



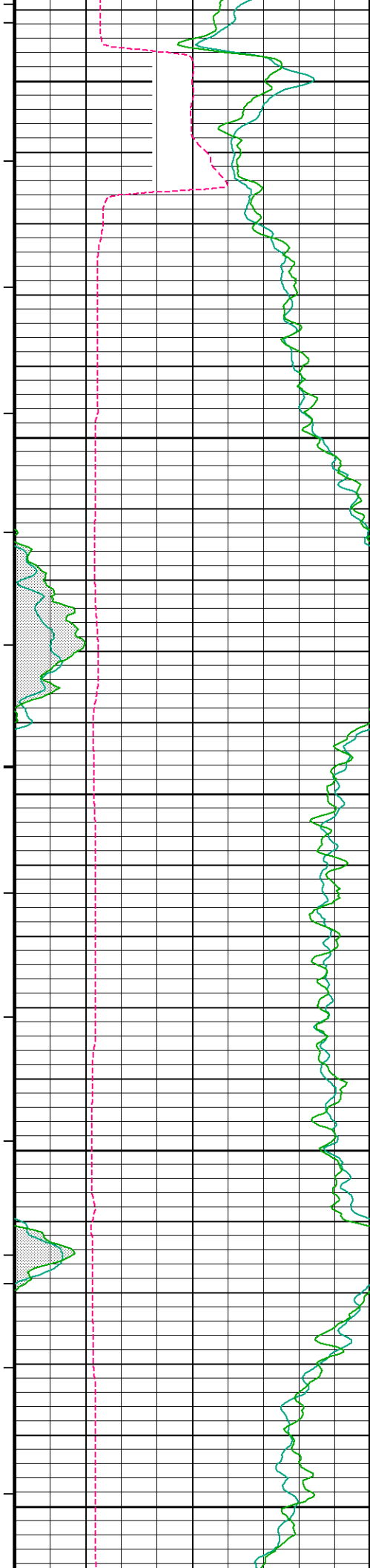
Weatherford®

**MEASURED DEPTH
SPECTRAL GAMMA RAY LOG**

COMPANY	WHITTING OIL AND GAS CORPORATION			
WELL	HORSETAIL 30F-1943			
FIELD	REDTAIL			
PROVINCE/COUNTY	WELD			
COUNTRY/STATE	U.S.A. / COLORADO			
LOCATION	SHL: 2324' FNL & 1920' FWL			
PERMIT NUMBER	AFE: 13-1914			
SEC 30	TWP 10N	RGE 57W	Other Services MICRO IMAGER INDUCTION	
API Number		05-123-38739		NEUTRON/DENSITY
Permanent Datum G.L., Elevation 4780 feet		Log Measured From KB		Elevations: KB 4797.00 DF 4797.00 GL 4780.00
Drilling Measured From K.B. @ 17 FEET		Date		
		9-OCT-2014		
Run Number		ONE		
Service Order		2577-100067384		
Depth Driller		13702.00		feet
Depth Logger		13702.00		feet
First Reading		13671.00		feet
Last Reading		5995.00		feet
Casing Driller		5993.00		feet
Casing Logger		5995.00		feet
Bit Size		6.000		inches
Hole Fluid Type		WBM		
Density / Viscosity		10.20 lb/USg		42.00 type in
PH / Fluid Loss		9.00		3.80 ml/30Min
Sample Source		FLOWLINE		
Rm @ Measured Temp		1.65 @ 63.7		ohm-m
Rmf @ Measured Temp		1.32 @ 63.7		ohm-m
Rmc @ Measured Temp		1.98 @ 63.7		ohm-m
Source Rmf / Rmc		CALC		CALC
Rm @ BHT		0.51 @215.0		ohm-m
Time Since Circulation		NO DELAY		
Max Recorded Temp		215.00		deg F
Equipment / Base		18063		Casper
Recorded By		M.RICHINS		
Witnessed By		M. ODEGARD		GEOLOGIST
WSL		K.RENTON		WSL

BOREHOLE RECORD					Last Edited: 09-OCT-2014 19:59
Bit Size inches		Depth From feet		Depth To feet	
6.000		5993.00		13702.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	7.000	0.00	5993.00	29.00	

REMARKS
LOGGED WITH WLS 14.01.3220
LOGGED USING MESSENGER SHUTTLE METHOD OF DEPLOYMENT
HARDWARE: MDN: MIS-A DOUBLE BOWSPRING USED ABOVE MDN MPD: 4INCH PROFILE PLATE USED, MIS-A SINGLE BOWSPRING USED BELOW MPD CMI: OVER BODY BASKET AND MIS-D BASKETS PLACED ABOVE AND BELOW FOR CENTRALIZATION SGS: RAN BELOW CMI. ECCENTRALIZED WITH SKJ.
2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY
ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST
LONGITUDE: -103.796464 LATITUDE: 40.810683
ANNULAR HOLE VOLUME FROM TD TO CASING AT 5995 FEET = 770 CUBIC FEET



Casing
Shoe

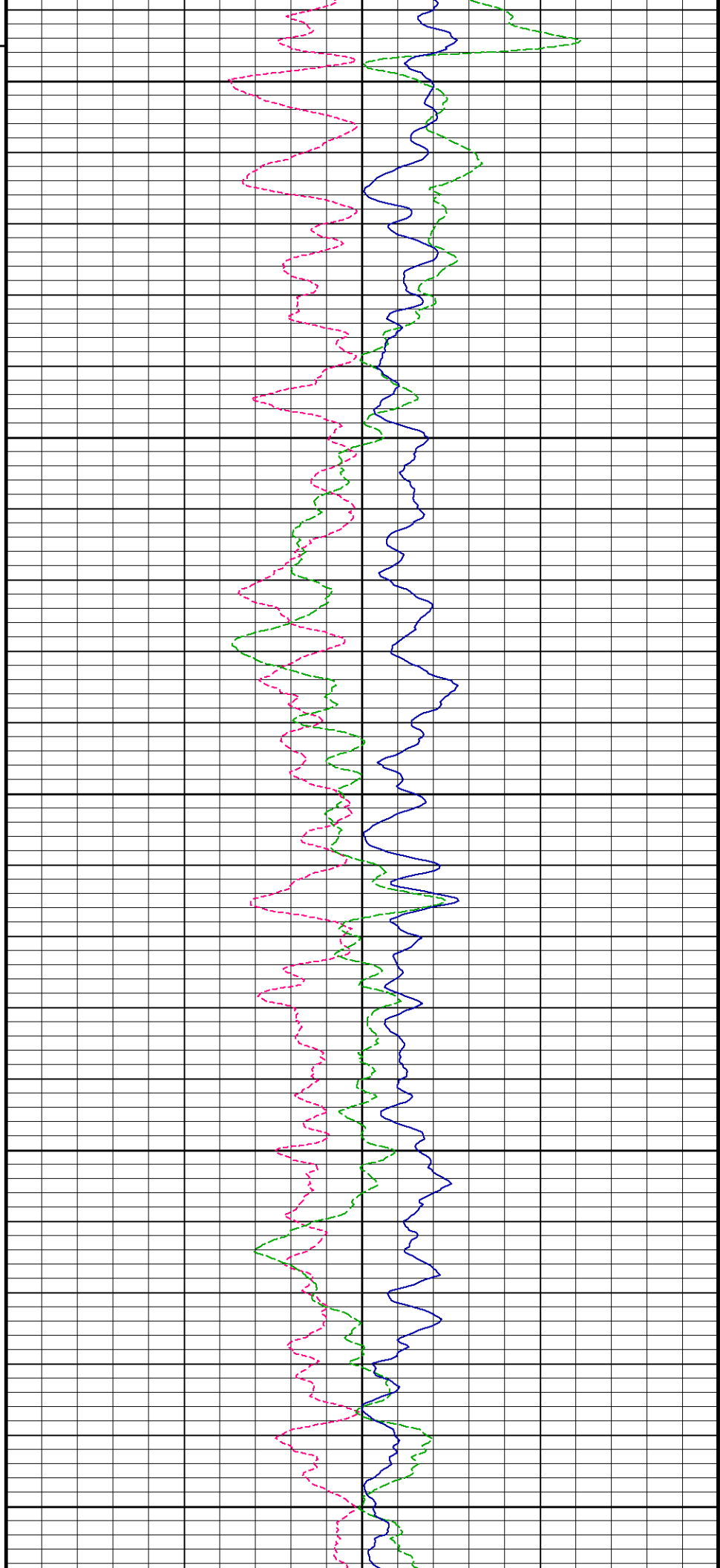
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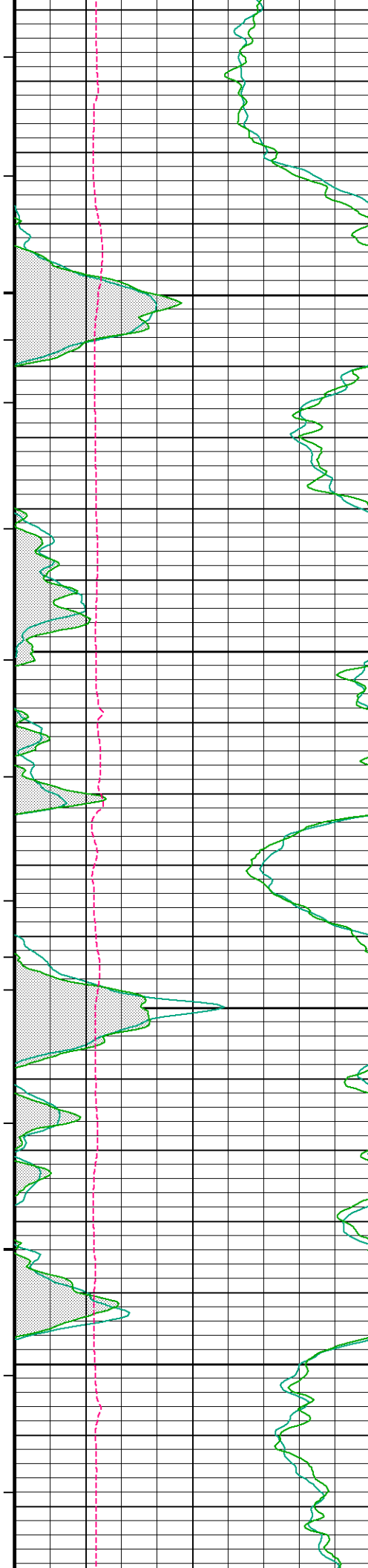
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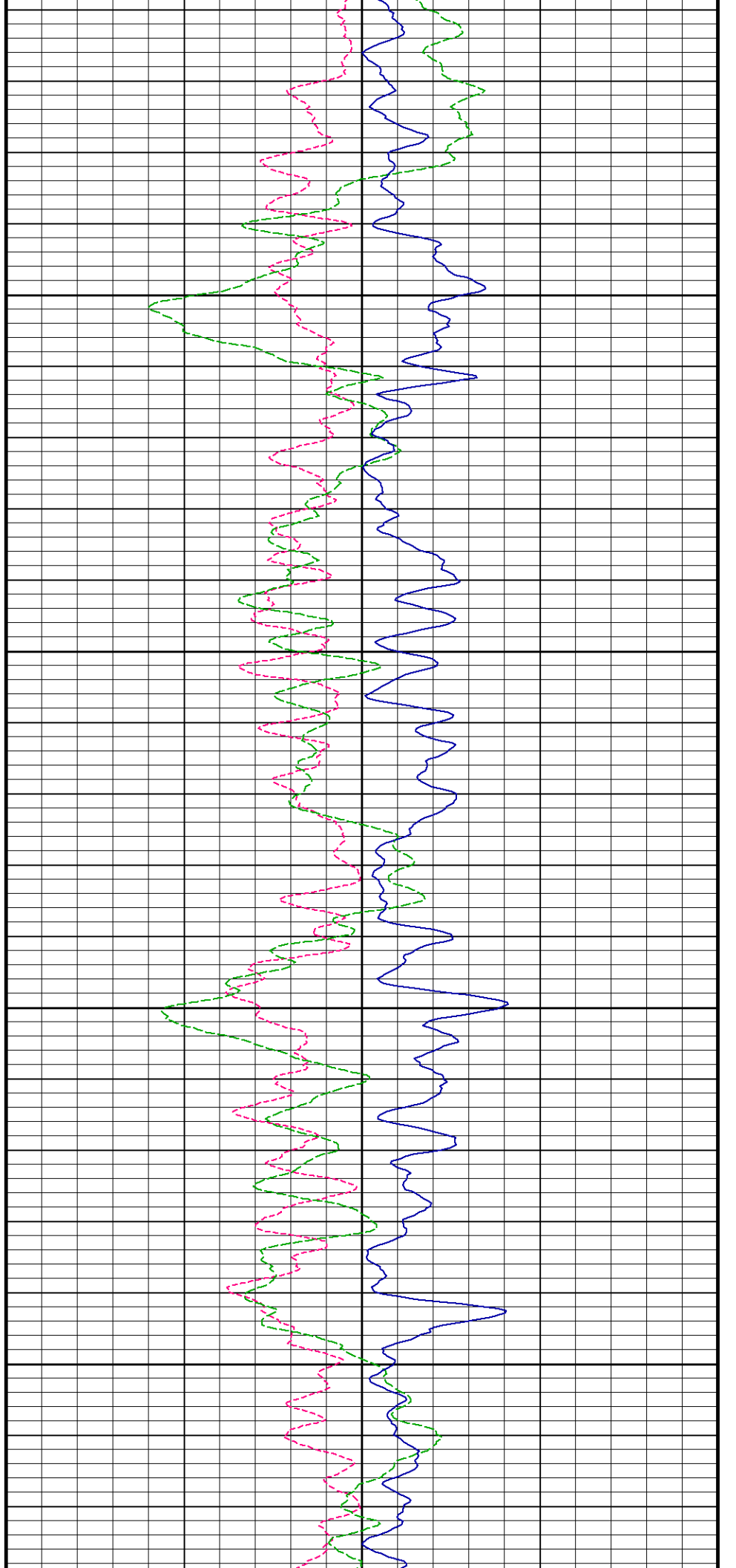


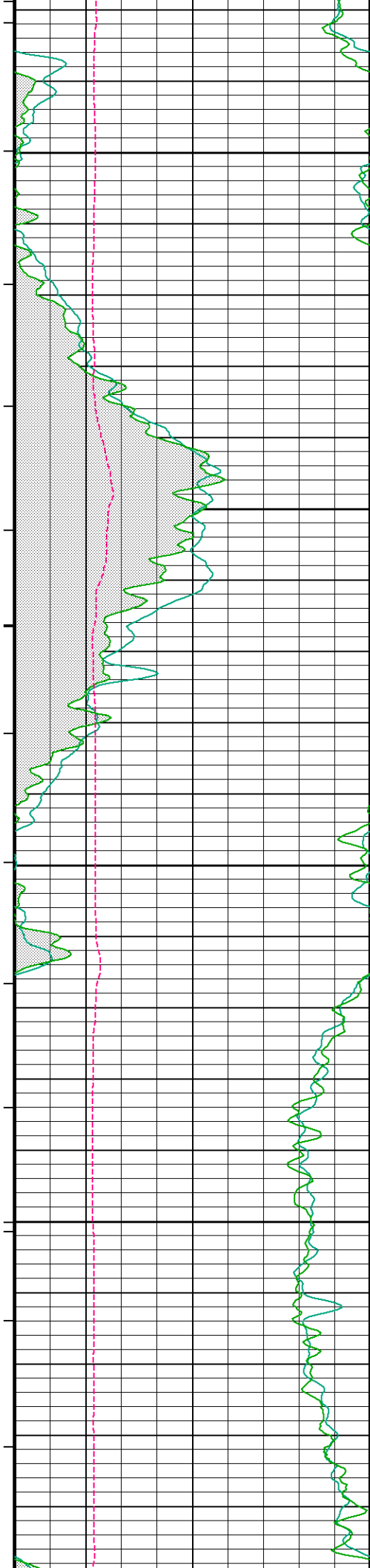
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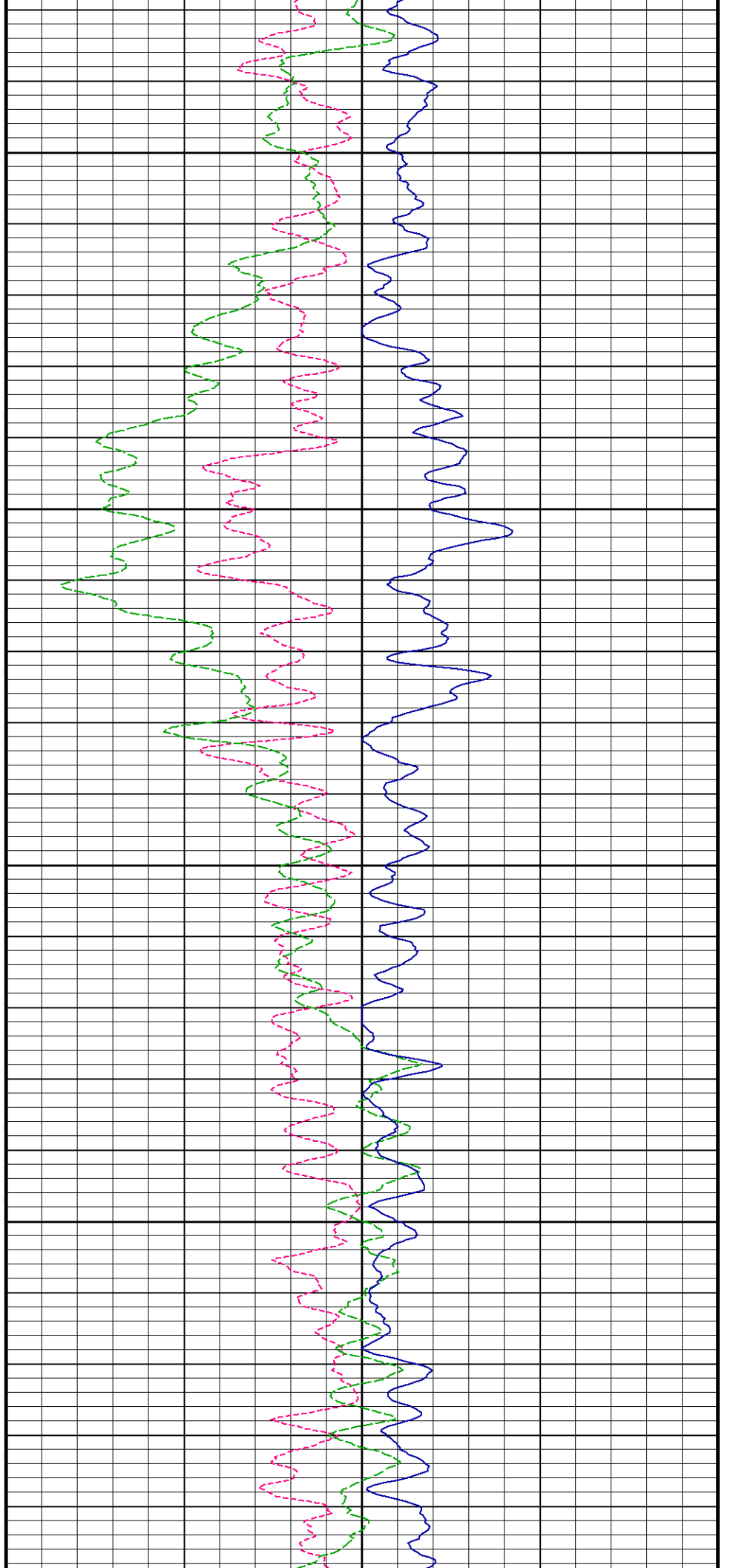


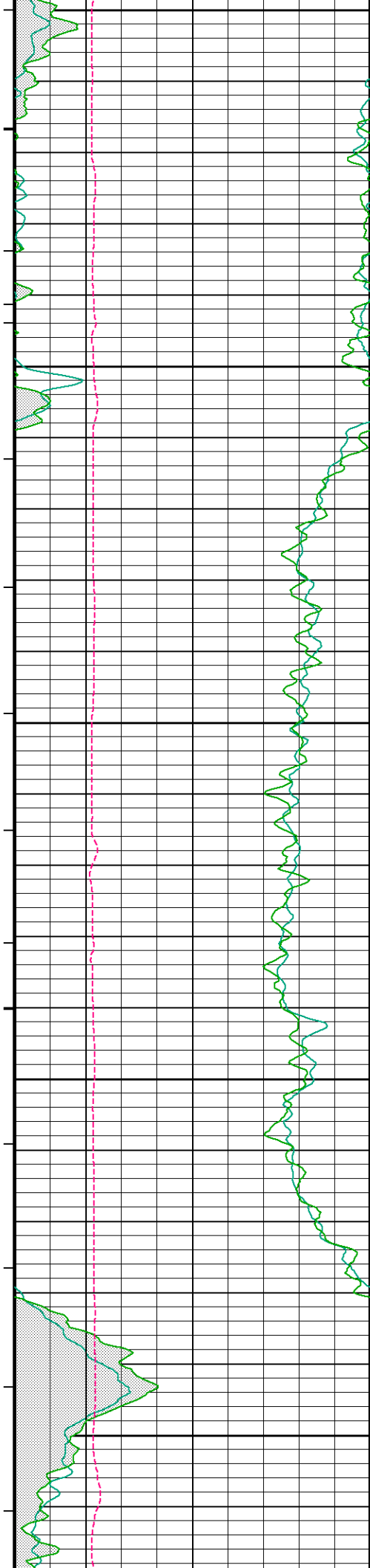
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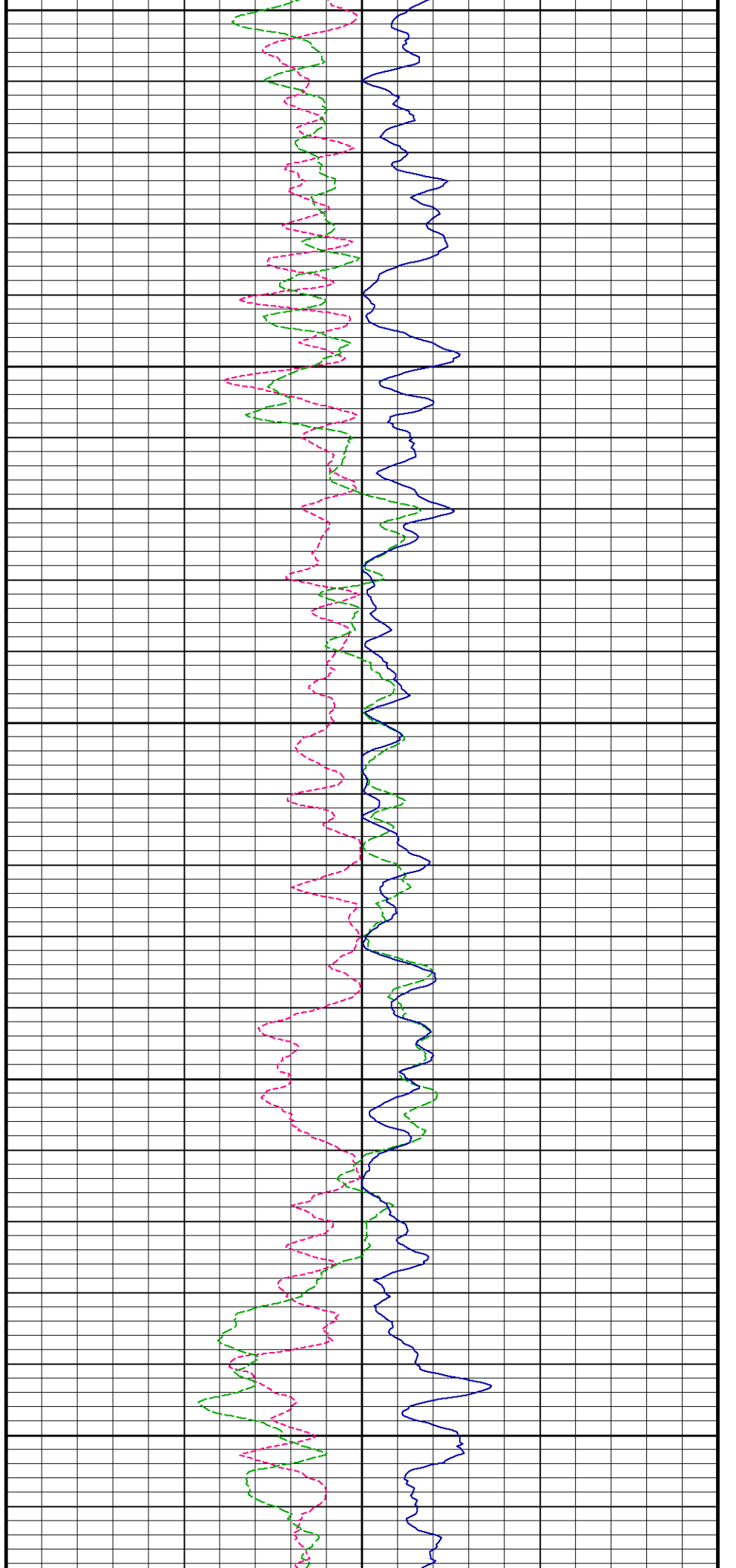
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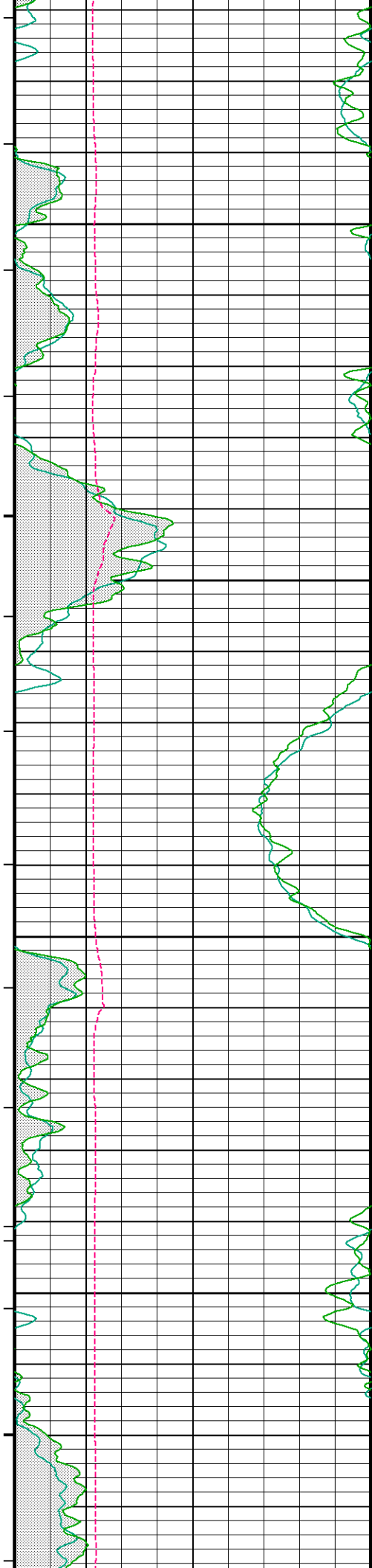
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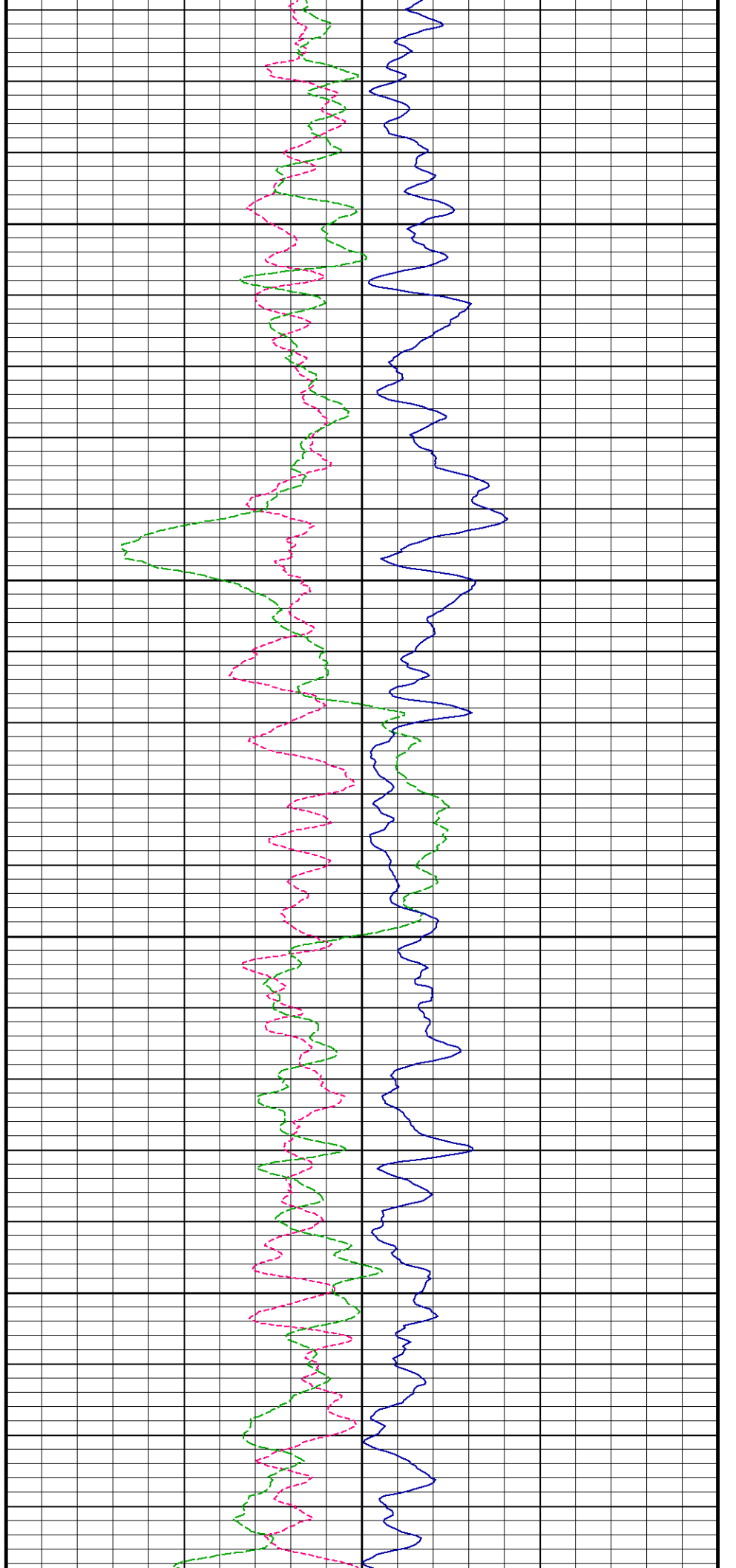


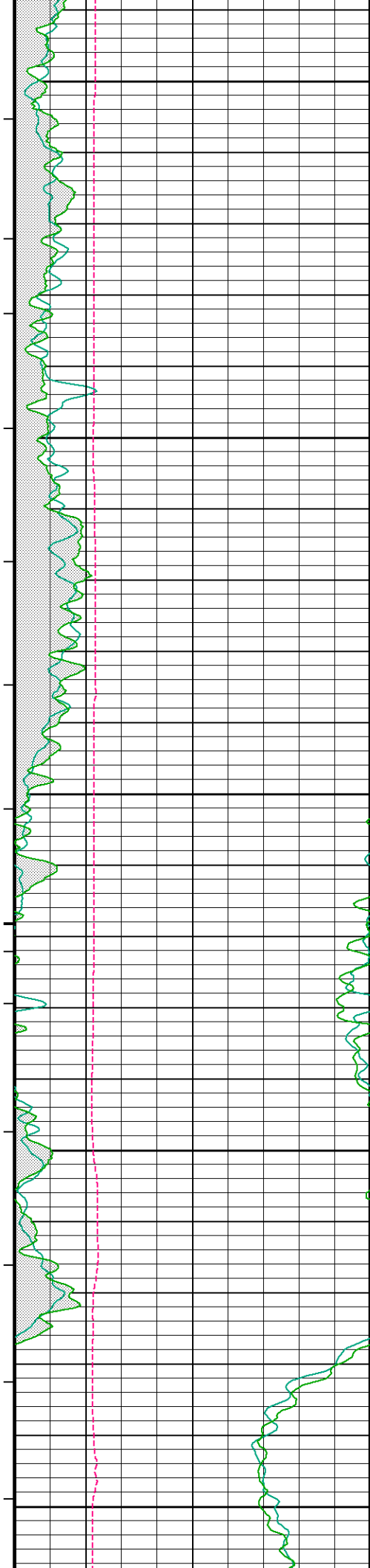
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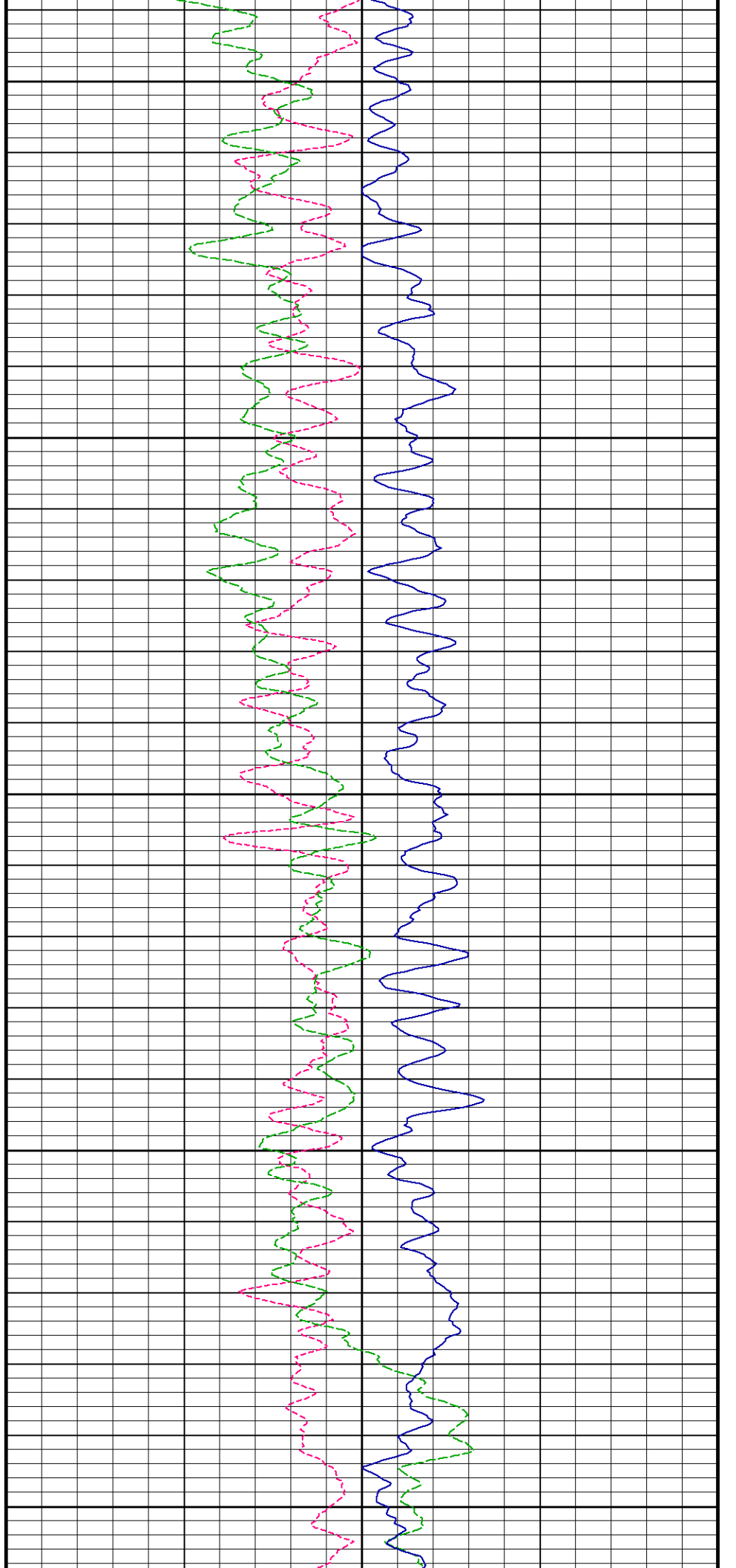
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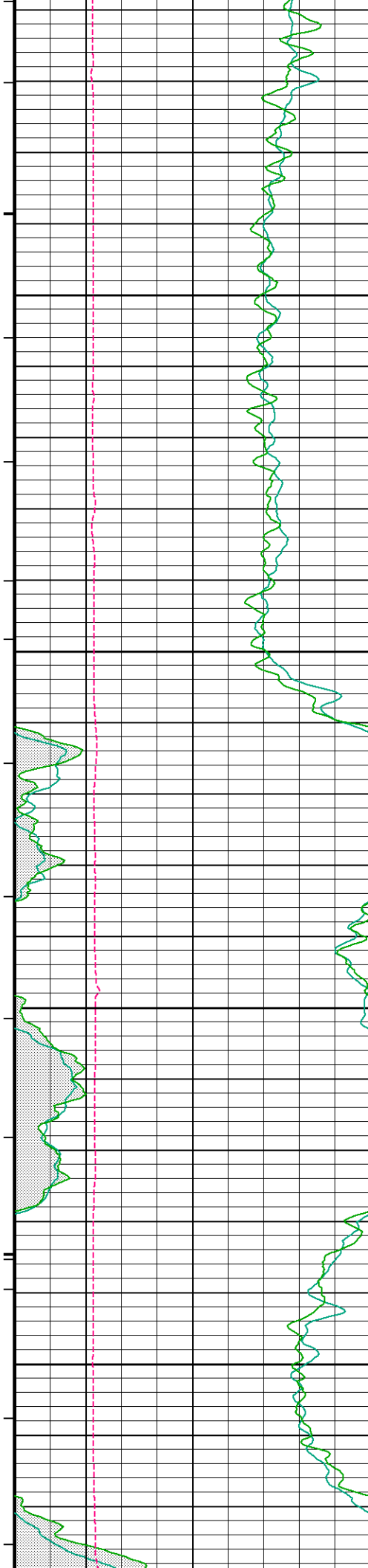
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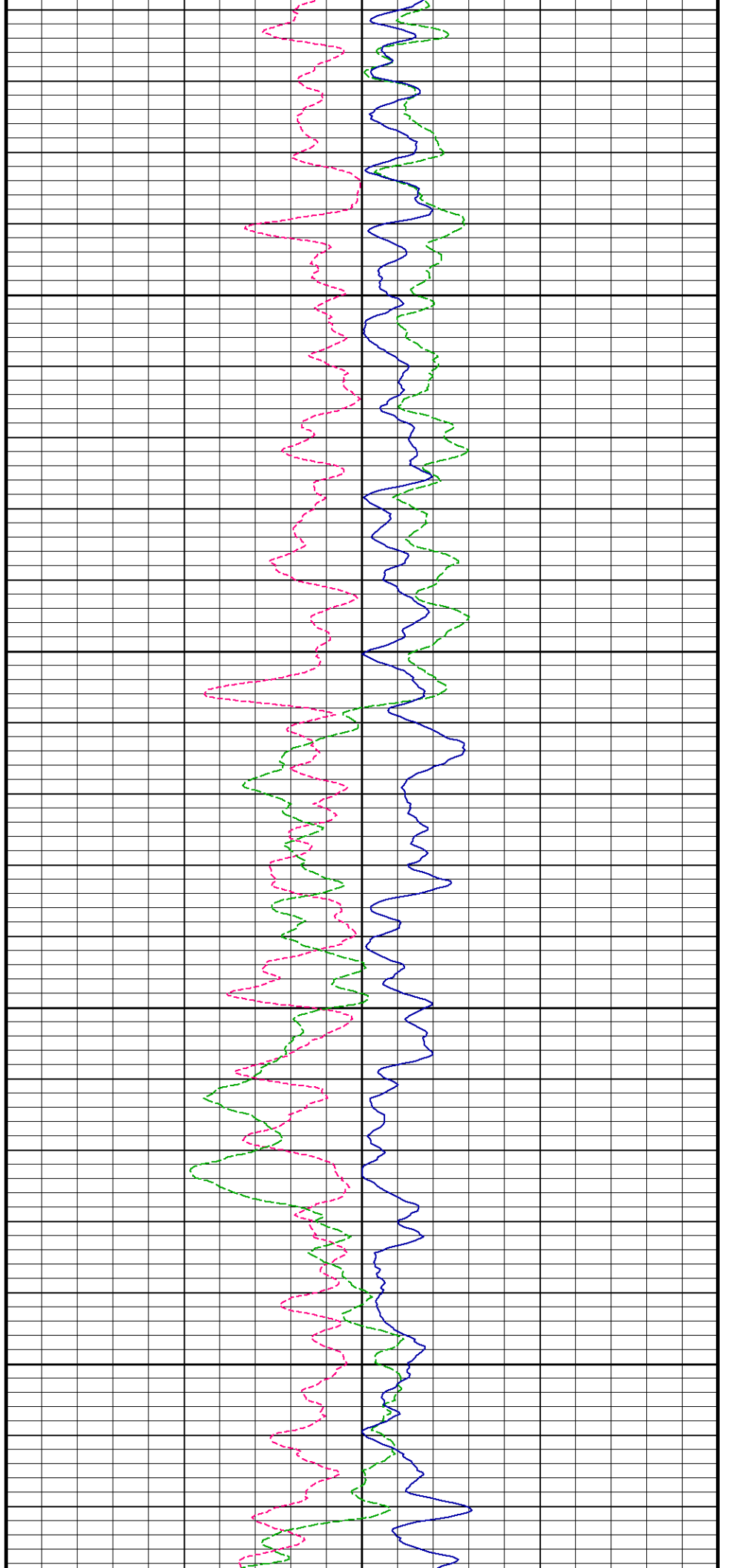


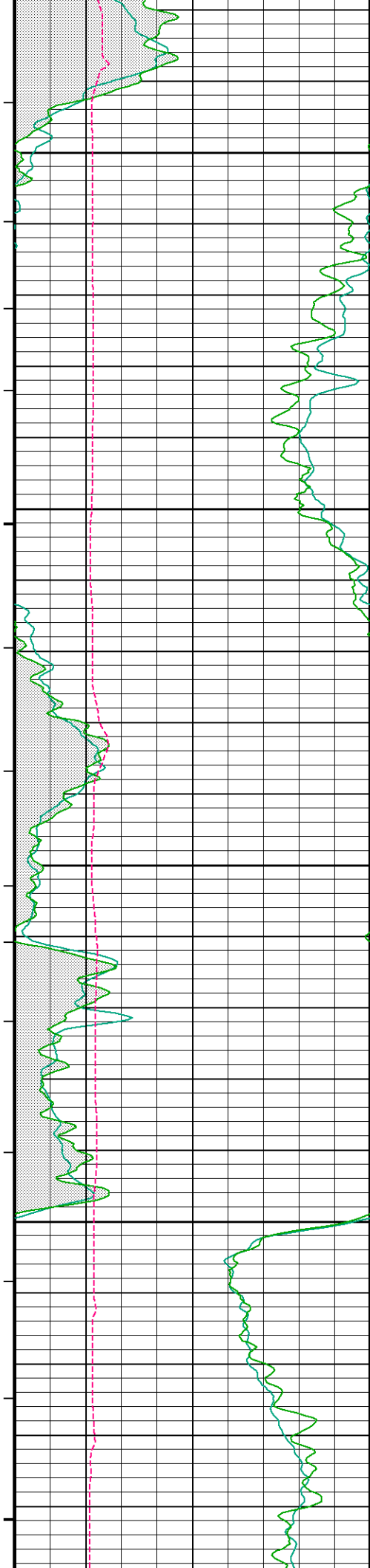
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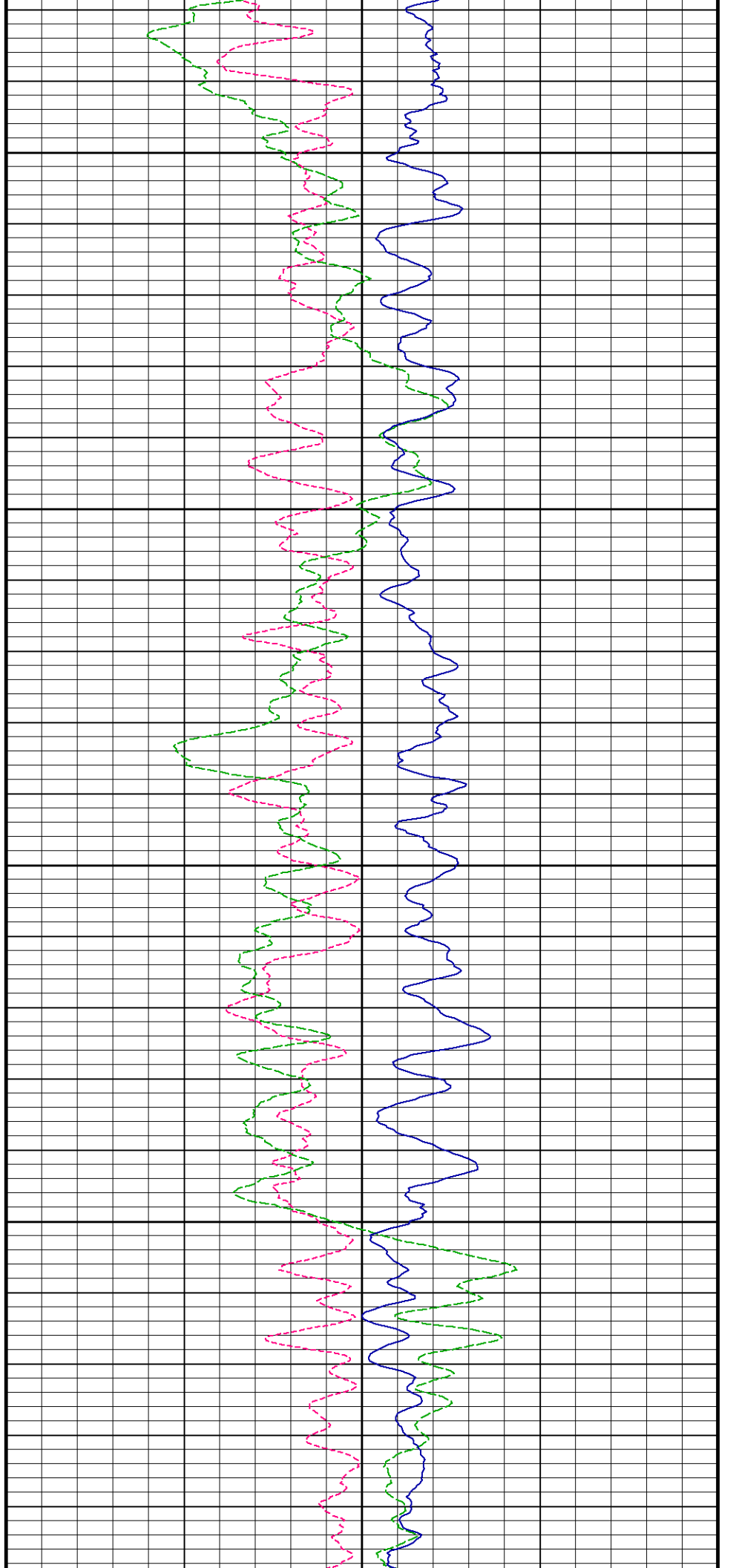


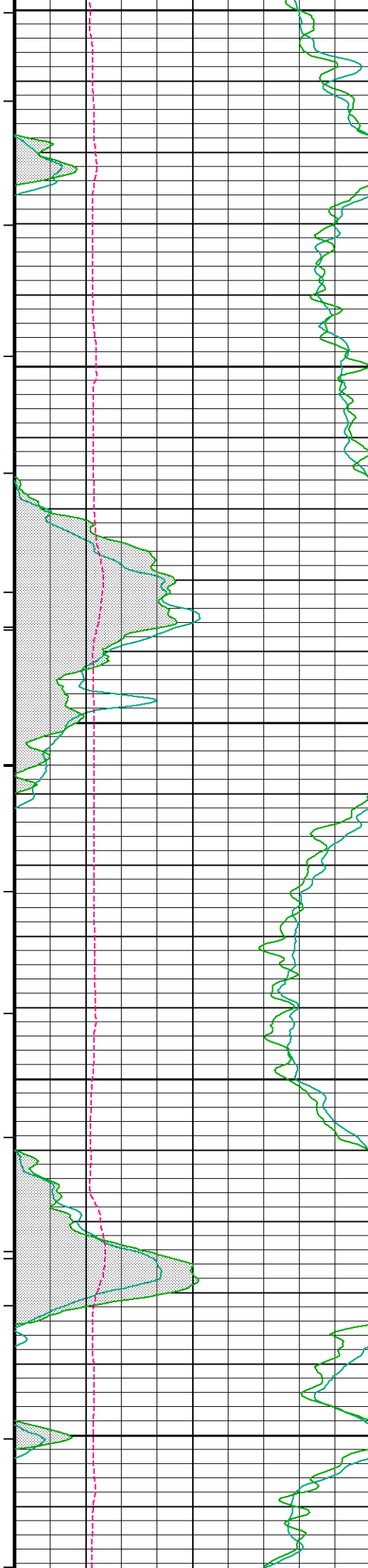
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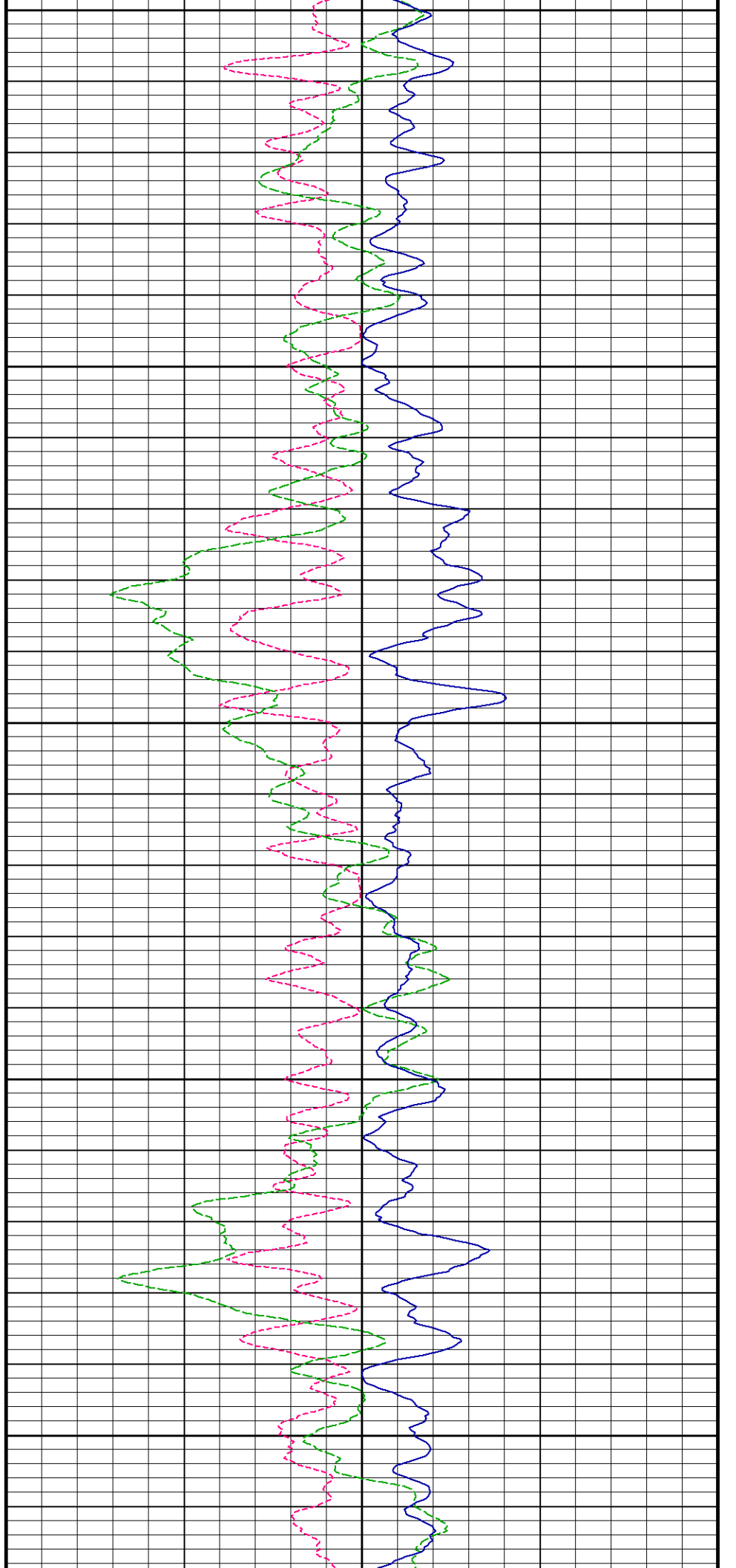
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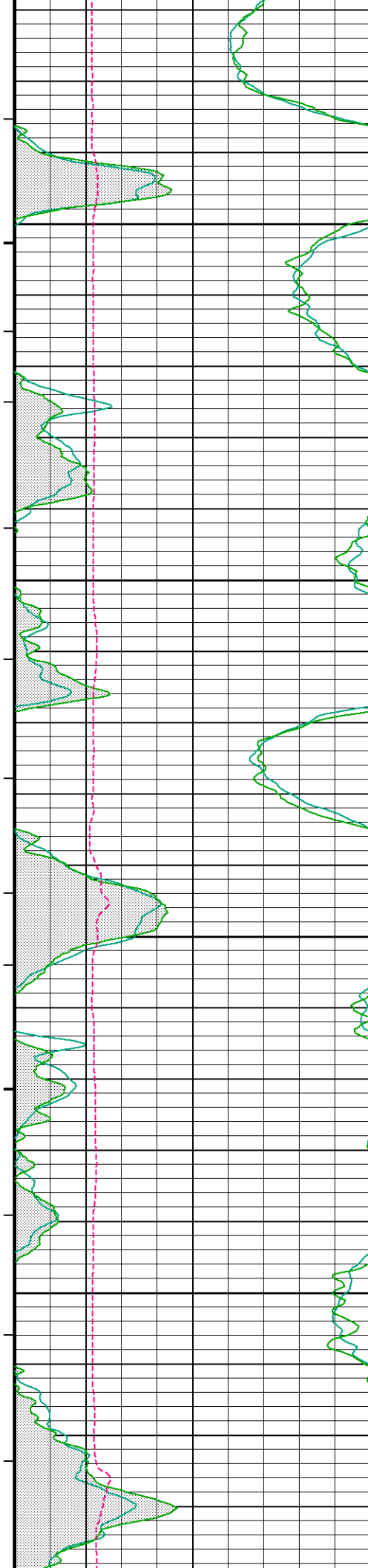
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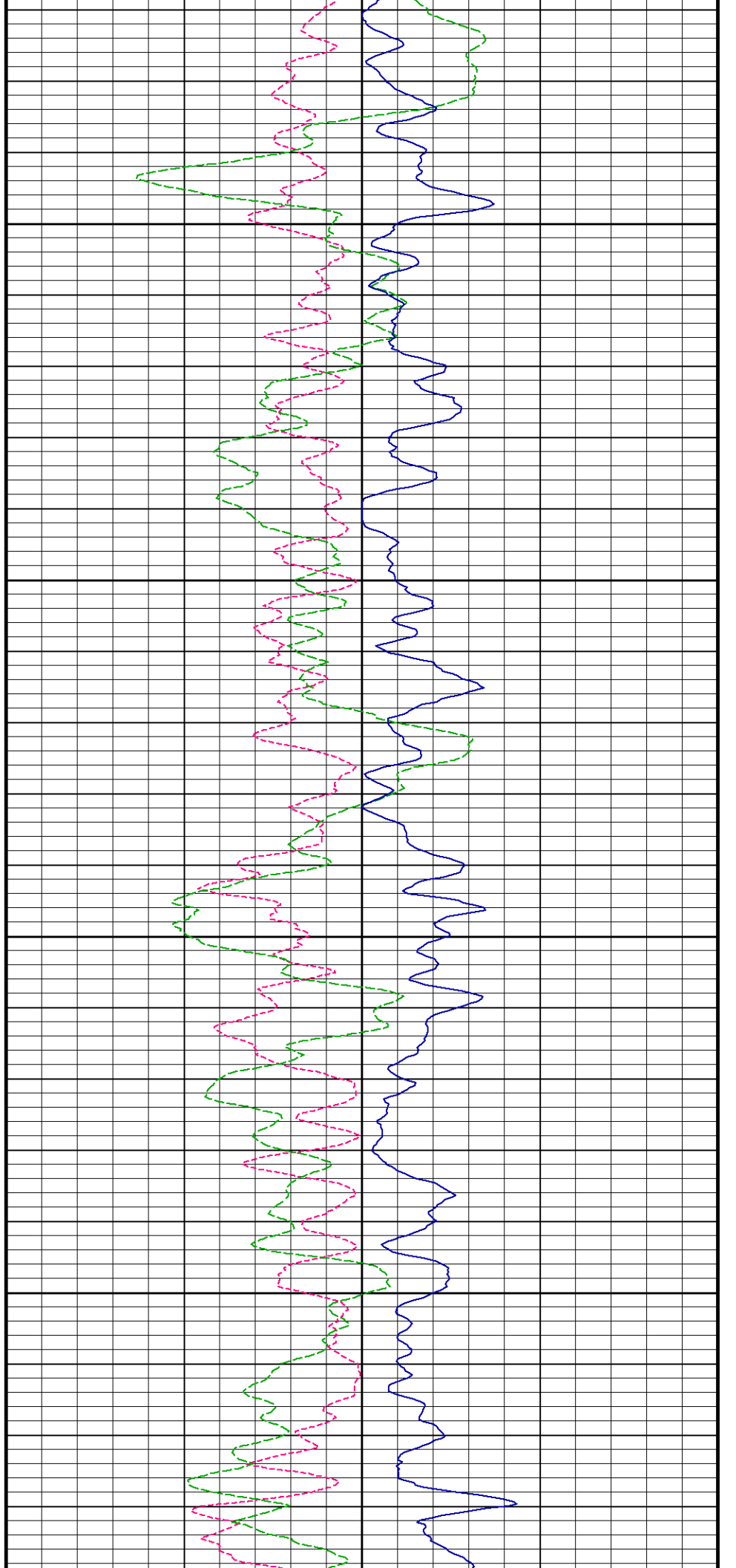


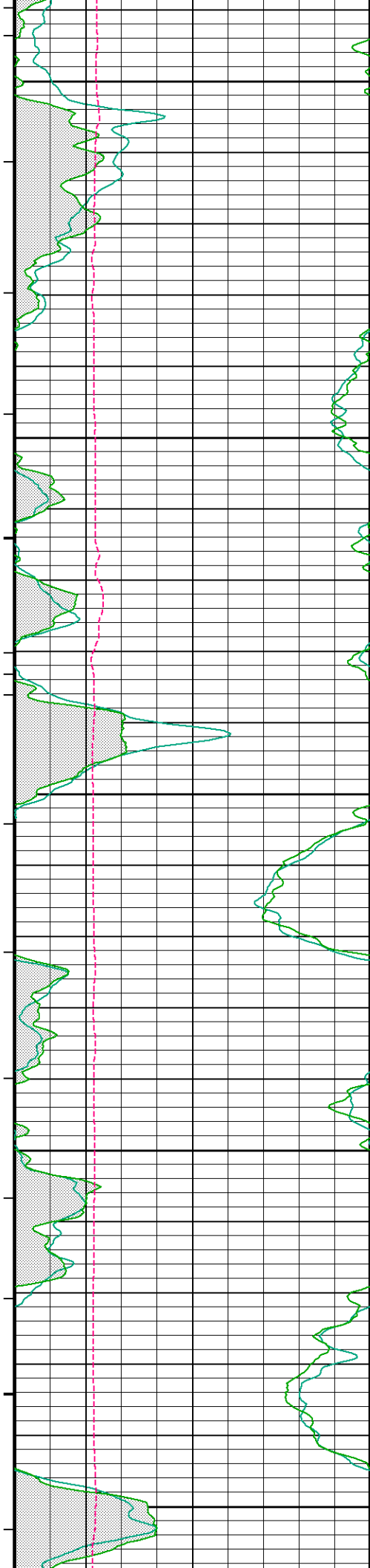
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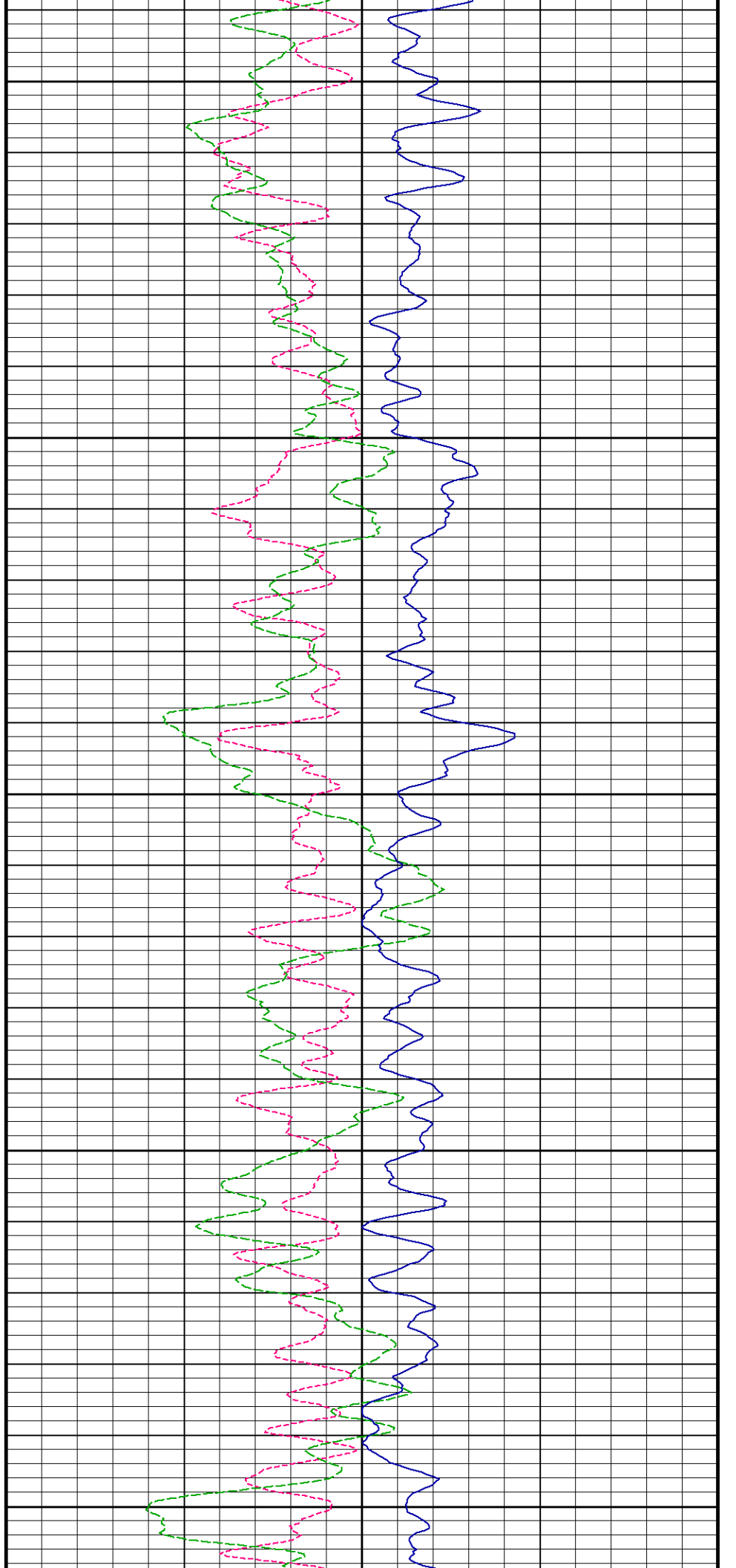
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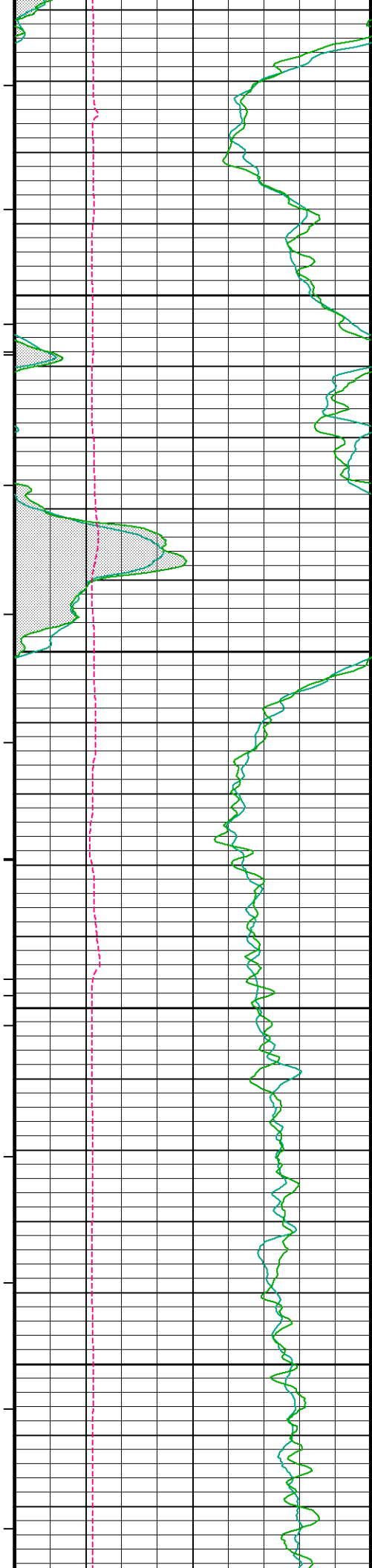
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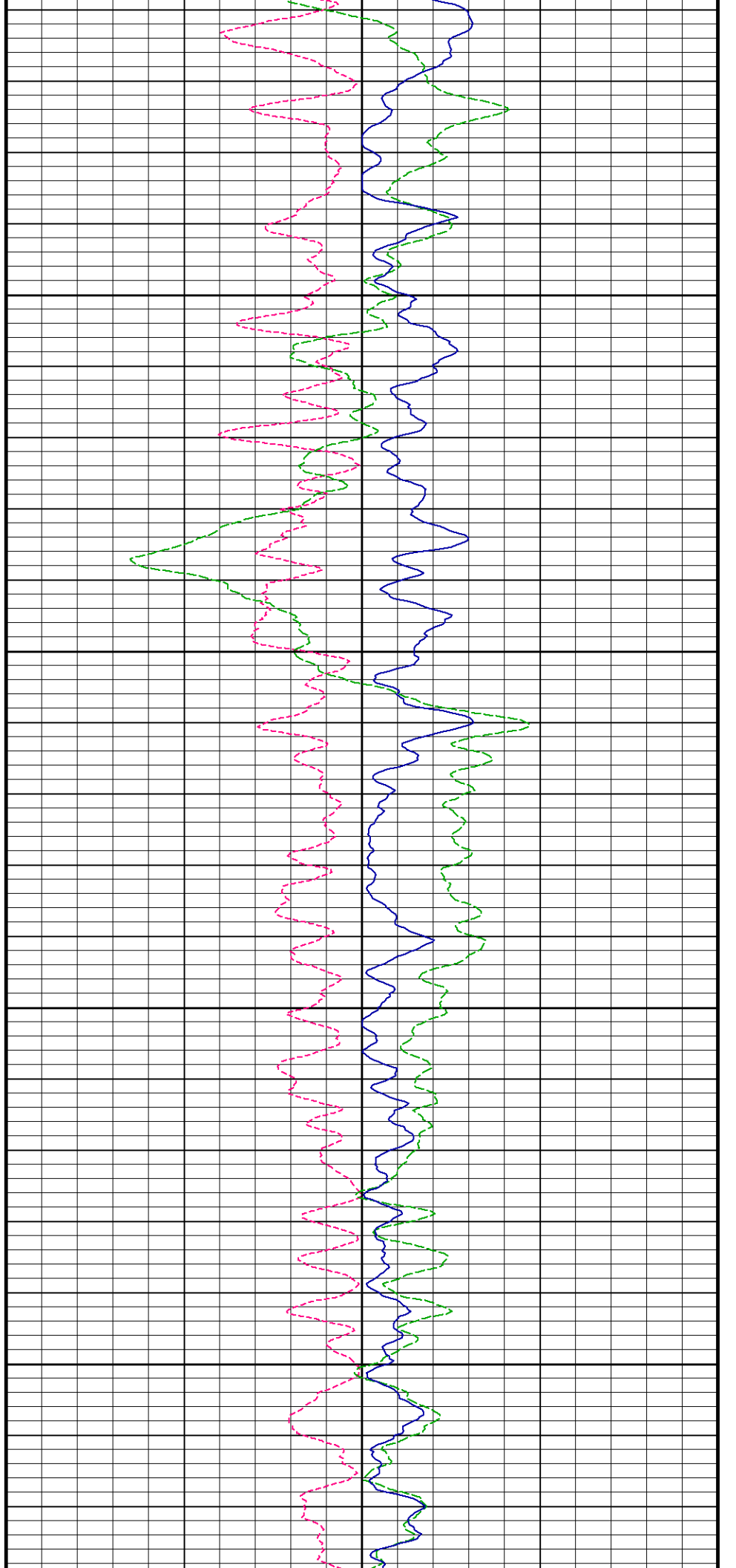


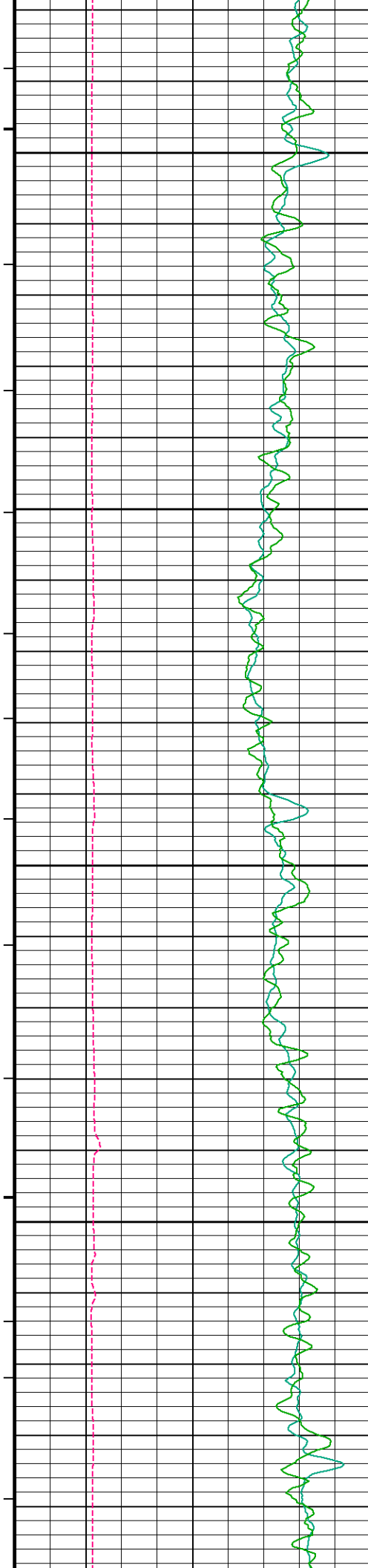
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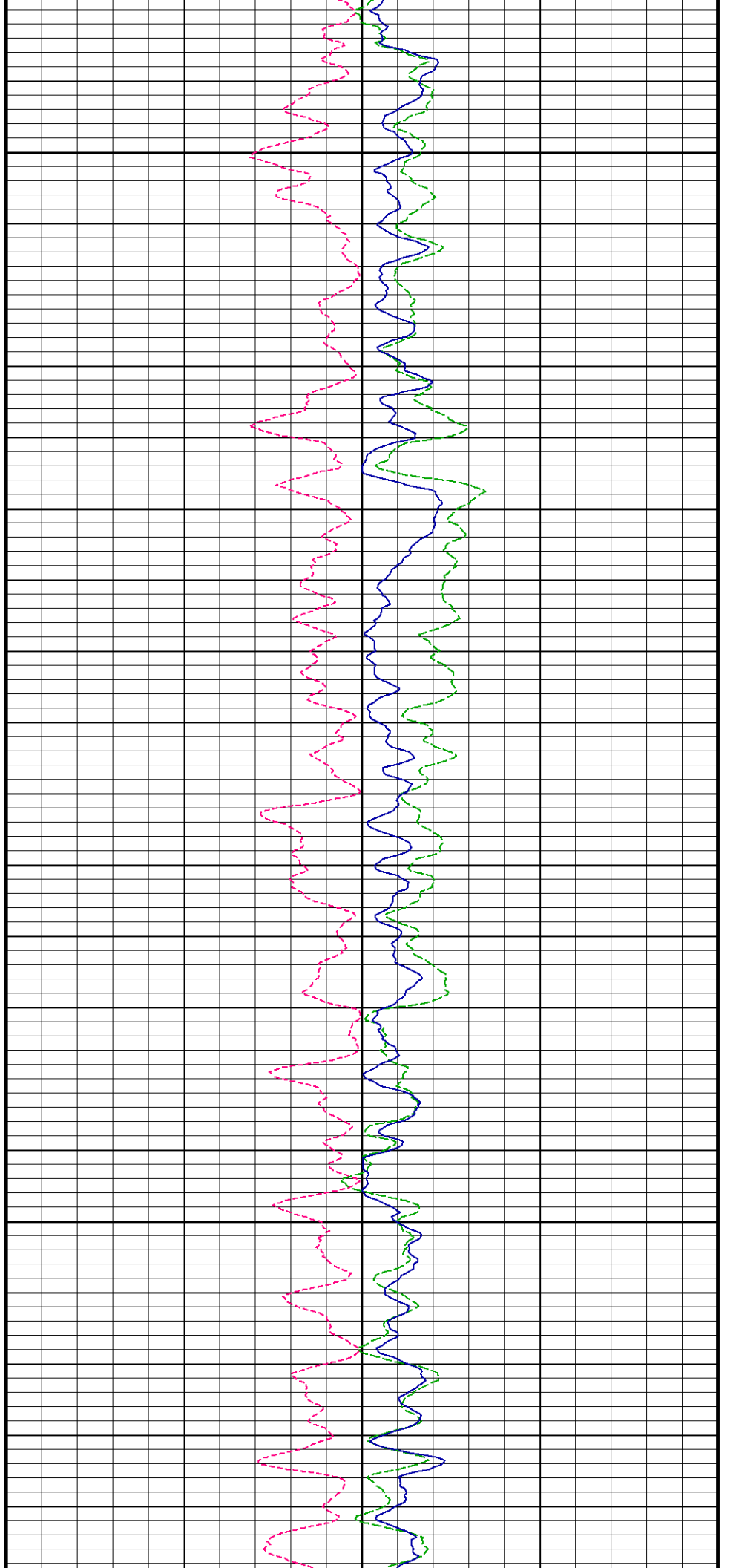


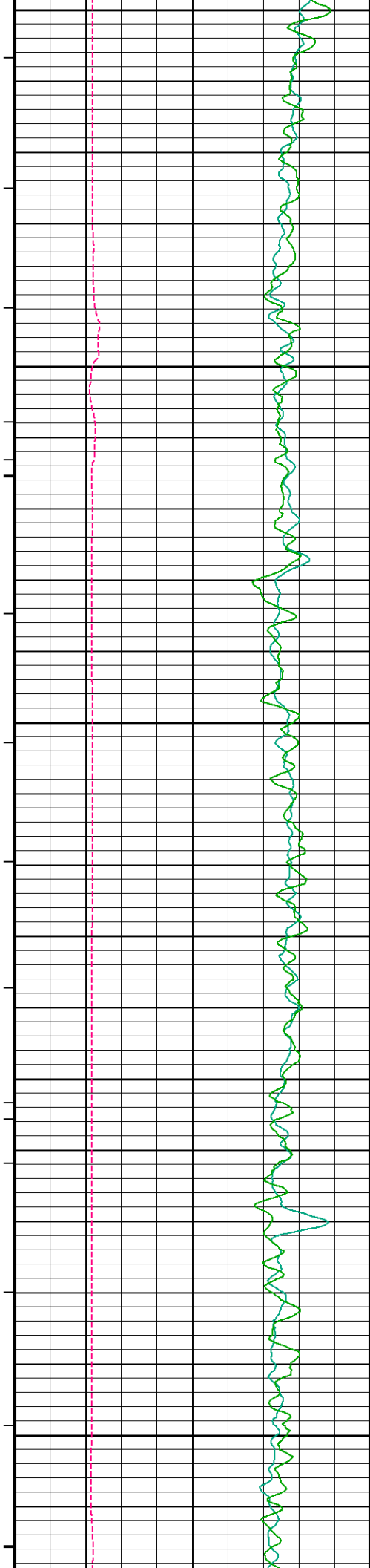
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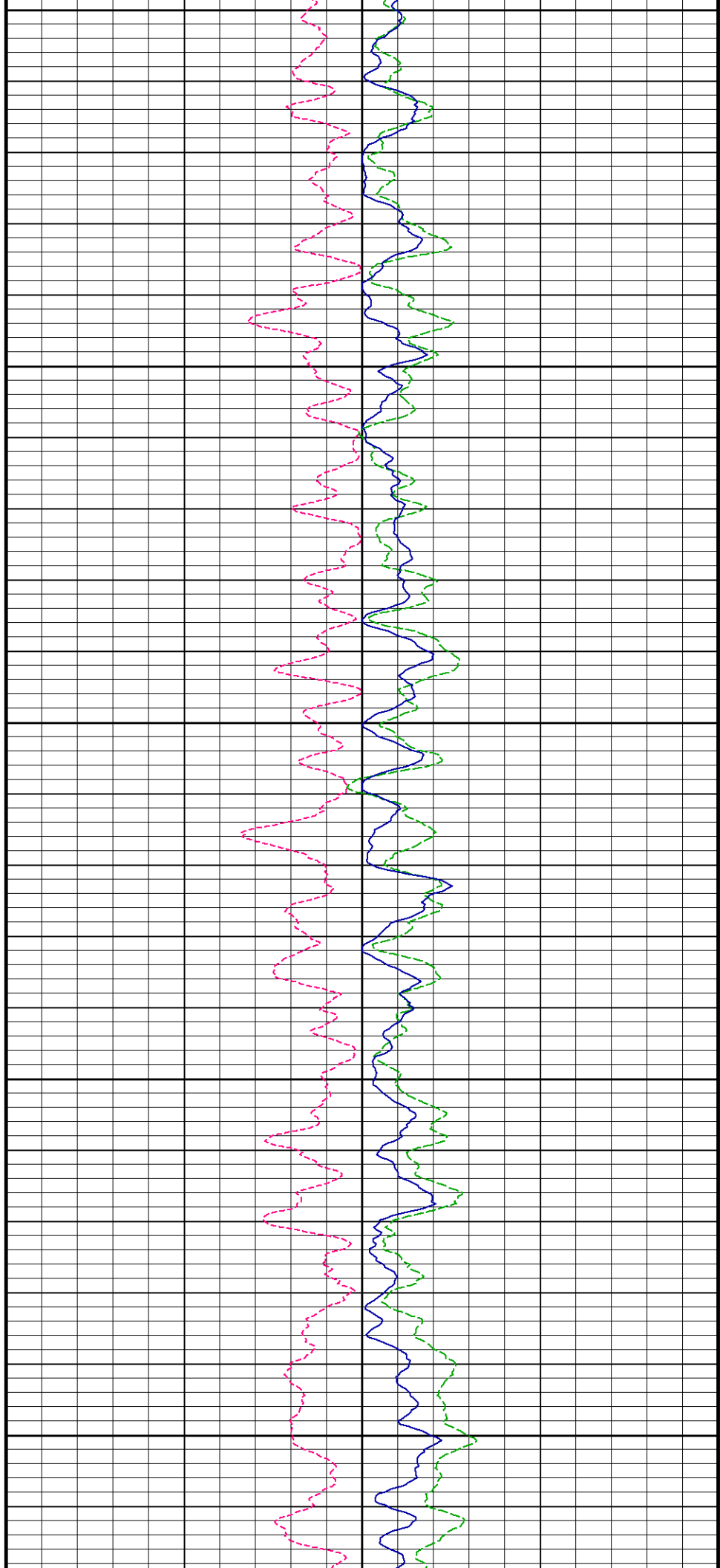
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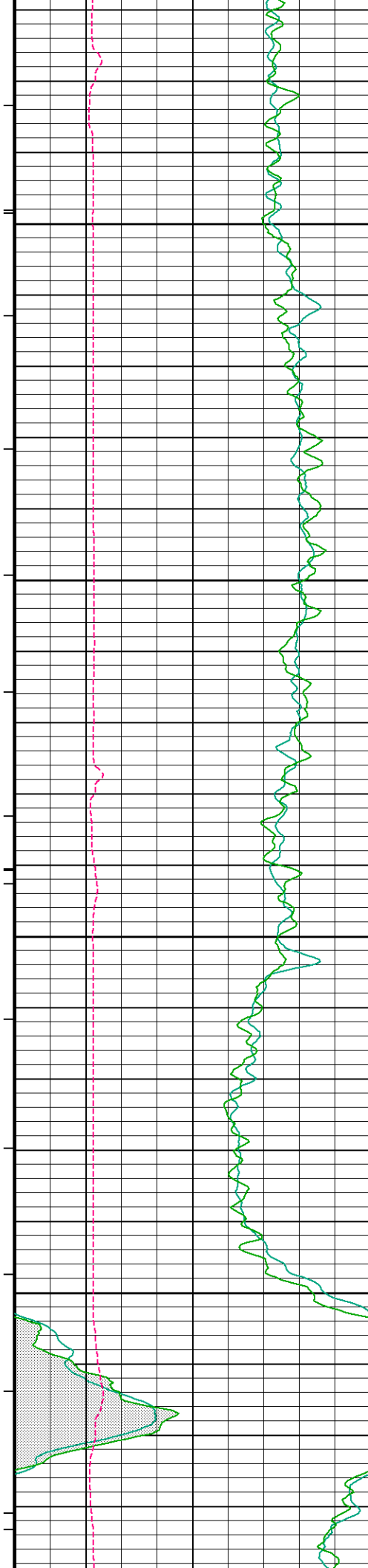
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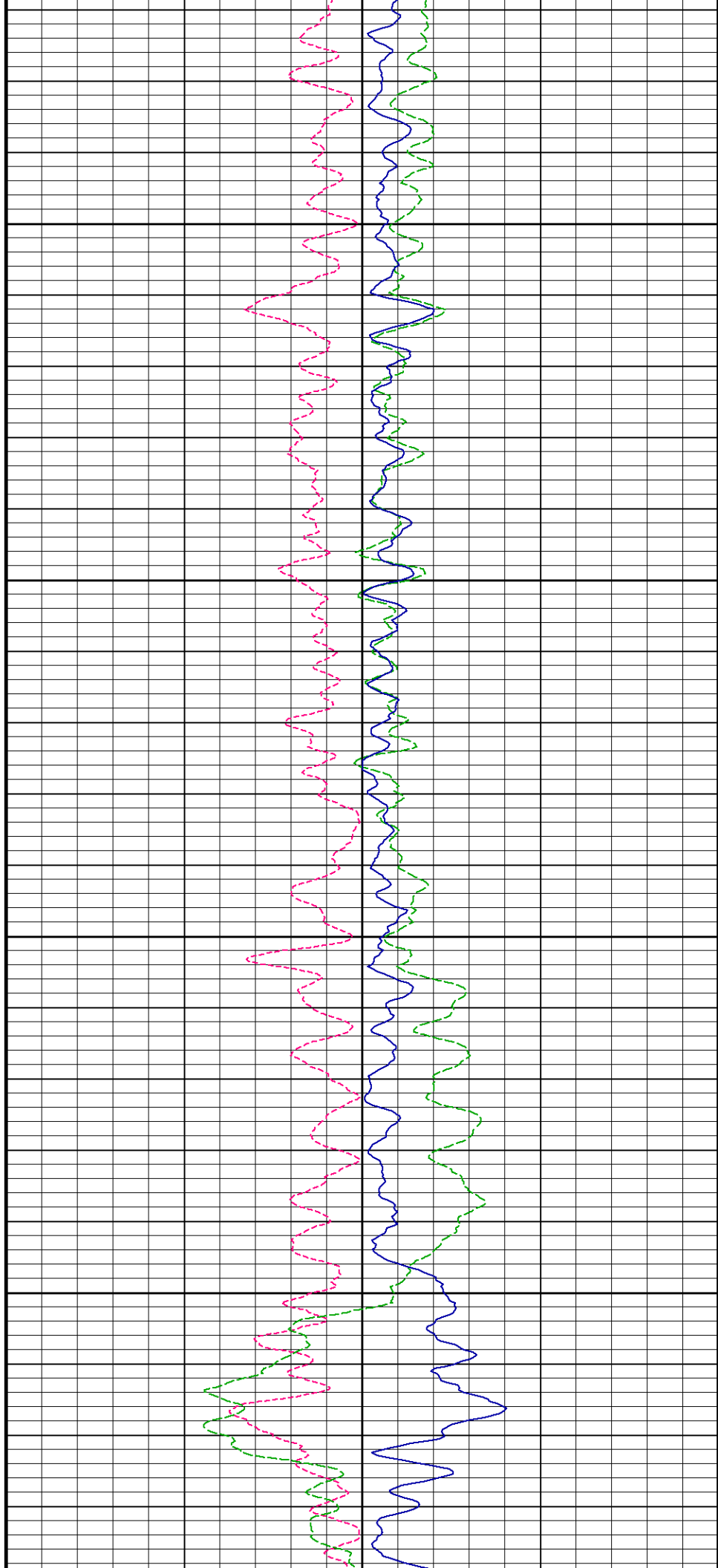


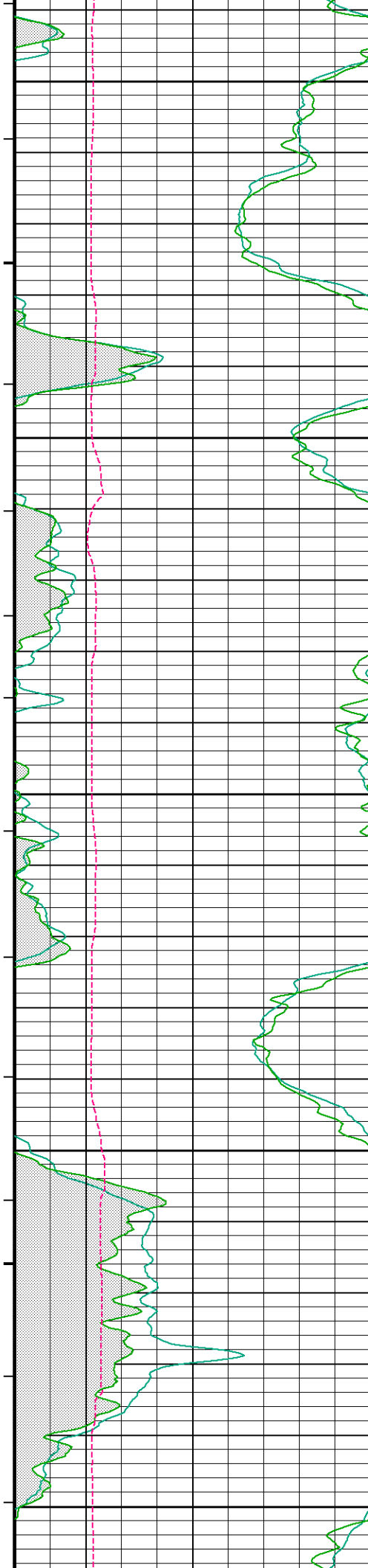
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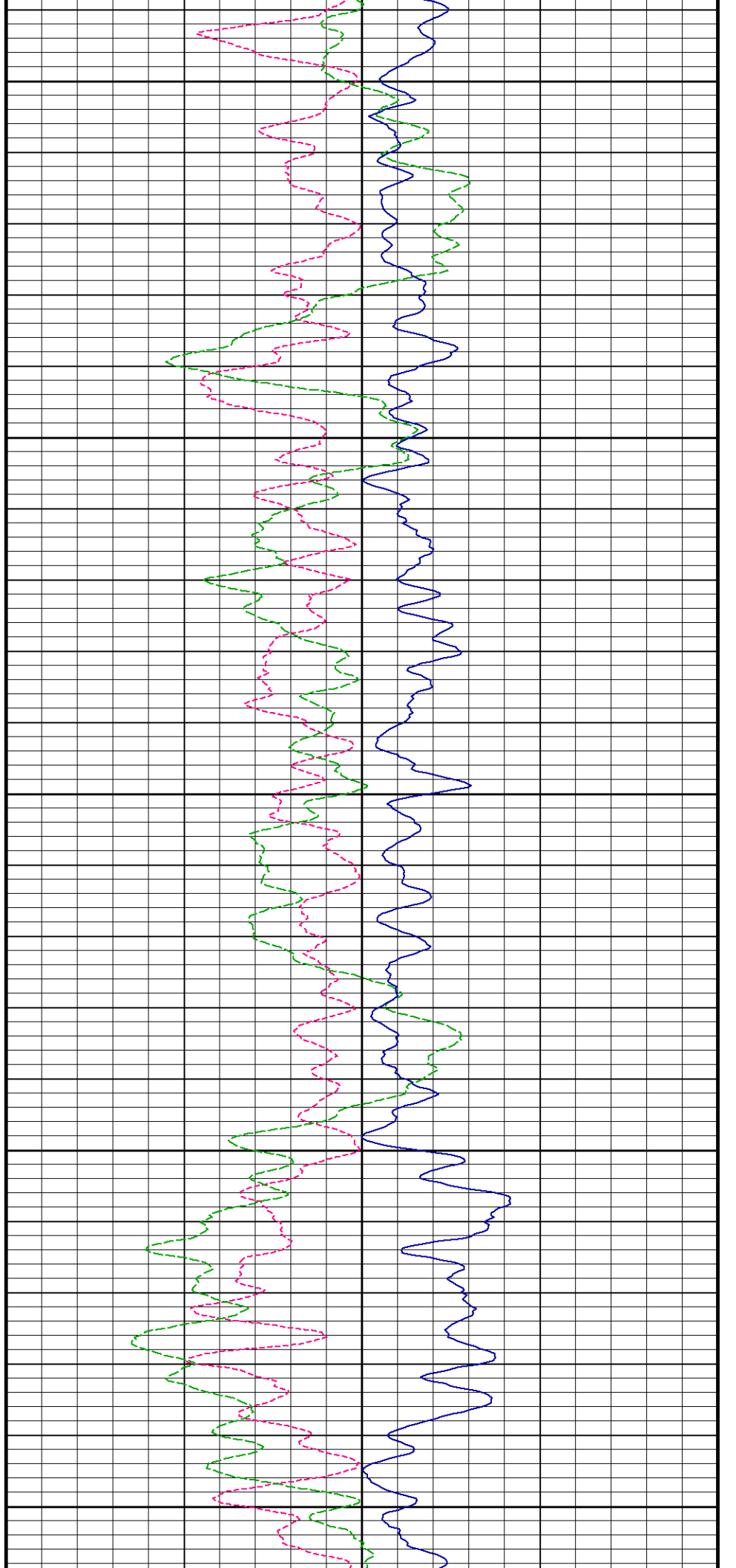
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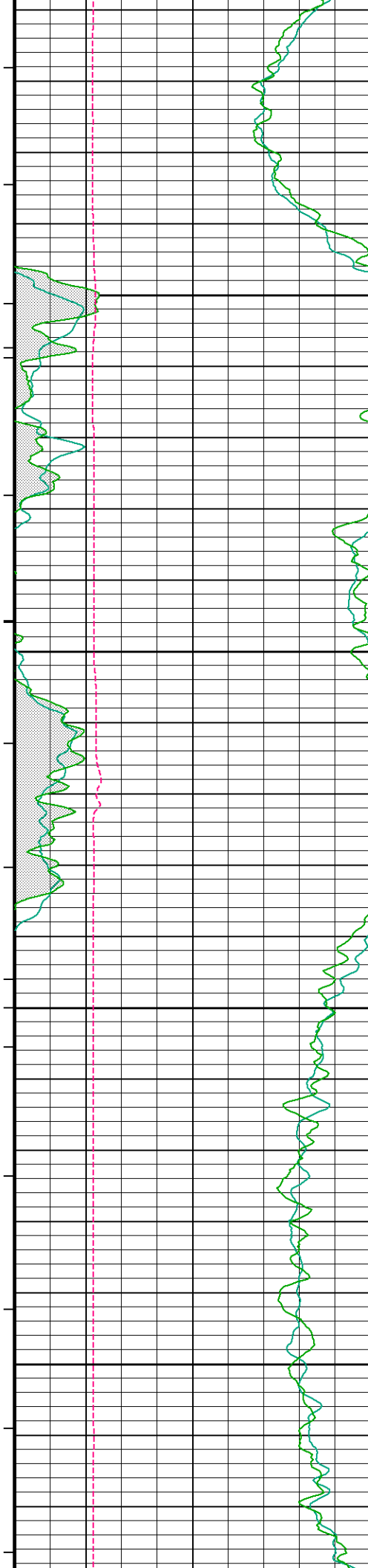
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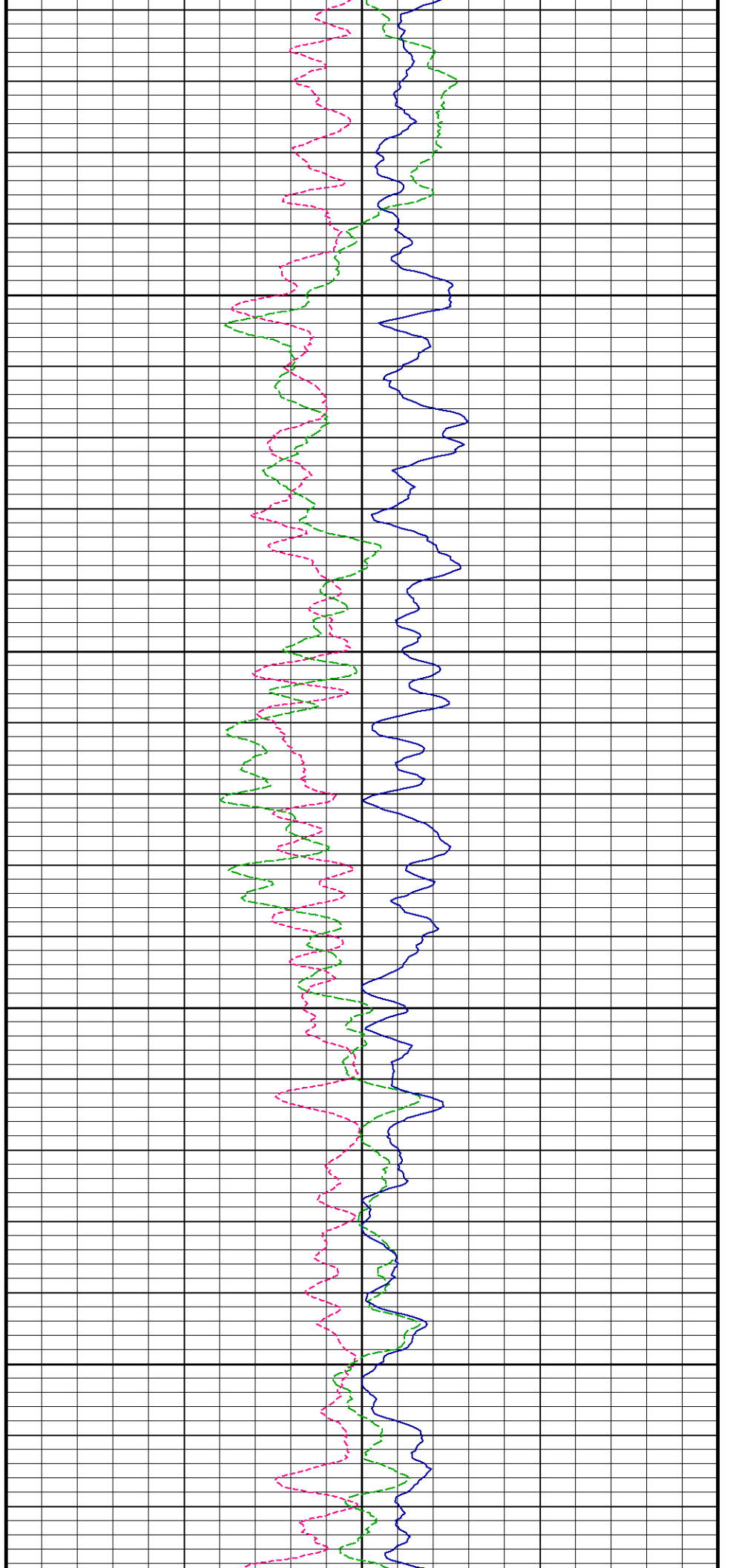


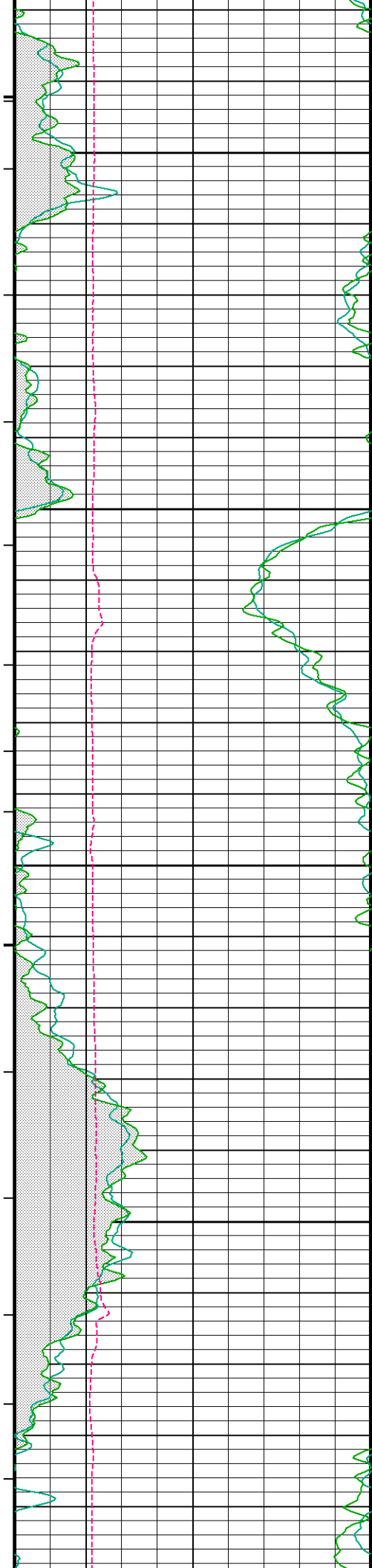
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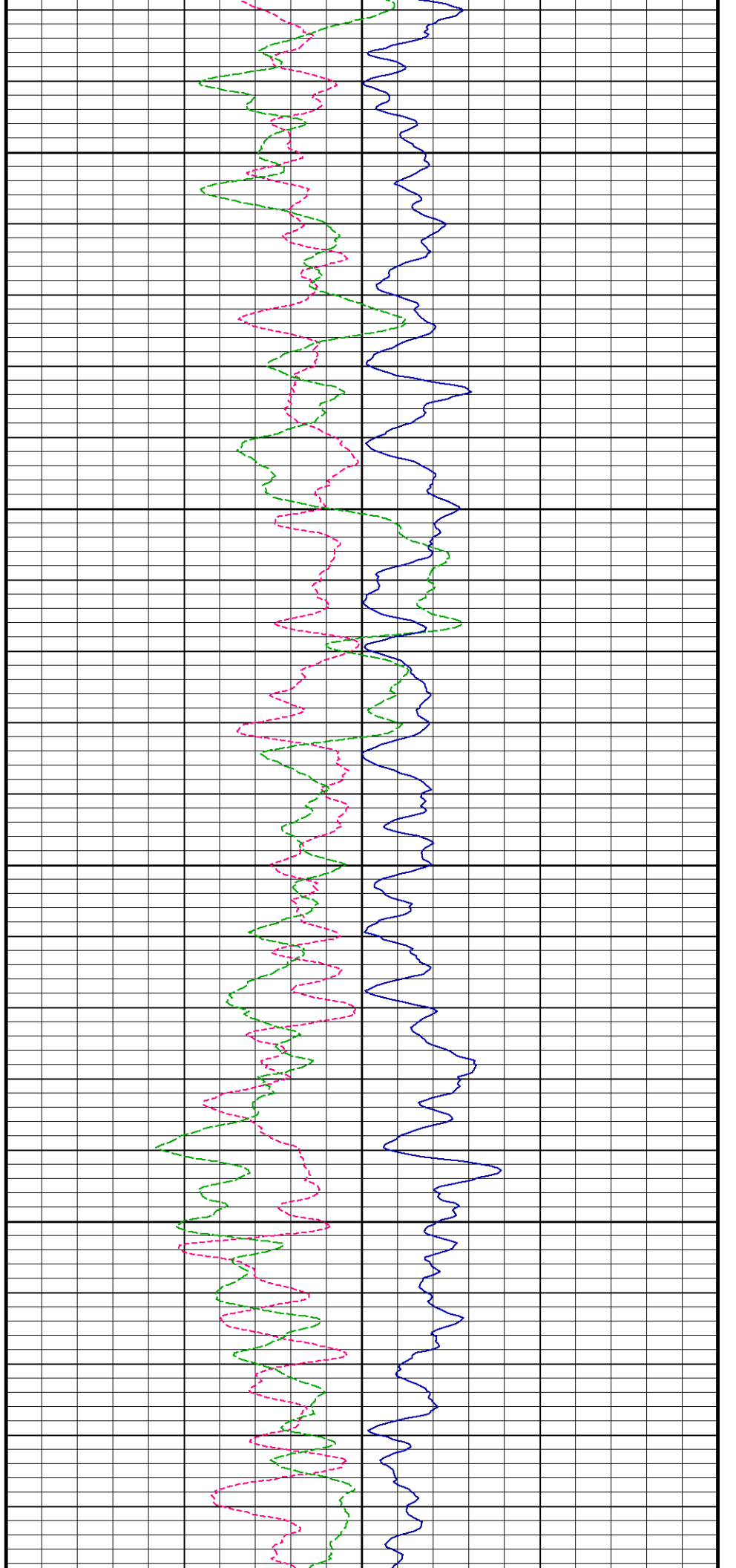


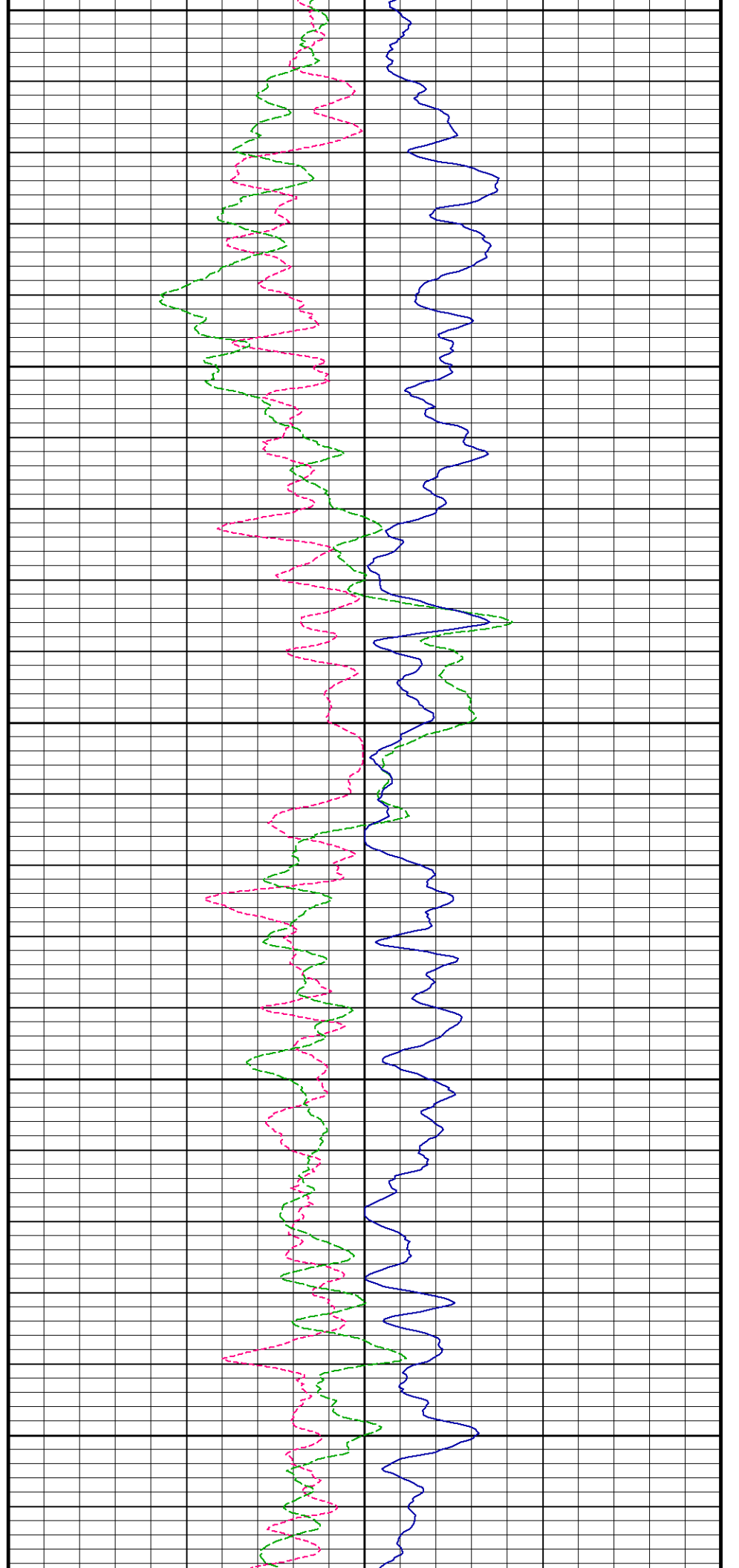
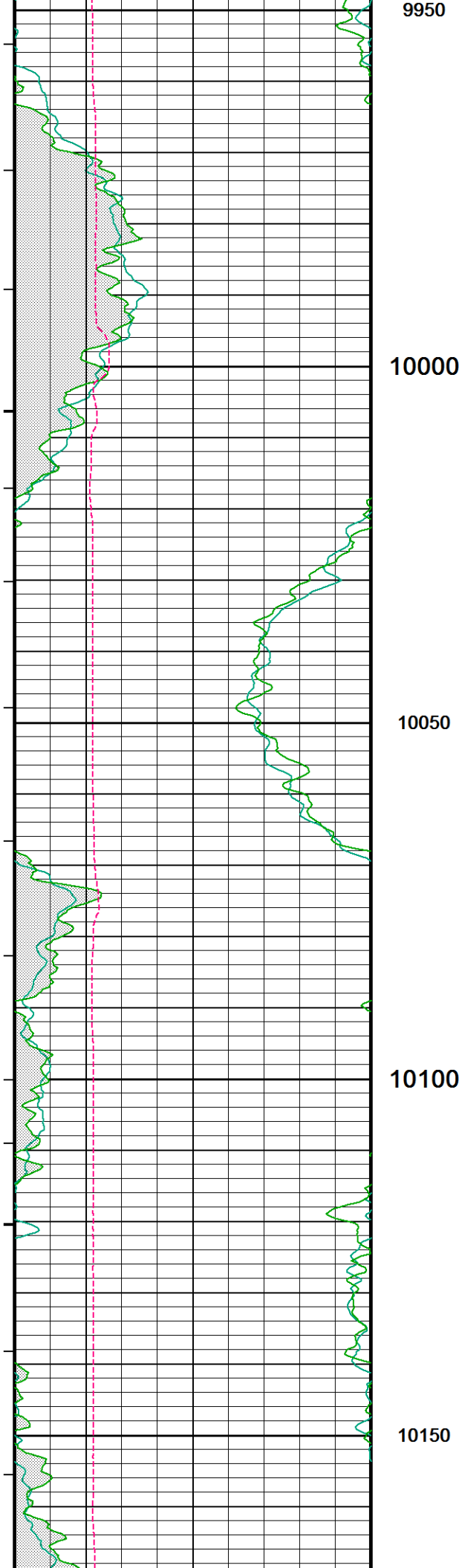
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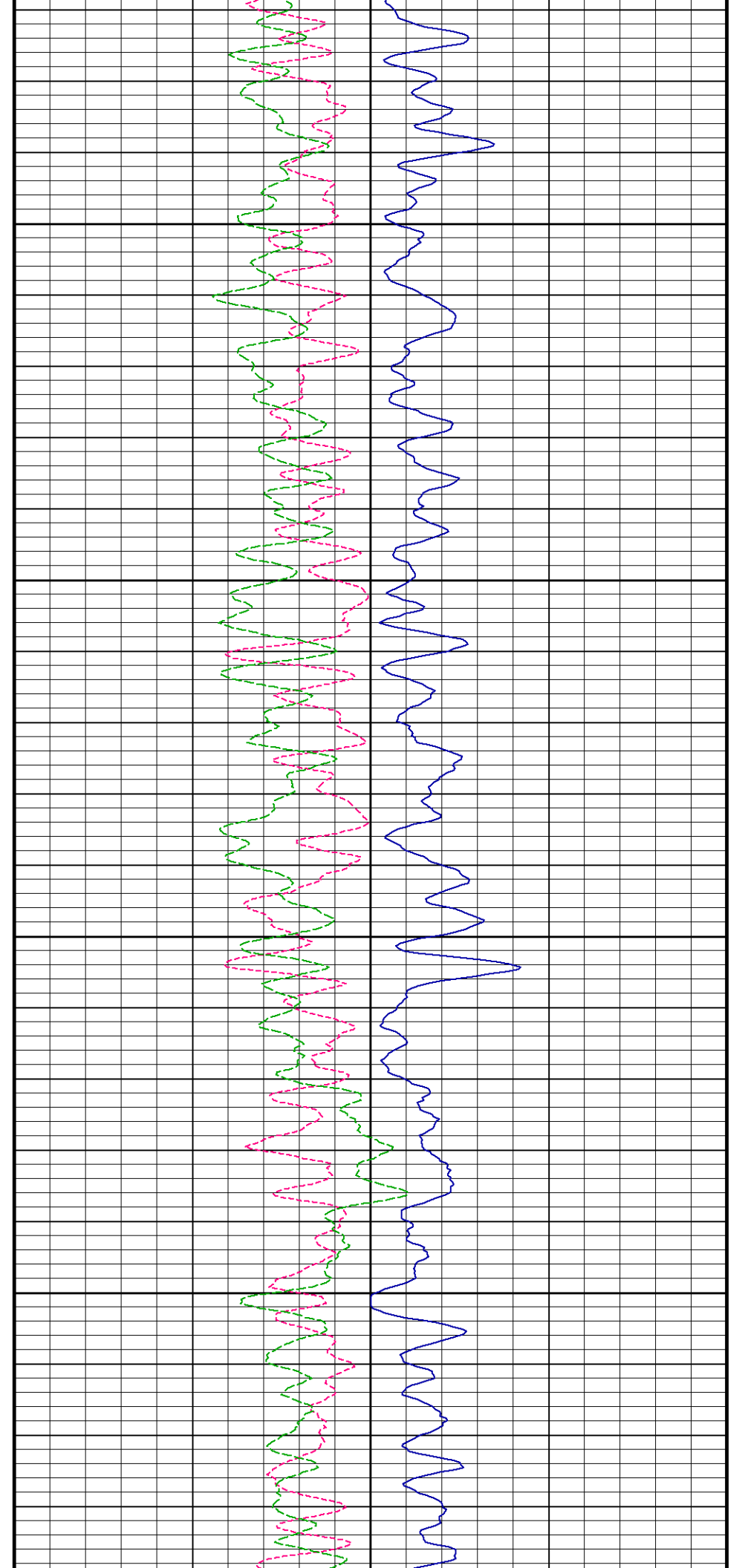
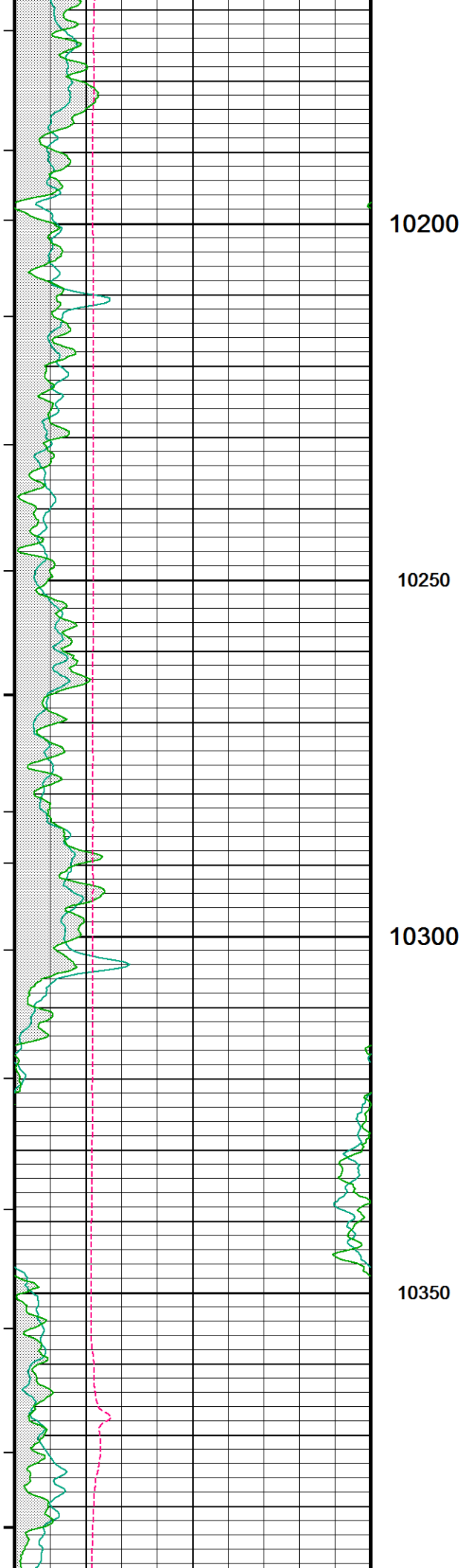
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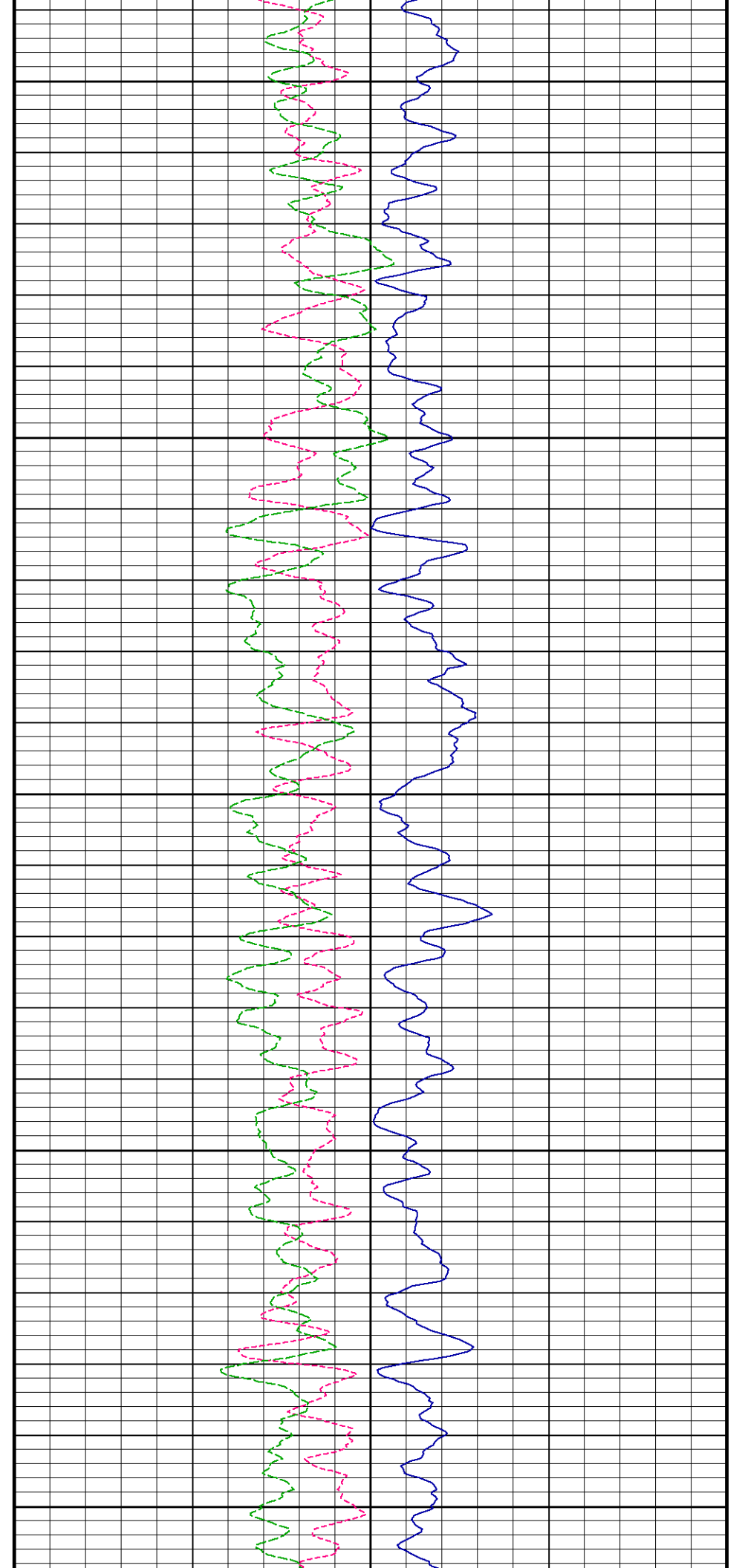
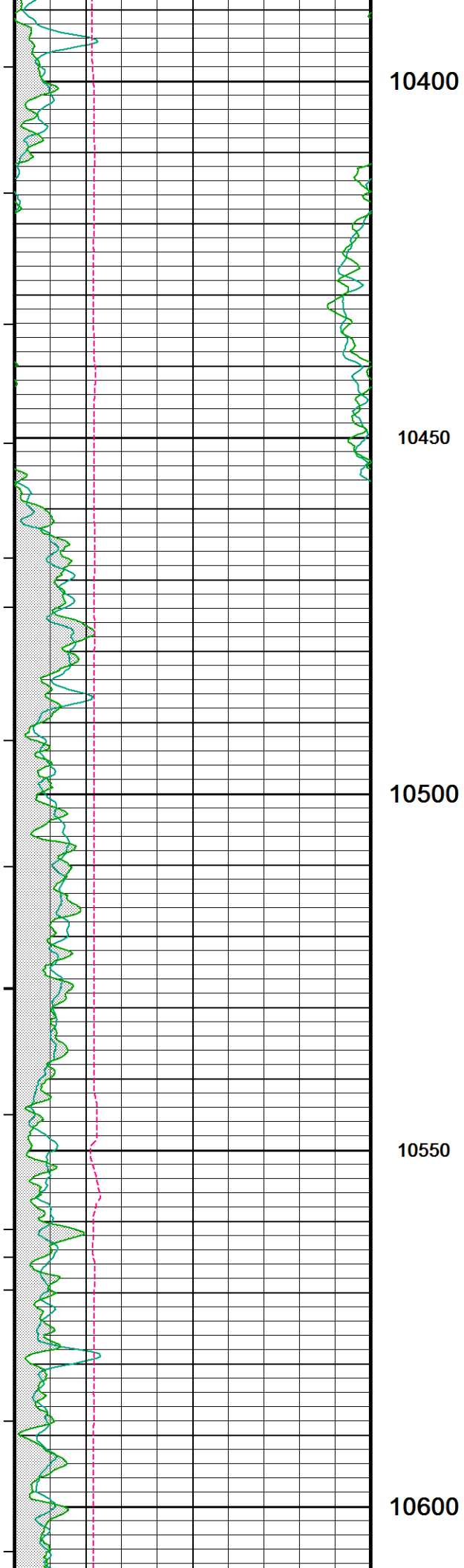
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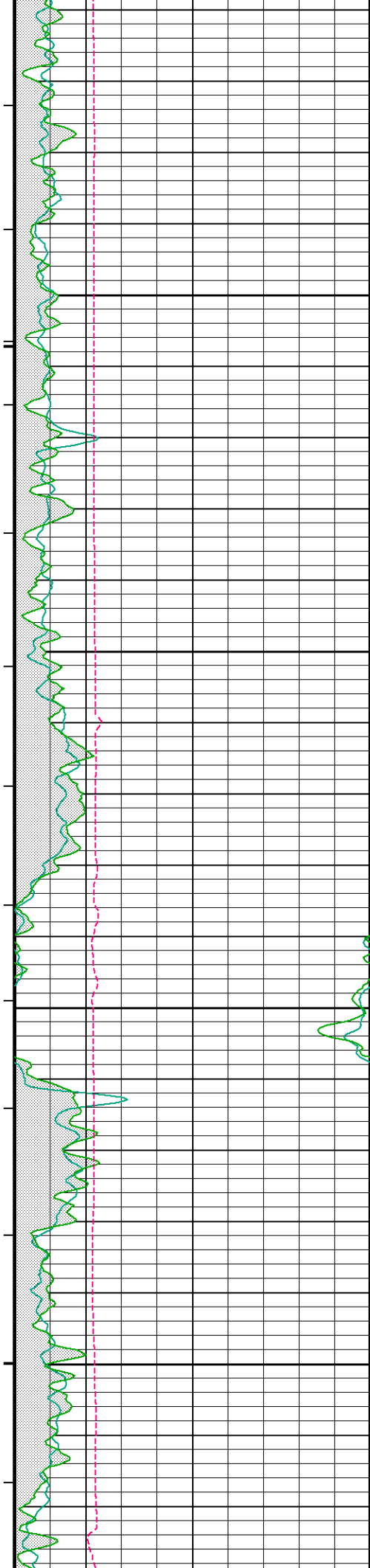
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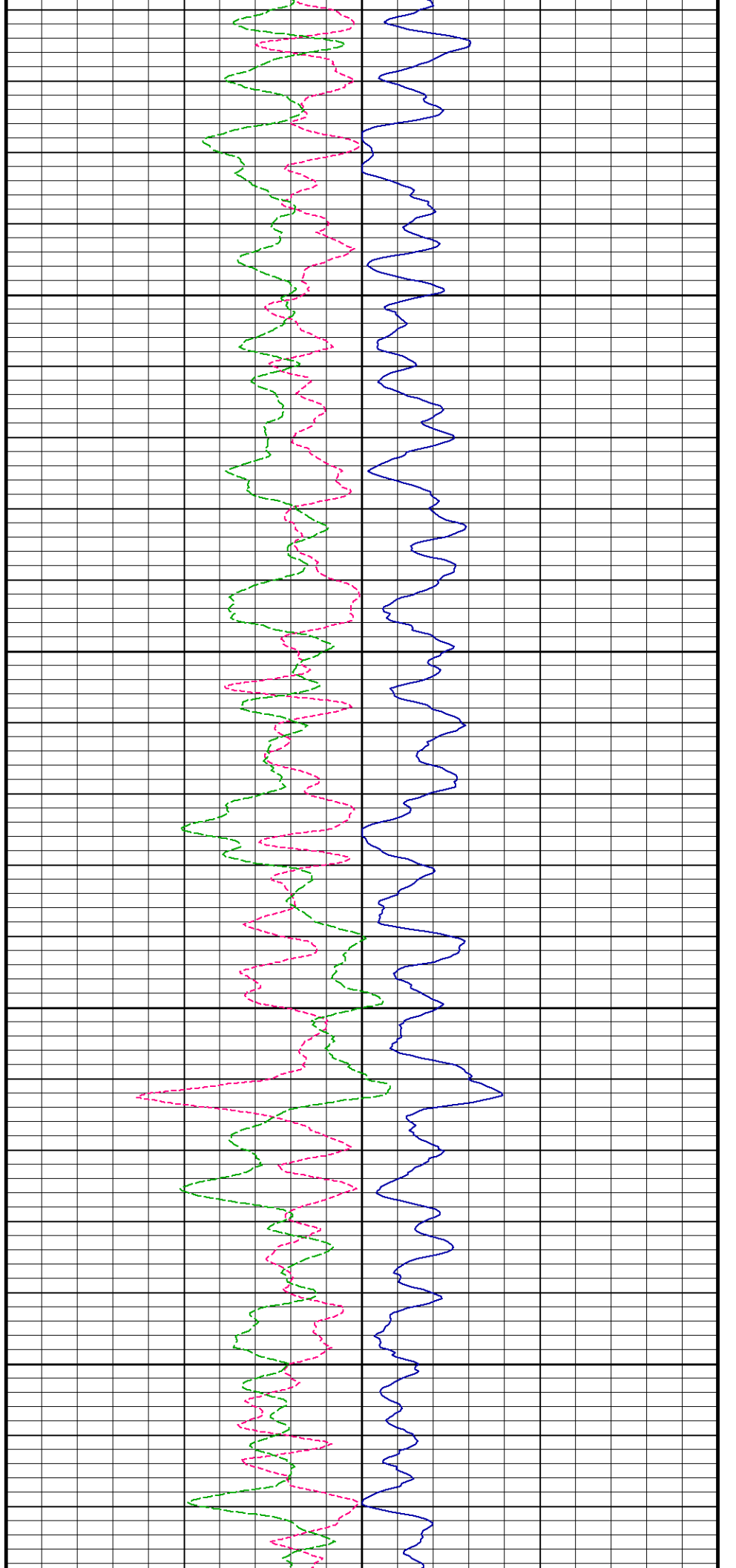


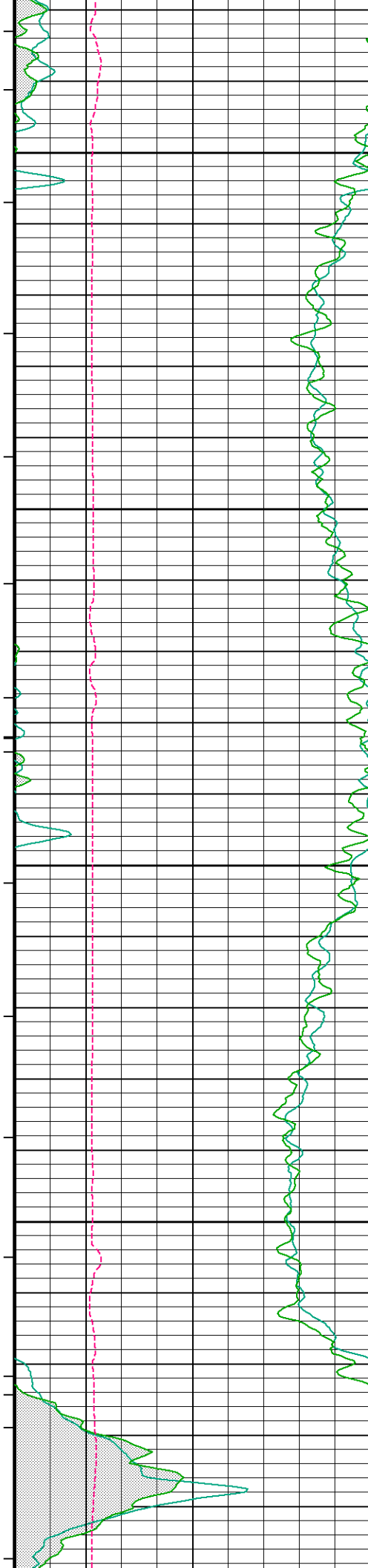
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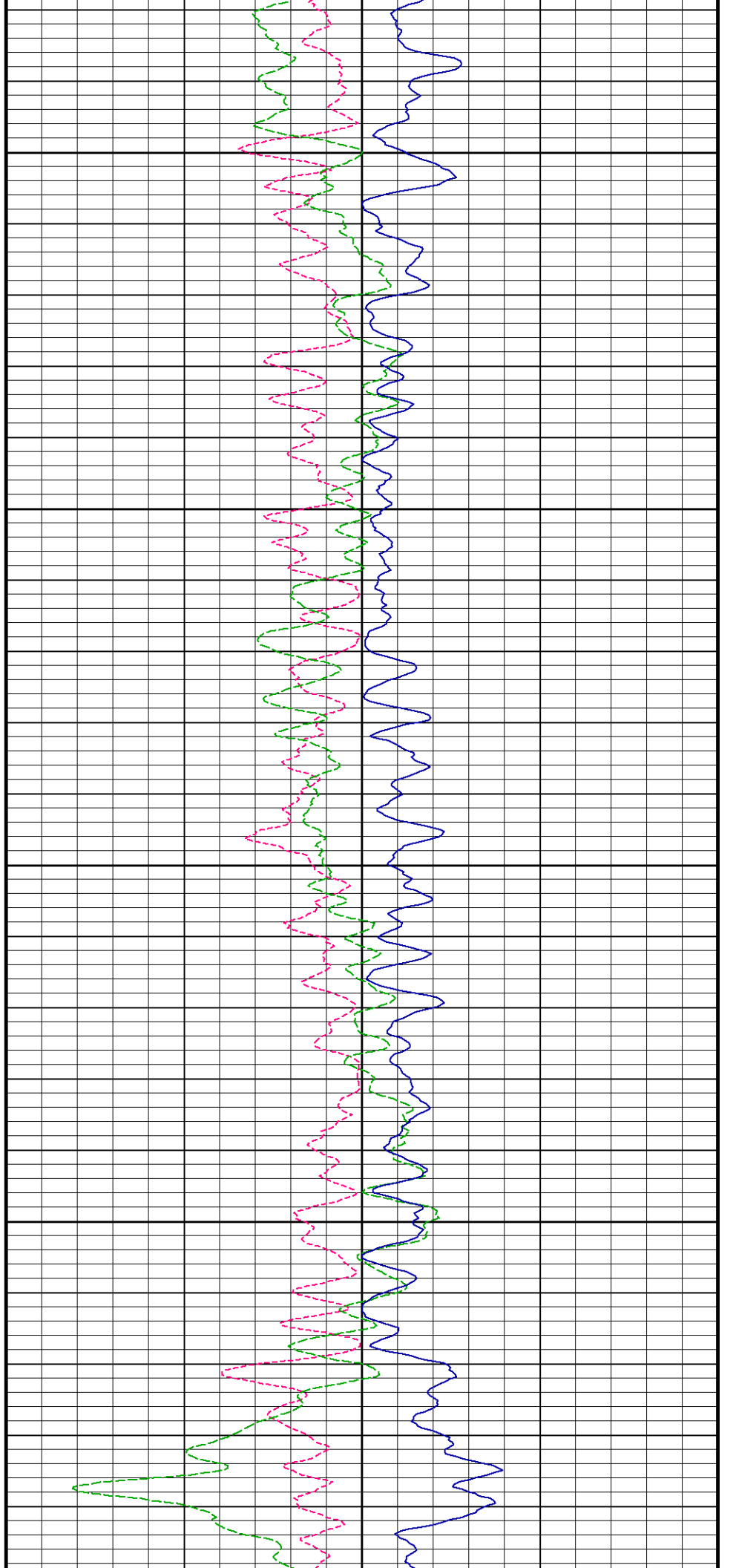


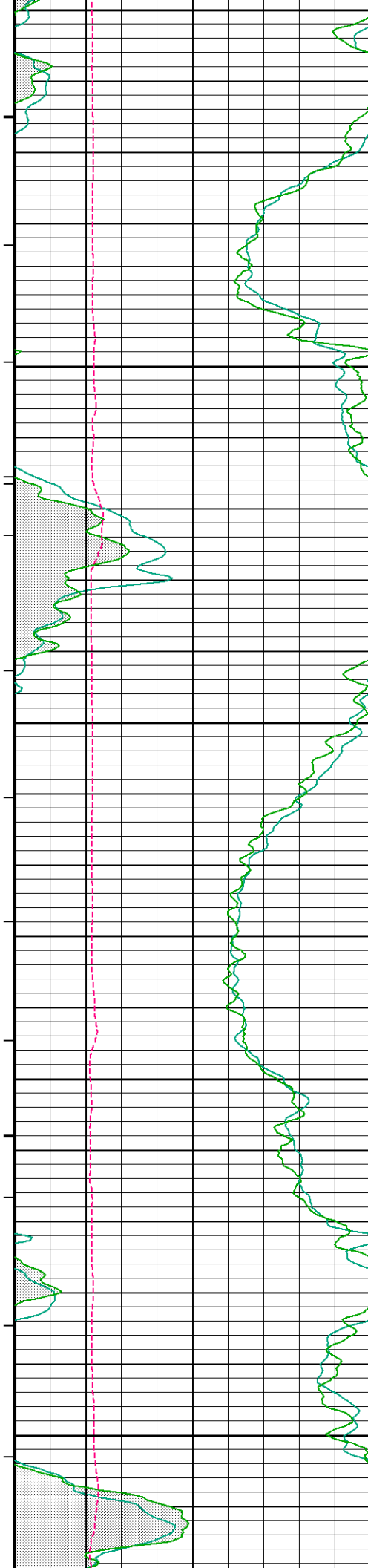
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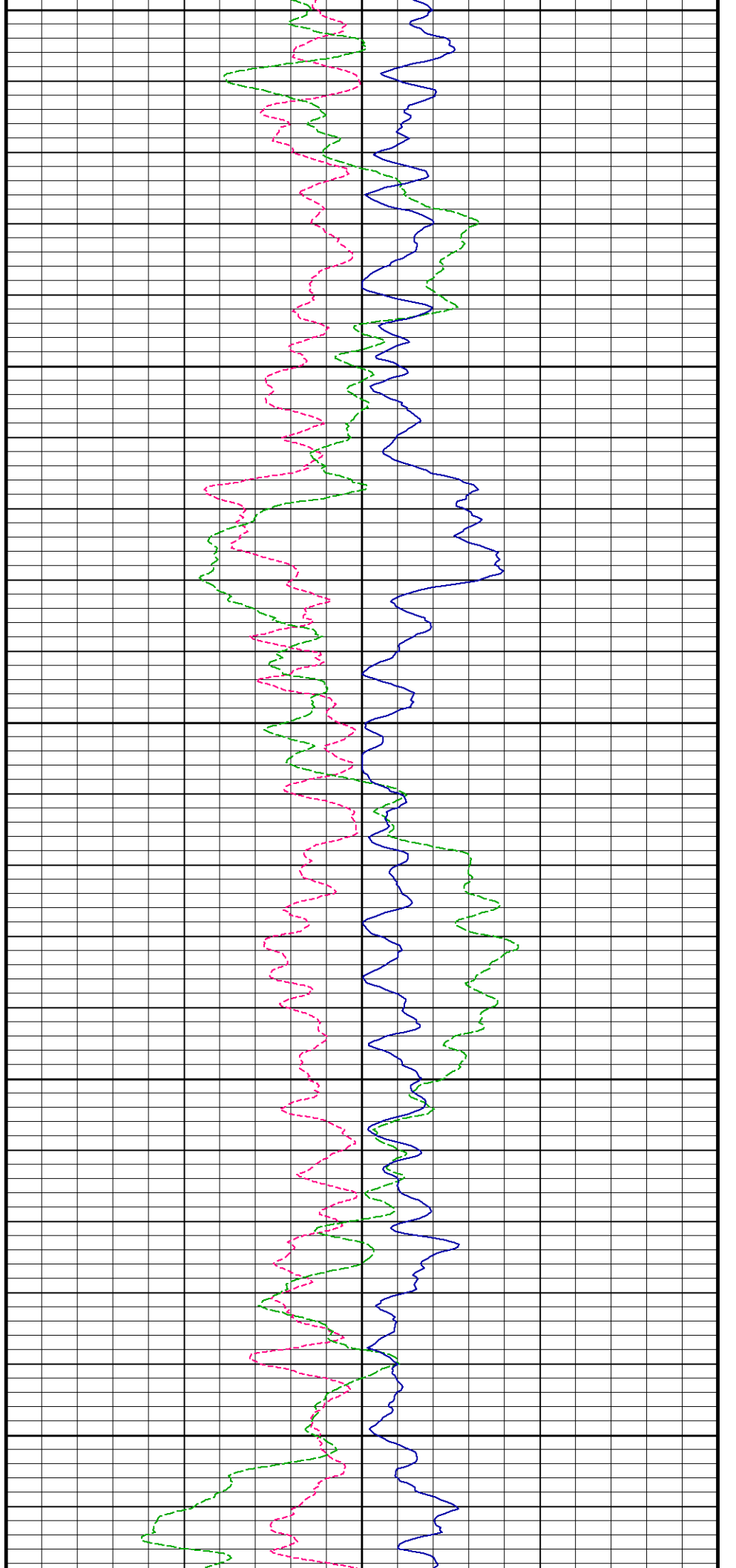
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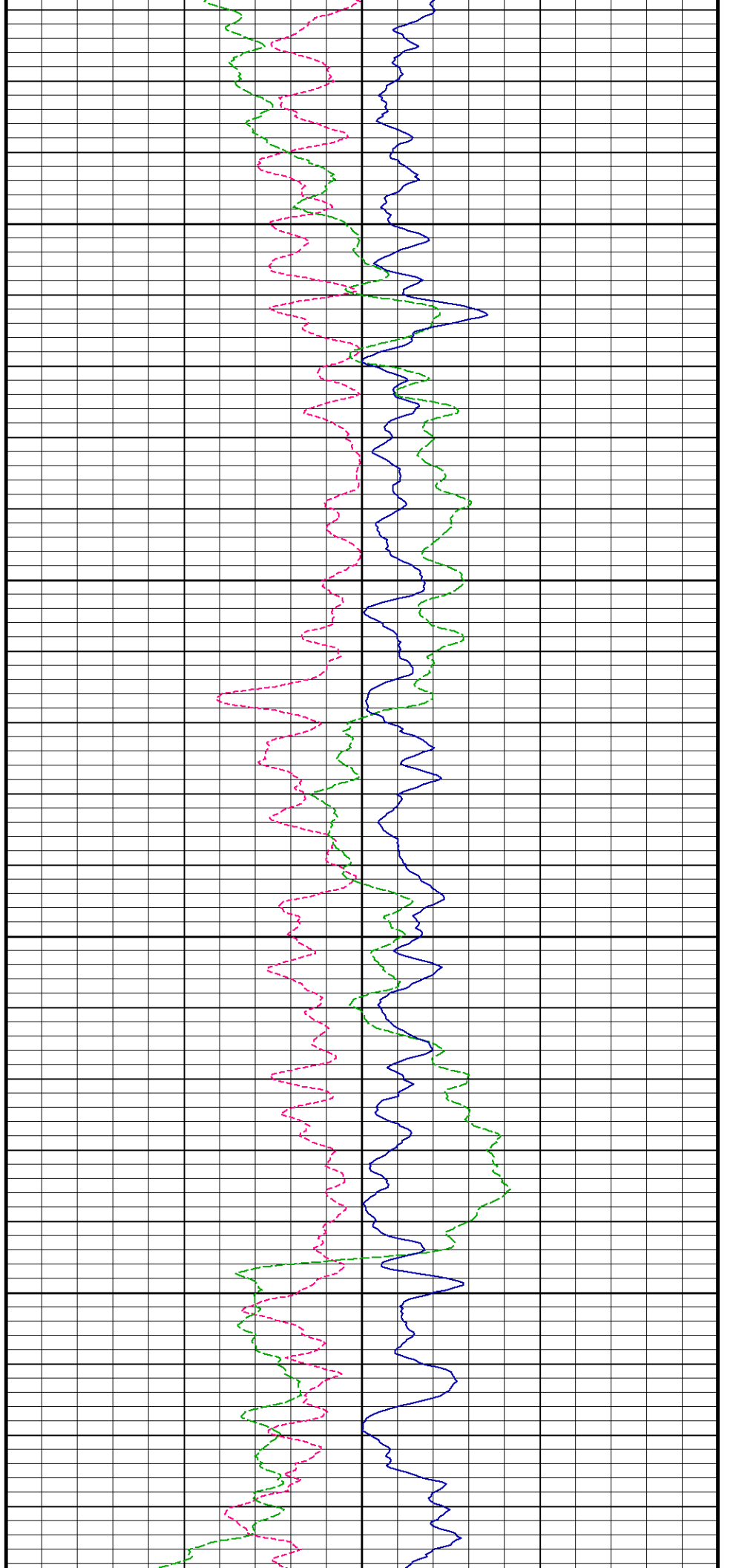
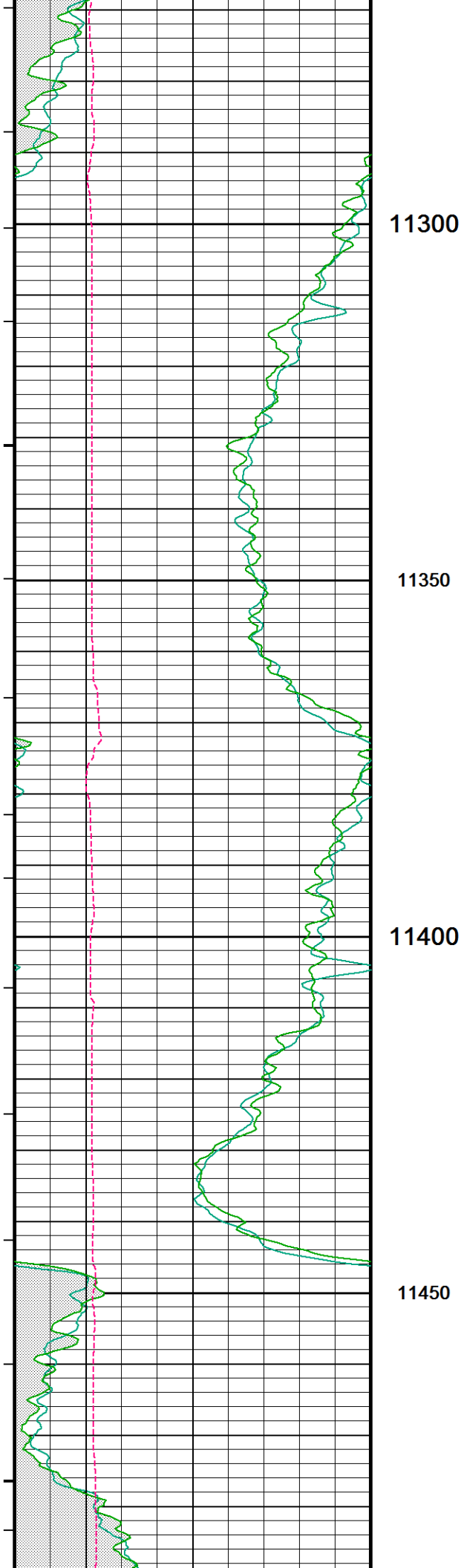
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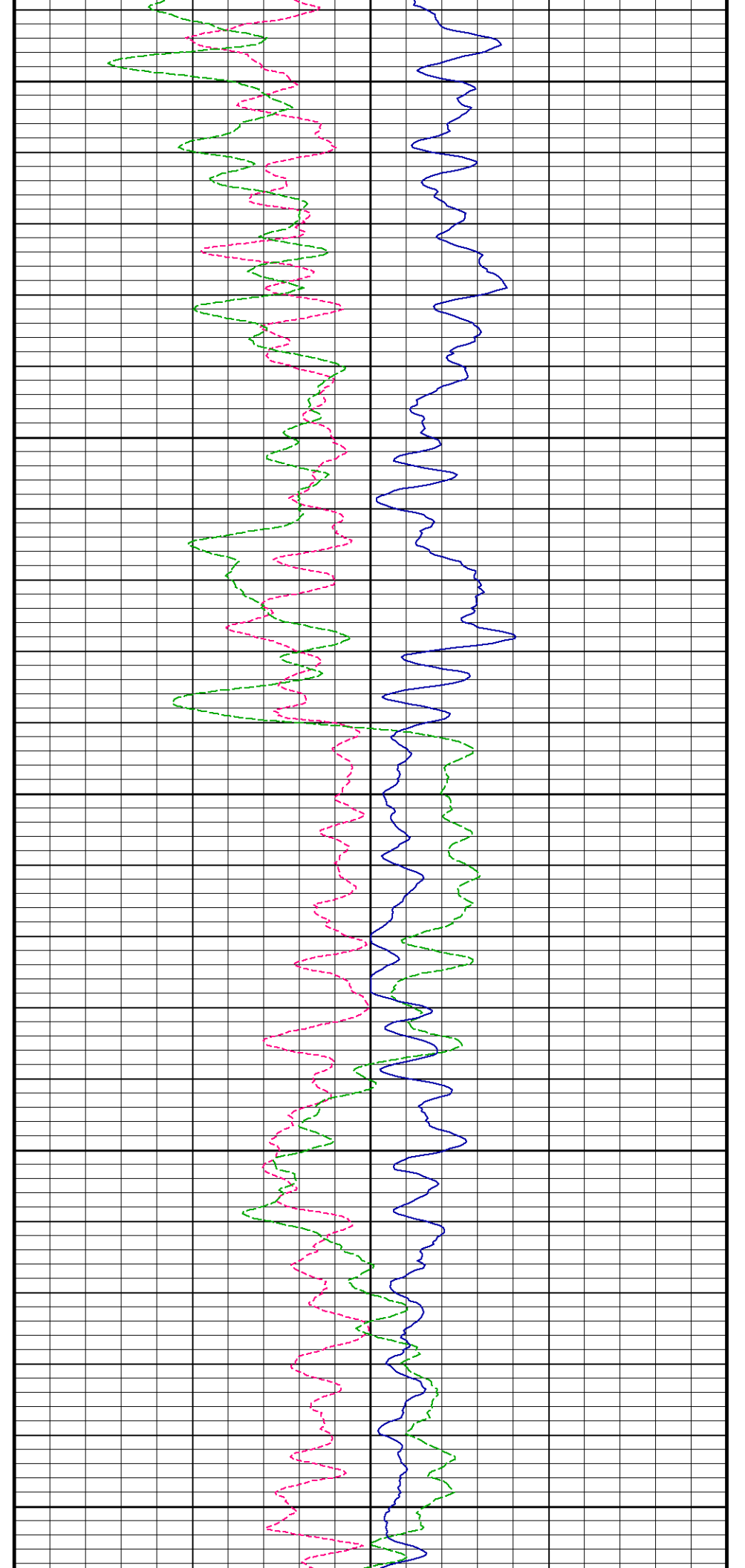
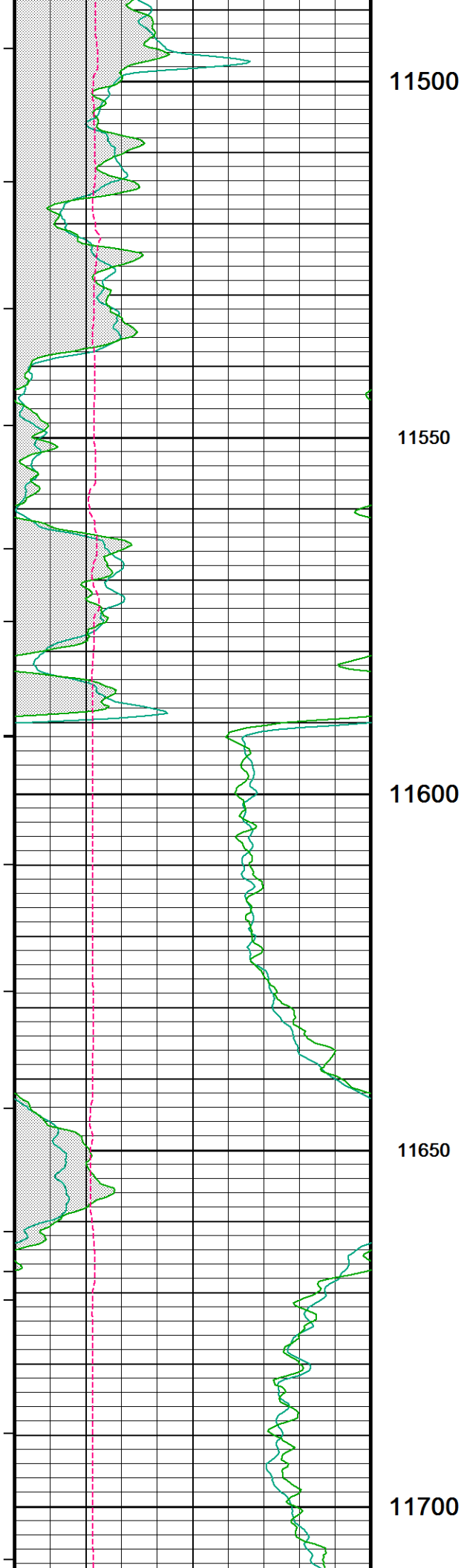
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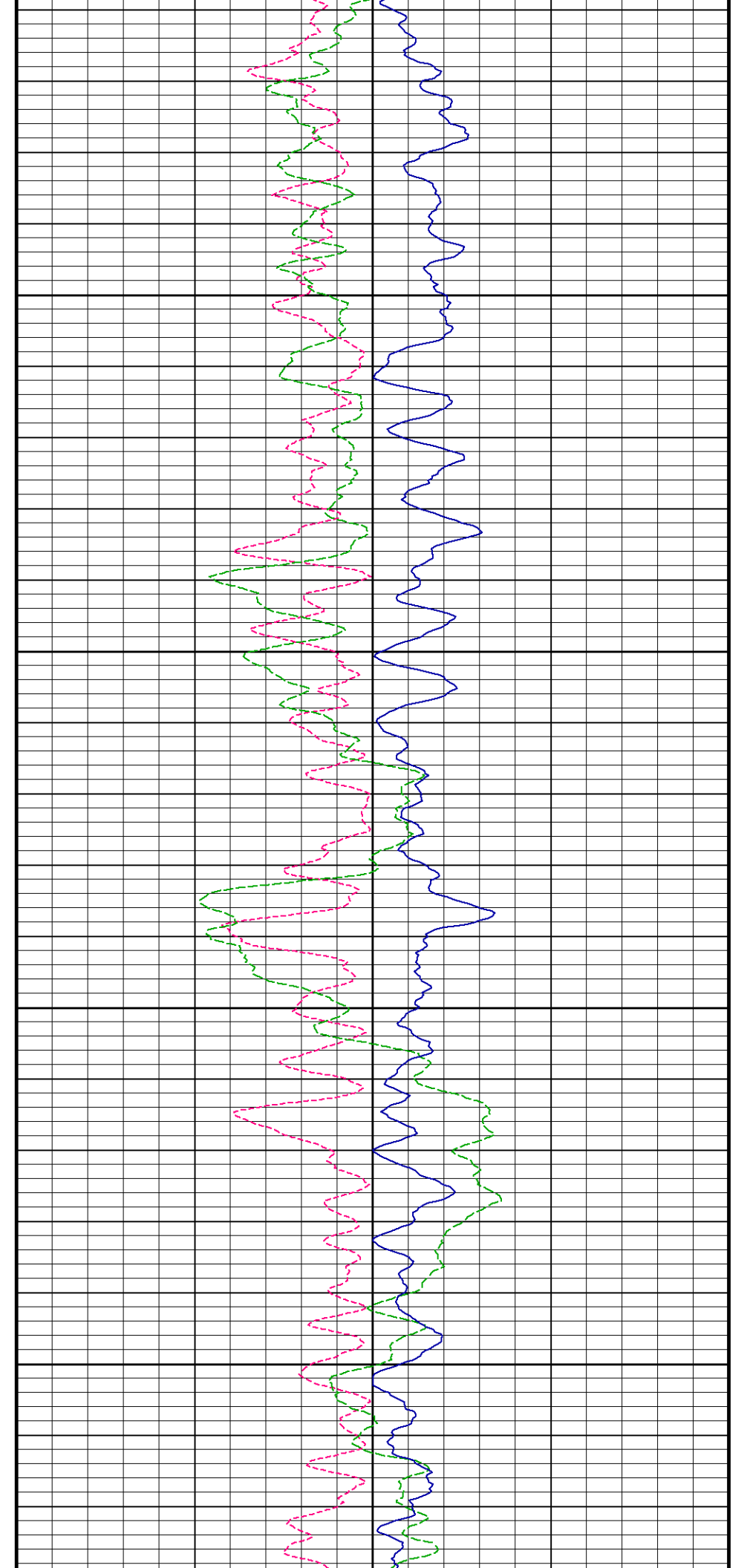
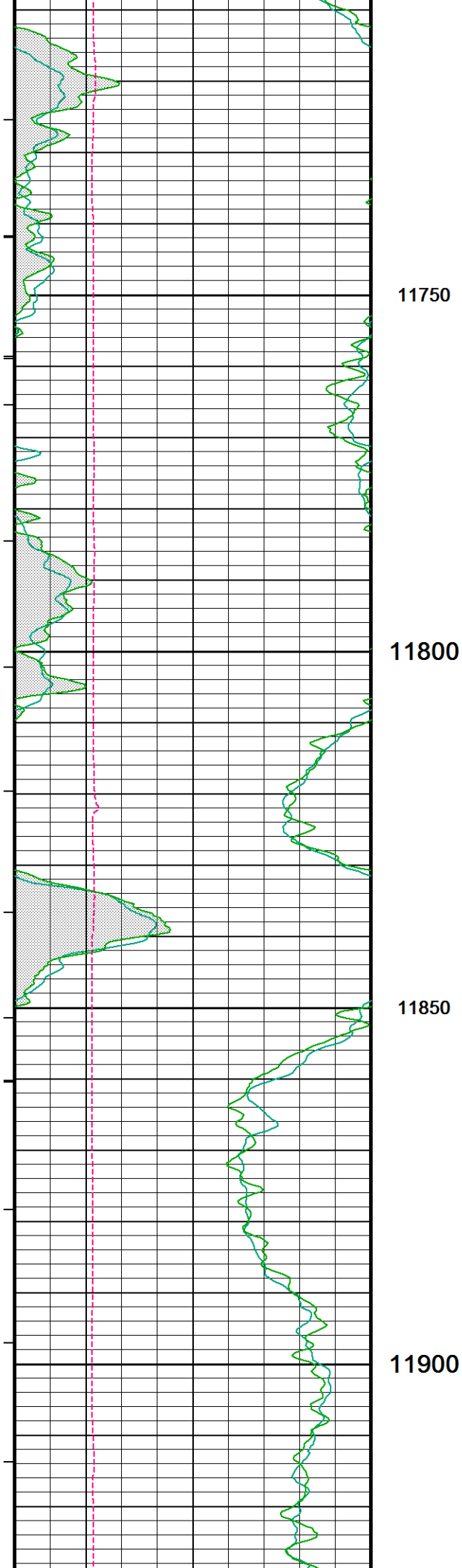
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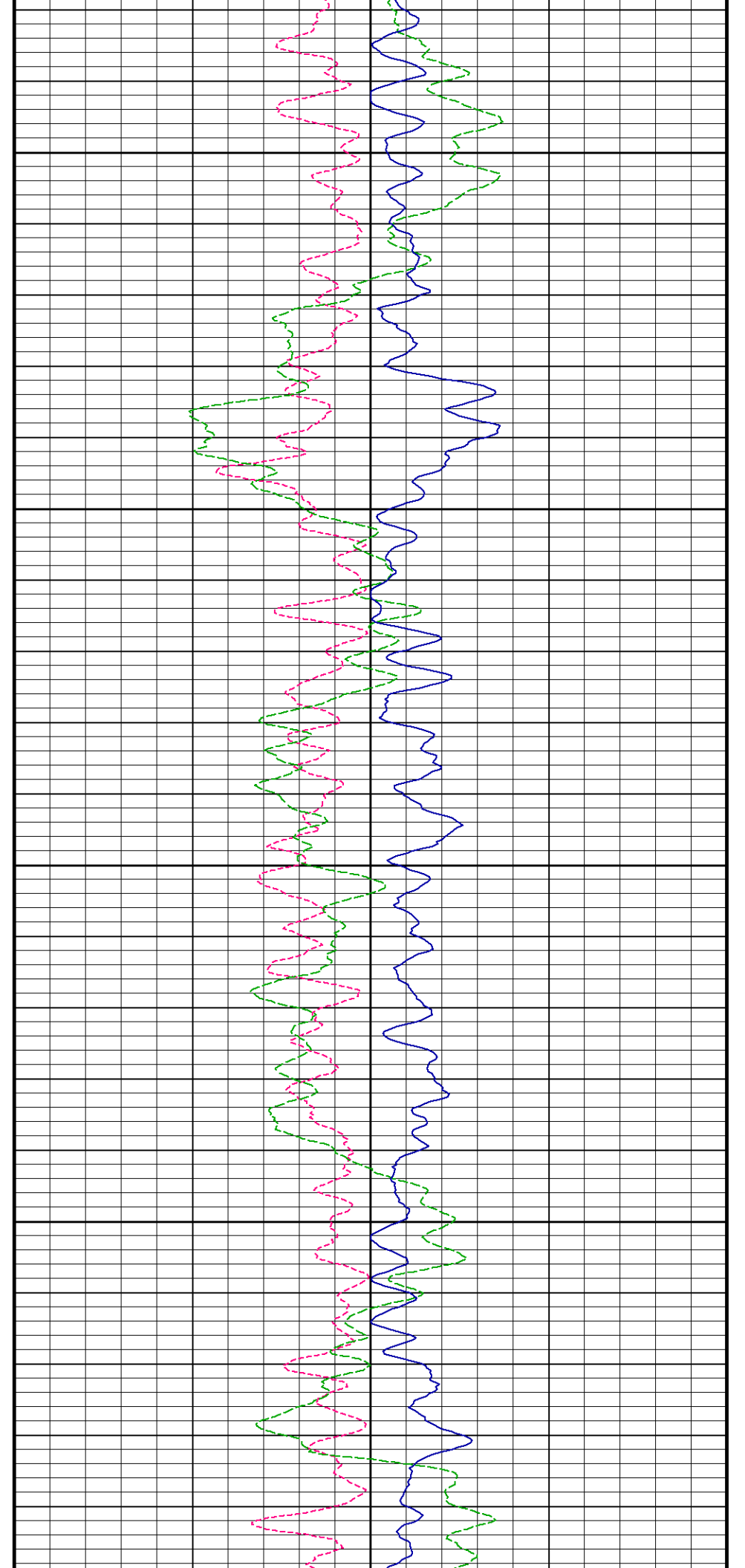
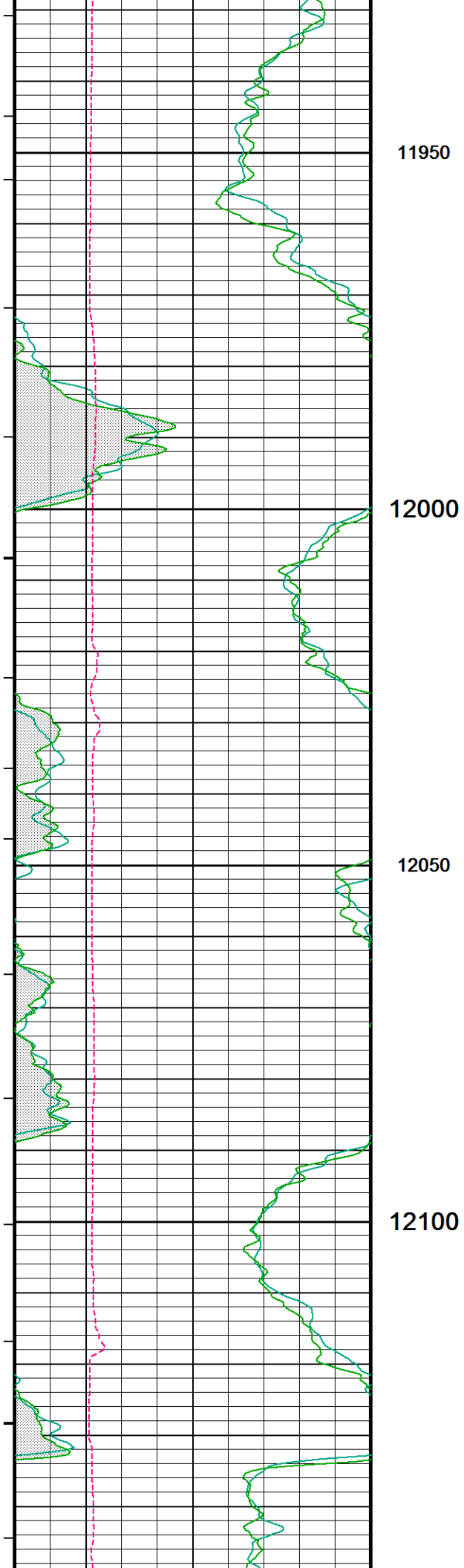
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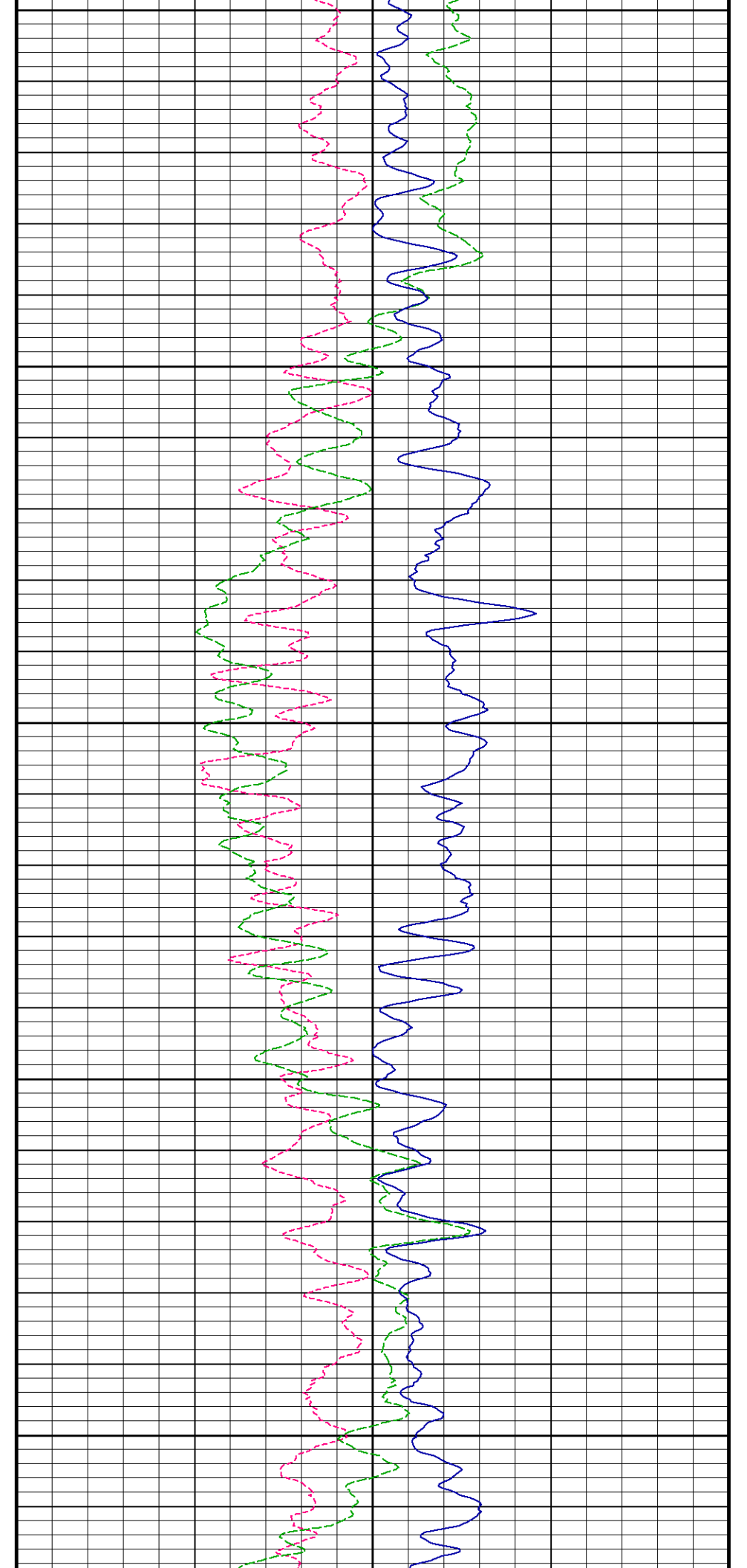
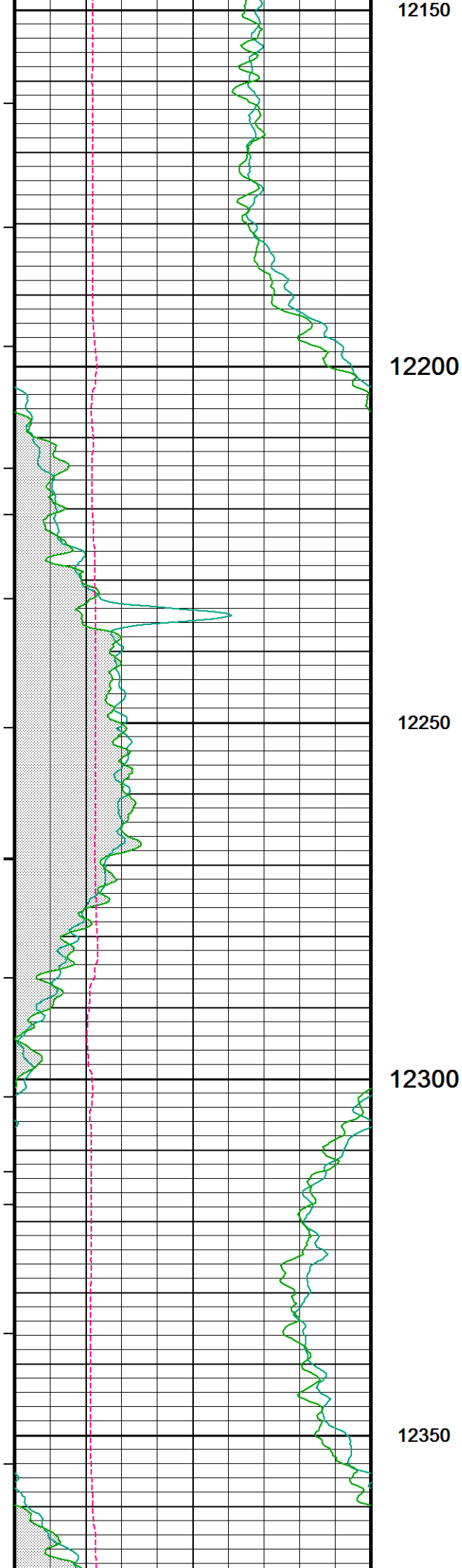


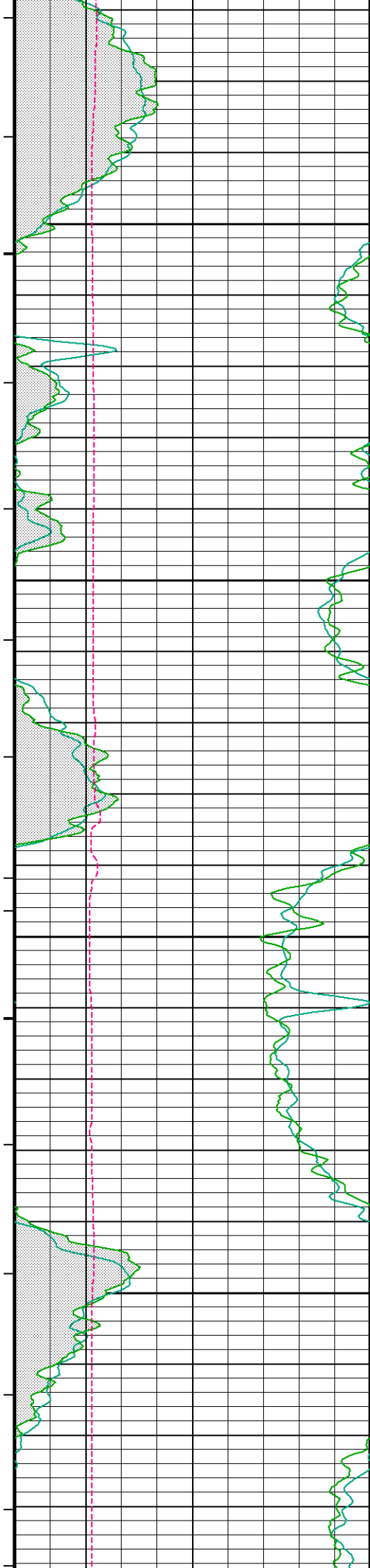










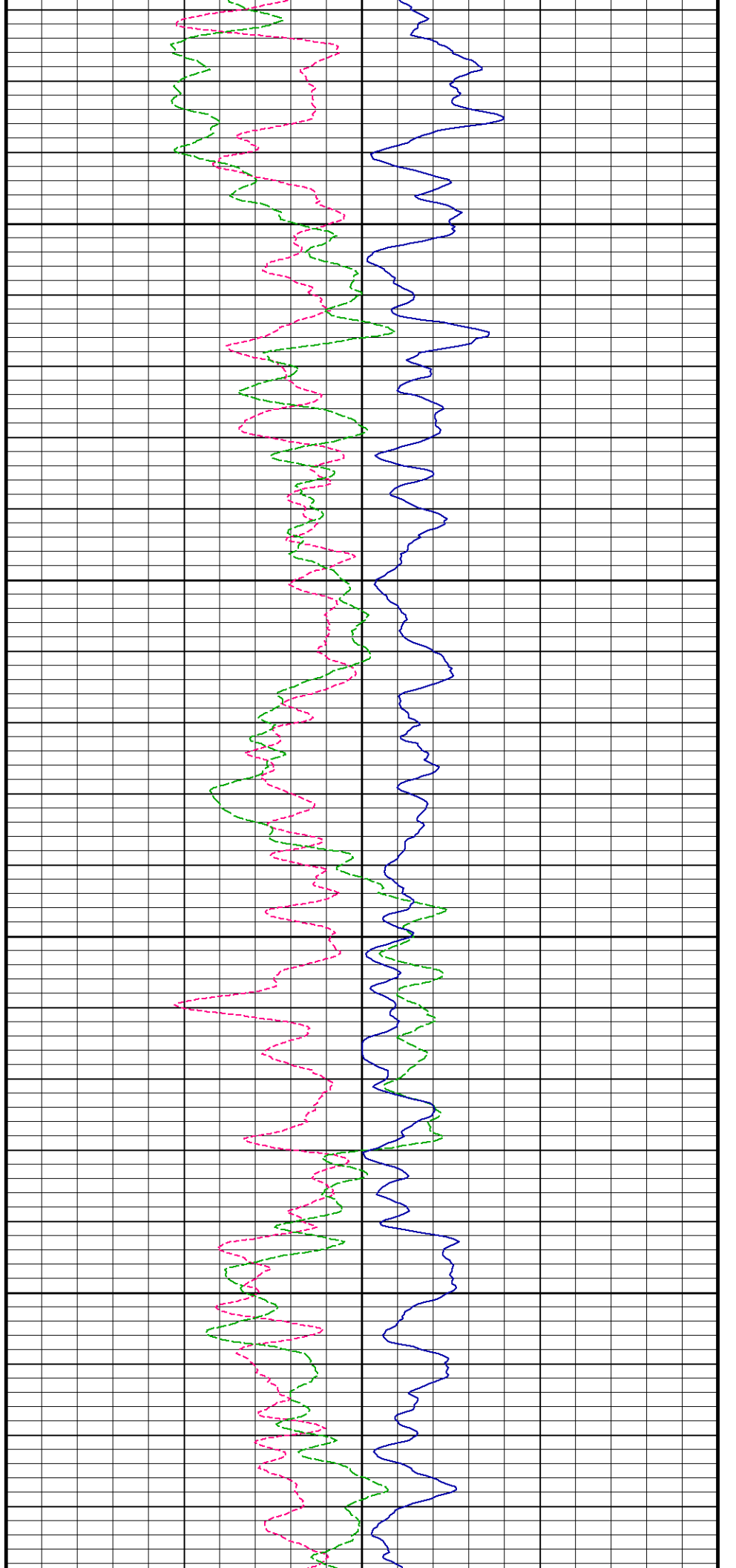


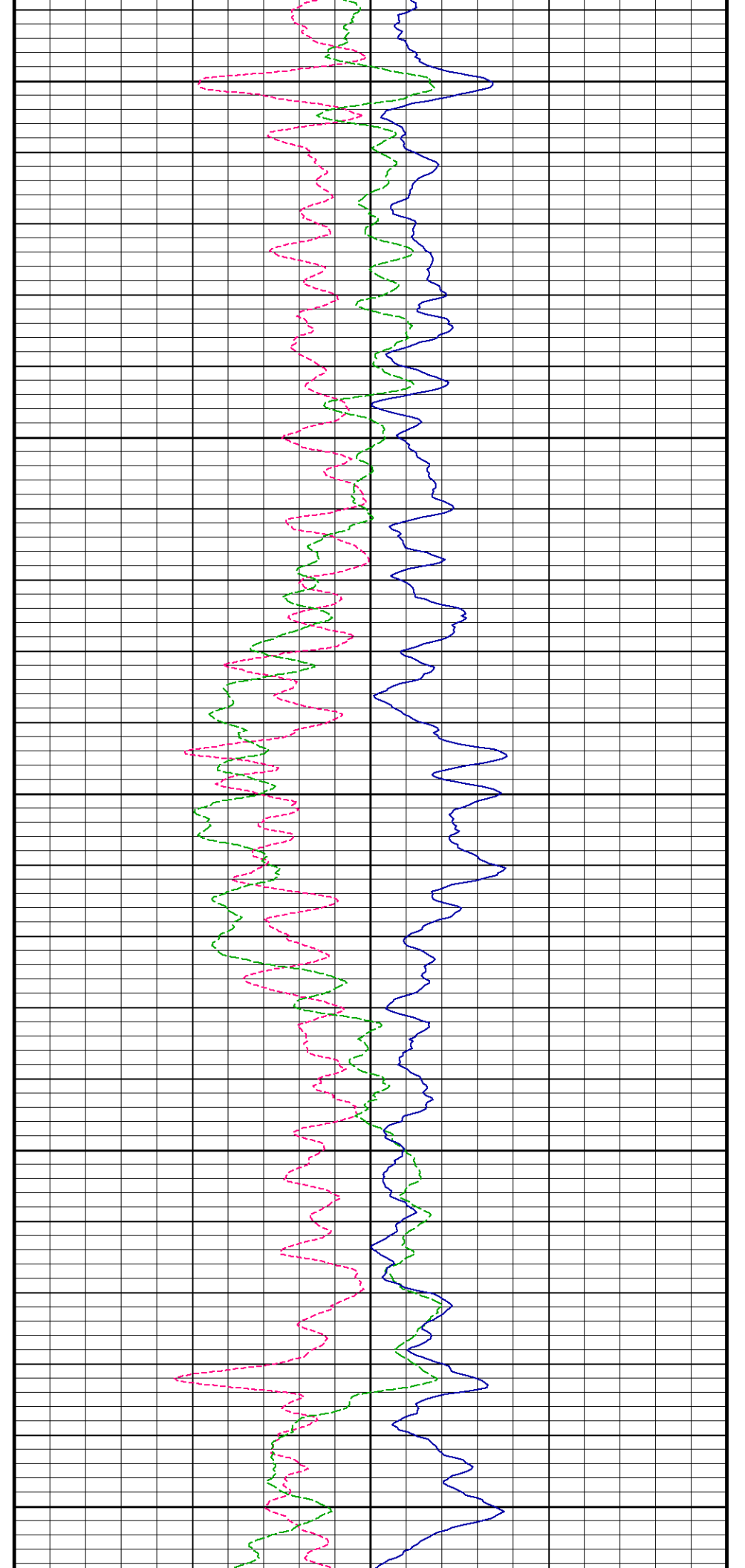
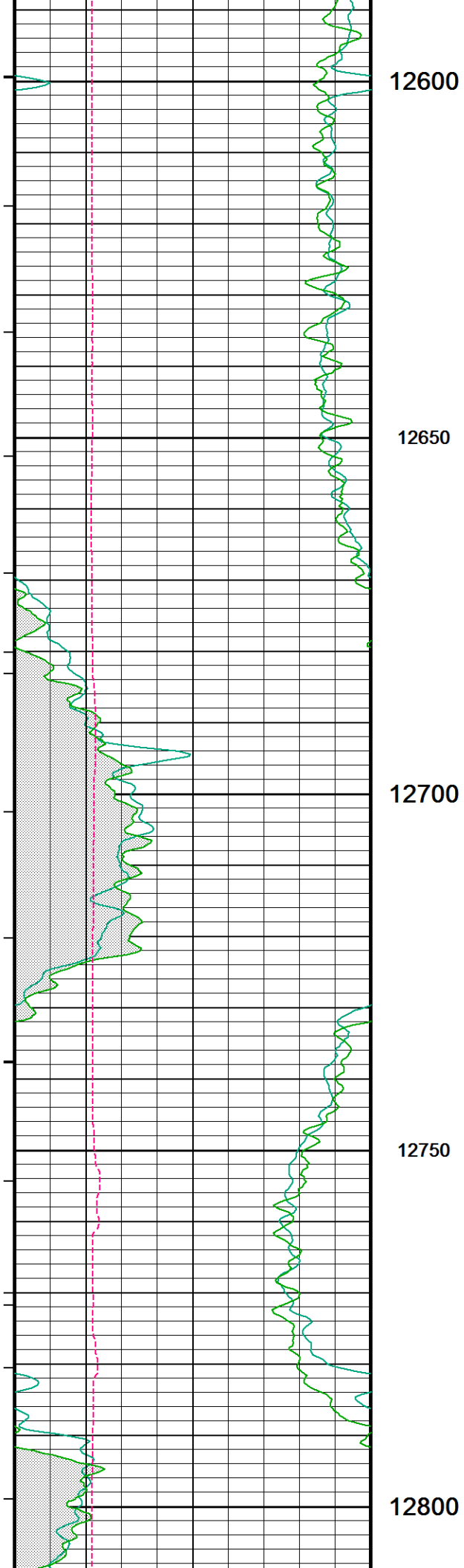
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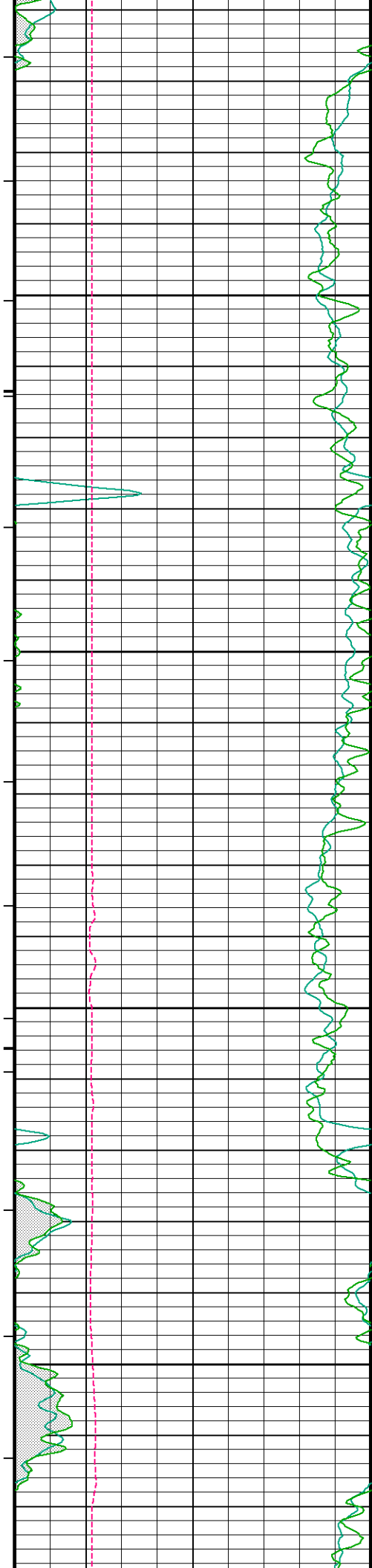
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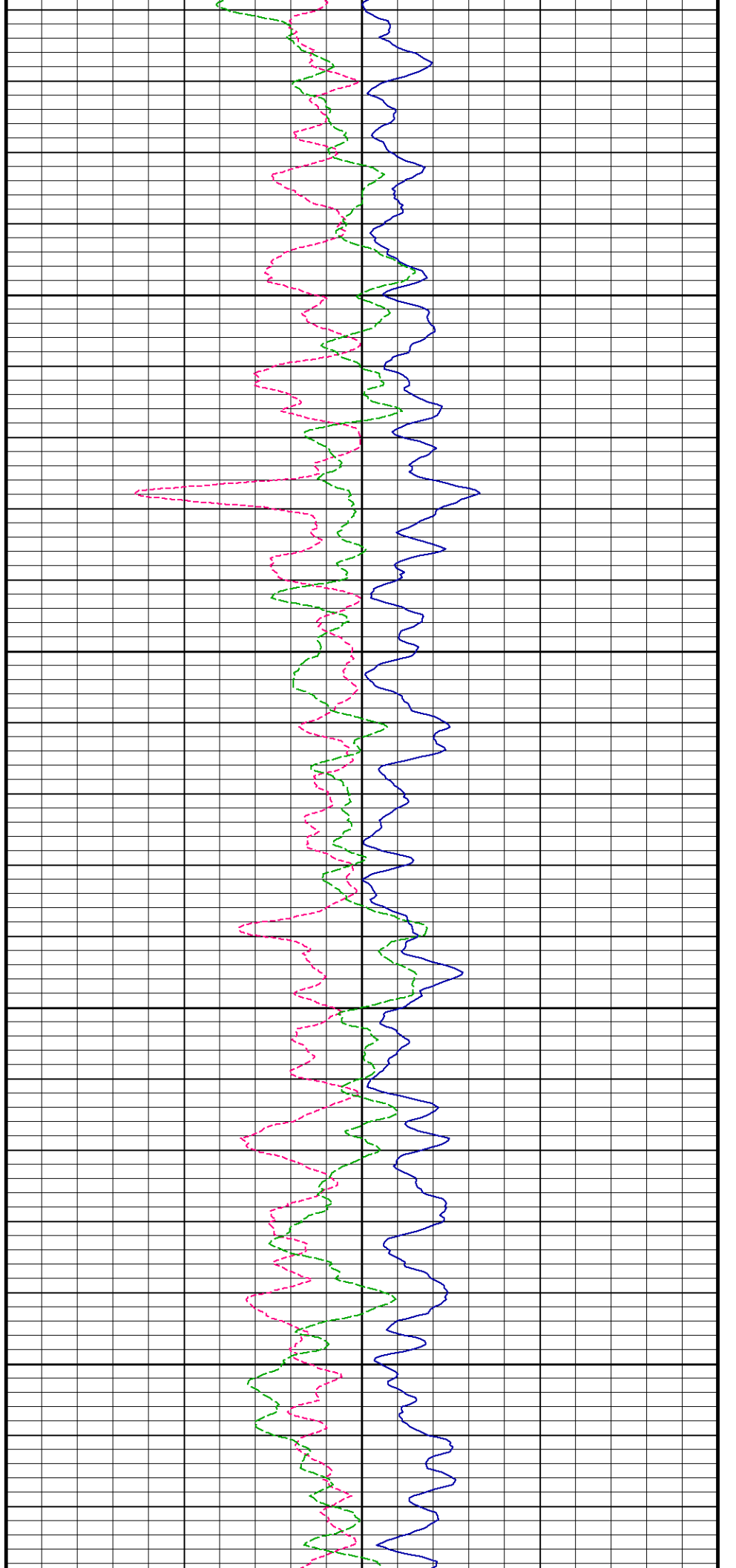


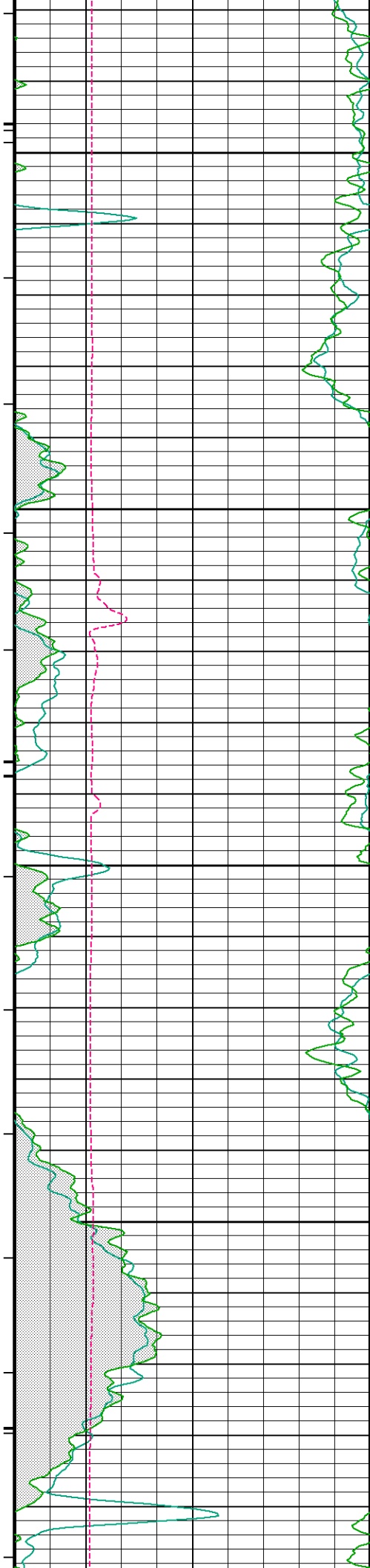
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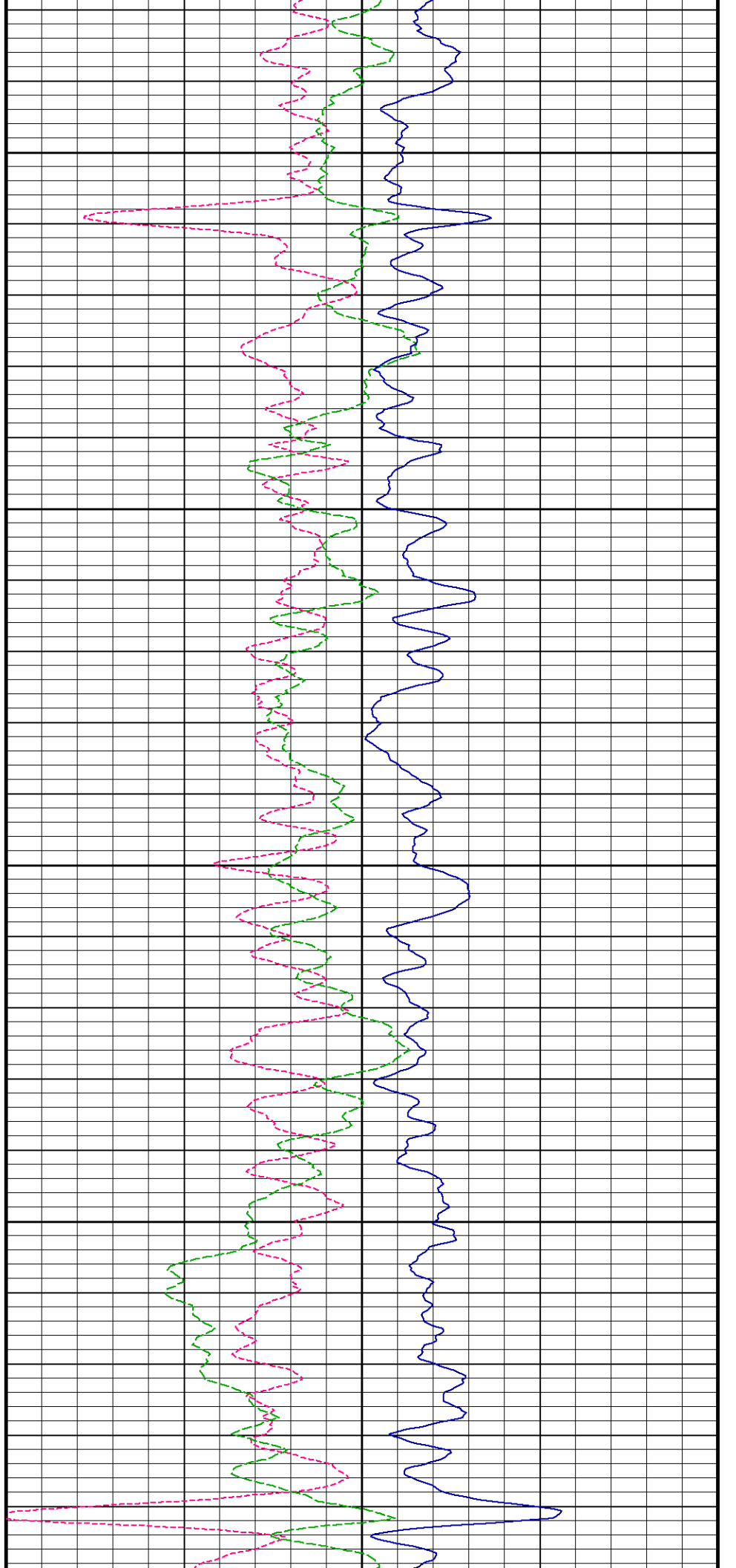


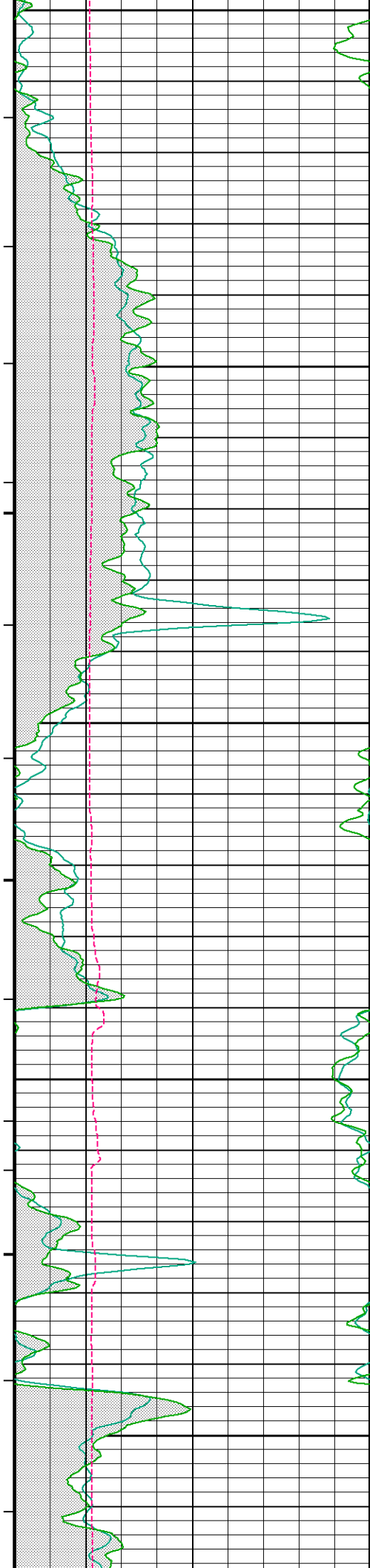
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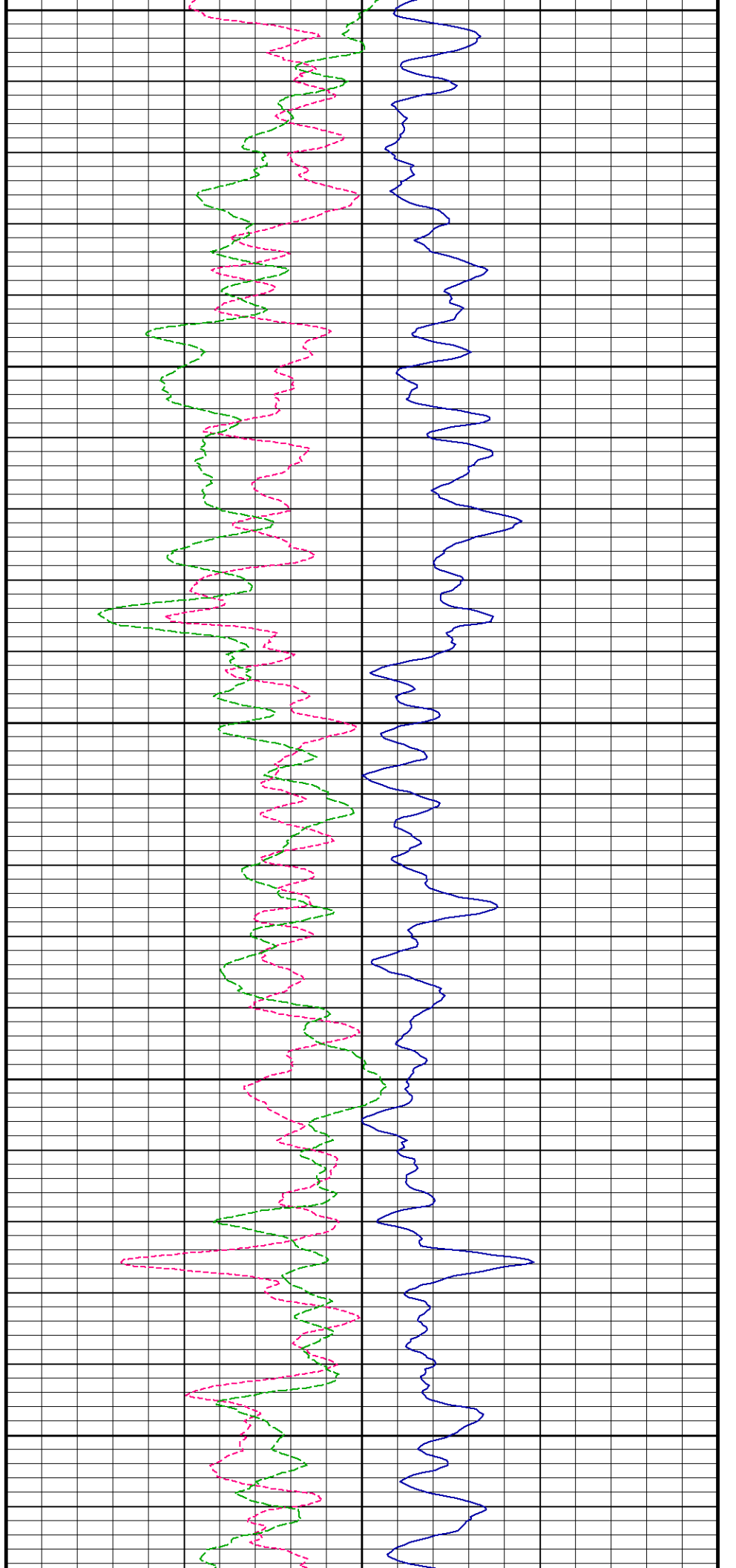
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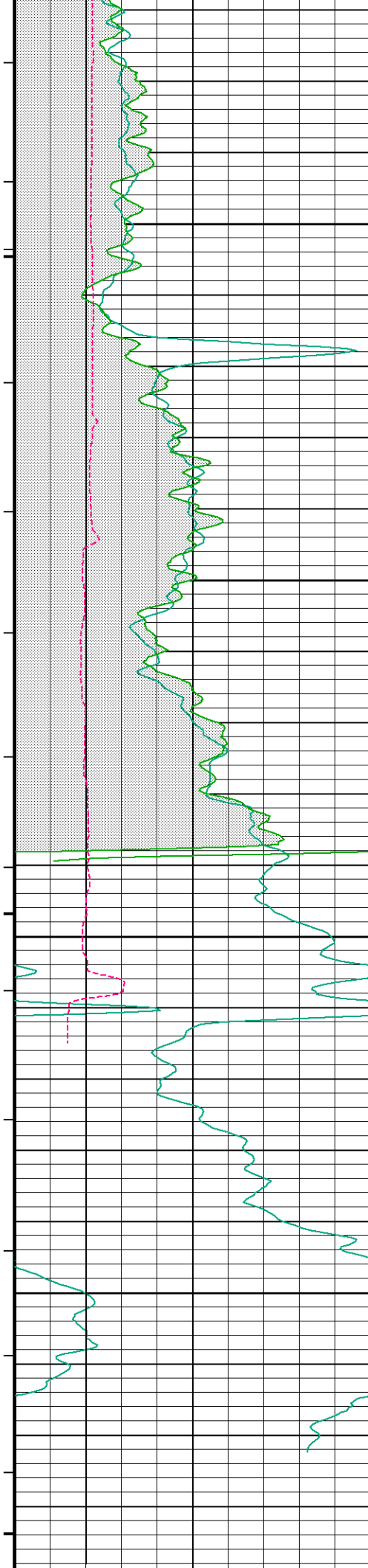
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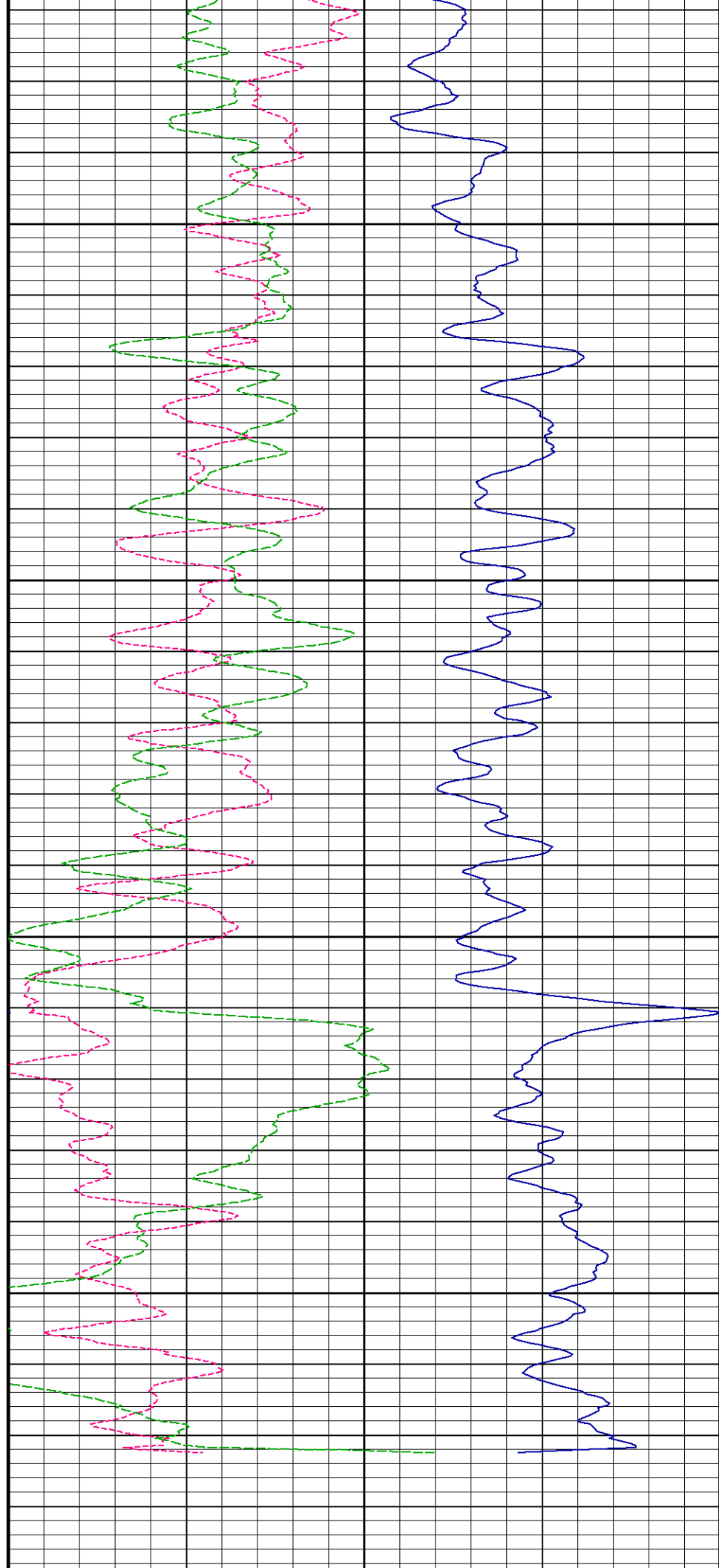


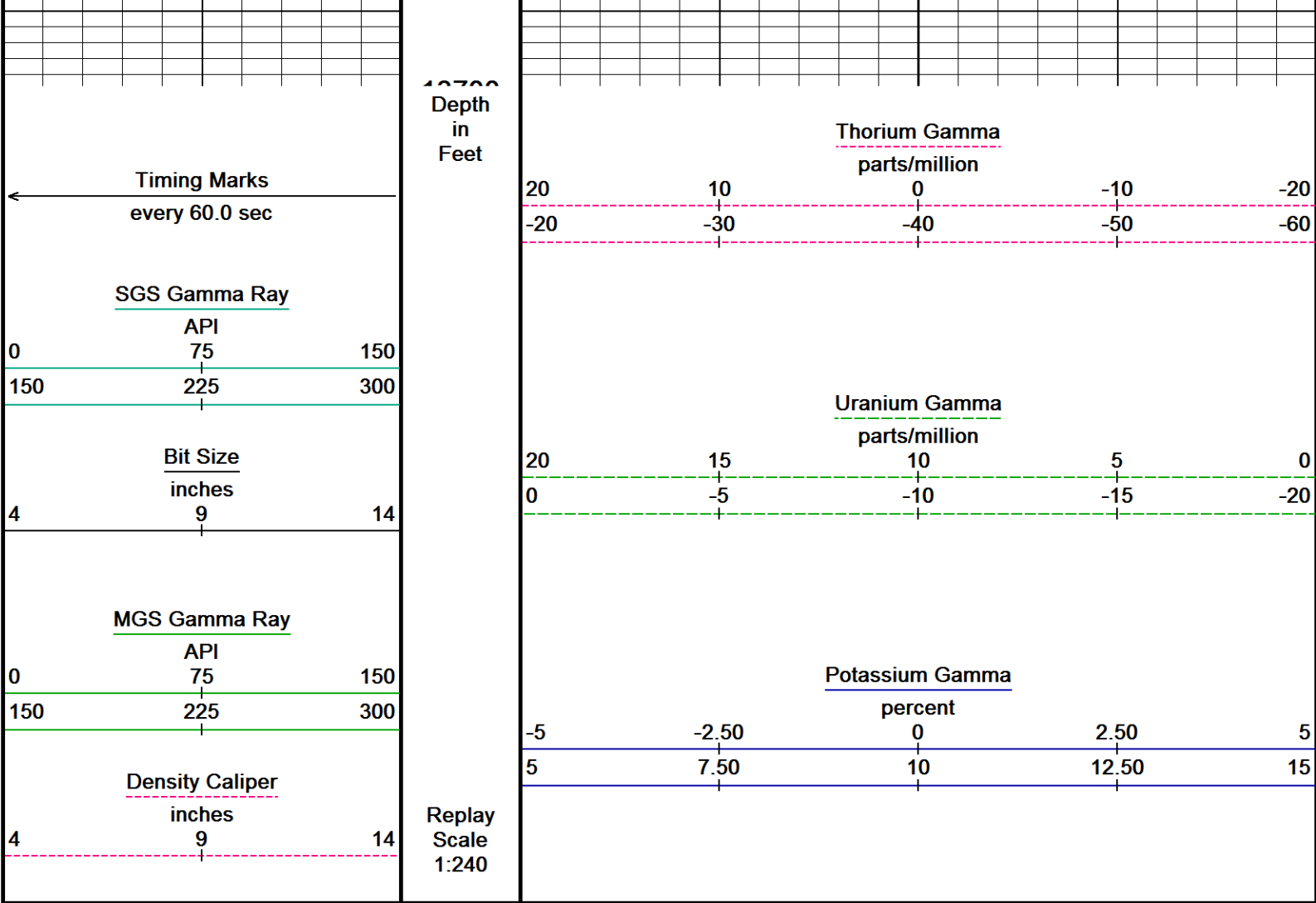
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Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\LOGS\WHITING\Horsetail 30F-1943\MMS Depth.dta
System Versions: Logged with 14.01.3220 Processed with 14.01.3220 Plotted with 14.01.3220

Plotted on 11-OCT-2014 12:23
Recorded on 11-OCT-2014 10:59

↑ 5 INCH MAIN LOG ↑

BEFORE SURVEY CALIBRATION		
C:\LOGS\WHITING\Horsetail 30F-1943\MMS Depth.dta		
General Constants All 000		Last Edited on 11-OCT-2014,09:40
General Parameters		
Mud Resistivity	1.650	ohm-metres
Mud Resistivity Temperature	63.700	degrees F
Water Level	0.000	feet
Borehole Fluid Processing	Wet Hole	
Hole/Annular Volume and Differential Caliper Parameters		
HVOL Method	Single Caliper	
HVOL Caliper 1	Density Caliper	
HVOL Caliper 2	N/A	
Annular Volume Diameter	4.500	inches
Caliper for Differential Caliper	Density Caliper	
Rwa Parameters		
Porosity used	N/A	
Resistivity used	N/A	
RWA Constant A	N/A	
RWA Constant M	N/A	
SW/APOR Tool Source	0.000	

	Measured	Calibrated (API)
Background	176	125
Calibrator (Gross)	1026	727
Calibrator (Net)	849	602

Gamma Constants MGS-D.A 220		Last Edited on 09-OCT-2014,19:14	
Gamma Calibrator Number	GRC-224		
Mud Density	1.22	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl		kppm	
K Mud Type	Chloride		
K Mud Concentration	0.29	%	

Caliper Calibration MIE-A.J 244			Base Calibration on 25-JUL-2014 11:44 Field Calibration on 02-OCT-2014 16:29		
Base Calibration					
Reading No	Pads 1-5 Meas.	Pads 3-7 Meas.	Calibrator Size (in)		
1	26004	25378	5.97		
2	36167	35519	7.96		
3	46431	45371	9.86		
4	57324	56752	11.92		
5	0	0	0.00		
Reading No	Pad 2 Meas.	Pad 4 Meas.	Pad 6 Meas.	Pad 8 Meas.	Calibrator Size (in)
1	26012	25269	23347	25203	5.97
2	34599	33642	31769	34020	7.96
3	42691	41621	39973	42619	9.86
4	52950	51129	49036	52308	11.92
5	0	0	0	0	0.00
Field Calibration					
	Measured Pads 1-5 Caliper(in)	Measured Pads 3-7 Caliper(in)	Actual Caliper(in)		
	5.84	5.85	5.97		
	Measured Pad 2 Caliper(in)	Measured Pad 4 Caliper(in)	Measured Pad 6 Caliper(in)	Measured Pad 8 Caliper(in)	Actual Caliper(in)
	2.81	2.98	3.15	3.00	5.97

Caliper Constants MIE-A.J 244		Last Edited on 25-JUL-2014,11:39	
Caliper Difference for BRKT	0.120	inches	

Accelerometer Parameters MIE-A.J 244			
Date Of Last Accelerometer Calibration	13-FEB-2013,14:31		
	X Accelerometer	Y Accelerometer	Z Accelerometer
Slope	-1.103572	-1.107641	-1.103778
Offset	-0.006989	0.006286	-0.003996

Accelerometer Constants MIE-A.J 244			Last Edited on 02-OCT-2014,16:25		
Accelerometer Calibrator Number		000			
Accelerometer Temperature Characterisation					
X Accelerometer					
Serial Number		1016			
Calibration Date		12-Apr-2011			
	B0	B1	B2	B3	
Bias(g)	0.00000e+000	1.93698e-005	-7.60293e-010	6.54727e-011	
	SF0	SF1	SF2	SF3	
Scale Factor(mA/g)	3.00000e+000	2.59257e-004	6.13375e-007	-3.90888e-010	
Y Accelerometer					
Serial Number		973			
Calibration Date		19-Jan-2011			
	B0	B1	B2	B3	
Bias(g)	0.00000e+000	1.95276e-005	-1.88058e-008	2.74122e-010	
	SF0	SF1	SF2	SF3	
Scale Factor(mA/g)	3.00000e+000	2.75268e-004	3.53140e-007	7.52116e-010	
Z Accelerometer					

Serial Number	1032					
Calibration Date	18-Apr-2011					
	B0	B1	B2	B3		
Bias(g)	0.00000e+000	-1.14960e-005	3.94288e-009	8.97135e-011		
	SF0	SF1	SF2	SF3		
Scale Factor(mA/g)	3.00000e+000	2.88058e-004	2.44833e-007	8.38007e-010		
Magnetometer Parameters MIE-A.J 244						
Date Of Last Magnetometer Calibration		22-AUG-2013,09:56				
	X Magnetometer	Y Magnetometer	Z Magnetometer			
Slope	-1.000000	-1.011965	-0.991340			
Offset	0.010303	-0.015788	0.008269			
Magnetometer Constants MIE-A.J 244				Last Edited on		
Magnetometer Calibrator Number		000				
Navigation Constants MIE-A.J 244				Last Edited on 10-OCT-2014,22:11		
Magnetic Declination		7.92	degrees	East		
Imager Pad Check MIE-A.J 244				Field Check on		
Pad 1	Pad Not Tested	Pad 5	Pad Not Tested			
Pad 2	Pad Not Tested	Pad 6	Pad Not Tested			
Pad 3	Pad Not Tested	Pad 7	Pad Not Tested			
Pad 4	Pad Not Tested	Pad 8	Pad Not Tested			
Compact Micro Imager Constants MIE-A.J 244				Last Edited on 25-JUL-2014,11:39		
Sonde Configuration		Imager Mode				
Arm-Pad Kit	Normal Pads (12.25 in)					
Arm-Pad Kit Serial Number						
Centre Pad 1 Rotational Offset	0.00	degrees				
Image/Borehole Ovality Reference	Azimuth of Pad 1					
Non Active Buttons	Omit					
Search Angle	0.00	degrees				
Correlation Interval	3.28	feet				
Correlation Step	1.64	feet				
Current Offset	0.0000	mAmp				
Squasher Start	0.0500	mAmp				
Image Processing	Enabled					
Caliper Calibration MPD-C.J 378				Base Calibration on 01-OCT-2014 12:42 Field Calibration on 09-OCT-2014 18:46		
Base Calibration						
Reading No	Measured	Calibrator Size (in)				
1	12771	4.01				
2	21027	5.97				
3	29312	7.96				
4	37448	9.86				
5	46707	11.92				
6	N/A	N/A				
Field Calibration						
	Measured Caliper (in)	Actual Caliper (in)				
	7.93	7.96				
Spectral Gamma Calibration SGS-E.J 128				Base Calibration on 25-SEP-2014 17:21 Field Calibration on 03-OCT-2014 16:24		
Base Calibration						
Potassium Calibrator		Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	106.5	36.9	3.8	1.4	2.3	
Calibrator (Gross)	234.7	121.4	29.0	1.5	2.4	
Calibrator (Net)	128.2	84.5	25.2	0.1	0.1	
	K %	U ppm	Th ppm			
Concentrations	5.9	0.0	0.0			
Uranium Calibrator						

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	106.5	36.9	3.8	1.4	2.3
Calibrator (Gross)	561.8	196.8	17.3	11.1	5.9
Calibrator (Net)	455.4	159.9	13.5	9.7	3.6

	K %	U ppm	Th ppm
Concentrations	0.0	16.6	0.0

Thorium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	106.5	36.9	3.8	1.4	2.3
Calibrator (Gross)	424.1	156.4	12.6	6.6	17.3
Calibrator (Net)	317.6	119.5	8.8	5.2	14.9

	K %	U ppm	Th ppm
Concentrations	0.0	0.0	44.7

Mixture Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	106.5	36.9	3.8	1.4	2.3
Calibrator (Gross)	906.0	369.5	48.4	14.6	19.8
Calibrator (Net)	799.6	332.5	44.6	13.2	17.5

Field Calibration

Gamma Ray

	Measured	Calibrated (API)
Background	157	31
Calibrator (Gross)	1356	271
Calibrator (Net)	1199	240

Mixture Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	105.4	35.9	3.8	1.4	2.2
Calibrator (Gross)	900.9	365.2	48.3	14.3	19.5
Calibrator (Net)	795.4	329.3	44.5	12.9	17.3

Spectral Gamma Constants SGS-E.J 128

Last Edited on 09-OCT-2014,19:31

Background Calibrator Number	440	
Mixture Calibrator Number	450	
Potassium Calibrator Number	500	
Uranium Calibrator Number	506	
Thorium Calibrator Number	503	
Mud Density	1.22	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.29	%

DOWNHOLE EQUIPMENT

C:\LOGS\WHITING\Horsetail 30F-1943\MMS Depth.dta

Shuttle Running Tool 3.5"
SRT-A.A 59 LG: 6.62 ft WT: 37.5 lb OD: 2.520 in

Compact Linker 400 EXT
MLK-A 2 LG: 14.23 ft WT: 30.9 lb OD: 2.240 in

Compact Linker 200 STD
MLK-A 1 LG: 8.52 ft WT: 30.9 lb OD: 2.240 in

SHA-J.A Compact Swivel Head Adaptor
SHA-J.A 397 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

SKJ-E.A Compact Knuckle Joint



SKJ-E.A 245 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

MIS-E.B Compact Inline Standoff sub

MIS-E.B 662 LG: 2.14 ft WT: 15.4 lb OD: 2.244 in

MBS-F.A 200v Compact Battery Sub

MBS-F.A 123 LG: 17.06 ft WT: 123.5 lb OD: 2.240 in

Compact Memory Sub F.A

MMS-F.A 246 LG: 5.20 ft WT: 37.5 lb OD: 2.244 in

Compact Tool Isolator sub.

MTI-C.A 146 LG: 1.54 ft WT: 13.2 lb OD: 2.244 in

Compact Short Gamma

MGS-D.A 220 LG: 3.41 ft WT: 24.3 lb OD: 2.244 in

Compact Collar Locator

MCL-C.A 129 LG: 3.17 ft WT: 26.5 lb OD: 2.244 in

SKJ-E.B Compact Knuckle Joint

SKJ-E.B 610 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

SHA-J.A Compact Swivel Head Adaptor

SHA-J.A 314 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

MIS-D.B Compact Inline Bowspring sub

MIS-D.B 695 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

Compact Neutron

MDN-B.J 372 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper

MPD-C.J 378 LG: 9.59 ft WT: 90.4 lb OD: 2.244 in

MIS-D.B Compact Inline Bowspring sub

MIS-D.B 734 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

SHA-J.B Compact Swivel Head Adaptor

SHA-J.B 682 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

SKJ-E.B Compact Knuckle Joint

SKJ-E.B 537 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

MIS-E.A Compact Inline Standoff sub

MIS-E.A 363 LG: 2.14 ft WT: 15.4 lb OD: 2.244 in

SKJ-E.A Compact Knuckle Joint

SKJ-E.A 410 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

MIS-D.B Compact Inline Bowspring sub

MIS-D.B 698 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

Compact MMI Memory Section

MIM-A.J 244 LG: 4.65 ft WT: 26.5 lb OD: 2.244 in

Compact MMI Electrode Section

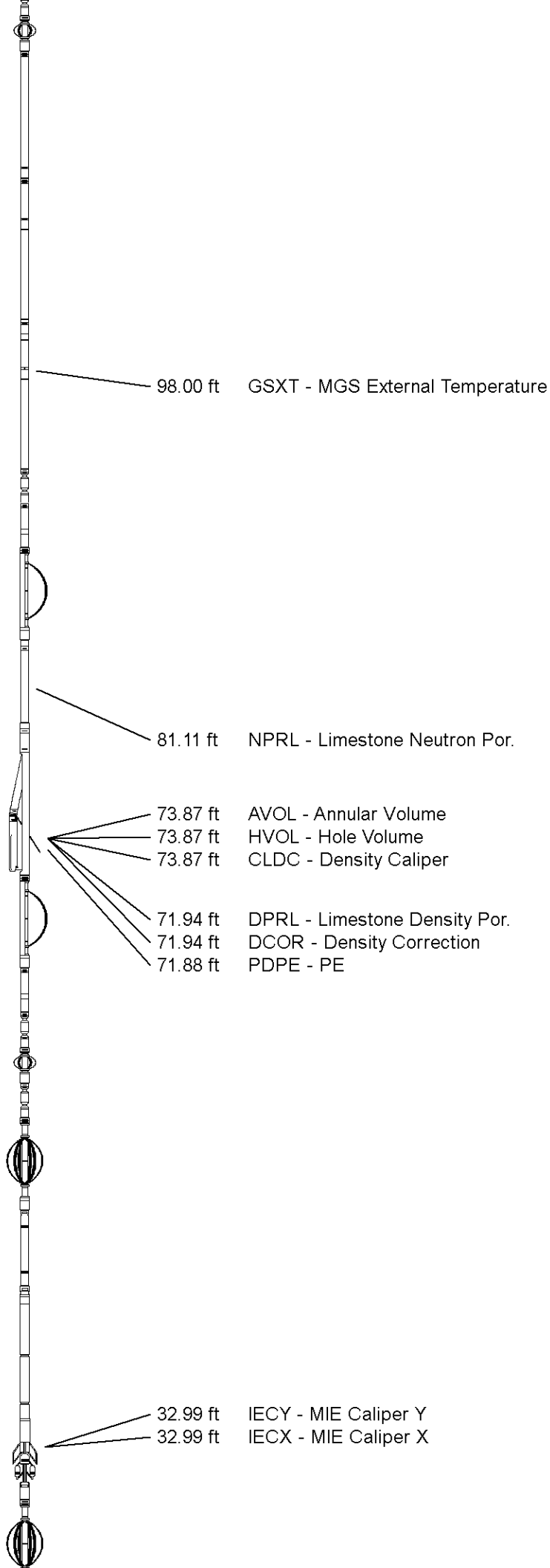
MIE-A.J 244 LG: 13.96 ft WT: 99.2 lb OD: 4.094 in

MIS-D.B Compact Inline Bowspring sub

MIS-D.B 810 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

SKJ-E.A Compact Knuckle Joint

SKJ-E.A 203 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in



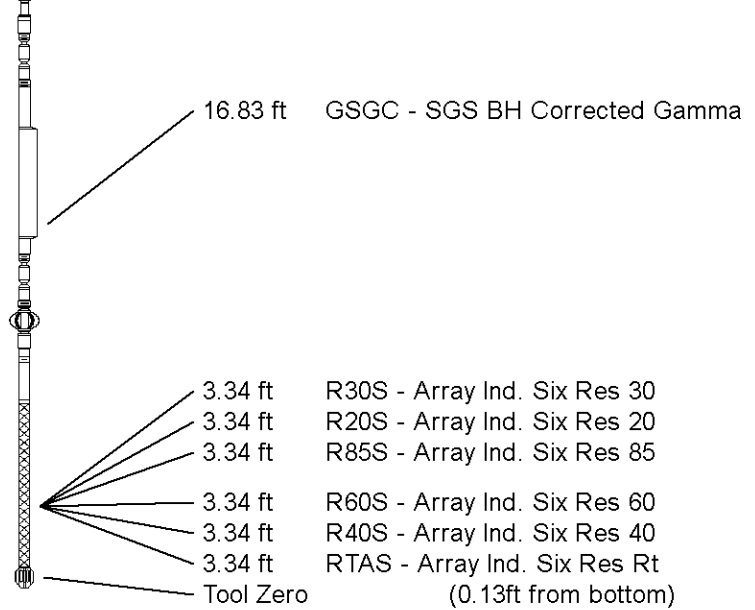
Spectral Gamma Ray Sub
SGS-E.J 128 LG: 7.78 ft WT: 105.8 lb OD: 3.543 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 611 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

MIS-E.B Compact Inline Standoff sub
MIS-E.B 695 LG: 2.14 ft WT: 15.4 lb OD: 2.244 in

Compact Induction
MAI-B.A 289 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 160.68 ft Weight: 1135.4 lb



COMPANY	WHITING OIL AND GAS CORPORATION
WELL	HORSETAIL 30F-1943
FIELD	REDTAIL
PROVINCE/COUNTY	WELD
COUNTRY/STATE	U.S.A. / COLORADO

Elevation Kelly Bushing	4797.00	feet	First Reading	13671.00	feet
Elevation Drill Floor	4797.00	feet	Depth Driller	13702.00	feet
Elevation Ground Level	4780.00	feet	Depth Logger	13702.00	feet



MEASURED DEPTH
SPECTRAL GAMMA RAY LOG

Weatherford®