Schlumberger

Company: **Kerr−McGee Oil & Gas Onshore LP**

Well: **Cannon 36C−11HZ**
Field: **Wattenberg**
County: **Weld** State: **Colorado**

HNGS

Xtreme Natural Gamma Ray Spectroscopy

County: Weld
Field: Wattenberg
Location: SHL: 610' FNL X 676' FWL NWN
Well: Cannon 36C−11HZ
Company: Kerr−McGee Oil & Gas Onshore

LOCATION

SHL: 610' FNL X 676' FWL NWNW
Lat/Long: 40.158321/−104.751377

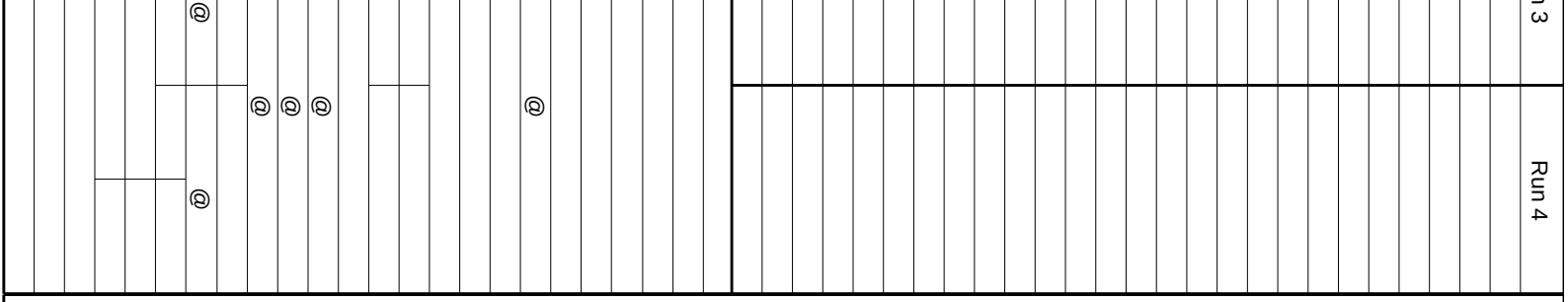
Elev.: K.B. 5059.00 ft
G.L. 5042.00 ft
D.F. 5058.00 ft

Permanent Datum: Ground Level Elev.: 5042.00 ft
Log Measured From: Kelly Bushing 17.00 ft above Perm. Datum
Drilling Measured From: Kelly Bushing

API Serial No.	Section	Township	Range
05123343300000	11	2N	66W

	Run 1	Run 2	Run 3
Logging Date	16−Jan−2012		
Run Number	1		
Depth Driller	12028 ft		
Schlumberger Depth	12000 ft		
Bottom Log Interval	12000 ft		
Top Log Interval	7802 ft		
Casing Driller Size @ Depth	7.000 in @ 7814 ft	@	@
Casing Schlumberger	7802 ft		
Bit Size	6.125 in		
Type Fluid In Hole	WBM		
MUD Density / Viscosity	10.2 lbm/gal / 41 s		
MUD Fluid Loss / PH	/		
MUD Source Of Sample	Mud Pit		
RM @ Measured Temperature	1.450 ohm.m @ 65 degF	@	@
RMF @ Measured Temperature	1.087 ohm.m @ 65 degF	@	@
RMC @ Measured Temperature	2.175 ohm.m @ 65 degF	@	@
Source RMF / RMC	Calculated / Calculated	/	
RM @ MRT / RMF @ MRT	0.491 @ 205 / 0.369 @ 205	@ / @	@ / @
Maximum Recorded Temperatures	205 degF		
Circulation Stopped / Time	30−Jan−2012 / 0:00		
Logger On Bottom / Time	1−Feb−2012 / 9:00		
Unit Number / Location	3021 / Ft, Morgan		
Recorded By	Todd Johnson		
Witnessed By	George Hine		

	Run 1	Run 2	Run 3
Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Driller Size @ Depth	@		
Casing Schlumberger			
Bit Size			
Type Fluid In Hole			
MUD Density / Viscosity	/		
MUD Fluid Loss / PH	/		
MUD Source Of Sample			
RM @ Measured Temperature	@		
RMF @ Measured Temperature	@		
RMC @ Measured Temperature	@		
Source RMF / RMC	/		
RM @ MRT / RMF @ MRT	@ / @		
Maximum Recorded Temperatures			
Circulation Stopped / Time	/		
Logger On Bottom / Time	/		
Unit Number / Location	/		
Recorded By			
Witnessed By			



DISCLAIMER

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OTHER SERVICES1	OTHER SERVICES2
OS1: FMI−PPC	OS1:
OS2: PEX−AIT	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
Tool String ran as per tool sketch.	
Second run due to brigding out at 8400 on the first run	
Mud resistivity calculated from mud pit.	
Correlated to Baker Hughes MWD log	
Logged at 1700 ft/hr for the FMI image	
Maximum temperature from Gtem generalized borehole temperature	
Depth offset= 8 feet versus MWD Log	
Rig: Xtreme 8	
Crew: Tim Ludgate, Ian Derry, Kit Carlson	

RUN 1

SERVICE ORDER #: BFCL−00181
PROGRAM VERSION: 18C0−147
FLUID LEVEL: 10 ft

LOGGED INTERVAL	START	STOP

RUN 2

SERVICE ORDER #:
PROGRAM VERSION:
FLUID LEVEL:

LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1 RUN 2

SURFACE EQUIPMENT

GSR−U
WITM (DTS)−A

DOWNHOLE EQUIPMENT

DWCH−C 63.4
DWCH−C

AH−107
AH−107

55.4

HTCS−A
HTCS−A

53.4

DTC−H
ECH−KC
DTCH0−A

CTEM
TelStatus
ToolStatu

48.7
46.6

49.6

HNGS−BA
HNGS−BA
HNSH−BA

Upper_1
Lower_2

44.3
43.6

46.6

HNGC−B
HNGH−A
HNGC−B

HNGC Stat

36.7

38.4

AH−107
AH−107

34.9

PPC1−B
PPC1−B
PPC_CAL_STD

Calipers

31.8

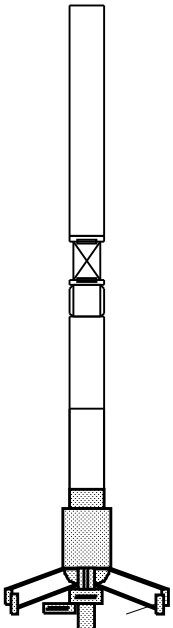
PPC_Cartr

26.4

32.9

FBST−B
ECH−MRA
FBCC−A
AH−184
AH−185
FBSH−A
GPIC−C
FBSC−B
FBSS−B

26.4



MAXIMUM STRING DIAMETER 5.00 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Company: Kerr−McGee Oil & Gas Onshore LP | Well: Cannon 36C−11HZ

Input DLIS Files

DEFAULT	FMI_CAL_NGS_007LUP	FN:6	PRODUCER	01−Feb−2012 08:58	11992.5 FT	7649.5 FT

Output DLIS Files

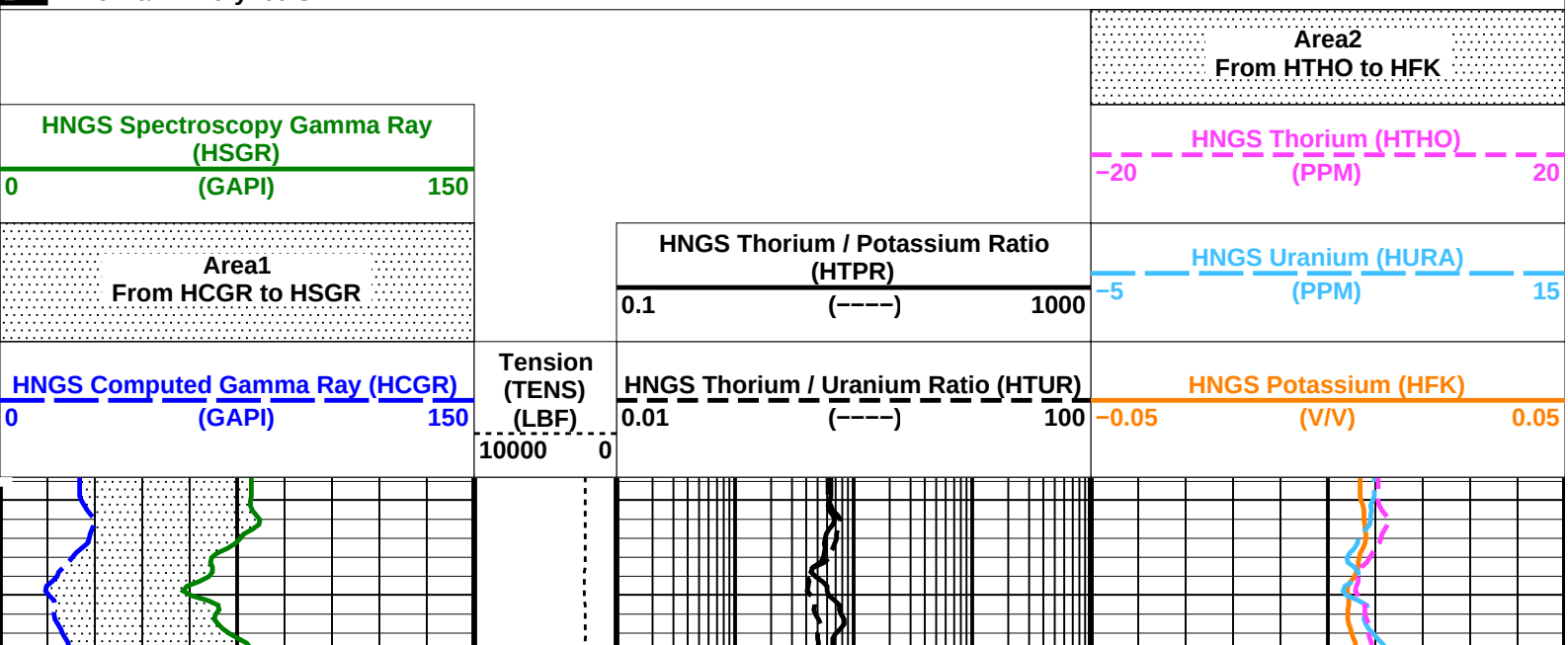
DEFAULT	FMI_CAL_NGS_009PUP	FN:8	PRODUCER	01−Feb−2012 13:06	12000.0 FT	7657.5 FT

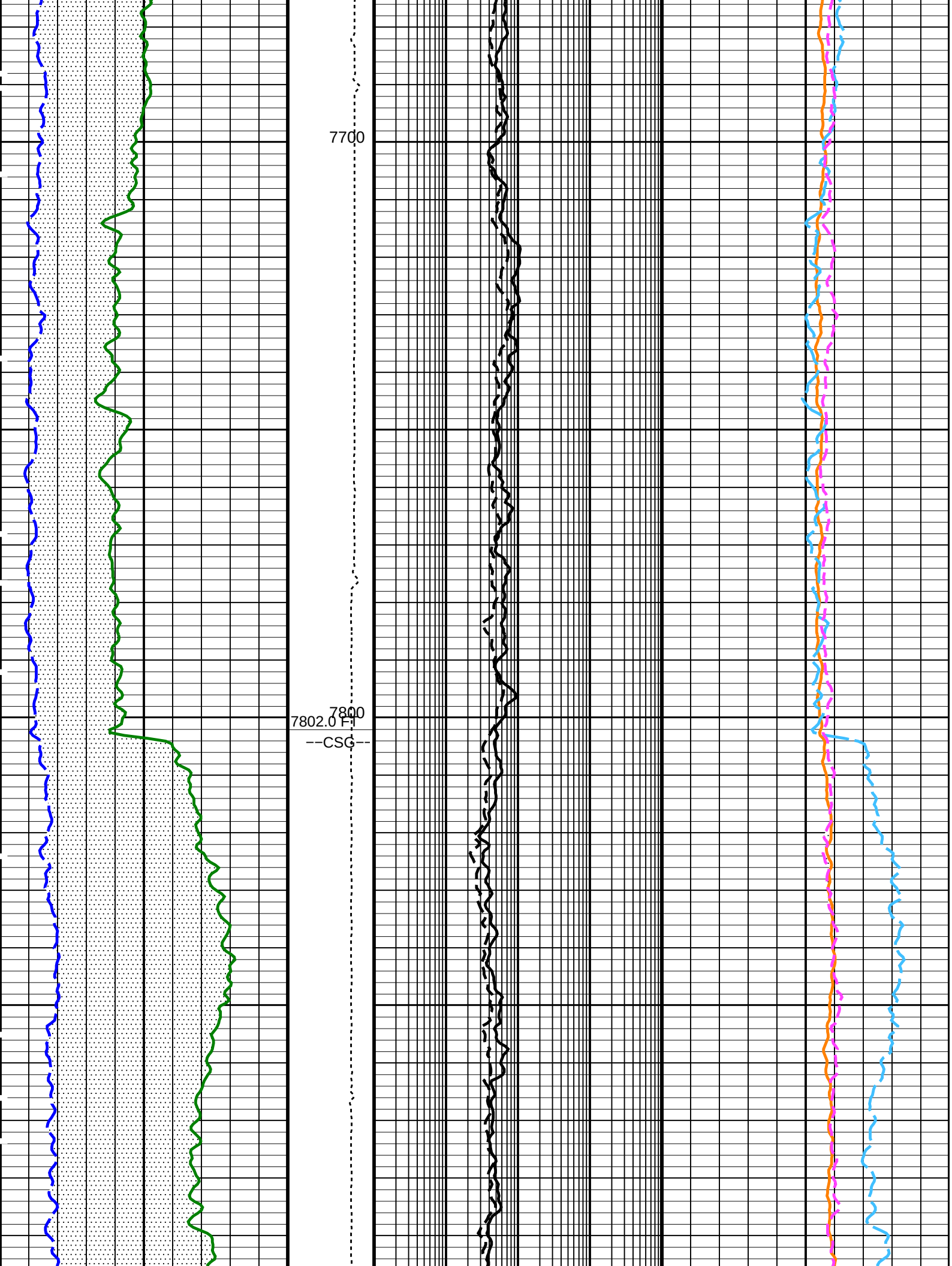
OP System Version: 18C0−147

FBST−B	18C0−147	PPC1−B	18C0−147
HNGC−B	HFE−4001−OP18−NUCL	HNGS−BA	HFE−4001−OP18−NUCL
DTC−H	18C0−147		

PIP SUMMARY

Time Mark Every 60 S

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7800
7802.0 FT
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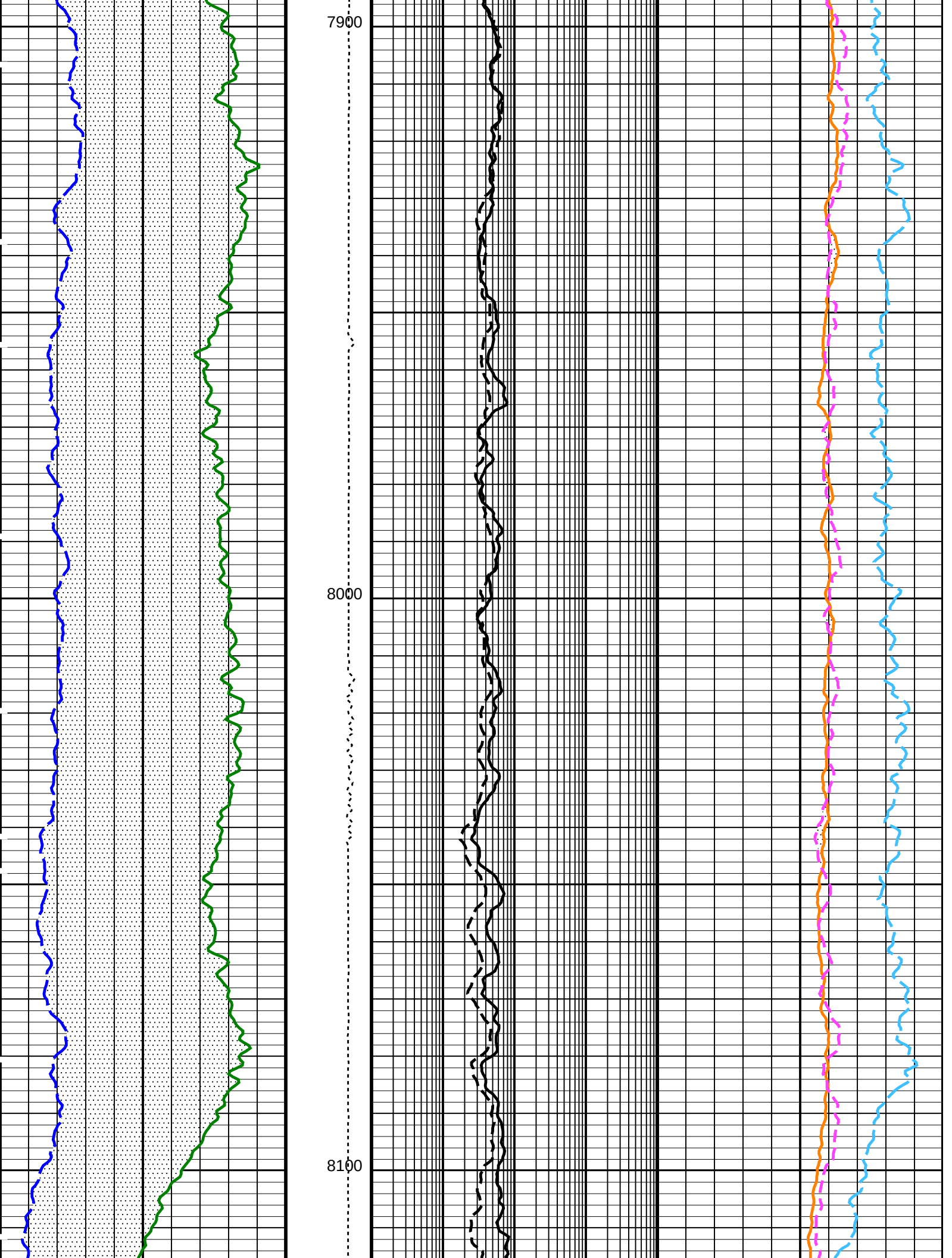
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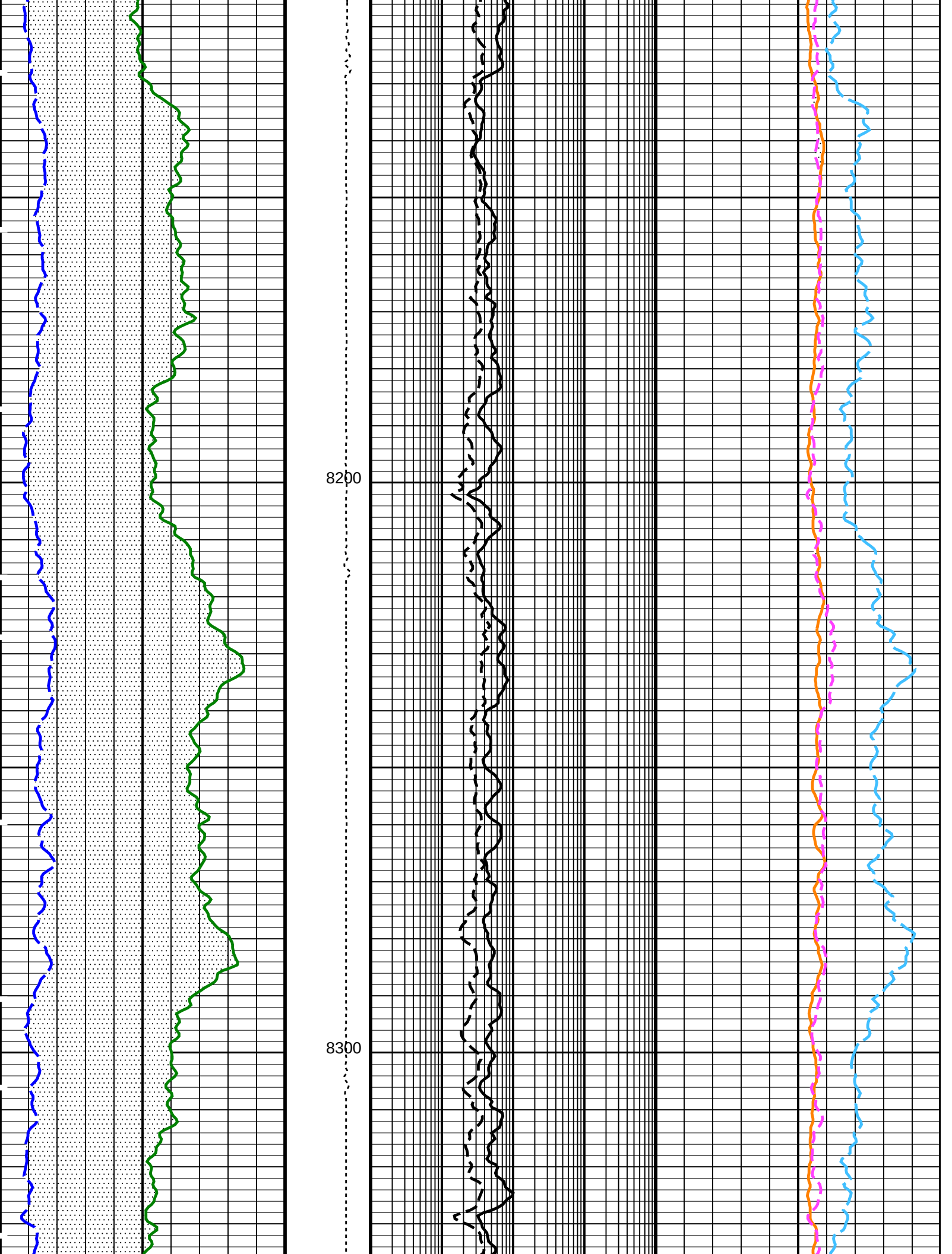
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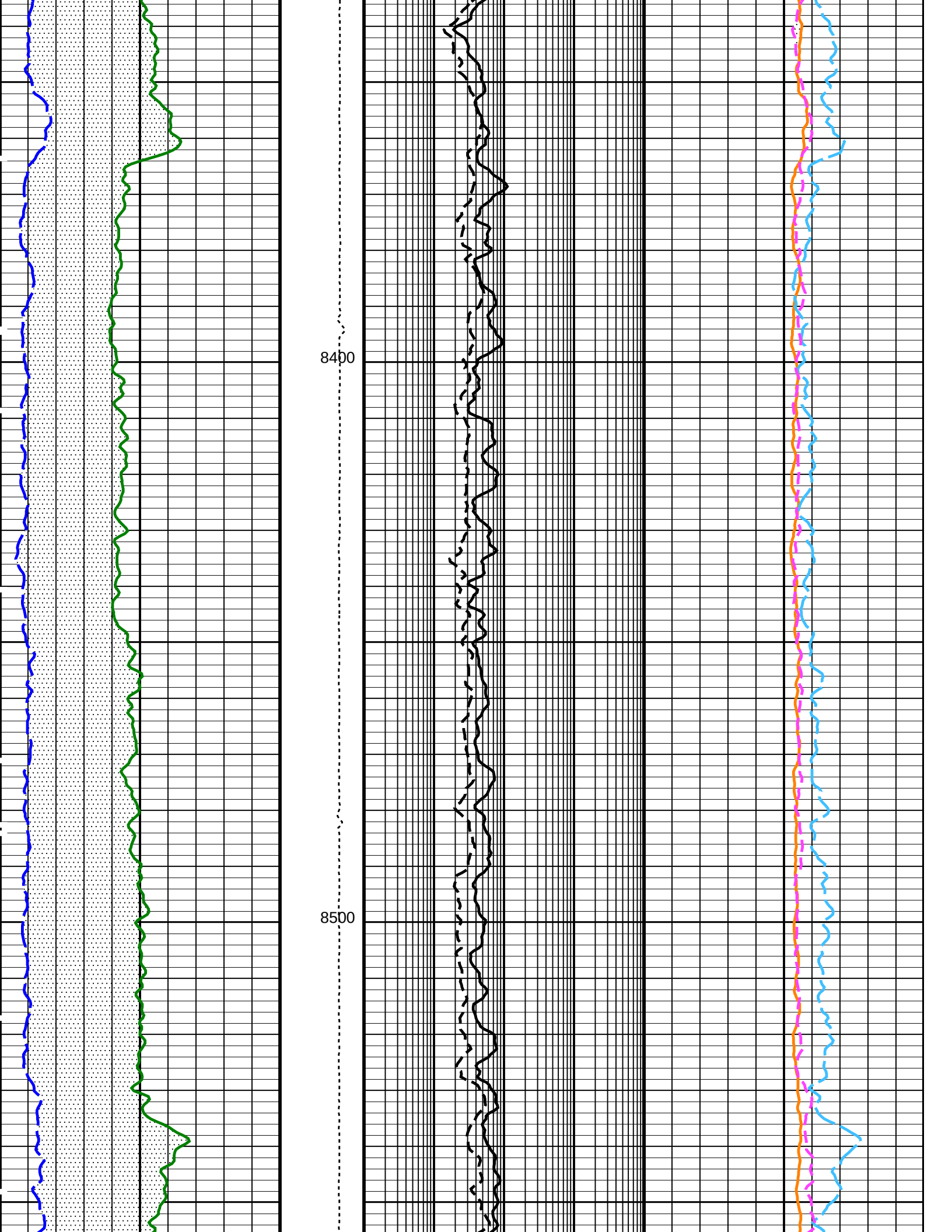
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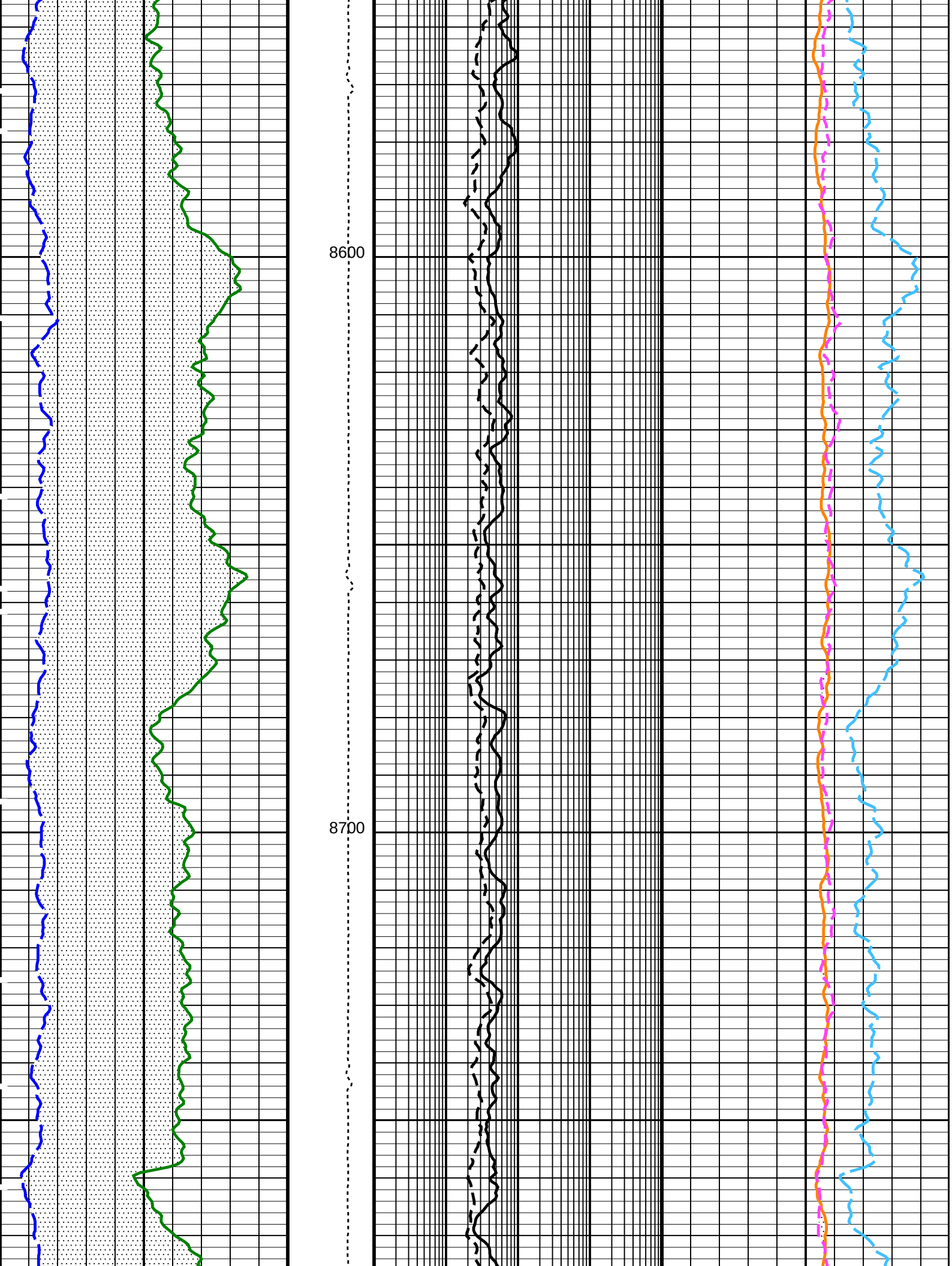
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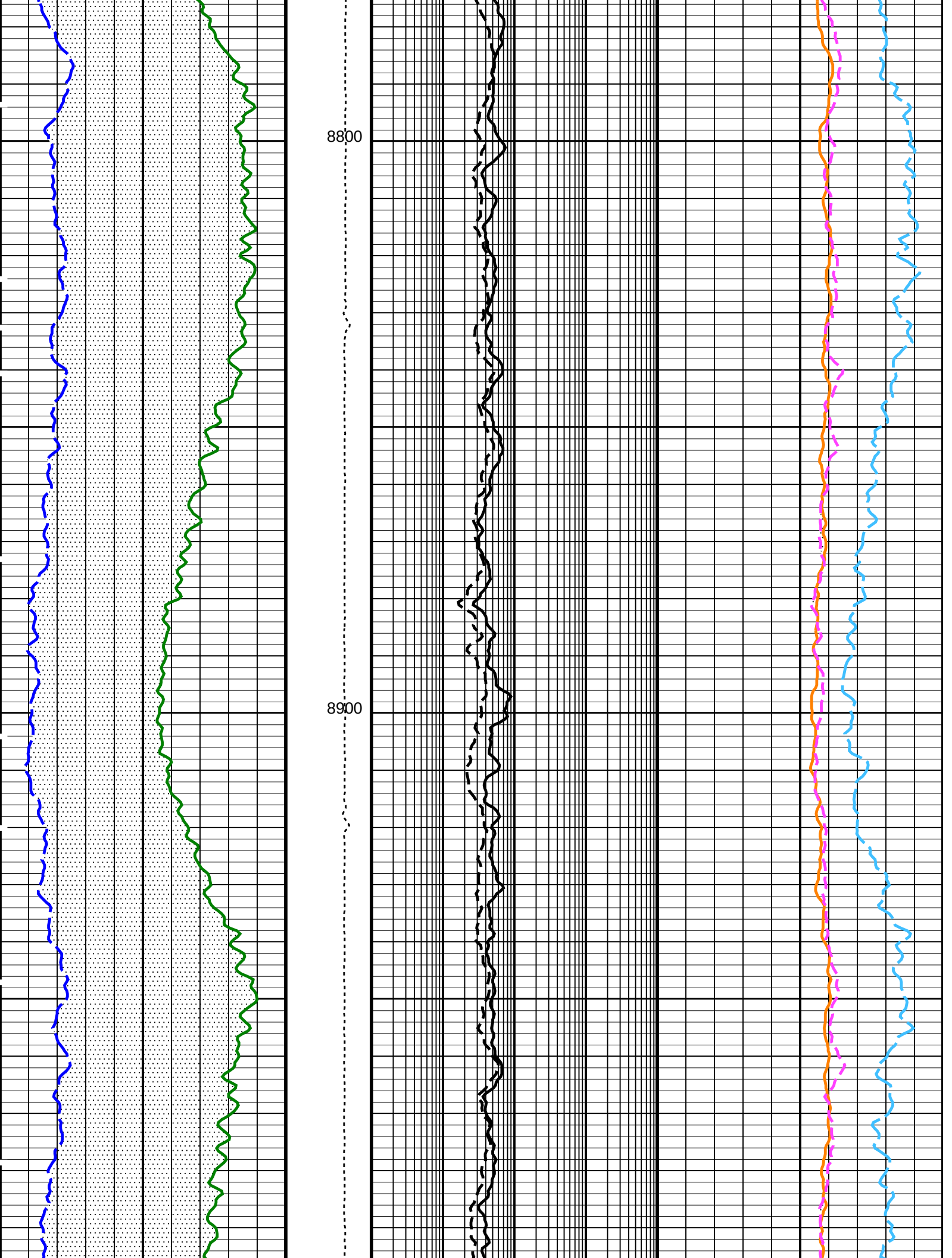
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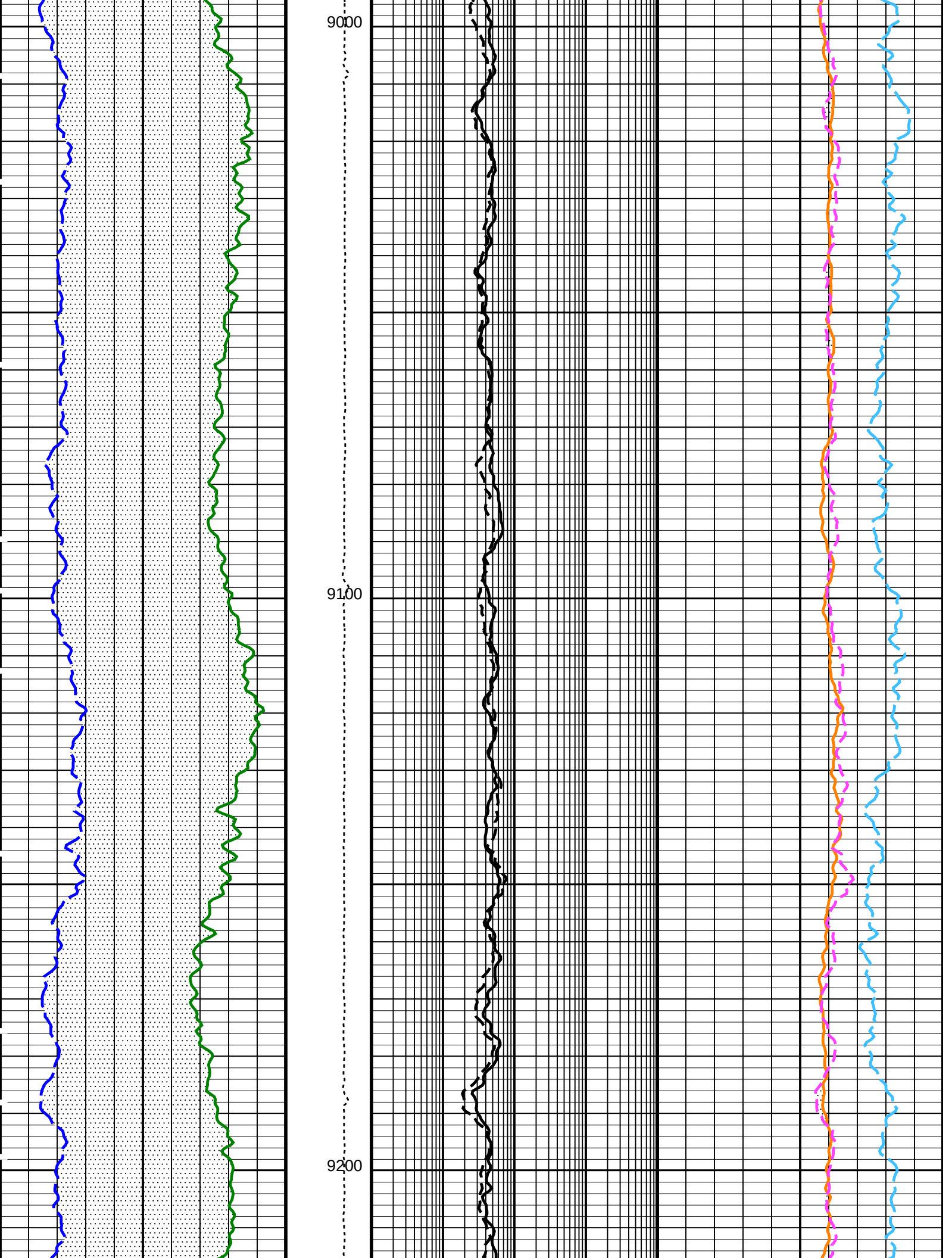
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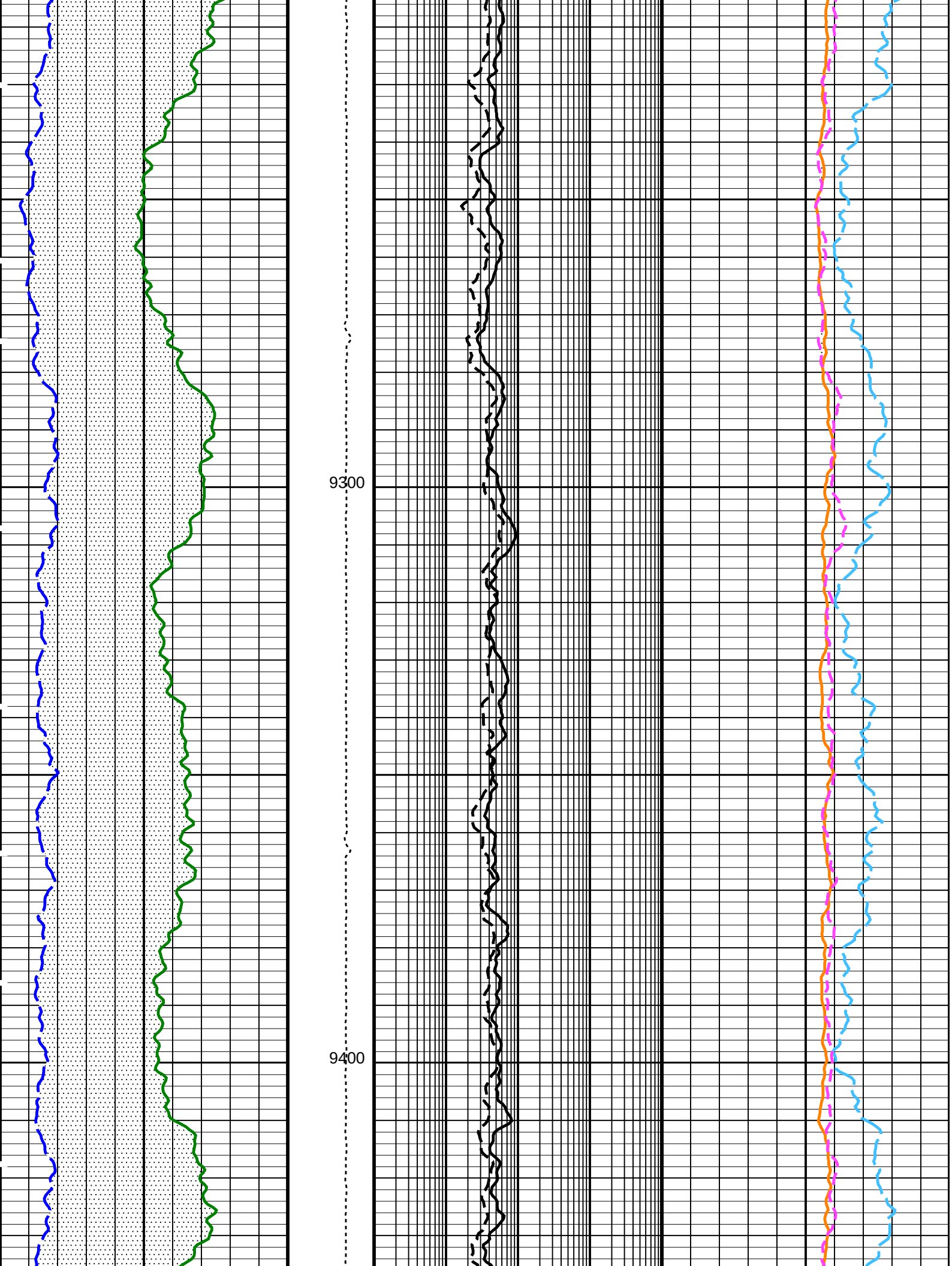
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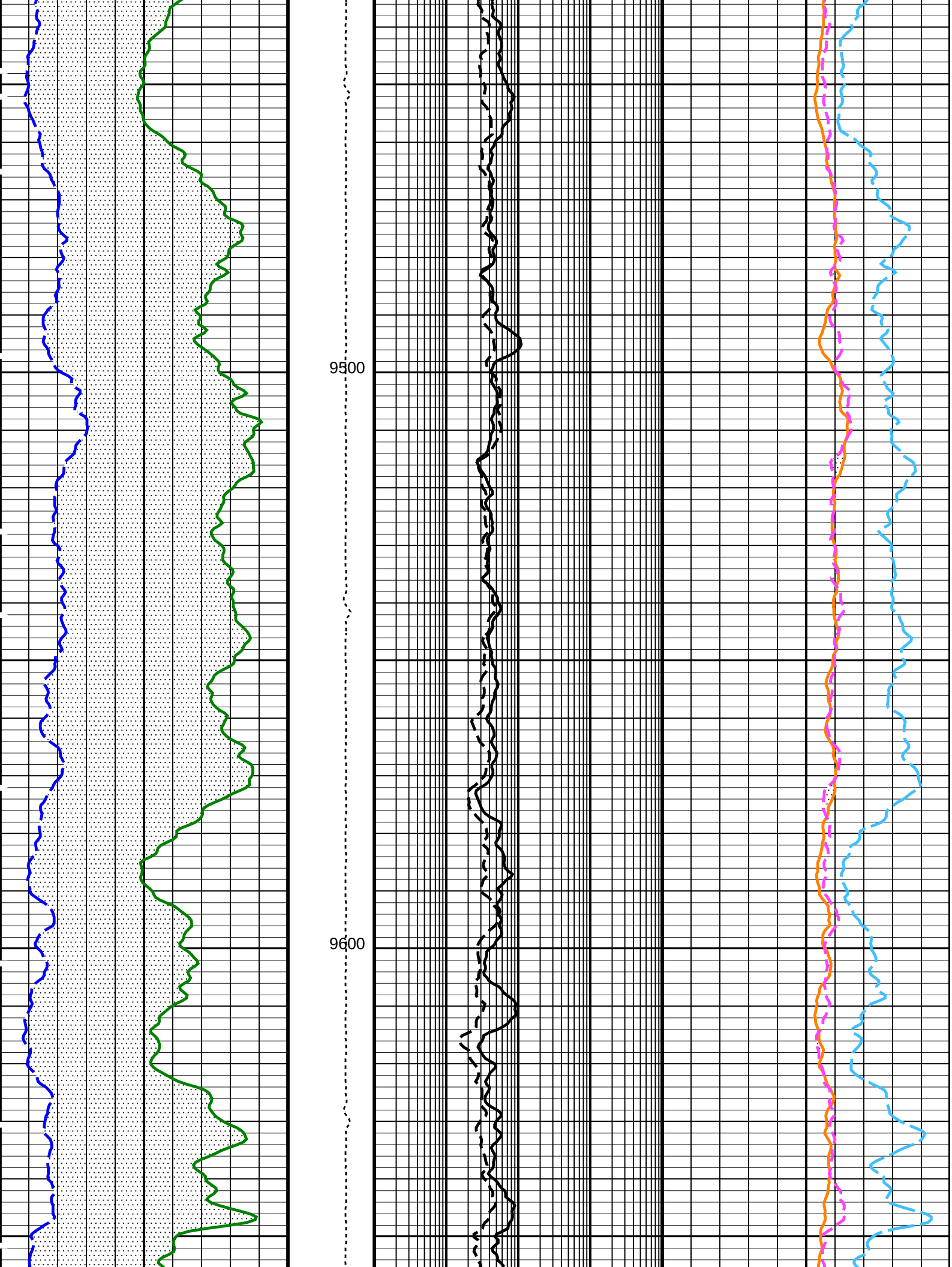
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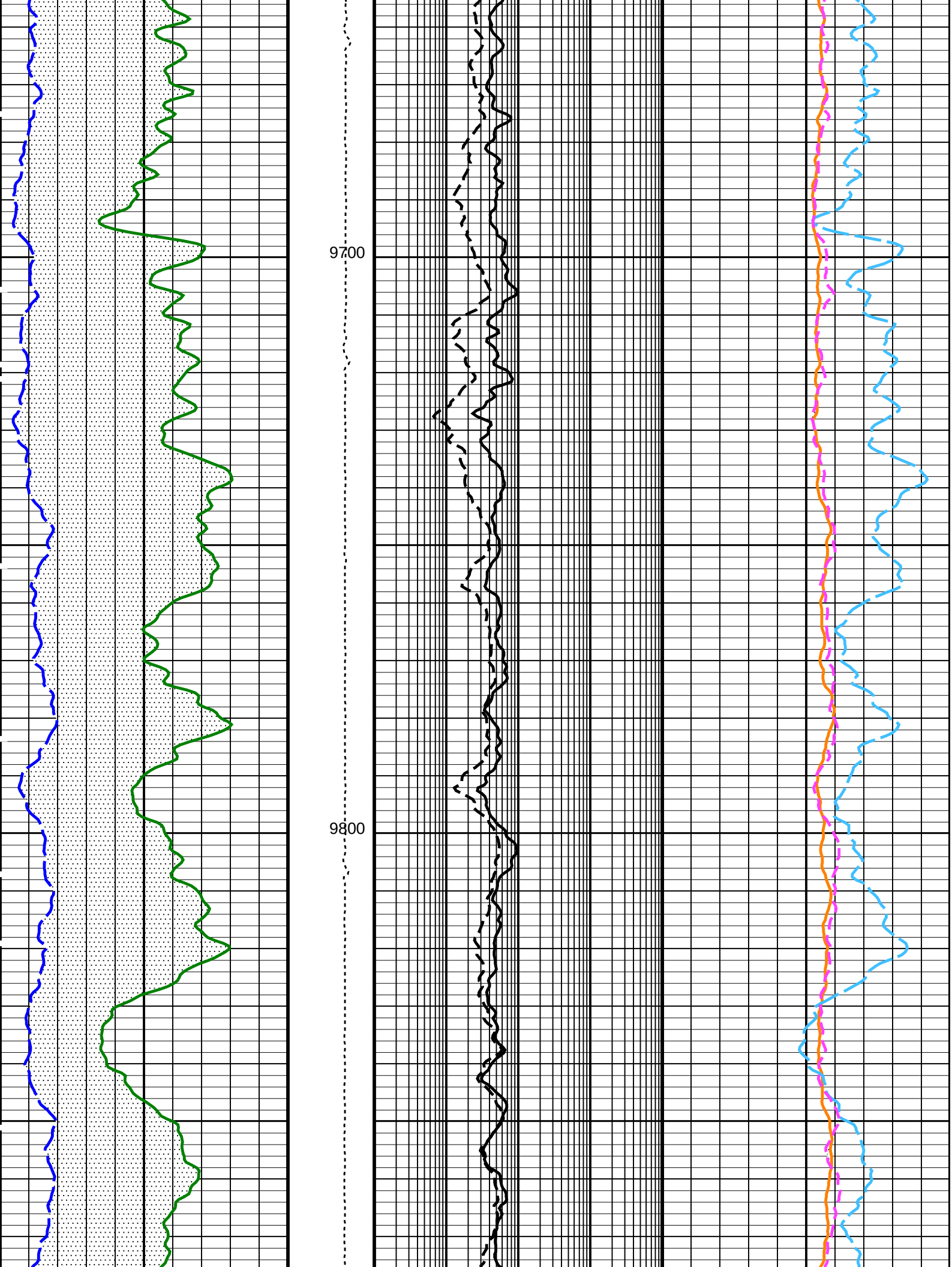
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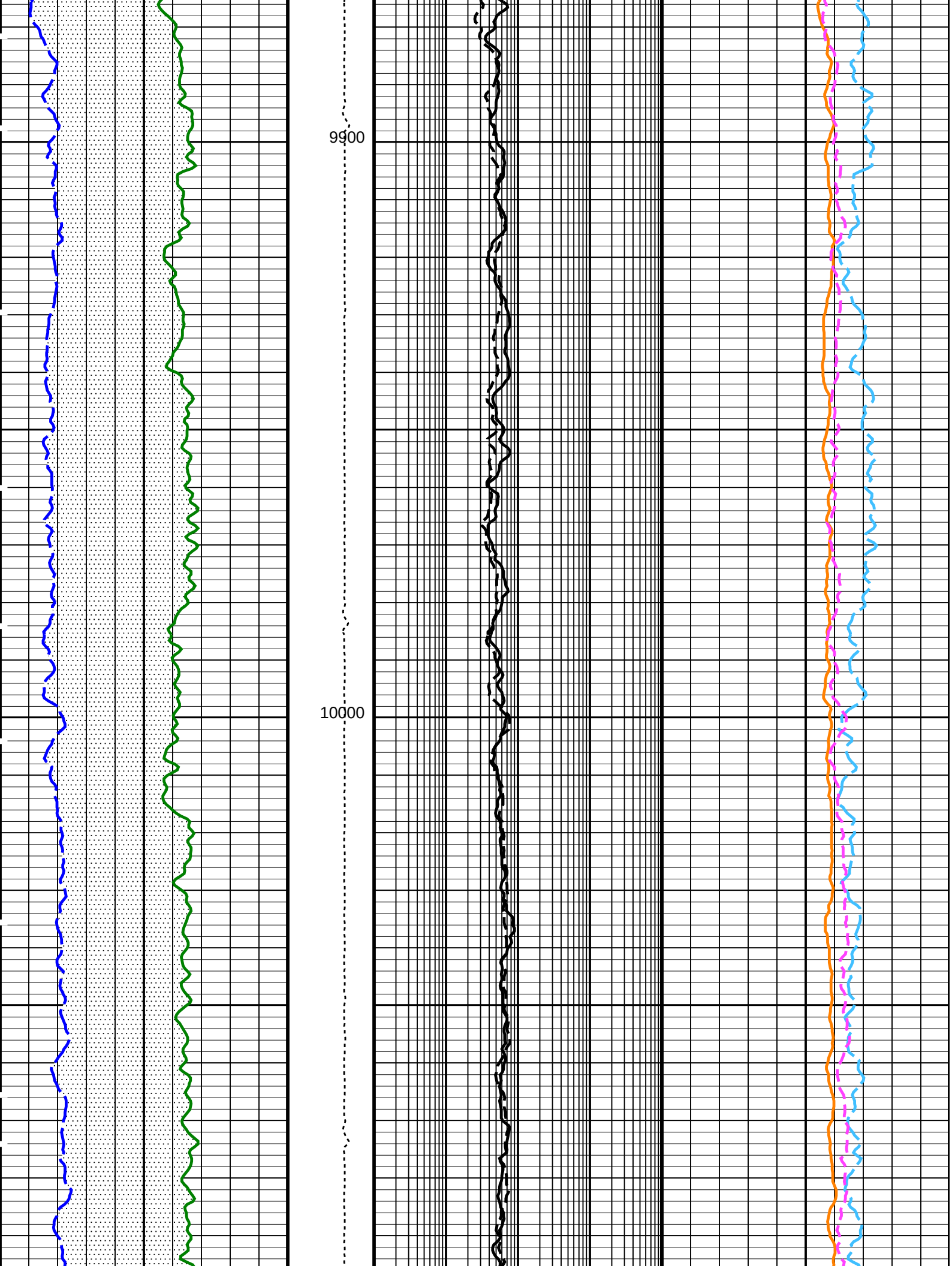
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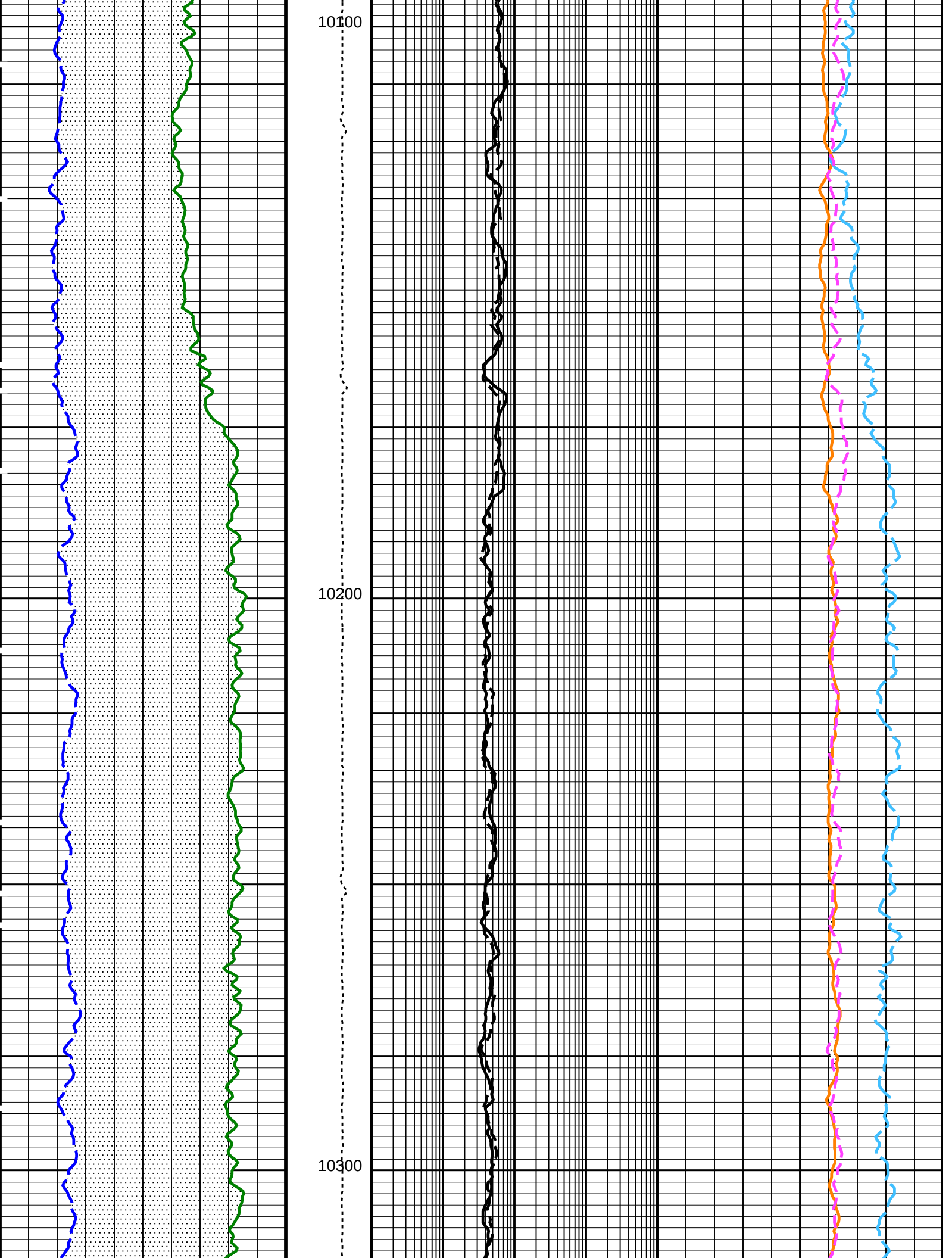
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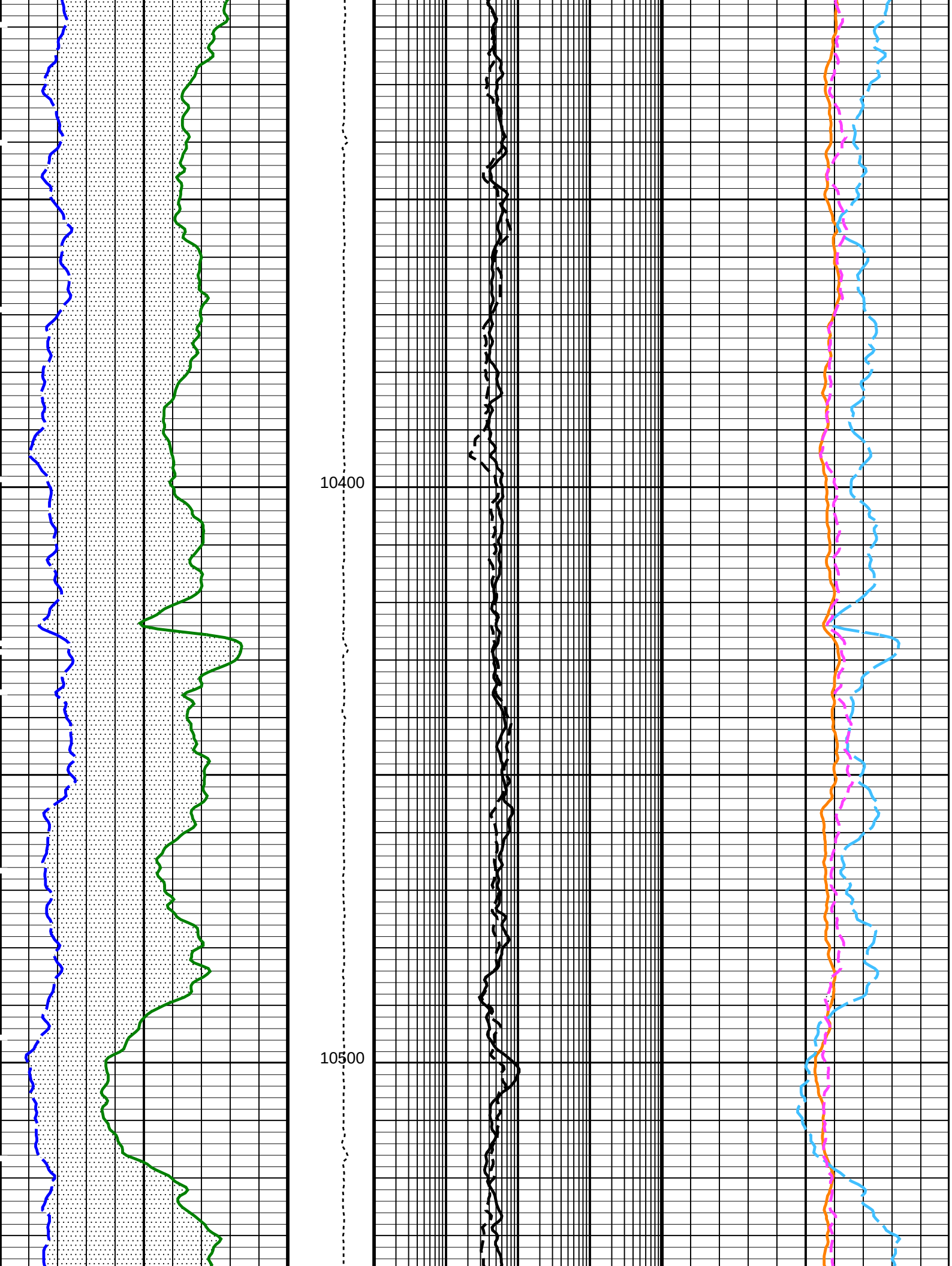
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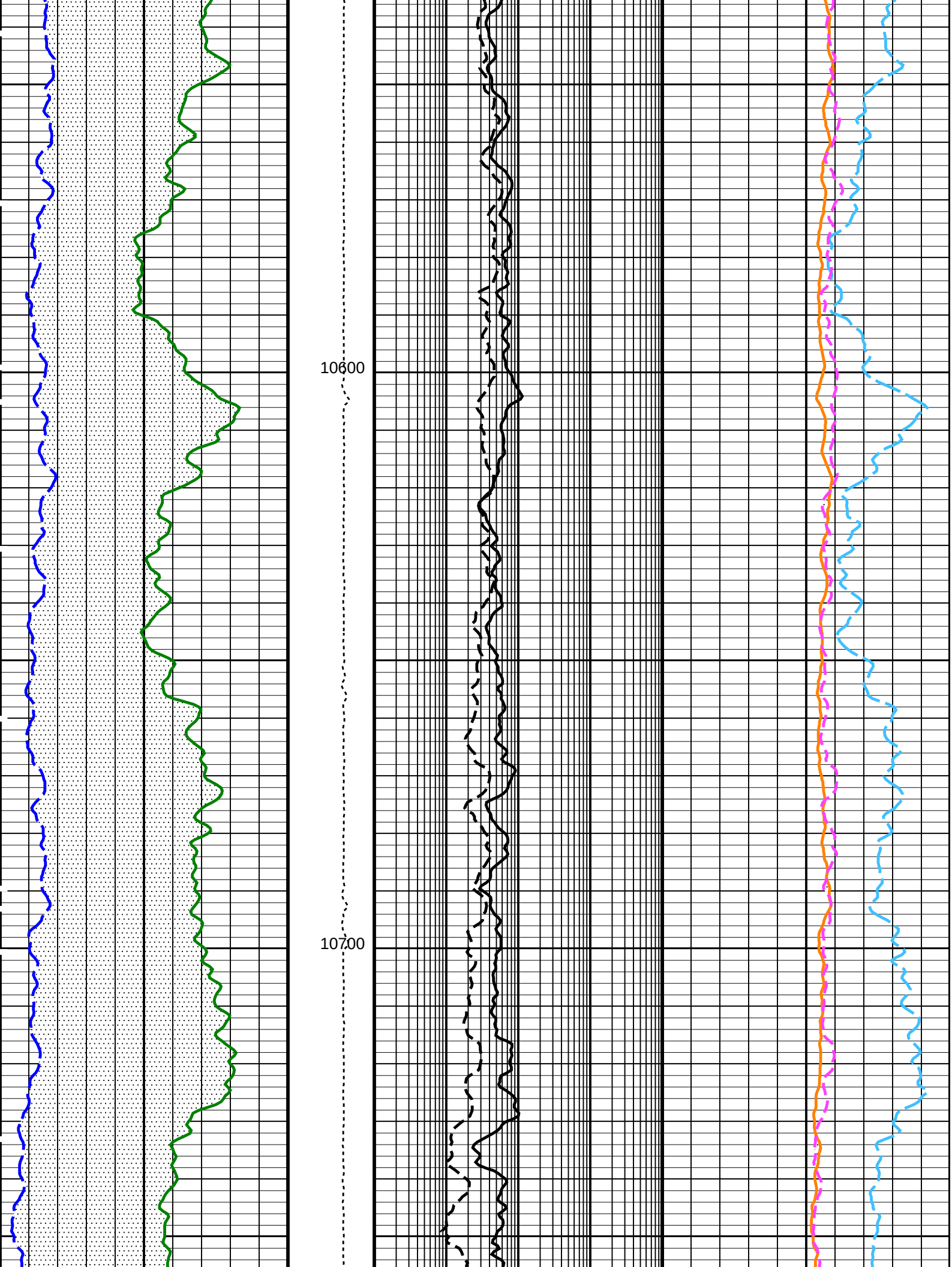
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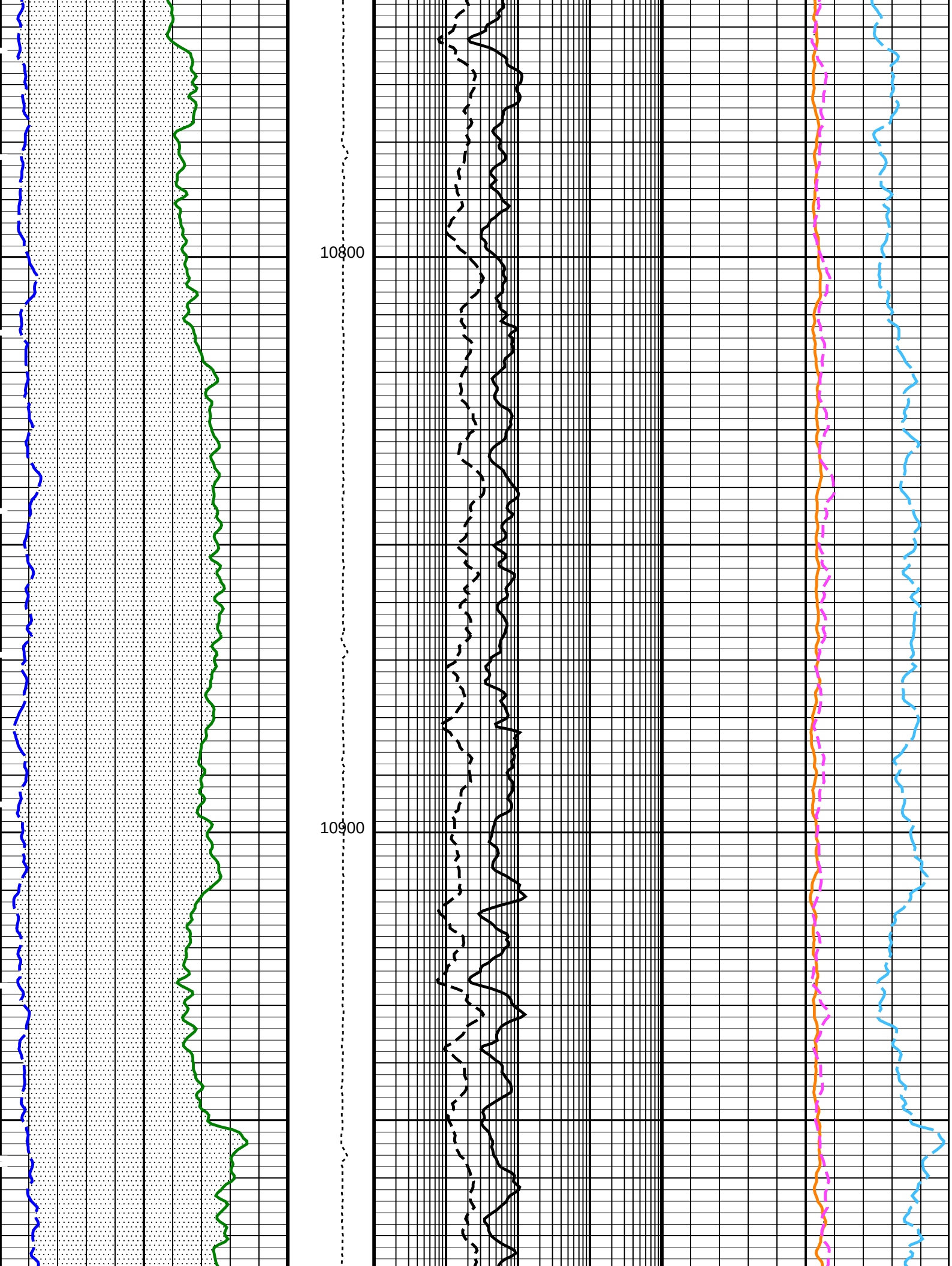
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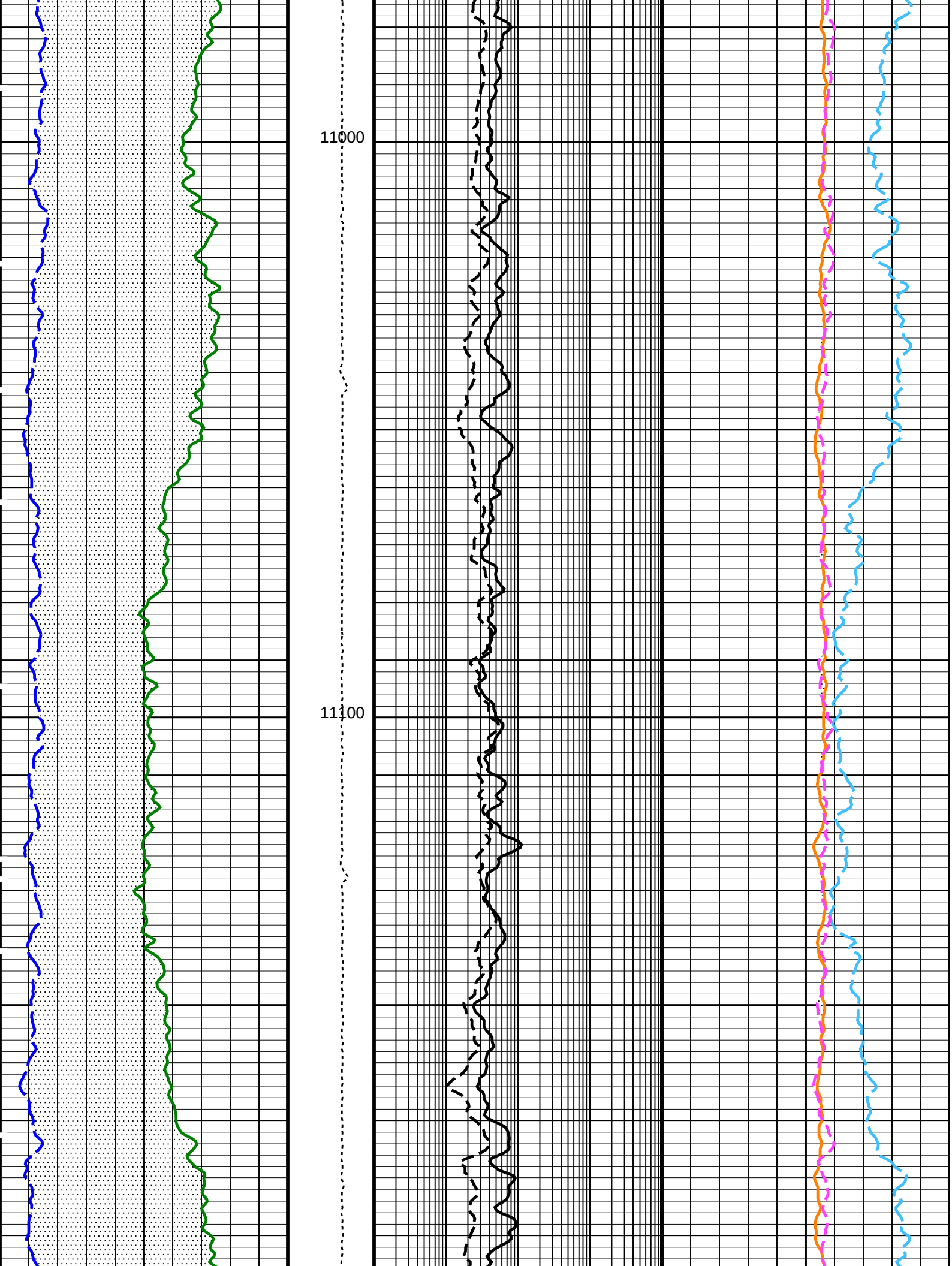
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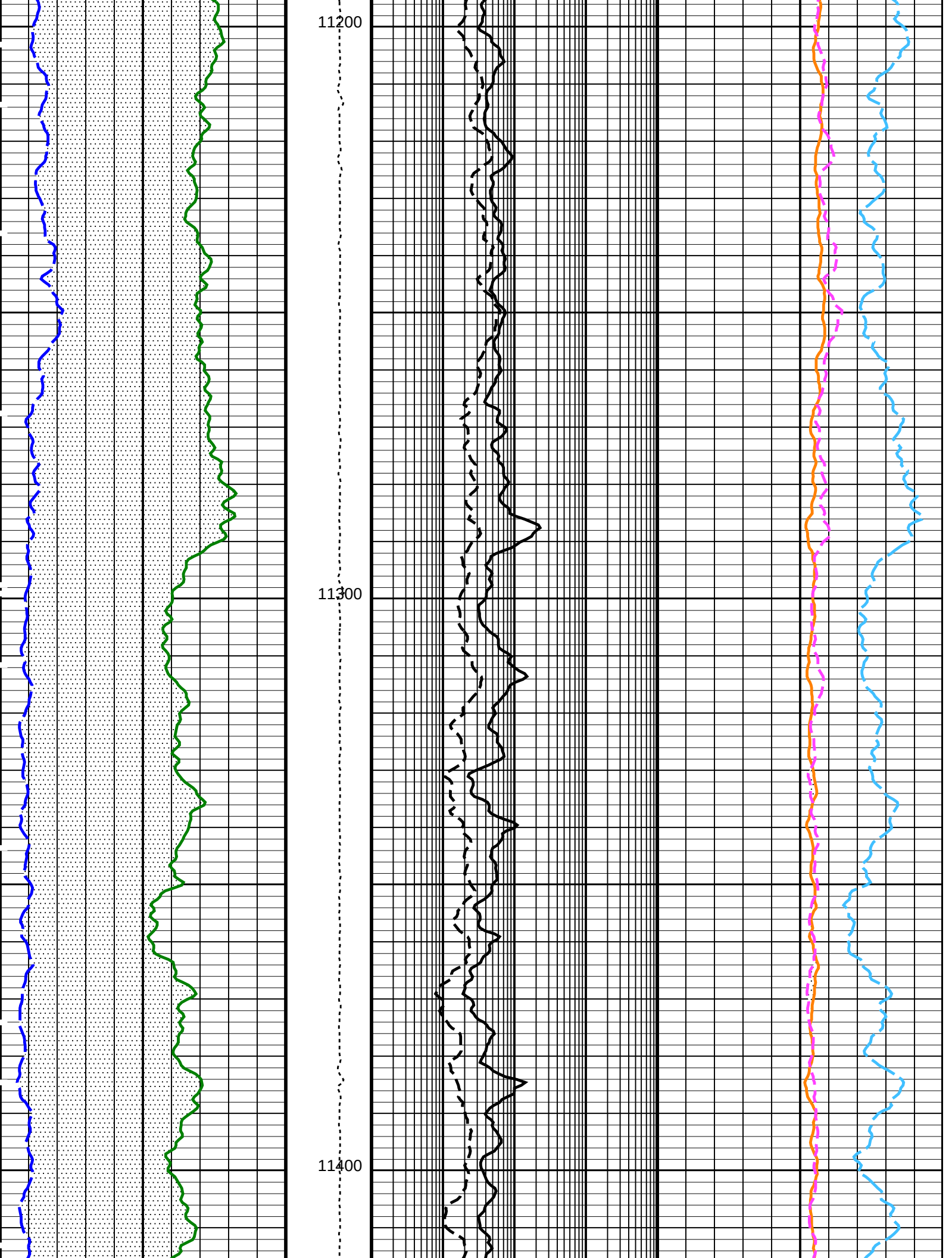
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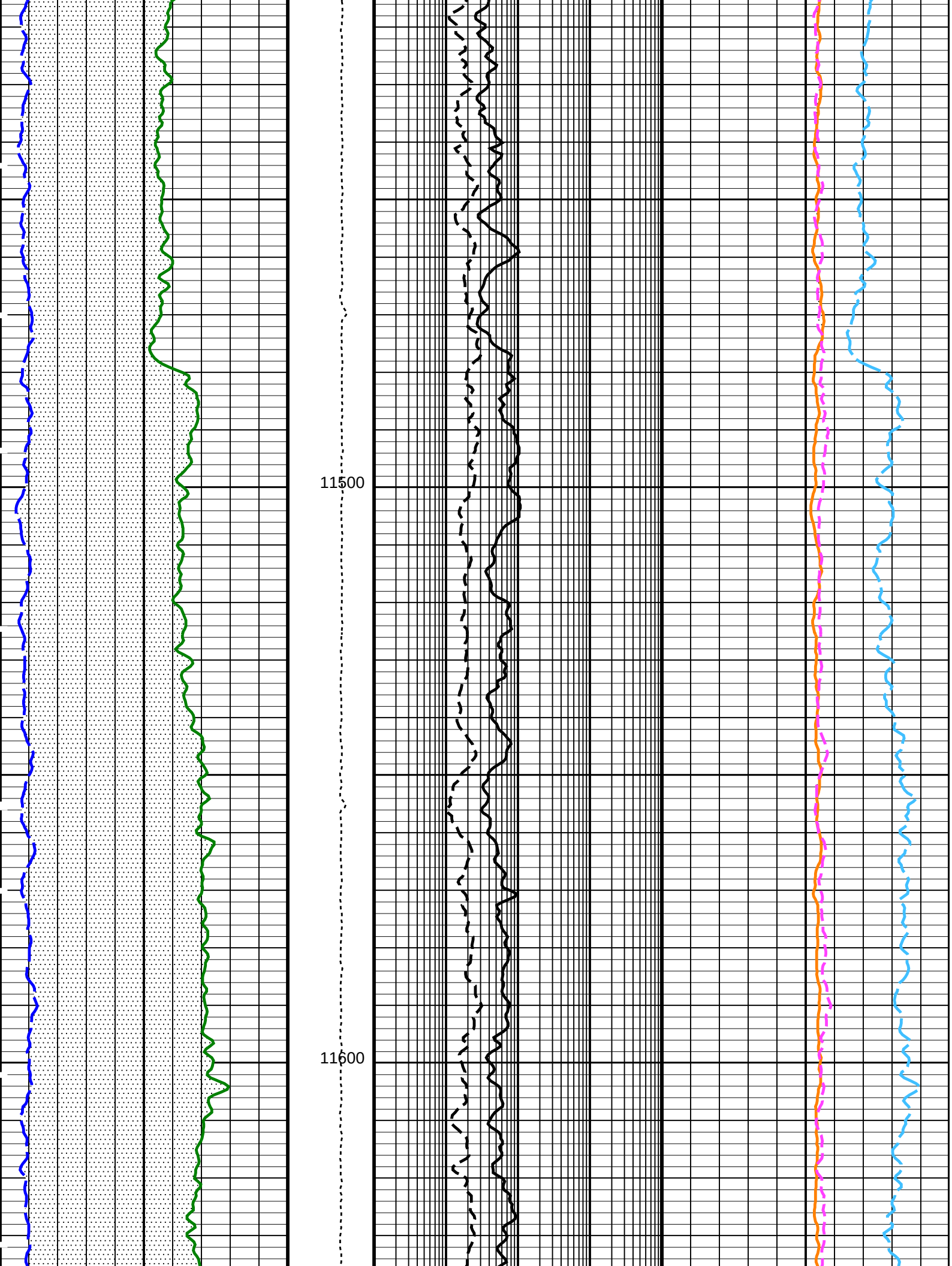
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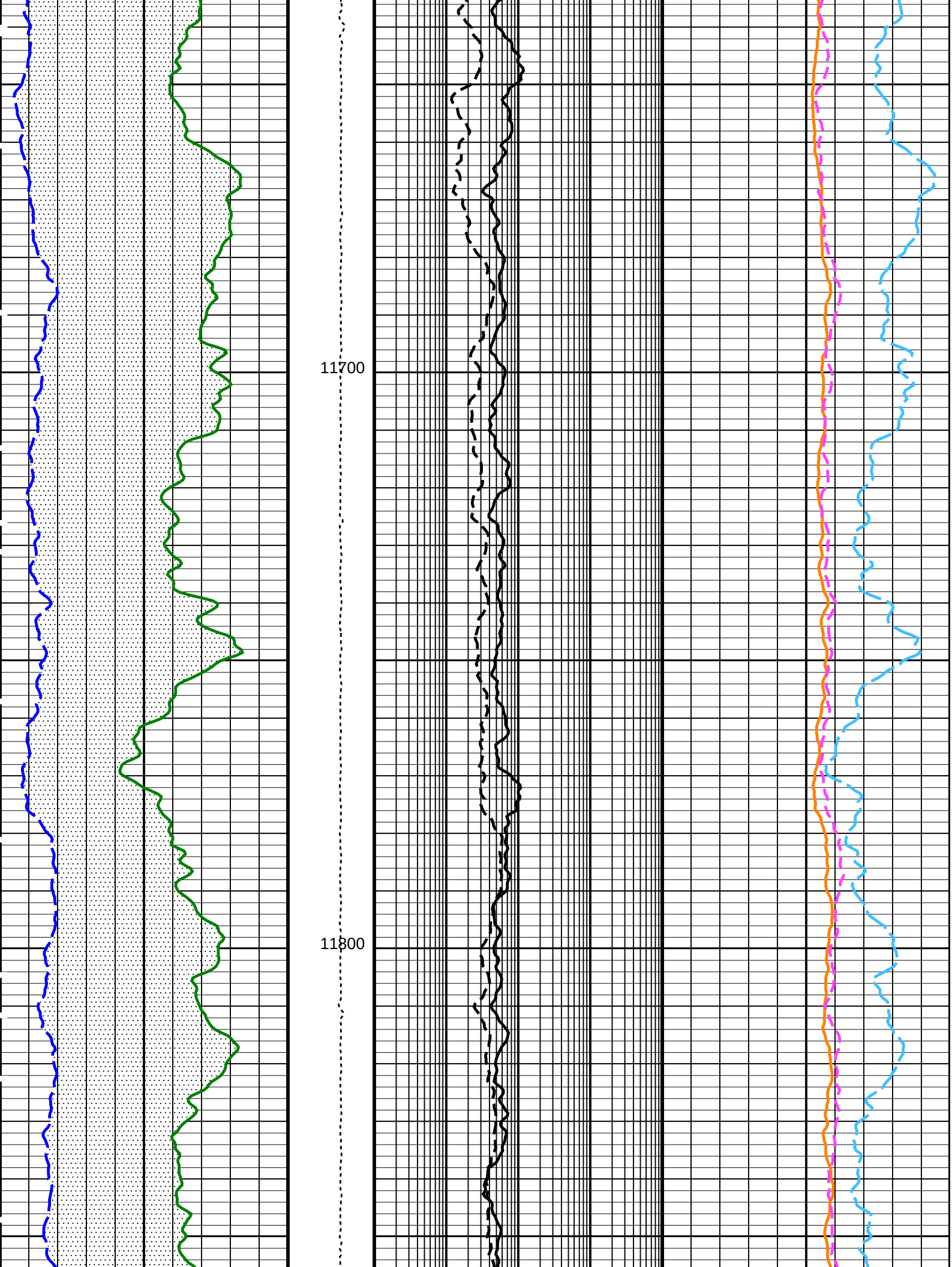
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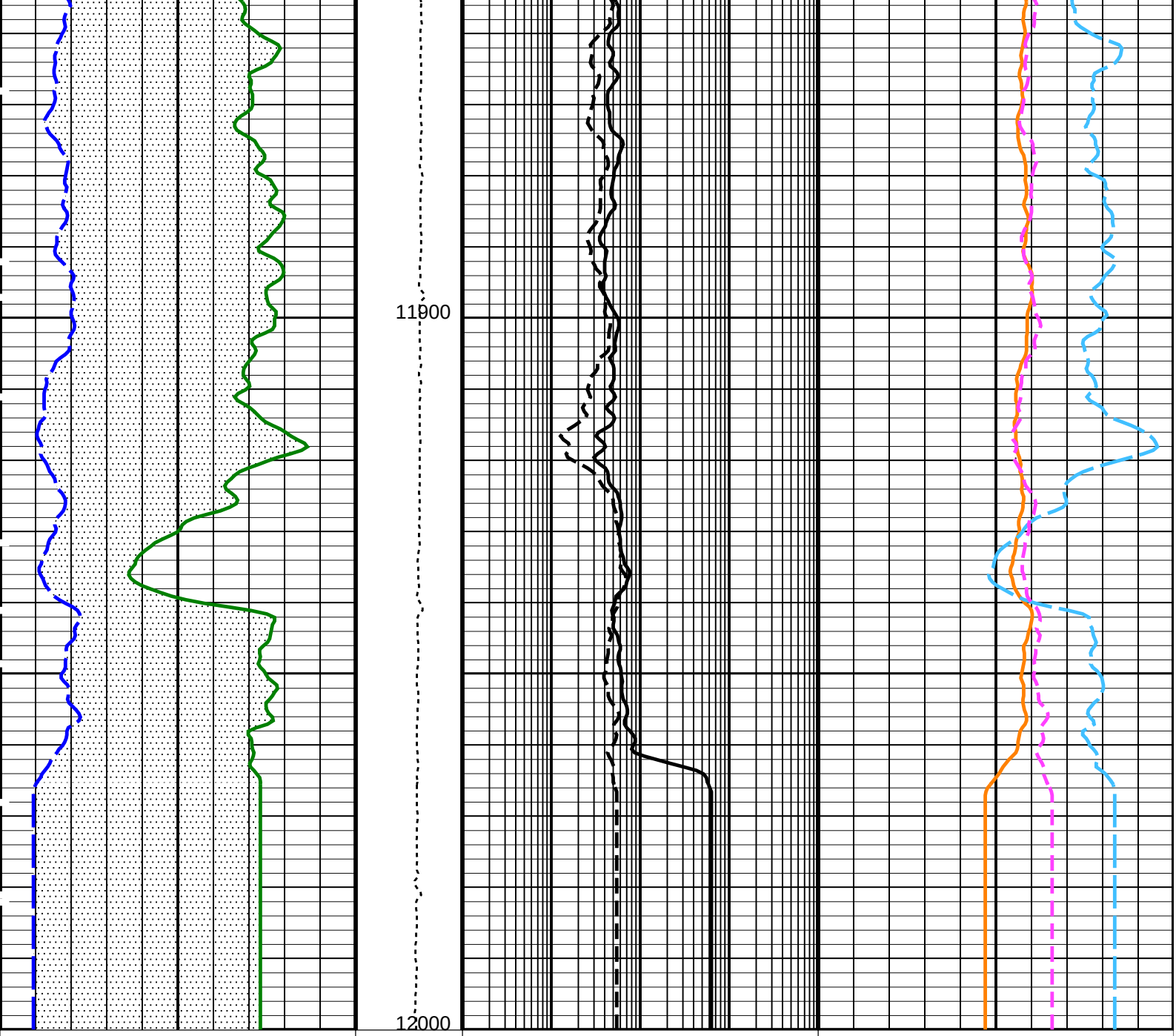


HNGS Computed Gamma Ray (HCGR)
0 (GAPI) 150

Tension (TENS) (LBF)
10000 0

HNGS Thorium / Uranium Ratio (HTUR)
0.01 (−−−−) 100

HNGS Potassium (HFK)
−0.05 (V/V) 0.05

Area1
From HCGR to HSGR

HNGS Thorium / Potassium Ratio (HTPR)
0.1 (−−−−) 1000

HNGS Uranium (HURA)
−5 (PPM) 15

HNGS Spectroscopy Gamma Ray (HSGR)
0 (GAPI) 150

HNGS Thorium (HTHO)
−20 (PPM) 20

Area2
From HTHO to HFK

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
	HNGS−BA: Hostile Natural Gamma Ray Sonde	

BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	BS	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	−0.011388	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	−999.25	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	−999.25	CPS
SGRC	HNGS Standard Gamma−Ray Correction Flag	YES	
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.98141	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.988575	
	System and Miscellaneous		
BS	Bit Size	6.125	IN
DFD	Drilling Fluid Density	10.20	LB/G
DO	Depth Offset for Playback	8.0	FT
PP	Playback Processing	NORMAL	

Format: HNGSRatios Vertical Scale: 5" per 100' Graphics File Created: 01−Feb−2012 13:06

OP System Version: 18C0−147

FBST−B	18C0−147	PPC1−B	18C0−147
HNGC−B	HFE−4001−OP18−NUCL	HNGS−BA	HFE−4001−OP18−NUCL
DTC−H	18C0−147		

Input DLIS Files

DEFAULT	FMI_CAL_NGS_007LUP	FN:6	PRODUCER	01−Feb−2012 08:58	11992.5 FT	7649.5 FT

Output DLIS Files

DEFAULT	FMI_CAL_NGS_009PUP	FN:8	PRODUCER	01−Feb−2012 13:06		

Company: Kerr−McGee Oil & Gas Onshore LP Well: Cannon 36C−11HZ

Input DLIS Files

DEFAULT	FMI_CAL_NGS_007LUP	FN:6	PRODUCER	01−Feb−2012 08:58	11992.5 FT	7649.5 FT

Output DLIS Files

DEFAULT	FMI_CAL_NGS_009PUP	FN:8	PRODUCER	01−Feb−2012 13:06	12000.0 FT	7657.5 FT

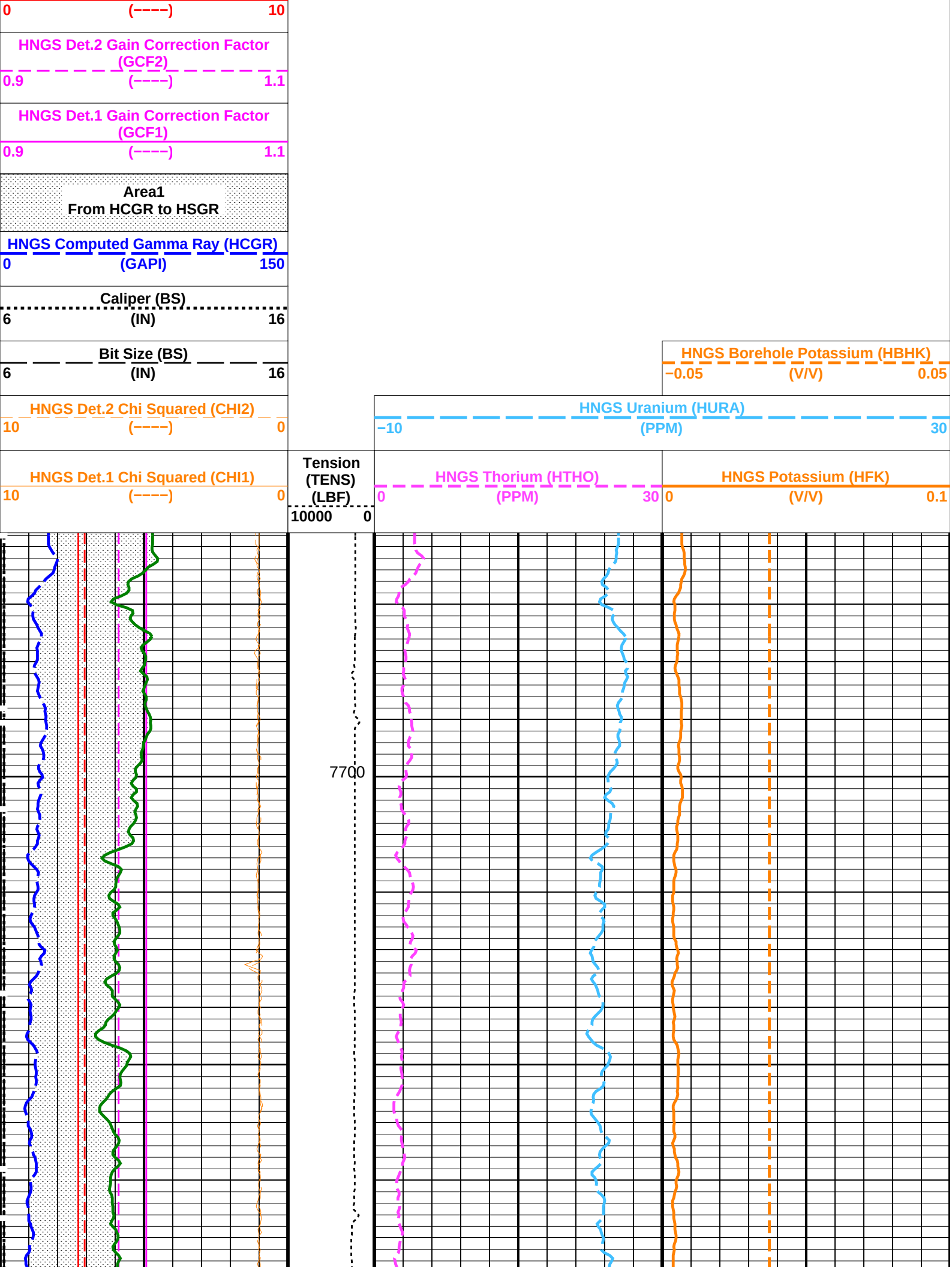
OP System Version: 18C0−147

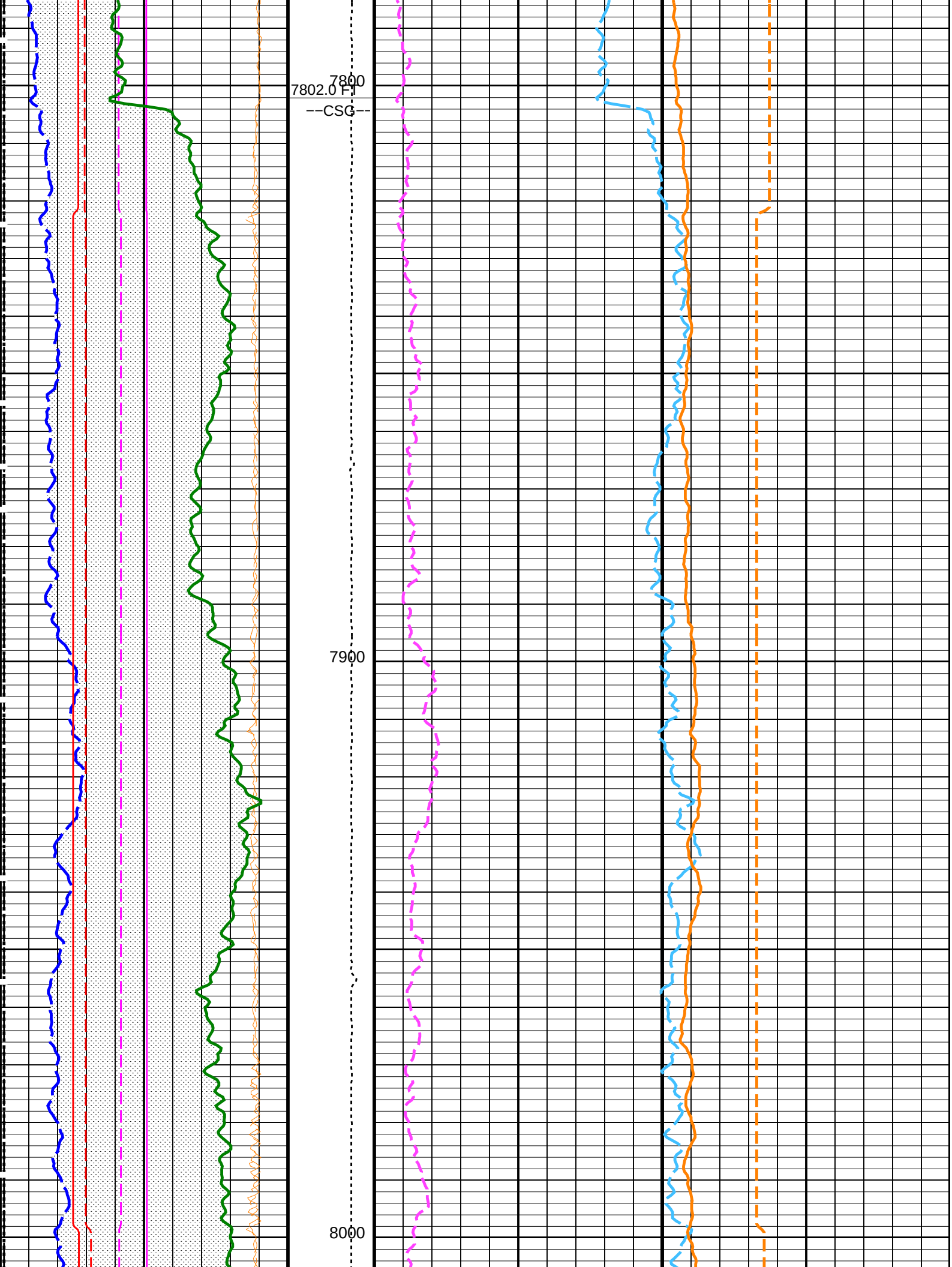
FBST−B	18C0−147	PPC1−B	18C0−147
HNGC−B	HFE−4001−OP18−NUCL	HNGS−BA	HFE−4001−OP18−NUCL
DTC−H	18C0−147		

PIP SUMMARY

Time Mark Every 60 S

HNGS Spectroscopy Gamma Ray (HSGR)		
0	(GAPI)	150
HNGS Det.2 Resolution Degradation Factor (RDF2)		
0	(−−−−)	10
HNGS Det.1 Resolution Degradation Factor (RDF1)		


0 (----) 10
HNGS Det.2 Gain Correction Factor (GCF2)
0.9 (----) 1.1
HNGS Det.1 Gain Correction Factor (GCF1)
0.9 (----) 1.1
Area1
From HCGR to HSGR
HNGS Computed Gamma Ray (HCGR)
0 (GAPI) 150
Caliper (BS)
6 (IN) 16
Bit Size (BS)
6 (IN) 16
HNGS Borehole Potassium (HBHK)
−0.05 (V/V) 0.05
HNGS Det.2 Chi Squared (CHI2)
10 (----) 0
HNGS Uranium (HURA)
−10 (PPM) 30
HNGS Det.1 Chi Squared (CHI1)
10 (----) 0
Tension (TENS) (LBF)
10000 0
HNGS Thorium (HTHO)
0 (PPM) 30
HNGS Potassium (HFK)
0 (V/V) 0.1
7700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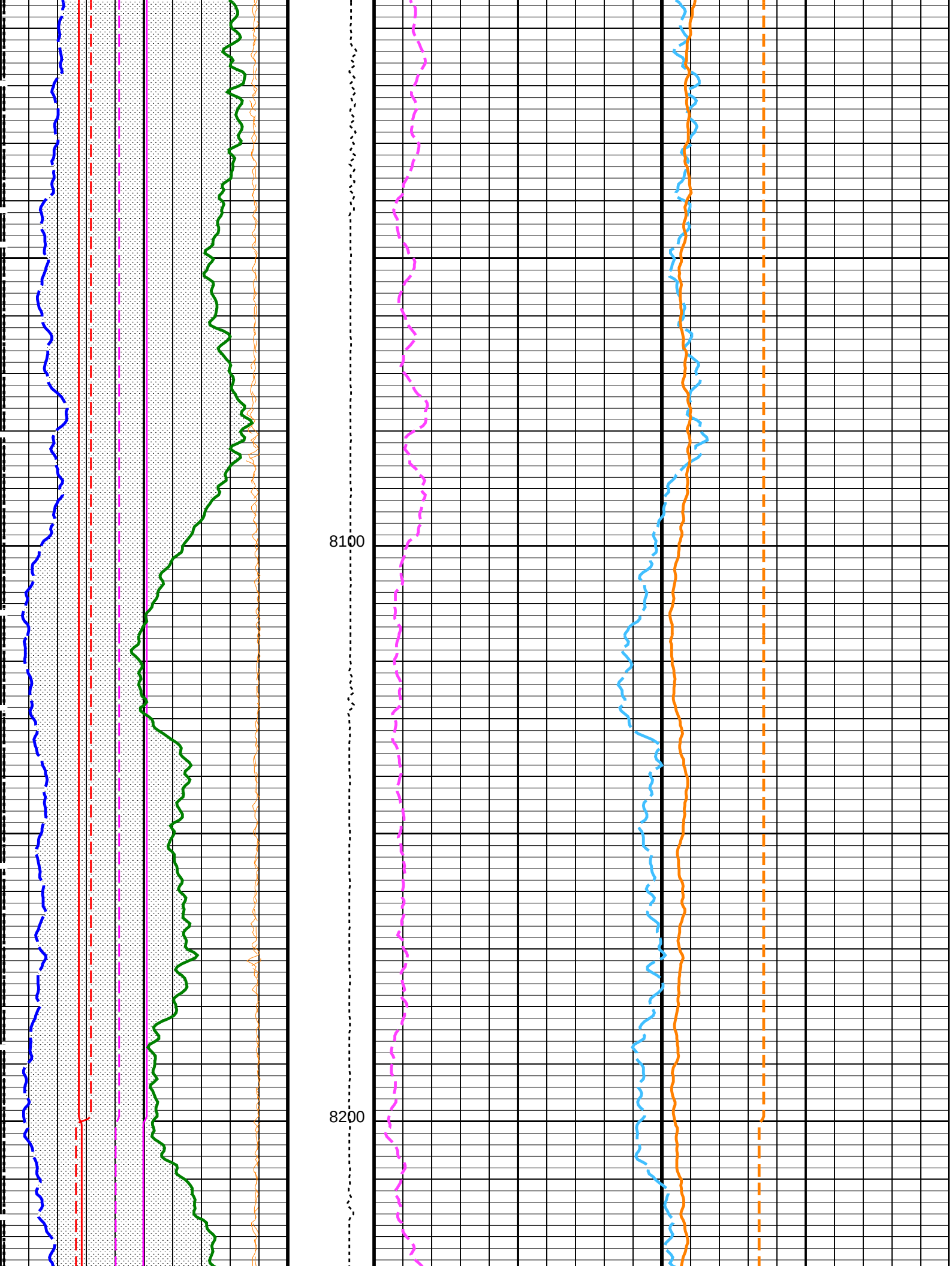
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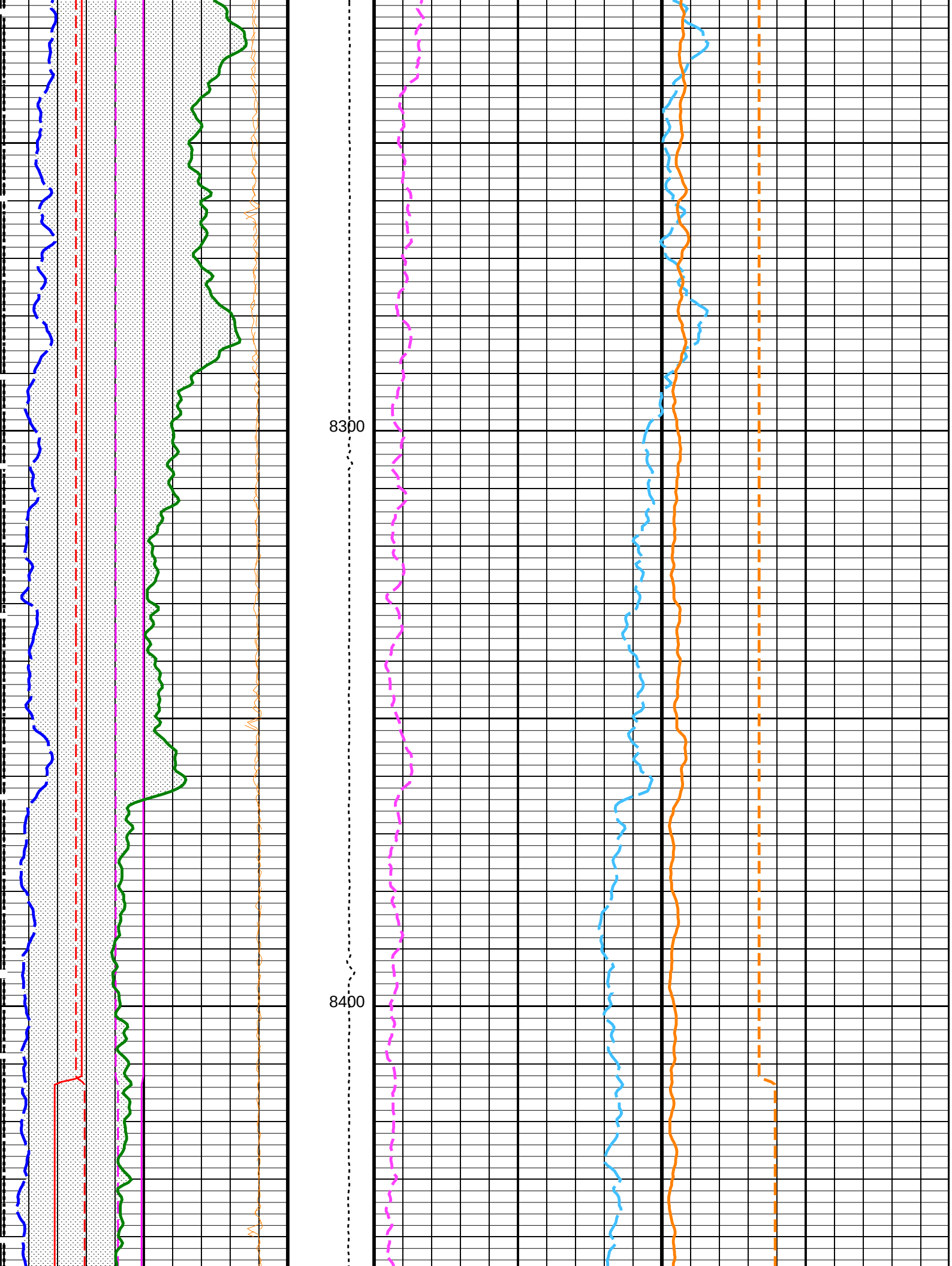
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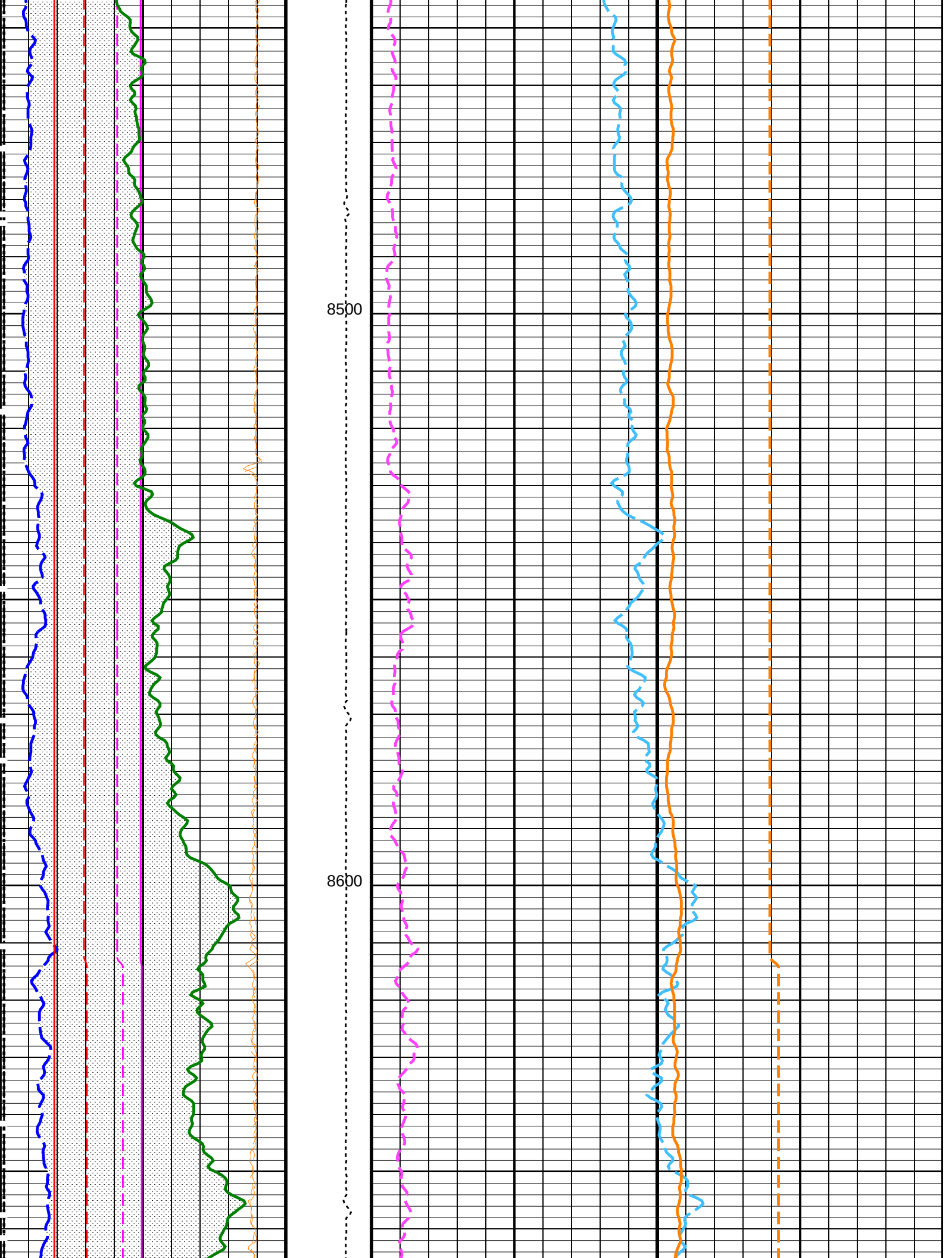
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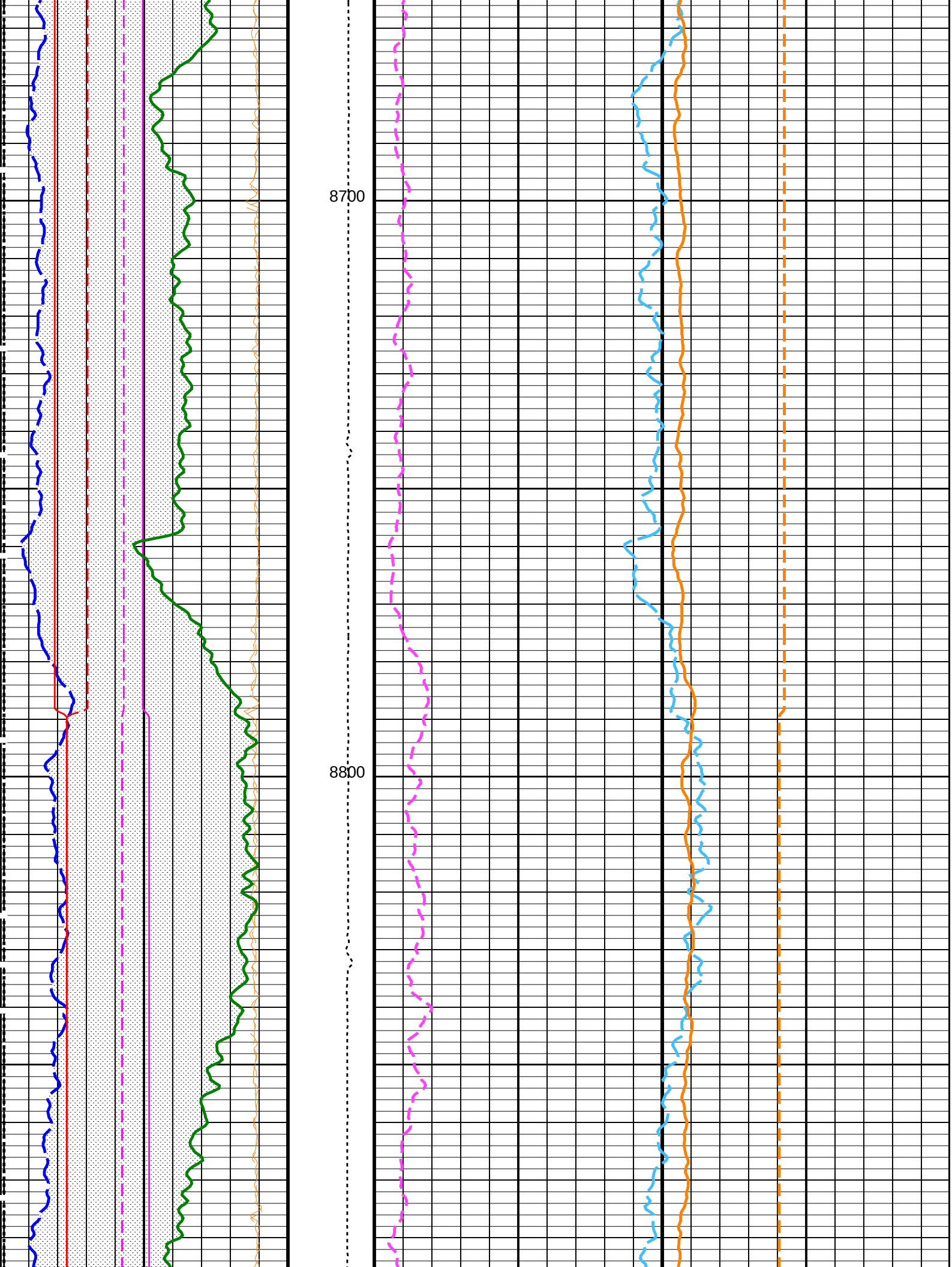
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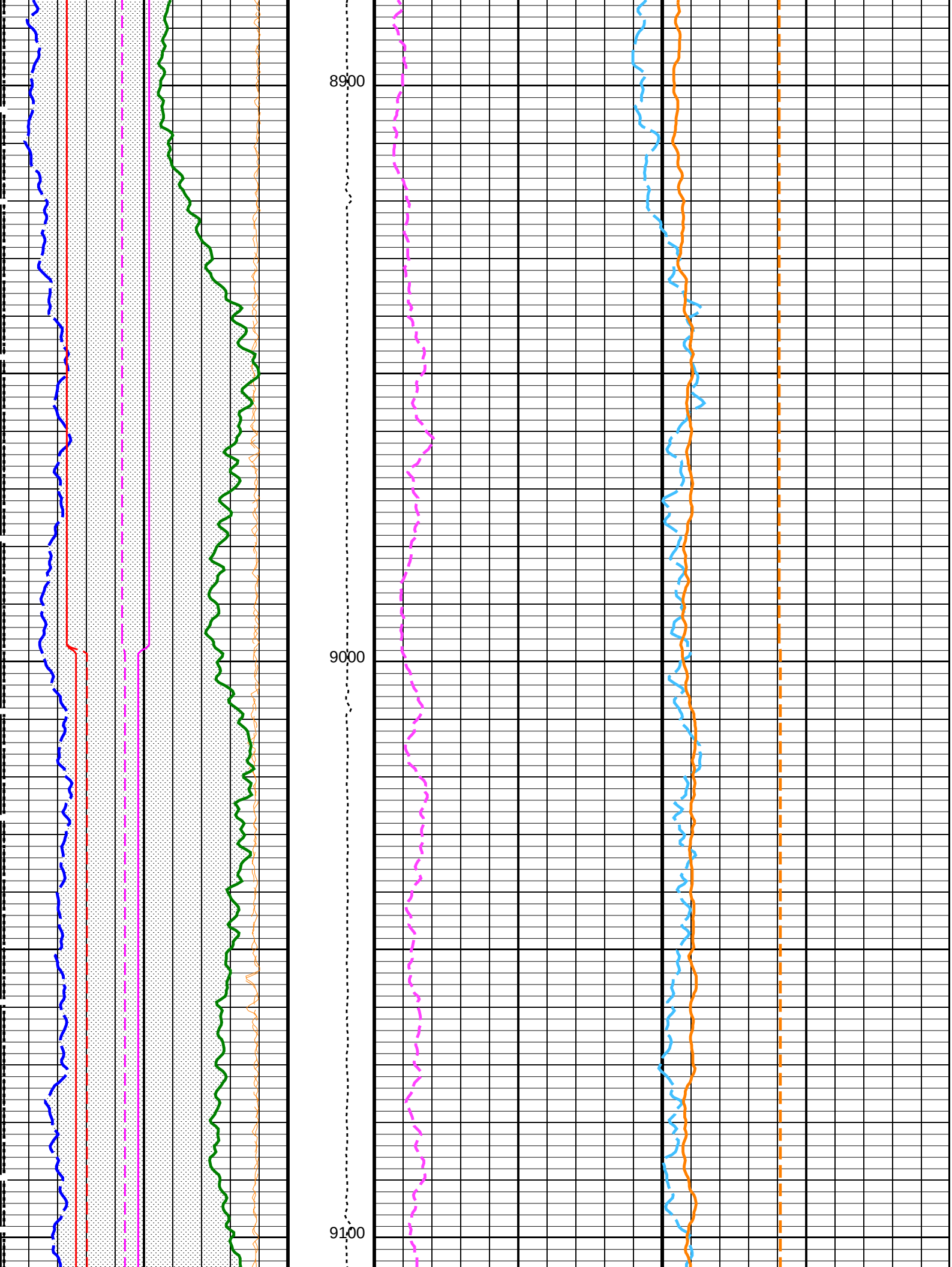
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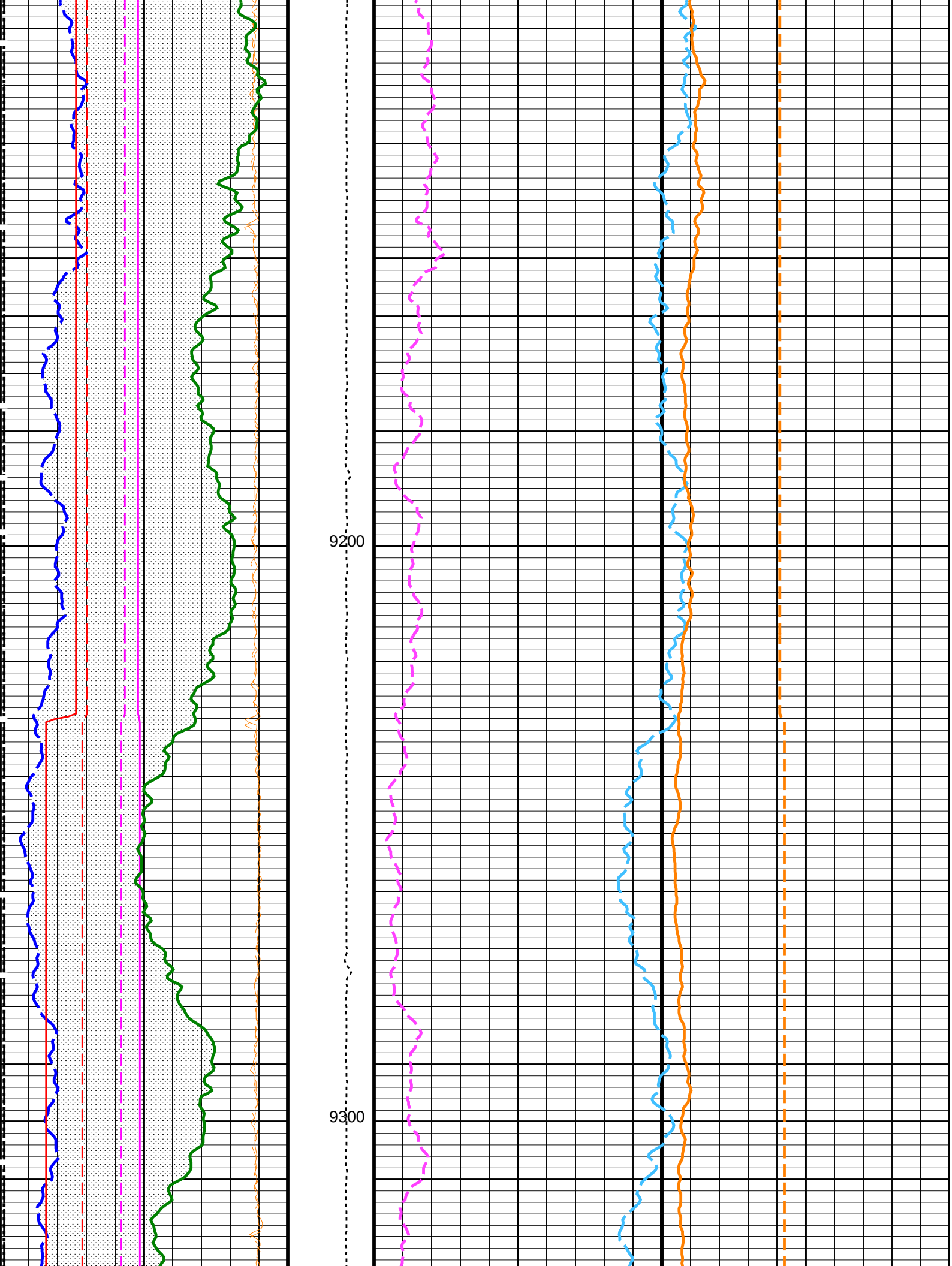
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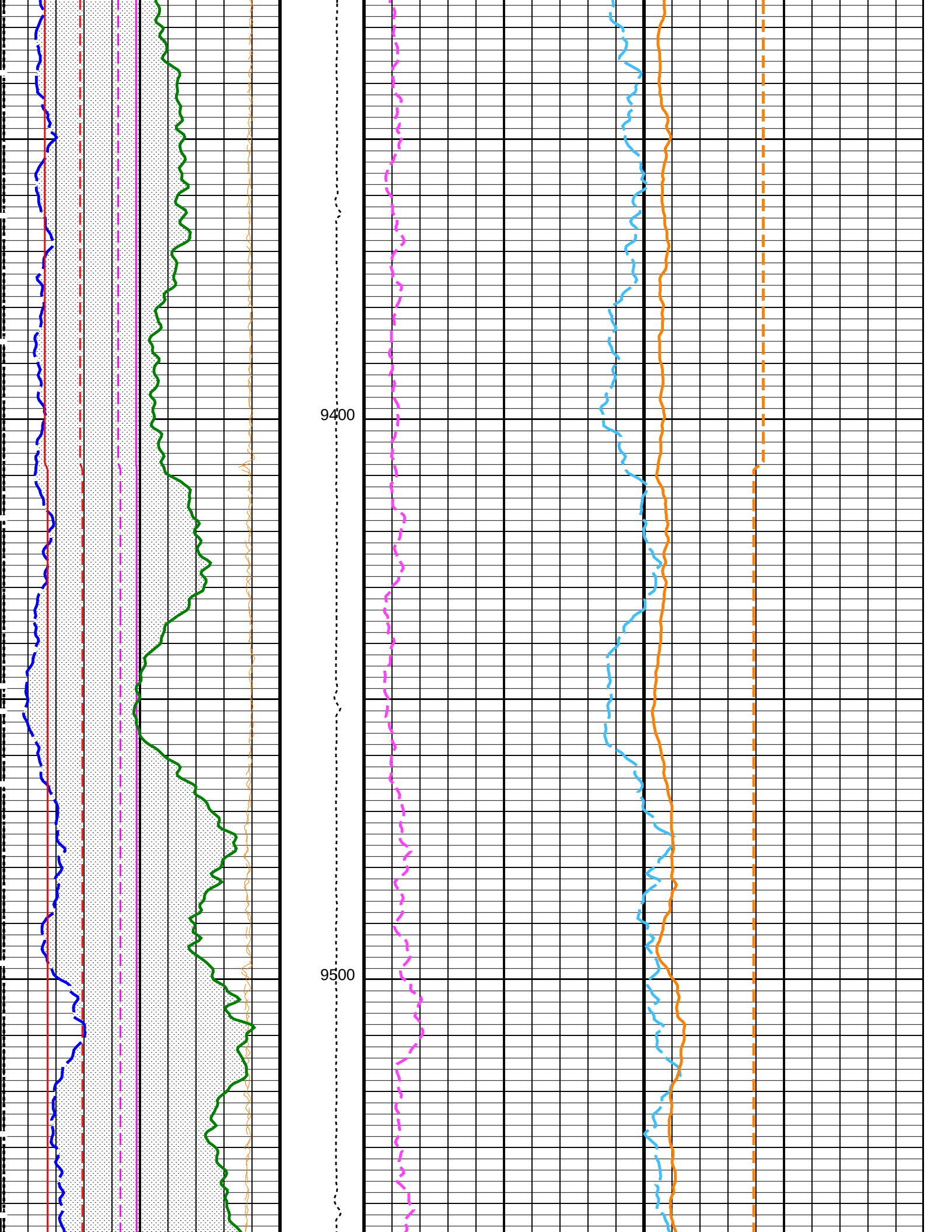
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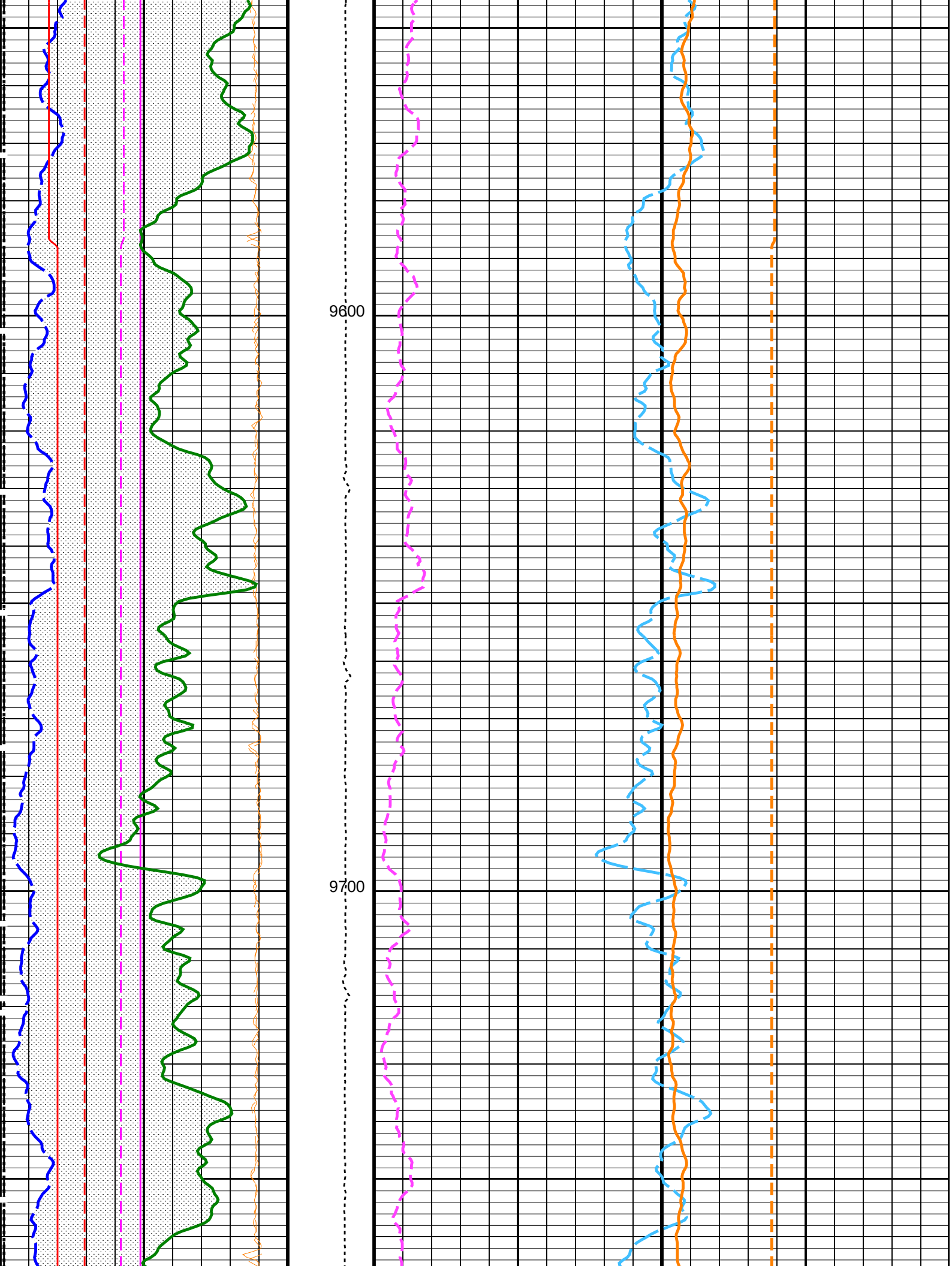
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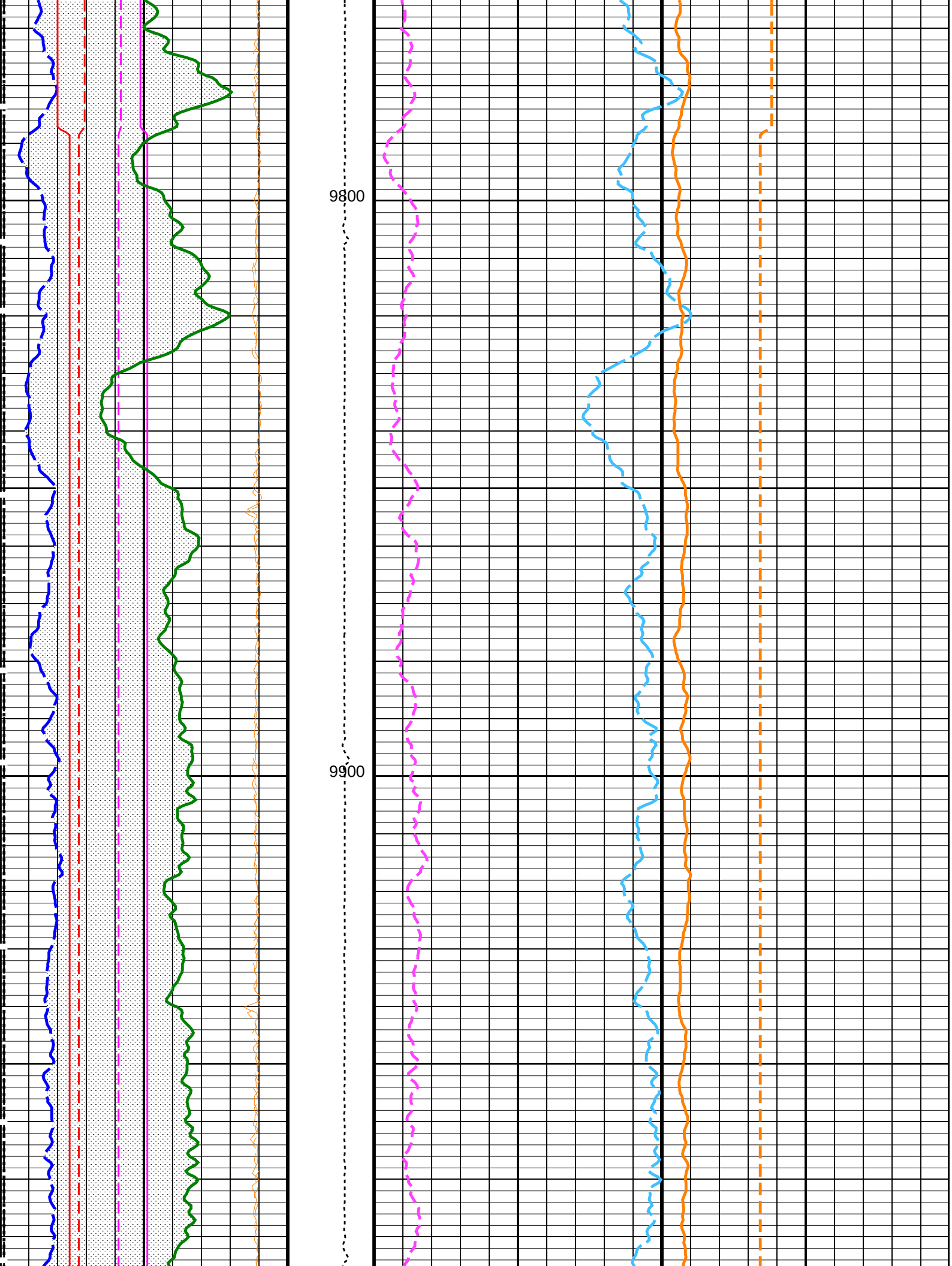
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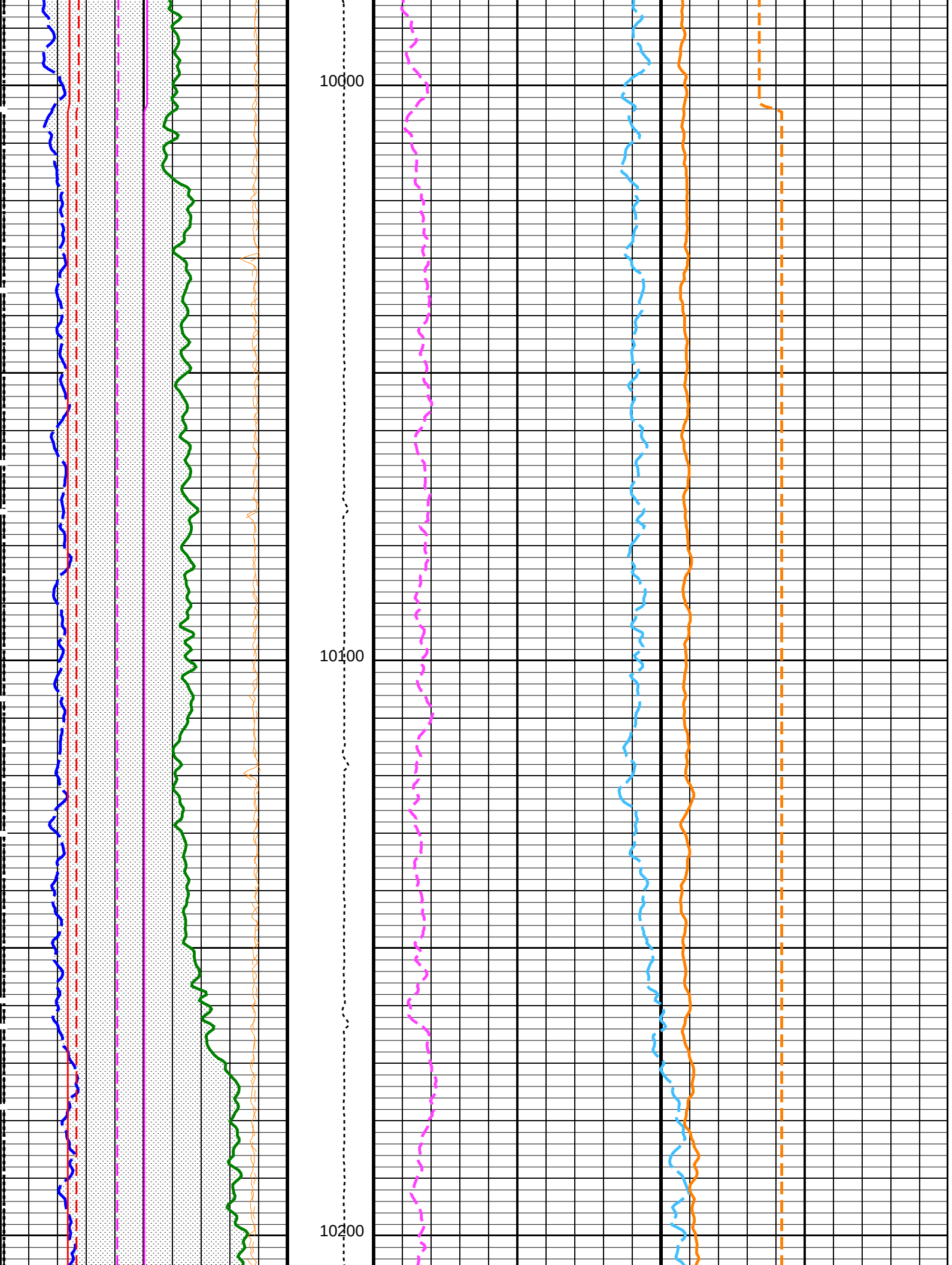
10000
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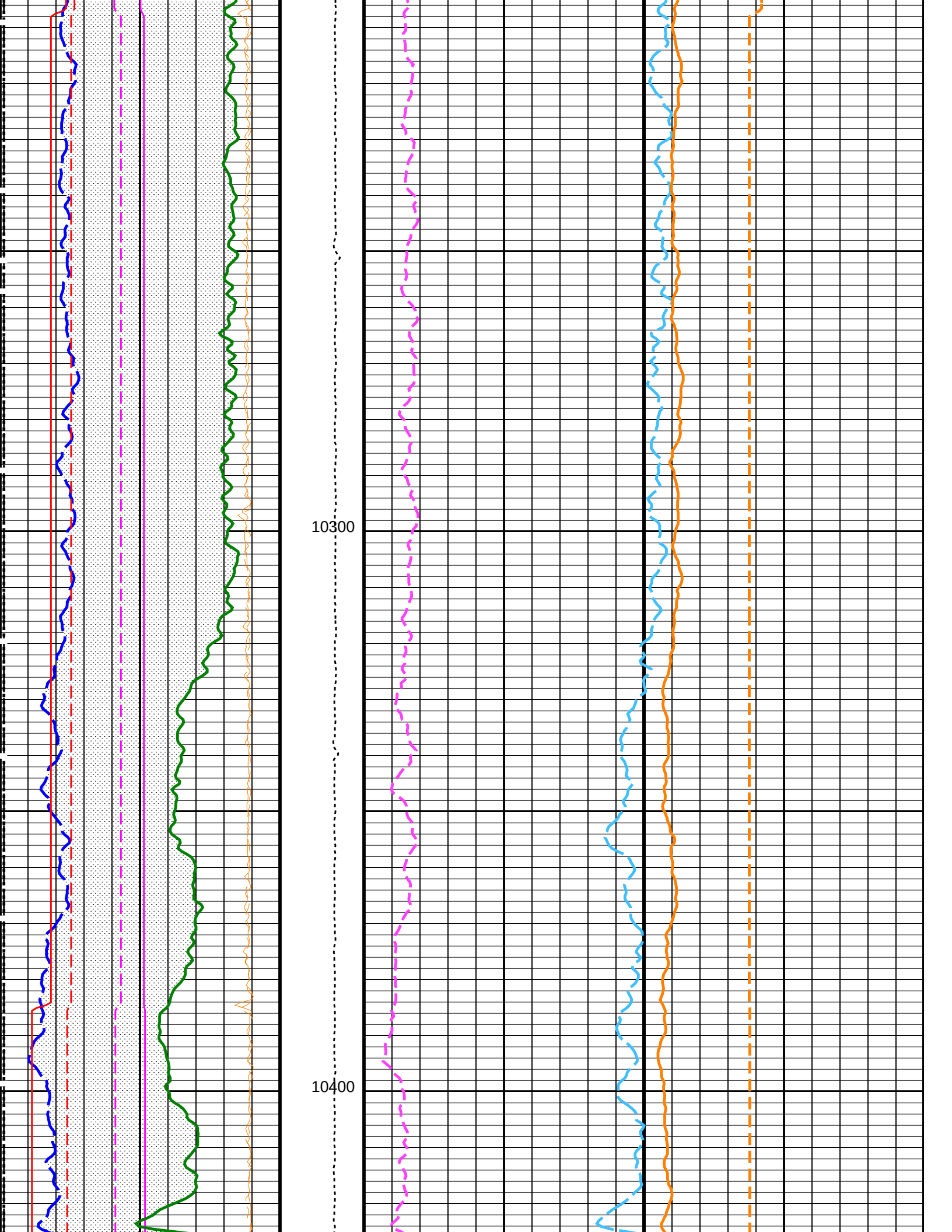
10200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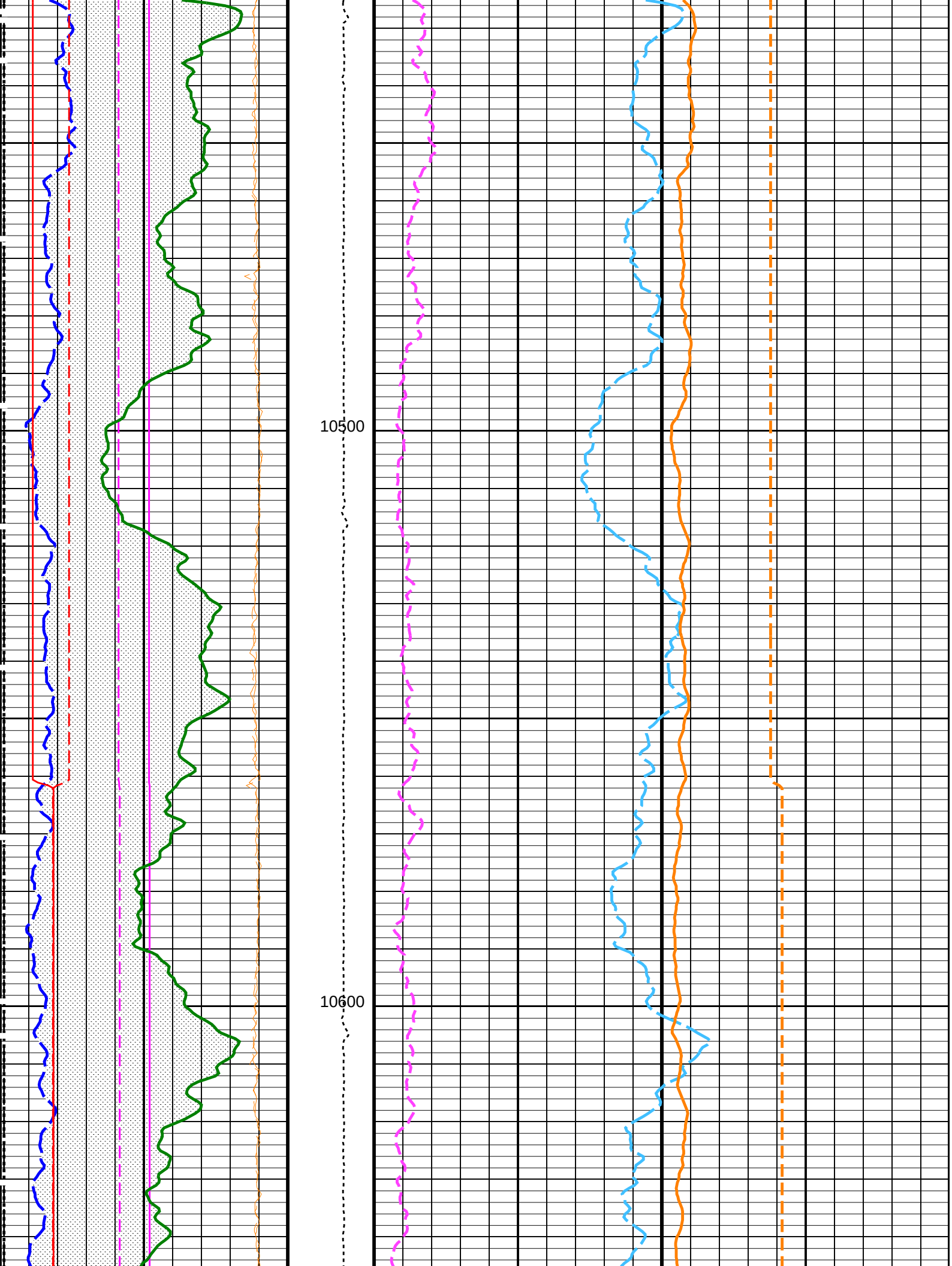
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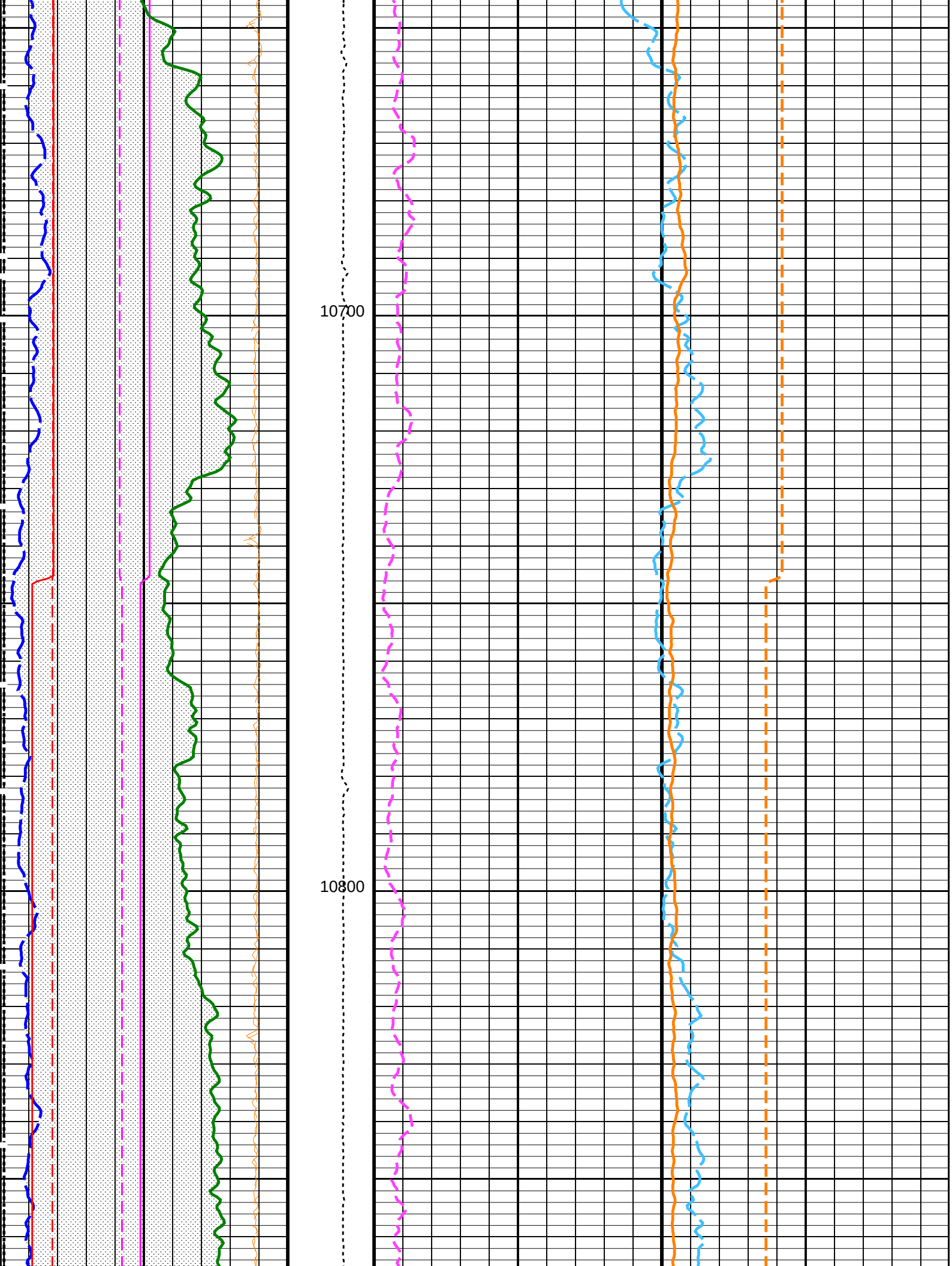
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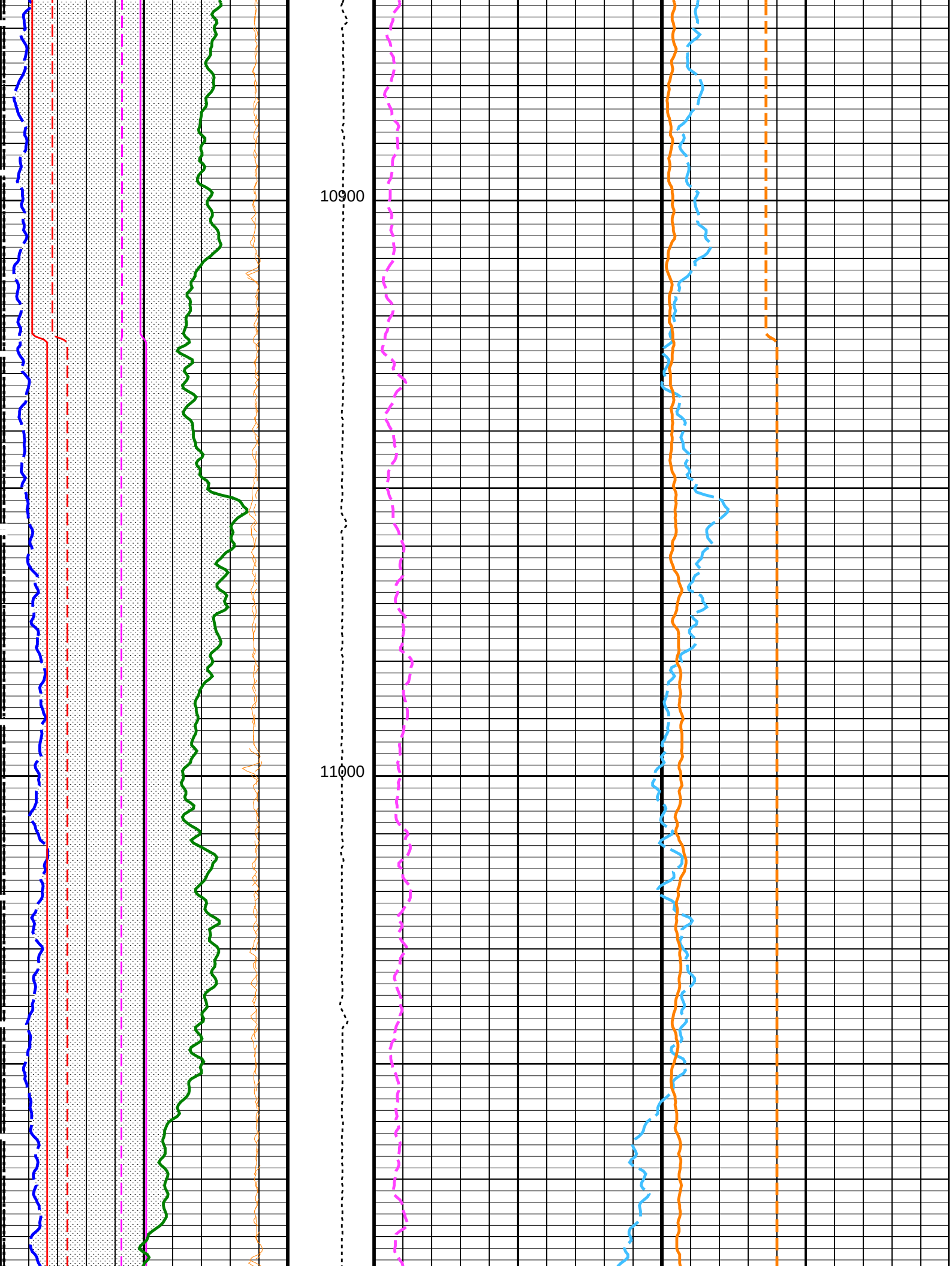
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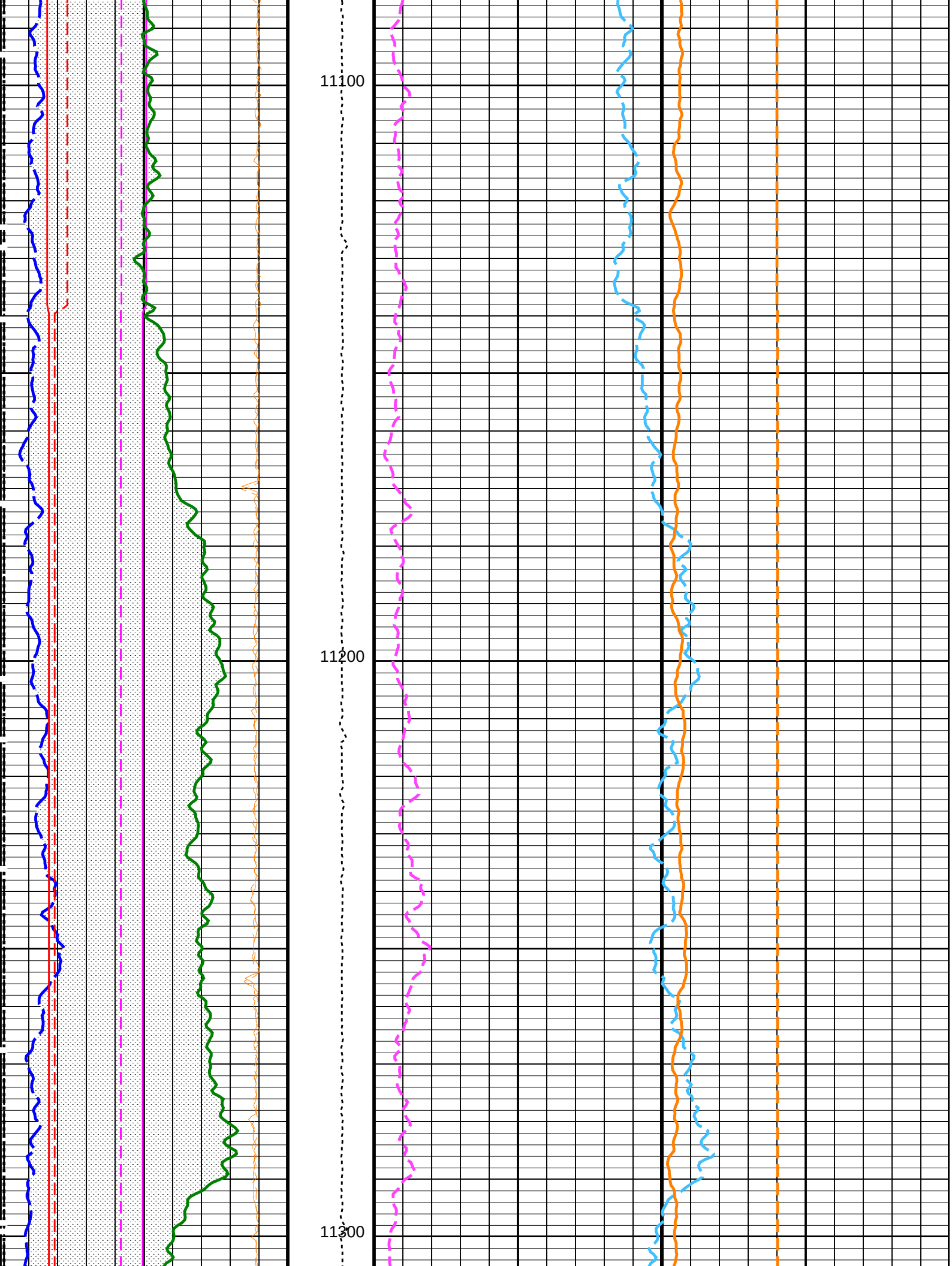
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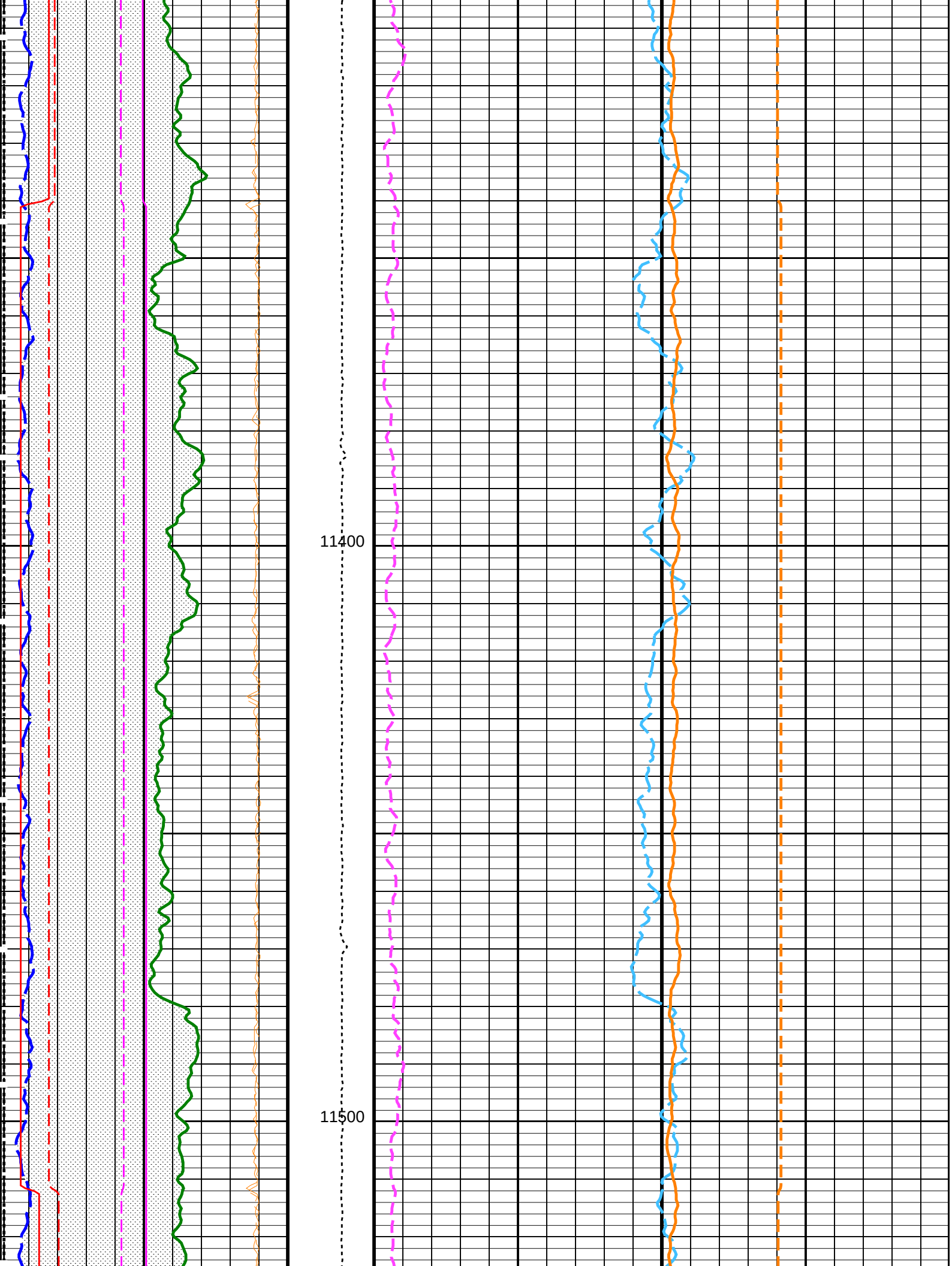
11200
11300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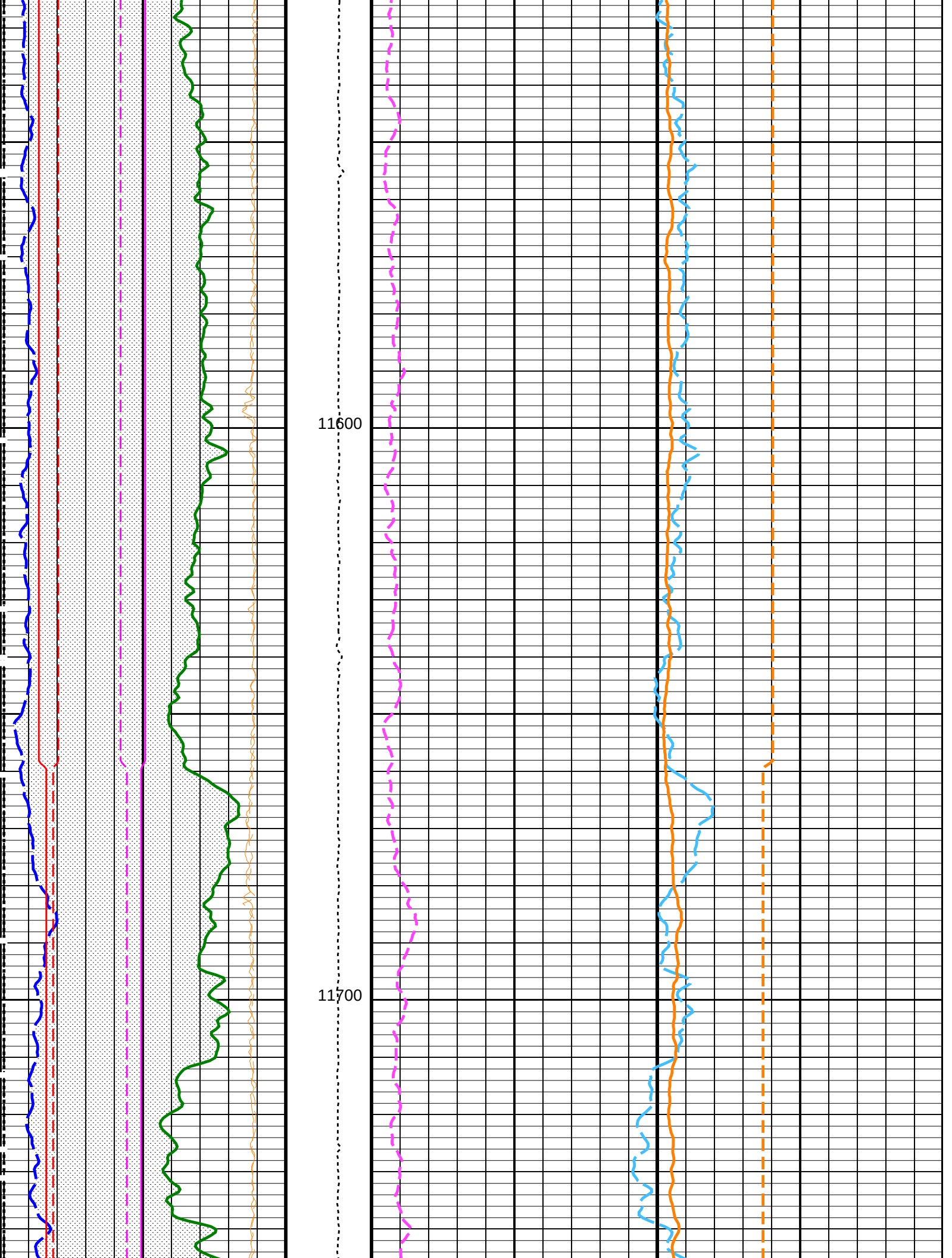
11500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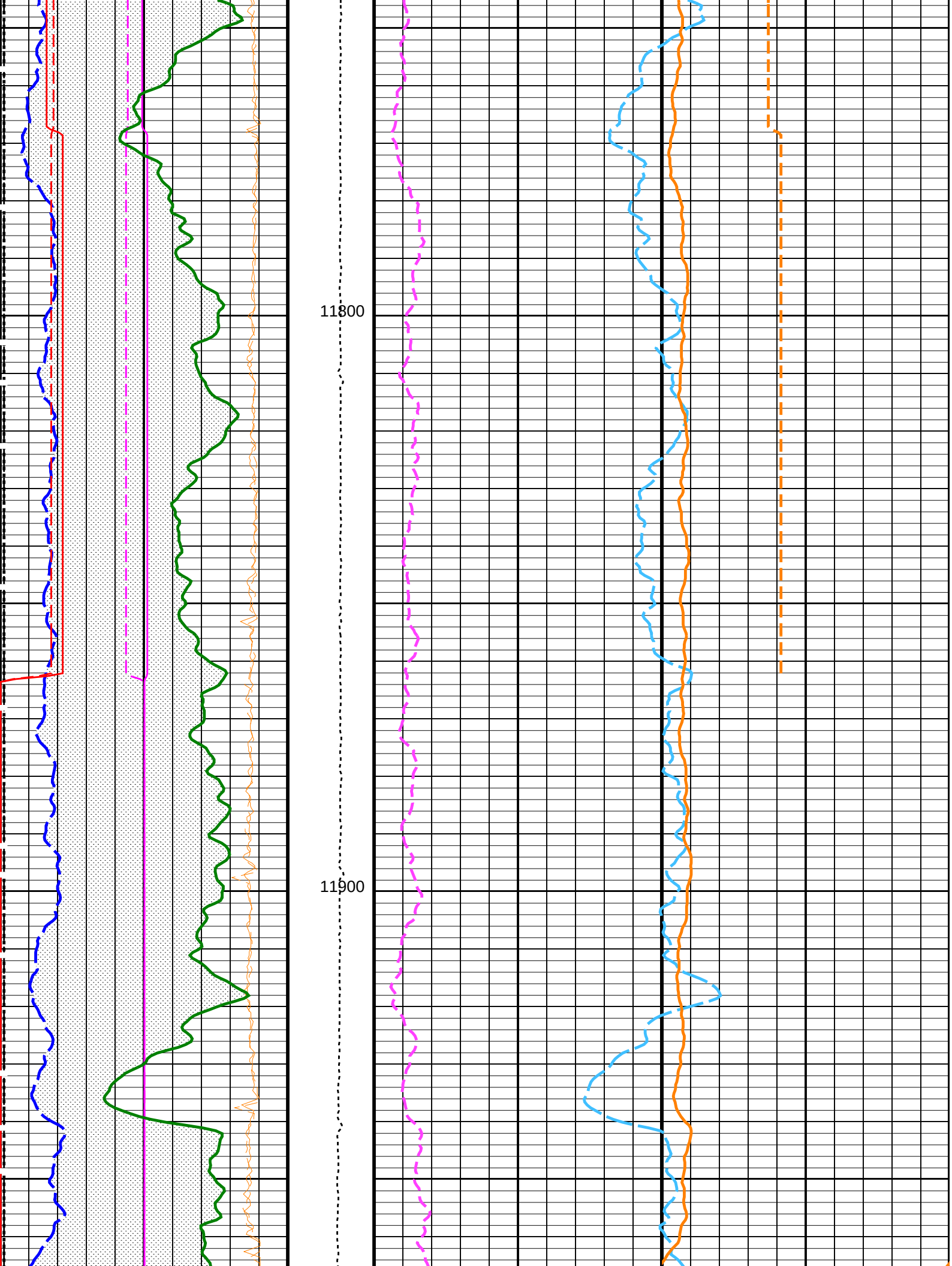
11700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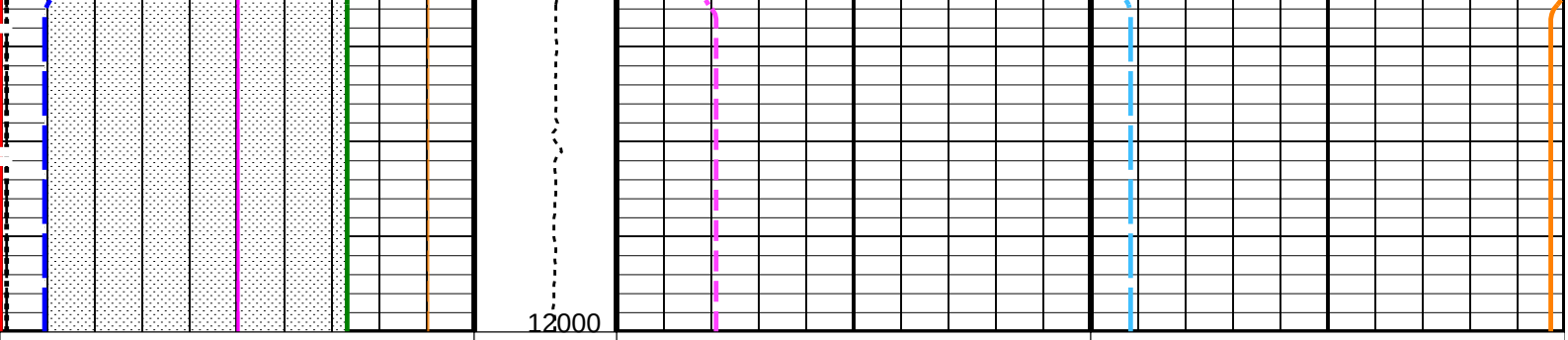
11900



HNGS Det.1 Chi Squared (CHI1)
10 (----) 0

Tension (TENS) (LBF)
10000 0

HNGS Thorium (HTHO)
0 (PPM) 30

HNGS Potassium (HFK)
0 (V/V) 0.1

HNGS Det.2 Chi Squared (CHI2)
10 (----) 0

HNGS Uranium (HURA)
−10 (PPM) 30

Bit Size (BS)
6 (IN) 16

HNGS Borehole Potassium (HBHK)
−0.05 (V/V) 0.05

Caliper (BS)
6 (IN) 16

HNGS Computed Gamma Ray (HCGR)
0 (GAPI) 150

Area1
From HCGR to HSGR

HNGS Det.1 Gain Correction Factor (GCF1)
0.9 (----) 1.1

HNGS Det.2 Gain Correction Factor (GCF2)
0.9 (----) 1.1

HNGS Det.1 Resolution Degradation Factor (RDF1)
0 (----) 10

HNGS Det.2 Resolution Degradation Factor (RDF2)
0 (----) 10

HNGS Spectroscopy Gamma Ray (HSGR)
0 (GAPI) 150

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HNGS−BA: Hostile Natural Gamma Ray Sonde		
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	BS	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	−0.011388	
HALF	HNGS Alpha Filter Length	60	IN

HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	−999.25	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	−999.25	CPS
SGRC	HNGS Standard Gamma−Ray Correction Flag	YES	
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.98141	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.988575	
System and Miscellaneous			
BS	Bit Size	6.125	IN
DFD	Drilling Fluid Density	10.20	LB/G
DO	Depth Offset for Playback	8.0	FT
PP	Playback Processing	NORMAL	

Format: HNGSYields **Vertical Scale: 5" per 100'** **Graphics File Created: 01−Feb−2012 13:06**

OP System Version: 18C0−147

FBST−B	18C0−147	PPC1−B	18C0−147
HNGC−B	HFE−4001−OP18−NUCL	HNGS−BA	HFE−4001−OP18−NUCL
DTC−H	18C0−147		

Input DLIS Files

DEFAULT	FMI_CAL_NGS_007LUP	FN:6	PRODUCER	01−Feb−2012 08:58	11992.5 FT	7649.5 FT

Output DLIS Files

DEFAULT	FMI_CAL_NGS_009PUP	FN:8	PRODUCER	01−Feb−2012 13:06

Schlumberger

BEFORE CALIBRATIONS

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Full−Bore Scanner − B Wellsite Calibration − Caliper Calibration							
Before: 27−Jan−2012 19:31							
Caliper 1 Small Jig	6.000	N/A	6.215	N/A	N/A	N/A	IN
Caliper 2 Small Jig	6.000	N/A	6.209	N/A	N/A	N/A	IN
Caliper 1 Large Jig	8.000	N/A	8.316	N/A	N/A	N/A	IN
Caliper 2 Large Jig	8.000	N/A	8.287	N/A	N/A	N/A	IN
Full−Bore Scanner − B Wellsite Calibration − CROUZET ACCELEROMETER PROM HAS BEEN READ CORRECTLY							
Before: 1−Feb−2012 5:10							
TEMPERATURE REFERENCE :	N/A	N/A	68	N/A	N/A	N/A	DEGF
YEAR OF CALIBRATION :	N/A	N/A	5	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	4	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	1007	N/A	N/A	N/A	
Full−Bore Scanner − B Wellsite Calibration − CROUZET MAGNETOMETER PROM HAS BEEN READ CORRECTLY							
Before: 1−Feb−2012 5:10							
TEMPERATURE REFERENCE :	N/A	N/A	66	N/A	N/A	N/A	DEGF
YEAR OF CALIBRATION :	N/A	N/A	4	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	12	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	675	N/A	N/A	N/A	
Powered Positioning Device/Caliper 1 Wellsite Calibration − PPC1 Caliper Calibration							
Before: 10−Jan−2012 17:15							
PPC1 Radius 1 Raw Small Radius	3.500	N/A	4.751	N/A	N/A	0.5000	IN

PPC1 Radius 1 Raw Large Radius	8.000	N/A	8.945	N/A	N/A	0.5000	IN
PPC1 Radius 2 Raw Small Radius	3.500	N/A	4.021	N/A	N/A	0.5000	IN
PPC1 Radius 2 Raw Large Radius	8.000	N/A	8.329	N/A	N/A	0.5000	IN
PPC1 Radius 3 Raw Small Radius	3.500	N/A	4.585	N/A	N/A	0.5000	IN
PPC1 Radius 3 Raw Large Radius	8.000	N/A	8.898	N/A	N/A	0.5000	IN
PPC1 Radius 4 Raw Small Radius	3.500	N/A	3.597	N/A	N/A	0.5000	IN
PPC1 Radius 4 Raw Large Radius	8.000	N/A	7.940	N/A	N/A	0.5000	IN

Hostile Natural Gamma Ray Sonde Wellsite Calibration − Detector 1 Check
Master: 25−Dec−2011 17:38

Na 511 Peak Loc	40.00	38.55	N/A	N/A	N/A	1.000	
Na 511 Peak Res	15.50	14.25	N/A	N/A	N/A	2.000	%
High Voltage	1150	897.8	N/A	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	138.5	N/A	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	7.751	N/A	N/A	N/A	2.000	%
Temperature	59.90	62.59	N/A	N/A	N/A	N/A	DEGF
Na Count Rate	45.00	52.42	N/A	N/A	N/A	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration − Detector 2 Check
Master: 25−Dec−2011 17:38

Na 511 Peak Loc	40.00	39.71	N/A	N/A	N/A	1.000	
Na 511 Peak Res	15.50	15.30	N/A	N/A	N/A	2.000	%
High Voltage	1150	953.2	N/A	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	141.8	N/A	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	7.880	N/A	N/A	N/A	2.000	%
Temperature	59.90	62.46	N/A	N/A	N/A	N/A	DEGF
Na Count Rate	45.00	52.54	N/A	N/A	N/A	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration − Ratio Of Detector 1 To Detector 2
Master: 25−Dec−2011 17:38

Coincidence Count Rate Ratio	1.000	0.9967	N/A	N/A	N/A	0.05000

Full−Bore Scanner − B / Equipment Identification

Primary Equipment:

FullBore Scanner Sonde	FBSS − B	942
FullBore Scanner Sonde Upper part	FBSH − A	
FullBore Scanner Sonde Cartridge	FBSC − B	1785
GPIT Cartridge − C	GPIC − C	1850
Insulating Sub	AH − 185	942
Flex Joint	AH − 184	2929
FullBore Scanner Control Cartridge	FBCC − A	775

Auxiliary Equipment:

Electronics Cartridge Housing	ECH − MRA

Full−Bore Scanner − B Wellsite Calibration

Caliper Calibration

Phase	Caliper 1 Small Jig IN	Value	Phase	Caliper 2 Small Jig IN	Value
Before		6.215	Before		6.209
	5.100 (Minimum) 6.000 (Nominal) 6.900 (Maximum)			5.100 (Minimum) 6.000 (Nominal) 6.900 (Maximum)	

Phase	Caliper 1 Large Jig IN	Value	Phase	Caliper 2 Large Jig IN	Value
Before		8.316	Before		8.287
	6.800 (Minimum) 8.000 (Nominal) 9.200 (Maximum)			6.800 (Minimum) 8.000 (Nominal) 9.200 (Maximum)	

Before: 27−Jan−2012 19:31

Powered Positioning Device/Caliper 1 / Equipment Identification

Primary Equipment:

PPC Powered Positioning Device/Caliper	PPC1 − B	8352
PPC1 Caliper Standard	PPC_ −	

Auxiliary Equipment:

Powered Positioning Device/Caliper 1 Wellsite Calibration

PPC1 Caliper Calibration

Phase	PPC1 Radius 1 Raw Small Radius IN	Value	Phase	PPC1 Radius 1 Raw Large Radius IN	Value

Before	4.751	Before	8.945
1.200 (Minimum) 3.500 (Nominal) 5.600 (Maximum)		6.100 (Minimum) 8.000 (Nominal) 9.700 (Maximum)	

Phase PPC1 Radius 2 Raw Small Radius IN	Value	Phase PPC1 Radius 2 Raw Large Radius IN	Value
Before	4.021	Before	8.329
1.200 (Minimum) 3.500 (Nominal) 5.600 (Maximum)		6.100 (Minimum) 8.000 (Nominal) 9.700 (Maximum)	

Phase PPC1 Radius 3 Raw Small Radius IN	Value	Phase PPC1 Radius 3 Raw Large Radius IN	Value
Before	4.585	Before	8.898
1.200 (Minimum) 3.500 (Nominal) 5.600 (Maximum)		6.100 (Minimum) 8.000 (Nominal) 9.700 (Maximum)	

Phase PPC1 Radius 4 Raw Small Radius IN	Value	Phase PPC1 Radius 4 Raw Large Radius IN	Value
Before	3.597	Before	7.940
1.200 (Minimum) 3.500 (Nominal) 5.600 (Maximum)		6.100 (Minimum) 8.000 (Nominal) 9.700 (Maximum)	

Before: 10−Jan−2012 17:15

Hostile Natural Gamma Ray Cartridge − B / Equipment Identification

Primary Equipment:		
HNGC Cartridge	HNGC − B	
Auxiliary Equipment:		
HNGC Housing	HNGH − A	87

Hostile Natural Gamma Ray Sonde / Equipment Identification

Primary Equipment:		
HNGS Sonde	HNGS − BA	50
Auxiliary Equipment:		
HNGS Sonde Housing	HNSH − BA	152
Gamma Source Radioactive	GSR − U	

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 1 Check

Phase	Na 511 Peak Loc	Value	Phase	Na 511 Peak Res %	Value	Phase	High Voltage V	Value
Master		38.55	Master		14.25	Master	EXCEEDS LIMIT	897.8
37.50 (Minimum) 40.00 (Nominal) 43.50 (Maximum)			12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)			900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)		

Phase	Na 1785 Peak Loc	Value	Phase	Na 1785 Peak Res %	Value	Phase	Temperature DEGF	Value
Master		138.5	Master		7.751	Master		62.59
135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)			7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum)			−20.00 (Minimum) 59.90 (Nominal) 140.0 (Maximum)		

Phase	Na Count Rate CPS	Value
Master		52.42
10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)		

Master: 25−Dec−2011 17:38

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 2 Check

Phase	Na 511 Peak Loc	Value	Phase	Na 511 Peak Res %	Value	Phase	High Voltage V	Value
Master		39.71	Master		15.30	Master		953.2
37.50 (Minimum) 40.00 (Nominal) 43.50 (Maximum)			12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)			900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)		

Phase	Na 1785 Peak Loc	Value	Phase	Na 1785 Peak Res %	Value	Phase	Temperature DEGF	Value
Master		141.8	Master		7.880	Master		62.46
135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)			7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum)			−20.00 (Minimum) 59.90 (Nominal) 140.0 (Maximum)		

Phase	Na Count Rate CPS	Value
Master		52.54
10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)		

Master: 25−Dec−2011 17:38

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Ratio Of Detector 1 To Detector 2

Phase	Coincidence Count Rate Ratio	Value
Master		0.9967

0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)

Master: 25−Dec−2011 17:38

DTS Telemetry Tool / Equipment Identification

Primary Equipment:

DTC−H Auxiliary Cartridge	DTCH − A
DTC−H Telemetry Cartridge	DTCH − A

Auxiliary Equipment:

DTCH Telemetry Cartridge Housing	ECH − KC

Company: **Kerr−McGee Oil & Gas Onshore LP**

Schlumberger

Well: **Cannon 36C−11HZ**
Field: **Wattenberg**
County: **Weld**
State: **Colorado**

HNGS
Xtreme Natural Gamma Ray Spectroscopy