Weatherford®

MEASURED DEPTH SPECTRAL GAMMA RAY LOG

COMPANY	WHITING OIL AND GAS CORPORATION
WELL	WOLF 12L-0103
FIELD	REDTAIL
PROVINCE/COUNTY	WELD
COUNTRY/STATE	U.S.A. / COLORADO
LOCATION	SHL: 619' FWL & 2558' FNL
PERMIT NUMBER	BHL: 825' FWL & 600' FNL

SEC	TWP	RGE	Other Services
12	10N	59W	MICRO IMAGER
			ARRAY INDUCTION
API Number	05-123-39421		NEUTRON/DENSITY

Permanent Datum G.L., Elevation 4953 feet
Log Measured From KB
Drilling Measured From K.B. @ 17 FEET

Elevations:	feet
KB	4970.00
DF	4970.00
GL	4953.00

Date	15-SEPT-2014				
Run Number	ONE				
Service Order	6551-97985944				
Depth Driller	13393.00	feet			
Depth Logger	11781.00	feet			
First Reading	11762.00	feet			
Last Reading	6610.00	feet			
Casing Driller	6629.00	feet			
Casing Logger	6630.00	feet			
Bit Size	6.000	inches			
Hole Fluid Type	WBM				
Density / Viscosity	9.65	lb/USg	47.00	SEC/QT	
PH / Fluid Loss			5.60	ml/30Min	
Sample Source	FLOWLINE				
Rm @ Measured Temp	0.97 @ 89.9	ohm-m			
Rmf @ Measured Temp	0.75 @ 89.9	ohm-m			
Rmc @ Measured Temp	1.16 @ 89.9	ohm-m			
Source Rmf / Rmc	CALC		CALC		
Rm @ BHT	0.43 @206.0	ohm-m			
Time Since Circulation	1 HOUR				
Max Recorded Temp	211.00	deg F			
Equipment / Base	18086		Casper		
Recorded By	C CULLEN				
Witnessed By	E GREIGER				
WSL					WSL

BOREHOLE RECORD

Last Edited: 17-SEP-2014 03:03

Bit Size (inches)	Depth From (feet)	Depth To (feet)
6.000	6629.00	11780.00

CASING RECORD

Type	Size (inches)	Depth From (feet)	Shoe Depth (feet)	Weight (pounds/ft)
SURFACE	7.000	0.00	6629.00	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

FROM 10800 TO 11800 EVERY STAND WAS WASHED DOWN AND ROTATED AT 15RPM. THE BATTERY LIFE WAS GETTING LOW BECAUSE OF THE TIME IT WAS TAKING TO WASH AND ROTATE EVERY STAND. THE DECISION WAS MADE TO DEPLOY THE DART AT NOON IN ORDER TO MAKE SURE BATTERY LIFE WAS STILL AVAILABLE SO WE DEPLOYED THE TOOLS AT 11781. TD WAS 13393.

ANNULAR HOLE VOLUME WITH 4.5 " FROM TD TO 7"-29# CASING = 510 CUBIC FEET.
TOTAL HOLE VOLUME FROM TD TO 7"-29# CASING =1070 CUBIC FEET

OPERATORS: J GERDES AND T DUNCAN

RIG: PIONEER 54

In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will give the Company the benefit of the Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ. ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF THE COMPANY, AND THE CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. THE COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISIONS CONCERNING THE SERVICES.

5 INCH MAIN LOG

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 17-SEP-2014 03:03

Filename: D:\Logs\Whiting\WOLF 12L-0103\MMS DEPTH2.dta — Recorded on 17-SEP-2014 01:04

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 75 150
150 225 300

Bit Size
inches
4 9 14

MGS Gamma Ray
API
0 75 150
150 225 300

Density Caliper
inches
4 9 14

Depth in Feet

Replay Scale 1:240

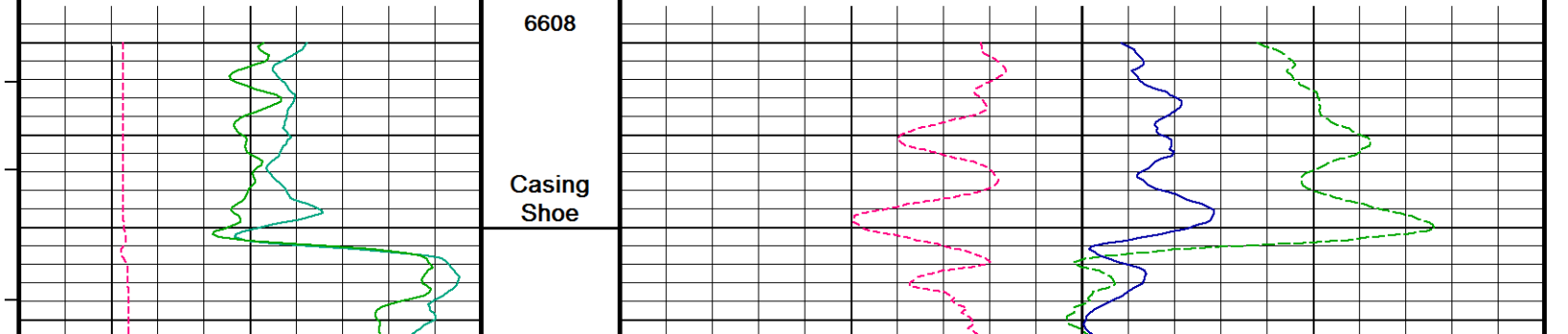
6608

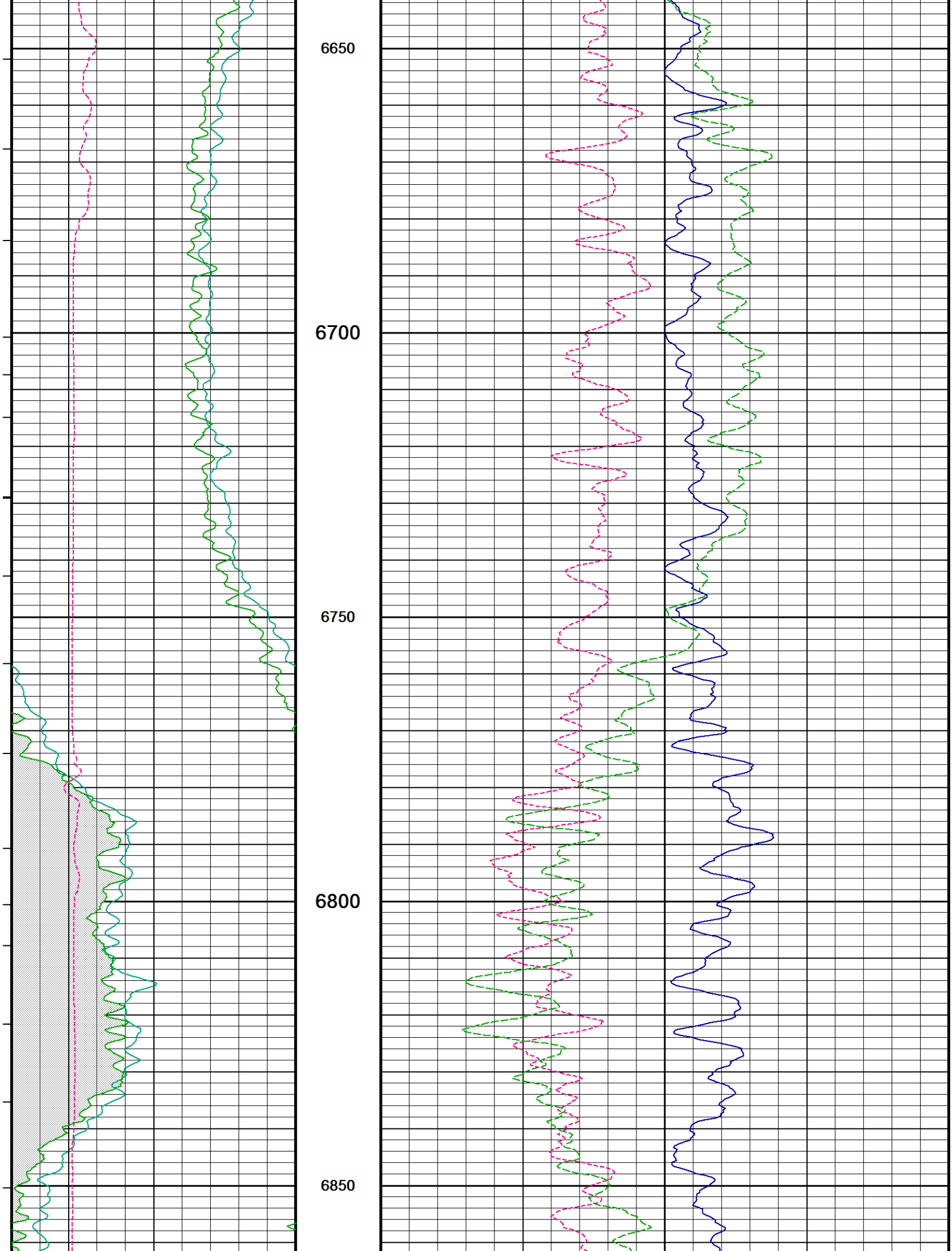
Casing Shoe

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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6800
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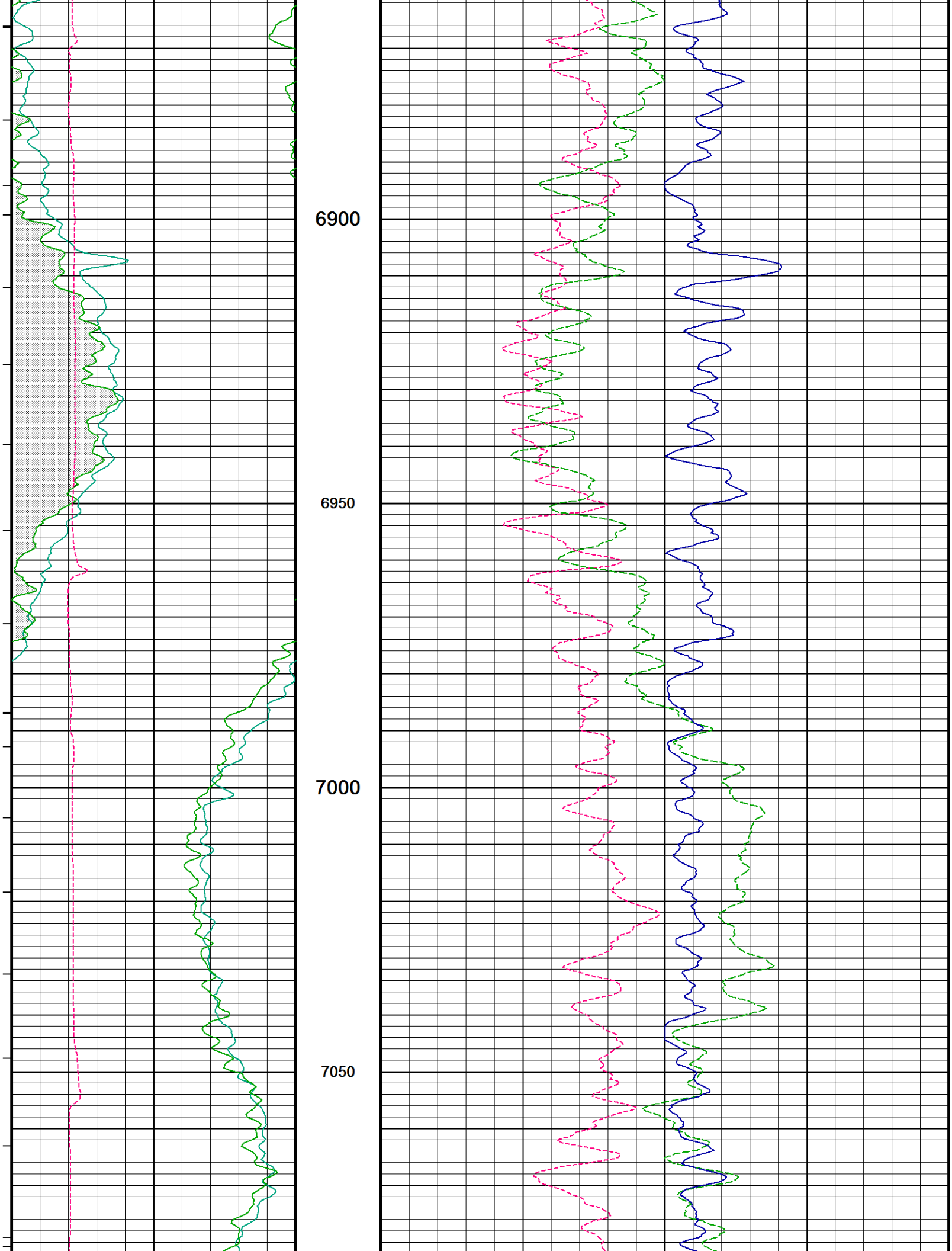
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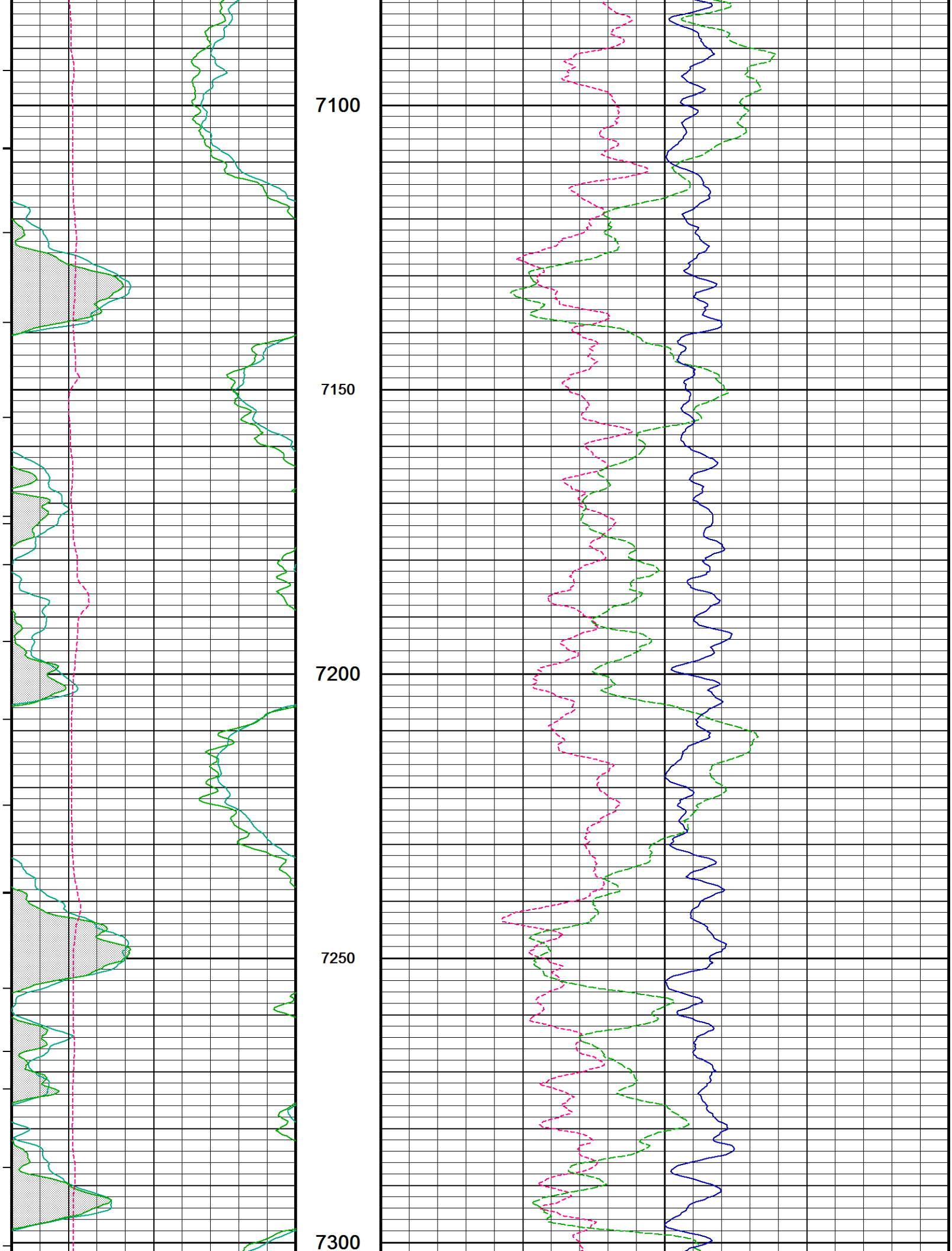
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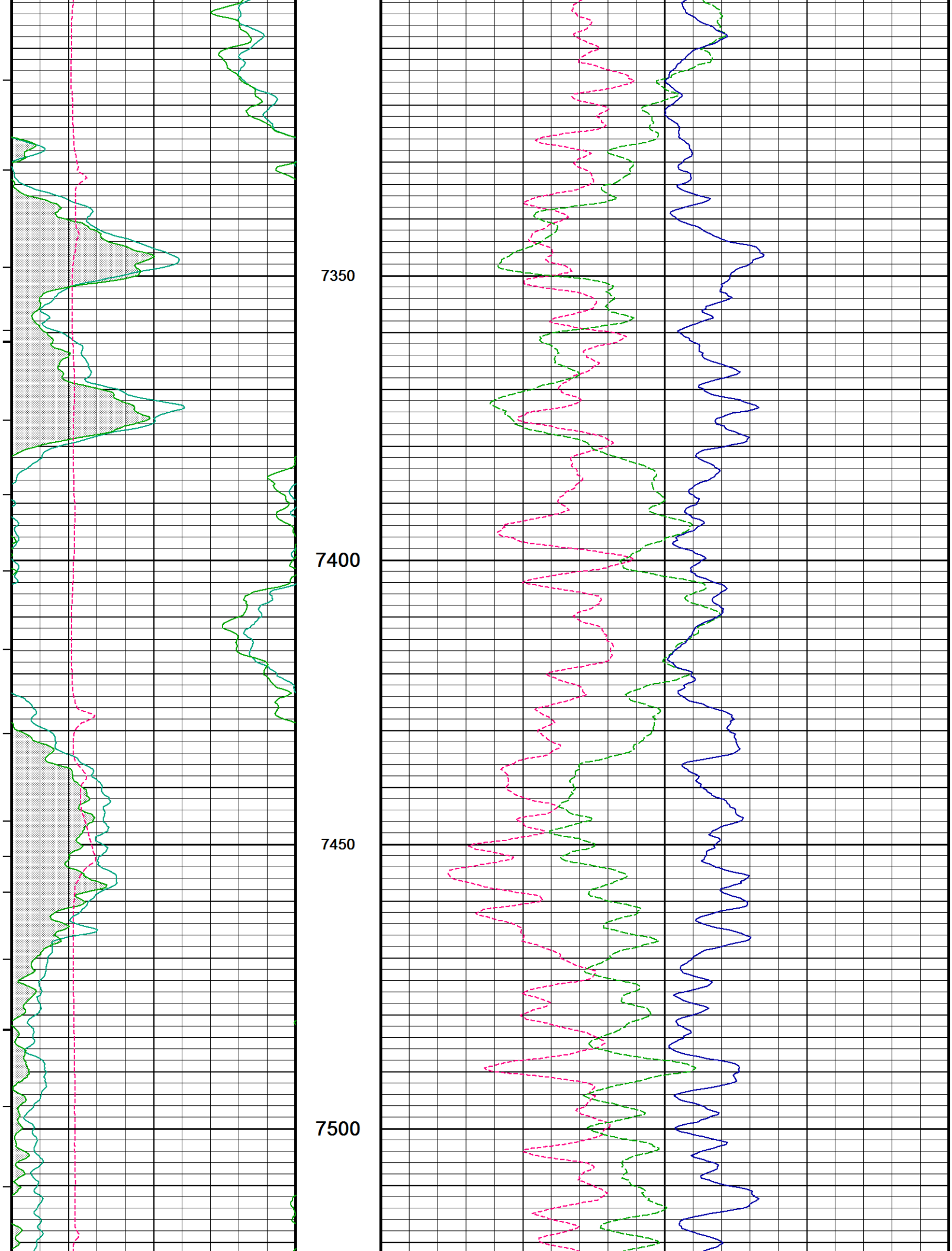
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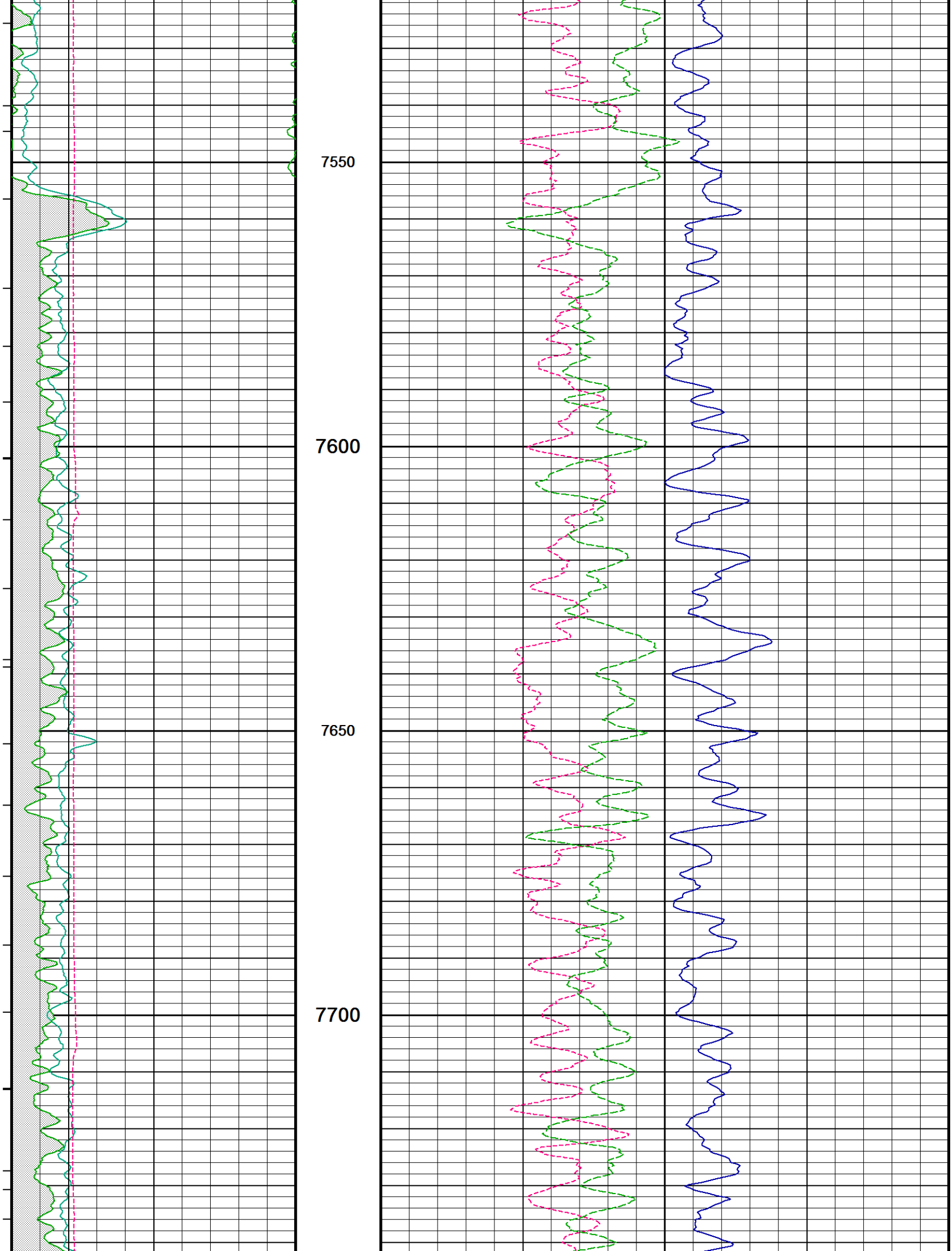
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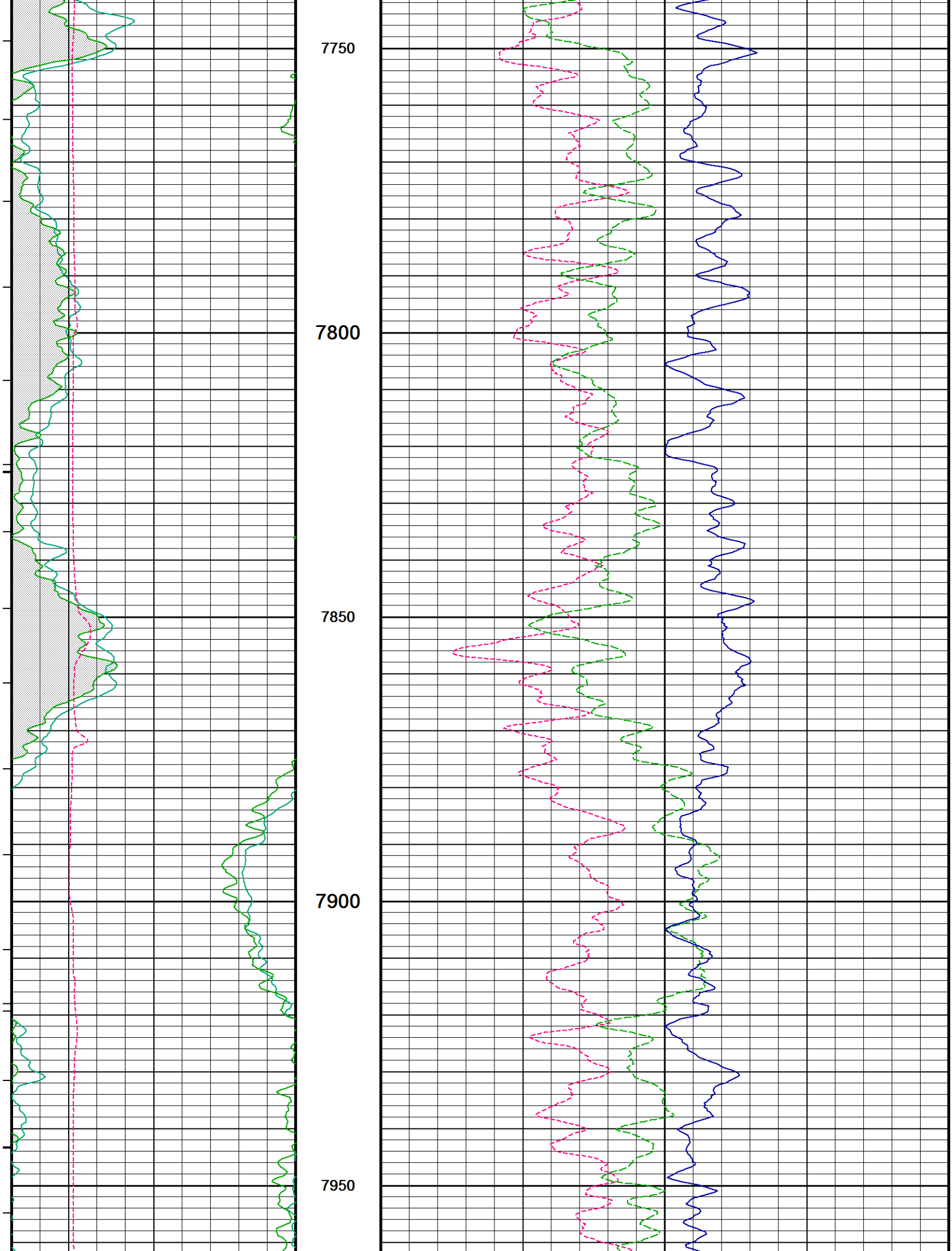
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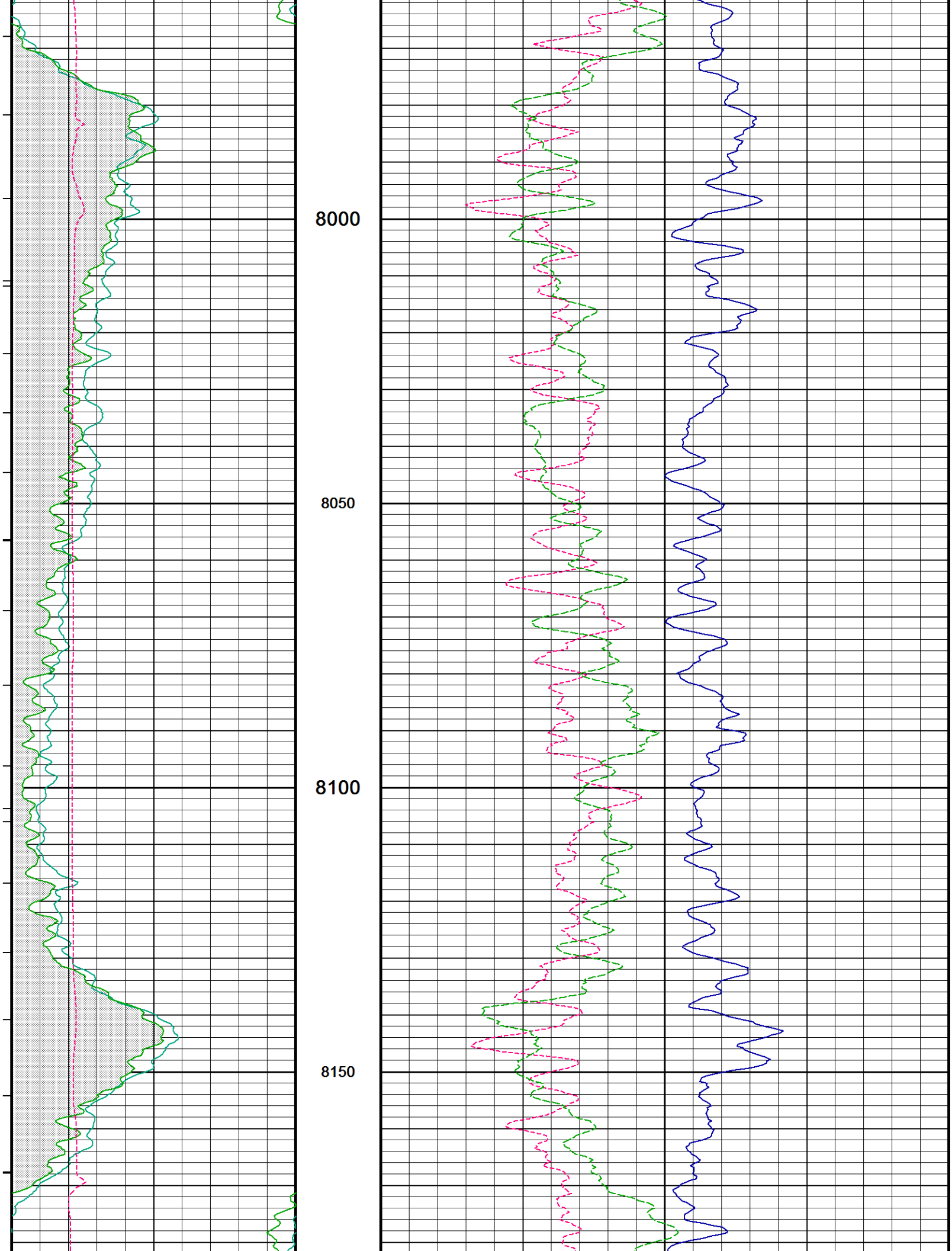
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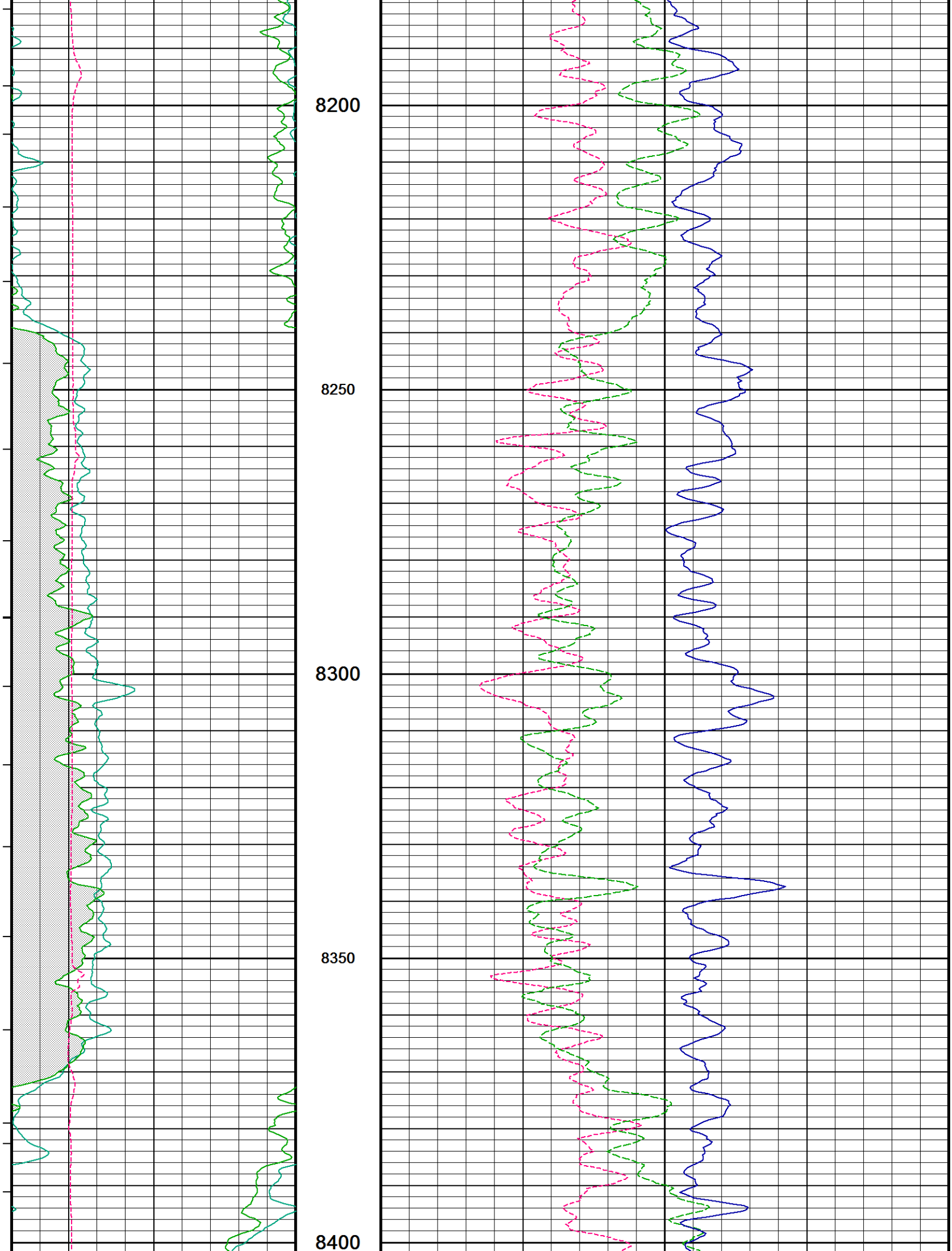
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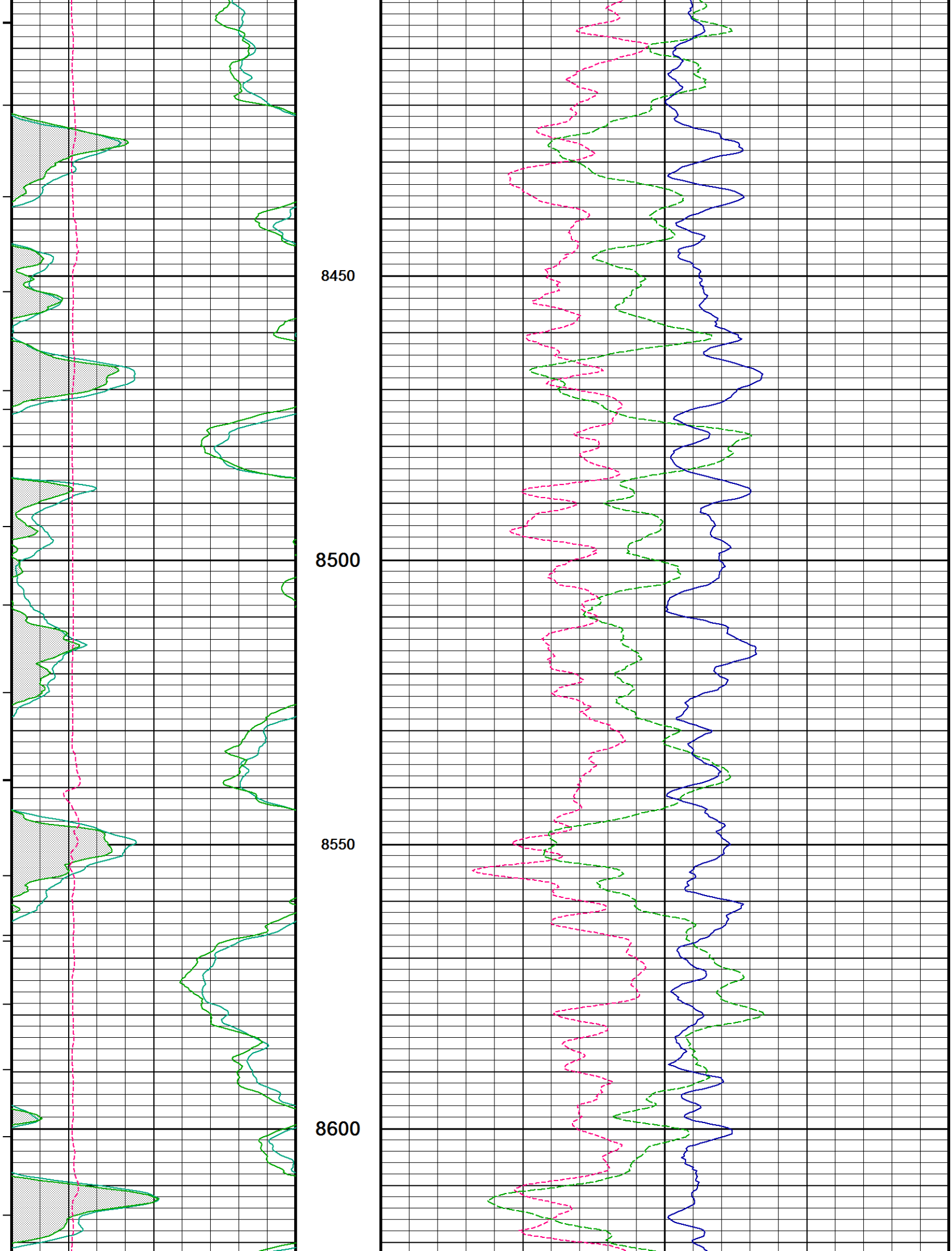
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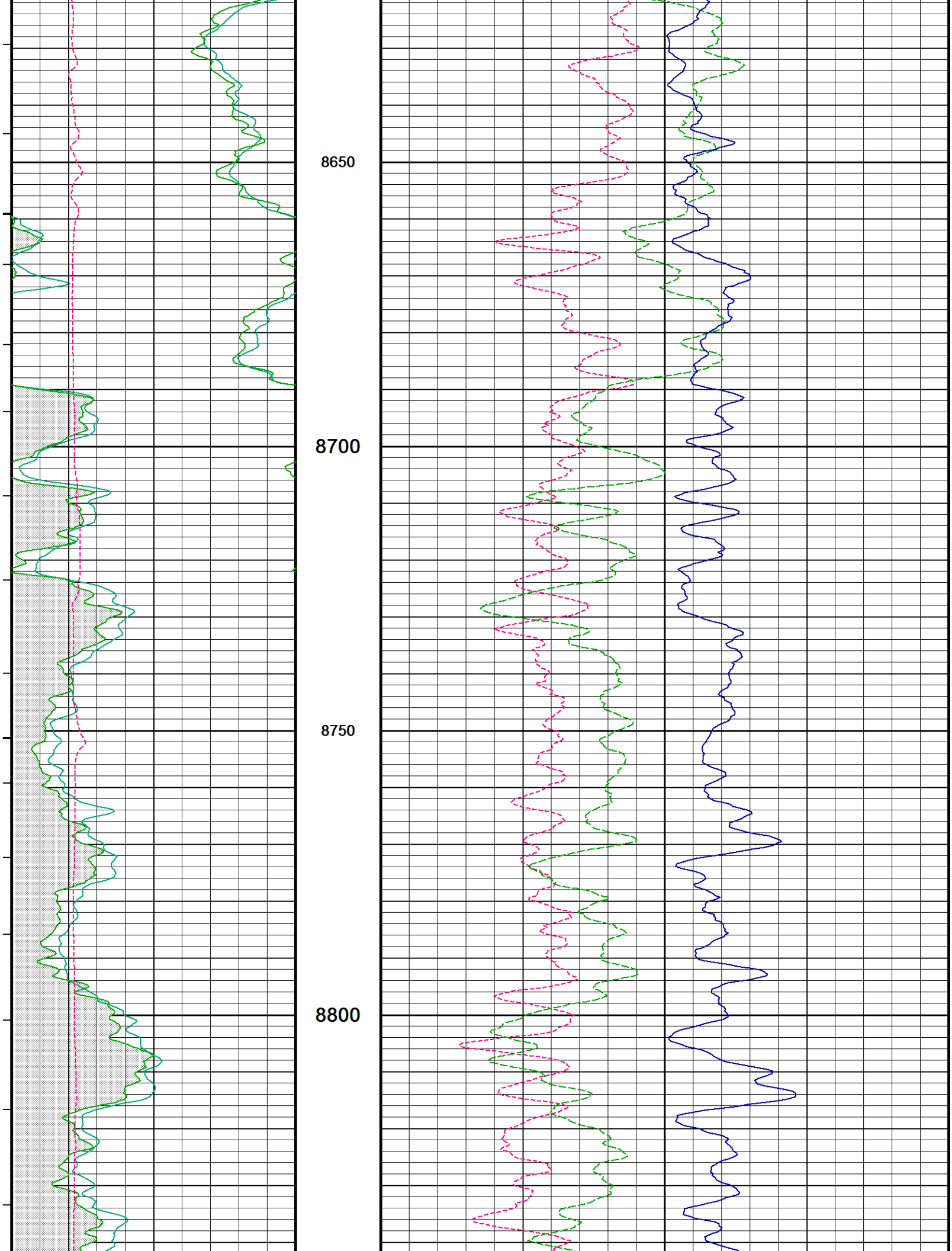
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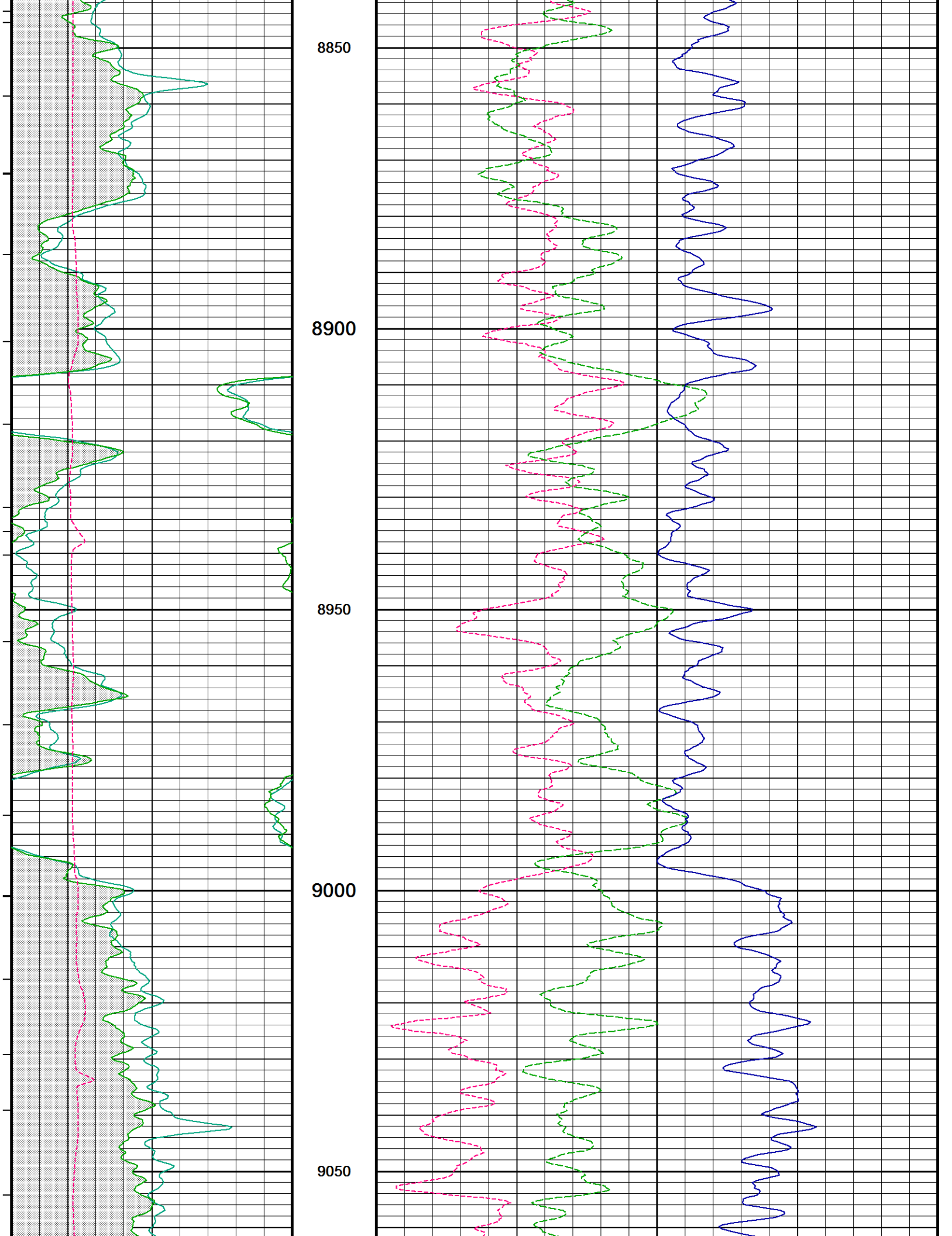
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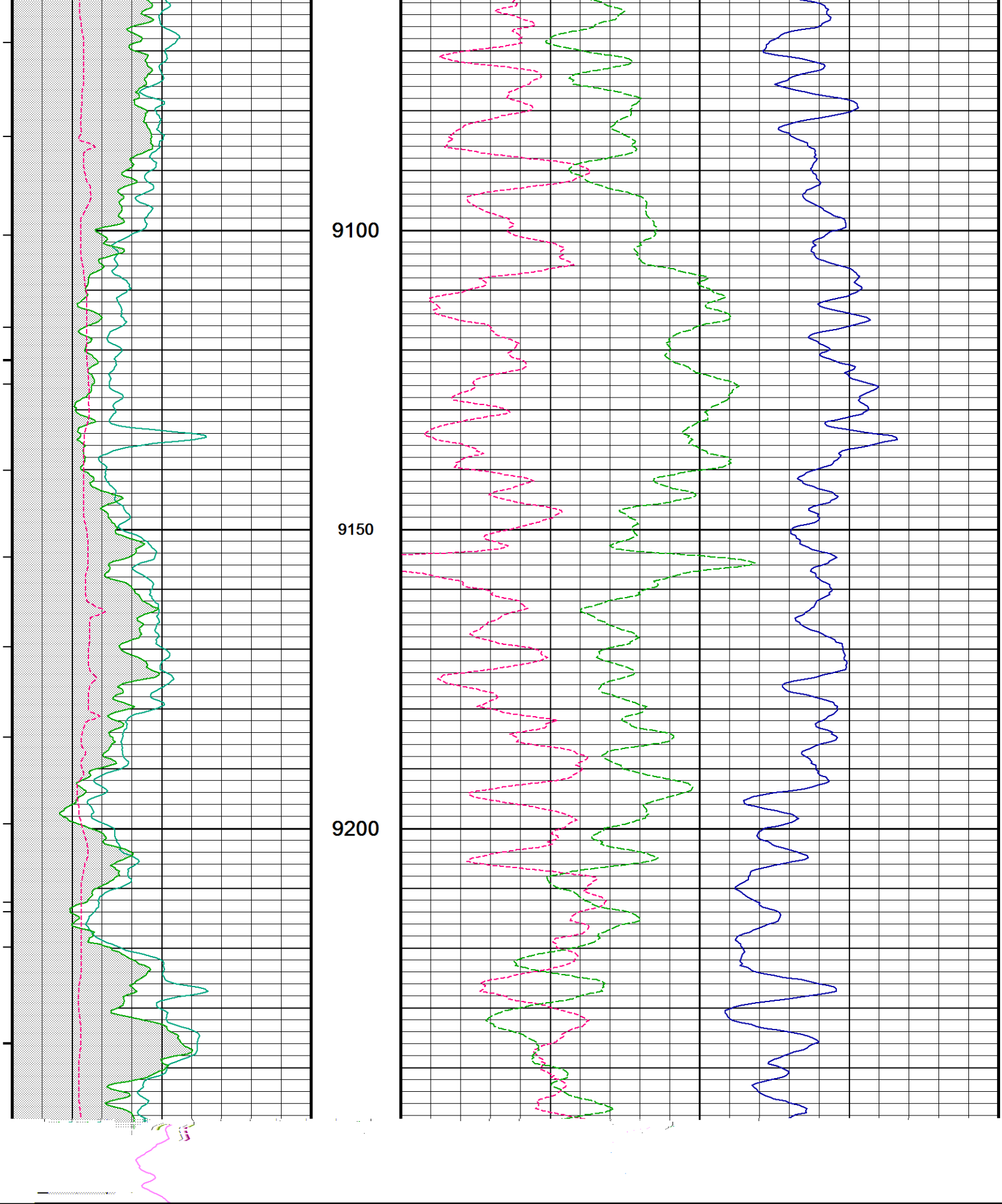
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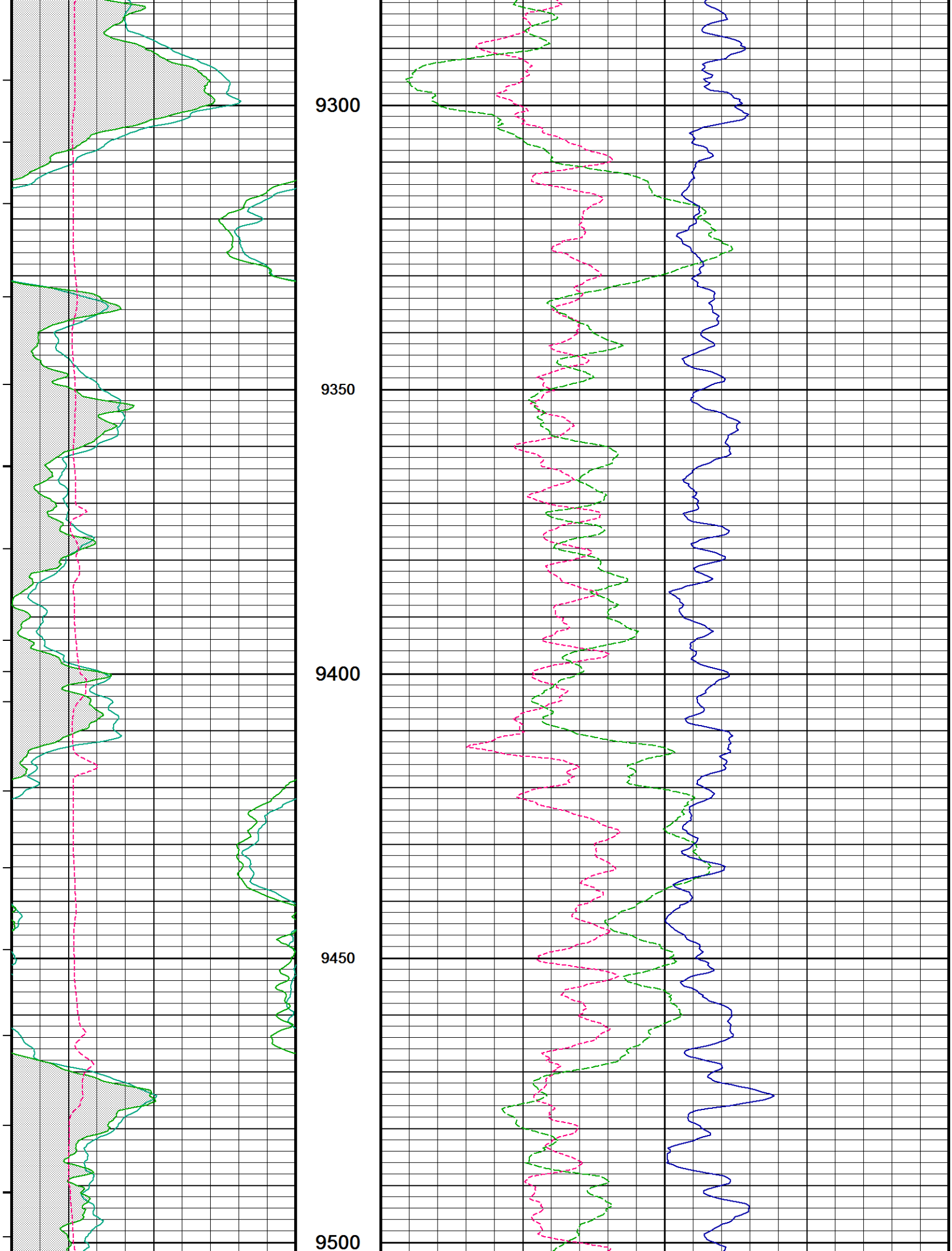
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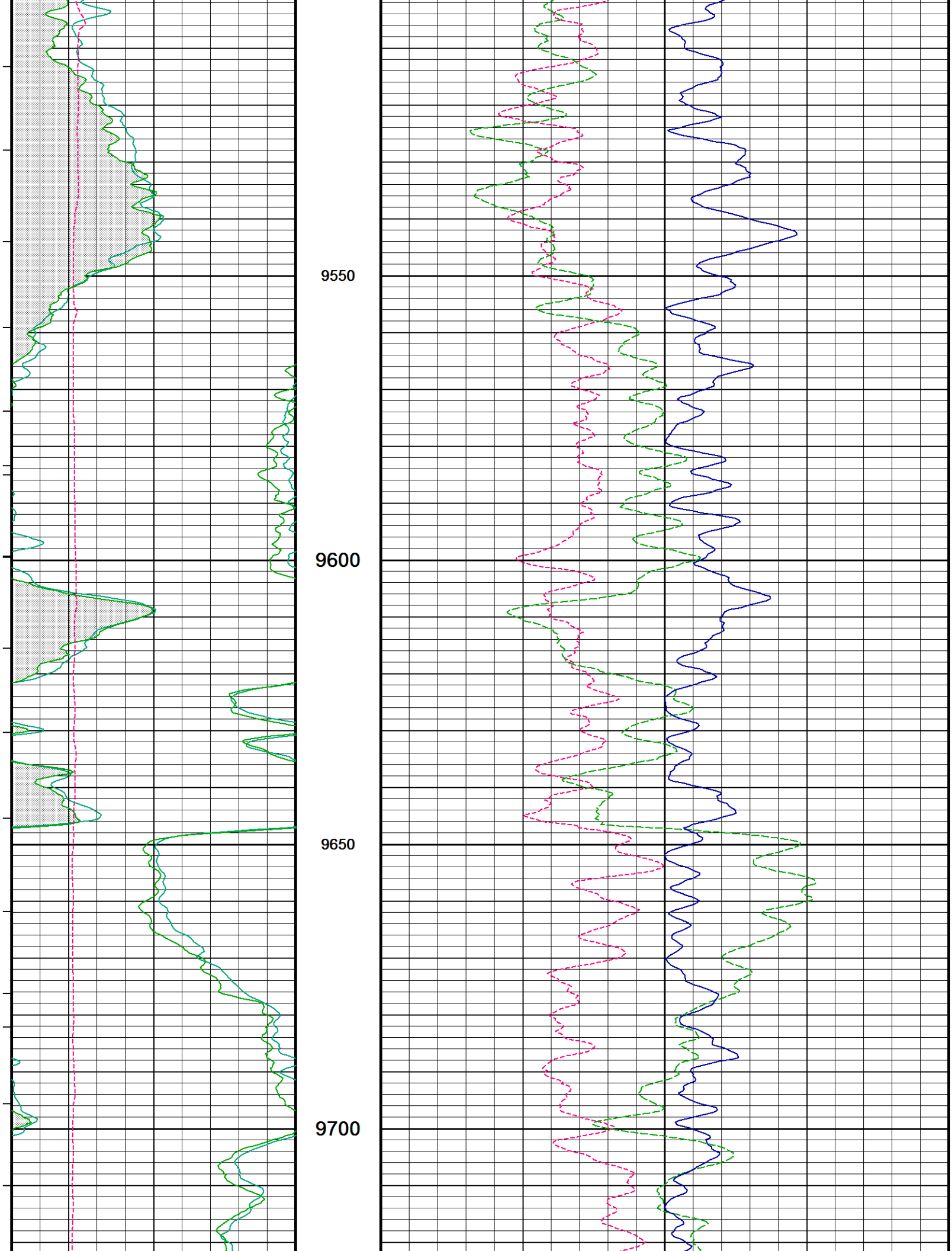
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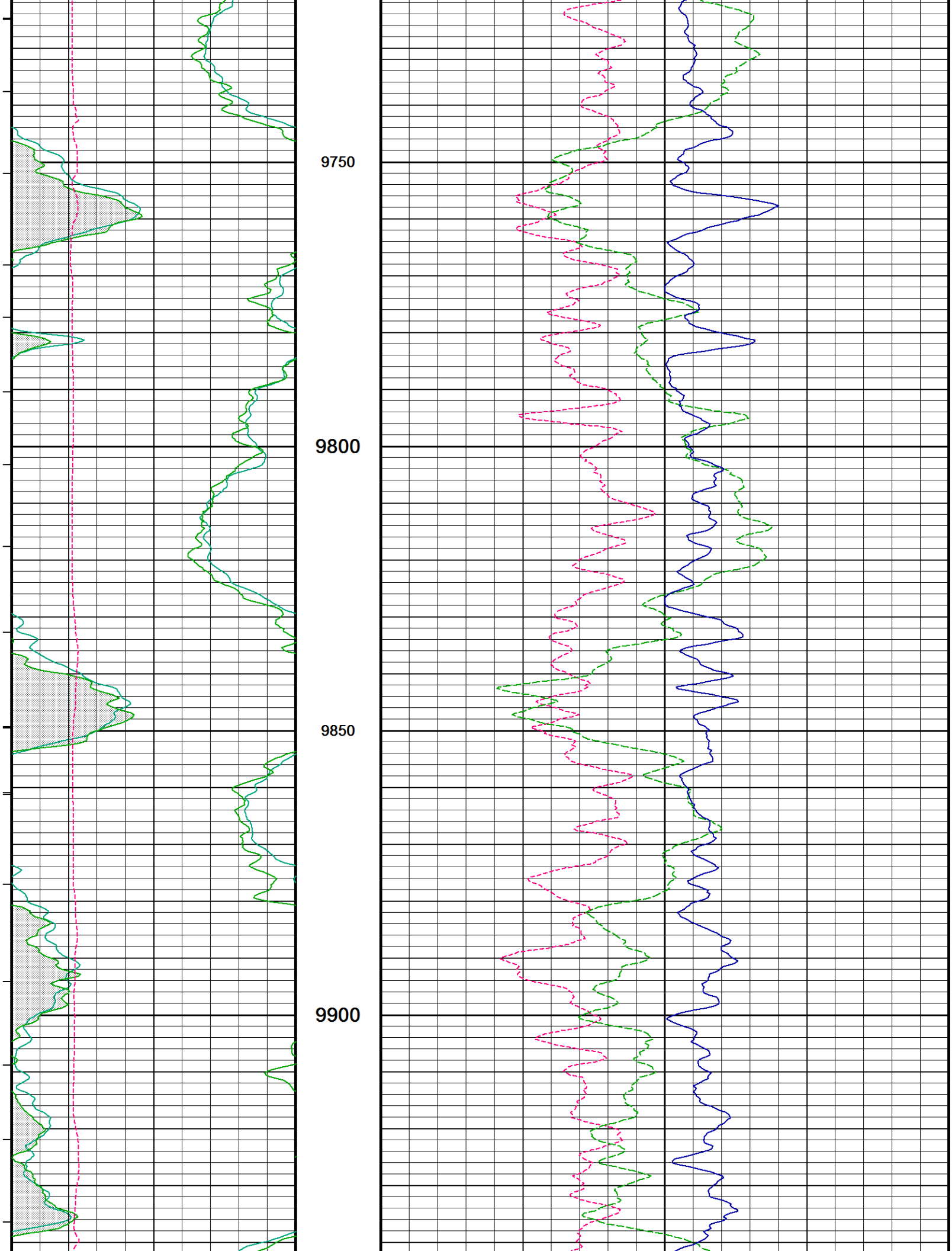
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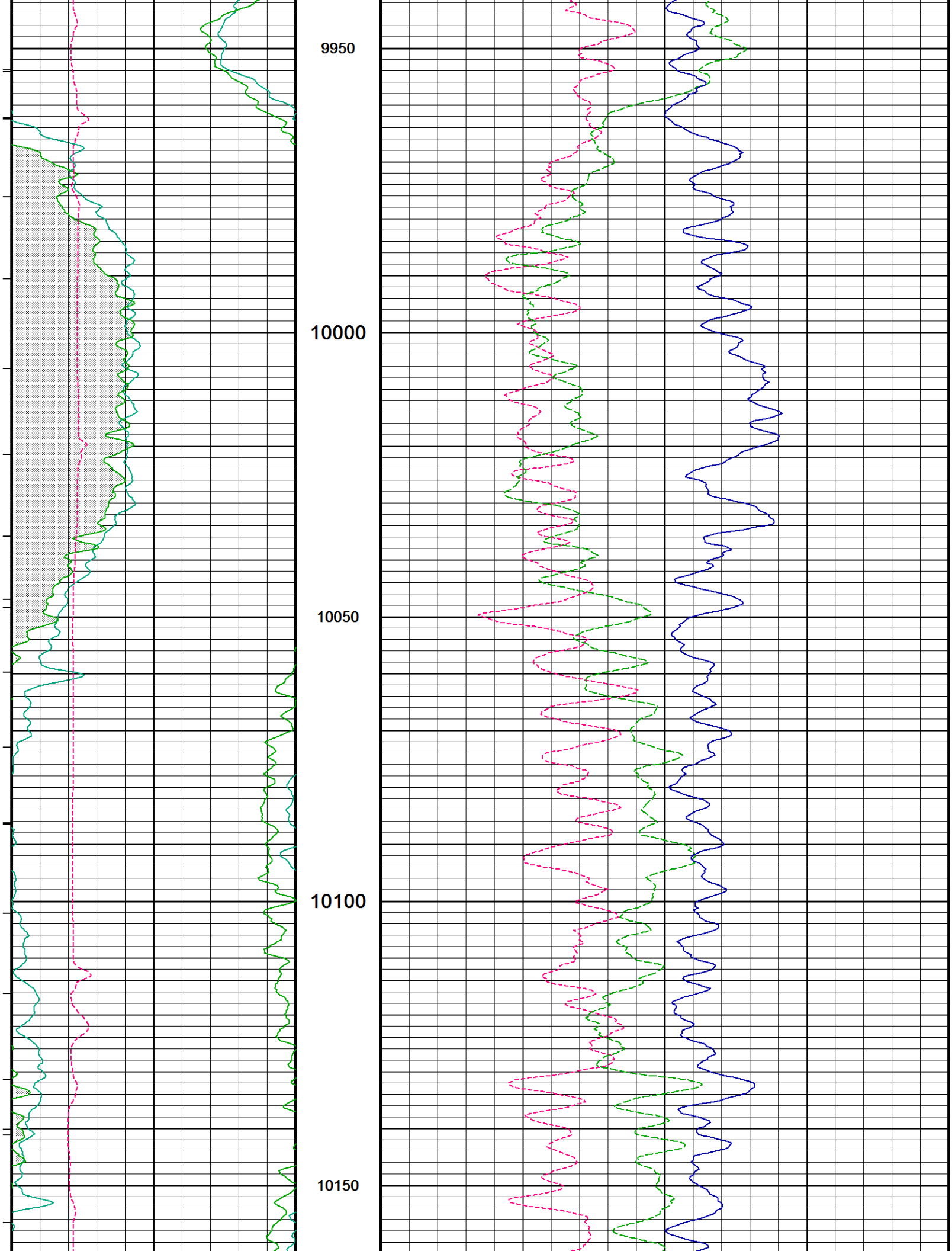
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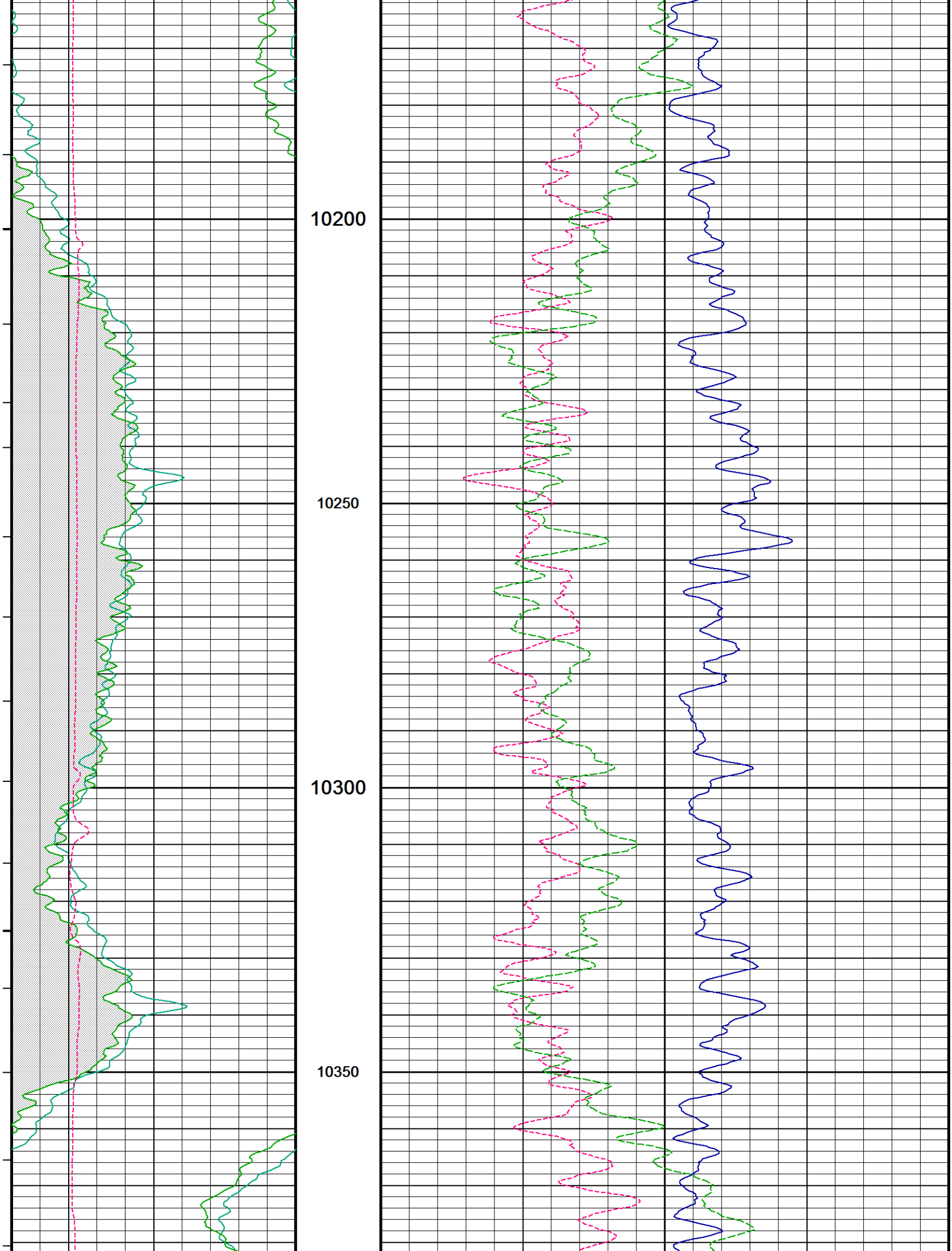
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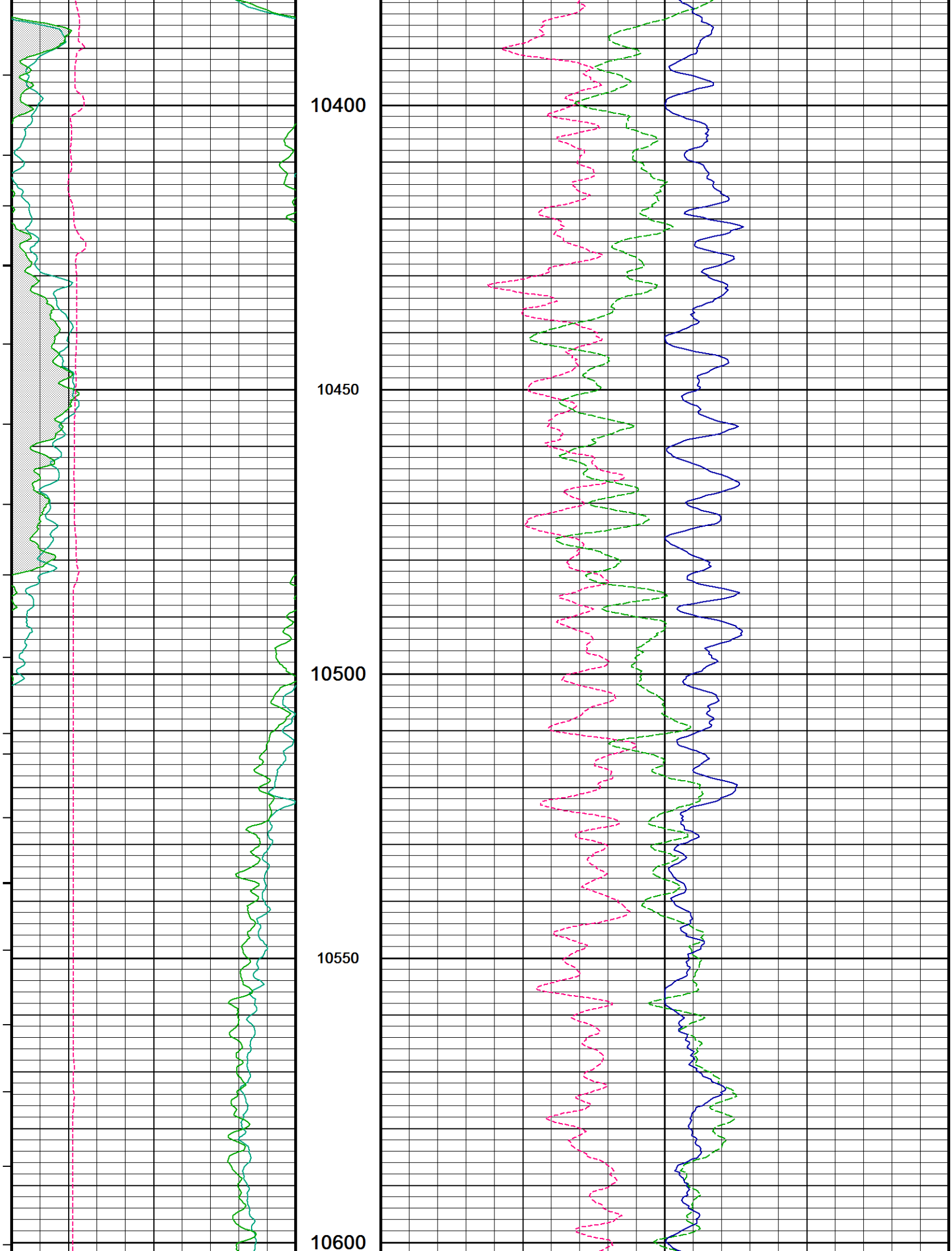
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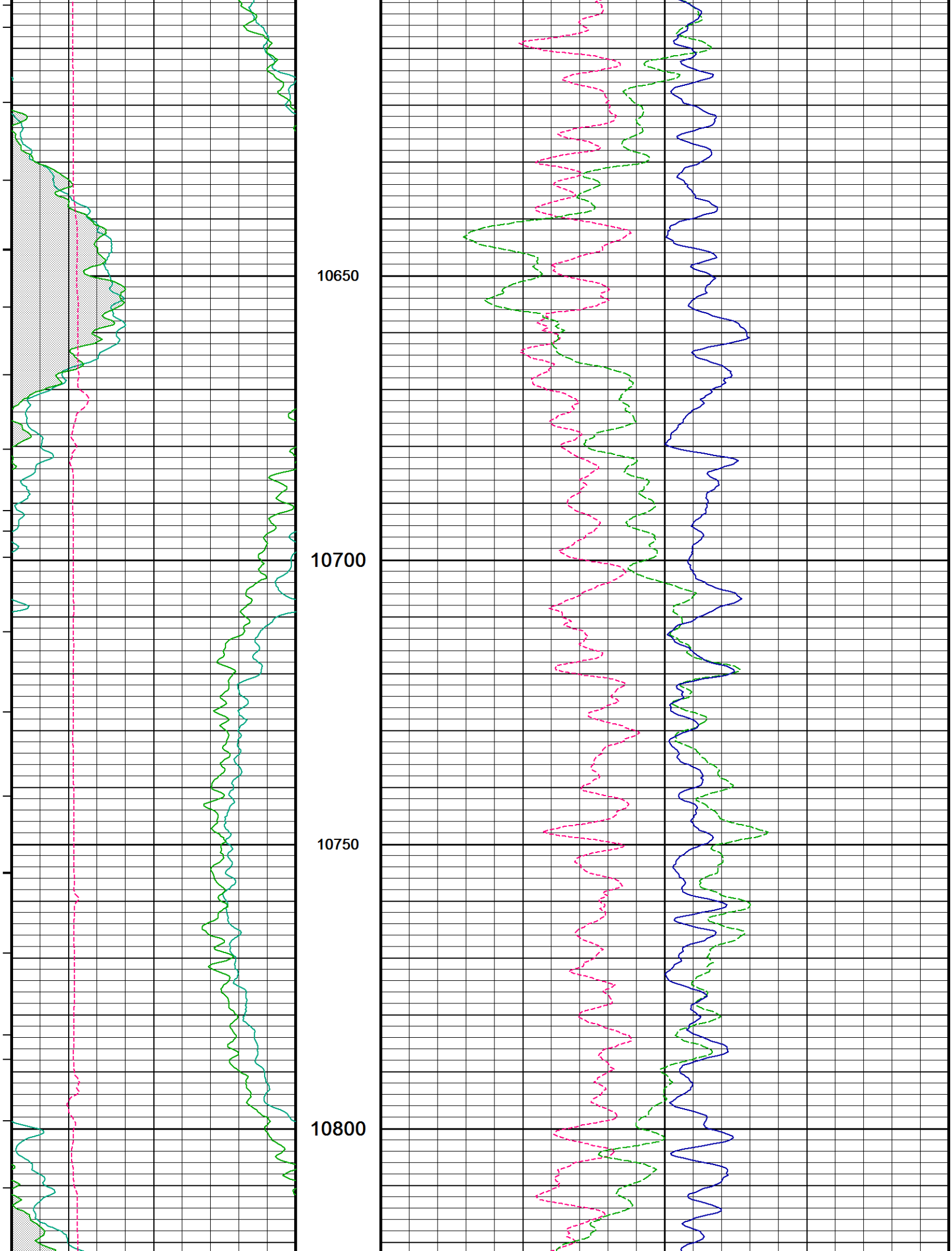
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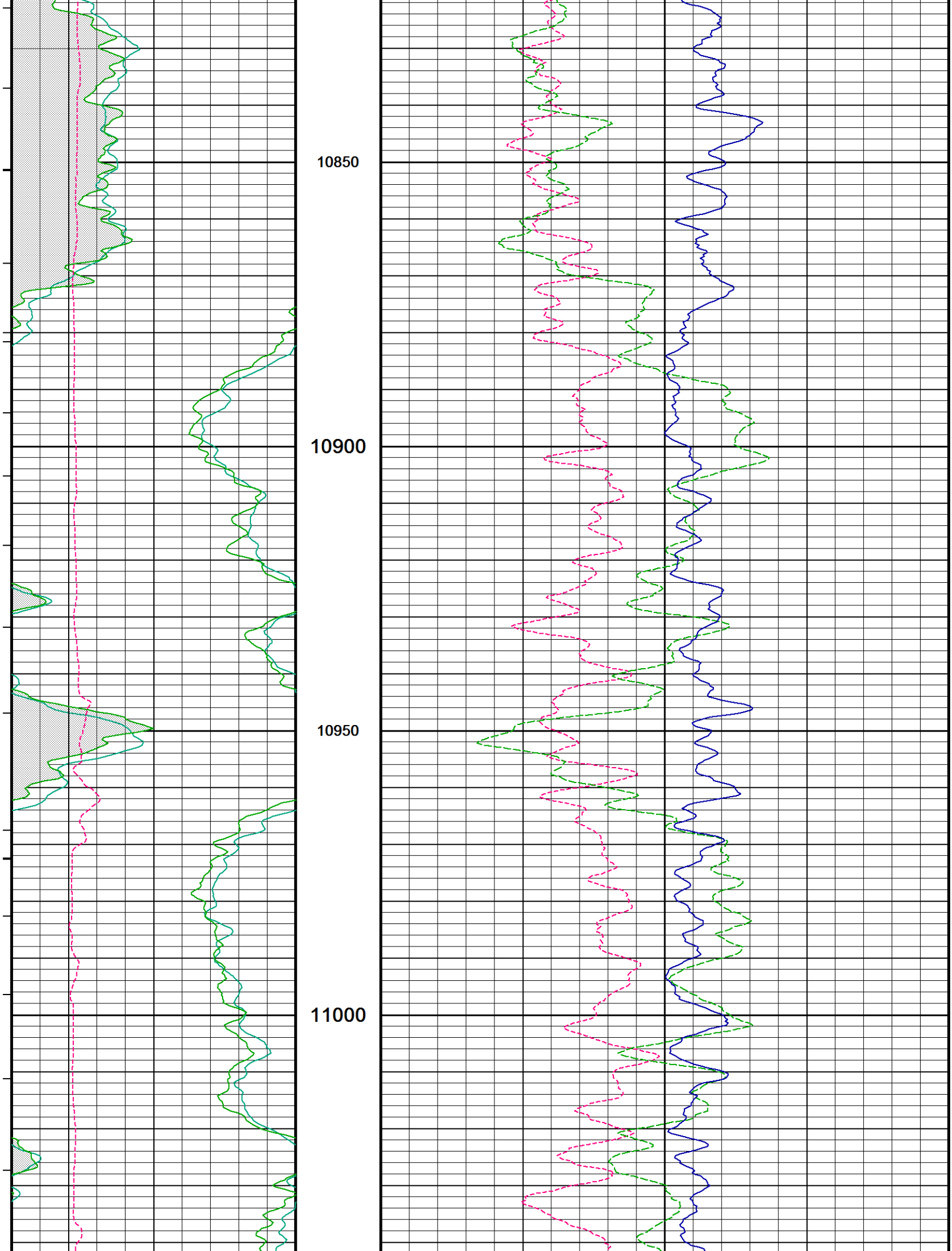
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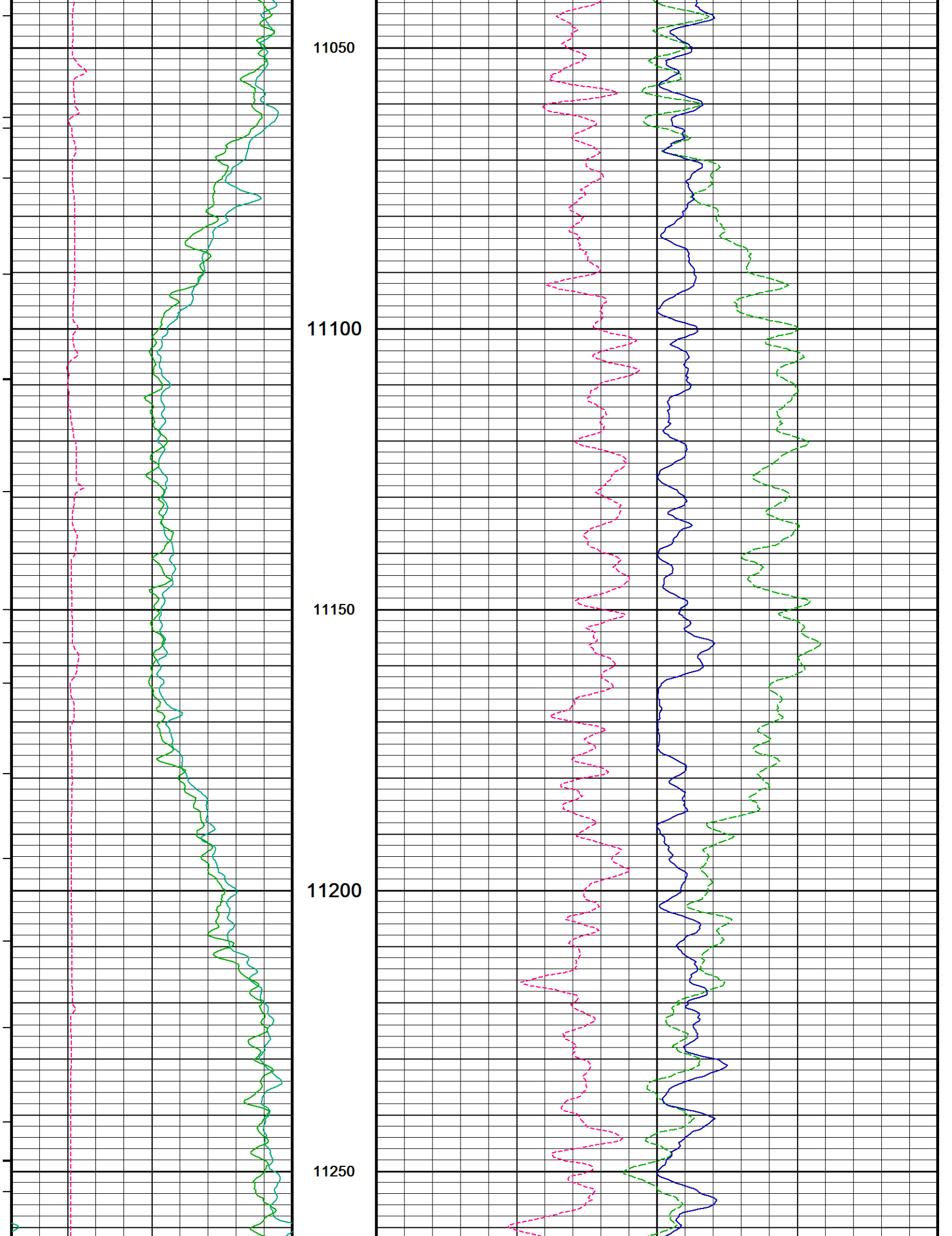
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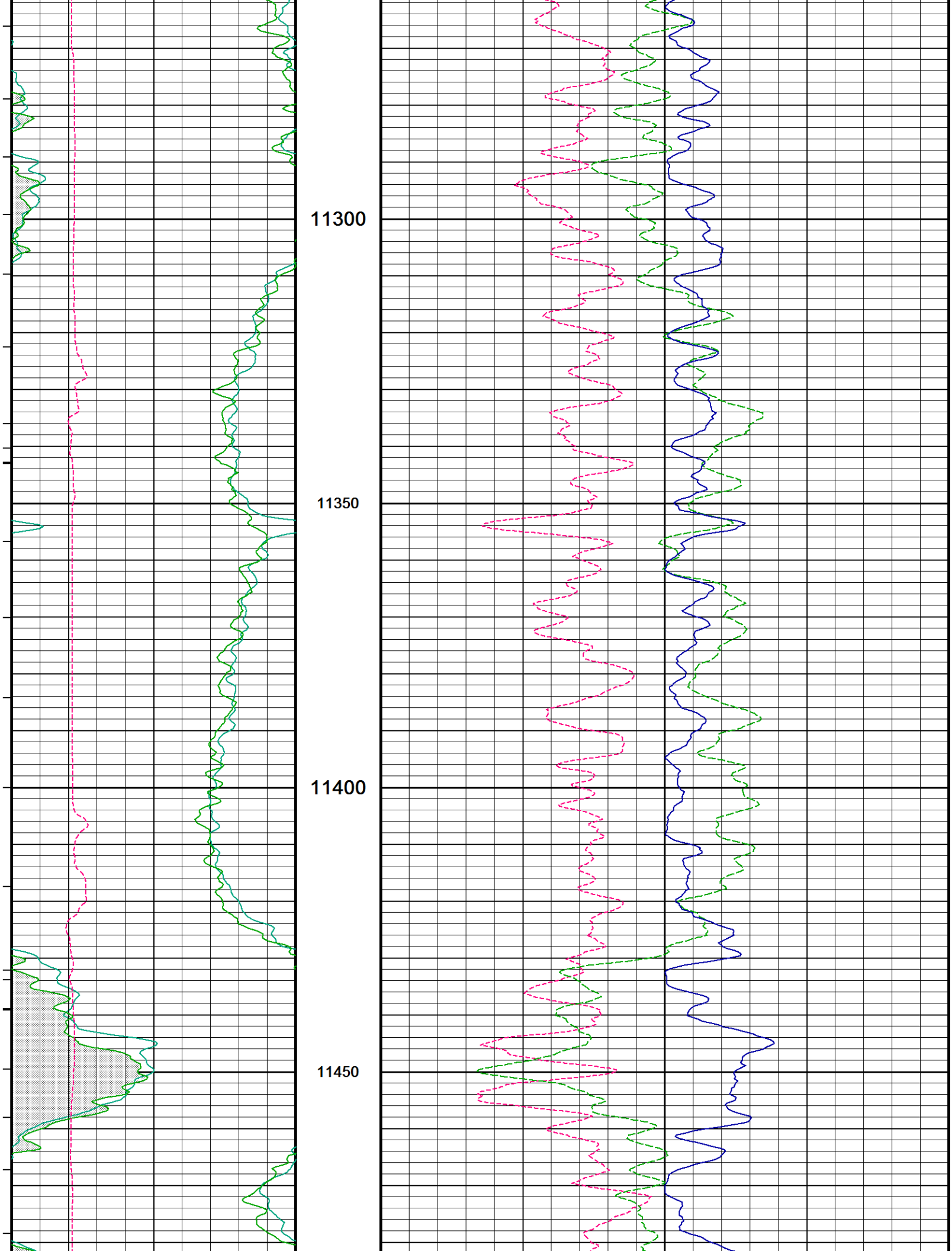
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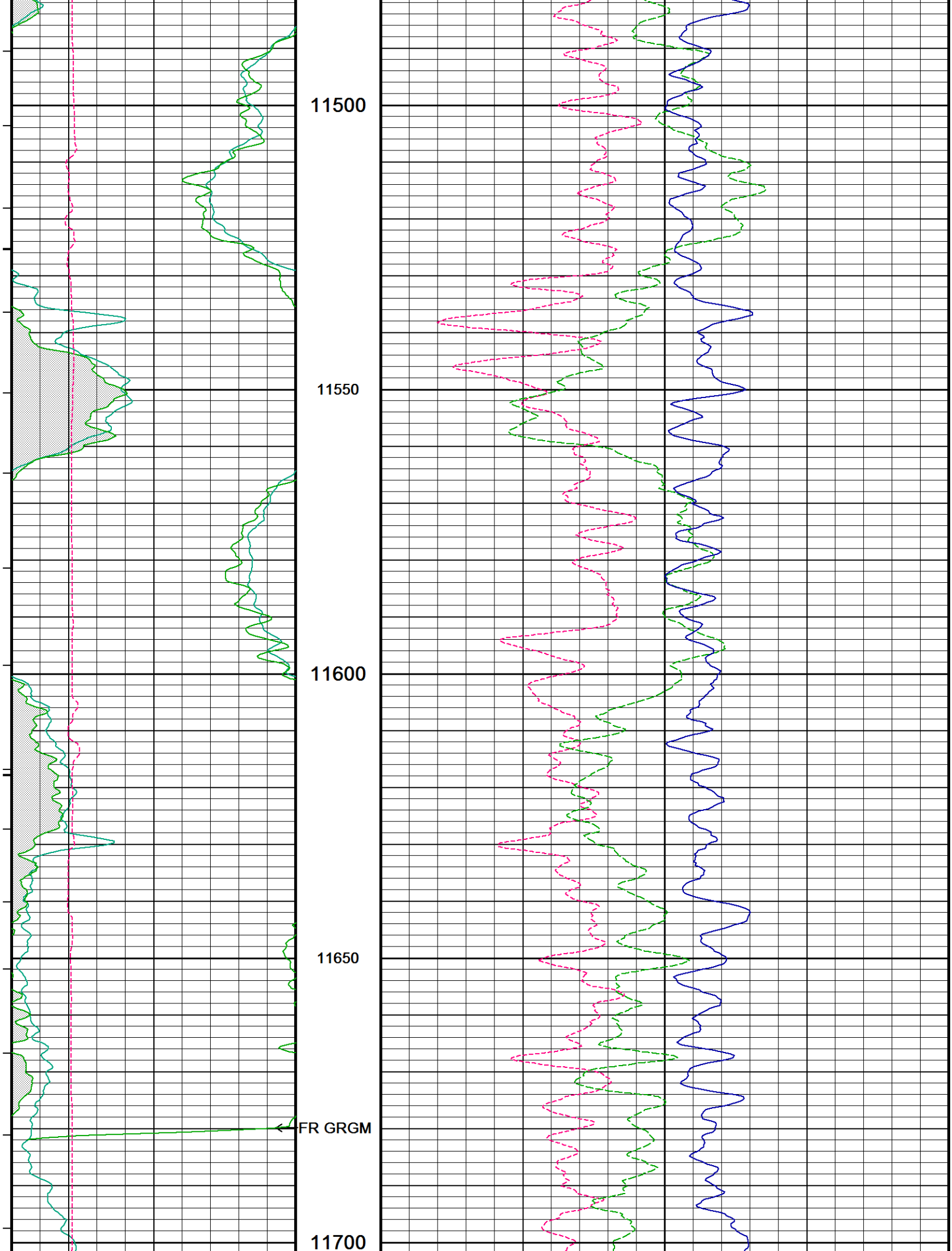
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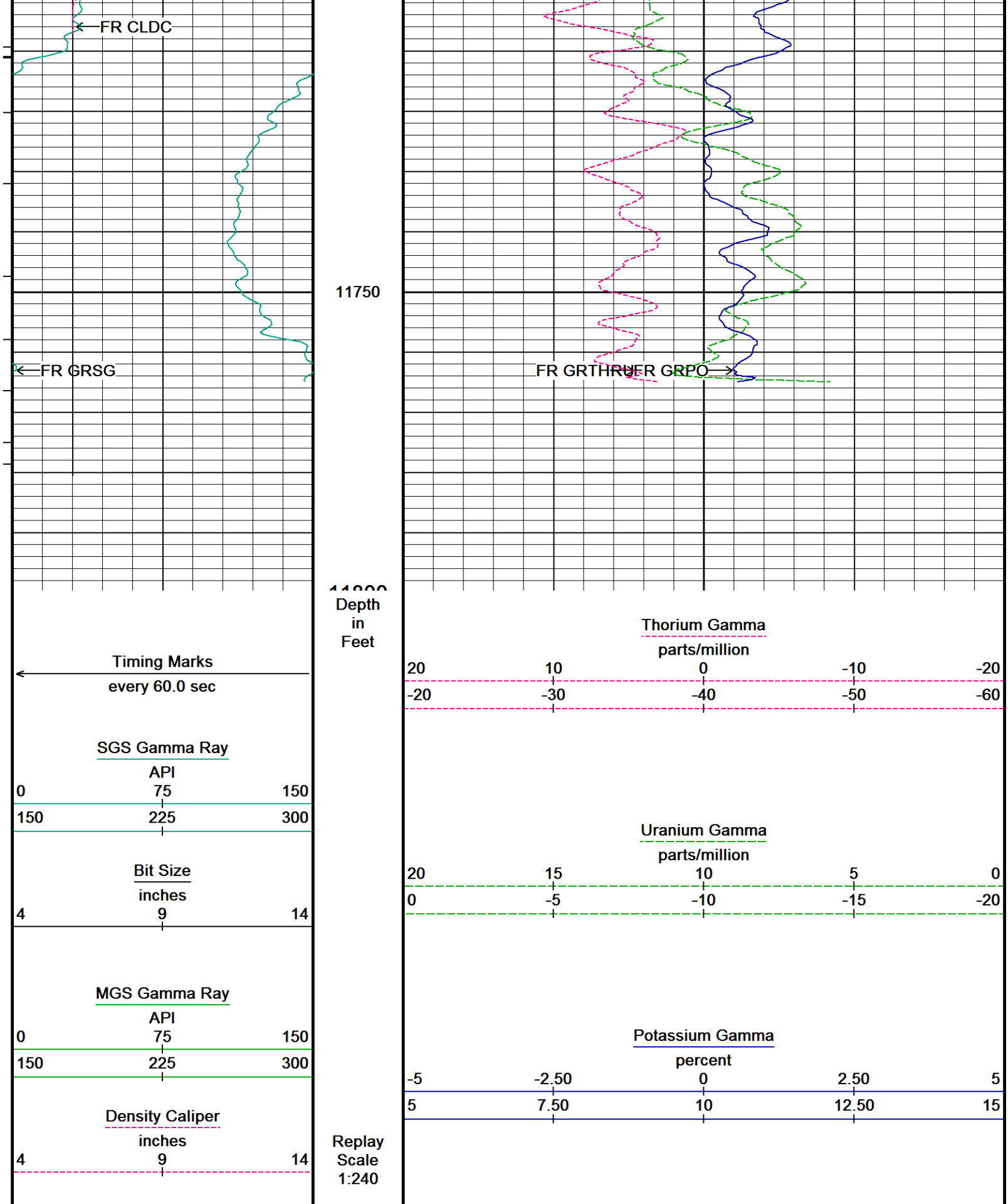


Depth in Feet

Timing Marks
every 60.0 sec

SGS Gamma Ray
API
0 75 150
150 225 300

Bit Size
inches
4 9 14

MGS Gamma Ray
API
0 75 150
150 225 300

Density Caliper
inches
4 9 14

Replay Scale 1:240

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

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: D:\Logs\Whiting\WOLF 12L-0103\MMS DEPTH2.dta
System Versions: Logged with 14.01.3220 Processed with 14.01.3220 Plotted with 14.01.3220

Plotted on 17-SEP-2014 03:03
Recorded on 17-SEP-2014 01:04

5 INCH MAIN LOG

BEFORE SURVEY CALIBRATION

D:\Logs\Whiting\WOLF 12L-0103\MMS DEPTH2.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 16-SEP-2014,22:59

General Parameters		
Mud Resistivity	0.970	ohm-metres
Mud Resistivity Temperature	89.900	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	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 248

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	

Gamma Calibration MGS-D.A 219

Field Calibration on 15-SEP-2014 17:05

	Measured	Calibrated (API)
Background	135	92
Calibrator (Gross)	1024	701
Calibrator (Net)	889	609

Gamma Constants MGS-D.A 219

Last Edited on 16-SEP-2014,23:00

Gamma Calibrator Number	GRCC 224	
Mud Density	1.16	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

SP Calibration MGS-D.A 219

Field Calibration on 24-JUL-2014,18:59

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

High Resolution Temperature Calibration MGS-D.A 219

Field Calibration on 24-JUL-2014,18:59

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

High Resolution Temperature Constants MGS-D.A 219

Last Edited on 24-JUL-2014,18:59

Pre-filter Length	11

Neutron Calibration MDN-B.J 372

Base Calibration on 28-AUG-2014 09:05
Field Check on 15-SEP-2014 16:28

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2928	89	3714	110
Ratio	32.979		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	2324	3439
Ratio	0.676	

Field Check

	Calibrated (cps)	
	2424	3535
Ratio	0.686	

Neutron Constants MDN-B.J 372

Last Edited on 15-SEP-2014,16:25

Neutron Source Id	P31115B	
Neutron Jig Number	NJ5299	
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 28-JUL-2014 13:58

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
Saucebar Start	N/A	mAmp

Squasher Start	N/A	mAmp
Image Processing	Enabled	

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 15-SEP-2014,16:43

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 15-SEP-2014 16:49
Field Calibration on 15-SEP-2014 16:51

Base Calibration

Reading No	Pads 1-5 Meas.	Pads 3-7 Meas.	Calibrator Size (in)
1	25596	27177	5.96
2	35531	37467	7.98
3	42540	46891	9.86
4	49316	57779	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	25350	25662	25136	25847	5.96
2	34138	34121	33803	34657	7.98
3	43605	40646	40186	44503	9.86
4	55526	47326	47020	56371	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)

Pads 1-3 Caliper(in)	Pads 3-7 Caliper(in)	Caliper(in)
5.98	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)
2.95	3.01	3.03	2.96	5.96

Caliper Constants MIE-A.A 173

Last Edited on

Caliper Difference for BRKT	0.120	inches

Induction Calibration MAI-B.J 434

Base Calibration on 24-JAN-2012,20:11
Field Check on 15-SEP-2014 16:41

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			19.6	4103.6
2			34.6	3790.9
3			30.1	3169.0
4			20.7	2138.8
Deep			16.9	1969.4
Medium			44.0	4225.0
Shallow			54.3	5753.5

Array Temperature	84.7	Deg F

Induction Constants MAI-B.J 434

Last Edited on 15-SEP-2014,16:39

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

Photo Density Calibration MPD-C.J 378

Base Calibration on 28-AUG-2014 14:26
Field Check on 15-SEP-2014 16:34

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Background	1151	1225		
Reference 1	56652	25552	59443	30683
Reference 2	22274	2349	25113	2508
Field Check at Base	1151.5	1225.5		
Field Check	1147.4	1227.9		

PE Calibration

Base Calibration	Measured			Calibrated
	WS	WH	Ratio	Ratio
Background	211	1032		
Reference 1	24495	56459	0.438	0.372
Reference 2	6523	22145	0.299	0.268
Field Check at Base	211.2	1031.7		
Field Check	212.4	1030.2		

Density Constants MPD-C.J 378

Last Edited on 16-SEP-2014,23:00

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	1.16	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

Caliper Calibration MPD-C.J 378

Base Calibration on 28-AUG-2014 13:41
Field Calibration on 15-SEP-2014 16:38

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13040	4.00
2	21312	5.96
3	29748	7.98

4	37680	9.86
5	46993	11.88
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.89	5.96

Spectral Gamma Calibration SGS-E.J 167

Base Calibration on 07-AUG-2014 16:23
Field Calibration on 21-AUG-2014 11:11

Base Calibration

Potassium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	112.9	38.0	4.1	1.5	3.1
Calibrator (Gross)	244.6	128.0	29.0	1.8	3.8
Calibrator (Net)	131.7	90.0	24.8	0.3	0.7

	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	112.9	38.0	4.1	1.5	3.1
Calibrator (Gross)	549.0	191.7	17.1	10.6	5.4
Calibrator (Net)	436.1	153.7	13.0	9.1	2.3

	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	112.9	38.0	4.1	1.5	3.1
Calibrator (Gross)	419.6	151.1	12.1	6.7	16.9
Calibrator (Net)	306.7	113.1	8.0	5.2	13.8

	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	112.9	38.0	4.1	1.5	3.1
Calibrator (Gross)	896.6	362.0	47.7	14.1	19.8
Calibrator (Net)	783.7	324.0	43.6	12.6	16.7

Field Calibration

Gamma Ray

	Measured	Calibrated (API)
Background	157	33
Calibrator (Gross)	1360	283
Calibrator (Net)	1203	250

Mixture Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	105.6	35.9	3.8	1.4	2.2
Calibrator (Gross)	893.6	373.4	49.4	15.4	21.0
Calibrator (Net)	788.0	337.4	45.6	13.9	18.8

Spectral Gamma Constants SGS-E.J 167

Last Edited on 16-SEP-2014,23:01

Background Calibrator Number	440	
Mixture Calibrator Number	450	
Potassium Calibrator Number	500	
Uranium Calibrator Number	506	
Thorium Calibrator Number	503	
Mud Density	1.16	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\WOLF 12L-0103\MMS DEPTH2.dta

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

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

Compact Linker MMR
MLK-A 1 LG: 14.23 ft WT: 30.9 lb OD: 2.240 in

Compact Linker 200V EXT
MLK-A 2 LG: 8.52 ft WT: 30.9 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

MBS-F.A 200v Compact Battery Sub
MBS-F.A 119 LG: 17.06 ft WT: 123.5 lb OD: 2.240 in

Compact Memory Sub F.A
MMS-F.A 248 LG: 5.20 ft WT: 37.5 lb OD: 2.244 in

Compact Tool Isolator sub.
MTI-C.A 145 LG: 1.54 ft WT: 13.2 lb OD: 2.244 in

Compact Short Gamma
MGS-D.A 219 LG: 3.41 ft WT: 24.3 lb OD: 2.244 in

Compact Collar Locator
MCL-C.A 128 LG: 3.17 ft WT: 26.5 lb OD: 2.244 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 597 LG: 2.17 ft WT: 24.3 lb OD: 2.244 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 731 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 723 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

SHA-J.B Compact Swivel Head Adaptor
SHA-J.B 678 LG: 2.30 ft WT: 22.0 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

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

SKJ-E.B Compact Knuckle Joint

99.98 ft GRGM - MGS Gamma Ray
98.00 ft GSXT - MGS External Temperature
81.11 ft NPRL - Limestone Neutron Por.
73.87 ft AVOL - Annular Volume
73.87 ft HVOL - Hole Volume
73.87 ft CLDC - Density Caliper
71.94 ft DPRL - Limestone Density Por.
71.94 ft DCOR - Density Correction
71.88 ft PDPE - PE

SKJ-E.B 612 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

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

Compact MMI Memory Section
MIM-A.A 207 LG: 4.65 ft WT: 26.5 lb OD: 2.244 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 437 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

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

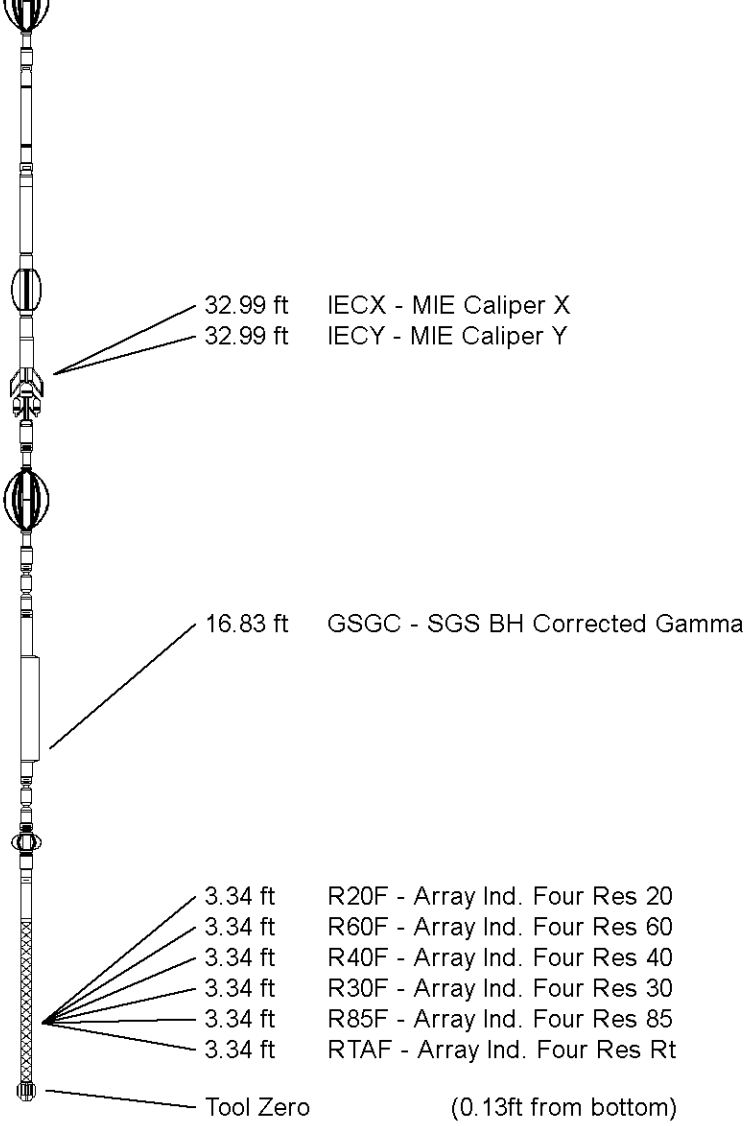
Spectral Gamma Ray Sub
SGS-E.J 167 LG: 7.78 ft WT: 105.8 lb OD: 3.543 in

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

MIS-E.B Compact Inline Standoff sub
MIS-E.B 787 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: 2.244 in

Total Length: 160.57 ft Weight: 1128.8 lb



COMPANY	WHITING OIL AND GAS CORPORATION
WELL	WOLF 12L-0103
FIELD	REDTAIL
PROVINCE/COUNTY	WELD
COUNTRY/STATE	U.S.A. / COLORADO

Elevation Kelly Bushing	4970.00	feet	First Reading	11762.00	feet
Elevation Drill Floor	4970.00	feet	Depth Driller	13393.00	feet
Elevation Ground Level	4953.00	feet	Depth Logger	11781.00	feet

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MEASURED DEPTH
SPECTRAL GAMMA RAY
LOG