



**Radial Cement Bond  
Variable Density Log  
Gamma Ray / CCL / Temperature**

Company Antero  
Well Cider Run 1H  
Field Marcellus  
County Tyler  
State WV

Location: API #: 47-095-02839

Permanent Datum	Ground Level	Elevation	30'	Other Services GR CCL
Log Measured From	R.K.B.	30'	K.B. N/A	
Drilling Measured From	R.K.B.		D.F. N/A G.L. N/A	

Date	05-April-2023		
Run Number	ONE		
Depth Driller	24,990'		
Depth Logger	7,430'		
Bottom Logged Interval	SURFACE		
Top Log Interval	SURFACE		
Open Hole Size	8.75"		
Type Fluid	F/W		
Density / Viscosity	8.3#		
Max. Recorded Temp.	141.32 degF		
Estimated Cement Top	5,880'		
Time Well Ready	Arrival		
Time Logger on Bottom	09:30		
Equipment Number	811004		
Location	CHARLEROI,PA		
Recorded By	Steven Butler		
Witnessed By	Brandon Hairre		

Borehole Record		Tubing Record				
Run Number	Bit From	To	Size	Weight	From	To
Casing Record	Size	Wgt/Ft	Top	Bottom		
Surface String	13.375"	54.50#	SURFACE	369'		
Prot. String	9.625"	40#	SURFACE	3,641'		
Production String	5.5"	23#	SURFACE	24,990'		
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 @ 6,435' - 6,445'  
Marker Joint Adj + 16'**

**Estimated Top of Cement 5,880'**

**Thank You For Using Nine Energy Services**

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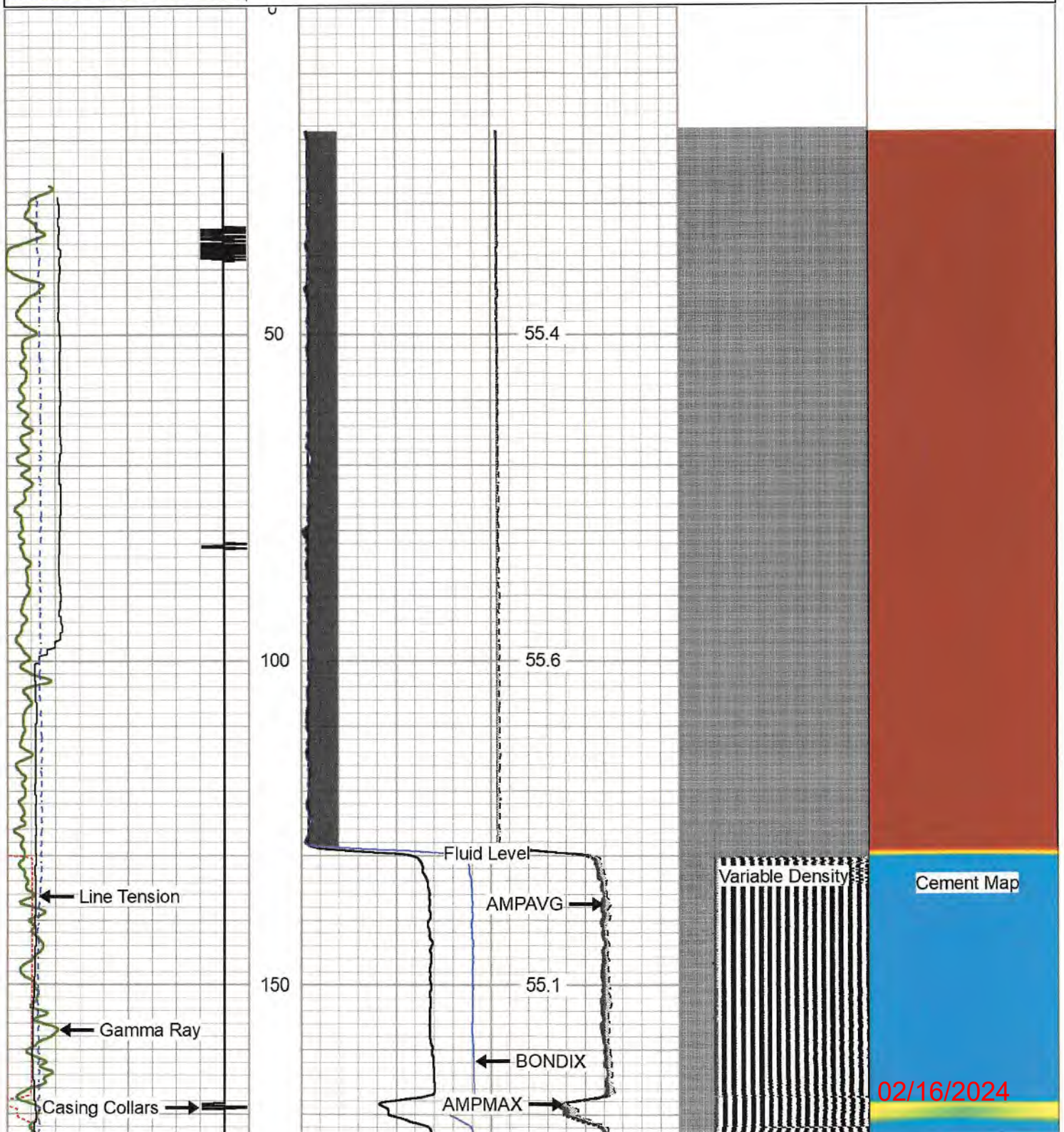
**Main Pass**

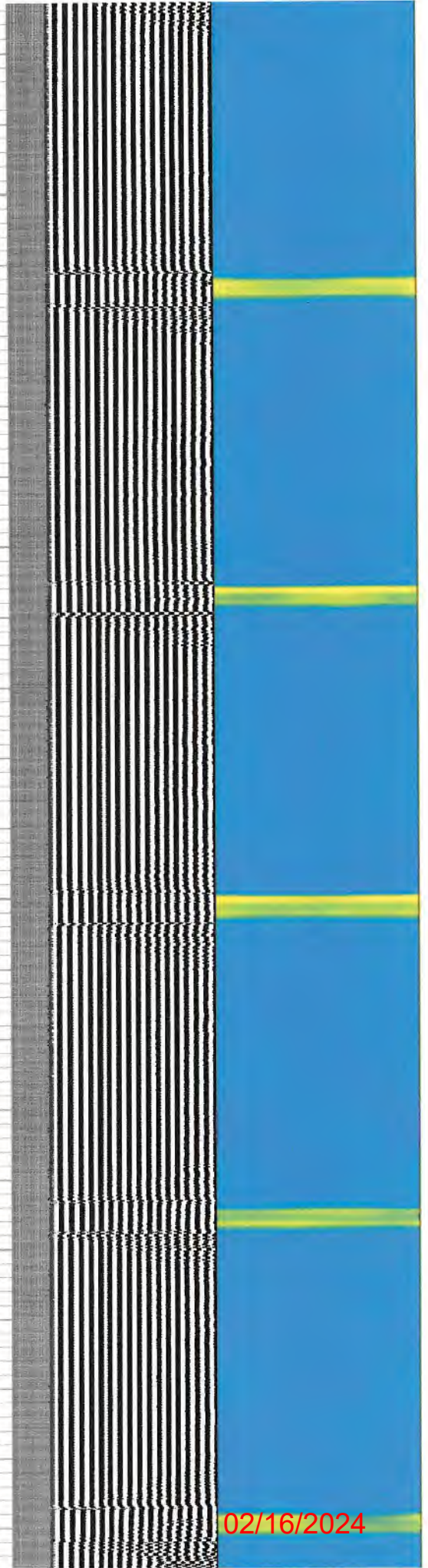
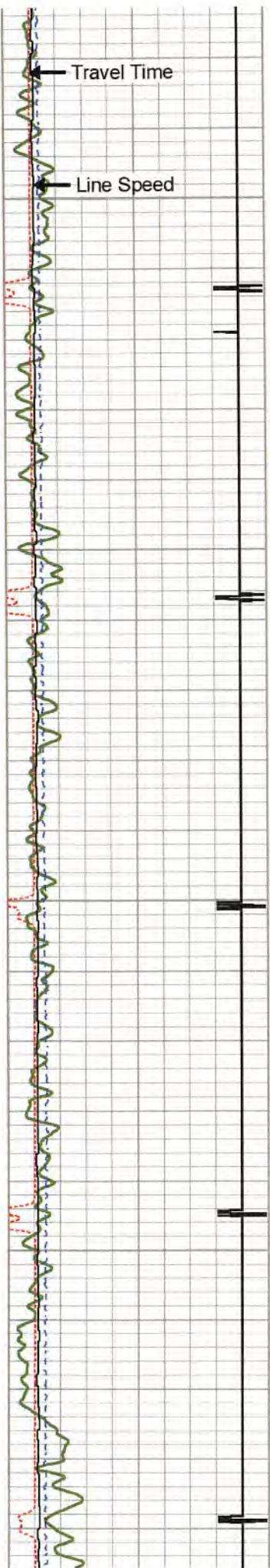
Zero PSI

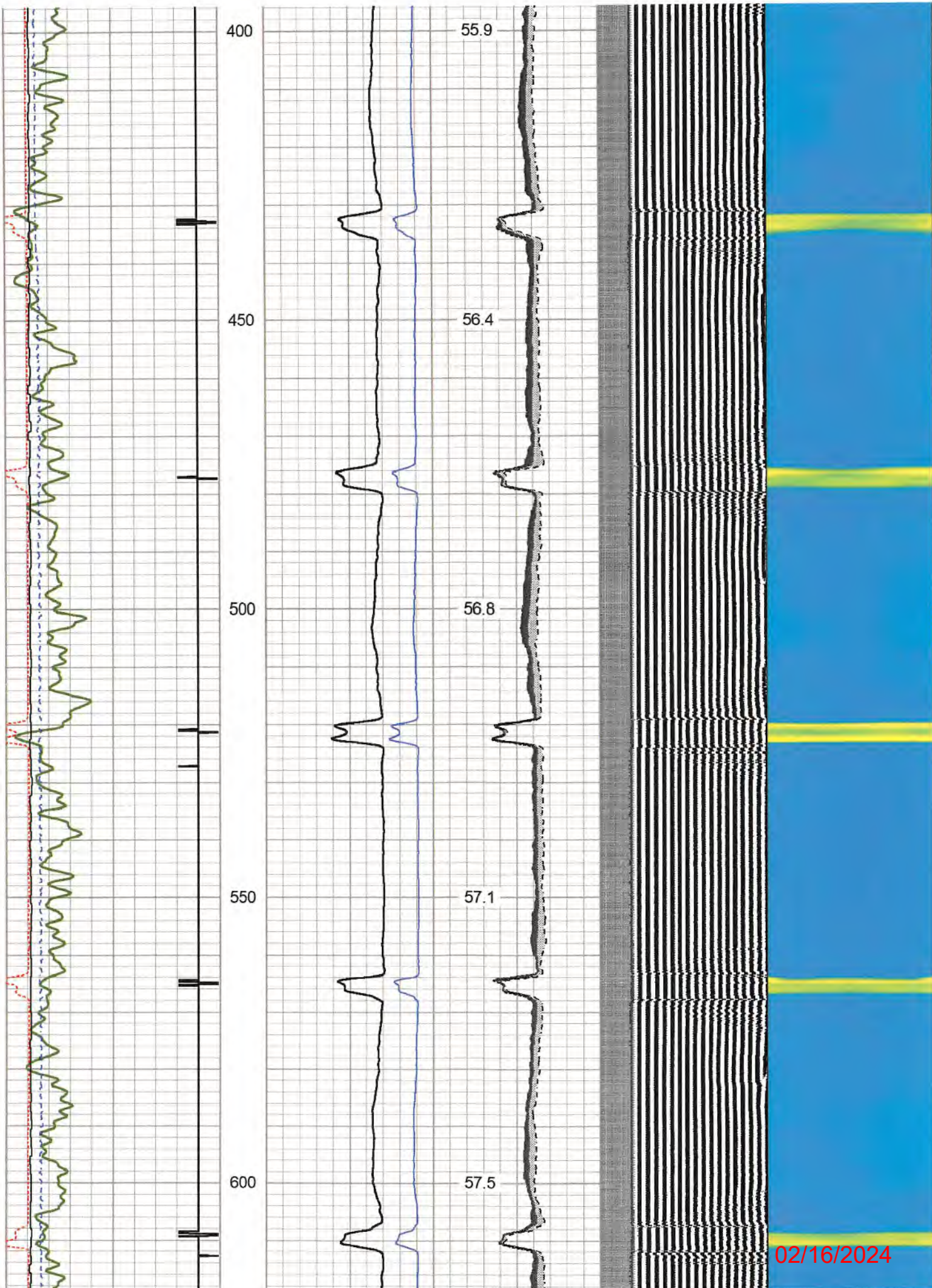
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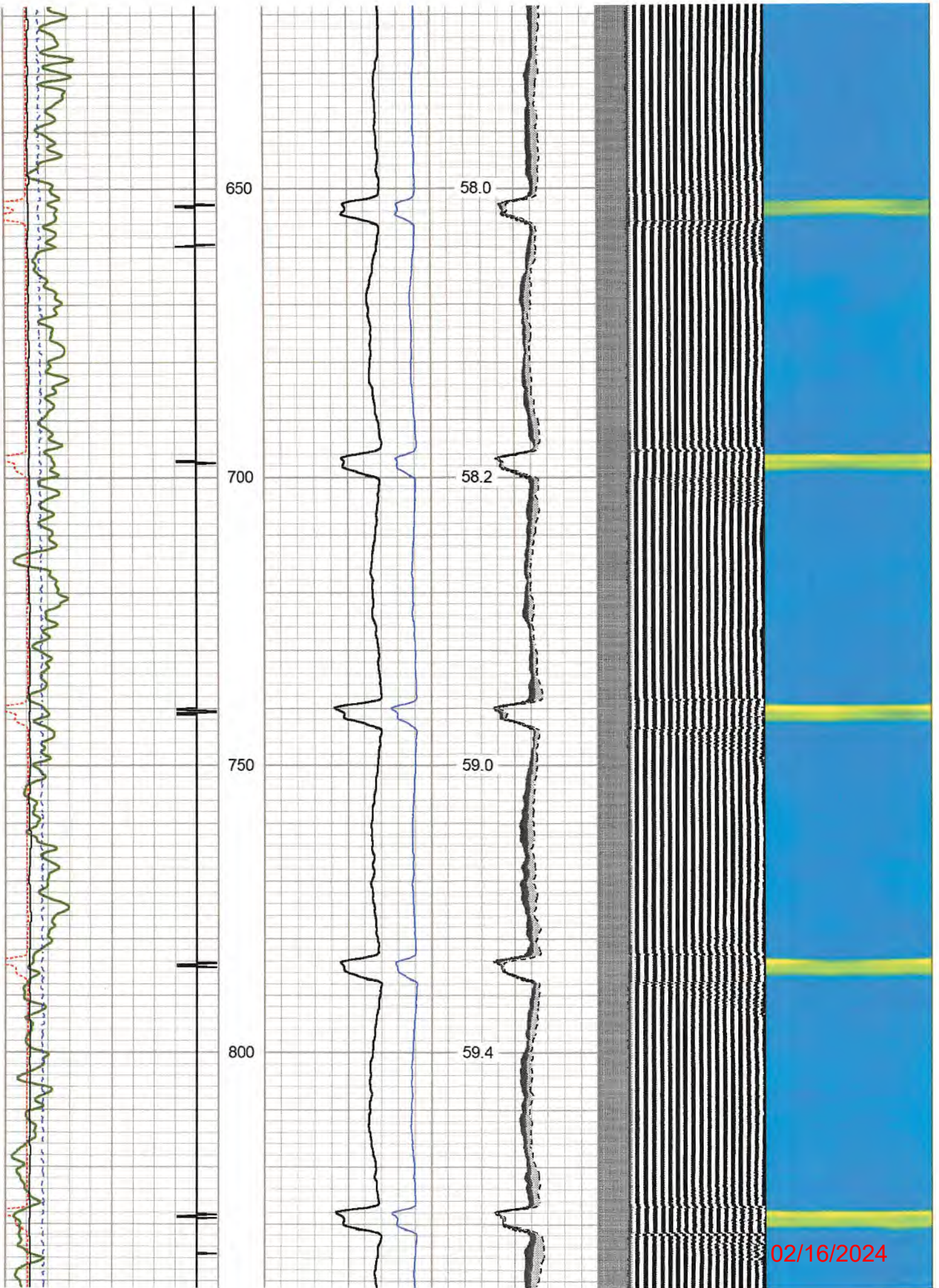
Database File antero\_cider\_run\_1h\_5\_5\_rcbl.db  
 Dataset Pathname pass8  
 Presentation Format rcbl-bond index 1020  
 Dataset Creation Wed Apr 05 12:34:34 2023  
 Charted by Depth in Feet scaled 1:240

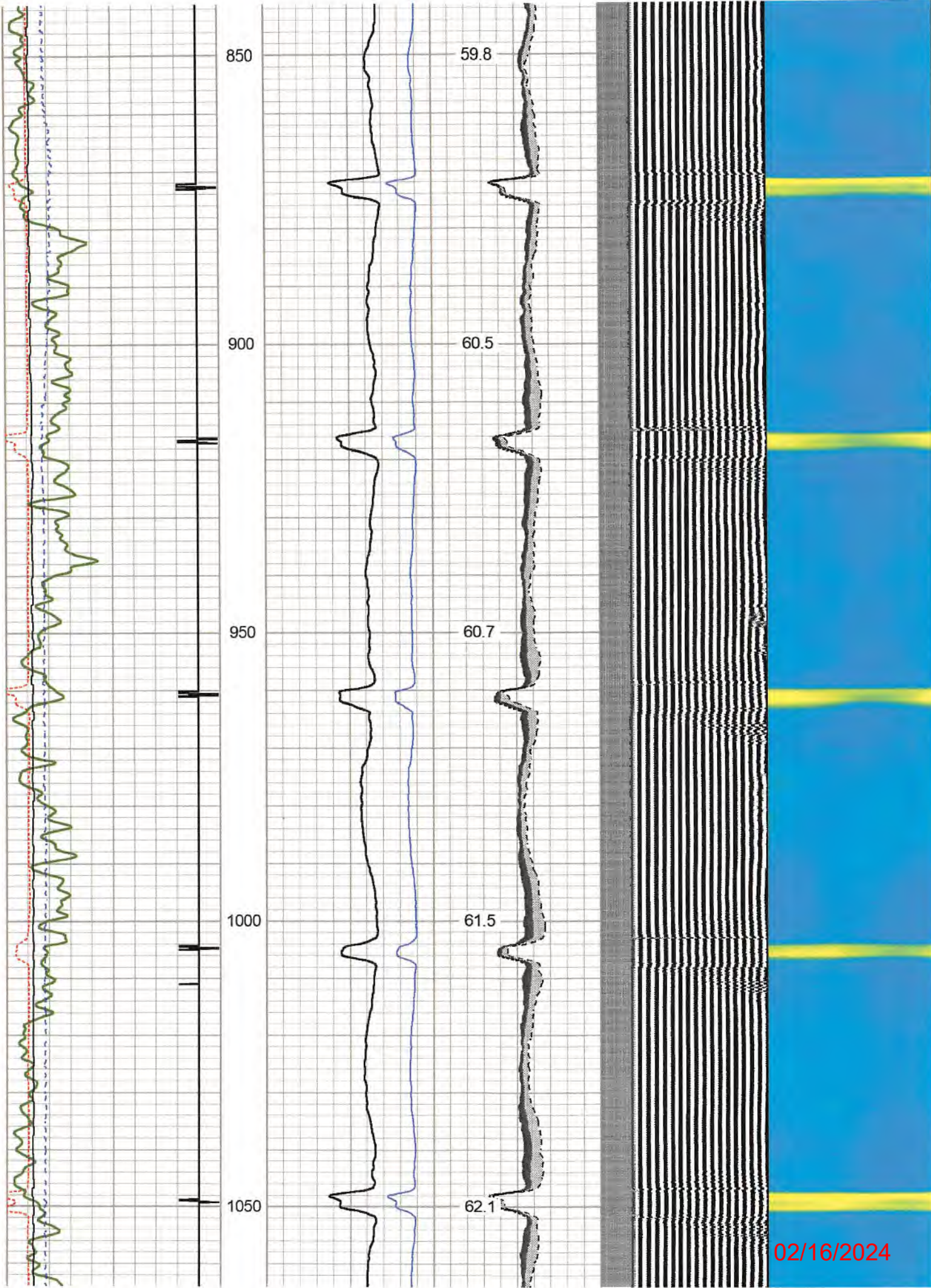
280	Travel Time (usec)	180	0	Amplitude (mV)	100	-5	AMPMIN	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1	1	BONDIX	0	-5	AMPMAX	150	200 (usec)	1200		
0	Gamma Ray (GAPI)	150				-5	AMPAVG	150				
	Line Speed						TEMP					
-120	(ft/min)	100					(degF)					
0	Line Tension (lb)	3000										



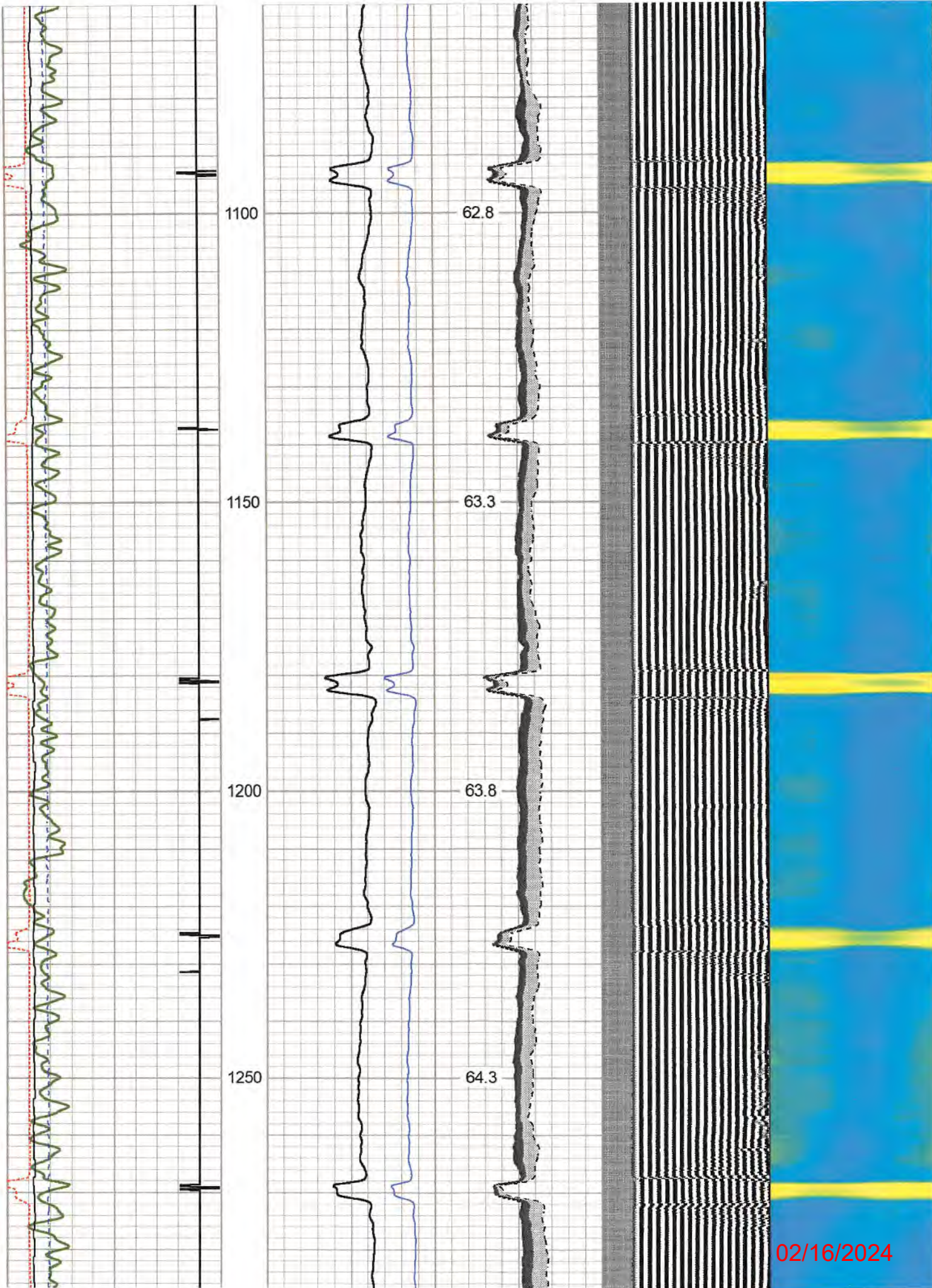




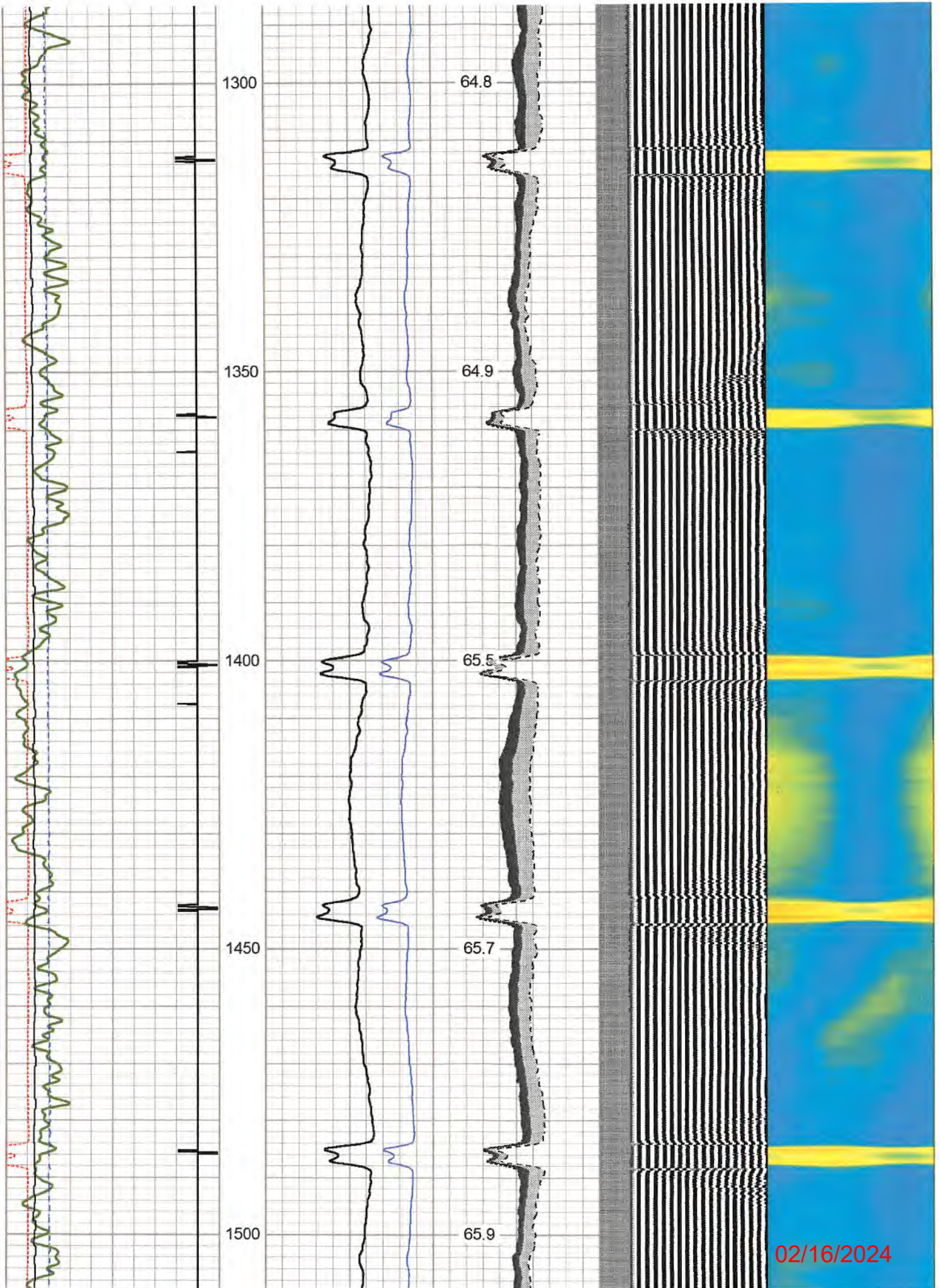




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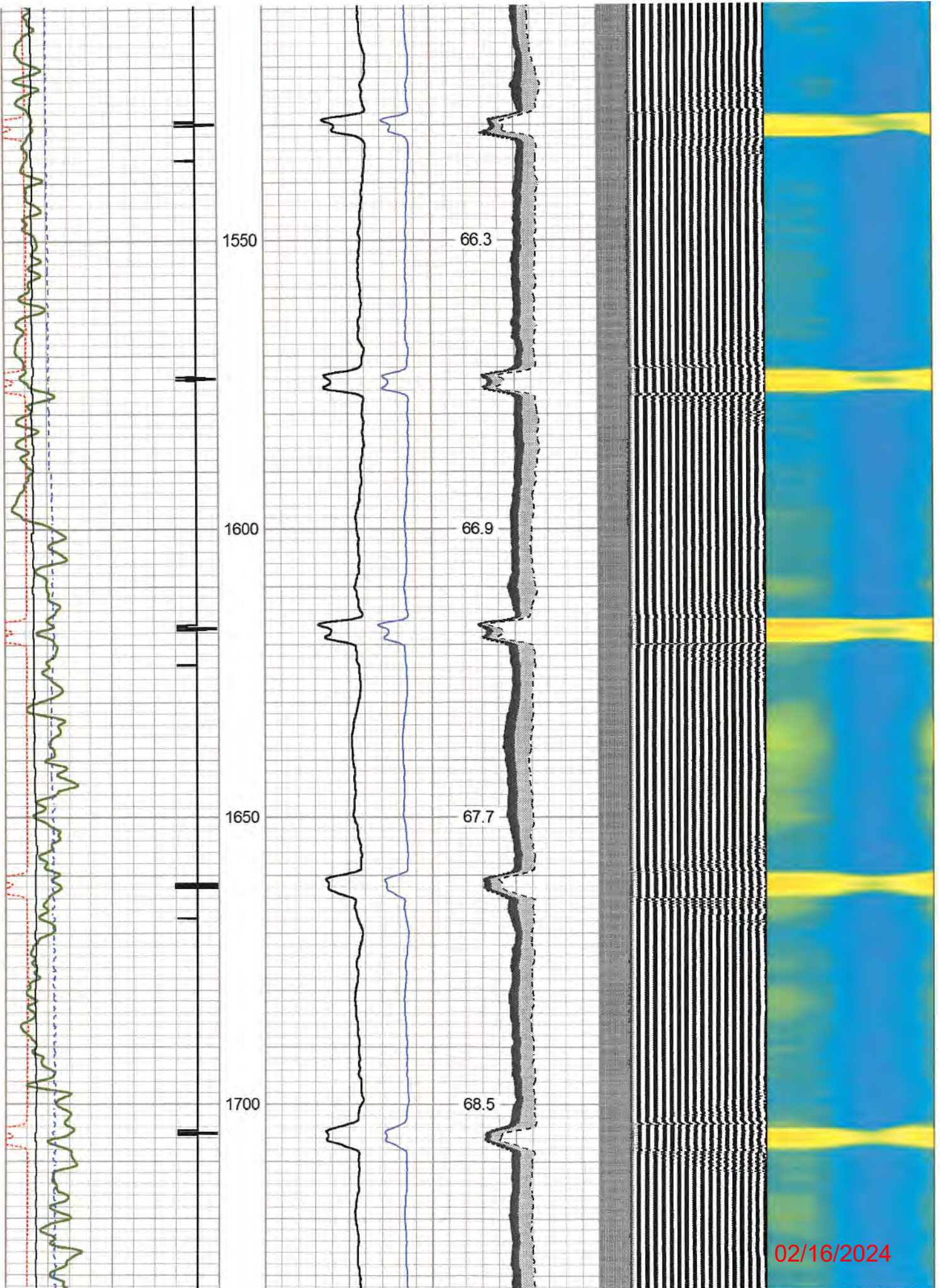


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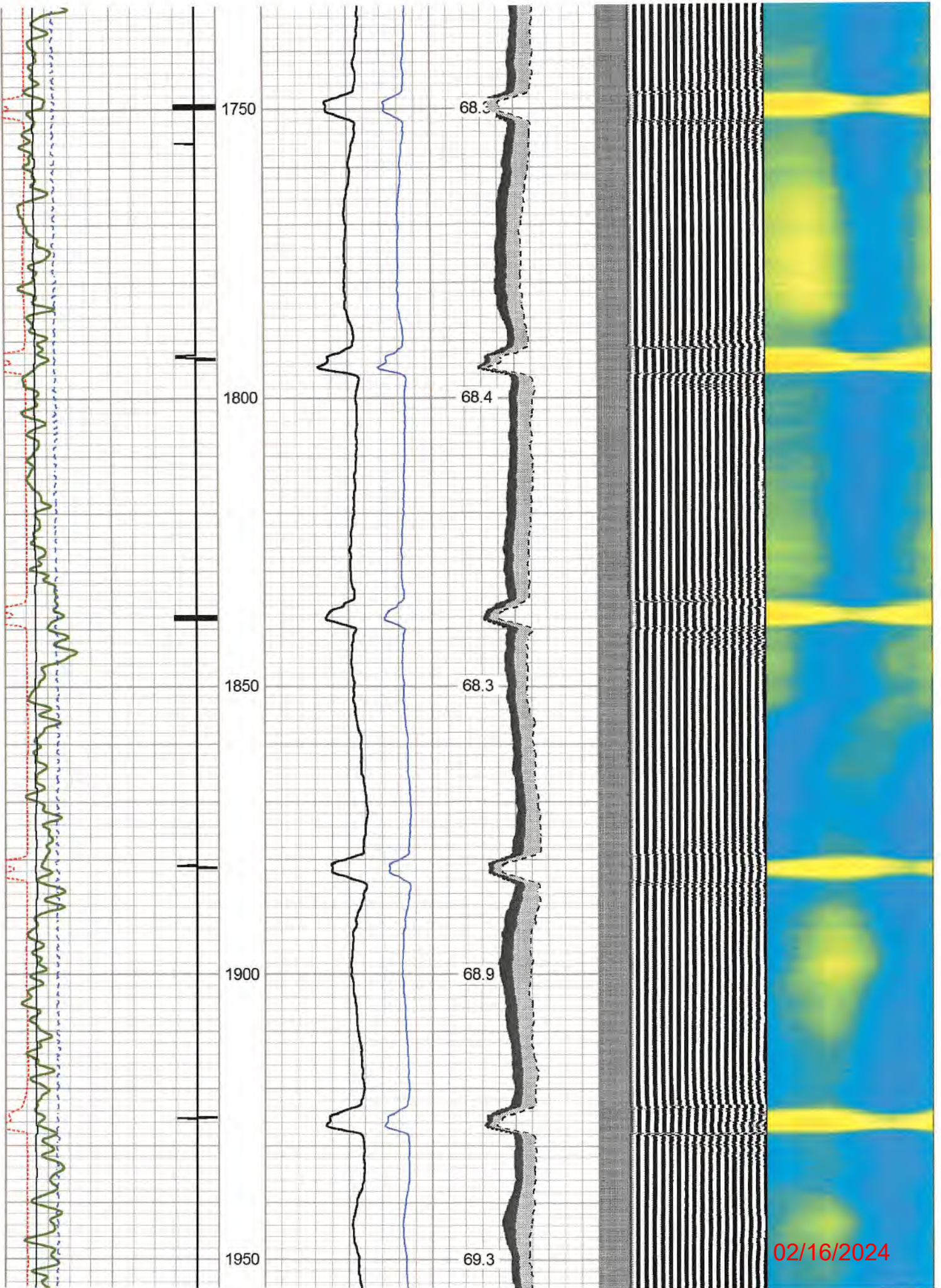


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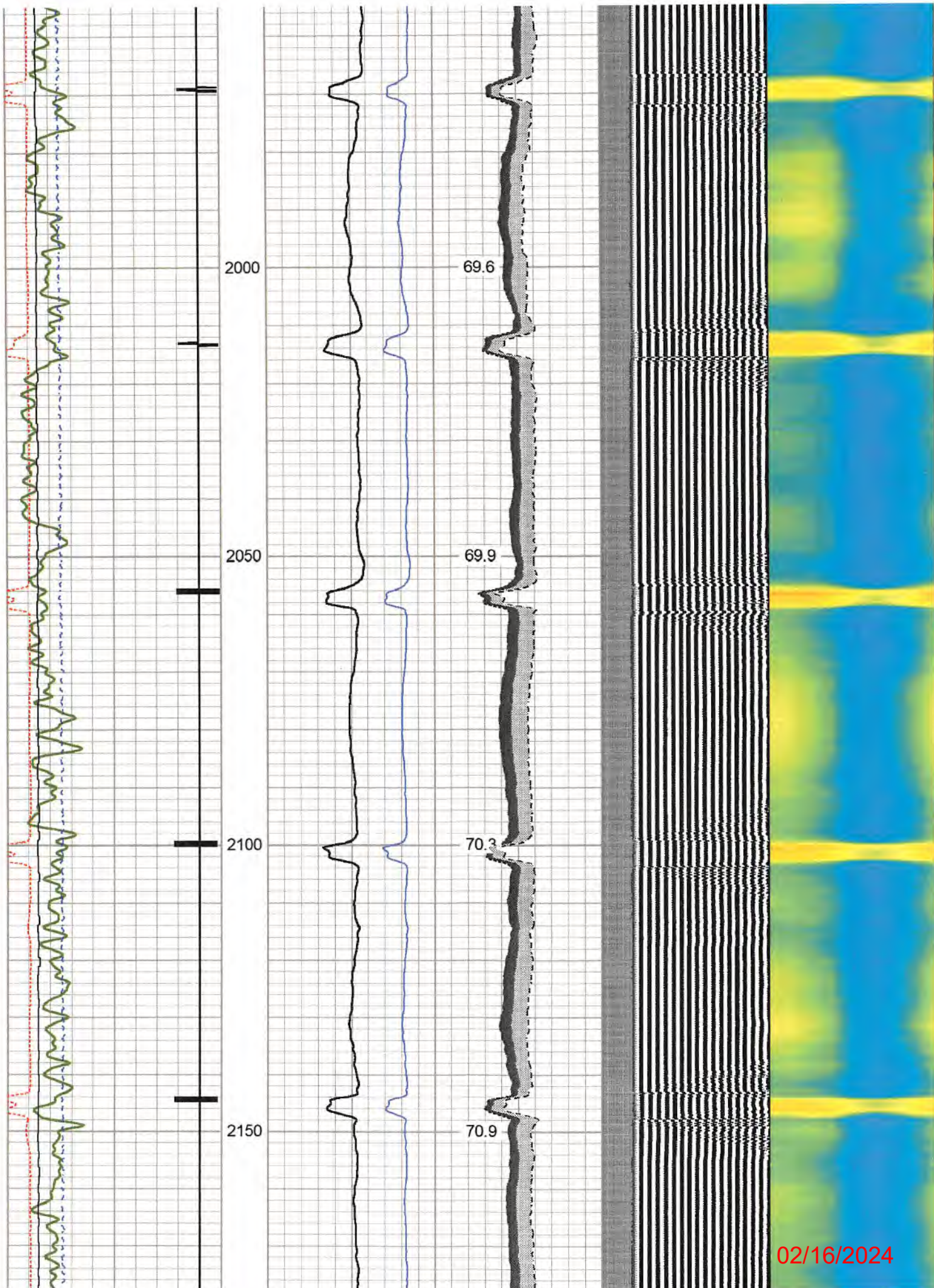




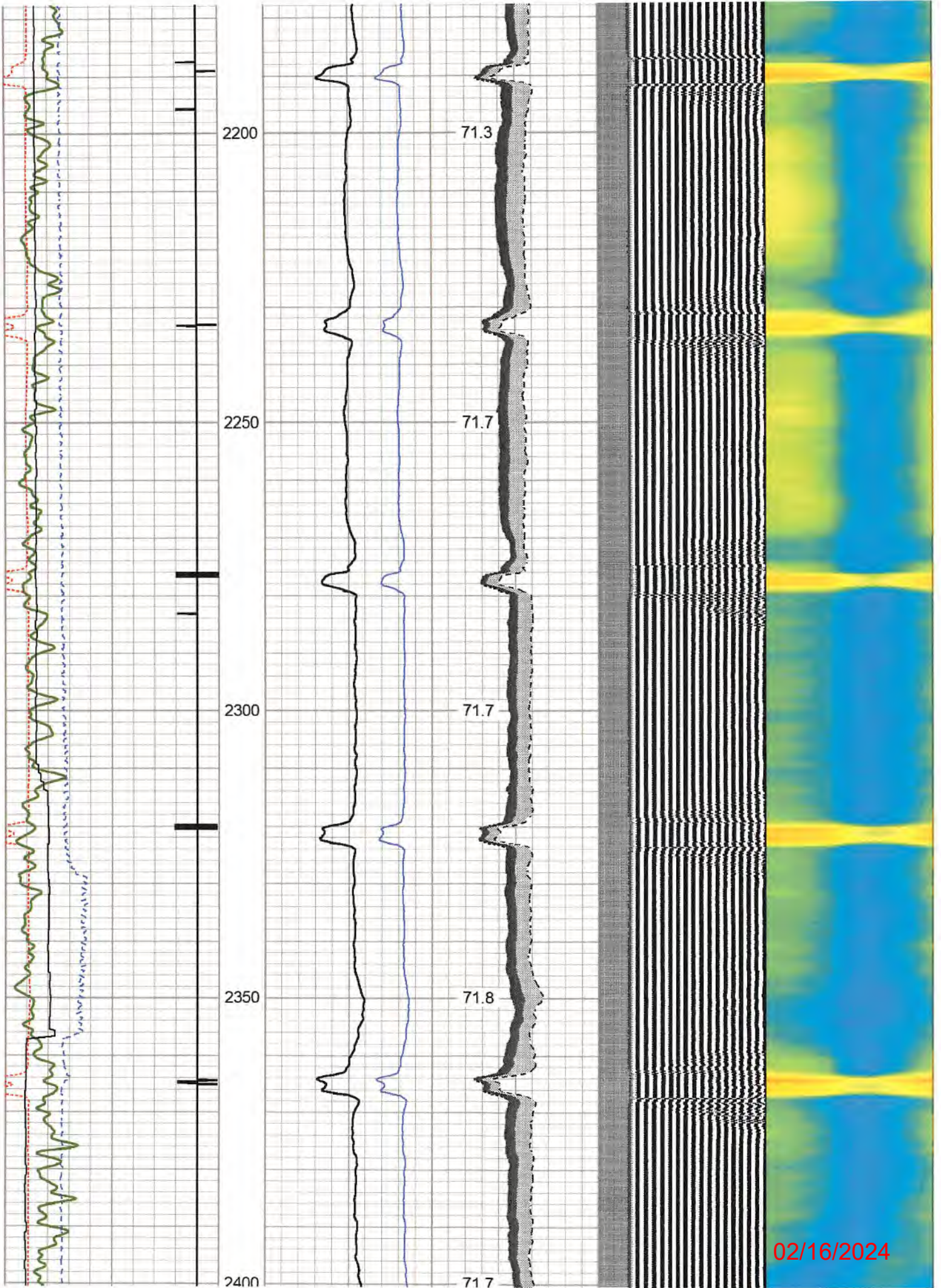
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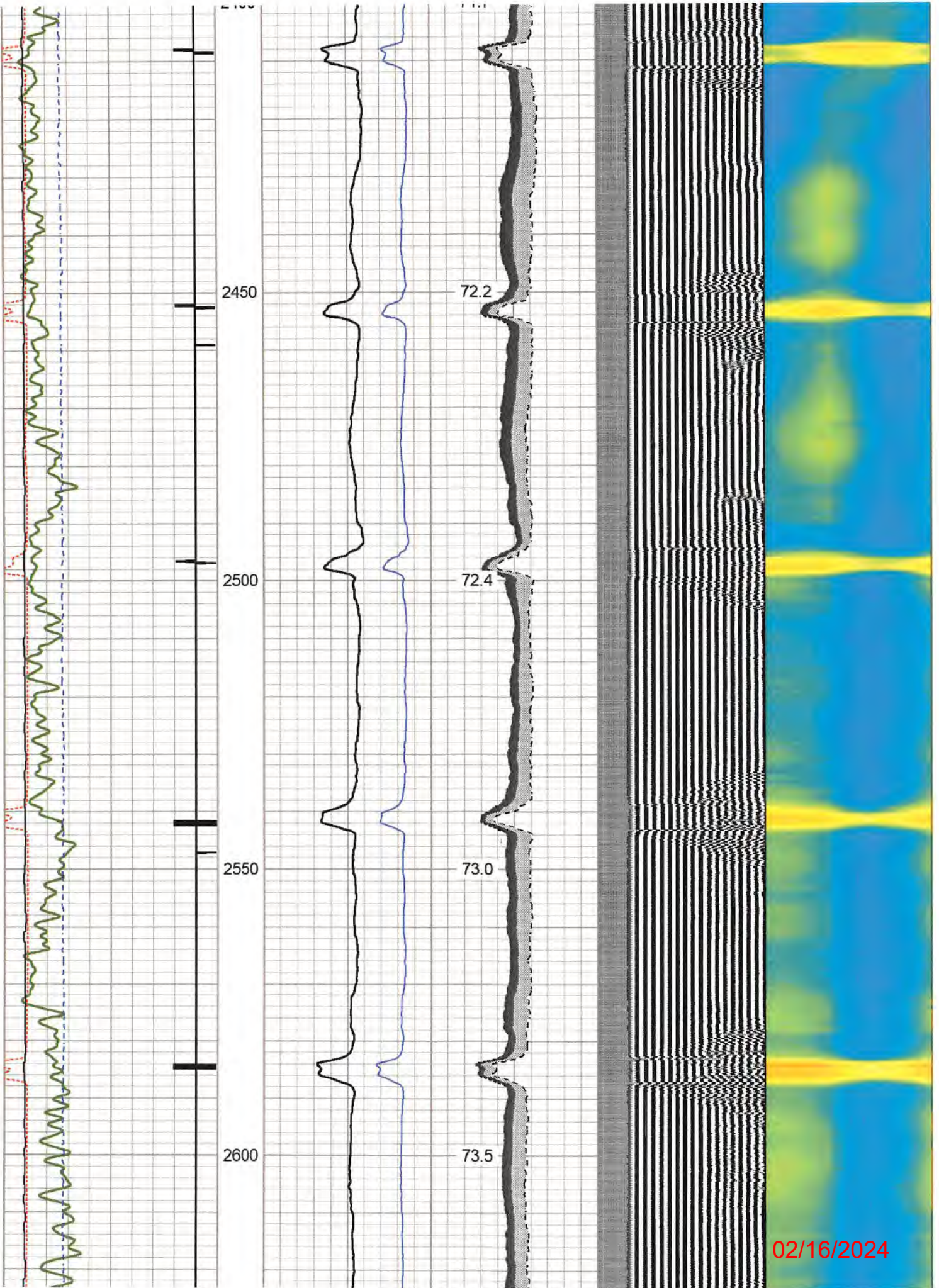


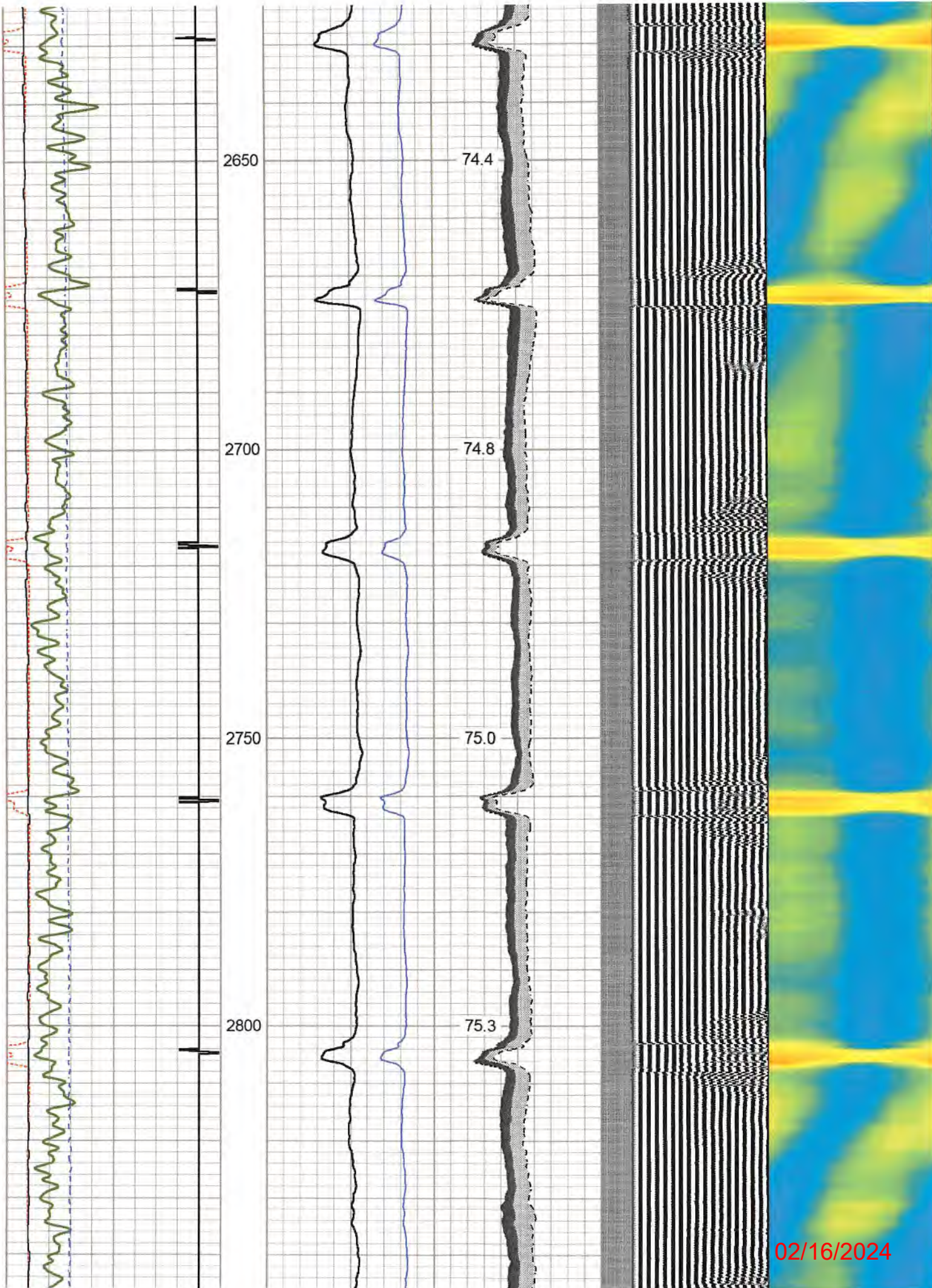
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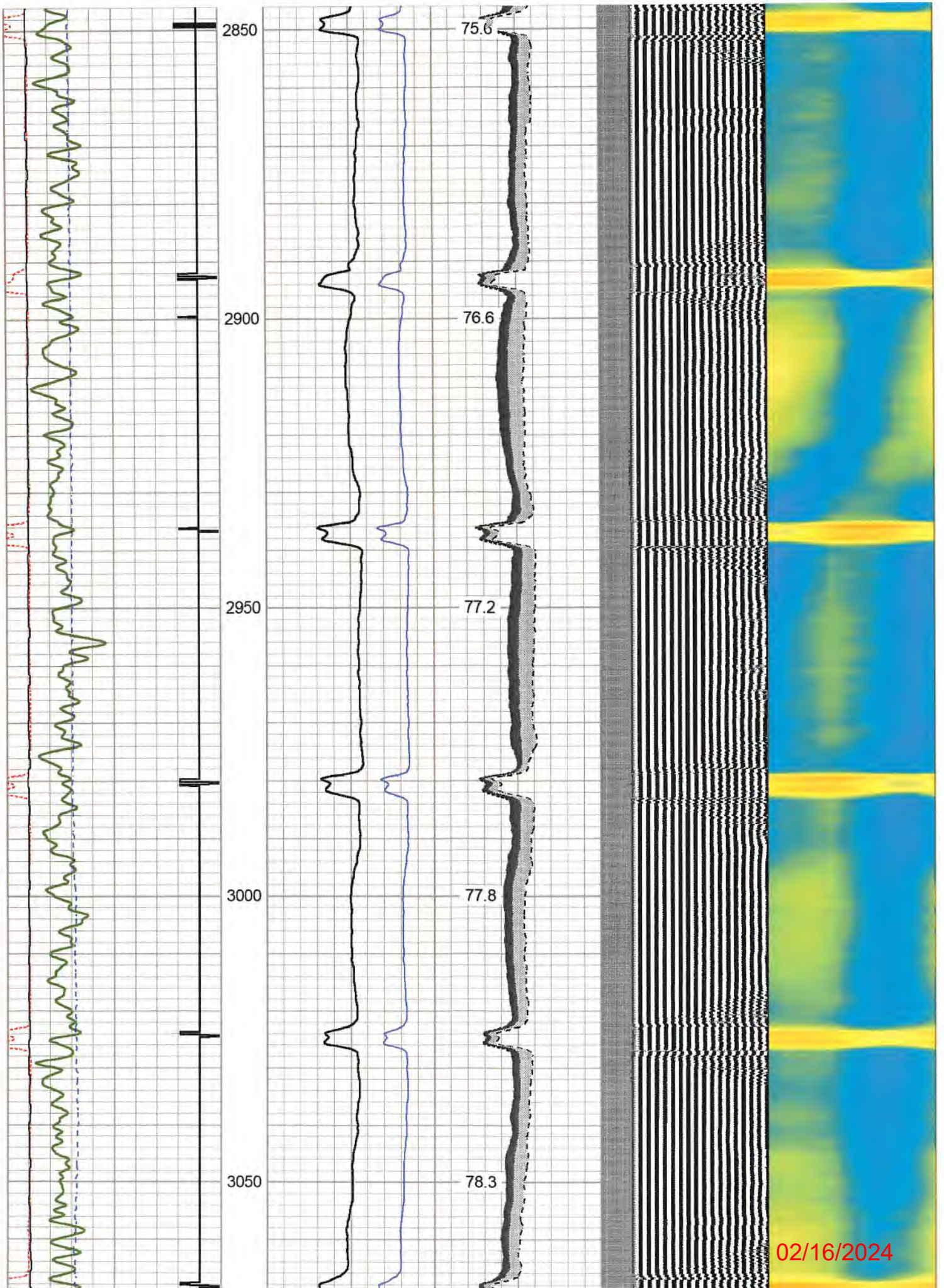
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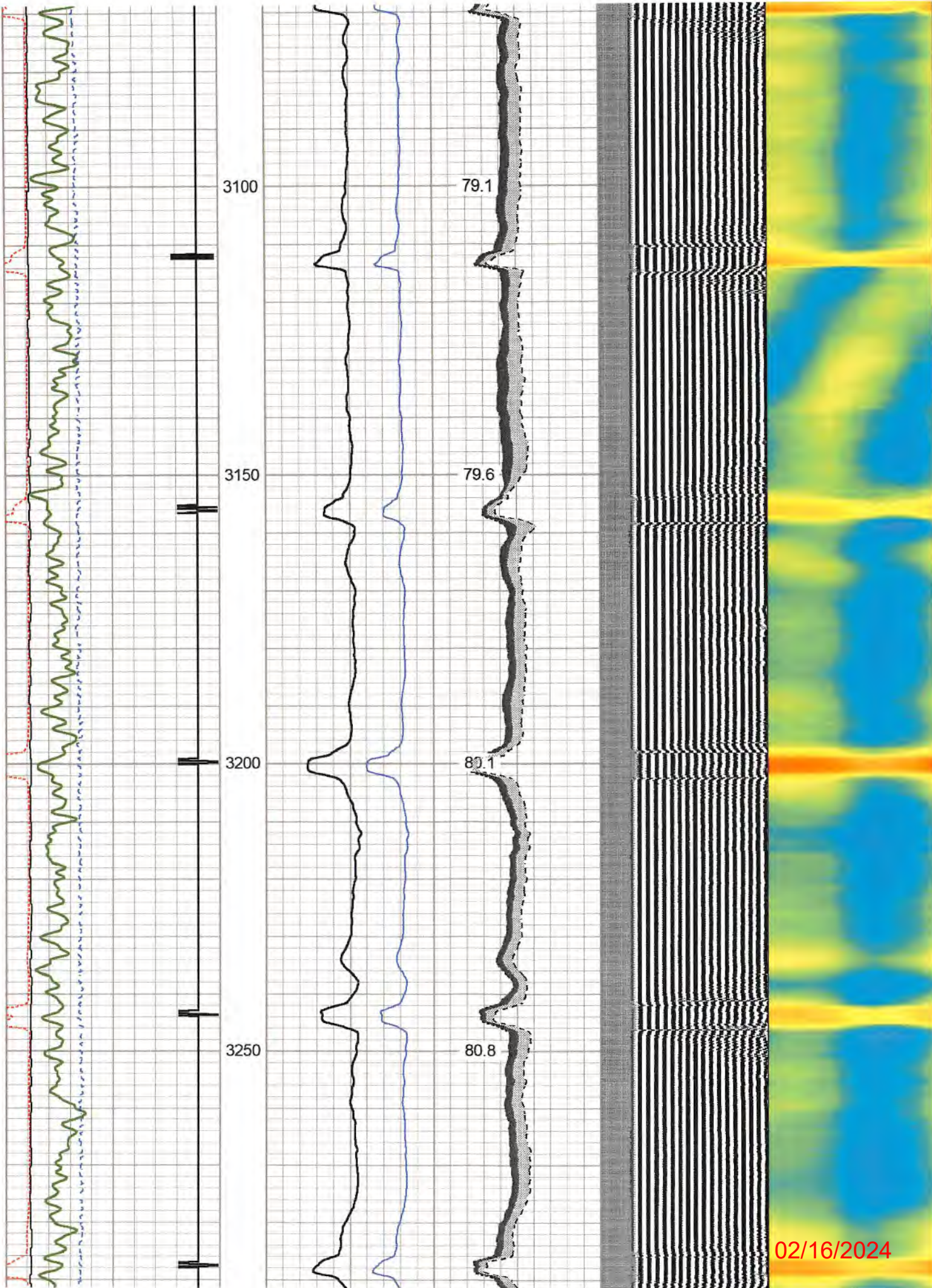




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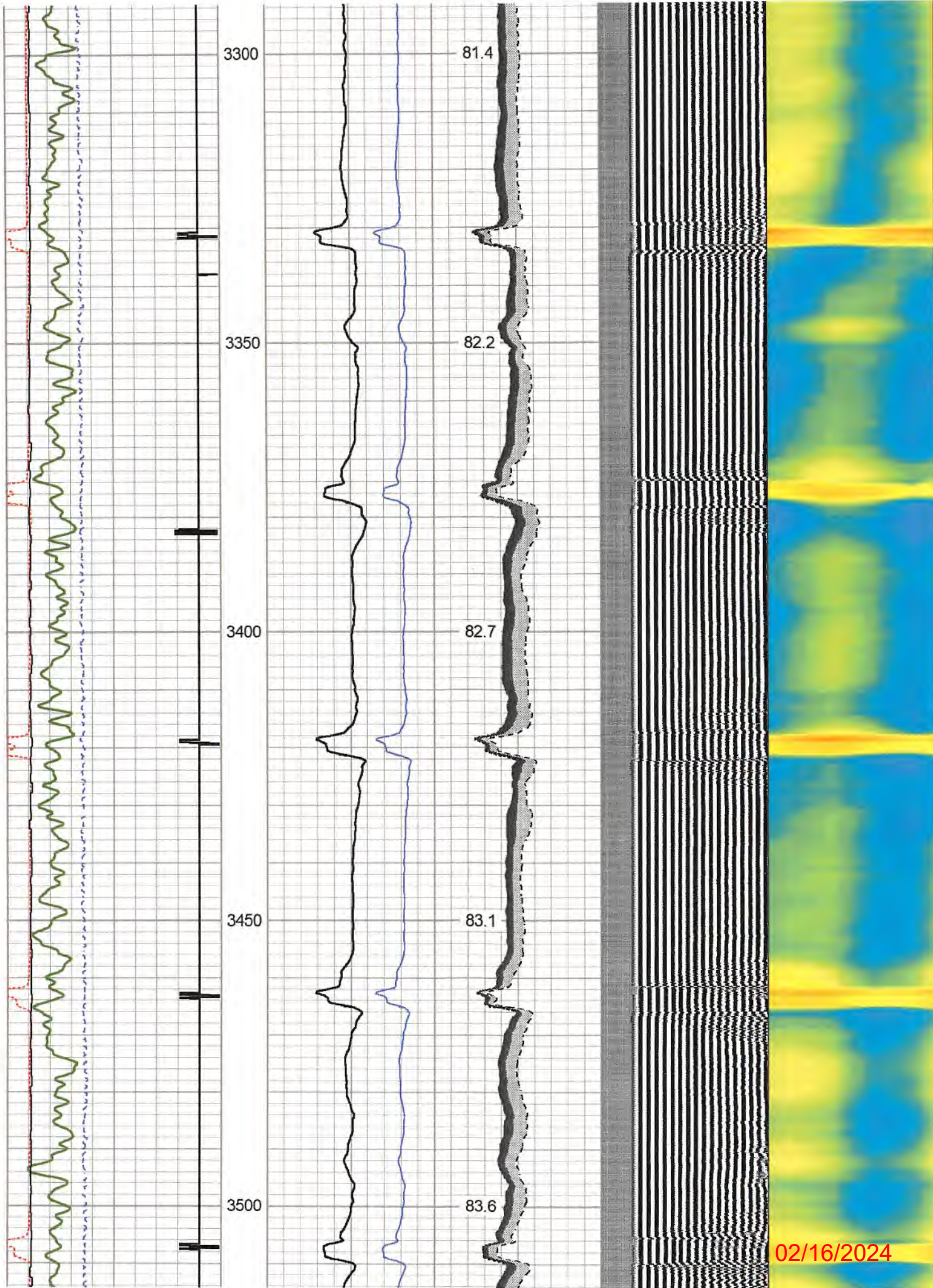


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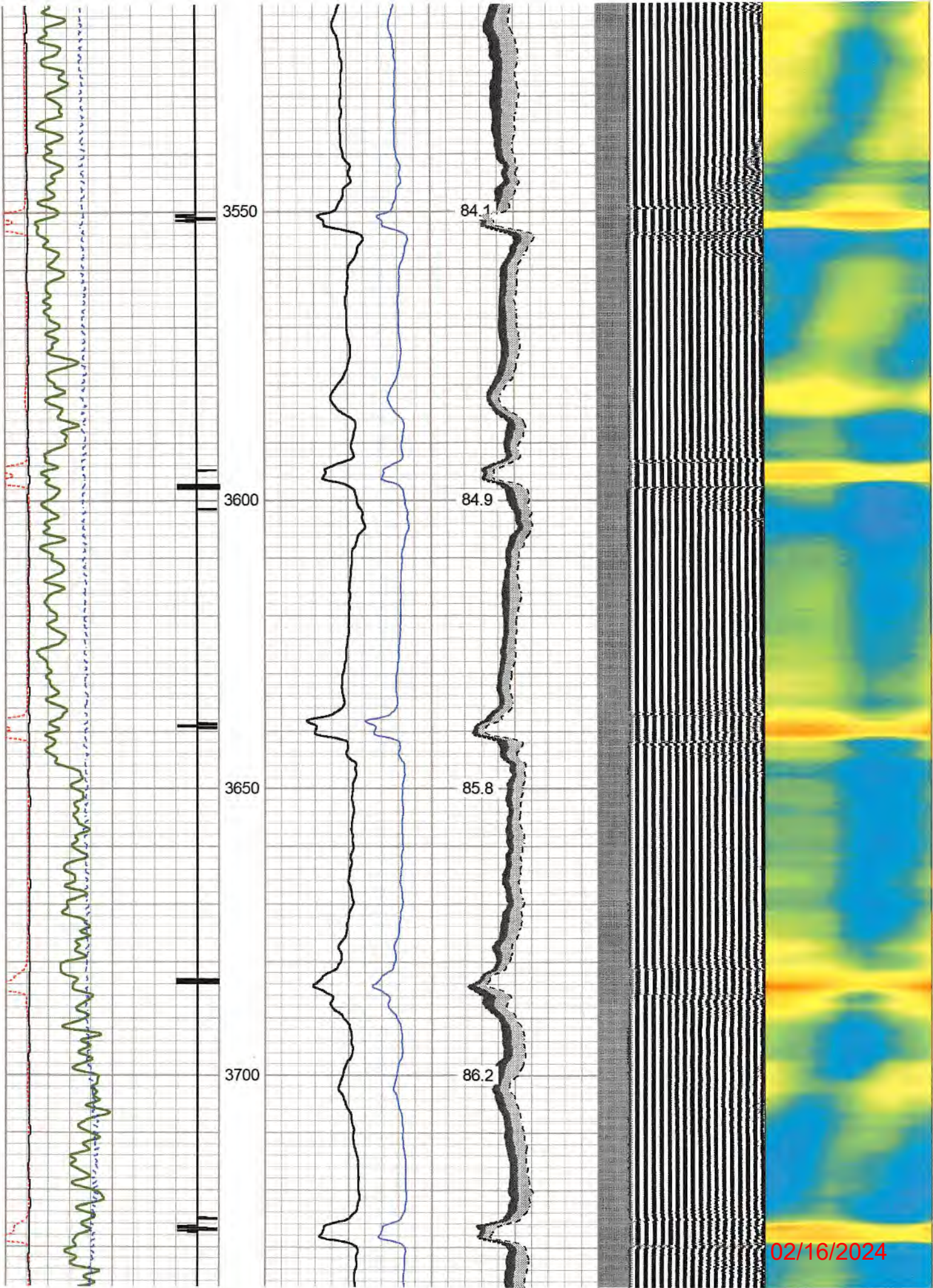


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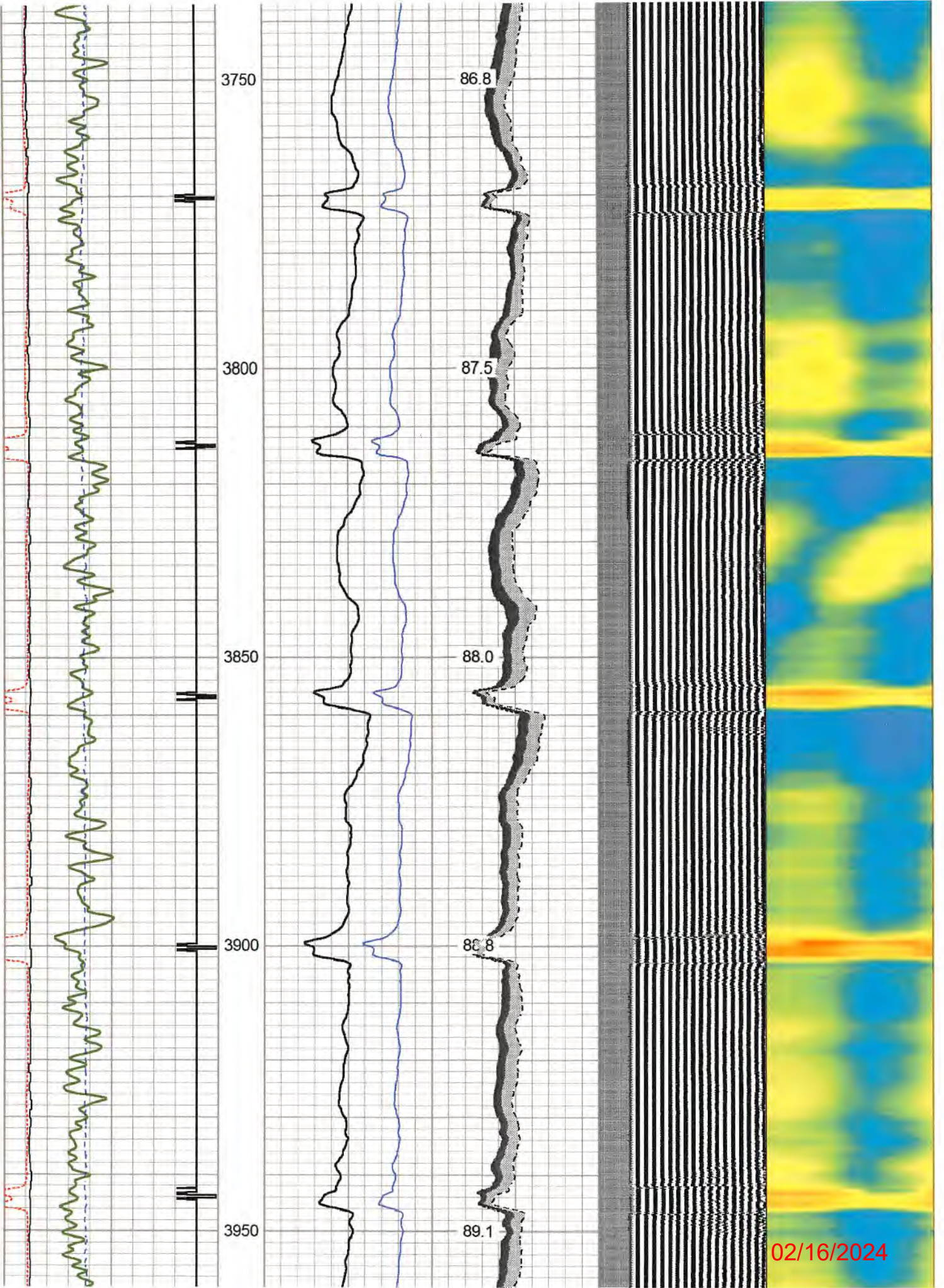


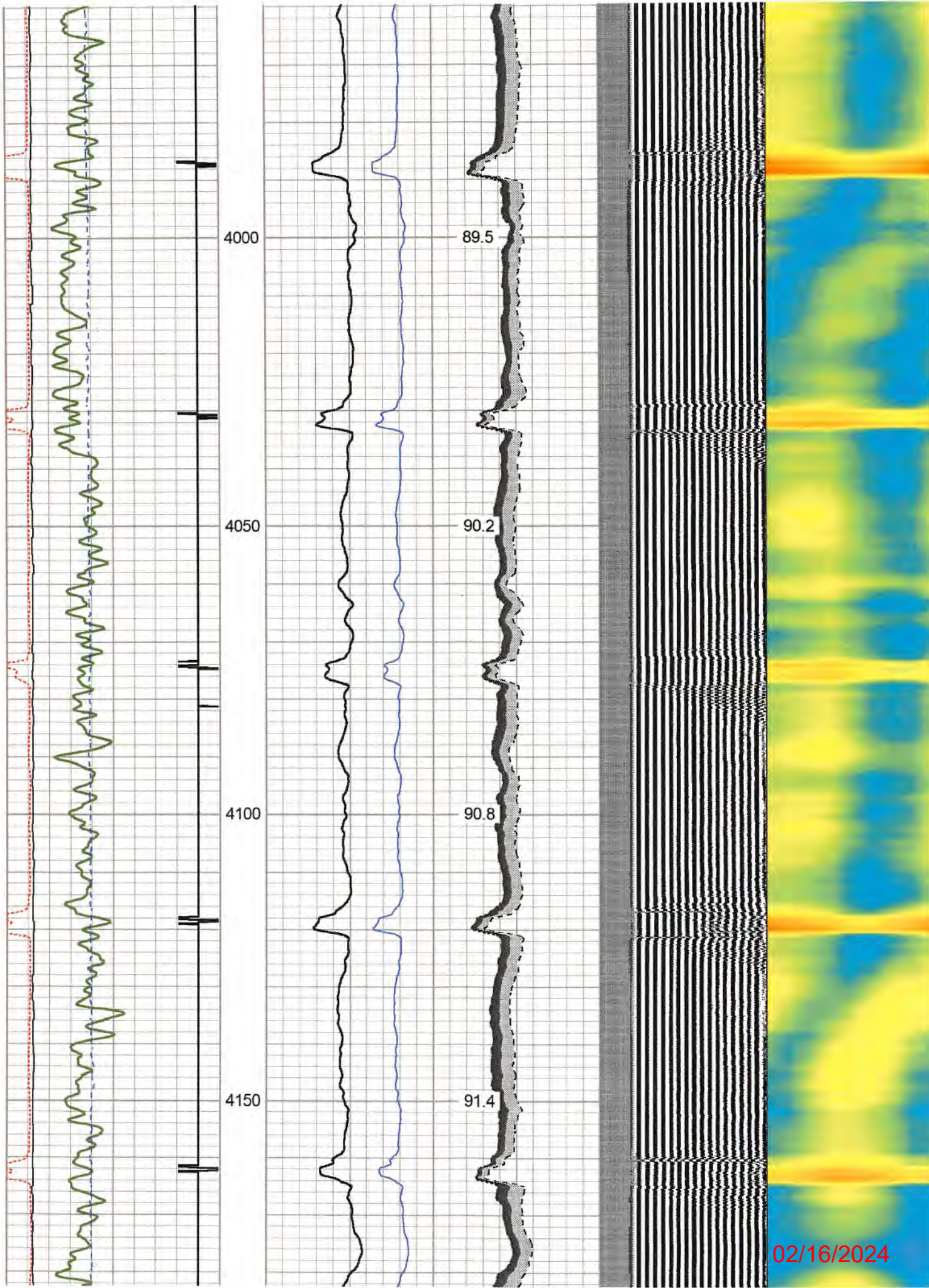


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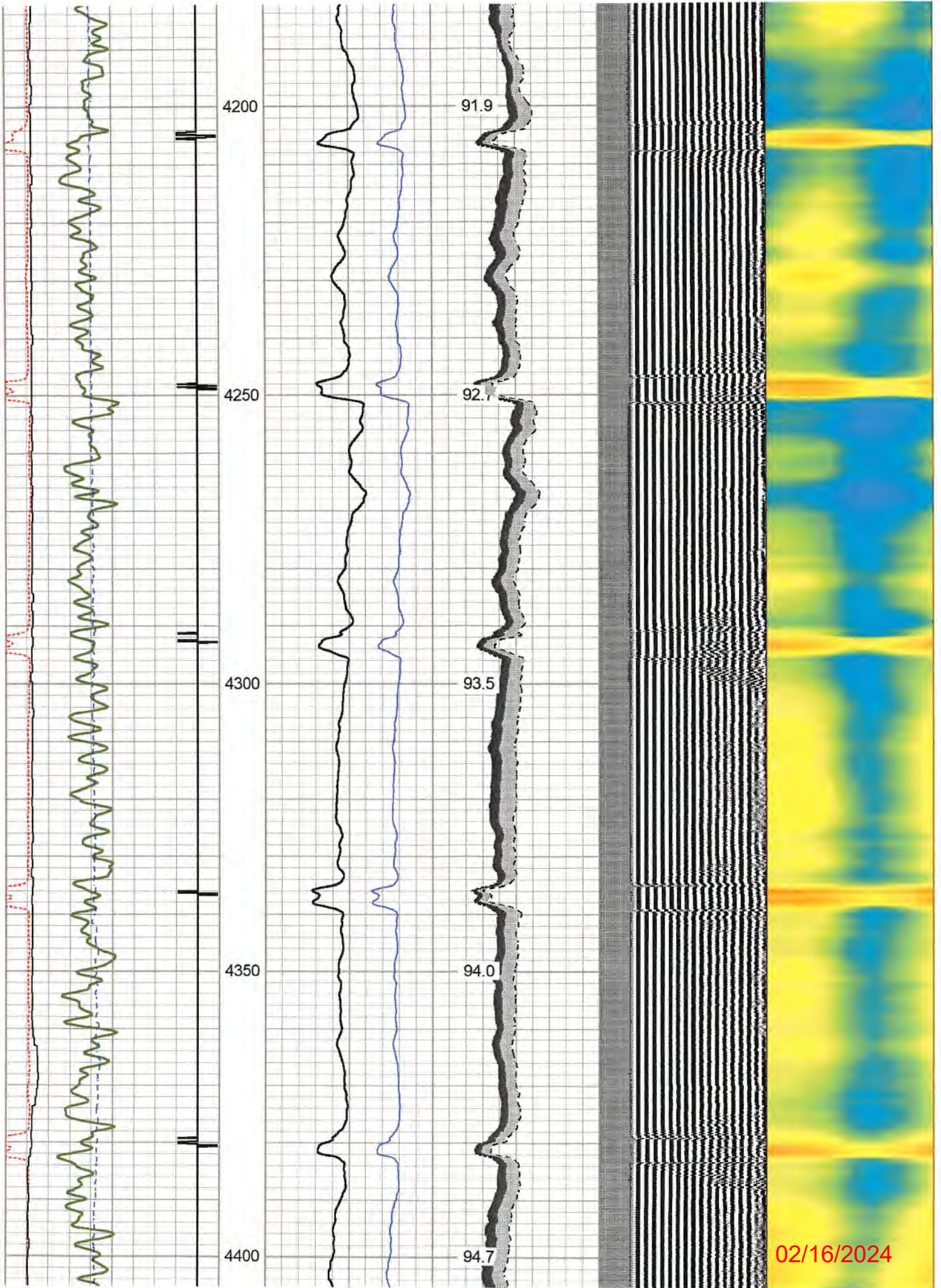


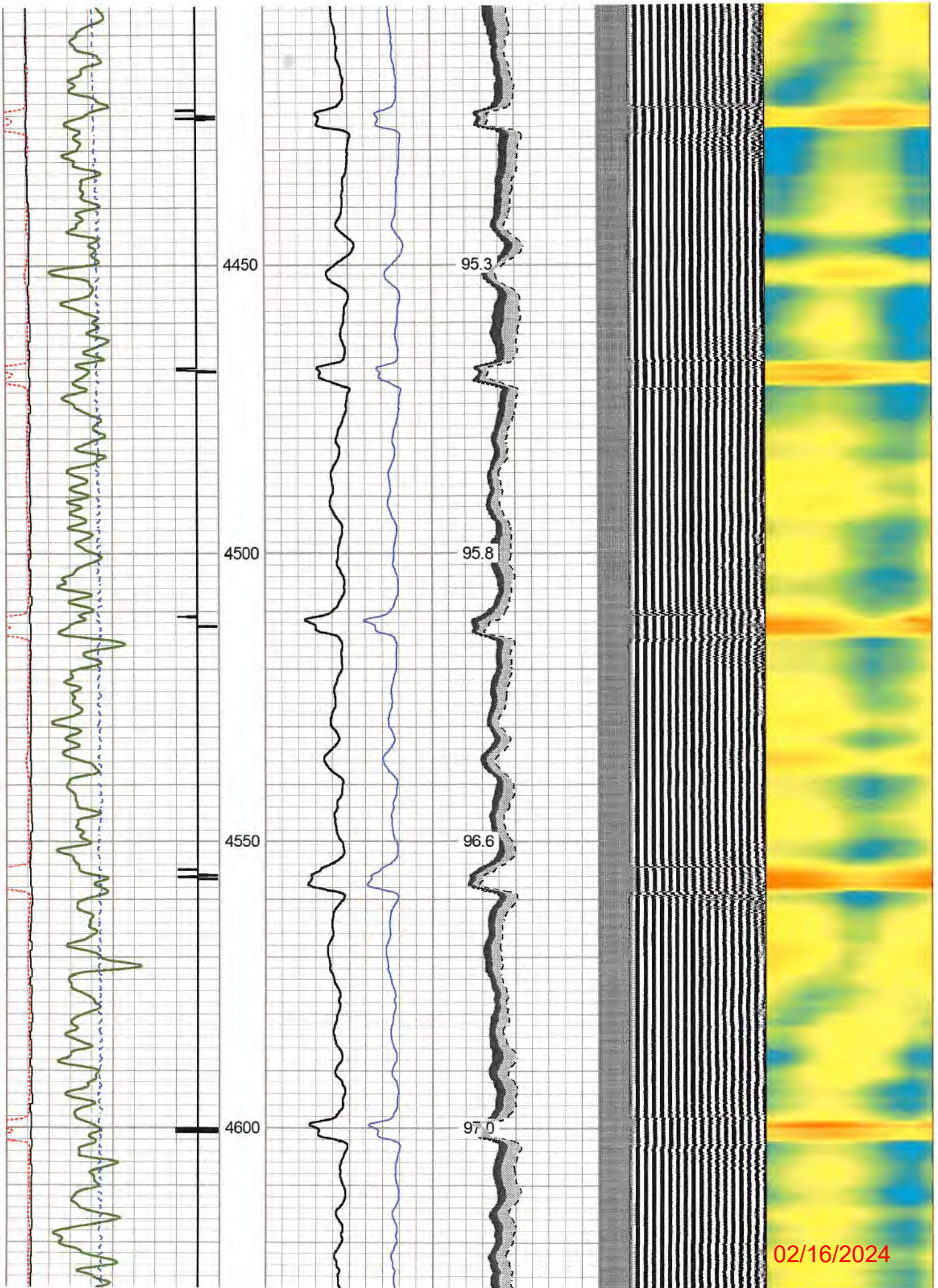
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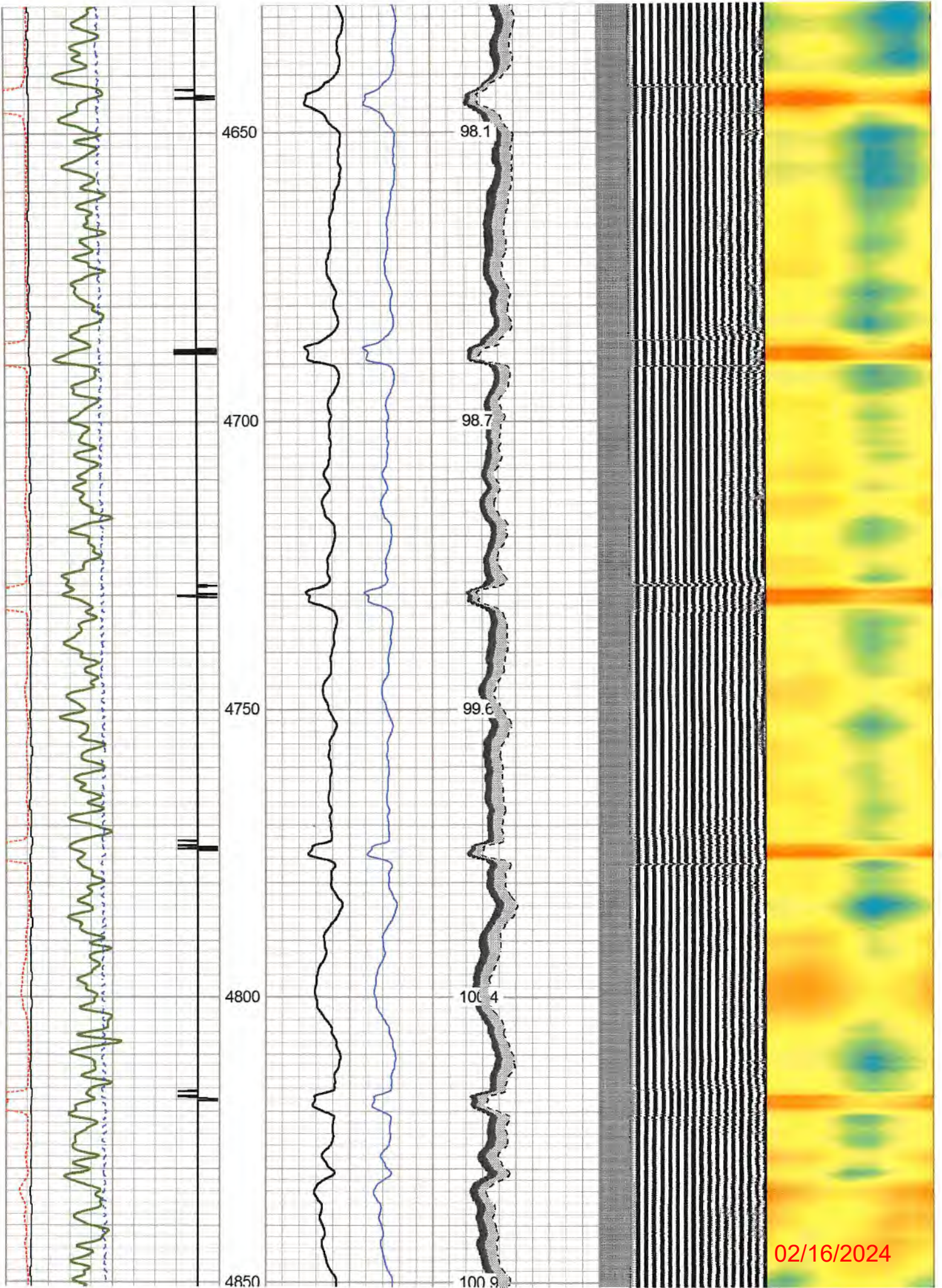


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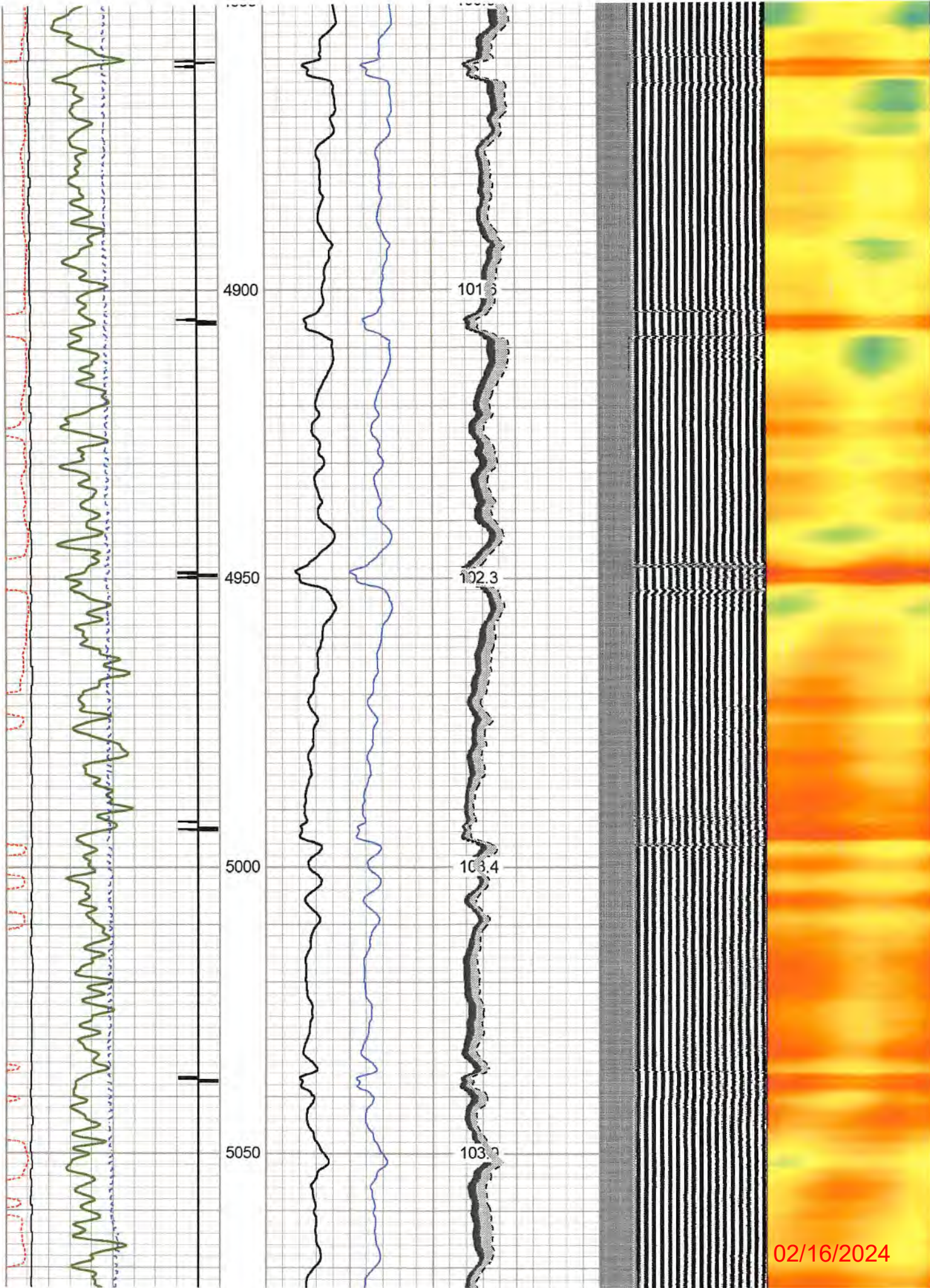




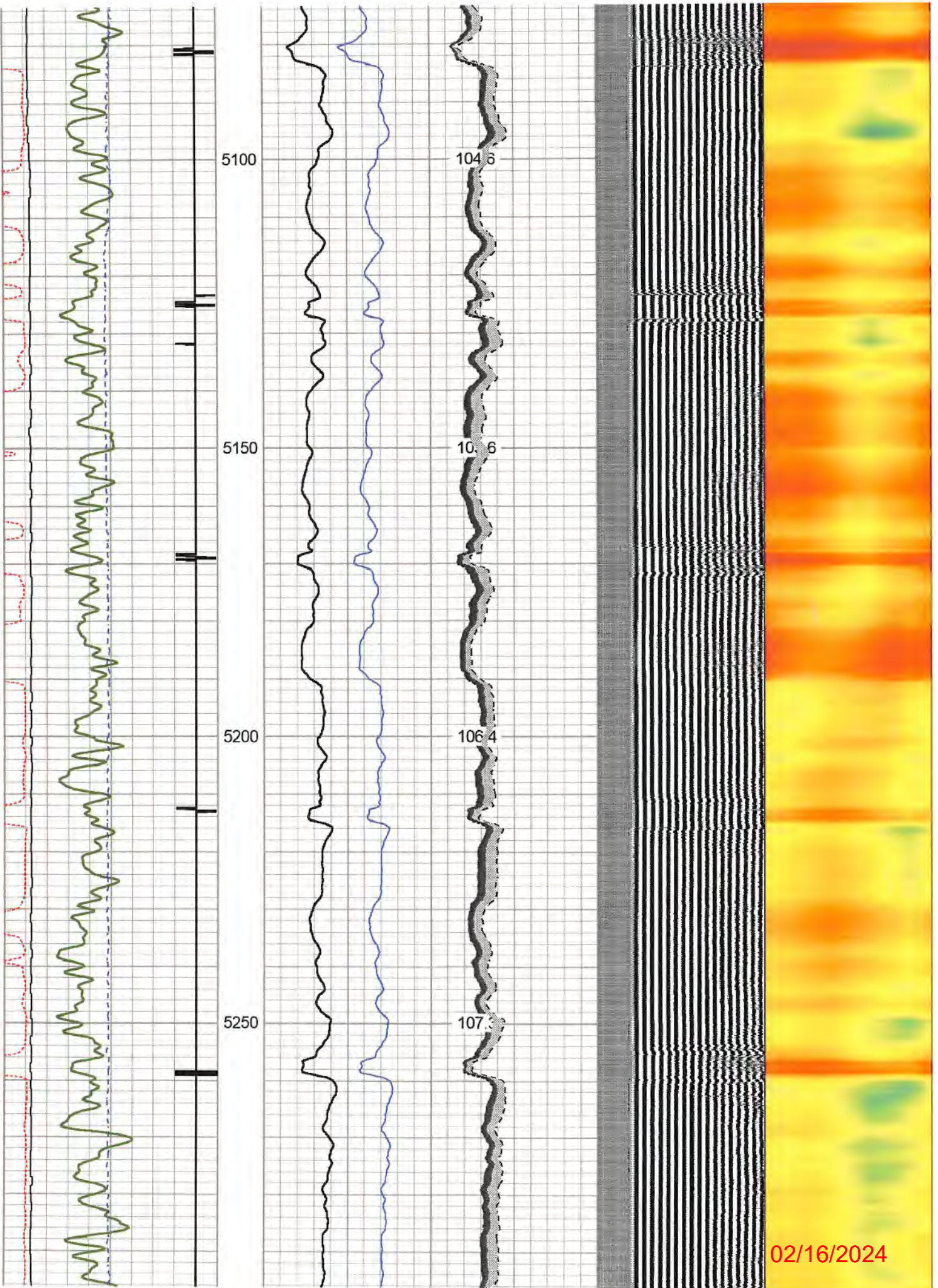
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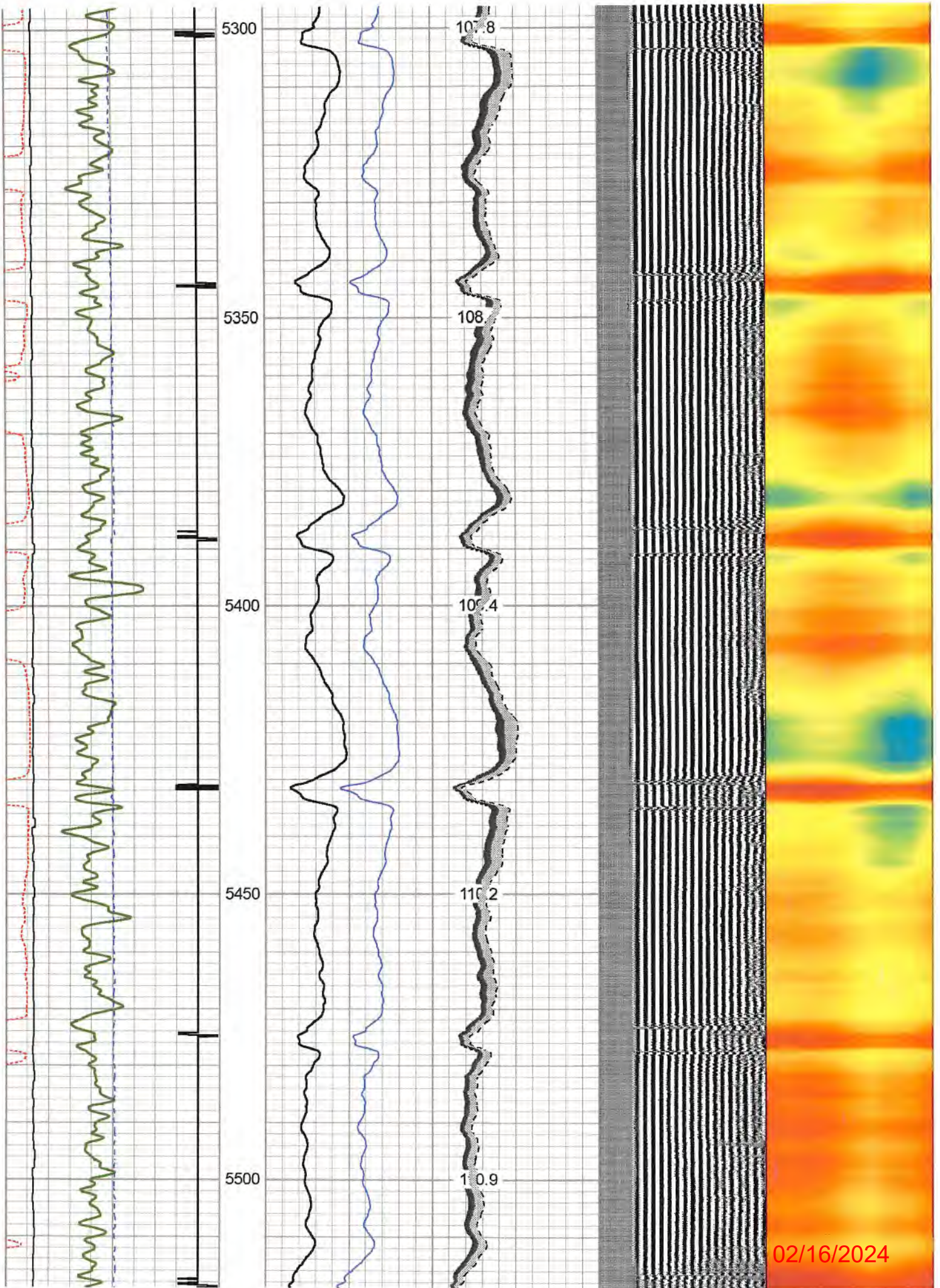
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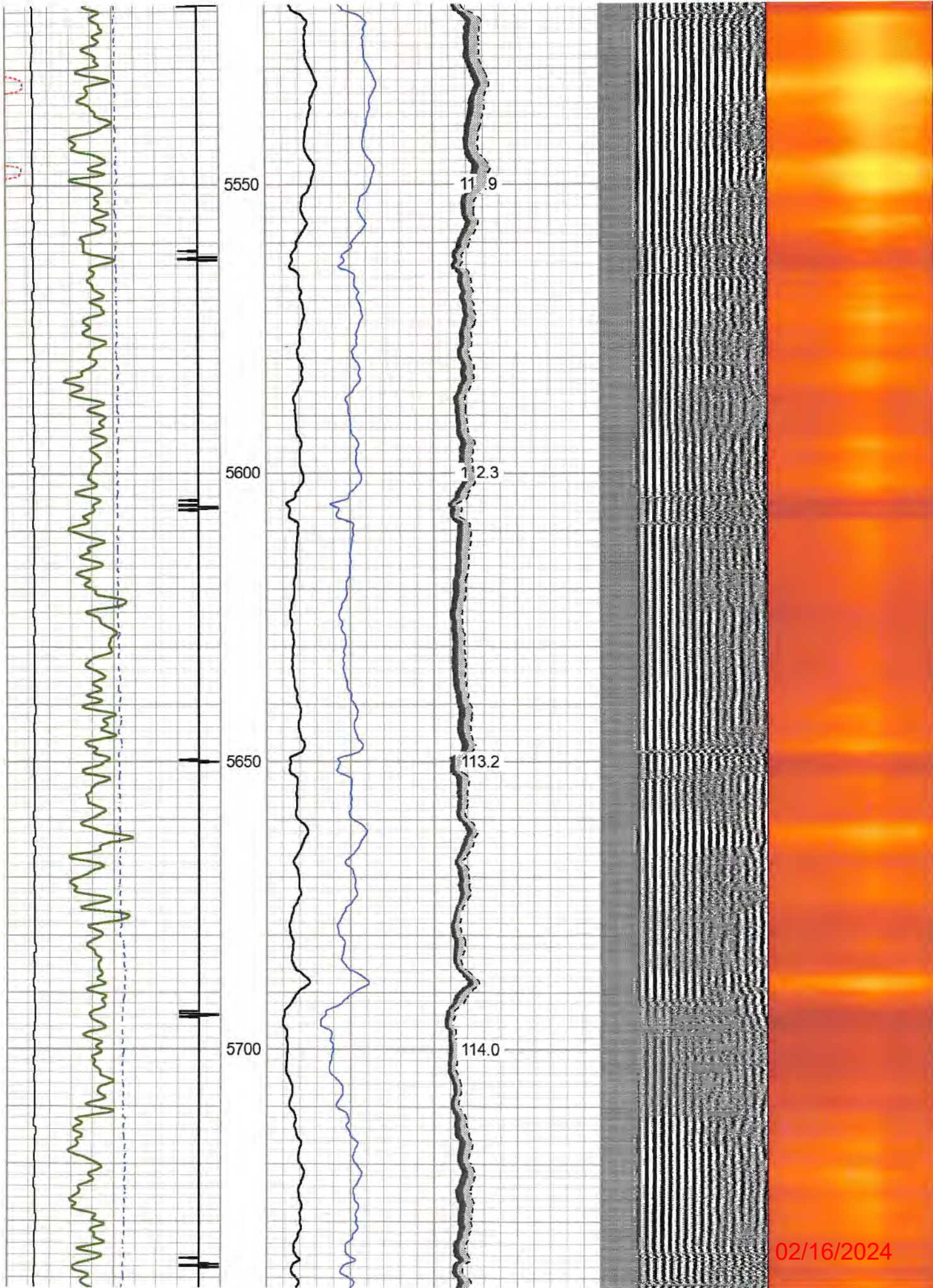




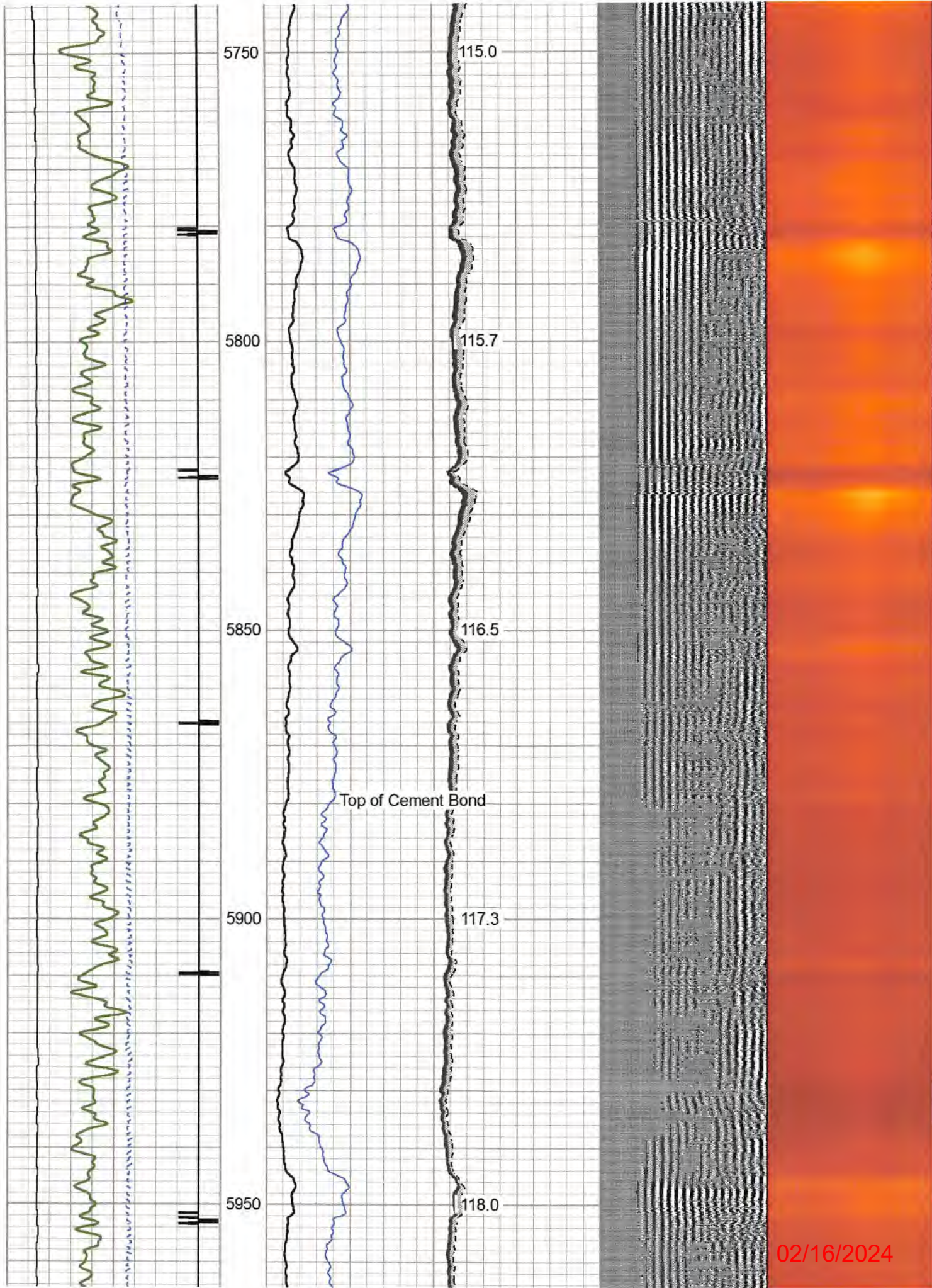


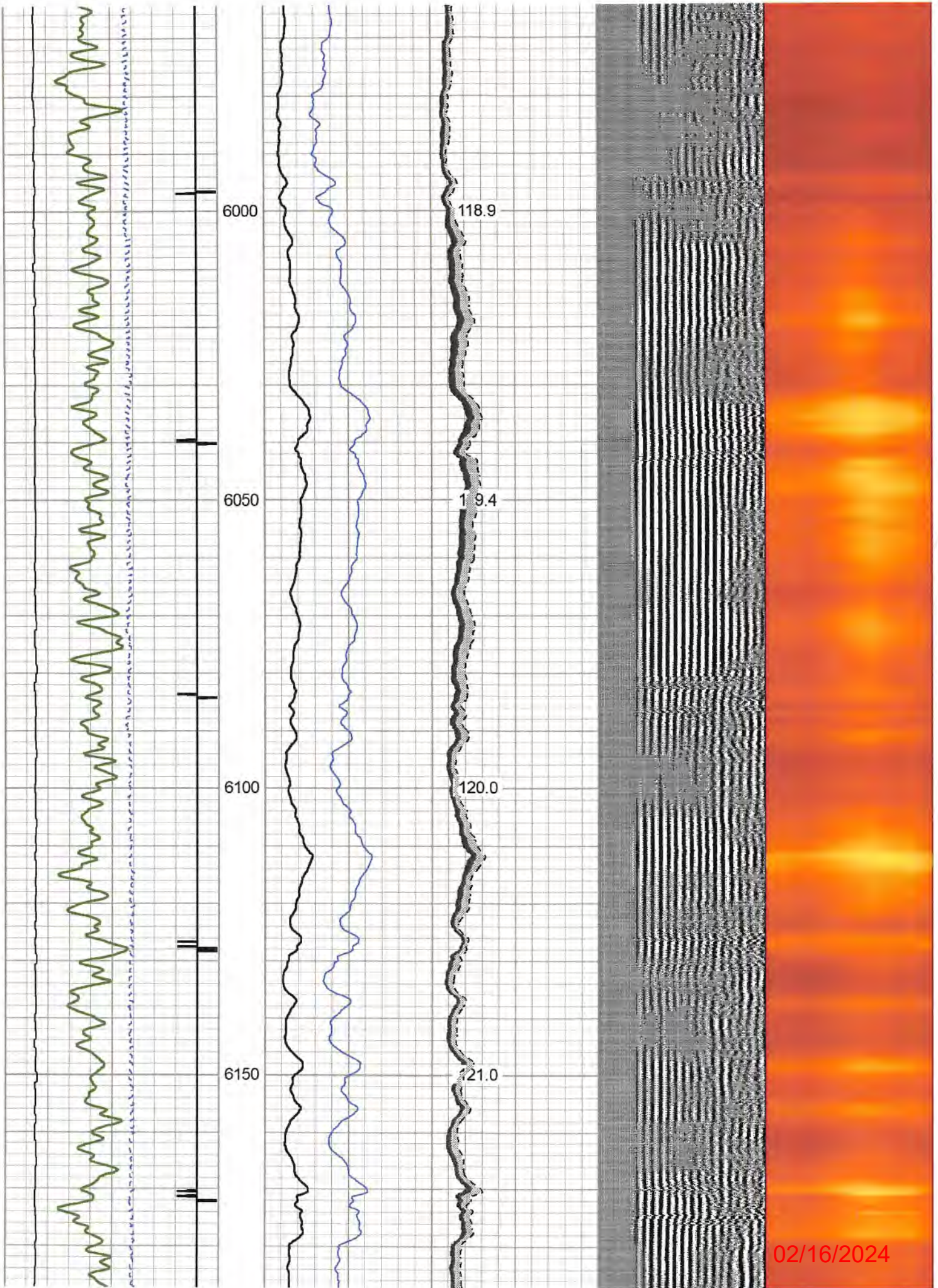
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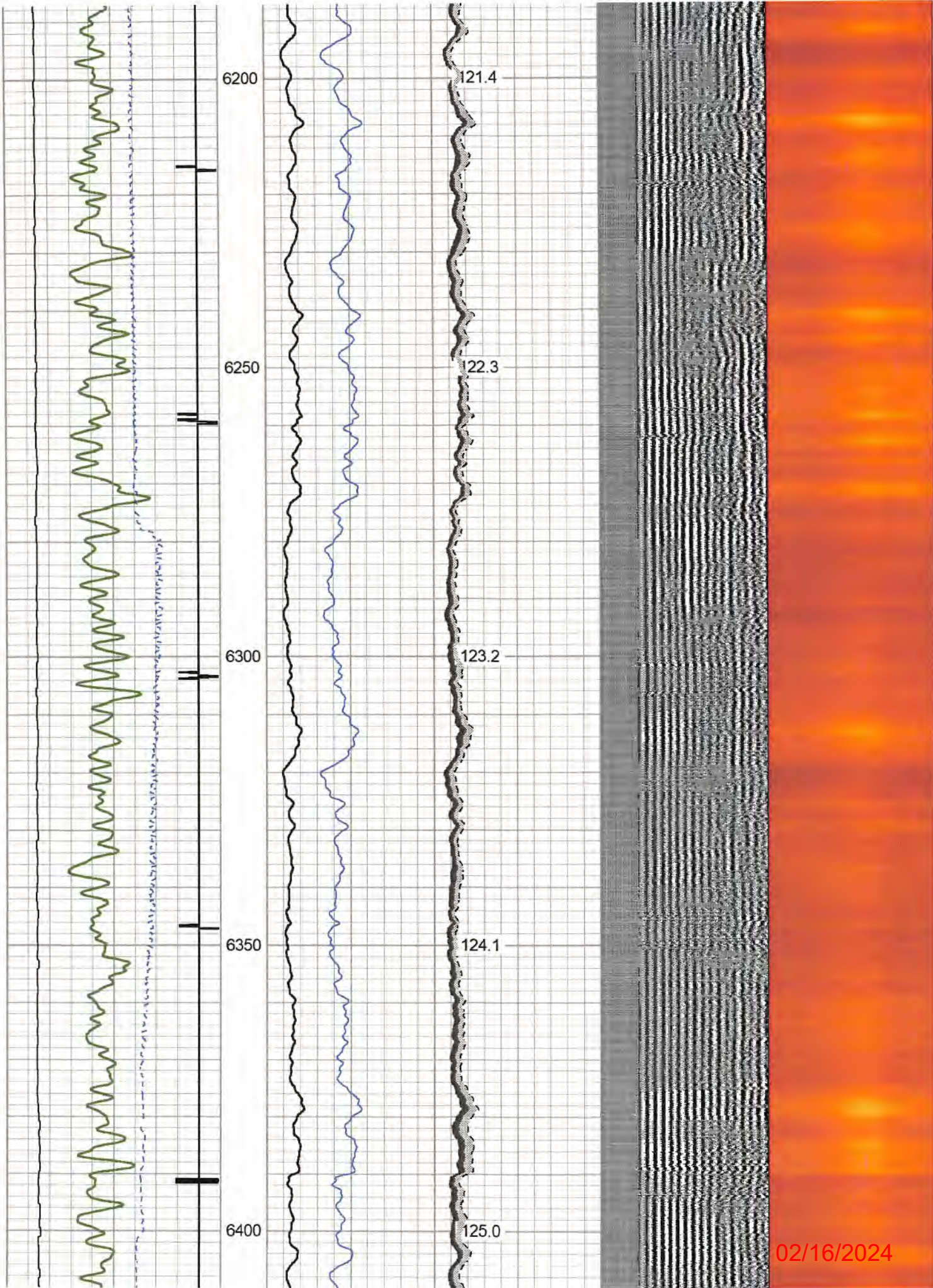


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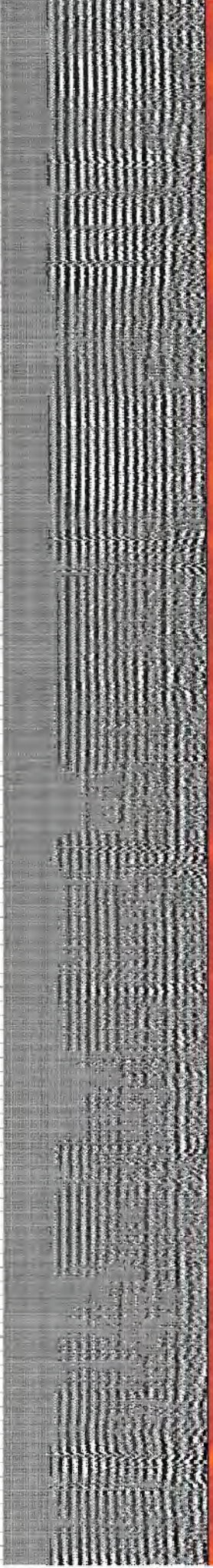
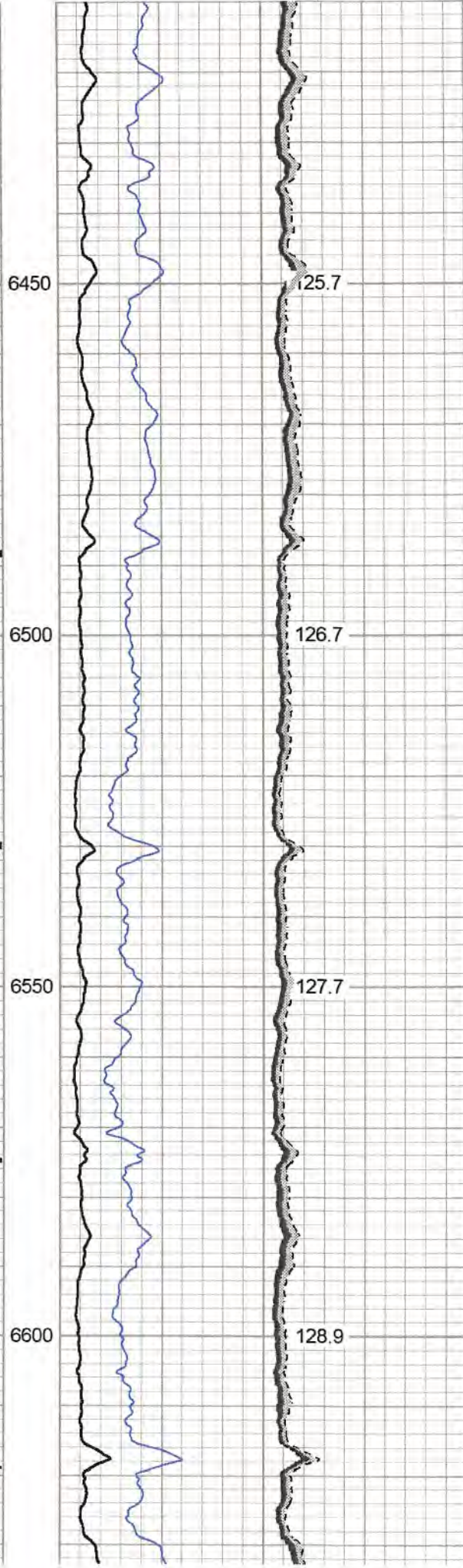
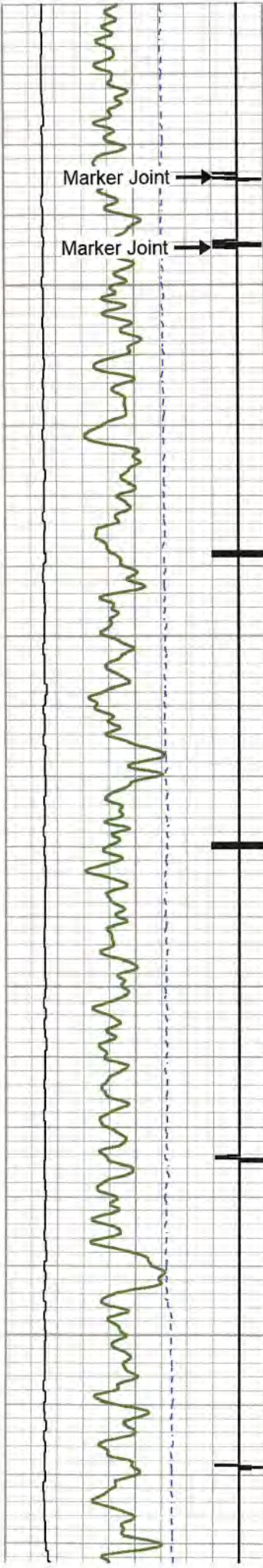


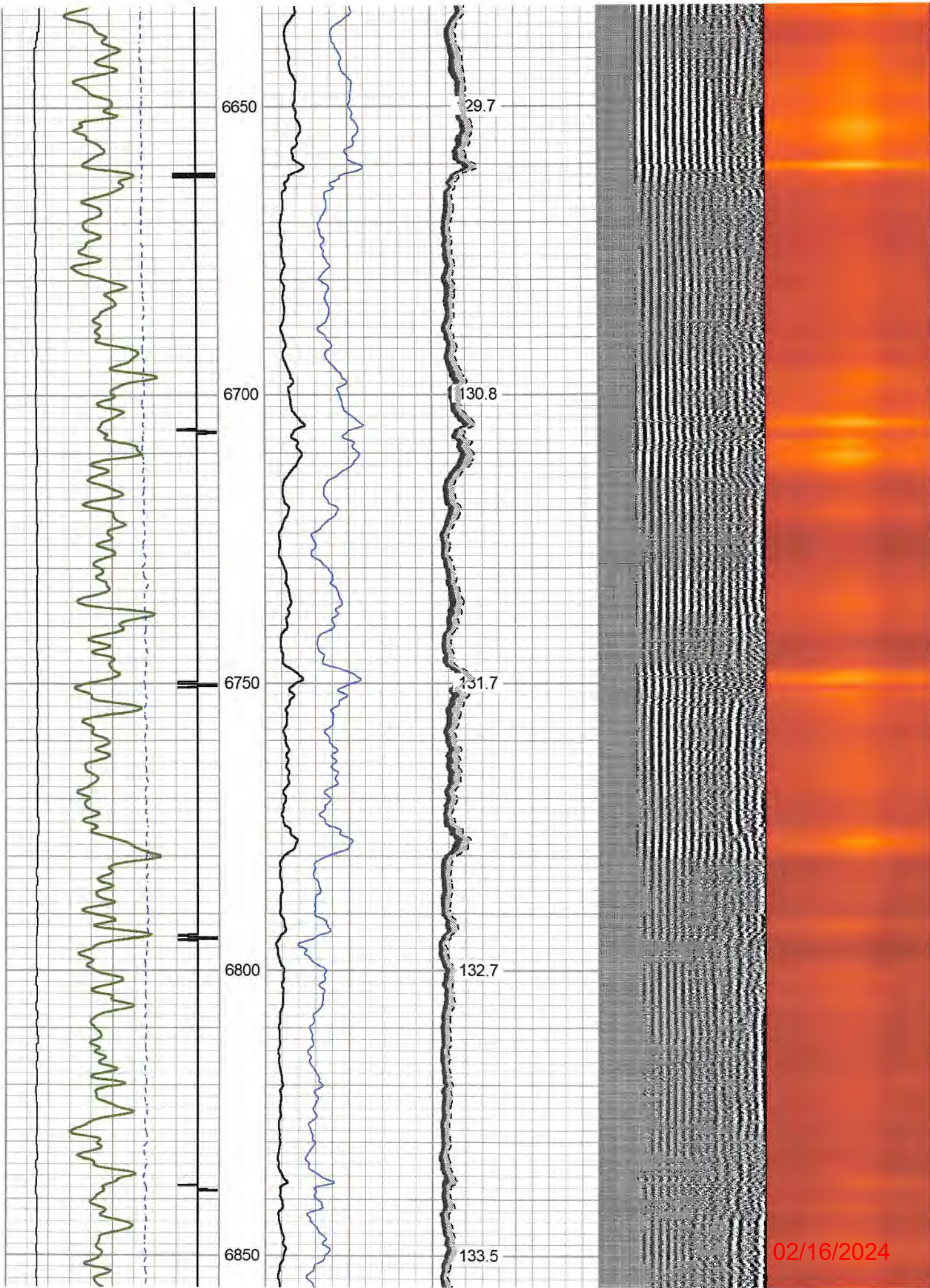


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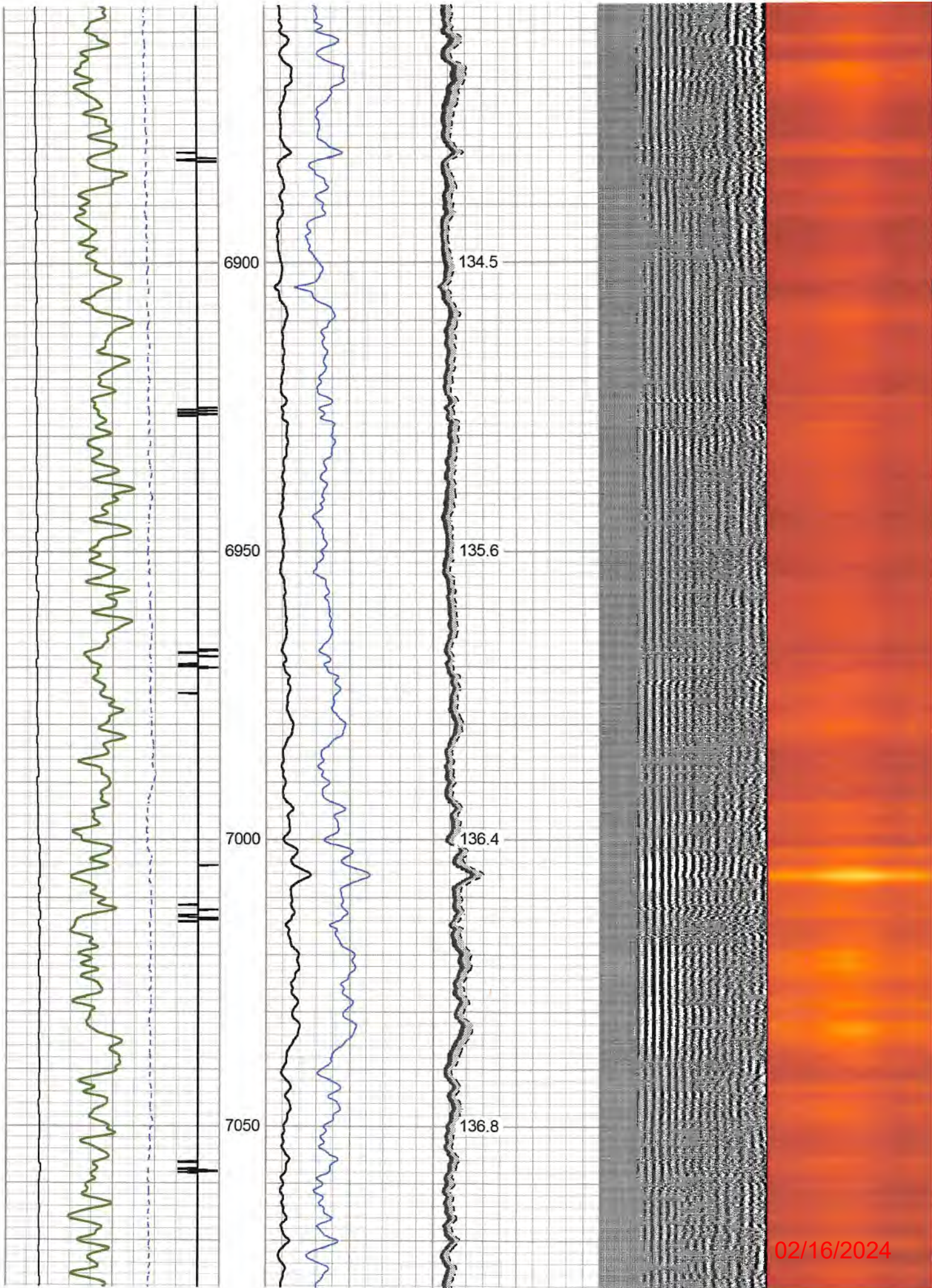


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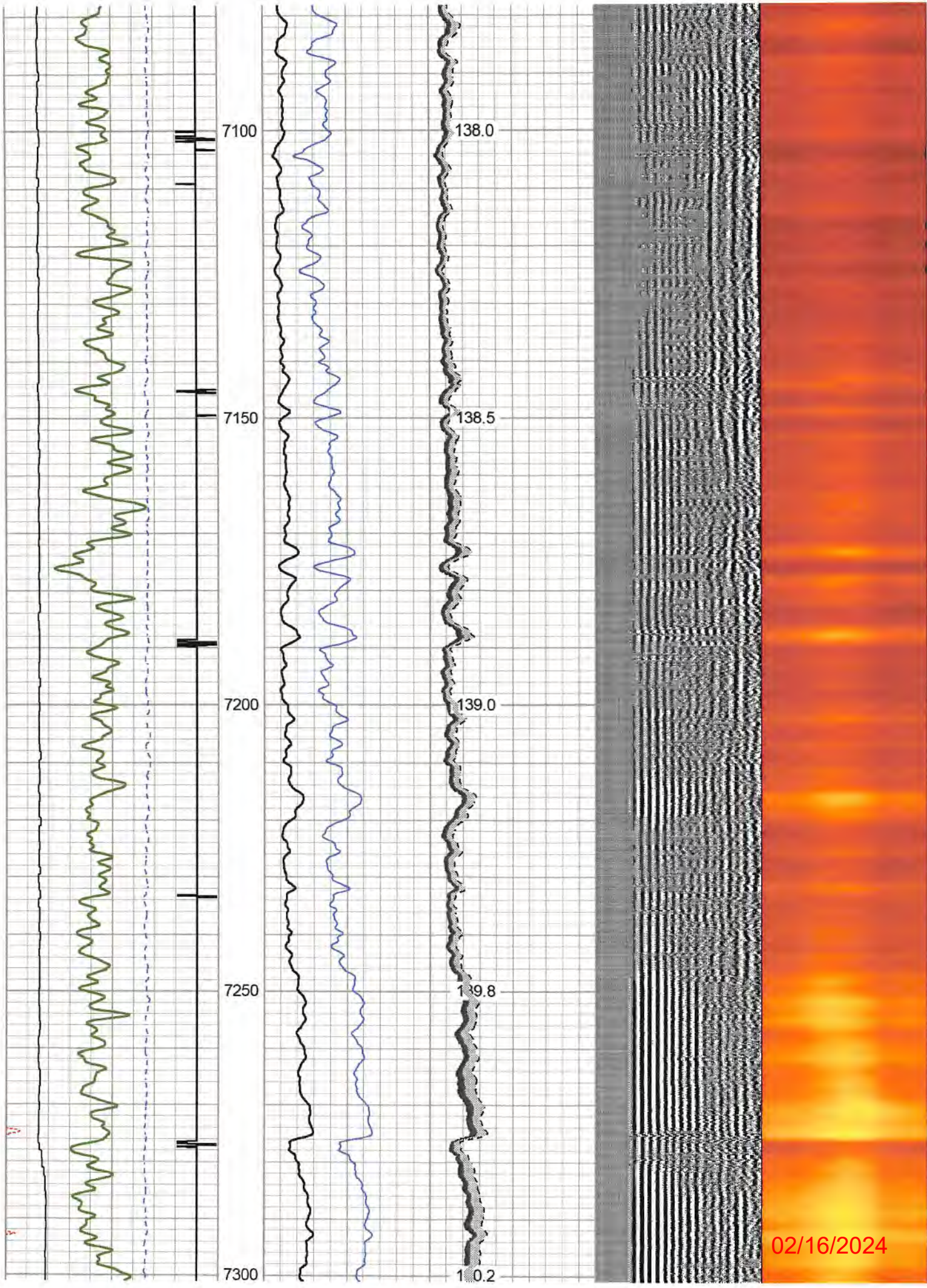


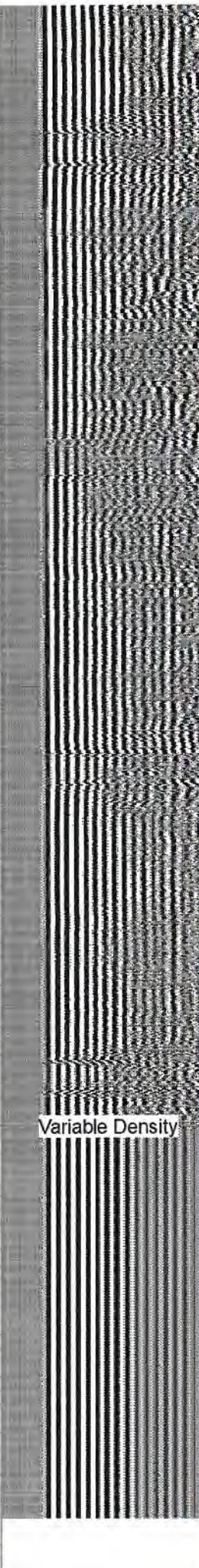
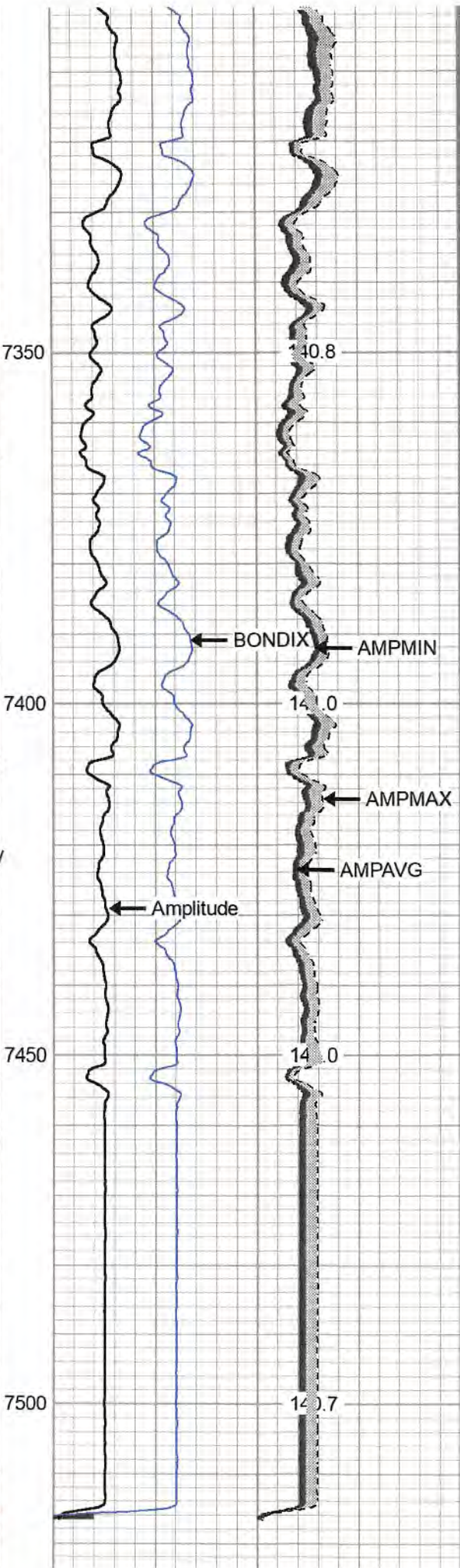
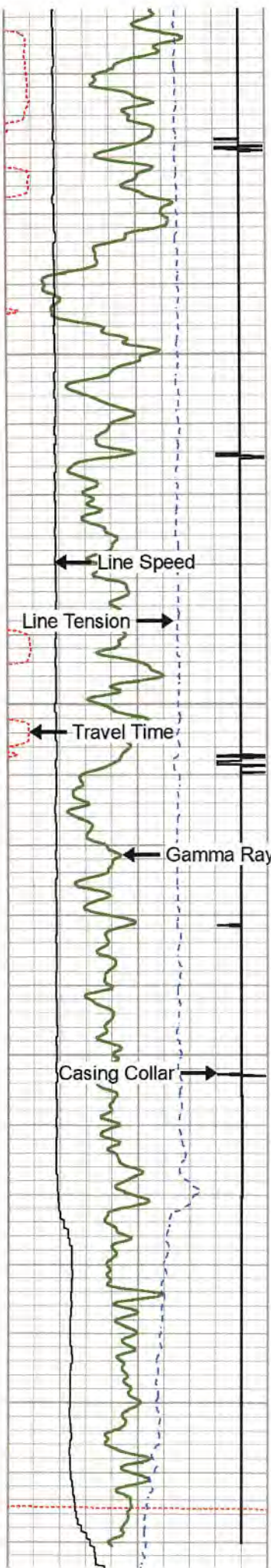







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280	Travel Time (usec)	180	0	Amplitude (mV)	100	-5	AMPMIN	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1	1	BONDIX	0	-5	AMPMAX	150	200	(usec)	1200	
0	Gamma Ray (GAPI)	150				-5	AMPAVG	150				
	Line Speed						TEMP					
-120	(ft/min)	100					(degF)					
0	Line Tension (lb)	3000										

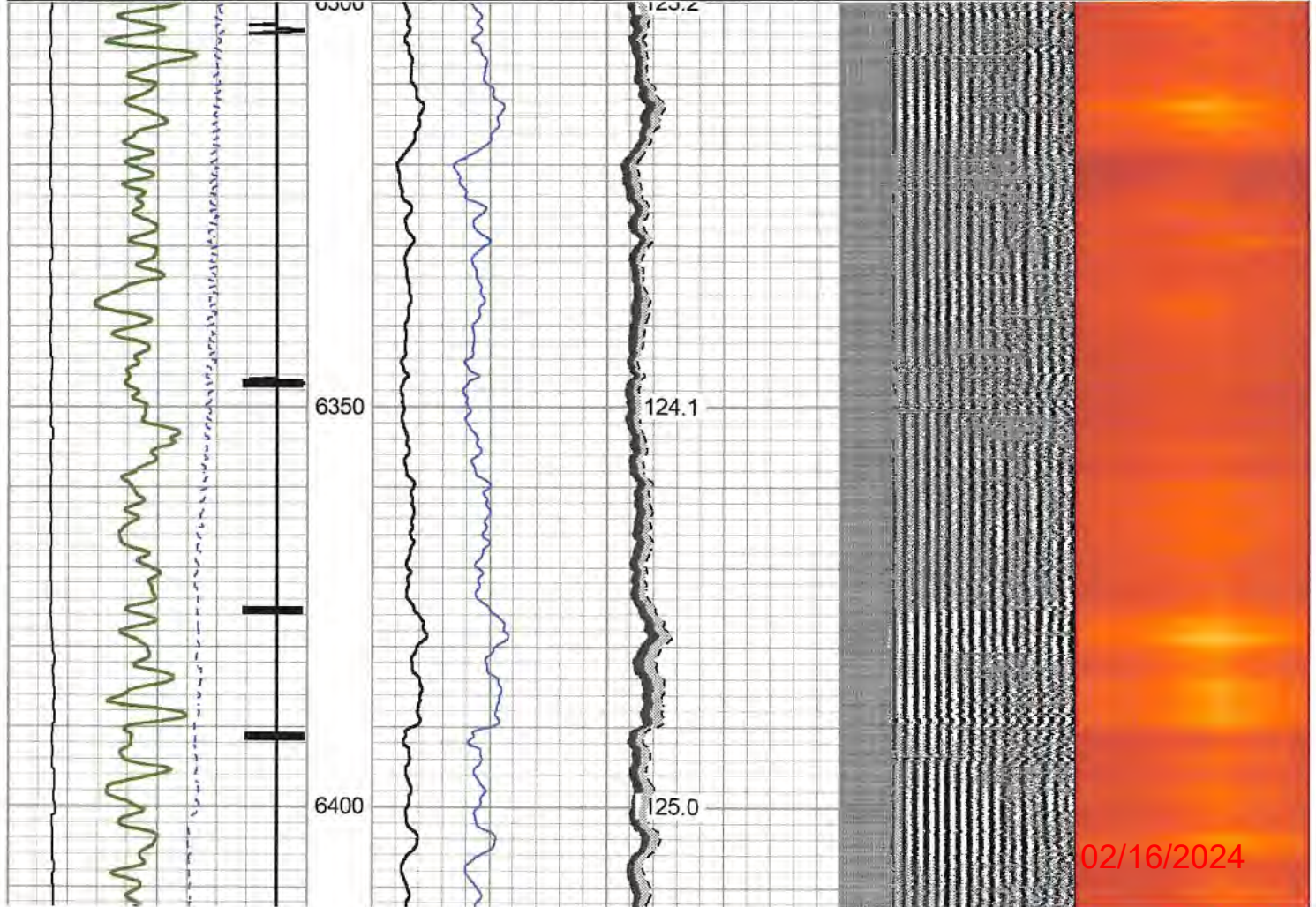


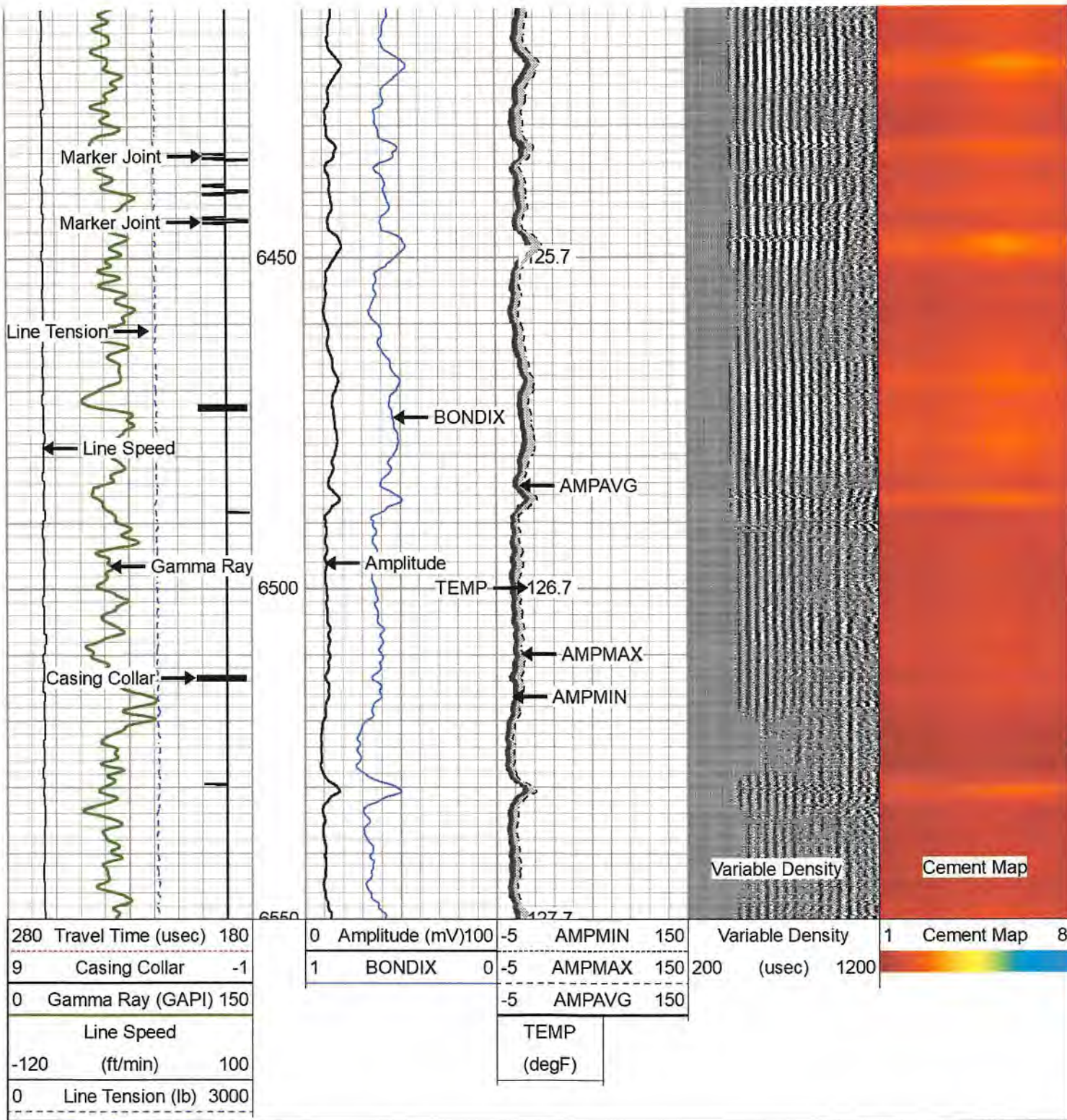
## Repeat Pass

Zero PSI

Database File: antero\_cider\_run\_1h\_5\_5\_rcbl.db  
 Dataset Pathname: pass5  
 Presentation Format: rcbl-bond index 1020  
 Dataset Creation: Wed Apr 05 11:08:21 2023  
 Charted by: Depth in Feet scaled 1:240

280	Travel Time (usec)	180	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					
-120	(ft/min)	100					(degF)					
0	Line Tension (lb)	3000										





## Log Variables

DatabaseC:\ProgramData\Warrior\Data\antero\_cider\_run\_1h\_5\_5\_rcbl.db  
 Dataset field/well/run1/pass5/\_vars\_

### Top - Bottom

BHTEMP_Src	BOREID	BOTTEMP	CASEOD	CASETHCK	CASEWGHT	MAXAMPL	MINAMPL
	in	degF	in	in	lb/ft	mV	mV
TEMP	8.75	100	5.5	0.415	23	71.9	3.4
MINATTN	PERFS	PPT	SRFTEMP	TDEPTH			
db/ft		usec	degF	ft			
0.8	No	0	0	0			

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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\_cider\_run\_1h\_5\_5\_rcbl.db  
 Dataset Pathname pass5  
 Dataset Creation Wed Apr 05 11:08:21 2023

**Gamma Ray Calibration Report**

Serial Number: FW1211-86  
 Tool Model: Probe  
 Performed: Wed Apr 5 09:42:21 2023  
  
 Calibrator Value: 1.0 GAPI  
  
 Background Reading: 0.0 cps  
 Calibrator Reading: 1.0 cps  
  
 Sensitivity: 0.5000 GAPI/cps

**Segmented Cement Bond Log Calibration Report**

Serial Number: 2.75"  
 Tool Model: Probe275T  
  
 Calibration Casing Diameter: 5.500 in  
 Calibration Depth: 237.775 ft

**Master Calibration, performed Wed Apr 5 09:33:49 2023:**

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.001	0.533	3.400	71.921	128.338	3.524
CAL	-0.002	0.827				
5'	-0.002	0.523	3.400	71.921	130.680	3.622
SUM						
S1	0.029	0.500	0.000	100.000	212.647	-6.230
S2	-0.003	0.490	0.000	100.000	202.838	0.513
S3	-0.001	0.509	0.000	100.000	196.169	0.239
S4	-0.001	0.543	0.000	100.000	183.793	0.238
S5	-0.001	0.581	0.000	100.000	171.600	0.243
S6	-0.001	0.586	0.000	100.000	170.167	0.214
S7	-0.001	0.553	0.000	100.000	180.306	0.222
S8	-0.001	0.519	0.000	100.000	192.224	0.237

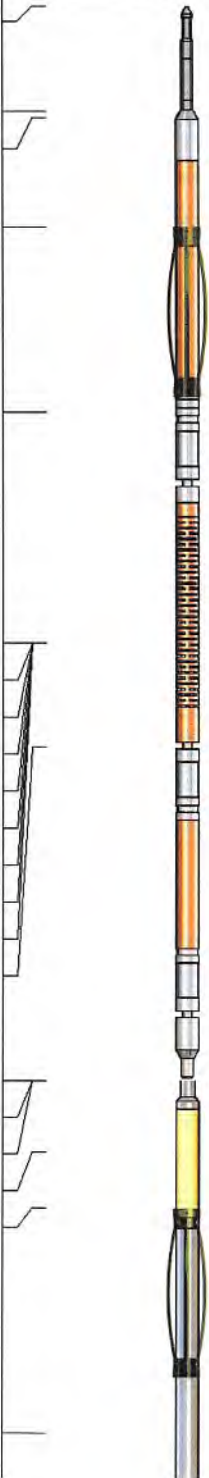
**Internal Reference Calibration, performed Wed Nov 23 14:17:52 2011:**

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	-0.002	0.827	1.000	0.000

Air Zero Calibration, performed Fri Jun 24 09:40:36 2022:


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	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)	
CHD	17.60		CHD-Titan Standard 1 7/16" Cable Head	1.02	1.44	1.00	
RBT HeadVolt	16.58 16.53						
CENT	15.46			CENT-Overbody Antelope (SP-919-0233)	1.67	4.88	5.00
Temp	13.68						
WVFS8	11.44			RBT-Probe275T (2.75") Probe 2.75" Radial with Integral Temperature Sub	9.39	2.75	90.00
WVFS7	11.44						
WVFS6	11.44						
WVFS5	11.44						
WVFS4	11.44						
WVFS3	11.44						
WVFS2	11.44						
WVFS1	11.44						
WVF3FT	11.44						
WVF5FT	10.44						
GR WVFCAL HEADVOLT CCL CENT	7.19 7.19 7.19 6.49 5.94						
				CENT-Overbody Antelope (SP-919-0233)	1.67	4.88	5.00
				GR-Probe (FW1211-86) Probe 2.75" 4 Channel Pulse	4.33	2.75	30.00
GR	3.76						

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CENT	2.86		CENT-Titn275Adj Titan 2 3/4" Adjustable Centralizer	2.86	2.75	35.00
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Dataset: antero\_cider\_run\_1h\_5\_5\_rcbl.db: field/well/run1/pass5  
Total length: 17.60 ft  
Total weight: 166.00 lb  
O.D.: 4.88 in

	Company	Antero
	Well	Cider Run 1H
	Field	Marcellus
	County	Tyler
	State	WV

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