



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

Company ANTERO RESOURCES
Well MARGERY-NATIONAL 1H
Field RABBIT EARS
County TYLER
State WV

Company ANTERO RESOURCES
Well MARGERY-NATIONAL 1H
Field RABBIT EARS
County TYLER State WV

Location: 39.520117, -80.834338 (ENTERANCE)
SEC TWP RGE
Permanent Datum GROUND LEVEL Elevation 25.5"
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING
Other Services
Elevation
K.B. 1650.5
D.F. 1650.5
G.L. 1625

Date DECEMBER 4, 2021

Run Number	1
Depth Driller	21258
Depth Logger	6854
Bottom Logged Interval	6842
Top Log Interval	SURFACE
Open Hole Size	NA
Type Fluid	FRESH WATER
Density / Viscosity	8.6 LB/GAL
Max. Recorded Temp.	148
Estimated Cement Top	600
Time Well Ready	UPON ARRIVAL
Time Logger on Bottom	9:30 AM
Equipment Number	116
Location	CHARLEROI, PA
Recorded By	JAKE BELLI
Witnessed By	MR. BRYAN CARTER

Borehole Record		Tubing Record	
Run Number	Bit From To	Size	Weight From To
Casing Record	Size	Vgt/Ft	Top Bottom
Surface String	NAA	NA	NA NA
Prod. String	NA	NA	NA NA
Production String	5.5	23#	SURFACE 21258
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 5705-5715
ALL PASSES MADE WITH 1500 PSI
THANK YOU FOR USING NINE ENERGY SERVICES

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Office of Oil and Gas

MAR 03 2023

WV Department of
Environmental Protection



MAIN PASS-1500 PSI

Database File antero-margery-nat-1h-12-4-21.db
 Dataset Pathname RABBIT_EARS/NATIONAL_1H/RCBL/pass16
 Presentation Format rcbl-bond index for antero 1020
 Dataset Creation Sat Dec 04 10:42:05 2021
 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

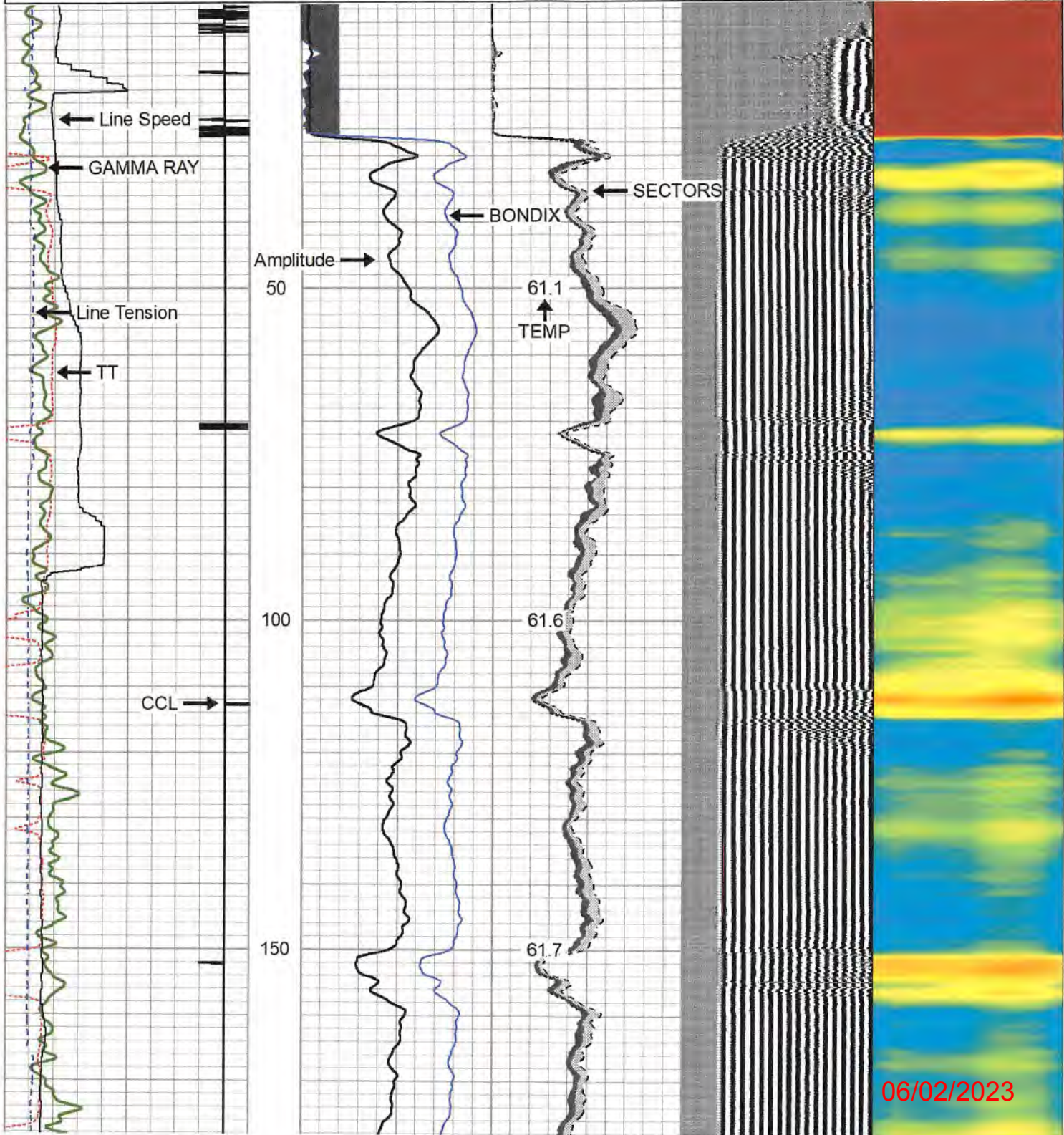
0 Amplitude (mV)100
 1 BONDIX 0

0 AMPMIN 150
 0 AMPMAX 150
 0 AMPAVG 150

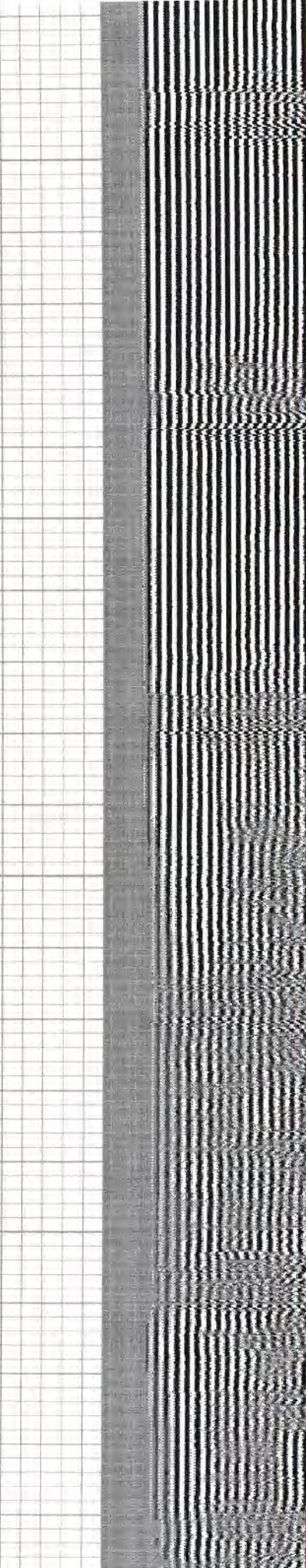
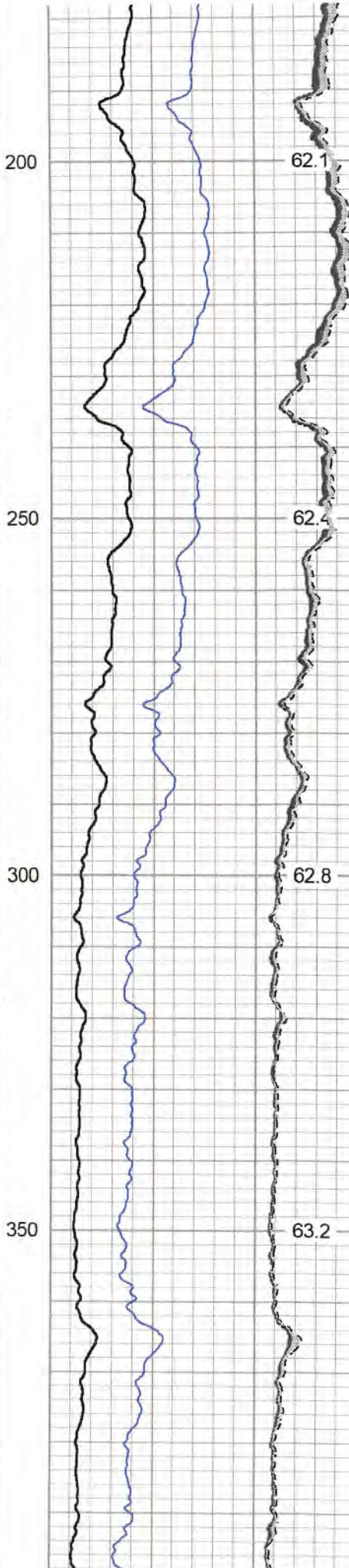
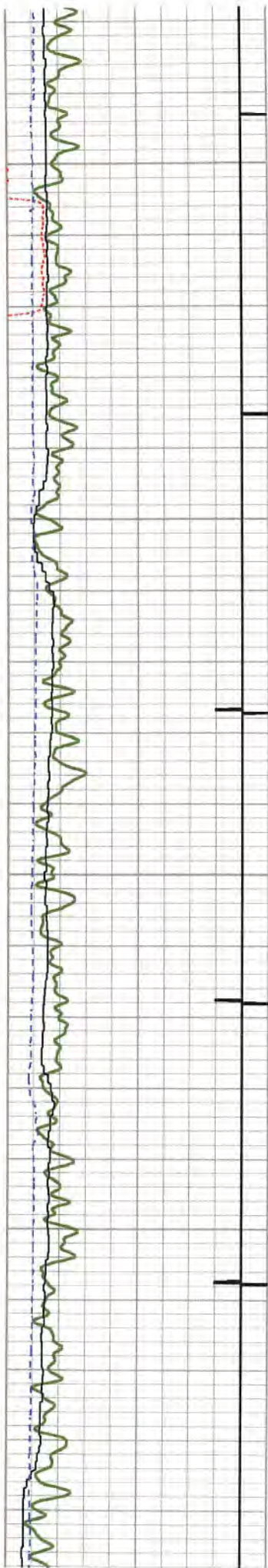
Variable Density
 200 (usec) 1200

1 Cement Map 8

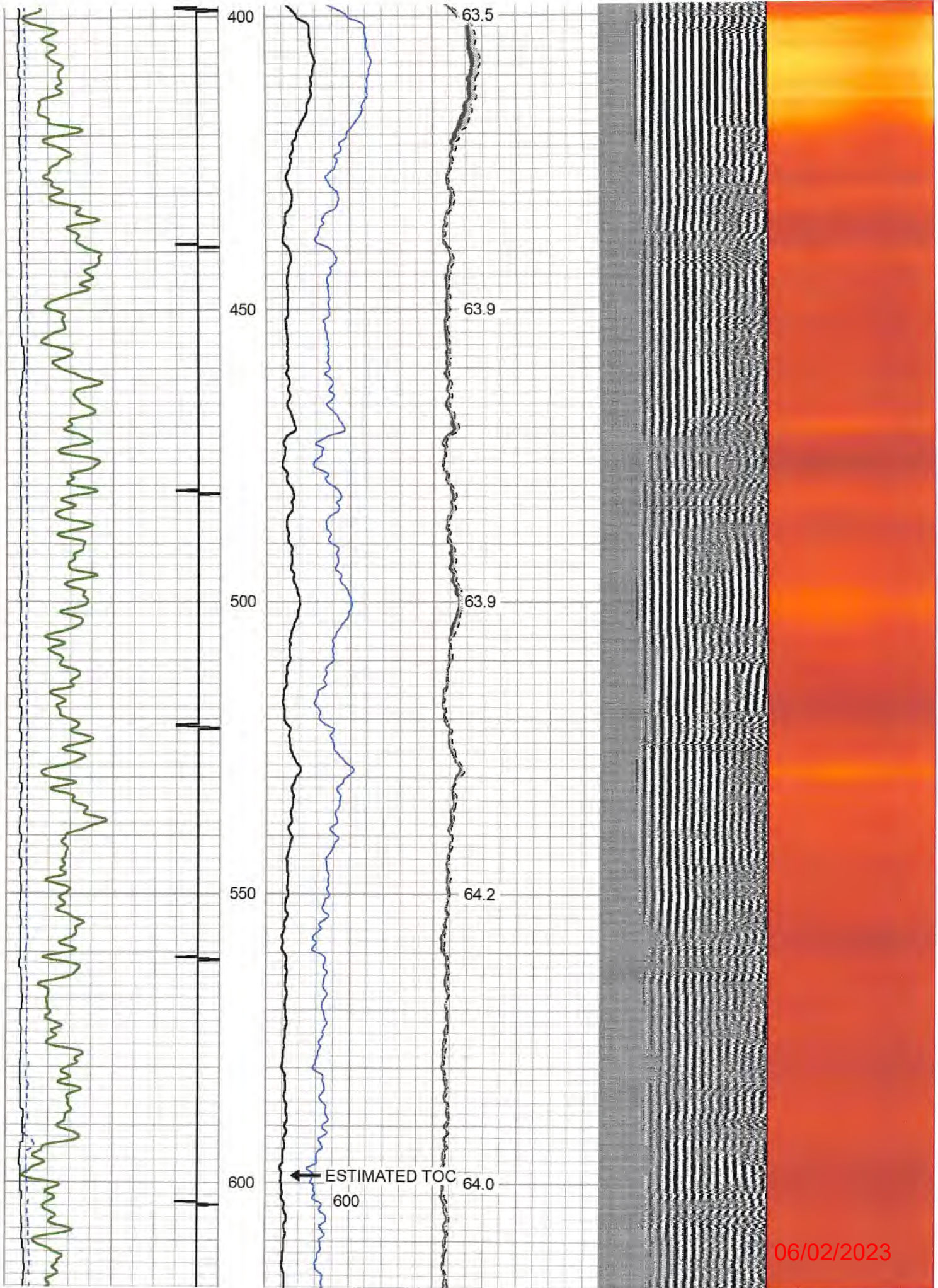
TEMP
 (degF)



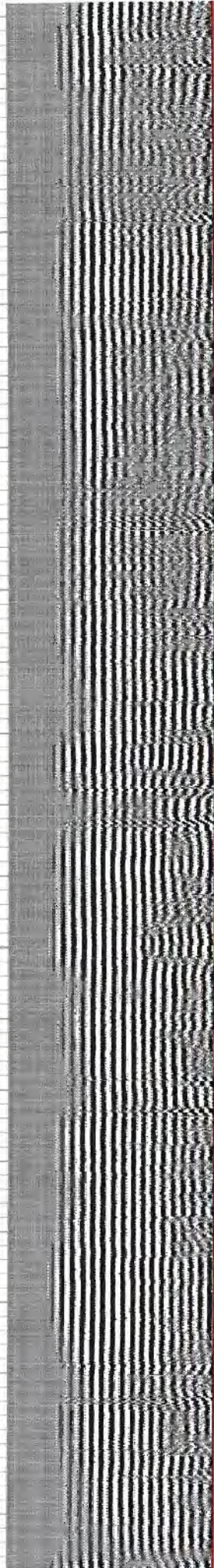
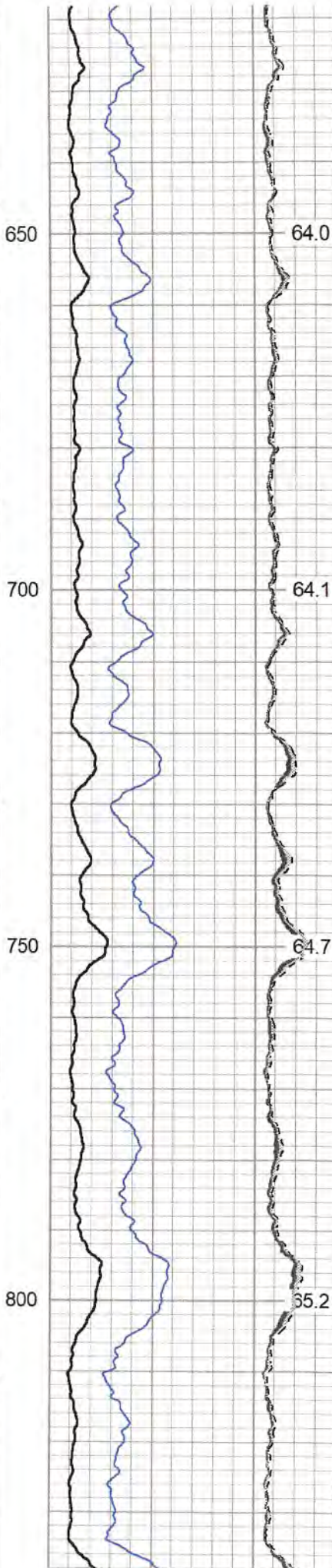
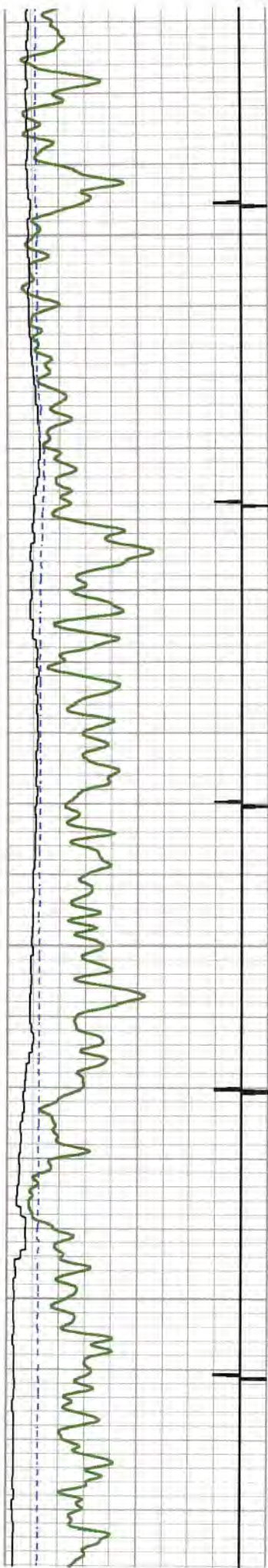
06/02/2023



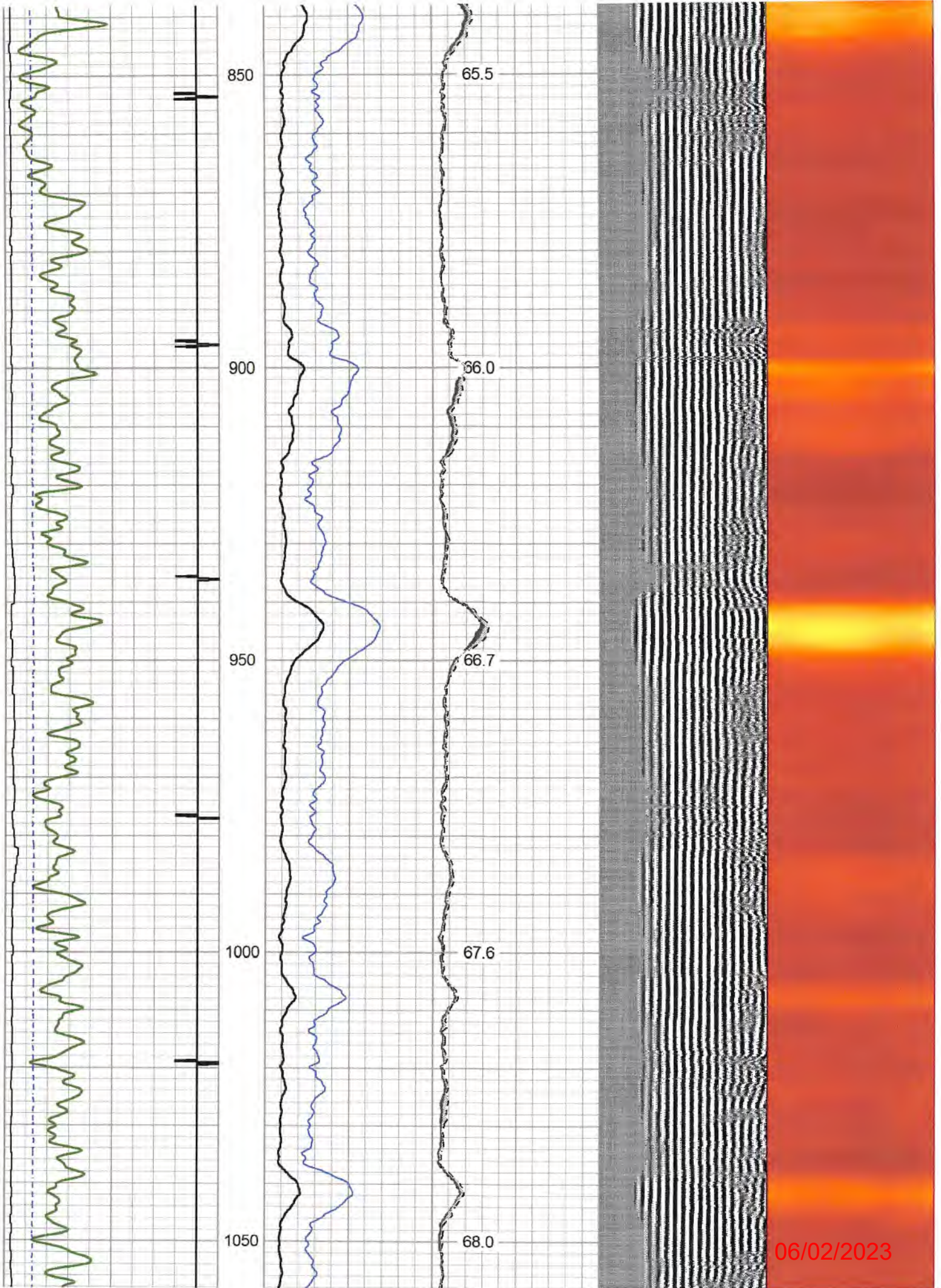
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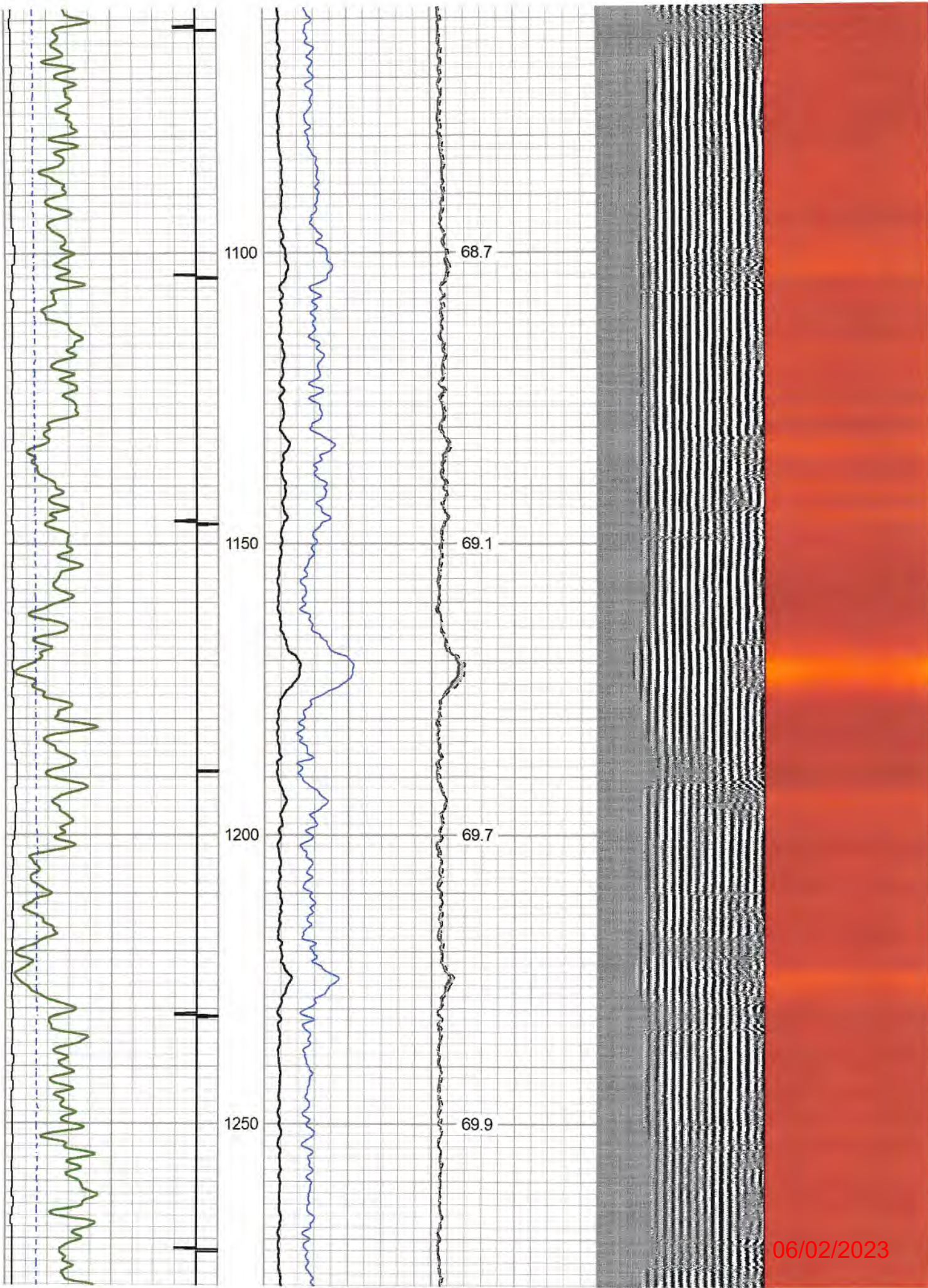
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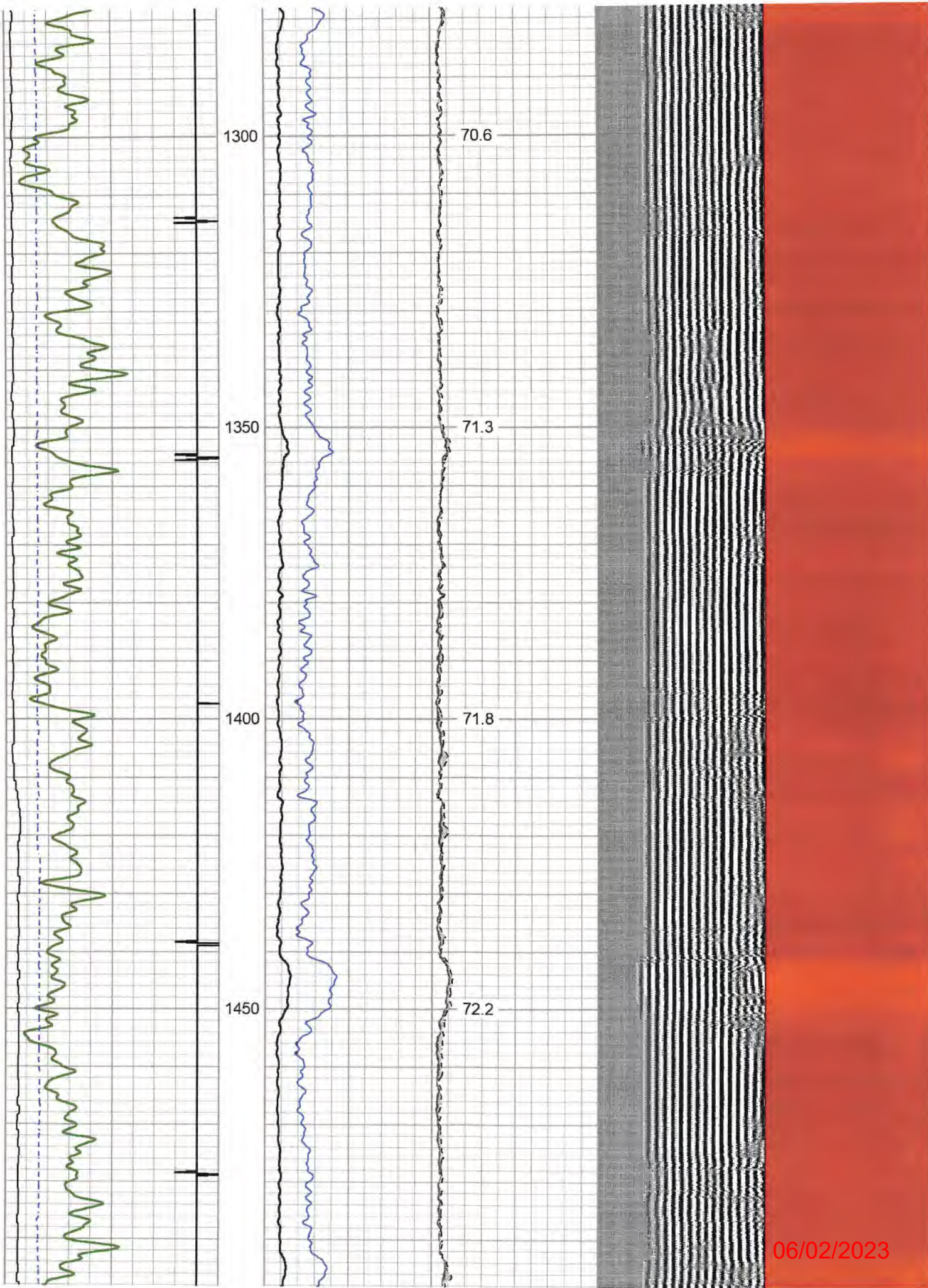
06/02/2023



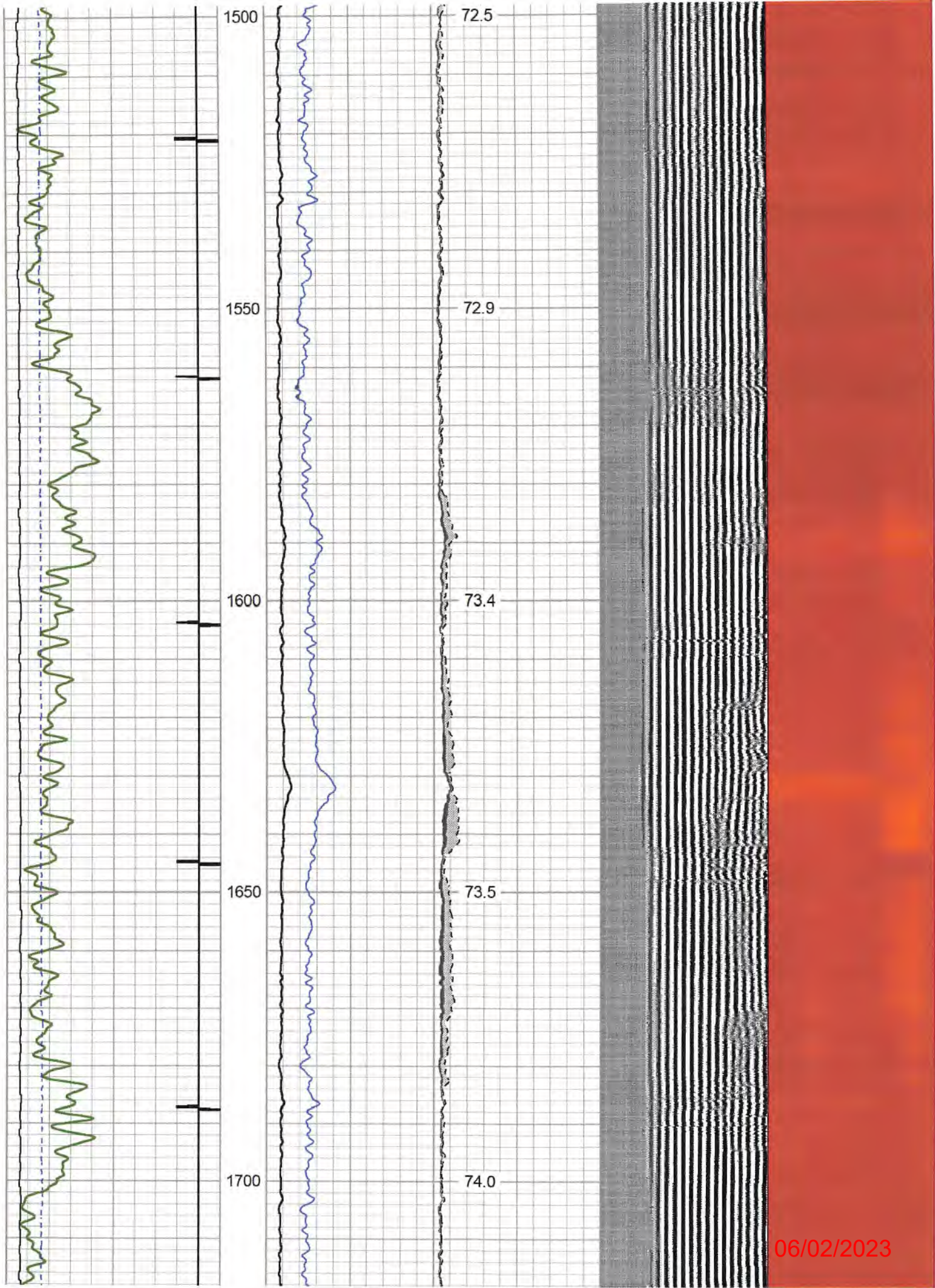
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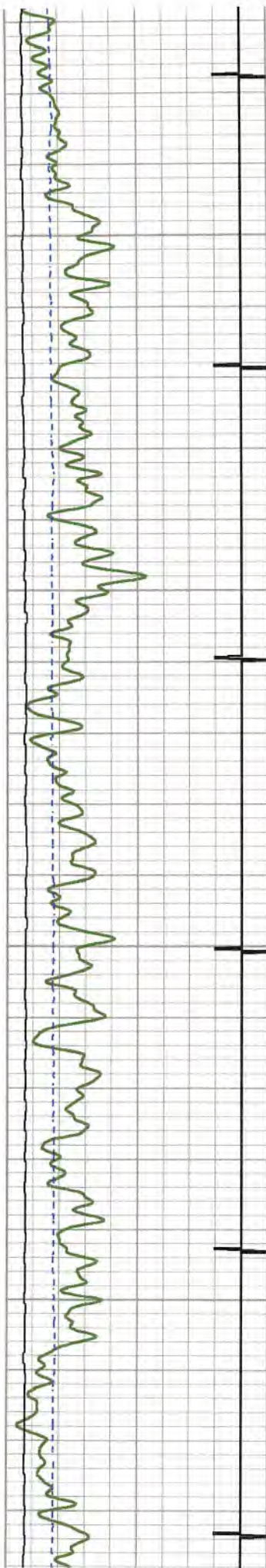
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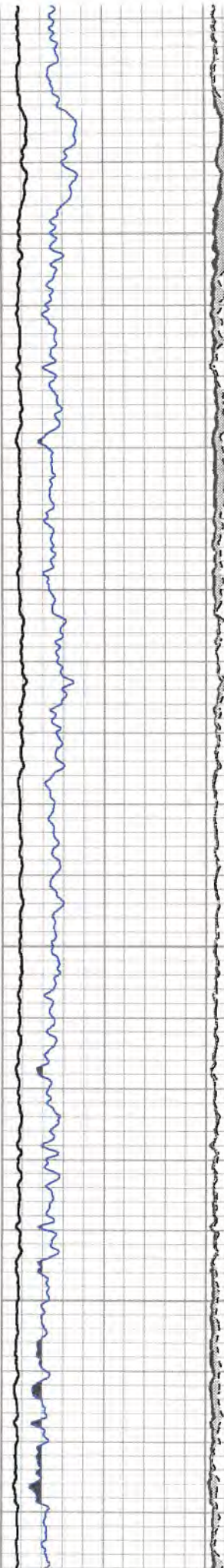
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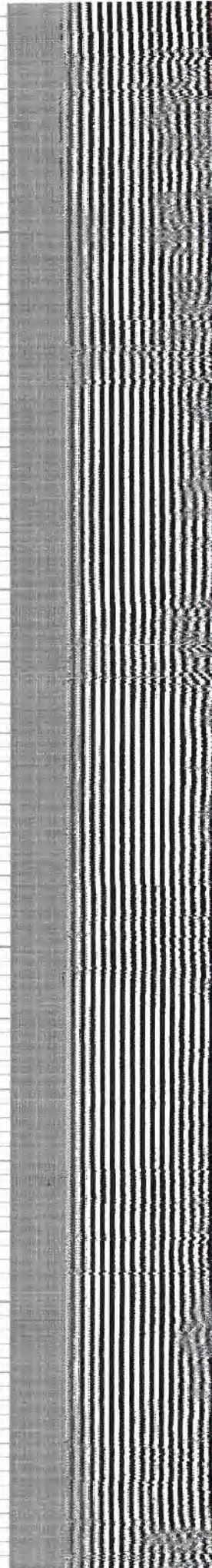
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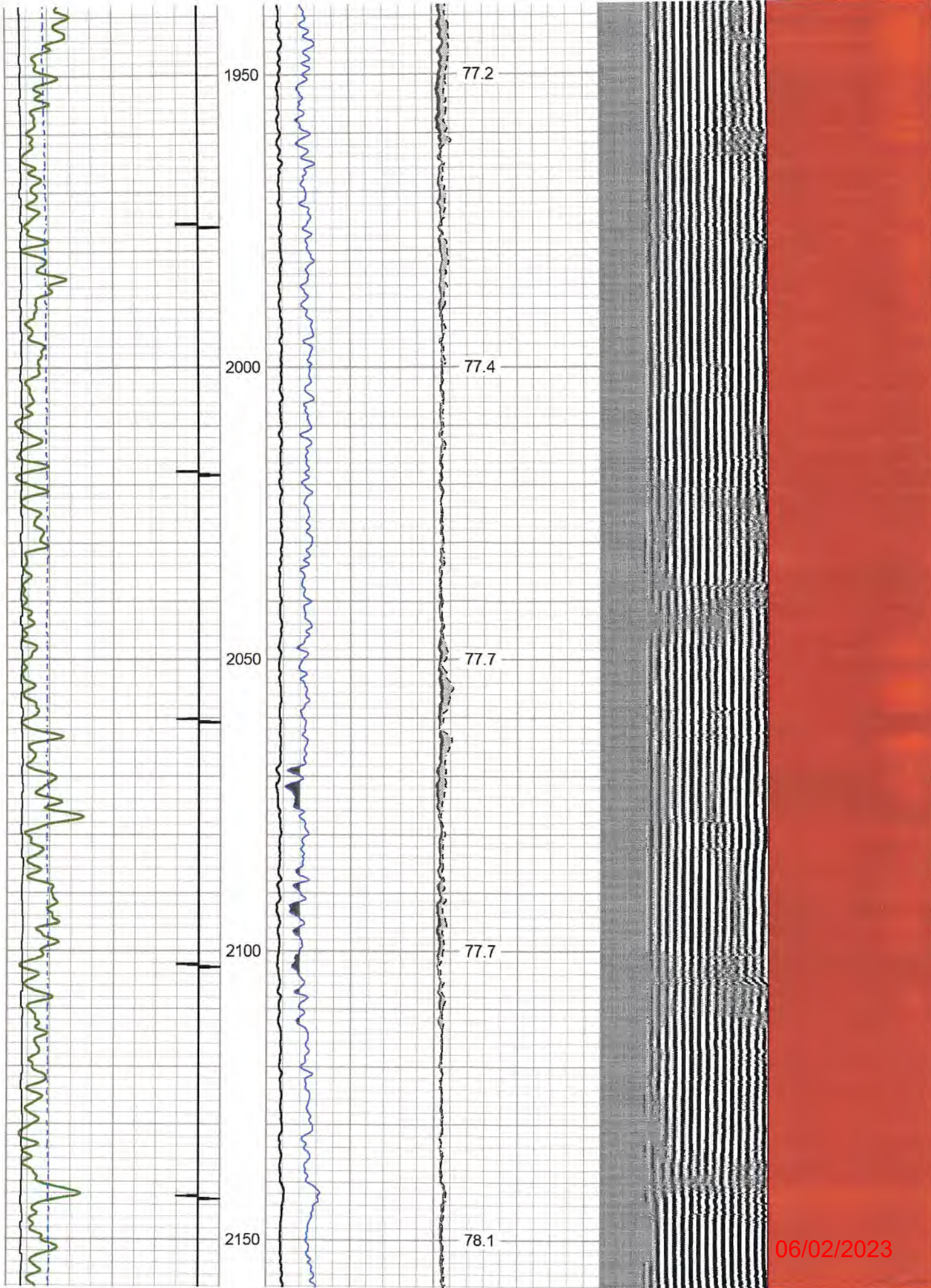
1750
1800
1850
1900



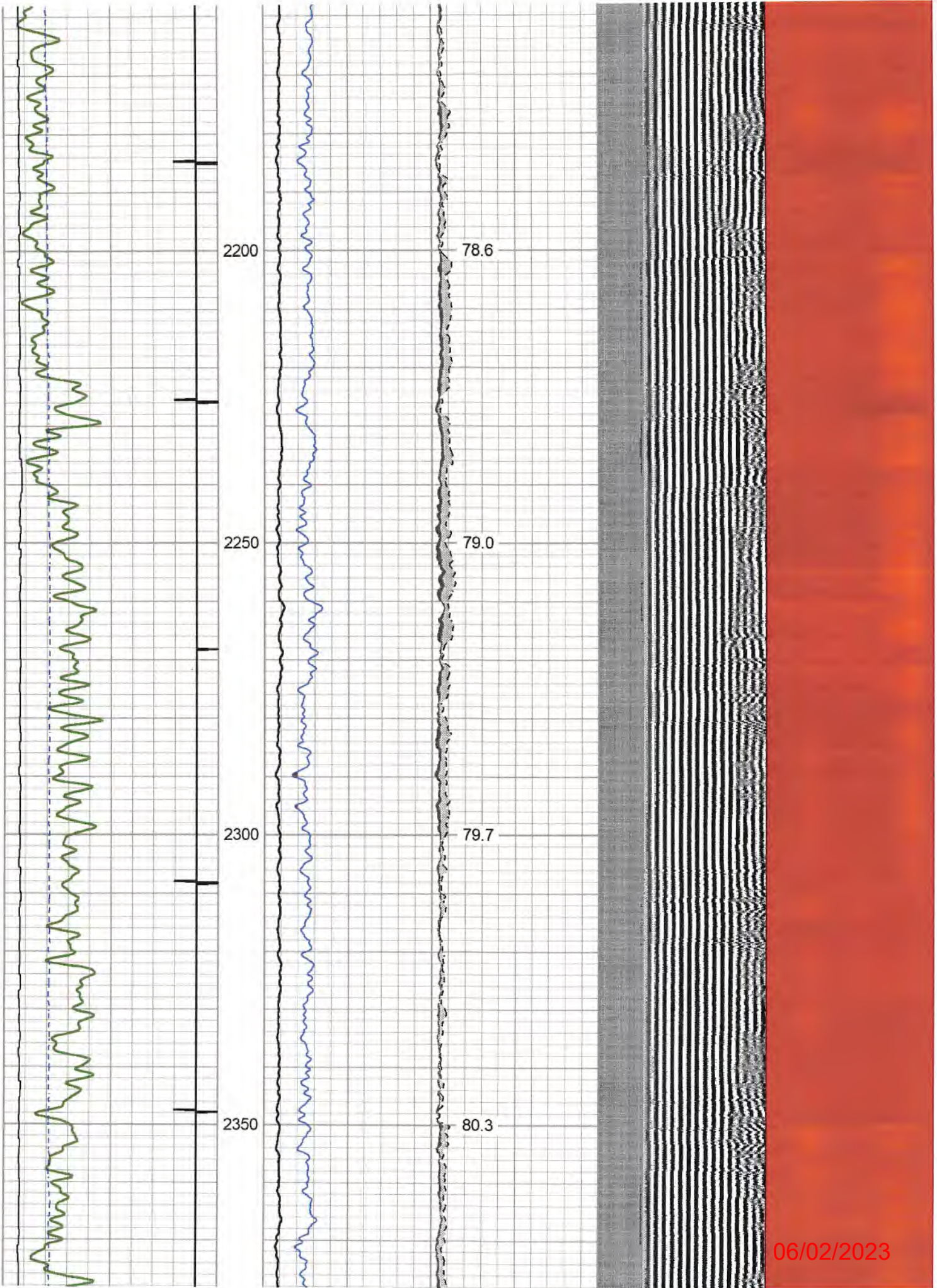
74.5
75.1
75.7
76.4



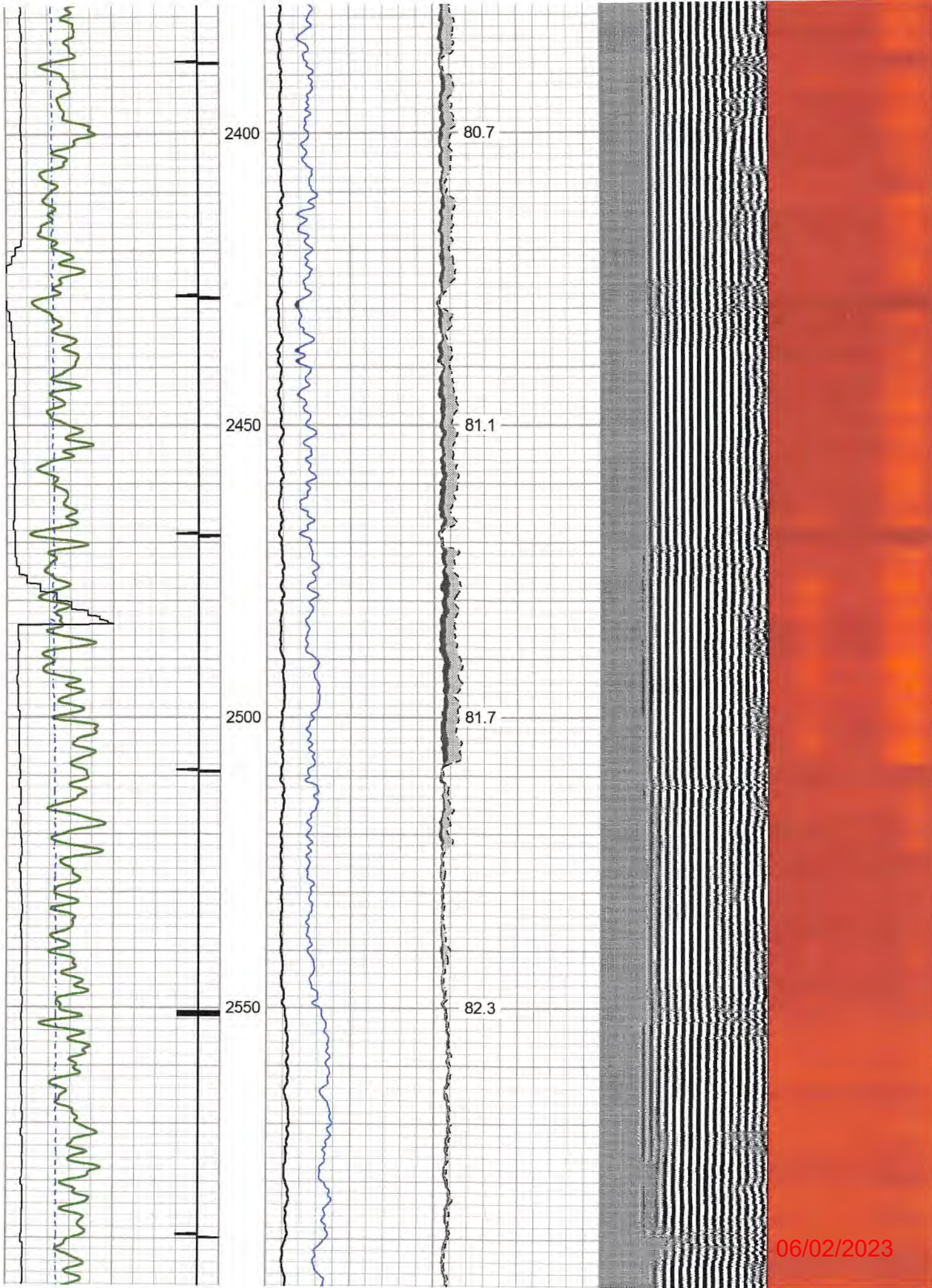
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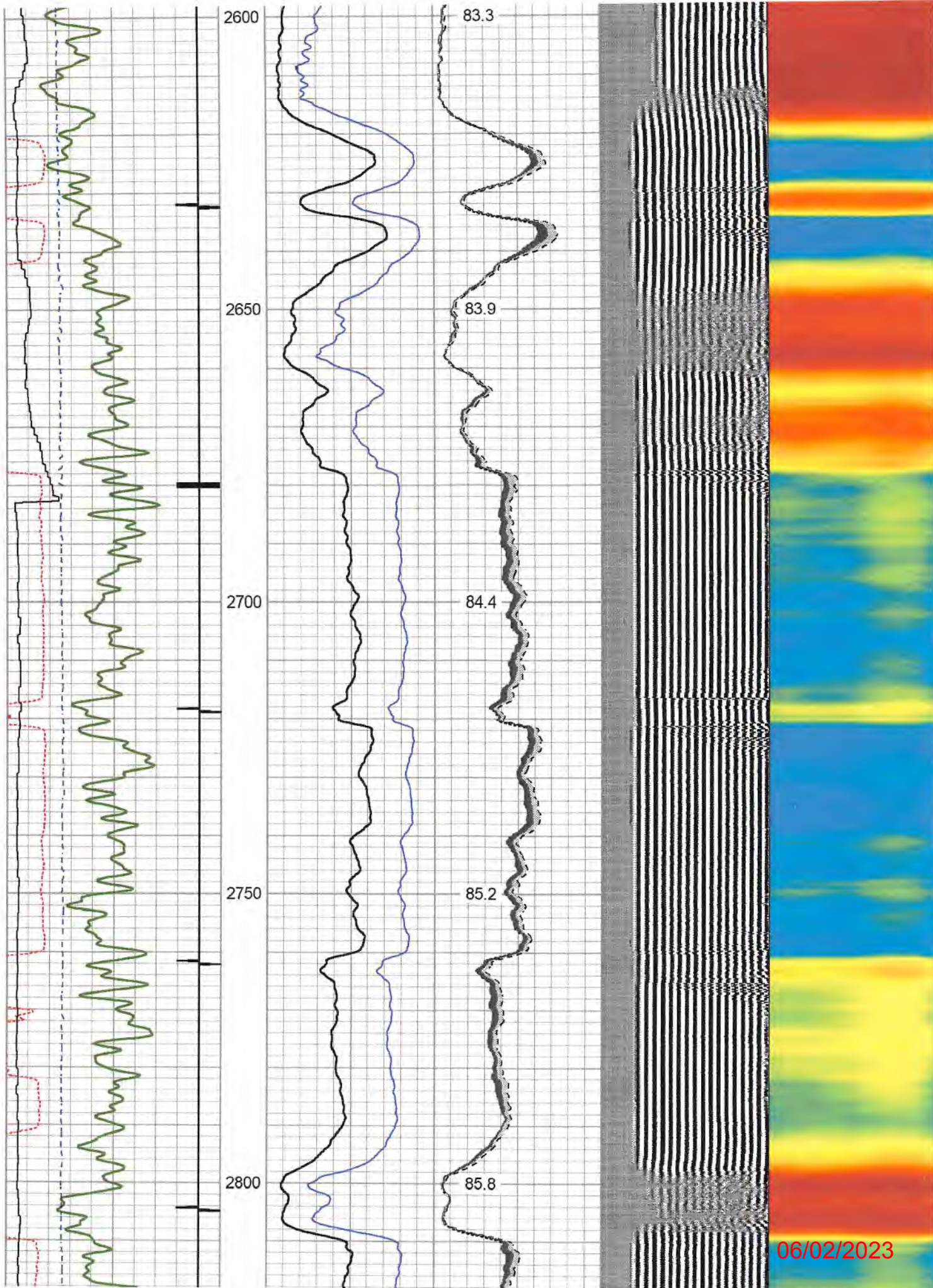


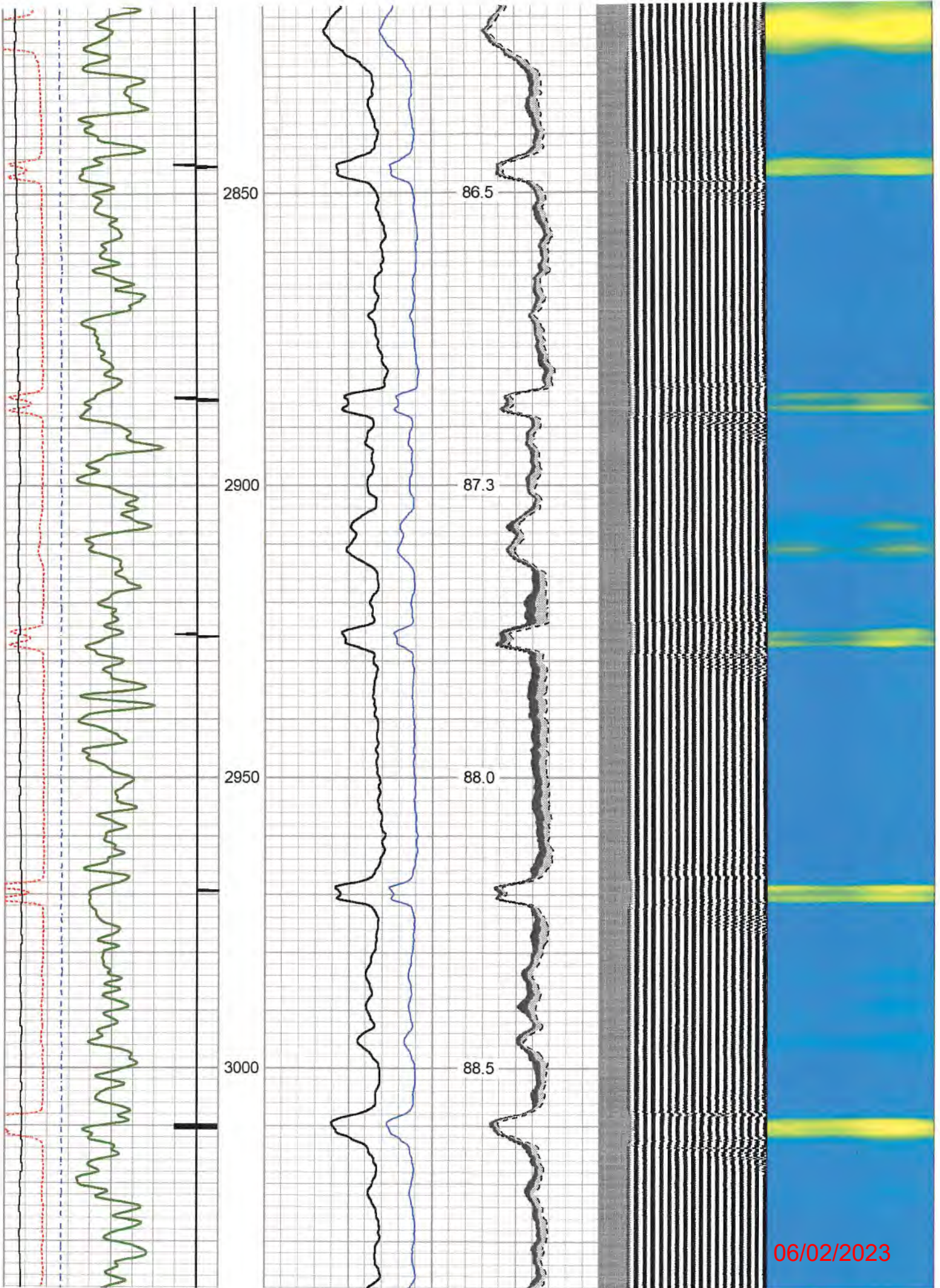
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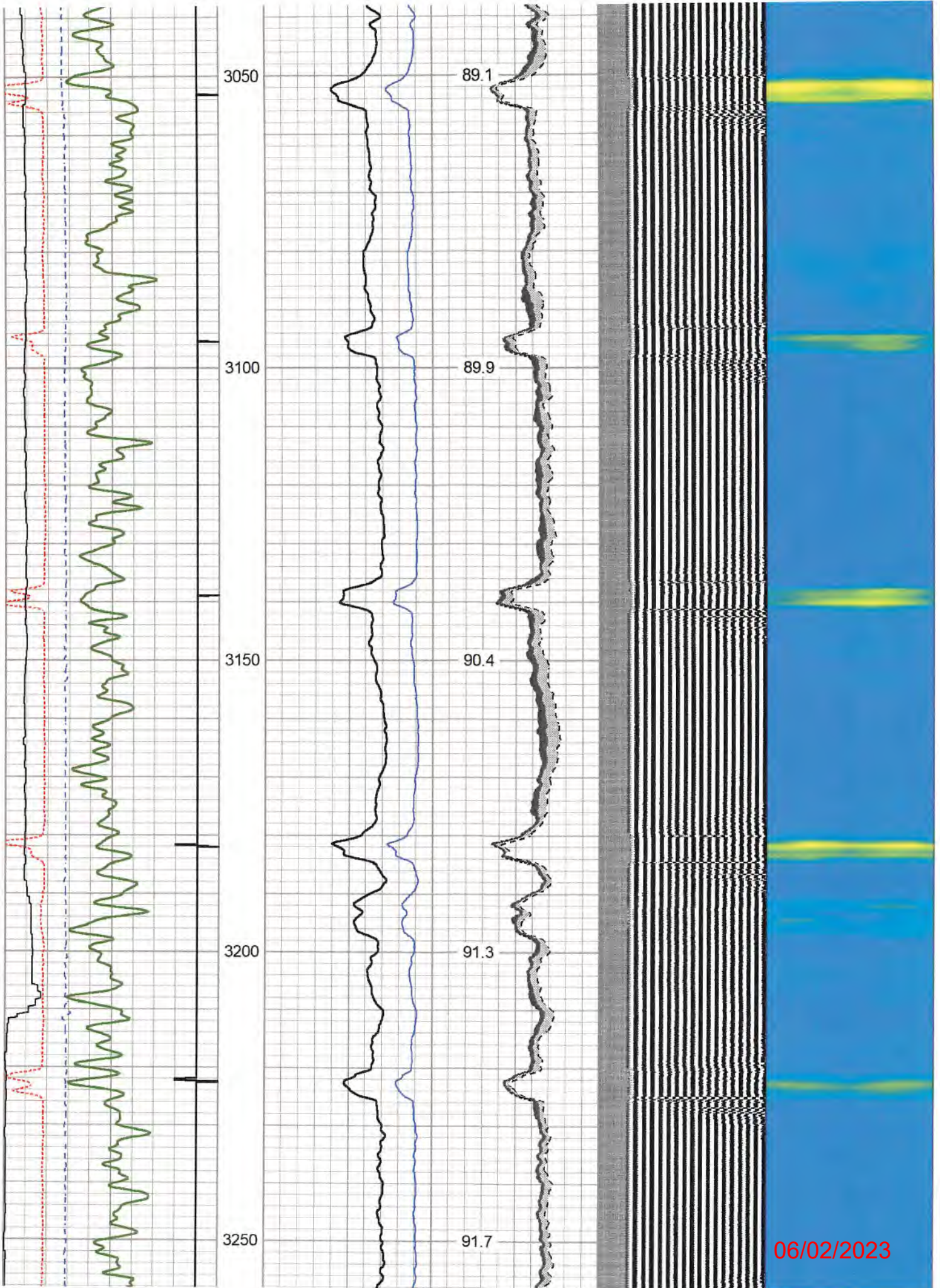
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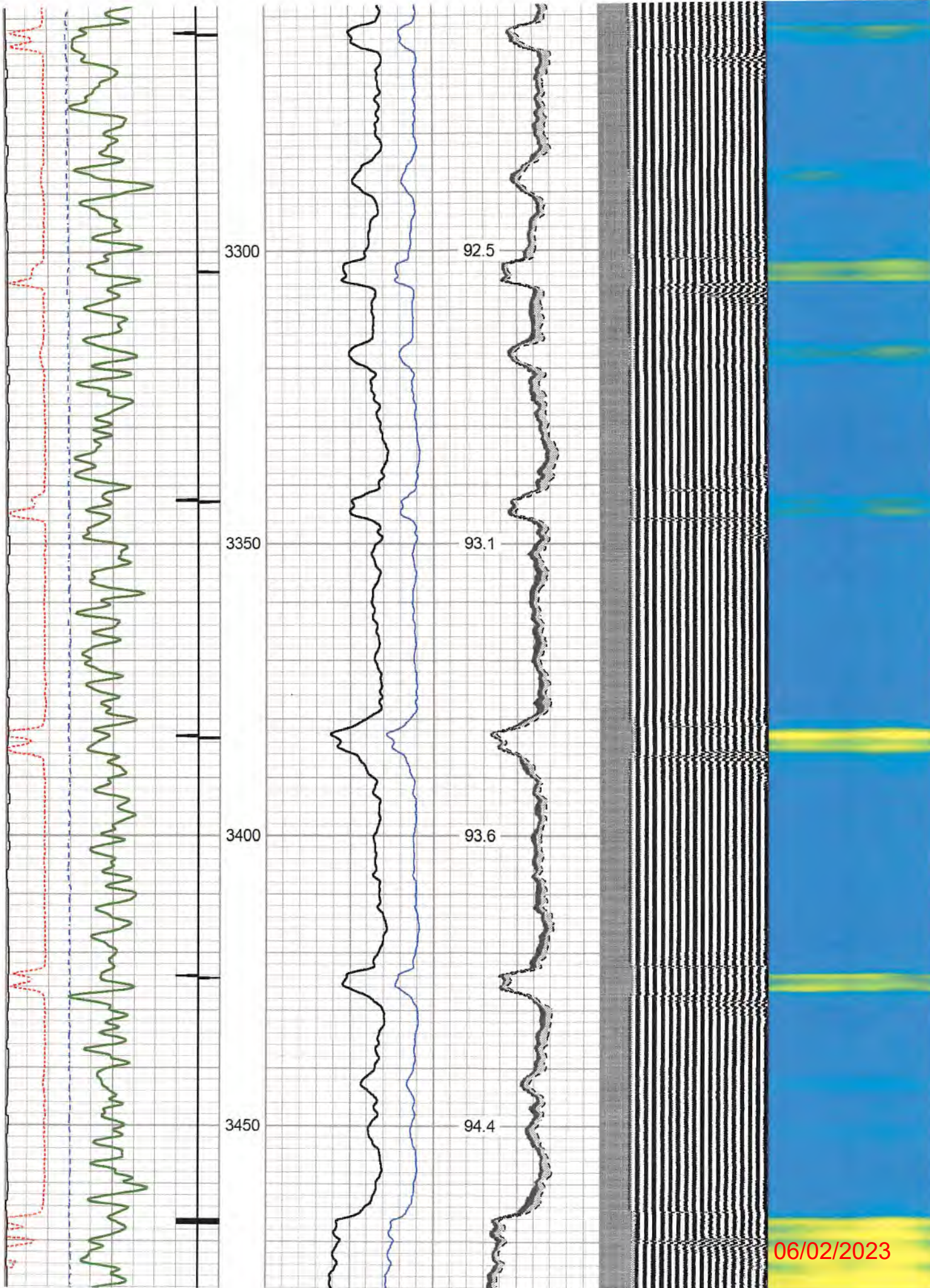


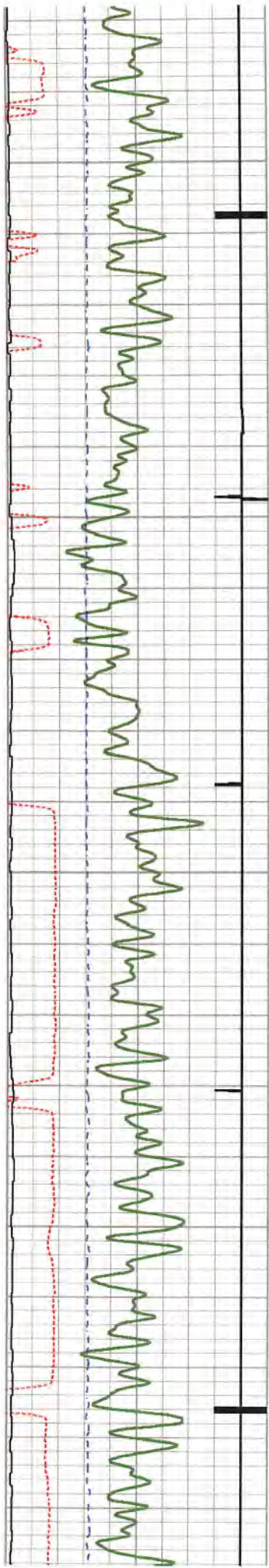


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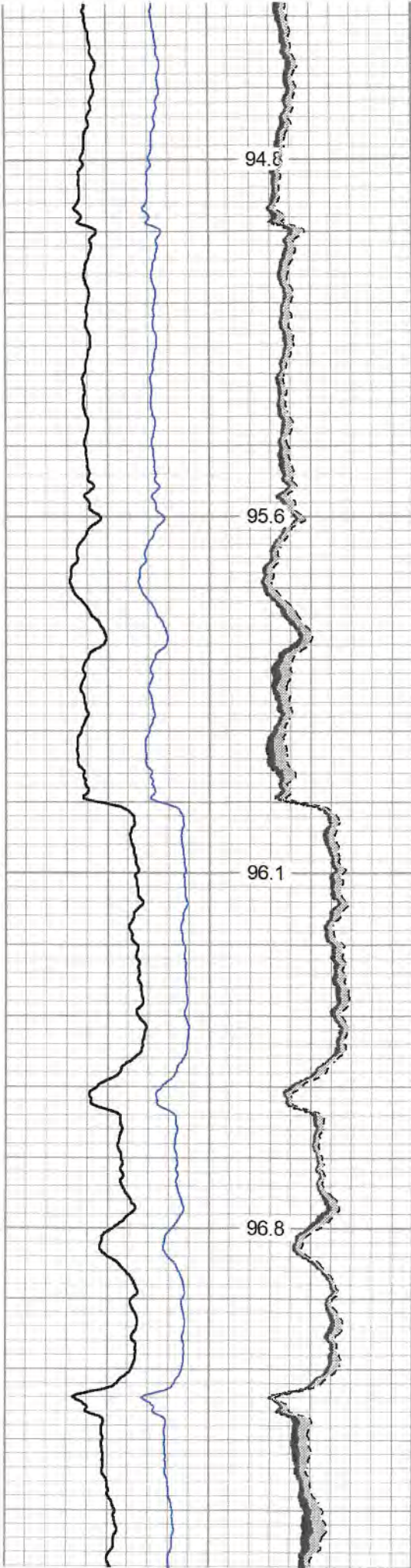


3500

3550

3600

3650

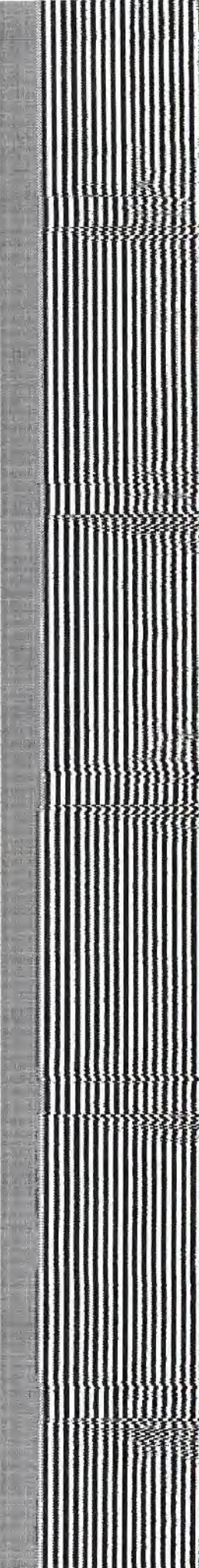


94.8

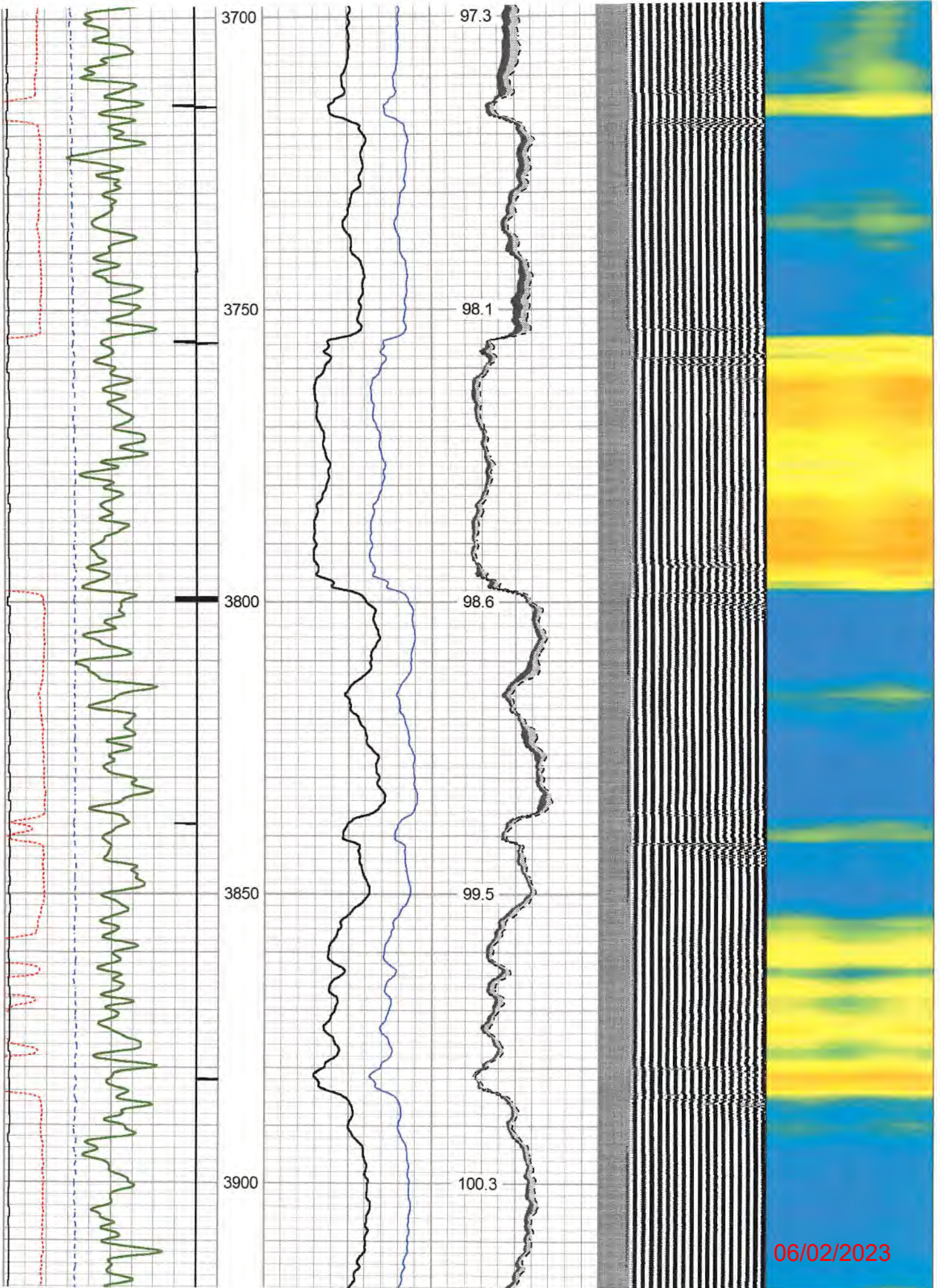
95.6

96.1

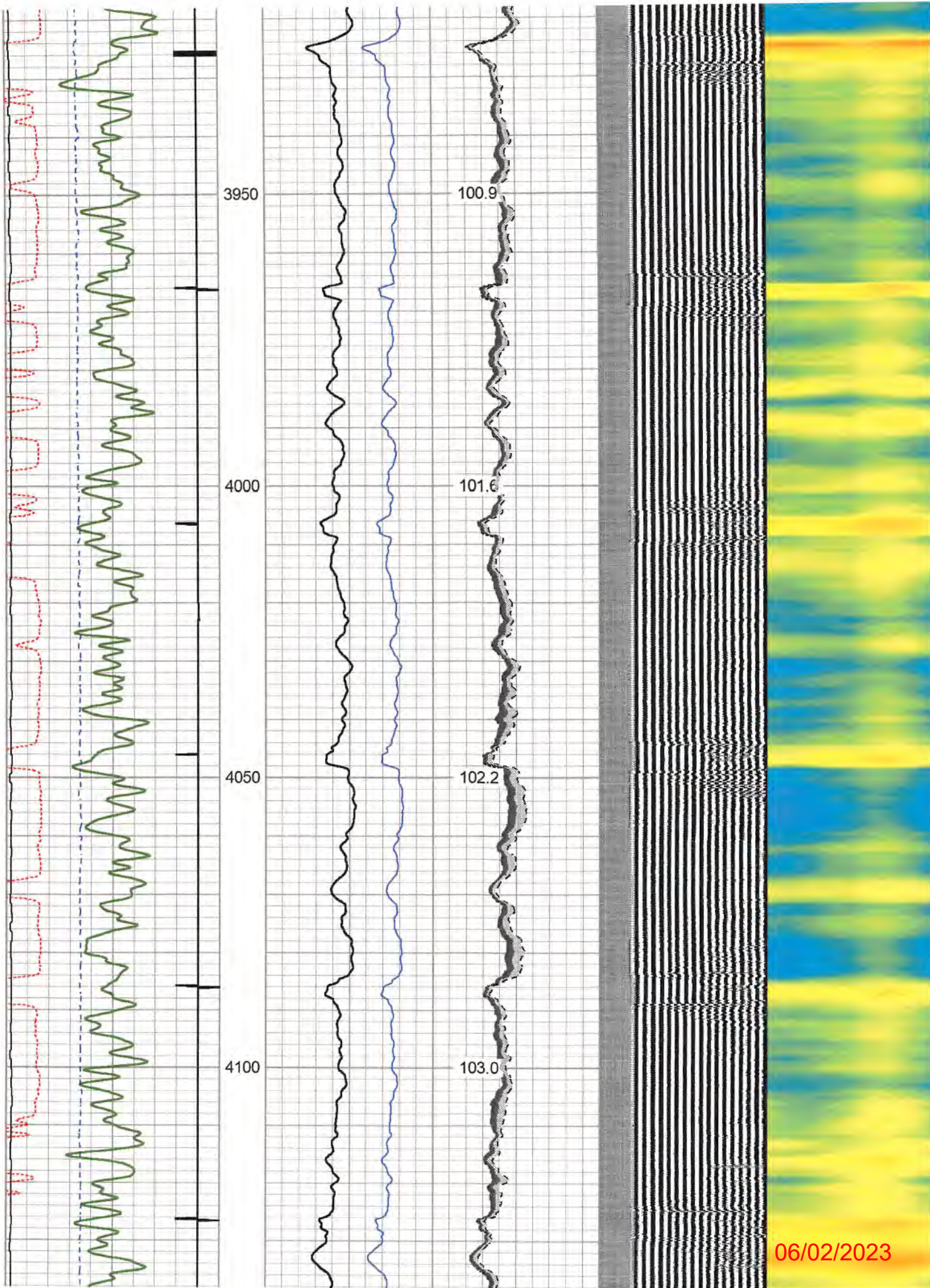
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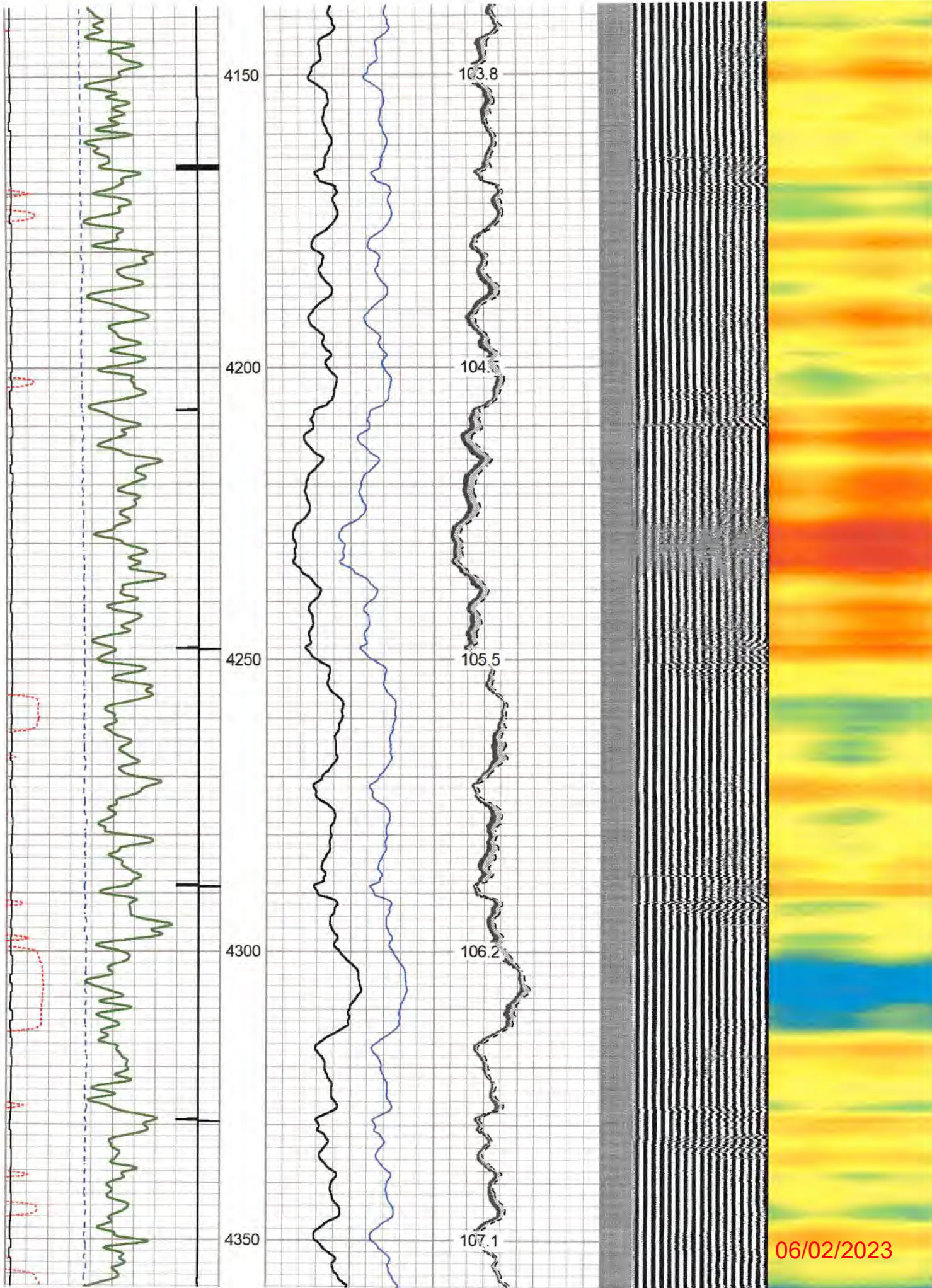


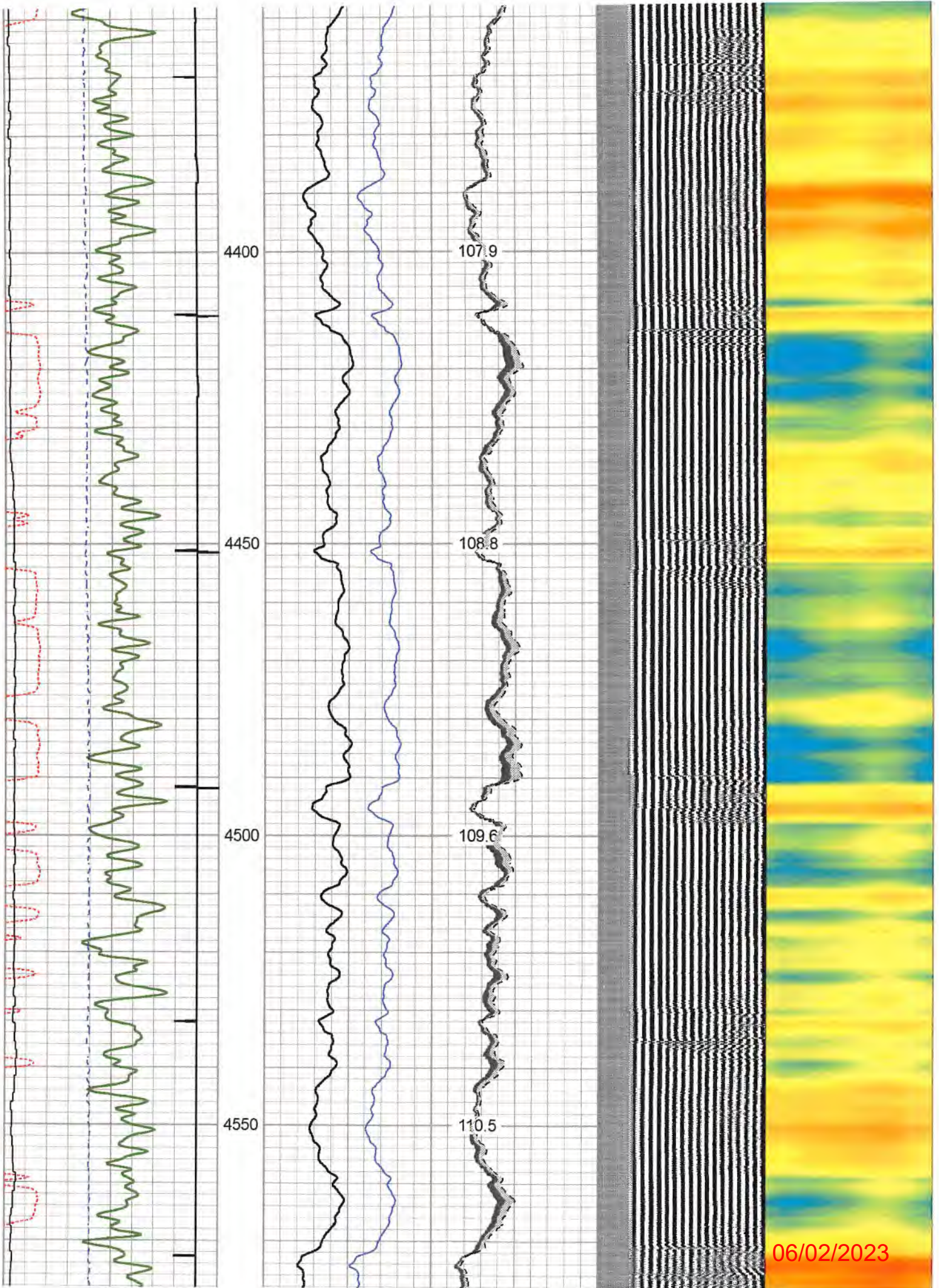
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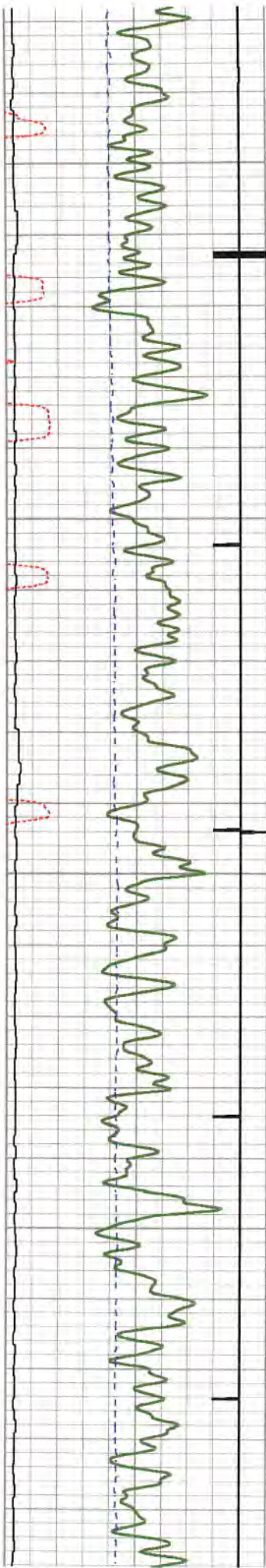
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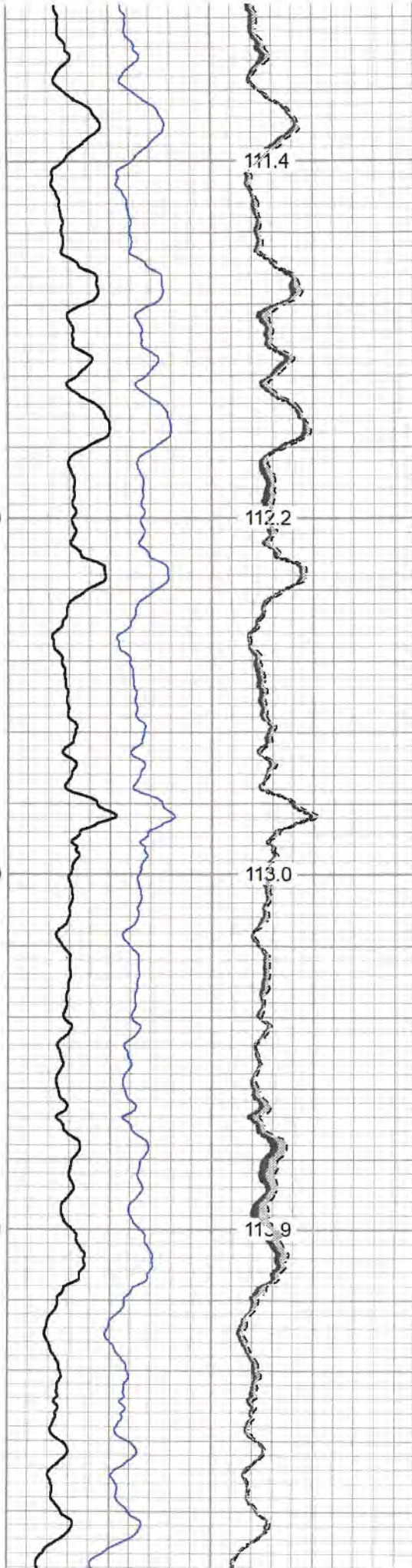


4600

4650

4700

4750

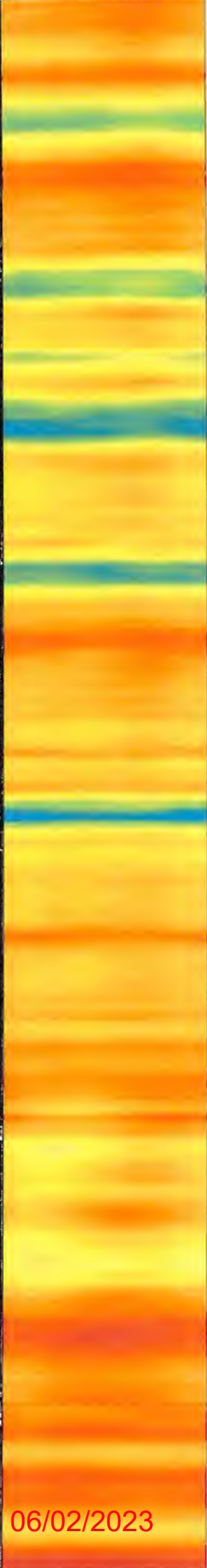
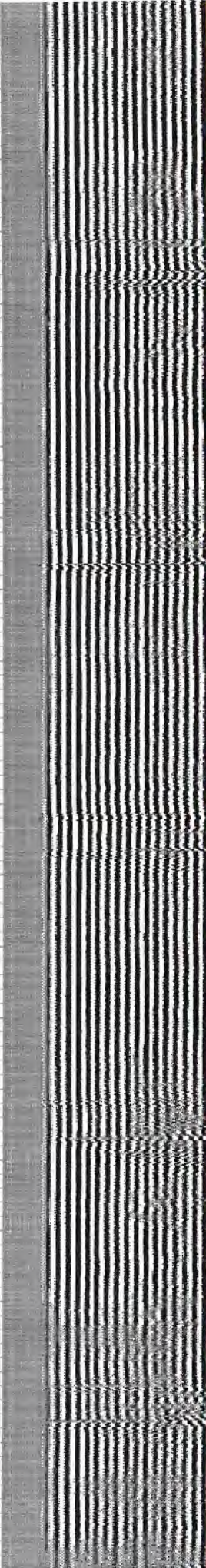


111.4

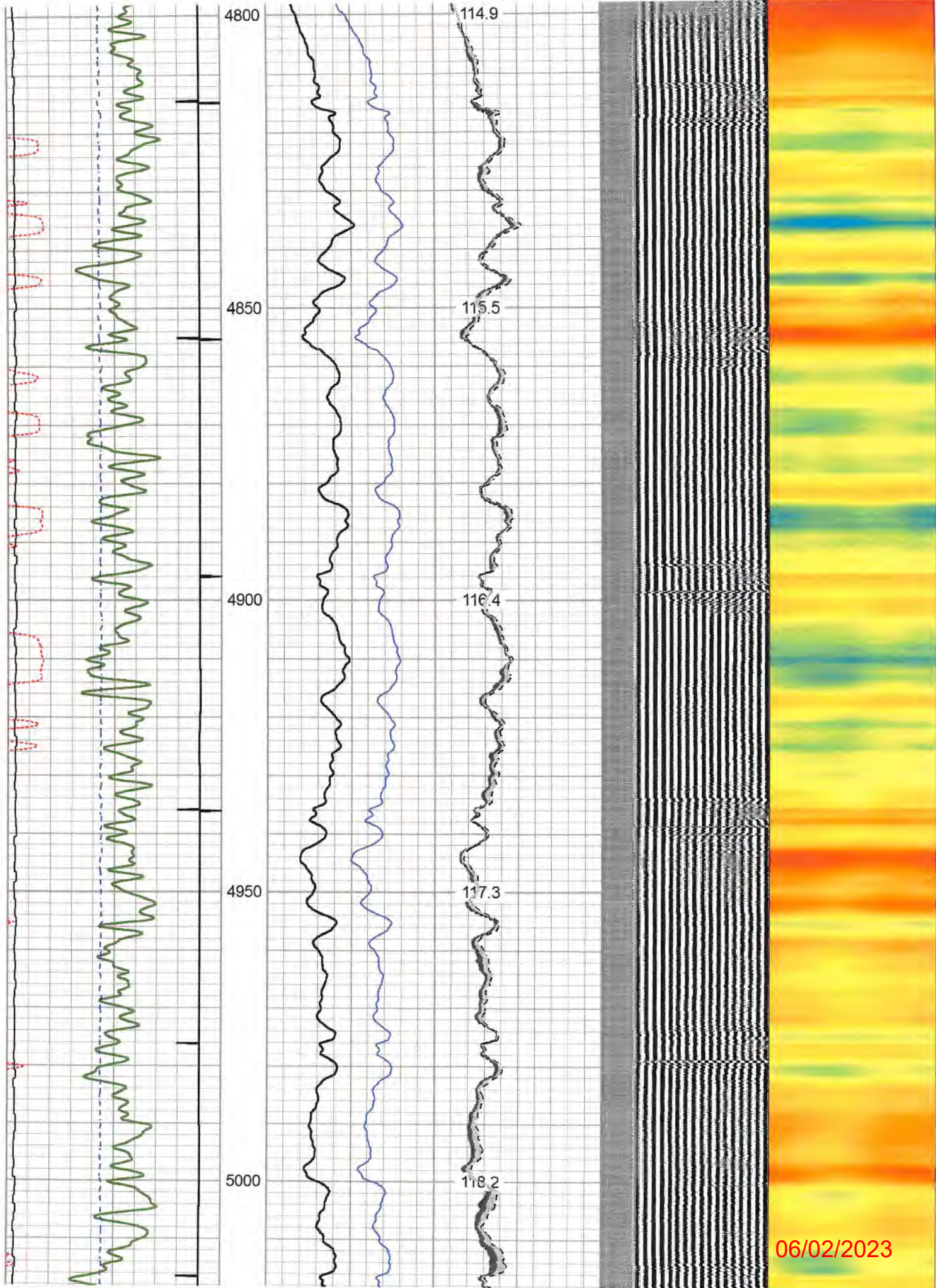
112.2

113.0

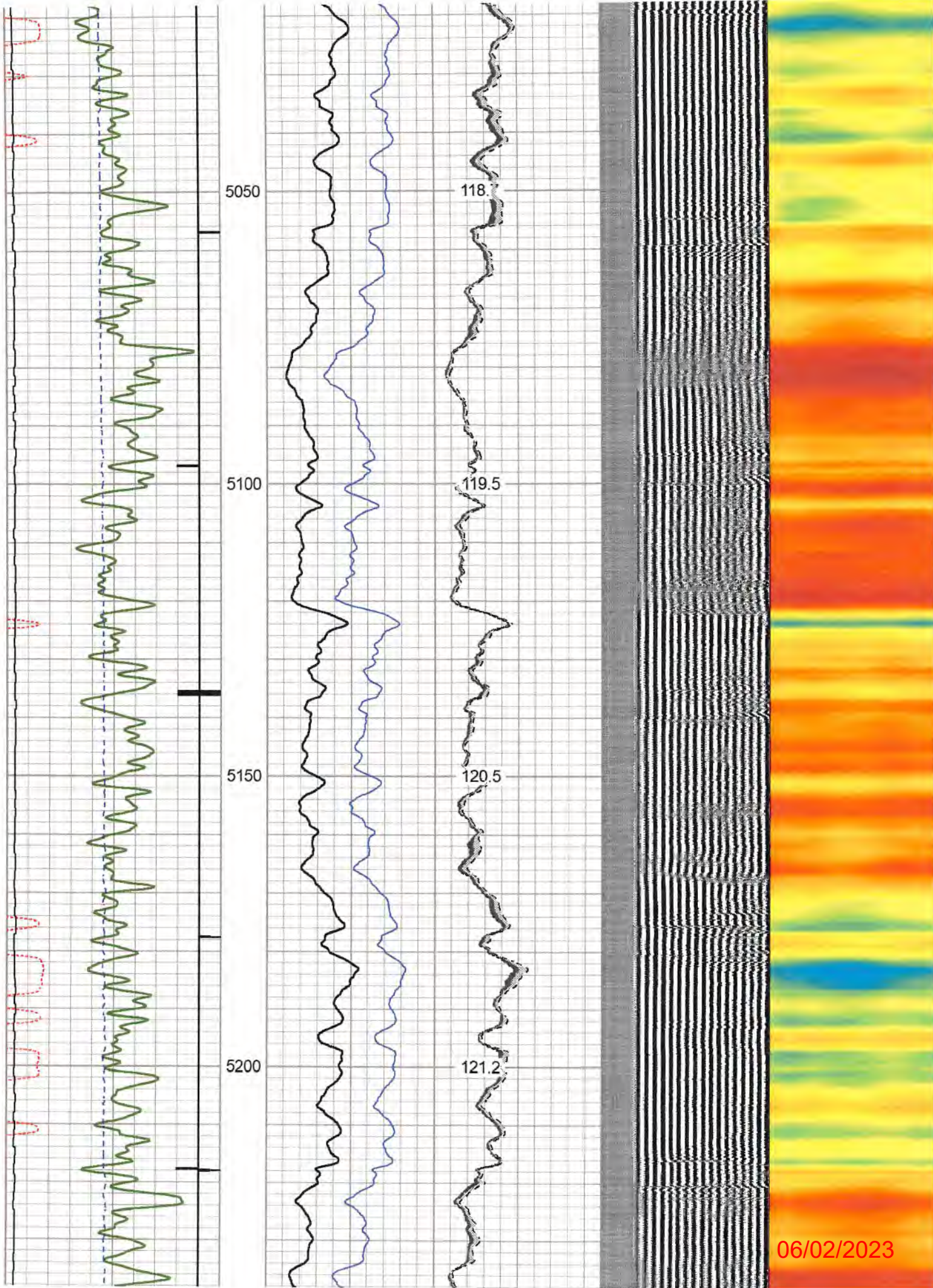
113.9



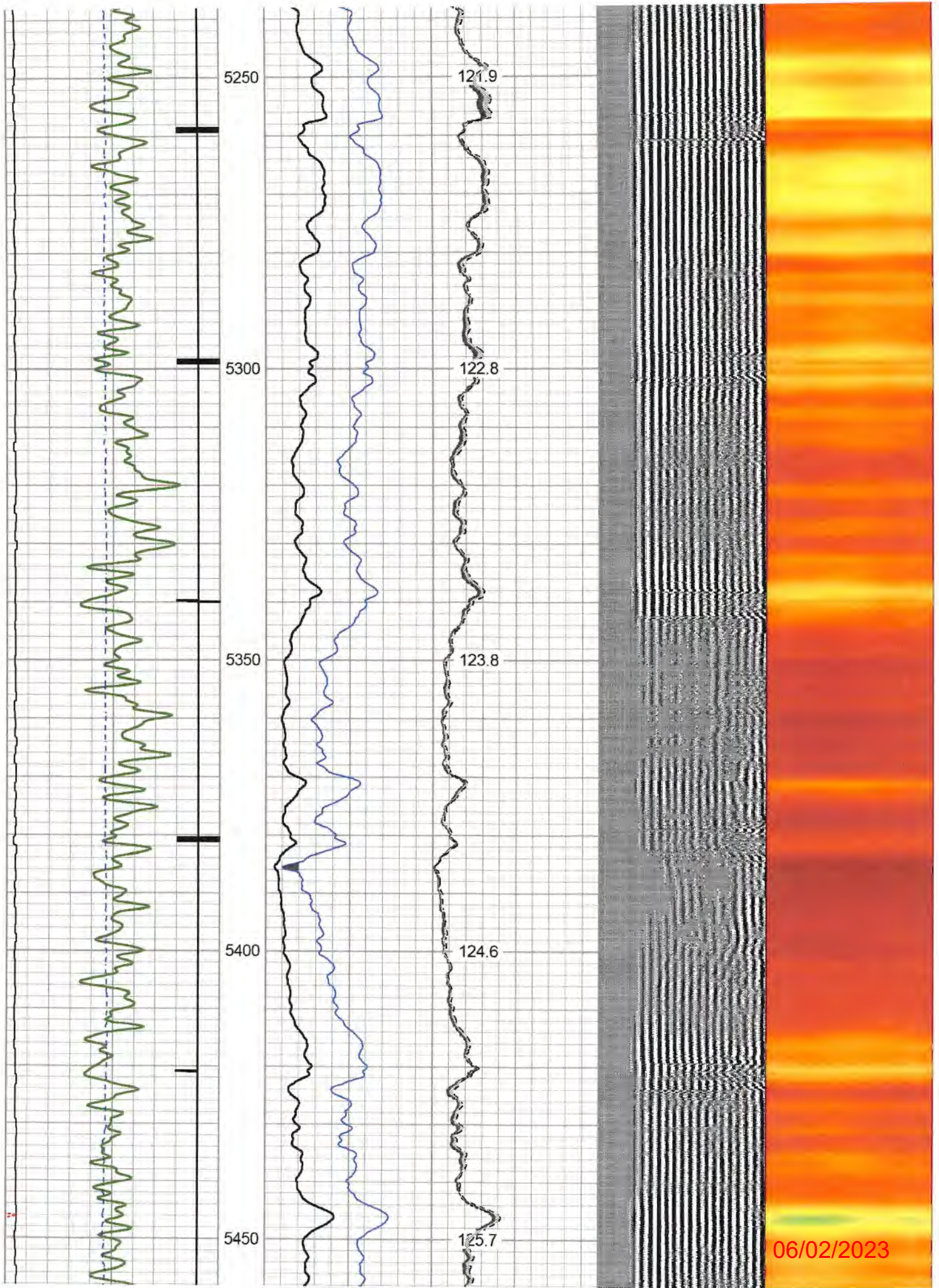
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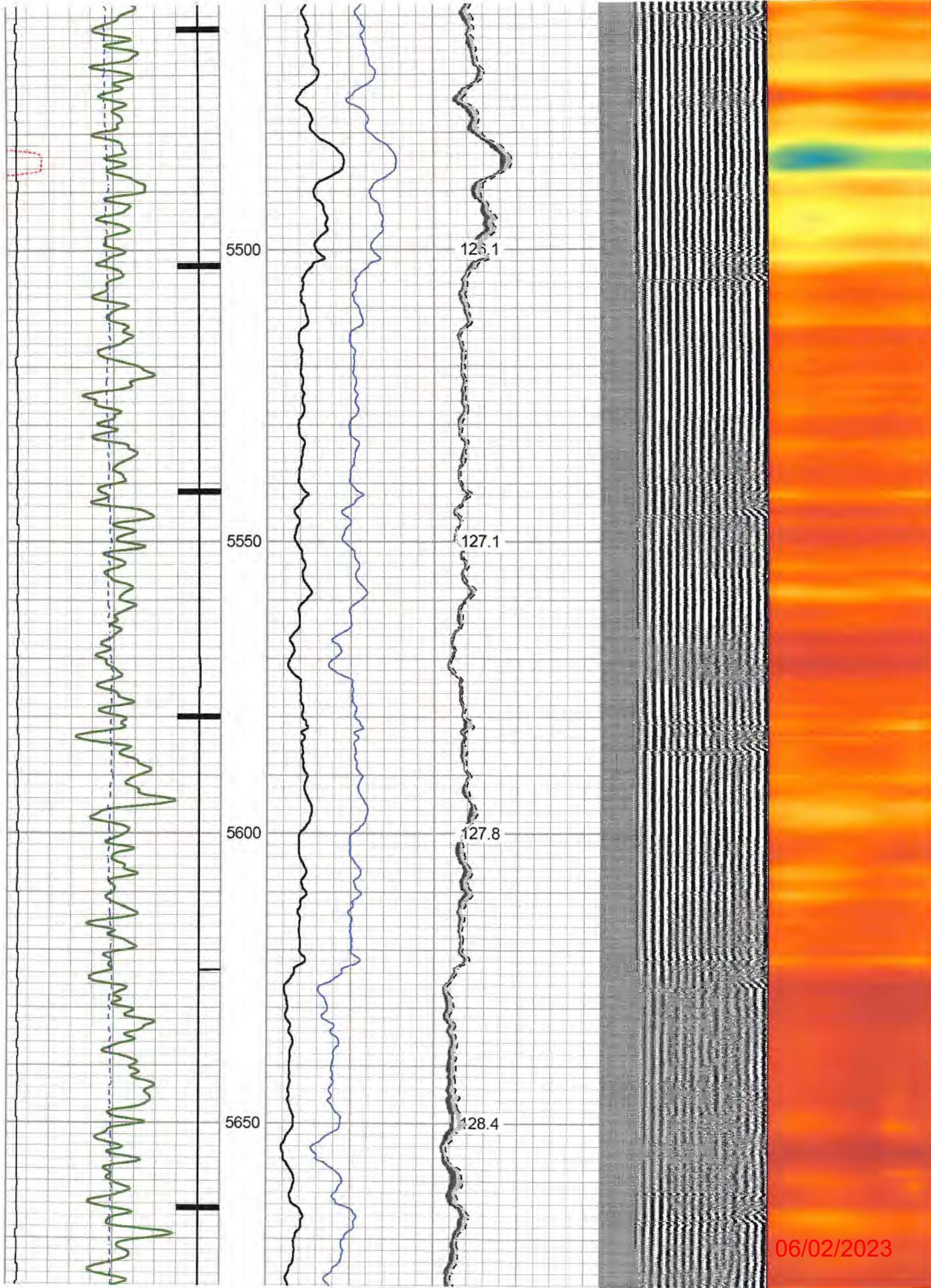
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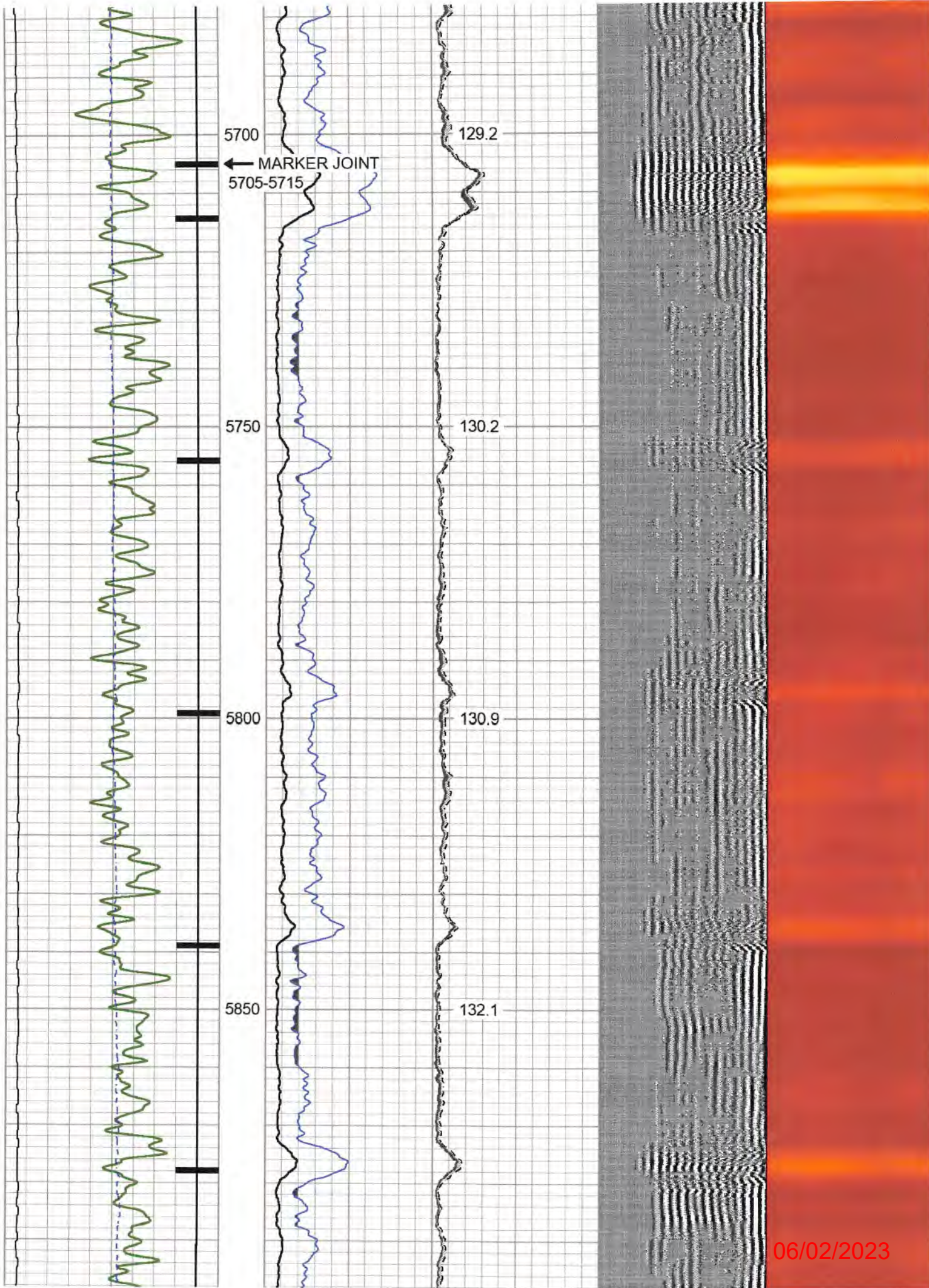


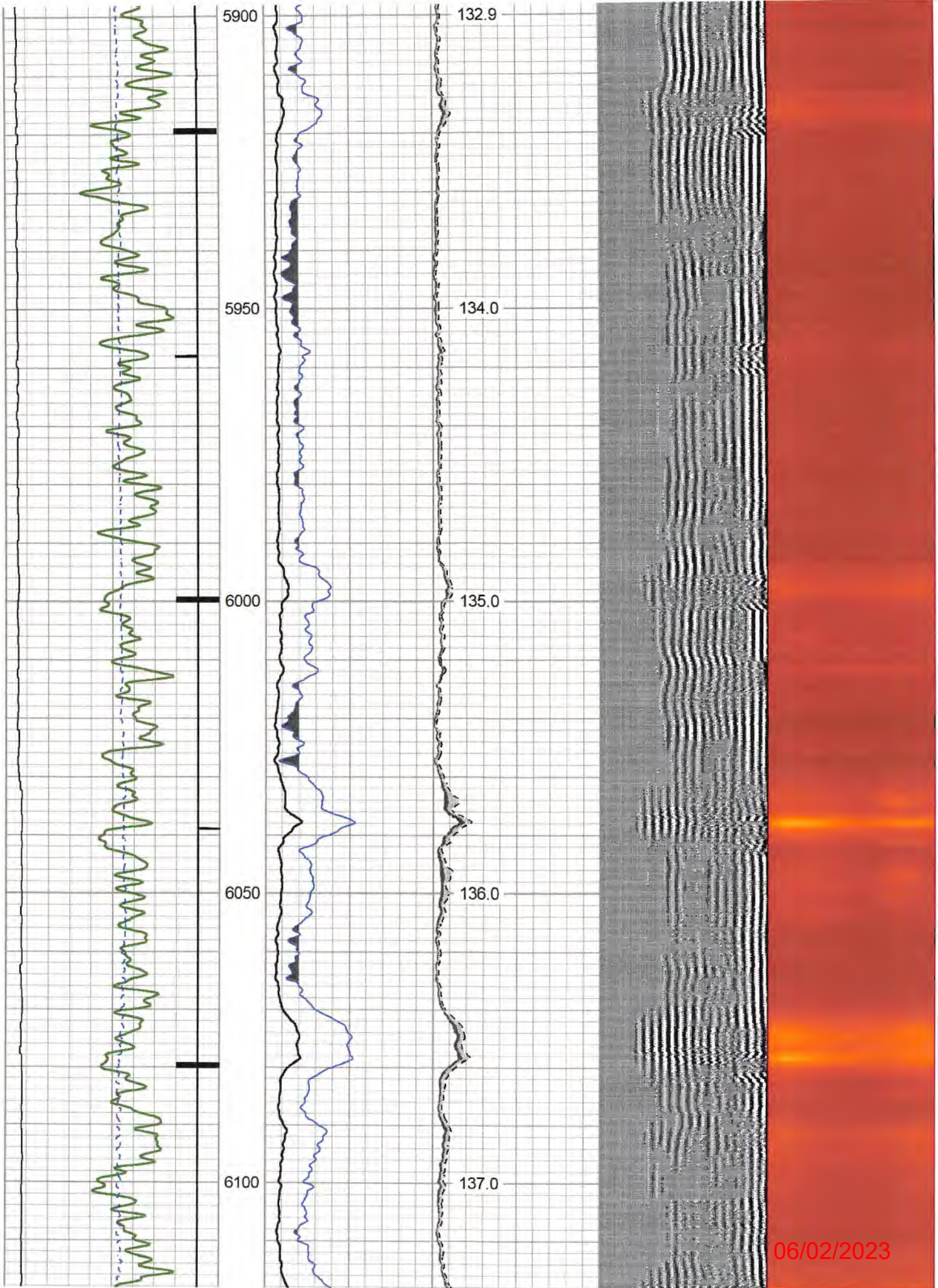
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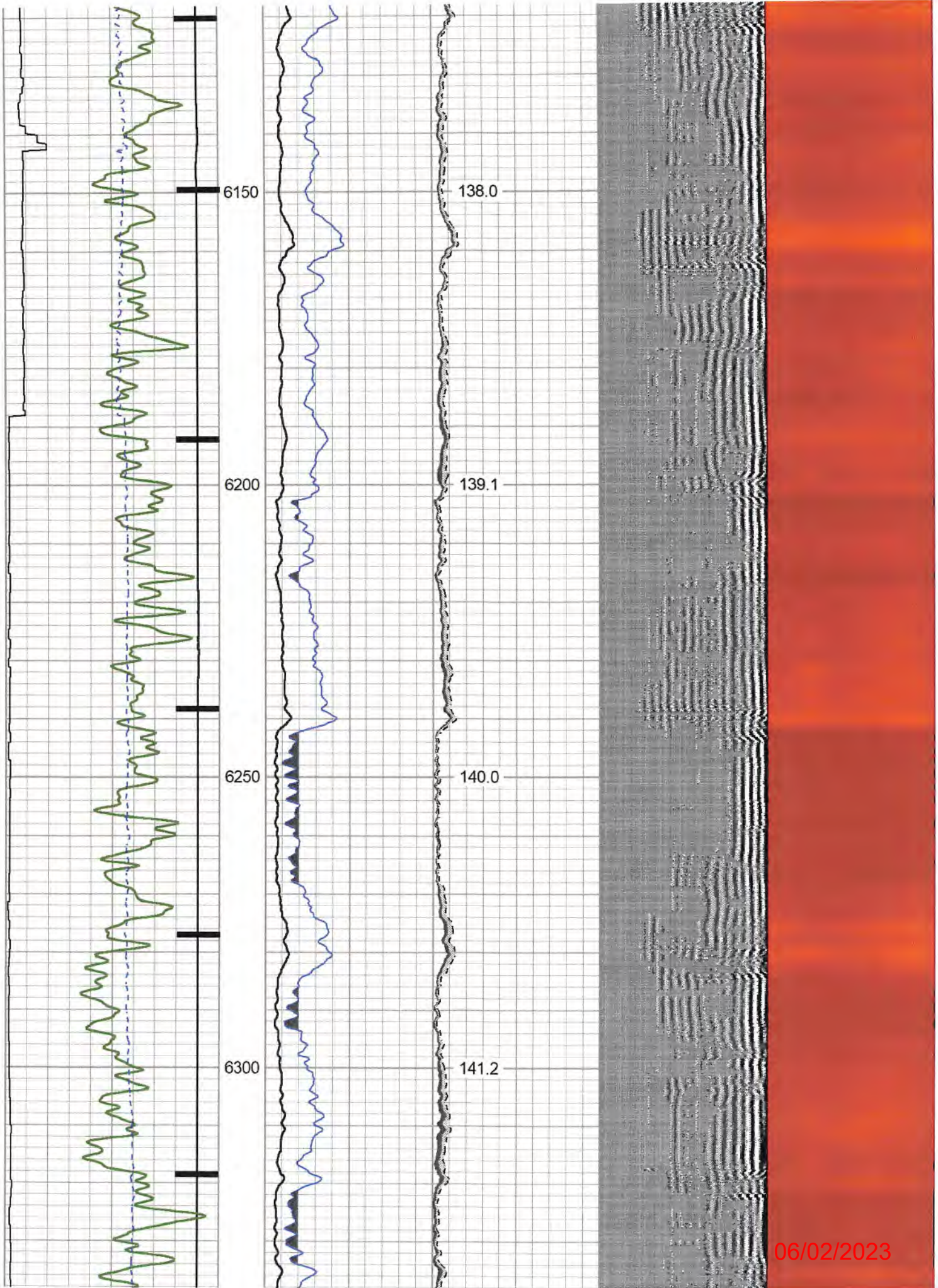
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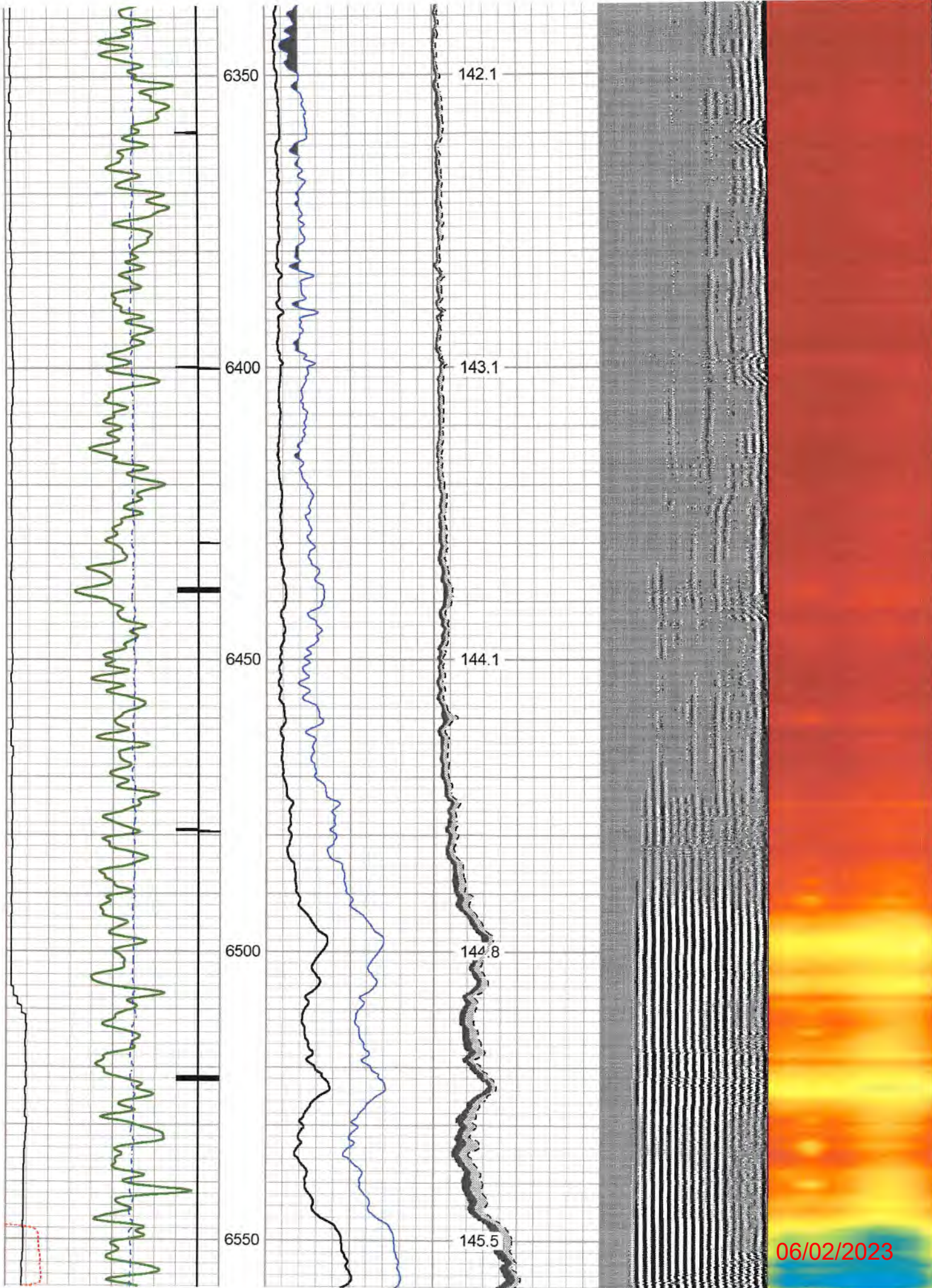




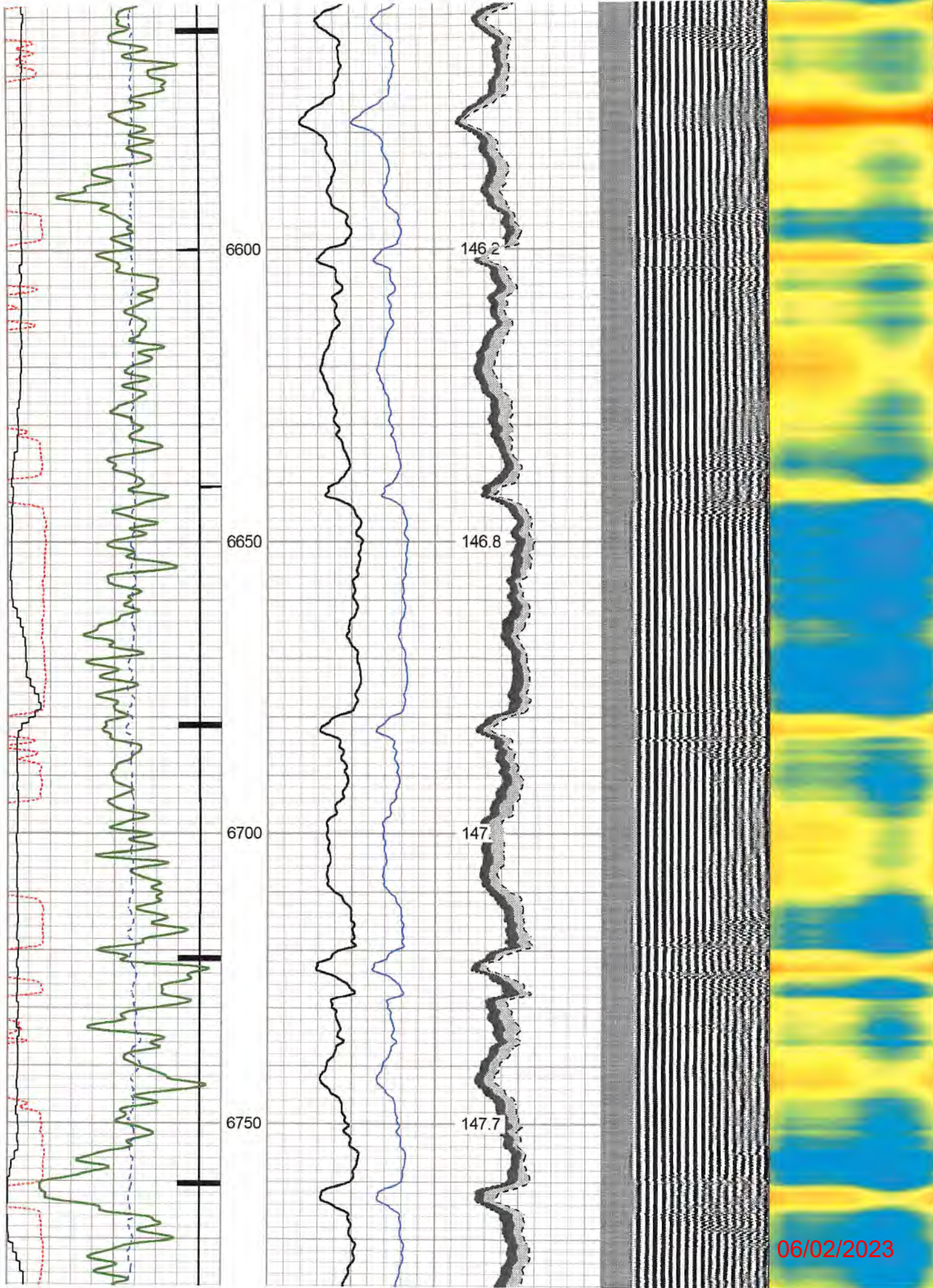
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06/02/2023





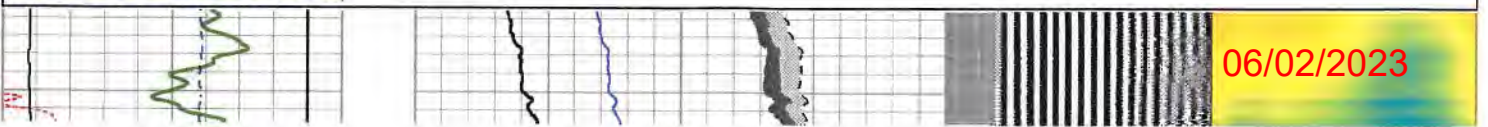
270	Travel Time (usec)	160	0	Amplitude (mV)	100	0	AMPMIN	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1	1	BONDIX	0	0	AMPMAX	150	200 (usec)	1200		
0	Gamma Ray (GAPI)	150	0	AMPAVG	150							
	Line Speed			TEMP								
-100	(ft/min)	100		(degF)								
0	Line Tension (lb)	2000										



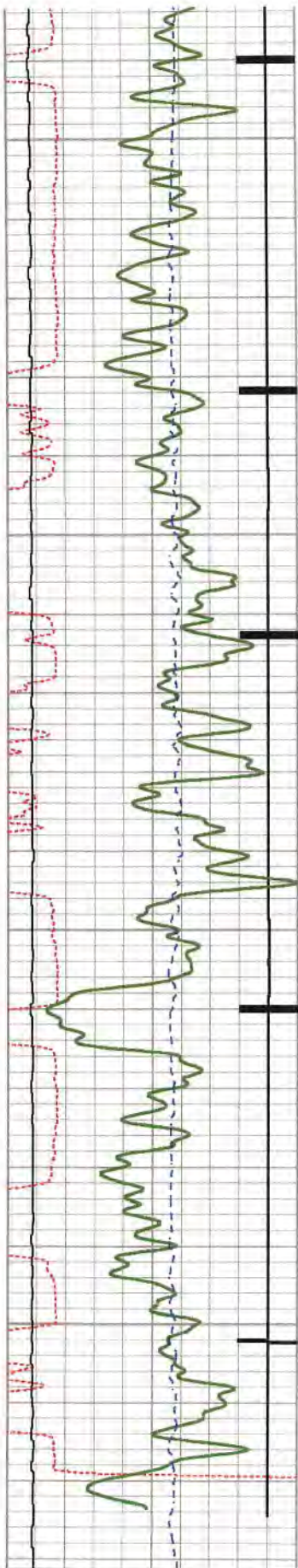
REPEAT PASS- 1500 PSI

Database File: antero-margery-nat-1h-12-4-21.db
 Dataset Pathname: RABBIT_EARS/NATIONAL_1H/RCBL/pass14
 Presentation Format: rcbl-bond index for antero 1020
 Dataset Creation: Sat Dec 04 10:37:37 2021
 Charted by: Depth in Feet scaled 1:240

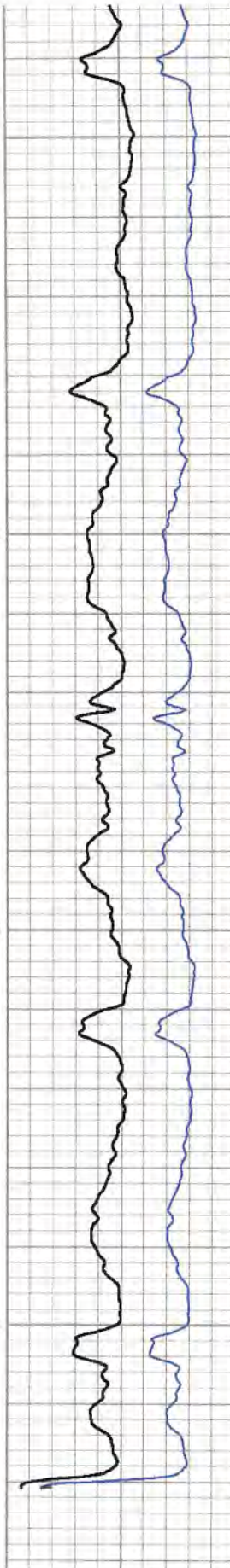
270	Travel Time (usec)	160	0	Amplitude (mV)	100	0	AMPMIN	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1	1	BONDIX	0	0	AMPMAX	150	200 (usec)	1200		
0	Gamma Ray (GAPI)	150	0	AMPAVG	150							
	Line Speed			TEMP								
-100	(ft/min)	100		(degF)								
0	Line Tension (lb)	2000										



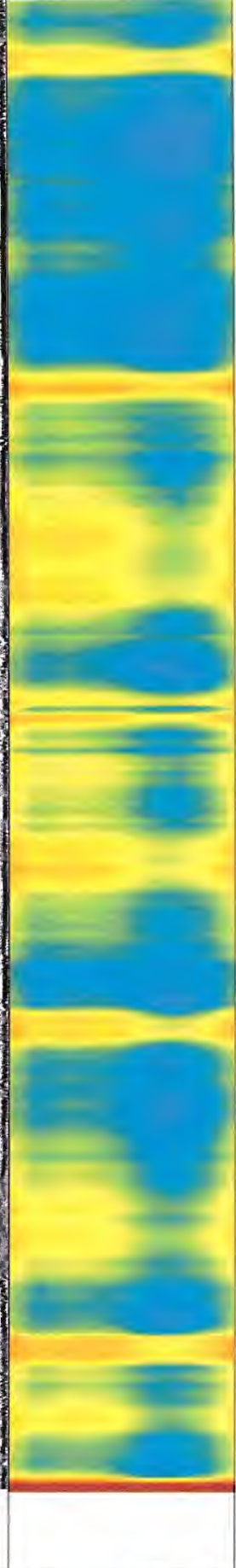
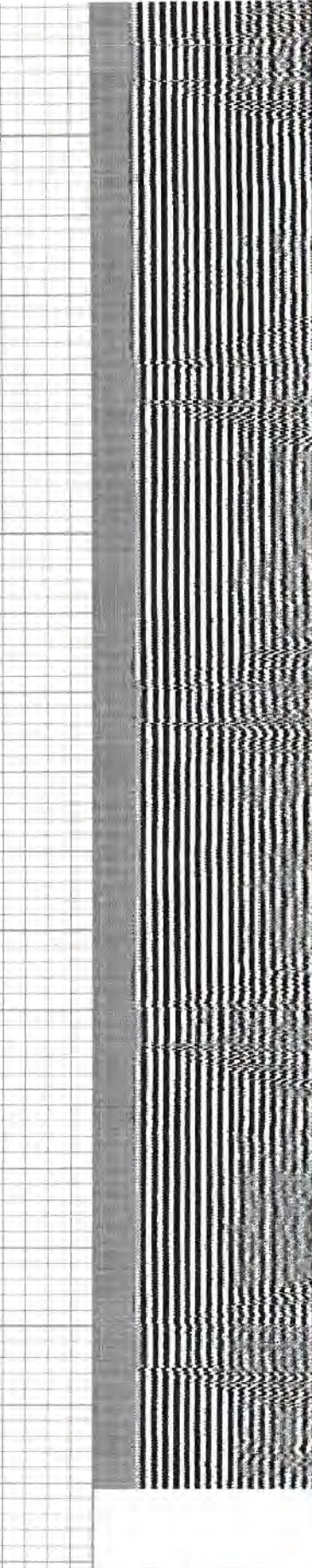
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6650
6700
6750
6800



146.7
147
147.5
148.0



270	Travel Time (usec)	160
9	Casing Collar	-1
0	Gamma Ray (GAPI)	150
Line Speed		
-100	(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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06/02/2023

Calibration Report

Database File antero-margery-nat-1h-12-4-21.db
 Dataset Pathname RABBIT_EARS/NATIONAL_1H/RCBL/pass16
 Dataset Creation Sat Dec 04 10:42:05 2021

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: 3253.033 ft

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 WV Department of
 Environmental Protection

Master Calibration, performed Sat Dec 04 08:57:14 2021:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.014	0.356	4.000	70.000	178.534	6.437
CAL	0.490	0.490				
5'	-0.012	0.311	4.000	70.000	204.637	6.456
SUM						
S1	-0.003	0.315	0.000	100.000	314.835	0.846
S2	-0.011	0.327	0.000	100.000	295.793	3.307
S3	-0.014	0.339	0.000	100.000	283.499	3.866
S4	-0.013	0.352	0.000	100.000	273.687	3.541
S5	-0.013	0.362	0.000	100.000	266.858	3.352
S6	-0.013	0.391	0.000	100.000	247.964	3.133
S7	-0.013	0.382	0.000	100.000	253.191	3.245
S8	-0.013	0.364	0.000	100.000	265.328	3.401

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	0.490	0.490	1.000	0.000

Air Zero Calibration, performed Sat Dec 04 08:09:25 2021:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.000		0.000		0.000	0.000
5'	0.000		0.000		0.000	0.000

06/02/2023

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	16.99		CHD-Titan Standard 1 7/16" Cable Head	1.02	1.44	1.00
			Centralizer-2.75_Overbody	1.67	3.12	5.00
Temp	14.14		RBT-Probe275T (2.75") Probe 2.75" Radial with Integral Temperature Sub	9.39	2.75	90.00
WVFS8	11.91					
WVFS7	11.91					
WVFS6	11.91					
WVFS5	11.91					
WVFS4	11.91					
WVFS3	11.91					
WVFS2	11.91					
WVFS1	11.91					
WVF3FT	11.91					
WVF5FT	10.91					
WVFCAL	7.66					
HEADVOLT	7.66					
CCL	6.75					
GR	5.42	Centralizer-2.75_Overbody GR-Probe (FW1211-86) Probe 2 3/4" Logging Gamma Ray	1.67 4.78	3.12 2.75	5.00 57.00	

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MAR 03 2023
WV Department of
Environmental Protection

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CENT-Probe275
2.75" Centralizer

2.88

2.75

20.00

Dataset:	antero-margery-nat-1h-12-4-21.db: RABBIT_EARS/NATIONAL_1H/RCBL/pass16
Total length:	18.07 ft
Total weight:	178.00 lb
O.D.:	3.12 in



Company	ANTERO RESOURCES
Well	MARGERY-NATIONAL 1H
Field	RABBIT EARS
County	TYLER
State	WV

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