



**RADIAL CEMENT BOND LOG
VARIABLE DENSITY LOG
GAMMA/CCL/TEMP**

Company ANTERO RESOURCES
Well TOROWEAP 2H
Field MARCELLUS
County TYLER
State WV

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Well TOROWEAP 2H
Field MARCELLUS
County TYLER State WV

Location: AFE - A11682
API #: 47-095-027660000

Permanent Datum GROUND LEVEL Elevation 25.5"
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING
SEC TWP RGE
Elevation
K.B. 1268.5
D.F. 1268.5
G.L. 1243

Date MAY 23, 2022

Run Number	1				
Depth Driller	18,809				
Depth Logger	7287				
Bottom Logged Interval	7287				
Top Log Interval	SURFACE				
Open Hole Size	NA				
Type Fluid	FRESH WATER				
Density / Viscosity	8.6 LB/GAL				
Max. Recorded Temp.	144.3				
Estimated Cement Top	5890				
Time Well Ready	UPON ARRIVAL				
Time Logger on Bottom	4:30 PM				
Equipment Number	116				
Location	CHARLEROI, PA				
Recorded By	CALVIN DRUMMOND				
Witnessed By	MIKE SZABO				
Borehole Record		Tubing Record			
Run Number	Bit	From	To	Size	Weight
					From
					To
Casing Record	Size	Wgt/Ft	Top	Bottom	
Surface String	NAA	NA	NA	NA	
Prot. String	NA	NA	NA	NA	
Production String	5.5	20#	SURFACE	18,809	
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.

RECEIVED
Office of Oil and Gas

APR 07 2023

WV Department of
Environmental Protection

Comments

LOG CORRELATED TO MARKER JOINT
DEPTH SHIFT +92.5
MARKER JOINT 5917.5 - 5928.5
MAIN PASS 1500 PSI
THANK YOU FOR USING NINE ENERGY SERVICES



Main Pass 1500 PSI

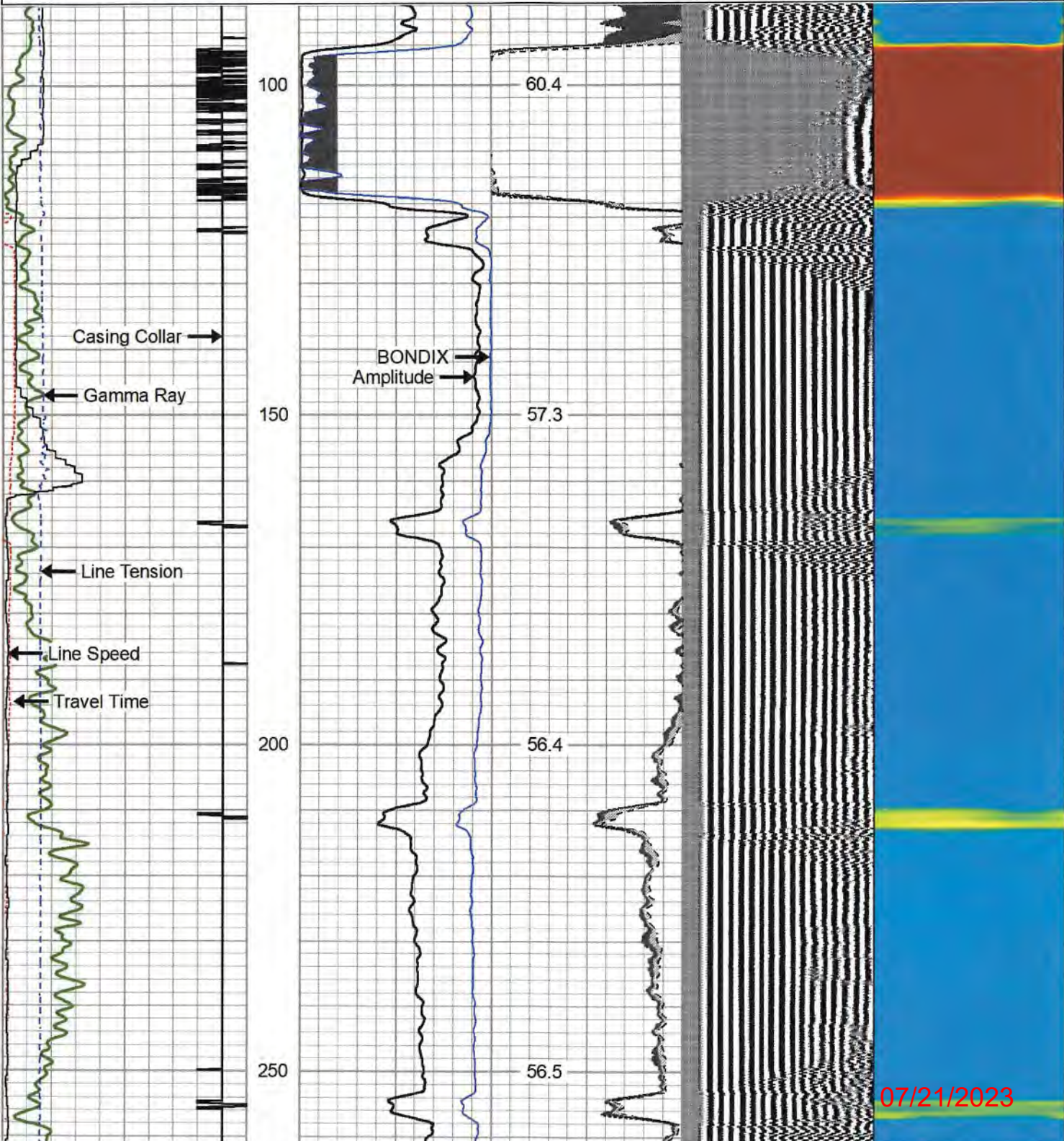
07/21/2023

Database File antero_grand_pad_toroweap2h_rcbl_23_may_22.db
 Dataset Pathname pass4.1
 Presentation Format rcbl-bond index 1020
 Dataset Creation Tue May 24 10:16:18 2022
 Charted by Depth in Feet scaled 1:240

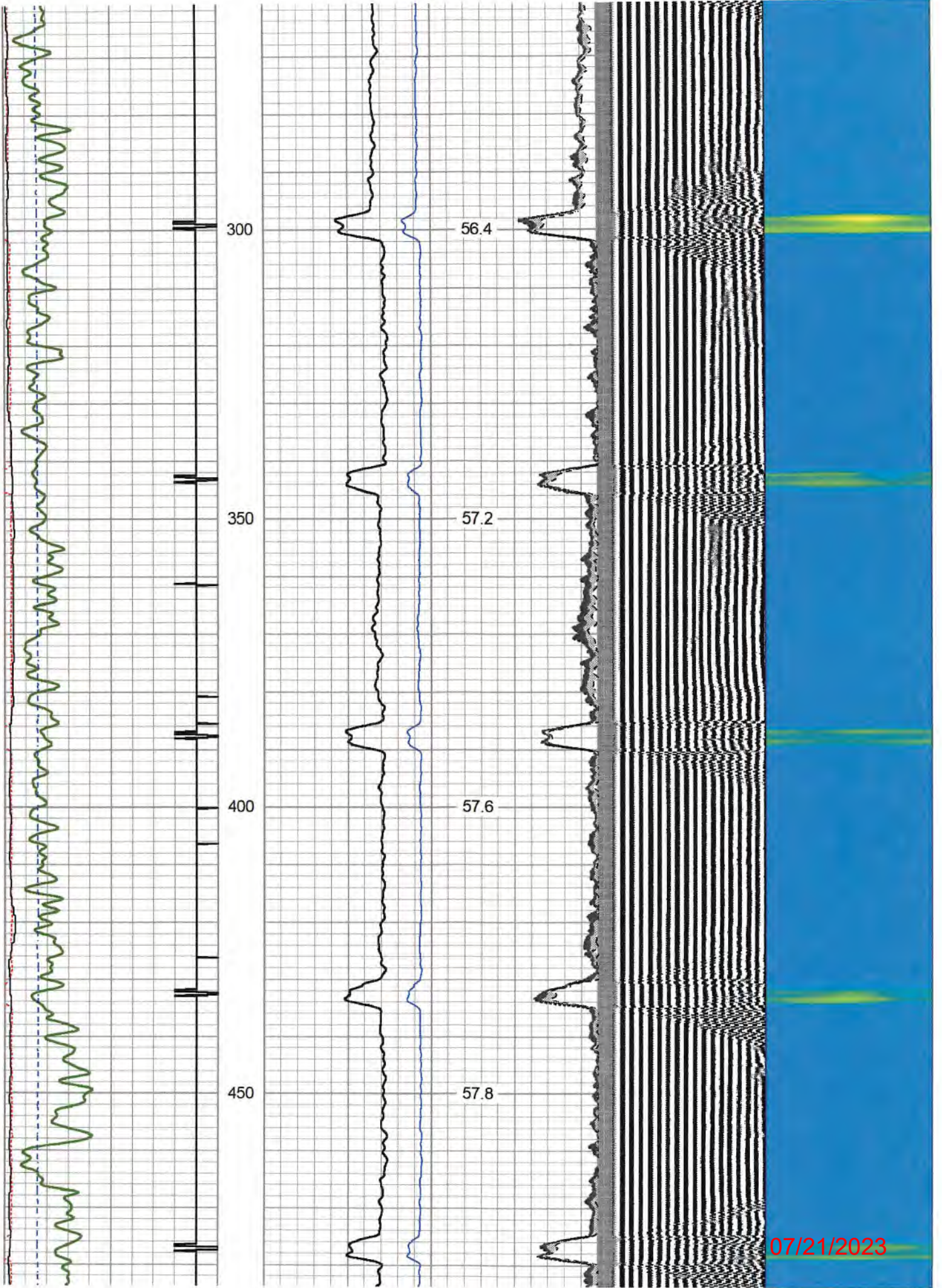
265	Travel Time (usec)	165
9	Casing Collar	-1
0	Gamma Ray (GAPI)	150
Line Speed		
-100	(ft/min)	100
0	Line Tension (lb)	2000

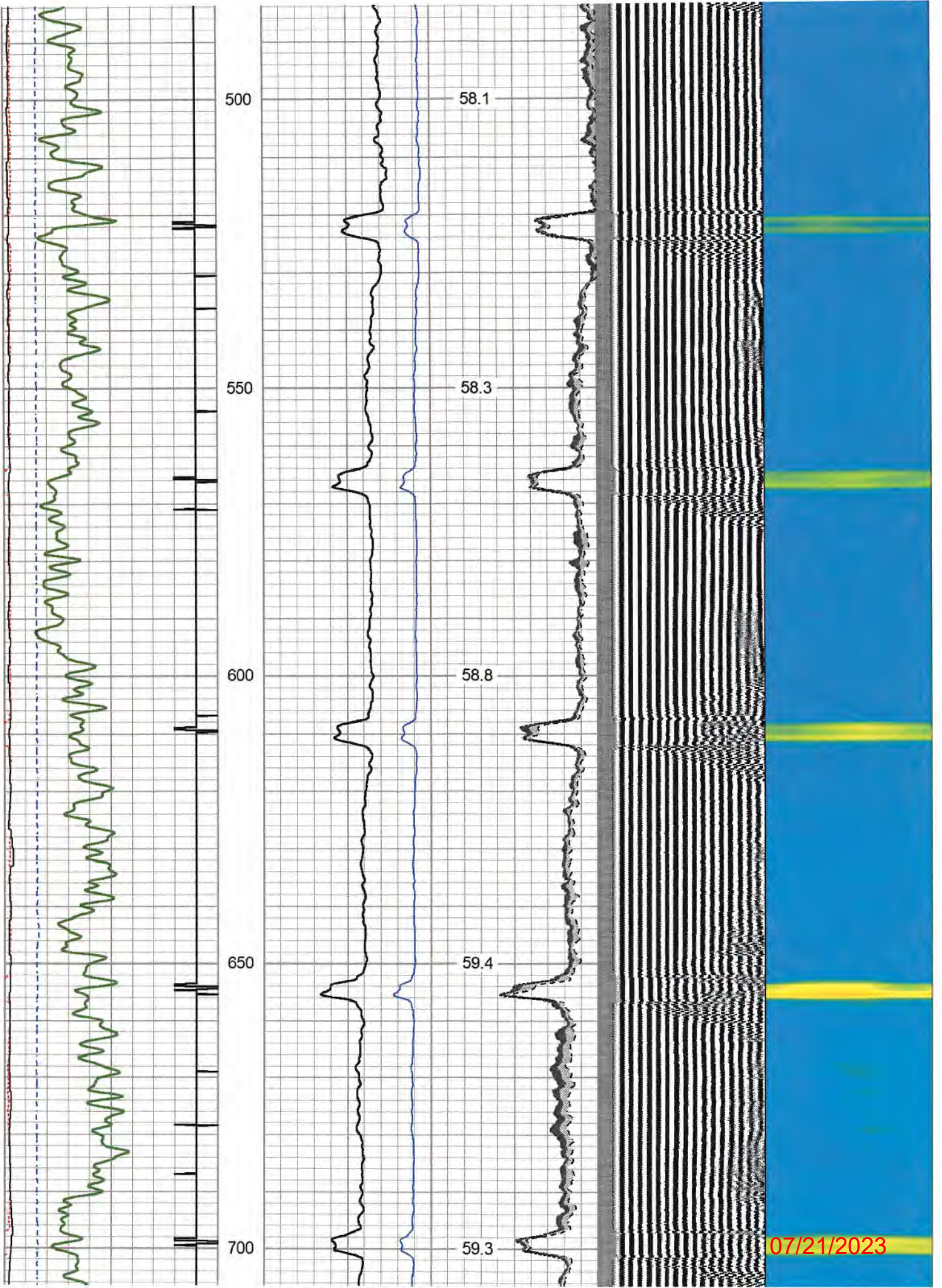
0	Amplitude (mV)	100	0	AMPMIN	100
1	BONDIX	0	0	AMPMAX	100
			0	AMPAVG	100
TEMP			(degF)		

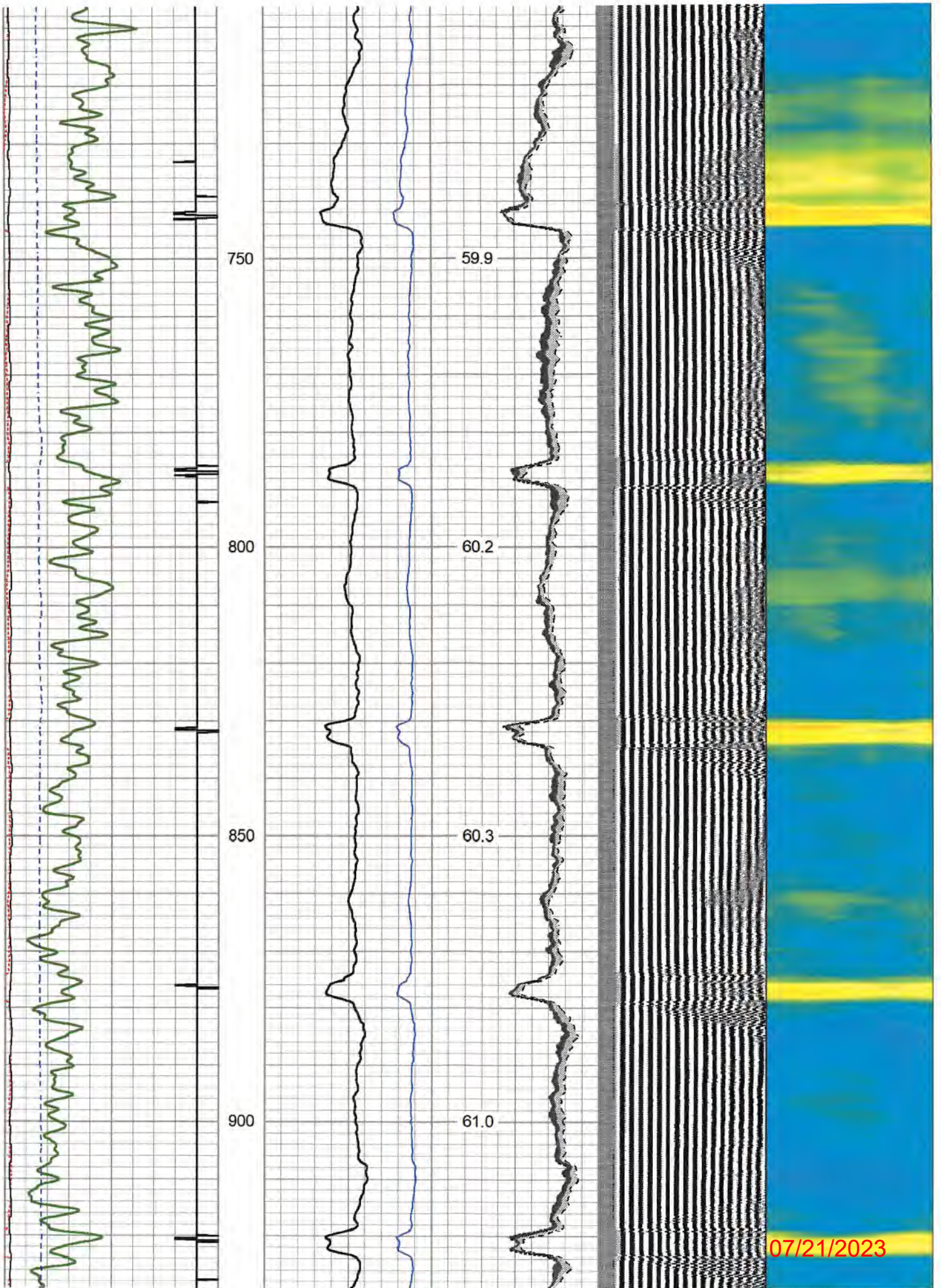
Variable Density	1	Cement Map	8
(usec)	300		1200

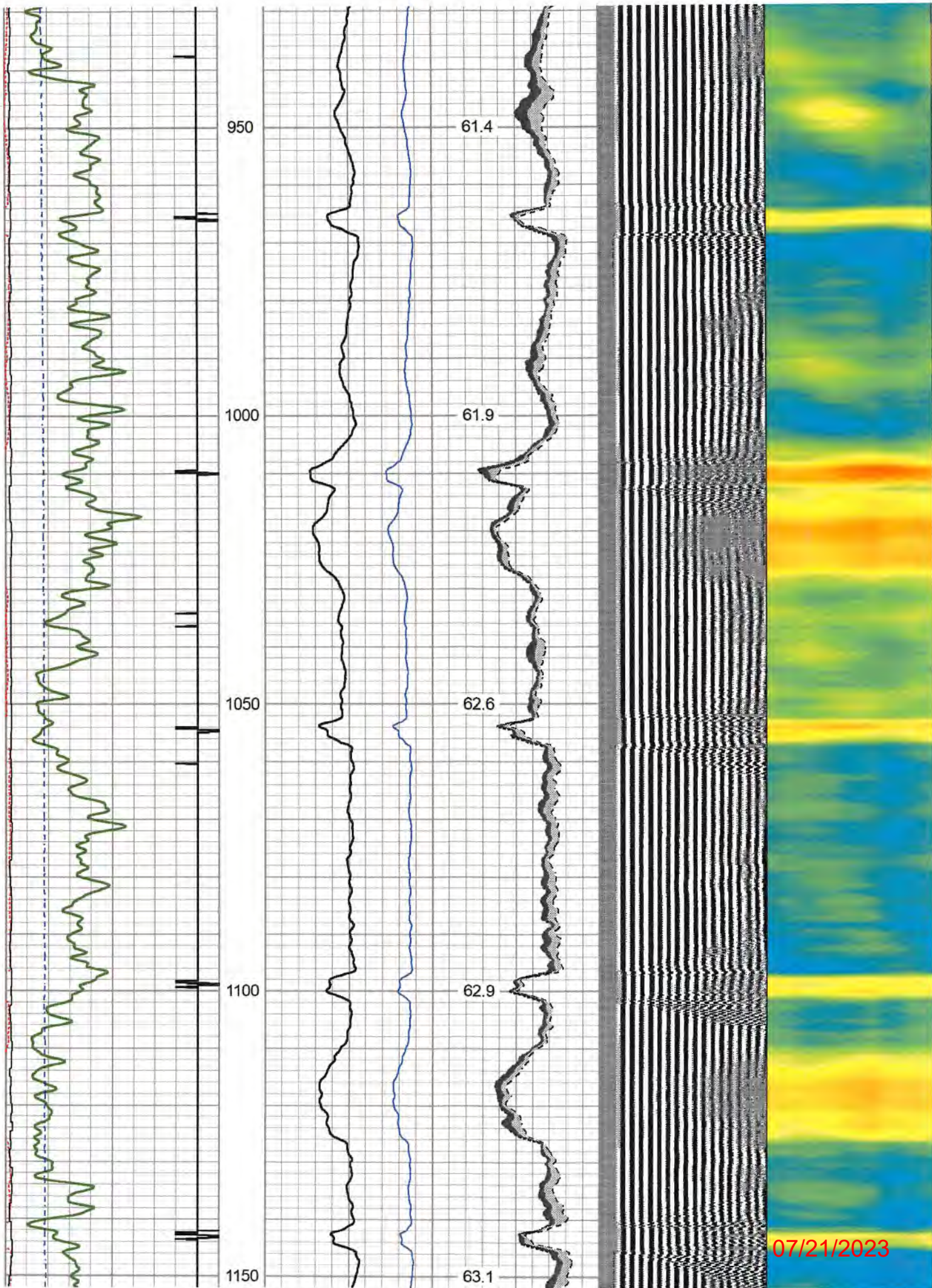


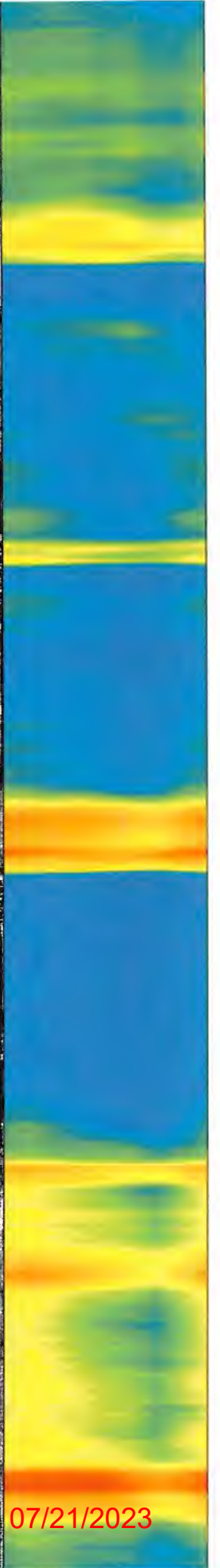
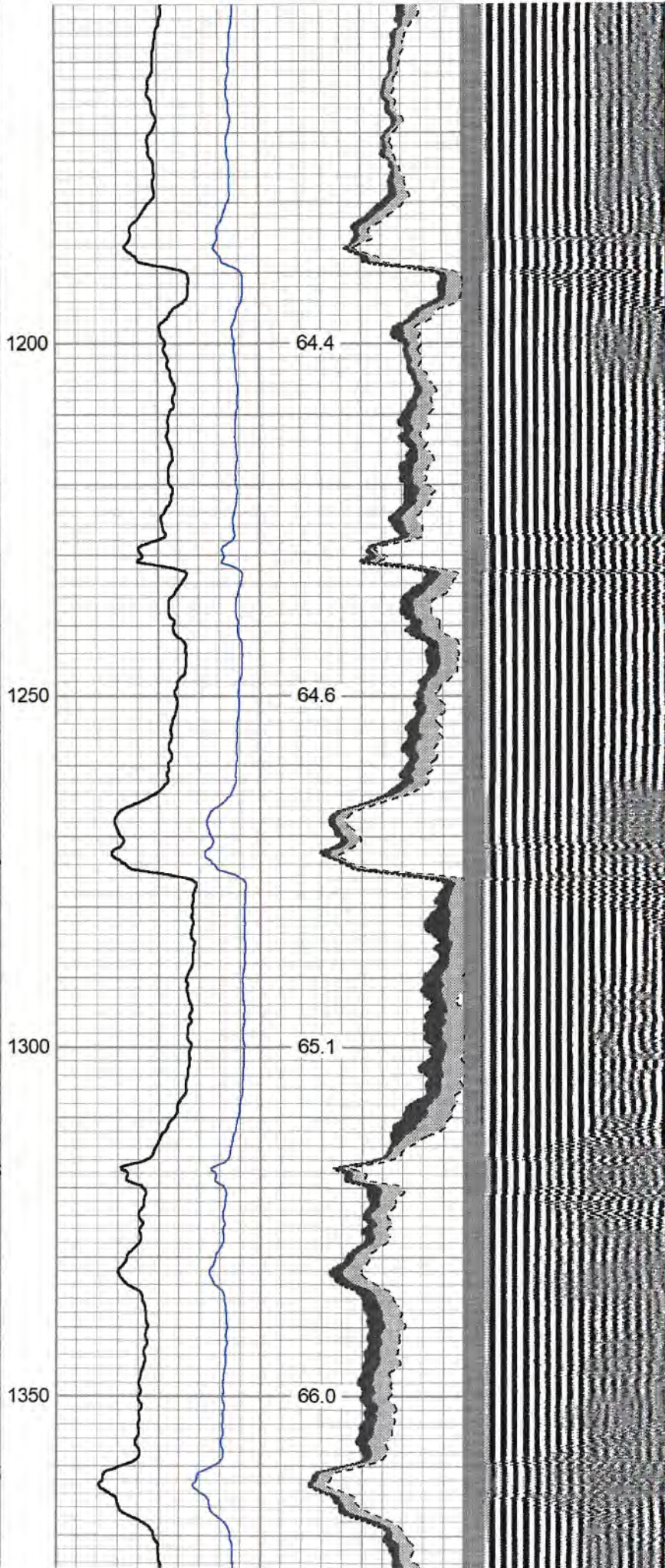
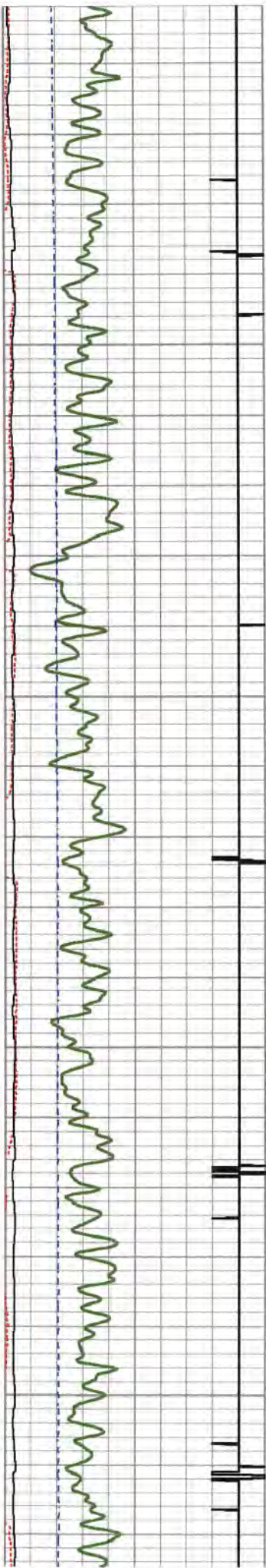
07/21/2023



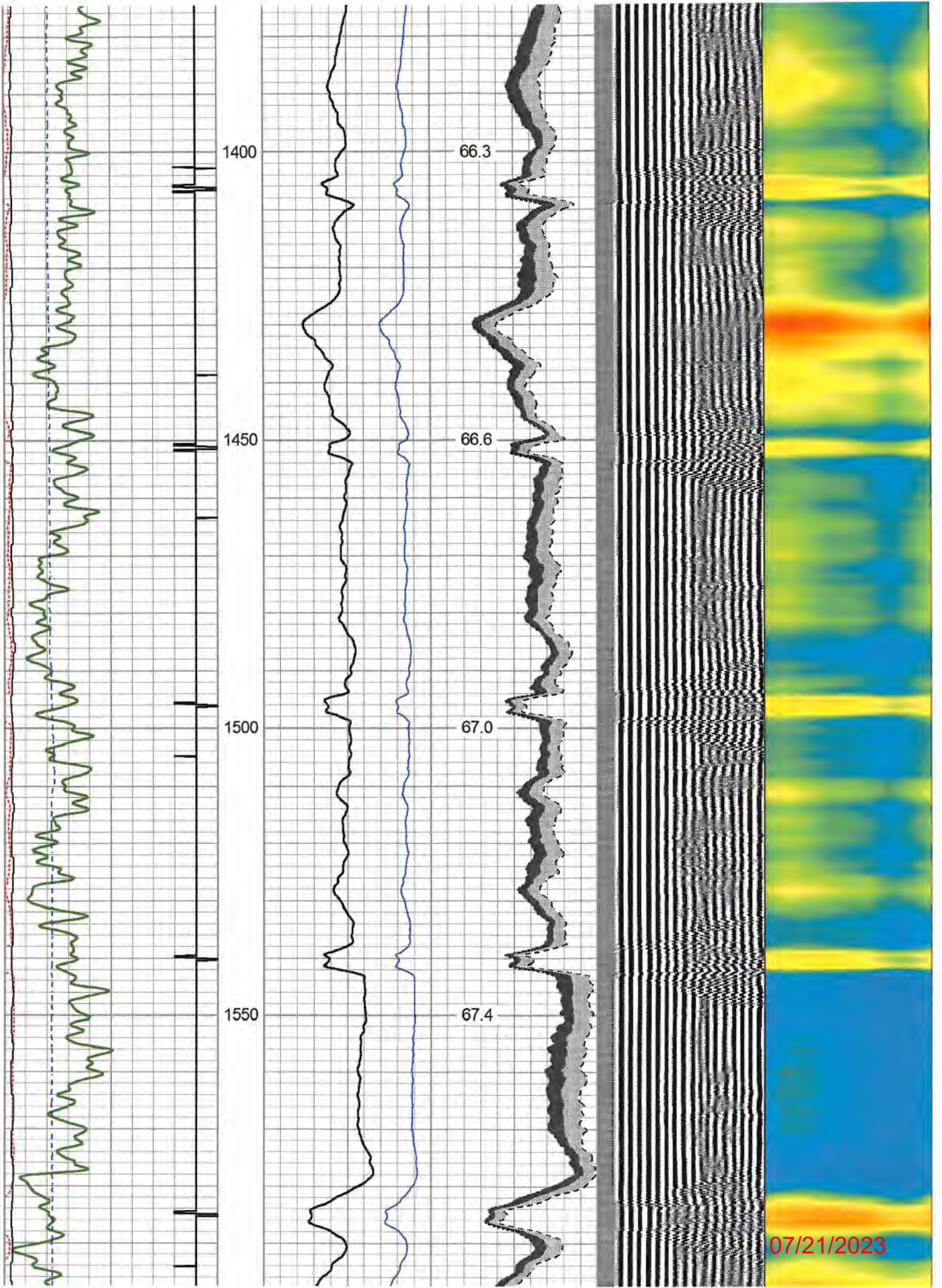


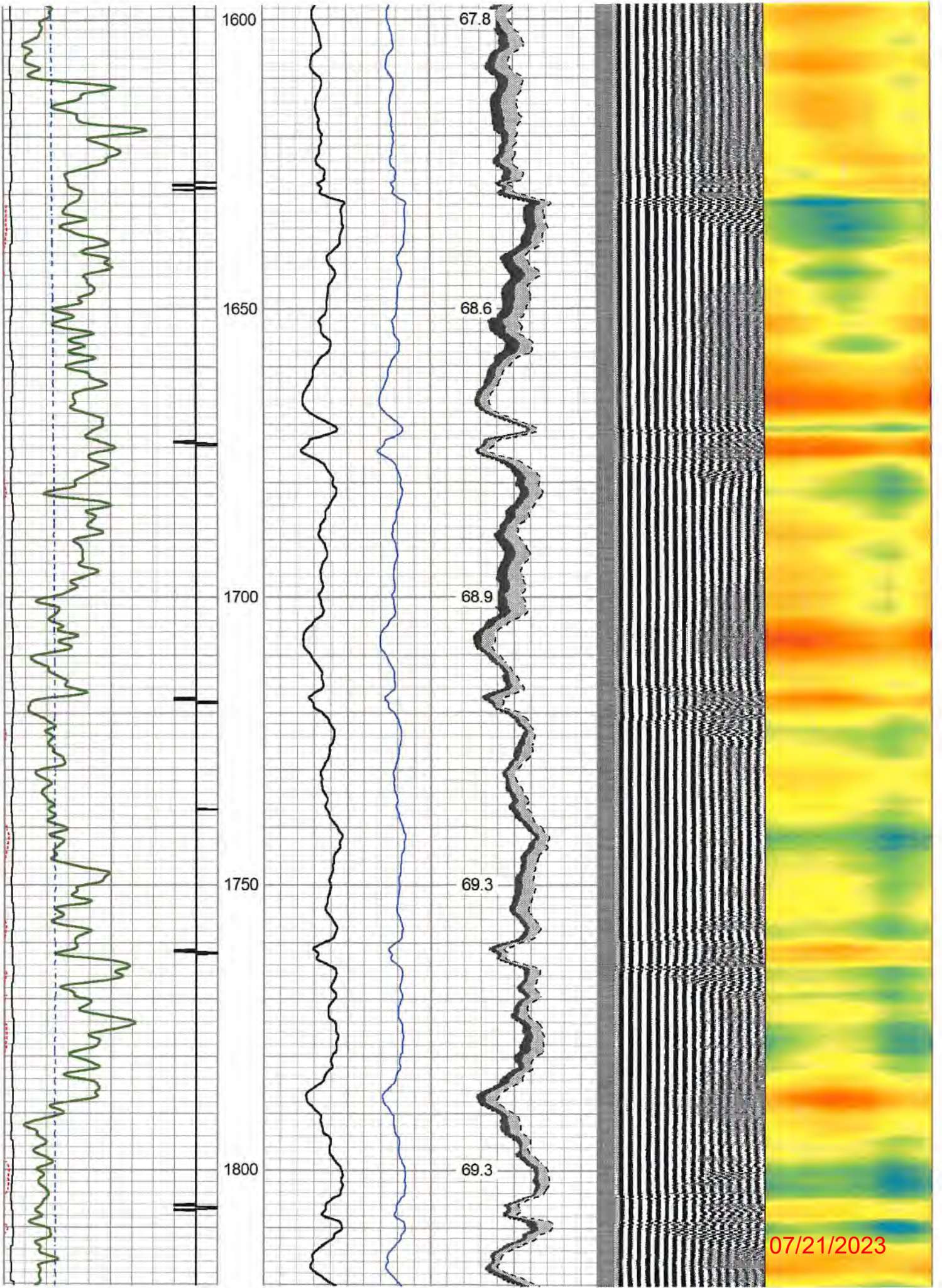


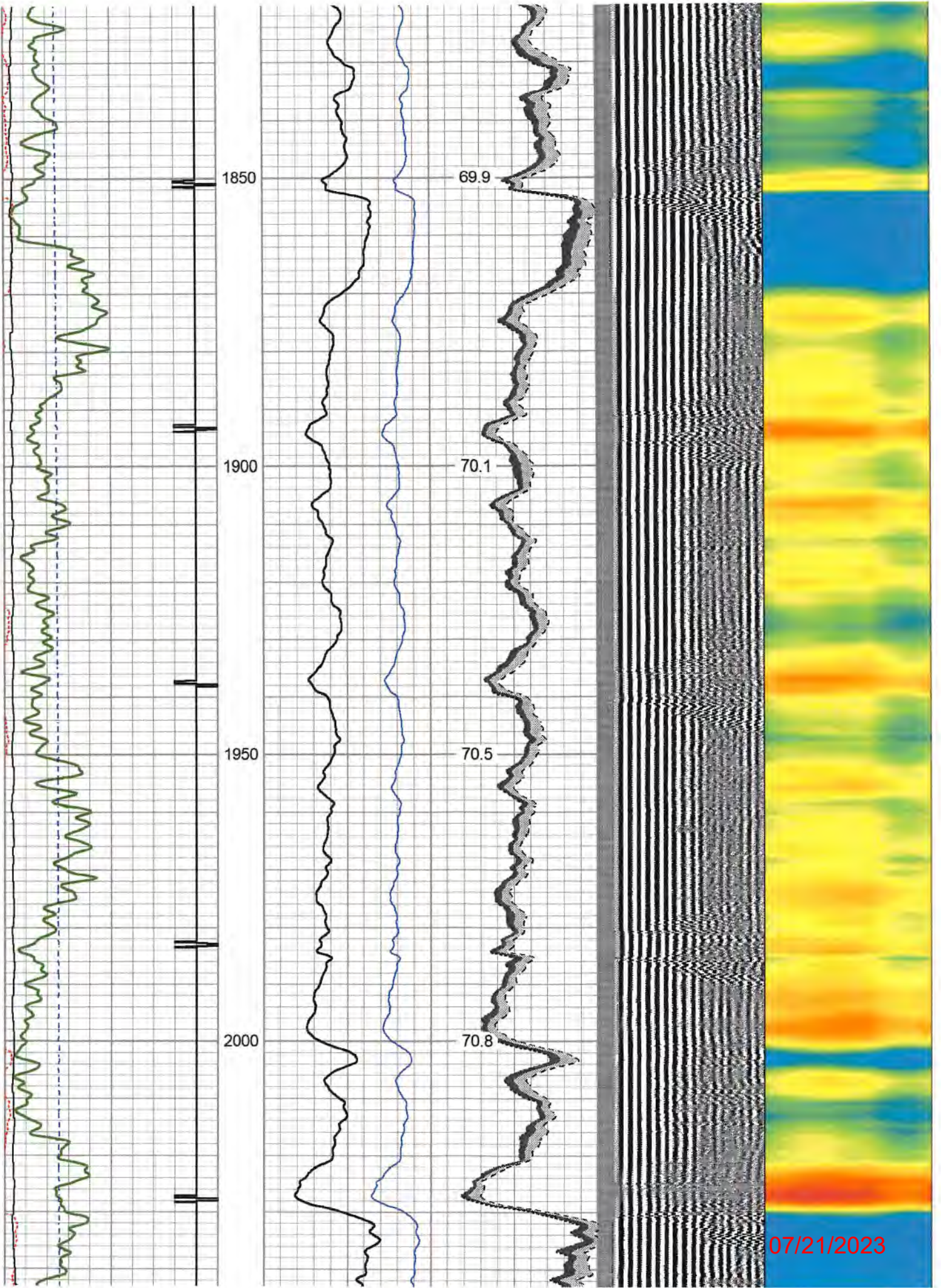


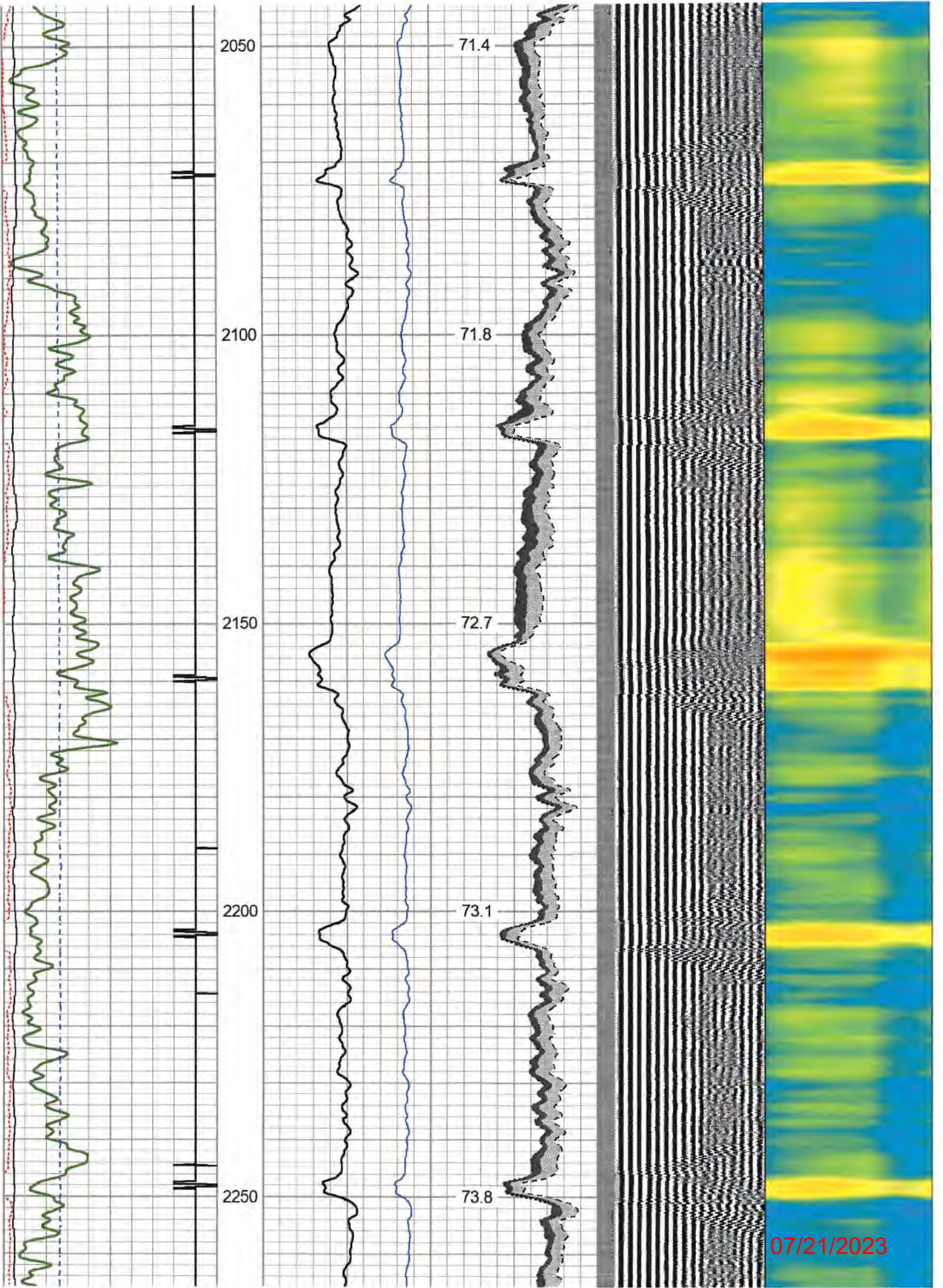


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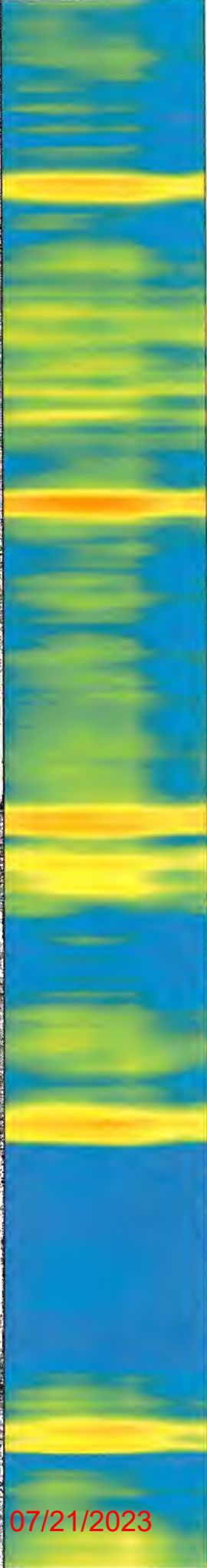
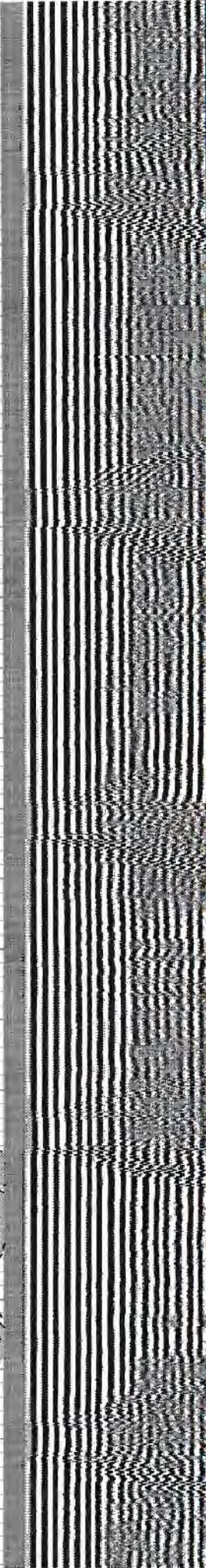
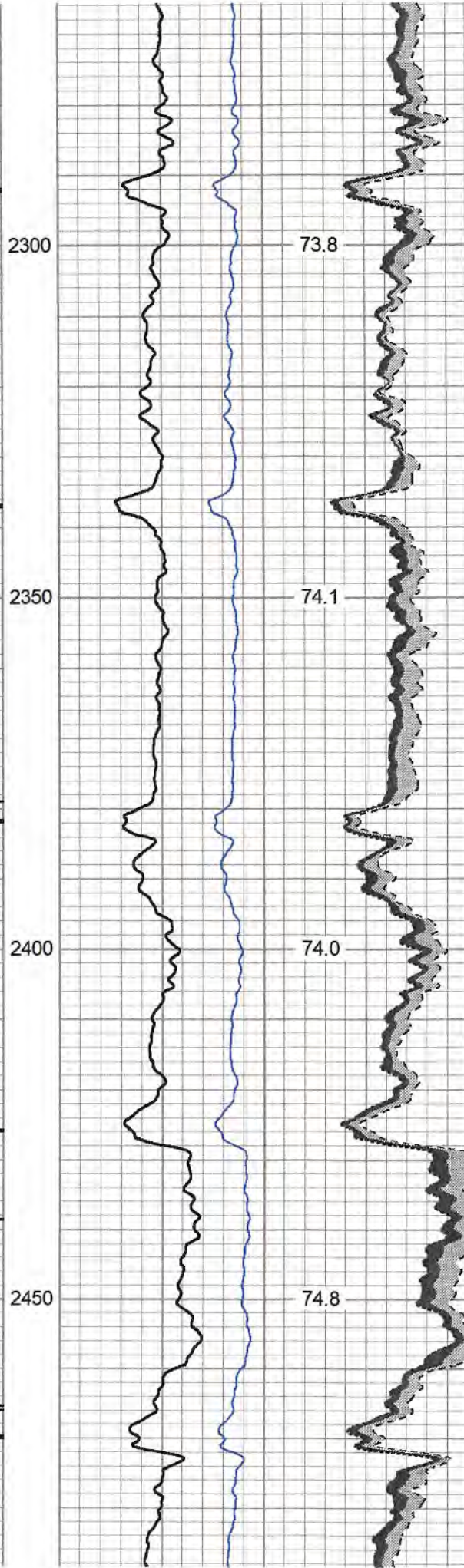
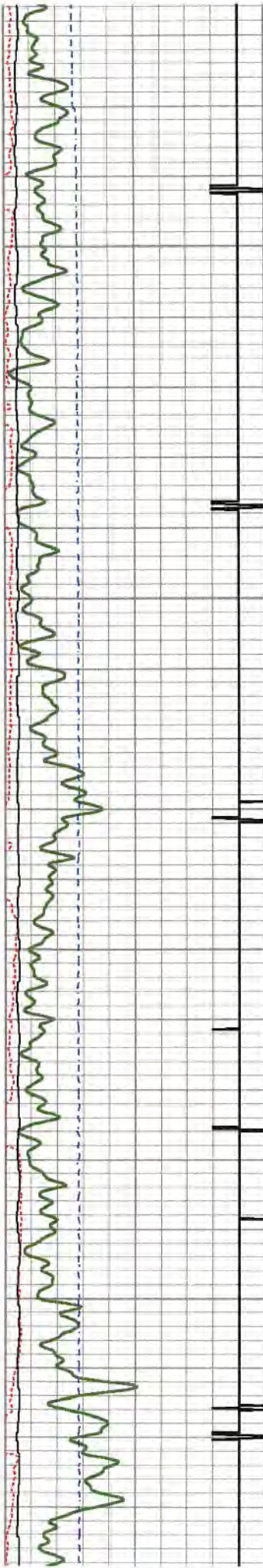




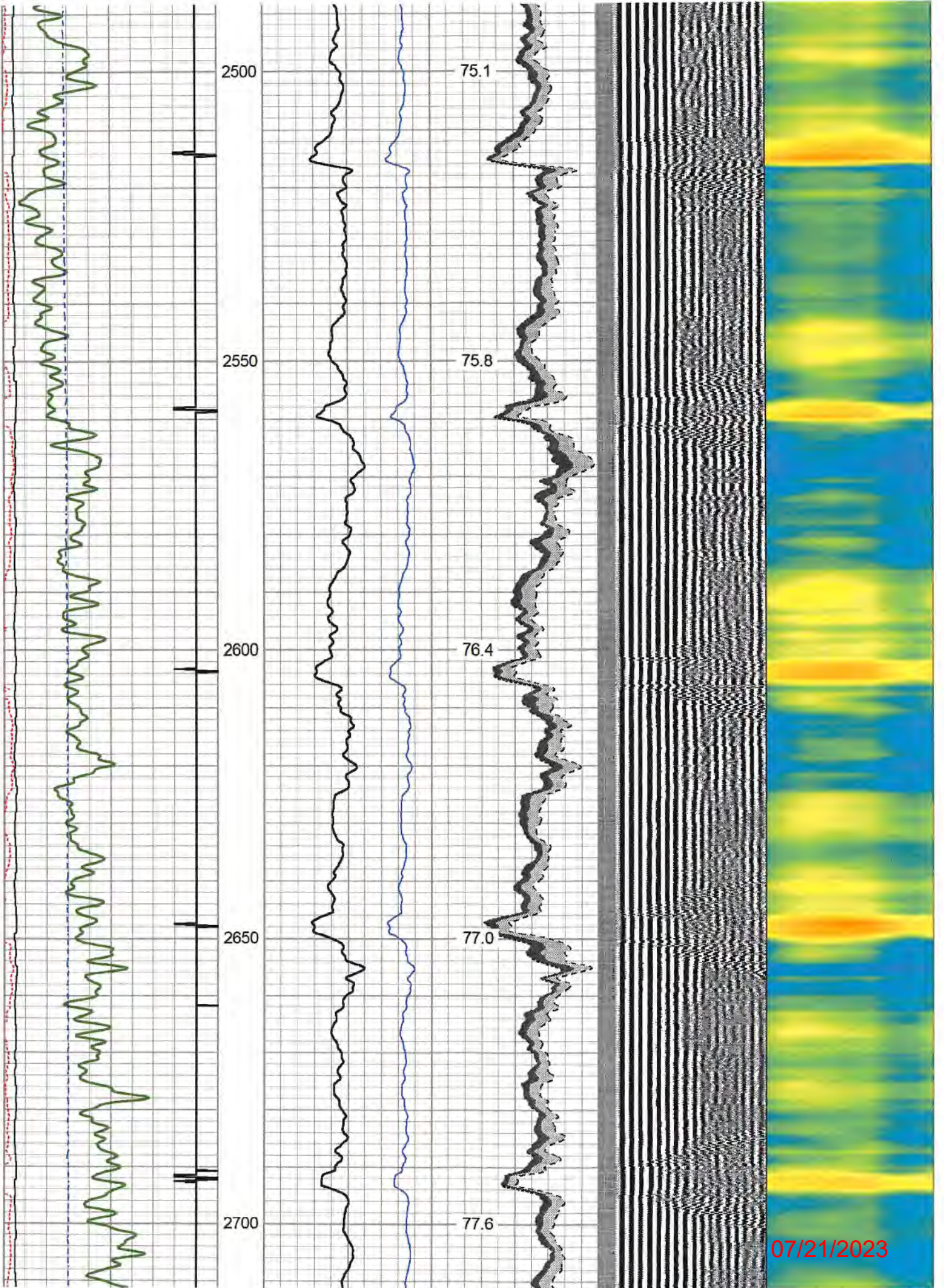




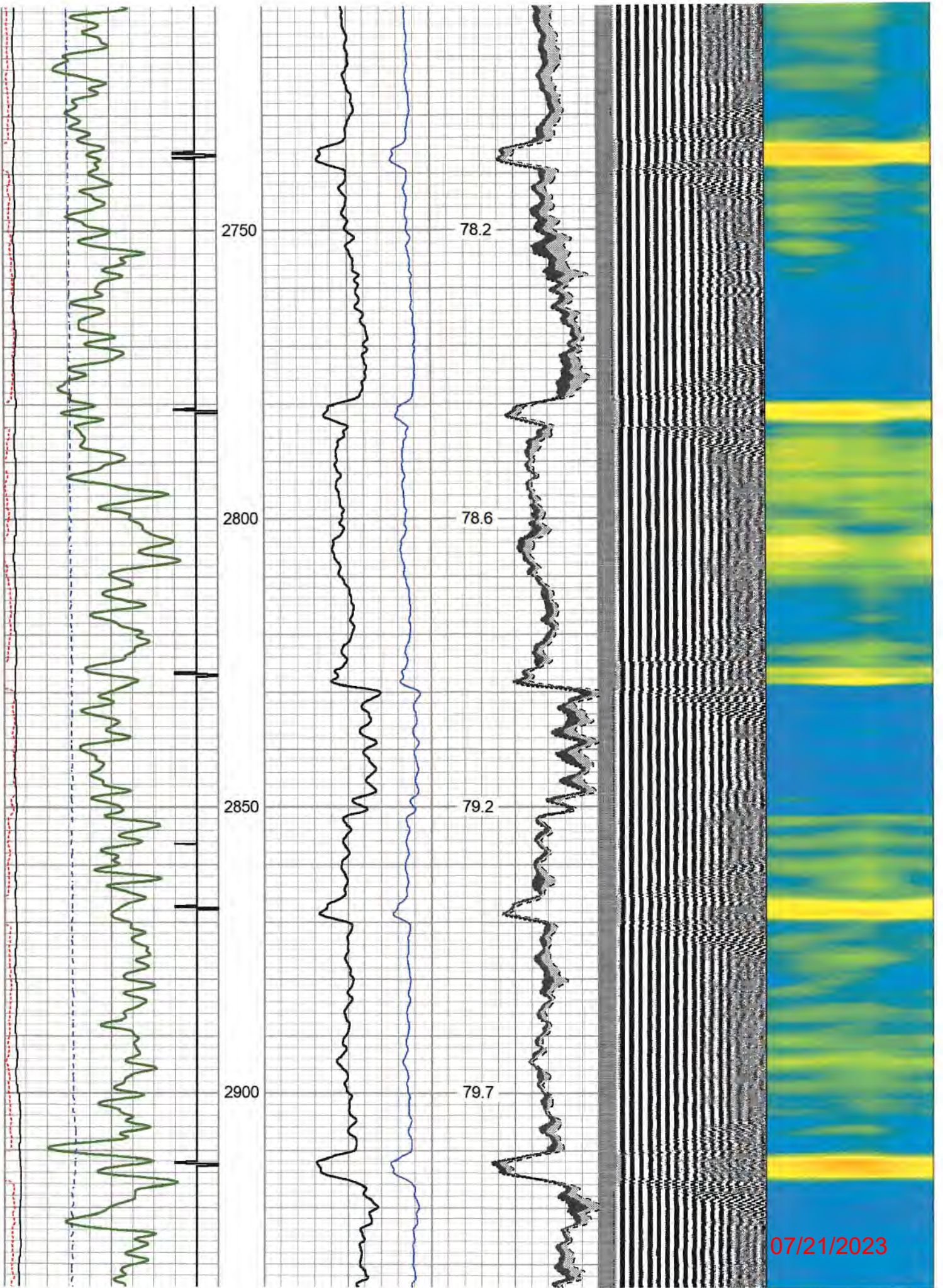
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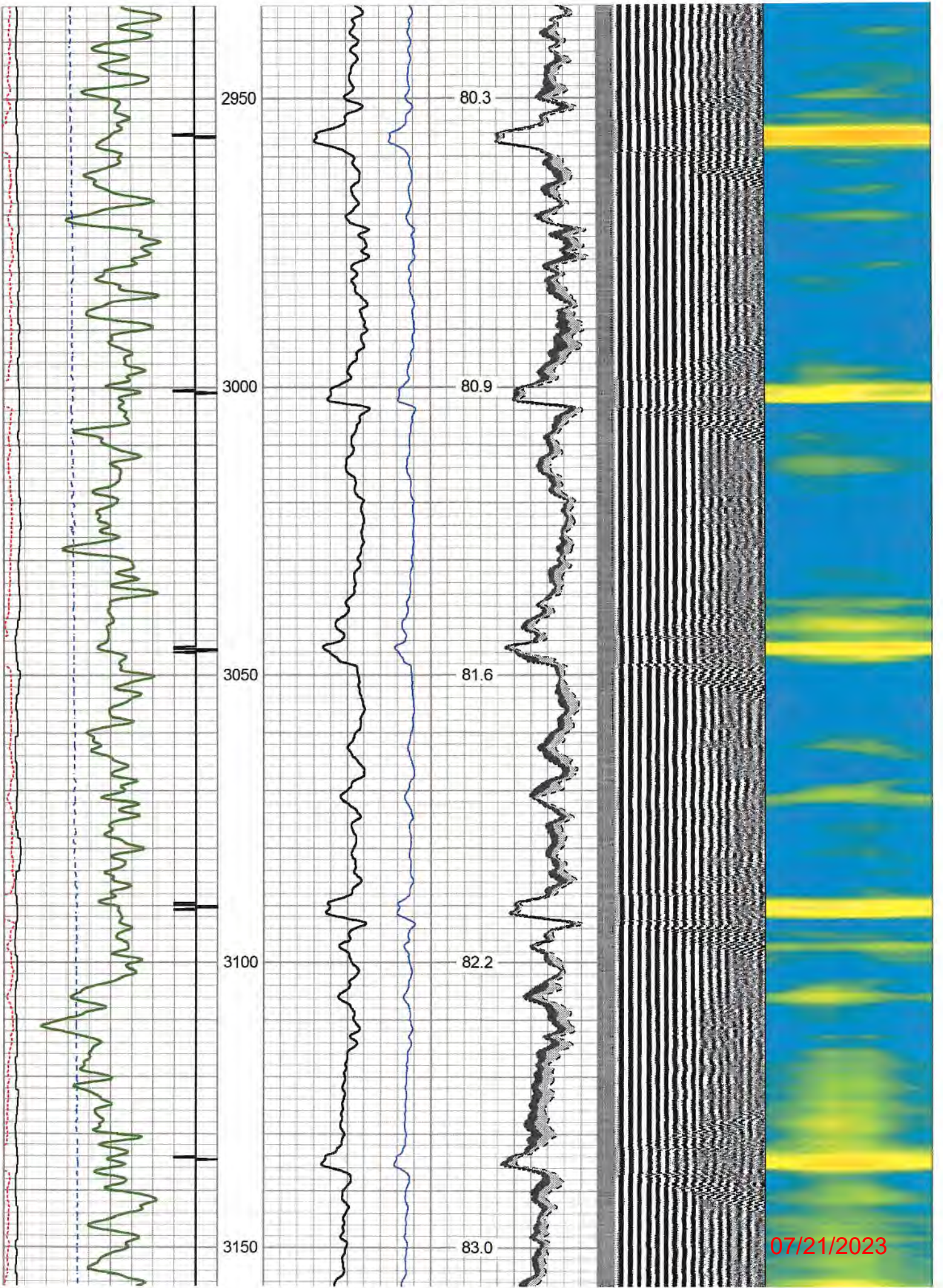
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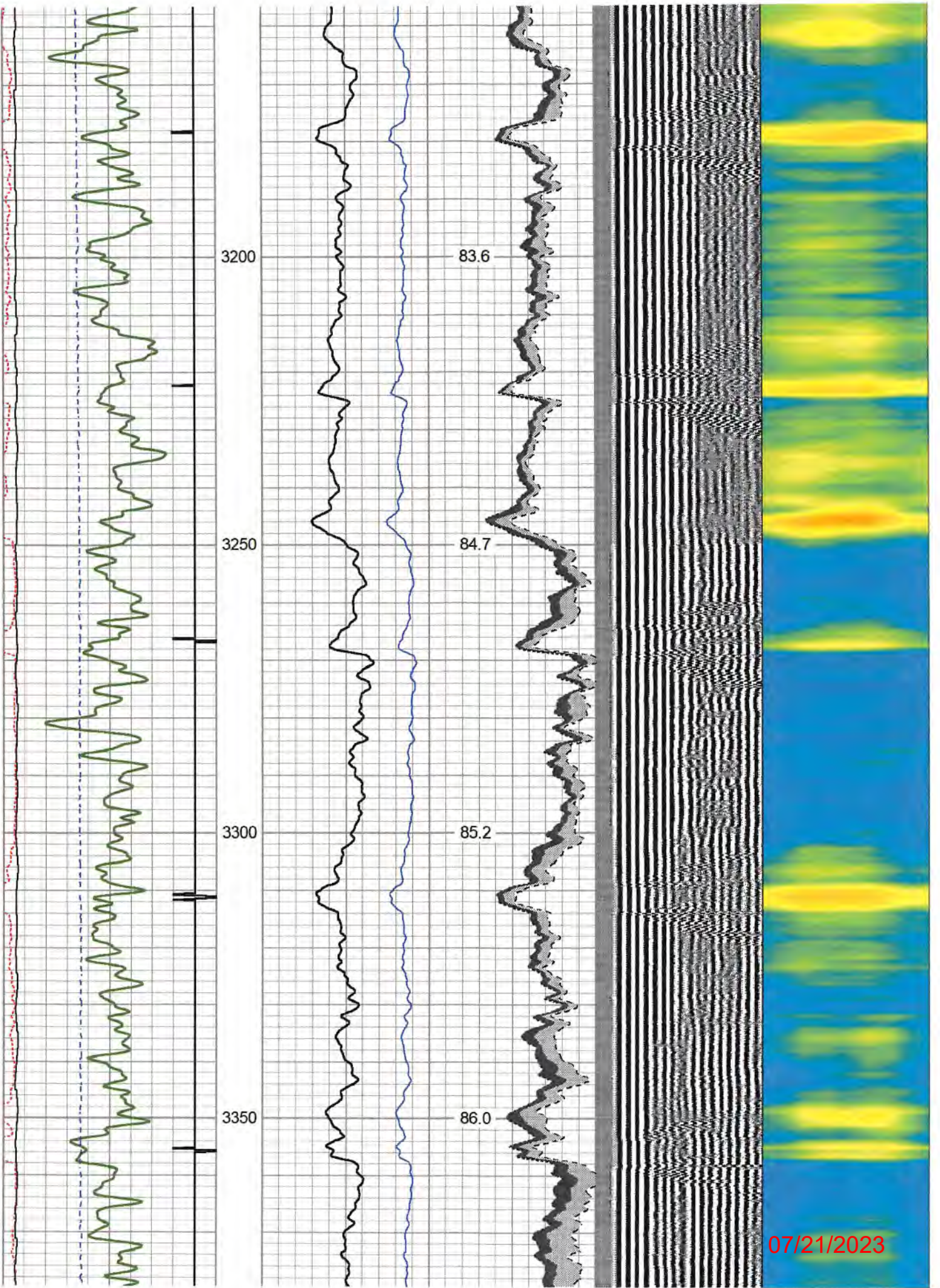
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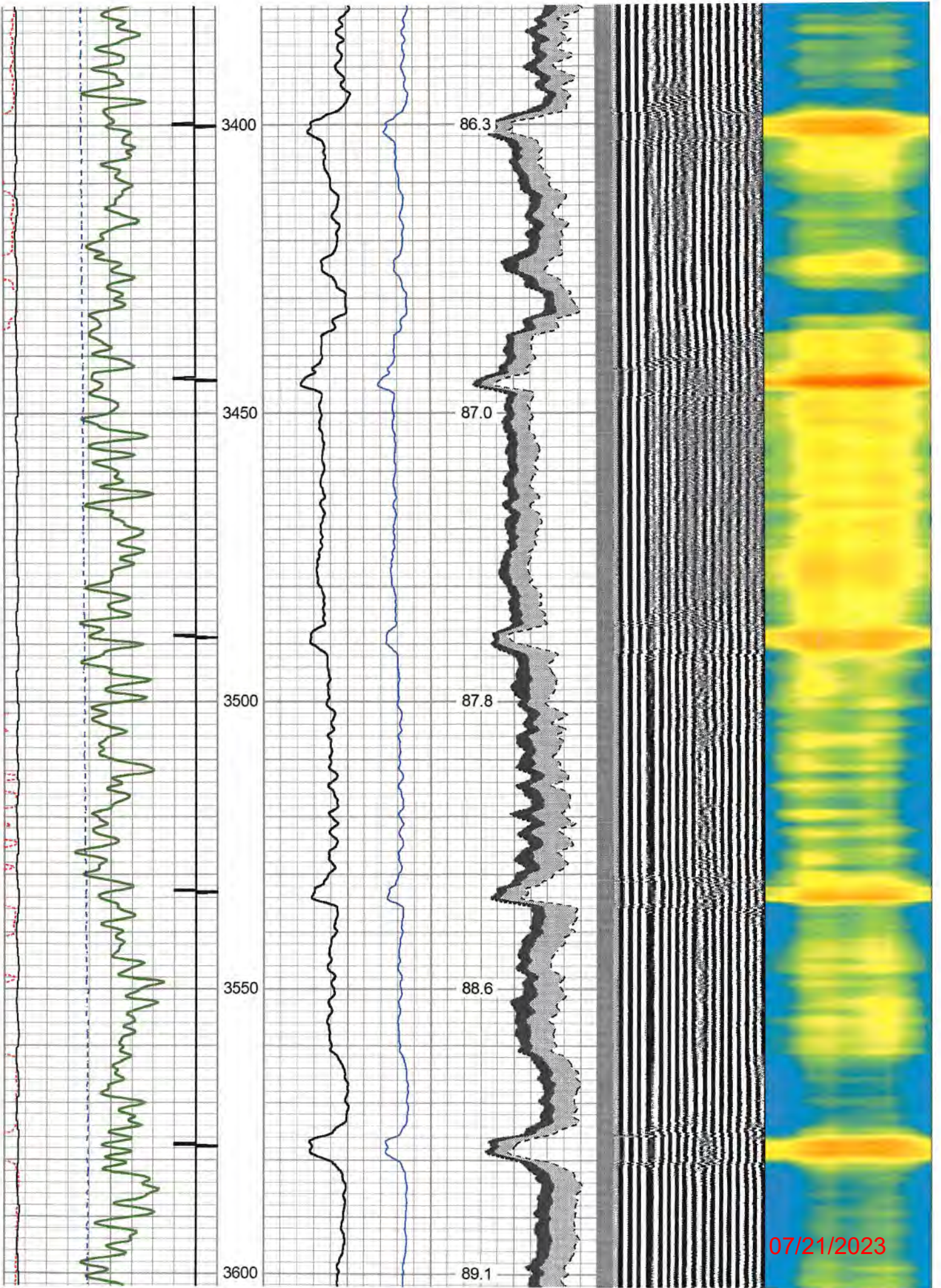
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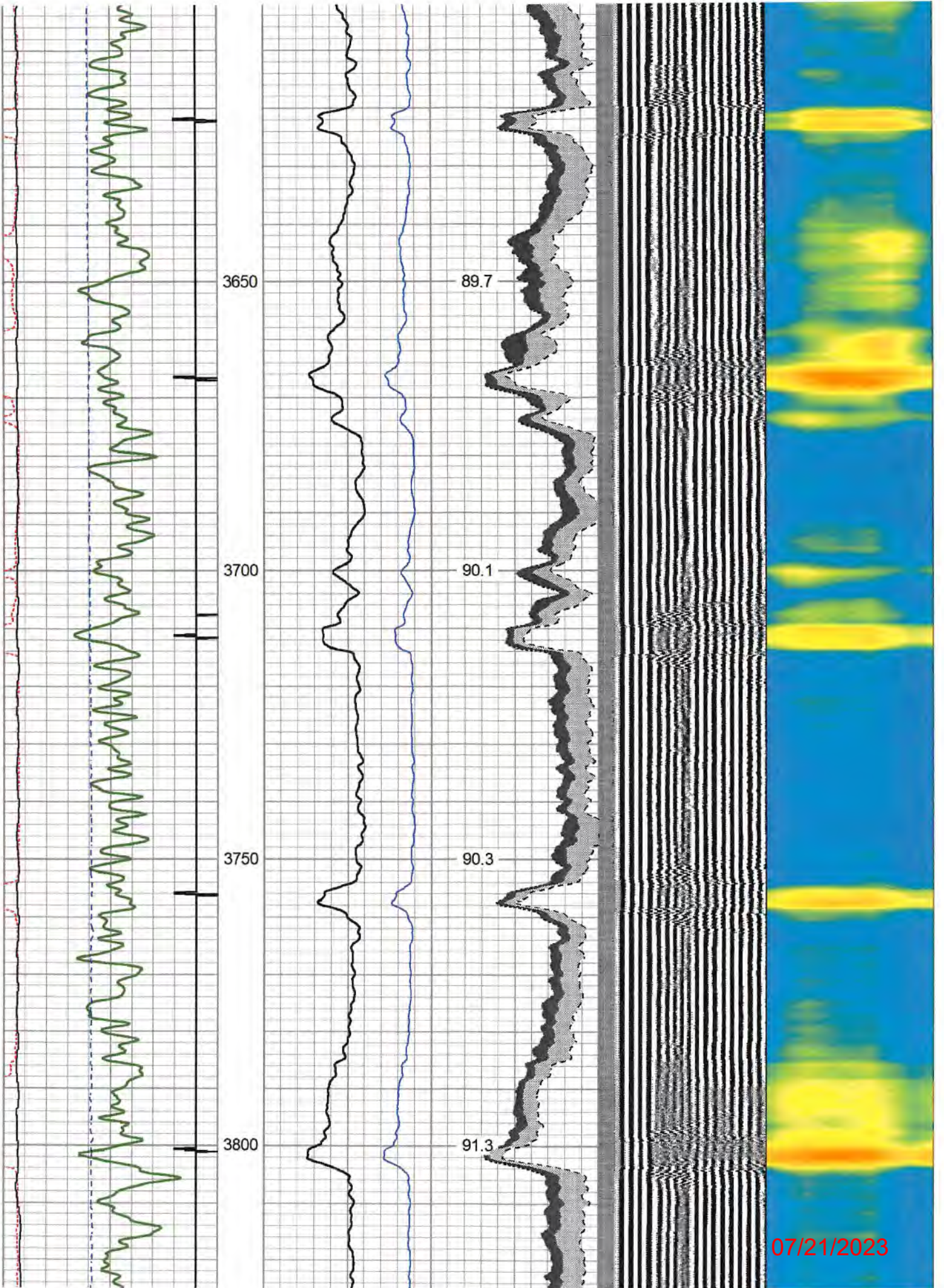


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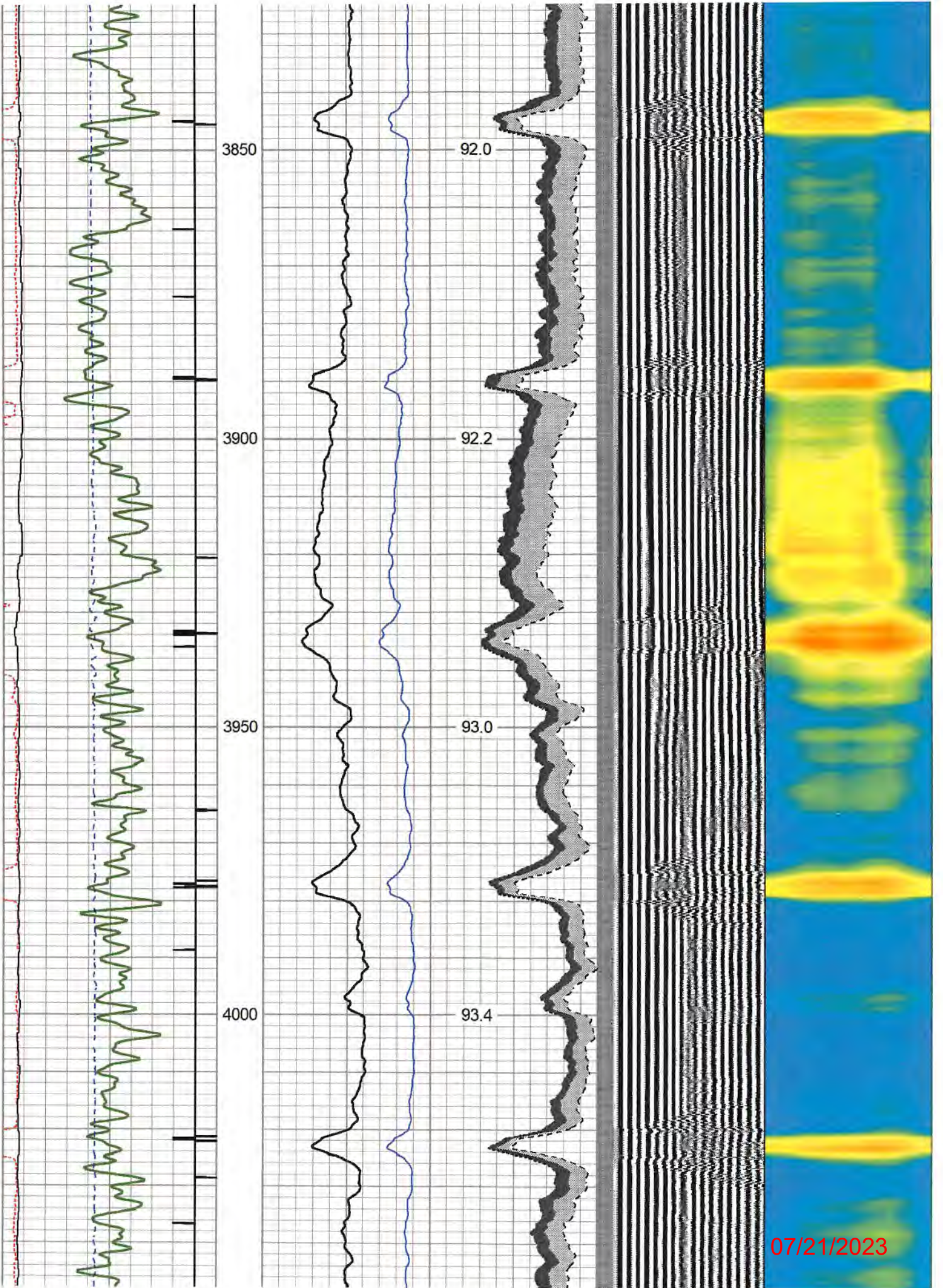


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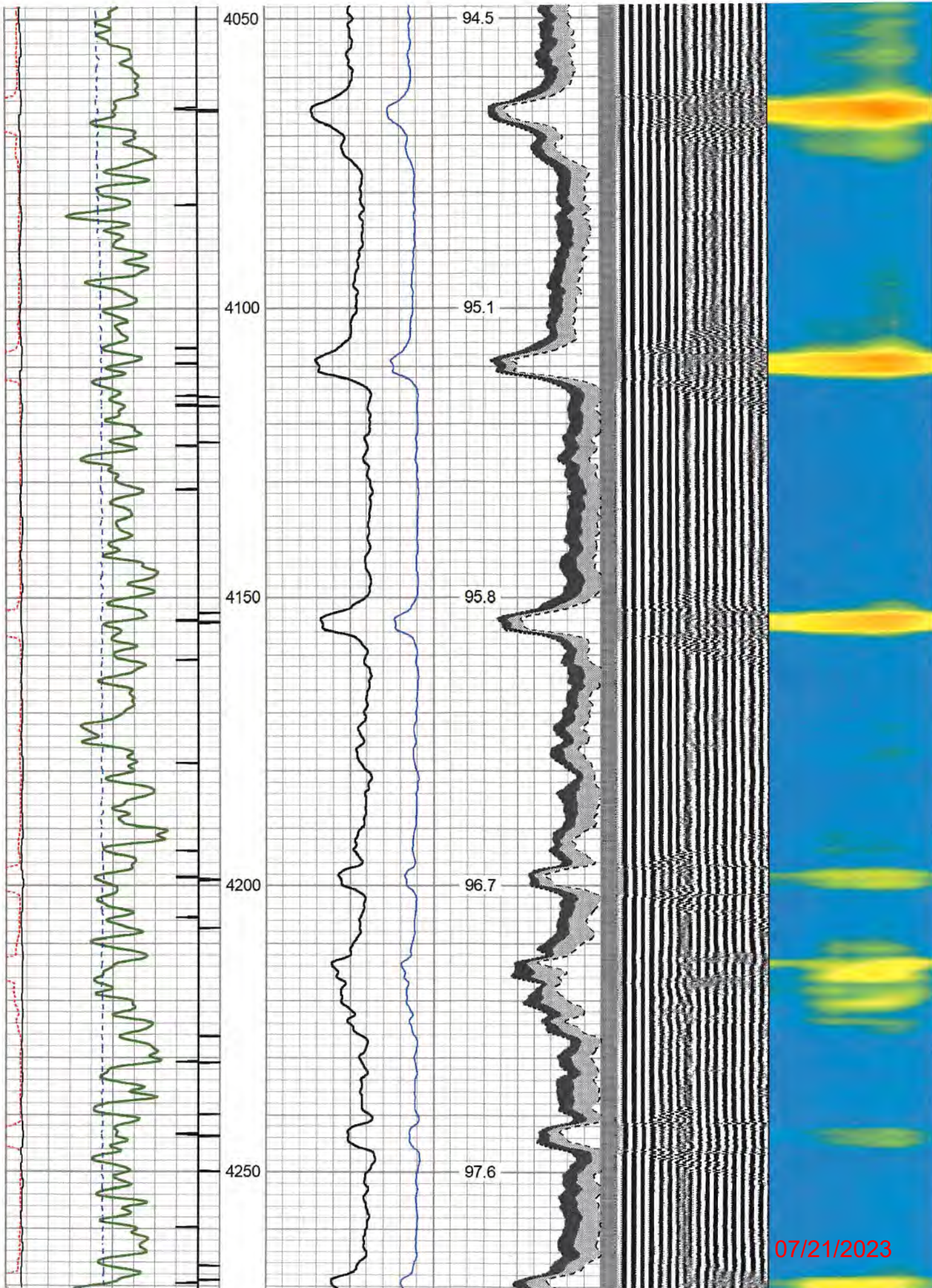


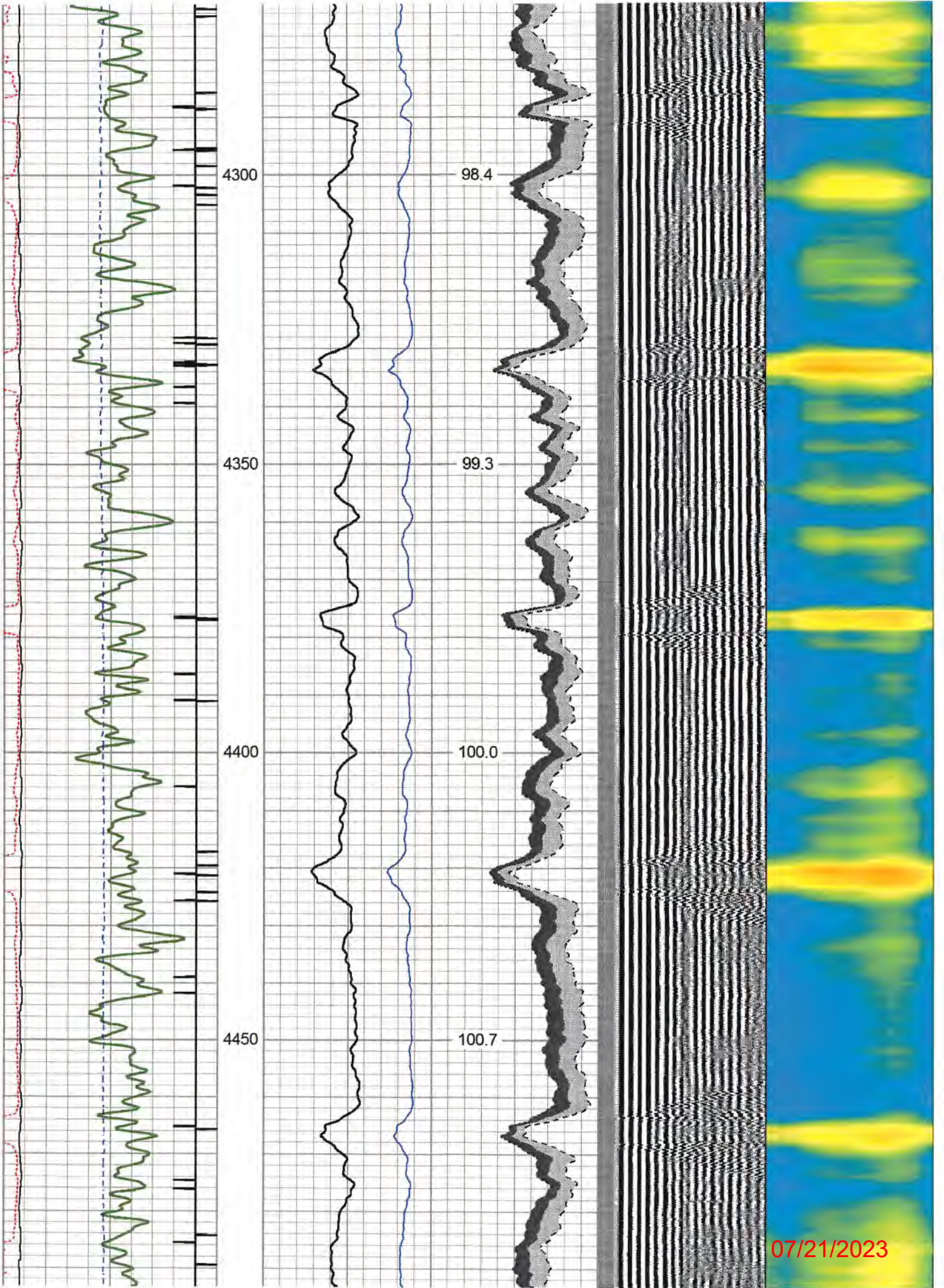


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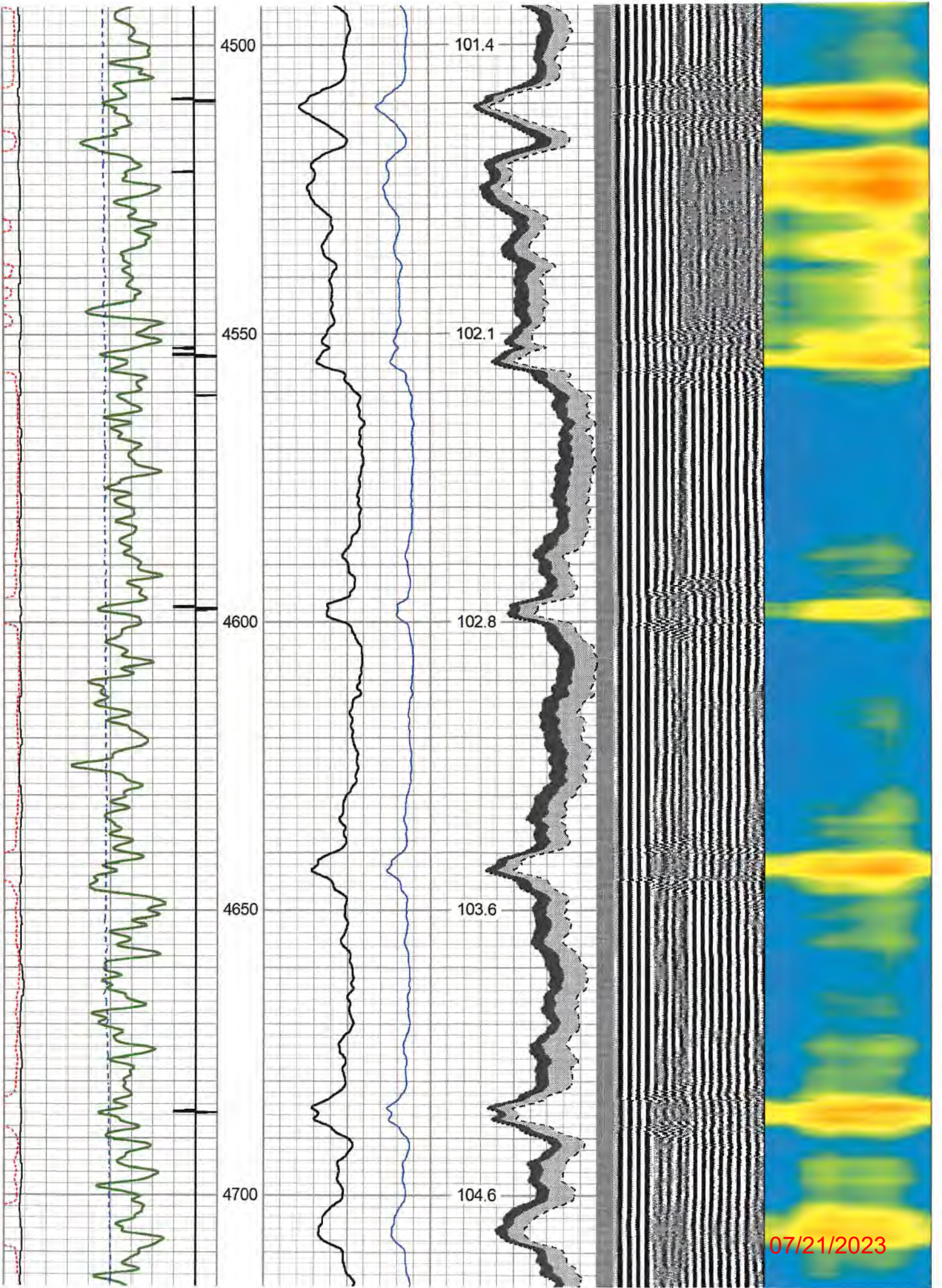


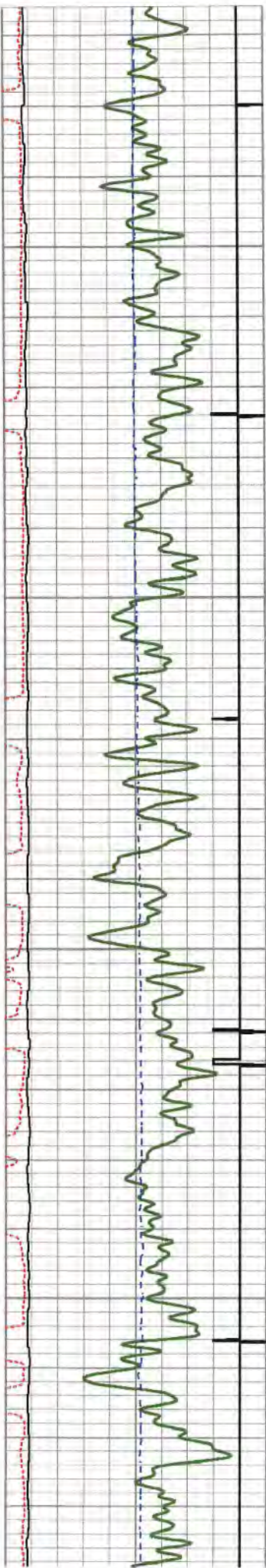
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07/21/2023



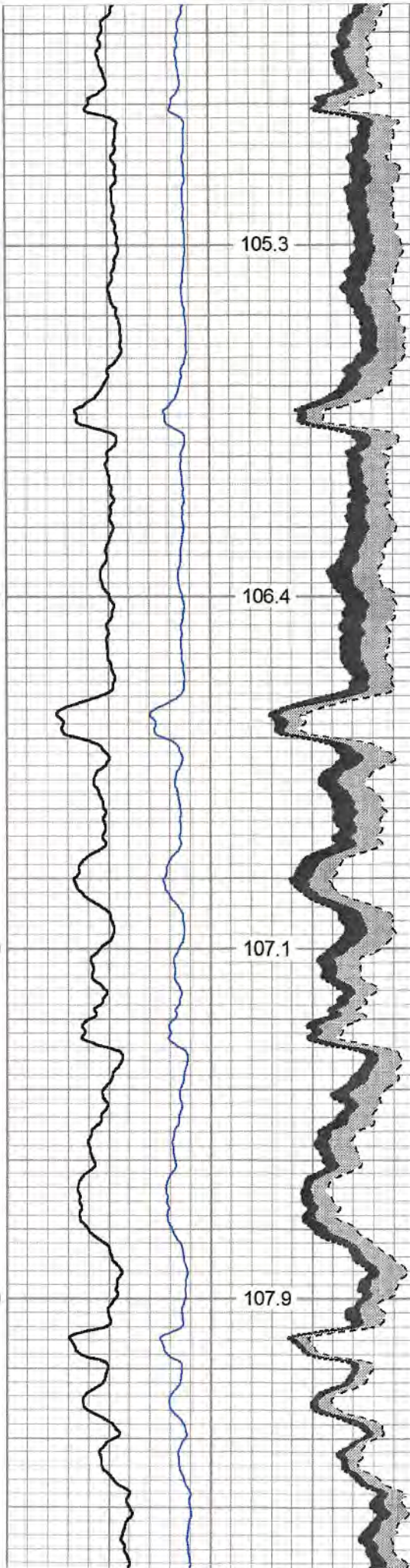


4750

4800

4850

4900

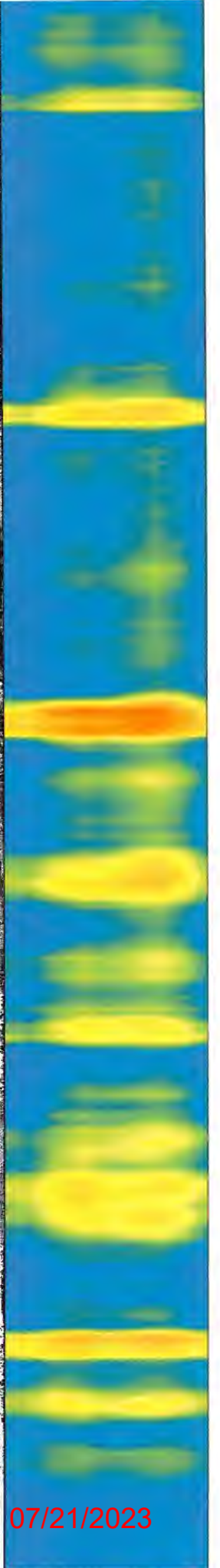
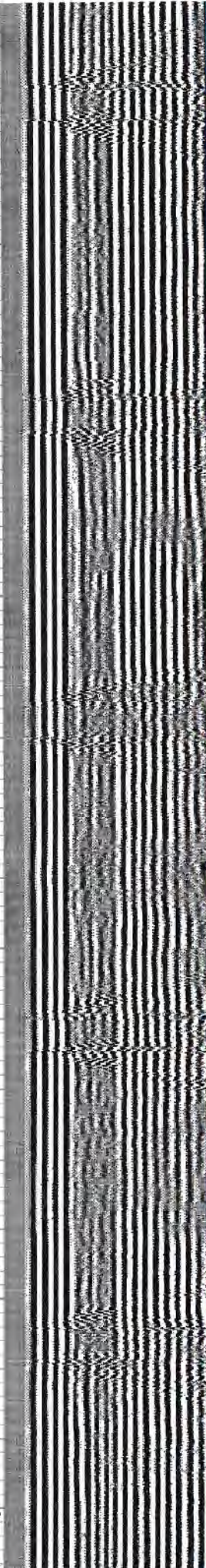


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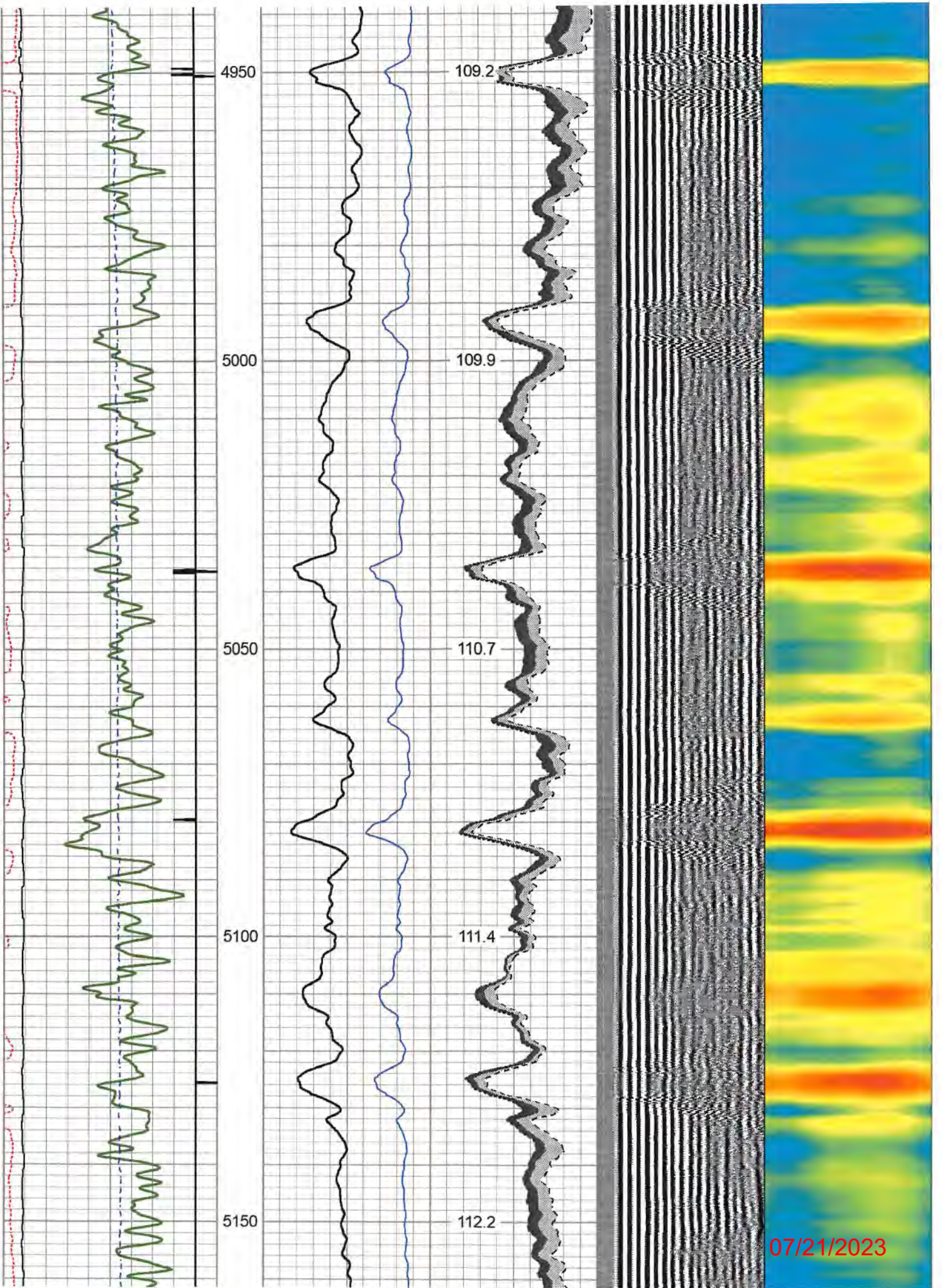
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107.1

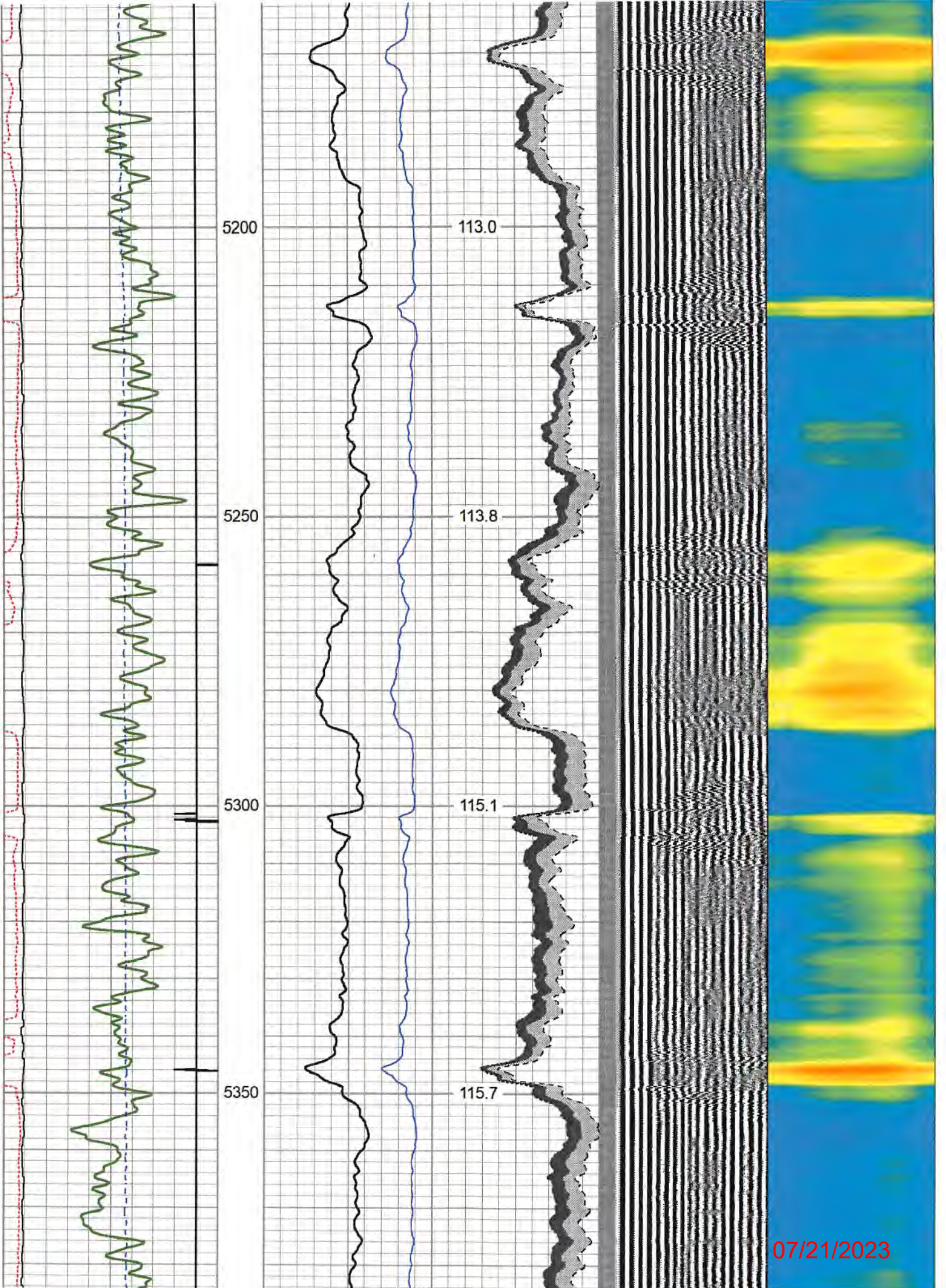
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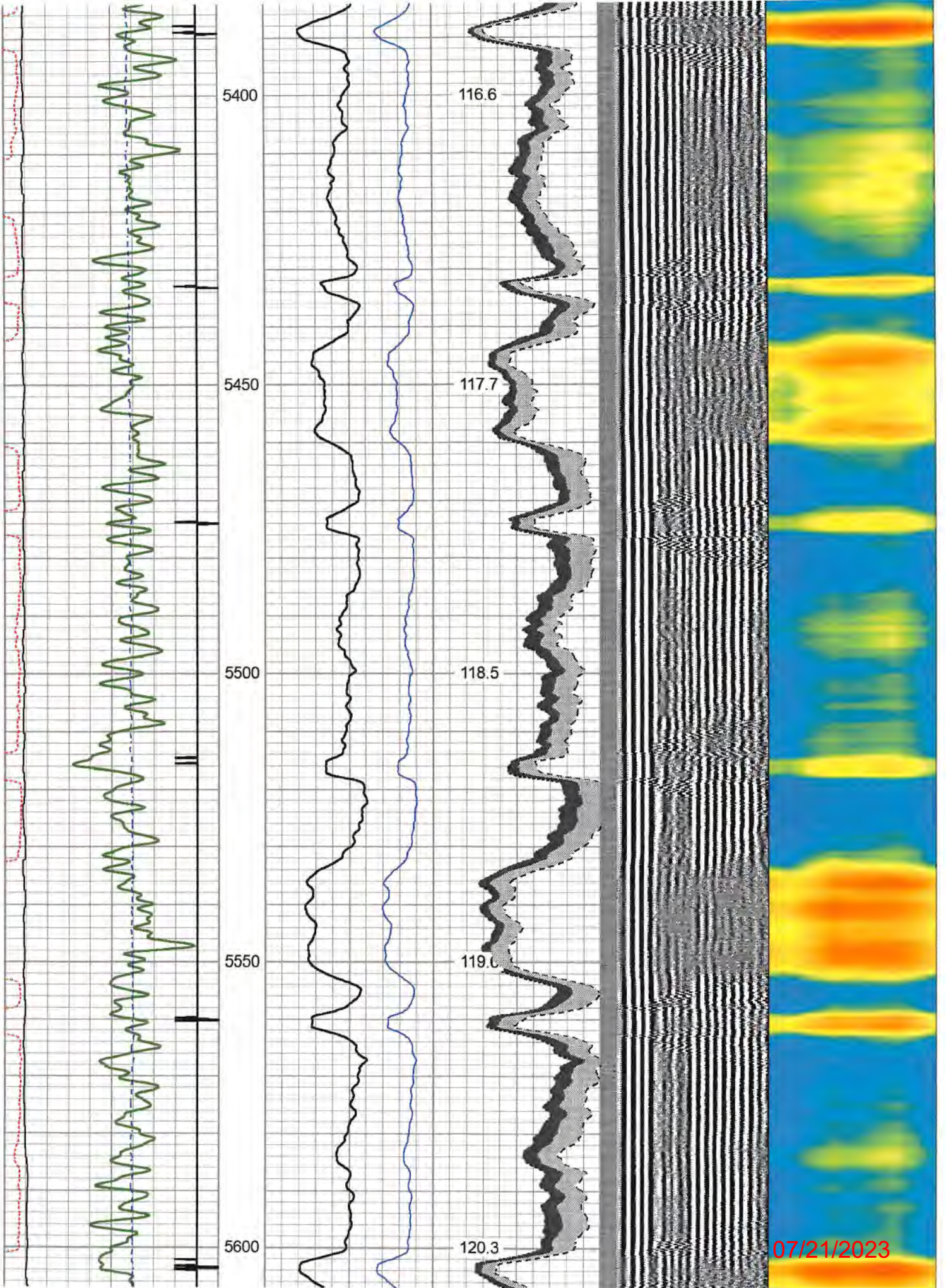
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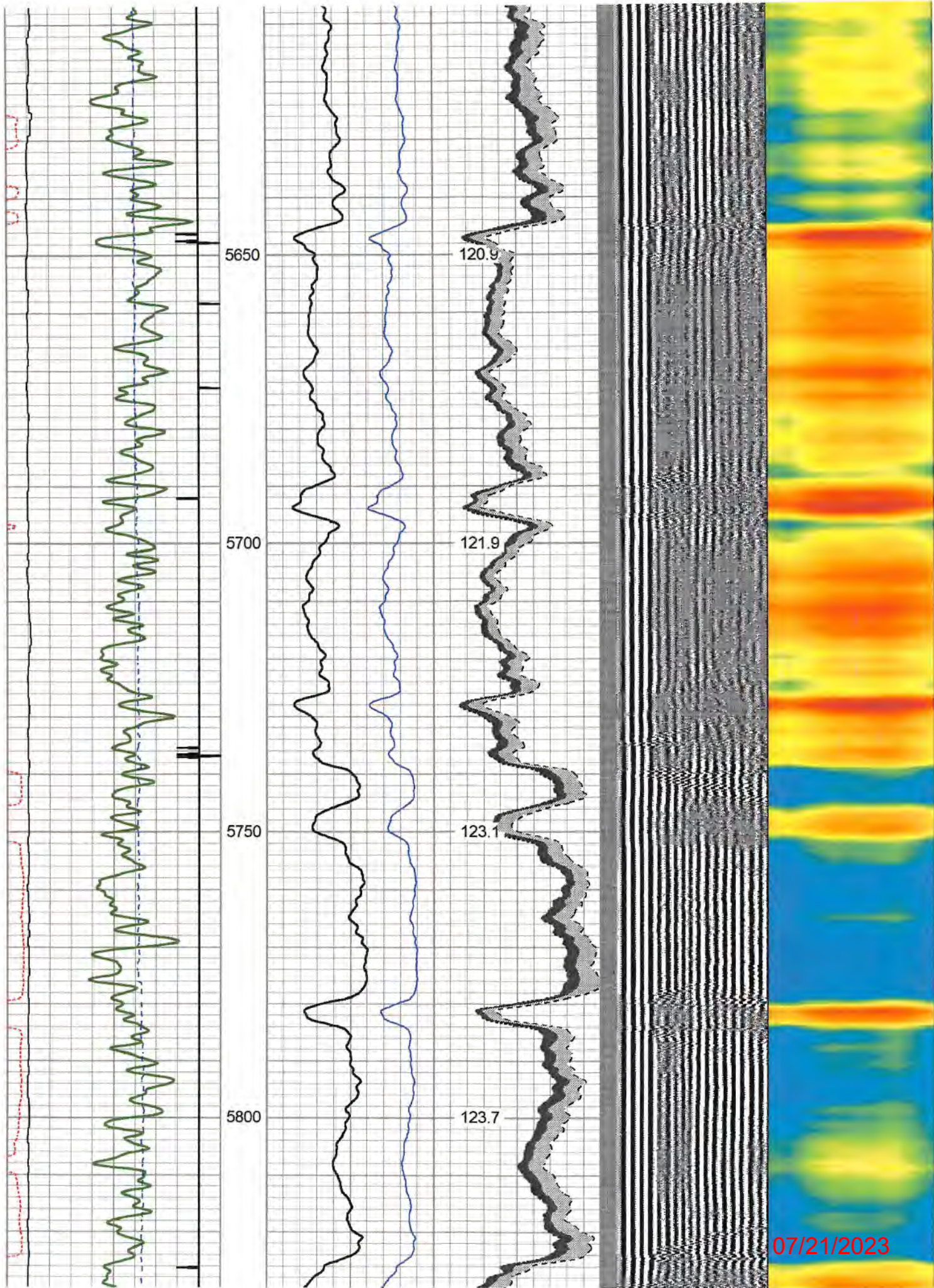
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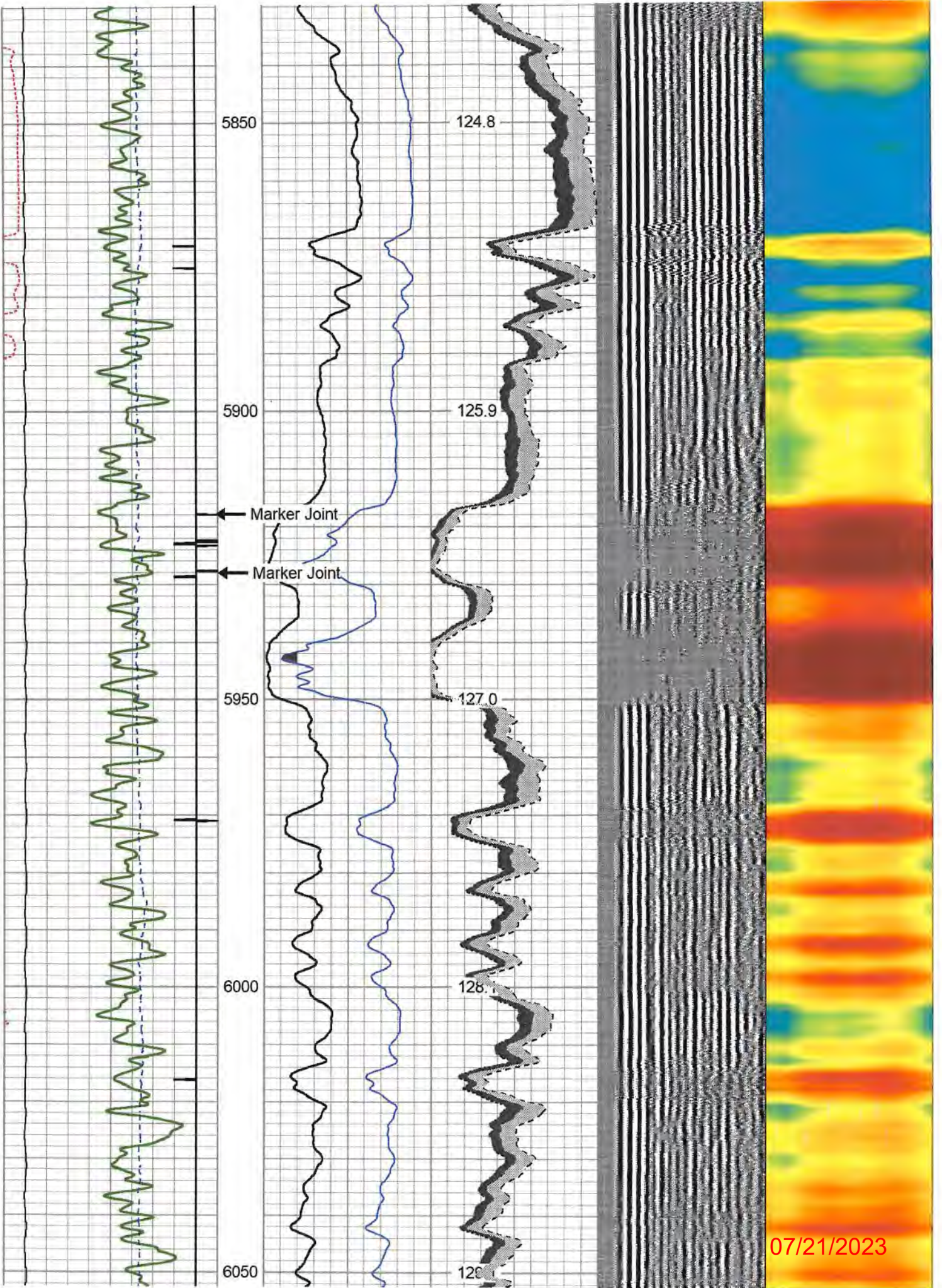
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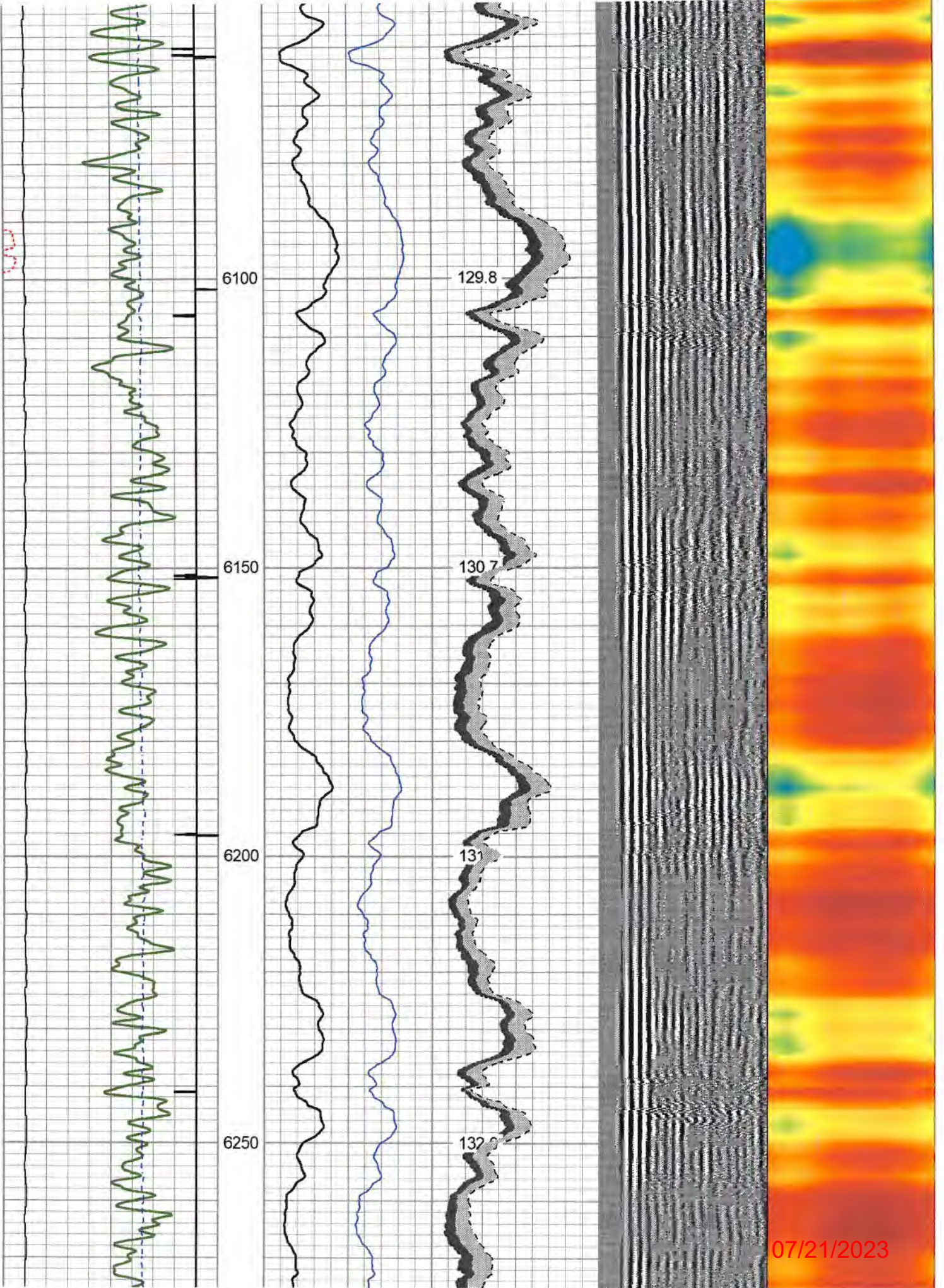
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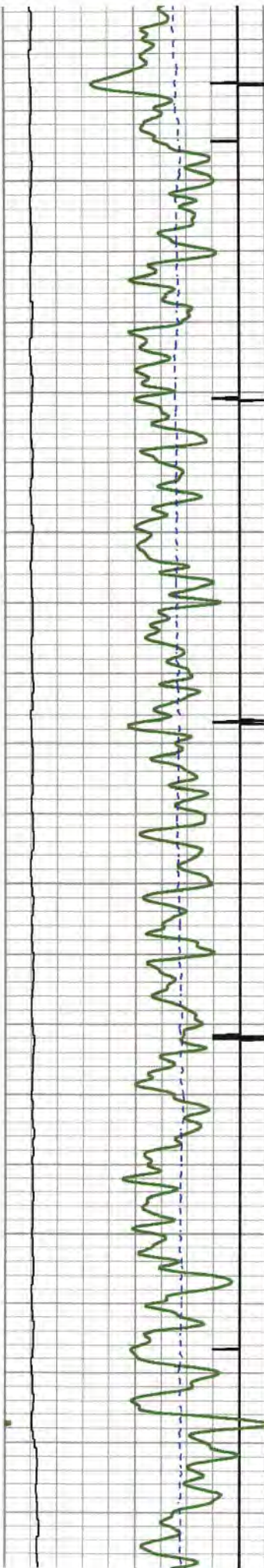


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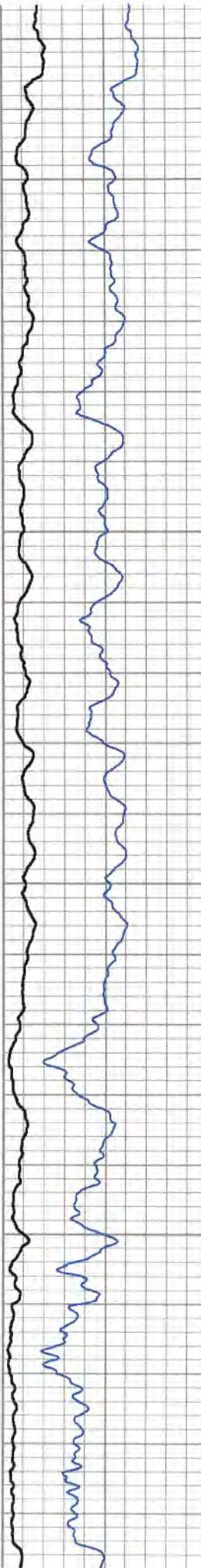


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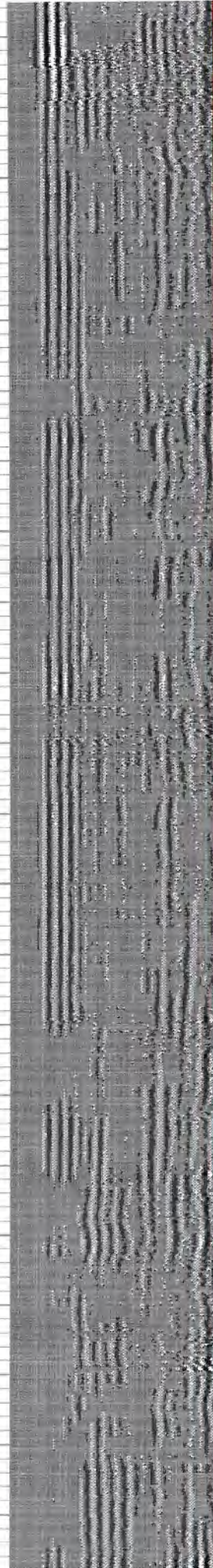




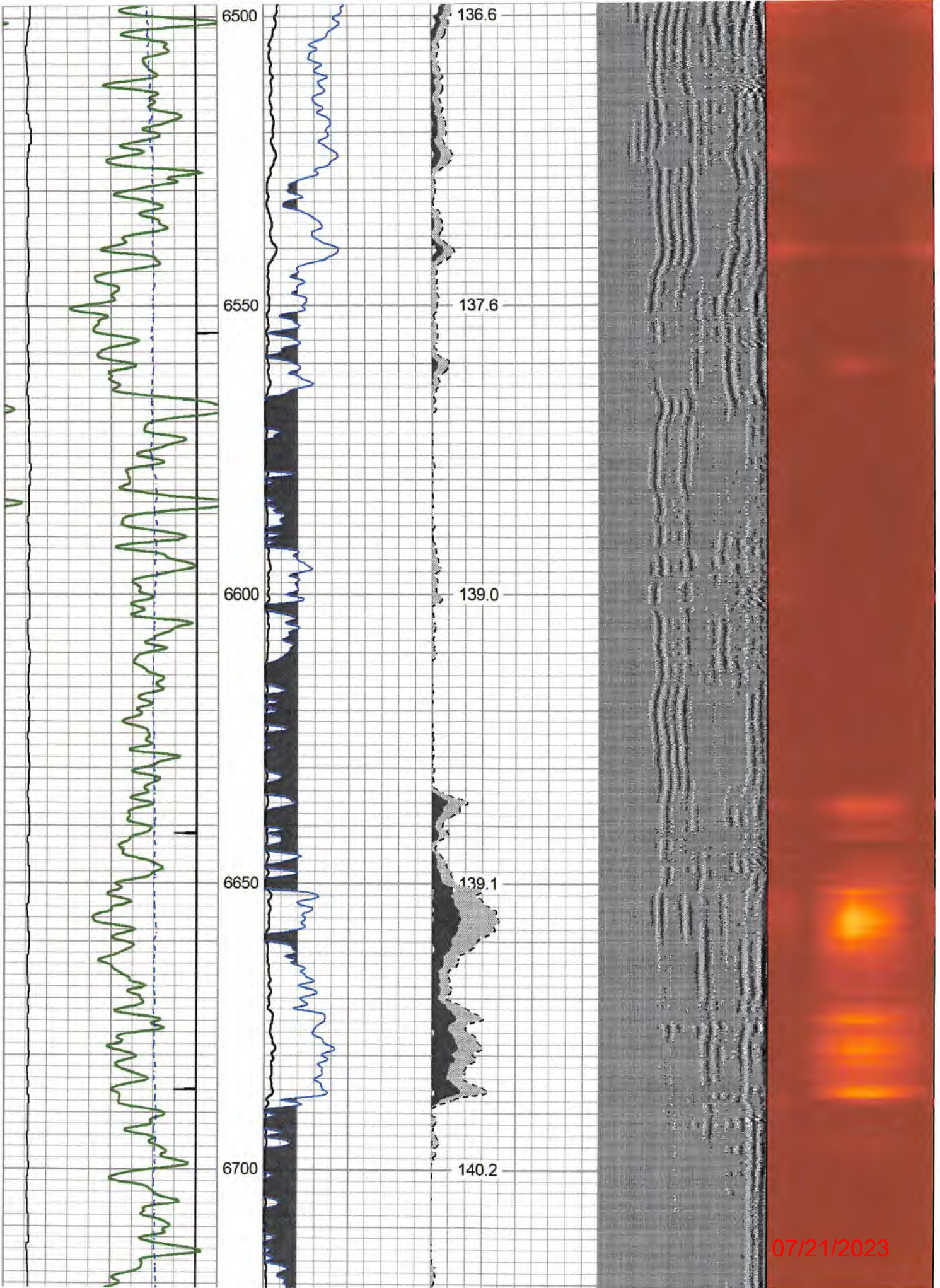
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6350
6400
6450



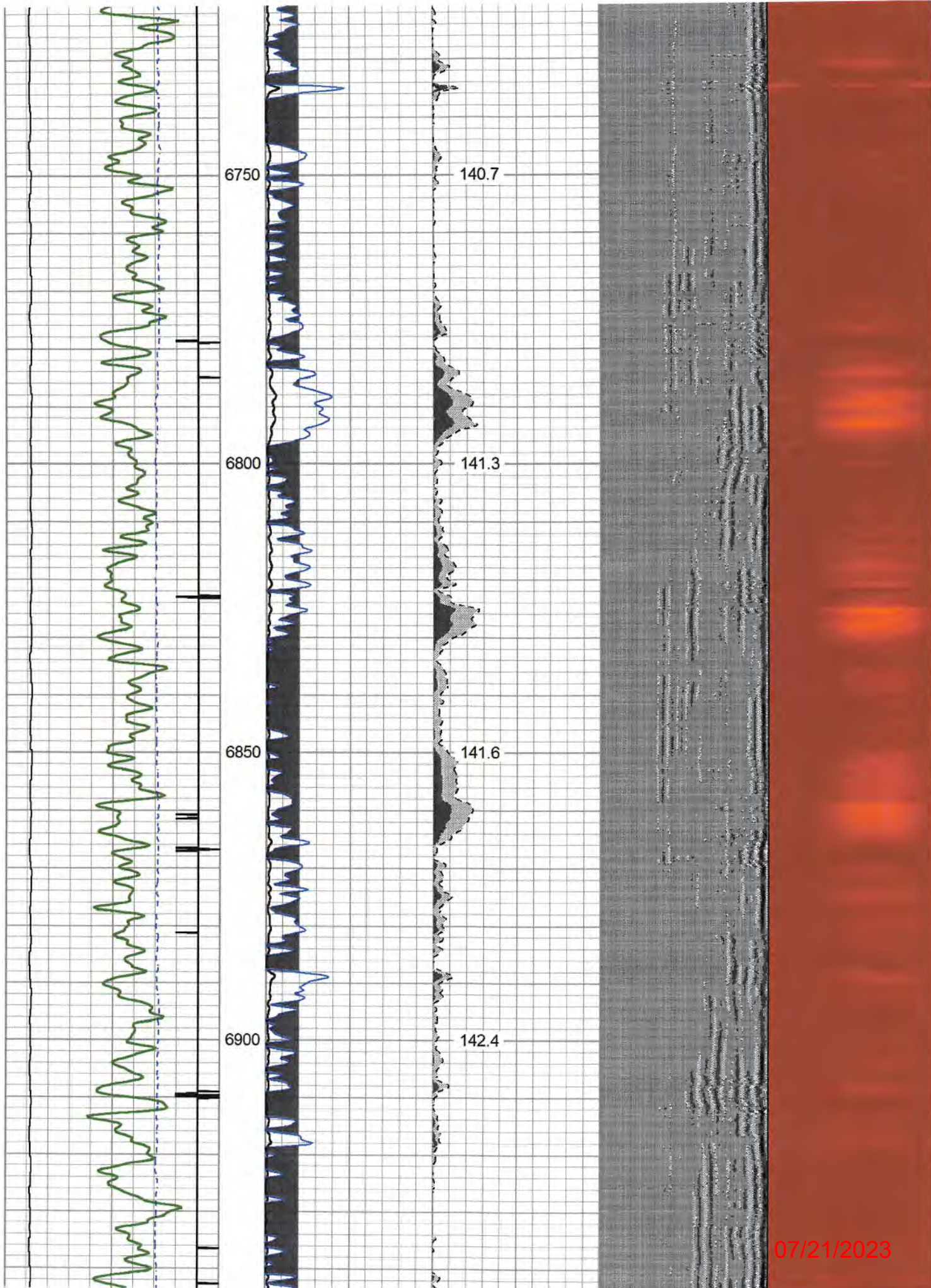
33.7
34.7
35.5
35.6



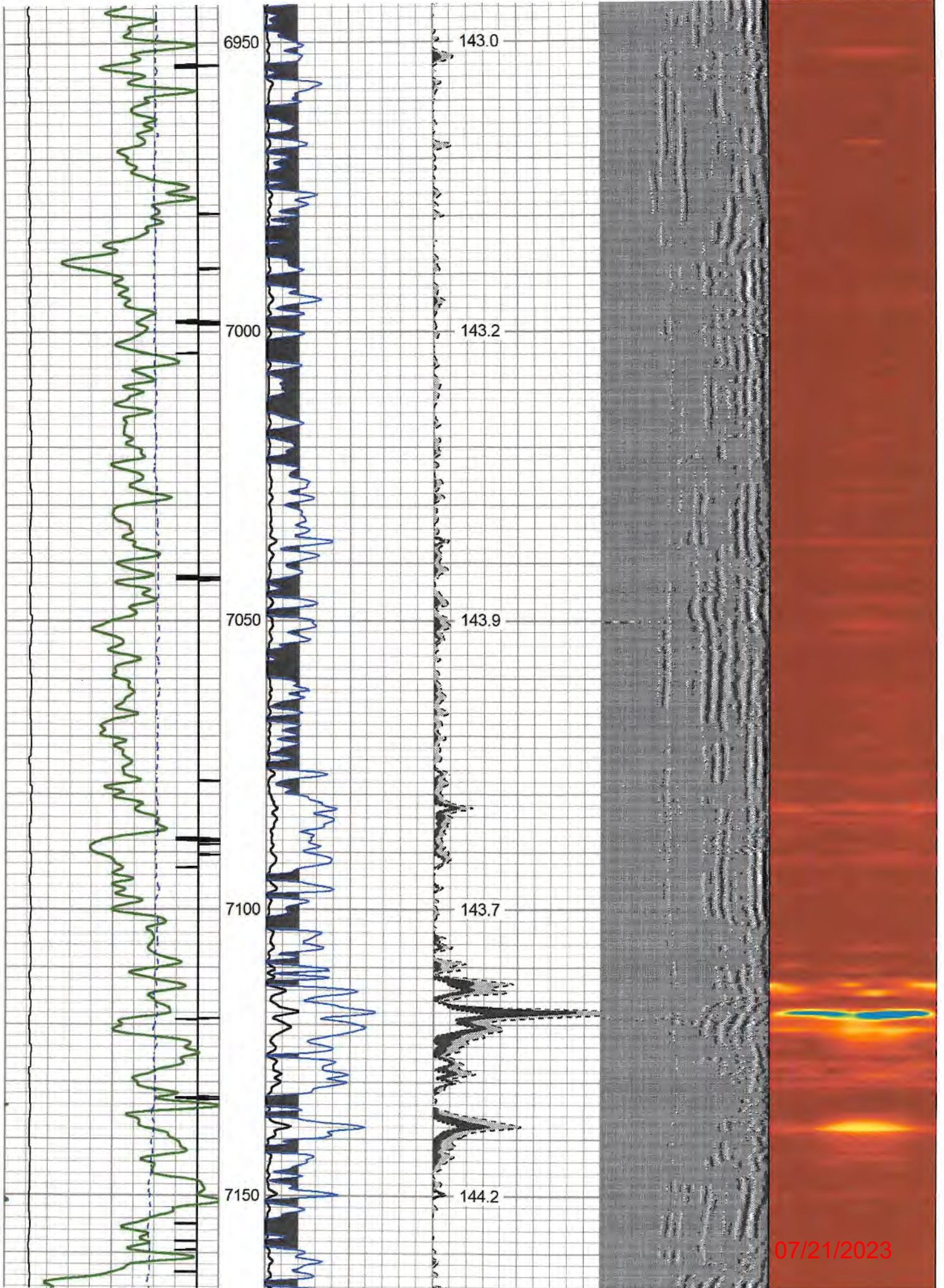
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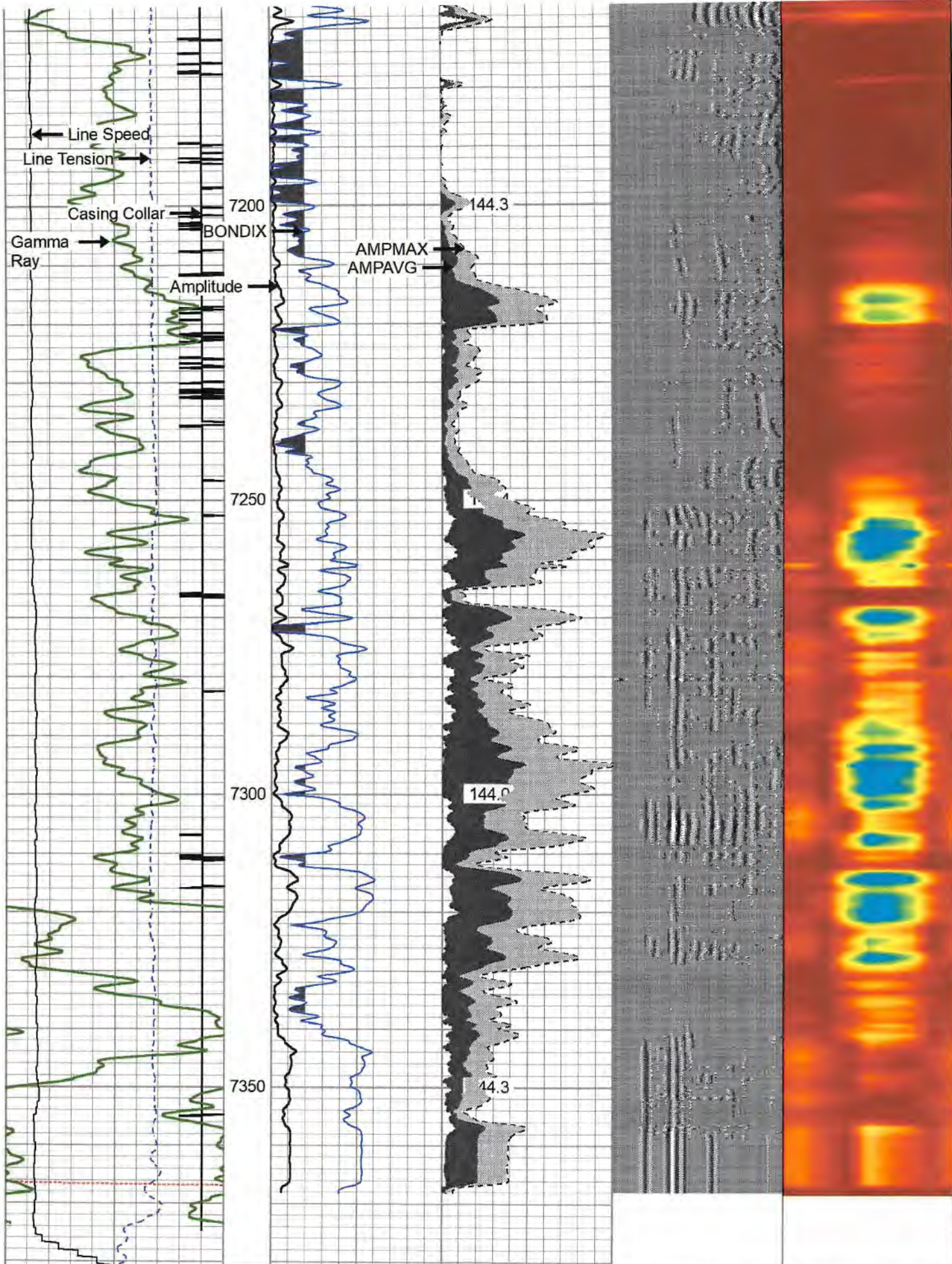
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265 Travel Time (usec) 165
 0 Casing Collar 1

0 Amplitude (mV)100 0
 1 BONDIX 0 0 AMPMAX 100

Variable Density
 300 (usec) 1200

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 1 Cement Map 8

9	Casing Collar	-1
0	Gamma Ray (GAPI) 150	
Line Speed		
-100	(ft/min)	100
0	Line Tension (lb)	2000

1	BONDIX	0	0	AMP MAX	100	300	(usec)	1200
0	AMPAVG	100						
TEMP								
(degF)								



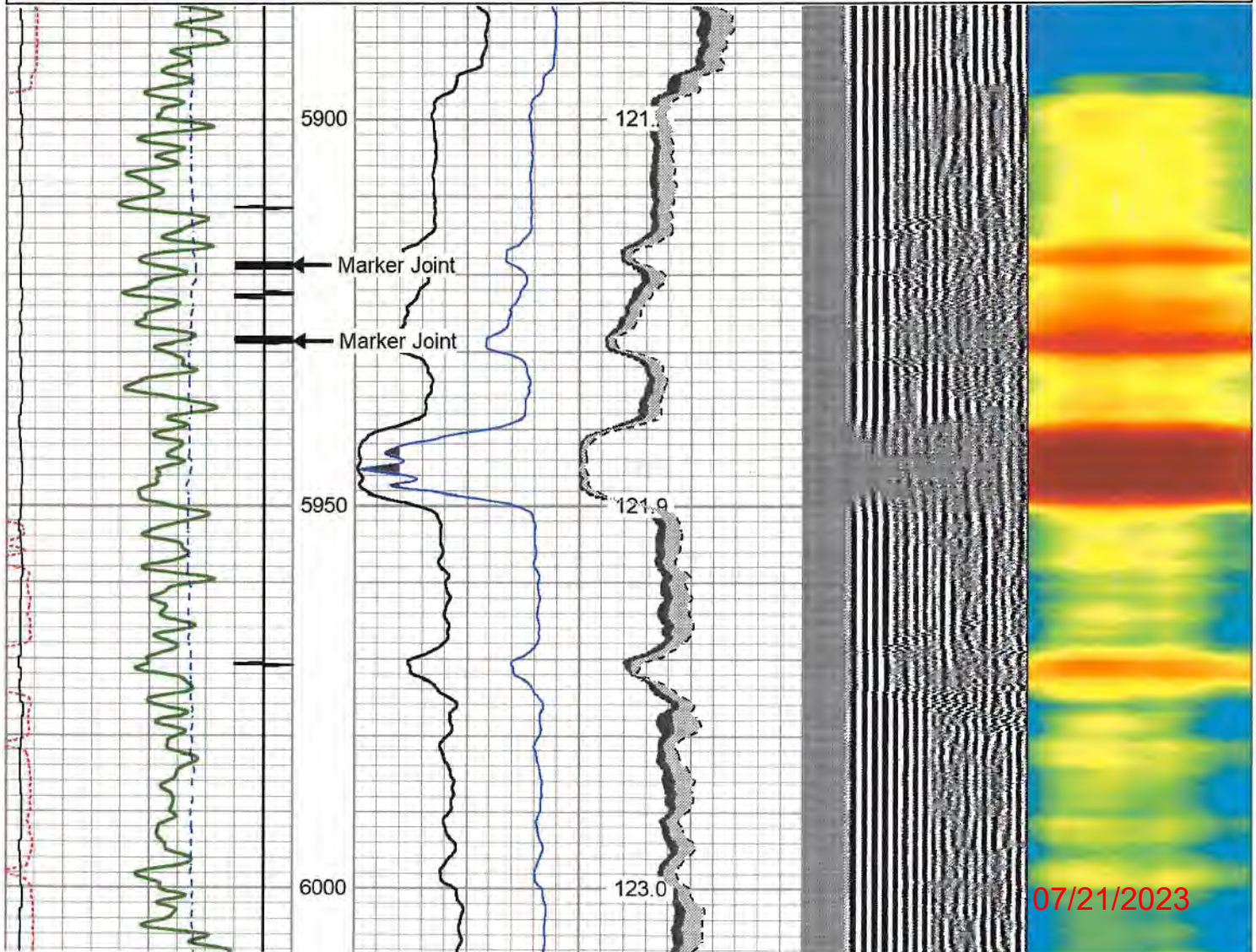
Repeat Pass 0 PSI

Database File antero_grand_pad_toroweap2h_rcbl_23_may_22.db
 Dataset Pathname pass2
 Presentation Format scbl03
 Dataset Creation Mon May 23 17:19:02 2022
 Charted by Depth in Feet scaled 1:240

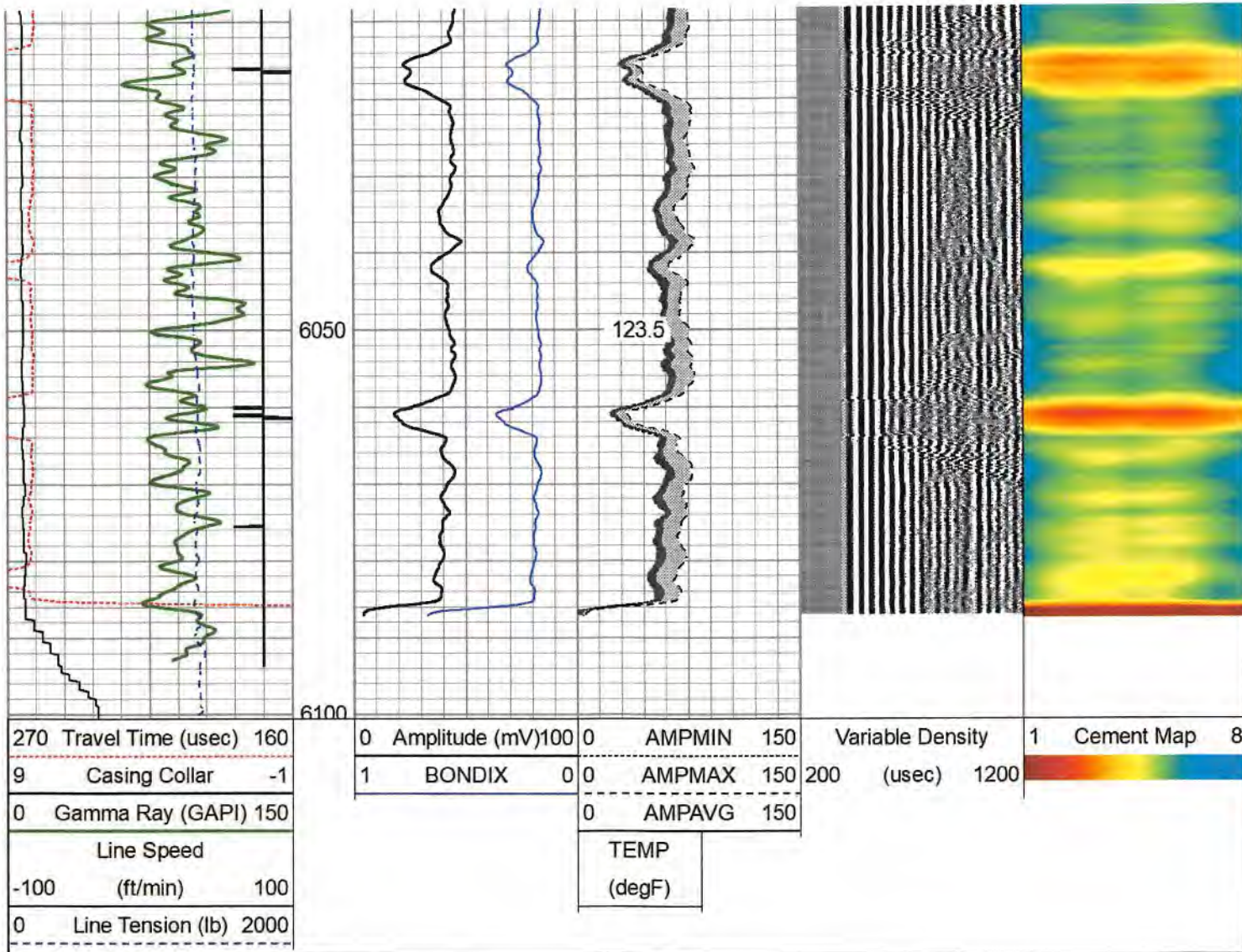
270	Travel Time (usec)	160
9	Casing Collar	-1
0	Gamma Ray (GAPI) 150	
Line Speed		
-100	(ft/min)	100
0	Line Tension (lb)	2000

0	Amplitude (mV)	100	0	AMP MIN	150
1	BONDIX	0	0	AMP MAX	150
0	AMPAVG	150			
TEMP					
(degF)					

Variable Density	1	Cement Map	8
200	(usec)	1200	



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Calibration Report			
Database File	antero_grand_pad_toroweap2h_rcbl_23_may_22.db		
Dataset Pathname	pass4		
Dataset Creation	Mon May 23 17:41:42 2022		
Gamma Ray Calibration Report			
Serial Number:	FW1211-86		
Tool Model:	Probe		
Performed:	Mon Nov 15 11:21:05 2021		
Calibrator Value:	1.0	GAPI	
Background Reading:	0.0	cps	
Calibrator Reading:	1.0	cps	
Sensitivity:	0.7000	GAPI/cps	
Segmented Cement Bond Log Calibration Report			
Serial Number:	2.75"		
Tool Model:	Probe275T		
Calibration Casing Diameter:	5.500	in	
Calibration Depth:	630.458	ft	
Master Calibration, performed Mon May 23 13:32:10 2022:			

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	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.010	0.300	2.200	71.921	224.590	4.459
CAL	0.502	0.507				
5'	-0.016	0.284	2.200	71.921	231.969	6.017
SUM						
S1	0.012	0.342	0.000	100.000	302.735	-3.492
S2	-0.015	0.306	0.000	100.000	310.927	4.718
S3	-0.014	0.309	0.000	100.000	309.179	4.431
S4	-0.015	0.296	0.000	100.000	321.810	4.675
S5	-0.015	0.286	0.000	100.000	332.873	4.933
S6	-0.016	0.289	0.000	100.000	327.850	5.151
S7	-0.012	0.296	0.000	100.000	325.376	3.757
S8	-0.017	0.306	0.000	100.000	308.736	5.401

Internal Reference Calibration, performed Wed Nov 23 14:17:52 2011:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.502	0.507	1.000	0.000

Air Zero Calibration, performed Mon May 23 13:07:50 2022:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Gain	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	19.83		CHD-Titan Standard 1 7/16" Cable Head	1.02	1.44	1.00
			CENT-Titn275Adj Titan 2 3/4" Adjustable Centralizer	2.86	2.75	35.00
Temp	16.98					

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WVFS8	14.75		RBT-Probe275T (2.75") Probe 2.75" Radial with Integral Temperature Sub	9.39	2.75	90.00
WVFS7	14.75					
WVFS6	14.75					
WVFS5	14.75					
WVFS4	14.75					
WVFS3	14.75					
WVFS2	14.75					
WVFS1	14.75					
WVF3FT	14.75					
WVF5FT	13.75					
WVFCAL	10.50					
HEADVOLT	10.50					
CCL	6.73			CENT-Titn275Adj Titan 2 3/4" Adjustable Centralizer	2.86	2.75
GR	5.40		GR-Probe (FW1211-86) Probe 2 3/4" Logging Gamma Ray	4.78	2.75	57.00
			CENT-Titn275Adj Titan 2 3/4" Adjustable Centralizer	2.86	2.75	35.00

Dataset: antero_grand_pad_toroweap2h_rcbl_23_may_22.db: field/well/run1/pass4
 Total length: 23.77 ft
 Total weight: 253.00 lb
 O.D.: 2.75 in

	Company	ANTERO RESOURCES
	Well	TOROWEAP 2H
	Field	MARCELLUS
	County	TYLER
	State	WV

07/21/2023