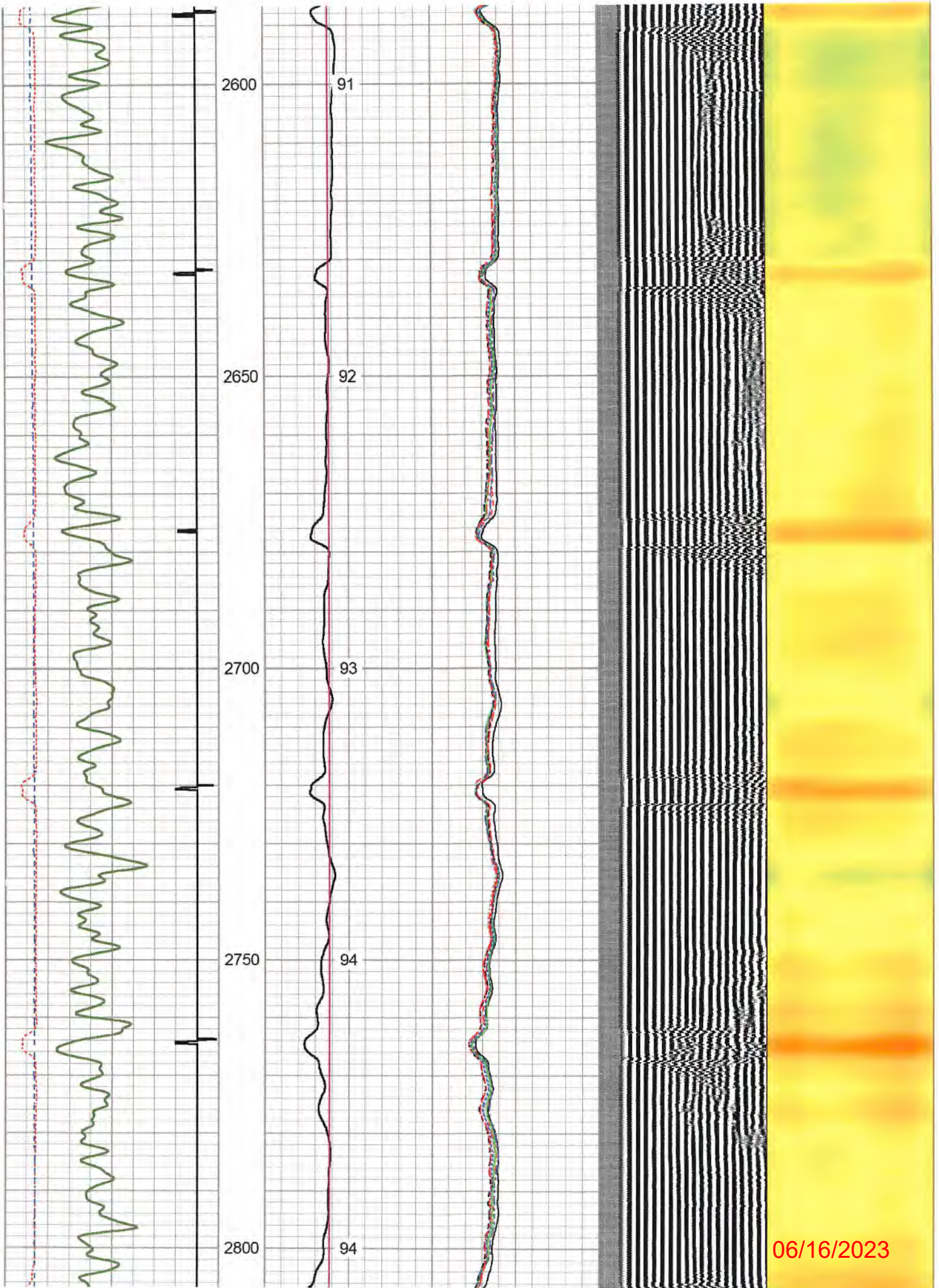


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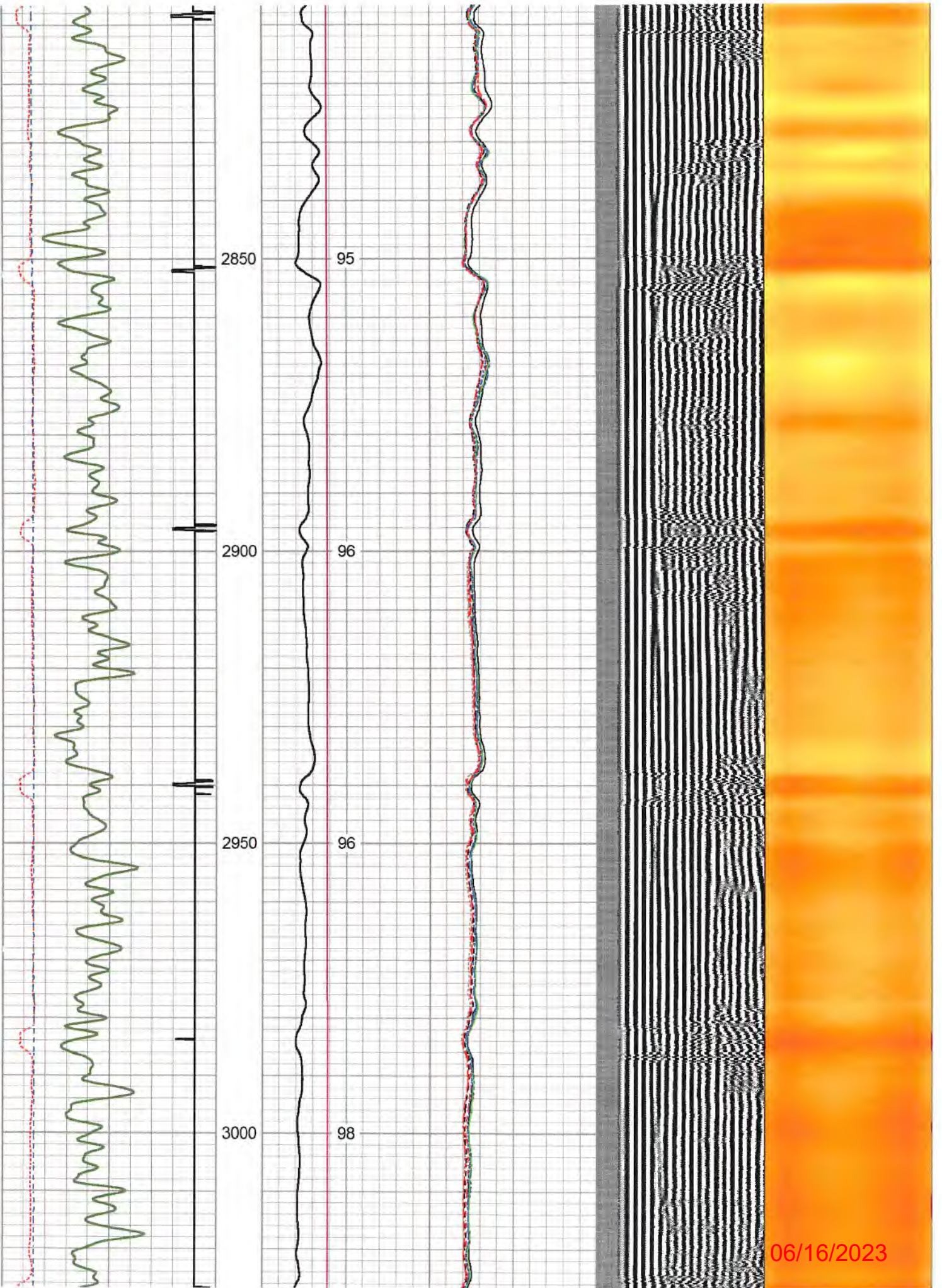




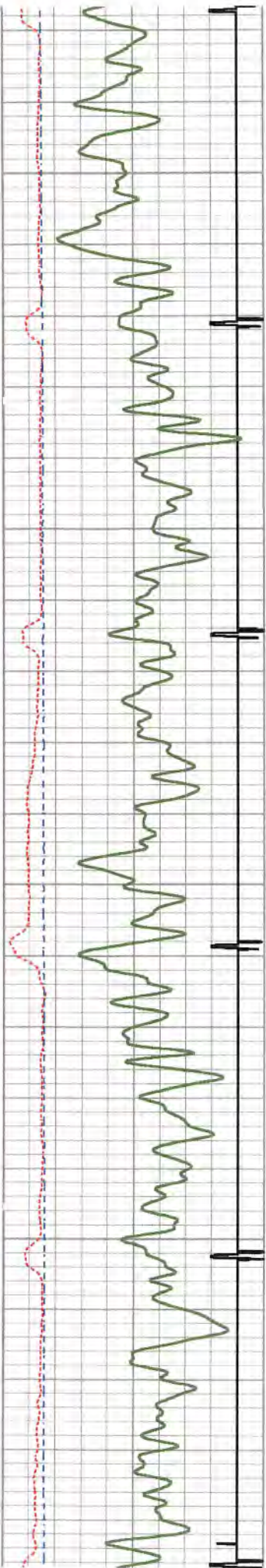
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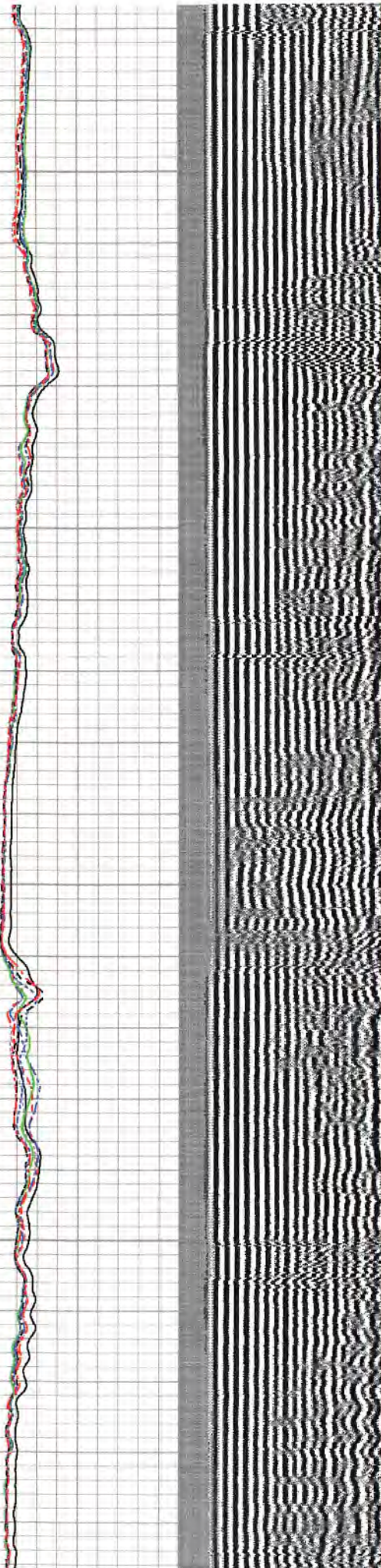
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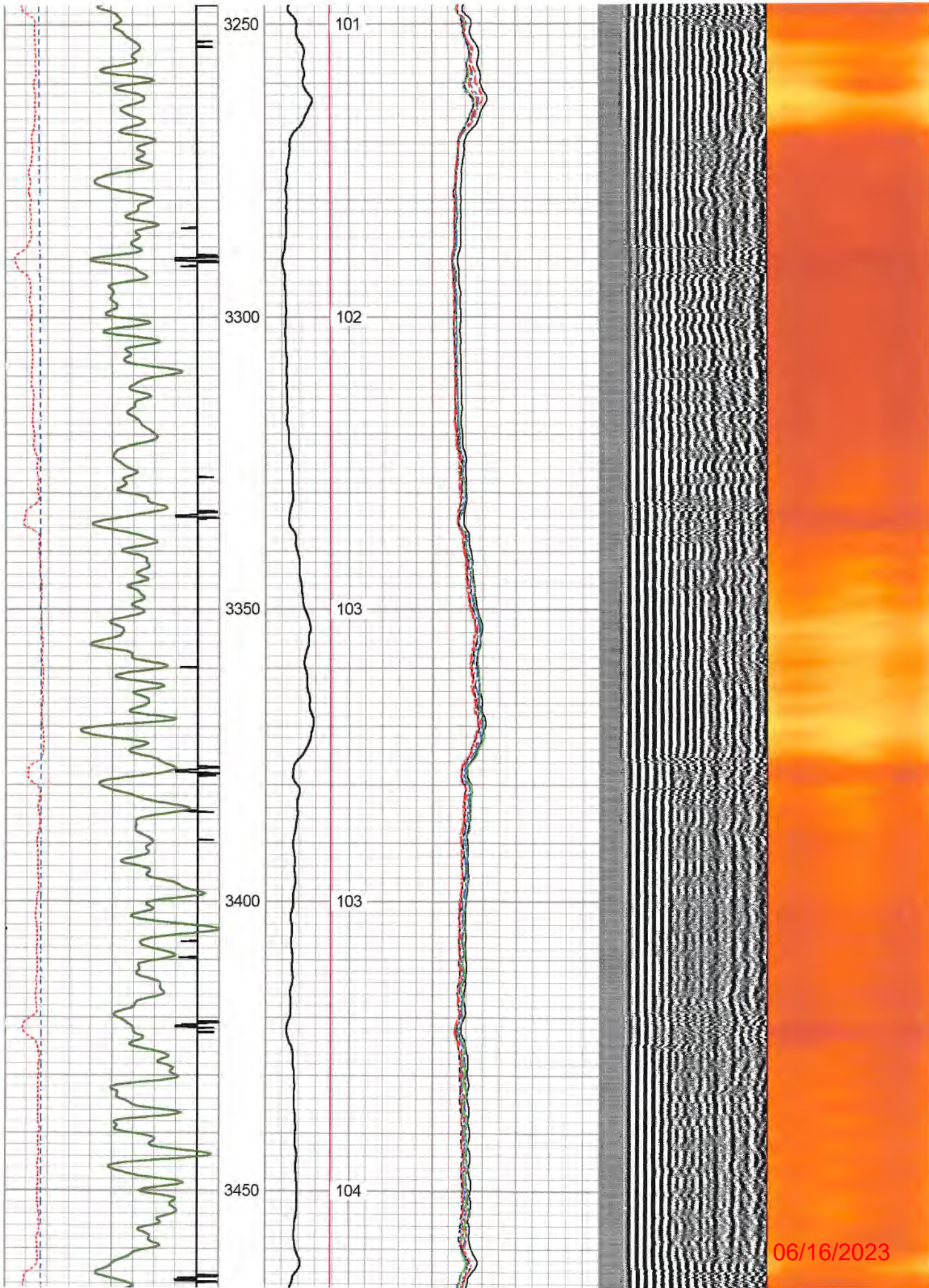
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3100
3150
3200



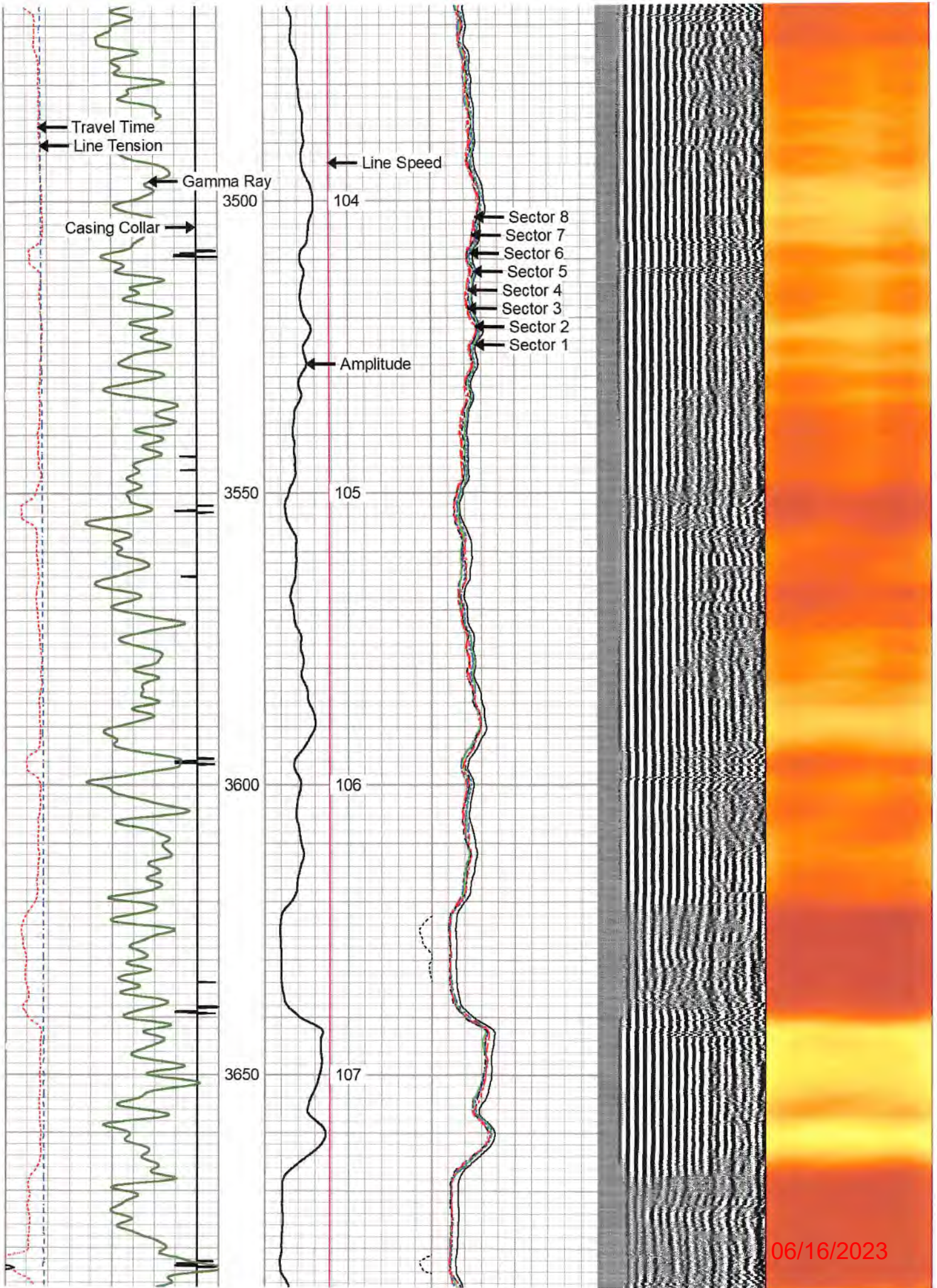
98
99
100
101

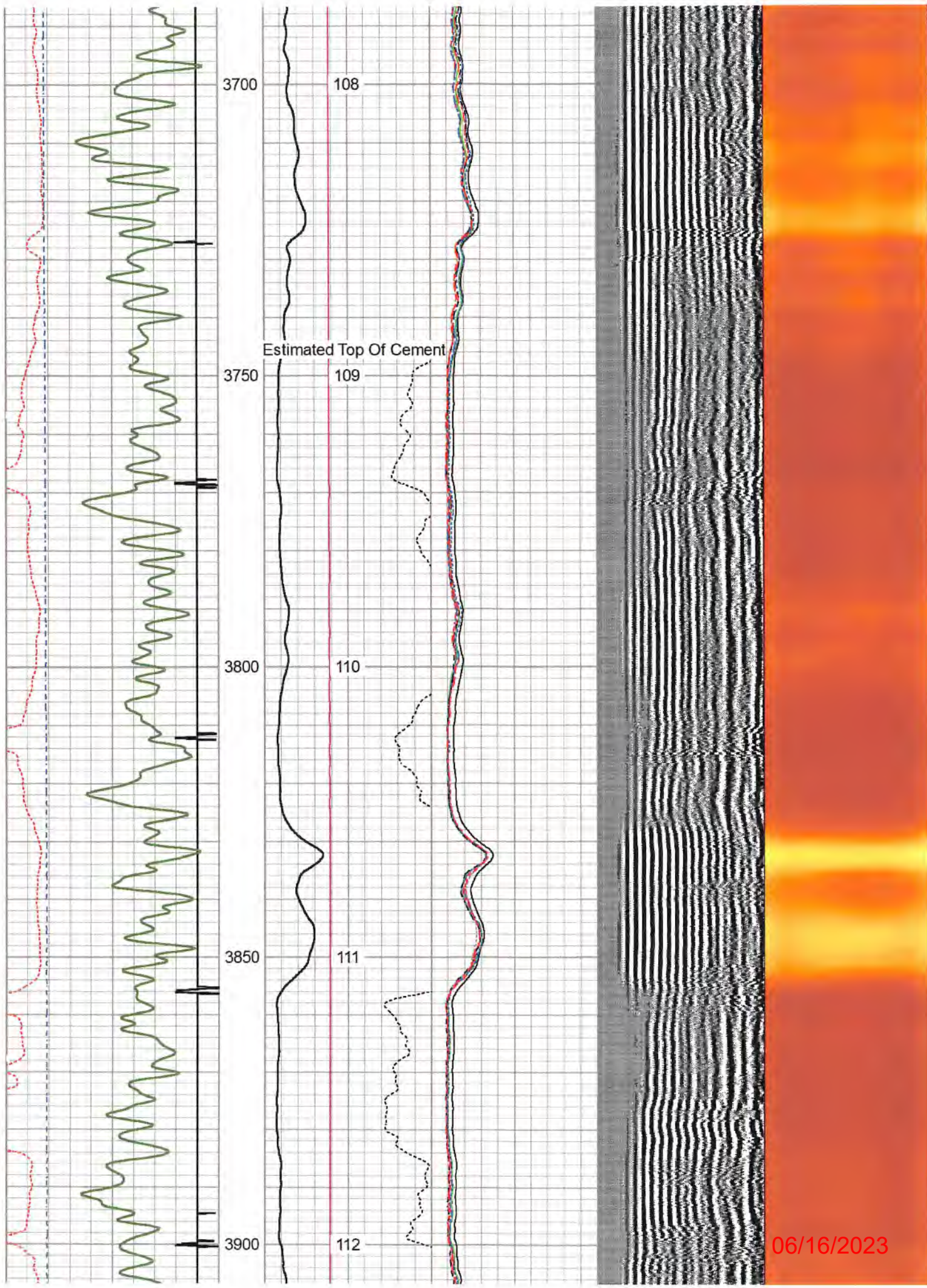


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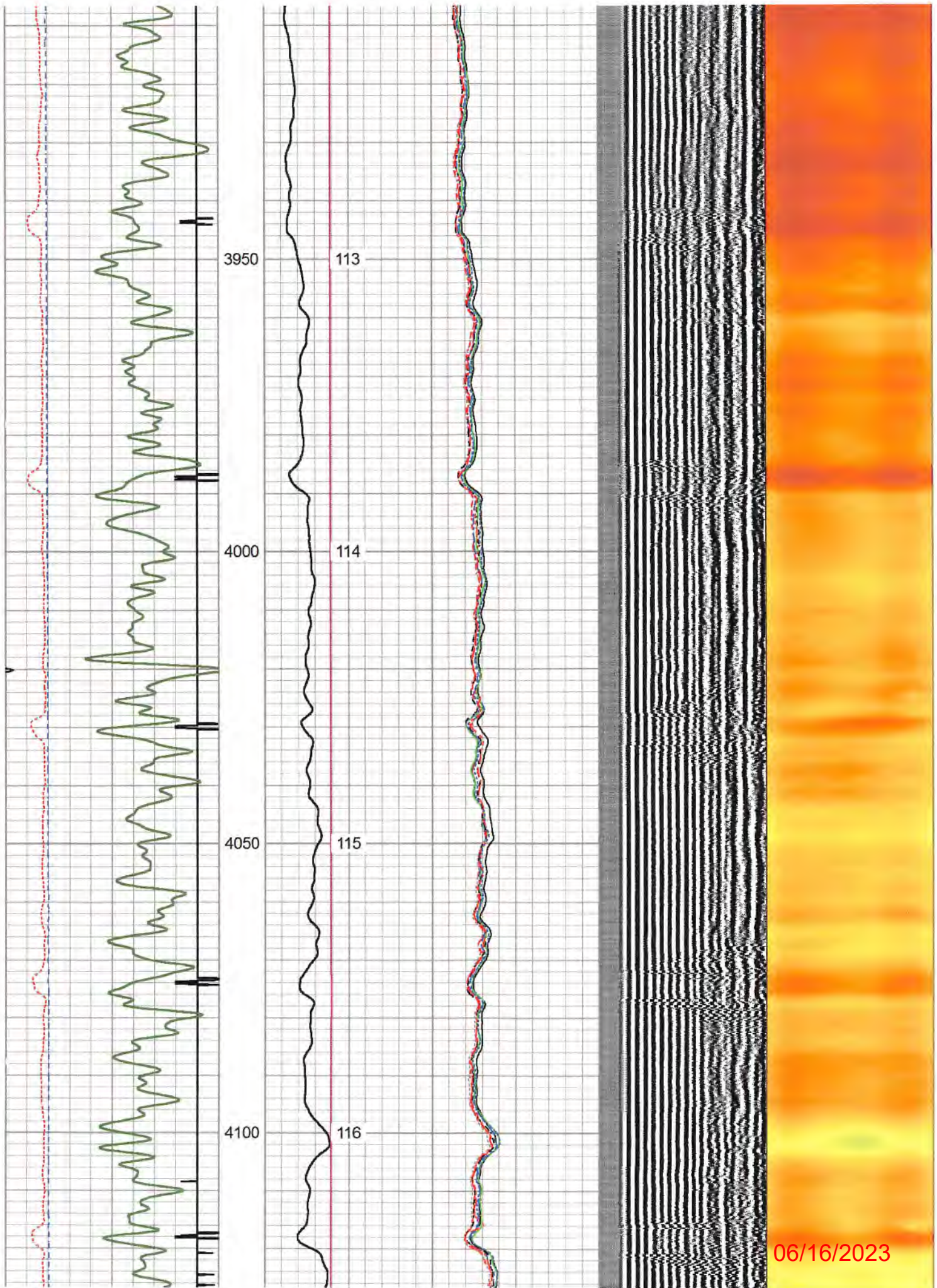


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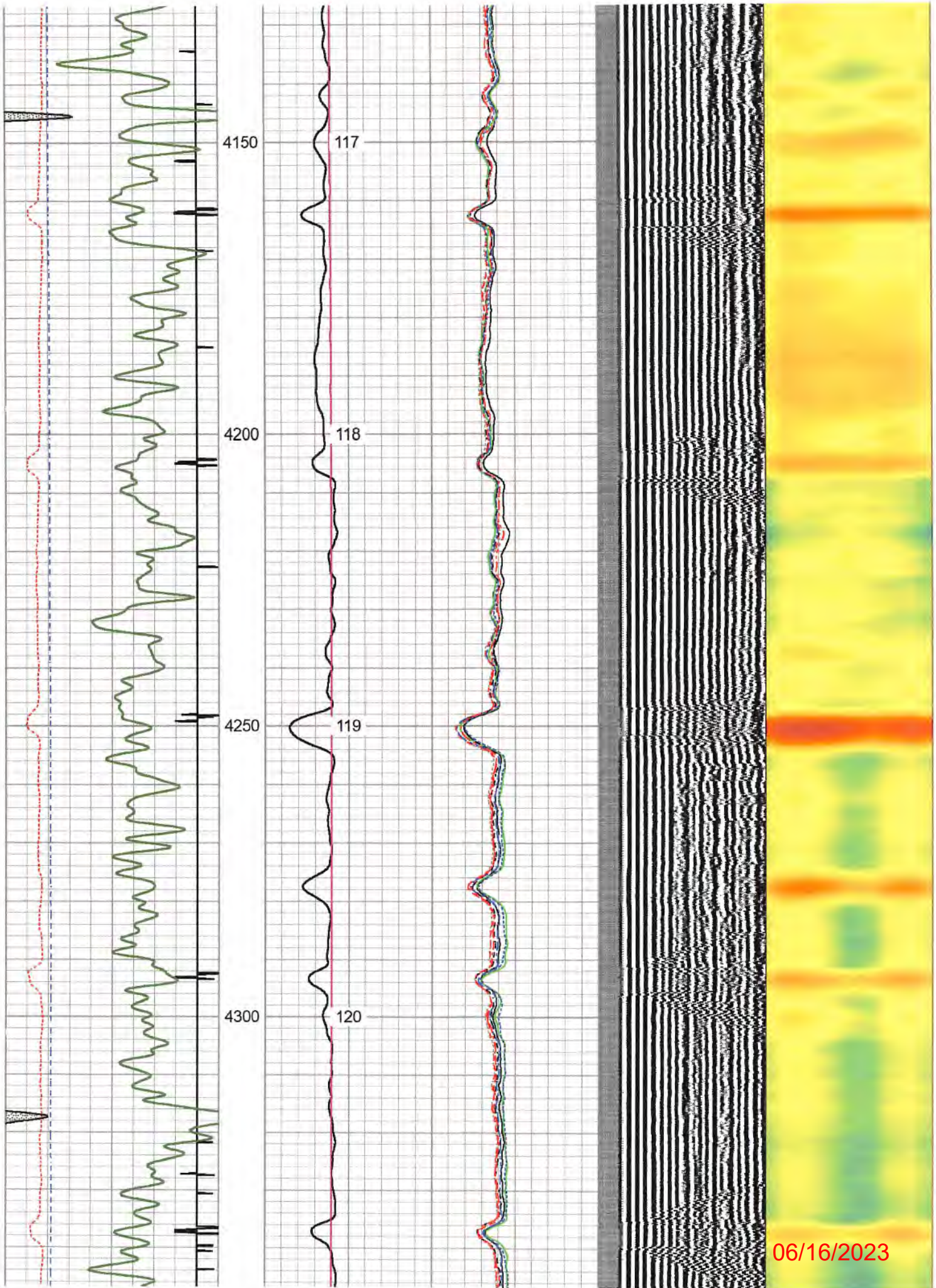


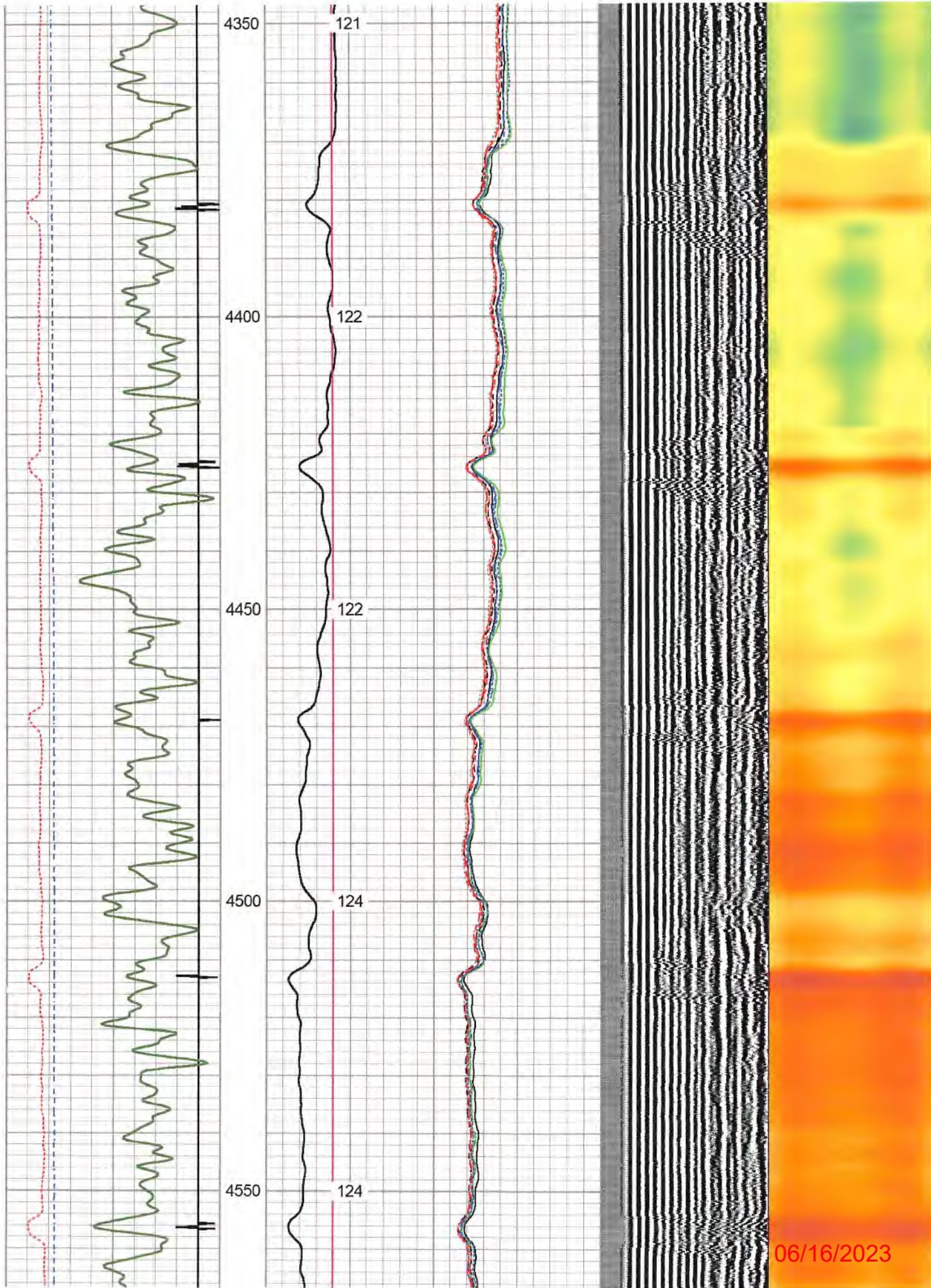


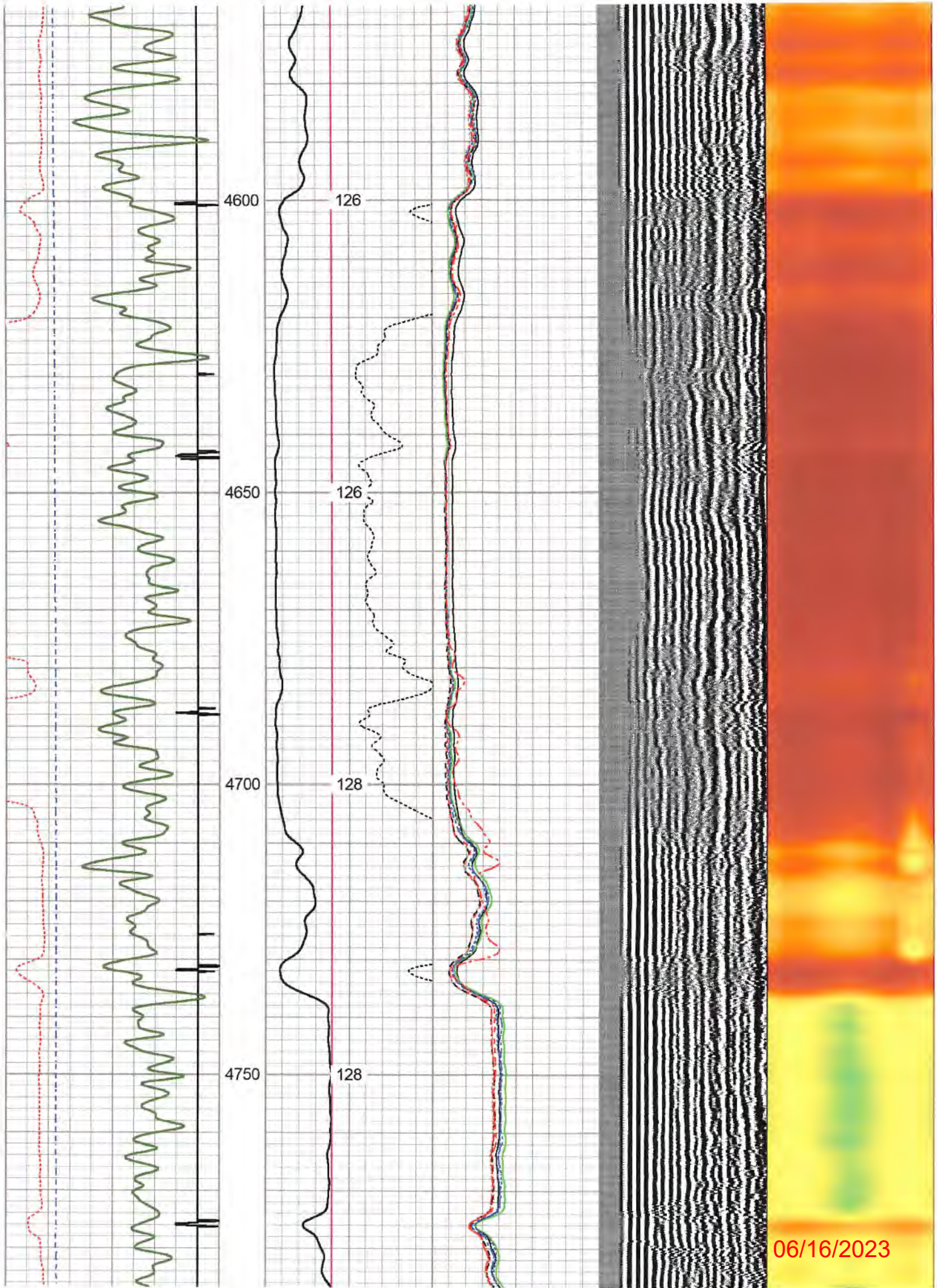
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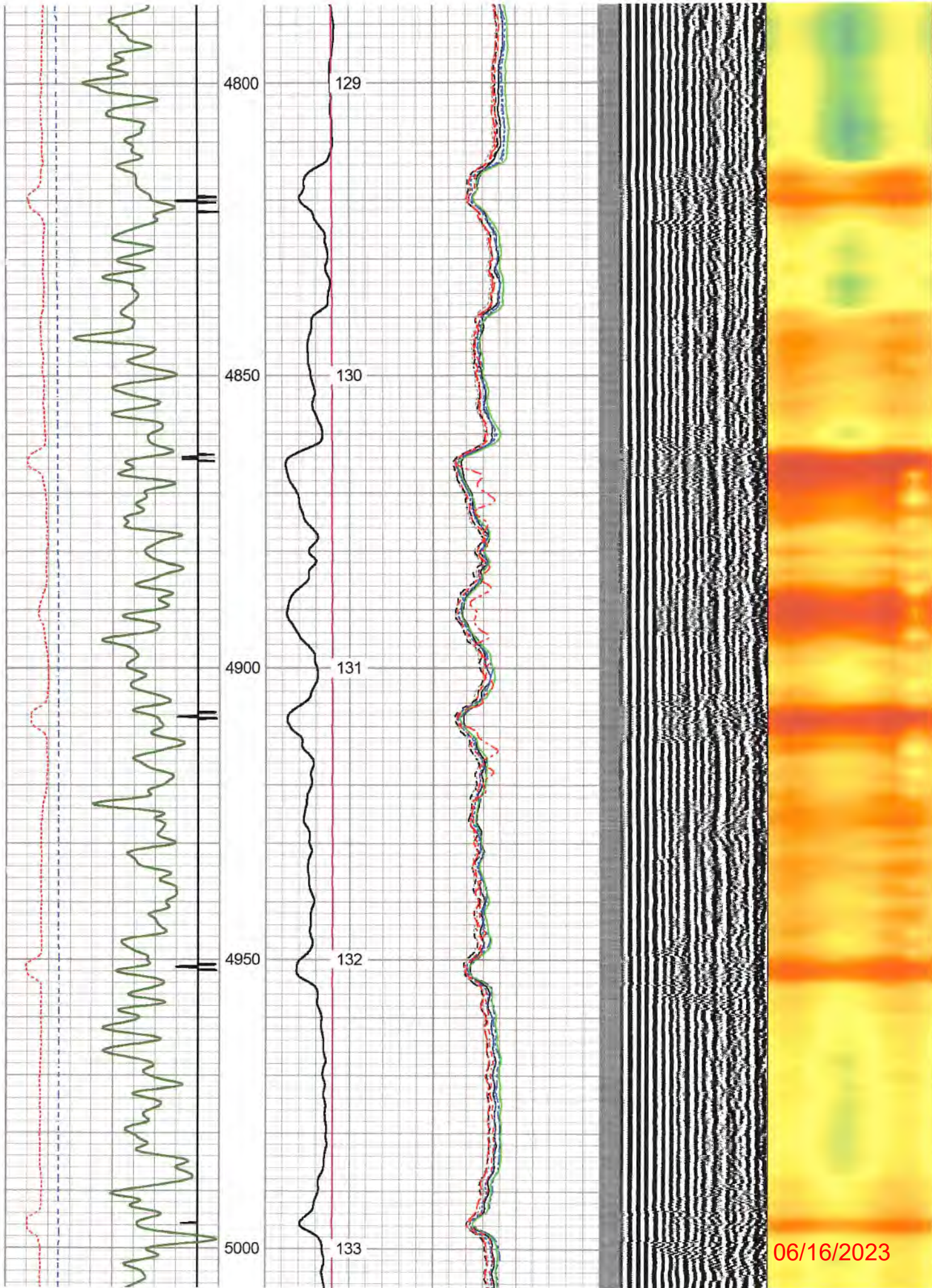


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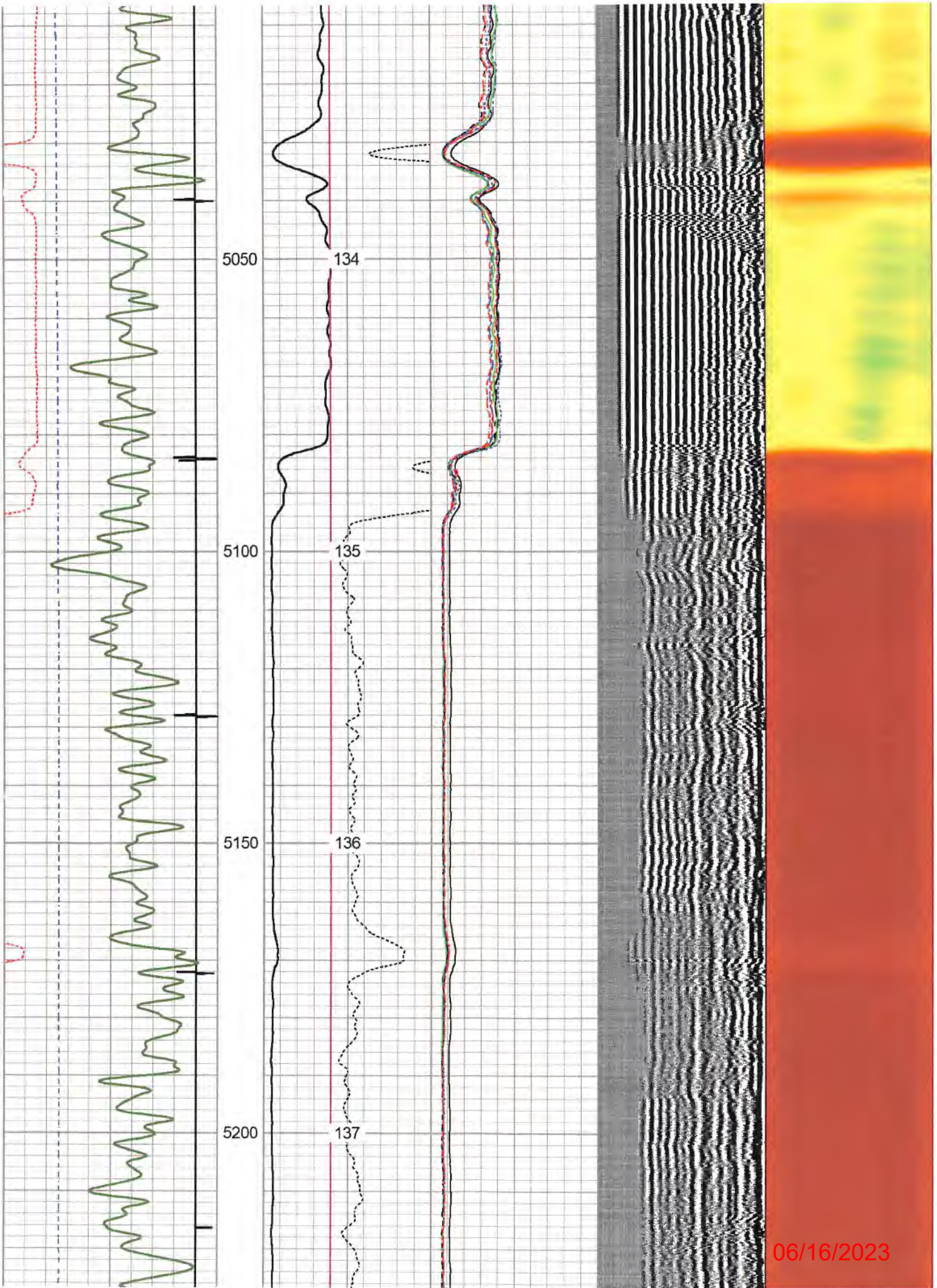




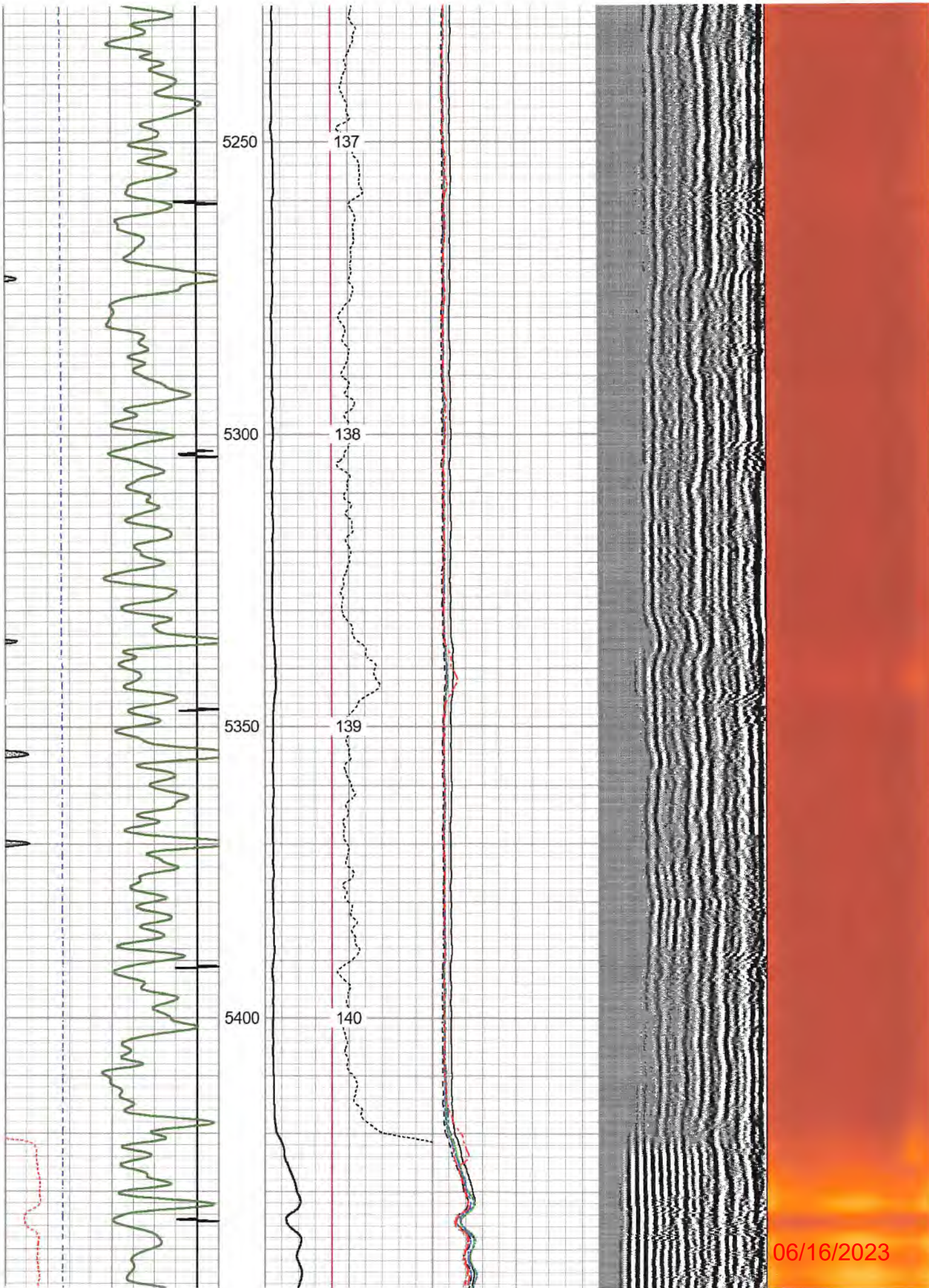


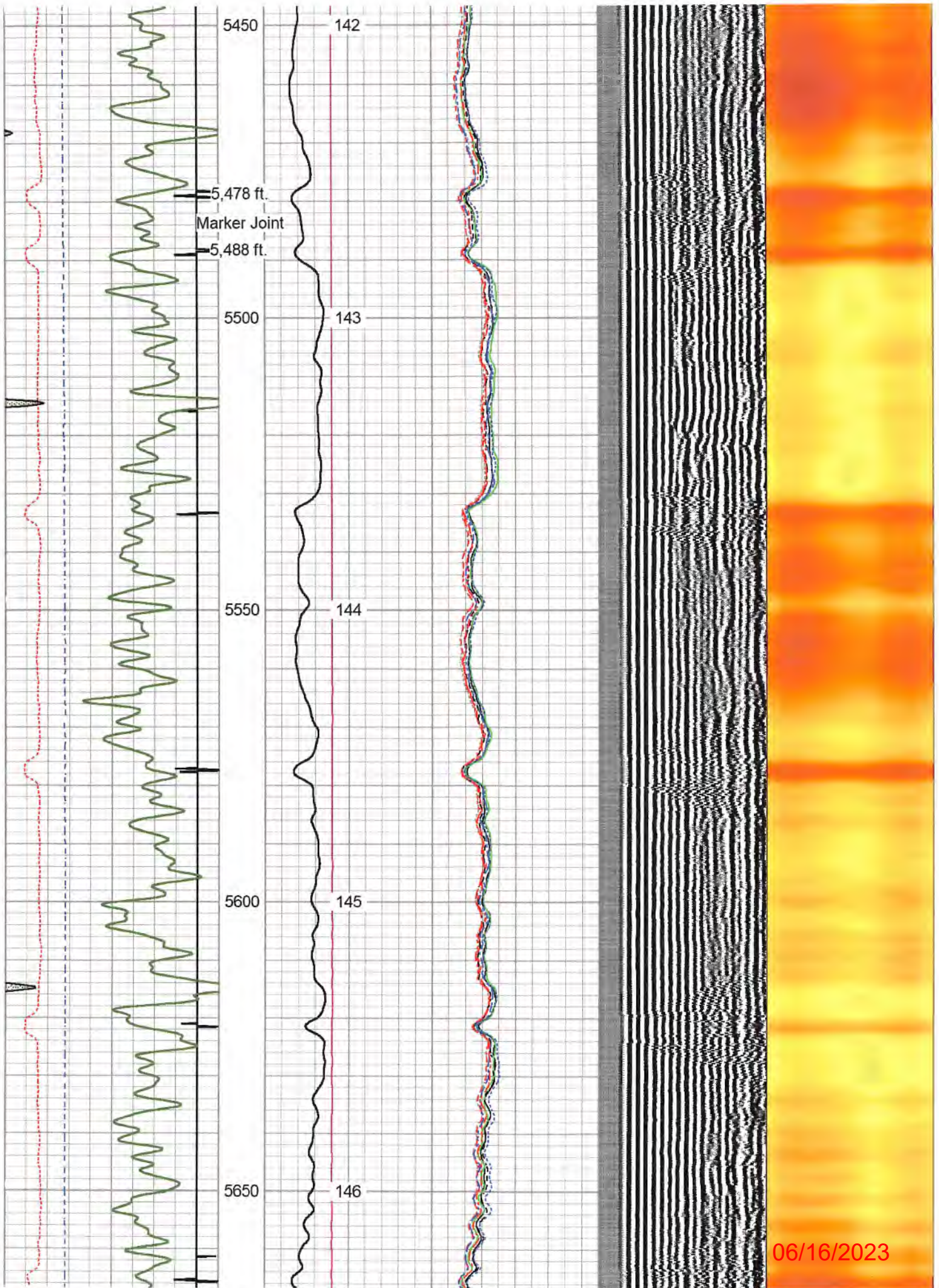


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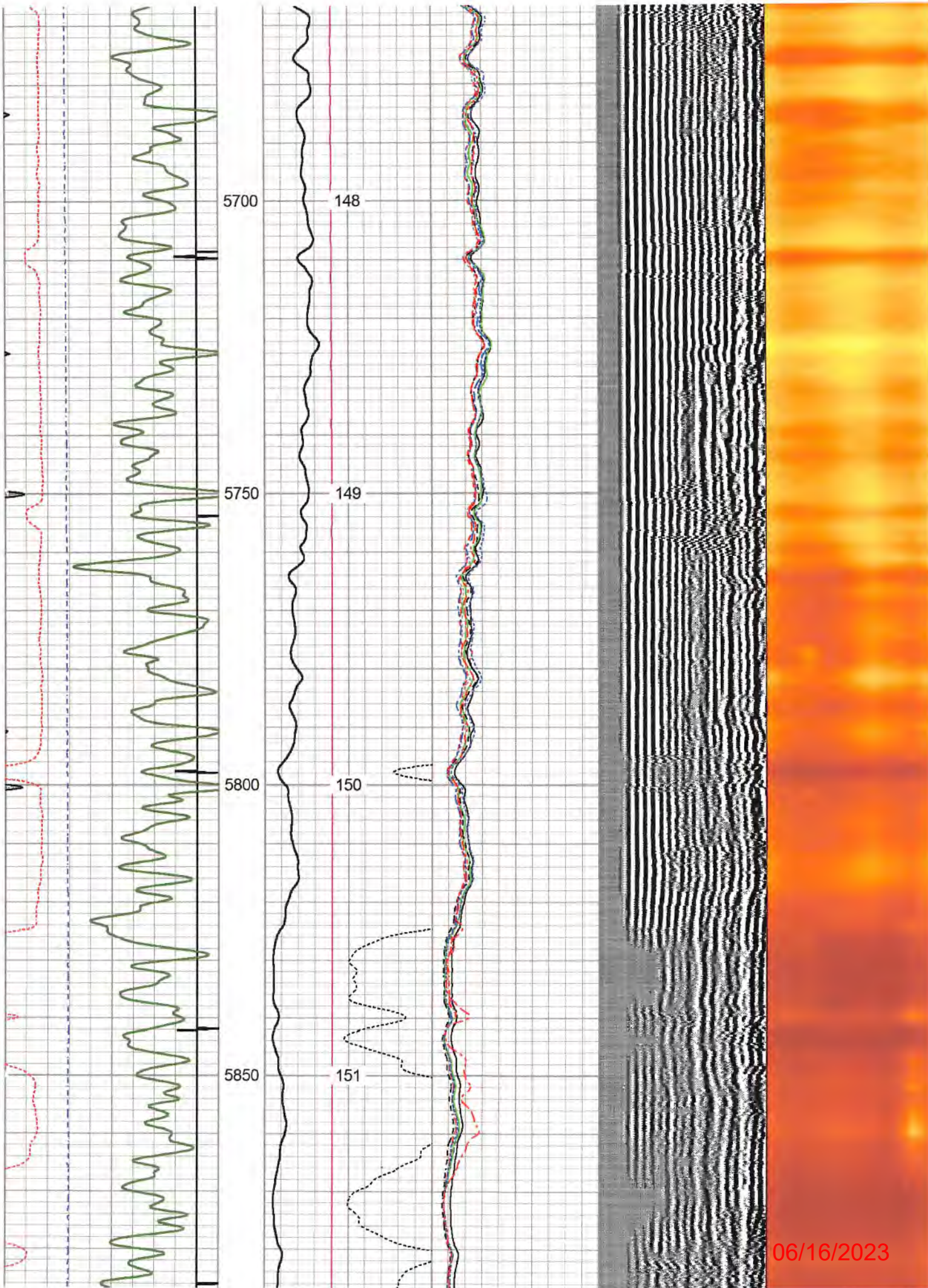


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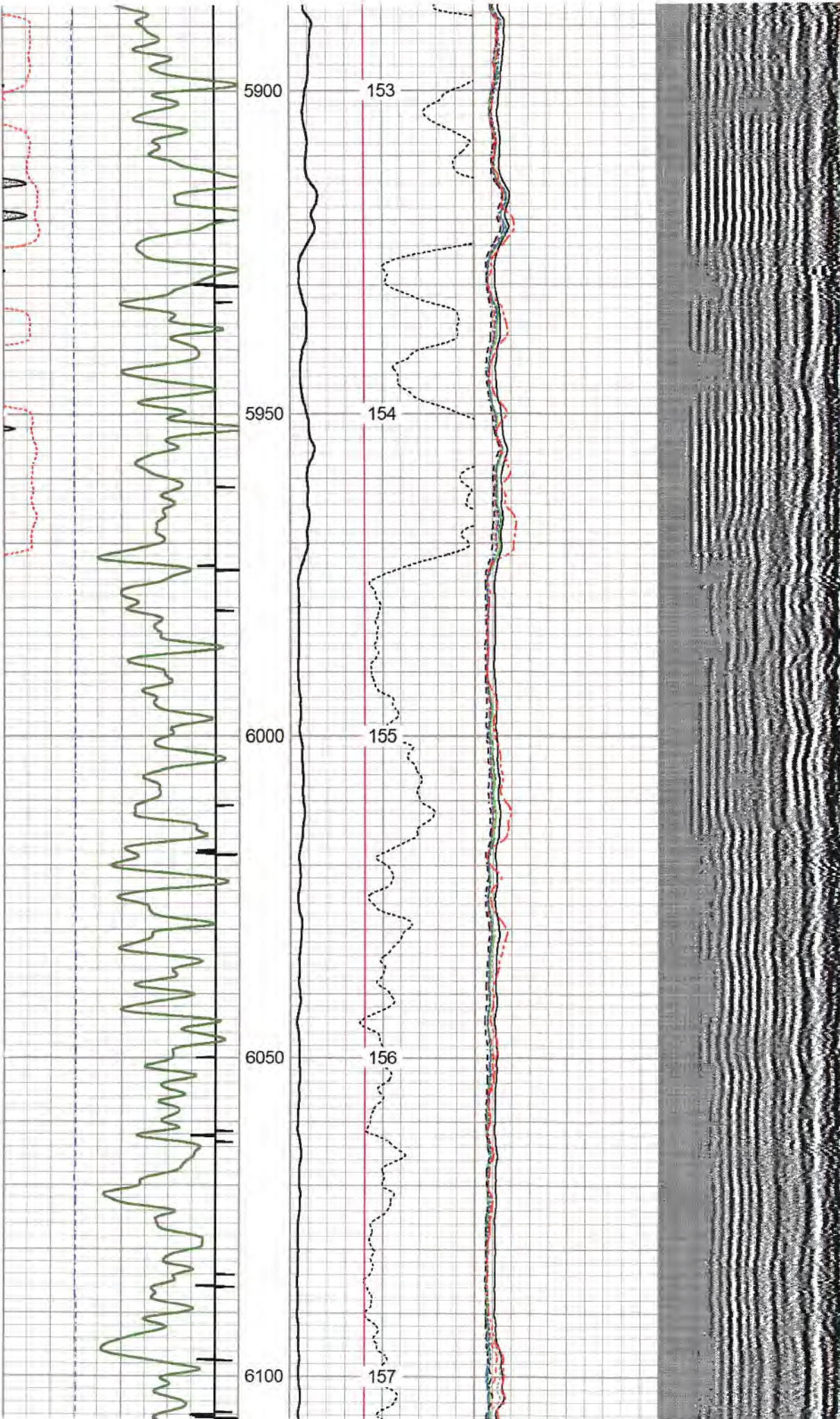




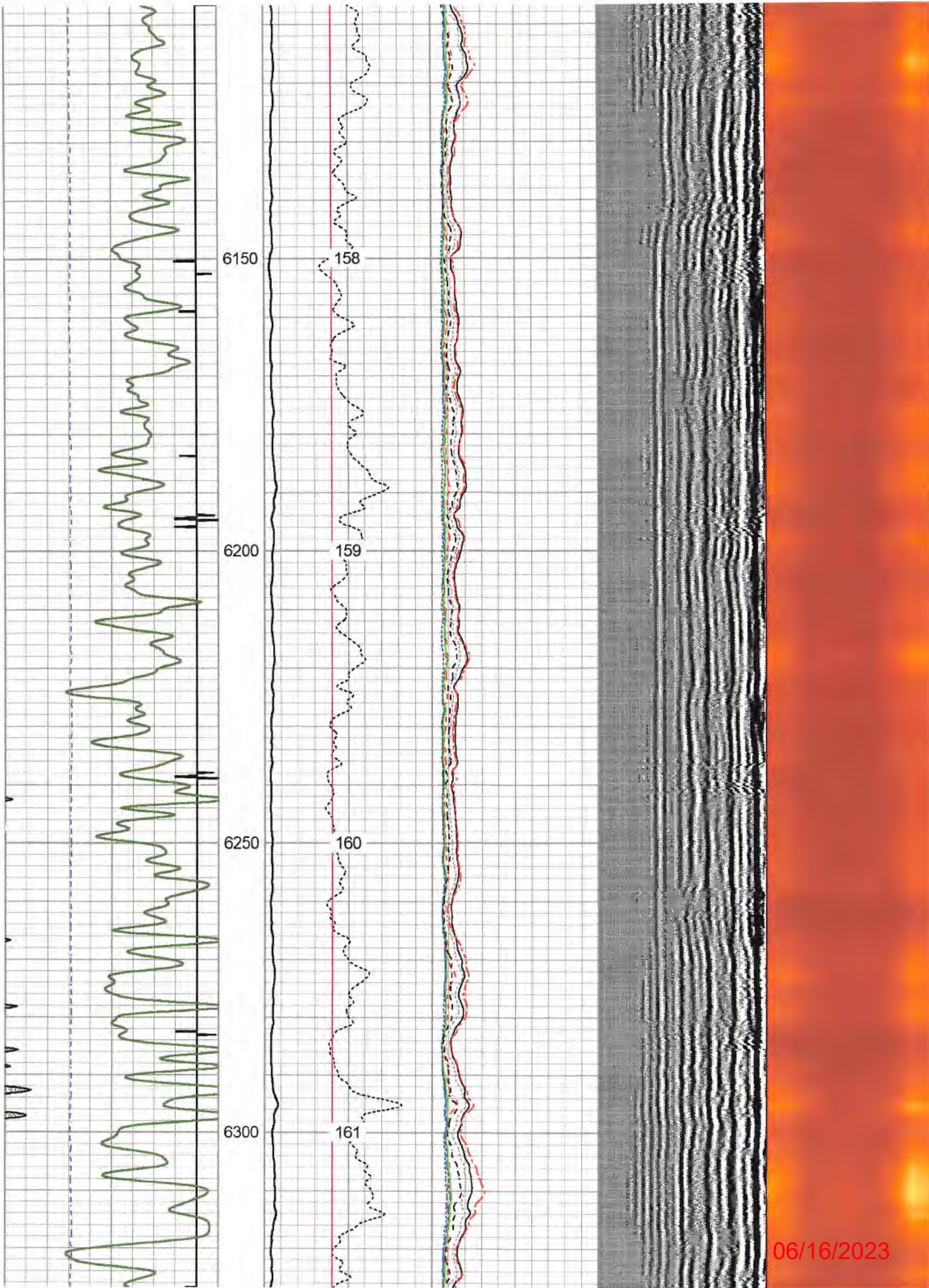
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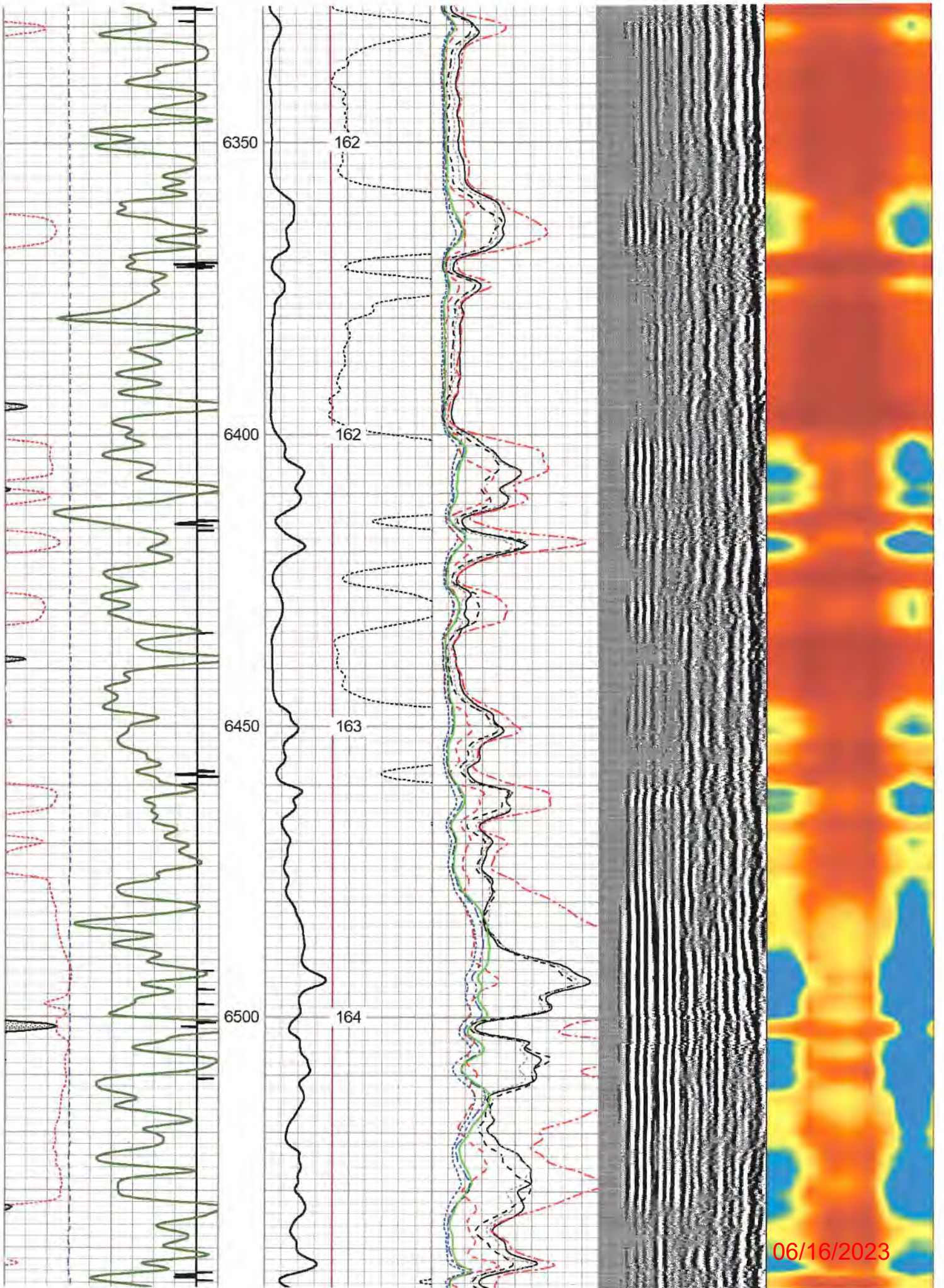
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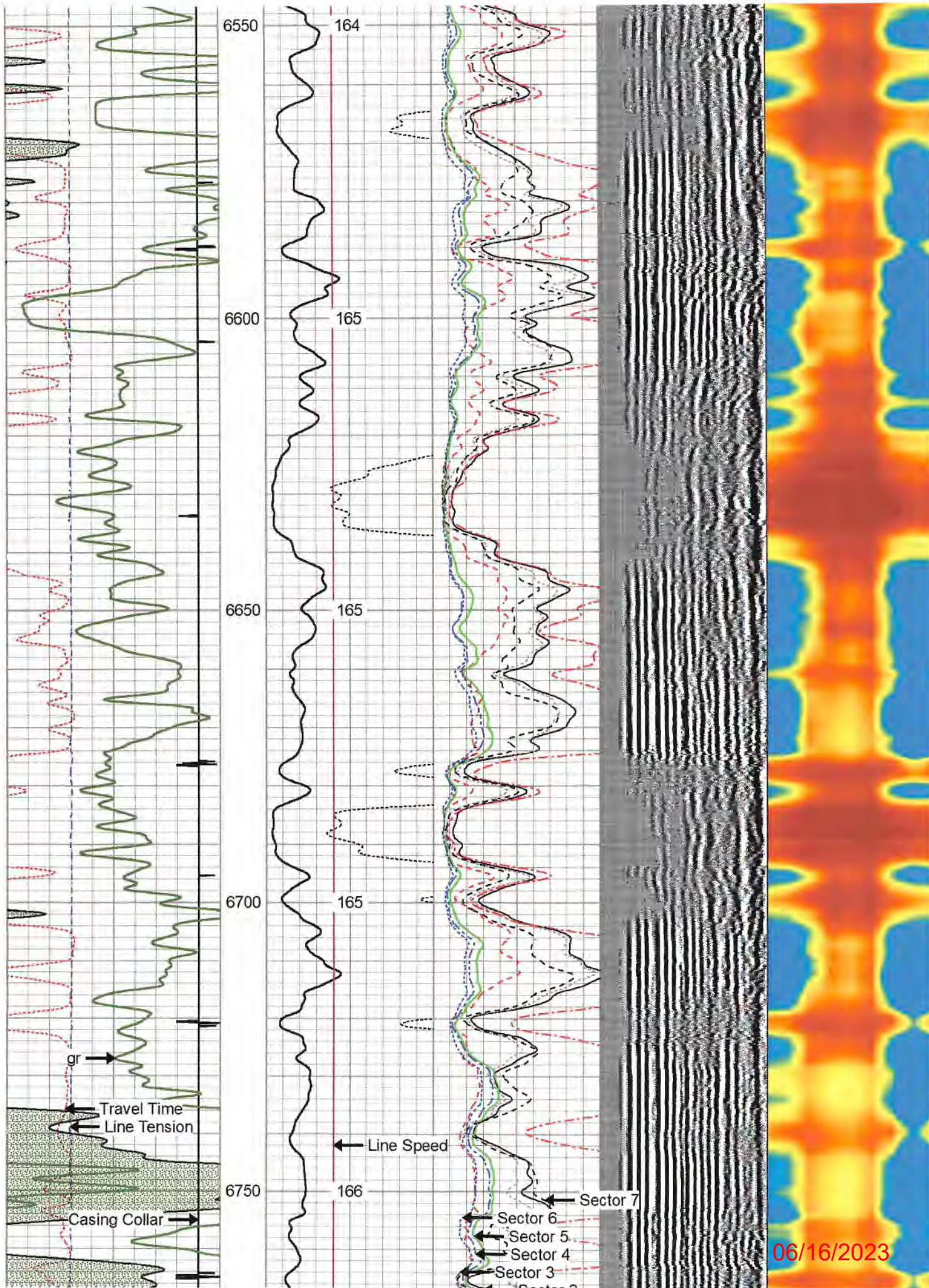


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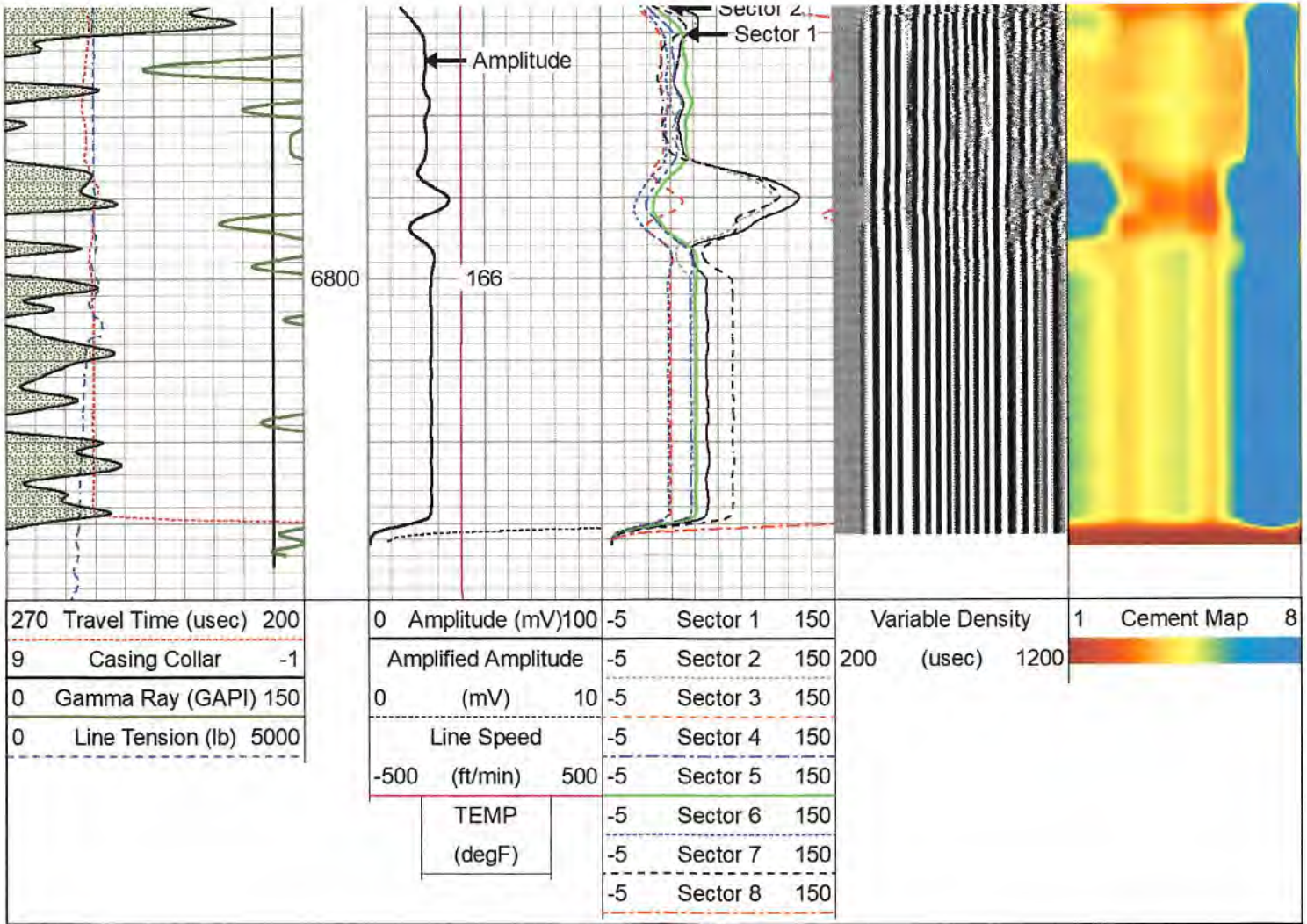


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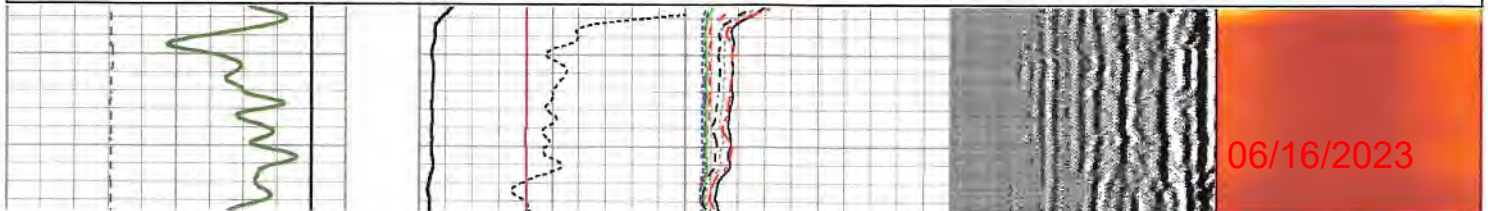
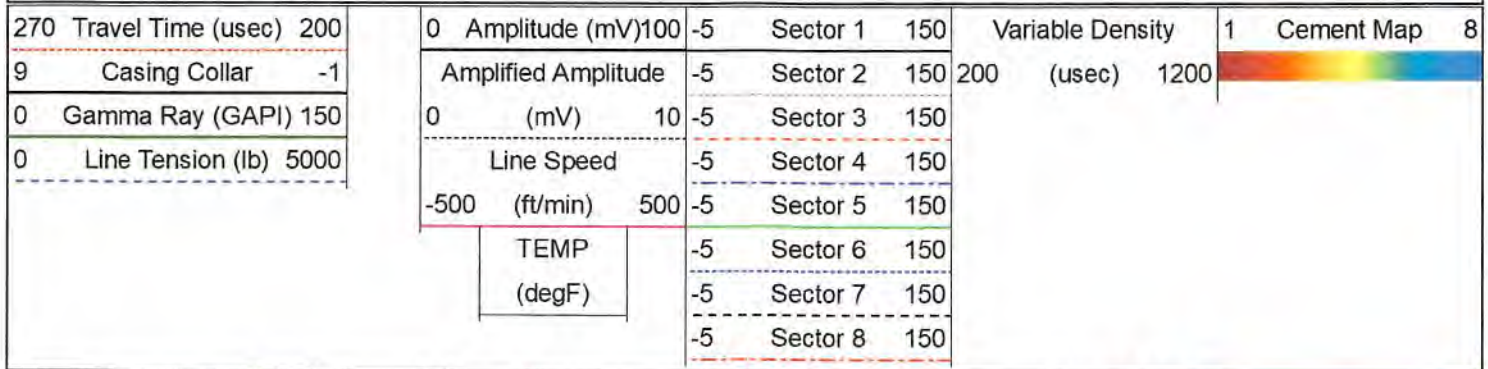


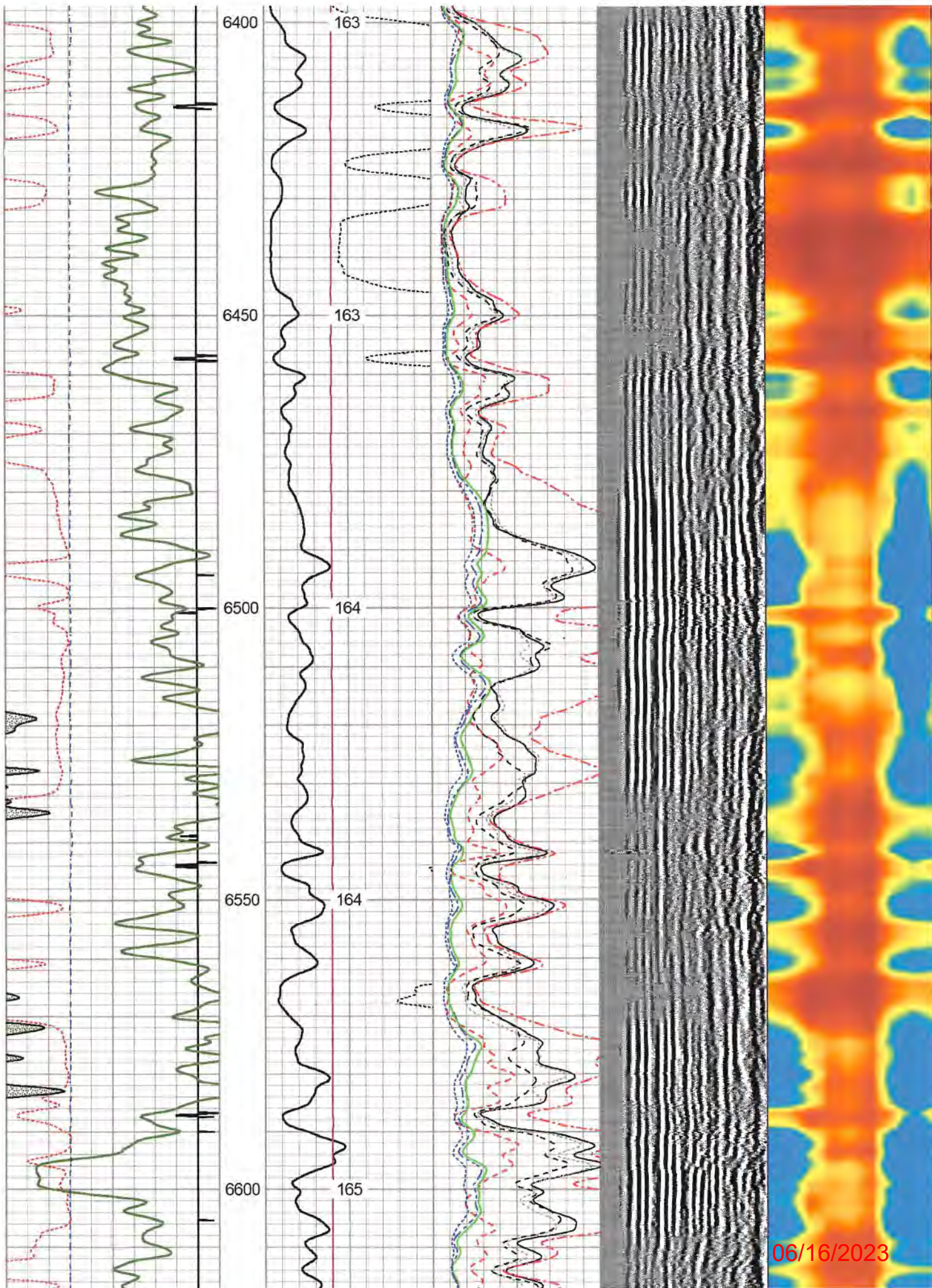
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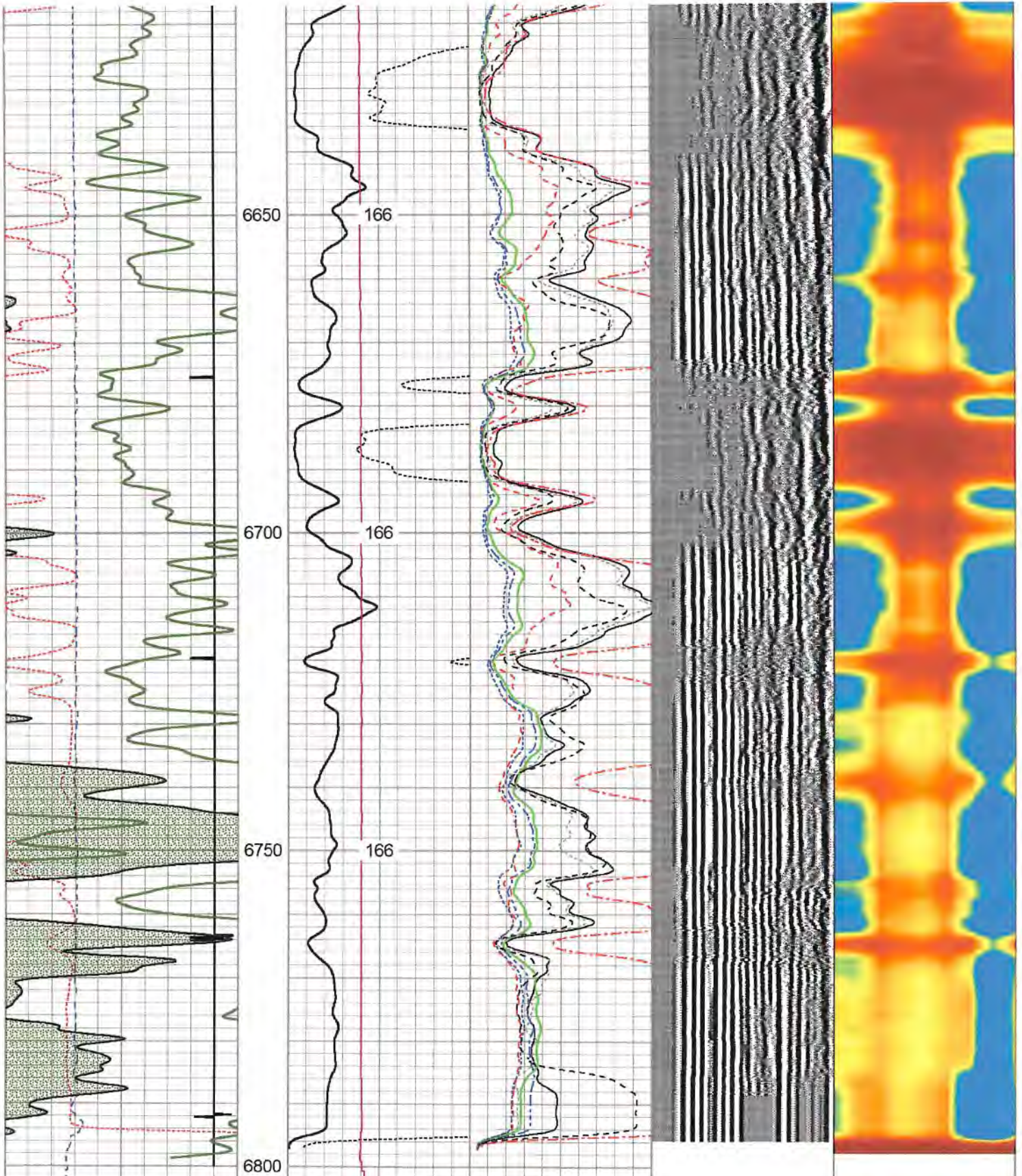



Repeat Pass 0 PSI

Database File antero_coloradowest_rookies_2h_rcbl_nineenergy_apr_30_2020.db
 Dataset Pathname Marcellus/Rockies_2H/RCBL_1/pass2
 Presentation Format 9rcbl
 Dataset Creation Thu Apr 30 16:10:51 2020
 Charted by Depth in Feet scaled 1:240







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
	(degF)		-5	Sector 7	150

Variable Density	1	Cement Map	8
200 (usec)			
1200			

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Log Variables

DatabaseC:\ProgramData\Warrrior\Data\antero_coloradowest_rookies_2h_rcbl_nineenergy_apr_30
 Dataset Marcellus/Rockies_2H/RCBL_1/pass4.3/_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	MINAMPL : Minimum Amplitude
BOREID : Borehole I.D.	MINATTN : Minimum Attenuation
BOTTEMP : Bottom Hole Temperature	PERFS : Perforation Flag
CASEOD : Casing O.D.	PPT : Predicted Pipe Time
CASETHCK : Casing Thickness	SRFTEMP : Surface Temperature
CASEWGHT : Casing Weight	TDEPTH : Total Depth
MAXAMPL : Maximum Amplitude	

Calibration Report

Database File antero_coloradowest_rookies_2h_rcbl_nineenergy_apr_30_2020.db
 Dataset Pathname Marcellus/Rockies_2H/RCBL_1/pass4.3
 Dataset Creation Thu Apr 30 17:24:15 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	110.212	0.834
CAL	0.994	0.997				
5'	0.015	0.861	2.200	71.921	112.418	0.960
SUM						
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

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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):

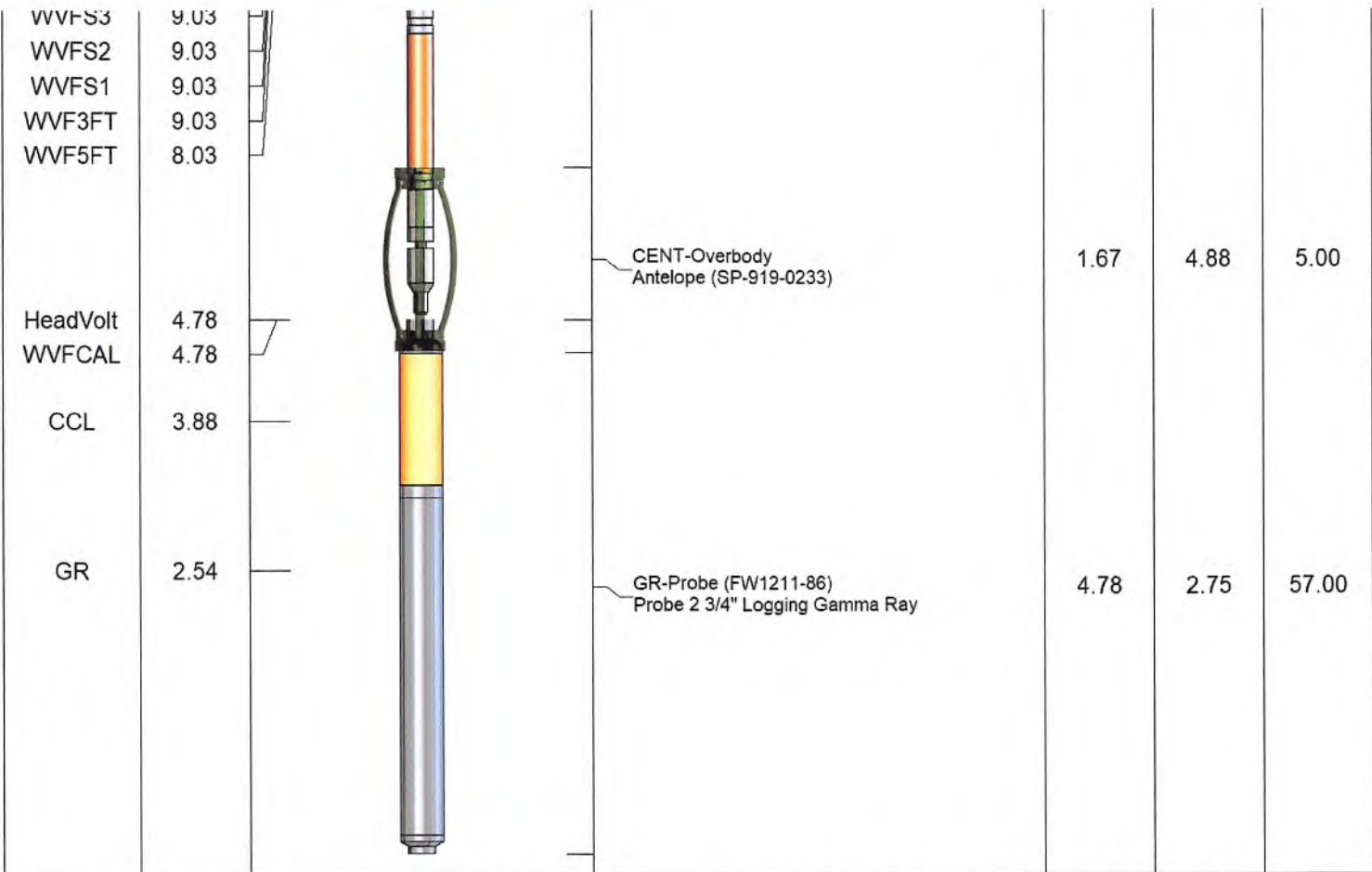
	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.994	0.997	1.000	0.000

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)
			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		RBT-Probe275T (FW1312-32) Probe 2.75" Radial with Integral Temperature Sub	9.39	2.75	90.00
WVFS8	9.03					
WVFS7	9.03					
WVFS6	9.03					
WVFS5	9.03					
WVFS4	9.03					

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Dataset: antero_coloradowest_rockies_2h_rcbl_nineenergy_apr_30_2020.db: Marcellus/Rockies_2H/RCBL_1/pass4.3
 Total length: 15.17 ft
 Total weight: 162.00 lb
 O.D.: 4.88 in

	Company	Antero Resources
	Well	Rockies 2H
	Field	North Canton
	County	Tyler
	State	West Virginia