



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

Company ANTERO RESOURCES CORPORATION
Well KERNS UNIT 1 H
Field MARCELLUS
County TYLER
State WV Country US

Company ANTERO RESOURCES CORPORATION
Well KERNS UNIT 1 H
Field MARCELLUS
County TYLER
State WV Country US

Location: API #: 47095026880000

Permanent Datum	GL	Elevation	N/A
Log Measured From	KB 25.5 FT		
Drilling Measured From	KB 25.5 FT		
		Elevation	K.B. D.F. G.L.

Date	25 AUG 2020						
Run Number	1						
Depth Driller	22.923						
Depth Logger	7012						
Bottom Logged Interval	7004						
Top Log Interval	SURFACE						
Open Hole Size	N/A						
Type Fluid	WATER						
Density / Viscosity	N/A						
Max. Recorded Temp.	134						
Estimated Cement Top	4100						
Time Well Ready	ON ARRIVAL						
Time Logger on Bottom	8:16						
Equipment Number	214182						
Location	BRIDGEPORT						
Recorded By	K.LINGER						
Witnessed By	JIMMY DARQUENNE						
Borehole Record		Tubing Record					
Run Number	Bit	From	To	Size	Weight	From	To
Casing Record	Size	Waif/Ft	Top	Bottom			
Surface String	13.375	N/A	SURFACE	577			
Prot. String	9.625	N/A	SURFACE	2698			
Production String	5.5	23	SURFACE	22.903			
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

CORRELATED TO PIPE TALLY
SHIFTED UP HOLE 8 FT TO MATCH
LOG RAN UNDER 1500 PSI
TOP OF CEMENT @ 4100
MARKER JOINT @ 5998 - 6008



MAIN PASS 1500 PSI


Sm

Database File e:\antero 2020\8_25_20_antero_kernsunit_1h.db
 Dataset Pathname pass4
 Presentation Format antero
 Dataset Creation Tue Aug 25 08:39:35 2020
 Charted by Depth in Feet scaled 1:240

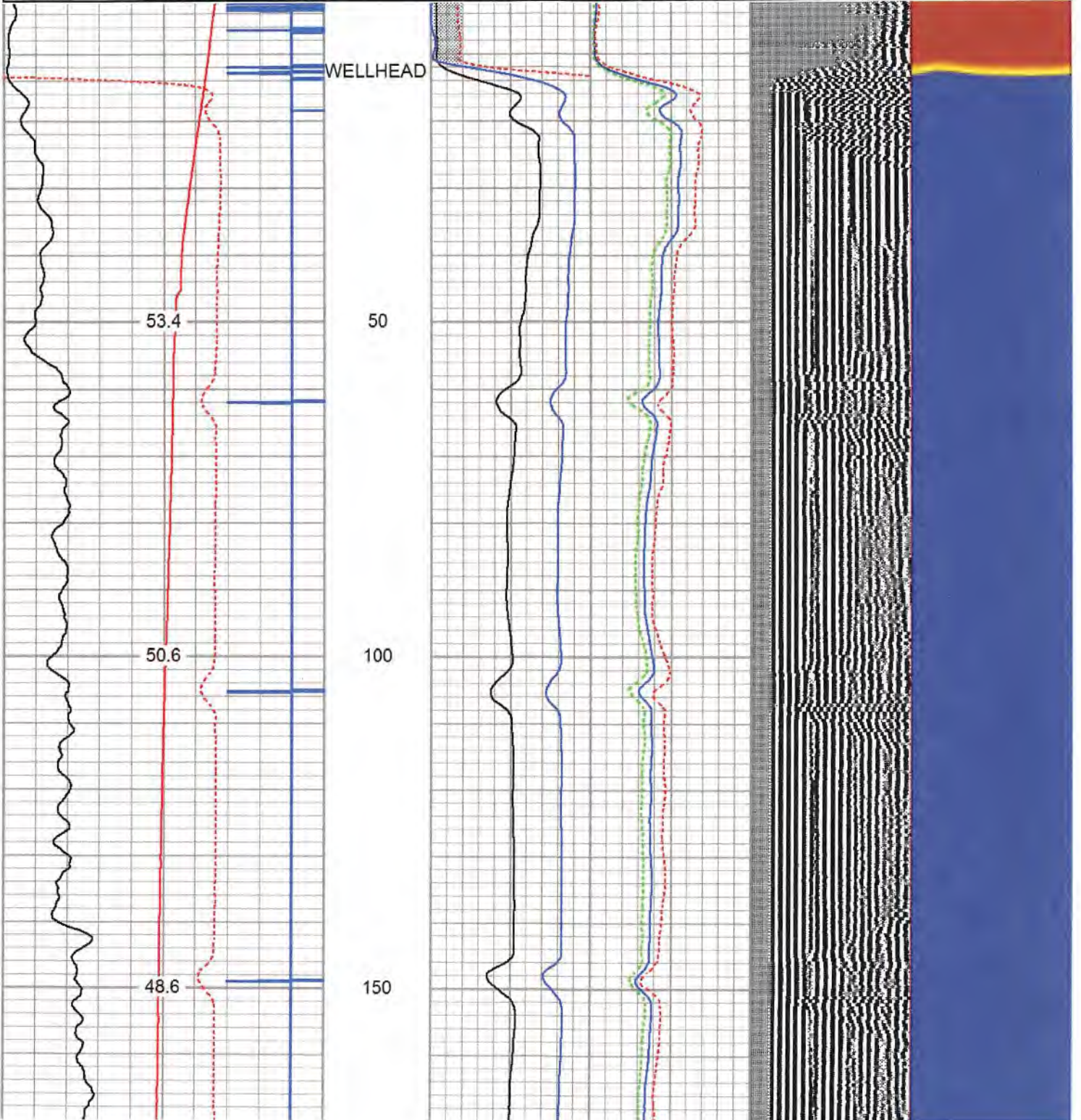
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9	Casing Collar	-1
0	Gamma Ray	180
0	TEMP (degF)	100
180	GR	360

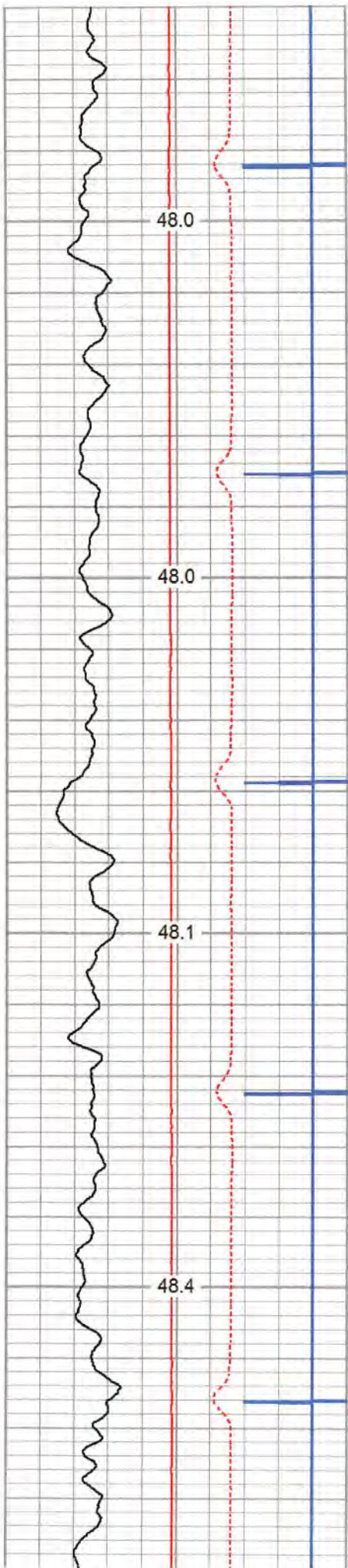
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0	(mV) 100	Sector Amp MAX	200 (usec) 1200
Amp X5		Sector Amp MIN	
0	(mV) 20		
1	BONDIX 0		

1 Sector Map 12



TEMP
(degF)



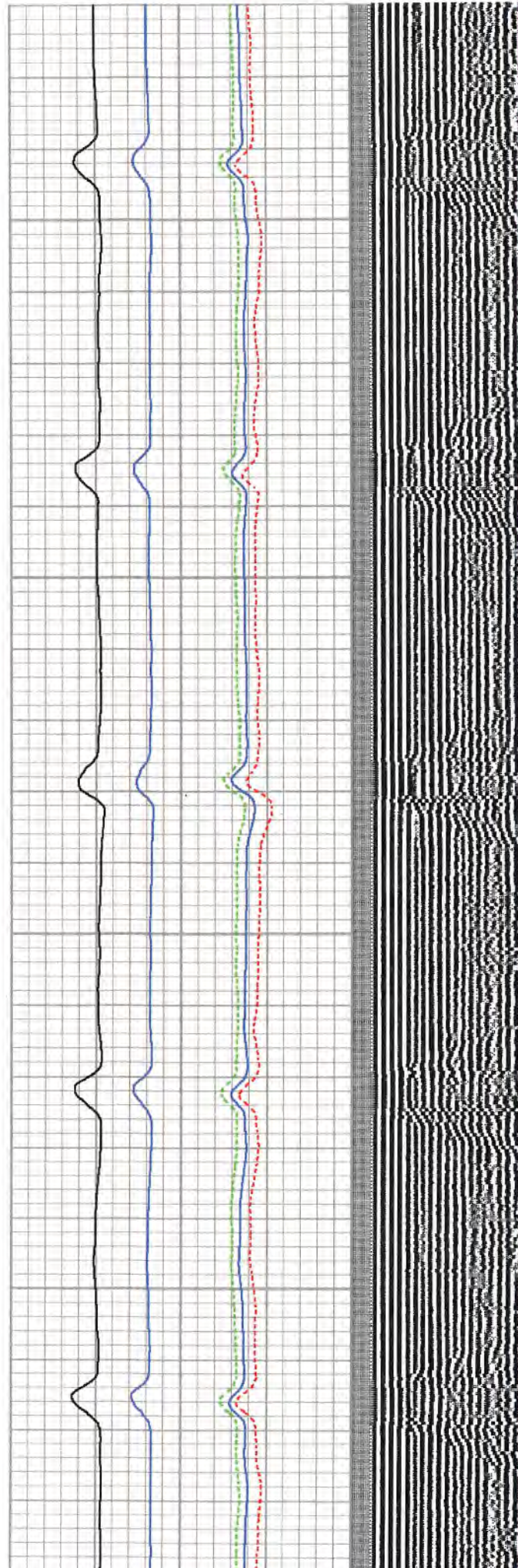


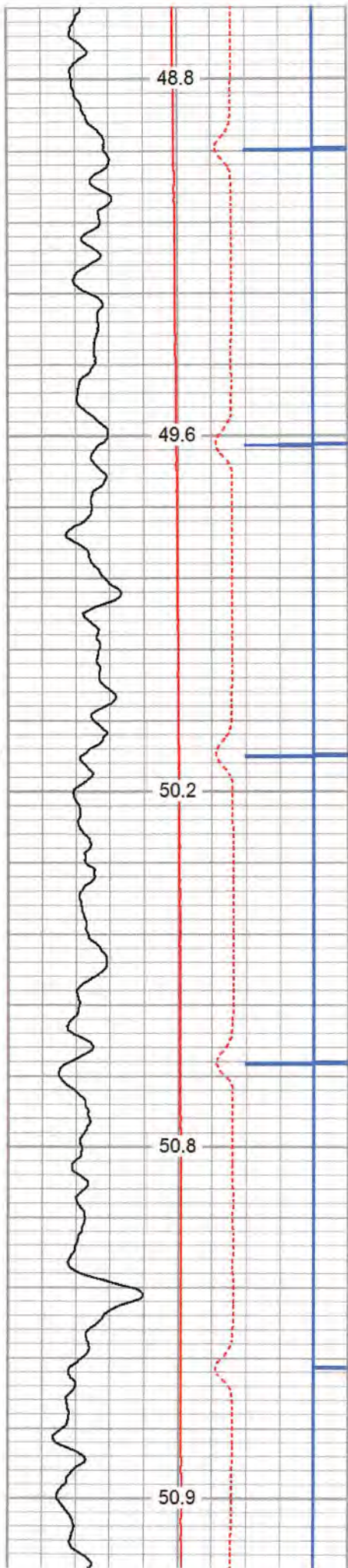
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250

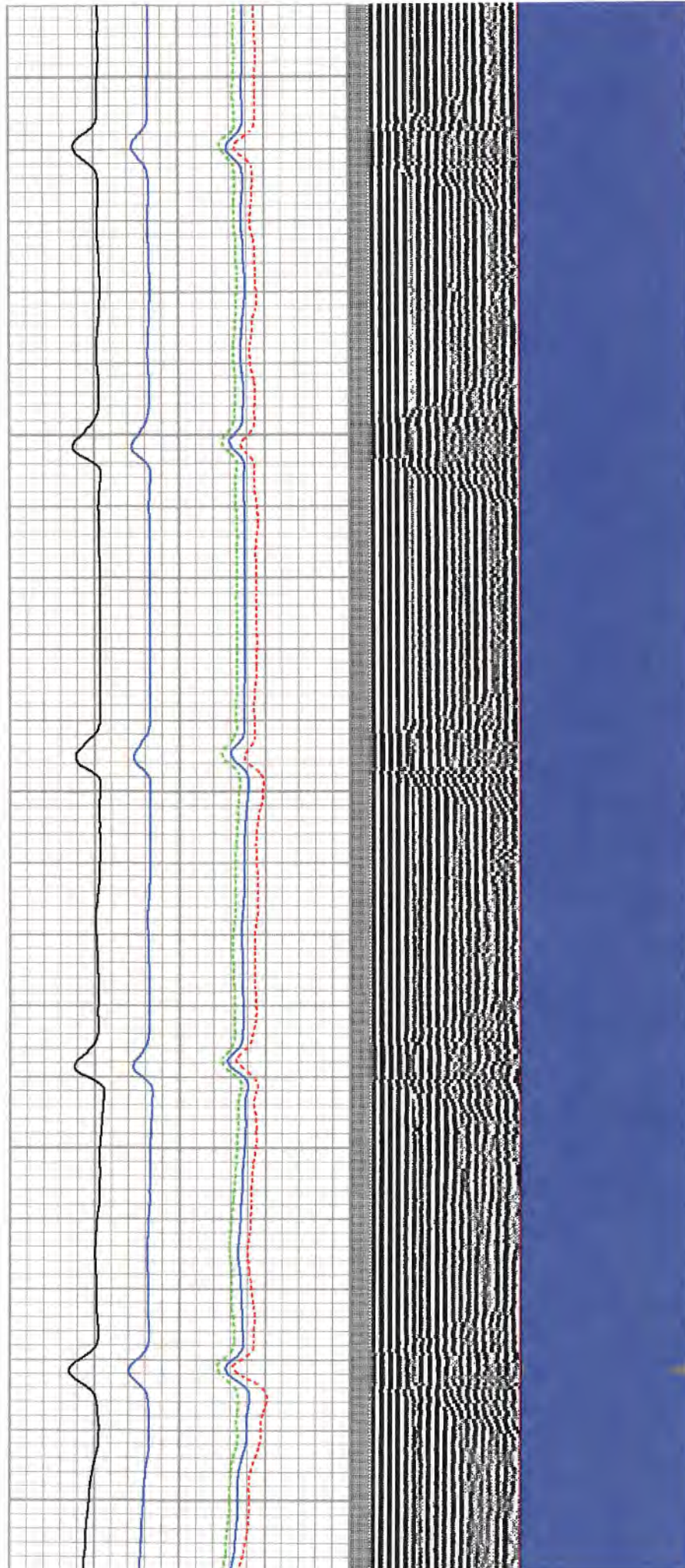
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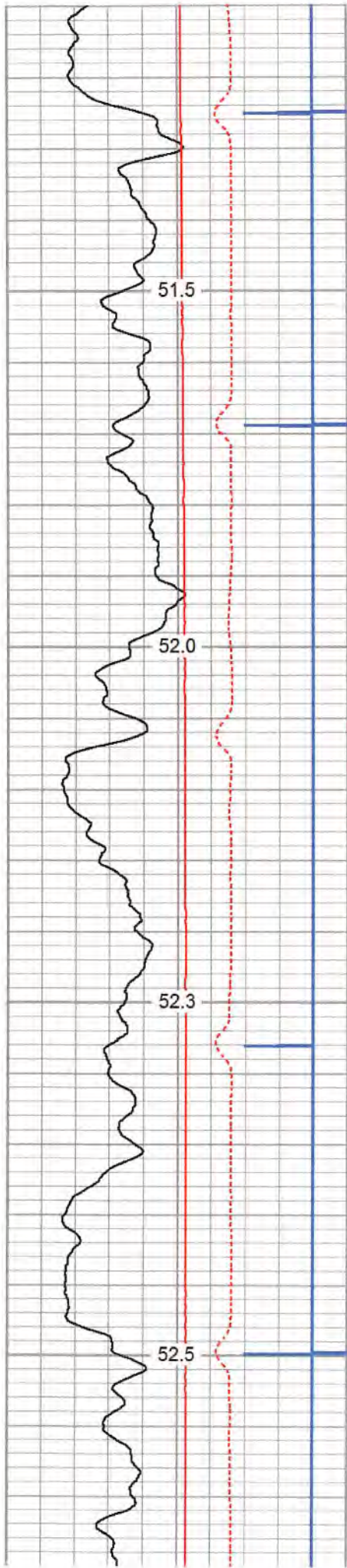
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400
450
500
550
600



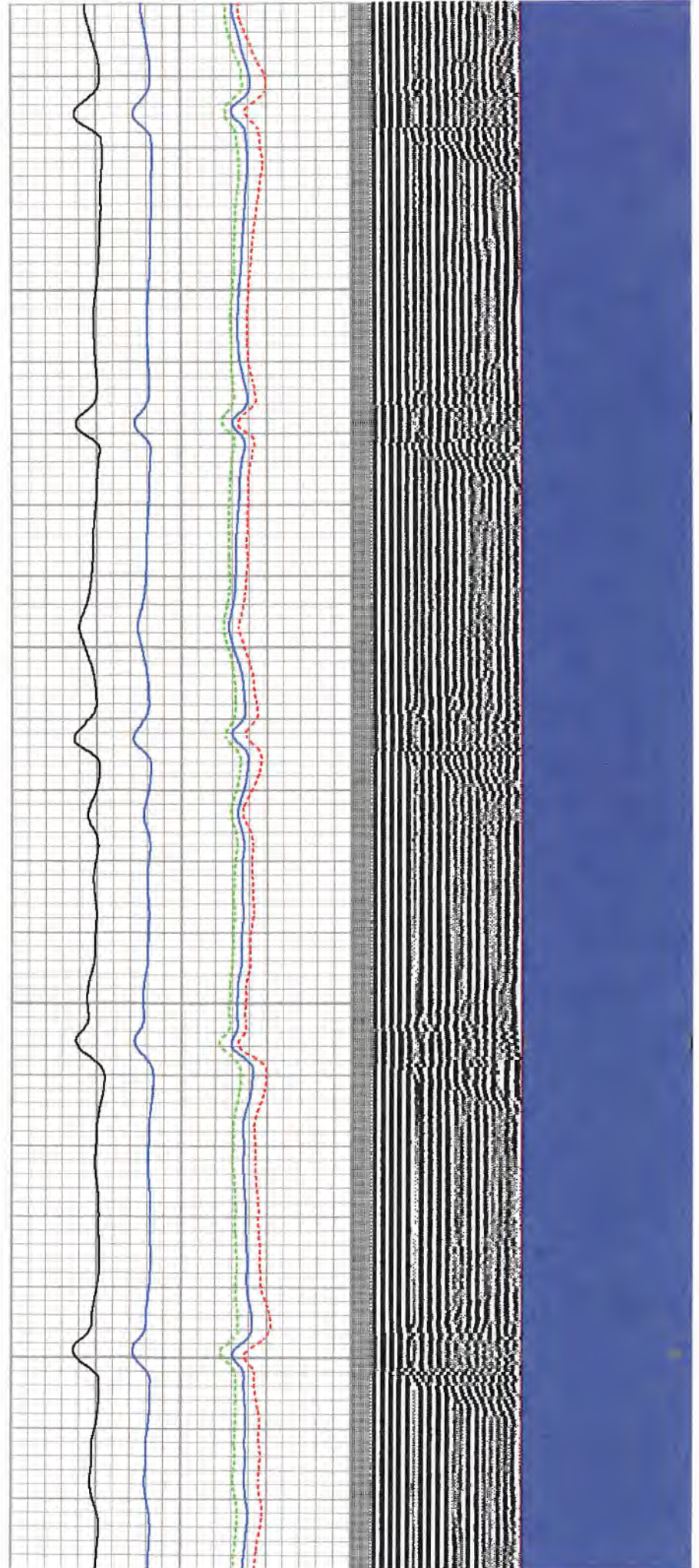


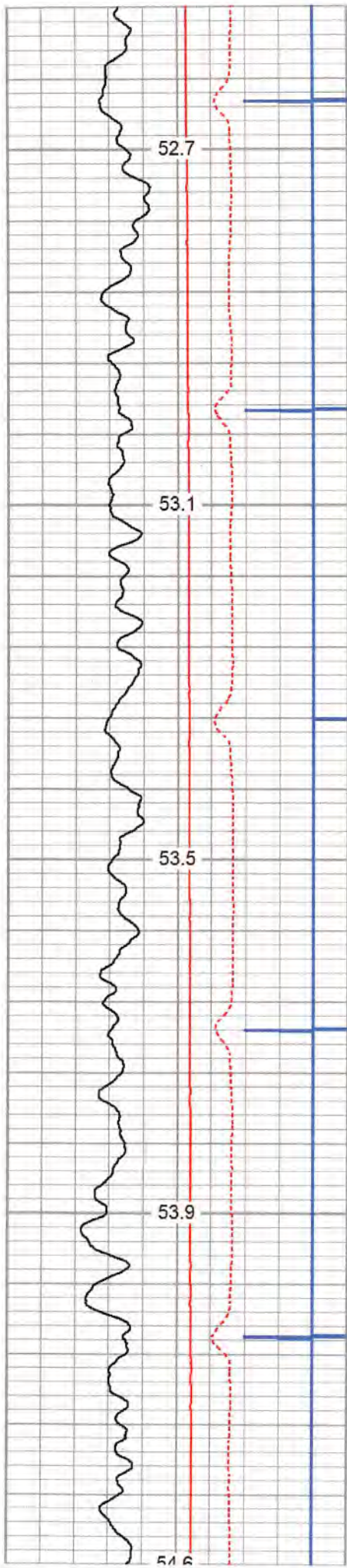
650

700

750

800





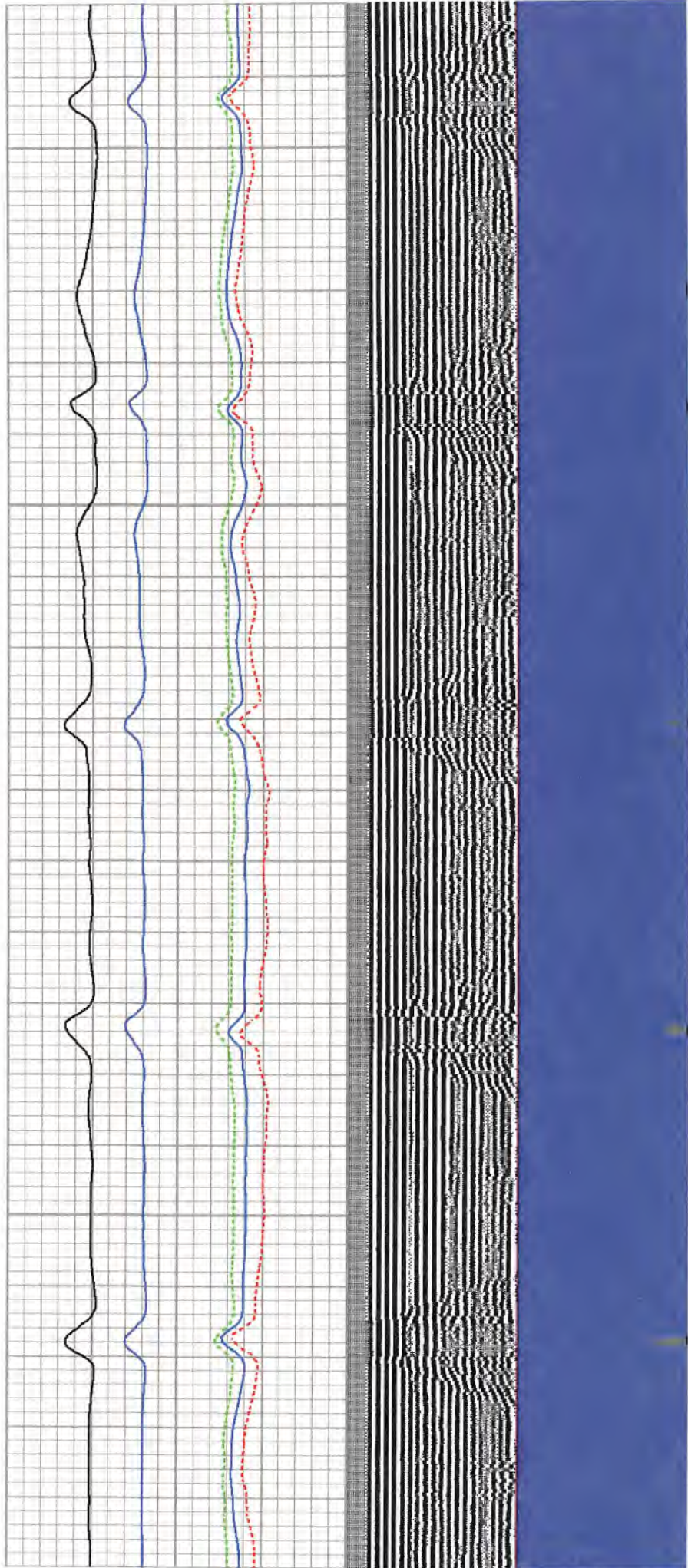
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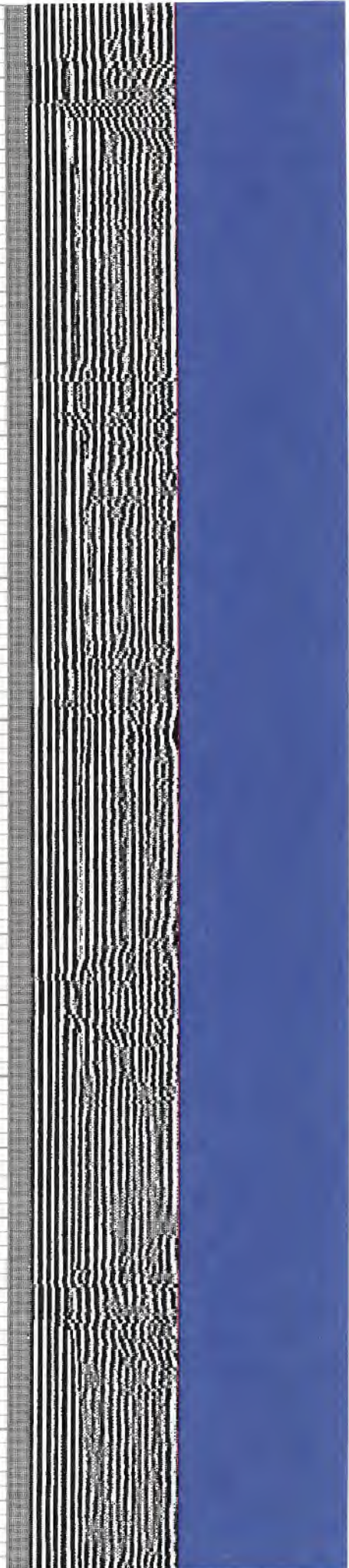
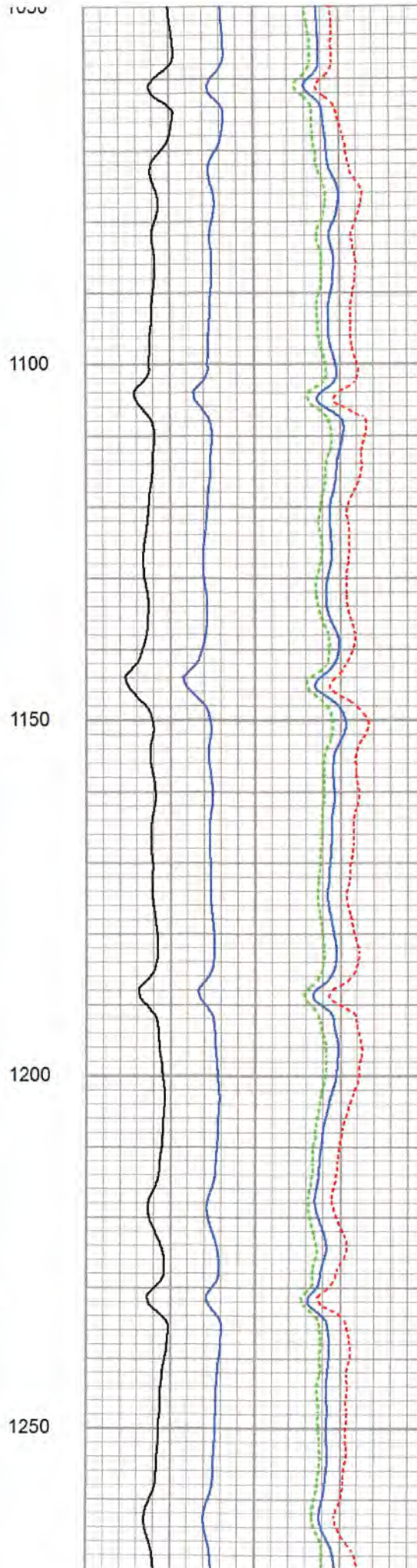
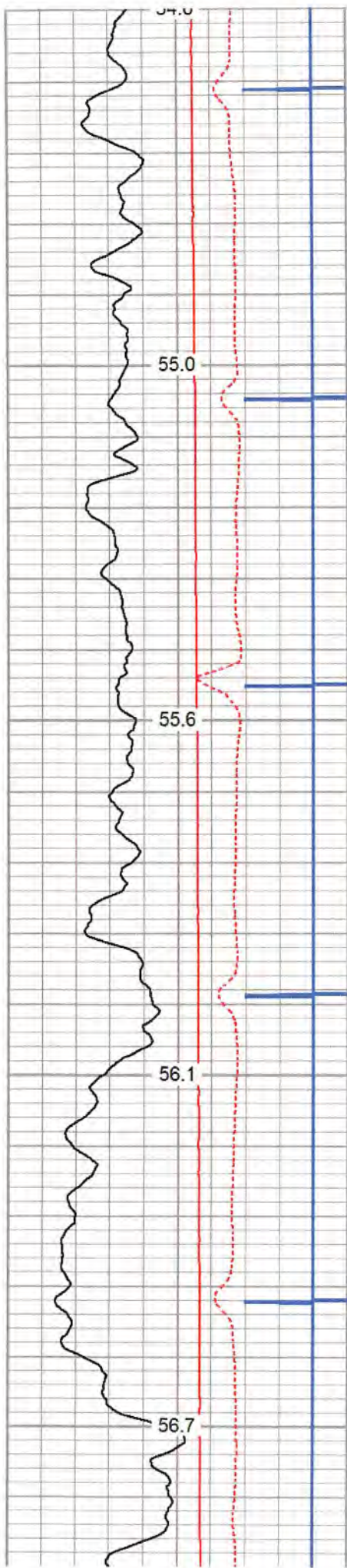
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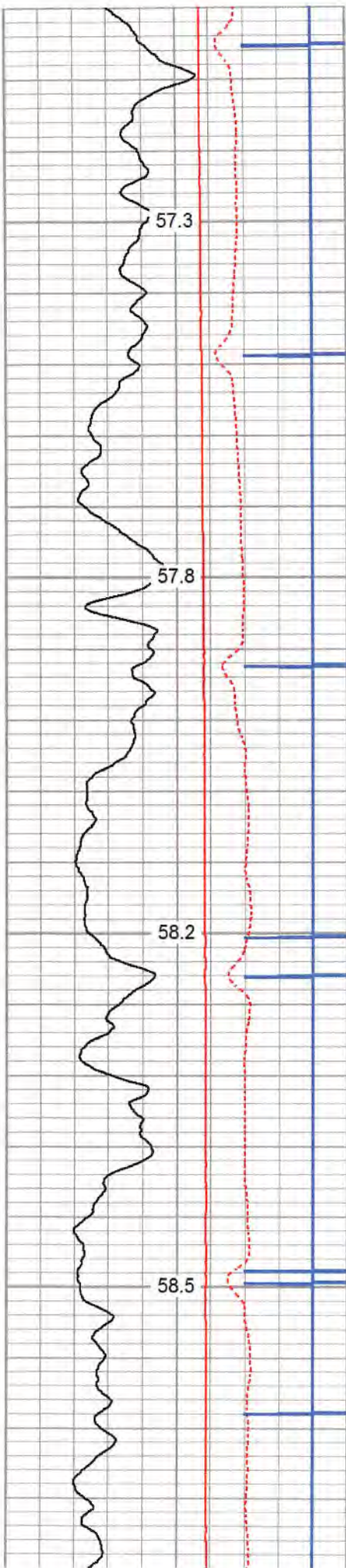
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1000

1050





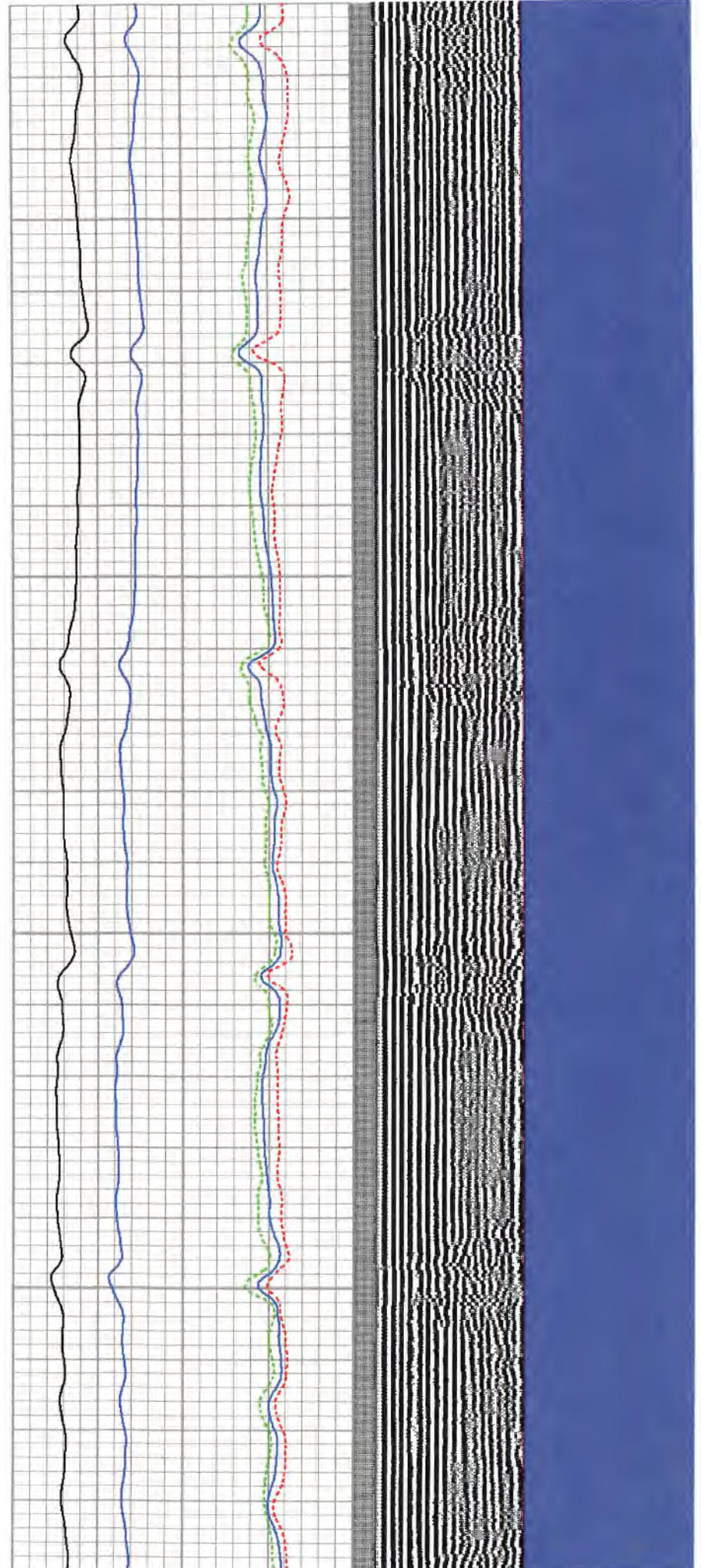


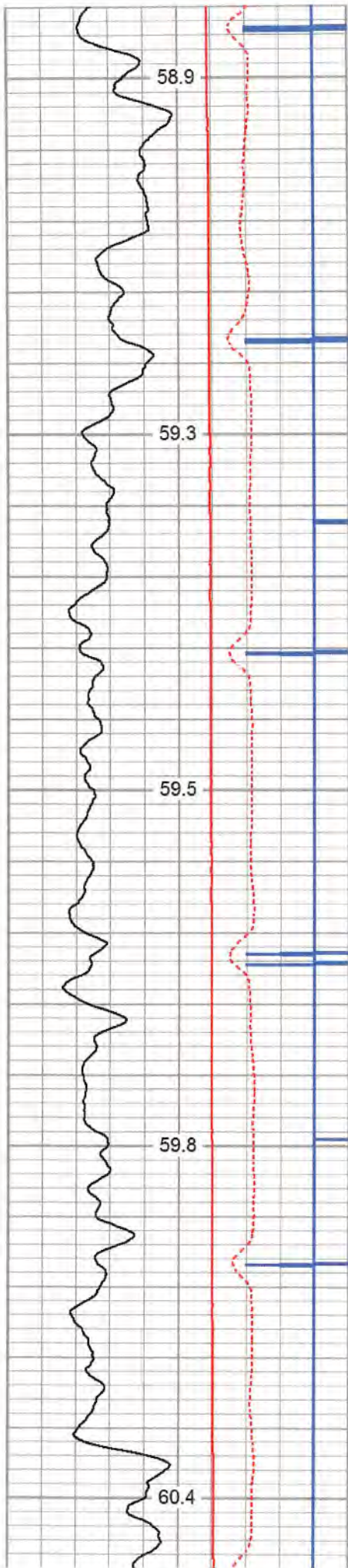
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1350

1400

1450





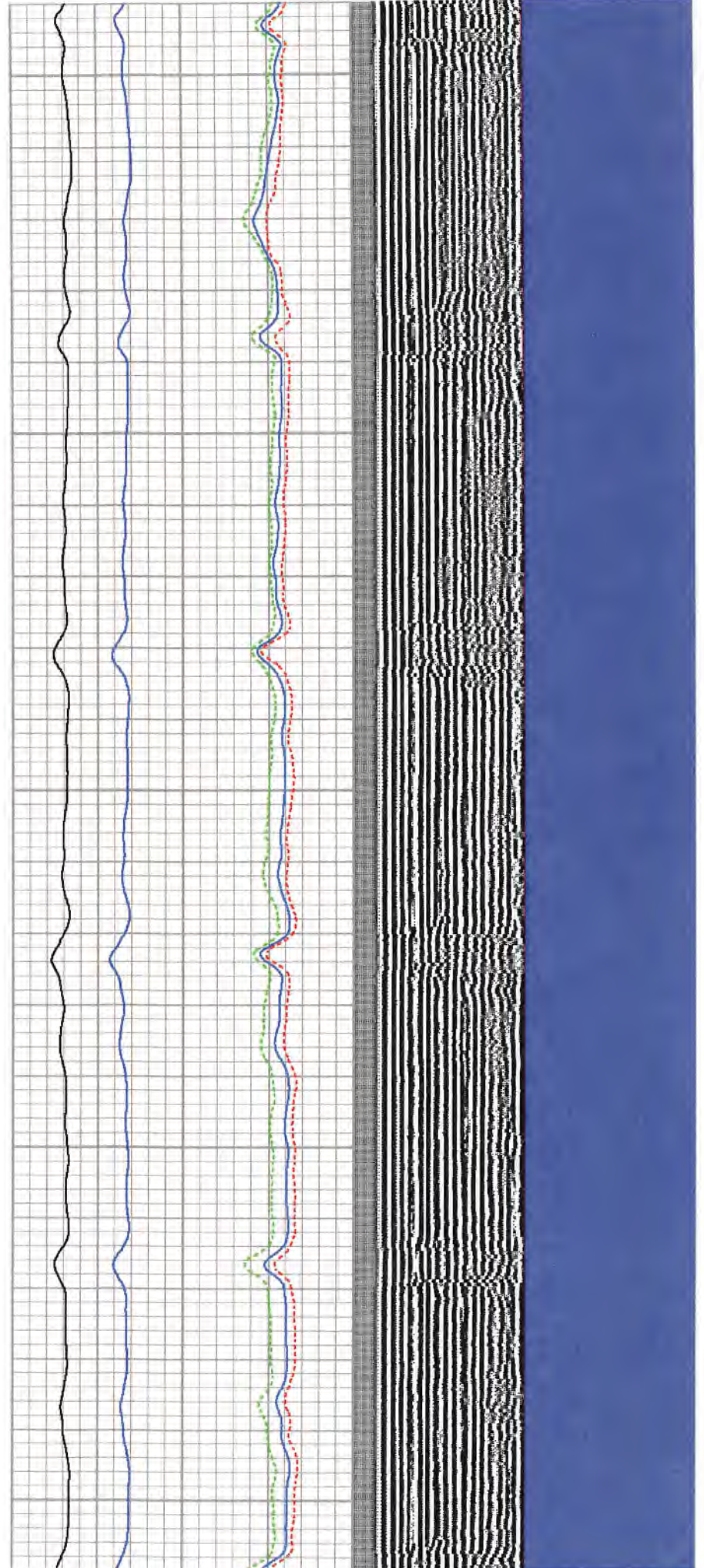
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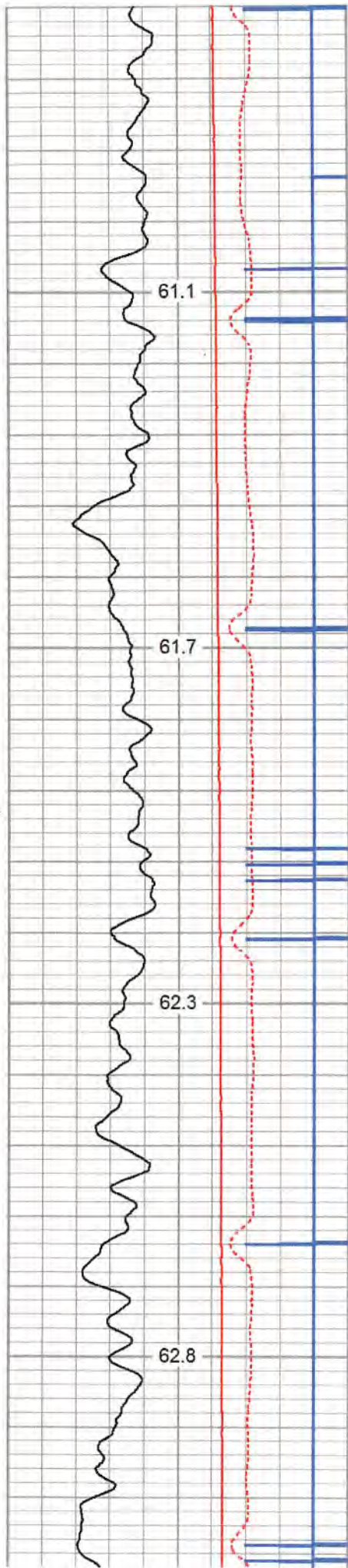
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1600

1650

1700



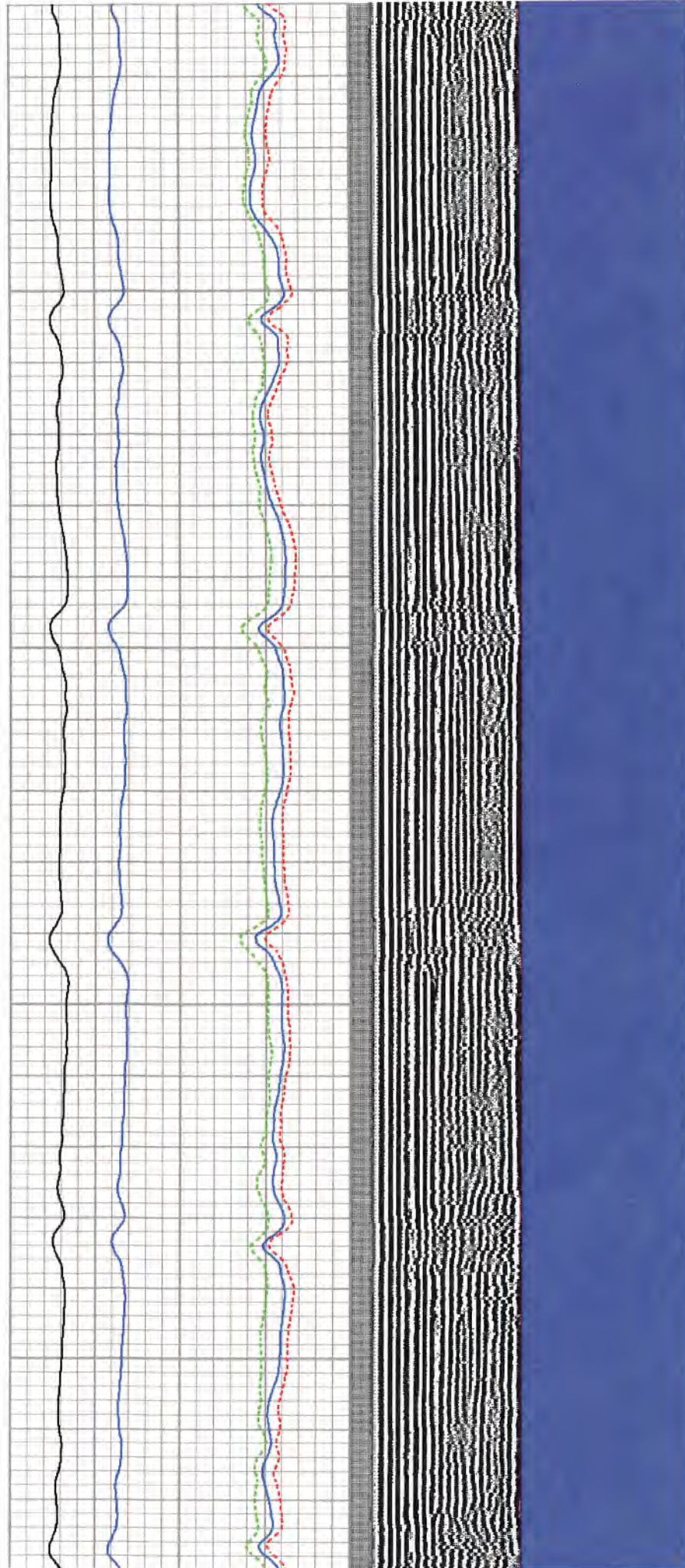


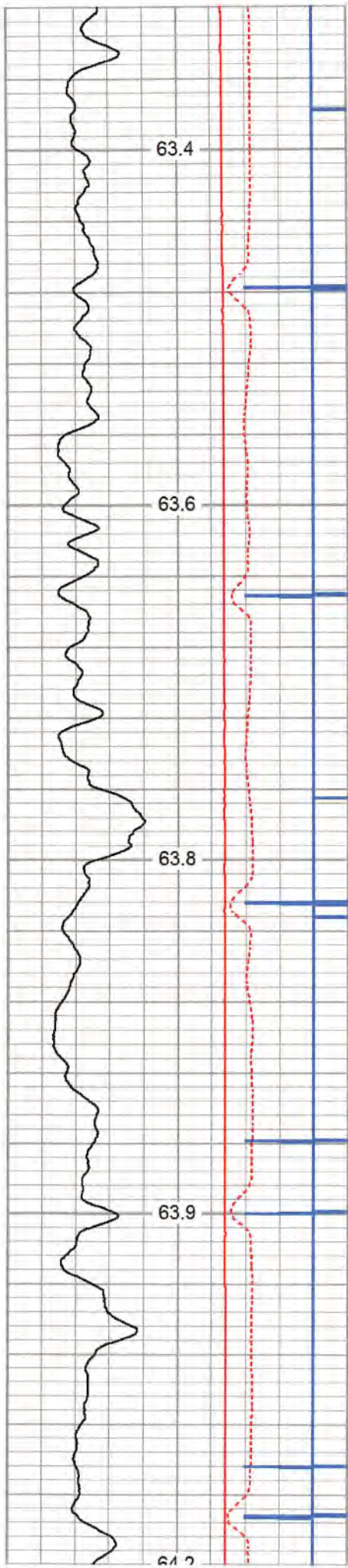
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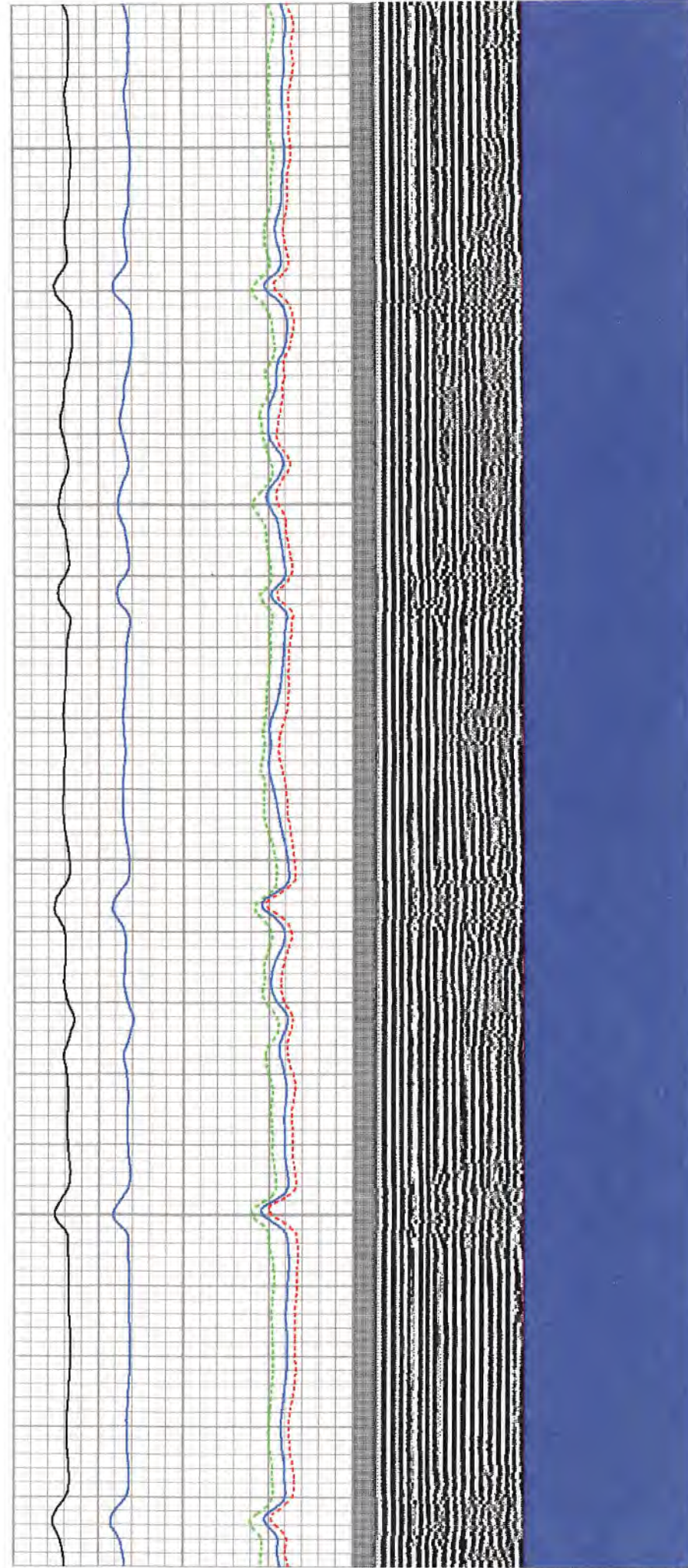
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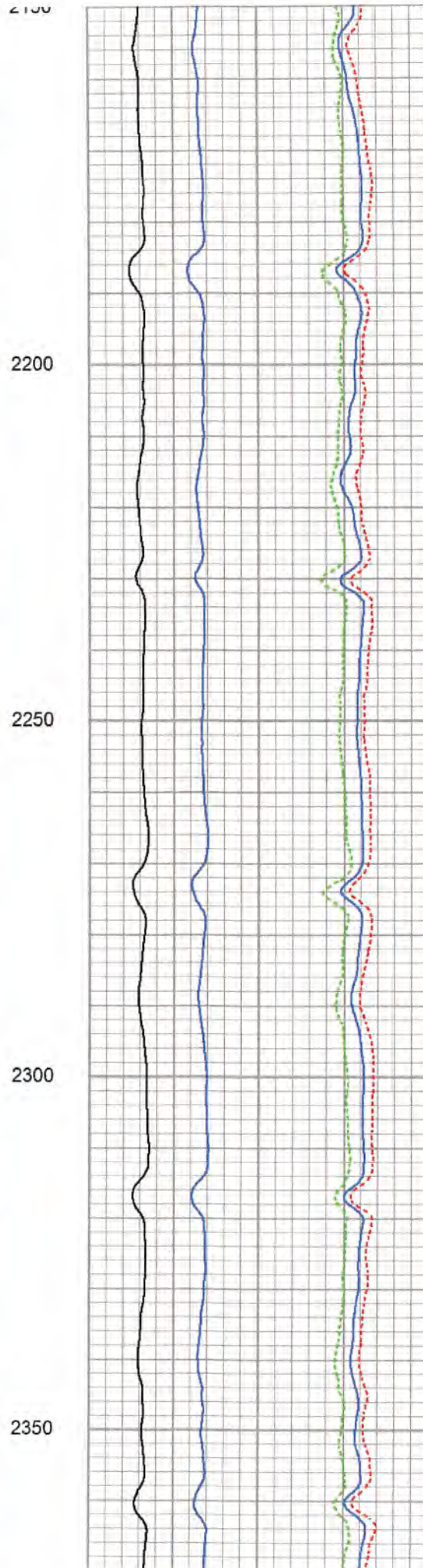
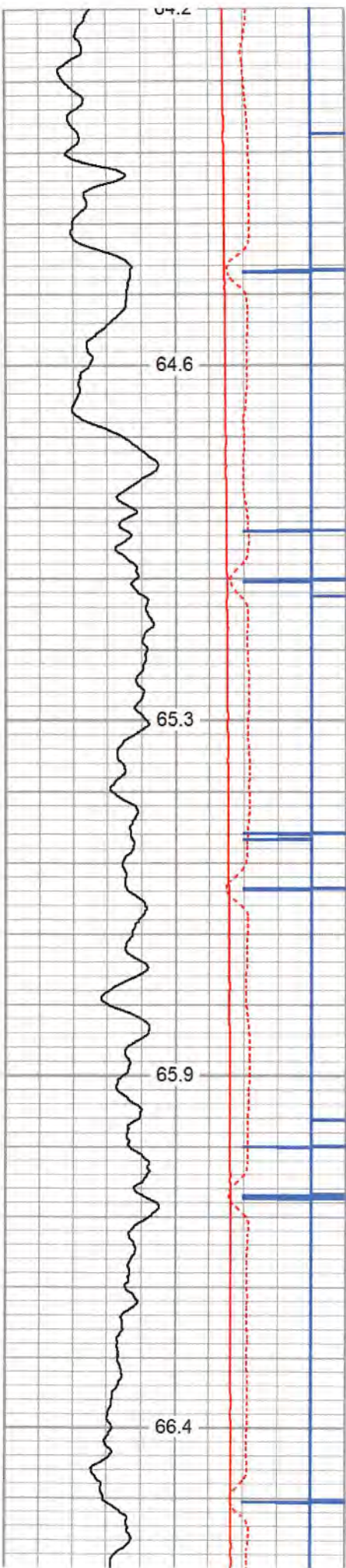
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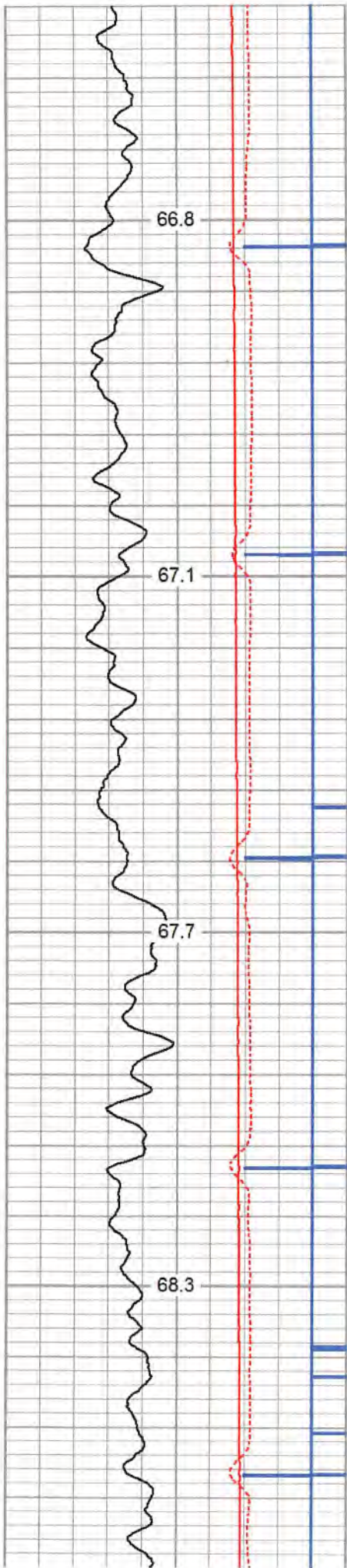




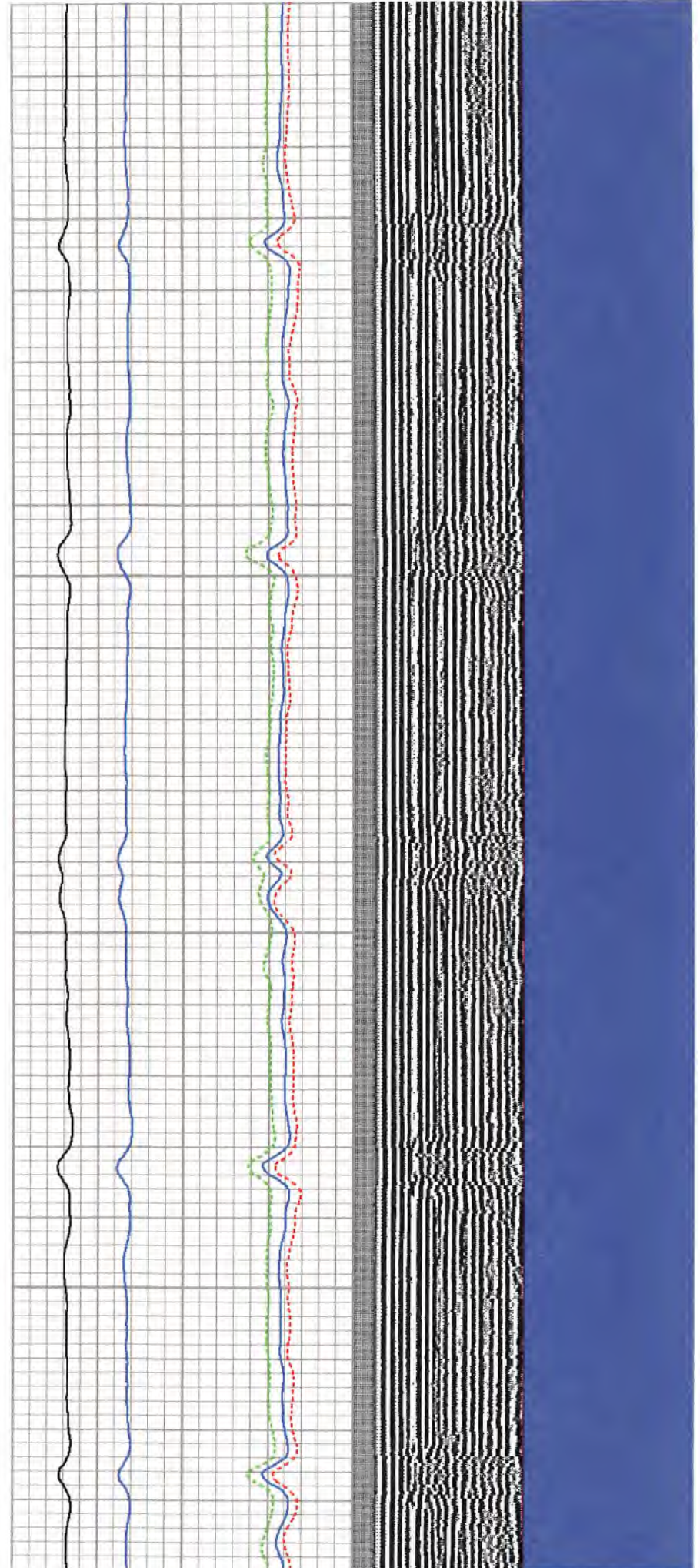
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2000
2050
2100
2150

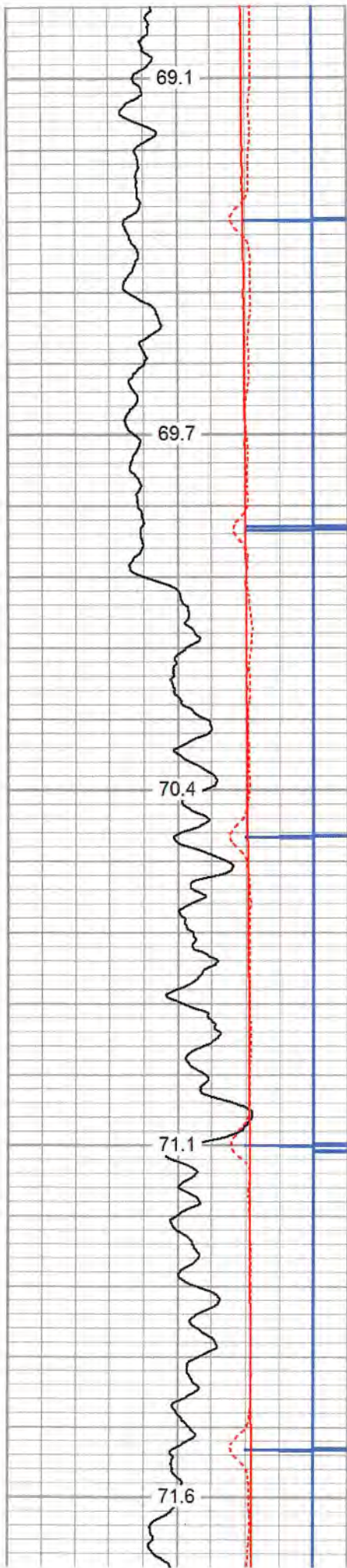






2400
2450
2500
2550





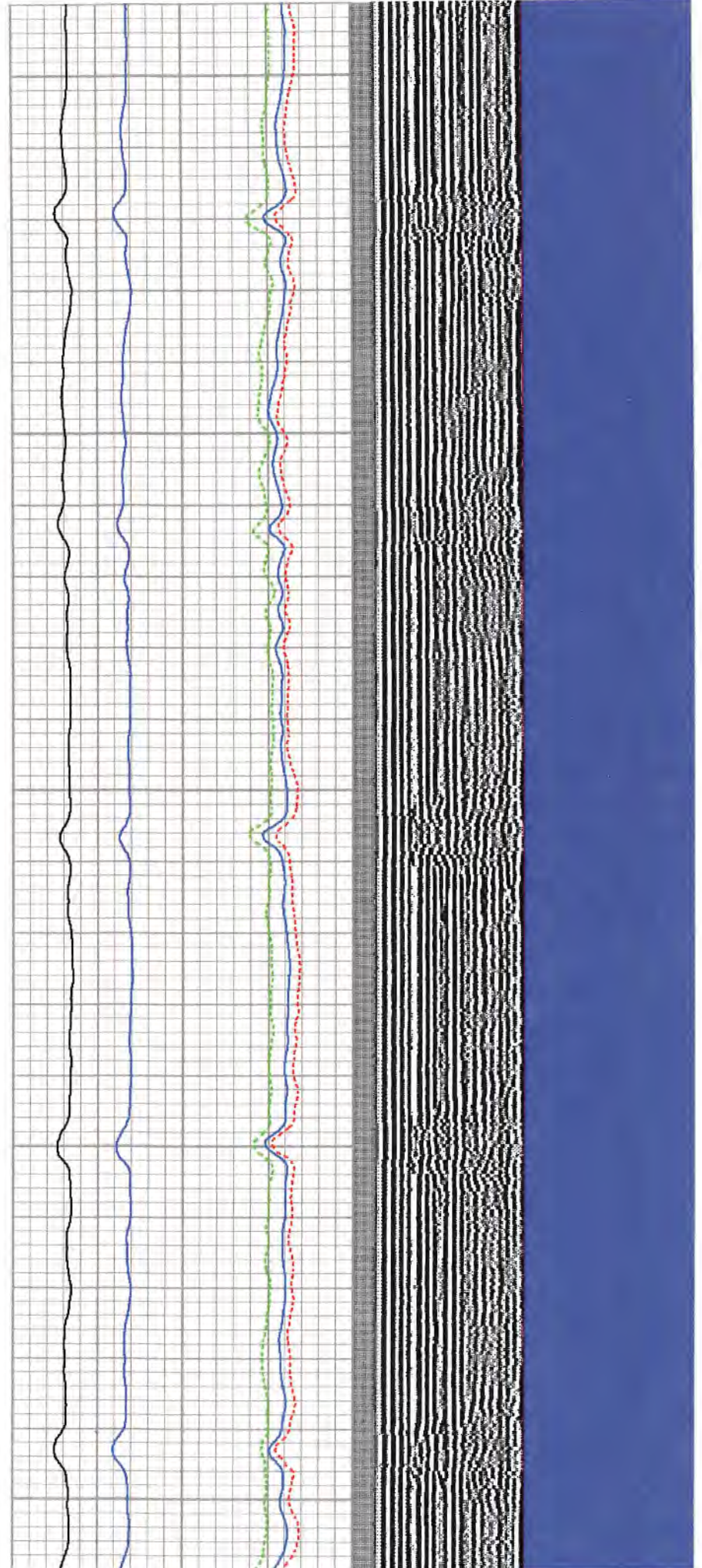
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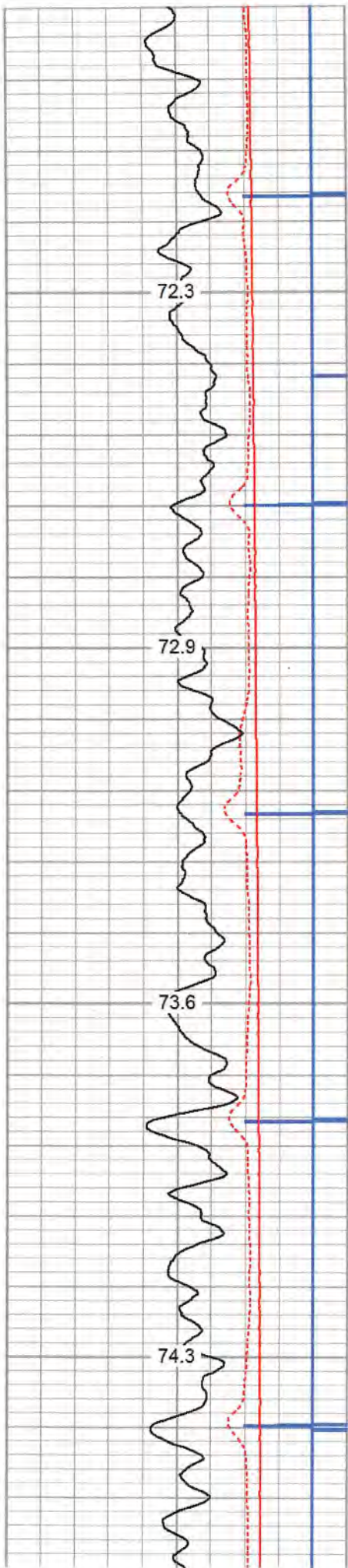
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2700

2750

2800



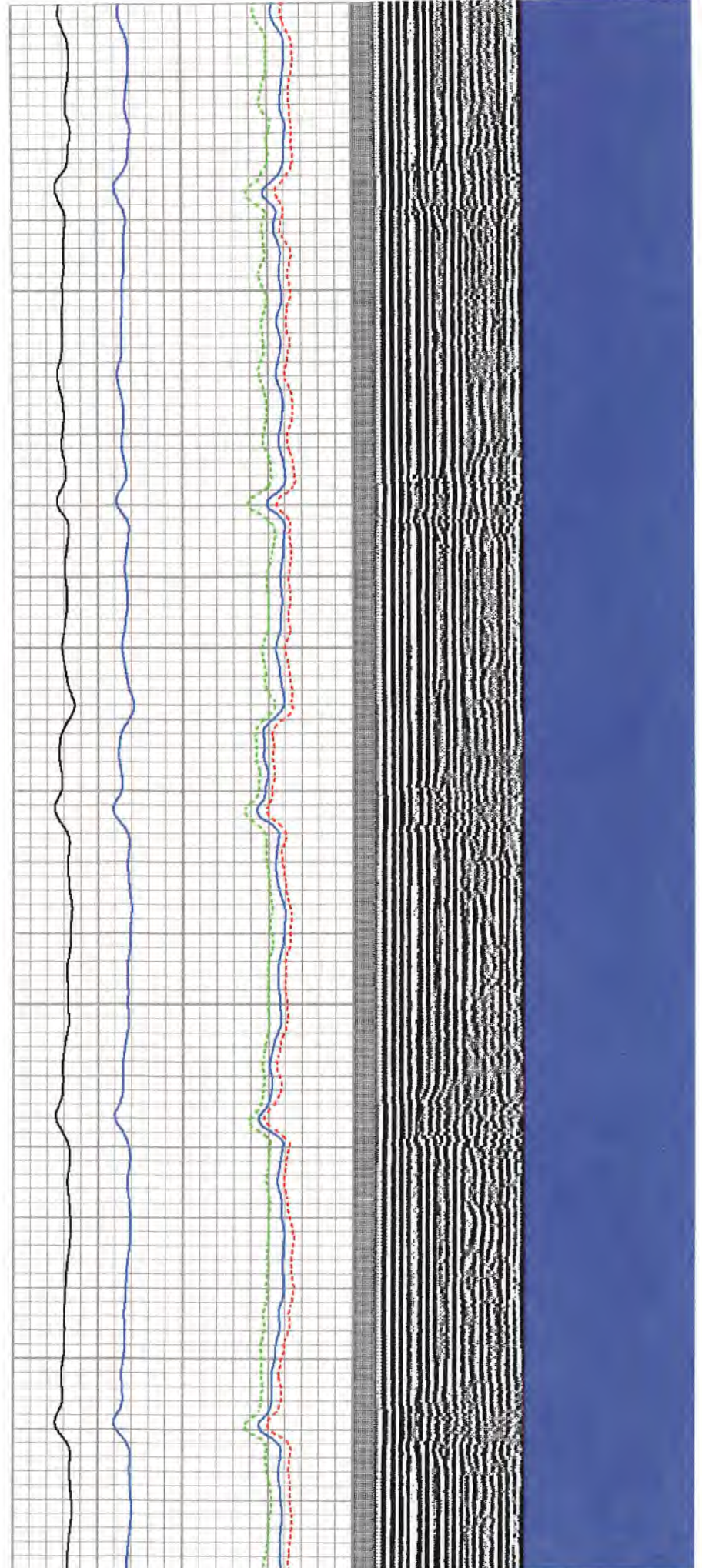


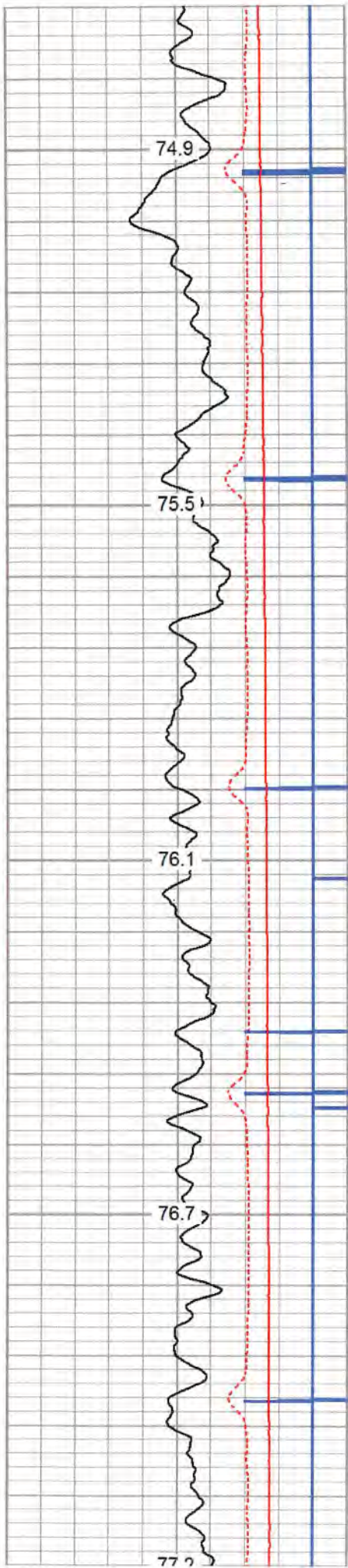
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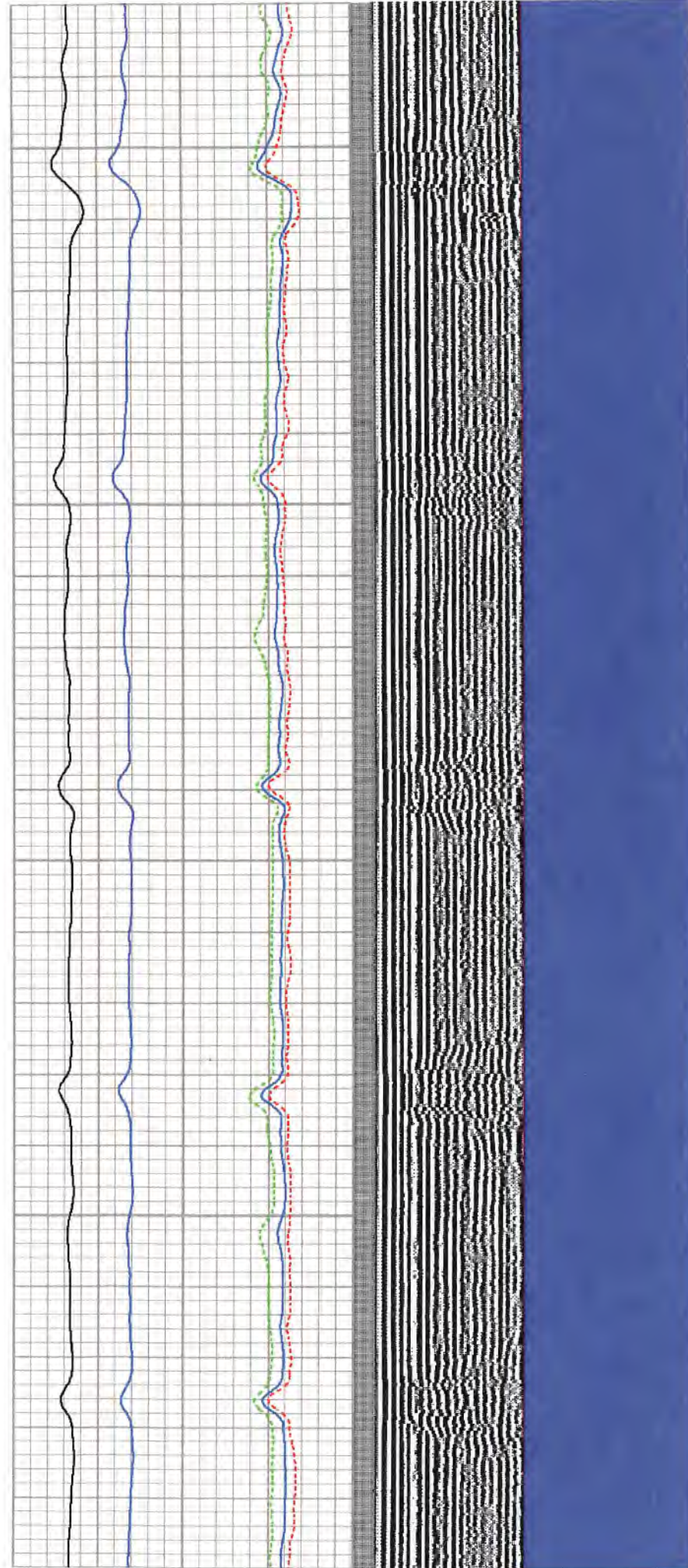
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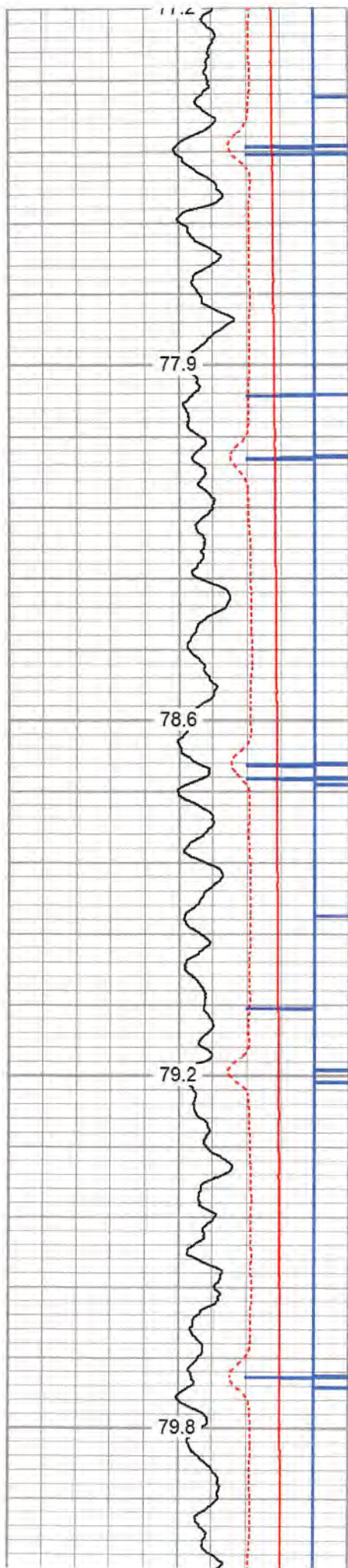
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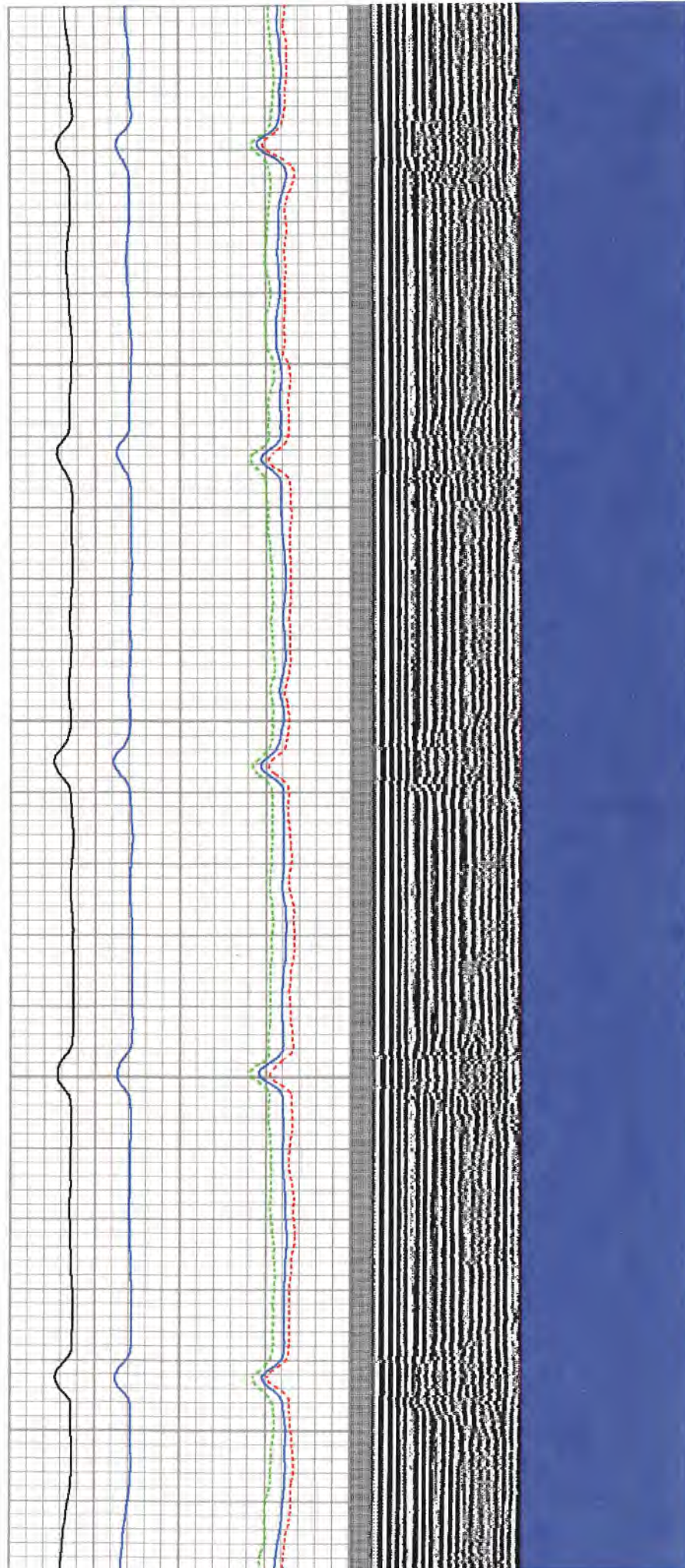


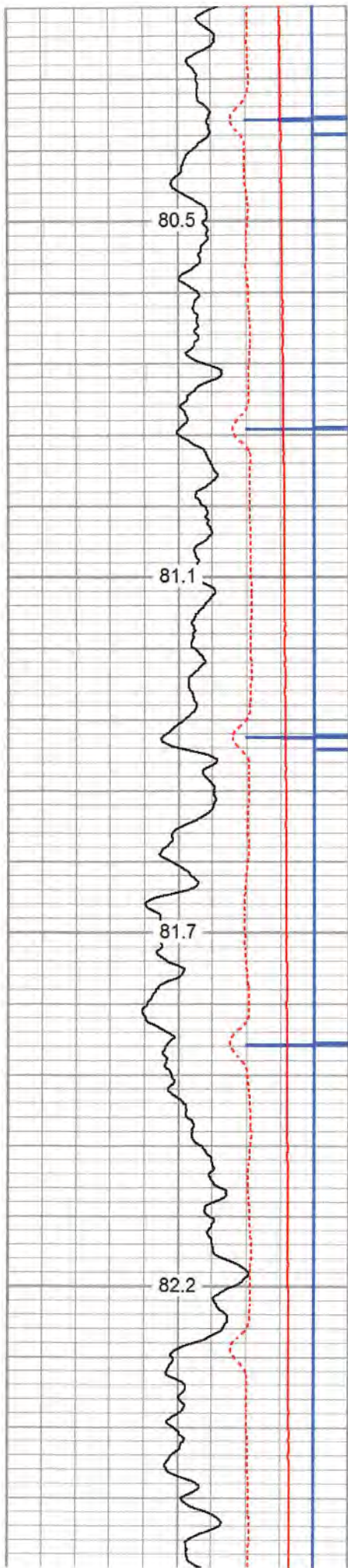
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3100
3150
3200
3250





3200
3300
3350
3400
3450



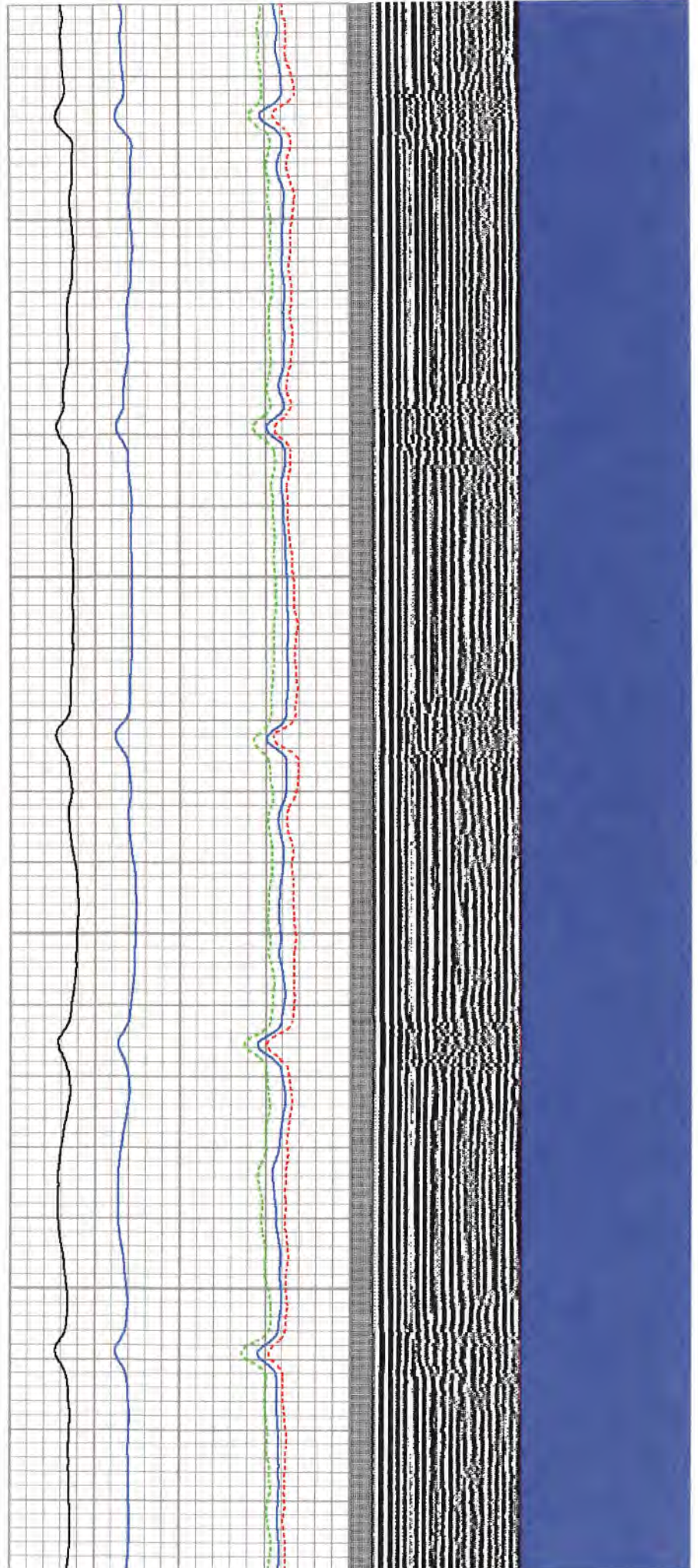


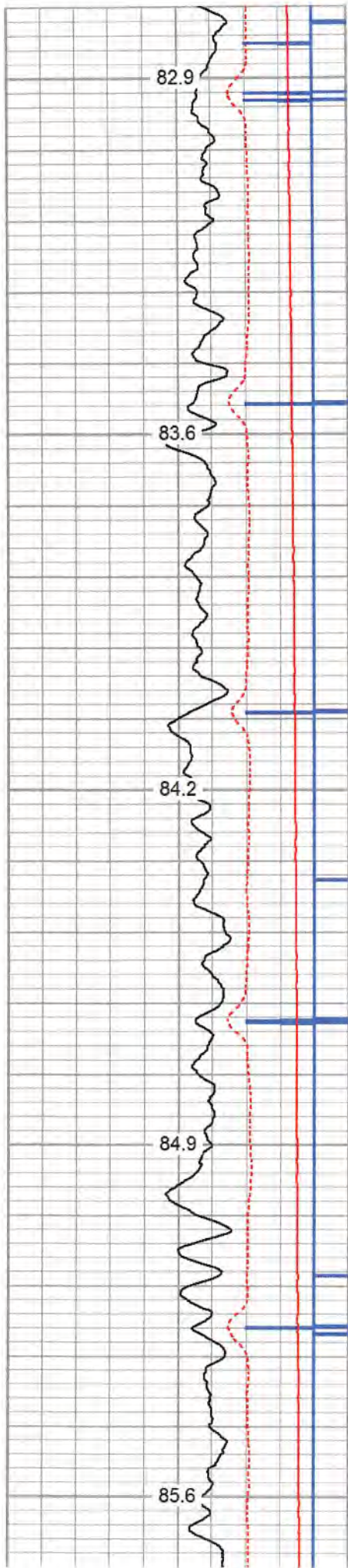
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3550

3600

3650





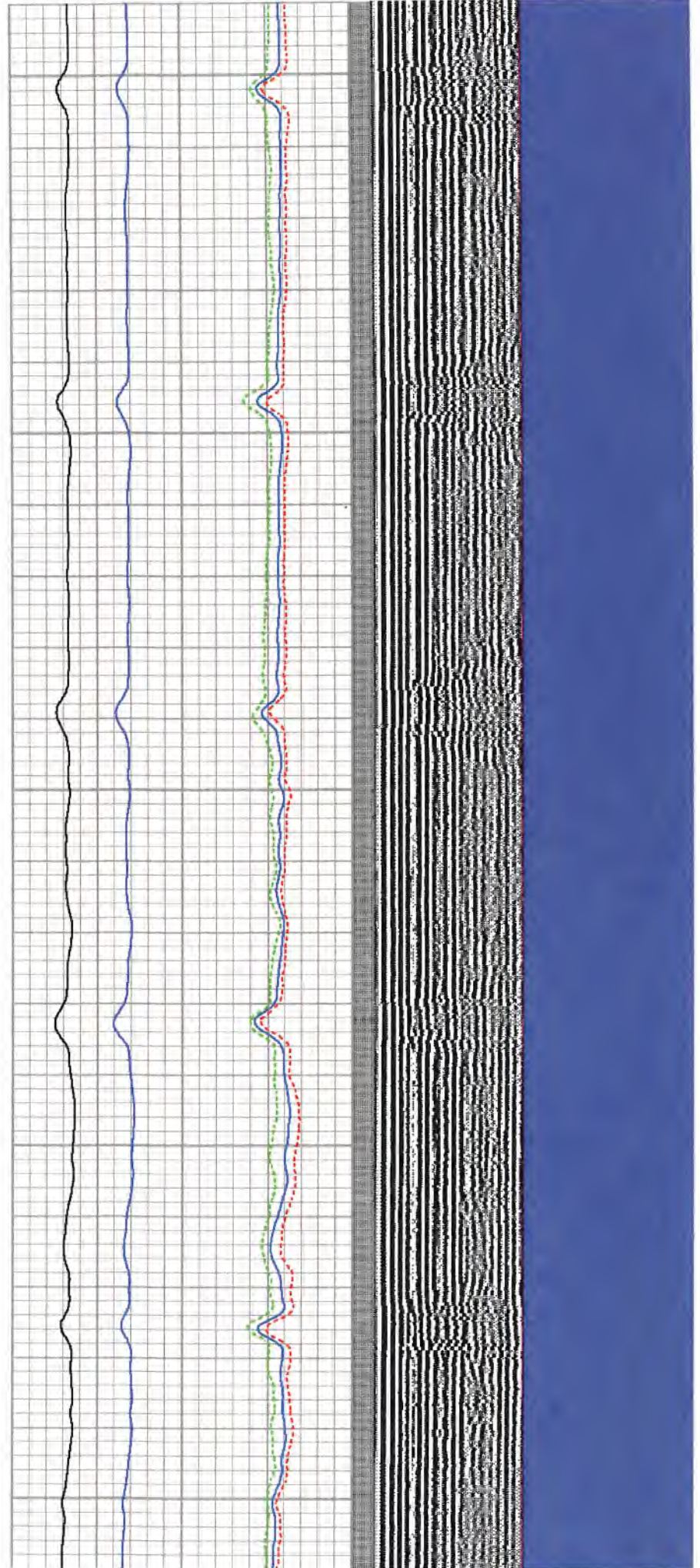
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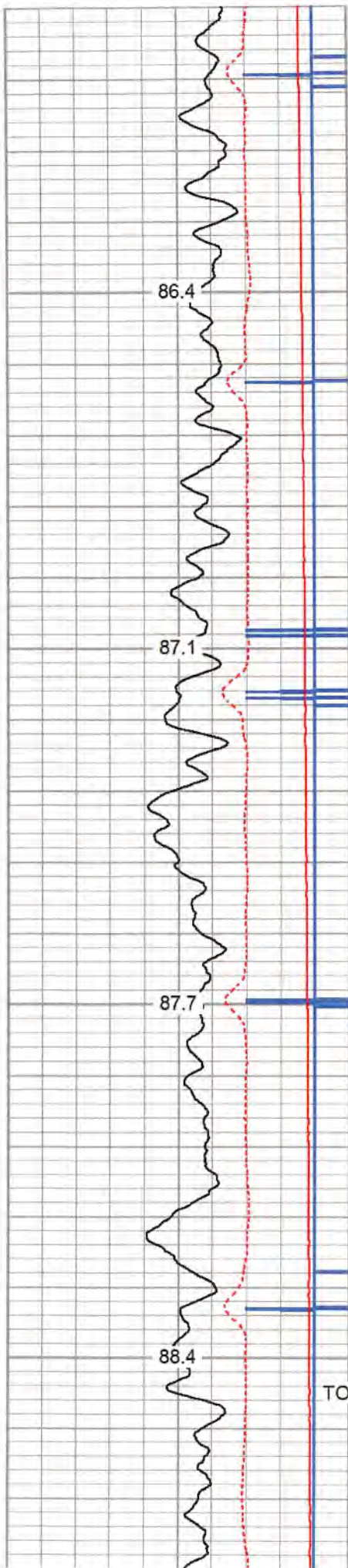
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3850

3900





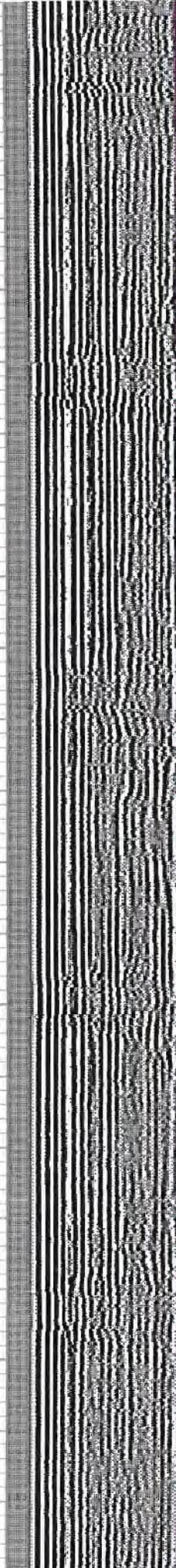
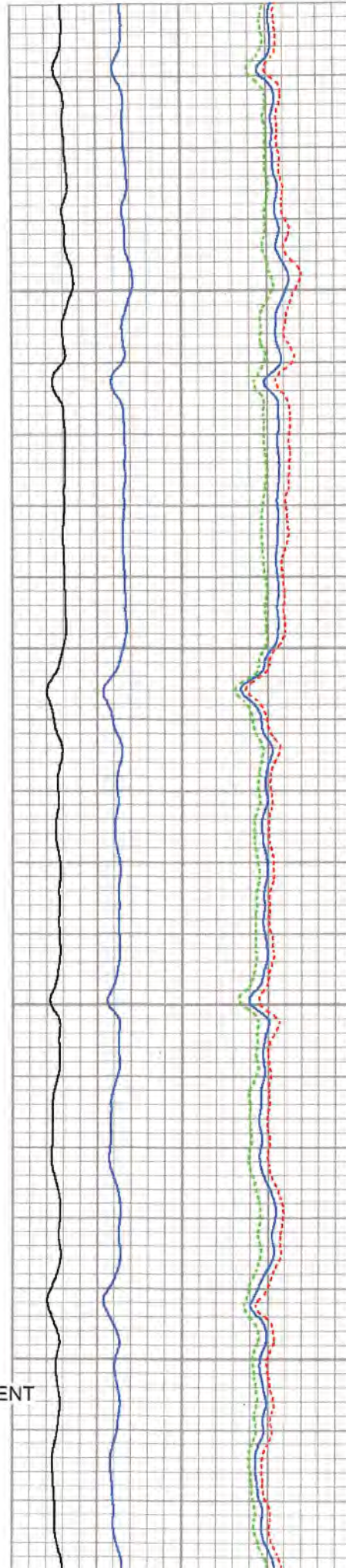
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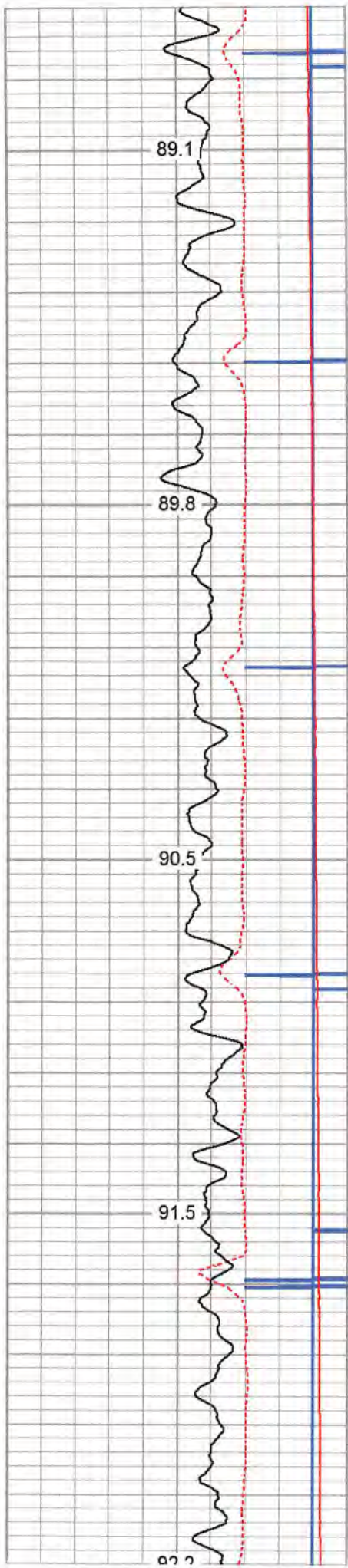
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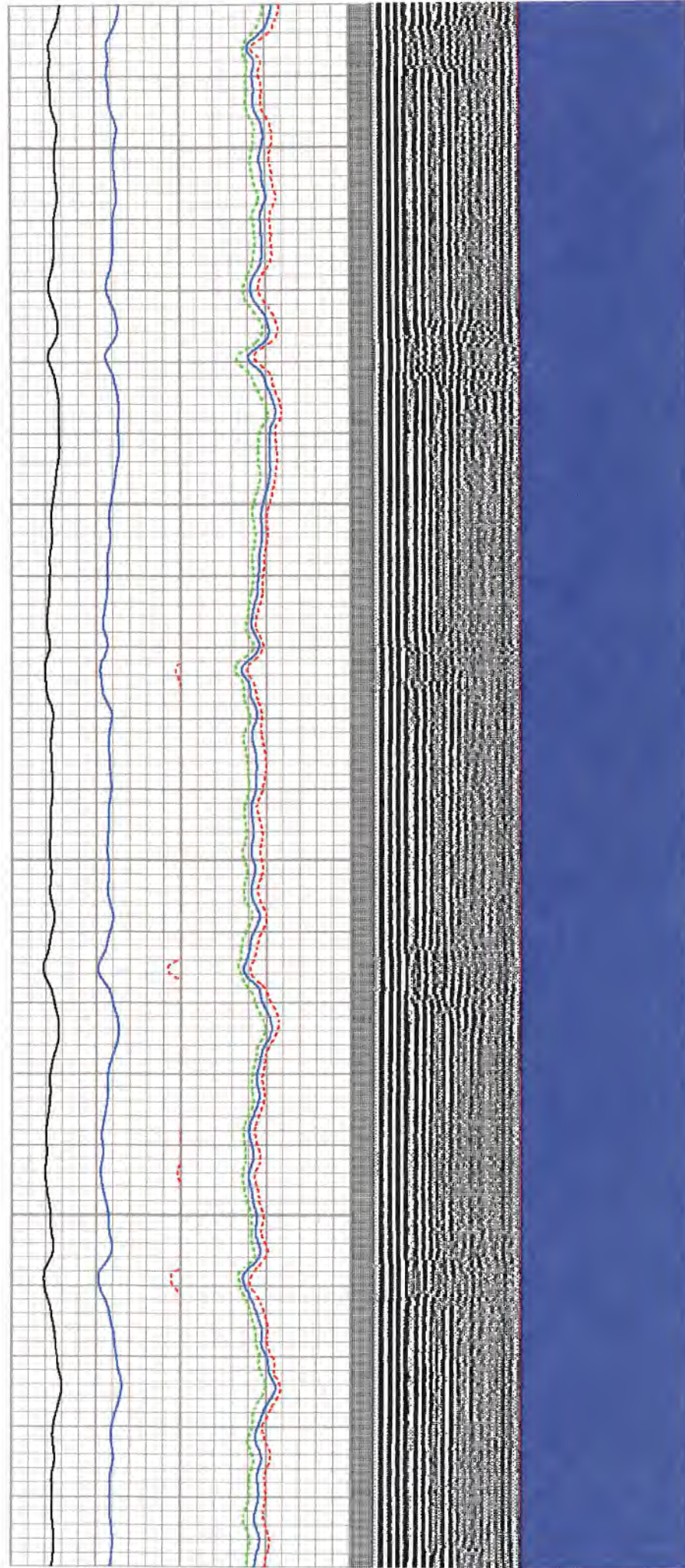
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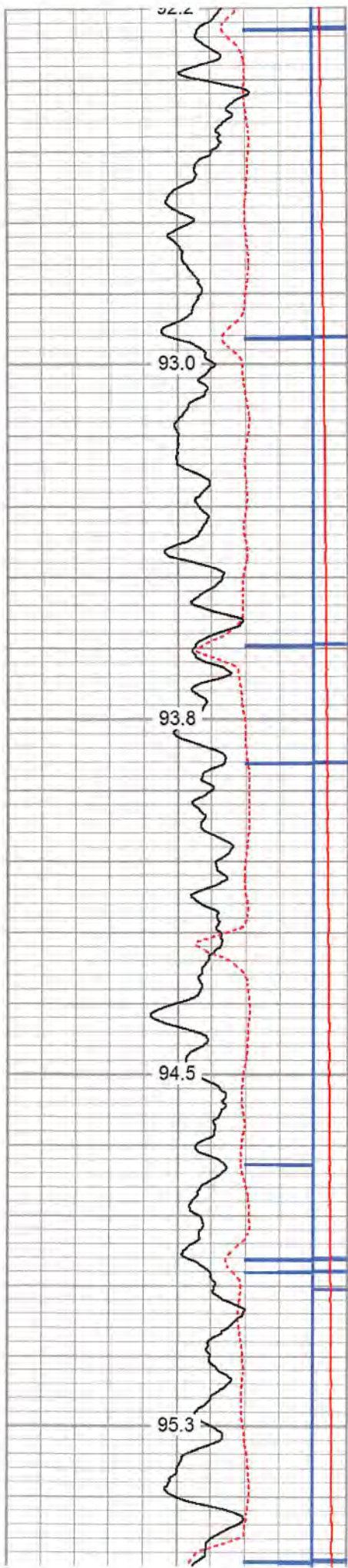
TOP OF CEMENT



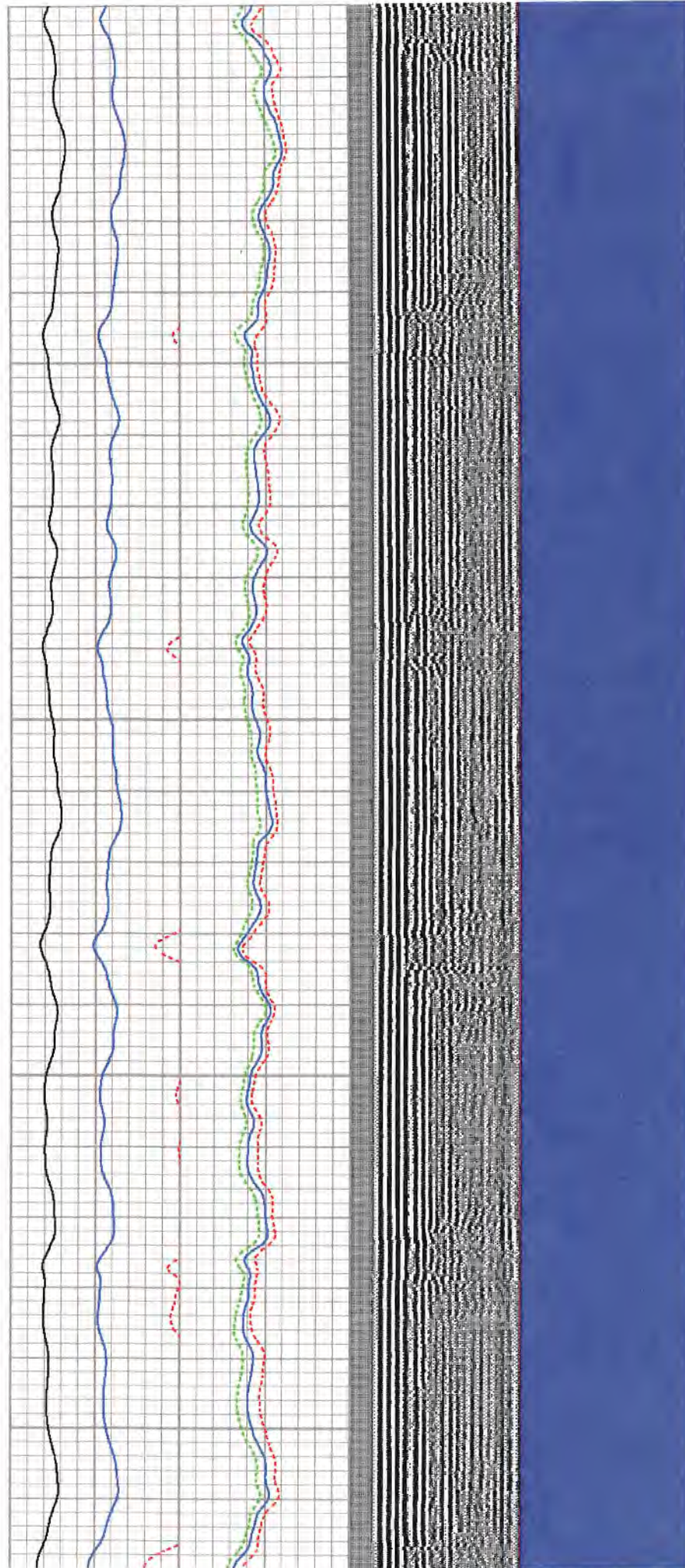


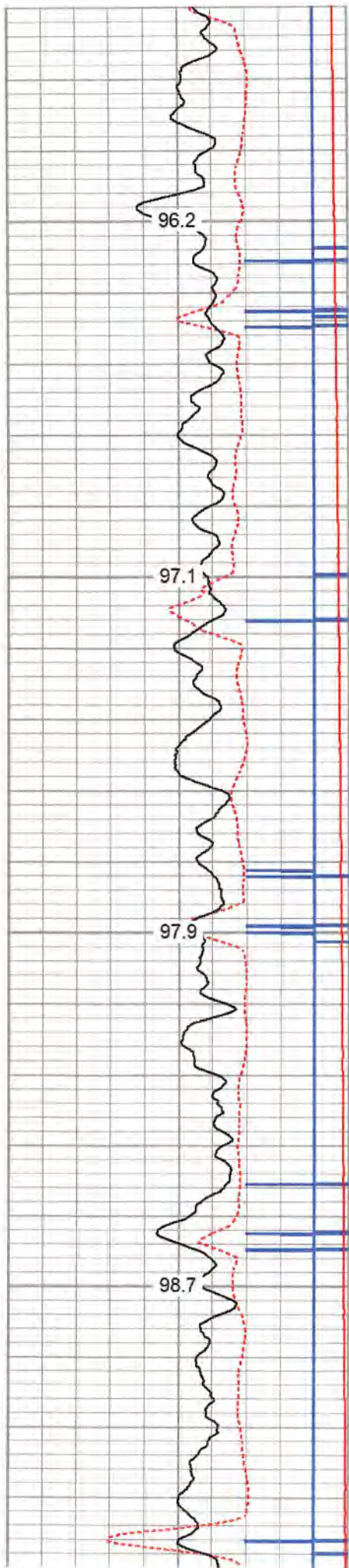
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4200
4250
4300
4350





4300
4400
4450
4500
4550



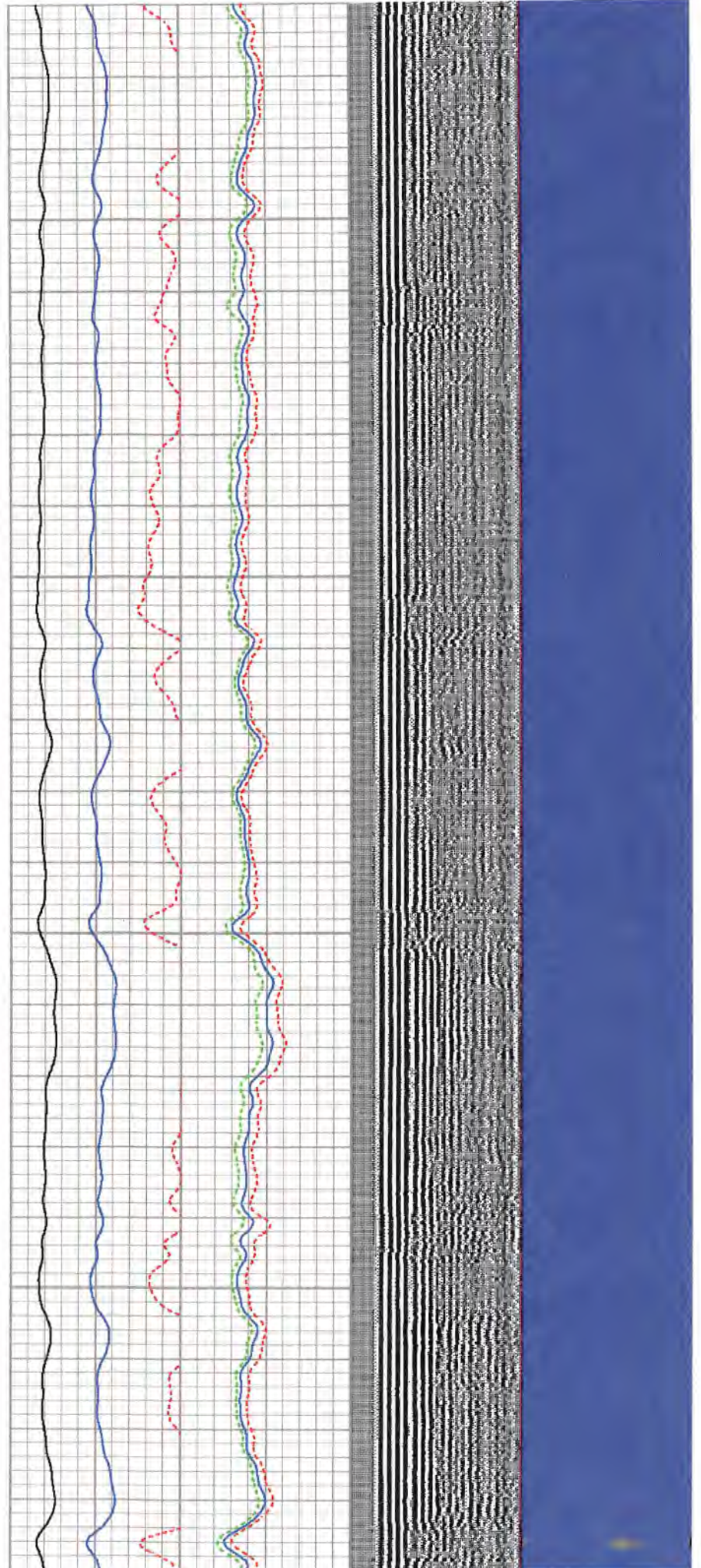


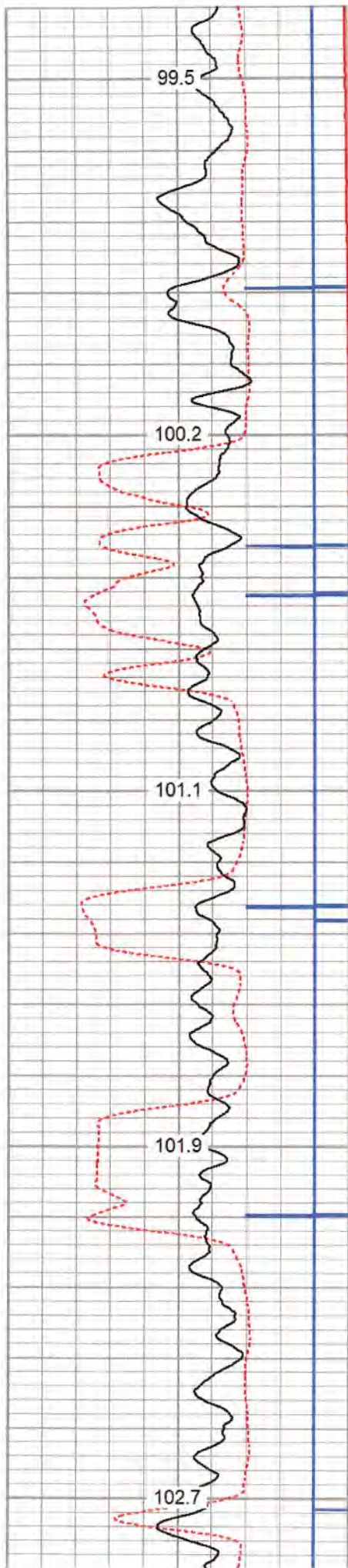
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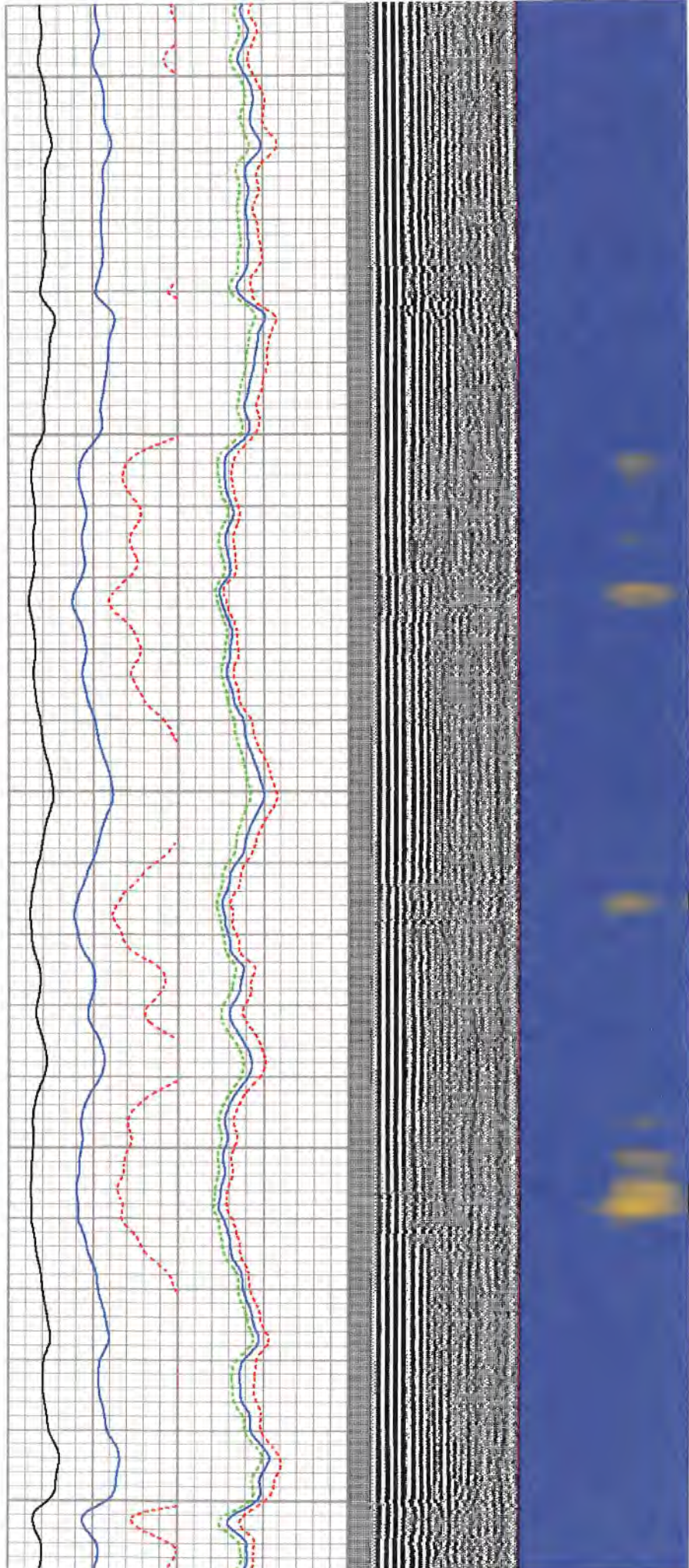
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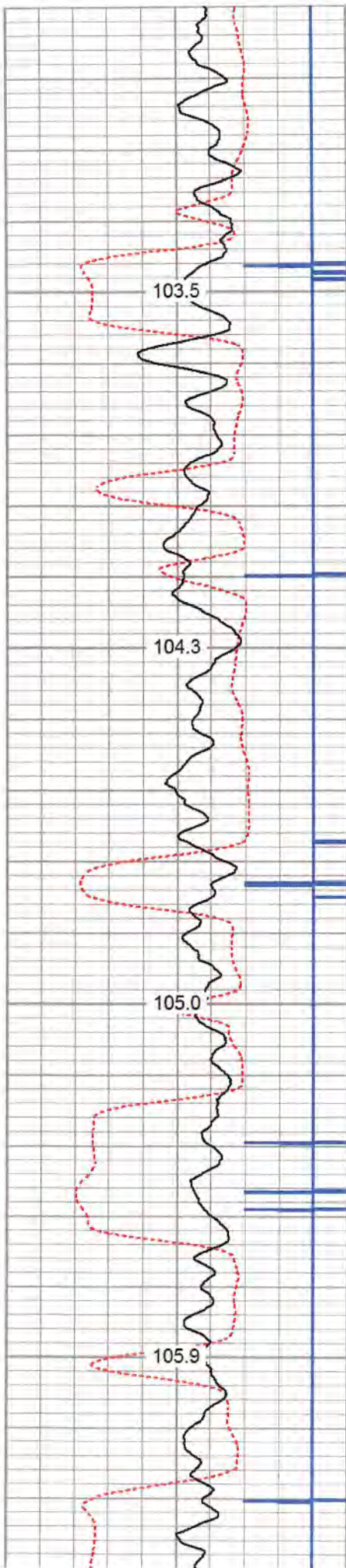
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4800
4850
4900
4950
5000



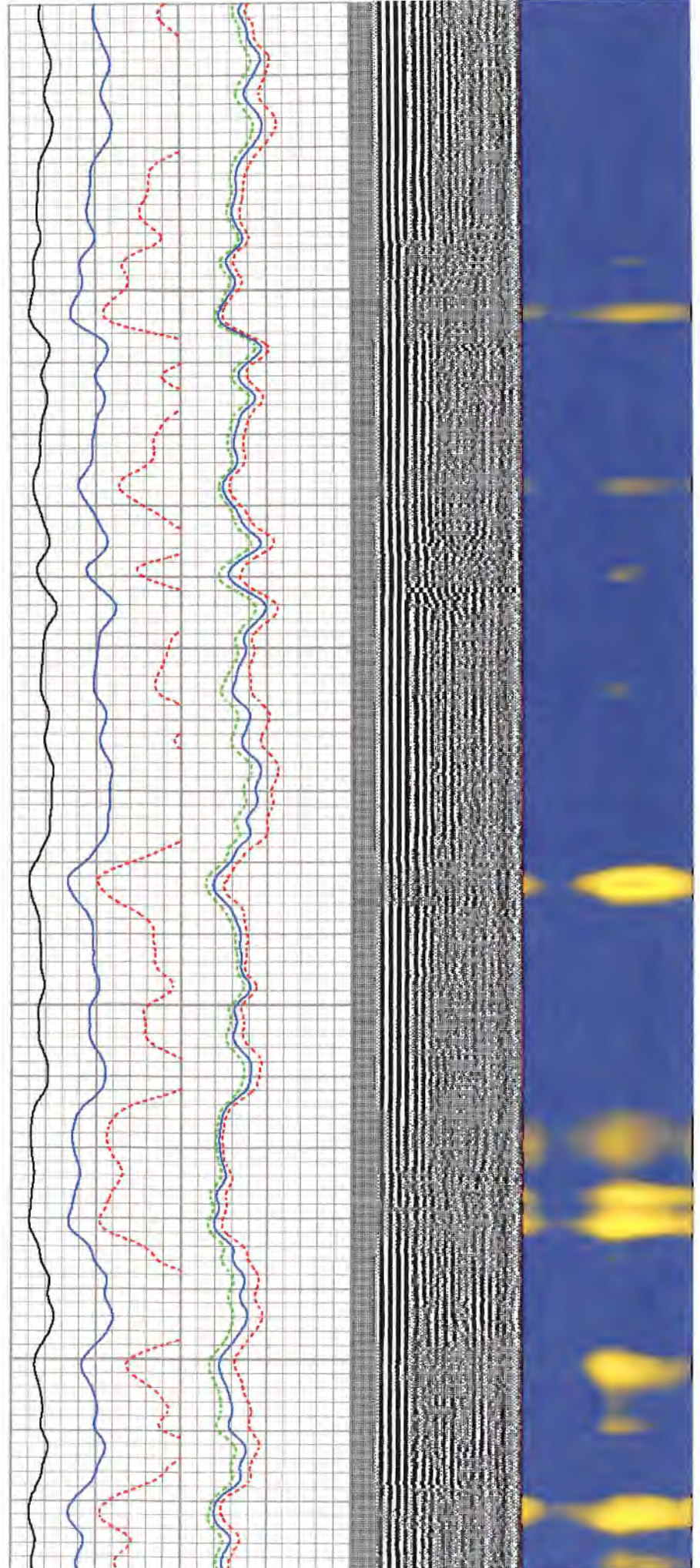


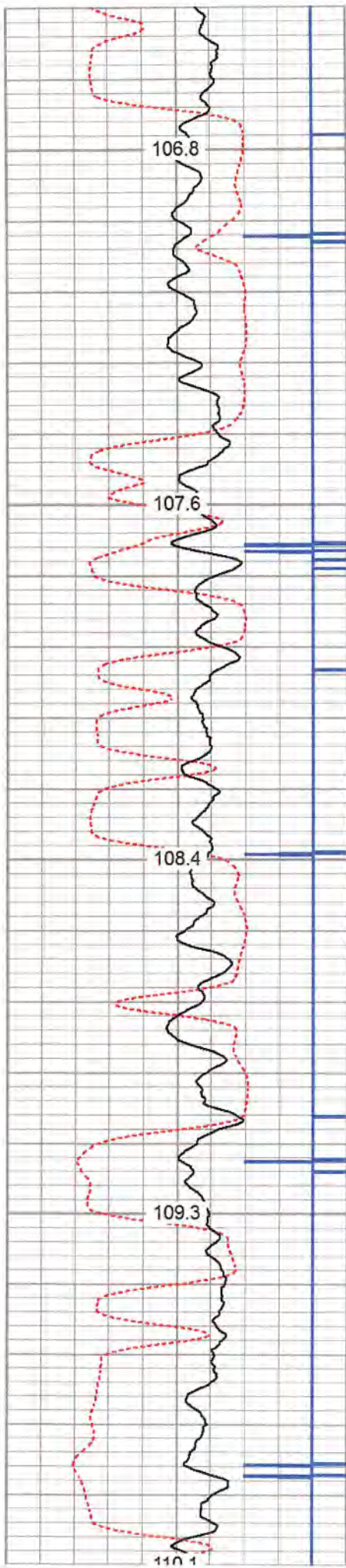
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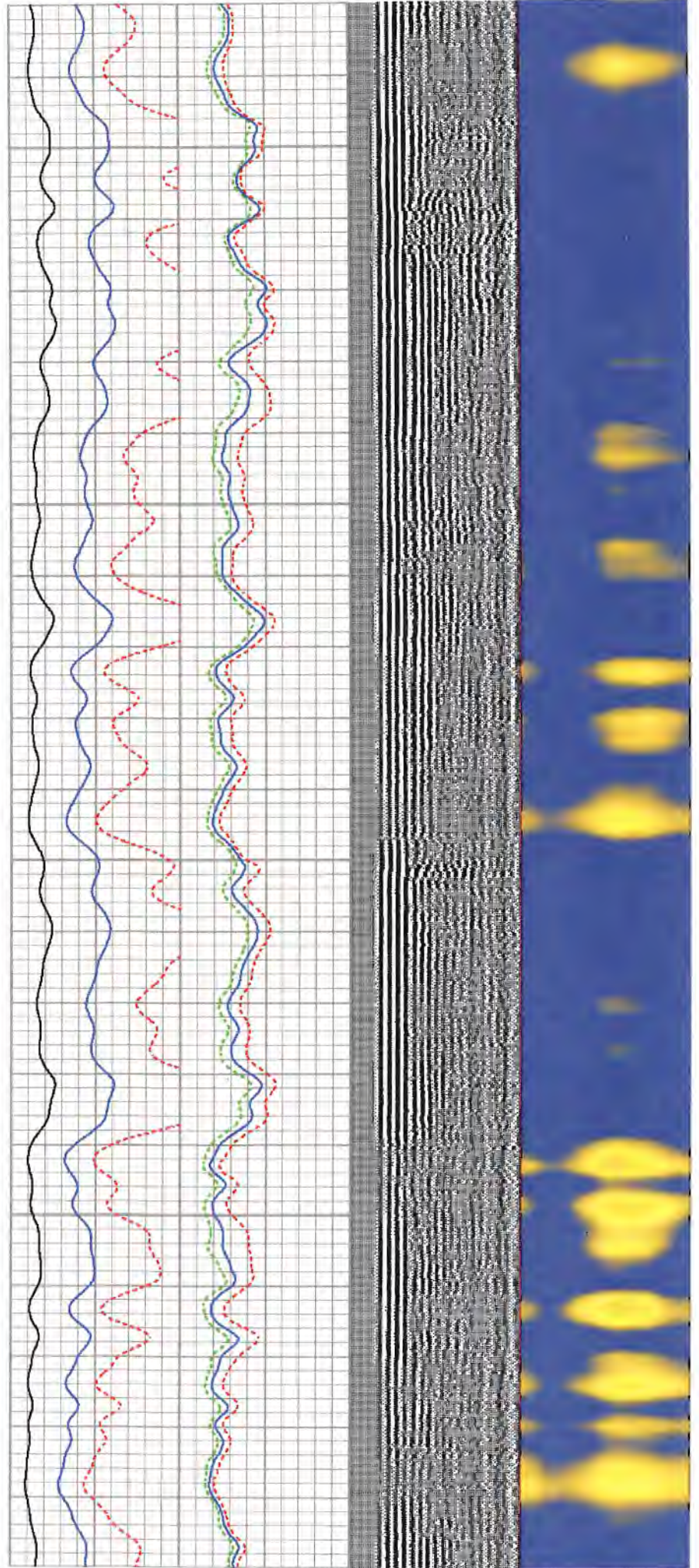
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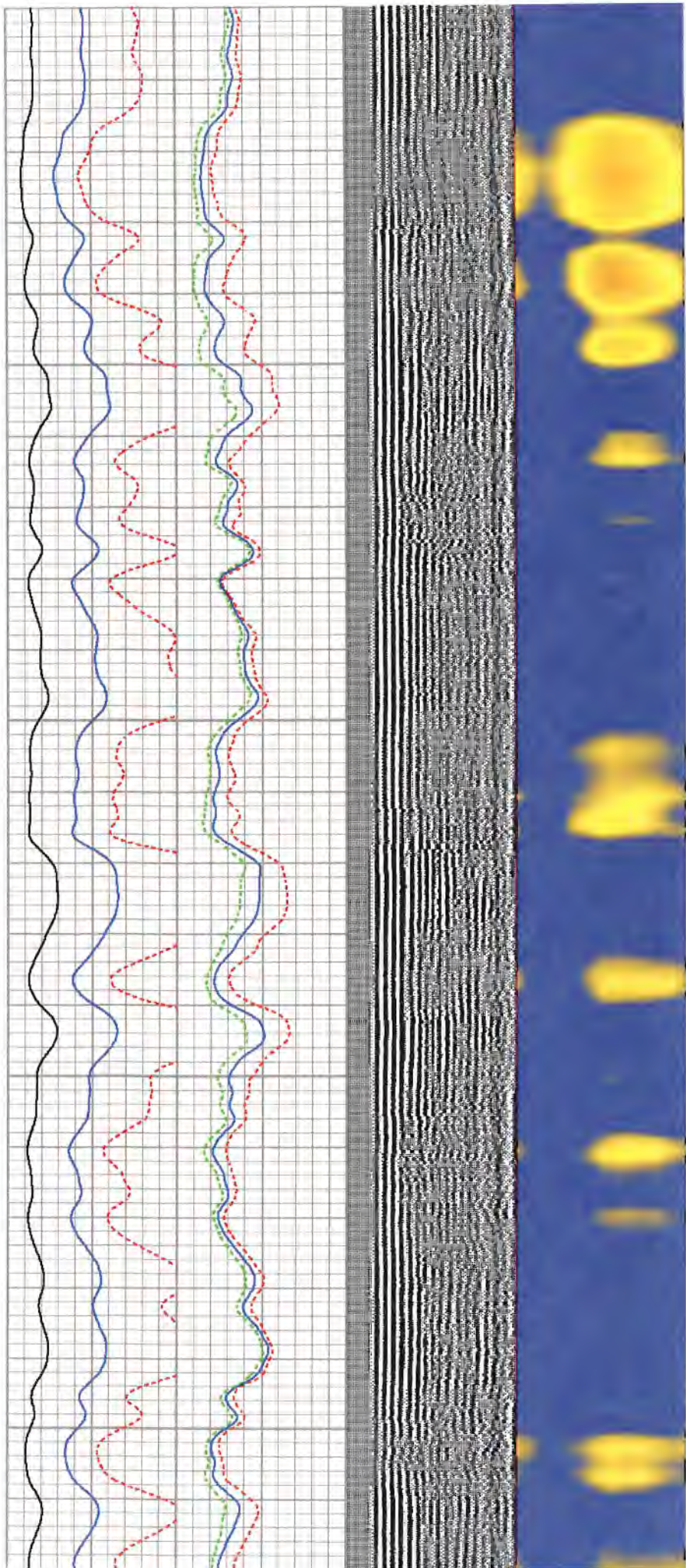


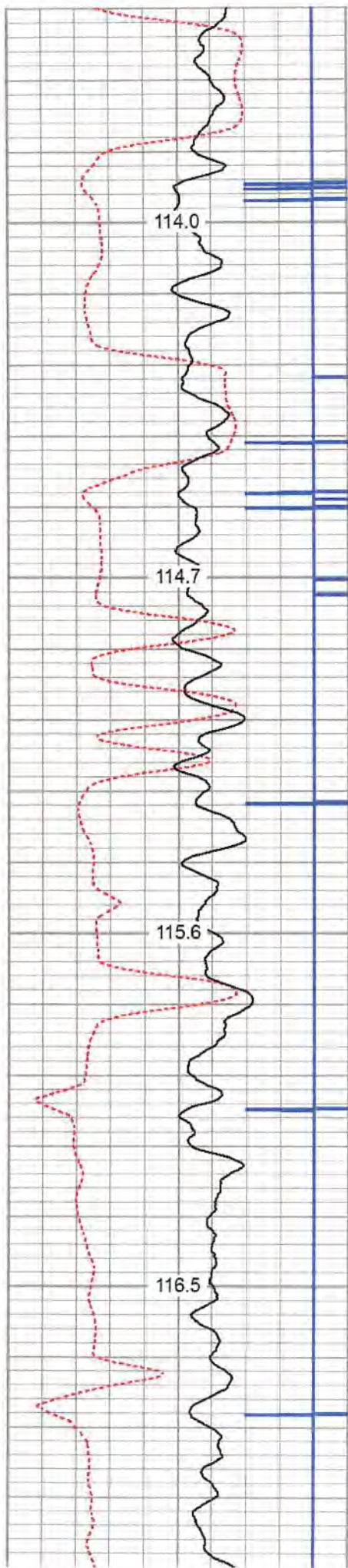
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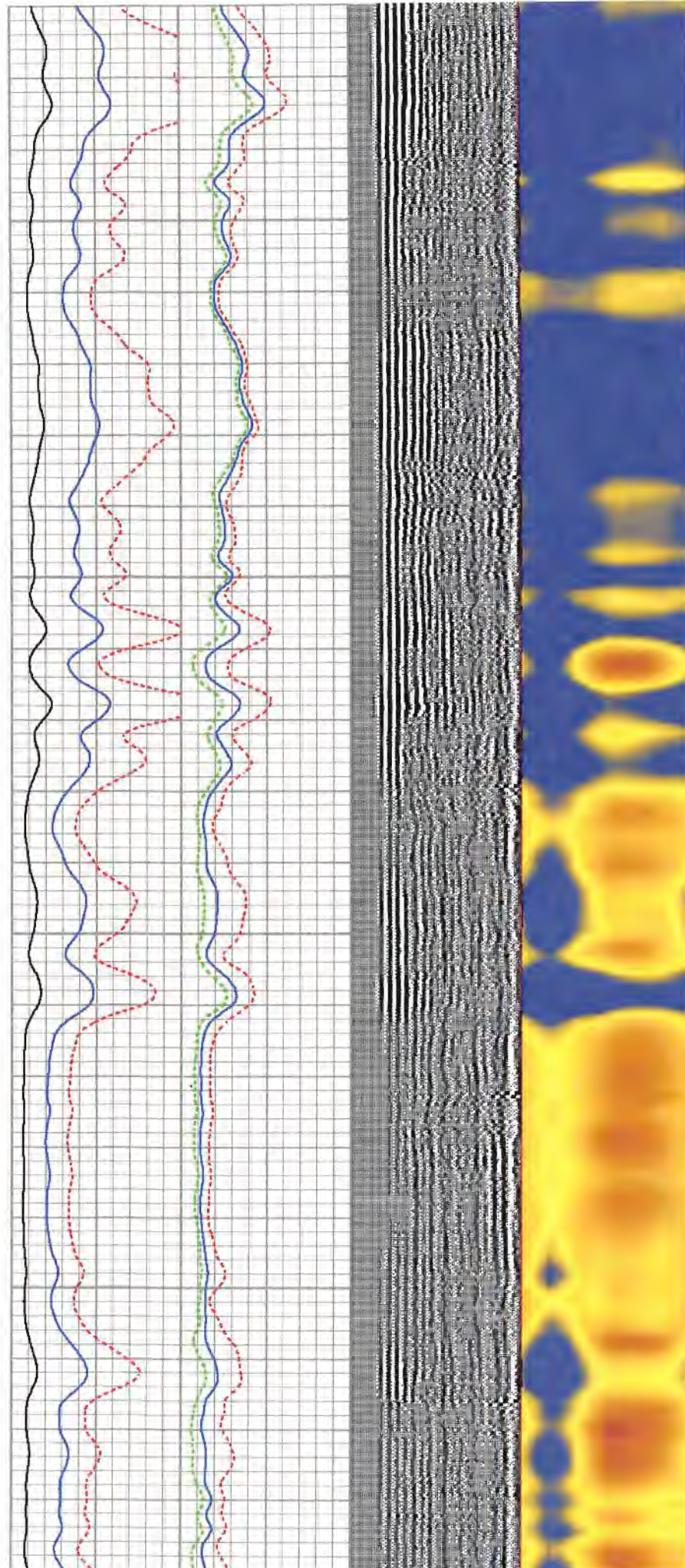


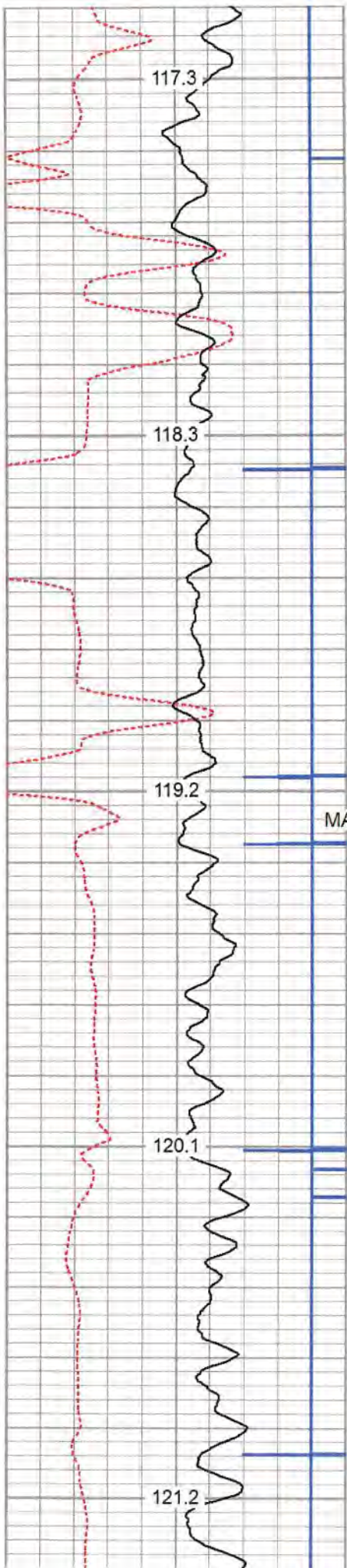
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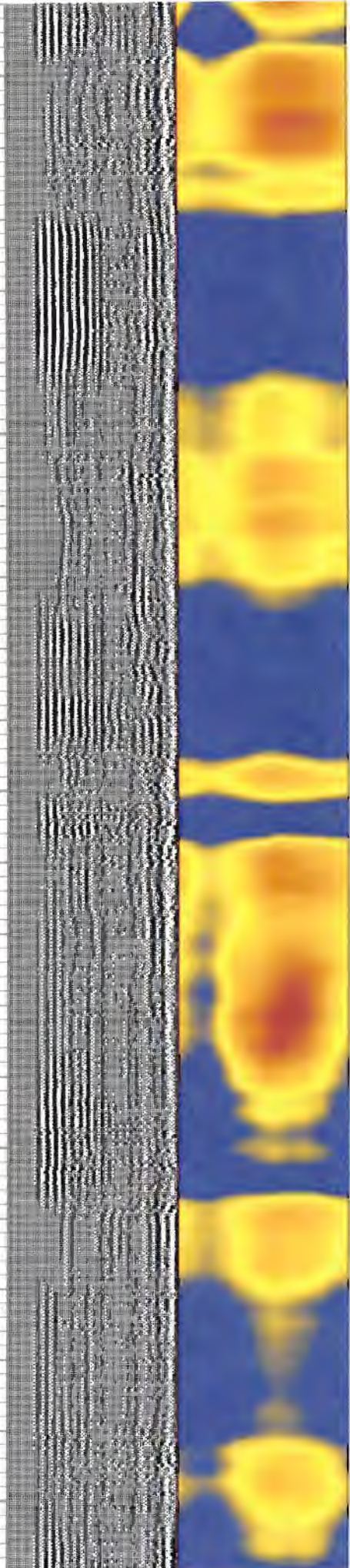
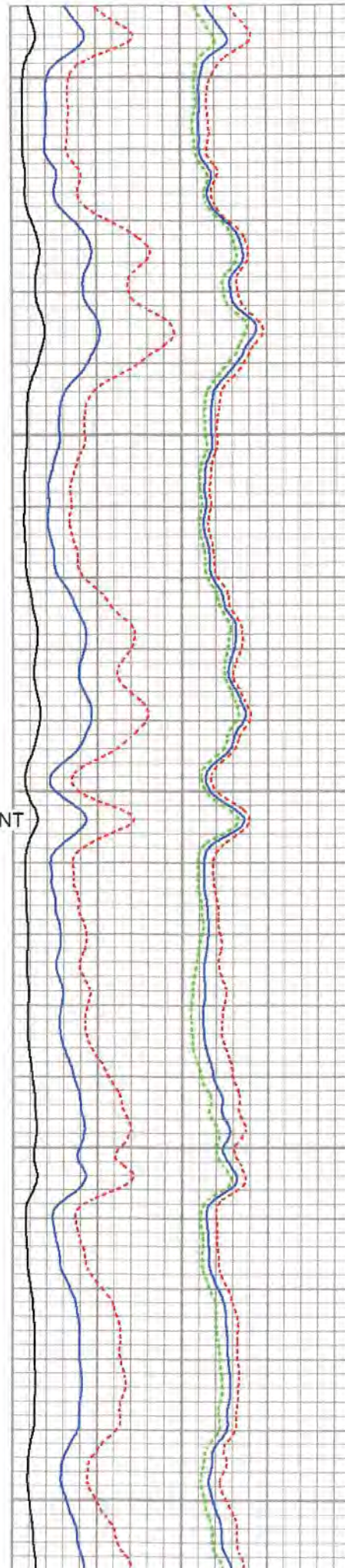
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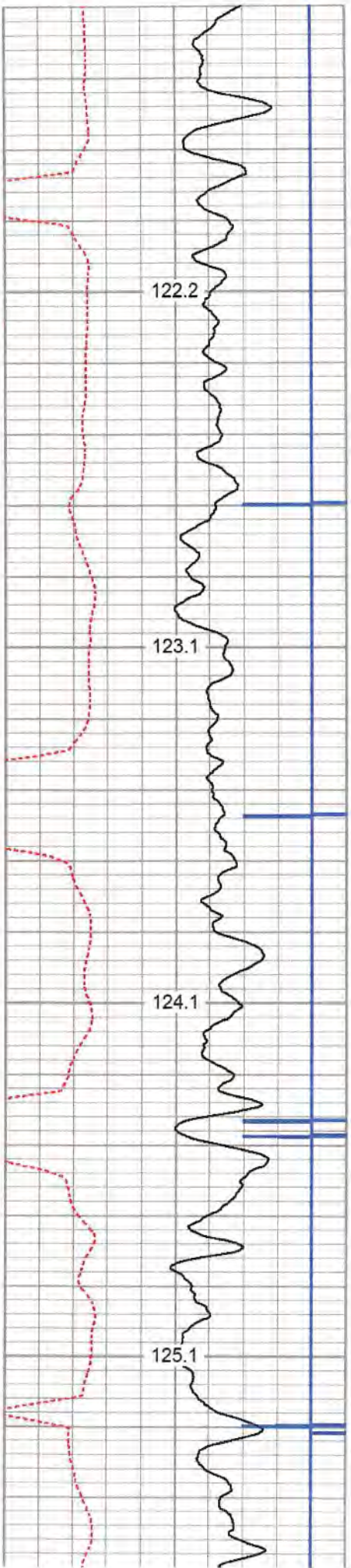




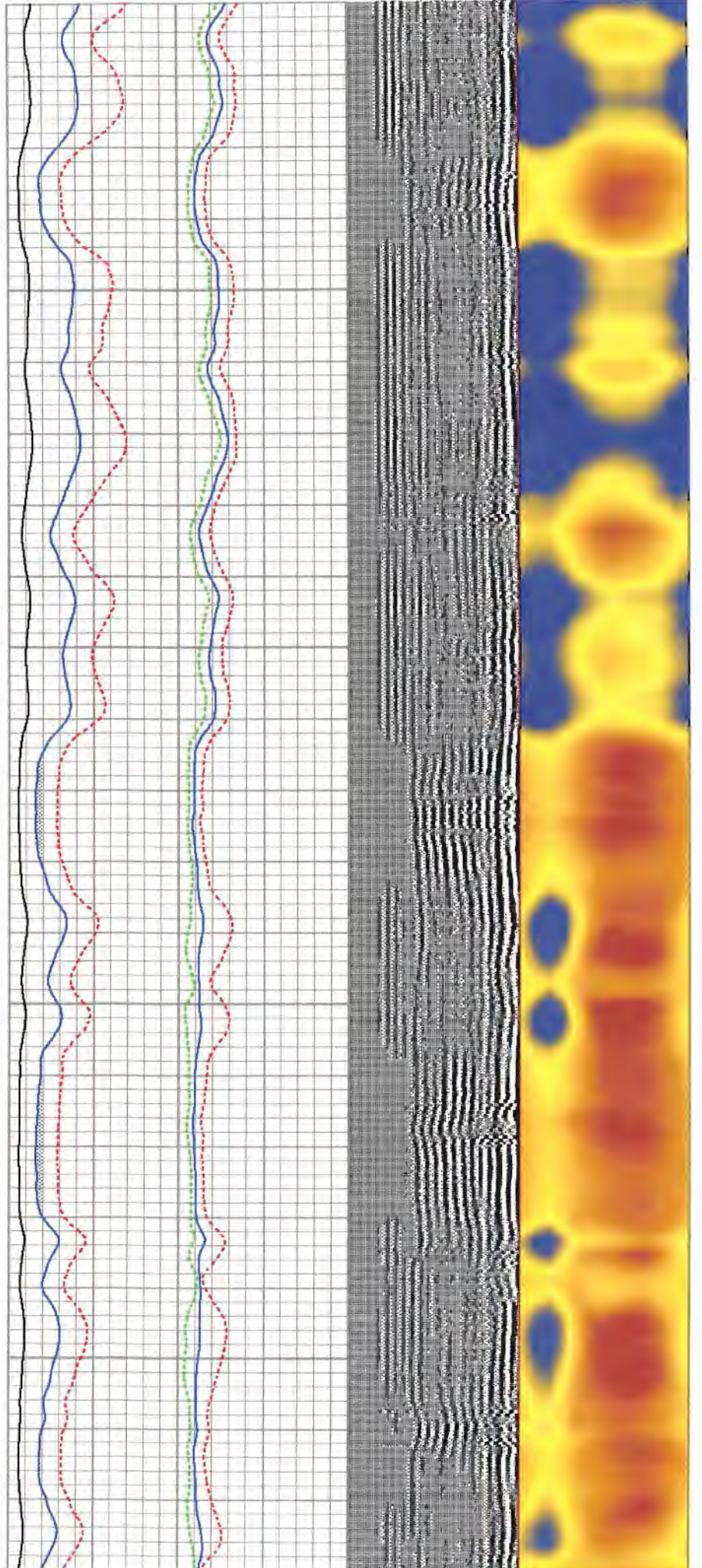
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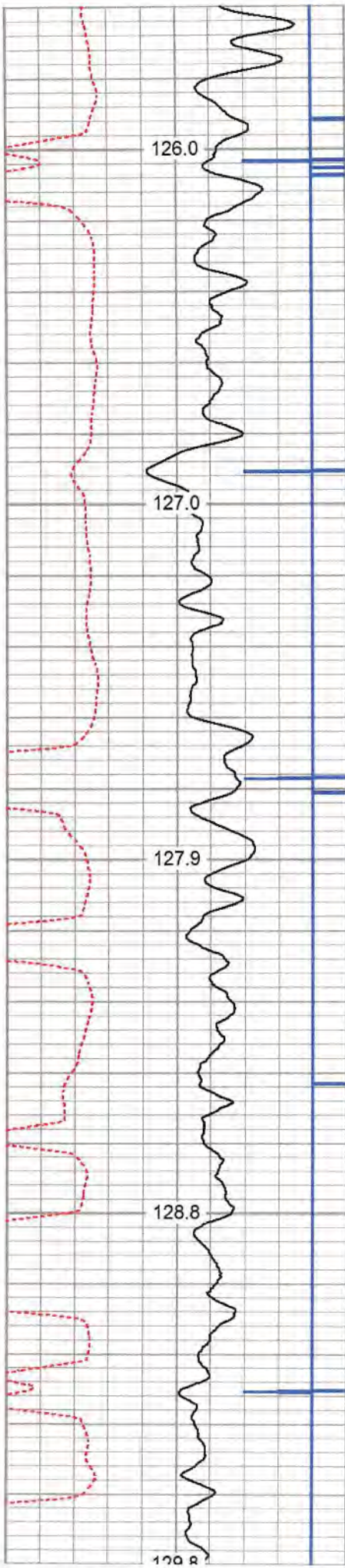
MARKER JOINT



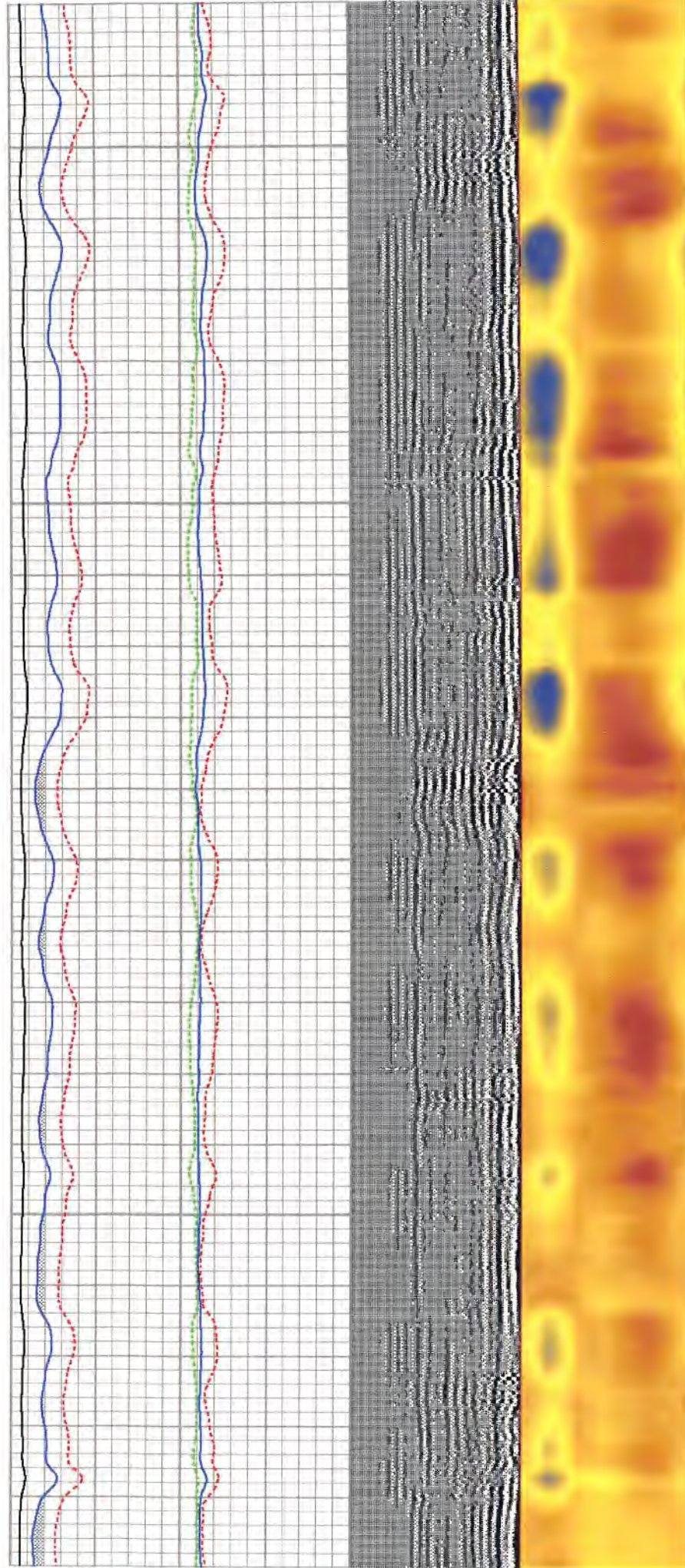


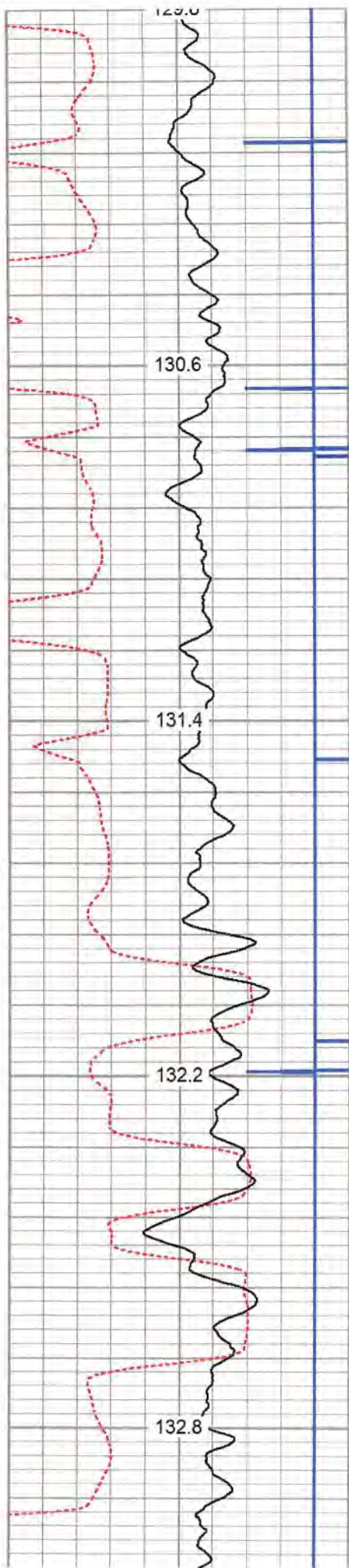
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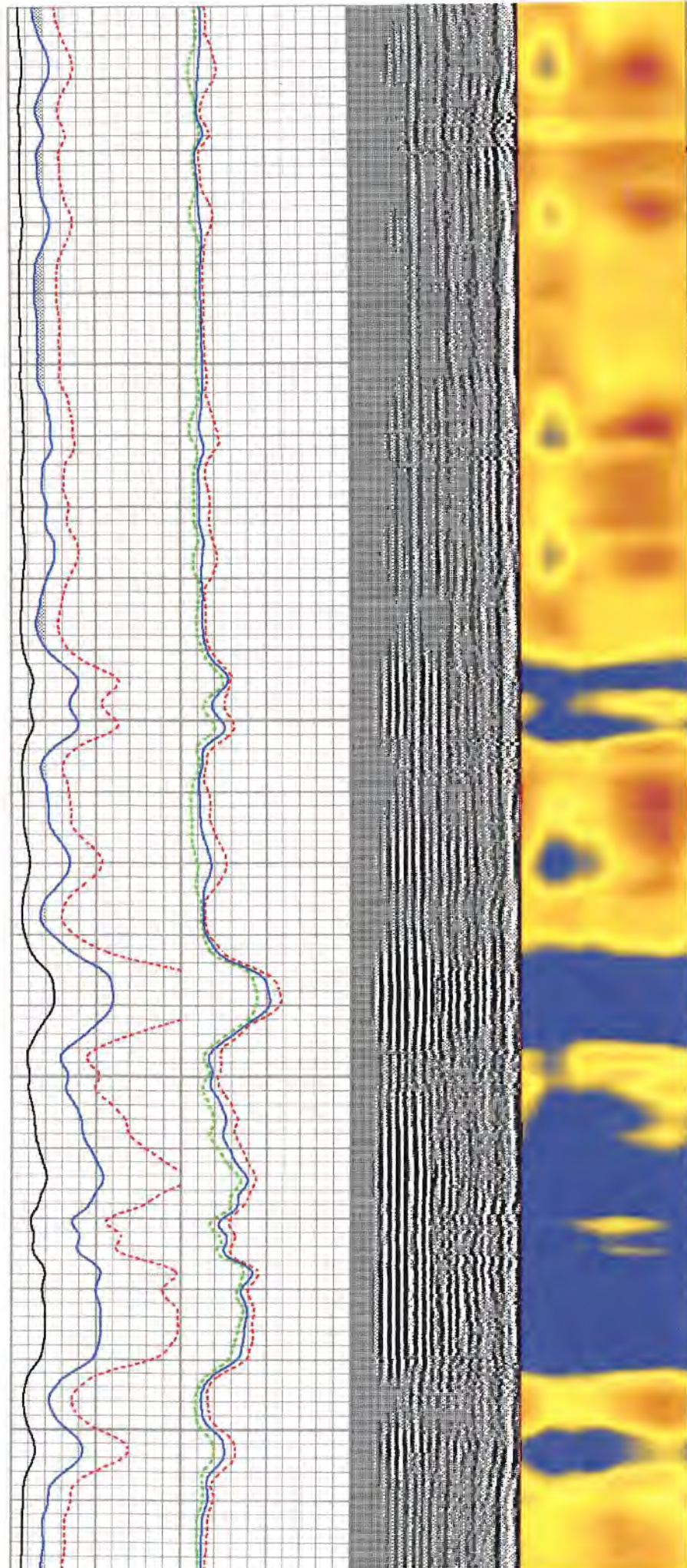


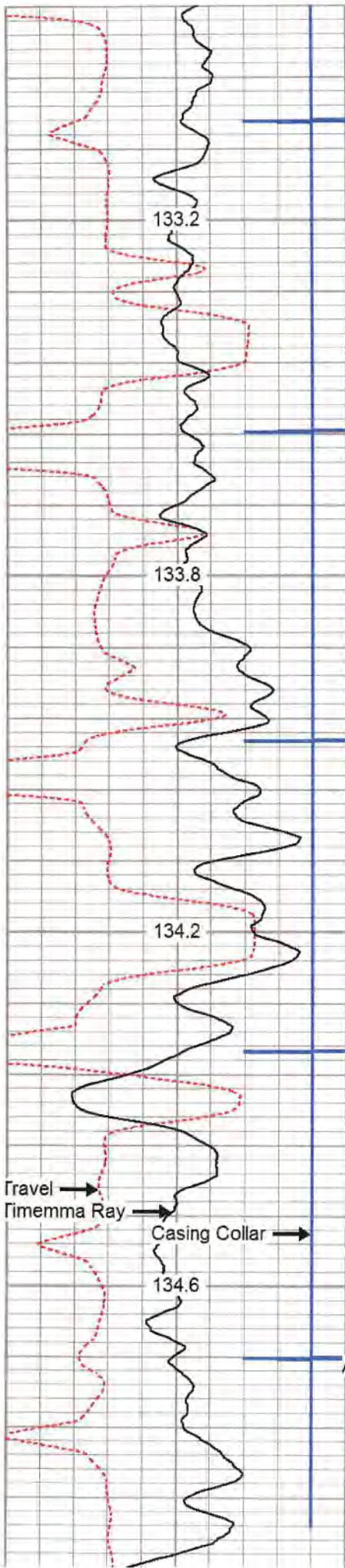
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6550





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6650
6700
6750





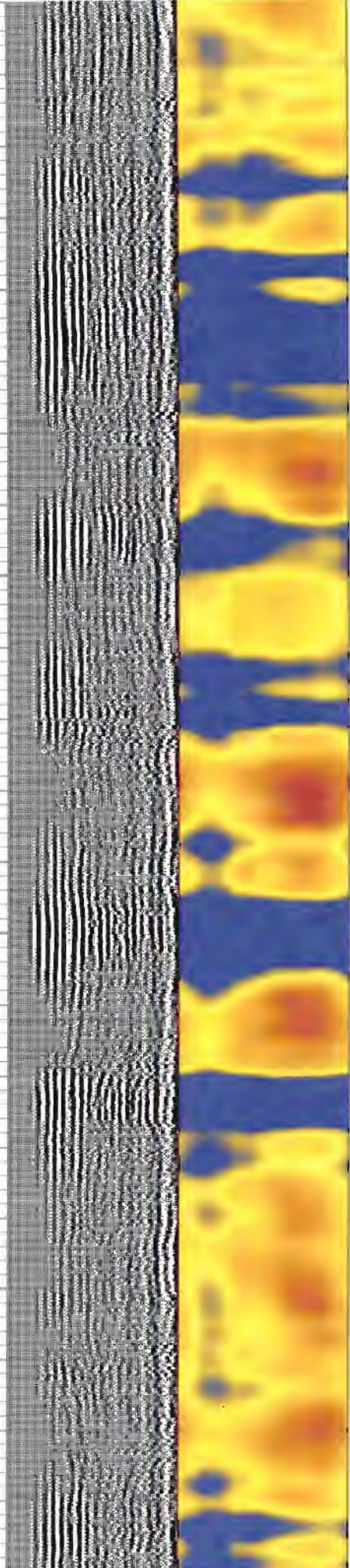
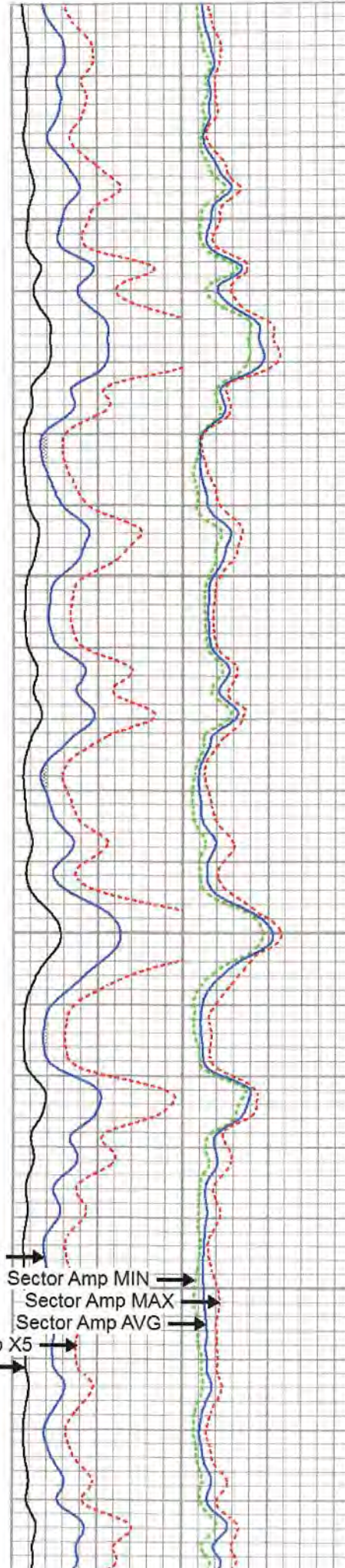
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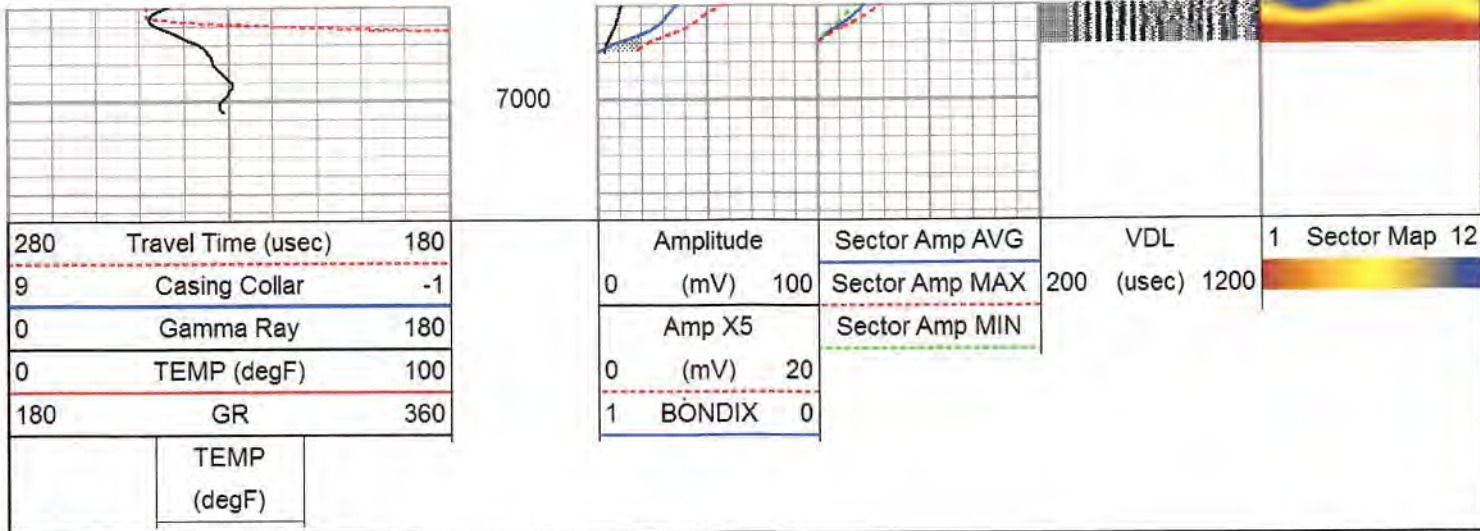
6850

6900

Travel Time
 Finemma Ray
 Casing Collar

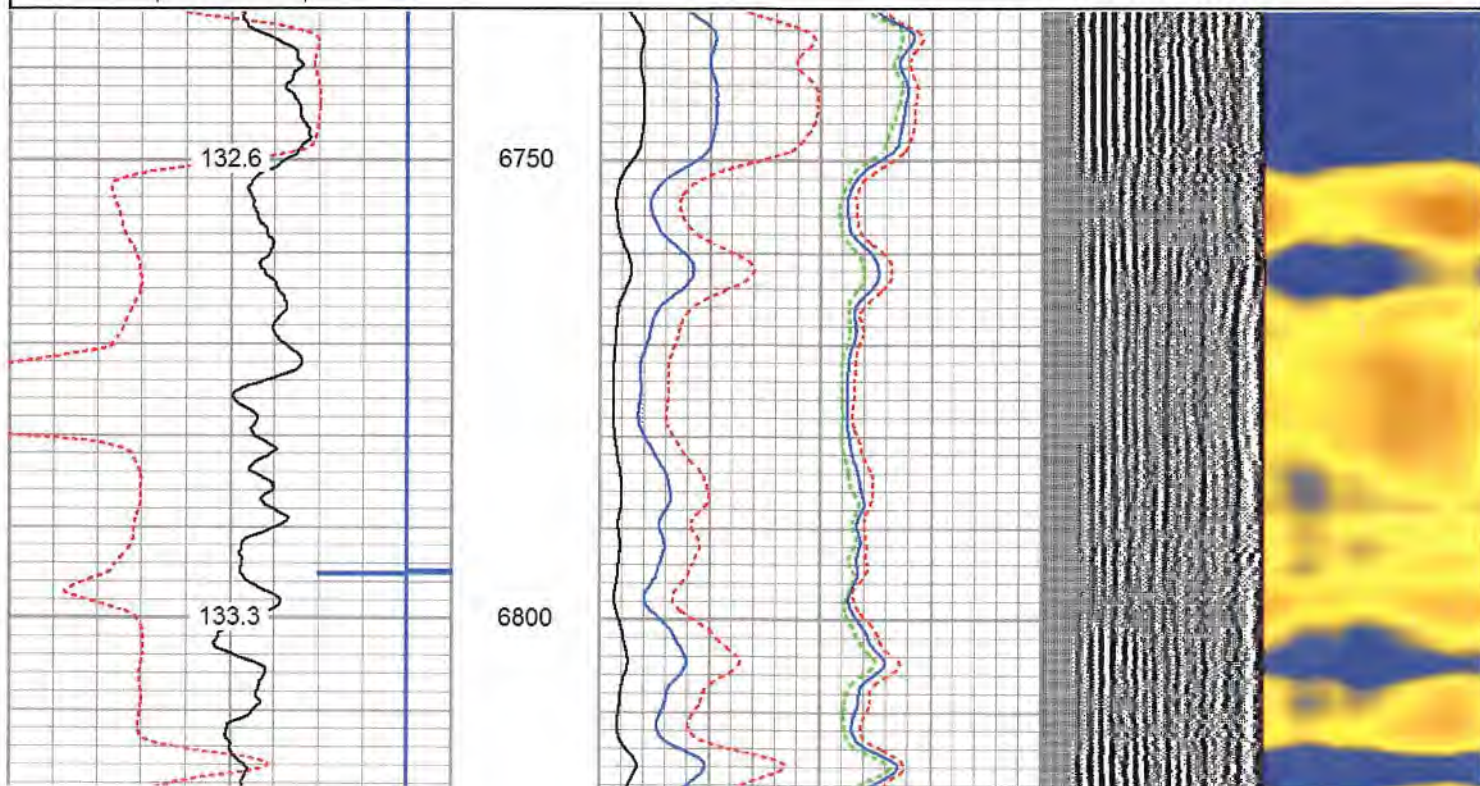
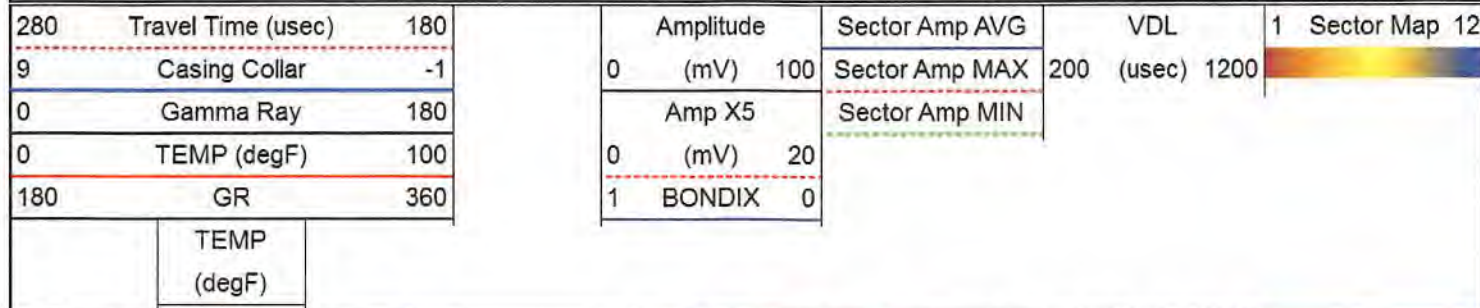
BONDIX
 6950
 Sector Amp MIN
 Sector Amp MAX
 Sector Amp AVG
 Amp X5
 Amplitude

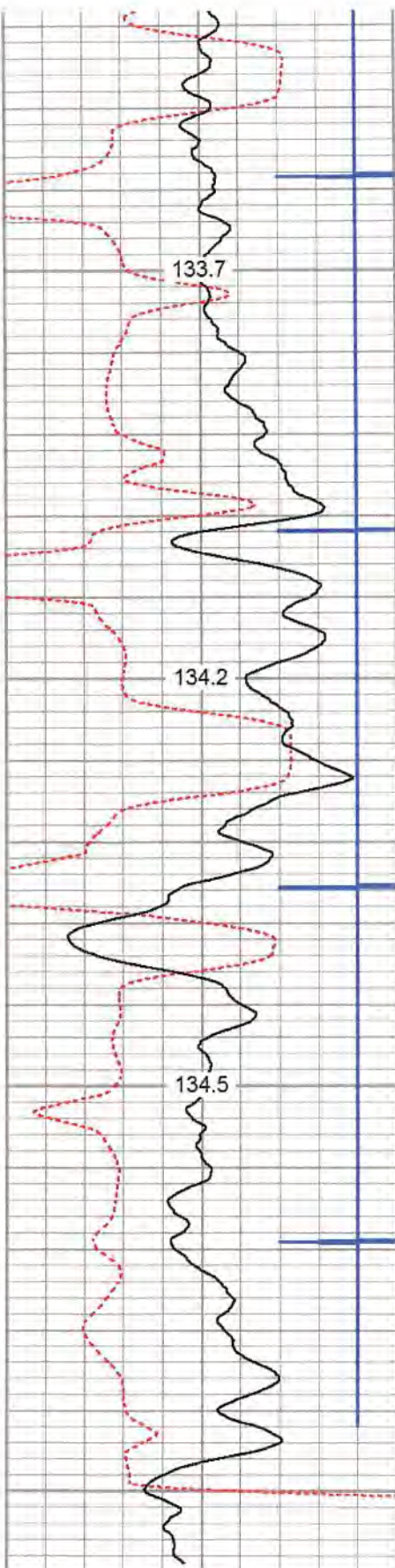




REPEAT PASS 1500 PSI

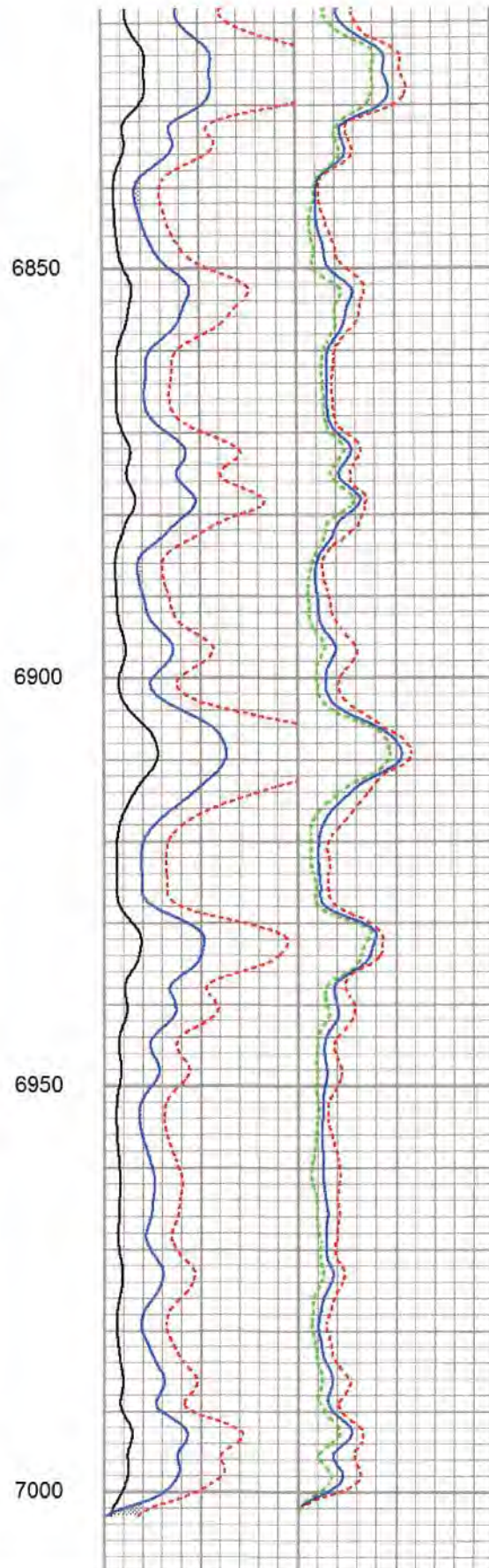
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 Dataset Pathname pass3
 Presentation Format antero
 Dataset Creation Tue Aug 25 08:20:57 2020
 Charted by Depth in Feet scaled 1:240



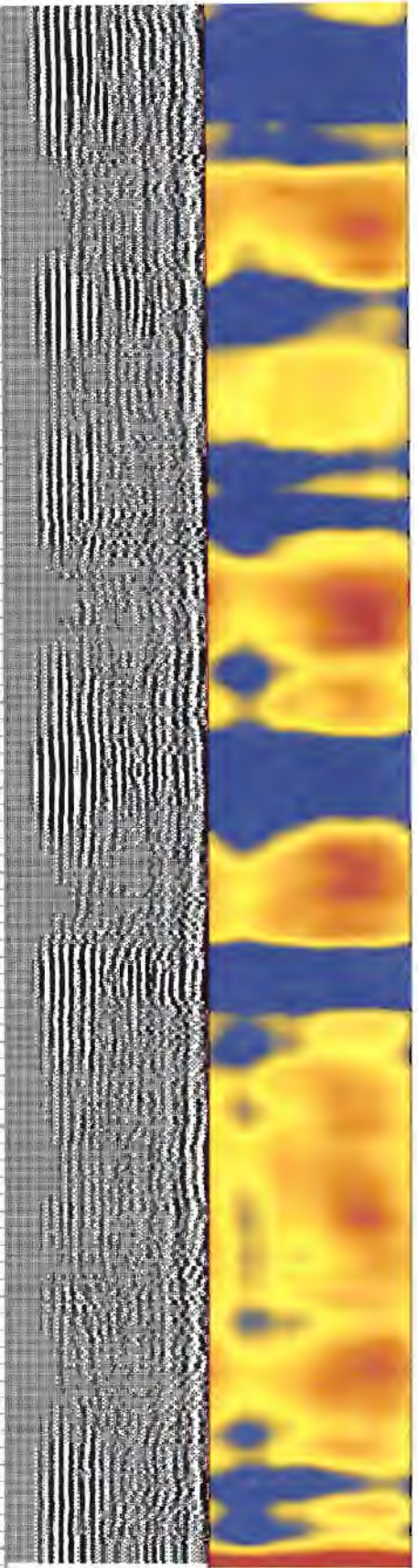


280	Travel Time (usec)	180
9	Casing Collar	-1
0	Gamma Ray	180
0	TEMP (degF)	100
180	GR	360

TFMP



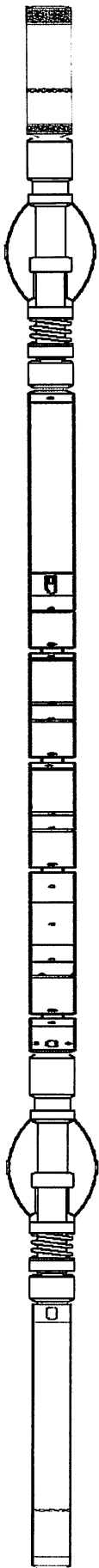
Amplitude	Sector Amp AVG
0 (mV) 100	Sector Amp MAX
Amp X5	Sector Amp MIN
0 (mV) 20	
1 BONDIX 0	



VDL	1 Sector Map 12
200 (usec) 1200	

Color scale for Sector Map 12, ranging from blue (low) to yellow/red (high).

(degF)

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)	
CCL	20.30		CCL-312tekco (108X3-01) 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			SCBL-Tek12 (IOL40-03_5_5) Tekco 400 Deg F 12 Sector RIB with Temp	9.13	3.25	135.00
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						
WVFTEMP	7.08		Tek-3.125 3 1/8" Titan Adjustable Centralizer	3.42	3.13	50.00	
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: 8_25_20_antero_kemsunit_1h.db: field/well/run1/pass4
 Total length: 21.44 ft
 Total weight: 300.00 lb
 O.D.: 3.25 in

Calibration Report

Database File E:\antero 2020\8_25_20_antero_kemsunit_1h.db
 Dataset Pathname pass4
 Dataset Creation Tue Aug 25 08:39:35 2020

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: 388.083 ft

Master Calibration, performed Tue Aug 25 07:12:11 2020:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.001	0.701	3.400	71.921	97.878	3.338
CAL	0.865	0.408				
5'	-0.002	0.748	1.000	71.921	94.617	1.169
SUM						
S1	0.006	1.637	0.000	100.000	61.287	-0.344
S2	0.006	1.500	0.000	100.000	66.925	-0.407
S3	0.006	1.414	0.000	100.000	71.015	-0.416
S4	0.005	1.460	0.000	100.000	68.730	-0.356
S5	0.004	1.595	0.000	100.000	62.854	-0.274
S6	0.004	1.757	0.000	100.000	57.065	-0.244
S7	0.004	1.715	0.000	100.000	58.440	-0.227
S8	0.004	1.625	0.000	100.000	61.675	-0.217
S9	0.004	1.572	0.000	100.000	63.755	-0.232
S10	0.004	1.549	0.000	100.000	64.697	-0.244
S11	0.004	1.554	0.000	100.000	64.514	-0.246
S12	0.005	1.648	0.000	100.000	60.865	-0.276

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	KERNS UNIT 1 H		
Field	MARCELLUS		
County	TYLER		
State	WW	Country	US