MEASURED DEPTH SPECTRAL GAMMA RAY LOG

COMPANY	WHITING OIL AND GAS CORPORATION
WELL	HORSETAIL 30F-1942
FIELD	REDTAIL
PROVINCE/COUNTY	WELD
COUNTRY/STATE	U.S.A. / COLORADO
LOCATION	SHL: 2323 FNL & 1890 FWL
PERMIT NUMBER	BHL: 100 FNL & 1485 FWL

SEC	TWP	RGE
30	10N	57W

API Number 05-123-38740

Other Services
MICRO IMAGER
ARRAY INDUCTION
NEUTRON/DENSITY
CROSS DIPOLE SONIC

Permanent Datum G.L., Elevation 4780 feet
Log Measured From KB
Drilling Measured From K.B. @ 17 FEET

Elevations:	feet
KB	4797.00
DF	4797.00
GL	4780.00

Date	22-OCT-2014				
Run Number	ONE				
Service Order	6551-101136206				
Depth Driller	13777.00	feet			
Depth Logger	13777.00	feet			
First Reading	13744.00	feet			
Last Reading	6050.00	feet			
Casing Driller	6064.00	feet			
Casing Logger	6070.00	feet			
Bit Size	6.750	inches			
Hole Fluid Type	WBM				
Density / Viscosity	9.50	lb/USg	44.00	type in	
PH / Fluid Loss	8.90		4.80	ml/30Min	
Sample Source	FLOWLINE				
Rm @ Measured Temp	1.05 @ 69.2	ohm-m			
Rmf @ Measured Temp	0.84 @ 69.2	ohm-m			
Rmc @ Measured Temp	1.26 @ 69.2	ohm-m			
Source Rmf / Rmc	CALC		CALC		
Rm @ BHT	0.36 @211.0	ohm-m			
Time Since Circulation	1 HOUR				
Max Recorded Temp	212.00	deg F			
Equipment / Base	18086		Casper		
Recorded By	C CULLEN				
Witnessed By	M ODEBERG		GEOLOGIST		
WSL			WSL		

BOREHOLE RECORD

Last Edited: 22-OCT-2014 15:42

Bit Size (inches)	Depth From (feet)	Depth To (feet)
6.750	6064.00	13777.00

CASING RECORD

Type	Size (inches)	Depth From (feet)	Shoe Depth (feet)	Weight (pounds/ft)
SURFACE	7.000	0.00	6064.00	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
MSD: STANDOFFS ON THE RECEIVER AND TRANSMITTER
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

LAST 3 STANDS WERE PUMPED ON AT 4BBLS/MIN AND ROTATED AT 25 RPM TO REACH TD.

ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST

ANNULAR HOLE VOLUME FROM TD TO 7"-29# CASING AT 6070 FEET = 1070 CUBIC FEET

TOTAL HOLE VOLUME FROM TD TO 7"-29# CASING AT 6070 FEET = 1920 CUBIC FEET.

OPERATORS: S.LANDON, J. GERDES

RIG: XTREME 18

5 INCH MAIN LOG

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 24-OCT-2014 06:31
Filename: D:\Logs\Whiting\HORSETAIL 30F-1942\MMS DEPTH.dta
Recorded on 24-OCT-2014 04:18
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

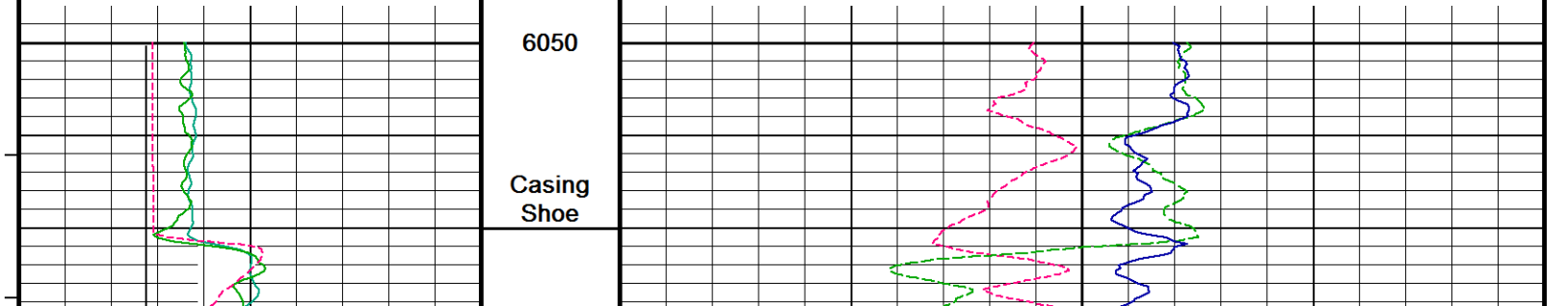
6050

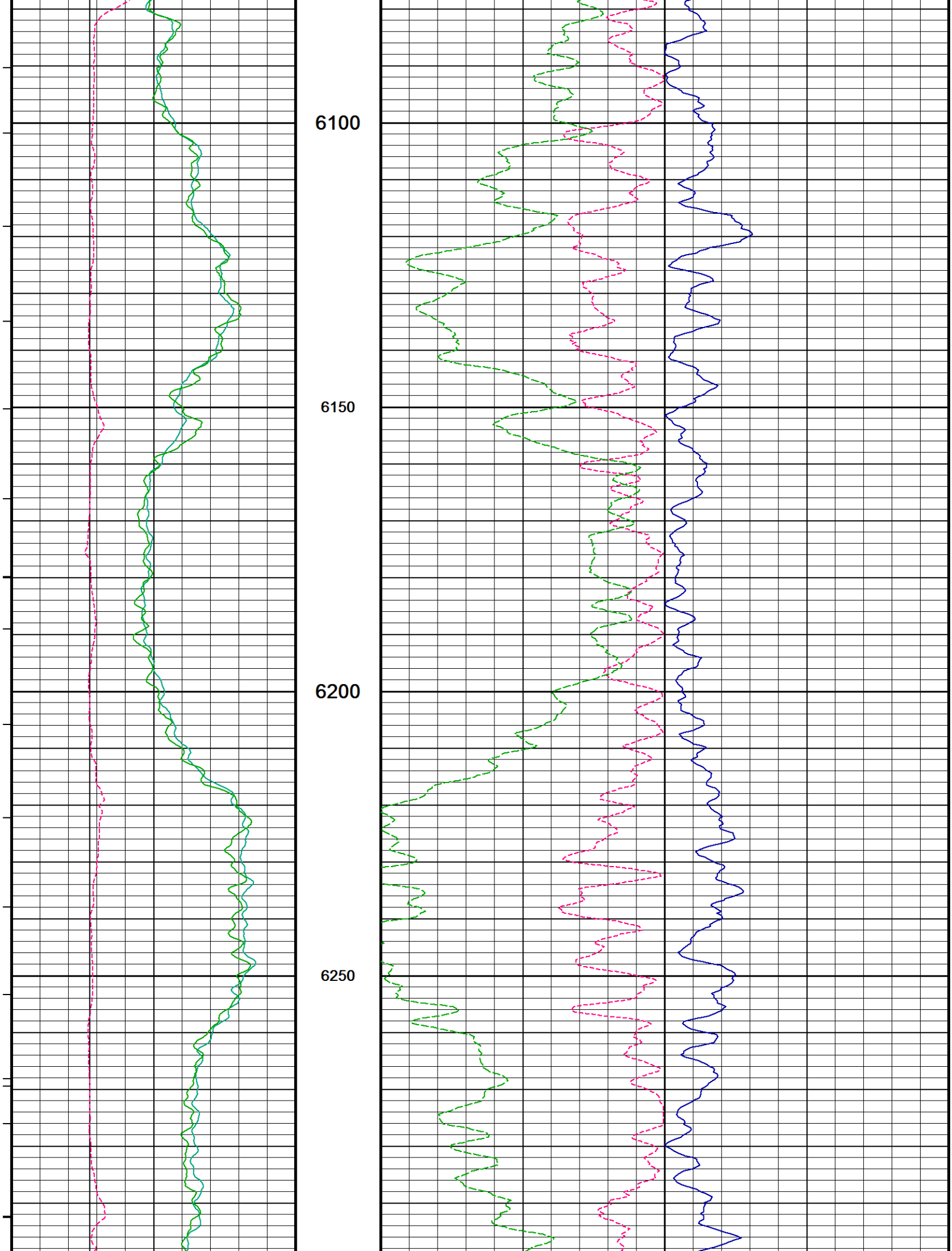
Casing Shoe

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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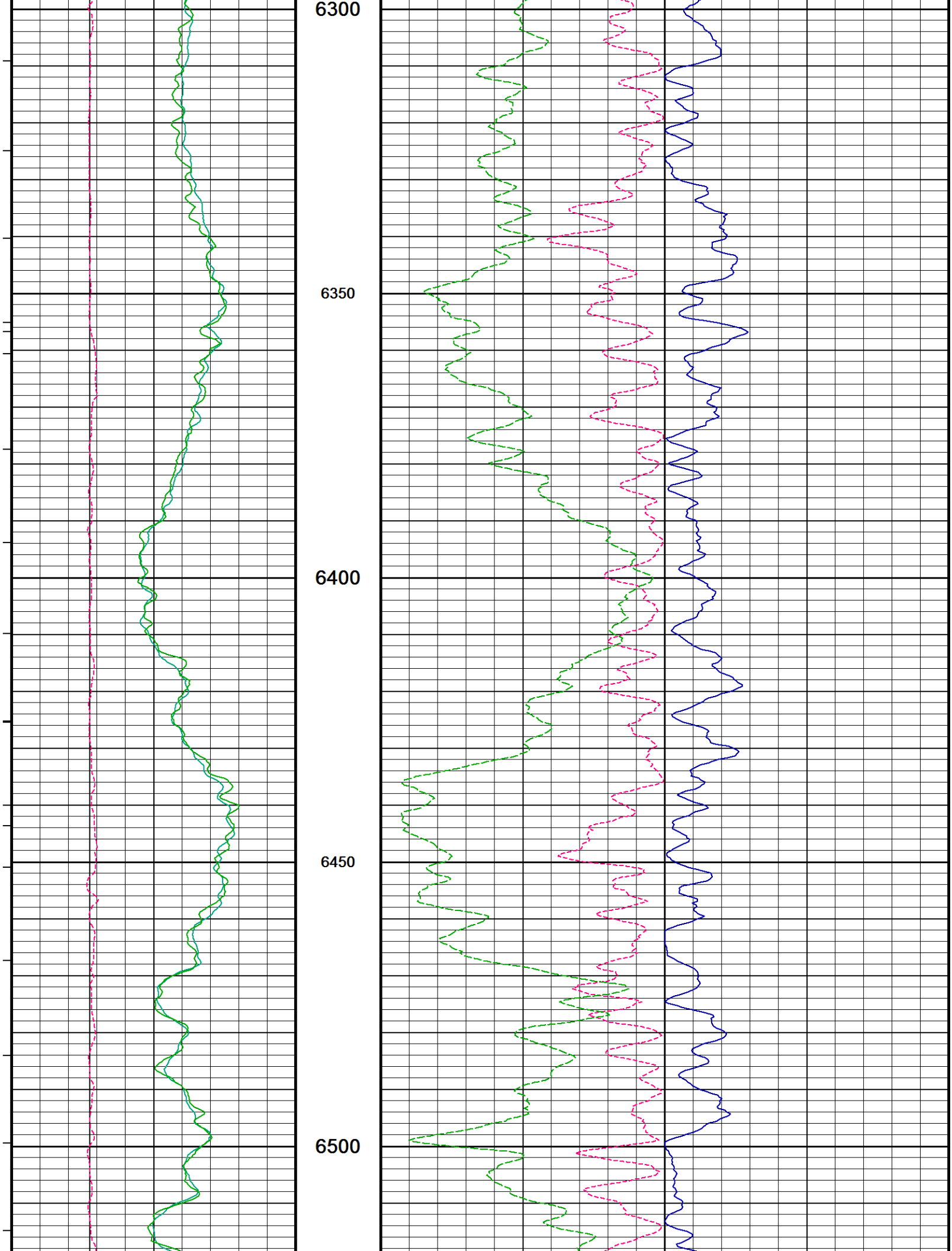
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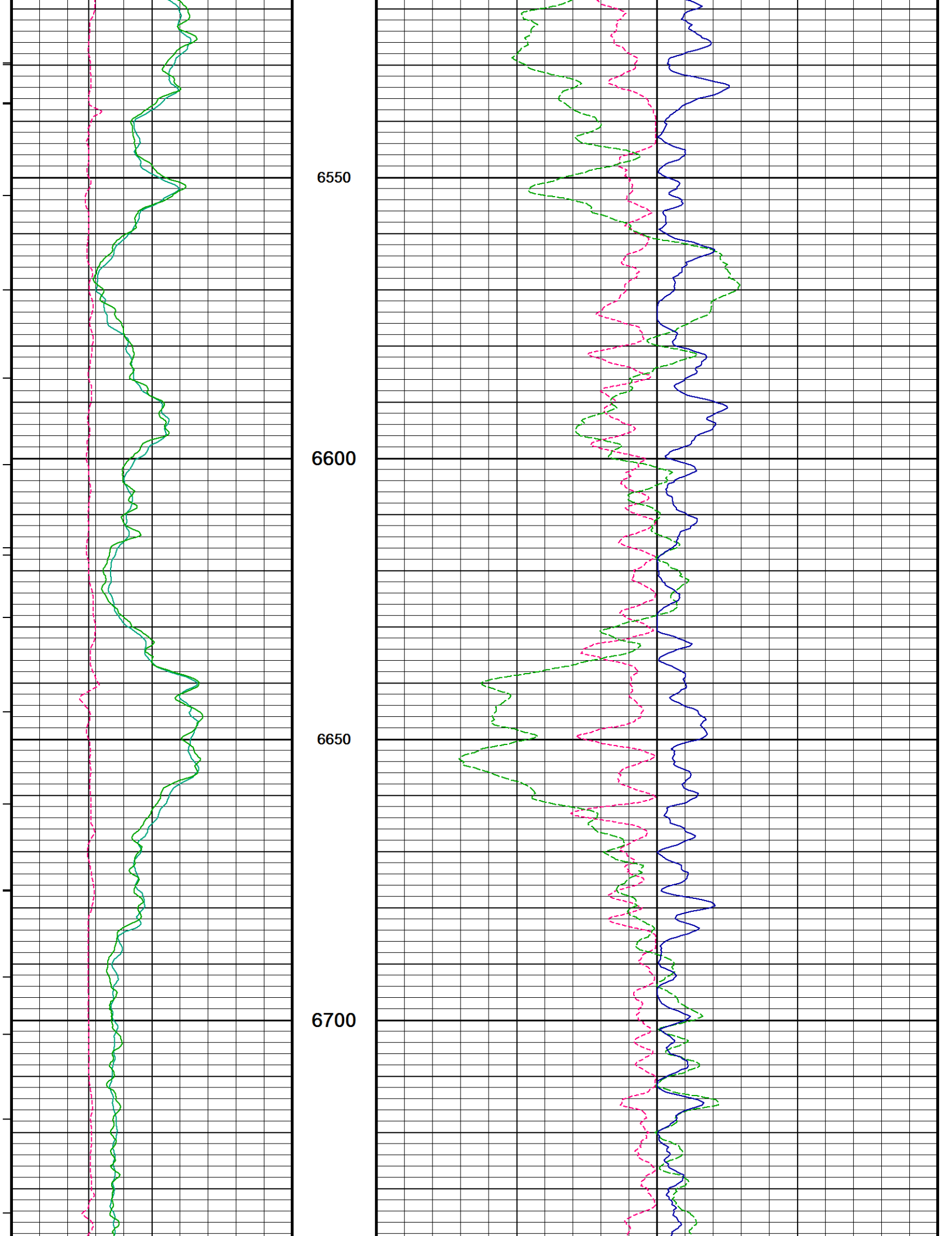
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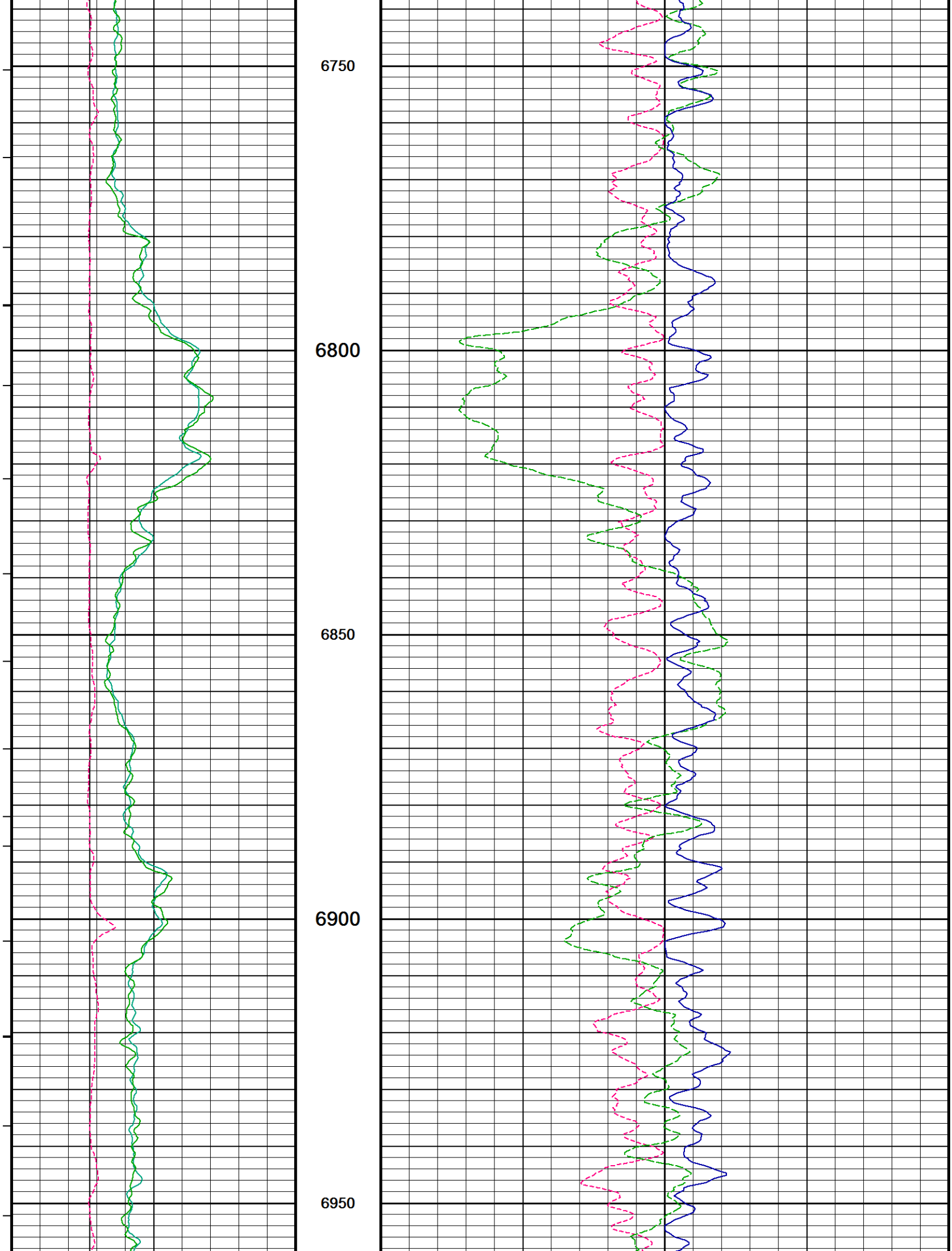
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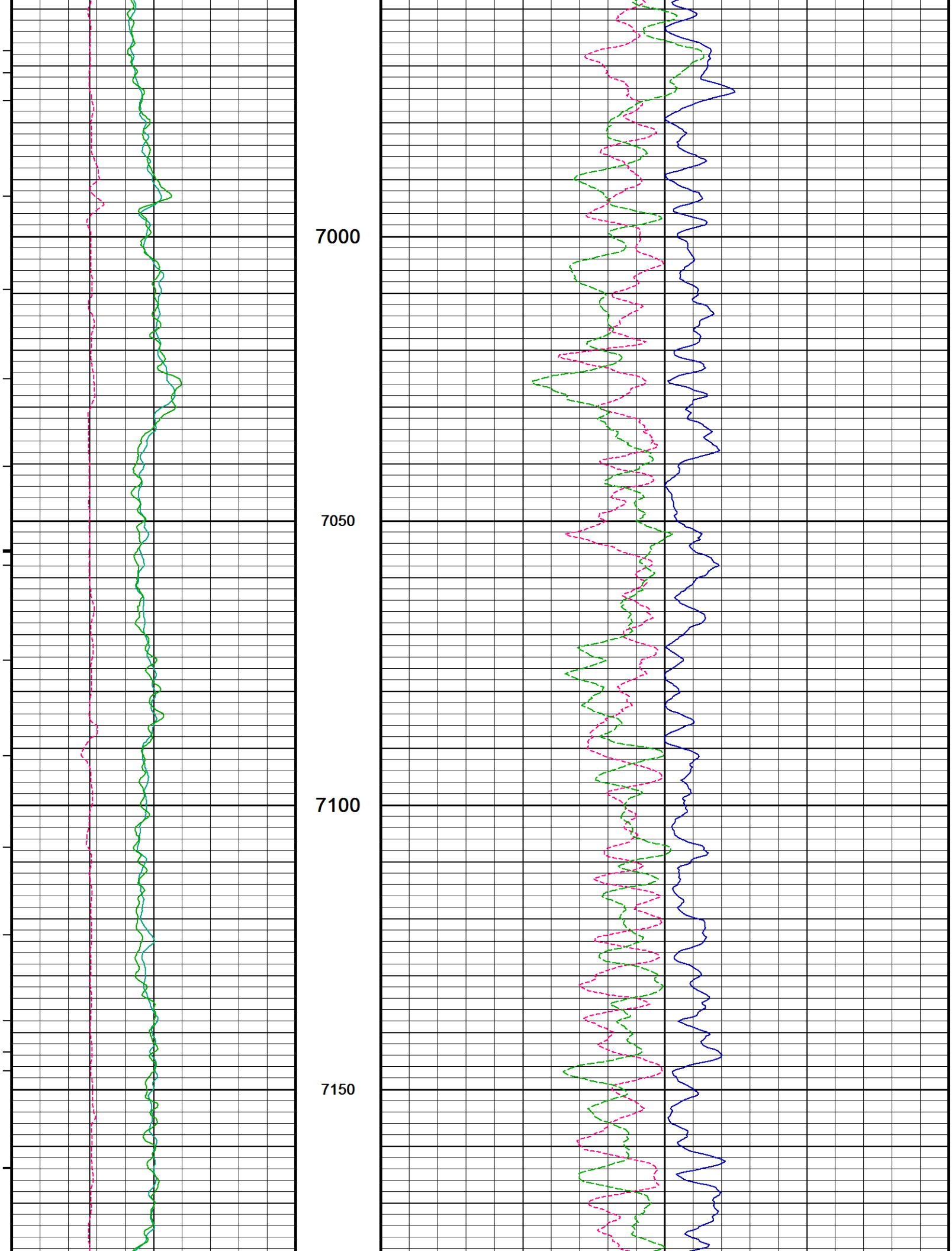
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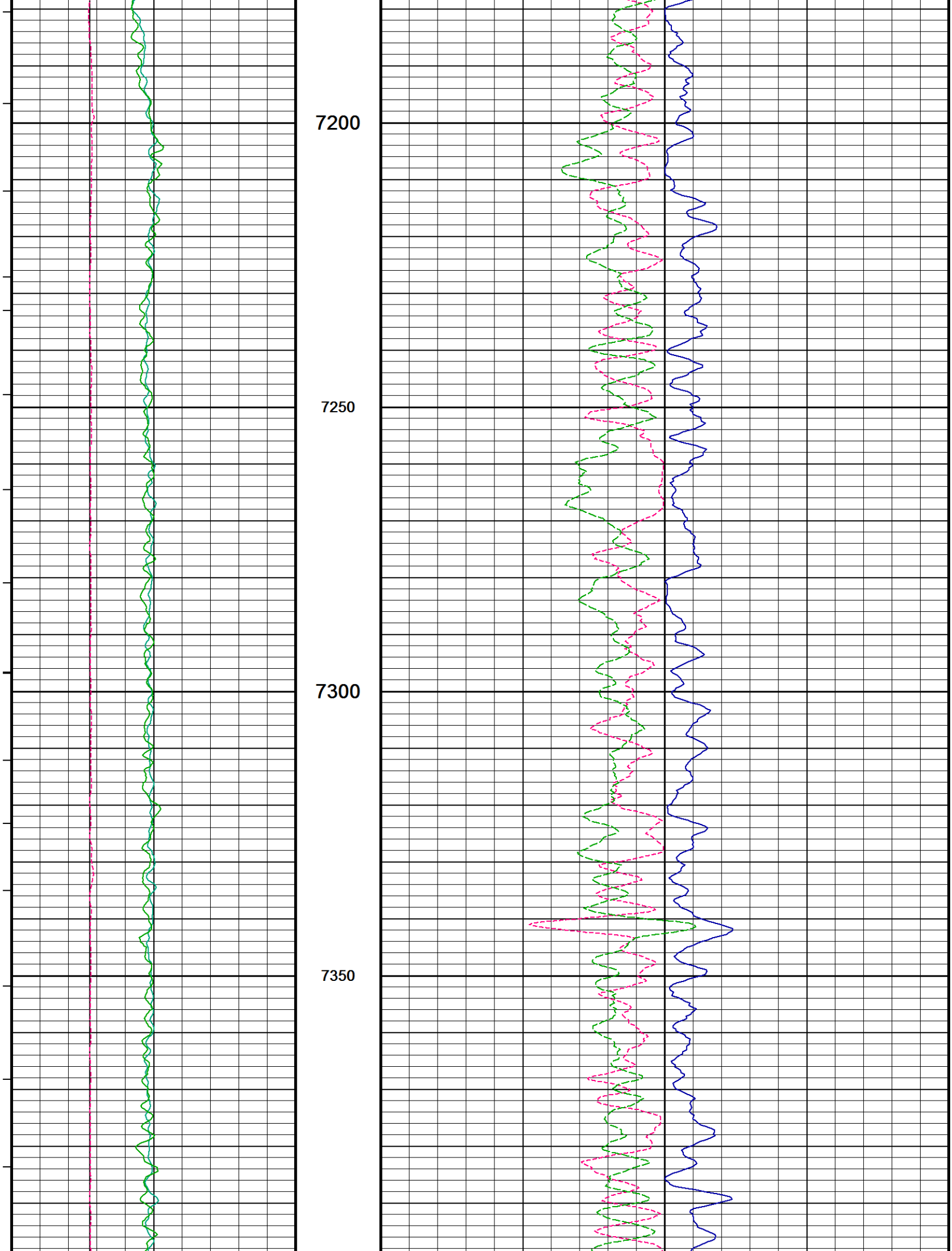
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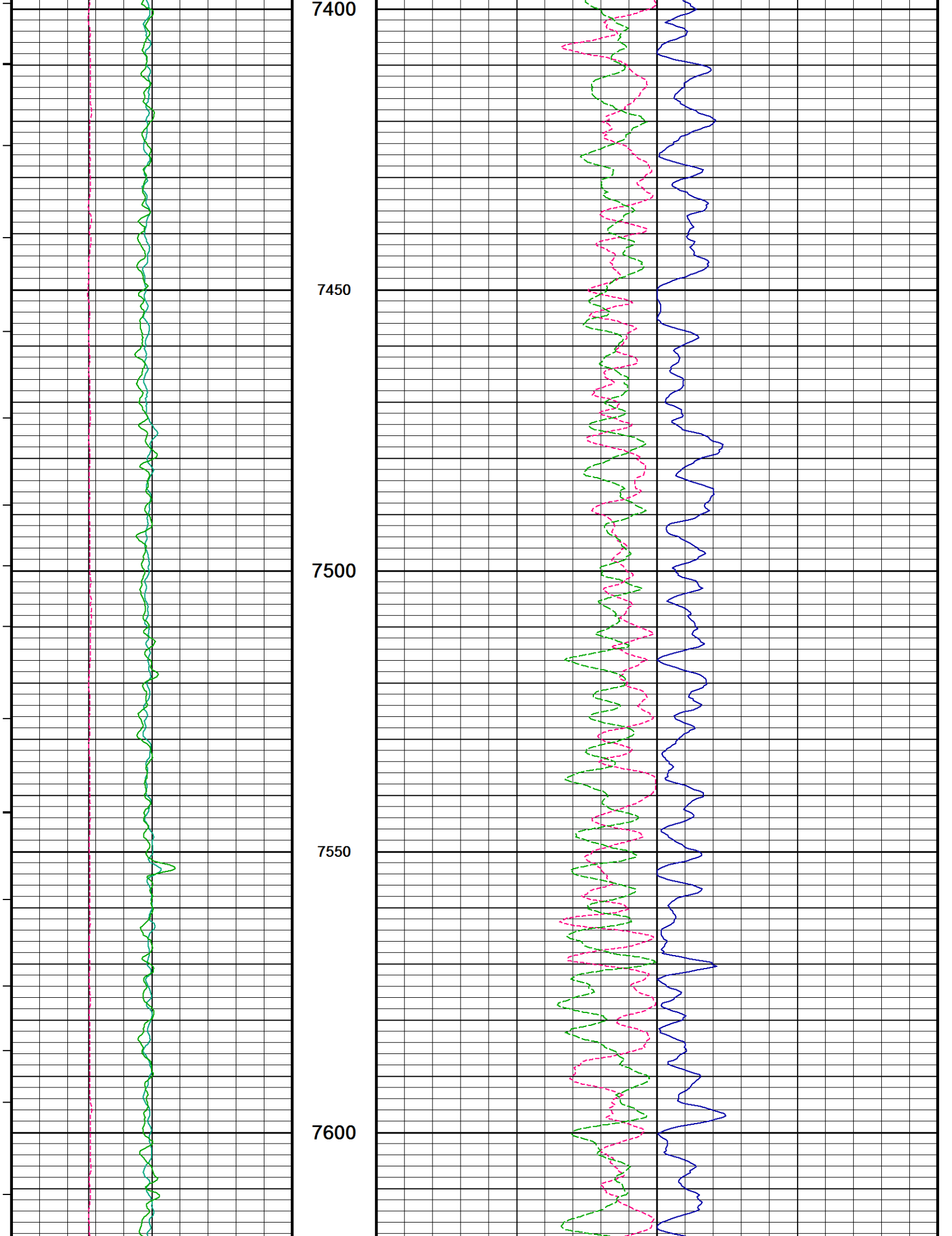
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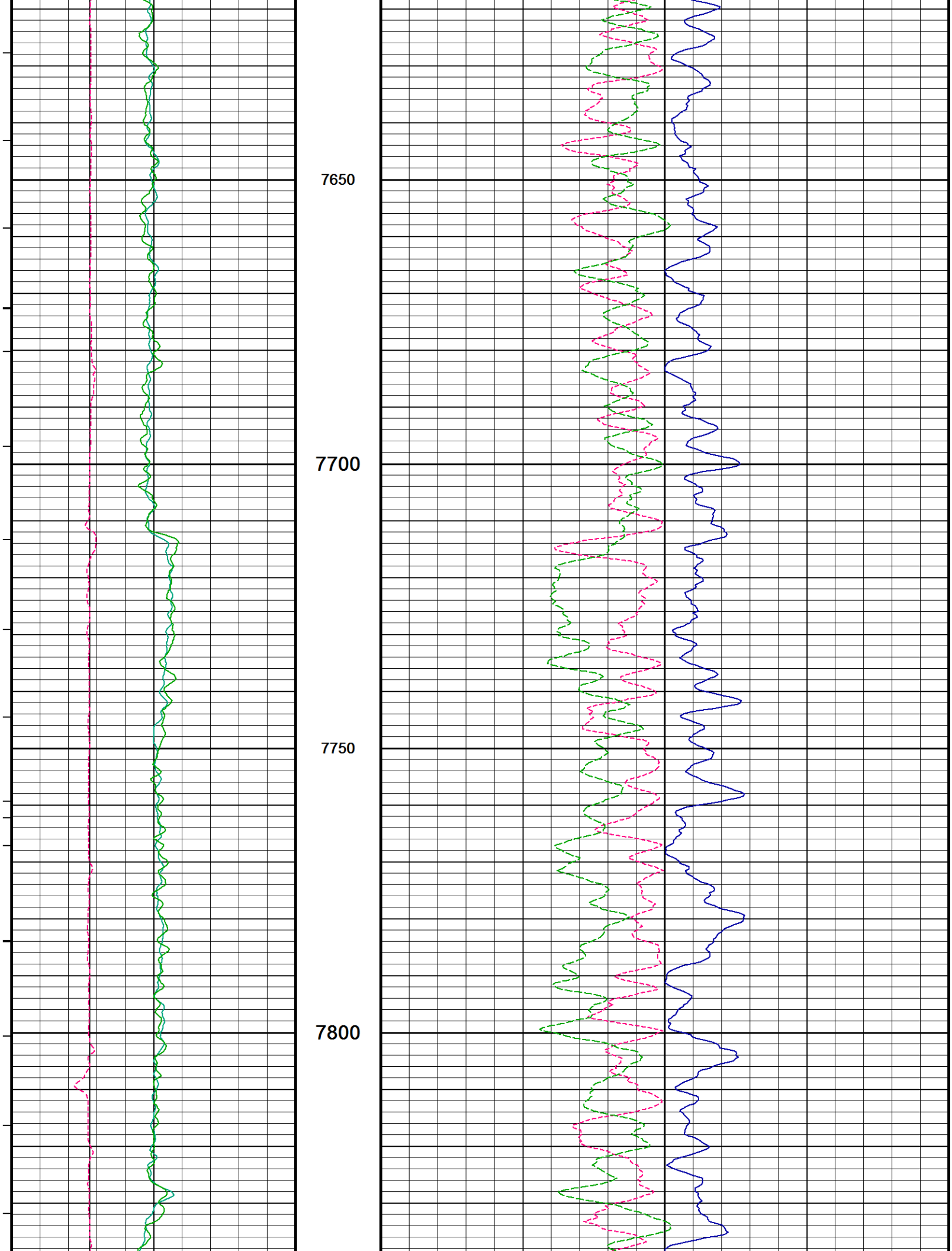
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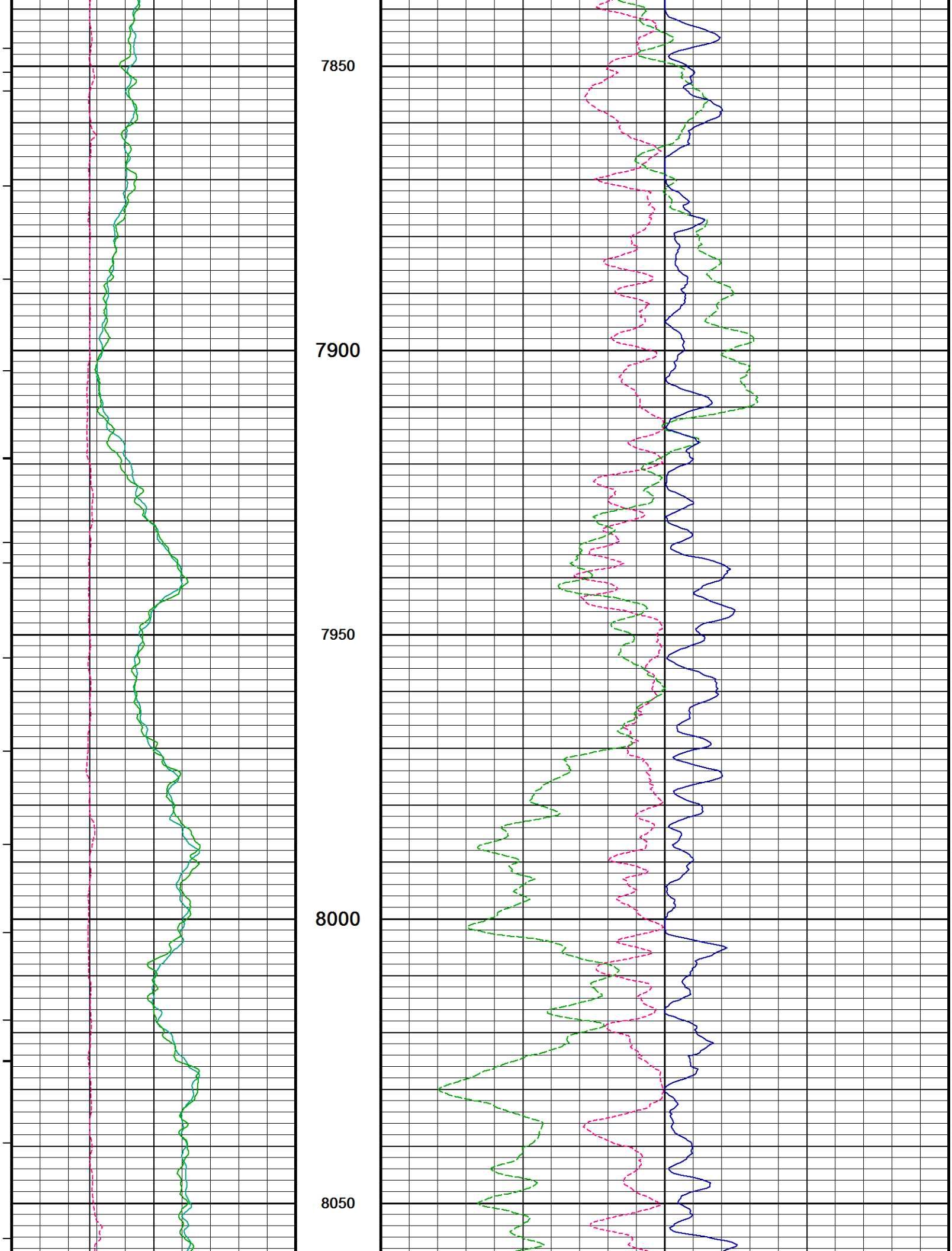
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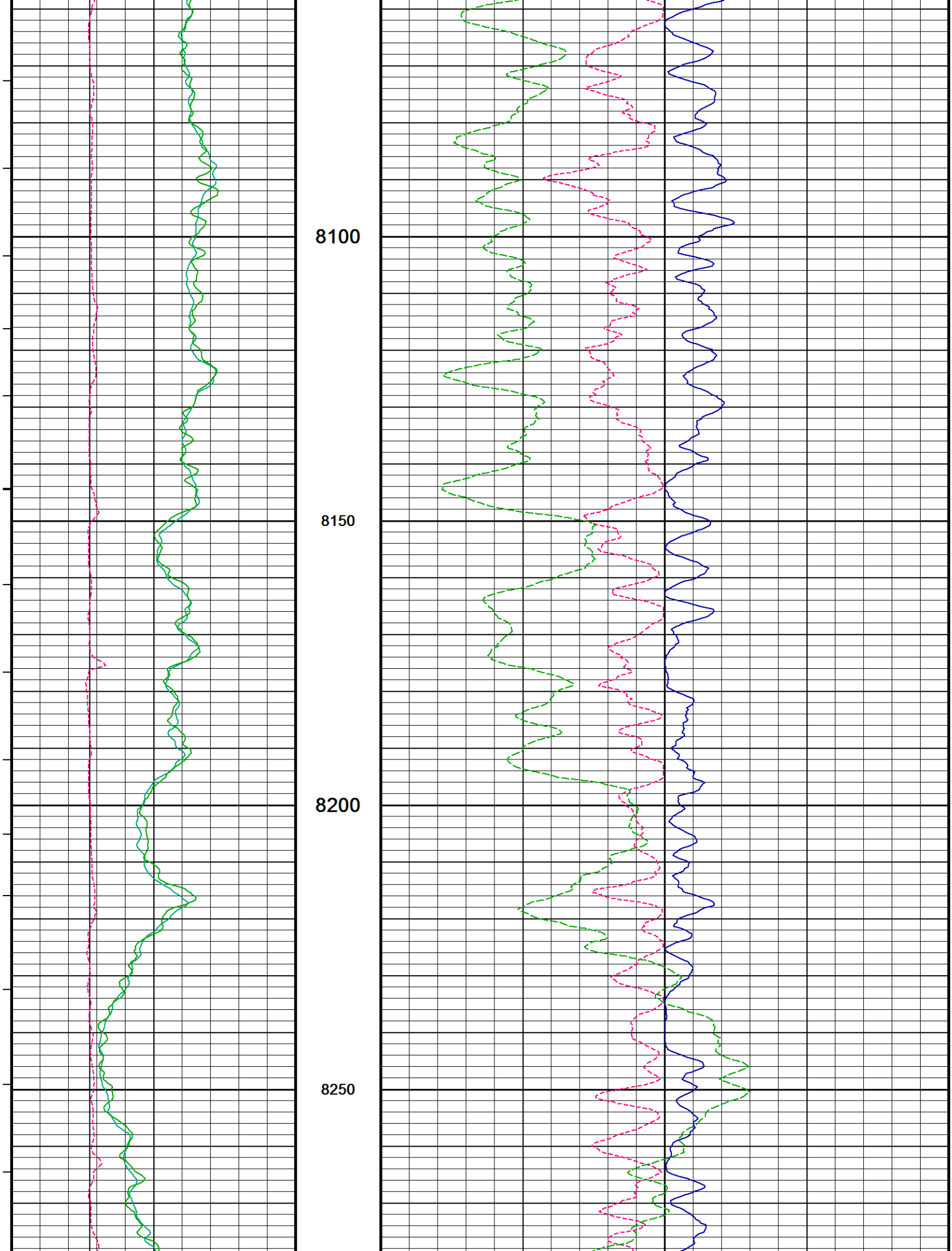
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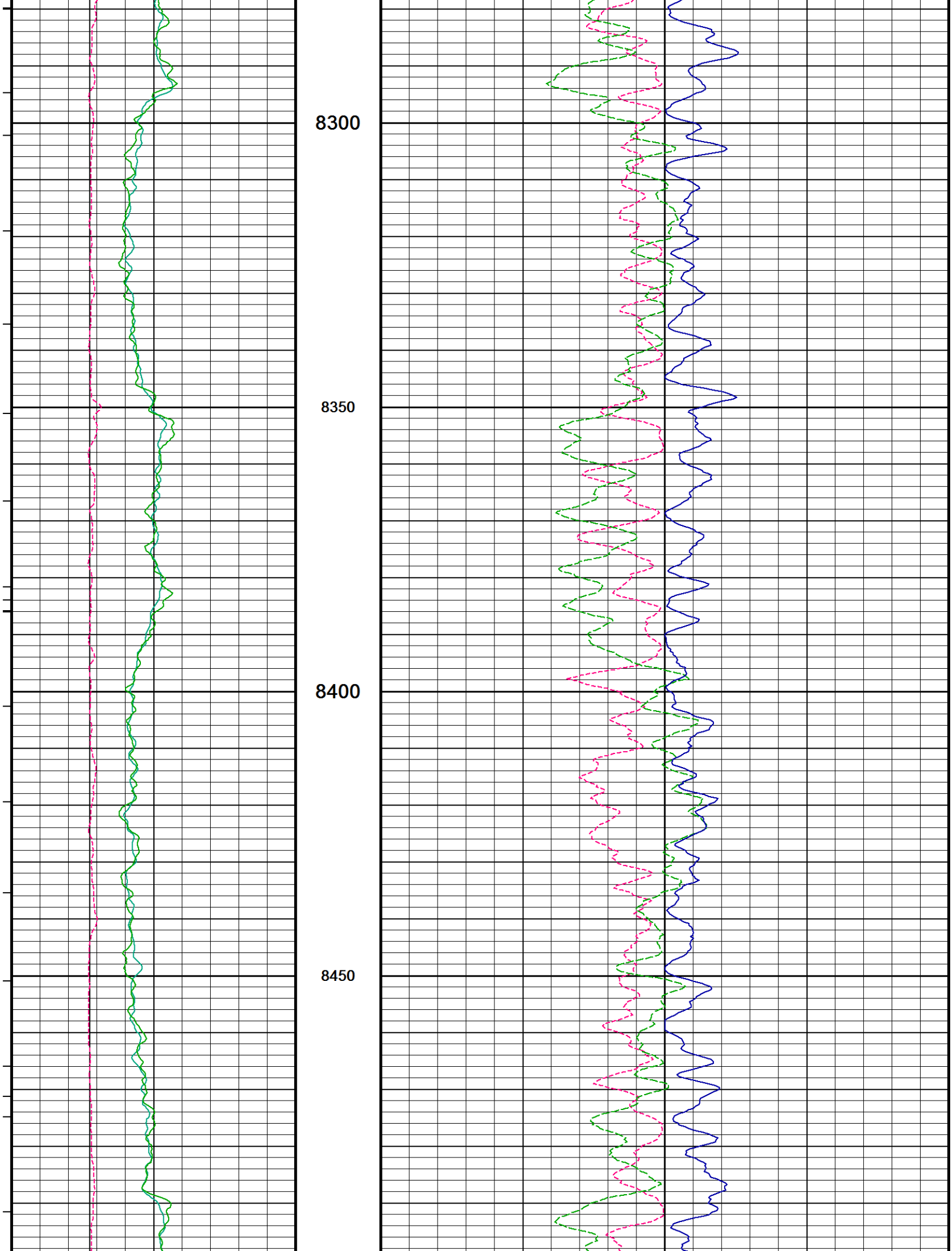
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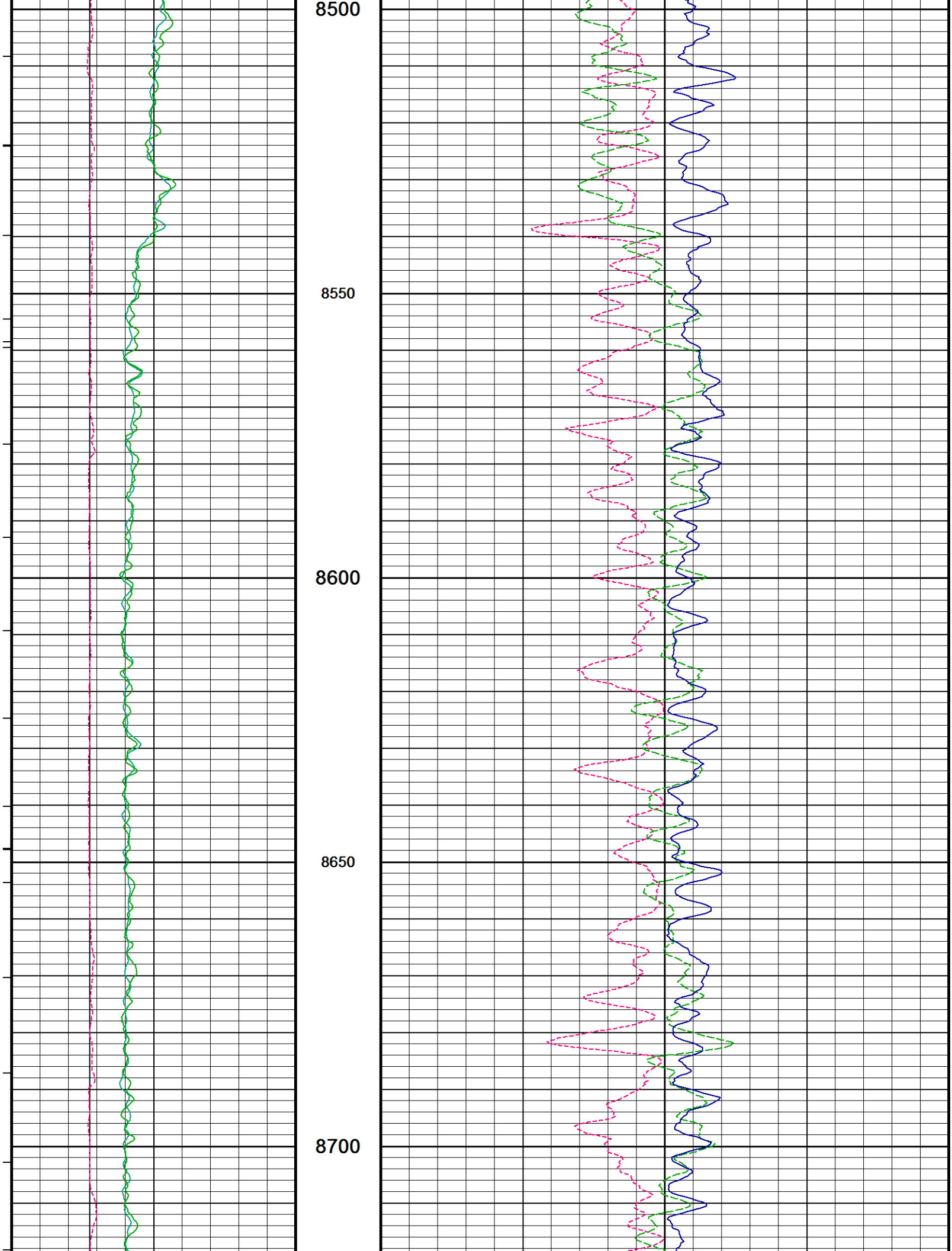
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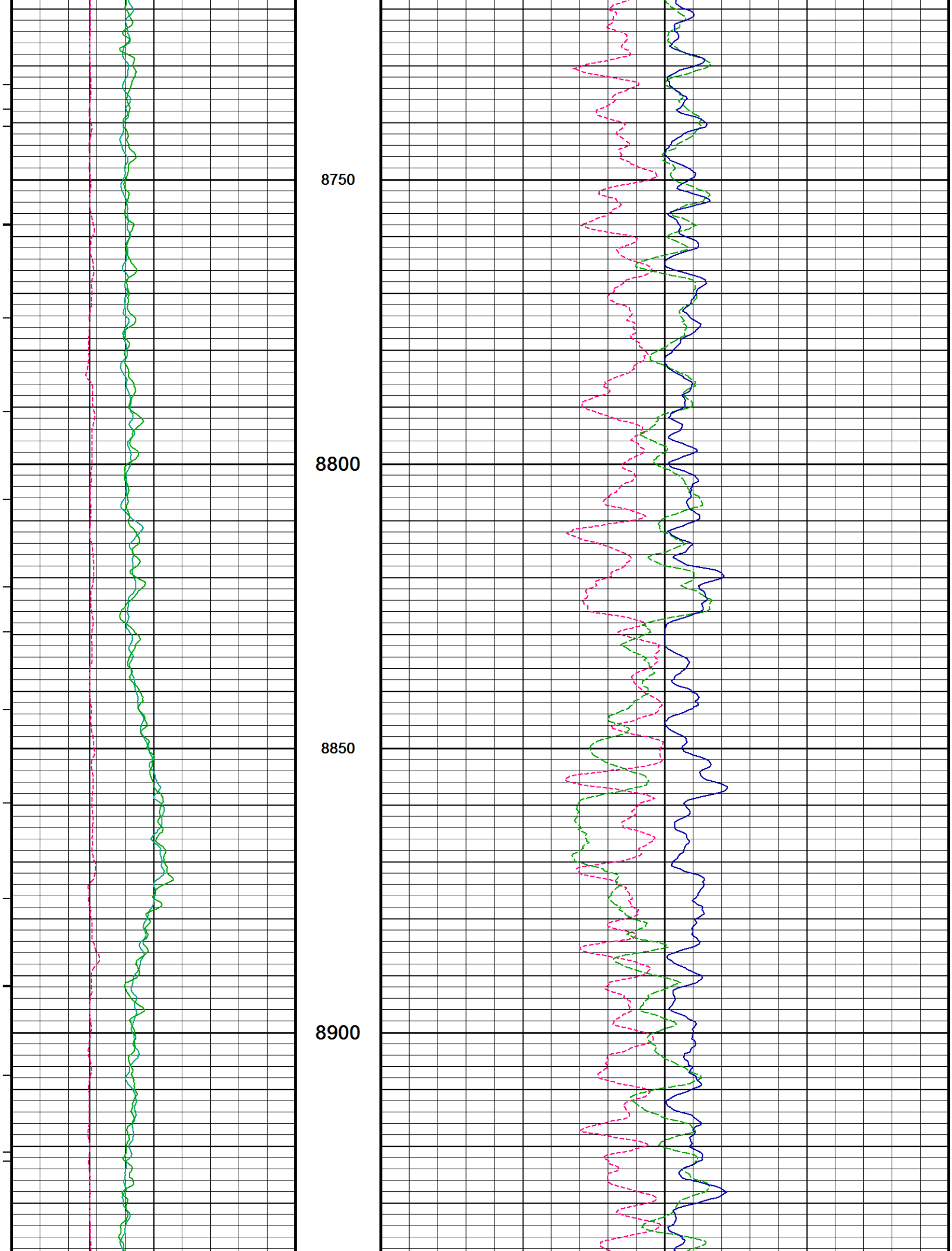
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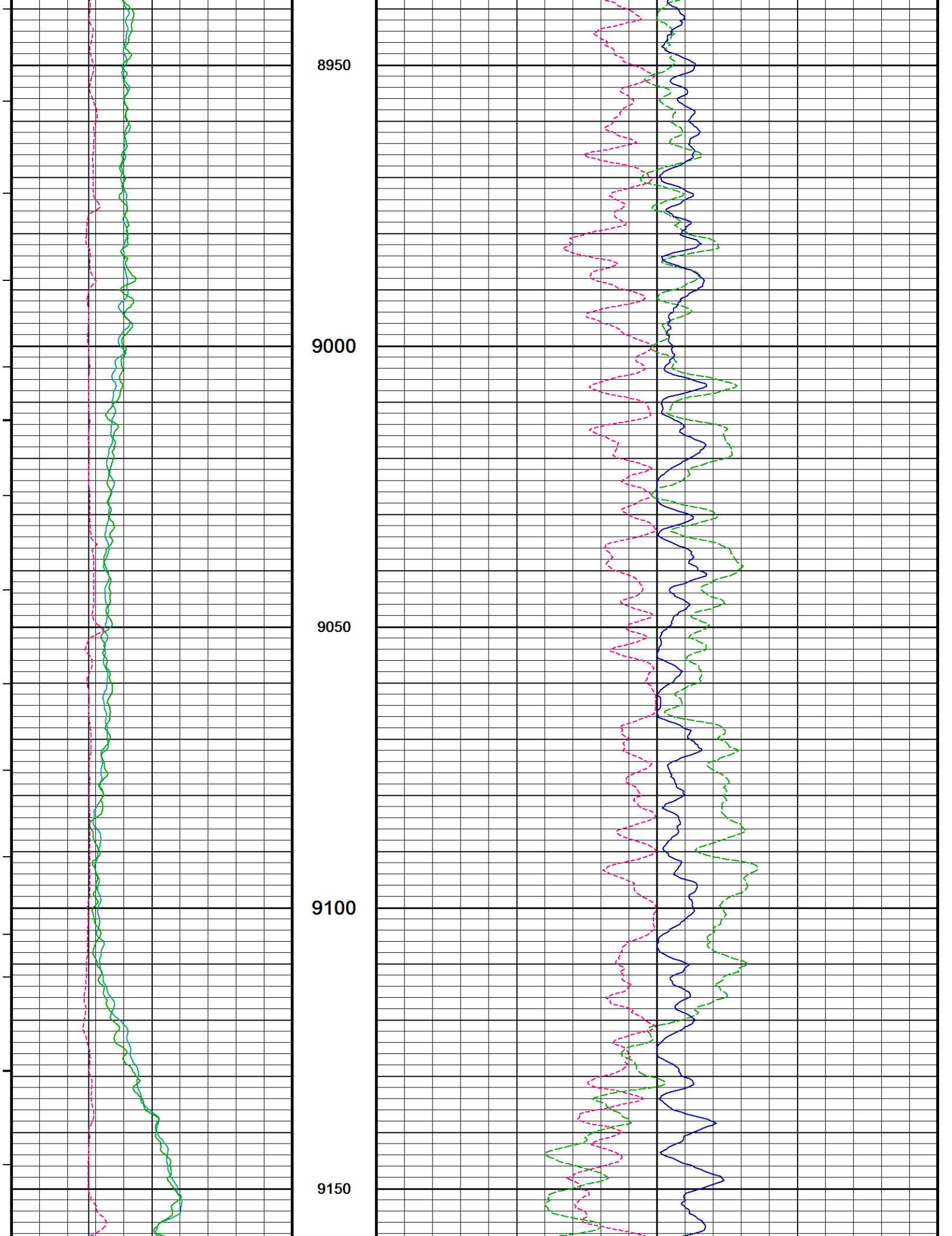
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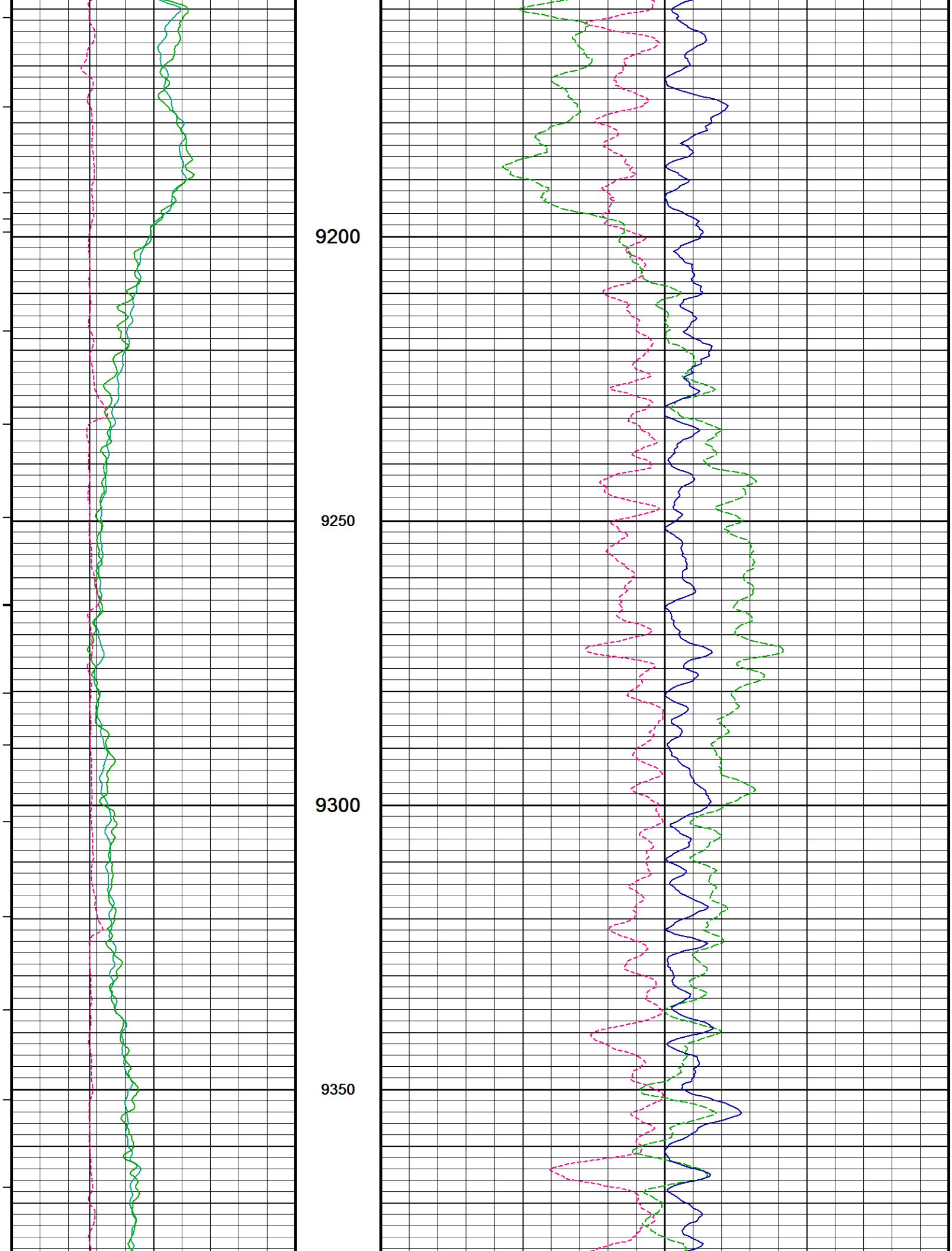
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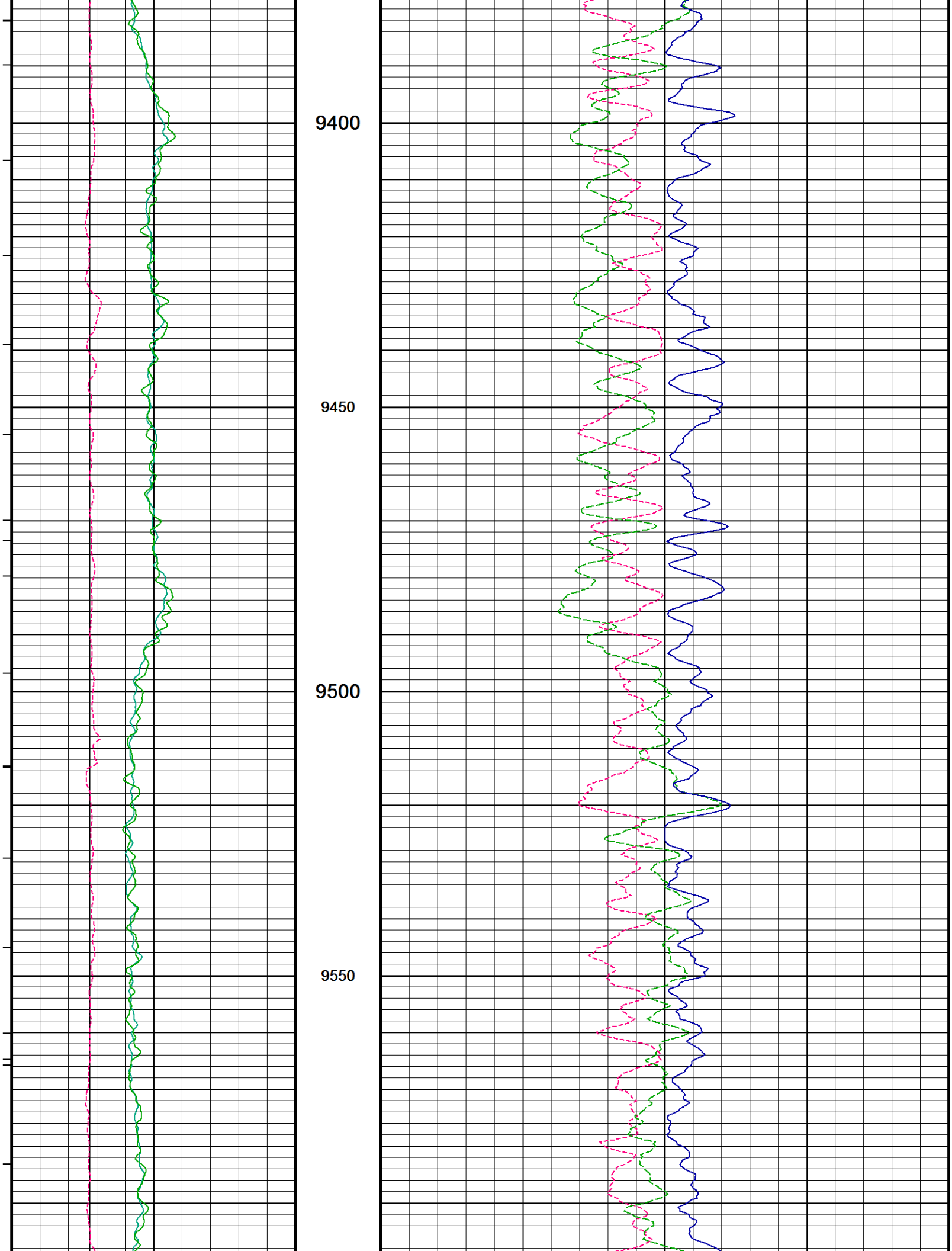
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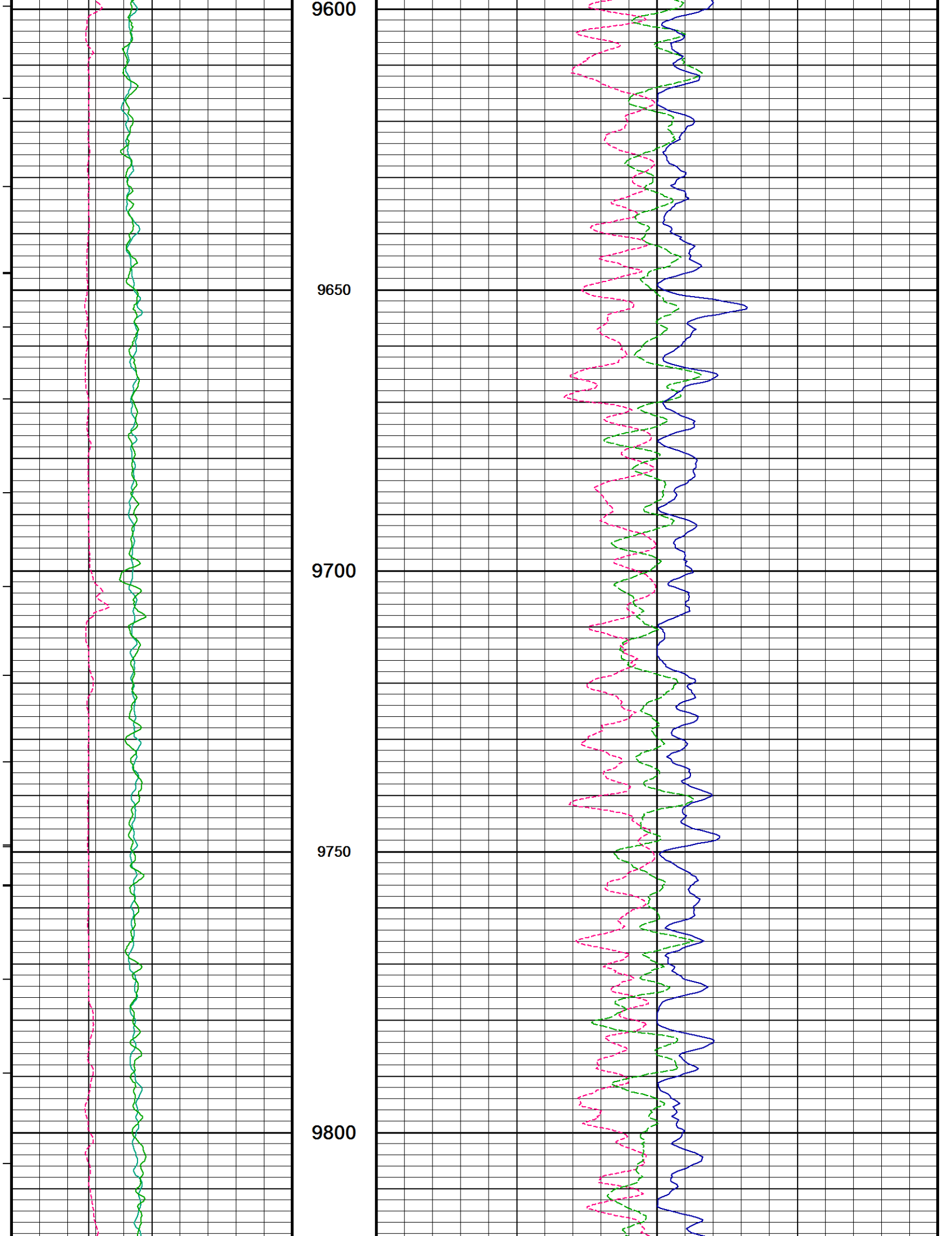
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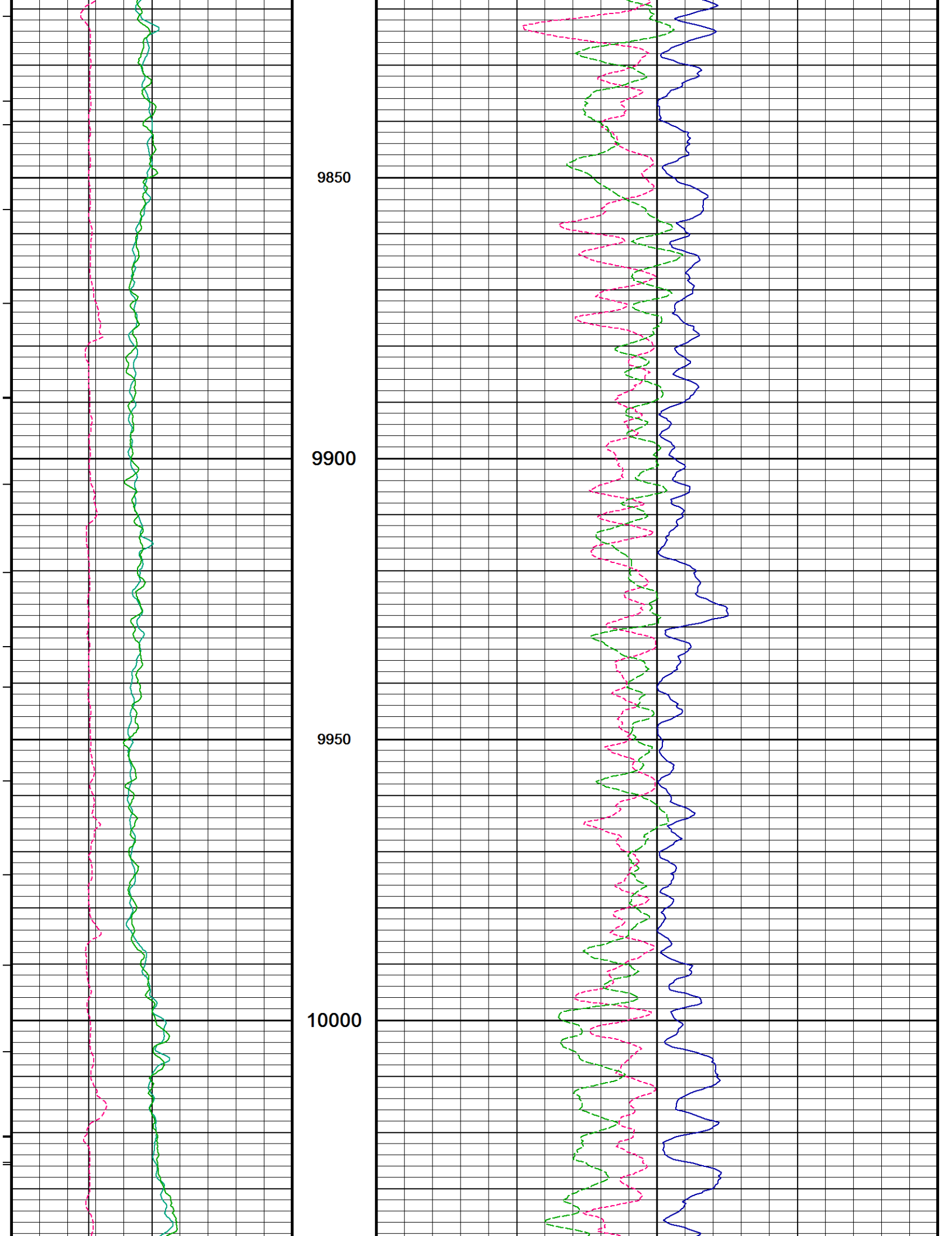
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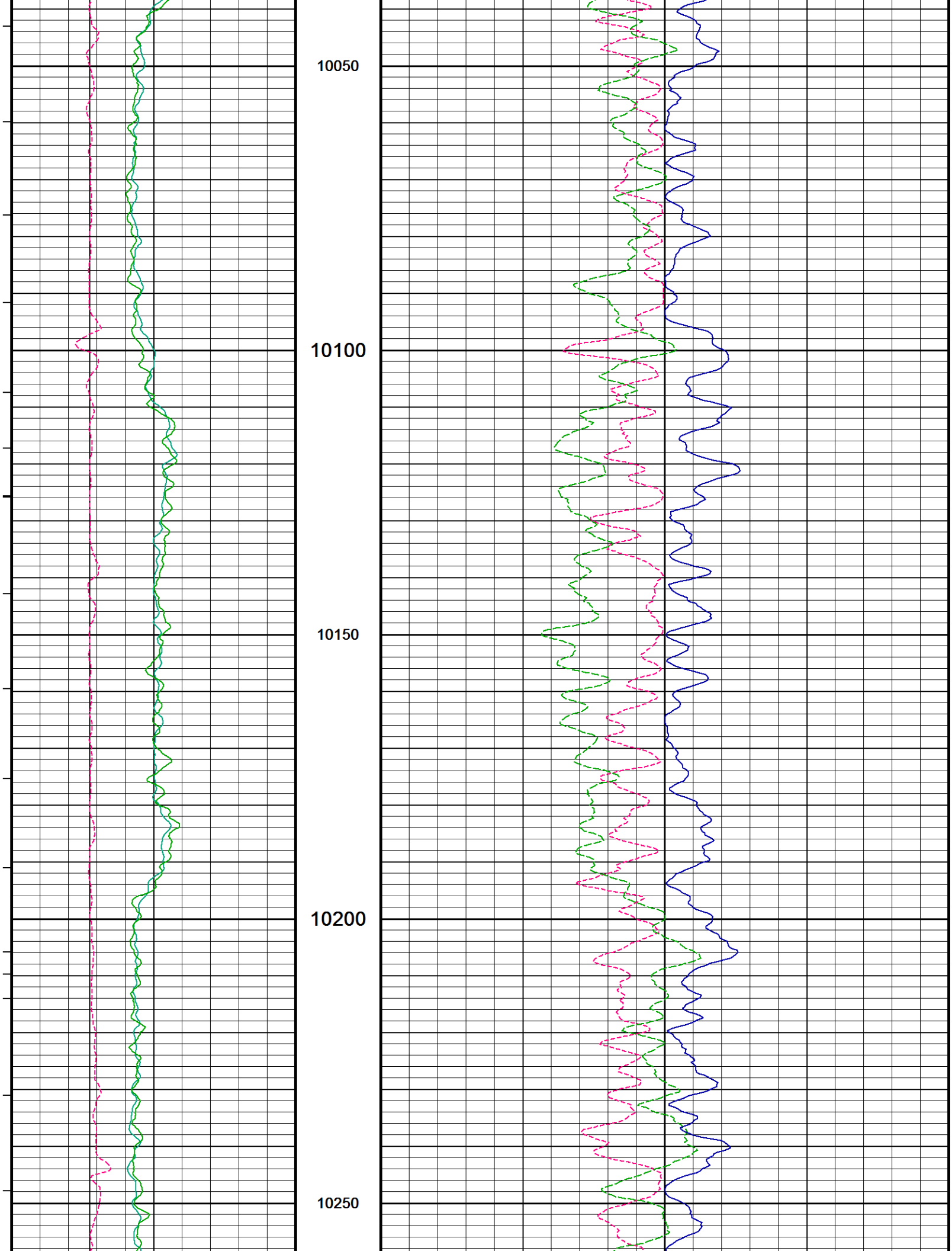
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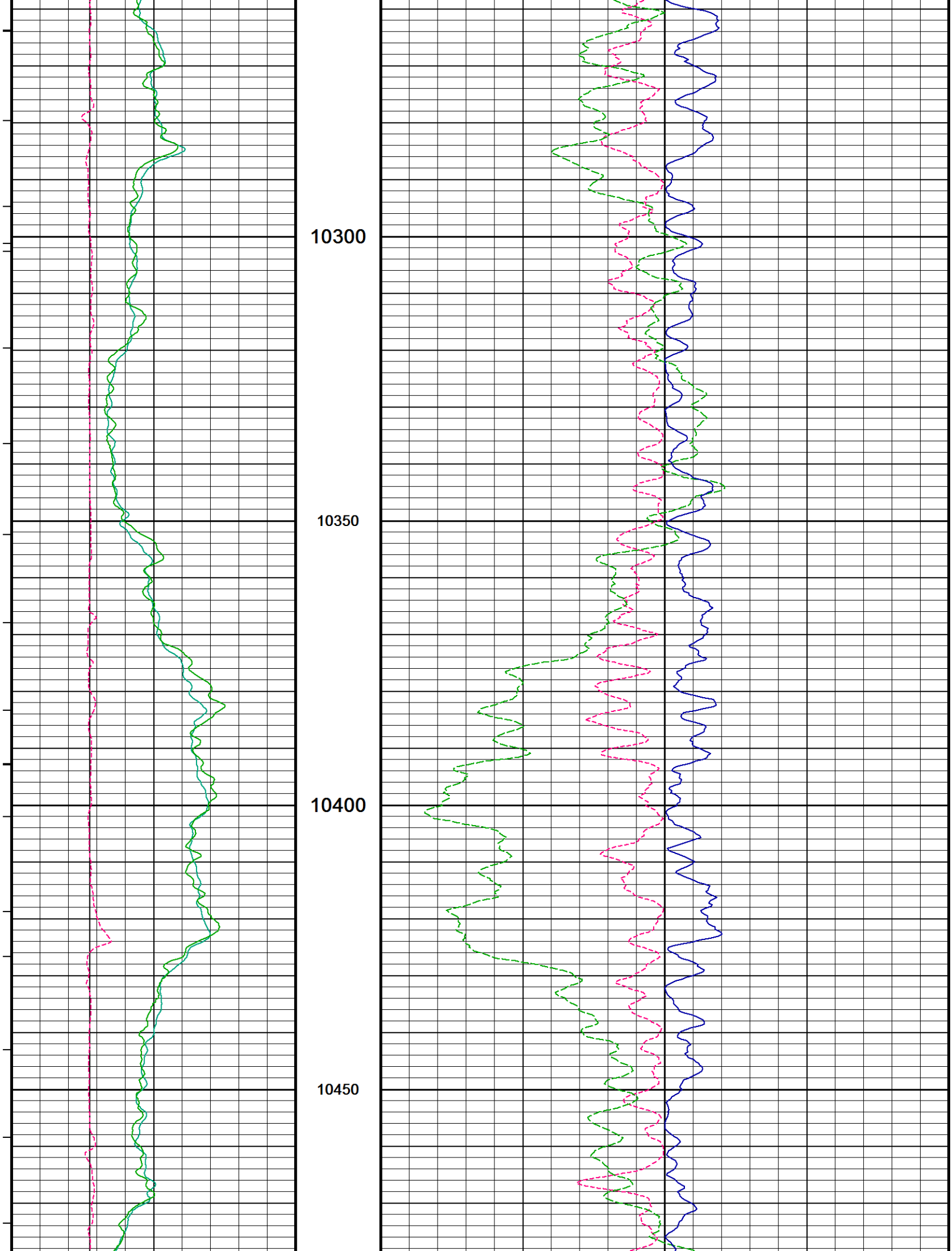
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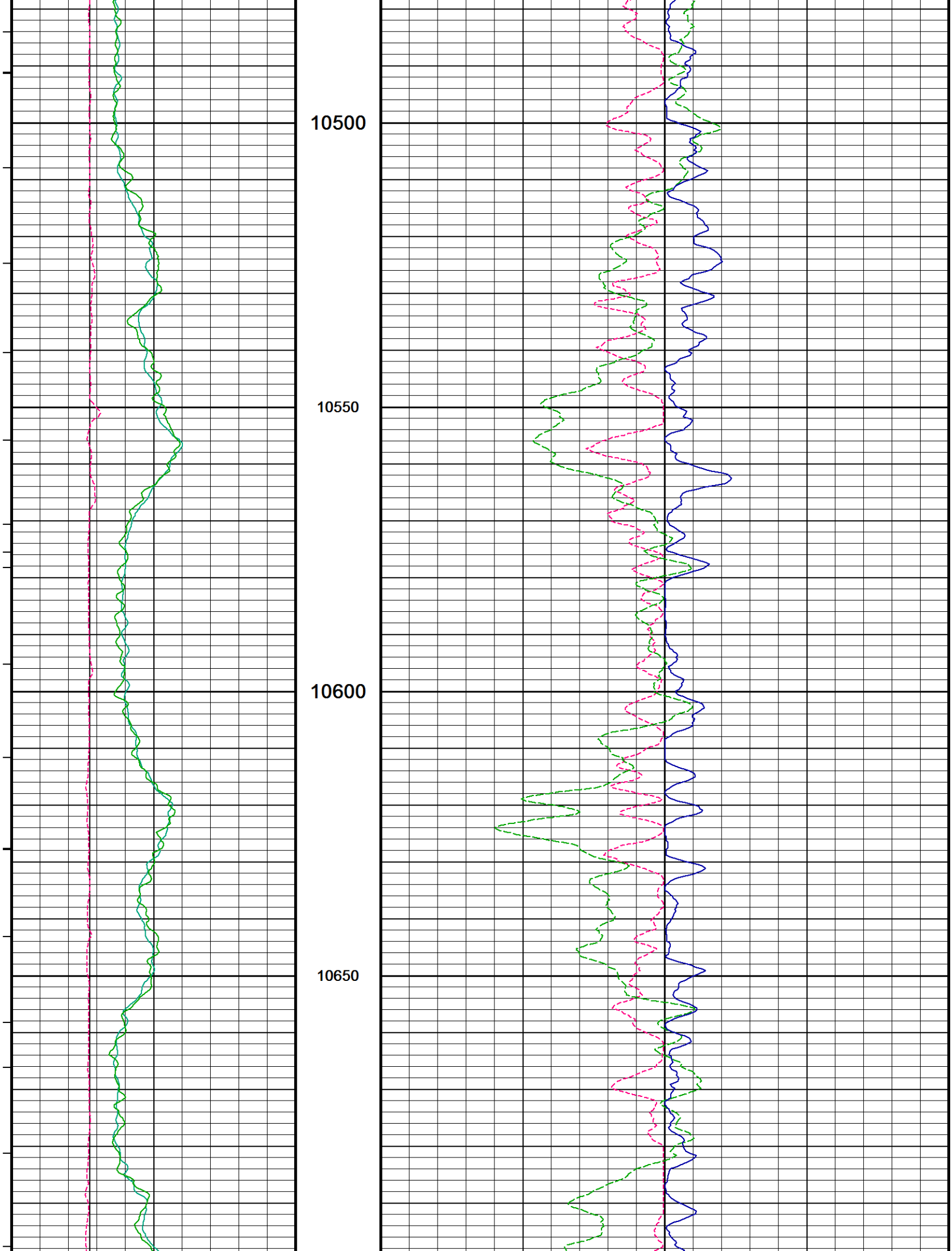
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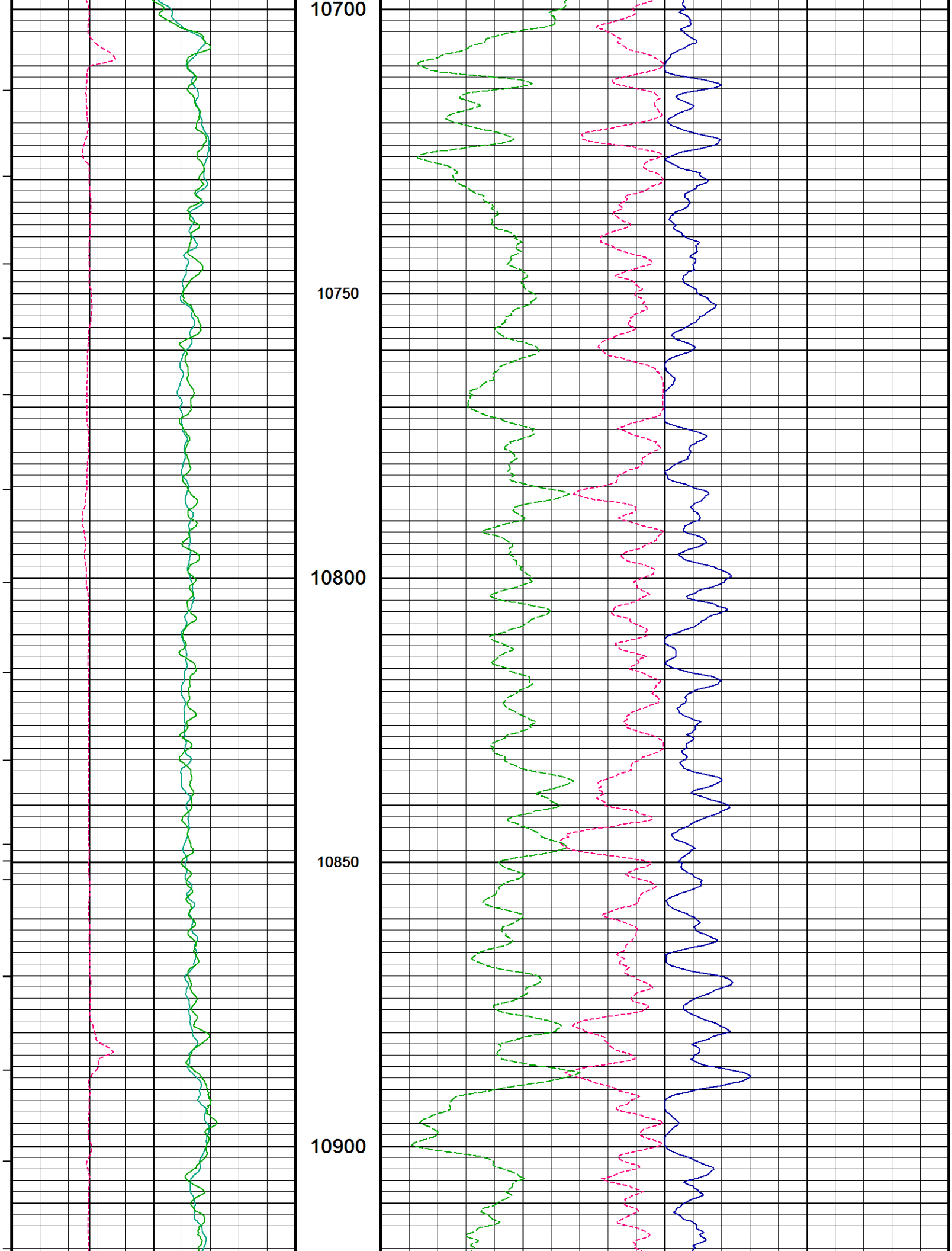
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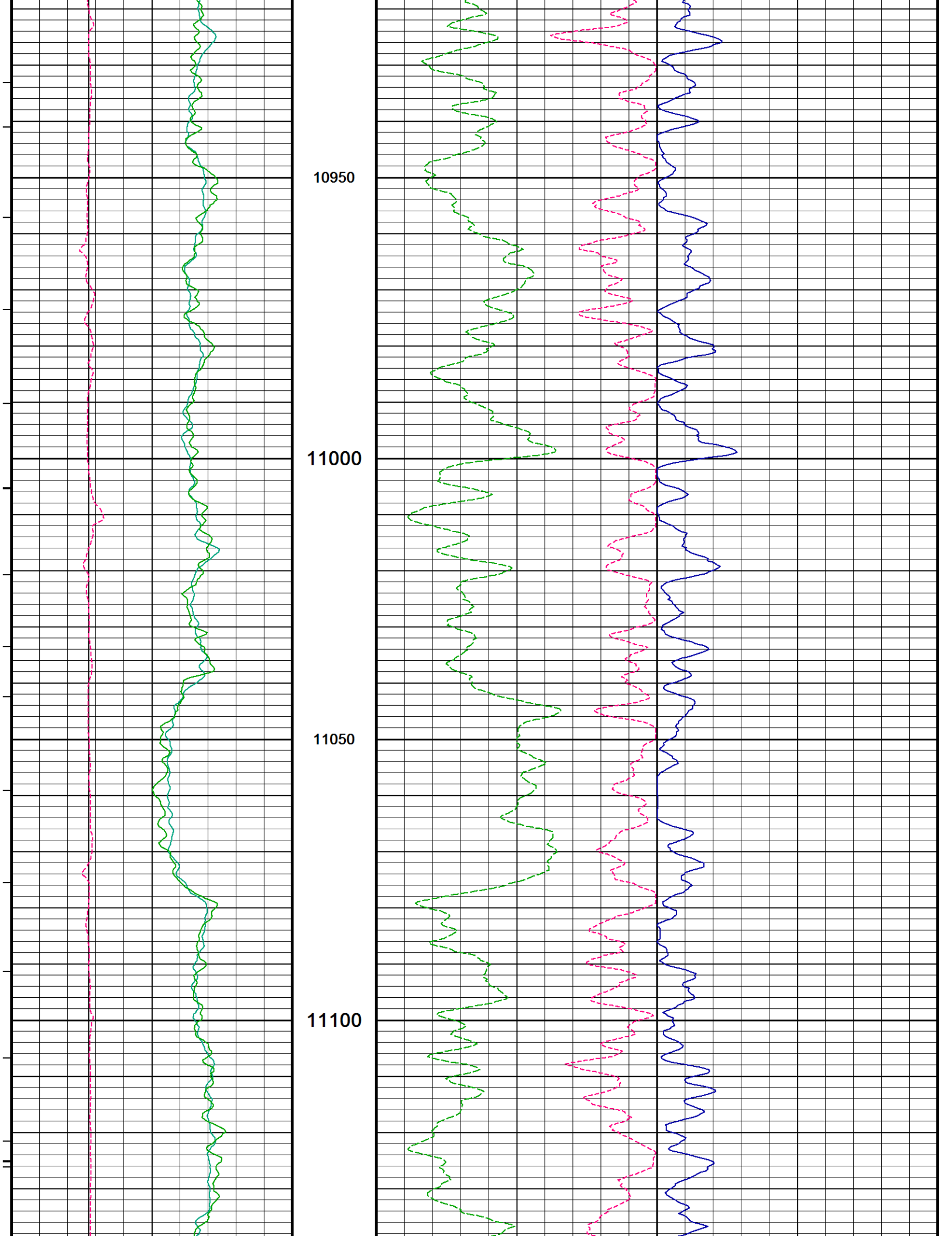
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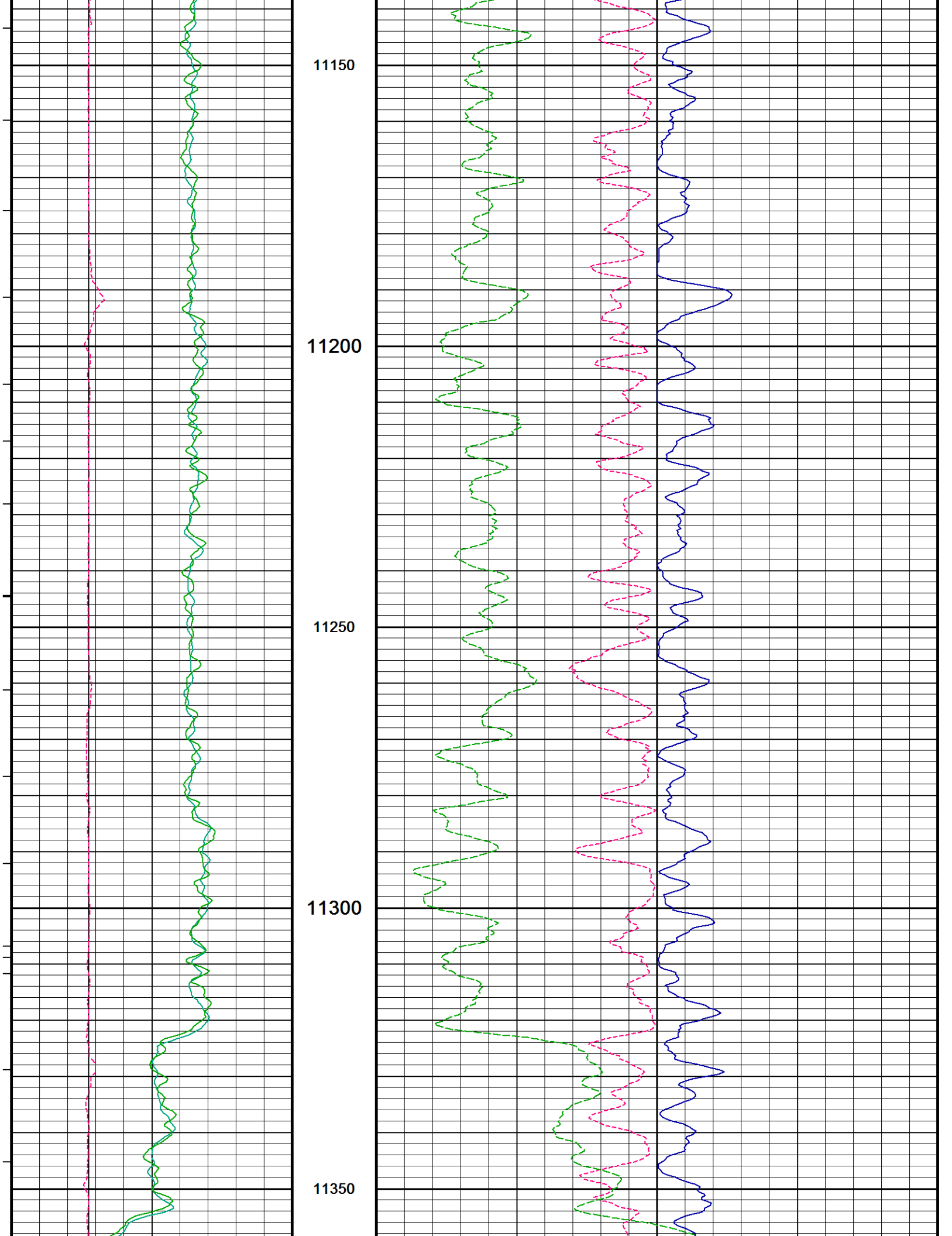
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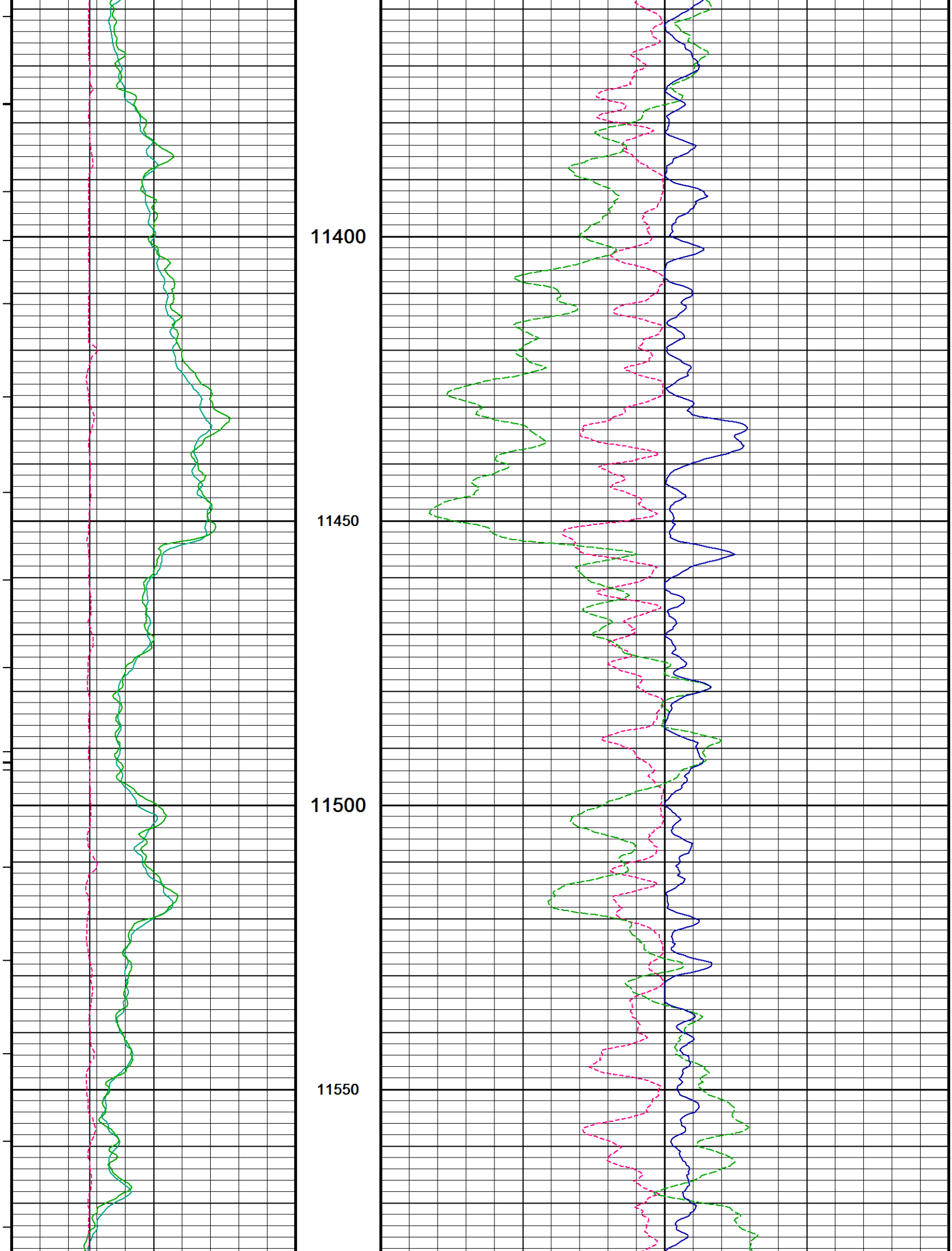
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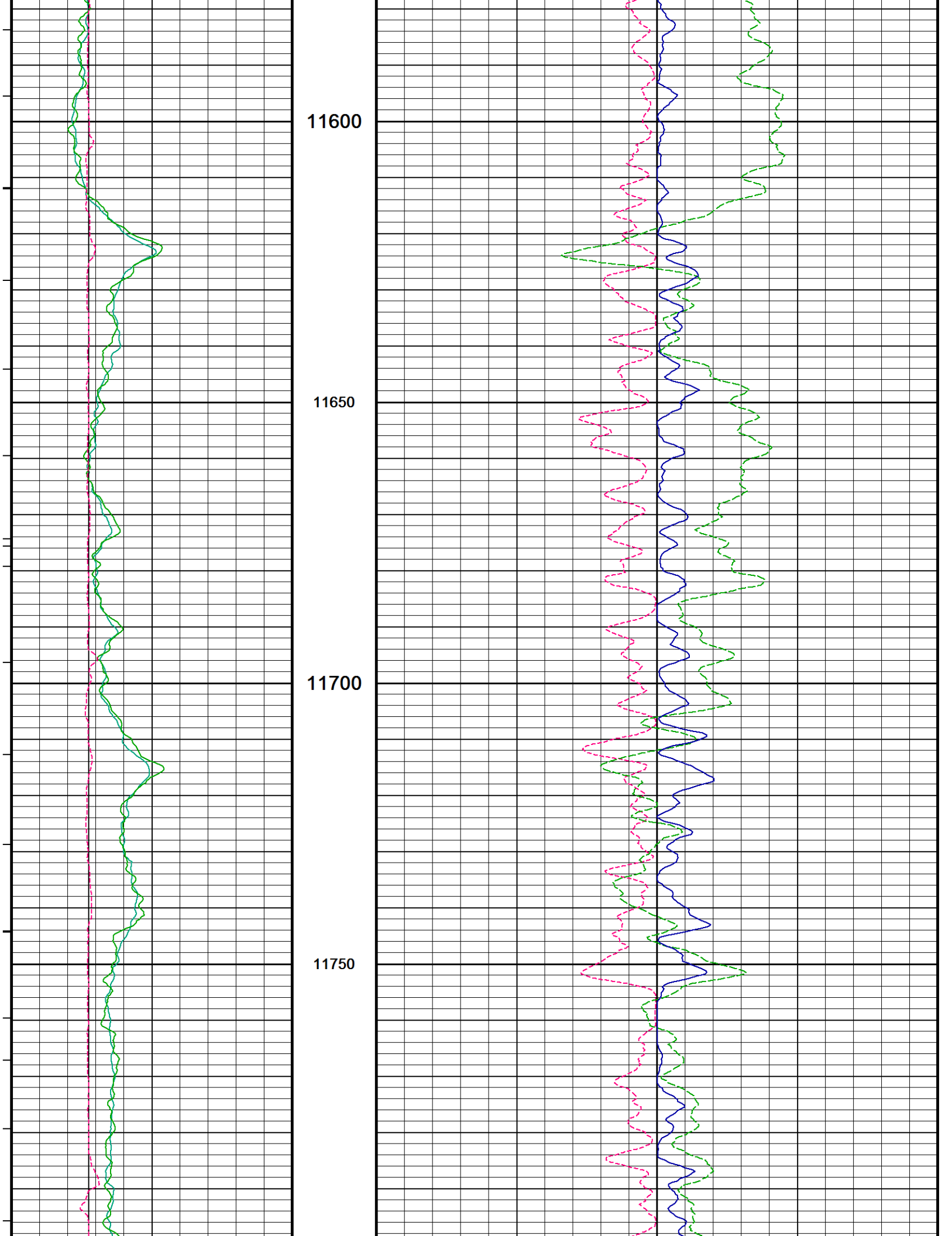
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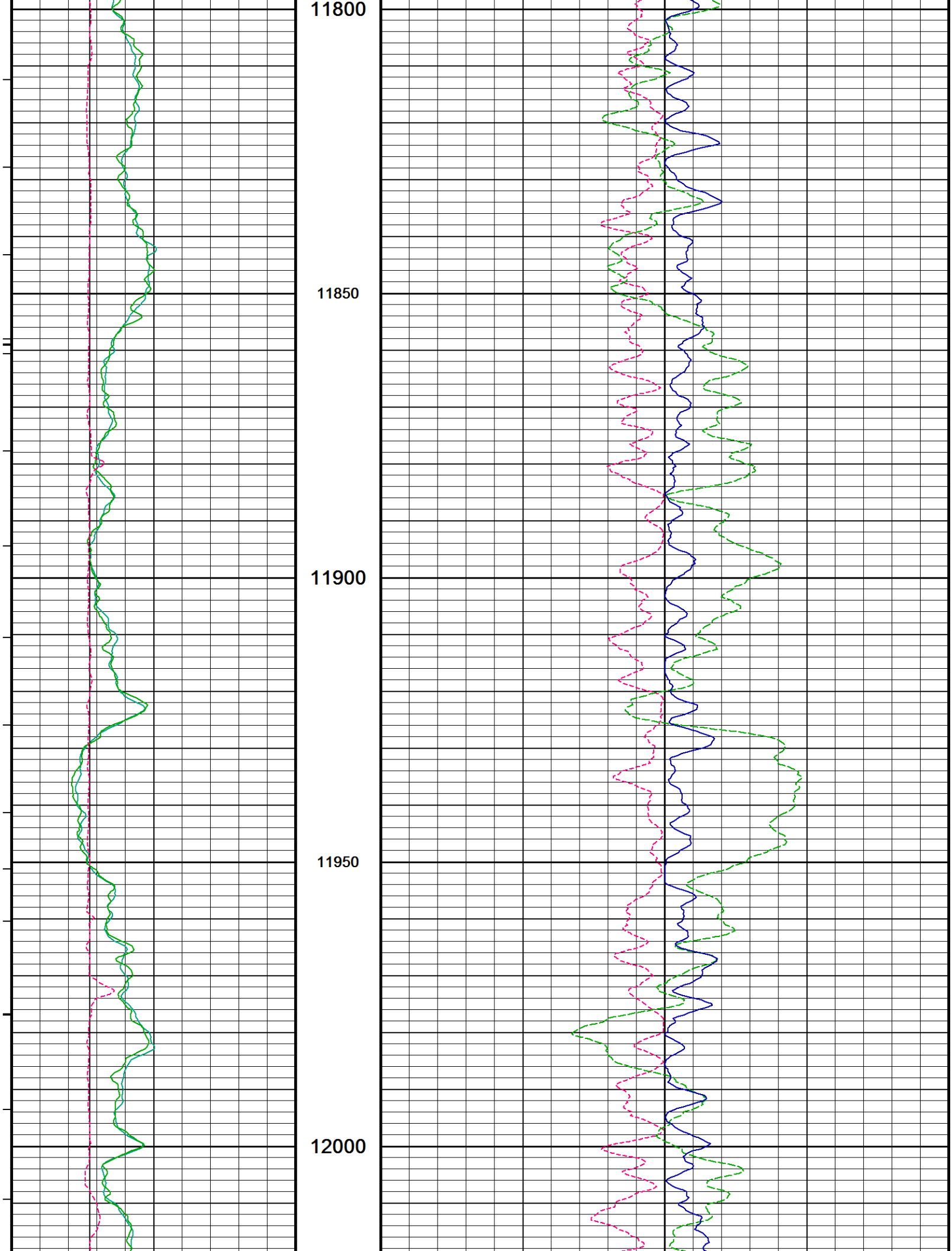
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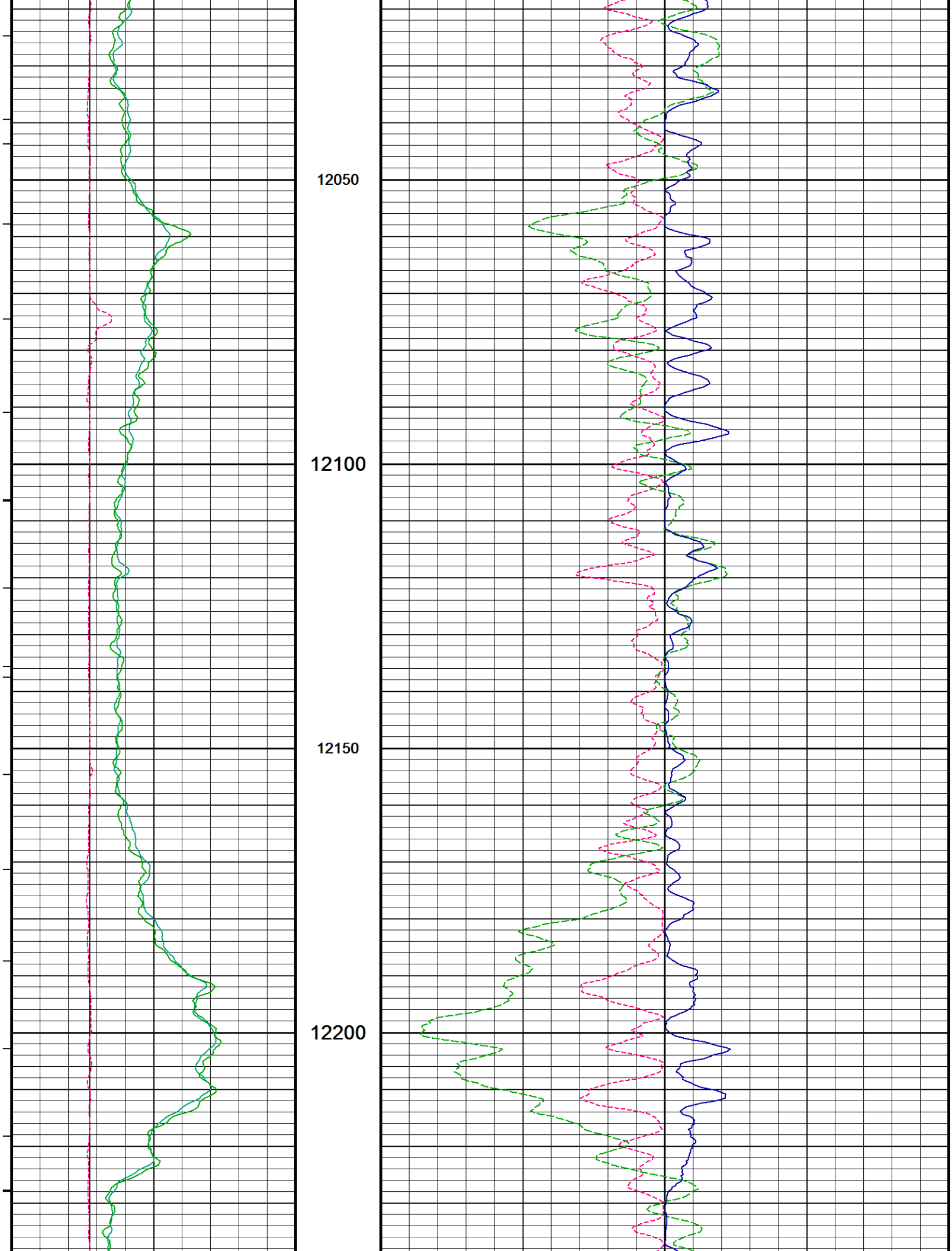
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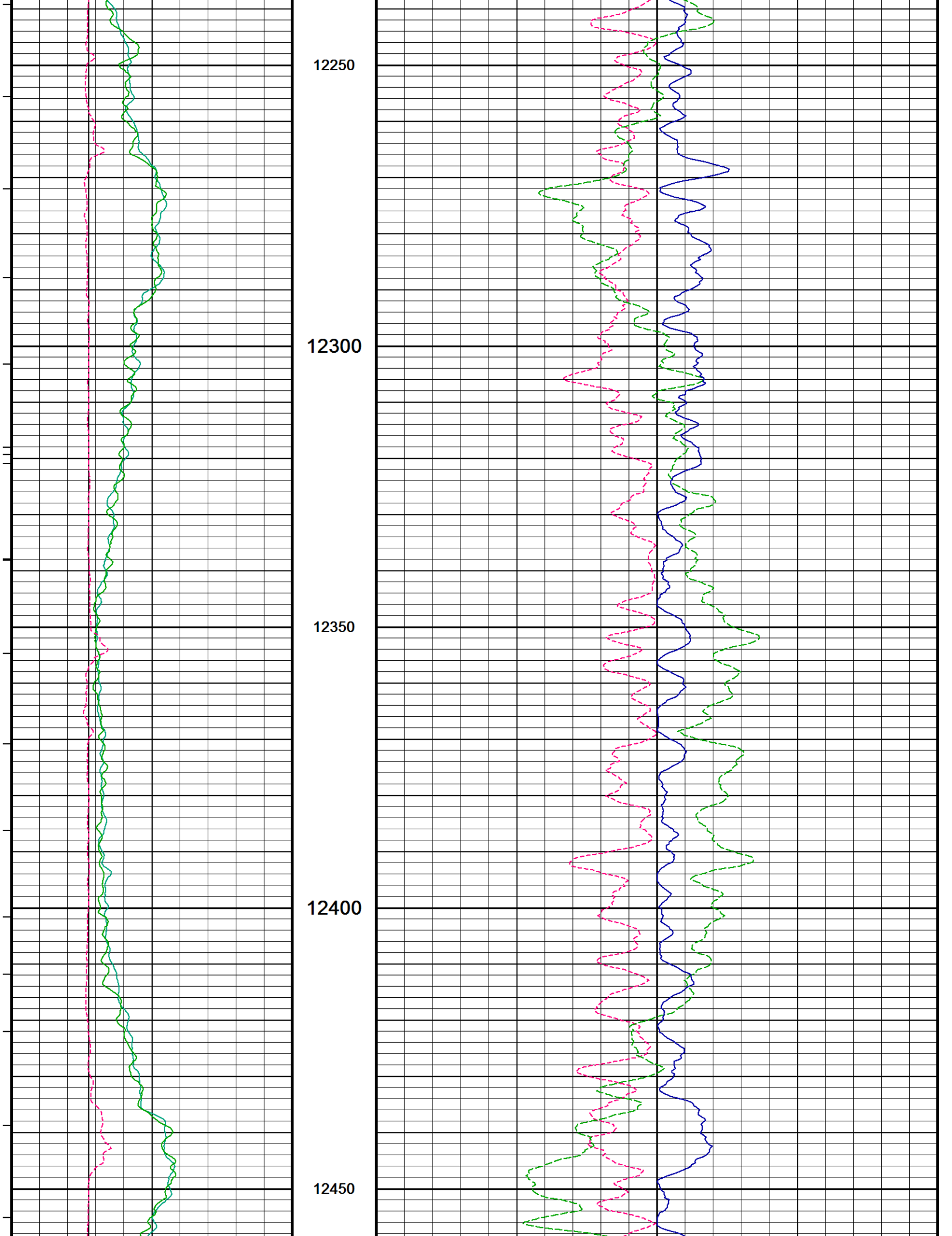
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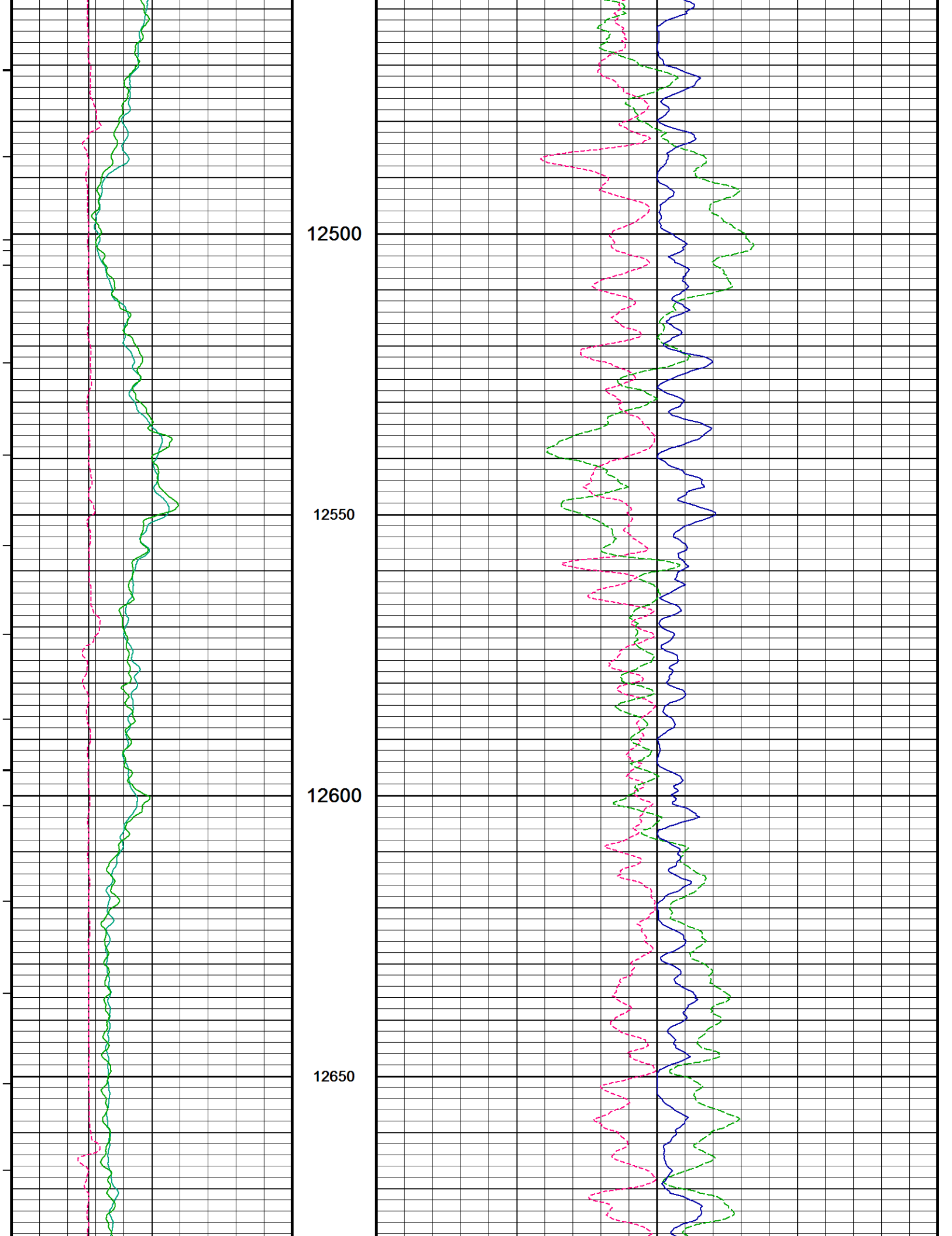
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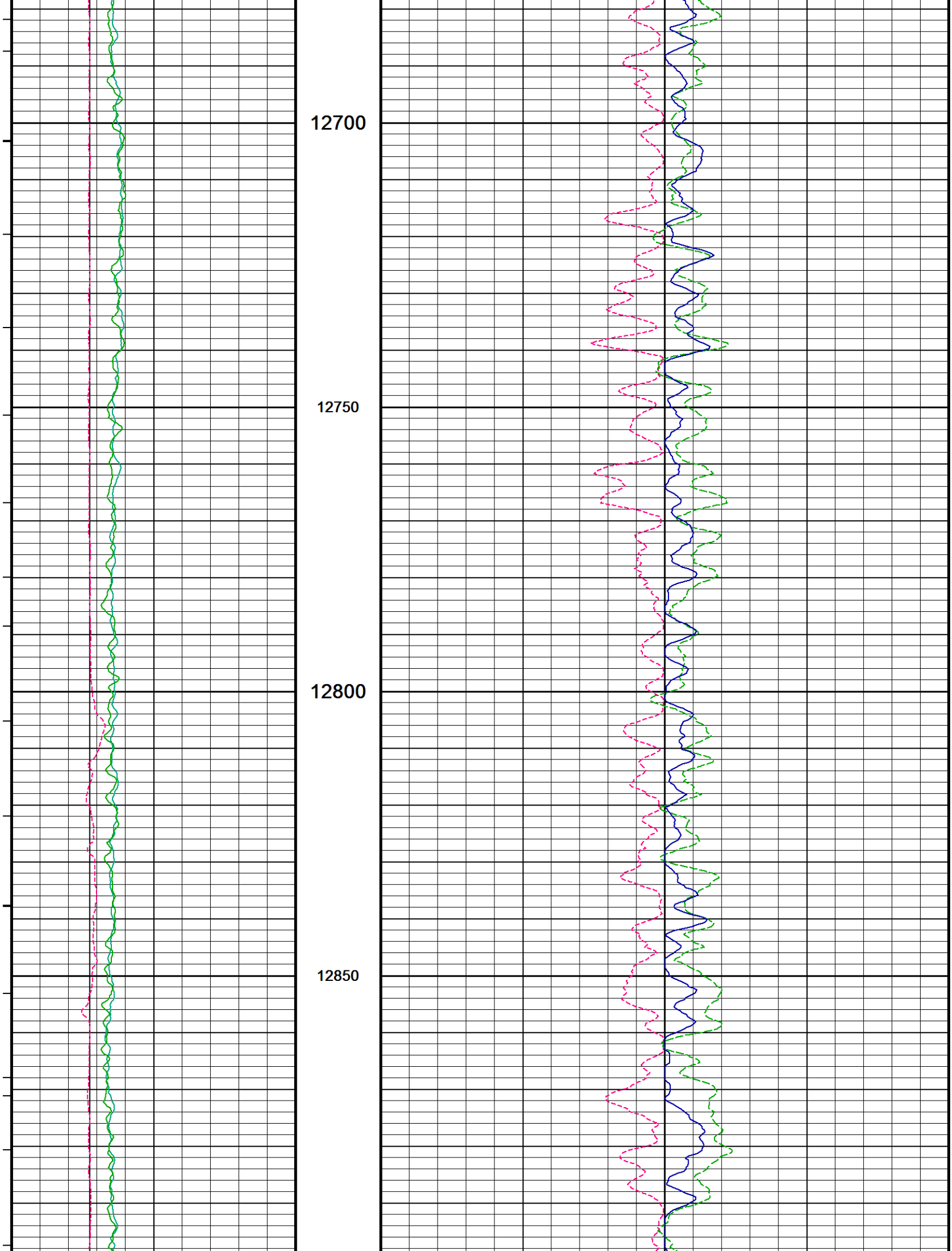
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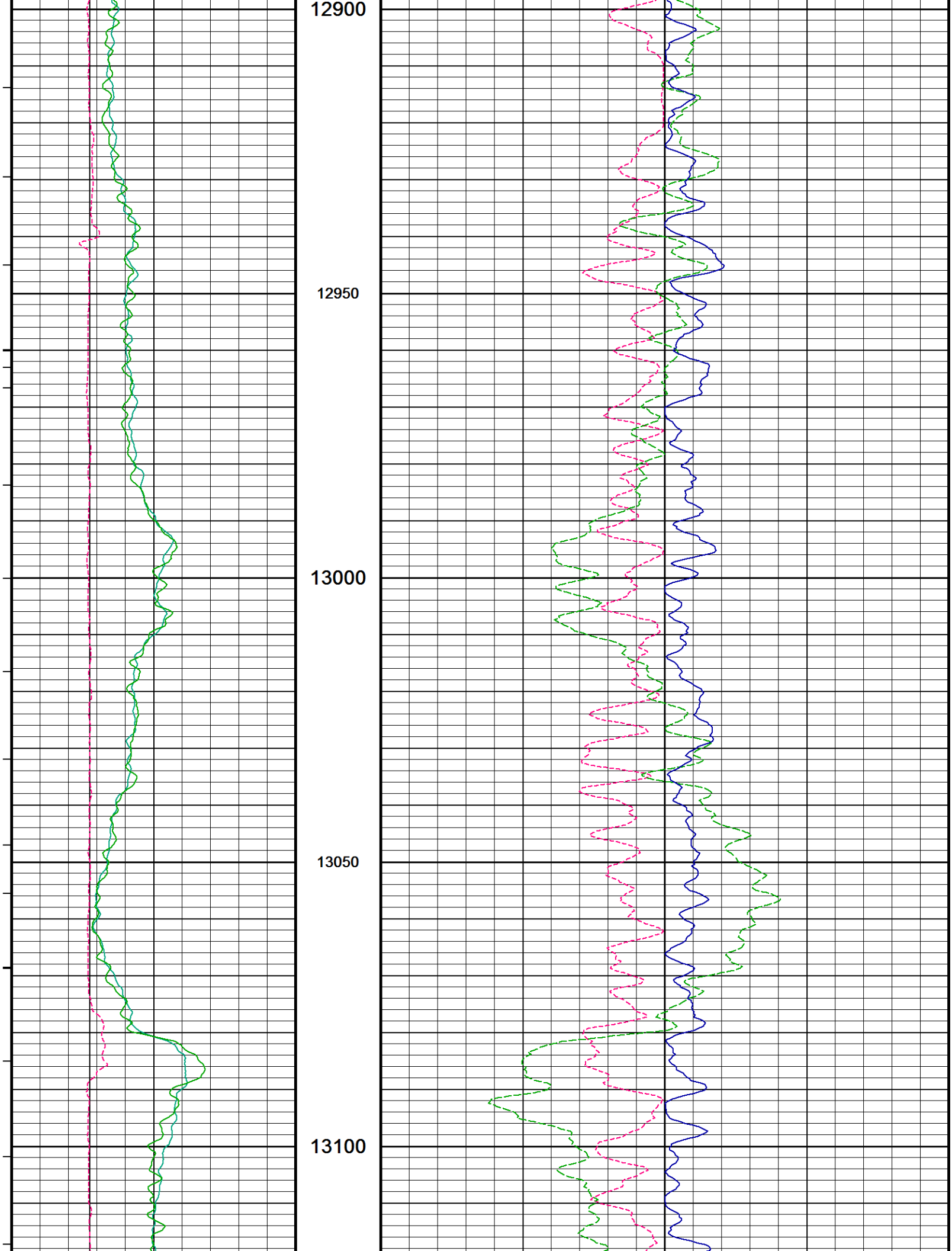
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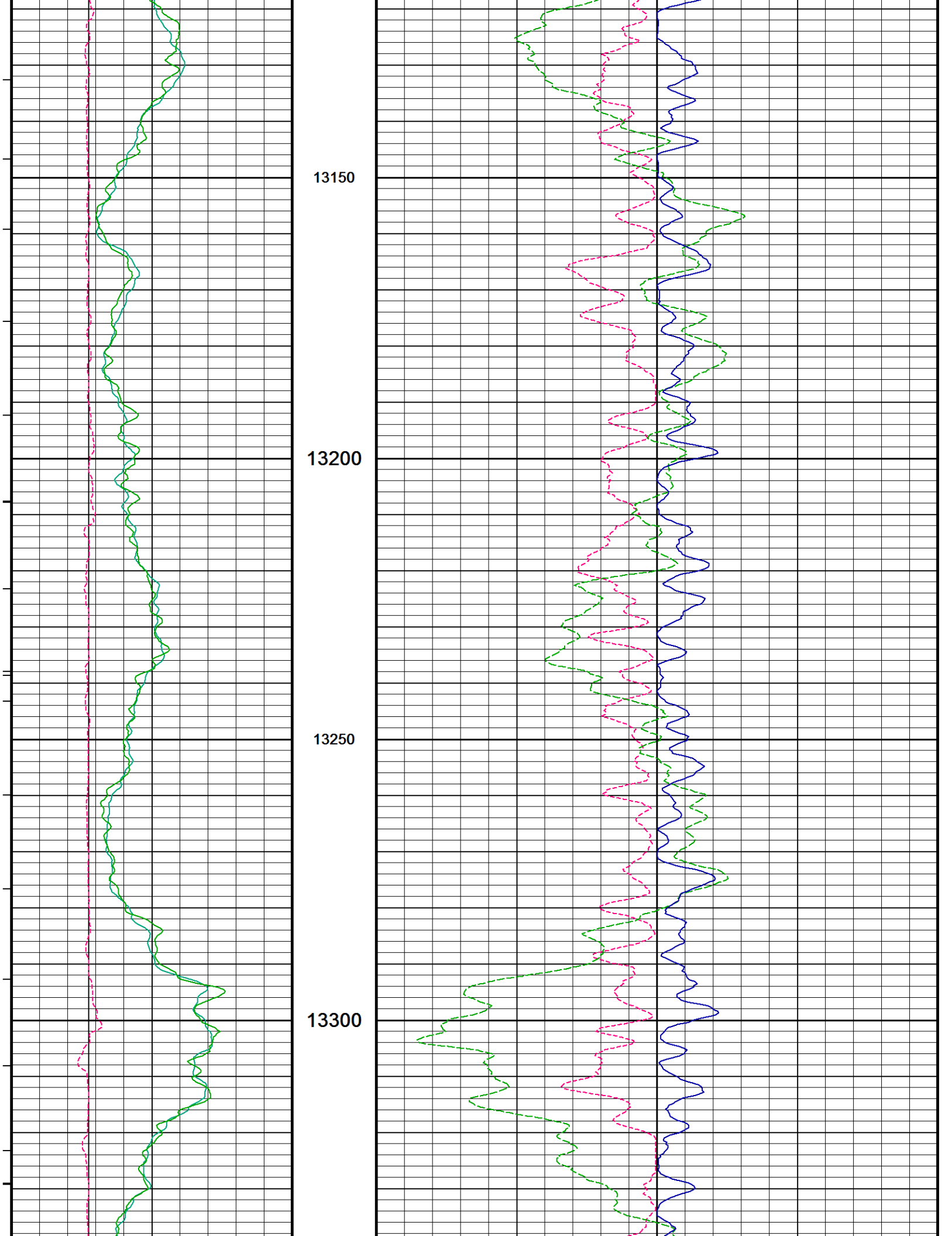
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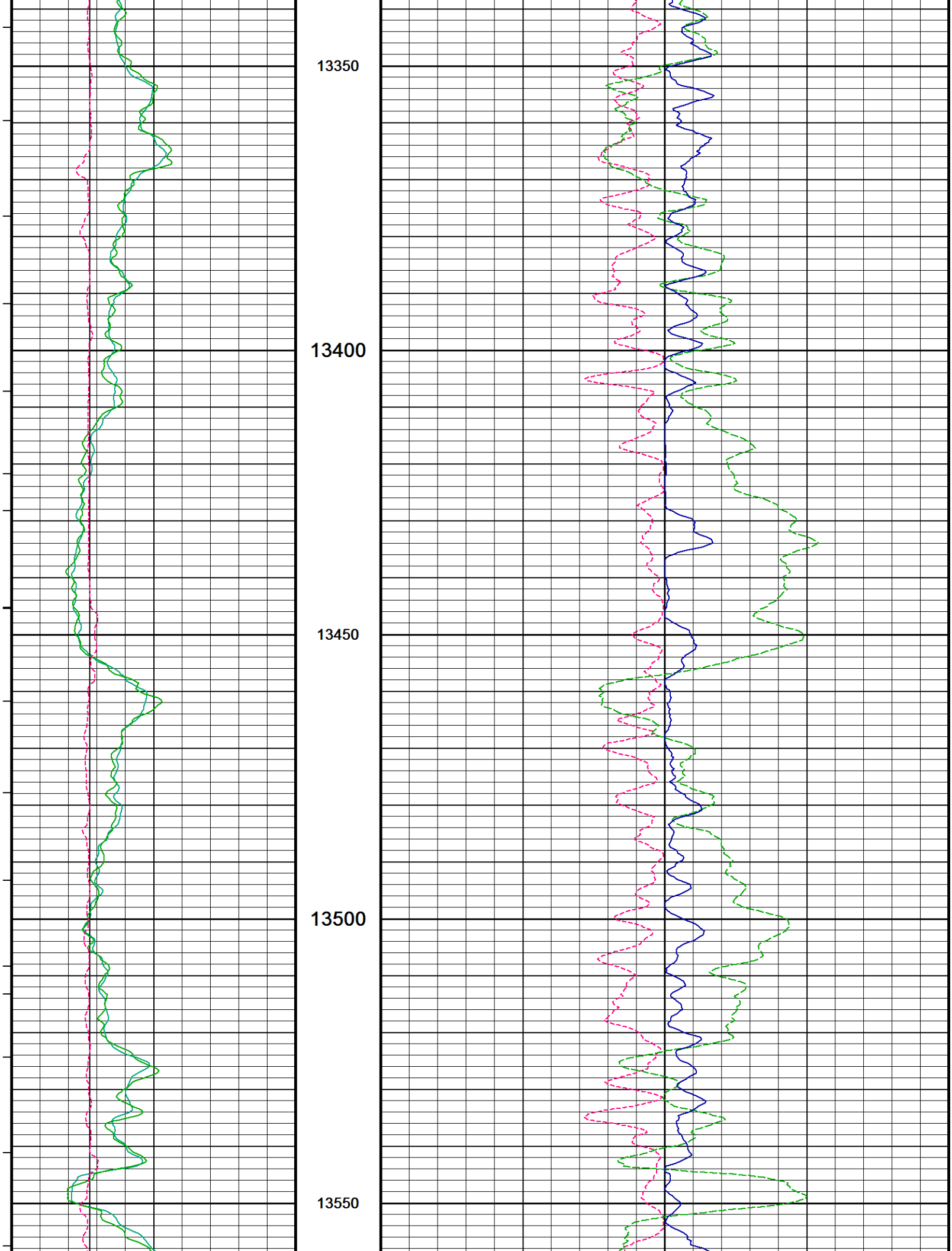
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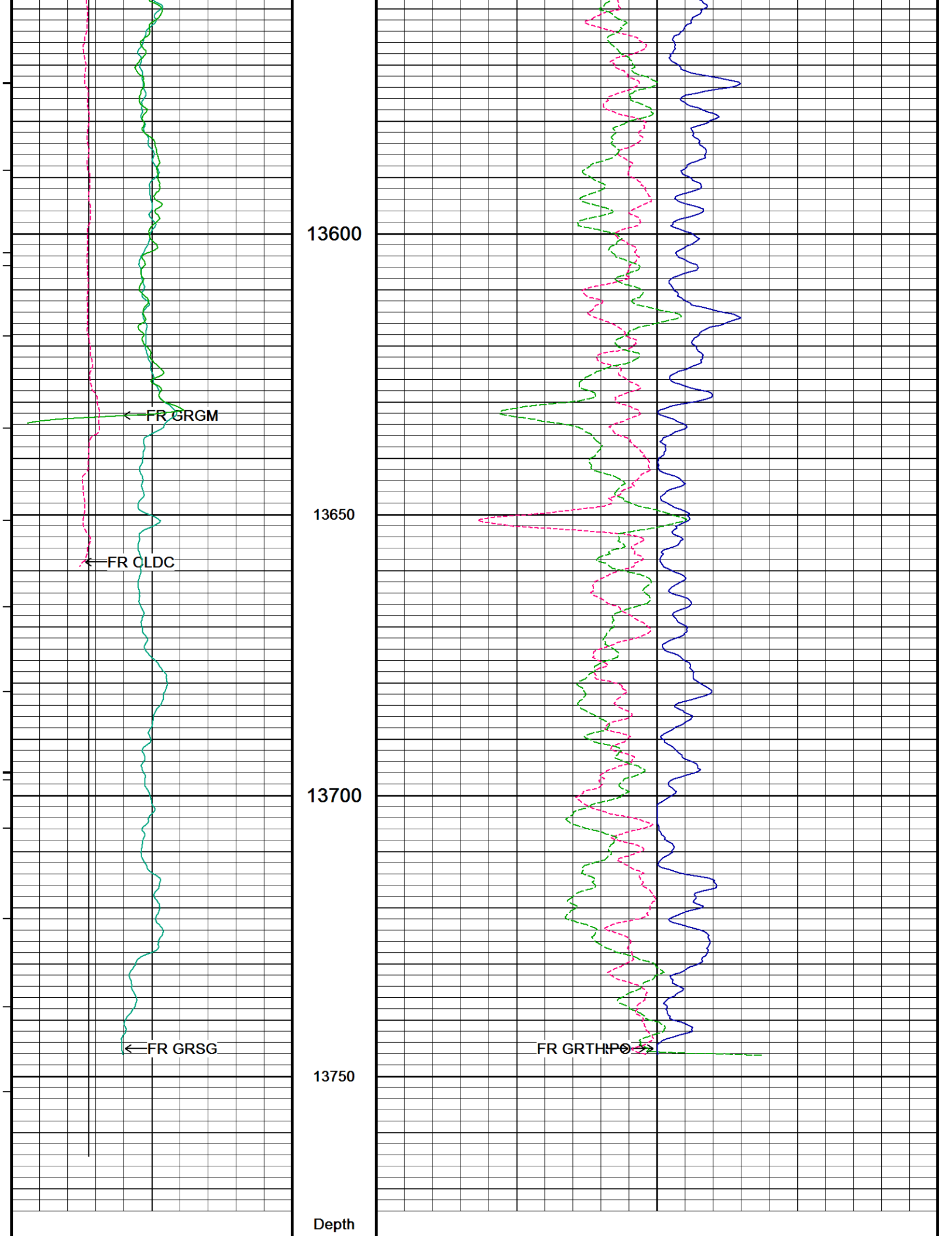
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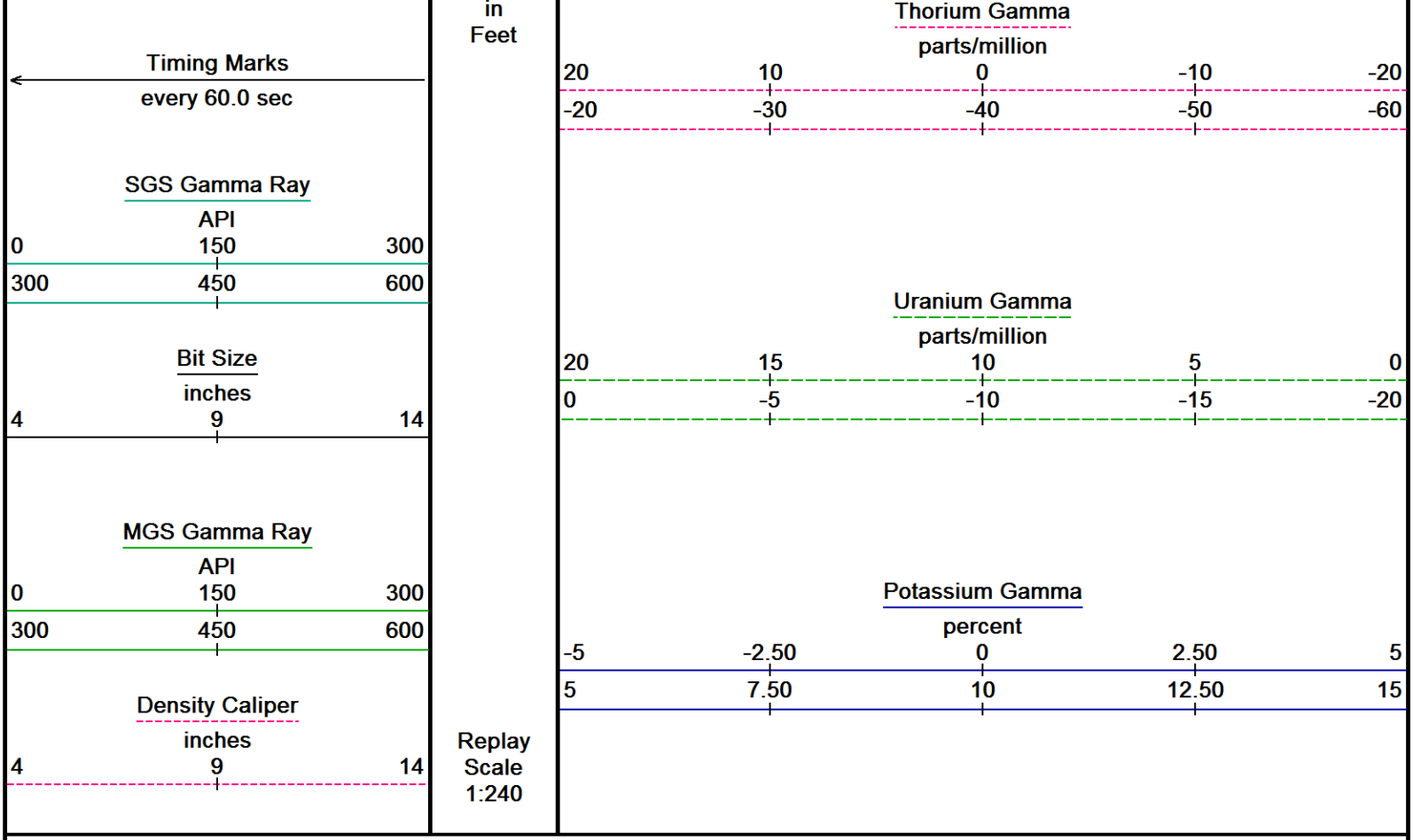
FR GRTHPO



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 24-OCT-2014 06:31
Filename: D:\Logs\Whiting\HORSETAIL 30F-1942\MMS DEPTH.dta — Recorded on 24-OCT-2014 04:18
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 30F-1942\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 24-OCT-2014,01:03

General Parameters		
Mud Resistivity	1.050	ohm-metres
Mud Resistivity Temperature	69.200	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 261

Last Edited on

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-C.J 140

Field Calibration on 28-JUN-2014,09:06

	Measured	Calibrated(Deg F)
Lower	35.00	35.00
Upper	200.00	200.00

High Resolution Temperature Constants MGS-C.J 140

Last Edited on 28-JUN-2014,09:06

Pre-filter Length	11

SP Calibration MGS-C.J 140

Field Calibration on 28-JUN-2014,09:06

	Measured	Calibrated (mV)
Reference 1	-102.0	-100.0
Reference 2	101.0	100.0

Gamma Calibration MGS-C.J 140

Field Calibration on 22-OCT-2014,13:16

	Measured	Calibrated (API)
Background	150	105
Calibrator (Gross)	1009	707
Calibrator (Net)	859	602

Gamma Constants MGS-C.J 140

Last Edited on 22-OCT-2014,23:47

Gamma Calibrator Number	GRC-224	
Mud Density	1.14	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-C.A 464

Base Calibration on 01-OCT-2014 13:45
Field Check on 22-OCT-2014 13:31

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2883	89	3714	110
Ratio	32.553		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	2385	3521
Ratio	0.677	

Field Check

	Calibrated (cps)	
	2366	3532
Ratio	0.670	

Neutron Constants MDN-C.A 464

Last Edited on 24-OCT-2014,01:04

Neutron Source Id	p44385b

Neutron Source Id	p44585b	
Neutron Jig Number	nj5236	
Air Hole Processing	Modified Ratio	
Caliper Source for Processing	MIE Diam. X Armswing	
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.J 241

Field Check on 02-SEP-2014 15:40

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.J 241

Last Edited on 02-SEP-2014,15:32

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	0.0500	mAmp
Image Processing	Enabled	

Navigation Constants MIE-A.J 241

Last Edited on 14-OCT-2014,17:29

Magnetic Declination	7.88	degrees	East

Magnetometer Parameters MIE-A.J 241

Date Of Last Magnetometer Calibration 9-AUG-2014,14:48

	X Magnetometer	Y Magnetometer	Z Magnetometer
Slope	-1.000000	-1.010059	-0.993063
Offset	0.000064	-0.018611	0.005101

Magnetometer Constants MIE-A.J 241

Last Edited on

Magnetometer Calibrator Number 000

Accelerometer Parameters MIE-A.J 241

Date Of Last Accelerometer Calibration 8-APR-2012,12:35

	X Accelerometer	Y Accelerometer	Z Accelerometer
Slope	-1.108980	-1.107773	-1.091611
Offset	-0.003545	0.008582	-0.004936

Accelerometer Constants MIE-A.J 241

Last Edited on 22-OCT-2014,13:50

Accelerometer Calibrator Number 000

Accelerometer Temperature Characterisation

X Accelerometer

Serial Number	922			
Calibration Date	14-Nov-2010			
	B0	B1	B2	B3

Bias(g)	0.00000e+000	1.98626e-005	-2.34772e-009	1.61466e-010
	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.59314e-004	4.64734e-007	5.67183e-010

Y Accelerometer

Serial Number	970			
Calibration Date	19-Jan-2011			
	B0	B1	B2	B3
Bias(g)	0.00000e+000	-4.23329e-006	-2.08894e-008	1.84400e-010
	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.61643e-004	3.45088e-007	8.15526e-010

Z Accelerometer

Serial Number	1076			
Calibration Date	05-May-2011			
	B0	B1	B2	B3
Bias(g)	0.00000e+000	-5.18602e-006	1.72429e-008	7.30746e-011
	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.93462e-004	2.41183e-007	1.26400e-009

Caliper Calibration MIE-A.J 241

Base Calibration on 22-OCT-2014 13:55
Field Calibration on 22-OCT-2014 13:57

Base Calibration

Reading No	Pads 1-5 Meas.	Pads 3-7 Meas.	Calibrator Size (in)
1	25523	29599	5.96
2	36062	39139	7.98
3	45921	48894	9.86
4	57037	59465	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	25007	25103	24823	25651	5.96
2	33585	33227	33711	34459	7.98
3	41846	41100	42023	42949	9.86
4	51489	49717	51759	53653	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)
6.02	5.85	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)
2.99	2.96	3.00	3.01	5.96

Caliper Constants MIE-A.J 241

Last Edited on 24-SEP-2014,15:26

Caliper Difference for BRKT	0.120	inches

Induction Calibration MAI-B.J 434

Base Calibration on 24-JAN-2012,20:11
Field Check on 22-OCT-2014 13:23

Base Calibration

Test Loop Calibration Channel	Measured Low	Measured High	Calibrated (mmho/m) Low	Calibrated (mmho/m) High
1	14.7	442.4	9.3	966.2
2	5.0	355.7	7.6	821.4
3	3.2	250.0	5.2	566.0
4	1.6	129.2	2.6	279.2

Array Temperature	23.6	Deg F

Channel	Base Check (mmho/m) Low	Base Check (mmho/m) High	Field Check (mmho/m) Low	Field Check (mmho/m) High
1	0.0	0.0	19.5	4104.2
2	0.0	0.0	34.7	3791.4
3	0.0	0.0	30.2	3169.6
4	0.0	0.0	20.7	2139.0
Deep			16.9	1969.7
Medium			44.1	4226.0
Shallow			54.4	5754.3
Array Temperature	0.0		81.7	Deg F

Induction Constants MAI-B.J 434

Last Edited on 24-OCT-2014 01:06

Induction Constants MAI-B.J 434 — Last Edited on 24-OCT-2014,01:06

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	

High Resolution Temperature Calibration MAI-B.J 434

Field Calibration on 24-JAN-2012,20:11

	Measured	Calibrated(Deg C)
Lower	10.00	10.00
Upper	100.00	100.00

High Resolution Temperature Constants MAI-B.J 434

Last Edited on

Pre-filter Length	11

Caliper Calibration MPD-C.A 218

Base Calibration on 22-OCT-2014 13:45
Field Calibration on 22-OCT-2014 13:47

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14657	4.00
2	22831	5.96
3	31351	7.98
4	39468	9.86
5	48772	11.88
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.94	5.96

Photo Density Calibration MPD-C.A 218

Base Calibration on 01-OCT-2014 11:18
Field Check on 22-OCT-2014 13:36

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Background	734	786		
Reference 1	54446	24915	59443	30683

Reference 2	21359	1881	25113	2508

Field Check at Base

	734.5	785.7

Field Check

	736.9	790.1

PE Calibration

Base Calibration

	WS	WH	Measured Ratio	Calibrated Ratio
Background	133	655		
Reference 1	22242	54310	0.412	0.372
Reference 2	5996	21274	0.284	0.268

Field Check at Base

	133.1	655.2

Field Check

	133.7	659.7

Density Constants MPD-C.A 218

Last Edited on 22-OCT-2014,23:41

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	1.14	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
0.00	

Dipole Constants and Gains MRD-A.A 142

Logging Mode	Standard	
Semblance Parameters		
Window Start	1.00	milliseconds
Window Width	15	milliseconds

Discriminator Levels

M1C Discriminator	0.1	mV
M2C Discriminator	0.1	mV
M3C Discriminator	0.1	mV
M4C Discriminator	0.1	mV

Monopole Receiver Gains

MR1A	1.00	MR1B	1.00	MR1C	1.00	MR1D	1.00
MR2A	1.00	MR2B	1.00	MR2C	1.00	MR2D	1.00
MR3A	1.00	MR3B	1.00	MR3C	1.00	MR3D	1.00
MR4A	1.00	MR4B	1.00	MR4C	1.00	MR4D	1.00
MR5A	1.00	MR5B	1.00	MR5C	1.00	MR5D	1.00
MR6A	1.00	MR6B	1.00	MR6C	1.00	MR6D	1.00
MR7A	1.00	MR7B	1.00	MR7C	1.00	MR7D	1.00
MR8A	1.00	MR8B	1.00	MR8C	1.00	MR8D	1.00

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 22-OCT-2014,23:47

Background Calibrator Number	440	
Mixture Calibrator Number	450	
Potassium Calibrator Number	500	
Uranium Calibrator Number	506	
Thorium Calibrator Number	503	
Mud Density	1.14	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 30F-1942\MMS DEPTH.dta

Shuttle Running Tool 3.5"
SRT-A.A 35 LG: 6.62 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

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

SHA-J.B Compact Swivel Head Adaptor
SHA-J.B 589 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

MIS-E.A Compact Inline Standoff sub
MIS-E.A 183 LG: 2.14 ft WT: 15.4 lb OD: 2.244 in

400V EXT
MLK-A 300 LG: 14.23 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

400V EXT
MLK-A 400 LG: 14.23 ft WT: 30.9 lb OD: 2.240 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 Battery Power Supply
MBP-A.A 103 LG: 4.85 ft WT: 39.7 lb OD: 2.244 in

Compact Memory Sub F.A
MMS-F.A 261 LG: 5.20 ft WT: 37.5 lb OD: 2.244 in

Compact Tool Isolator sub.
MTI-B.A 66 LG: 1.54 ft WT: 13.2 lb OD: 2.244 in

Compact Short Gamma
MGS-C.J 140 LG: 3.41 ft WT: 24.3 lb OD: 2.244 in

Compact Collar Locator
MCL-B.J 67 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-C.A 464 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper
MPD-C.A 218 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

MIS-D.B Compact Inline Bowspring sub
MIS-D.B 702 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 697 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

Compact Dipole Memory
MDM-A.A 142 LG: 4.48 ft WT: 39.7 lb OD: 2.240 in

Compact Dipole Receiver
MRD-A.A 142 LG: 8.89 ft WT: 88.2 lb OD: 2.244 in

Compact Dipole Transmitter
MTD-A.A 142 LG: 12.63 ft WT: 110.2 lb OD: 2.240 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.J 241 LG: 4.65 ft WT: 26.5 lb OD: 2.244 in

Compact MMI Electrode Section
MIE-A.J 241 LG: 13.96 ft WT: 99.2 lb OD: 4.094 in

MIS-D.B Compact Inline Bowspring sub
MIS-D.B 654 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

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

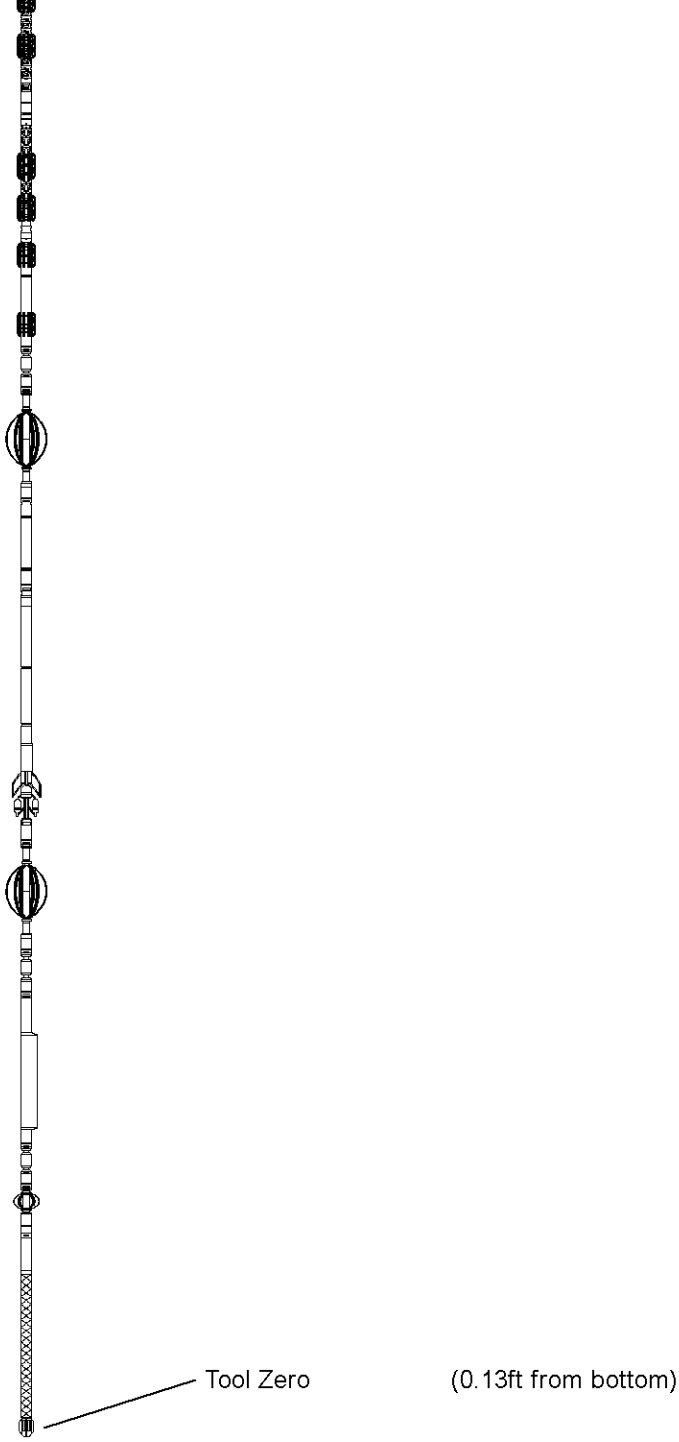
Spectral Gamma Ray Sub
SGS-E.J 128 LG: 7.78 ft WT: 105.8 lb OD: 3.543 in

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

MIS-E.B Compact Inline Standoff sub
MIS-E.B 693 LG: 2.14 ft WT: 15.4 lb OD: 2.244 in

Compact Induction
MAI-B.J 434 LG: 10.81 ft WT: 48.5 lb OD: 2.240 in

Total Length: 229.23 ft Weight: 1492.5 lb



COMPANY	WHITING OIL AND GAS CORPORATION
WELL	HORSETAIL 30F-1942
FIELD	REDTAIL
PROVINCE/COUNTY	WELD
COUNTRY/STATE	U.S.A. / COLORADO

Elevation Kelly Bushing	4797.00	feet	First Reading	13744.00	feet
Elevation Drill Floor	4797.00	feet	Depth Driller	13777.00	feet
Elevation Ground Level	4780.00	feet	Depth Logger	13777.00	feet

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MEASURED DEPTH
SPECTRAL GAMMA RAY
LOG