



**RADIAL CEMENT BOND LOG  
GAMMA RAY / CCL / VD  
TEMP / CEMENT MAP**

Company ANTERO RESOURCES CORPORATION  
Well GARMIN UNIT 2H  
Field MARCELLUS  
County TYLER  
State WV Country US

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Well GARMIN UNIT 2H  
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Location: API #: 47095025990000 Other Services  
AFE # A10523  
Permanent Datum SEC TWP RGE Elevation N/A  
Log Measured From KB KB  
Drilling Measured From KB 30 FT G.L. G.L.

Date	7 AUG 2020	
Run Number	1	
Depth Driller	22.777	
Depth Logger	6904	
Bottom Logged Interval	SURFACE	
Top Log Interval	N/A	
Open Hole Size	WATER	
Type Fluid	N/A	
Density / Viscosity	N/A	
Max. Recorded Temp.	134	
Estimated Cement Top	4460	
Time Well Ready	ON ARRIVAL	
Time Logger on Bottom	10:46	
Equipment Number	214182	
Location	BRIDGEPORT WV	
Recorded By	KLINGER	
Witnessed By	BRIAN CARTER	
Borehole Record		
Run Number	Bit	From To
Tubing Record		
Run Number	Size	Weight From To
Casing Record		
Surface String	Size	Wgt/Ft Top Bottom
Prot. String	9.625	N/A SURFACE SURFACE 2722
Production String	5.5	23 SURFACE SURFACE 22.777
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 RAN UNDER 1500 PSI  
CORRELATED TO PIPE TALLY  
MARKER JOINT@5968-5977  
CEMENT TOP @ 4460

RECEIVED  
Office of Oil and Gas

FEB 17 2023

WV Department of  
Environmental Protection

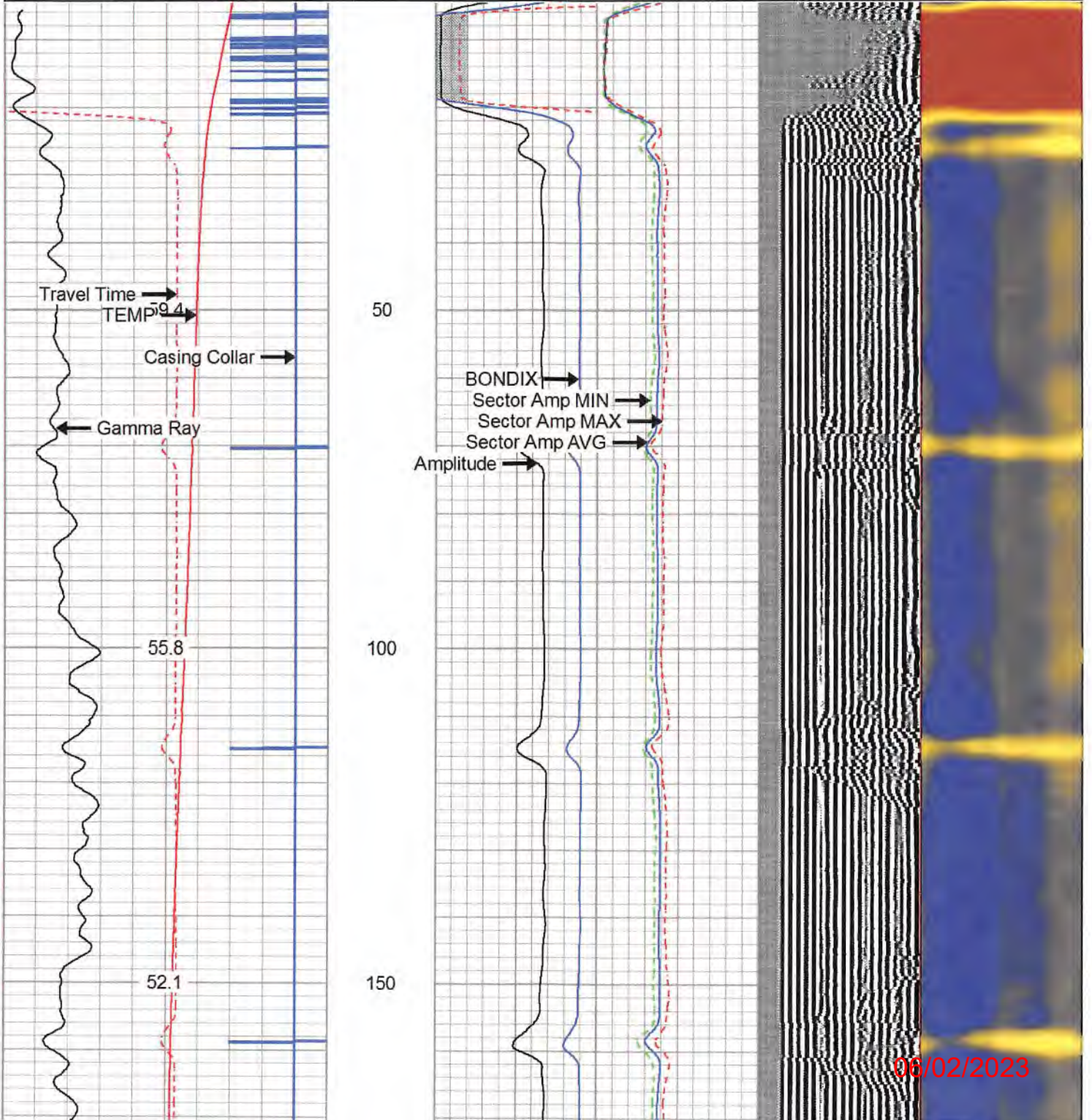


**MAIN PASS**

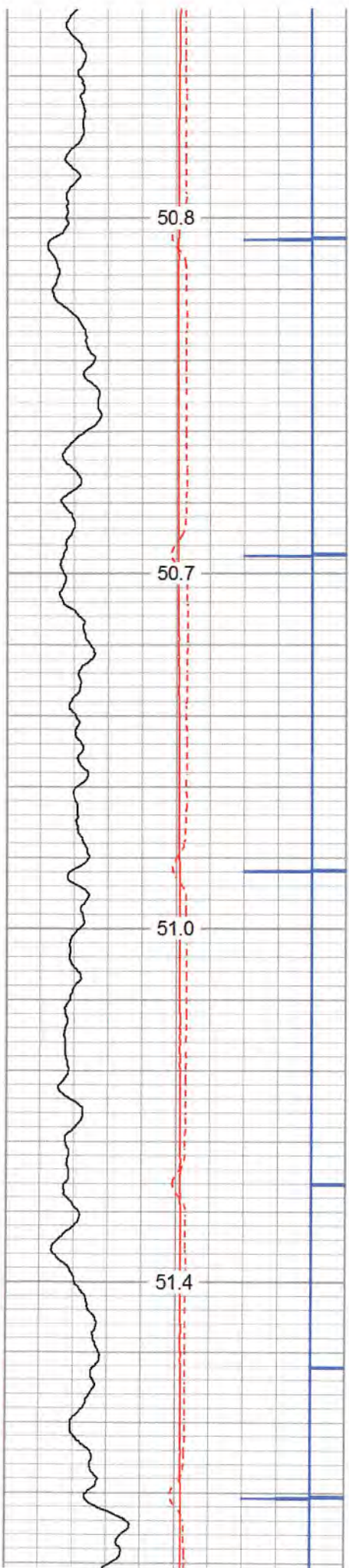
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Database File g:\antero 2020\8\_7\_20\_antero\_garminunit2h.db  
 Dataset Pathname pass4.2  
 Presentation Format antero  
 Dataset Creation Fri Aug 07 19:22:24 2020  
 Charted by Depth in Feet scaled 1:240

280	Travel Time (usec)	180		Amplitude	Sector Amp AVG	VDL	1 Sector Map 12
9	Casing Collar	-1	0	(mV) 100	Sector Amp MAX	200 (usec) 1200	
0	Gamma Ray	180		Amp X5	Sector Amp MIN		
0	TEMP (degF)	100	0	(mV) 20			
180	GR	360	1	BONDIX 0			
	TEMP (degF)						



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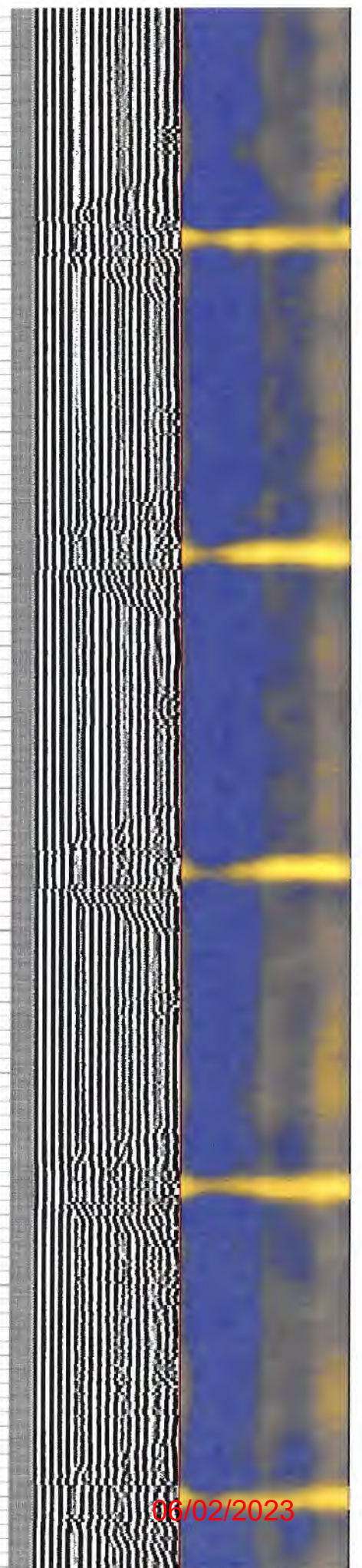
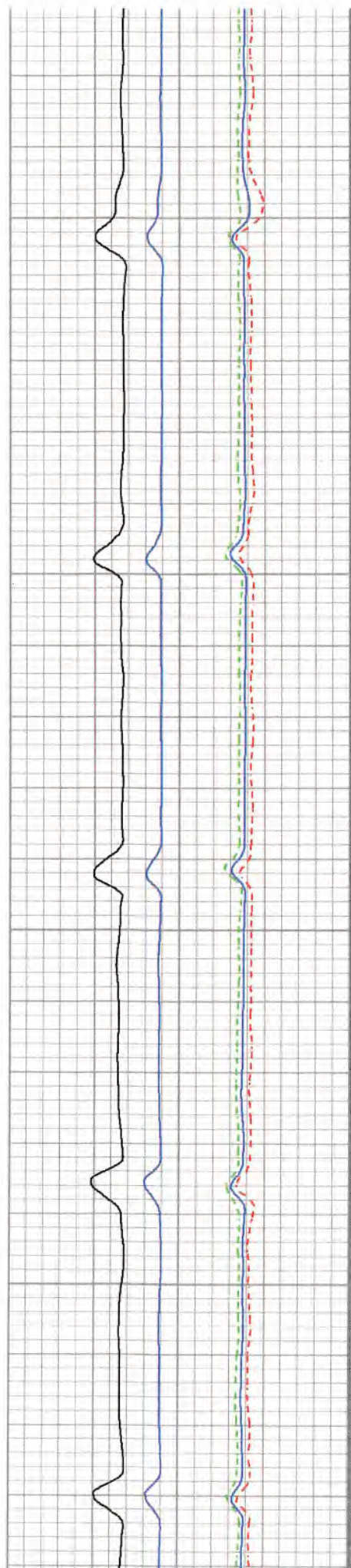


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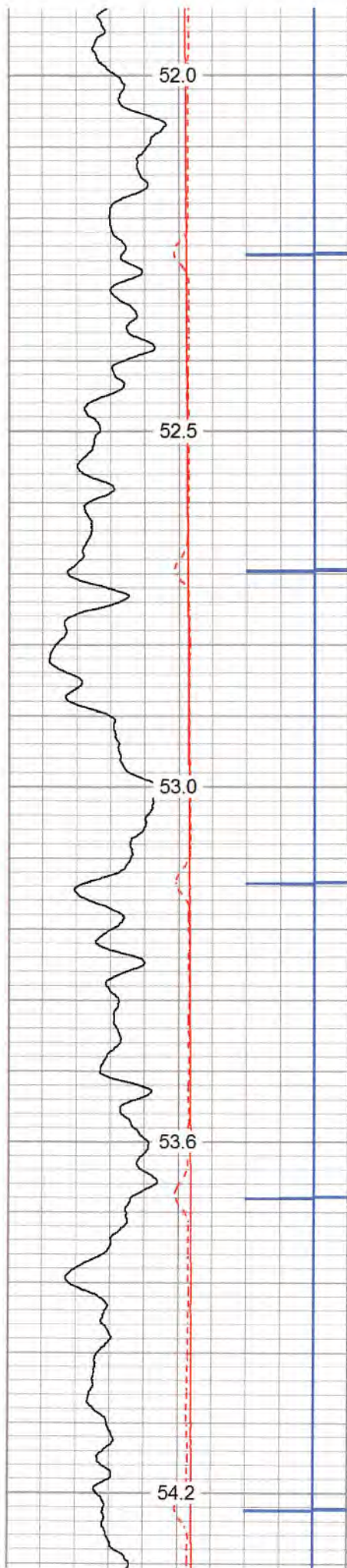
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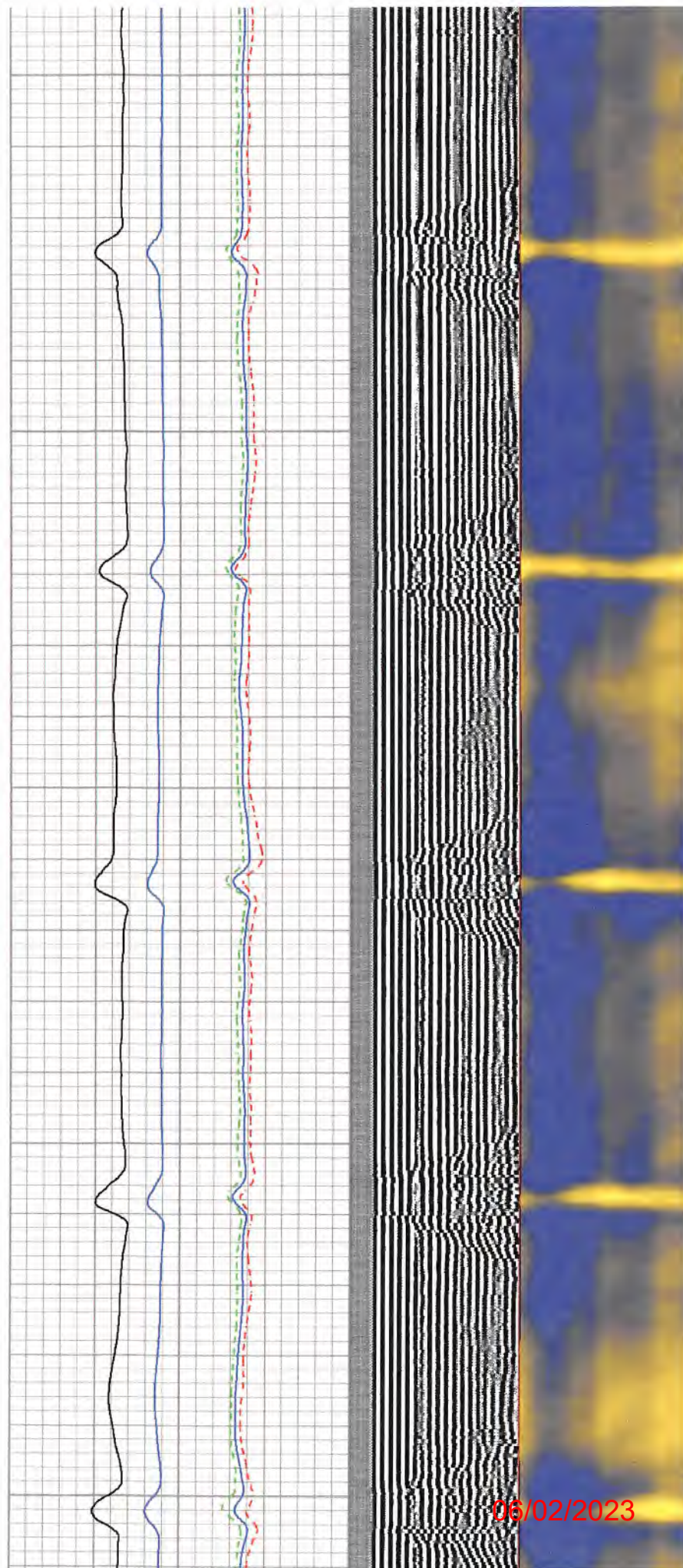
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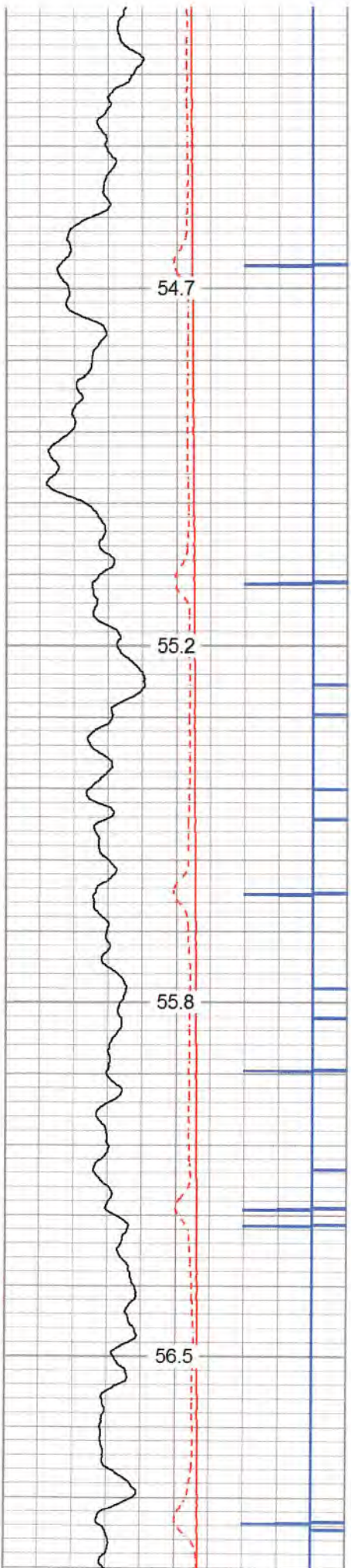
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550

600



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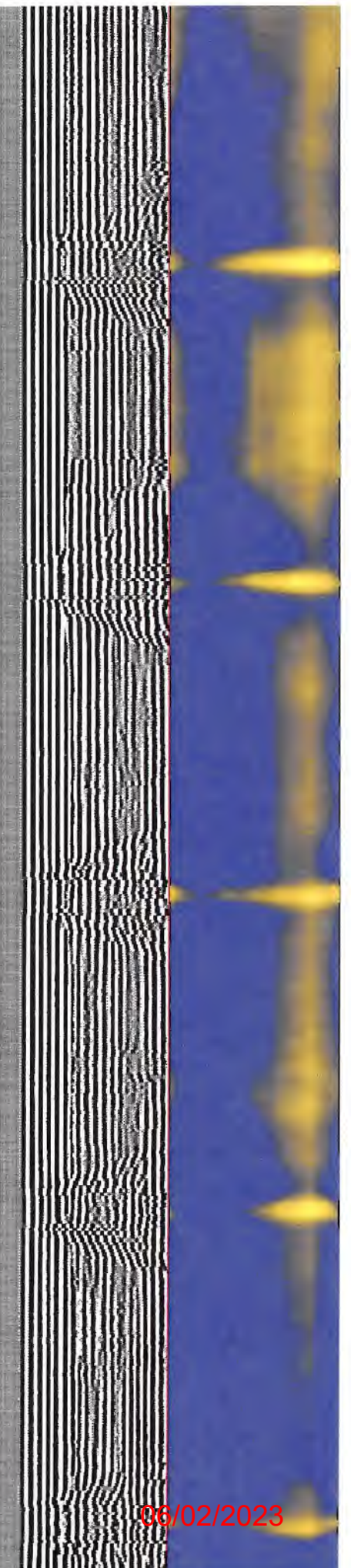
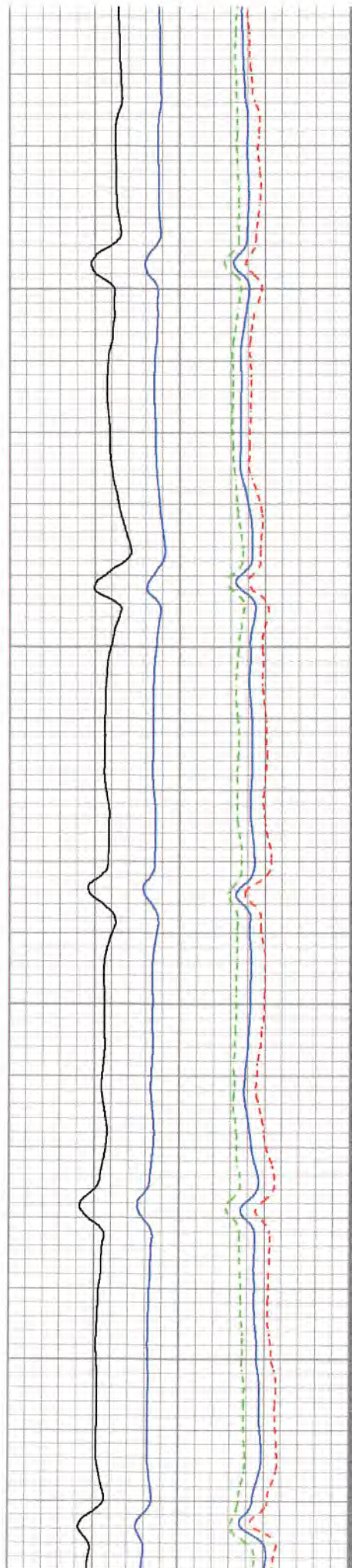


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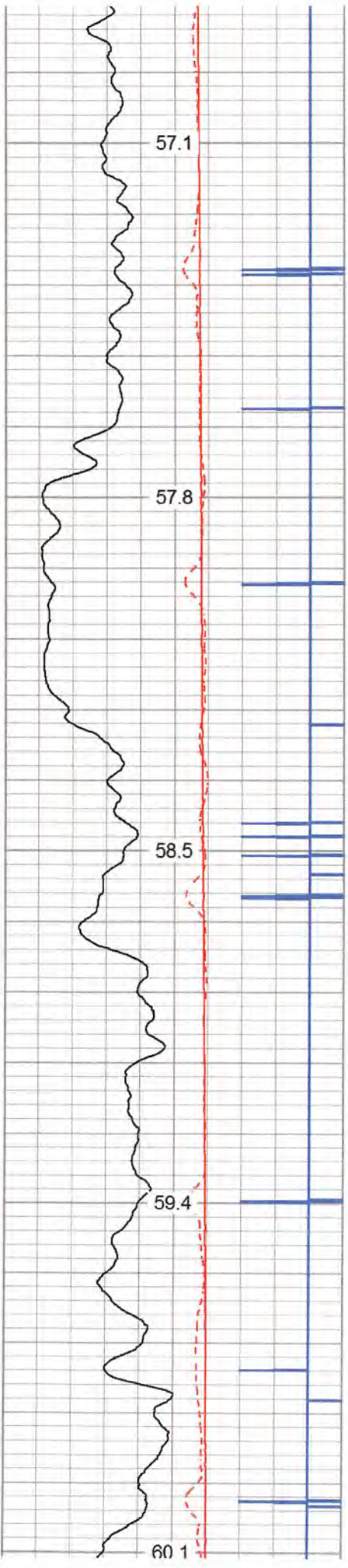
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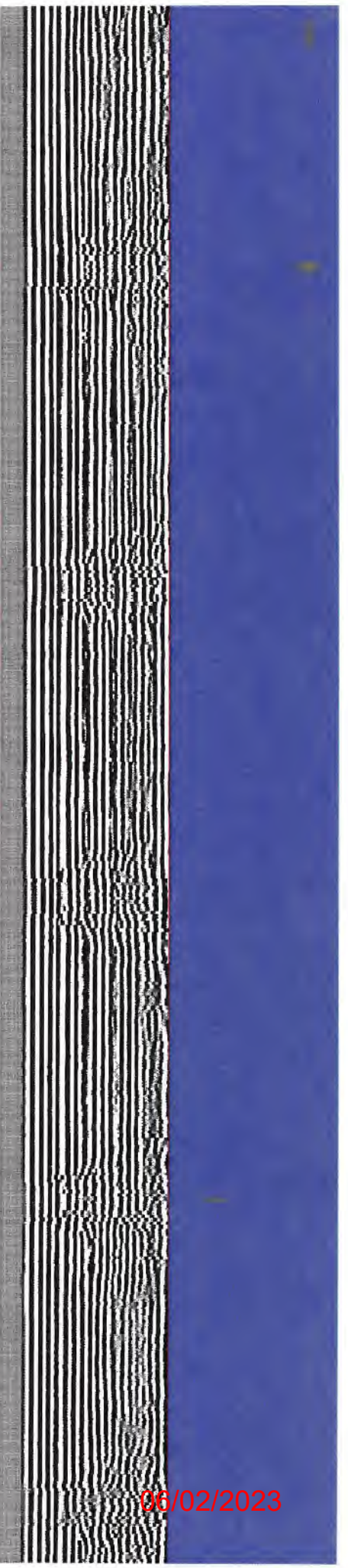
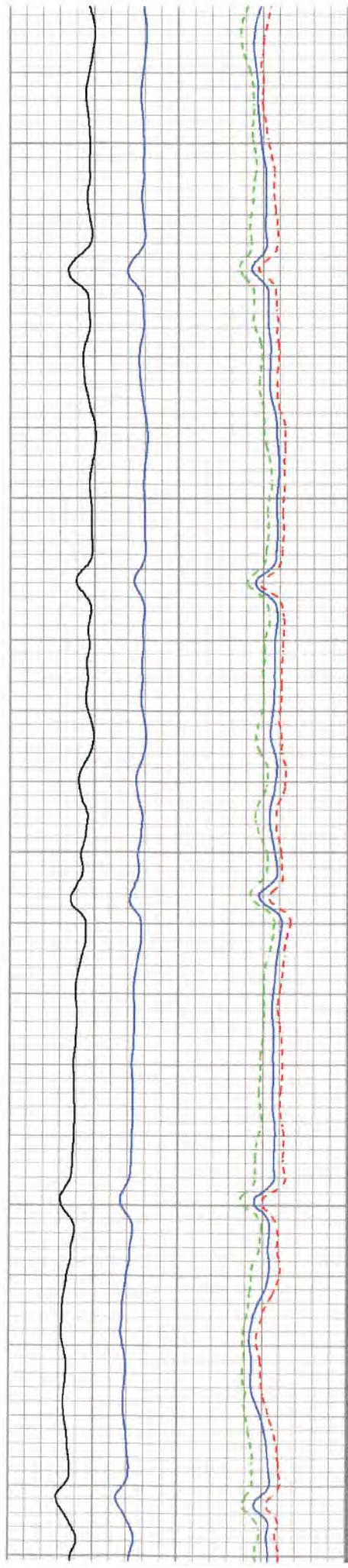
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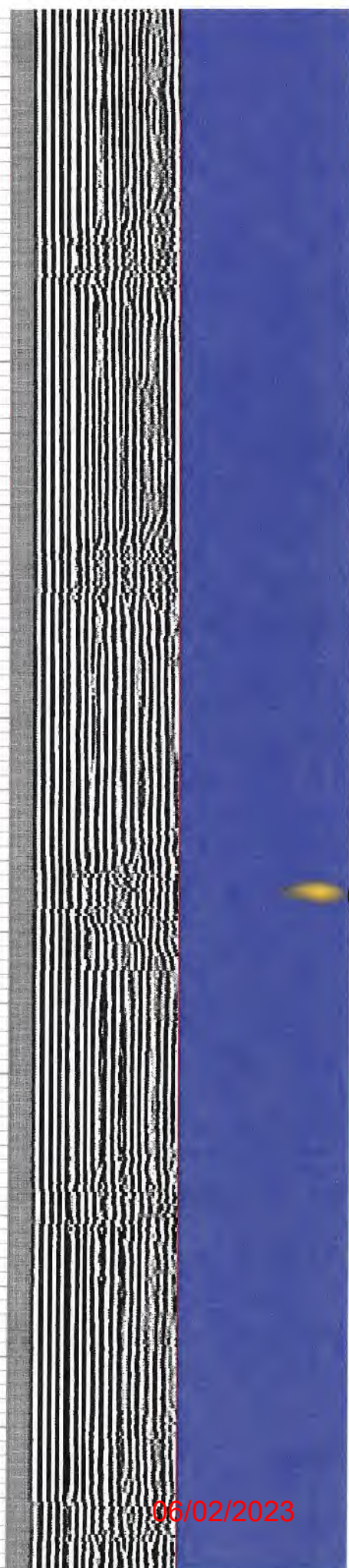
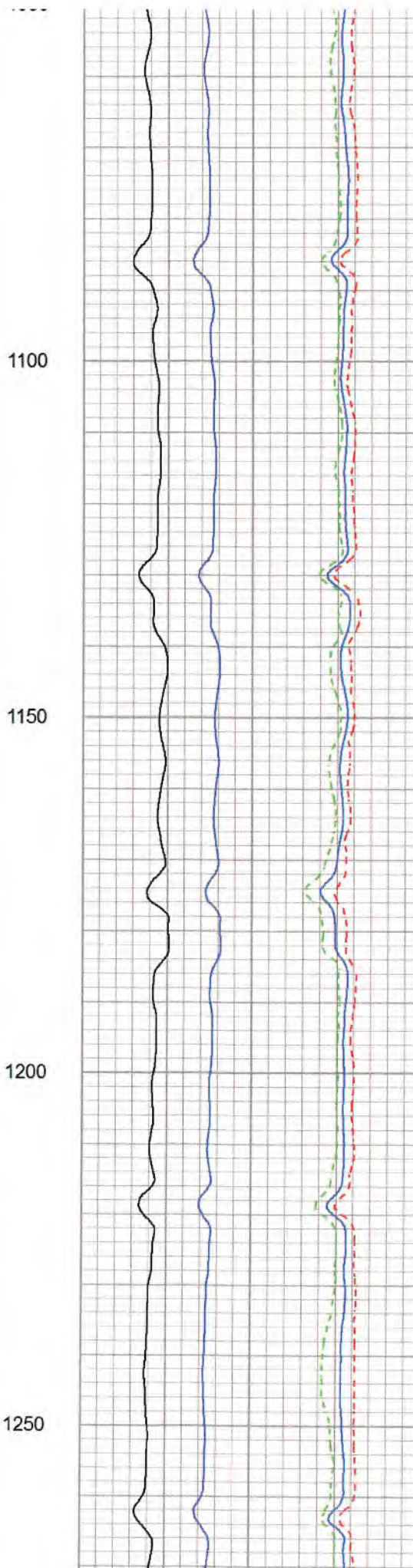
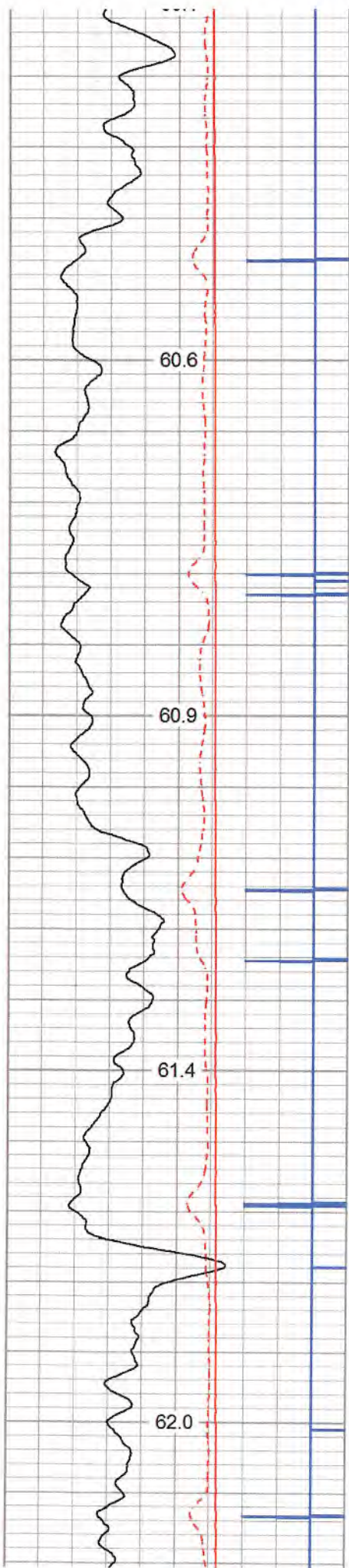
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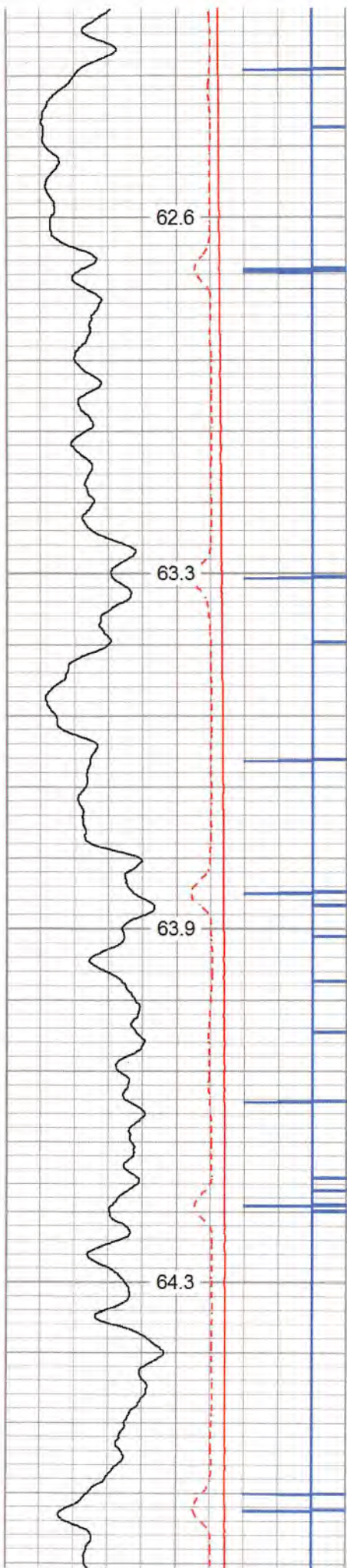
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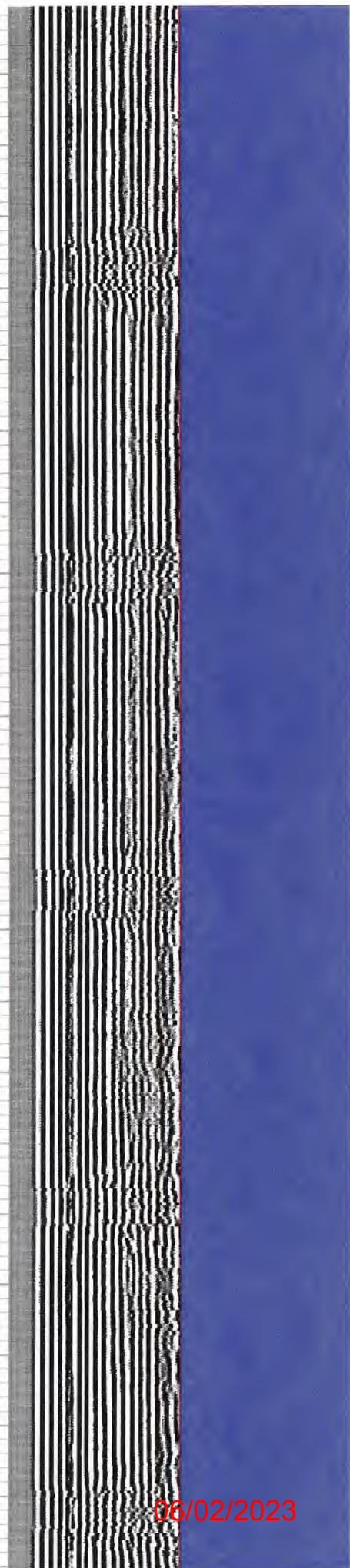
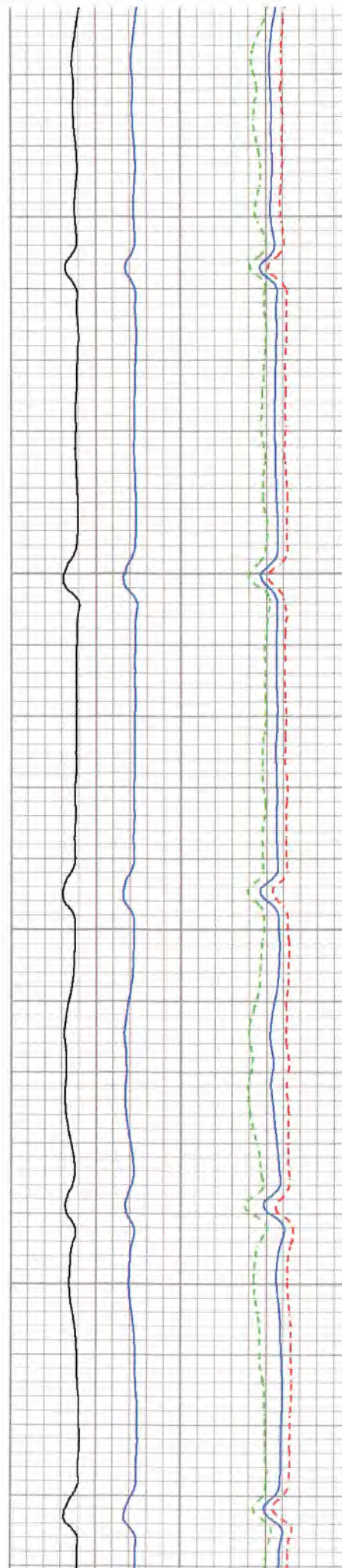


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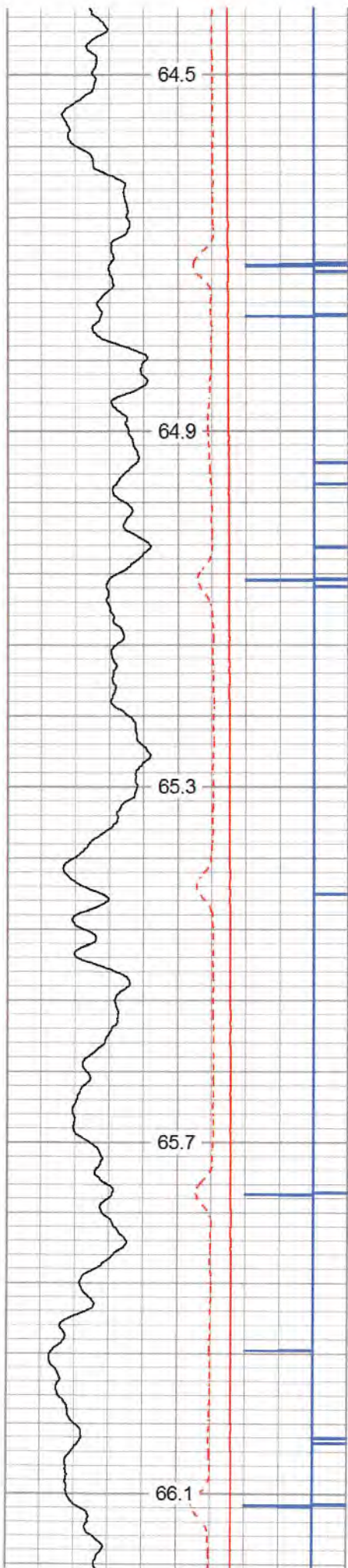
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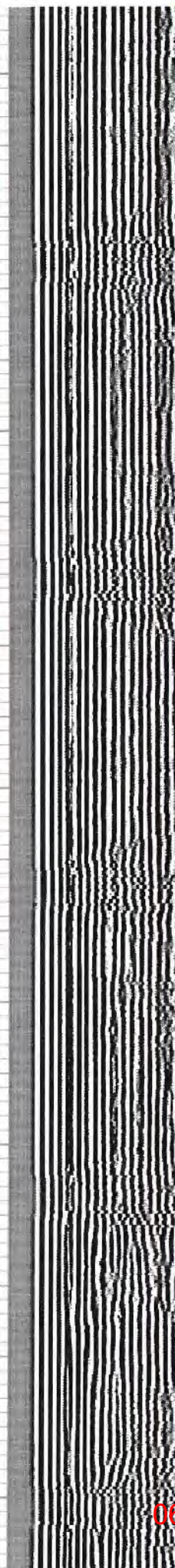
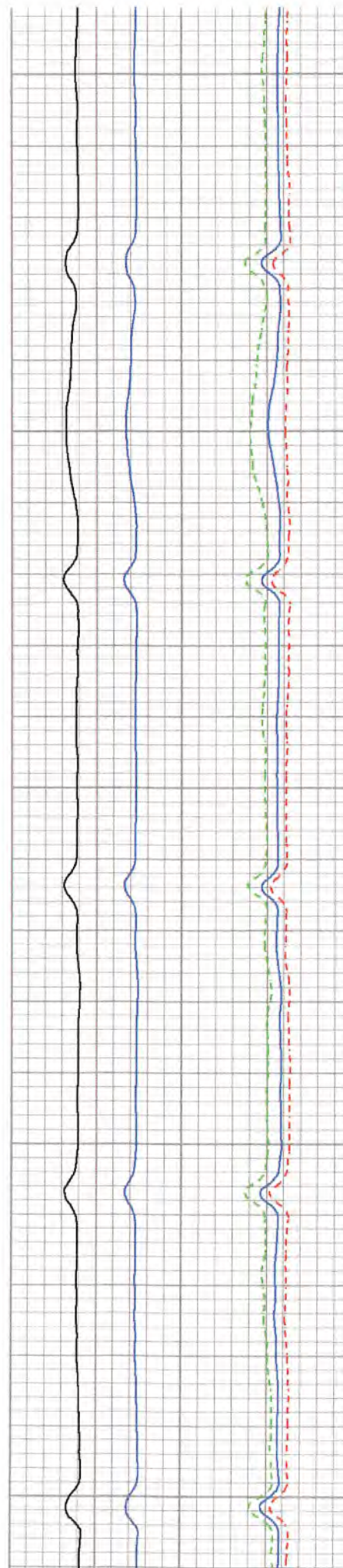
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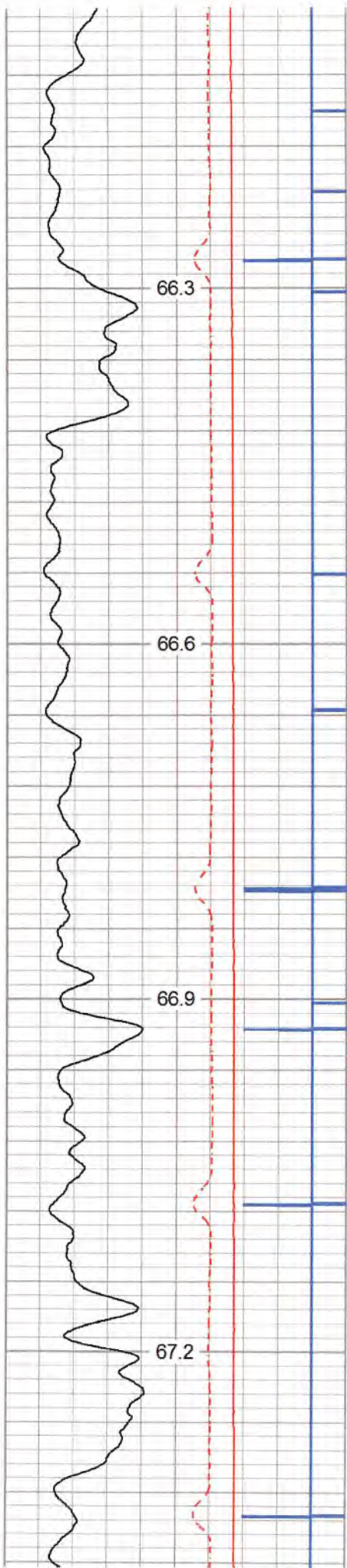
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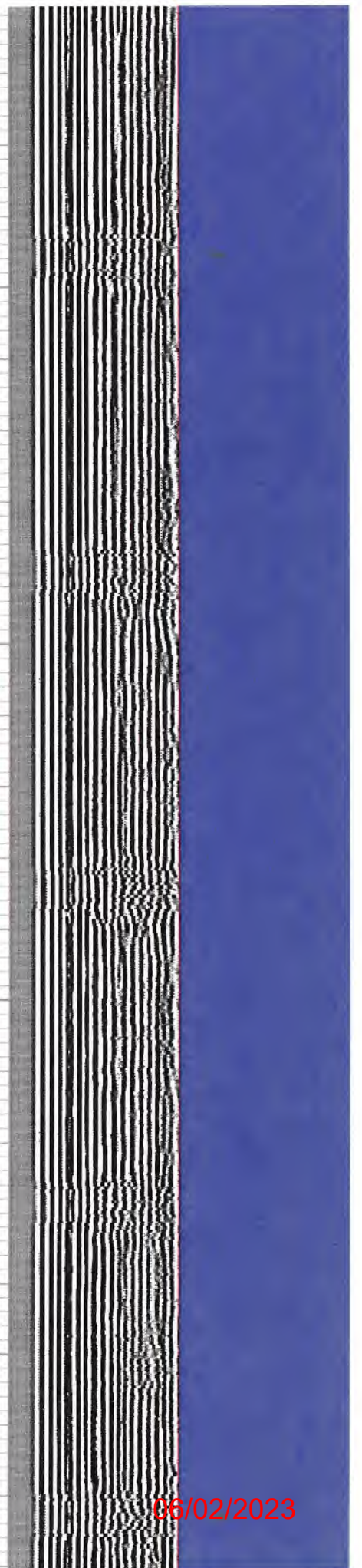
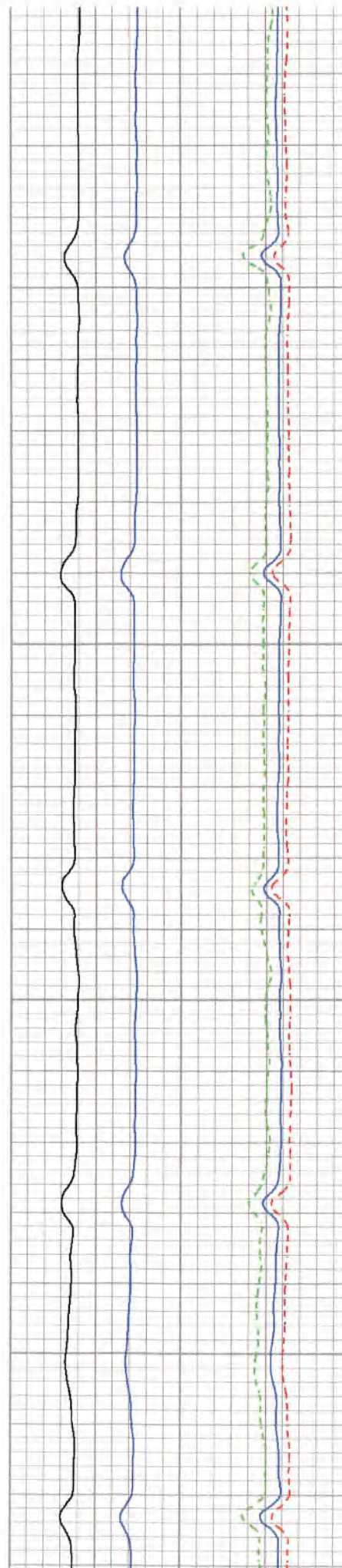


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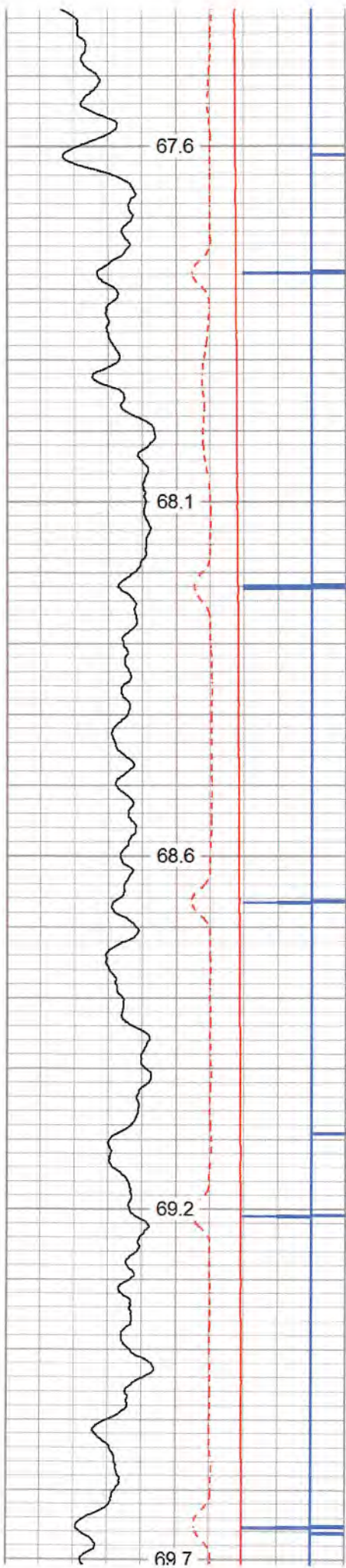
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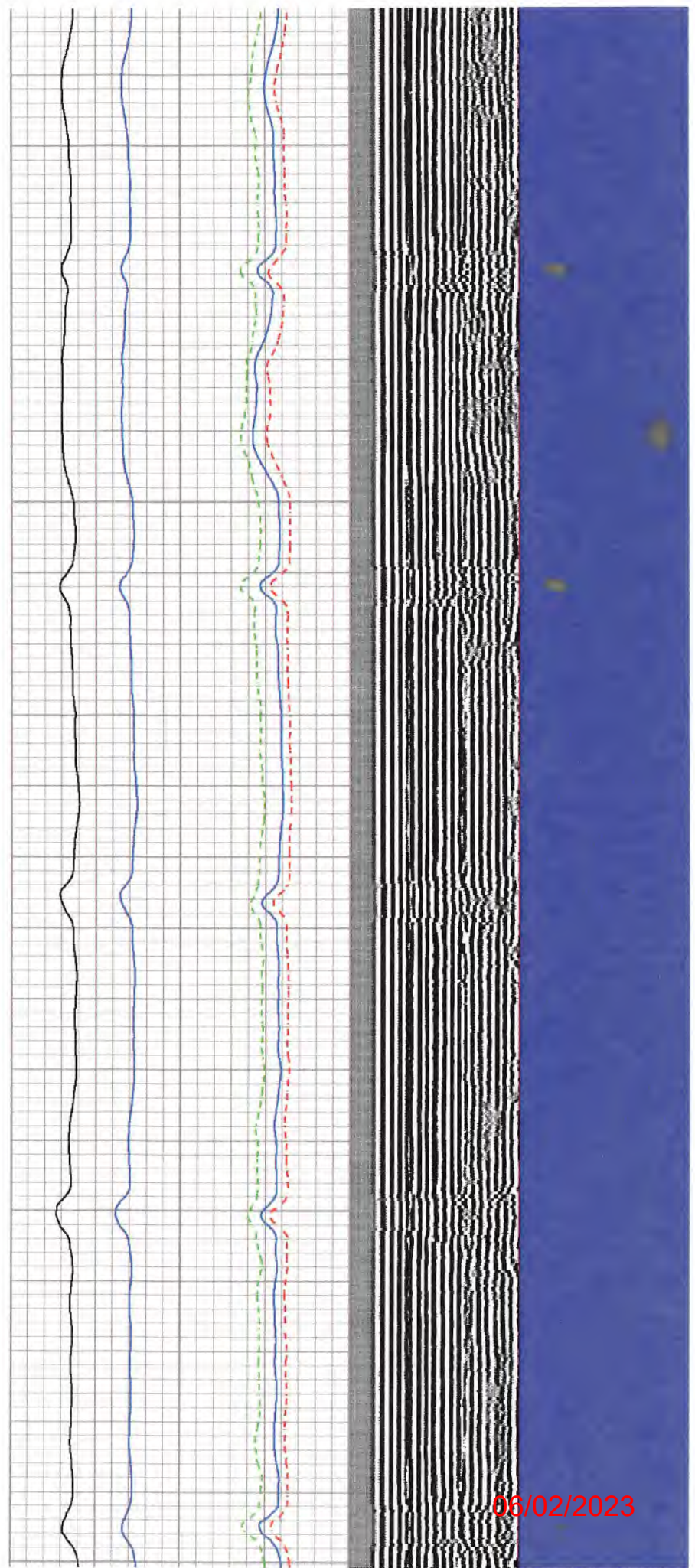
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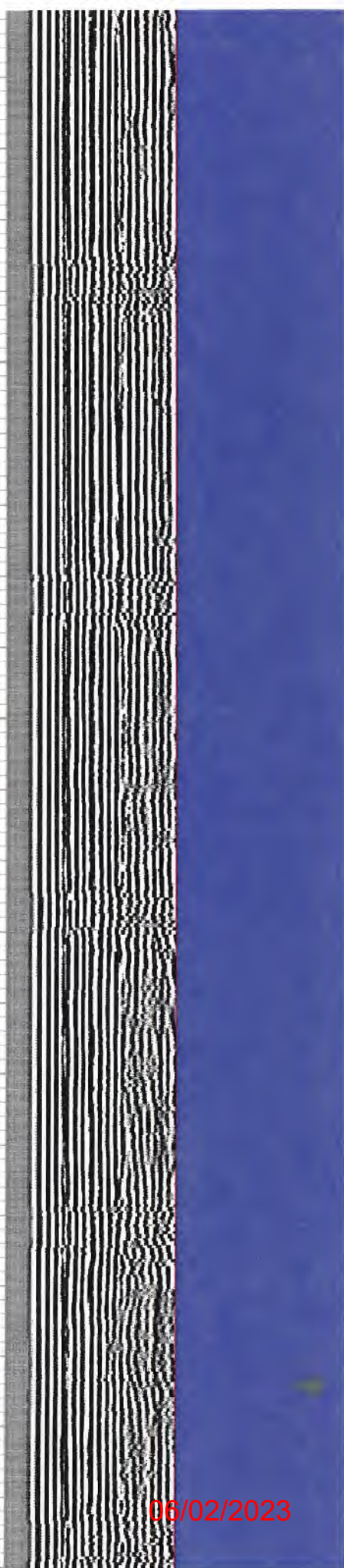
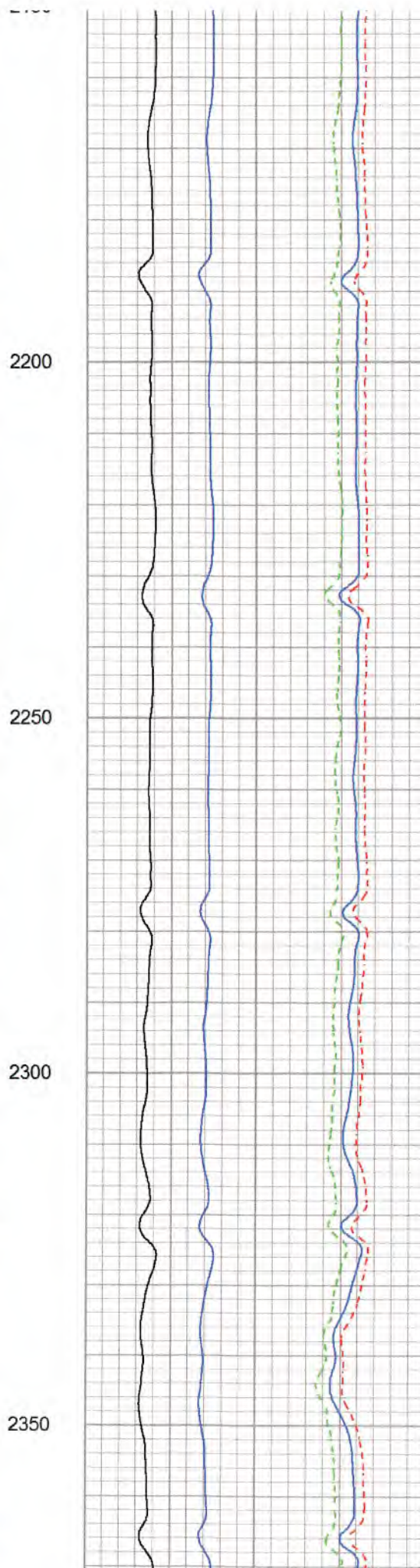
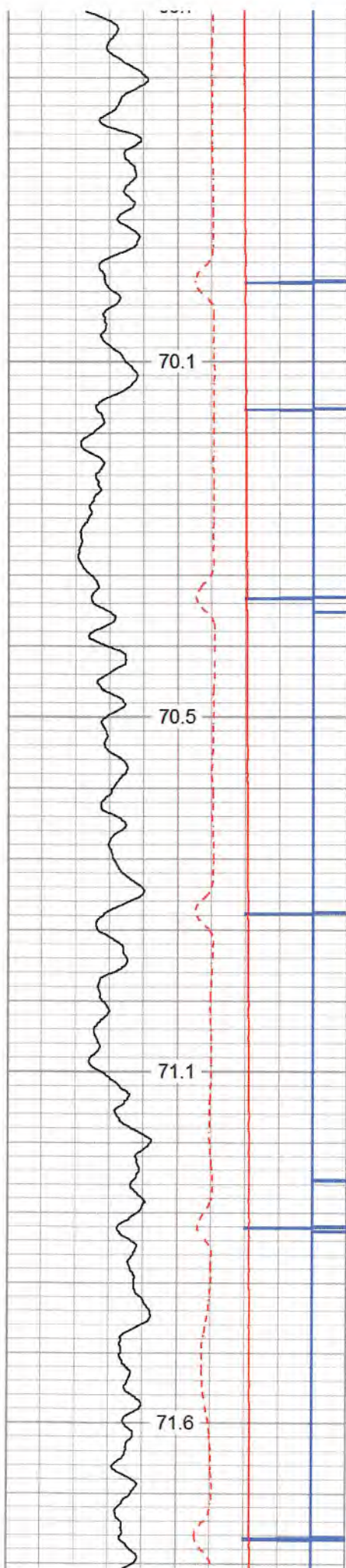
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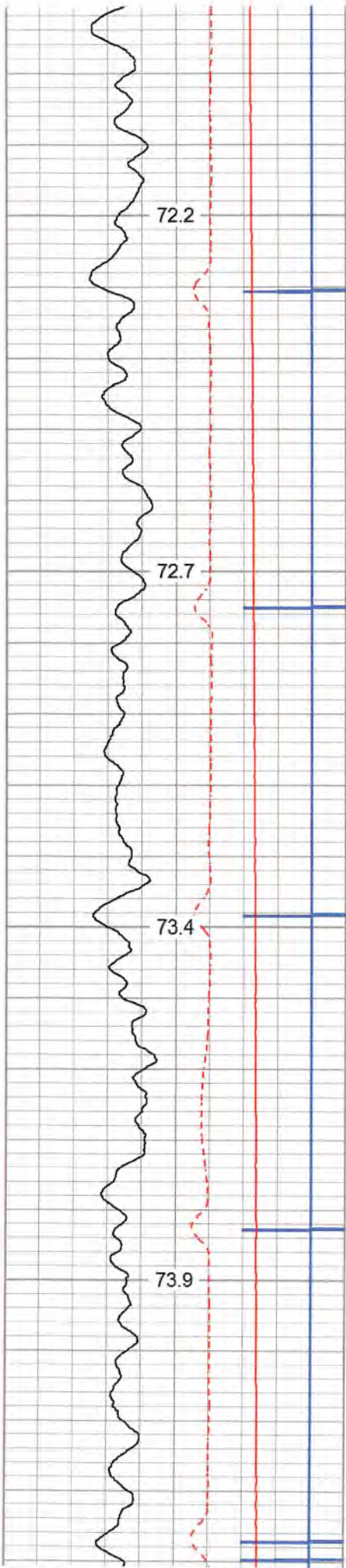
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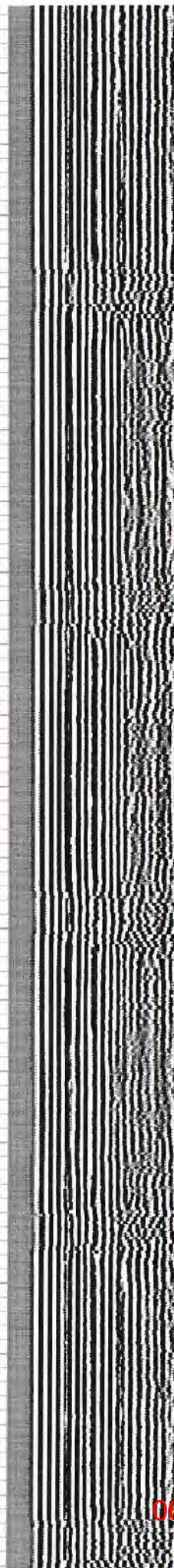
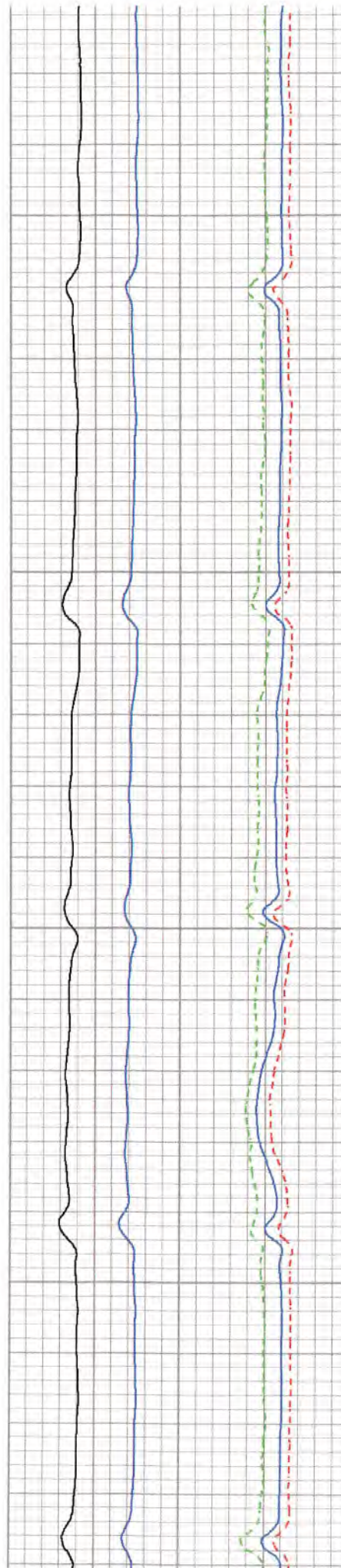


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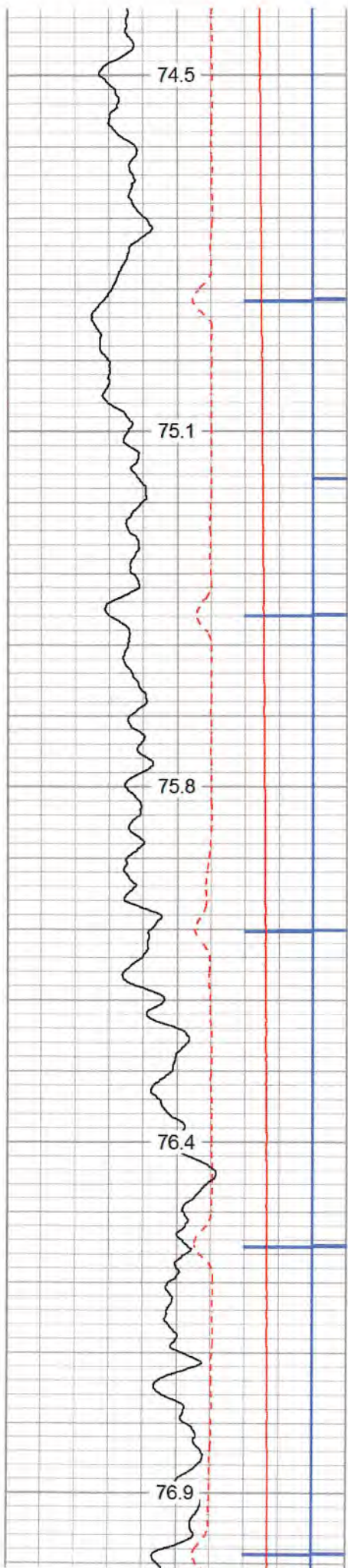
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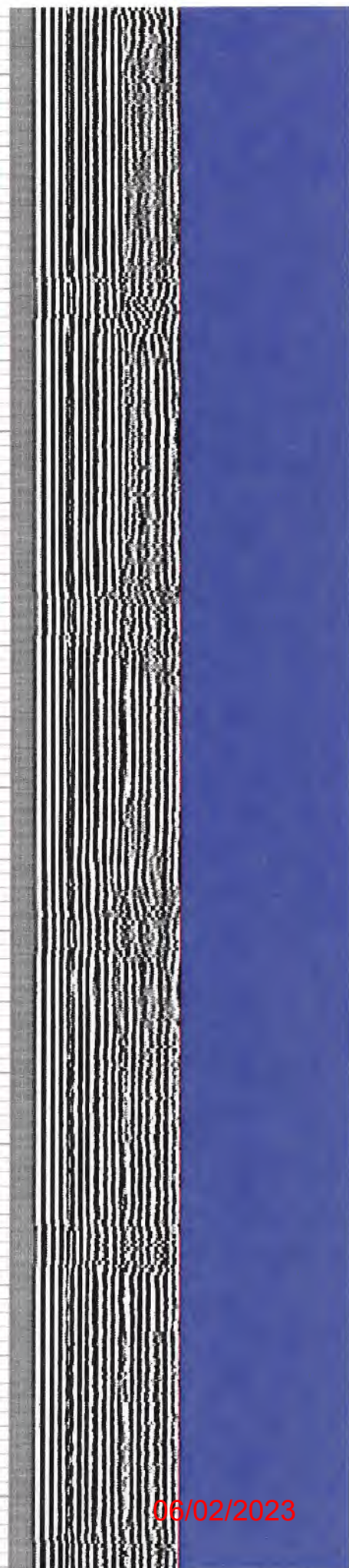
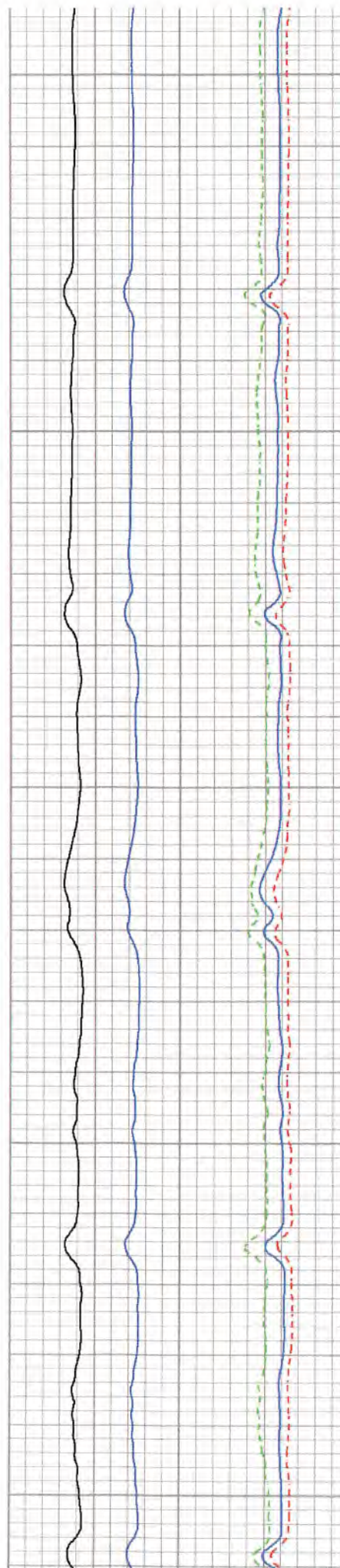
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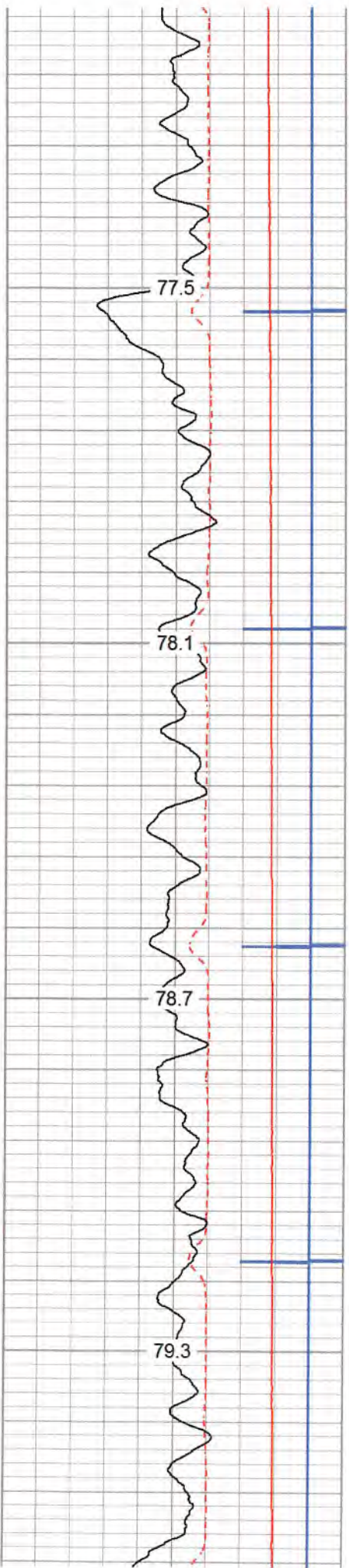
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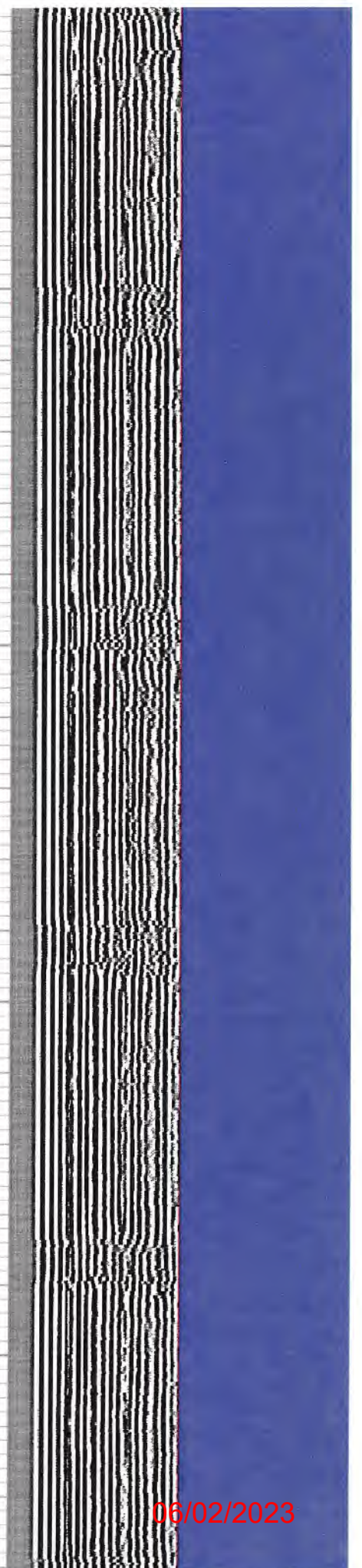
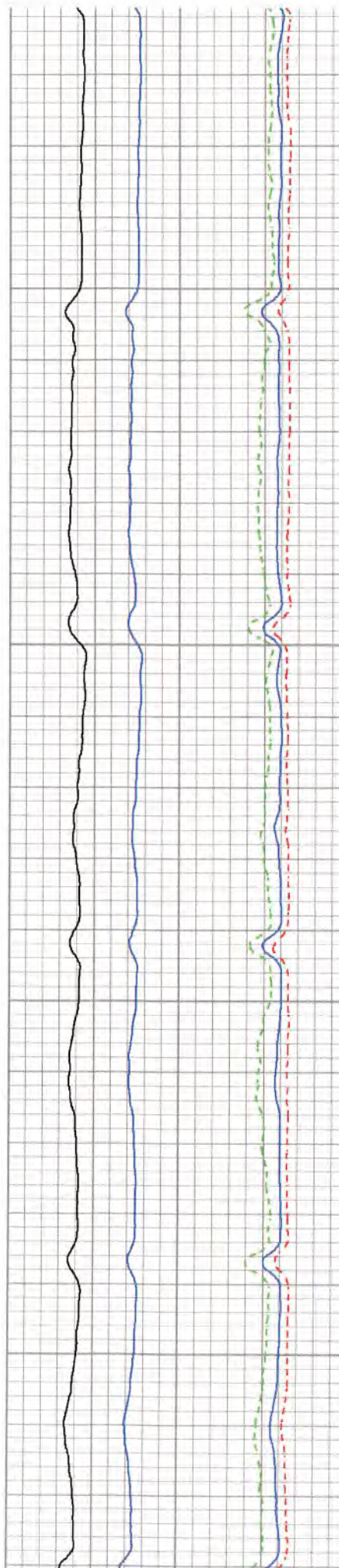


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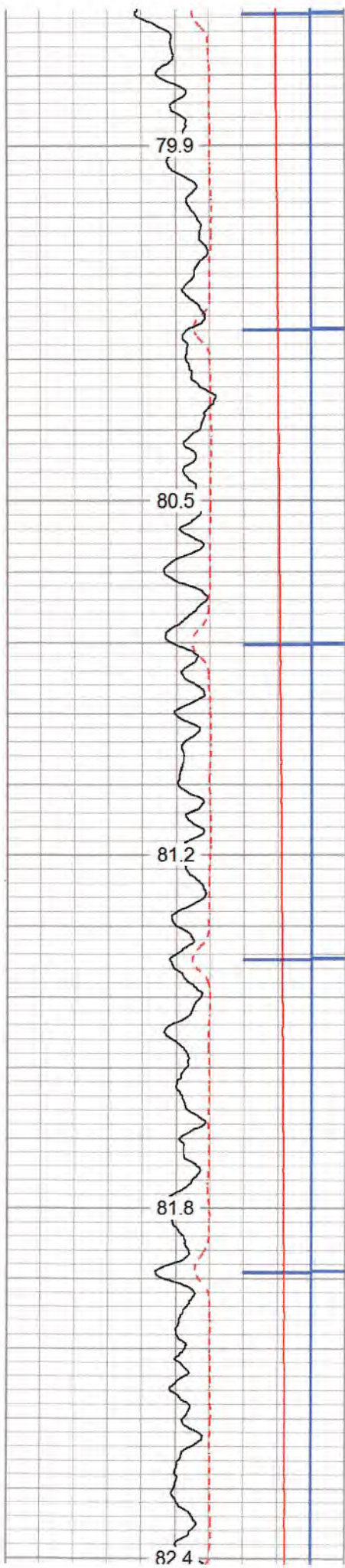
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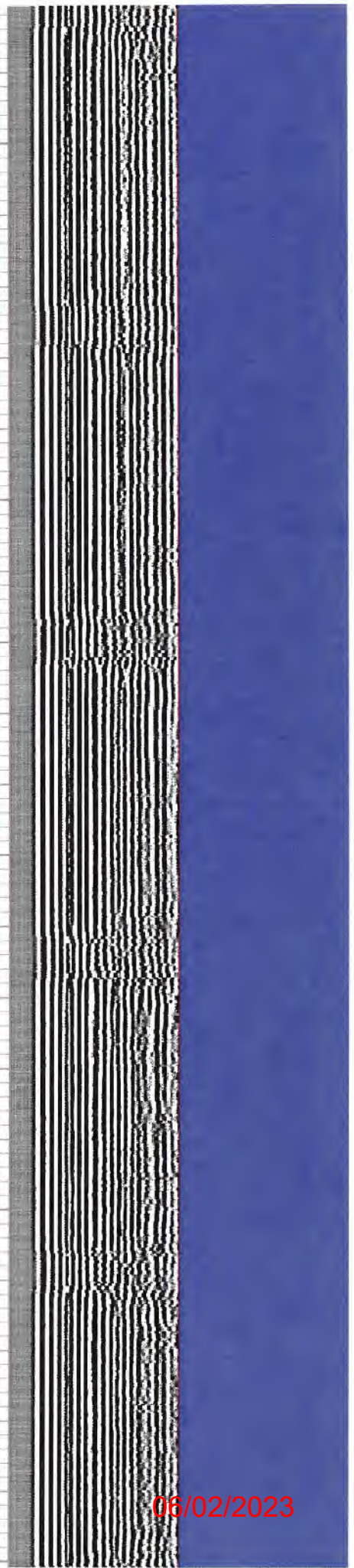
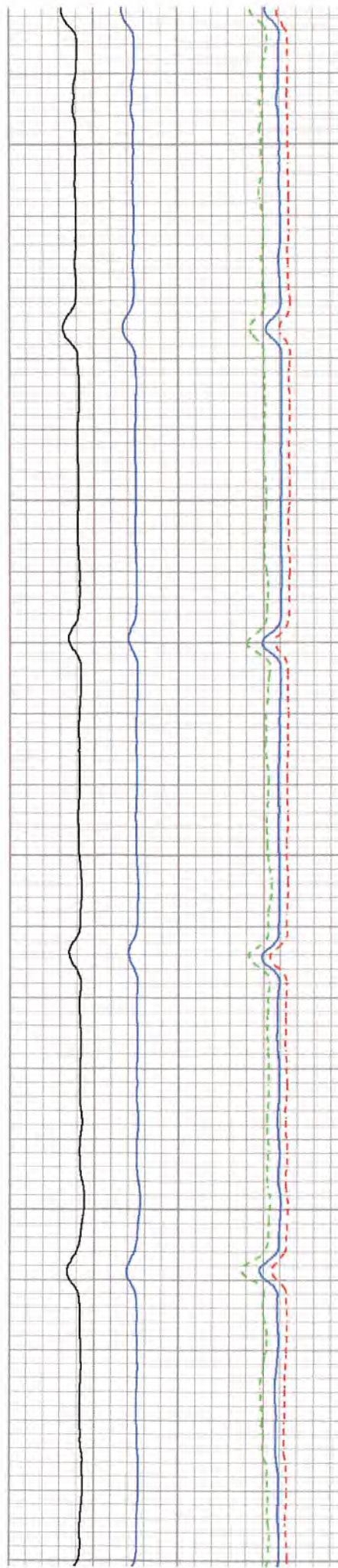
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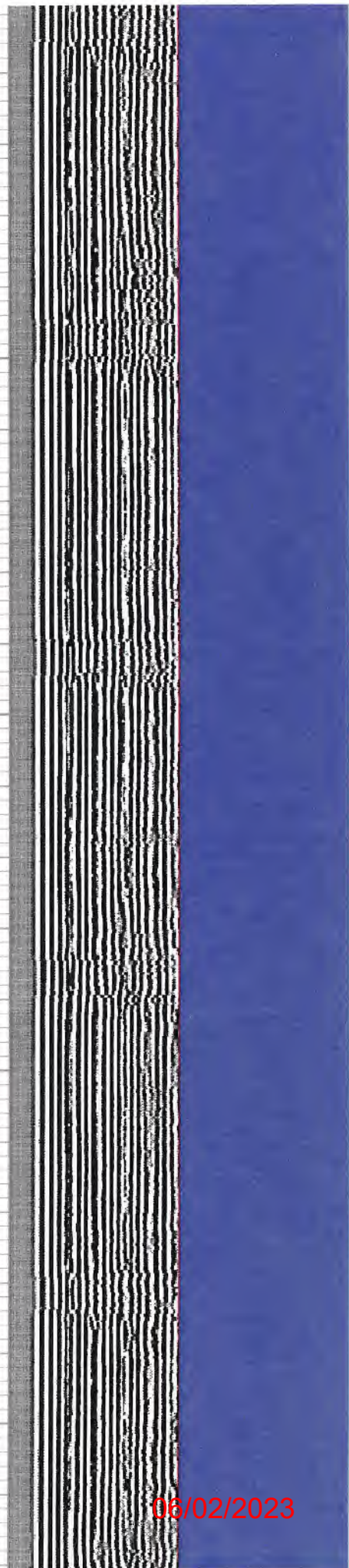
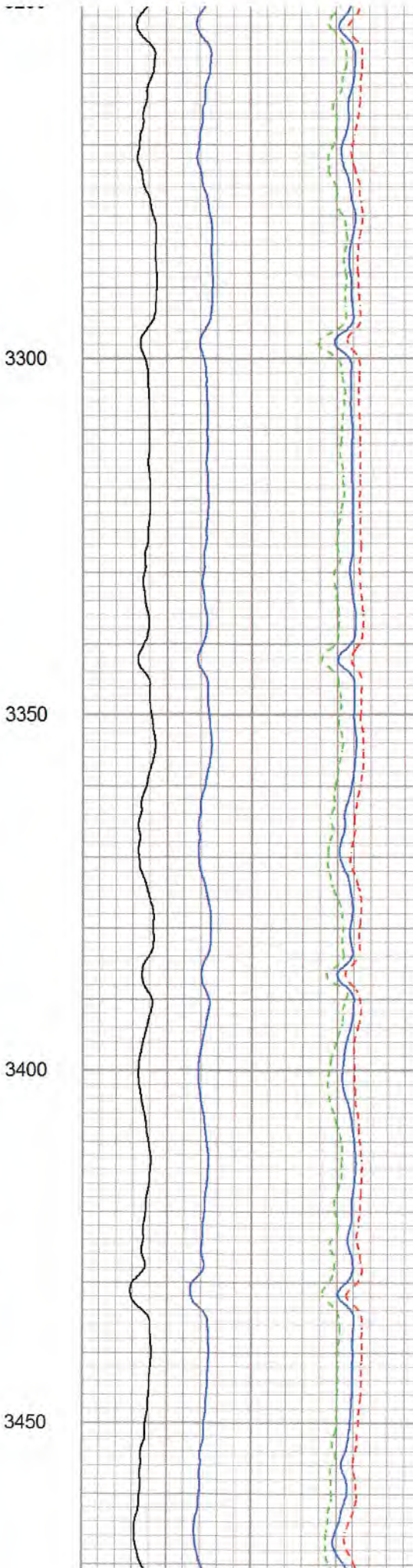
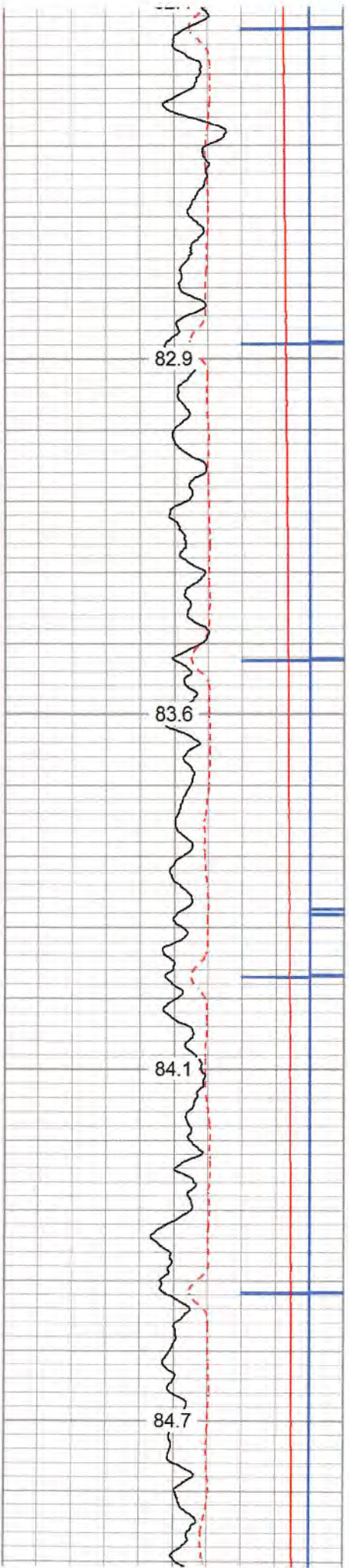
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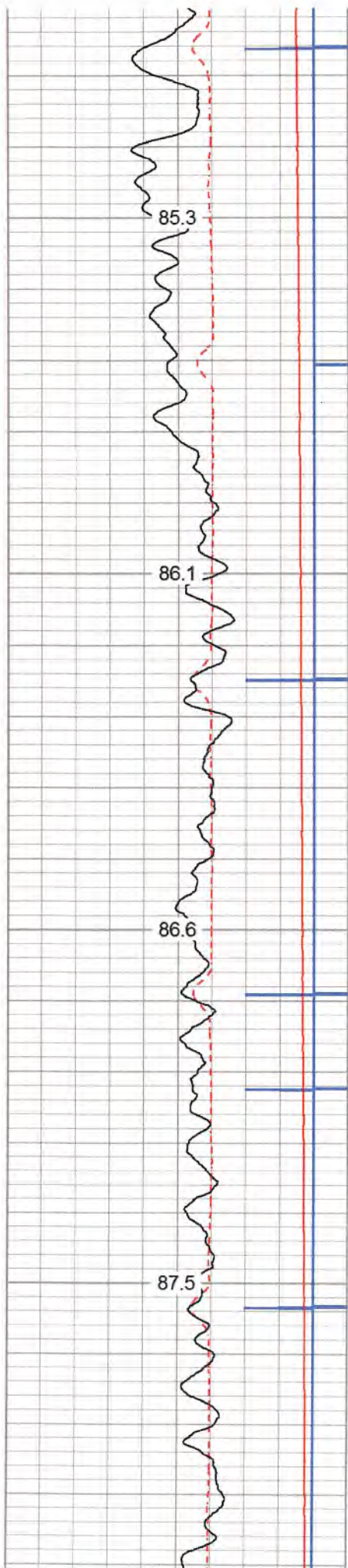


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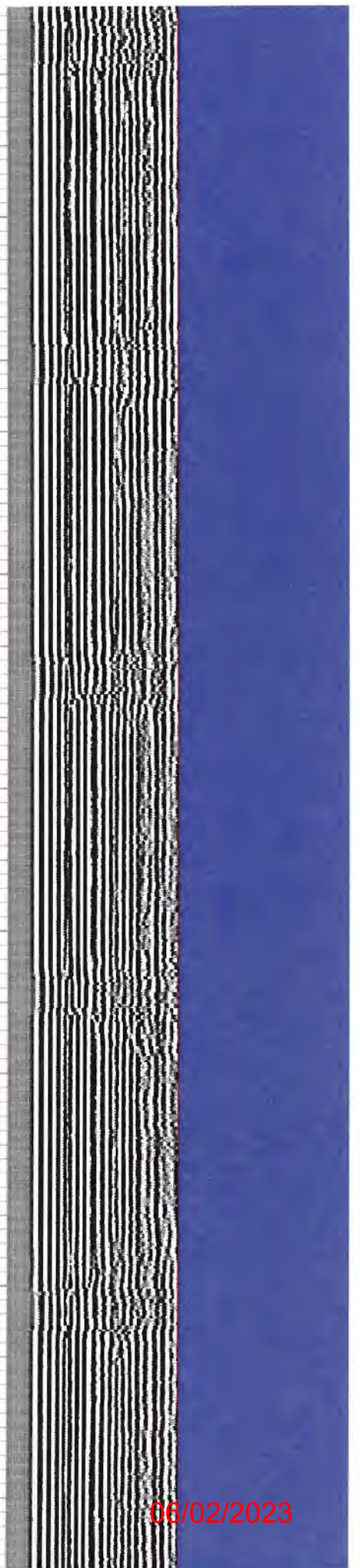
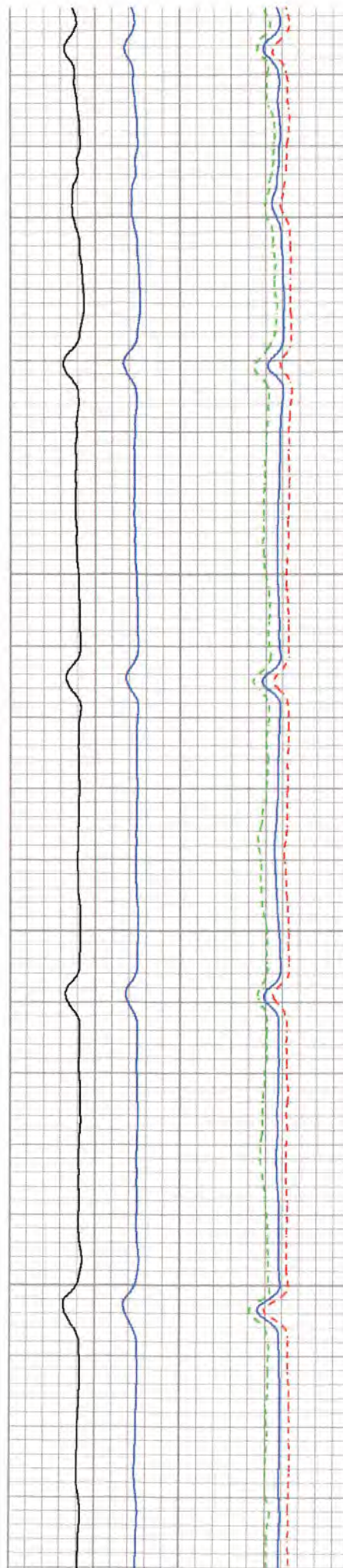


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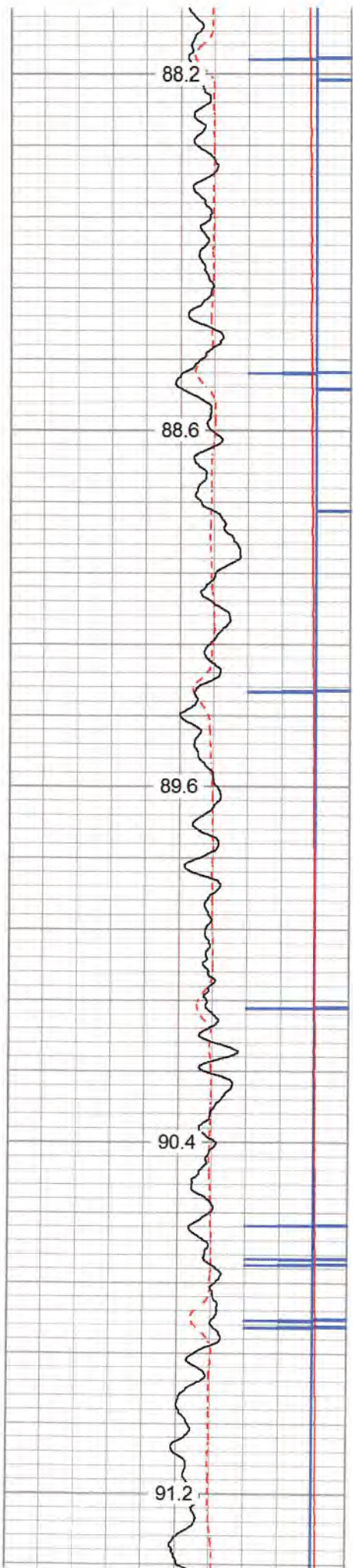
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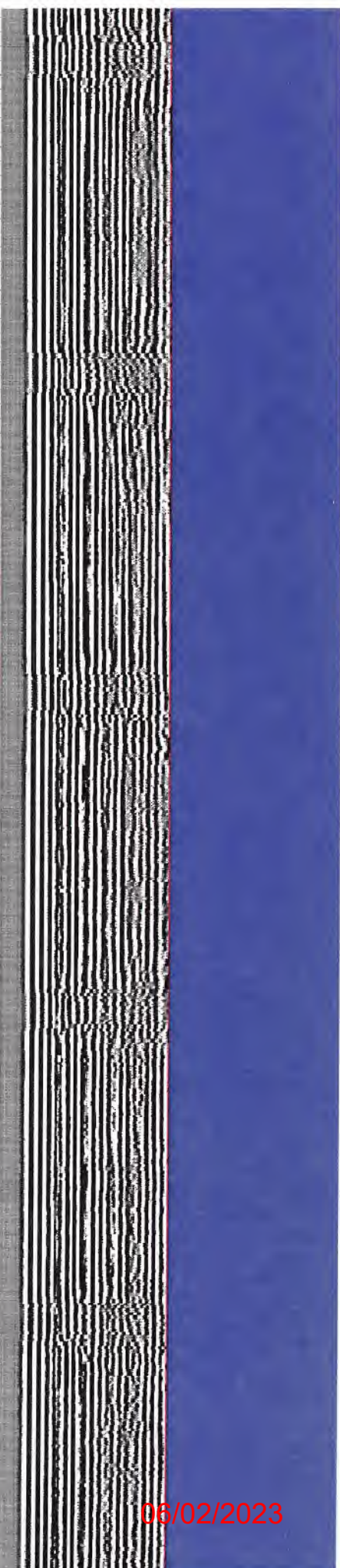
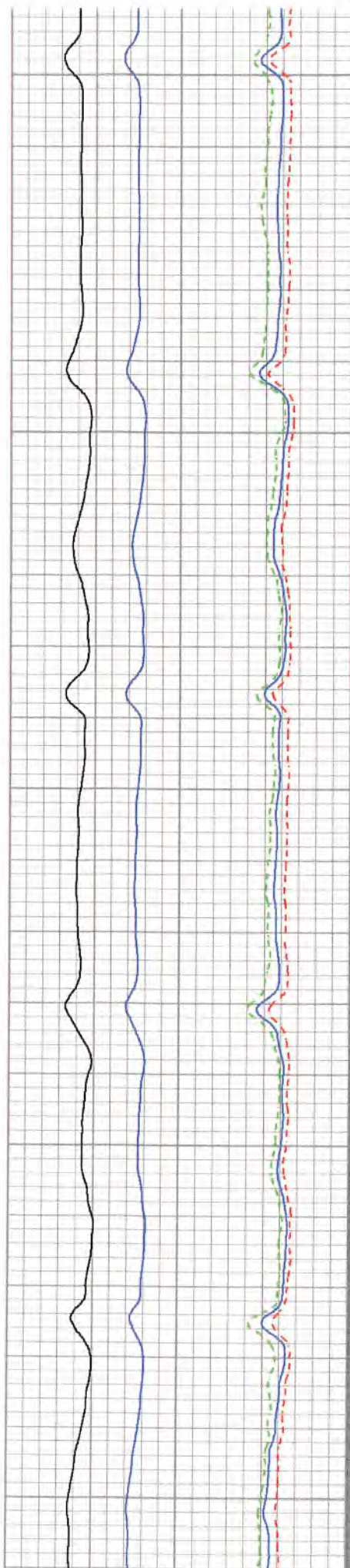
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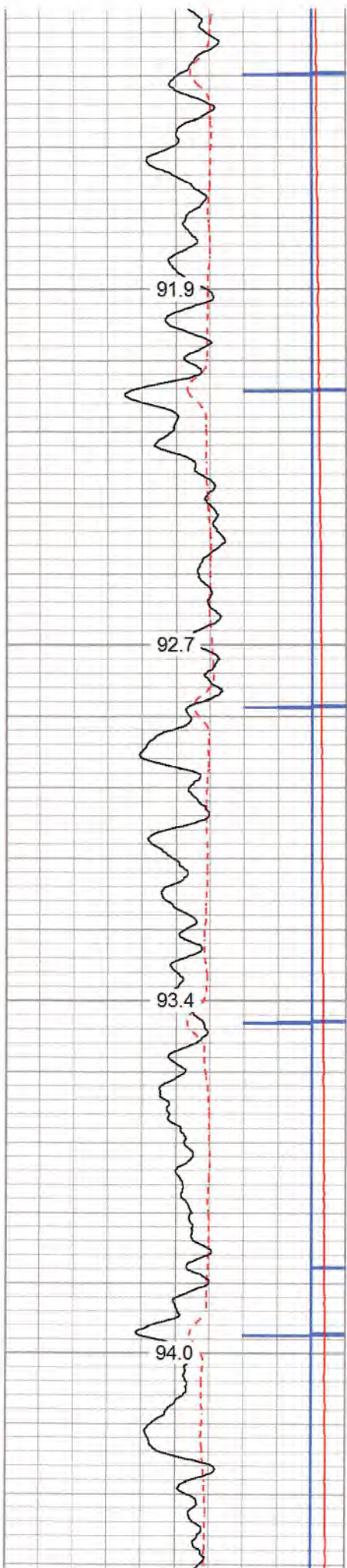
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3800  
3850  
3900



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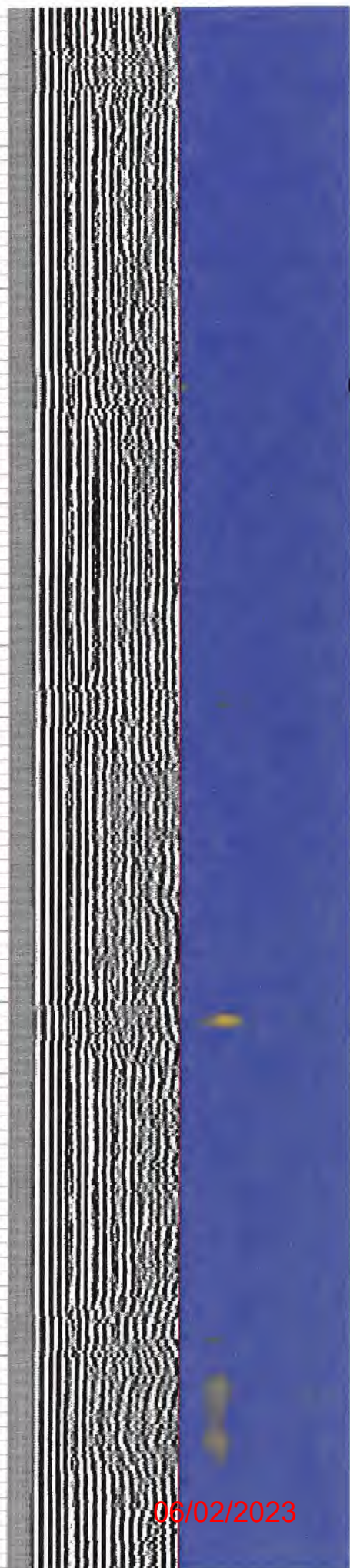
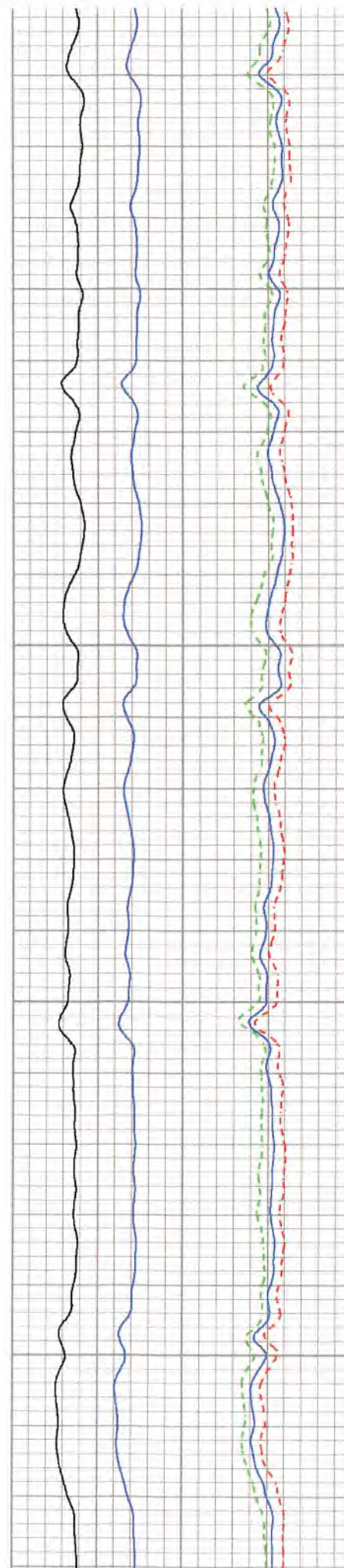


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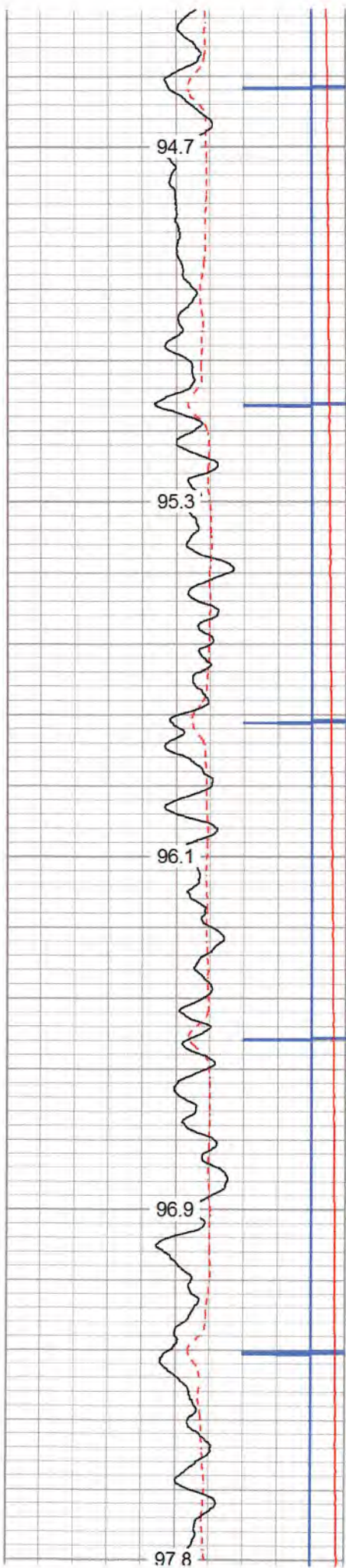
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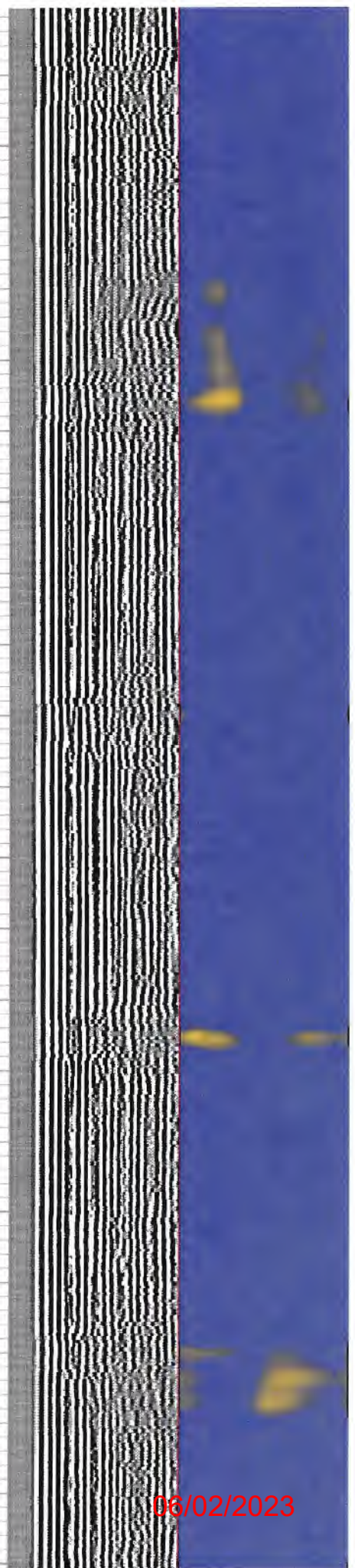
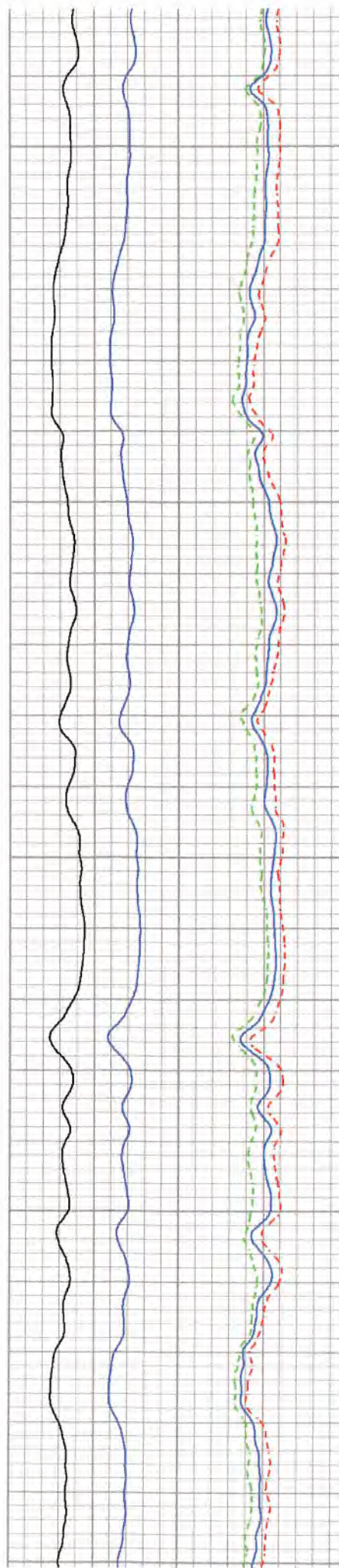
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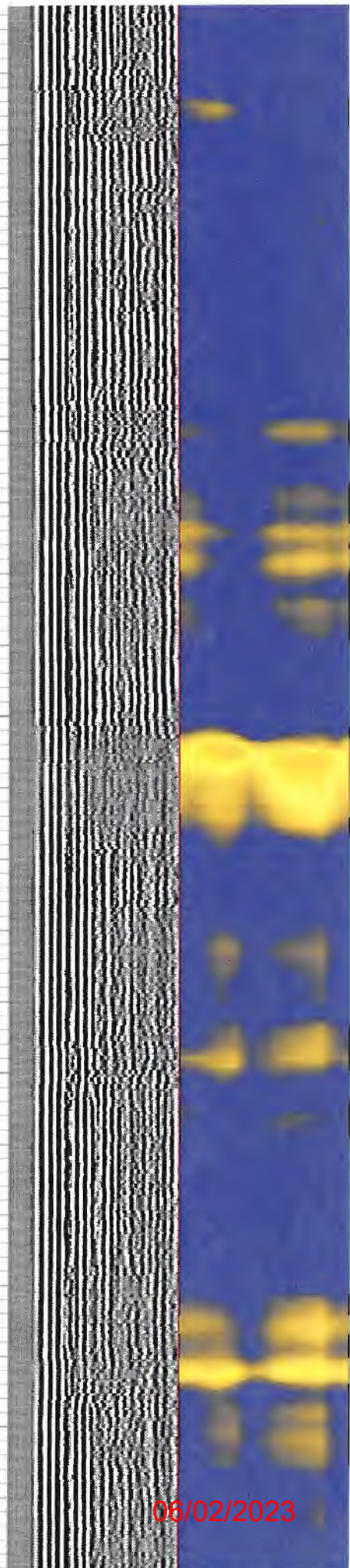
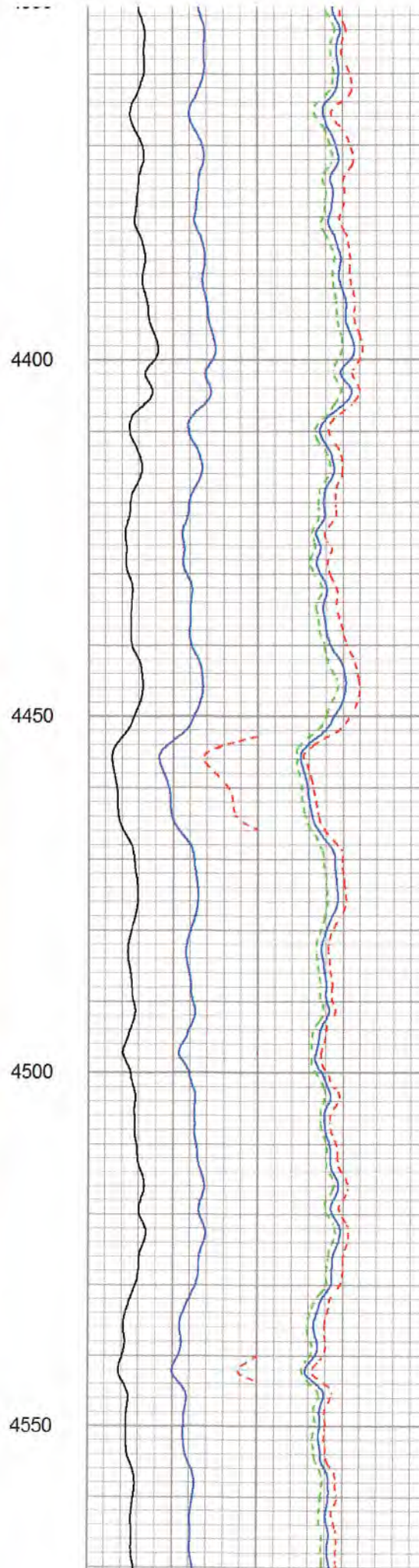
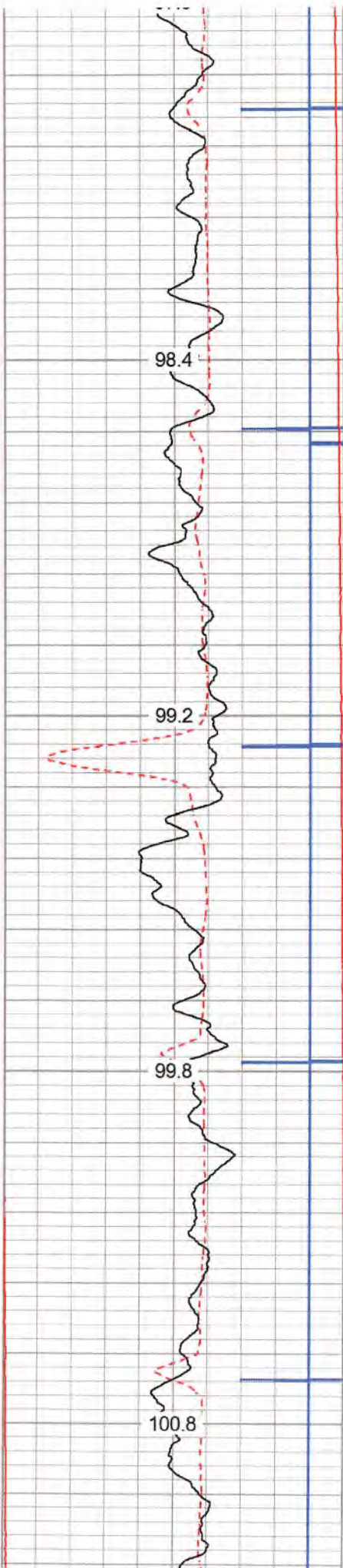
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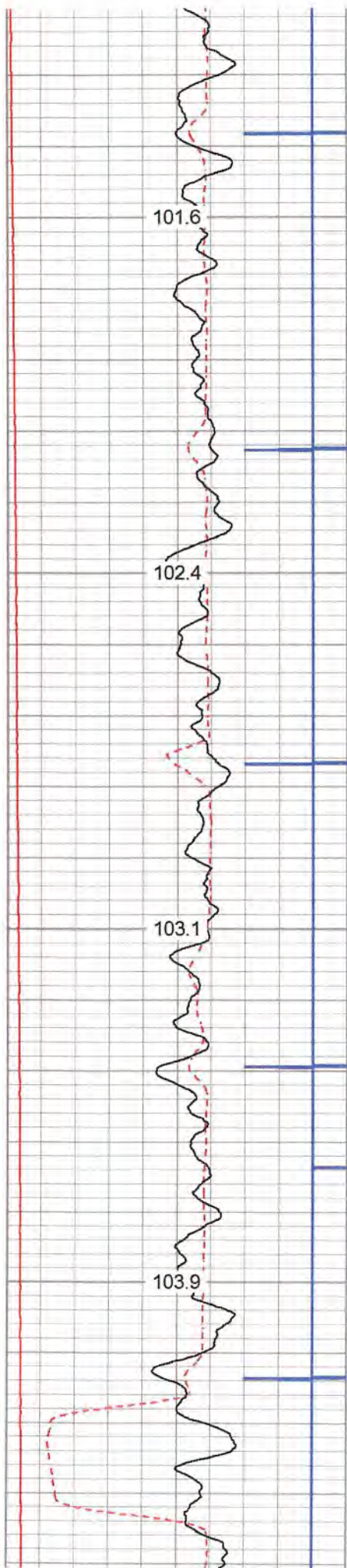
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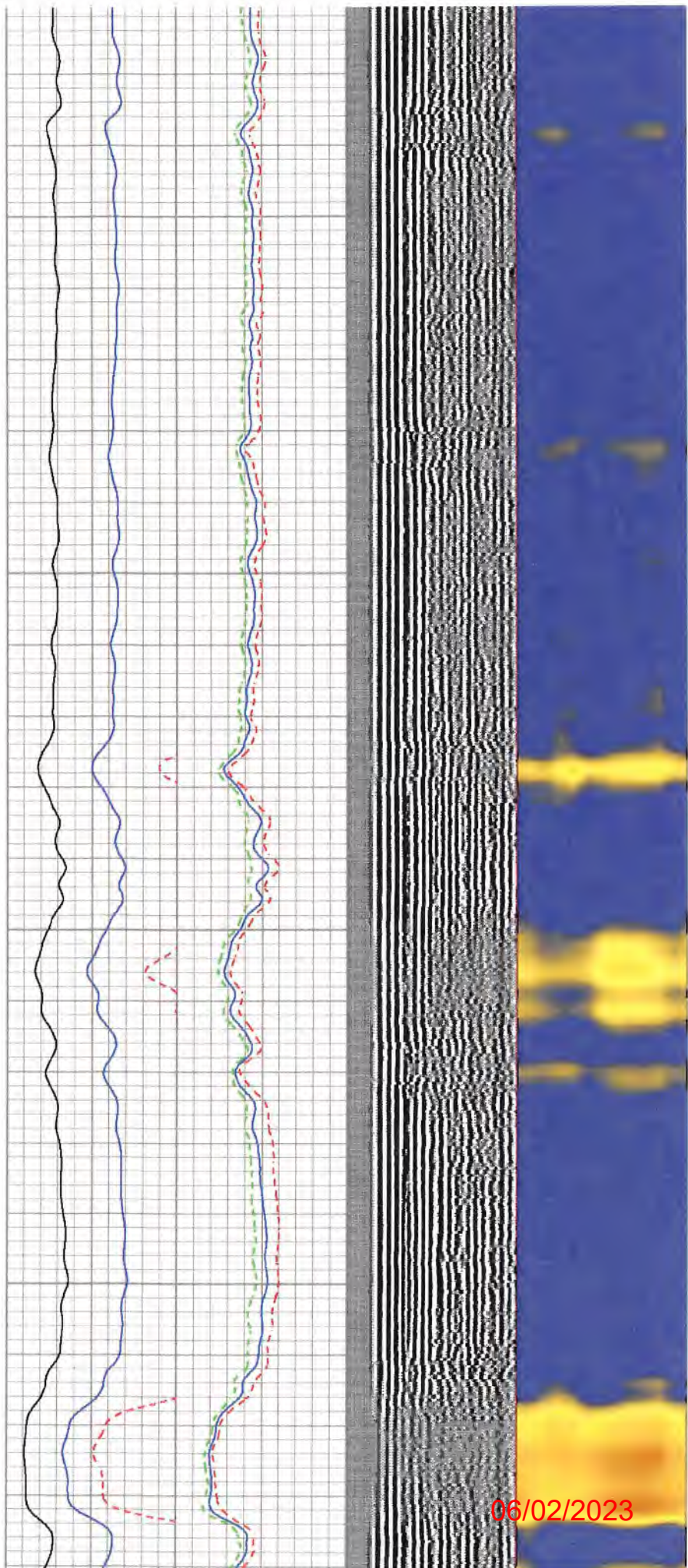


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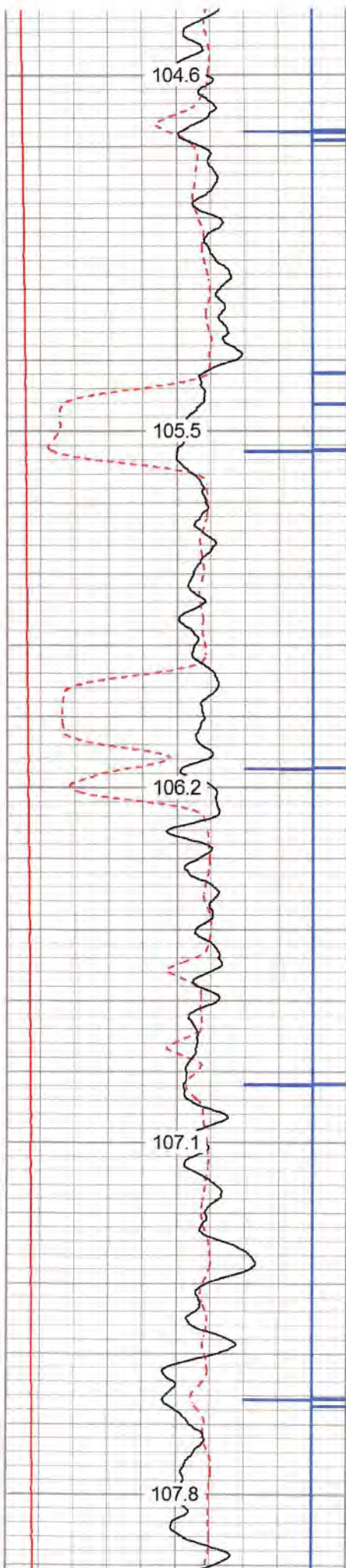
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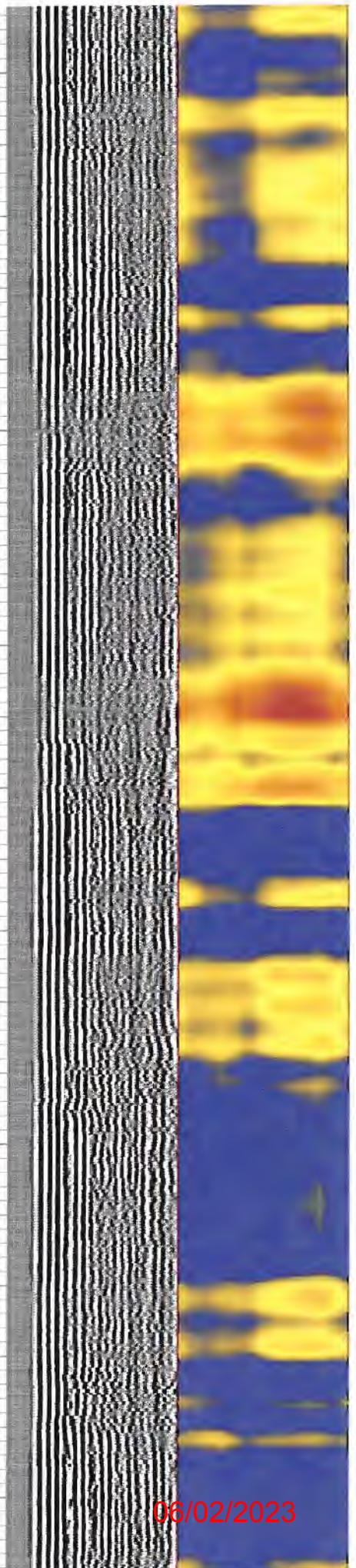
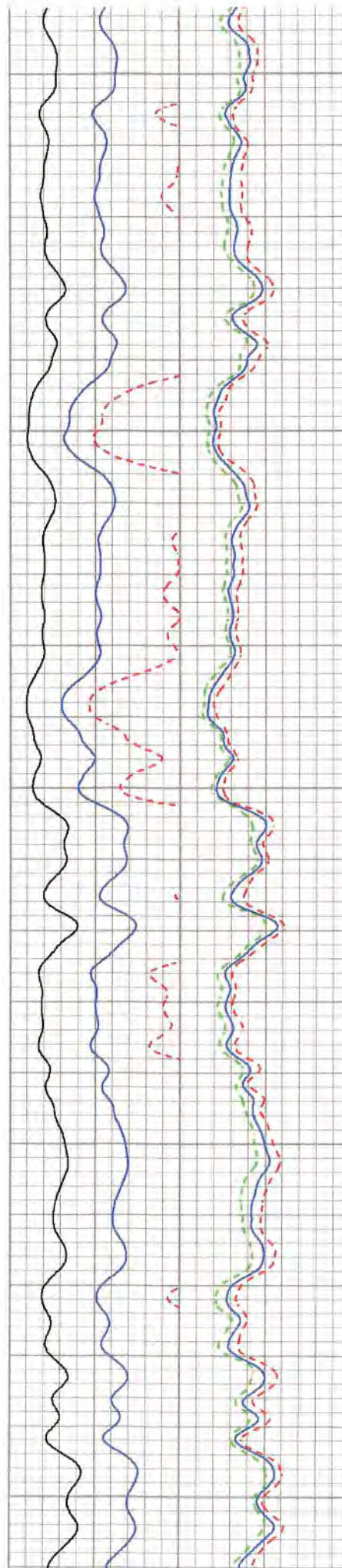
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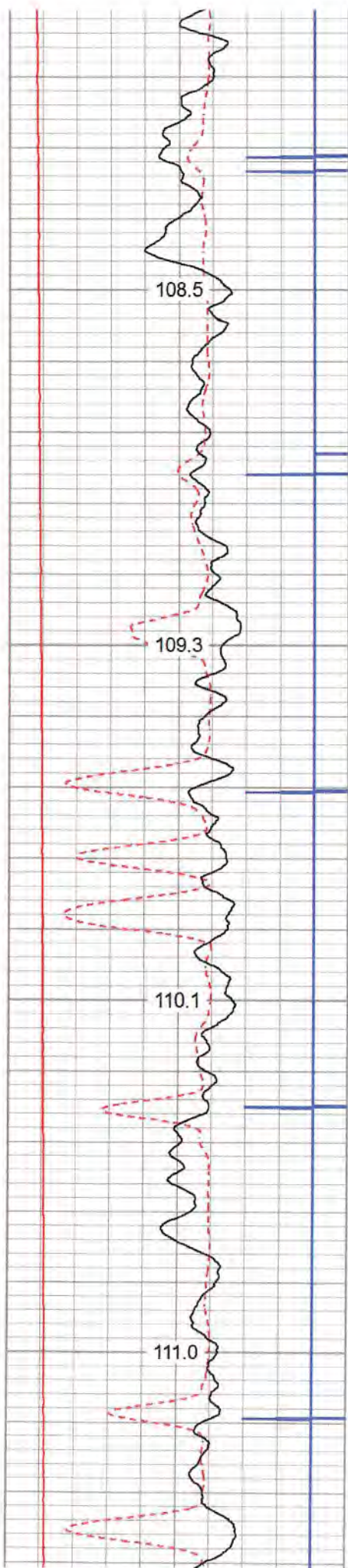
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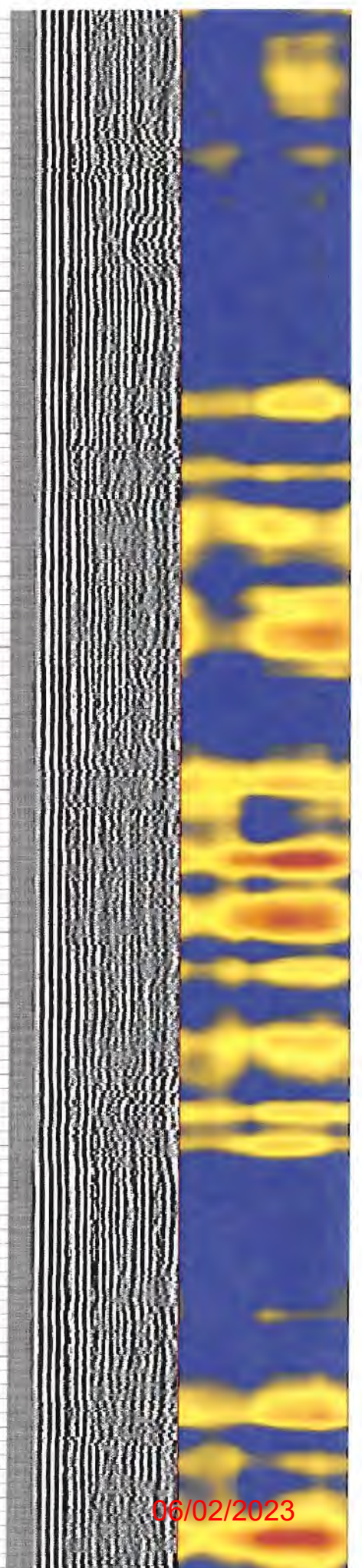
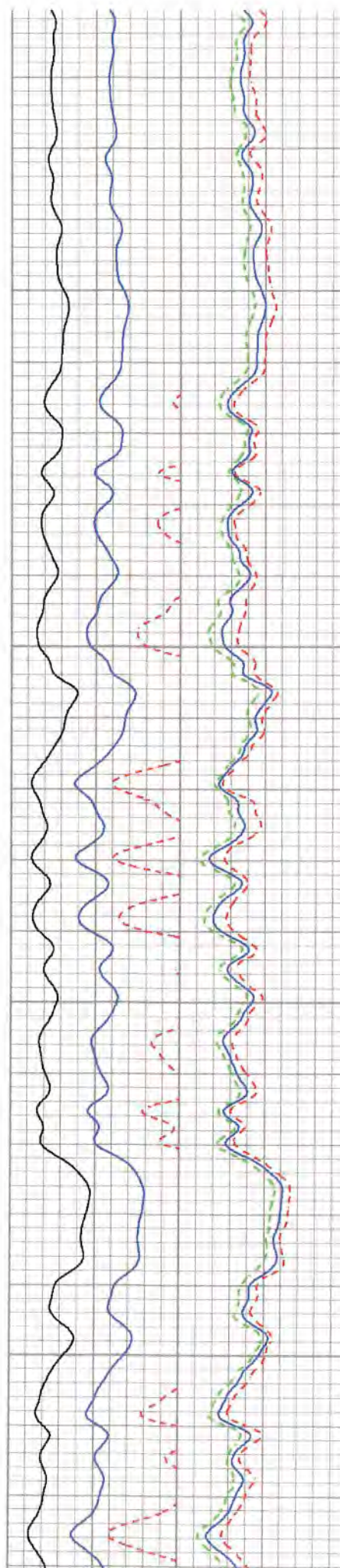


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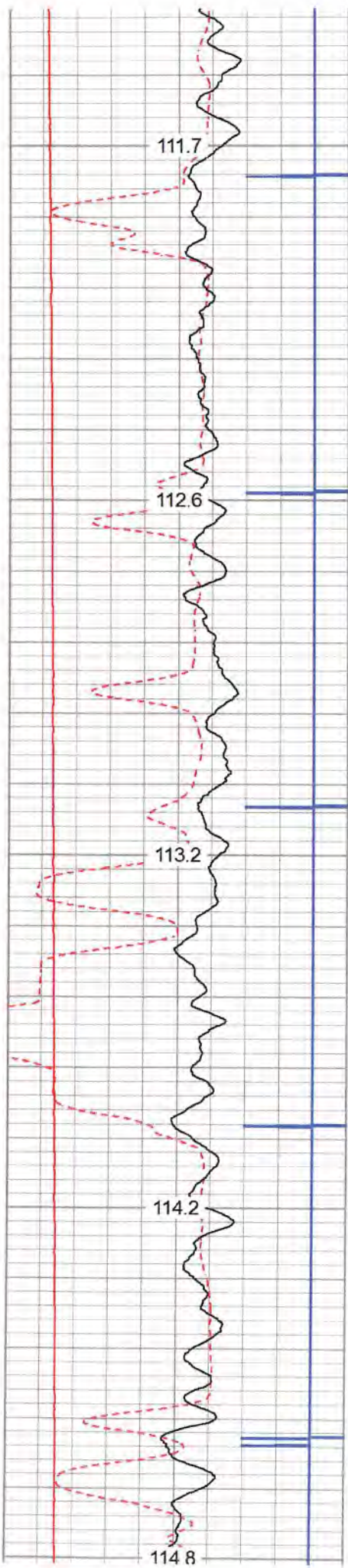
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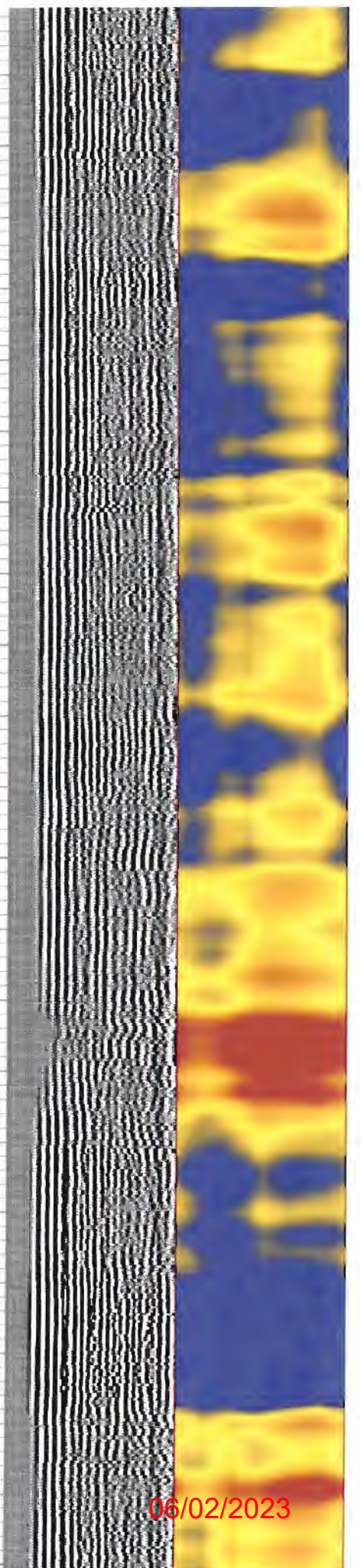
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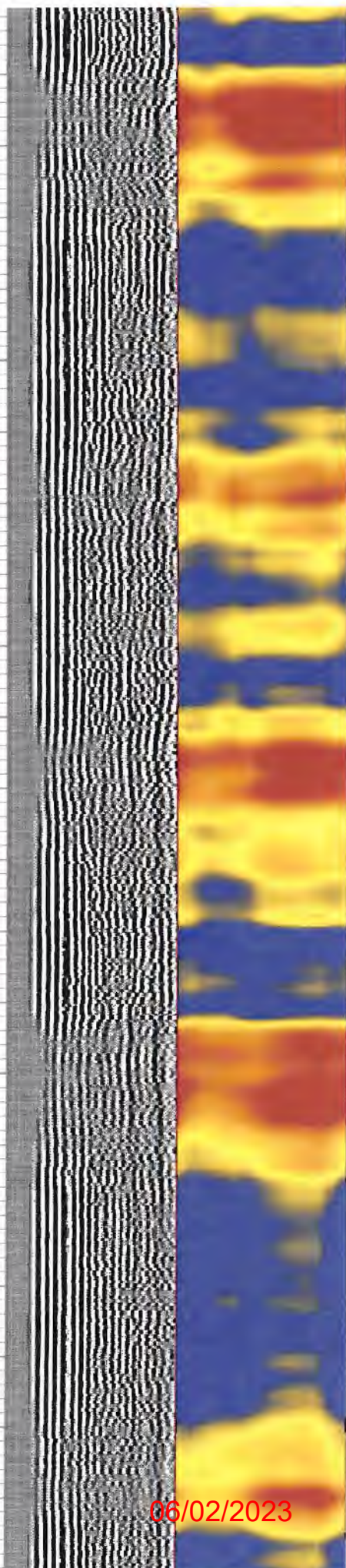
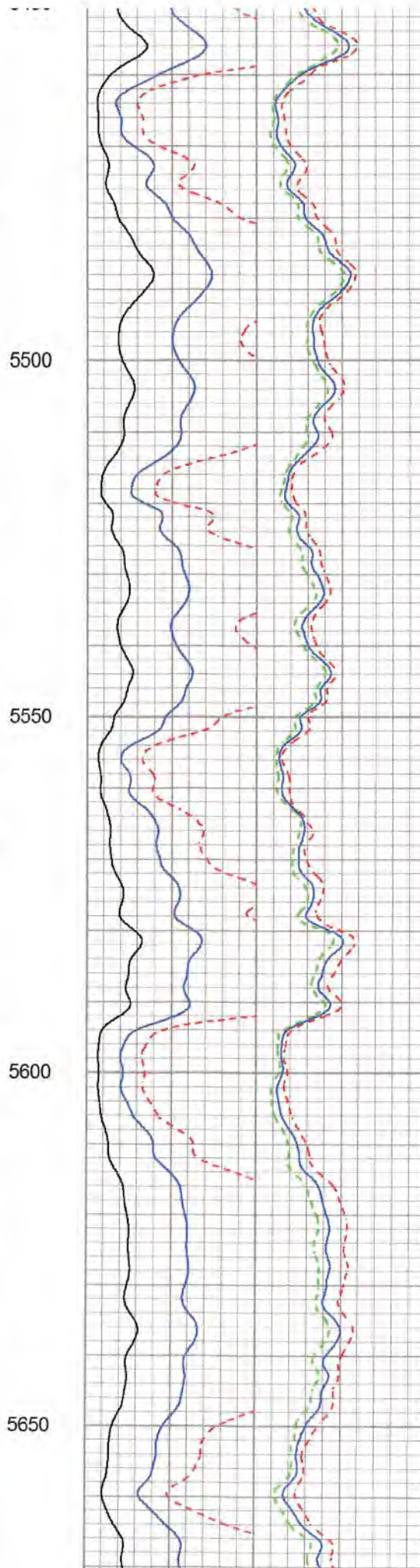
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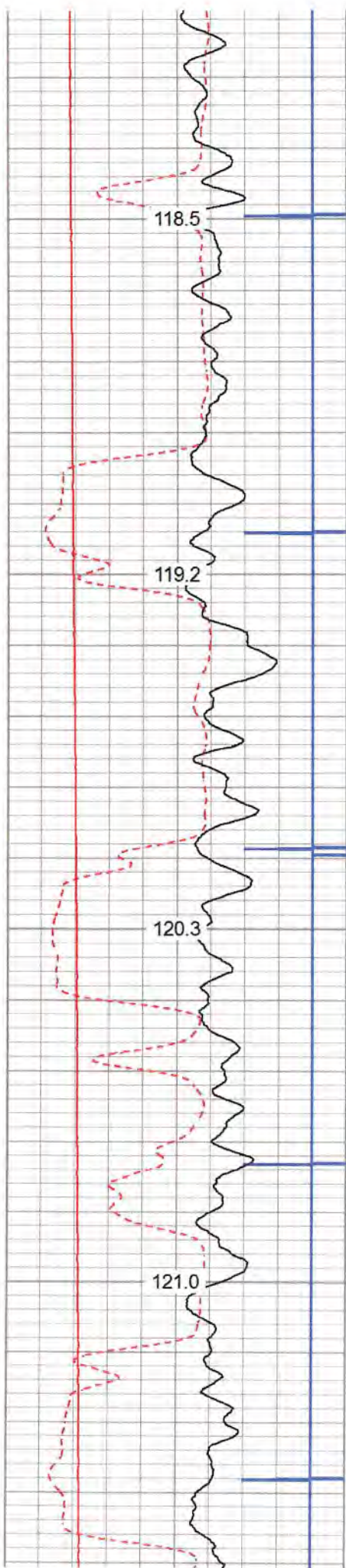
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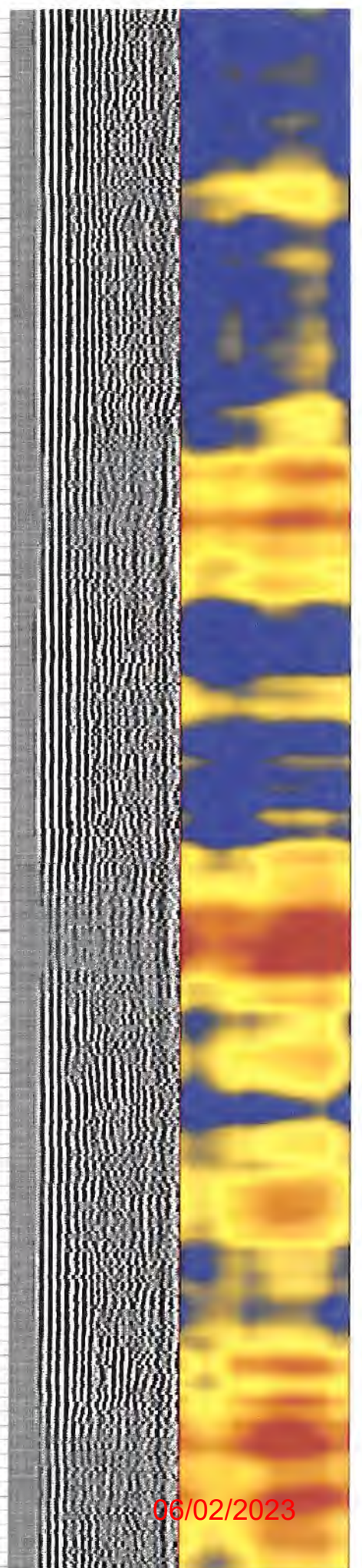
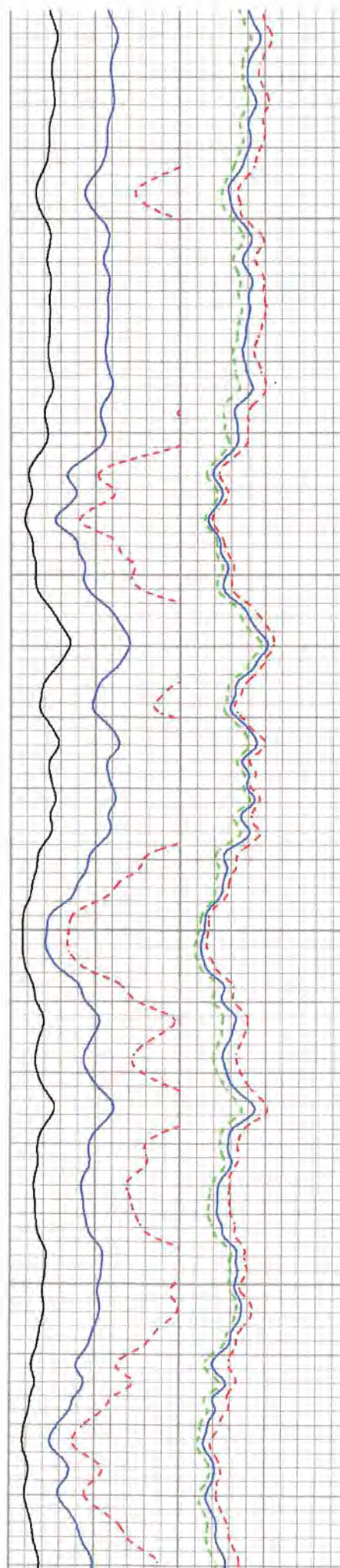


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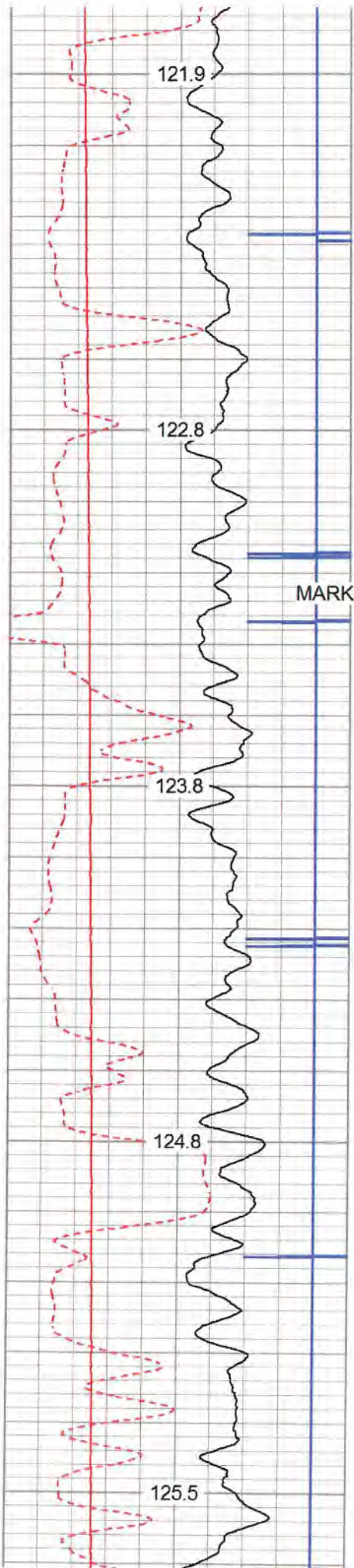
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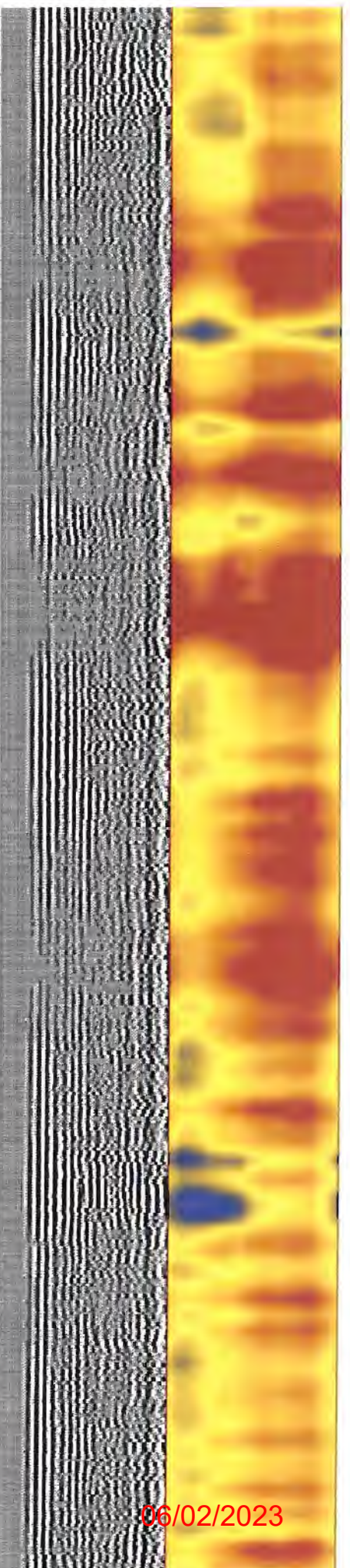
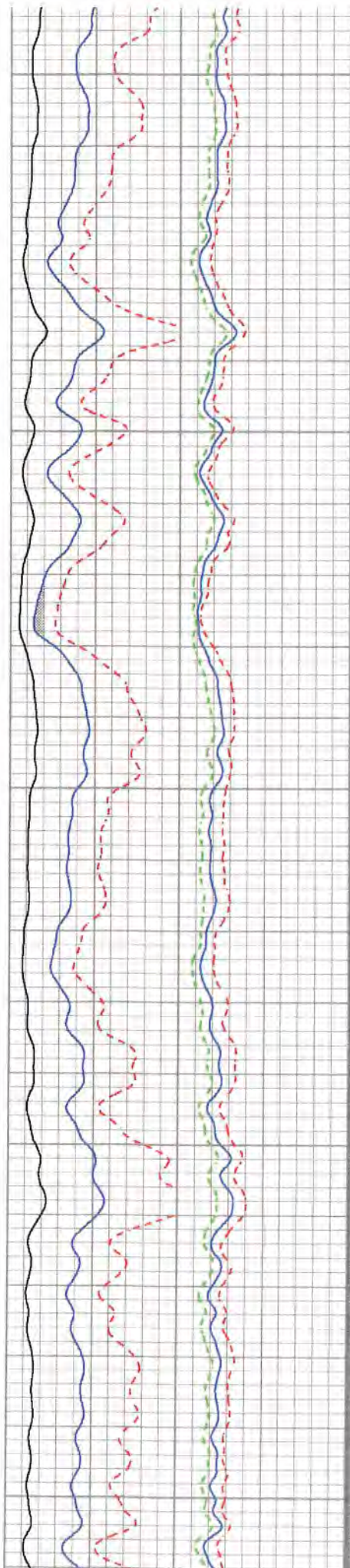
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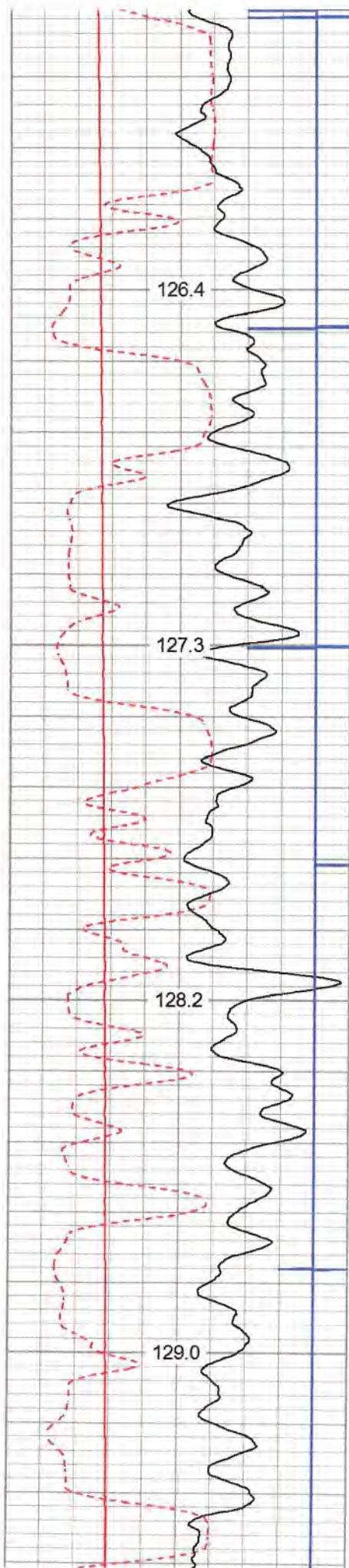
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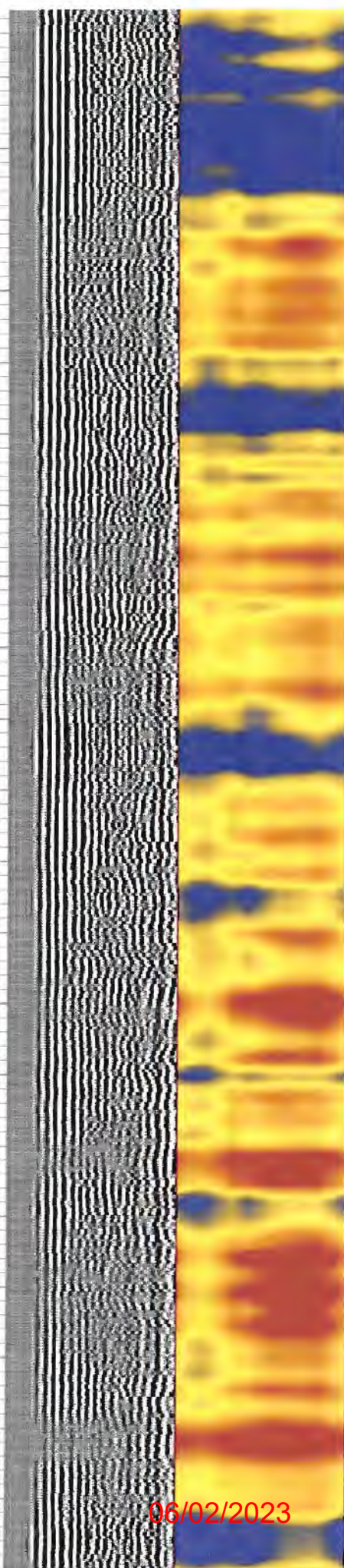
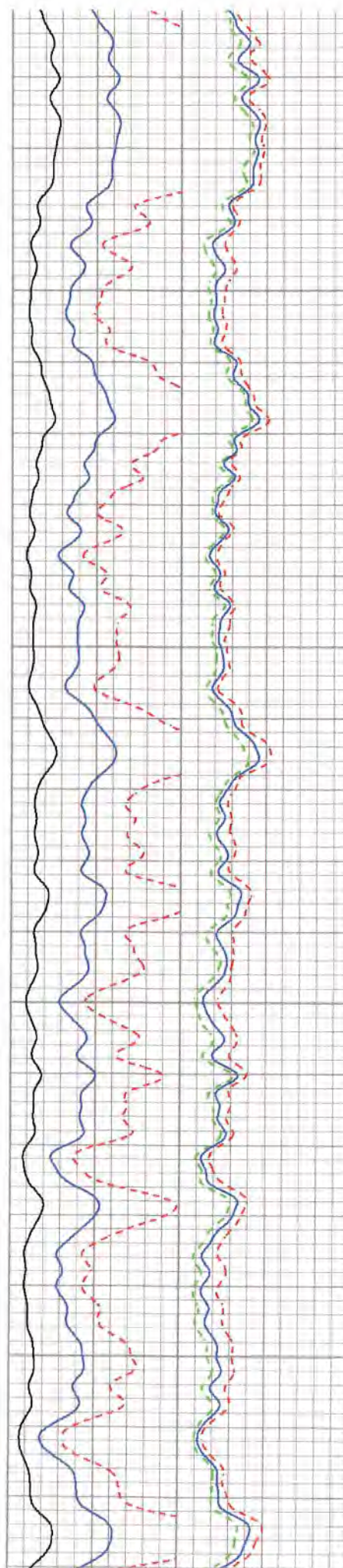


6150

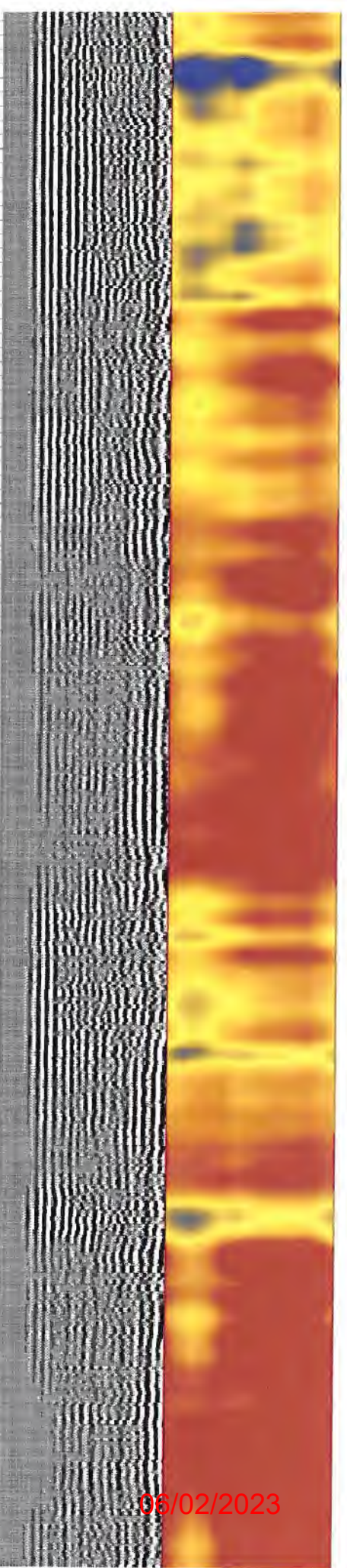
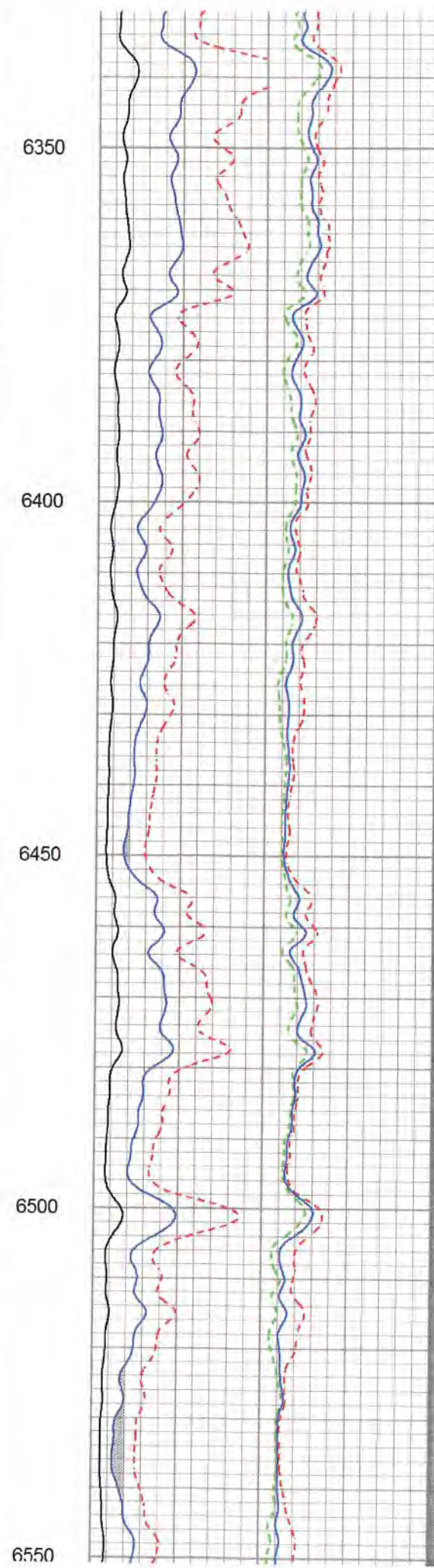
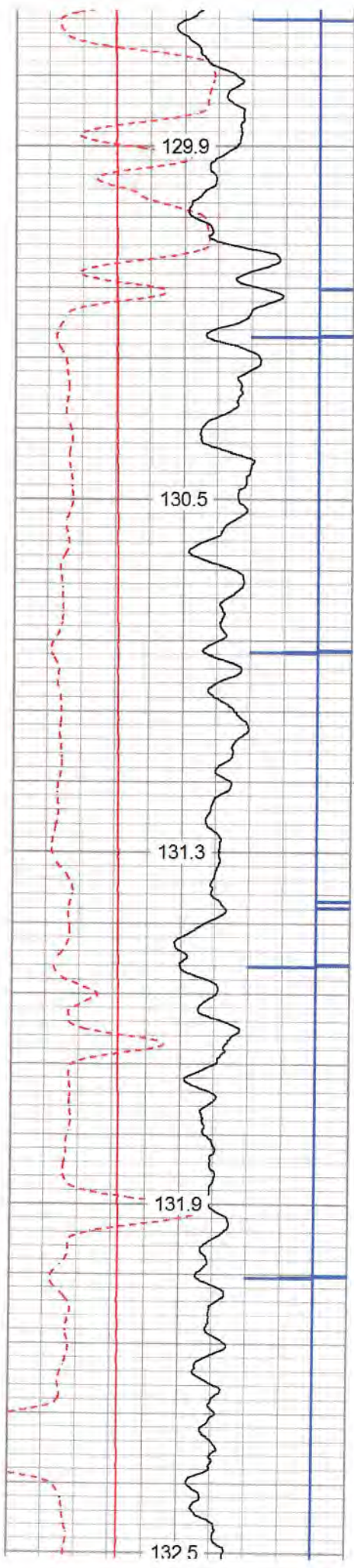
6200

6250

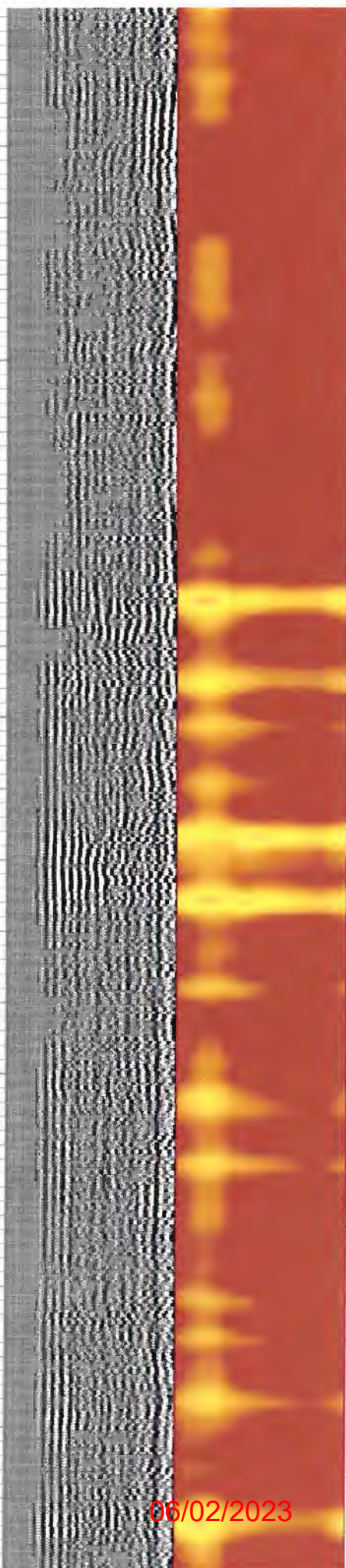
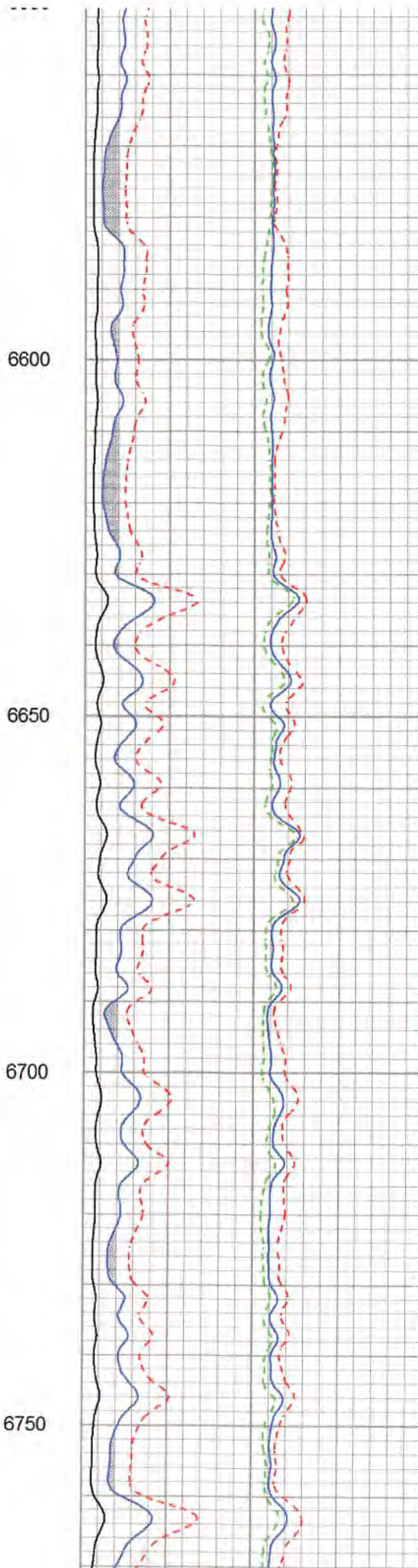
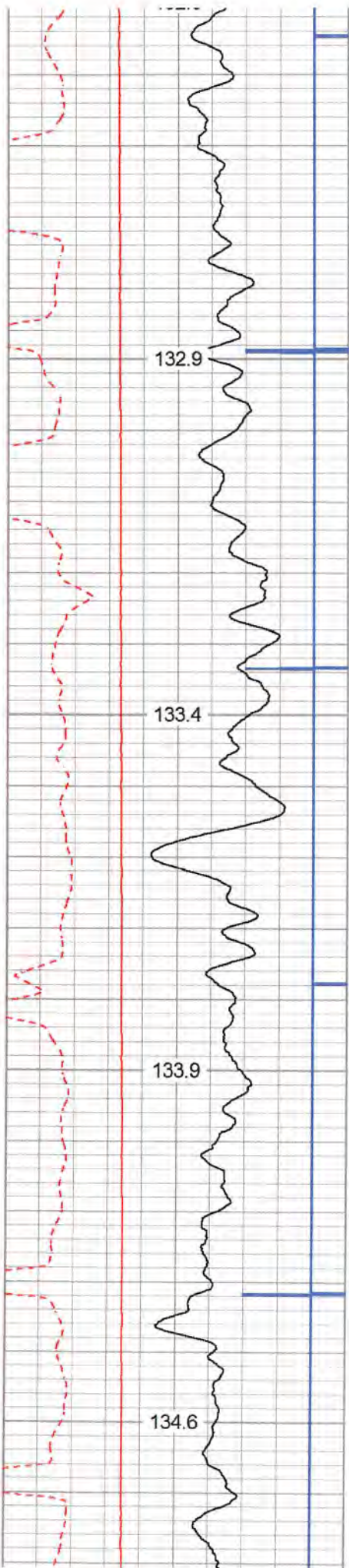
6300



06/02/2023

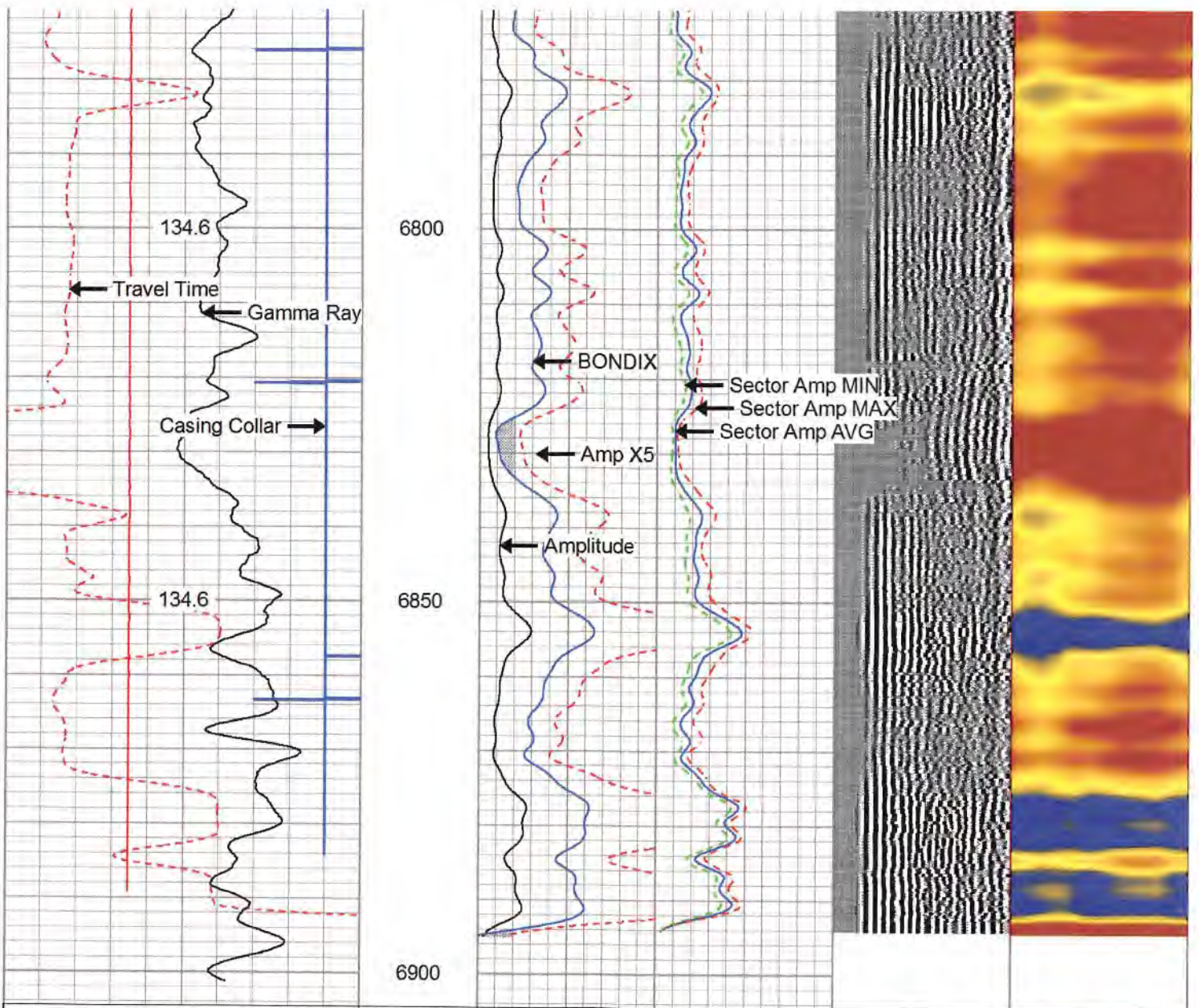


06/02/2023



06/02/2023





280	Travel Time (usec)	180
9	Casing Collar	-1
0	Gamma Ray	180
0	TEMP (degF)	100
180	GR	360
	TEMP (degF)	

Amplitude	Sector Amp AVG	VDL	1 Sector Map 12
0 (mV) 100	Sector Amp MAX	200 (usec) 1200	
Amp X5	Sector Amp MIN		
0 (mV) 20			
1 BONDIX 0			



# REPEAT PASS 1500 PSI

Database File g:\antero 2020\8\_7\_20\_antero Garminunit2h.db  
 Dataset Pathname pass3  
 Presentation Format antero  
 Dataset Creation Fri Aug 07 10:46:56 2020  
 Charted by Depth in Feet scaled 1:240

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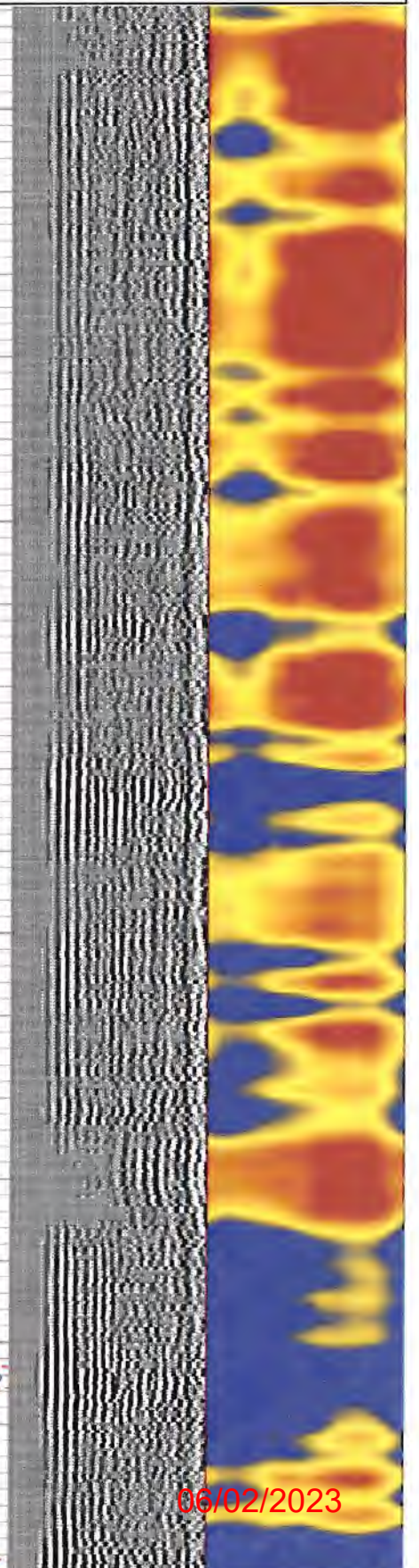
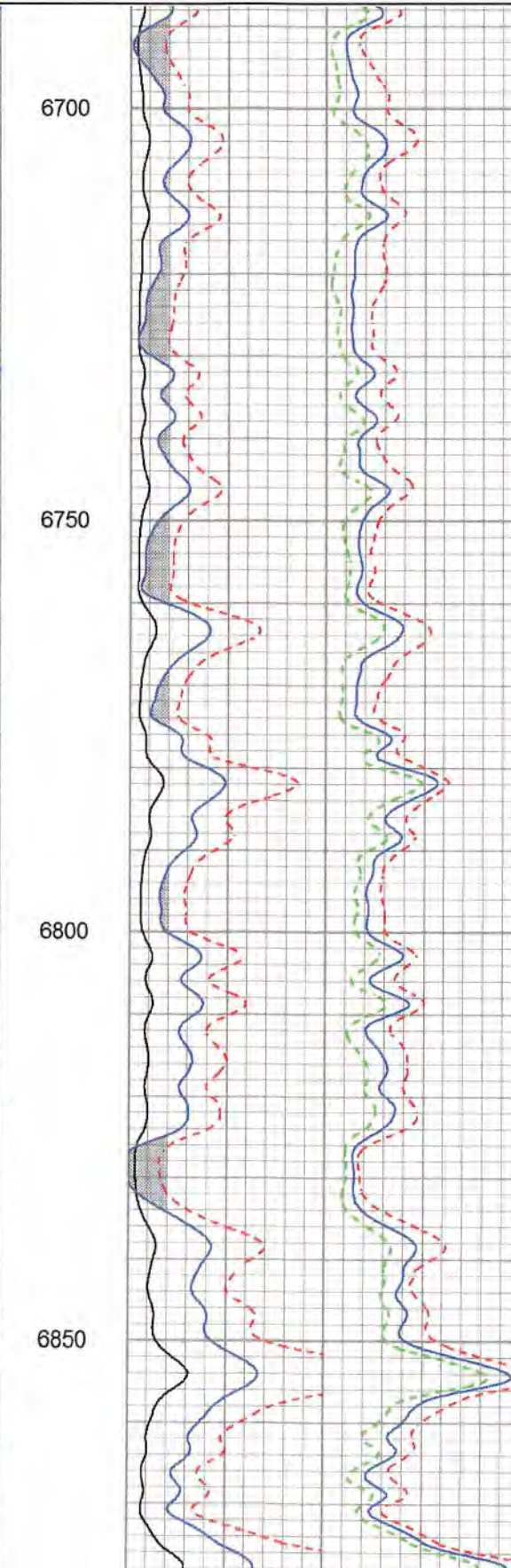
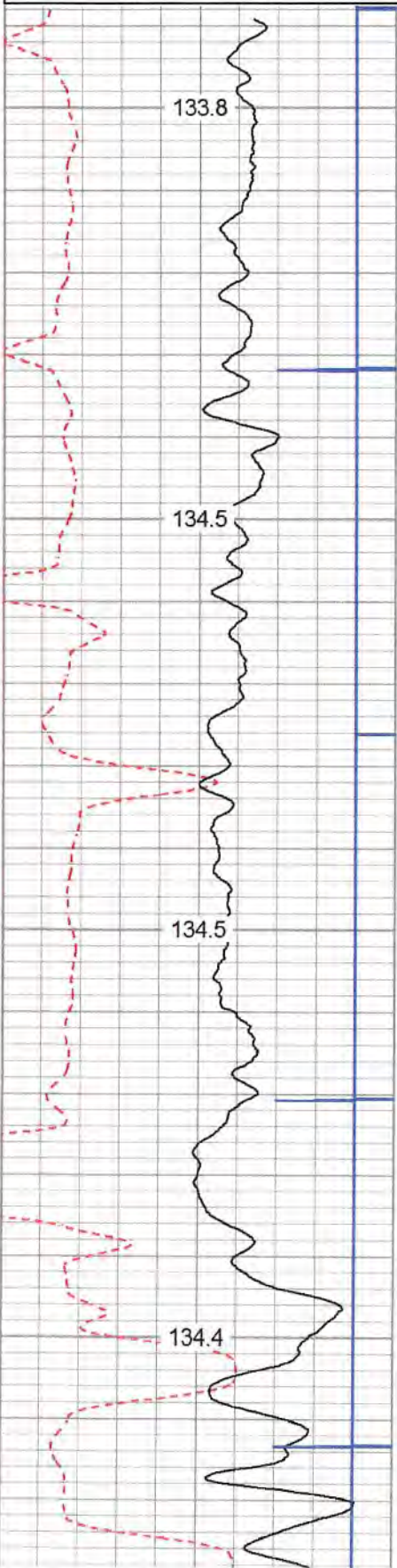
280	Travel Time (usec)	180	Amplitude	Sector Amp AVG	VDL	1 Sector Map 12
-----	--------------------	-----	-----------	----------------	-----	-----------------

9	Casing Collar	-1
0	Gamma Ray	180
0	TEMP (degF)	100
180	GR	360

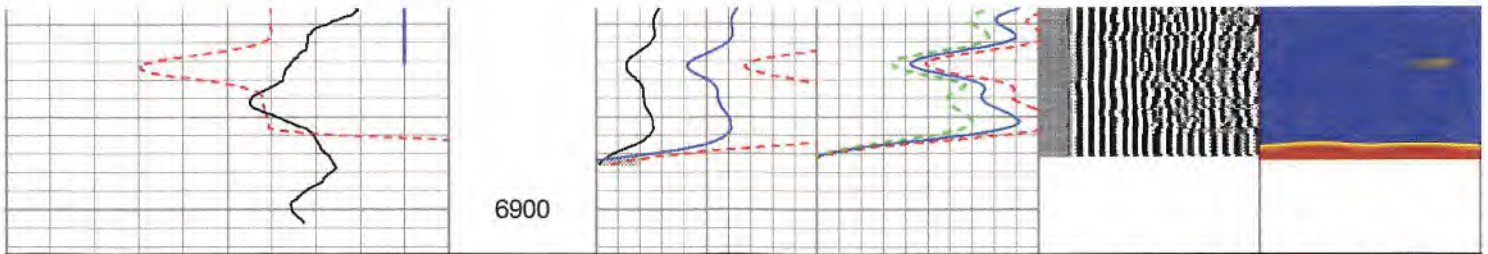
0	(mV)	100	Sector Amp MAX	200	(usec)	1200
	Amp X5		Sector Amp MIN			
0	(mV)	20				
1	BONDIX	0				



TEMP
(degF)



06/02/2023



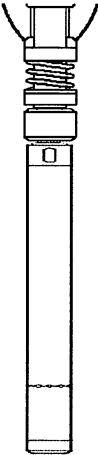
280	Travel Time (usec)	180	Amplitude	Sector Amp AVG	VDL	1	Sector Map	12
9	Casing Collar	-1	0 (mV)	Sector Amp MAX	200 (usec)	1200		
0	Gamma Ray	180	Amp X5	Sector Amp MIN				
0	TEMP (degF)	100	0 (mV)	20				
180	GR	360	1 BONDIX	0				

TEMP  
(degF)

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)	
CCL	20.30		CCL-312tekco (IO8X3-01) Tekco 3 1/8" 450 Deg. "F" SmCo Logging CCL	1.82	3.12	25.00	
			Tek-3.125 3 1/8" Titan Adjustable Centralizer	3.42	3.13	50.00	
TEMP	13.46						
WVFS12	12.17						
WVFS11	12.17						
WVFS10	12.17						
WVFS9	12.17						
WVFS8	12.17						
WVFS7	12.17						
WVFS6	12.17						
WVFS5	12.17						
WVFS4	12.17						
WVFS3	12.17						
WVFS2	12.17						
WVFS1	12.17						
WVFCAL	11.42						
WVF3FT	11.42						
WVF5FT	10.42						
WVFSYNC	7.08						
			Tek-3.125	3.42	3.13	50.00	

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WVFTEMP	7.08		3 1/8" Titan Adjustable Centralizer			
GR	1.04		GR-Tek-Co 2 3/4 (IPSNO-03) Tekco 2 3/4" 400 Deg. F Logging Gamma Ray	3.67	2.75	40.00
Dataset: 8_7_20_antero_garminunit2h.db: field/well/run1/pass4 Total length: 21.44 ft Total weight: 300.00 lb O.D.: 3.25 in						

**Calibration Report**

Database File g:\antero 2020\8\_7\_20\_antero\_garminunit2h.db  
 Dataset Pathname pass4.2  
 Dataset Creation Fri Aug 07 19:22:24 2020

**Gamma Ray Calibration Report**

Serial Number:	IPSNO-03		RECEIVED Office of Oil and Gas  <b>FEB 17 2023</b>  WV Department of Environmental Protection
Tool Model:	Tek-Co 2 3/4		
Performed:	Tue Nov 12 16:11:18 2019		
Calibrator Value:	1.0		
Background Reading:	0.0	cps	
Calibrator Reading:	1.0	cps	
Sensitivity:	0.5000	/cps	

**Segmented Cement Bond Log Calibration Report**

Serial Number:	IOL40-03_5_5	
Tool Model:	Tek12	
Calibration Casing Diameter:	5.500	in
Calibration Depth:	388.083	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.002	0.671	3.400	71.921	102.464	2.645
CAL	0.865	0.408				
5'	-0.002	0.724	3.400	71.921	94.368	3.609
SUM						
S1	0.018	1.956	3.400	100.000	49.854	2.478
S2	0.016	1.833	3.400	100.000	53.148	2.564
S3	0.014	1.905	3.400	100.000	51.097	2.665
S4	0.014	2.019	3.400	100.000	48.179	2.725
S5	0.015	2.099	3.400	100.000	46.339	2.714
S6	0.019	2.144	3.400	100.000	45.449	2.552
S7	0.019	2.100	3.400	100.000	46.421	2.514
S8	0.018	2.012	3.400	100.000	48.447	2.546
S9	0.017	2.013	3.400	100.000	48.409	2.554

06/02/2023

S10	0.018	2.018	3.400	100.000	48.305	2.527
S11	0.017	2.018	3.400	100.000	48.274	2.561
S12	0.018	1.996	3.400	100.000	48.829	2.514

Temperature Calibration Report

Serial Number: IOL40-03\_5\_5  
Tool Model: Tek12  
Performed: Fri Oct 20 09:51:21 2017

	Reference	Reading
Low Reference:	0.00 degF	0.00 usec
High Reference:	1.00 degF	1.00 usec
Gain:	0.33	
Offset:	0.00	
Delta Spacing	2	



Company	ANTERO RESOURCES CORPORATION
Well	GARMIN UNIT 2H
Field	MARCELLUS
County	TYLER
State	WV
Country	US

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