Schlumberger

Company: **Vecta Oil & Gas Ltd**

Well: **Torreys 31−4**
Field: **Wildcat**
County: **Cheyenne** State: **Colorado**

County: Cheyenne
Field: Wildcat
Location: Sec 4, T14S, R47W
Well: Torreys 31−4
Company: Vecta Oil & Gas Ltd

Platform Express
Compensated Neutron
Litho Density

LOCATION

Sec 4, T14S, R47W
SHL:354' FNl X 1623' FEL NWNE
Lat/Long: 38.865740/−102.672720

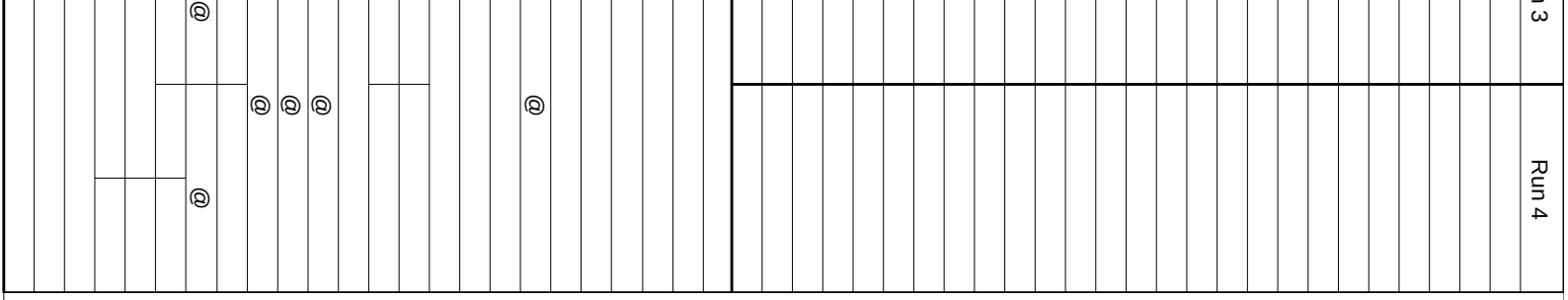
Elev.: K.B. 4312.00 ft
G.L. 4297.00 ft
D.F. 4311.00 ft

Permanent Datum: Ground Level Elev.: 4297.00 ft
Log Measured From: Kelly Bushing 15.00 ft above Perm. Datum
Drilling Measured From: Kelly Bushing

API Serial No.	Section	Township	Range
05−017−07705−0000	4	14S	47W

	Run 1	Run 2	Run 3
Logging Date	2−Aug−2011		
Run Number	1		
Depth Driller	5530 ft		
Schlumberger Depth	5528 ft		
Bottom Log Interval	5522 ft		
Top Log Interval	435 ft		
Casing Driller Size @ Depth	8.625 in @ 437 ft	@	@
Casing Schlumberger	435 ft		
Bit Size	7.875 in		
Type Fluid In Hole	Water Based Mud		
MUD Density / Viscosity	9.2 lbm/gal / 52 s		
MUD Fluid Loss / PH	8 cm3 / 10		
MUD Source Of Sample	AIT Sensor		
RM @ Measured Temperature	0.783 ohm.m @ 106 degF	@	@
RMF @ Measured Temperature	0.587 ohm.m @ 106 degF	@	@
RMC @ Measured Temperature	1.174 ohm.m @ 106 degF	@	@
Source RMF / RMC	Calculated / Calculated		
RM @ MRT / RMF @ MRT	0.607 @ 139 / 0.456 @ 139	@ / @	@ / @
Maximum Recorded Temperatures	139 degF		
Circulation Stopped / Time	2−Aug−2011 / 13:00		
Logger On Bottom / Time	2−Aug−2011 / 17:00		
Unit Number / Location	3055 / Fort Morgan, CO		
Recorded By	Philip Grant		
Witnessed By	Matt Goolsby		

	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			



DEPTH SUMMARY LISTING

Date Created: 2−AUG−2011 16:14:31

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−B/A	Type:	7−39P LXS
Serial Number:	3713	Serial Number:	2787	Serial Number:	6171
Calibration Date:	12−Jan−2011	Calibration Date:	31−Jan−2011	Length:	14900 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	100513		
Calibration Cable Type:	7−39P LXS	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	−5	Calibration RMS:	18	Rig Type:	LAND
Wheel Correction 2:	−4	Calibration Peak Error:	34		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 FT
Rig Up Length At Bottom:	0.00 FT
Rig Up Length Correction:	0.00 FT
Stretch Correction:	3.50 FT
Tool Zero Check At Surface:	0.00 FT

Depth Control Remarks

1. All Schlumberger depth policy procedures applied
2. This is the primary depth reference
3.
4.
5.
6.

OTHER SERVICES1	OTHER SERVICES2
OS1: MSIP	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
Tool run as per tool sketch.	
This is the first run in hole and primary depth reference.	
Data may be affected by hole rugosity.	
Matrix: Limestone 2.71	

Matrix: Limestone 2.71

Crew: Jay Musgrave, Derrick Hunter

Rig: Black Gold 169

RUN 1		RUN 2	
SERVICE ORDER #:	BE0K−000164	SERVICE ORDER #:	
PROGRAM VERSION:	18C0−147	PROGRAM VERSION:	
FLUID LEVEL:		FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1

SURFACE EQUIPMENT

GSR−U/Y
NCT−B
CNB−AB
NCS−VB

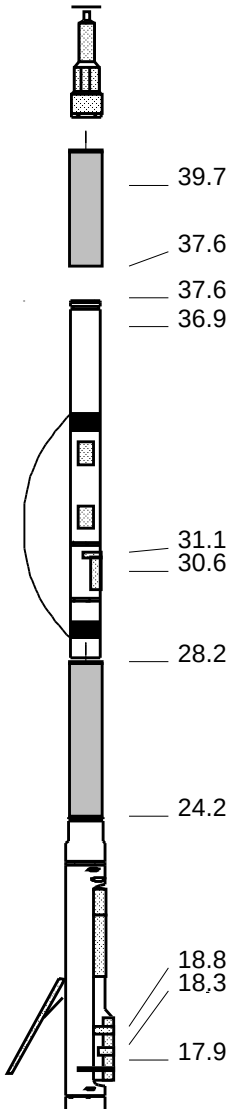
WITM (DTS)−A

DOWNHOLE EQUIPMENT

LEH−QT
LEH−QT

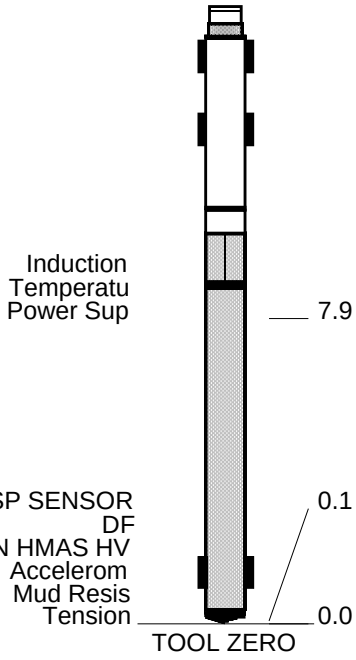
DTC−H
ECH−KC
DTCH0−A
DTCH1−A

HILTB−FTB
HGNSD−B
HMCA
HGNH
NLS−KL
NSR−F 5068
HACCZ 328
HCNT
HGR
HRCC−B
HRMS−B
HRGD−B
GLS−VJ 5094
MCFL Device
HILT Nucl. LS
HILT Nucl. SS
HILT Nucl. BS
BOW−SPR
NPV−N



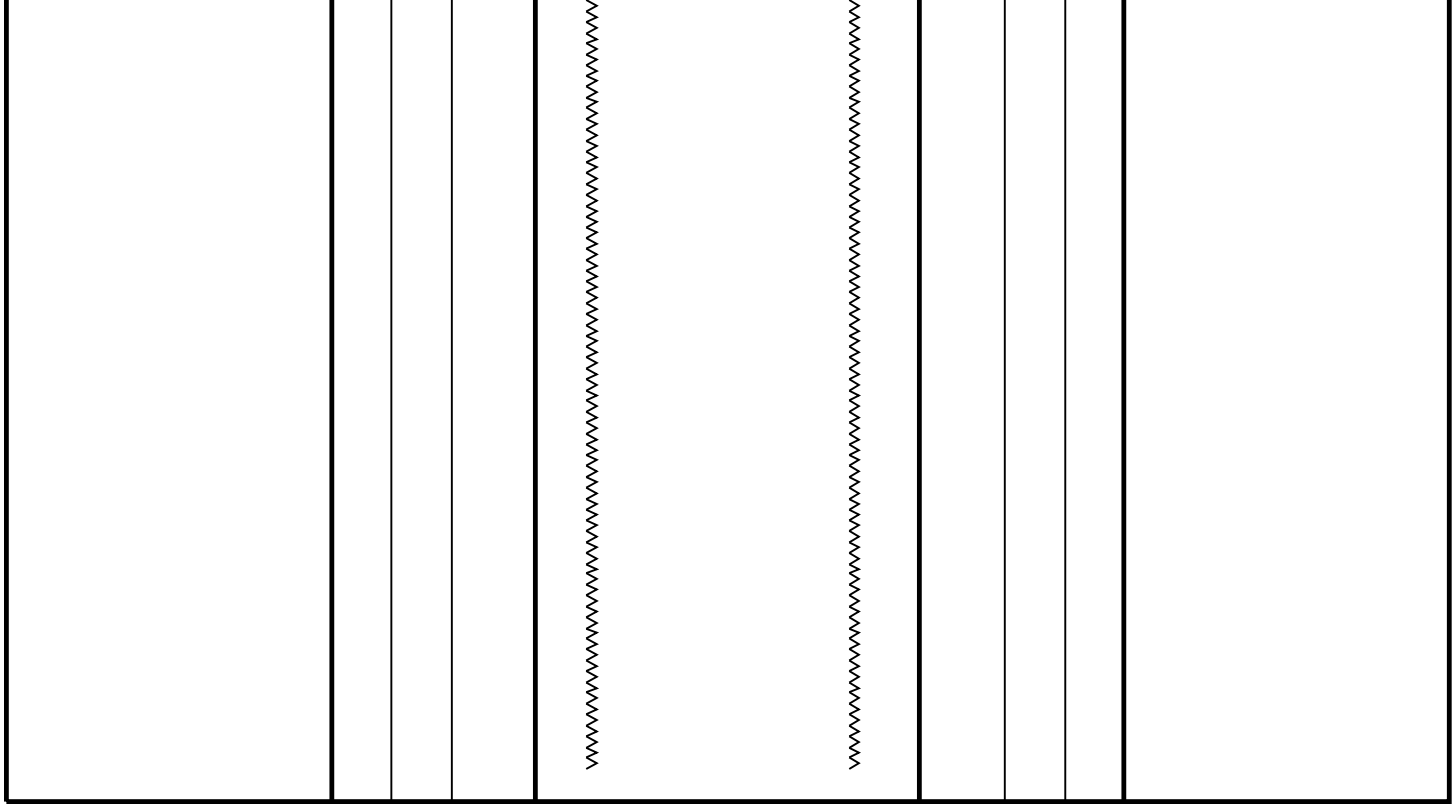
RUN 2

AIT−M
AMIS−A 1270
AMRM−A



MAXIMUM STRING DIAMETER 5.88 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Production String	(in) OD	(in) ID	(ft) MD	Well Schematic	(ft) MD	(in) OD	(in) ID	Casing String
					0.0	8.625	8.097	Casing String
					437.0	8.625	8.097	Casing Shoe
					437.0	7.875		Borehole Segment



All Depths are Drillers

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MAIN POROSITY LOG 5" = 100’

MAXIS Field Log

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_007LUP	FN:6	PRODUCER	02−Aug−2011 16:19	5550.0 FT	411.0 FT
DEFAULT	AIT_TLD_MCFL_CNL_005PUP	FN:4	PRODUCER	02−Aug−2011 16:10	5545.5 FT	4904.0 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 1798.91 ft3

Cement Volume = 958.68 ft3 (assuming 5.50 in casing O.D.)

Computed from 5527.5 ft to 435.0 ft

OP System Version: 18C0−147

AITM	18C0−147	HILTD	18C0−147
DTCH	18C0−147		

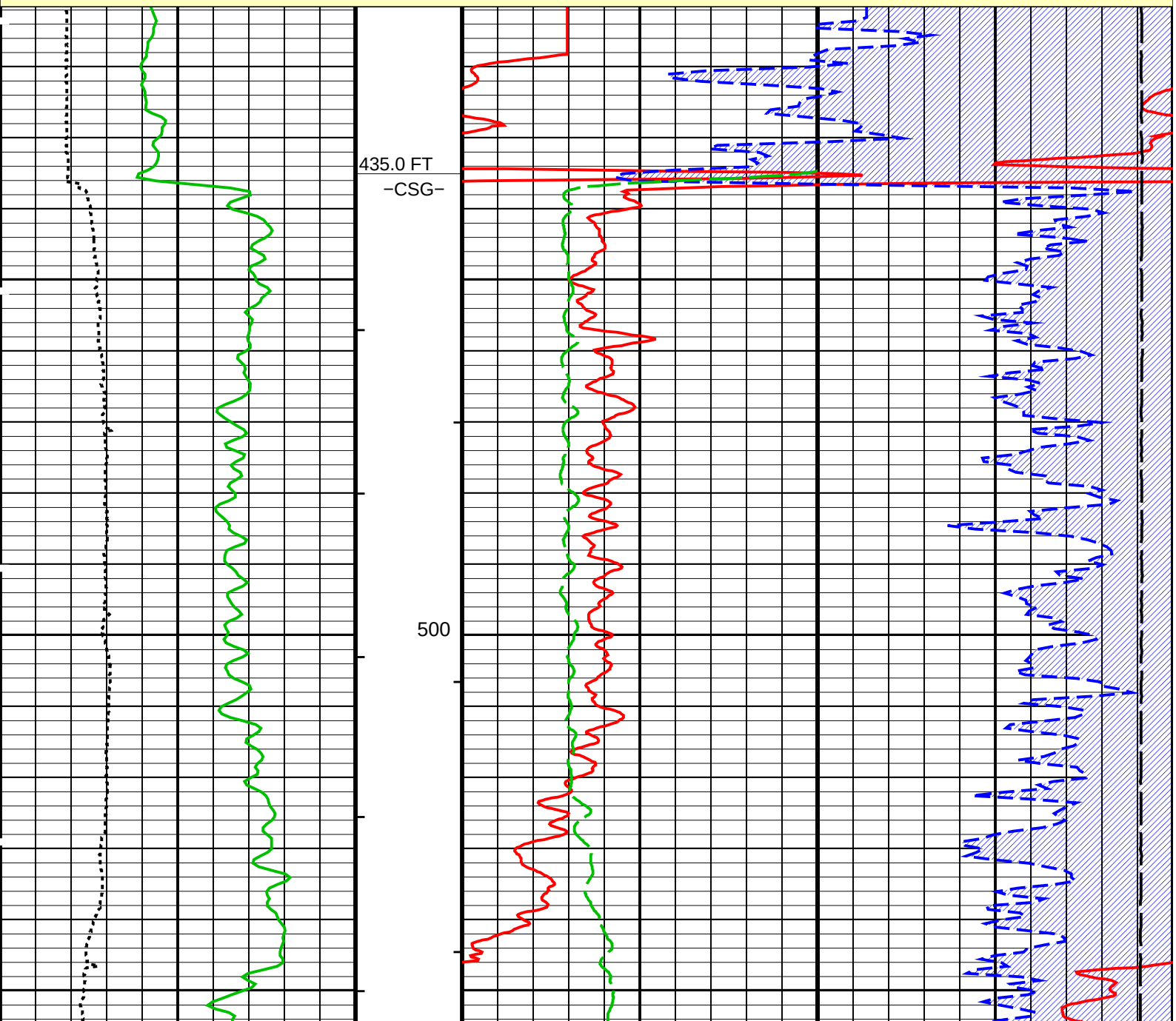
PIP SUMMARY

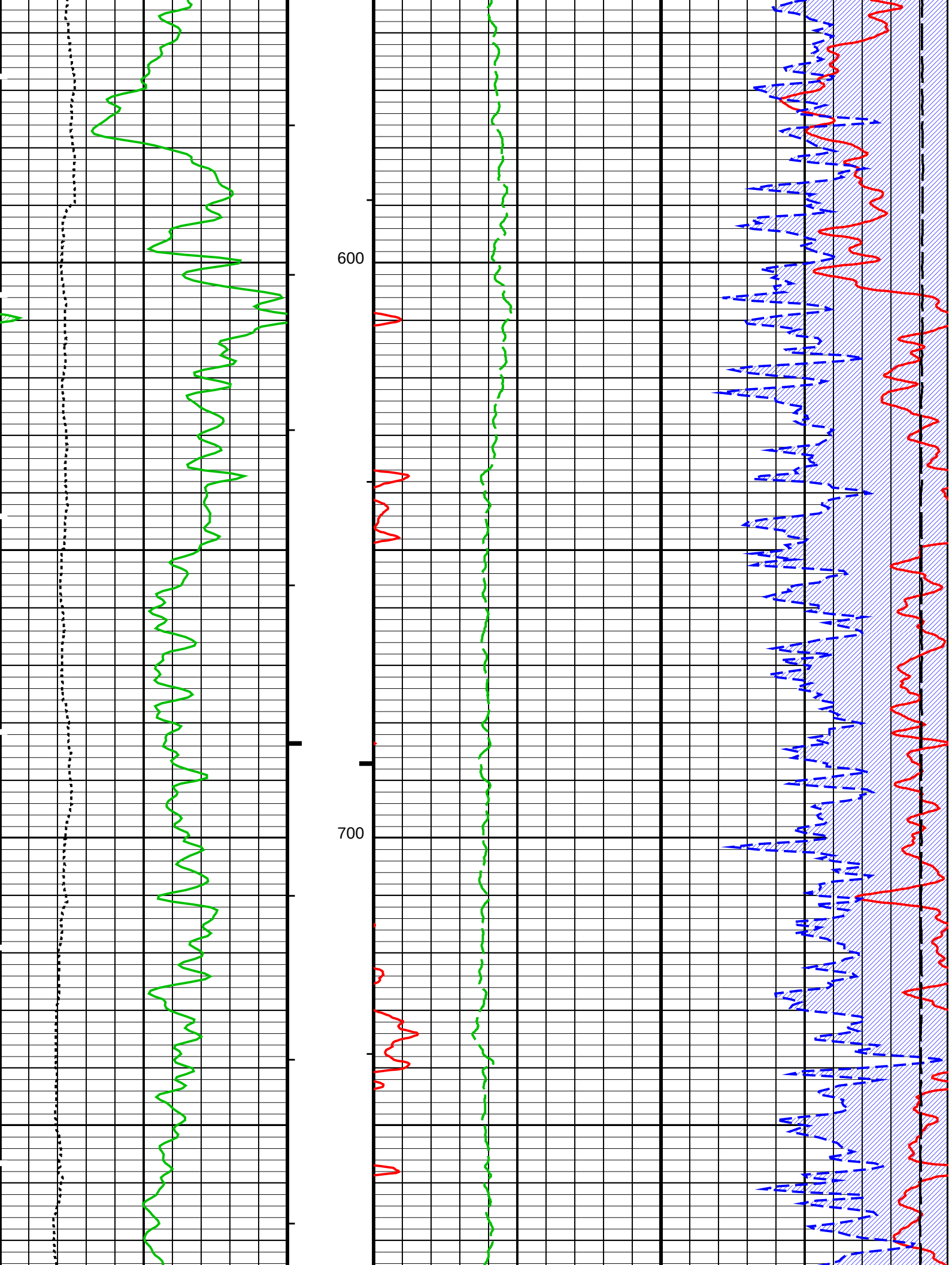
Integrated Hole Volume Minor Pip Every 10 F3
Integrated Hole Volume Major Pip Every 100 F3
Integrated Cement Volume Minor Pip Every 10 F3
Integrated Cement Volume Major Pip Every 100 F3
Time Mark Every 60 S

NPOR Backup
Gas Effect

Caliper (HCAL) 6 (IN) 16	Stuck Stretch (STIT) 0 (F) 50	Std. Res. Formation Pe (PEFZ) 0 (----) 10	Tension (TENS) 10000 (LBF) 0
Gamma Ray (GR) 0 (GAPI) 200	Tool/Tot. Drag	Alpha Processed Neutron Porosity (NPOR) 0.3 (V/V) -0.1	
Gamma Ray Backup	Cable Drag	Std. Res. Density Porosity (DPHZ) 0.3 (V/V) -0.1	

MAIN PASS: *** PLATFORM EXPRESS - NUCLEAR POROSITY ***

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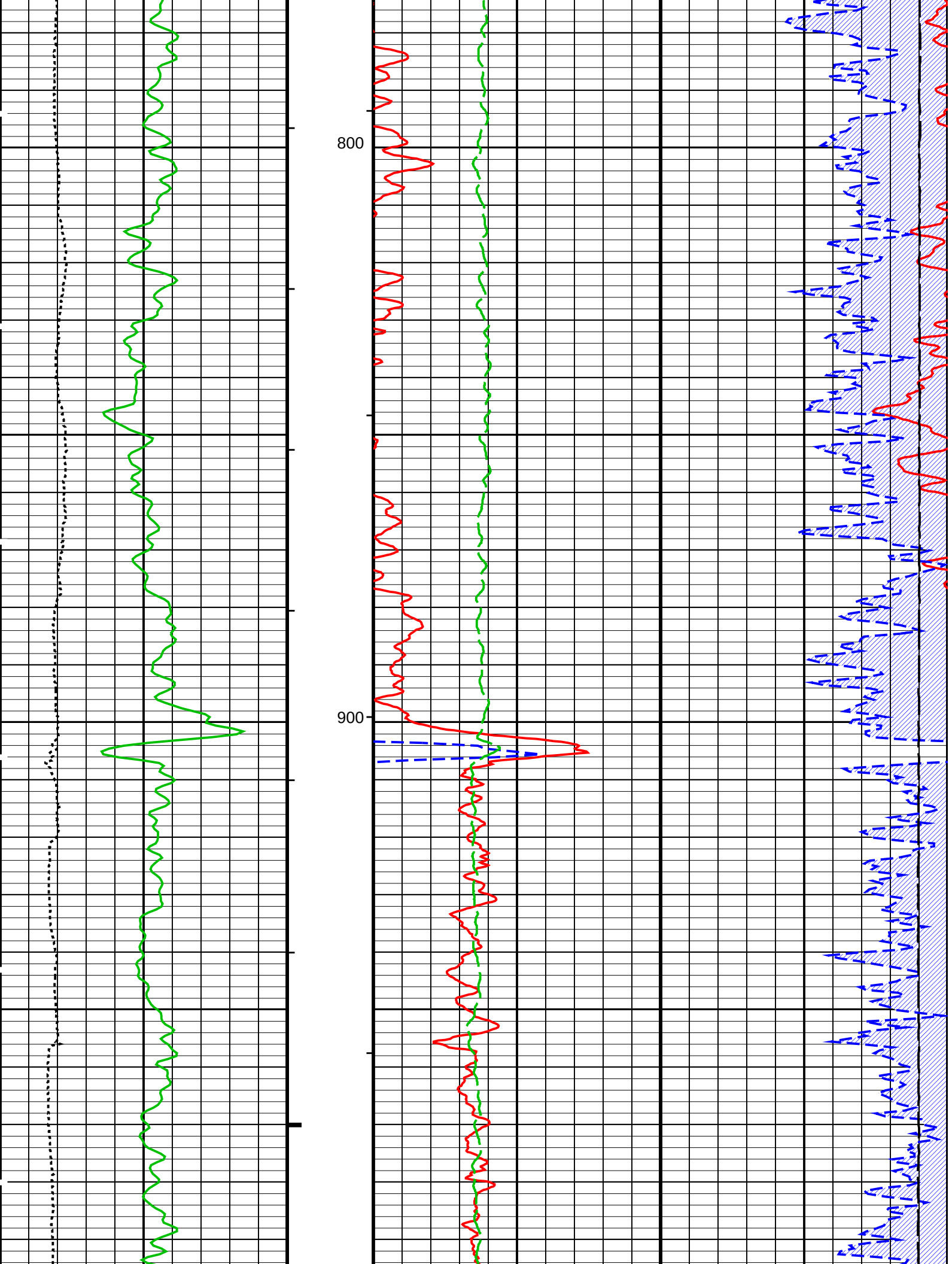
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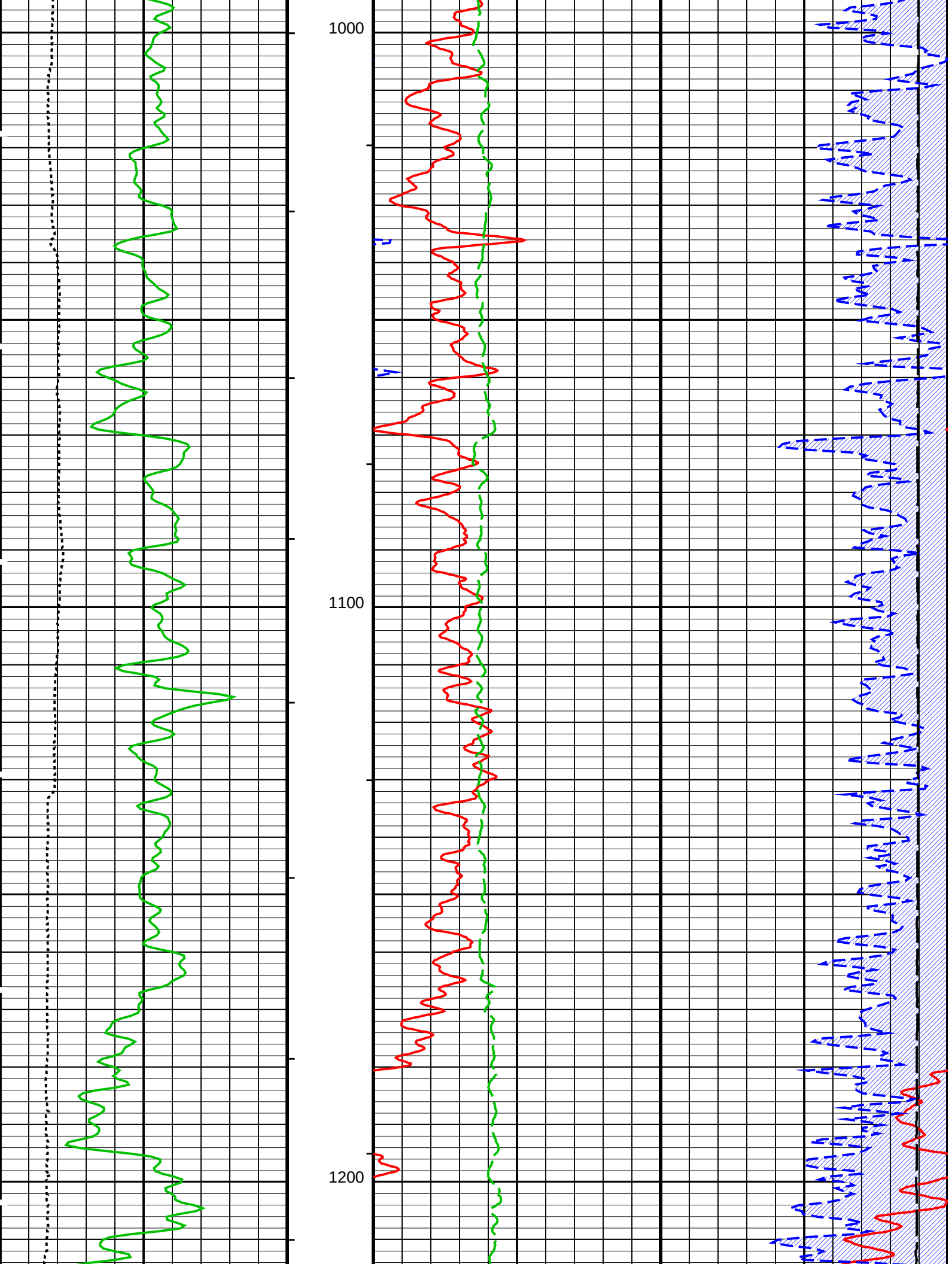
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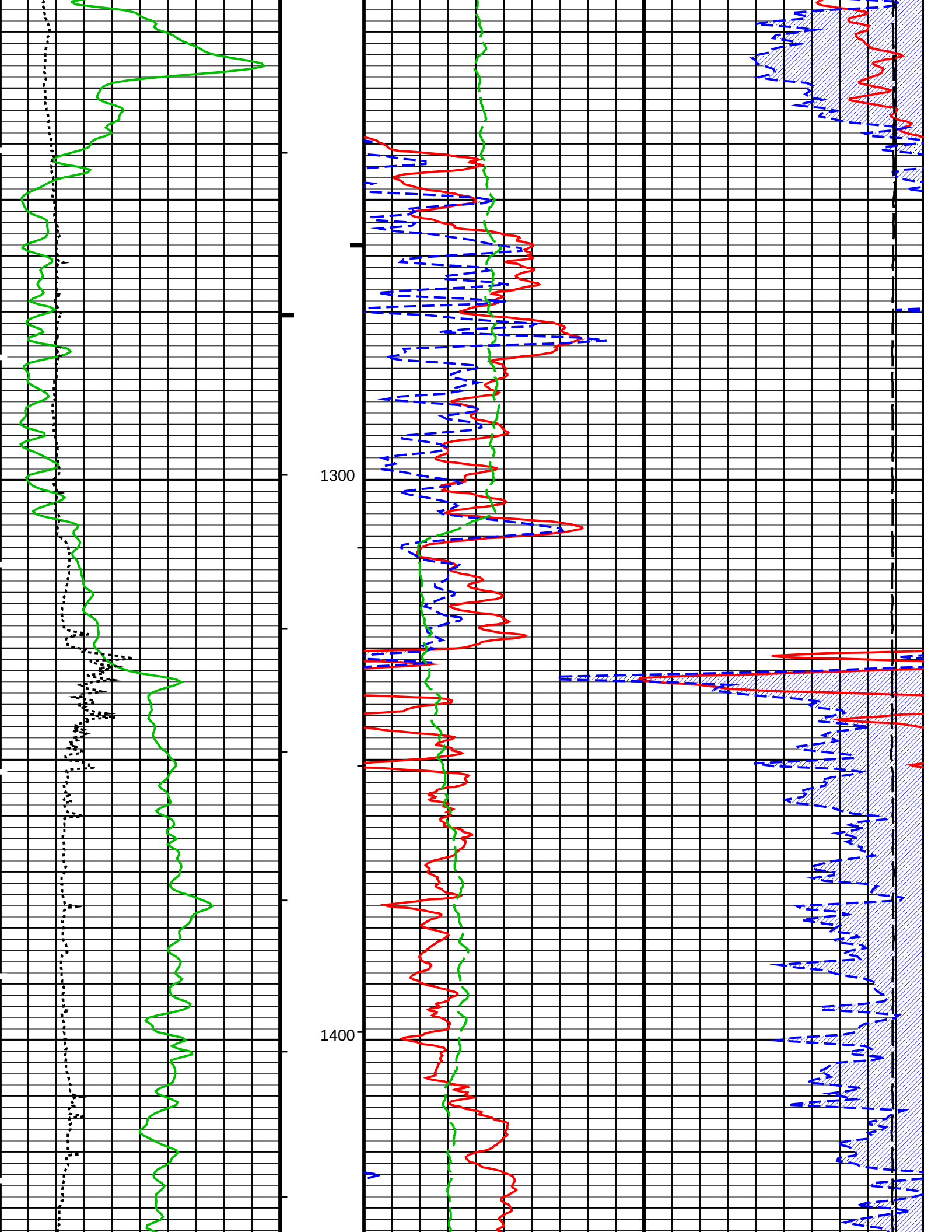
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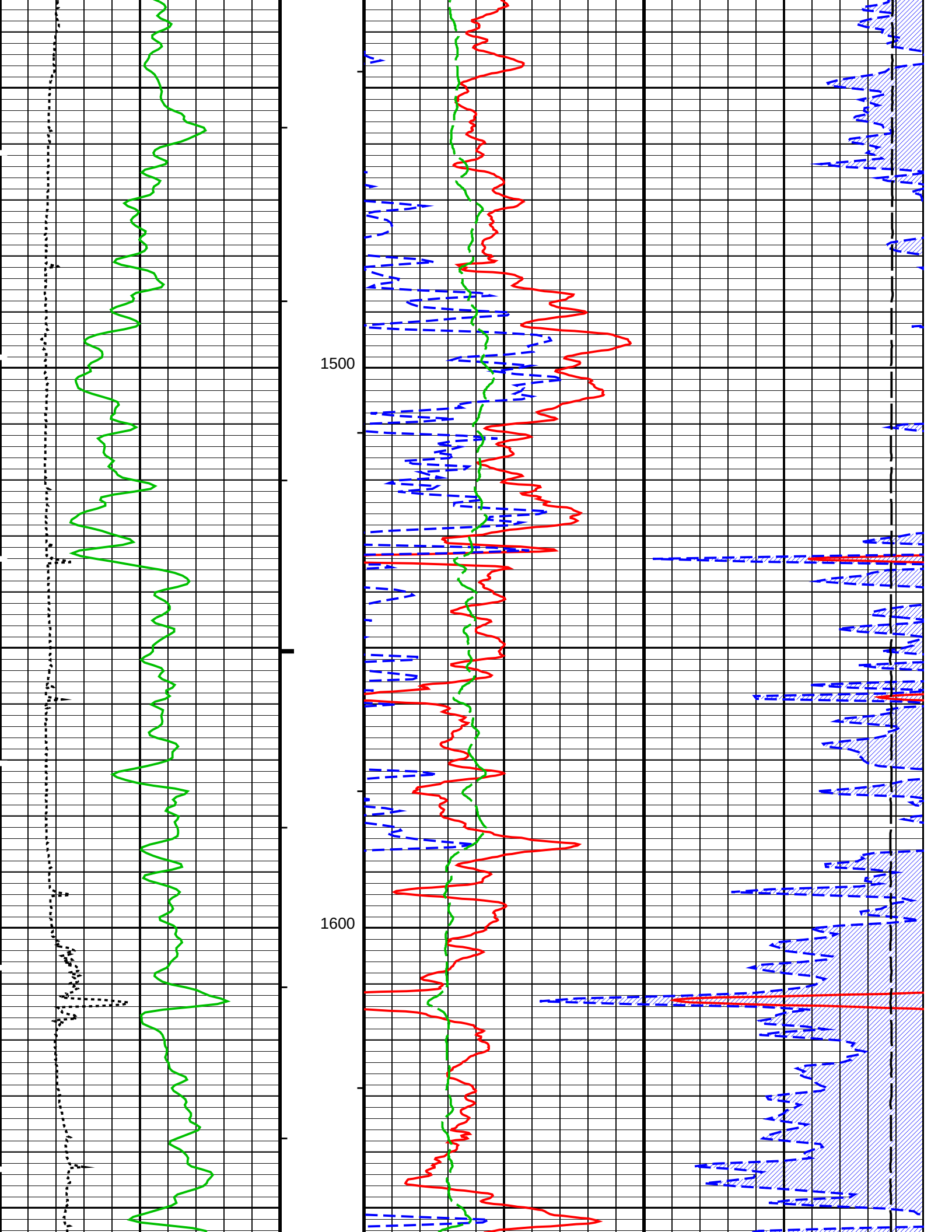
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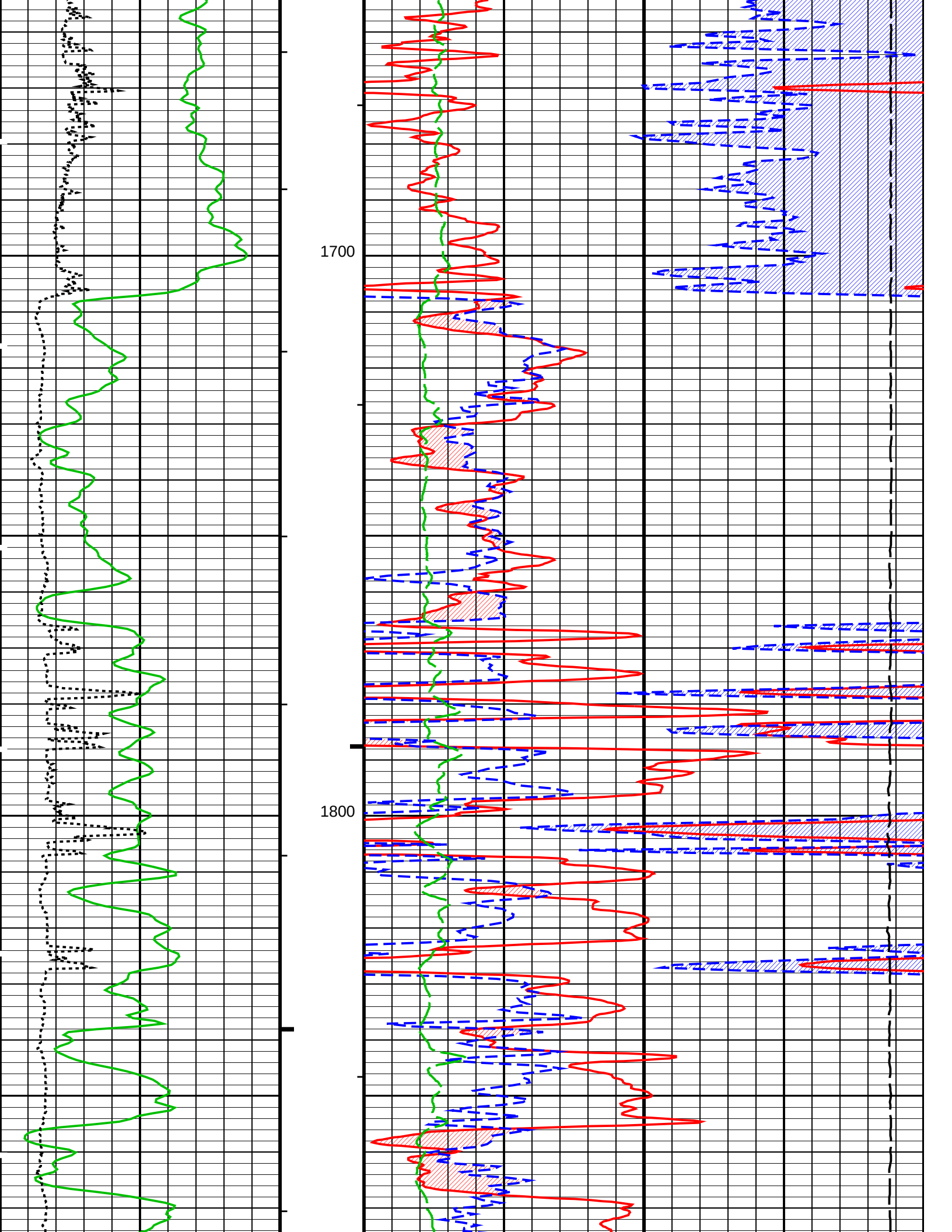
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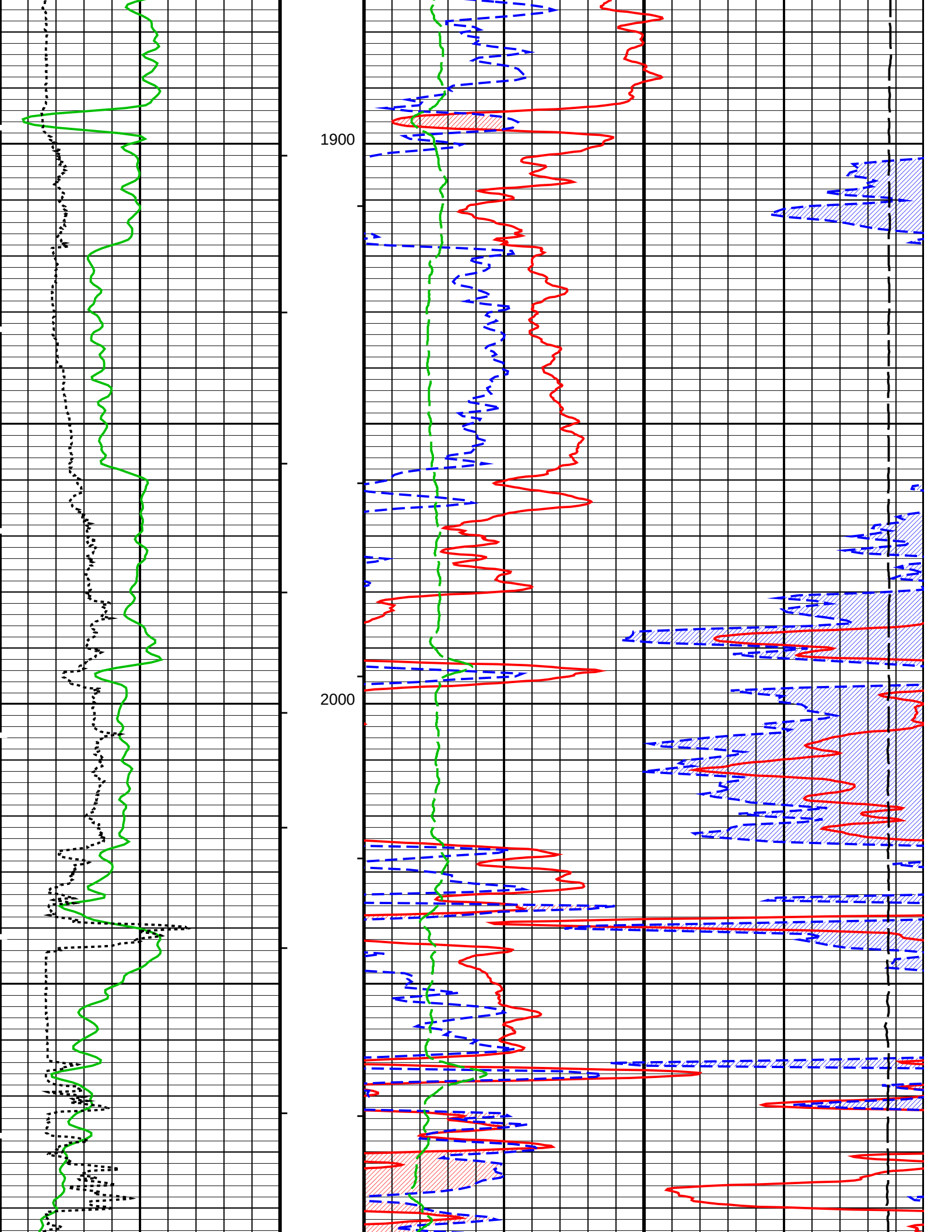
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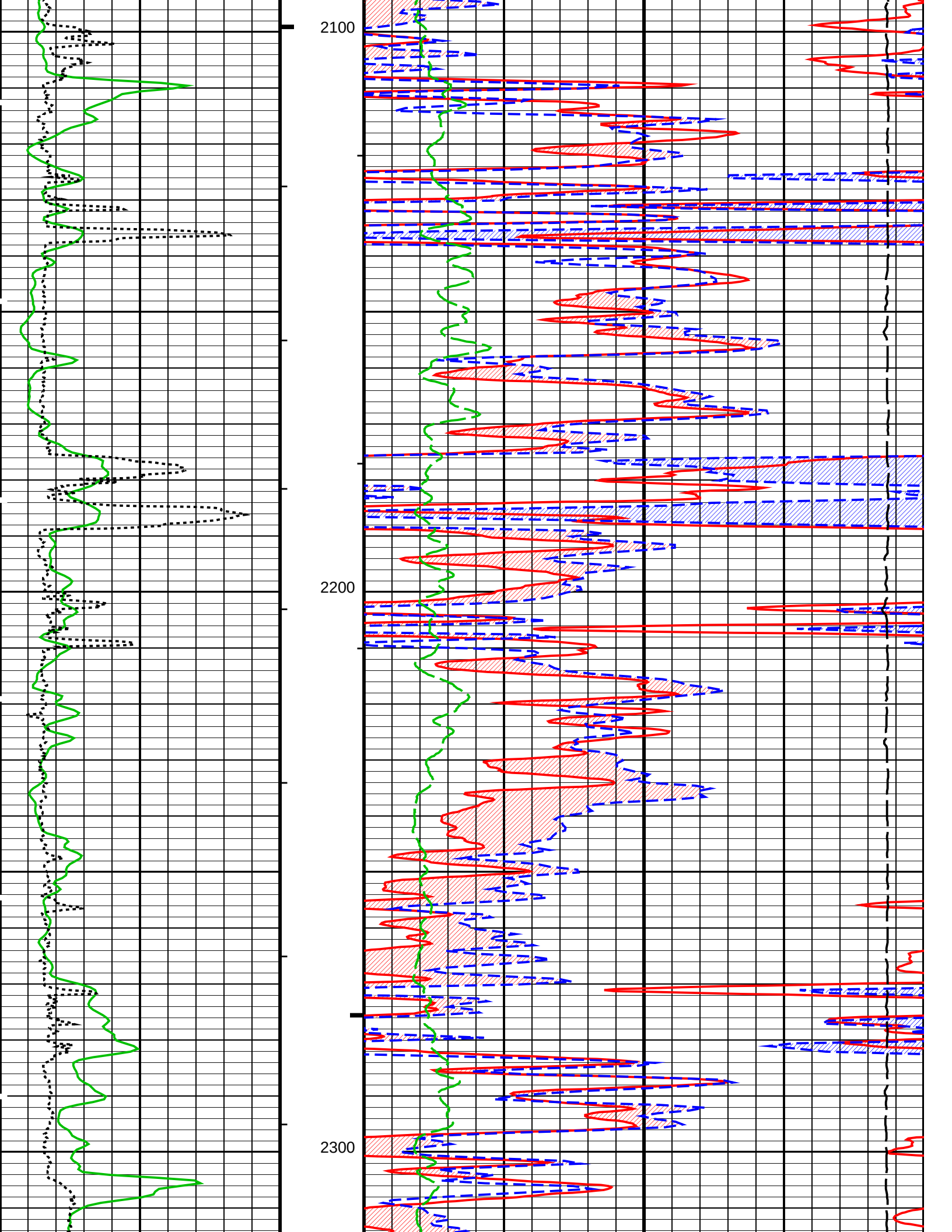
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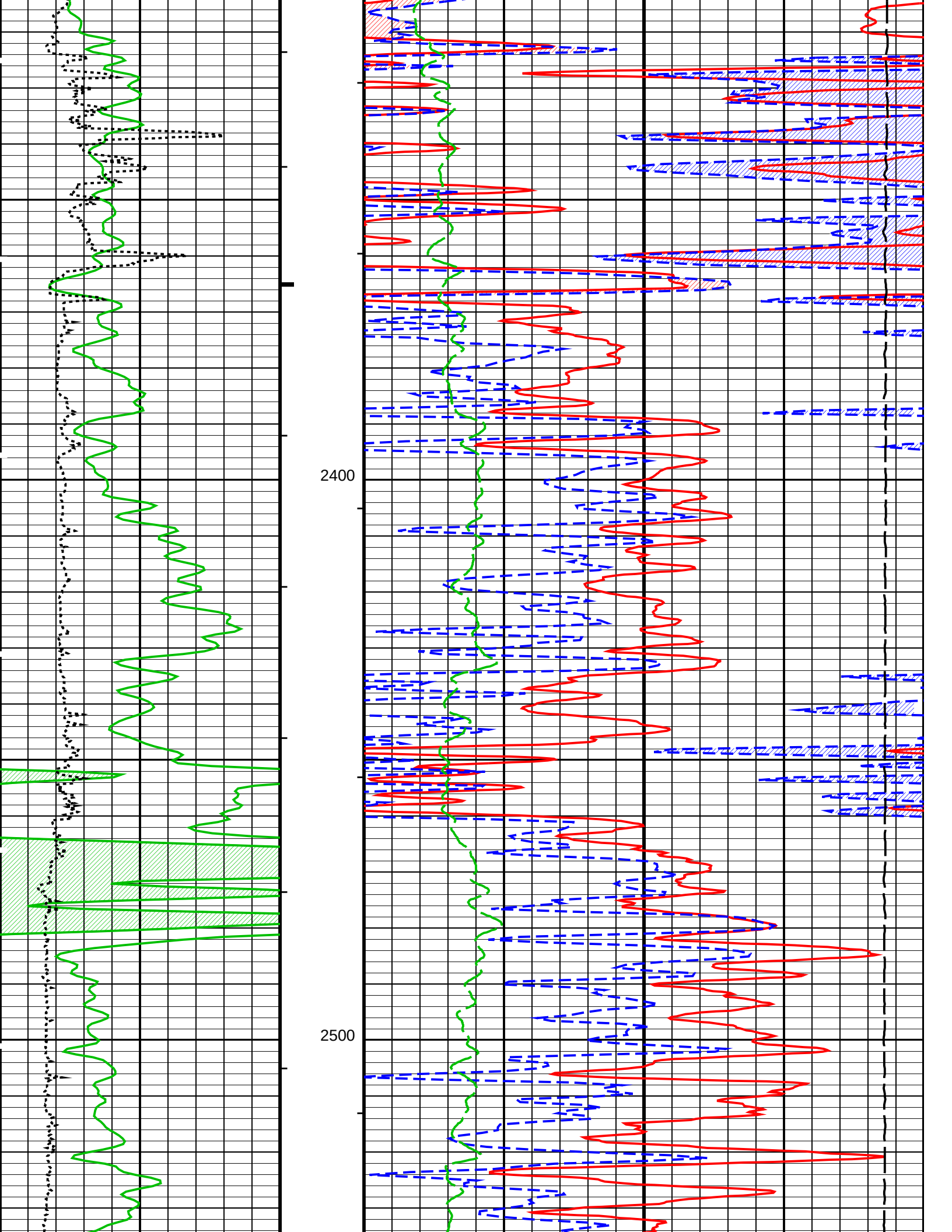
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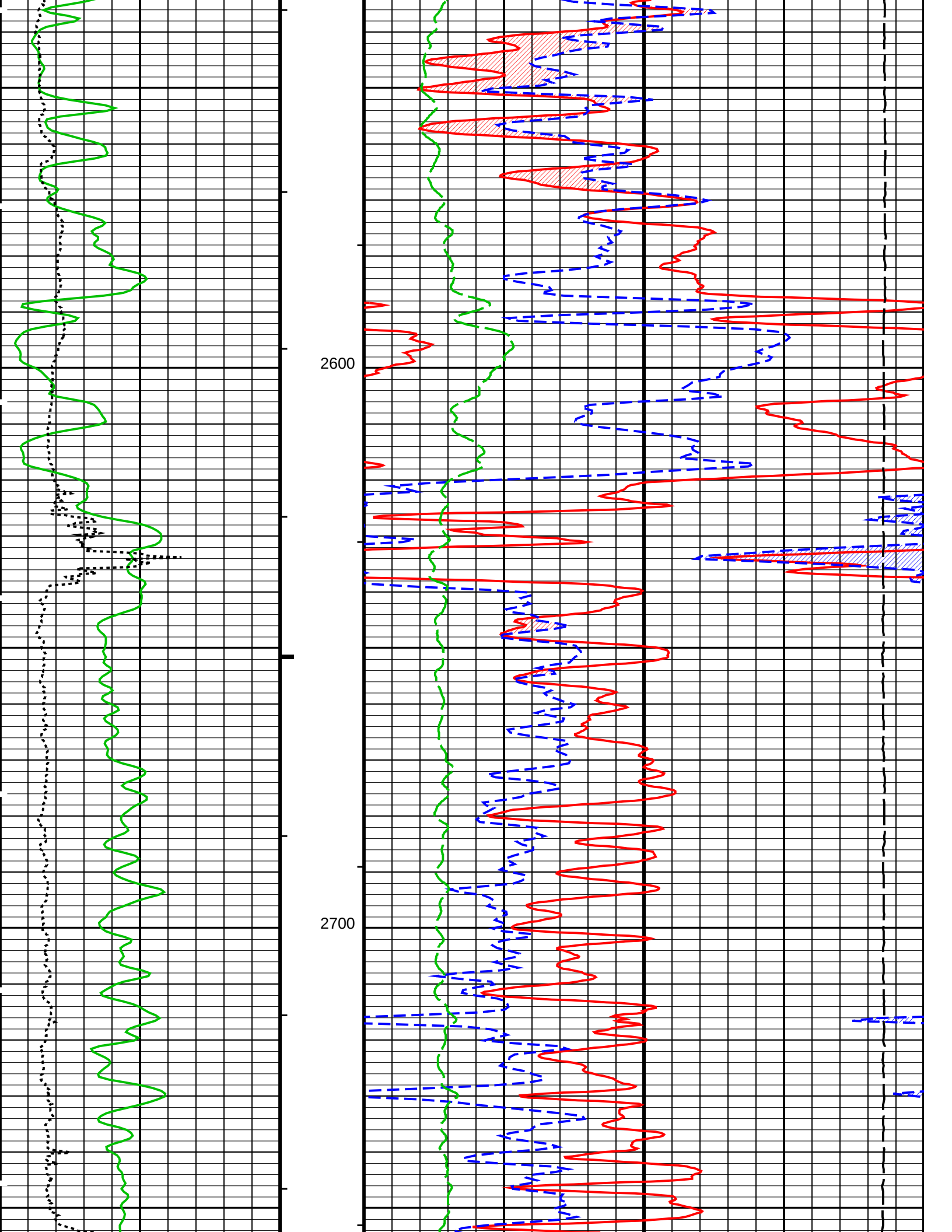
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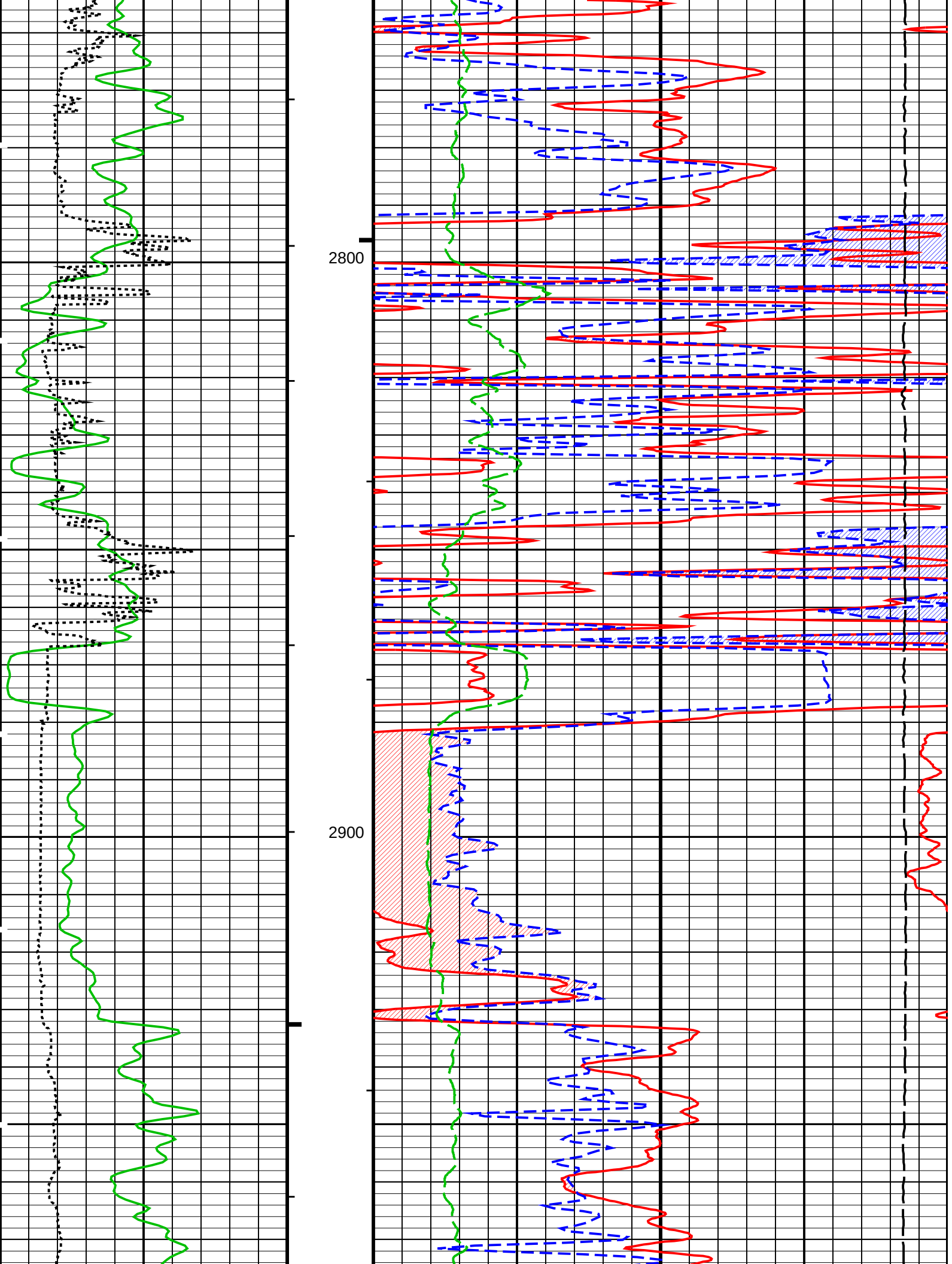
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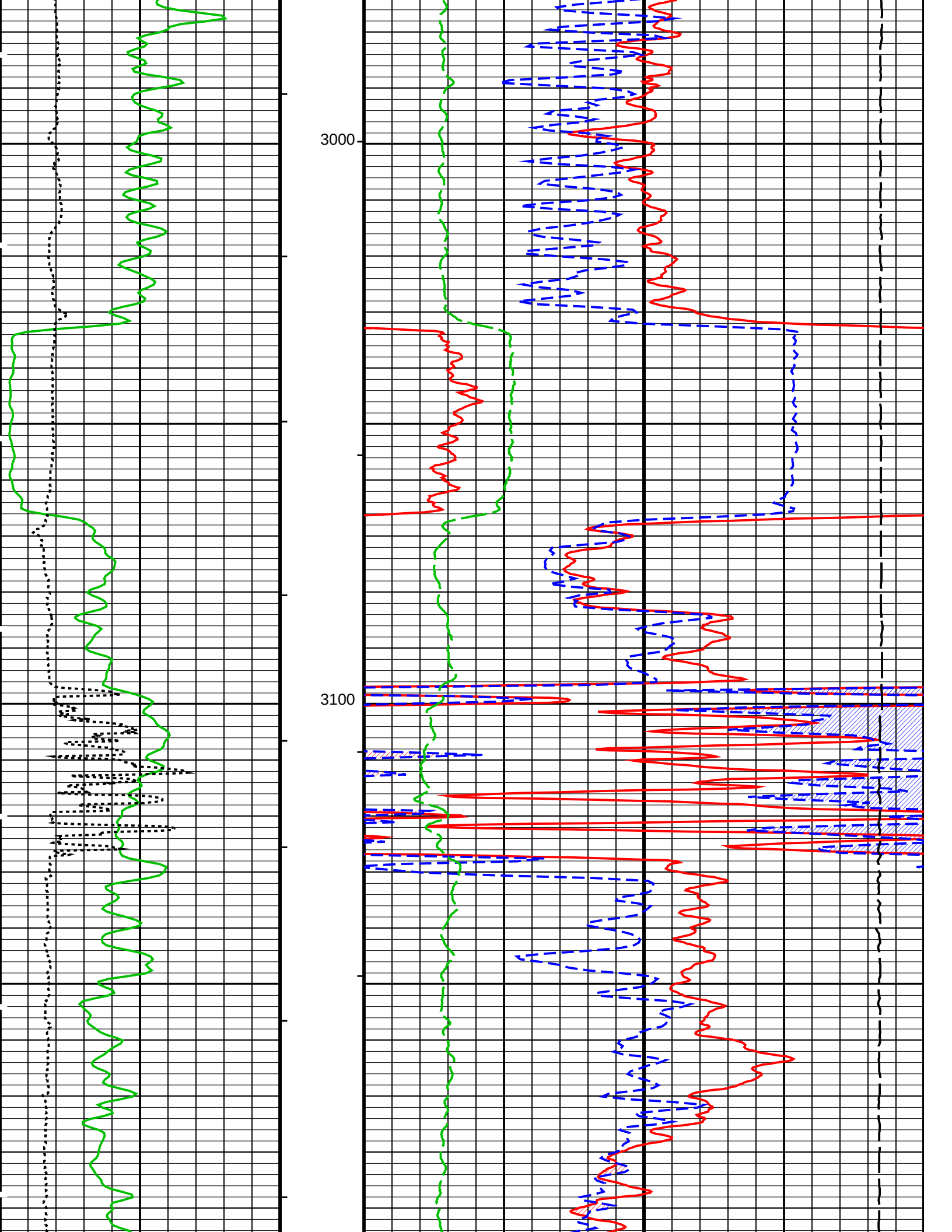
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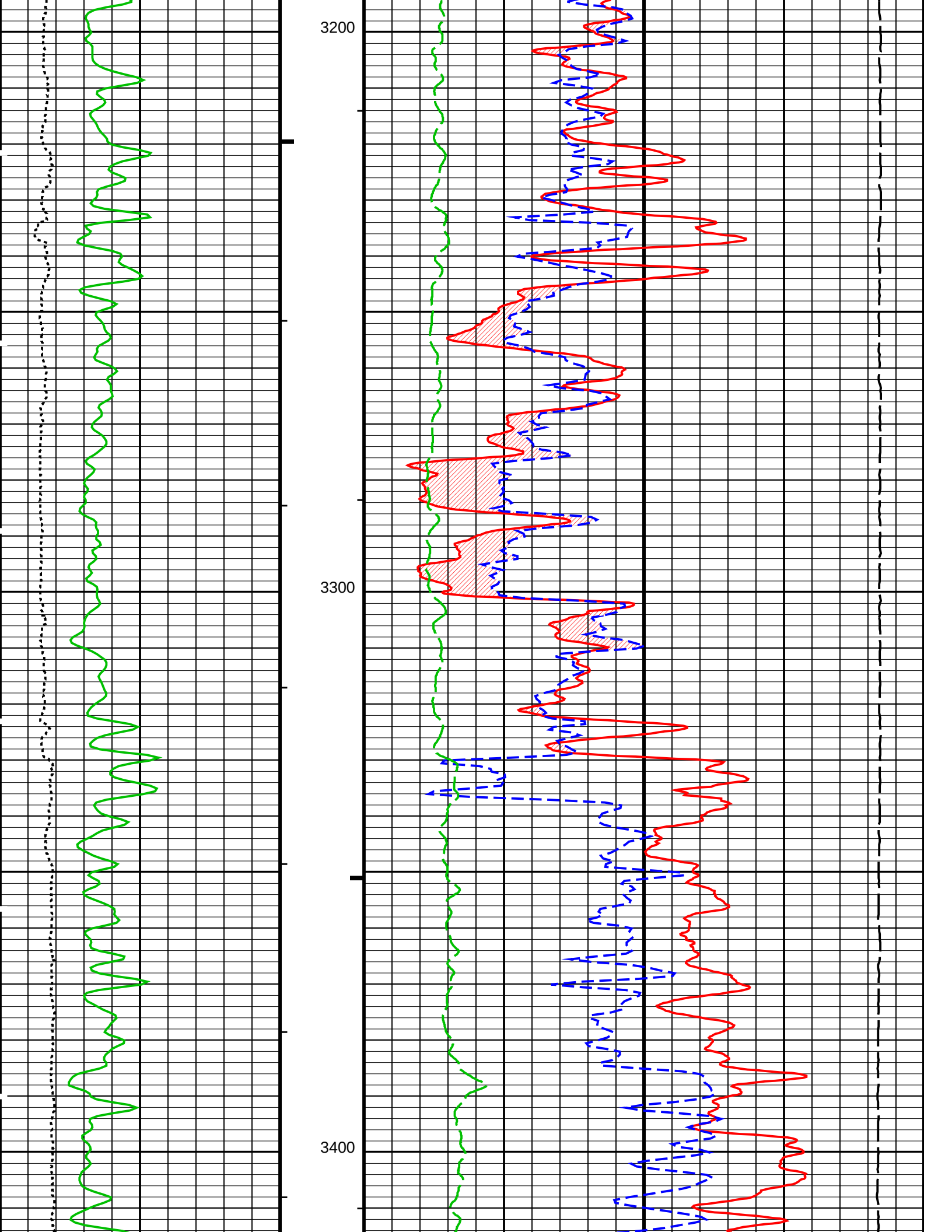
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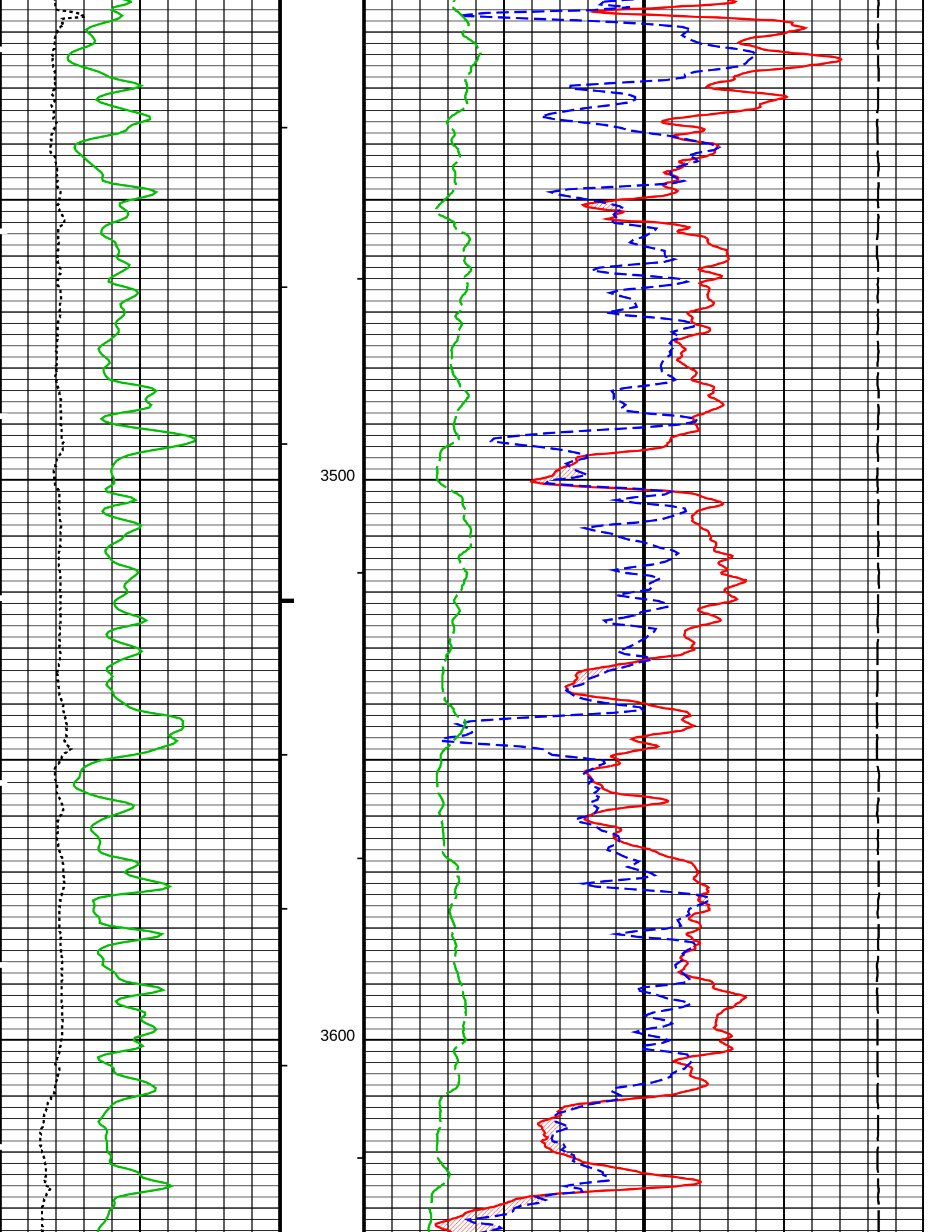
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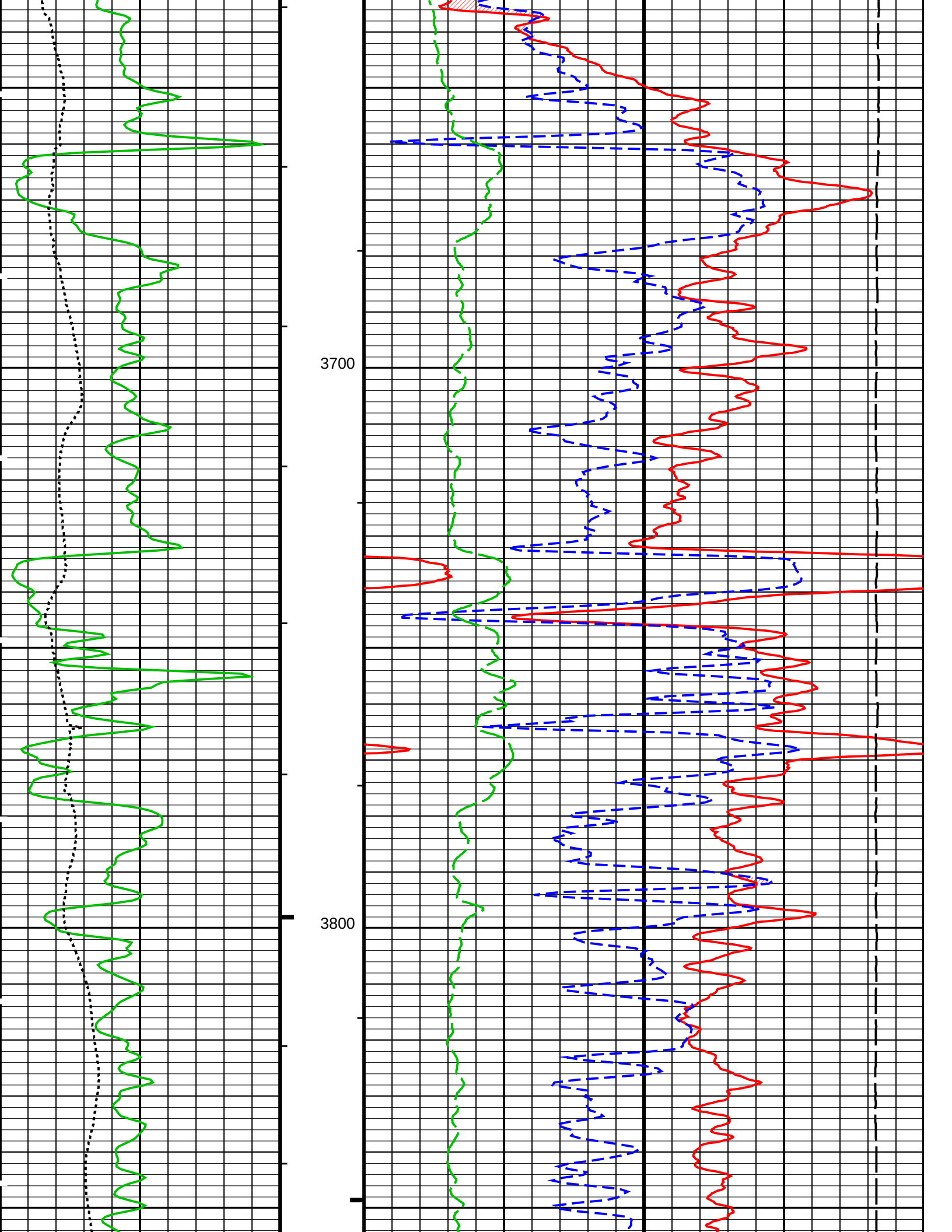
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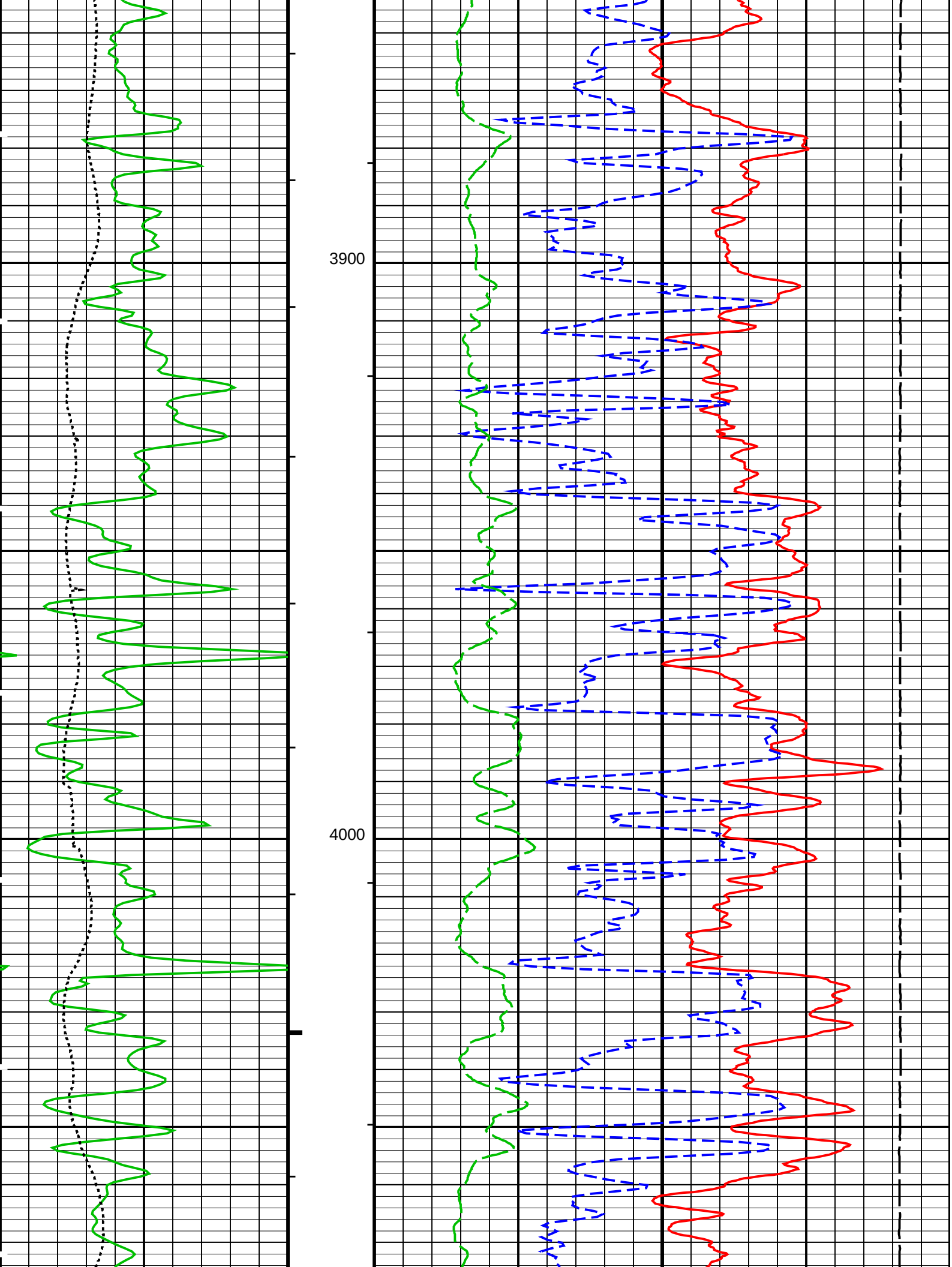
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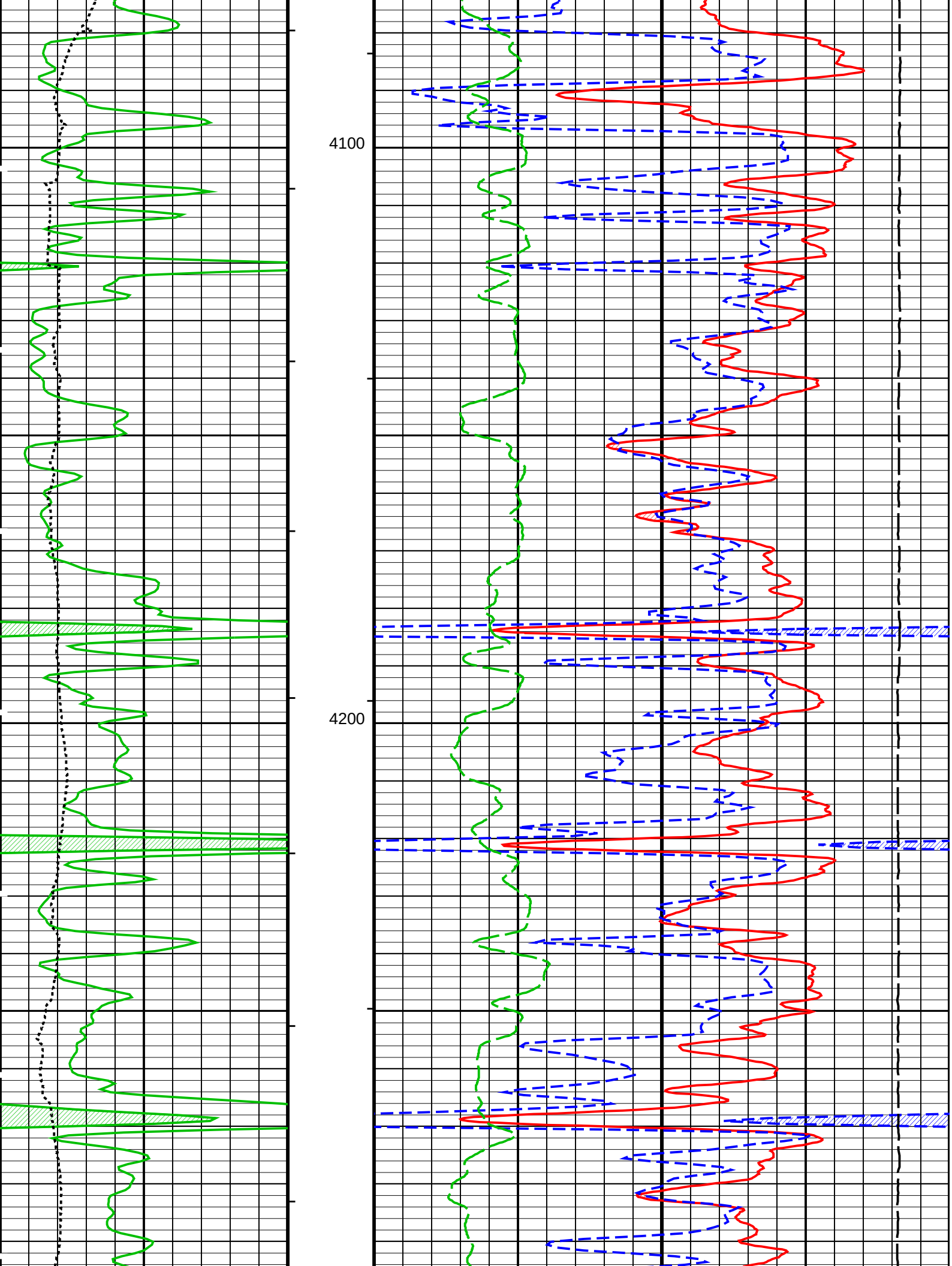
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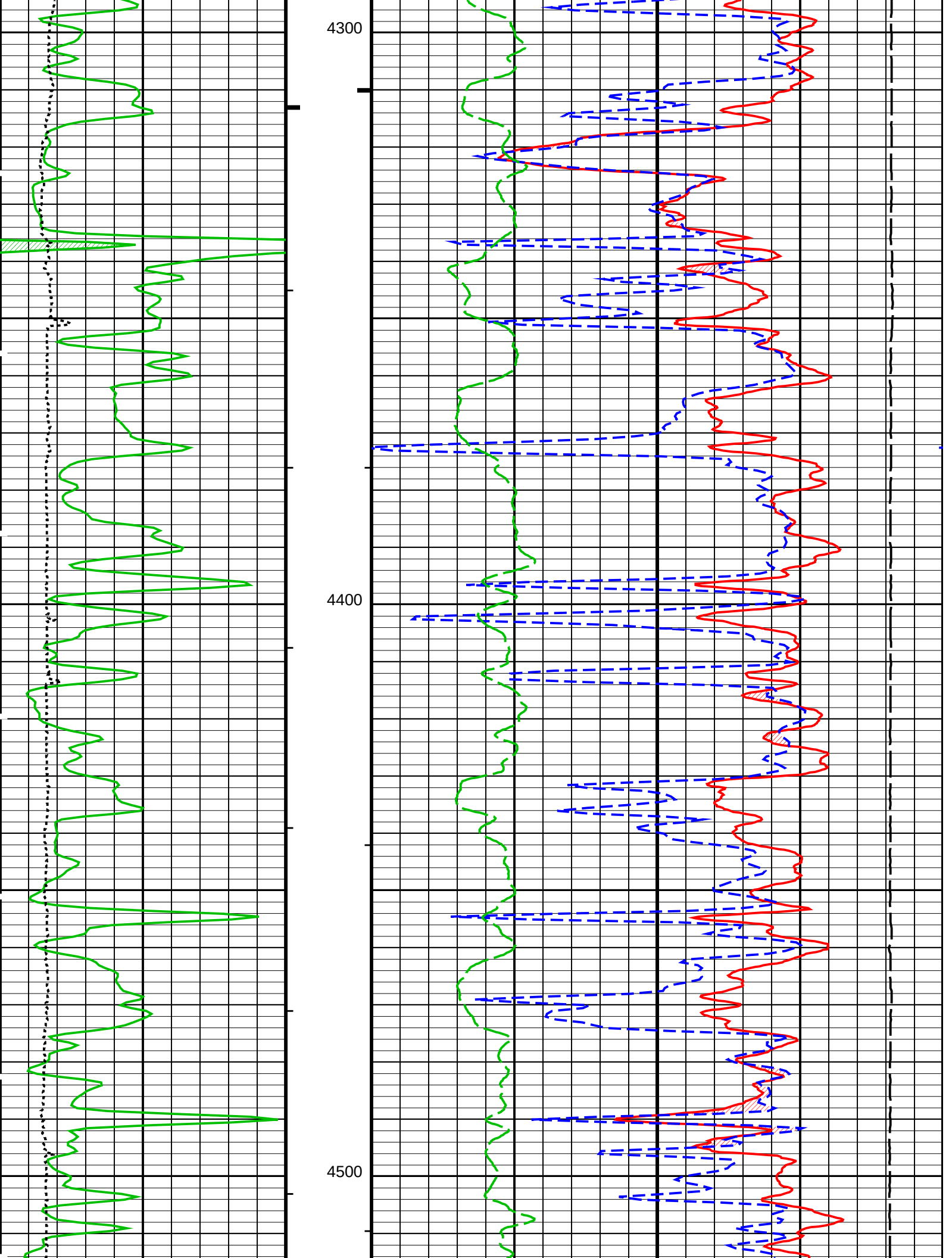
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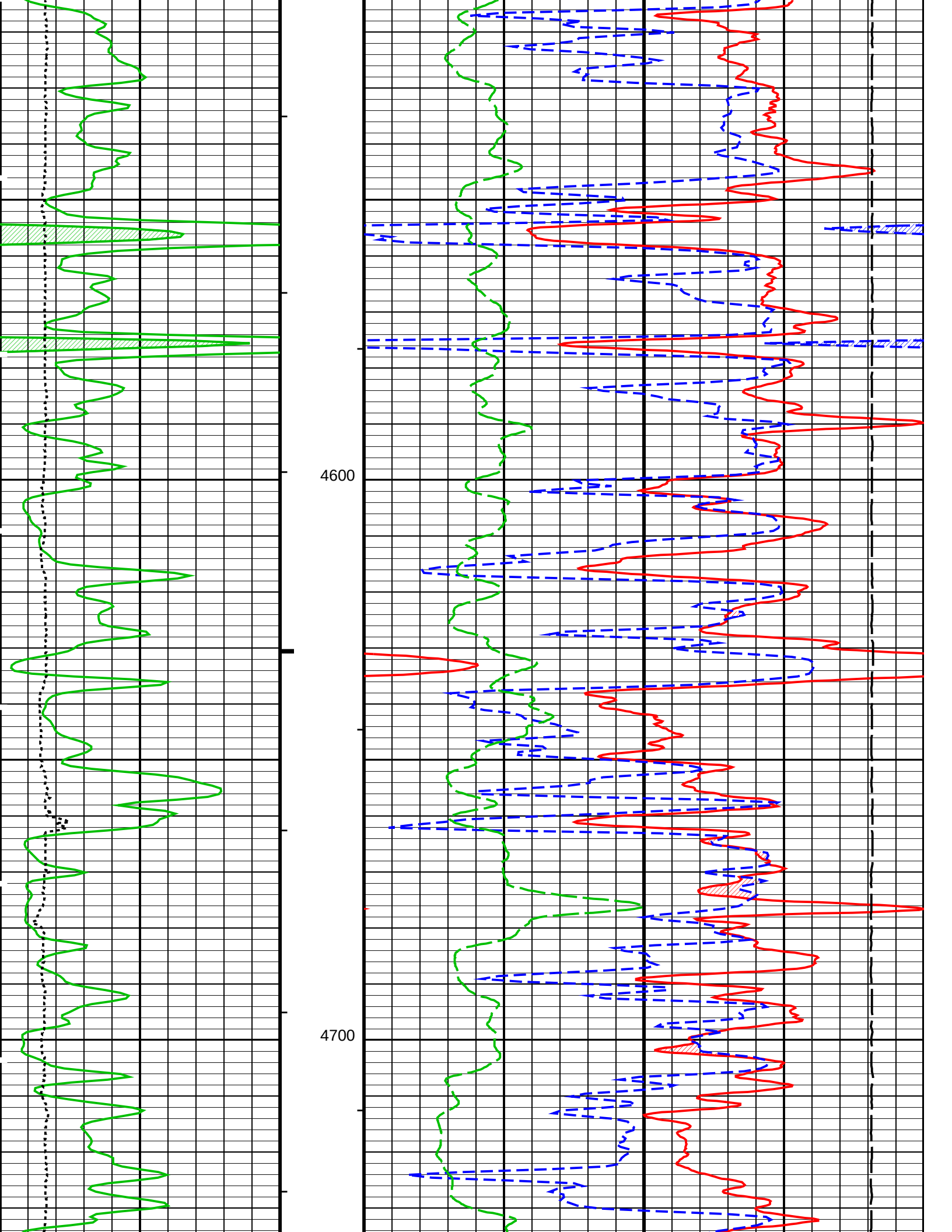
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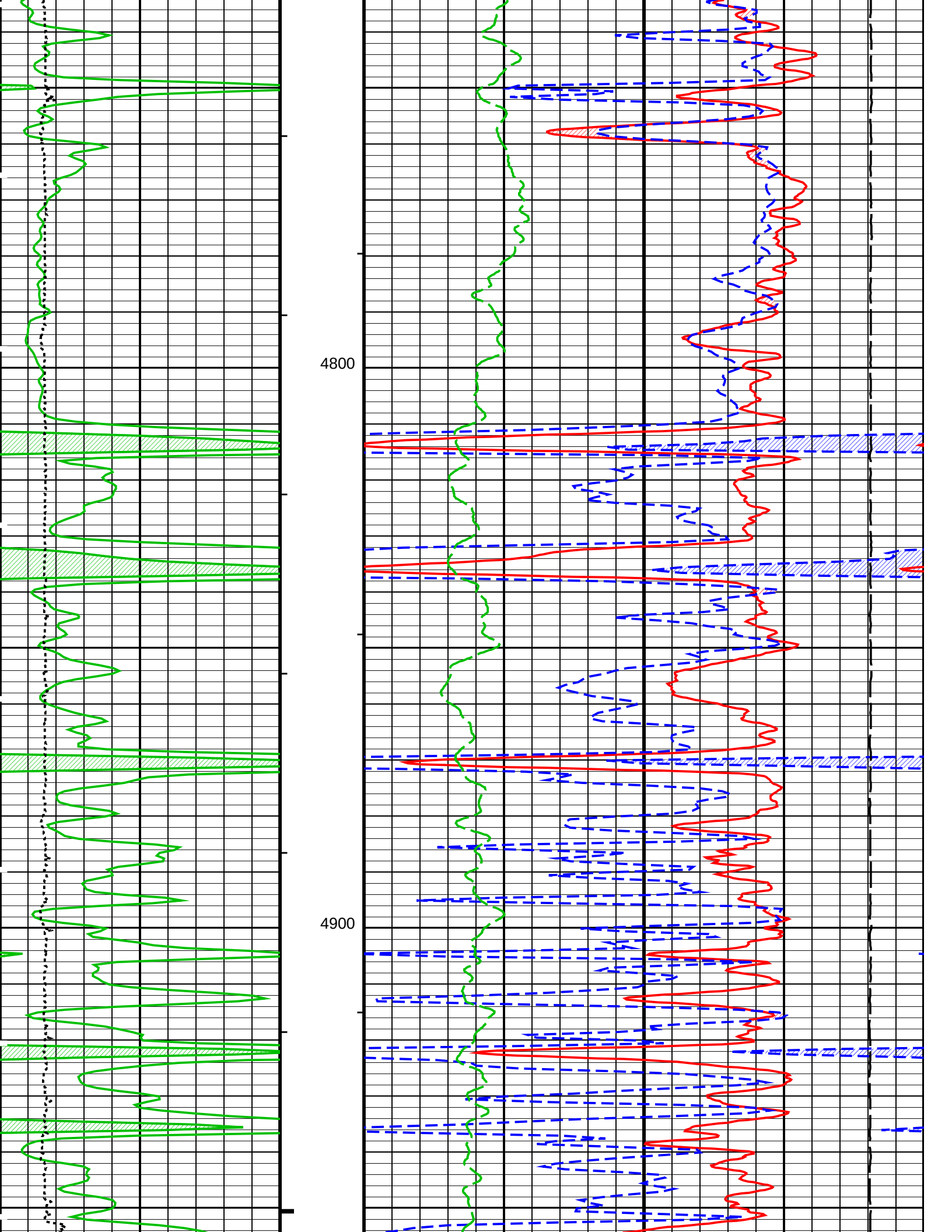
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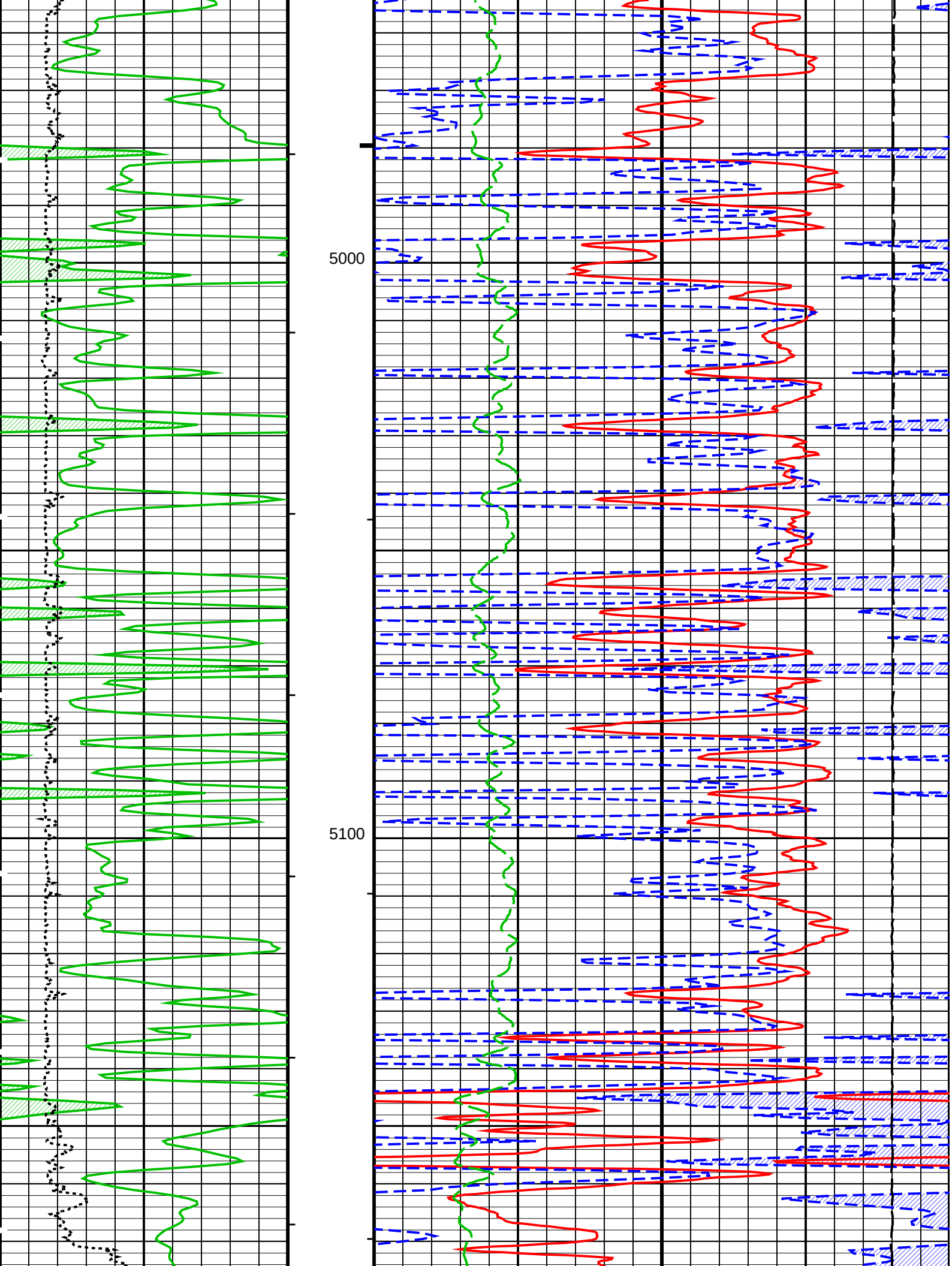
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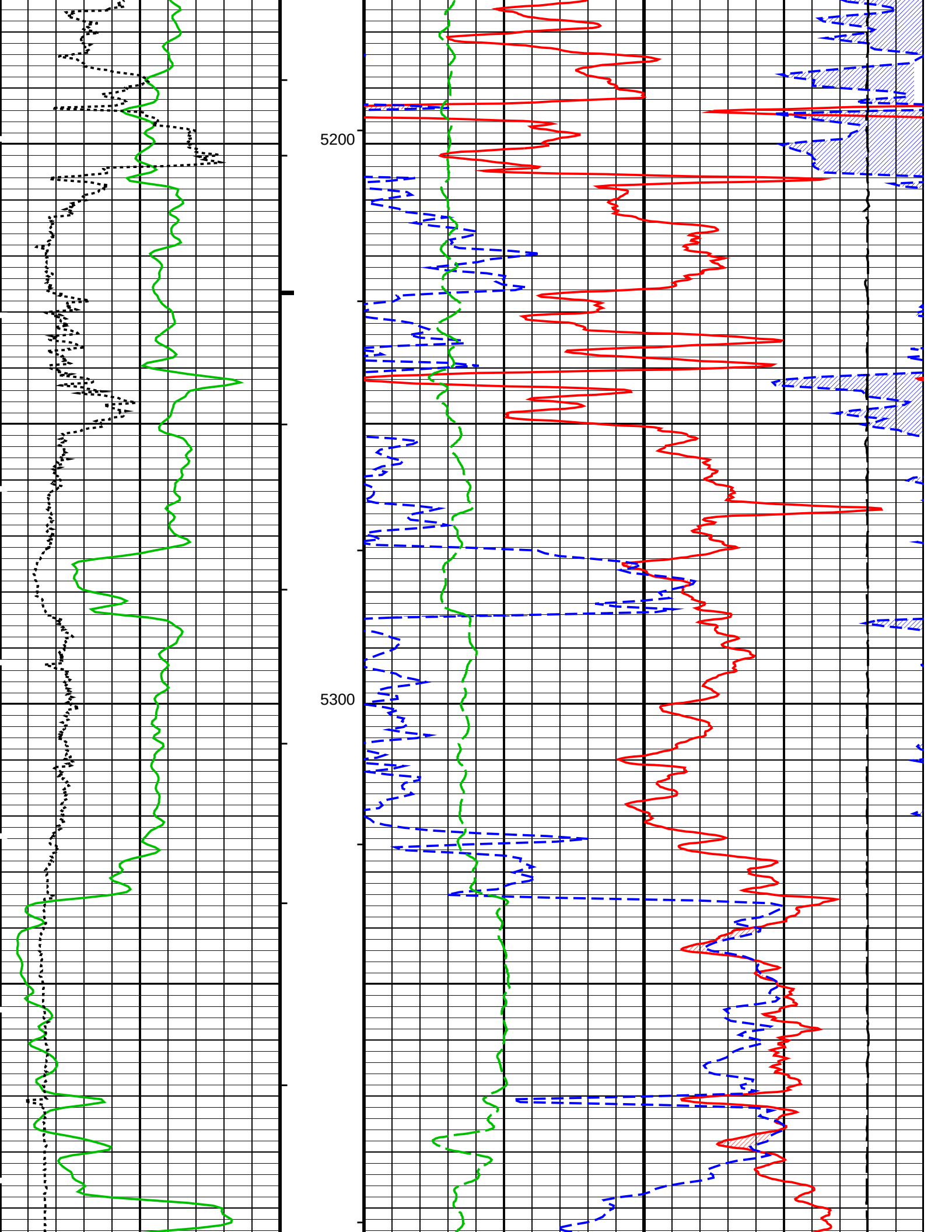
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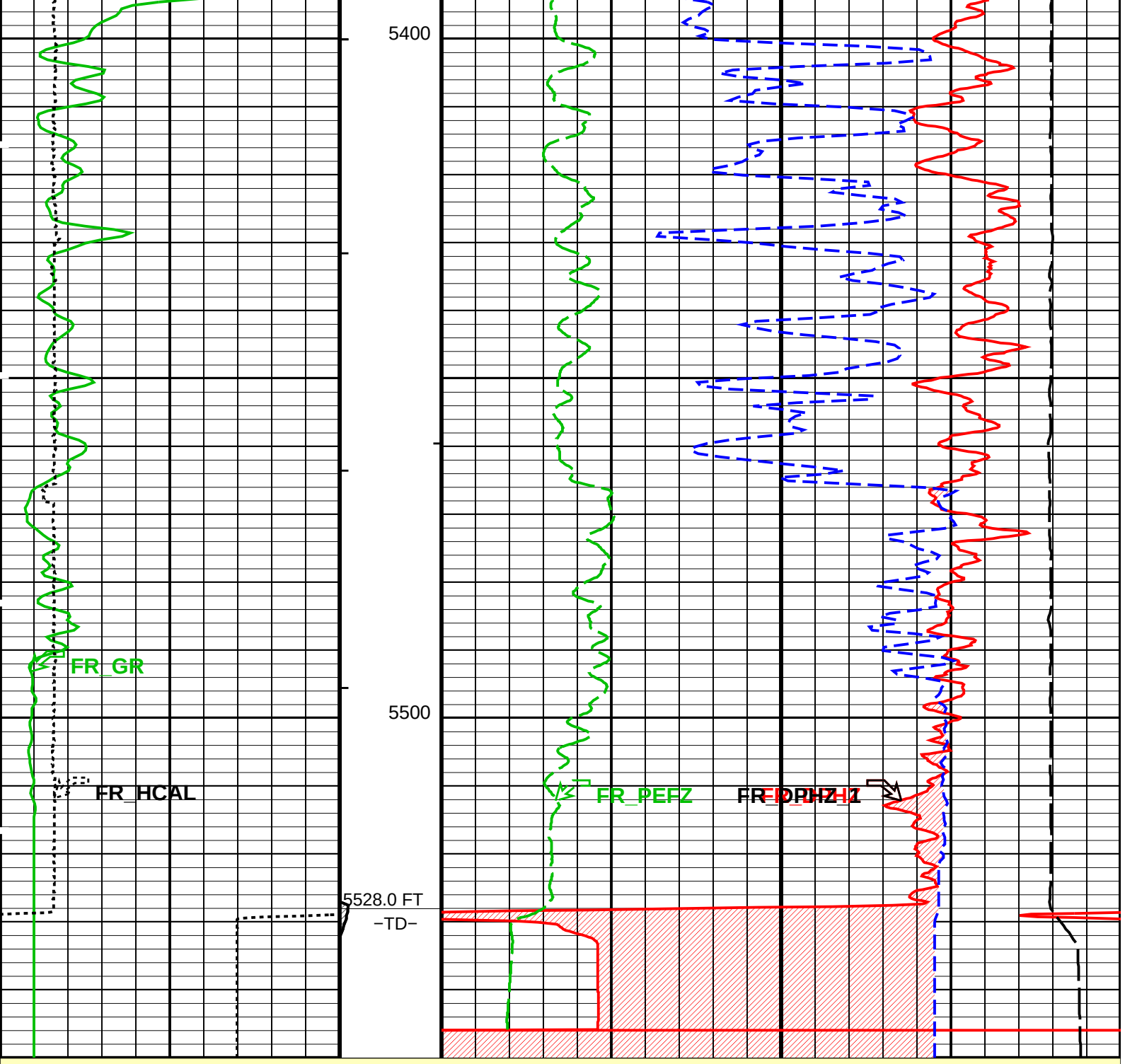


MAIN PASS: * PLATFORM EXPRESS − NUCLEAR POROSITY ***

Gamma Ray Backup	Cable Drag	Std. Res. Density Porosity (DPHZ) 0.3 (V/V) −0.1
Gamma Ray (GR) 0 (GAPI) 200	Tool/Tot. Drag	Alpha Processed Neutron Porosity (NPOR) 0.3 (V/V) −0.1
Caliper (HCAL) 6 (IN) 16	Stuck Stretch (STIT) 0 (F) 50	Std. Res. Formation Pe (PEFZ) 0 (−−−−) 10 / Tension (TENS) 10000 (LBF) 0
		Gas Effect
		NPOR Backup

PIP SUMMARY

⊢ Integrated Hole Volume Minor Pip Every 10 F3

Integrated Hole Volume Major Pip Every 100 F3
Integrated Cement Volume Minor Pip Every 10 F3
Integrated Cement Volume Major Pip Every 100 F3
Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	AIT−M: Array Induction Tool − M		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
MATR	Rock Matrix for Neutron Porosity Corrections	LIME	
SHT	Surface Hole Temperature	68.000	degF
	HILTB−FTB: High resolution Integrated Logging Tool−DTS		
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FD	Fluid Density	1.000	g/cm3
FSCO	Formation Salinity Correction Option	NO	
GCLF	Germany Coal−like Formation Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
HSCO	Hole Size Correction Option	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	LIME	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2.710	g/cm3
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	HIRES	
NSAR	HRDD Depth Sampling Rate	1.000	in
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	68.000	degF
SOCN	Standoff Distance	0.125	in
SOCO	Standoff Correction Option	YES	
	HOLEV: Integrated Hole/Cement Volume		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
MATR	Rock Matrix for Neutron Porosity Corrections	LIME	
SHT	Surface Hole Temperature	68.000	degF
	PERT: Preliminary Evaluation − Real Time		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
MATR	Rock Matrix for Neutron Porosity Corrections	LIME	
SHT	Surface Hole Temperature	68.000	degF
	STI: Stuck Tool Indicator		
STKT	STI Stuck Threshold	2.500	ft
TDD	Total Depth − Driller	5530.0	ft
TDL	Total Depth − Logger	5528.0	ft
	System and Miscellaneous		
BS	Bit Size	7.875	in
BSAL	Borehole Salinity		
CSIZ	Current Casing Size	8.625	in
CWEI	Casing Weight	24.000	lbm/ft
DFD	Drilling Fluid Density	9.200	lbm/gal
FSAL	Formation Salinity		
MST	Mud Sample Temperature	106.2	degF
RMFS	Resistivity of Mud Filtrate Sample	0.587	ohm.m

Format: PORO Vertical Scale: 5" per 100' Graphics File Created: 02−Aug−2011 18:56

OP System Version: 18C0−147

AITM	18C0−147	HILTD	18C0−147
DTCH	18C0−147		

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_007LUP	FN:6	PRODUCER	02−Aug−2011 16:19	5550.0 FT	411.0 FT
DEFAULT	AIT_TLD_MCFL_CNL_005PUP	FN:4	PRODUCER	02−Aug−2011 16:10	5545.5 FT	4904.0 FT

Schlumberger

POROSITY REPEAT ANALYSIS

MAXIS Field Log

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_007LUP	FN:6	PRODUCER	02−Aug−2011 16:19	5550.0 FT	411.0 FT
DEFAULT	AIT_TLD_MCFL_CNL_005PUP	FN:4	PRODUCER	02−Aug−2011 16:10	5545.5 FT	4904.0 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 1798.91 ft3

Cement Volume = 958.68 ft3 (assuming 5.50 in casing O.D.)

Computed from 5527.5 ft to 435.0 ft

OP System Version: 18C0−147

AITM	18C0−147	HILTD	18C0−147
DTCH	18C0−147		

PIP SUMMARY

Integrated Hole Volume Minor Pip Every 10 F3

Integrated Hole Volume Major Pip Every 100 F3

Integrated Cement Volume Minor Pip Every 10 F3

Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

HCAL_REP Curve (HCAL_REP)
6 (IN) 16

GR_REP Curve (GR_REP)
0 (GAPI) 200

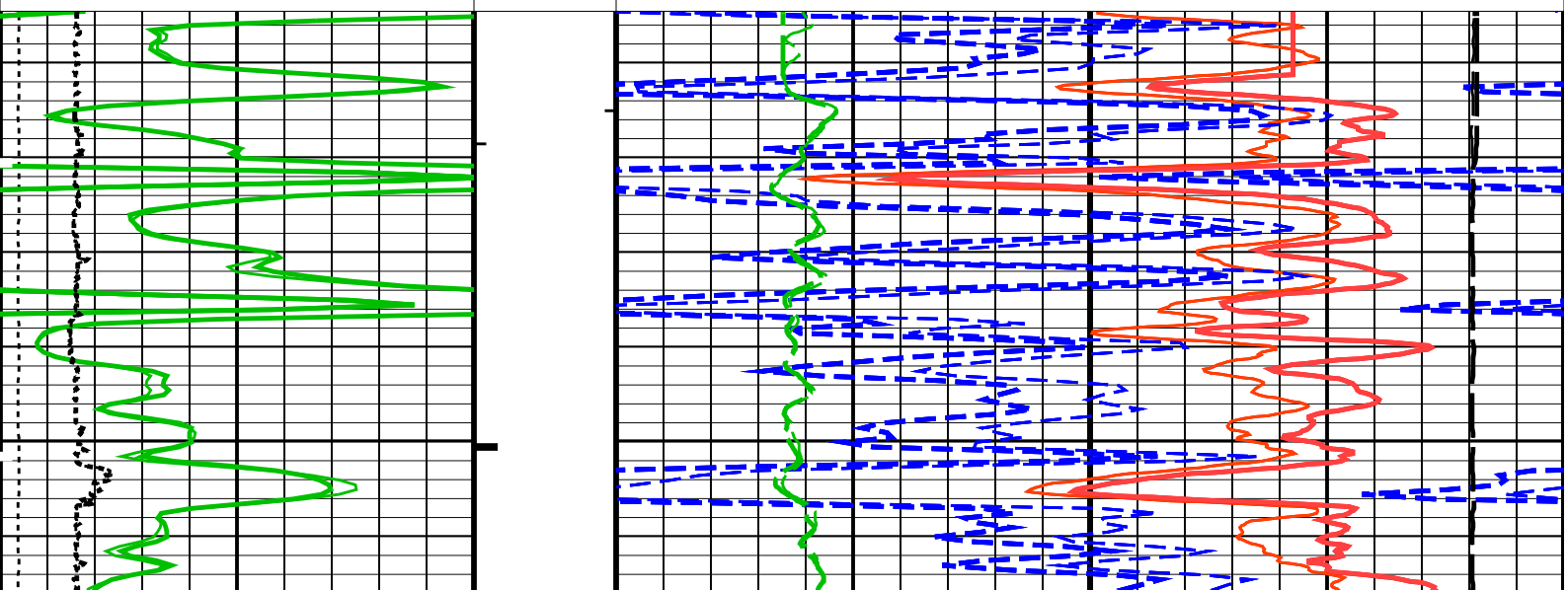
Cable Speed (CS)
0 (F/HR) 50000

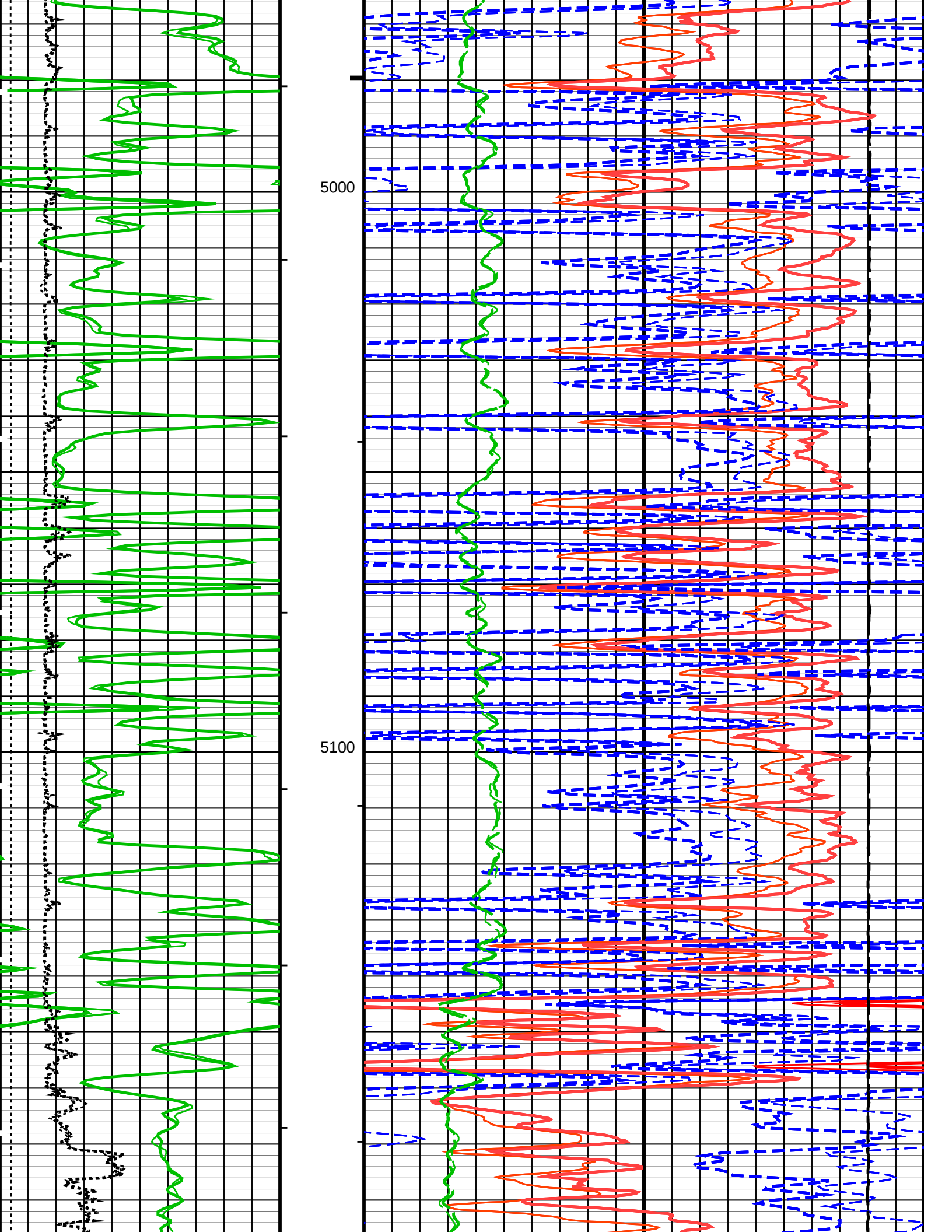
PEFZ_REP Curve (PEFZ_REP)
0 (−−−−) 10

TENS_REP Curve (TENS_REP)
10000 (LBF) 0

NPOR_REP Curve (NPOR_REP)
0.3 (V/V) −0.1

DPHZ_REP Curve (DPHZ_REP)
0.3 (V/V) −0.1

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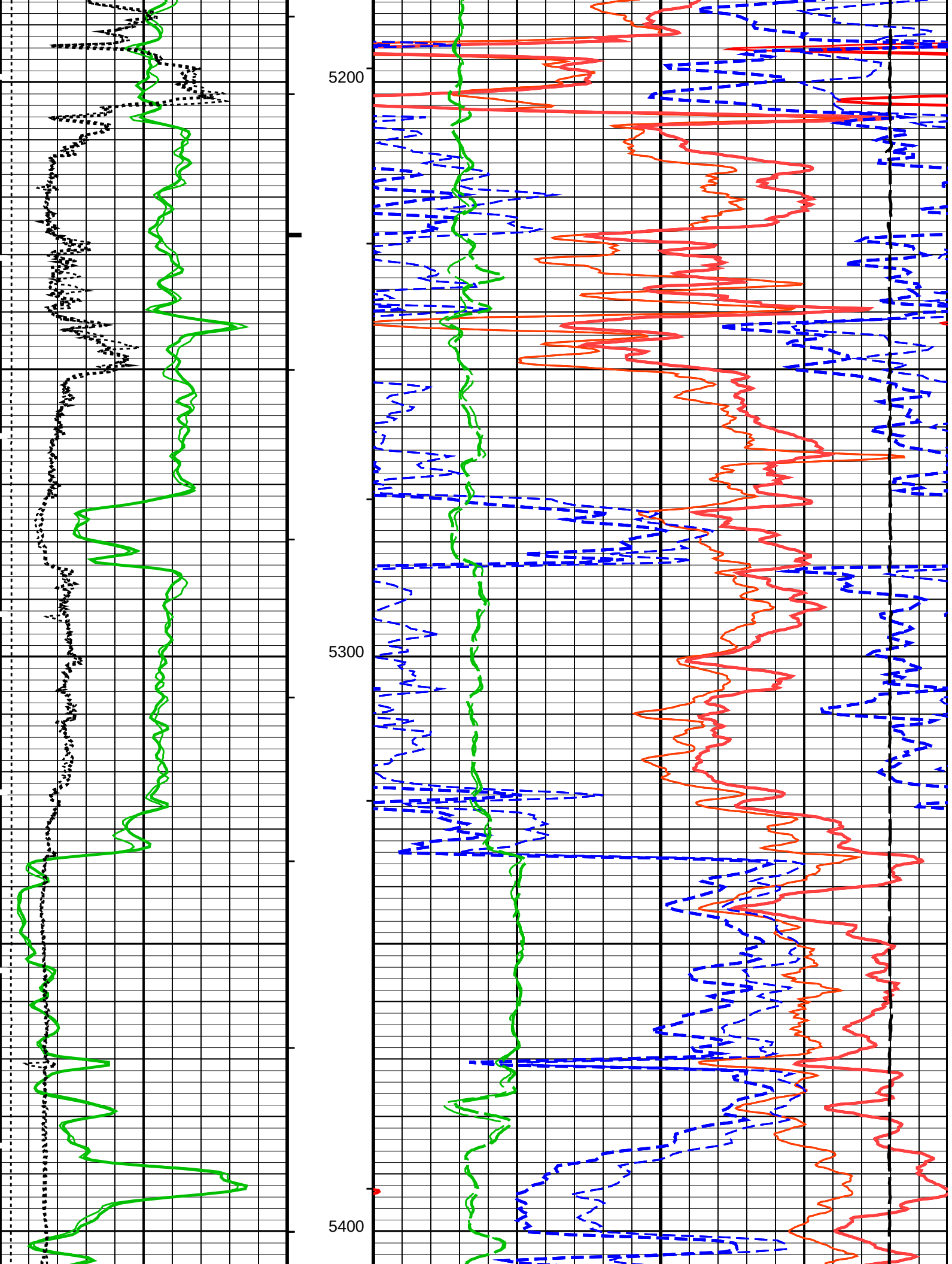
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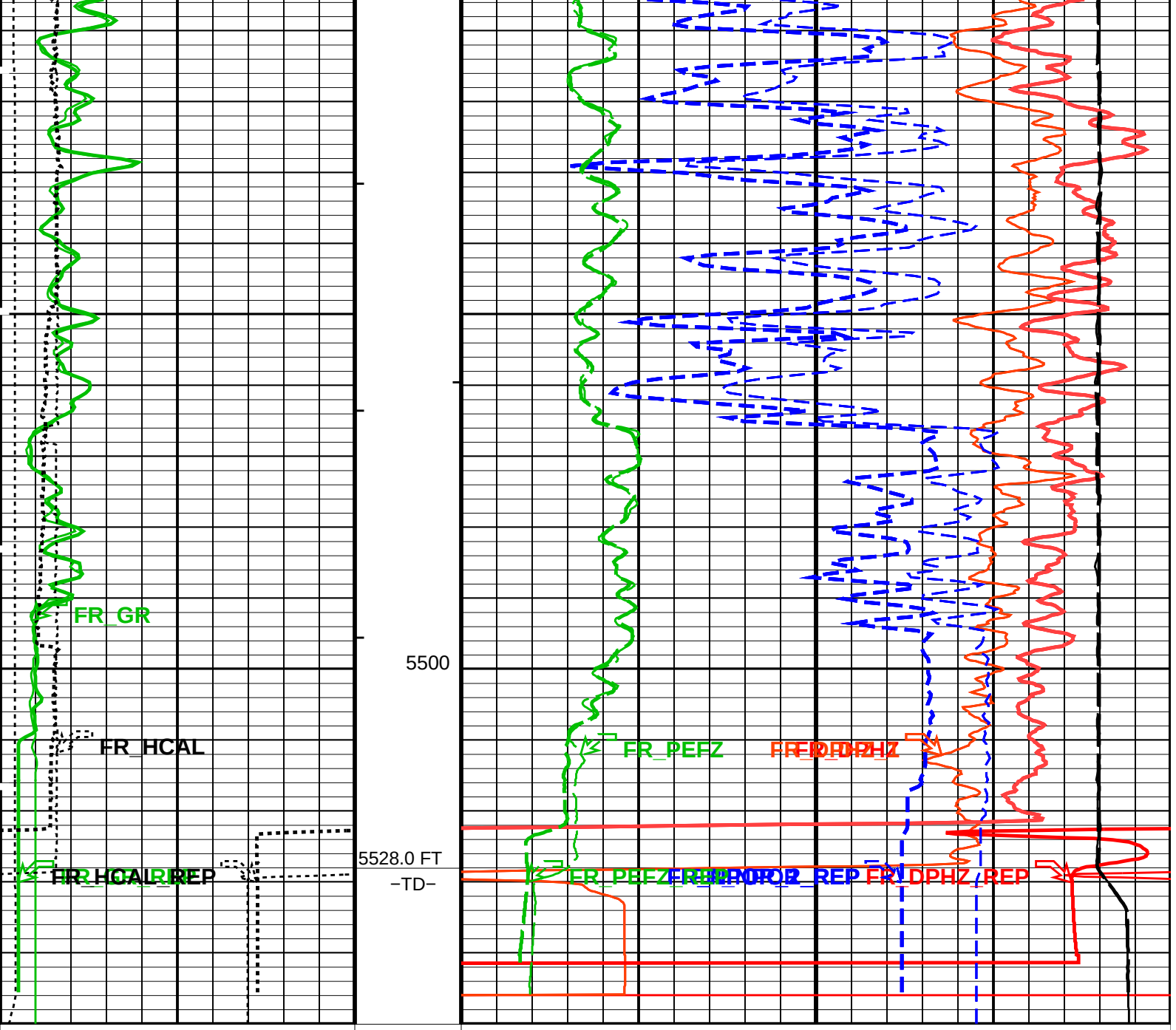

Cable Speed (CS)		
0	(F/HR)	50000
DPHZ_REP Curve (DPHZ_REP)		
0.3	(V/V)	−0.1
GR_REP Curve (GR_REP)		
0	(GAPI)	200
NPOR_REP Curve (NPOR_REP)		
0.3	(V/V)	−0.1
HCAL_REP Curve (HCAL_REP)		
6	(IN)	16
PEFZ_REP Curve (PEFZ_REP)		
0	(−−−−)	10
TENS_REP Curve (TENS_REP)		
10000	(LBF)	0

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 10 F3
- Integrated Hole Volume Major Pip Every 100 F3
- Integrated Cement Volume Minor Pip Every 10 F3
- Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
AIT−M: Array Induction Tool − M			
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft

MATR	Rock Matrix for Neutron Porosity Corrections	LIME	
SHT	Surface Hole Temperature	68.000	degF
HILTB−FTB: High resolution Integrated Logging Tool−DTS			
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FD	Fluid Density	1.000	g/cm3
FSCO	Formation Salinity Correction Option	NO	
GCLF	Germany Coal−like Formation Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
HSCO	Hole Size Correction Option	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	LIME	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2.710	g/cm3
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	HIRES	
NSAR	HRDD Depth Sampling Rate	1.000	in
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	68.000	degF
SOCN	Standoff Distance	0.125	in
SOCO	Standoff Correction Option	YES	
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
MATR	Rock Matrix for Neutron Porosity Corrections	LIME	
SHT	Surface Hole Temperature	68.000	degF
PERT: Preliminary Evaluation − Real Time			
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
MATR	Rock Matrix for Neutron Porosity Corrections	LIME	
SHT	Surface Hole Temperature	68.000	degF
STI: Stuck Tool Indicator			
TDL	Total Depth − Logger	5528.0	ft
System and Miscellaneous			
BS	Bit Size	7.875	in
BSAL	Borehole Salinity		
CSIZ	Current Casing Size	8.625	in
CWEI	Casing Weight	24.000	lbm/ft
DFD	Drilling Fluid Density	9.200	lbm/gal
FSAL	Formation Salinity		
MST	Mud Sample Temperature	106.2	degF
RMFS	Resistivity of Mud Filtrate Sample	0.587	ohm.m

Format: PORO_REP Vertical Scale: 5" per 100’ Graphics File Created: 02−Aug−2011 18:56

OP System Version: 18C0−147

AITM	18C0−147	HILTD	18C0−147
DTCH	18C0−147		

Input DLIS Files

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DEFAULT	AIT_TLD_MCFL_CNL_005PUP	FN:4	PRODUCER	02−Aug−2011 16:10	5545.5 FT	4904.0 FT

Schlumberger

High Resolution 10"=100’

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_007LUP	FN:6	PRODUCER	02−Aug−2011 16:19	5550.0 FT	0.0 FT
DEFAULT	AIT_TLD_MCFL_CNL_007LUP	FN:6	PRODUCER	02−Aug−2011 16:19	5550.0 FT	0.0 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 217.53 ft3

Cement Volume = 113.01 ft3 (assuming 5.50 in casing O.D.)

Computed from 5527.5 ft to 4894.5 ft

OP System Version: 18C0−147

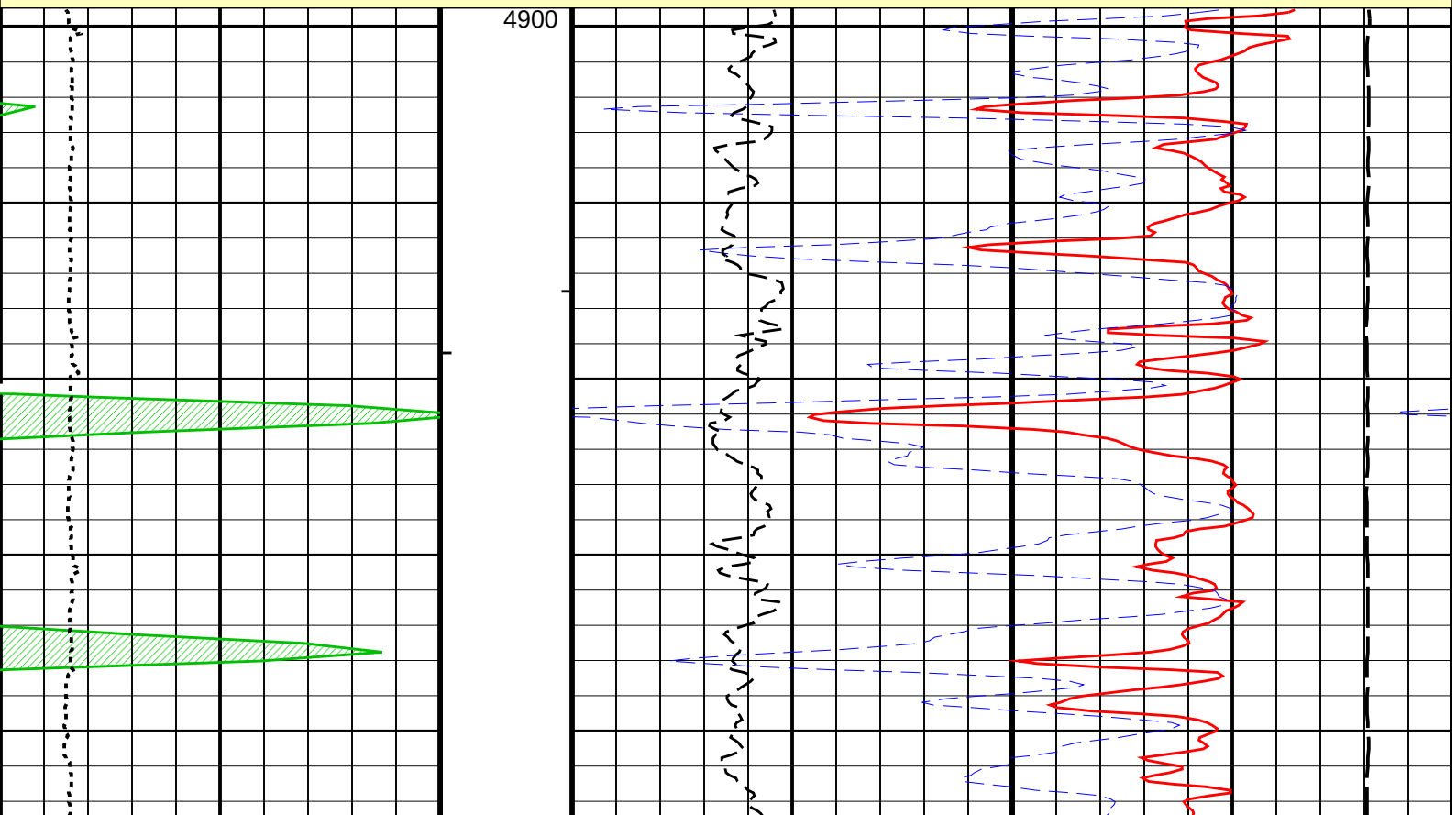
AITM	18C0−147	HILTD	18C0−147
DTCH	18C0−147		

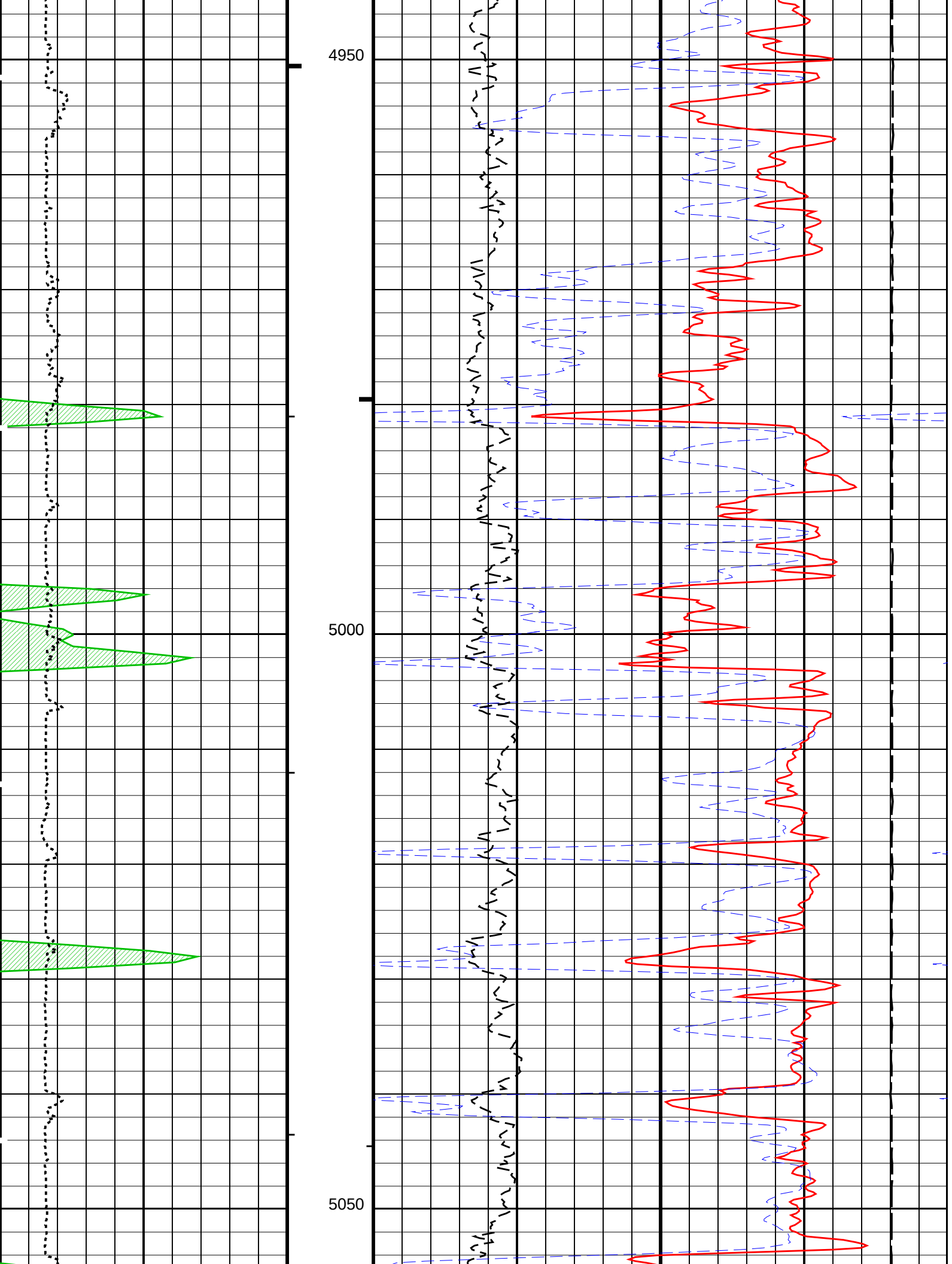
PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 10 F3
- Integrated Hole Volume Major Pip Every 100 F3
- Integrated Cement Volume Minor Pip Every 10 F3
- Integrated Cement Volume Major Pip Every 100 F3
- Time Mark Every 60 S

	Stuck Stretch (STIT)	H. Res. Formation Pe (PEF8)	Tension (TENS)
	0 (F) 50	0 (−−−−) 10	10000 (LBF) 0
Caliper (HCAL) 6 (IN) 16	Tool/Tot. Drag	HiRes NPOR (HNPO) 0.45 (V/V) −0.15	
Gamma Ray Backup	Cable Drag	H. Res. Density Porosity (DPH8) 0.45 (V/V) −0.15	

MAIN PASS: * PLATFORM EXPRESS − NUCLEAR POROSITY ***

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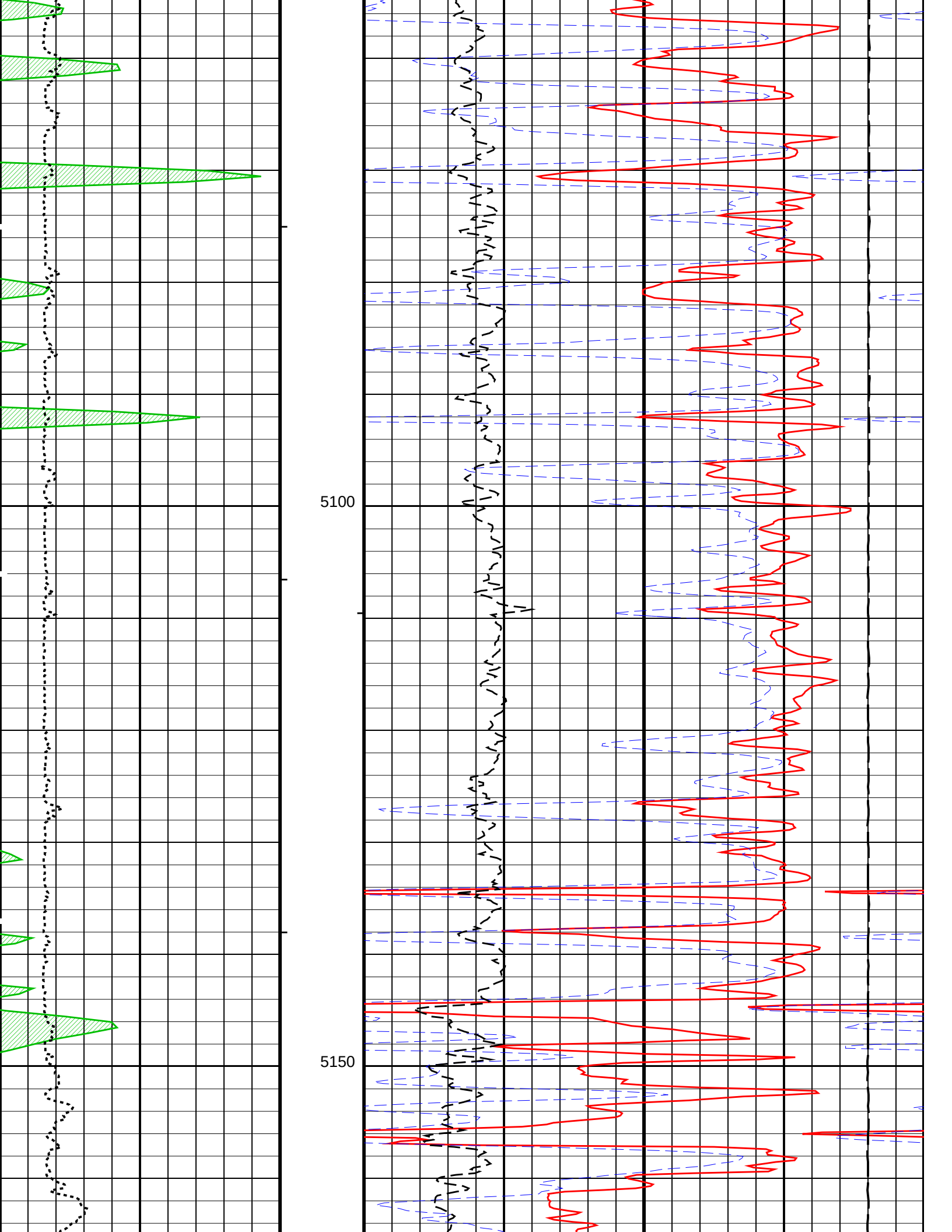
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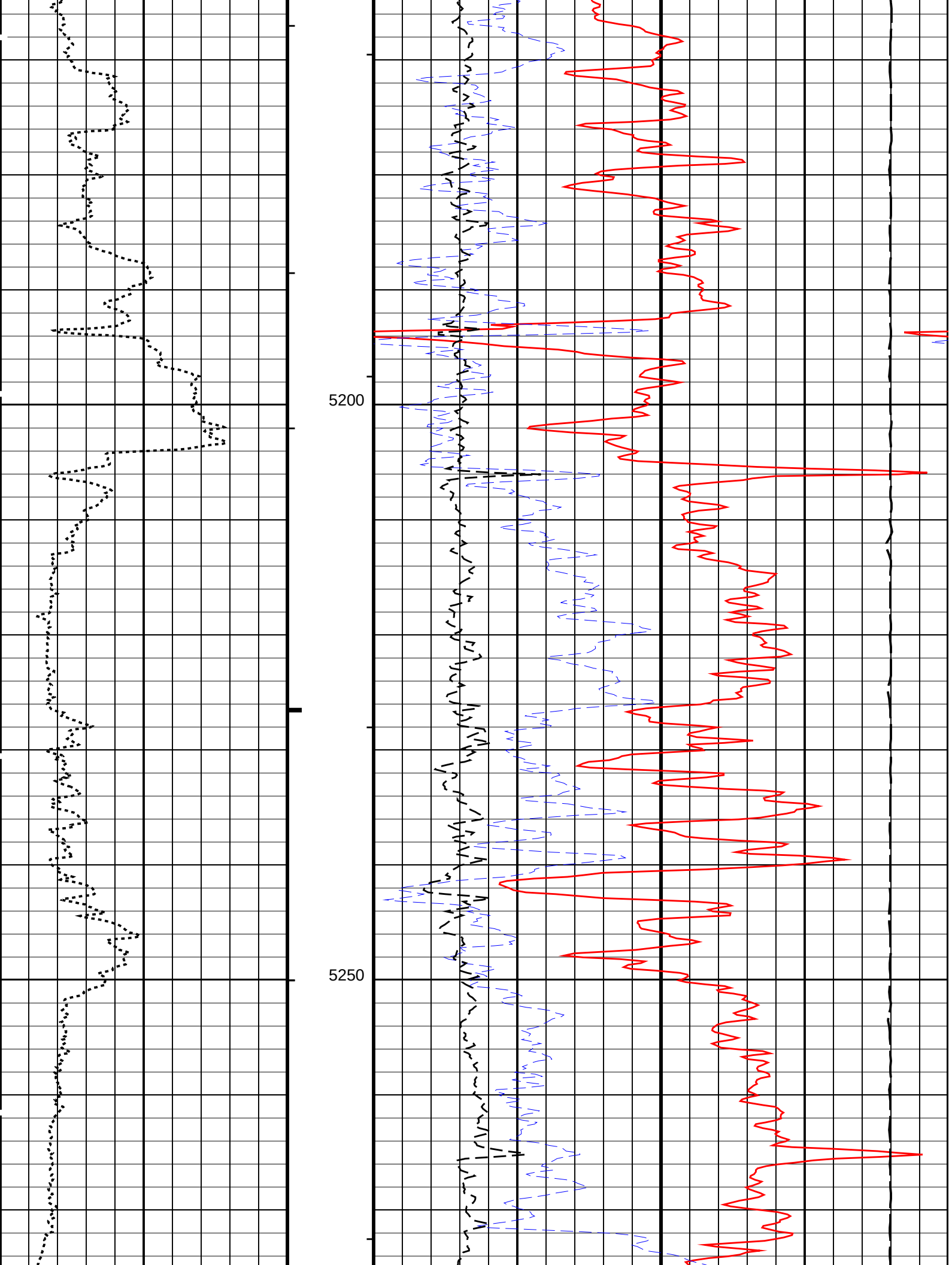
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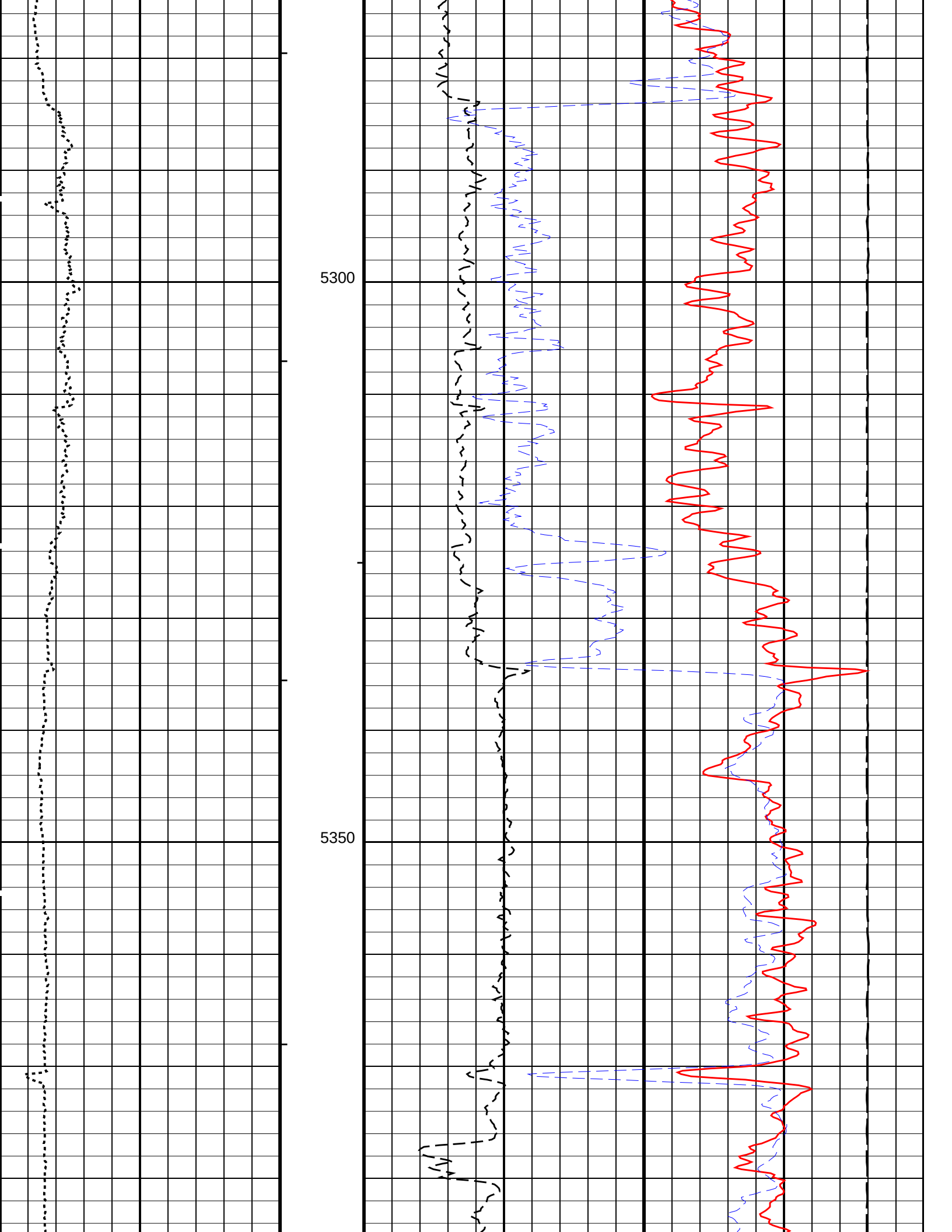
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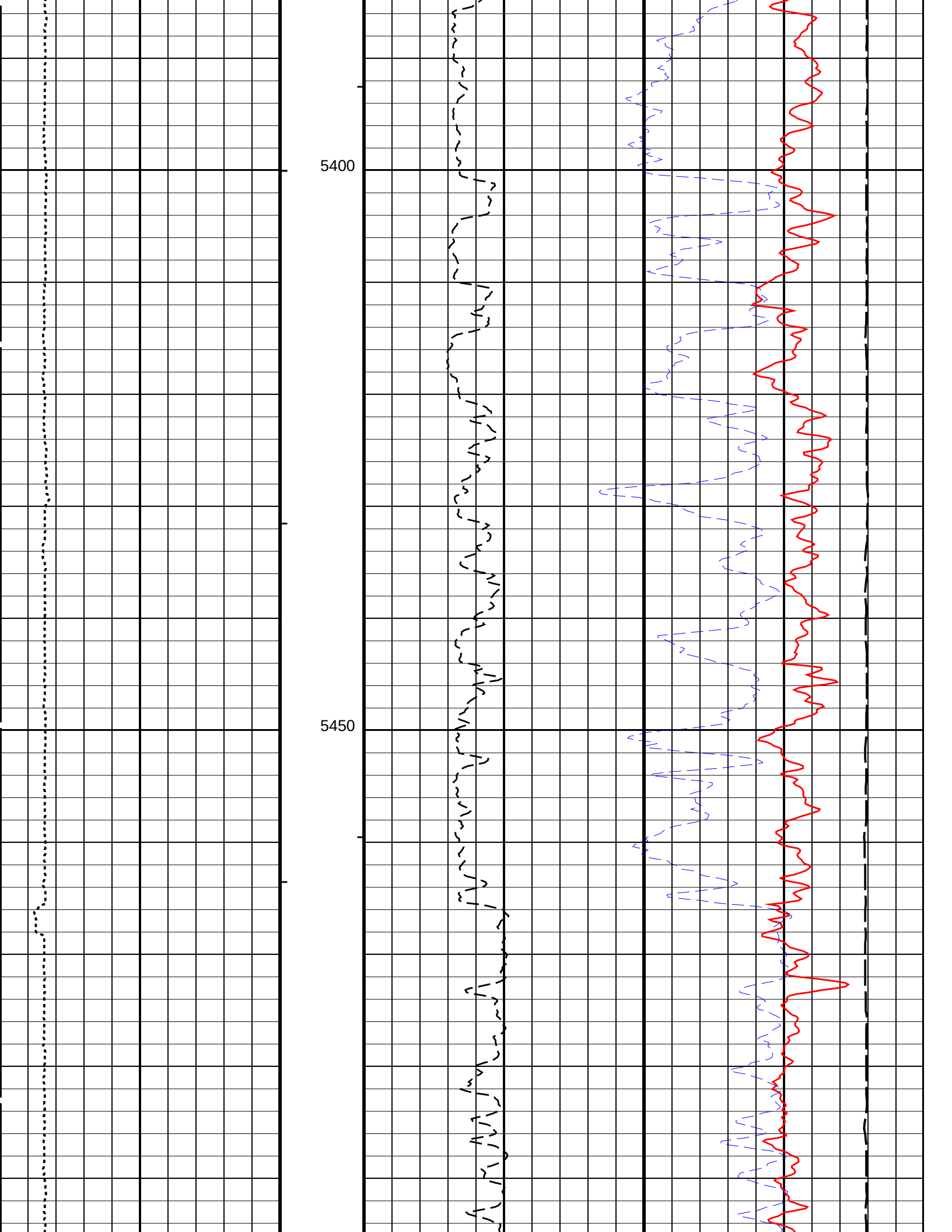
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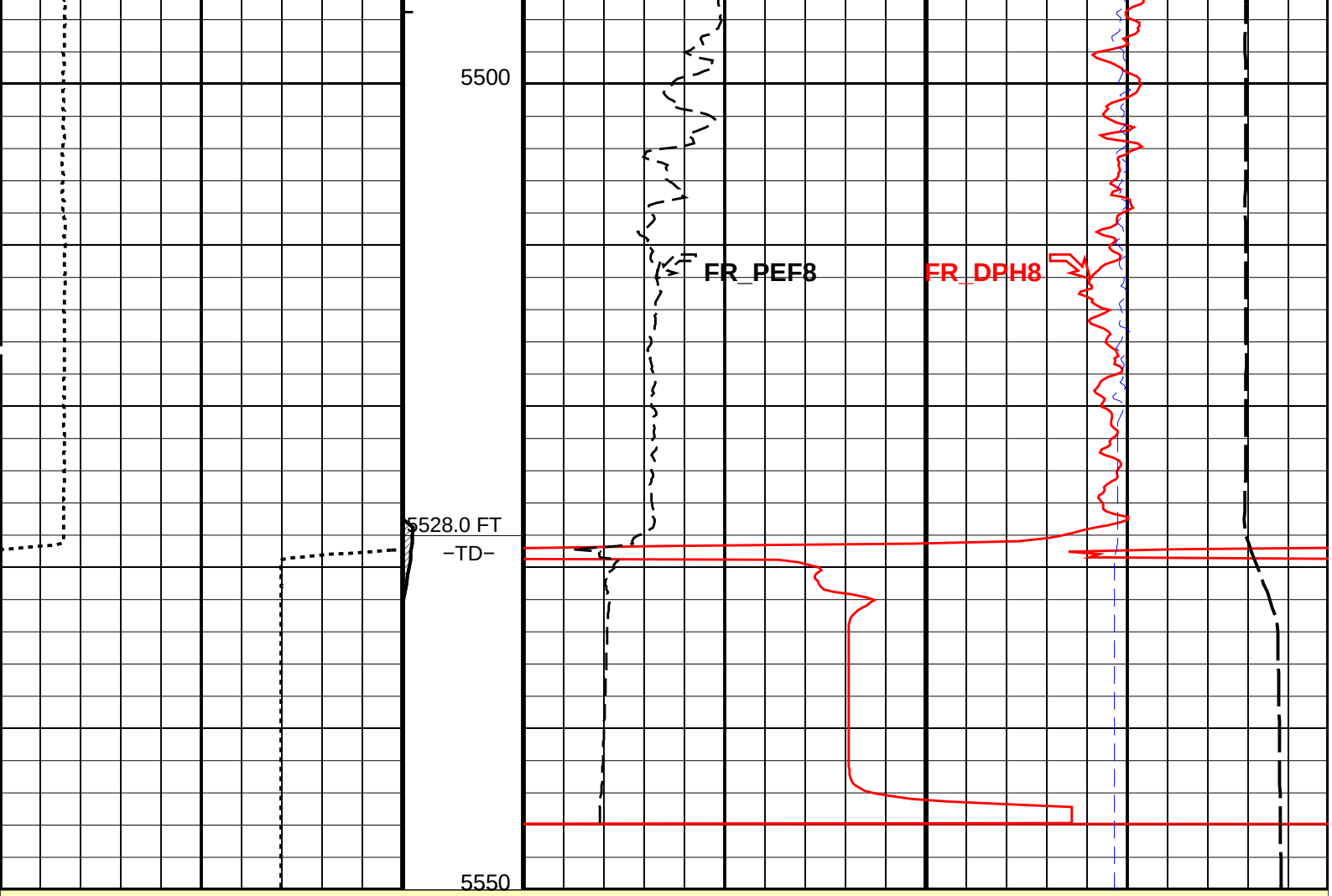

MAIN PASS: *** PLATFORM EXPRESS − NUCLEAR POROSITY ***

Gamma Ray Backup	Cable Drag	H. Res. Density Porosity (DPH8) 0.45 (V/V) −0.15
Caliper (HCAL) 6 (IN) 16	Tool/Tot. Drag	HiRes NPOR (HNPO) 0.45 (V/V) −0.15
	Stuck Stretch (STIT) 0 (F) 50	H. Res. Formation Pe (PEF8) 0 (−−−−) 10 / Tension (TENS) 10000 (LBF) 0

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 10 F3
- Integrated Hole Volume Major Pip Every 100 F3
- Integrated Cement Volume Minor Pip Every 10 F3
- Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	AIT−M: Array Induction Tool − M		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
MATR	Rock Matrix for Neutron Porosity Corrections	LIME	
SHT	Surface Hole Temperature	68.000	degF
	HILTB−FTB: High resolution Integrated Logging Tool−DTS		
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Option	NO	

CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FD	Fluid Density	1.000	g/cm3
FSCO	Formation Salinity Correction Option	NO	
GCLF	Germany Coal−like Formation Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
HSCO	Hole Size Correction Option	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	LIME	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2.710	g/cm3
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	HIRES	
NSAR	HRDD Depth Sampling Rate	1.000	in
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	68.000	degF
SOCN	Standoff Distance	0.125	in
SOCO	Standoff Correction Option	YES	
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
MATR	Rock Matrix for Neutron Porosity Corrections	LIME	
SHT	Surface Hole Temperature	68.000	degF
PERT: Preliminary Evaluation − Real Time			
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
MATR	Rock Matrix for Neutron Porosity Corrections	LIME	
SHT	Surface Hole Temperature	68.000	degF
STI: Stuck Tool Indicator			
STKT	STI Stuck Threshold	2.500	ft
TDD	Total Depth − Driller	5530.0	ft
TDL	Total Depth − Logger	5528.0	ft
System and Miscellaneous			
BS	Bit Size	7.875	in
BSAL	Borehole Salinity		
CSIZ	Current Casing Size	8.625	in
CWEI	Casing Weight	24.000	lbm/ft
DFD	Drilling Fluid Density	9.200	lbm/gal
FSAL	Formation Salinity		
MST	Mud Sample Temperature	106.2	degF
RMFS	Resistivity of Mud Filtrate Sample	0.587	ohm.m

Format: PORO_HIRES Vertical Scale: 10" per 100’ Graphics File Created: 02−Aug−2011 17:57

OP System Version: 18C0−147

AITM	18C0−147	HILTD	18C0−147
DTCH	18C0−147		

Input DLIS Files

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Schlumberger

UPPER DENSITY LOG 5" = 100’

MAXIS Field Log

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_007LUP	FN:6	PRODUCER	02−Aug−2011 16:19	5550.0 FT	411.0 FT
DEFAULT	AIT_TLD_MCFL_CNL_005PUP	FN:4	PRODUCER	02−Aug−2011 16:10	5545.5 FT	4904.0 FT

OP System Version: 18C0−147

AITM	18C0−147	HILTD	18C0−147
DTCH	18C0−147		

PIP SUMMARY

Time Mark Every 60 S

SHALE

SAND

LIME

Caliper (HCAL)
6 (IN) 16

Tension (TENS)
10000 (LBF) 0

Gamma Ray (GR)
0 (GAPI) 200

Std. Res. Formation Density (RHOZ)
2 (G/C3) 3

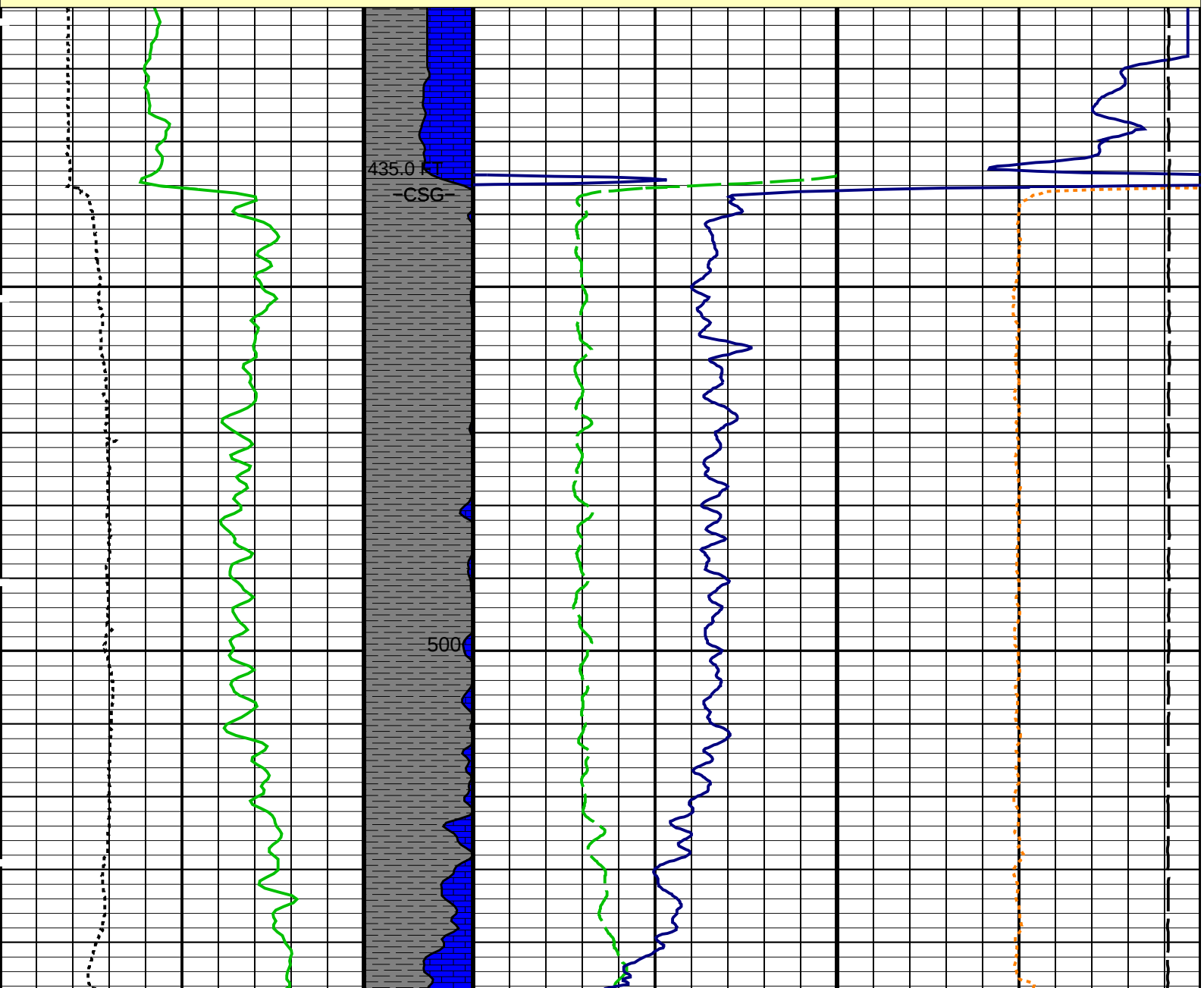
Gamma Ray Backup

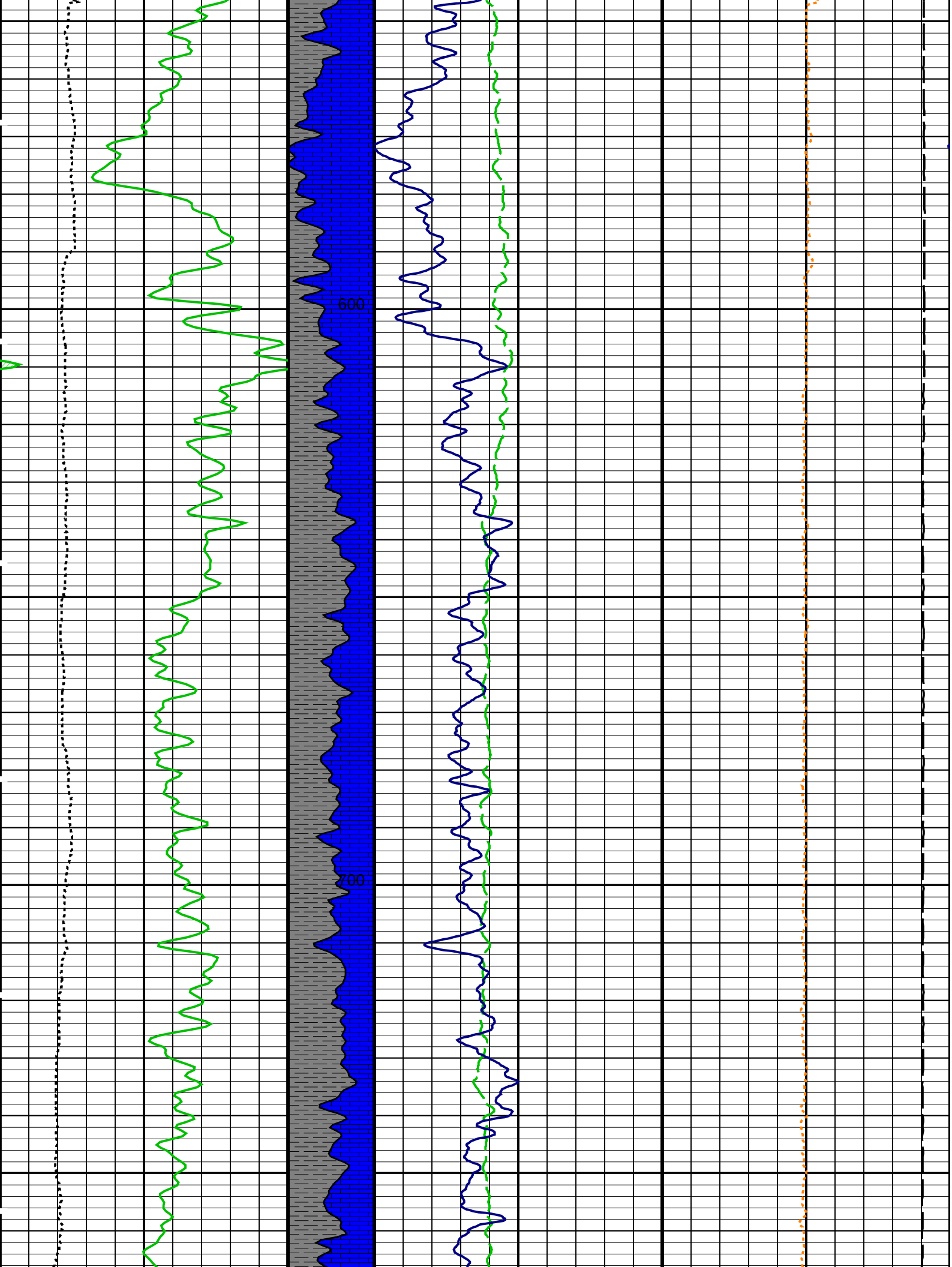
Stuck Stretch (STIT)
0 (F) 50

Std. Res. Formation Pe (PEFZ)
0 (−−−−) 10

Density Correction (HDRA)
−0.25 (G/C3) 0.25

MAIN PASS: *** PLATFORM EXPRESS − LITHOLOGY DENSITY ***

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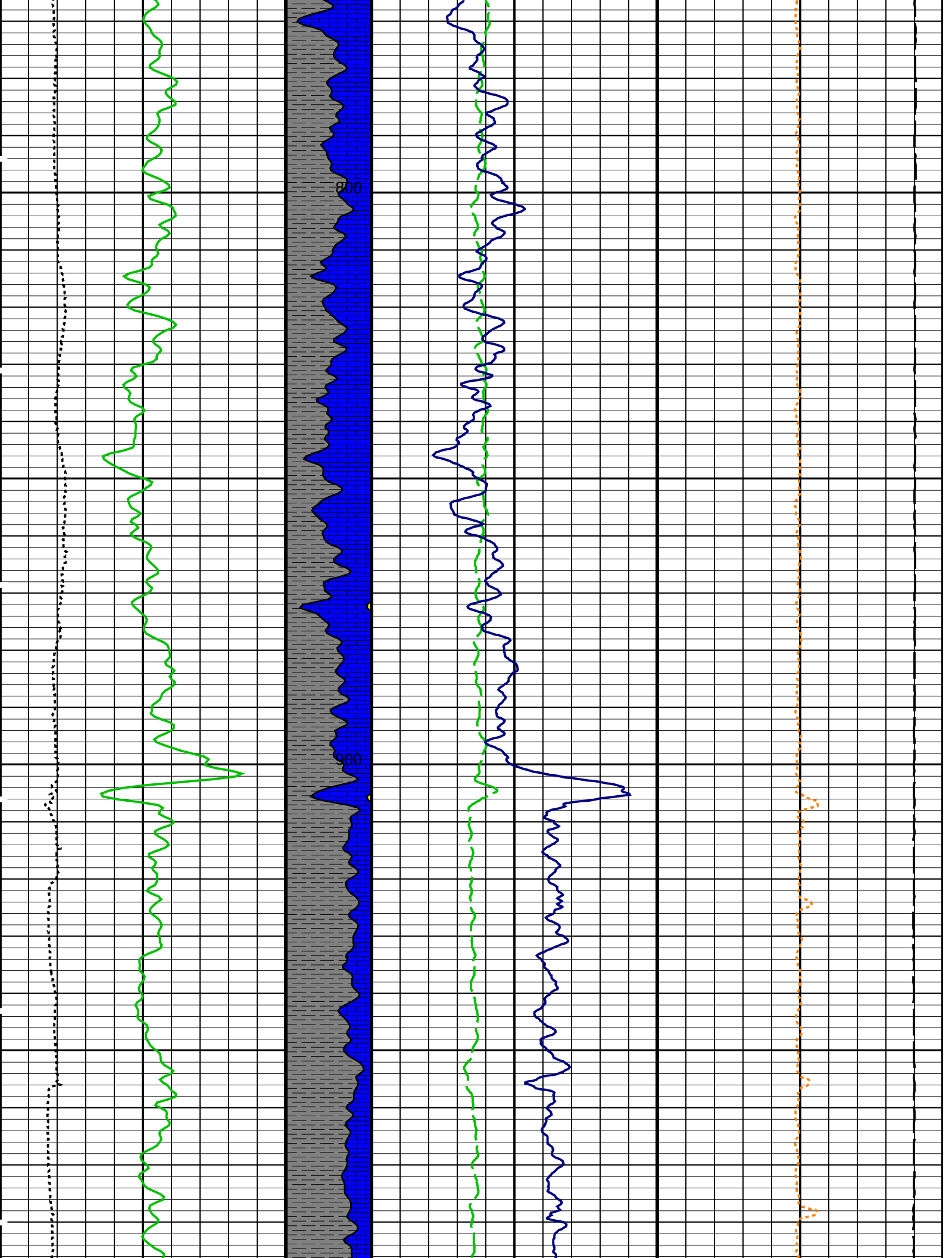
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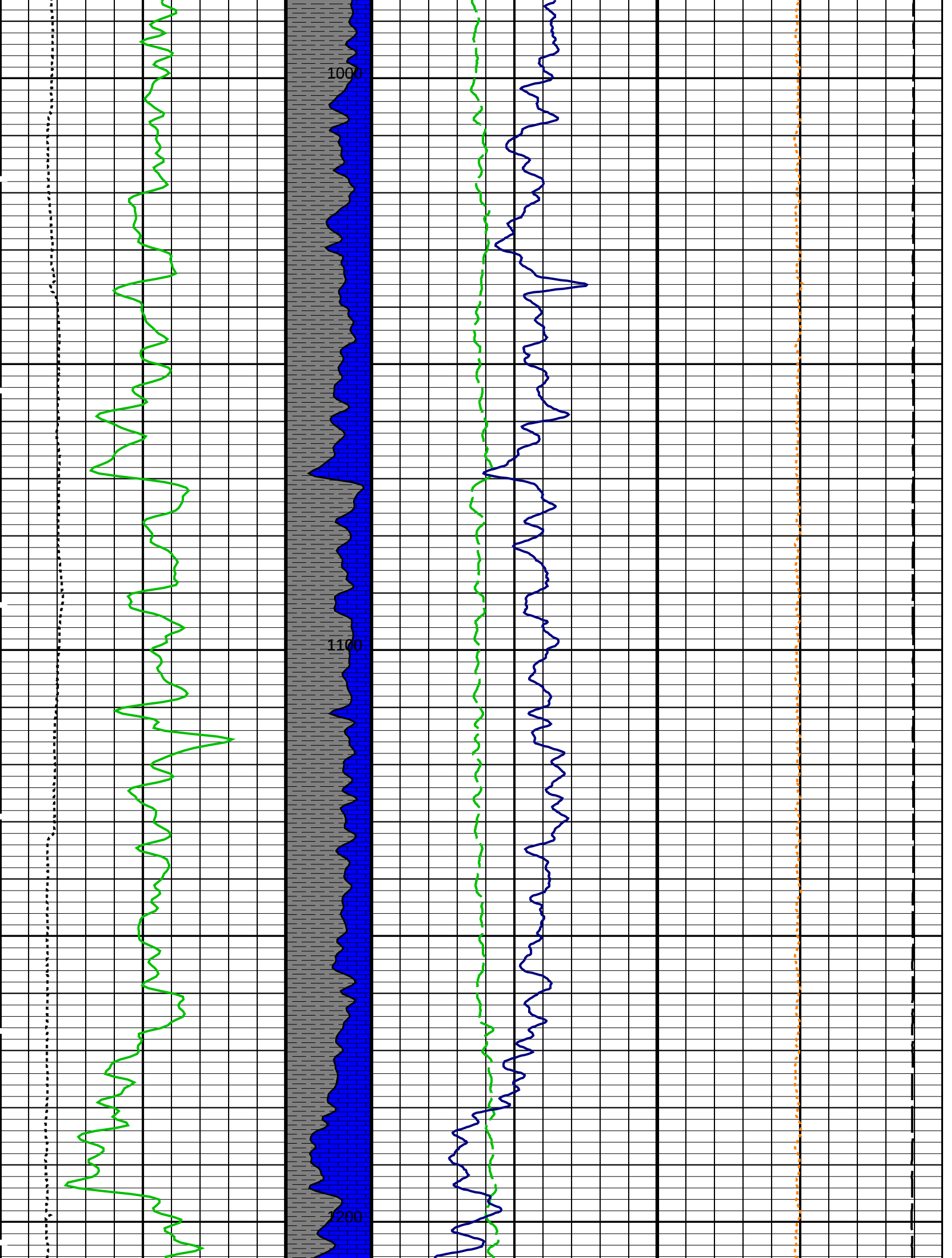
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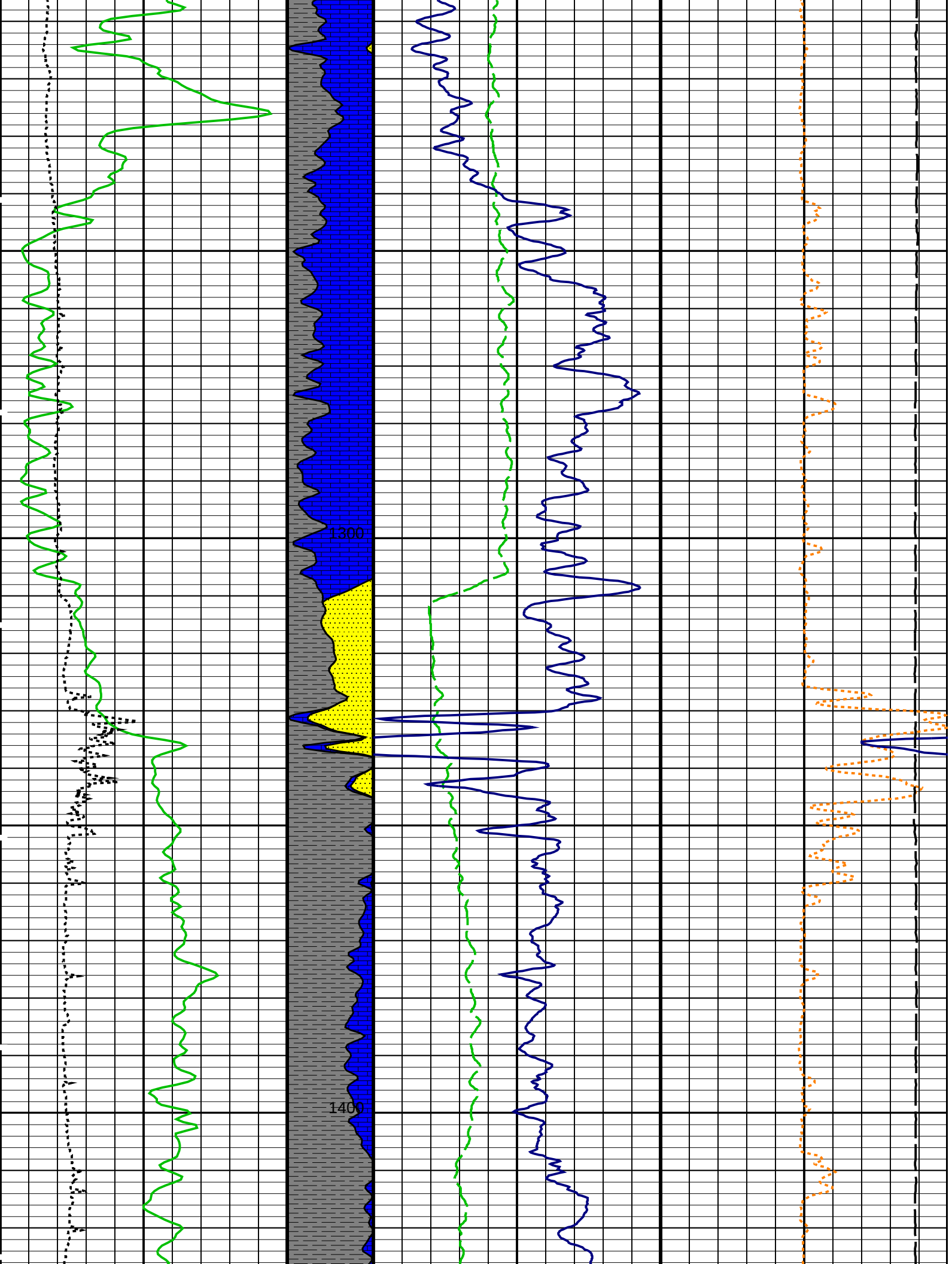
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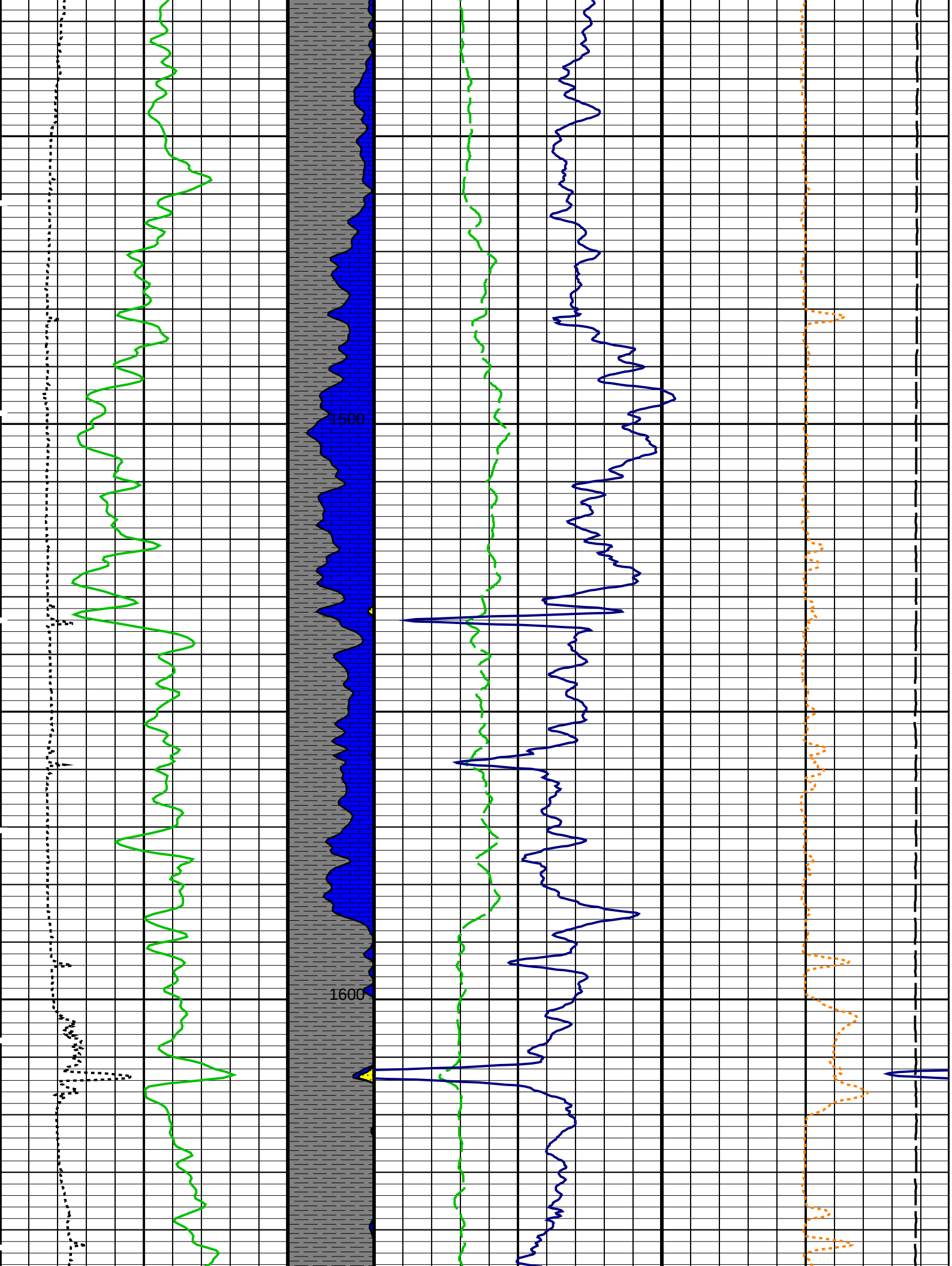
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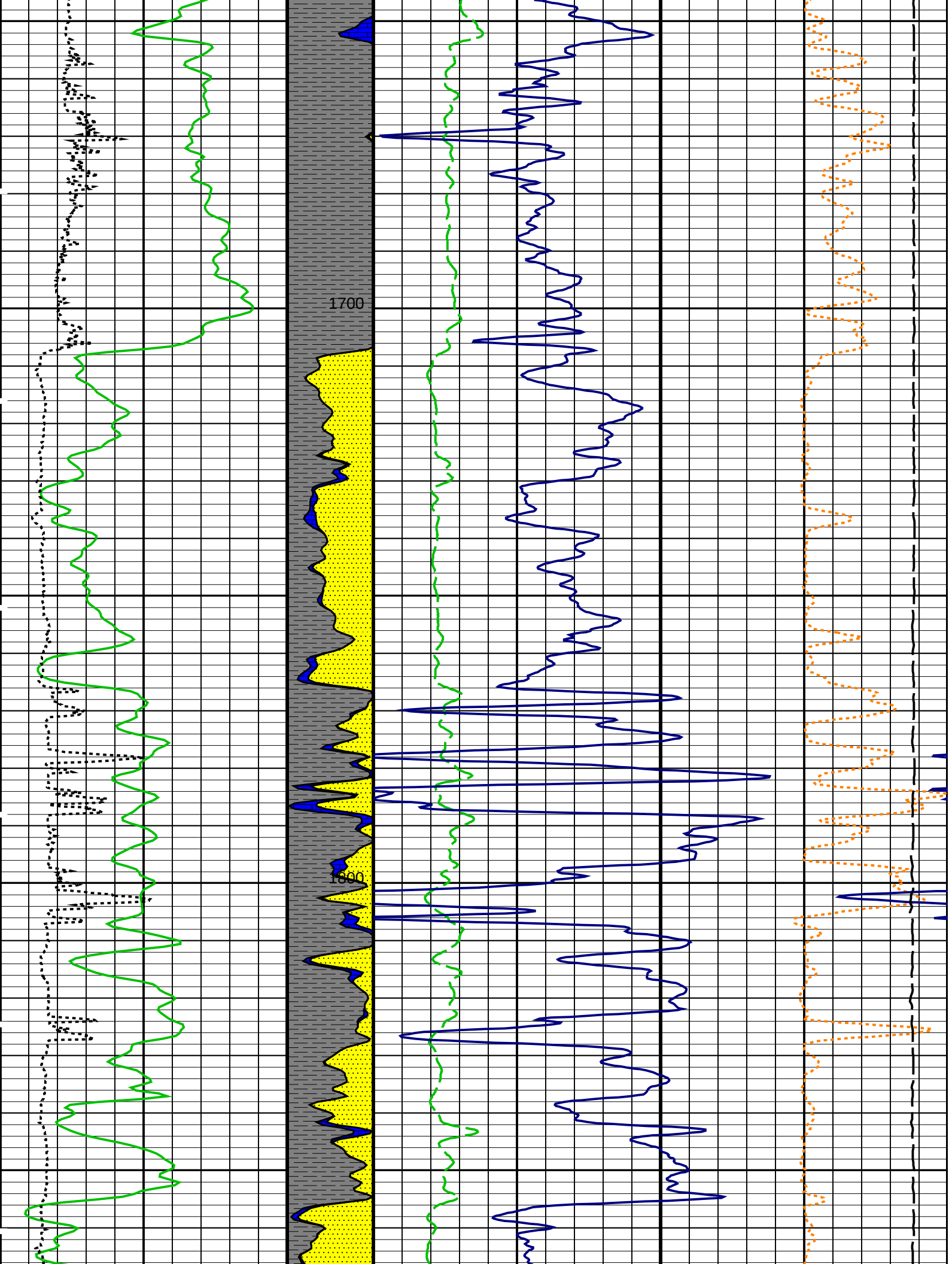
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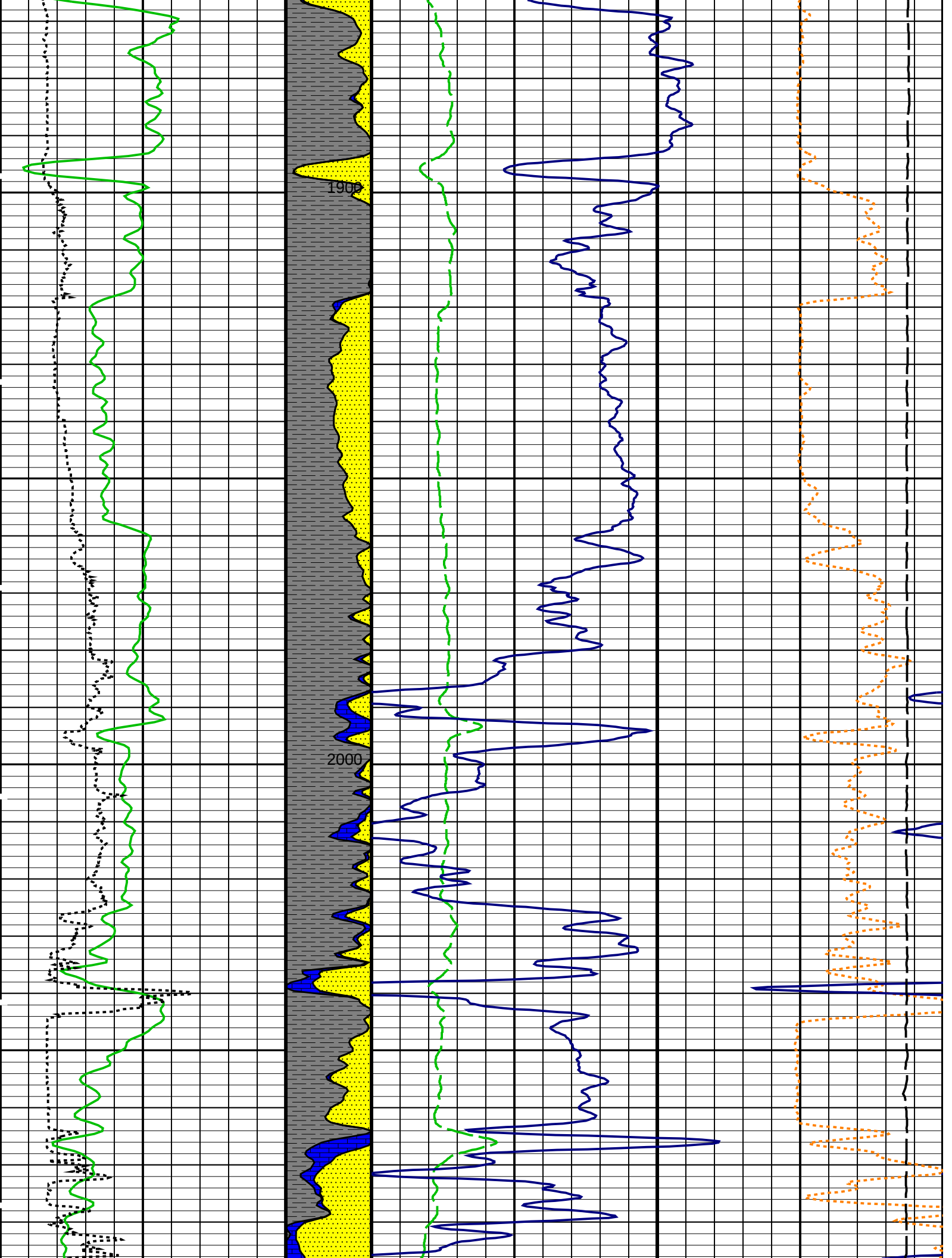
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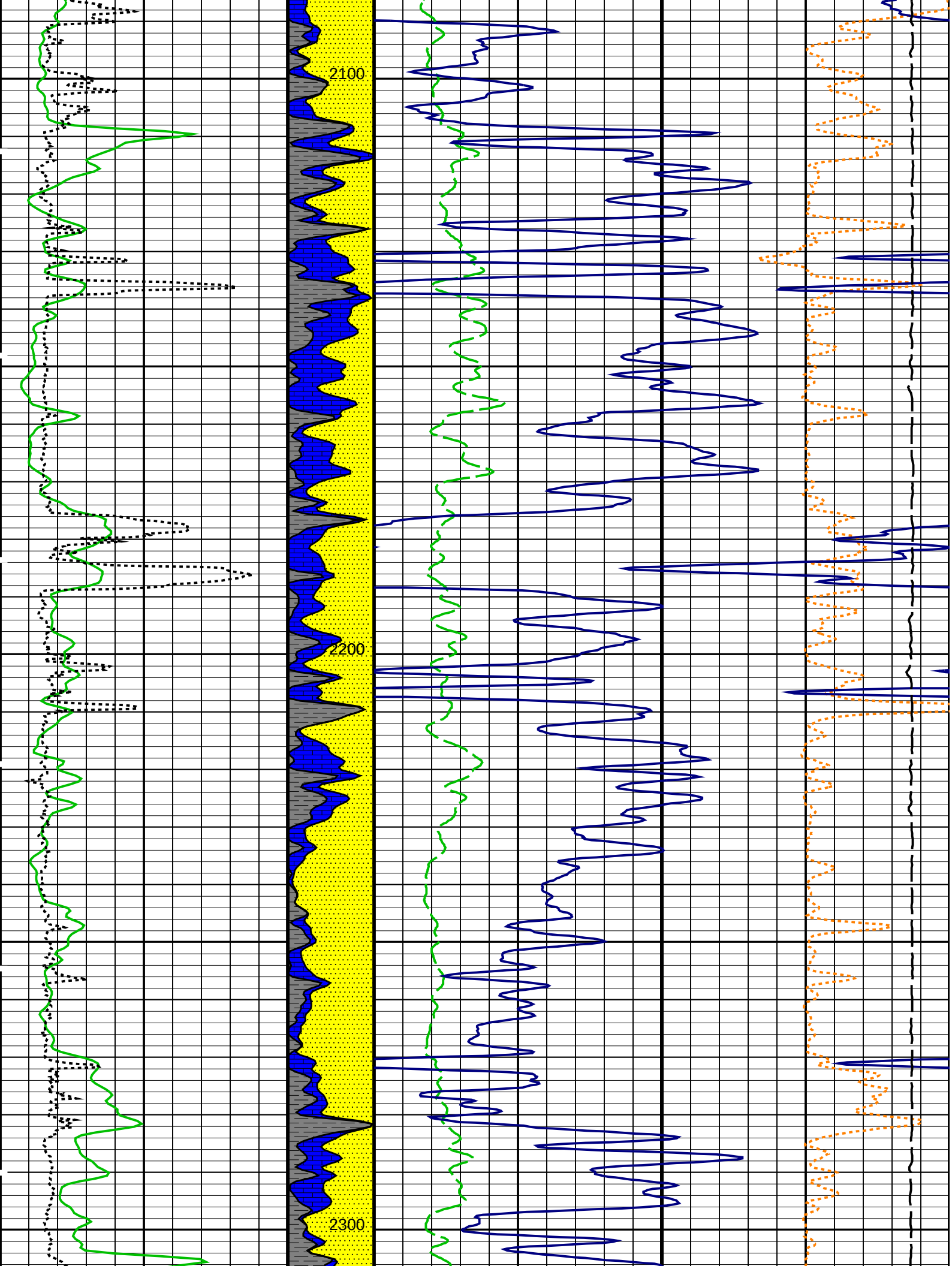
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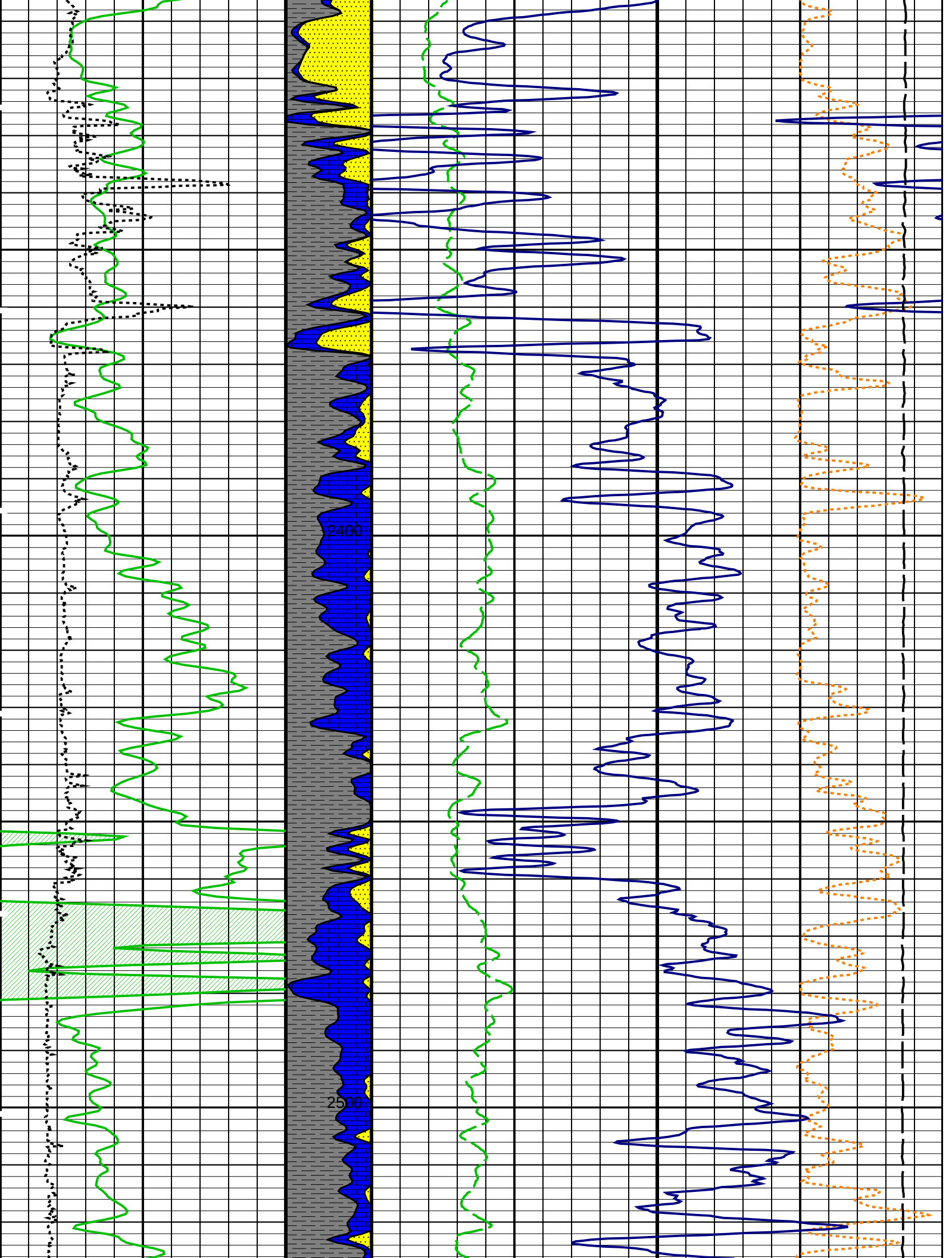
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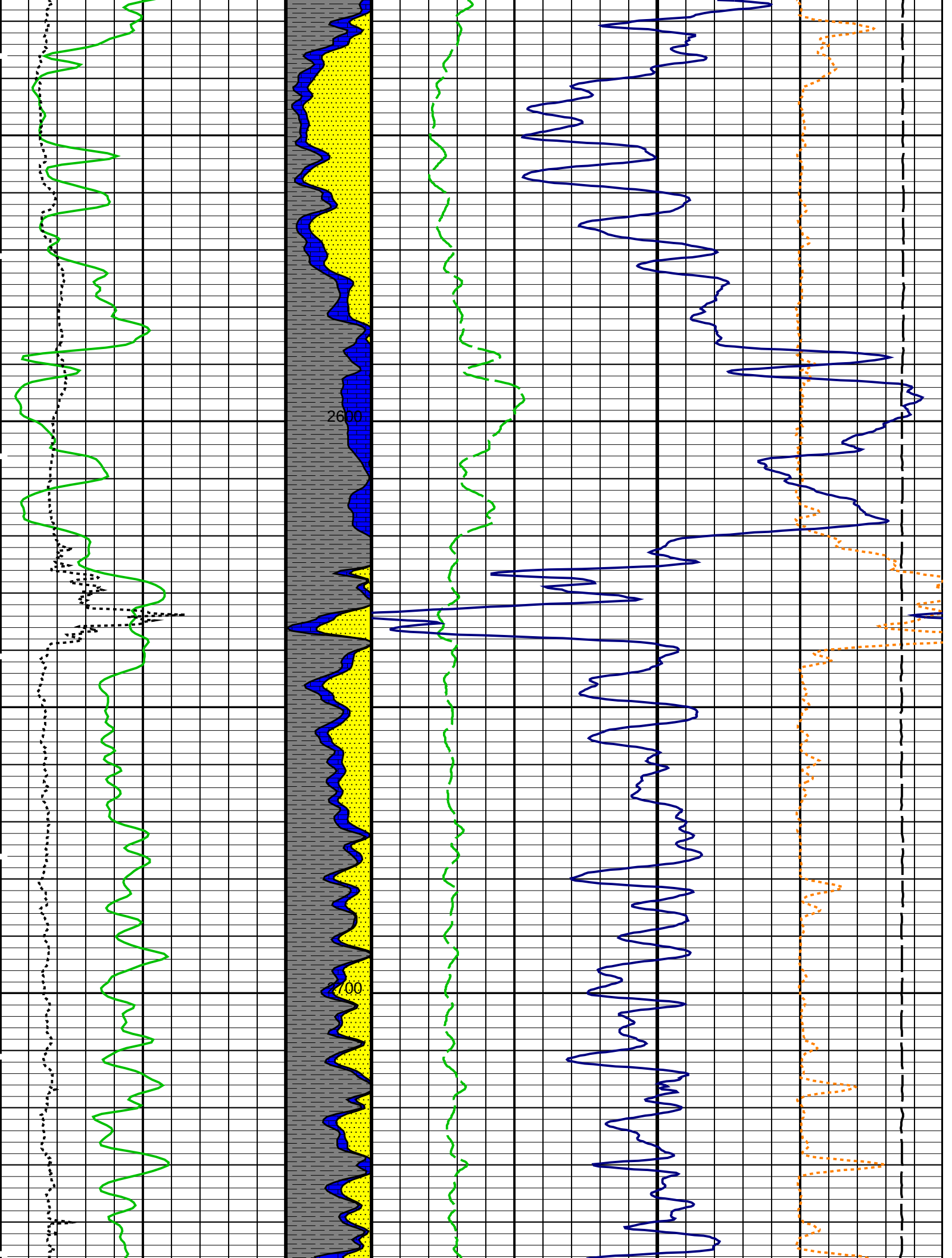
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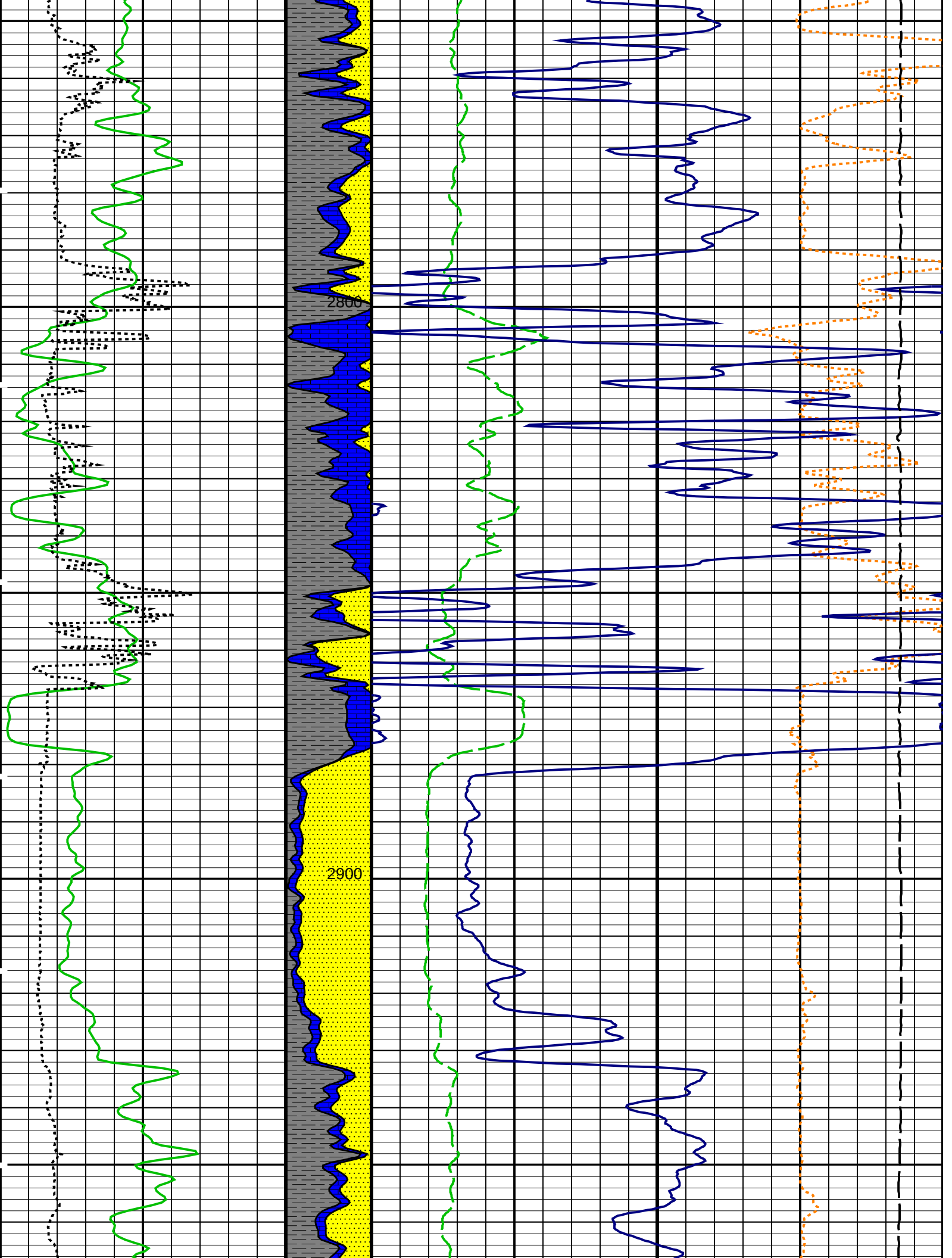
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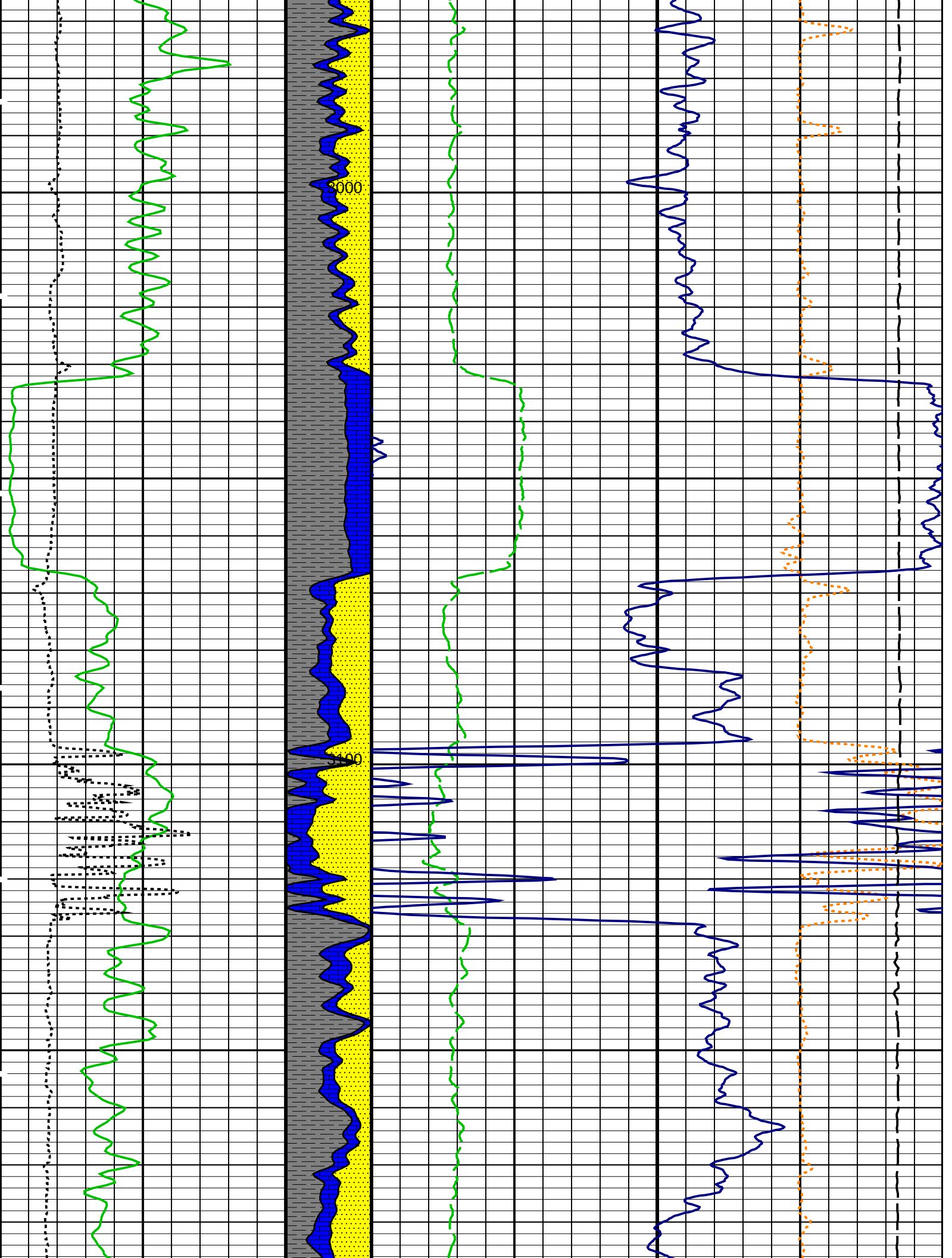
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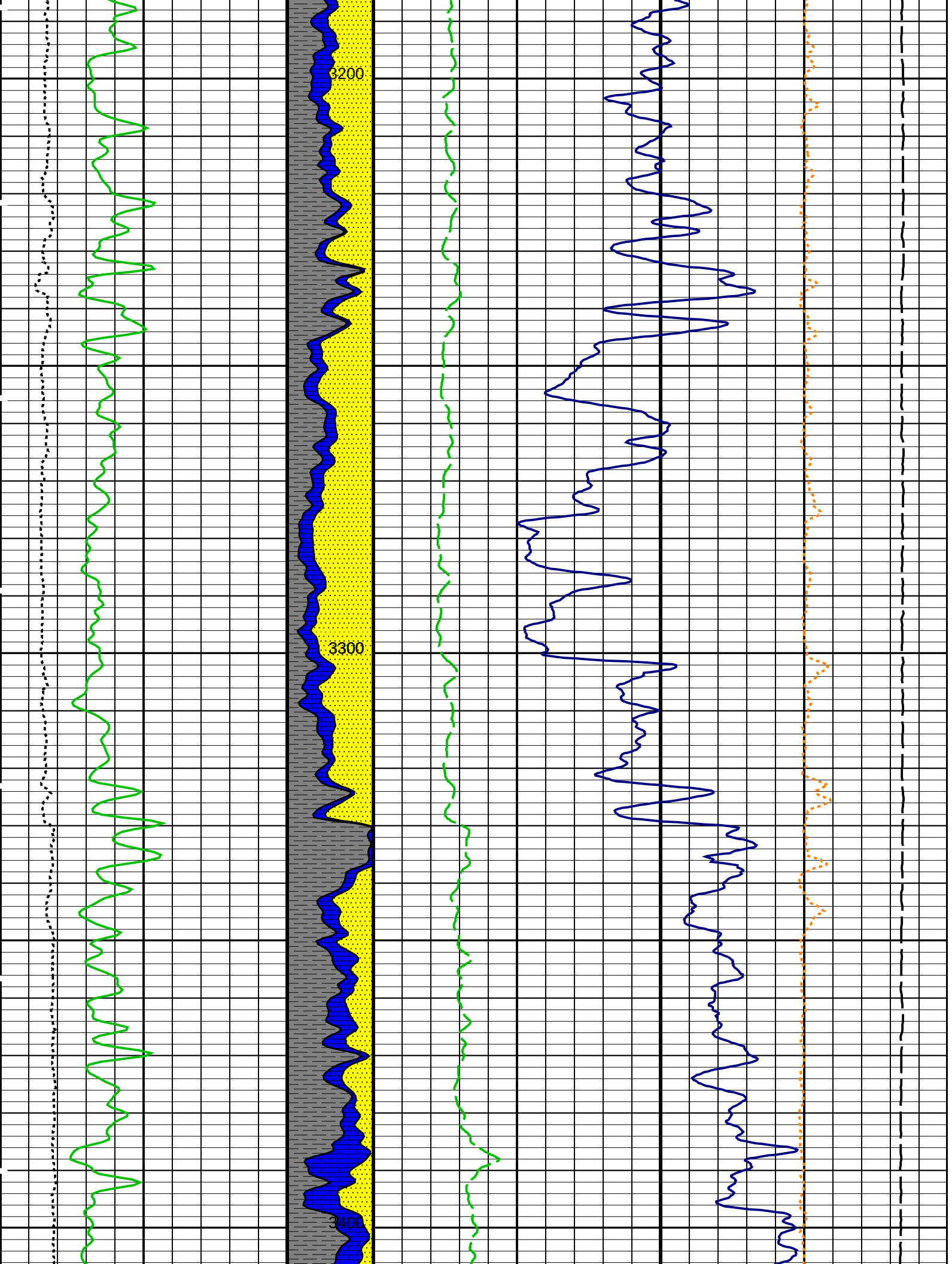
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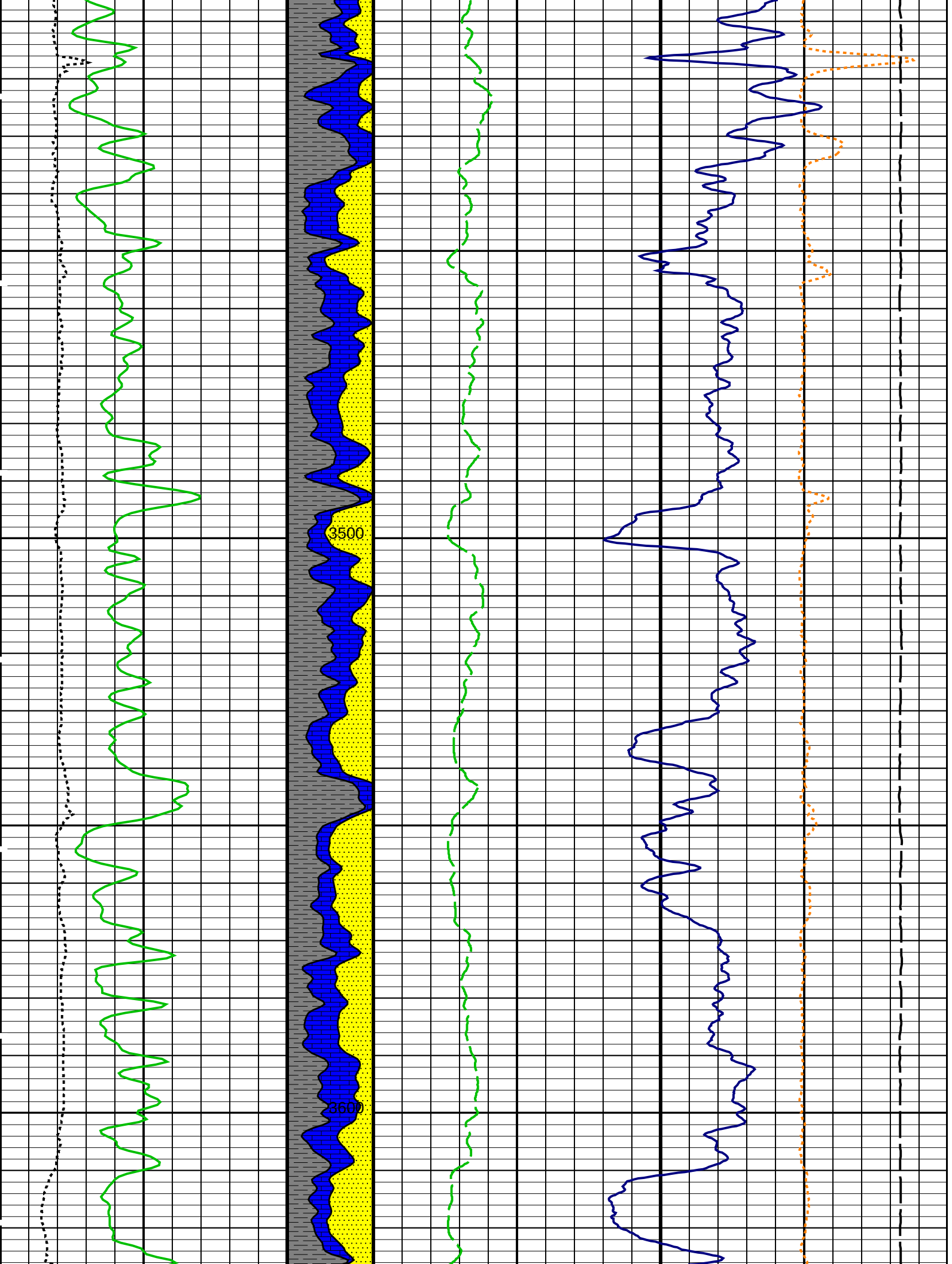
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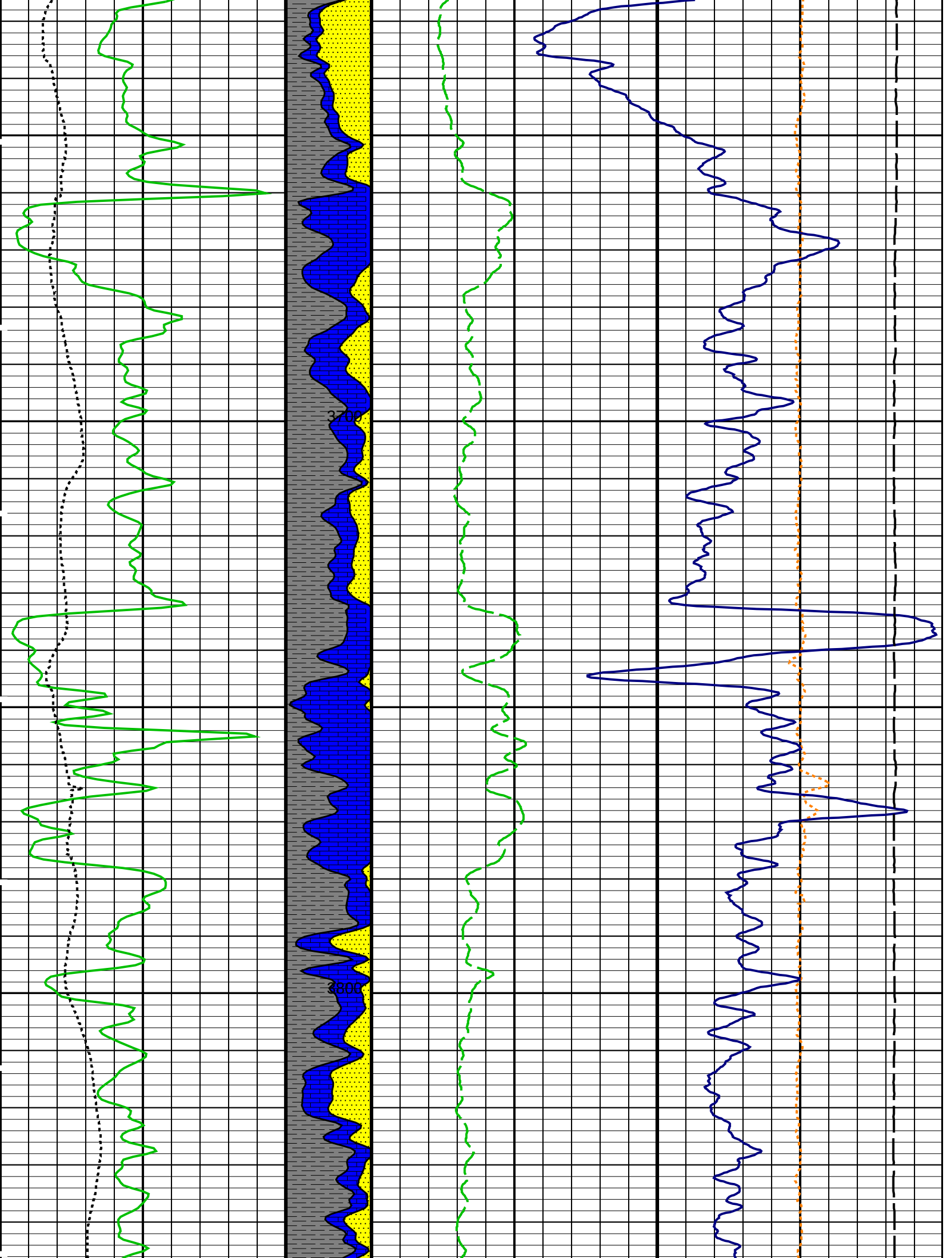
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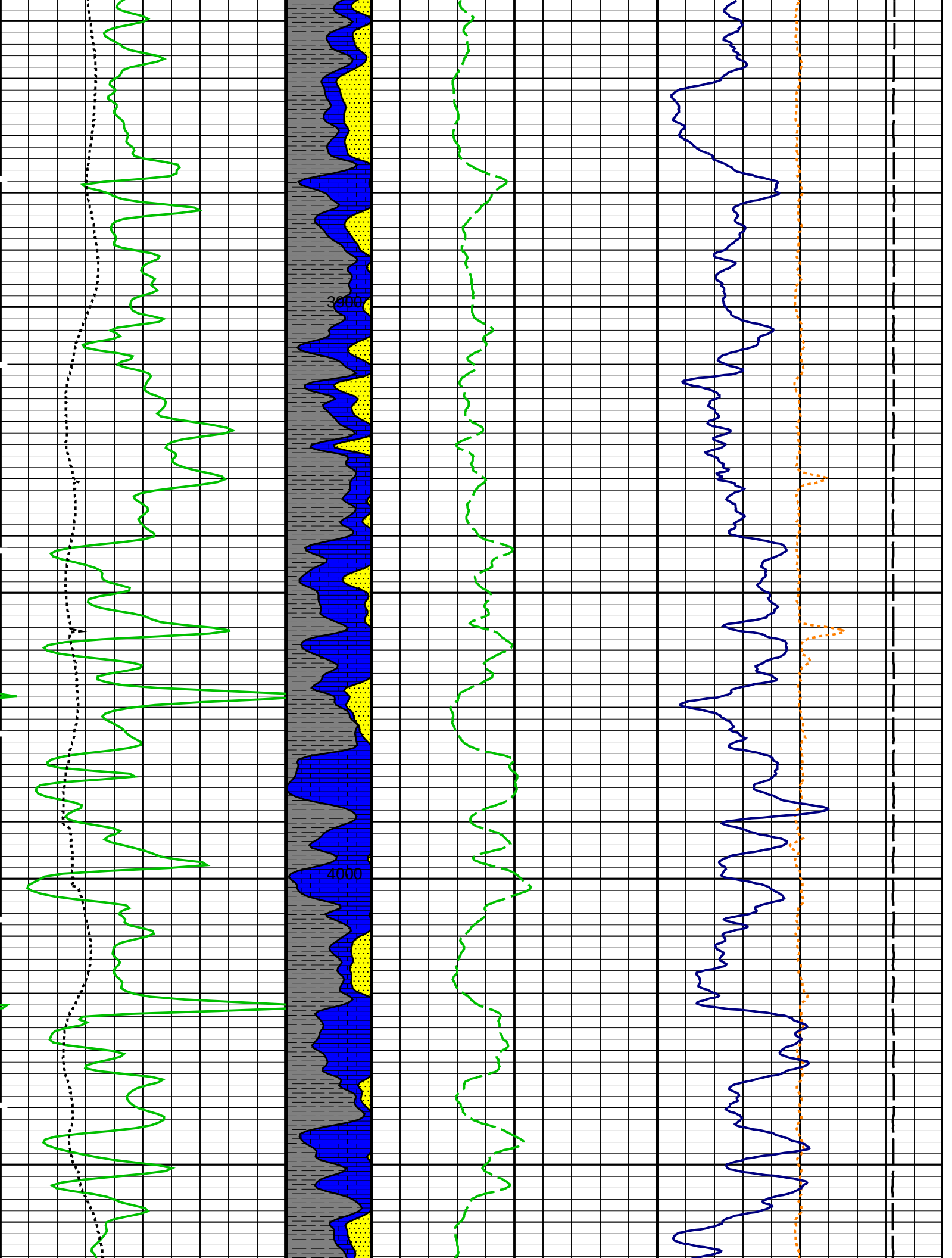
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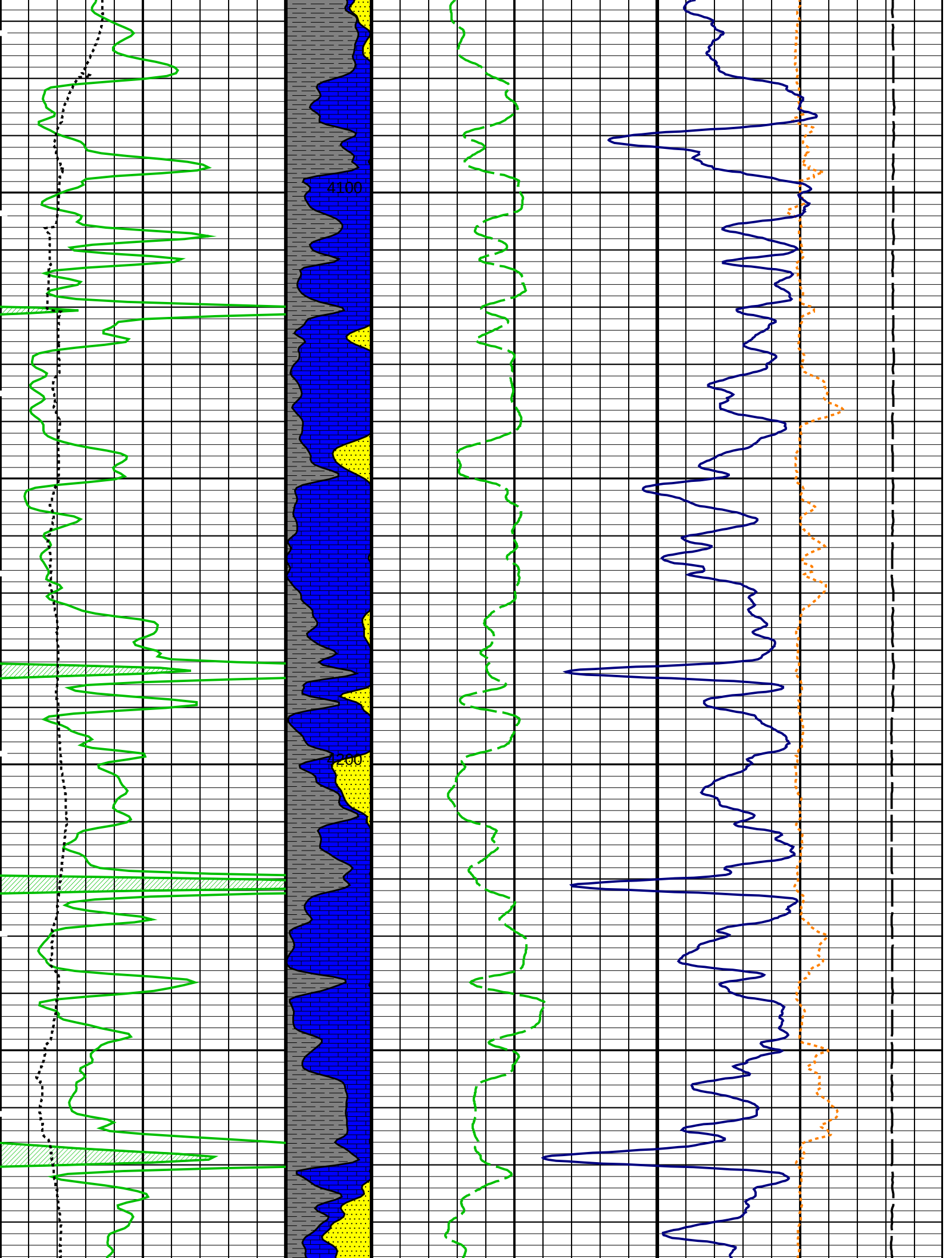
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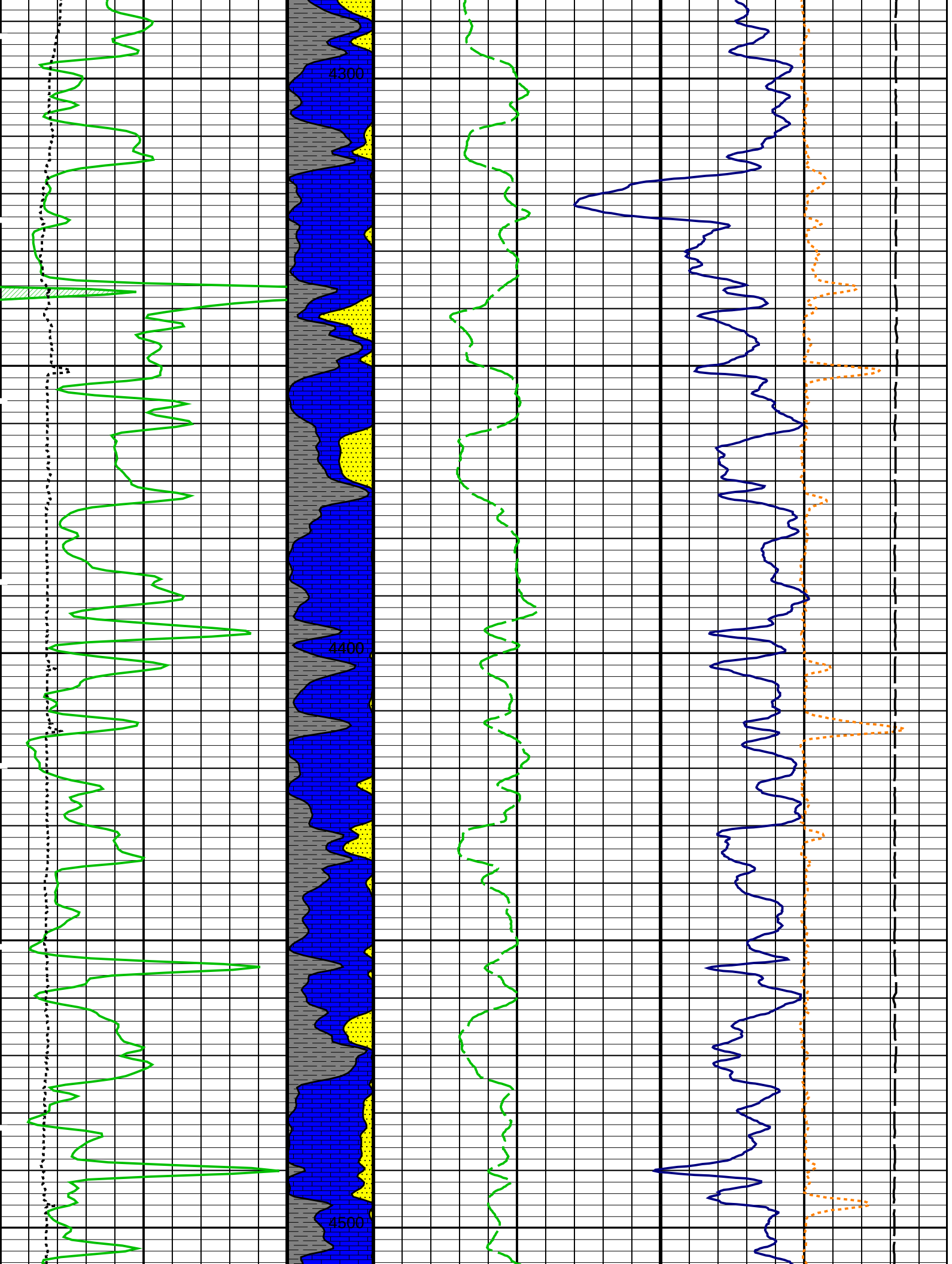
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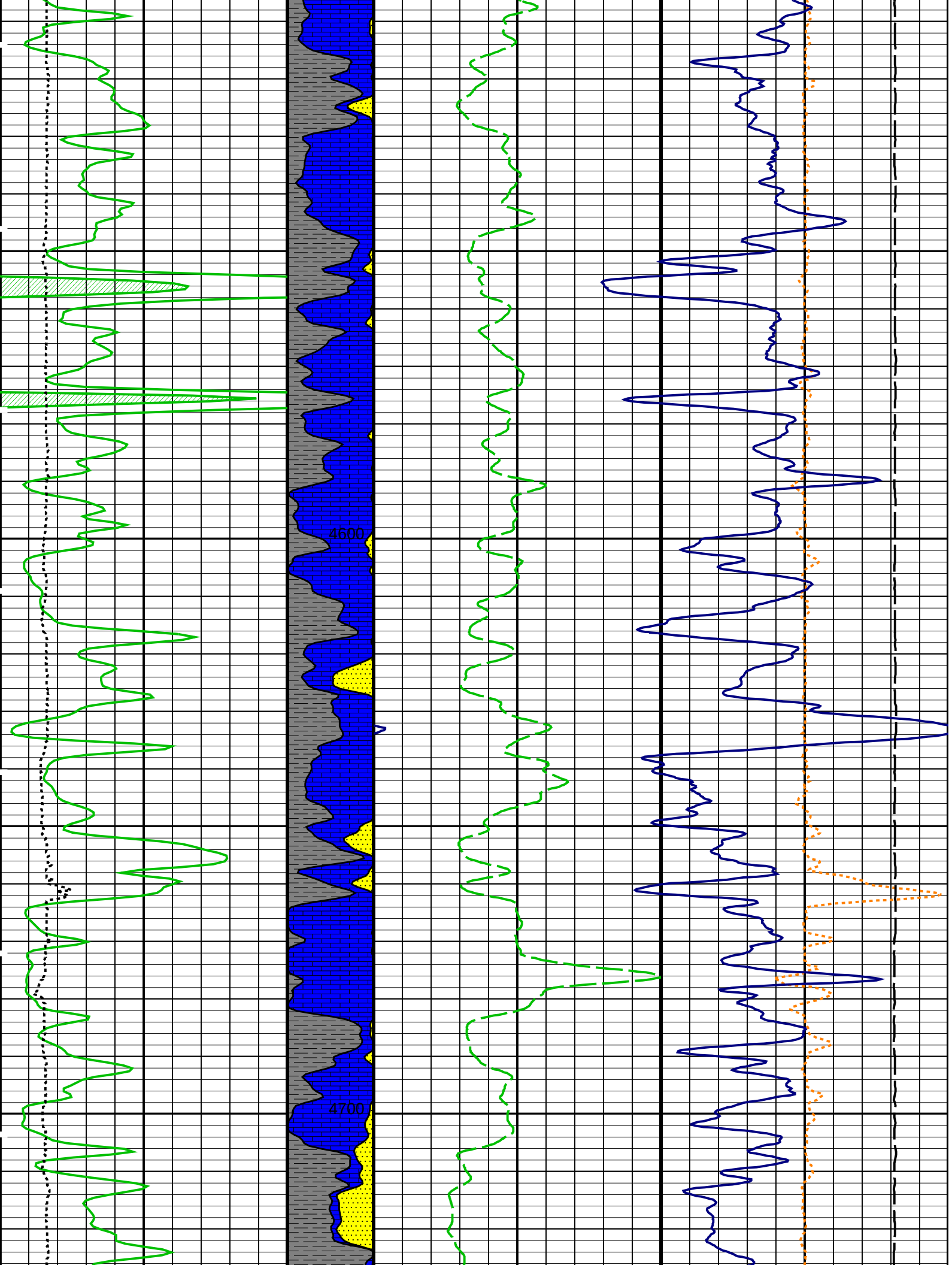
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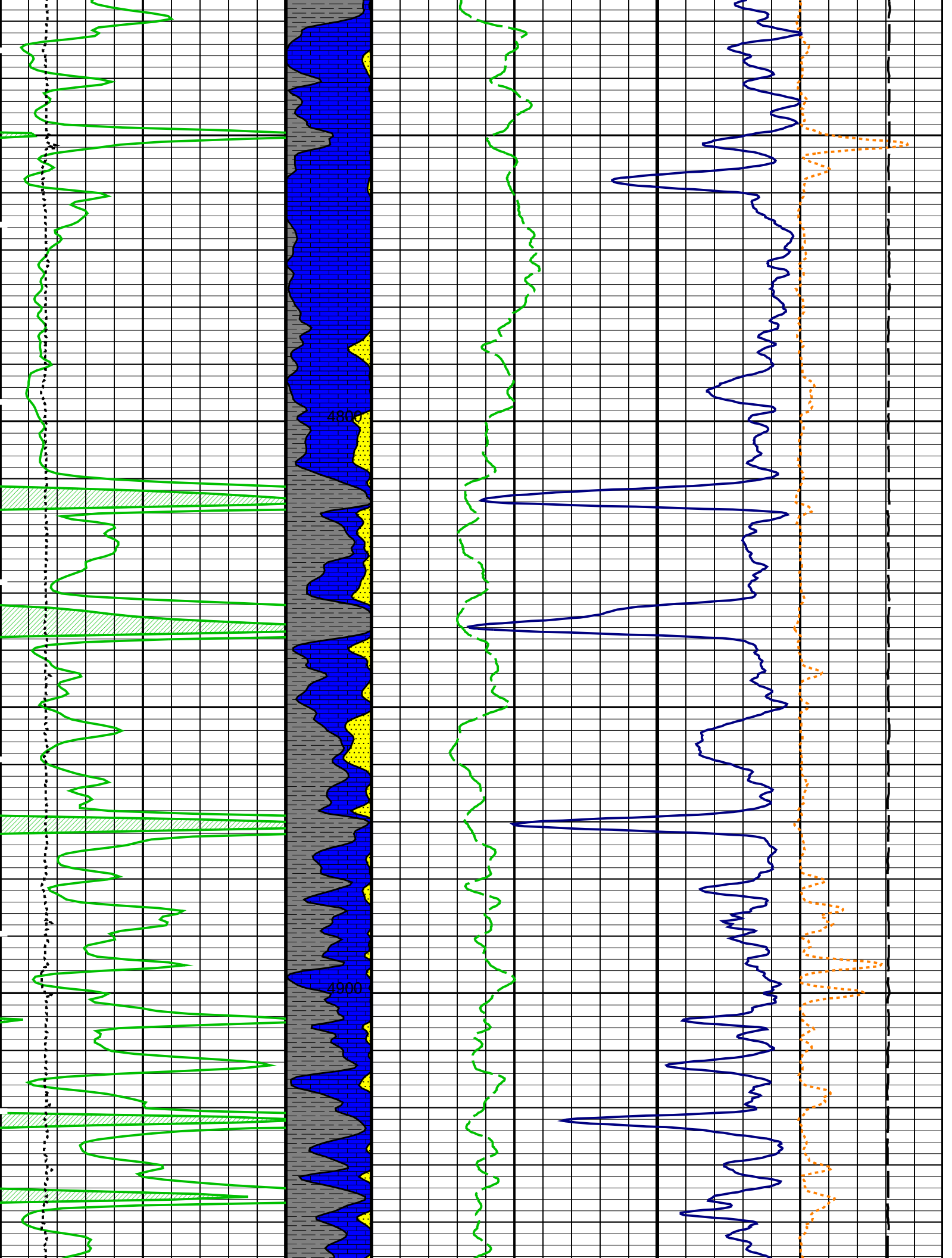
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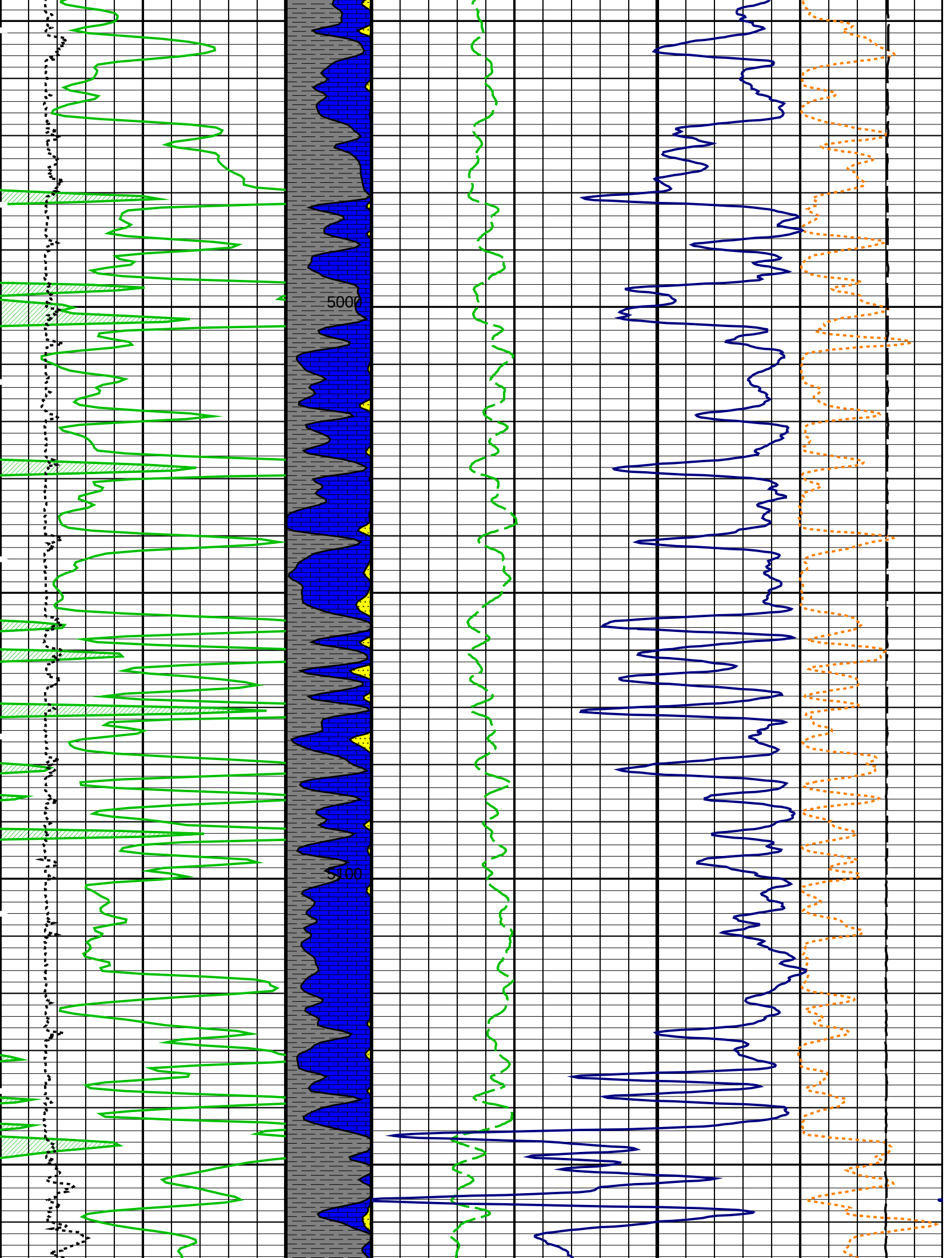
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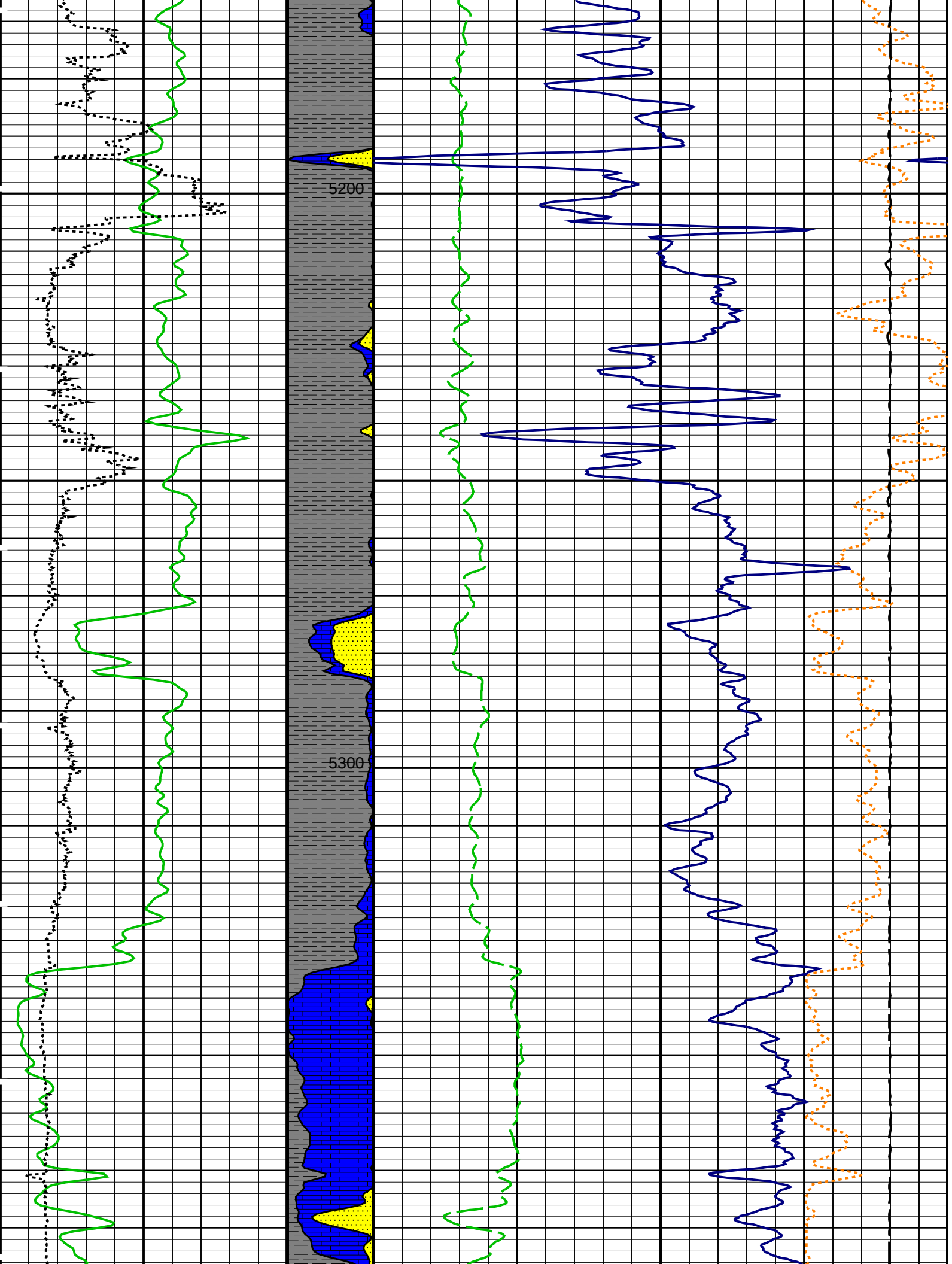
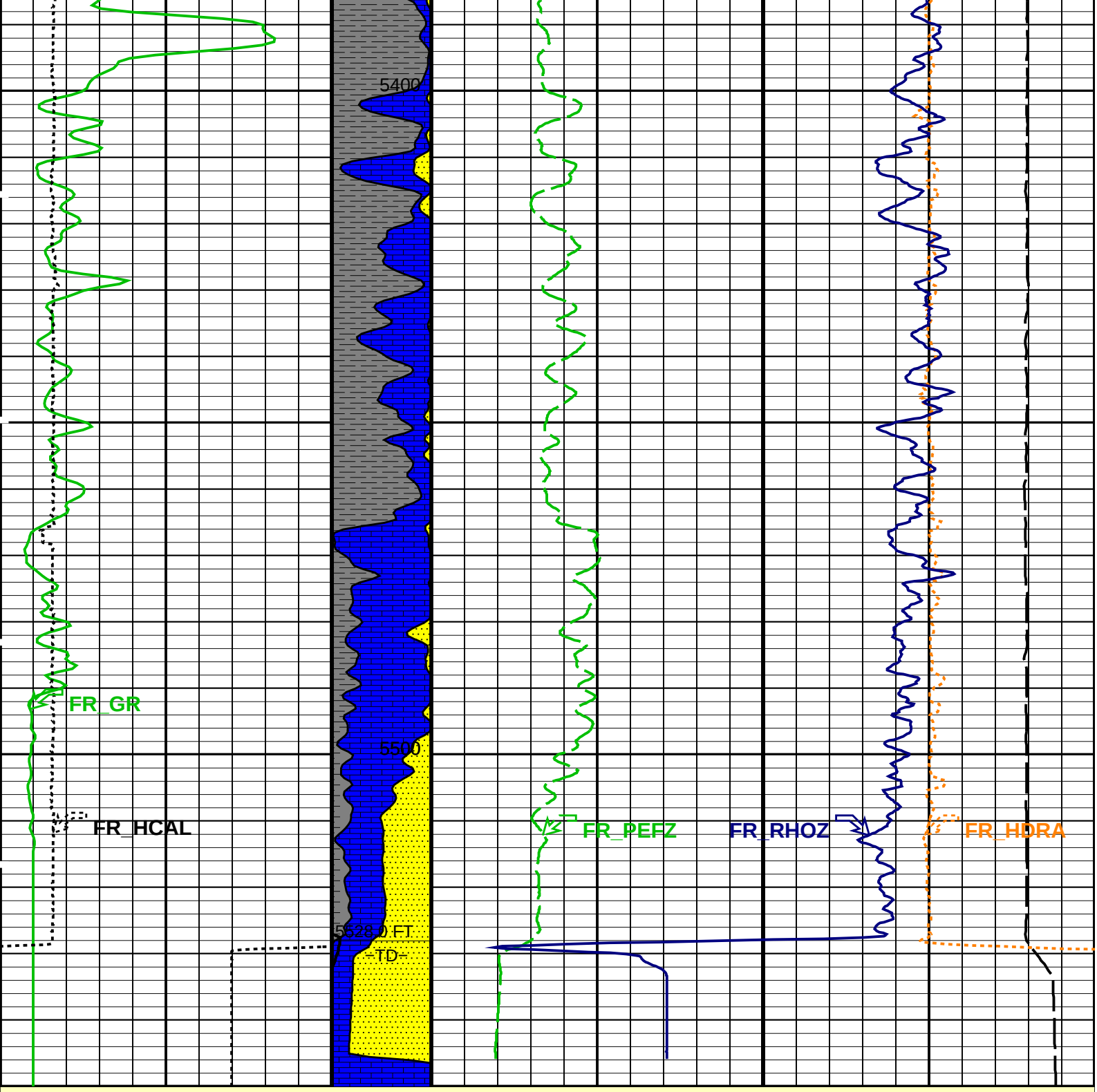

5200
5300



MAIN PASS: *** PLATFORM EXPRESS − LITHOLOGY DENSITY ***

Gamma Ray Backup	Stuck Stretch (STIT) 0 (F) 50	Std. Res. Formation Pe (PEFZ) 0 (−−−−) 10 / Density Correction (HDRA) −0.25 (G/C3) 0.25
Gamma Ray (GR) 0 (GAPI) 200	LIME	Std. Res. Formation Density (RHOZ) 2 (G/C3) 3
Caliper (HCAL) 6 (IN) 16	SAND	Tension (TENS) 10000 (LBF) 0
	SHALE	

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HILTB−FTB: High resolution Integrated Logging Tool−DTS		
BHFL_TLD	HILT Nuclear Mud Base	WATER	
DHC	Density Hole Correction	BS	
GCLF	Germany Coal−like Formation Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	HIRES	
NSAR	HRDD Depth Sampling Rate	1.000	in
	STI: Stuck Tool Indicator		
STKT	STI Stuck Threshold	2.500	ft
TDD	Total Depth − Driller	5530.0	ft
TDL	Total Depth − Logger	5528.0	ft
	System and Miscellaneous		
BS	Bit Size	7.875	in
DFD	Drilling Fluid Density	9.200	lbm/gal

Format: DENS Vertical Scale: 5" per 100' Graphics File Created: 02−Aug−2011 18:56

OP System Version: 18C0−147

AITM	18C0−147	HILTD	18C0−147
DTCH	18C0−147		

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_007LUP	FN:6	PRODUCER	02−Aug−2011 16:19	5550.0 FT	411.0 FT
DEFAULT	AIT_TLD_MCFL_CNL_005PUP	FN:4	PRODUCER	02−Aug−2011 16:10	5545.5 FT	4904.0 FT

Schlumberger

Density High Resolution 10"=10

MAXIS Field Log

Input DLIS Files

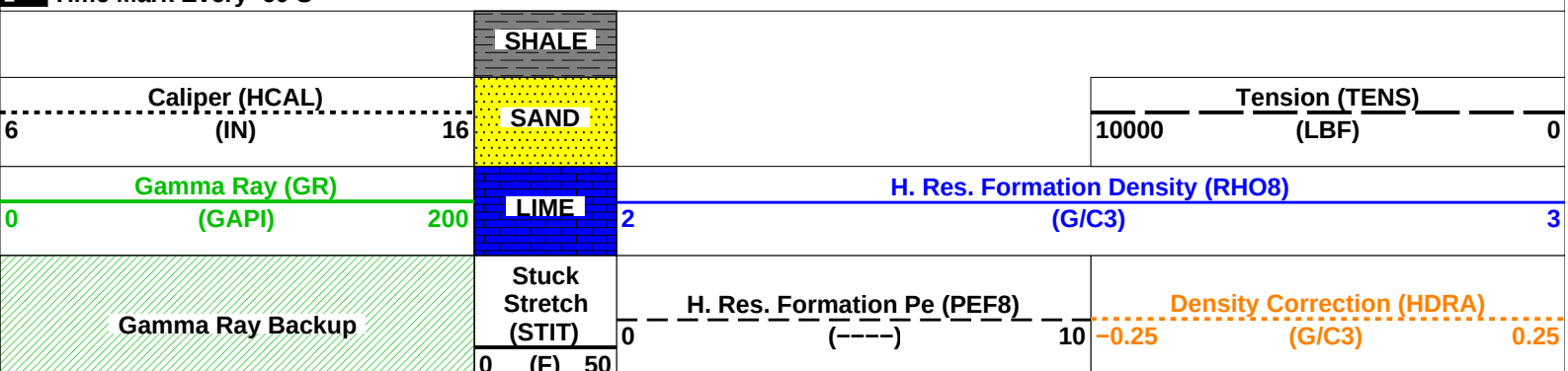
DEFAULT	AIT_TLD_MCFL_CNL_007LUP	FN:6	PRODUCER	02−Aug−2011 16:19	5550.0 FT	0.0 FT
DEFAULT	AIT_TLD_MCFL_CNL_007LUP	FN:6	PRODUCER	02−Aug−2011 16:19	5550.0 FT	0.0 FT

OP System Version: 18C0−147

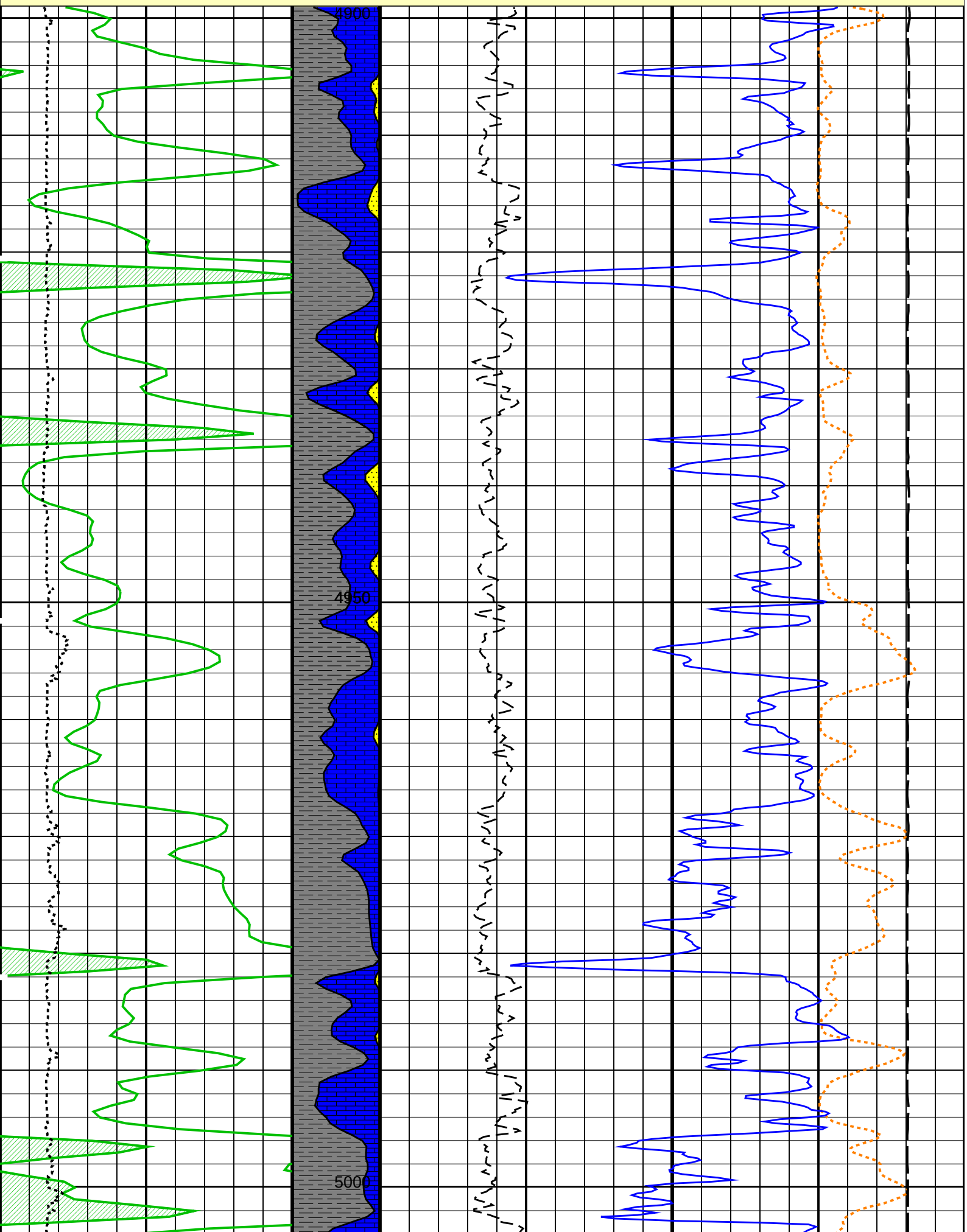
AITM	18C0−147	HILTD	18C0−147
DTCH	18C0−147		

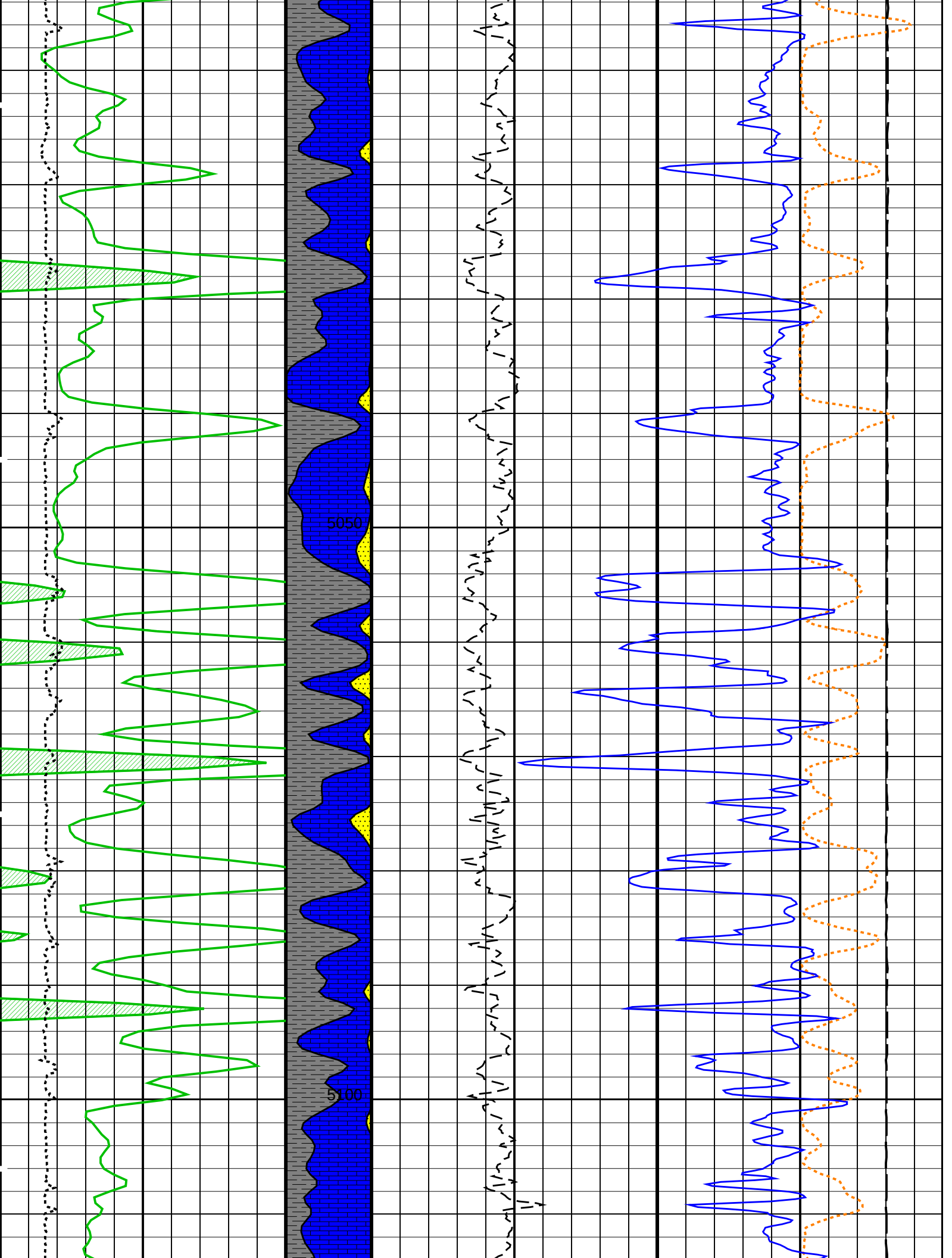
PIP SUMMARY

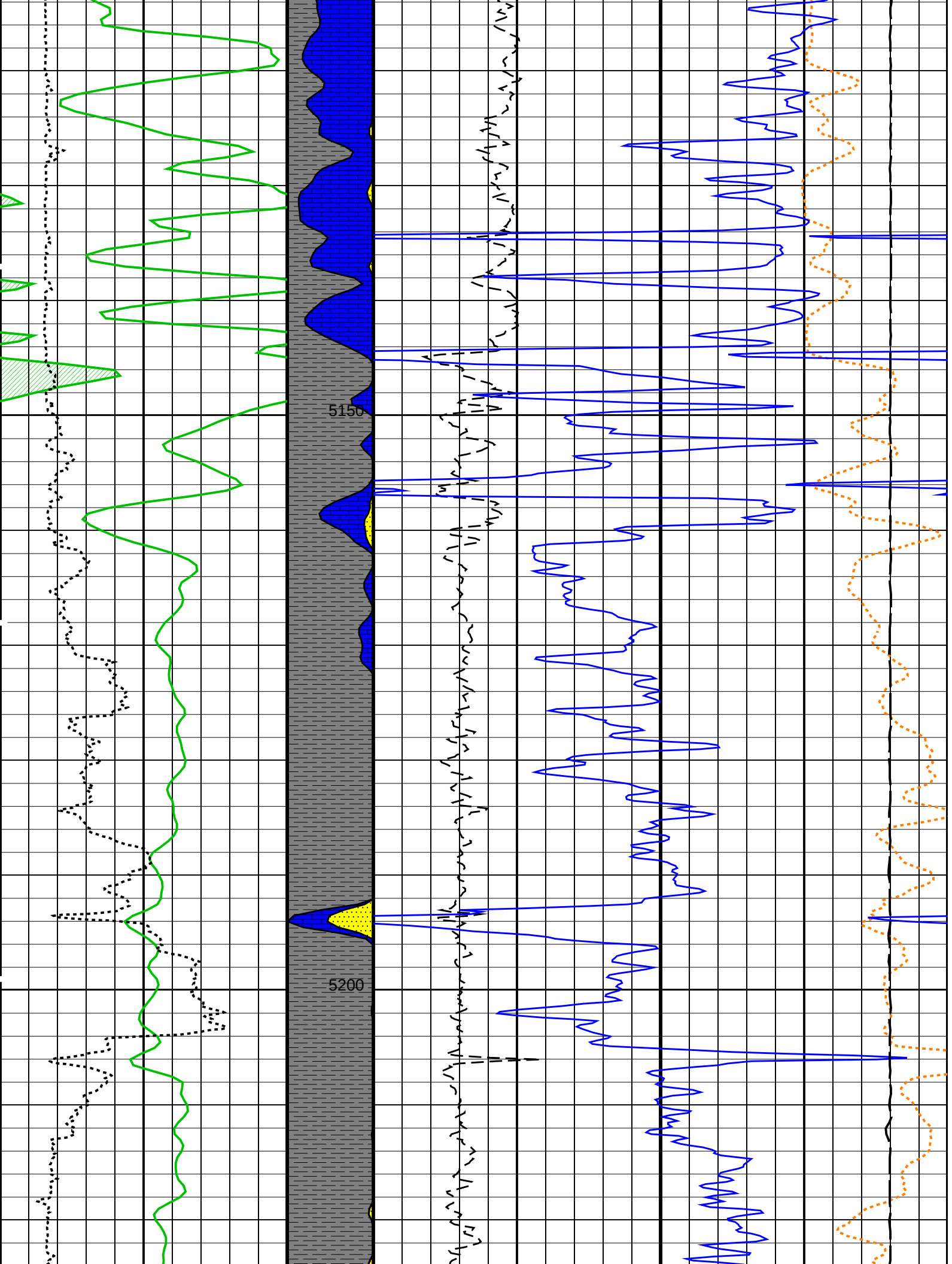
Time Mark Every 60 S

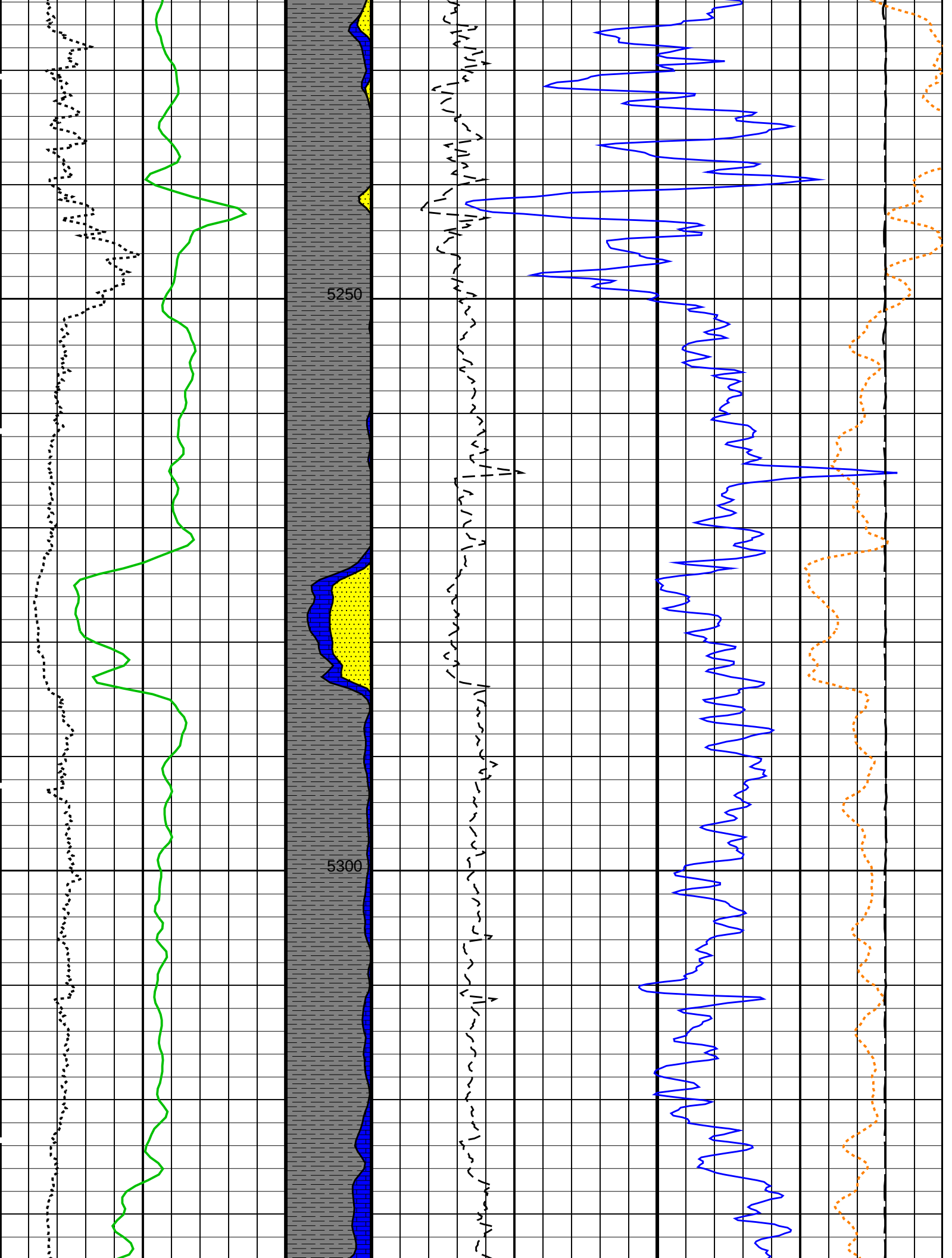


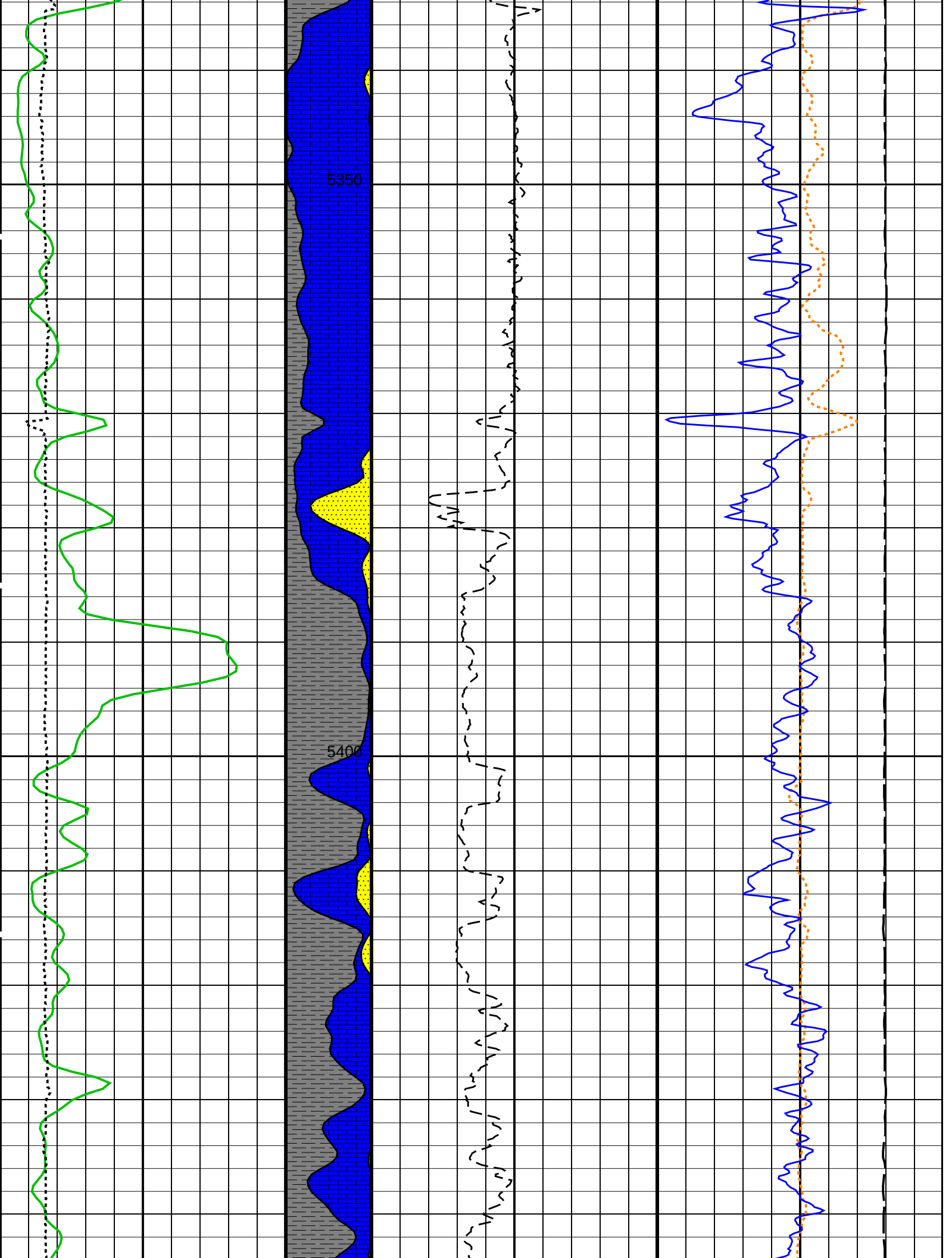
MAIN PASS: *** PLATFORM EXPRESS – LITHOLOGY DENSITY ***

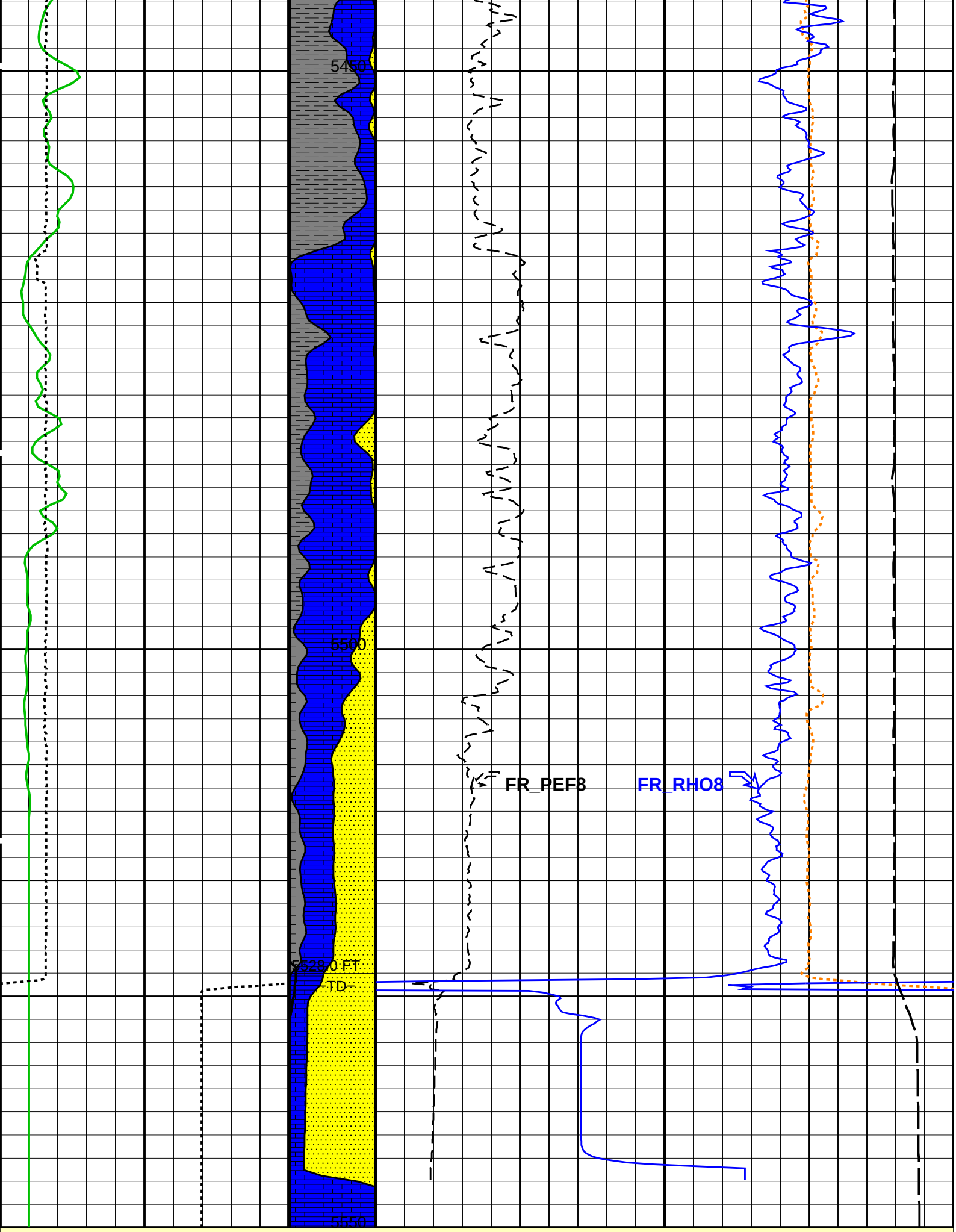



5050
5100

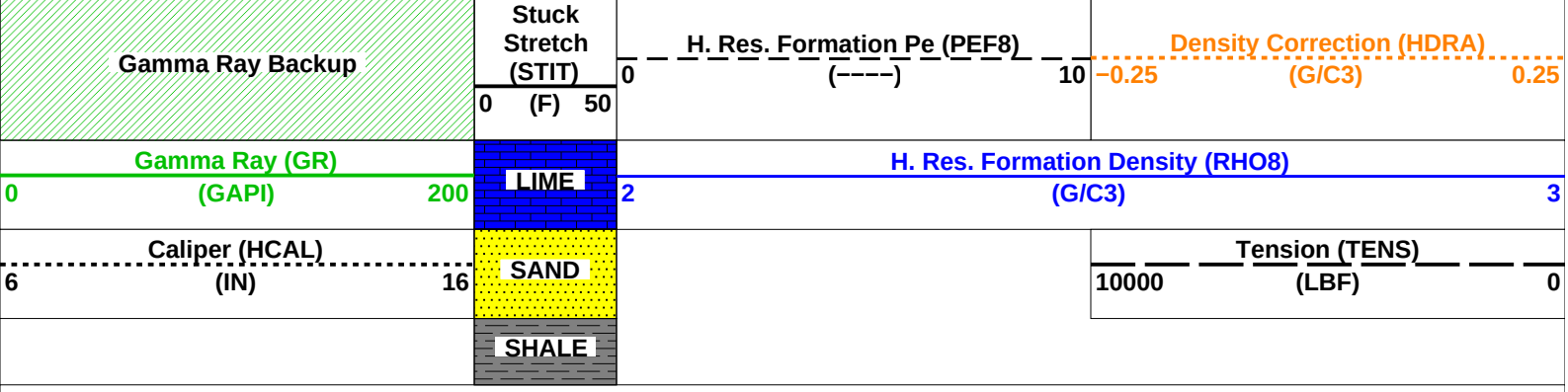

5150
5200


5250
5300


5350
5400



MAIN PASS: *** PLATFORM EXPRESS – LITHOLOGY DENSITY ***



PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HILTB-FTB: High resolution Integrated Logging Tool-DTS		
BHFL_TLD	HILT Nuclear Mud Base	WATER	
DHC	Density Hole Correction	BS	
GCLF	Germany Coal-like Formation Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	HIRES	
NSAR	HRDD Depth Sampling Rate	1.000	in
	STI: Stuck Tool Indicator		
STKT	STI Stuck Threshold	2.500	ft
TDD	Total Depth - Driller	5530.0	ft
TDL	Total Depth - Logger	5528.0	ft
	System and Miscellaneous		
BS	Bit Size	7.875	in
DFD	Drilling Fluid Density	9.200	lbm/gal

Format: DENS_HIRES **Vertical Scale: 10" per 100'** **Graphics File Created: 02-Aug-2011 17:57**

OP System Version: 18C0-147

AITM	18C0-147	HILTD	18C0-147
DTCH	18C0-147		

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_007LUP	FN:6	PRODUCER	02-Aug-2011 16:19	5550.0 FT	0.0 FT
DEFAULT	AIT_TLD_MCFL_CNL_007LUP	FN:6	PRODUCER	02-Aug-2011 16:19	5550.0 FT	0.0 FT

Schlumberger

BEFORE CALIBRATIONS

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Array Induction Tool - M Wellsite Calibration - Electronics Calibration Check - Thru Cal Mag. & Phase							
Master: 16-Jun-2011 9:20 Before: 1-Aug-2011 4:59							
Thru Cal Magnitude - 0	0	0.6232	0.6232	N/A	N/A	N/A	V
Thru Cal Magnitude - 1	0	1.277	1.277	N/A	N/A	N/A	V

Thru Cal Magnitude − 2	0	0.6338	0.6338	N/A	N/A	N/A	V
Thru Cal Magnitude − 3	0	0.7158	0.7159	N/A	N/A	N/A	V
Thru Cal Magnitude − 4	0	1.343	1.343	N/A	N/A	N/A	V
Thru Cal Magnitude − 5	0	1.953	1.953	N/A	N/A	N/A	V
Thru Cal Magnitude − 6	0	1.956	1.956	N/A	N/A	N/A	V
Thru Cal Magnitude − 7	0	1.427	1.427	N/A	N/A	N/A	V
Thru Cal Phase − 0	0	187.1	186.8	N/A	N/A	N/A	DEG
Thru Cal Phase − 1	0	186.1	185.8	N/A	N/A	N/A	DEG
Thru Cal Phase − 2	0	182.5	182.2	N/A	N/A	N/A	DEG
Thru Cal Phase − 3	0	181.8	181.4	N/A	N/A	N/A	DEG
Thru Cal Phase − 4	0	175.6	175.3	N/A	N/A	N/A	DEG
Thru Cal Phase − 5	0	174.0	173.7	N/A	N/A	N/A	DEG
Thru Cal Phase − 6	0	174.0	173.7	N/A	N/A	N/A	DEG
Thru Cal Phase − 7	0	173.0	172.7	N/A	N/A	N/A	DEG

Array Induction Tool − M Wellsite Calibration − Electronics Calibration Check − Auxiliary
Master: 16−Jun−2011 9:20 Before: 1−Aug−2011 4:59

Array Induction SPA Plus	991.0	992.6	992.6	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	0.6312	0.6546	N/A	N/A	N/A	MV
Array Induction Temperature Pl	0.9170	0.9195	0.9196	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	0.0006374	0.0007223	N/A	N/A	N/A	V

Array Induction Tool − M Wellsite Calibration − Test Loop Gain Correction
Master: 16−Jun−2011 9:20

Test Loop Gain Correctio − 0	0	1.043	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 1	0	1.017	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 2	0	1.026	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 3	0	1.021	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 4	0	1.002	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 5	0	0.9904	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 6	0	0.9975	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 7	0	1.006	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 0	0	0.4529	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 1	0	0.7686	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 2	0	0.05323	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 3	0	0.1755	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 4	0	0.08051	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 5	0	−0.09107	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 6	0	0.2852	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 7	0	−0.07289	N/A	N/A	N/A	N/A	DEG

Array Induction Tool − M Wellsite Calibration − Sonde Error Correction
Master: 16−Jun−2011 9:20

R Sonde Error Correction − 0	0	−83.51	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 1	0	161.1	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 2	0	110.8	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 3	0	68.40	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 4	0	27.47	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 5	0	12.19	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 6	0	9.946	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 7	0	−1.793	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 0	0	−403.9	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 1	0	−99.44	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 2	0	64.35	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 3	0	−104.3	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 4	0	−21.13	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 5	0	−14.49	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 6	0	−9.579	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 7	0	−3.504	N/A	N/A	N/A	N/A	MM/M

Array Induction Tool − M Wellsite Calibration − Mud Gain Correction
Master: 16−Jun−2011 9:20

Coarse − Mag, Real, Imag − 0	0	0.8589	N/A	N/A	N/A	N/A	
Coarse − Mag, Real, Imag − 1	0	0.8589	N/A	N/A	N/A	N/A	
Coarse − Mag, Real, Imag − 2	0	0.8589	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 0	0	0.8618	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 1	0	0.8619	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 2	0	0.8619	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Stab Measurement Summary
Before: 1−Aug−2011 5:01

BS Window Ratio	0.7278	N/A	0.7271	N/A	N/A	N/A	
BS Window Sum	9473	N/A	9480	N/A	N/A	N/A	CPS
SS Window Ratio	0.4775	N/A	0.4778	N/A	N/A	N/A	
SS Window Sum	9398	N/A	9390	N/A	N/A	N/A	CPS
LS Window Ratio	0.2927	N/A	0.2887	N/A	N/A	N/A	
LS Window Sum	1040	N/A	1042	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Photo−multiplier High Voltages Calibrations
Before: 1−Aug−2011 5:01

BS PM High Voltage (Command)	1664	N/A	1676	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1426	N/A	1433	N/A	N/A	N/A	V

LS PM High Voltage (Command)	1530	N/A	1528	N/A	N/A	N/A	V

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Crystal Quality Resolutions Calibration
Before: 1−Aug−2011 5:01

BS Crystal Resolution	11.56	N/A	11.63	N/A	N/A	N/A	%
SS Crystal Resolution	10.01	N/A	10.03	N/A	N/A	N/A	%
LS Crystal Resolution	8.870	N/A	8.954	N/A	N/A	N/A	%

High resolution Integrated Logging Tool−DTS Wellsite Calibration − MCFL Calibration
Before: 1−Aug−2011 5:02

Raw B0 Resistivity	3875	N/A	3868	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3806	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3801	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool−DTS Wellsite Calibration − HILT Caliper Calibration
Before: 1−Aug−2011 4:56

HILT Caliper Zero Measurement	8.000	N/A	8.608	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	12.84	N/A	N/A	N/A	IN

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Detector Calibration
Before: 1−Aug−2011 4:57

Gamma Ray Background	30.00	N/A	74.76	N/A	N/A	N/A	GAPI
Gamma Ray (Jig − Bkgd)	165.0	N/A	179.5	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Zero Measurement
Master: 26−Jul−2011 8:44 Before: 1−Aug−2011 4:58

CNTC Background	28.13	28.13	26.81	N/A	N/A	4.220	CPS
CFTC Background	25.95	25.95	25.73	N/A	N/A	3.893	CPS

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Ratio Measurement
Master: 26−Jul−2011 8:44

Thermal Near Corr. (Tank)	5800	4840	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2064	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.345	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Accelerometer Calibration
Before: 2−Aug−2011 15:23

Z−Axis Acceleration	32.19	N/A	32.12	N/A	N/A	N/A	F/S2

High resolution Integrated Logging Tool−DTS Master Calibration − Inversion results
Master: 28−Jul−2011 15:04

Rho Aluminum	2.596	2.597	−−	−−	−−	−−	G/C3
Rho Magnesium	1.686	1.688	−−	−−	−−	−−	G/C3
Pe Aluminum	2.570	2.539	−−	−−	−−	−−	
Pe Magnesium	2.650	2.629	−−	−−	−−	−−	

High resolution Integrated Logging Tool−DTS Master Calibration − Deviation Summary
Master: 28−Jul−2011 15:04

BS Average Deviation	0	0.4013	−−	−−	−−	−−	%
BS Max Deviation	0	0.8638	−−	−−	−−	−−	%
SS Average Deviation	0	0.3115	−−	−−	−−	−−	%
SS Max Deviation	0	0.8795	−−	−−	−−	−−	%
LS Average Deviation	0	0.5381	−−	−−	−−	−−	%
LS Max Deviation	0	1.410	−−	−−	−−	−−	%

The GLS−VJ source activity is acceptable.

The HGNS Neutron Master Calibration was done with the following parameters :

NCT−B Water Temperature	70.0	DEGF.
Thermal Housing Size	3.372	IN.
NSR−F serial number	5068	

Array Induction Tool − M / Equipment Identification

Primary Equipment:

Rm/SP Bottom Nose	AMRM − A	
Array Induction Sonde	AMIS − A	1270

Auxiliary Equipment:

Array Induction Tool − M Wellsite Calibration

Electronics Calibration Check − Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Thru Cal Phase DEG	Nominal
0	Master	0.6232		0.6100	187.1		197.0
	Before	0.6232			186.8		
1	Master	1.277		1.270	186.1		196.0
	Before	1.277			185.8		
2	Master	0.6338		0.6200	182.5		192.0
	Before	0.6338			182.2		
3	Master	0.7158		0.7000	181.8		191.0
	Before	0.7159			181.4		
4	Master	1.343		1.340	175.6		185.0
	Before	1.343			175.3		
5	Master	1.953		1.960	174.0		182.0
	Before	1.953			173.7		
6	Master	1.956		1.960	174.0		181.0
	Before	1.956			173.7		
7	Master	1.427		1.410	173.0		175.0
	Before	1.427			172.7		
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom −60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)

Master: 16−Jun−2011 9:20 Before: 1−Aug−2011 4:59

Array Induction Tool − M Wellsite Calibration

Electronics Calibration Check − Auxiliary

Phase	Array Induction SPA Plus MV	Value
Master		992.6
Before		992.6
	941.0 (Minimum) 991.0 (Nominal) 1040 (Maximum)	

Phase	Array Induction SPA Zero MV	Value
Master		0.6312
Before		0.6546
	−50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)	

Phase	Array Induction Temperature Plus V	Value
Master		0.9195
Before		0.9196
	0.8710 (Minimum) 0.9170 (Nominal) 0.9630 (Maximum)	

Phase	Array Induction Temperature Zero V	Value
Master		0.0006374
Before		0.0007223
	−0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	

Master: 16−Jun−2011 9:20 Before: 1−Aug−2011 4:59

Array Induction Tool − M Wellsite Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Correction Magnitude V	Value	Test Loop Gain Correction Phase DEG
0	1.043		0.4529	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
1	1.017		0.7686	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
2	1.026		0.05323	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
3	1.021		0.1755	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
4	1.002		0.08051	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
5	0.9904		−0.09107	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)

6	0.9975				0.2852			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.006				−0.07289			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master: 16−Jun−2011 9:20

Array Induction Tool − M Wellsite Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	−83.51				−403.9			
		−231.0 (Minimum)	−56.00 (Nominal)	119.0 (Maximum)		−2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	161.1				−99.44			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		−625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	110.8				64.35			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		−350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	68.40				−104.3			
		39.00 (Minimum)	64.00 (Nominal)	89.30 (Maximum)		−250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	27.47				−21.13			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		−63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	12.19				−14.49			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		−50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	9.946				−9.579			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	−1.793				−3.504			
		−5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: 16−Jun−2011 9:20

Array Induction Tool − M Wellsite Calibration

Mud Gain Correction

Idx	Value	Coarse − Mag, Real, Imag			Value	Fine − Mag, Real, Imag		
0	0.8589				0.8618			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	0.8589				0.8619			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	0.8589				0.8619			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

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Array Induction Tool − M Master Calibration

Electronics Calibration Check − Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Thru Cal Phase DEG	Nominal
0	Master	0.6232		0.6100	187.1		197.0
1	Master	1.277		1.270	186.1		196.0
2	Master	0.6338		0.6200	182.5		192.0
3	Master	0.7158		0.7000	181.8		191.0
4	Master	1.343		1.340	175.6		185.0
5	Master	1.953		1.960	174.0		182.0
6	Master	1.956		1.960	174.0		181.0
7	Master	1.427		1.410	173.0		175.0

	60.00 % (Minimum)	140.0 % (Maximum)	
	Nom −60.00 (Minimum)	Nom + 60.00 (Maximum)	

Master: 16−Jun−2011 9:20

Array Induction Tool − M Master Calibration

Electronics Calibration Check − Auxiliary

Phase	Array Induction SPA Plus MV	Value
Master		992.6
	941.0 (Minimum) 991.0 (Nominal) 1040 (Maximum)	

Phase	Array Induction SPA Zero MV	Value
Master		0.6312
	−50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)	

Phase	Array Induction Temperature Plus V	Value
Master		0.9195
	0.8710 (Minimum) 0.9170 (Nominal) 0.9630 (Maximum)	

Phase	Array Induction Temperature Zero V	Value
Master		0.0006374
	−0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	

Master: 16−Jun−2011 9:20

Array Induction Tool − M Master Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Correction Magnitude V	Value	Test Loop Gain Correction Phase DEG
0	1.043	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.4529	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
1	1.017	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.7686	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
2	1.026	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.05323	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
3	1.021	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.1755	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
4	1.002	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.08051	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
5	0.9904	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	−0.09107	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
6	0.9975	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.2852	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
7	1.006	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	−0.07289	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)

Master: 16−Jun−2011 9:20

Array Induction Tool − M Master Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M	Value	X Sonde Error Correction MM/M
0	−83.51	−231.0 (Minimum) −56.00 (Nominal) 119.0 (Maximum)	−403.9	−2250 (Minimum) 0 (Nominal) 2250 (Maximum)
1	161.1	114.0 (Minimum) 159.0 (Nominal) 204.0 (Maximum)	−99.44	−625.0 (Minimum) 0 (Nominal) 625.0 (Maximum)
2	110.8	66.00 (Minimum) 111.0 (Nominal) 156.0 (Maximum)	64.35	−350.0 (Minimum) 0 (Nominal) 350.0 (Maximum)
3	68.40	39.00 (Minimum) 64.00 (Nominal) 89.30 (Maximum)	−104.3	−250.0 (Minimum) 0 (Nominal) 250.0 (Maximum)
4	27.47	15.00 (Minimum) 25.00 (Nominal) 35.00 (Maximum)	−21.13	−63.00 (Minimum) 0 (Nominal) 63.00 (Maximum)
5	12.19	4.000 (Minimum) 14.00 (Nominal) 24.00 (Maximum)	−14.49	−50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)

6	9.946				−9.579				
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)	
7	−1.793				−3.504				
		−5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)	

Master: 16−Jun−2011 9:20

Array Induction Tool − M Master Calibration

Mud Gain Correction

Idx	Value	Coarse − Mag, Real, Imag			Value	Fine − Mag, Real, Imag		
0	0.8589				0.8618			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	0.8589				0.8619			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	0.8589				0.8619			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Master: 16−Jun−2011 9:20

High resolution Integrated Logging Tool−DTS / Equipment Identification

Primary Equipment:

HILT high−Resolution Mechanical Sonde	HRMS − B	
HILT Rxo Gamma−ray Device	HRGD − B	
HILT Micro Cylindrically Focused Log Dev	MCFL −	
GR Logging Source	GLS − VJ	5094
HILT High Res. Control Cartridge	HRCC − B	
HILT Gamma−Ray Neutron Sonde−DTS	HGNS − B	
HGNS Gamma−Ray Device	HGR −	
HGNS Neutron Detector with Alpha Source	HCNT −	

Auxiliary Equipment:

Neutron Calibration Tank	NCT − B	
Gamma Source Radioactive	GSR − U/Y	
HGNS Housing	HGNH −	

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Stab Measurement Summary

Phase	BS Window Ratio	Value	Phase	SS Window Ratio	Value	Phase	LS Window Ratio	Value
Before		0.7271	Before		0.4778	Before		0.2887
	0.6914 (Minimum) 0.7278 (Nominal) 0.7642 (Maximum)			0.4537 (Minimum) 0.4775 (Nominal) 0.5014 (Maximum)			0.2781 (Minimum) 0.2927 (Nominal) 0.3073 (Maximum)	
Phase	BS Window Sum CPS	Value	Phase	SS Window Sum CPS	Value	Phase	LS Window Sum CPS	Value
Before		9480	Before		9390	Before		1042
	9000 (Minimum) 9473 (Nominal) 9947 (Maximum)			8928 (Minimum) 9398 (Nominal) 9868 (Maximum)			987.9 (Minimum) 1040 (Nominal) 1092 (Maximum)	

Before: 1−Aug−2011 5:01

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Photo−multiplier High Voltages Calibrations

Phase	BS PM High Voltage (Command) V	Value	Phase	SS PM High Voltage (Command) V	Value	Phase	LS PM High Voltage (Command) V	Value
Before		1676	Before		1433	Before		1528
	1564 (Minimum) 1664 (Nominal) 1764 (Maximum)			1326 (Minimum) 1426 (Nominal) 1526 (Maximum)			1430 (Minimum) 1530 (Nominal) 1630 (Maximum)	

Before: 1−Aug−2011 5:01

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Crystal Quality Resolutions Calibration

Phase	BS Crystal Resolution %	Value	Phase	SS Crystal Resolution %	Value	Phase	LS Crystal Resolution %	Value
Before		11.63	Before		10.03	Before		8.954
	10.56 (Minimum) 11.56 (Nominal) 12.56 (Maximum)			9.007 (Minimum) 10.01 (Nominal) 11.01 (Maximum)			7.870 (Minimum) 8.870 (Nominal) 9.870 (Maximum)	

Before: 1−Aug−2011 5:01

High resolution Integrated Logging Tool−DTS Wellsite Calibration

MCFL Calibration

Phase	Raw B0 Resistivity OHMM	Value	Phase	Raw B1 Resistivity OHMM	Value	Phase	Raw B2 Resistivity OHMM	Value
Before		3868	Before		3806	Before		3801
	3565 (Minimum) 3875 (Nominal) 4185 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)	

Before: 1−Aug−2011 5:02

High resolution Integrated Logging Tool−DTS Wellsite Calibration

HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement IN	Value	Phase	HILT Caliper Plus Measurement IN	Value
Before		8.608	Before		12.84
	6.000 (Minimum) 8.000 (Nominal) 10.00 (Maximum)			9.000 (Minimum) 12.00 (Nominal) 15.00 (Maximum)	

Before: 1−Aug−2011 4:56

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig − Bkgd) GAPI	Value
Before		74.76	Before		179.5
	0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)			157.1 (Minimum) 165.0 (Nominal) 206.3 (Maximum)	

Before: 1−Aug−2011 4:57

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		28.13	Master		25.95
Before		26.81	Before		25.73
	5.000 (Minimum) 28.13 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 25.95 (Nominal) 40.00 (Maximum)	

Master: 26−Jul−2011 8:44 Before: 1−Aug−2011 4:58

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Ratio Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		4840	Master		2064	Master		2.345
	4700 (Minimum) 5800 (Nominal) 6900 (Maximum)			1900 (Minimum) 2400 (Nominal) 2900 (Maximum)			2.120 (Minimum) 2.159 (Nominal) 2.540 (Maximum)	

Master: 26−Jul−2011 8:44

High resolution Integrated Logging Tool−DTS
Wellsite Calibration

Accelerometer Calibration

Phase	Z−Axis Acceleration F/S2	Value
Before		32.12
	31.53 (Minimum) 32.19 (Nominal) 32.84 (Maximum)	

Before: 2−Aug−2011 15:23

High resolution Integrated Logging Tool−DTS Master Calibration

Inversion results

Phase	Rho Aluminum G/C3	Value	Phase	Rho Magnesium G/C3	Value
Master		2.597	Master		1.688
	2.586 (Minimum) 2.596 (Nominal) 2.606 (Maximum)			1.676 (Minimum) 1.686 (Nominal) 1.696 (Maximum)	
Phase	Pe Aluminum	Value	Phase	Pe Magnesium	Value
Master		2.539	Master		2.629
	2.470 (Minimum) 2.570 (Nominal) 2.670 (Maximum)			2.550 (Minimum) 2.650 (Nominal) 2.750 (Maximum)	

Master: 28−Jul−2011 15:04

High resolution Integrated Logging Tool−DTS Master Calibration

Deviation Summary

Phase	BS Average Deviation %	Value	Phase	SS Average Deviation %	Value	Phase	LS Average Deviation %	Value
Master		0.4013	Master		0.3115	Master		0.5381
	−0.6000 (Minimum) 0 (Nominal) 0.6000 (Maximum)			−1.000 (Minimum) 0 (Nominal) 1.000 (Maximum)			−1.500 (Minimum) 0 (Nominal) 1.500 (Maximum)	

Phase	BS Max Deviation %	Value	Phase	SS Max Deviation %	Value	Phase	LS Max Deviation %	Value
Master		0.8638	Master		0.8795	Master		1.410
	−1.600 (Minimum) 0 (Nominal) 1.600 (Maximum)			−2.500 (Minimum) 0 (Nominal) 2.500 (Maximum)			−3.500 (Minimum) 0 (Nominal) 3.500 (Maximum)	

Master: 28−Jul−2011 15:04

High resolution Integrated Logging Tool−DTS Master Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		28.13	Master		25.95
	5.000 (Minimum) 28.13 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 25.95 (Nominal) 40.00 (Maximum)	

Master: 26−Jul−2011 8:44

High resolution Integrated Logging Tool−DTS Master Calibration

Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		4840	Master		2064	Master		2.345
	4700 (Minimum) 5800 (Nominal) 6900 (Maximum)			1900 (Minimum) 2400 (Nominal) 2900 (Maximum)			2.120 (Minimum) 2.159 (Nominal) 2.540 (Maximum)	

Master: 26−Jul−2011 8:44

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: **Vecta Oil & Gas Ltd**

Schlumberger

Well: **Torreys 31−4**
Field: **Wildcat**
County: **Cheyenne**
State: **Colorado**

Platform Express
Compensated Neutron
Litho Density