Schlumberger

Company: **ANADARKO**

Well: **CHEESE STATE 37N−28HZ**
Field: **WATTENBERG**
County: **WELD** State: **COLORADO**

County: WELD
Field: WATTENBERG
Location: 428' FNL, 860' FEL, T3N R65W S
Well: CHEESE STATE 37N−28HZ
Company: ANADARKO

SLIM CEMENT MAPPING LOG
CBL−VDL
GR−CCL

LOCATION

428' FNL, 860' FEL, T3N R65W SEC 28 NENE

Elev.: K.B. 4843.00 ft
G.L. 4818.00 ft
D.F. 4842.00 ft

Permanent Datum: GROUND LEVEL Elev.: 4818.00 ft
Log Measured From: KELLY BUSHING 25.00 ft above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No.	Section	Township	Range
0512340945	28	3N	65W

		Run 1	Run 2	Run
PVT DATA	Oil Density			
	Water Salinity			
	Gas Gravity			
	Bo			
	Bw			
	1/Bg			
	Bubble Point Pressure			
	Bubble Point Temperature			
	Solution GOR			
	Maximum Deviation			
	CEMENTING DATA			
	Primary/Squeeze	Primary		
	Casing String No			
	Lead Cement Type			
	Volume			
	Density			
	Water Loss			
	Additives			
	Tail Cement Type			
	Volume			
	Density			
	Water Loss			
	Additives			
	Expected Cement Top			

Logging Date		15−Jul−2015					Logging Date	
Run Number		1					Run Number	
Depth Driller		12679 ft					Depth Driller	
Schlumberger Depth		7397 ft					Schlumberger Depth	
Bottom Log Interval		7388 ft					Bottom Log Interval	
Top Log Interval		25 ft					Top Log Interval	
Casing Fluid Type		WATER					Casing Fluid Type	
Salinity							Salinity	
Density		8.4 lbm/gal					Density	
Fluid Level		25 ft					Fluid Level	
BIT/CASING/TUBING STRING							BIT/CASING/TUBING STRING	
Bit Size		8.500 in					Bit Size	
From		25 ft					From	
To		12679 ft					To	
Casing/Tubing Size		5.500 in					Casing/Tubing Size	
Weight		17 lbm/ft					Weight	
Grade		HCP−110 LTC					Grade	
From		25 ft					From	
To		12670 ft					To	
Maximum Recorded Temperatures		254 degF					Maximum Recorded Temperatures	
Logger On Bottom	Time	15−Jul−2015	13:00				Logger On Bottom	Time
Unit Number	Location	354	PLATTEVILLE				Unit Number	Location
Recorded By		KIRSTIE BUNTING					Recorded By	
Witnessed By		VAN FRANKE					Witnessed By	

Run 3

Run 4

DISCLAIMER

THE USE OF AND RELIANCE UPON THIS RECORDED−DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED−DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED−DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED−DATA.

OTHER SERVICES1	OTHER SERVICES2
OS1: NONE	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
FIRST RUN IN HOLE CORRELATED TO MJ AT 6419 FT	
MAIN PASS LOGGED UNDER 2800 PSI AT SURFACE	
ENTRANCE: 12:30	
TIME ON BOTTOM: 13:00	
EXIT: 15:30	
MRT: 254 DEGF	
MRP: 5907 PSI	
THANK YOU FOR CHOOSING E&P WIRELINE, A SCHLUMBERGER COMPANY!	
CREW: KBUNTING, RWILEY, JJUMP, BKRAL	

RUN 1

SERVICE ORDER #: CGF9−00254
PROGRAM VERSION: 19C0−187
FLUID LEVEL: 25 ft

LOGGED INTERVAL	START	STOP

RUN 2

SERVICE ORDER #:
PROGRAM VERSION:
FLUID LEVEL:

LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1 RUN 2

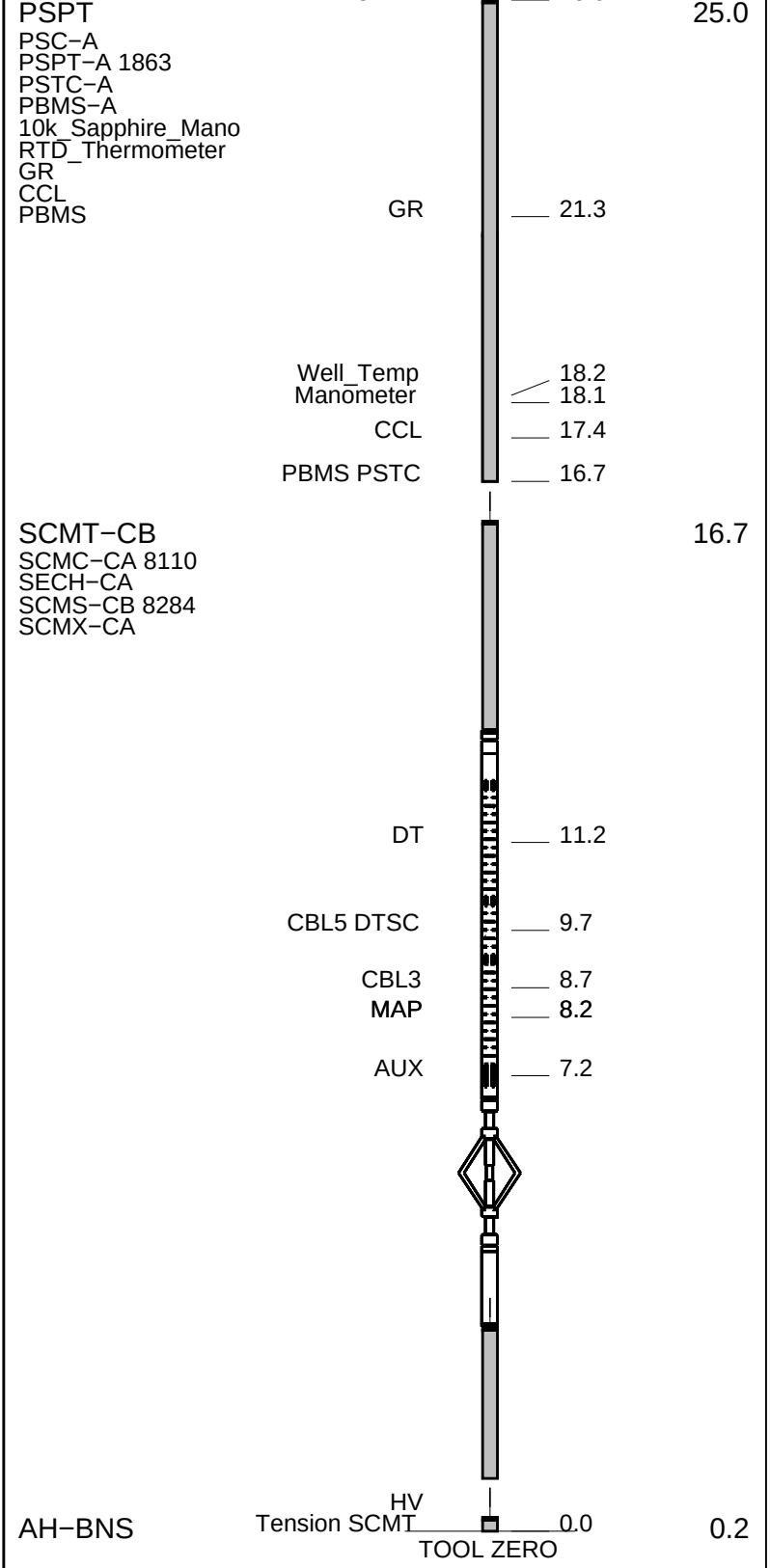
SURFACE EQUIPMENT

WITM−A
PSC_16MHZ

DOWNHOLE EQUIPMENT

MH−22 26.8
MH−22

AH−38 Detail MT 25.2
TelStatus
CTEM 25.0



MAXIMUM STRING DIAMETER 1.69 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Schlumberger

MAIN PASS CBL−VDL 2800PSI

MAXIS Field Log

Company: ANADARKO **Well: CHEESE STATE 37N−28HZ**

Input DLIS Files

DEFAULT	SCMT_PSP_012PUP	FN:11	PRODUCER	15−Jul−2015 19:44	7429.0 FT	20.5 FT

Output DLIS Files

DEFAULT	SCMT_PSP_006PUP	FN:5	PRODUCER	15−Jul−2015 21:45	7429.0 FT	20.5 FT

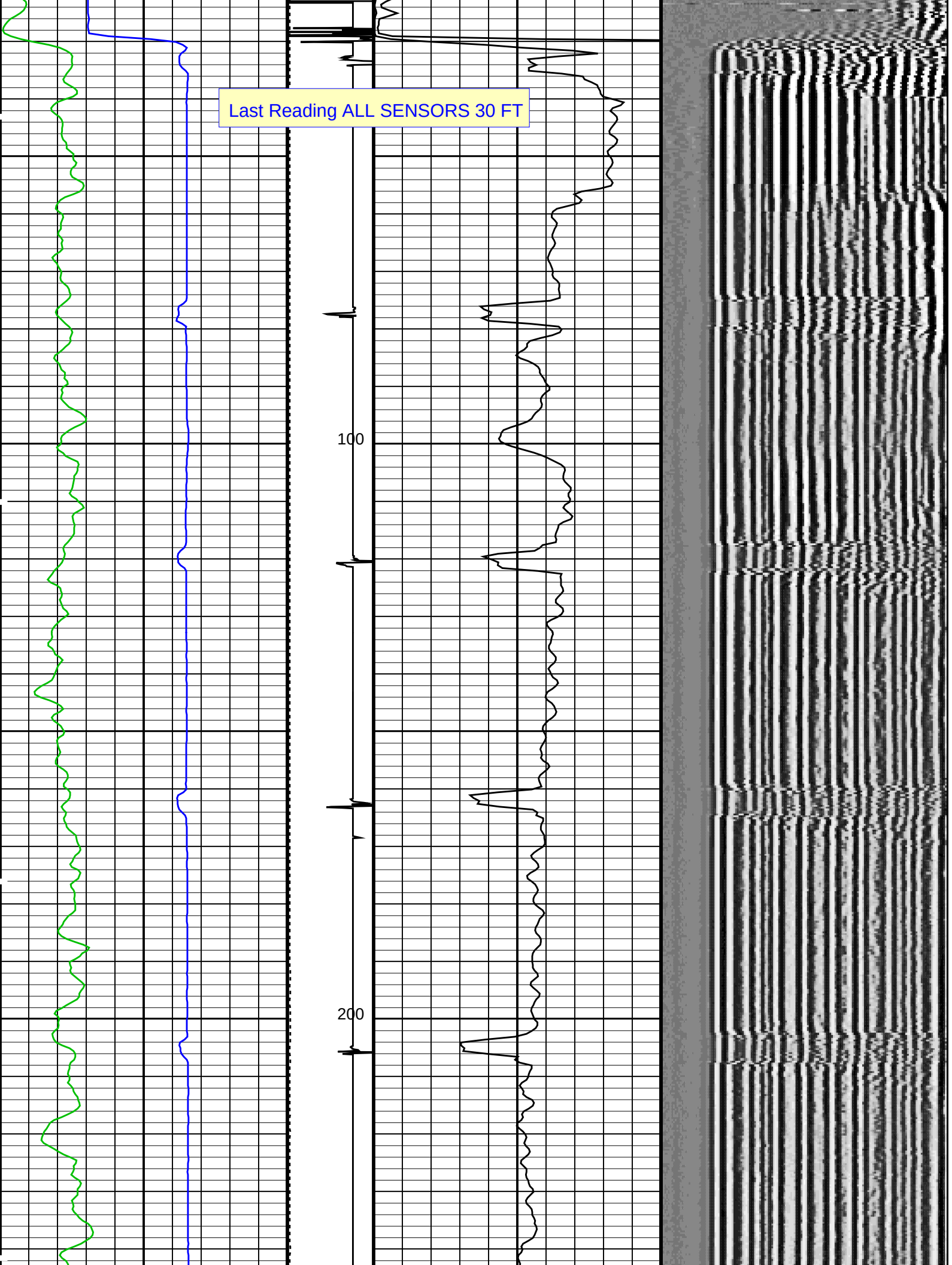
OP System Version: 19C0−187

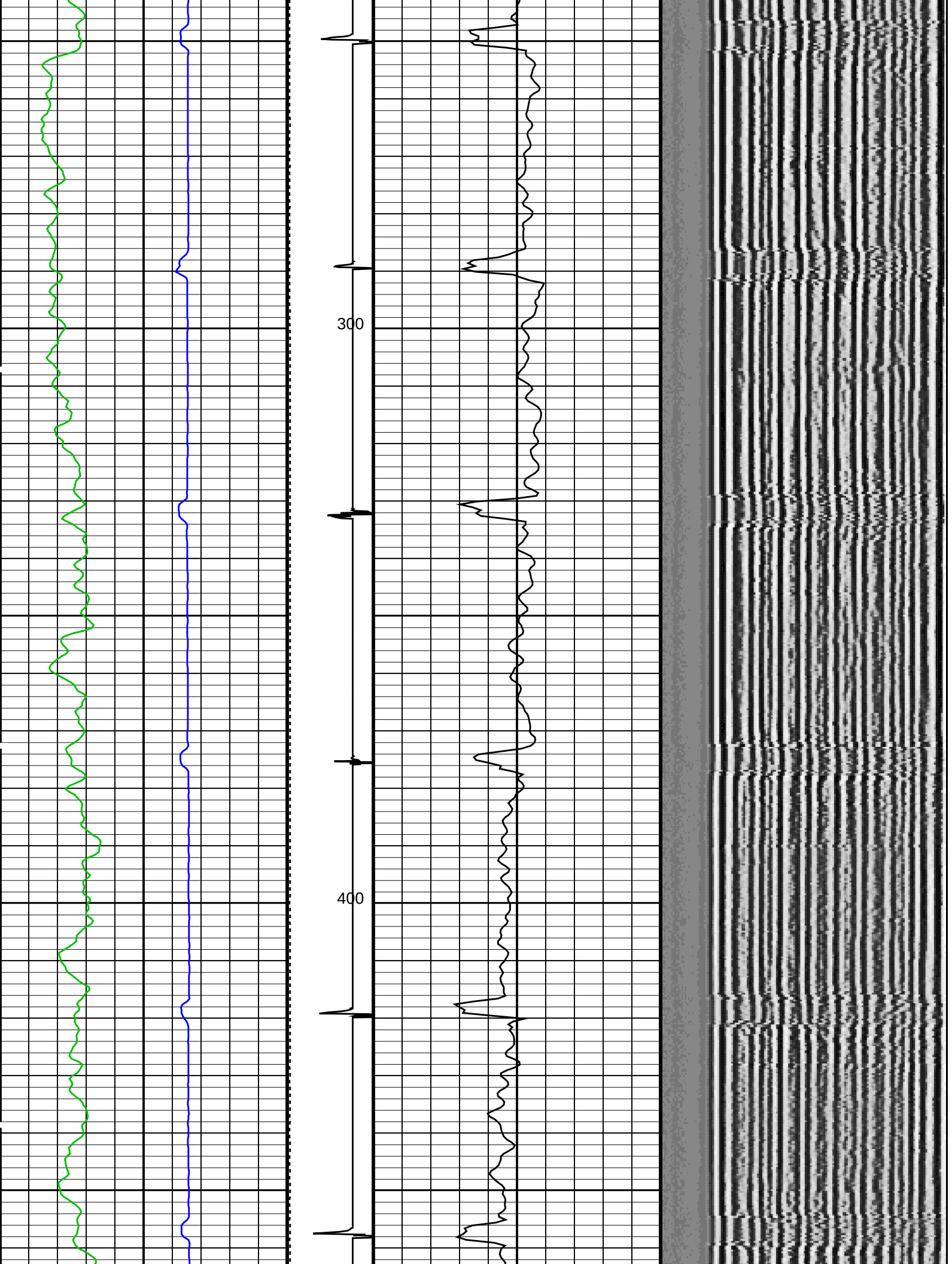
SCMT−CB	19C0−187	PSPT	19C0−187

PIP SUMMARY

Time Mark Every 60 S

Transit Time (TT) 400 (US) 200	Discriminated CCL (CCLD) 3 (V) −1	CBL Amplitude (CBL) 0 (MV) 100	
Gamma Ray (GR) 0 (GAPI) 150	Tension (TENS) (LBF) 0 5000	CBL Amplitude (CBL) 0 (MV) 10	Min Amplitude Max VDL VariableDensity (VDL) 200 (US) 1200


Last Reading ALL SENSORS 30 FT
100
200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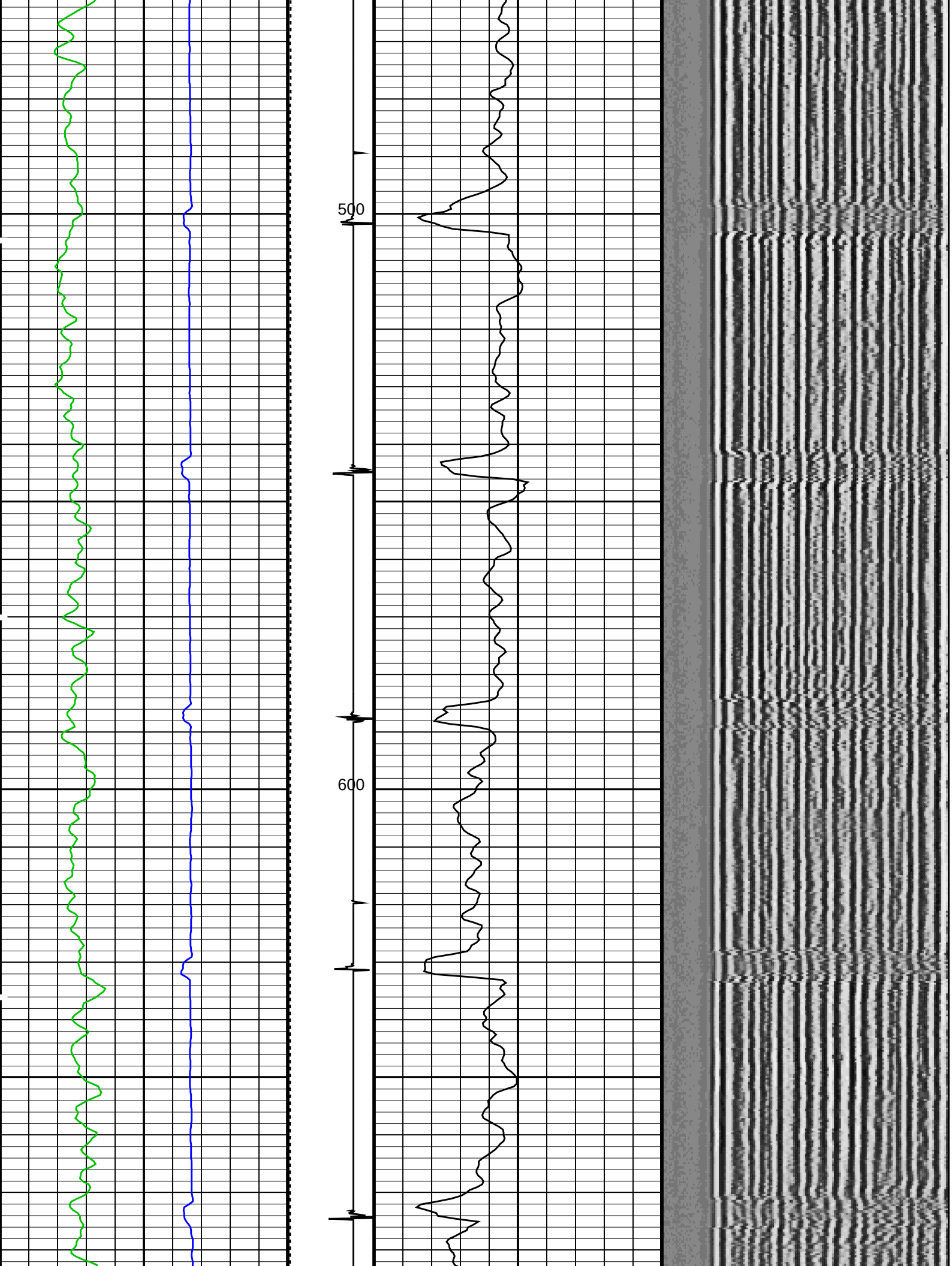
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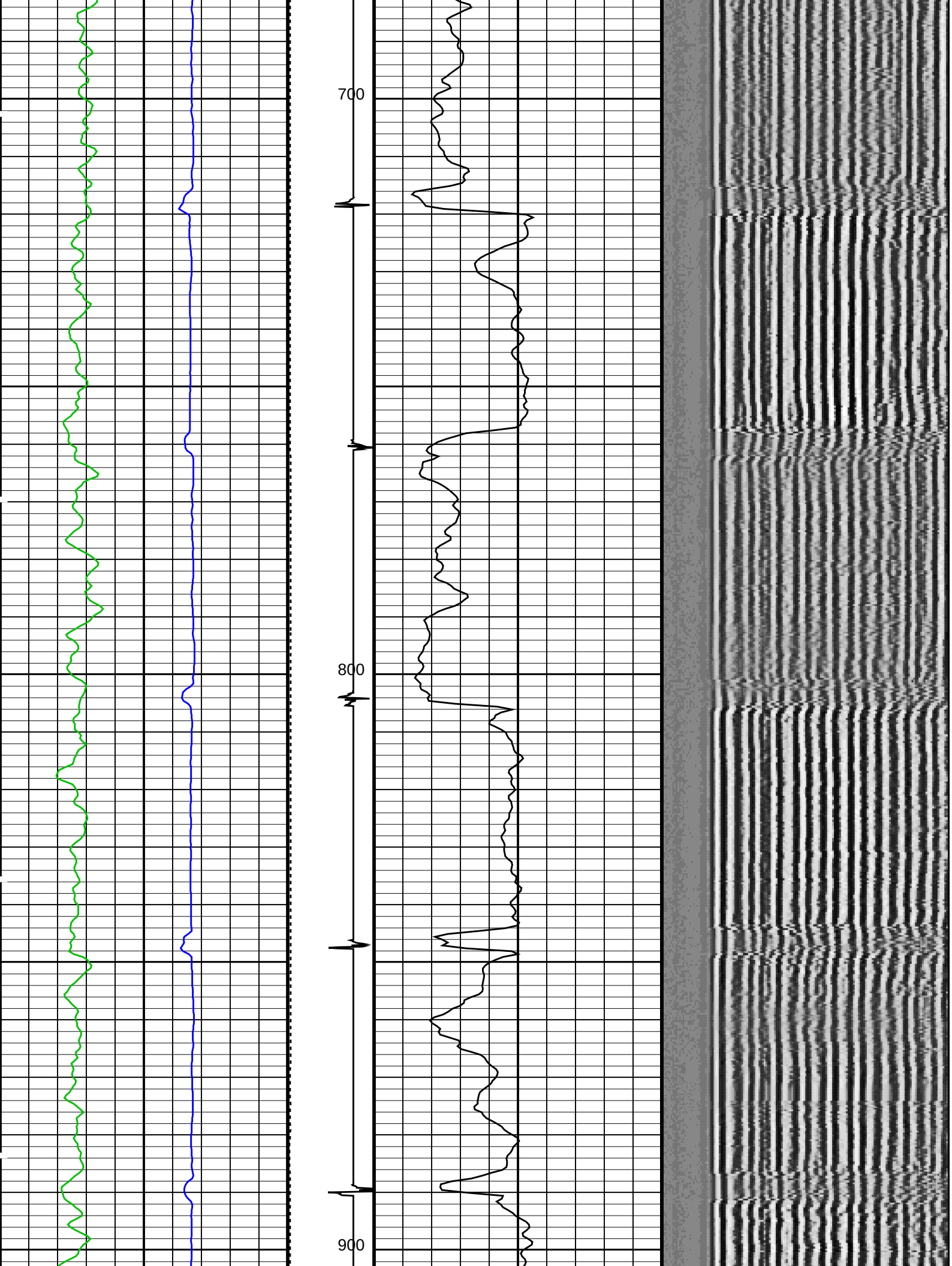
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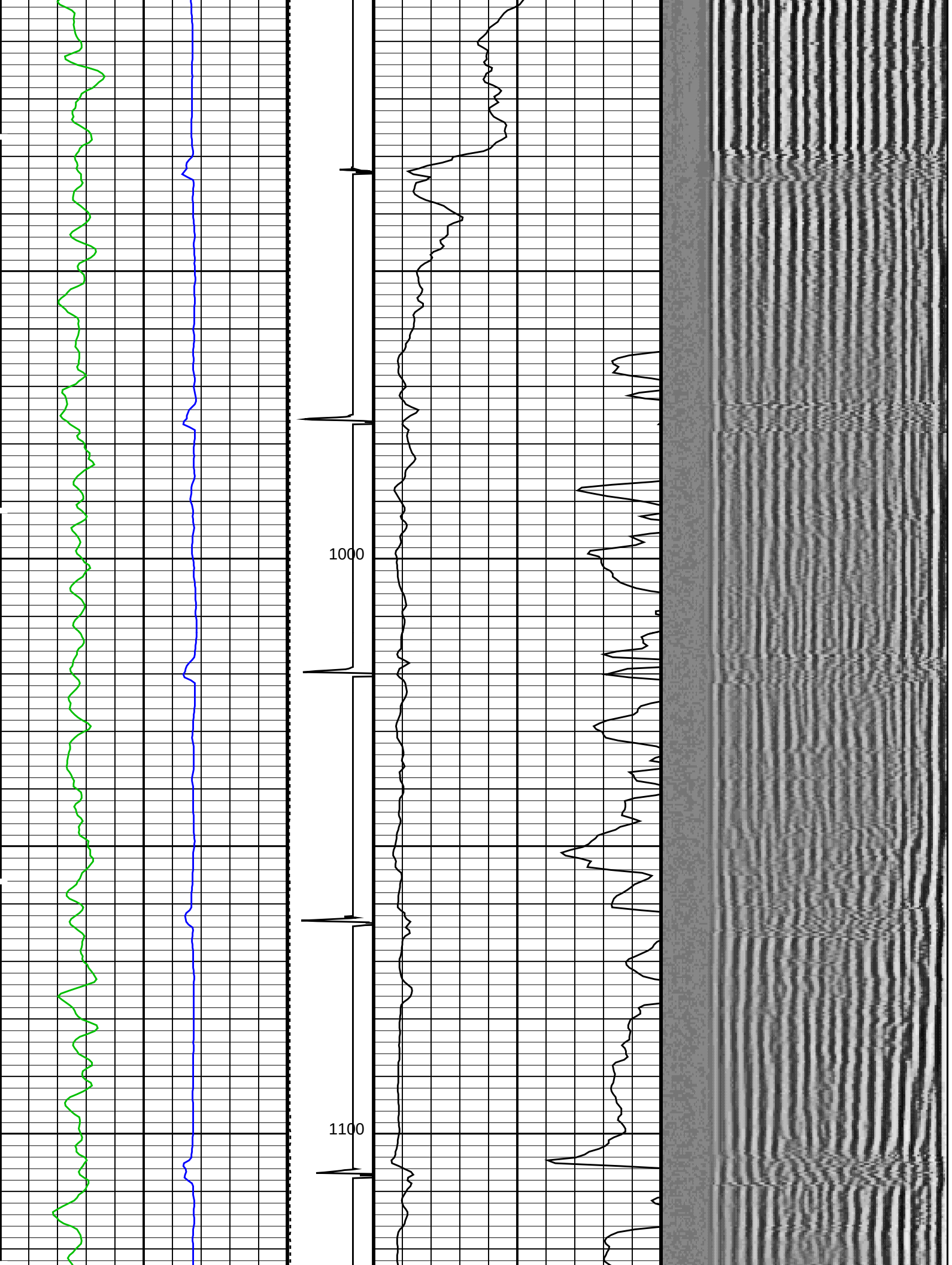
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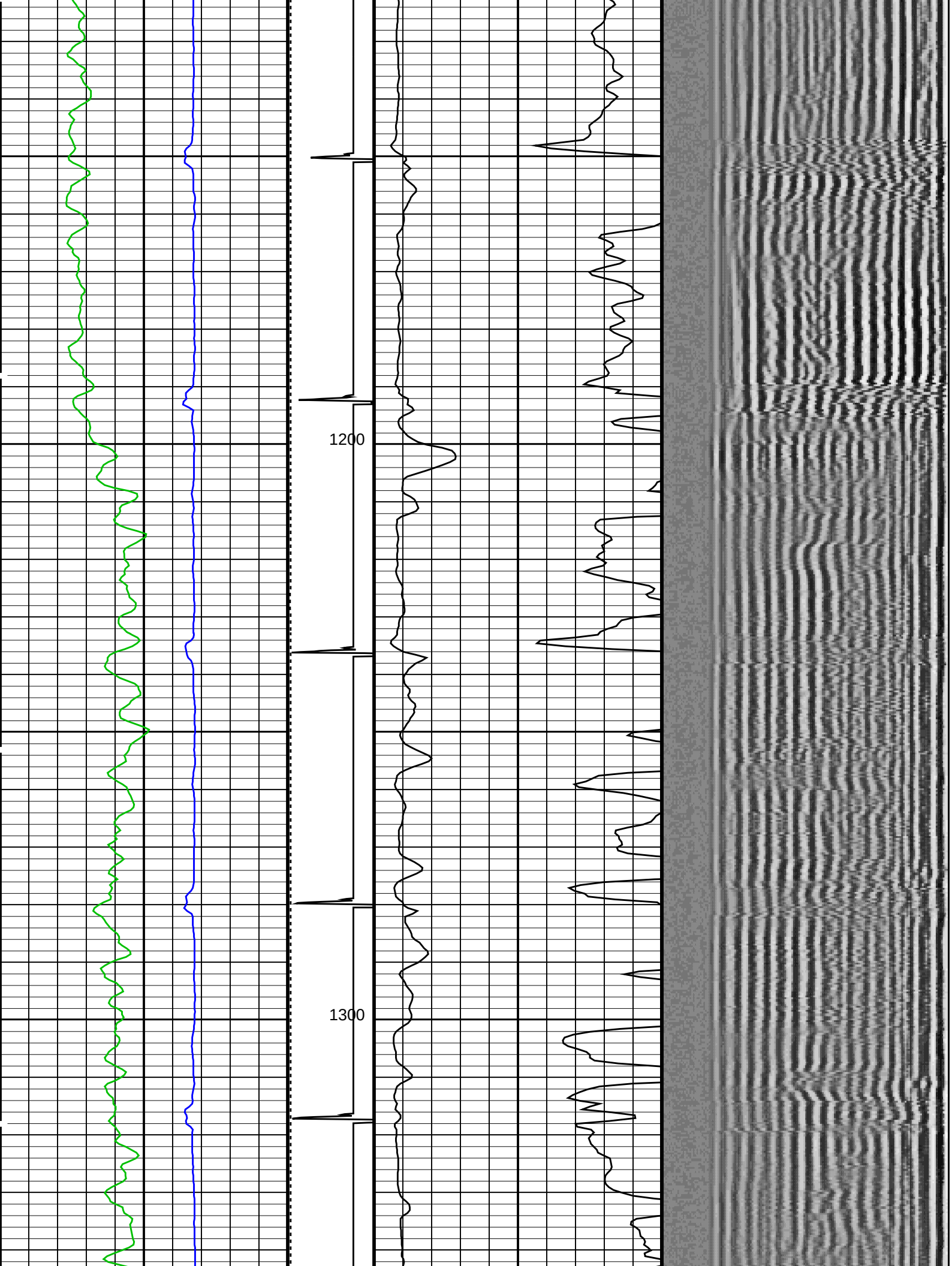
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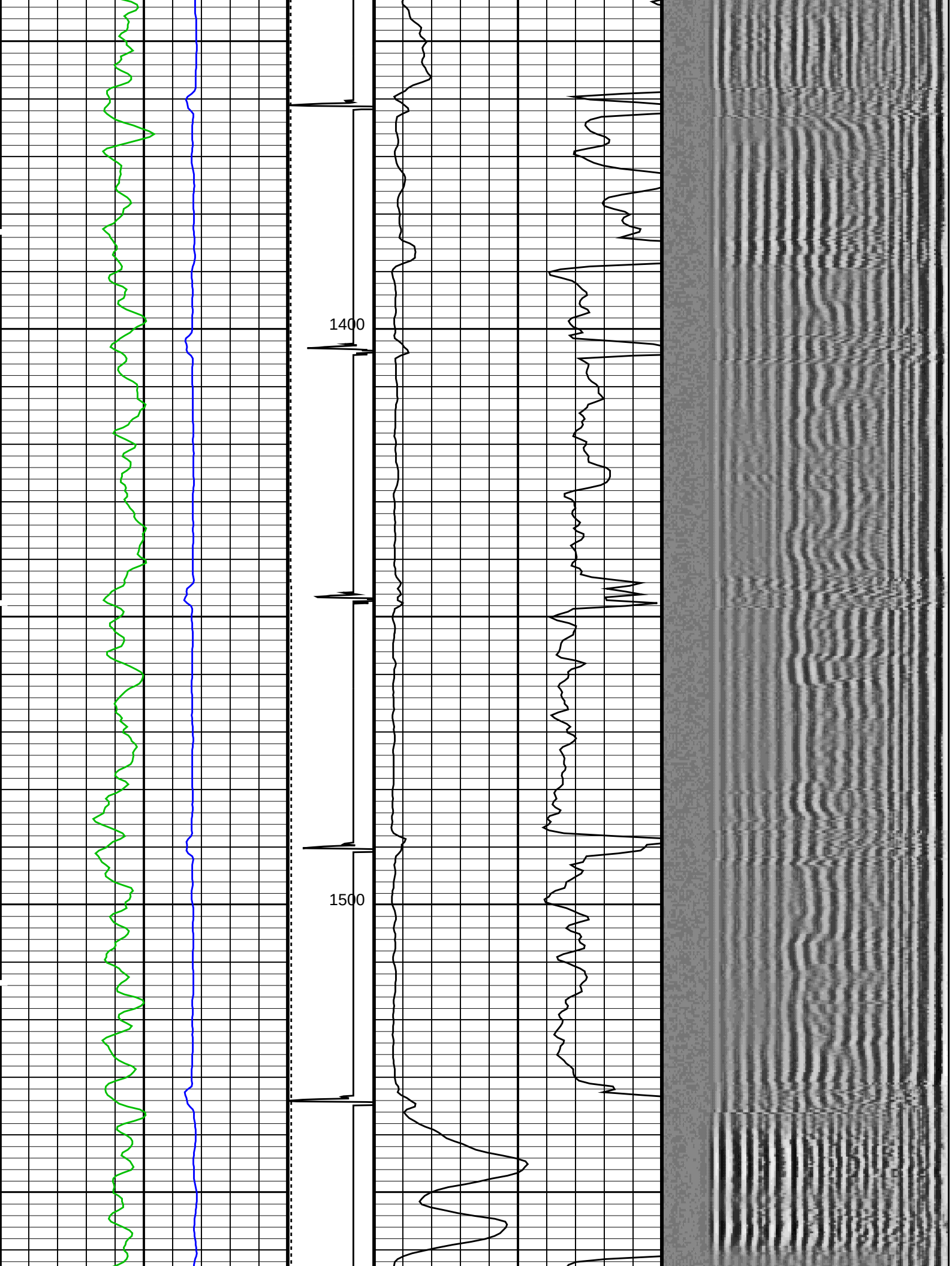
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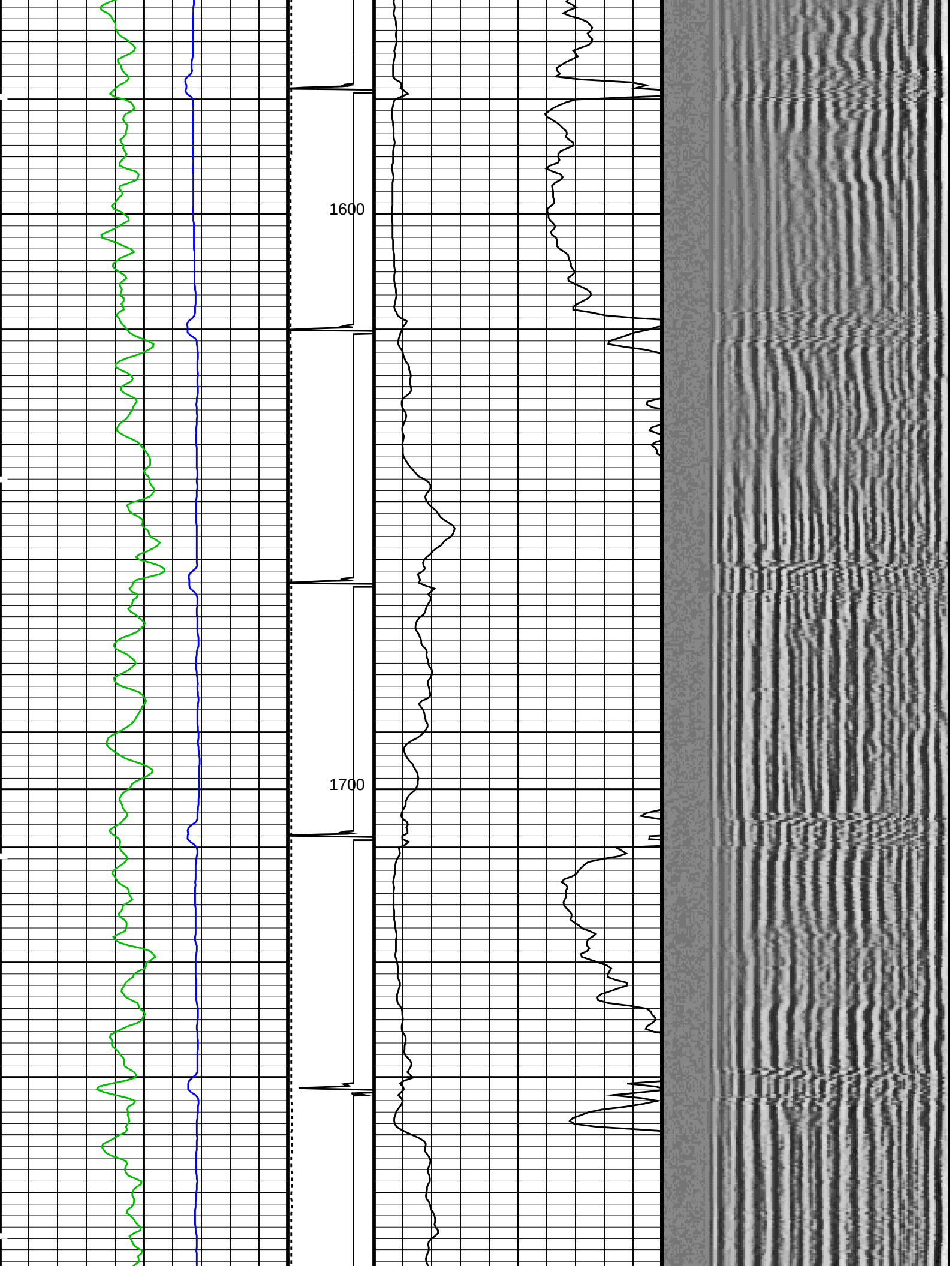
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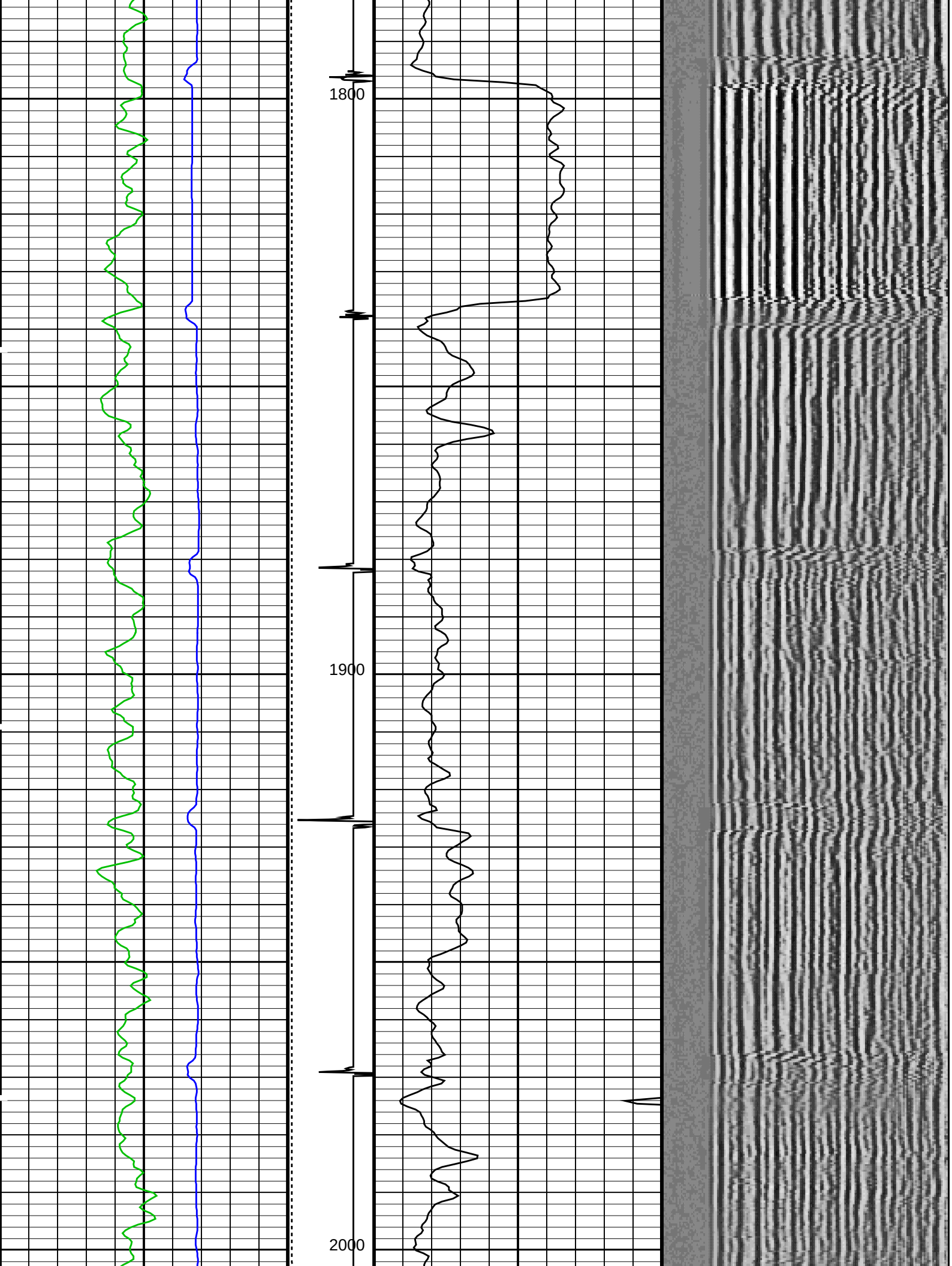
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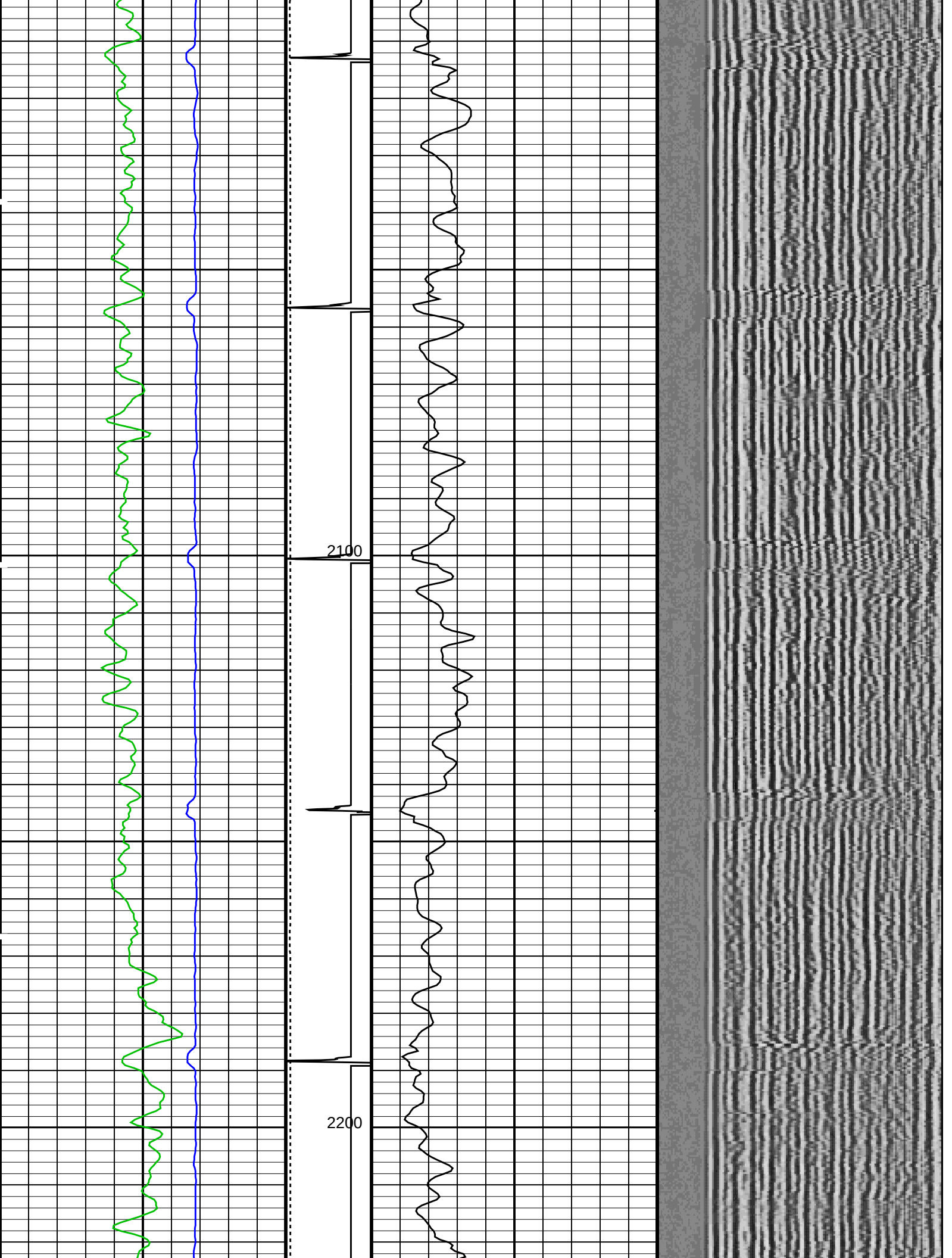
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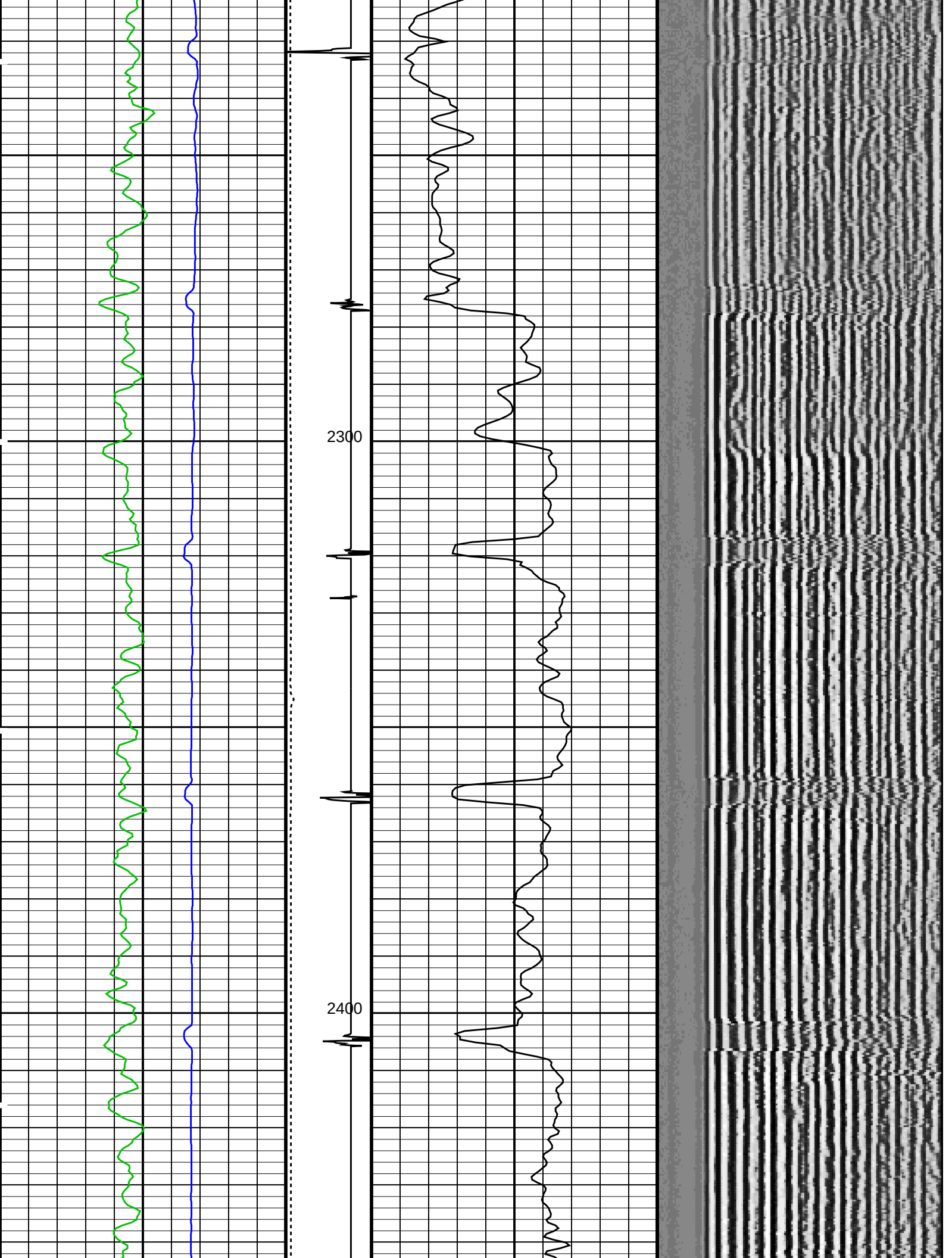
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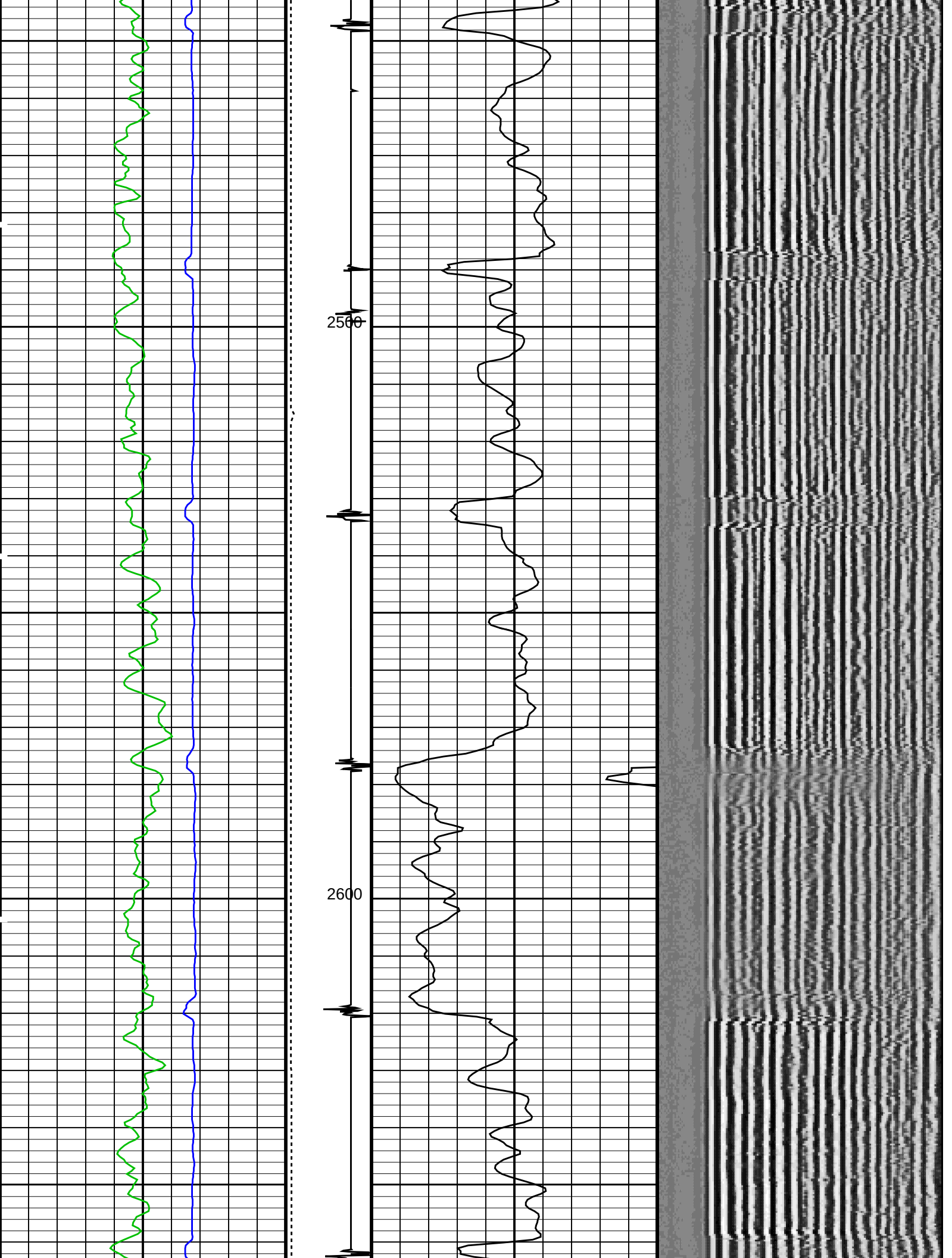
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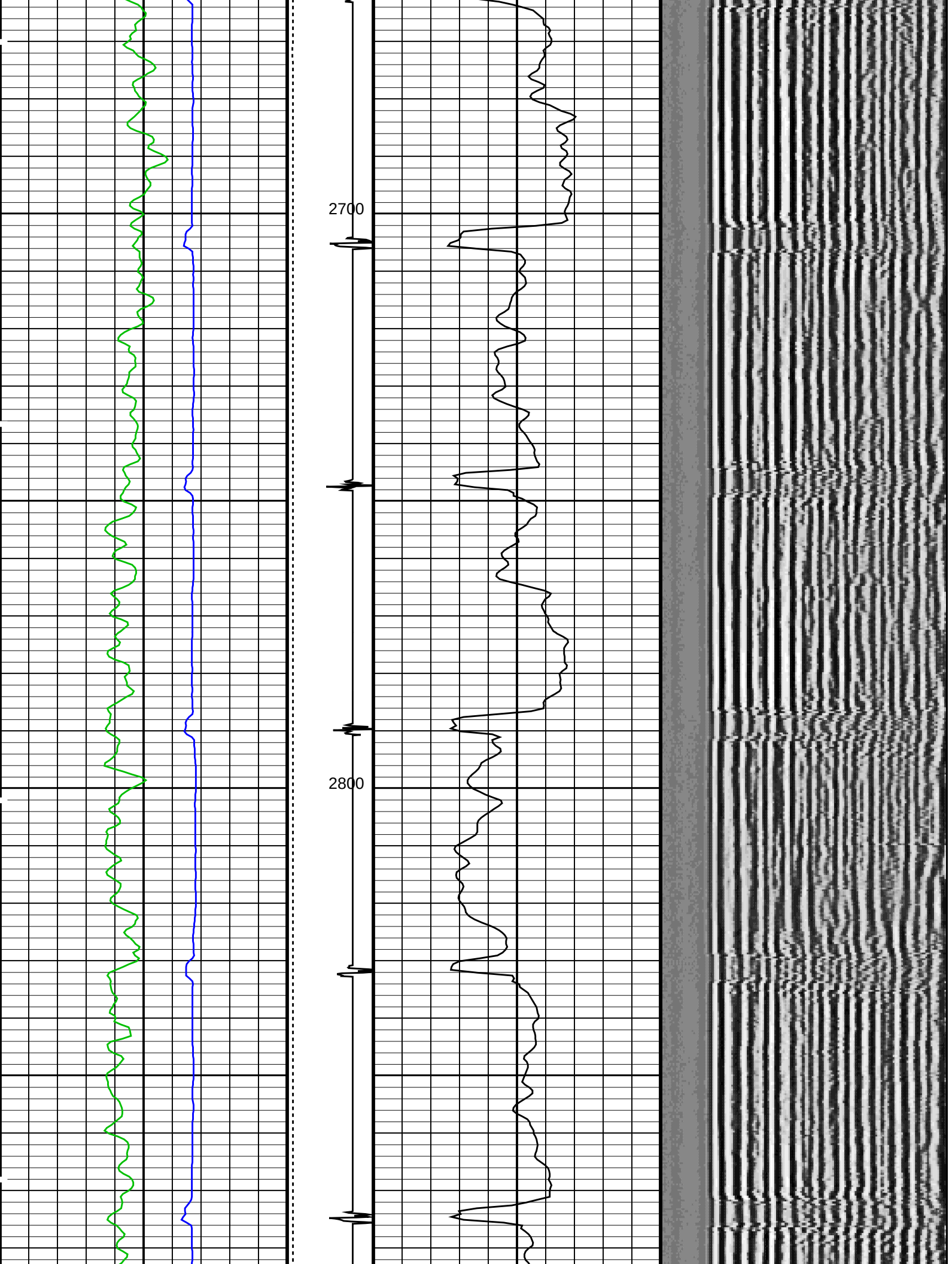
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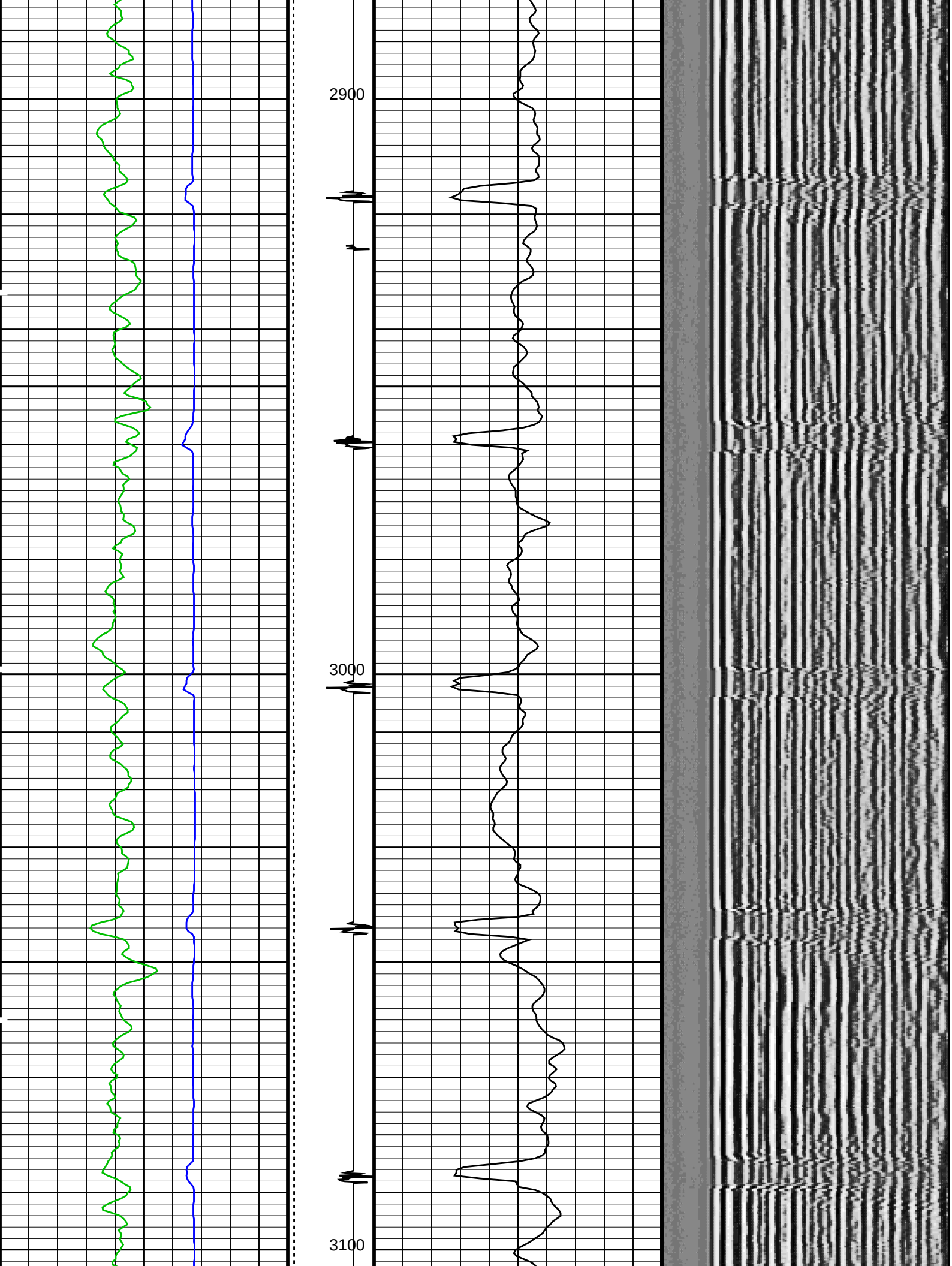
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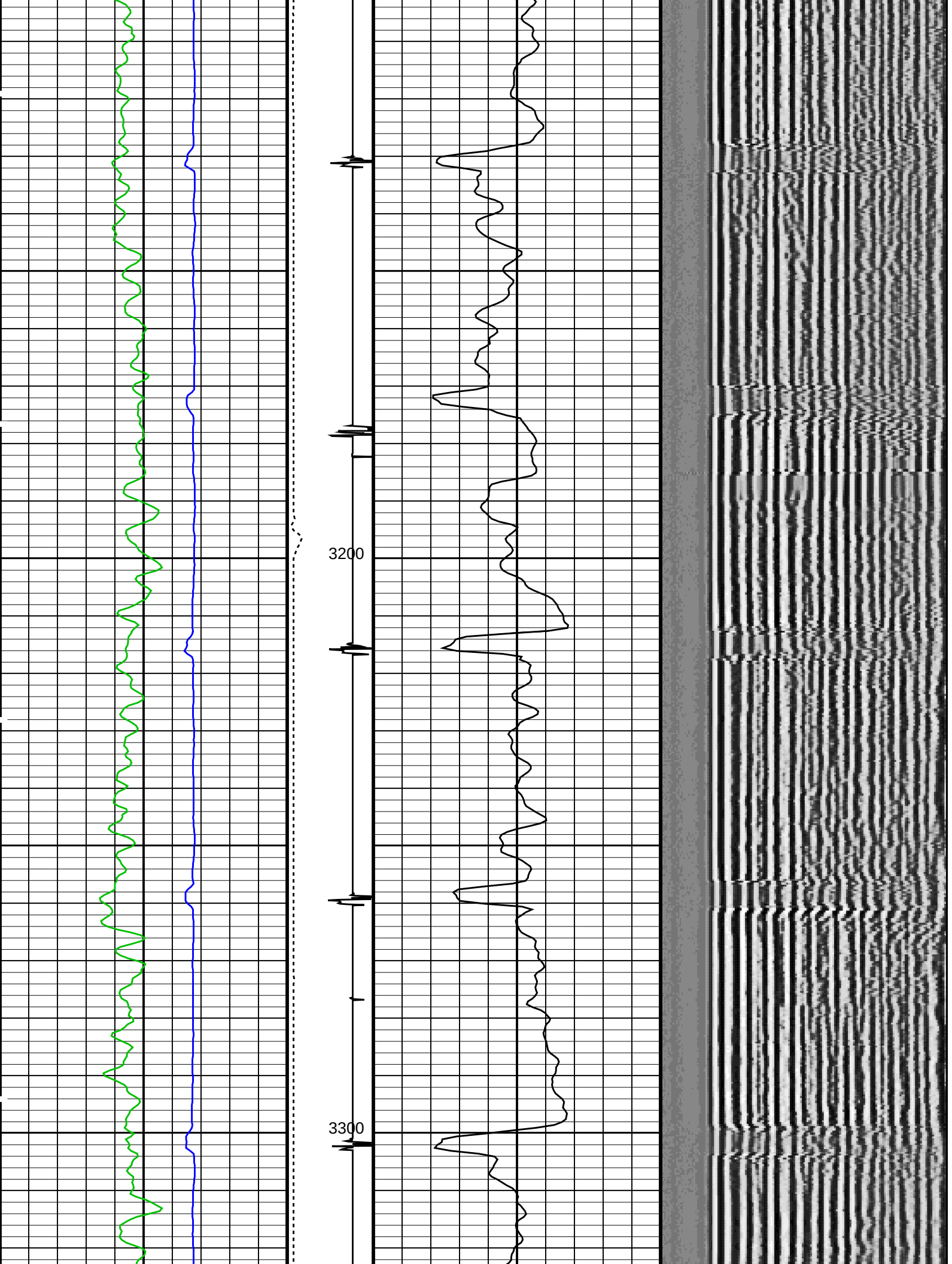
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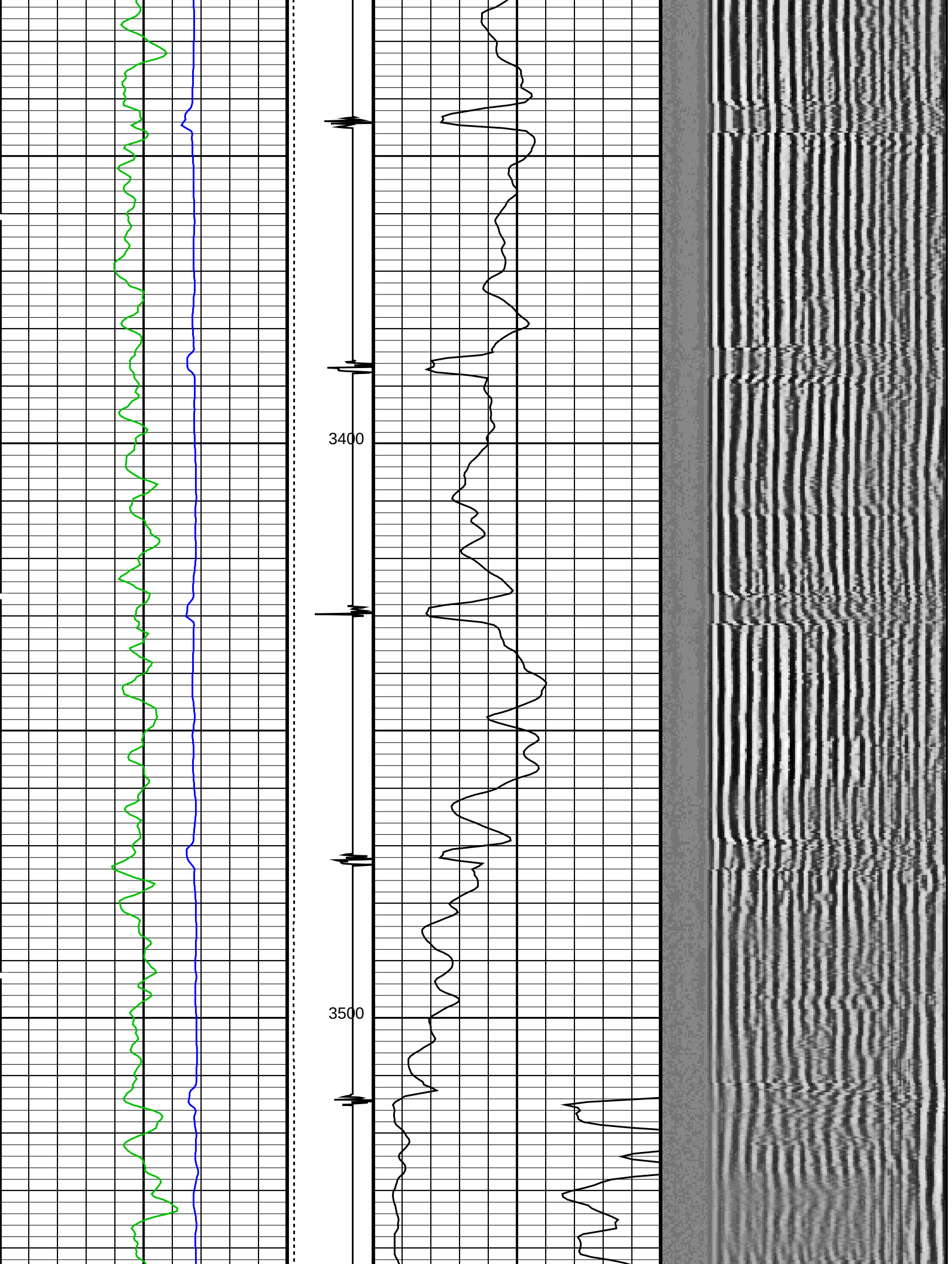
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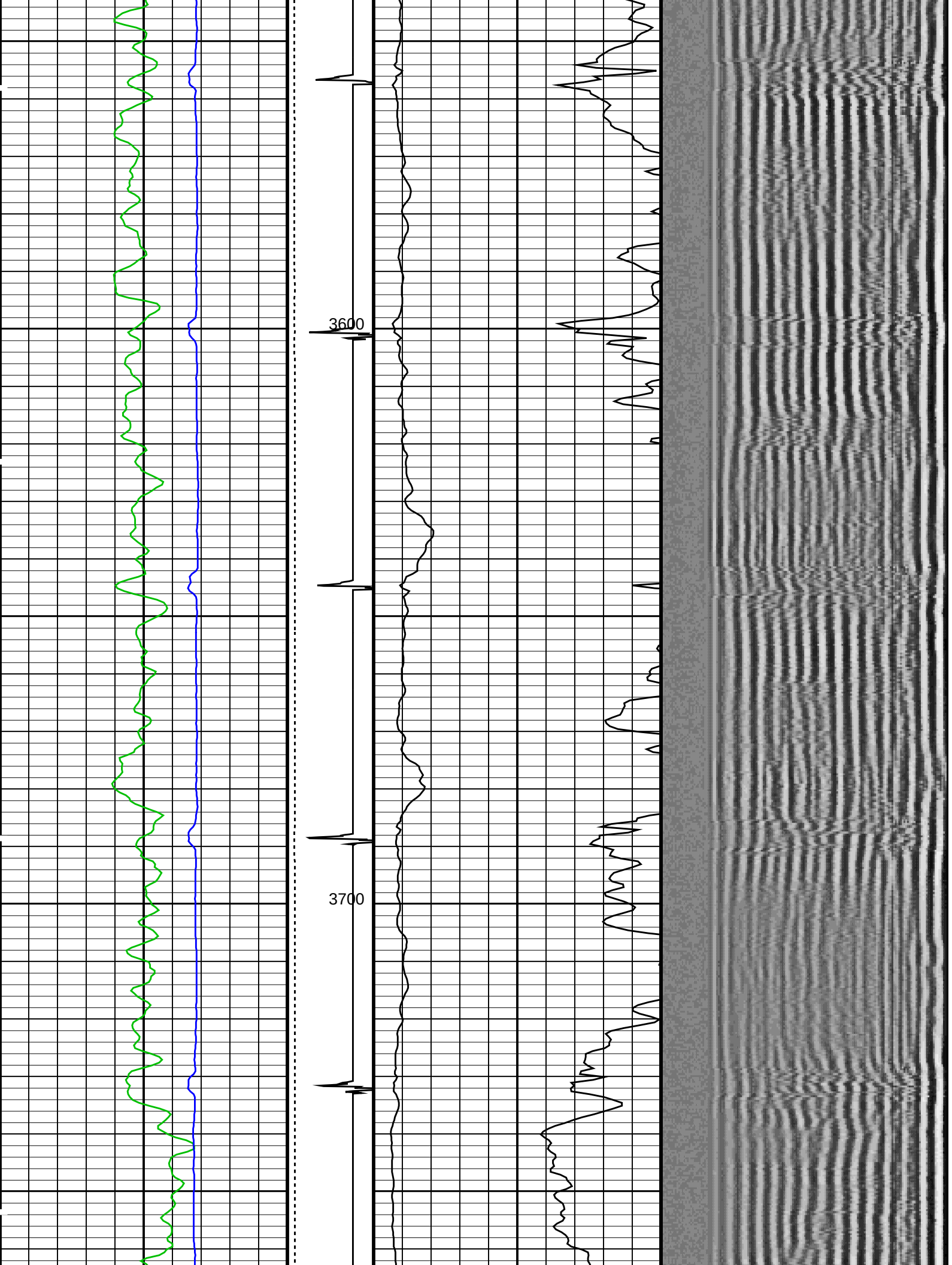
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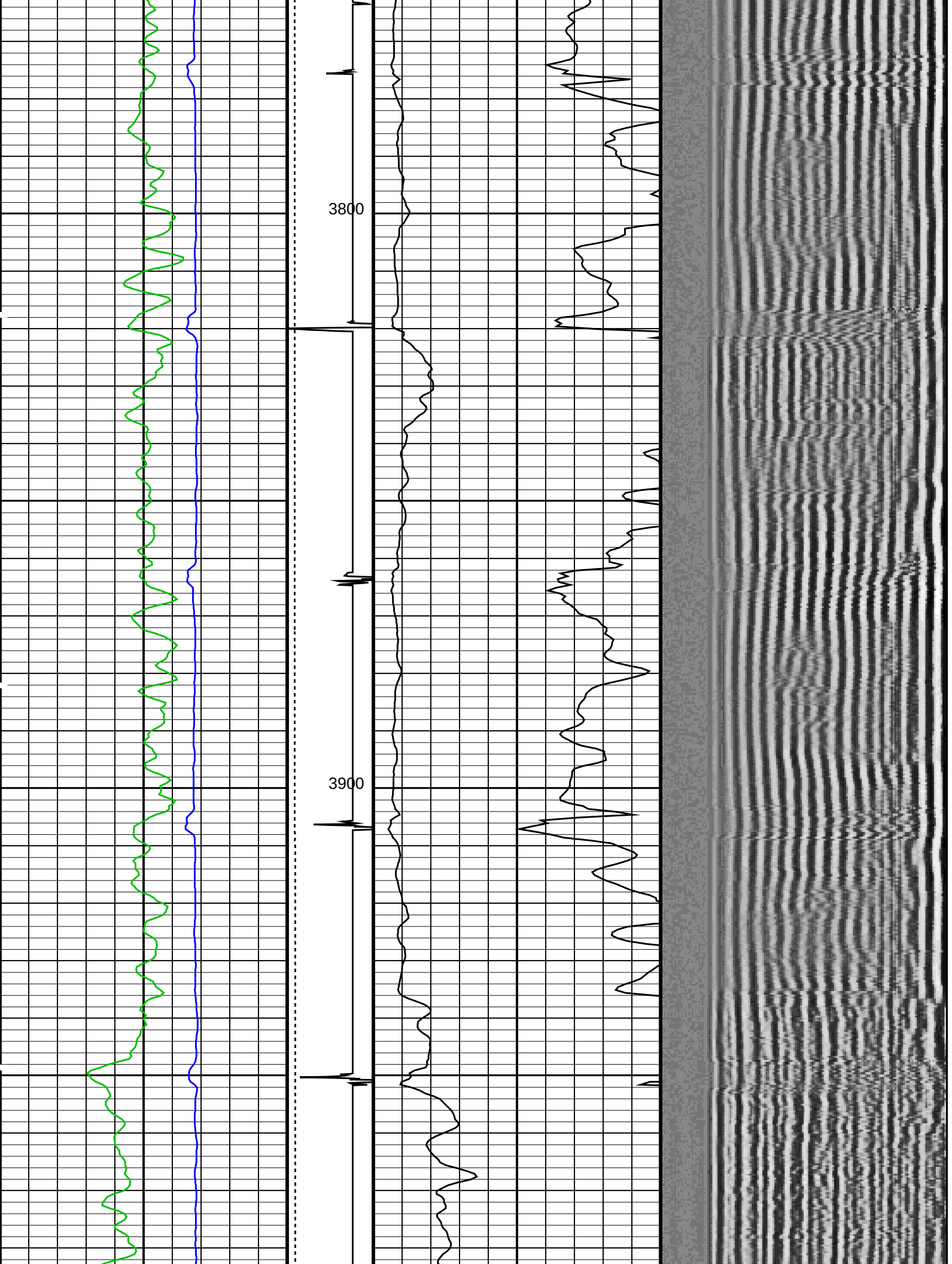
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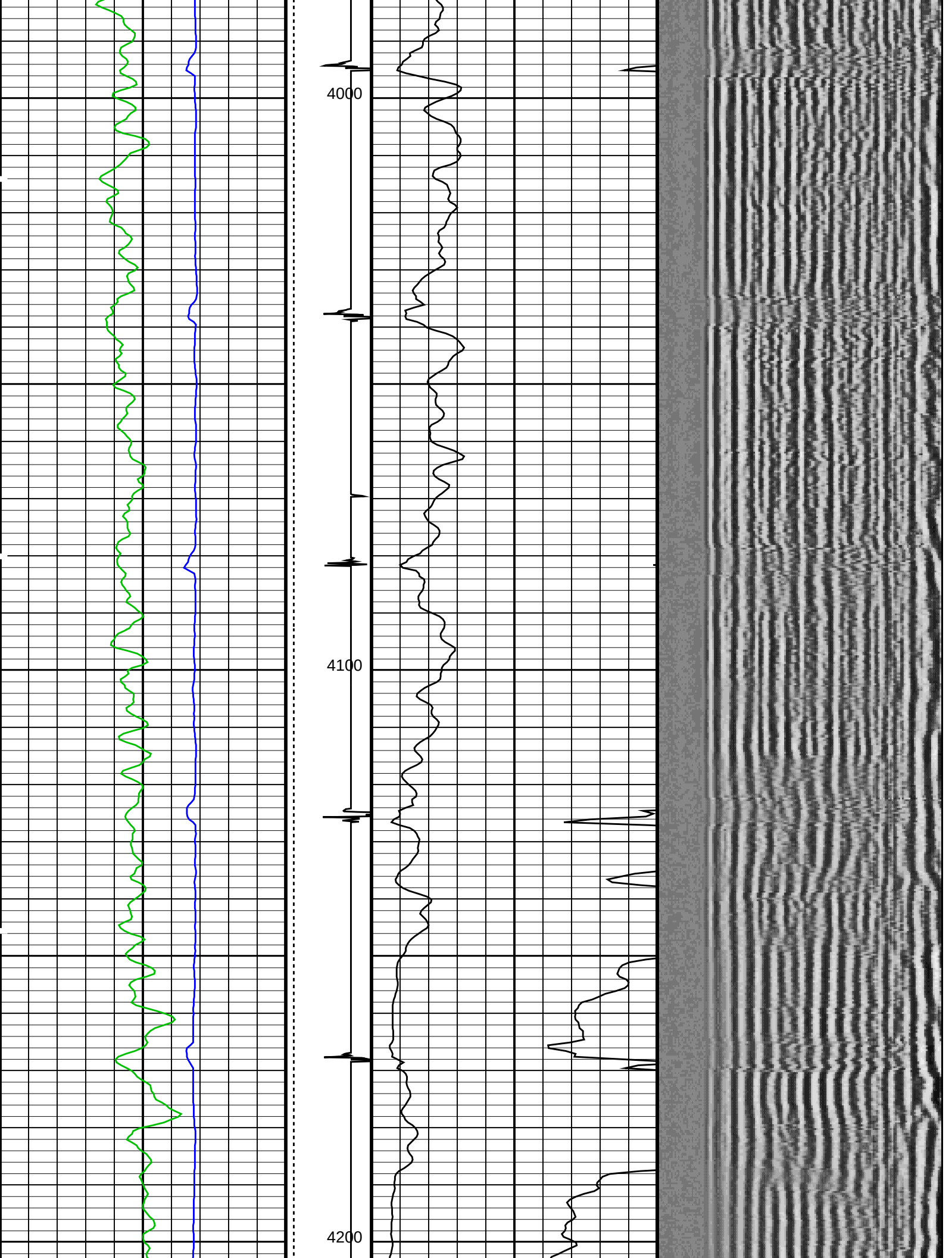
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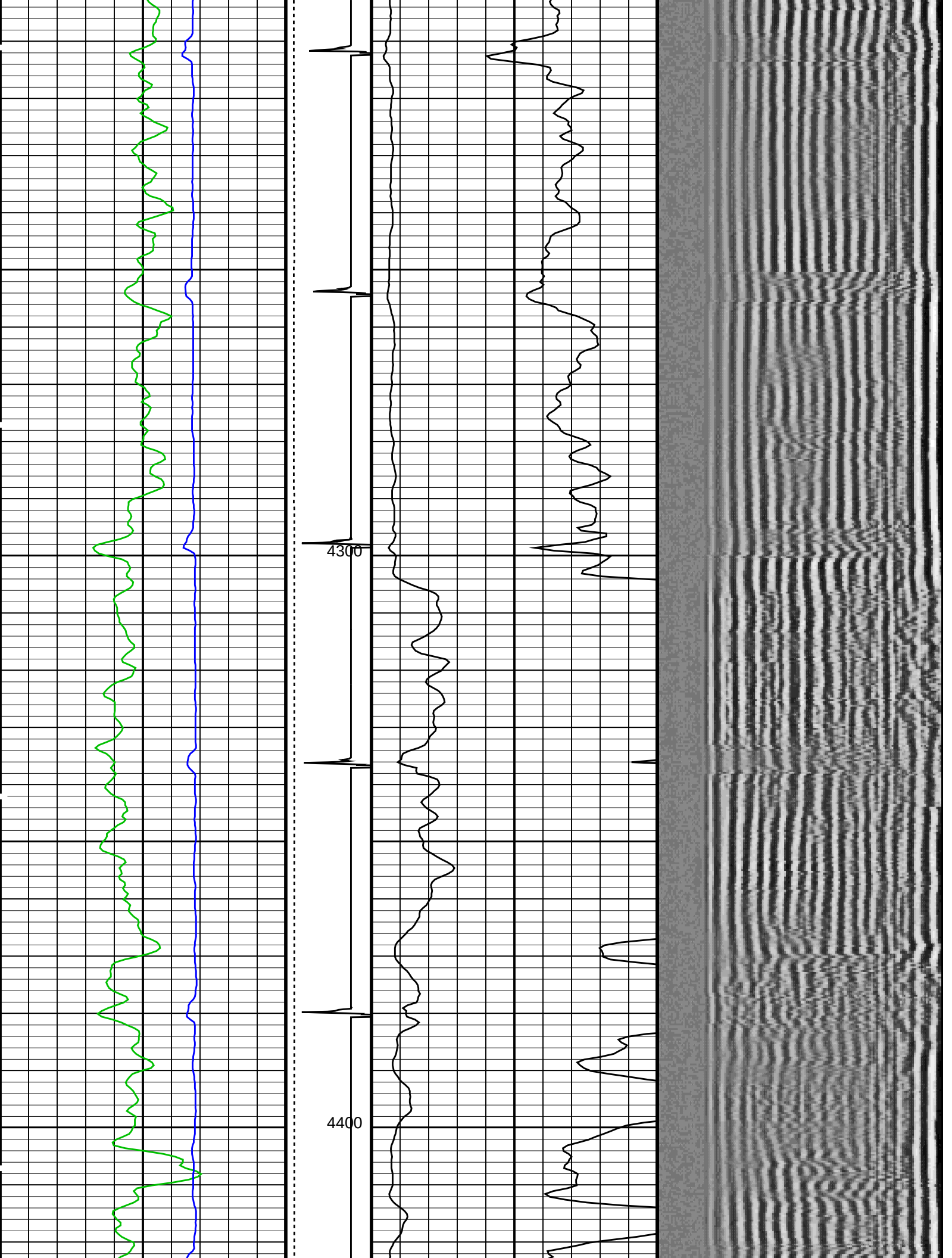
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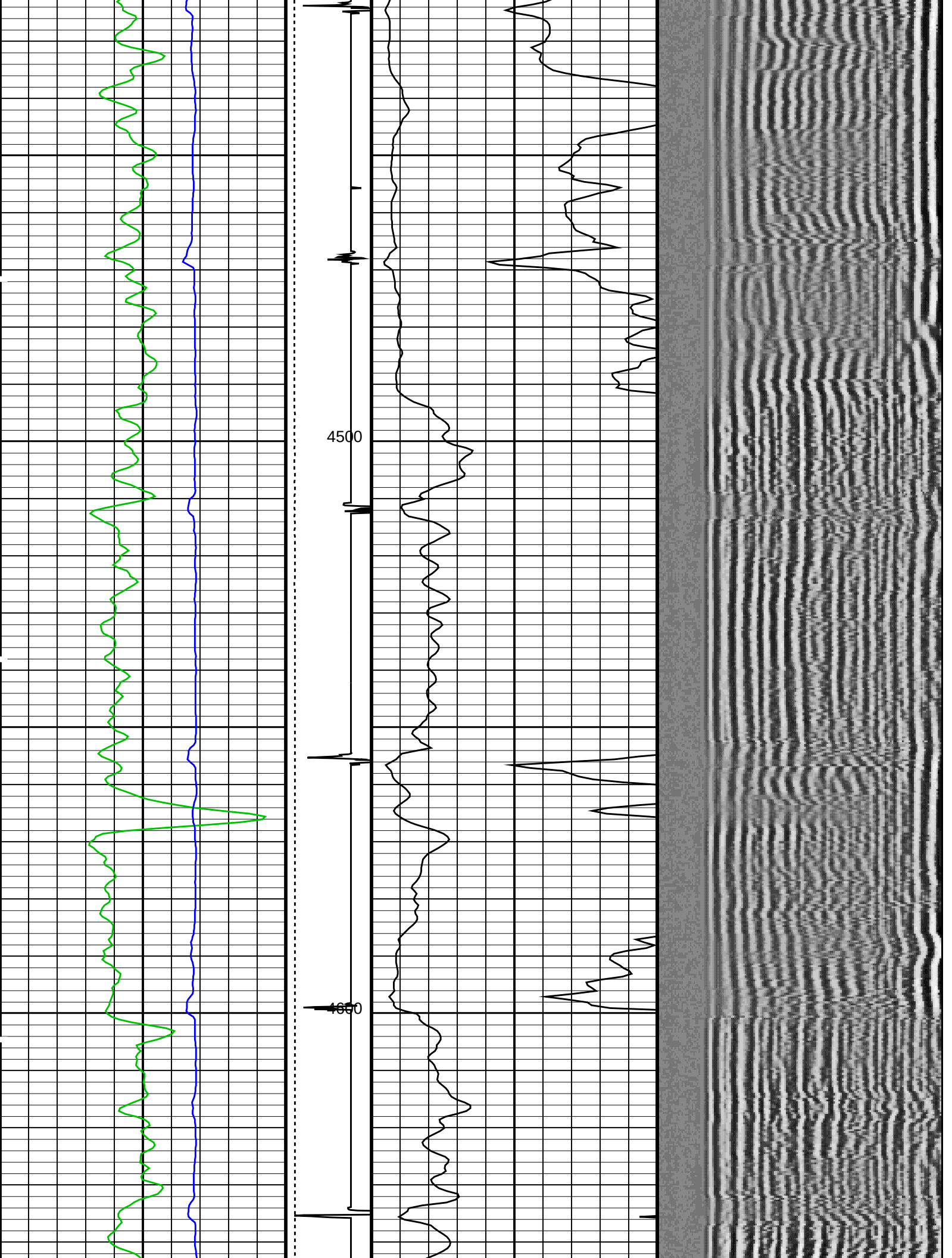
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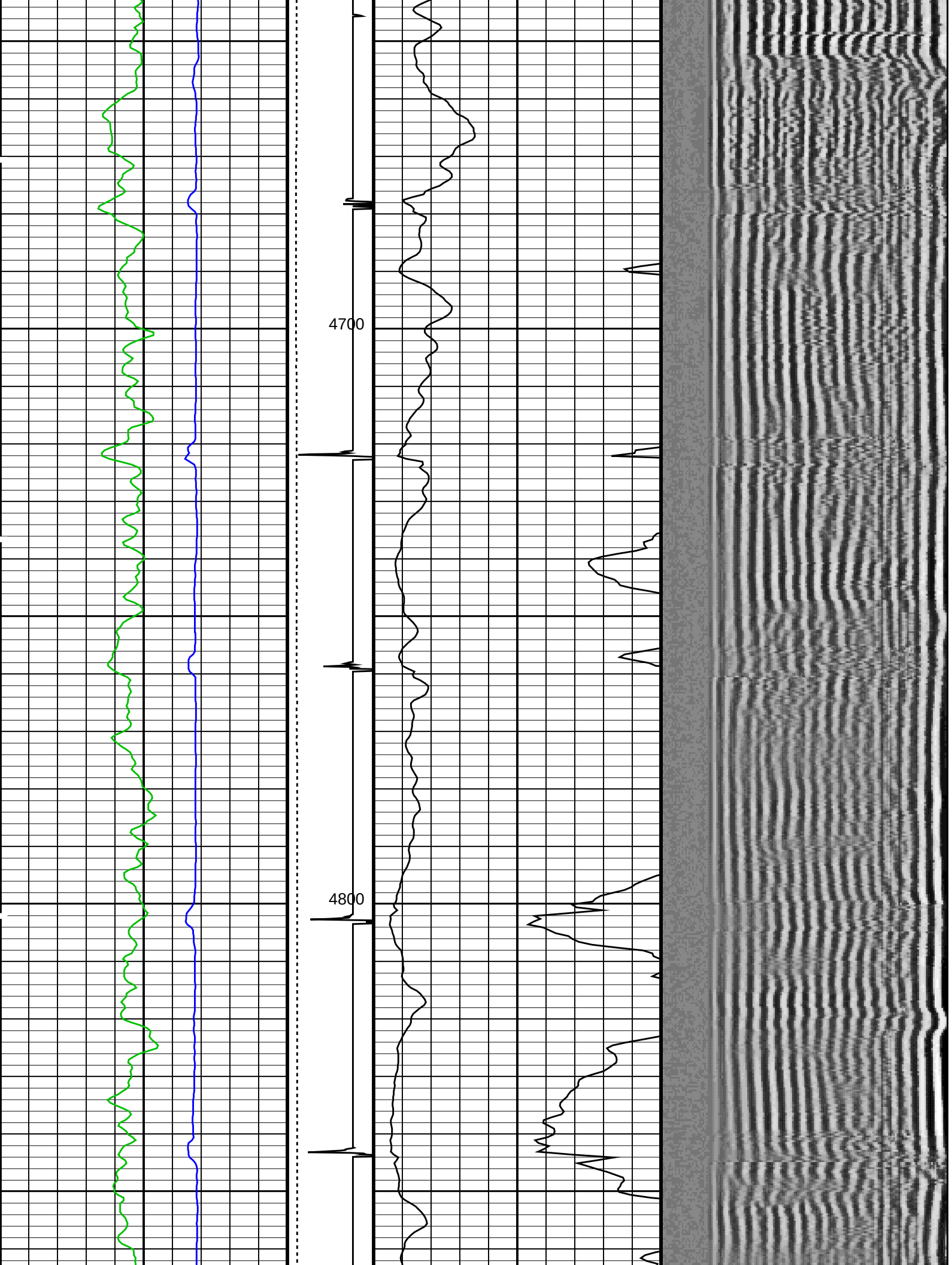
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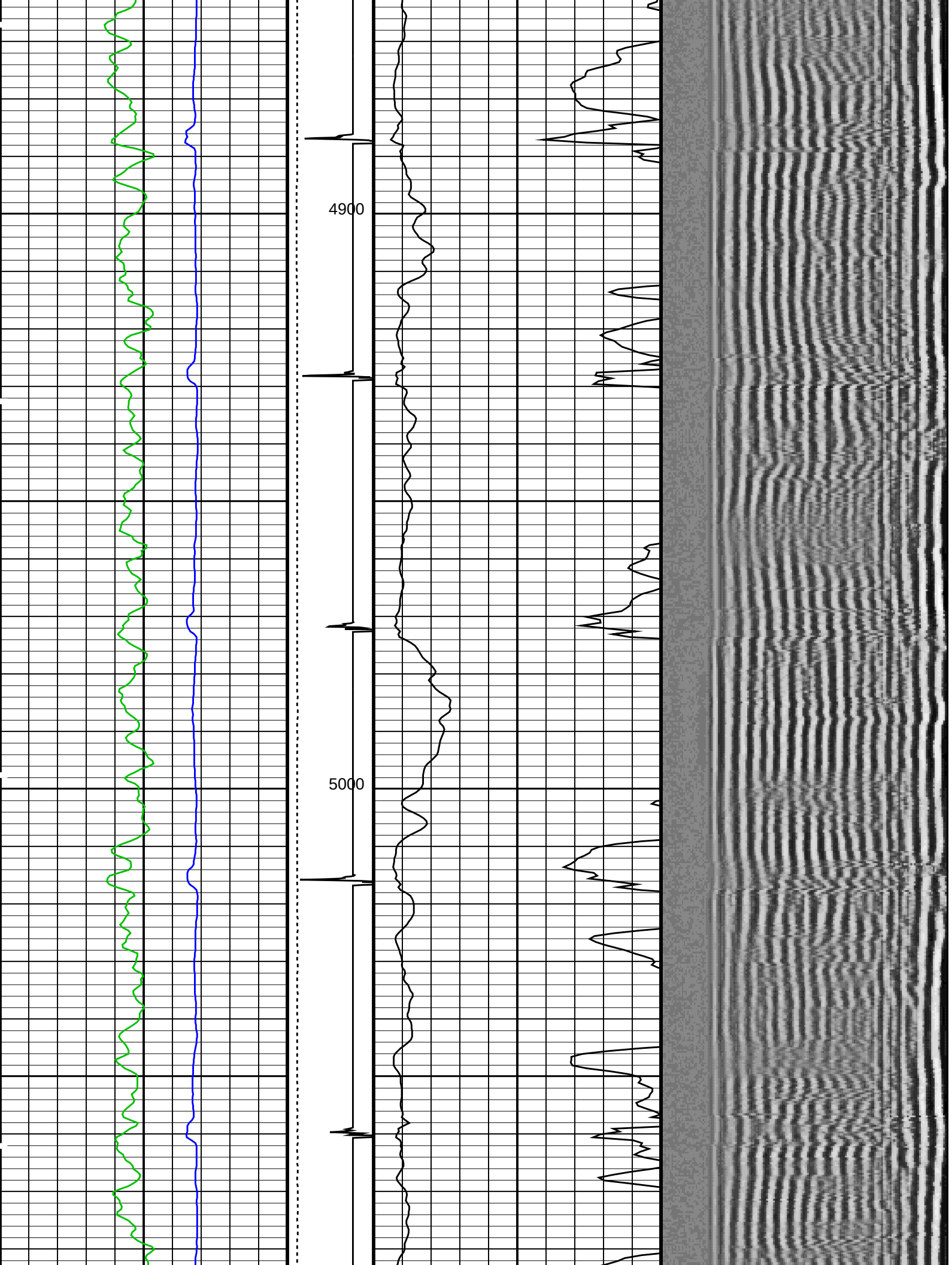
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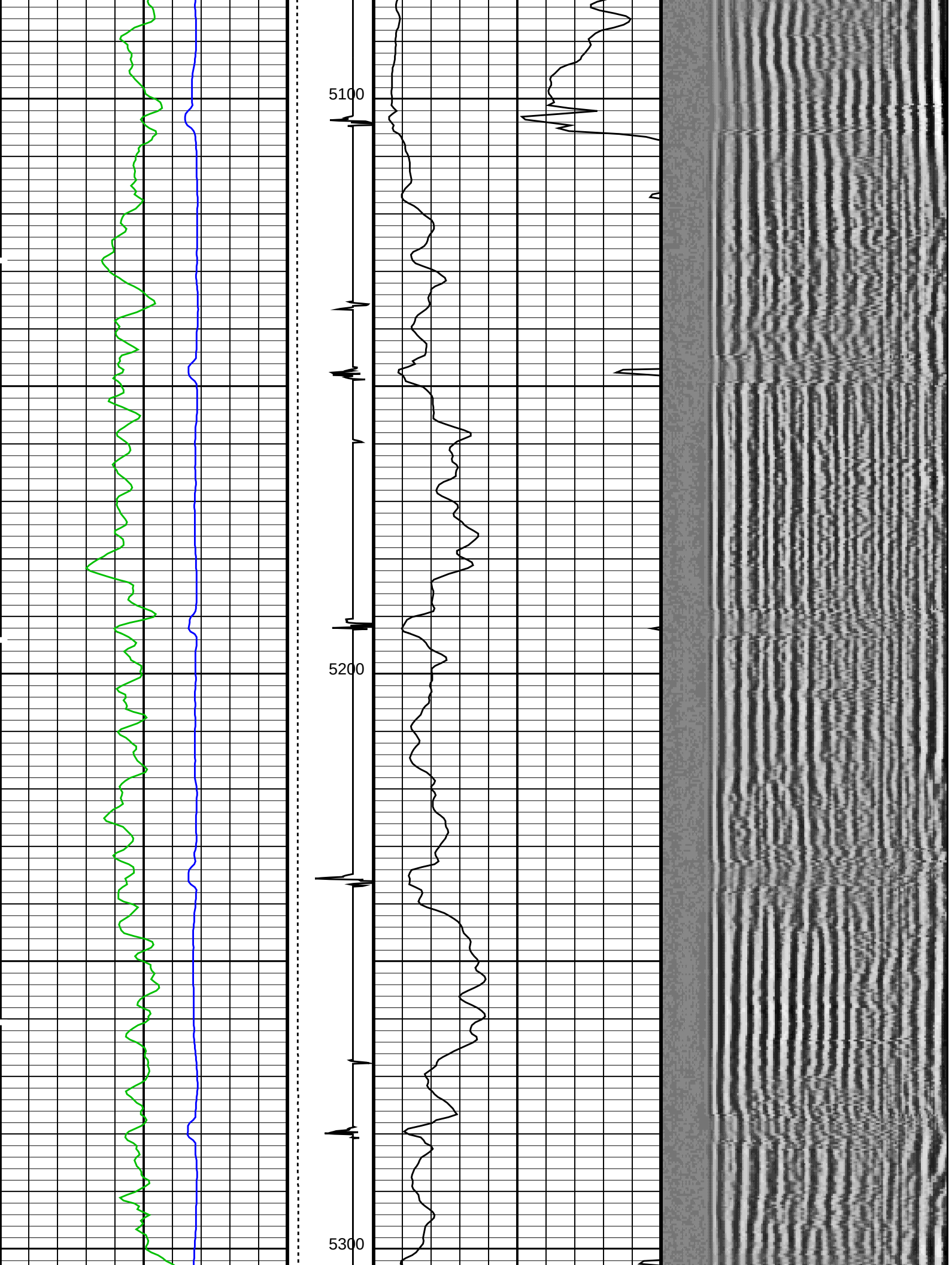
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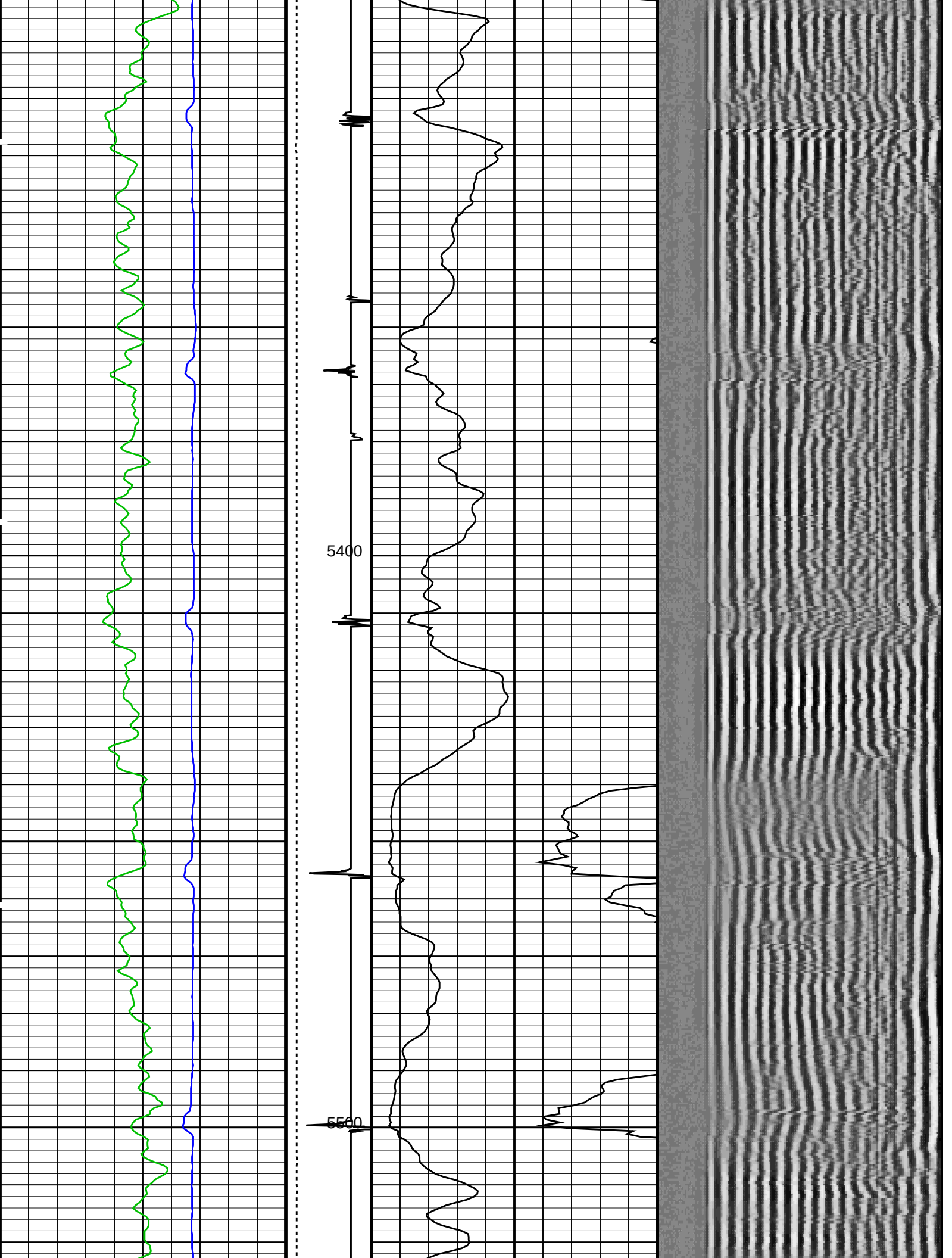
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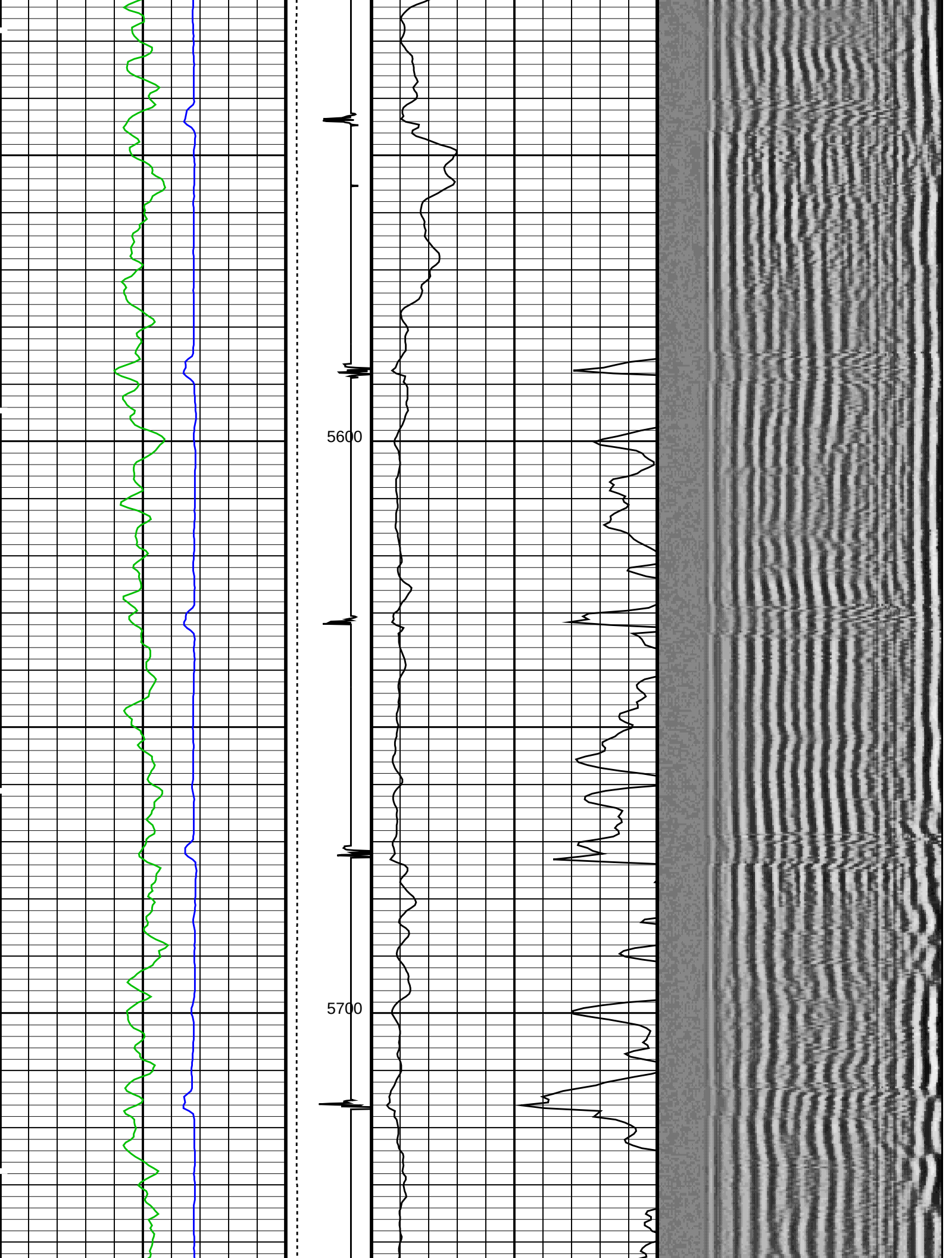
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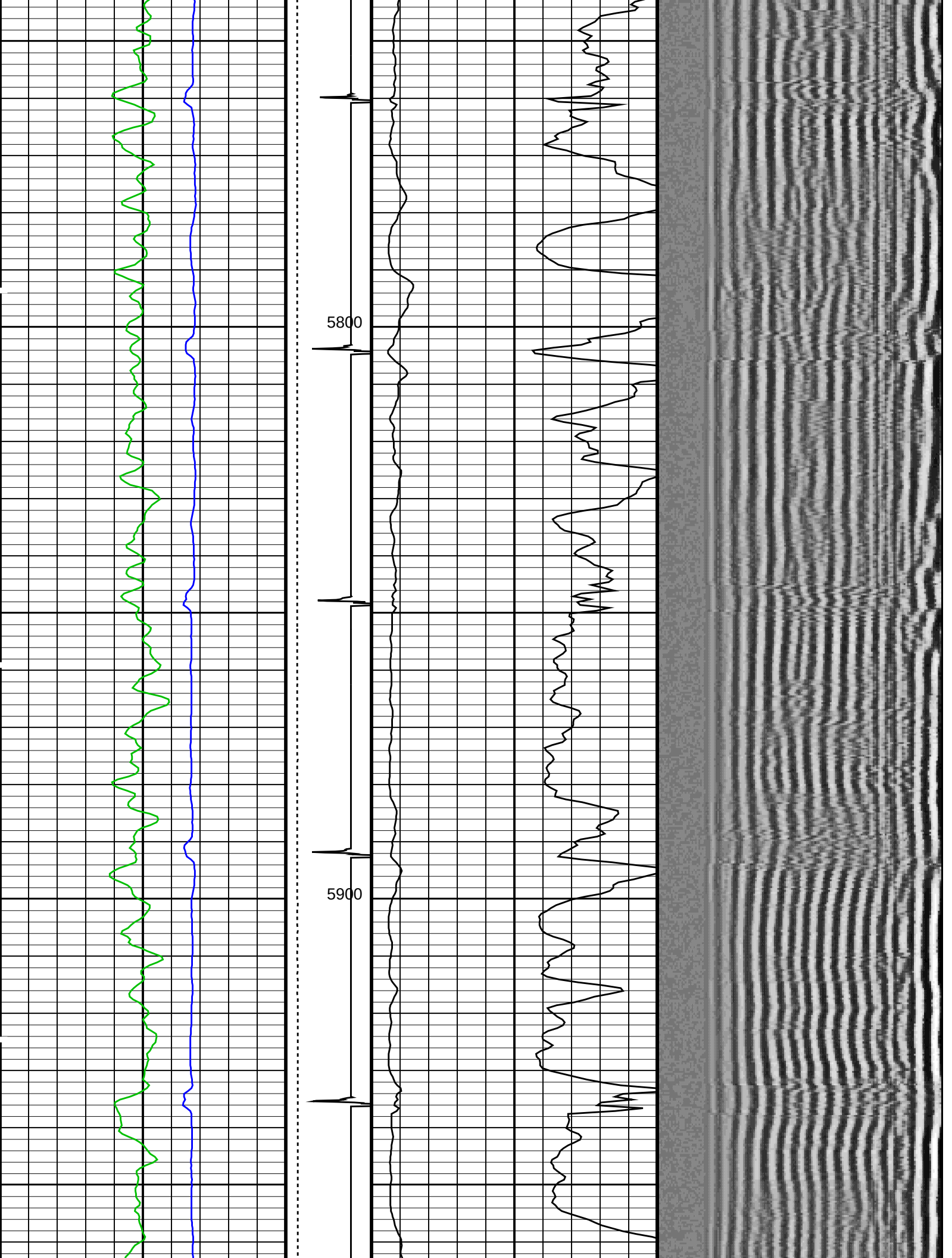
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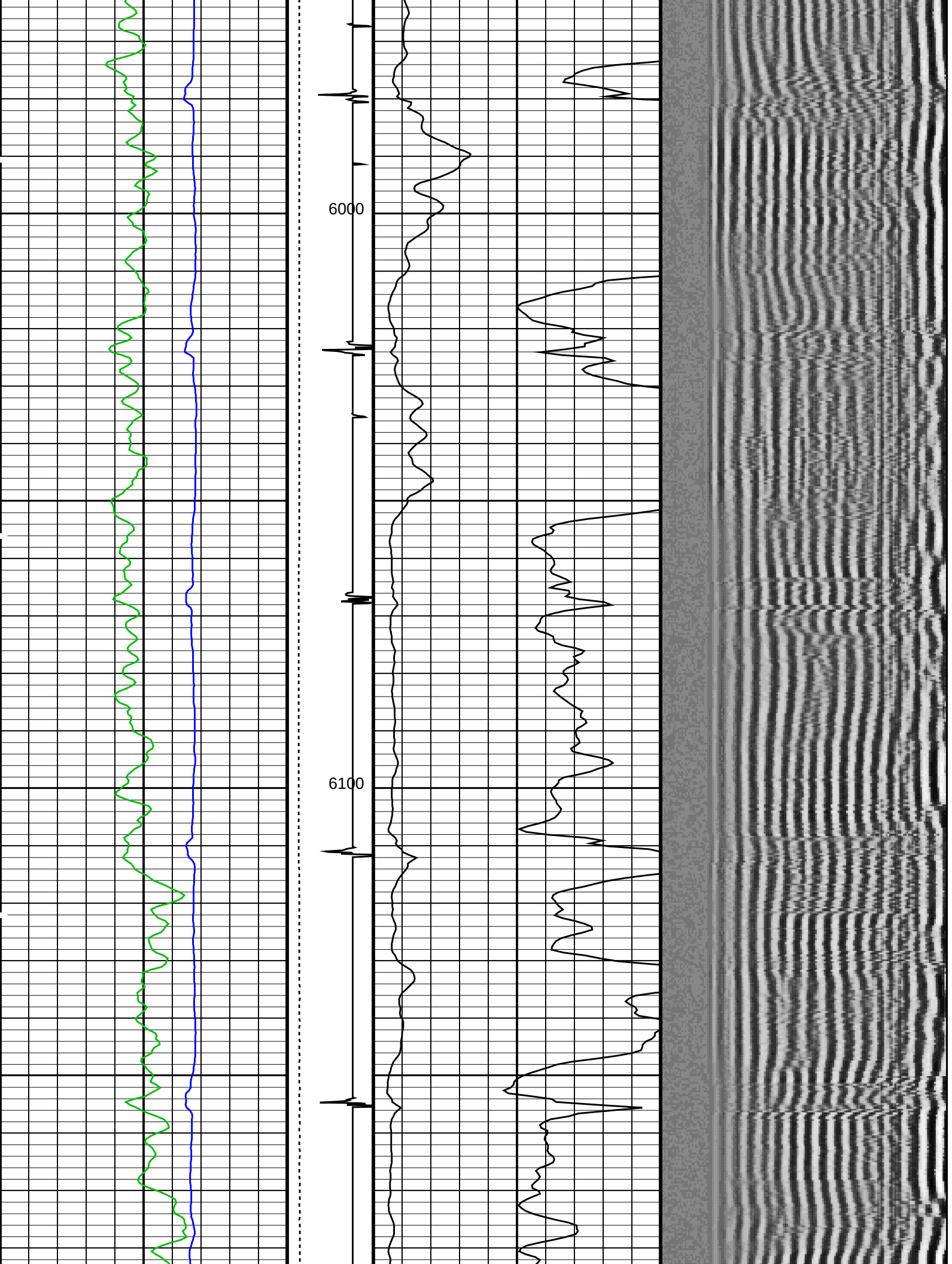
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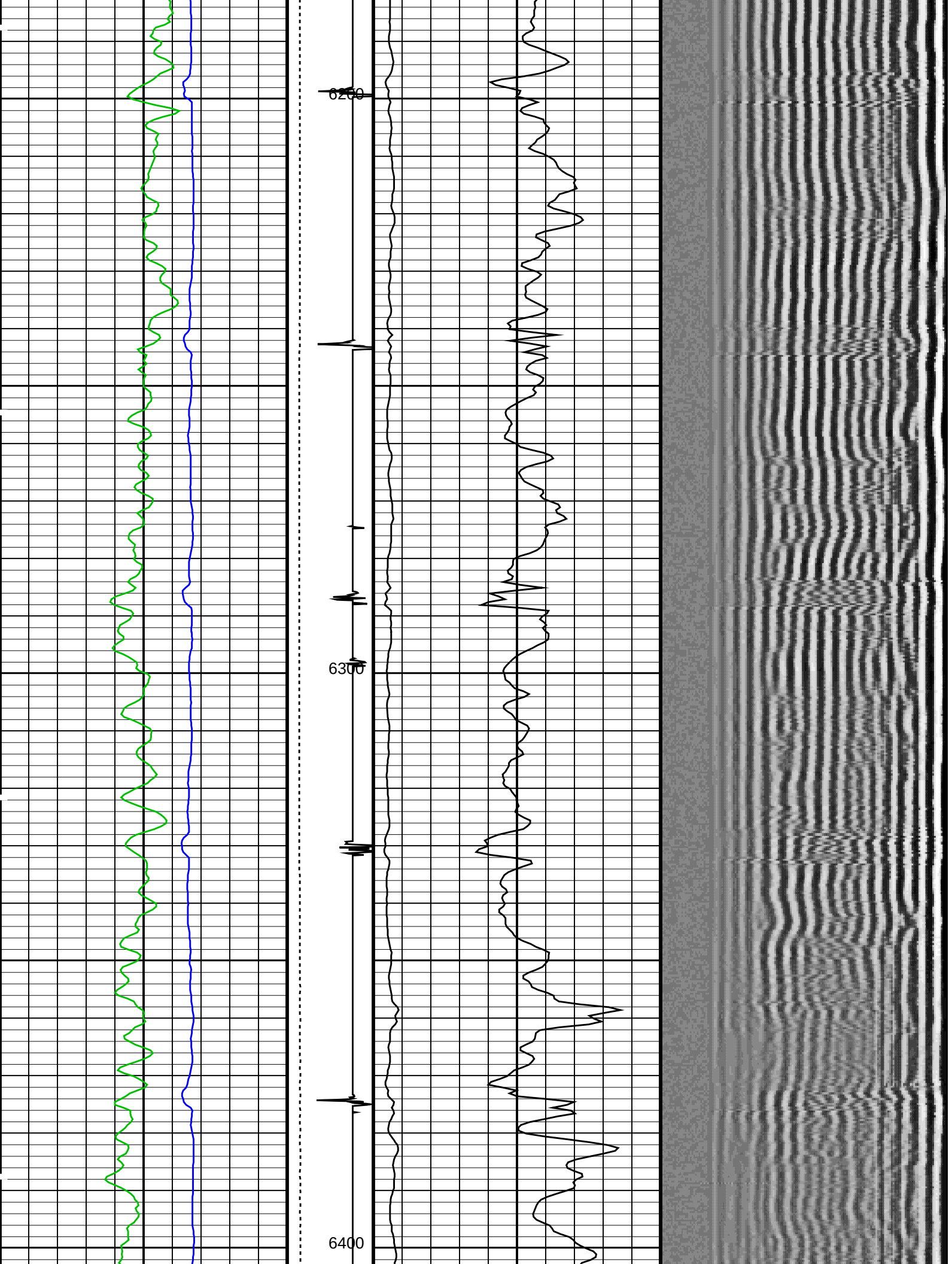
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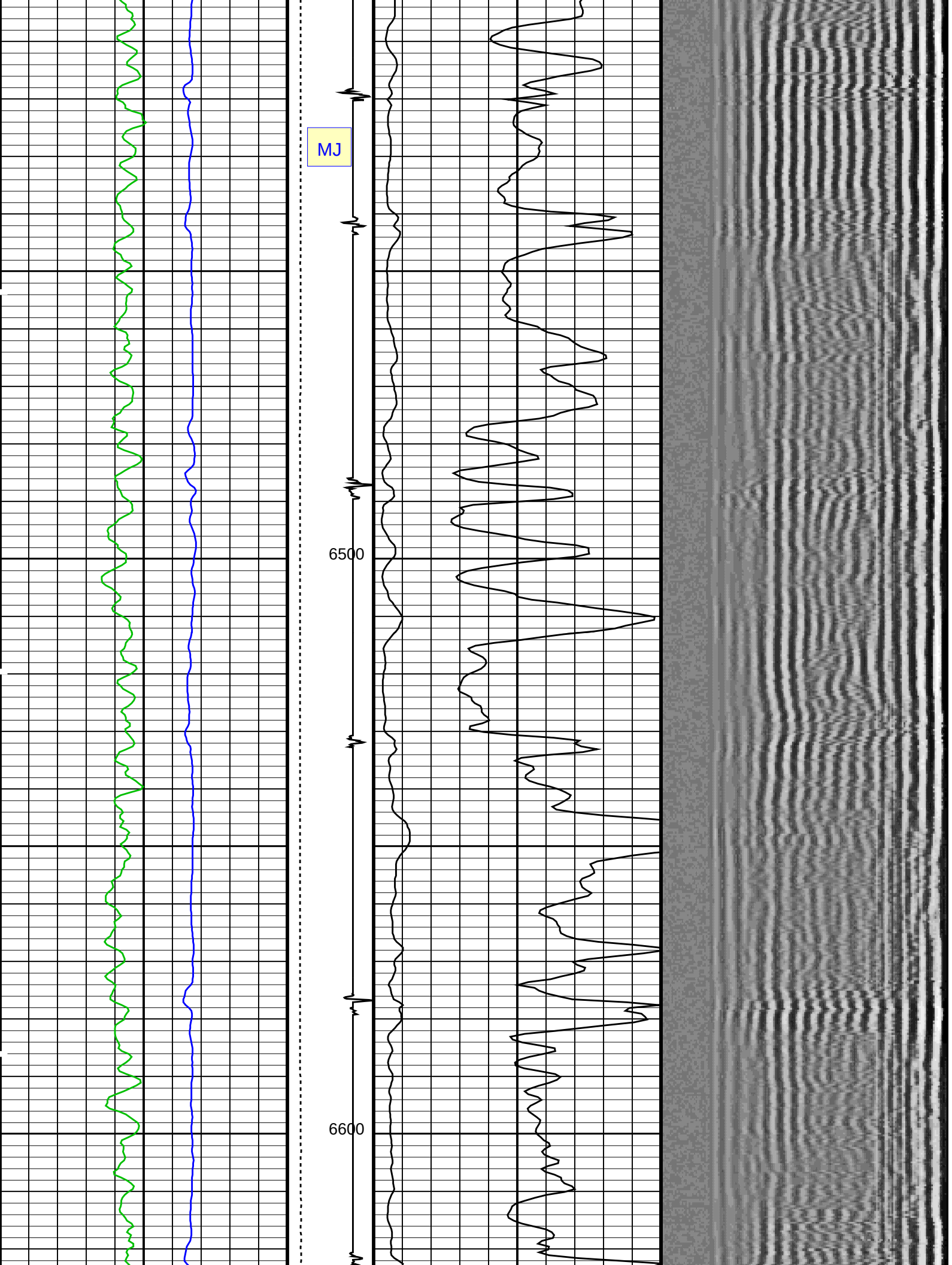
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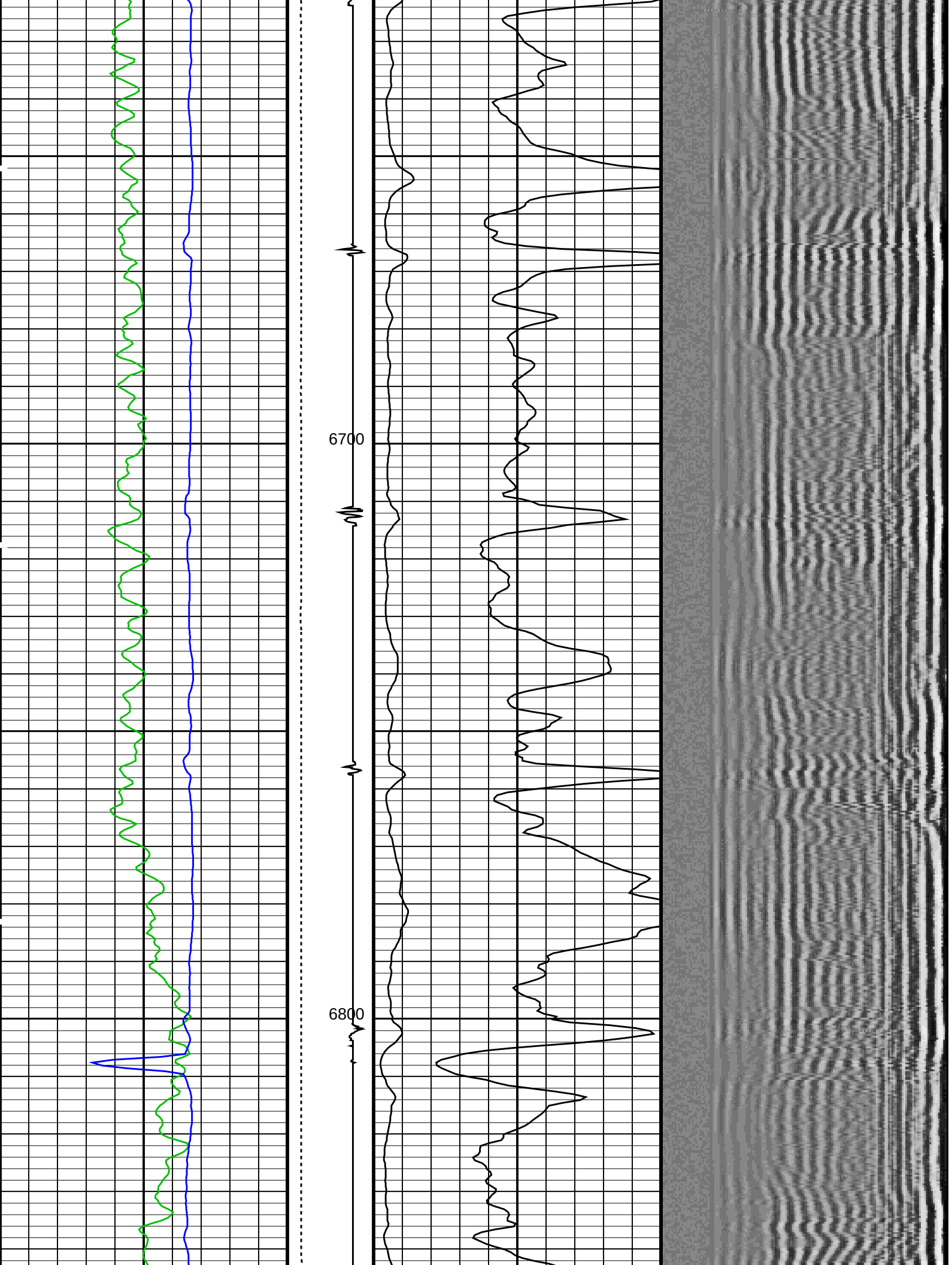
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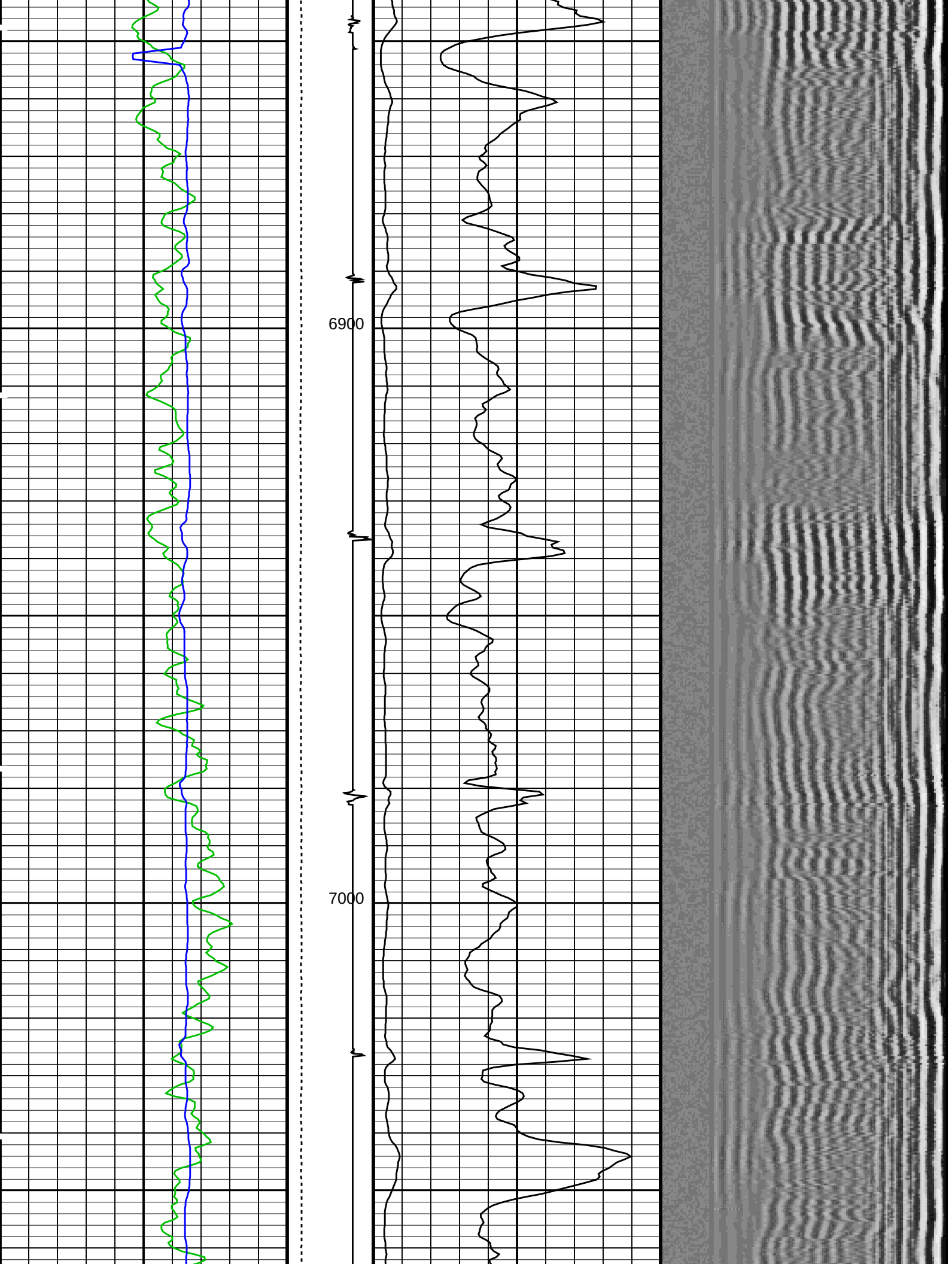
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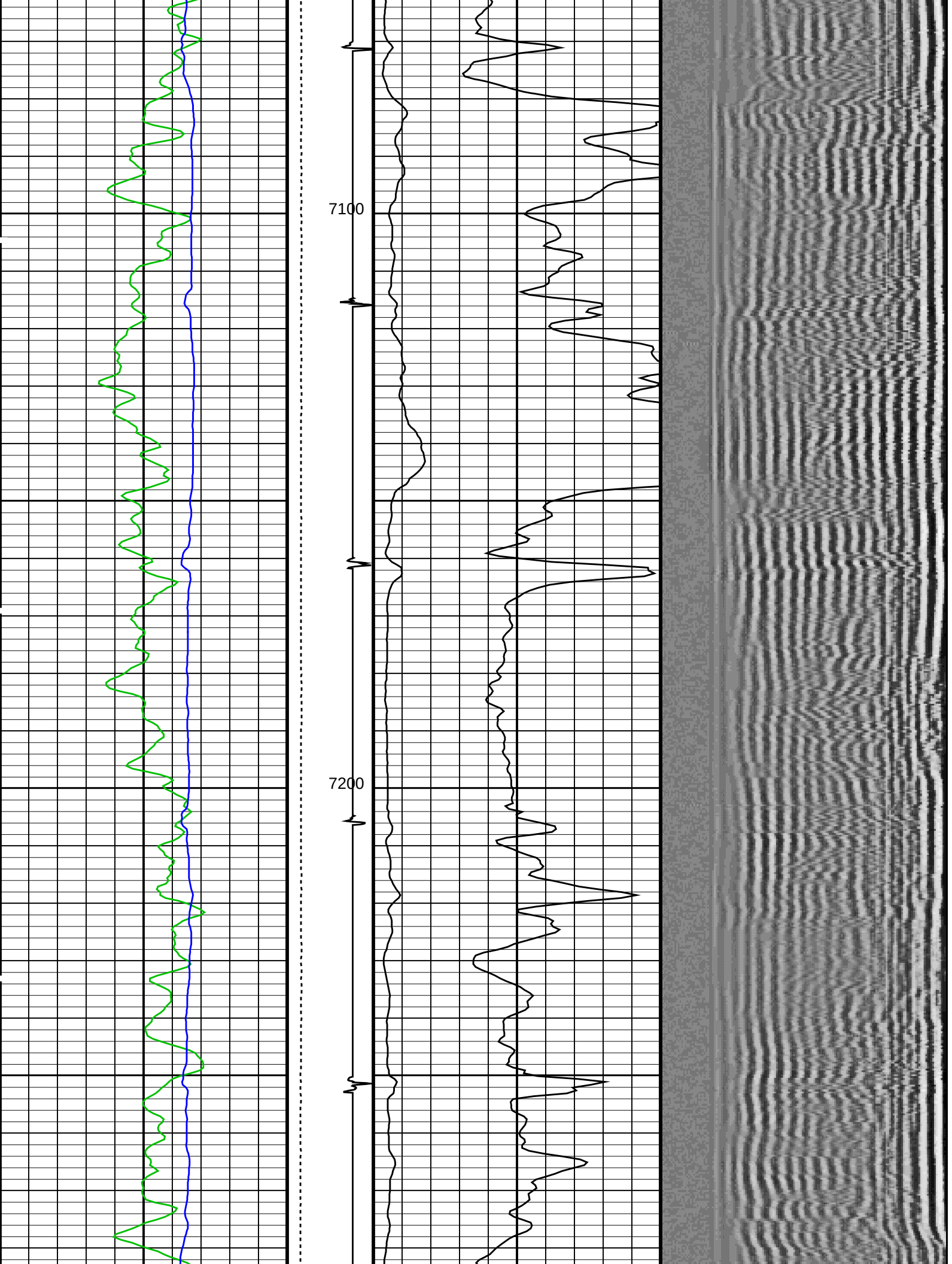
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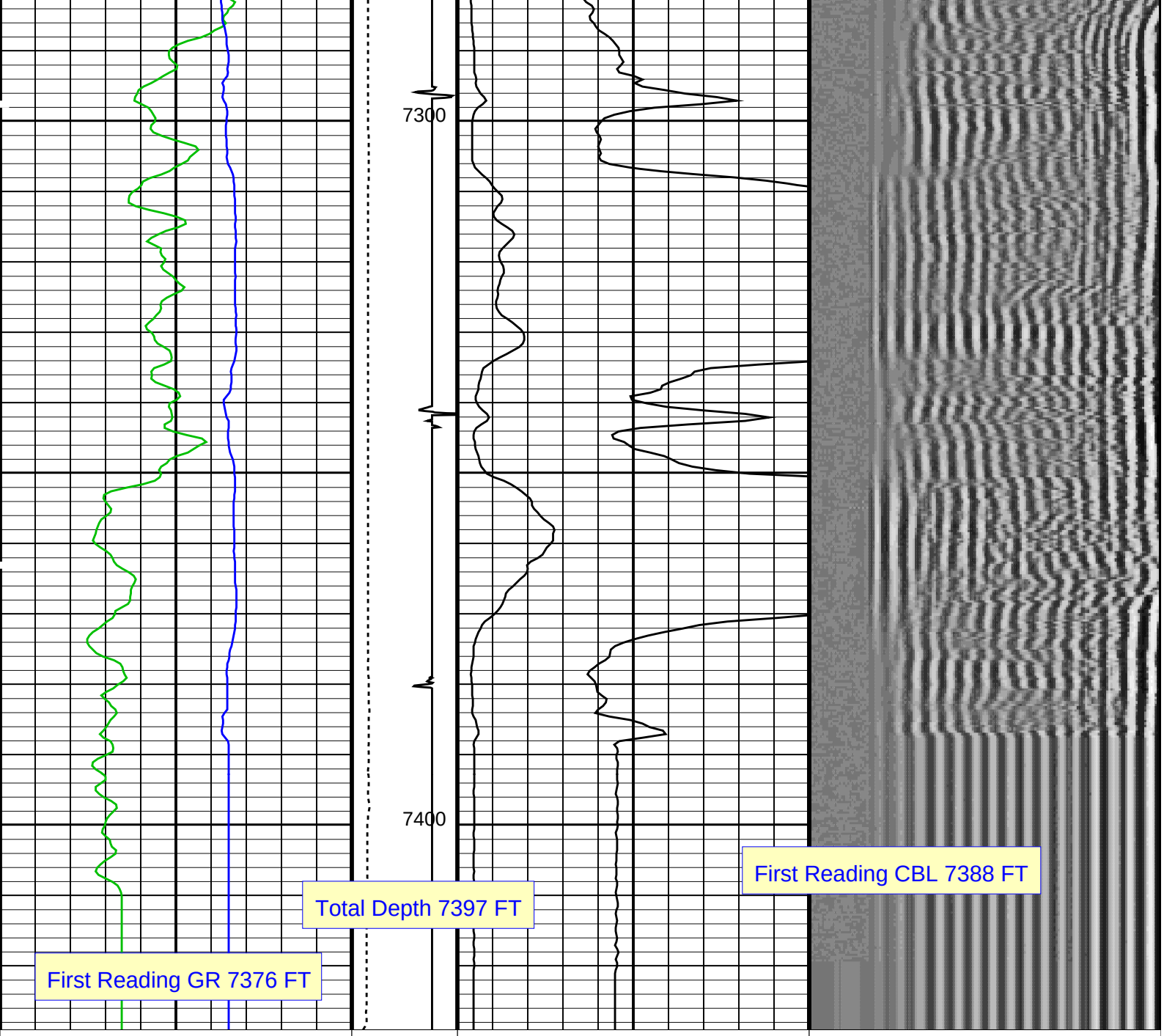


Gamma Ray (GR)	Tension (TENS)	CBL Amplitude (CBL)	Min Amplitude Max
0 (GAPI) 150	(LBF) 0 5000	0 (MV) 10	VDL VariableDensity (VDL) 200 (US) 1200
Transit Time (TT)	**Discriminated CCL (CCLD)**	**CBL Amplitude (CBL)**	
400 (US) 200	3 (V) −1	0 (MV) 100	

PIP SUMMARY

Time Mark Every 60 S

Format: CBL_VDL **Vertical Scale: 5" per 100'** **Graphics File Created: 15−Jul−2015 21:45**

OP System Version: 19C0−187

SCMT−CB	**19C0−187**	**PSPT**	**19C0−187**

<<<SCMT Cement Evaluation Information Summary>>>

Sonde Serial Number	**SCMS−CB 8284**
Current Casing Size	**5.50000 IN**

Current Casing Size	**5.50000 IN**		
Casing Weight	**17.0 LB/F**		
Expected CBL Amplitude in Free Pipe Section	**71 MV**	**Minimum Sonic Amplitude**	**1.15842 MV (100% Cement)** **2.63842 MV (80% Cement)**
		MAP Minimum Sonic Amplitude	**7.35072 MV (100% Cement)** **12.3898 MV (80% Cement)**

Master Calibration (Normalization)		**Before Calibration (Adjustment)**	
Date of Master Calibration	**21−JUN−2013**		
CBL Correction Factor	**0.0743795**	**CBL Adjustment Factor (CBAF)**	**1.0**
MAP 1 Correction Factor	**0.105721**	**MAP Adjustment Factor (MPAF)**	**1.0**
MAP 2 Correction Factor	**0.132315**		
MAP 3 Correction Factor	**0.146735**		
MAP 4 Correction Factor	**0.109791**		
MAP 5 Correction Factor	**0.114089**		
MAP 6 Correction Factor	**0.110732**		
MAP 7 Correction Factor	**0.116601**		
MAP 8 Correction Factor	**0.0804110**		

Parameters

DLIS Name	Description	Value	
	SCMT−CB: Slim Cement Mapping Tool, 1−11/16 OD		
BILI	**Bond Index Level for Zone Isolation**	**0.8**	
CB3D	**SCMT CBL 3 ft Peak Detection Mode**	**PEAK**	
CB3G	**SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate**	**238.059**	**US**
CB3T	**SCMT CBL 3 ft Fixed Threshold Level**	**20**	**MV**
CB5D	**SCMT CBL 5 ft Peak Detection Mode**	**PEAK**	
CB5G	**SCMT CBL 5 ft Peak Detection T0_Delay and Noise Gate**	**352.059**	**US**
CB5T	**SCMT CBL 5 ft Fixed Threshold Level**	**20**	**MV**
CBLG	**CBL Gate Width**	**50**	**US**
CBRA	**CBL LQC Reference Amplitude in Free Pipe**	**71**	**MV**
CMCF	**CBL Cement Type Compensation Factor**	**1**	
CMTC	**SCMT Slow Channel Multiplexer Mode**	**SCAN**	
CMTM	**SCMT Operating Mode**	**LOG**	
CSCS	**SCMT Slow Channel Index**	**VCC**	
CTHI	**Casing Thickness**	**0.306128**	**IN**
DTF	**Delta−T Fluid**	**189**	**US/F**
FATT	**Acoustic Attenuation due to Fluid**	**0**	**DB/F**
FCF	**CBL Fluid Compensation Factor**	**0.924277**	
GOBO	**Good Bond**	**2.63842**	**MV**
MAPD	**SCMT MAP Peak Detection Mode**	**PEAK**	
MAPG	**SCMT MAP Peak Detection T0_Delay and Noise Gate**	**181.059**	**US**
MAPT	**SCMT MAP Fixed Threshold Level**	**30**	**MV**
MATT	**Maximum Attenuation**	**13.848**	**DB/F**
MCCF	**MAP Cement Type Compensation Factor**	**1**	
MCI	**Minimum Cemented Interval for Isolation**	**4.75**	**FT**
MMSA	**MAP Minimum Sonic Amplitude**	**7.35072**	**MV**
MSA	**Minimum Sonic Amplitude**	**1.15842**	**MV**
PEDE	**Peak Detection On/Off Switch in Playback**	**OFF**	
VDLG	**VDL Manual Gain**	**5**	
ZCMT	**Acoustic Impedance of Cement**	**6.8**	**MRAY**
	System and Miscellaneous		
CSIZ	**Current Casing Size**	**5.500**	**IN**
CWEI	**Casing Weight**	**17.00**	**LB/F**
DFD	**Drilling Fluid Density**	**8.40**	**LB/G**
DO	**Depth Offset for Playback**	**0.0**	**FT**
PP	**Playback Processing**	**RECOMPUTE**	
TD	**Total Depth**	**7397**	**FT**

Input DLIS Files

DEFAULT	**SCMT_PSP_012PUP**	**FN:11**	**PRODUCER**	**15−Jul−2015 19:44**	**7429.0 FT**	**20.5 FT**

Output DLIS Files

DEFAULT	**SCMT_PSP_006PUP**	**FN:5**	**PRODUCER**	**15−Jul−2015 21:45**

Schlumberger

REPEAT PASS CBL−VDL 0PSI

MAXIS Field Log

Company: ANADARKO **Well: CHEESE STATE 37N−28HZ**

Input DLIS Files

DEFAULT	SCMT_PSP_013PUP	FN:12	PRODUCER	15−Jul−2015 19:44	7429.0 FT	7201.5 FT

Output DLIS Files

DEFAULT	SCMT_PSP_007PUP	FN:6	PRODUCER	15−Jul−2015 21:50	7429.0 FT	7201.5 FT

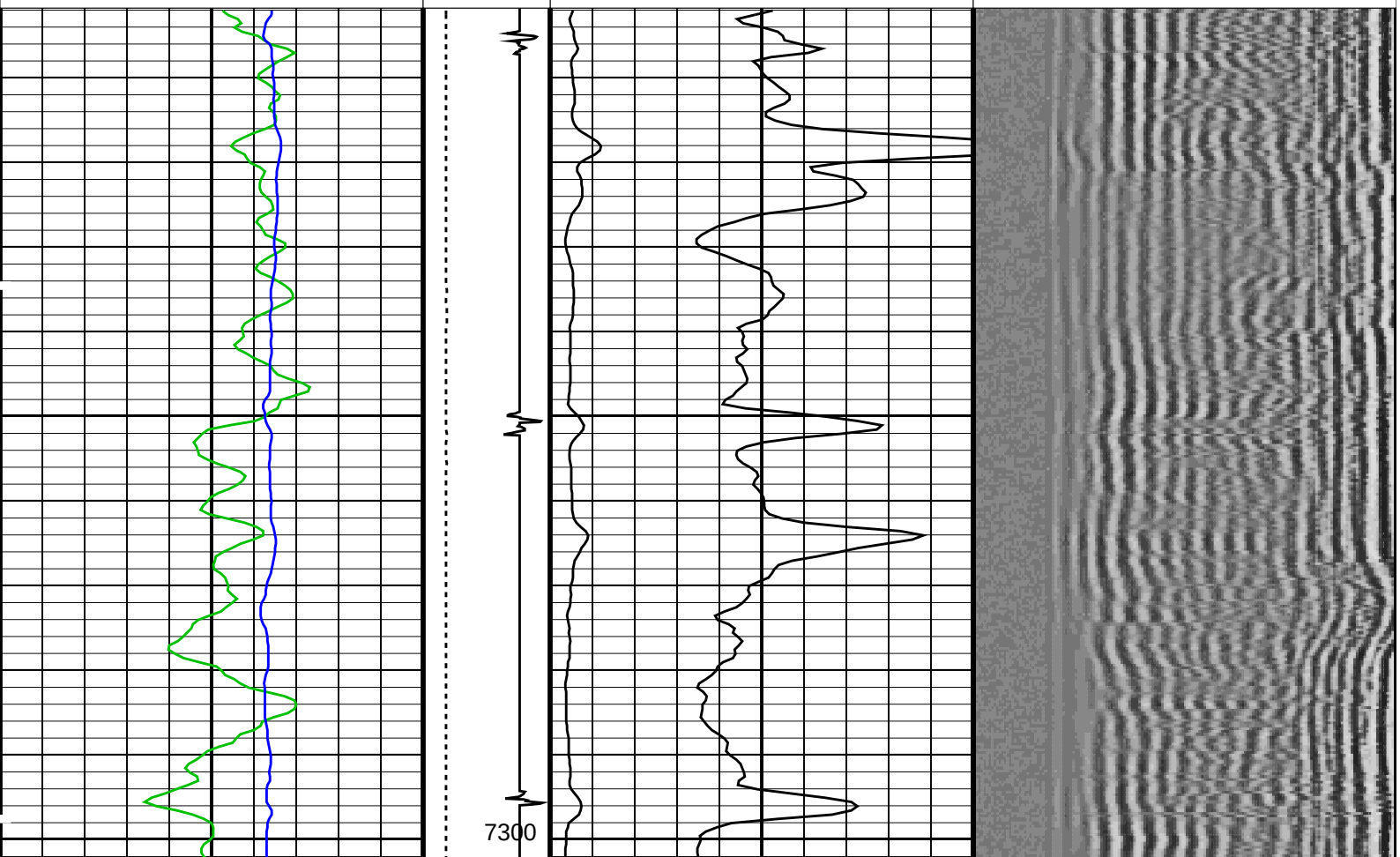
OP System Version: 19C0−187

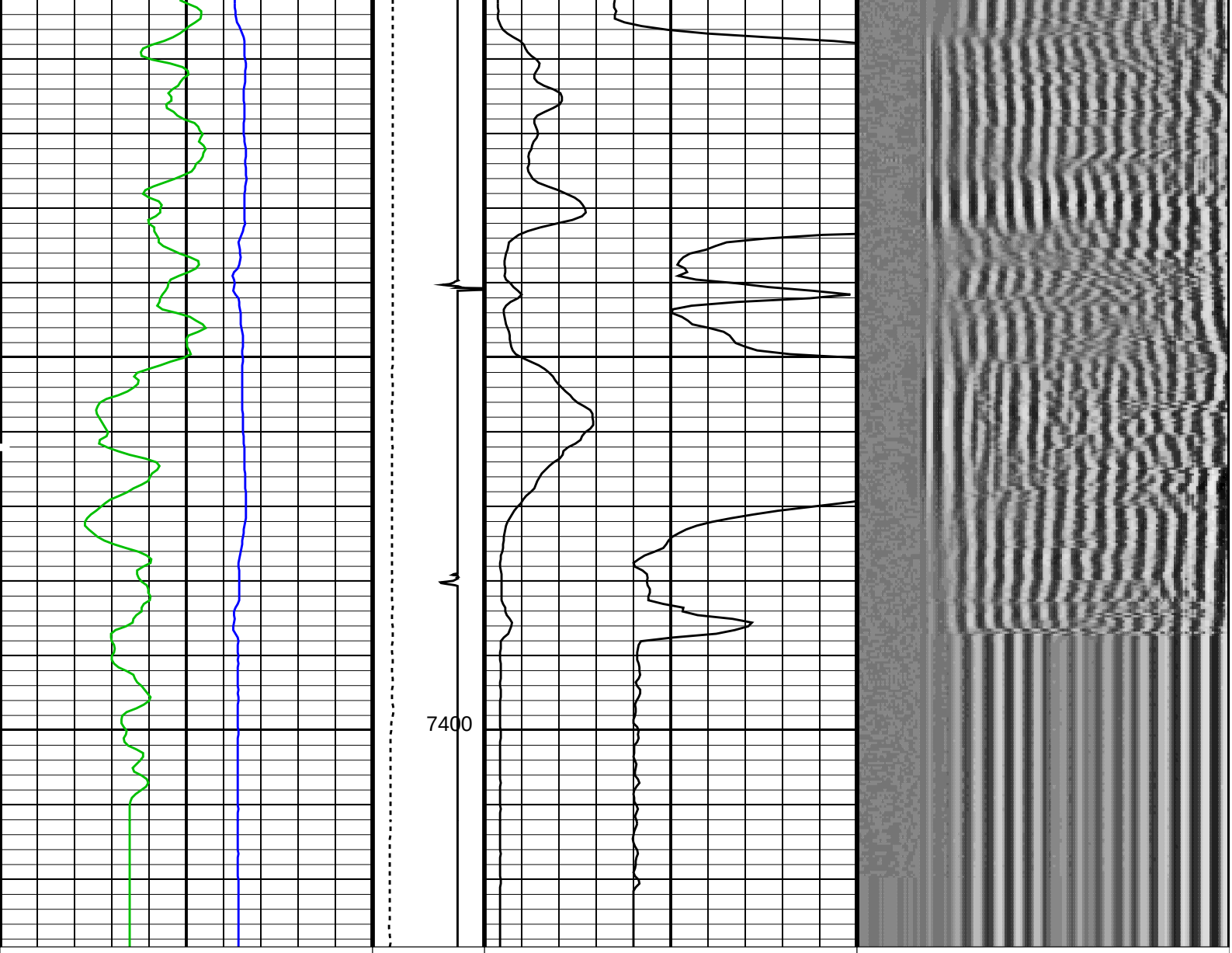
SCMT−CB	19C0−187	PSPT	19C0−187

PIP SUMMARY

Time Mark Every 60 S

Transit Time (TT)	Discriminated CCL (CCLD)	CBL Amplitude (CBL)	
400 (US) 200	3 (V) −1	0 (MV) 100	
Gamma Ray (GR)	**Tension (TENS)**	**CBL Amplitude (CBL)**	**Min Amplitude Max**
0 (GAPI) 150	0 (LBF) 5000	0 (MV) 10	VDL VariableDensity (VDL) 200 (US) 1200





Gamma Ray (GR)	Tension (TENS)	CBL Amplitude (CBL)	Min Amplitude Max
0 (GAPI) 150	(LBF) 0 5000	0 (MV) 10	VDL VariableDensity (VDL) 200 (US) 1200
Transit Time (TT)	**Discriminated CCL (CCLD)**	**CBL Amplitude (CBL)**	
400 (US) 200	3 (V) −1	0 (MV) 100	

PIP SUMMARY

Time Mark Every 60 S

Format: CBL_VDL **Vertical Scale: 5" per 100'** **Graphics File Created: 15−Jul−2015 21:50**

OP System Version: 19C0−187

SCMT−CB **19C0−187** **PSPT** **19C0−187**

<<<SCMT Cement Evaluation Information Summary>>>

Sonde Serial Number	SCMS−CB 8284		
Current Casing Size	5.50000 IN		
Casing Weight	17.0 LB/F		
Expected CBL Amplitude in Free Pipe Section	71 MV	Minimum Sonic Amplitude	1.15842 MV (100% Cement)
			2.63842 MV (80% Cement)
		MAP Minimum Sonic Amplitude	7.35072 MV (100% Cement)

12.3898 MV (80% Cement)

Master Calibration (Normalization)		**Before Calibration (Adjustment)**	
Date of Master Calibration	**21−JUN−2013**		
CBL Correction Factor	**0.0743795**	**CBL Adjustment Factor (CBAF)**	**1.0**
MAP 1 Correction Factor	**0.105721**	**MAP Adjustment Factor (MPAF)**	**1.0**
MAP 2 Correction Factor	**0.132315**		
MAP 3 Correction Factor	**0.146735**		
MAP 4 Correction Factor	**0.109791**		
MAP 5 Correction Factor	**0.114089**		
MAP 6 Correction Factor	**0.110732**		
MAP 7 Correction Factor	**0.116601**		
MAP 8 Correction Factor	**0.0804110**		

Parameters

DLIS Name	Description	Value	
	SCMT−CB: Slim Cement Mapping Tool, 1−11/16 OD		
BILI	Bond Index Level for Zone Isolation	0.8	
CB3D	SCMT CBL 3 ft Peak Detection Mode	PEAK	
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	238.059	US
CB3T	SCMT CBL 3 ft Fixed Threshold Level	20	MV
CB5D	SCMT CBL 5 ft Peak Detection Mode	PEAK	
CB5G	SCMT CBL 5 ft Peak Detection T0_Delay and Noise Gate	352.059	US
CB5T	SCMT CBL 5 ft Fixed Threshold Level	20	MV
CBLG	CBL Gate Width	50	US
CBRA	CBL LQC Reference Amplitude in Free Pipe	71	MV
CMCF	CBL Cement Type Compensation Factor	1	
CMTC	SCMT Slow Channel Multiplexer Mode	SCAN	
CMTM	SCMT Operating Mode	LOG	
CSCS	SCMT Slow Channel Index	VCC	
CTHI	Casing Thickness	0.306128	IN
DTF	Delta−T Fluid	189	US/F
FATT	Acoustic Attenuation due to Fluid	0	DB/F
FCF	CBL Fluid Compensation Factor	0.924277	
GOBO	Good Bond	2.63842	MV
MAPD	SCMT MAP Peak Detection Mode	PEAK	
MAPG	SCMT MAP Peak Detection T0_Delay and Noise Gate	181.059	US
MAPT	SCMT MAP Fixed Threshold Level	30	MV
MATT	Maximum Attenuation	13.848	DB/F
MCCF	MAP Cement Type Compensation Factor	1	
MCI	Minimum Cemented Interval for Isolation	4.75	FT
MMSA	MAP Minimum Sonic Amplitude	7.35072	MV
MSA	Minimum Sonic Amplitude	1.15842	MV
PEDE	Peak Detection On/Off Switch in Playback	OFF	
VDLG	VDL Manual Gain	5	
ZCMT	Acoustic Impedance of Cement	6.8	MRAY
	System and Miscellaneous		
CSIZ	Current Casing Size	5.500	IN
CWEI	Casing Weight	17.00	LB/F
DFD	Drilling Fluid Density	8.40	LB/G
DO	Depth Offset for Playback	0.0	FT
PP	Playback Processing	RECOMPUTE	
TD	Total Depth	7397	FT

Input DLIS Files

DEFAULT	**SCMT_PSP_013PUP**	**FN:12**	**PRODUCER**	**15−Jul−2015 19:44**	**7429.0 FT**	**7201.5 FT**

Output DLIS Files

DEFAULT	**SCMT_PSP_007PUP**	**FN:6**	**PRODUCER**	**15−Jul−2015 21:50**

Schlumberger

PBMS COEFFICIENTS

Client: ANADARKO
Field: WATTENBERG
Well: CHEESE STATE 37N−28HZ
Run date: 15−Jul−2015

Tool: PSP
Sub Type: PBMS
Sensor: Clock Model

PBMS Digitalization Clock

Sonde Serial NB	
Sensor Serial NB	1863
Calib Date ddmmyy	261007
Matrix Size	16
Coeff CRC	3AB0

Clock Coeff

	Temp**0	Temp**1	Temp**2
Temp**0	−.151788334201E+03	−.102873785445E+01	−.167225792957E+00

	Temp**3	Temp**4	Temp**5
Temp**0	+.136689035753E−02	+.538068013029E−06	0.0

Client: ANADARKO
Field: WATTENBERG
Well: CHEESE STATE 37N−28HZ
Run date: 15−Jul−2015

Tool: PSP
Sub Type: PBMS
Sensor: Sapphire

PBMS Sapphire 10kPsi Gauge

Sonde Serial NB	COEFFICIENTS FOR SAPPHIRE PBMS−A.1863 S/N:
Sensor Serial NB	1863
Calib Date ddmmyy	261007
Matrix Size	66
Coeff CRC	F756

Pres Coeff

	Tt**0	Tt**1	Tt**2
Tp**0	−.359590231743E+05	+.299188234803E+05	−.107446687531E+05

Tp**1	+.237648969480E+05	−.186021128720E+05	+.671109848596E+04
Tp**2	−.149422117989E+03	+.596502883584E+02	−.652553761493E+01
Tp**3	+.143644323931E+01	−.305754161348E+00	0.0
Tp**4	0.0	0.0	0.0
Tp**5	0.0	0.0	0.0

	Tt**3	Tt**4	Tt**5
Tp**0	+.180759727775E+04	−.117082497700E+03	0.0
Tp**1	−.113521285304E+04	+.740106734909E+02	0.0
Tp**2	0.0	0.0	0.0
Tp**3	0.0	0.0	0.0
Tp**4	0.0	0.0	0.0
Tp**5	0.0	0.0	0.0

PBMS Sapphire 10kPsi Gauge

Sonde Serial NB	**:**
Sensor Serial NB	**1863**
Calib Date ddmmyy	**261007**
Matrix Size	**66**
Coeff CRC	**89EB**

Temp Coeff

	Tp**0	Tp**1	Tp**2
Tt**0	+.196657284828E+04	+.100051500932E+02	−.971524337955E+01
Tt**1	−.124071500899E+04	−.116824853877E+00	+.270298401768E+01
Tt**2	+.276001008305E+03	−.113239508435E+01	−.340525434373E−01
Tt**3	−.216436996942E+02	+.118632399044E+00	0.0
Tt**4	0.0	0.0	0.0
Tt**5	0.0	0.0	0.0

	Tp**3	Tp**4	Tp**5
Tt**0	+.255739855736E+01	−.250107203346E+00	0.0
Tt**1	−.674177192949E+00	+.655237399131E−01	0.0
Tt**2	0.0	0.0	0.0
Tt**3	0.0	0.0	0.0
Tt**4	0.0	0.0	0.0
Tt**5	0.0	0.0	0.0

Client:	**ANADARKO**	**Tool:**	**PSP**
Field:	**WATTENBERG**	**Sub Type:**	**PBMS**
Well:	**CHEESE STATE 37N−28HZ**	**Sensor:**	**GR**
Run date:	**15−Jul−2015**		

PBMS Gamma Ray

Sonde Serial NB	**RESISTORS FOR GR SENSOR N.33499,TOOL PBMS−AA1863. SENSOR S/N:**
Sensor Serial NB	**33499**
Calib Date ddmmyy	**100402**
Matrix Size	**12**
Coeff CRC	**DFA9**

GR HV Rt

	Rt0**	**Rt**1**
Rt0**	**+.150000000000e+04**	**+.241000000000e+04**

Client:	**ANADARKO**	**Tool:**	**PSP**
Field:	**WATTENBERG**	**Sub Type:**	**PBMS**
Well:	**CHEESE STATE 37N−28HZ**	**Sensor:**	**WellTemp RTD**
Run date:	**15−Jul−2015**		

PBMS RTD Well Thermometer

Sonde Serial NB	**COEFFICIENTS FOR RTD THERMOMETER PBMS−A.1863 S/N:**
Sensor Serial NB	**1863**
Calib Date ddmmyy	**261007**
Matrix Size	**16**
Coeff CRC	**3DE3**

WTemp Coeff

	Tt0**	**Tt**1**	**Tt**2**
Tt0**	**−.445369658202E+03**	**+.231013910229E+03**	**−.562860354452E+02**

	Tt3**	**Tt**4**	**Tt**5**
Tt0**	**+.107489365785E+02**	**−.720697242025E+00**	**0.0**

Company:	**ANADARKO**
Well:	**CHEESE STATE 37N−28HZ**
Field:	**WATTENBERG**
County:	**WELD**
State:	**COLORADO**

Schlumberger

SLIM CEMENT MAPPING LOG
CBL−VDL
GR−CCL