



## Cement Bond Log

Company	Mull Drilling Company, Inc.	Company	Mull Drilling Company, Inc.
Well	NWAU #38	Well	NWAU #38
Field	Arapahoe	Field	Arapahoe
County	Cheyenne	County	Cheyenne
State	CO	State	CO
Location:		API # : 05-017-07799-00	Other Services
2070' FSL & 659' FWL NW/4 - SW/4			
SEC 25 TWP 13S RGE 43W			
Permanent Datum	Ground Level	Elevation	3988'
Log Measured From	Kelly Bushing 11' AGL		
Drilling Measured From	K. B	Elevation	K.B. 3999' D.F. 3997' G.L. 3988'

Date	11-24-14
Run Number	ONE
Depth Driller	5400'
Depth Logger	5353'
Bottom Logged Interval	5351'
Top Log Interval	1200'
Open Hole Size	8 5/8"
Type Fluid	Water
Density / Viscosity	///
Max. Recorded Temp.	///
Estimated Cement Top	3272'
Time Well Ready	10:00 A.M
Time Logger on Bottom	10:20 A.M
Equipment Number	T-045
Location	Hays, KS
Recorded By	C. Patterson
Witnessed By	Mr. Ray Brown

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
Casing Record	Size	Vgt/Ft	Top	Bottom			
Surface String	8 5/8"	26#	0'	518'			
Prot. String							
Production String	5 1/2"	15.5#	0'	5397'			
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

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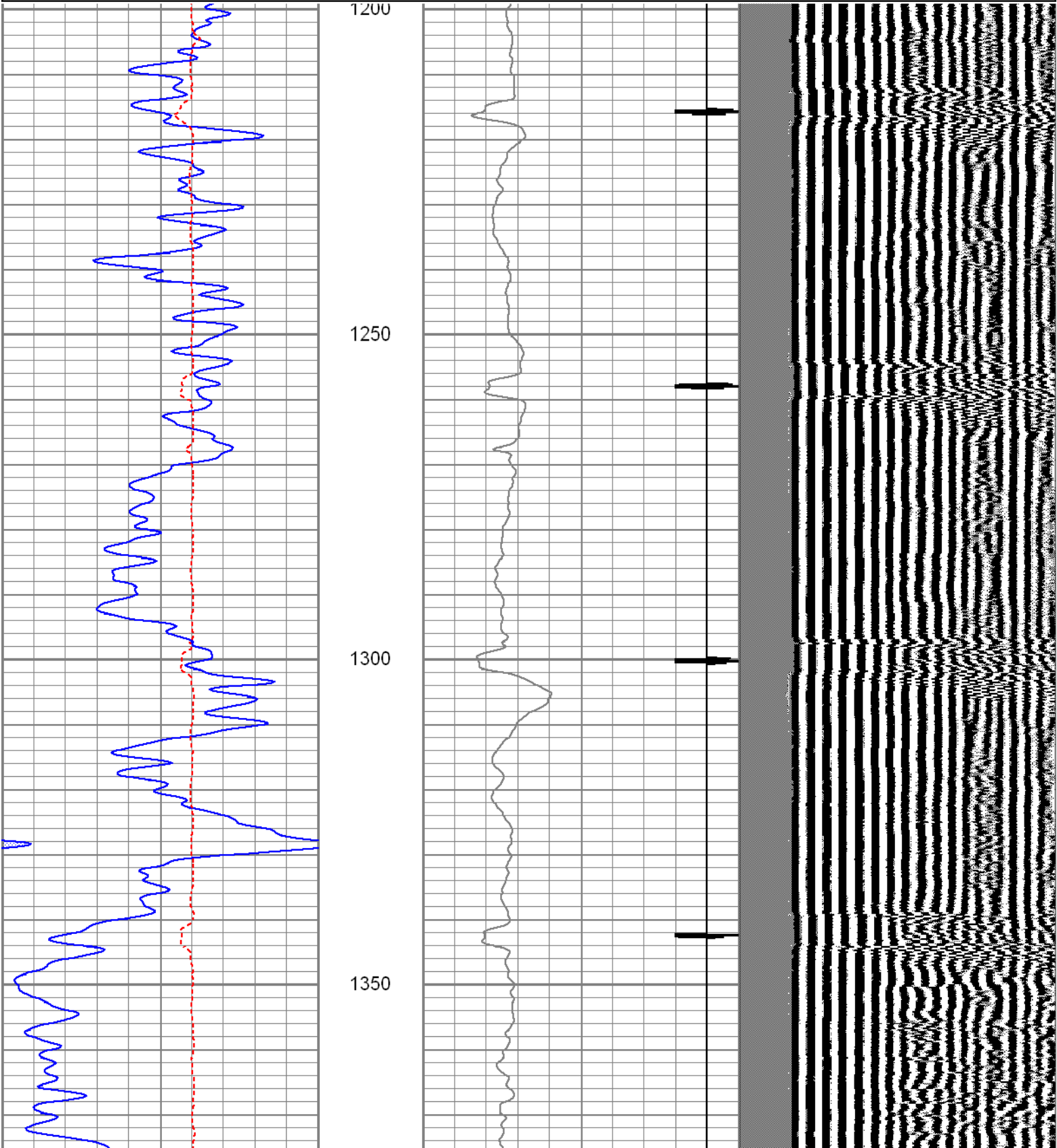
# Main Section

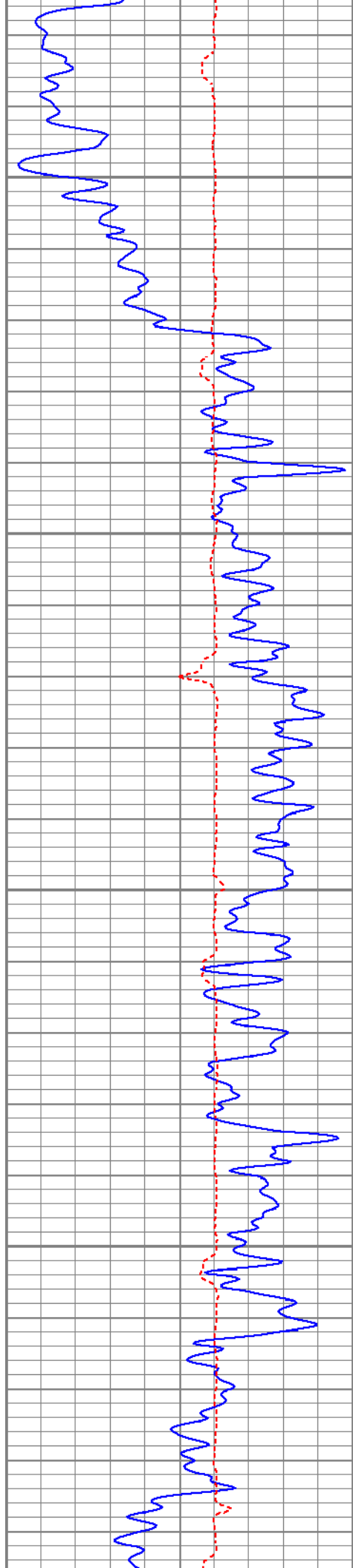
Database File mdnwau38cbl1.db  
Dataset Pathname pass2  
Presentation Format cbl  
Dataset Creation Mon Nov 24 11:28:09 2014  
Charted by Depth in Feet scaled 1:240

0	GR (GAPI)	150
150	GR (GAPI)	300
420	TT3FT (usec)	220

18	CCL	-2
0	AMP3 (mV)	100

200 VDL 1200



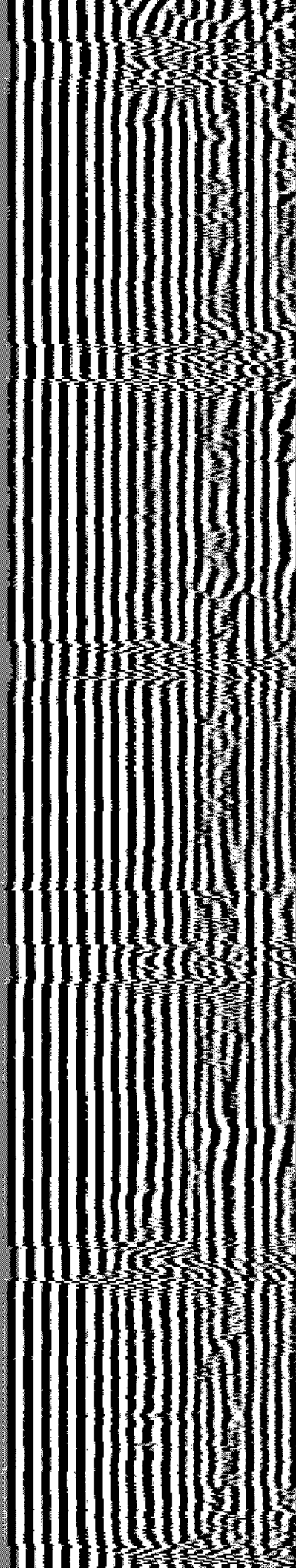
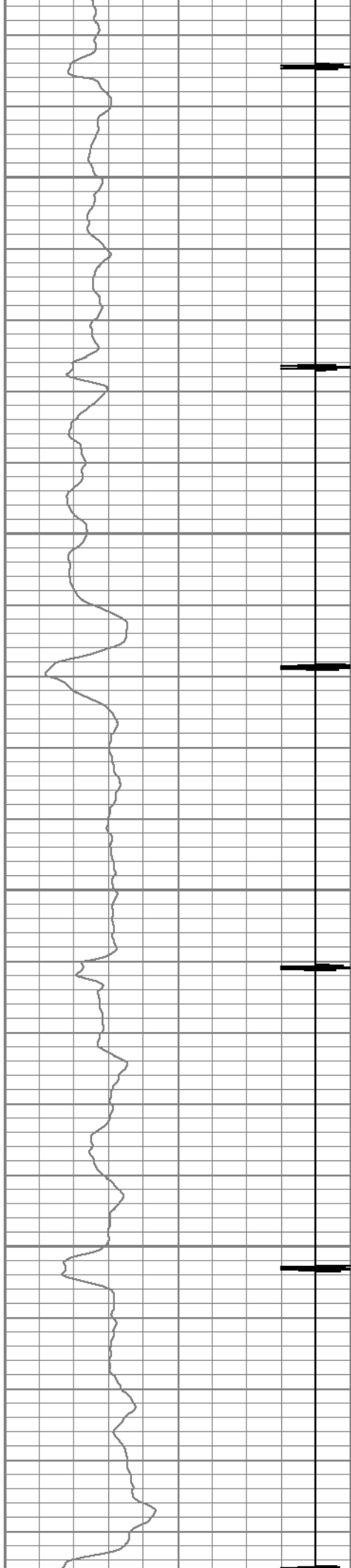


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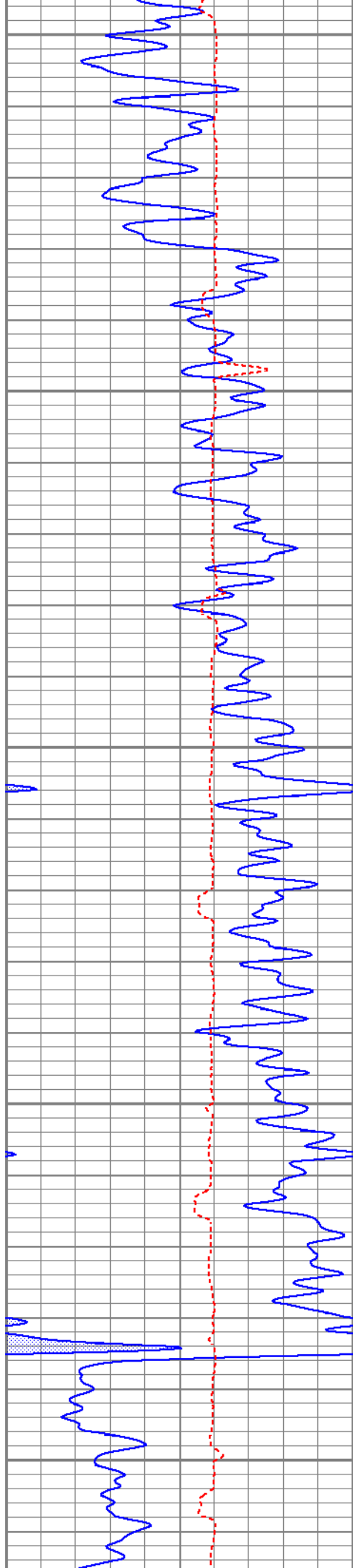
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1500

1550







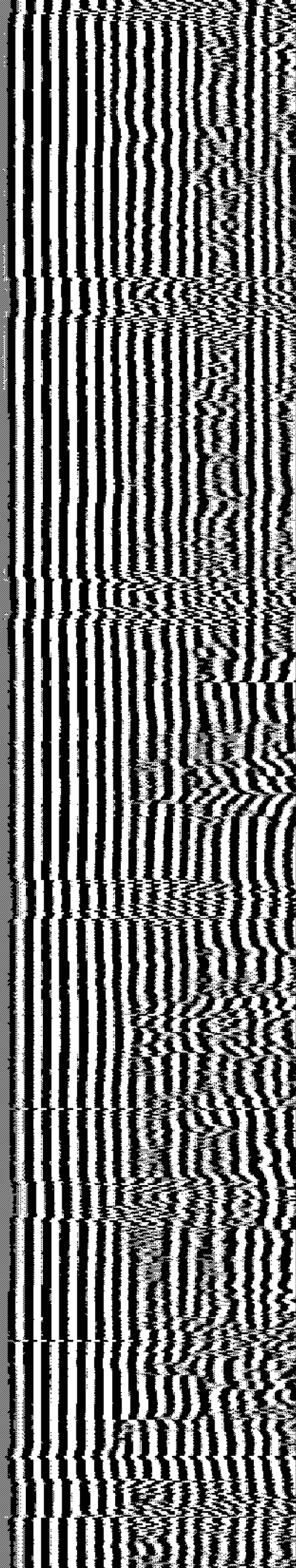
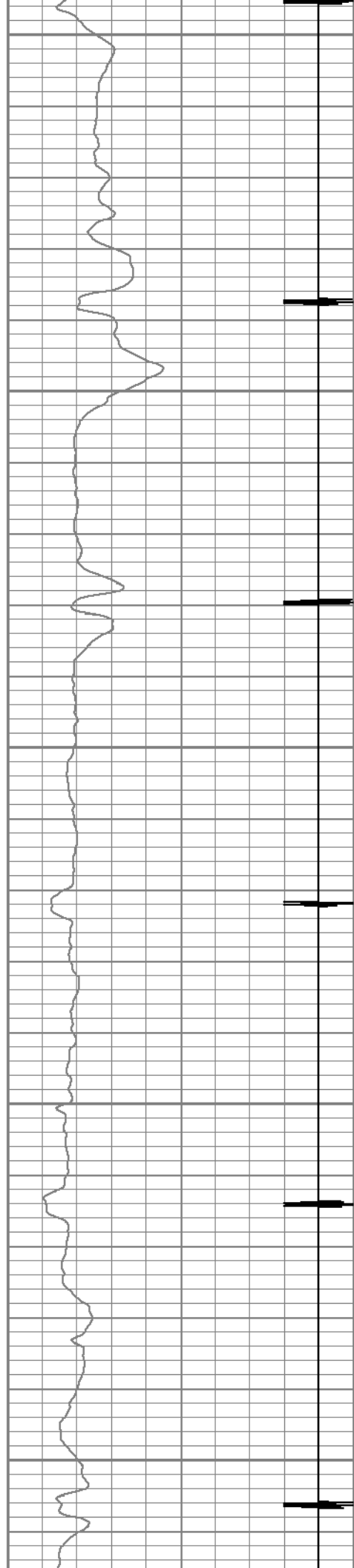
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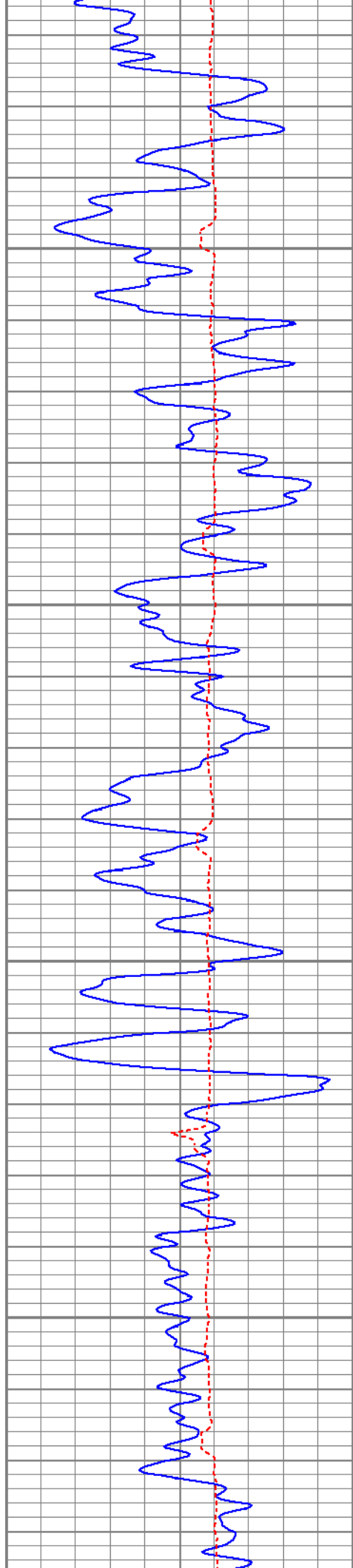
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1700

1750

1800



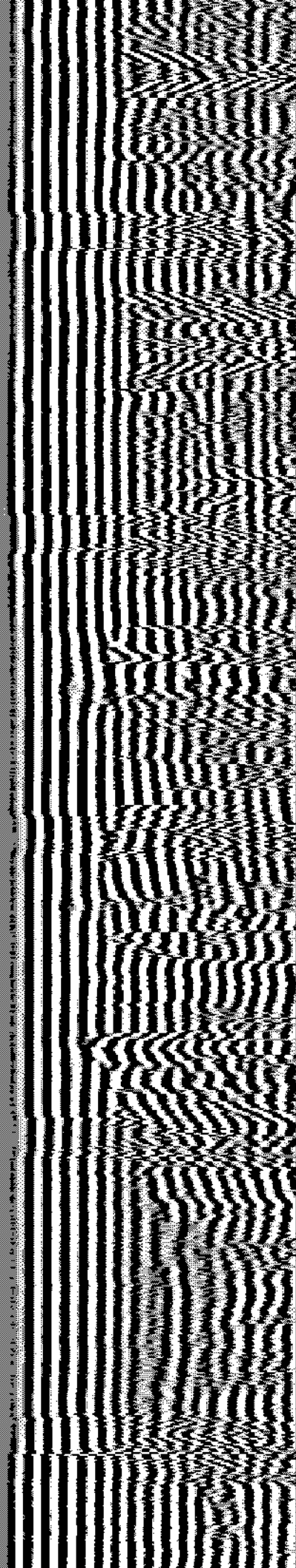
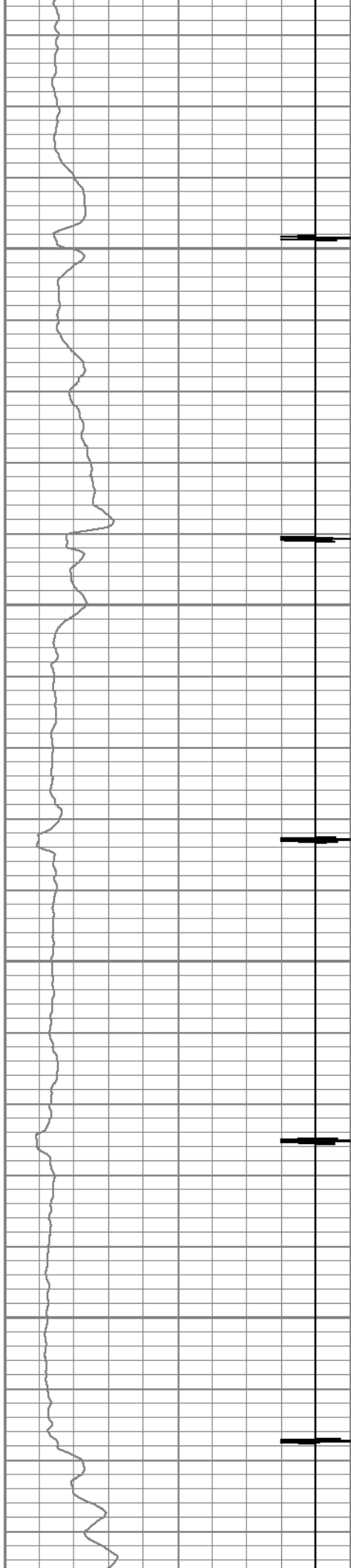


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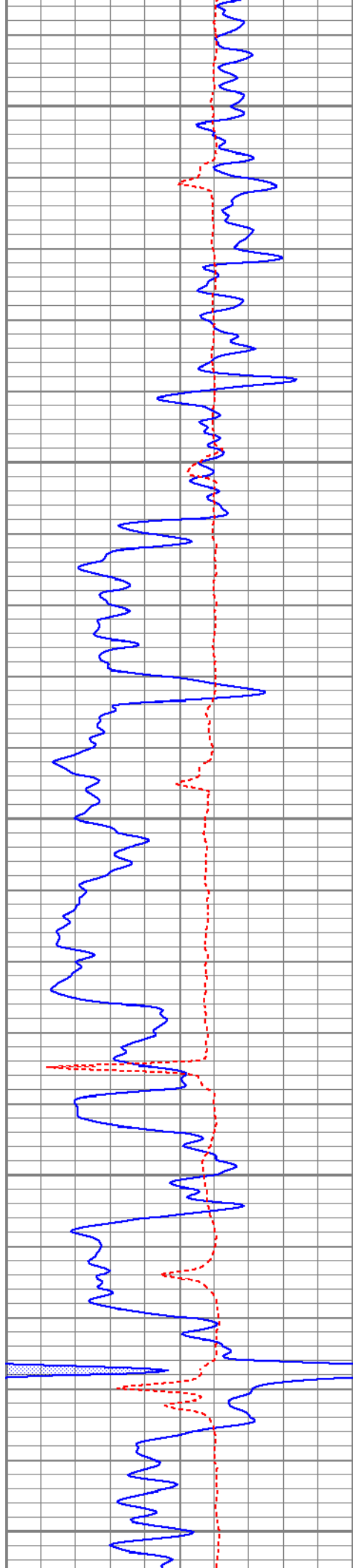
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1950

2000







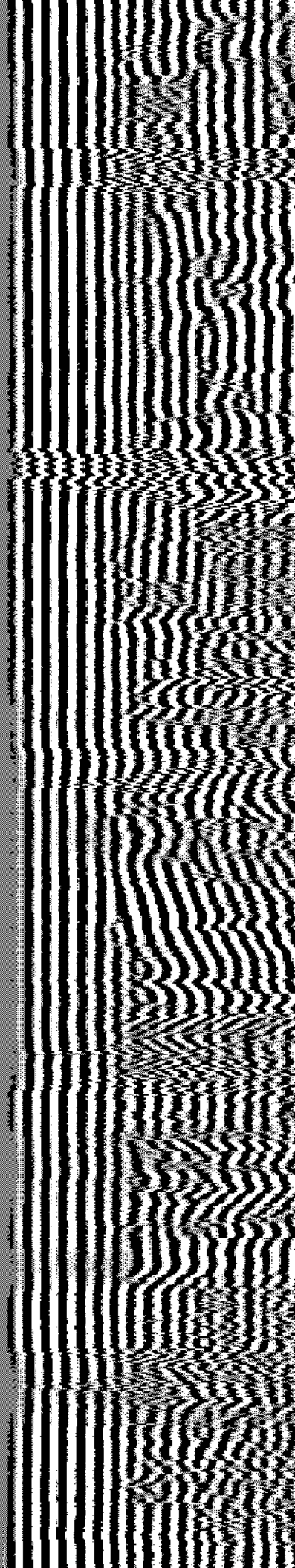
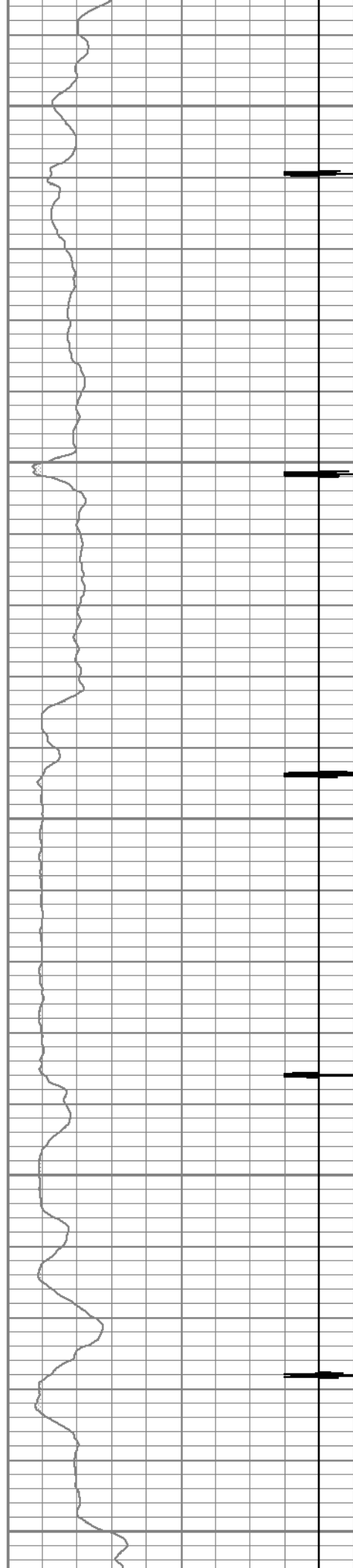
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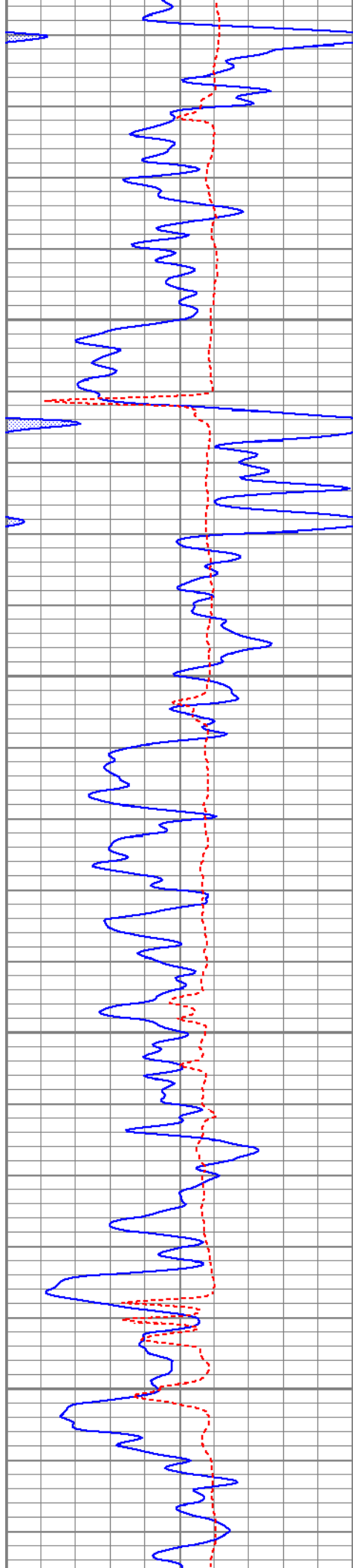
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2150

2200

2250



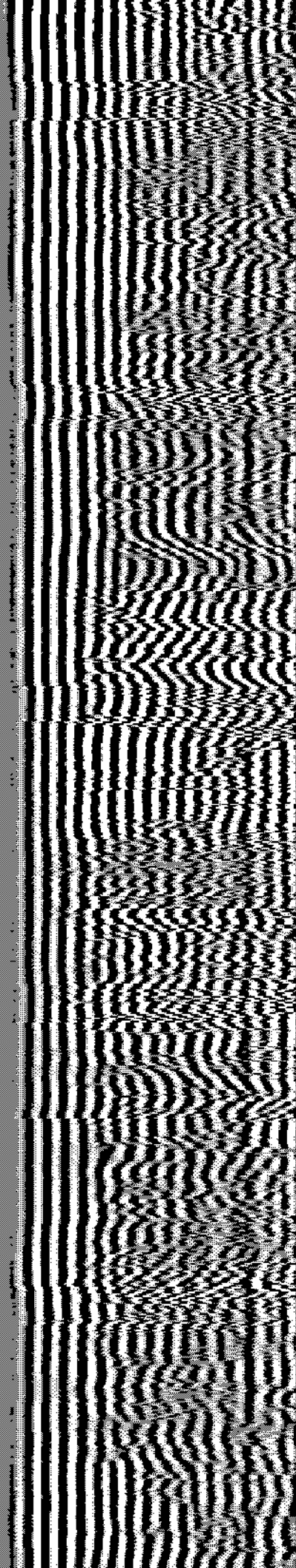
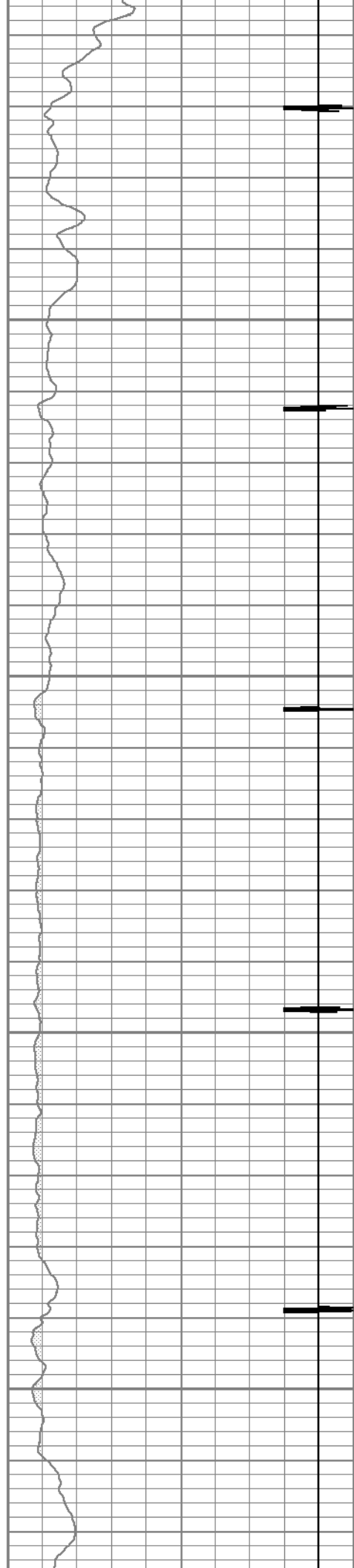


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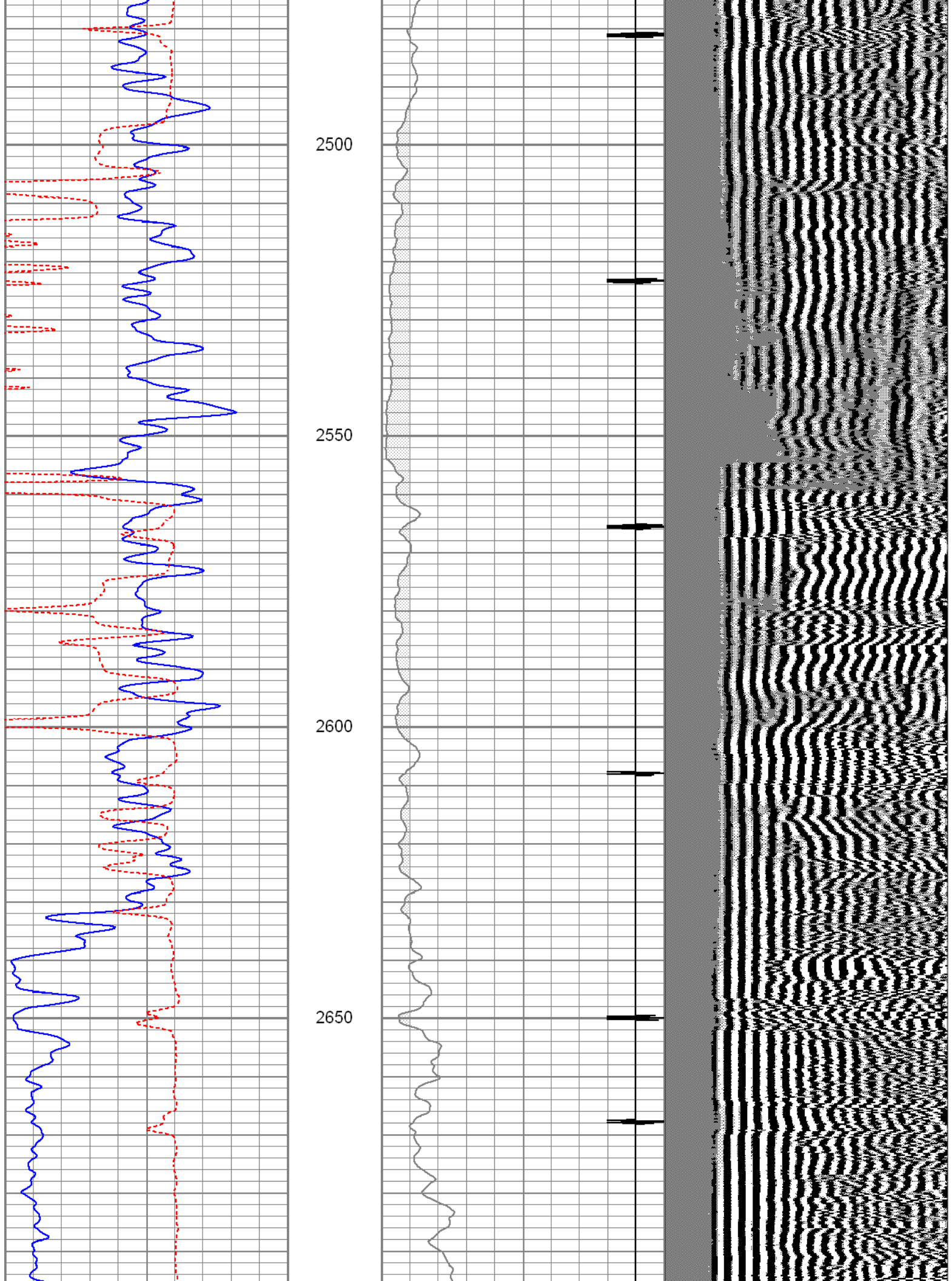
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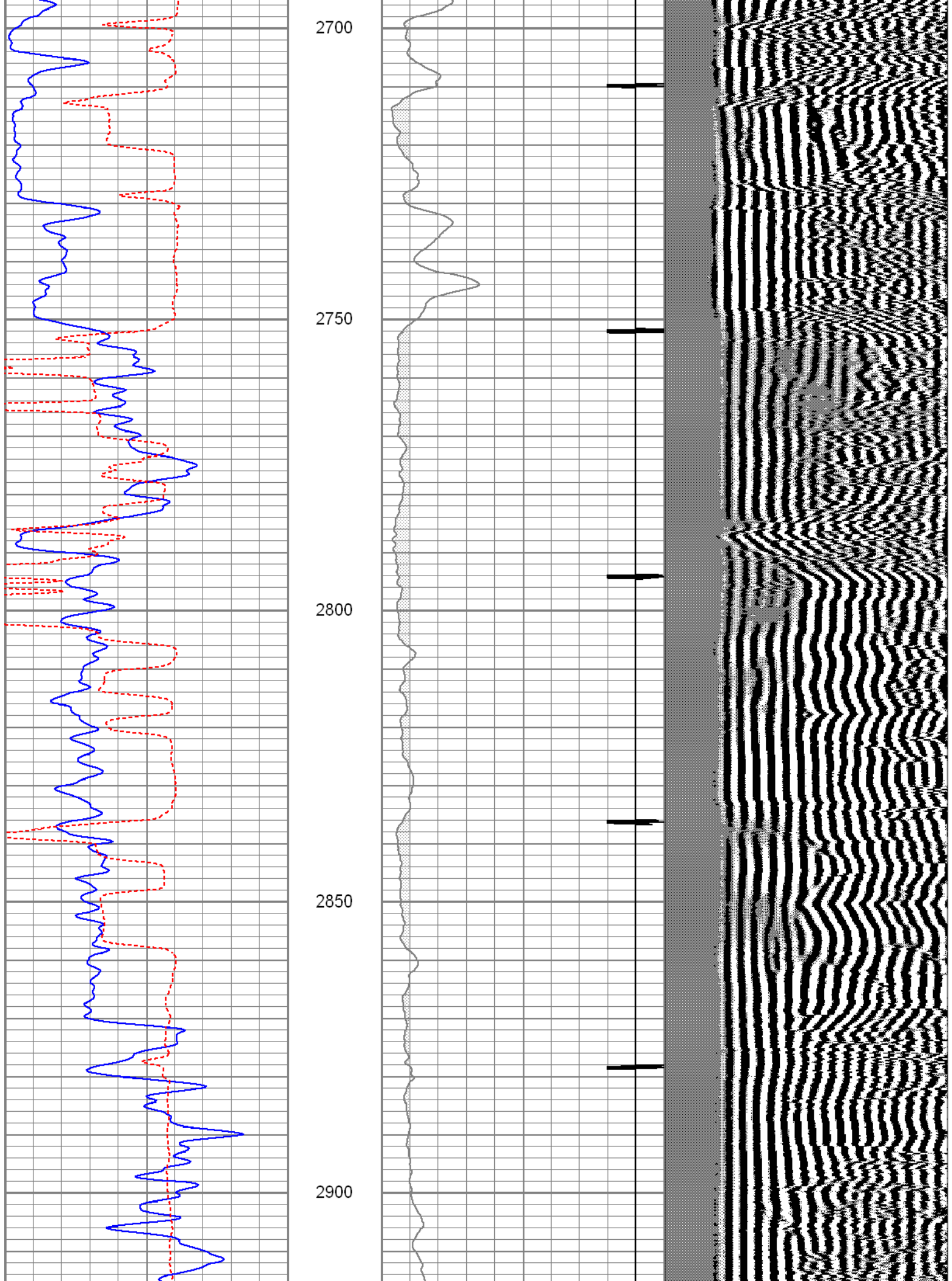
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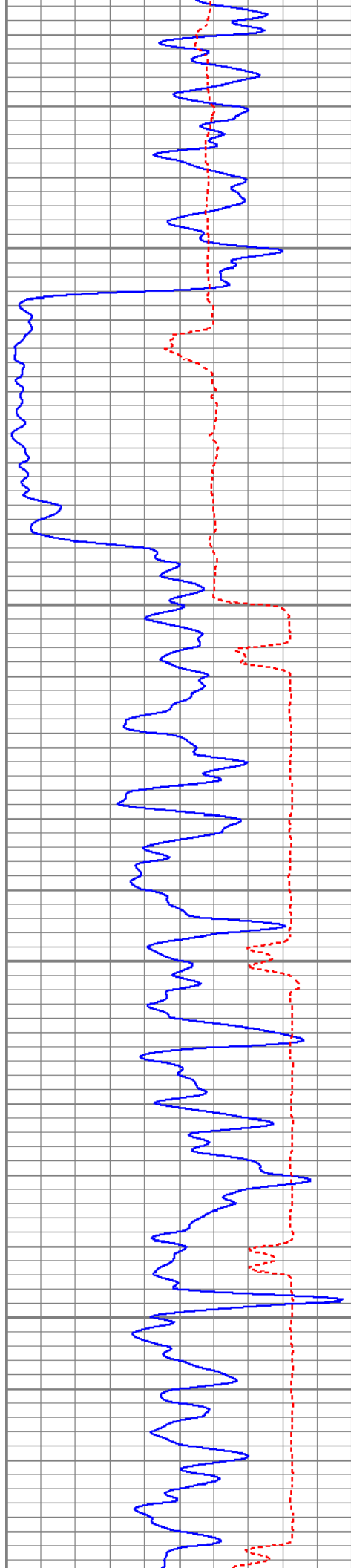












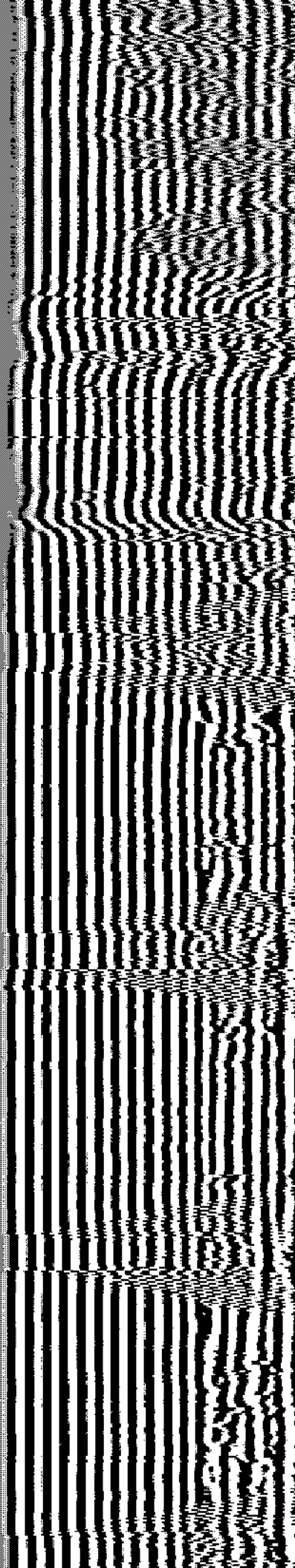
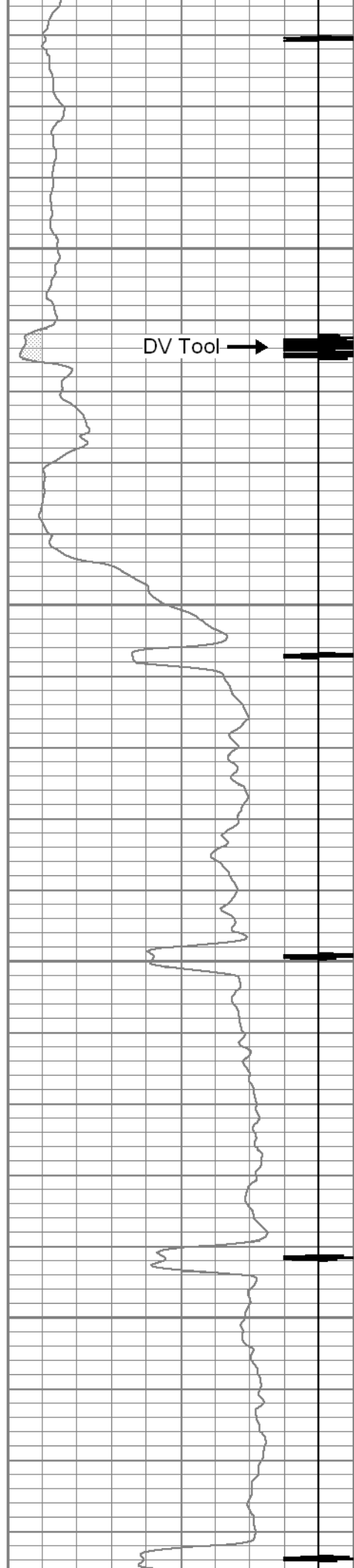
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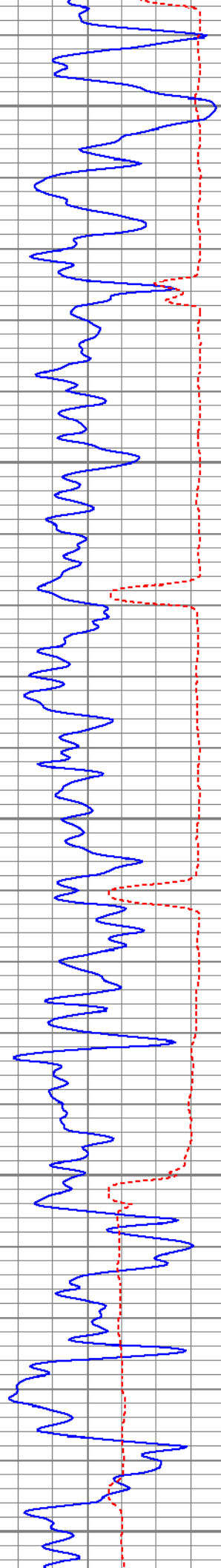
3050

3100

DV Tool →







3150

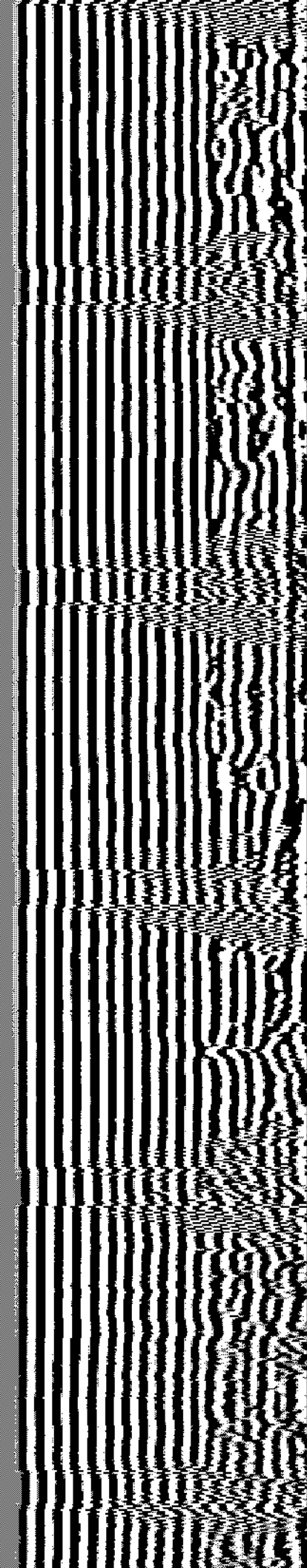
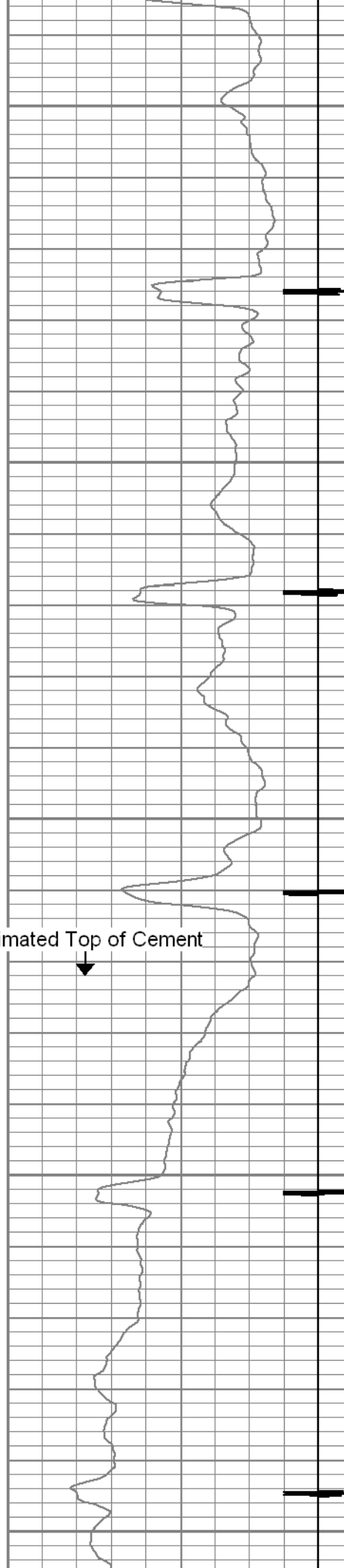
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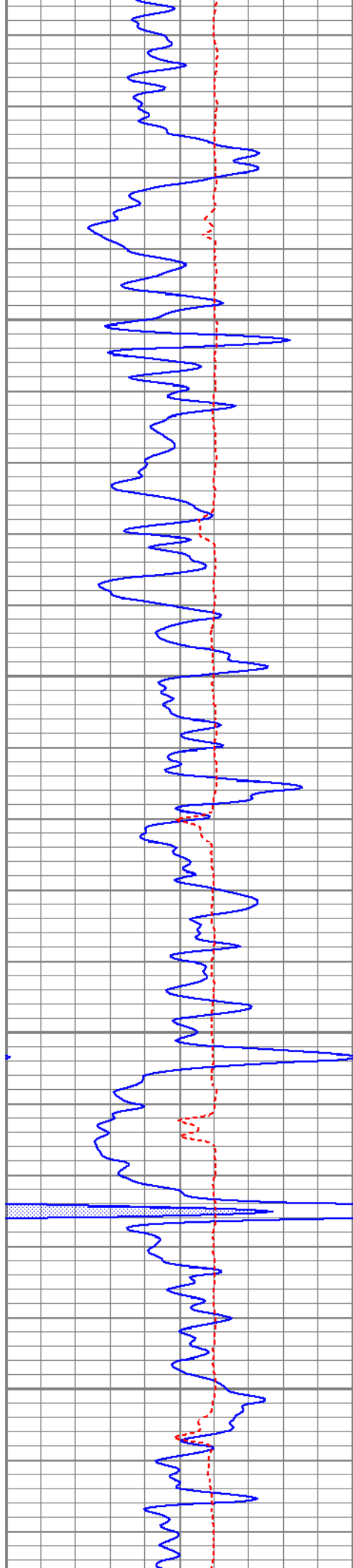
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Estimated Top of Cement  
↓

3300

3350



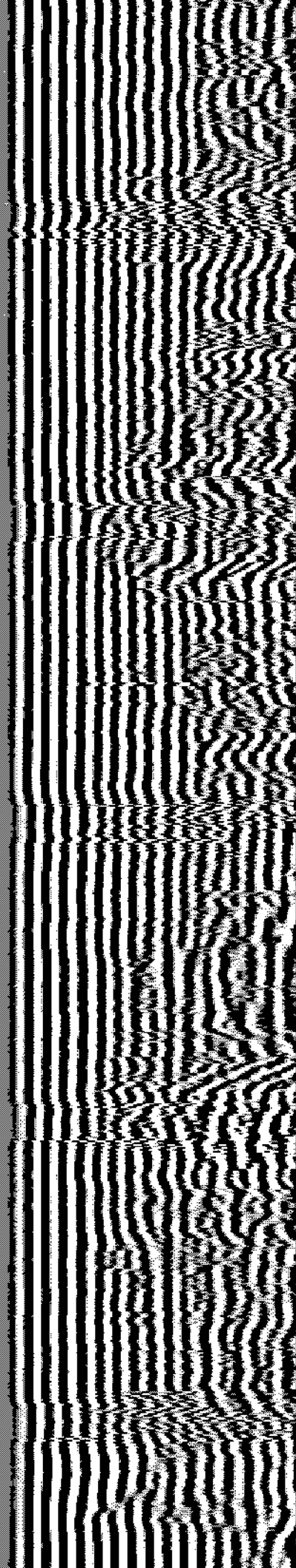
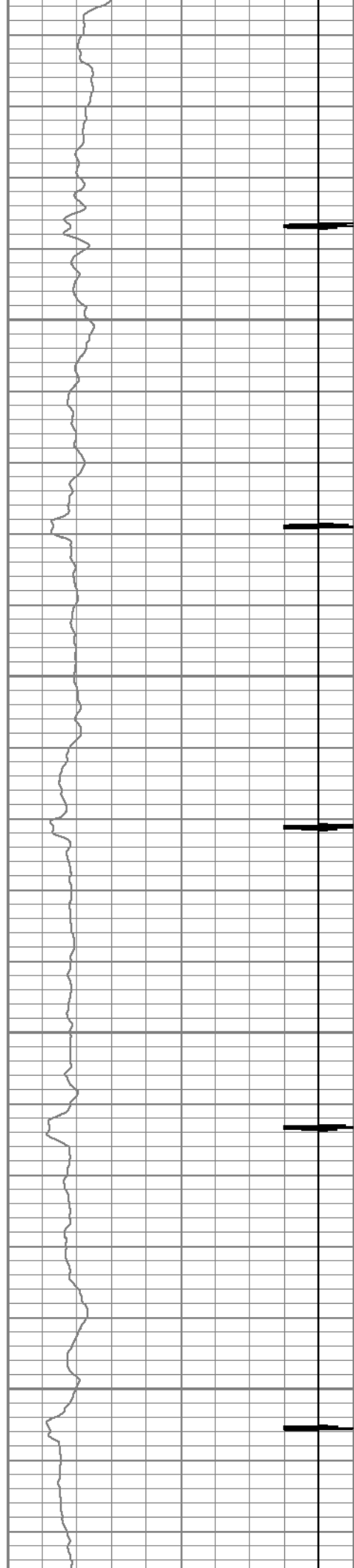


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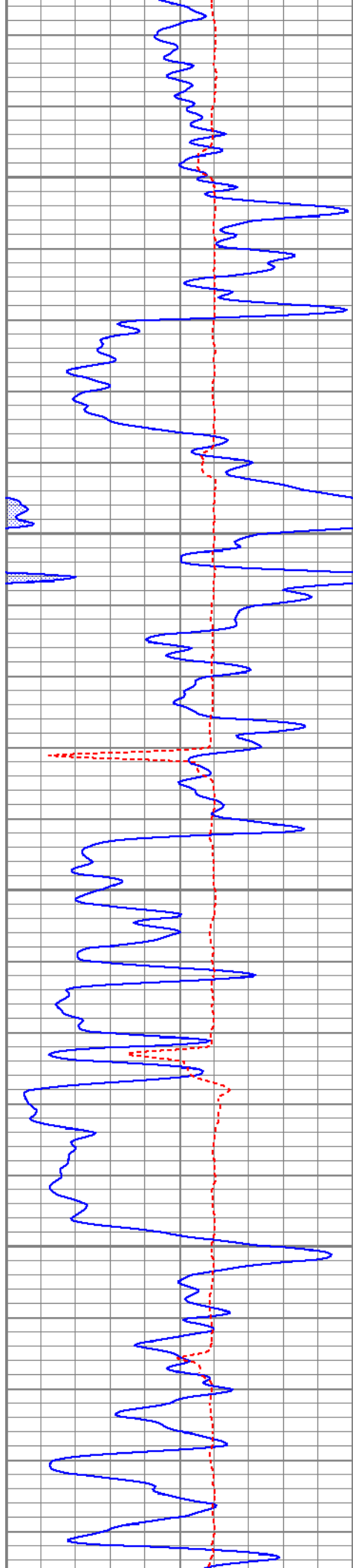
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3500

3550





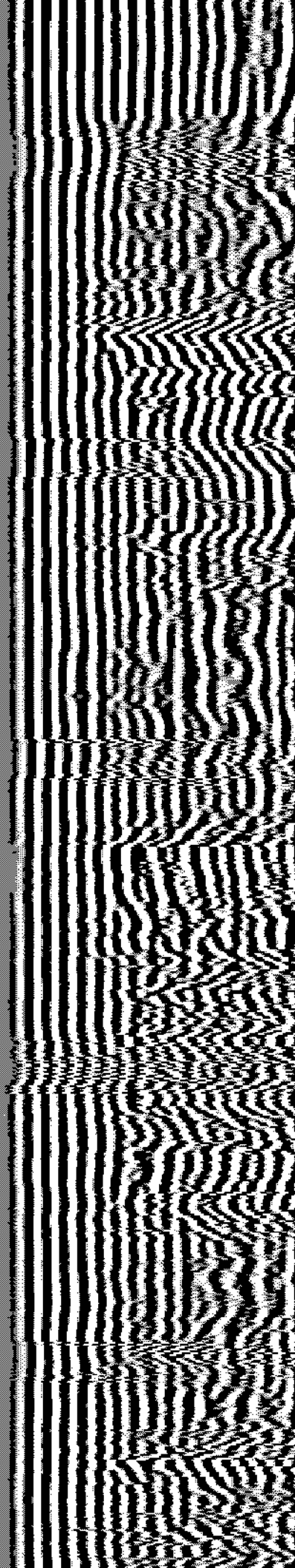
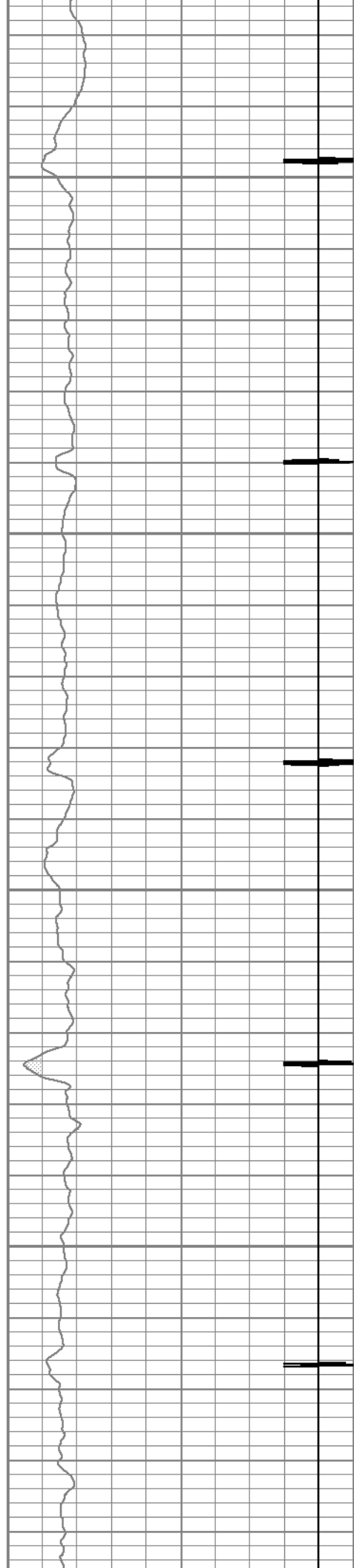


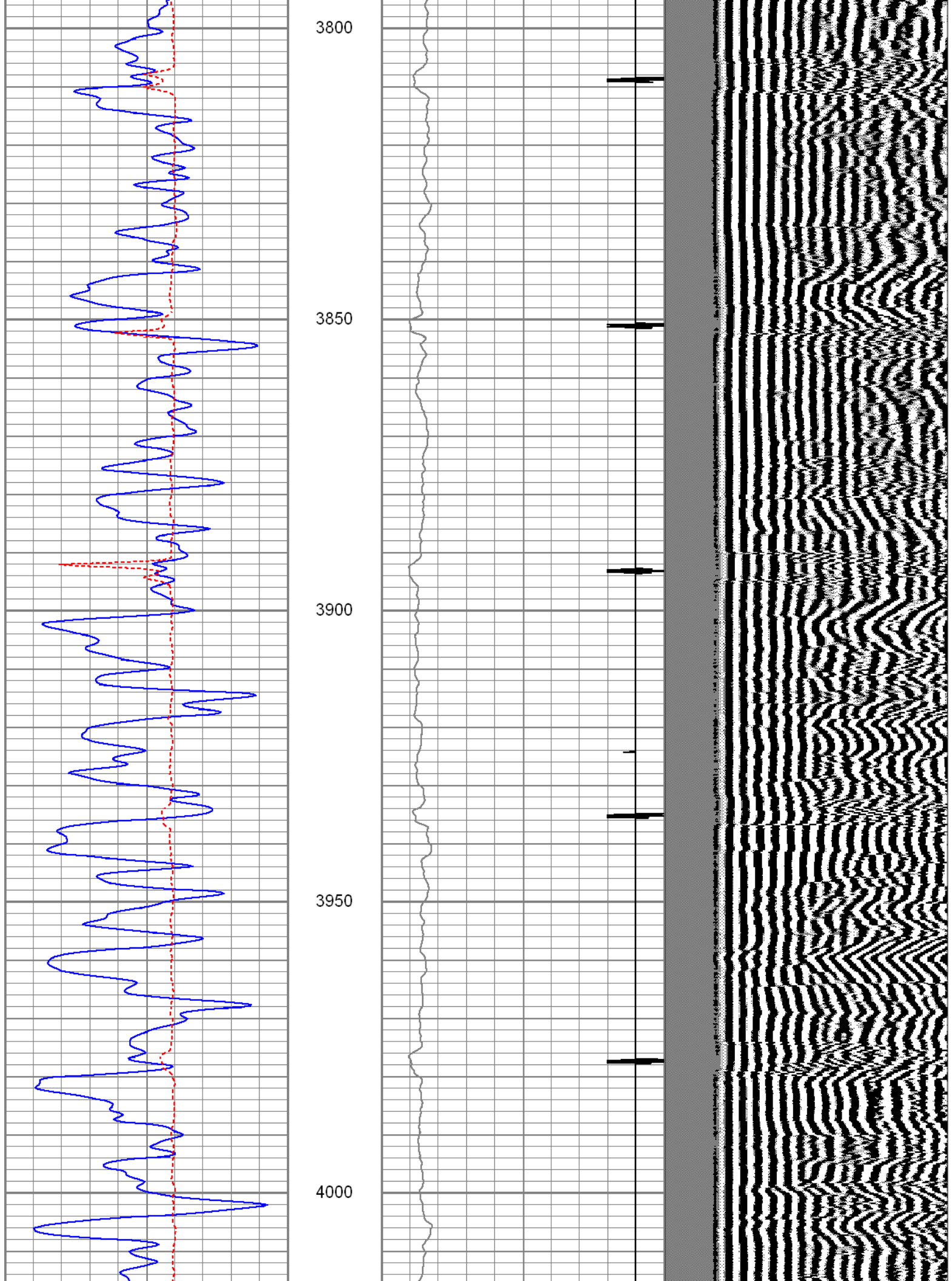
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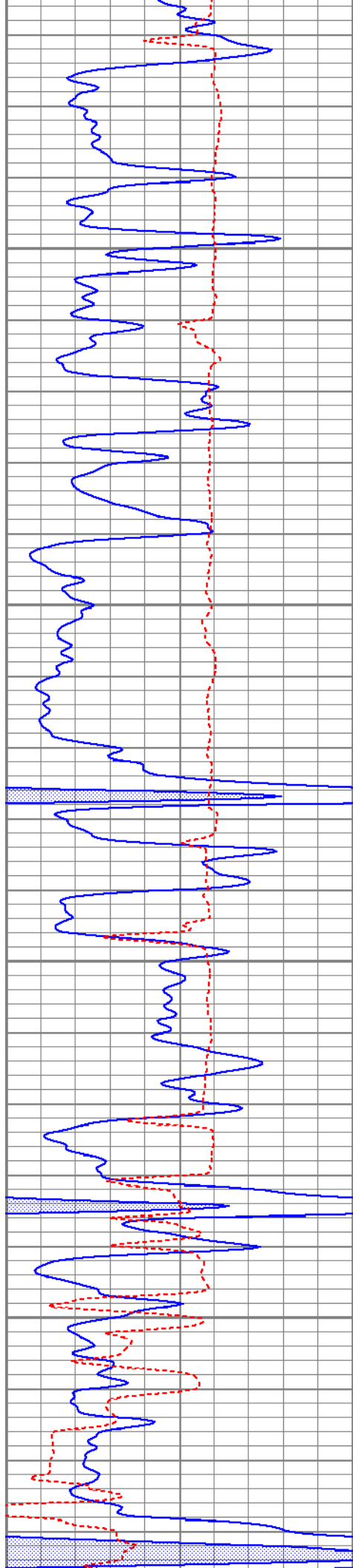
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3750







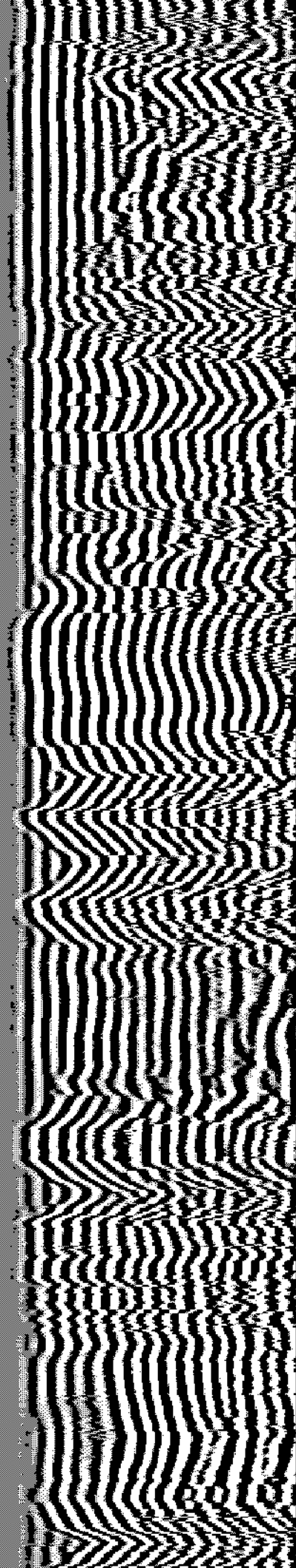
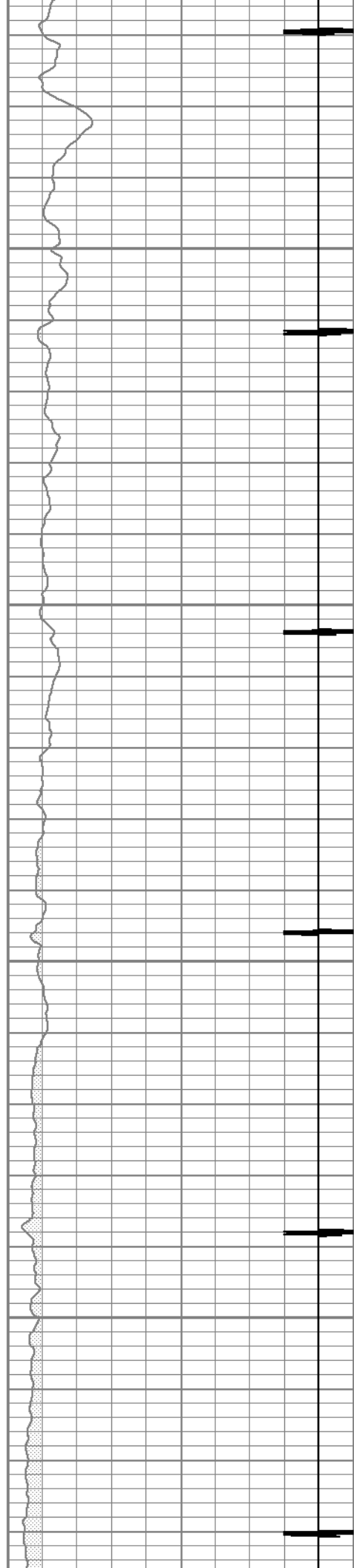


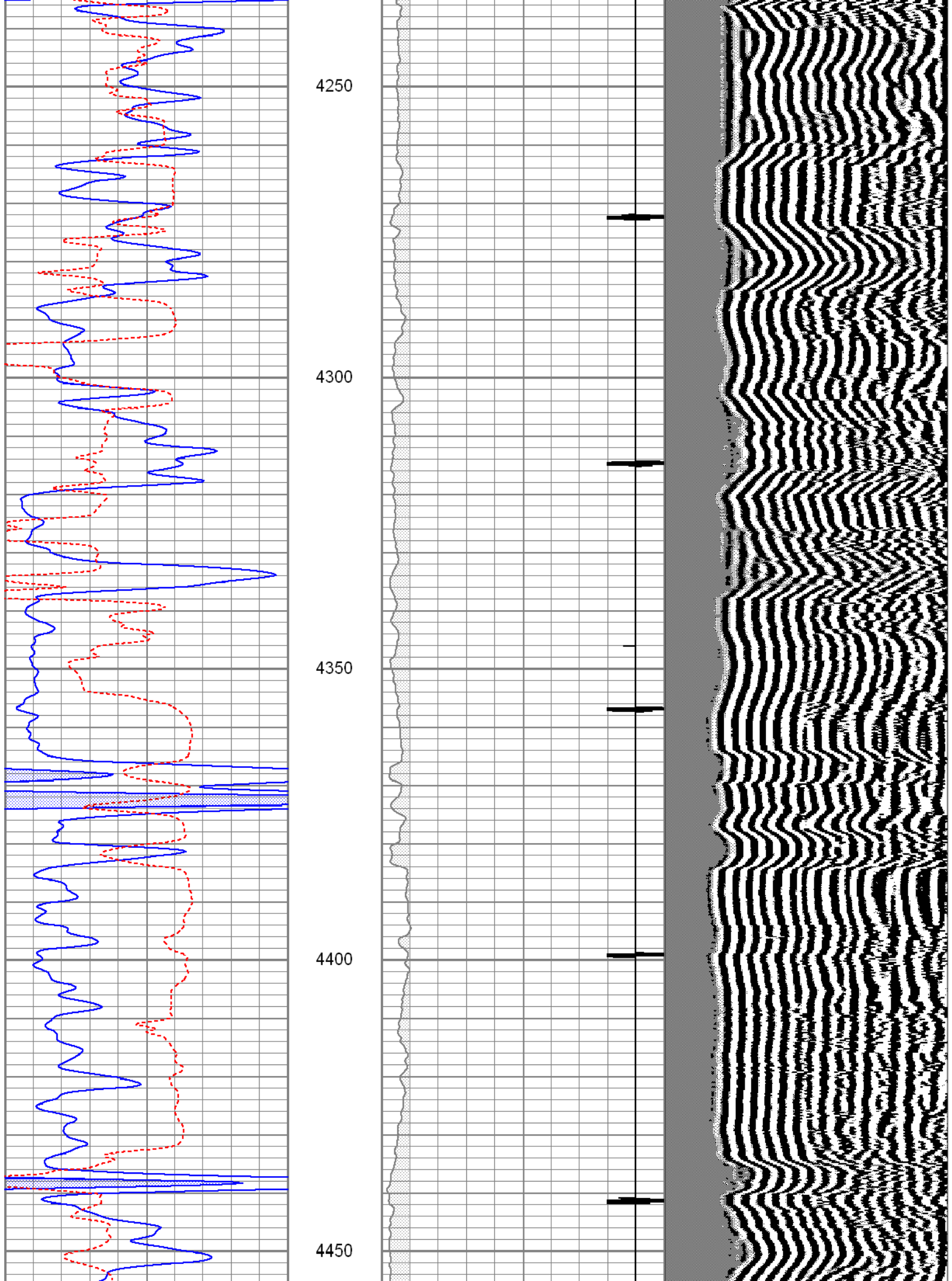
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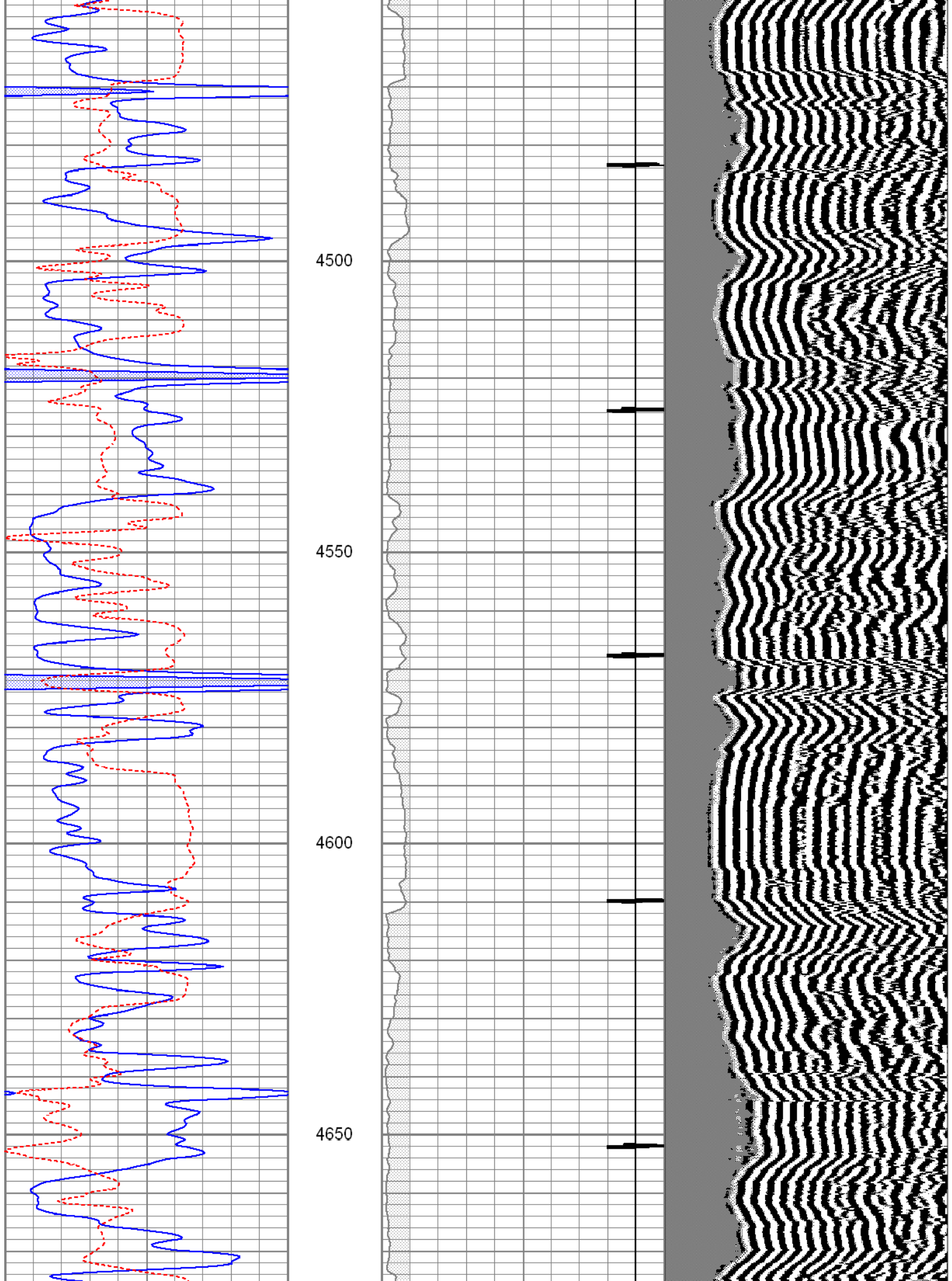
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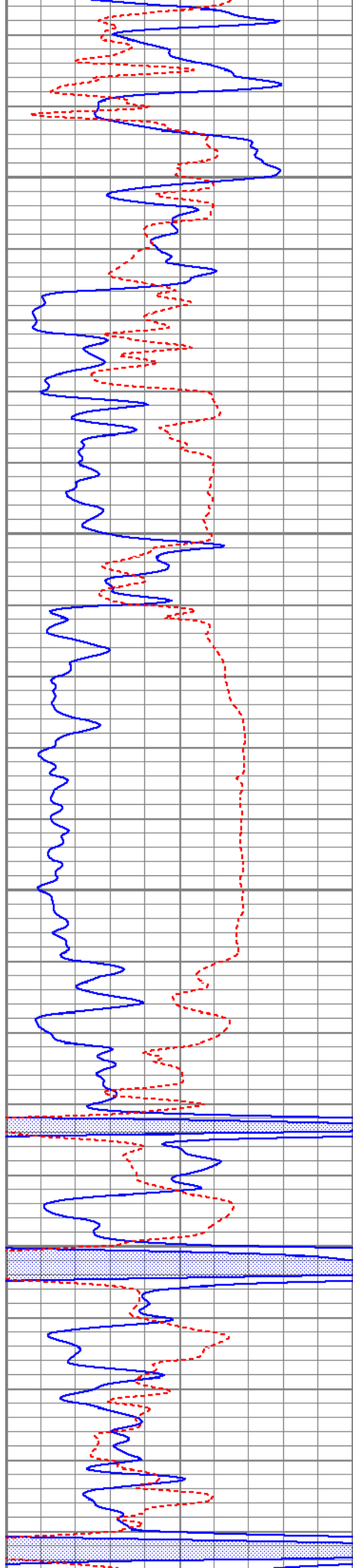
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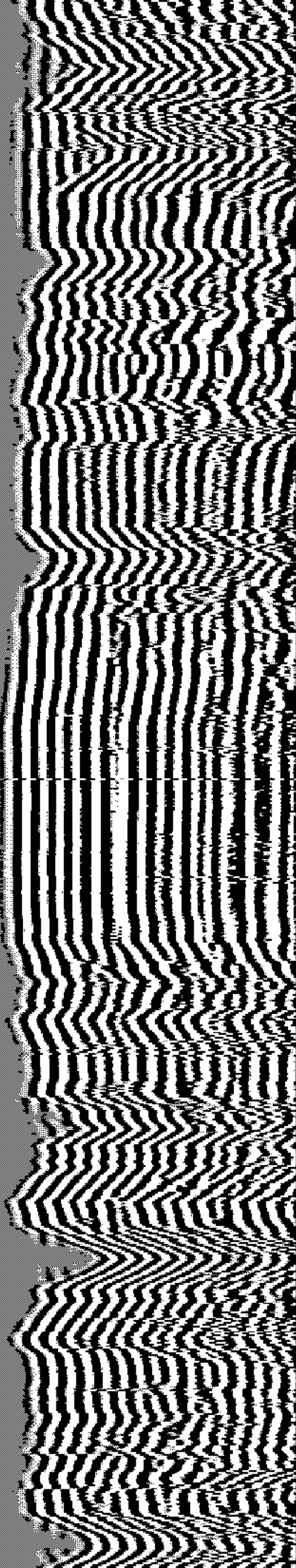
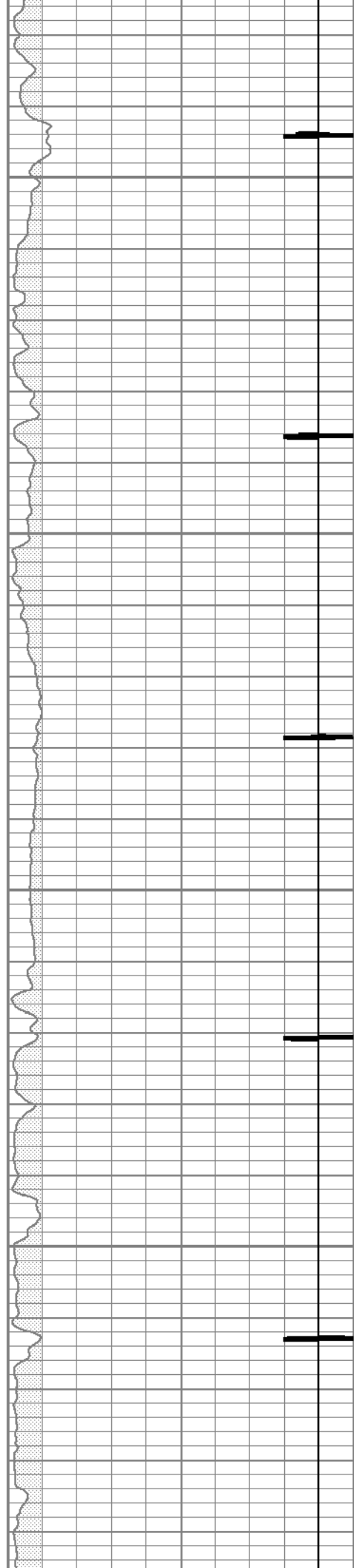


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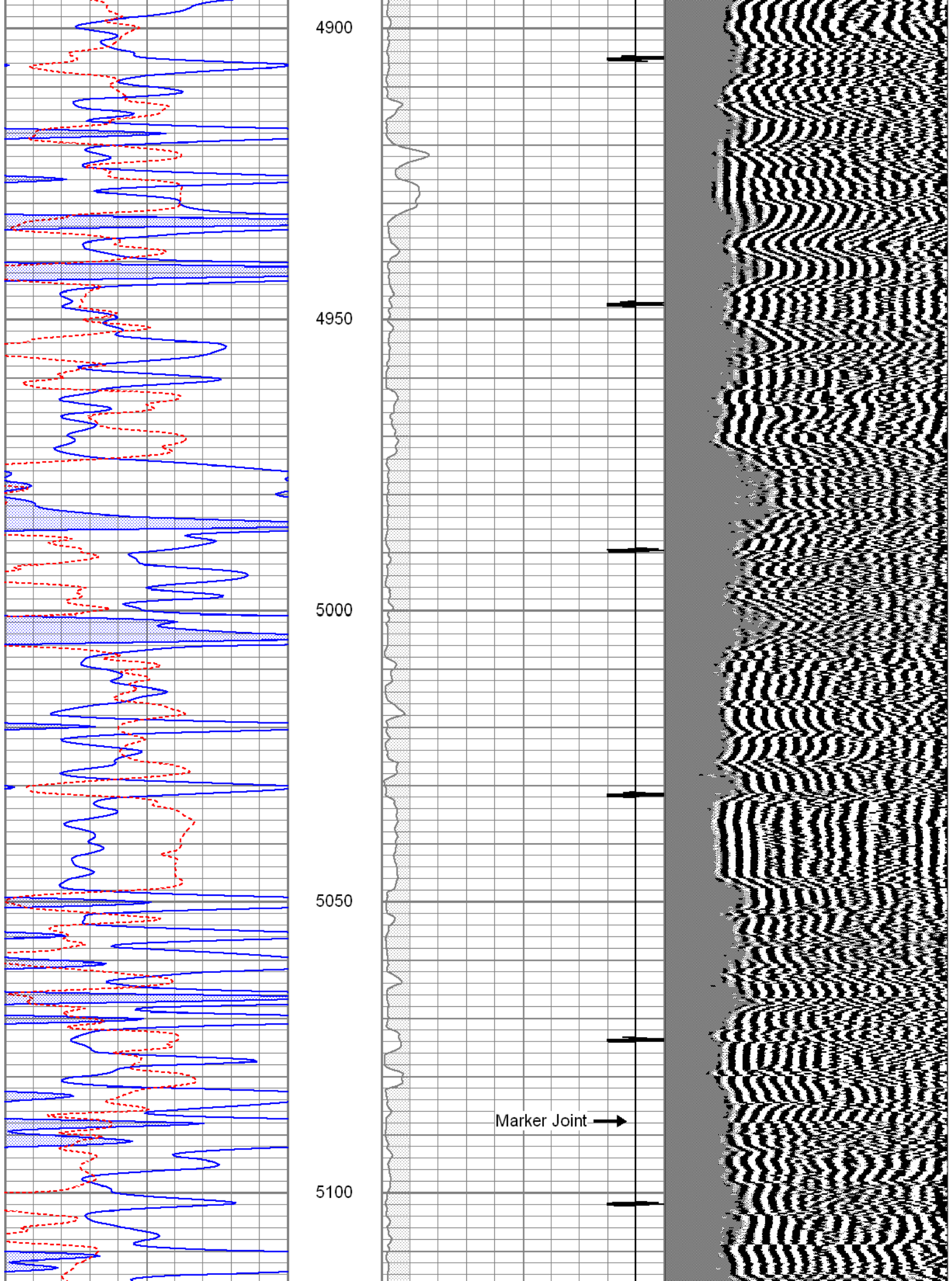
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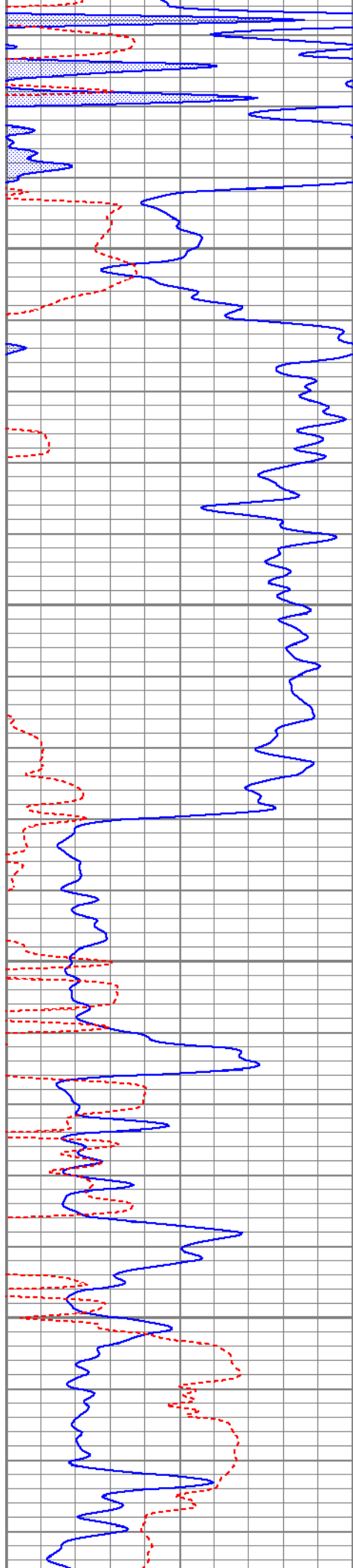
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4850









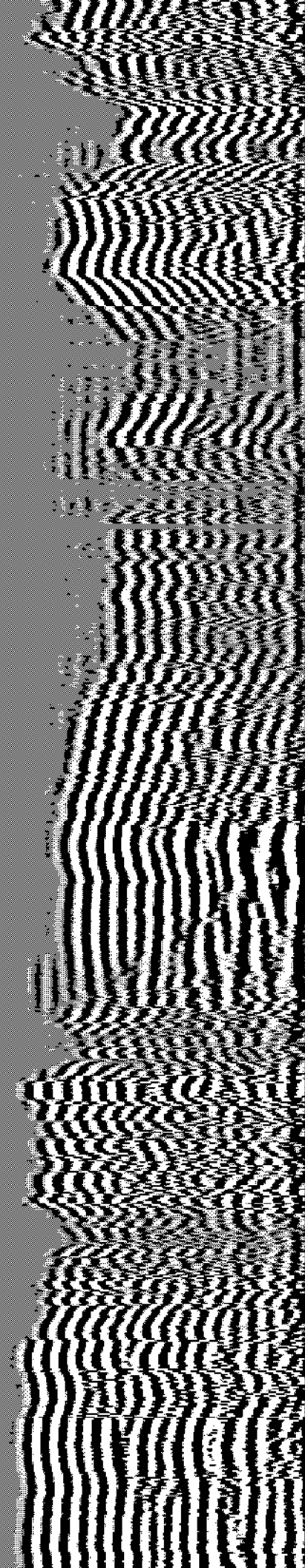
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5200

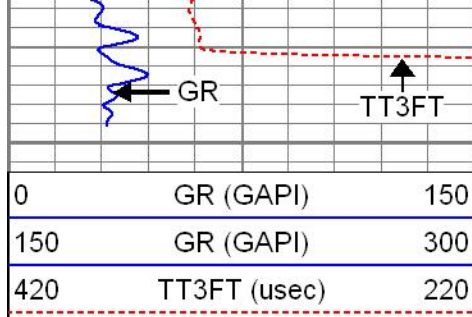
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5300

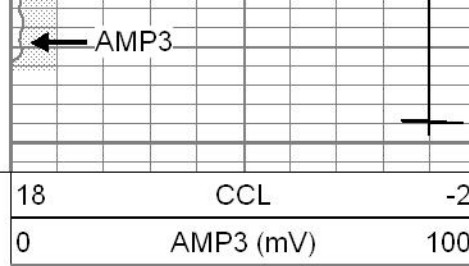
CCL →







5350



0	GR (GAPI)	150
150	GR (GAPI)	300
420	TT3FT (usec)	220

18	CCL	-2
0	AMP3 (mV)	100

200	VDL	1200
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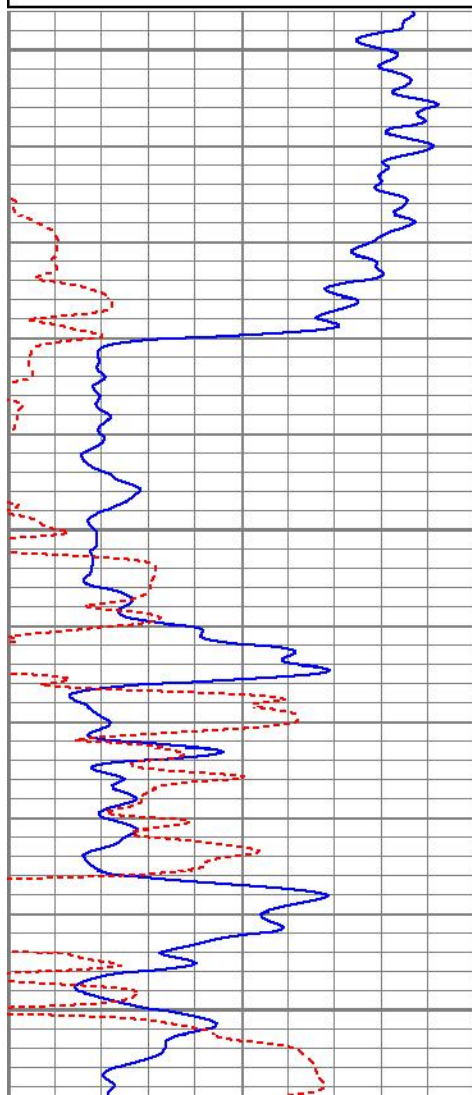
# Repeat Section

Database File mdnwau38cbl1.db  
 Dataset Pathname pass1  
 Presentation Format cbl  
 Dataset Creation Mon Nov 24 11:18:41 2014  
 Charted by Depth in Feet scaled 1:240

0	GR (GAPI)	150
150	GR (GAPI)	300
420	TT3FT (usec)	220

18	CCL	-2
0	AMP3 (mV)	100

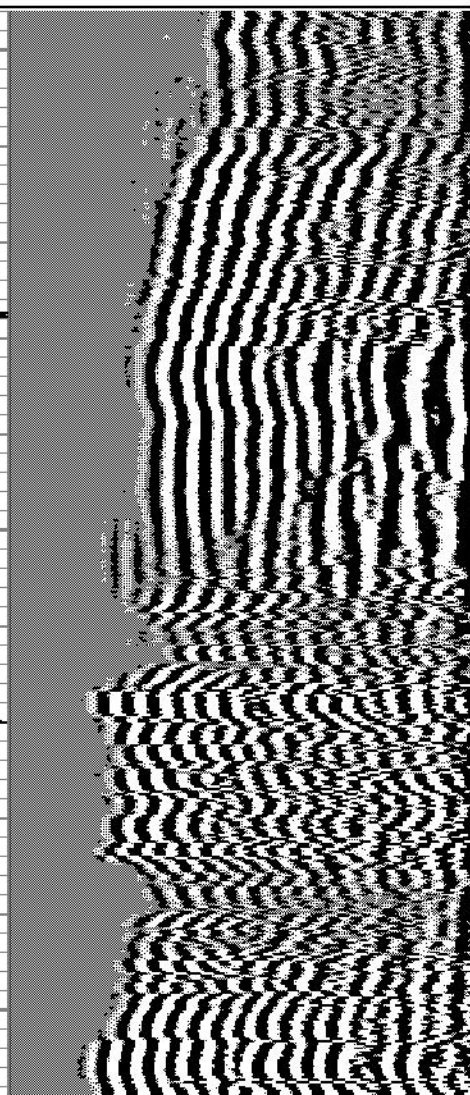
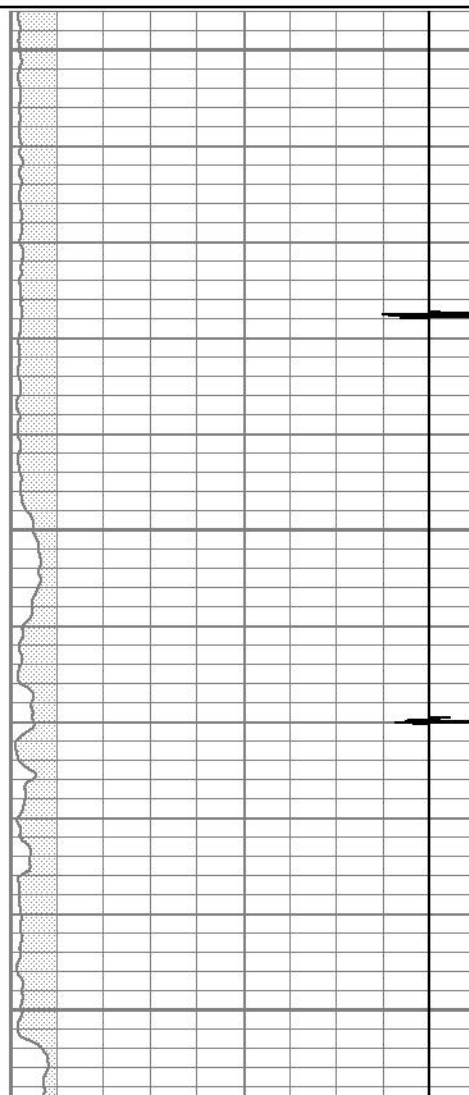
200	VDL	1200
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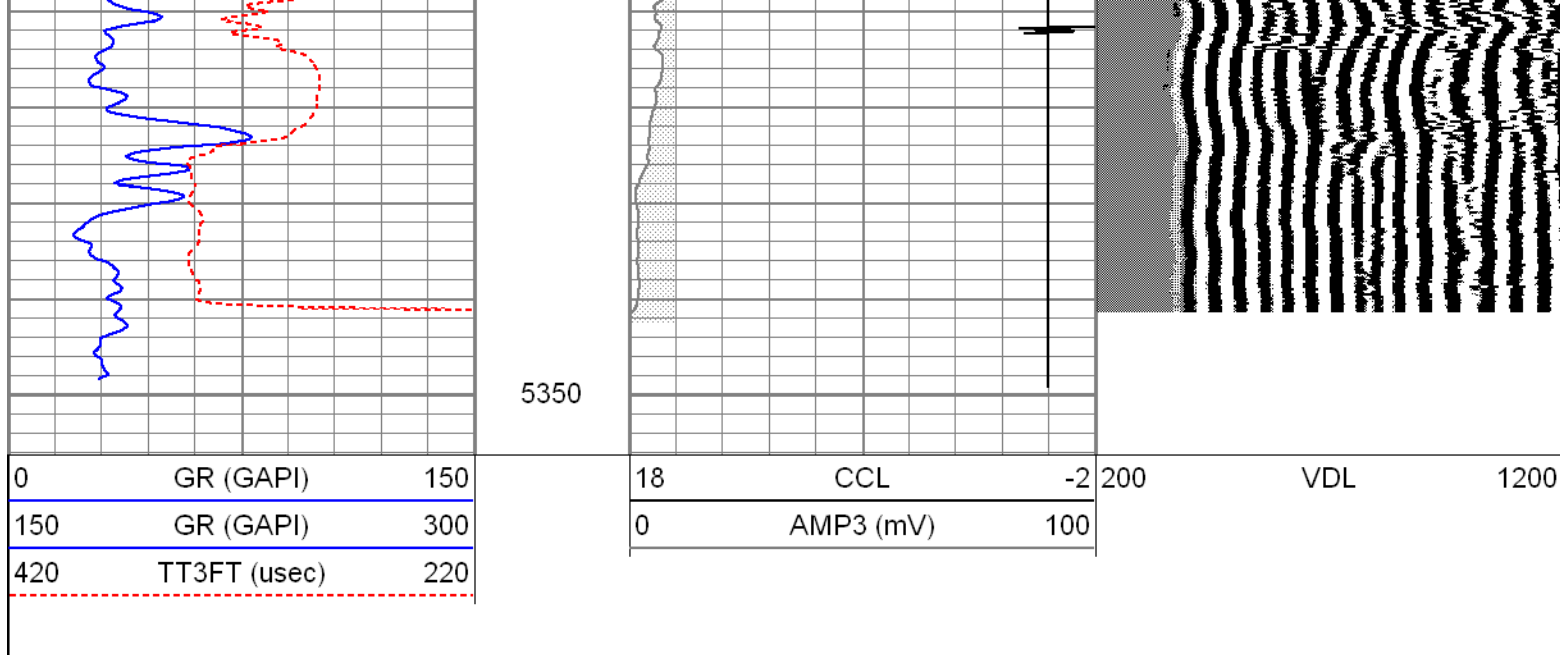


5200

5250

5300





### Calibration Report

Database File mdnwau38cbl1.db  
 Dataset Pathname pass1  
 Dataset Creation Mon Nov 24 11:18:41 2014

### Gamma Ray Calibration Report

Serial Number: 080224  
 Tool Model: Probe1  
 Performed: Thu May 16 06:41:41 2013

Calibrator Value: 200.0 GAPI

Background Reading: 15.0 cps  
 Calibrator Reading: 222.7 cps

Sensitivity: 0.9629 GAPI/cps

### Segmented Cement Bond Log Calibration Report

Serial Number: 080201  
 Tool Model: DigitalCBL

Calibration Casing Diameter: 4.500 in  
 Calibration Depth: 3087.203 ft

Master Calibration, performed Mon Nov 24 11:07:48 2014:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.013	0.963	1.000	71.196	73.896	0.012
CAL						
5'	0.013	0.917	1.000	71.196	77.649	-0.041
SUM						
S1						
S2						
S3						
S4						
S5						
S6						



S7  
S8

Internal Reference Calibration, performed Wed Dec 31 17:00:00 1969:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL						

Air Zero Calibration, performed Mon Nov 24 10:24:53 2014:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.000		0.000		0.000	
5'	0.000		0.000		0.000	
SUM						
S1						
S2						
S3						
S4						
S5						
S6						
S7						
S8						

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
WVF5FT WVF3FT	11.75 11.75		sdschd	0.75	1.44	3.00
			X	3.00	1.69	25.00
			Probedig-DigitalCBL (080201) 2 3/4 Bond Tool	8.77	2.75	92.00
			X	3.00	1.69	25.00
CCL	3.67		CCL-Probe (080224)	1.42	2.75	20.00
GR	2.30		GR-Probe1 (080224)	3.08	2.75	40.00

Dataset: mdnwau38cbl1.db: field/well/run1/pass2  
Total length: 20.02 ft

Total weight:	205.00 lb
O.D.:	2.75 in