



**Segmented Radial Cement Bond  
W/Gamma Ray, CCL  
Log**

Company Antero Resources Corporation  
Well GALT 1H  
Field Marcellus  
County TYLER  
State WV  
Country USA

Company Antero Resources Corporation  
Well GALT 1H  
Field Marcellus  
County TYLER  
State WV  
Country USA

Location: API #: 47095025610000  
SEC TWP RGE  
Permanent Datum Ground Level Elevation  
Log Measured From R.K.B. 30'  
Drilling Measured From R.K.B.  
Other Services  
API  
A05130  
Elevation  
K.B.  
D.F.  
G.L.

Date	17-DEC-2019	
Run Number	ONE	
Depth Driller	15539'	
Depth Logger	6628'	
Bottom Logged Interval	Surface	
Top Log Interval	Surface	
Open Hole Size	8.25" F/W	
Type Fluid	N/A	
Density / Viscosity	N/A	
Max. Recorded Temp.	133.2 DEG	
Estimated Cement Top	2720'	
Time Well Ready	N/A	
Time Logger on Bottom	N/A	
Equipment Number	214182	
Location	Bridgeport, WV	
Recorded By	P DAVIDSON	
Witnessed By	B BETCHER	
<b>Borehole Record</b>		
Run Number	Bit	From To
ONE	24"	
TWO	17.5"	
THREE	12.25"	
FOUR	8.25"	
<b>Tubing Record</b>		
Casing Record	Size	Wd/Ft
Surface String	13.375"	54.5
Prod. String	9.625"	40
Production String	5.5"	20
Liner		

<<< Fold Here >>>

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**

Zero @ R.K.B. 30'  
Marker Joint 5497'-5507'  
Log TD 6628'  
Cement Top @ 2720'  
Log Ran Under 1500 PSI

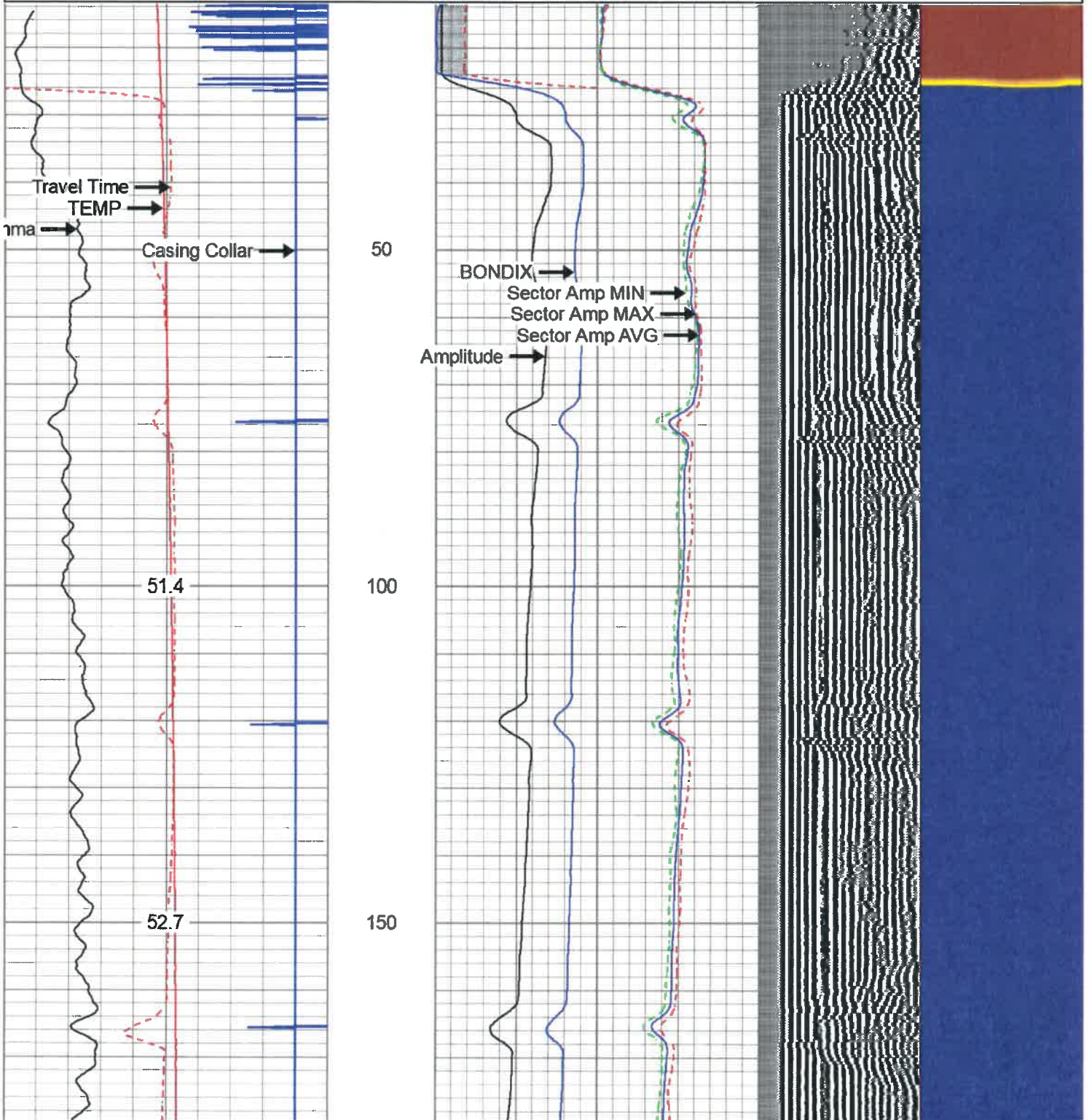
RECEIVED  
Office of Oil and Gas  
SEP 24 2020  
WV Department of Environmental Protection

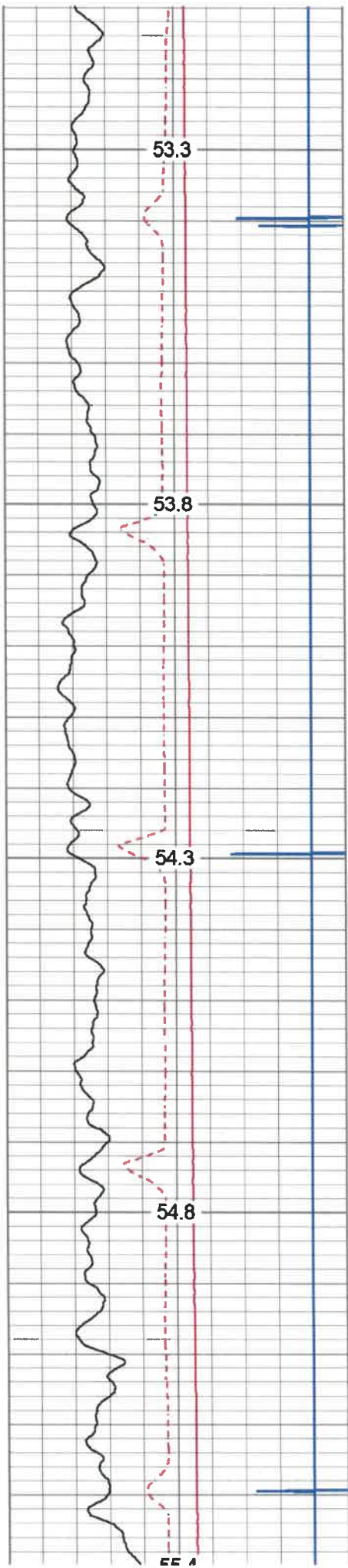


**1500 PSI PRESSURE PASS**

Database File ant\_galt1h.db  
 Dataset Pathname pass4.1  
 Presentation Format antero  
 Dataset Creation Tue Dec 17 17:59:03 2019  
 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			
0	Gamma Ray	180	Amp X5		Sector Amp MIN				
0	TEMP (degF)	100	0	(mV)	20				
180	GR	360	1	BONDIX	0				
TEMP (degF)									





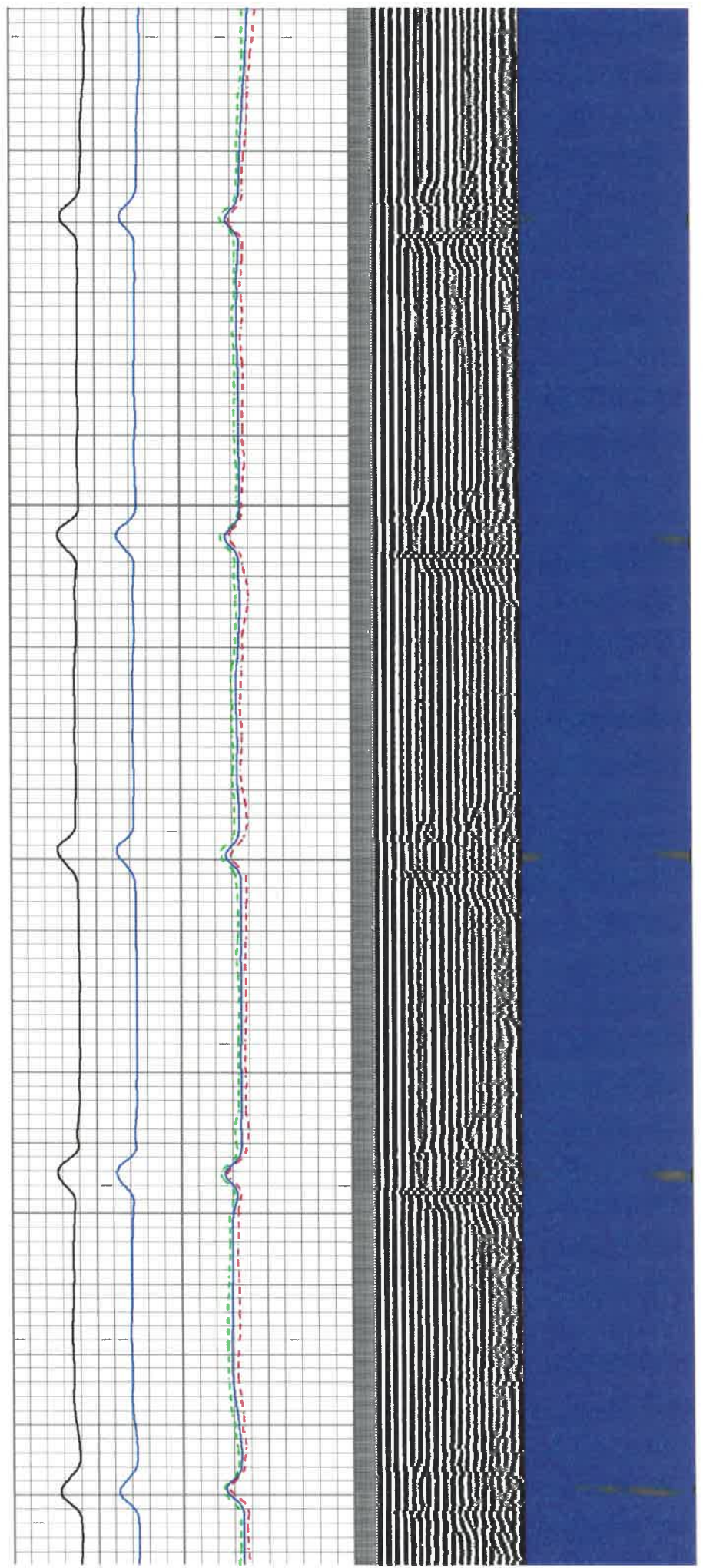
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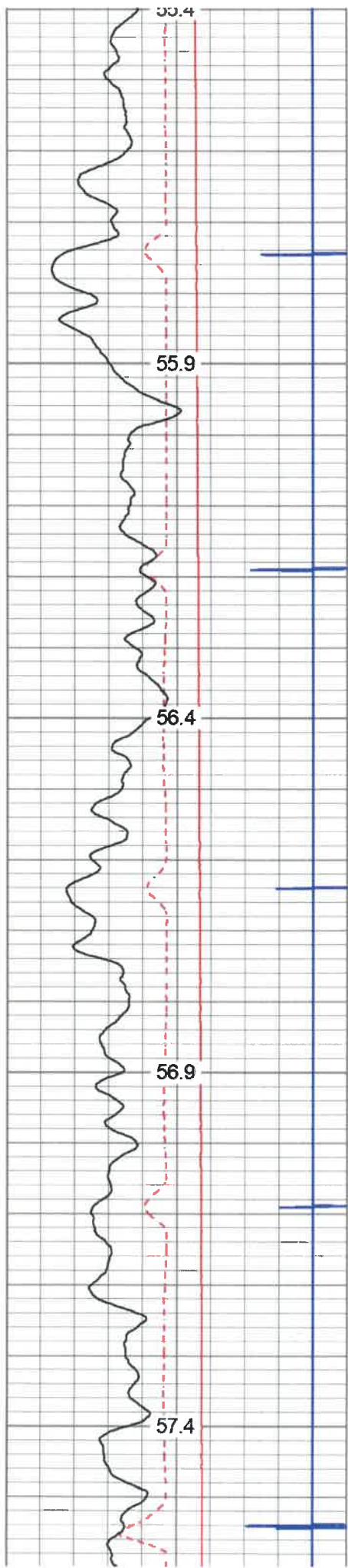
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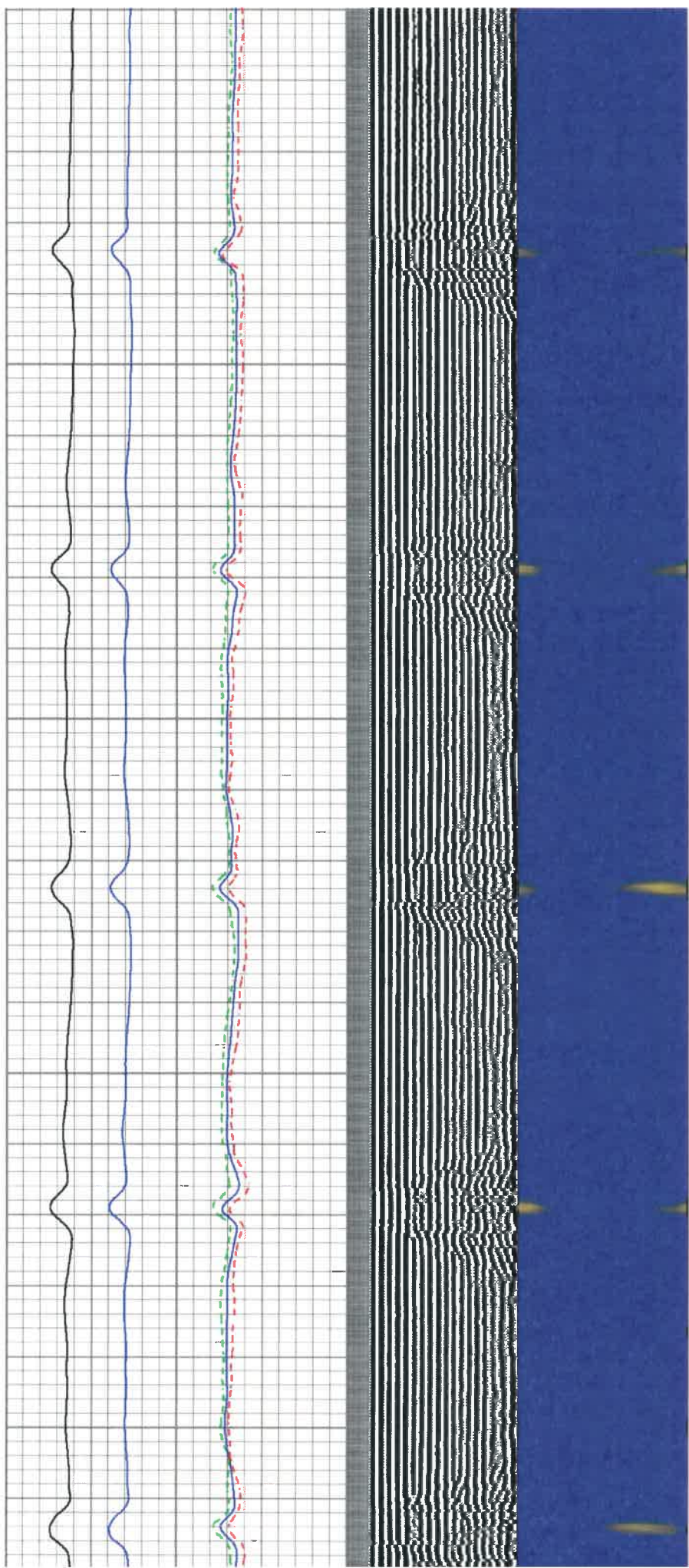
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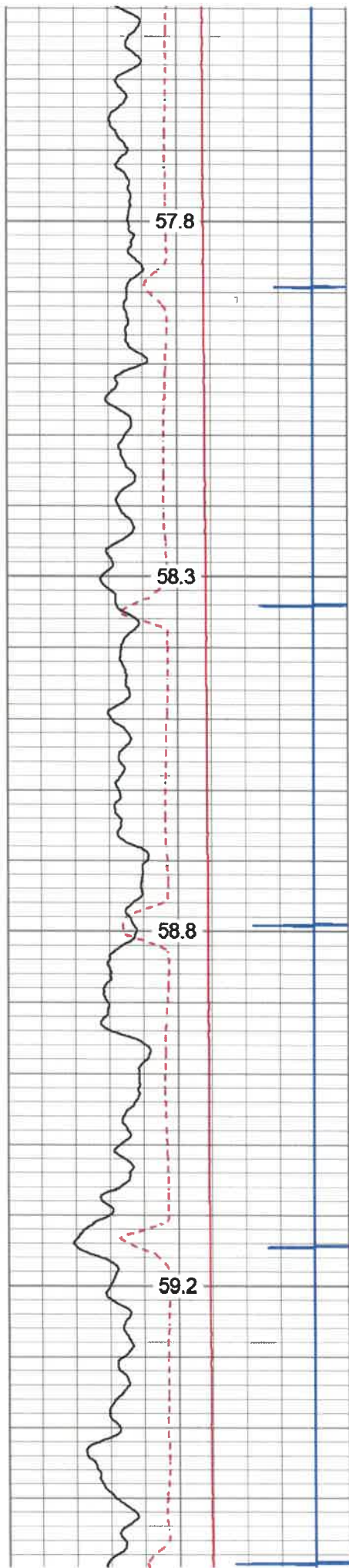
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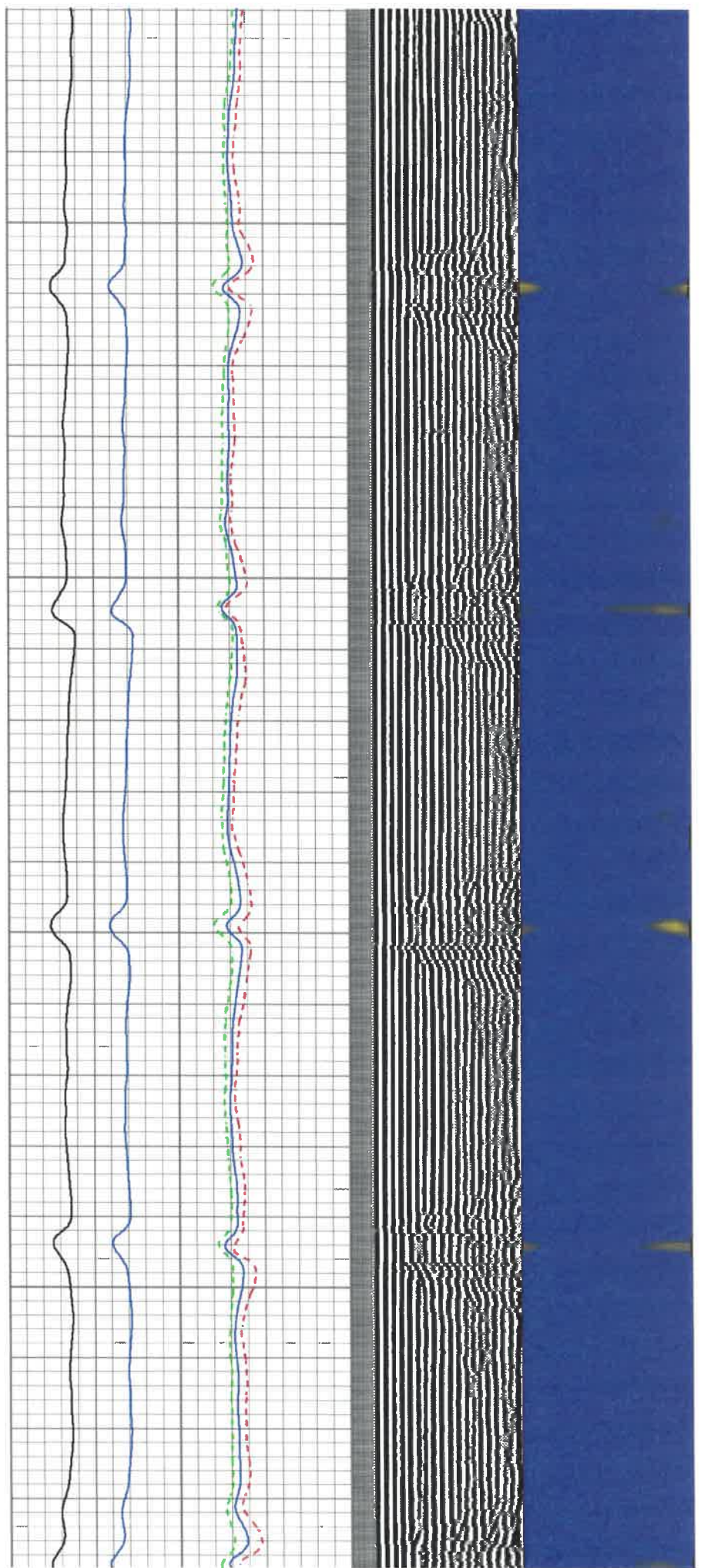


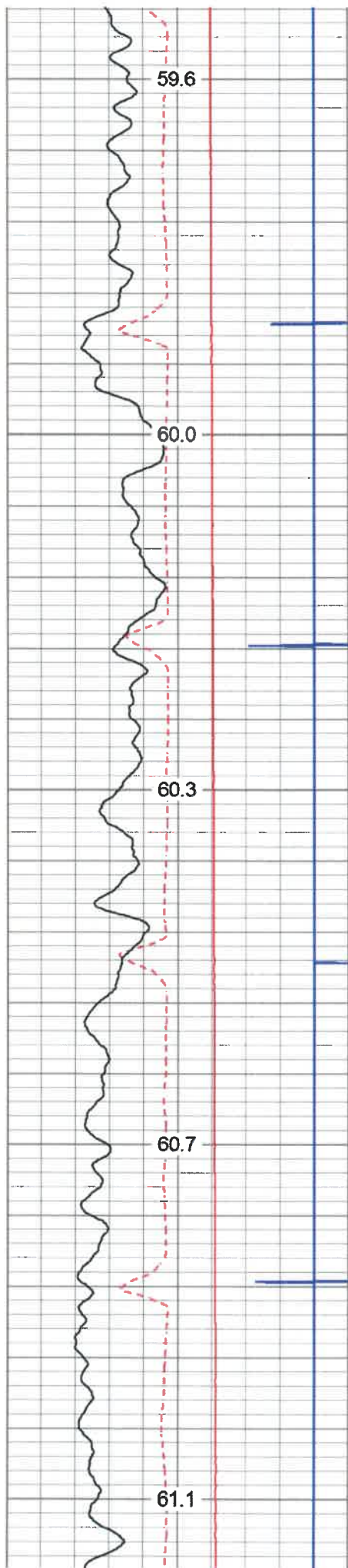
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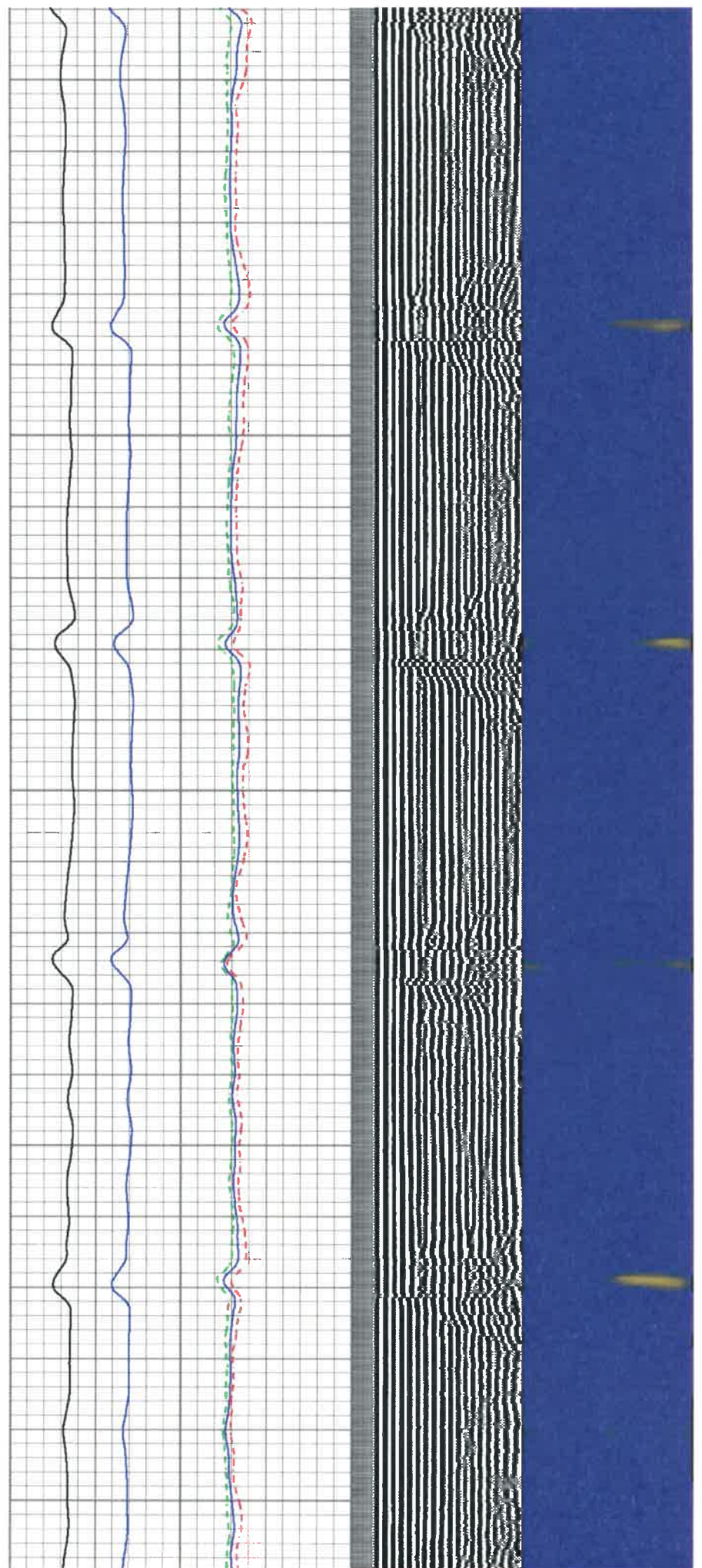
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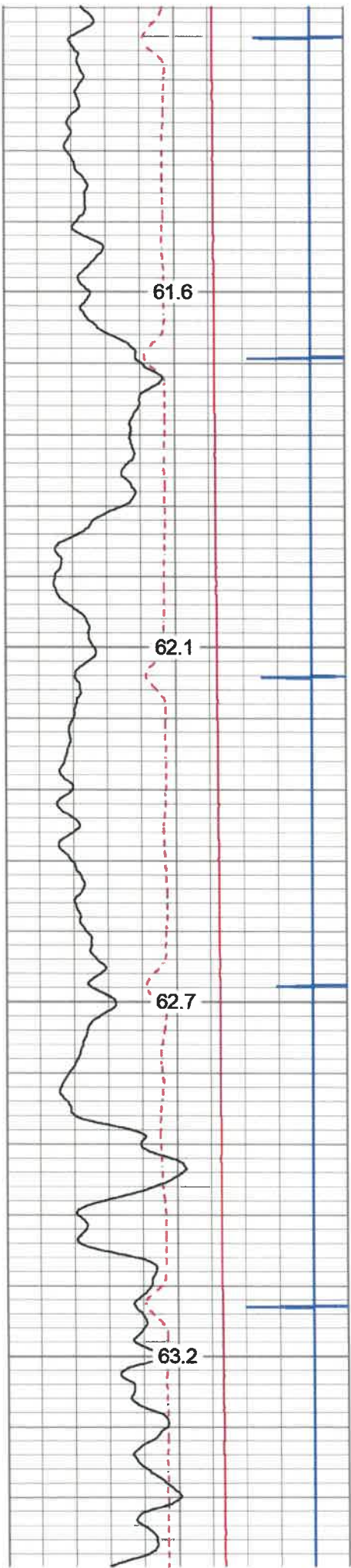
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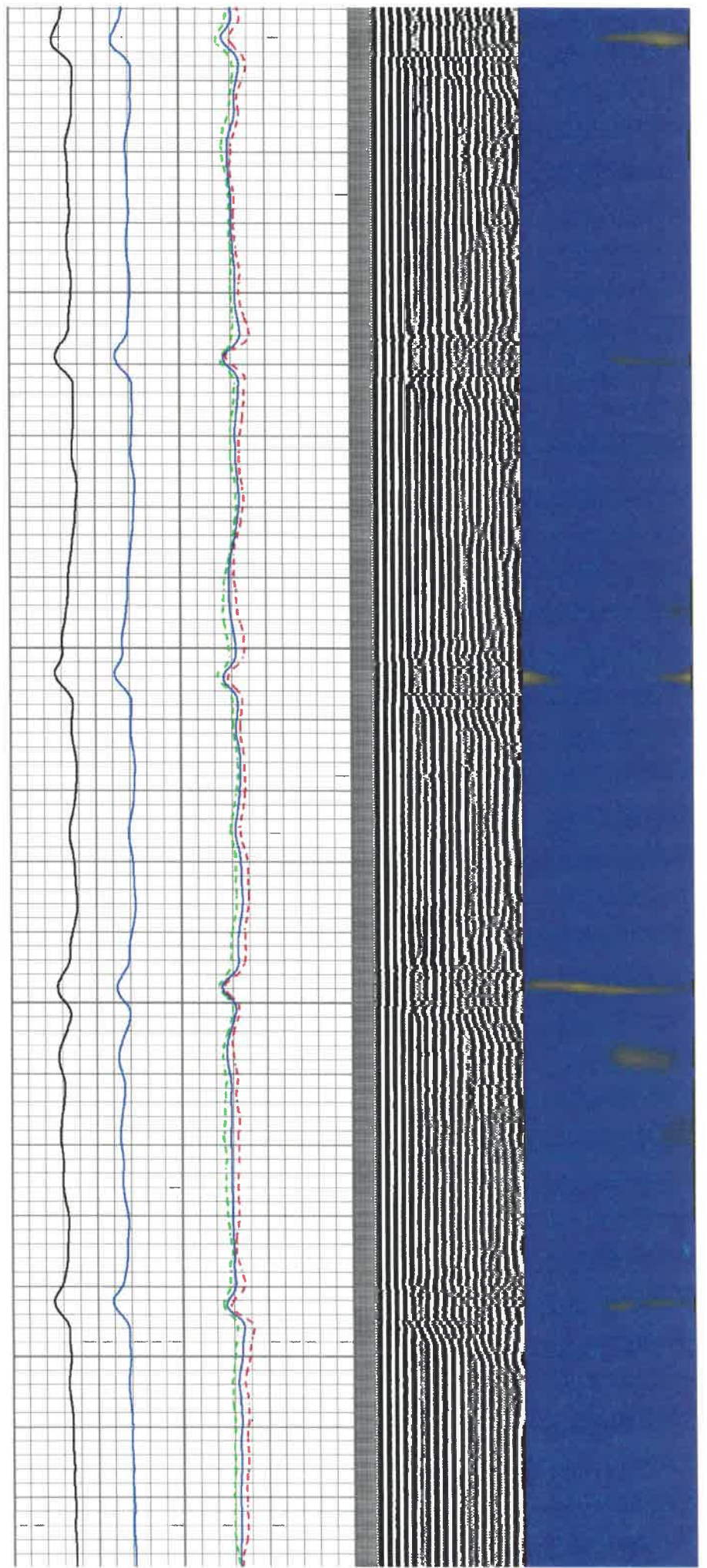


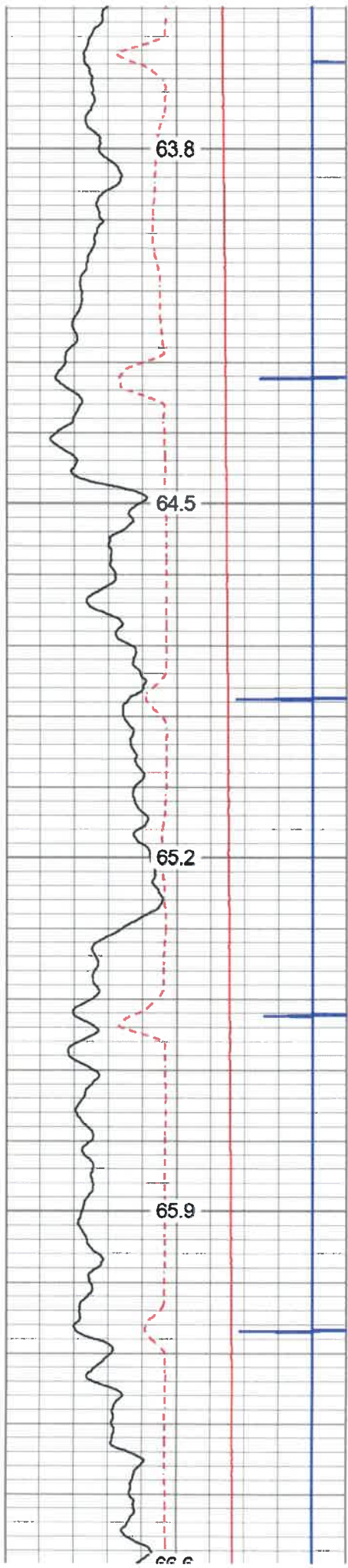
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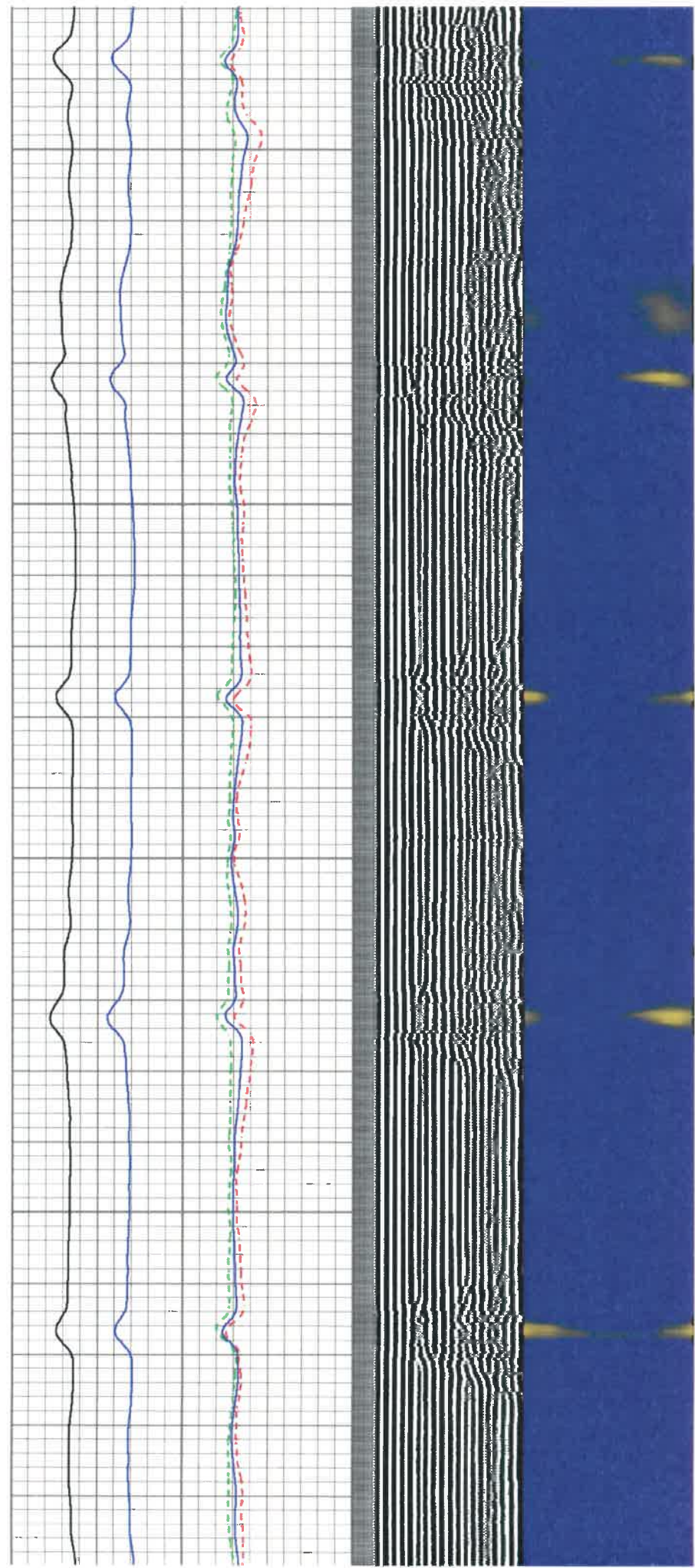
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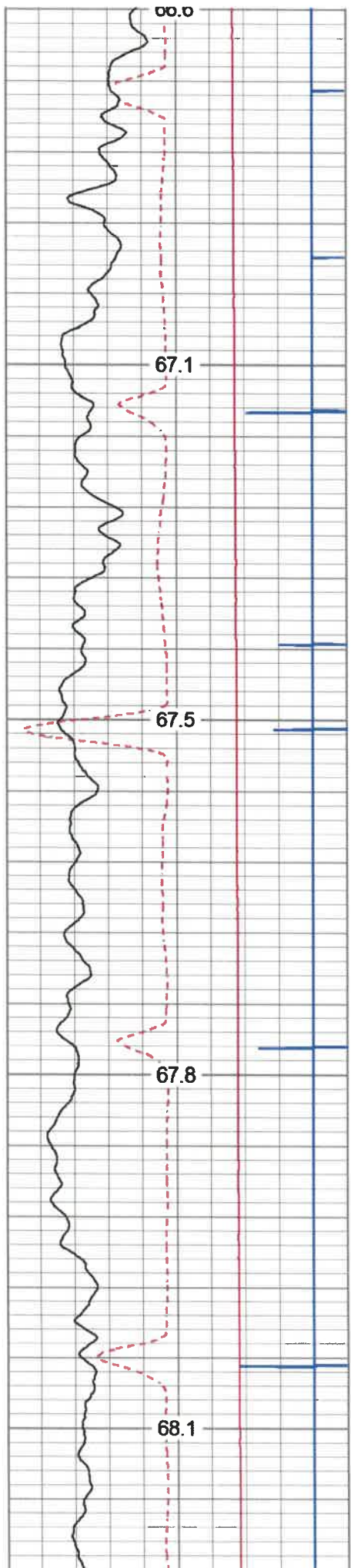
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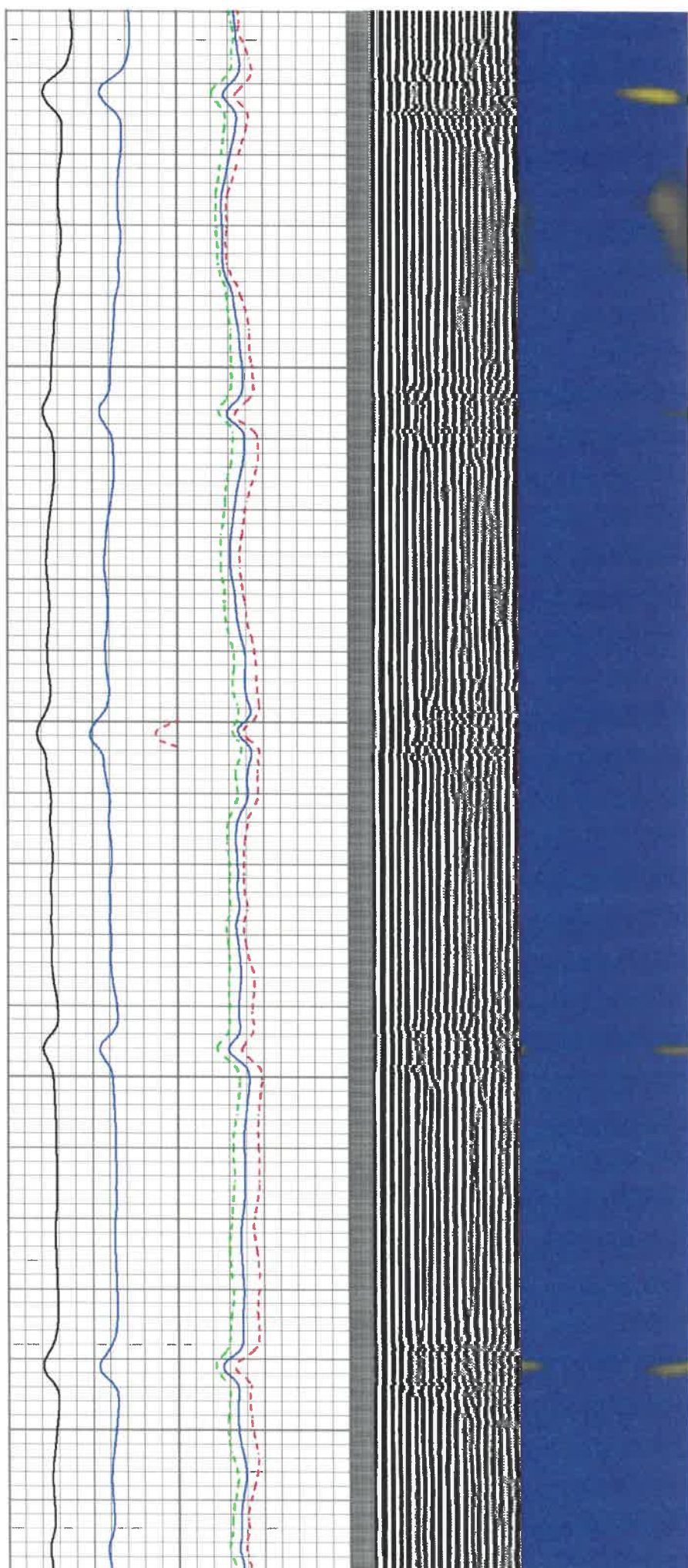
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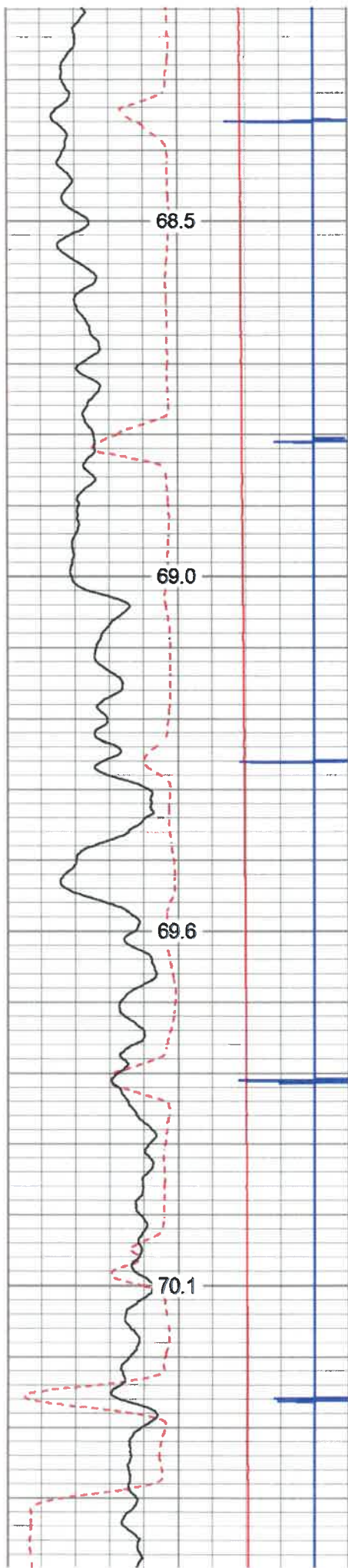






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1650  
1700



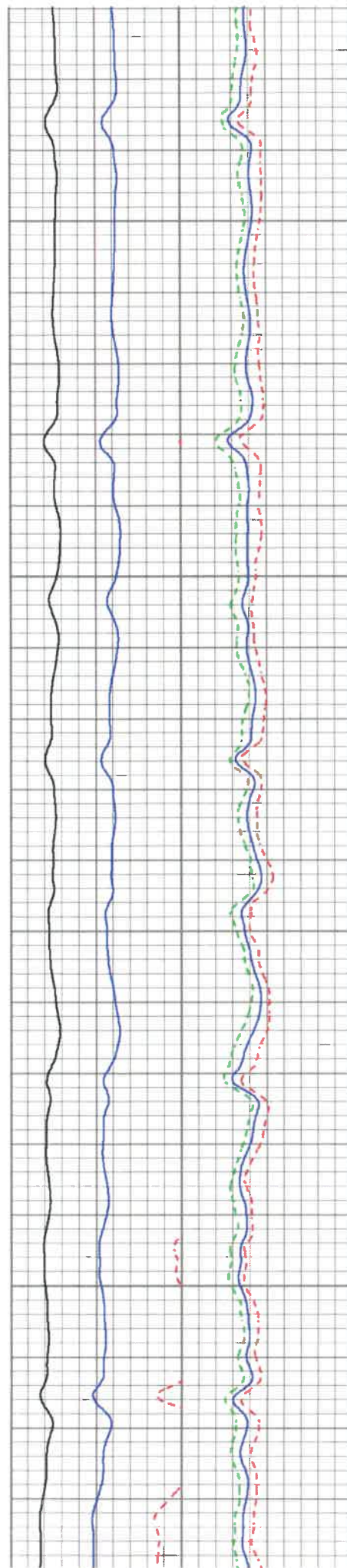


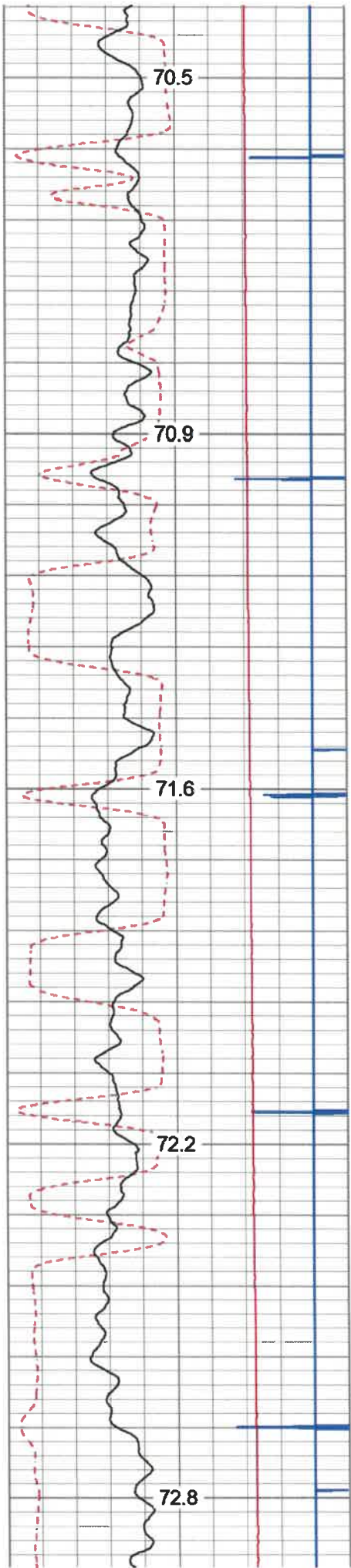
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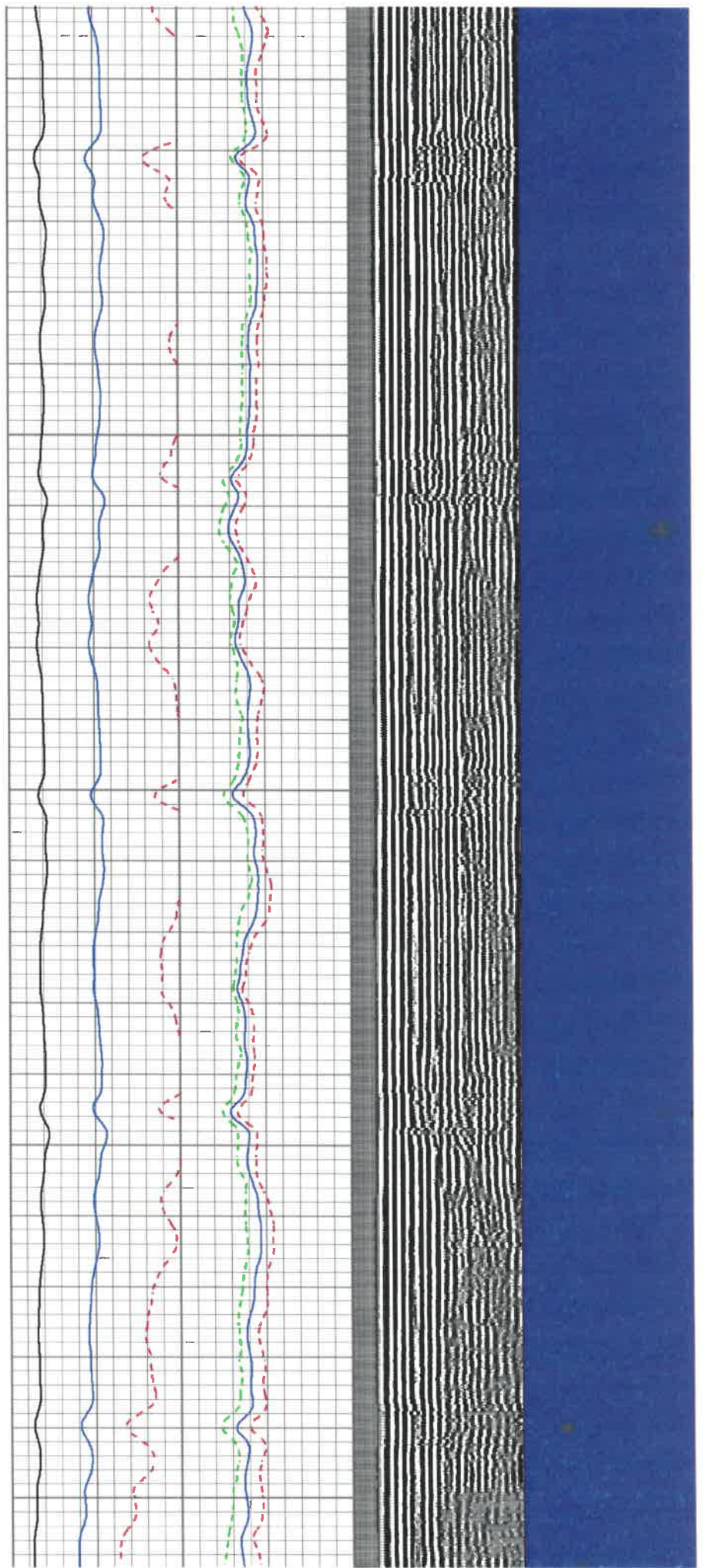
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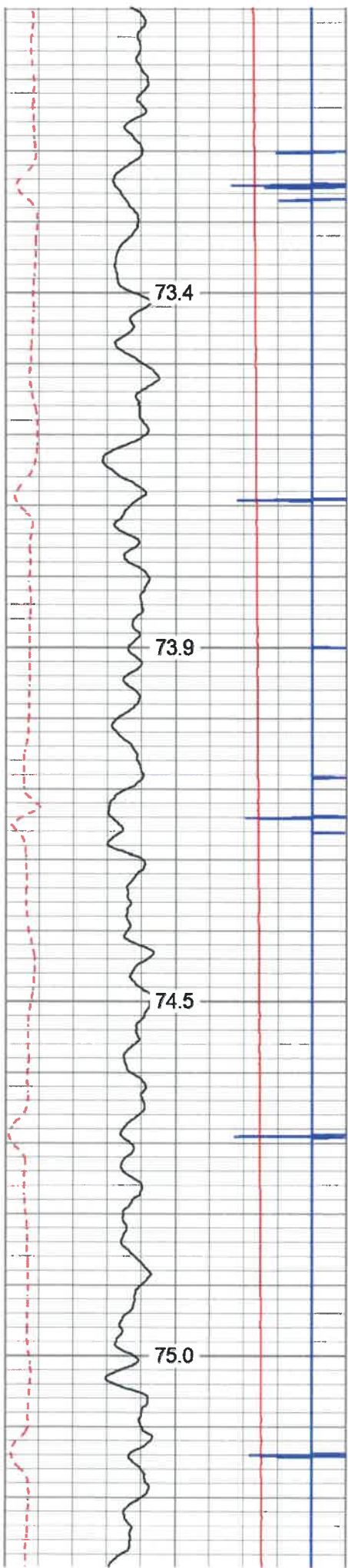
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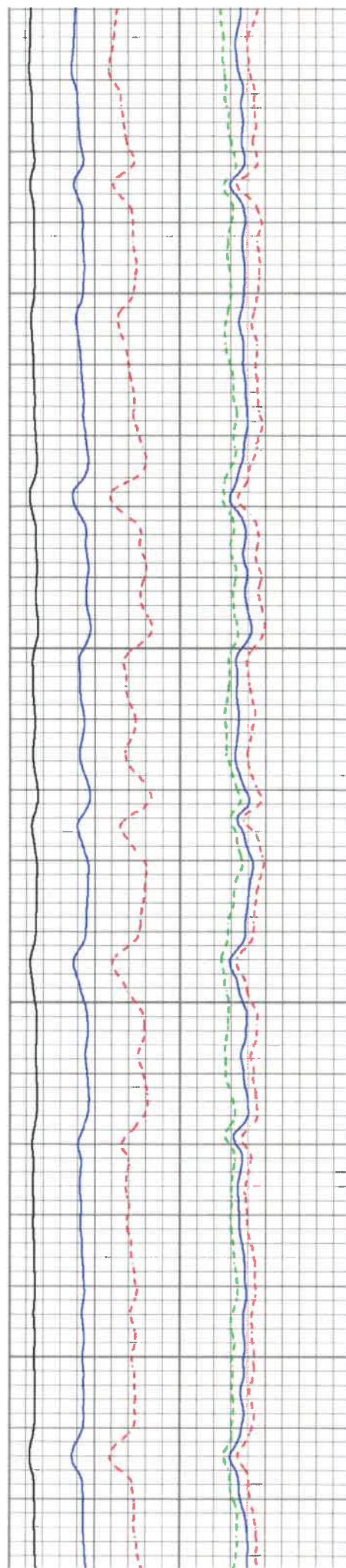


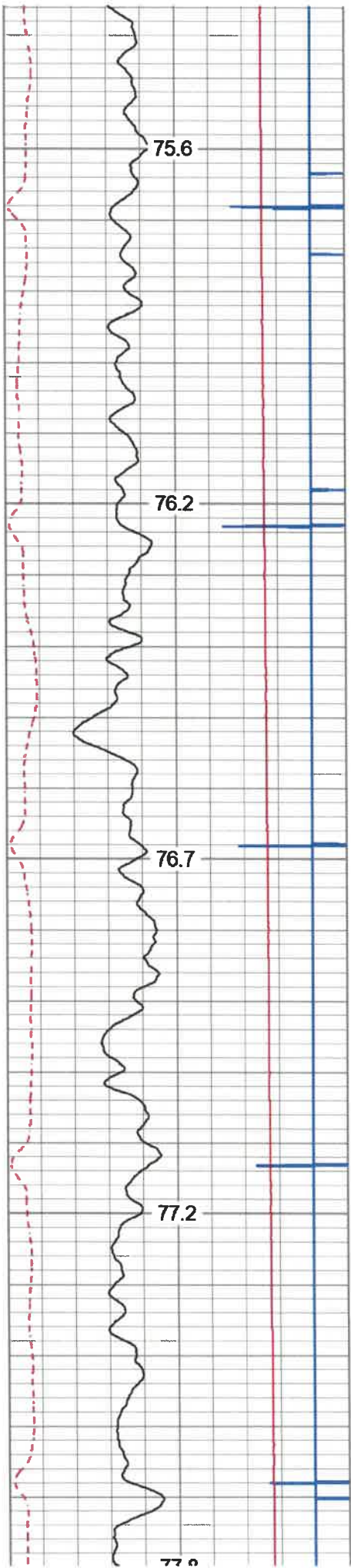
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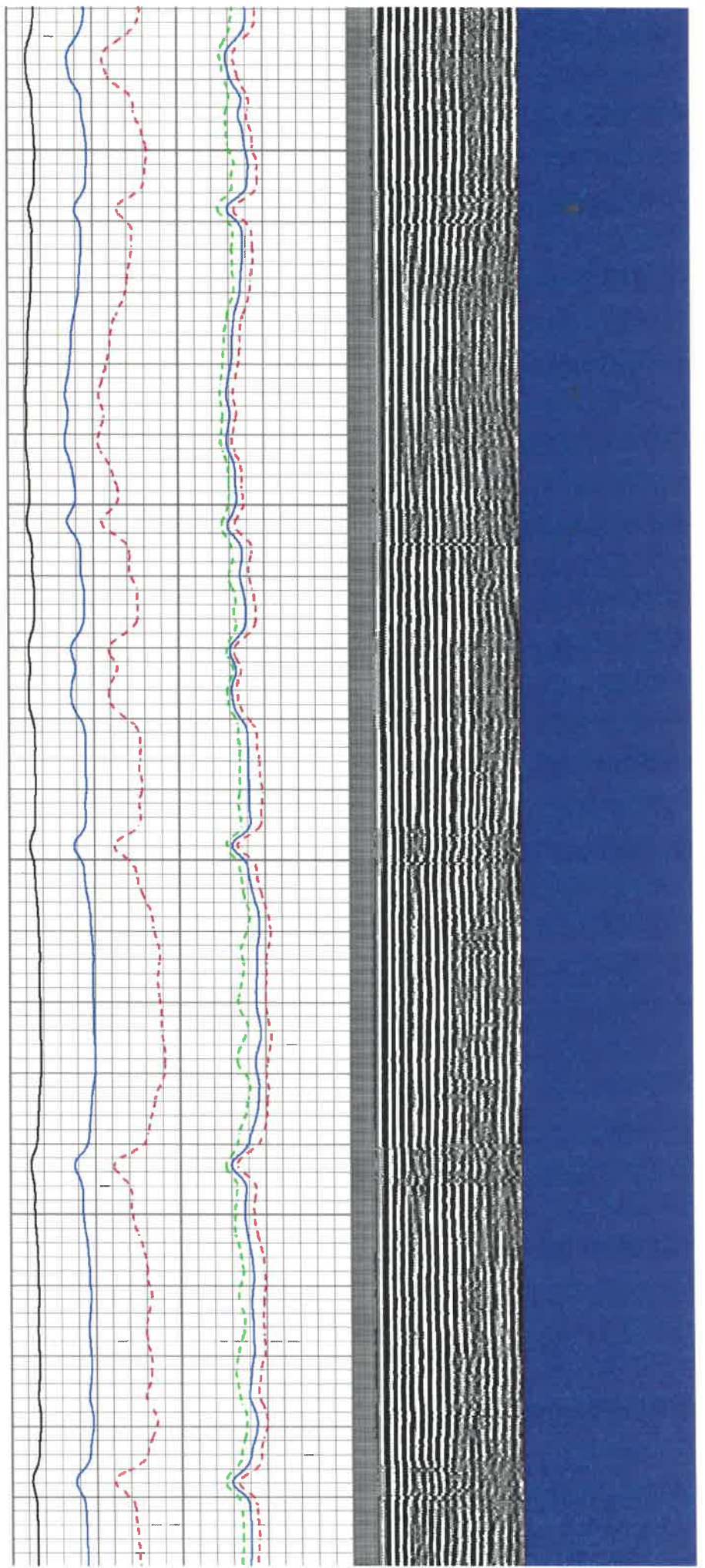
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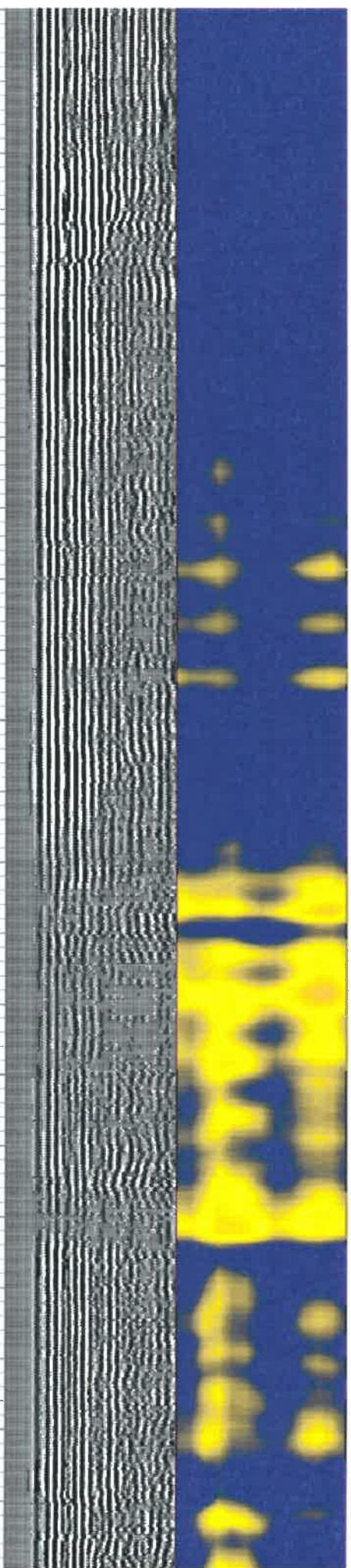
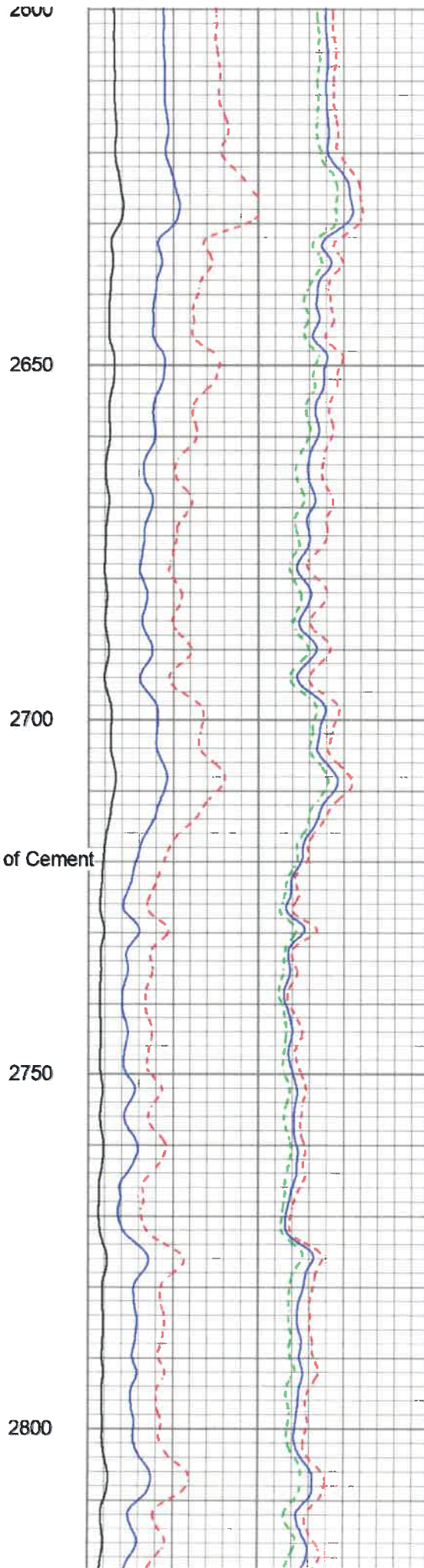
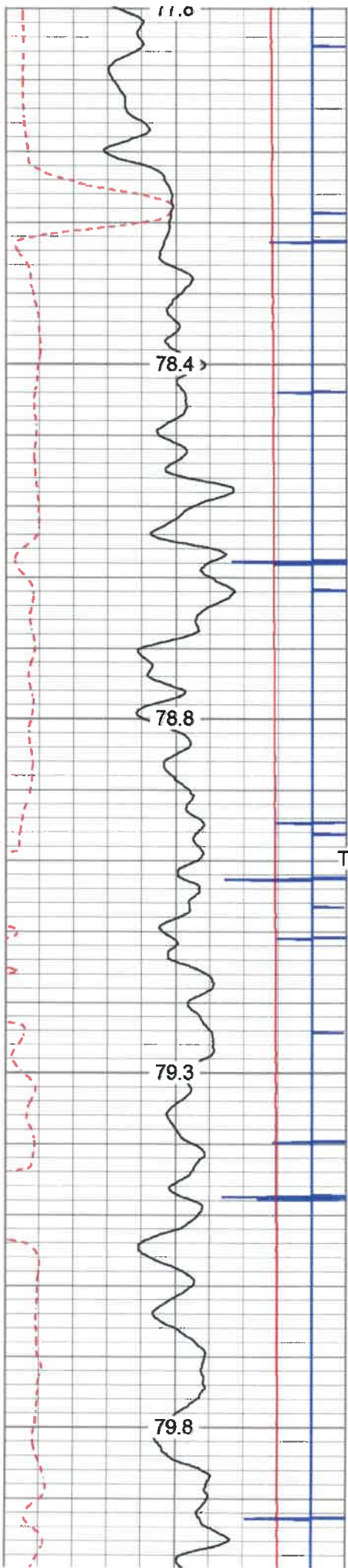
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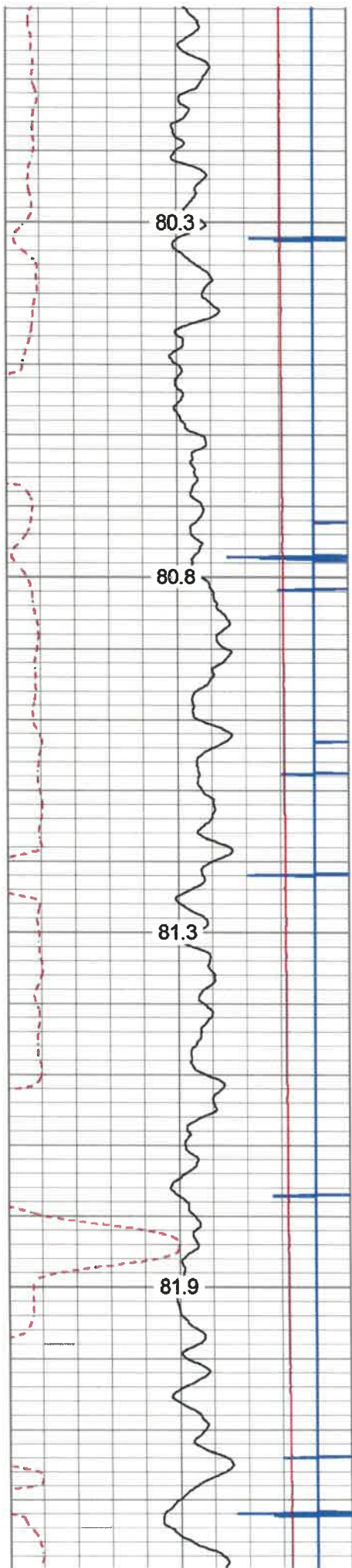




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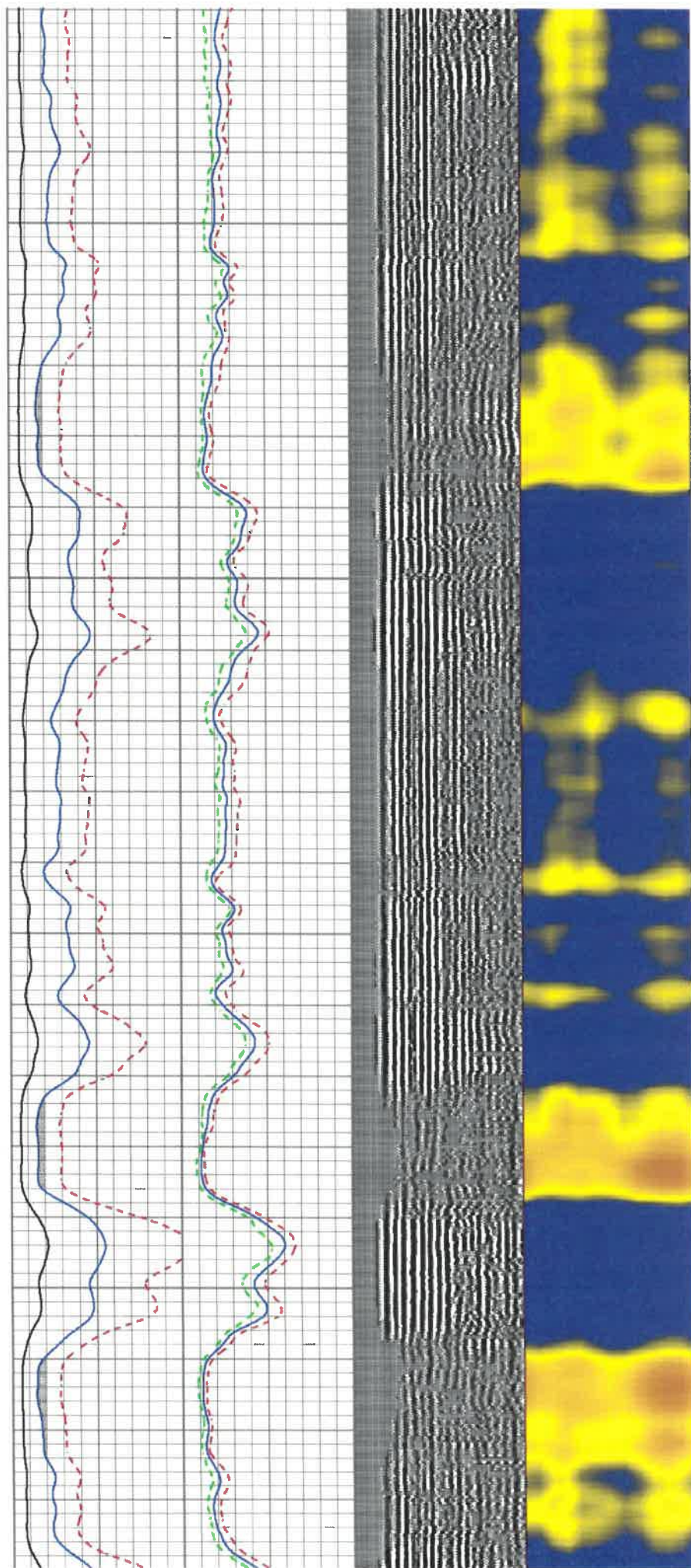


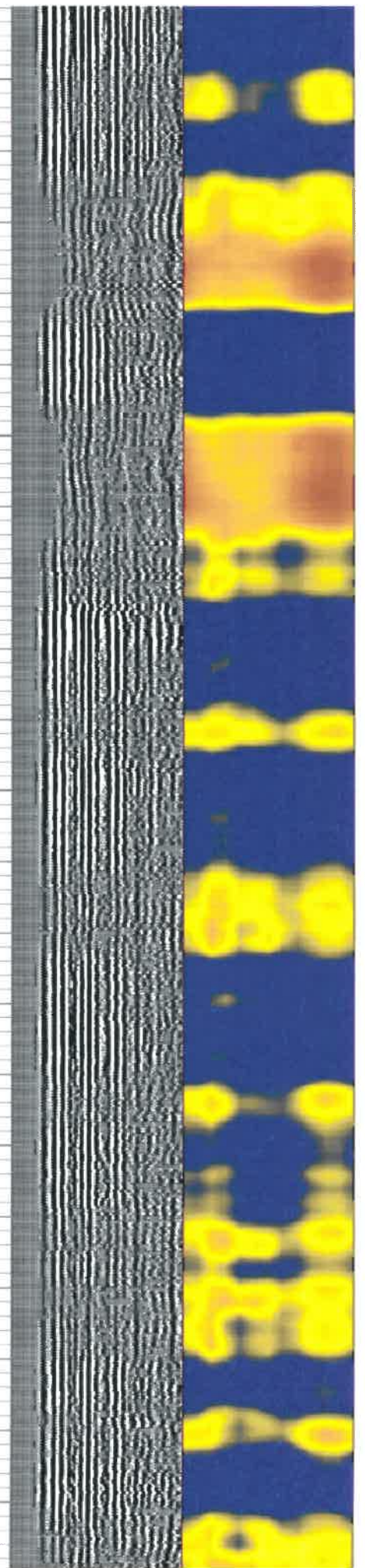
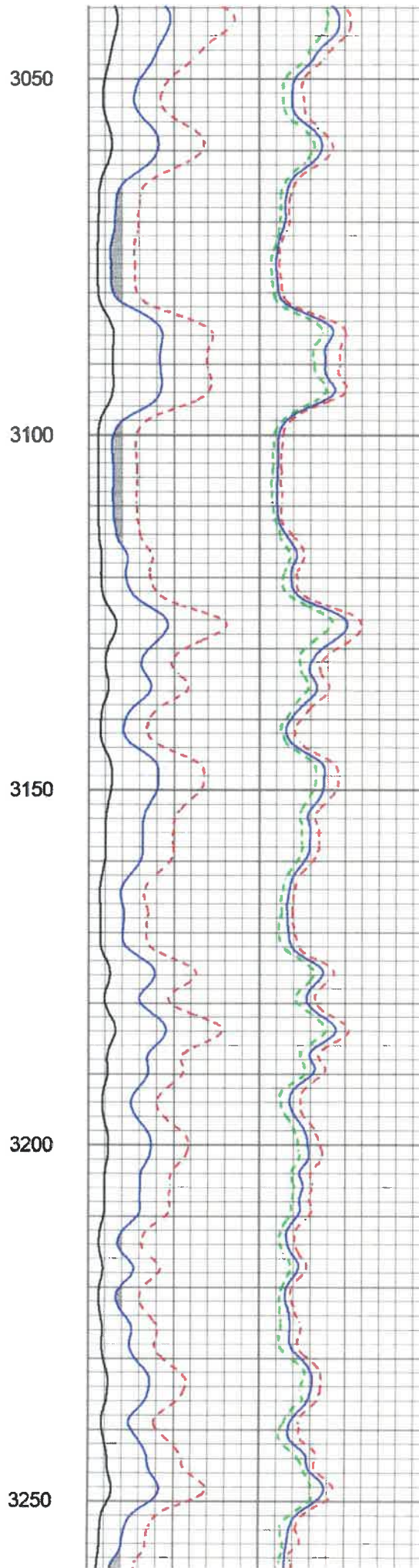
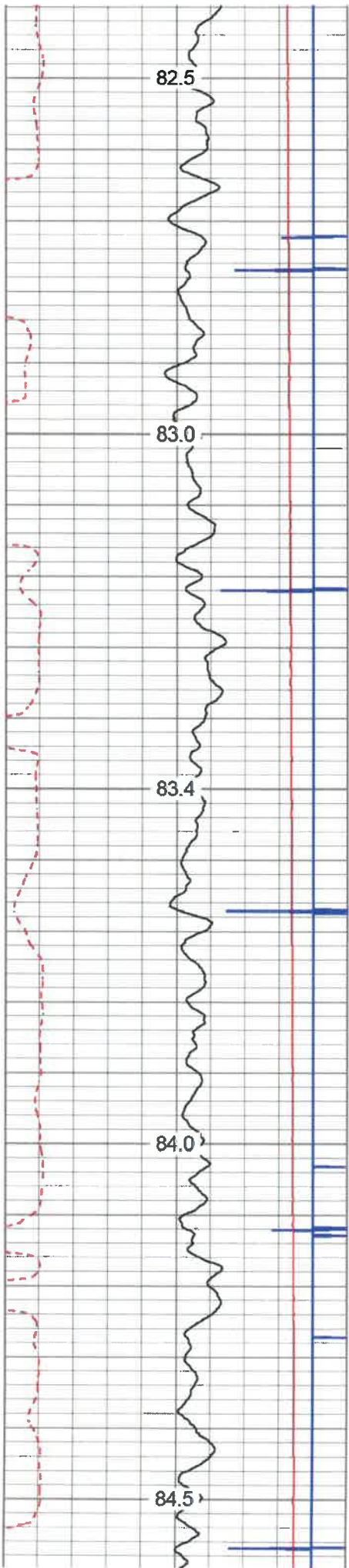
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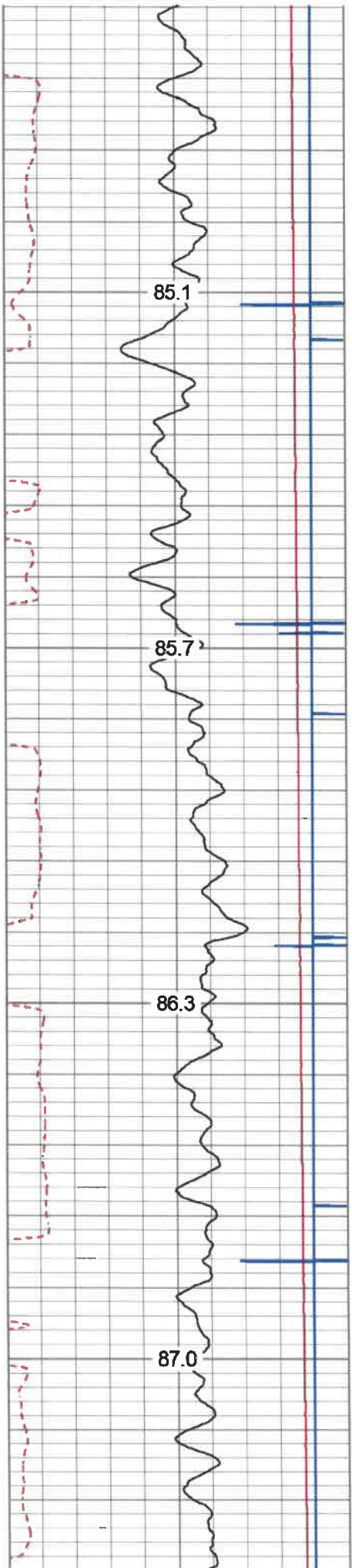
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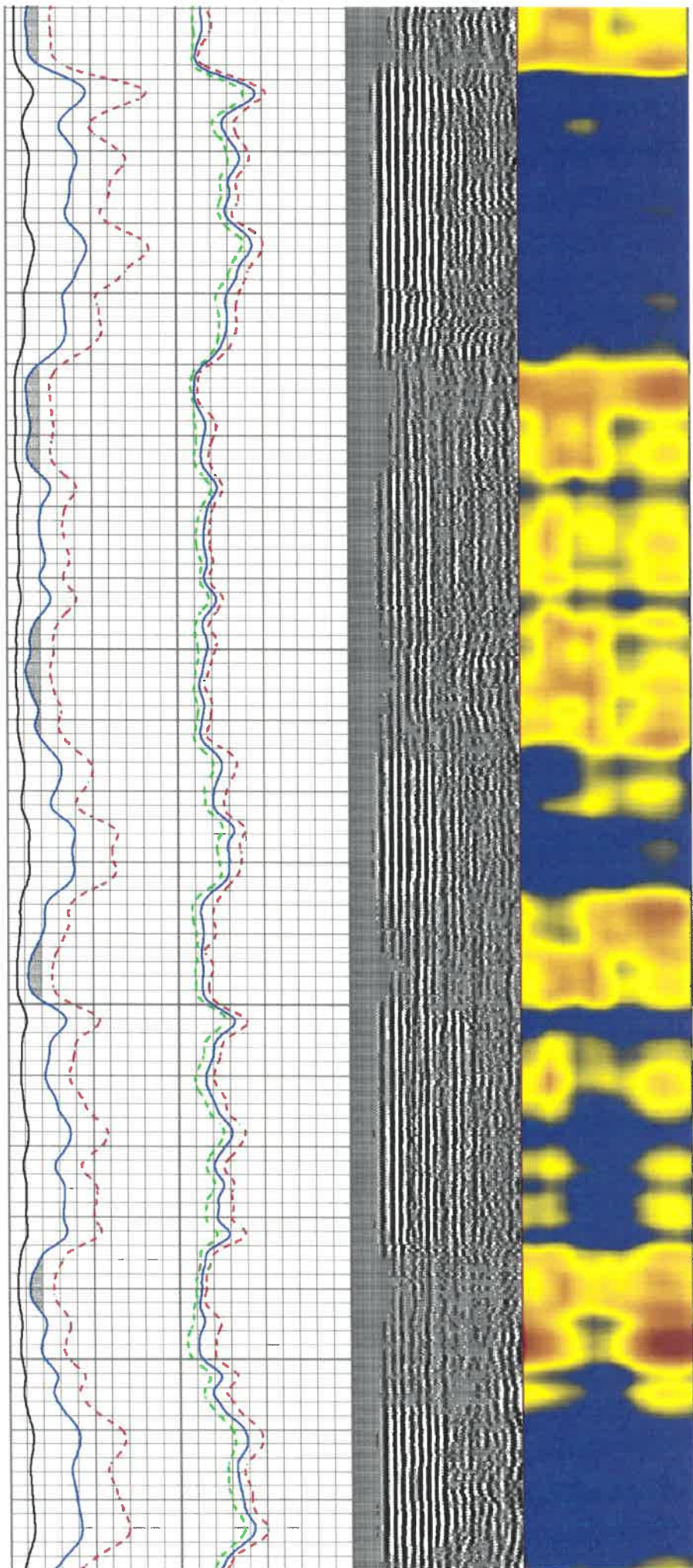


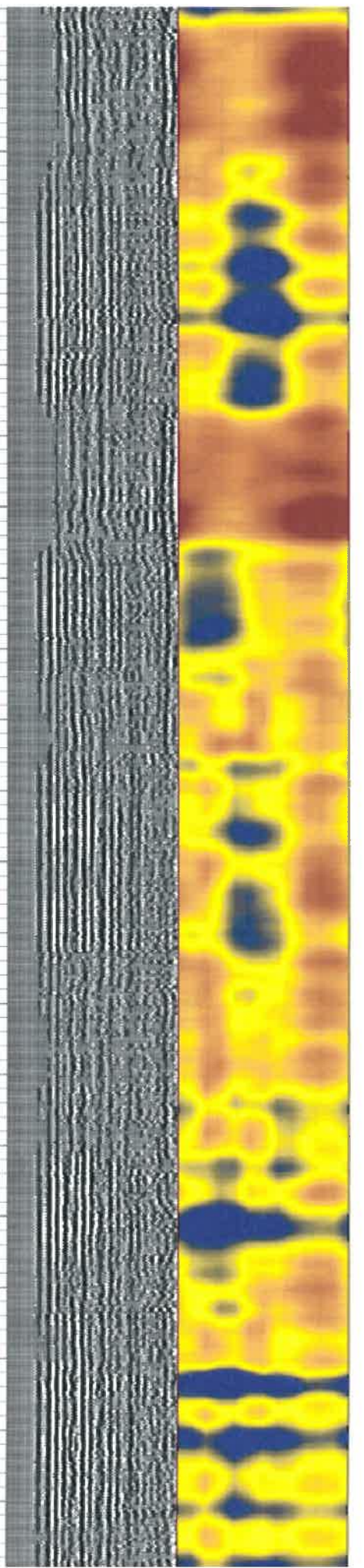
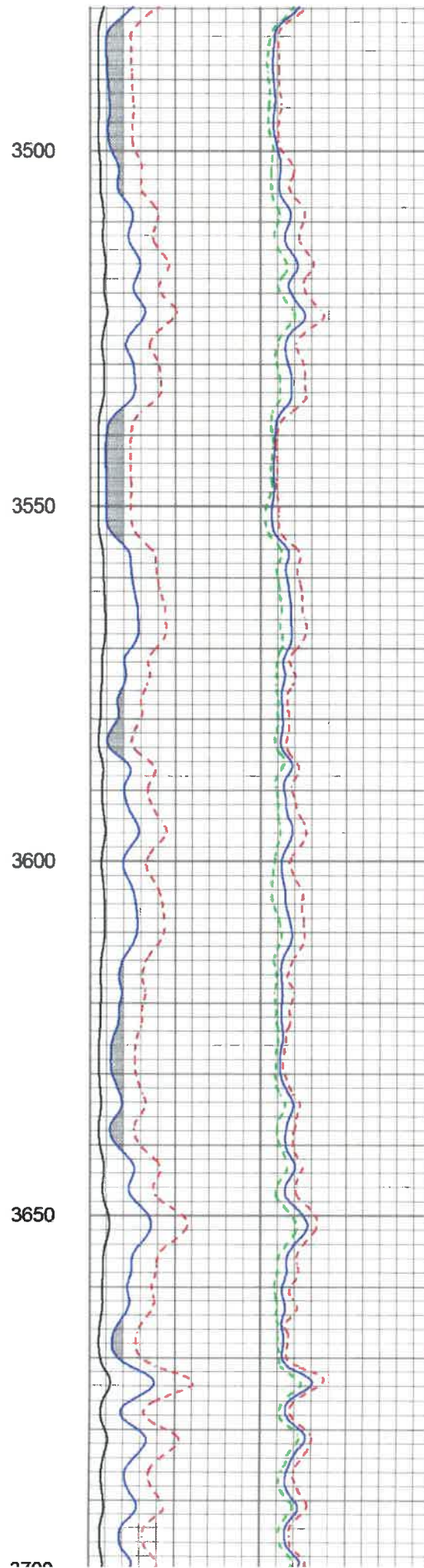
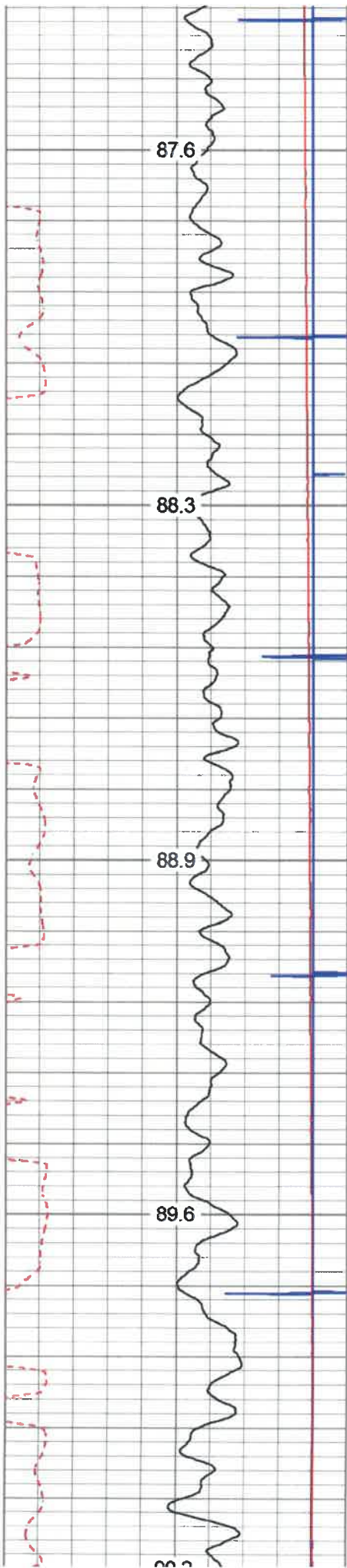
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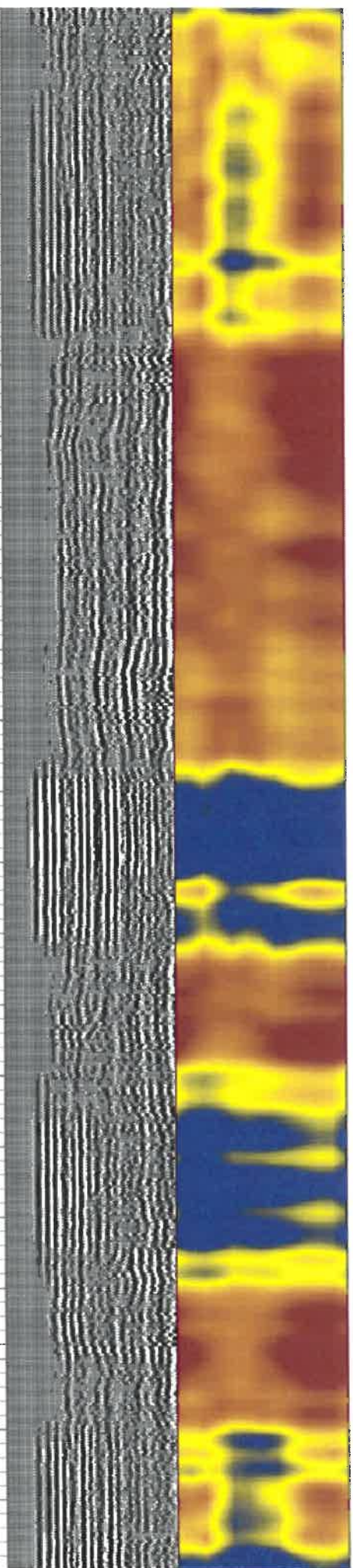
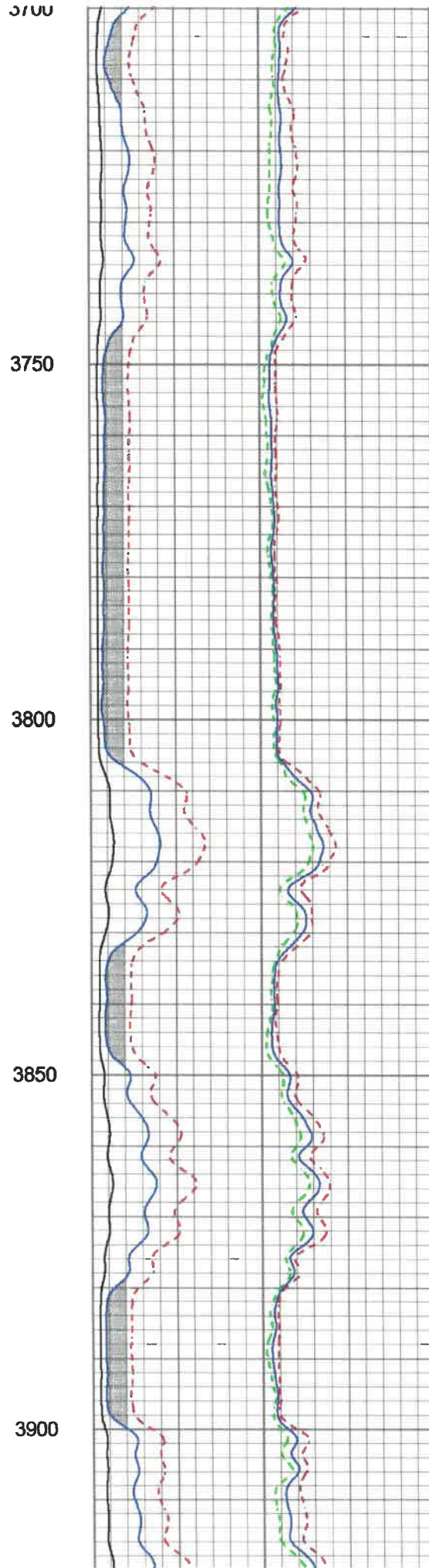
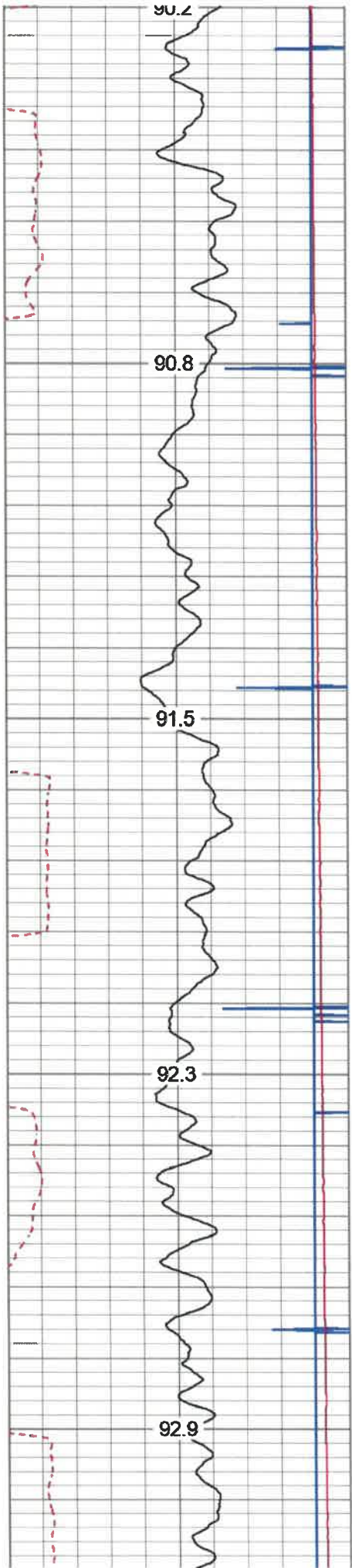
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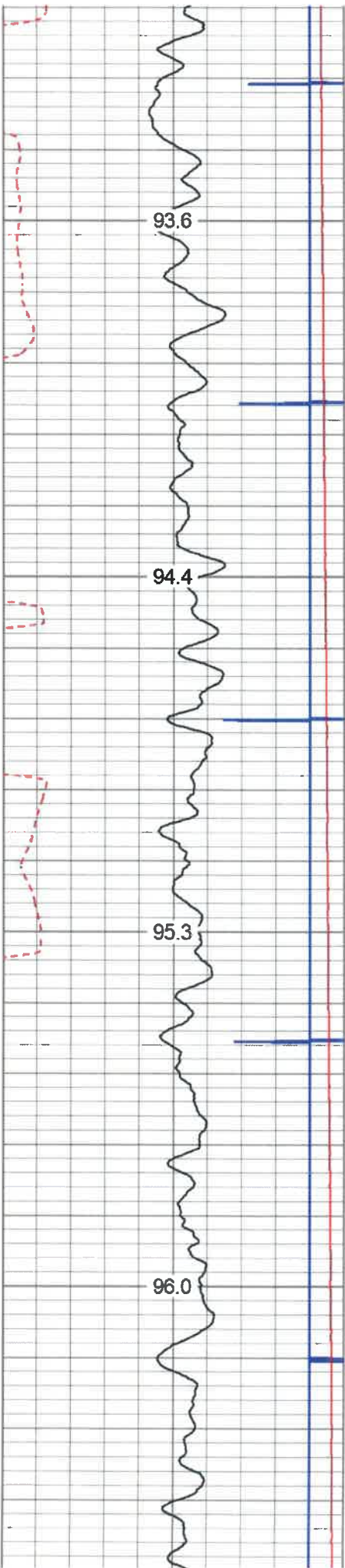
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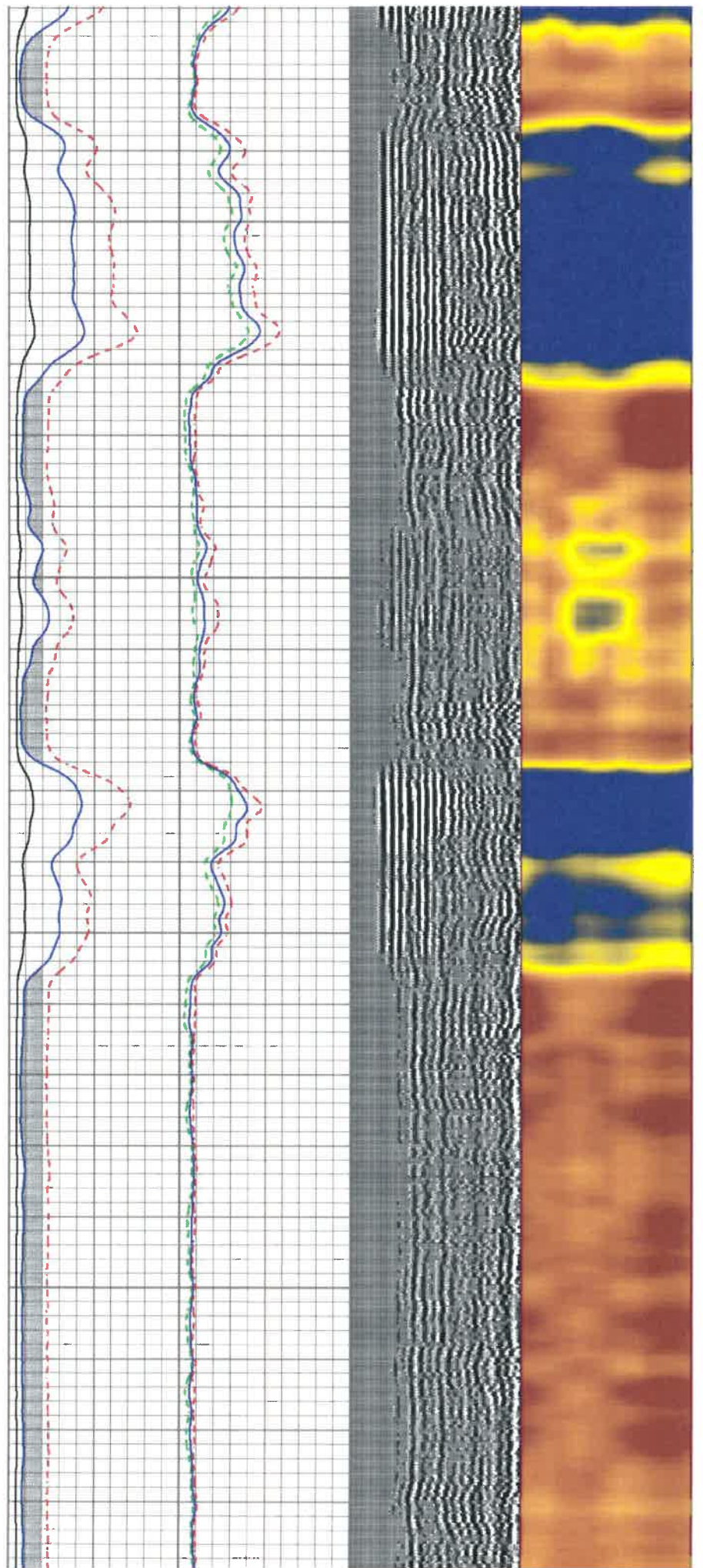


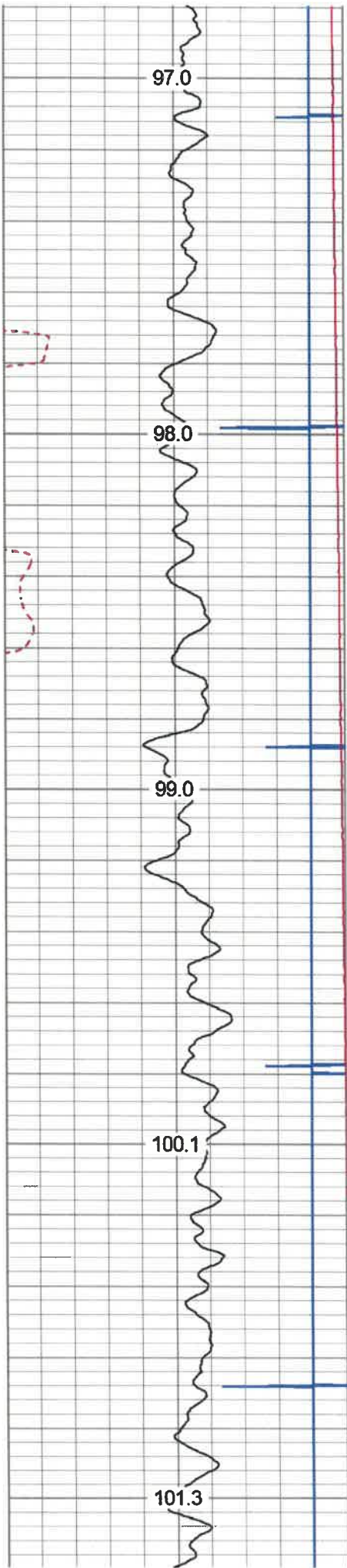
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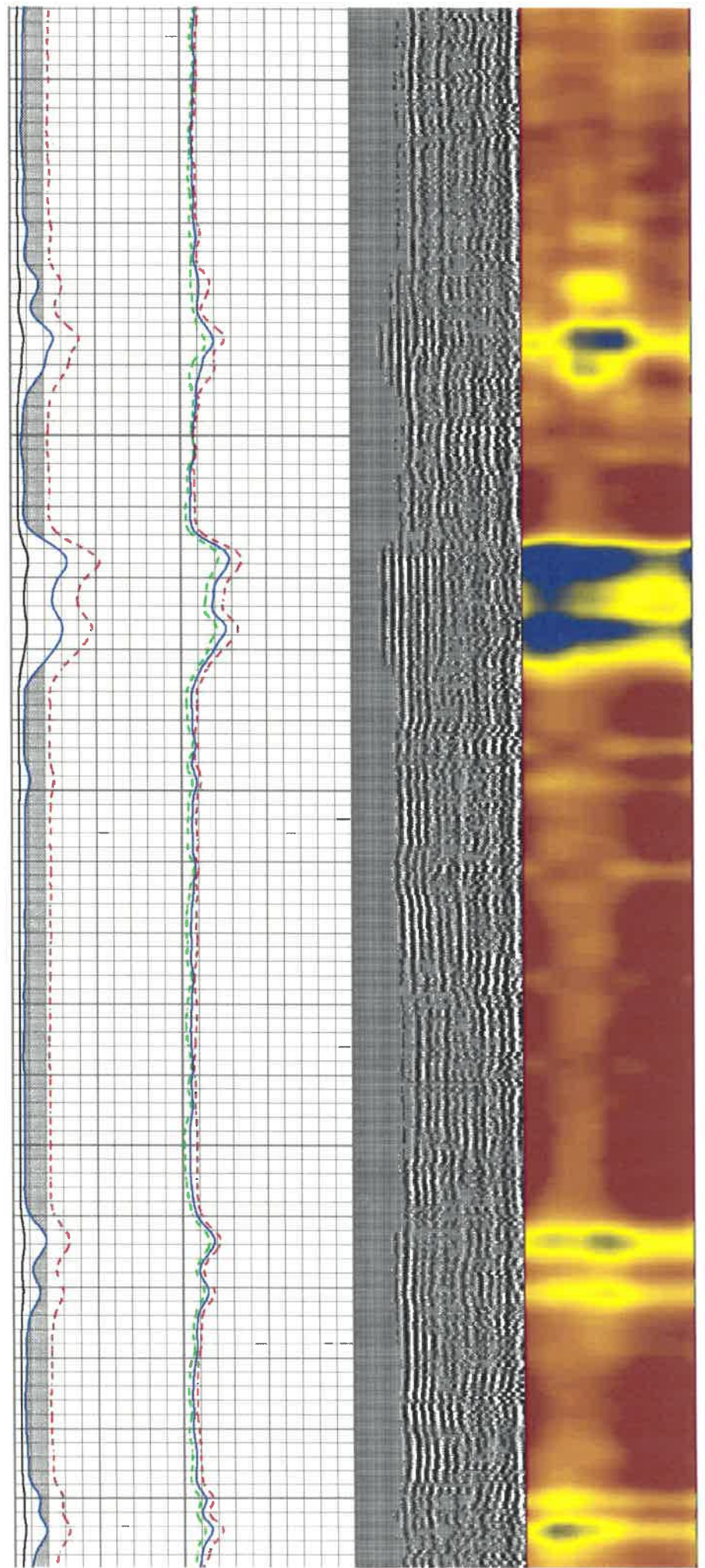
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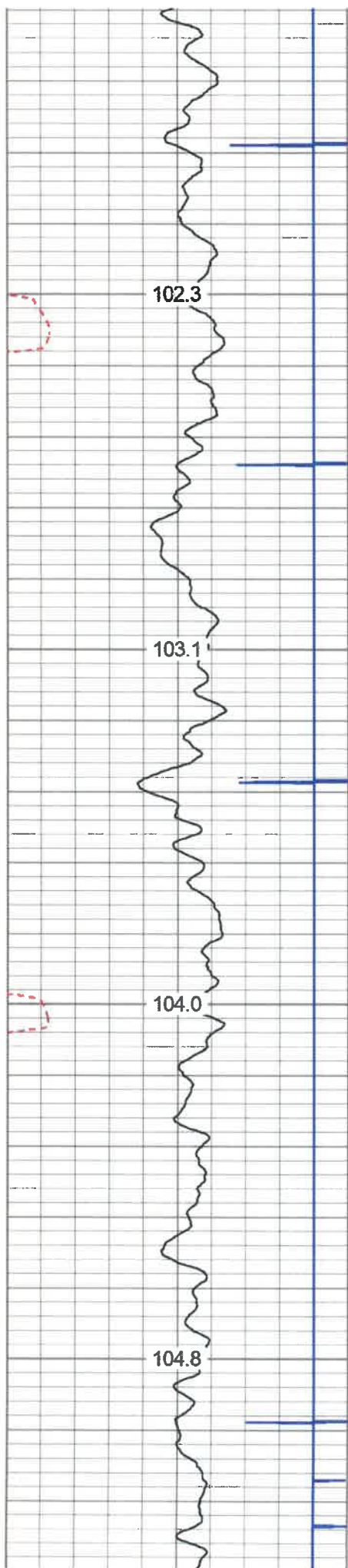
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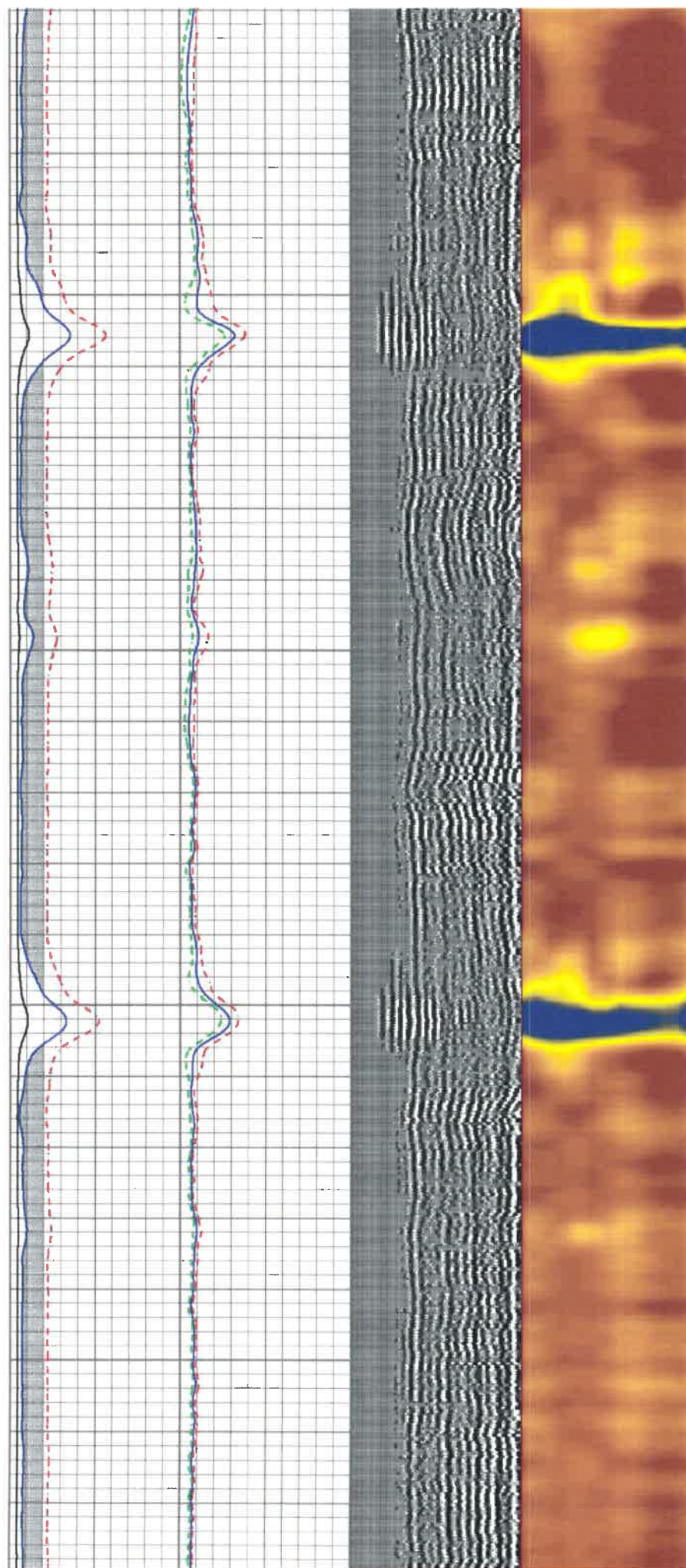


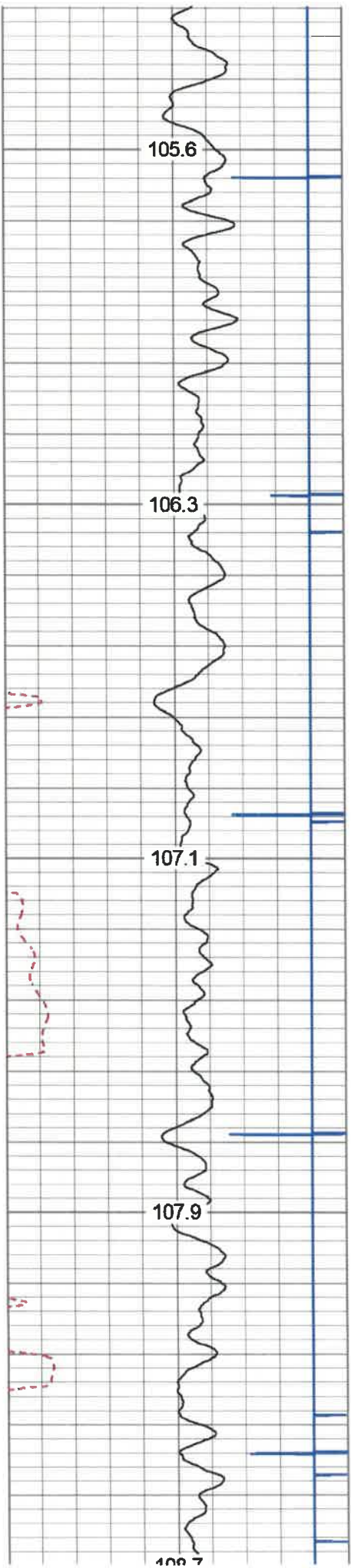
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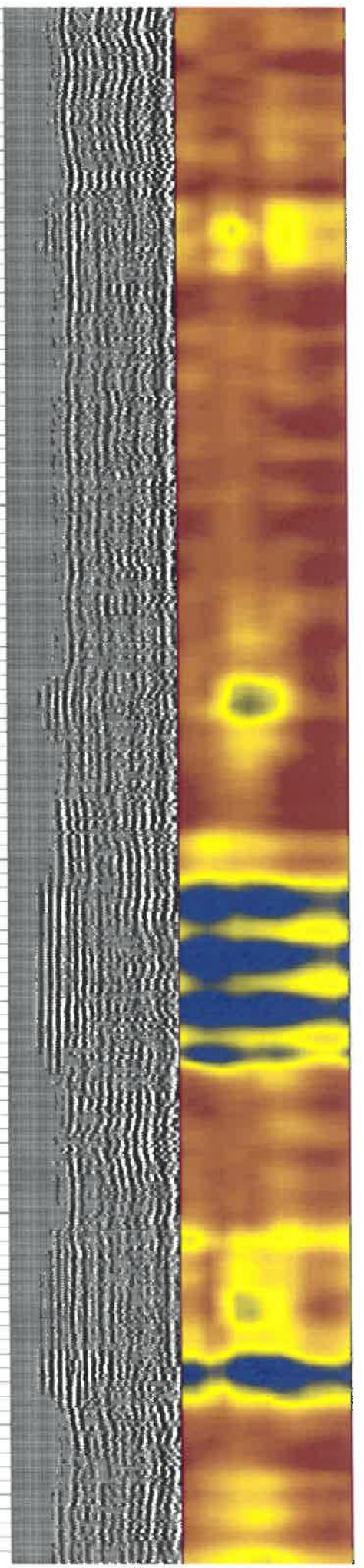
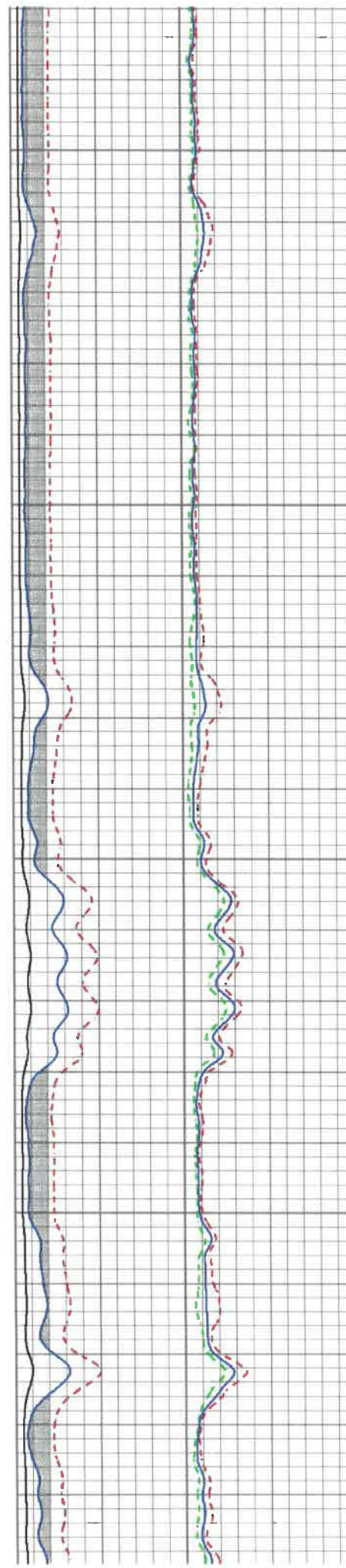
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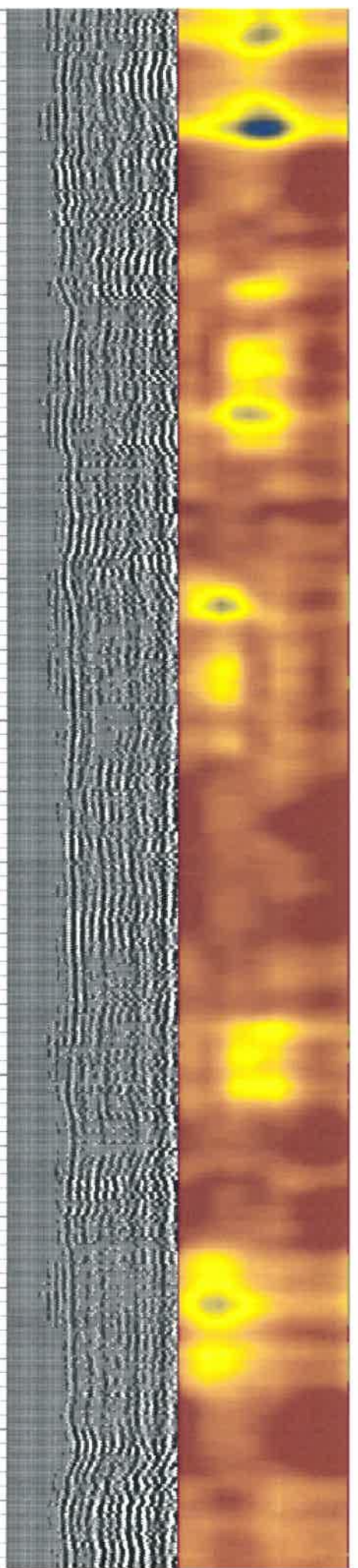
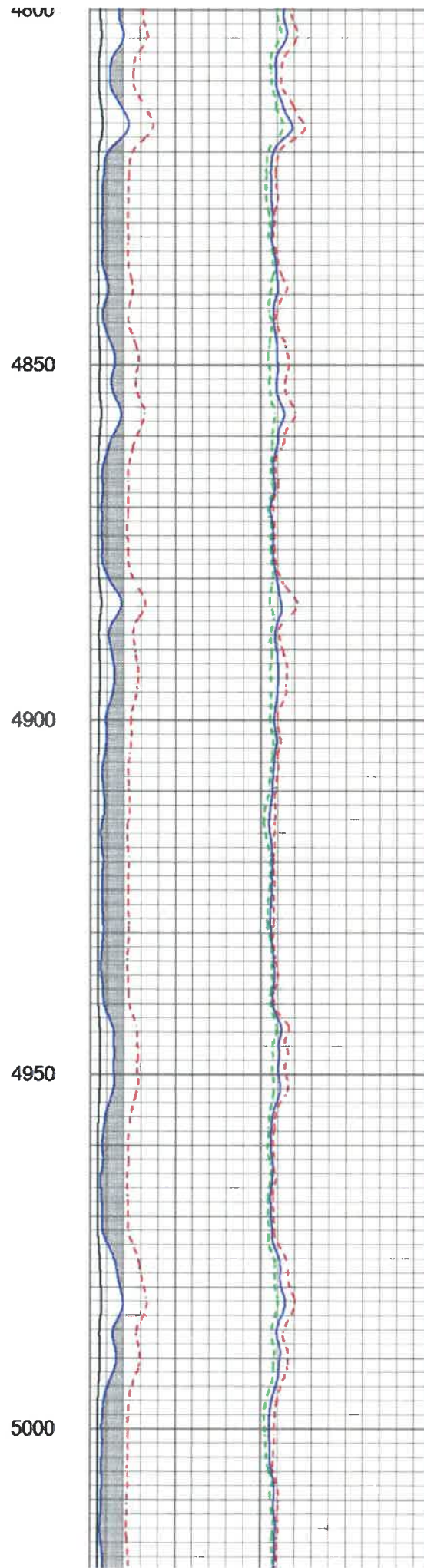
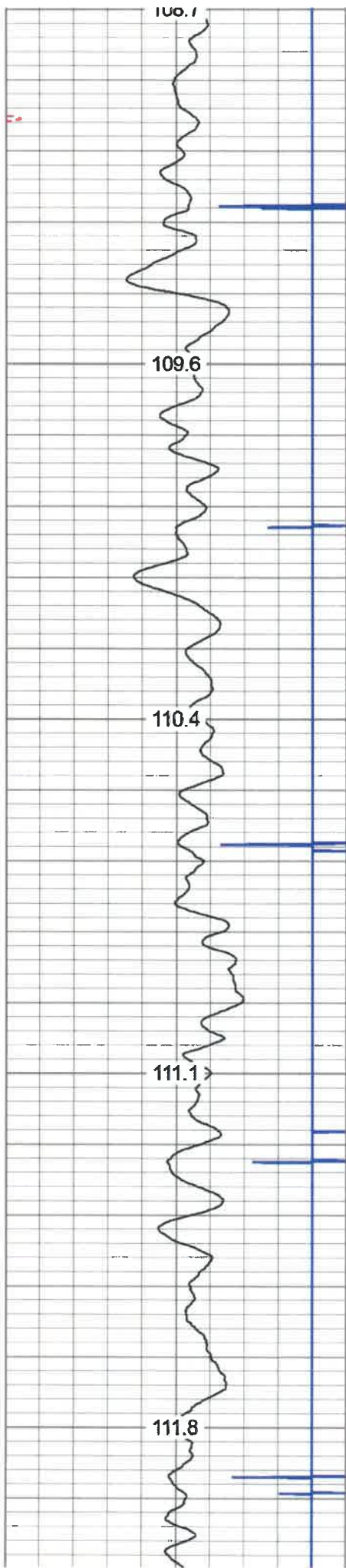
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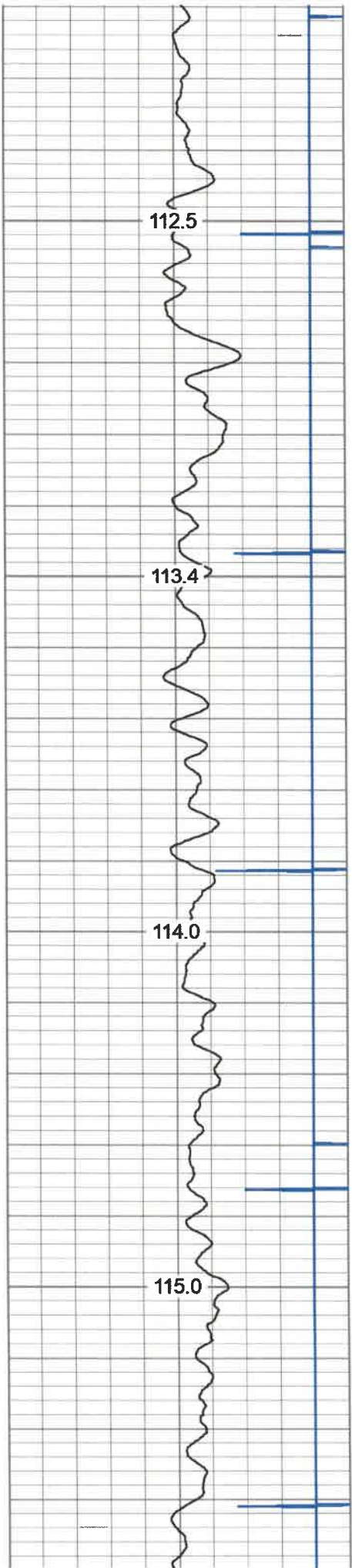
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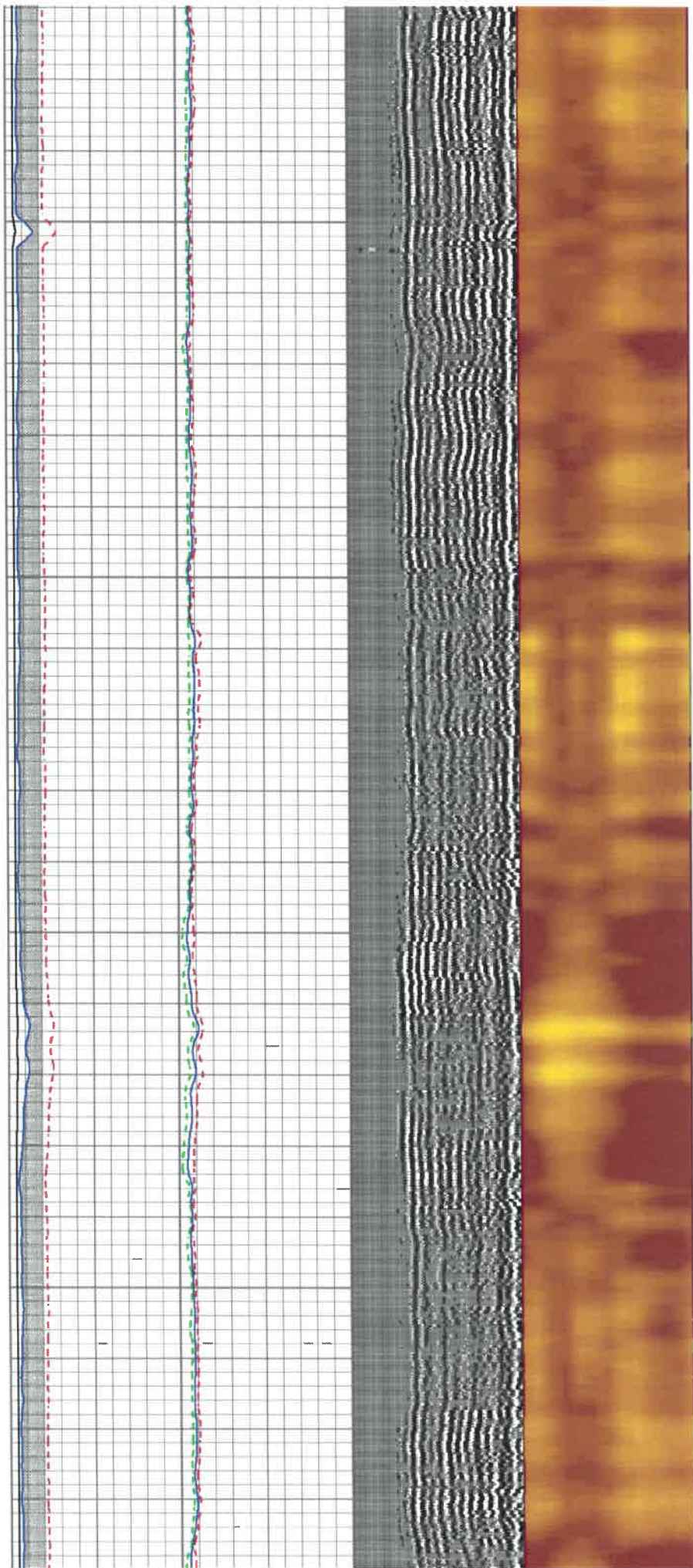








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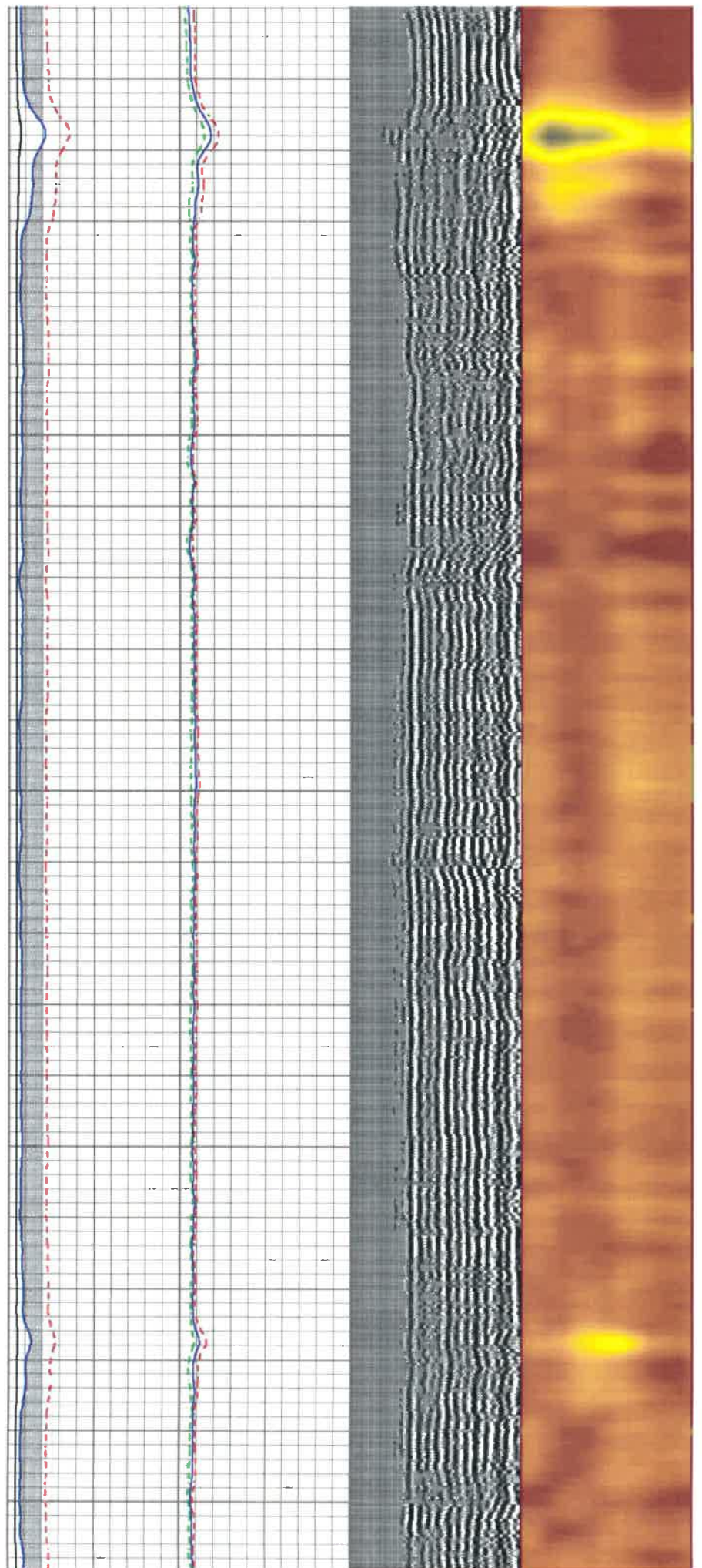
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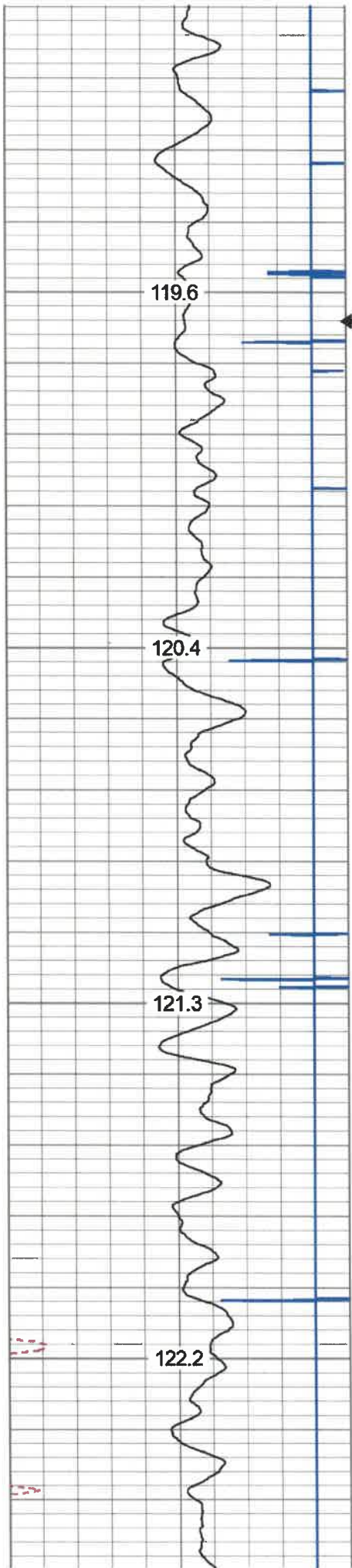
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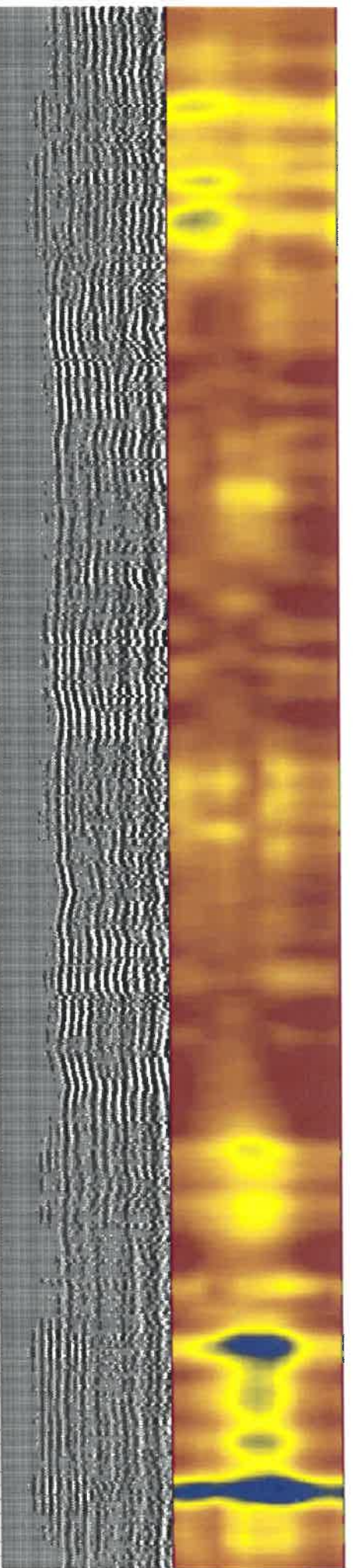
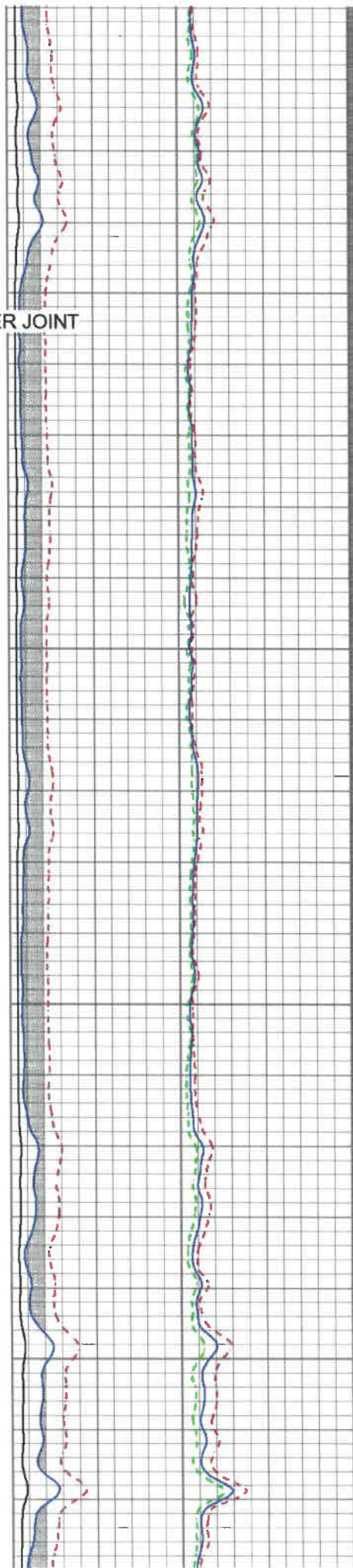


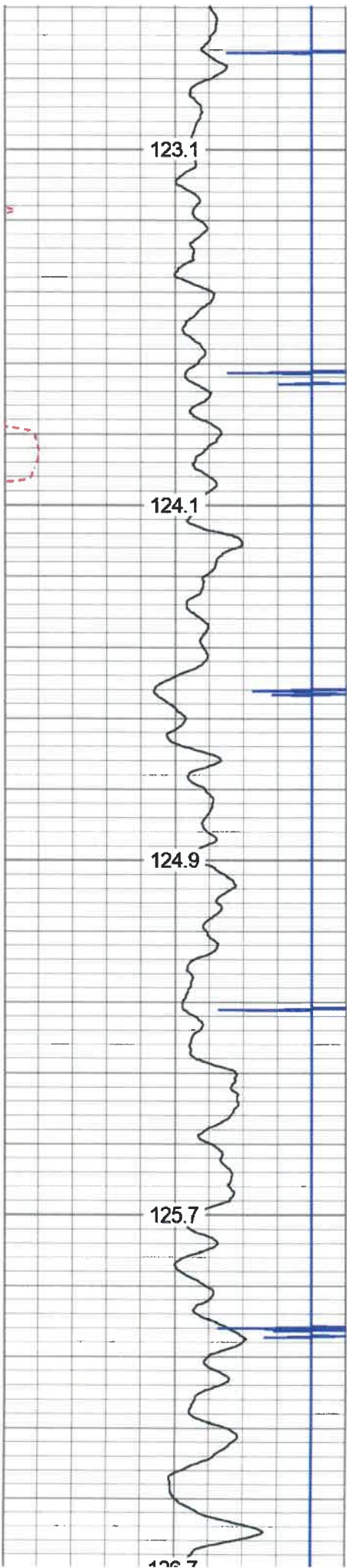
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MARKER JOINT

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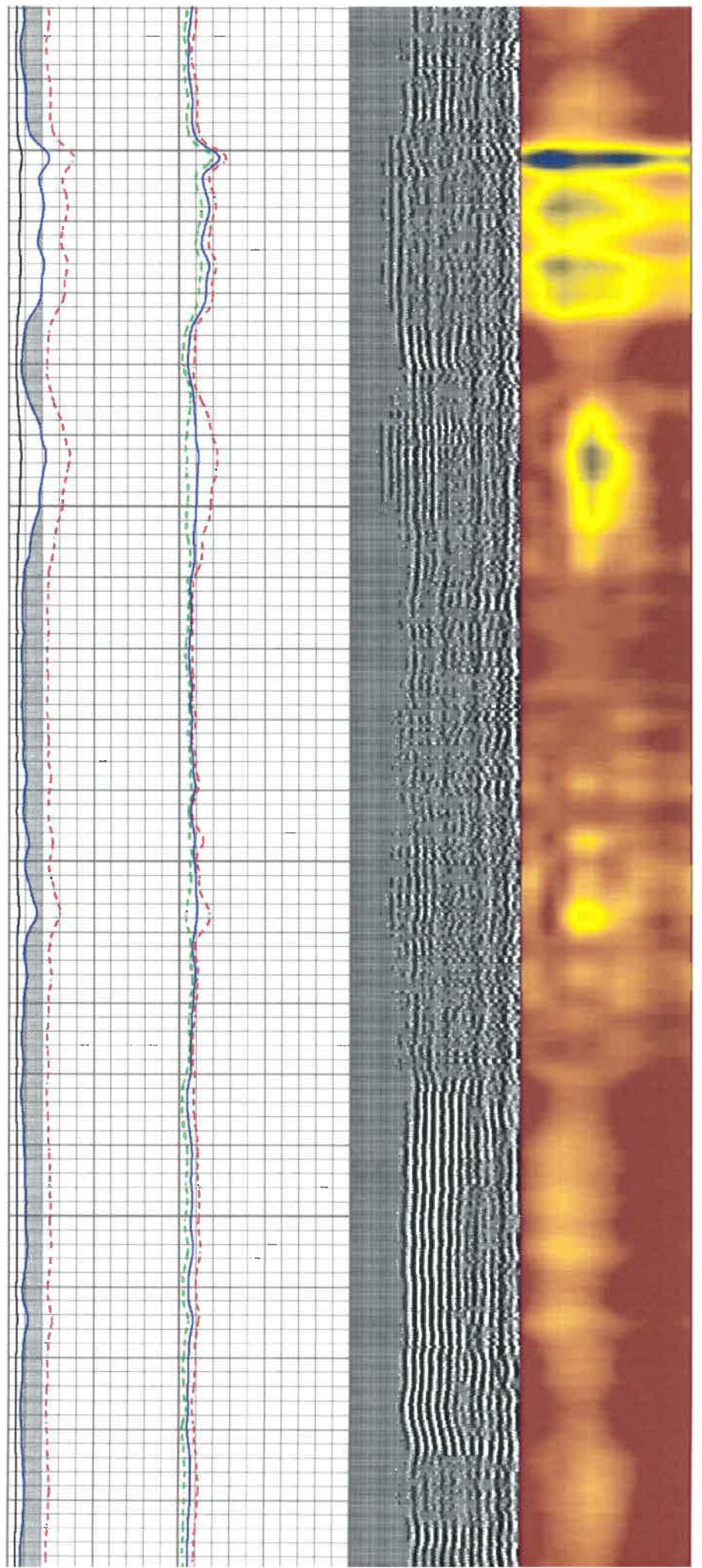
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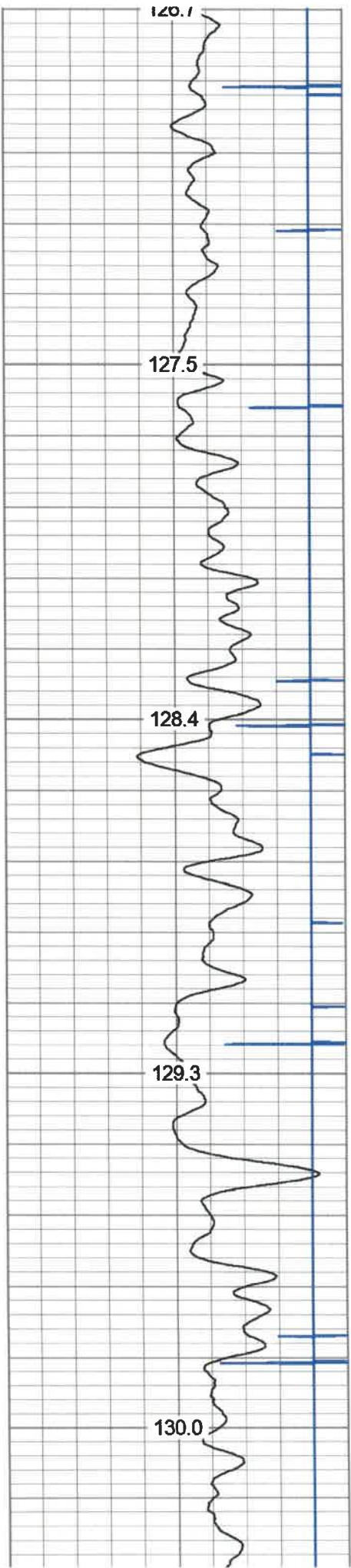
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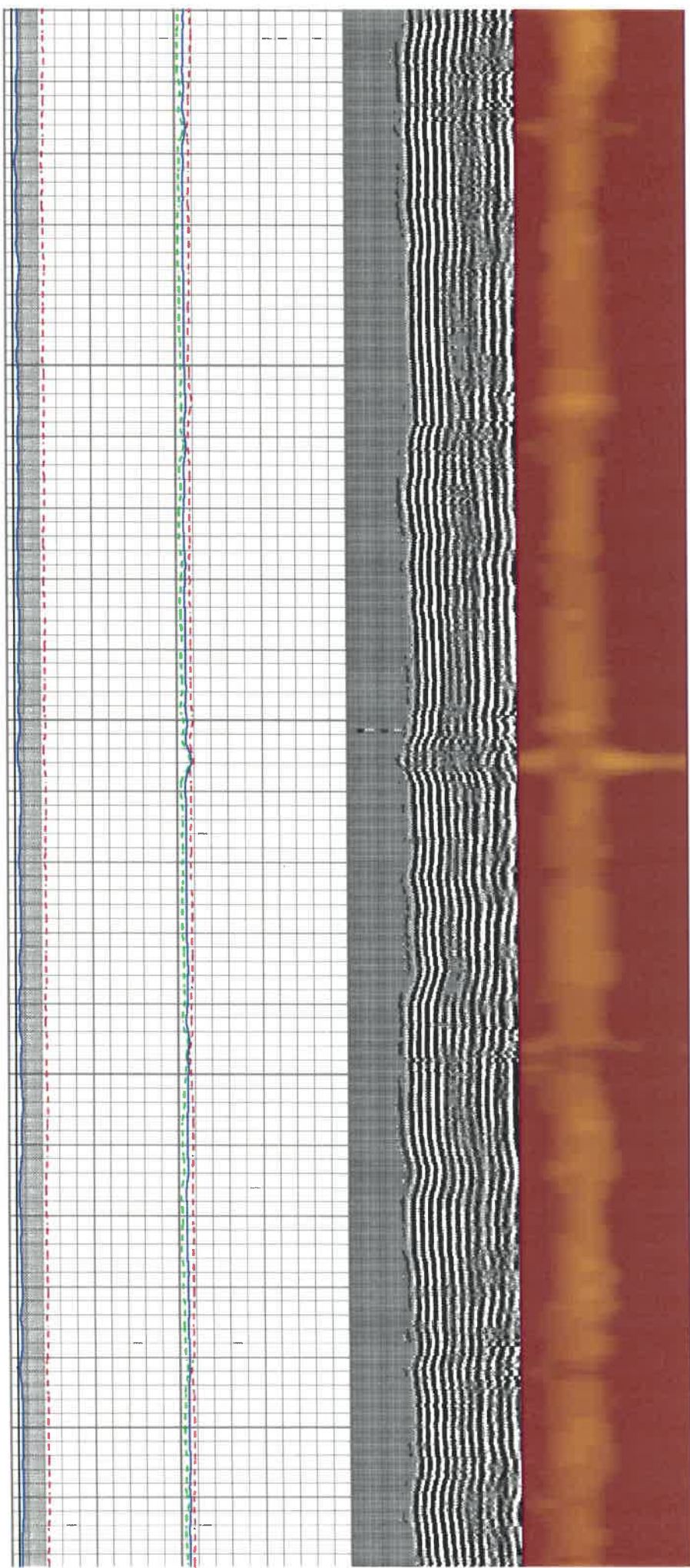
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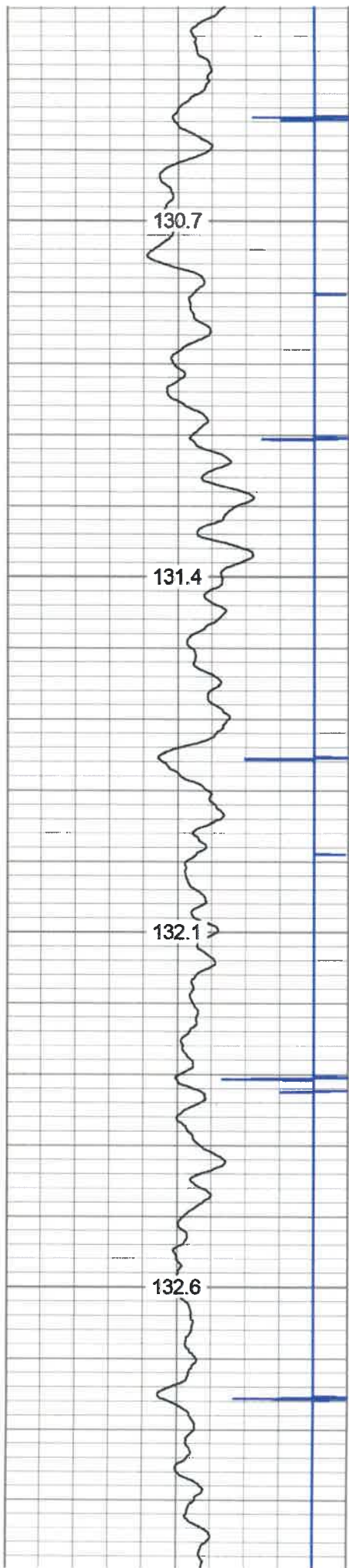
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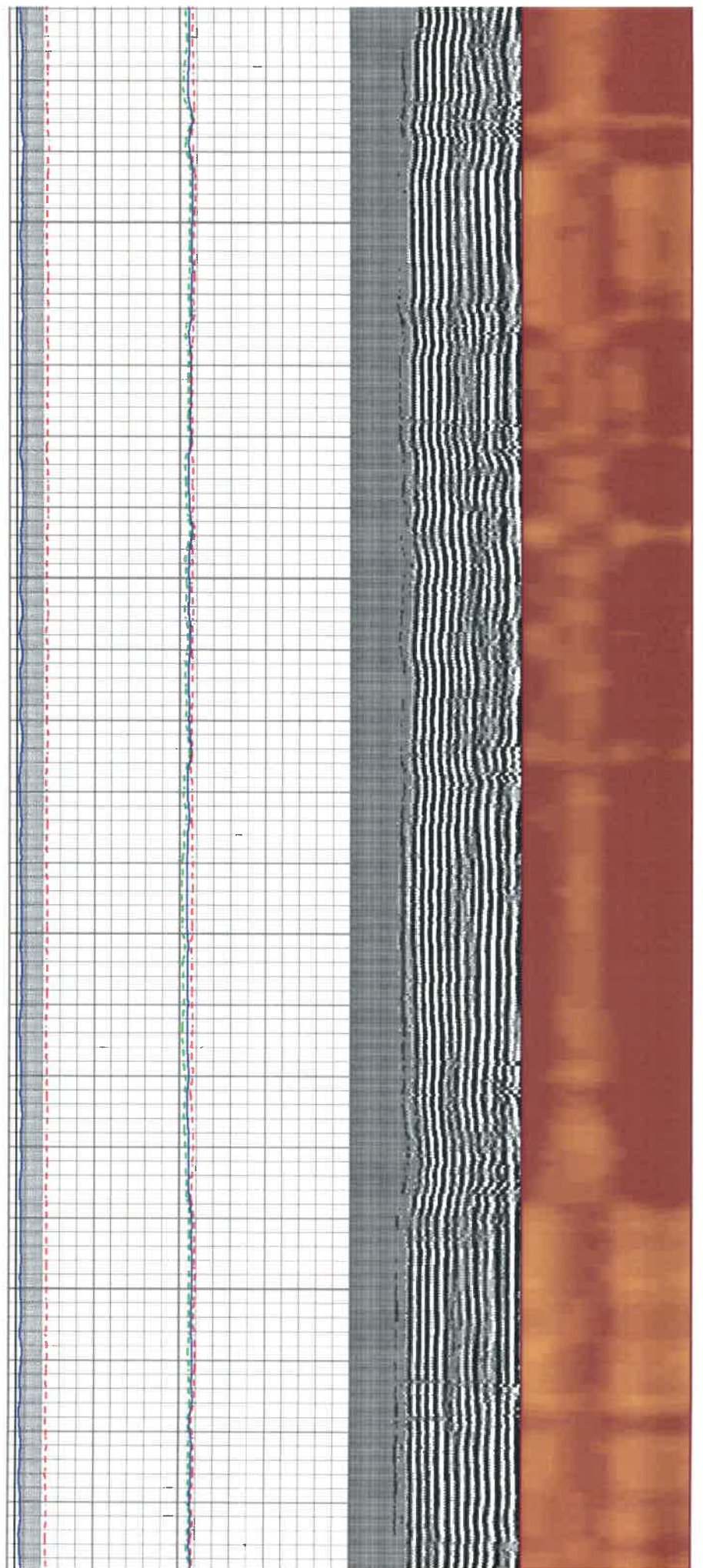


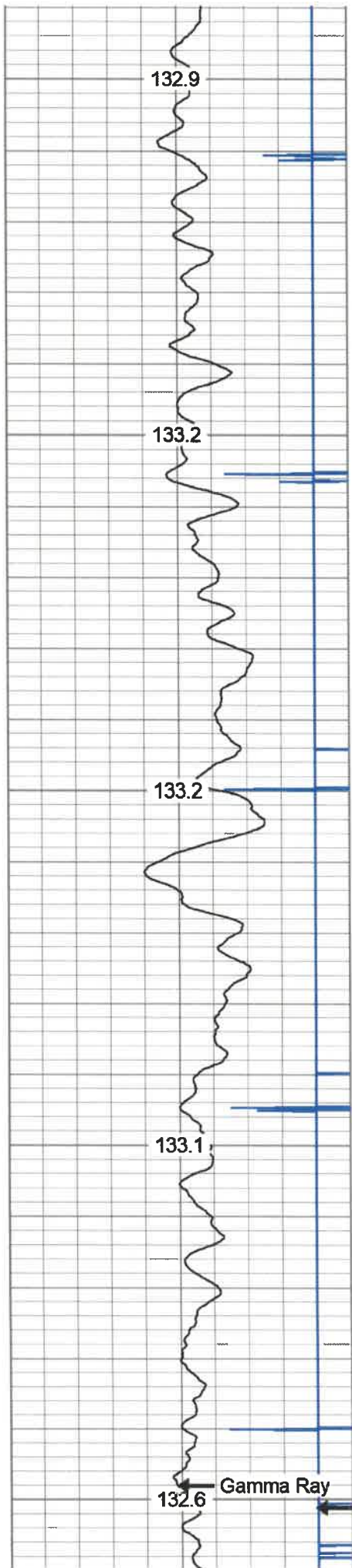
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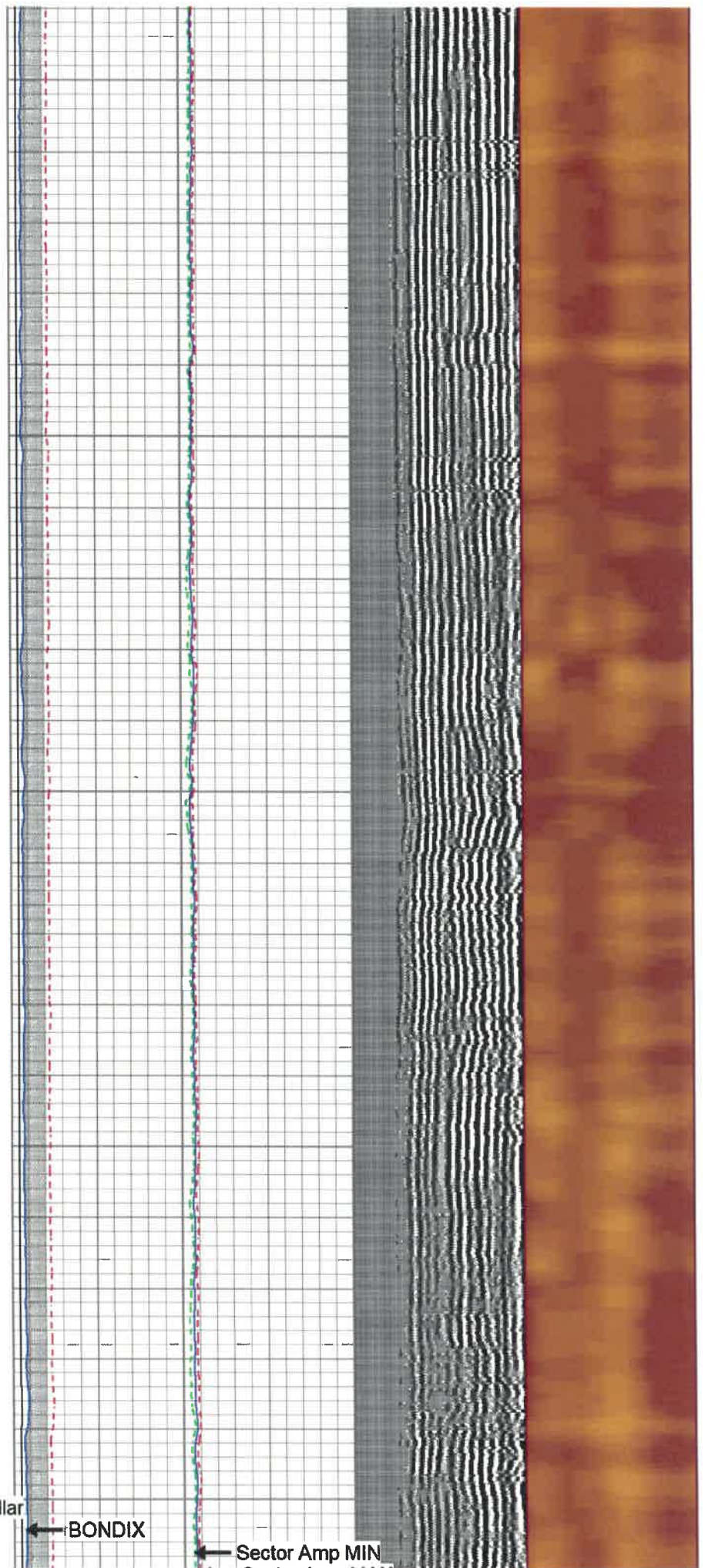
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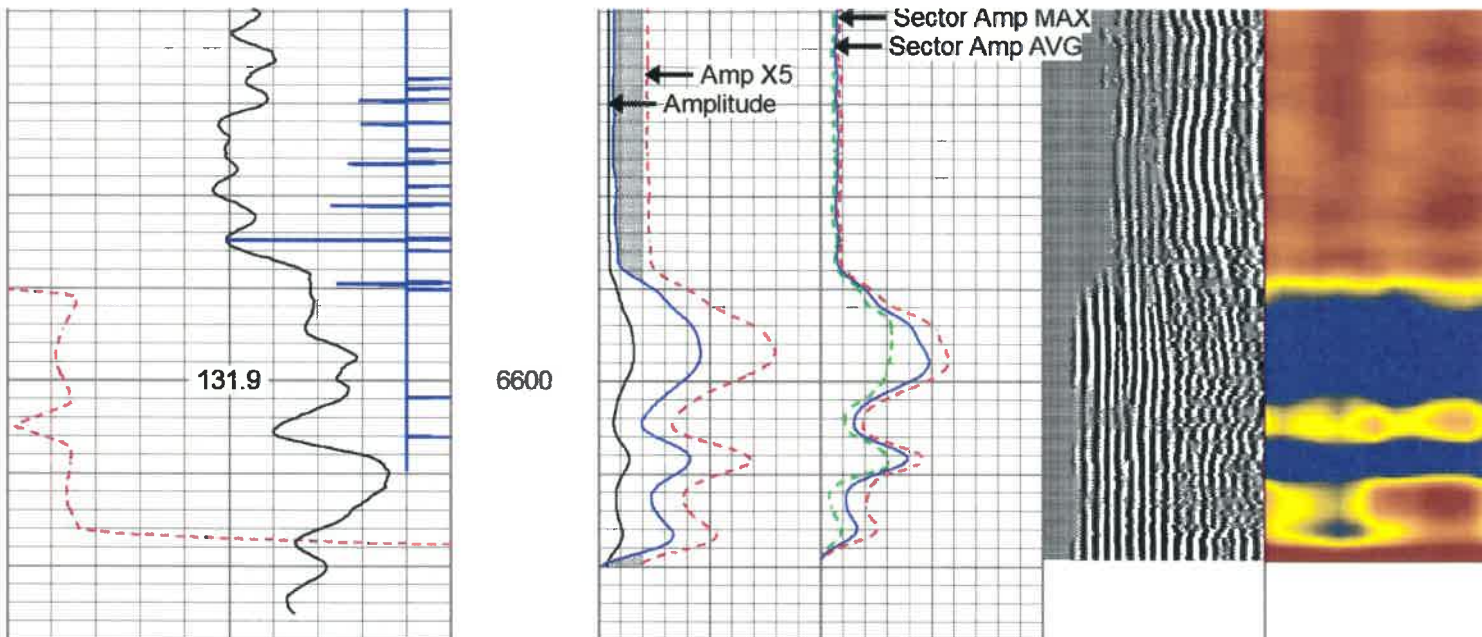
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Casing Collar





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)						



# 1500 PSI PRESSURE PASS



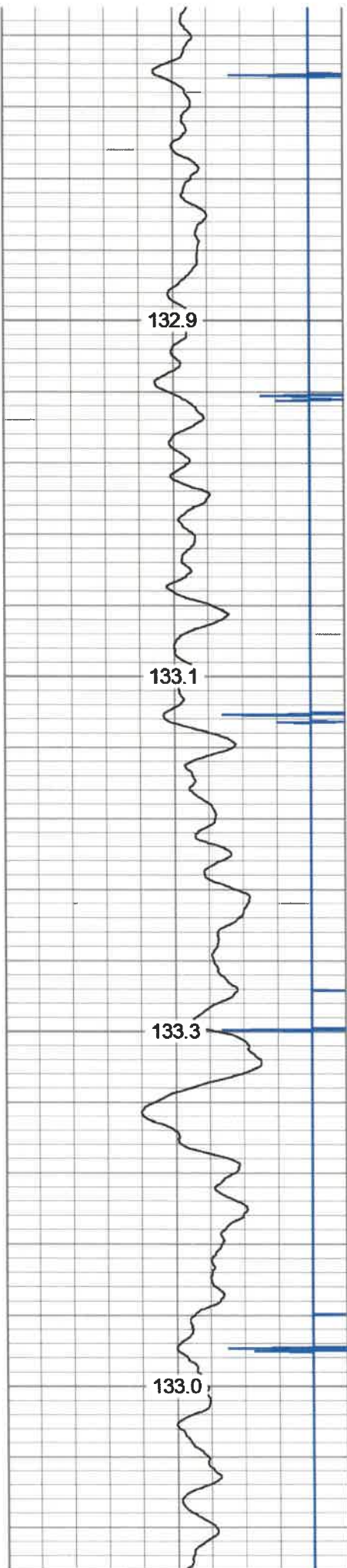
# REPEAT PASS

Database File ant\_galt1h.db  
 Dataset Pathname REPEAT  
 Presentation Format antero  
 Dataset Creation Tue Dec 17 18:45:23 2019  
 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)						





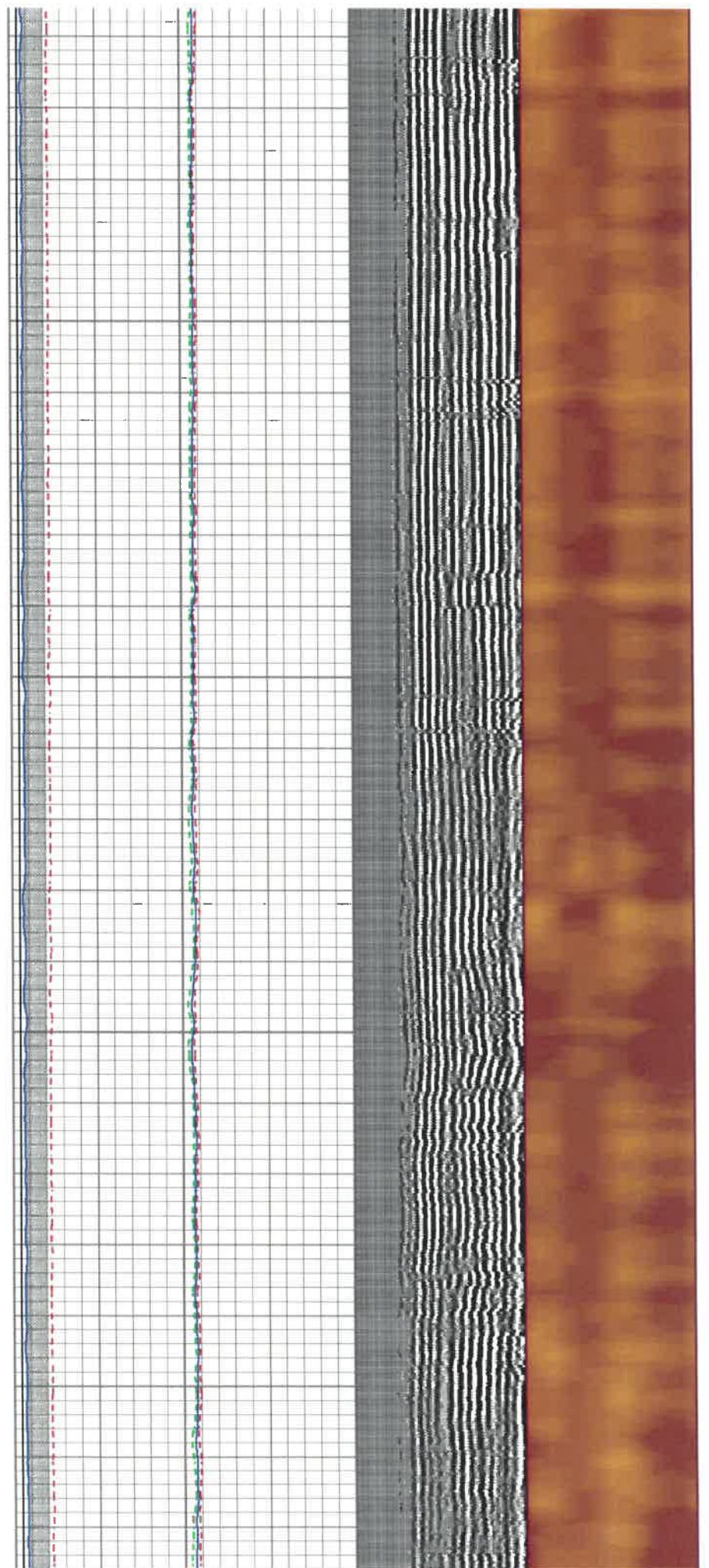


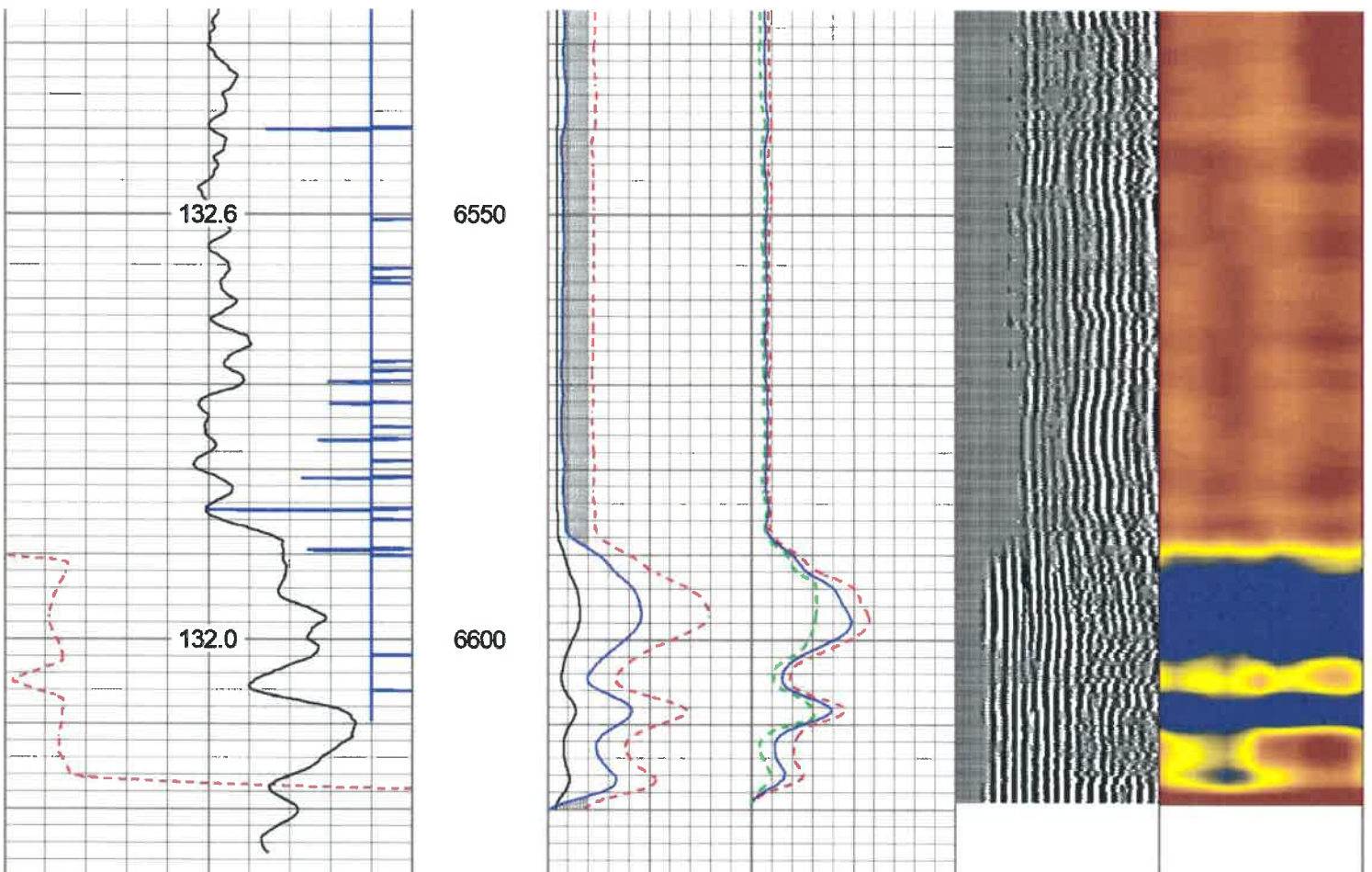
6350

6400

6450

6500





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

Amplitude	Sector Amp AVG
0 (mV) 100	Sector Amp MAX
Amp X5	Sector Amp MIN
0 (mV) 20	
1 BONDIX 0	

VDL	1 Sector Map 12
200 (usec) 1200	

TEMP  
(degF)



# REPEAT PASS

**Log Variables** DatabaseC:\ProgramData\Warrior\Data\ant\_galt1h.db  
Dataset field/well/run1/pass4.1/\_vars\_

Top - Bottom							
BHTEMP_Src	BOREID	BOTTEMP	CASEOD	CASETHCK	CASEWGHT	MAXAMPL	MINAMPL
TEMP	in 8.25	degF 100	in 5.5	in 0	lb/ft 20	mV 71.9	mV 3.5
MINATTN	PERFS	PPT	SRFTEMP	TDEPTH			
db/ft 0.8	No	usec 219	degF 0	ft 0			

### Variable Description

BHTEMP\_Src : BHTEMP Input Source Selector  
BOREID : Borehole ID

MINAMPL : Minimum Amplitude  
MINATTN : Minimum Attenuation

BOREID : Borehole I.D.  
 BOTTEMP : Bottom Hole Temperature  
 CASEOD : Casing O.D.  
 CASETHCK : Casing Thickness  
 CASEWGHT : Casing Weight  
 MAXAMPL : Maximum Amplitude

PERFS : Perforation Flag  
 PPT : Predicted Pipe Time  
 SRFTEMP : Surface Temperature  
 TDEPTH : Total Depth

**Calibration Report**

Database File      ant\_gait1h.db  
 Dataset Pathname  pass4.1  
 Dataset Creation   Tue Dec 17 17:59:03 2019

**Gamma Ray Calibration Report**

Serial Number:           IPSNO-03  
 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:       177.533        ft

**Master Calibration, performed (Derived):**

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.001	1.291	3.500	71.921	53.018	3.458
CAL	0.022	0.411				
5'	-0.046	1.337	3.500	71.921	49.507	5.755
SUM						
S1	0.007	2.112	0.000	100.000	47.508	-0.331
S2	0.009	2.160	0.000	100.000	46.488	-0.420
S3	0.010	2.252	0.000	100.000	44.613	-0.465
S4	0.012	2.263	0.000	100.000	44.411	-0.515
S5	0.013	2.266	0.000	100.000	44.388	-0.580
S6	0.013	2.291	0.000	100.000	43.883	-0.554
S7	0.011	2.240	0.000	100.000	44.864	-0.485
S8	0.010	2.225	0.000	100.000	45.146	-0.433
S9	0.008	2.221	0.000	100.000	45.184	-0.346
S10	0.006	2.196	0.000	100.000	45.681	-0.294
S11	0.006	2.130	0.000	100.000	47.069	-0.280
S12	0.006	2.105	0.000	100.000	47.636	-0.274

**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

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)	
CCL	18.93		CCL-312tekco (I08X3-01) Tekco 3 1/8" 450 Deg. "F" SmCo Logging CCL	1.82	3.12	25.00	
			Tek-2.75 2 3/4" Tekco Adjustable Centralizer	2.73	2.75	25.00	
TEMP	12.77						
WVFS12	11.48						
WVFS11	11.48						
WVFS10	11.48			SCBL-Tek12 (IOL40-03_5_5) Tekco 400 Deg F 12 Sector RIB with Temp	9.13	3.25	135.00
WVFS9	11.48						
WVFS8	11.48						
WVFS7	11.48						
WVFS6	11.48						
WVFS5	11.48						
WVFS4	11.48						
WVFS3	11.48						
WVFS2	11.48						
WVFS1	11.48						
WVFCAL	10.73						
WVF3FT	10.73						
WVF5FT	9.73						
WVFSYNC	6.40						
WVFTEMP	6.40		Tek-2.75 2 3/4" Tekco Adjustable Centralizer	2.73	2.75	25.00	
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:	ant_galt1h.db: field/well/run1/pass4.1
Total length:	20.07 ft
Total weight:	250.00 lb
O.D.:	3.25 in



Company	Antero Resources Corporation
Well	GALT 1H
Field	Marcellus
County	TYLER
State	WV
Country	USA

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