



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

Company ANTERO RESOURCES
Well TOROWEAP 1H
Field MARCELLUS
County TYLER
State WV

Company ANTERO RESOURCES
Well TOROWEAP 1H
Field MARCELLUS
County TYLER State WV

Location: AFE - A11680
API #: 47-095-027650000

Other Services

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	18,547
Depth Logger	7051
Bottom Logged Interval	7051
Top Log Interval	SURFACE
Open Hole Size	NA
Type Fluid	FRESH WATER
Density / Viscosity	8.6 LB/GAL
Max. Recorded Temp.	144.2
Estimated Cement Top	5312
Time Well Ready	UPON ARRIVAL
Time Logger on Bottom	2:00 PM
Equipment Number	116
Location	CHARLEROI, PA
Recorded By	CALVIN DRUMMOND
Witnessed By	MIKE SZABO

Borehole Record

Run Number	Bit	From	To	Size	Weight	From	To

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	18,547
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

LOG CORRELATED TO MARKER JOINT
DEPTH SHIFT +6
MARKER JOINT 5893 - 5904
MAIN PASS 1500 PSI
THANK YOU FOR USING NINE ENERGY SERVICES

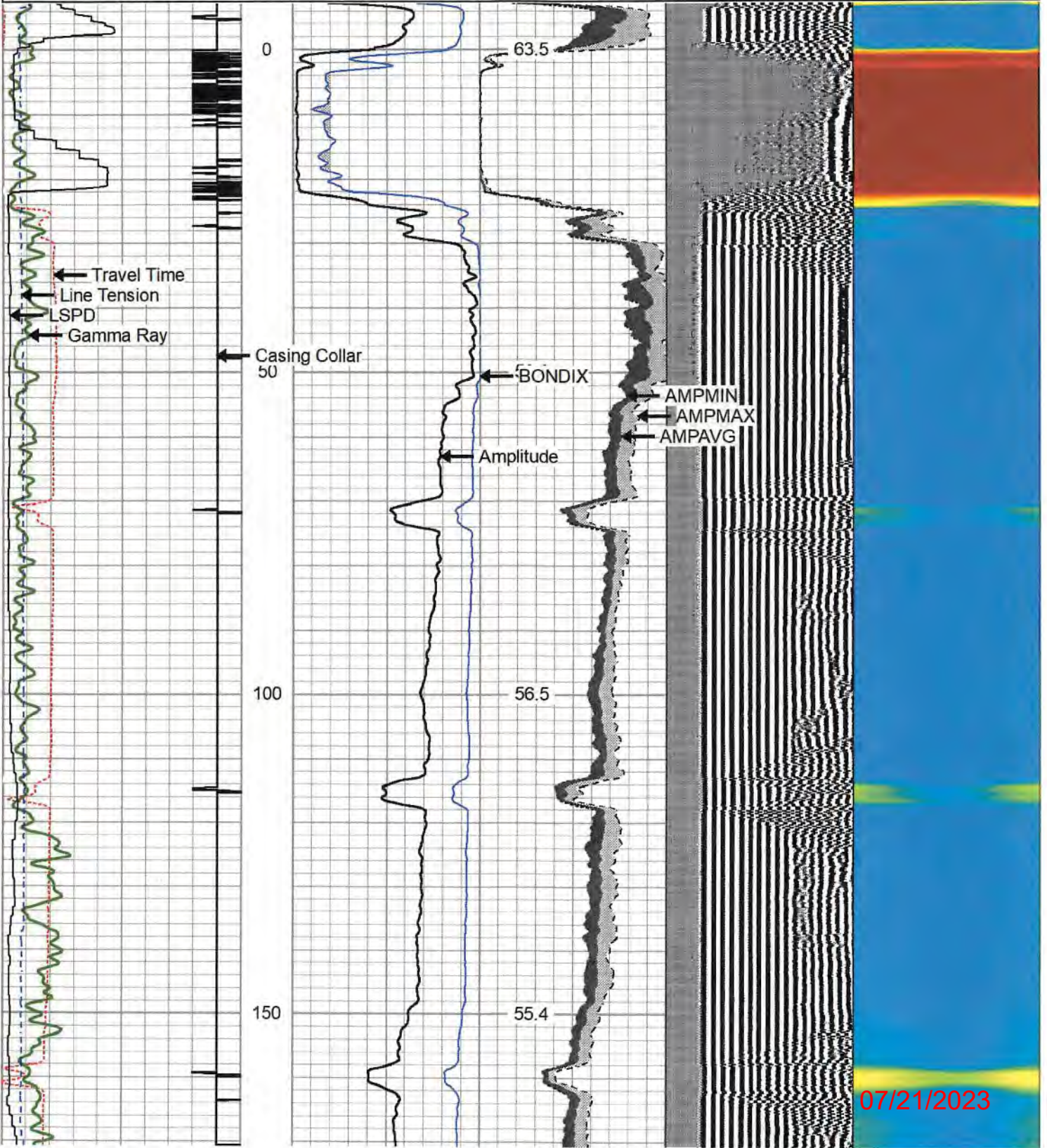
RECEIVED
Office of Oil and Gas
APR 07 2023
WV Department of
Environmental Protection

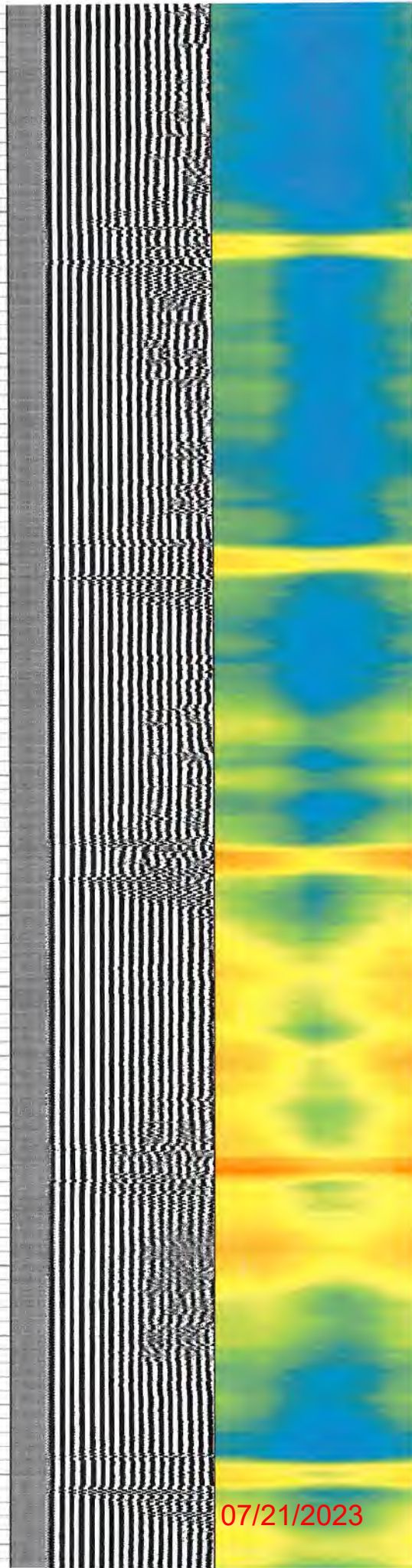
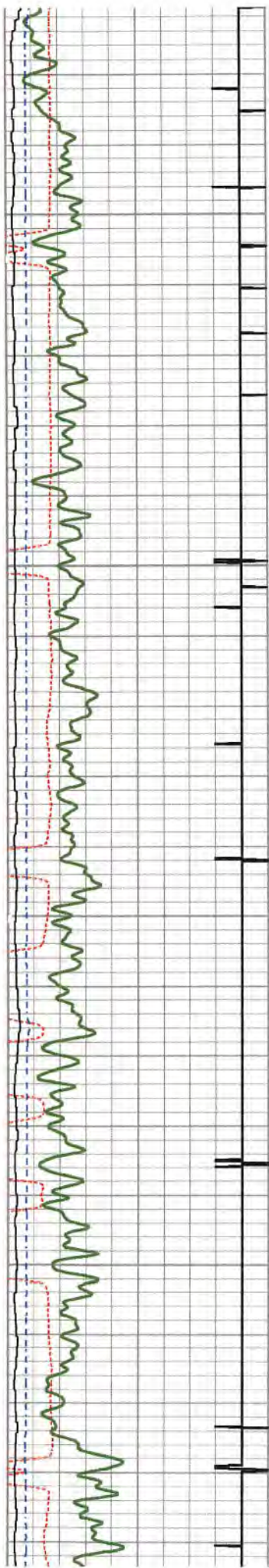


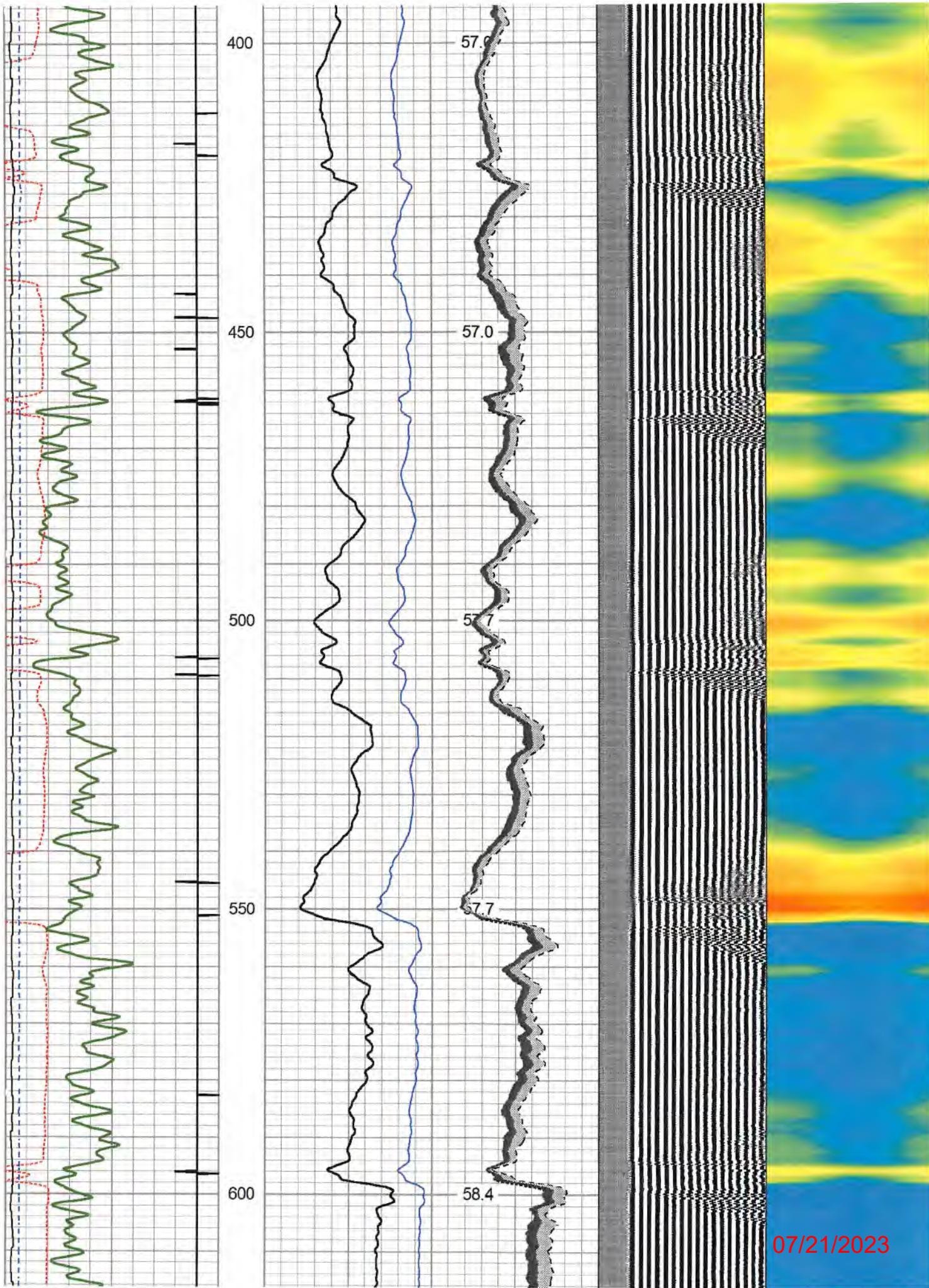
Main Pass 1500 PSI

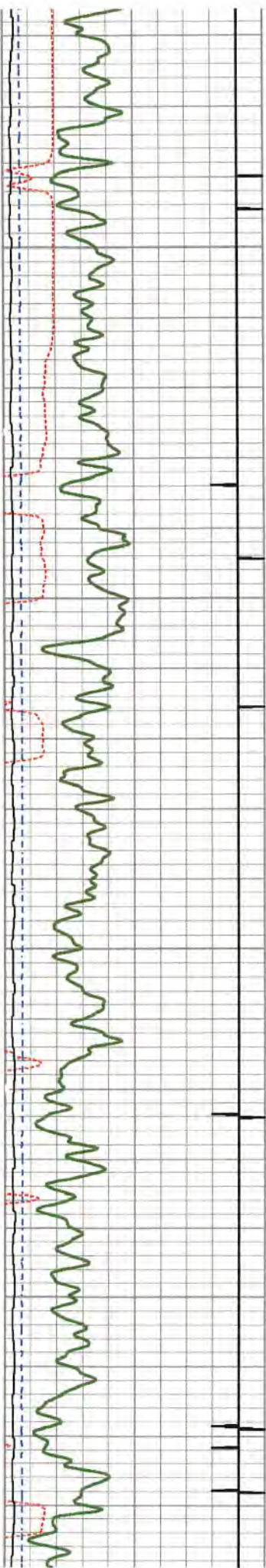
Database File antero_grand_pad_toroweap1h_rcbl_23_may_2022.db
 Dataset Pathname pass7
 Presentation Format rcbl-bond index for antero 1020
 Dataset Creation Mon May 23 15:22:50 2022
 Charted by Depth in Feet scaled 1:240

280	Travel Time (usec)	180	0	Amplitude (mV)	100	0	AMPMIN	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1	1	BONDIX	0	0	AMPMAX	150	200	(usec)	1200	
0	Gamma Ray (GAPI)	150				0	AMPAVG	150				
0	Line Tension (lb)	5000					TEMP					
-100	LSPD (ft/min)	100					(degF)					







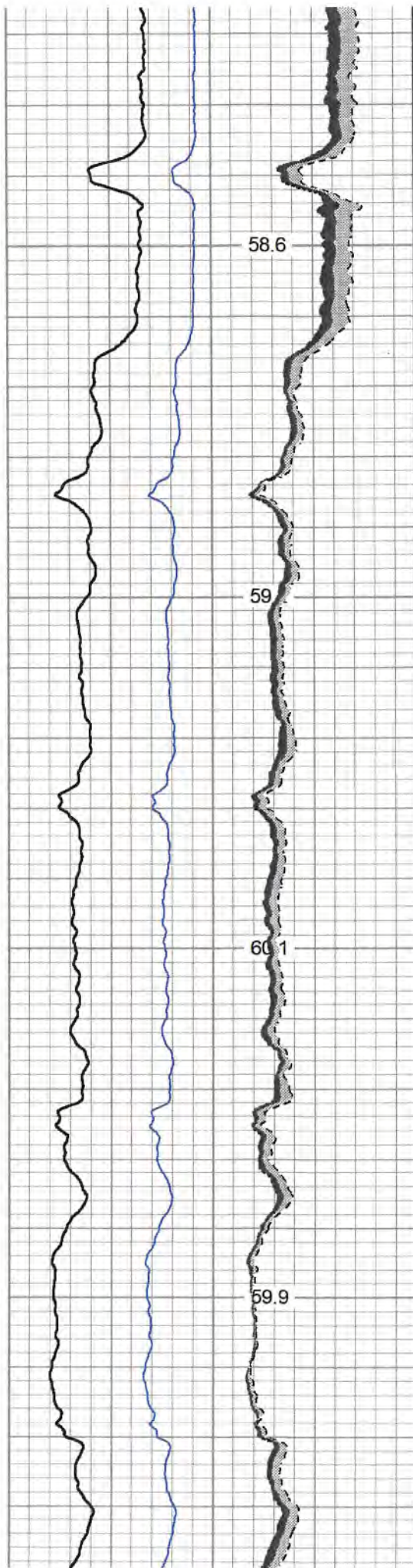


650

700

750

800

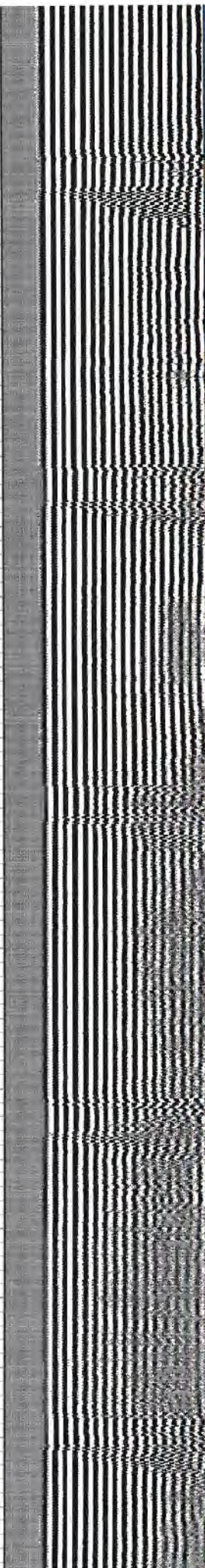


58.6

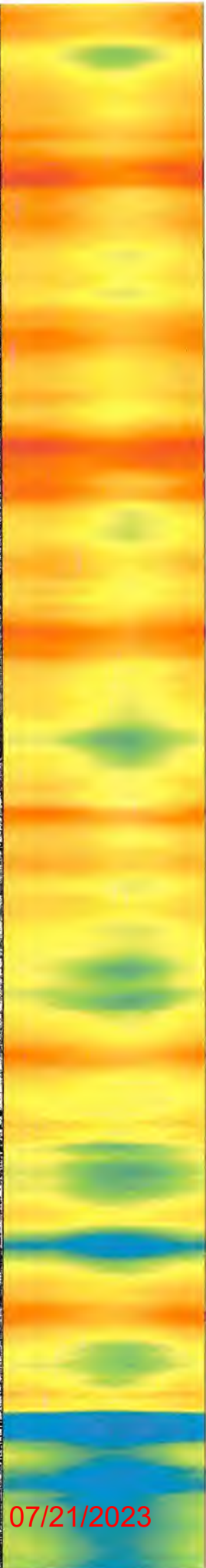
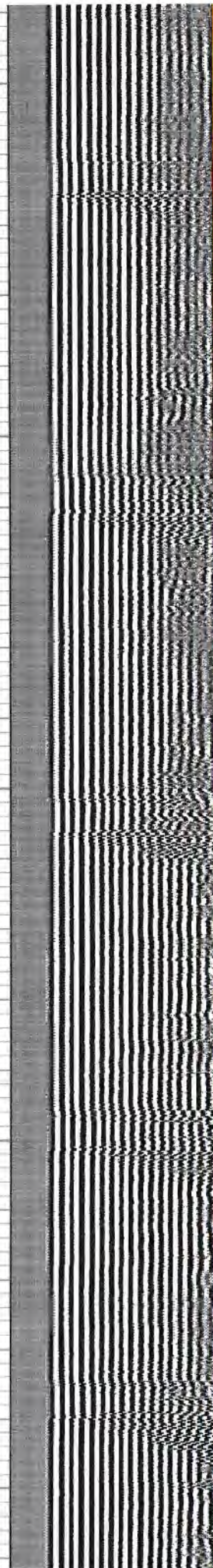
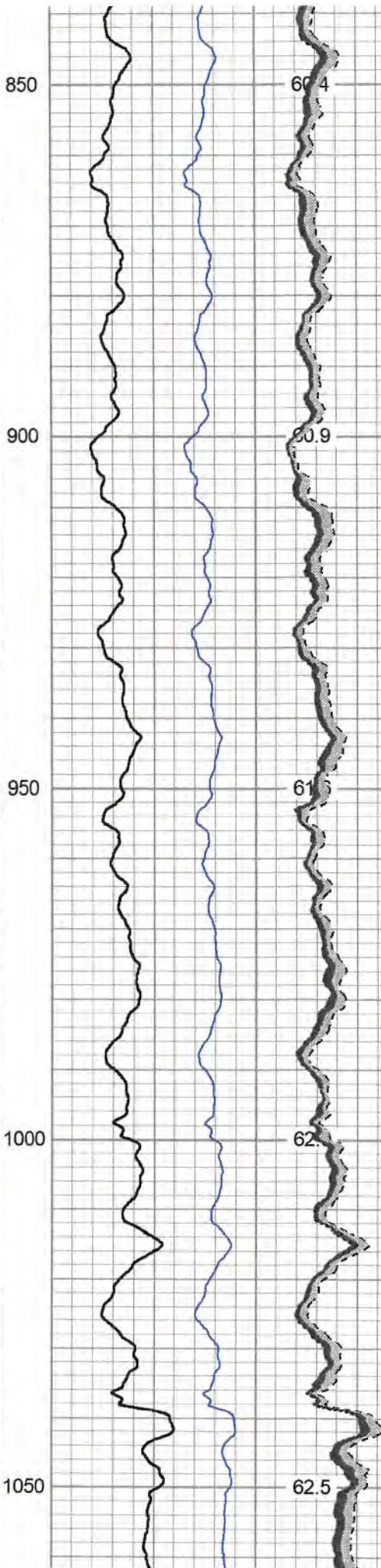
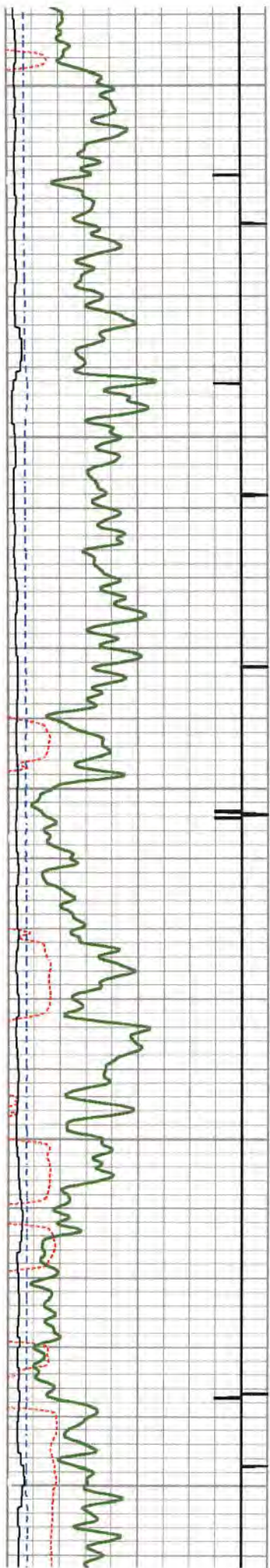
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60.1

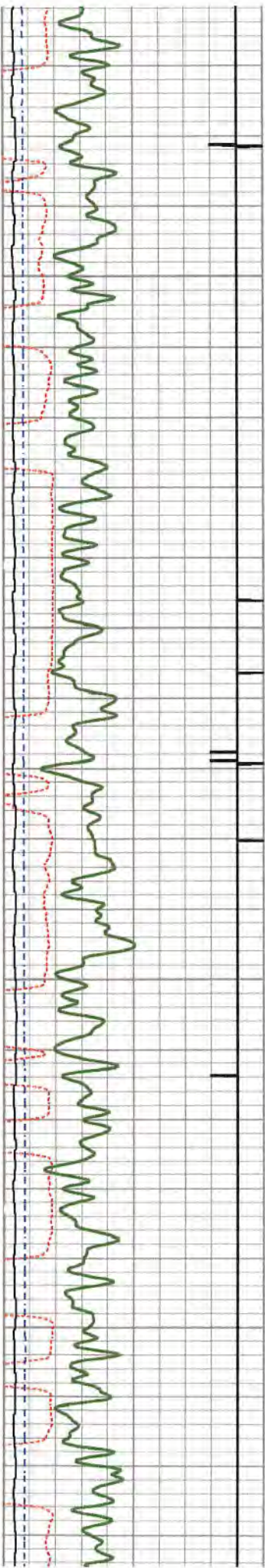
59.9



07/21/2023



07/21/2023

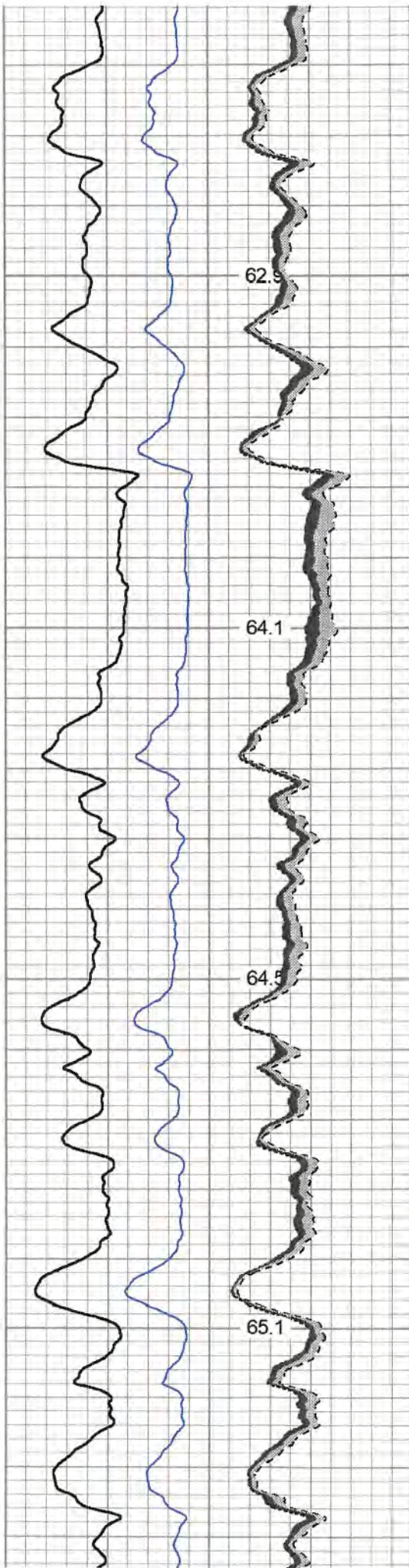


1100

1150

1200

1250

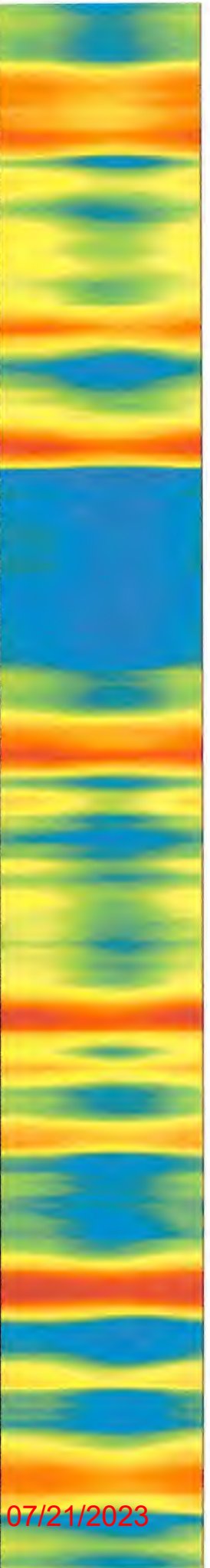


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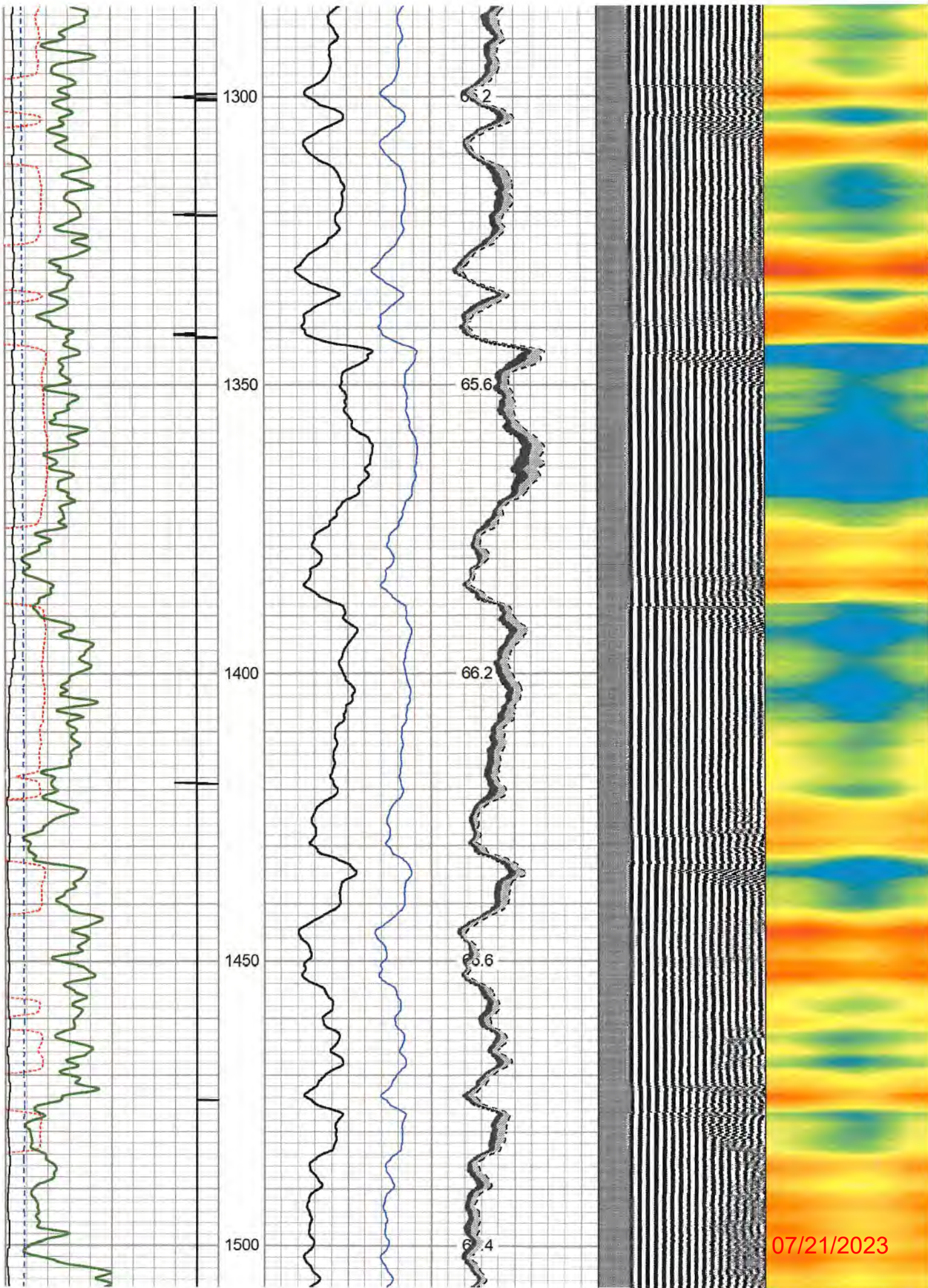
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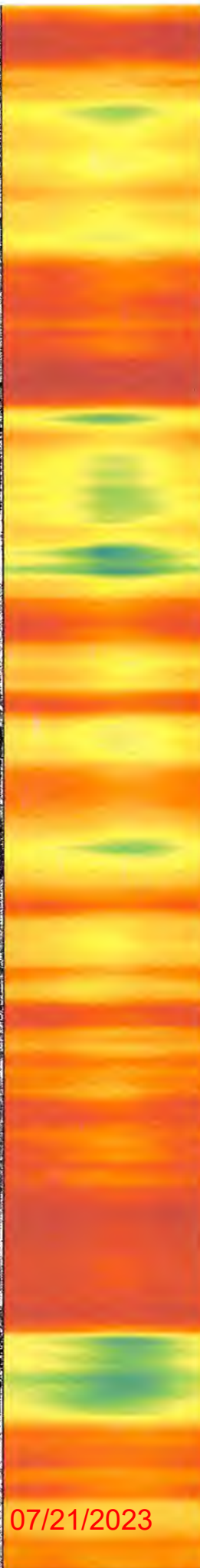
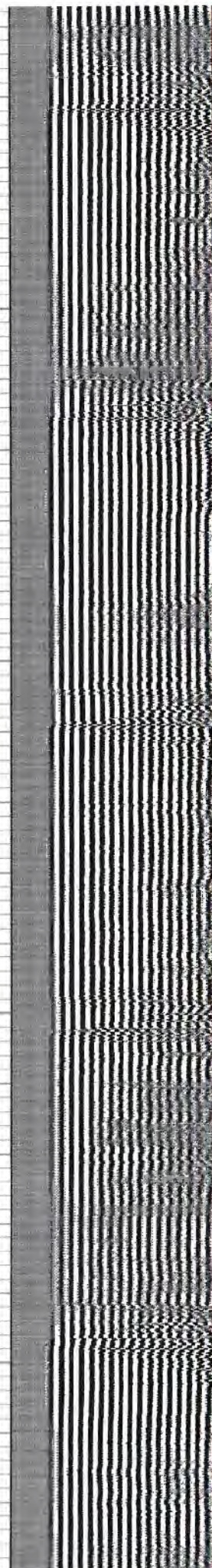
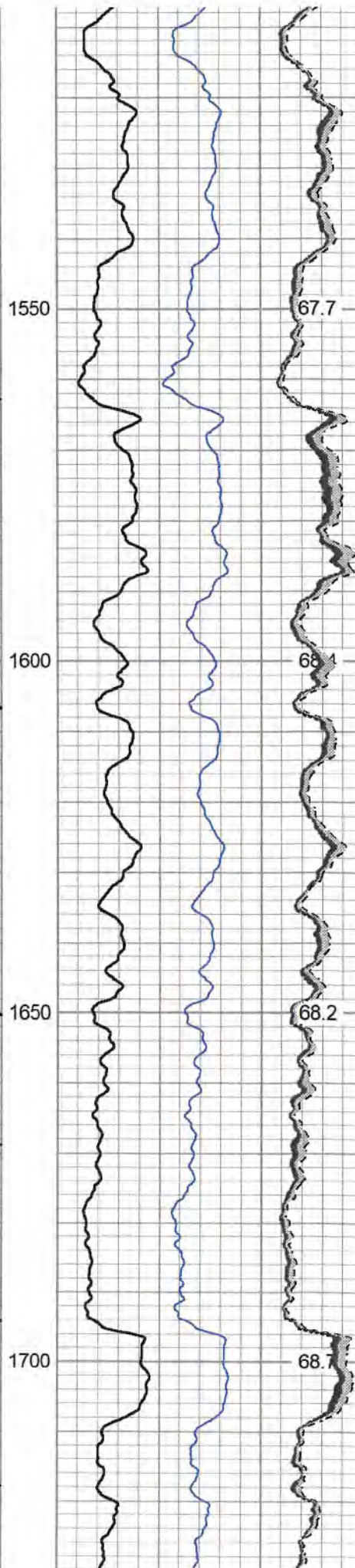
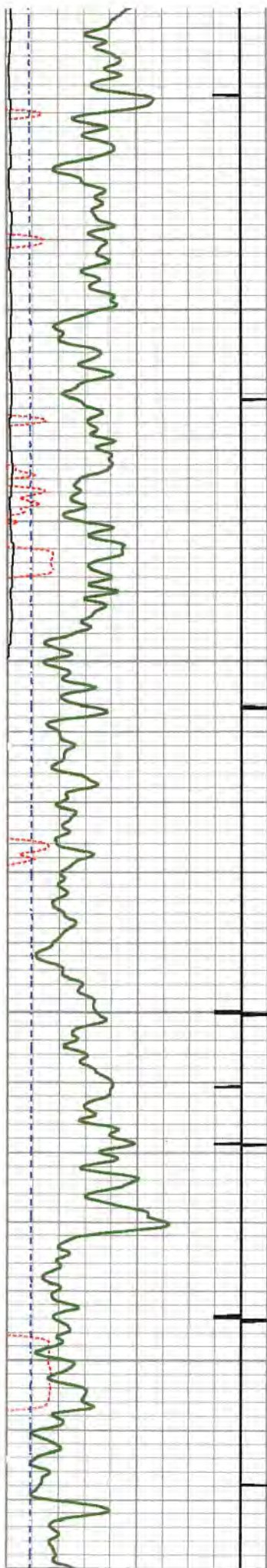
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65.1

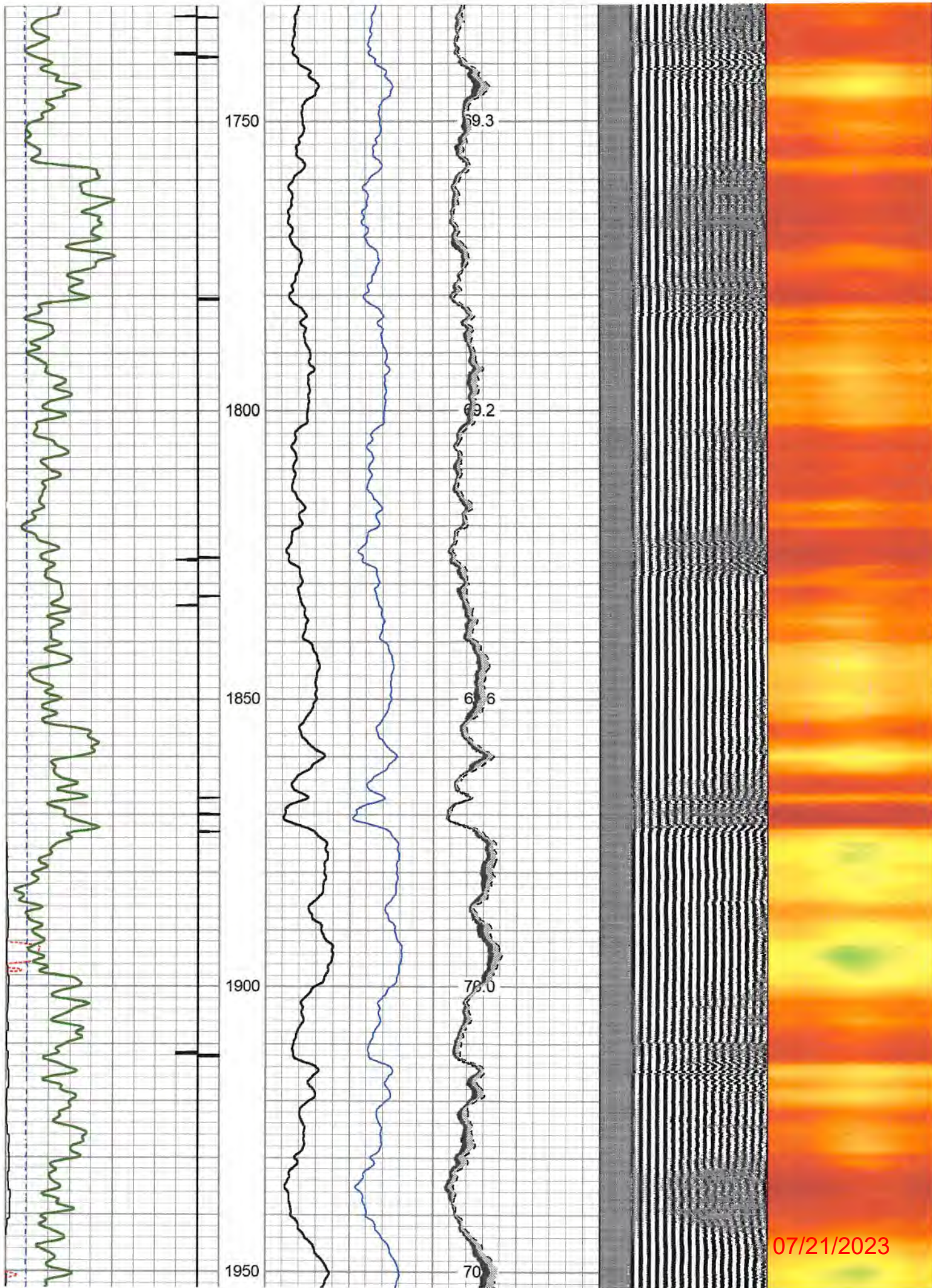


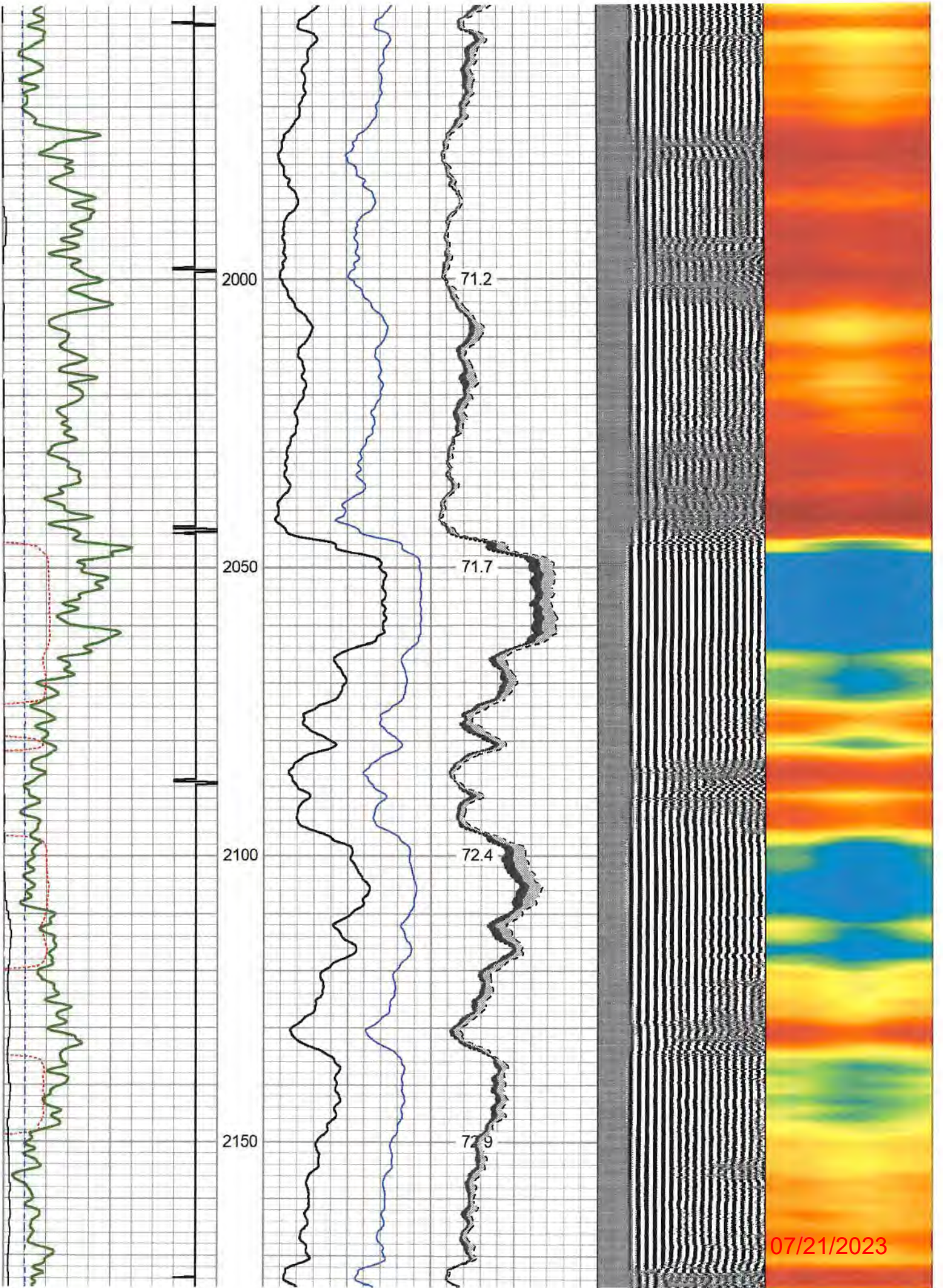
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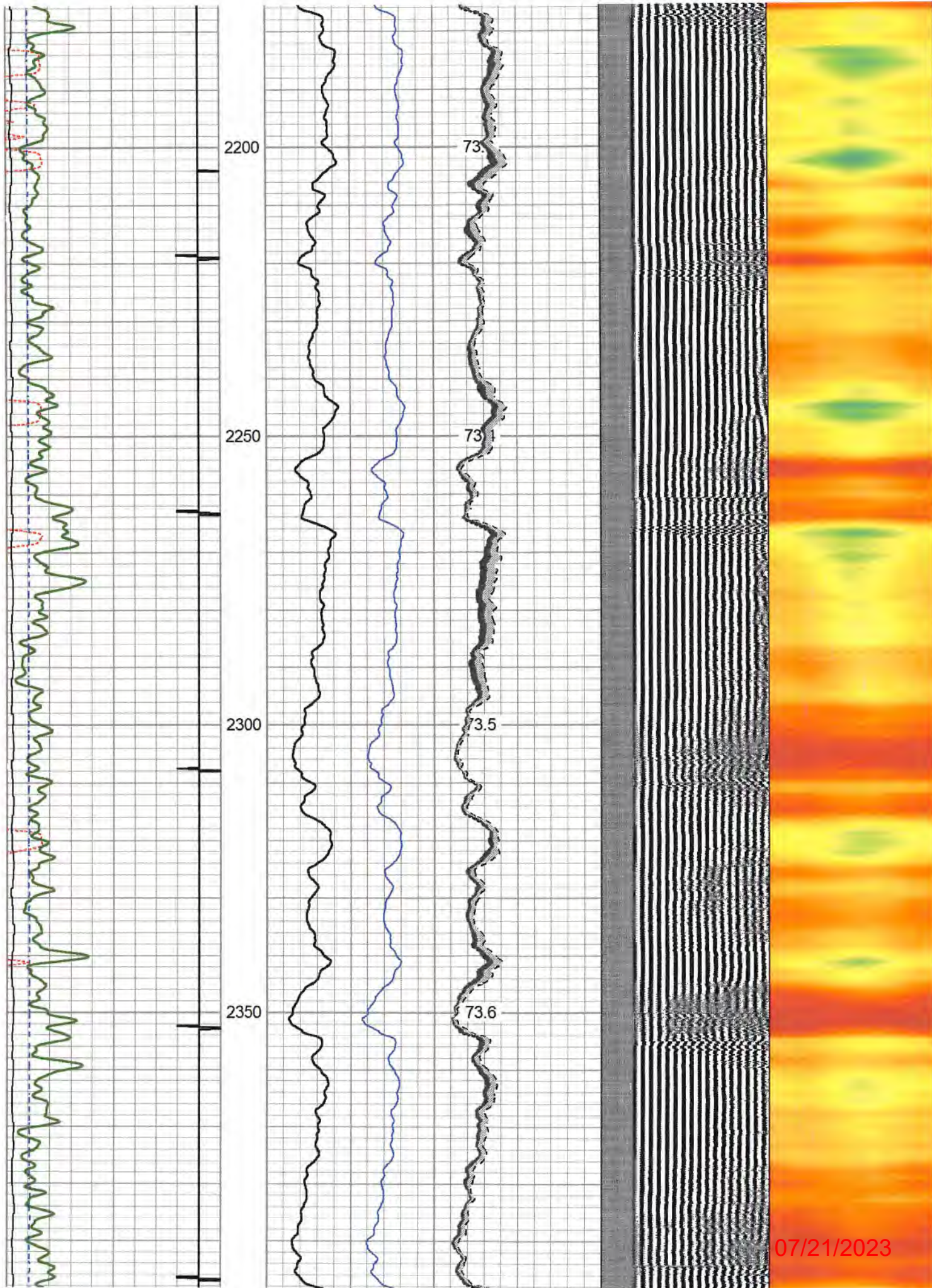


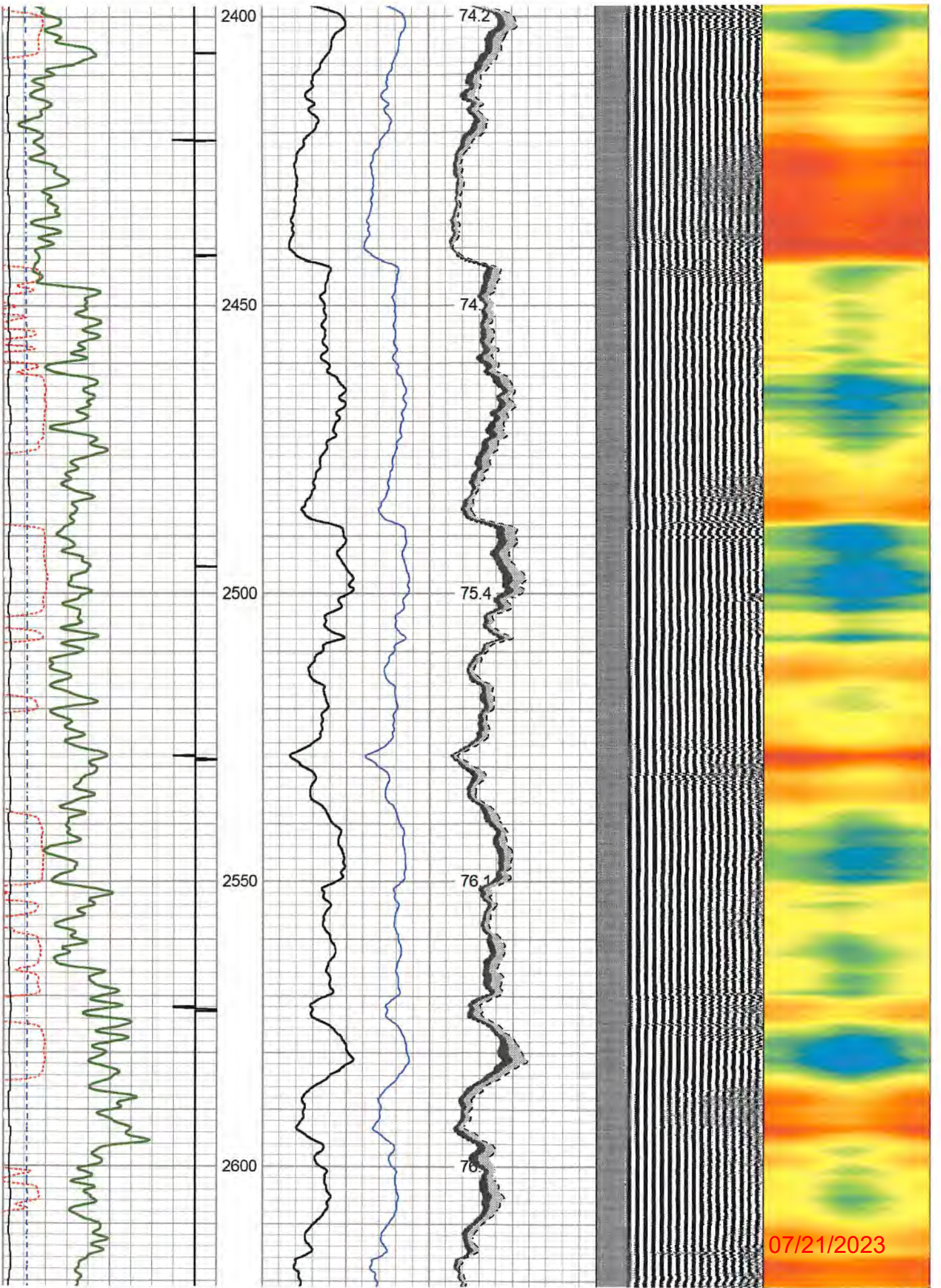
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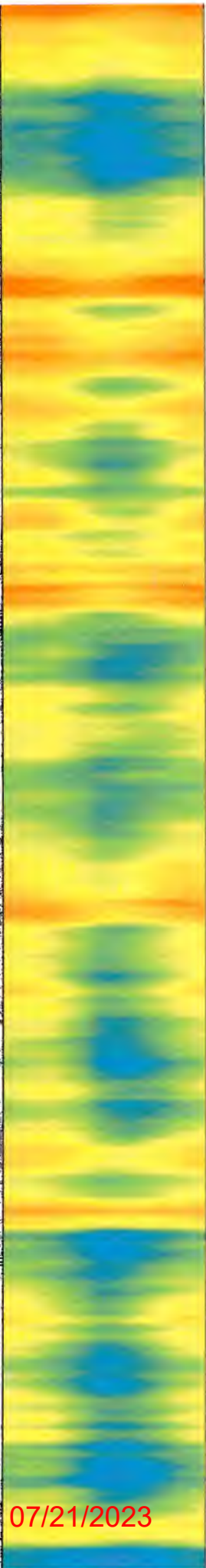
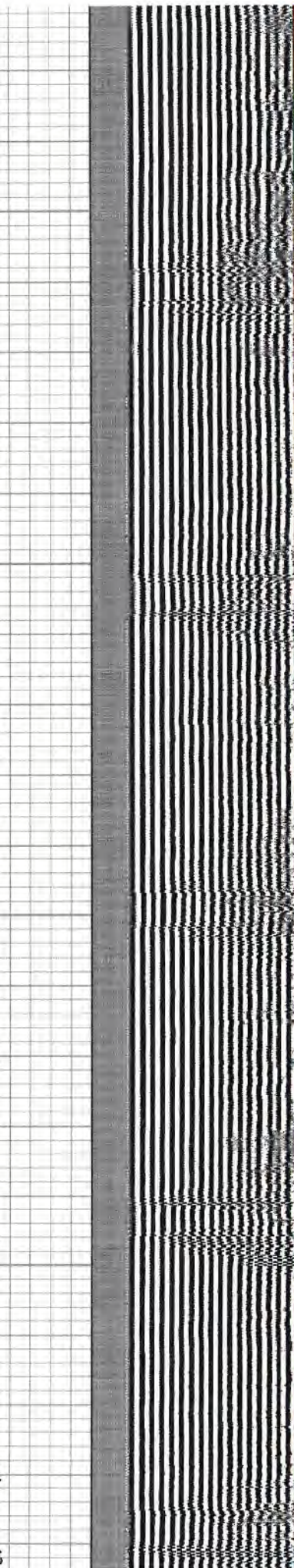
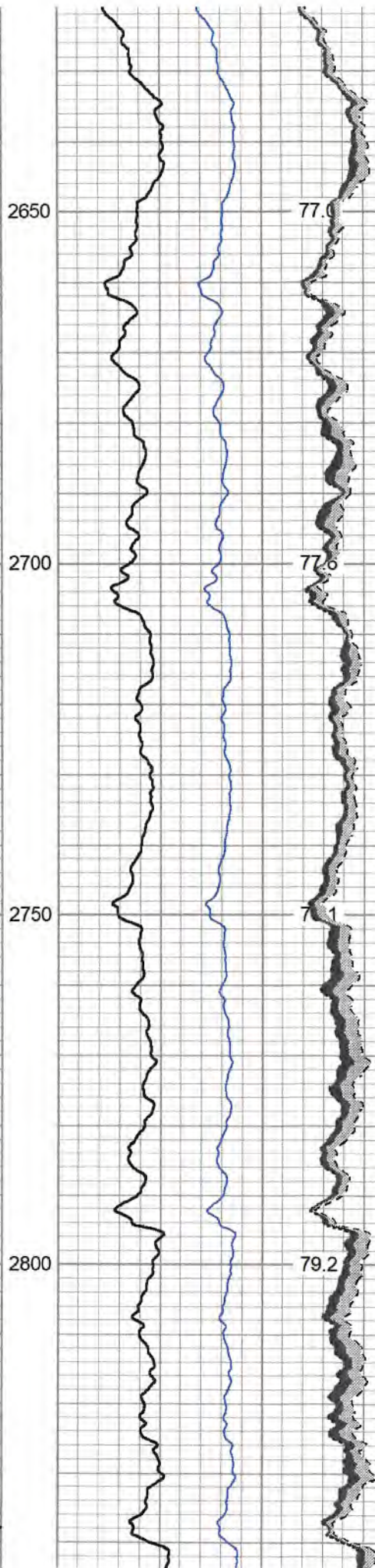
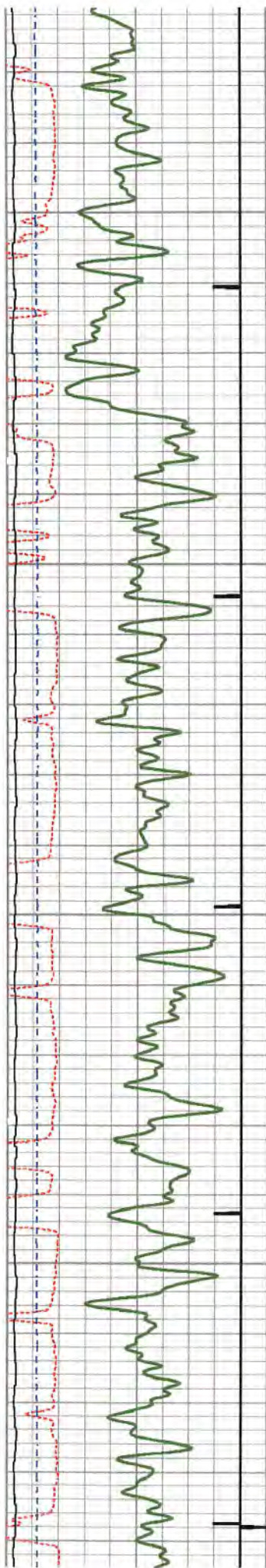




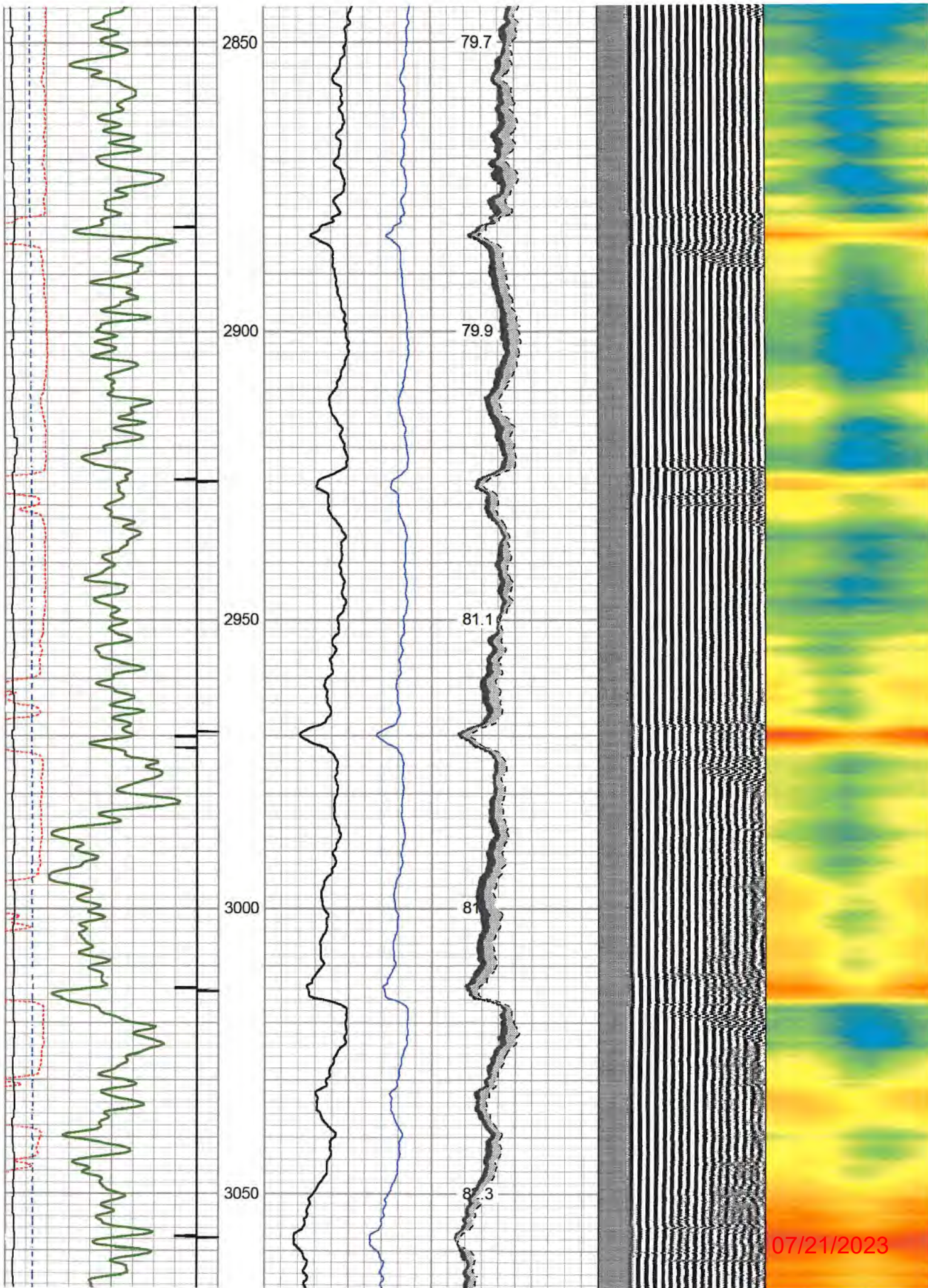
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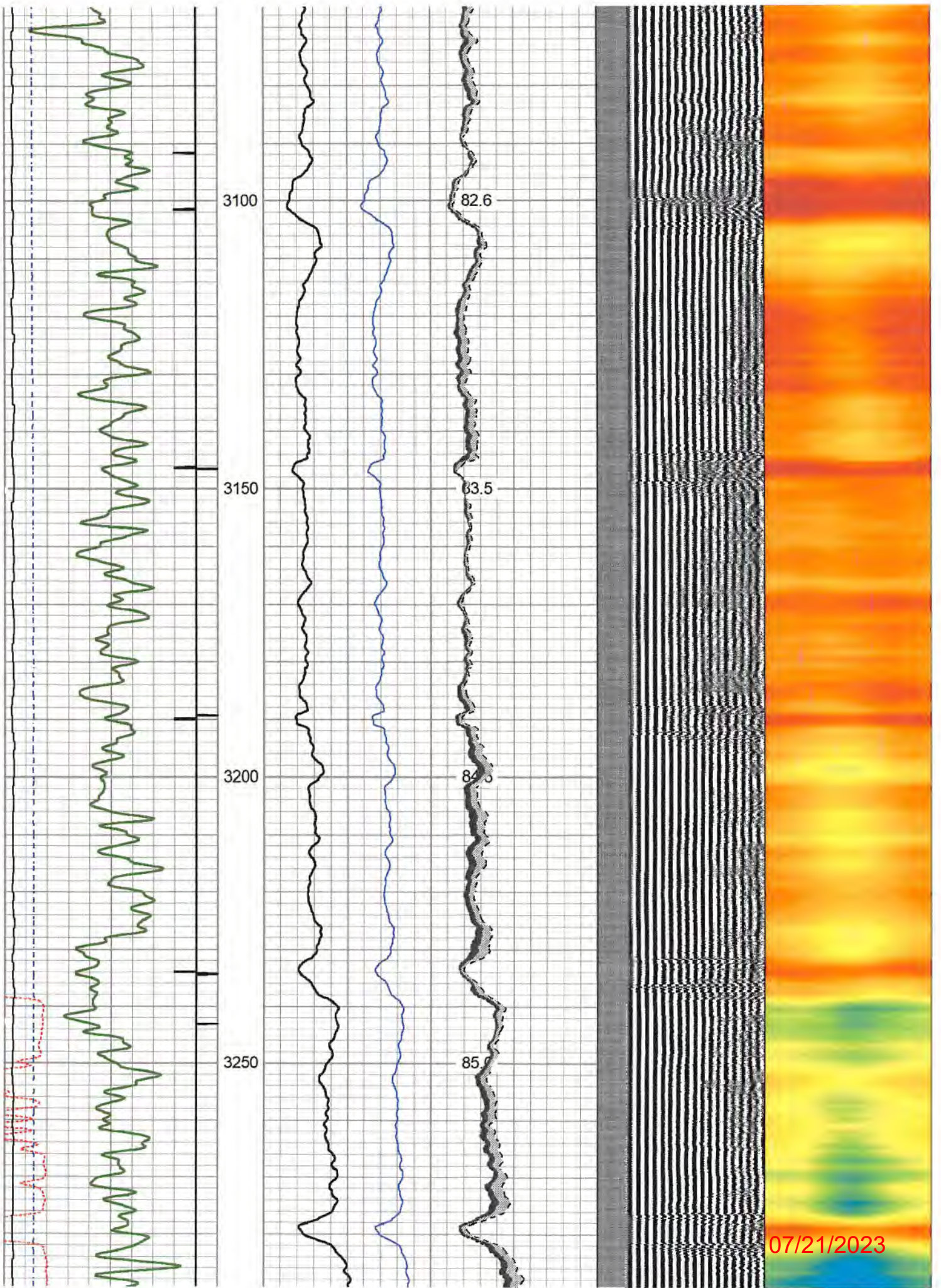


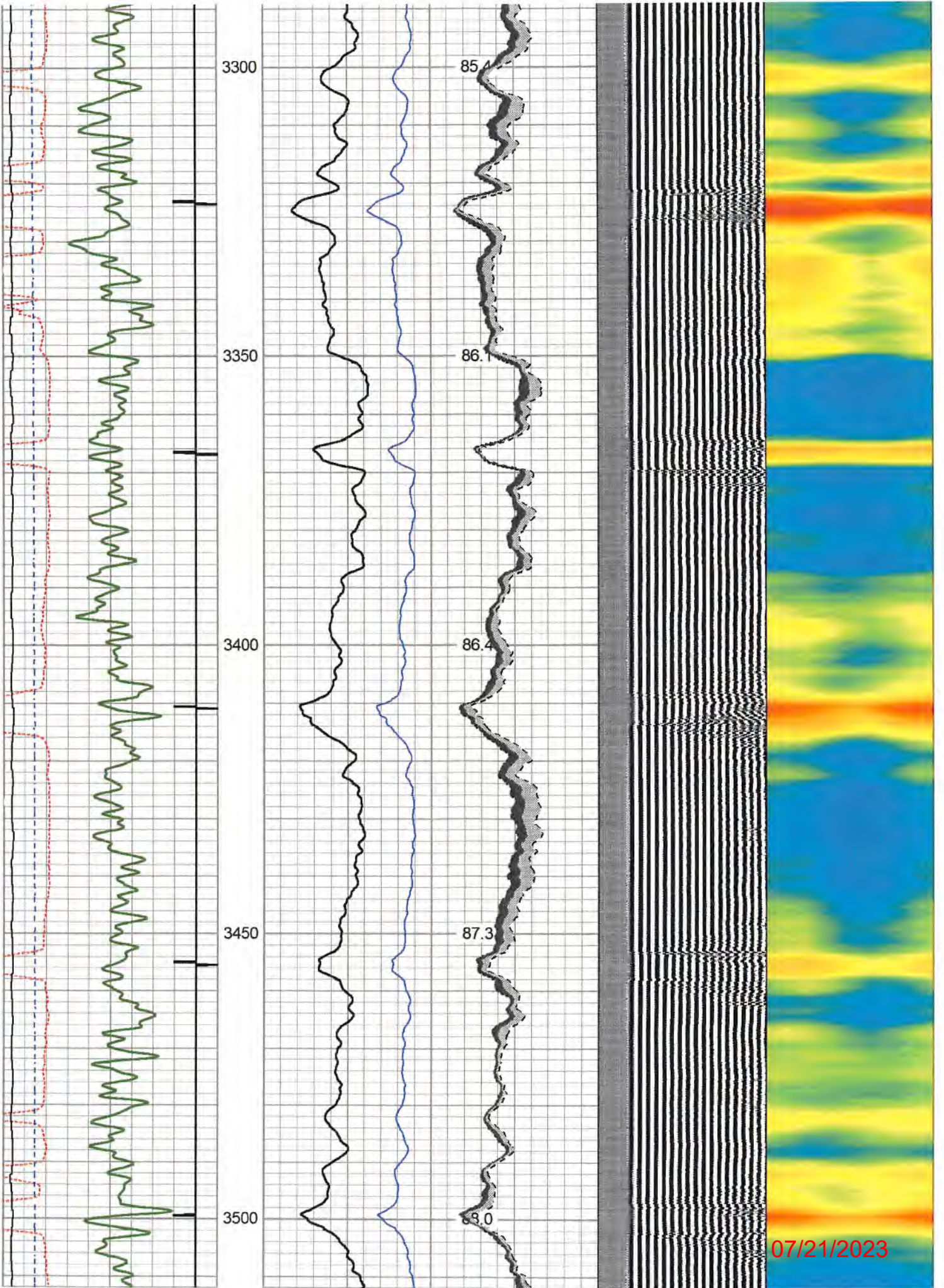




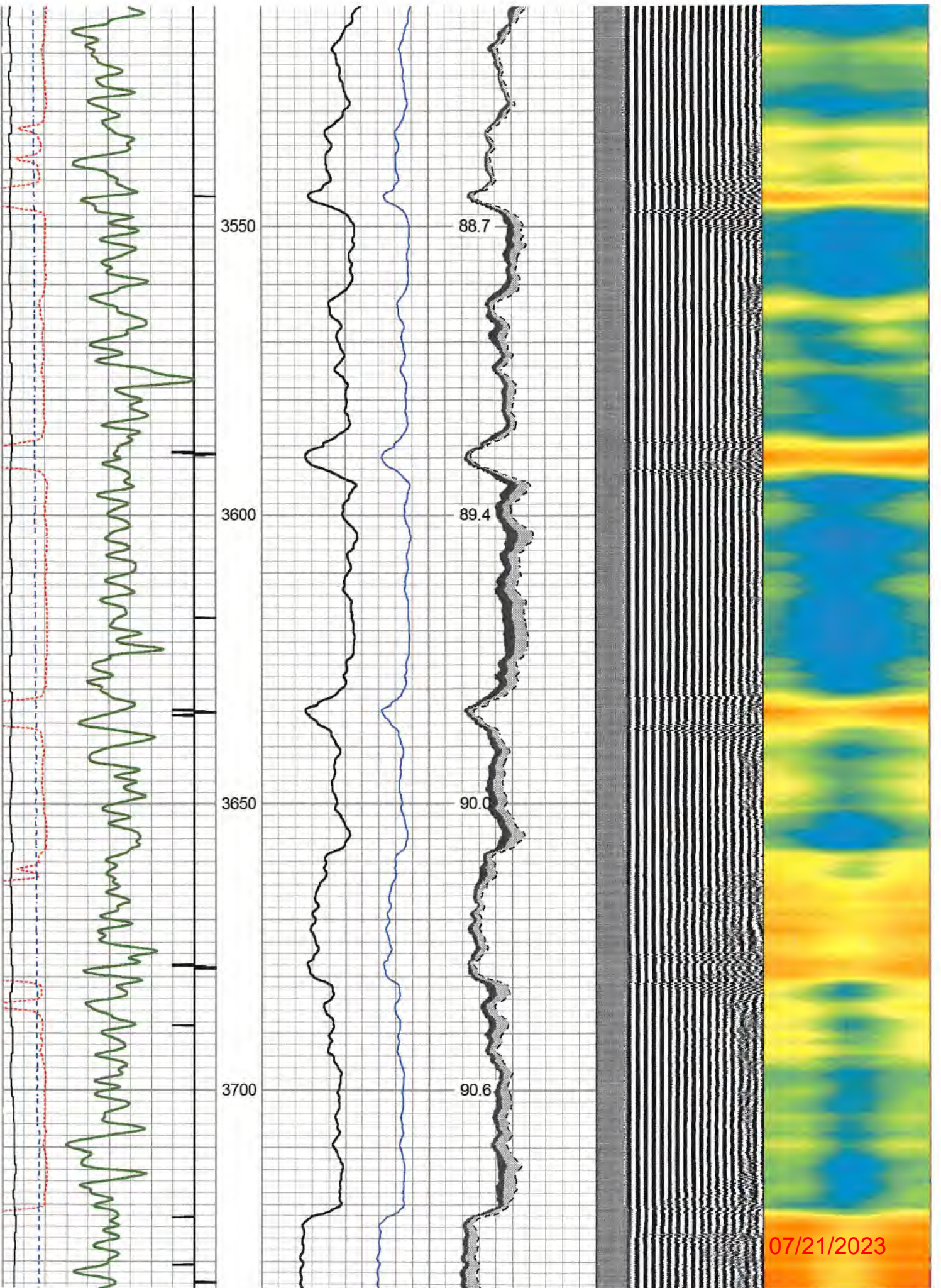
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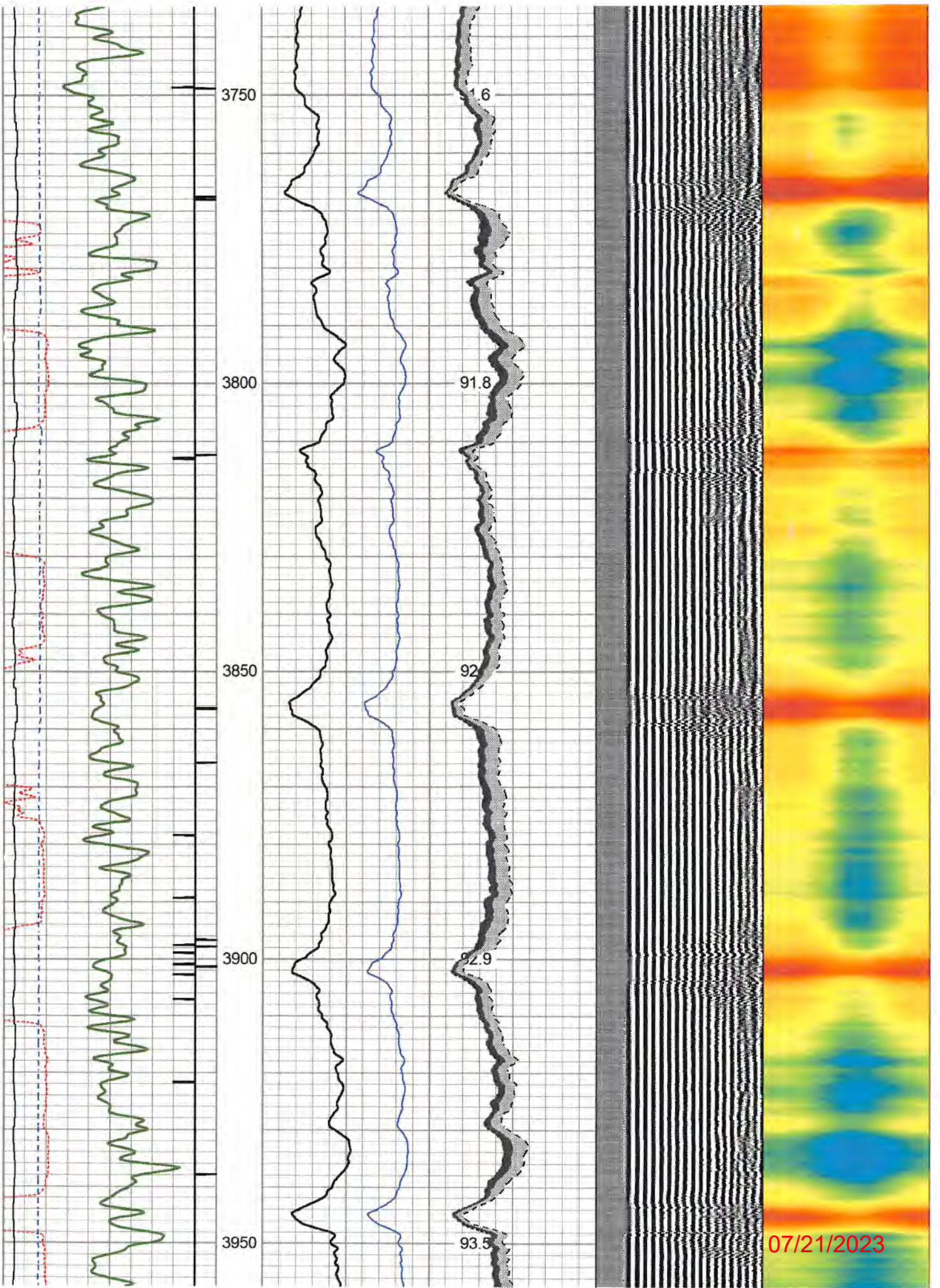




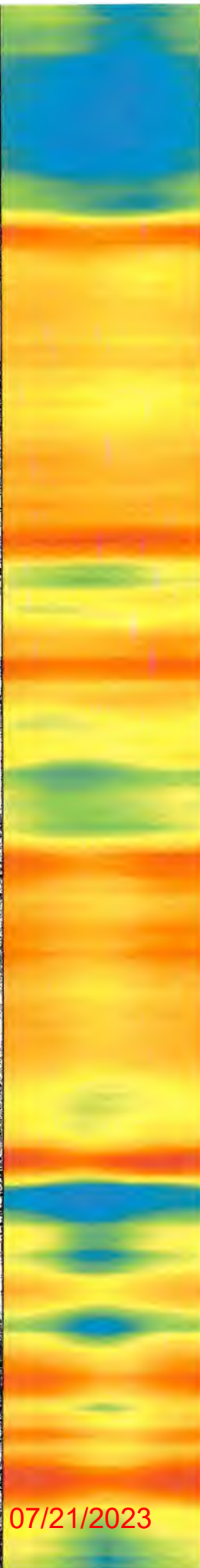
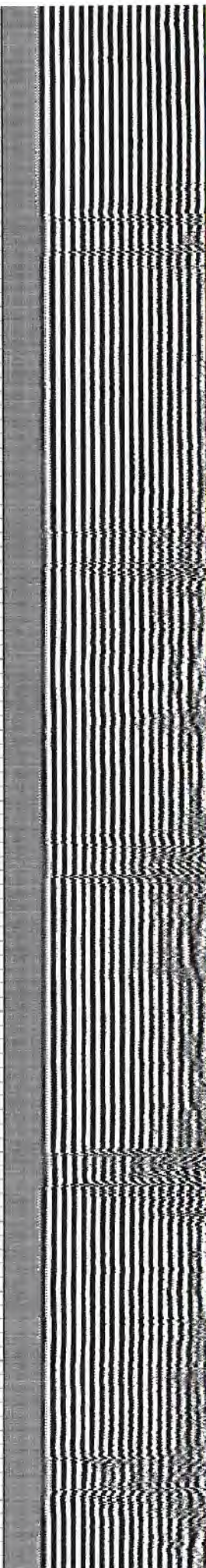
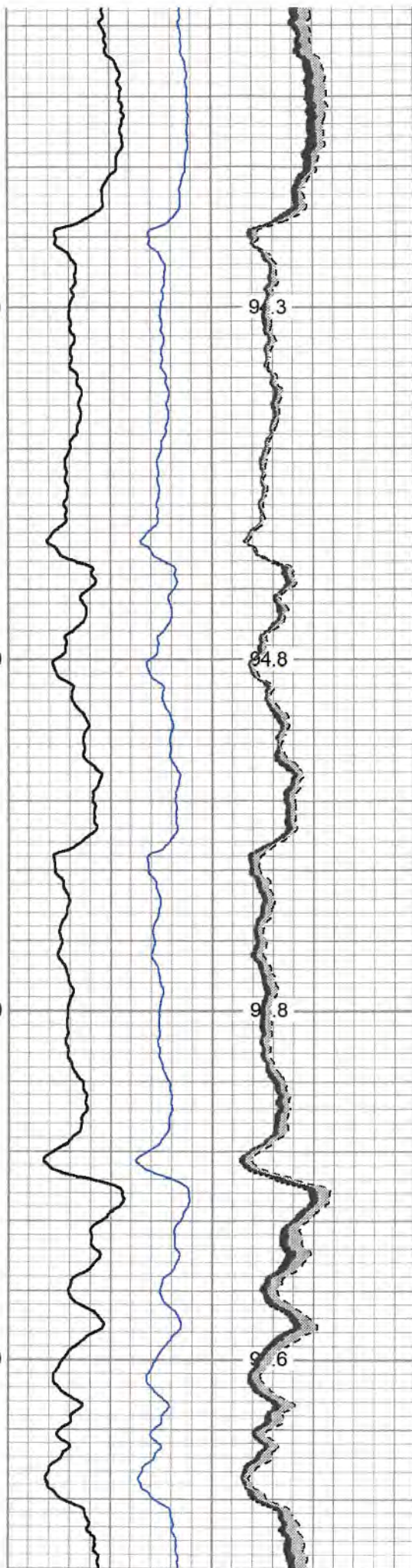
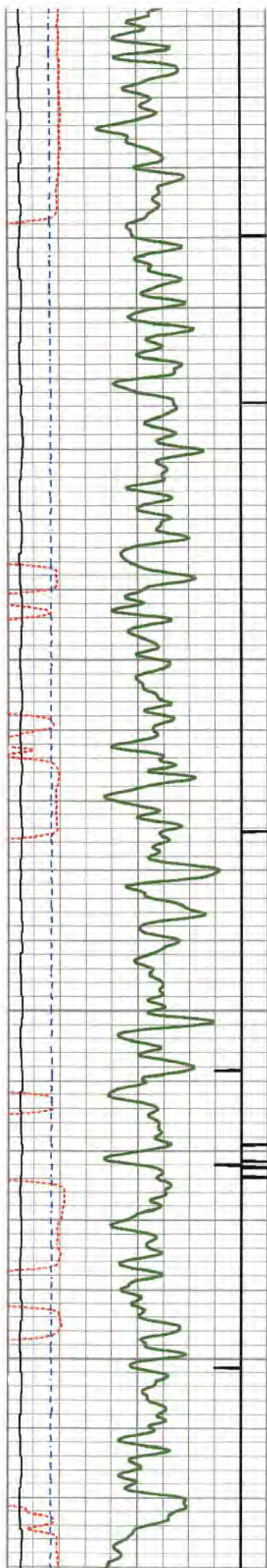


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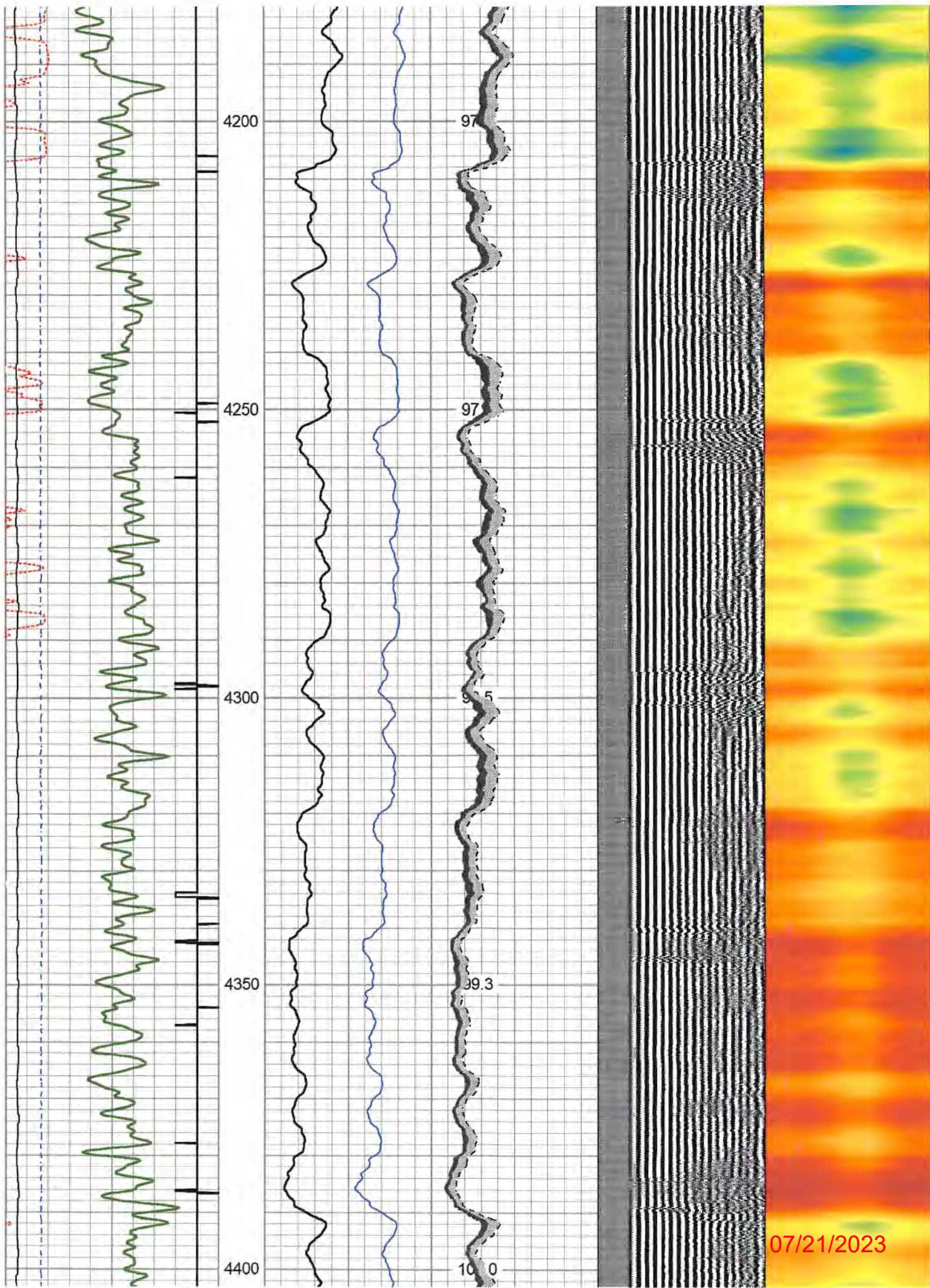


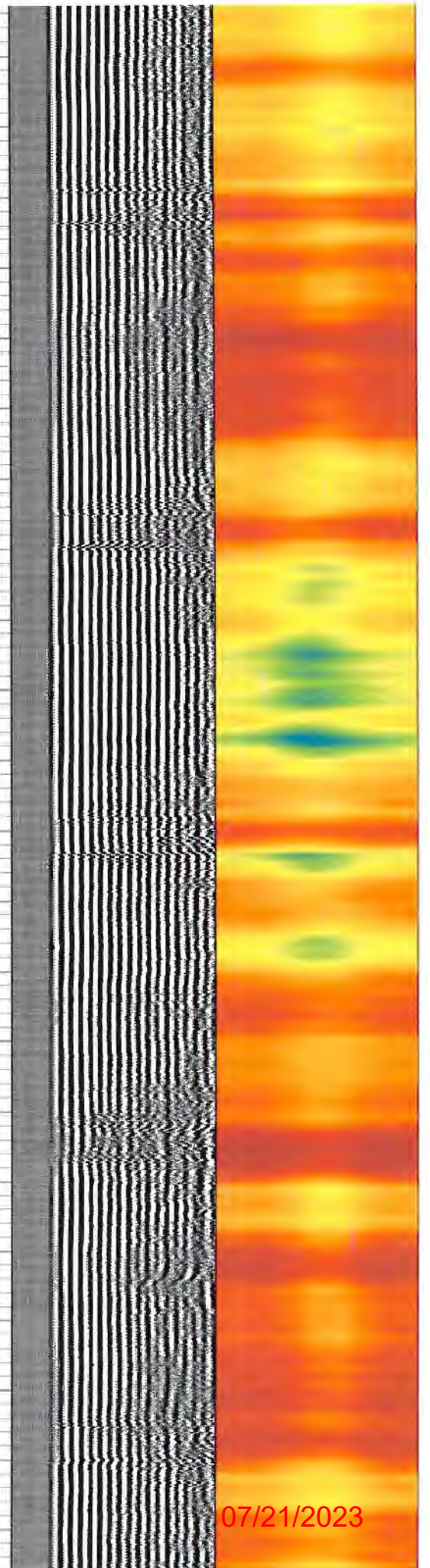
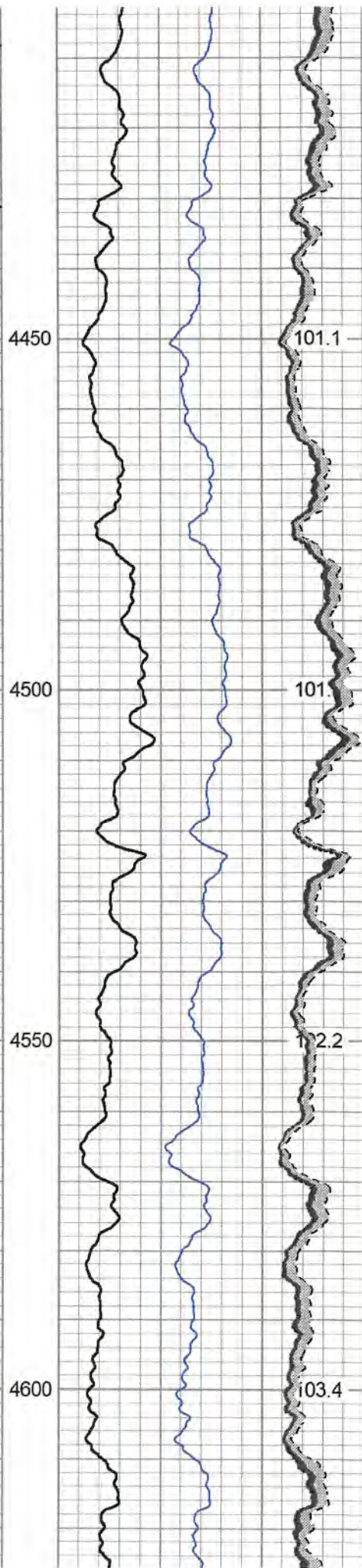
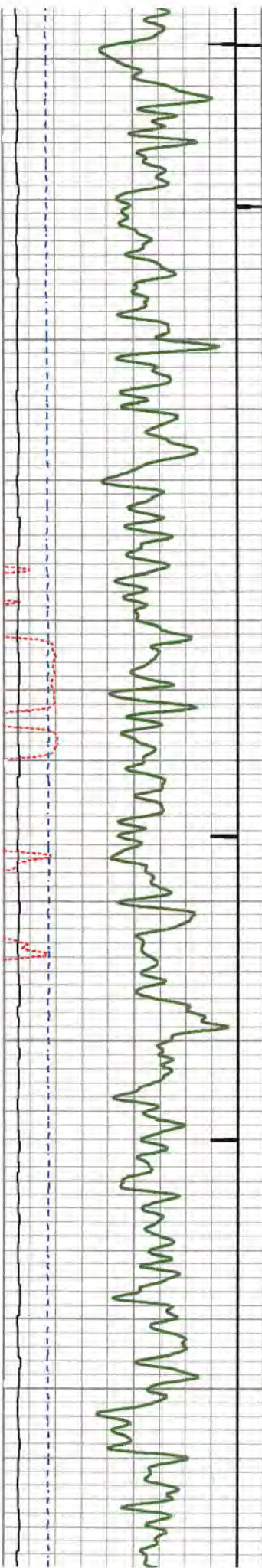


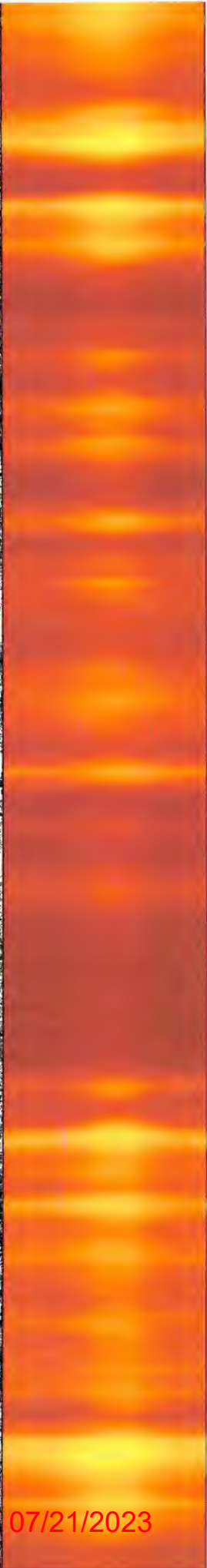
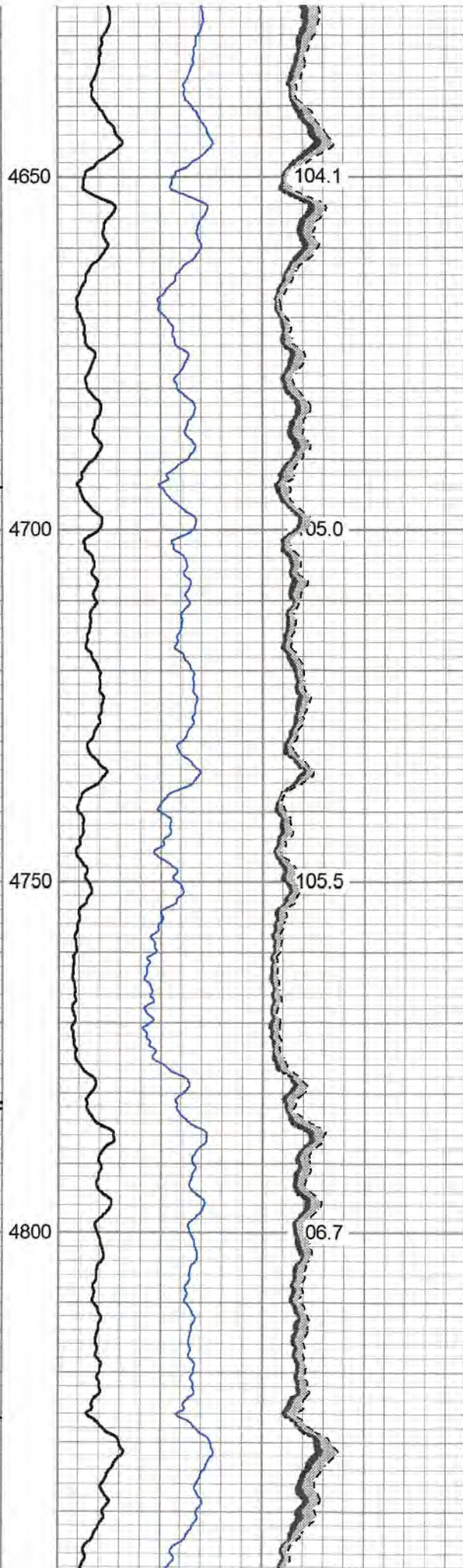
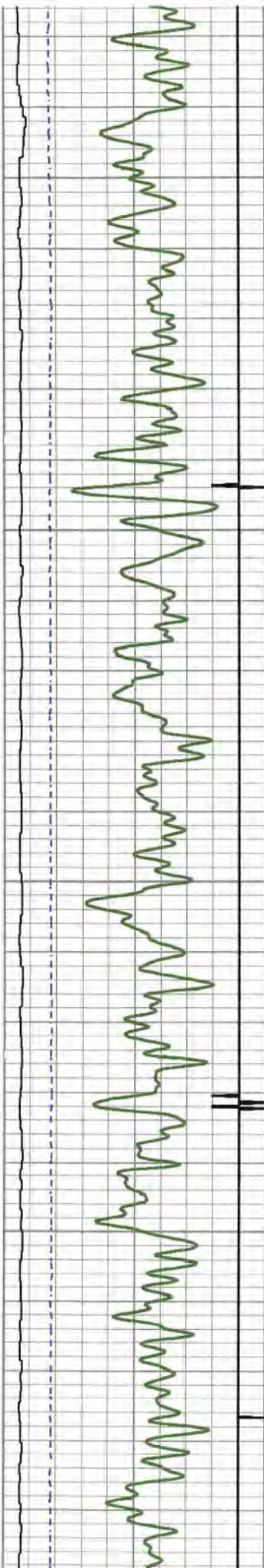
07/21/2023



07/21/2023







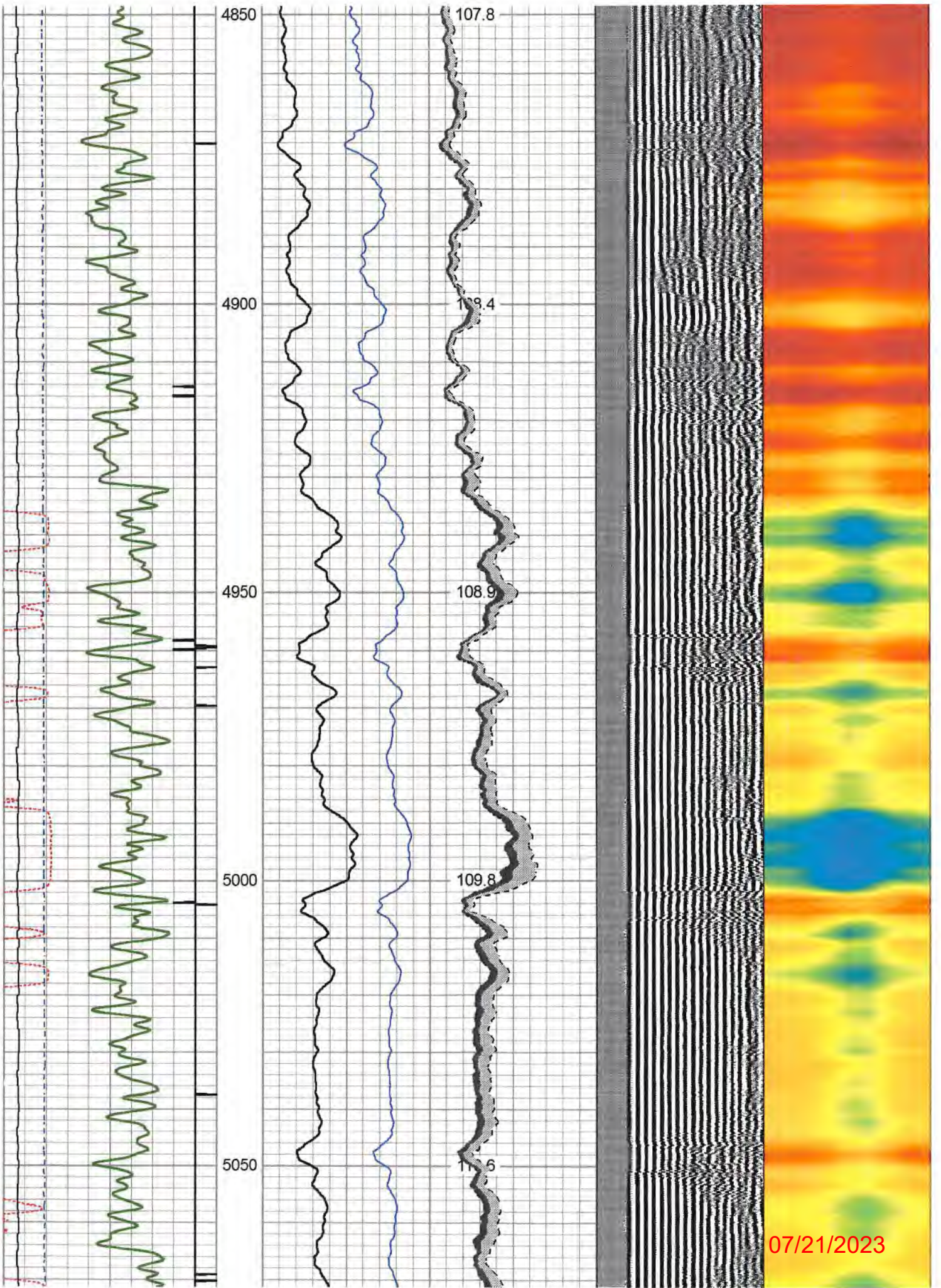
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105.0

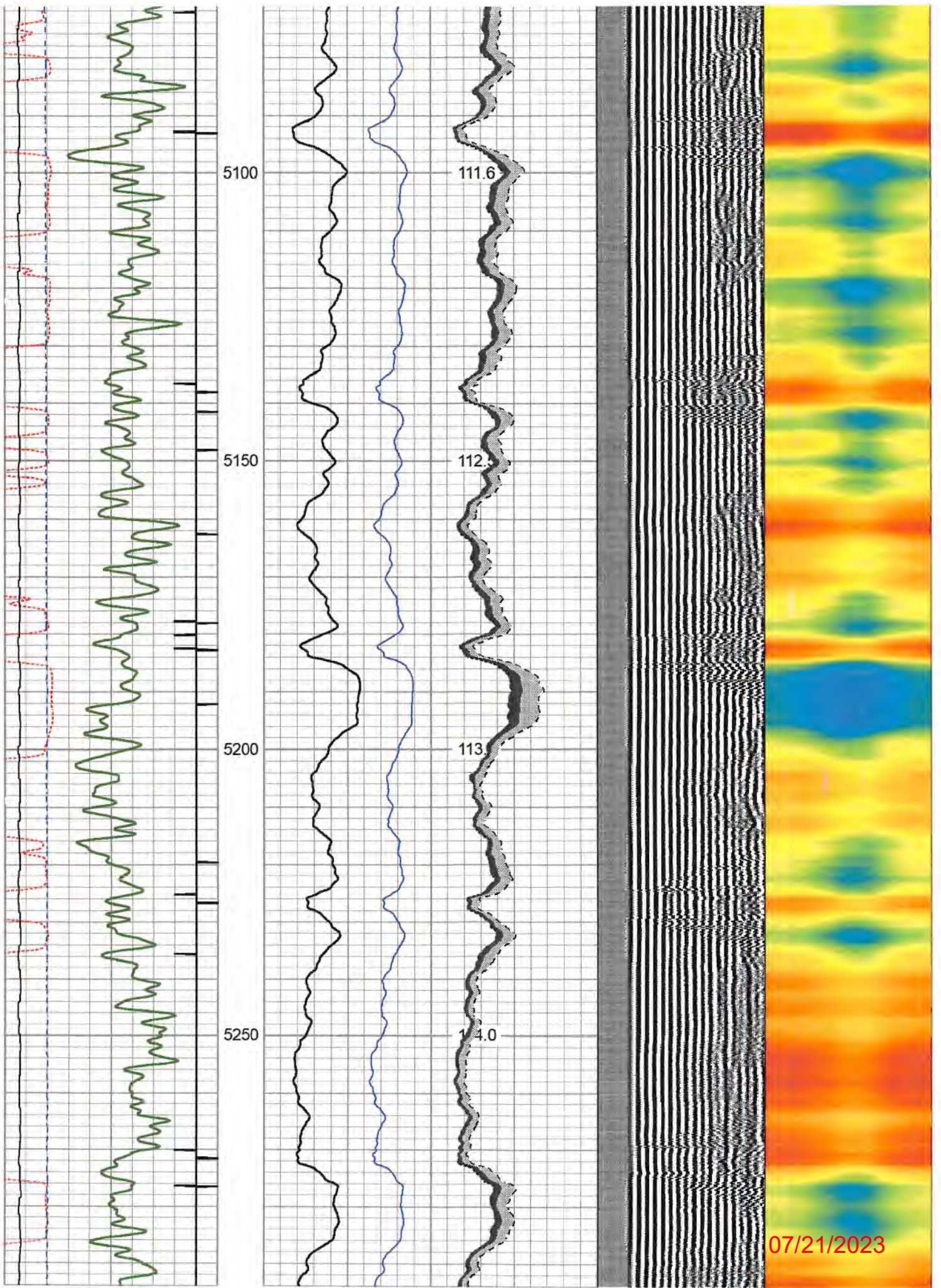
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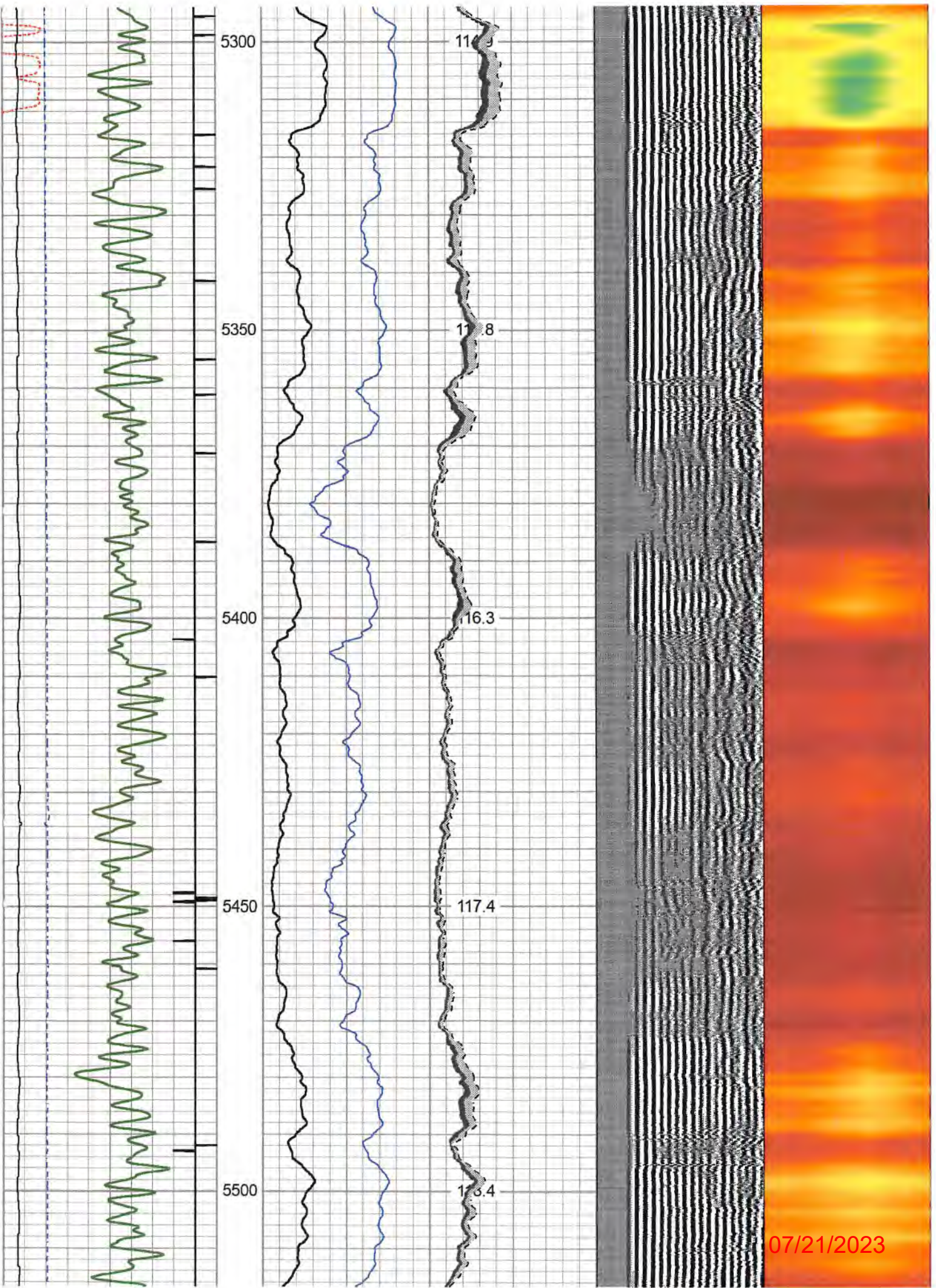
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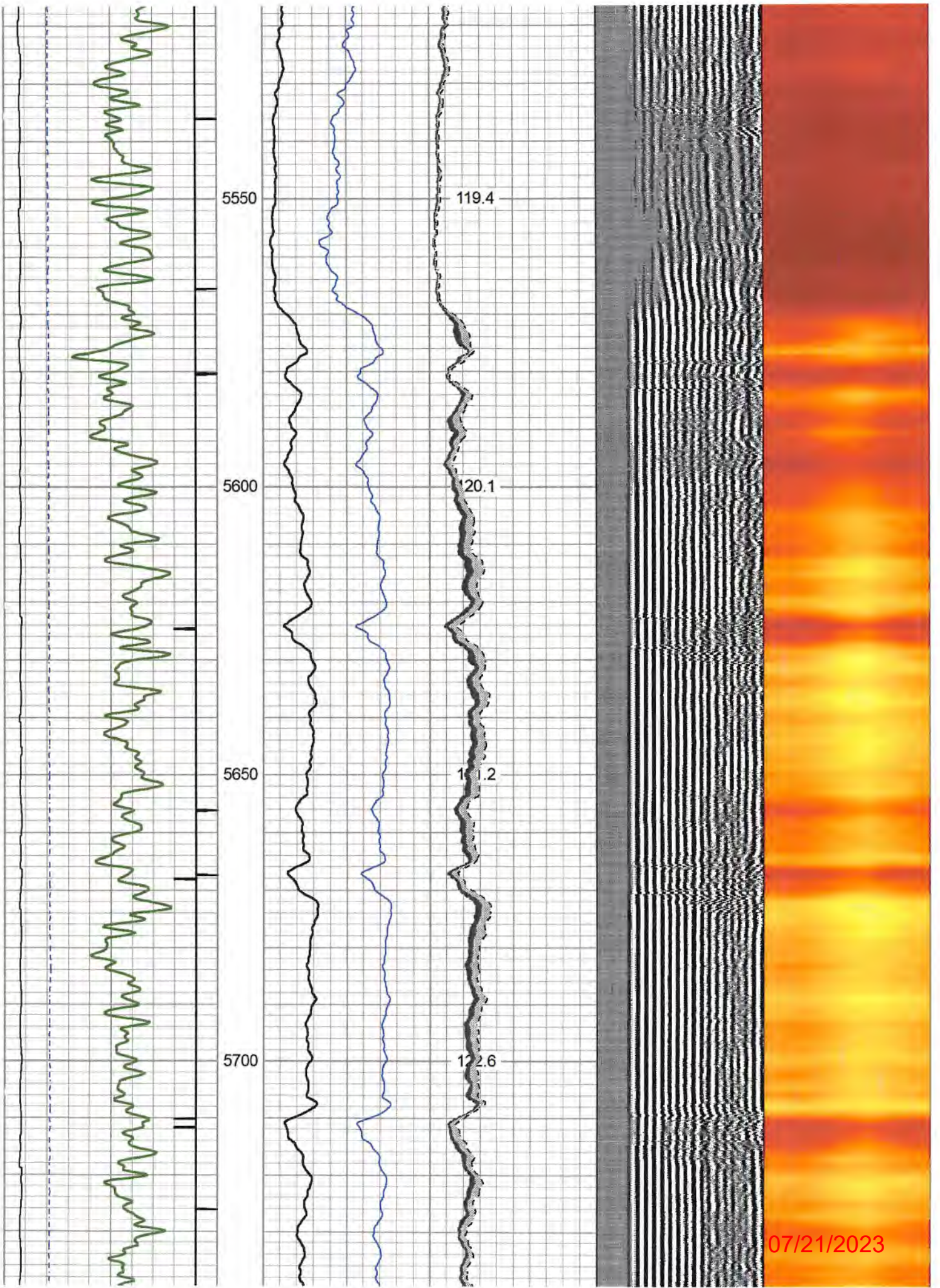
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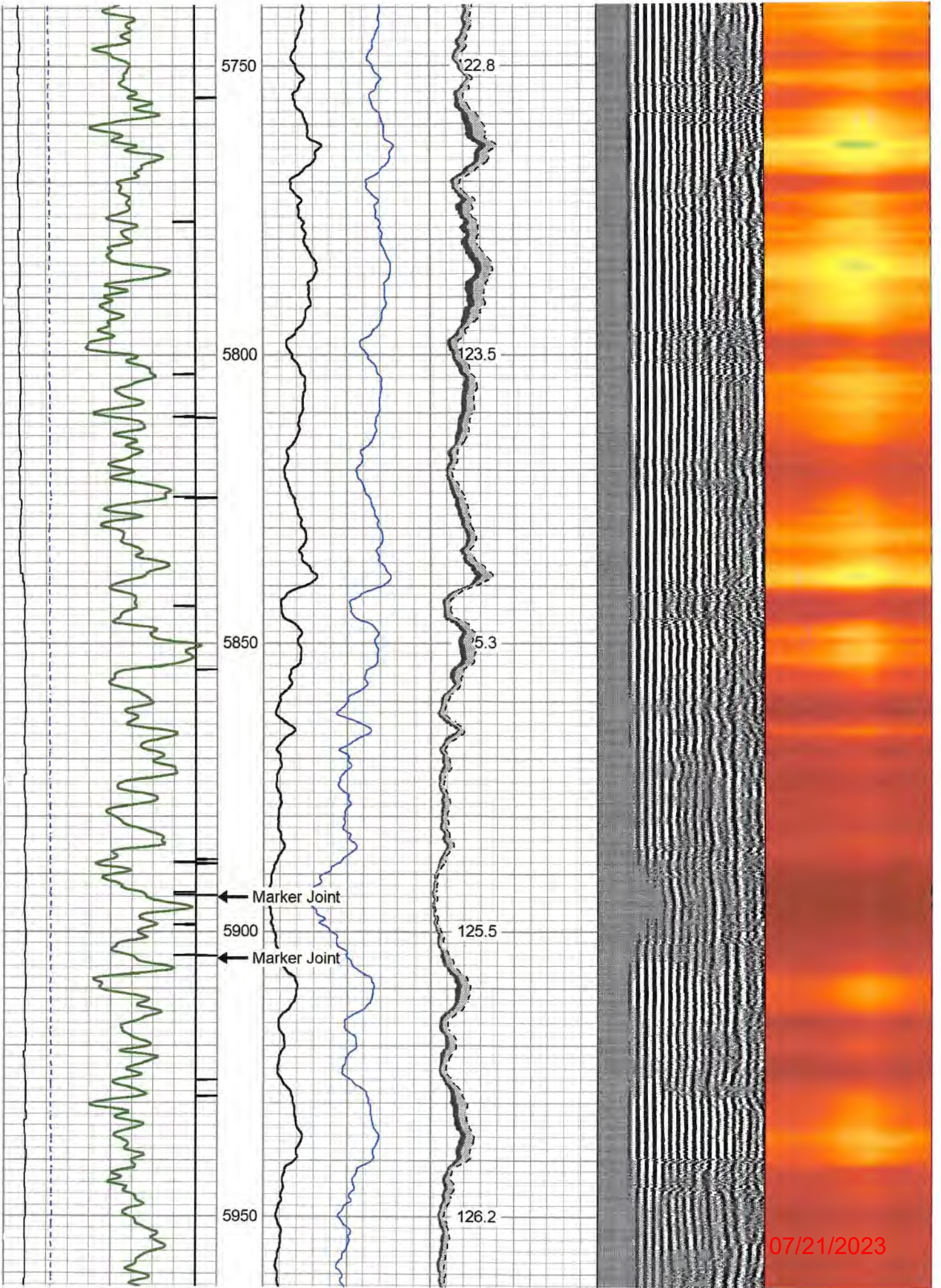


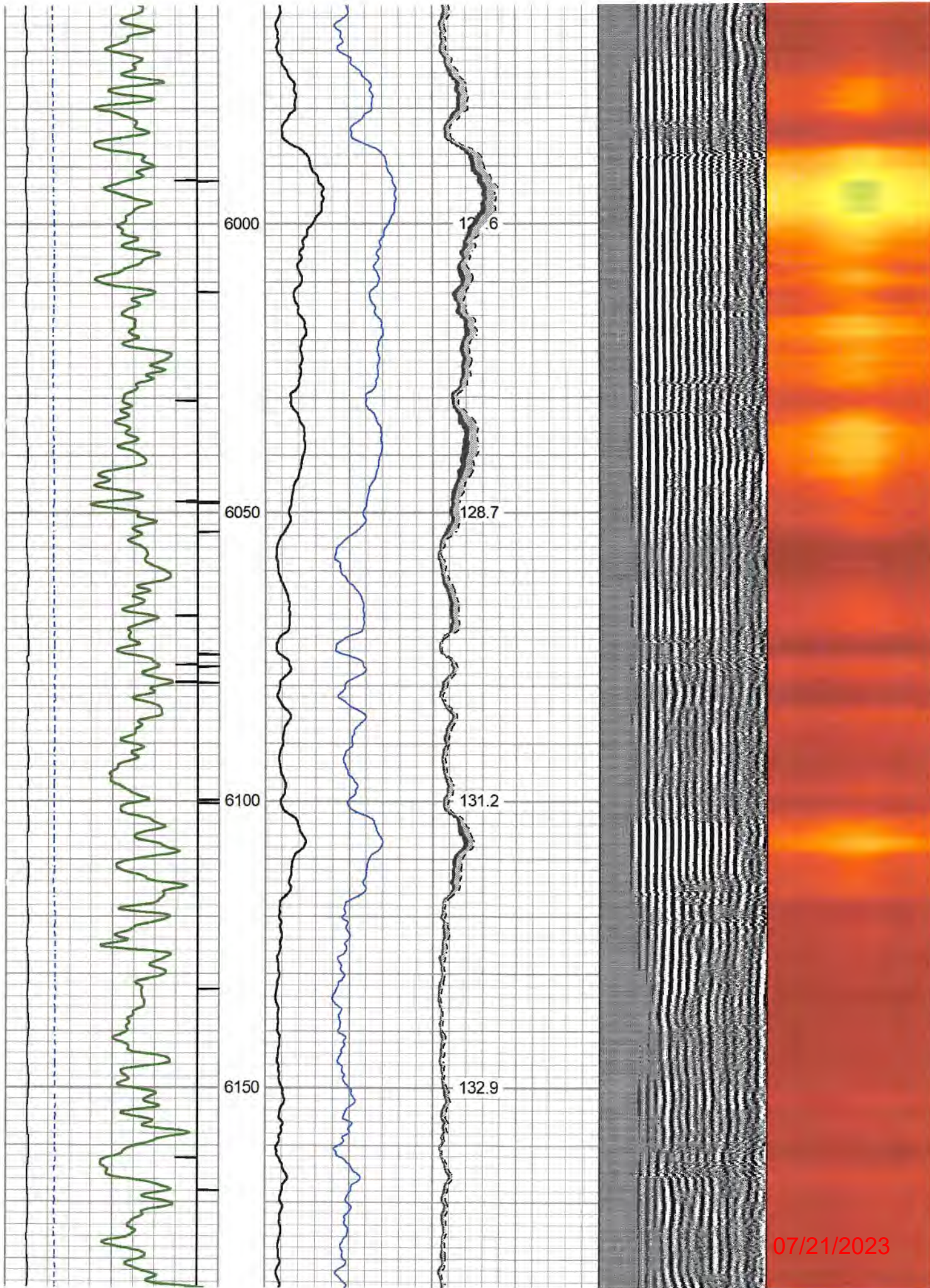
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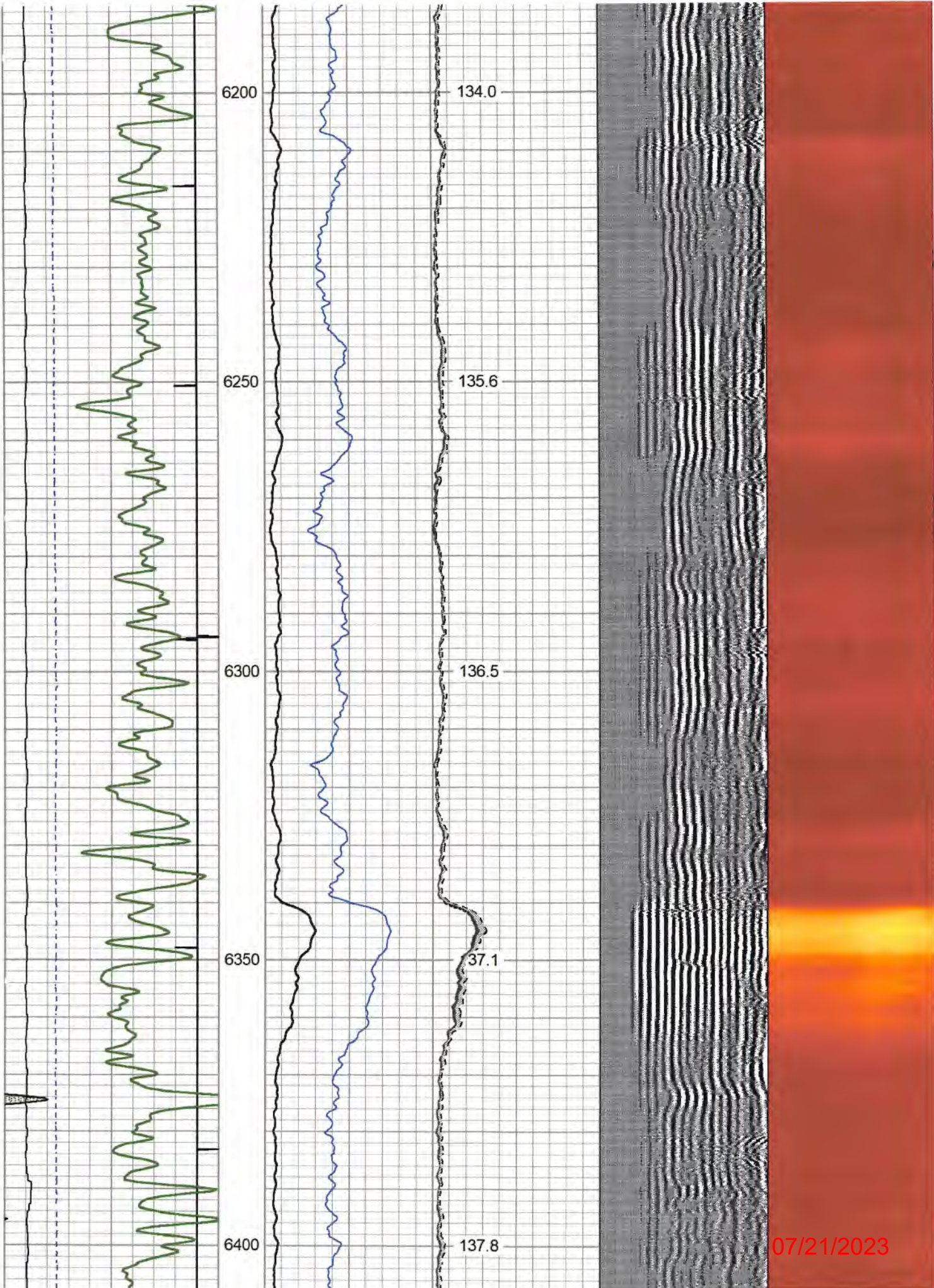




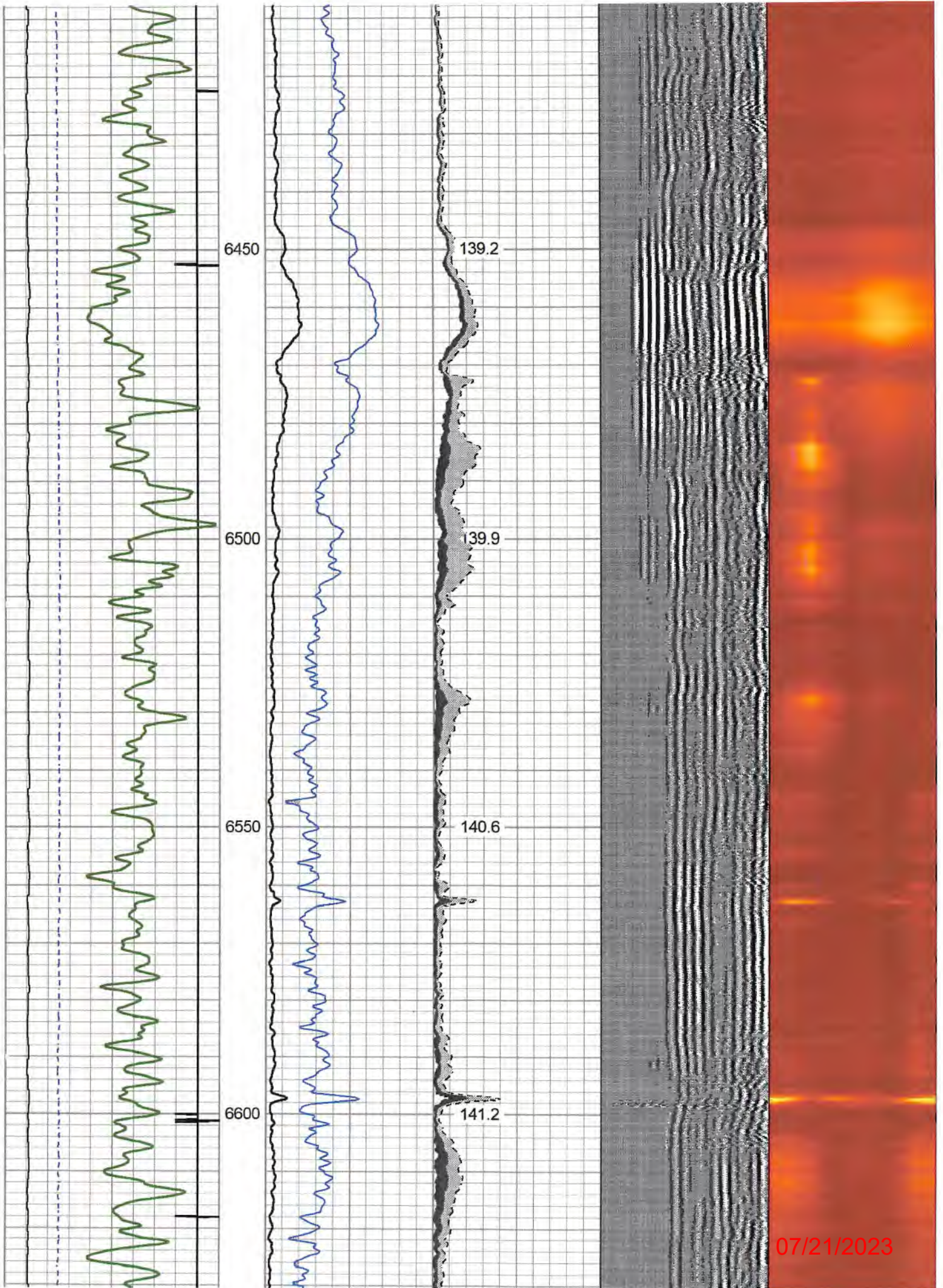


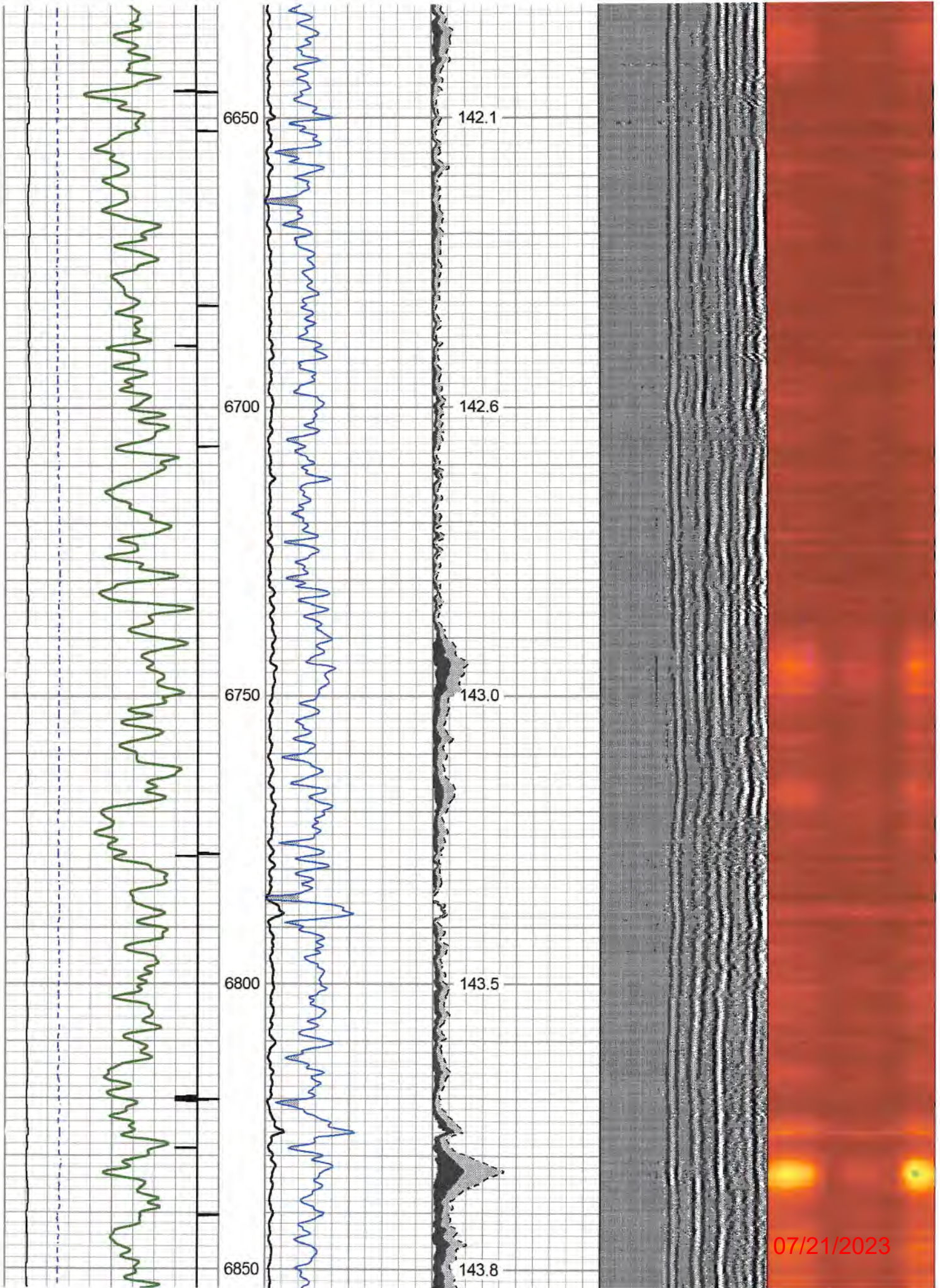


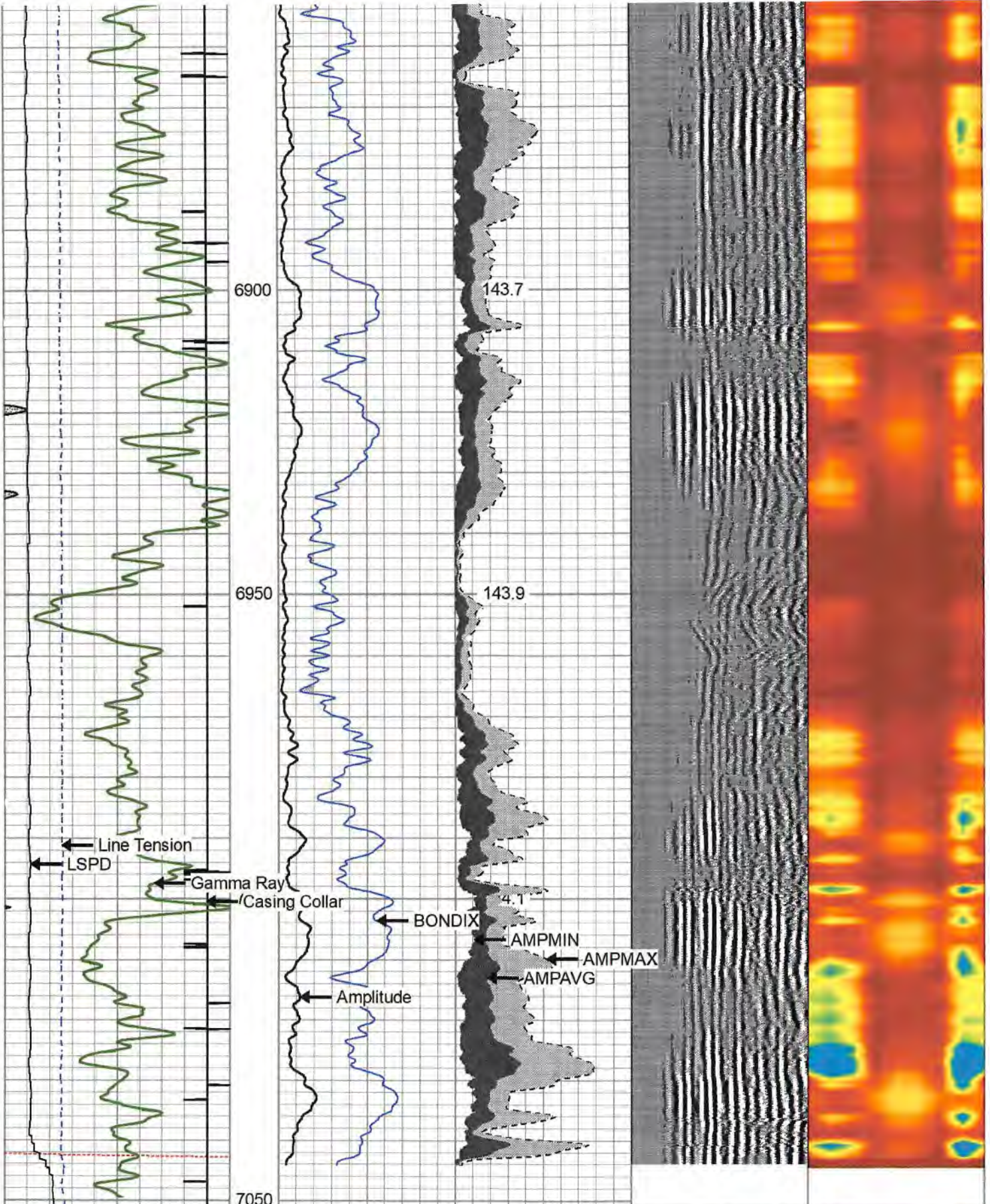
07/21/2023



07/21/2023







280	Travel Time (usec)	180
9	Casing Collar	-1
0	Gamma Ray (GAPI)	150
0	Line Tension (lb)	5000
-100	LSPD (ft/min)	100

0	Amplitude (mV)	100
1	BONDIX	0
0	AMPMIN	150
0	AMPMAX	150
0	AMPAVG	150

TEMP
(degF)

Variable Density
200 (usec) 1200

1 Cement Map 8

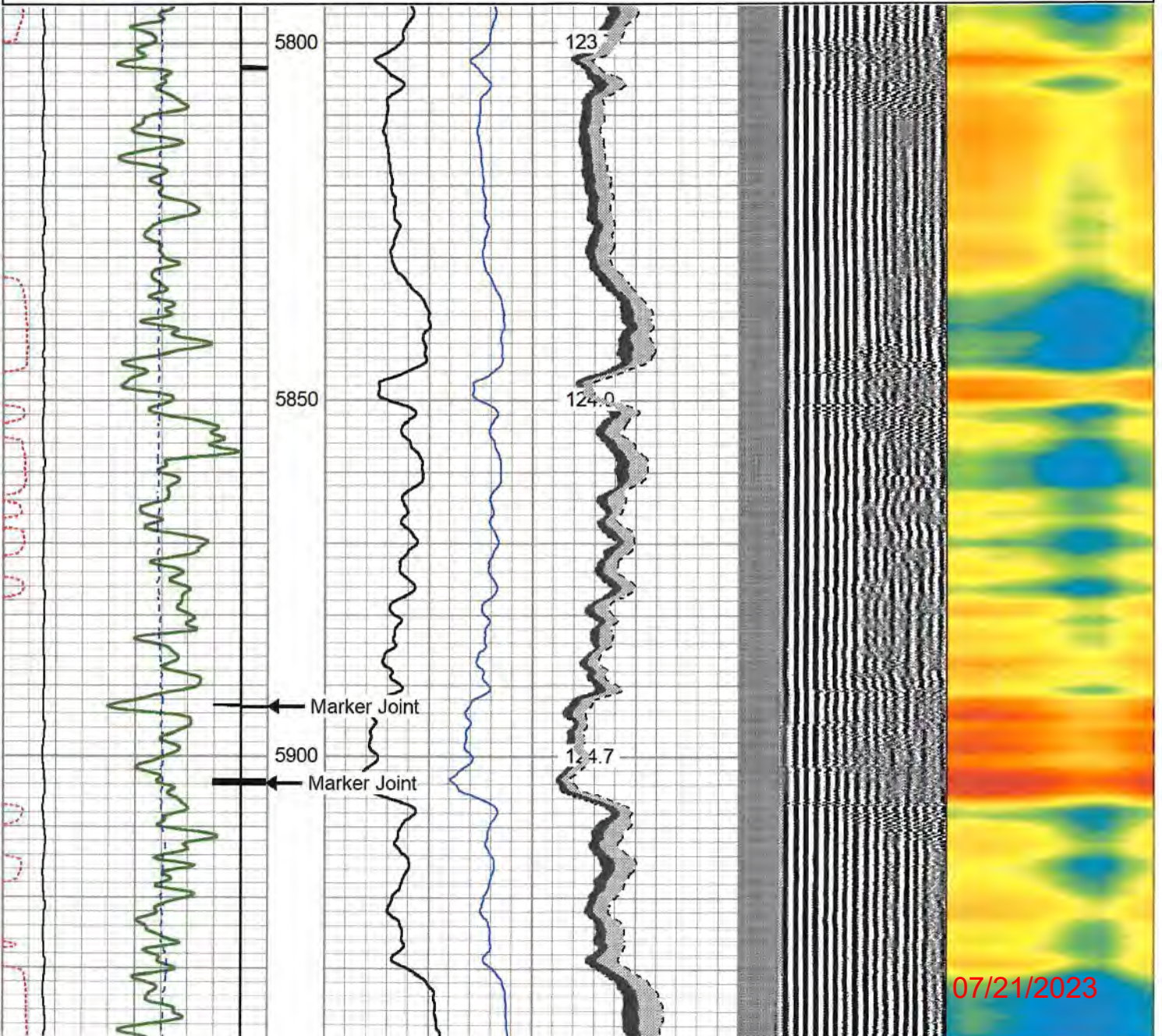
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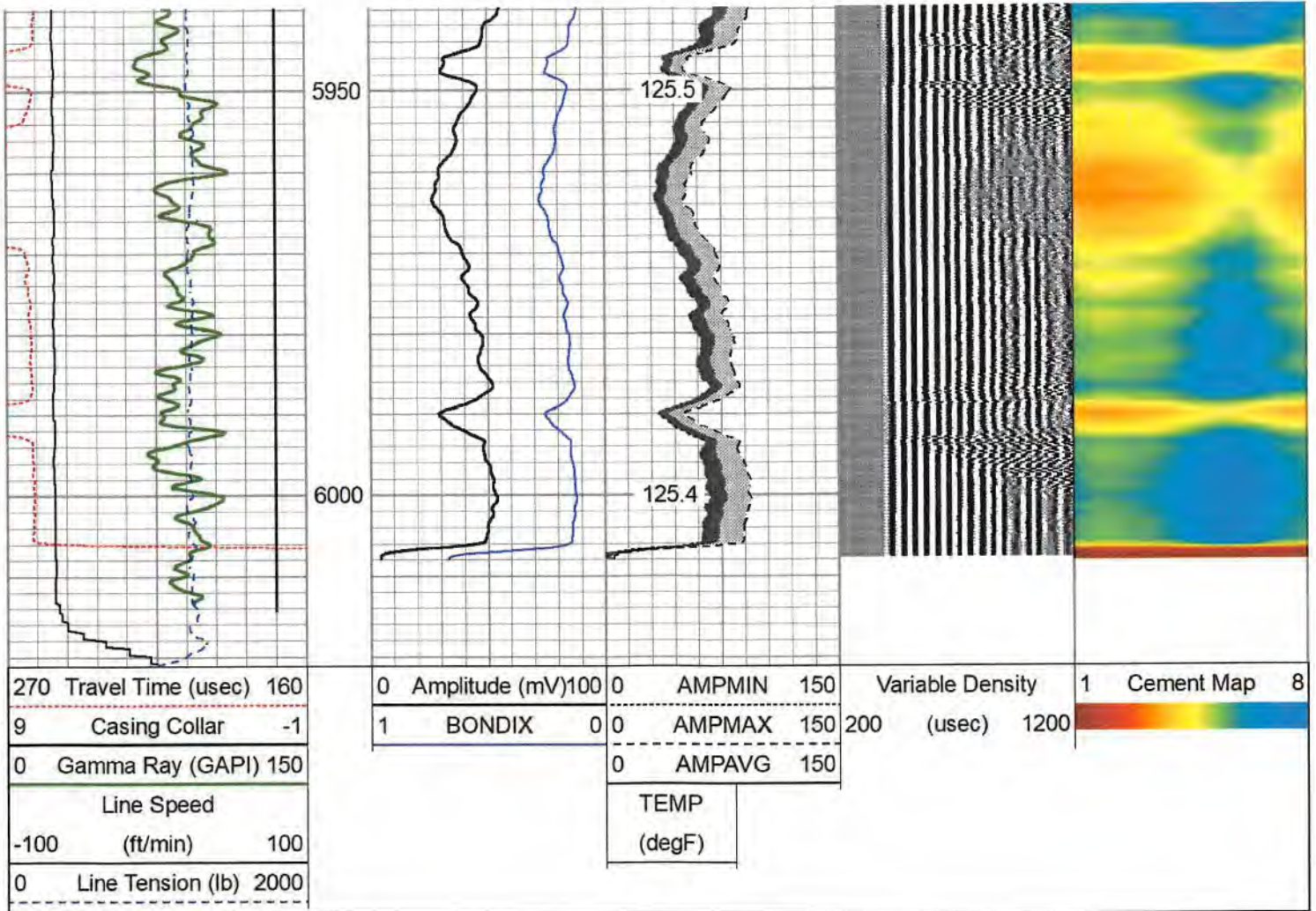


Repeat Pass 0 PSI

Database File antero_grand_pad_toroweap1h_rcbl_23_may_2022.db
 Dataset Pathname pass5
 Presentation Format scbl03
 Dataset Creation Mon May 23 14:52:08 2022
 Charted by Depth in Feet scaled 1:240

270	Travel Time (usec)	160	0	Amplitude (mV)	100	0	AMPMIN	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1	1	BONDIX	0	0	AMPMAX	150	200	(usec)	1200	
0	Gamma Ray (GAPI)	150	0	AMPAVG	150							
	Line Speed			TEMP								
-100	(ft/min)	100		(degF)								
0	Line Tension (lb)	2000										





Calibration Report			
Database File	antero_grand_pad_toroweap1h_rcbl_23_may_2022.db		
Dataset Pathname	pass7		
Dataset Creation	Mon May 23 15:22:50 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:			
Raw (v)	Calibrated (mv)	Results 07/21/2023	
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		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					
WVFS8	14.75		RBT-Probe275T (2.75") Probe 2.75" Radial with Integral Temperature Sub	9.39	2.75	90.00

07/21/2023

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					
			CENT-Titn275Adj Titan 2 3/4" Adjustable Centralizer	2.86	2.75	35.00
CCL	6.73					
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_toroweap1h_rcbl_23_may_2022.db: field/well/run1/pass7
 Total length: 23.77 ft
 Total weight: 253.00 lb
 O.D.: 2.75 in

	Company	ANTERO RESOURCES
	Well	TOROWEAP 1H
	Field	MARCELLUS
	County	TYLER
	State	WV