MEASURED DEPTH
SPECTRAL GAMMA RAY
LOG

Weatherford®

COMPANY	WHITING OIL AND GAS CORPORATION
WELL	HORSETAIL 29G-2012B
FIELD	REDTAIL
PROVINCE/COUNTY	WELD
COUNTRY/STATE	U.S.A. / COLORADO
LOCATION	SHL: 2328 FNL & 1888 FWL
PERMIT NUMBER	BHL: 100 FNL & 1485 FWL

SEC	TWP	RGE	Other Services
29	10N	57W	MICRO IMAGER
			ARRAY INDUCTION
API Number	05-123-38804		NEUTRON/DENSITY

Permanent Datum G.L., Elevation 4694 feet
Log Measured From KB
Drilling Measured From K.B. @ 18 FEET

Elevations:	feet
KB	4712.00
DF	4712.00
GL	4694.00

Date	26-OCT-2014				
Run Number	ONE				
Service Order	6551-101540329				
Depth Driller	13700.00	feet			
Depth Logger	13700.00	feet			
First Reading	13668.00	feet			
Last Reading	5962.00	feet			
Casing Driller	5981.00	feet			
Casing Logger	5982.00	feet			
Bit Size	6.000	inches			
Hole Fluid Type	WBM				
Density / Viscosity	10.60 lb/USg		44.00 type in		
PH / Fluid Loss	8.40		5.60 ml/30Min		
Sample Source	FLOWLINE				
Rm @ Measured Temp	1.88 @ 86.6	ohm-m			
Rmf @ Measured Temp	1.50 @ 86.6	ohm-m			
Rmc @ Measured Temp	2.26 @ 86.6	ohm-m			
Source Rmf / Rmc	CALC		CALC		
Rm @ BHT	0.79 @210.0	ohm-m			
Time Since Circulation	1 HOUR				
Max Recorded Temp	216.00	deg F			
Equipment / Base	18086		Casper		
Recorded By	C CULLEN				
Witnessed By	M ODEBERG			GEOLOGIST	
WSL				WSL	

BOREHOLE RECORD

Last Edited: 26-OCT-2014 09:16

Bit Size (inches)	Depth From (feet)	Depth To (feet)
6.000	5981.00	13700.00

CASING RECORD

Type	Size (inches)	Depth From (feet)	Shoe Depth (feet)	Weight (pounds/ft)
SURFACE	7.000	0.00	5981.00	29.00

REMARKS

LOGGED WITH WLS 14.01.3220

LOGGED USING MESSAGER SHUTTLE METHOD OF DEPLOYMENT

HARDWARE:
MDN: MIS-A SINGLE 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

ANNULAR HOLE VOLUME FROM TD TO 7"-29# CASING AT 5982 FEET = 660 CUBIC FEET.
TOTAL HOLE VOLUME FROM TD TO 7"-29# CASING AT 5982 FEET = 1510 CUBIC FEET.

OPERATORS: S LANDON, J GERDES

OPERATORS: S.LANDON, J. GERDES

RIG: PIONEER 54

5 INCH MAIN LOG

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 27-OCT-2014 19:08

Filename: D:\Logs\Whiting\HORSETAIL 29G-2012B\MMS DEPTH.dta — Recorded on 27-OCT-2014 17:11

System Versions: Logged with 14.01.3220 Processed with 14.01.3220 Plotted with 14.01.3220

Timing Marks
every 60.0 sec

SGS Gamma Ray
API
0 150 300
300 450 600

Bit Size
inches
4 9 14

MGS Gamma Ray
API
0 150 300
300 450 600

Density Caliper
inches
4 9 14

Depth in Feet

Replay Scale 1:240

5960

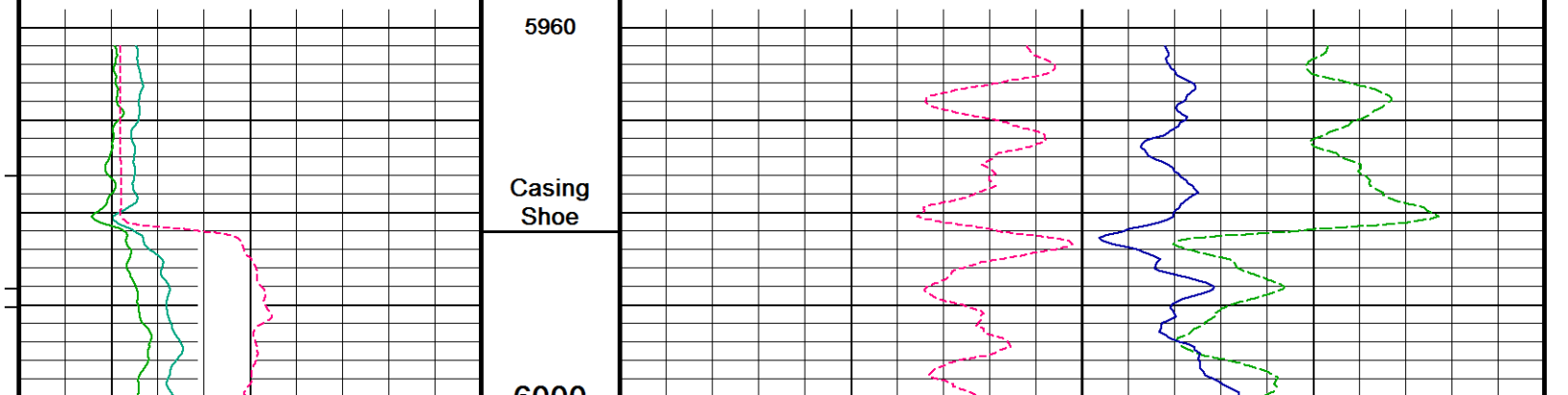
Casing Shoe

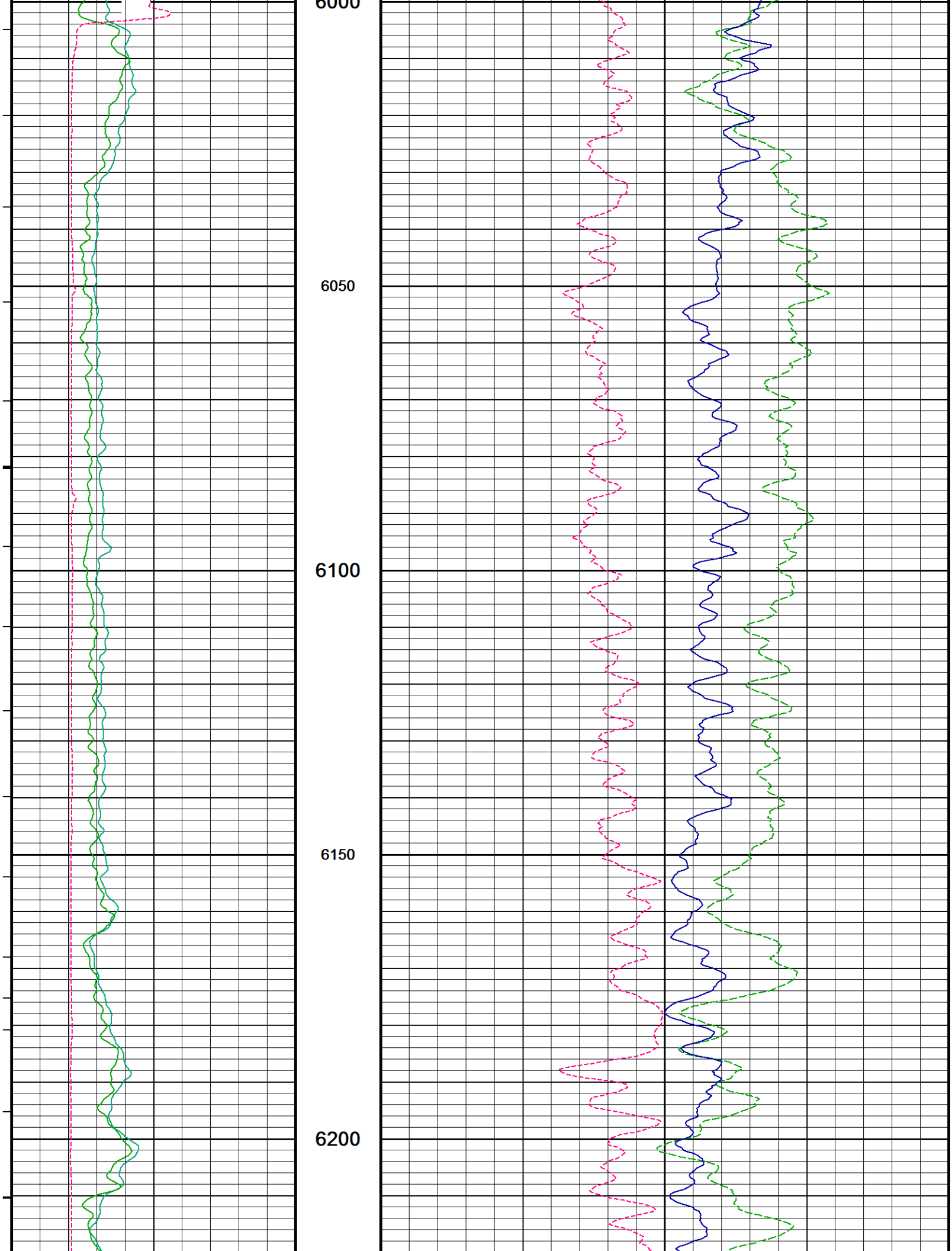
6000

Thorium Gamma
parts/million
20 10 0 -10 -20
-20 -30 -40 -50 -60

Uranium Gamma
parts/million
20 15 10 5 0
0 -5 -10 -15 -20

Potassium Gamma
percent
-5 -2.50 0 2.50 5
5 7.50 10 12.50 15

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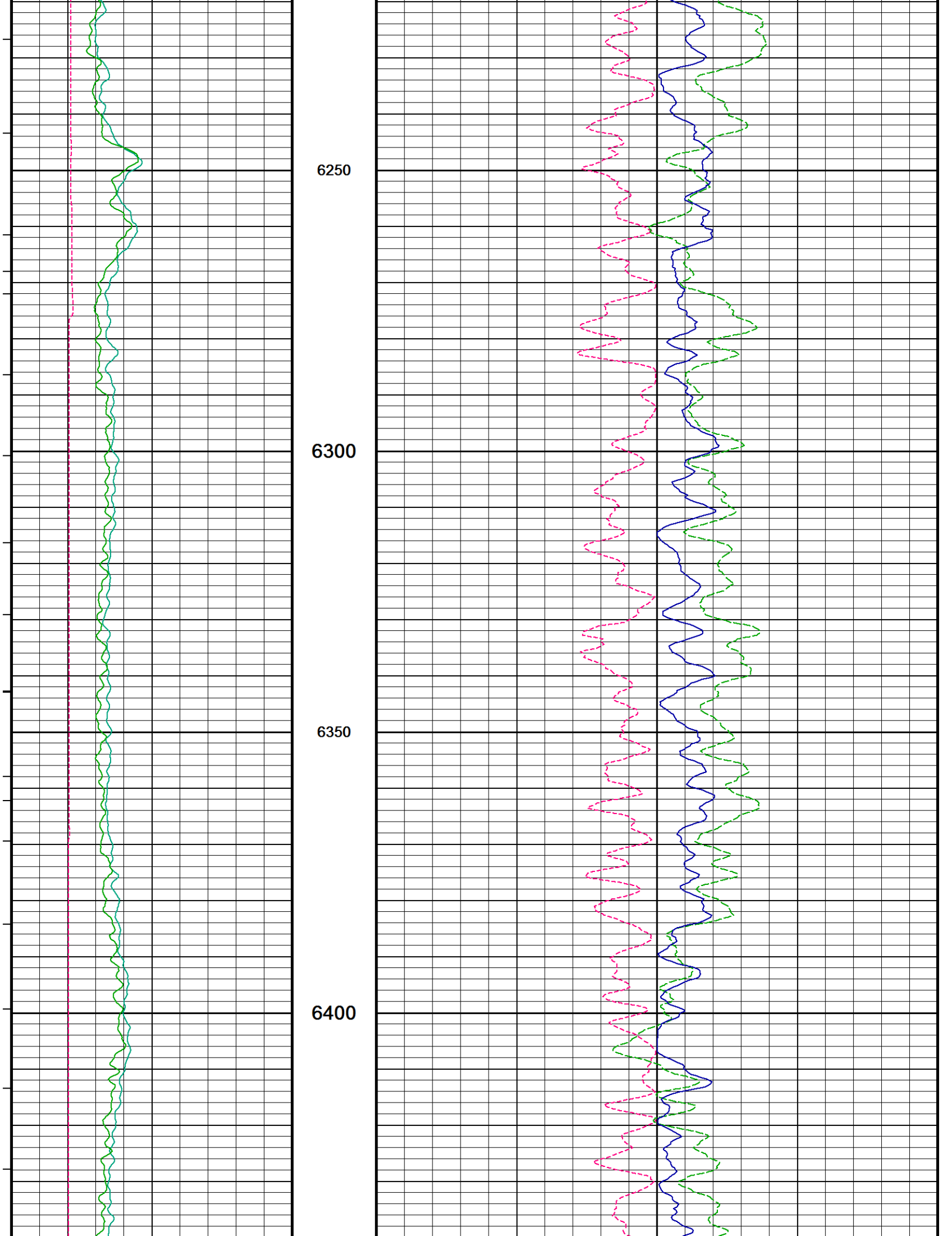
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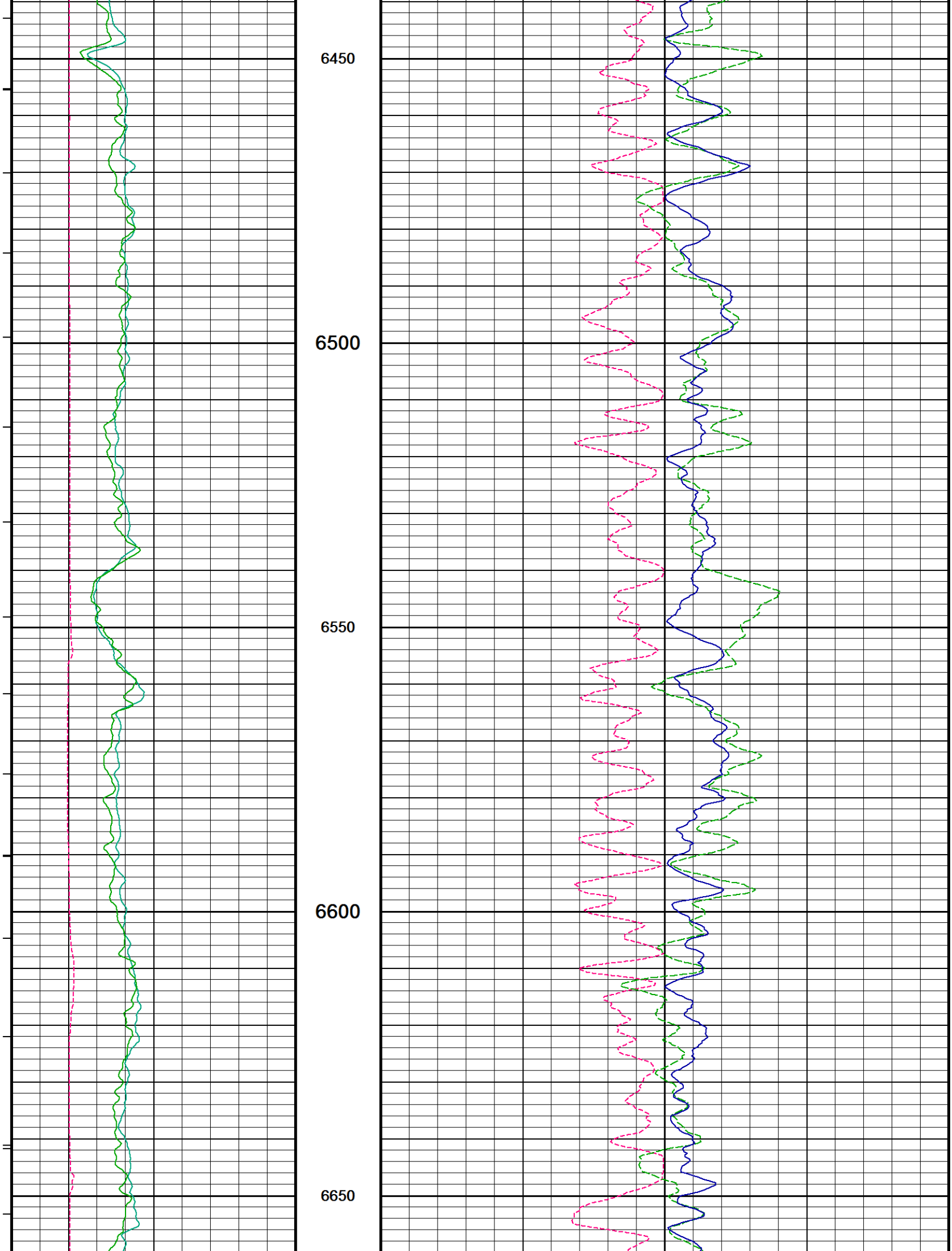
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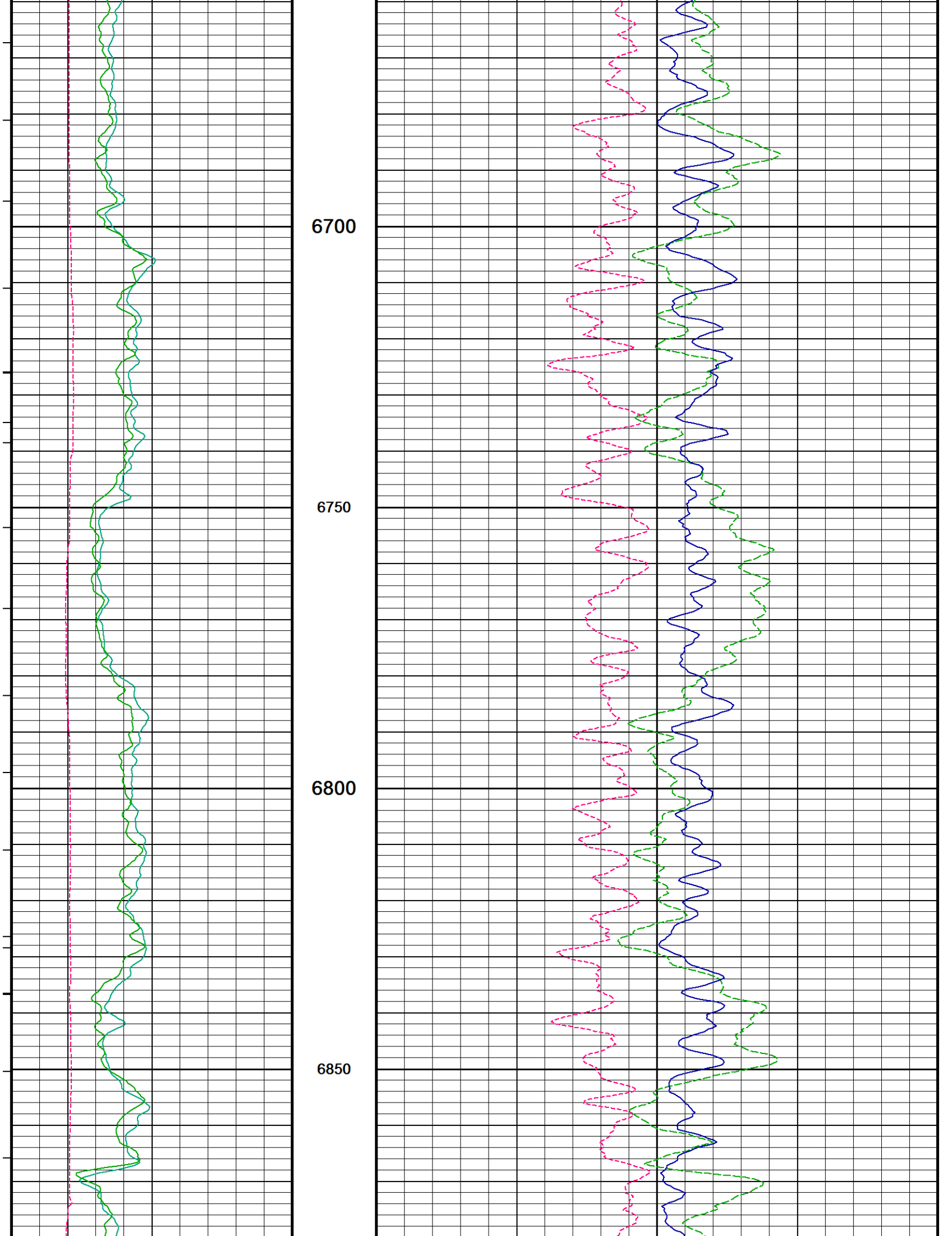
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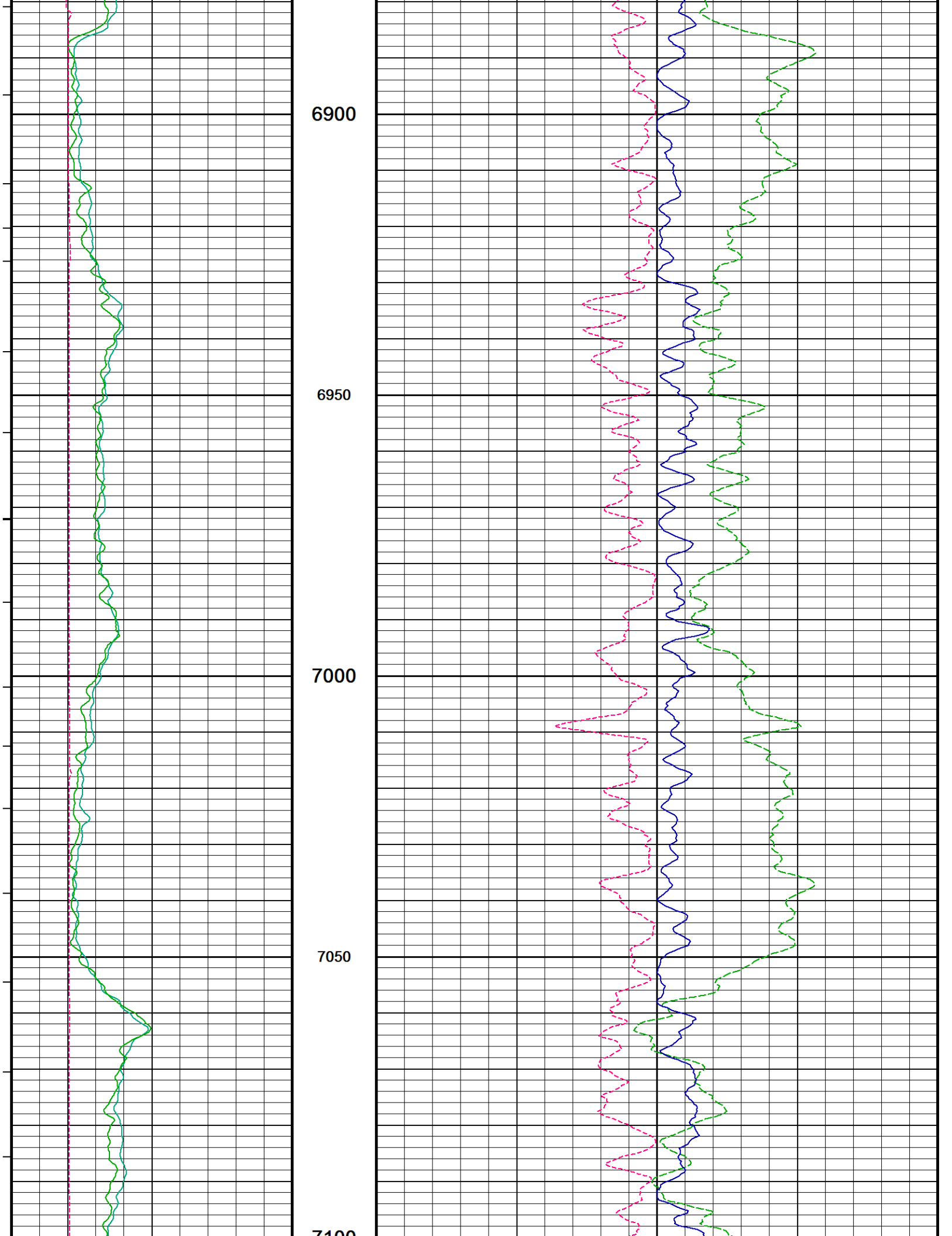
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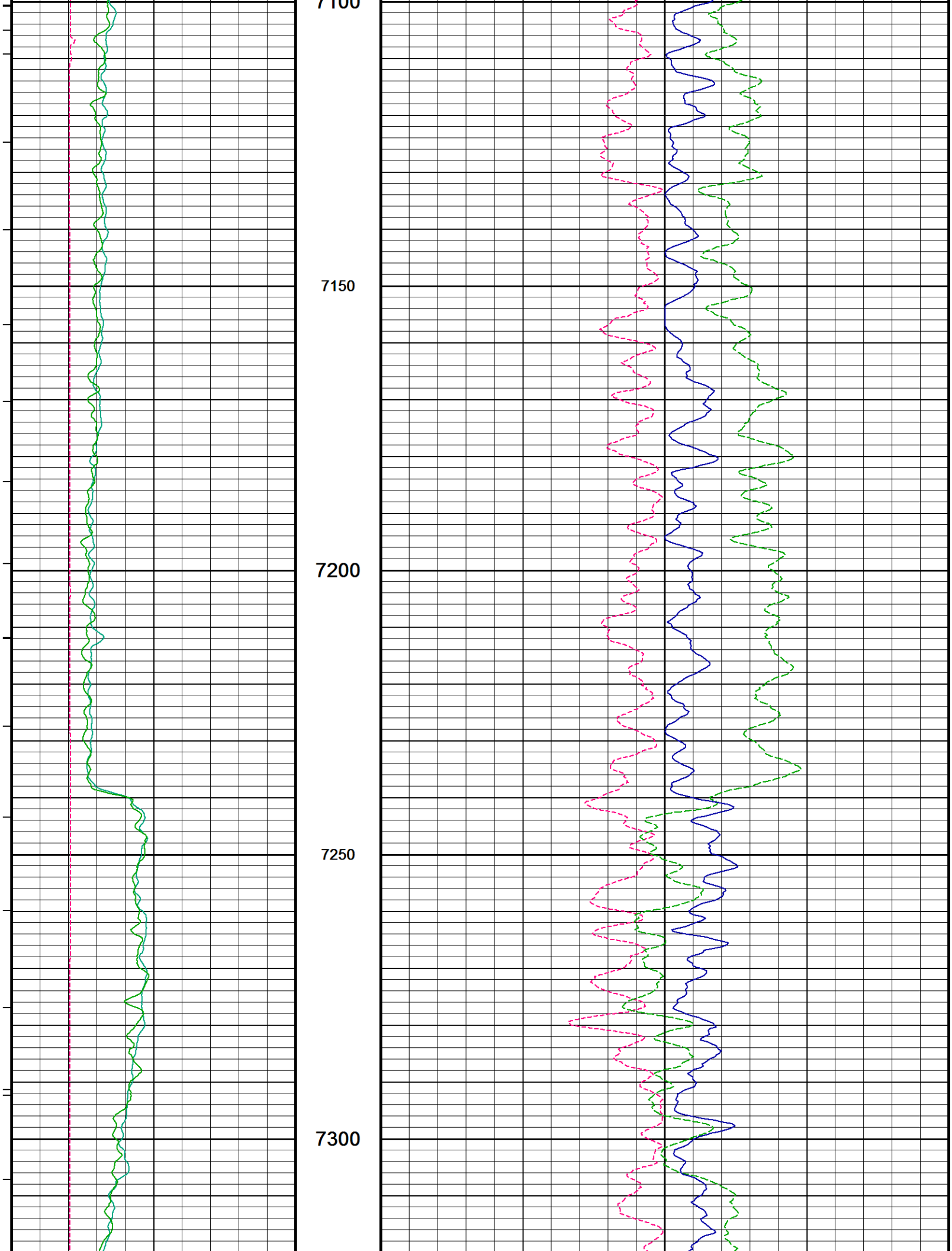
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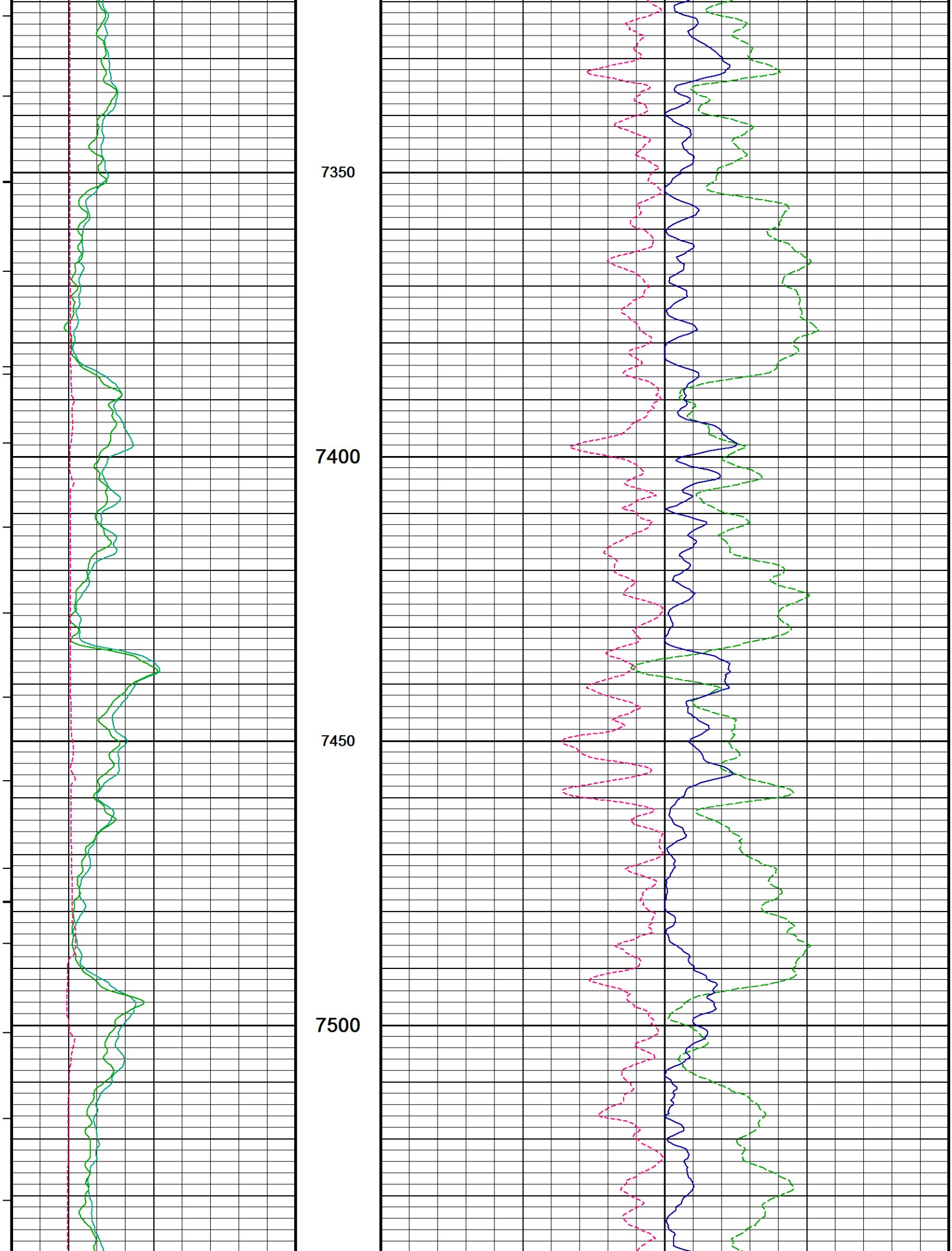
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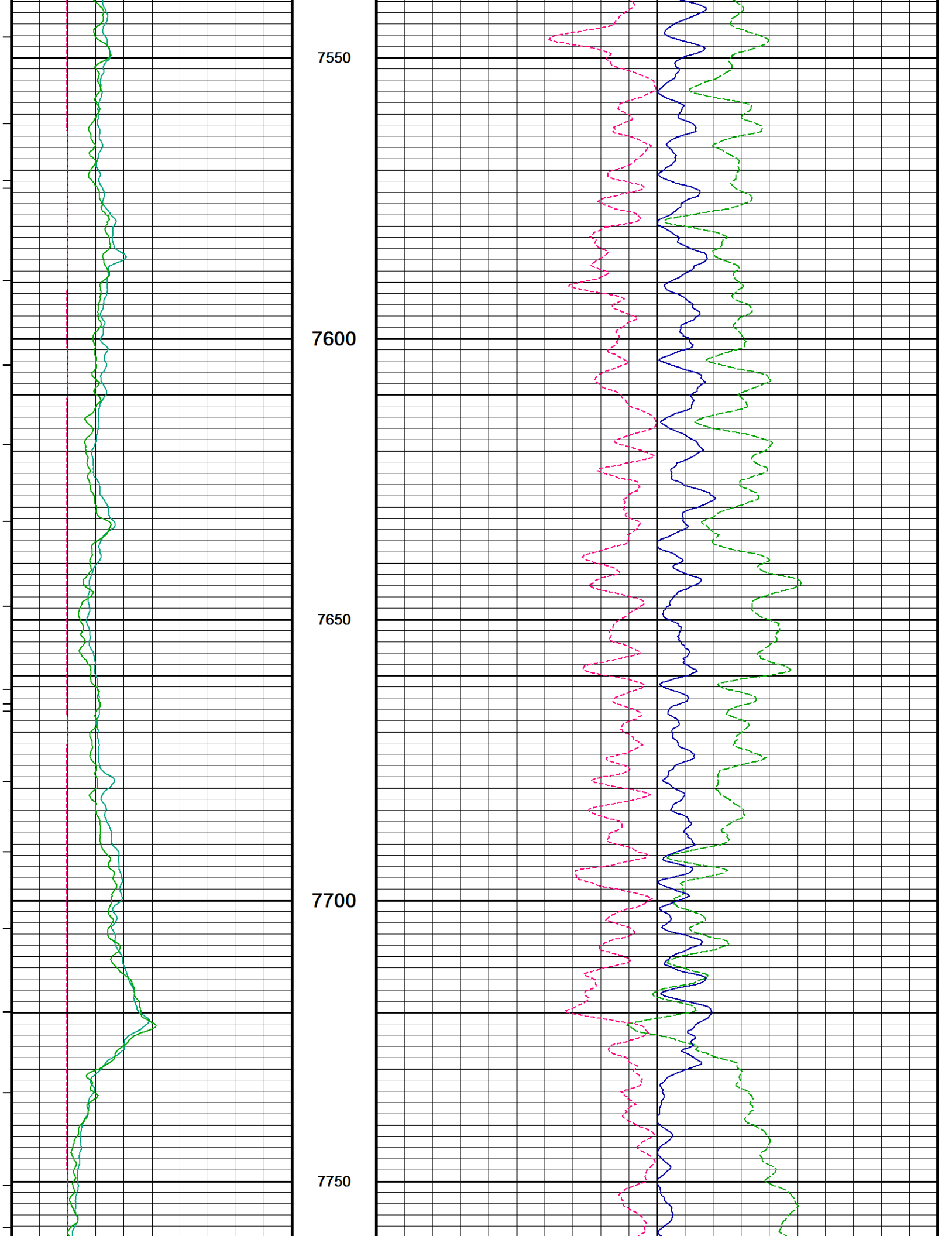
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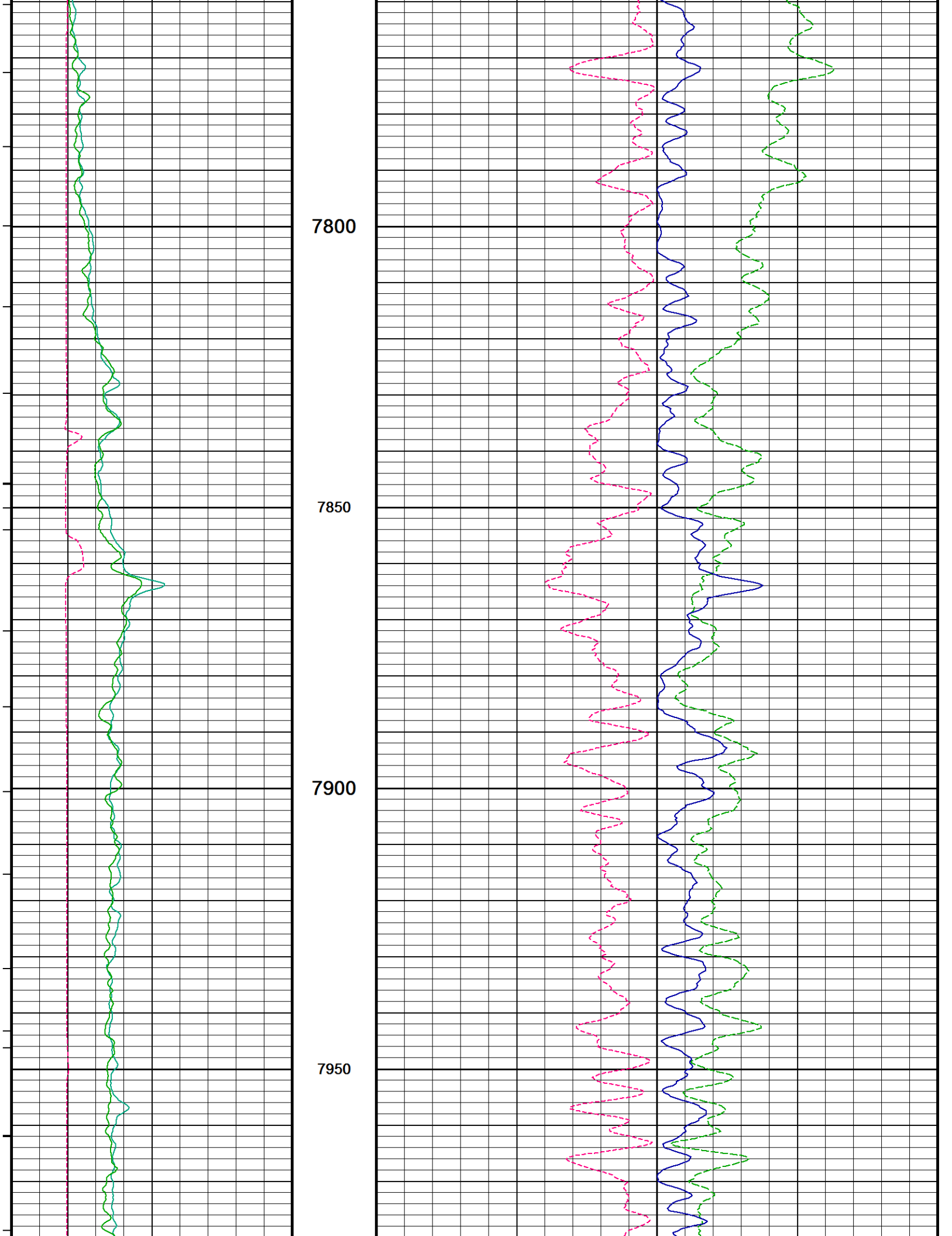
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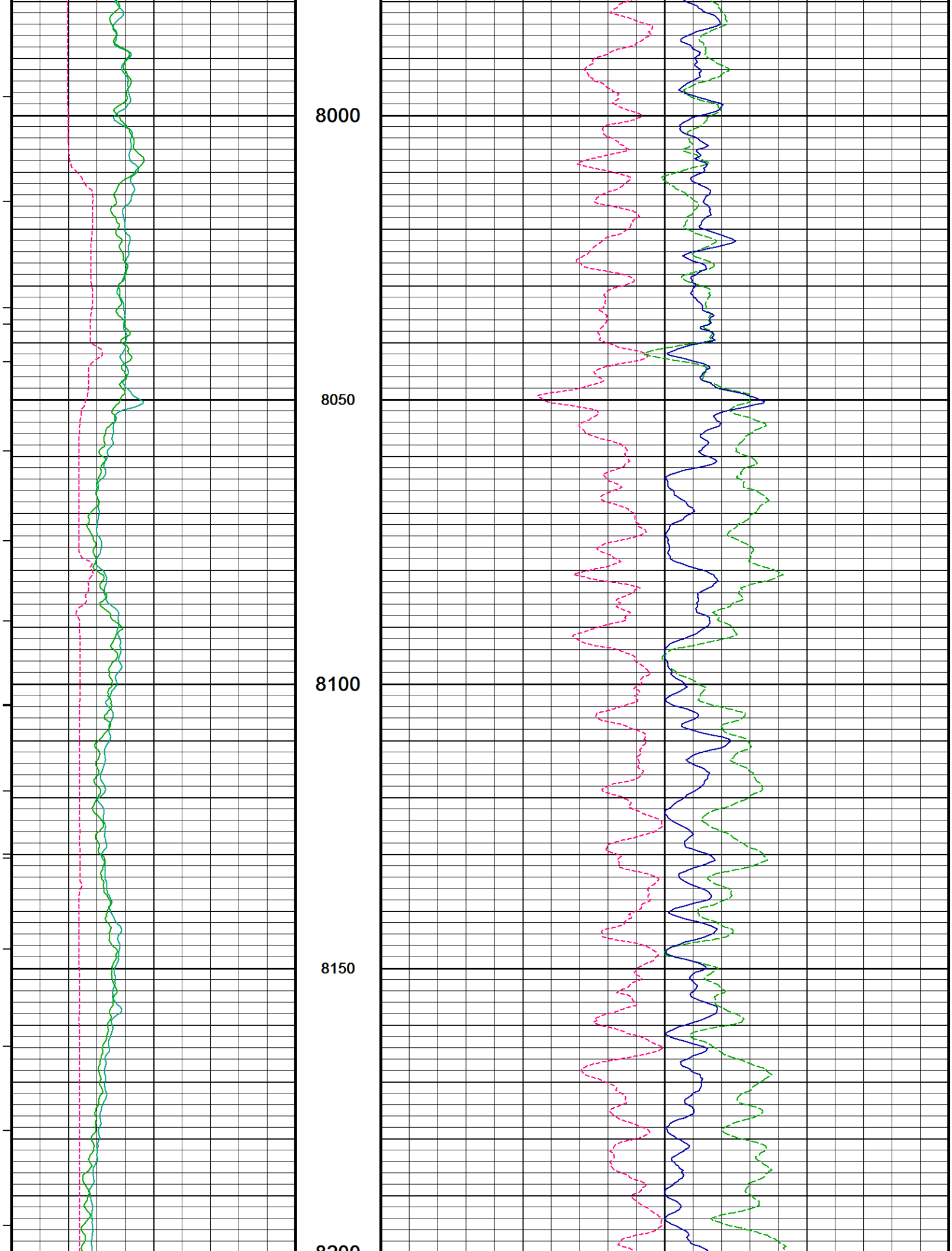
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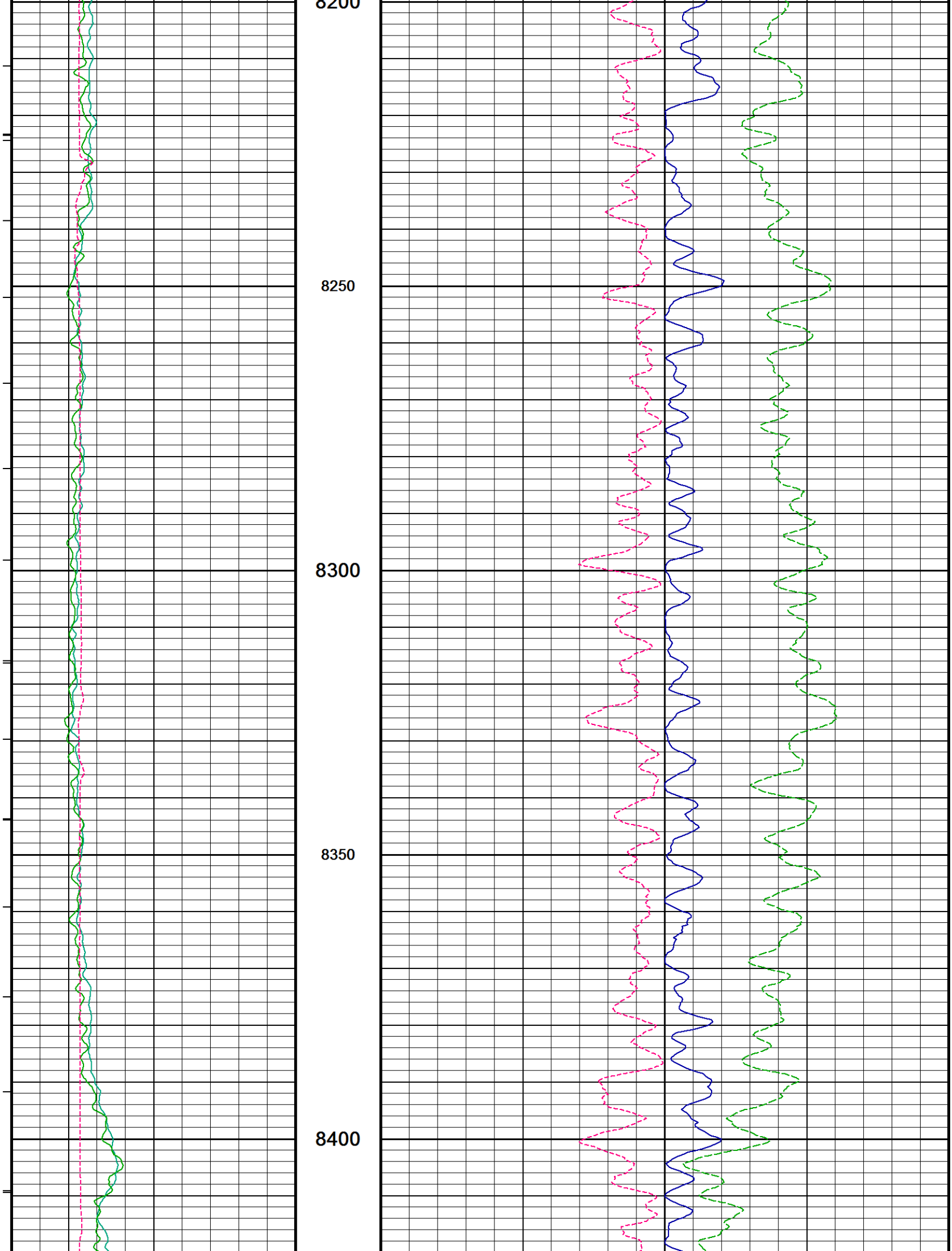
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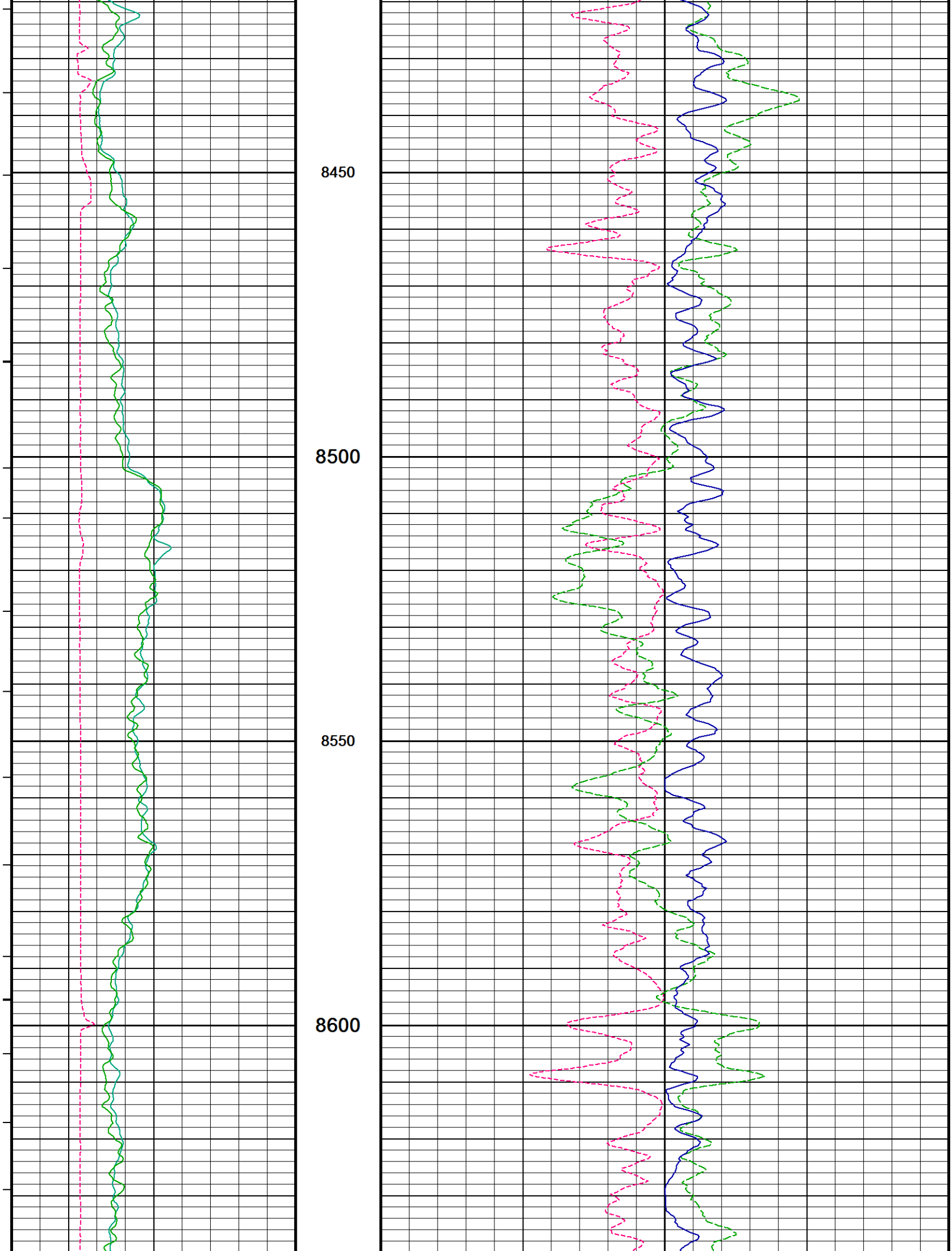
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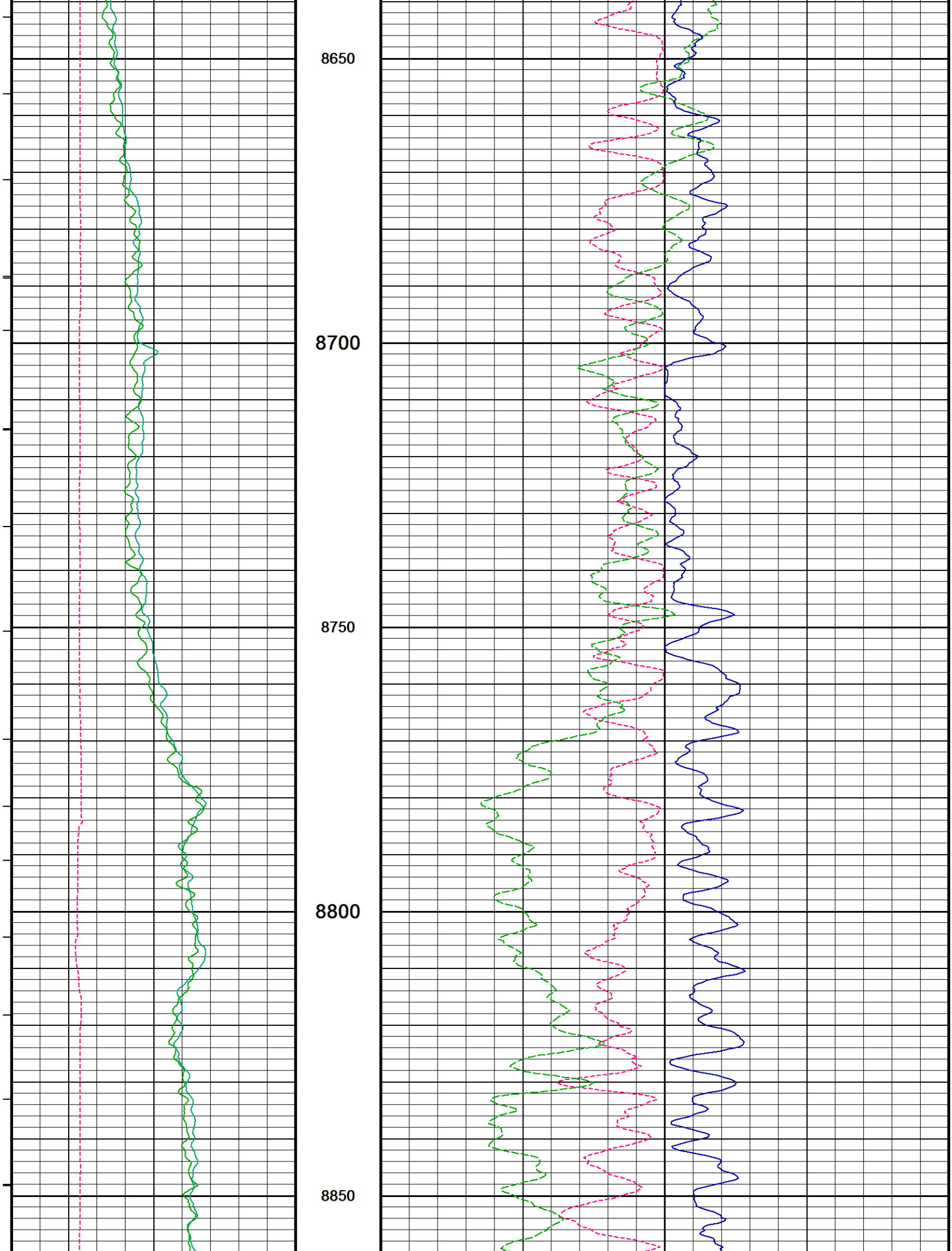
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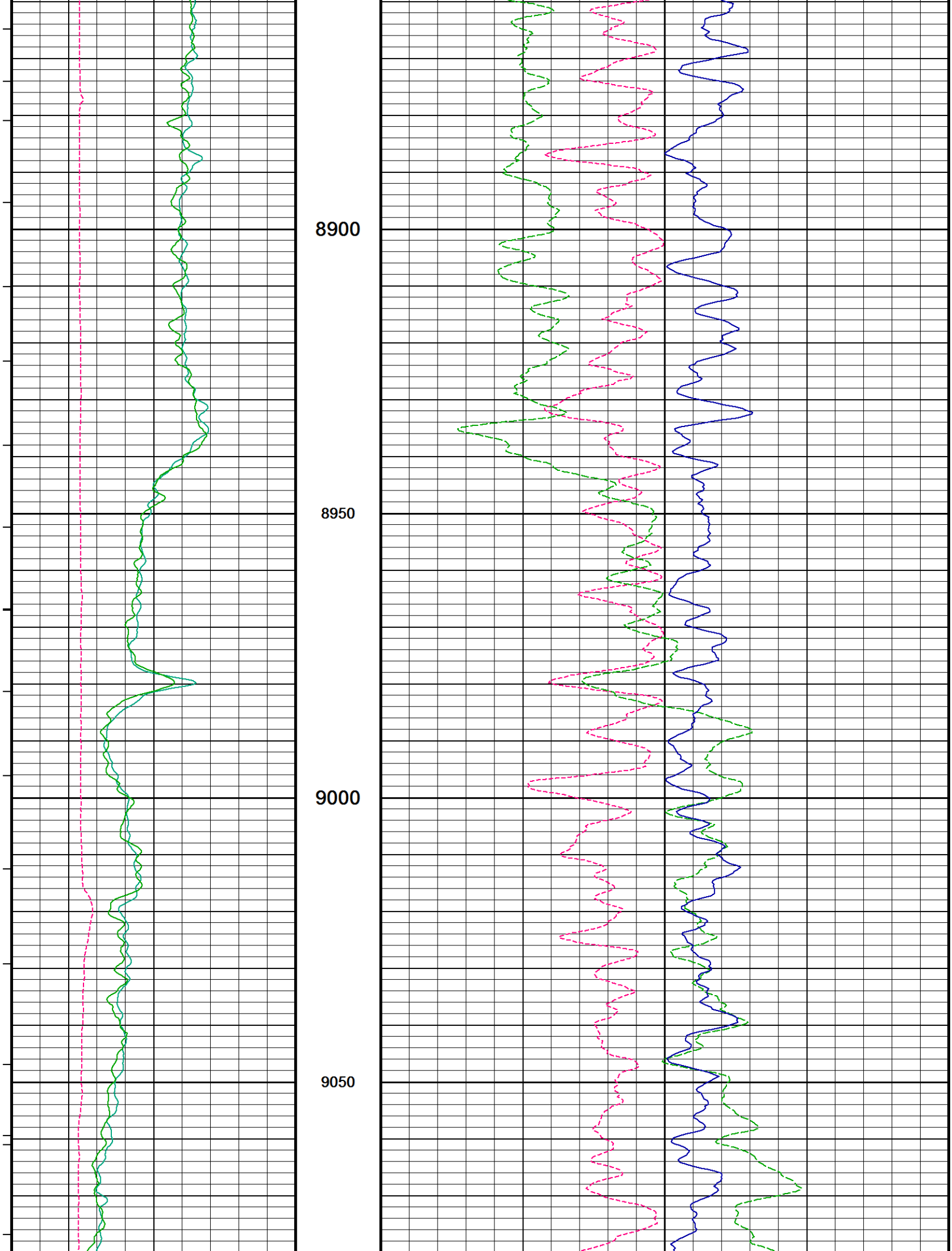
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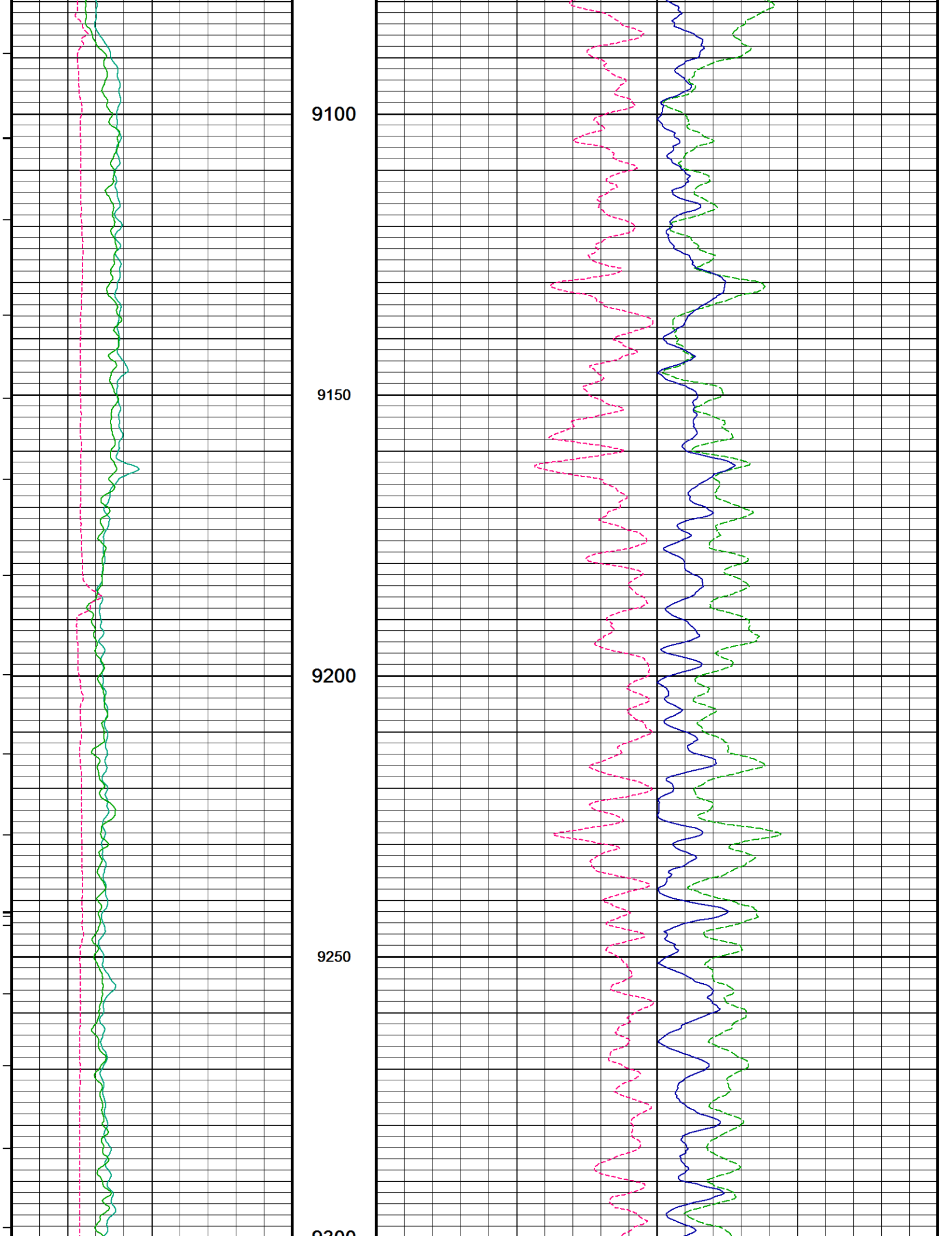
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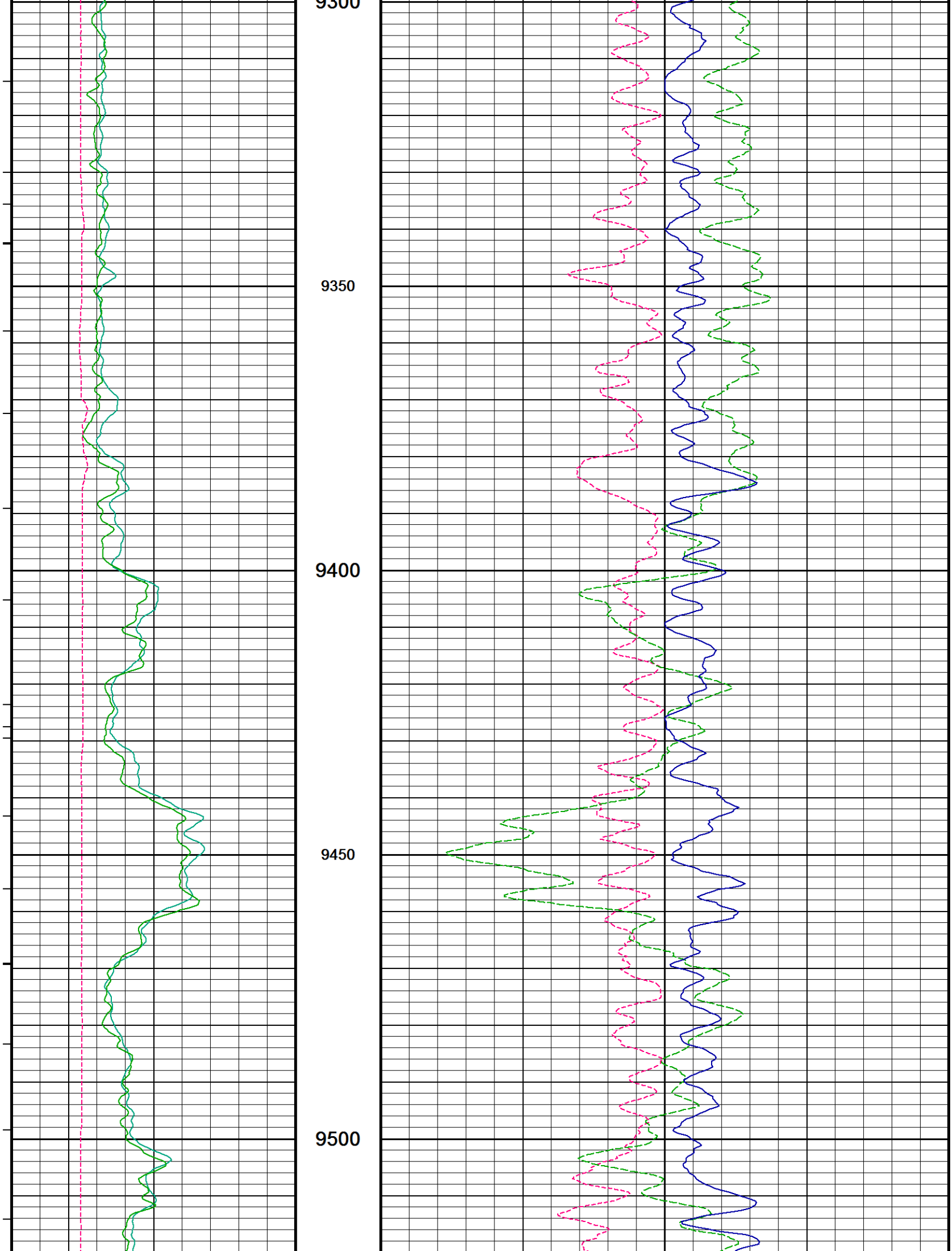
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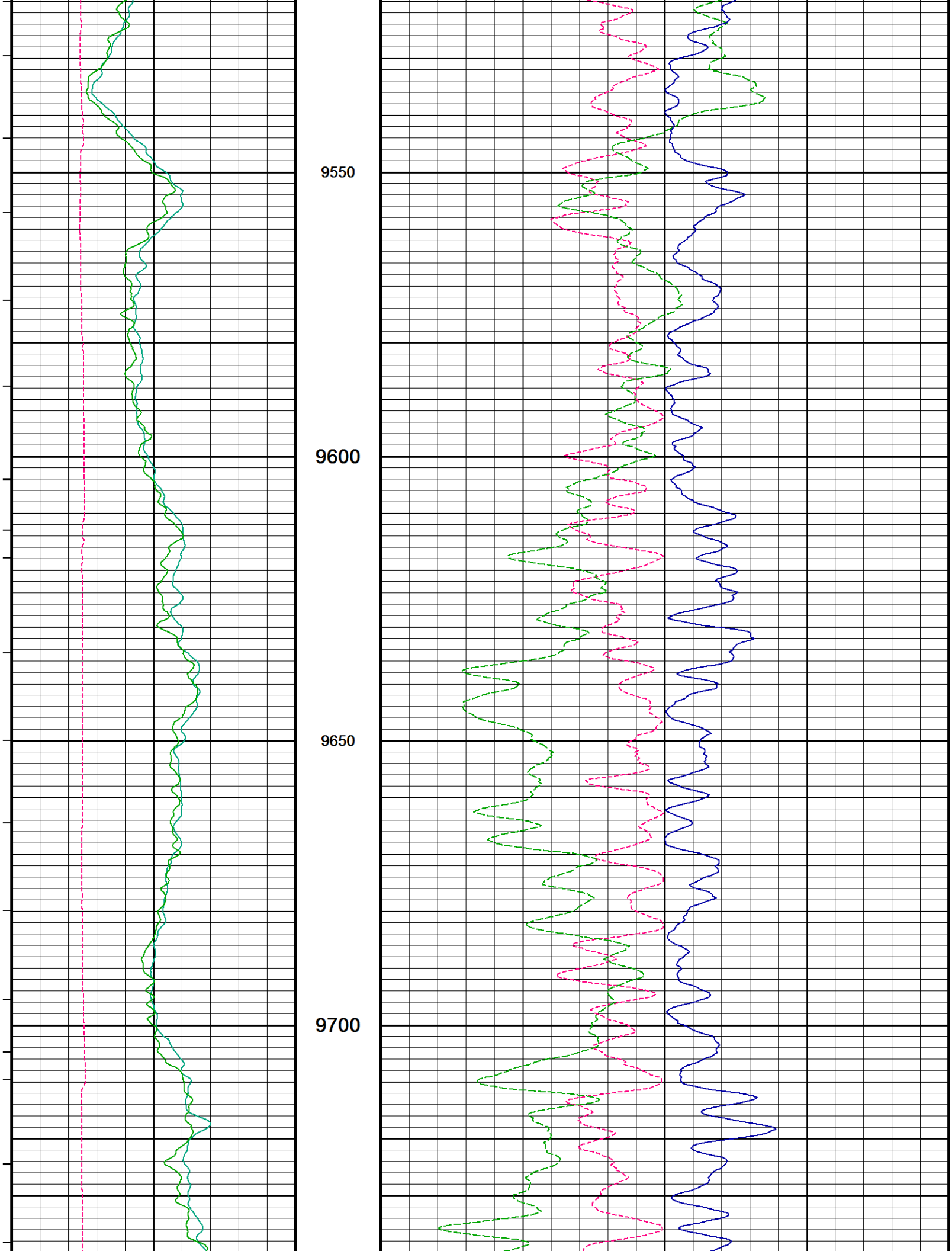
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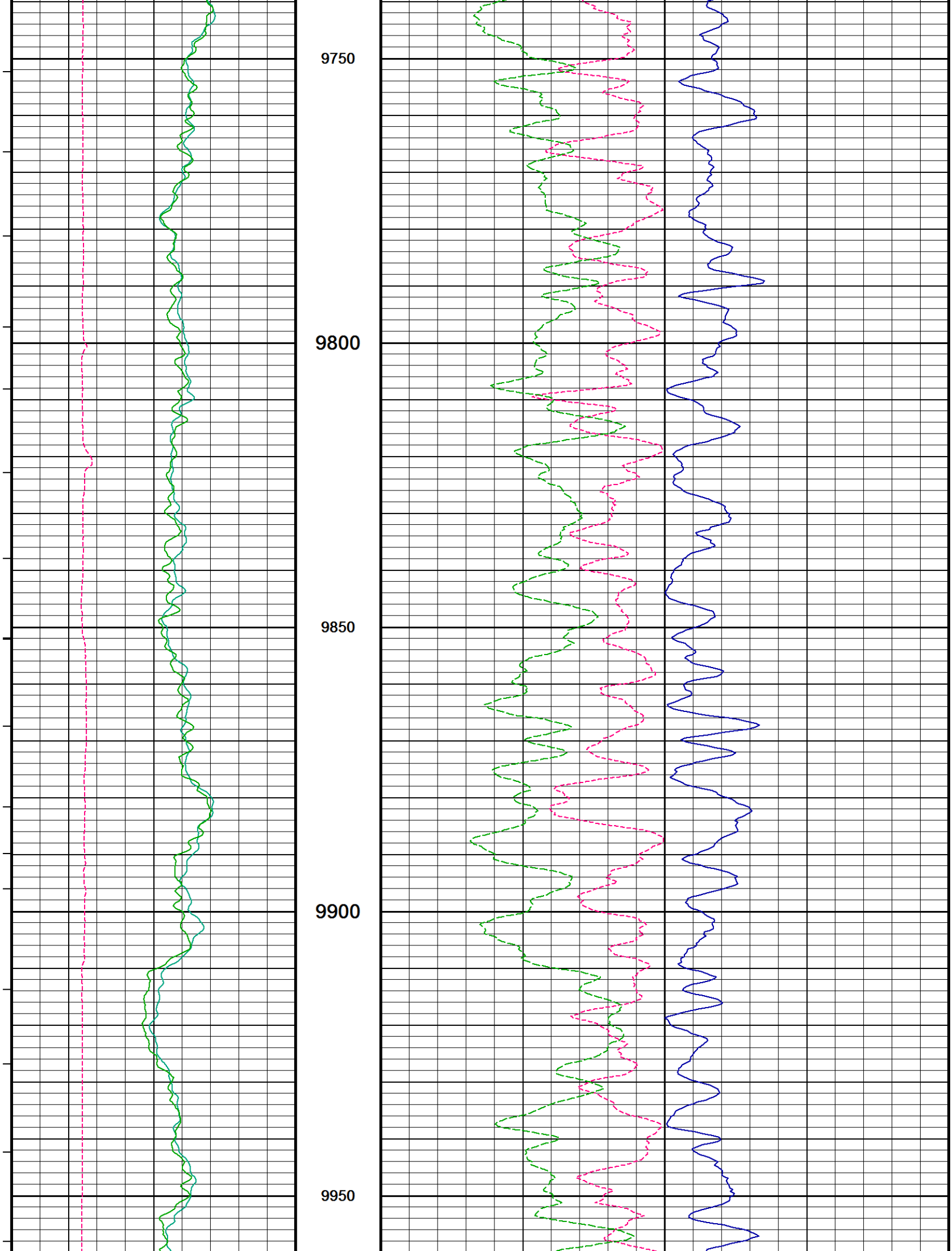
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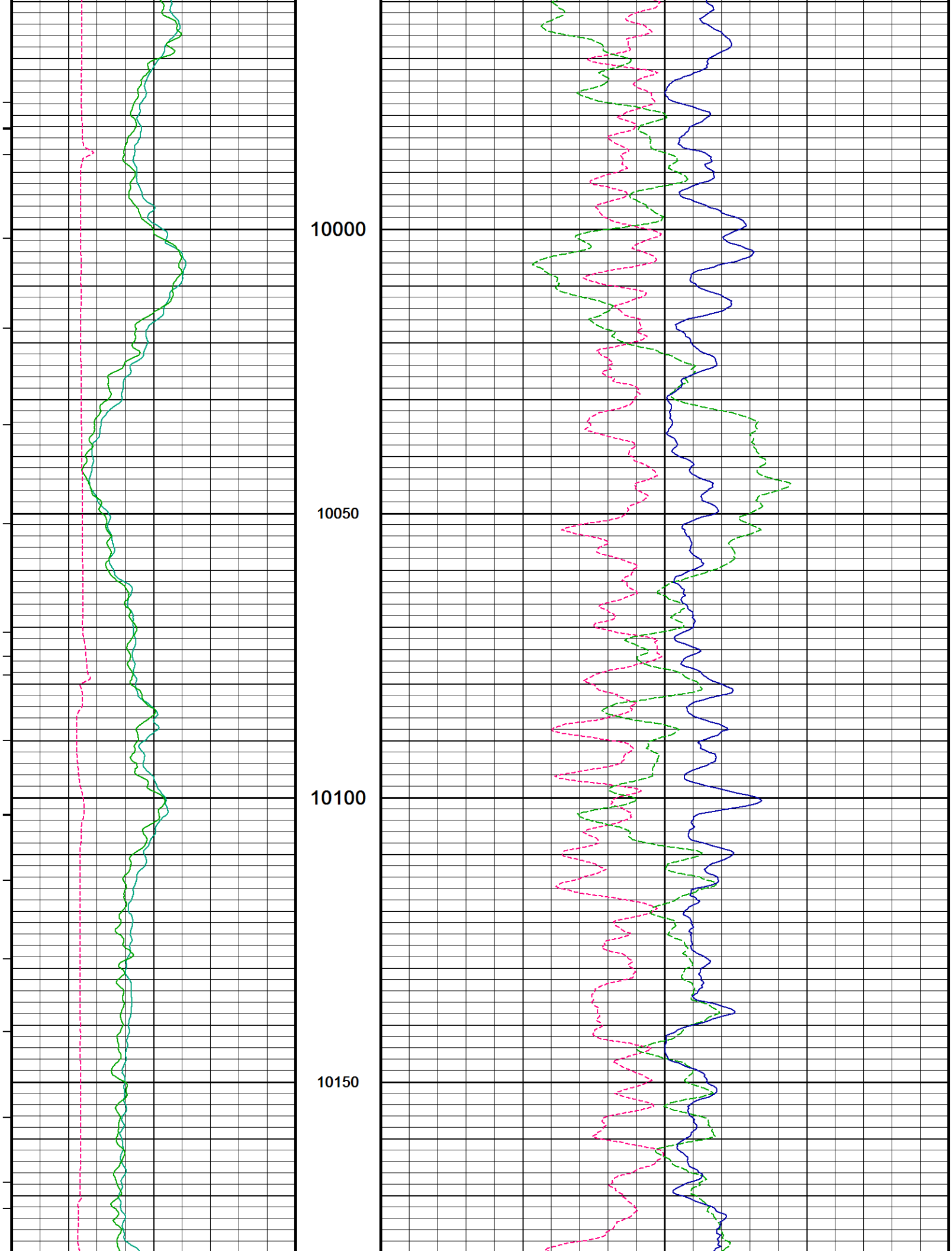
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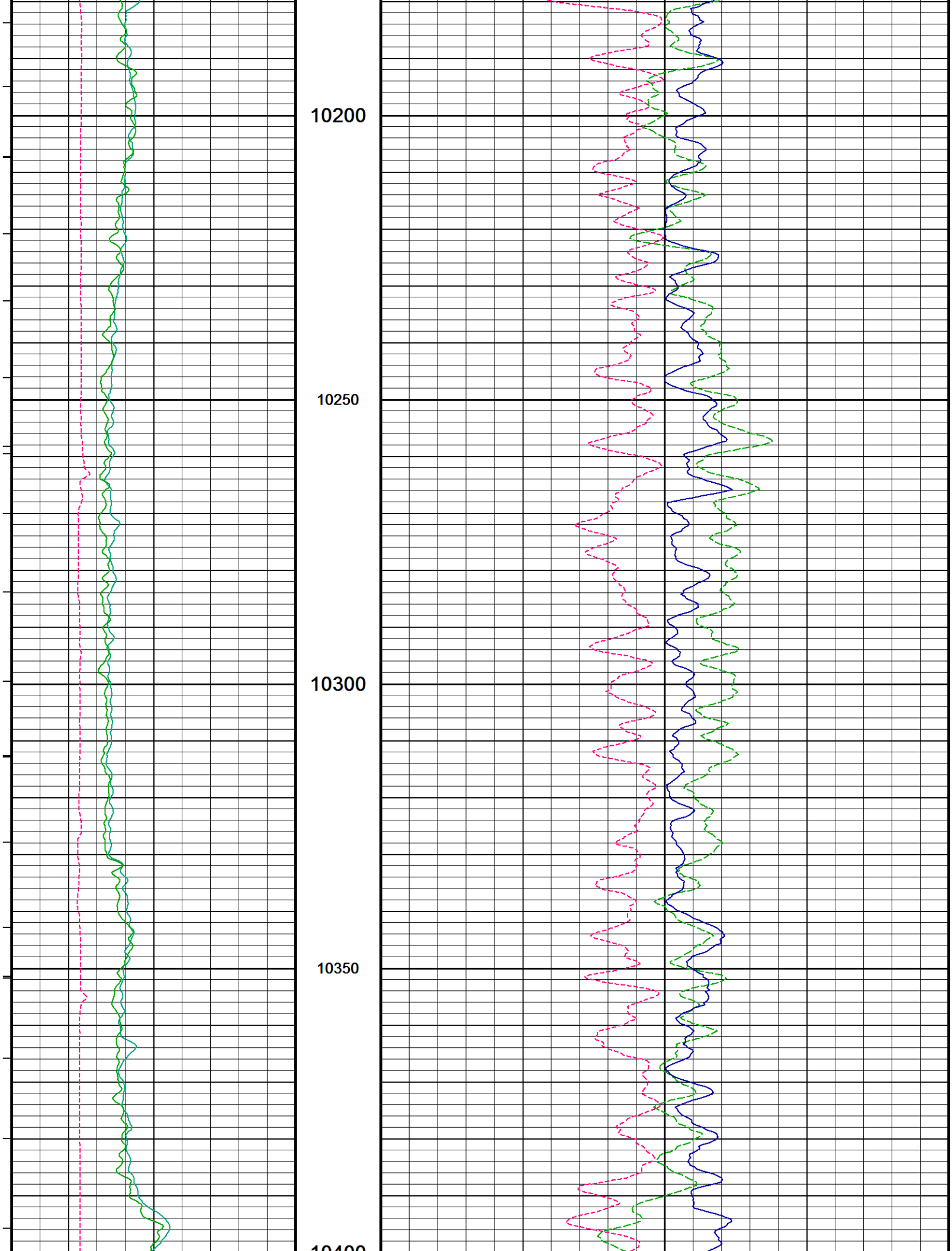
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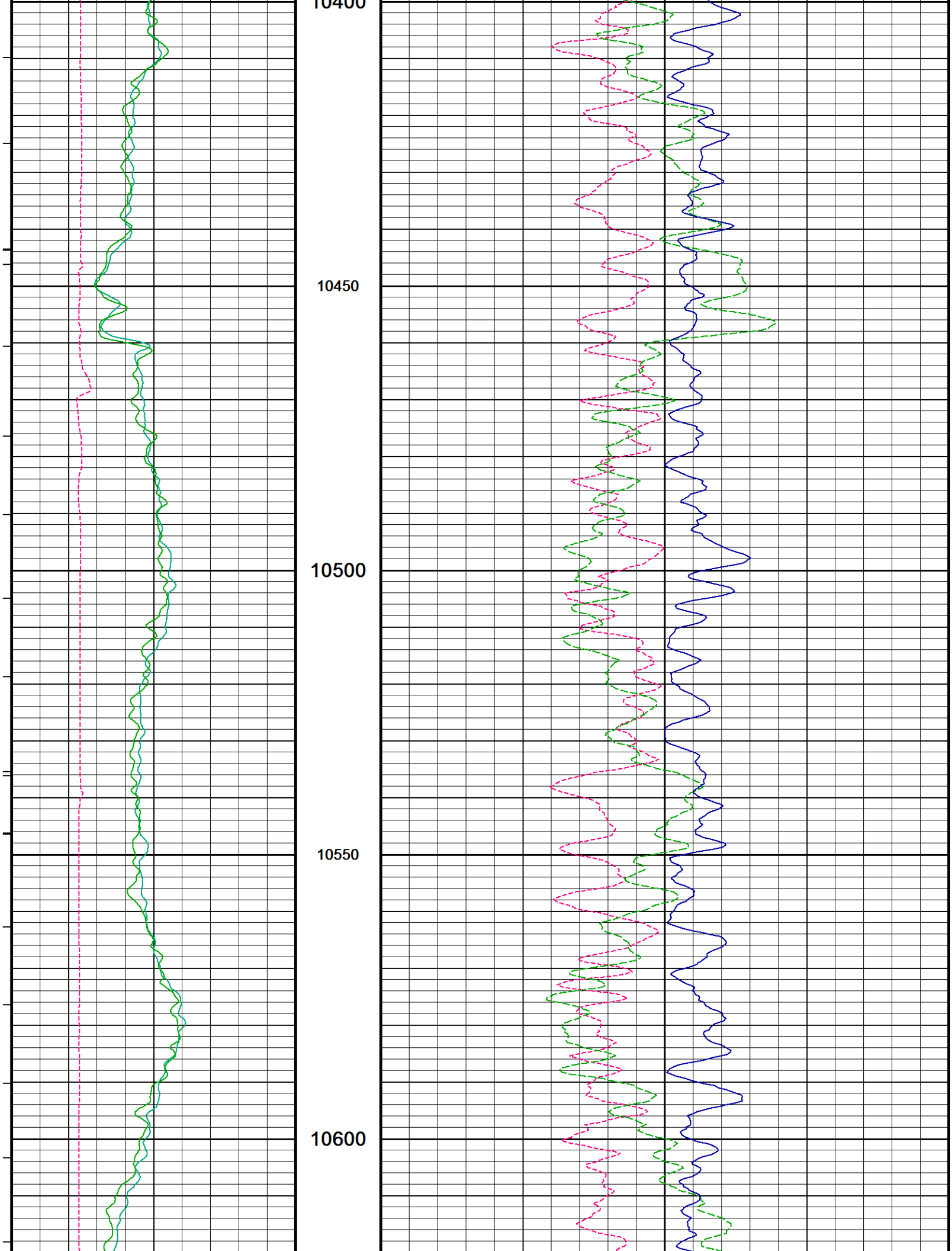
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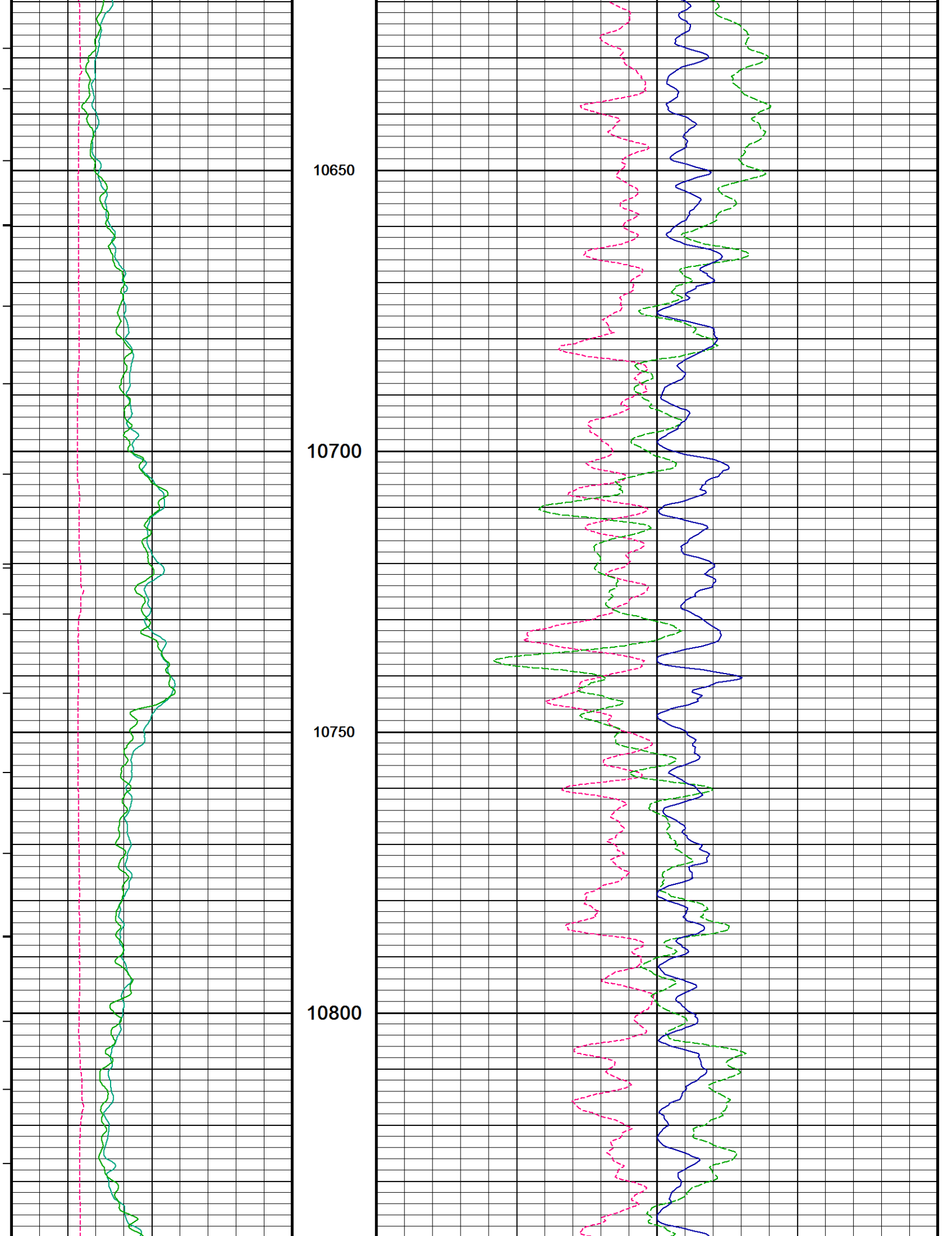
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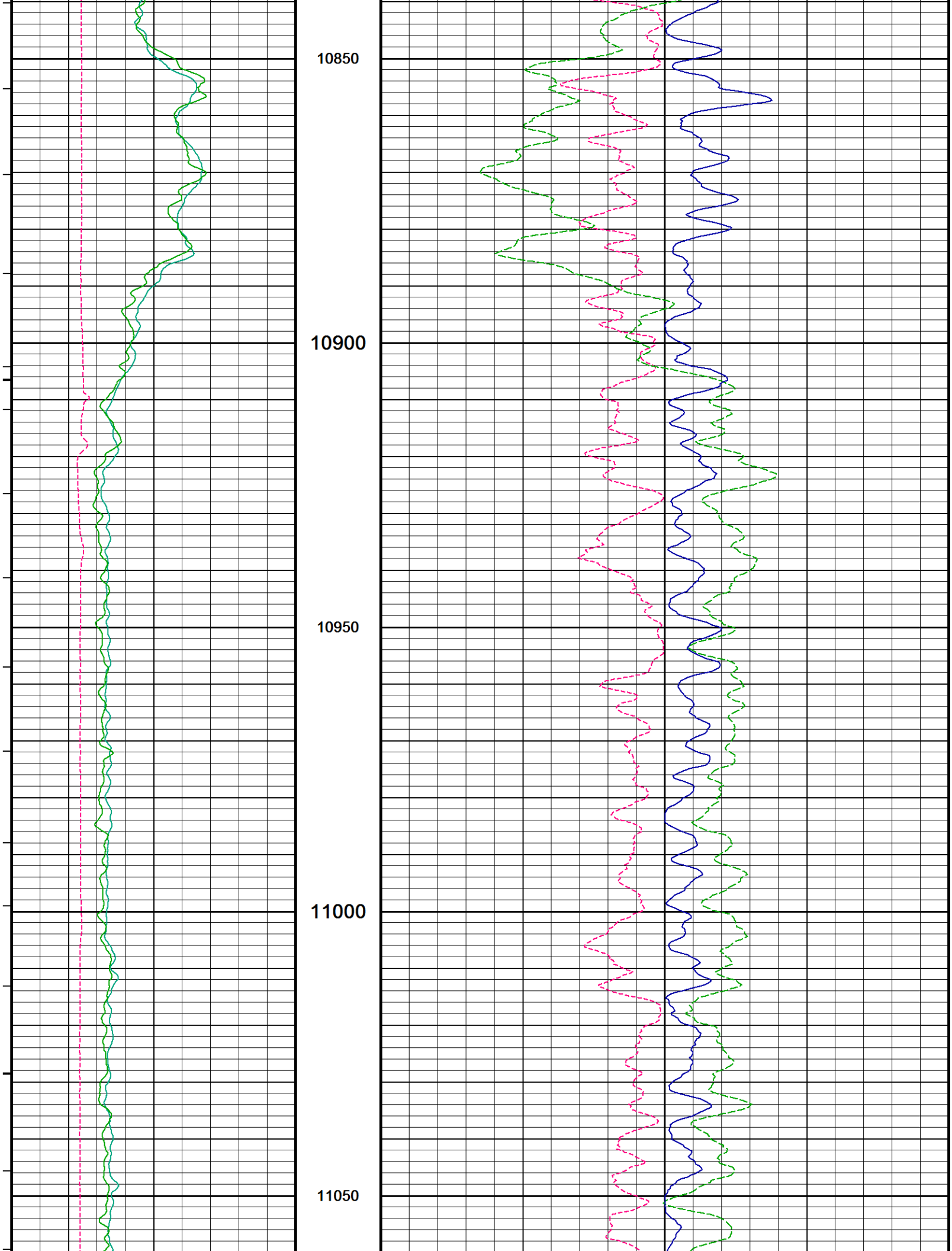
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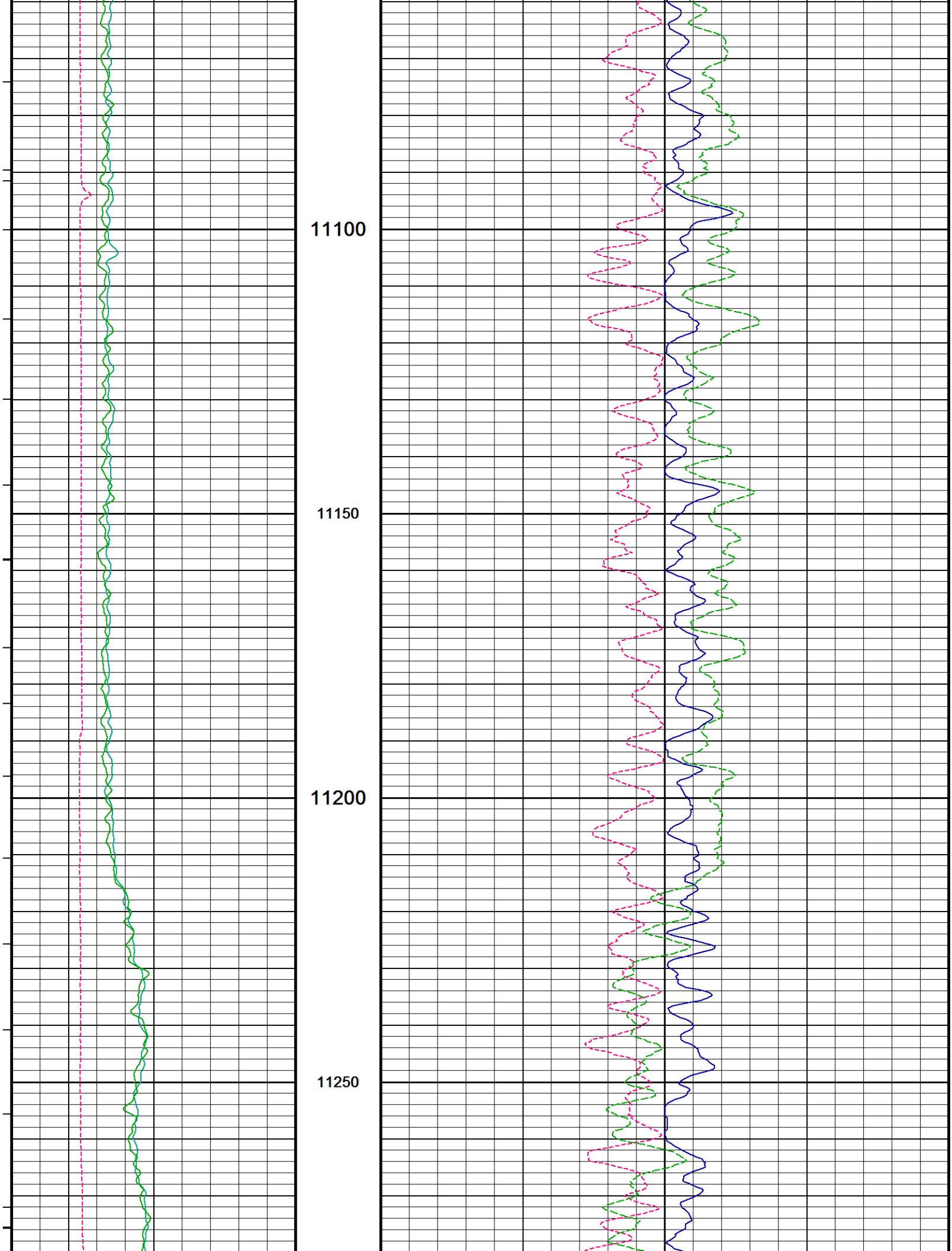
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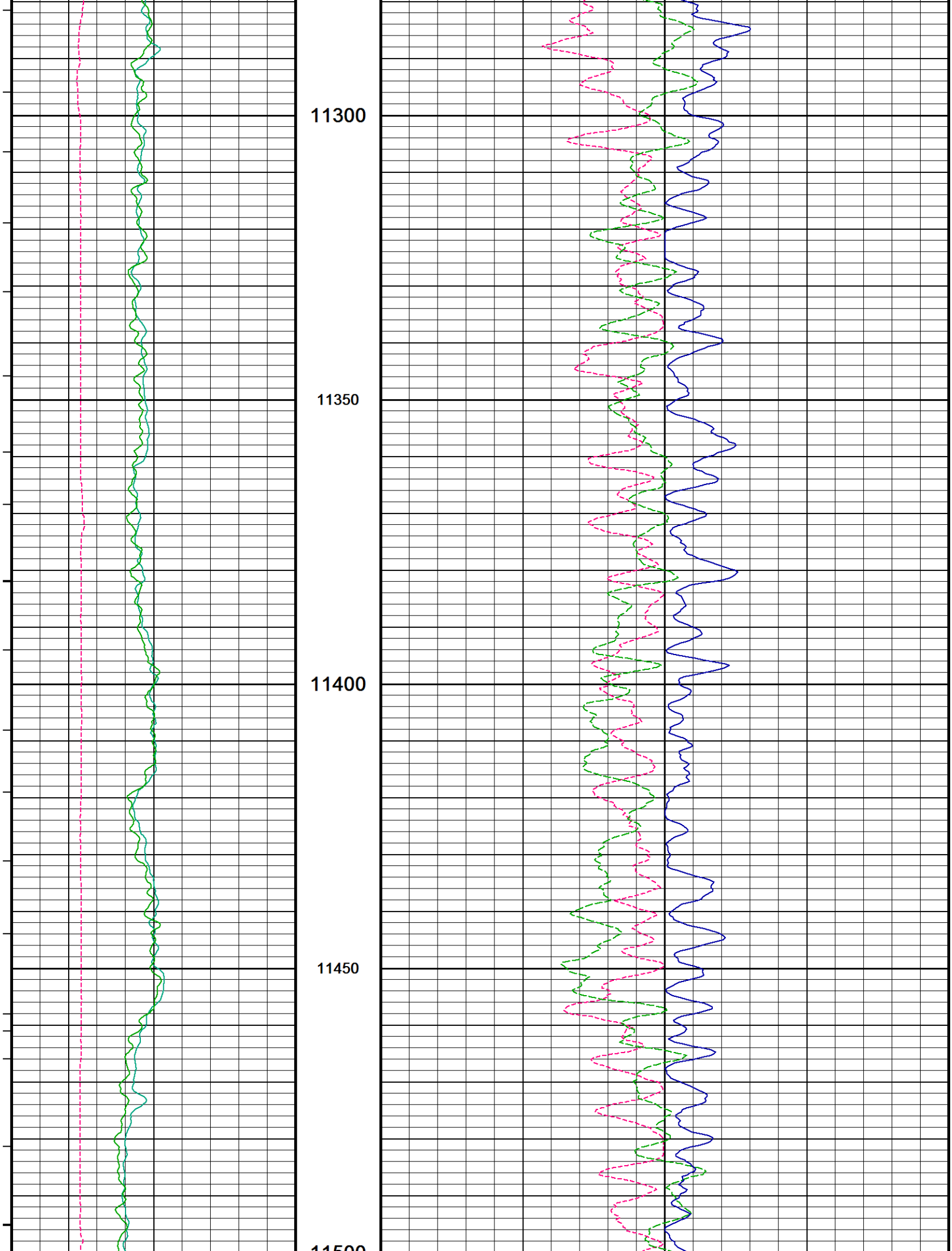
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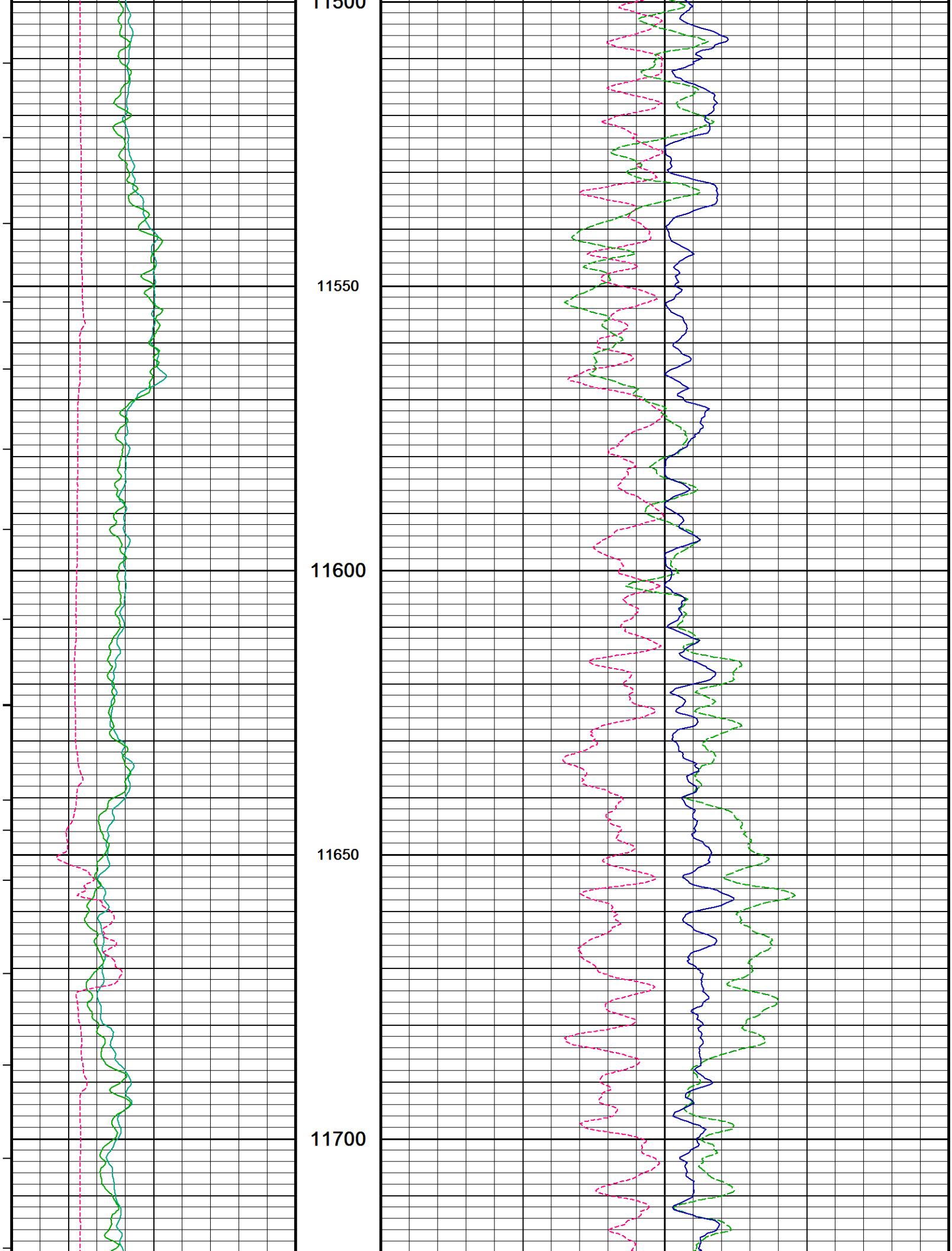
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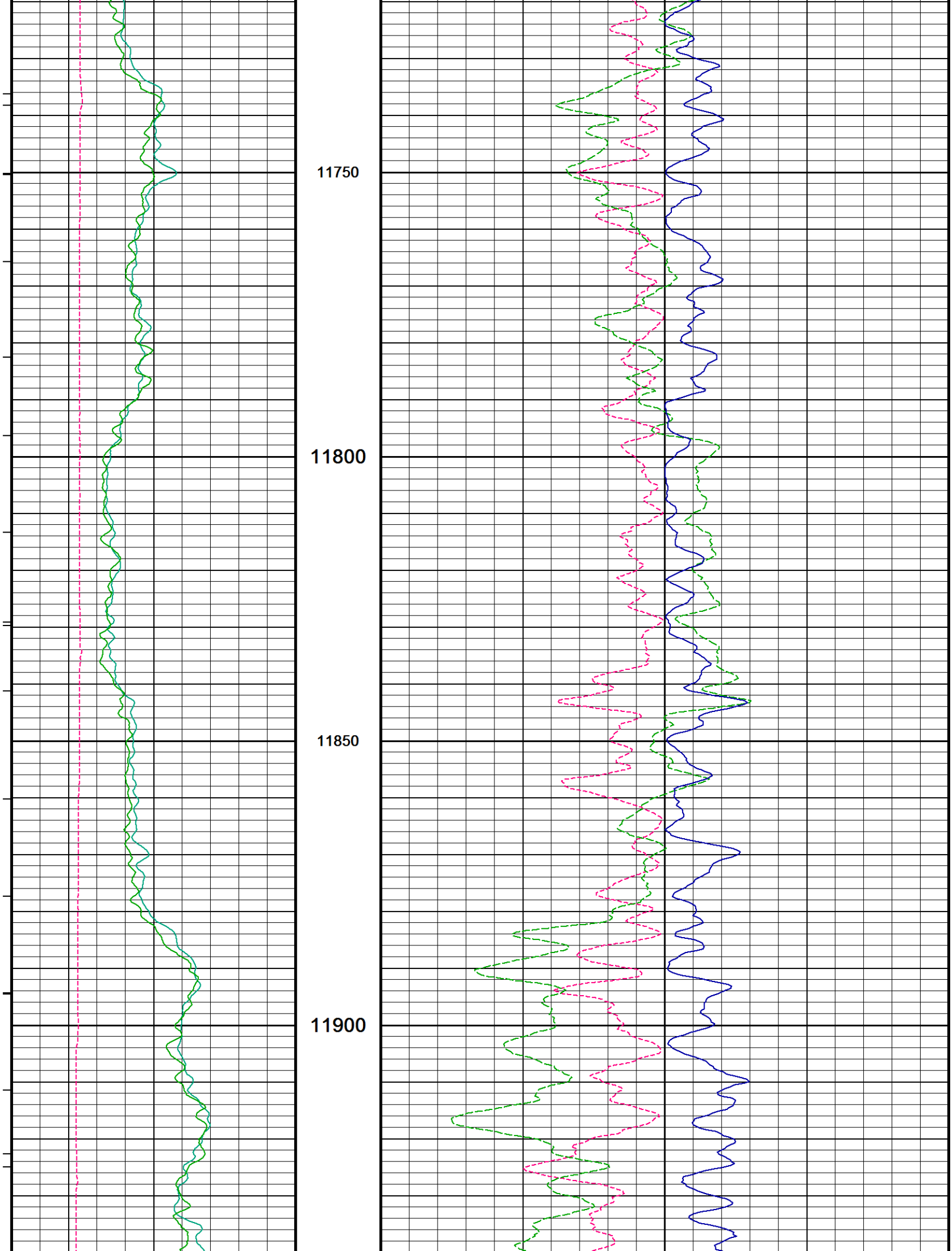
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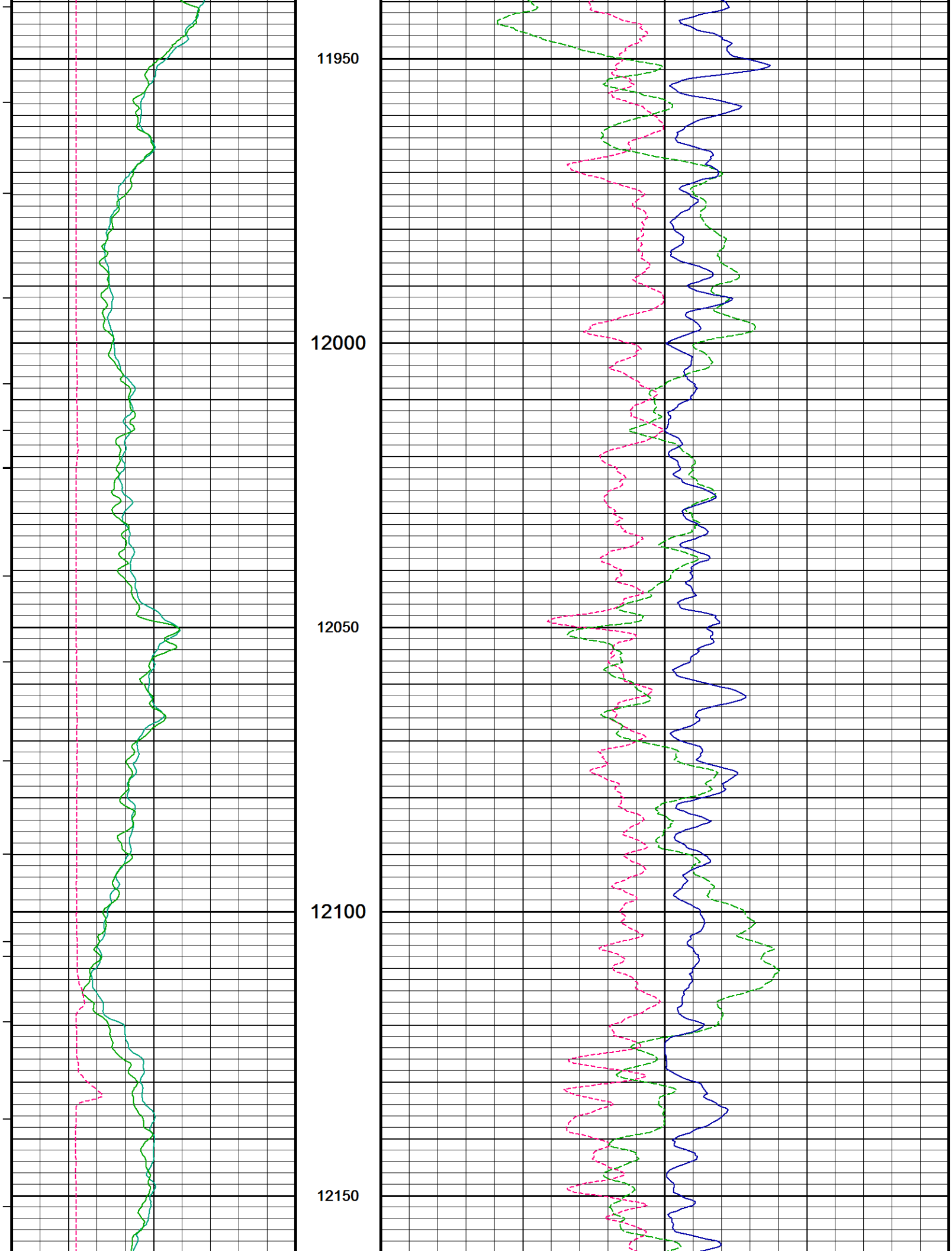
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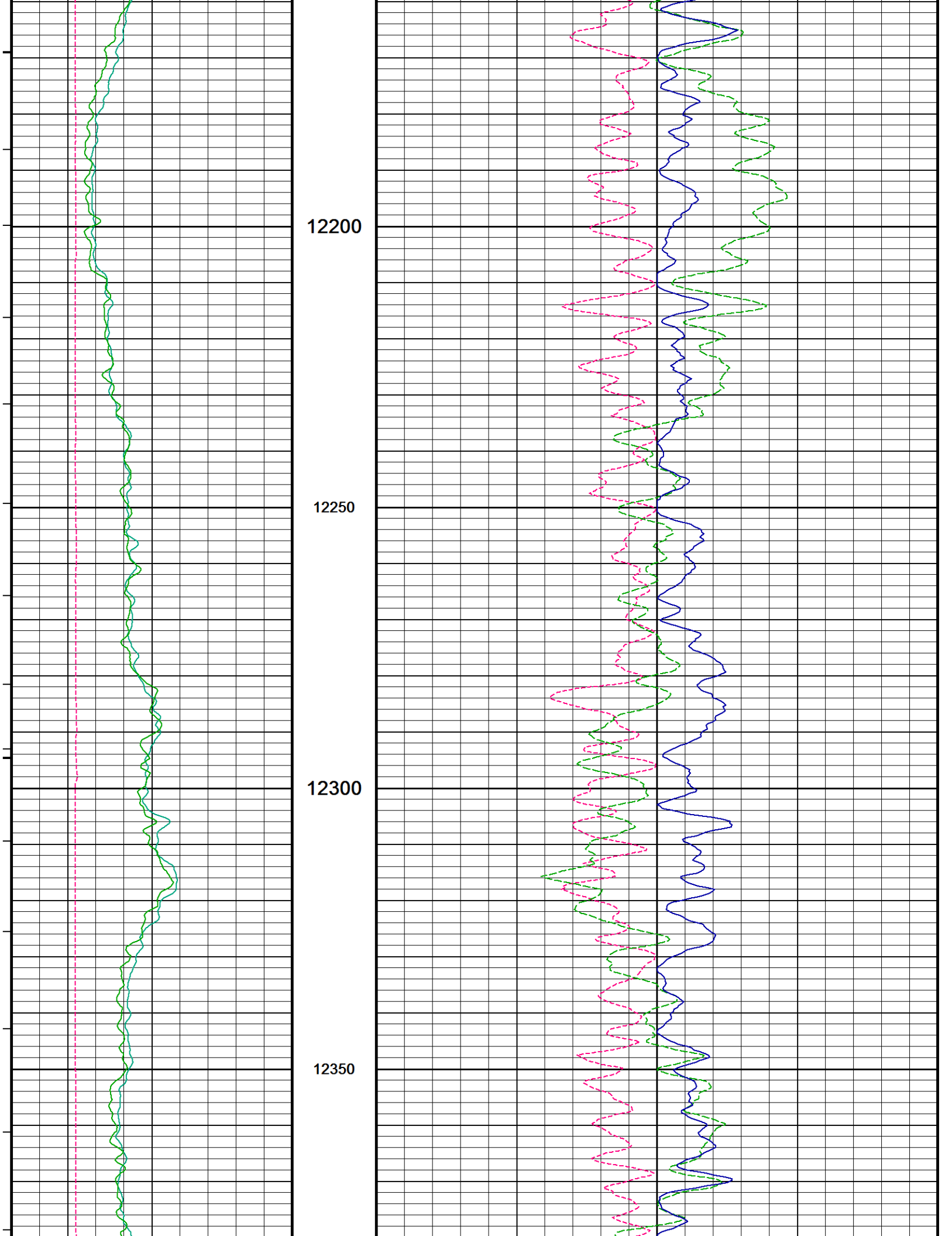
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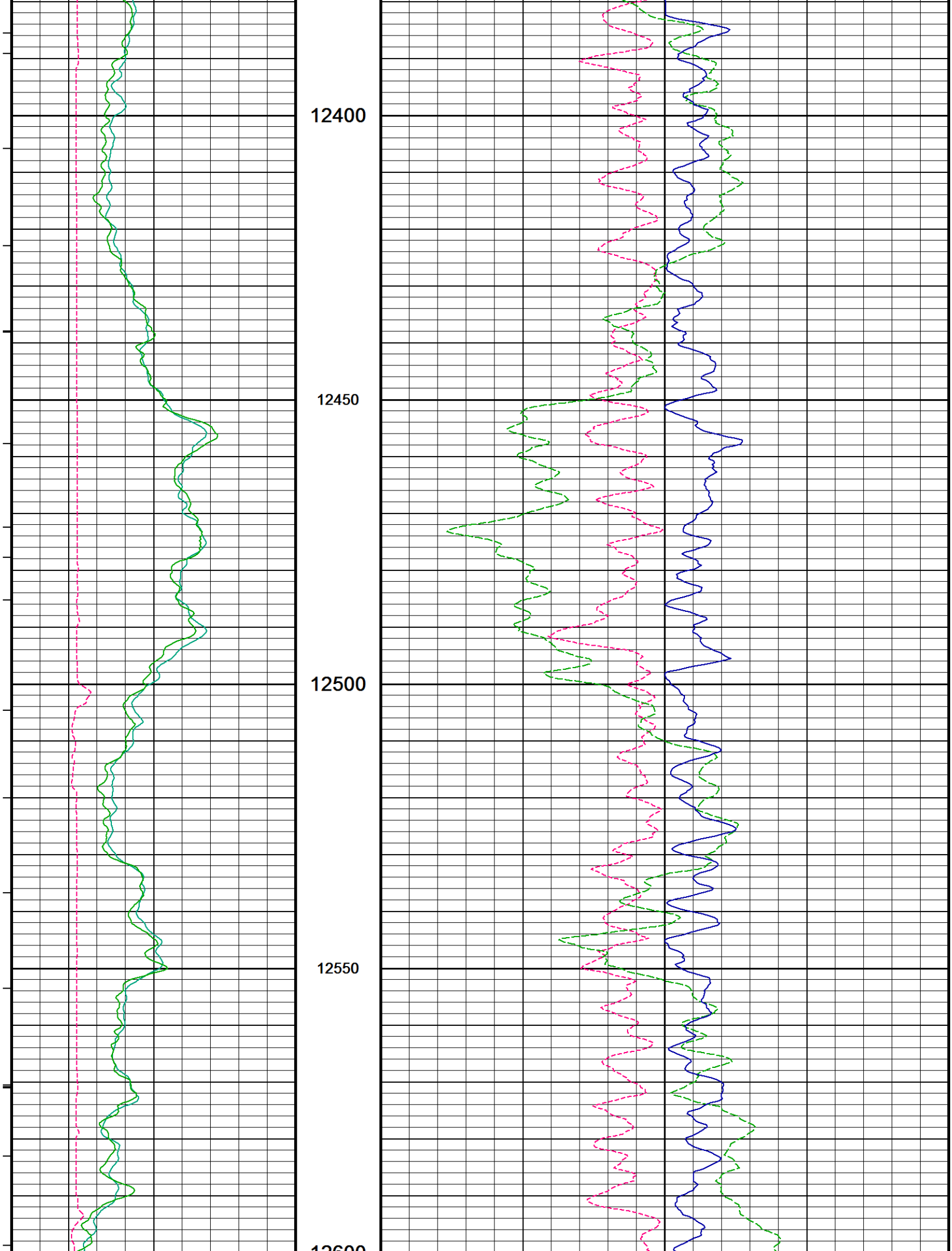
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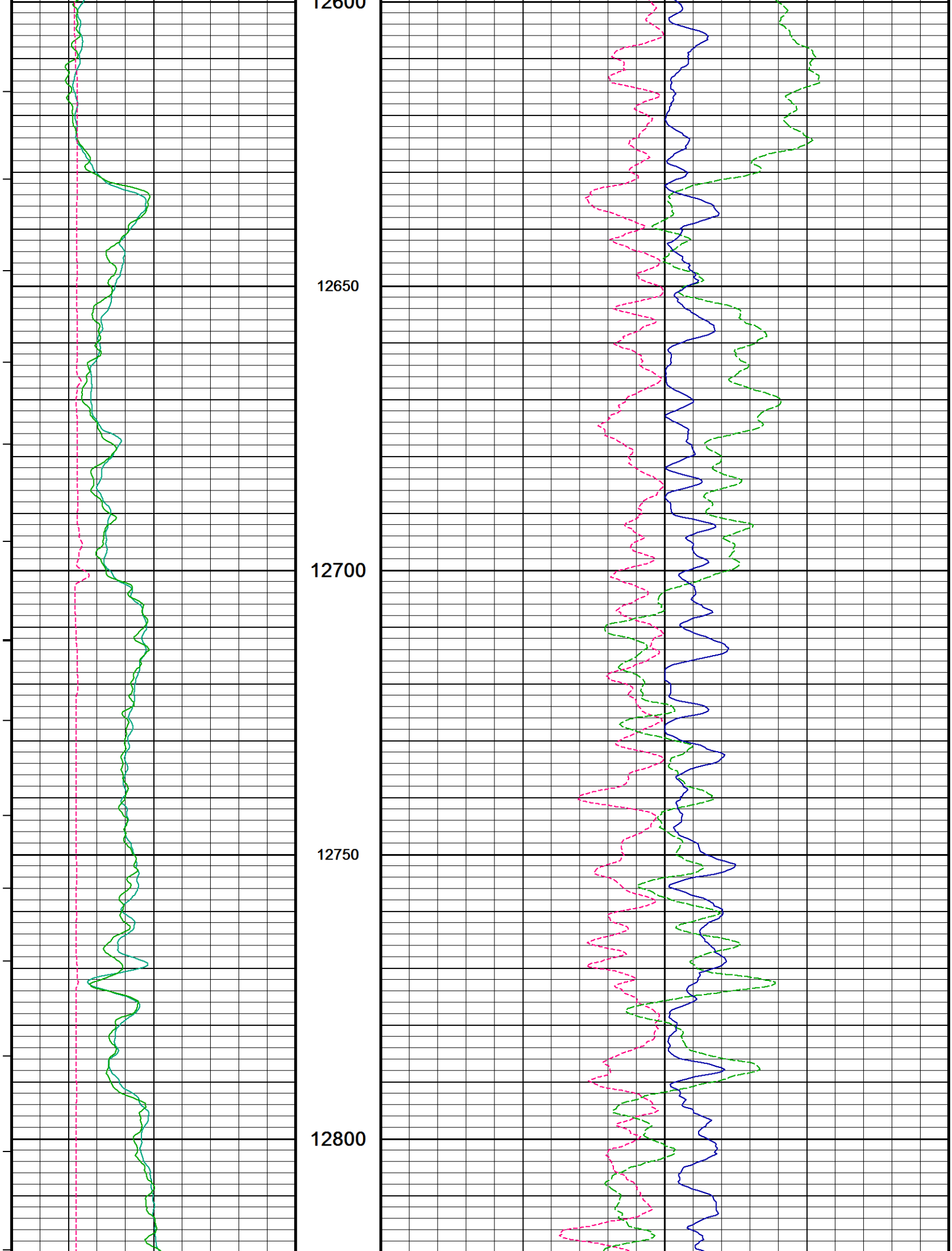
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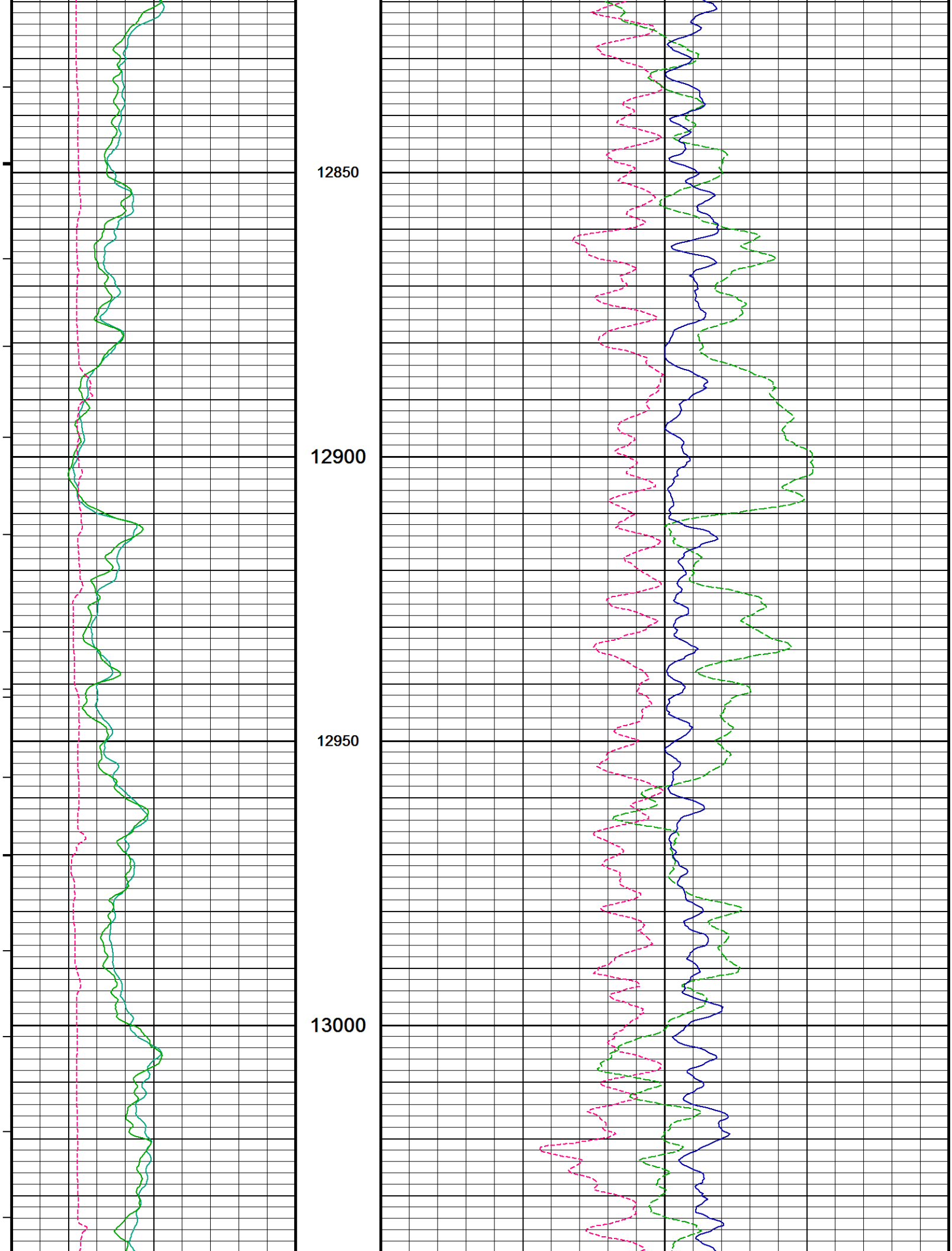
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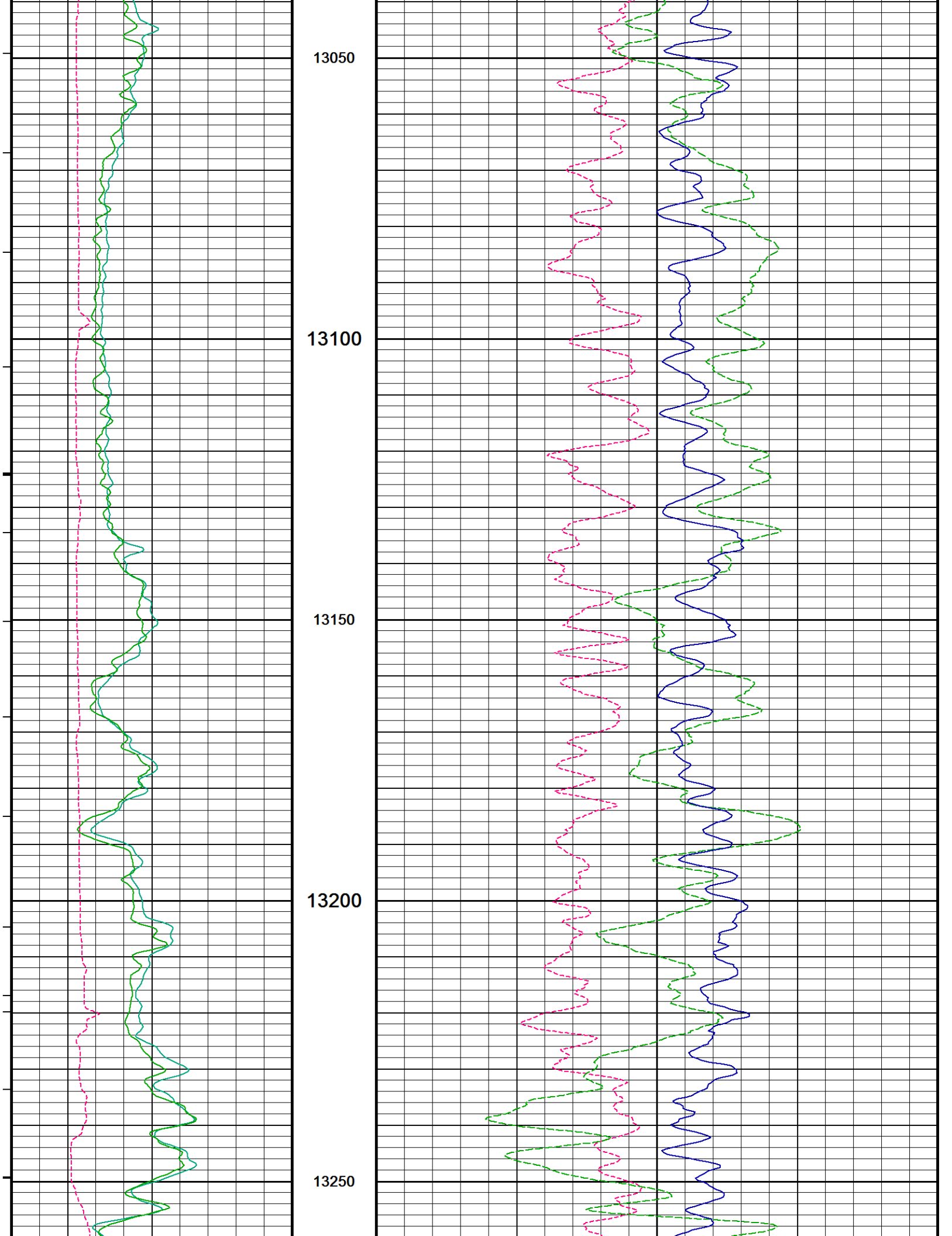
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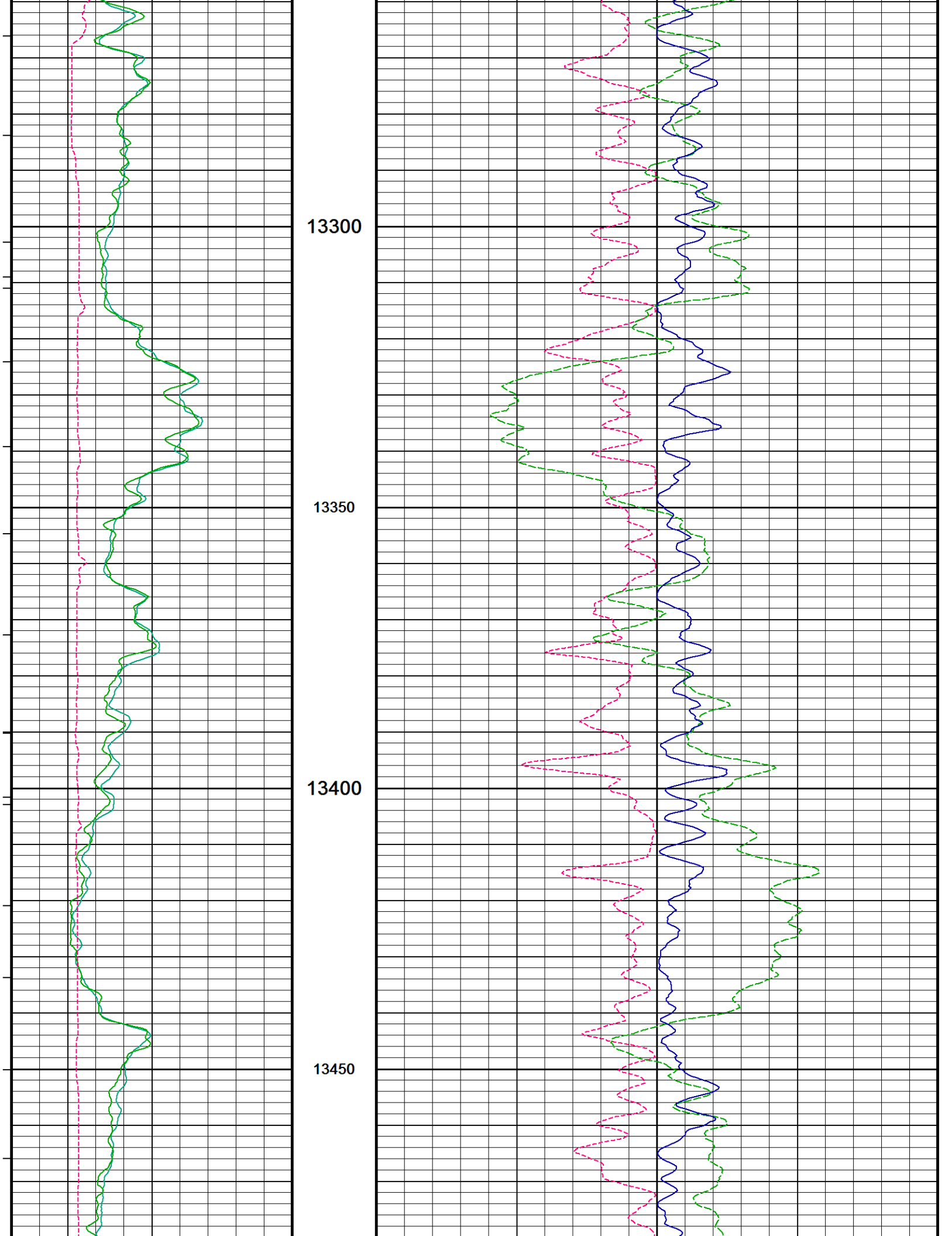
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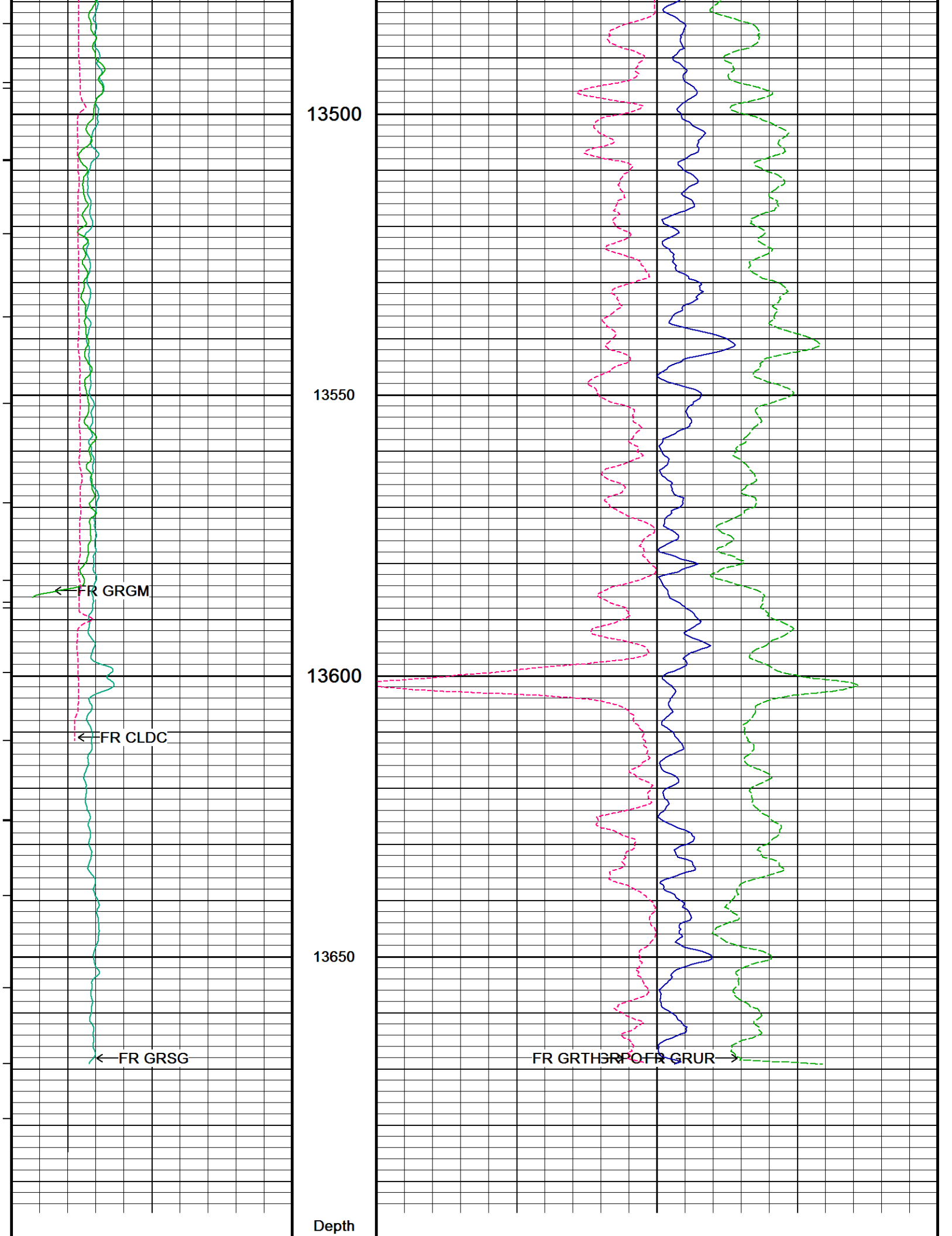
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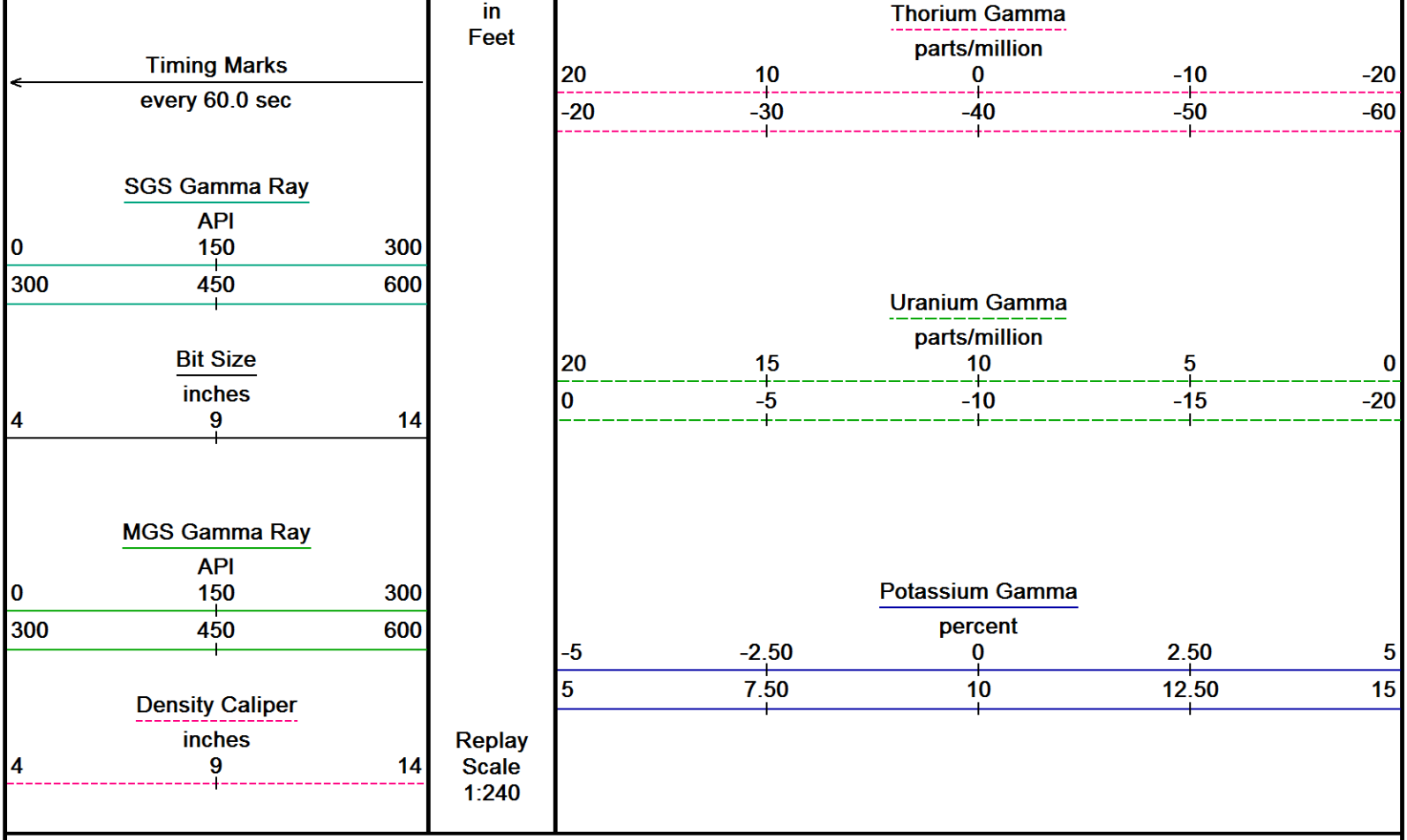
FR GRGM
FR CLDC
FR GRSG
FR GRTH
FR GRUR
Depth



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 27-OCT-2014 19:08
Filename: D:\Logs\Whiting\HORSETAIL 29G-2012B\MMS DEPTH.dta — Recorded on 27-OCT-2014 17:11
System Versions: Logged with 14.01.3220 Processed with 14.01.3220 Plotted with 14.01.3220

5 INCH MAIN LOG

BEFORE SURVEY CALIBRATION

D:\Logs\Whiting\HORSETAIL 29G-2012B\MMS DEPTH.dta

Down-hole Tension Calibration All 000

Field Calibration on 24-OCT-2010 03:34

Reading No	Measured	
1	15659.85	0.00
2	15734.68	370.00

General Constants All 000

Last Edited on 27-OCT-2014,16:20

General Parameters		
Mud Resistivity	1.880	ohm-metres
Mud Resistivity Temperature	86.600	degrees F
Water Level	0.000	feet
Borehole Fluid Processing	Wet Hole	
Hole/Annular Volume and Differential Caliper Parameters		
HVOL Method	XY Caliper	
HVOL Caliper 1	MIE Diam. X Armswing	
HVOL Caliper 2	MIE Diam. Y Armswing	
Annular Volume Diameter	4.500	inches
Caliper for Differential Caliper	MIE Diam. X Armswing	
Rwa Parameters		
Porosity used	Base Density Porosity	
Resistivity used	Array Ind. Four Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	
SW/APOR Tool Source	0.000	

Down-hole Tension Calibration SMS 0

Field Calibration on 03-MAR-2014 17:38

Reading No	Measured	Calibrated (lbs)
1	15344.12	0.00
2	16163.79	590.00

Strain Gauge Constants MMS-F.A 189

Last Edited on 18-SEP-2012,14:07

Atmospheric Pressure	14.70	psi
Serial Number	0	
Calibration Date	000000000000	
Base Check Date		
Dead Weight Serial Number	0	
Dead Weight Gravitational Correction	1.0	

Temperature	75.0		150.0		250.0		350.0	degrees F
Pressure psia	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.
0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2000.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4000.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6000.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8000.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10000.0	0.000		0.000		0.000		0.000	

High Resolution Temperature Calibration MGS-D.A 185

Field Calibration on 28-FEB-2014,12:06

	Measured	Calibrated(Deg F)
Lower	20.00	20.00
Upper	200.00	200.00

High Resolution Temperature Constants MGS-D.A 185

Last Edited on 10-APR-2014,11:59

Pre-filter Length	11

SP Calibration MGS-D.A 185

Field Calibration on 28-FEB-2014,12:05

	Measured	Calibrated (mV)
Reference 1	100.0	100.0
Reference 2	-100.0	-100.0

Gamma Calibration MGS-D.A 185

Field Calibration on 26-OCT-2014 09:34

	Measured	Calibrated (API)
Background	165	116
Calibrator (Gross)	1022	718
Calibrator (Net)	857	602

Gamma Constants MGS-D.A 185

Last Edited on 26-OCT-2014,13:00

Gamma Calibrator Number	GRCC224	
Mud Density	1.27	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

Neutron Calibration MDN-B.J 372

Base Calibration on 01-OCT-2014 13:06
Field Check on 26-OCT-2014 09:44

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2881	87	3714	110
Ratio	33.018		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	2377	3500
Ratio	0.679	

Field Check

	Calibrated (cps)	
	2405	3548
Ratio	0.678	

Neutron Constants MDN-B.J 372

Last Edited on 27-OCT-2014,16:21

Neutron Source Id	P44385B

Neutron Source Id	P4458JB	
Neutron Jig Number	NJ5236	
Air Hole Processing	Modified Ratio	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.00	gm/cc
Limestone Sigma	7.10	cu
Sandstone Sigma	7.00	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	None	
Formation Pressure	N/A	kpsi
Temperature Source	None	
Temperature	N/A	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	None	
Formation Fluid Salinity	N/A	kppm
Barite Mud Correction	Not Applied	

Imager Pad Check MIE-A.A 173

Field Check on 09-OCT-2014 14:29

Pad 1	20/20 Buttons Verified	Pad 5	20/20 Buttons Verified
Pad 2	24/24 Buttons Verified	Pad 6	24/24 Buttons Verified
Pad 3	20/20 Buttons Verified	Pad 7	20/20 Buttons Verified
Pad 4	24/24 Buttons Verified	Pad 8	24/24 Buttons Verified

Compact Micro Imager Constants MIE-A.A 173

Last Edited on 24-AUG-2014,16:32

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	11111111.0000	mAmp
Image Processing	11111111	

Navigation Constants MIE-A.A 173

Last Edited on 10-SEP-2014,09:35

Magnetic Declination	0.00	degrees	East

Magnetometer Parameters MIE-A.A 173

Date Of Last Magnetometer Calibration 17-JUL-2014,16:28

	X Magnetometer	Y Magnetometer	Z Magnetometer
Slope	-1.000000	-1.011067	-0.996373
Offset	0.009674	-0.014518	0.002543

Magnetometer Constants MIE-A.A 173

Last Edited on

Magnetometer Calibrator Number 000

Accelerometer Parameters MIE-A.A 173

Date Of Last Accelerometer Calibration 15-JUL-2014,13:24

	X Accelerometer	Y Accelerometer	Z Accelerometer
Slope	-1.113967	-1.108777	-1.100961
Offset	0.007433	0.003599	0.006425

Accelerometer Constants MIE-A.A 173

Last Edited on 26-OCT-2014,10:01

Accelerometer Calibrator Number 000

Accelerometer Temperature Characterisation

X Accelerometer

Serial Number	648			
Calibration Date	19-Aug-2008			
	B0	B1	B2	B3

Bias(g)	0.00000e+000	-9.57706e-006	9.83611e-009	1.13245e-011
	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.83616e-004	1.98700e-007	1.44742e-009

Y Accelerometer

Serial Number	652			
Calibration Date	19-Aug-2008			
	B0	B1	B2	B3
Bias(g)	0.00000e+000	3.42793e-006	-1.11656e-008	-4.36730e-011
	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.75161e-004	2.12516e-007	8.53262e-010

Z Accelerometer

Serial Number	588			
Calibration Date	06-May-2008			
	B0	B1	B2	B3
Bias(g)	0.00000e+000	2.55228e-005	-4.28668e-009	8.28710e-011
	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.82774e-004	2.50728e-007	1.25354e-009

Caliper Calibration MIE-A.A 173

Base Calibration on 26-OCT-2014 10:05
Field Calibration on 26-OCT-2014 10:07

Base Calibration

Reading No	Pads 1-5 Meas.	Pads 3-7 Meas.	Calibrator Size (in)
1	26645	27489	5.96
2	36054	37578	7.98
3	45717	47596	9.86
4	56451	58410	11.88
5	0	0	0.00

Reading No	Pad 2 Meas.	Pad 4 Meas.	Pad 6 Meas.	Pad 8 Meas.	Calibrator Size (in)
1	25036	26114	25590	25375	5.96
2	33290	34908	34476	33887	7.98
3	41361	43260	42764	42134	9.86
4	50340	52903	53157	51547	11.88
5	0	0	0	0	0.00

Field Calibration

Measured Pads 1-5 Caliper(in)	Measured Pads 3-7 Caliper(in)	Actual Caliper(in)
5.89	5.97	5.96

Measured Pad 2 Caliper(in)	Measured Pad 4 Caliper(in)	Measured Pad 6 Caliper(in)	Measured Pad 8 Caliper(in)	Actual Caliper(in)
3.01	2.99	2.98	2.98	5.96

Caliper Constants MIE-A.A 173

Last Edited on

Caliper Difference for BRKT	0.120	inches

High Resolution Temperature Calibration MAI-B.J 375

Field Calibration on 24-SEP-2014,03:39

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MAI-B.J 375

Last Edited on 24-SEP-2014,03:39

Pre-filter Length	11

Induction Calibration MAI-B.J 375

Base Calibration on 06-MAR-2014,09:29
Field Check on 26-OCT-2014 09:40

Base Calibration

Test Loop Calibration

Channel	Measured Low	Measured High	Calibrated (mmho/m) Low	Calibrated (mmho/m) High
1	17.2	476.3	9.3	966.2
2	6.0	379.5	7.6	821.4
3	3.1	258.6	5.2	566.0
4	1.5	131.2	2.6	279.2

Array Temperature 74.3 Deg F

Channel	Base Check (mmho/m) Low	Base Check (mmho/m) High	Field Check (mmho/m) Low	Field Check (mmho/m) High
1			12.8	3802.1

2	30.5	3542.4	
3	29.3	3049.5	
4	20.5	2097.0	
Deep	18.5	1993.6	
Medium	42.4	4012.6	
Shallow	44.7	5231.5	
Array Temperature		69.5	Deg F

Induction Constants MAI-B.J 375

Last Edited on 27-OCT-2014,16:22

Induction Model	RtAP-WBM	
Caliper for Borehole Corr.	Density Caliper	
Hole Size for Borehole Correction	N/A	inches
Tool Centred	No	
Stand-off Type	Fins	
Stand-off	0.50	inches
Number of Fins on Stand-off	6.0000	
Stand-off Fin Angle	60.00	degrees
Stand-off Fin Width	0.5000	inches
Borehole Corr. Rm Source	Temperature Corr	
Temp. for Rm Corr.	MGS External Temperature	
Squasher Start	0.0020	mhos/metre
Squasher Offset	N/A	mhos/metre

Borehole Normalisation

DRM1	0.0000	DRC1	0.0000
DRM2	0.0000	DRC2	0.0000
MRM1	0.0000	MRC1	0.0000
MRM2	0.0000	MRC2	0.0000
SRM1	0.0000	SRC1	0.0000
SRM2	0.0000	SRC2	0.0000

Calibration Site Corrections

Channel 1	0.00	mmhos/metre
Channel 2	0.00	mmhos/metre
Channel 3	0.00	mmhos/metre
Channel 4	0.00	mmhos/metre

Apparent Porosity and Water Saturation Constants

Archie Constant (A)	1.00	
Cementation Exponent (M)	2.00	
Saturation Exponent (N)	2.00	
Saturation of Water for Apor	100.00	percent
Resistivity of Water for Apor and Sw	0.05	ohm-m
Resistivity of Mud Filtrate for Sw	0.00	ohm-m
Source for Rt	0.00	
Source for Rxo	0.00	

Caliper Calibration MPD-C.J 378

Base Calibration on 26-OCT-2014 09:57
Field Calibration on 26-OCT-2014 09:58

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13871	4.00
2	21735	5.96
3	30021	7.98
4	37927	9.86
5	46879	11.88
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.97	5.96

Photo Density Calibration MPD-C.J 378

Base Calibration on 01-OCT-2014 11:53
Field Check on 26-OCT-2014 09:50

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Background	1145	1223		
Reference 1	56123	24901	59443	30683

Reference 2	22147	2322	25113	2508

Field Check at Base

1145.2	1222.9

Field Check

1146.1	1229.7

PE Calibration

Base Calibration

	WS	WH	Measured Ratio	Calibrated Ratio
Background	209	1030		
Reference 1	24056	55936	0.434	0.372
Reference 2	6396	22017	0.295	0.268

Field Check at Base

209.3	1029.7

Field Check

209.5	1029.6

Density Constants MPD-C.J 378

Last Edited on 26-OCT-2014,13:00

Density Source Id	P44264B	
Nylon Calibrator Number	652	
Aluminium Calibrator Number	659	
Density Shoe Profile	4 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.27	gm/cc
Mud Density Z/A Multiplier	1.11	
Mud Filtrate Density	1.00	gm/cc
Dry Hole Mud Filtrate Density	1.00	gm/cc
DNCT	0.00	gm/cc
CRCT	0.00	gm/cc
Density Z/A Correction	Hybrid	

Matrix Density (gm/cc)	Depth (ft)
2.71	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

Spectral Gamma Calibration SGS-E.J 128

Base Calibration on 25-SEP-2014 17:21
Field Calibration on 13-OCT-2014,17:33

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 26-OCT-2014,13:00

Background Calibrator Number	440	
Mixture Calibrator Number	450	
Potassium Calibrator Number	500	
Uranium Calibrator Number	506	
Thorium Calibrator Number	503	
Mud Density	1.27	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

DOWNHOLE EQUIPMENT

D:\Logs\Whiting\HORSETAIL 29G-2012B\MMS DEPTH.dta

Shuttle Running Tool 3.5" (SRT A)
SRT-A 6 LG: 6.47 ft WT: 37.5 lb OD: 2.520 in

400V EXT
MLK-A 1 LG: 14.23 ft WT: 30.9 lb OD: 2.240 in

200V ST
MLK-A 2 LG: 8.52 ft WT: 30.9 lb OD: 2.240 in

MMR LINKER
MLK-A 3 LG: 4.48 ft WT: 30.9 lb OD: 2.240 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 614 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

MBS-G.A 200v Compact Battery Sub
MBS-G.A 126 LG: 17.06 ft WT: 123.5 lb OD: 2.240 in

Compact Memory Sub F.A
MMS-F.A 189 LG: 5.20 ft WT: 37.5 lb OD: 2.244 in

Compact Tool Isolator sub.
MTI-C.A 136 LG: 1.54 ft WT: 13.2 lb OD: 2.244 in

Compact Short Gamma
MGS-D.A 185 LG: 3.41 ft WT: 24.3 lb OD: 2.244 in

Compact Collar Locator
MCL-C.A 96 LG: 3.17 ft WT: 26.5 lb OD: 2.244 in

SKJ-E.A Compact Knuckle Joint
SKJ-E.A 244 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

SHA-H Compact Swivel Head Adaptor
SHA-H 142 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

MIS-D.B Compact Inline Bowspring sub
MIS-D.B 723 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 731 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

SHA-J.B Compact Swivel Head Adaptor
SHA-J.B 512 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 695 LG: 2.14 ft WT: 15.4 lb OD: 2.244 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 603 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

MIS-D.A Compact Inline Bowspring sub
MIS-D.A 437 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

Compact MMI Memory Section
MIM-A.A 173 LG: 4.65 ft WT: 26.5 lb OD: 2.240 in

Compact MMI Electrode Section
MIE-A.A 173 LG: 13.96 ft WT: 99.2 lb OD: 4.094 in

MIS-D.A Compact Inline Bowspring sub
MIS-D.A 293 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 612 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.A Compact Knuckle Joint
SKJ-E.A 246 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

MIS-E.B Compact Inline Standoff sub
MIS-E.B 694 LG: 2.14 ft WT: 15.4 lb OD: 2.244 in

Compact Induction
MAI-B.J 375 LG: 10.81 ft WT: 48.5 lb OD: 2.240 in

Tool Zero (0.13ft from bottom)

Total Length: 160.56 ft Weight: 1128.8 lb

COMPANY	WHITING OIL AND GAS CORPORATION
WELL	HORSETAIL 29G-2012B
FIELD	REDTAIL
PROVINCE/COUNTY	WELD
COUNTRY/STATE	U.S.A. / COLORADO

Elevation Kelly Bushing	4712.00	feet	First Reading	13668.00	feet
Elevation Drill Floor	4712.00	feet	Depth Driller	13700.00	feet
Elevation Ground Level	4694.00	feet	Depth Logger	13700.00	feet

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MEASURED DEPTH SPECTRAL GAMMA RAY LOG