Schlumberger

Company: **ENCANA OIL & GAS (USA) INC**

Well: **FEDERAL 28−11H (PL28SW)**

Field: **PLATEAU**

County: **MESA** State: **COLORADO**

CEMENT BOND LOG
CBL − VDL
GAMMA RAY − CCL

County: MESA
Field: PLATEAU
Location: SHL: NESW 1520' FSL & 1874' F
Well: FEDERAL 28−11H (PL28SW)
Company: ENCANA OIL & GAS (USA) INC

LOCATION

SHL: NESW 1520' FSL & 1874' FWL
BHL: NWSW 505' FSL & 1081' FWL

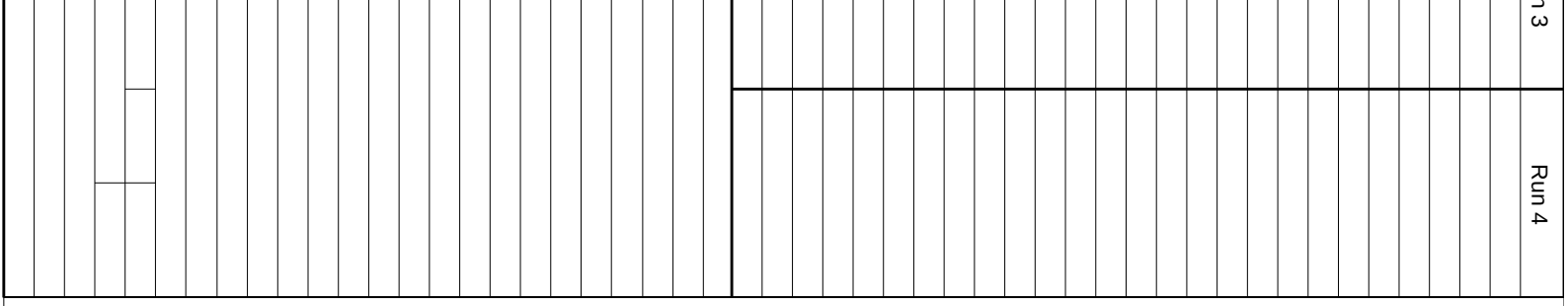
Elev.: K.B. 61111.00 ft
G.L. 6089.00 ft
D.F. 9110.00 ft

Permanent Datum: GROUND LEVEL Elev.: 6089.00 ft
Log Measured From: KELLY BUSHING 22.00 ft above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No.	Section	Township	Range
05−077−10150−0000	28	9S	96W

	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			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Fluid Type			
Salinity			
Density			
Fluid Level			
BIT/CASING/TUBING STRING			
Bit Size			
From			
To			
Casing/Tubing Size			
Weight			
Grade			
From			
To			
Maximum Recorded Temperatures			
Logger On Bottom / Time			
Unit Number / Location			
Recorded By			
Witnessed By			

Logging Date	31−Jul−2011
Run Number	TWO
Depth Driller	12817 ft
Schlumberger Depth	7824 ft
Bottom Log Interval	7815.1 ft
Top Log Interval	200 ft
Casing Fluid Type	WATER
Salinity	
Density	8.4 lbm/gal
Fluid Level	22 ft
BIT/CASING/TUBING STRING	
Bit Size	7.875 in
From	22 ft
To	12817 ft
Casing/Tubing Size	5.000 in
Weight	23.2 lbm/ft
Grade	
From	22 ft
To	12817 ft
Maximum Recorded Temperatures	227 degF
Logger On Bottom / Time	31−Jul−2011 7:56
Unit Number / Location	391 GRAND JUNCTION
Recorded By	DAVID PATE
Witnessed By	UNATTENDED



DEPTH SUMMARY LISTING

Date Created: 31−JUL−2011 9:00:32

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−C	Type:	1−25ZT
Serial Number:	6217	Serial Number:	5006	Serial Number:	391
Calibration Date:	14−JUN−2011	Calibration Date:	27−JUN−2011	Length:	14500 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	174878		
Calibration Cable Type:	1−25ZT	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	−1	Calibration RMS:	5	Rig Type:	LAND
Wheel Correction 2:	−2	Calibration Peak Error:	13		

Depth Control Parameters

Log Sequence:	Subsequent Trip To the Well
Reference Log Name:	TEMPERATURE LOG
Reference Log Run Number:	ONE
Reference Log Date:	17−JUL−2011
Subsequent Trip Down Log Correction:	−2.00 FT

Depth Control Remarks

1. ALL SCHLUMBERGER DEPTH CONTROL PROCEDURES FOLLOWED.
2. IDW USED AS PRIMARY DEPTH CONTROL.
3. Z−CHART AND DRUM COUNTER USED AS SECONDARY DEPTH CONTROL.
4.
5.
6.

OTHER SERVICES1	OTHER SERVICES2
OS1: RST − SIGMA	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
THIS IS FIRST RUN IN HOLE.	
TOOL RAN AS PER TOOL SKETCH.	
TD NOT TAGGED AT: 7824FT	
MAXIMUM RECORDED PRESSURE AT TD: 3227.8 PSIA	
MAXIMUM RECORDED TEMPERATURE AT TD: 227 DEGF	

SHORT JOINT: 6020 FT

EXPECTED FREE PIPE AMPLITUDE: 79mV

CBL TRANSIT TIME CYCLE SKIPPING IN ZONES OF GOOD CEMENT DUE TO LOW SIGNAL AMPLITUDE.

AFE: 09126507

THANK YOU FOR CHOOSING SCHLUMBERGER.

CREW: DAVID P., WALEED A., JARED R. AND DAVID W.

RUN 1		RUN 2	
SERVICE ORDER #:	BIHS−00133	SERVICE ORDER #:	
PROGRAM VERSION:	19C0−187	PROGRAM VERSION:	
FLUID LEVEL:	22 ft	FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

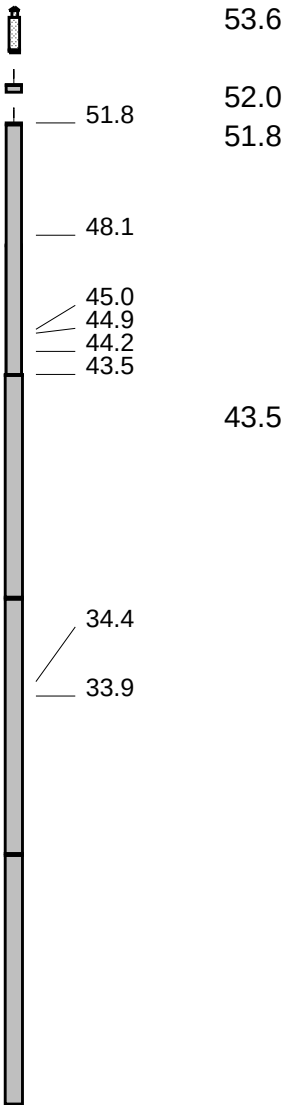
EQUIPMENT DESCRIPTION

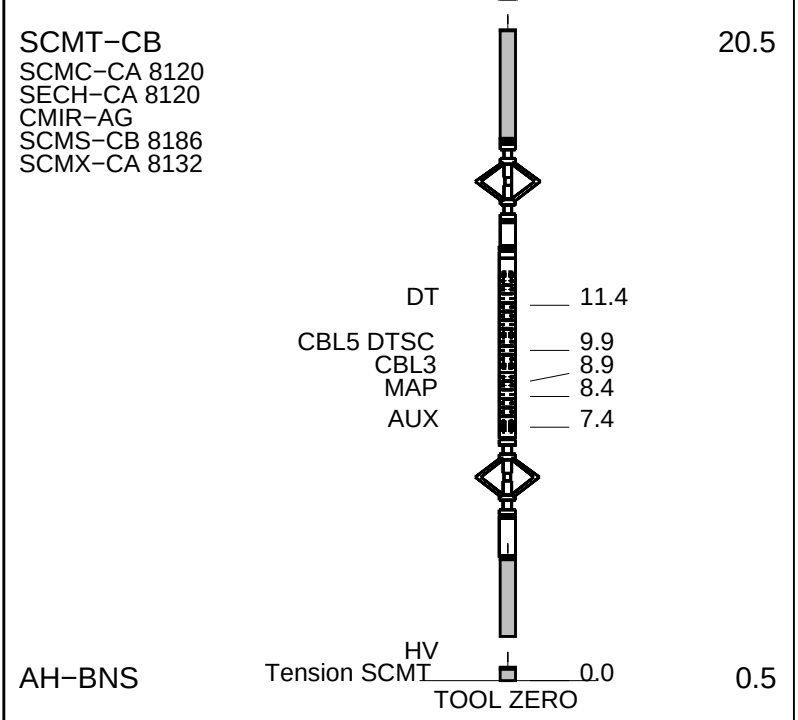
RUN 1 RUN 2

SURFACE EQUIPMENT

WITM−A 3412
PSC_16MHZ 3412

DOWNHOLE EQUIPMENT





MAXIMUM STRING DIAMETER 1.72 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Schlumberger

MAIN PASS 0 PSI

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC **Well: FEDERAL 28−11H (PL28SW)**

Output DLIS Files

DEFAULT	**SCMT_RST_PSP_008LUP**	**FN:7**	**PRODUCER**	**31−Jul−2011 07:58**	**7904.0 FT**	**163.0 FT**

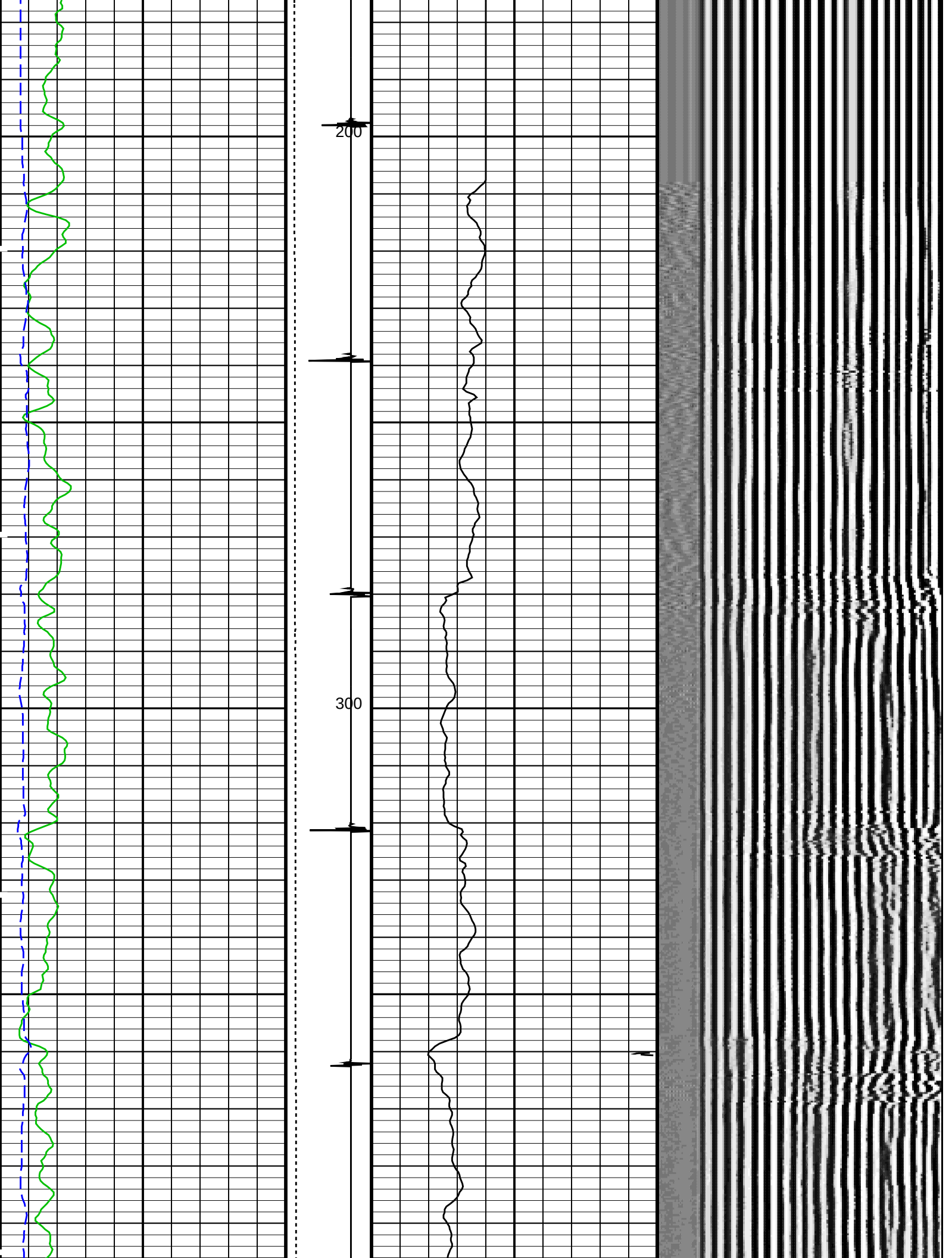
OP System Version: 19C0−187

SCMT−CB	**SRPC−5047−H1−2011−OP19**	**RST−C**	**SRPC−5047−H1−2011−OP19**
PSPT	**19C0−187**		

PIP SUMMARY

Time Mark Every 60 S

Transit Time (TT) 260 (US) 160	**Discriminated CCL (CCLD)** 3 (V) −1	**CBL Amplitude (CBL)** 0 (MV) 10	
Gamma Ray (GR) 0 (GAPI) 150	**Tension (TENS)** 0 (LBF) 2000	**CBL Amplitude (CBL)** 0 (MV) 100	**Min Amplitude Max** **VDL VariableDensity (VDL)** 200 (US) 1200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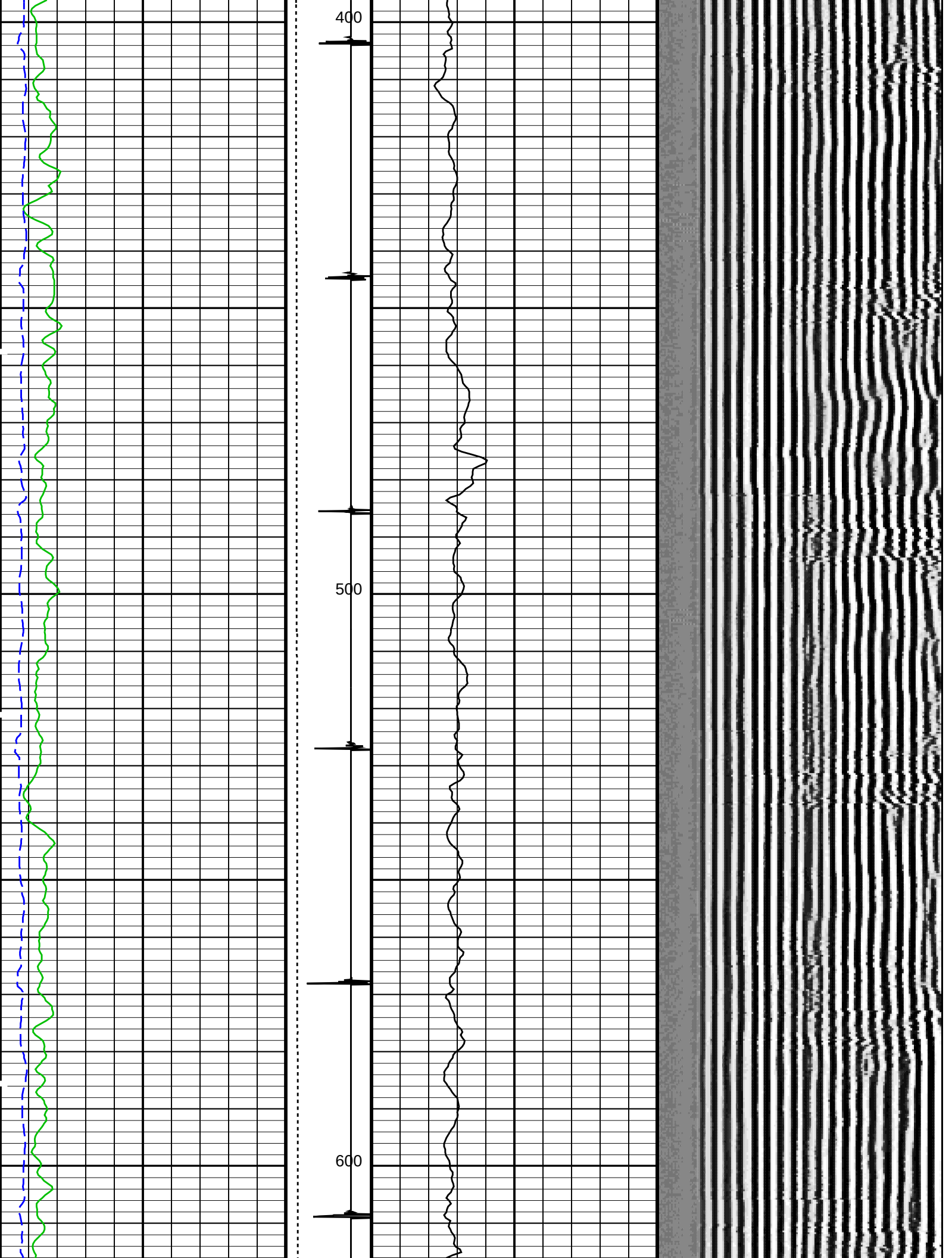
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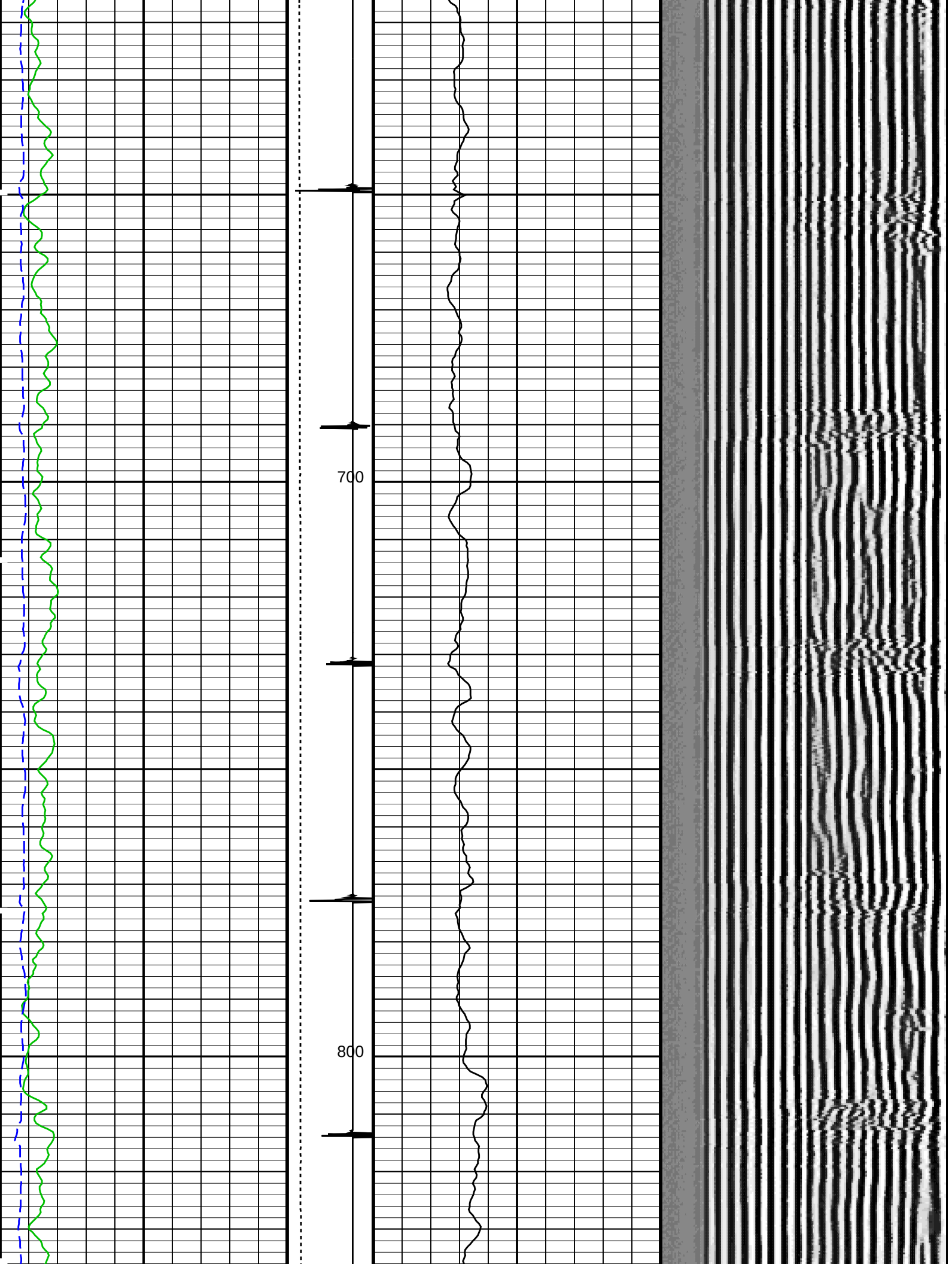
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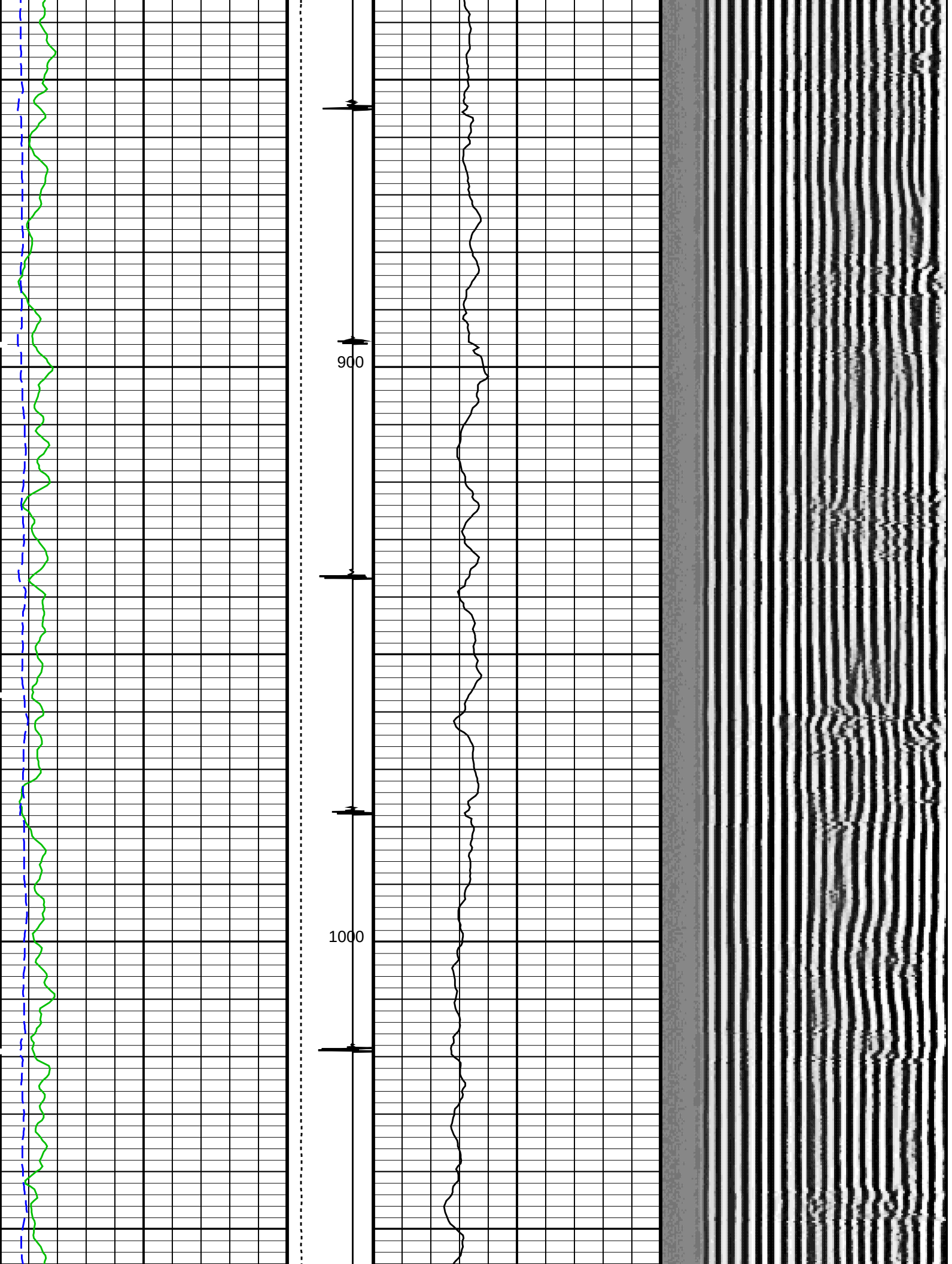
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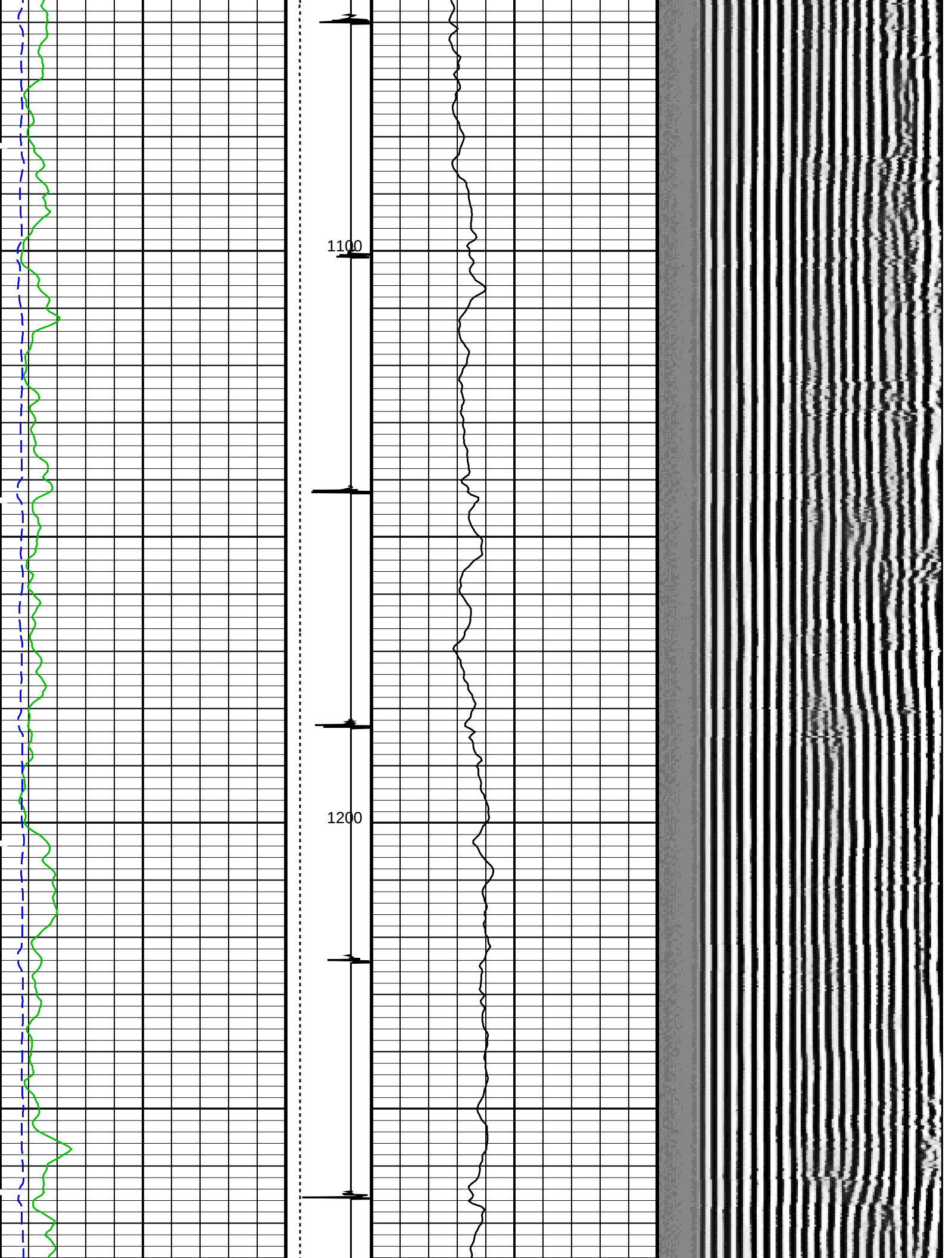
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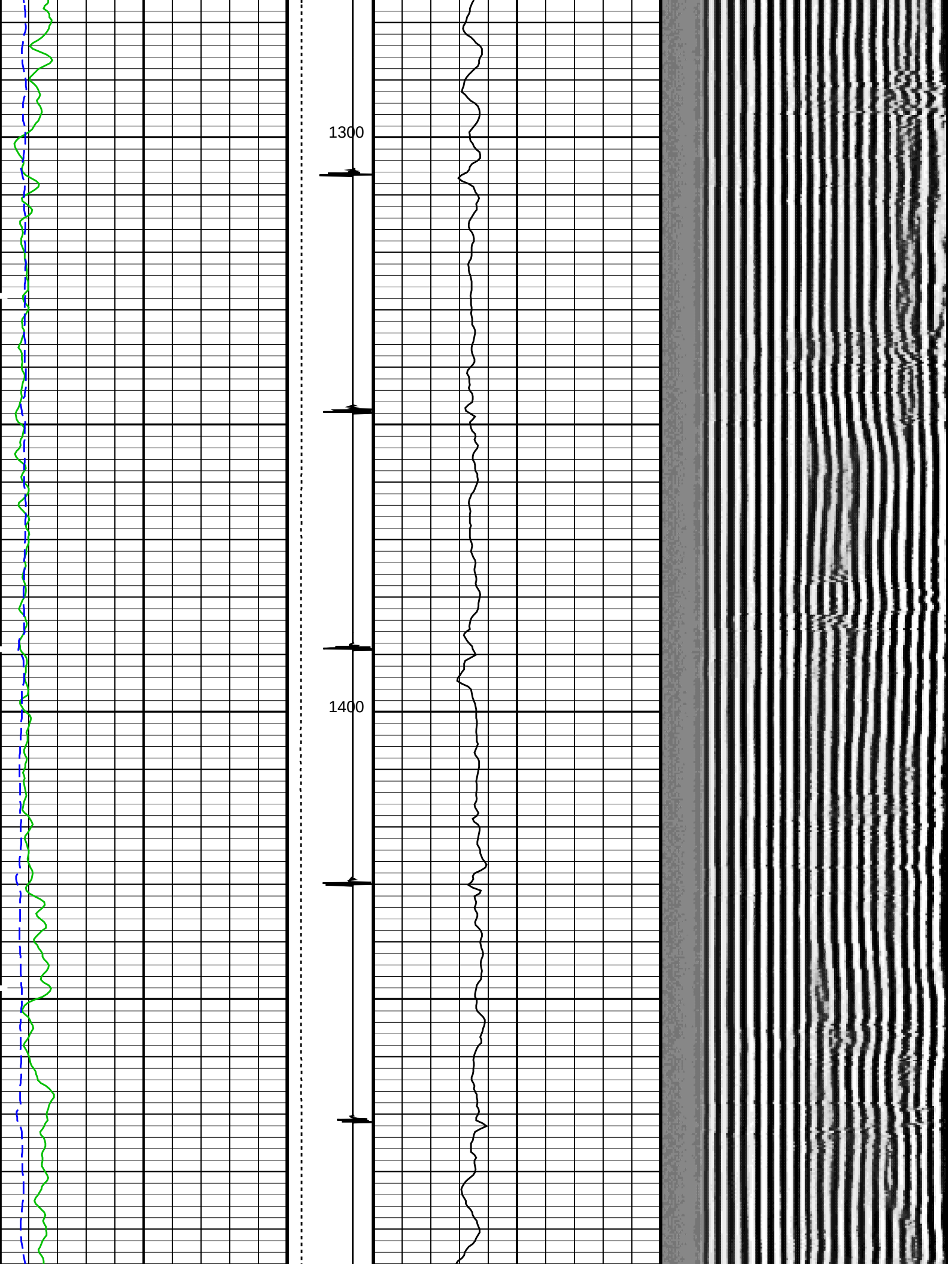
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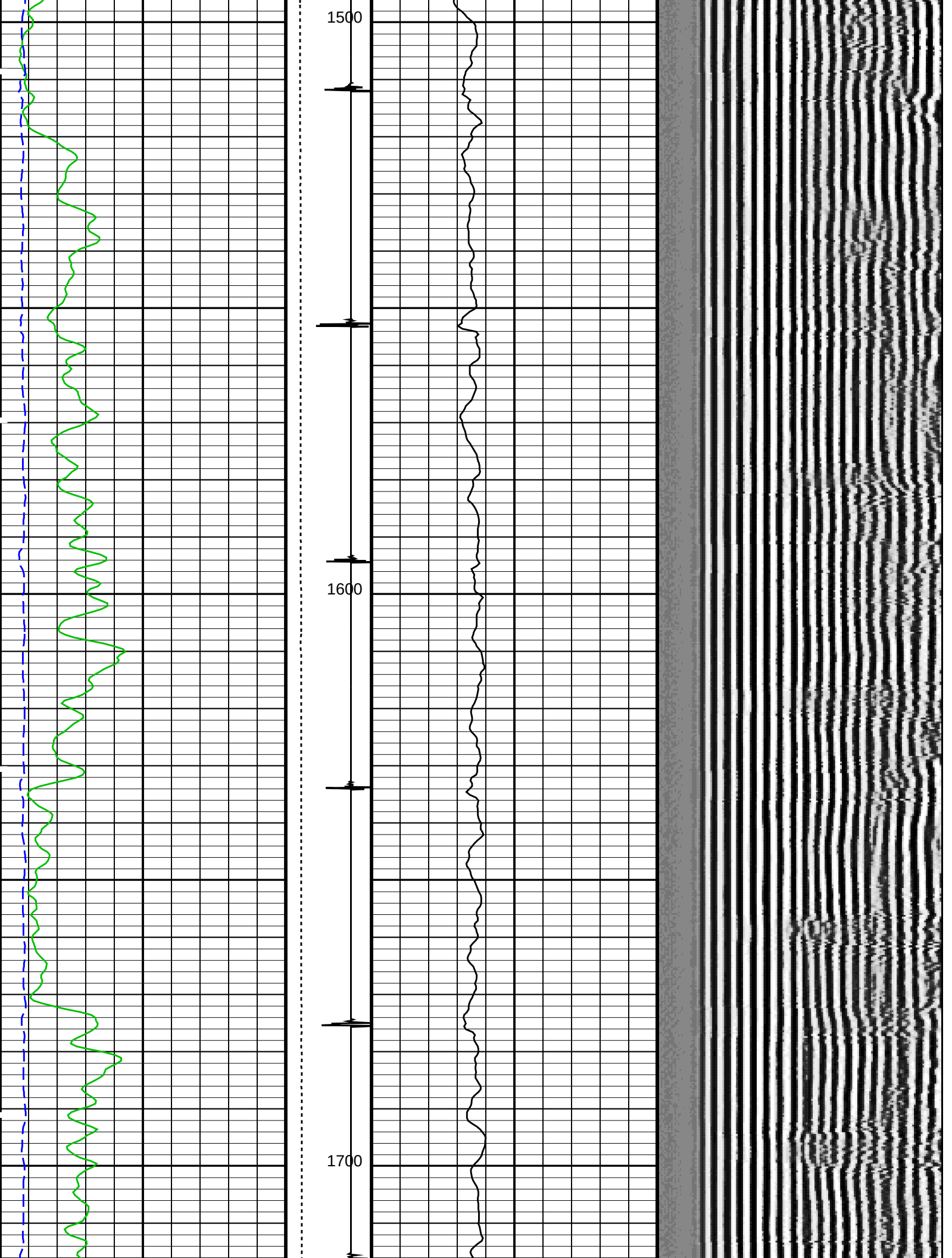
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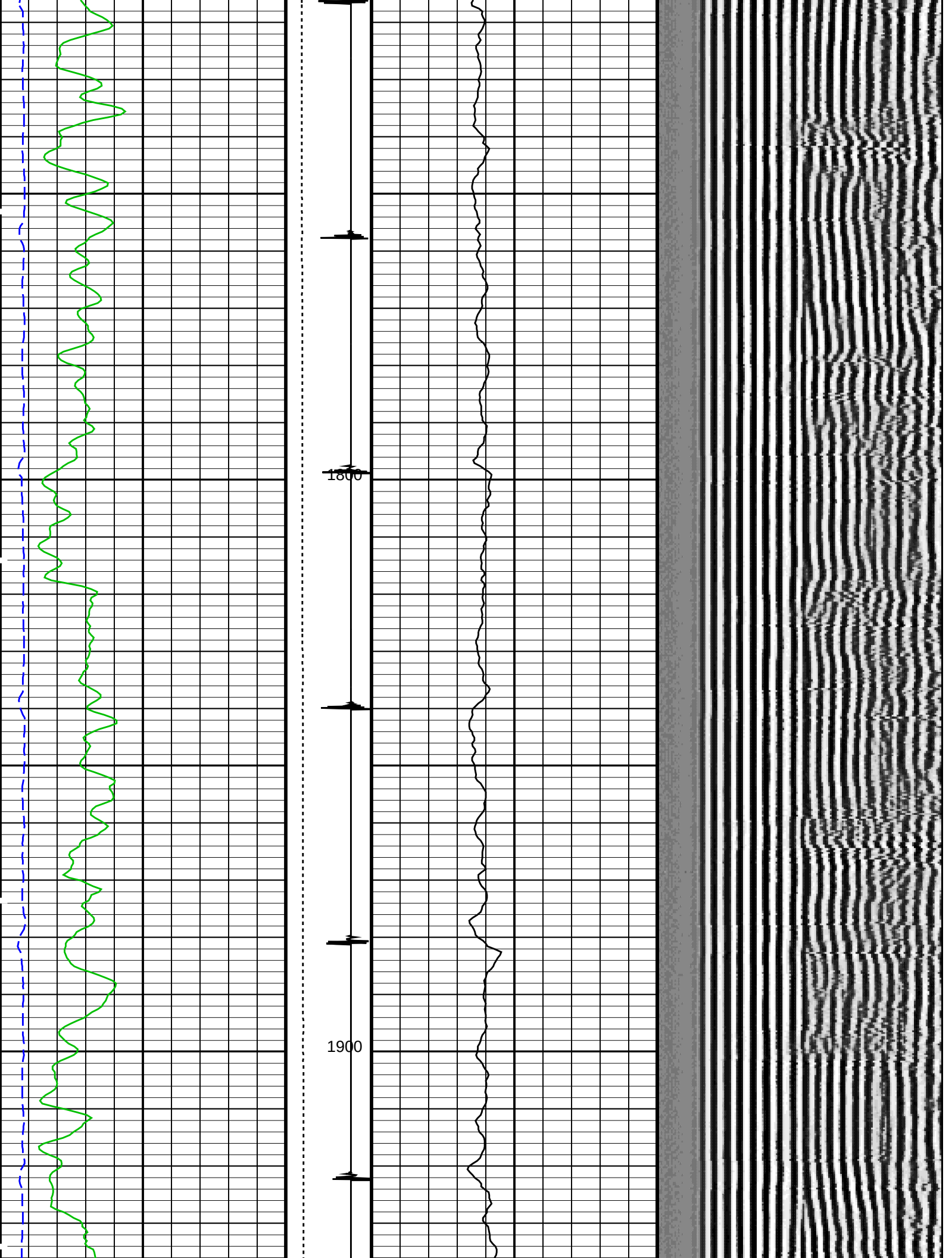
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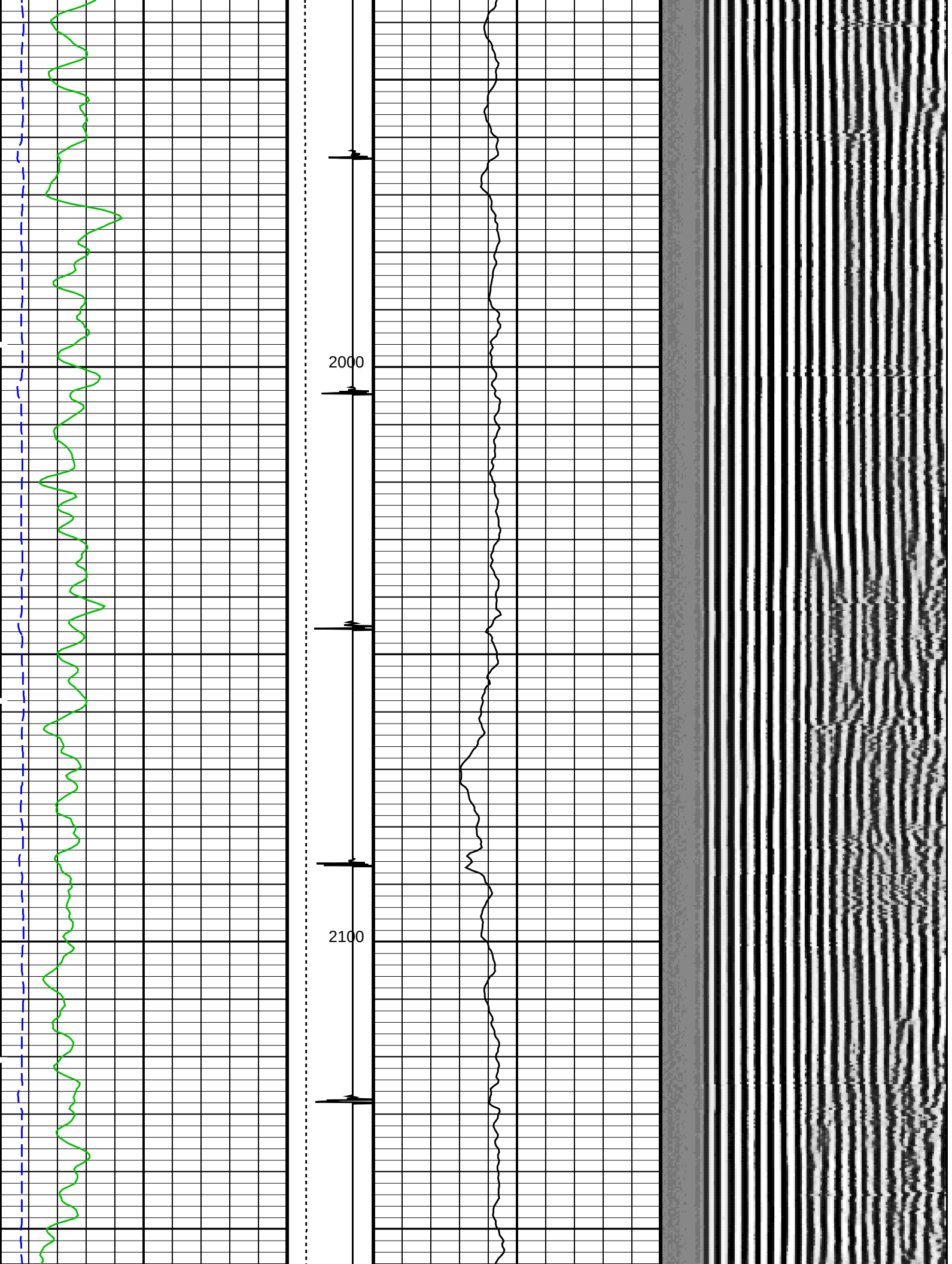
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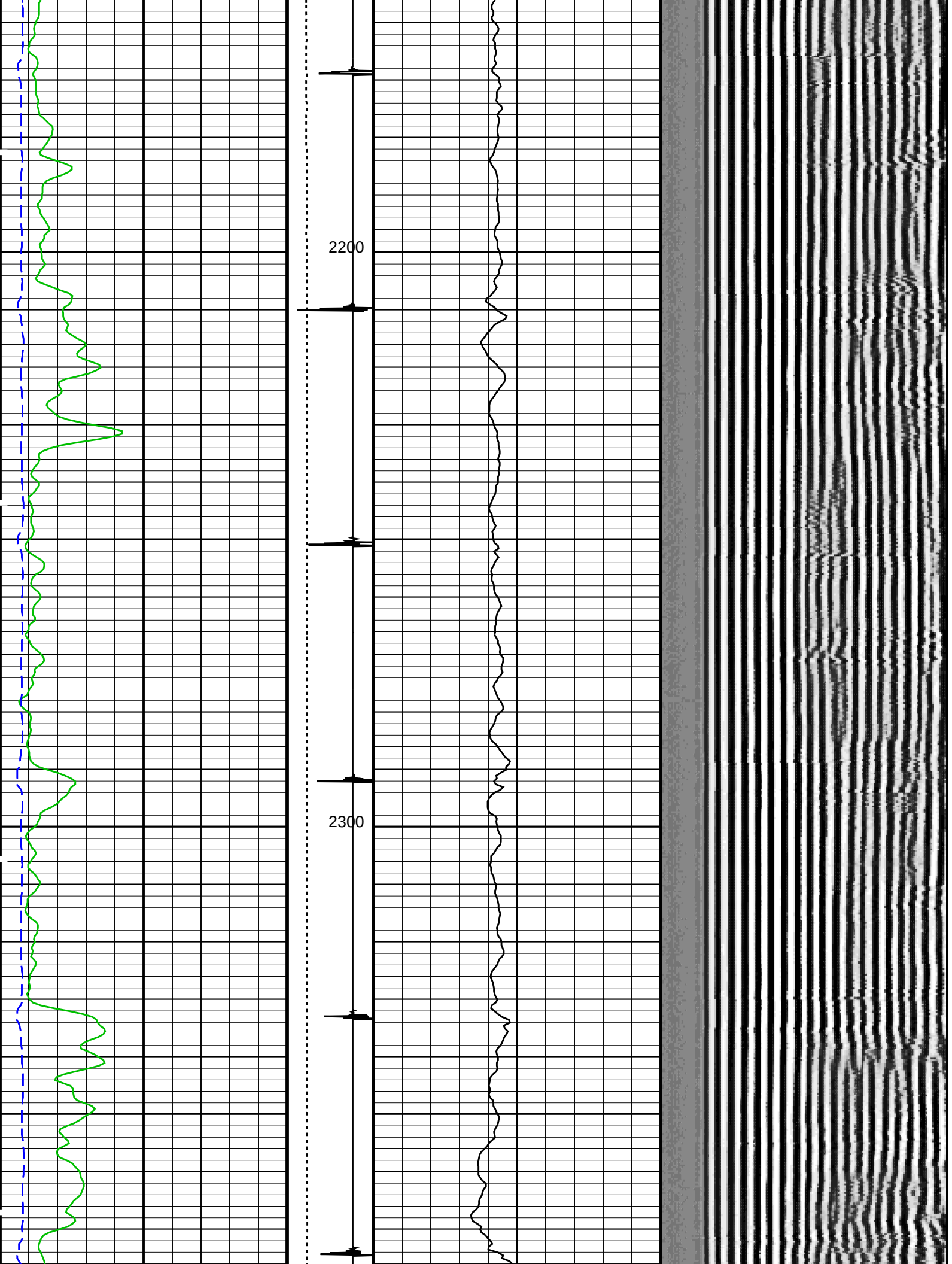
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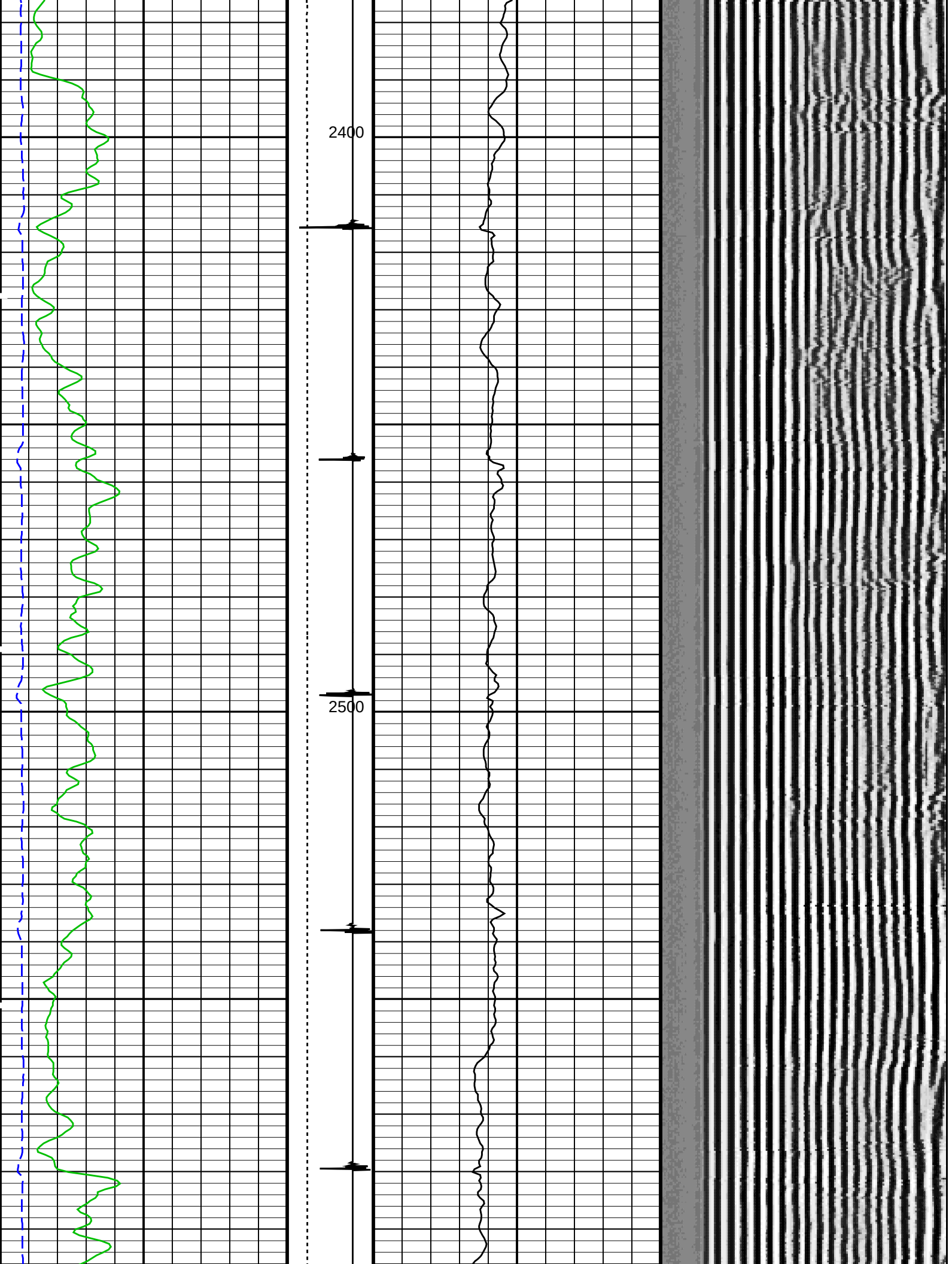
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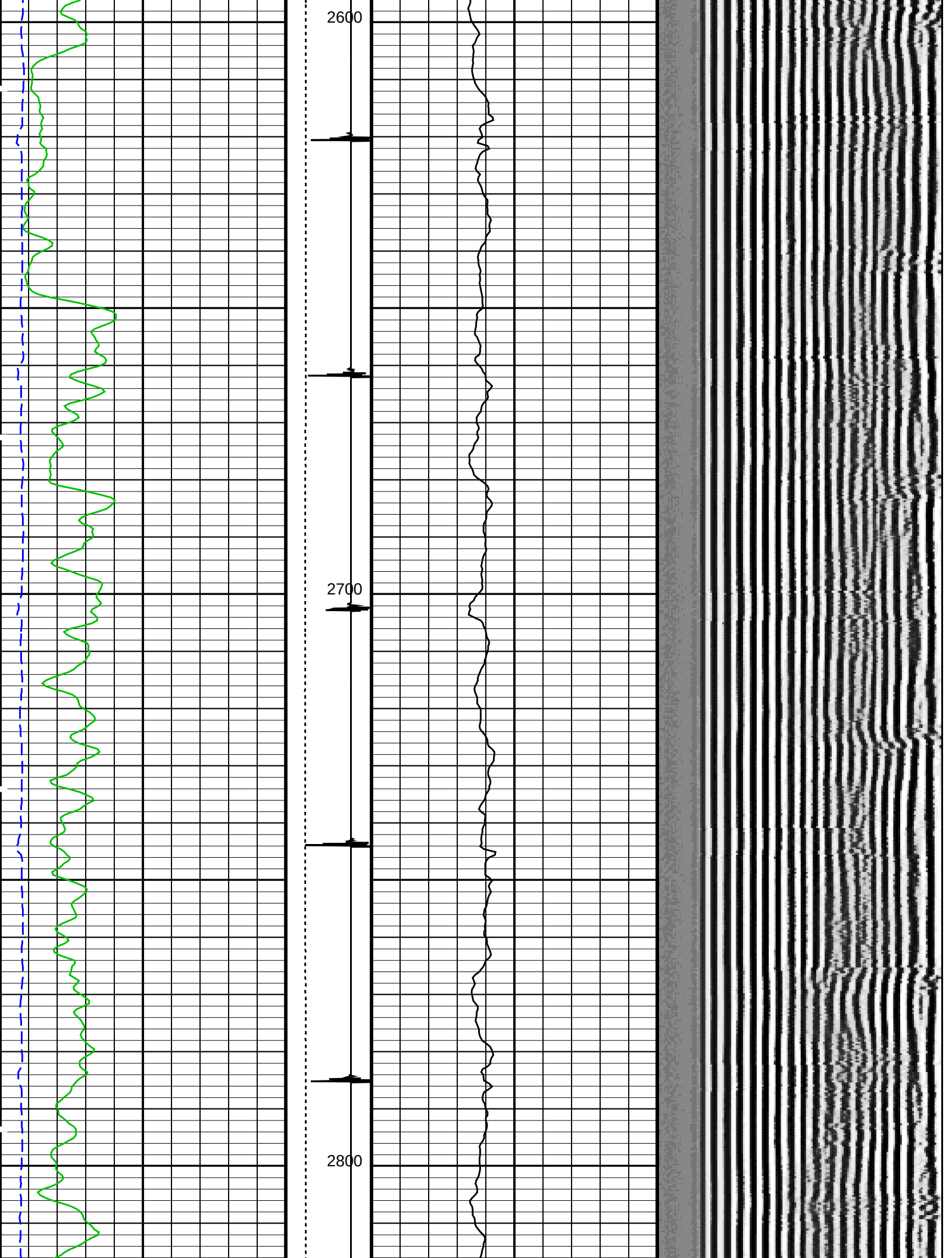
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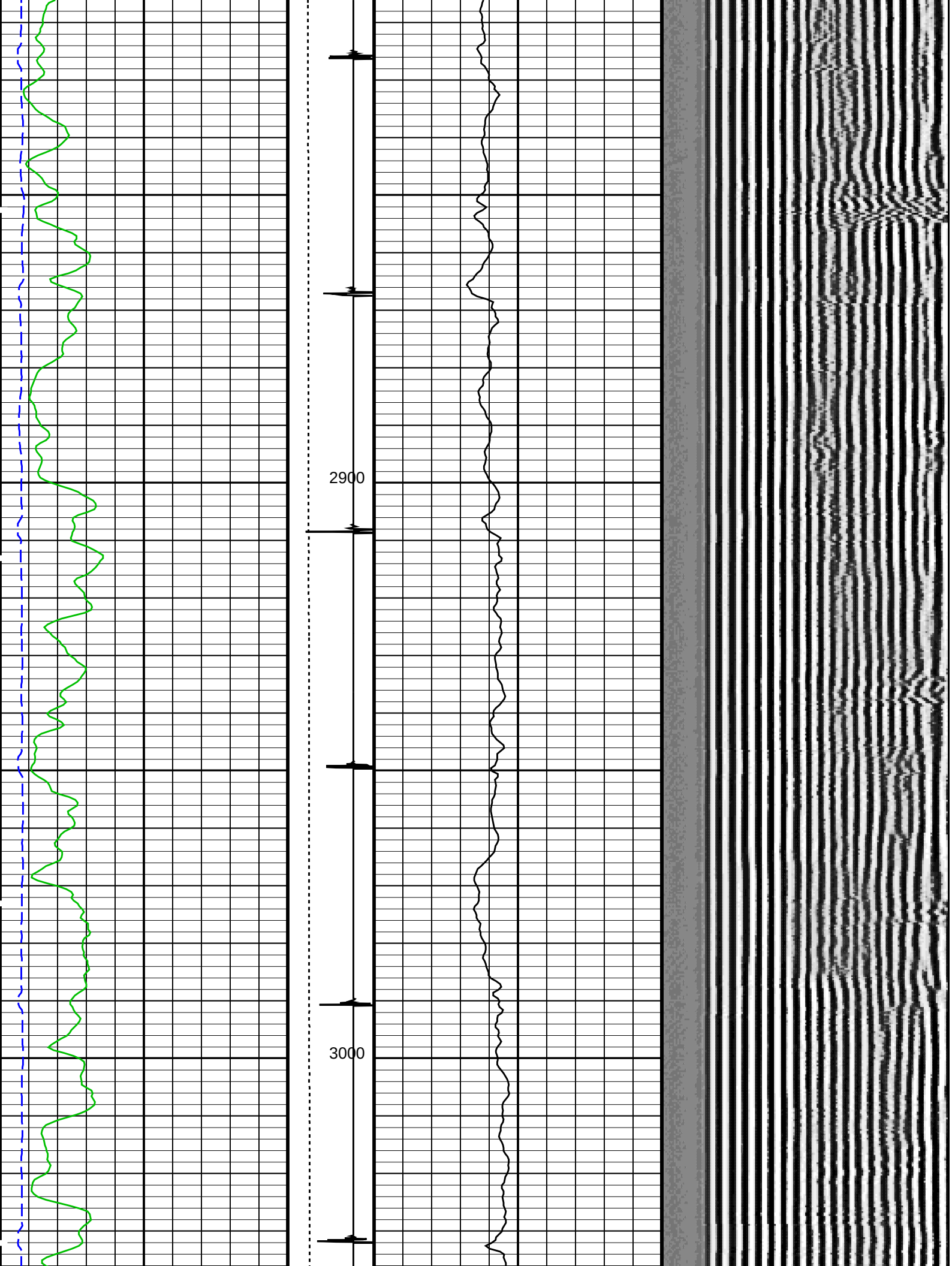
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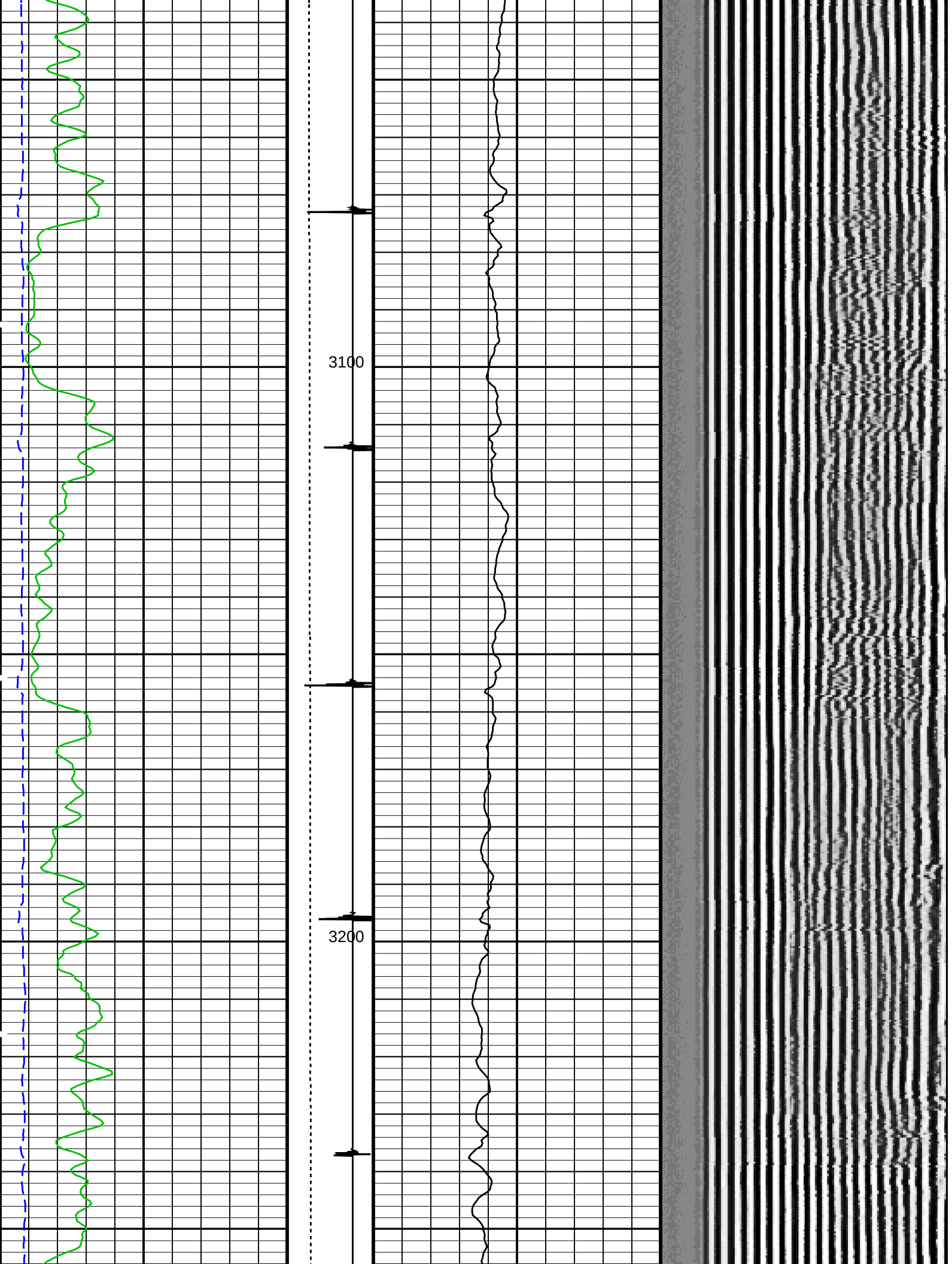
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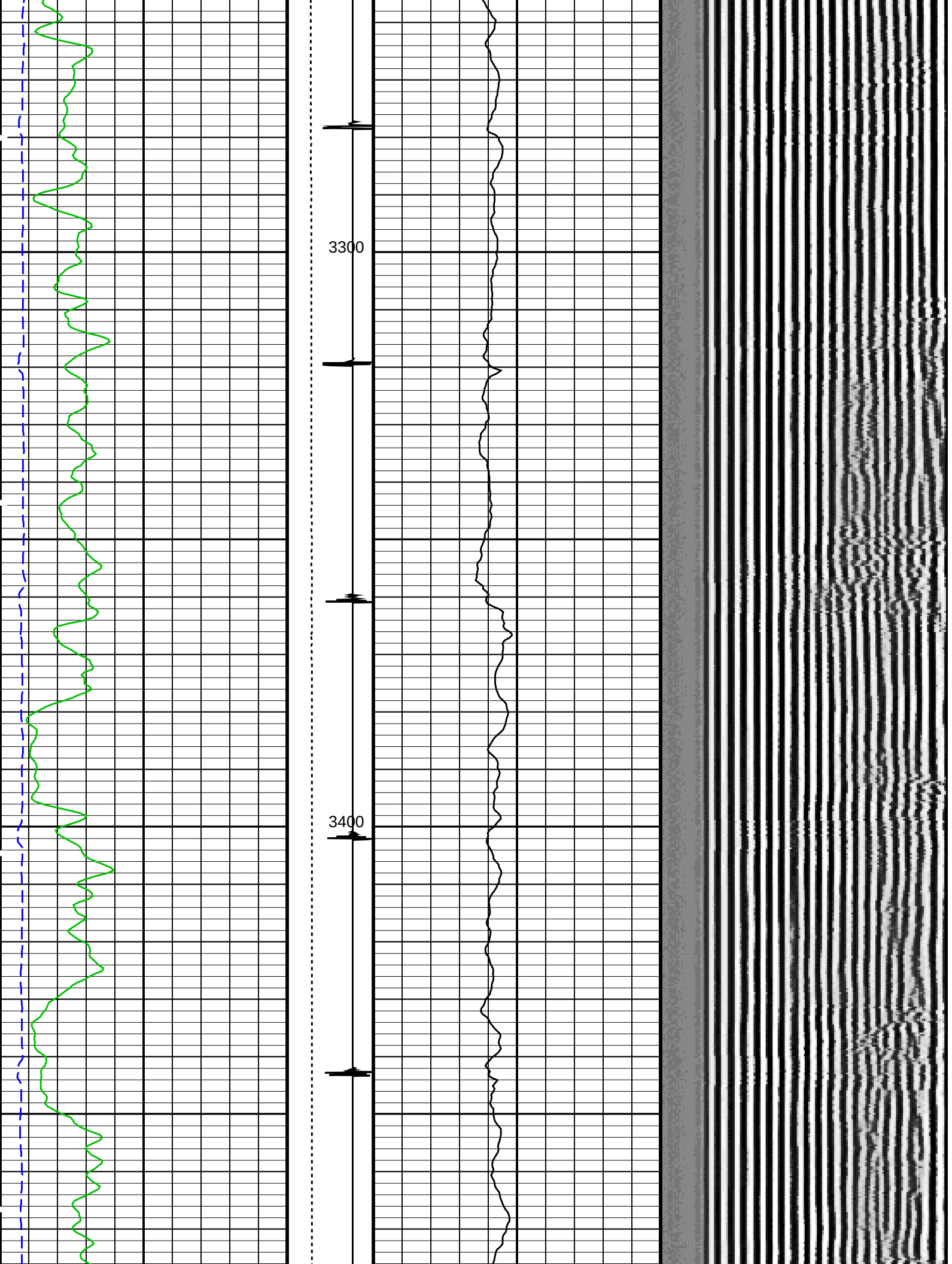
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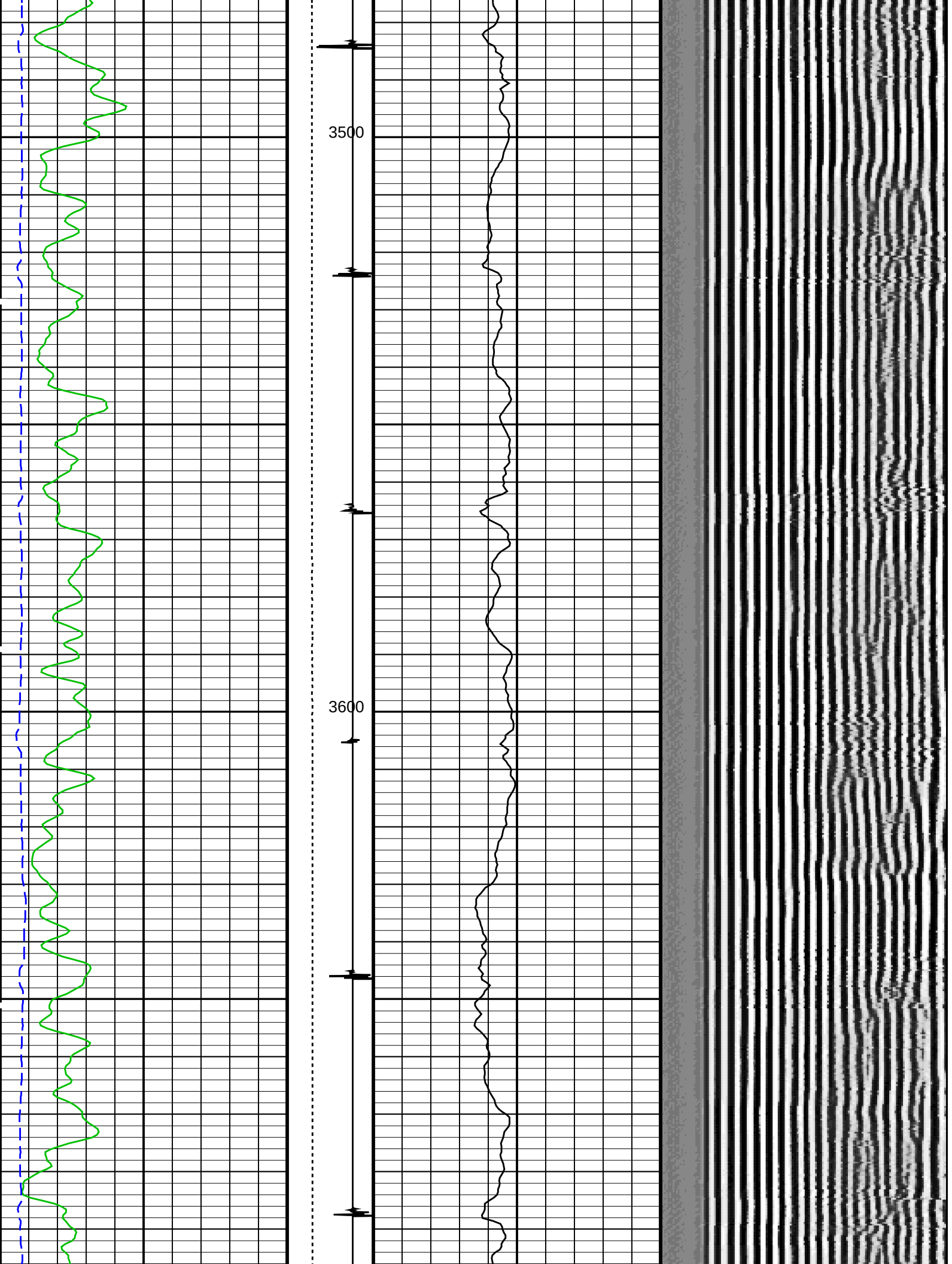
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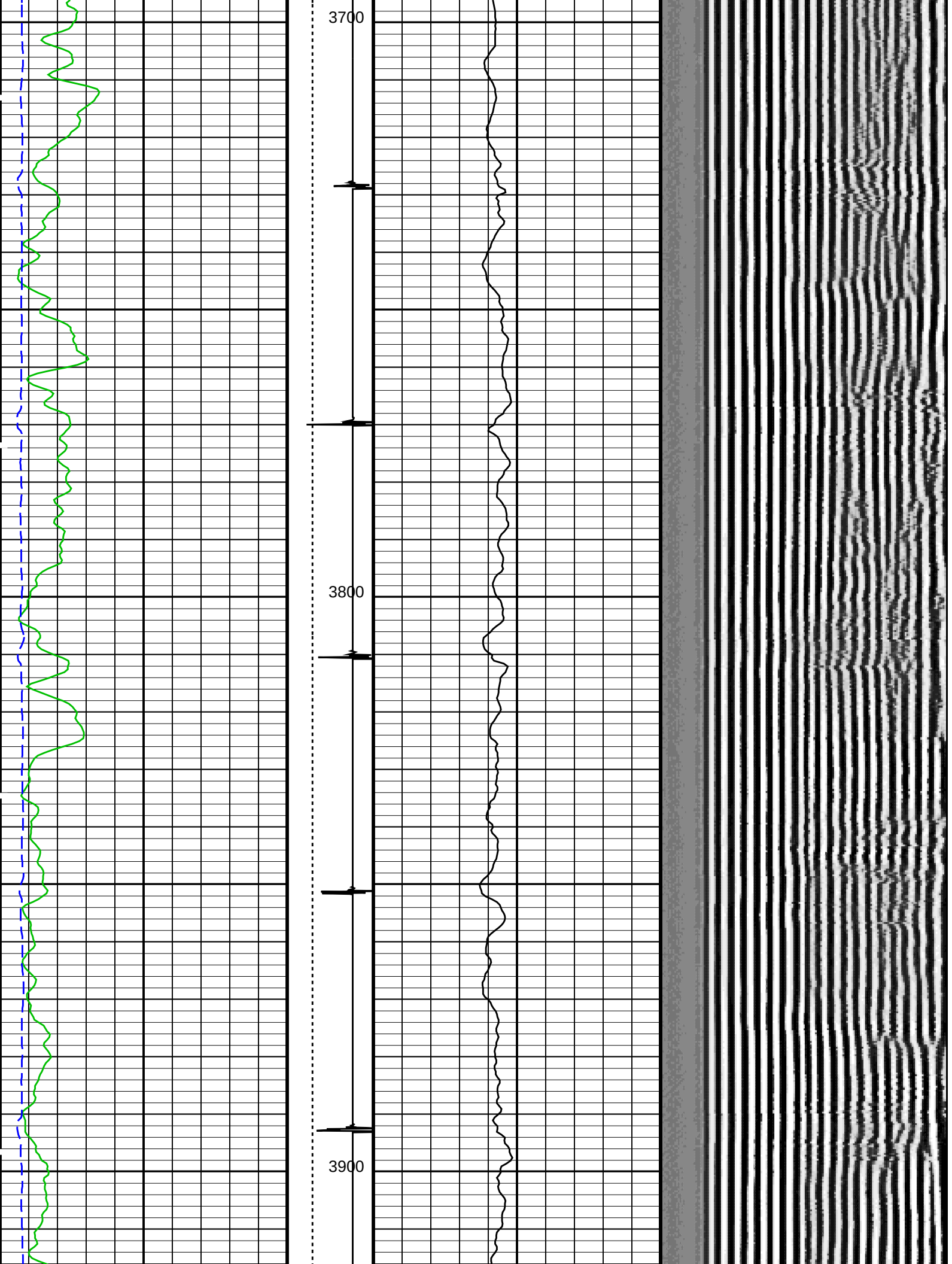
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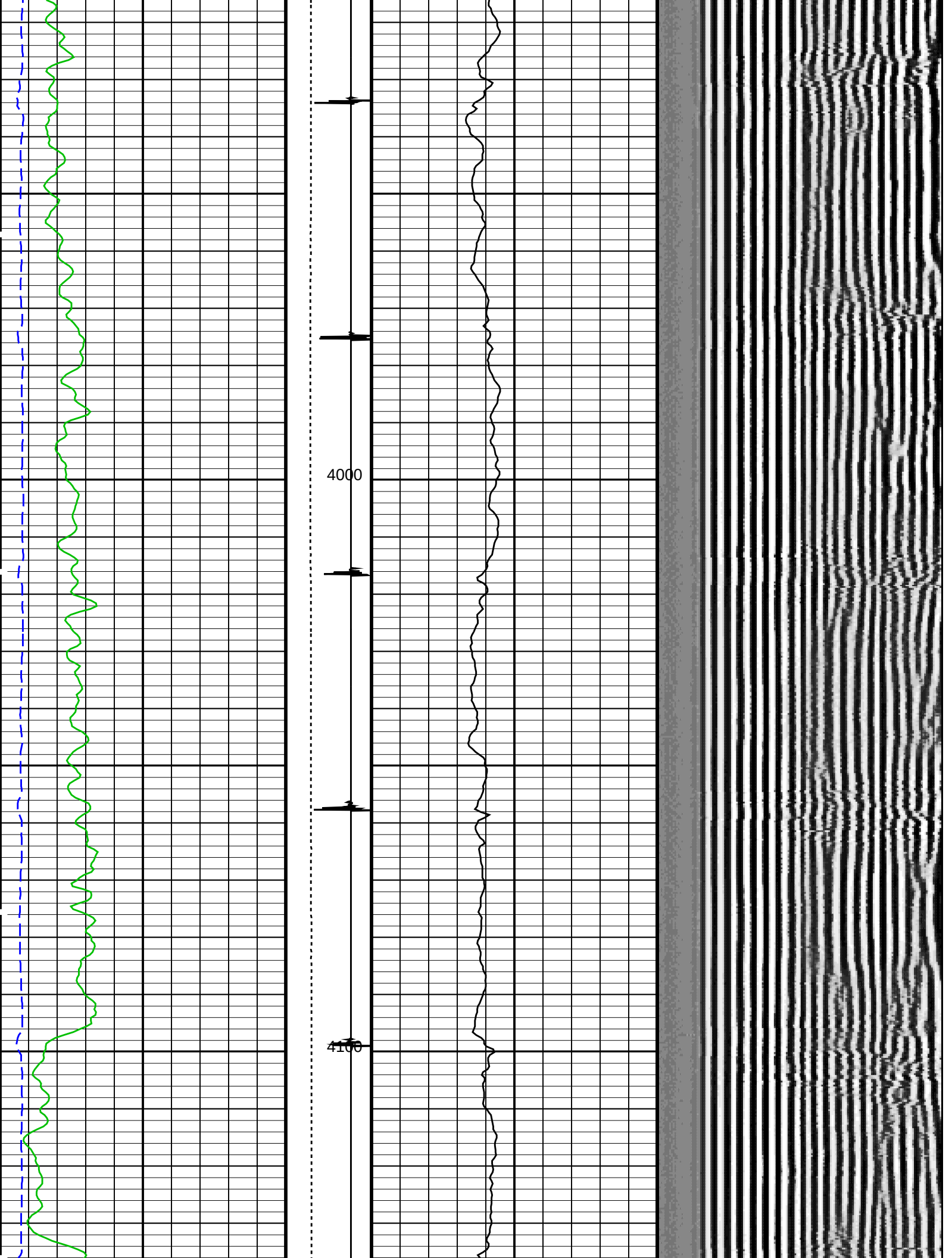
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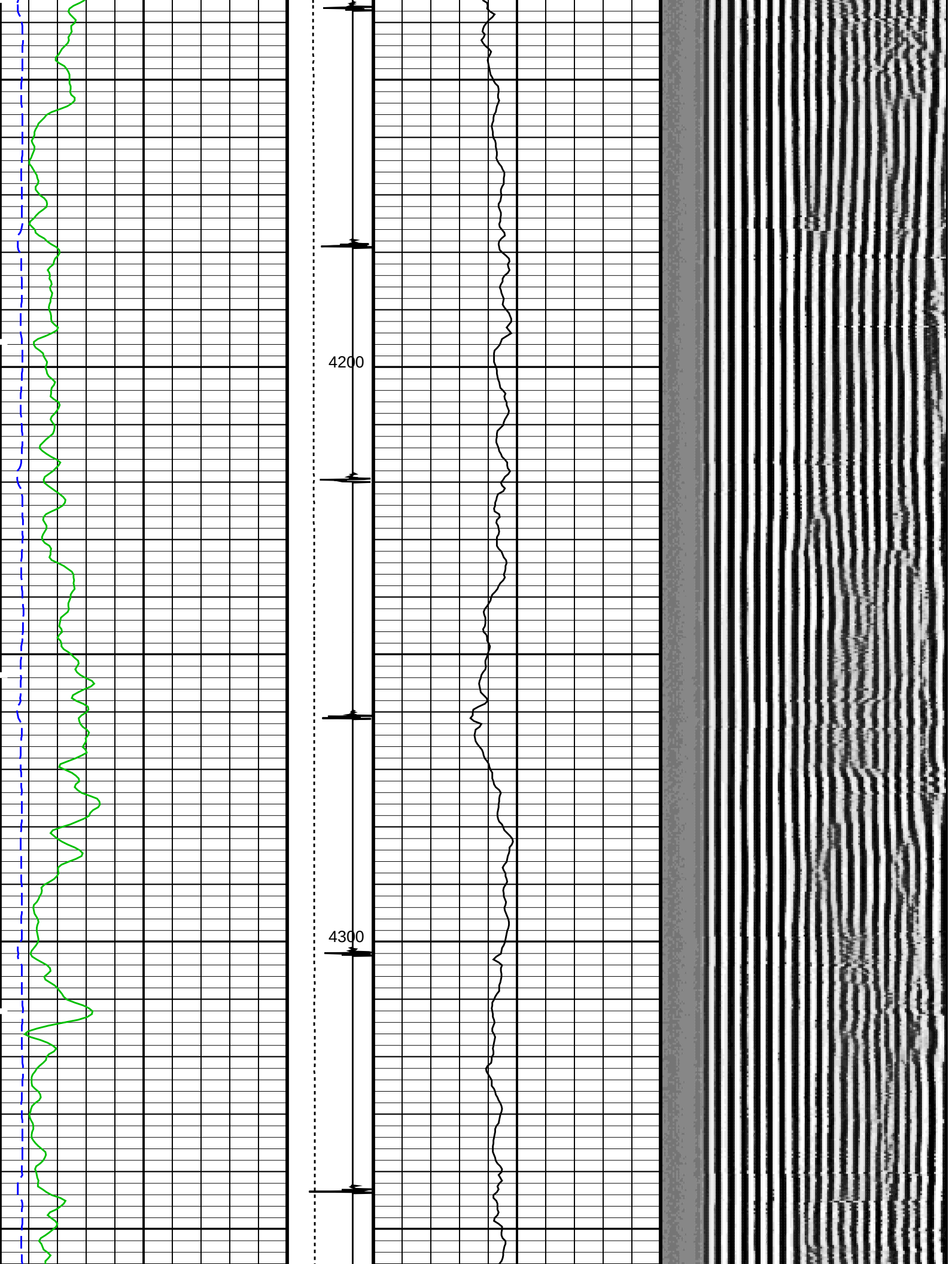
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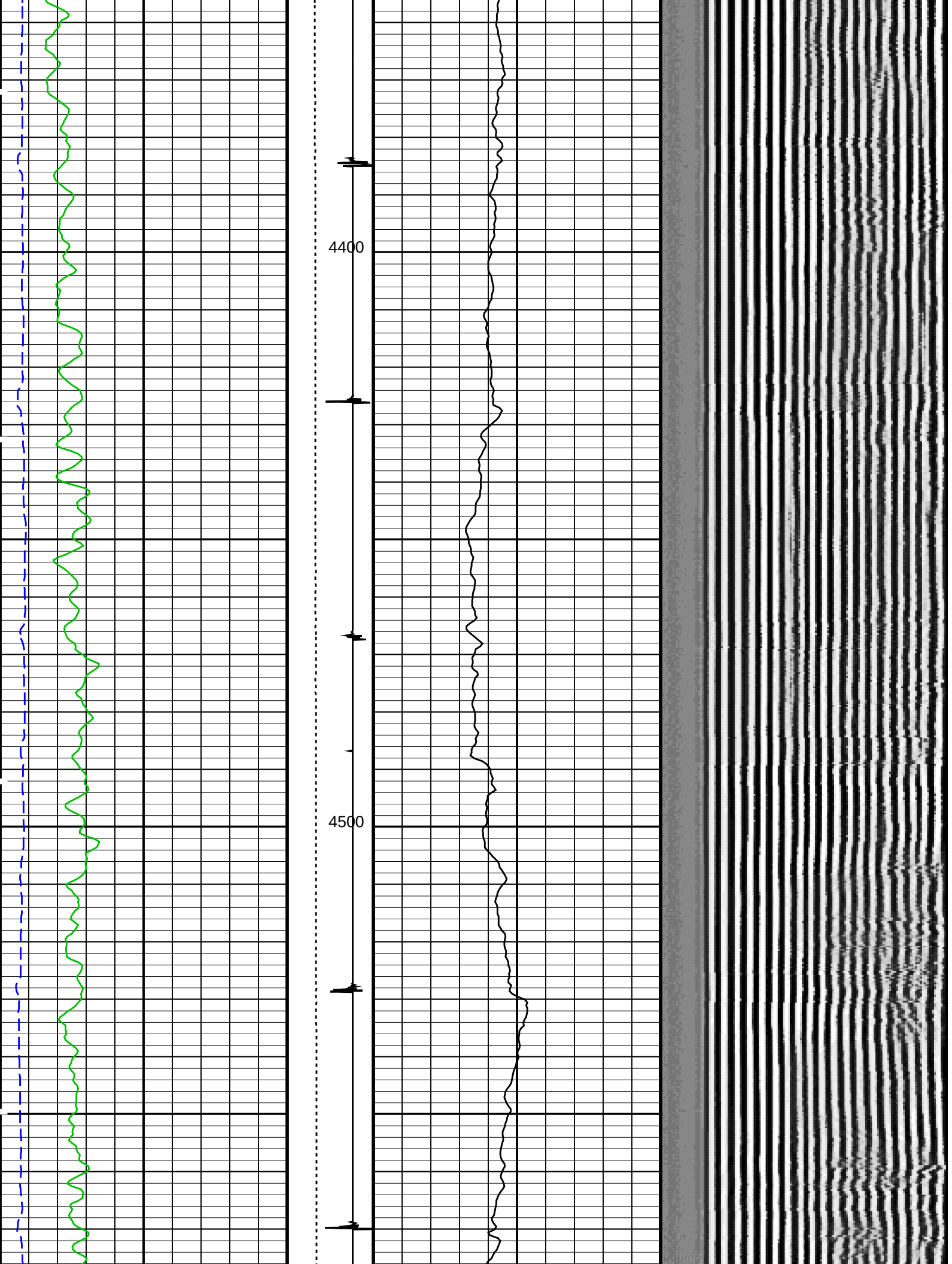
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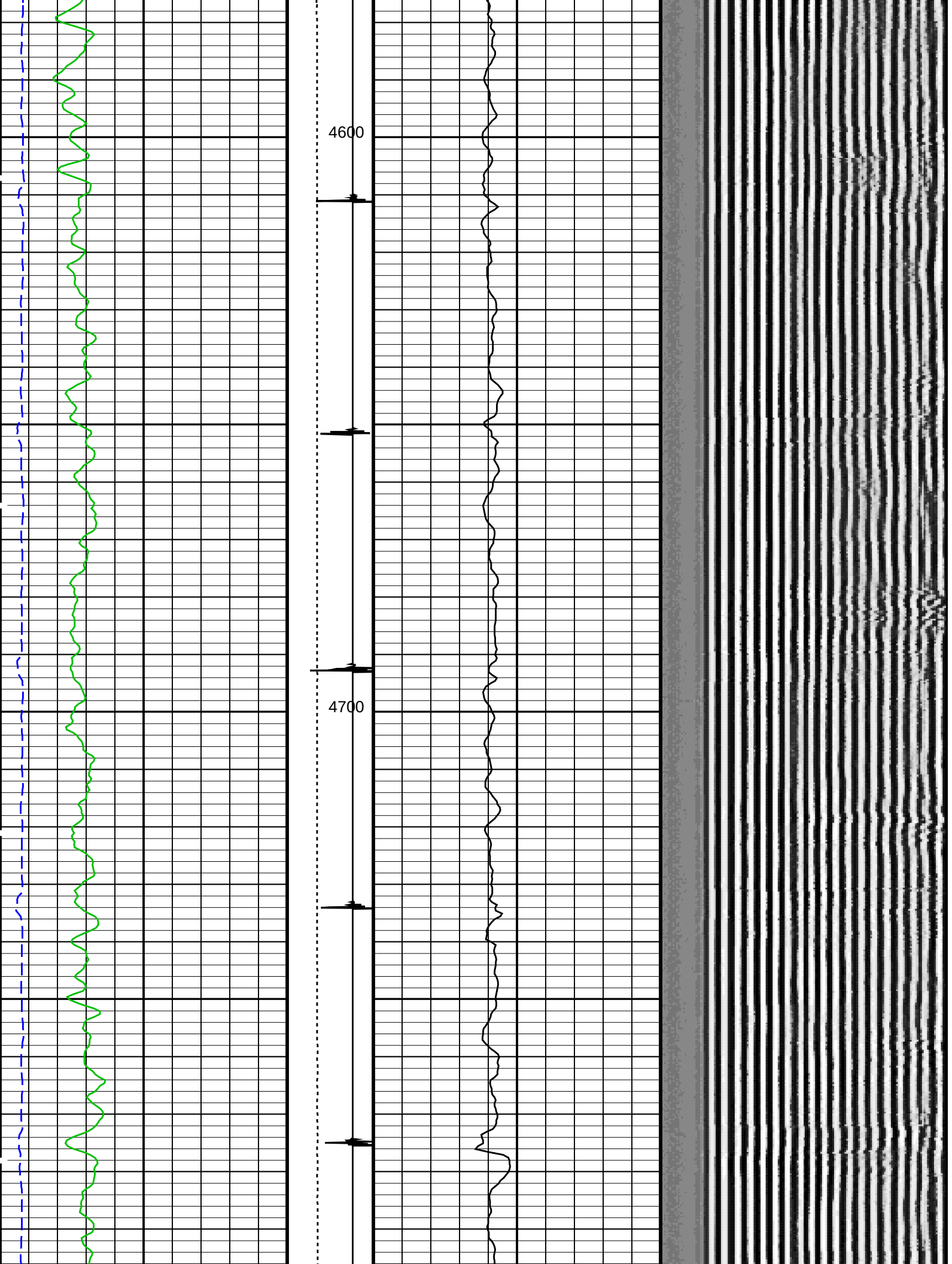
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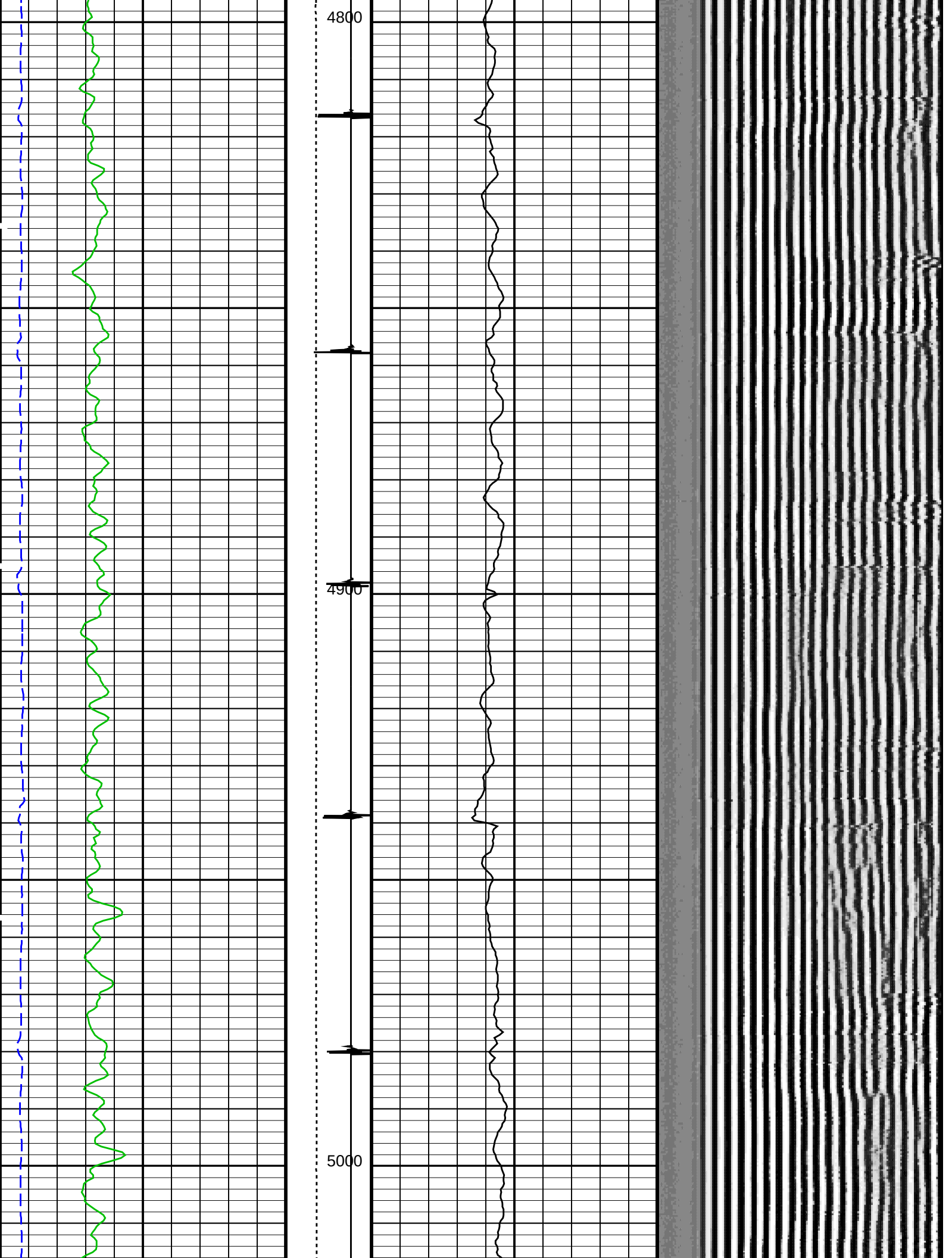
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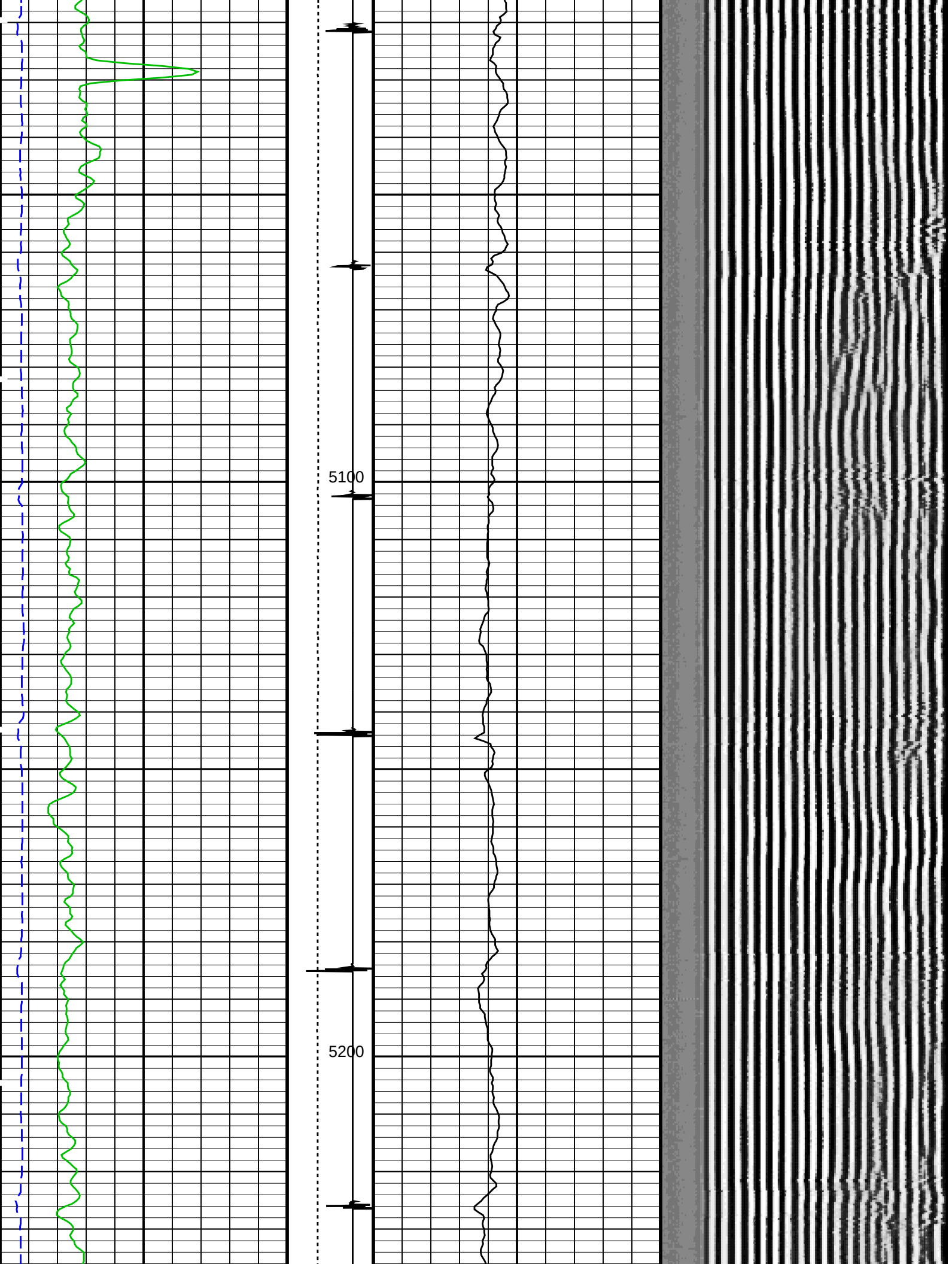
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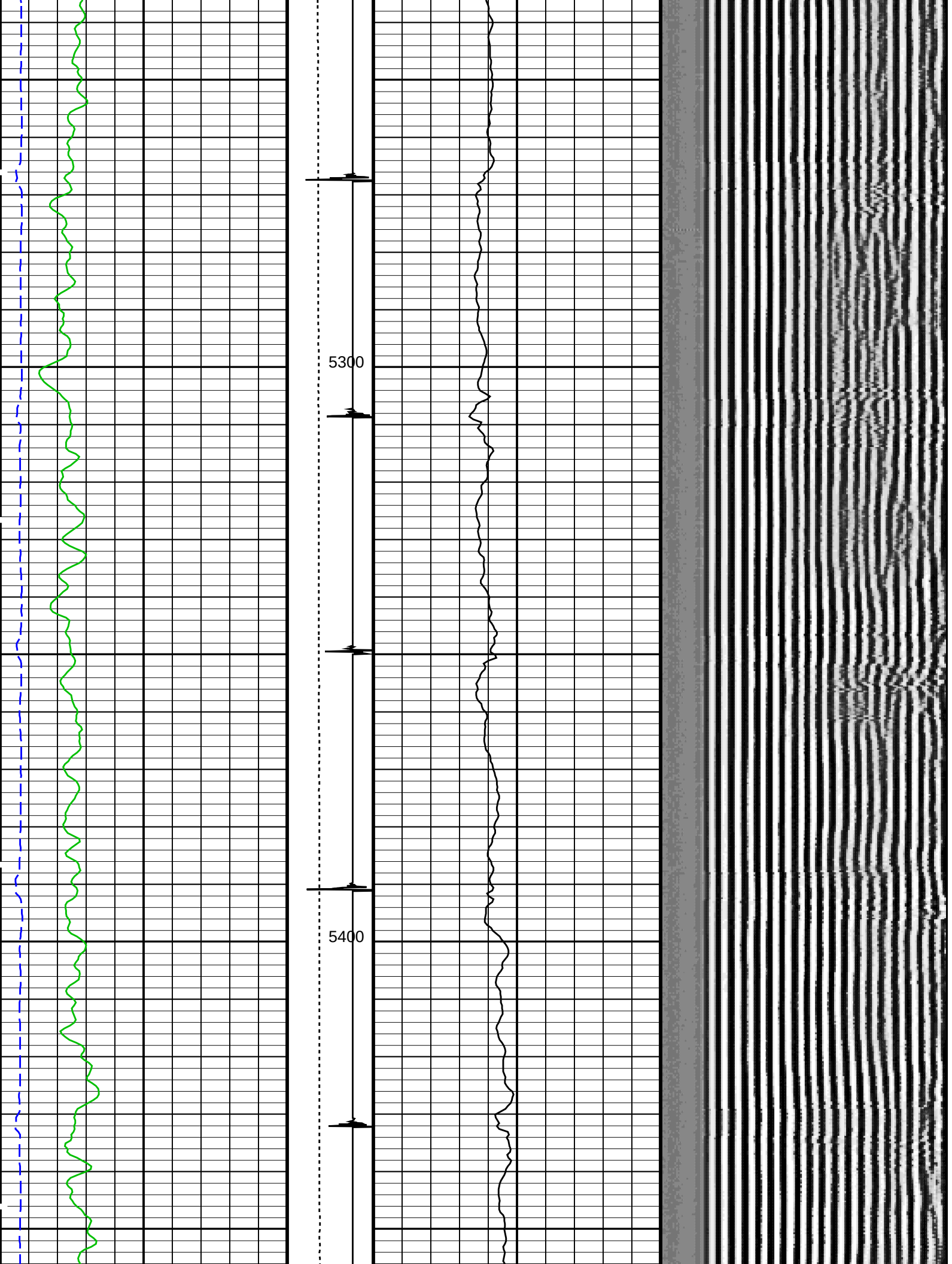
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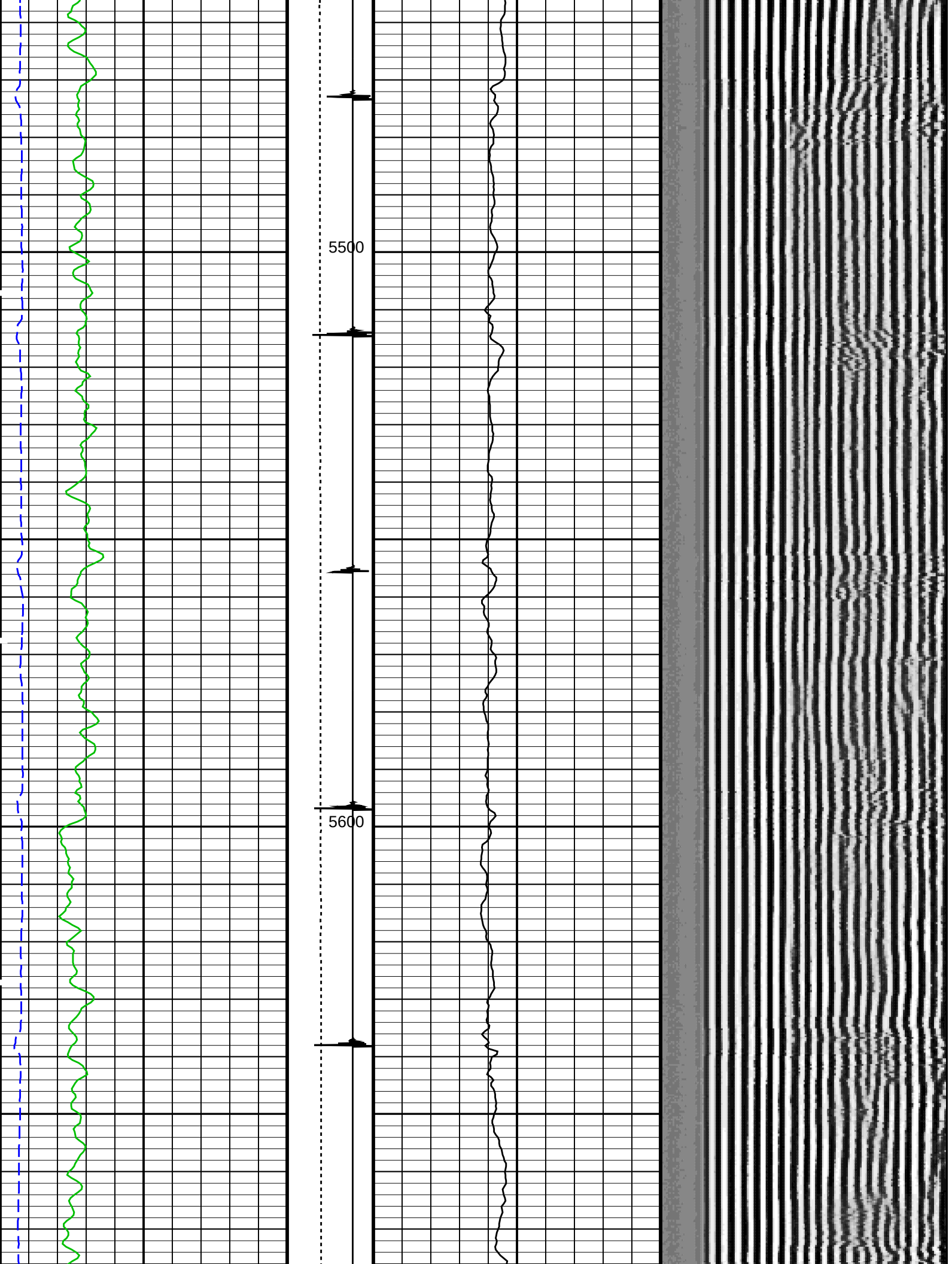
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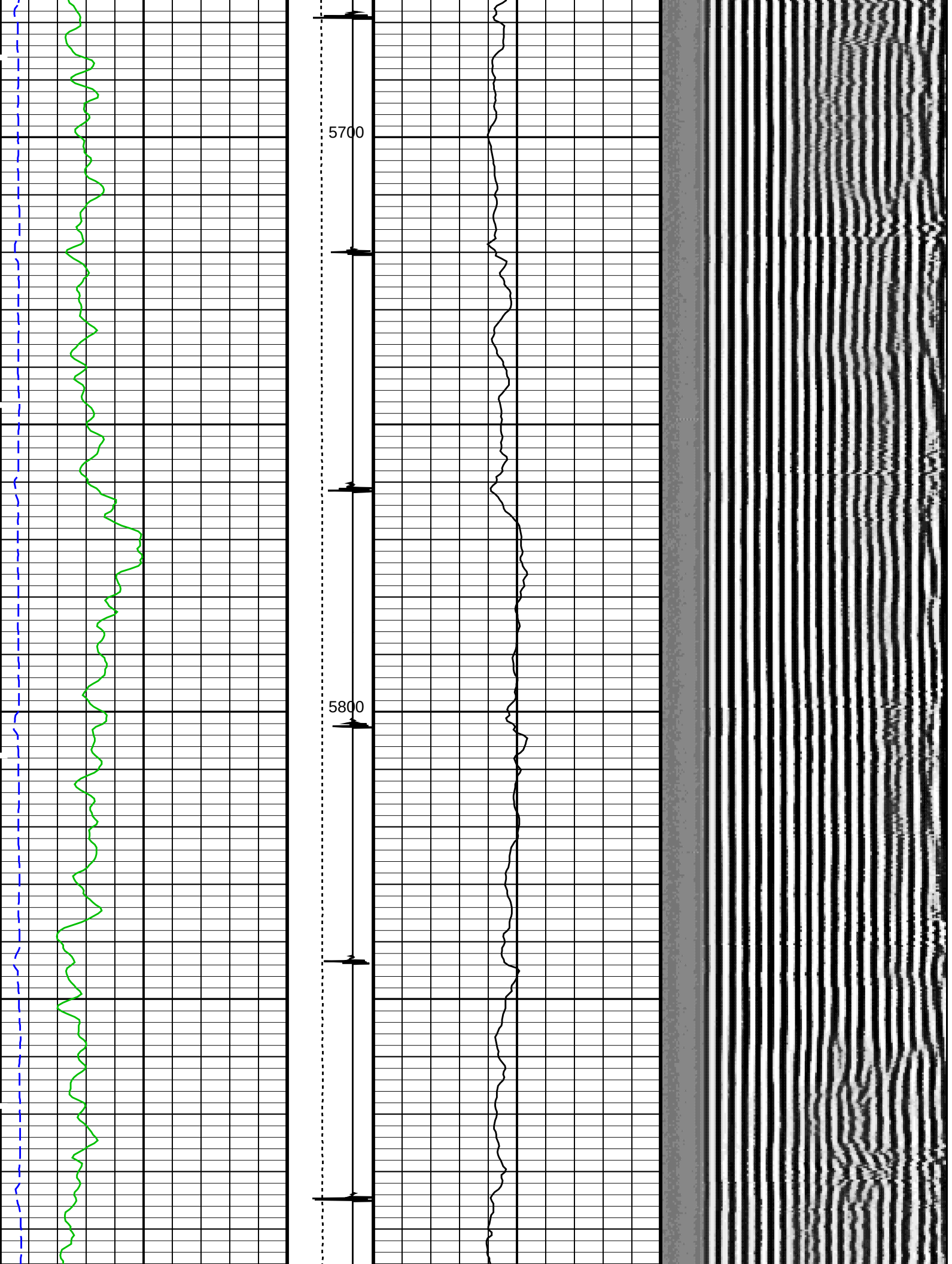
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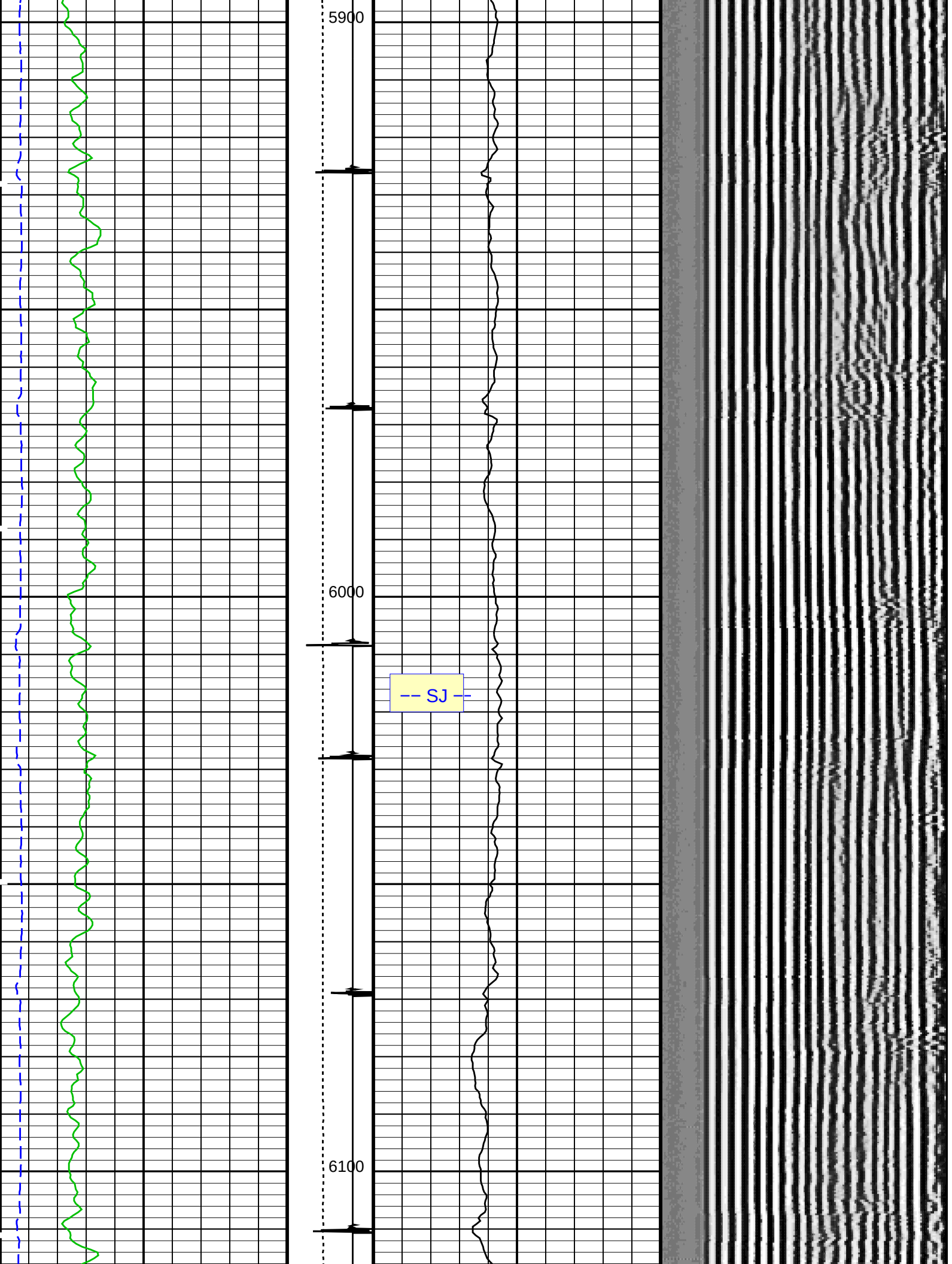
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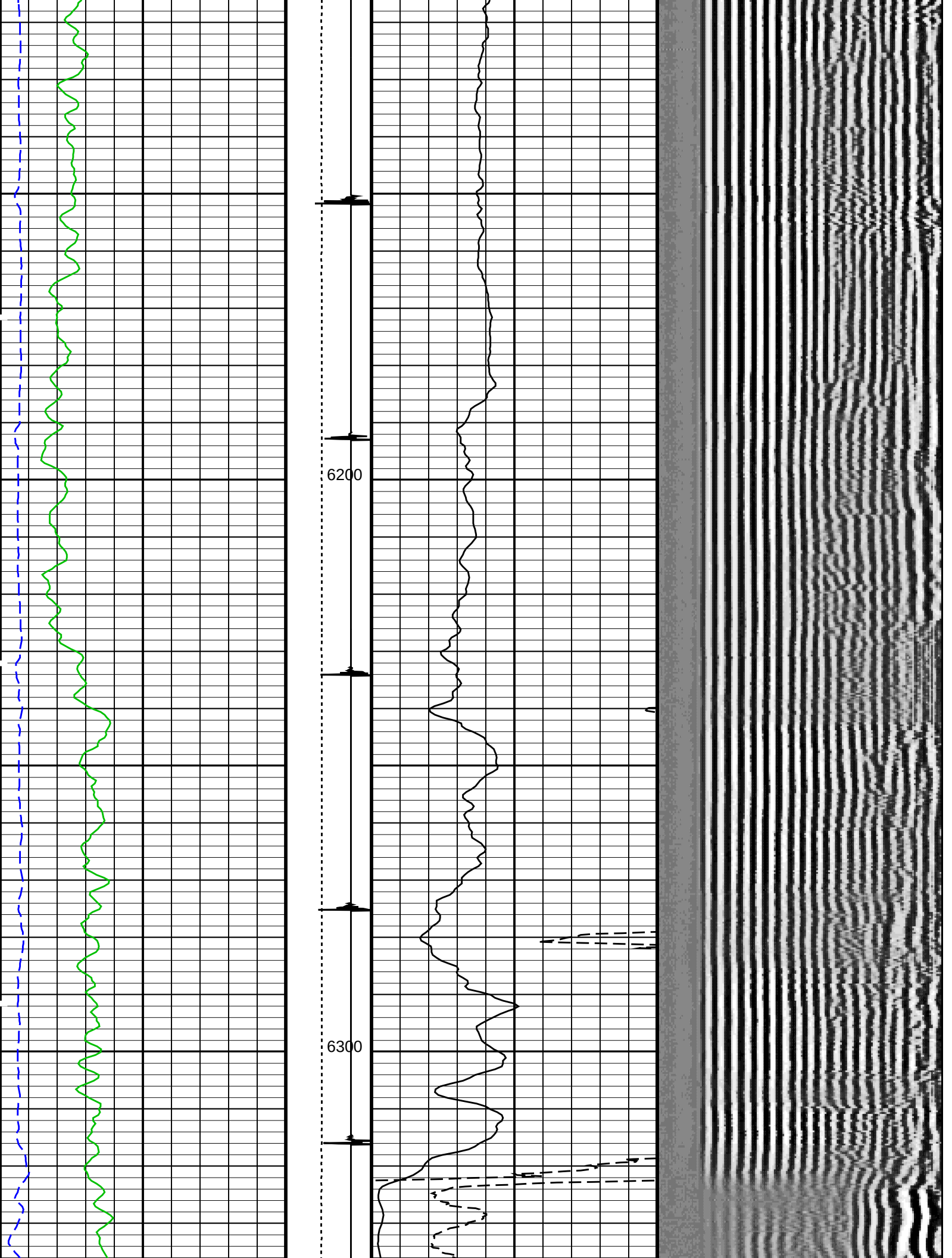
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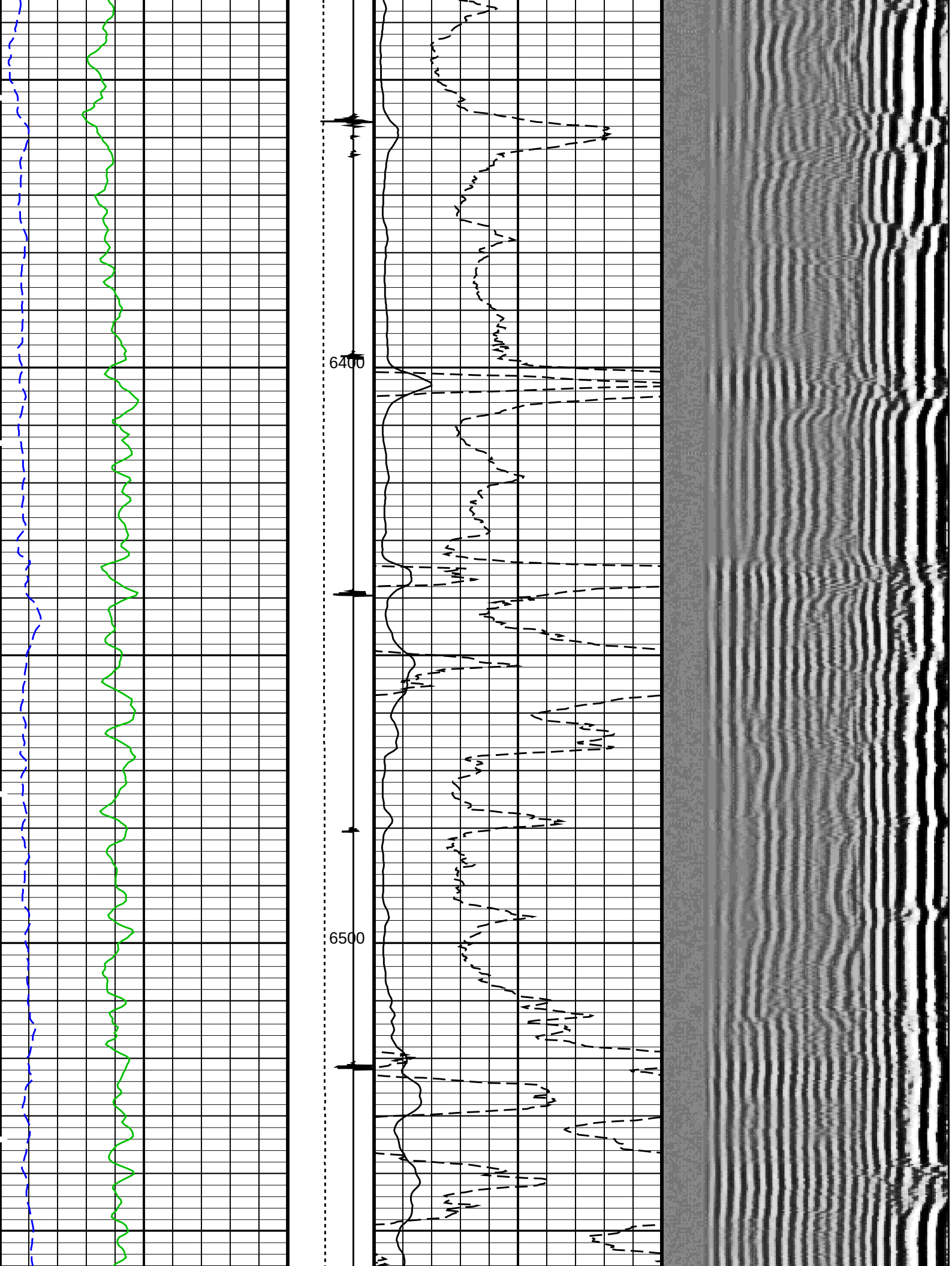
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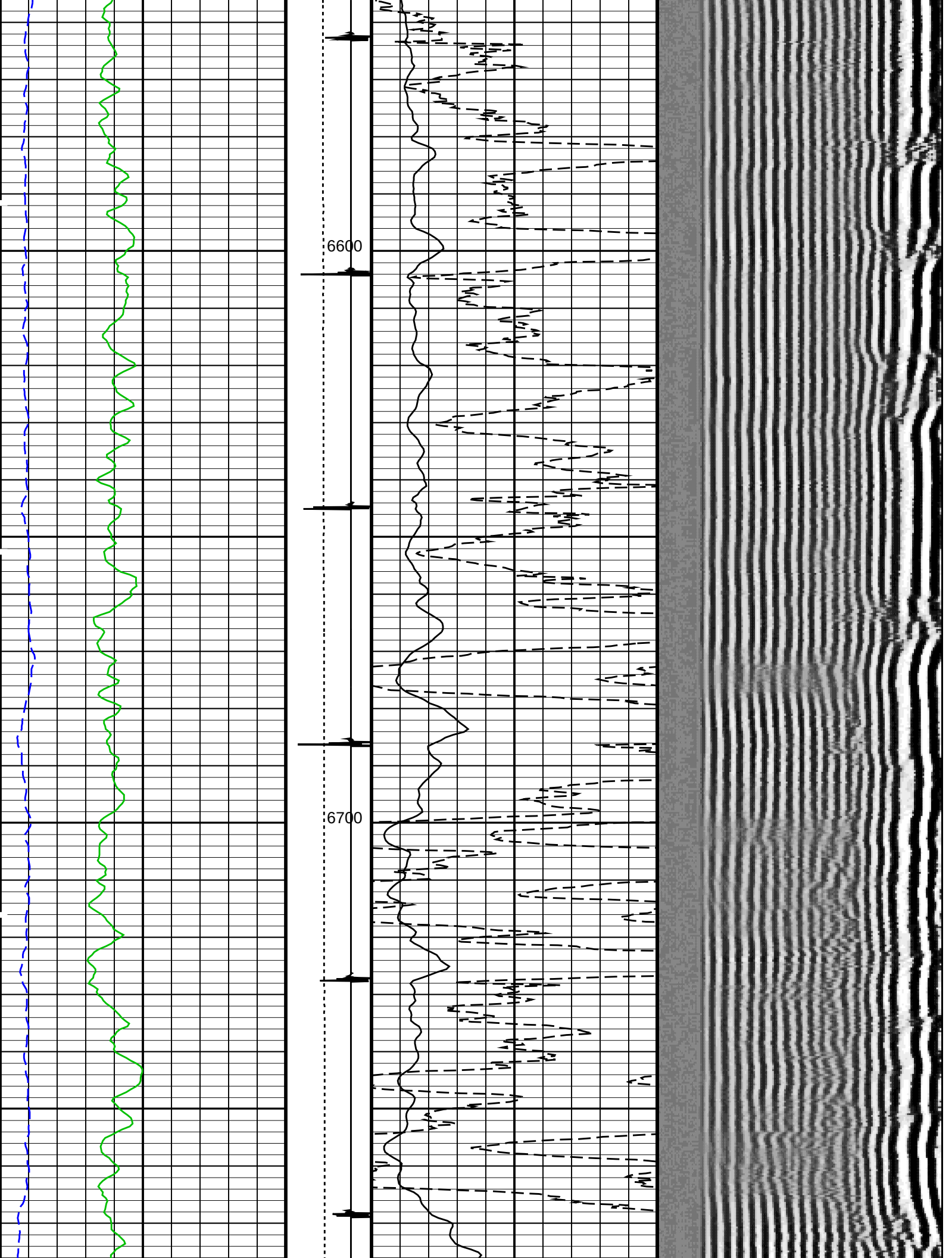
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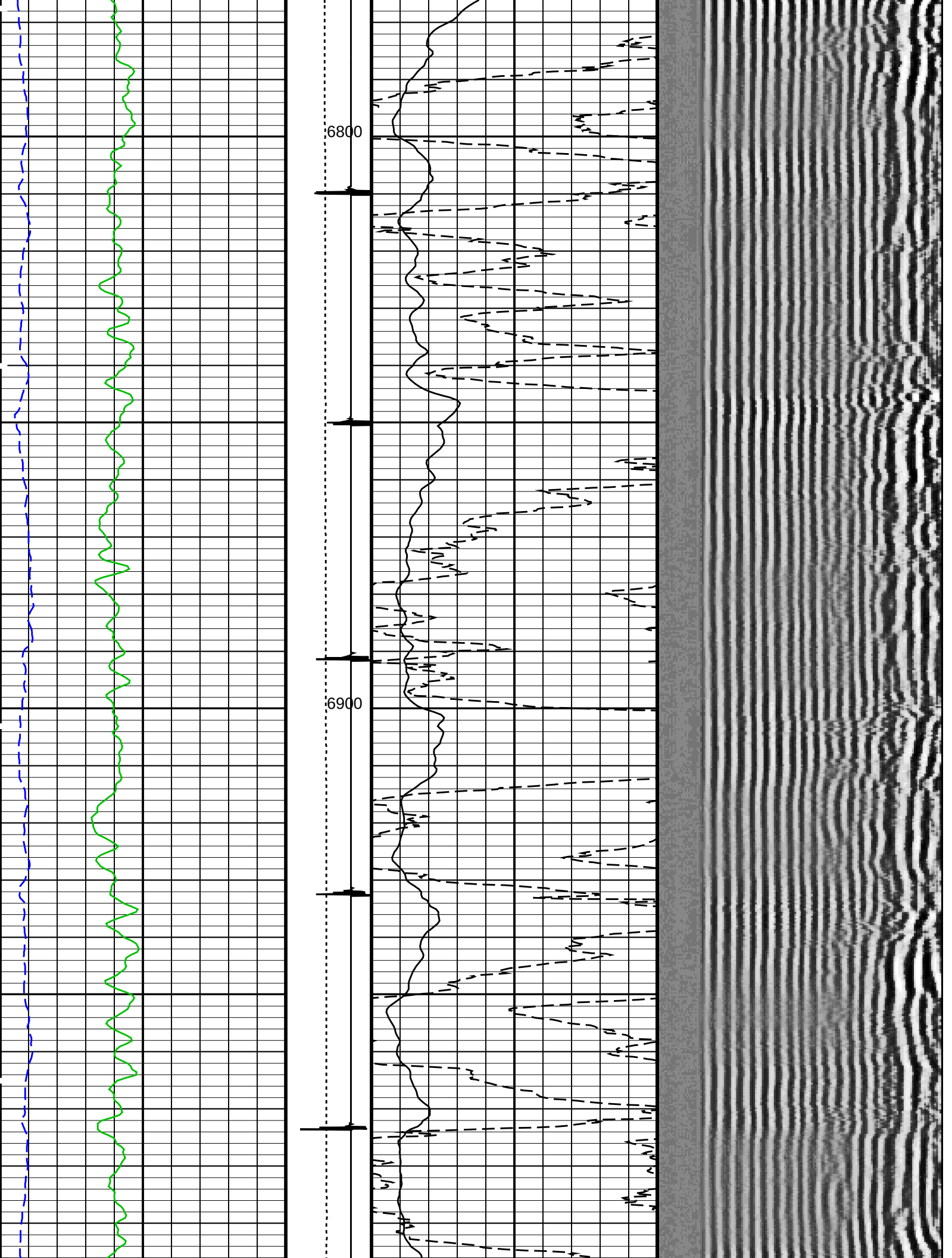
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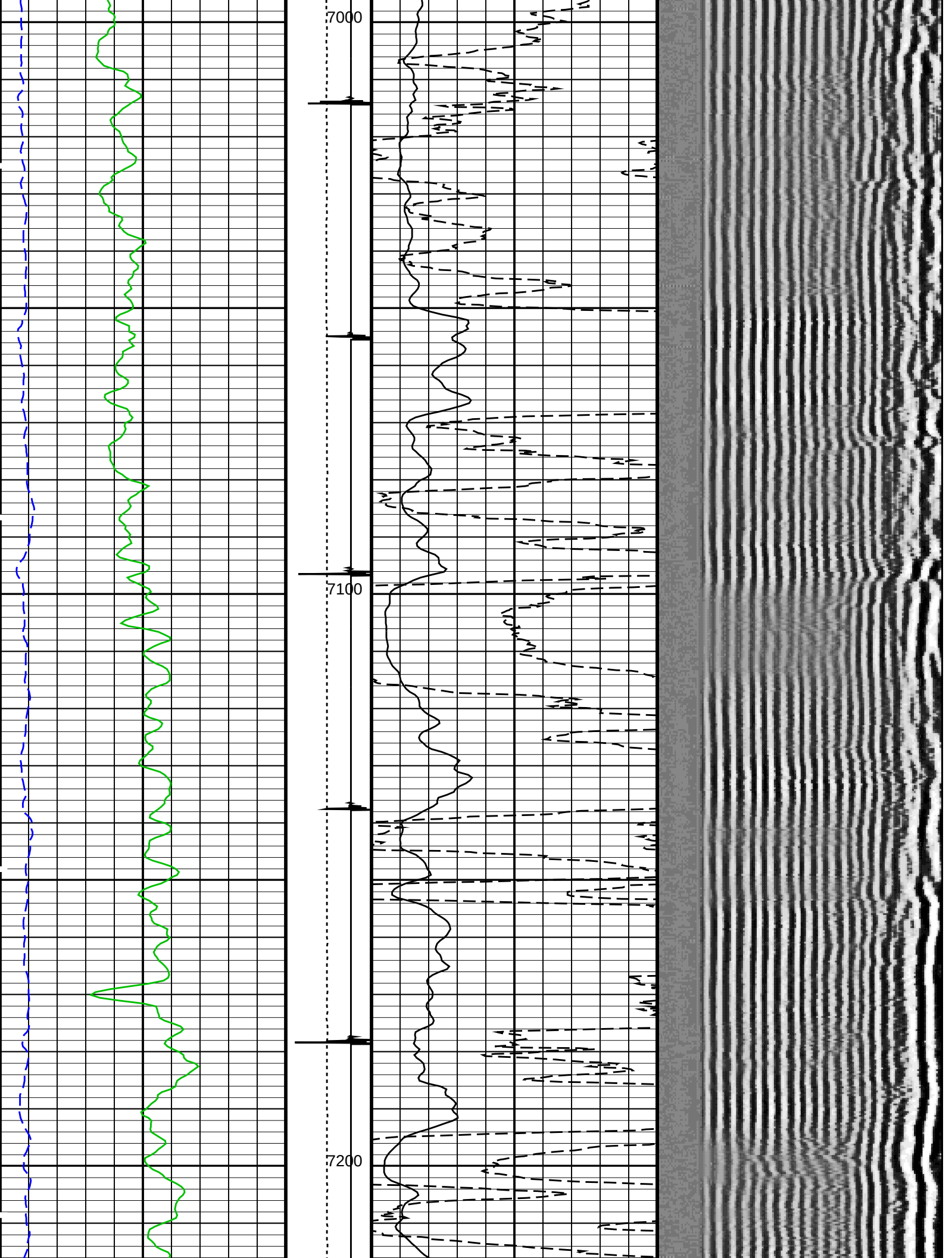
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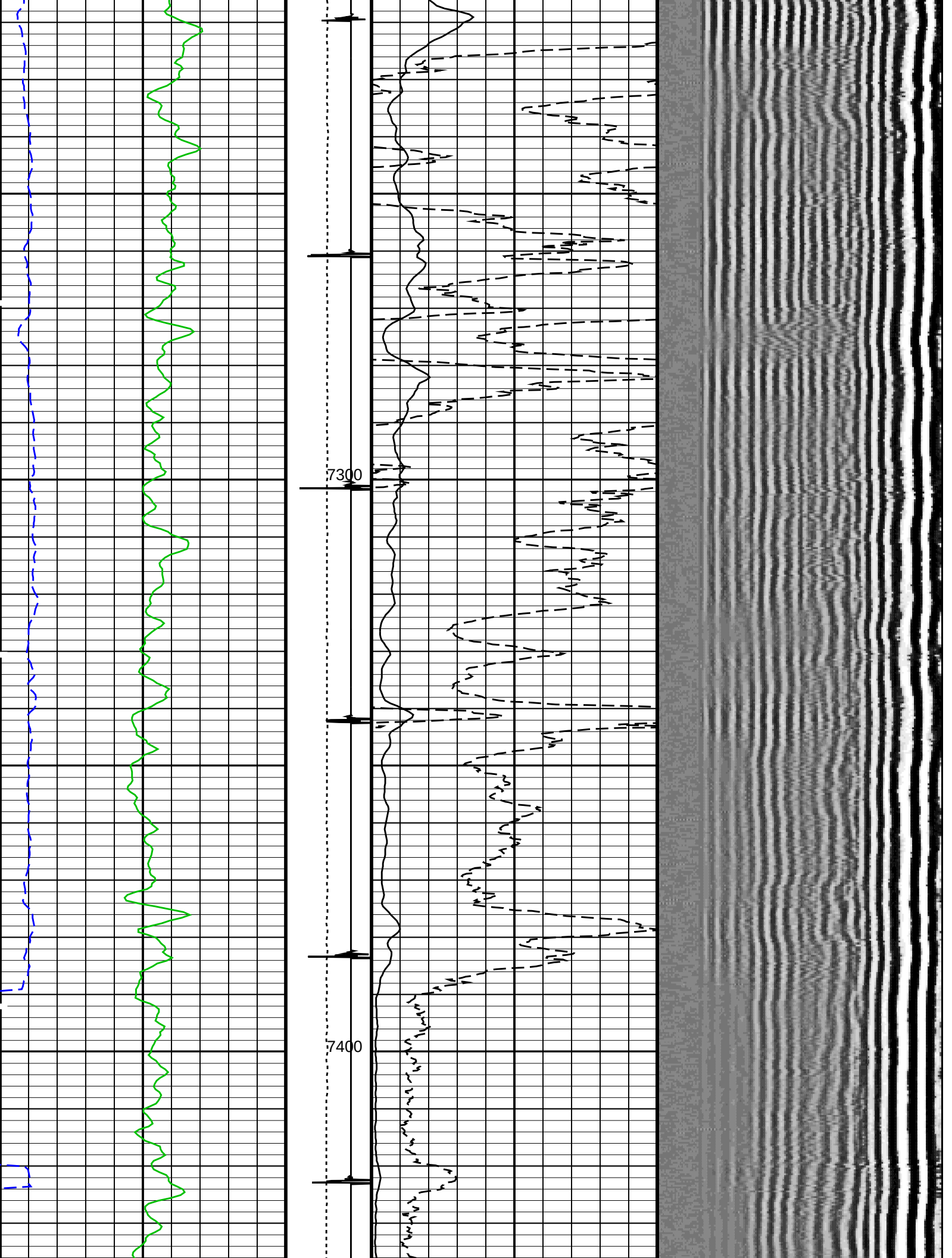
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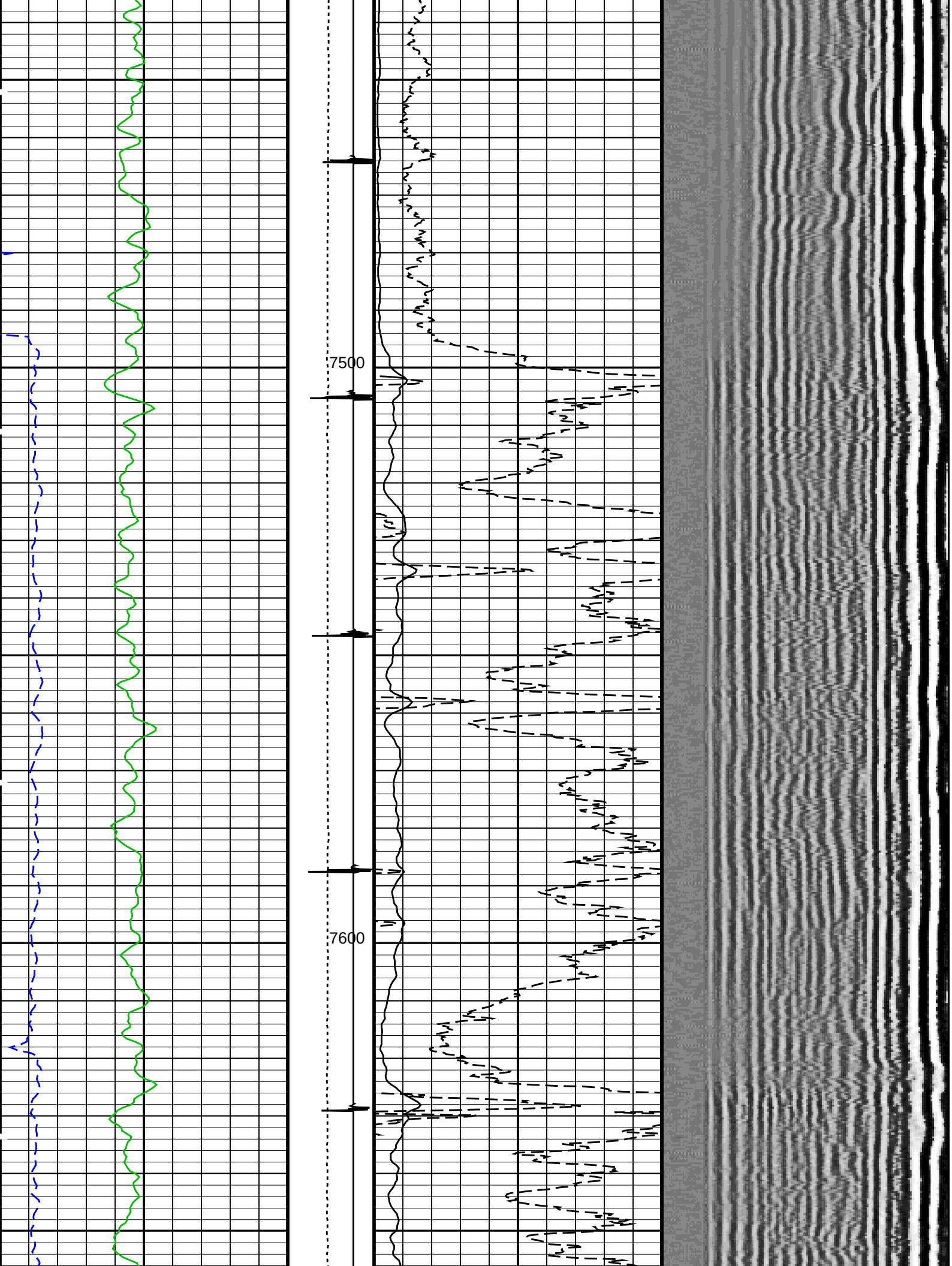
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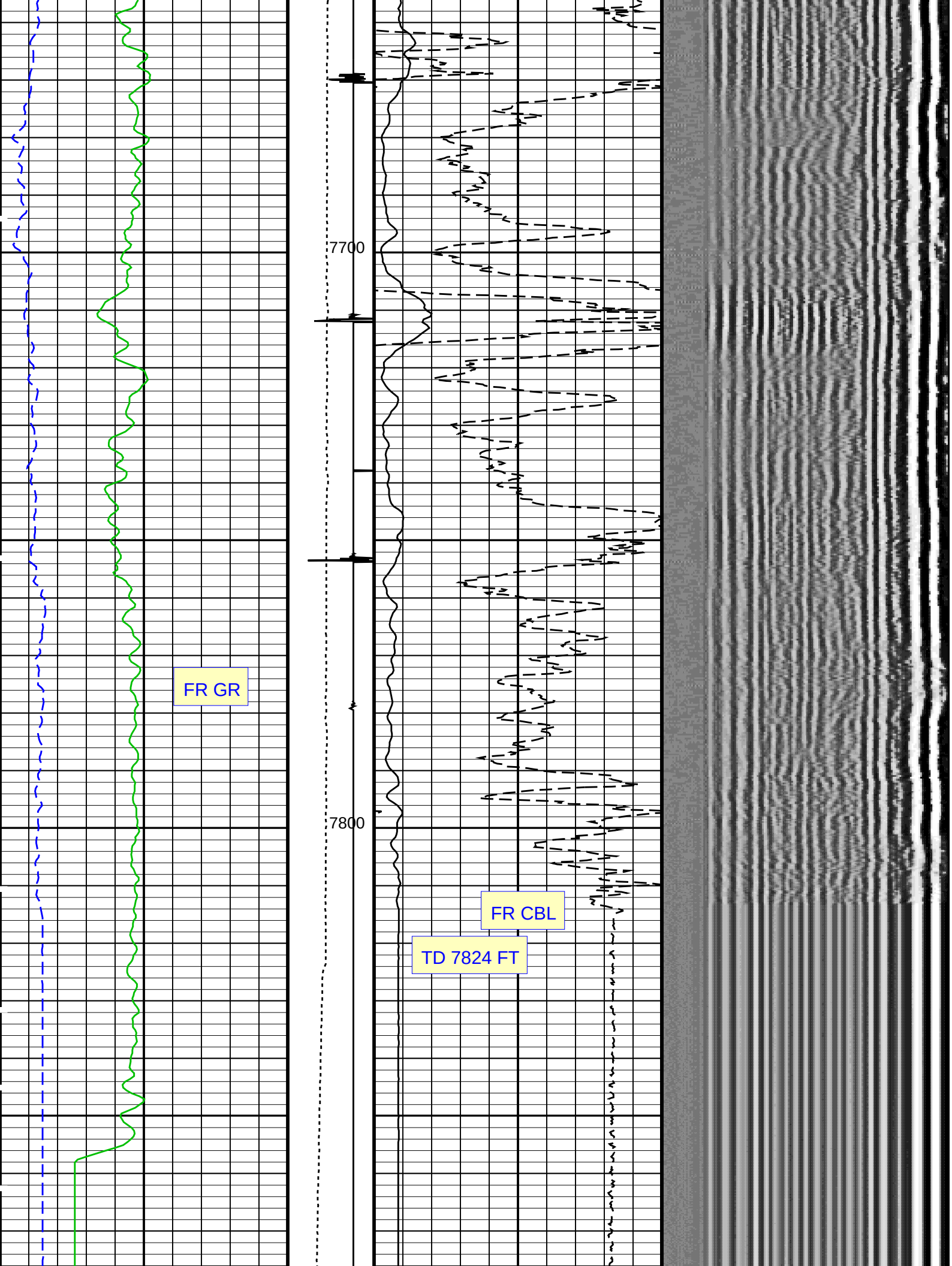
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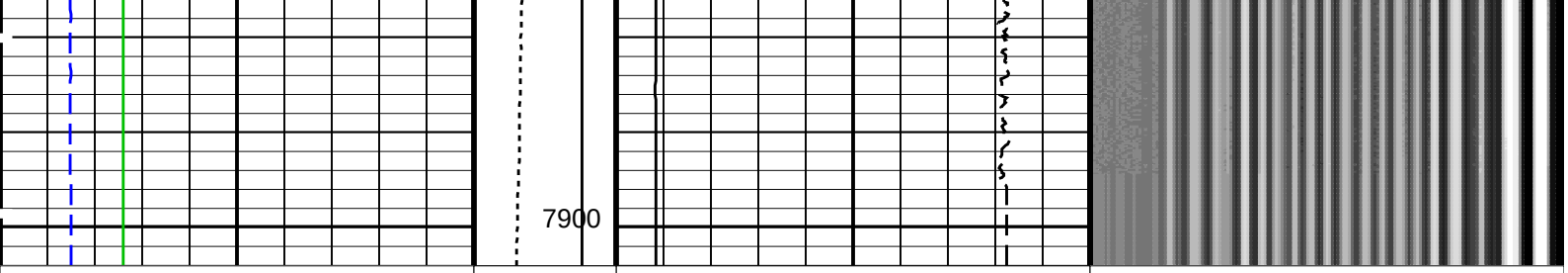
TD 7824 FT



Gamma Ray (GR)	Tension (TENS)	CBL Amplitude (CBL)	Min Amplitude Max
0 (GAPI) 150	(LBF) 0 2000	0 (MV) 100	VDL VariableDensity (VDL) 200 (US) 1200
Transit Time (TT) 260 (US) 160	Discriminated CCL (CCLD) 3 (V) −1	CBL Amplitude (CBL) 0 (MV) 10	

PIP SUMMARY

Time Mark Every 60 S

Format: CBL_VDL Vertical Scale: 5" per 100' Graphics File Created: 31−Jul−2011 07:58

OP System Version: 19C0−187

SCMT−CB	SRPC−5047−H1−2011−OP19	RST−C	SRPC−5047−H1−2011−OP19
PSPT	19C0−187		

<<<SCMT Cement Evaluation Information Summary>>>

Sonde Serial Number	SCMS−CB 8186		
Current Casing Size	5.0 IN		
Casing Weight	23.2000 LB/F		
Expected CBL Amplitude in Free Pipe Section	79 MV	Minimum Sonic Amplitude	5.89920 MV (100% Cement)
			9.91197 MV (80% Cement)
		MAP Minimum Sonic Amplitude	19.0993 MV (100% Cement)
			26.5958 MV (80% Cement)
Master Calibration (Normalization)		Before Calibration (Adjustment)	
Date of Master Calibration	23−FEB−2011		
CBL Correction Factor	0.0700110	CBL Adjustment Factor (CBAF)	1.0
MAP 1 Correction Factor	0.0960446	MAP Adjustment Factor (MPAF)	1.0
MAP 2 Correction Factor	0.103019		
MAP 3 Correction Factor	0.112474		
MAP 4 Correction Factor	0.170246		
MAP 5 Correction Factor	0.138168		
MAP 6 Correction Factor	0.126543		
MAP 7 Correction Factor	0.0891491		
MAP 8 Correction Factor	0.107987		

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	229.261	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	343.261	US
CB5T	SCMT CBL 5 ft Fixed Threshold Level	20	MV
CBLG	CBL Gate Width	40	US
CBRA	CBL LQC Reference Amplitude in Free Pipe	79	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	0.480067	IN
DTF	Delta−T Fluid	204.5	US/F
FATT	Acoustic Attenuation due to Fluid	0	DB/F
FCF	CBL Fluid Compensation Factor	1	
GOBO	Good Bond	9.91197	MV
MAPD	SCMT MAP Peak Detection Mode	PEAK	
MAPG	SCMT MAP Peak Detection T0_Delay and Noise Gate	172.261	US
MAPT	SCMT MAP Fixed Threshold Level	30	MV
MATT	Maximum Attenuation	9.1631	DB/F
MCCF	MAP Cement Type Compensation Factor	1	
MCI	Minimum Cemented Interval for Isolation	3	FT
MMSA	MAP Minimum Sonic Amplitude	19.0993	MV
MSA	Minimum Sonic Amplitude	5.8992	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	5.000	IN
CWEI	Casing Weight	23.20	LB/F
DORL	Depth Offset for Repeat Analysis	0.0	FT
TD	Total Depth	−50000	FT

Output DLIS Files

DEFAULT	SCMT_RST_PSP_008LUP	FN:7	PRODUCER	31−Jul−2011 07:58		

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REPEAT ANALYSIS

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC **Well: FEDERAL 28−11H (PL28SW)**

Input DLIS Files

DEFAULT	SCMT_RST_PSP_006PUP	FN:5	PRODUCER	31−Jul−2011 07:48	5063.0 FT	4697.5 FT

Output DLIS Files

DEFAULT	SCMT_RST_PSP_008LUP	FN:7	PRODUCER	31−Jul−2011 07:58		

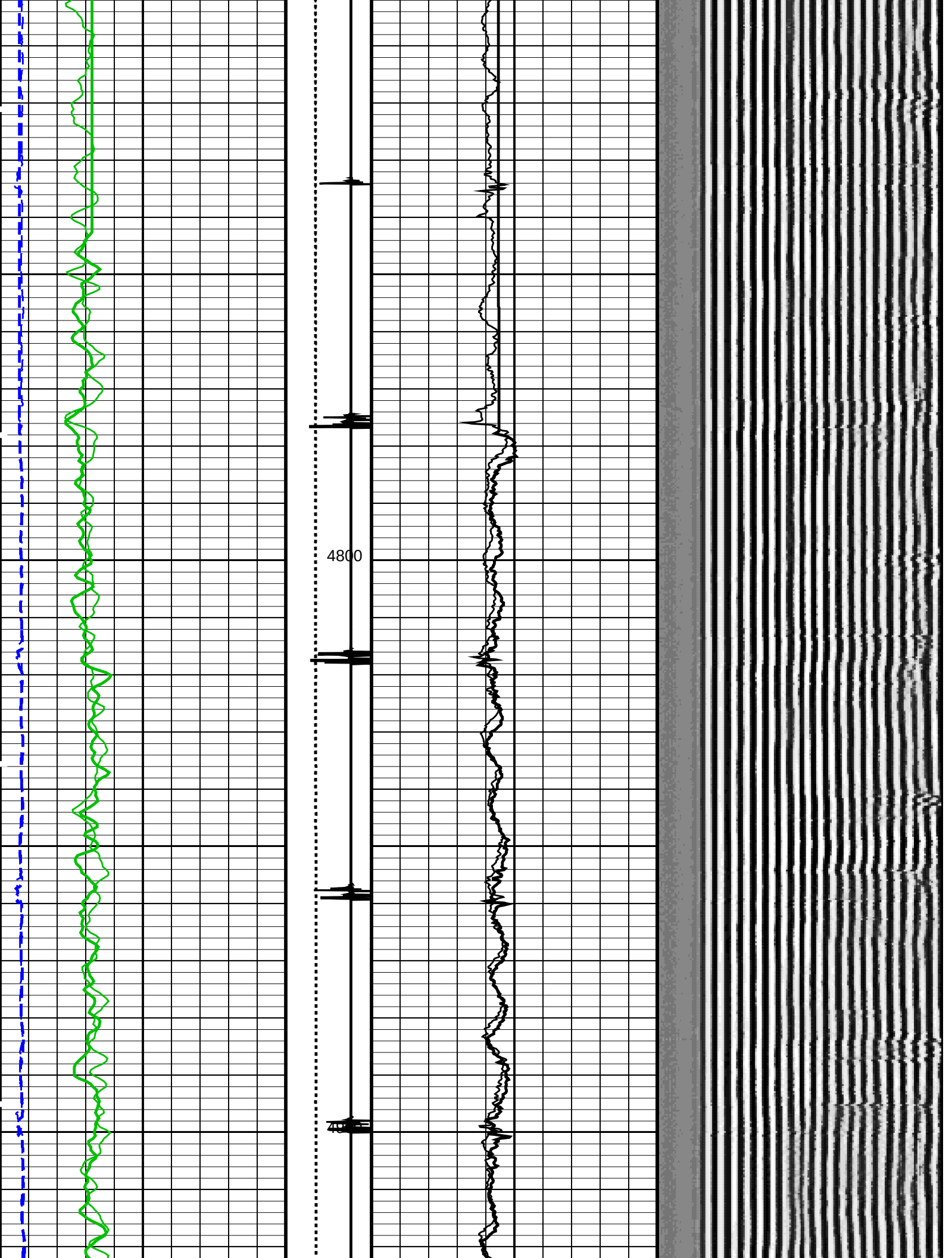
OP System Version: 19C0−187

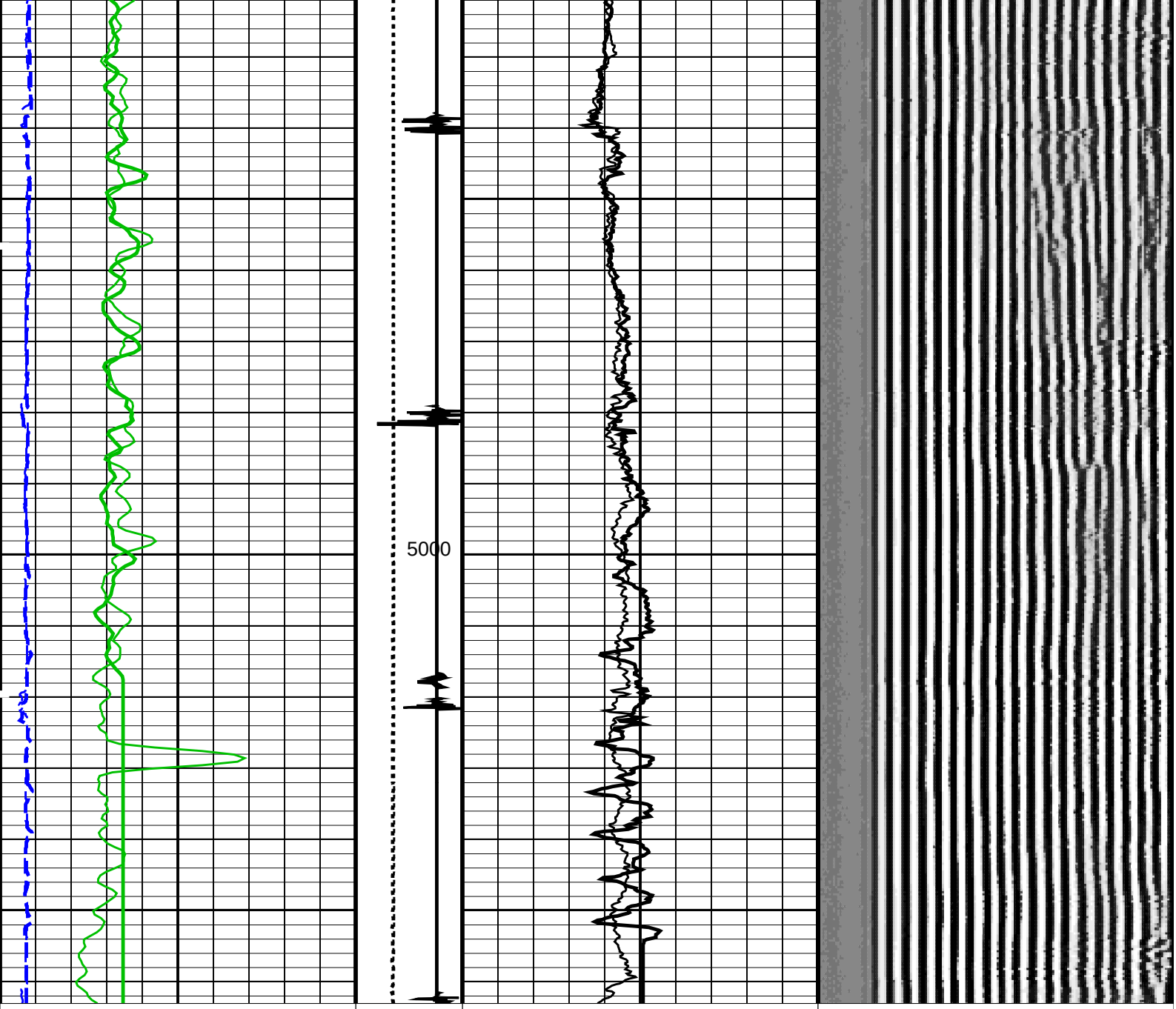
SCMT−CB	SRPC−5047−H1−2011−OP19	RST−C	SRPC−5047−H1−2011−OP19
PSPT	19C0−187		

PIP SUMMARY

Time Mark Every 60 S

TT_REP Curve (TT_REP) 260 (US) 160	TENS_REP Curve (TENS_REP) (LBF) 0 2000	CBL_1_REP Curve (CBL_REP) 0 (MV) 10	
GR_REP Curve (GR_REP) 0 (GAPI) 150	CCLD_REP Curve (CCLD_REP) 3 (V) −1	CBL_REP Curve (CBL_REP) 0 (MV) 100	Min Amplitude Max VDL VariableDensity (VDL) 200 (US) 1200
	4700		


4800



GR_REP Curve (GR_REP)
0 (GAPI) 150

CCLD_REP Curve (CCLD_REP)
3 (V) −1

CBL_REP Curve (CBL_REP)
0 (MV) 100

Min Amplitude Max
VDL VariableDensity (VDL)
200 (US) 1200

TT_REP Curve (TT_REP)
260 (US) 160

TENS_REP Curve (TENS_REP) (LBF)
0 2000

CBL_1_REP Curve (CBL_REP)
0 (MV) 10

PIP SUMMARY

Time Mark Every 60 S

Format: CBL_VDL_REP Vertical Scale: 5" per 100' Graphics File Created: 31−Jul−2011 07:58

OP System Version: 19C0−187

SCMT−CB	SRPC−5047−H1−2011−OP19	RST−C	SRPC−5047−H1−2011−OP19
PSPT	19C0−187		

<<<SCMT Cement Evaluation Information Summary>>>

Sonde Serial Number SCMS−CB 8186

Sonde Serial Number	SCMS-CB 8180
Current Casing Size	5.0 IN
Casing Weight	23.2000 LB/F
Expected CBL Amplitude in Free Pipe Section	79 MV

Minimum Sonic Amplitude	5.89920 MV (100% Cement)
	9.91197 MV (80% Cement)
MAP Minimum Sonic Amplitude	19.0993 MV (100% Cement)
	26.5958 MV (80% Cement)

Master Calibration (Normalization)		Before Calibration (Adjustment)	
Date of Master Calibration	23−FEB−2011		
CBL Correction Factor	0.0700110	CBL Adjustment Factor (CBAF)	1.0
MAP 1 Correction Factor	0.0960446	MAP Adjustment Factor (MPAF)	1.0
MAP 2 Correction Factor	0.103019		
MAP 3 Correction Factor	0.112474		
MAP 4 Correction Factor	0.170246		
MAP 5 Correction Factor	0.138168		
MAP 6 Correction Factor	0.126543		
MAP 7 Correction Factor	0.0891491		
MAP 8 Correction Factor	0.107987		

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	229.261	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	343.261	US
CB5T	SCMT CBL 5 ft Fixed Threshold Level	20	MV
CBLG	CBL Gate Width	40	US
CBRA	CBL LQC Reference Amplitude in Free Pipe	79	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	0.480067	IN
DTF	Delta−T Fluid	204.5	US/F
FATT	Acoustic Attenuation due to Fluid	0	DB/F
FCF	CBL Fluid Compensation Factor	1	
GOBO	Good Bond	9.91197	MV
MAPD	SCMT MAP Peak Detection Mode	PEAK	
MAPG	SCMT MAP Peak Detection T0_Delay and Noise Gate	172.261	US
MAPT	SCMT MAP Fixed Threshold Level	30	MV
MATT	Maximum Attenuation	9.1631	DB/F
MCCF	MAP Cement Type Compensation Factor	1	
MCI	Minimum Cemented Interval for Isolation	3	FT
MMSA	MAP Minimum Sonic Amplitude	19.0993	MV
MSA	Minimum Sonic Amplitude	5.8992	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	5.000	IN
CWEI	Casing Weight	23.20	LB/F
DORL	Depth Offset for Repeat Analysis	0.0	FT
TD	Total Depth	−50000	FT

Input DLIS Files

DEFAULT	SCMT_RST_PSP_006PUP	FN:5	PRODUCER	31−Jul−2011 07:48	5063.0 FT	4697.5 FT

Output DLIS Files

DEFAULT	SCMT_RST_PSP_008LUP	FN:7	PRODUCER	31−Jul−2011 07:58

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COEFFICIENTS

MAXIS Field Log

Client:	**ENCANA OIL & GAS (USA) INC**	**Tool:**	**PSP**
Field:	**PLATEAU**	**Sub Type:**	**PBMS**
Well:	**FEDERAL 28−11H (PL28SW)**	**Sensor:**	**Clock Model**
Run date:	**1−Aug−2011**		

PBMS Digitalization Clock

Sonde Serial NB	
Sensor Serial NB	**3779**
Calib Date ddmmyy	**090107**
Matrix Size	**16**
Coeff CRC	**D285**

Clock Coeff

	Temp0**	**Temp**1**	**Temp**2**
Temp0**	**−.210501098404E+03**	**−.537713340627E+01**	**−.752421519422E−01**

	Temp3**	**Temp**4**	**Temp**5**
Temp0**	**+.630273975887E−03**	**+.266728381738E−05**	**0.0**

Client:	**ENCANA OIL & GAS (USA) INC**	**Tool:**	**PSP**
Field:	**PLATEAU**	**Sub Type:**	**PBMS**
Well:	**FEDERAL 28−11H (PL28SW)**	**Sensor:**	**Sapphire**
Run date:	**1−Aug−2011**		

PBMS Sapphire 10kPsi Gauge

Sonde Serial NB	**COEFFICIENTS FOR SAPPHIRE PBMS−A.3779 S/N:**
Sensor Serial NB	**3779**
Calib Date ddmmyy	**090107**
Matrix Size	**66**

Coeff CRC 4C82

Pres Coeff

	Tt**0	Tt**1	Tt**2
Tp**0	−.611876617639E+04	+.471061007964E+04	−.216447354932E+04
Tp**1	+.371836126905E+04	−.234756196935E+04	+.129149325686E+04
Tp**2	+.193143980957E+02	−.189348218853E+01	−.341812471126E+01
Tp**3	−.568815065386E+01	+.200079683569E+01	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	+.380249508124E+03	−.247683004908E+02	0.0
Tp**1	−.227135245080E+03	+.146352372057E+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 3779

Calib Date ddmmyy 090107

Matrix Size 66

Coeff CRC C39E

Temp Coeff

	Tp**0	Tp**1	Tp**2
Tt**0	−.278275571347E+03	+.251216271916E+01	−.820715649824E+00
Tt**1	+.598349067015E+02	−.107326373545E+01	+.652890183203E−01
Tt**2	+.109160002120E+02	+.262812193556E+00	−.450134240377E−02
Tt**3	−.673302171285E+00	−.213772918779E−01	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	+.151507143209E+00	−.592670012996E−02	0.0
Tt**1	+.127486538512E−01	−.437897076104E−02	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

Tt**5	0.0	0.0	0.0

Client: ENCANA OIL & GAS (USA) INC
Field: PLATEAU
Well: FEDERAL 28−11H (PL28SW)
Run date: 1−Aug−2011

Tool: PSP
Sub Type: PBMS
Sensor: GR

PBMS Gamma Ray

Sonde Serial NB	RESISTORS FOR GR SENSOR N.34552,TOOL PBMS−AA3779. SENSOR S/N:
Sensor Serial NB	34552
Calib Date ddmmyy	030606
Matrix Size	12
Coeff CRC	3AE5

GR HV Rt

	Rt**0	Rt**1
Rt**0	+.200000000000e+04	+.214000000000e+04

Client: ENCANA OIL & GAS (USA) INC
Field: PLATEAU
Well: FEDERAL 28−11H (PL28SW)
Run date: 1−Aug−2011

Tool: PSP
Sub Type: PBMS
Sensor: WellTemp RTD

PBMS RTD Well Thermometer

Sonde Serial NB	COEFFICIENTS FOR RTD THERMOMETER PBMS−A.3779 S/N:
Sensor Serial NB	3779
Calib Date ddmmyy	090107
Matrix Size	16
Coeff CRC	3846

WTemp Coeff

	Tt**0	Tt**1	Tt**2

Tt**0	+.492135102627E+02	−.278827553804E+03	+.142867554561E+03

	Tt**3	Tt**4	Tt**5
Tt**0	−.233378392336E+02	+.145553494493E+01	0.0

Company: **ENCANA OIL & GAS (USA) INC**

Schlumberger

Well: **FEDERAL 28−11H (PL28SW)**
Field: **PLATEAU**
County: **MESA**
State: **COLORADO**

CEMENT BOND LOG
CBL − VDL
GAMMA RAY − CCL