



**RADIAL CEMENT BOND LOG
GAMMARAY / CCL / VDL
TEMP / CEMENT MAP**

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

Company ANTERO RESOURCES CORPORATION
Well RICHMOND UNIT 1H
Field MARCELLUS
County TYLER
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Location: AFE # 11019
API #: 47095026900000
Other Services

SEC TWP RGE Elevation N/A
Elevation
K.B. D.F. G.L.

Permanent Datum GL KB 25.5 FT
Log Measured From KB 25.5 FT
Drilling Measured From KB 25.5 FT

Date	25 AUG 2020	
Run Number	1	
Depth Driller	22.714	
Depth Logger	6676	
Bottom Logged Interval	6688	
Top Log Interval	SURFACE	
Open Hole Size	N/A	
Type Fluid	WATER	
Density / Viscosity	N/A	
Max. Recorded Temp.	133	
Estimated Cement Top	4880	
Time Well Ready	ON ARRIVAL	
Time Logger on Bottom	13:57	
Equipment Number	214182	
Location	BRIDGEPORT	
Recorded By	K.LINGER	
Witnessed By	JIMMY DARQUENNE	
Borehole Record		
Run Number	Bit	From To
Tubing Record		
Run Number	Size	Weight From To
Casing Record		
Surface String	Size	Wgt/Ft Top Bottom
Prot. String	9.625	N/A SURFACE 552
Production String	5.5	23 N/A SURFACE 2629
Liner		22.694

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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 DOWN HOLE 12 FT TO MATCH
LOG RAN UNDER 1500 PSI
TOP OF CEMENT @ 4880
MARKER JOINT @ 5604.5 - 5614

RECEIVED
Office Of Oil and Gas
FEB 08 2023
WV Department of
Environmental Protection

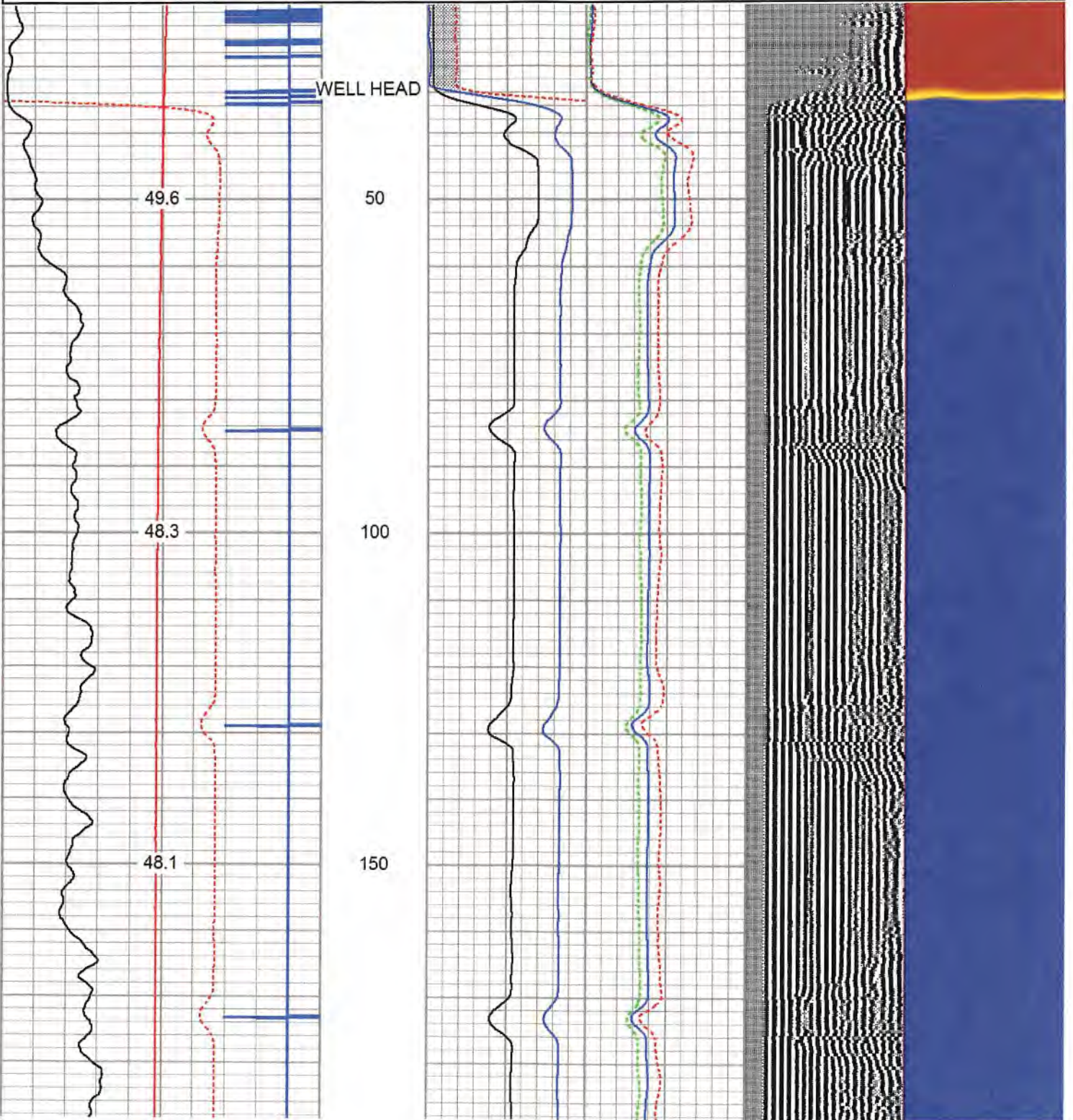


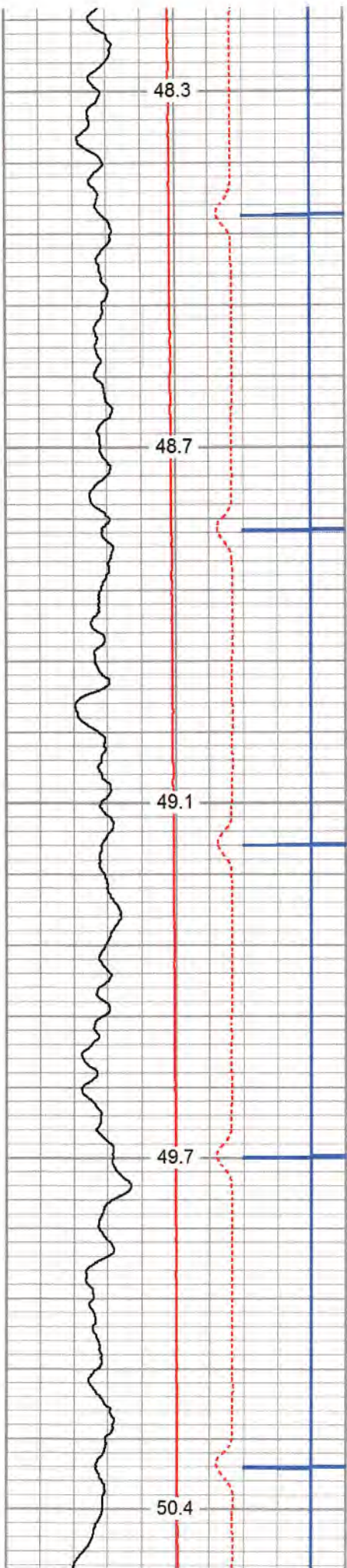
MAIN PASS 1500 PSI

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 Dataset Pathname pass3
 Presentation Format antero
 Dataset Creation Tue Aug 25 14:20:02 2020
 Charted by Depth in Feet scaled 1:240

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

TEMP
(degF)





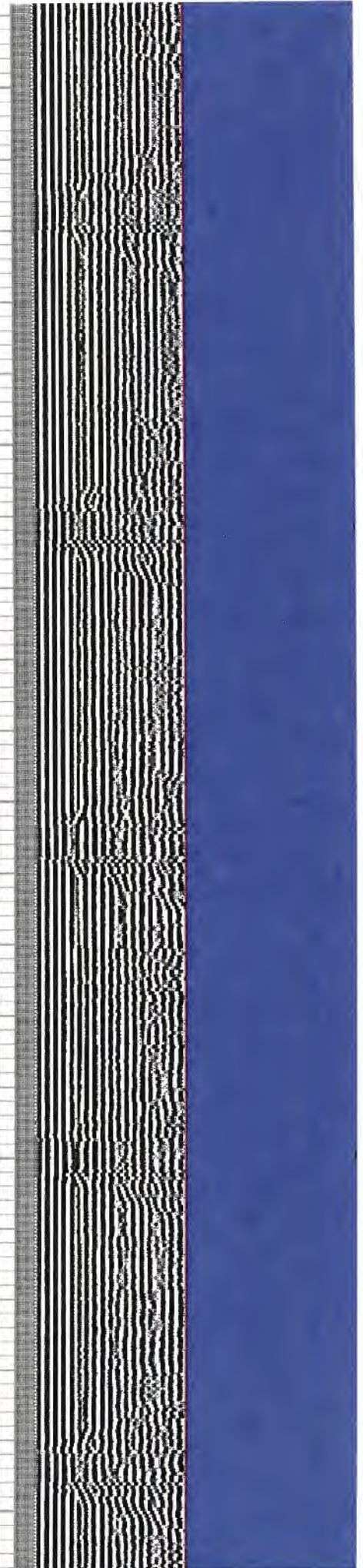
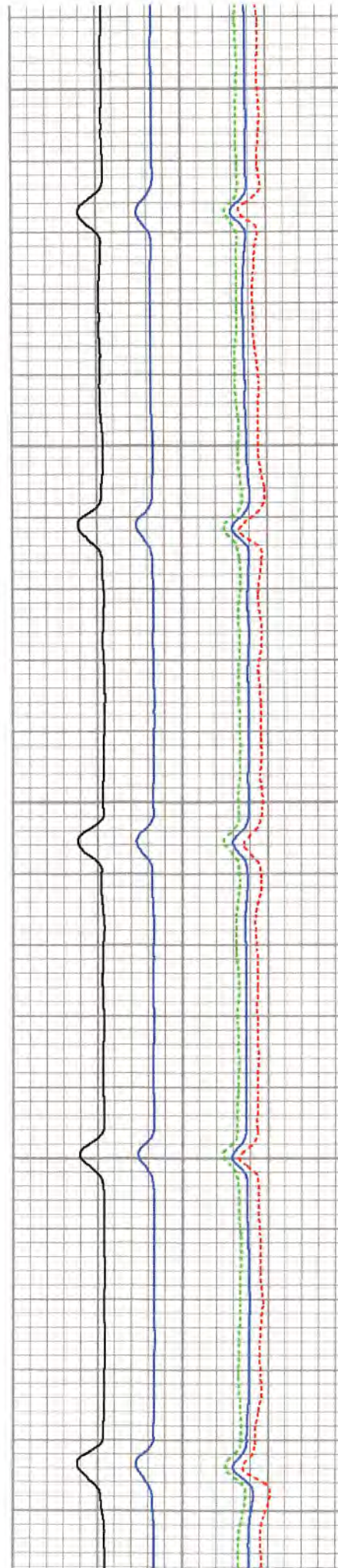
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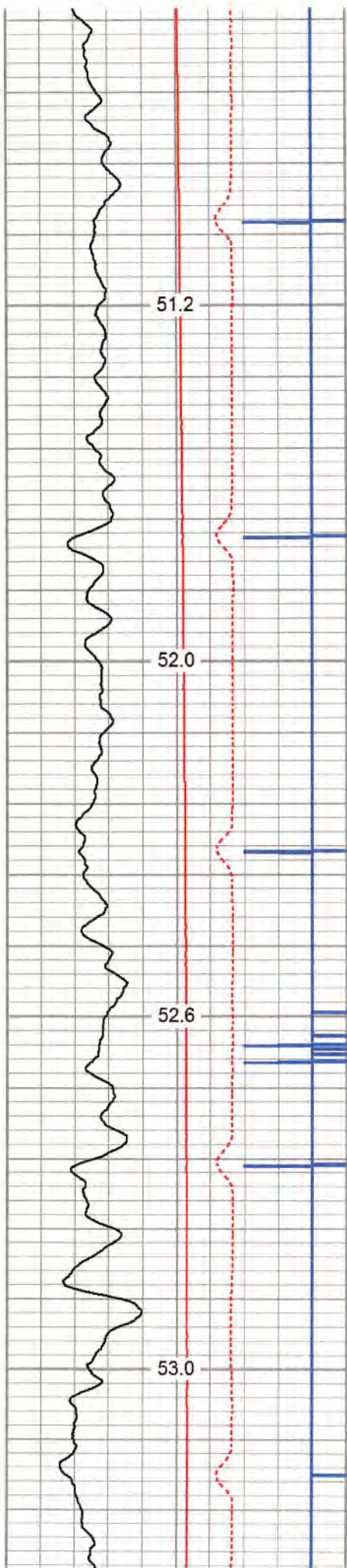
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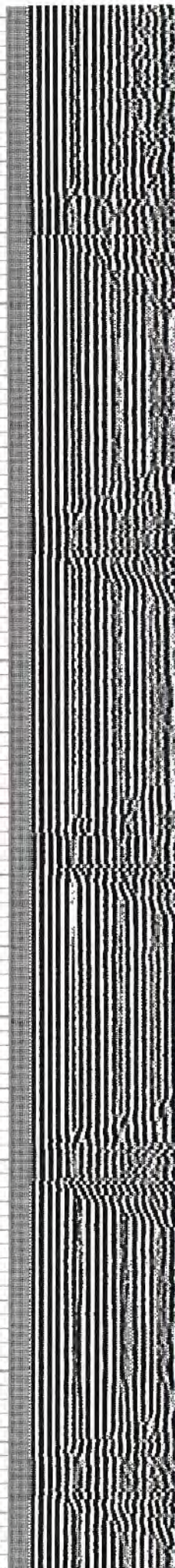
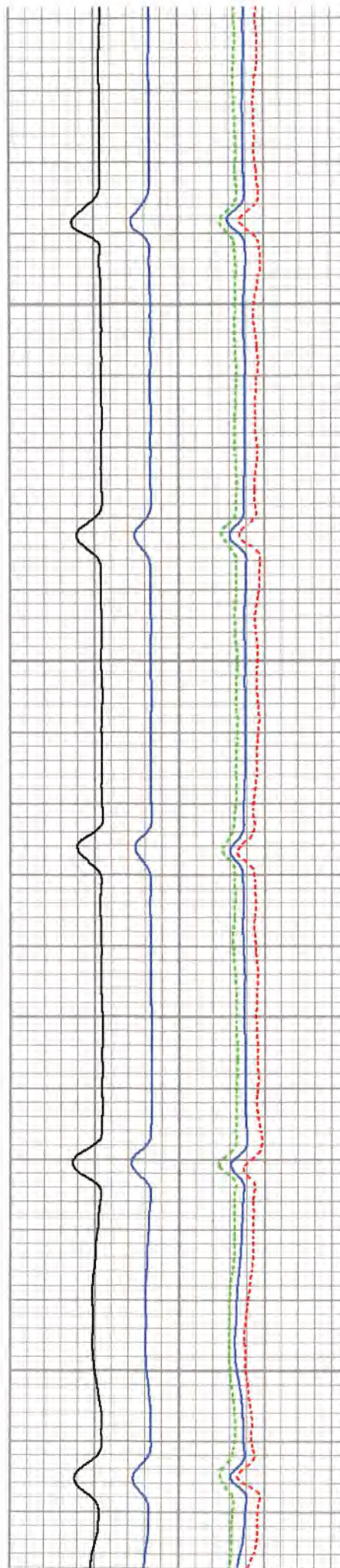


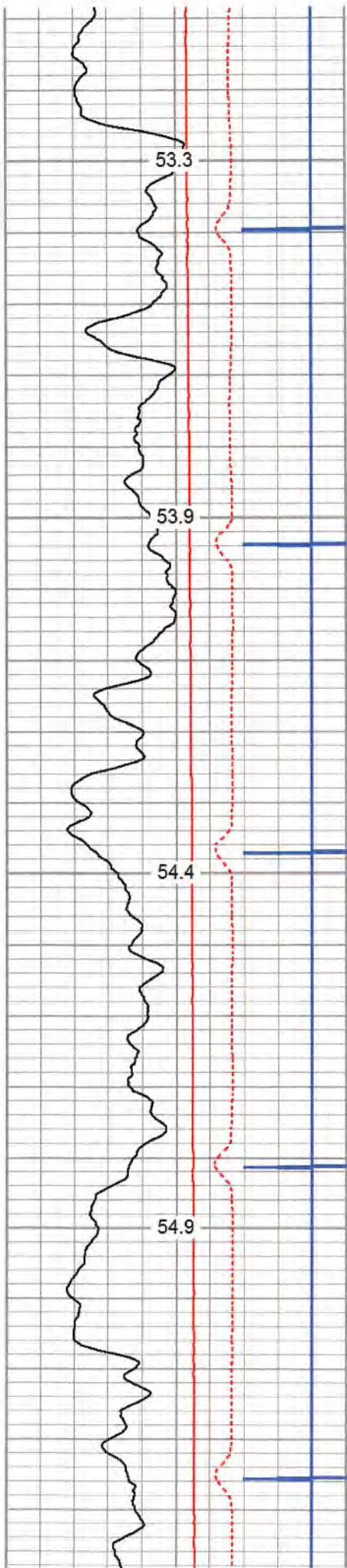
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500

550

600



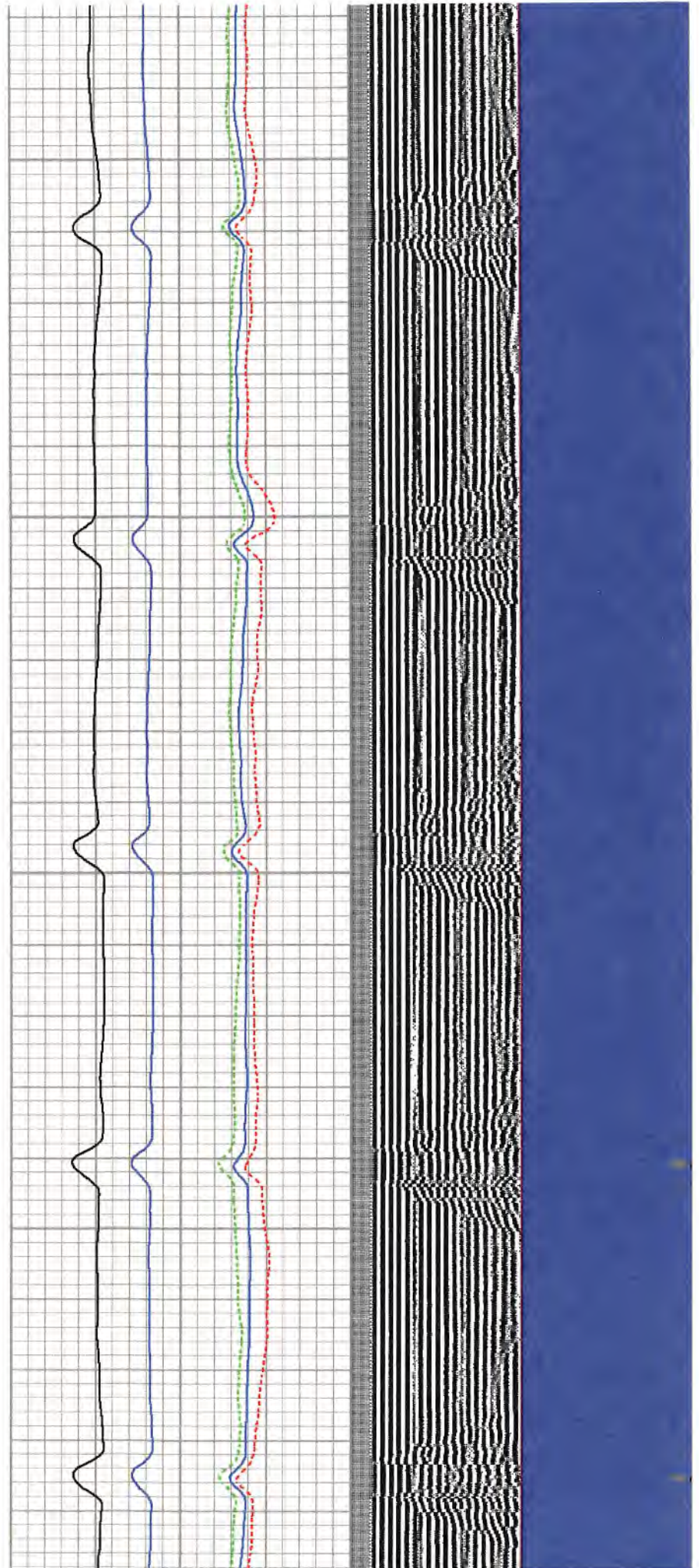


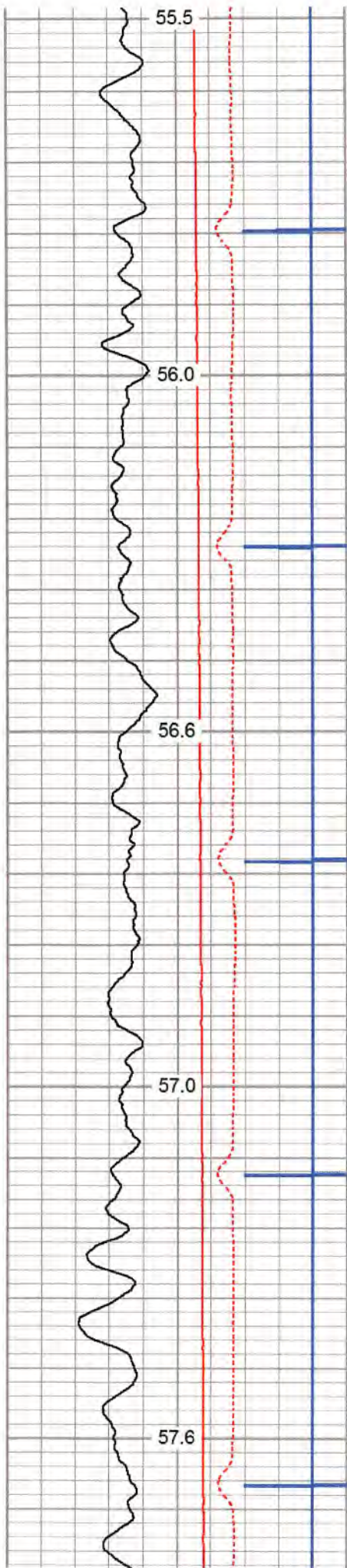
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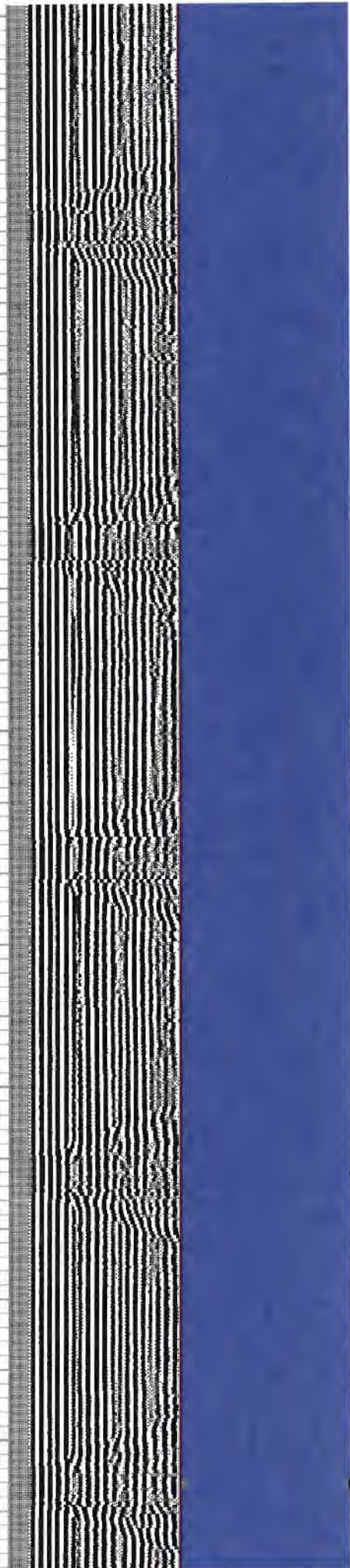
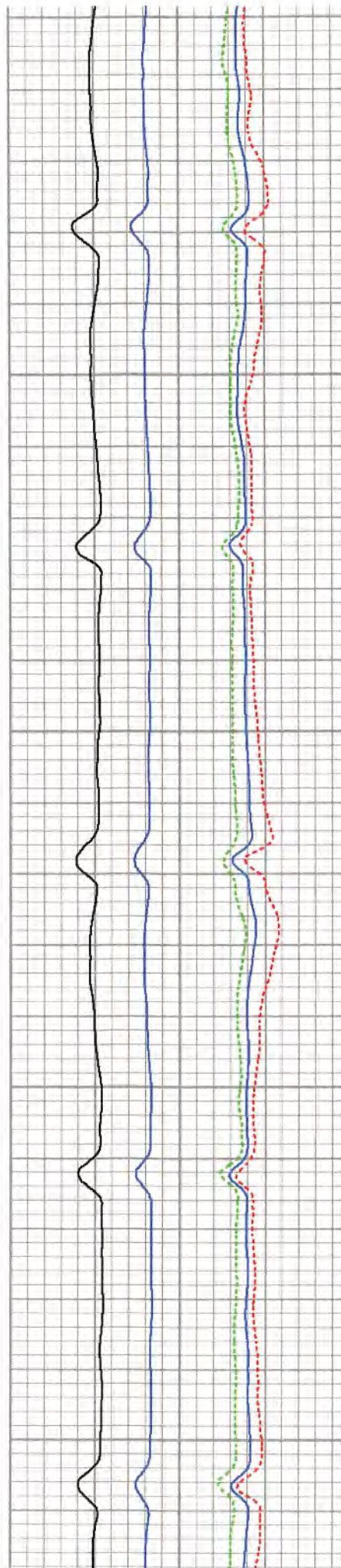
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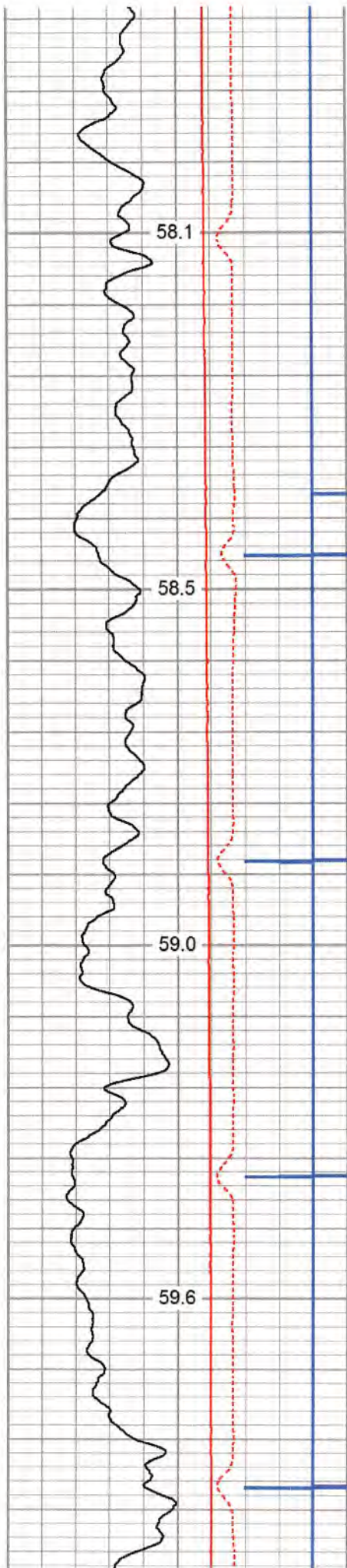
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950

1000

1050



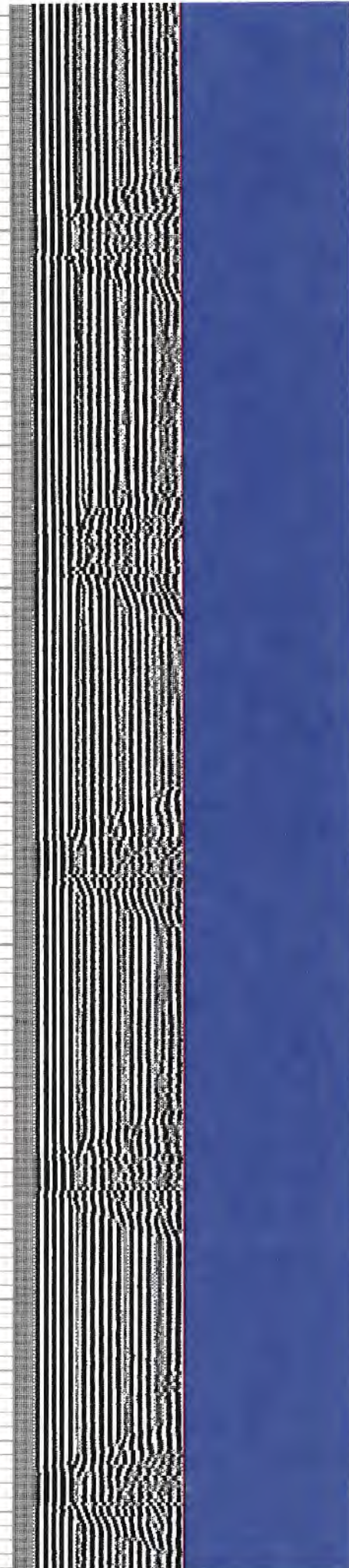
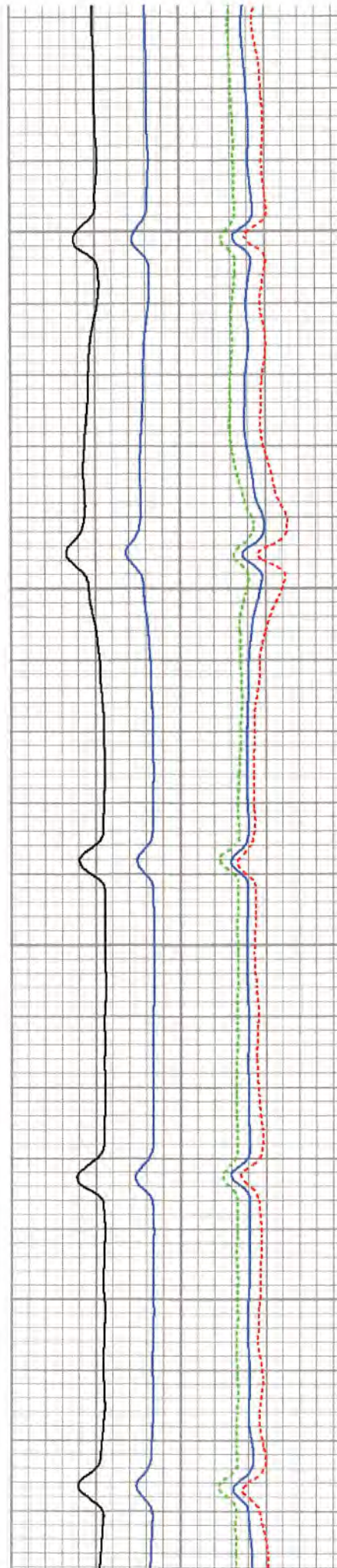


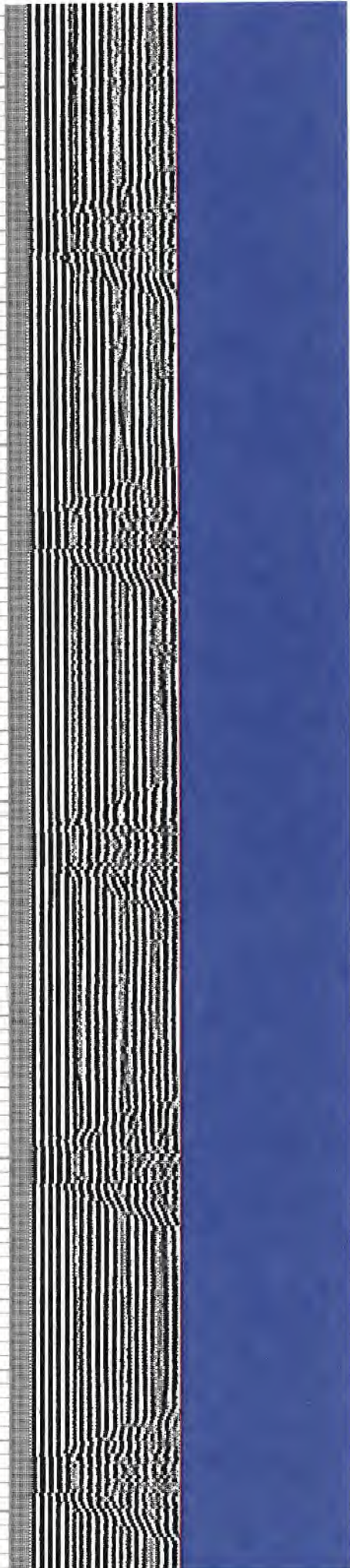
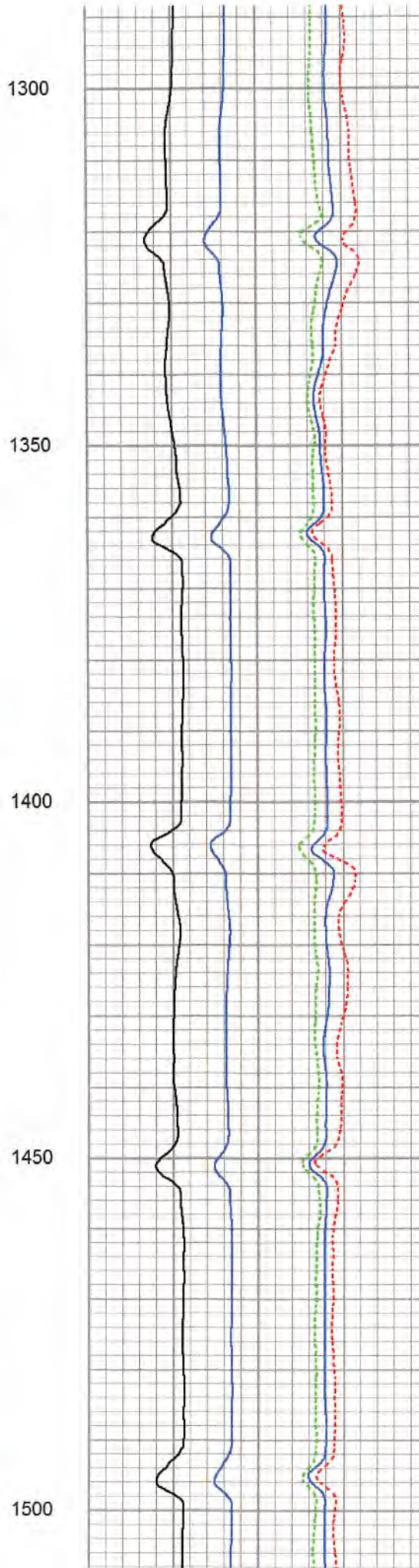
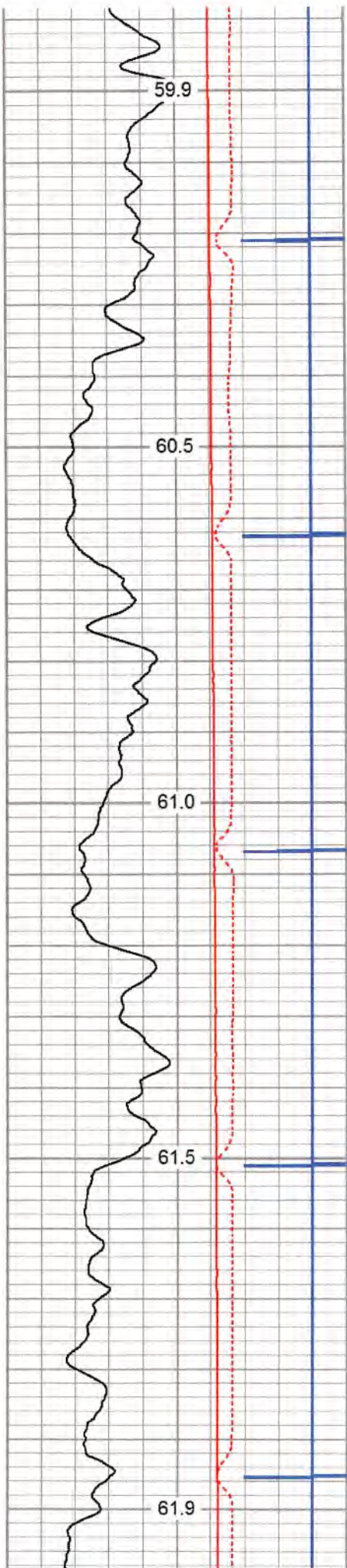
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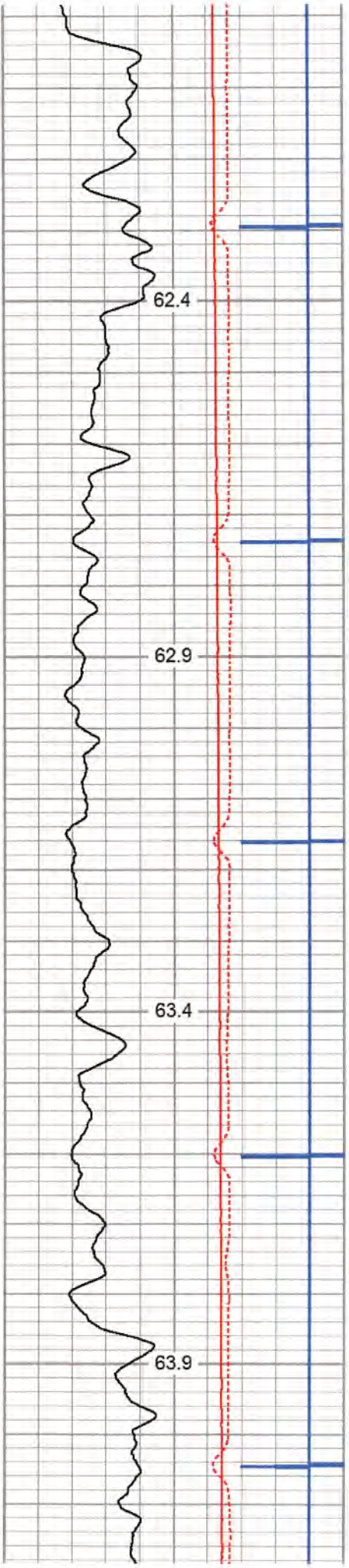
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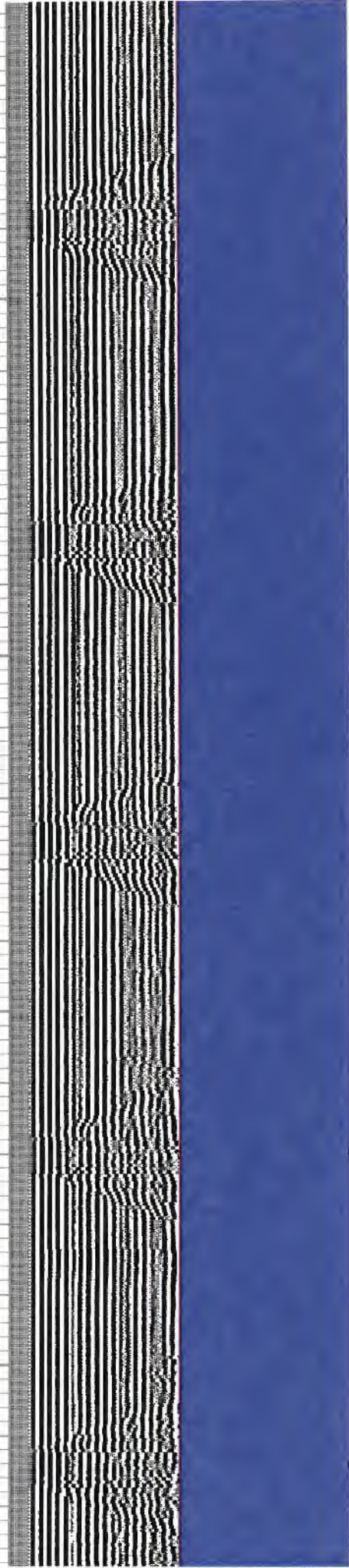
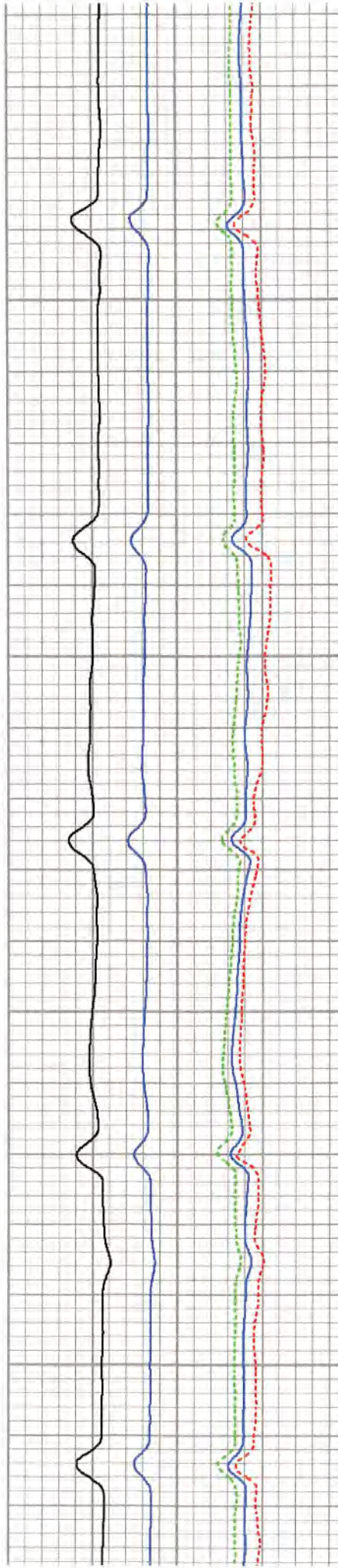


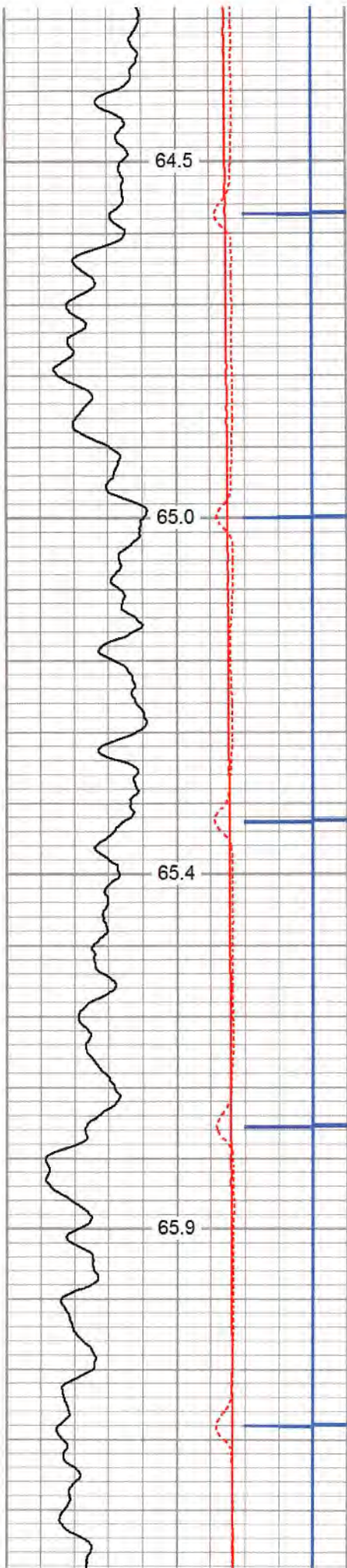
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1700



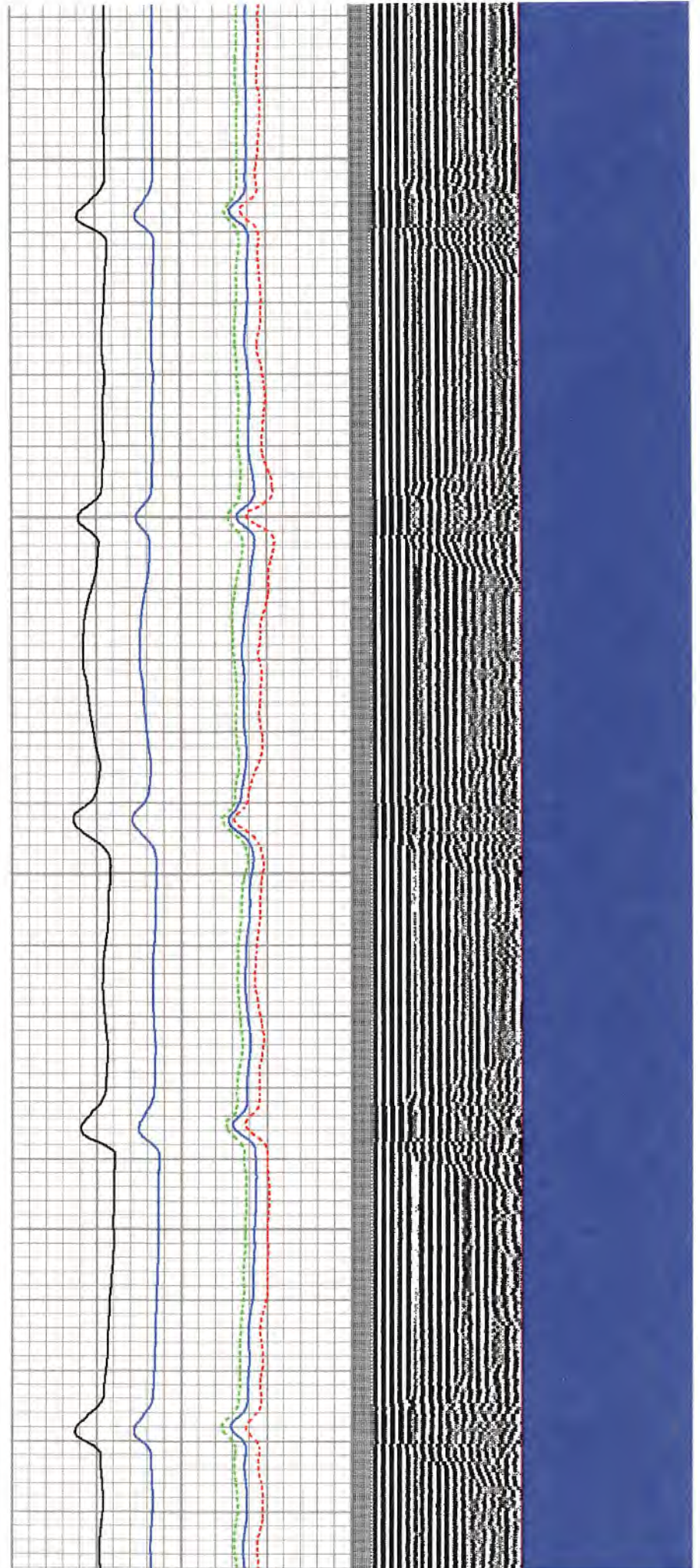


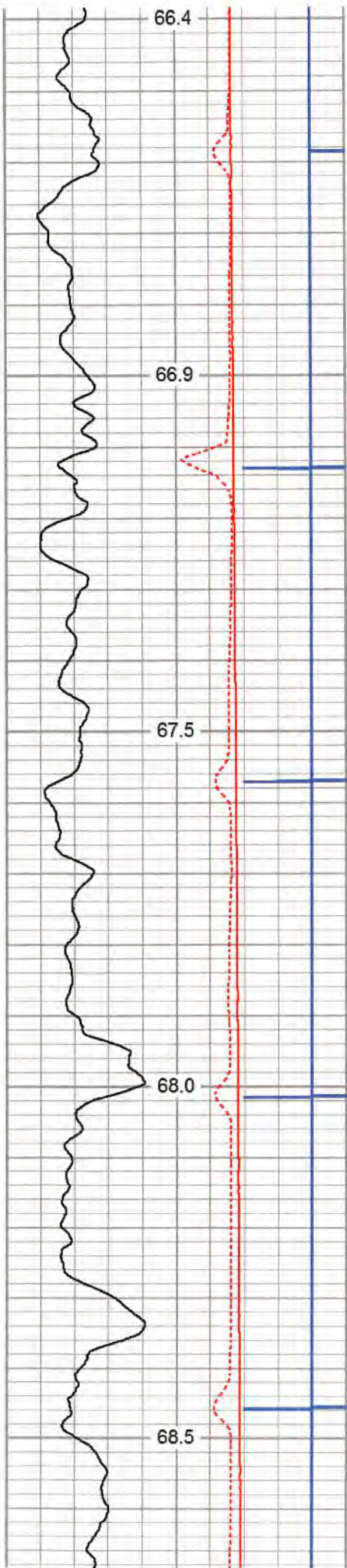
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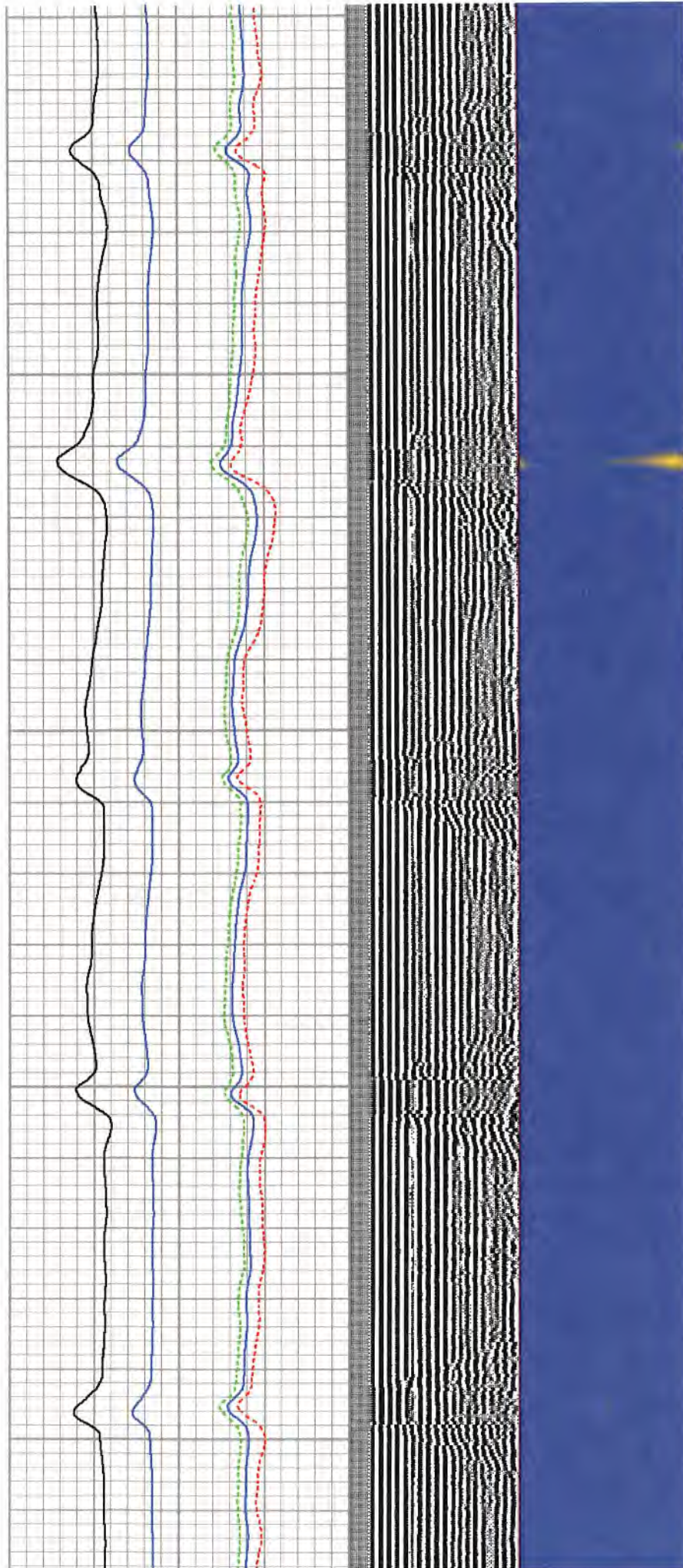
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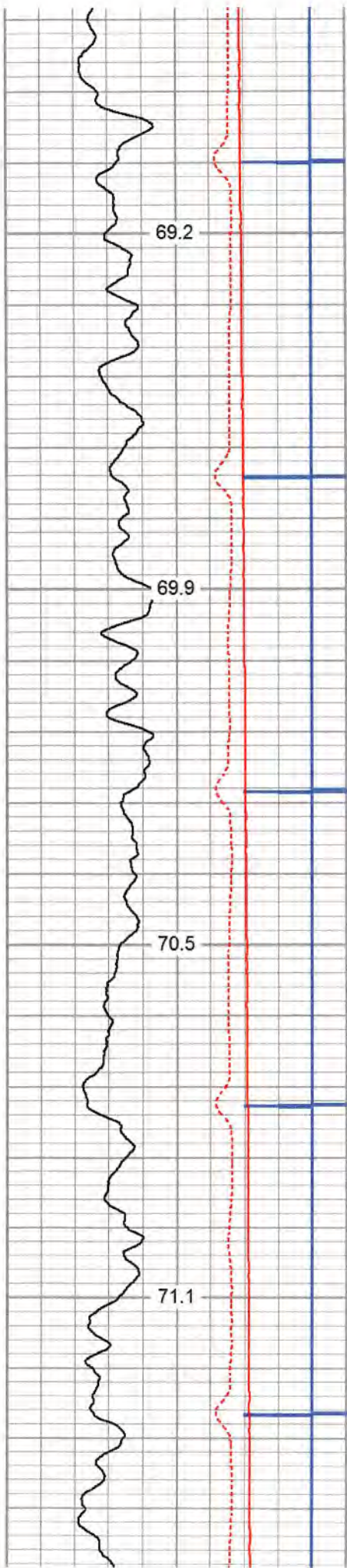
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1950
2000
2050
2100
2150



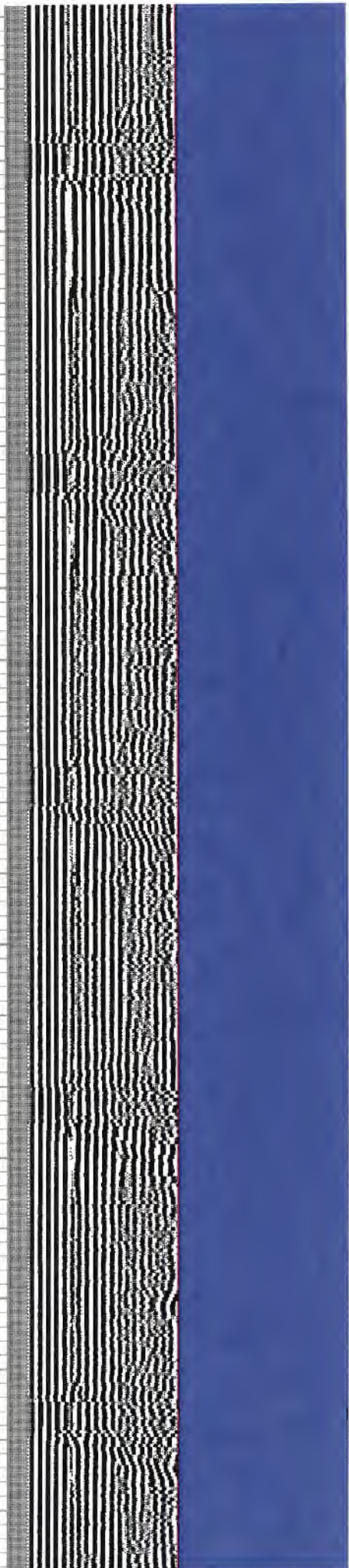
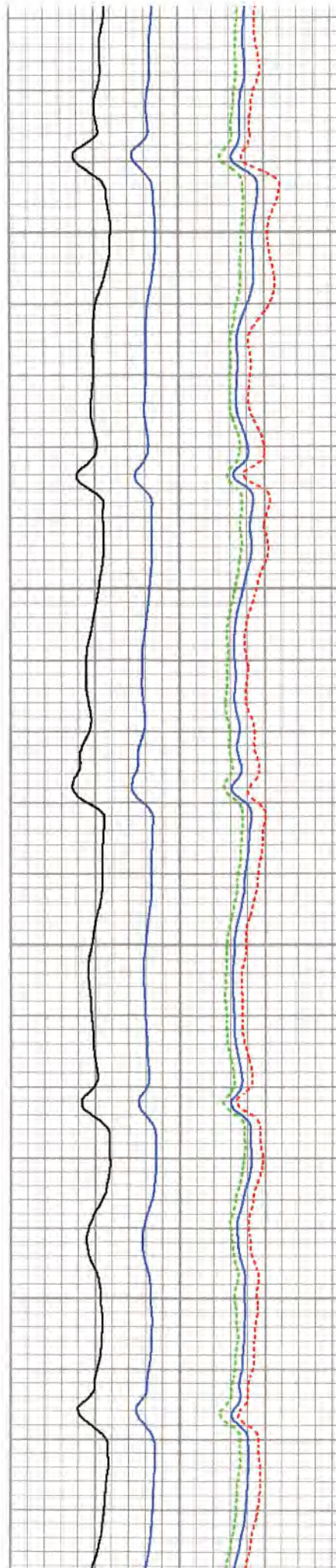


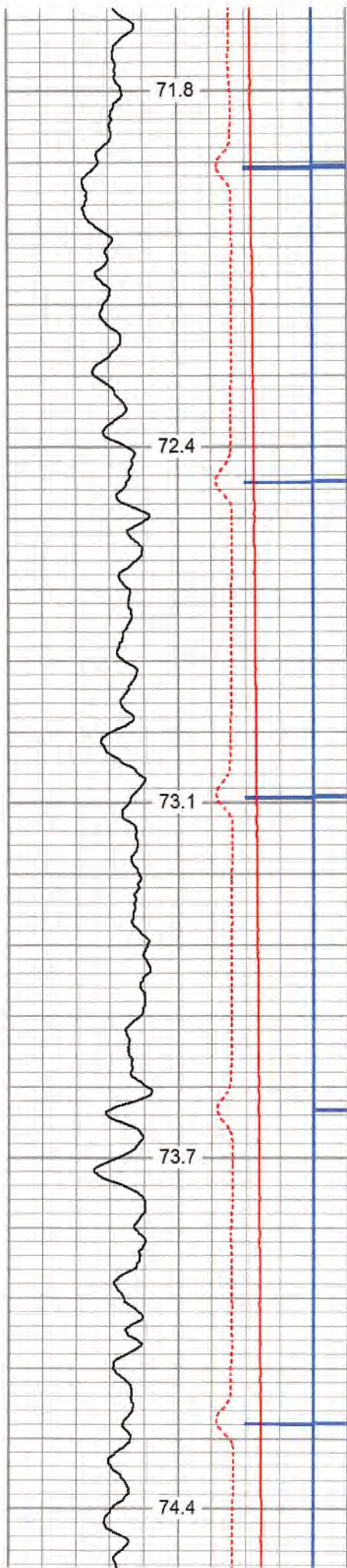
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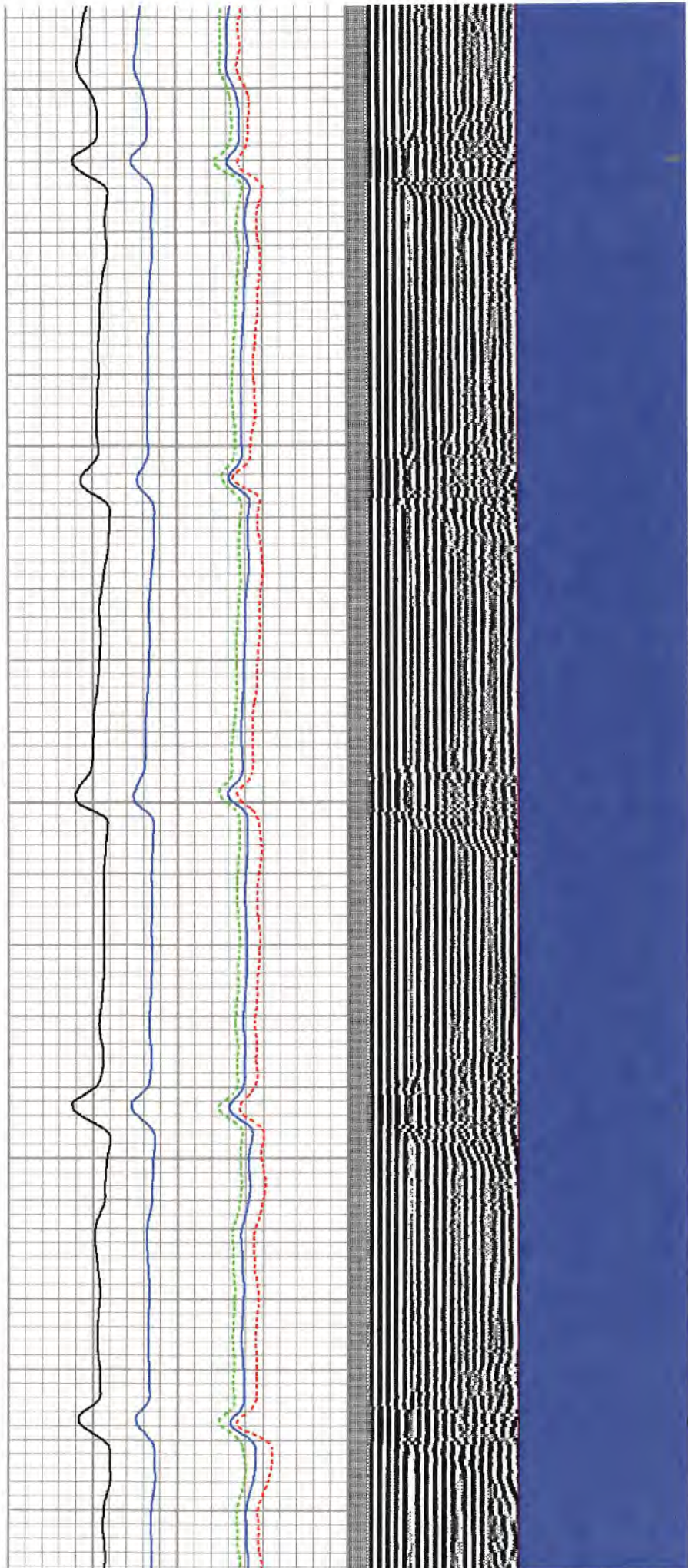
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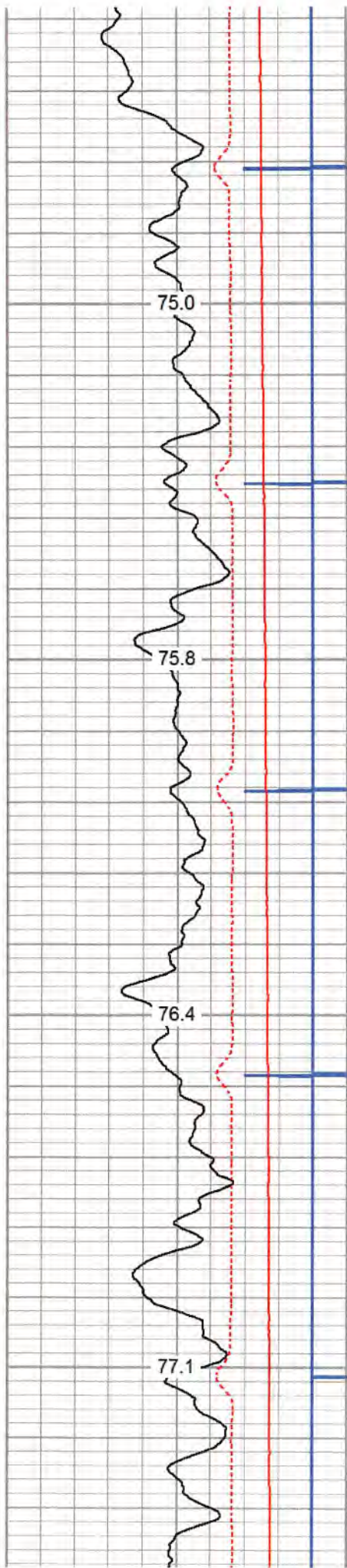
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2450
2500
2550
2600



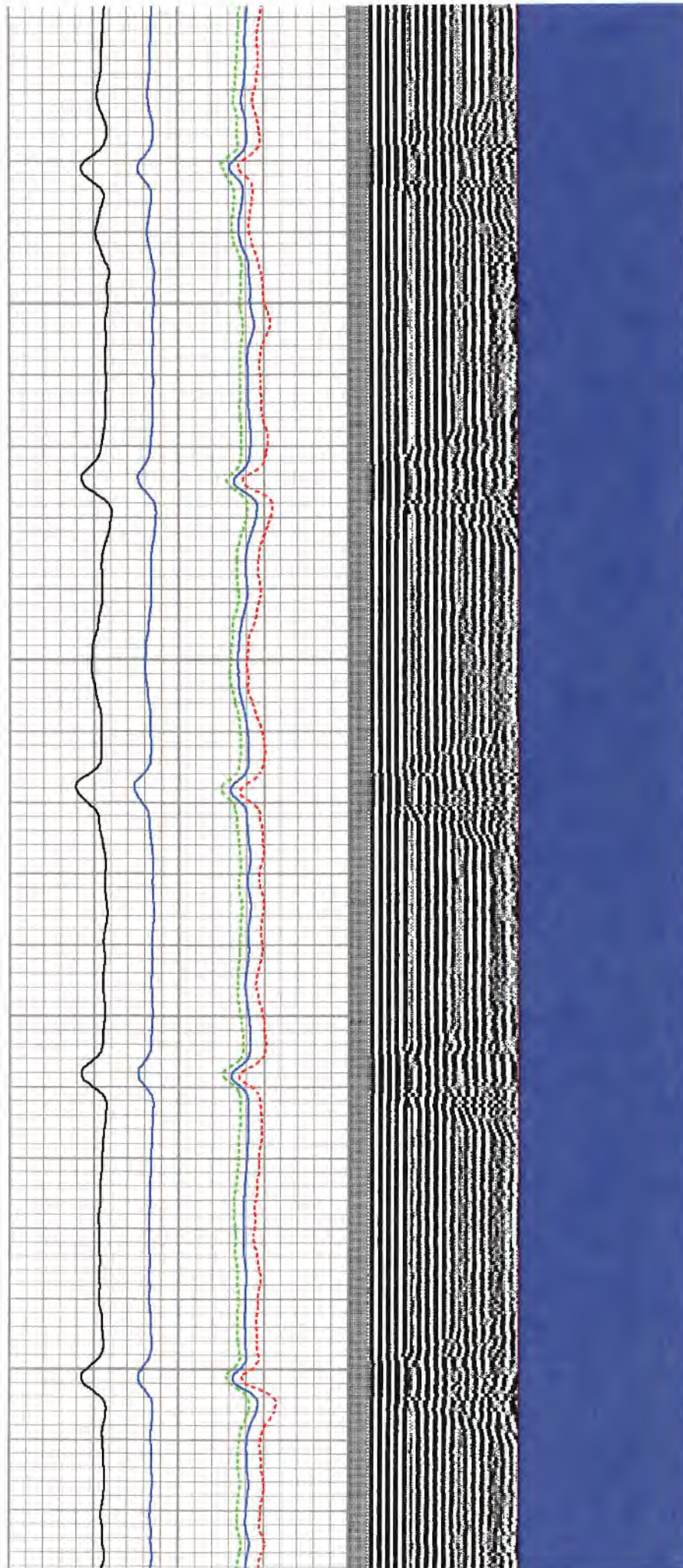


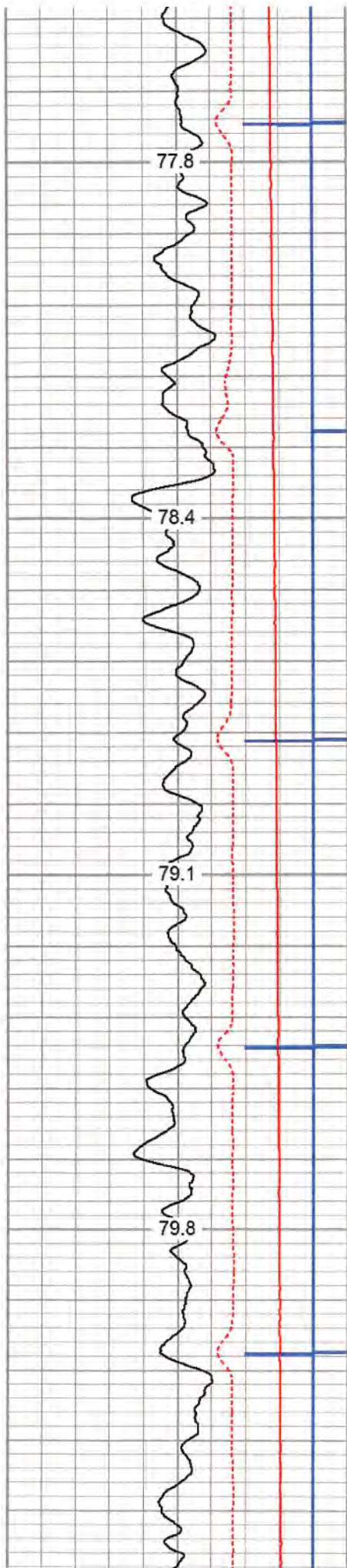
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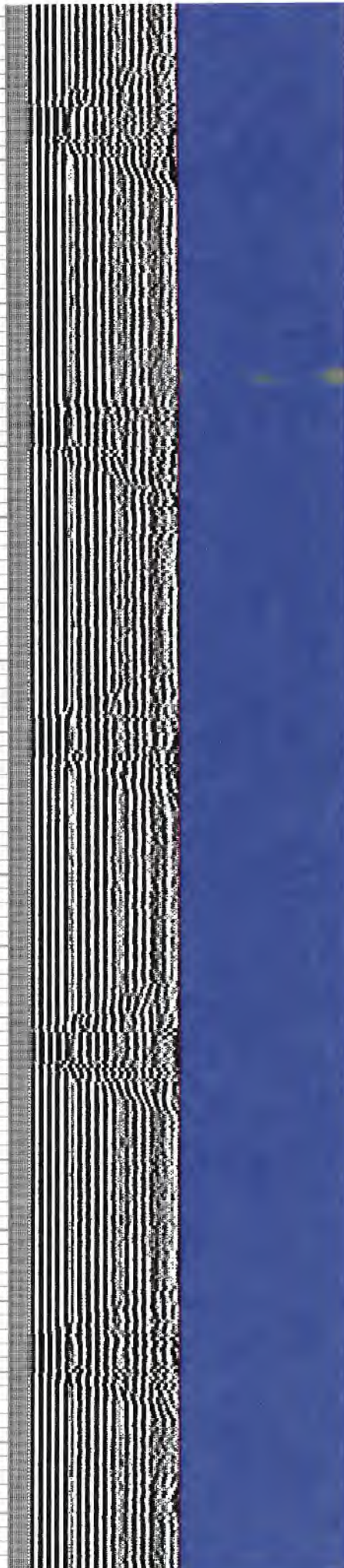
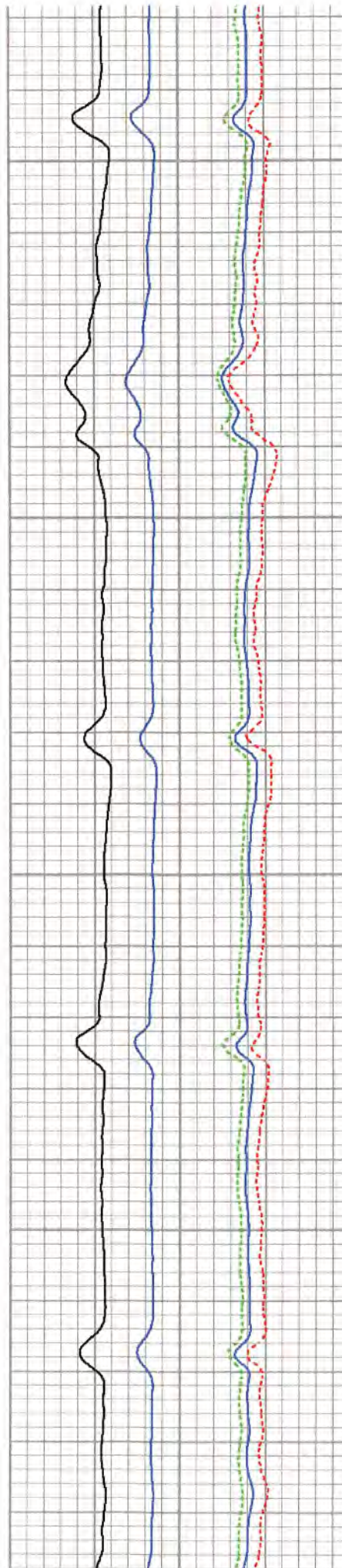
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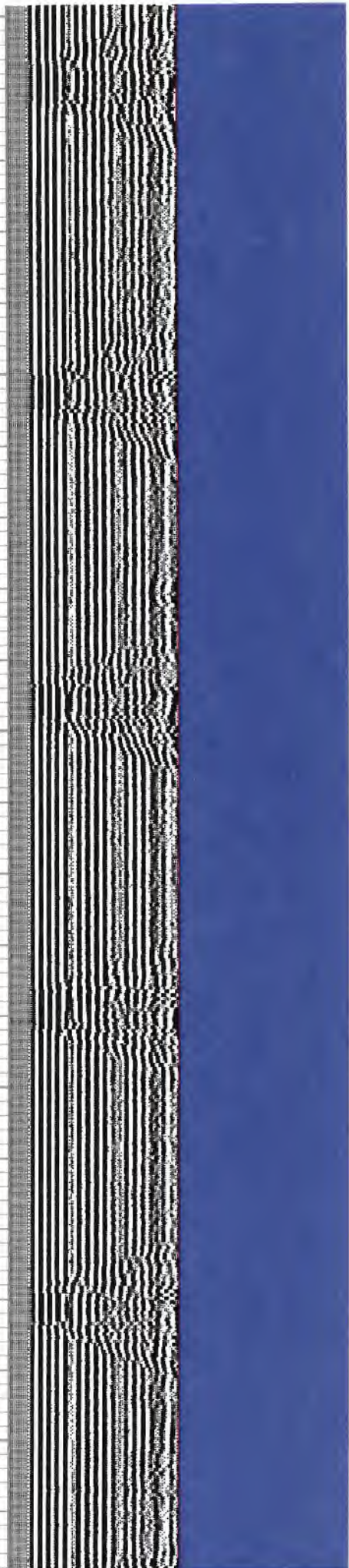
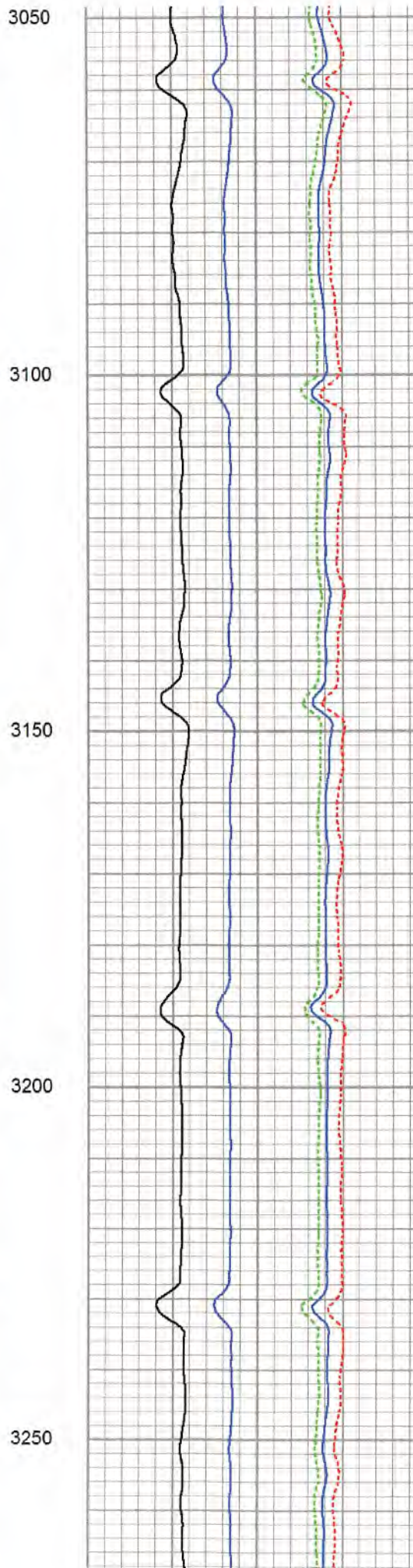
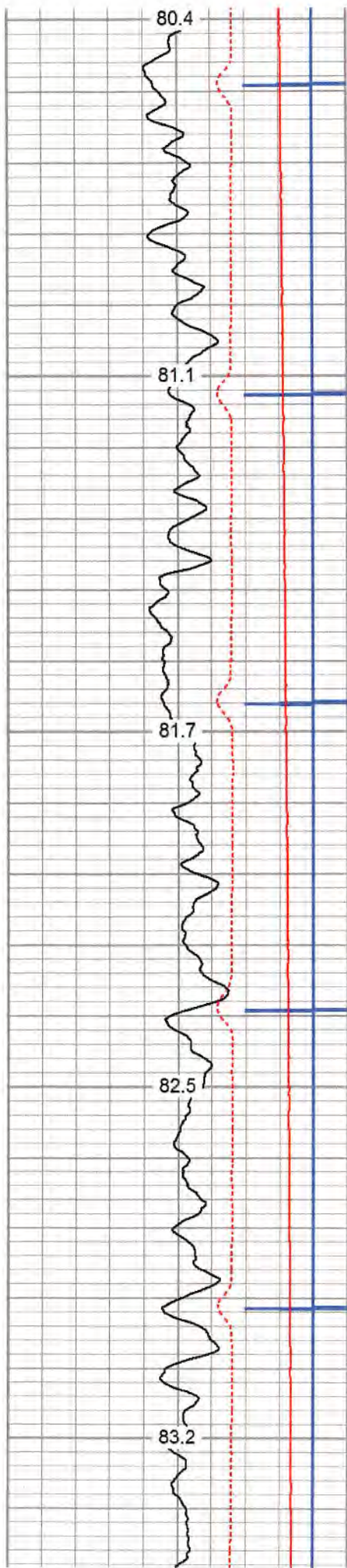
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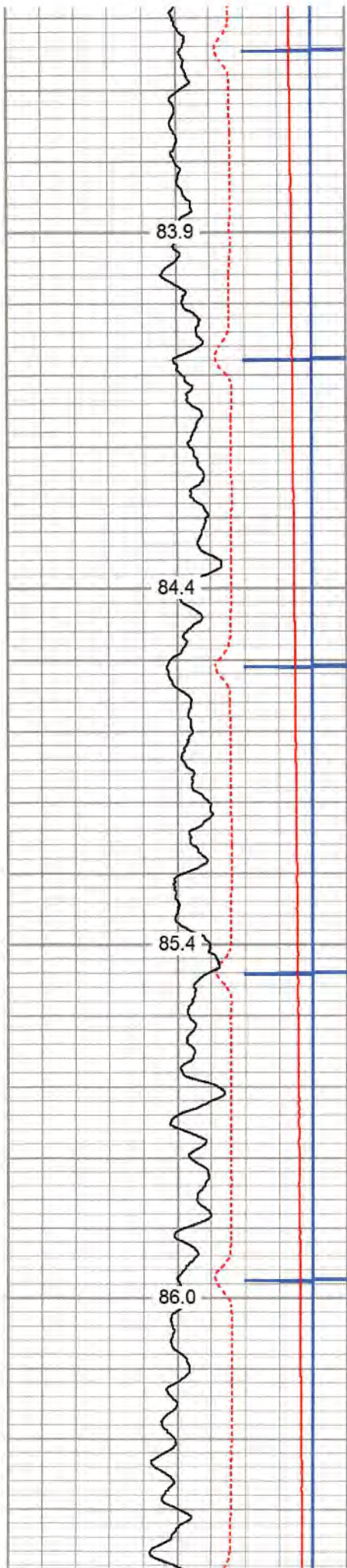




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2900
2950
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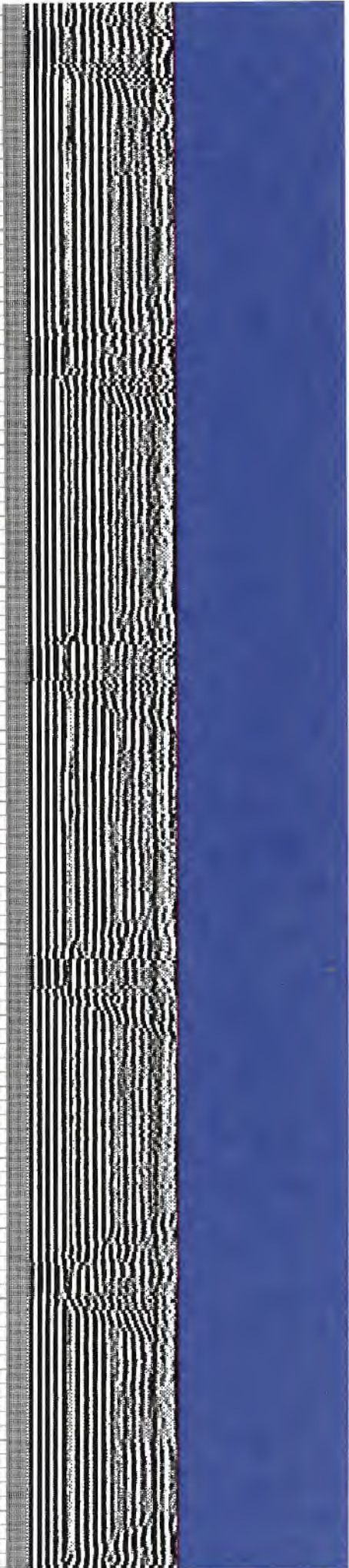
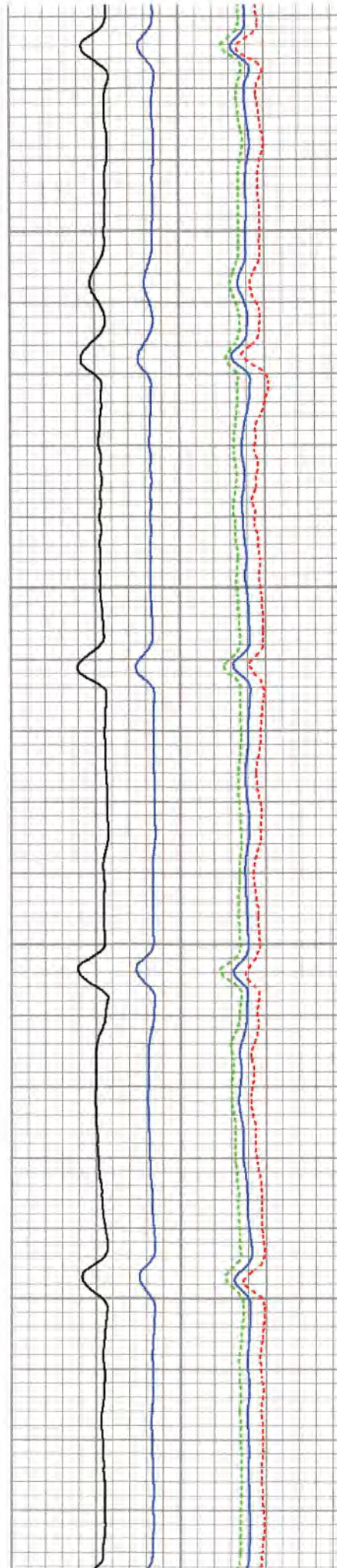


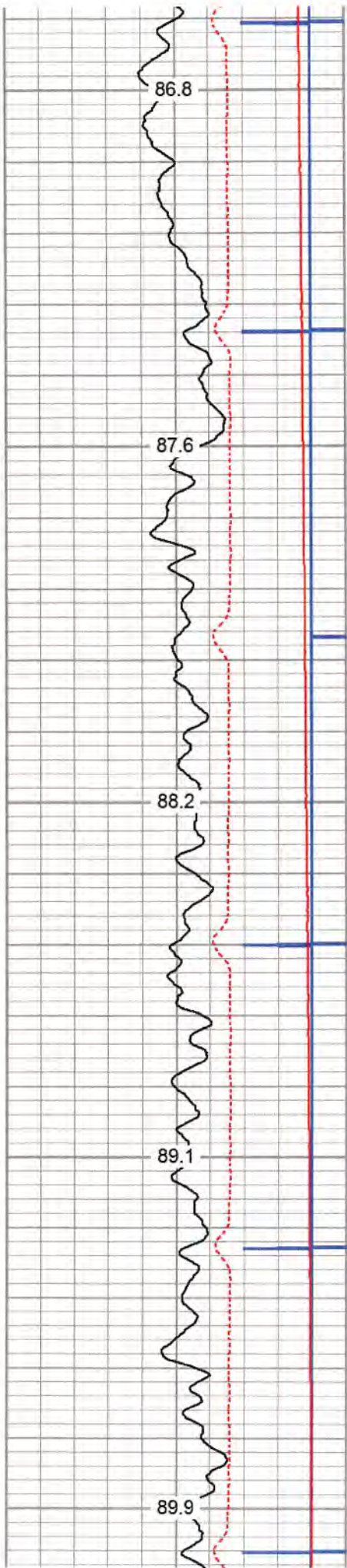
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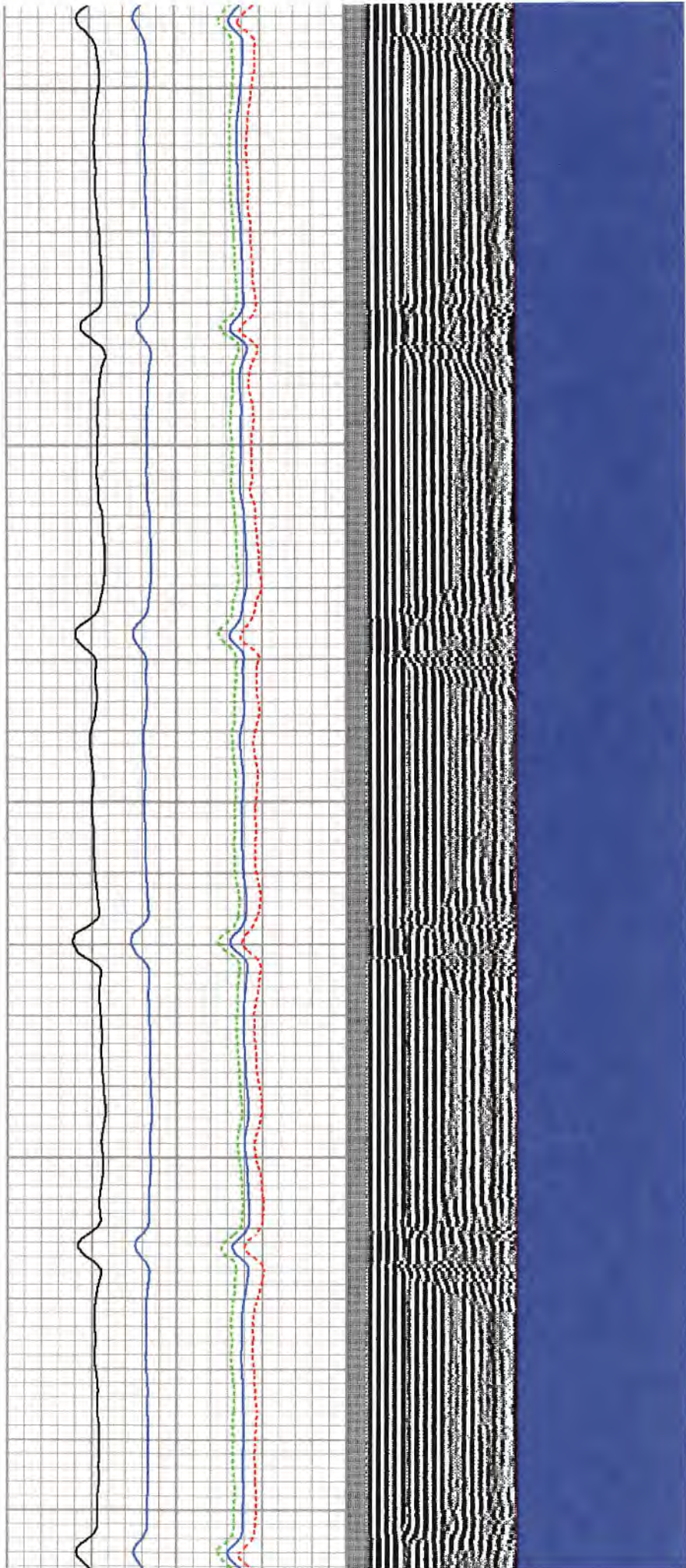
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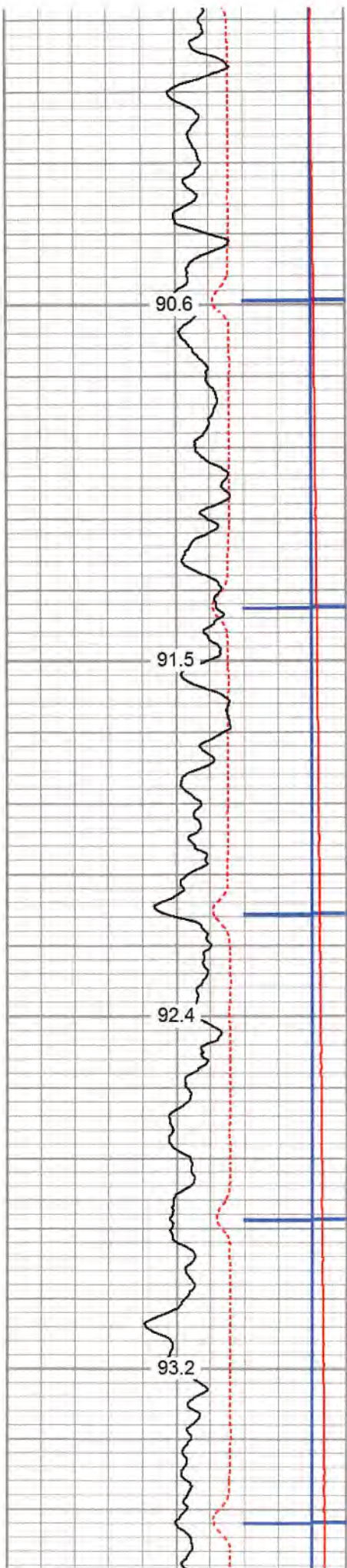
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3600
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3700



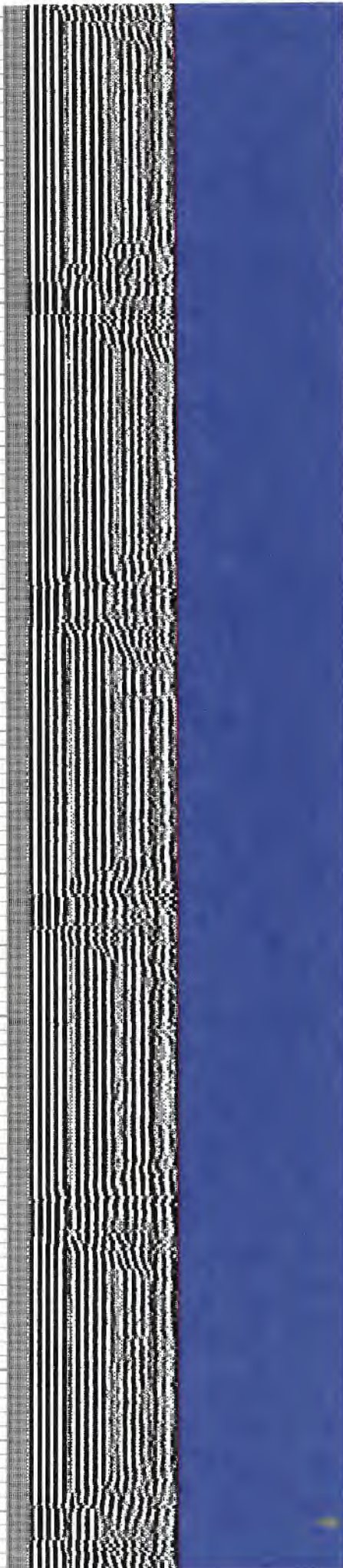


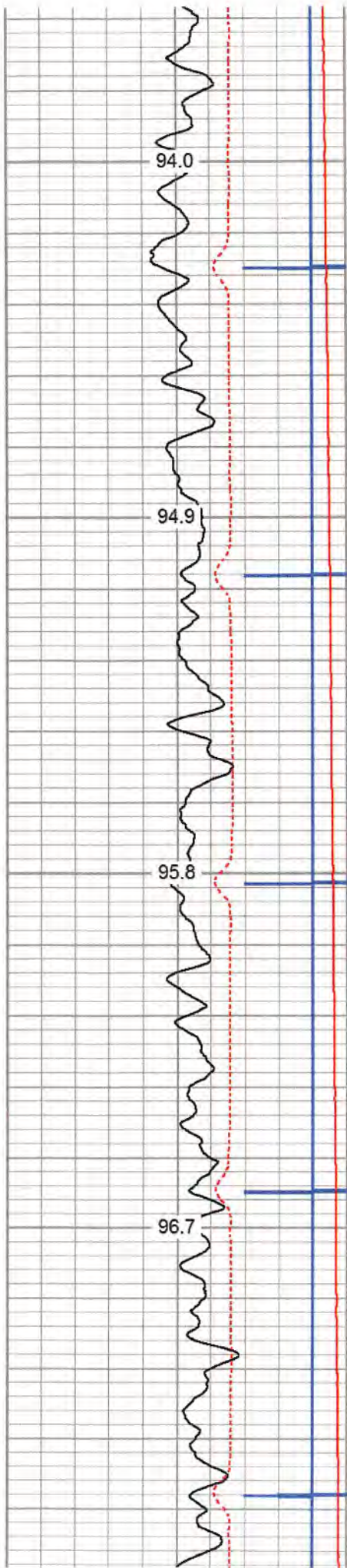
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3900



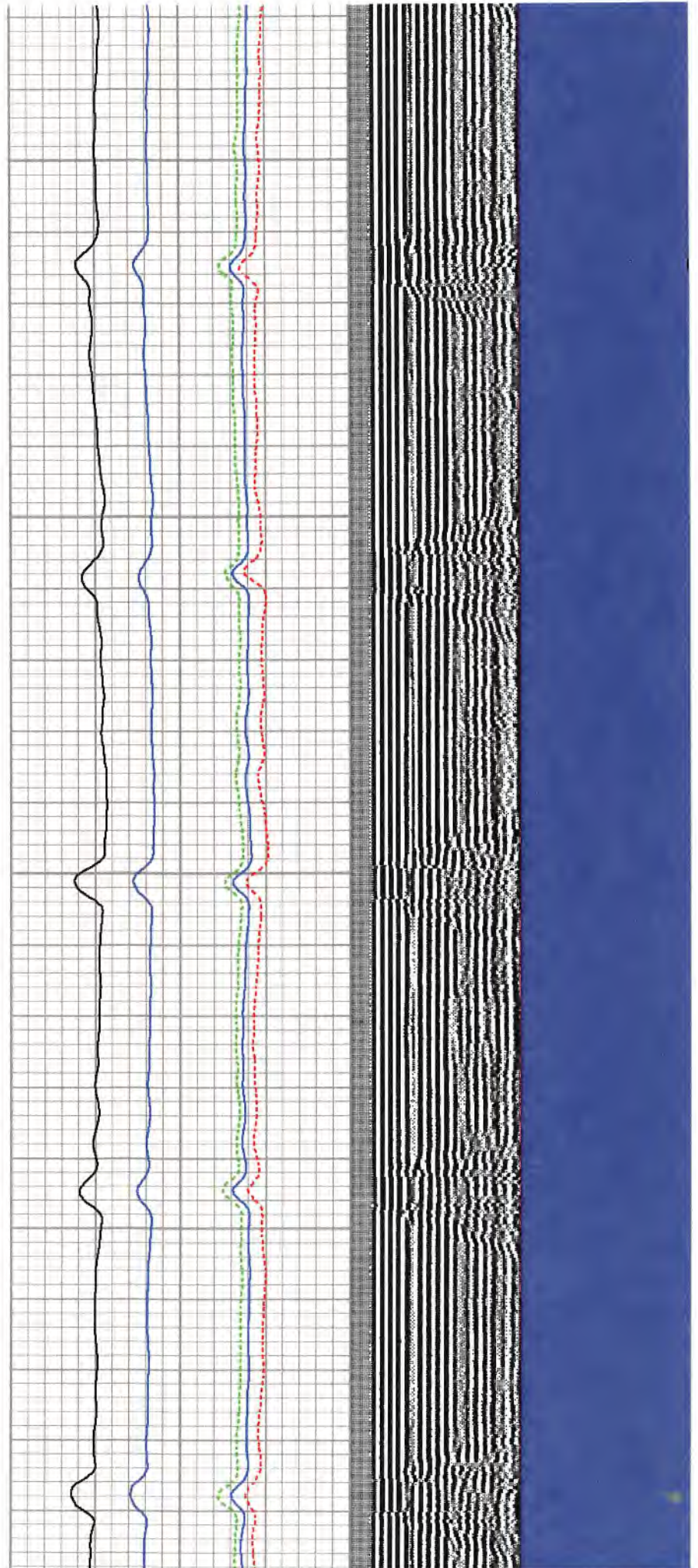


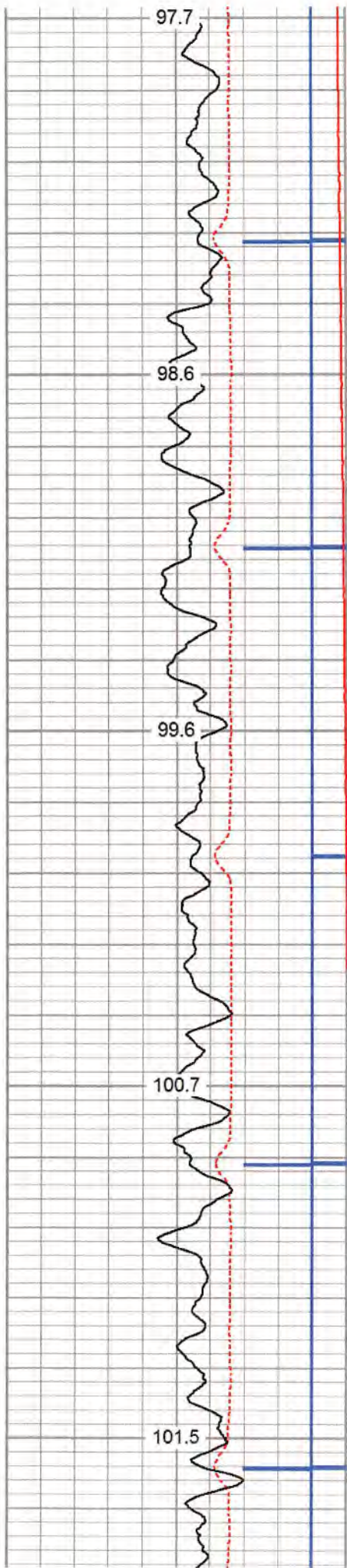
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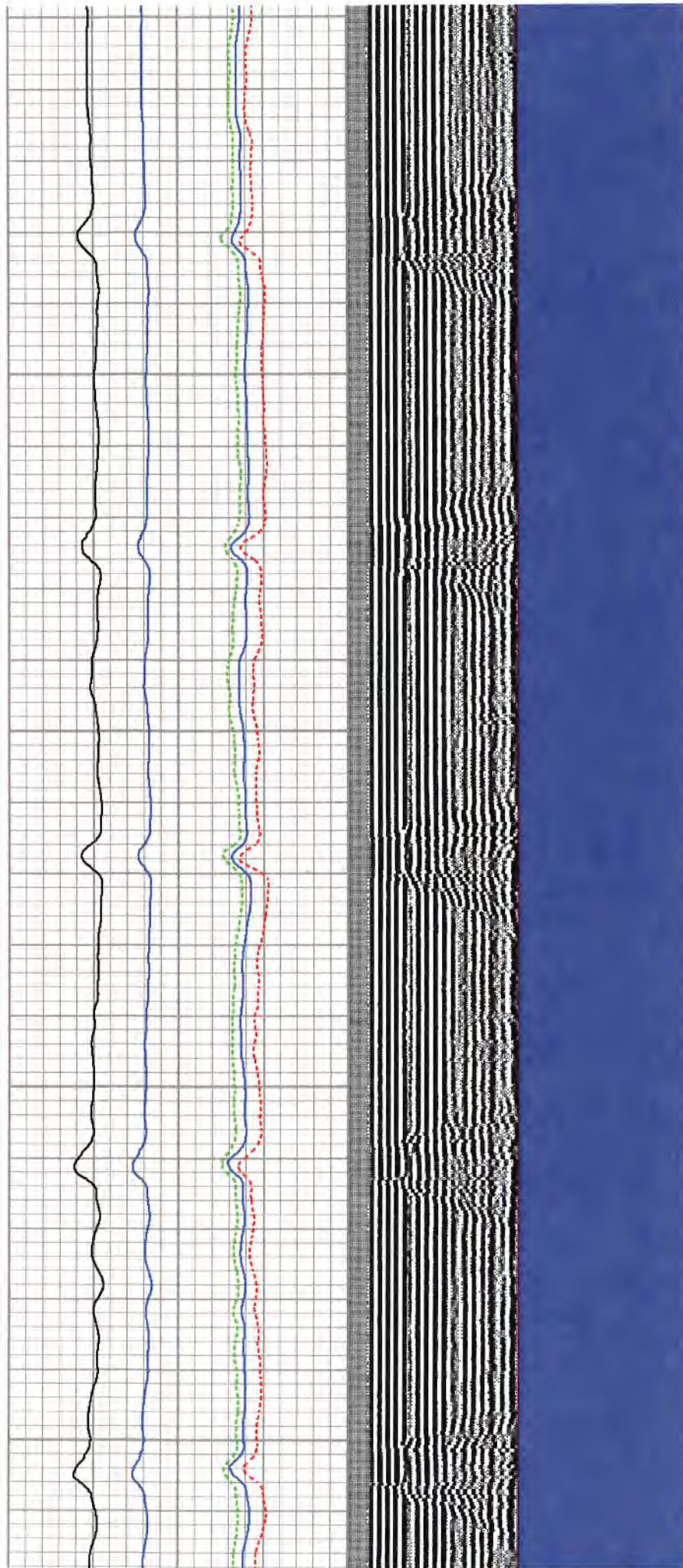
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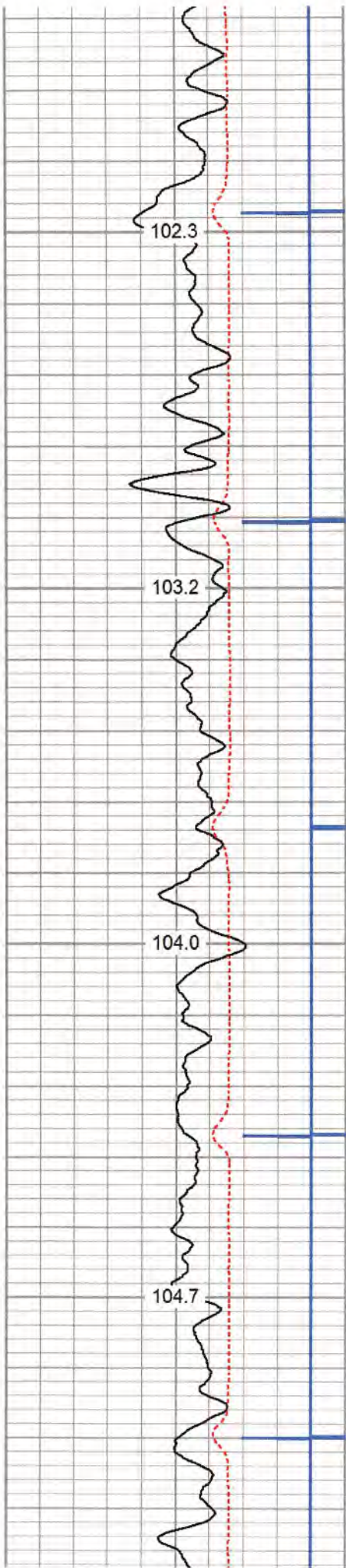
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4200
4250
4300
4350



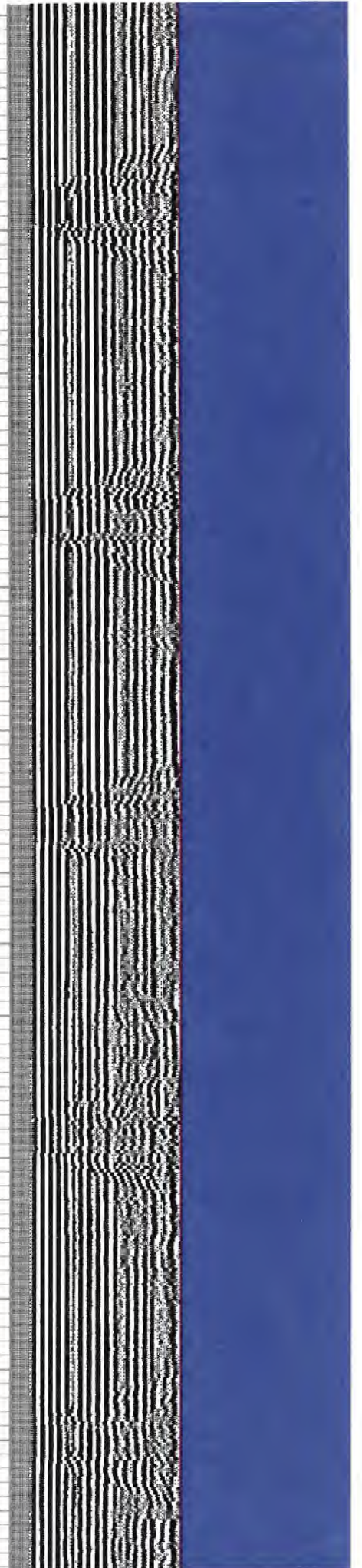
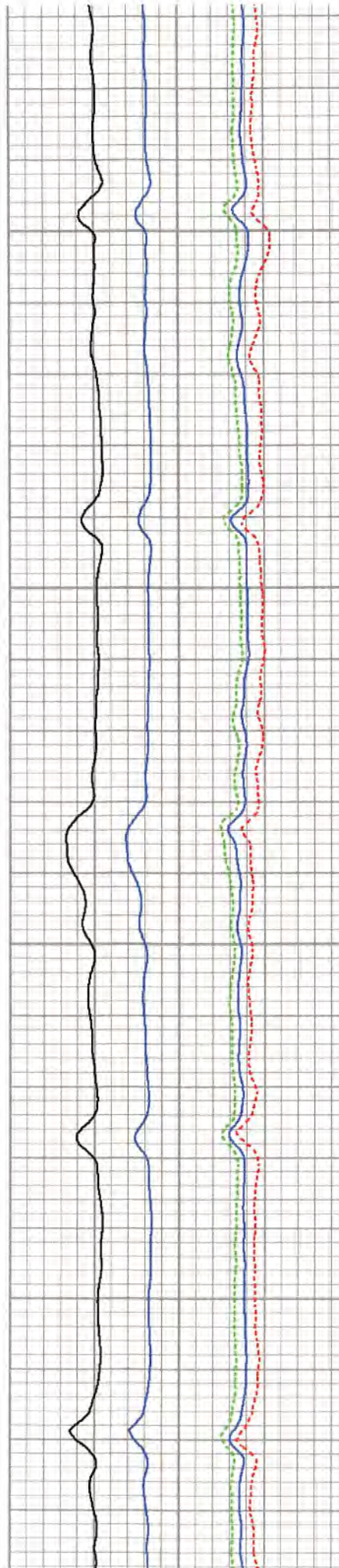


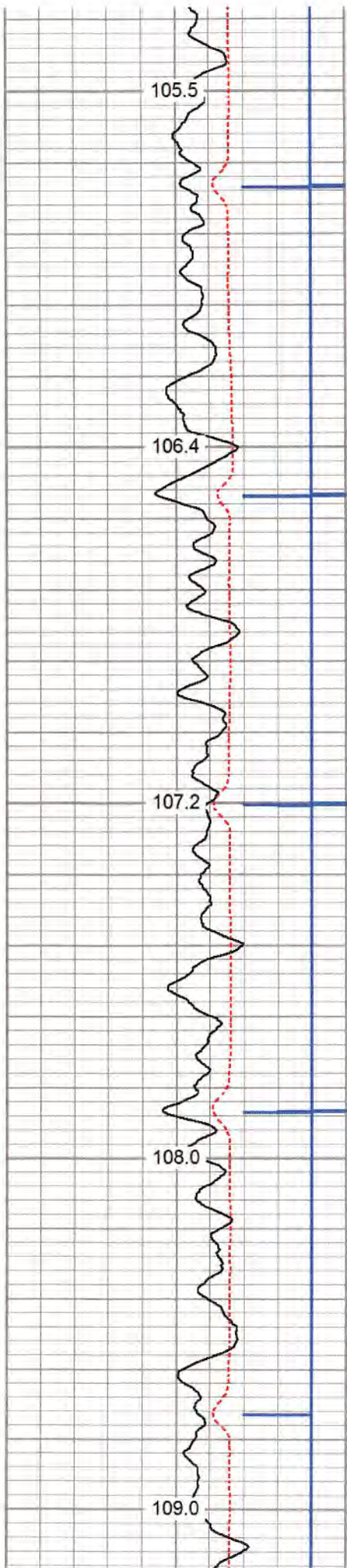
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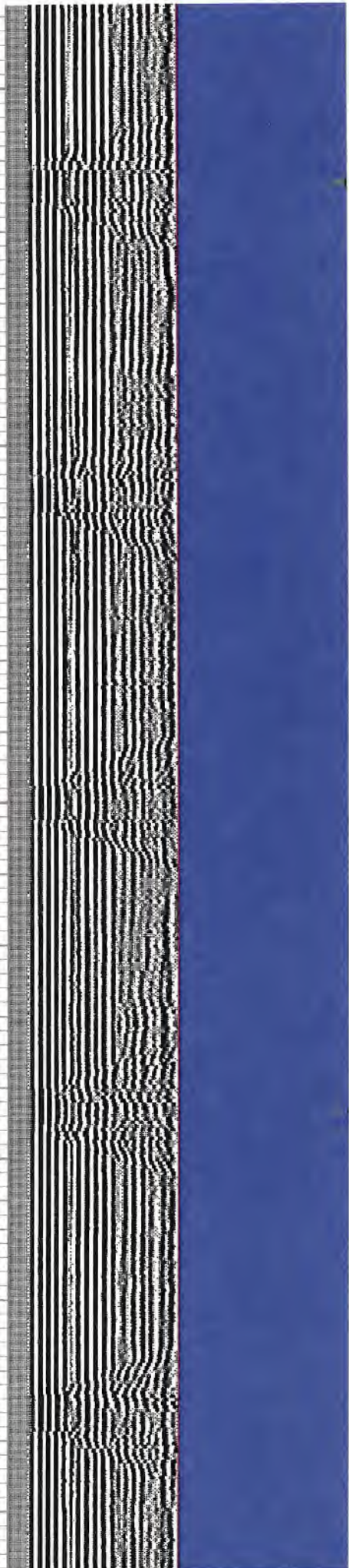
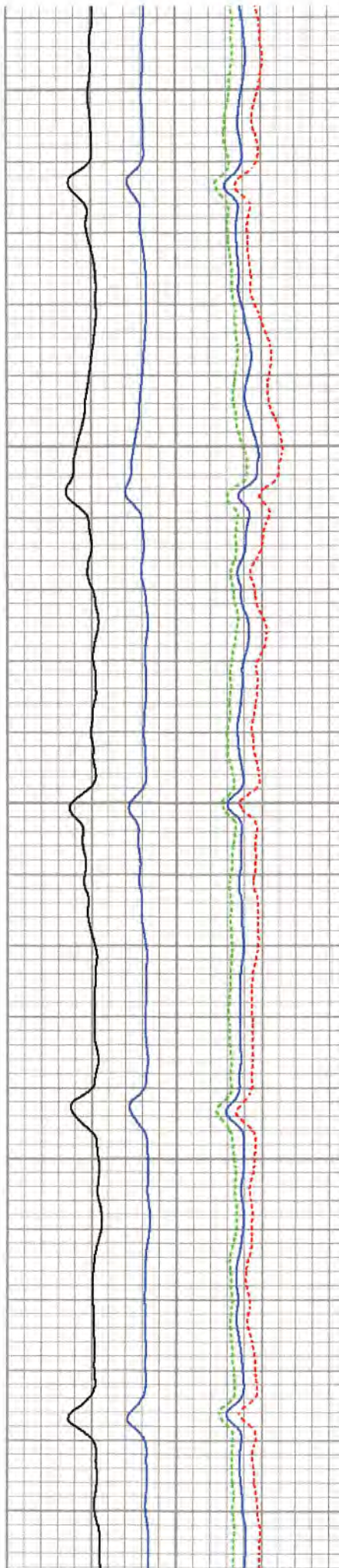
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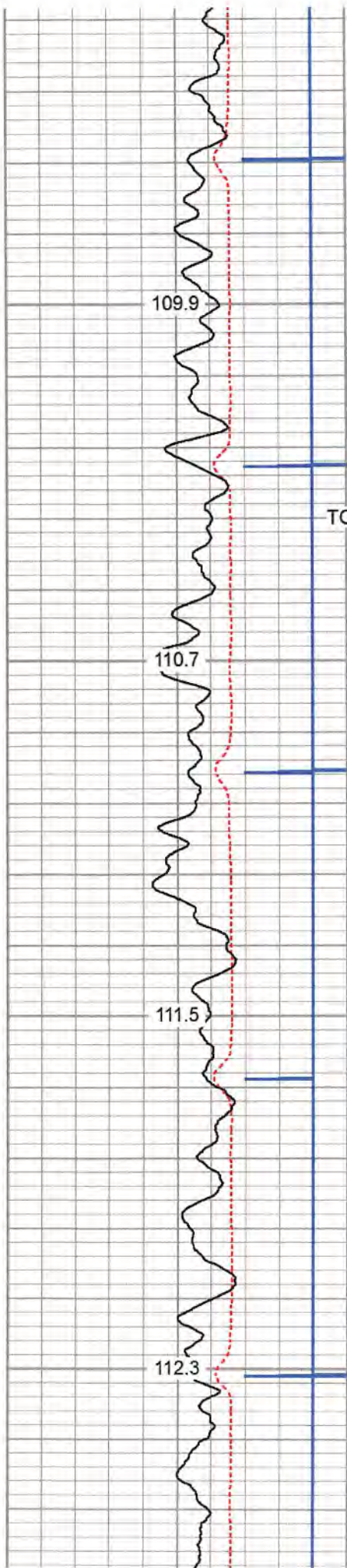
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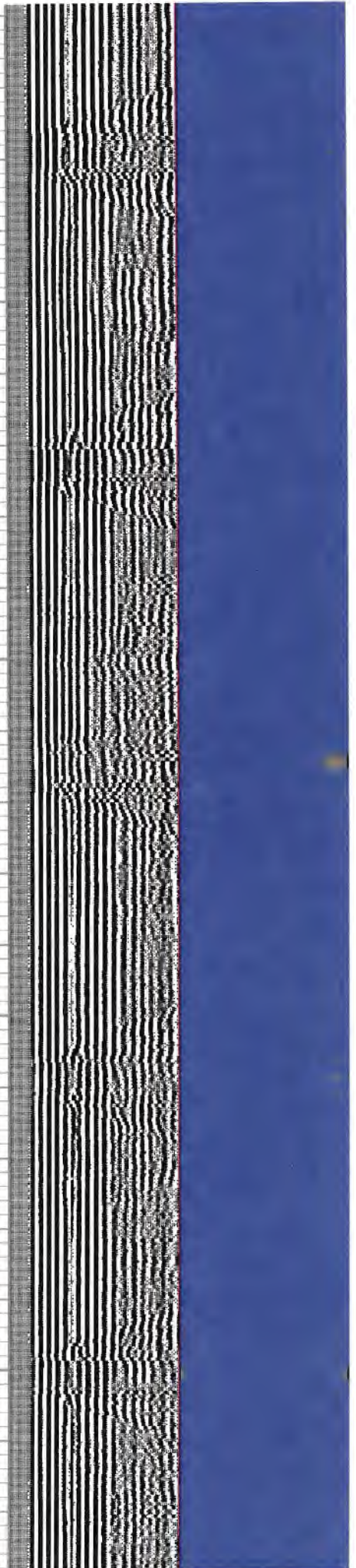
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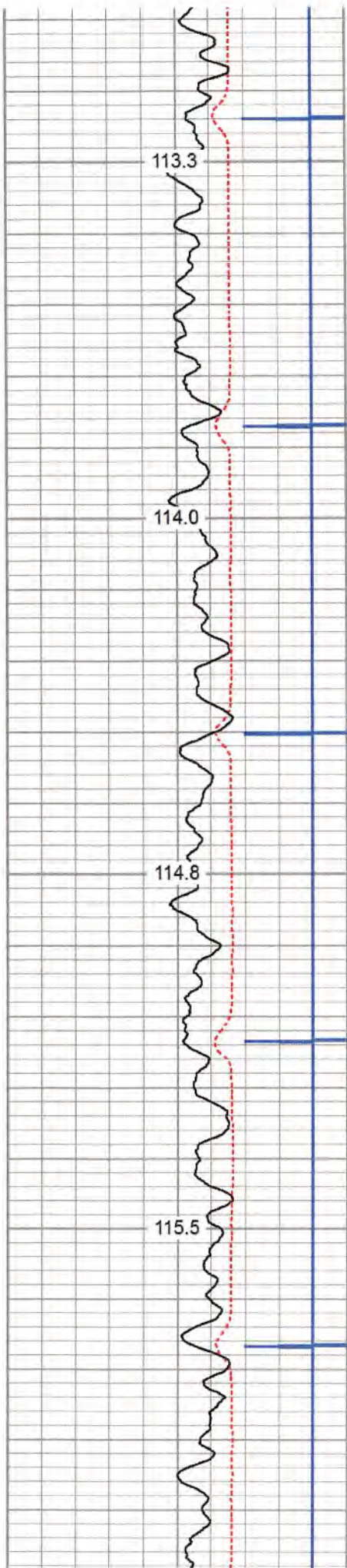
TOP OF CEMENT

4900

4950

5000



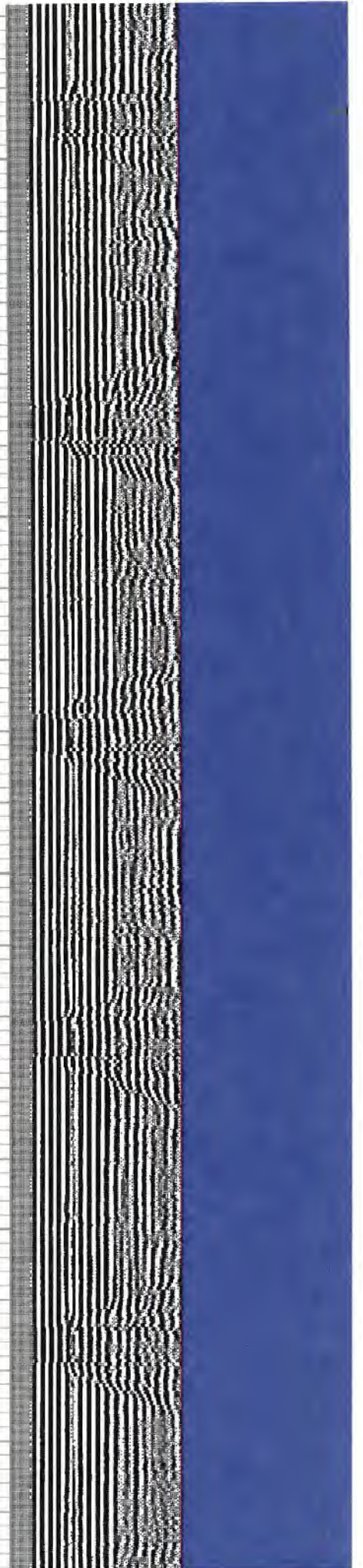
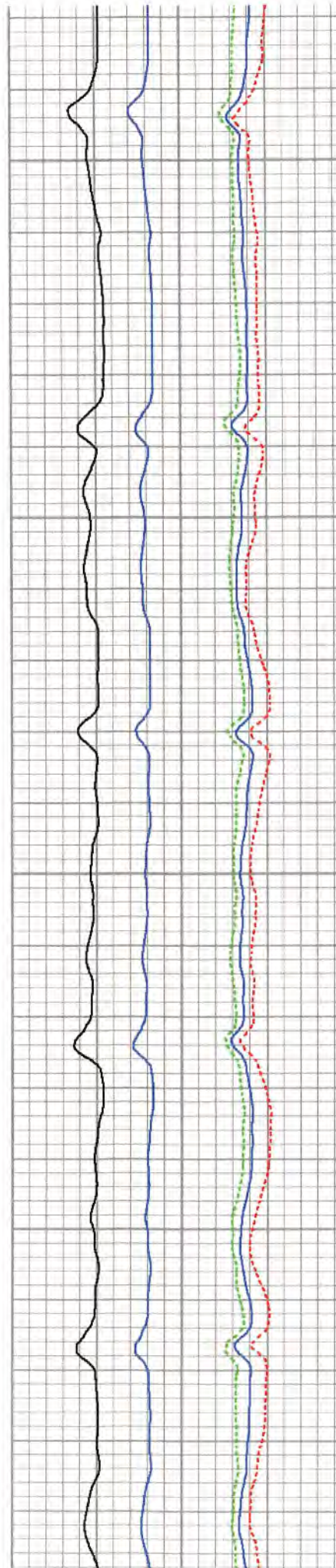


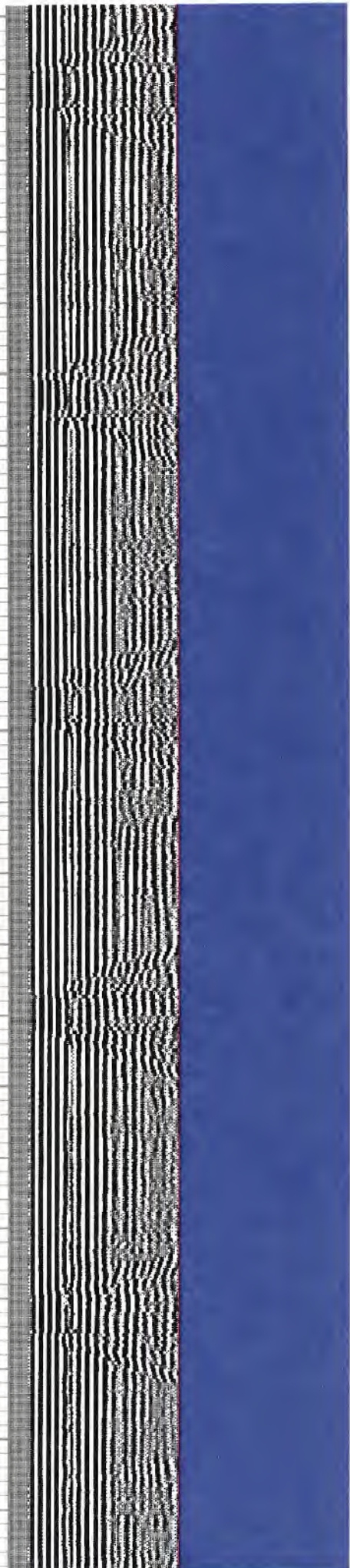
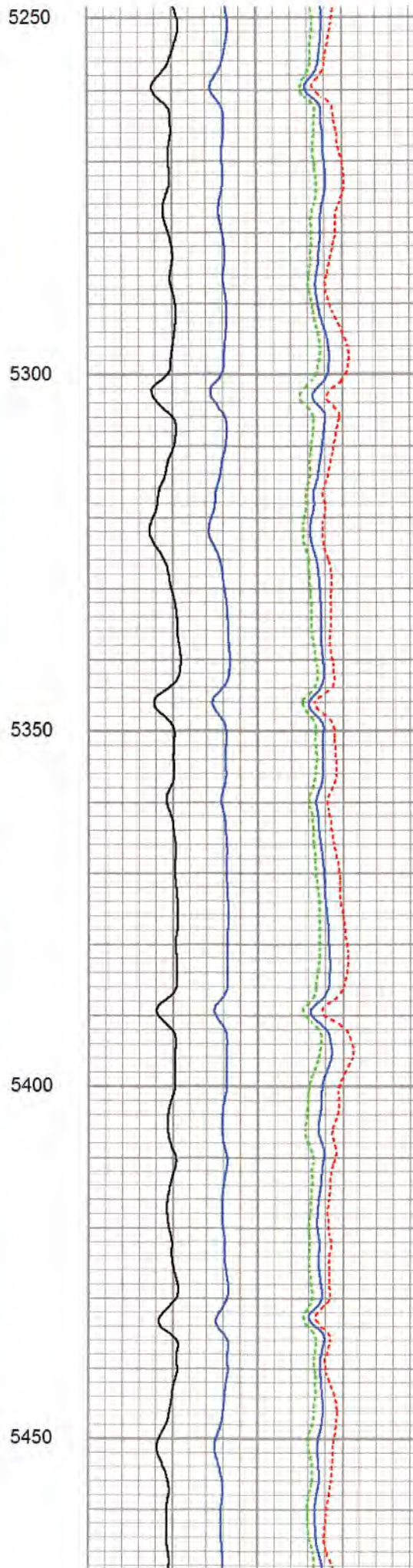
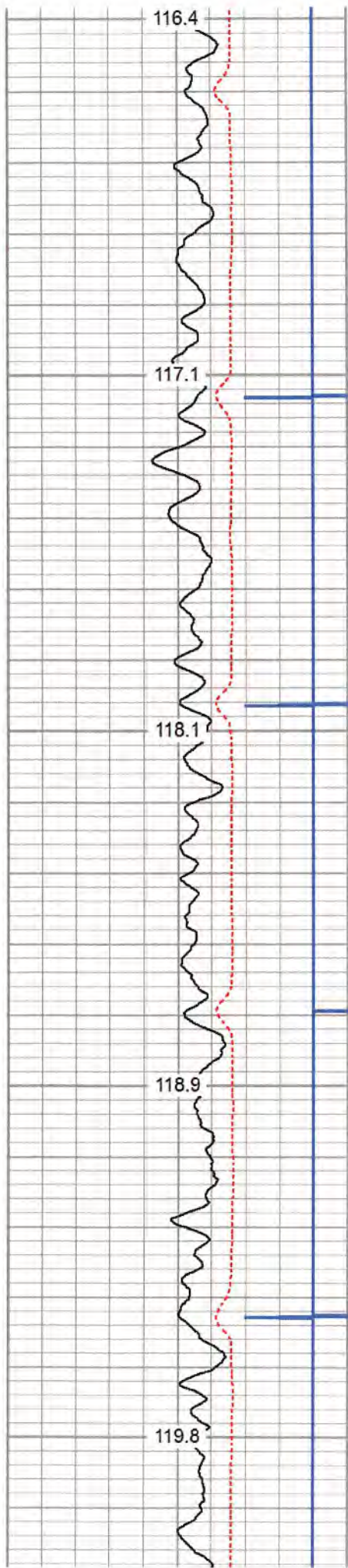
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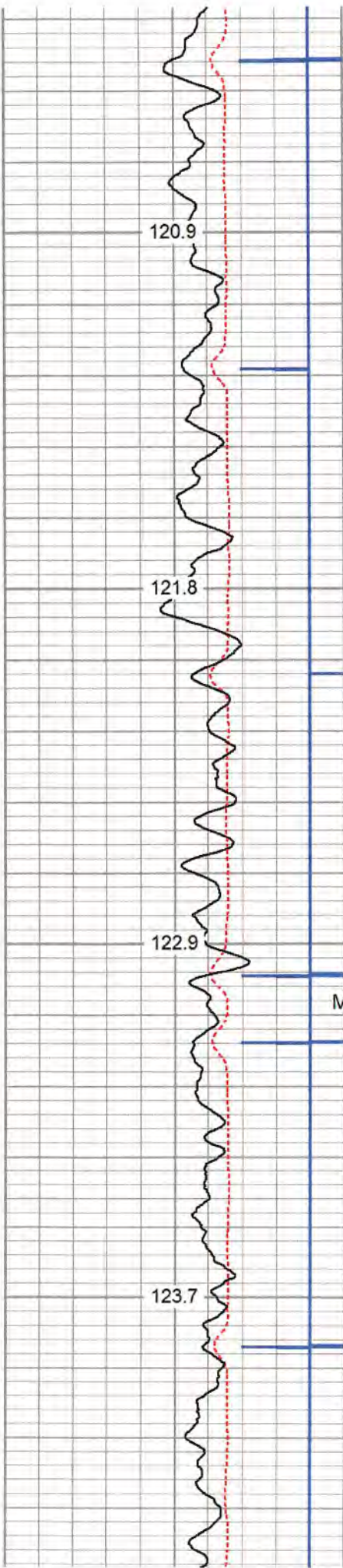
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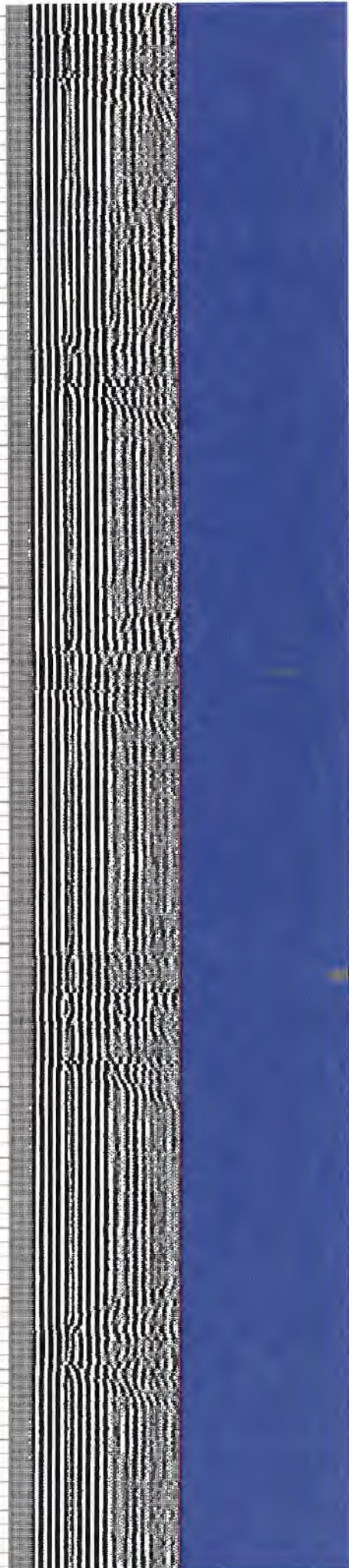
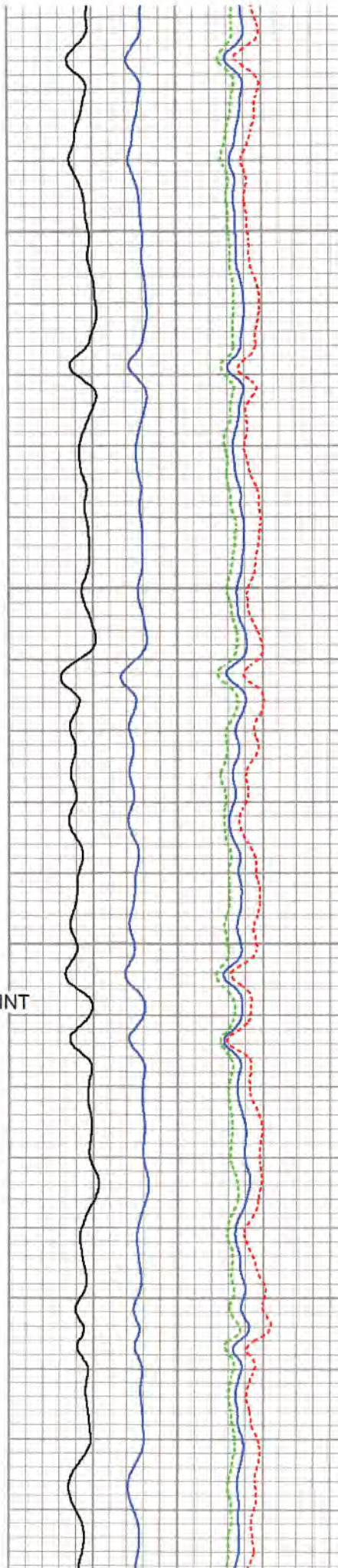


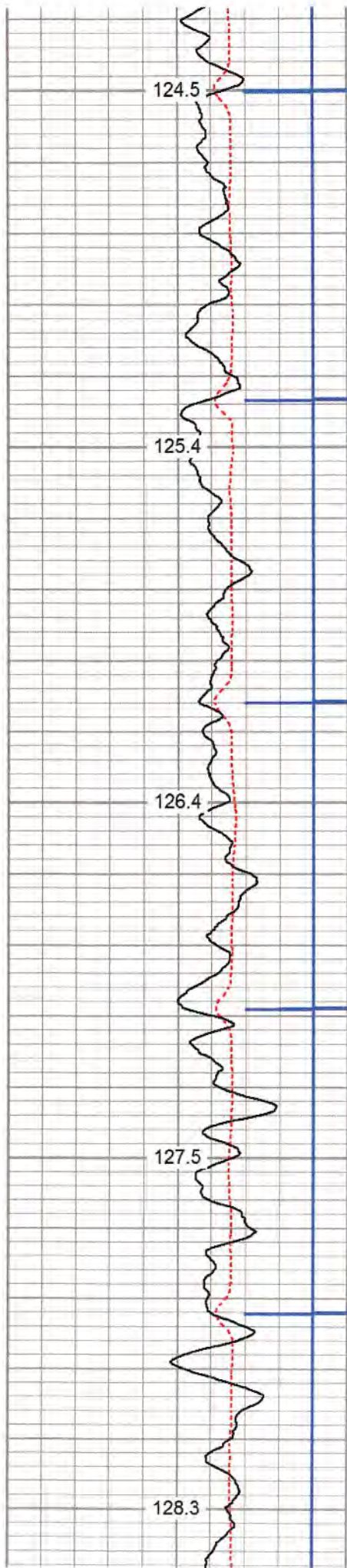




5500
5550
5600
5650

MARKER JOINT





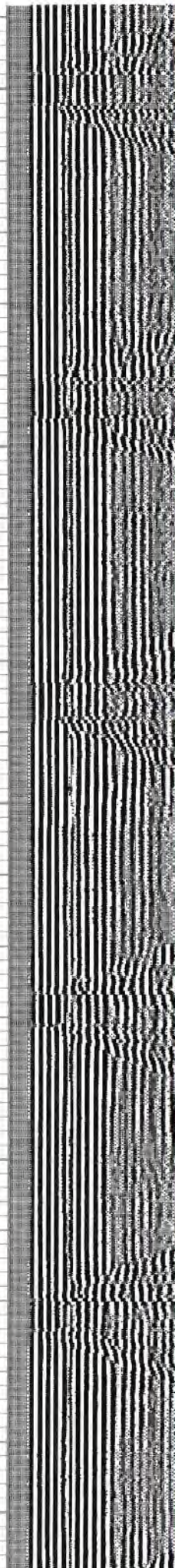
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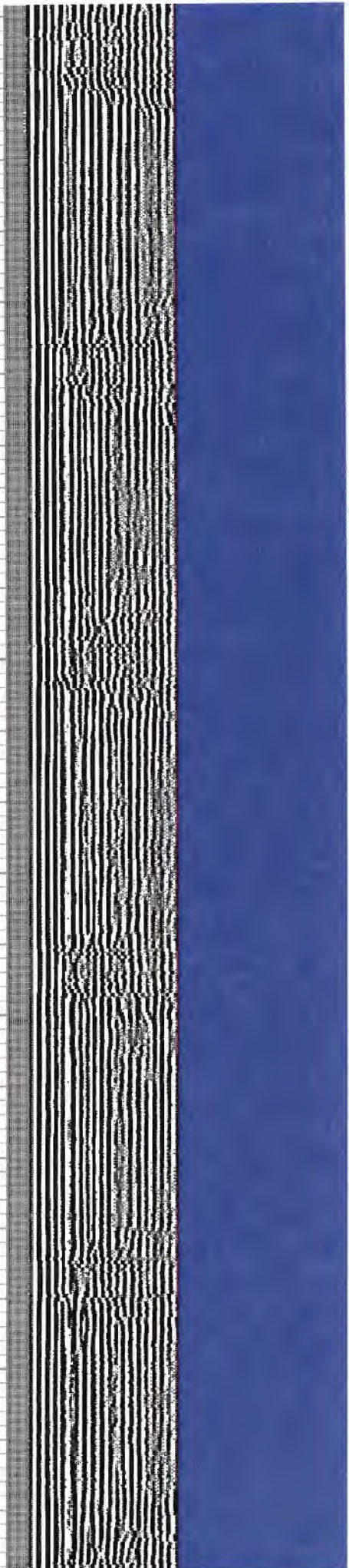
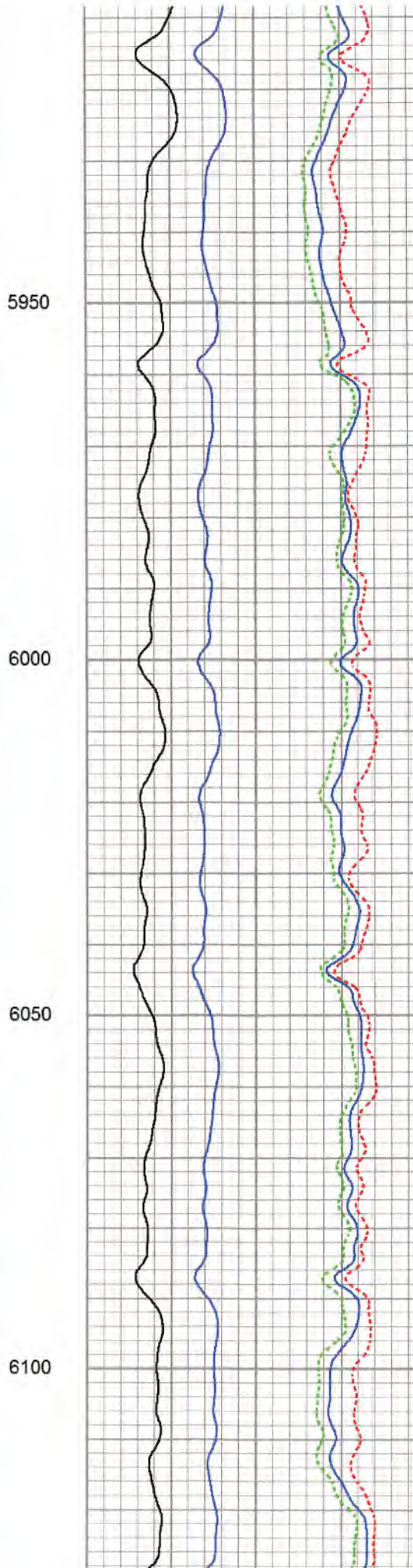
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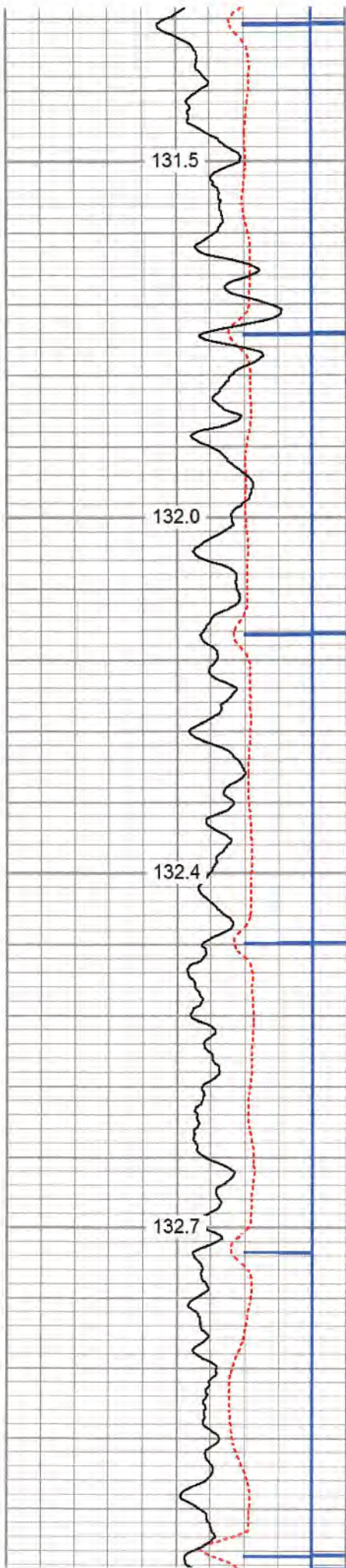
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5900





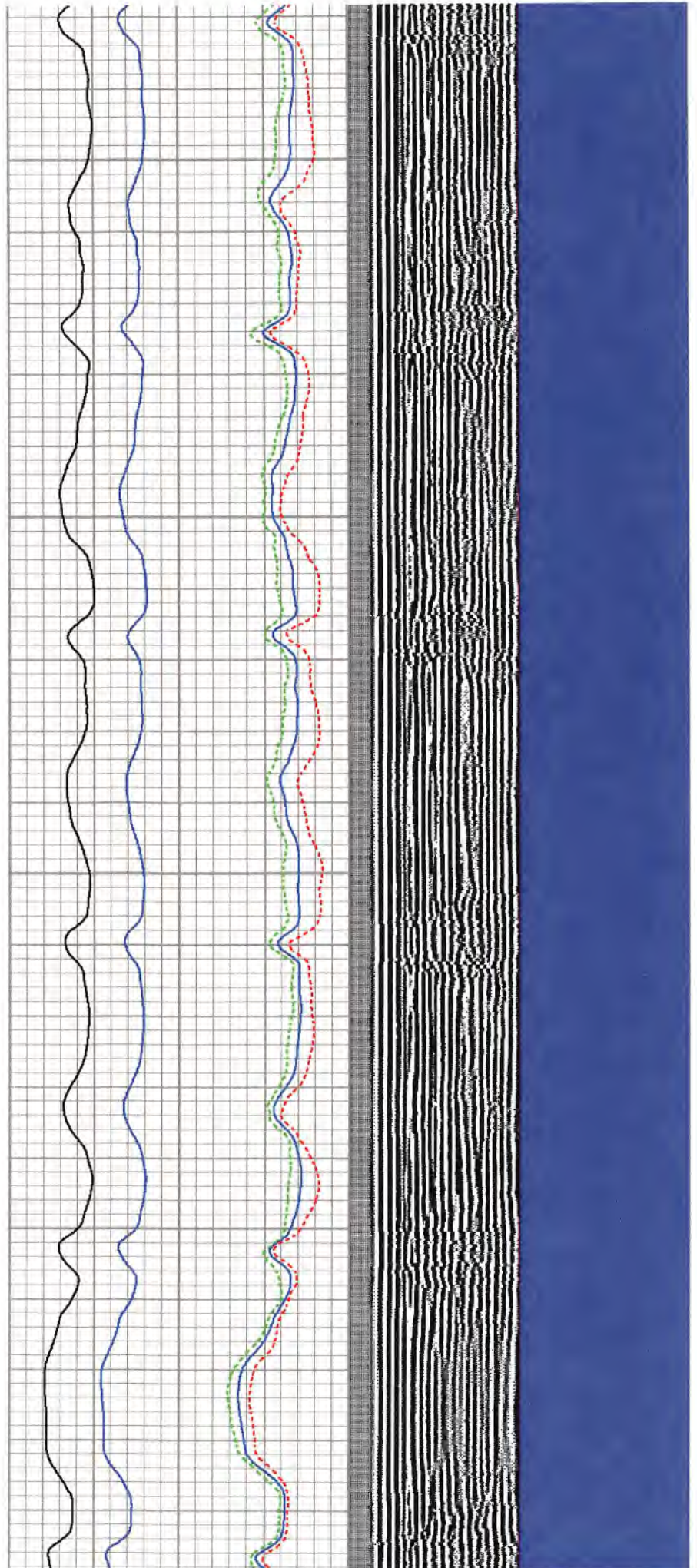


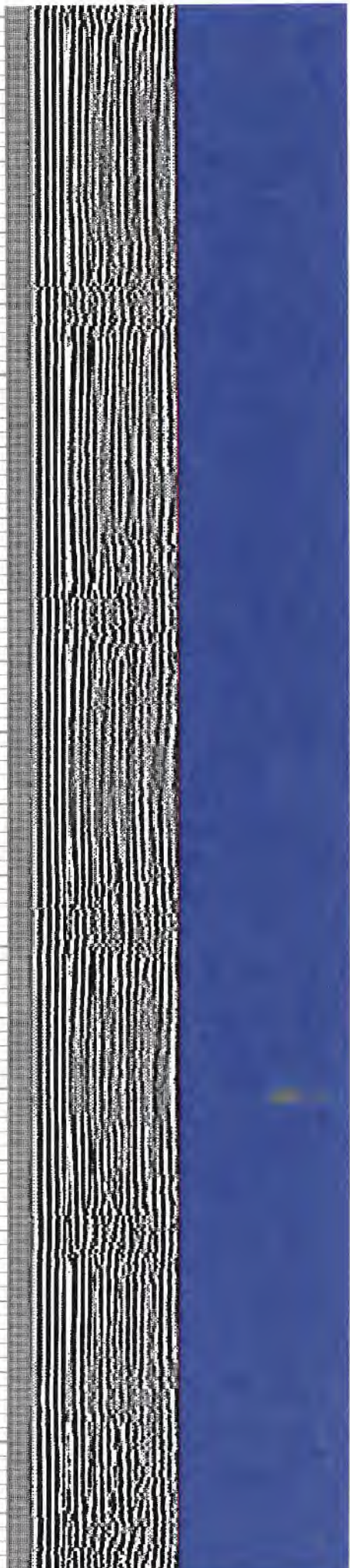
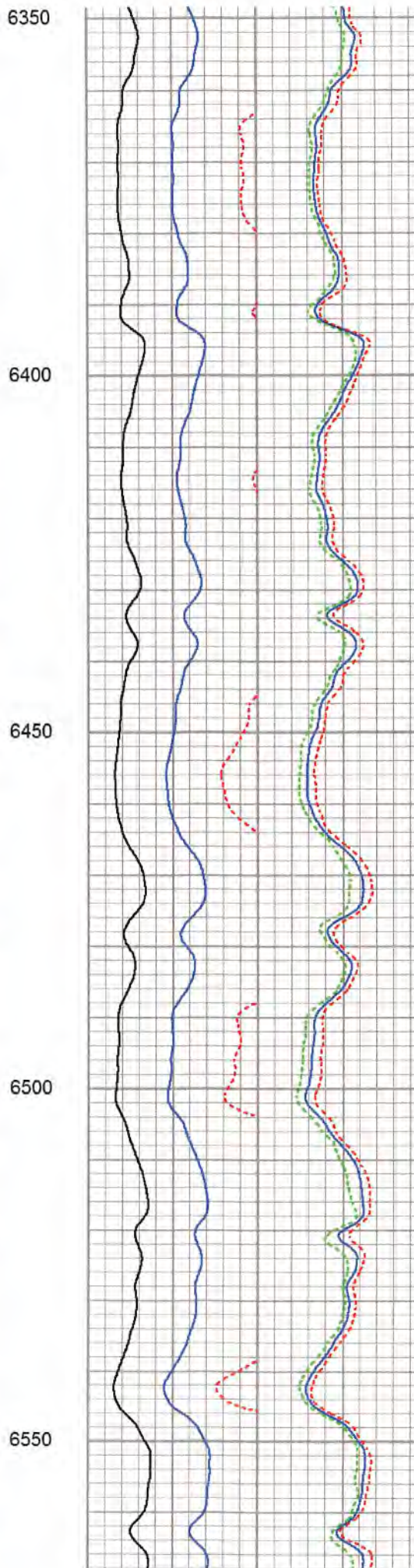
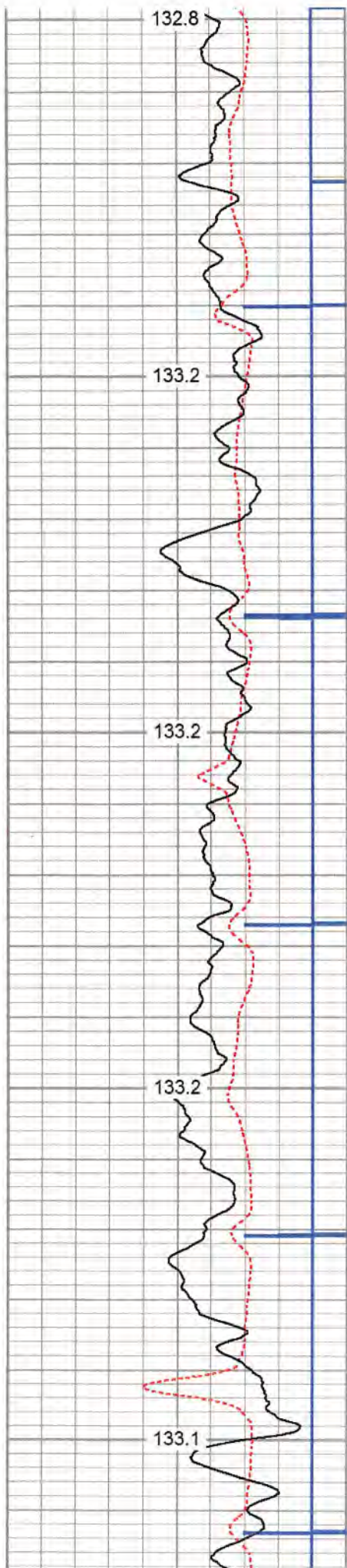
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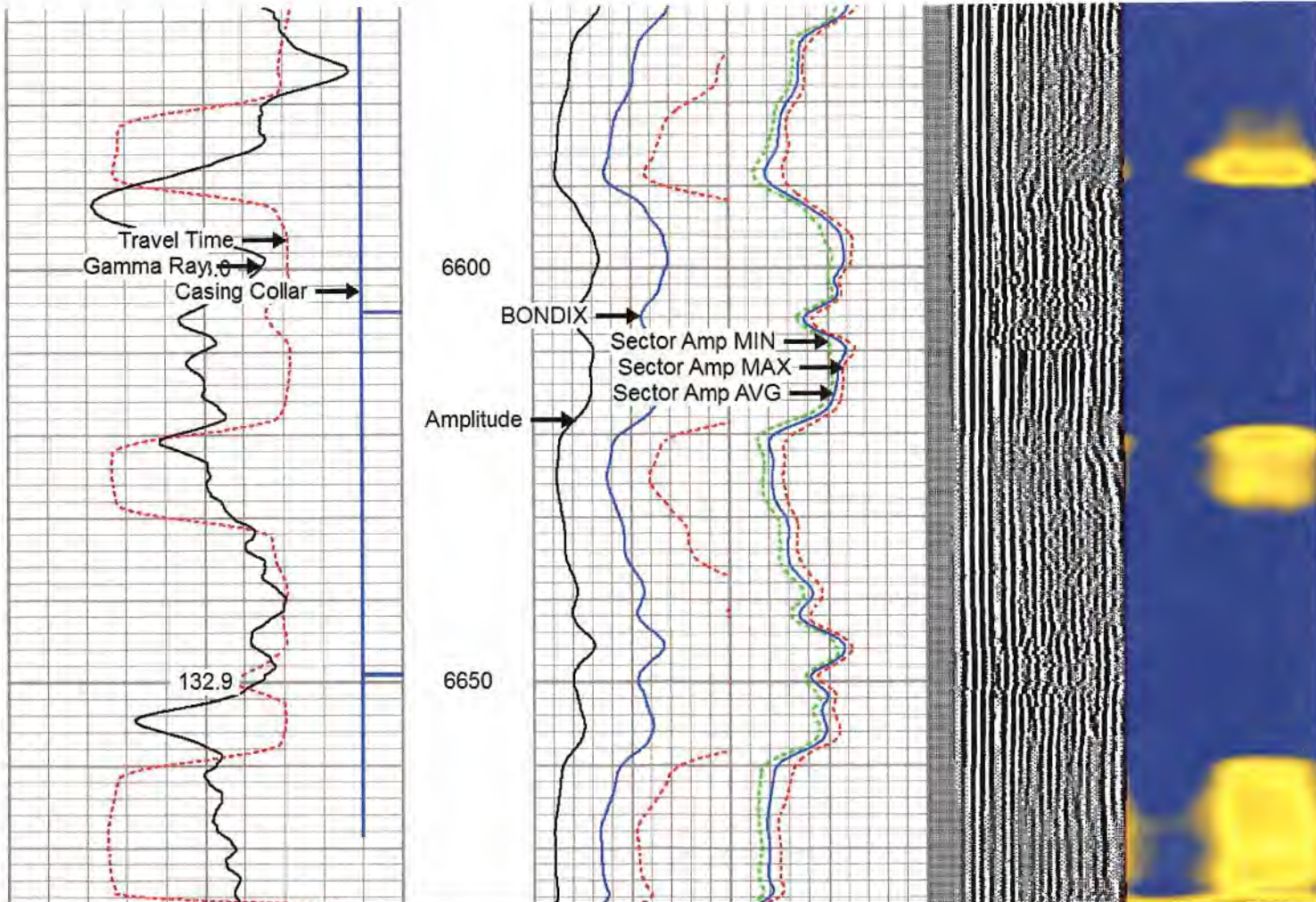
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6300







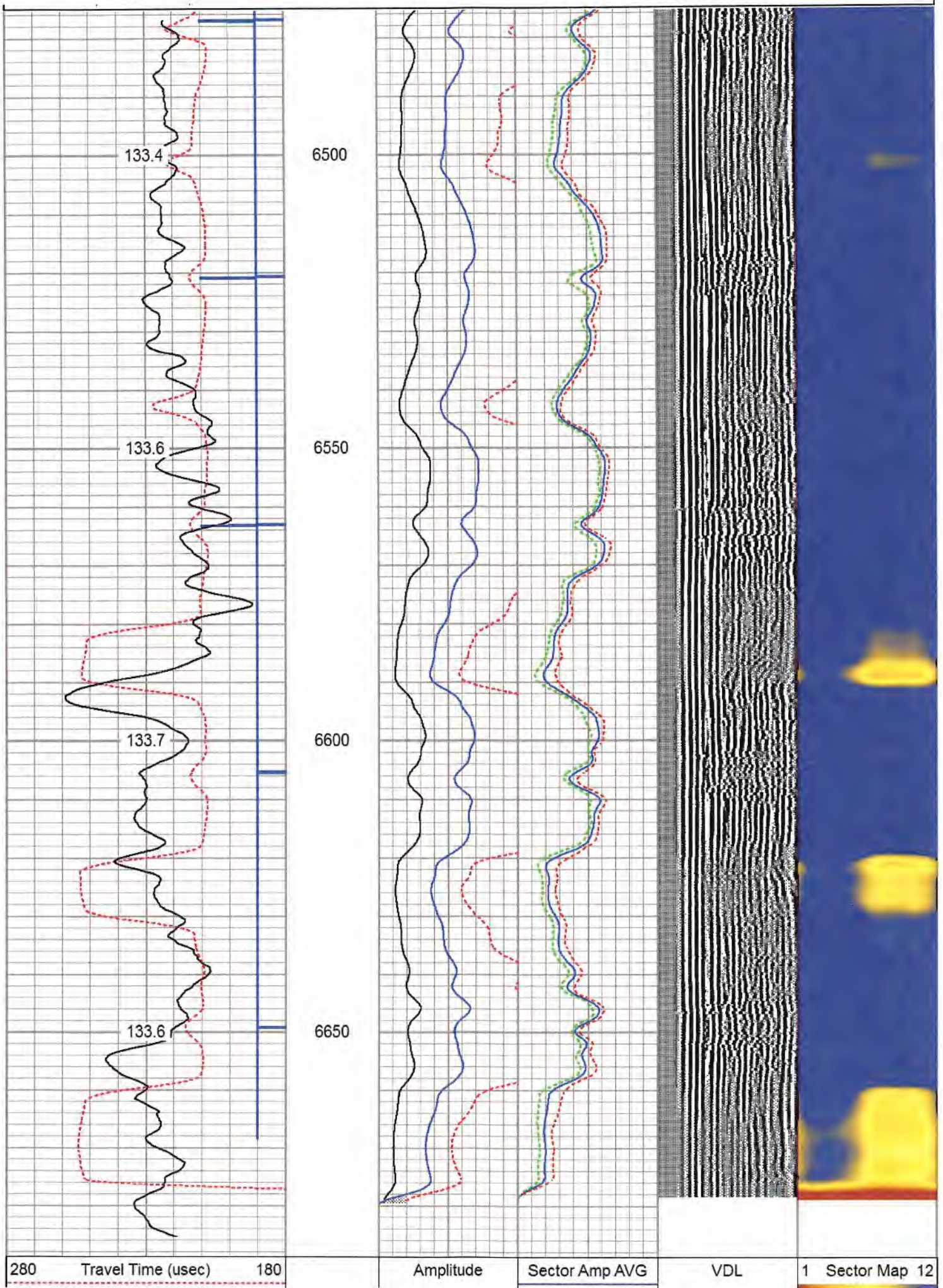
280	Travel Time (usec)	180	Amplitude	Sector Amp AVG	VDL	1	Sector Map	12
9	Casing Collar	-1	0 (mV) 100	Sector Amp MAX	200 (usec) 1200			
0	Gamma Ray	180	Amp X5	Sector Amp MIN				
0	TEMP (degF)	100	0 (mV) 20					
180	GR	360	1 BONDIX 0					
	TEMP (degF)							




REPEAT PASS 1500 PSI

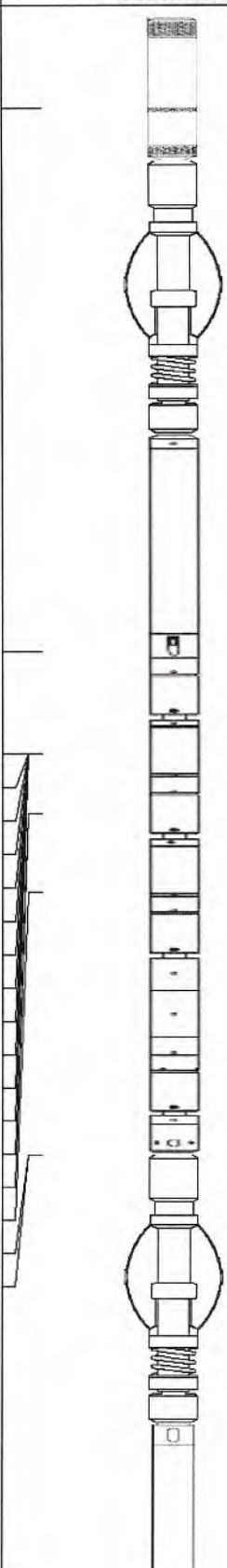
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 Dataset Pathname pass2
 Presentation Format antero
 Dataset Creation Tue Aug 25 14:02:50 2020
 Charted by Depth in Feet scaled 1:240

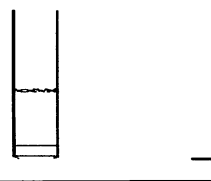
280	Travel Time (usec)	180	Amplitude	Sector Amp AVG	VDL	1	Sector Map	12
9	Casing Collar	-1	0 (mV) 100	Sector Amp MAX	200 (usec) 1200			
0	Gamma Ray	180	Amp X5	Sector Amp MIN				
0	TEMP (degF)	100	0 (mV) 20					
180	GR	360	1 BONDIX 0					
	TEMP (degF)							



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

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

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 (10L40-03_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-Tek-Co 2 3/4 (IPSNO-03)	3.67	2.75	40.00	

GR	1.04		Tekco 2 3/4" 400 Deg. F Logging Gamma Ray			
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Dataset: 8_25_20_antero_richmondunit_1h.db: field/well/run1/pass3
 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_richmondunit_1h.db
 Dataset Pathname pass3
 Dataset Creation Tue Aug 25 14:20:02 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
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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	RICHMOND UNIT 1H		
Field	MARCELLUS		
County	TYLER		
State	WV	Country	US