



**RADIAL CEMENT BOND
GAMMA RAY/CCLVDL**

Company ANTERO RESOURCES CORPORATION
 Well KAREN UNIT 1H
 Field MARCELLUS
 County RITCHIE
 State W.V.

Company ANTERO RESOURCES CORPORATION
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 Field MARCELLUS
 County RITCHIE State W.V.

Location: API #: 47085102150000 Other Services

SEC	TWP	RGE	Elevation	N/A
Permanent Datum	G.L.			
Log Measured From	K.B.			K.B. N/A
Drilling Measured From	K.B. OF 30'			D.F. N/A
				G.L. N/A

Date	4/3/19
Run Number	ONE
Depth Driller	19830'
Depth Logger	7285'
Bottom Logged Interval	7285'
Top Log Interval	SURFACE
Open Hole Size	N/A
Type Fluid	H2O
Density / Viscosity	N/A
Max. Recorded Temp.	142 DEG
Estimated Cement Top	190'
Time Well Ready	N/A
Time Logger on Bottom	N/A
Equipment Number	340
Location	BRIDGEPORT, WV
Recorded By	JBOGGS
Witnessed By	MR. BOB REED

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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

THANK YOU FOR USING KLX ENERGY SERVICES

LOG WAS RAN ON 5 1/2" CASING WITH 1500PSI ON CASING
 TOP OF CEMENT- 190'
 BOTTOM HOLE TEMP- 142 DEG
 MARKER JOINT ON LOG @ 6061'-6073'
 CORRECTED UP HOLE 22' TO PUT MARKER ON DEPTH WITH PIPE TALLY

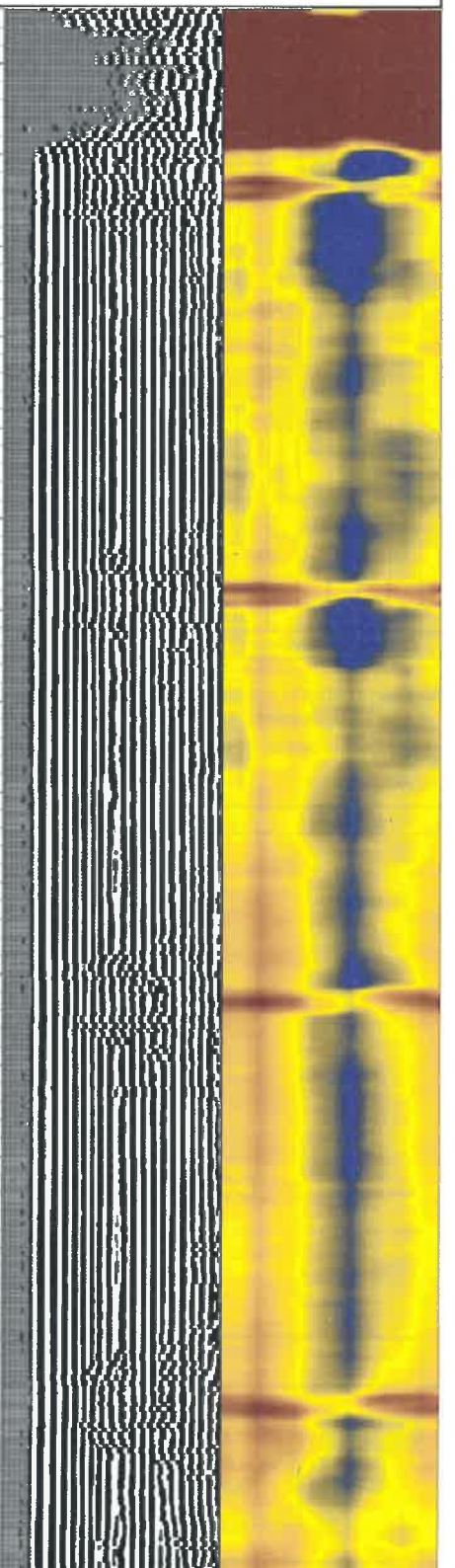
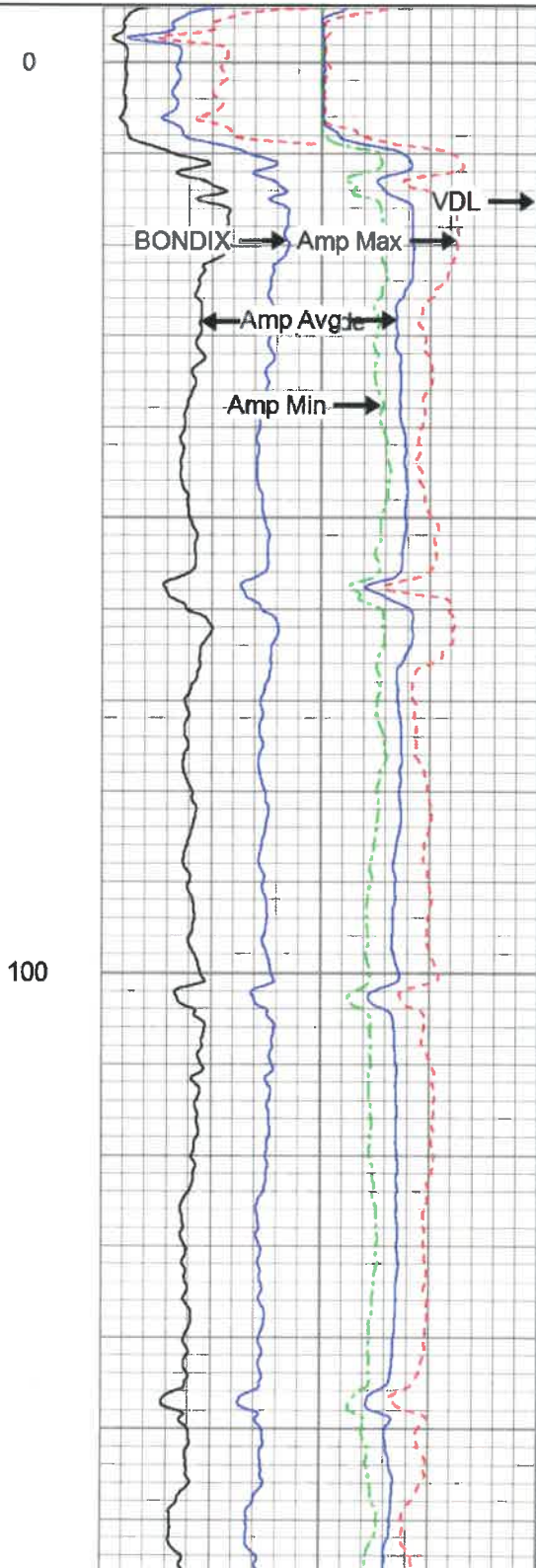
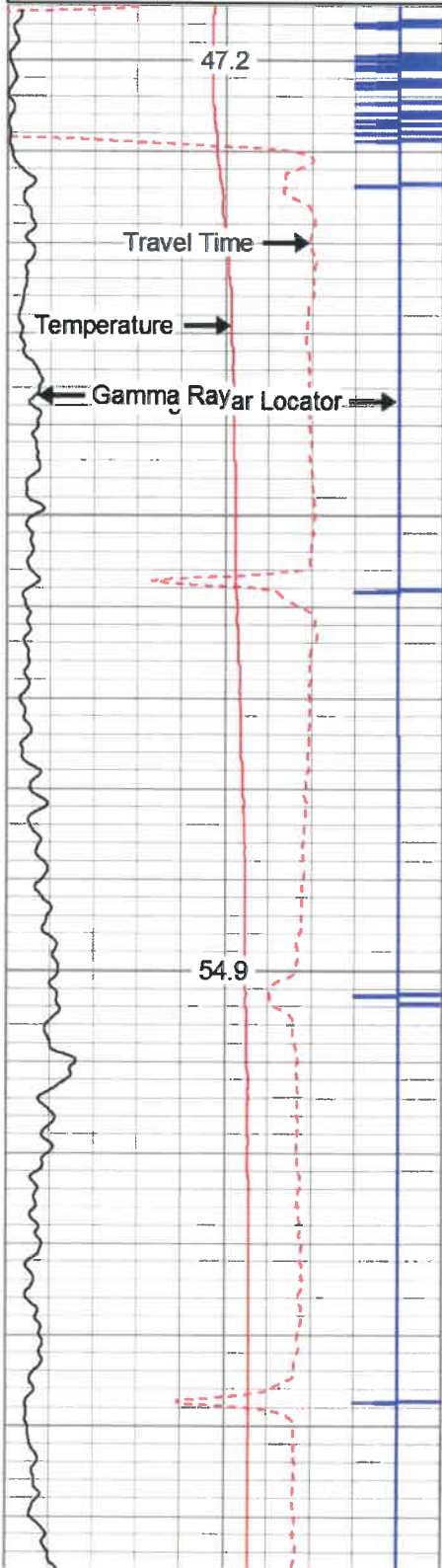
FEB 18 2020
 WV Dept. of Environmental Protection

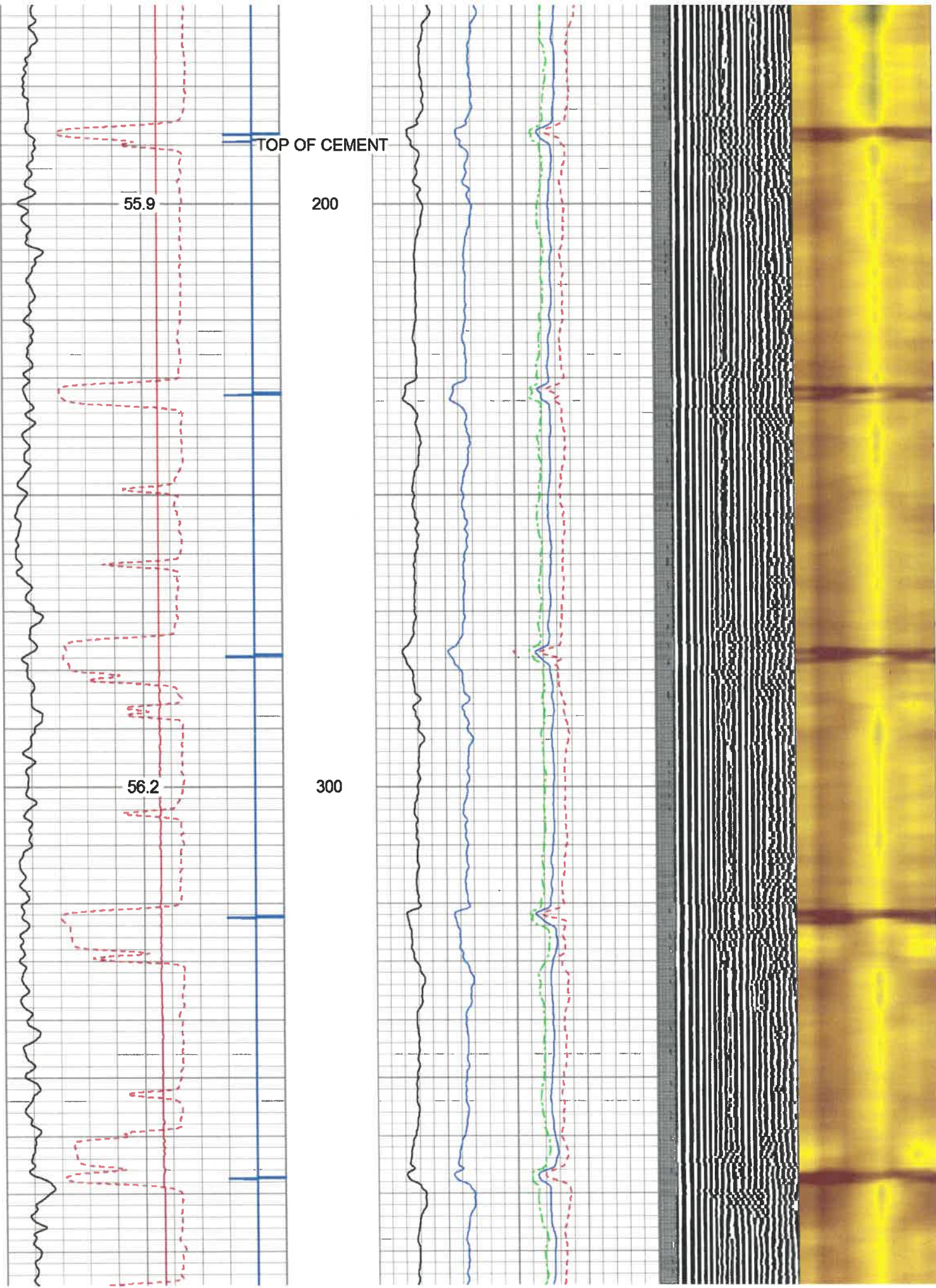


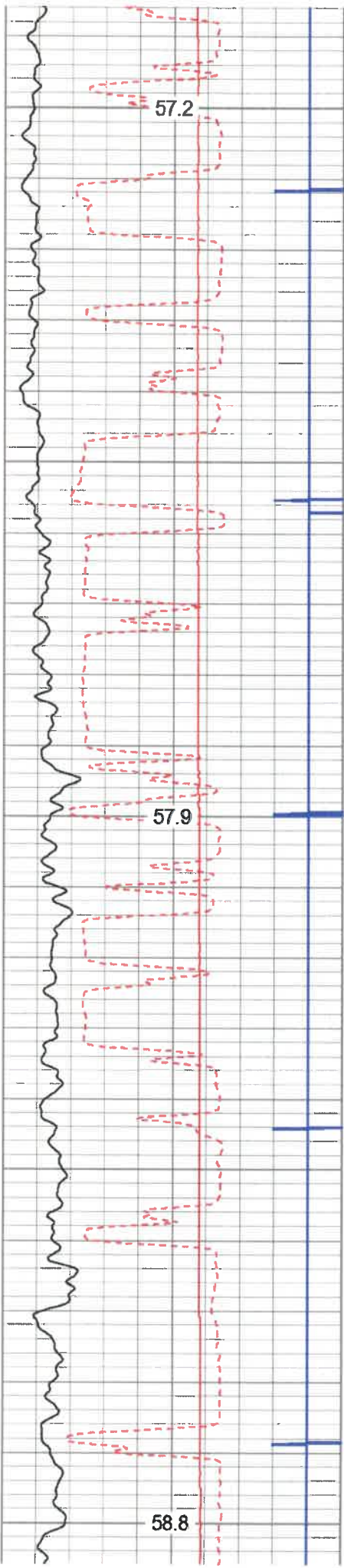
MAIN LOG 5"/100'

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 Presentation Format: antero f
 Dataset Creation: Wed Apr 03 10:00:20 2019 by Calc 7.0 B1
 Charted by: Depth in Feet scaled 1:240

280	Travel Time (usec)	180	Amplitude	0	Amp Avg	150	200	VDL	1200	1	Sector Map	12
9	Casing Collars	-1	(mV)	100	Amp Max	150				20		80
0	Gamma Ray	180	AmpX5 (mV)	20	Amp Min	150						
0	TEMP (degF)	100	BONDIX	0								



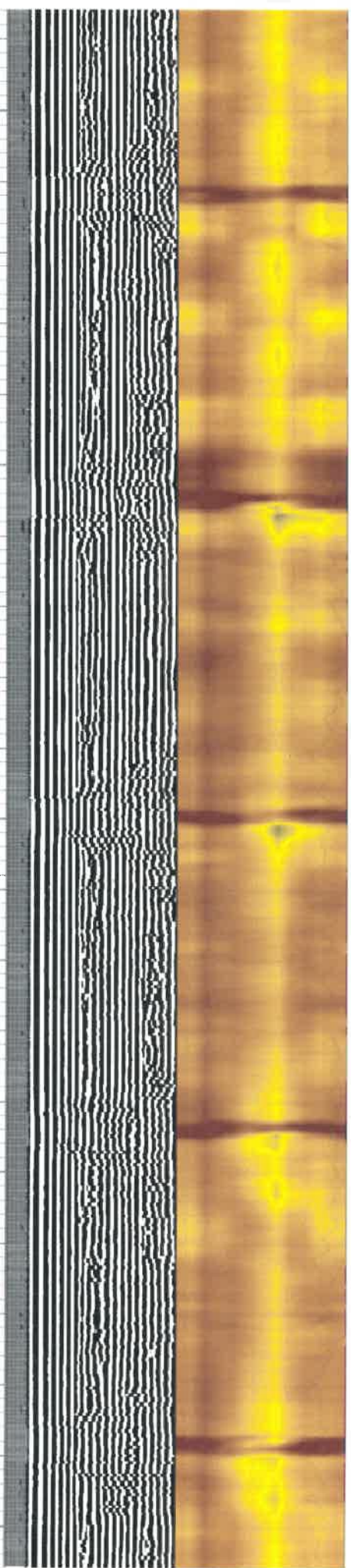
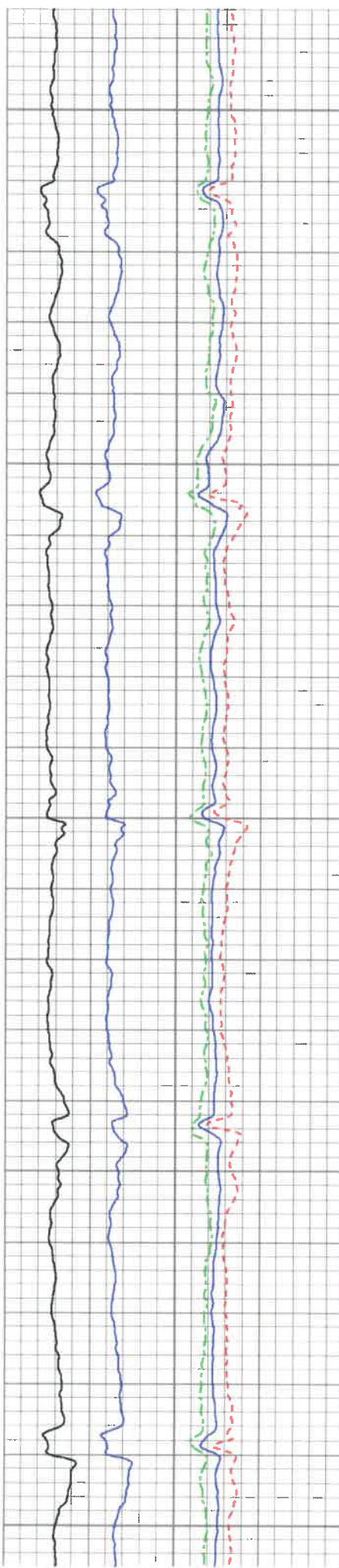


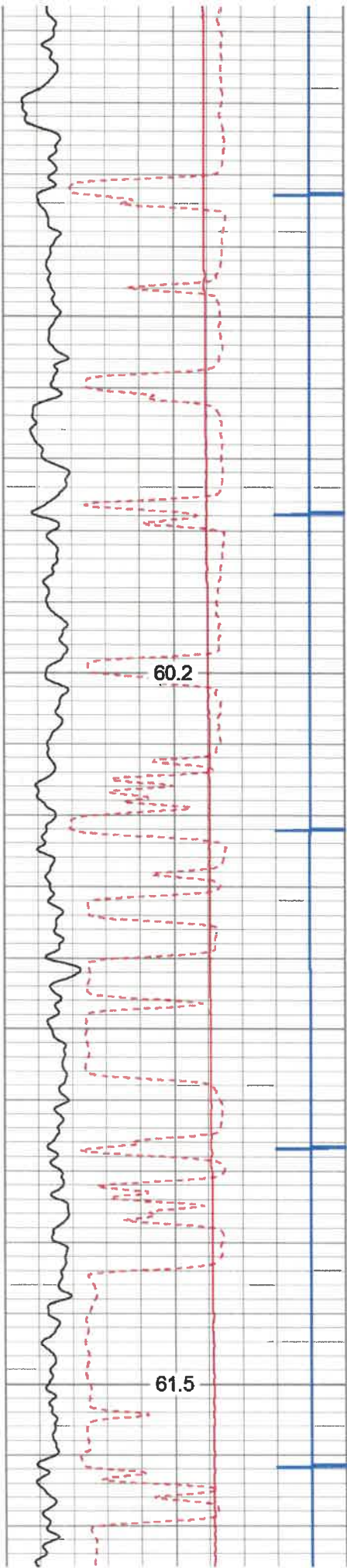


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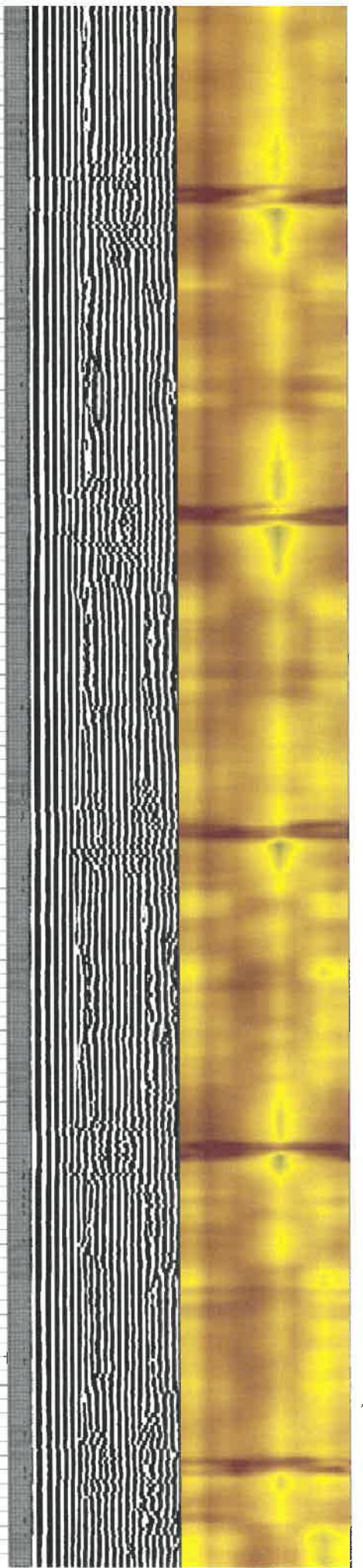
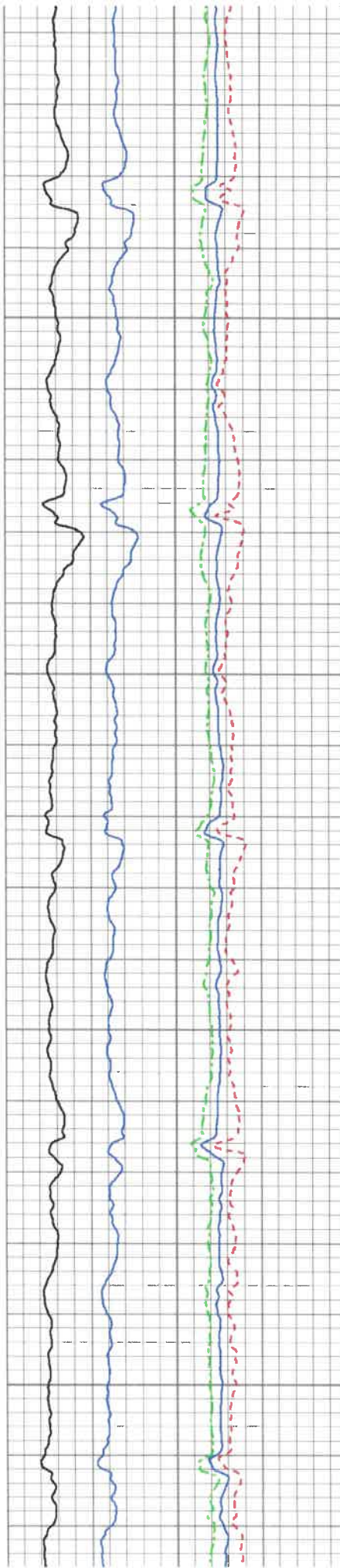
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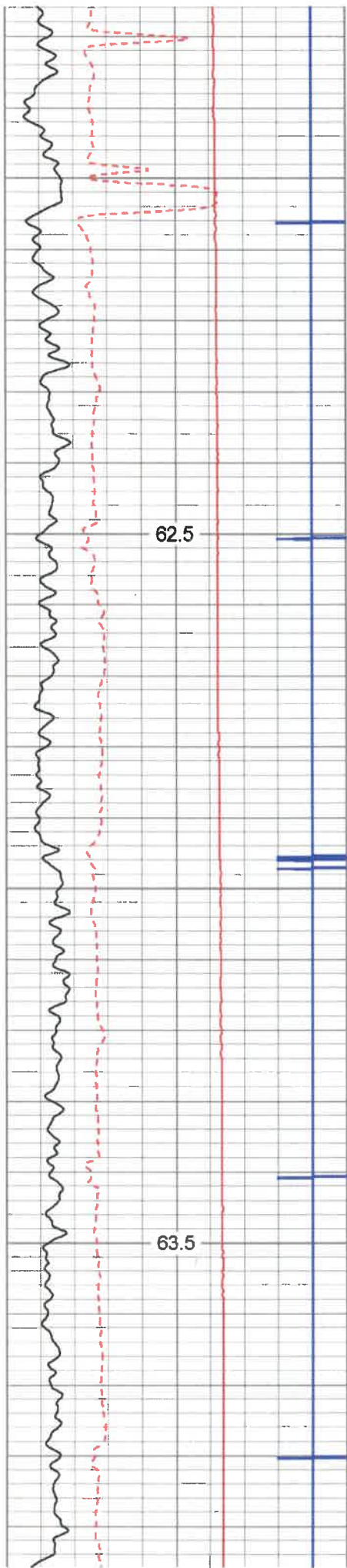




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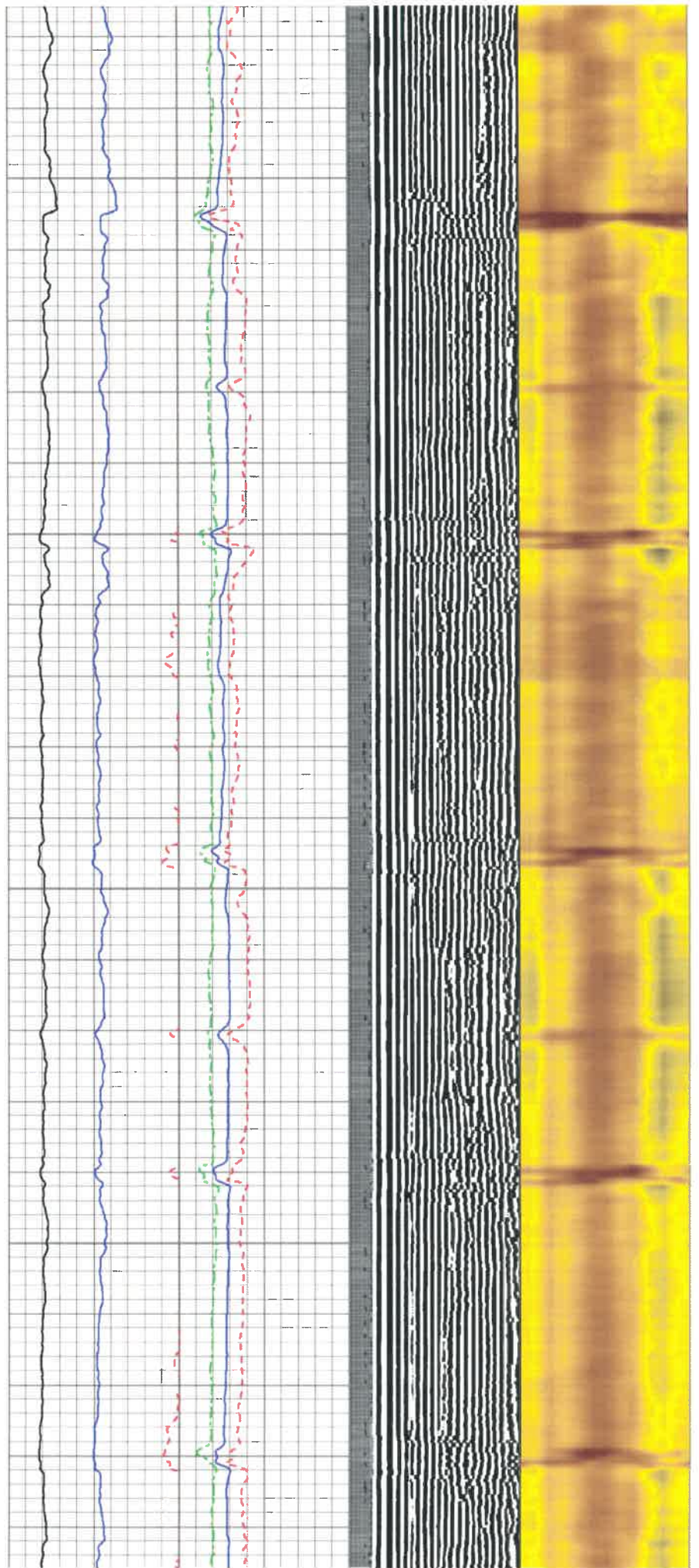
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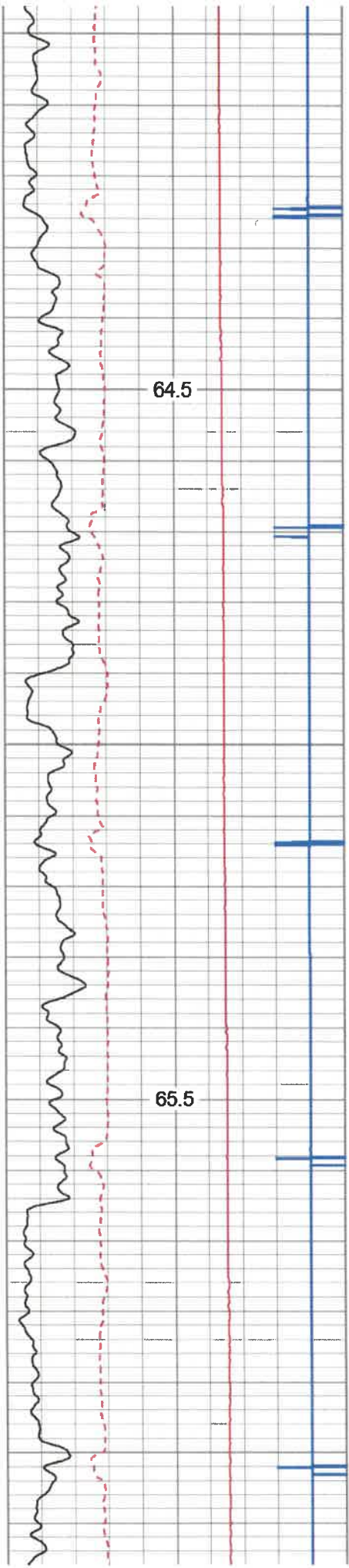




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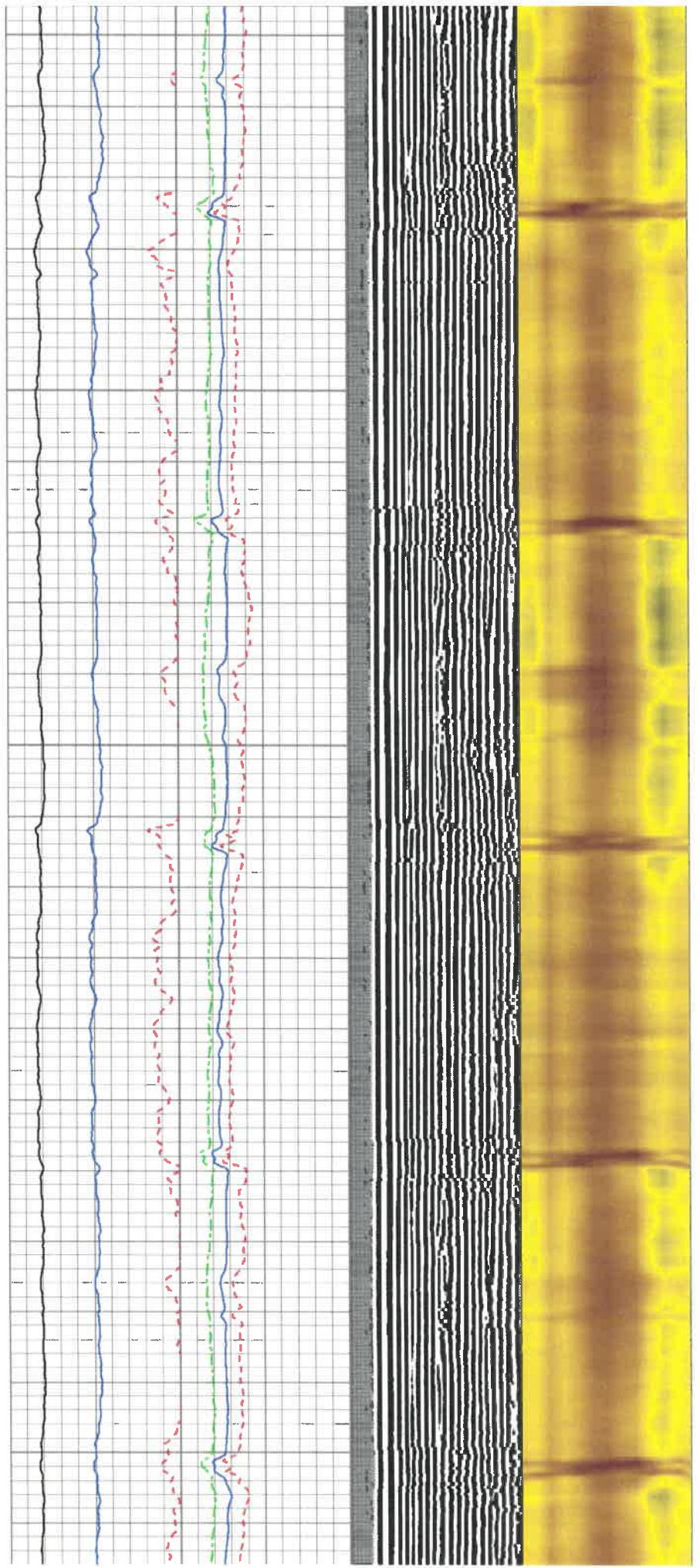
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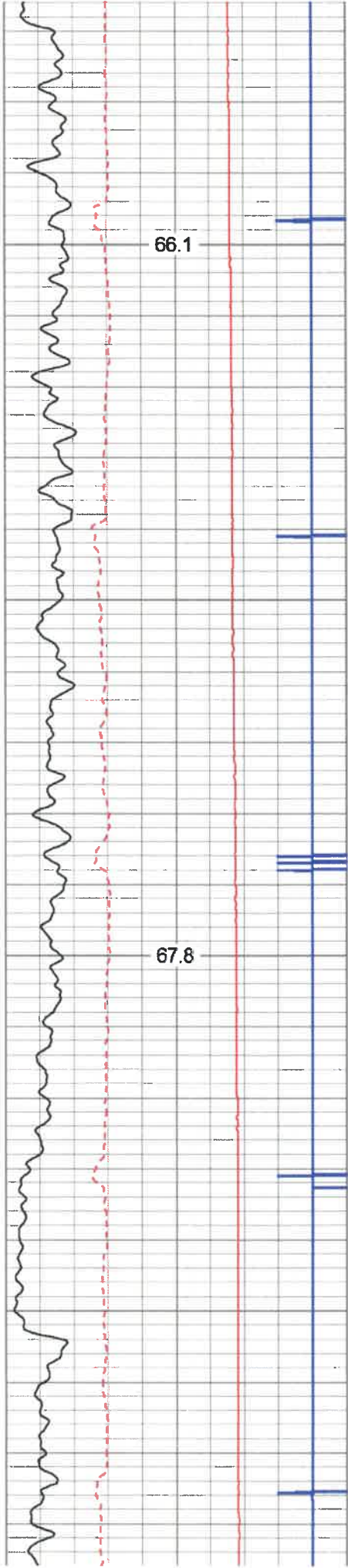




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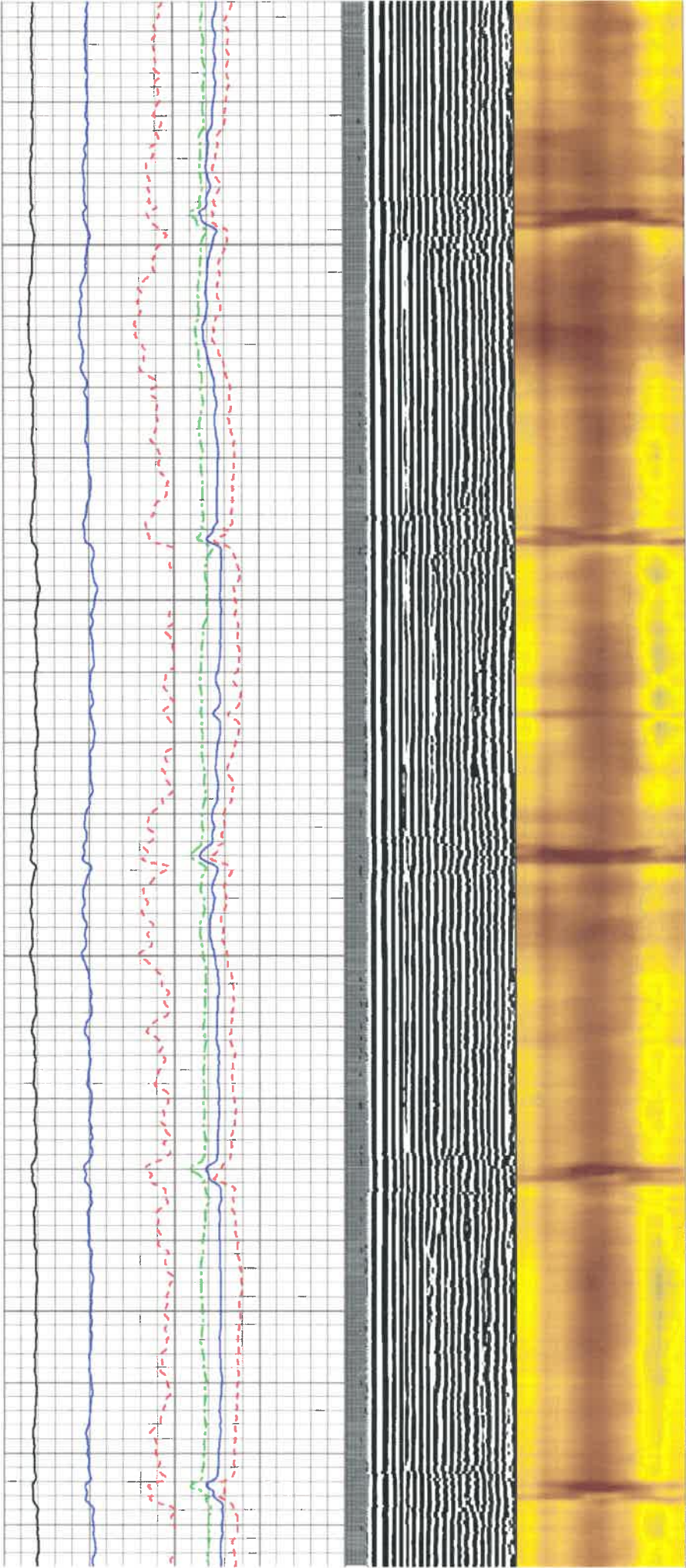
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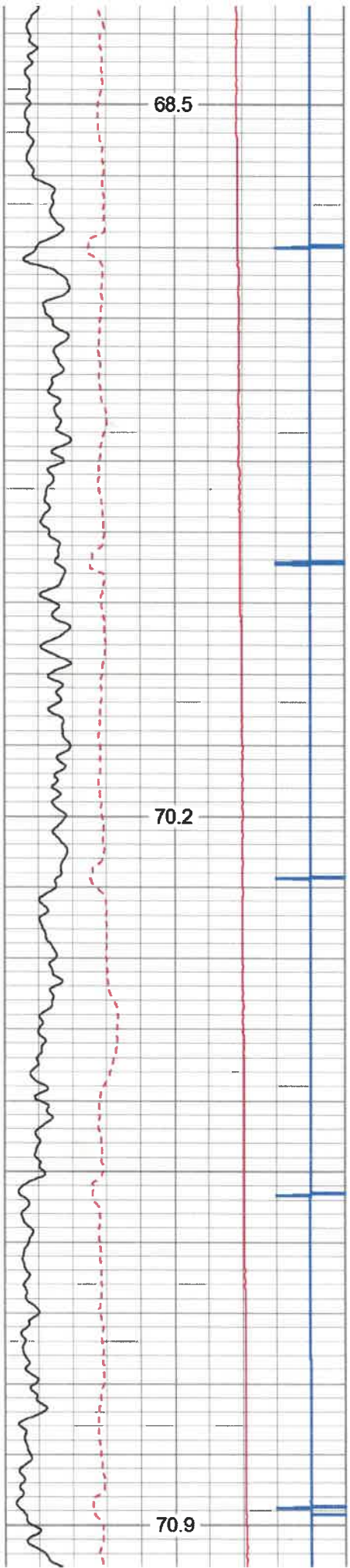




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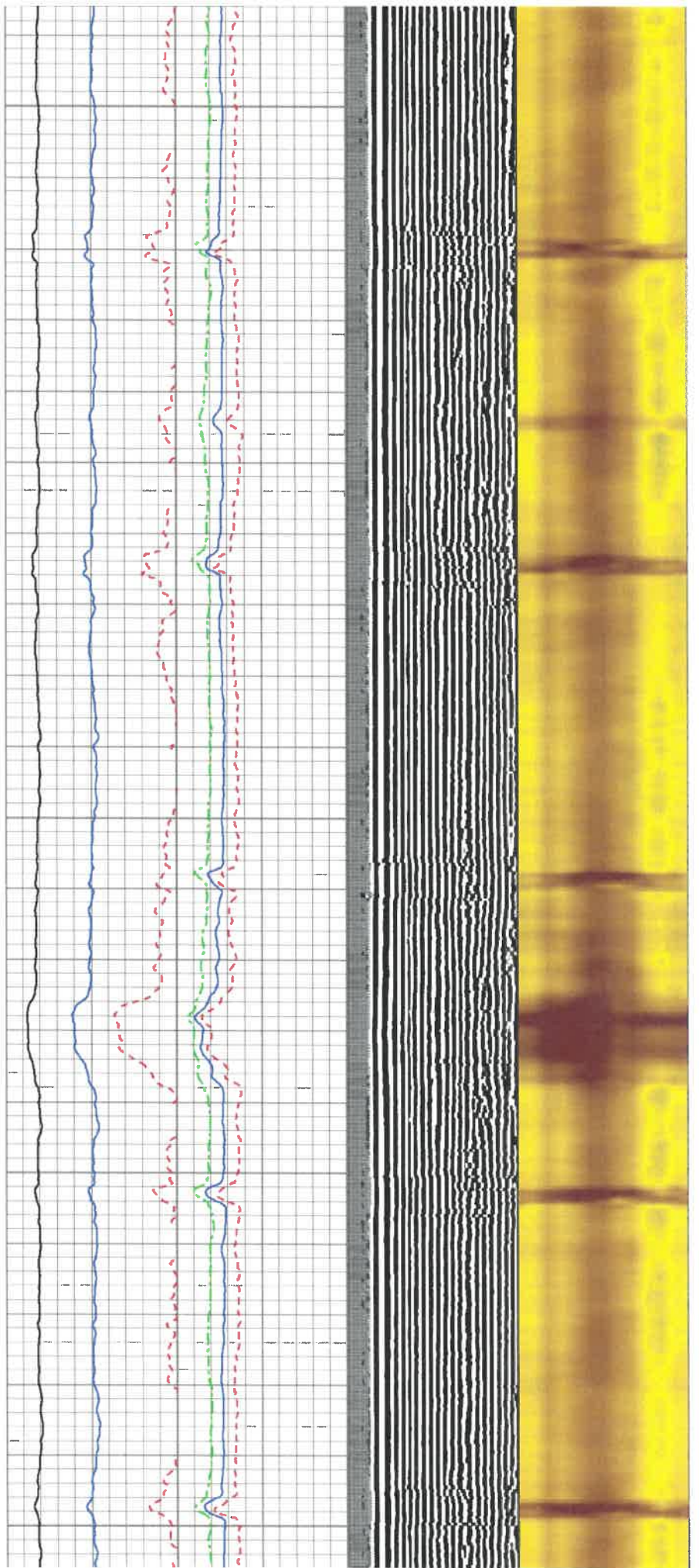


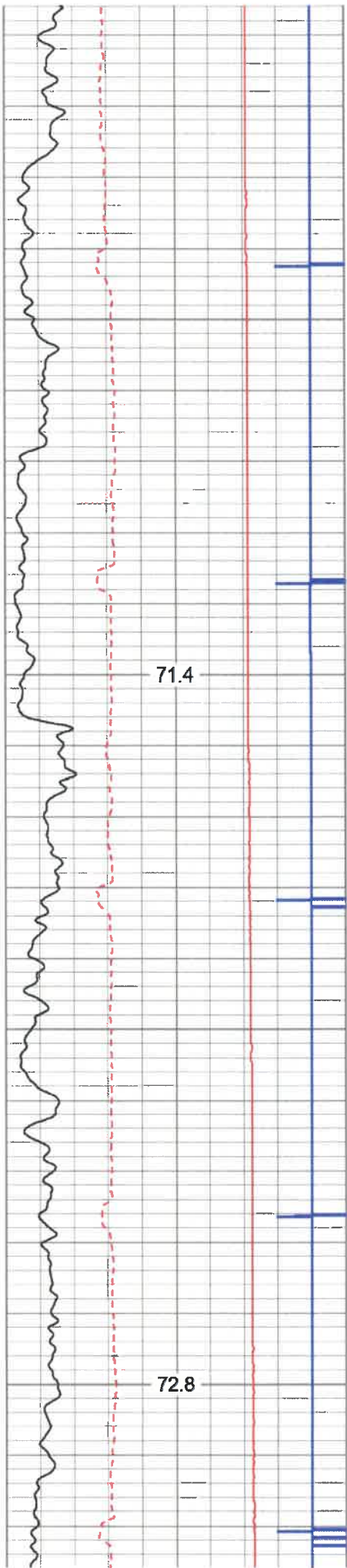


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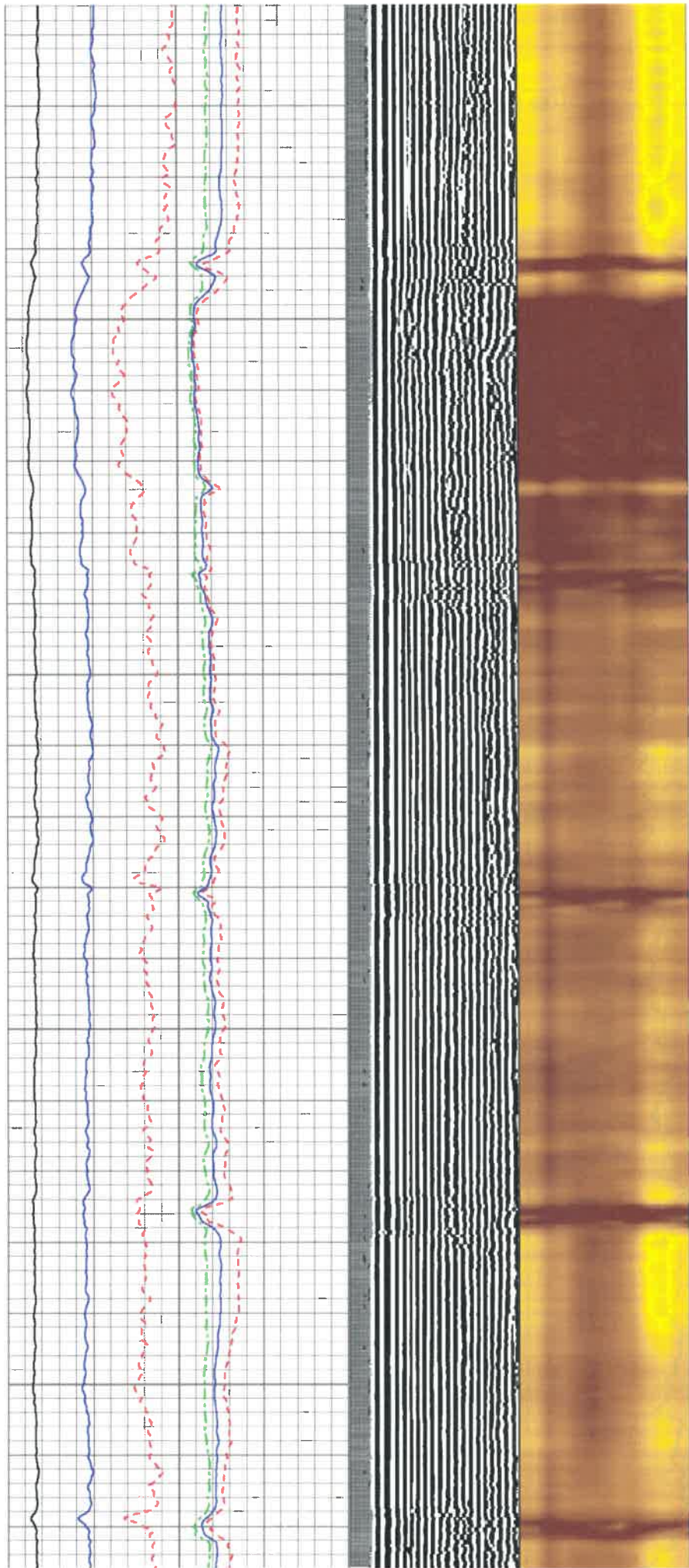
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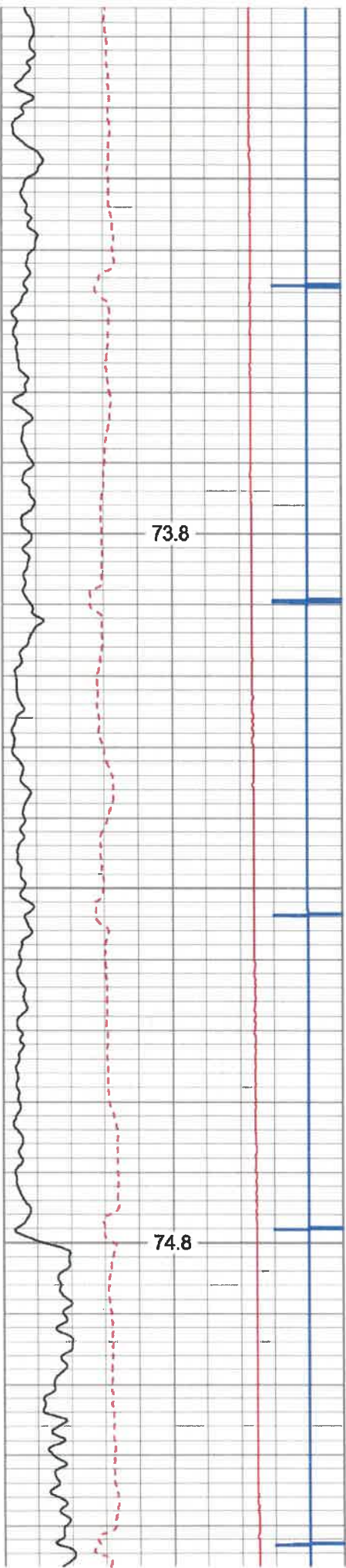




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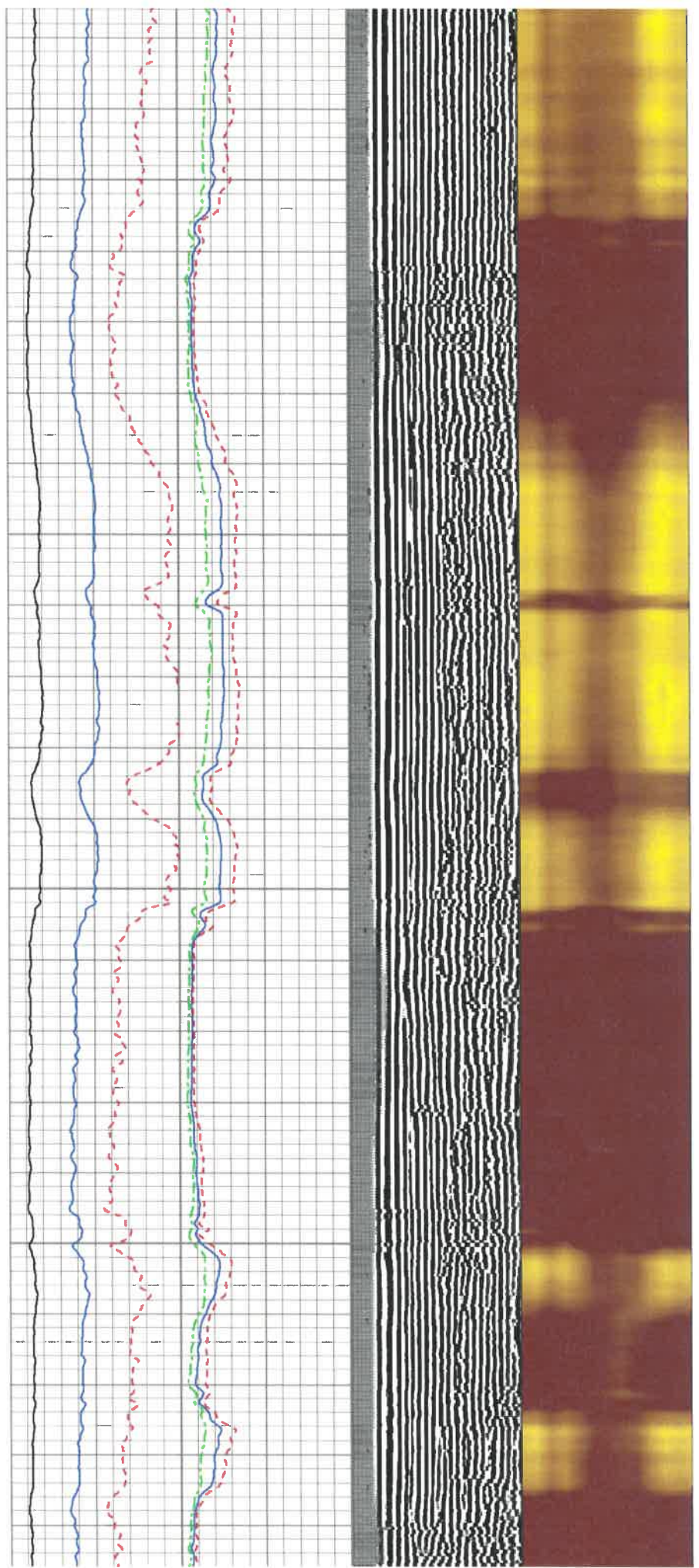
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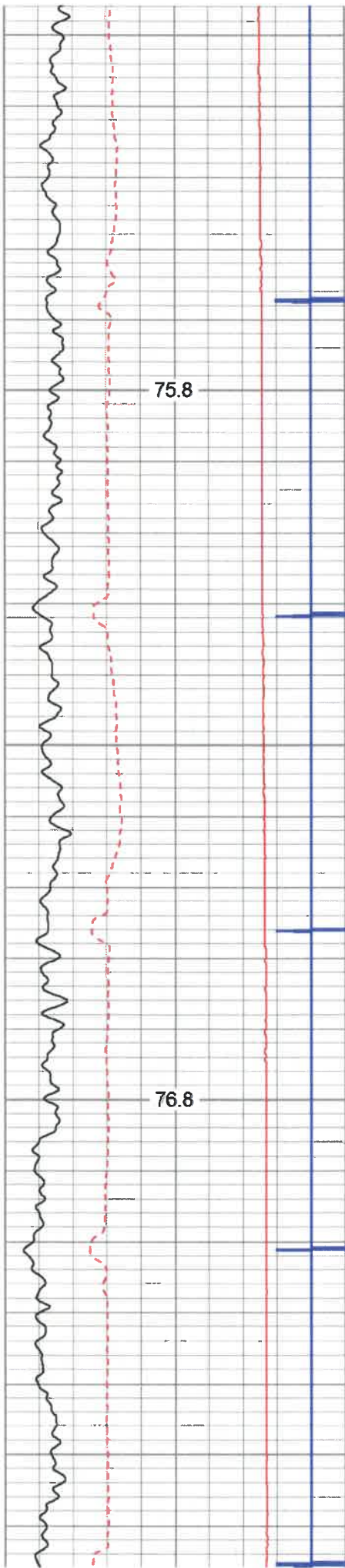




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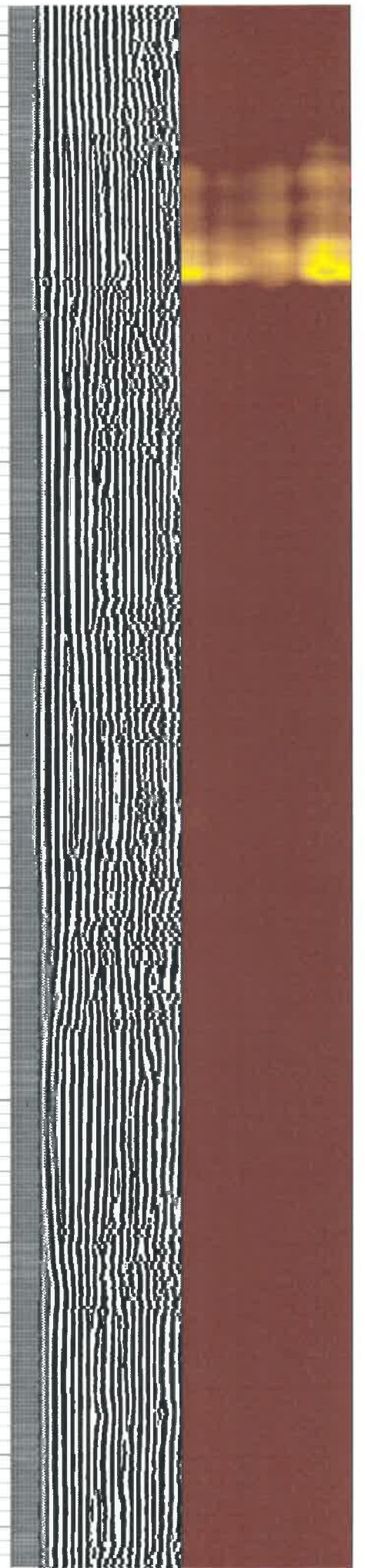
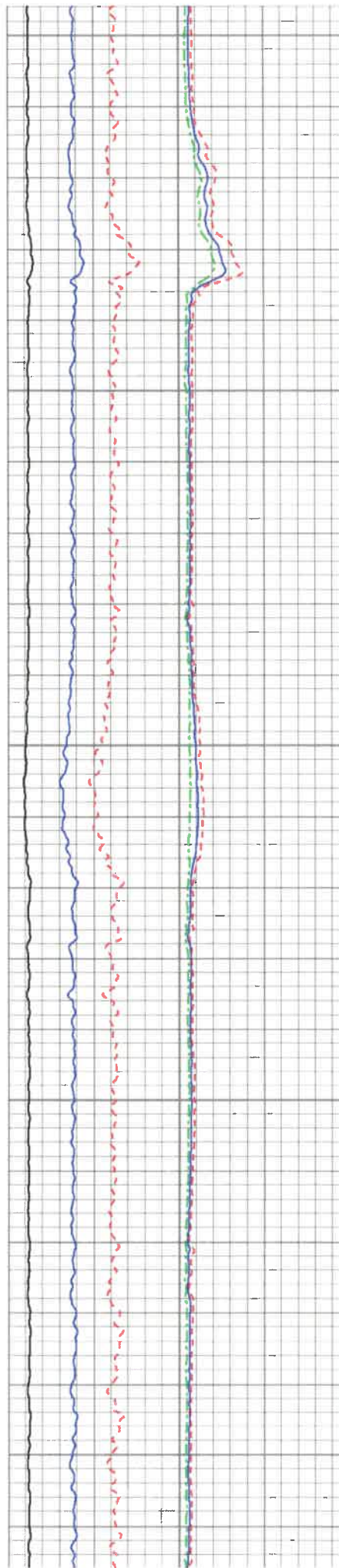
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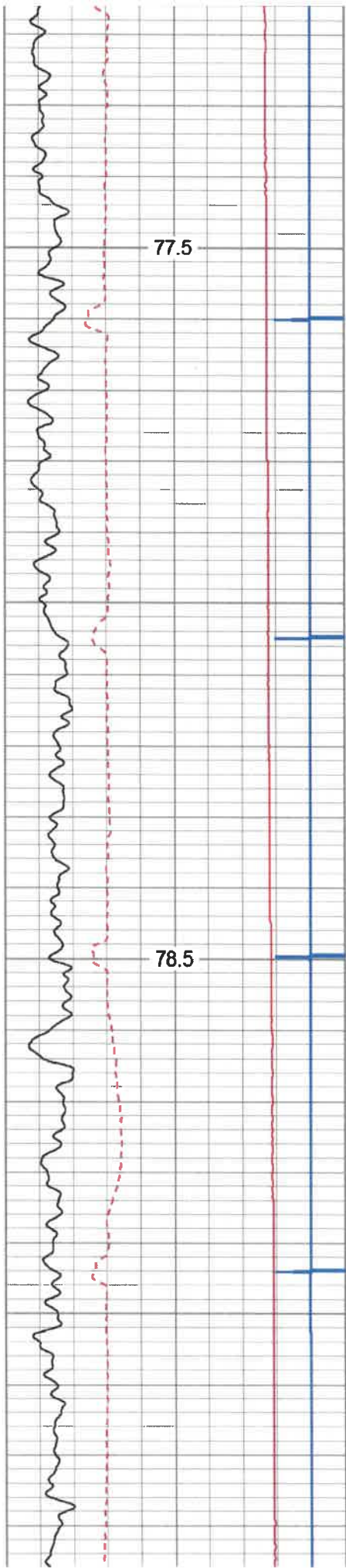




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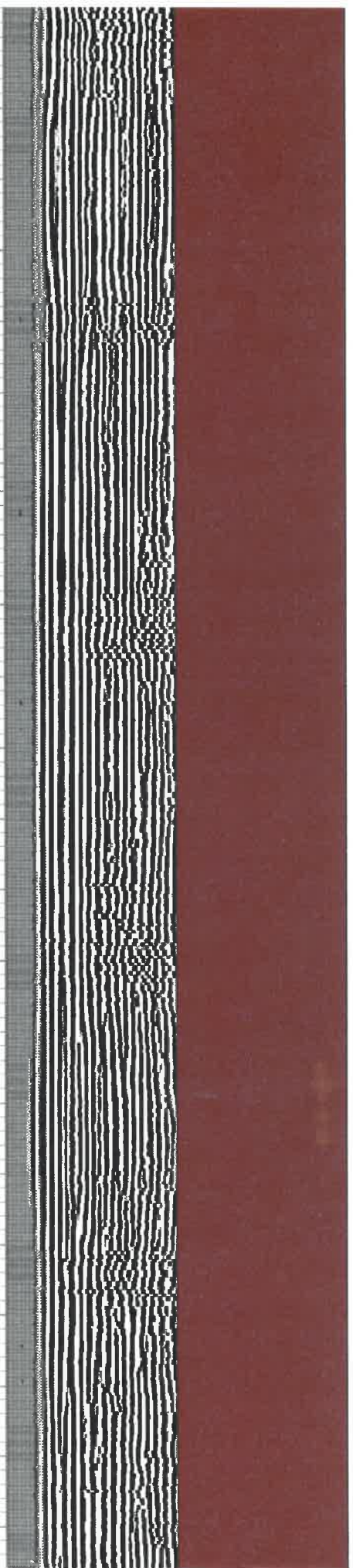
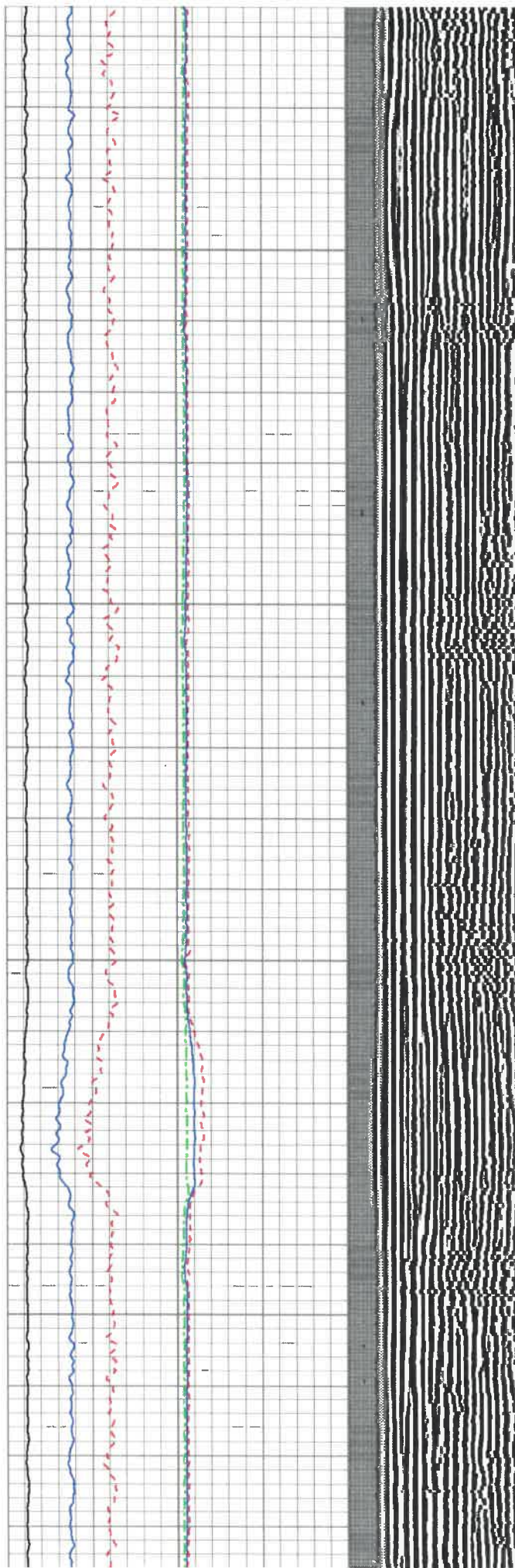
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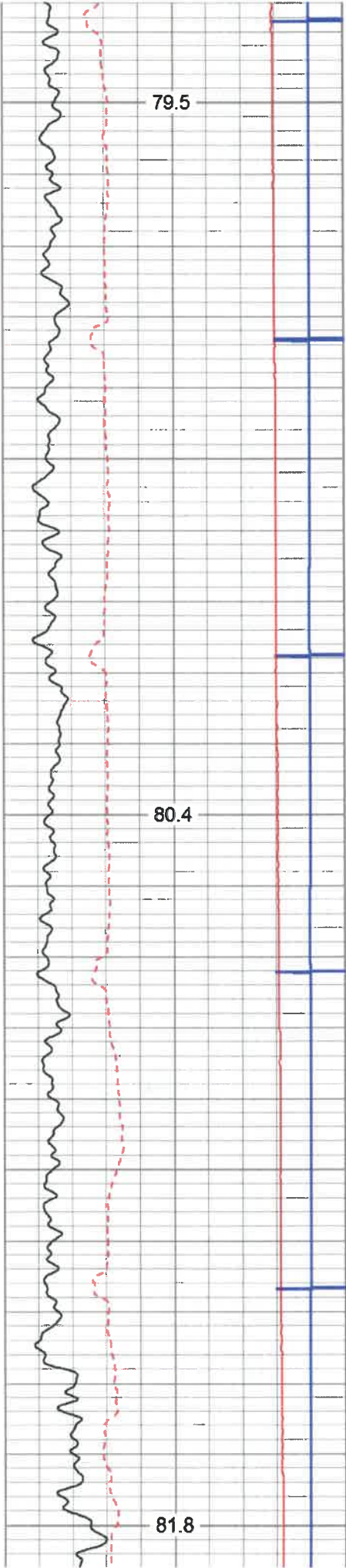




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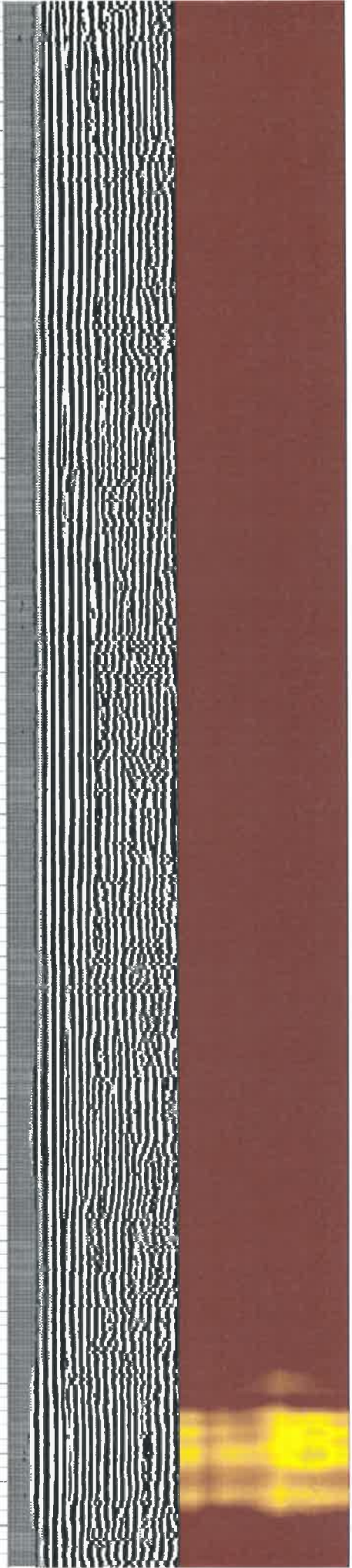
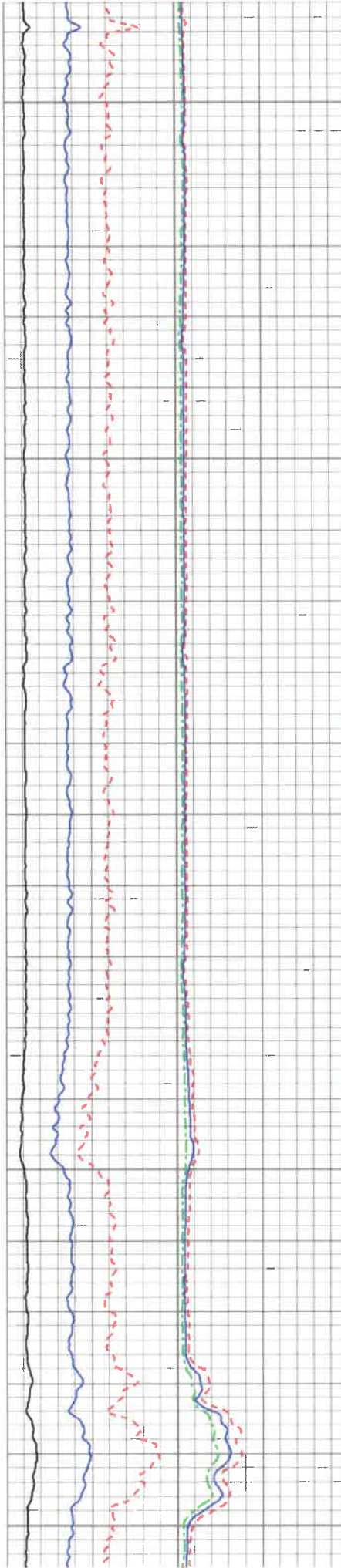


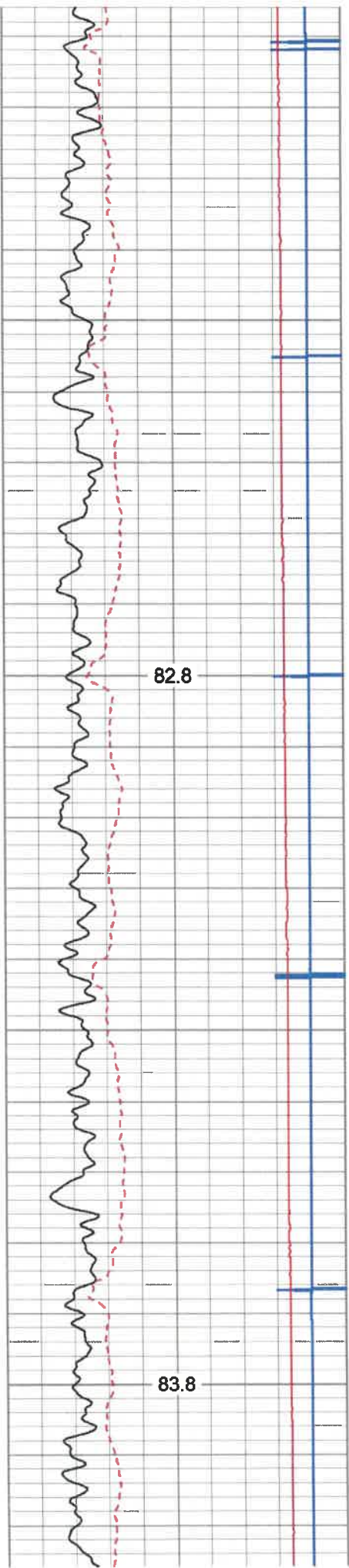


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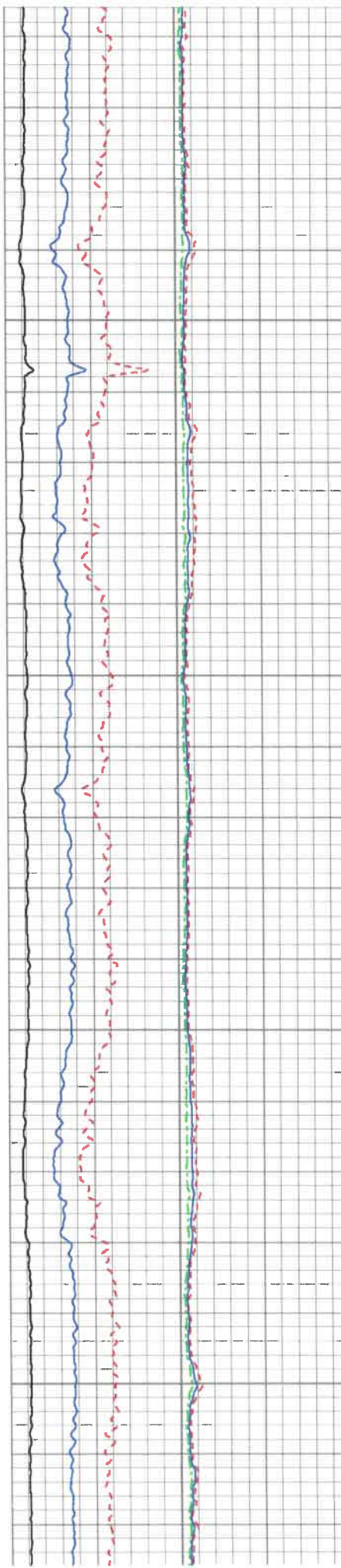
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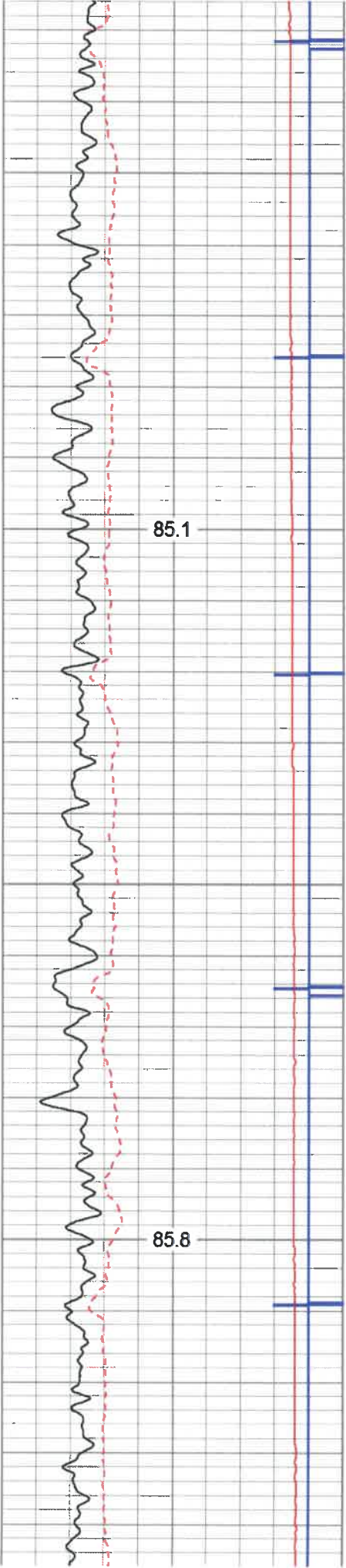




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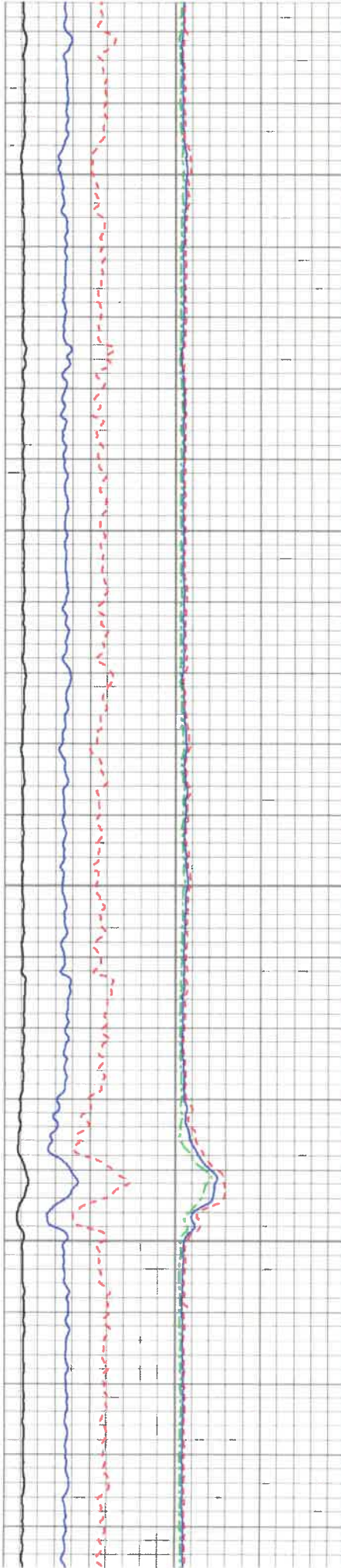
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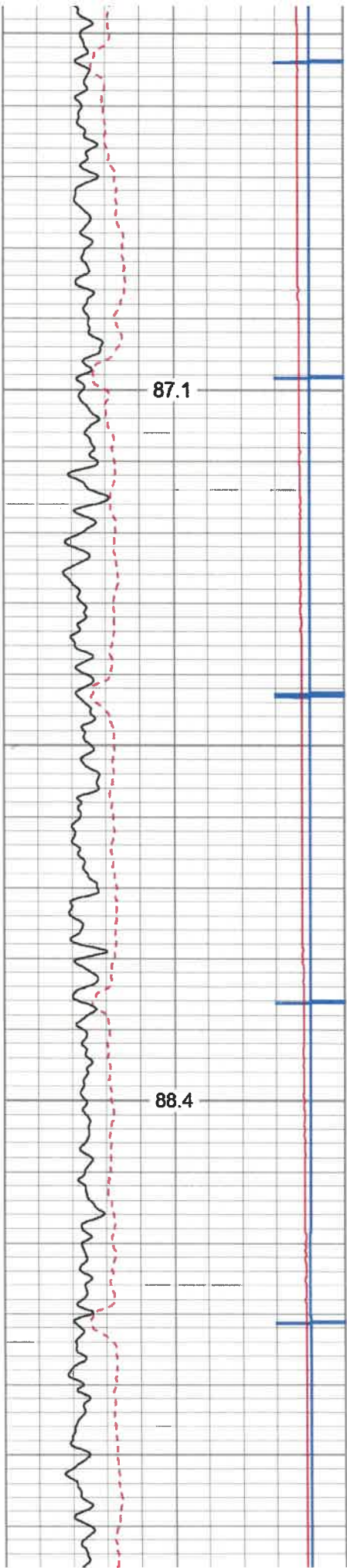




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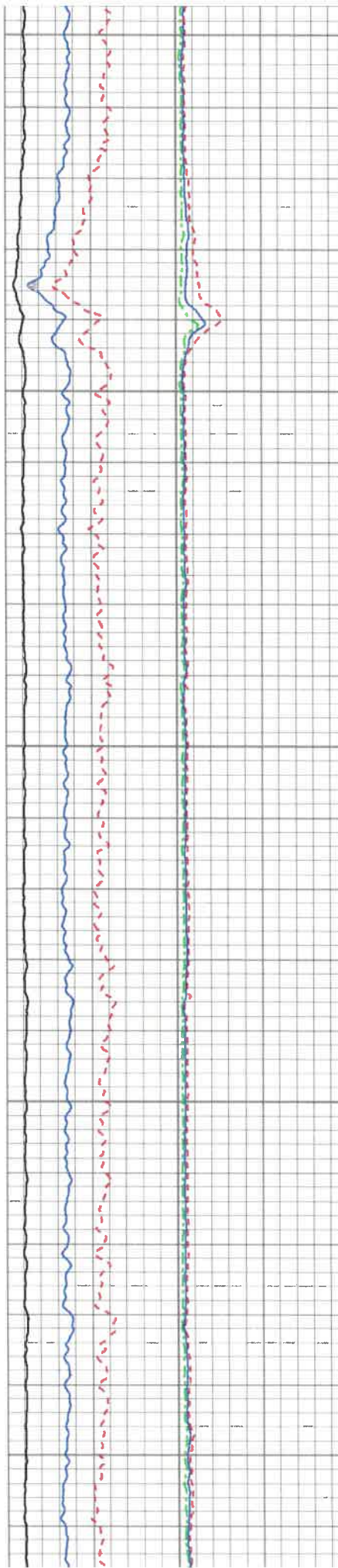
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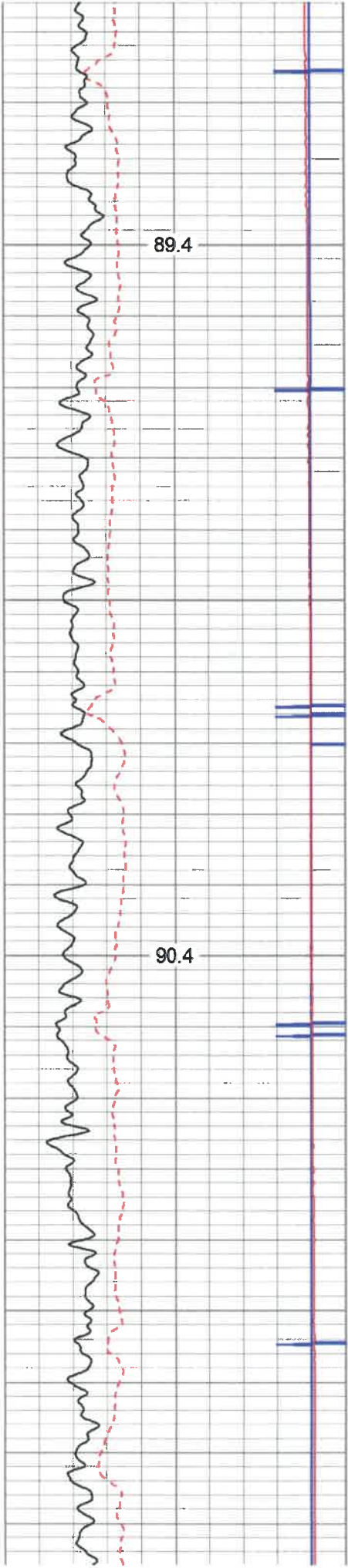




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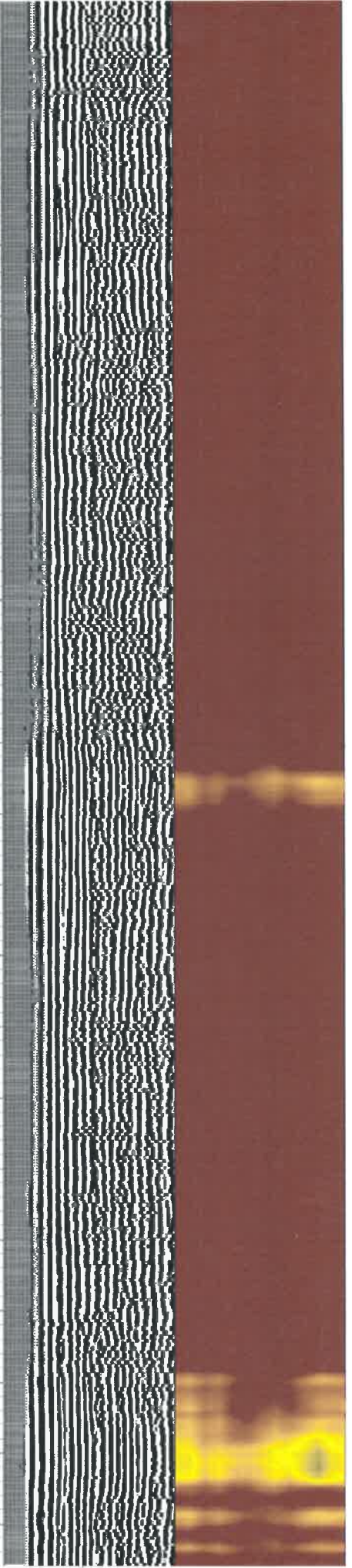
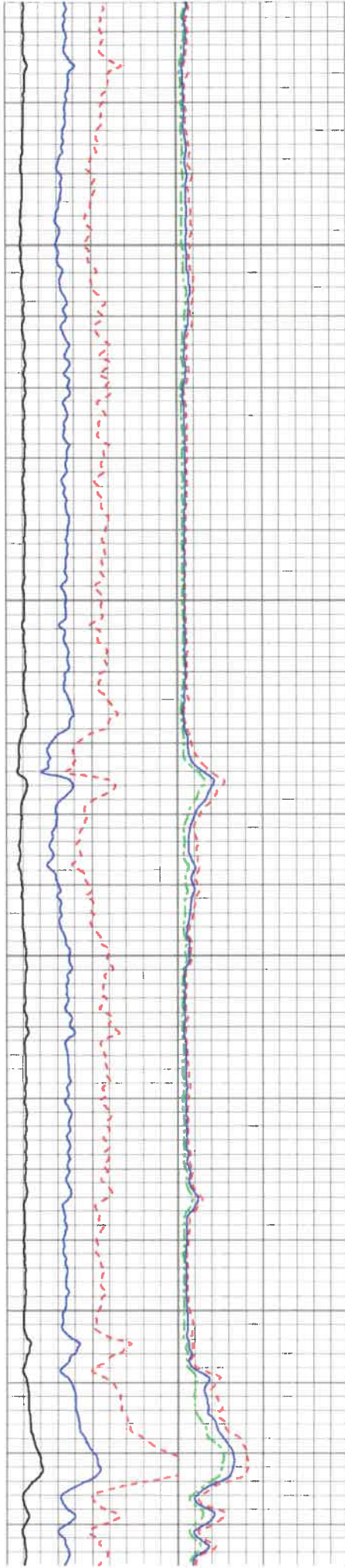
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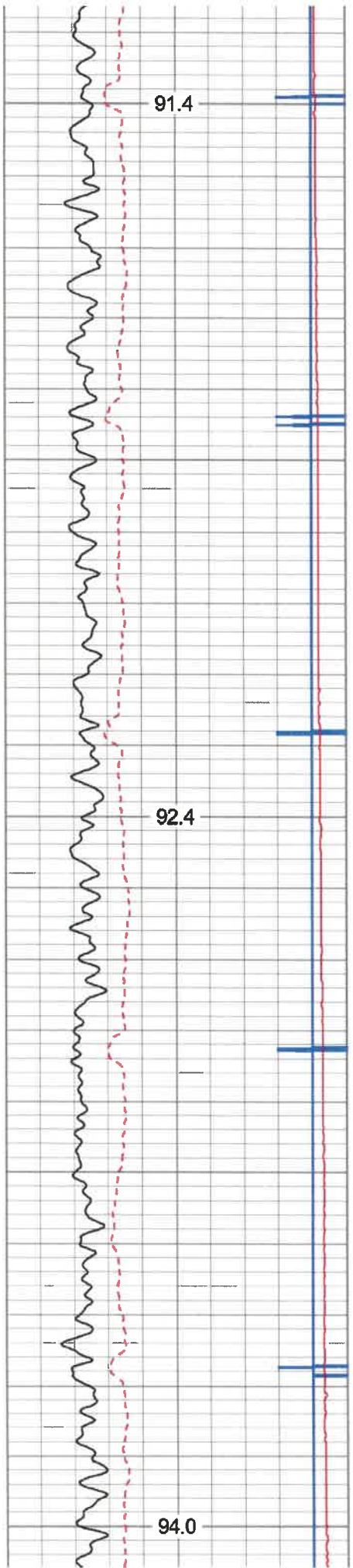




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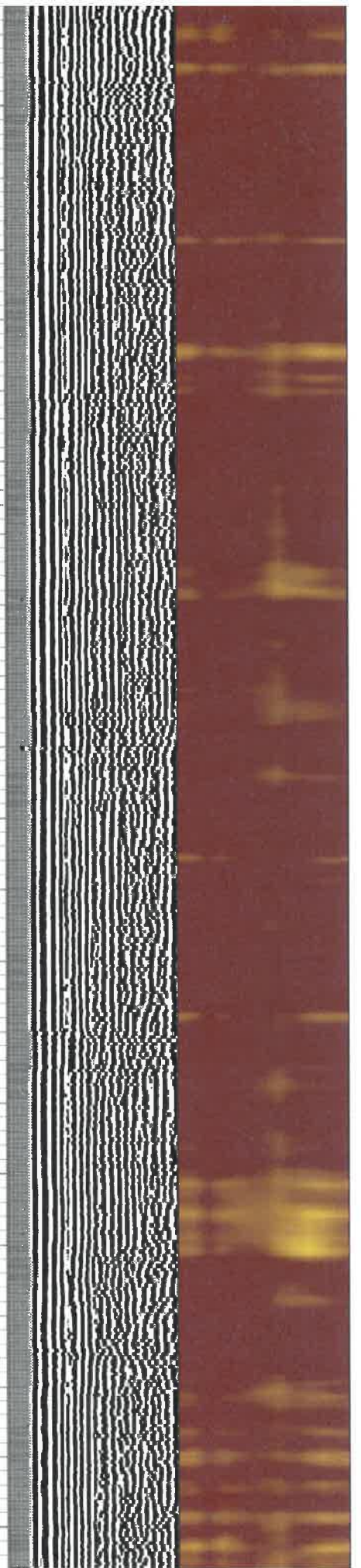
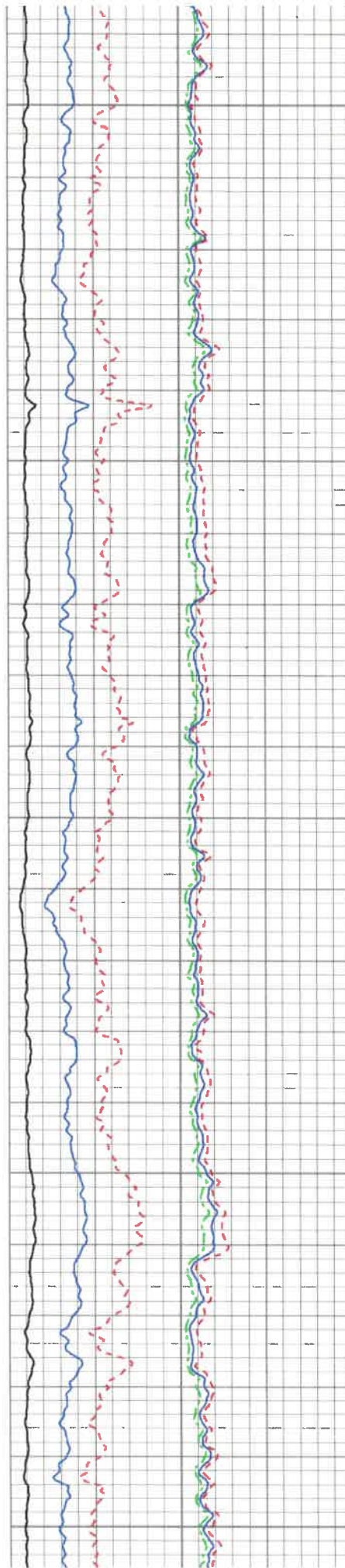


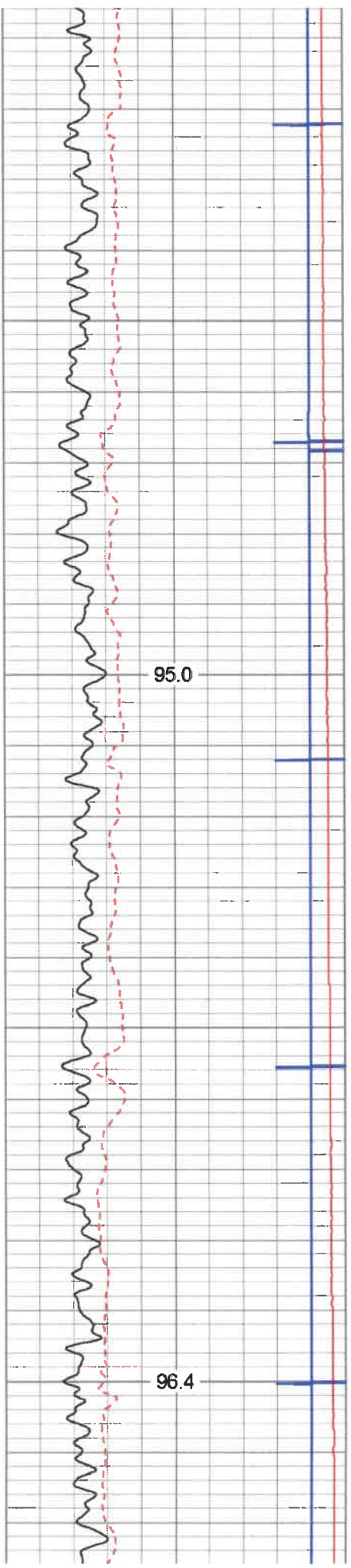


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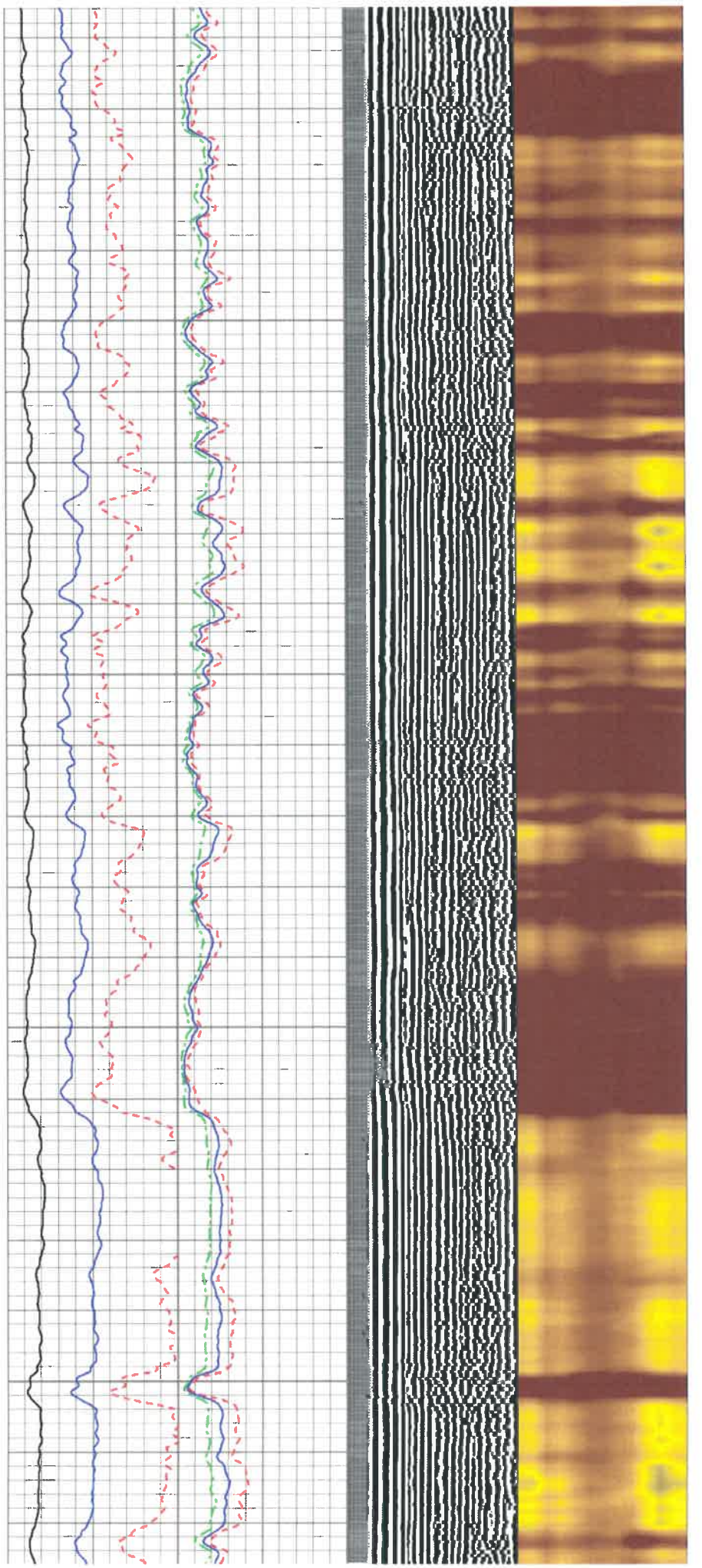
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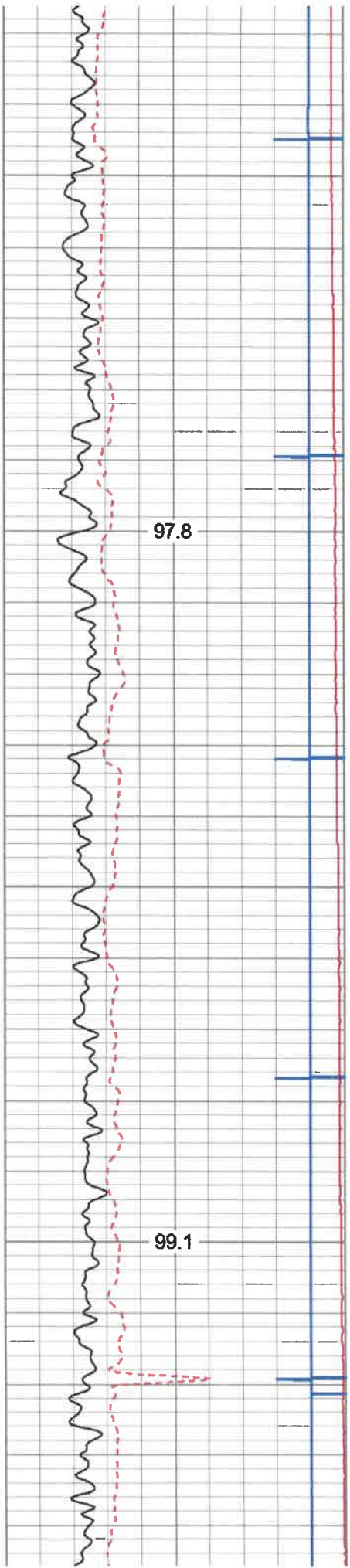




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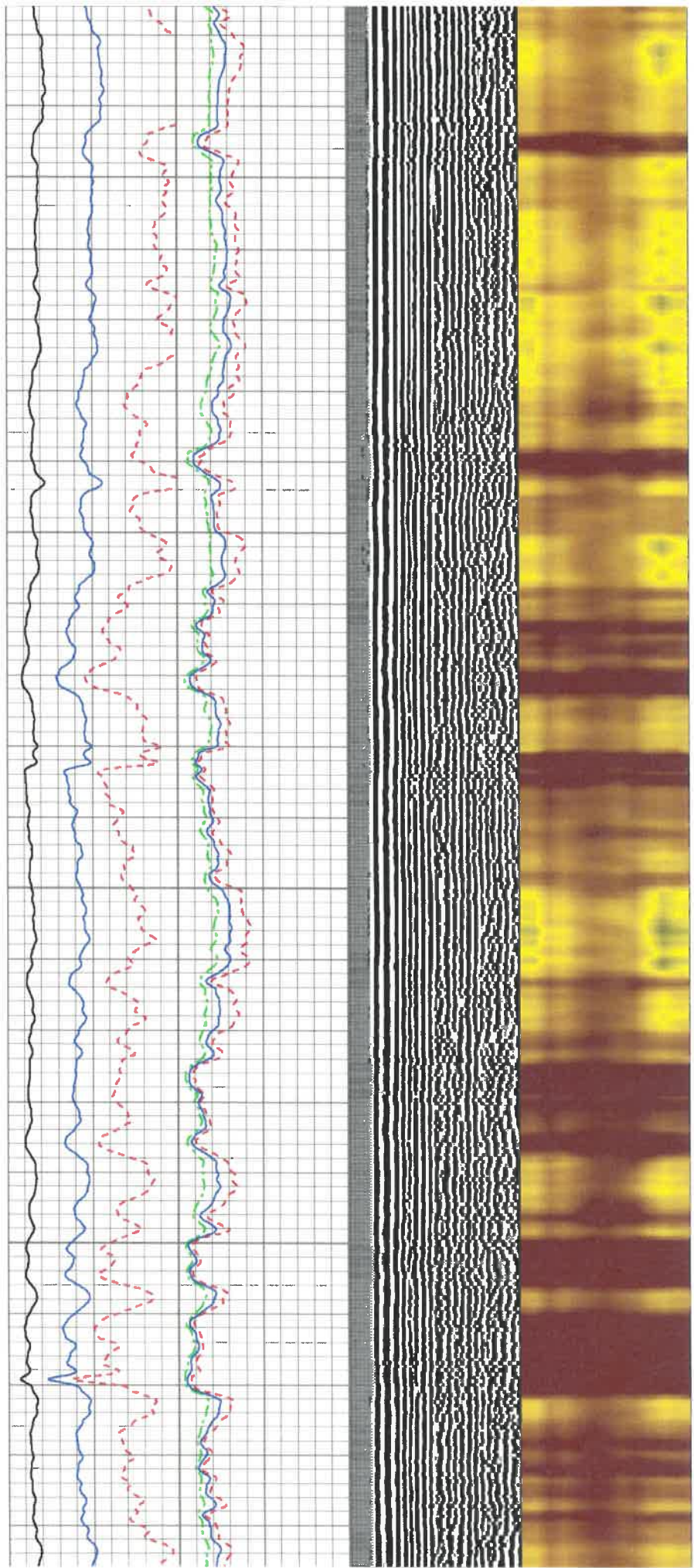
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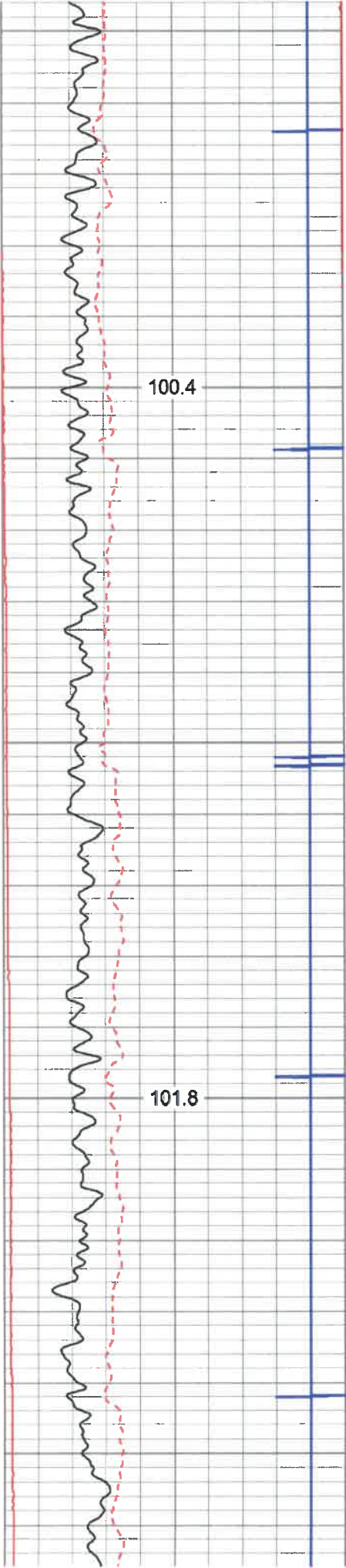




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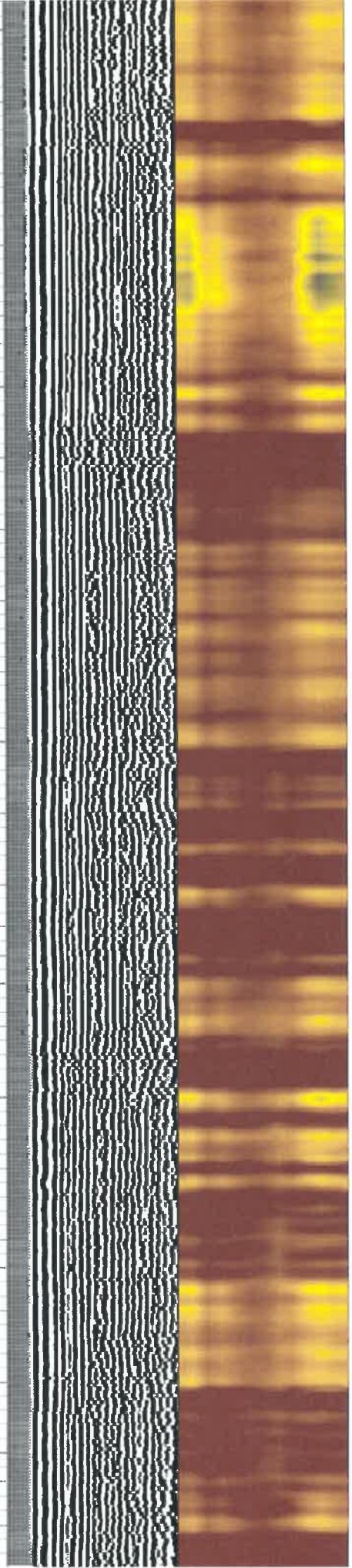
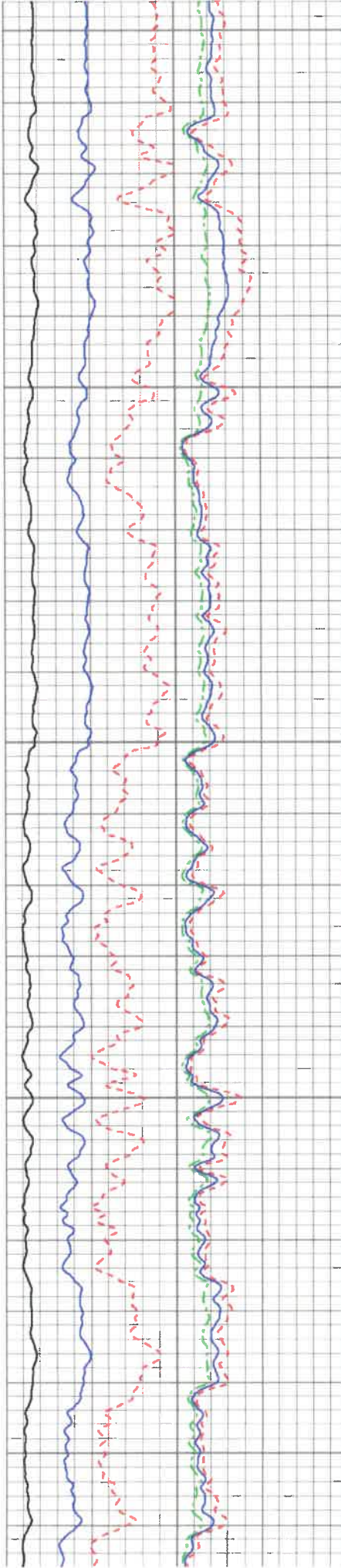
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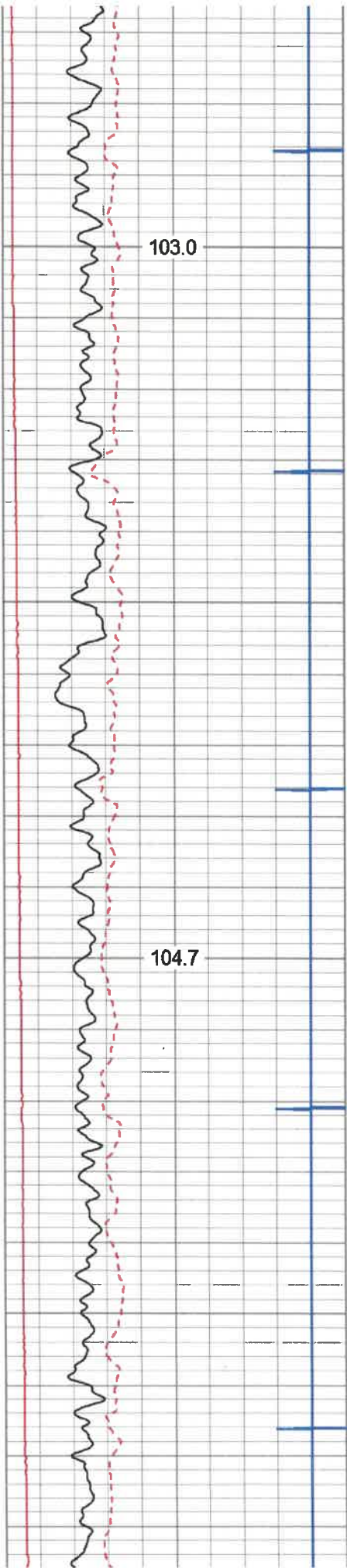




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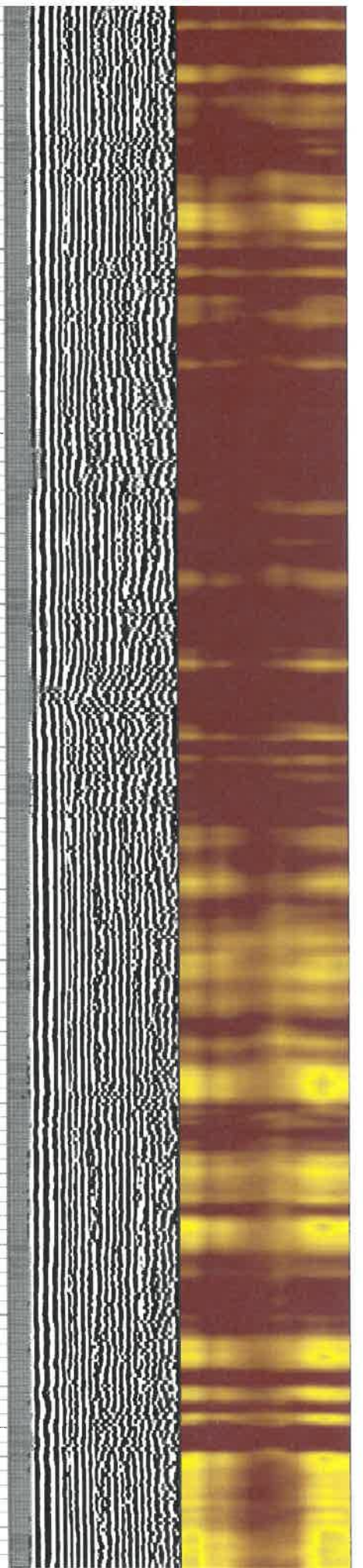
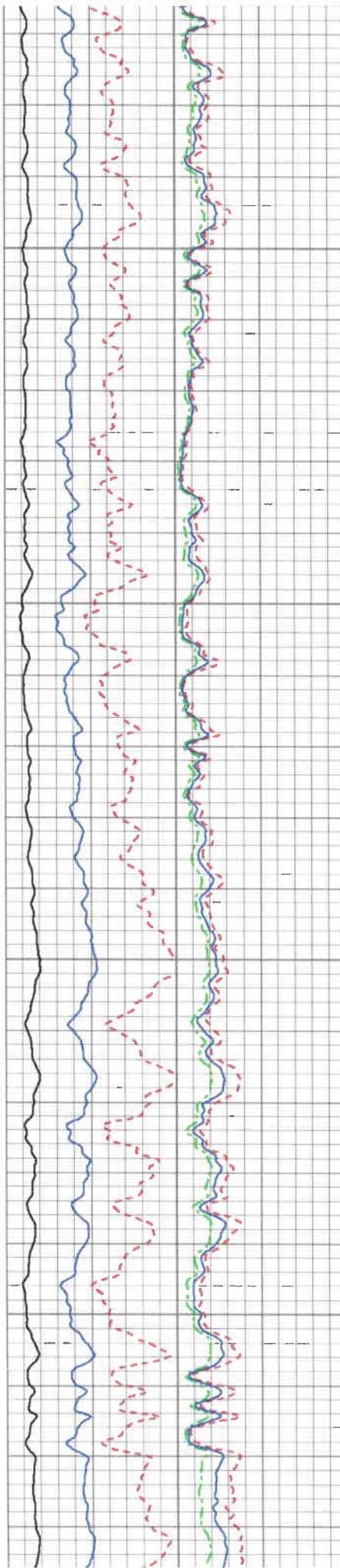
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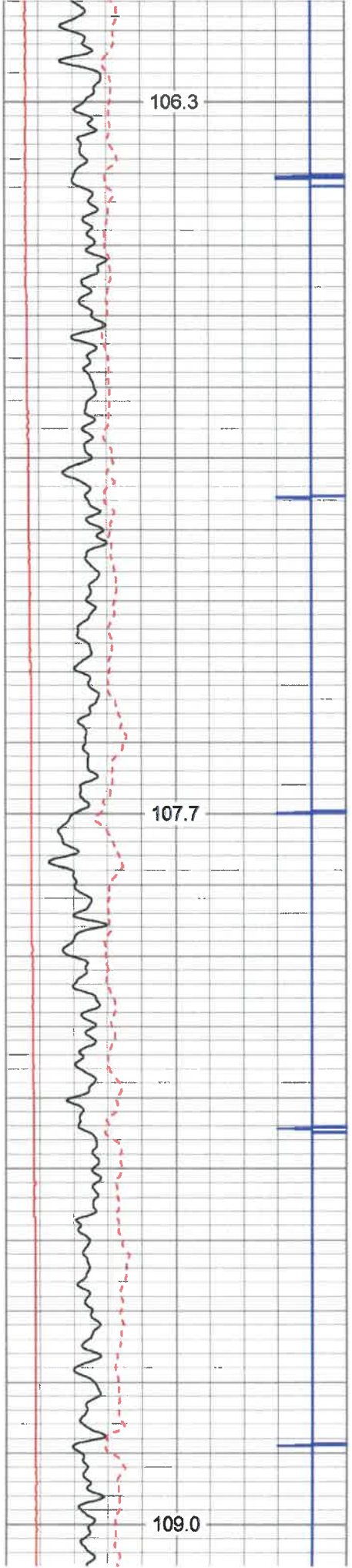




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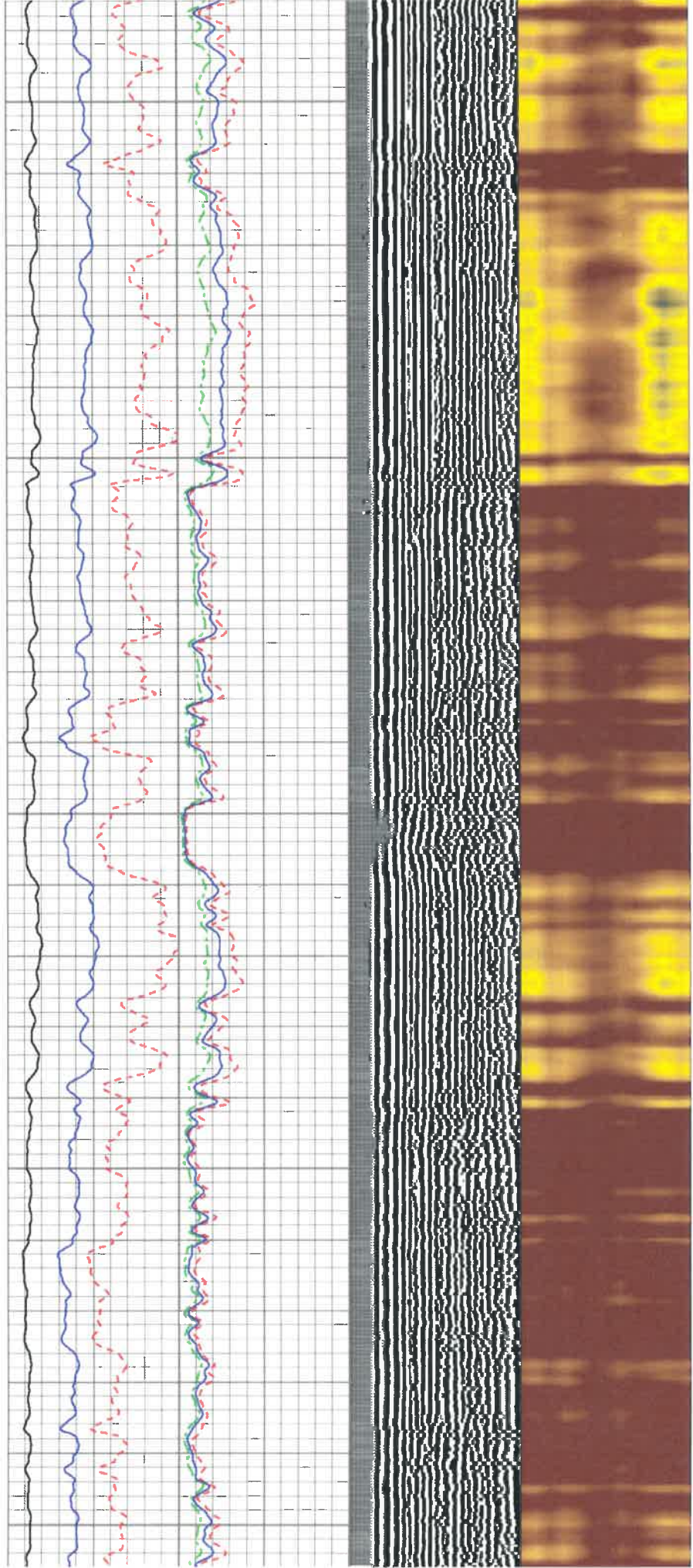


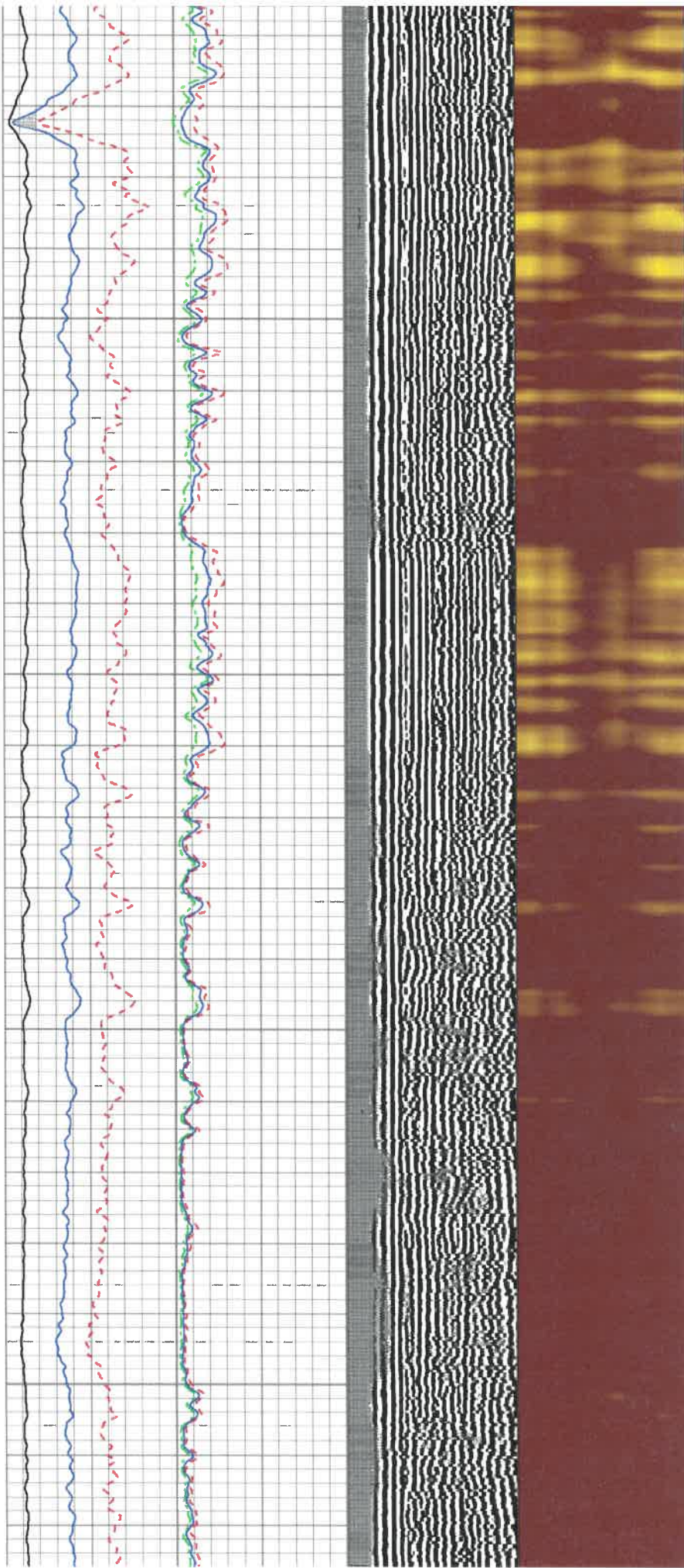
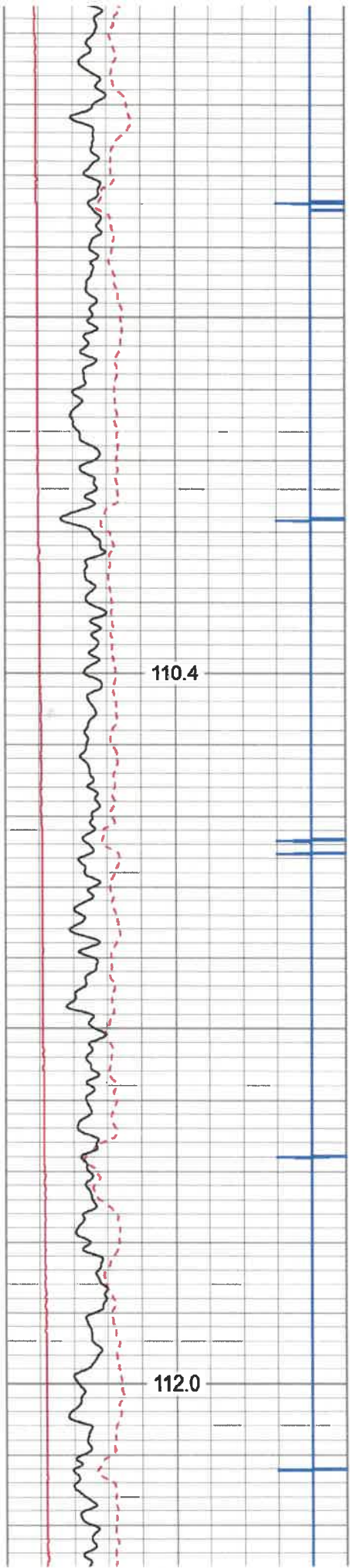


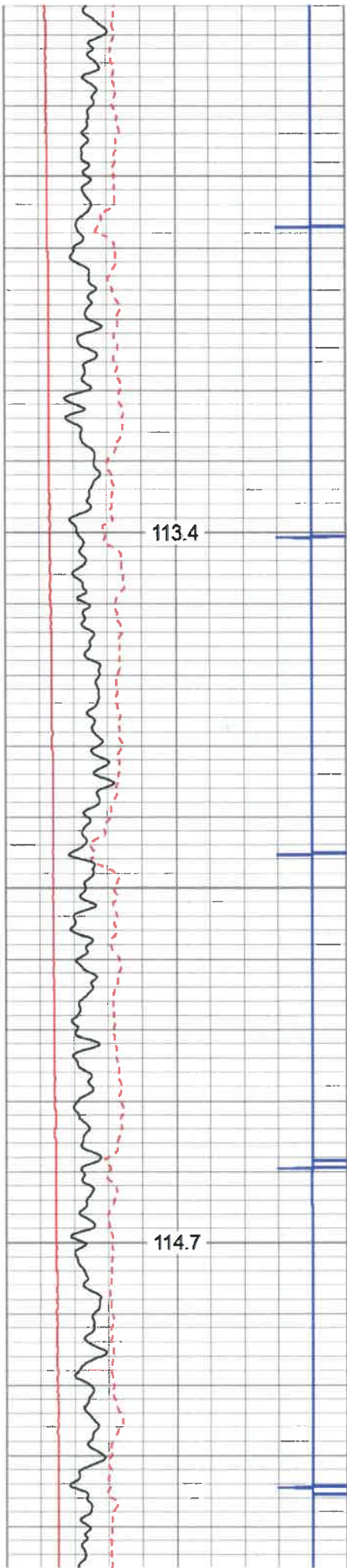
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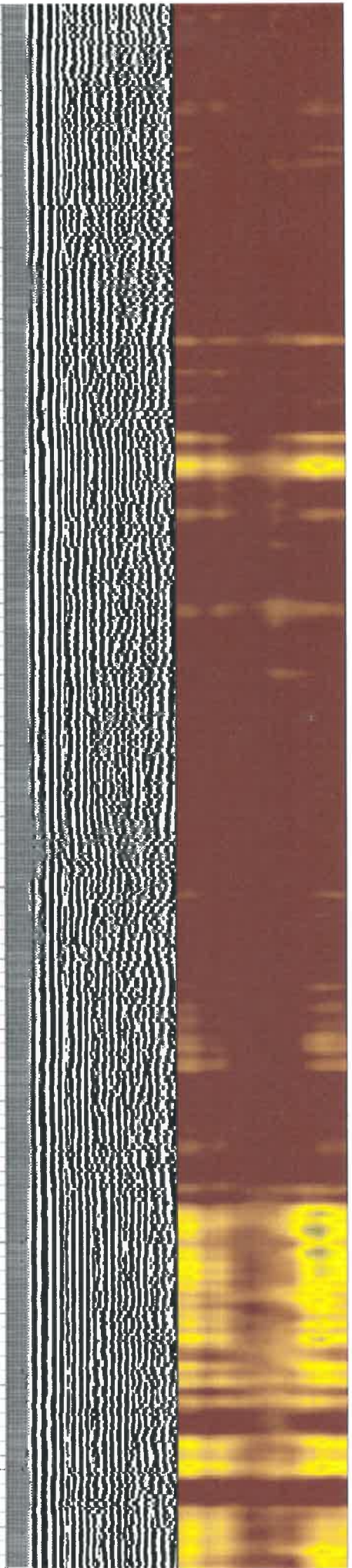
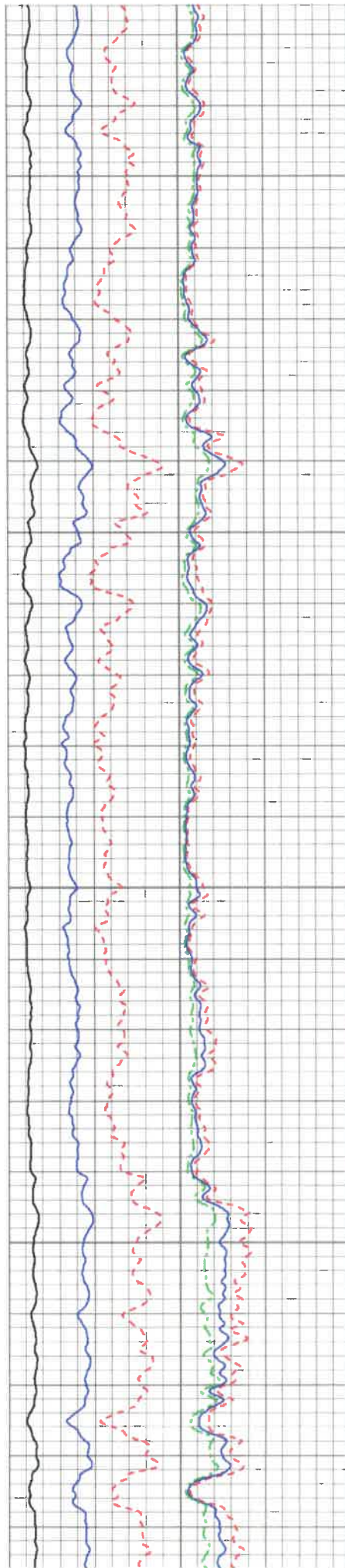


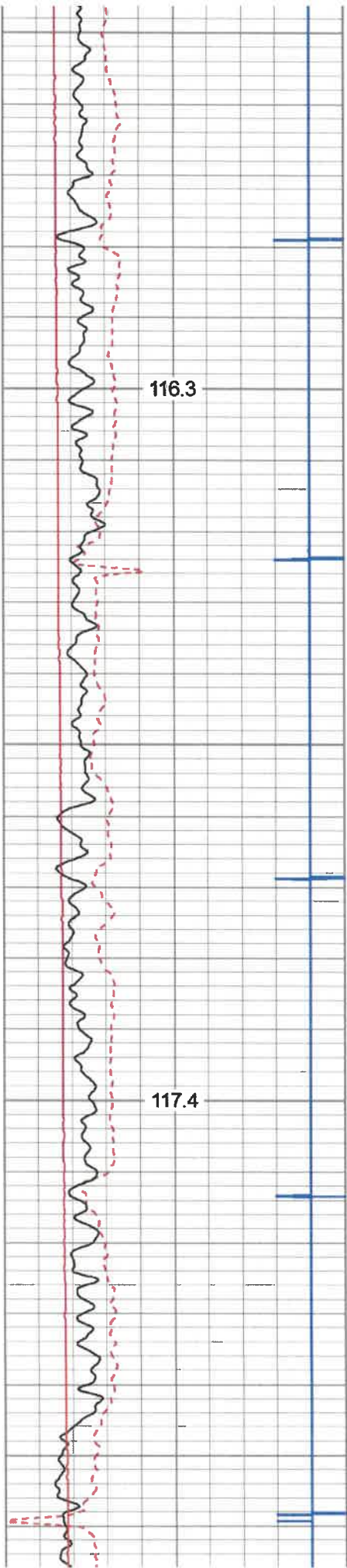




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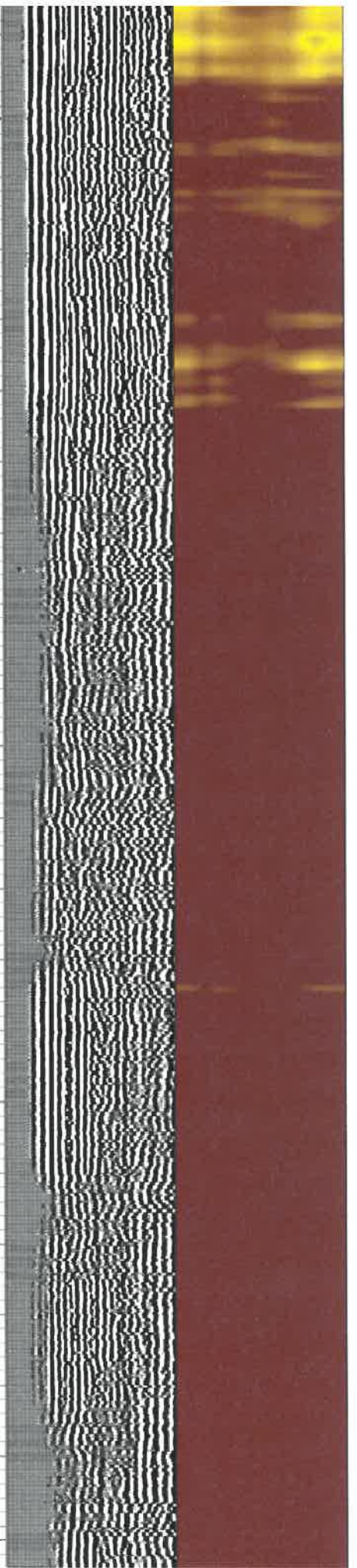
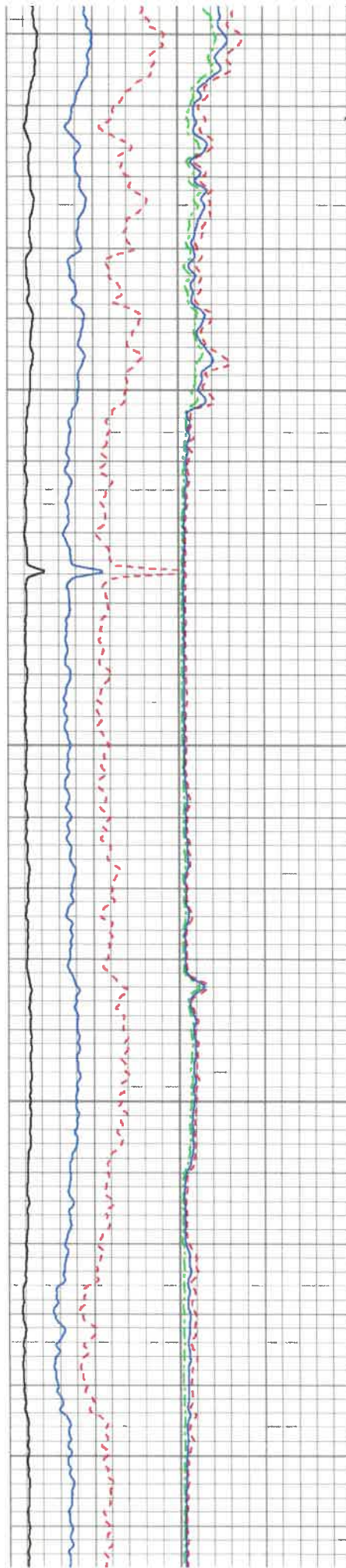
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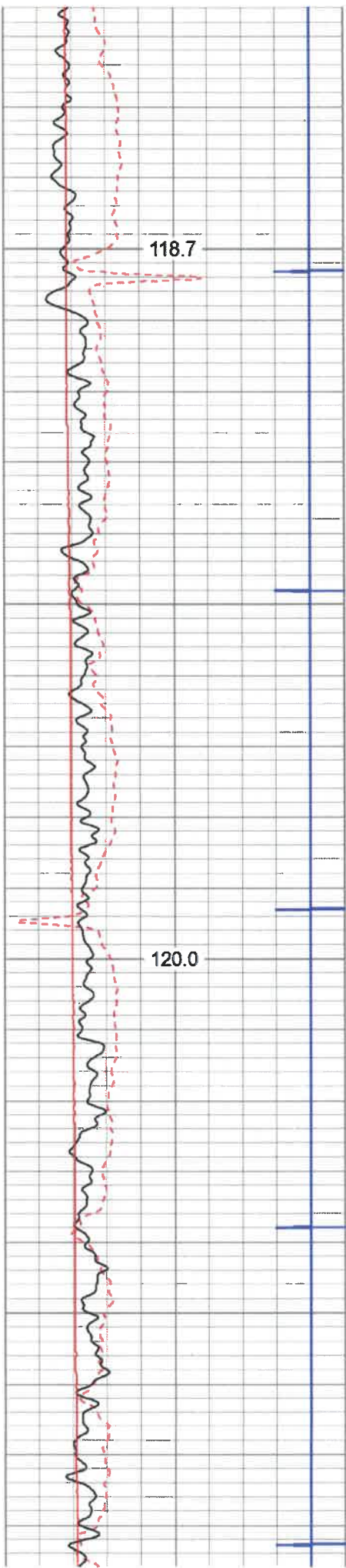




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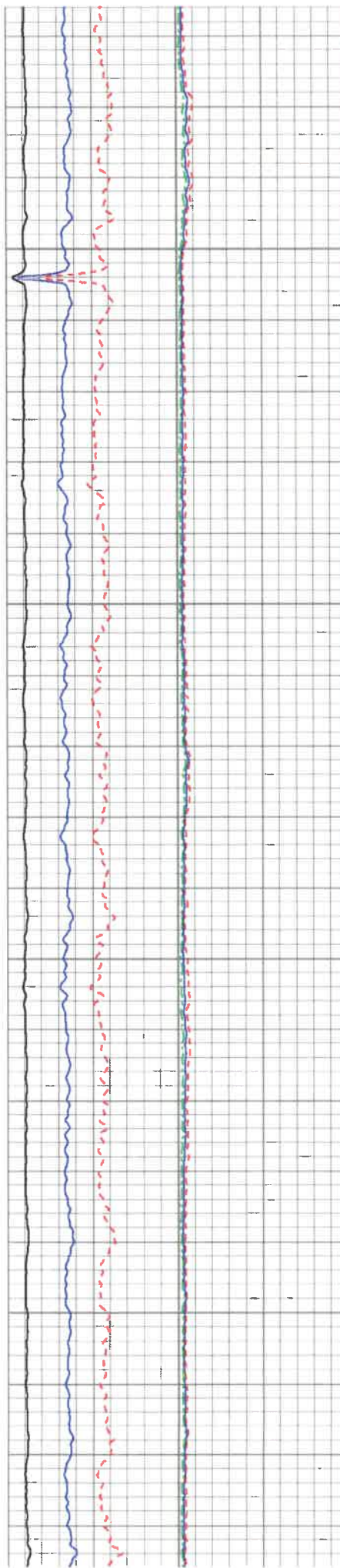
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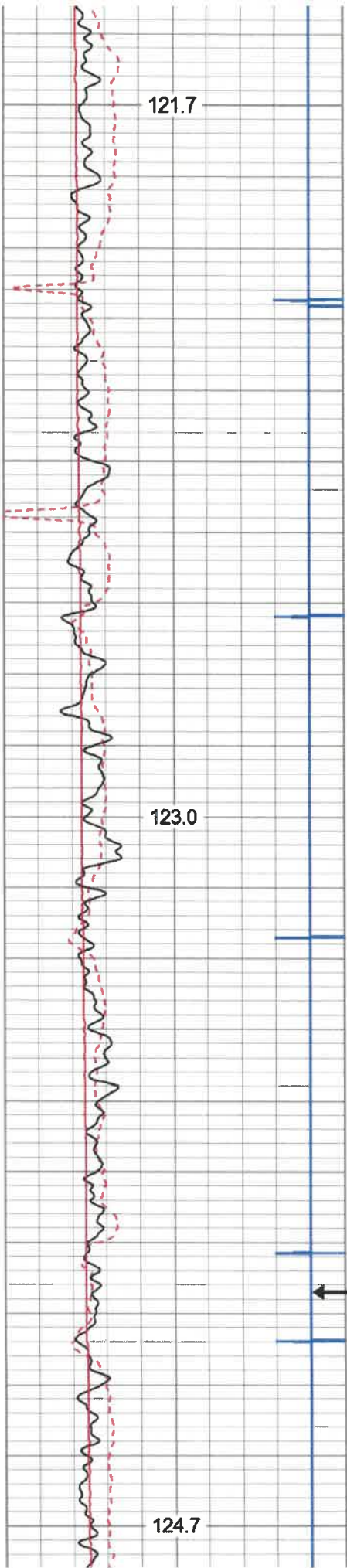




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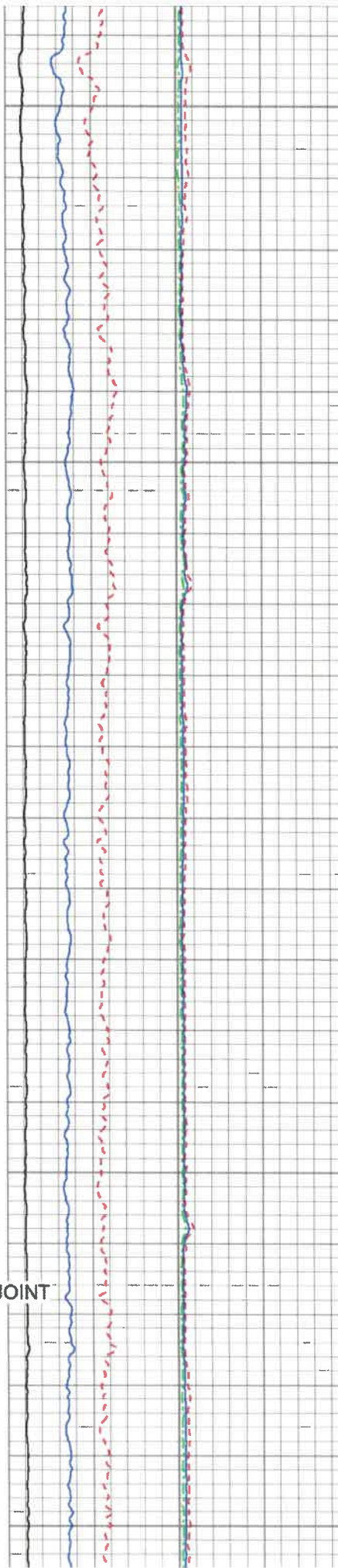


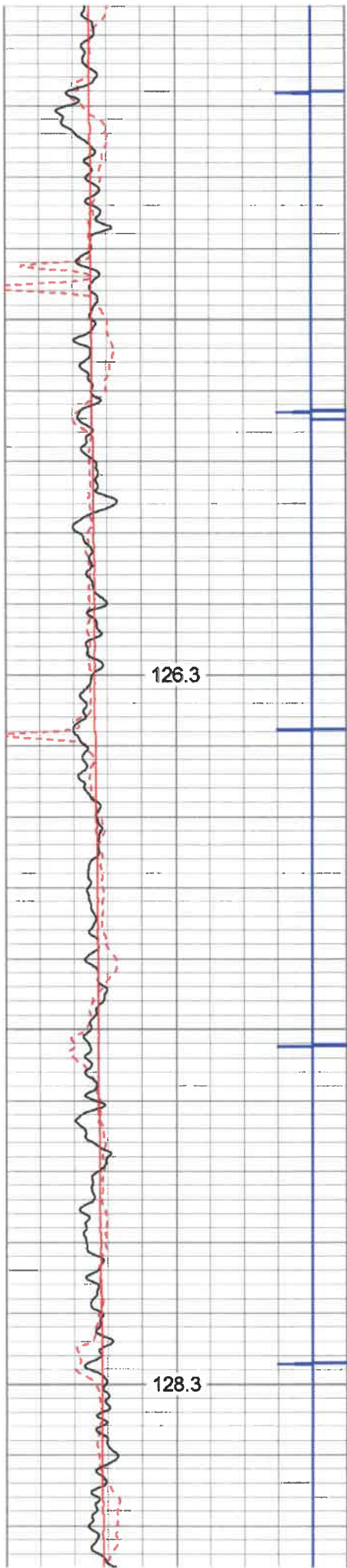
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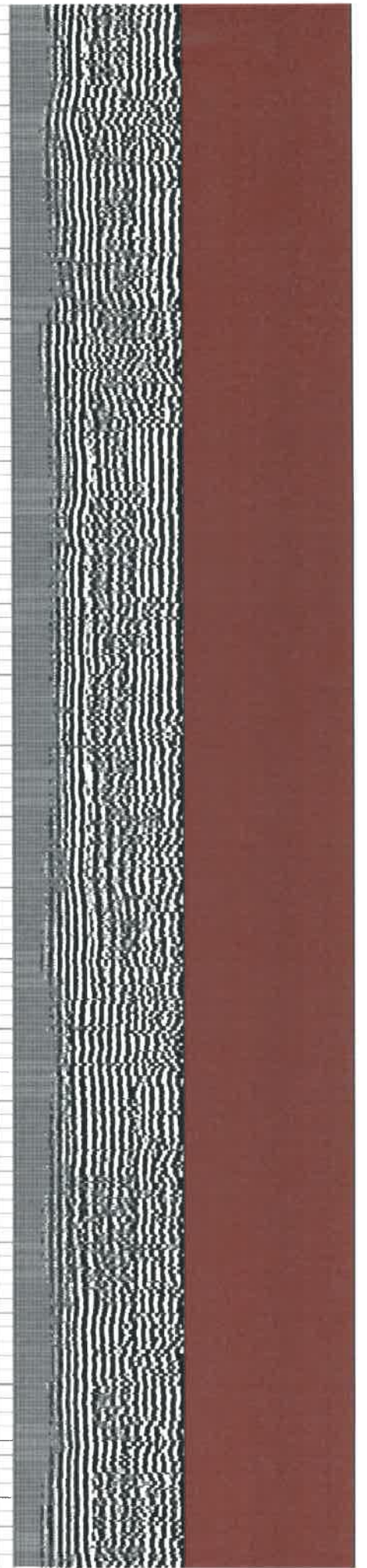
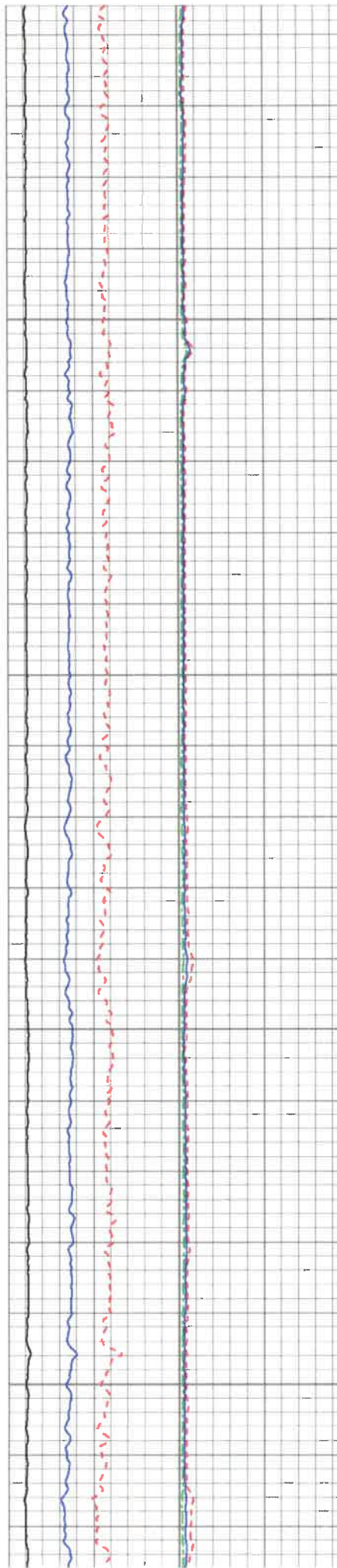
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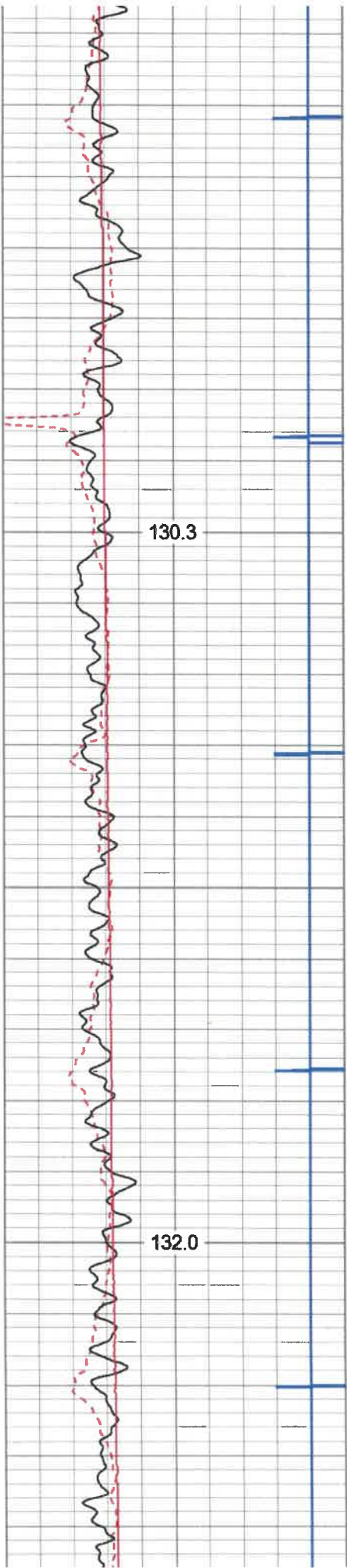




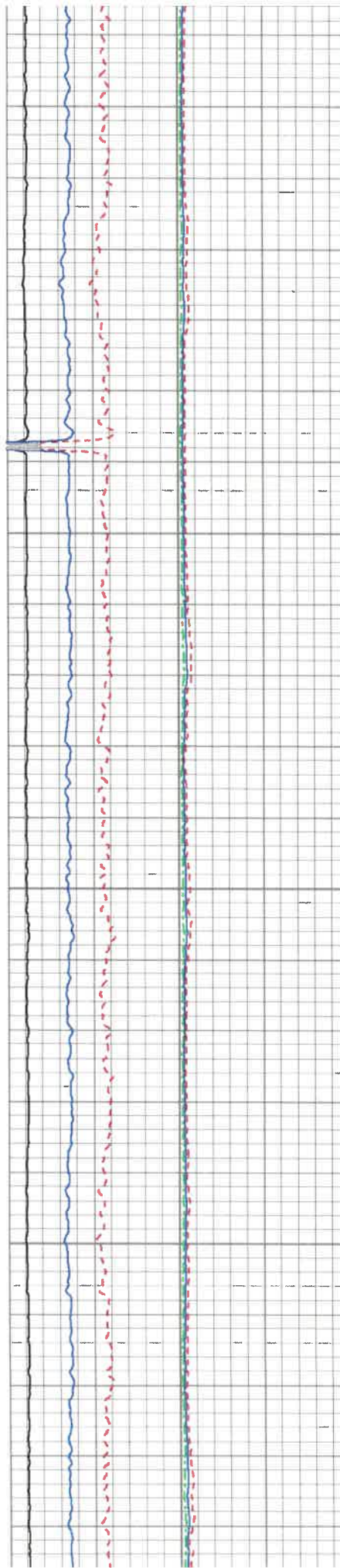
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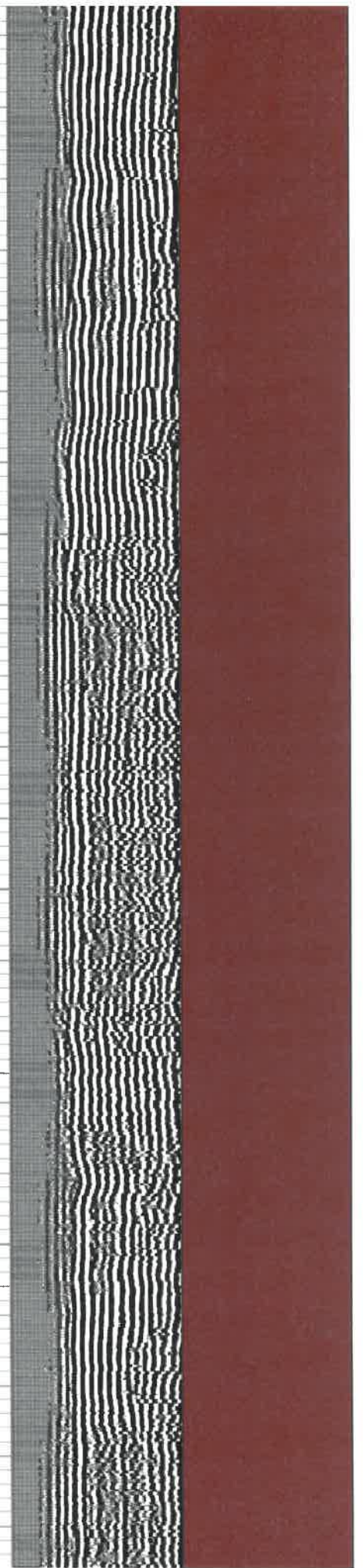


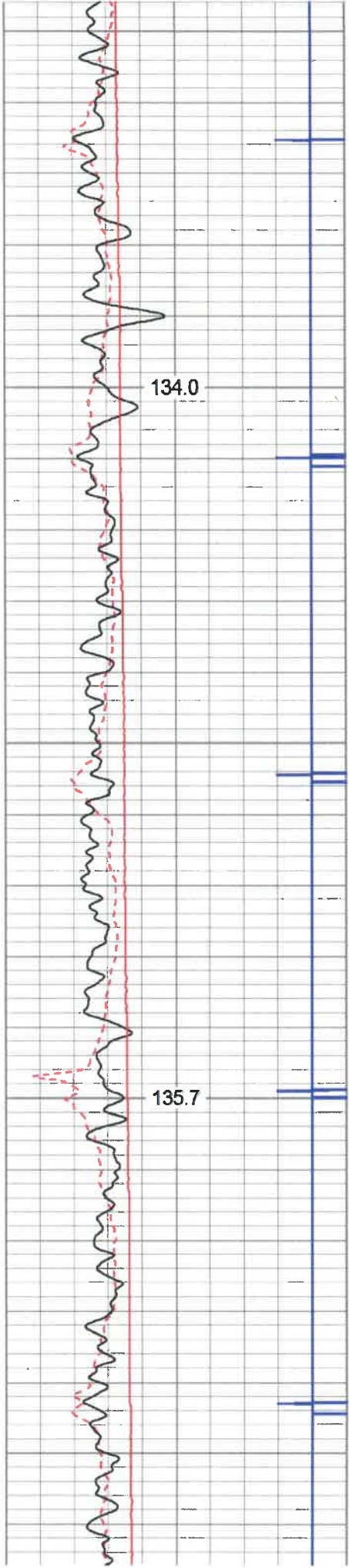


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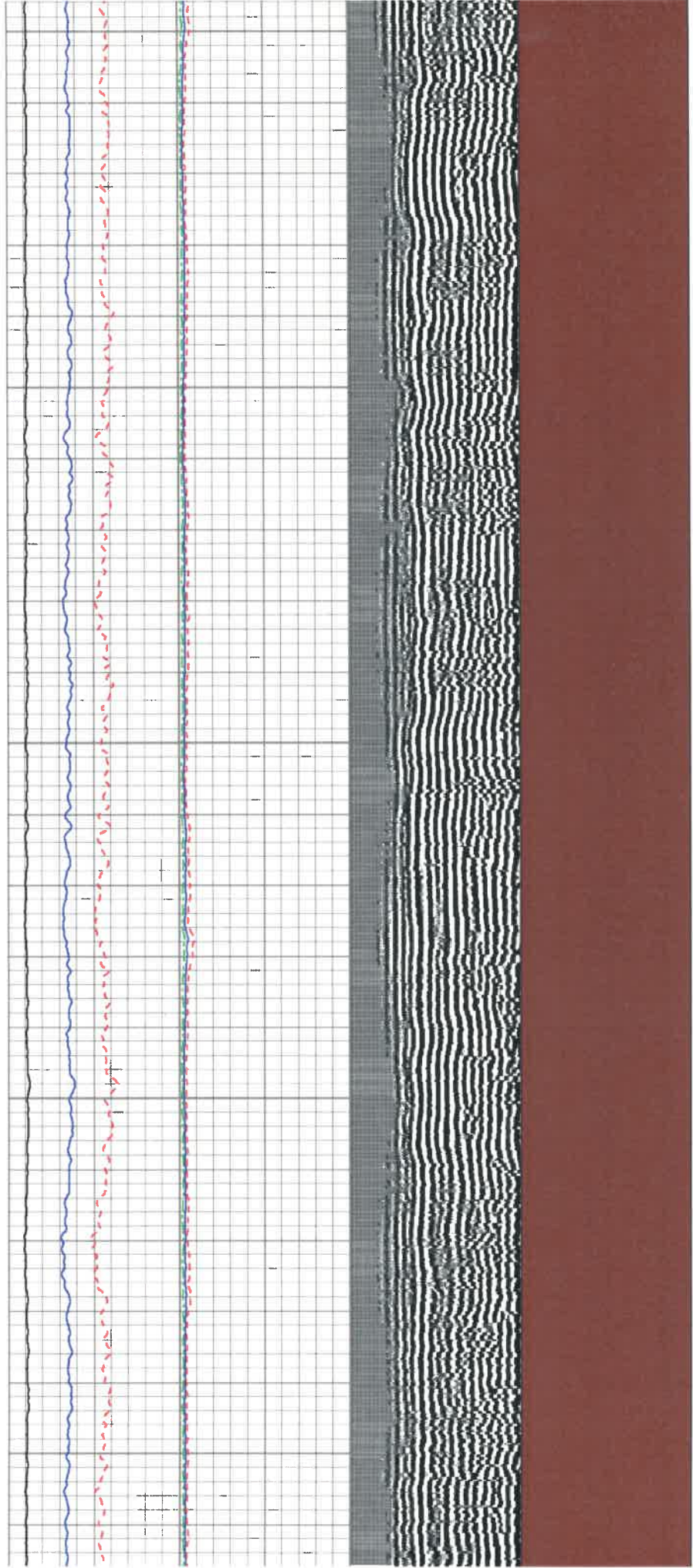
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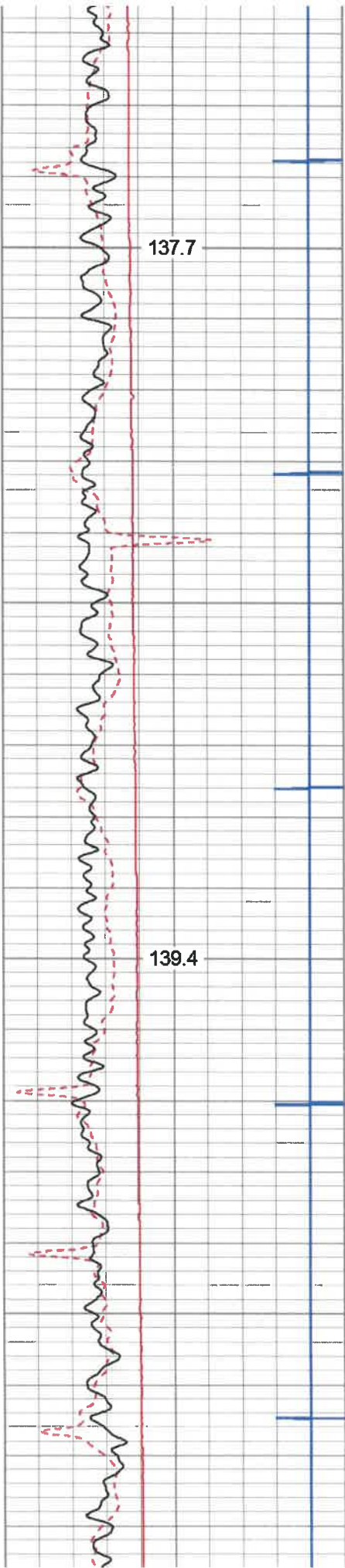




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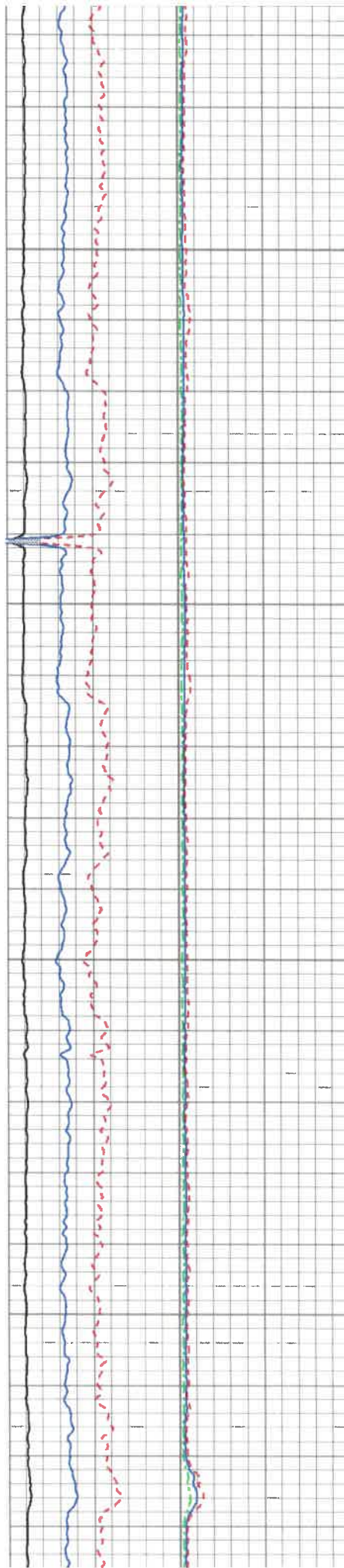
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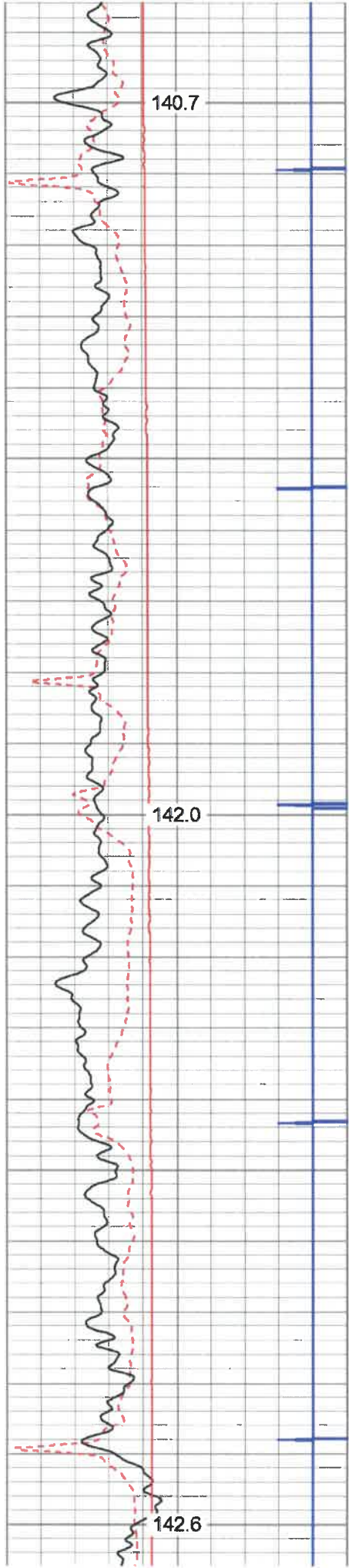




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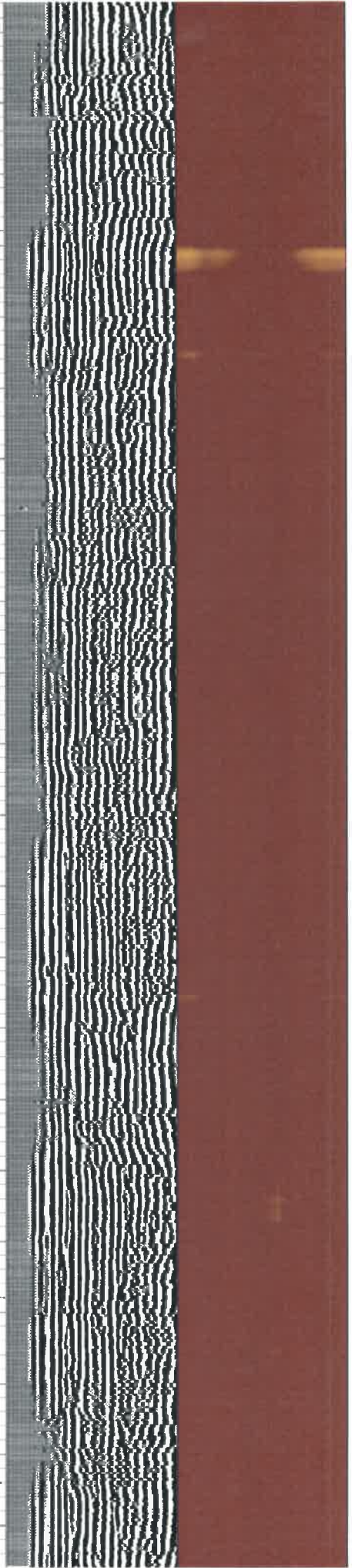
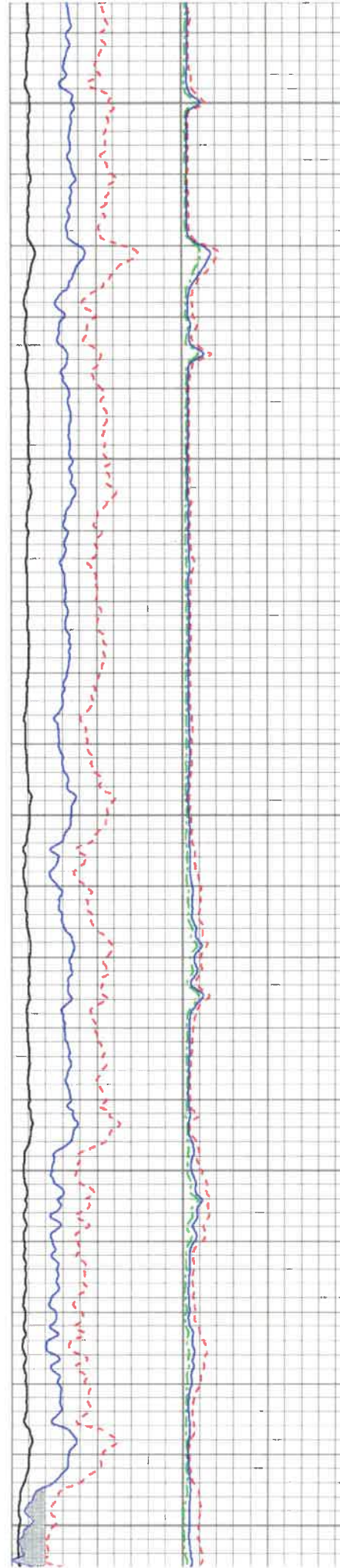


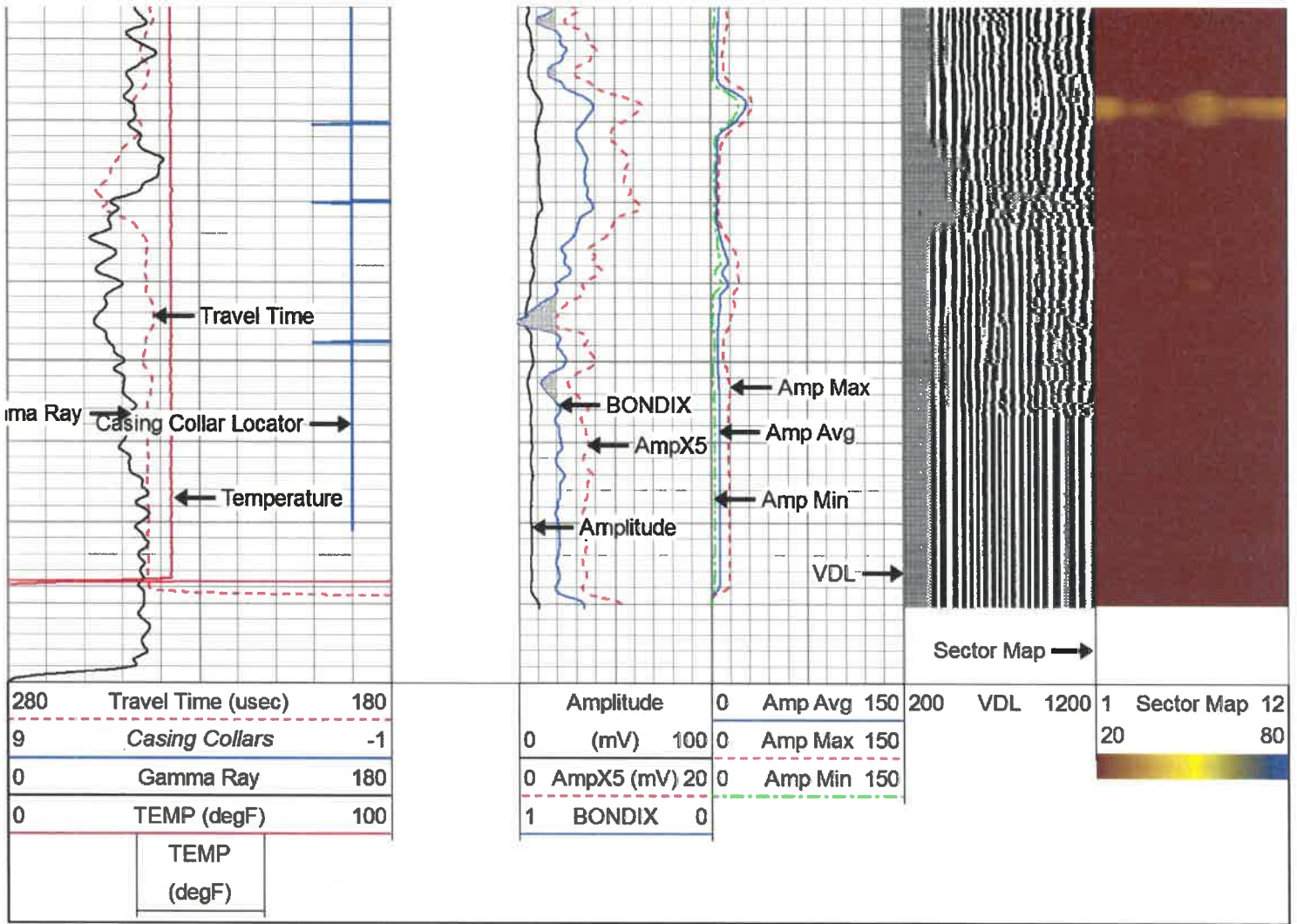


7000

7100

7200





REPEAT SECTION

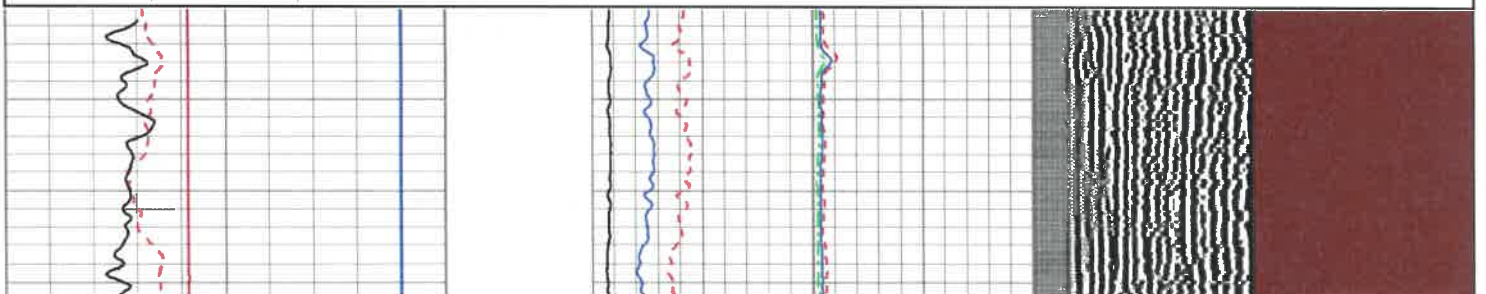
RECEIVED
Office of Oil and Gas

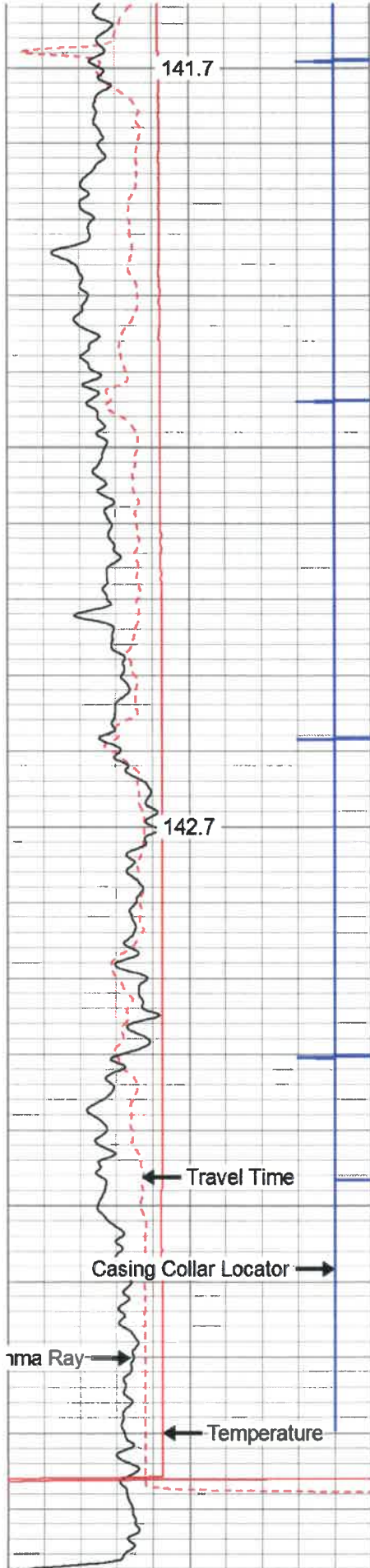
FEB 18 2020

Department of
Environmental Protection

Database File: c:\warrior\data\2019 antero\antero-karen 1h.db
 Dataset Pathname: pass3.1
 Presentation Format: antero f
 Dataset Creation: Wed Apr 03 09:56:38 2019 by Calc 7.0 B1
 Charted by: Depth in Feet scaled 1:240

280	Travel Time (usec)	180	Amplitude	0	Amp Avg	150	200	VDL	1200	1	Sector Map	12
9	Casing Collars	-1	0	(mV)	100	0	Amp Max	150		20	80	
0	Gamma Ray	180	0	AmpX5 (mV)	20	0	Amp Min	150				
0	TEMP (degF)	100	1	BONDIX	0							

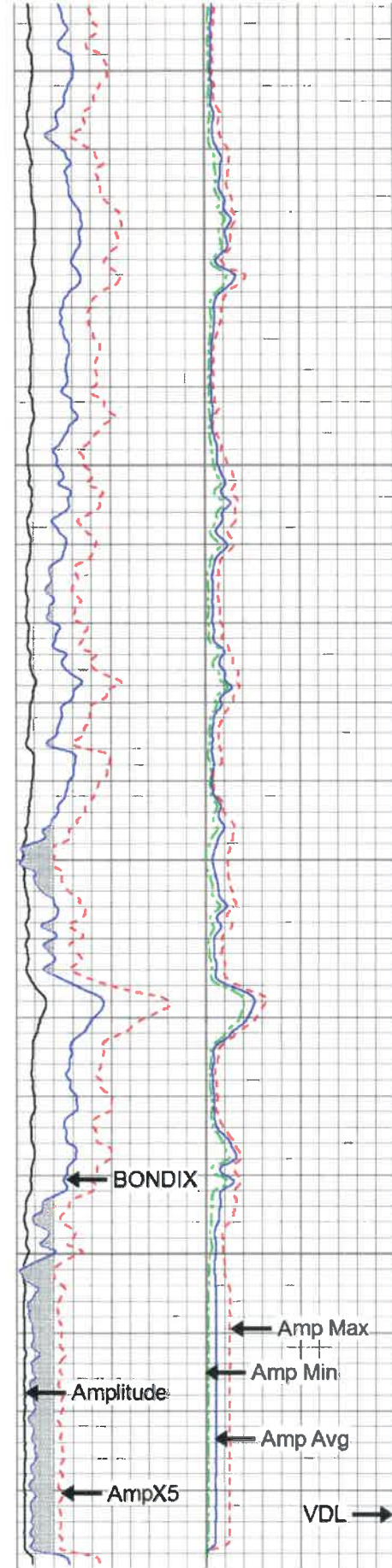




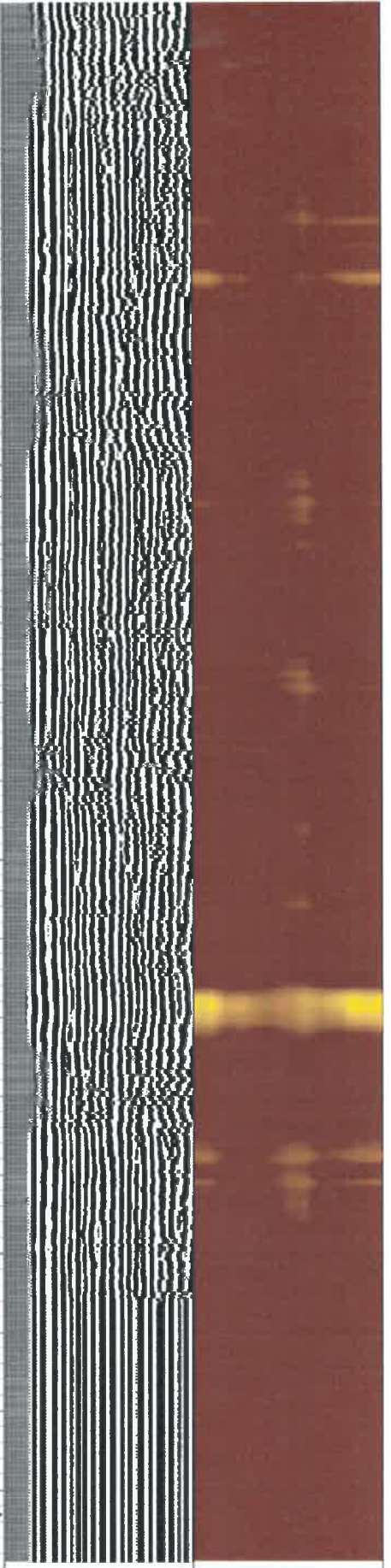
7100

7200

280	Travel Time (usec)	180
9	Casing Collars	-1
0	Gamma Rav	180



Amplitude	0	Amp Avg	150
(mV)	100	Amp Max	150
AmpX5 (mV)	20	Amp Min	150



200	VDL	1200	1	Sector Map	12
			20		80

0	TEMP (degF)	100
	TEMP (degF)	

1	BONDIX	0
---	--------	---

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)	
CCL	18.93		CCL-312tekco (3.12TEKCO) Tekco 3 1/8" 450 Deg. "F" SmCo Logging CCL	1.82	3.12	25.00	
			2.75 2 3/4" Tekco Adjustable Centralizer	2.73	2.75	25.00	
TEMP	12.77						
WVFS1	11.48						
WVFS2	11.48						
WVFS3	11.48						
WVFS4	11.48						
WVFS5	11.48						
WVFS6	11.48						
WVFS7	11.48						
WVFS8	11.48						
WVFS9	11.48						
WVFS10	11.48						
WVFS11	11.48						
WVFS12	11.48						
WVF3FT	10.73						
WVFCAL	10.73						
WVF5FT	9.73						
WVFTEMP	6.40						
WVFSYNC	6.40						
			2.75 2 3/4" Tekco Adjustable Centralizer	2.73	2.75	25.00	
			GR-Tek-Co 2 3/4 (IPSNO-03) Tekco 2 3/4" 400 Deg. F Logging Gamma Ray	3.67	2.75	40.00	
GR	1.04						

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Environmental Protection

Dataset:	antero-karen 1h.db: field/well/run1/pass4.3
Total Length:	20.07 ft
Total Weight:	250.00 lb
O.D.	3.25 in

Calibration Report

Database File: C:\Warrior\Data\2019 antero\antero-karen 1h.db
 Dataset Pathname: pass4.3
 Dataset Creation: Wed Apr 03 10:00:20 2019 by Calc 7.0 B1

Gamma Ray Calibration Report

Serial Number:	IPSNO-03		
Tool Model:	Tek-Co 2 3/4		
Performed:	Mon Nov 07 10:23:17 2016		
Calibrator Value:	1.0		
Background Reading:	0.0	cps	
Calibrator Reading:	1.0	cps	
Sensitivity:	0.3000	/cps	

Temperature Calibration Report

Serial Number:	IOL40-05		
Tool Model:	Tek12		
Performed:	Wed Jul 31 10:53:14 2013		
	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	KAREN UNIT 1H		
Field	MARCELLUS		
County	RITCHIE		
State	W.V.		Country