

# HALLIBURTON

## ACOUSTIC CEMENT BOND LOG

Company		WILLIAMS PRODUCTION CO		
Well		GM 424-32		
Field		GRAND VALLEY		
County		GARFIELD State CO		
Company		WILLIAMS PRODUCTION CO		
Well		GM 424-32		
Field		GRAND VALLEY		
County		GARFIELD State CO		
API No.:		05045169240000		
Serv #:		6459826		
Location:		SURFACE HOLE: 2631' FSL & 2273' FWL		
BOTTOM HOLE: 0658' FSL & 1463' FWL		RMT		
Sec: 32 Twp:06S Rge: 96W				
Permanent Datum		GROUND LEVEL Elevation 5736'		
Log Measured From		K.B. , 15 Ft. above perm. datum K.B. 5751' D.F. ----- G.L. 5736'		
Drilling Measured From		K.B.		
Date @ Time Logged		01/27/2009 @ 1230 HRS Type Fluid in Hole FRESH WATER		
Run No.		ONE Density of Fluid 8.34 PPG		
Depth - Driller		7085' Fluid Level FULL		
Depth - Logger		7022' Cement Top Est. Logged LOGGED		
Bottom - Logged Interval		7021' Equipment / Location 10029613 / GU		
Top - Log Interval		SURFACE Recorded by A. LINTEL		
Max. Recorded Temp.		216 F Witnessed by N/A		
CEMENTING DATA		Surface Protection Production Liner		
String		String		
Date / Time Cemented				
Primary / Squeeze				
Expected				
Compressive Strength		psi@ hrs psi@ hrs		
Cement Volume				
Cement Type / Weight		/ /		
Formulation				
Mud Type / Mud Wgt.		/ /		
Borehole Record				
Run Number		Bit From To Size Weight		
ONE		24" SURFACE 45' 18" 48#		
TWO		13.5" 45' 1400' 9.625" 32.3#		
THREE		7.875" 1400' 7085' 4.5" 11.6#		
Casing & Tubing Record				
		From To		
		SURFACE 45'		
		SURFACE 1400'		
		SURFACE 7080'		

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HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.

### Comments

GR-CCL-CBL RAN IN COMBINATION

HES CBL LOG DATED 01/27/2009 IS THE PRIMARY LOG FOR THIS WELL

LOGGED INTERVLAS PER CUSTOMER REQUEST

SHORT JOINT: 3402' - 3436'

\*\*\*THANK YOU FOR USING HALLIBURTON ENERGY SERVICES GRAND JUNCTION, CO\*\*\*

Service Ticket No. 6459826

API No. 05045169240000

PGM Ver WARRIOR 7.0

The Well Name, Location, Borehole Description, and / or Cementing Data Furnished by Client

EQUIPMENT DATA

CBL		GR-CCL					
Run No.	ONE	Run No.	ONE	Run No.		Run No.	
Serial No.	061113	Serial No.	061015	Serial No.		Serial No.	
Model No.	CBL-PROBE	Model No.	GR-PROBE	Model No.		Model No.	
Diameter	2.75"	Diameter	2.75"	Diameter		Diameter	
LOGGING DATA							
General Data							
Pass	Depths		Well Head	Speed	Logging Run Comments		
No.	From	To	Pressure	Ft/Min			
ONE	7022'	SURFACE	0 PSI	60	MAIN LOG SECTION		
	GAMMA RAY		CCL		AMPLITUDE		
Pass	Scale		Scale		Scale		Scale
No.	L	R	L	R	L	R	L
ONE	0	200	-9	1	0	100	
DIRECTIONAL INFORMATION							
Maximum Deviation			deg. @		KOP		

HALLIBURTON

MAIN LOG SECTION

5" = 100'

Database File: gm\_424\_32\_cbl.db

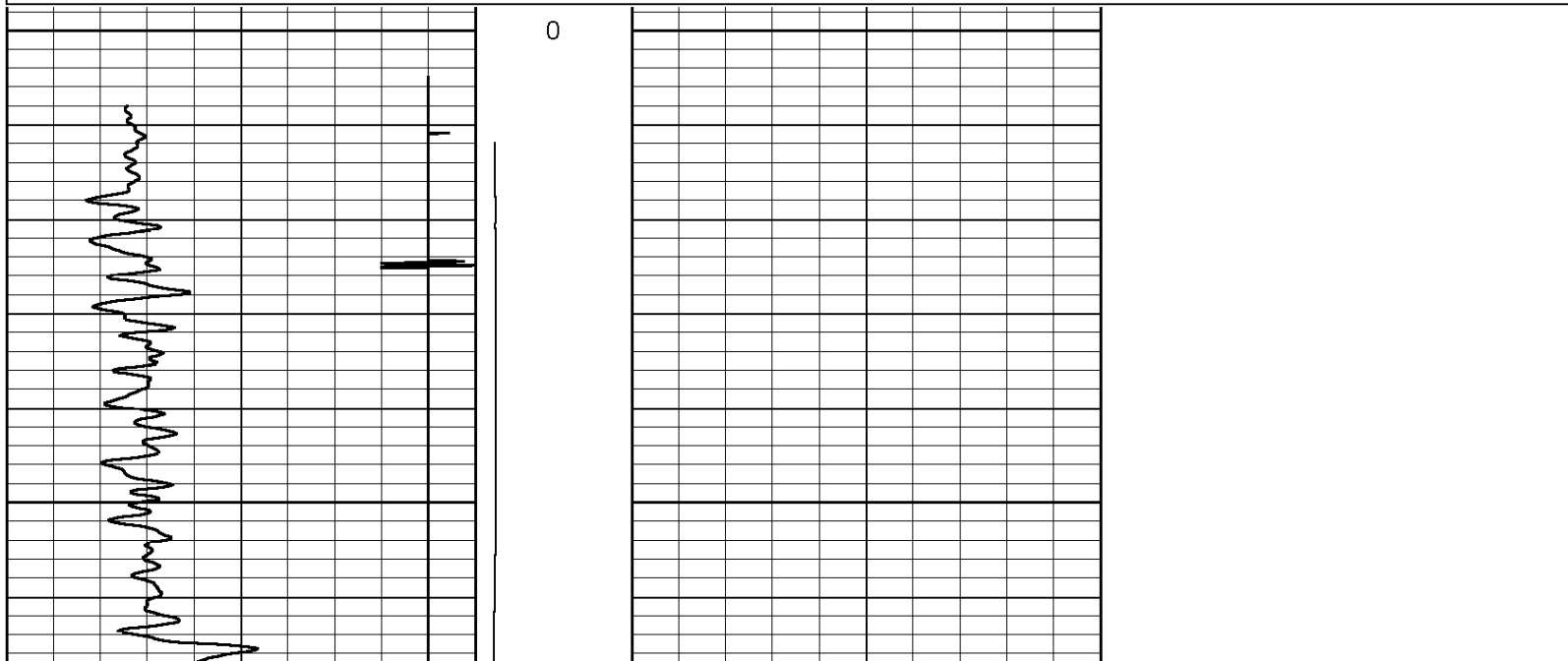
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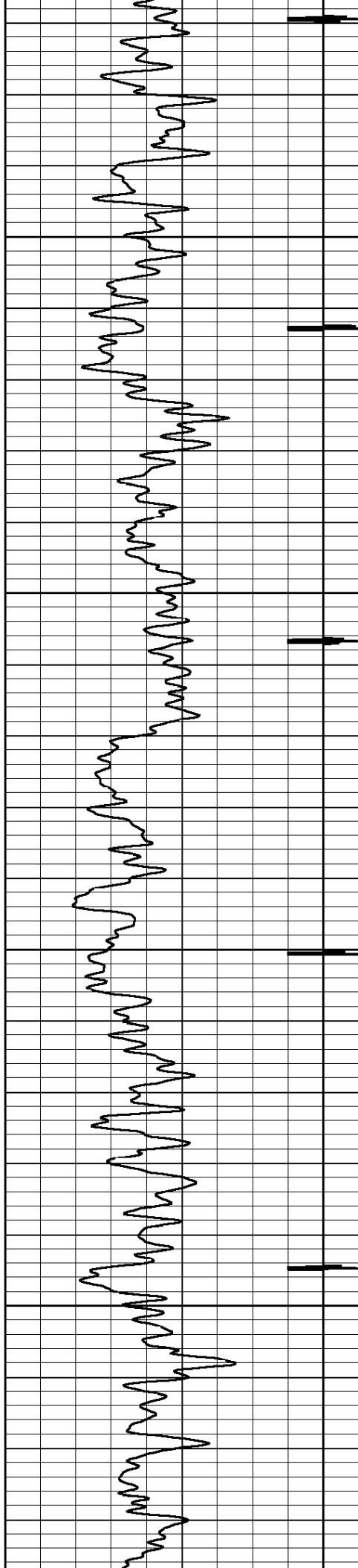
Presentation Format: CBL\_PR~1

Dataset Creation: Tue Jan 27 15:08:19 2009

Charted by: Depth in Feet scaled 1:240

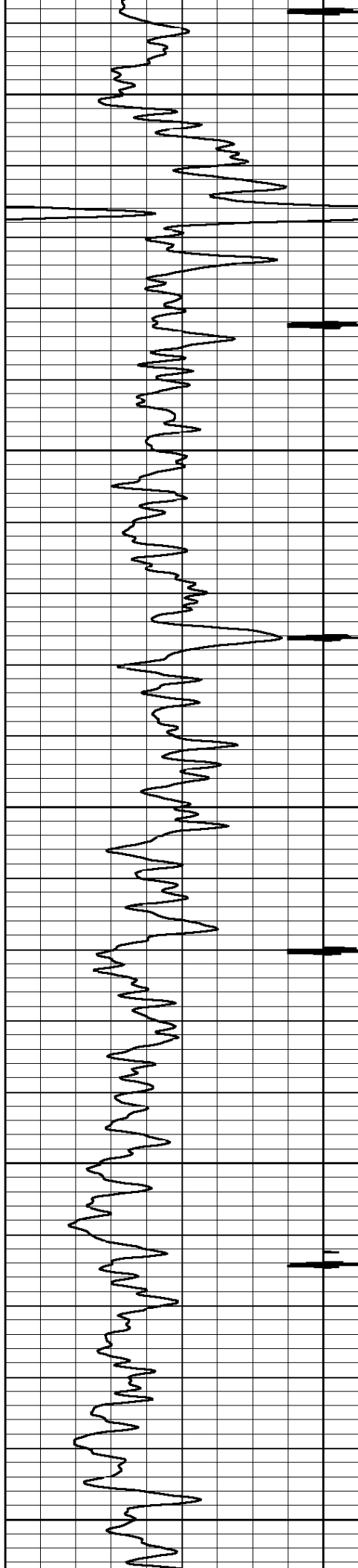
420	TRAVEL TIME (usec)	220	TENSION	0	AMP AMPLITUDE (mV)	10	200	MSG	1200
-9	Collar Locator	1	0 (lb)3000	0	AMPLITUDE (mV)	100			
0	Gamma Ray (GAPI)	200							





100

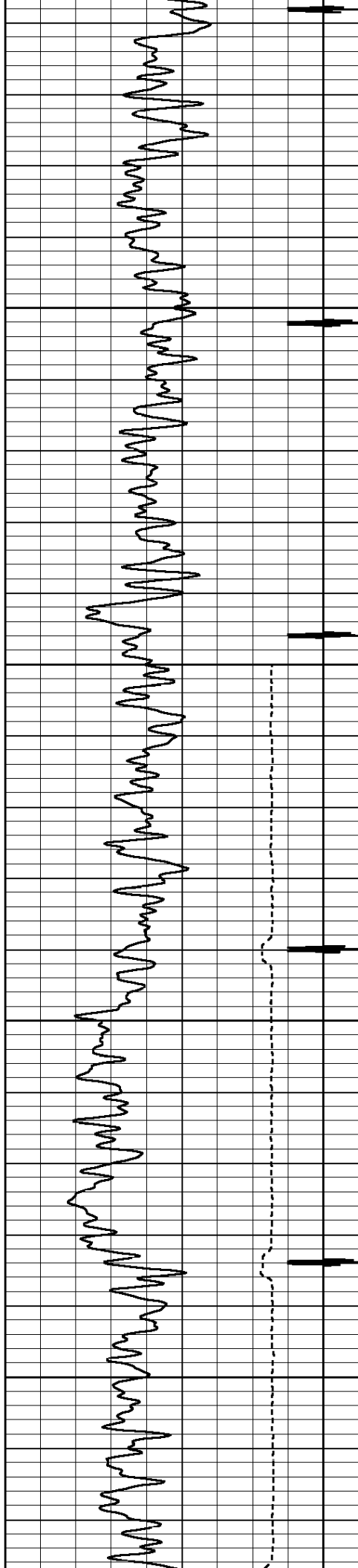
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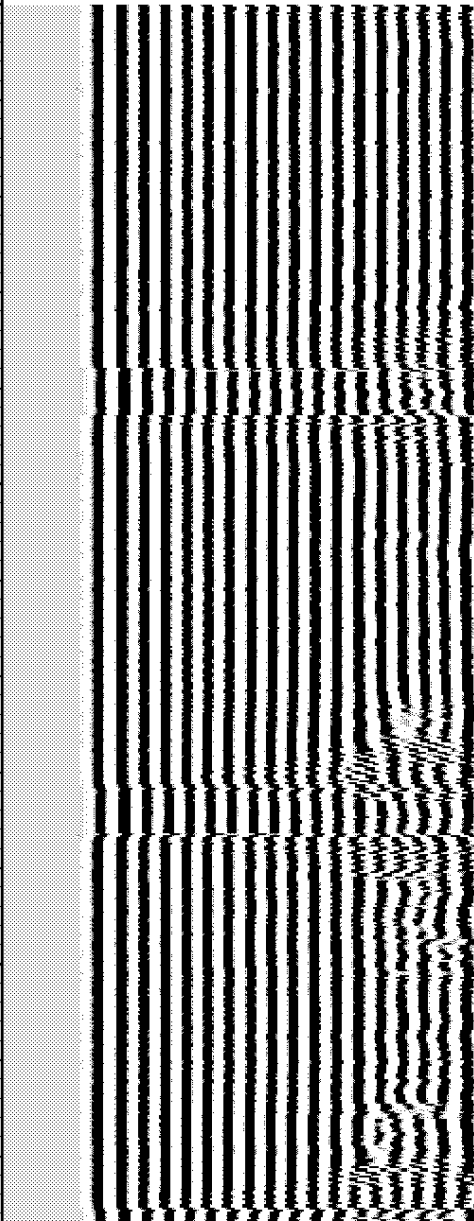
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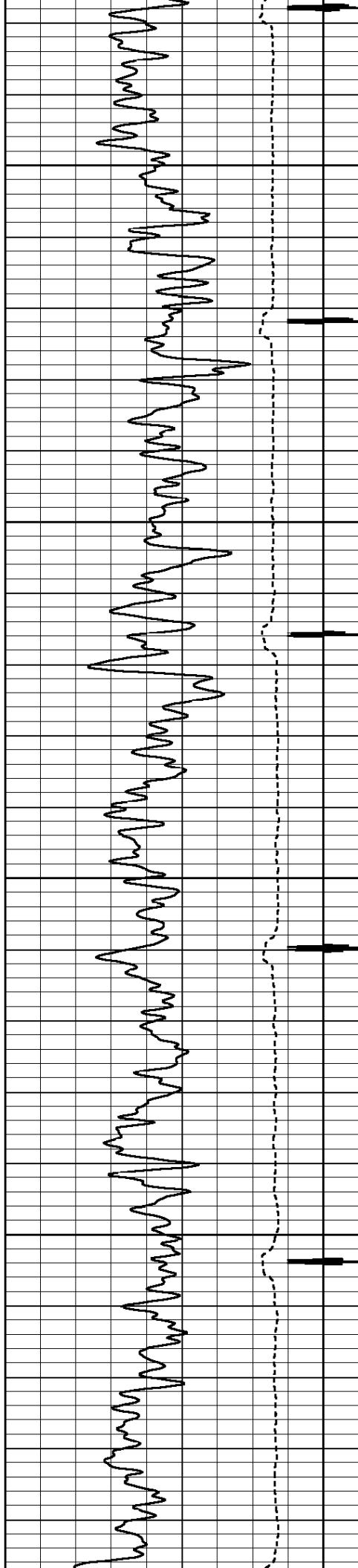
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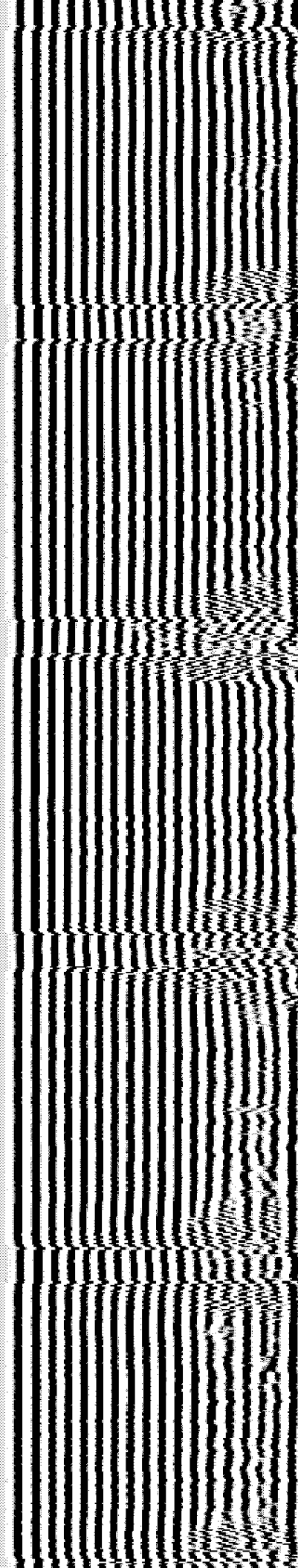
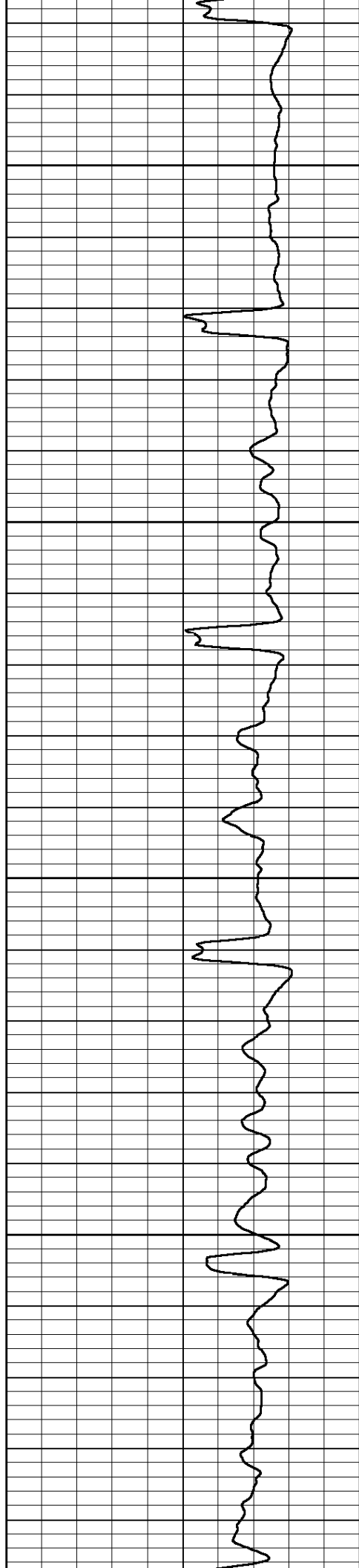
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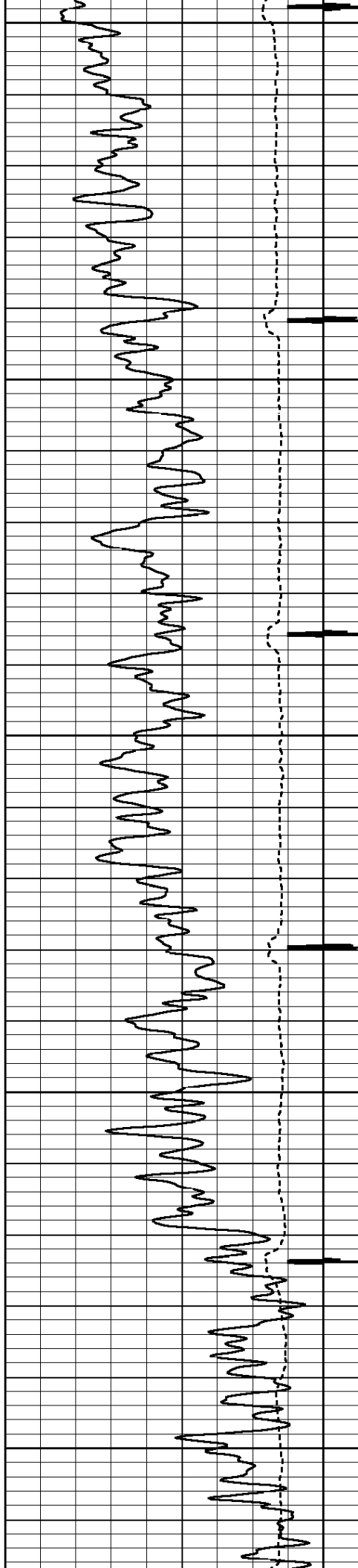




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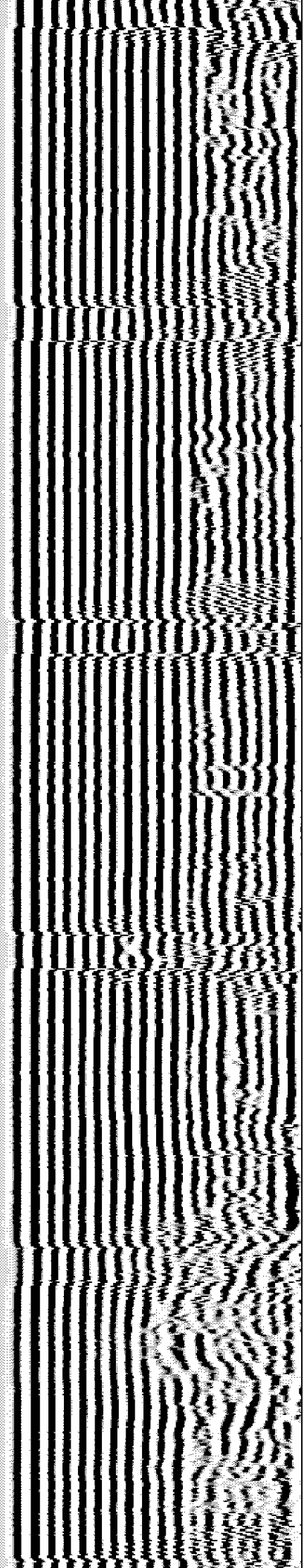
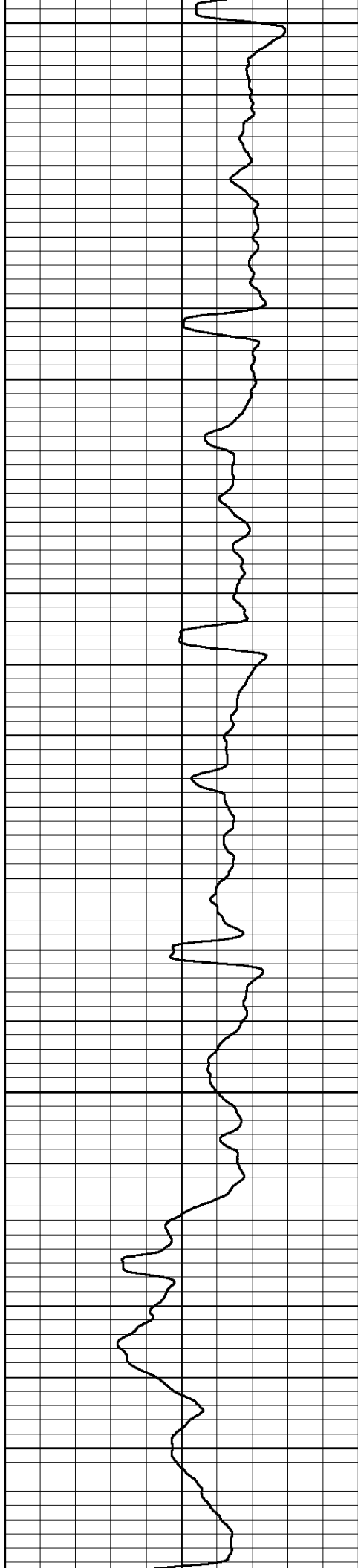
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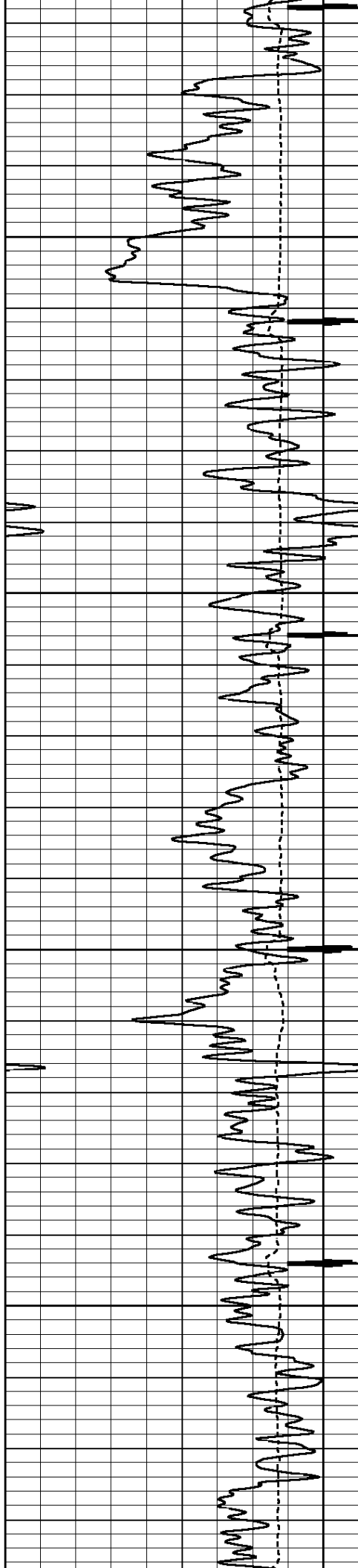




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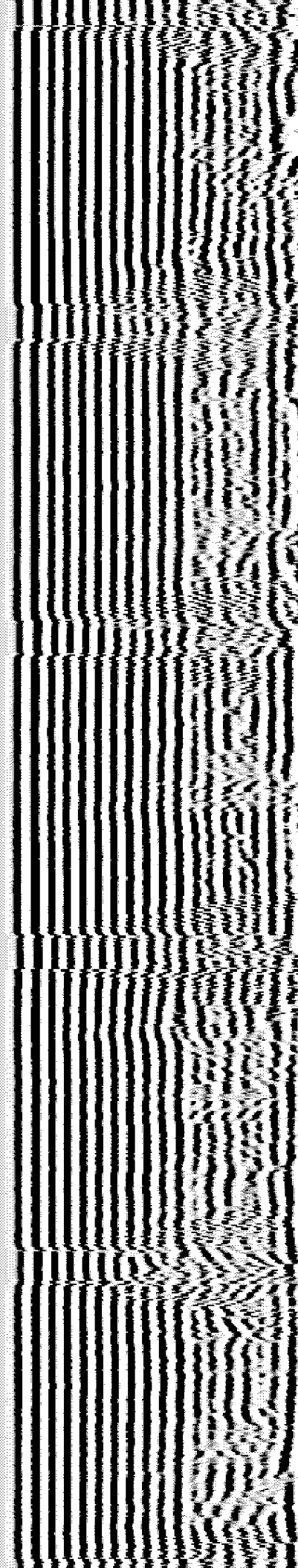
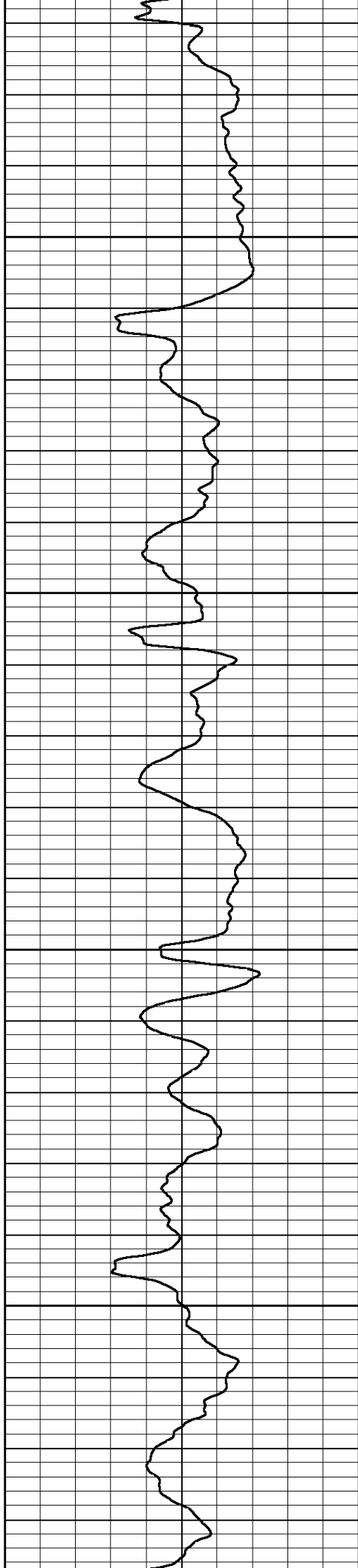
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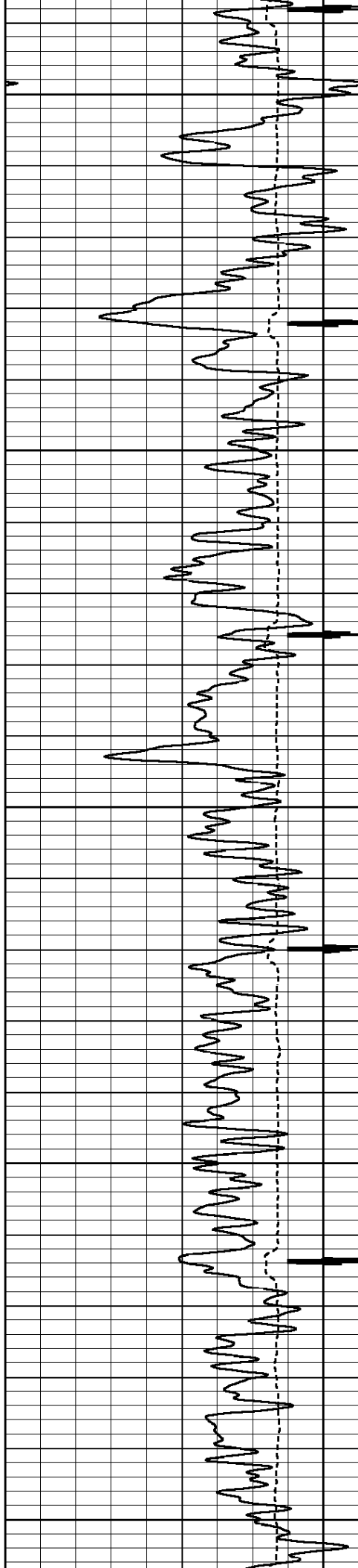


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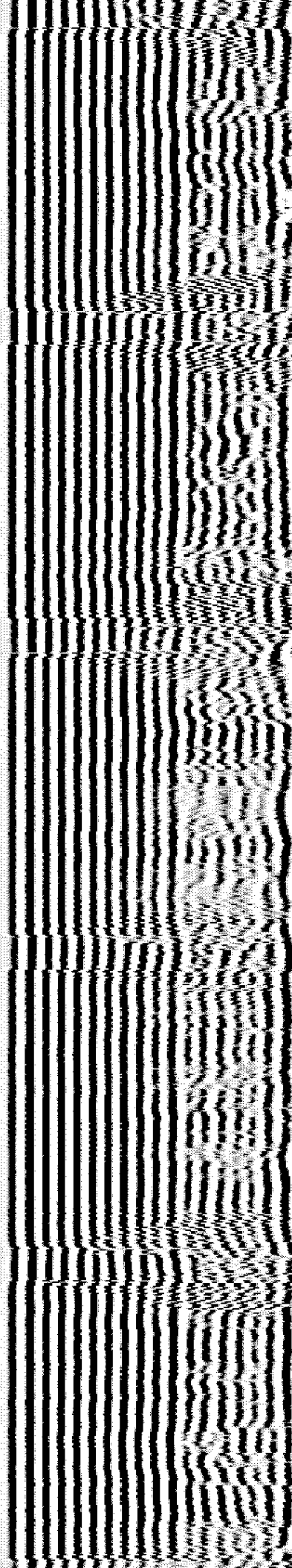
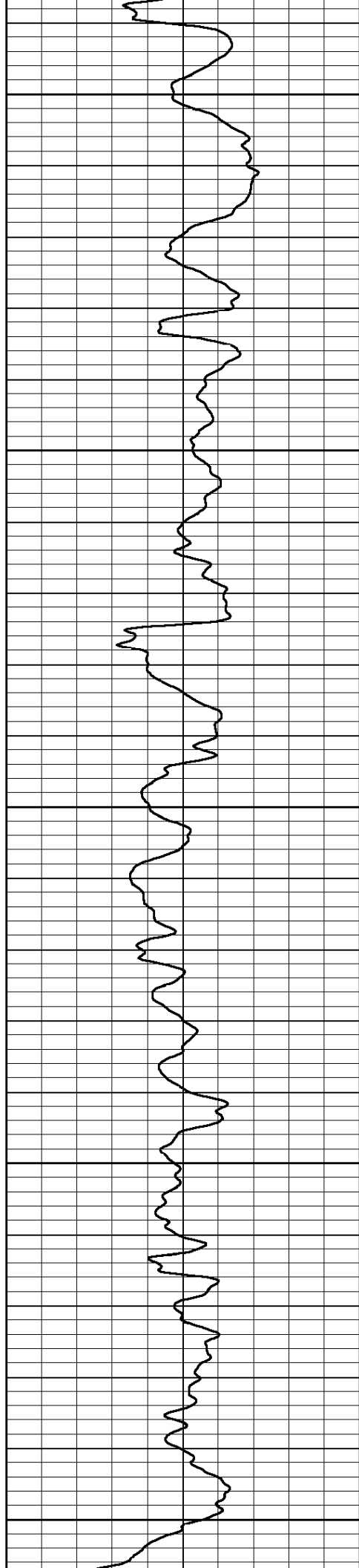


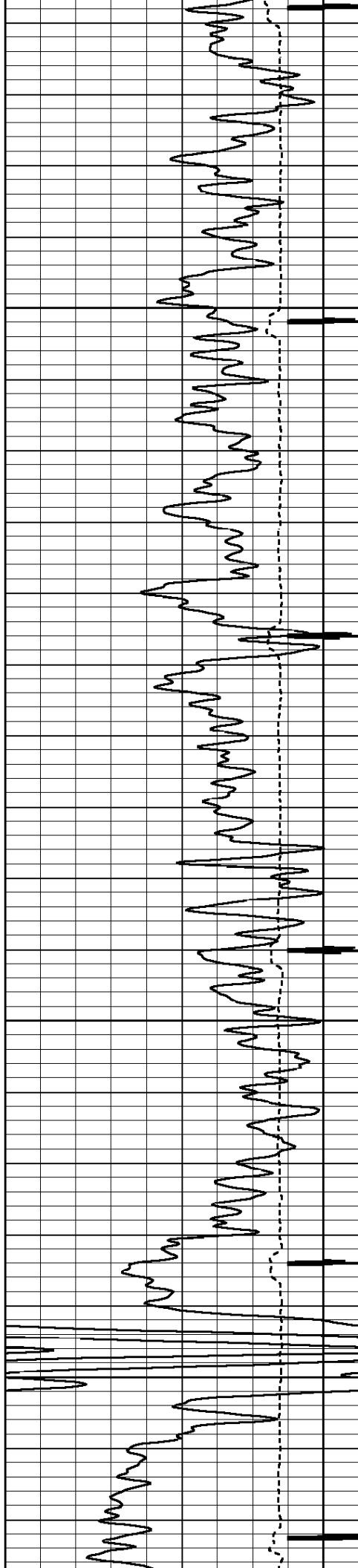


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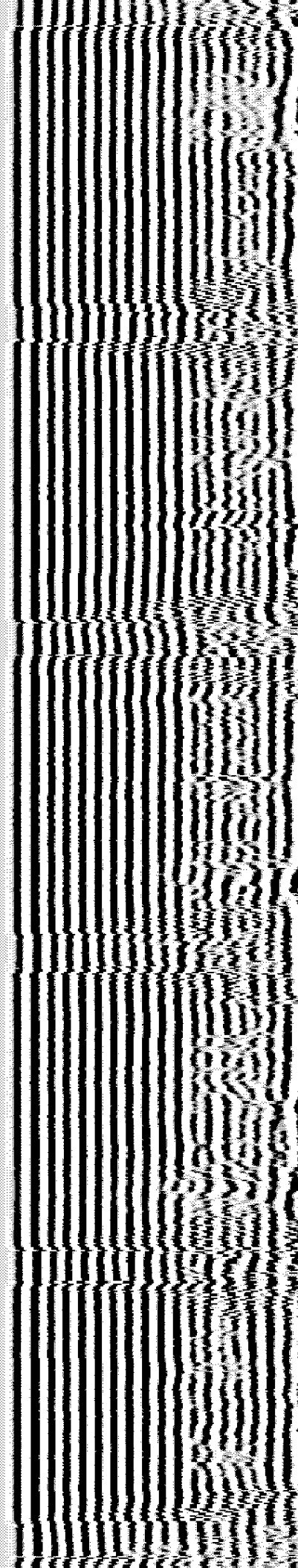
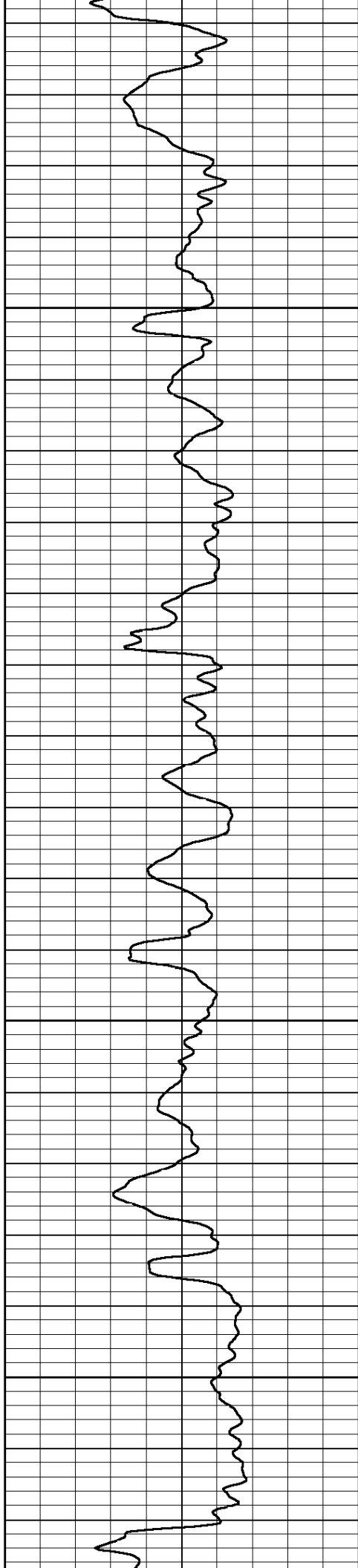
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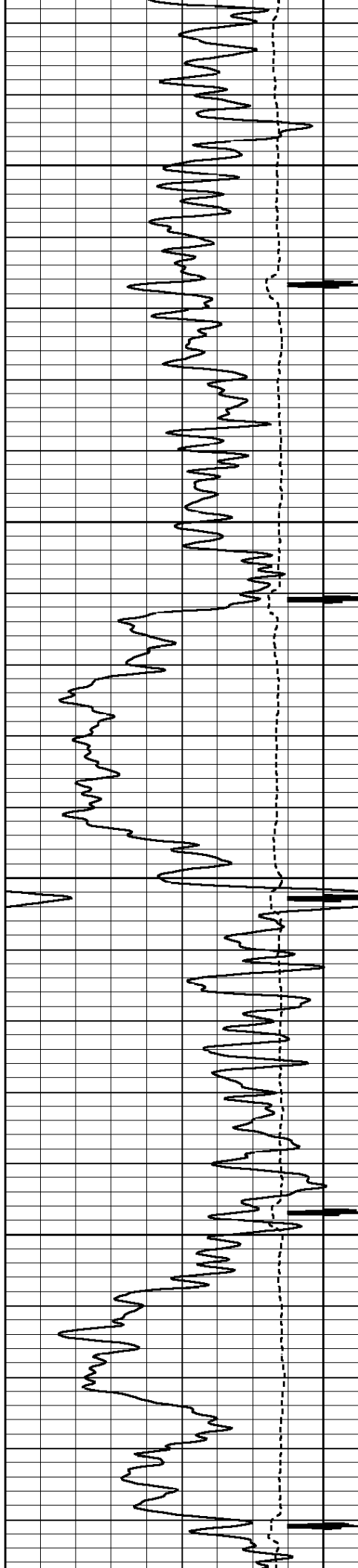




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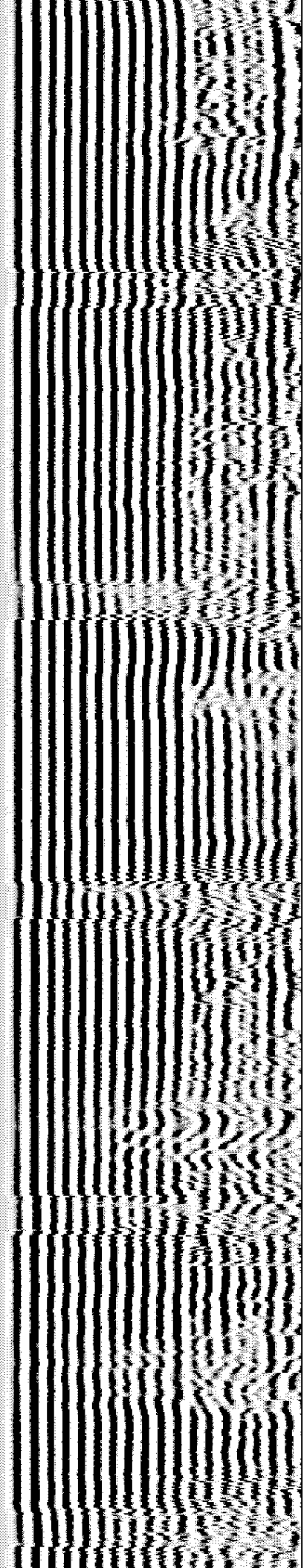
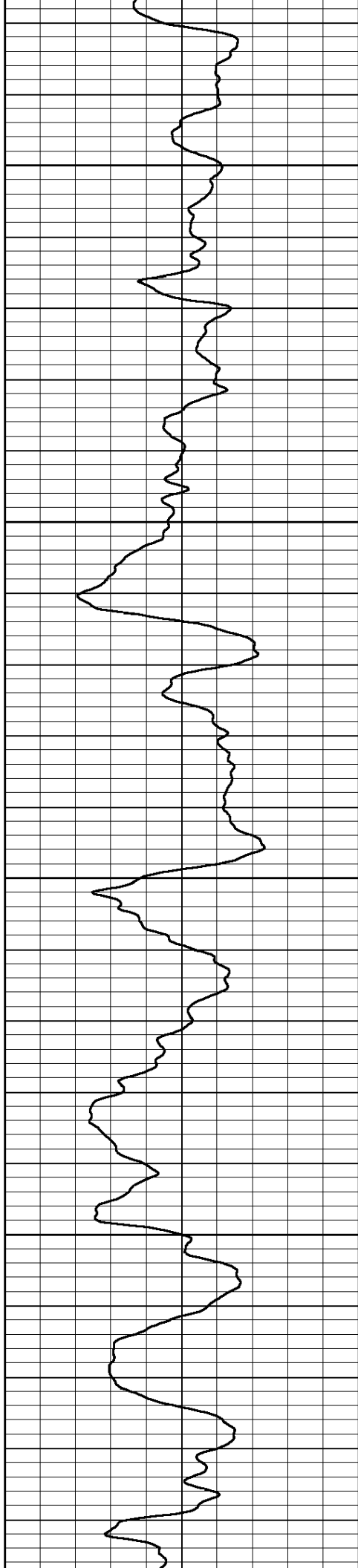
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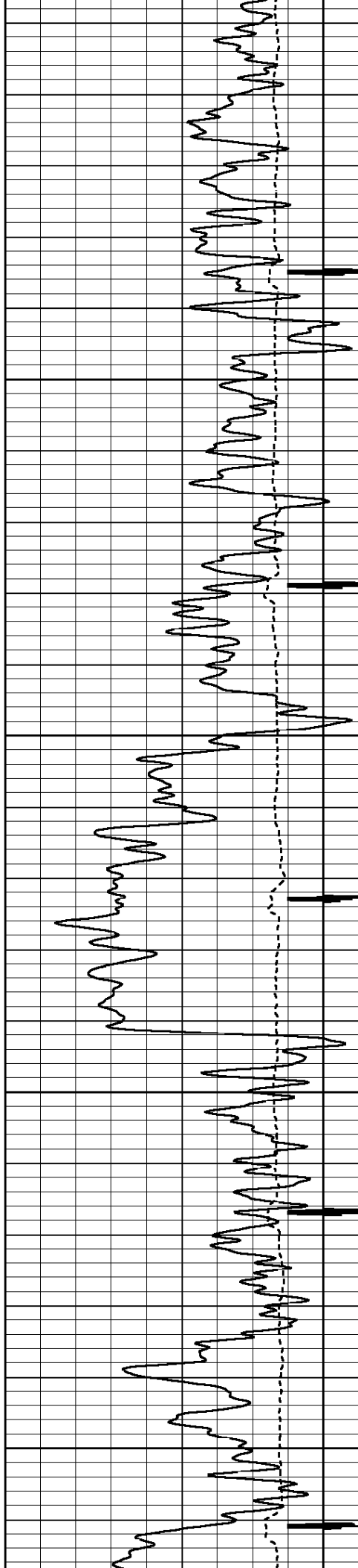




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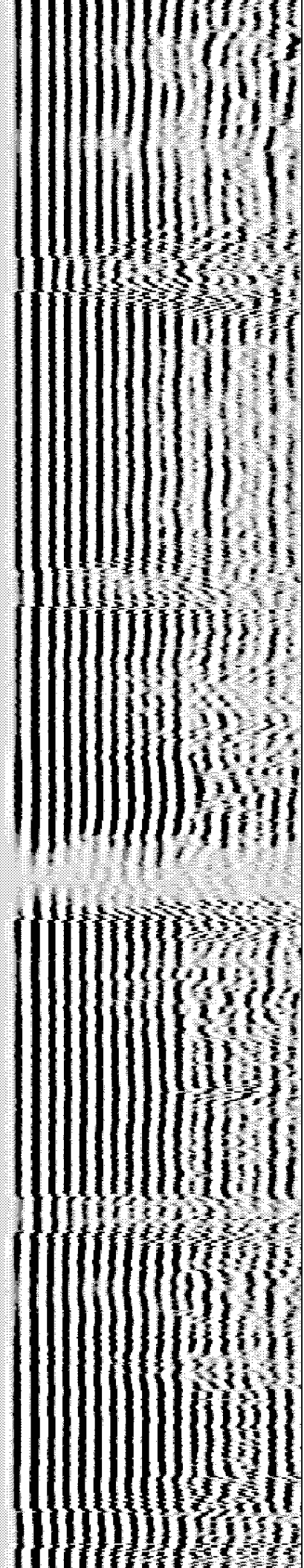
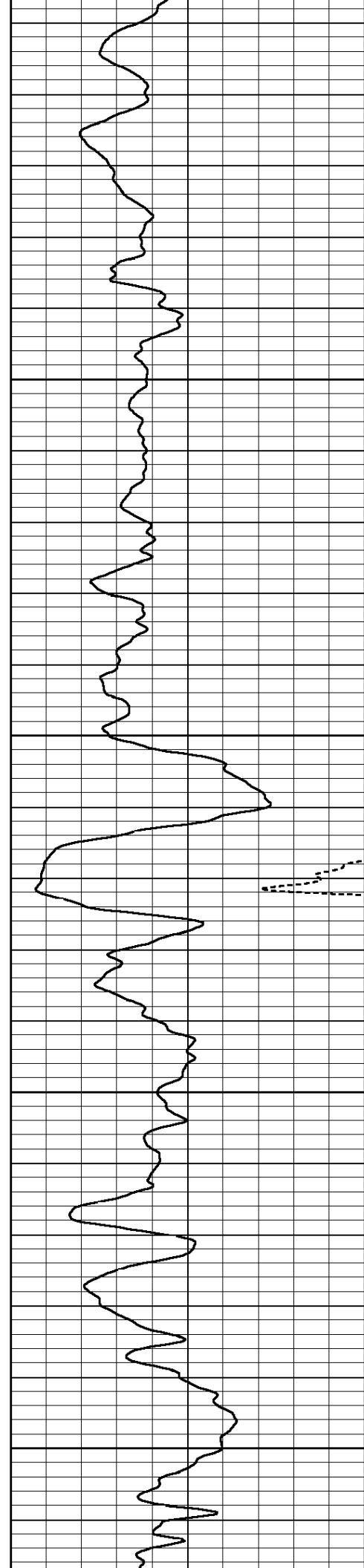
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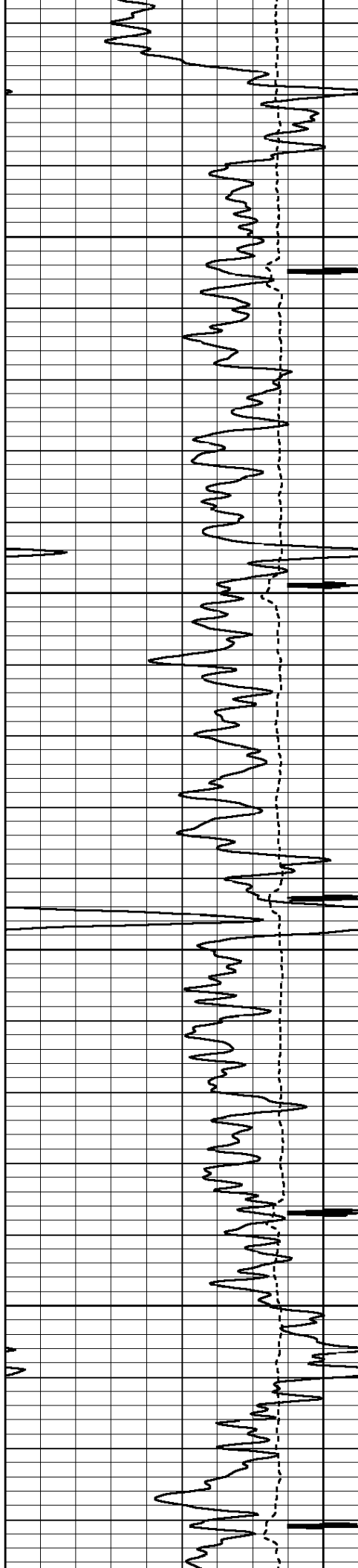




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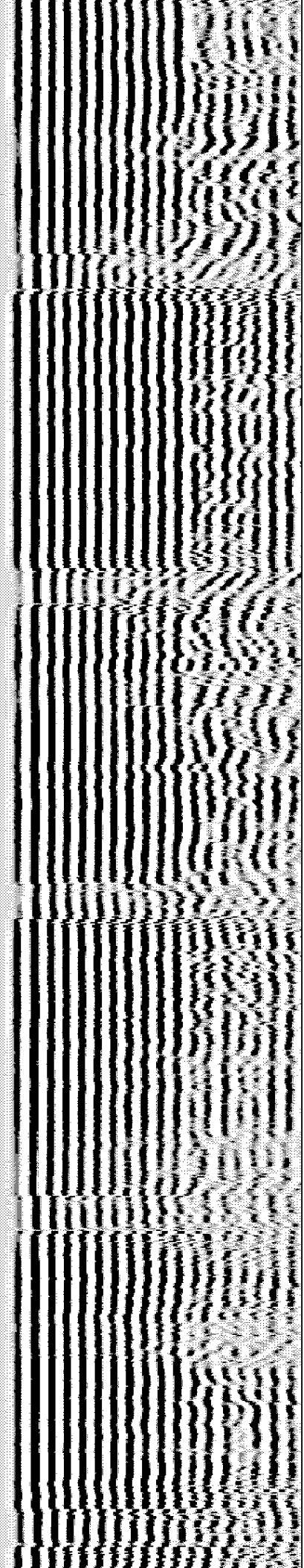
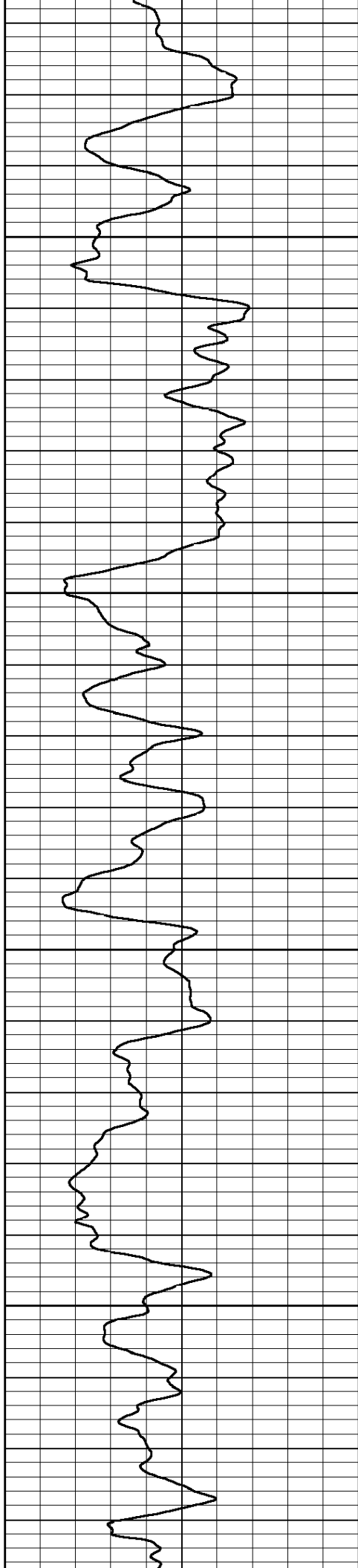
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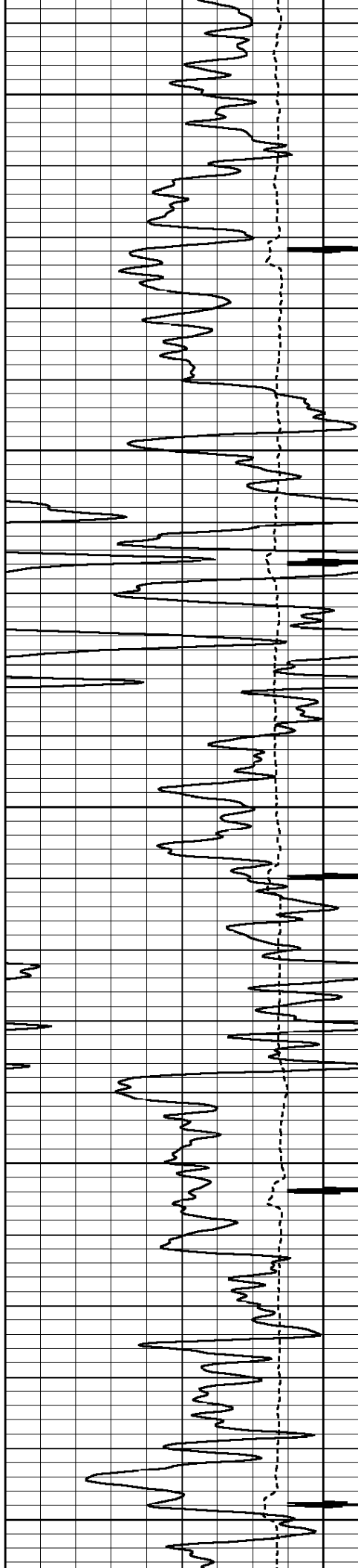




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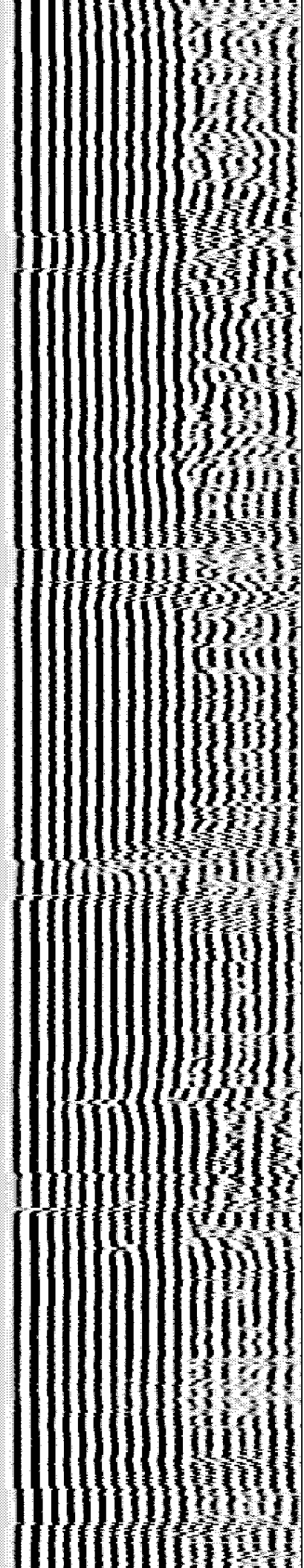
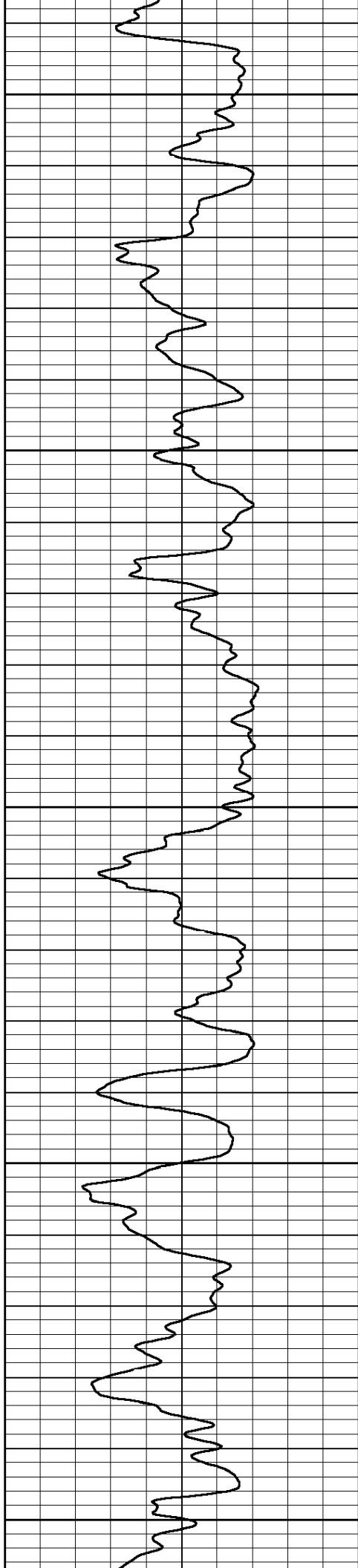




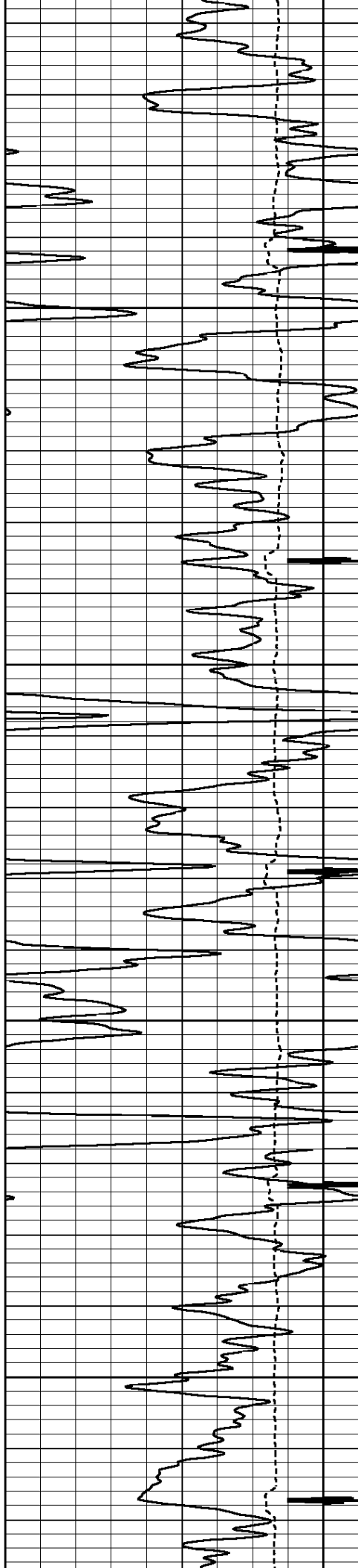
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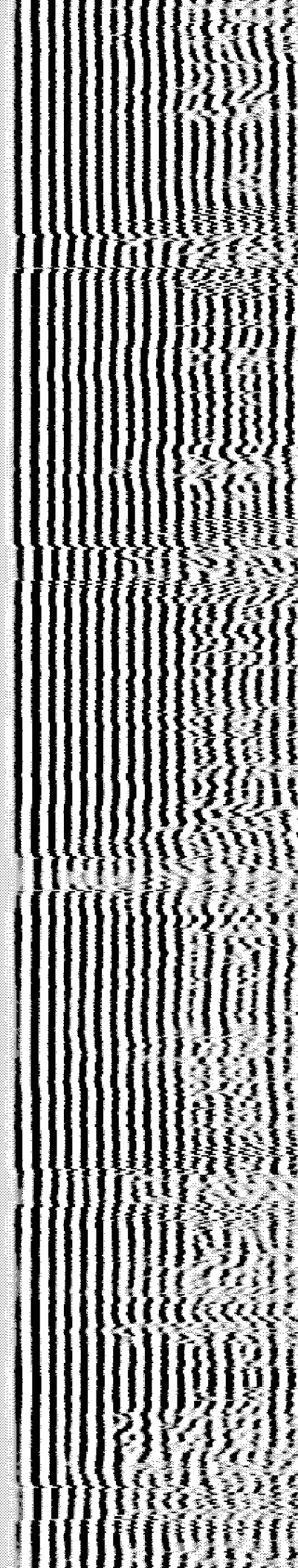
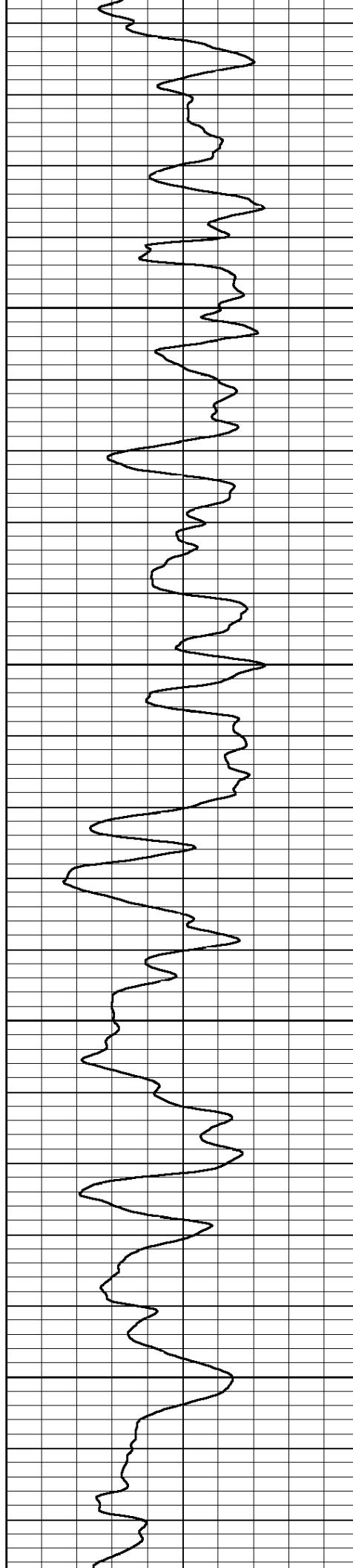


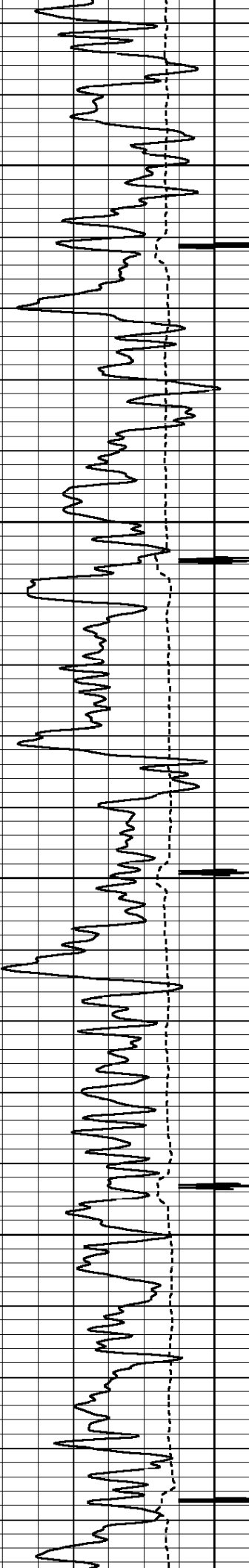




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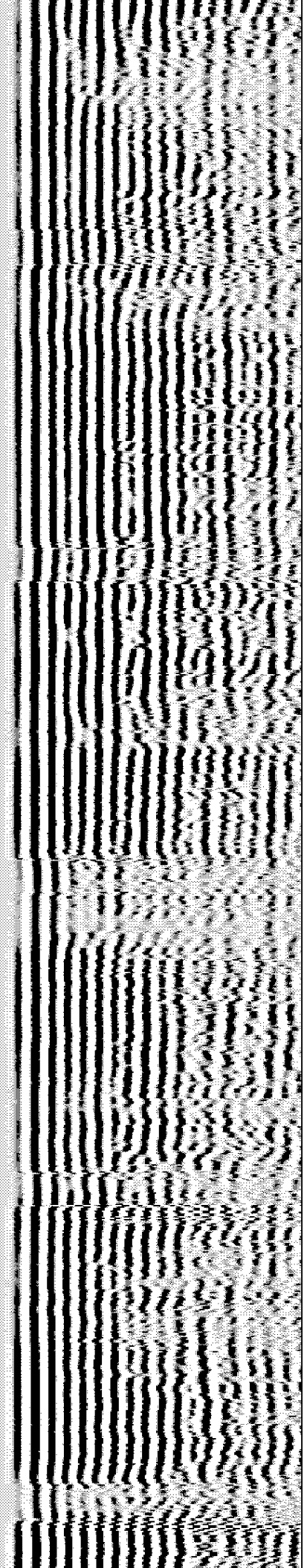
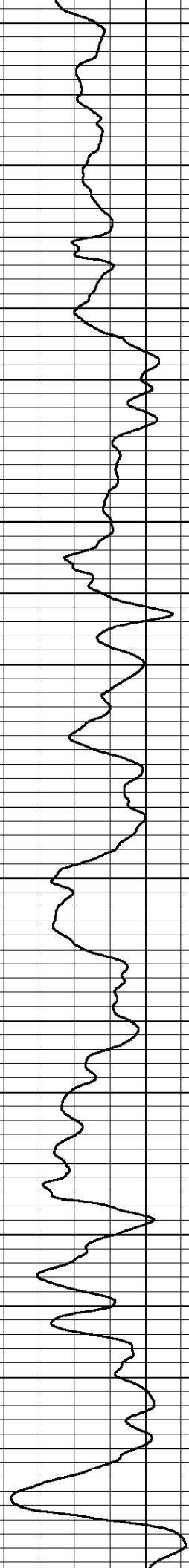
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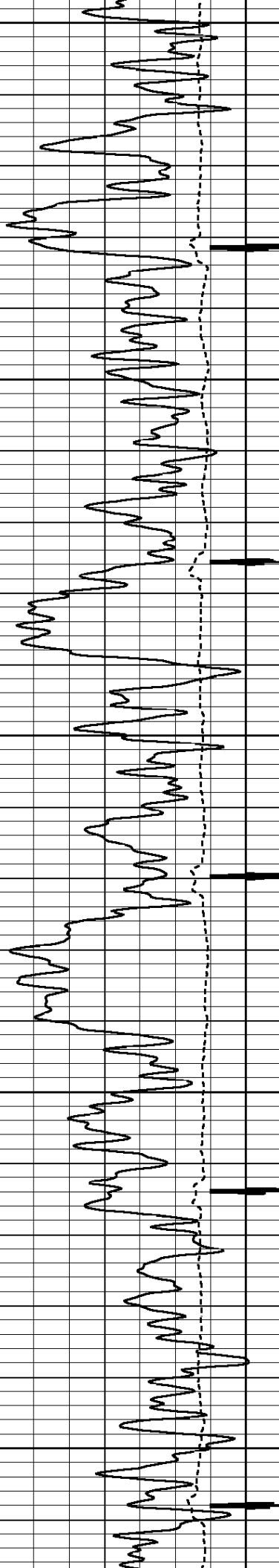


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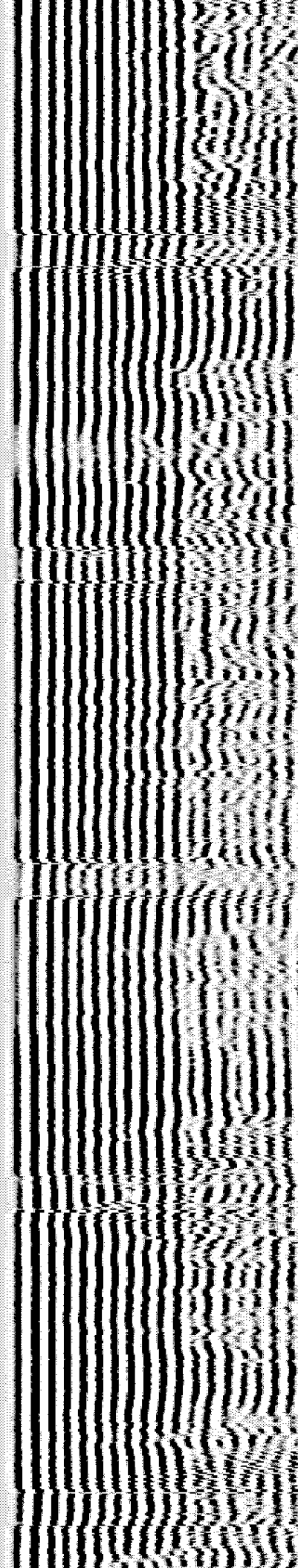
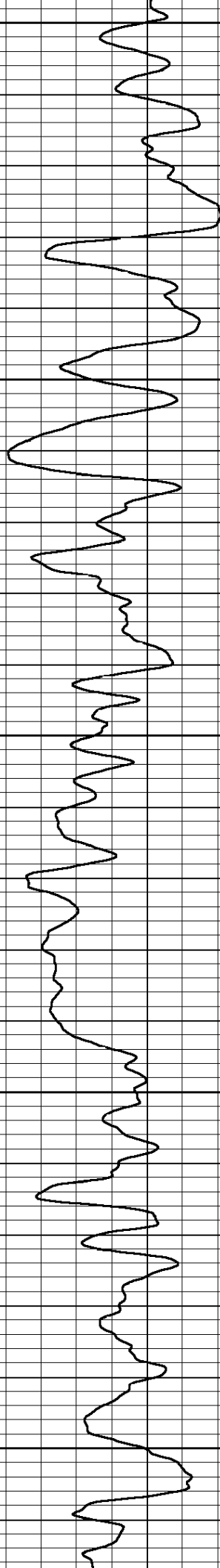


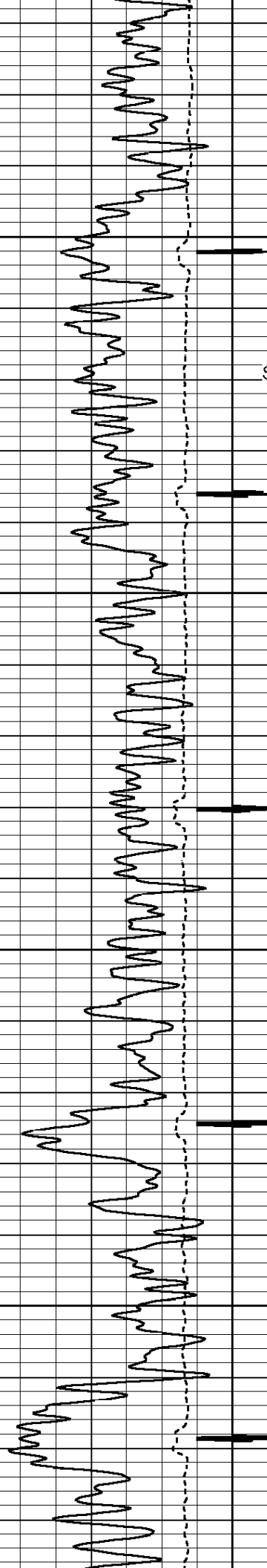




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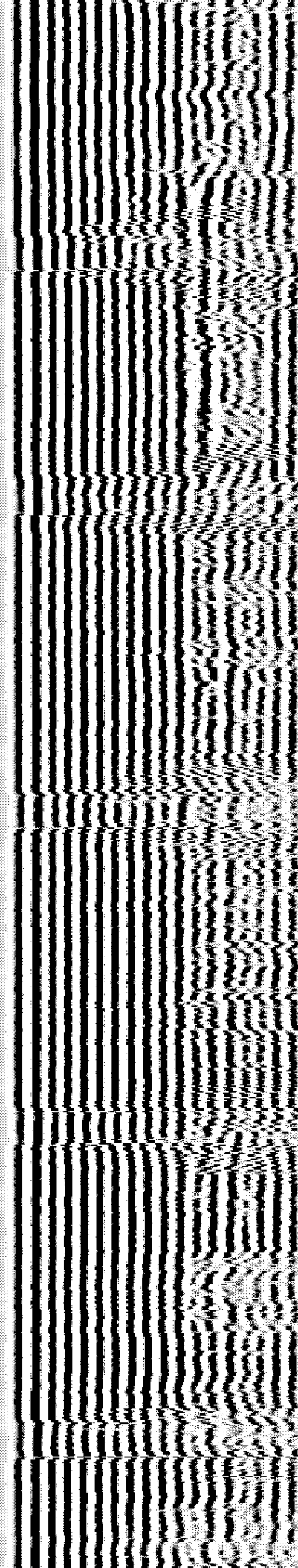
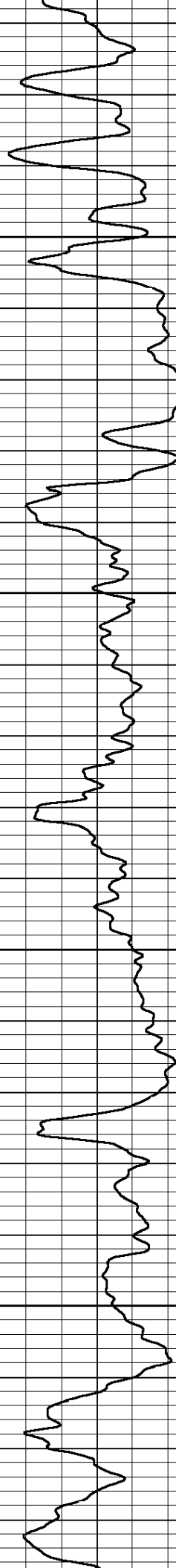


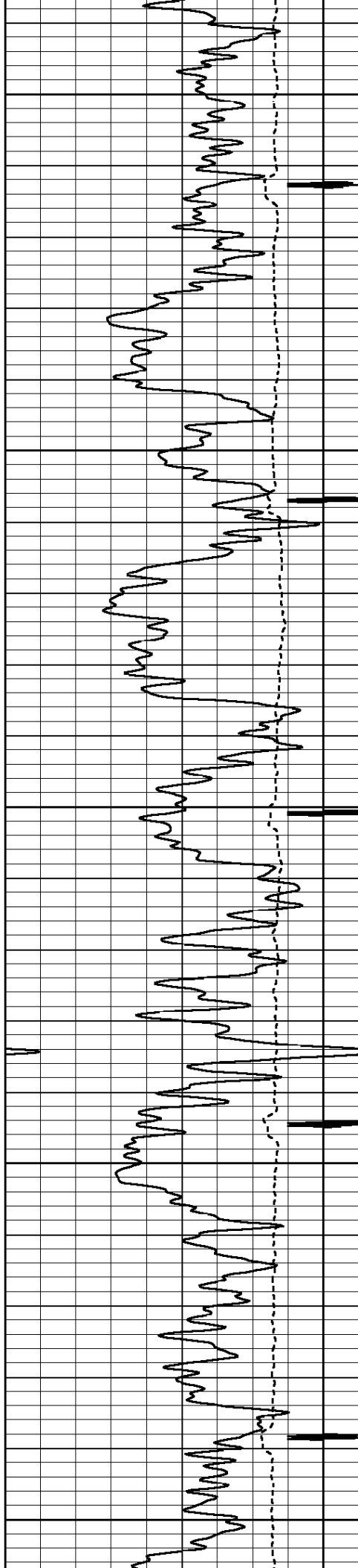


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SHORT JOINT

3500

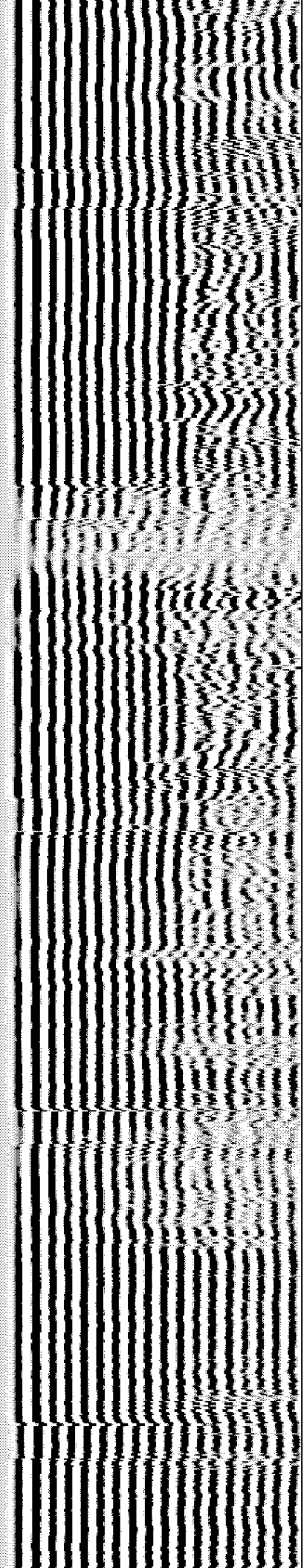
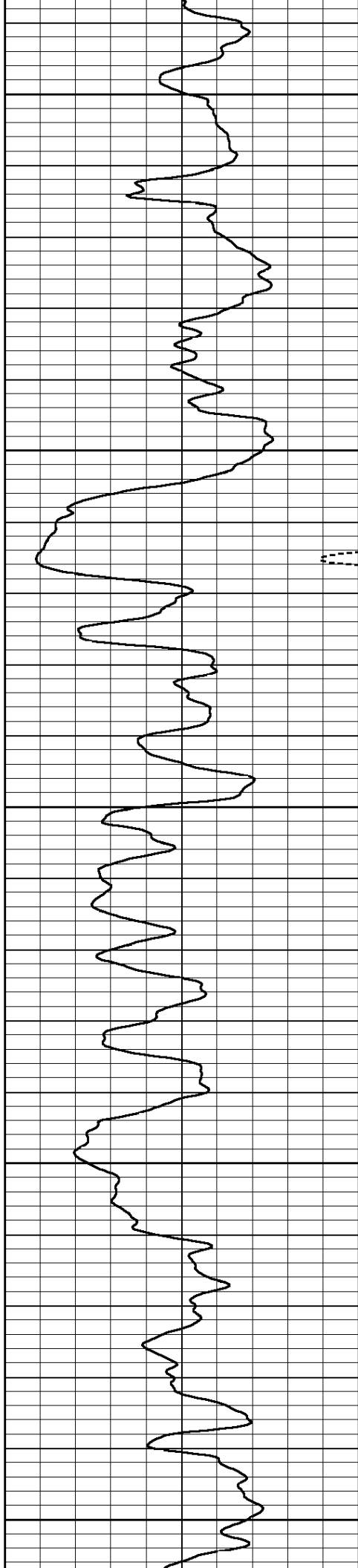


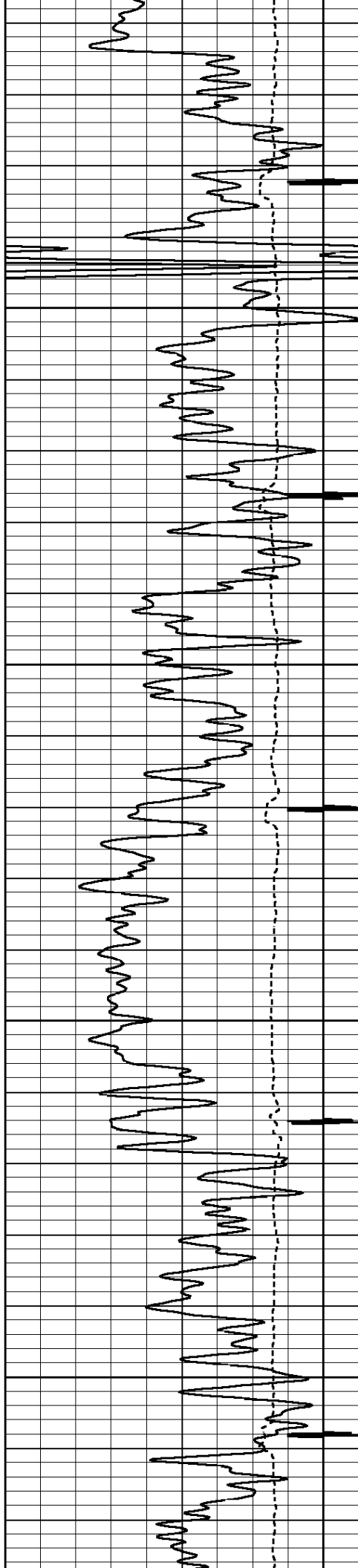


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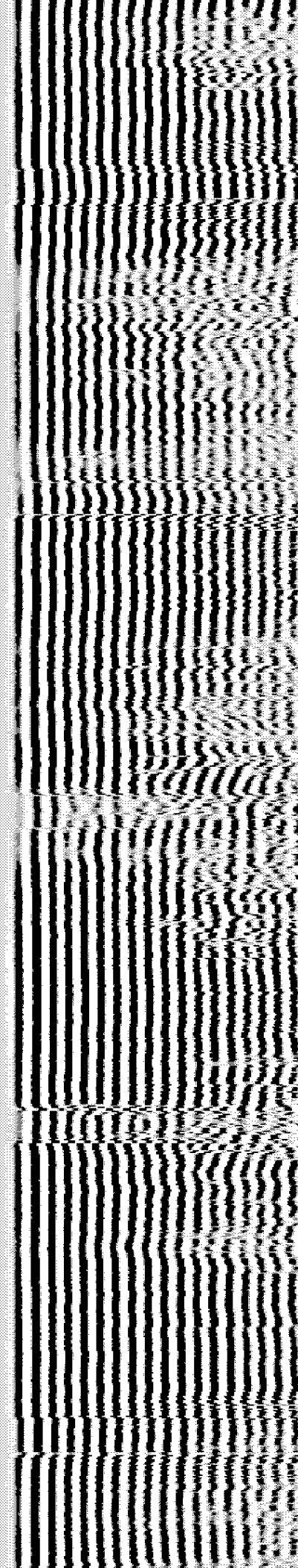
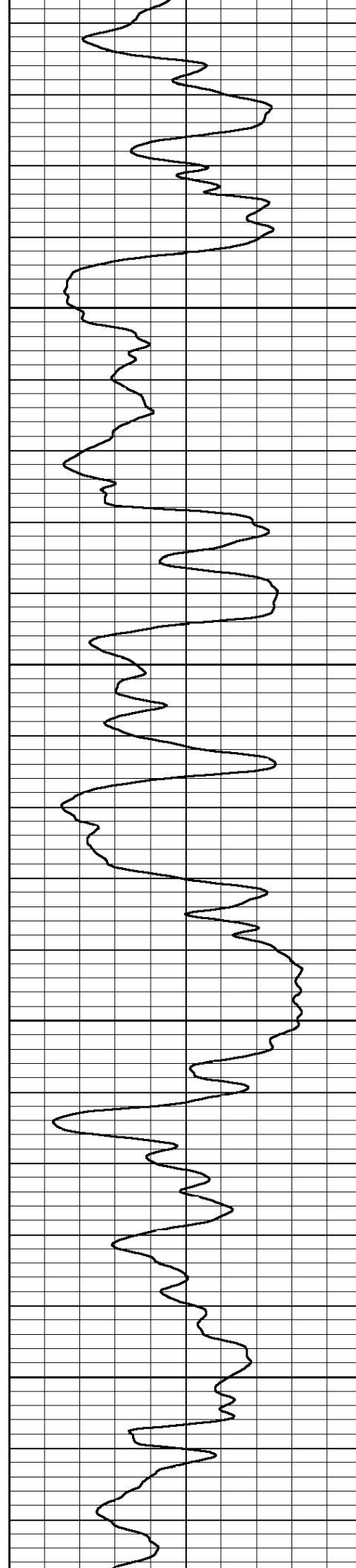
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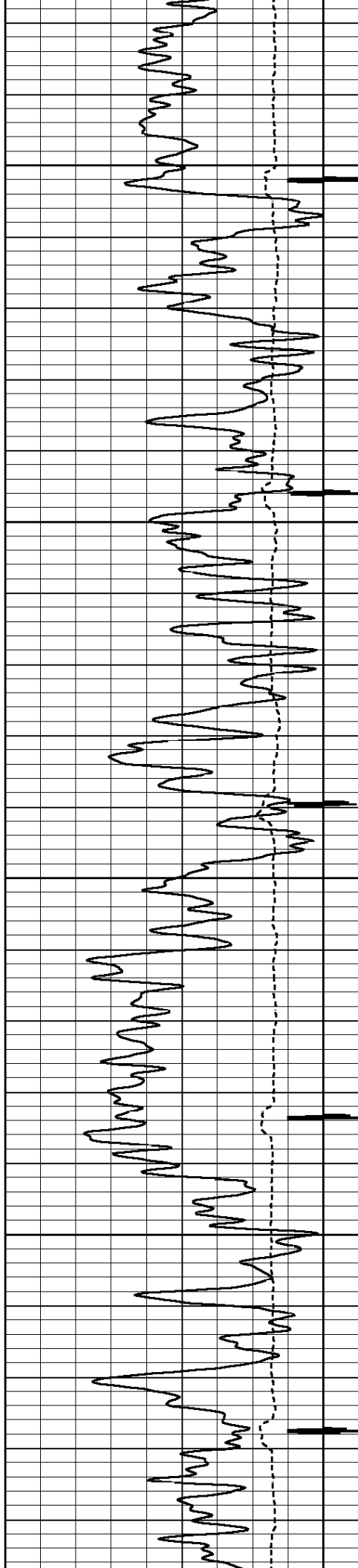




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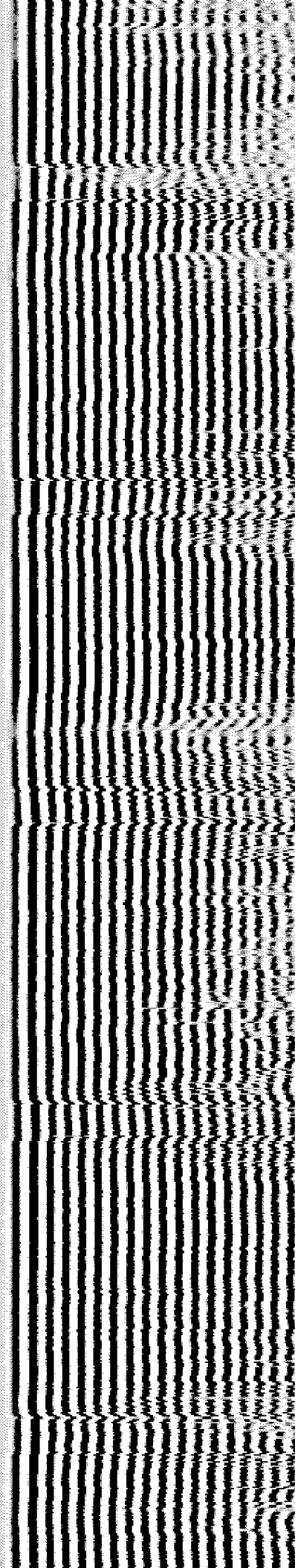
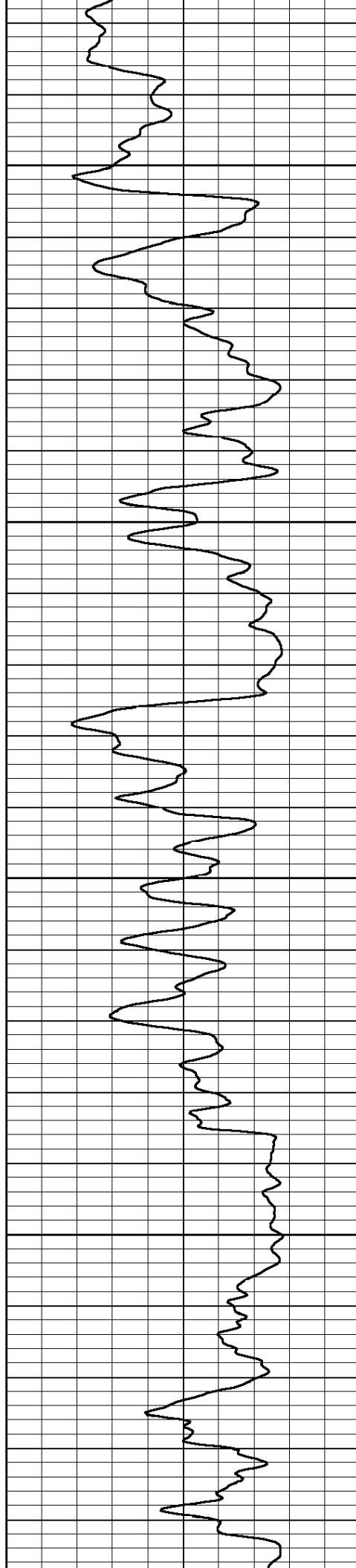
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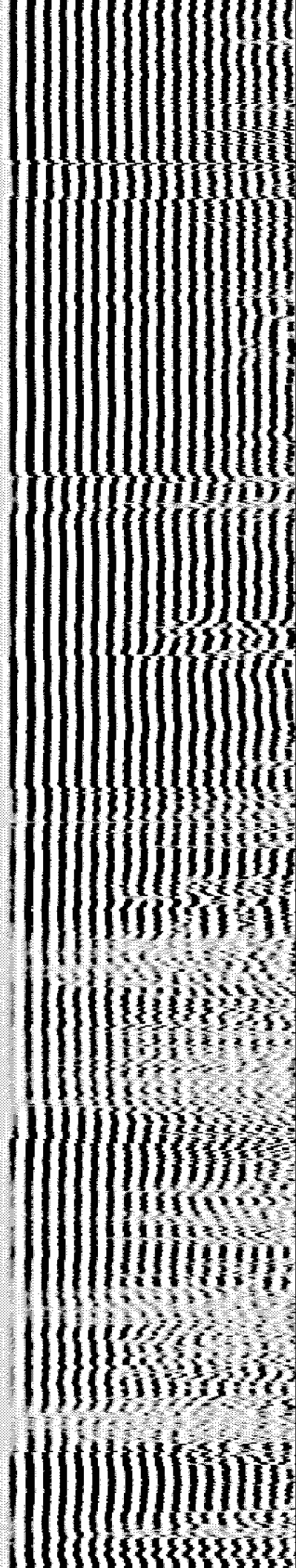
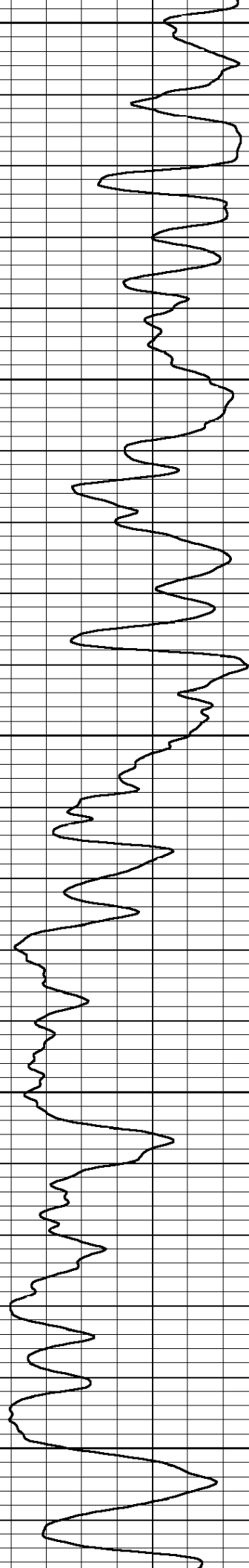
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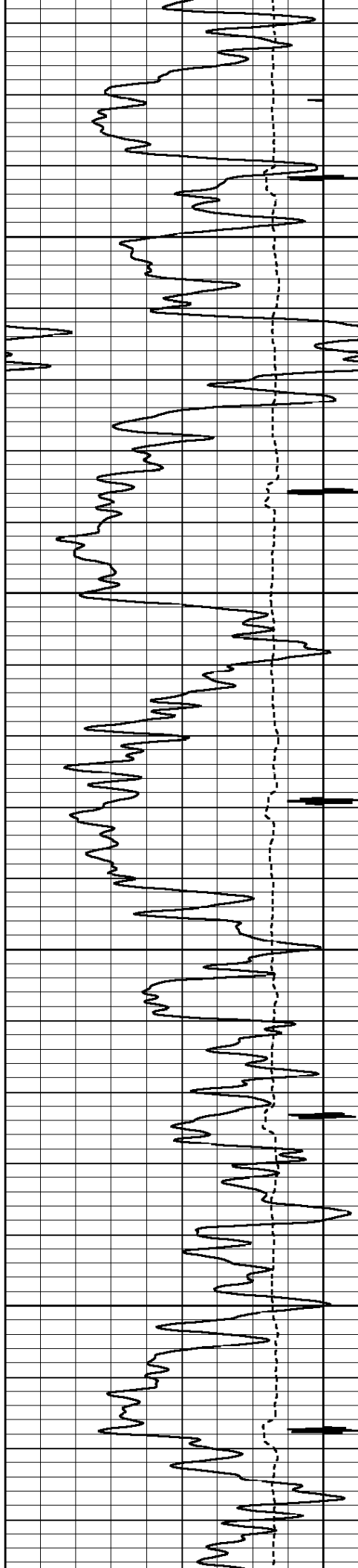




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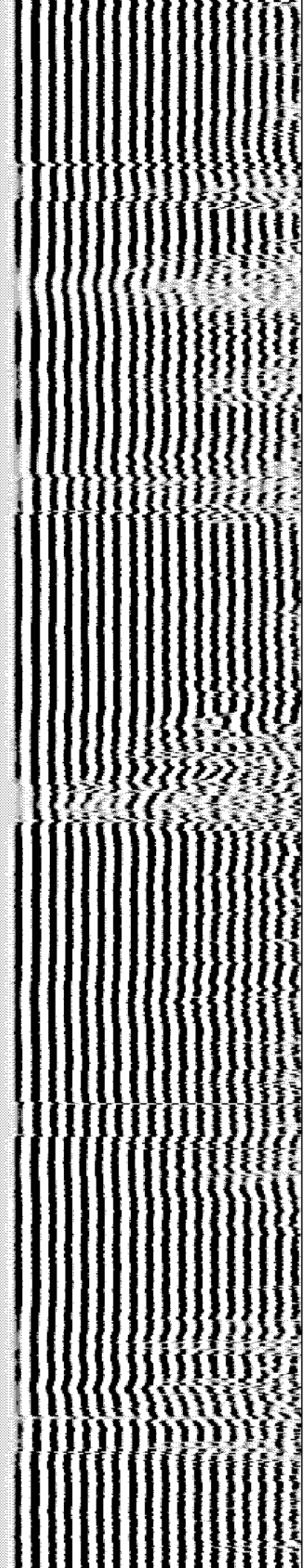
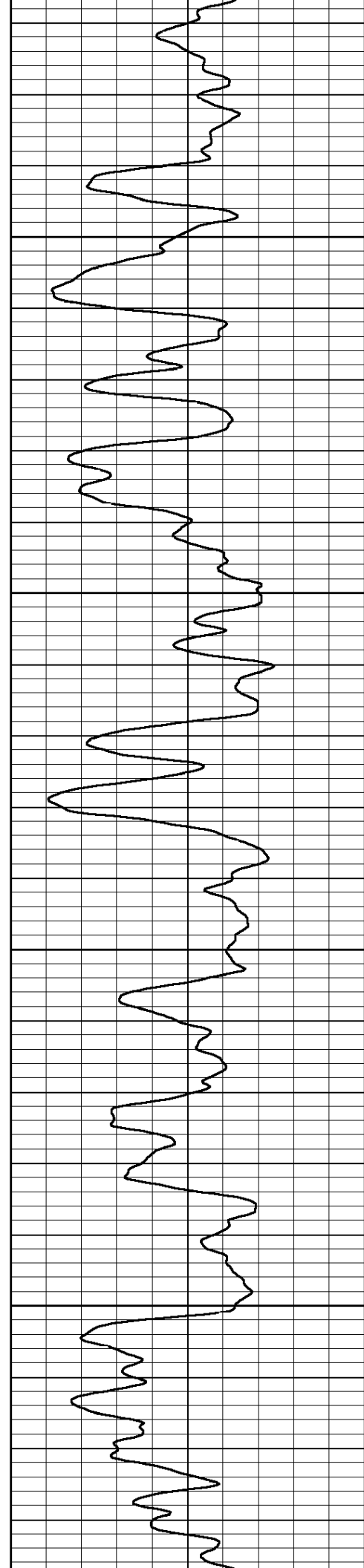
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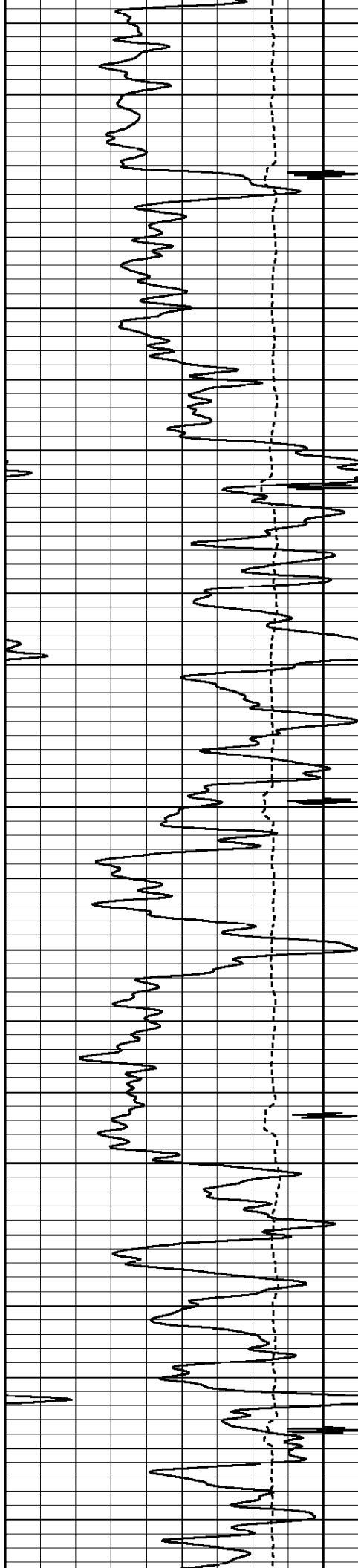


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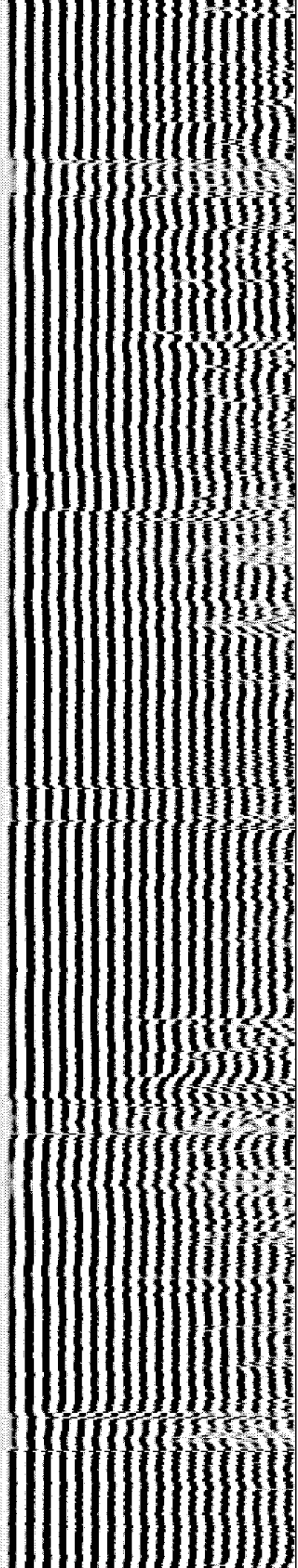
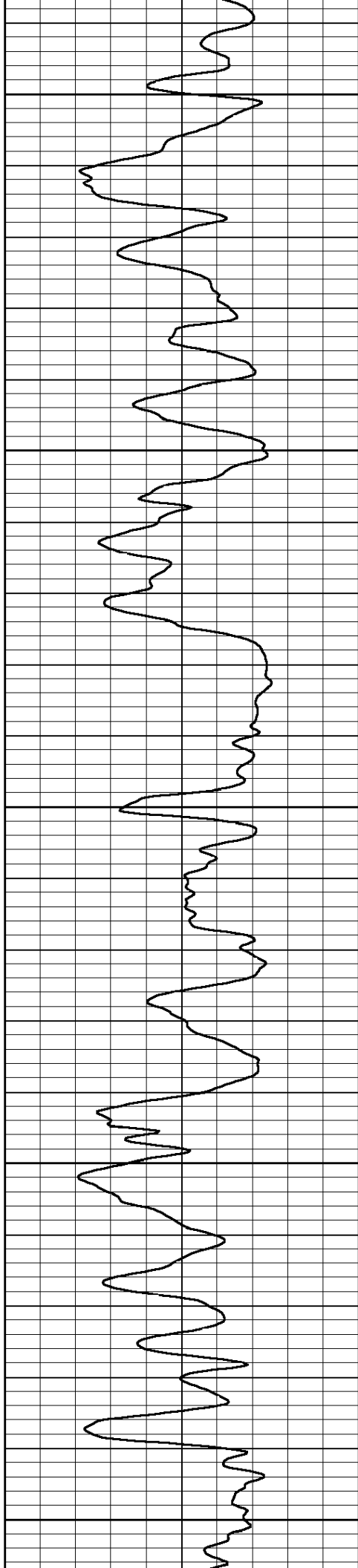




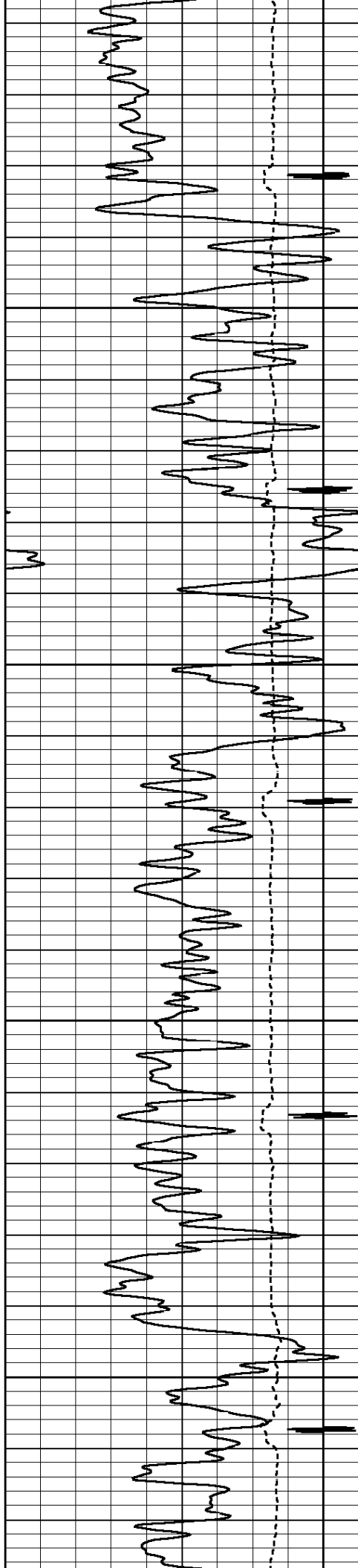
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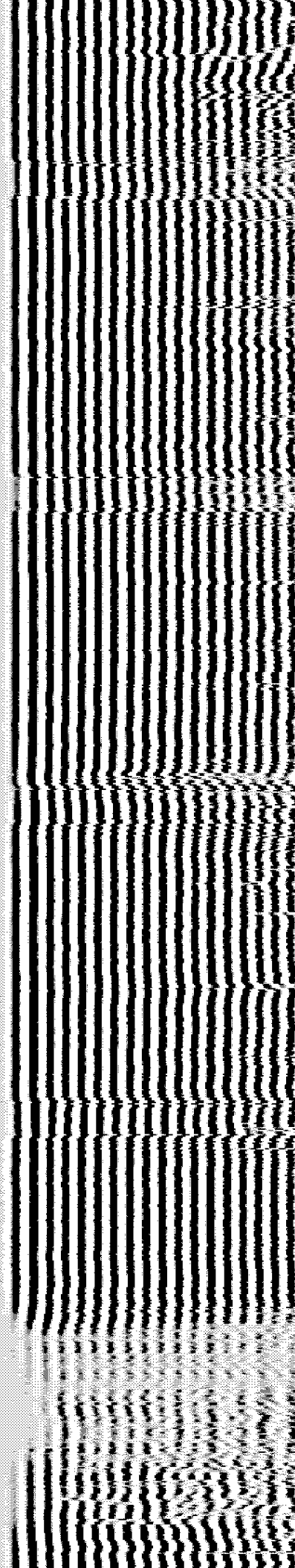
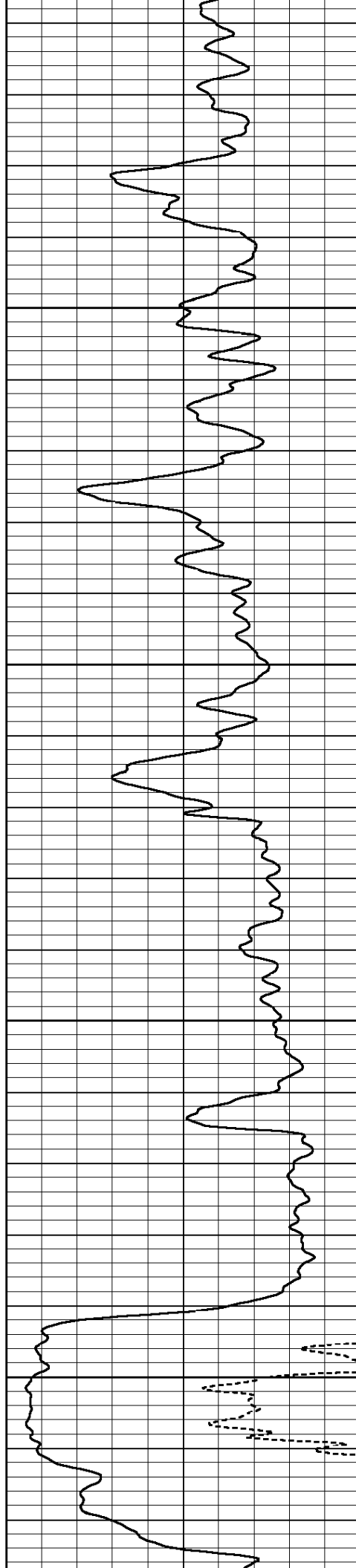


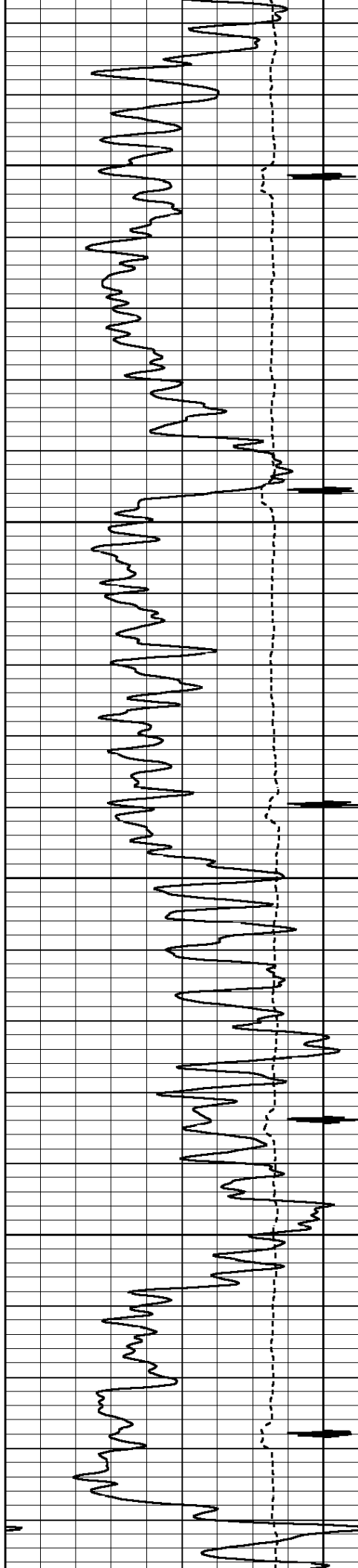




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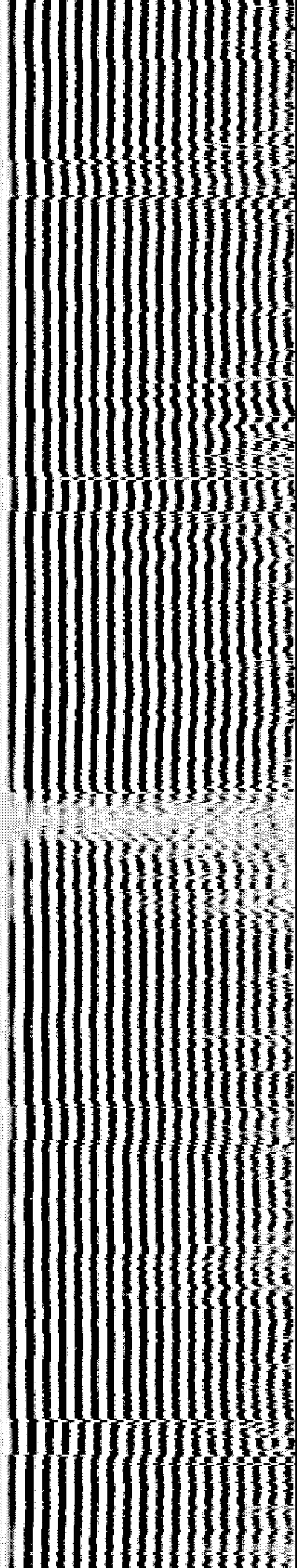
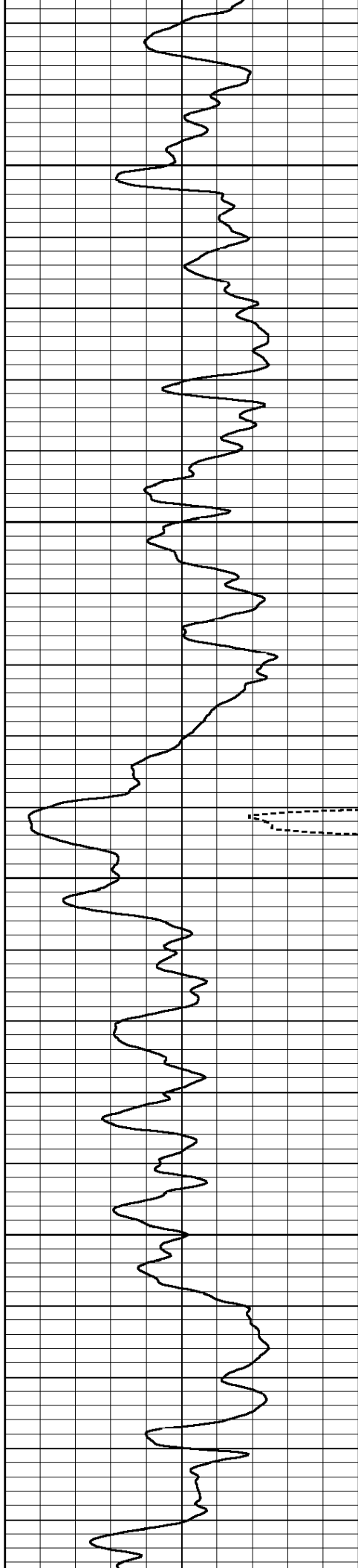
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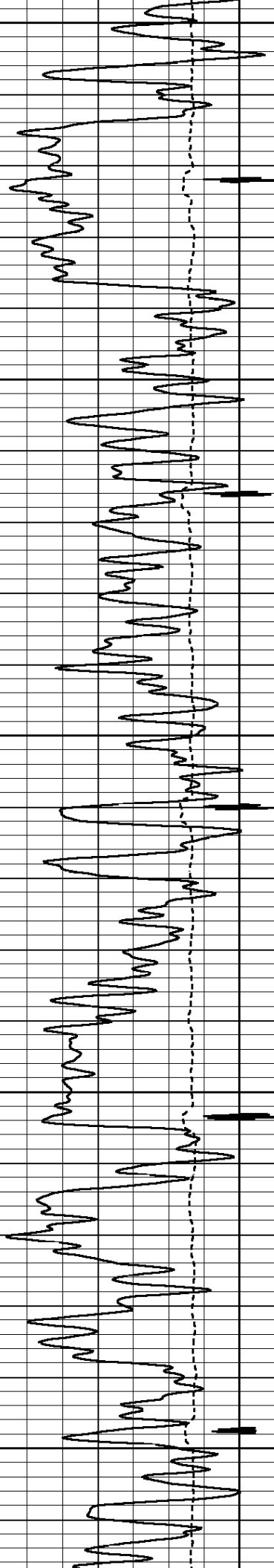




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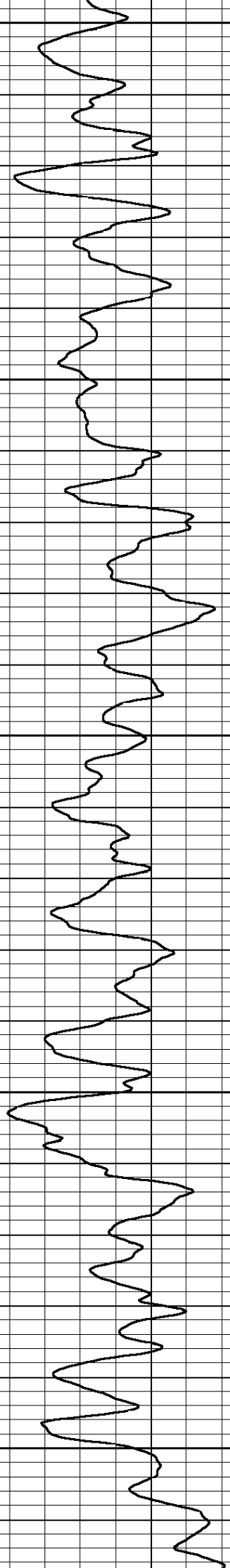
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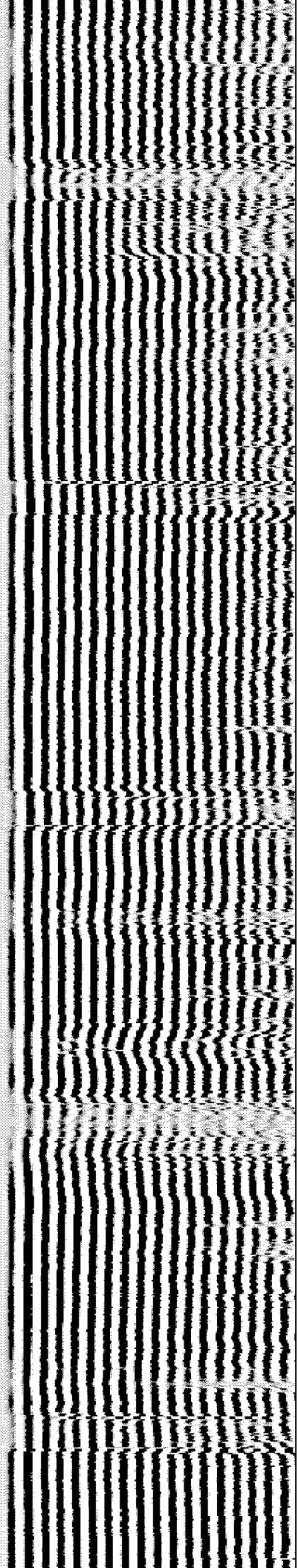


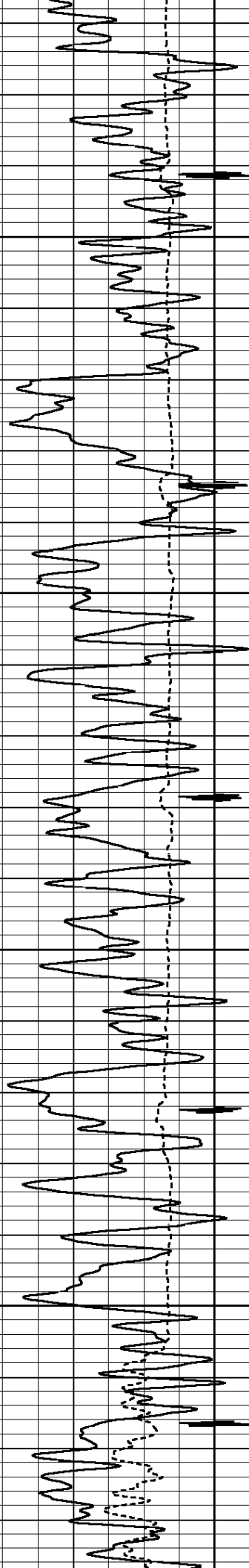
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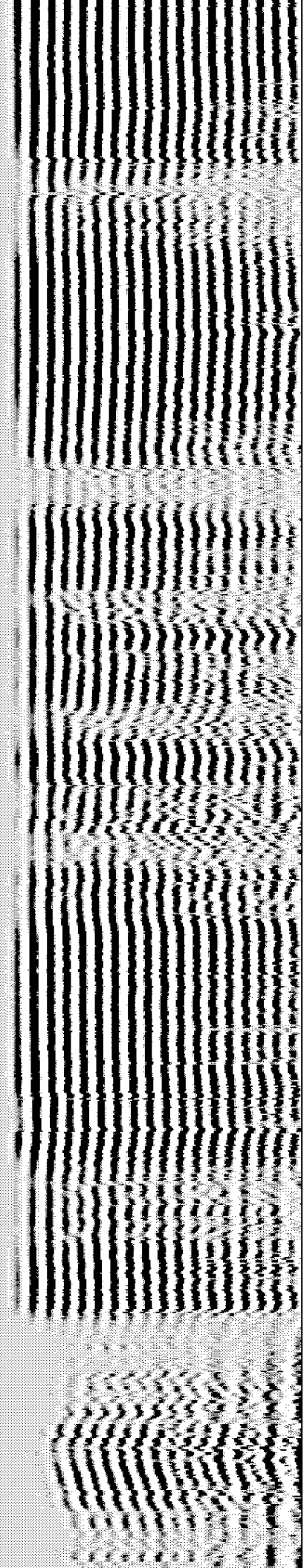
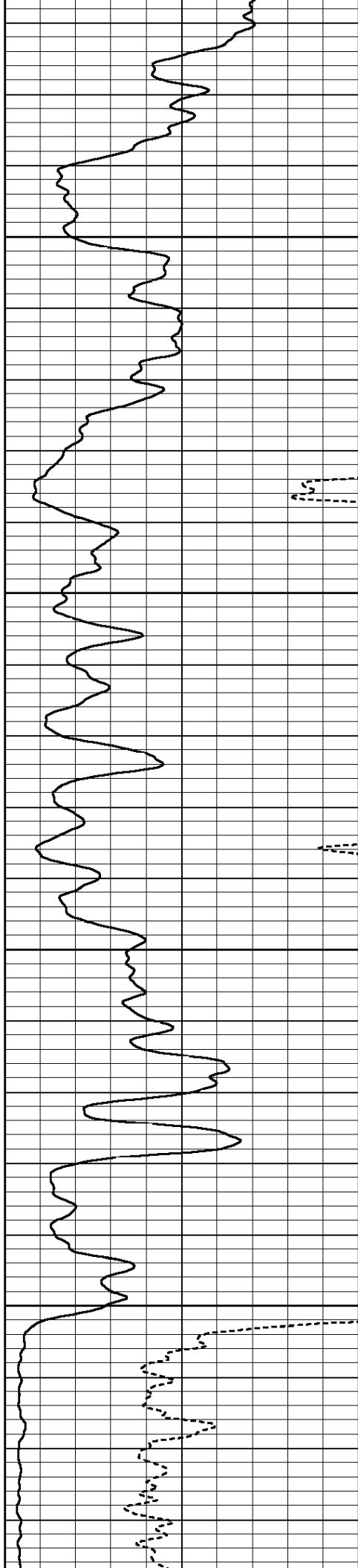
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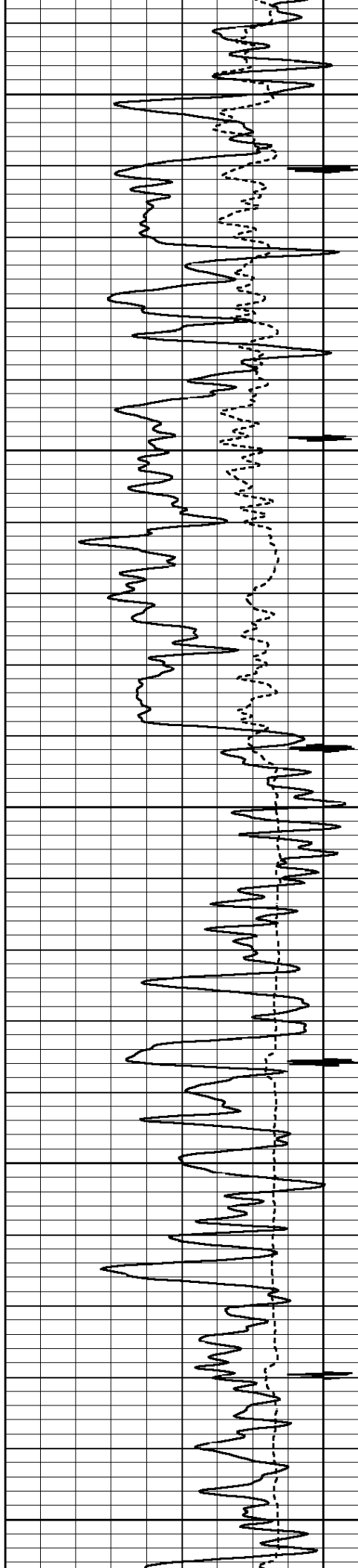




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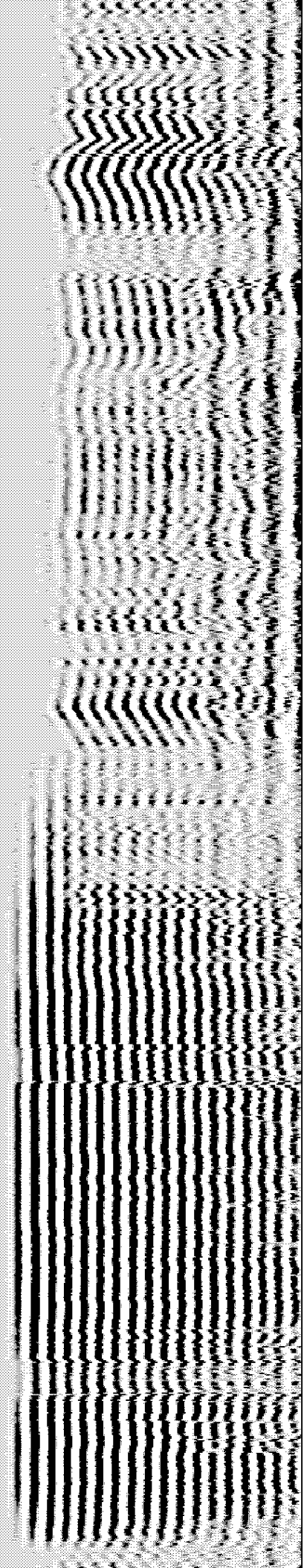
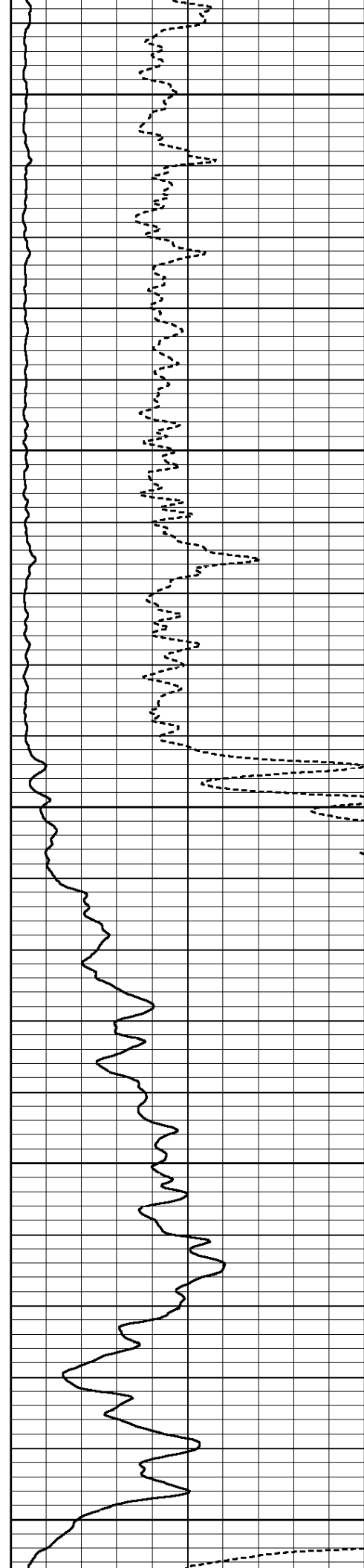


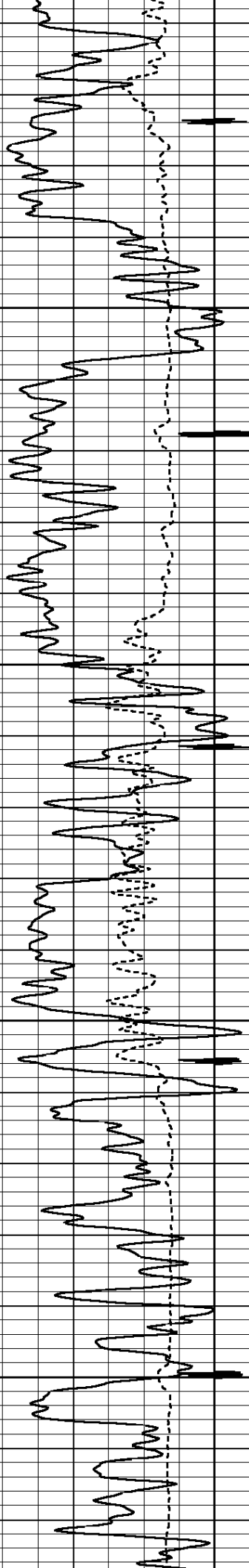


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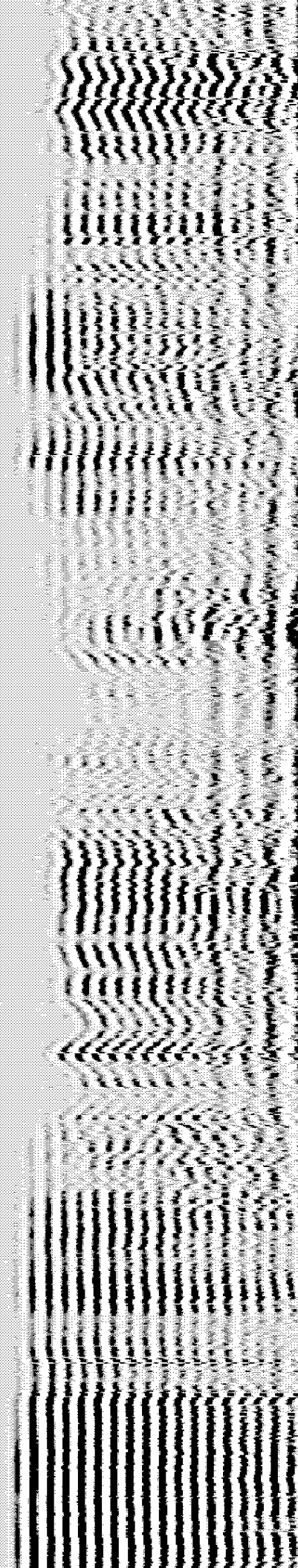
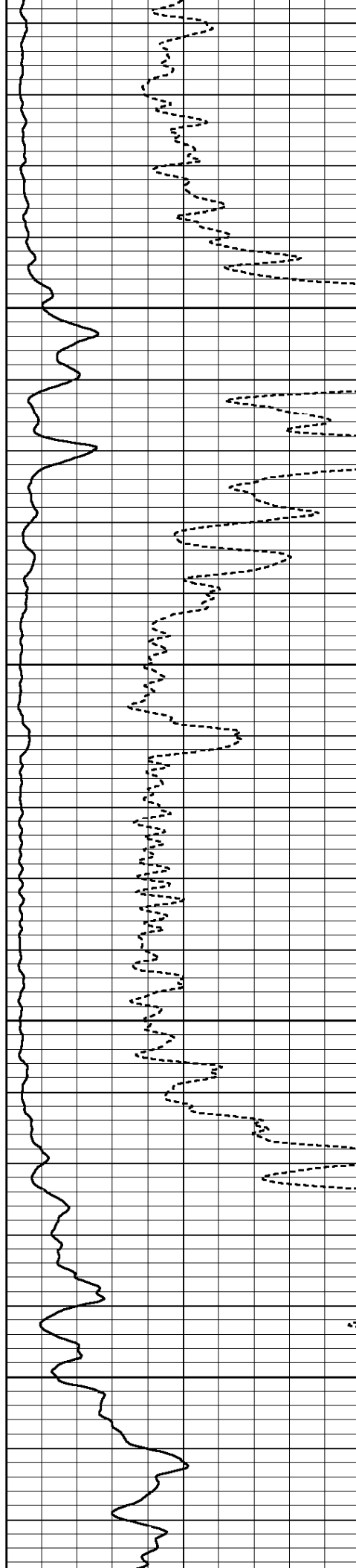
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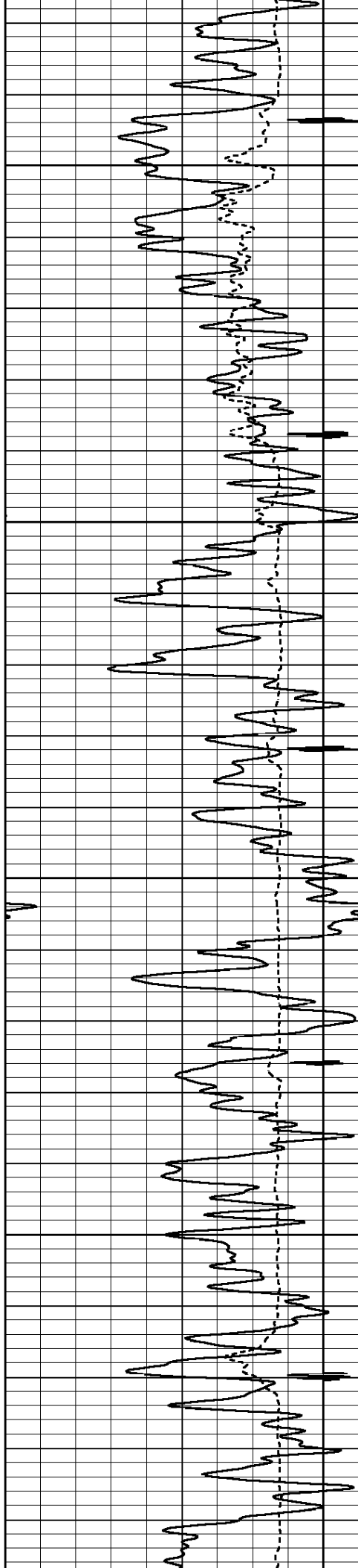


6100

6200

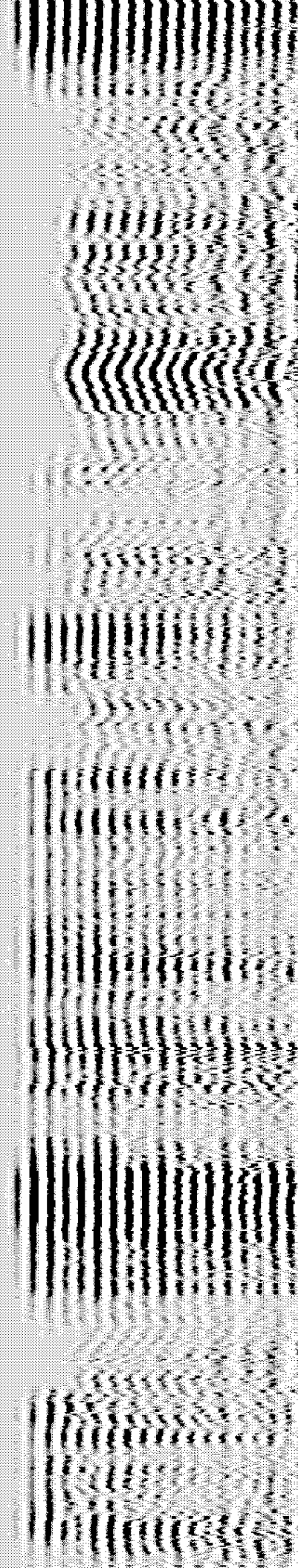
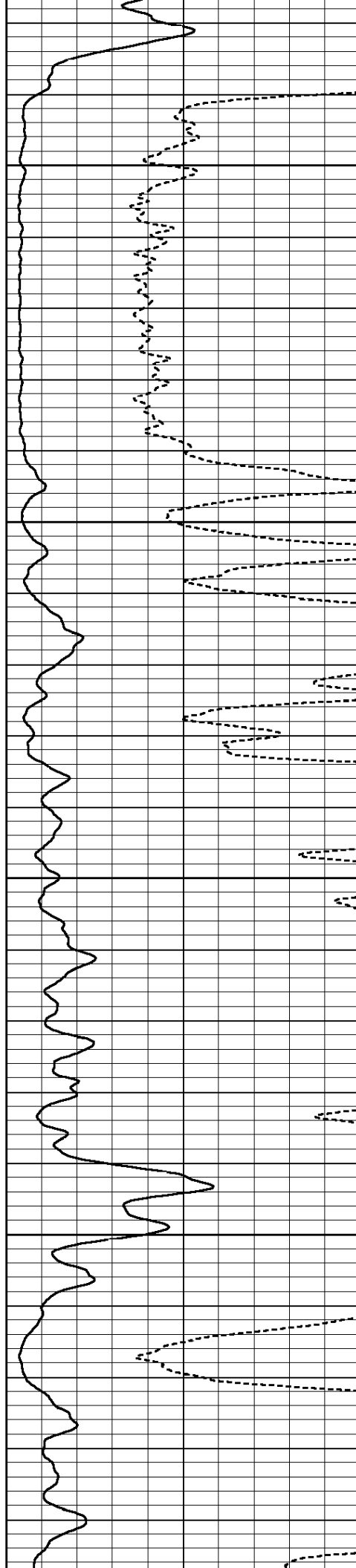


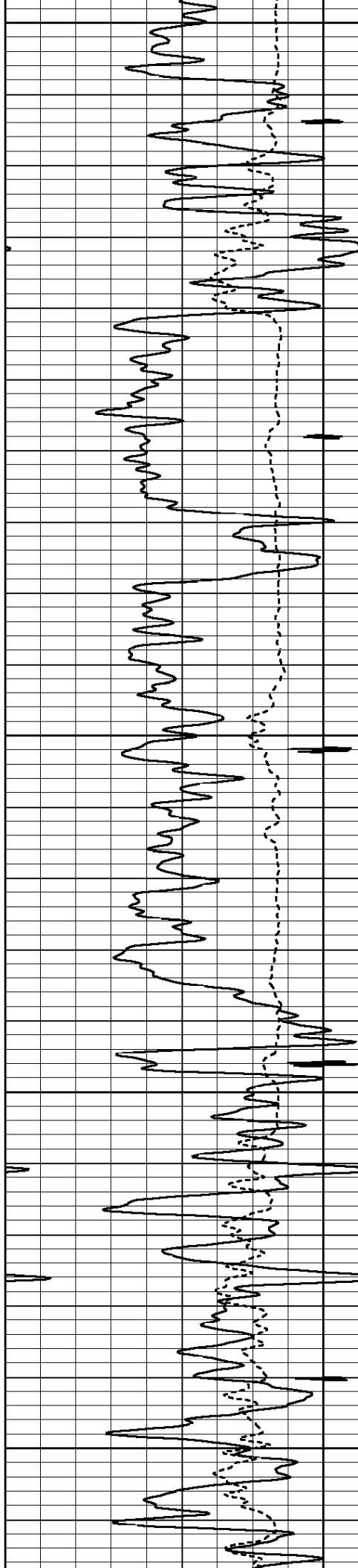




6300

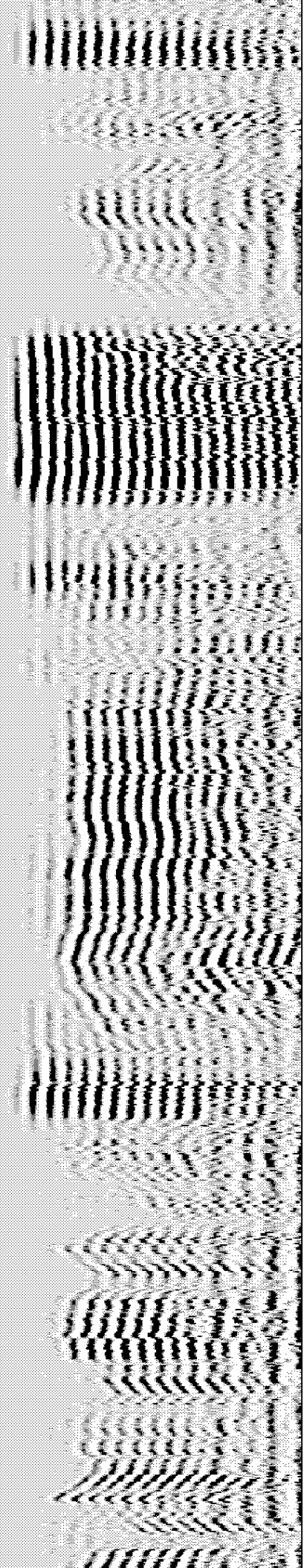
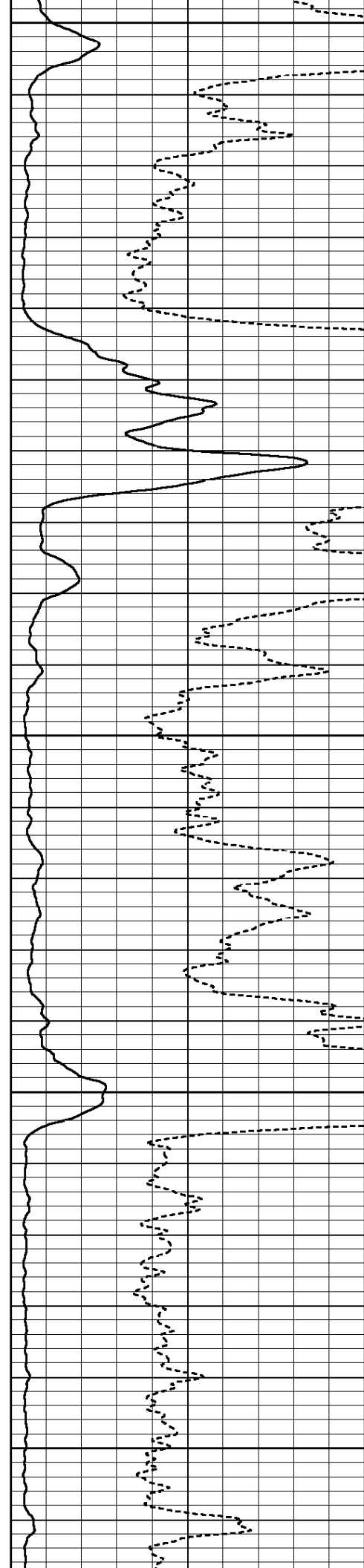
6400



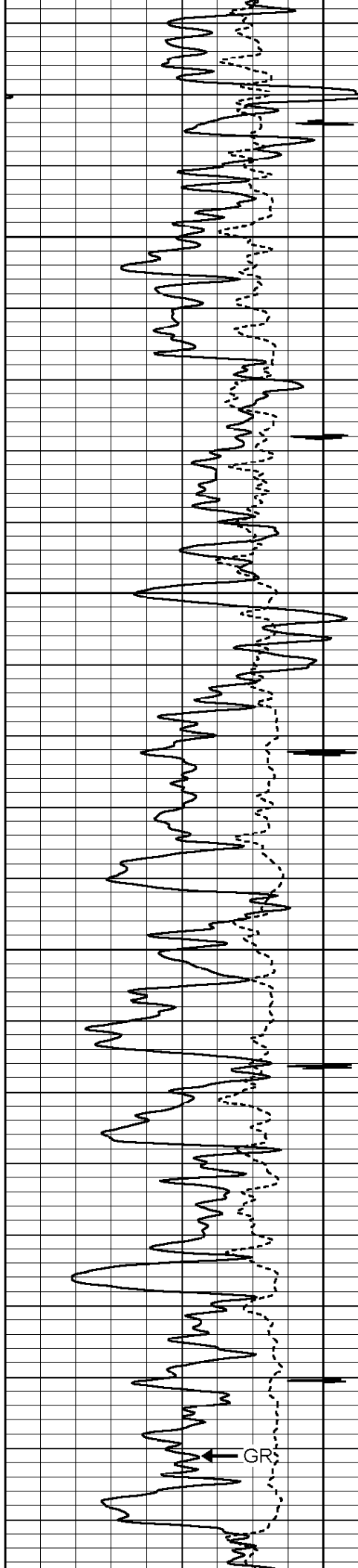


6500

6600

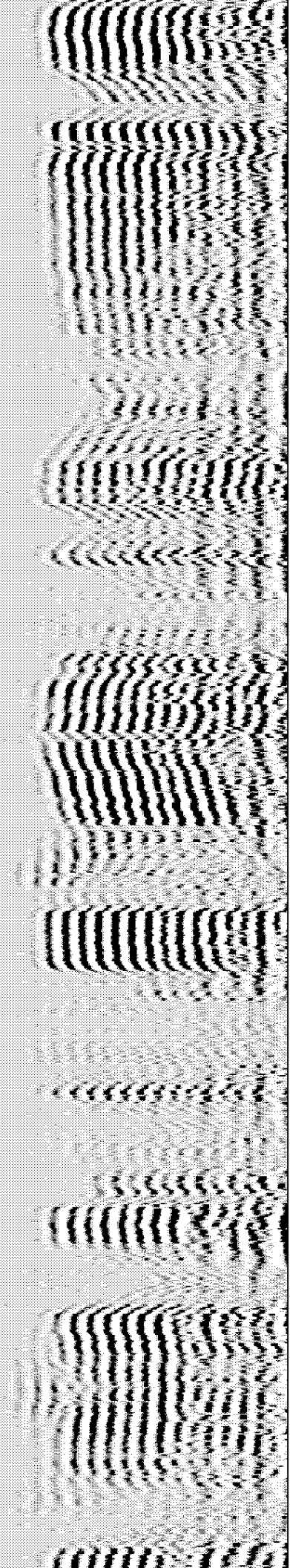
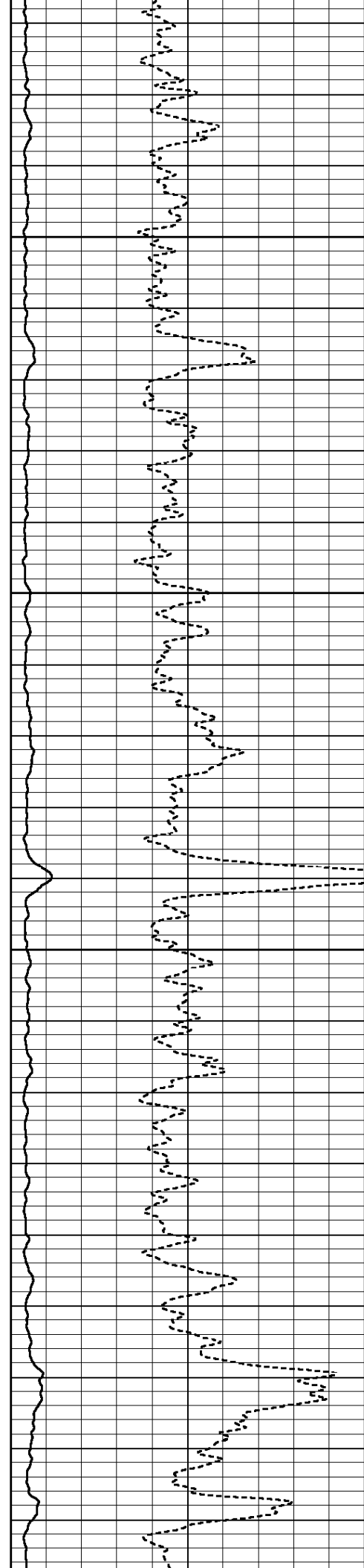


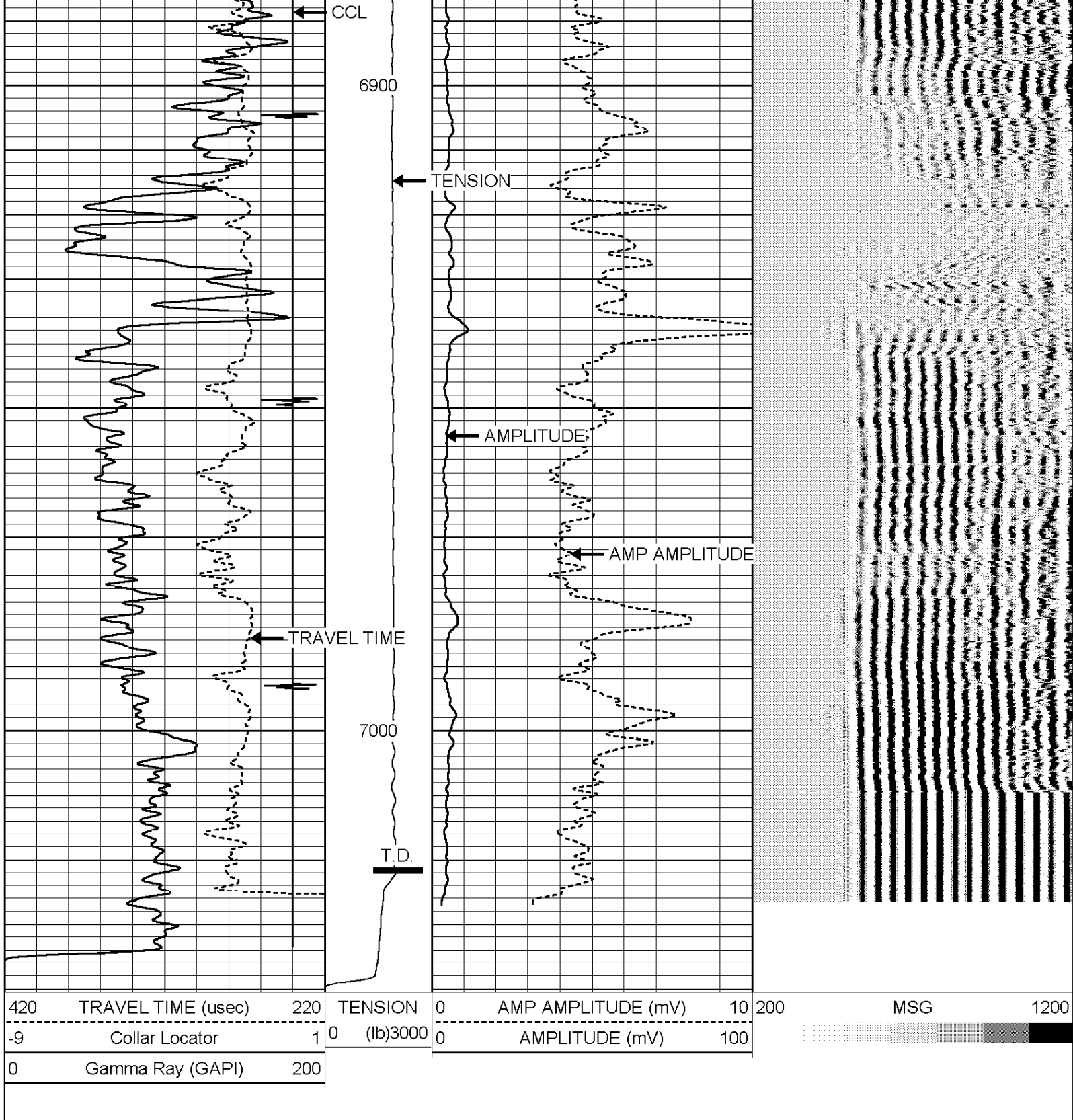




6700

6800





HALLIBURTON

MAIN LOG SECTION

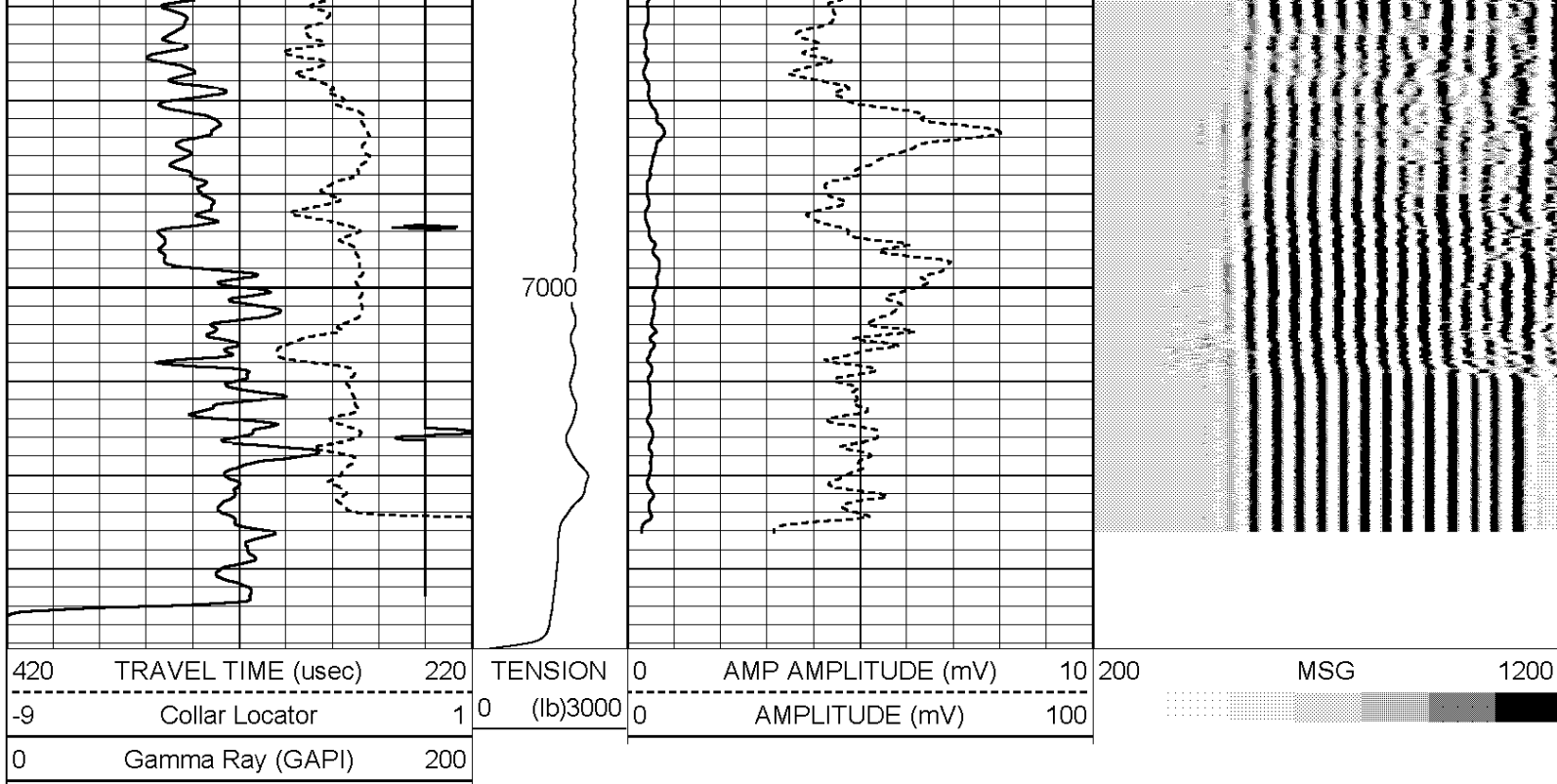
5" = 100'

HALLIBURTON

REPEAT LOG SECTION

5" = 100'





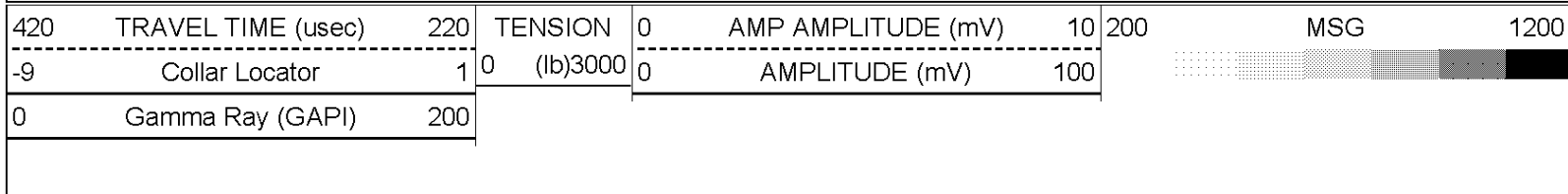
# REPEAT LOG SECTION

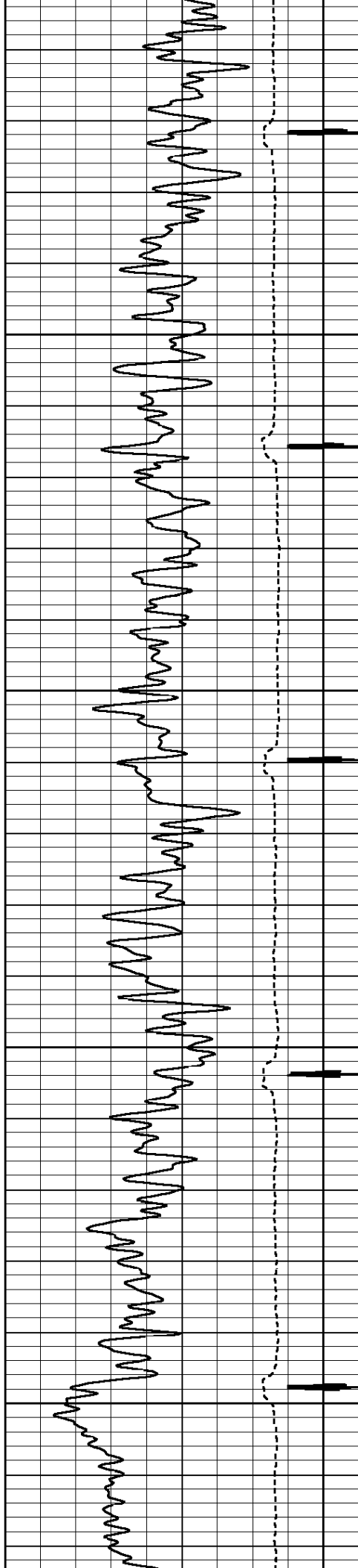
5" = 100'

# FREE PIPE LOG SECTION

5" = 100'

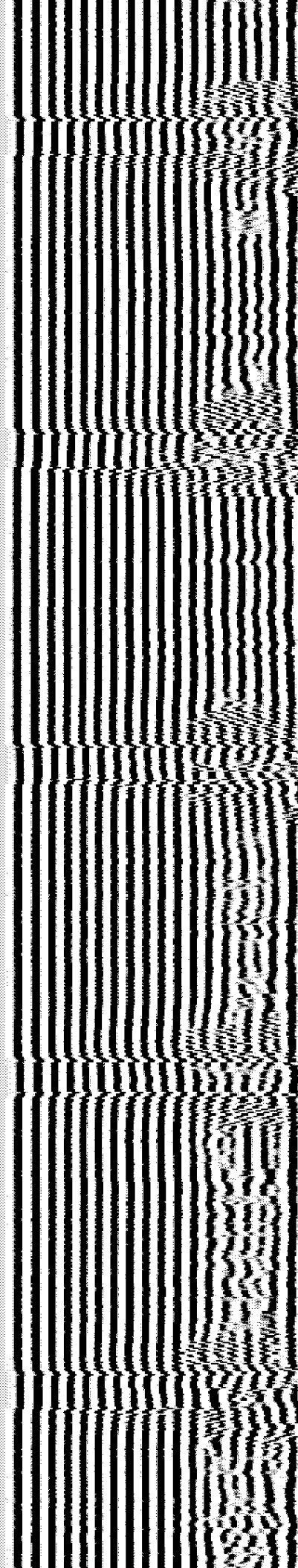
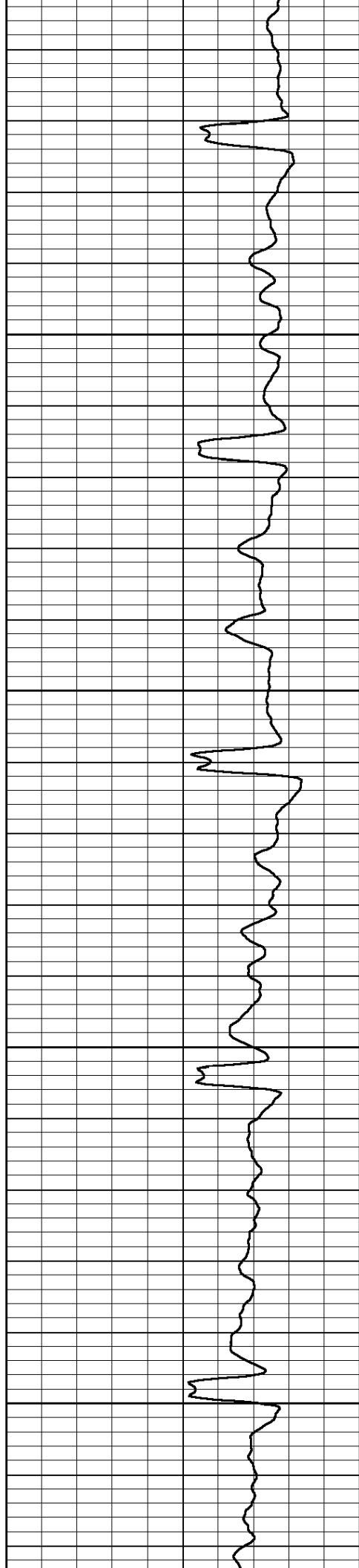
Database File: gm\_424\_32\_cbl.db  
 Dataset Pathname: FREE1  
 Presentation Format: cbl\_probe  
 Dataset Creation: Tue Jan 27 11:59:04 2009 by Log Halliburton Casedho  
 Charted by: Depth in Feet scaled 1:240

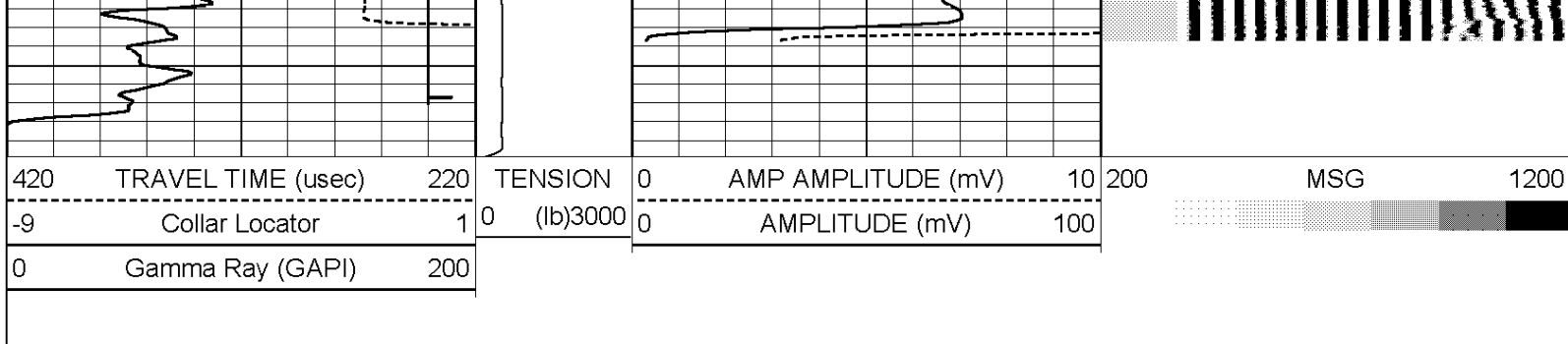




800

900





<b>HALLIBURTON</b>	<h2 style="margin: 0;">FREE PIPE LOG SECTION</h2> <p style="font-size: 1.2em; margin: 10px 0;">5" = 100'</p>
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Calibration Report
Database File: gm_424_32_cbl.db Dataset Pathname: MAINF Dataset Creation: Tue Jan 27 15:08:19 2009

Temperature Calibration Report																		
Serial Number: 080315 Tool Model: 1.375TEMP Performed: Sat Jan 24 14:53:29 2009																		
<table style="width: 100%;"> <tr> <th></th> <th style="text-align: center;">Reference</th> <th style="text-align: center;">Reading</th> </tr> <tr> <td>Low Reference:</td> <td style="text-align: center;">0.00 degF</td> <td style="text-align: center;">0.00 cps</td> </tr> <tr> <td>High Reference:</td> <td style="text-align: center;">1.00 degF</td> <td style="text-align: center;">1.00 cps</td> </tr> <tr> <td>Gain:</td> <td style="text-align: center;">0.10</td> <td></td> </tr> <tr> <td>Offset:</td> <td style="text-align: center;">0.00</td> <td></td> </tr> <tr> <td>Delta Spacing</td> <td style="text-align: center;">1</td> <td></td> </tr> </table>		Reference	Reading	Low Reference:	0.00 degF	0.00 cps	High Reference:	1.00 degF	1.00 cps	Gain:	0.10		Offset:	0.00		Delta Spacing	1	
	Reference	Reading																
Low Reference:	0.00 degF	0.00 cps																
High Reference:	1.00 degF	1.00 cps																
Gain:	0.10																	
Offset:	0.00																	
Delta Spacing	1																	

Gamma Ray Calibration Report
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Type / Serial:	Probe / 061015
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SHOP CALIBRATION	Tue Jan 27 08:48:09 2009																								
<table style="width: 100%;"> <tr> <th></th> <th style="text-align: center;">Counts/Sec.</th> <th style="text-align: center;">Gain</th> <th style="text-align: center;">Offset</th> <th style="text-align: center;">Jig</th> <th style="text-align: right;">Units</th> </tr> <tr> <td>Background</td> <td style="text-align: center;">51.5</td> <td></td> <td></td> <td></td> <td style="text-align: right;">cps</td> </tr> <tr> <td>Calibrator</td> <td style="text-align: center;">231.3</td> <td></td> <td></td> <td></td> <td style="text-align: right;">cps</td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">1.4017</td> <td></td> <td></td> <td style="text-align: right;">GAPI/cps</td> </tr> </table>		Counts/Sec.	Gain	Offset	Jig	Units	Background	51.5				cps	Calibrator	231.3				cps			1.4017			GAPI/cps	
	Counts/Sec.	Gain	Offset	Jig	Units																				
Background	51.5				cps																				
Calibrator	231.3				cps																				
		1.4017			GAPI/cps																				
PRIMARY VERIFICATION	Tue Jan 27 08:50:18 2009																								
<table style="width: 100%;"> <tr> <td>Background</td> <td style="text-align: center;">67.8</td> <td></td> <td></td> <td></td> <td style="text-align: right;">cps</td> </tr> <tr> <td>Calibrator</td> <td style="text-align: center;">314.8</td> <td></td> <td></td> <td></td> <td style="text-align: right;">cps</td> </tr> <tr> <td>Difference</td> <td></td> <td></td> <td></td> <td style="text-align: center;">247.0</td> <td style="text-align: right;">GAPI</td> </tr> </table>	Background	67.8				cps	Calibrator	314.8				cps	Difference				247.0	GAPI							
Background	67.8				cps																				
Calibrator	314.8				cps																				
Difference				247.0	GAPI																				
BEFORE SURVEY VERIFICATION																									
<table style="width: 100%;"> <tr> <td>Background</td> <td style="text-align: center;">0.0</td> <td></td> <td></td> <td></td> <td style="text-align: right;">cps</td> </tr> <tr> <td>Calibrator</td> <td style="text-align: center;">0.0</td> <td></td> <td></td> <td></td> <td style="text-align: right;">cps</td> </tr> <tr> <td>Difference</td> <td></td> <td></td> <td></td> <td style="text-align: center;">0.0</td> <td style="text-align: right;">GAPI</td> </tr> </table>	Background	0.0				cps	Calibrator	0.0				cps	Difference				0.0	GAPI							
Background	0.0				cps																				
Calibrator	0.0				cps																				
Difference				0.0	GAPI																				
AFTER SURVEY VERIFICATION																									
<table style="width: 100%;"> <tr> <td>Background</td> <td style="text-align: center;">0.0</td> <td></td> <td></td> <td></td> <td style="text-align: right;">cps</td> </tr> <tr> <td>Calibrator</td> <td style="text-align: center;">0.0</td> <td></td> <td></td> <td></td> <td style="text-align: right;">cps</td> </tr> <tr> <td>Difference</td> <td></td> <td></td> <td></td> <td style="text-align: center;">0.0</td> <td style="text-align: right;">GAPI</td> </tr> </table>	Background	0.0				cps	Calibrator	0.0				cps	Difference				0.0	GAPI							
Background	0.0				cps																				
Calibrator	0.0				cps																				
Difference				0.0	GAPI																				

# Cement Bond Log Calibration Report

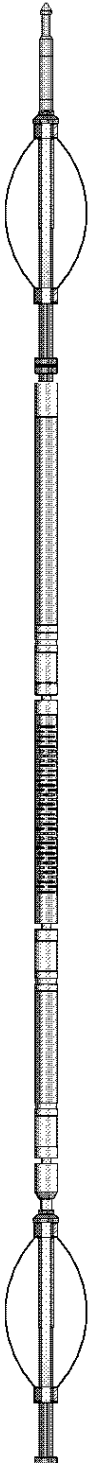
Serial Number: 061113  
 Tool Model: Probe  
 Performed: Tue Jan 27 09:13:50 2009


Depth: 1169.9 ft  
 Casing Diameter: 4.5 in

3' Spacing 5' Spacing

Signal Zero: 3 mV  
 Calibrated Amplitude: 81.1961 mV  
 Reading at Signal Zero: -0.00334473 V  
 Reading in Free Pipe: 1.85078 V

Gain: 42.1741  
 Offset: 3.14106

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
			STNDRD Standard Cable Head - F.N. 1 3/8"	1.15	1.44	1.10
			CENT-Probe (PT_MONO2)	2.88	2.75	35.00
WVF3	13.45		CBL-Probe (061113) Probe 2.75" Dual Receiver Bond	8.75	2.75	92.00
WVF5	12.45					
			CENT-Probe (PT_MONO2)	2.88	2.75	35.00

CCL	5.46					
GR	4.08		GR-Probe (061015) Probe 2.75" 4 Channel Pulse	4.83	2.75	57.00
TEMP LLMTEN	0.08 0.00		TEMP-1.375TEMP (080315) Temperature Tool	1.54	1.38	5.00
Dataset: gm_424_32_cbl.db: field/well/run1/MAINF Total Length: 22.04 ft Total Weight: 225.10 lb O.D. 2.75 in						

Company	WILLIAMS PRODUCTION CO				
Well	GM 424-32				
Field	GRAND VALLEY				
County	GARFIELD		State	CO	
HALLIBURTON			ACOUSTIC CEMENT BOND LOG		