



**RADIAL CEMENT BOND
GAMMA RAY/CCLV/DL**

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

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 Well HUGHES RIVER UNIT 1H
 Field MARCELLUS
 County RITCHIE State W.V.

Location: API #: 47085103690000 Other Services

SEC	TWP	RGE	Elevation
Permanent Datum	G.L.	Elevation	N/A
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	19300'
Depth Logger	6731'
Bottom Logged Interval	6731'
Top Log Interval	SURFACE
Open Hole Size	N/A
Type Fluid	H2O
Density / Viscosity	N/A
Max. Recorded Temp.	144 DEG
Estimated Cement Top	1220'
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- 1220'
BOTTOM HOLE TEMP- 144 DEG
MARKER JOINT ON LOG @ 5560'-5570'
CORRECTED UP HOLE 20' TO PUT MARKER ON DEPTH WITH PIPE TALLY

RECEIVED
 Oil, Gas and Coal
 FEB 18 2020
 West Virginia Department of Environmental Protection

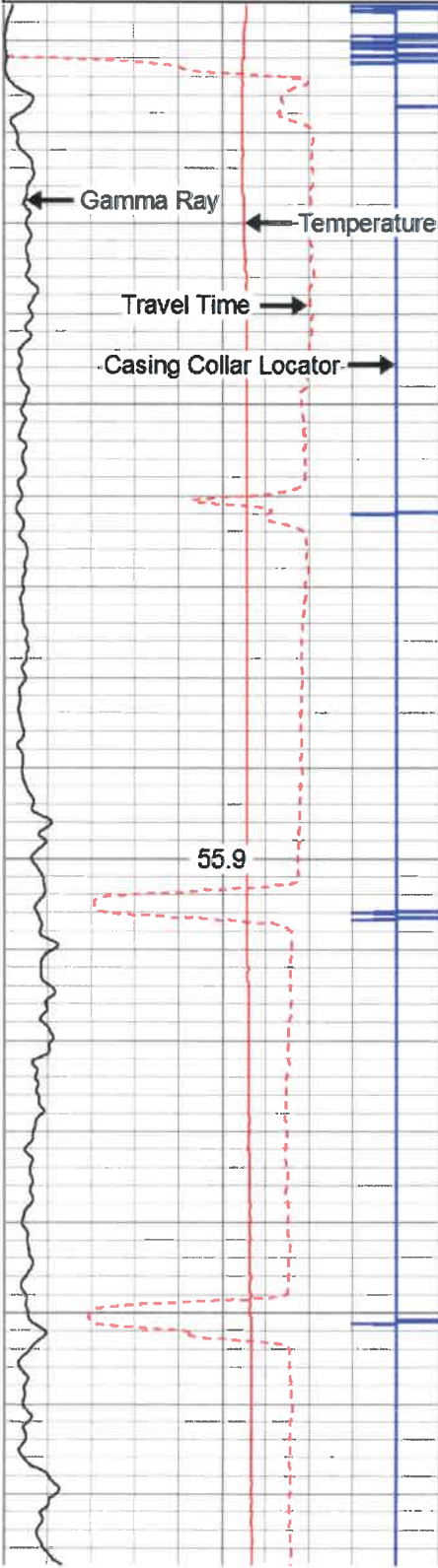
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 Dataset Pathname: pass4
 Presentation Format: antero f
 Dataset Creation: Wed Apr 03 11:25:41 2019 by Log 7.0 B1
 Charted by: Depth in Feet scaled 1:240

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

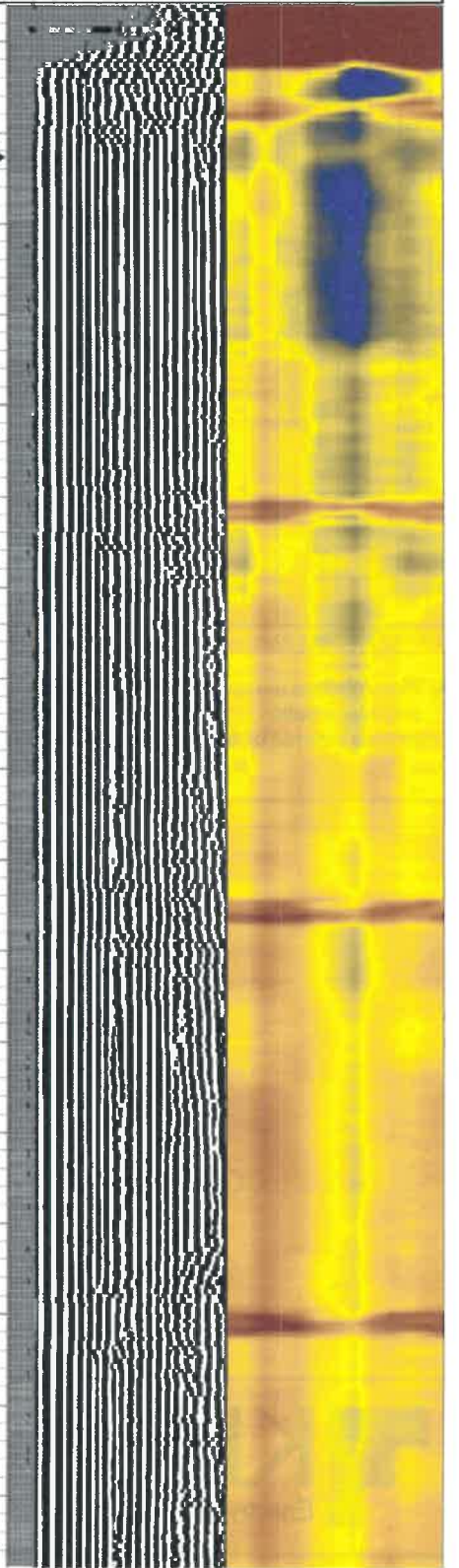
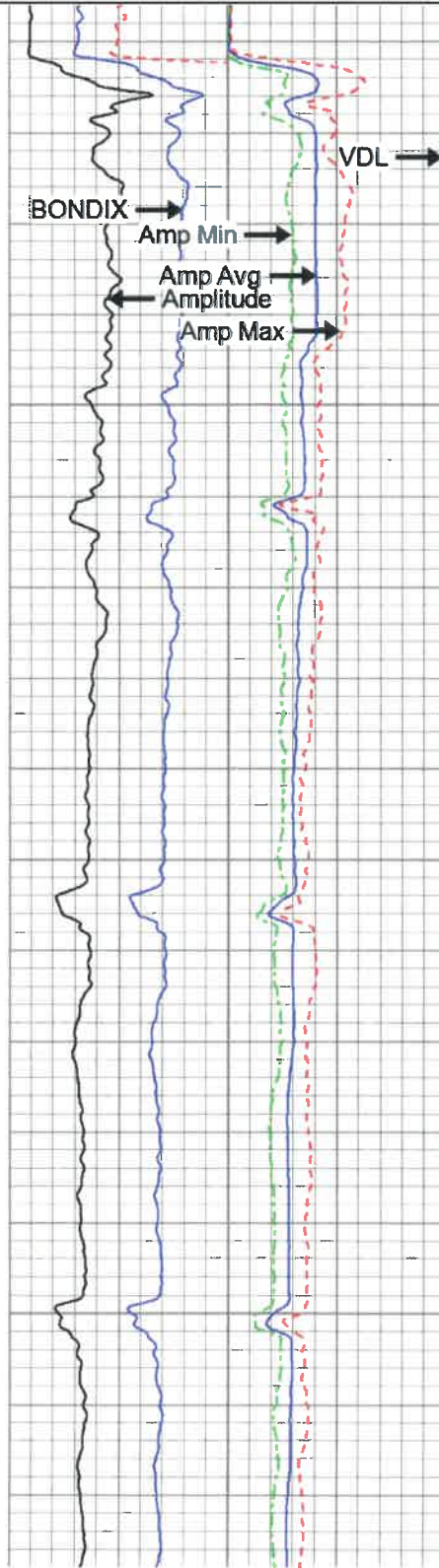
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(mV)	100	Amp Max	150			
AmpX5 (mV)	20	Amp Min	150			
BONDIX	0					

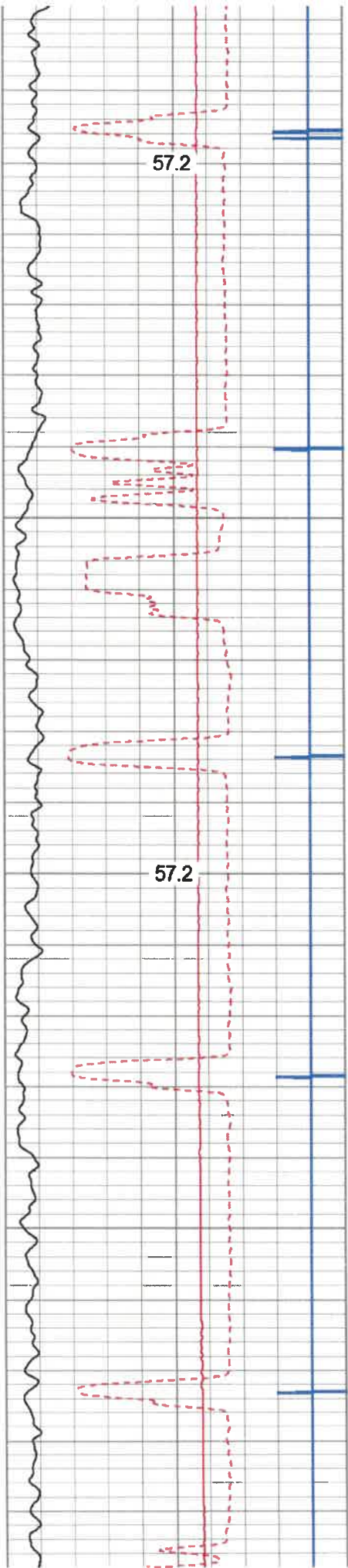
1 Sector Map 12
 20 80

TEMP (degF)



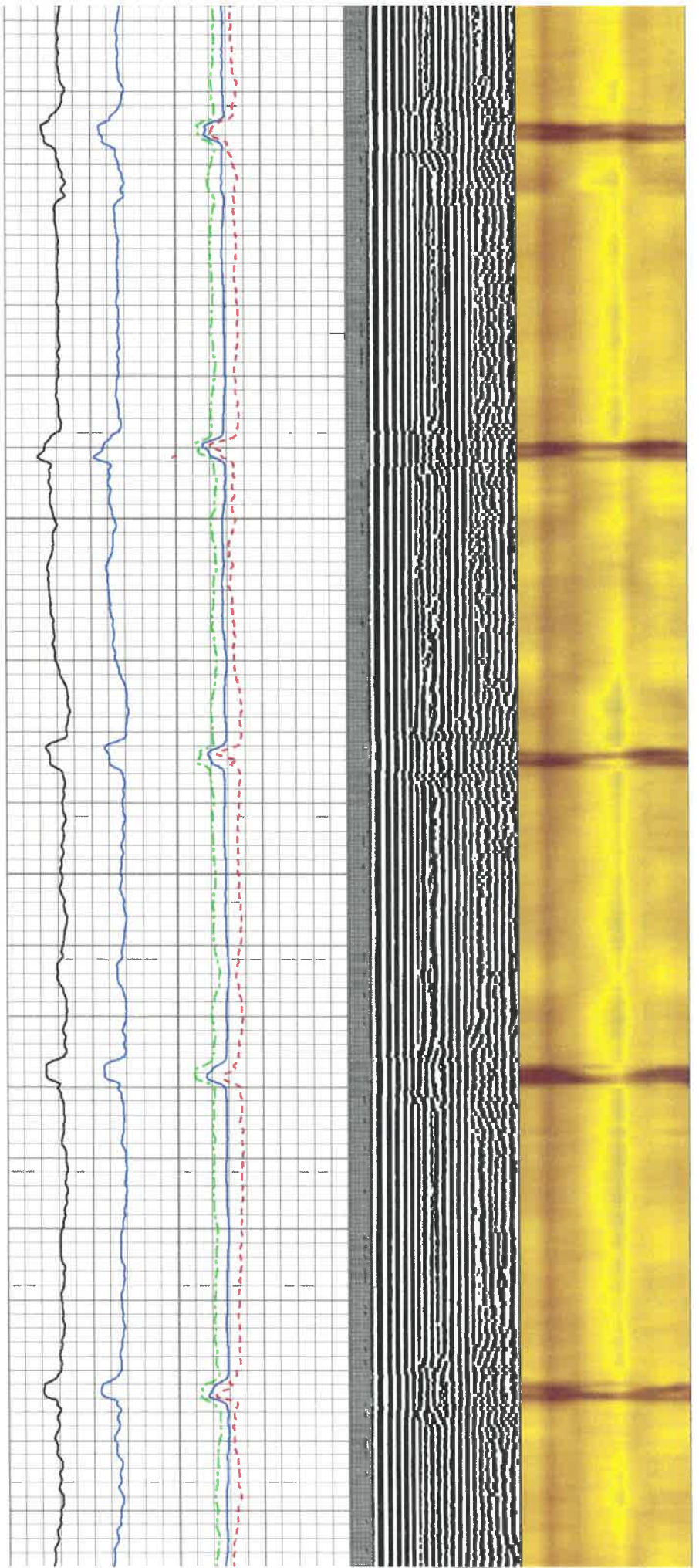
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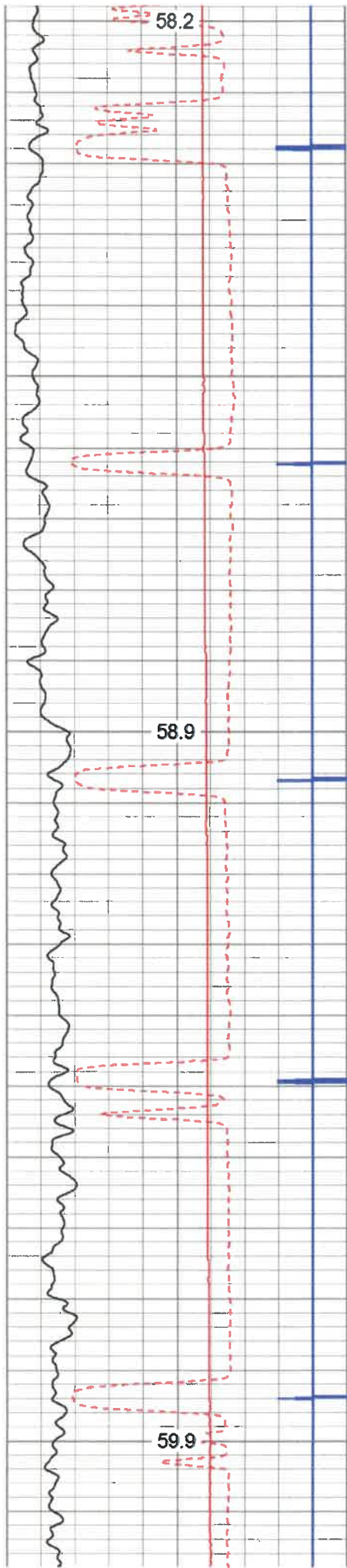




200

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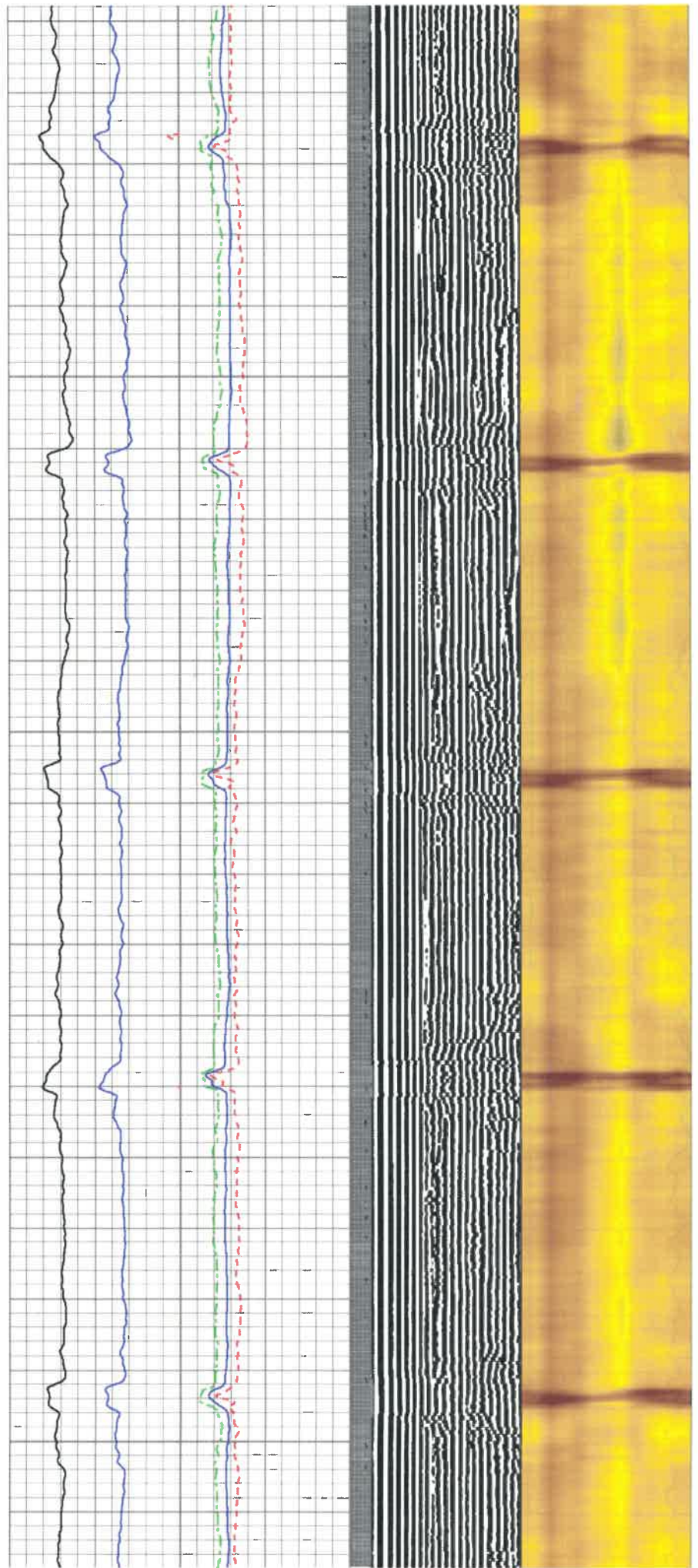


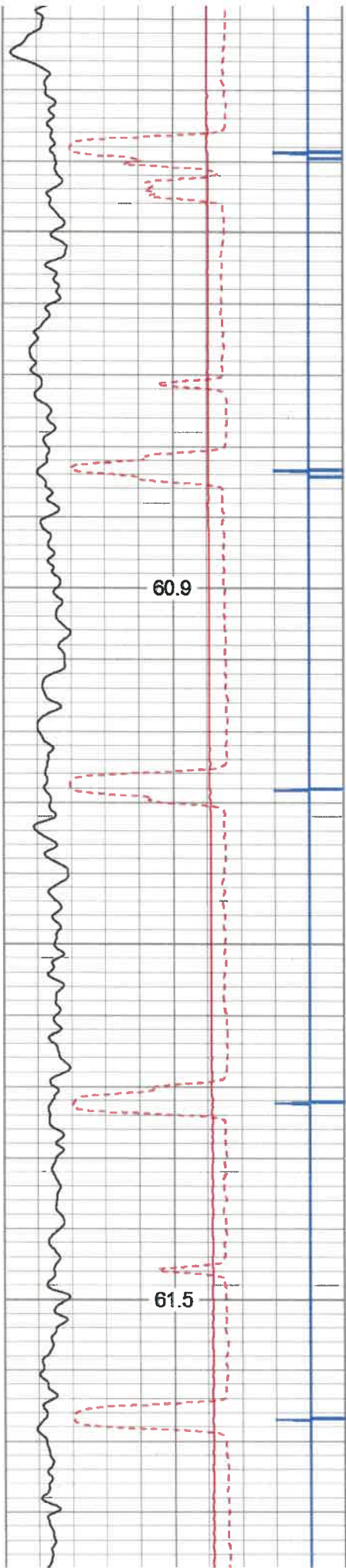


400

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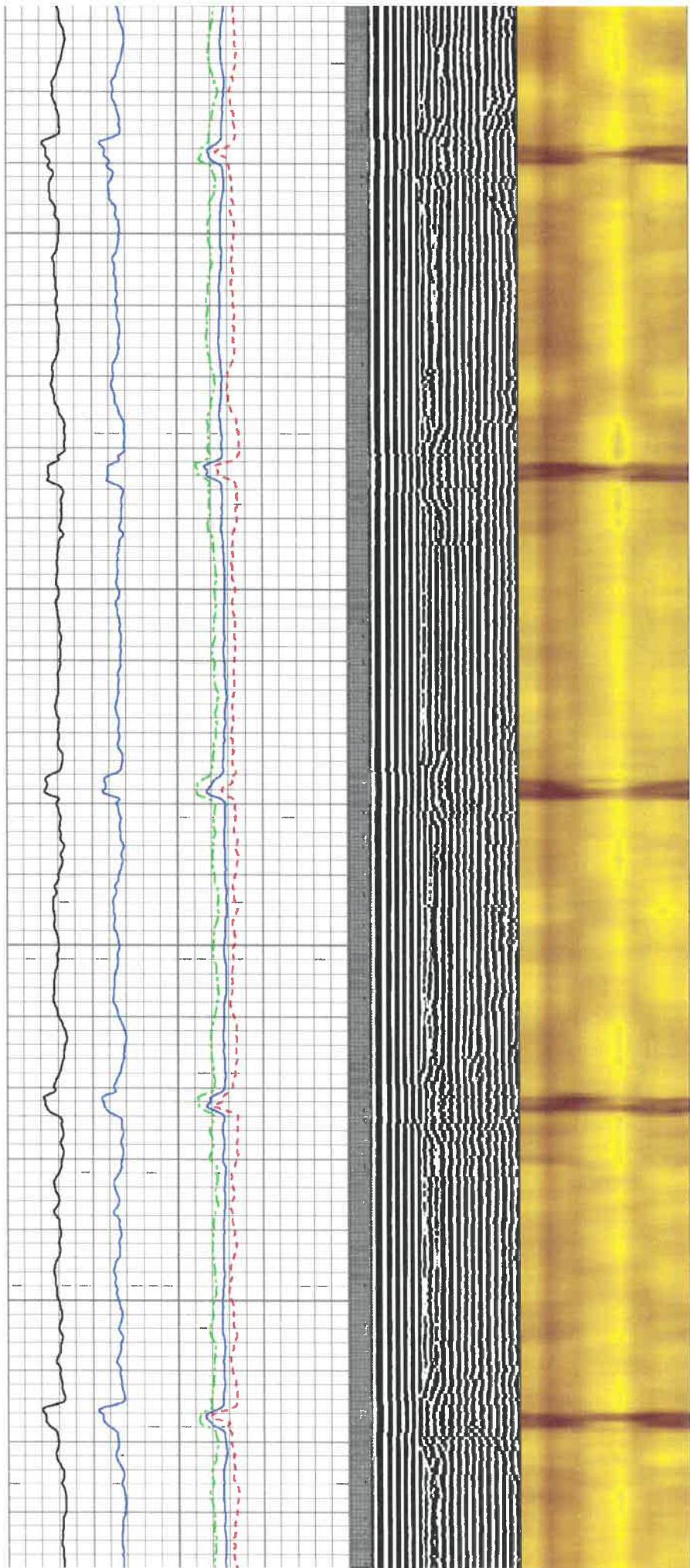
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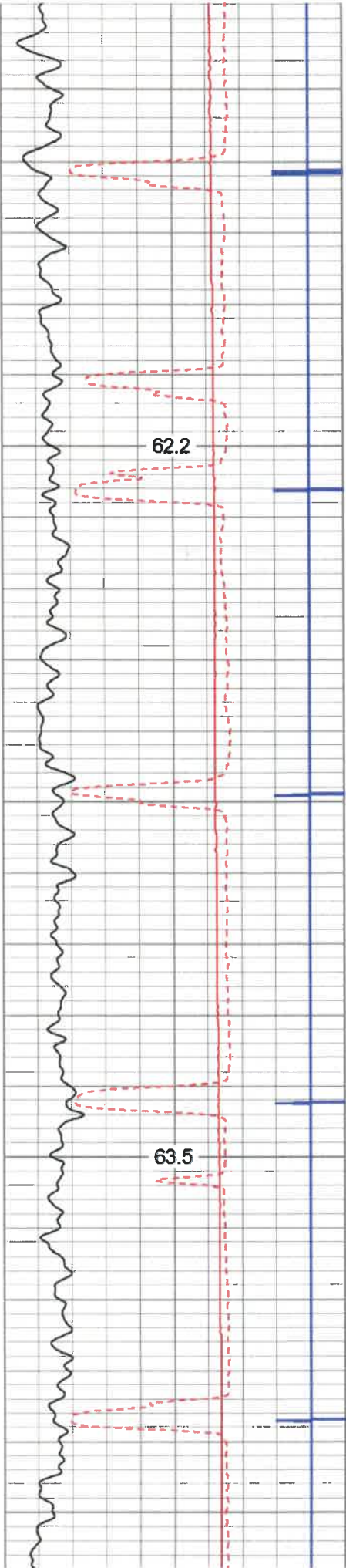




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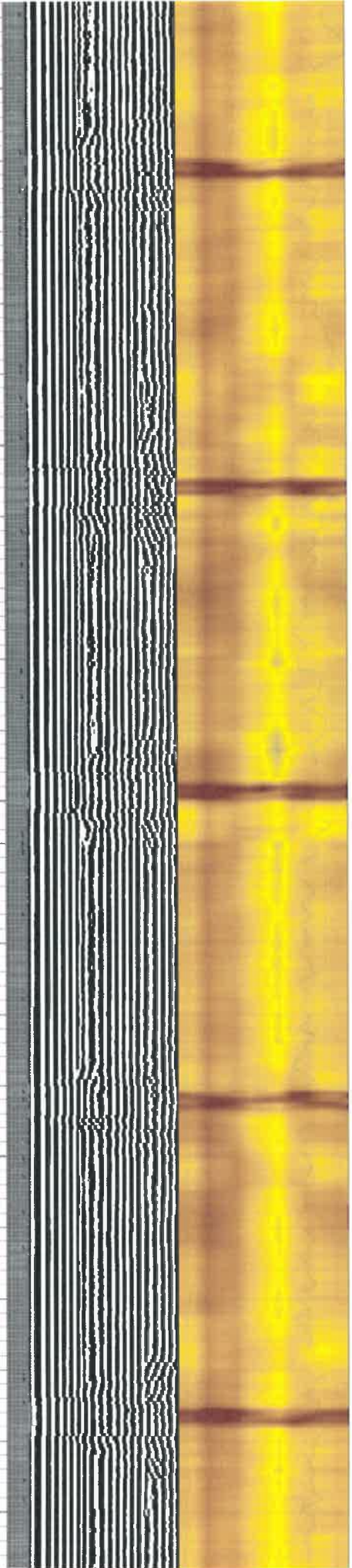
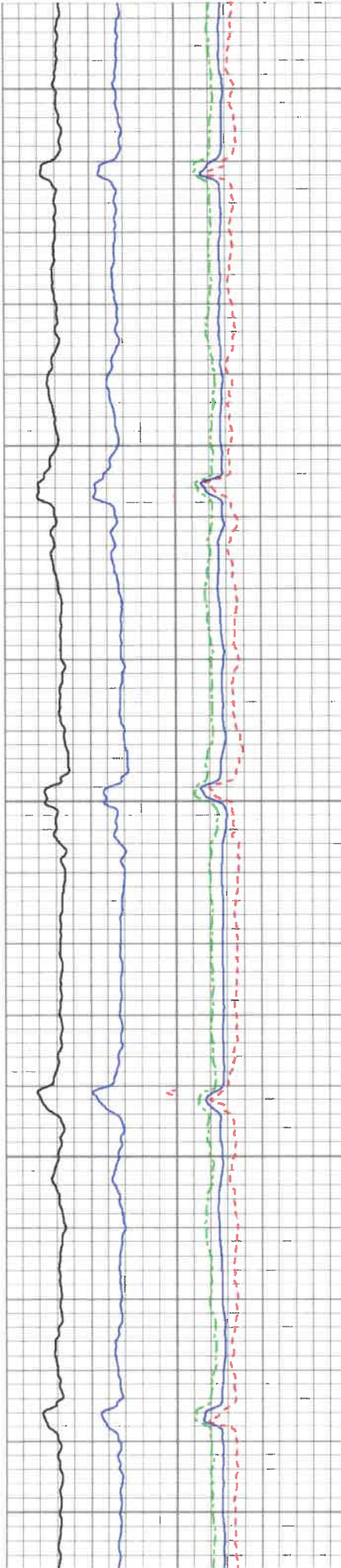
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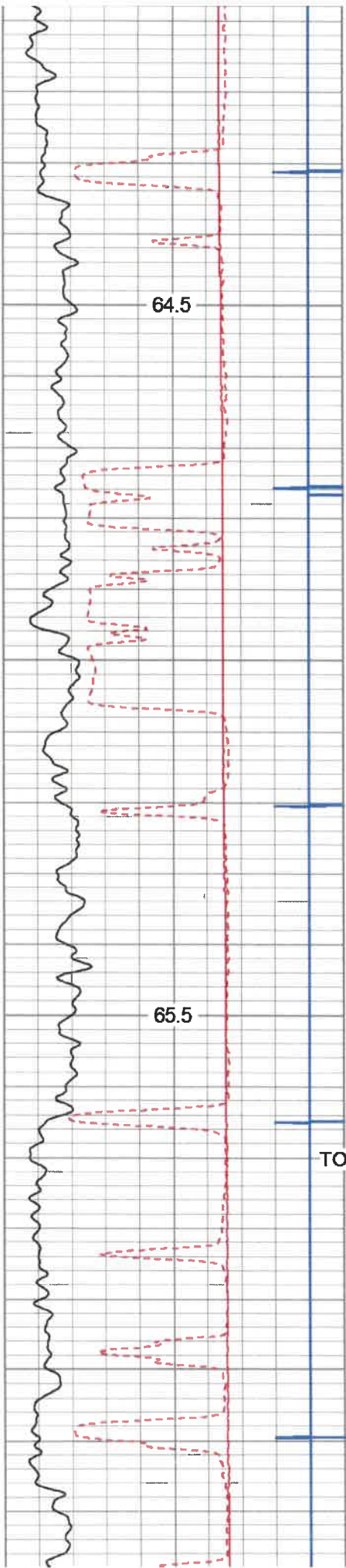




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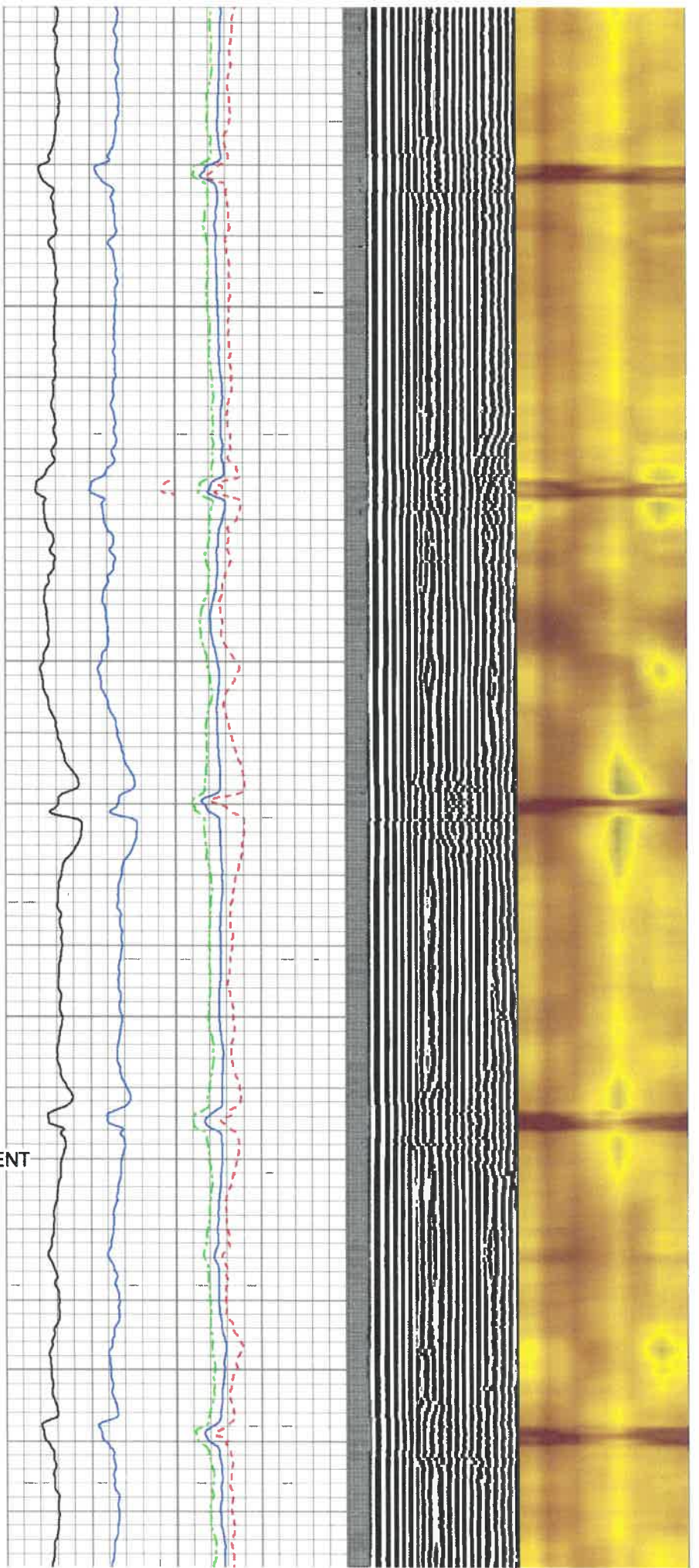


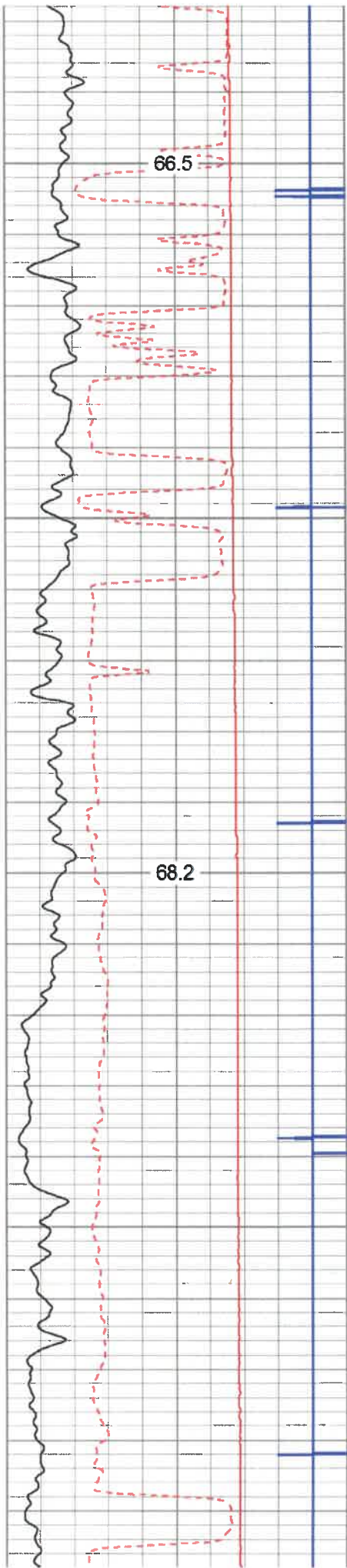


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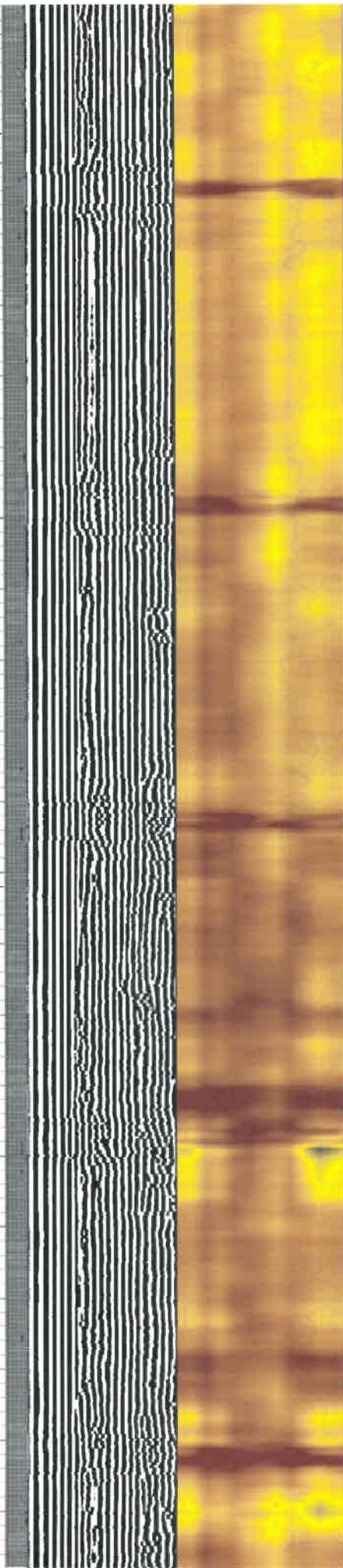
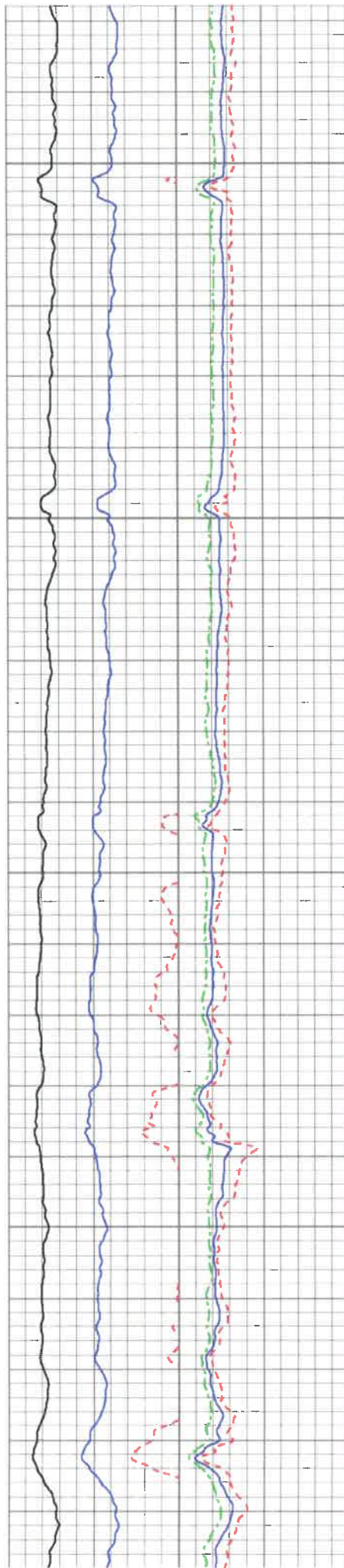
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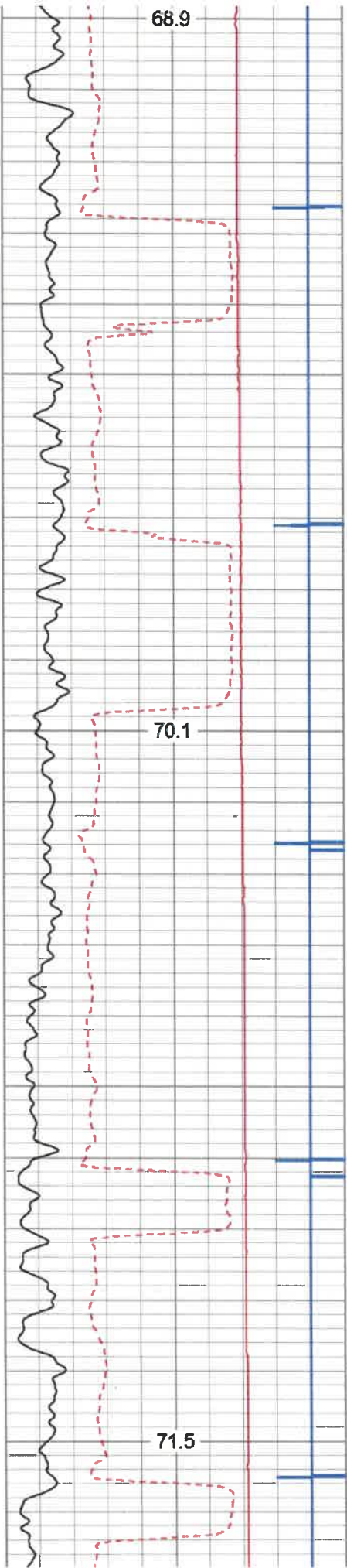




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1400

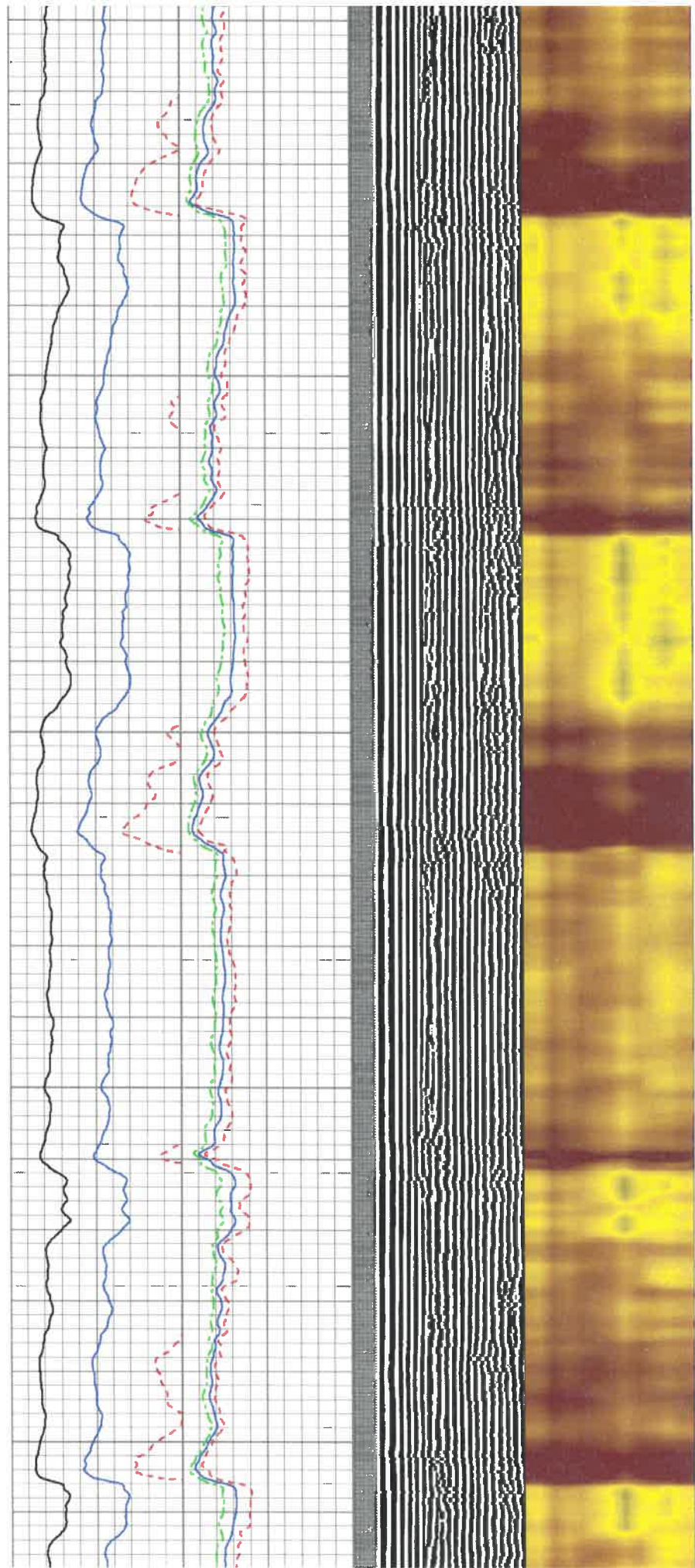


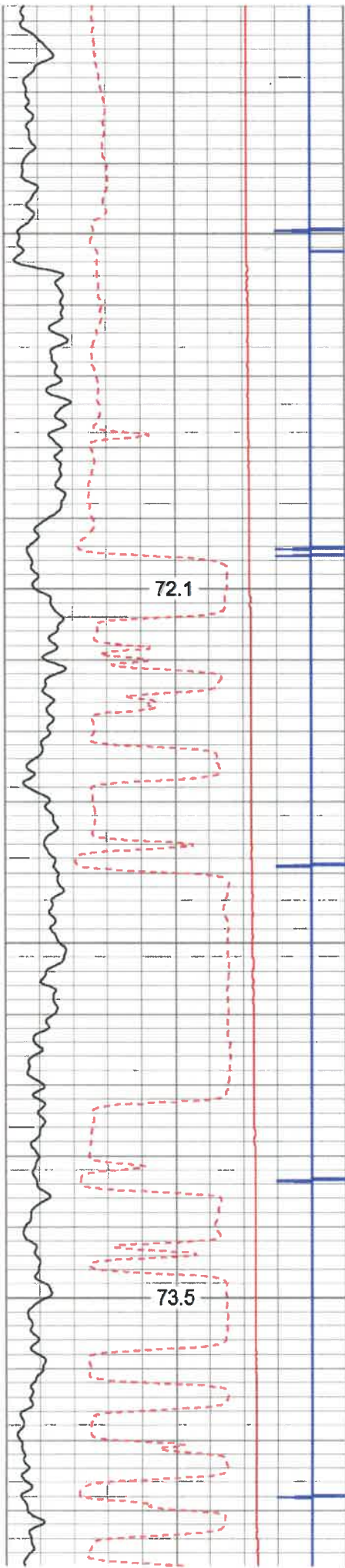


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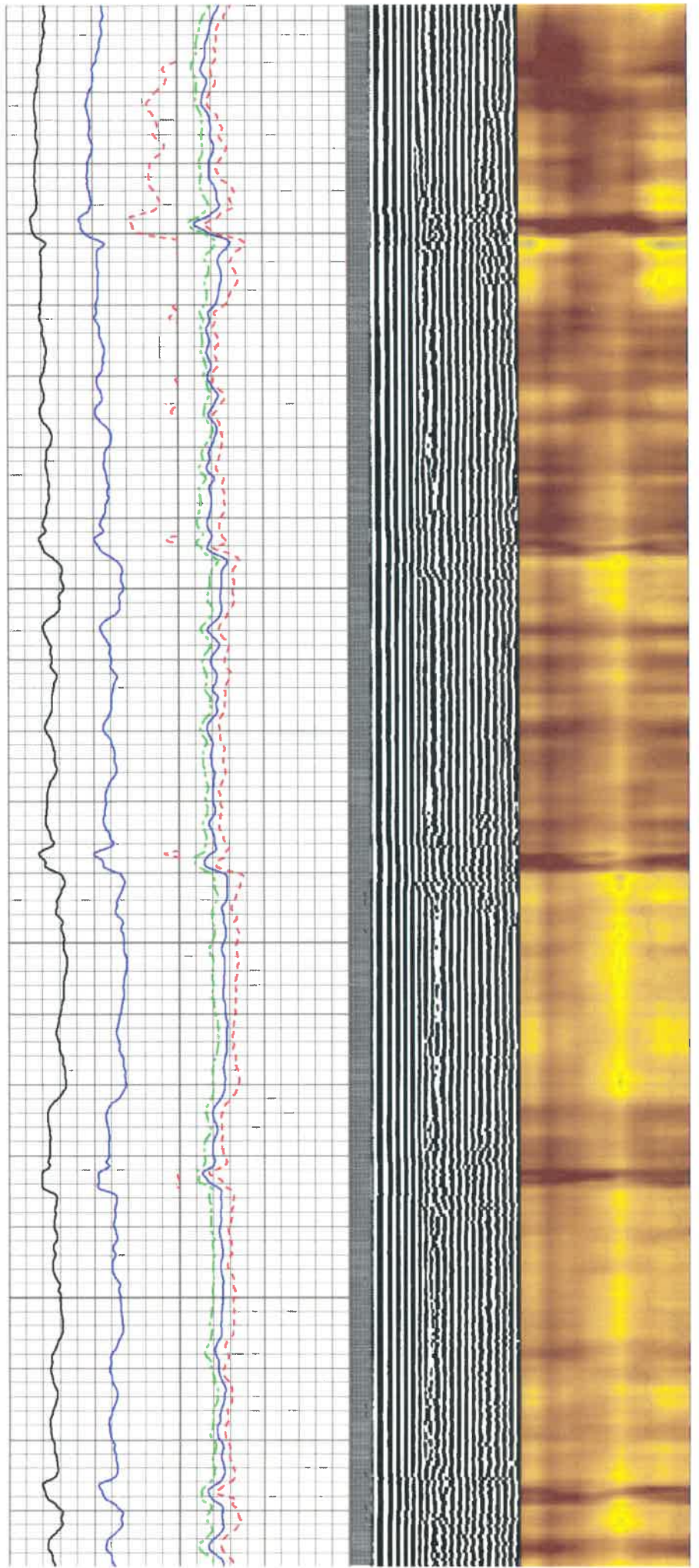
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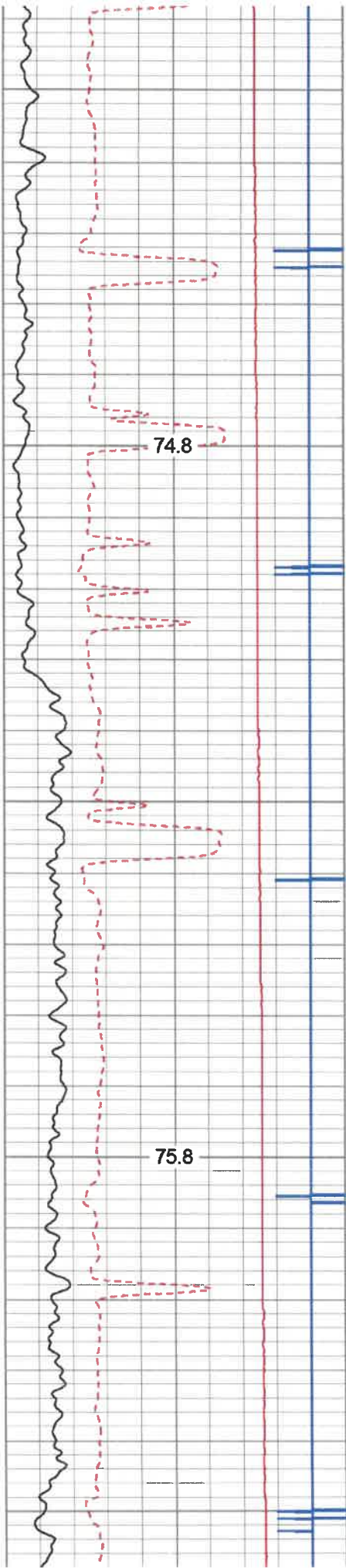




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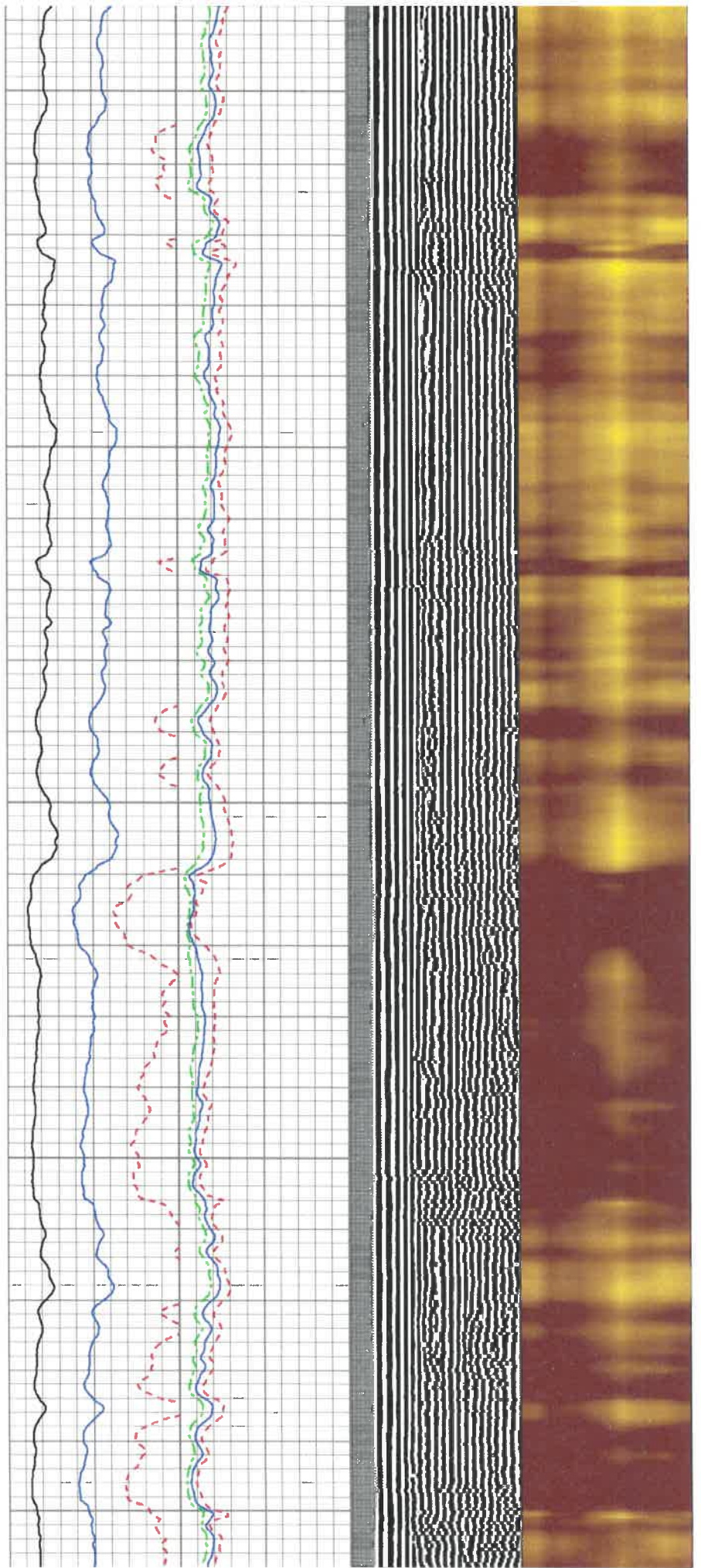
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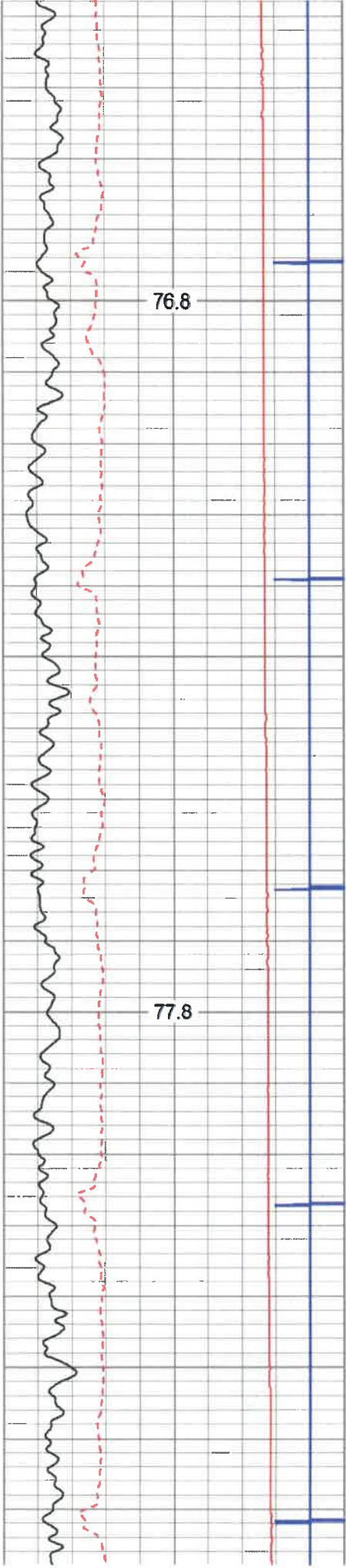




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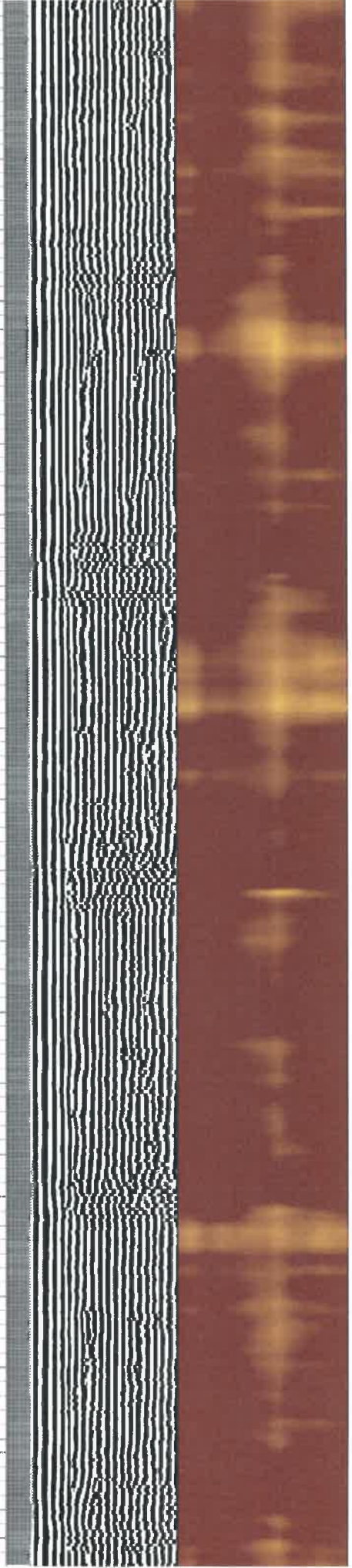
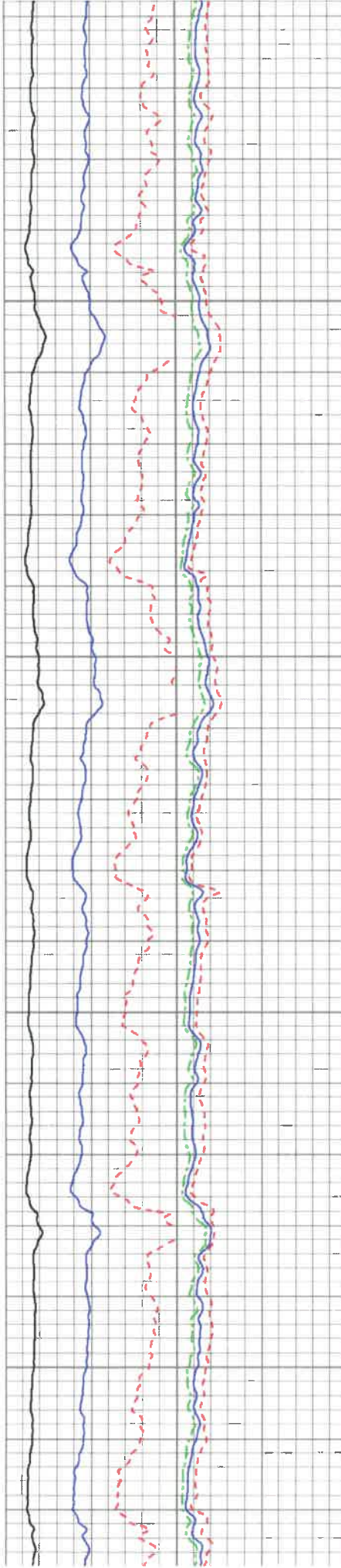
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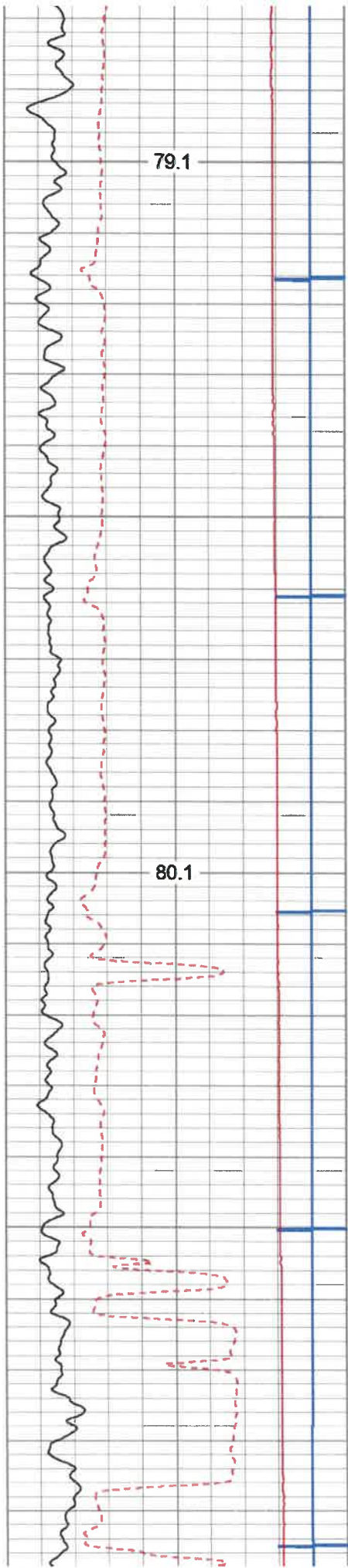




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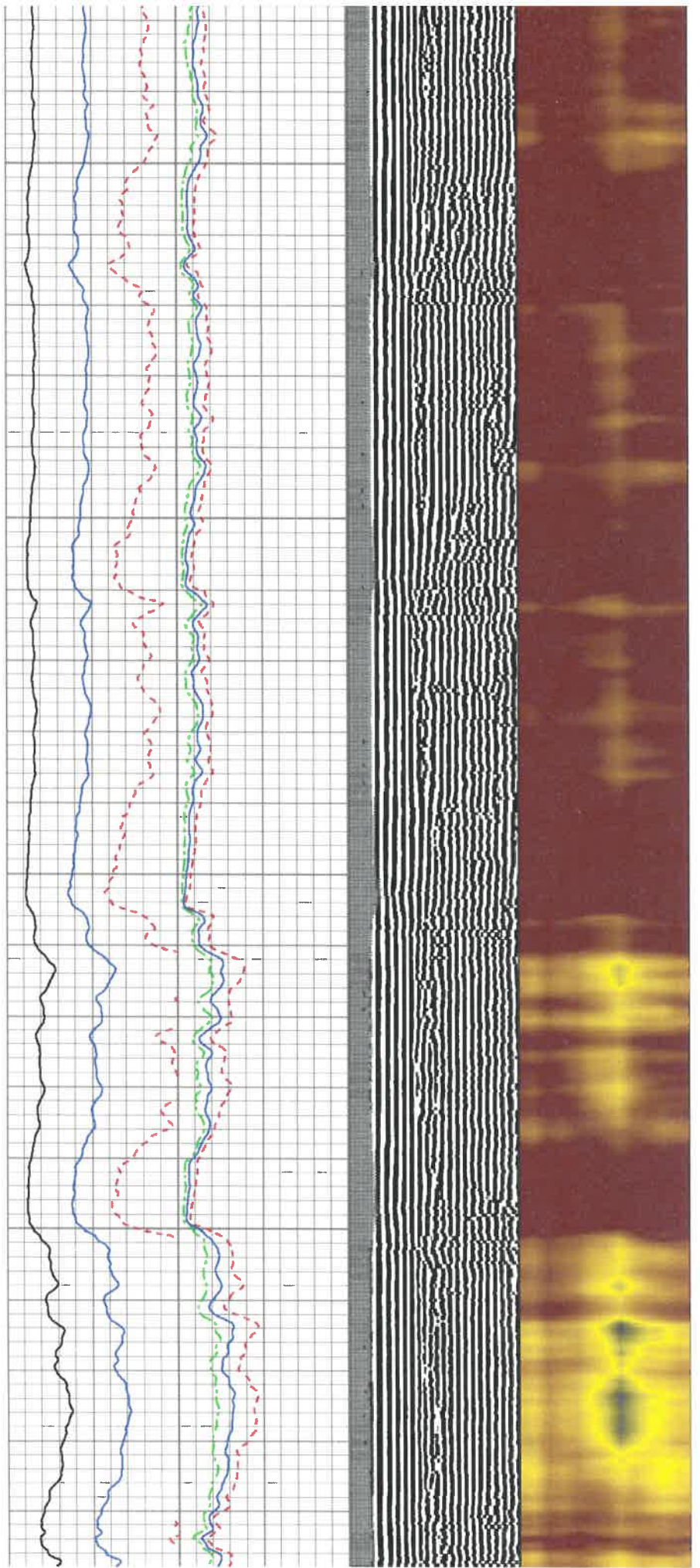
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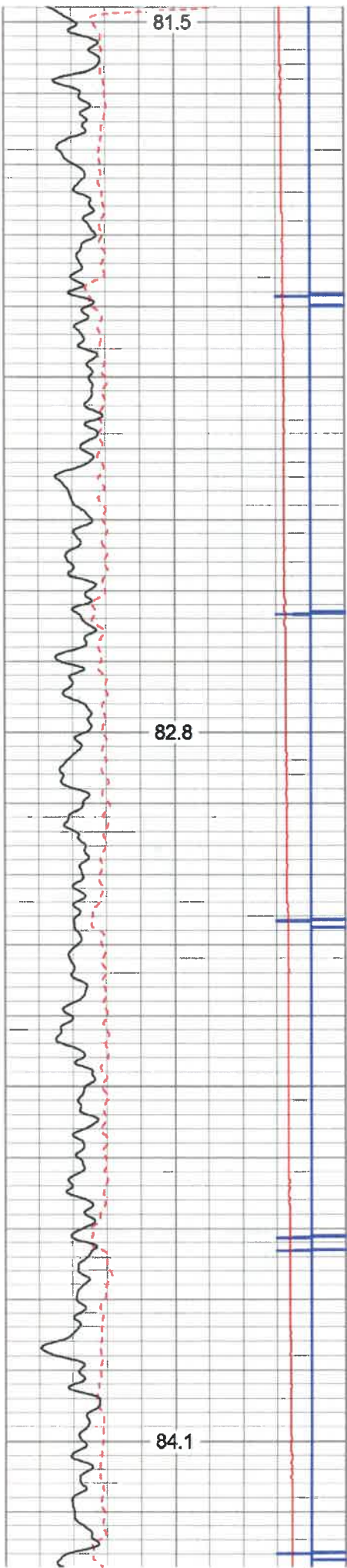




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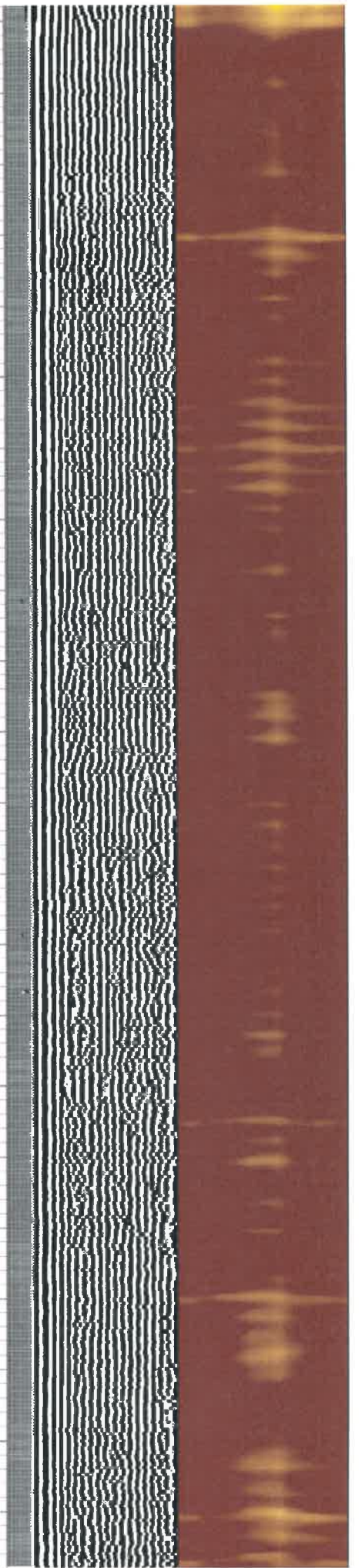
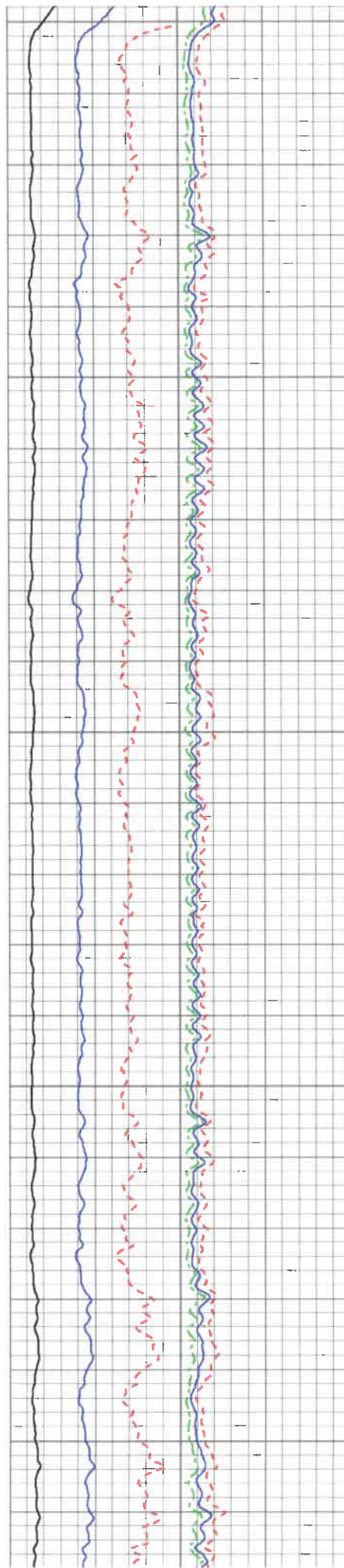


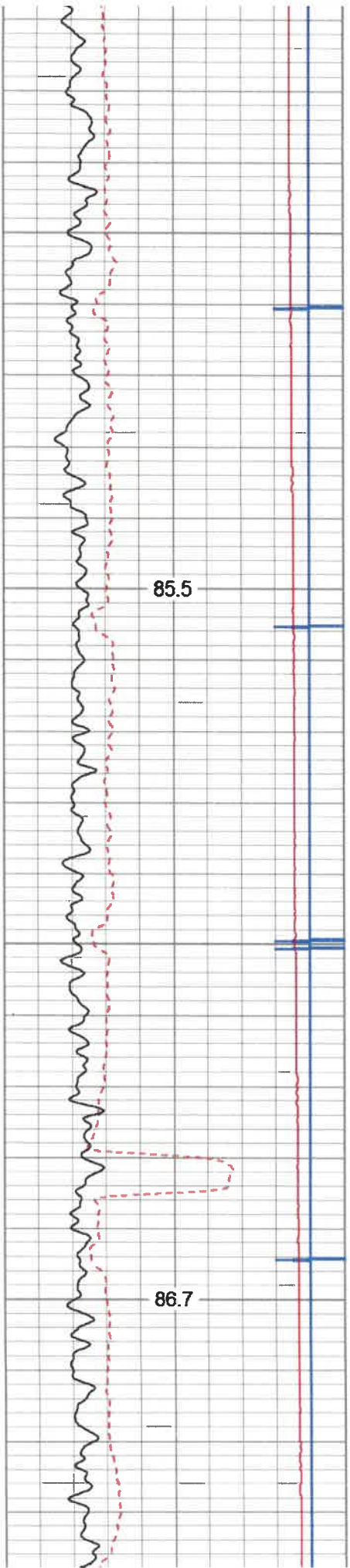


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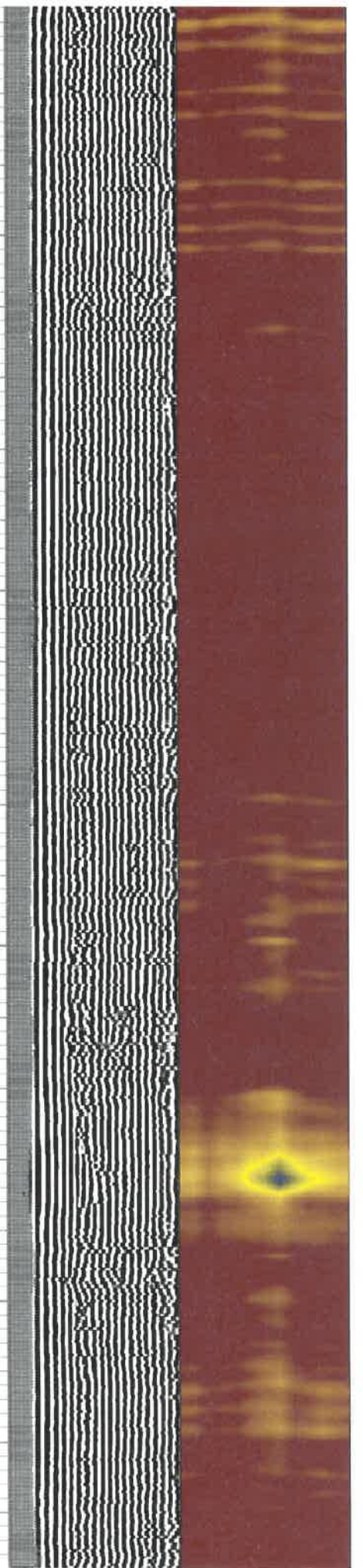
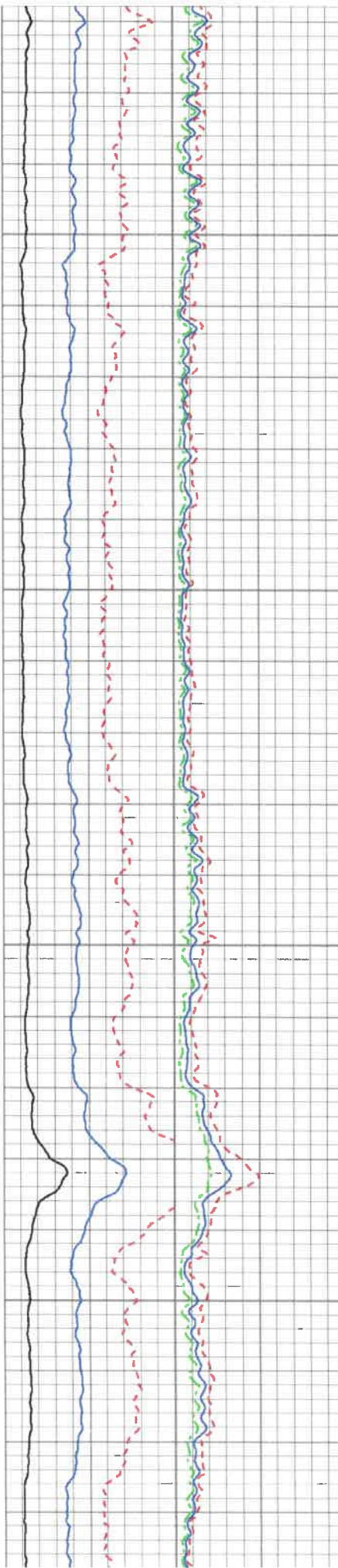
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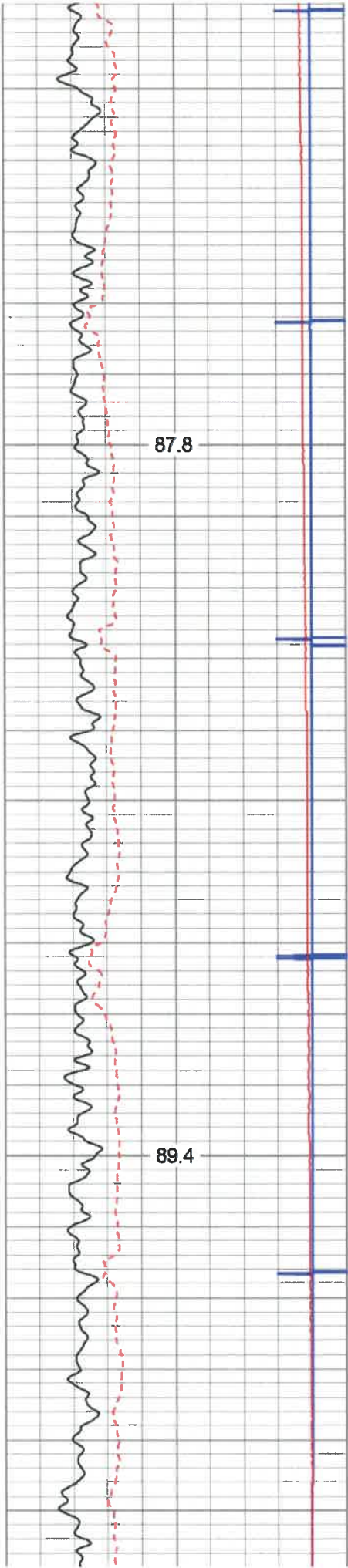




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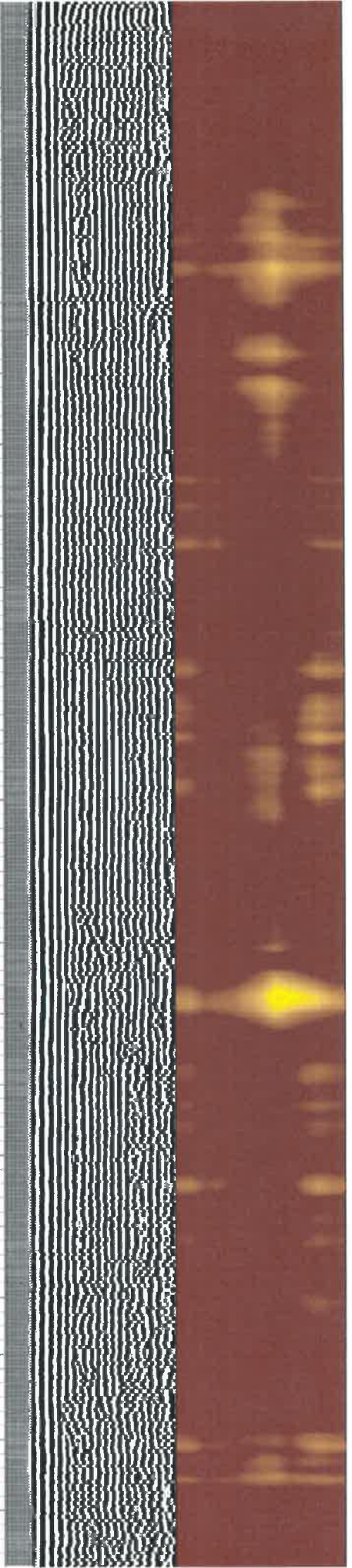
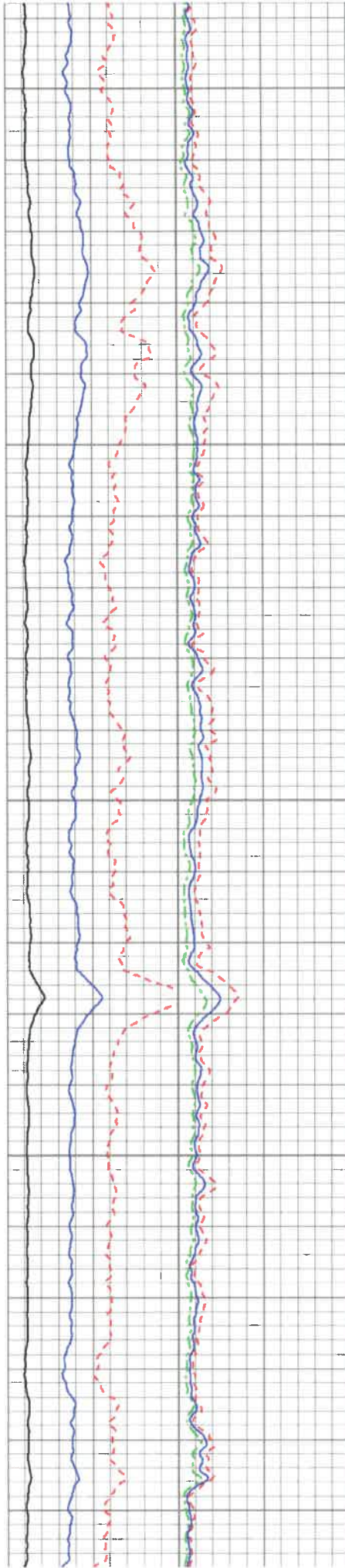
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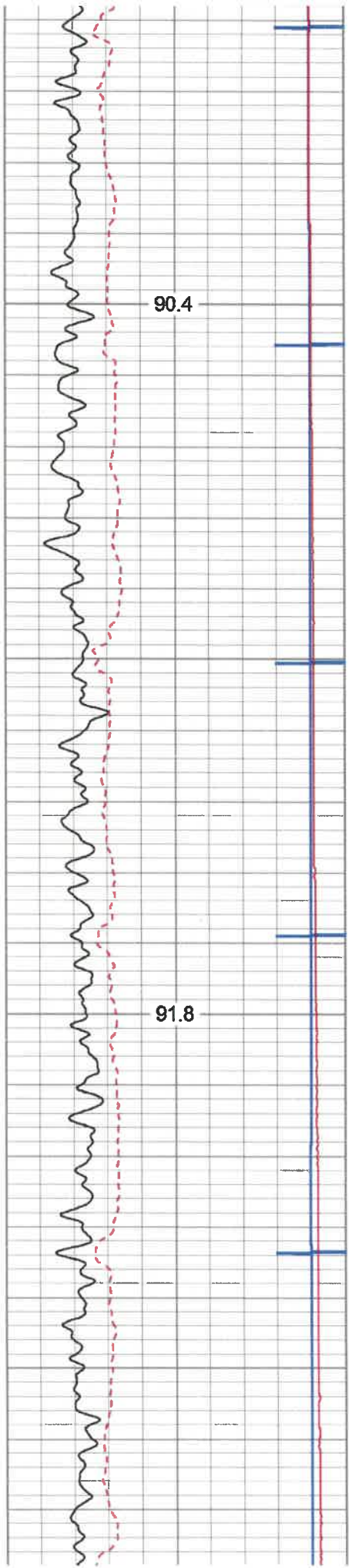




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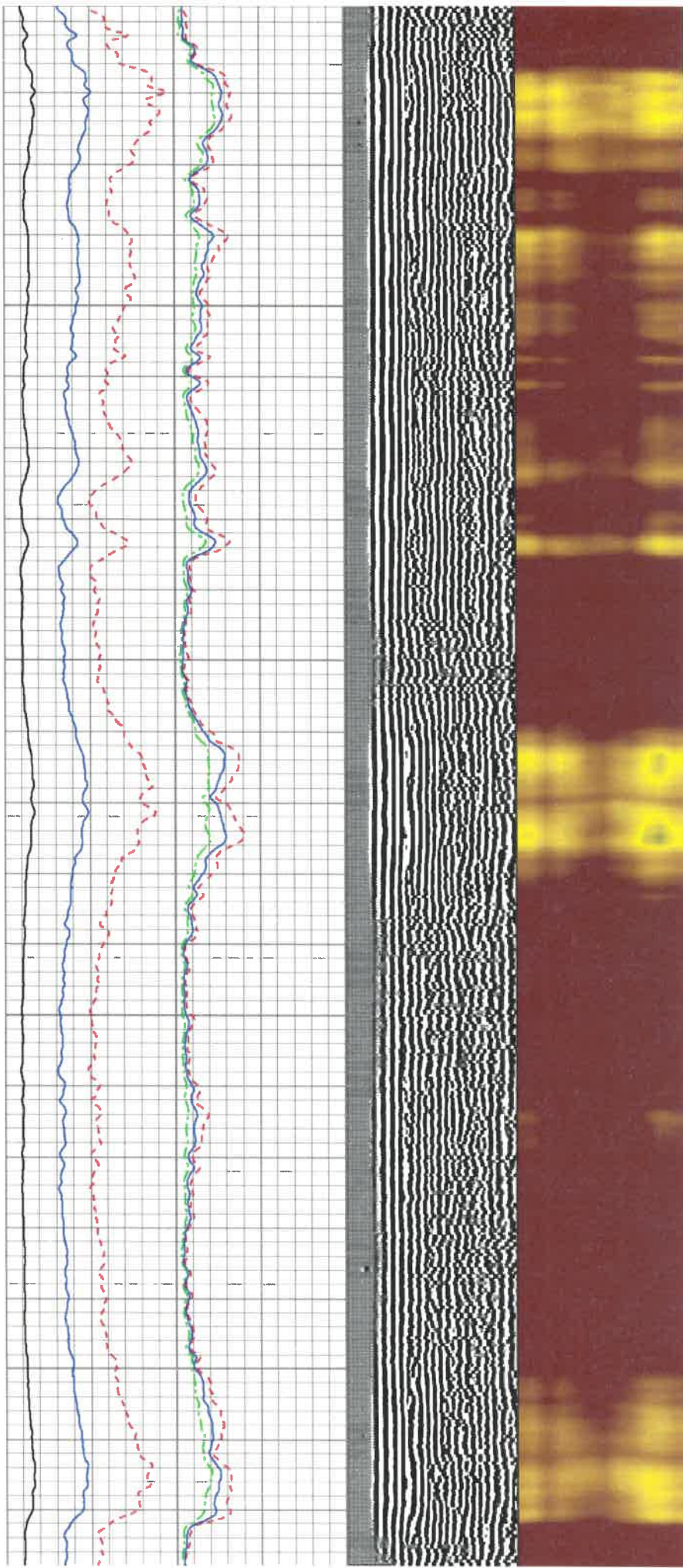
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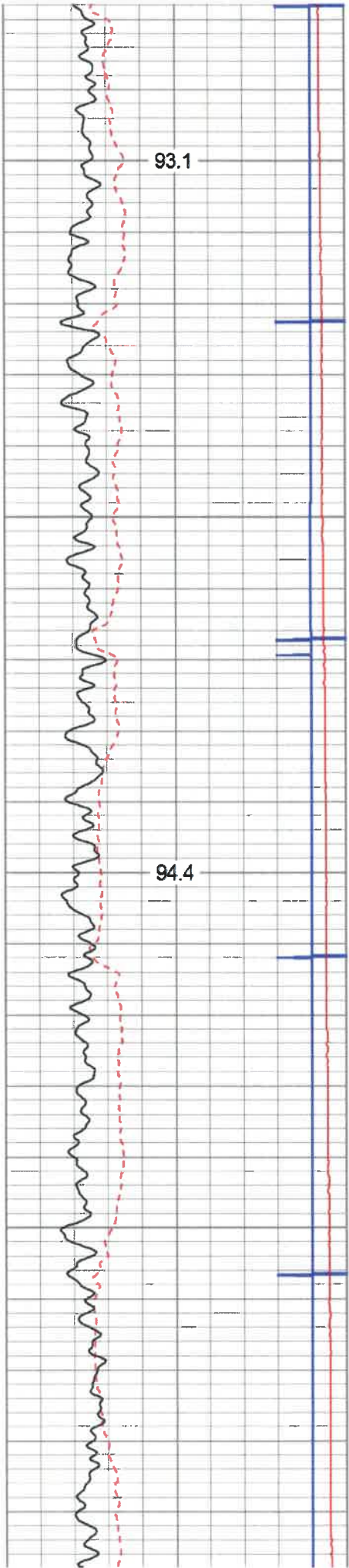




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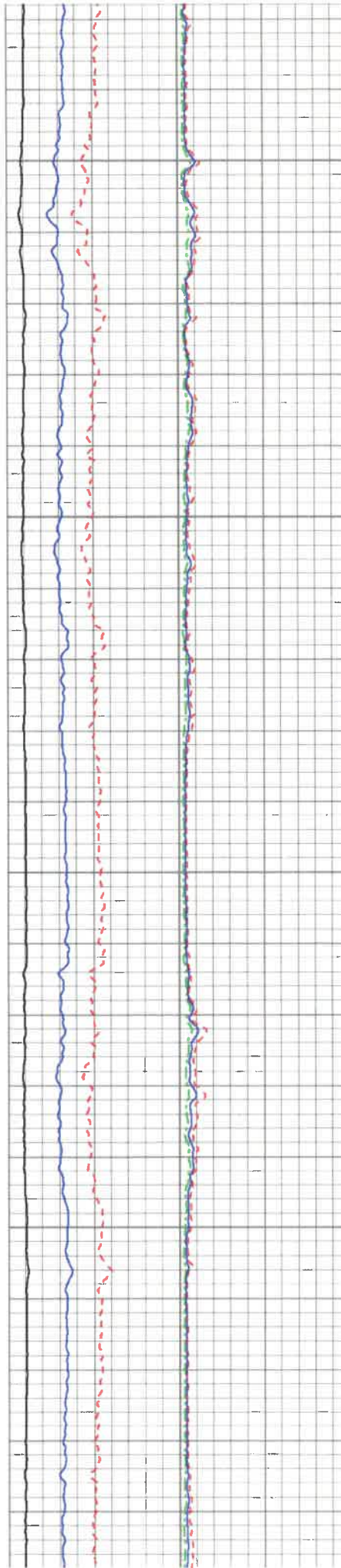
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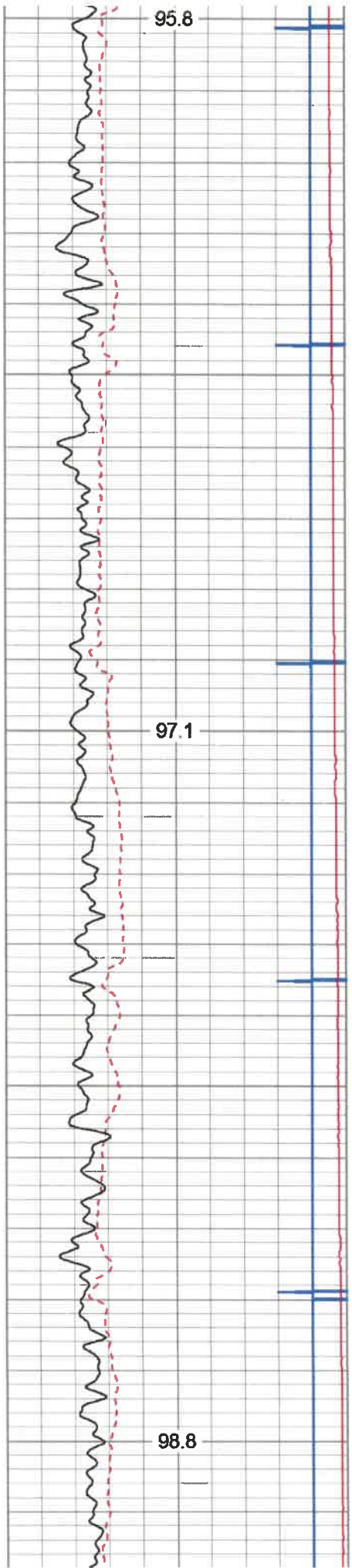




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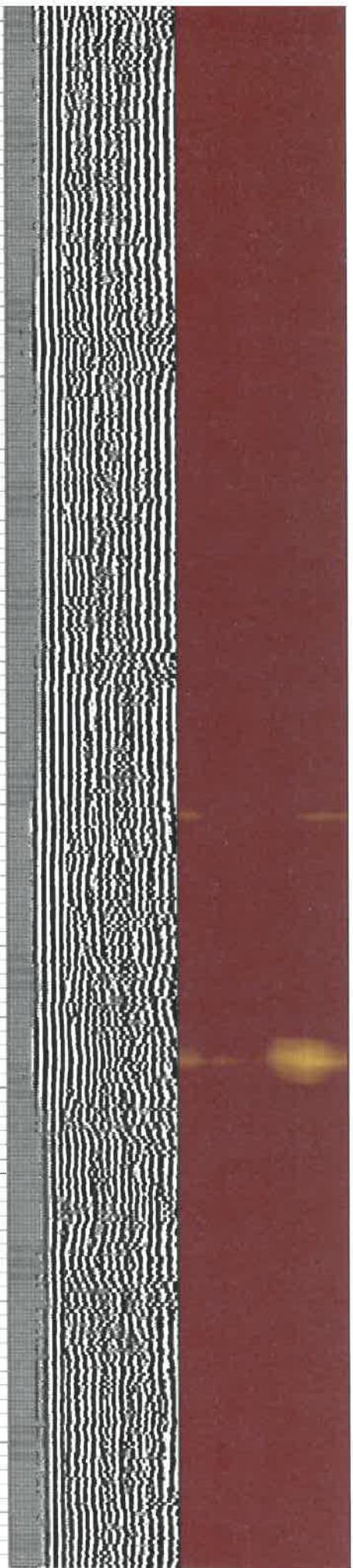
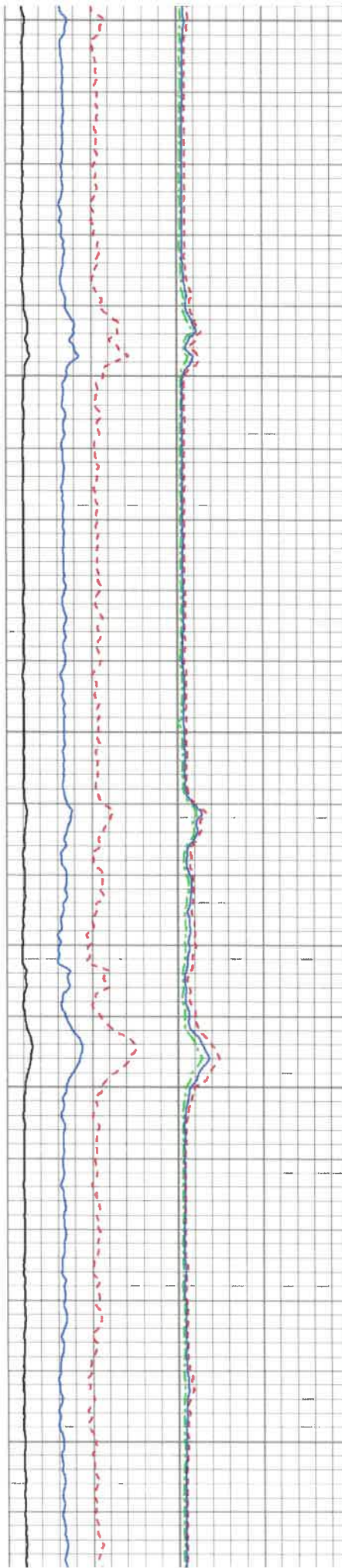


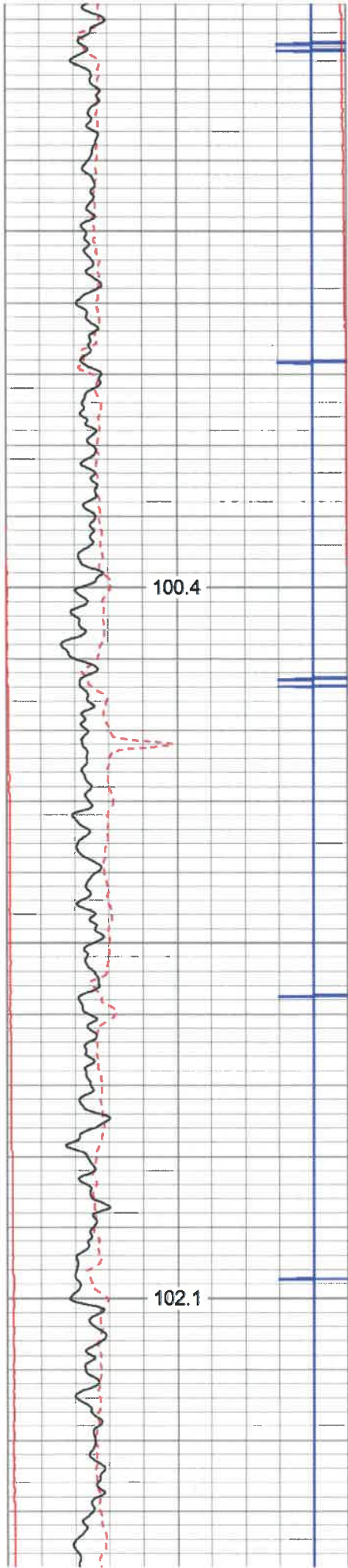


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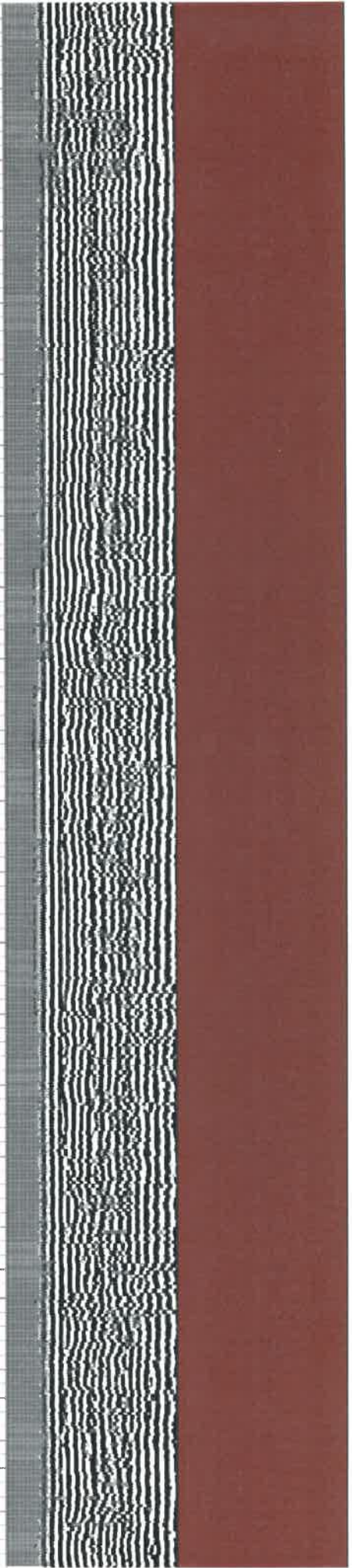
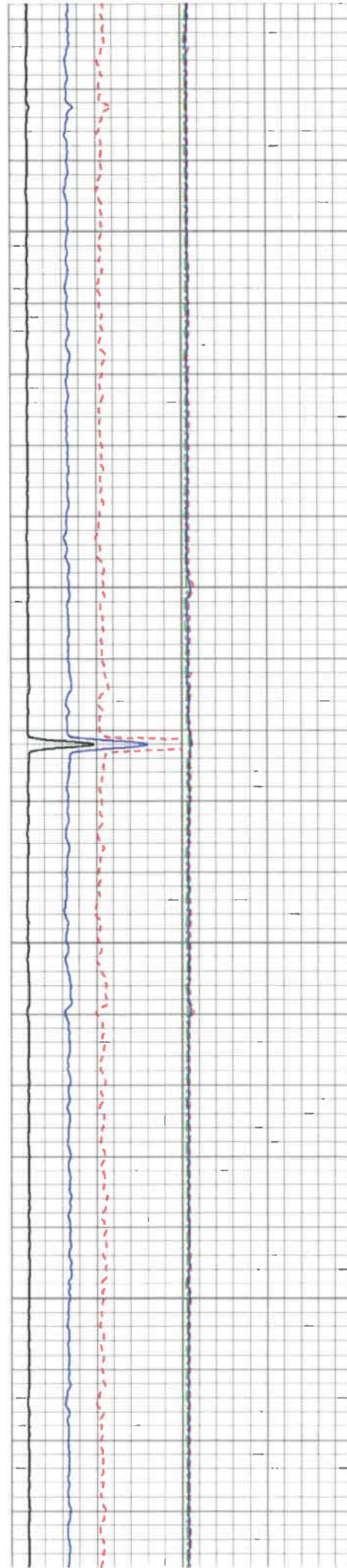
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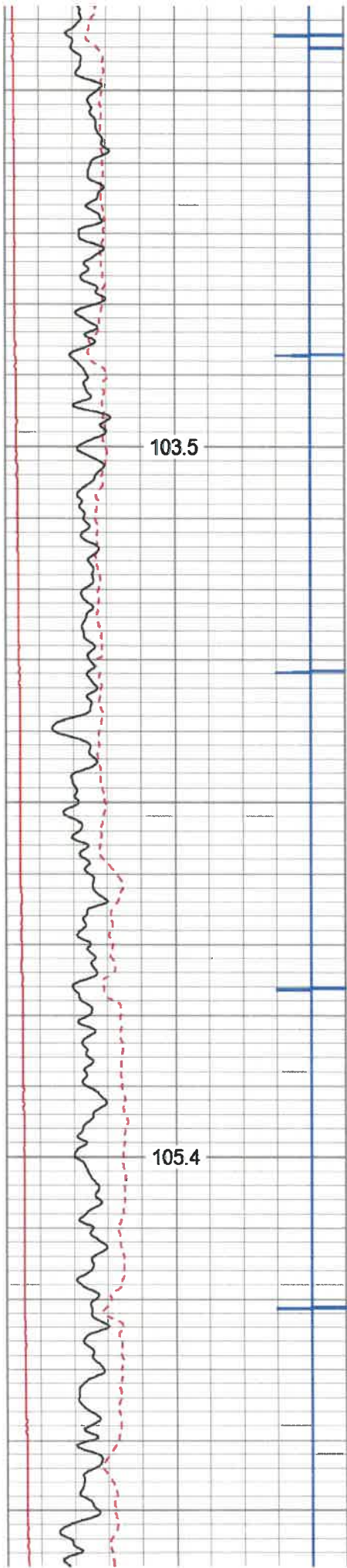




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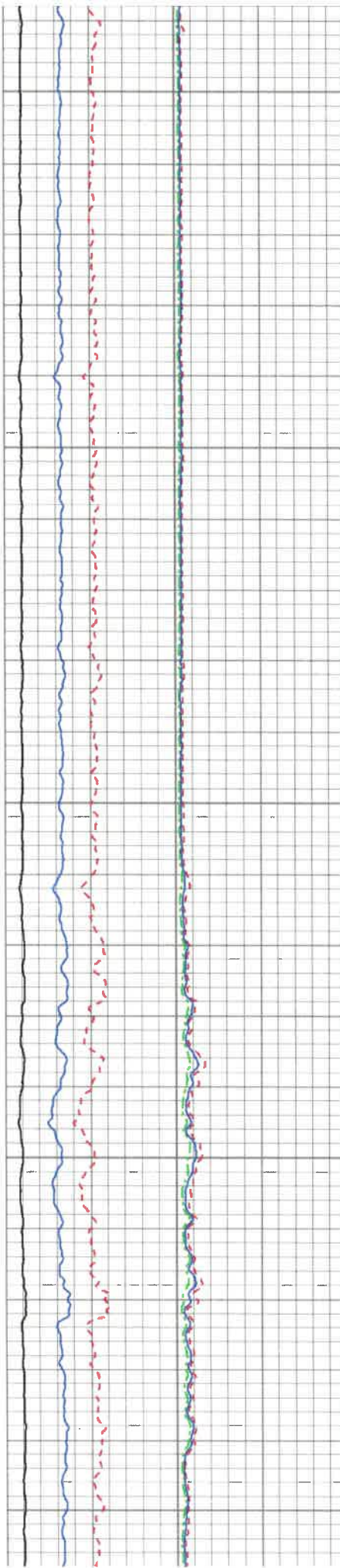
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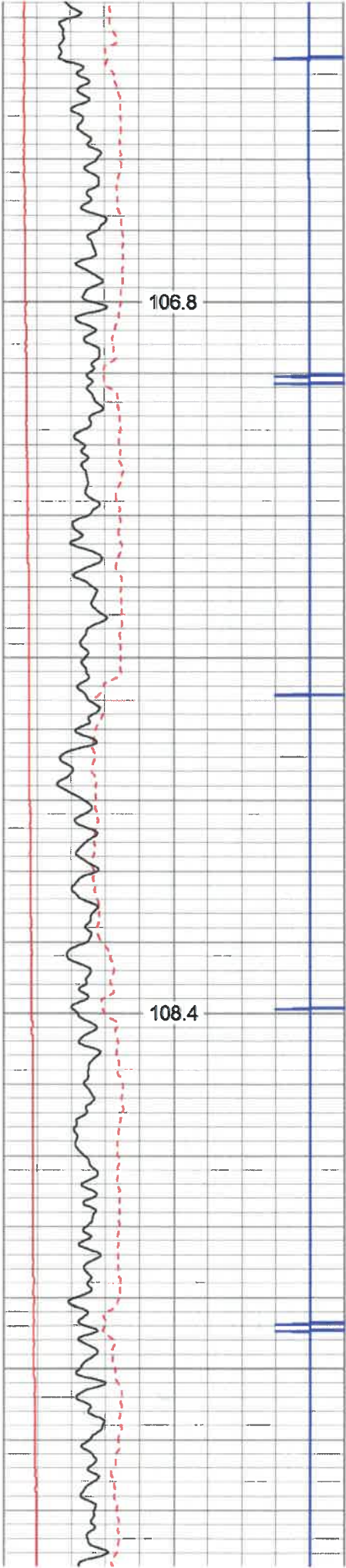




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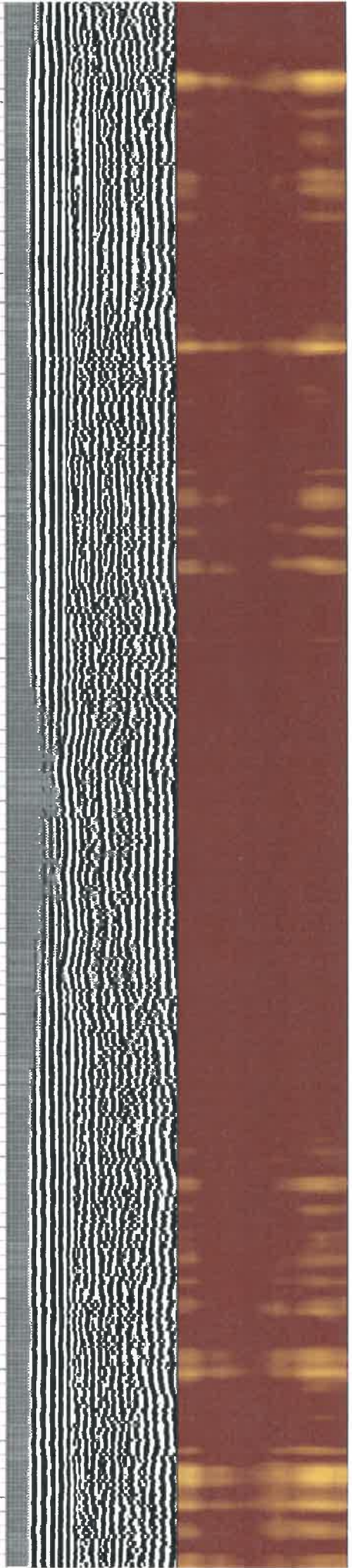
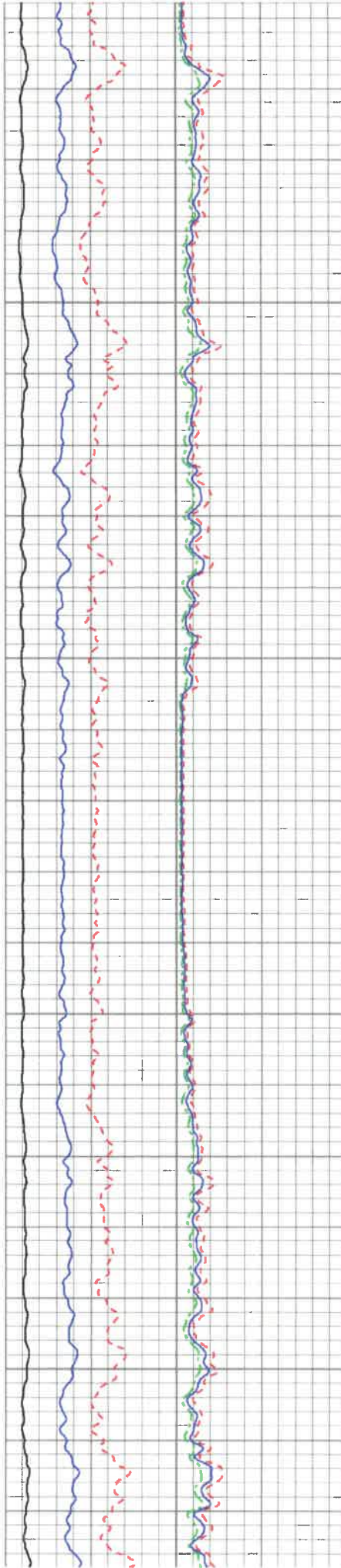
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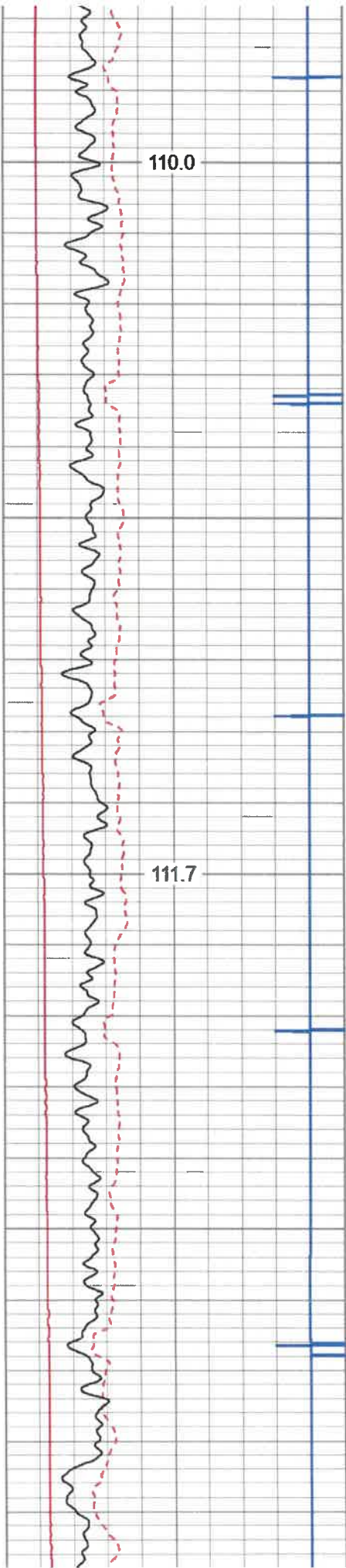




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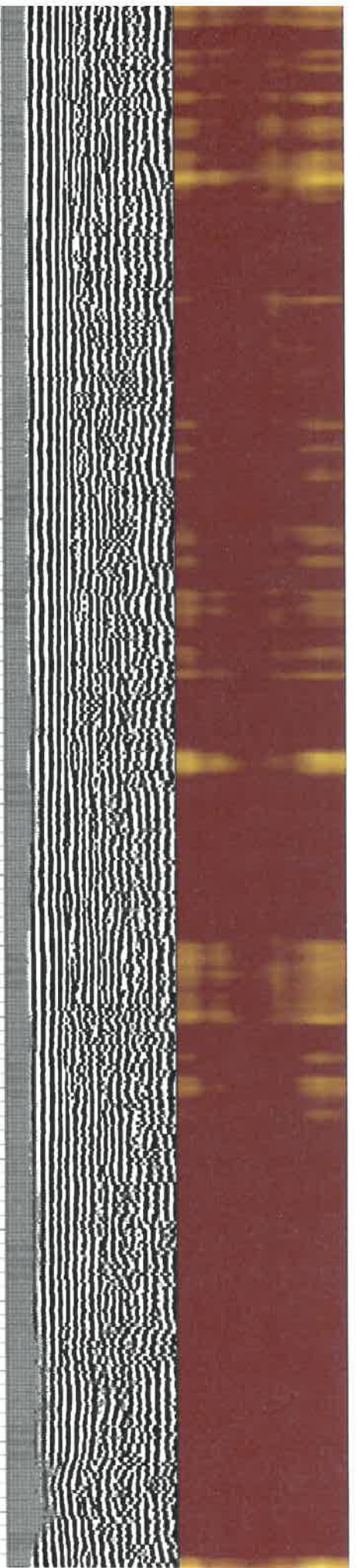
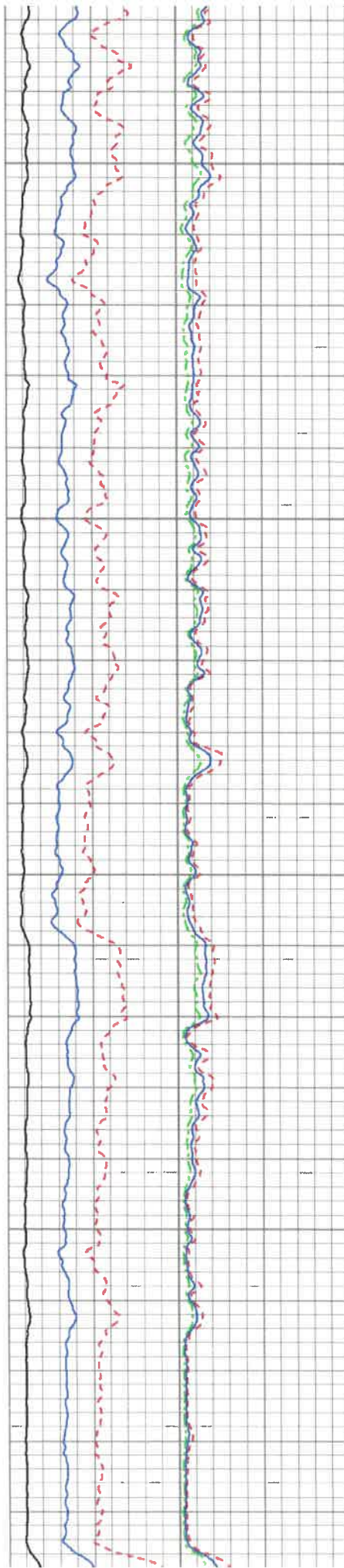
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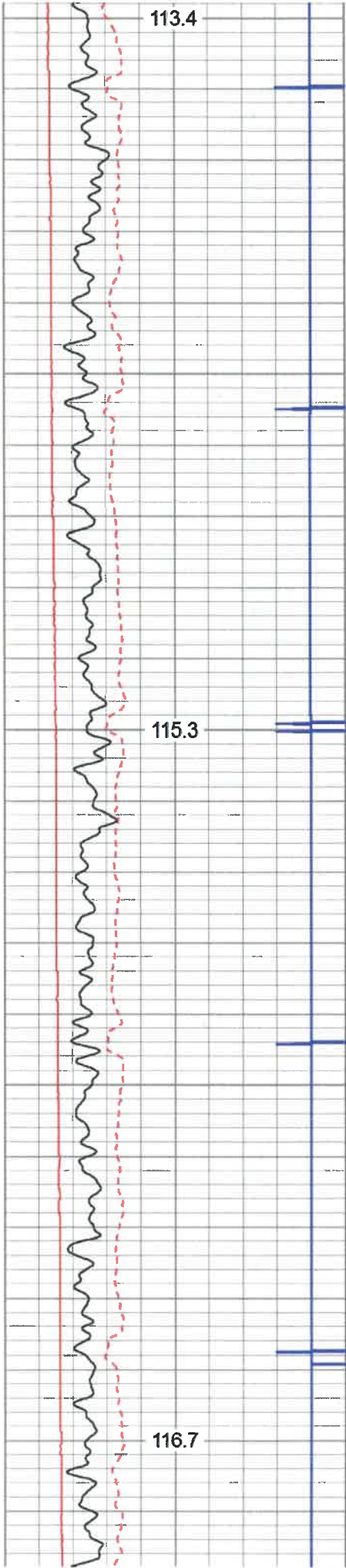




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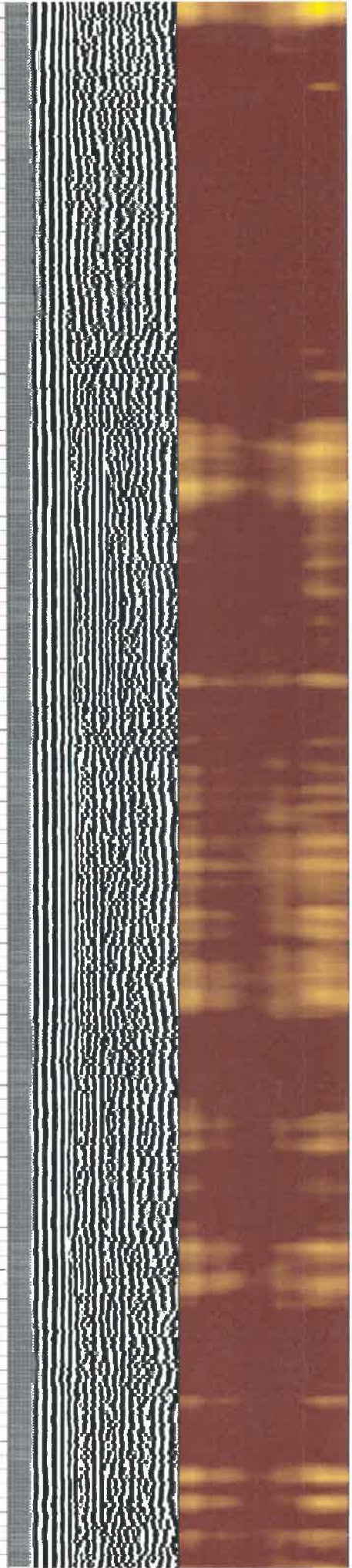
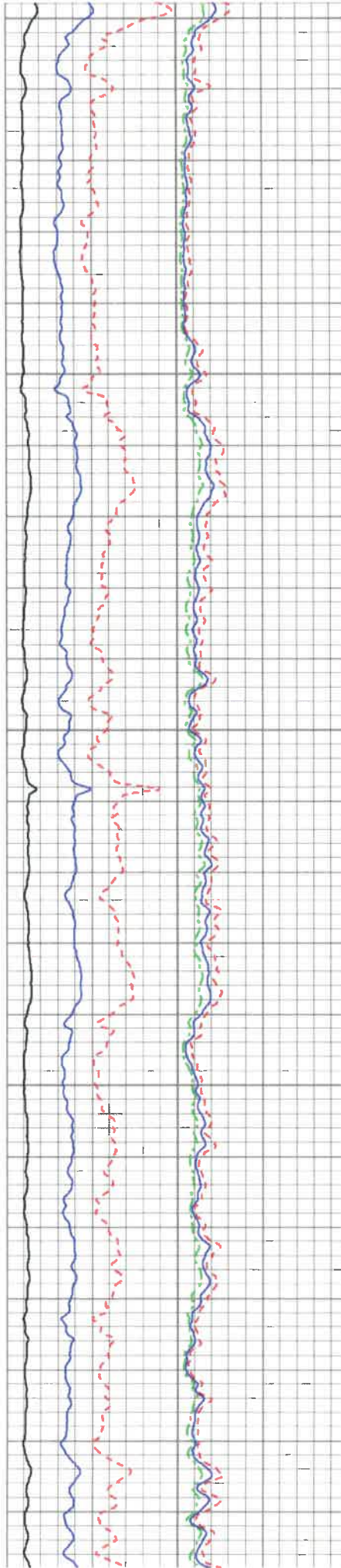


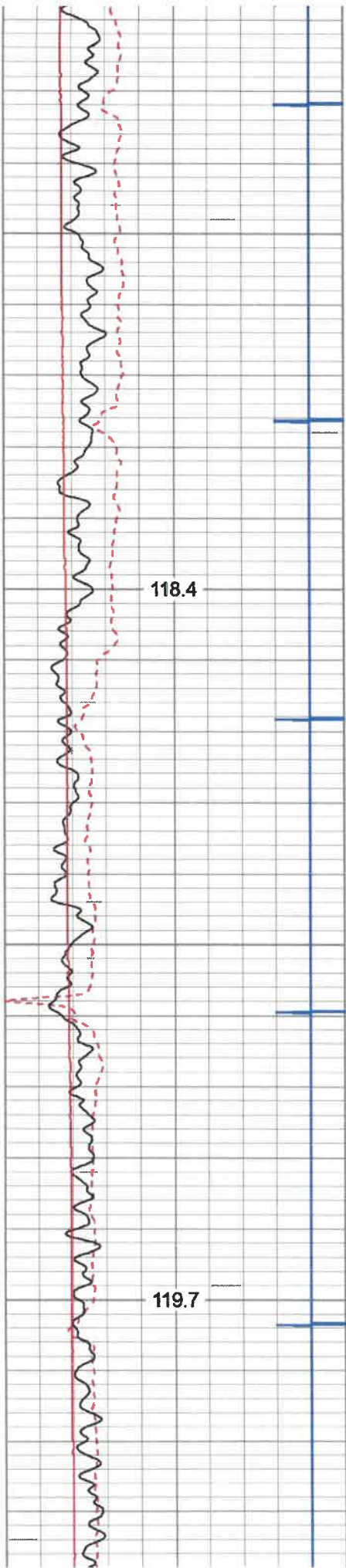
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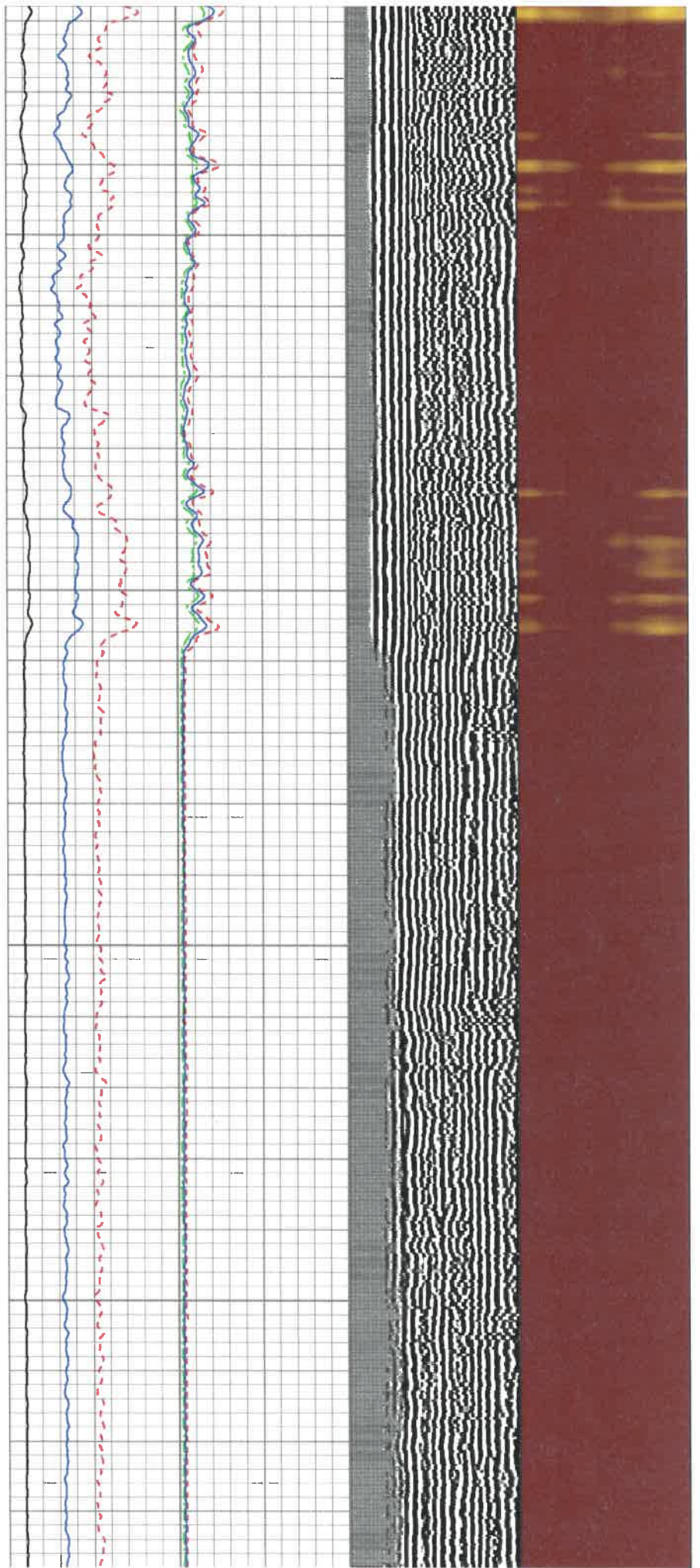
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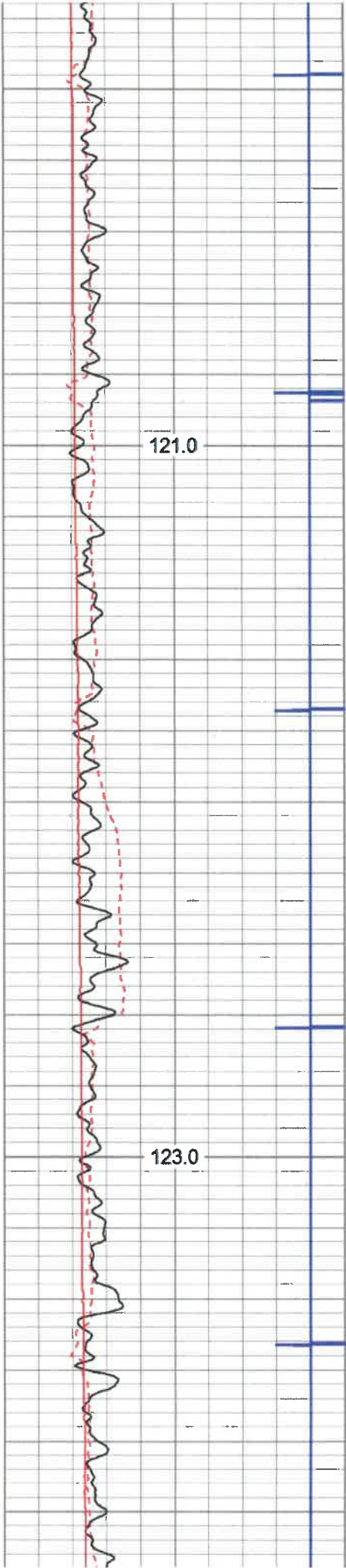




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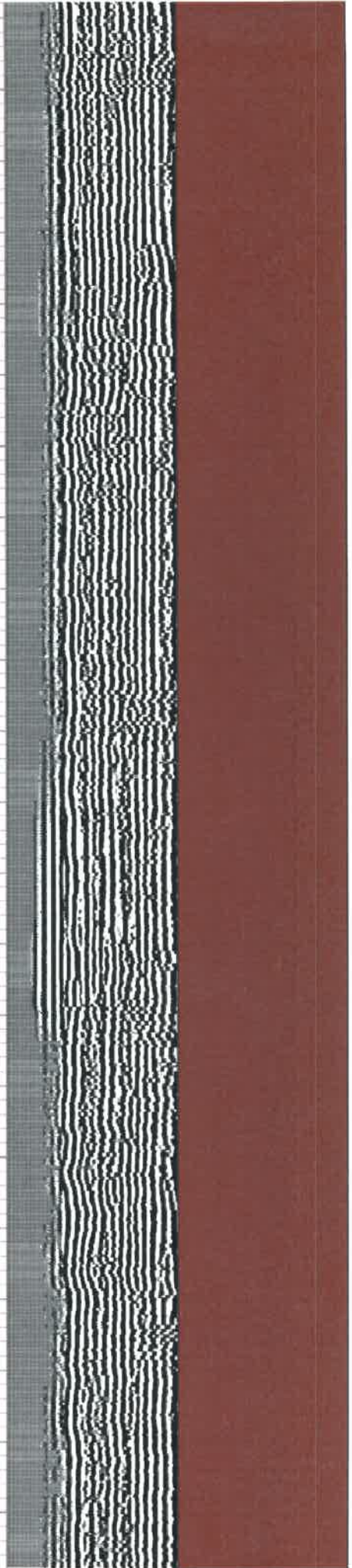
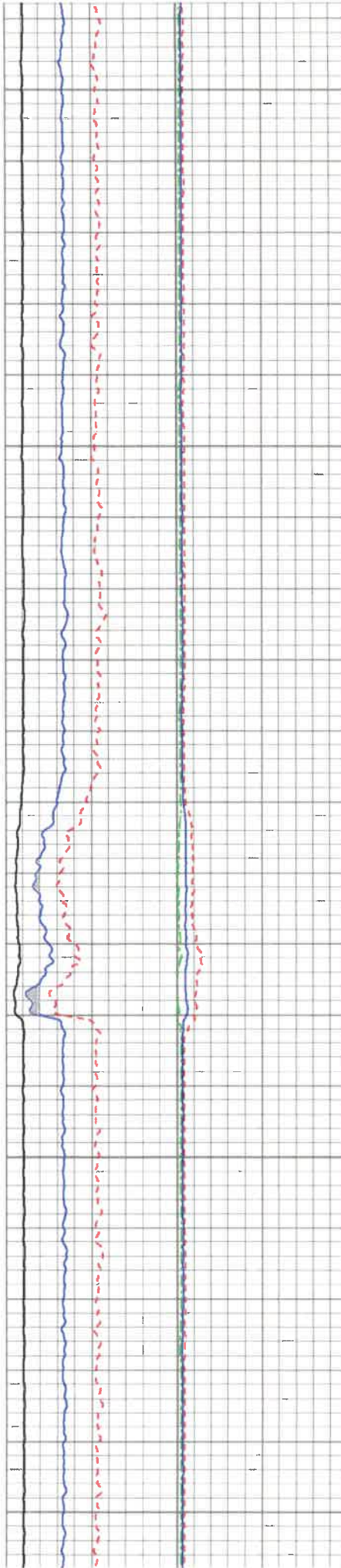
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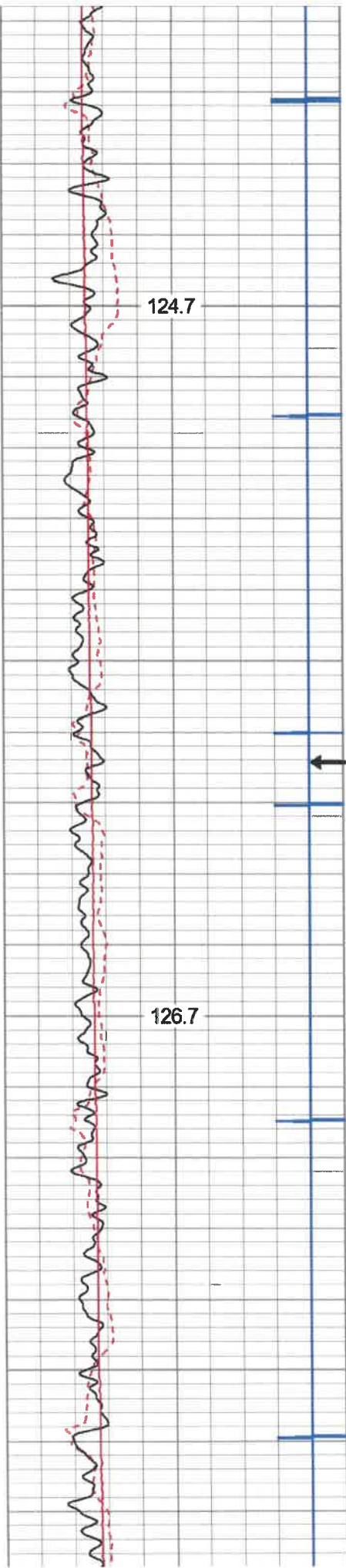




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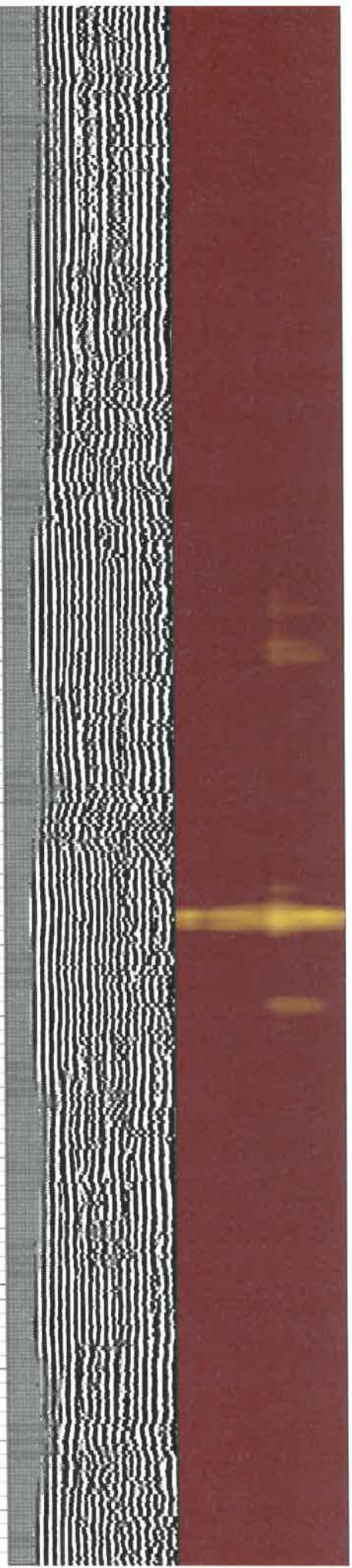
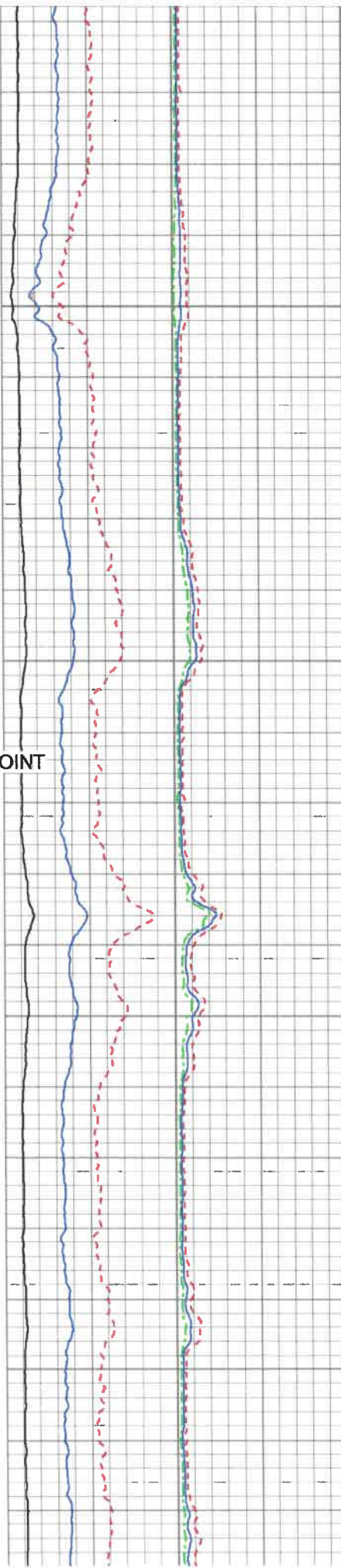


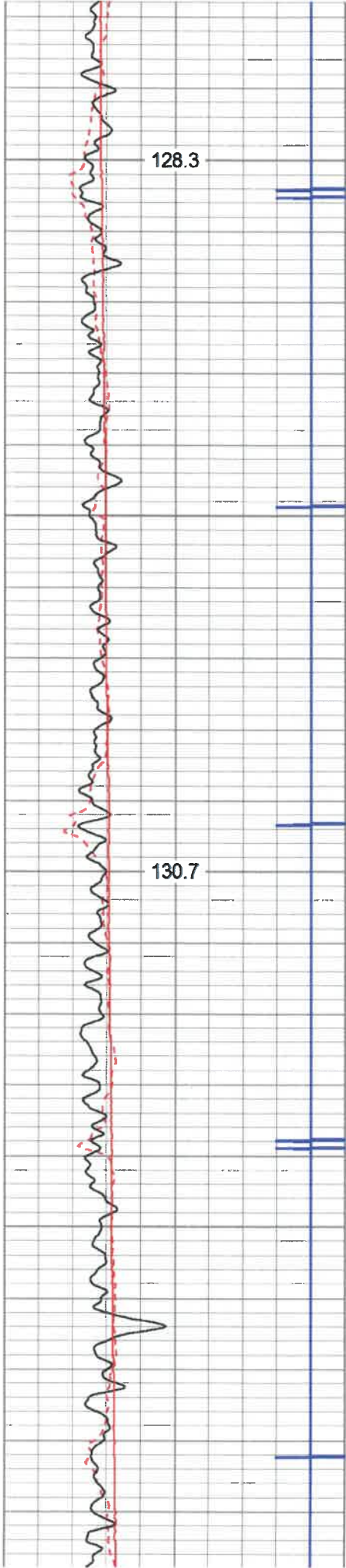


5500

← MARKER JOINT

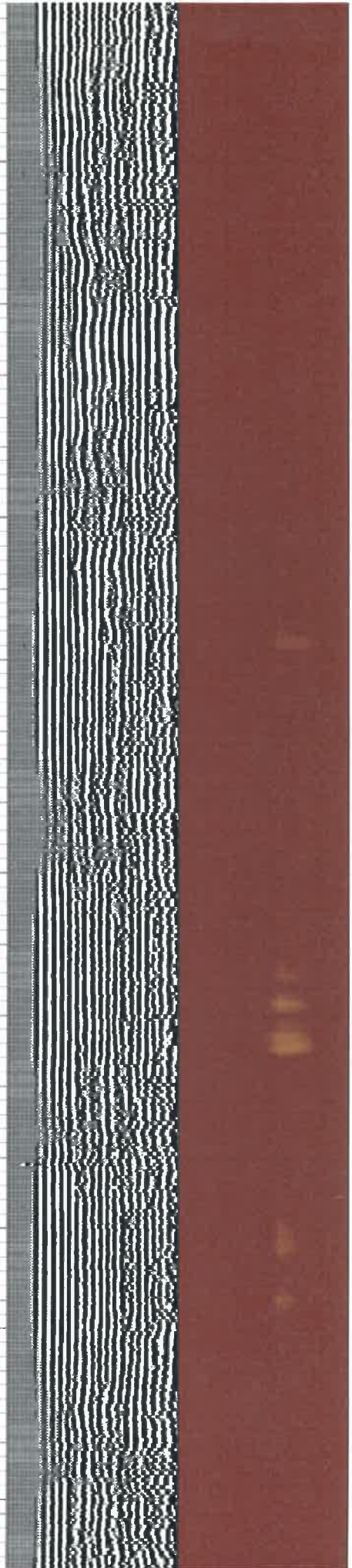
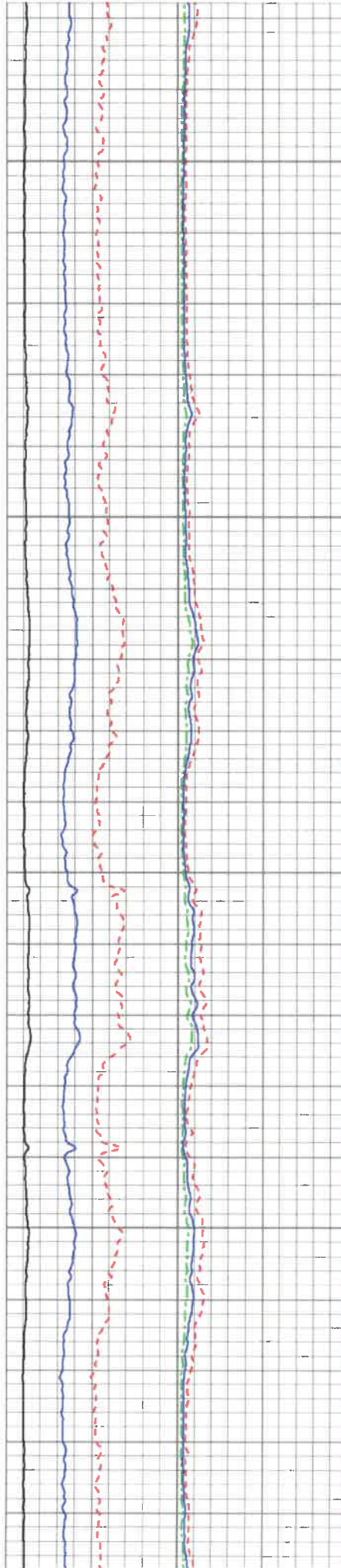
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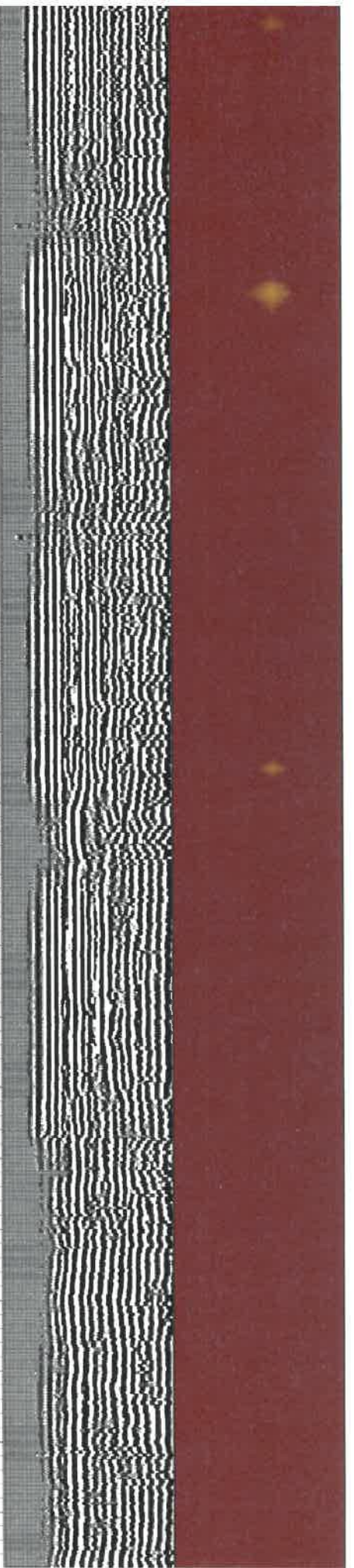
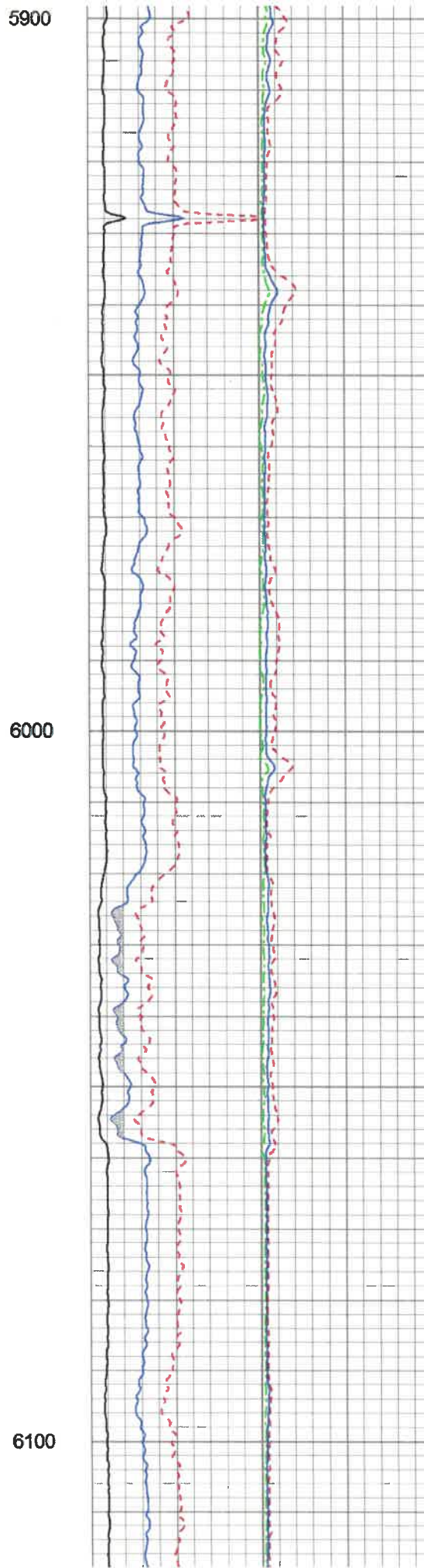
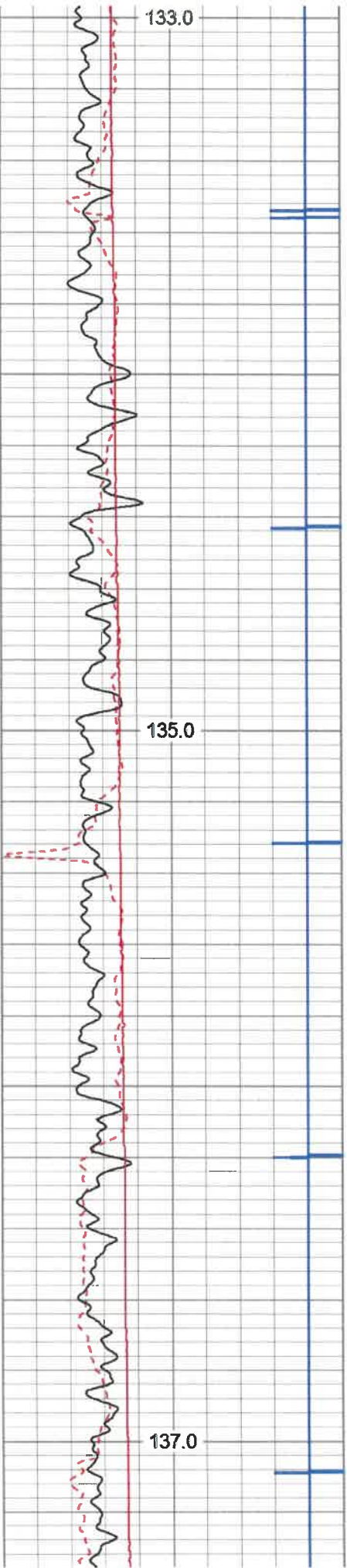


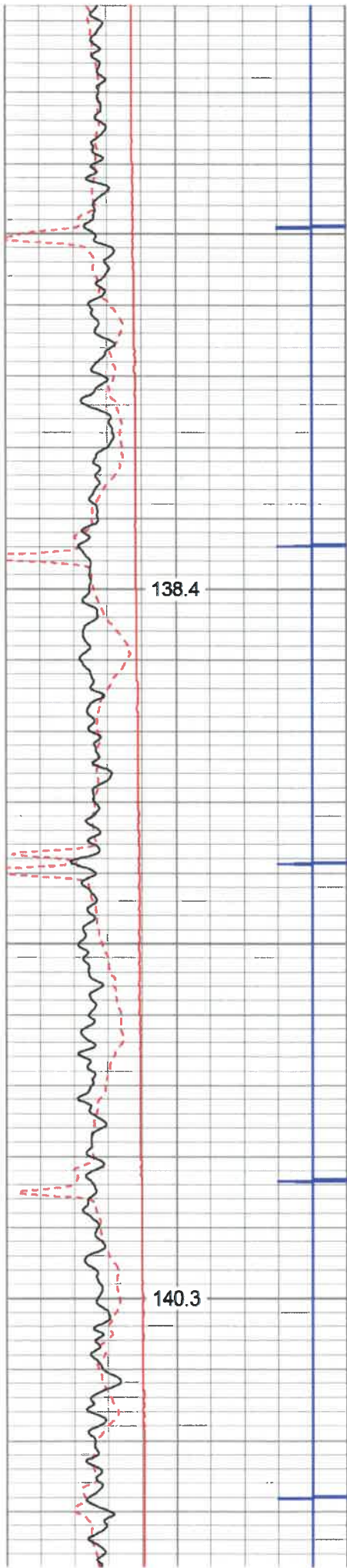


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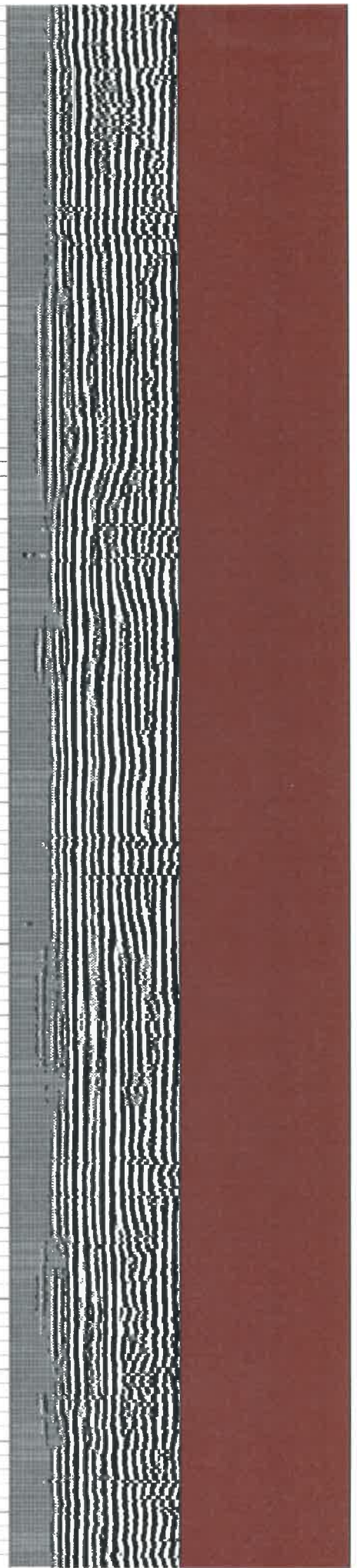
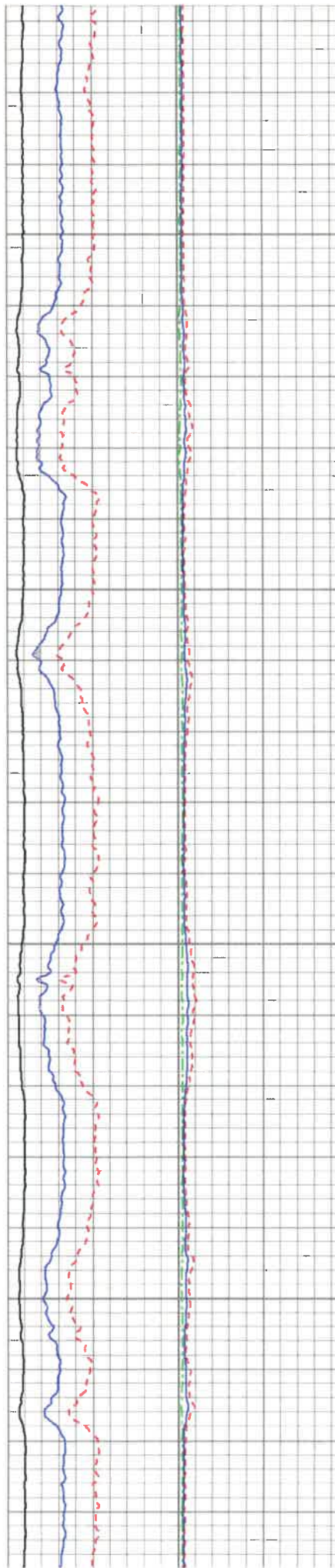


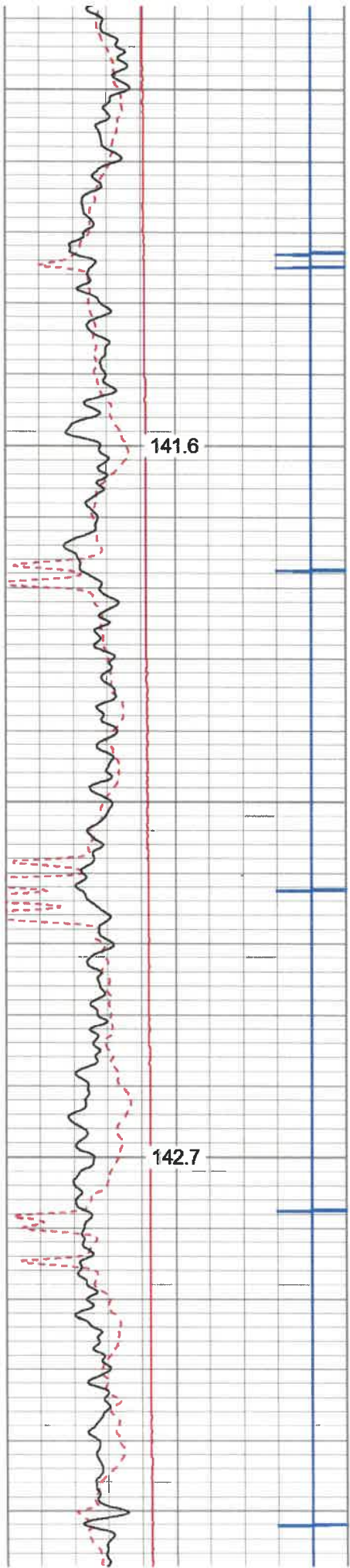




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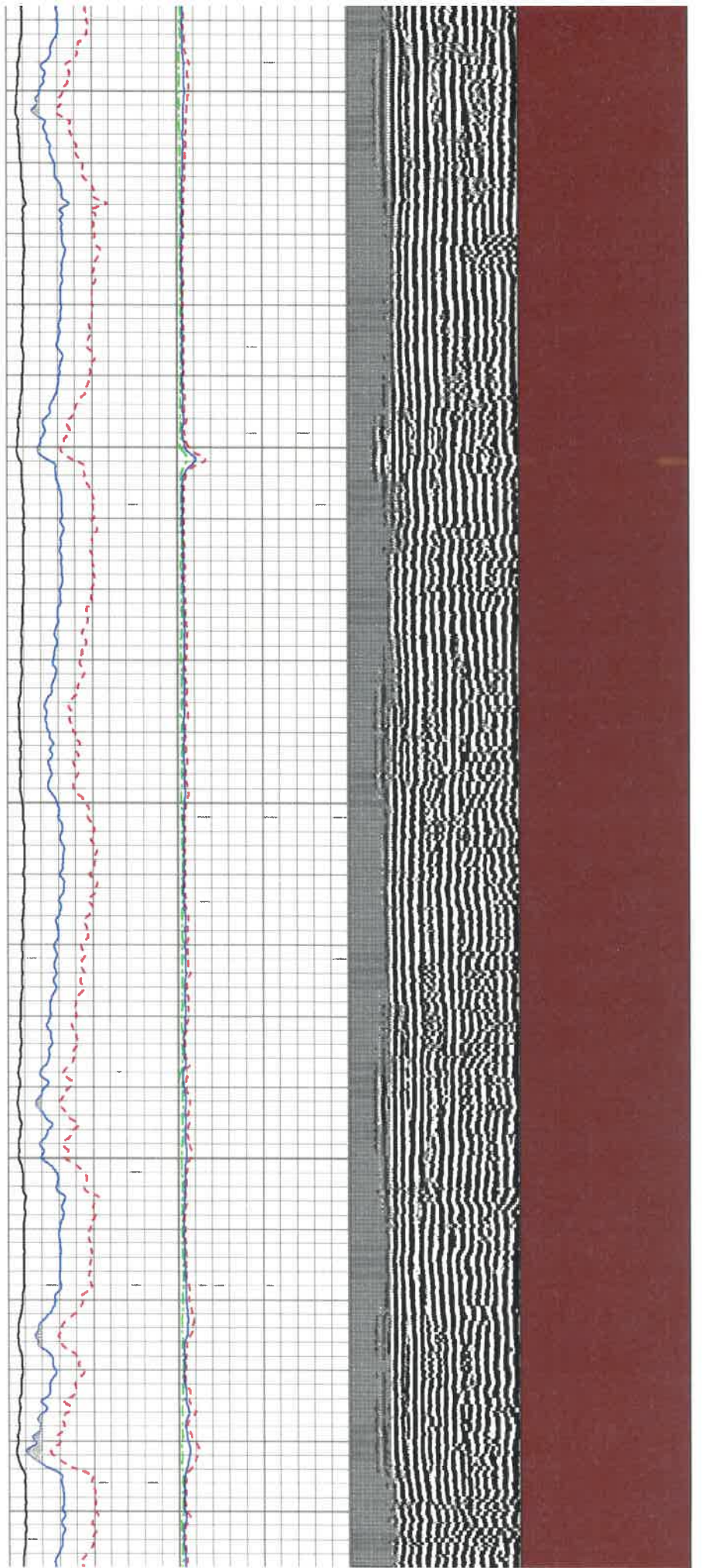
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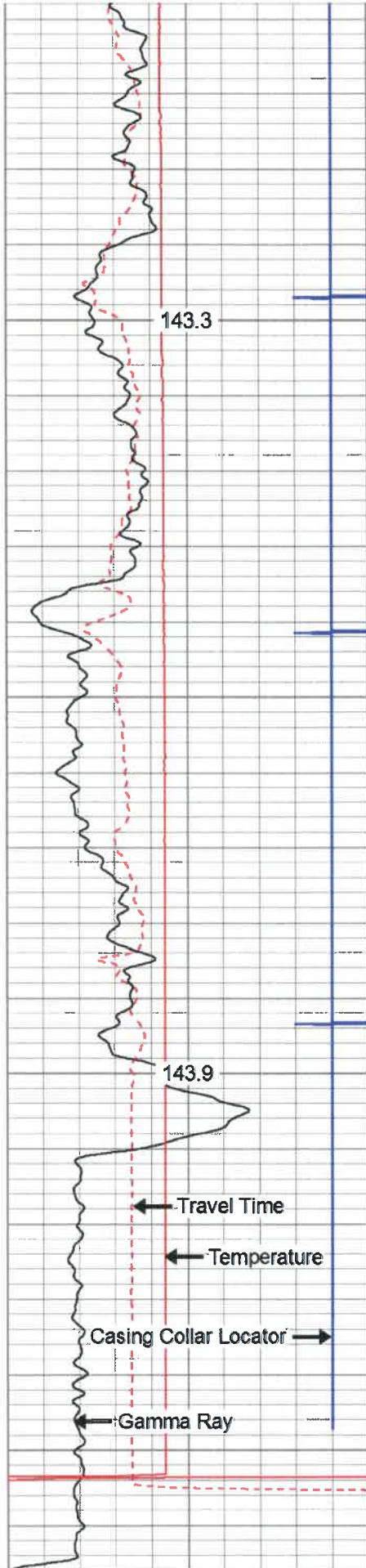




6400

6500





6600

6700

143.3

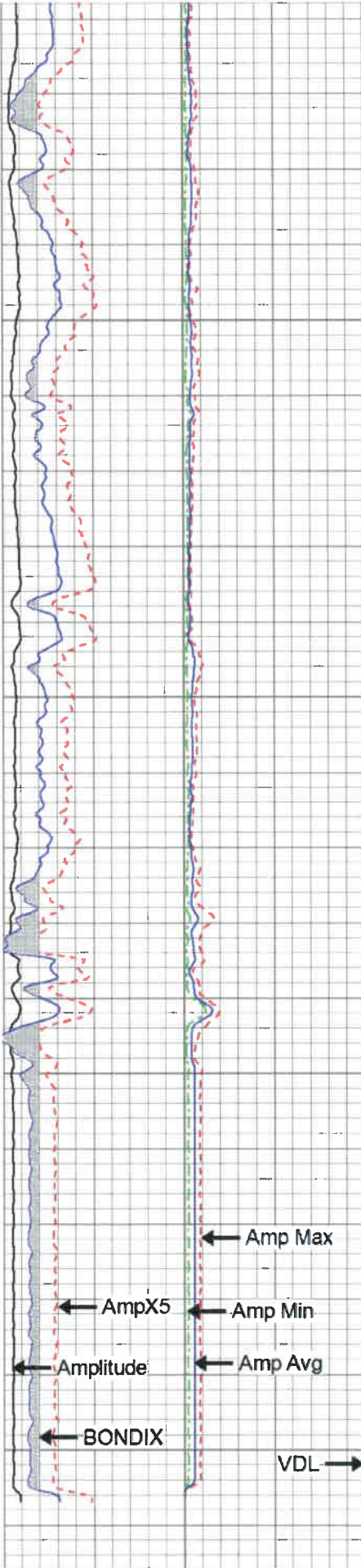
143.9

← Travel Time

← Temperature

Casing Collar Locator →

← Gamma Ray



← Amp Max

← AmpX5

← Amp Min

← Amplitude

← Amp Avg

← BONDIX

VDL →



Sector Map →

280	Travel Time (usec)	180
9	Casing Collars	-1
0	Gamma Ray	100

Amplitude	0	Amp Avg	150
(mV)	100	Amp Max	150
Amp X5 (mV)	20	Amp Min	150

200	VDL	1200	1	Sector Map	12
			20		80



0	Gamma Ray	180
0	TEMP (degF)	100
	TEMP (degF)	

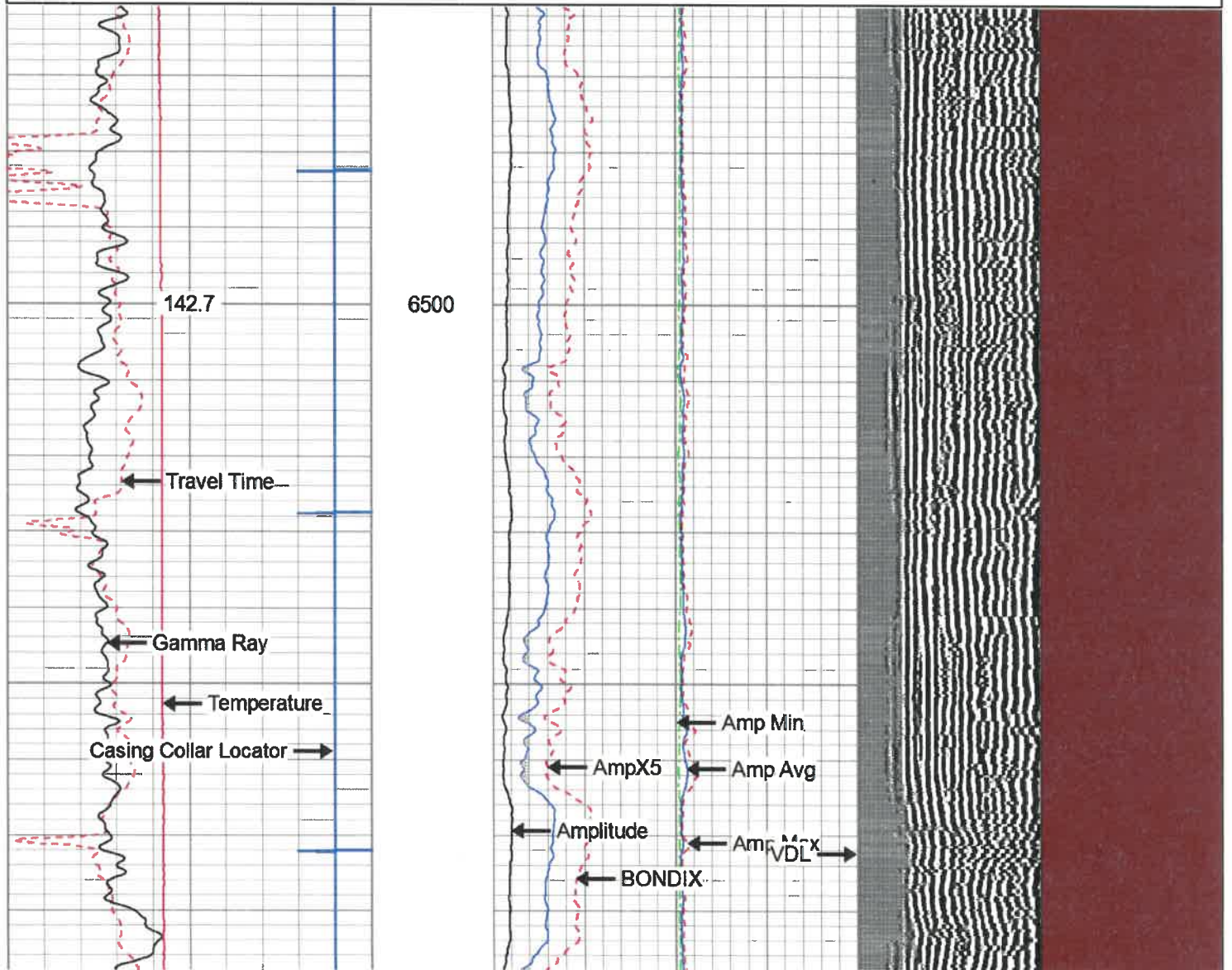
0	AmpX5 (mV)	20	0	Amp Min	150
1	BONDIX	0			

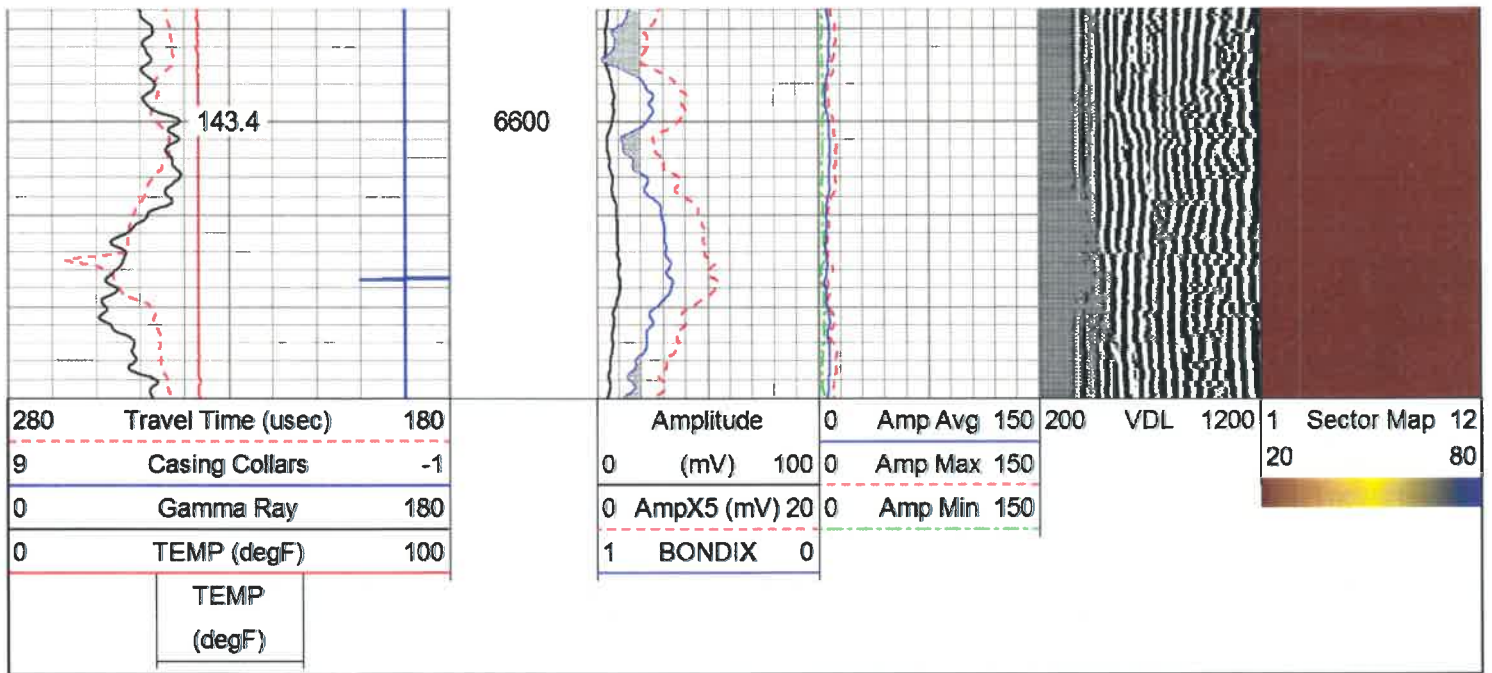


REPEAT SECTION

Database File: c:\warrior\data\2019 antero\antero-hughes river 1h.db
 Dataset Pathname: pass3
 Presentation Format: antero f
 Dataset Creation: Wed Apr 03 11:18:17 2019 by Log 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								
	TEMP (degF)											





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		SCBL-Tek12 (IOL40-05) Tekco 400 Deg F 12 Sector RIB with Temp	9.13	3.25	135.00
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		2.75	2.73	2.75	25.00
WVFTEMP	6.40		2 3/4" Tekco Adjustable Centralizer			
WVFSYNC	6.40					
GR	1.04		3.67	2.75	40.00	
			GR-Tek-Co 2 3/4 (IPSNO-03) Tekco 2 3/4" 400 Deg. F Logging Gamma Ray			

Dataset: antero-hughes river 1h.db: field/well/run1/pass4
 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-hughes river 1h.db
 Dataset Pathname: pass4
 Dataset Creation: Wed Apr 03 11:25:41 2019 by Log 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	

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Office of Oil and Gas

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WV Department of
Environmental Protection



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 Well HUGHES RIVER UNIT 1H
 Field MARCELLUS
 County RITCHIE

State

W.V.

Country