



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

Company ANTERO RESOURCES
Well Beech Run Emmons 1H
Field Rabbit Ears
County Tyler
State WV

Company ANTERO RESOURCES
Well Beech Run Emmons 1H
Field Rabbit Ears
County Tyler State WV

Location: API #: 47-095-02801
SEC TWP RGE
Permanent Datum GROUND LEVEL Elevation
Log Measured From KELLY BUSHING 25.5'
Drilling Measured From KELLY BUSHING
Other Services
Elevation
K.B.
D.F.
G.L.

Date	JANUARY 19, 2023						
Run Number	ONE						
Depth Driller	18,014'						
Depth Logger	7,309'						
Bottom Logged Interval	7,313'						
Top Log Interval	SURFACE						
Open Hole Size	NA						
Type Fluid	FRESH WATER						
Density / Viscosity	8.6 LB/GAL						
Max. Recorded Temp.	142 DEG.F.						
Estimated Cement Top	1,960'						
Time Well Ready	14:15						
Time Logger on Bottom	15:12						
Equipment Number	116						
Location	CHARLEROI, PA						
Recorded By	M.MCNALLY						
Witnessed By	Bob Reed						
Borehole Record		Tubing Record					
Run Number	Bit	From	To	Size	Weight	From	To
Casing Record	Size	Wgt/Ft		Top	Bottom		
Conductor String	28"			SURFACE	125.5'		
Surface String	17 1/2"			SURFACE	985'		
Intermediate String	12 1/4"			SURFACE	3,440'		
Intermediate String	8 3/4"			SURFACE	6,403'		
Production String	5.5"	20#		SURFACE	18,014'		

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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 +2'
MARKER JOINT 6,170'-6,180'
MAIN PASS LOGGED WITH 1500 PSI
REPEAT PASS LOGGED WITH 0 PSI

THANK YOU FOR USING NINE ENERGY SERVICES

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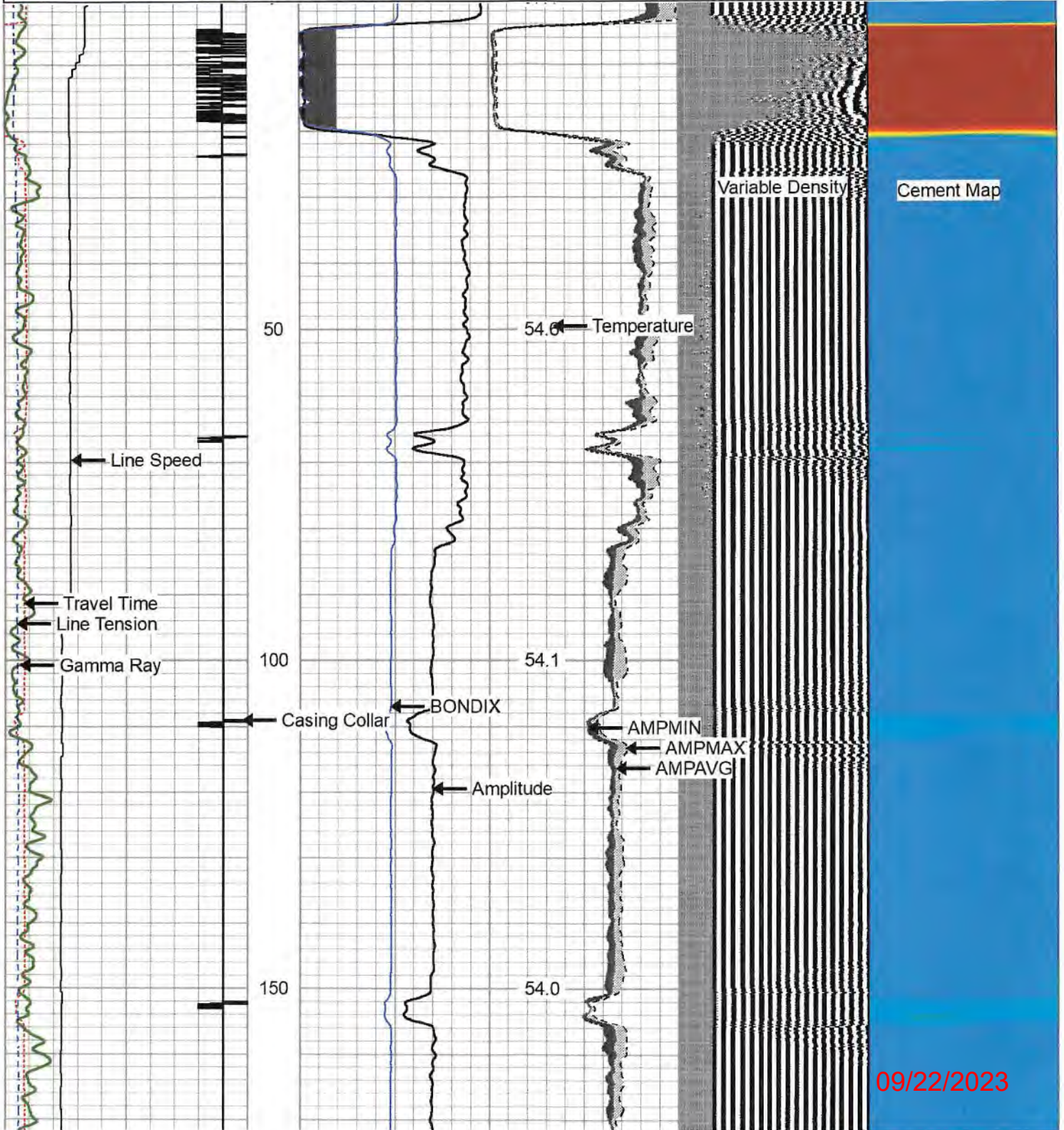
WV Department of
Environmental Protection

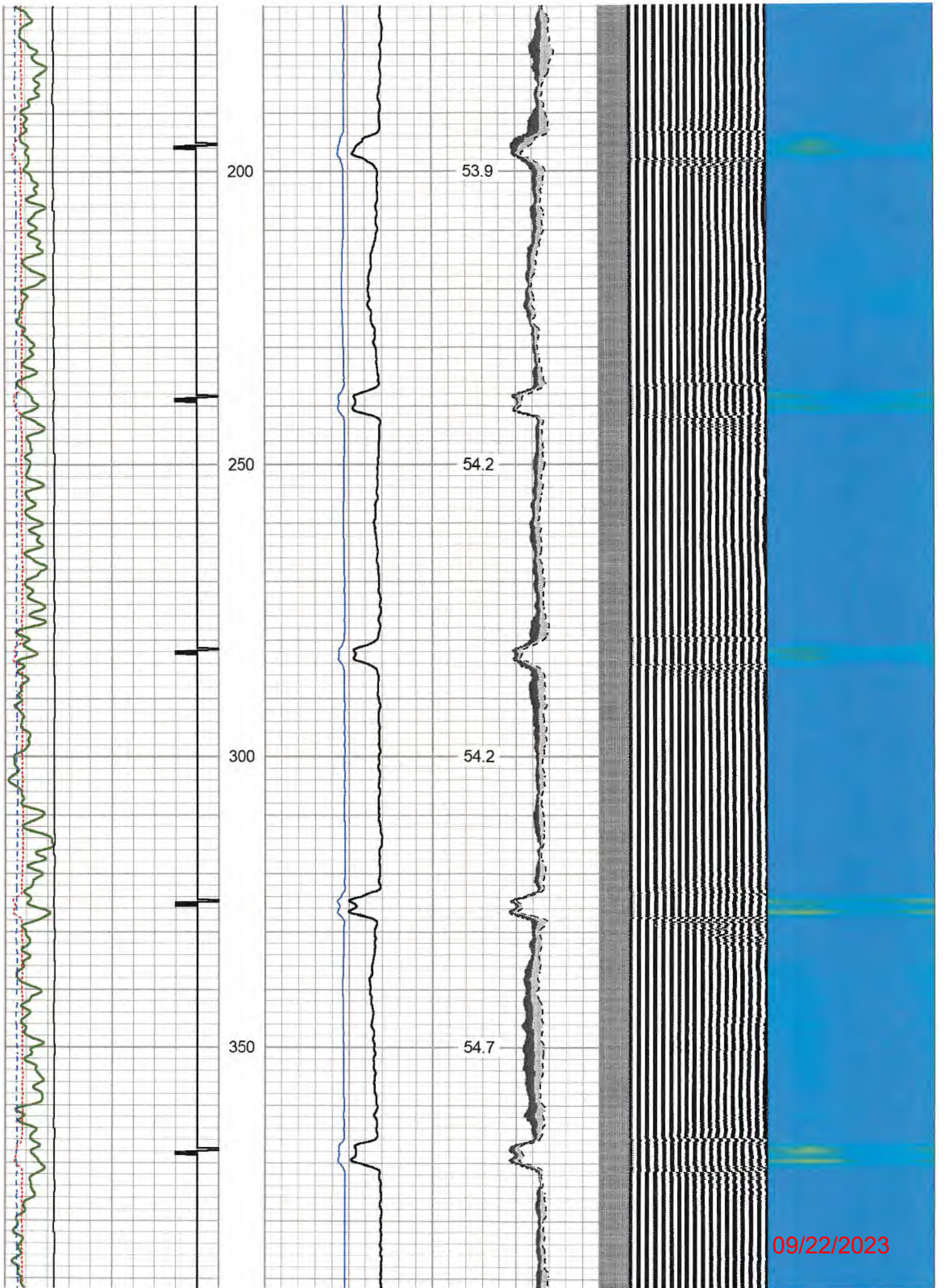


Main Pass 1500 PSI

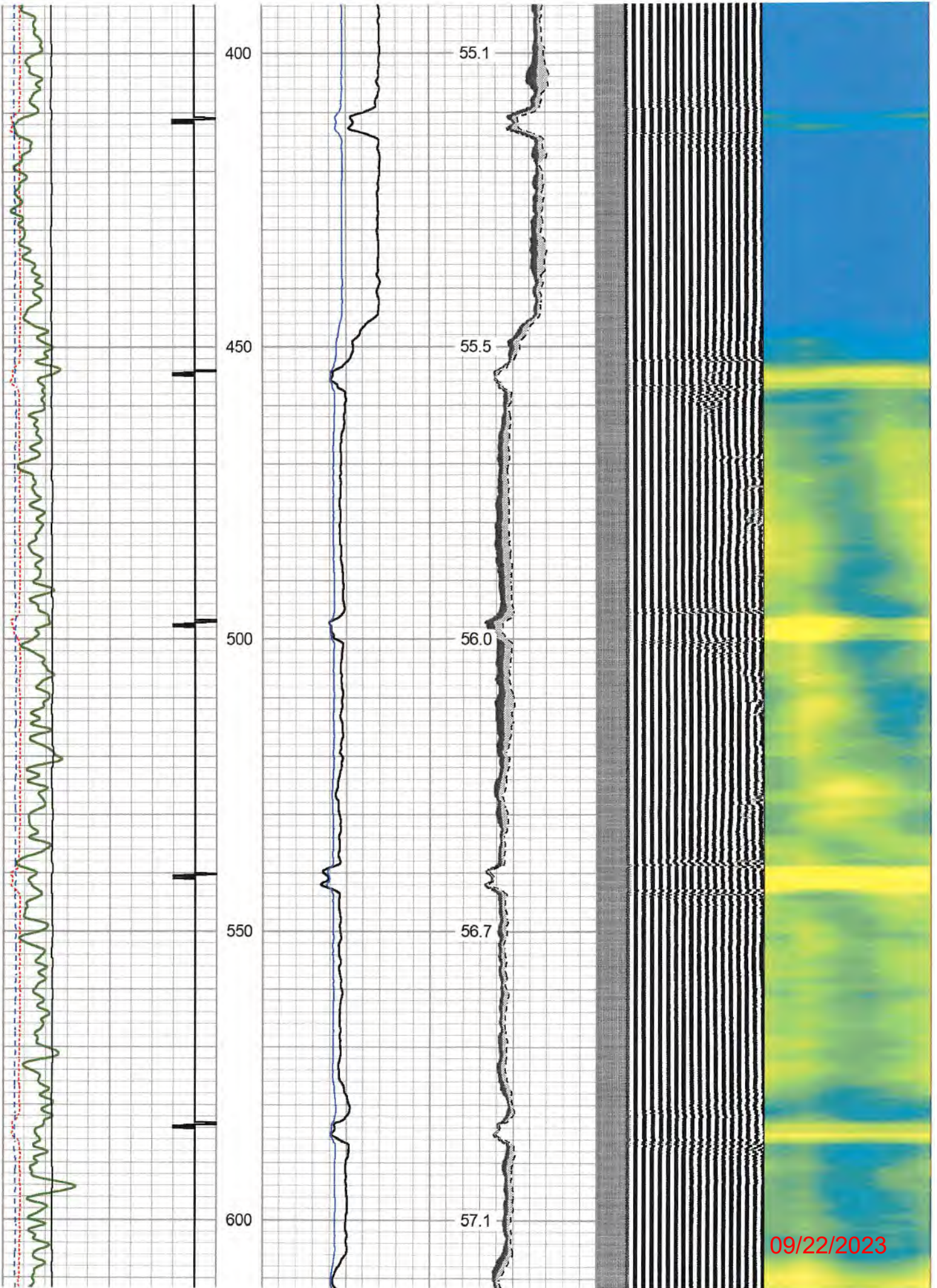
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 Dataset Pathname emmons1h/rcbl/pass4
 Presentation Format rcbl 2
 Dataset Creation Thu Jan 19 14:50:01 2023
 Charted by Depth in Feet scaled 1:240

270	Travel Time (usec)	160	0	Amplitude (mV)	100	-5	AMPMIN	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1	1	BONDIX	0	-5	AMPMAX	150	200	(usec)	1200	
0	Gamma Ray (GAPI)	150				-5	AMPAVG	150				
	Line Speed						TEMP					
-200	(ft/min)	200					(degF)					
0	Line Tension (lb)	5000										

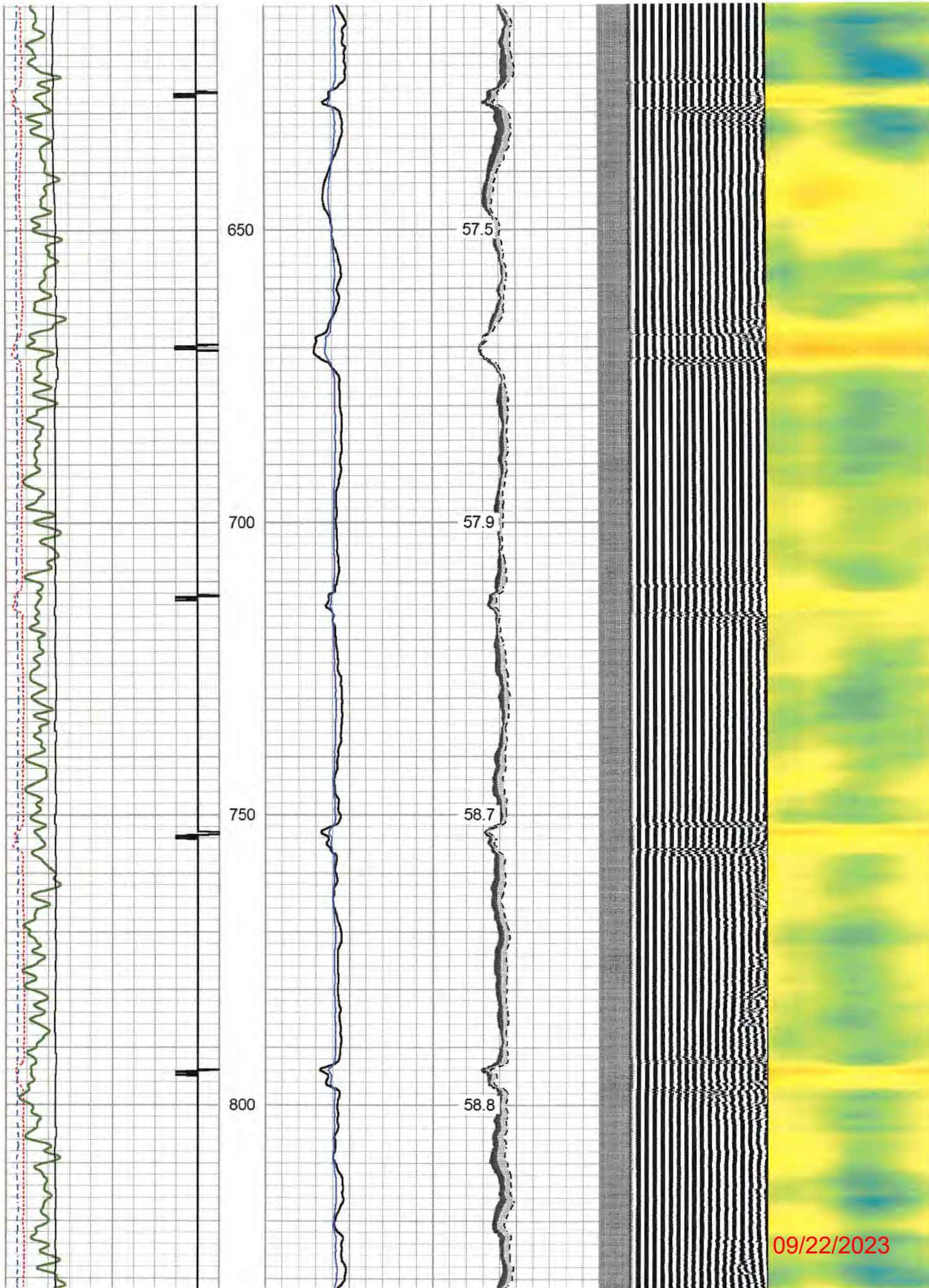


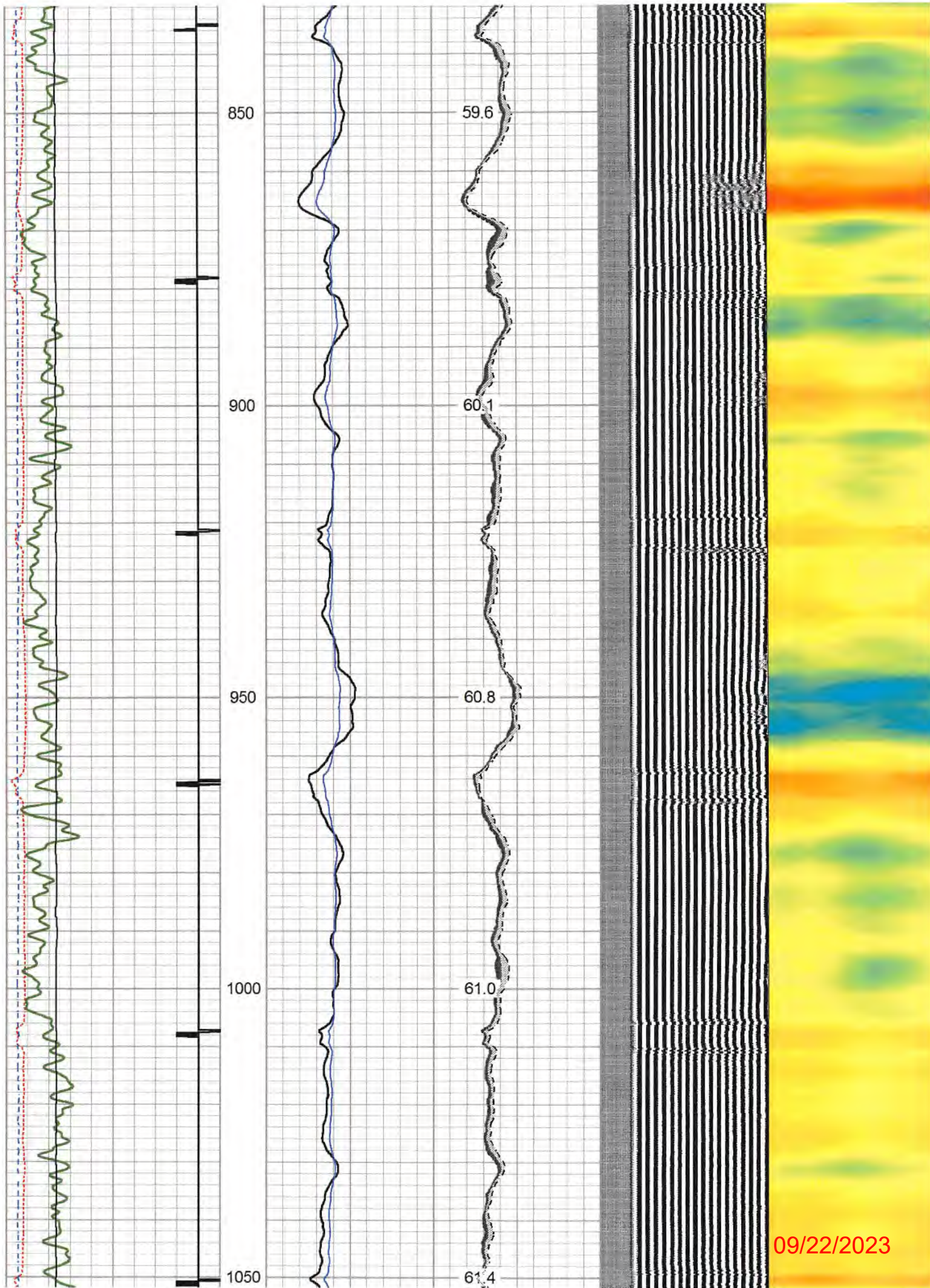


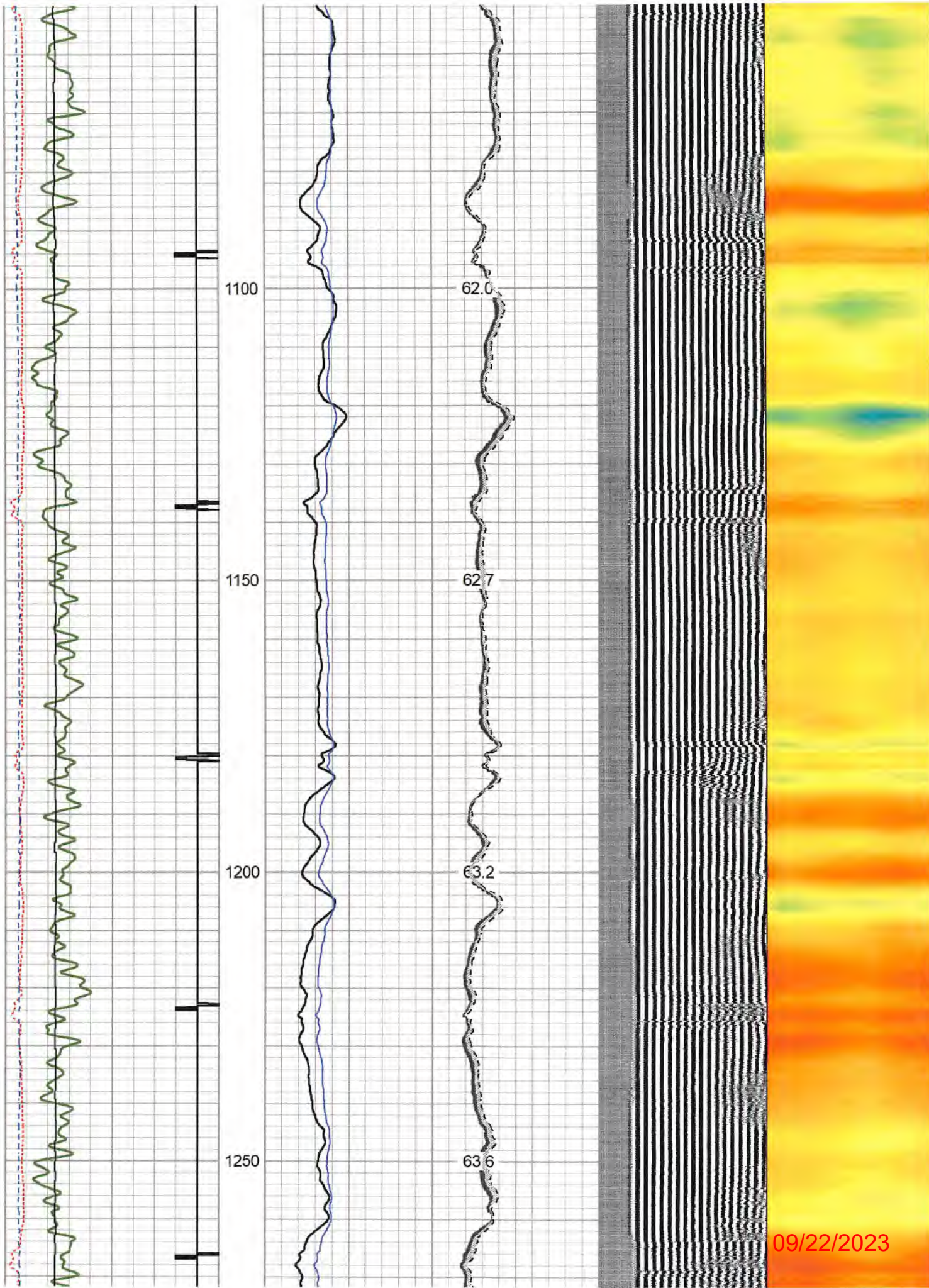
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1100

62.0

1150

62.7

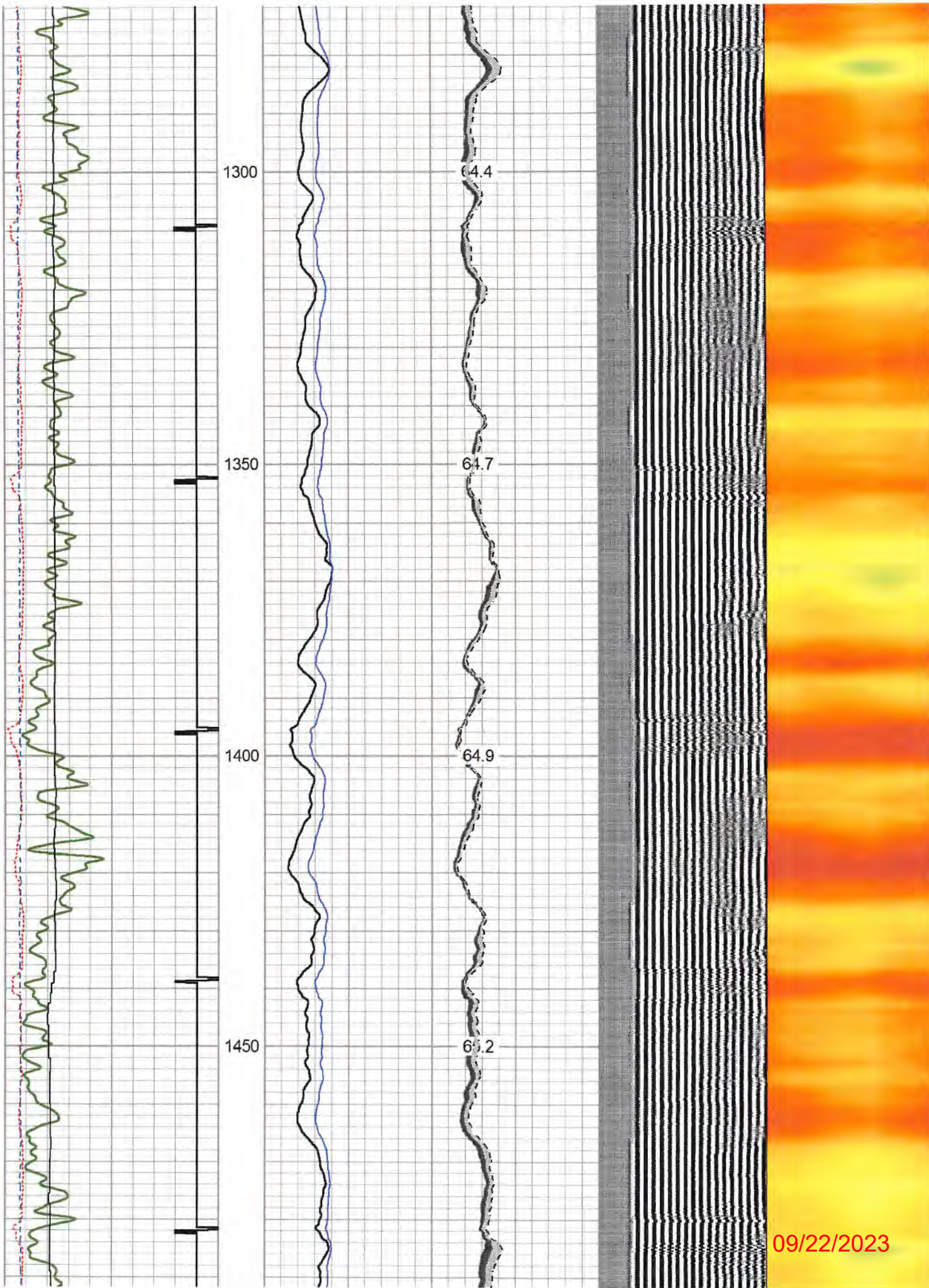
1200

63.2

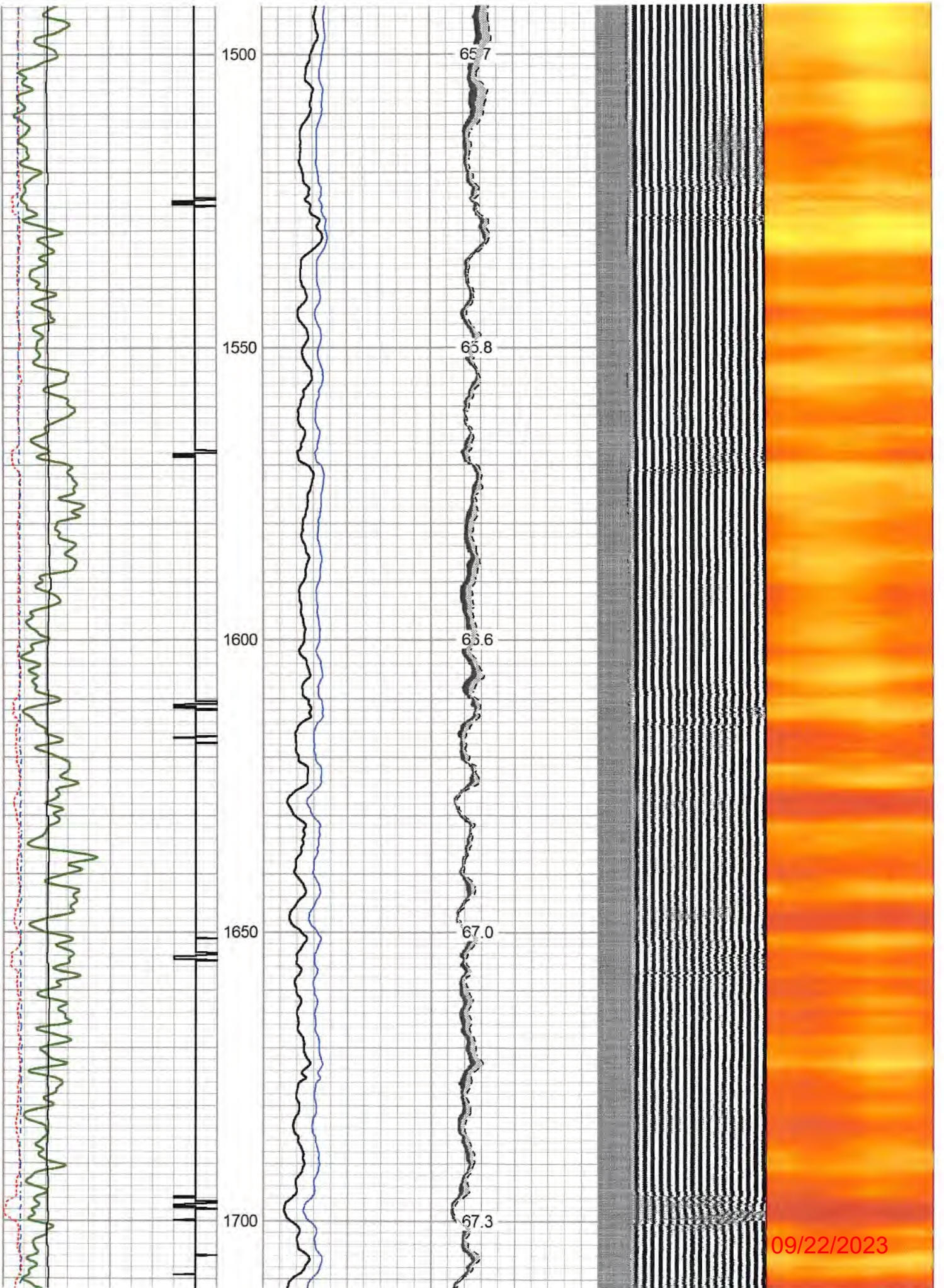
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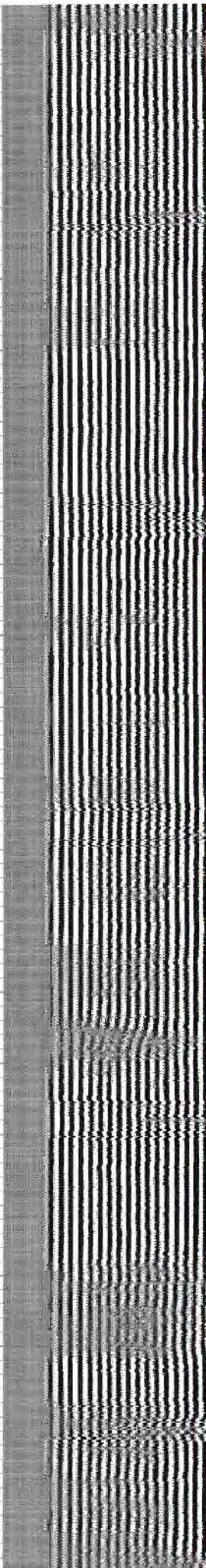
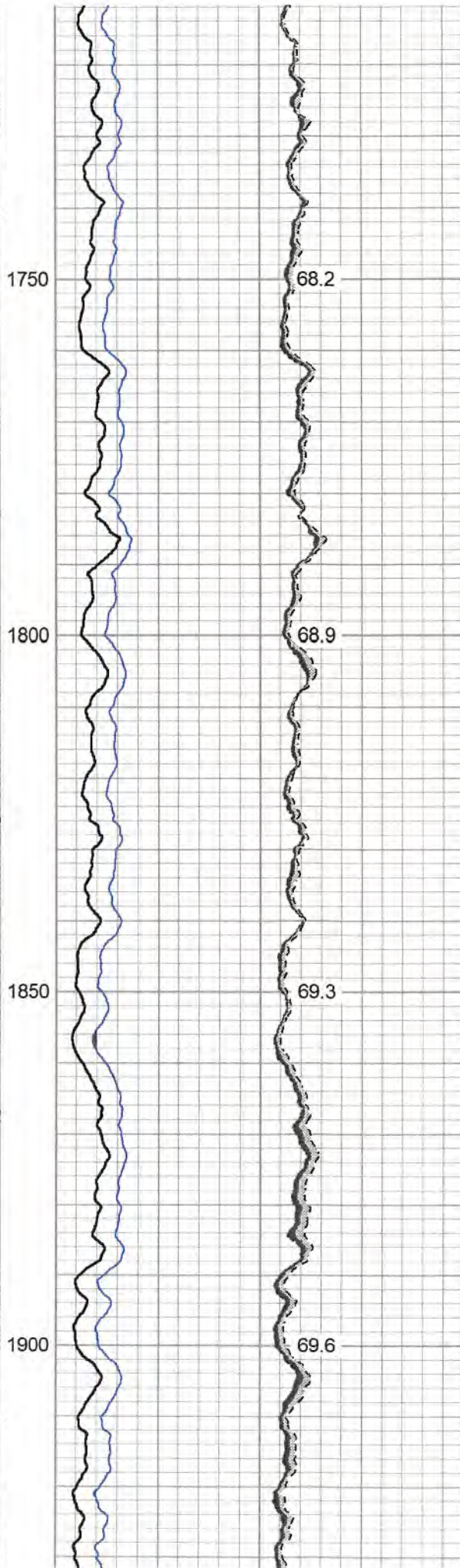
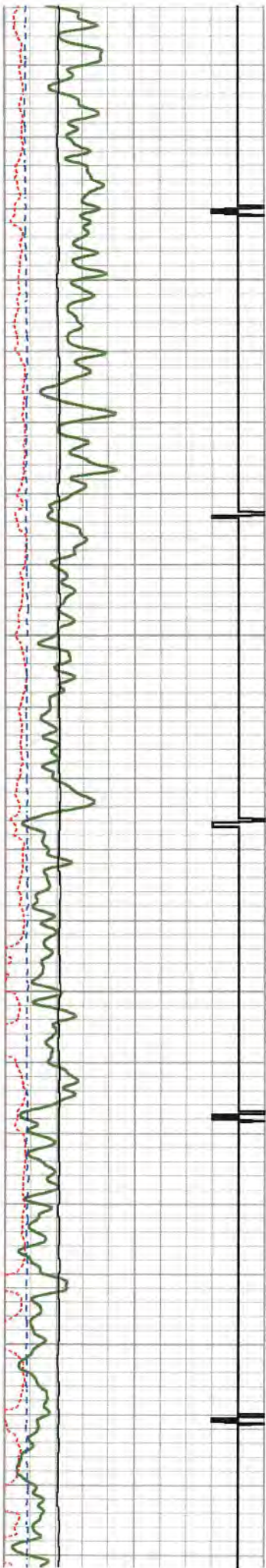
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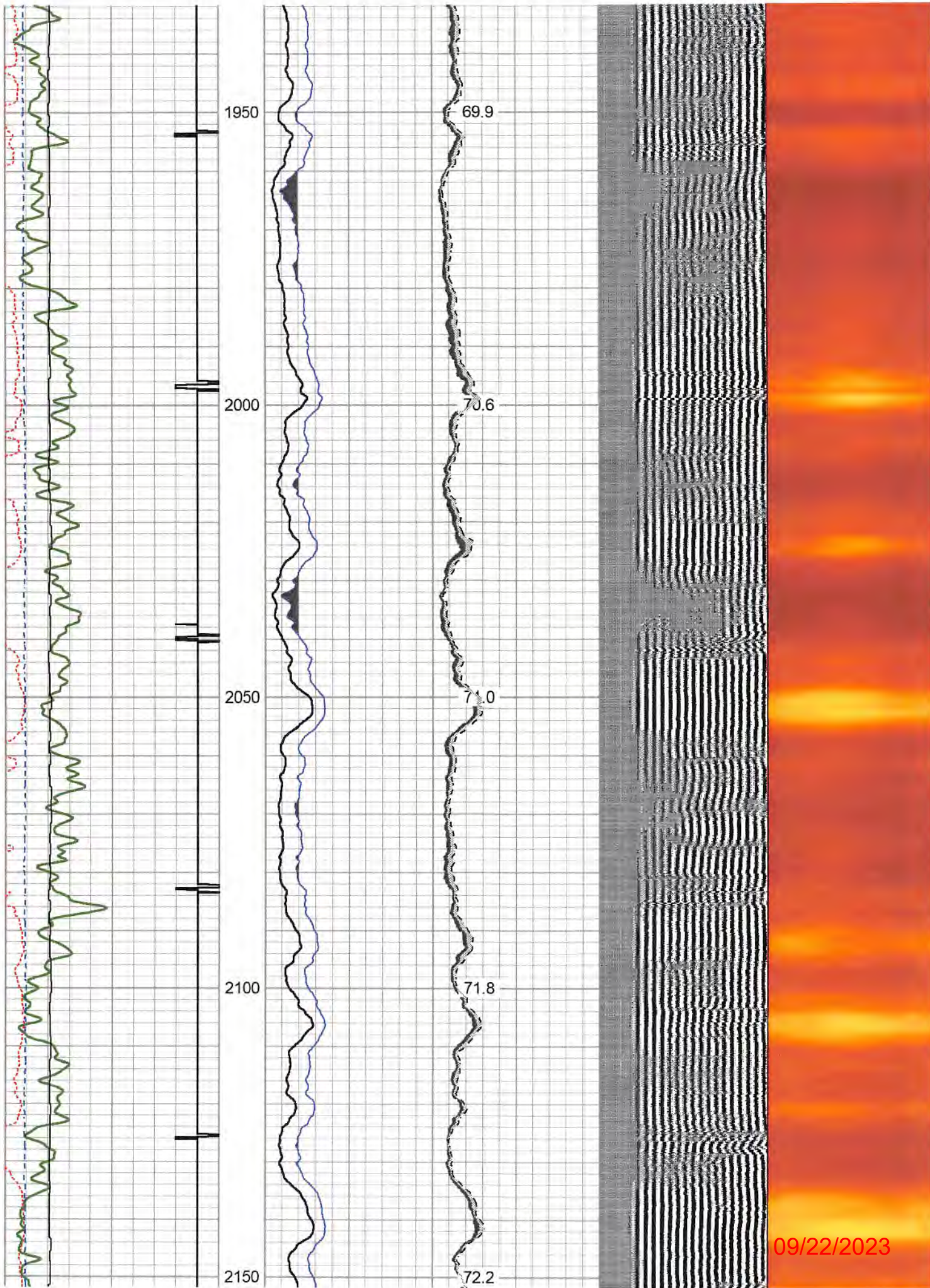
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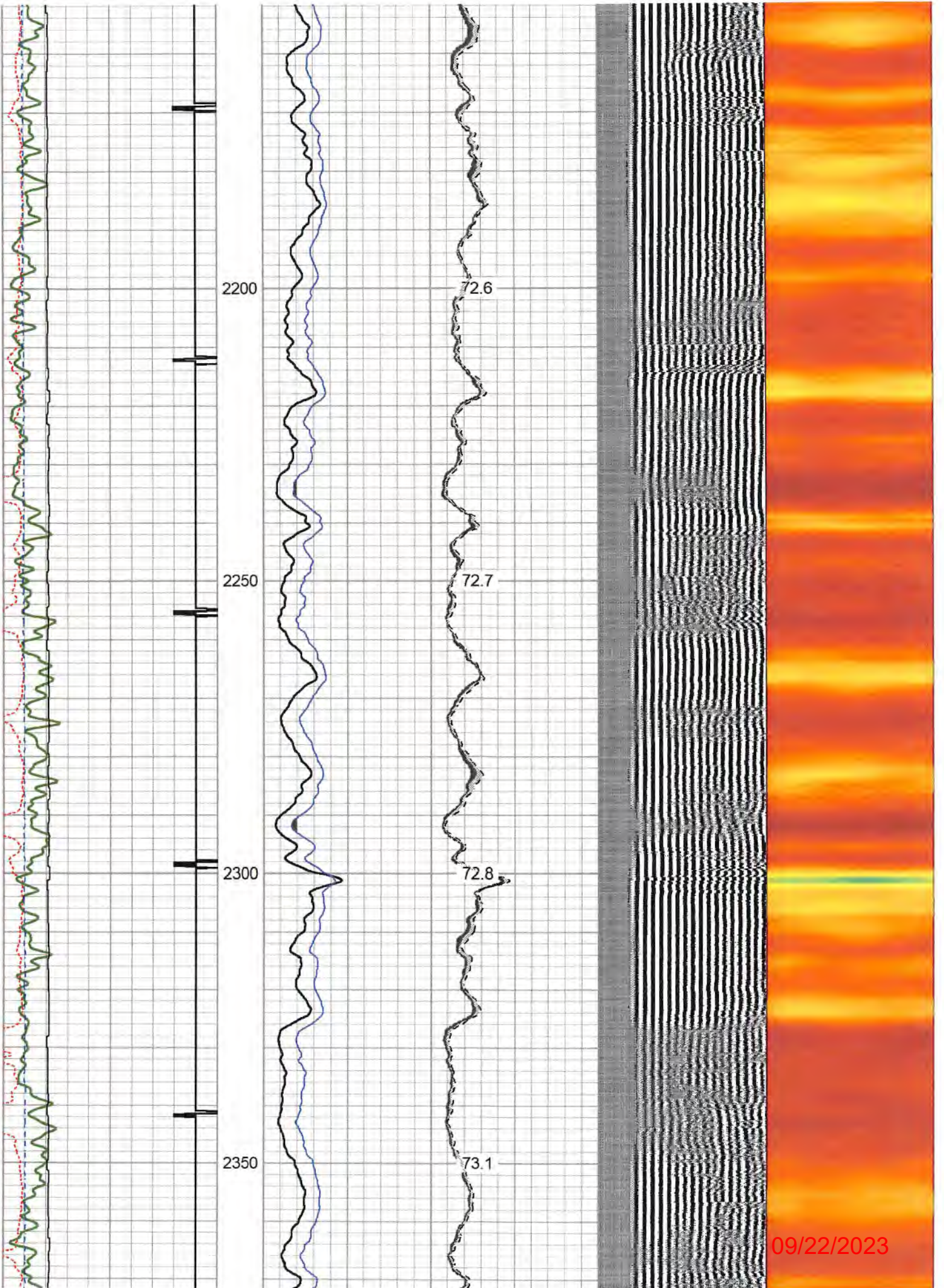
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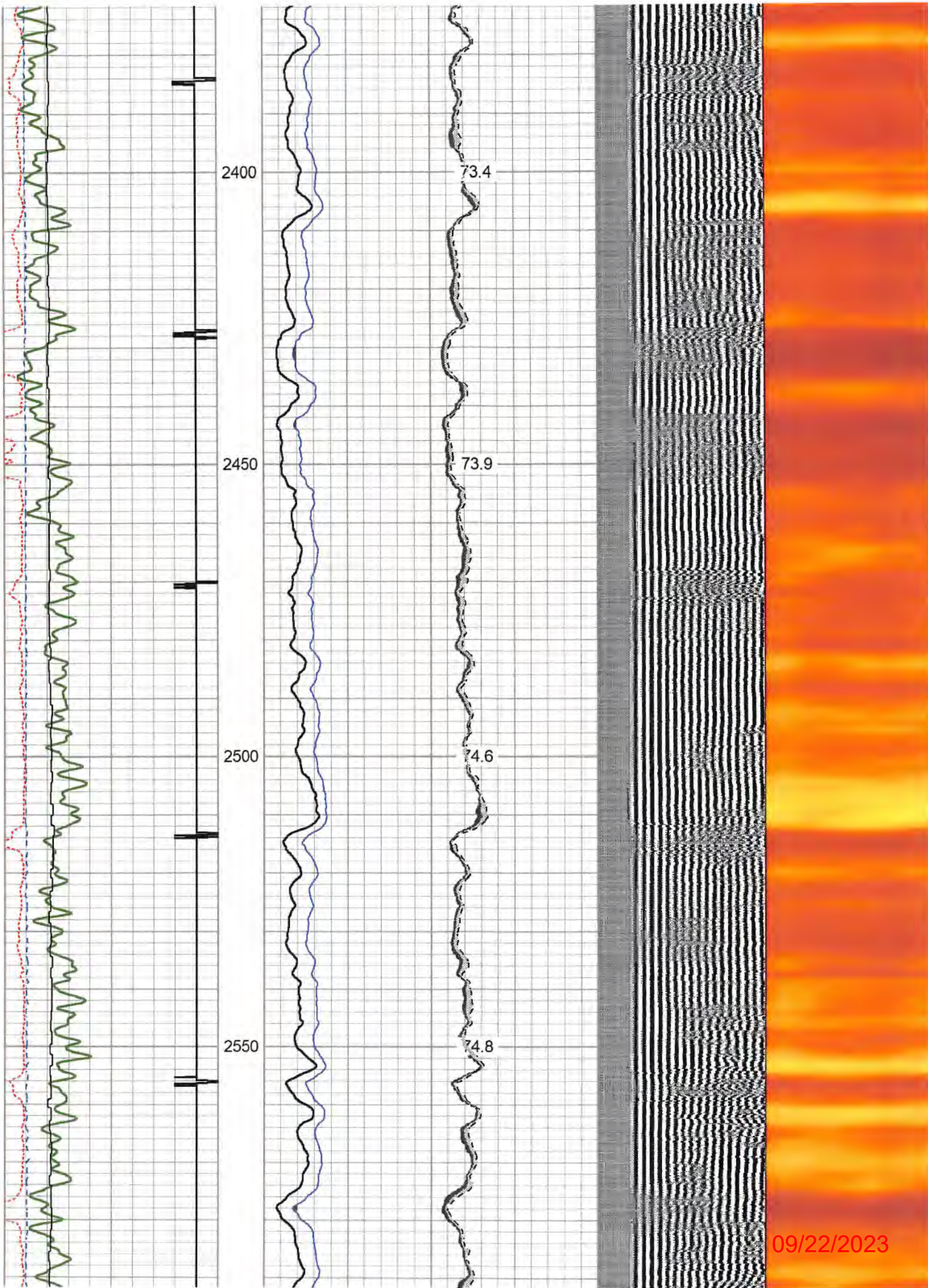
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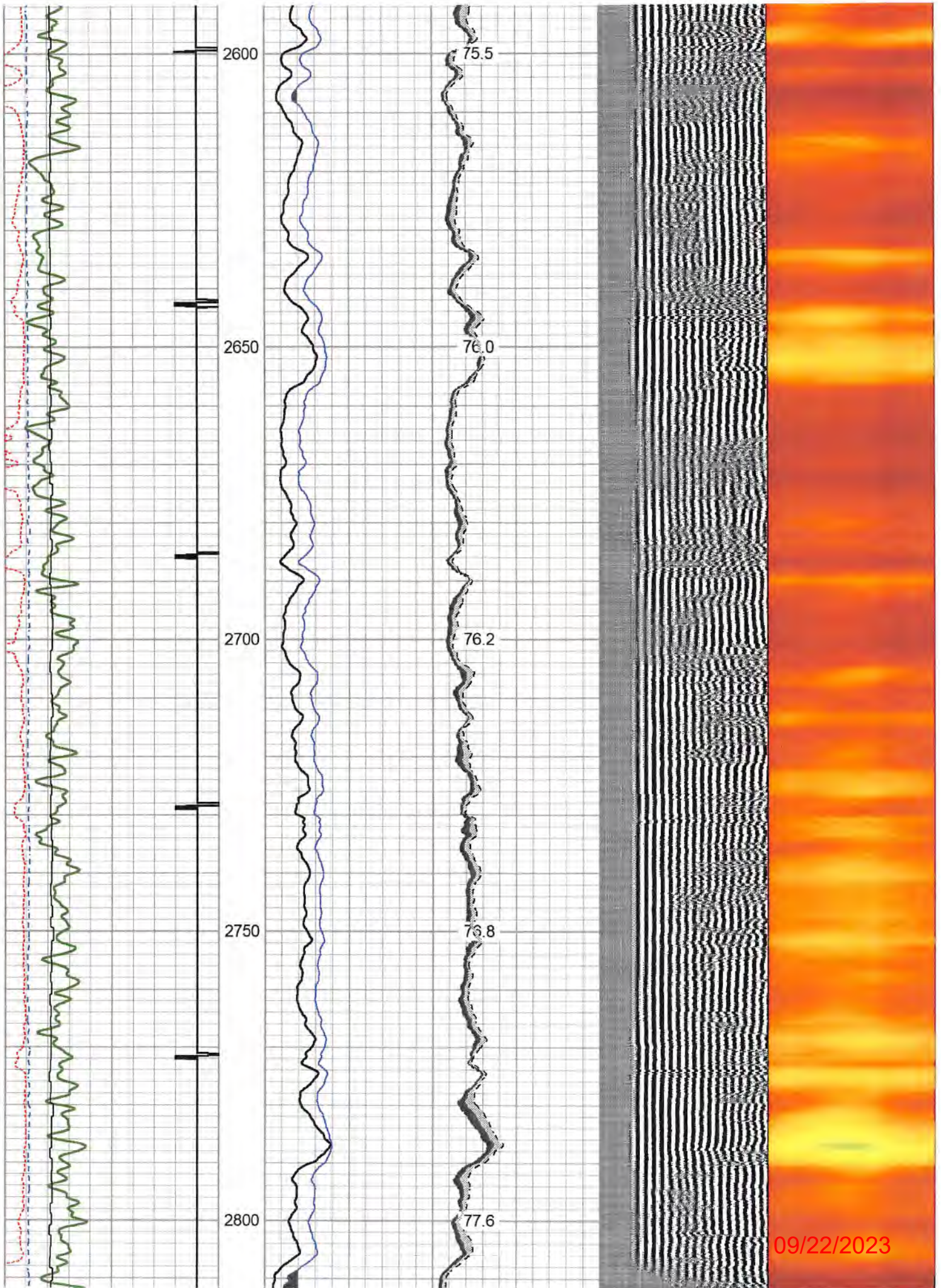


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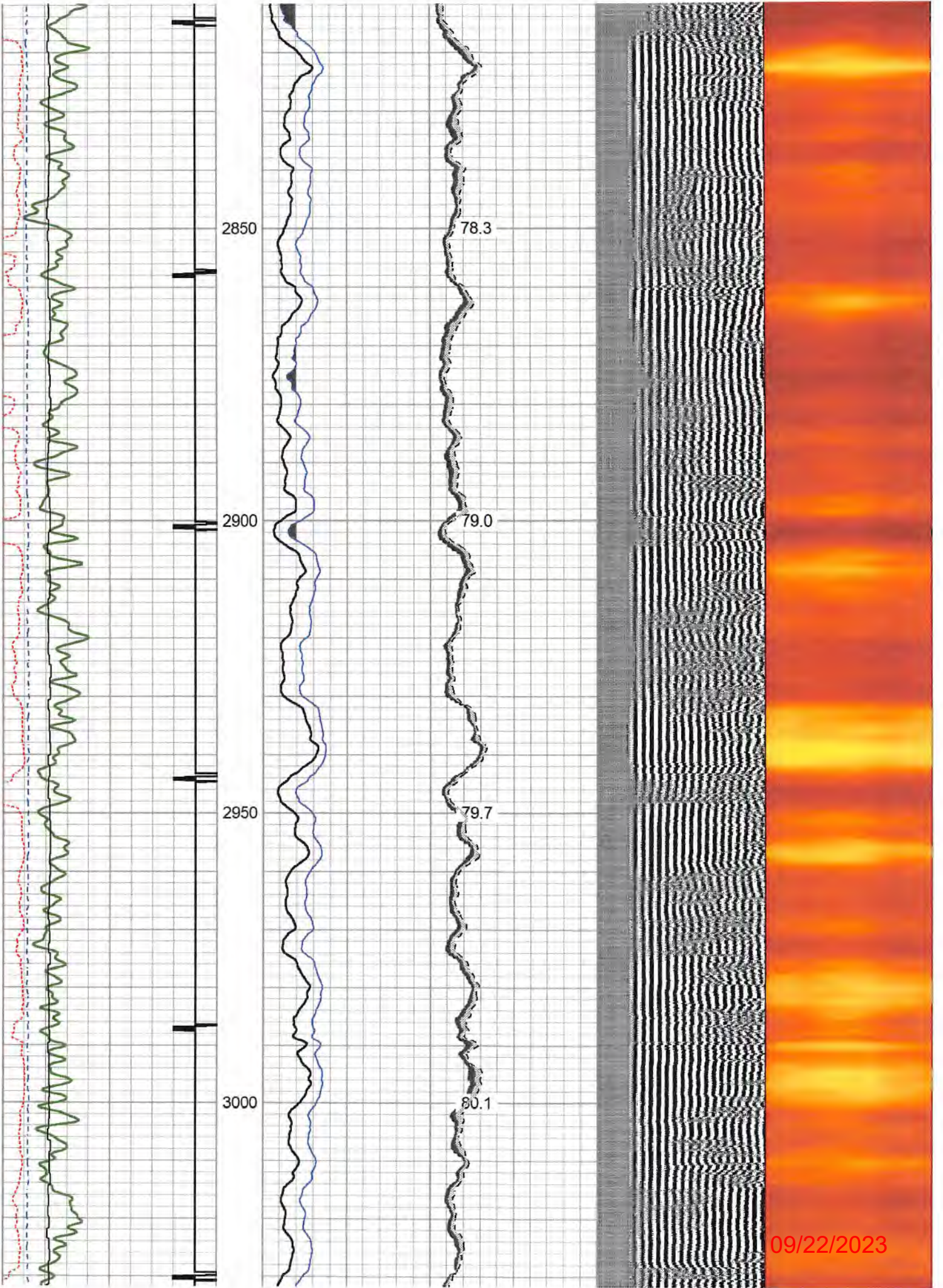


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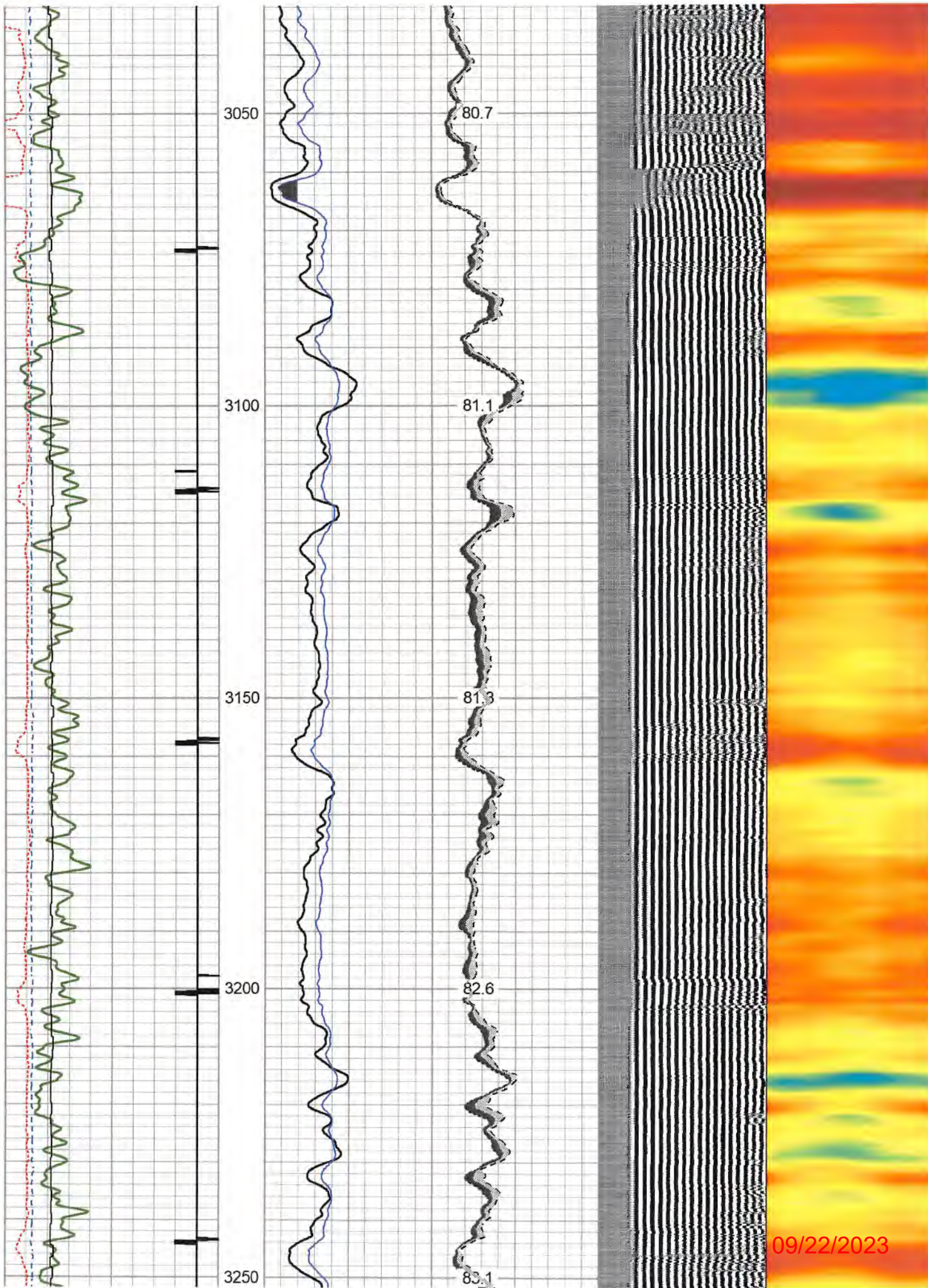


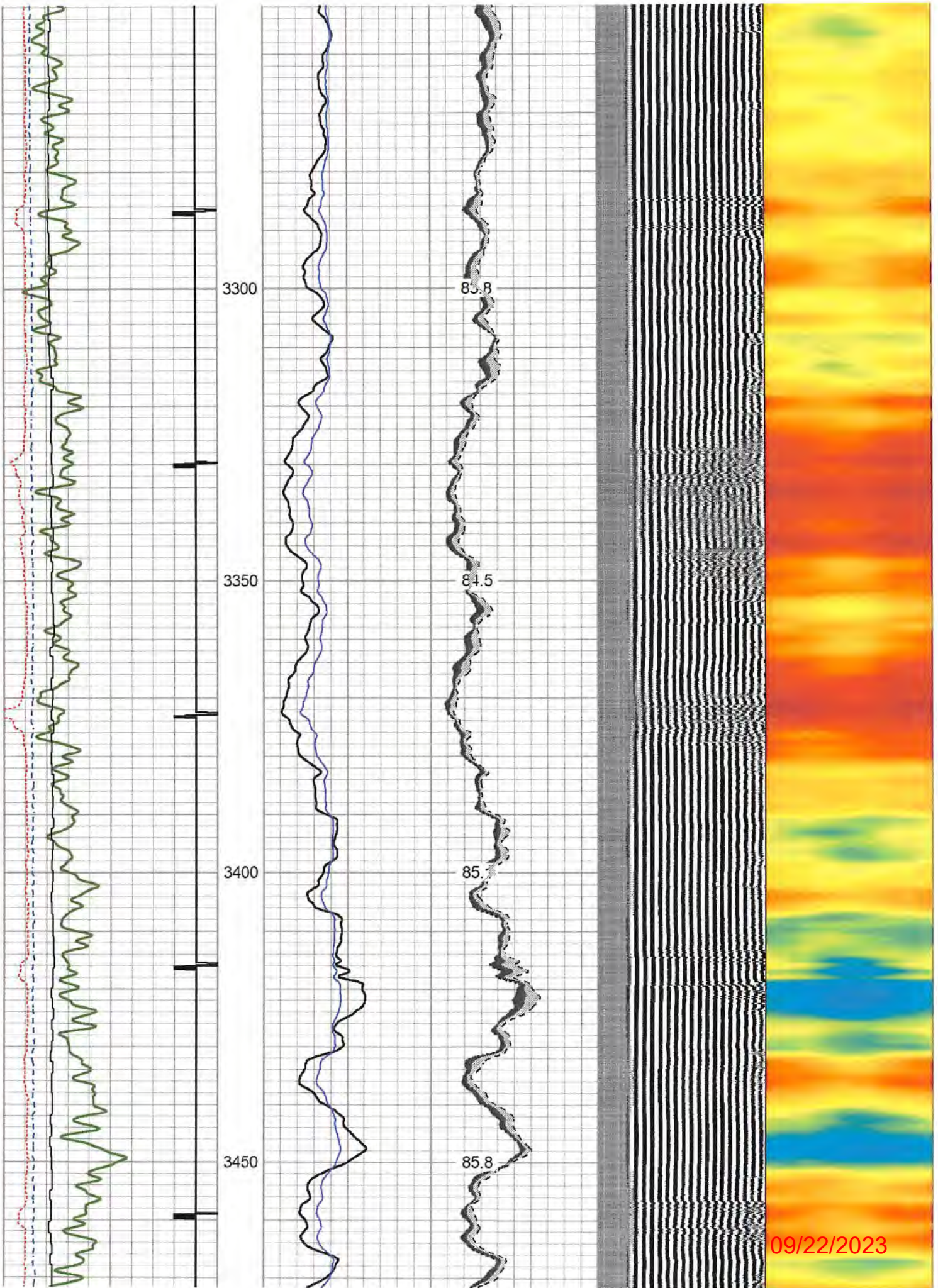


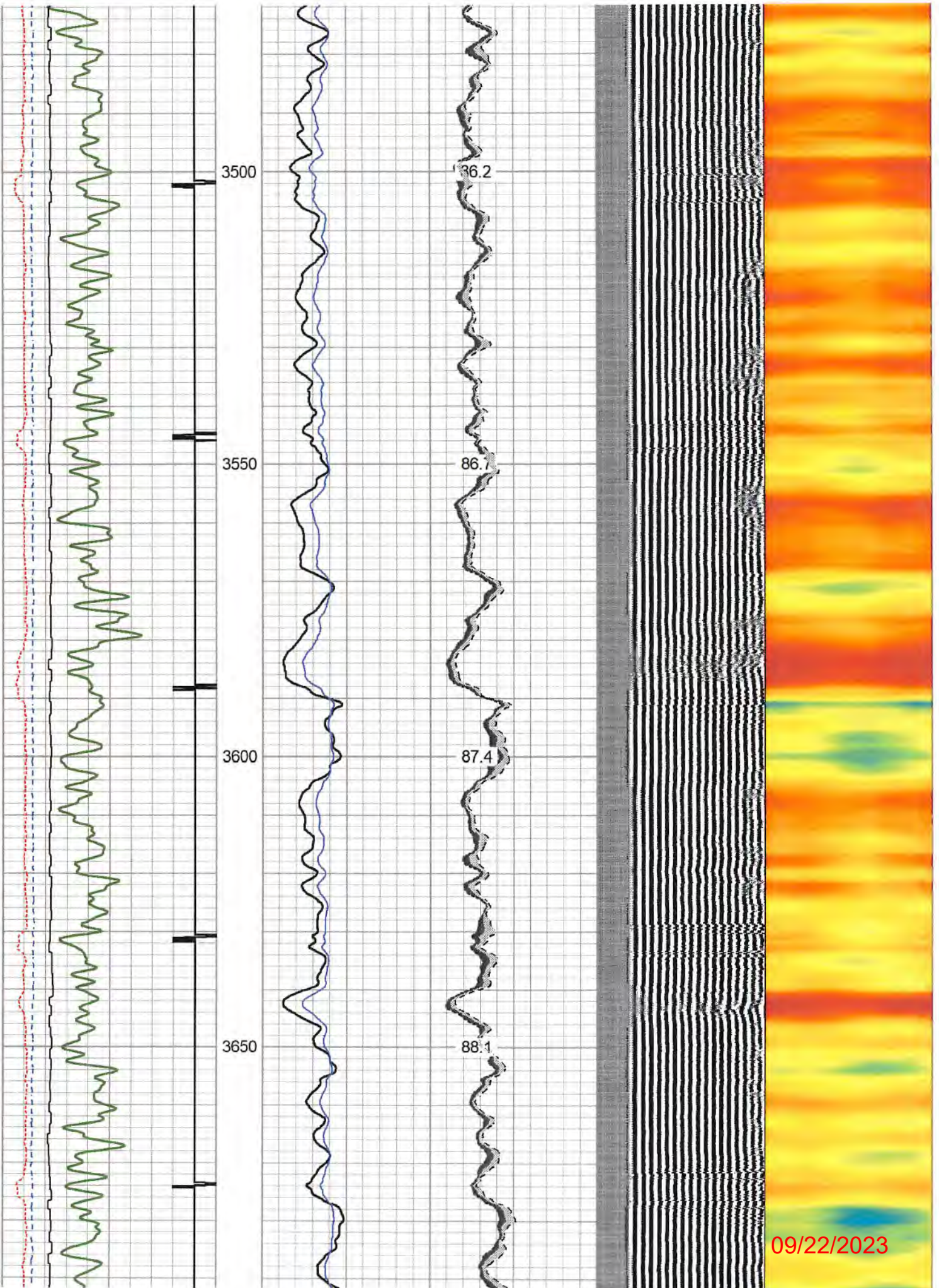
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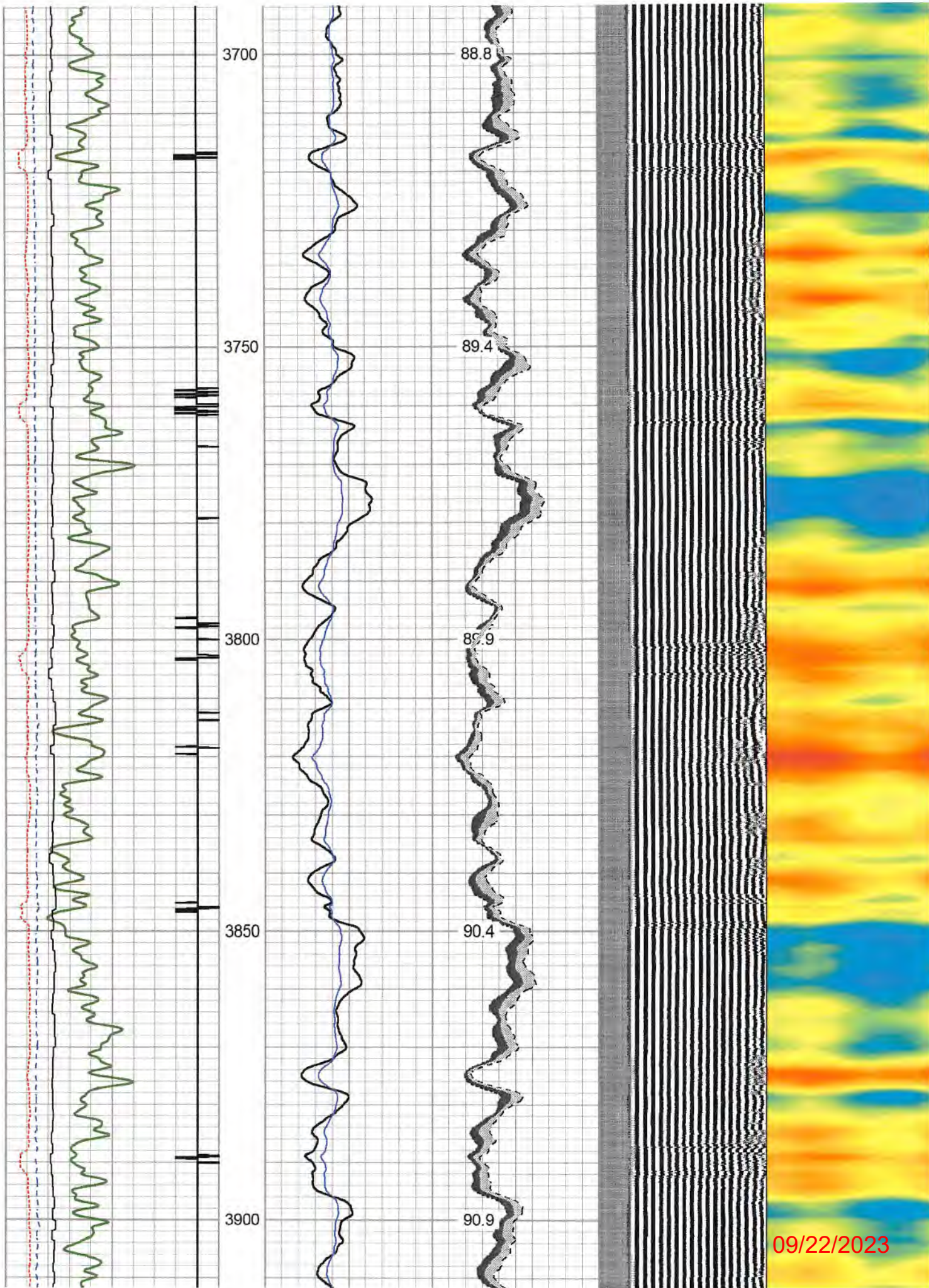
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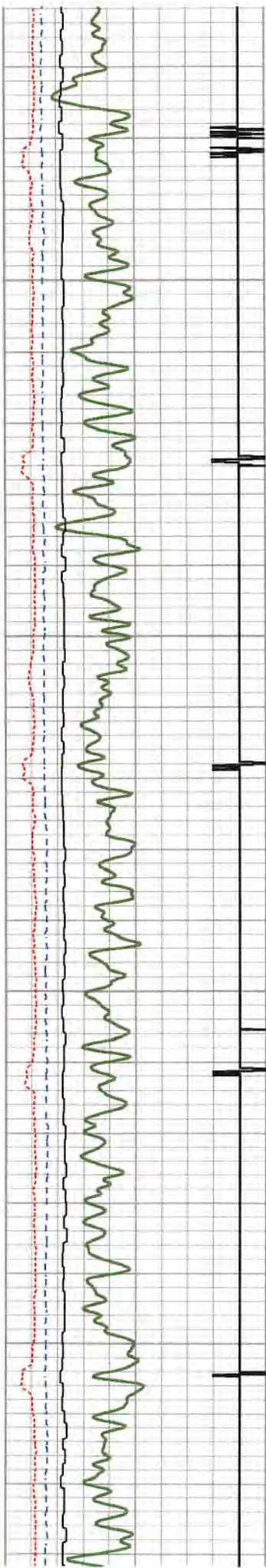




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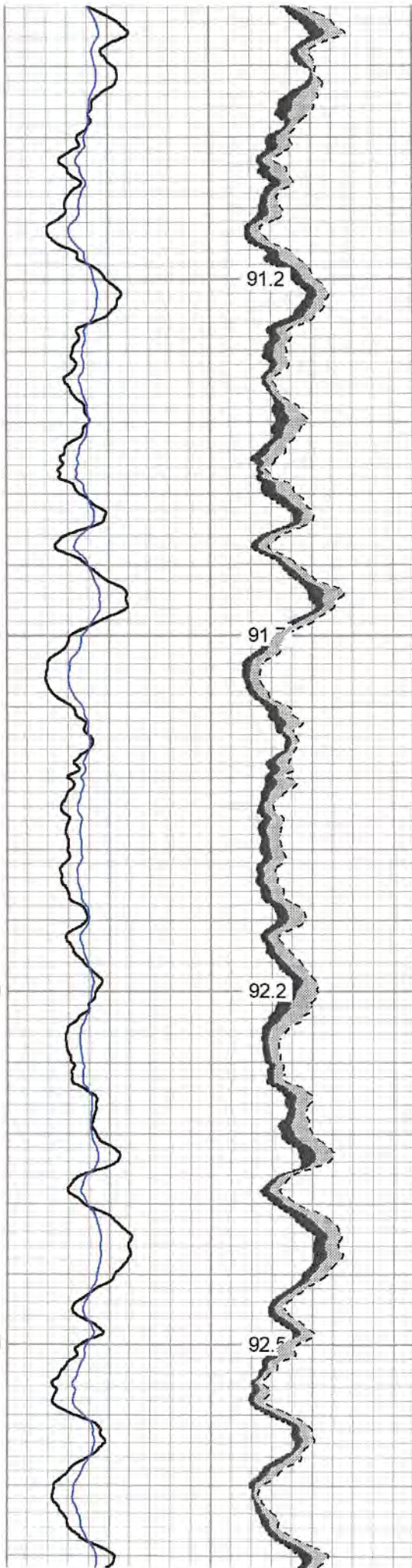


3950

4000

4050

4100

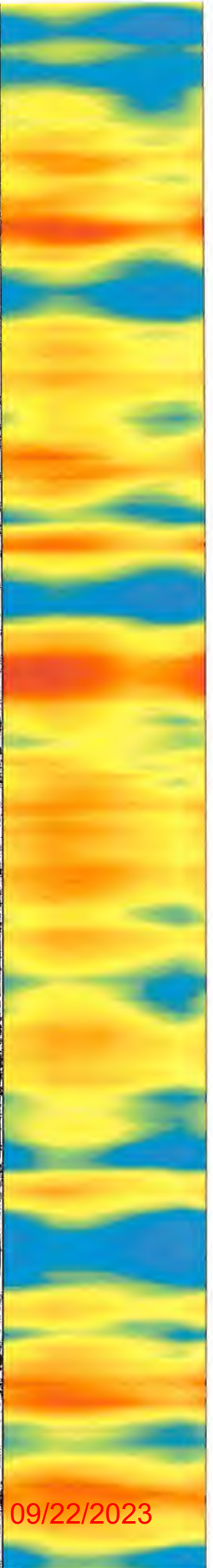
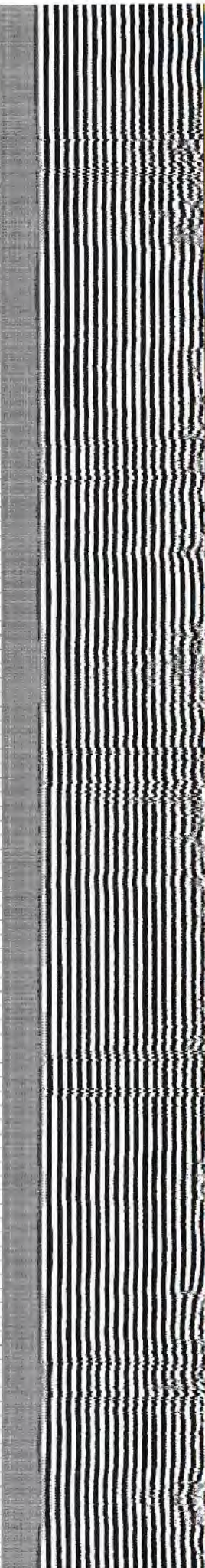


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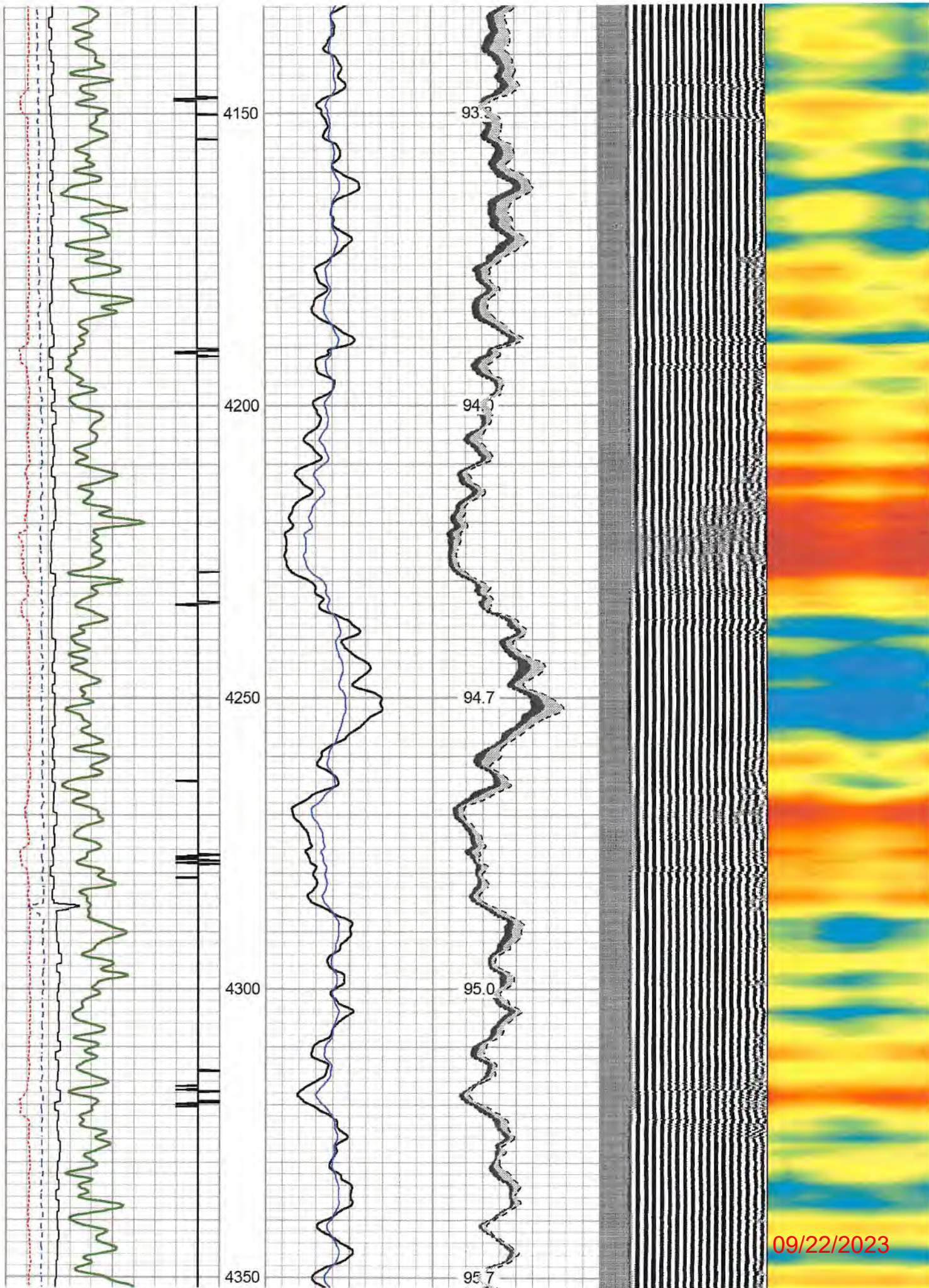
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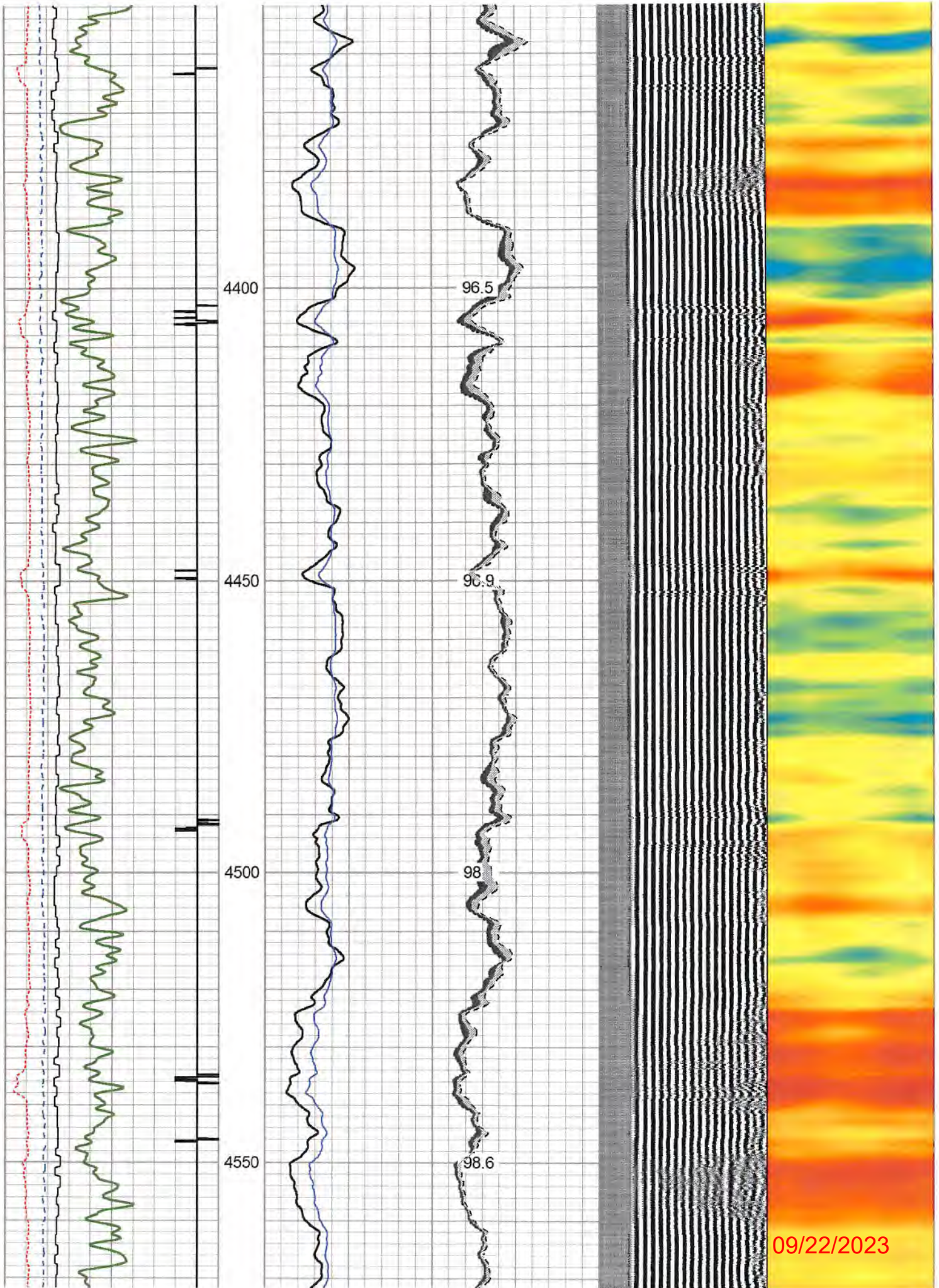
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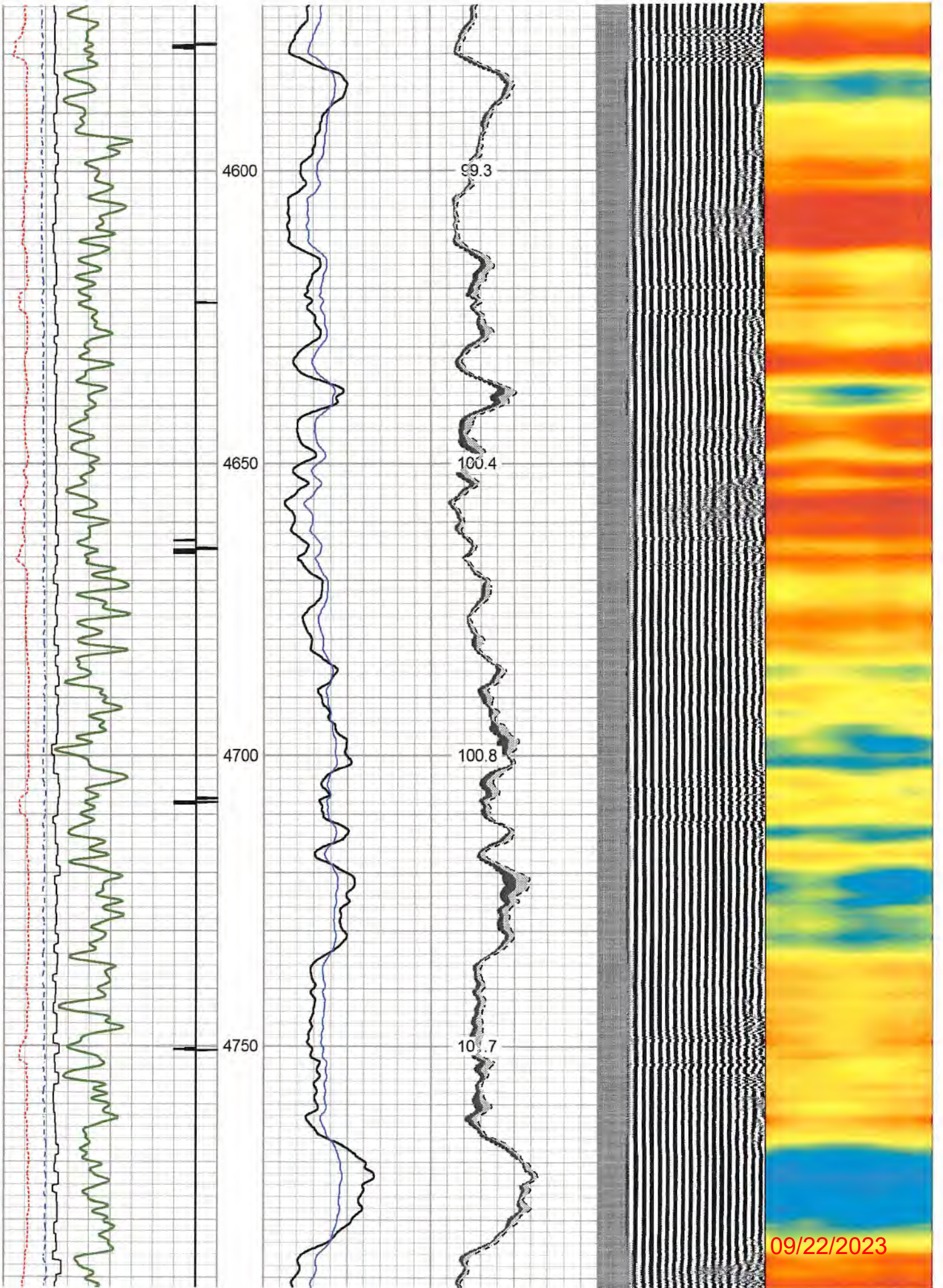
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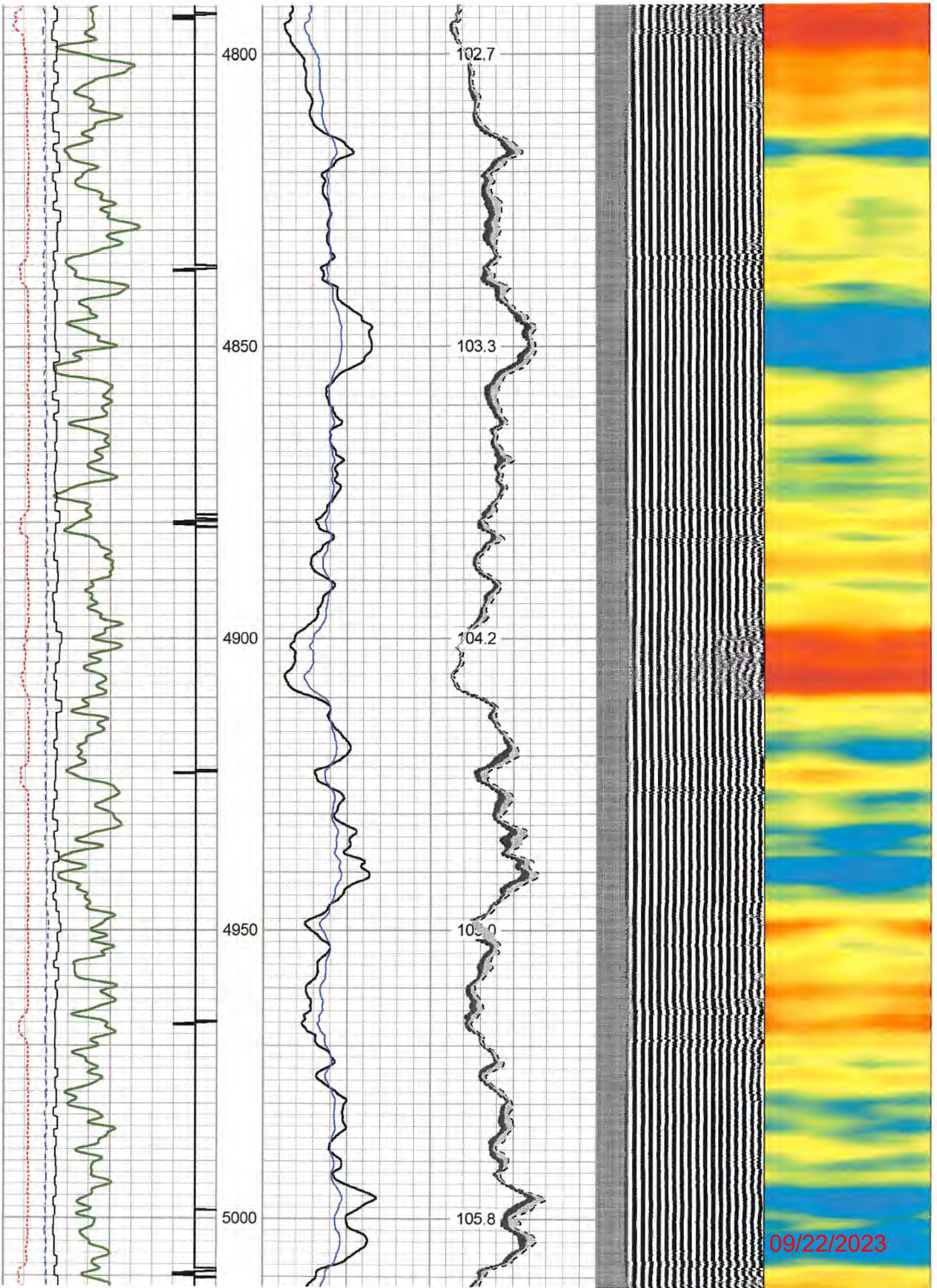


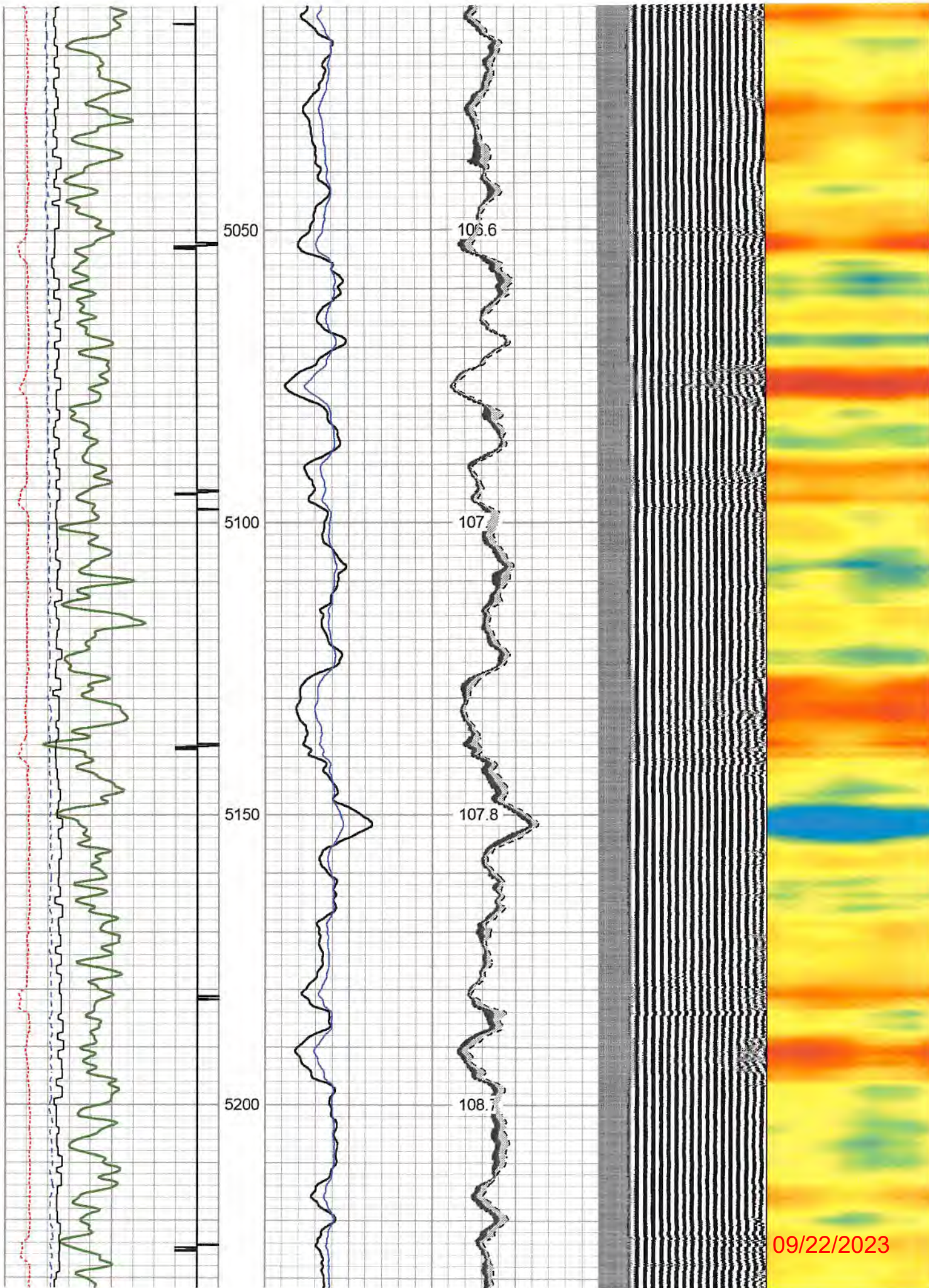
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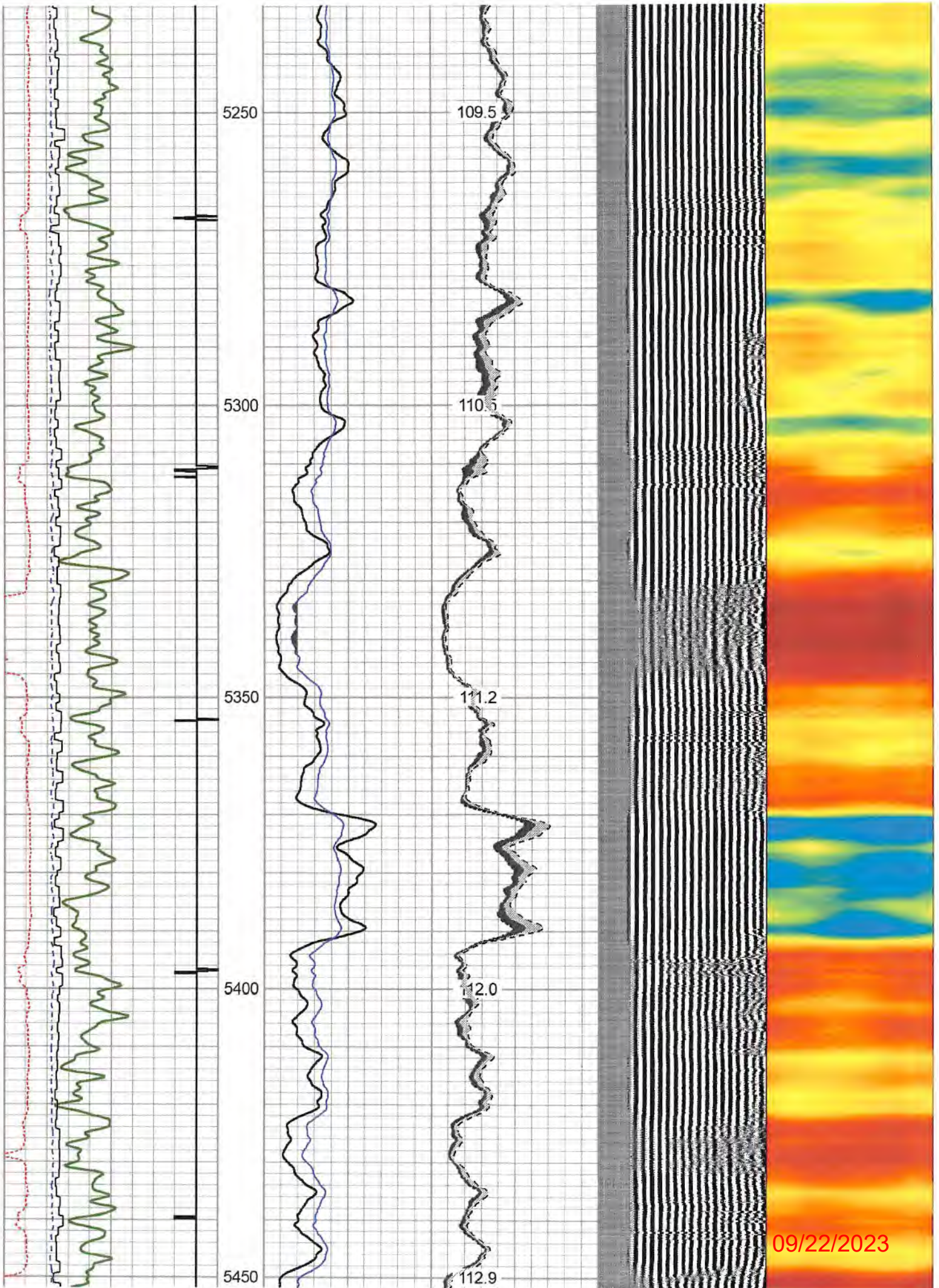


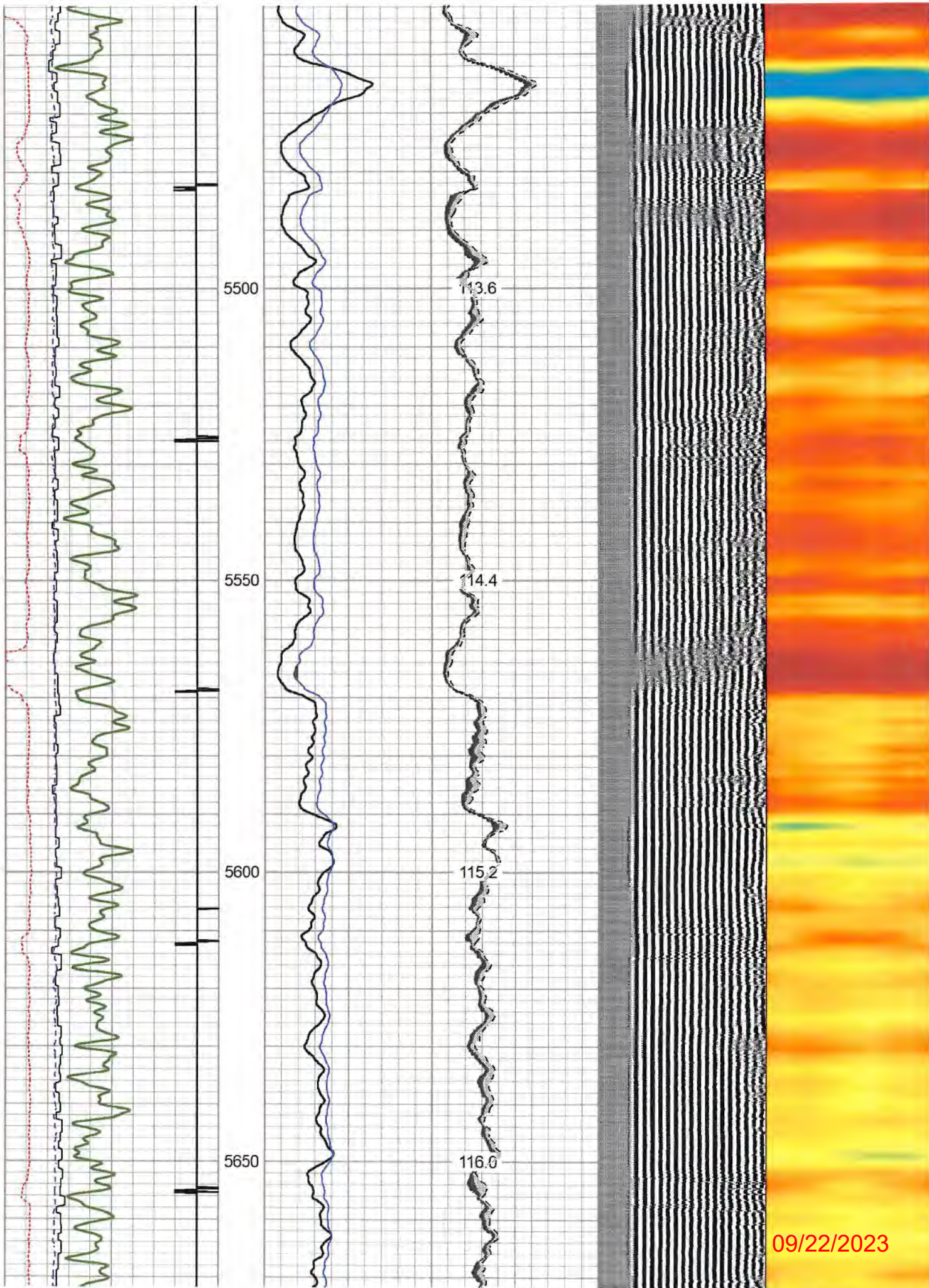


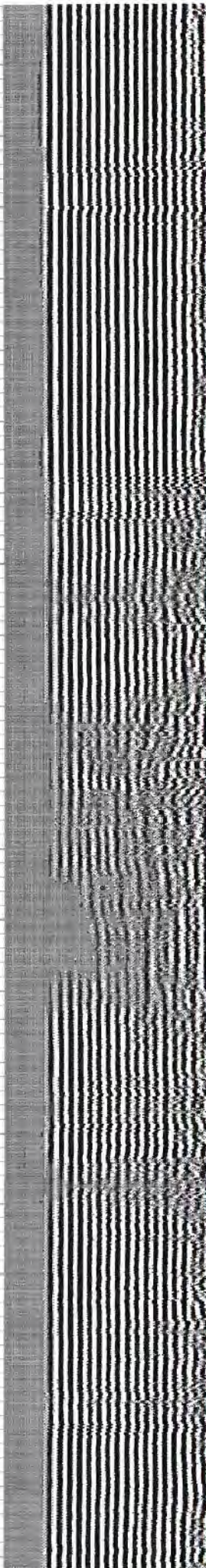
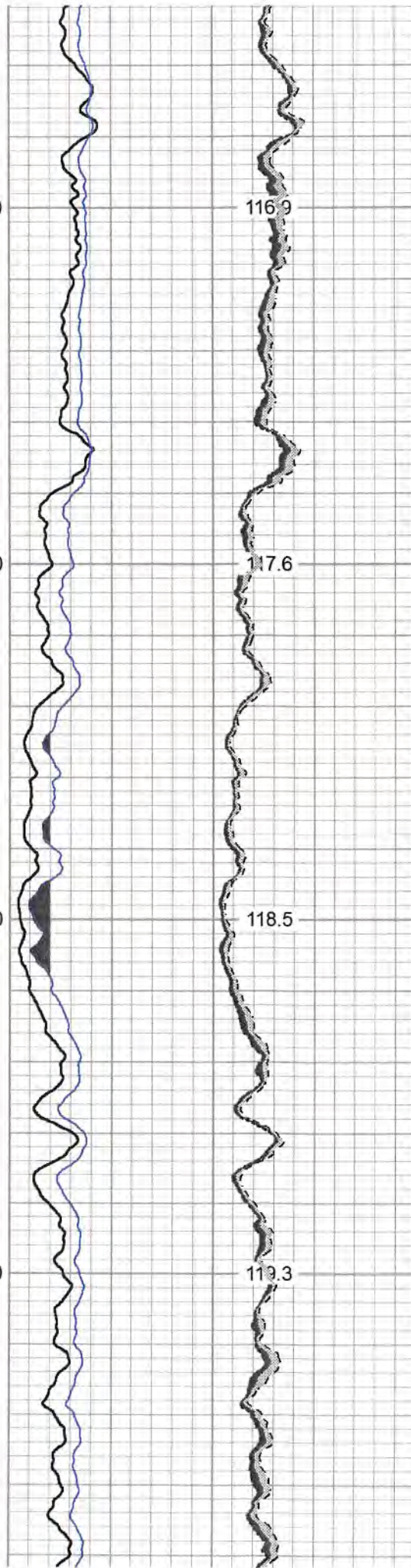
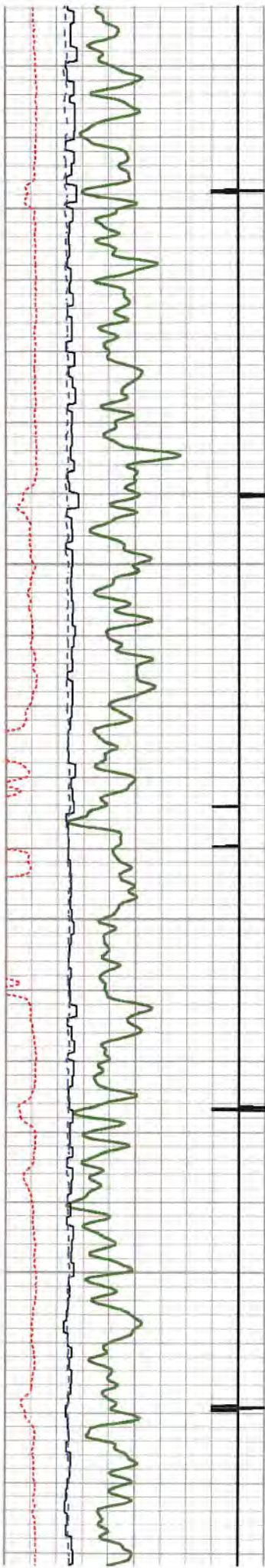




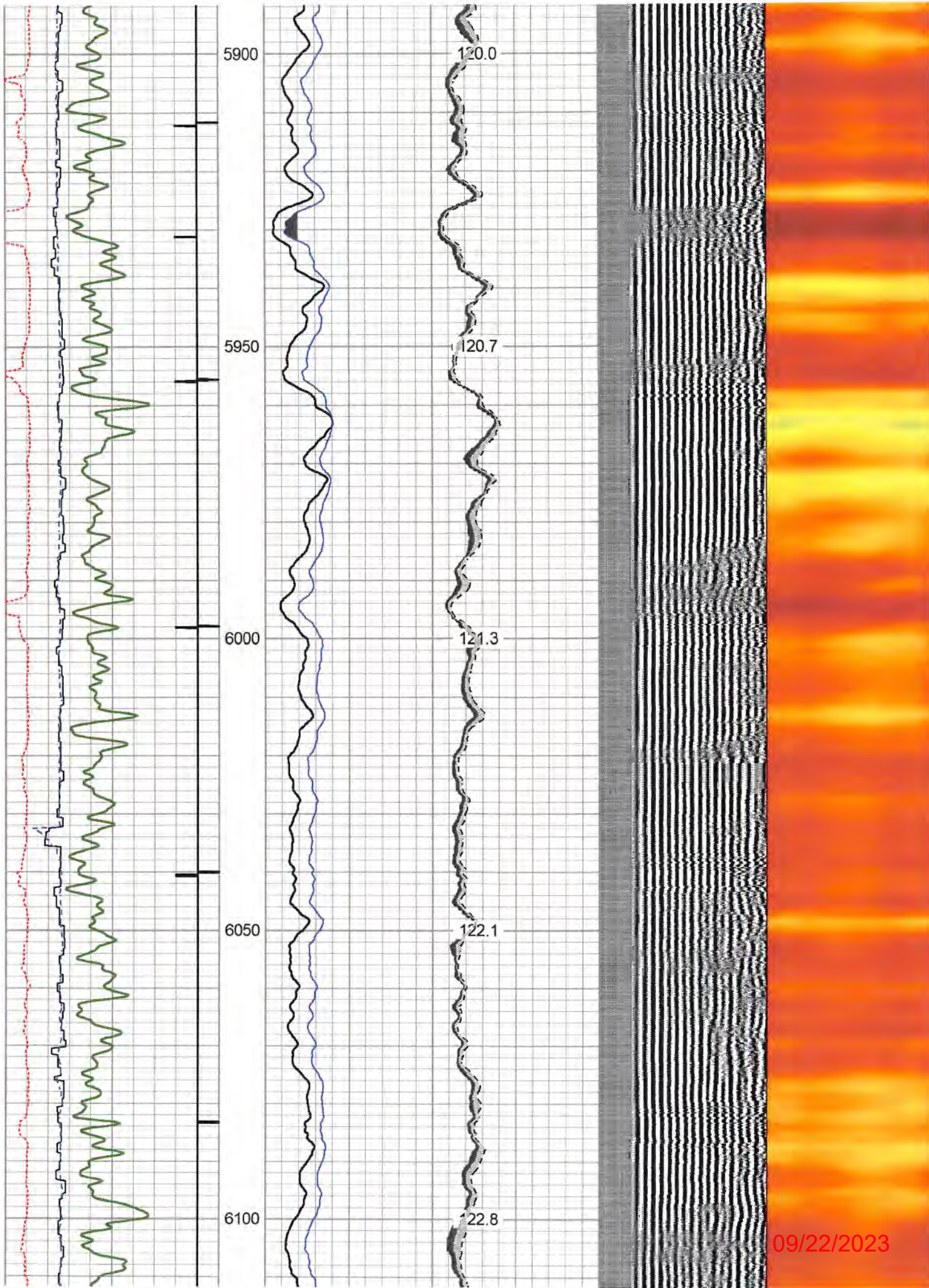


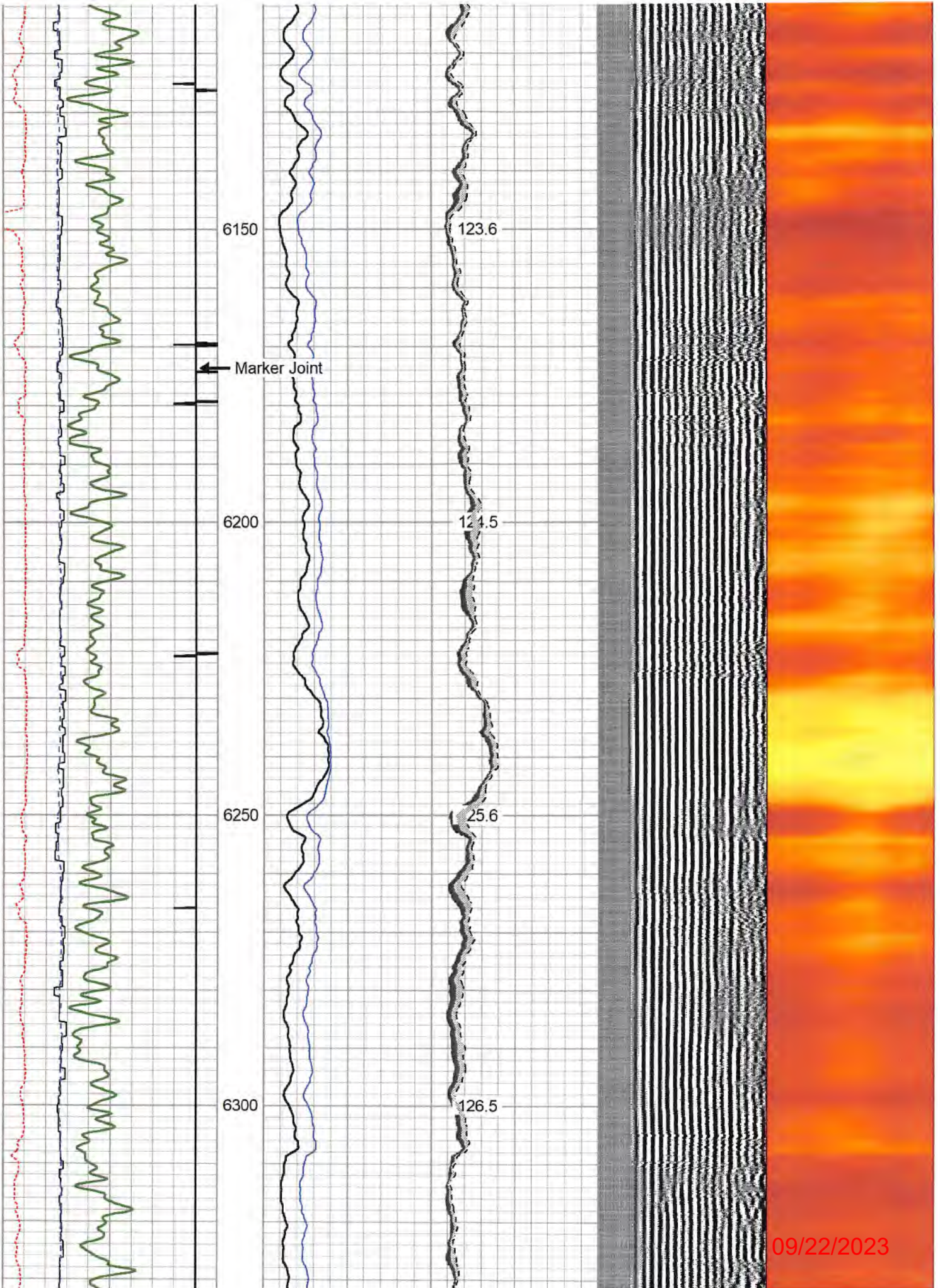


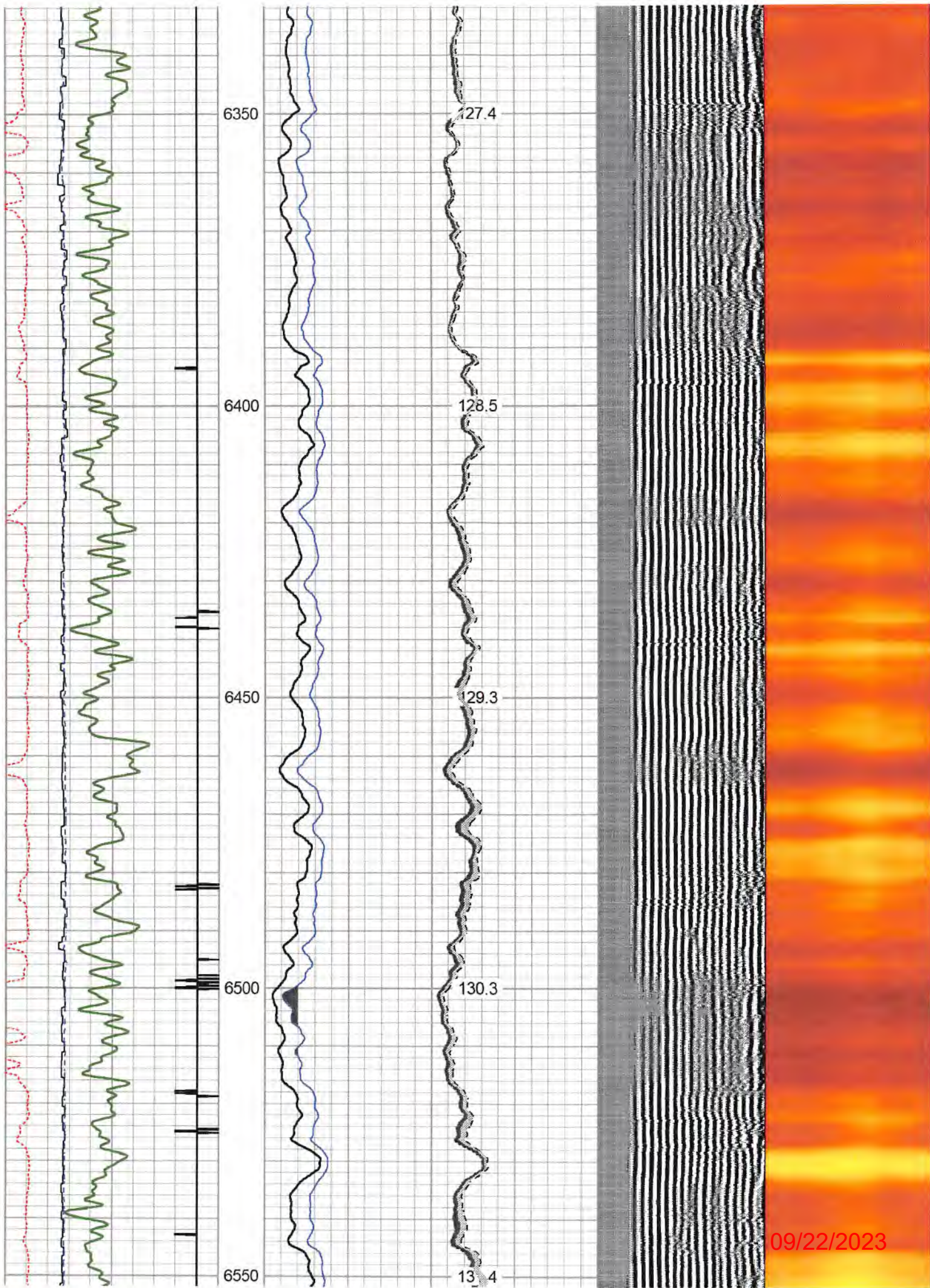




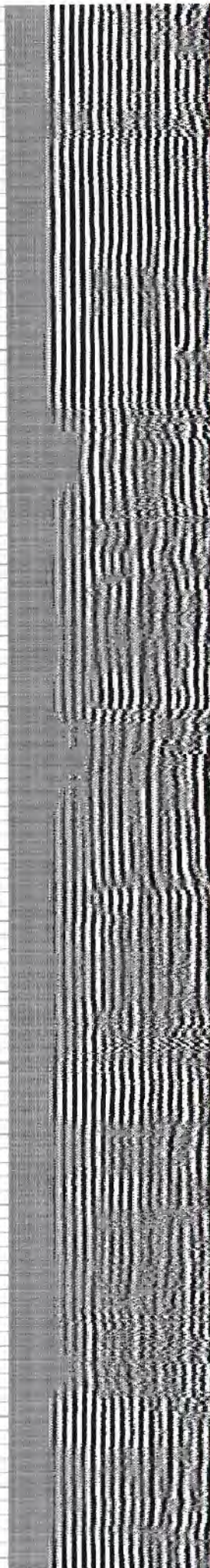
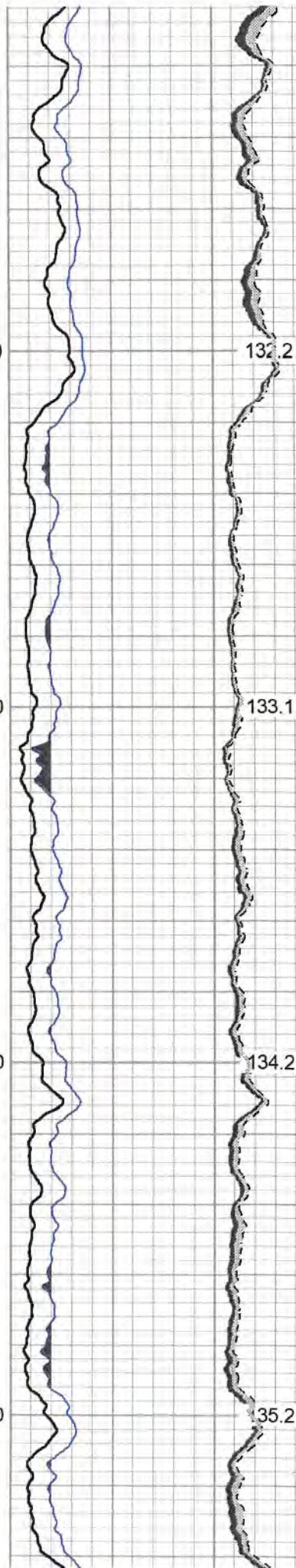
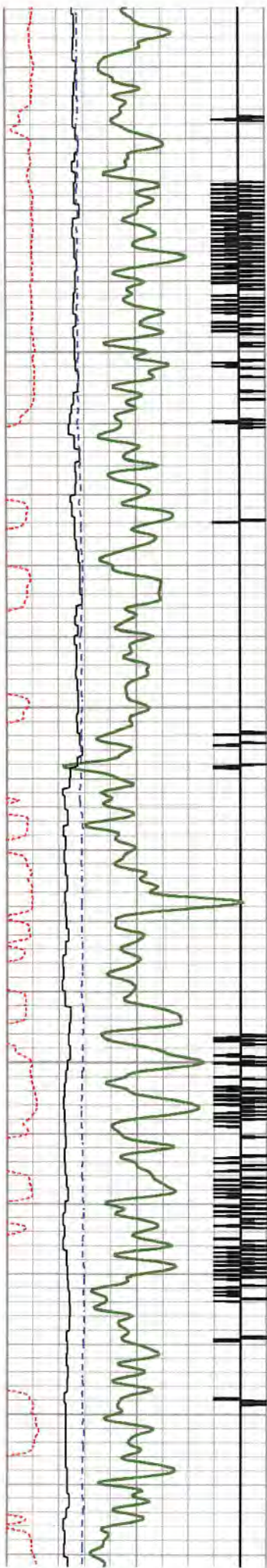
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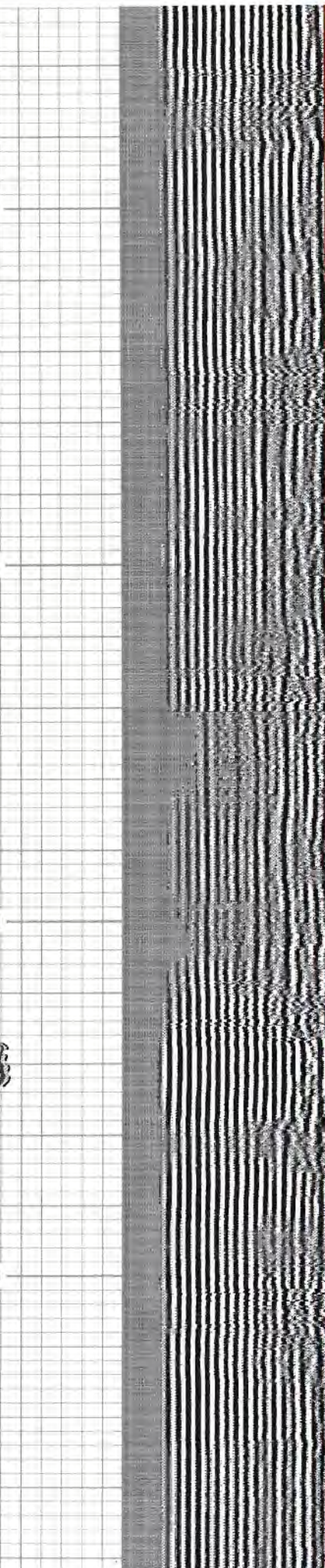
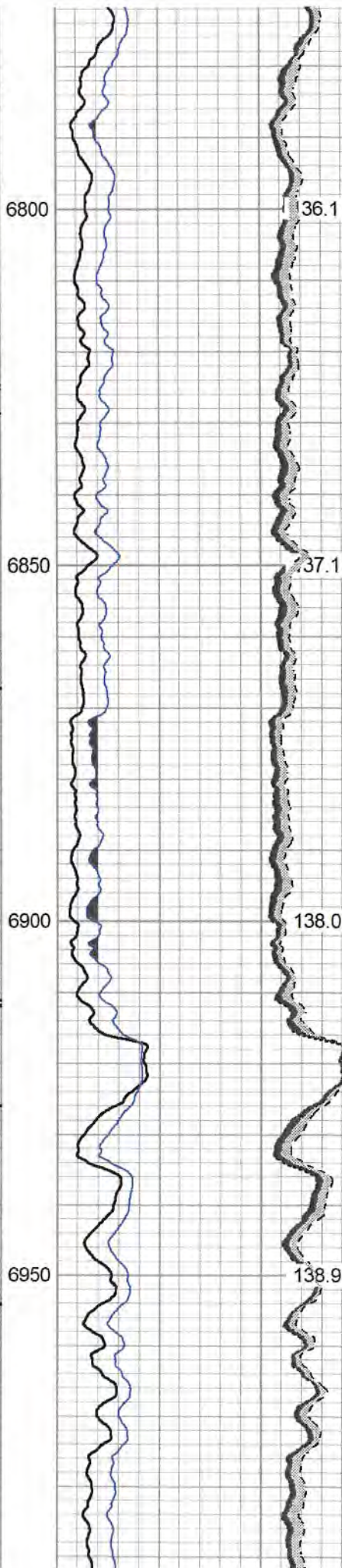
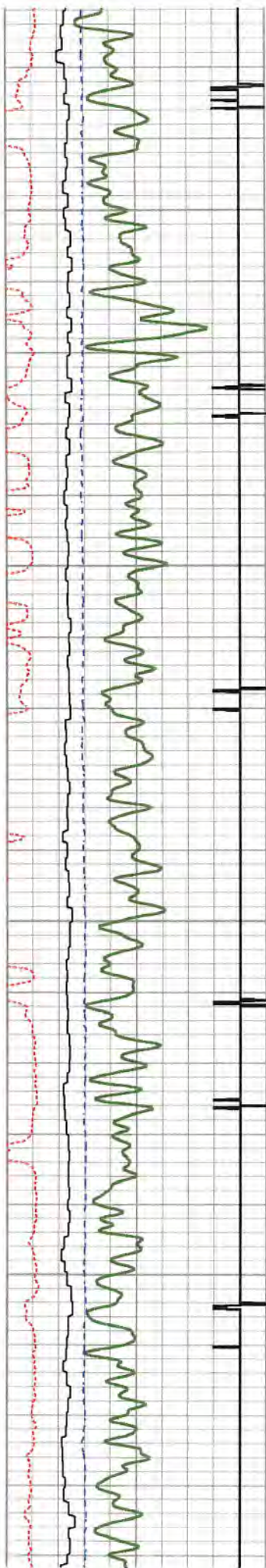




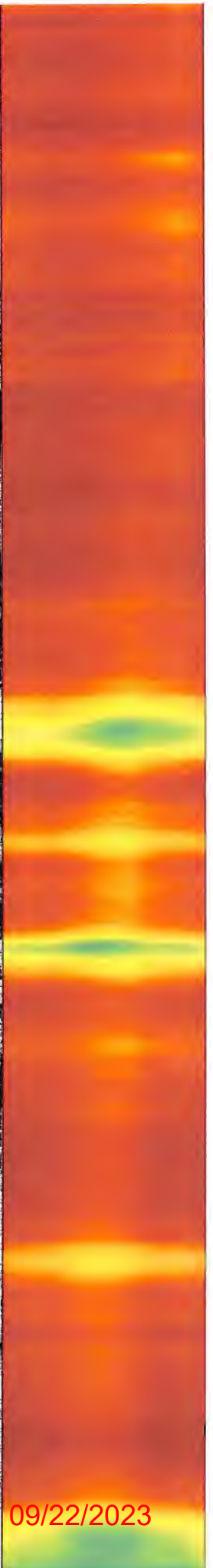
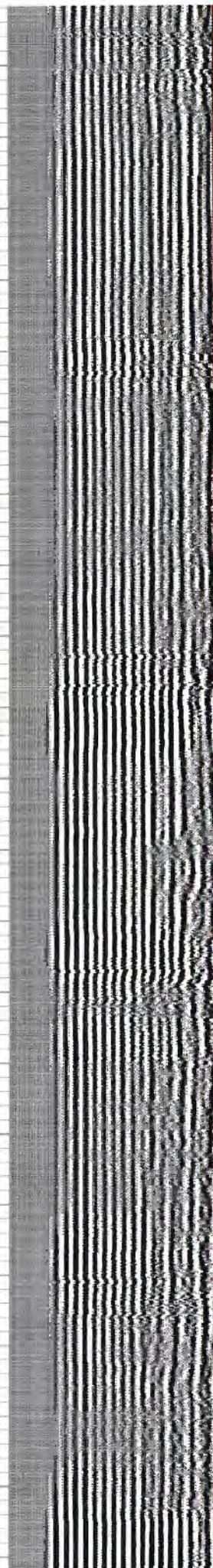
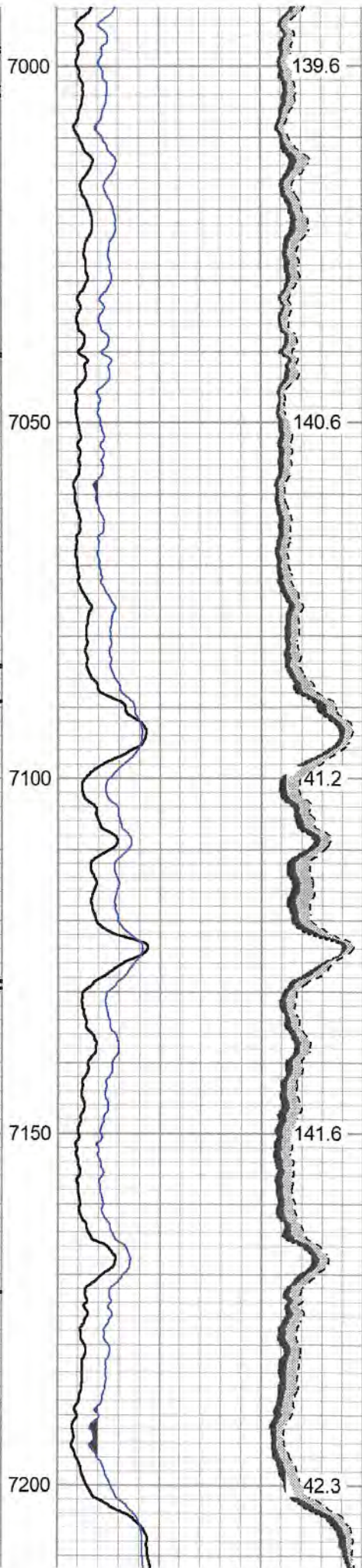
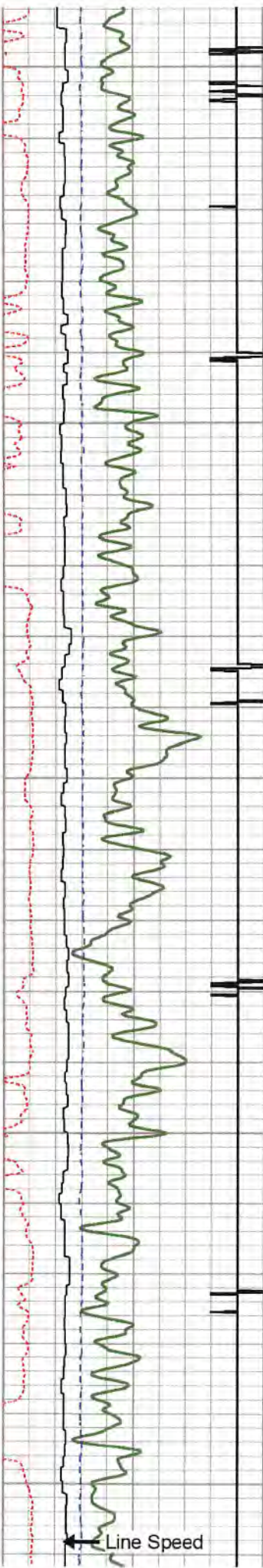
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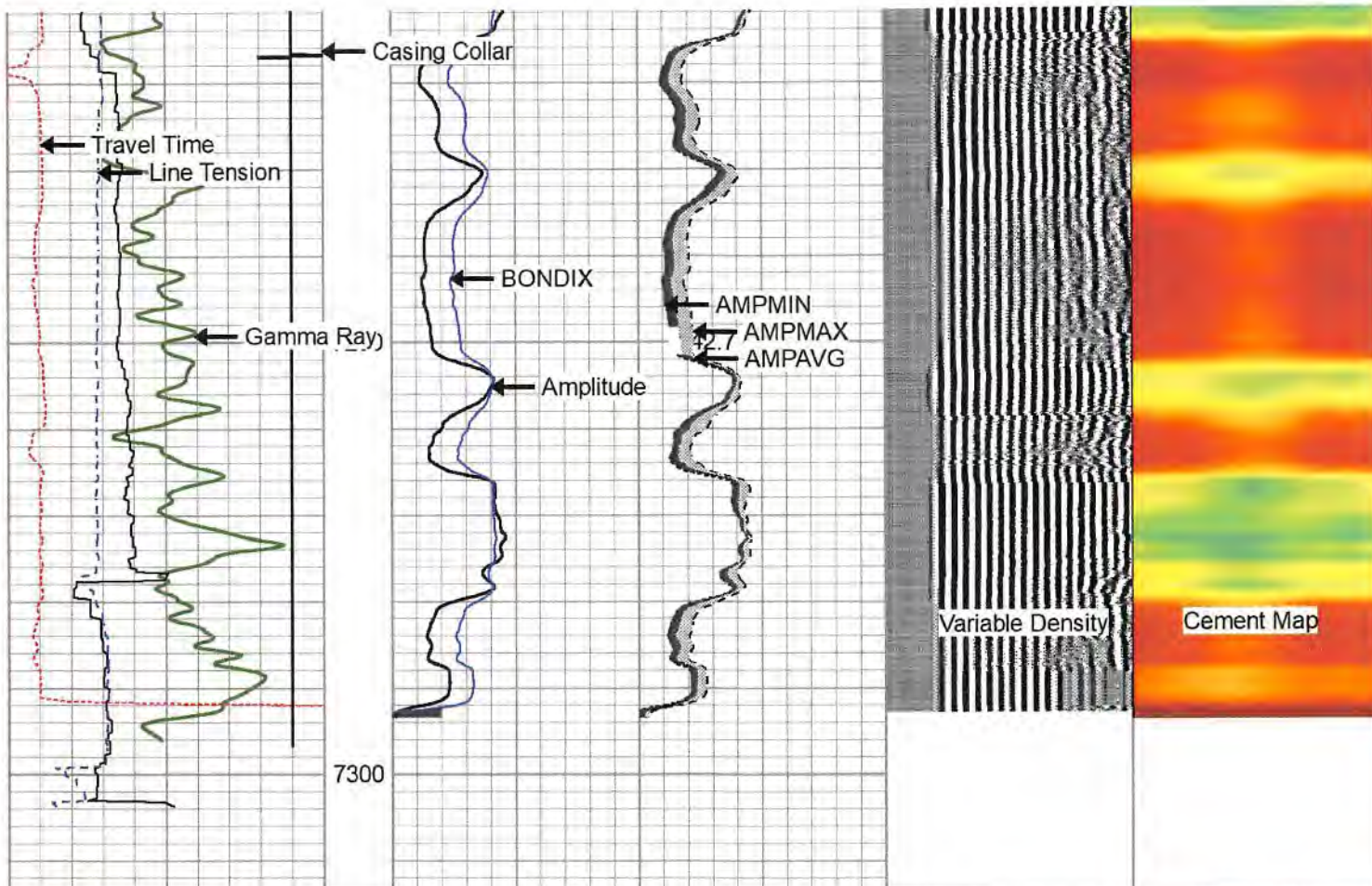
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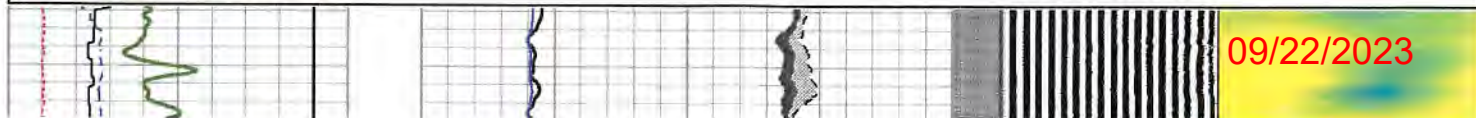


270	Travel Time (usec)	160	0	Amplitude (mV)	100	-5	AMPMIN	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1	1	BONDIX	0	-5	AMPMAX	150	200 (usec)	1200		
0	Gamma Ray (GAPI)	150				-5	AMPAVG	150				
	Line Speed						TEMP					
-200	(ft/min)	200					(degF)					
0	Line Tension (lb)	5000										

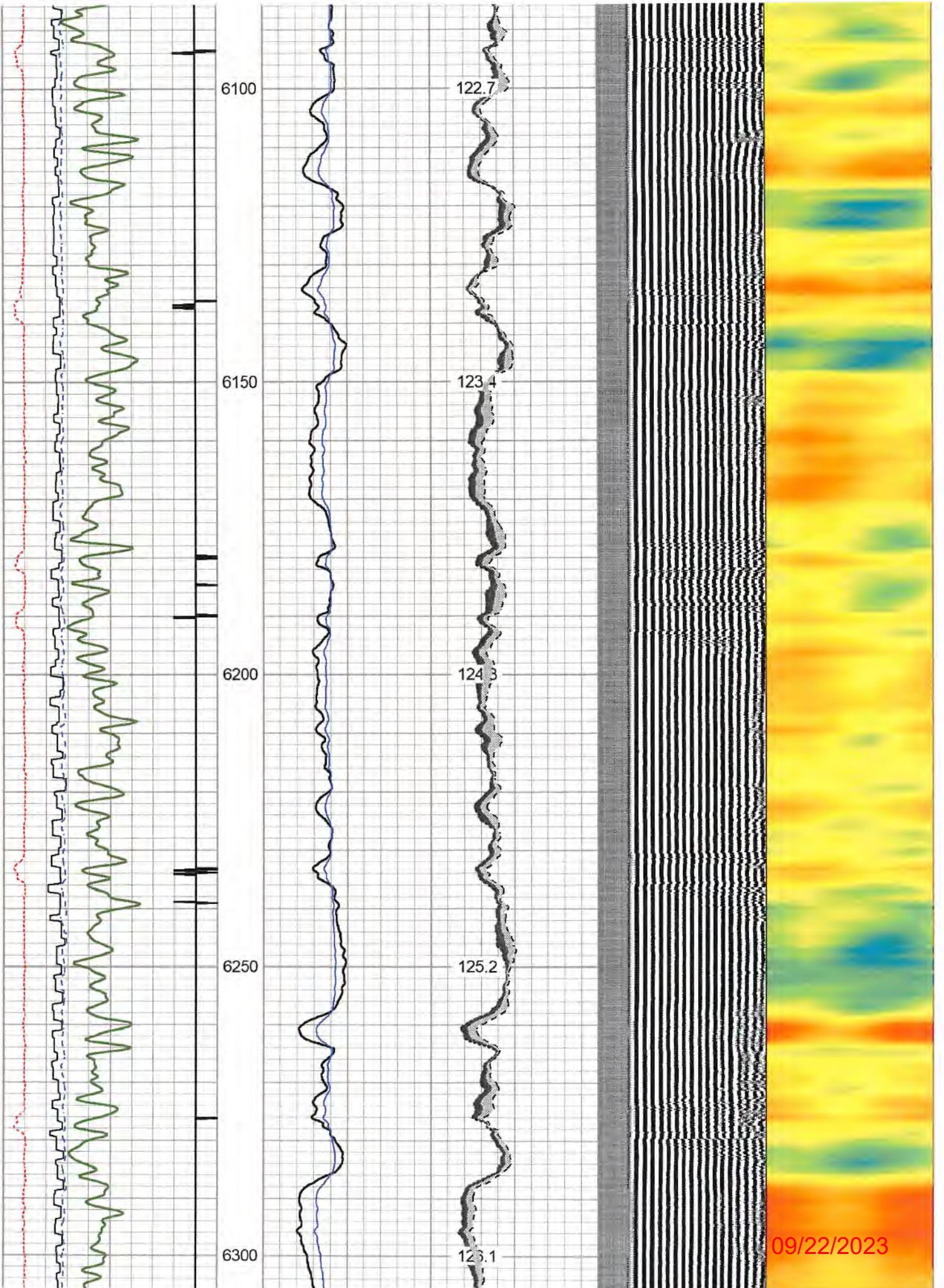
Repeat Pass 0 PSI

Database File: antero_emmons_1h_rcbl_19_jan_2022.db
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 Presentation Format: rcbl 2
 Dataset Creation: Thu Jan 19 14:42:03 2023
 Charted by: Depth in Feet scaled 1:240

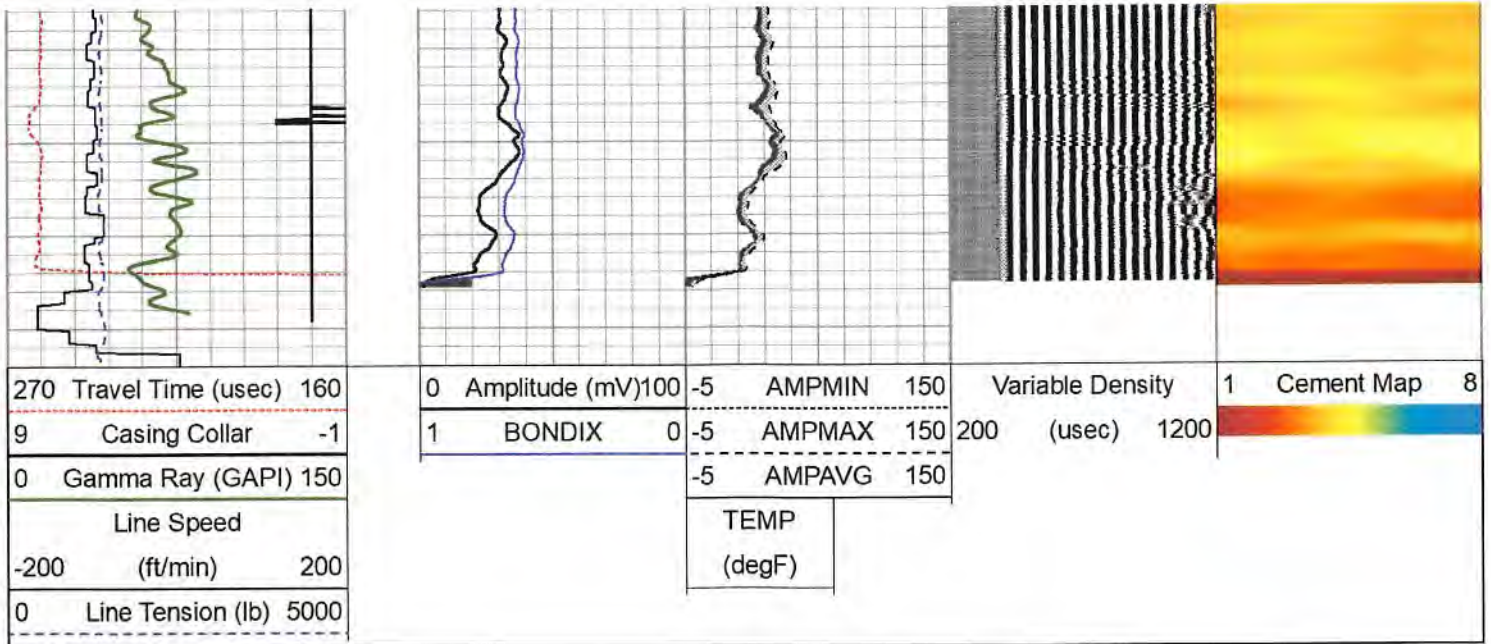
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9	Casing Collar	-1	1	BONDIX	0	-5	AMPMAX	150	200 (usec)	1200		
0	Gamma Ray (GAPI)	150				-5	AMPAVG	150				
	Line Speed						TEMP					
-200	(ft/min)	200					(degF)					
0	Line Tension (lb)	5000										



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Log Variables DatabaseC:\ProgramData\Warrior\Data\antero_emmons_1h_rcbl_19_jan_2022.db
 Dataset field/emmons1h/rcbl/pass4/_vars_

Top - Bottom

BHTEMP_Src	BOREID	BOTTEMP	CASEOD	CASETHCK	CASEWGHT	MAXAMPL	MINAMPL
TEMP	7.875	141	5.5	0.361	20	71.9	2.2
MINATTN	PERFS	PPT	SRFTEMP	TDEPTH			
10.8	No	261	50	6925			

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_emmons_1h_rcbl_19_jan_2022.db
 Dataset Pathname emmons1h/rcbl/pass4
 Dataset Creation Thu Jan 19 14:50:01 2023

Gamma Ray Calibration Report

Serial Number: FW1211-86
 Tool Model: Probe
 Performed: Sun Nov 13 11:04:25 2022

Calibrator Value: 1.0 GAPI
 Background Reading: 0.0 cps
 Calibrator Reading: 1.0 cps

Sensitivity: 0.5000 GAPI/cps

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Serial Number: 2.75"
 Tool Model: Probe275T
 Calibration Casing Diameter: 5.500 in
 Calibration Depth: 720.117 ft

Master Calibration, performed Thu Jan 19 10:32:37 2023:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.007	0.928	2.200	71.921	75.763	1.645
CAL	0.993	1.490				
5'	-0.005	0.956	2.200	71.921	72.595	2.554
SUM						
S1	0.089	0.975	0.000	100.000	112.910	-10.064
S2	0.006	0.903	0.000	100.000	111.477	-0.659
S3	-0.001	0.963	0.000	100.000	103.779	0.077
S4	-0.005	0.966	0.000	100.000	102.977	0.518
S5	-0.009	0.951	0.000	100.000	104.175	0.929
S6	-0.013	0.945	0.000	100.000	104.462	1.320
S7	0.000	0.933	0.000	100.000	107.173	-0.041
S8	0.004	0.918	0.000	100.000	109.335	-0.402


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	0.993	1.490	1.000	0.000

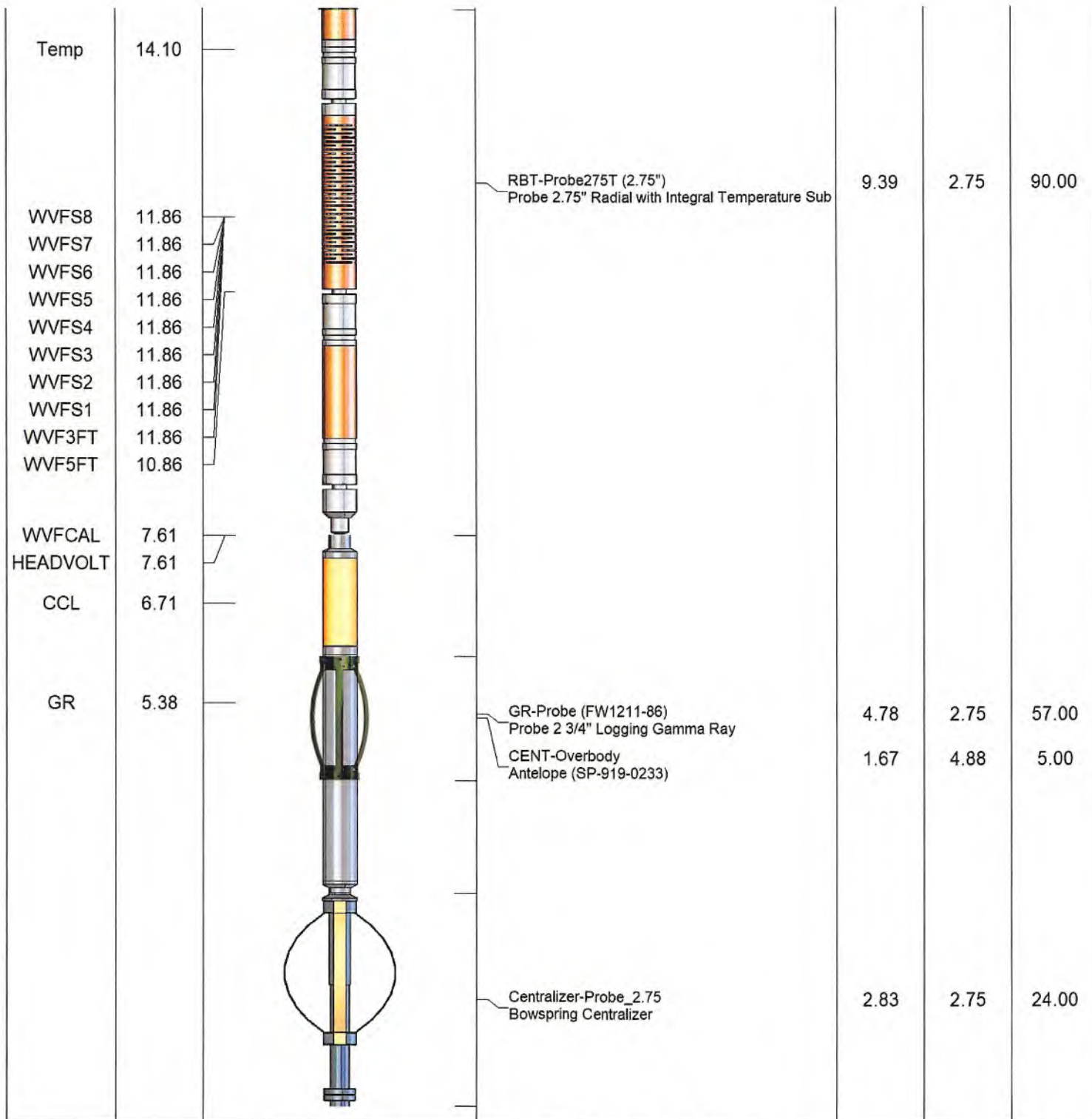
Air Zero Calibration, performed Wed Jan 11 18:02:46 2023:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Gain	Offset
3'	0.000		0.000		0.000	0.000
5'	0.000		0.000		0.000	0.000
SUM						
S1	0.000		0.000		0.000	0.000
S2	0.000		0.000		0.000	0.000
S3	0.000		0.000		0.000	0.000
S4	0.000		0.000		0.000	0.000
S5	0.000		0.000		0.000	0.000
S6	0.000		0.000		0.000	0.000
S7	0.000		0.000		0.000	0.000
S8	0.000		0.000		0.000	0.000

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 JUN 23 2023
 WV Department of
 Environmental Protection

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
HeadVolt	16.95		CHD-Titan Standard 1 7/16" Cable Head	1.02	1.44	1.00
			CENT-Overbody Antelope (SP-919-0233)	1.67	1.68	5.00

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Dataset: antero_emmons_1h_rcbl_19_jan_2022.db: field/emmons1h/rcbl/pass4
 Total length: 18.03 ft
 Total weight: 182.00 lb
 O.D.: 4.88 in

	Company	ANTERO RESOURCES	<p>RECEIVED Office of Oil and Gas JUN 23 2023 WV Department of Environmental Protection</p>
	Well	Beech Run Emmons 1H	
	Field	Rabbit Ears	
	County	Tyler	
	State	WV	

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