



# RESERVOIR PERFORMANCE MONITOR

## Baker Atlas

File No:	Company	WILLIAMS PRODUCTION COMPANY	
CH045471	Well	FEDERAL RGU 13-24-198	
API No:	Field	Sulphur Creek	
05103116130000	County	Rio Blanco	State
			COLORADO
Location		Other Services	
24 1S 98W RGU 13-24-198 Pad FRONTIER 10		CBL	
SHL: 1751' FSL 1076' FWL (NWSW) BHL: 2287' FSL 632' FWL (NWSW)			
Permanent Datum	GL	Elevation	6540 ft
Log Measured From	KB	22 ft	Above P. D.
Drill Measured From	KELLY BUSHING		
		Elevations	KB 6562 ft DF 6561 ft GL 6540 ft

Date	17 NOV 2011	
Run	ONE	
Service Order	575362	
Depth Driller	12727 ft	
Depth Logger	12682 ft	
Bottom Logged Interval	12672 ft	
Top Logged Interval	22 ft	
Time Started	1400	
Time Finished	900	
Operator Rig Time	19 HOURS	
Type of Fluid in Hole	WATER	
Fluid Density	NA	
Salinity	NA	
Fluid Level	NA	
Logged Cement Top	NA	
Wellhead Pressure	0 psi	
Maximum Hole Deviation	NA	
Nominal Logging Speed	10 fpm	
Maximum Recorded Temperature	278 degF	
Reference Log	BAKER HUGHES BOND LOG	
Reference Log Date	17 NOV 2011	
Equipment No.	4214	GRAND JCT
Recorded By	JACOB STALEY	
Witnessed By	Dale Coven	

- FOLD HERE

In making interpretations of logs, our employees will give the customer the benefit of their best judgement. But since all interpretations are opinions based on inferences from electrical or other measurements, we cannot, and we do not guarantee the accuracy or correctness of any interpretation. We shall not be liable or responsible for any loss, cost, damages, or expenses whatsoever incurred or sustained by the customer resulting from any interpretation made by any of our employees.

Borehole Record		
Bit Size	From	To
13.5 In	0 ft	3855 ft
7.875 In	0 ft	12727 ft

Casing Record				
Size	Weight	Grade	From	To
9.825 In			0 ft	3855 ft
4.5 In			0 ft	12727 ft

Remarks
SPLICE WAS MADE AT 12100' WITH PNC #1 753 USED FROM TD TO 12100' AND REPEAT
PNC #2 383 WAS USED FROM 12100' TO 3855'
LOGGED IN PNC3D MODE
LOGGED WITH 0 PSI AT WELLHEAD

ALL DATA WAS DEPTH SHIFTED TO MATCH THE GR OF THE BAKER HUGHES BOND LOG DATED

17 NOV 2011

BHT = 278 DEG F

SJ = 7722'-7744'

Equipment Data					
Run	Trip	Tool	Series Number	Serial Number	Position
1	1	RPM	8281FA	10191867	FREE
1	1	RPM	8281PA	11802753	FREE
1	1	RPM	8281EA	10423871	FREE
1	1	GR	8262XA	10485470	FREE
1	1	CCL/TEL	8248EA	11877323	FREE
1	1	PCM	8250EA	UNKNOWN	FREE
1	2	RPM	8281FA	10191867	FREE
1	2	RPM	8281PA	10180383	FREE
1	2	RPM	8281EA	10423871	FREE
1	2	GR	8262XA	10485470	FREE
1	2	CCL/TEL	8248EA	11877323	FREE
1	2	PCM	8250EA	UNKNOWN	FREE

*MAIN SECTION*  
*PNC 3-D MODE*

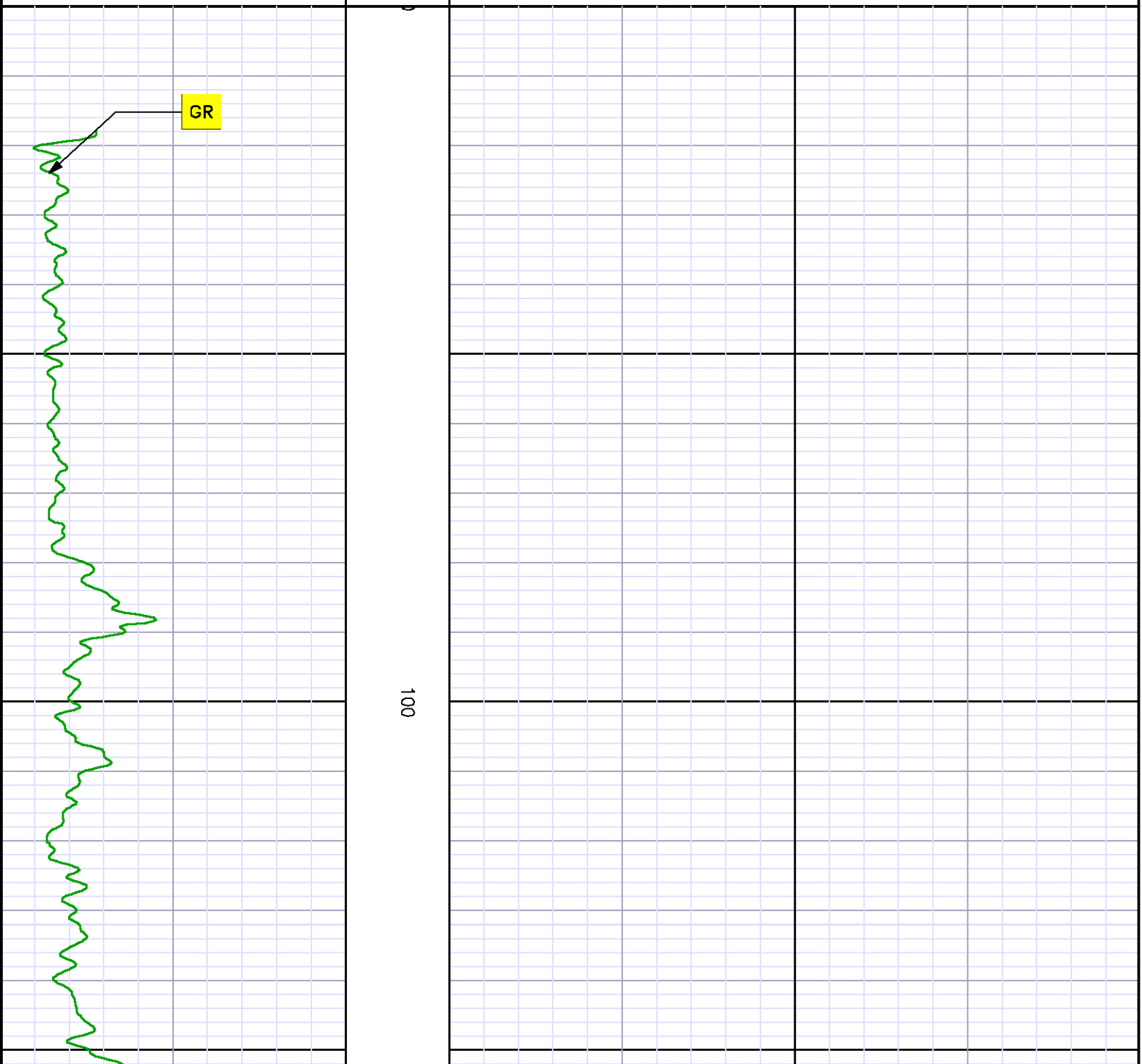
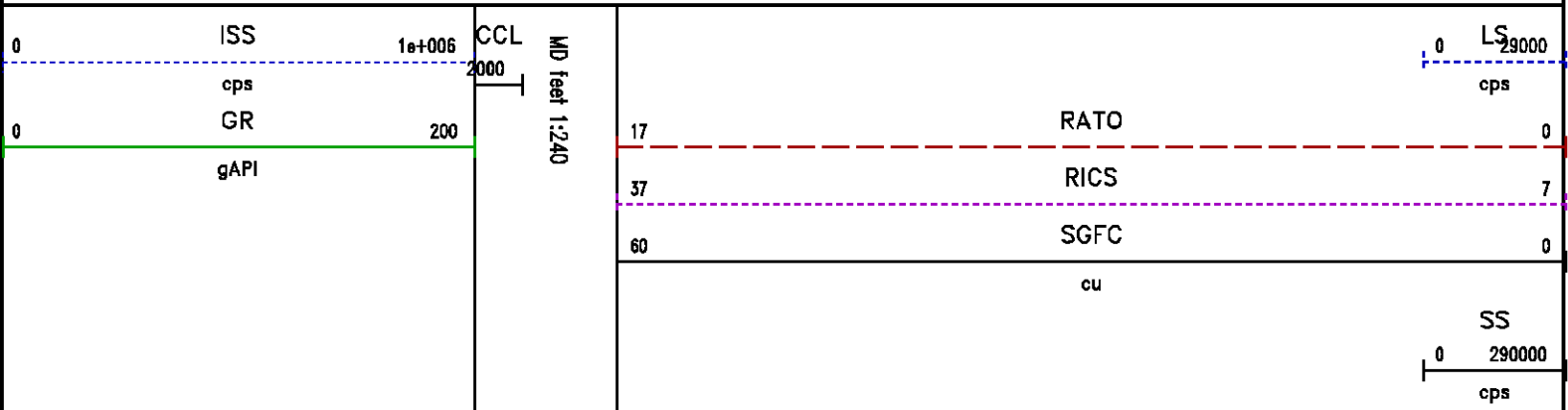
SPL PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	TOP	BOTTOM
PNC Porosity	Borehole	Cased		3791.250	12100.000
PNC Porosity	Borehole Size	8.750	inch	3791.250	12100.000
PNC Porosity	Casing Size	4.500	inch	3791.250	12100.000
PNC Porosity	Gas Filled	Non Gas Filled		3791.250	12100.000
PNC Porosity	Matrix	Sandstone		3791.250	12100.000
PNC Porosity	Borehole	Cased		12100.000	12708.780
PNC Porosity	Borehole Size	8.750	inch	12100.000	12708.780
PNC Porosity	Casing Size	4.500	inch	12100.000	12708.780
PNC Porosity	Gas Filled	Non Gas Filled		12100.000	12708.780
PNC Porosity	Matrix	Sandstone		12100.000	12708.780

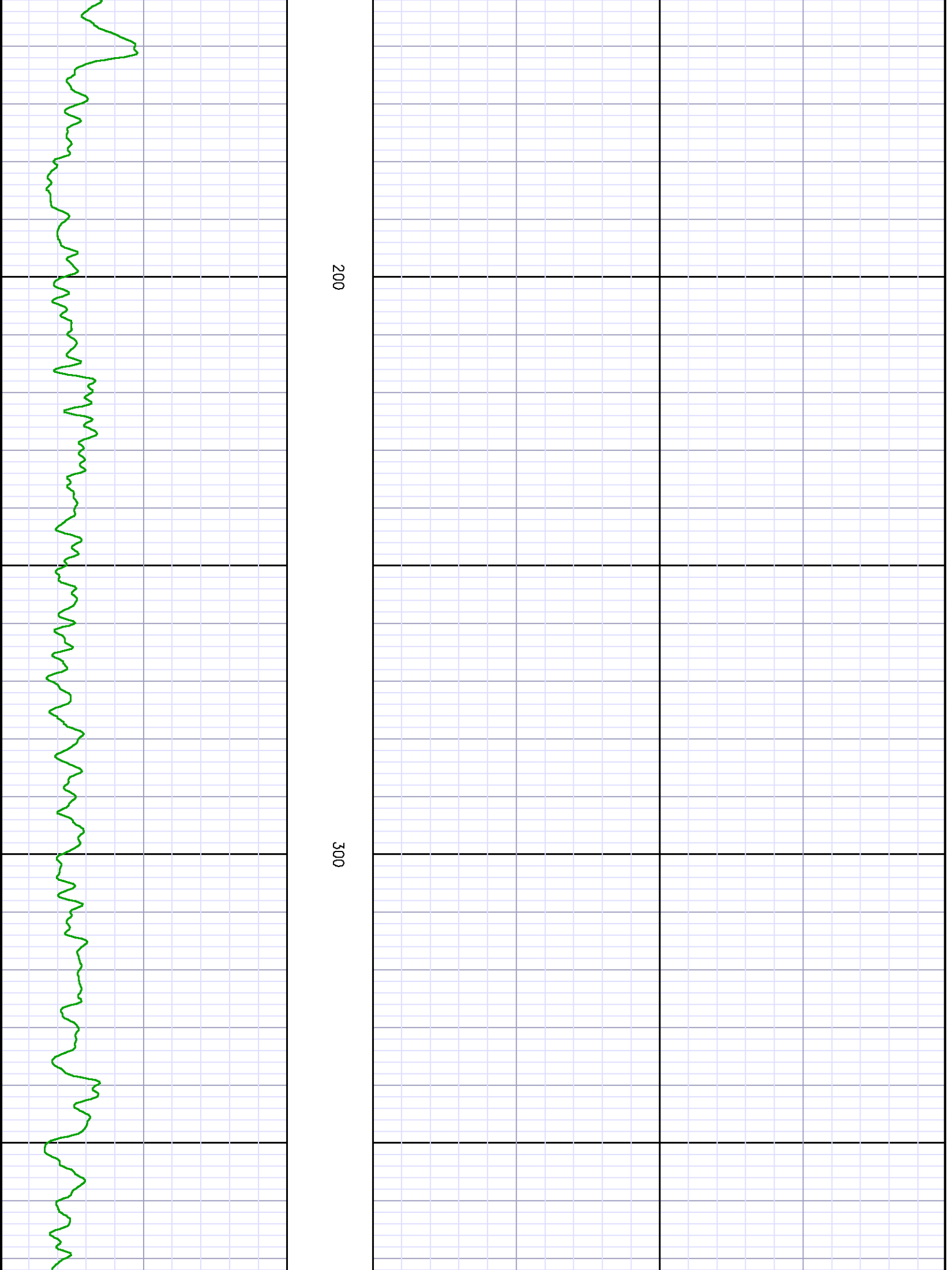
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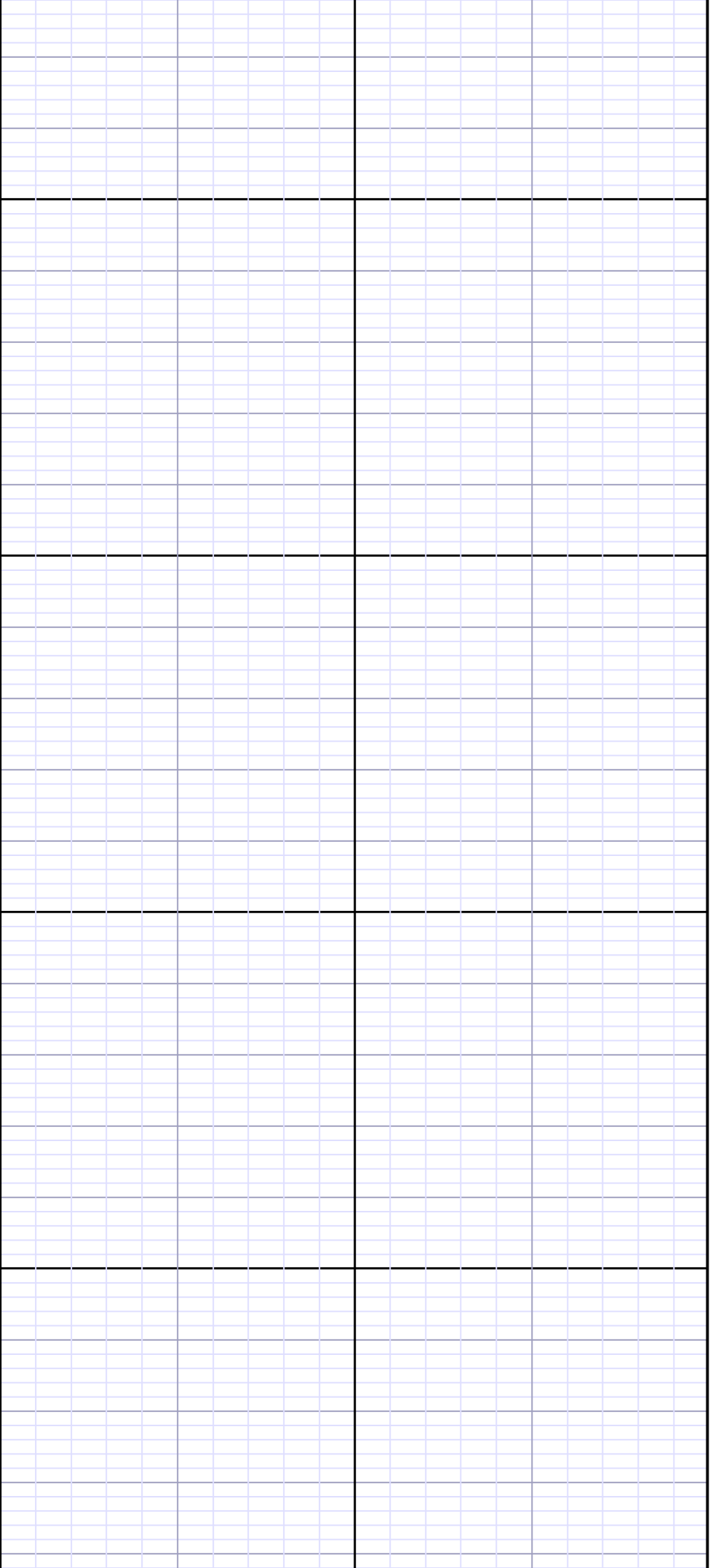
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES					
8248EA	-15.320	FLTM					
8248EA	-13.320	CCL	CHV				
8262XA	-10.189	GR					
8281XA	-0.662	HVC3Q0	SEQ3	AMA3	AML3	BKX	CXS
		CPT3Q0	CPT3Q2	CPT3Q3	CPT3Q4	ET3	IXS
		MCS3	MCS3Q0	QCAL3	RGN3	RICX	SDA3
		SDL3	SGA3	SGL3	STA3	XS	ASPEC3
		AMB3	AMF3	CHF3	IXSC	IXSN	RAT023
		RICXC	RIN13C	RIN23	RIN23C	SD3D	SG3D
		SGB3	SGF3	WDTH3	CXSR	IXSR	XSR
		RICXR					
8281XA	-0.250	HVC2Q0	SEQ2	AMA2	AMB2	AMF2	AML2
		BKL	CHF2	CLS	CPT2Q0	CPT2Q2	CPT2Q3
		CPT2Q4	ET2	ILS	LS	MCS2	MCS2Q0
		QCAL2	RGN2	RICL	RONE23	RTW023	SDA2
		SDL2	SGA2	SGB2	SGF2	SGK2	SGL2
		STA2	ASPEC2	ILSC	ILSN	WDTH2	RICLC
		CLSR	ILSR	LSR	RICLR		
8281XA	0.000	CPRS	HVC1Q0	MV	SEQ	SEQ1	AMA1
		AMB1	AME1	AMF1	AML1	BKS	CHF1
		CSS	CORB	CORF	CPT1Q0	CPT1Q2	CPT1Q2A
		CPT1Q2B	CPT1Q2C	CPT1Q3	CPT1Q4	CPT1Q5	ET1
		G1	G2	GE1S	GE2S	ISS	MCS1
		MCS1Q0	QA1	QCAL1	QM1	RATO	RAT013
		RBOR	RGN1	RICS	RIN	RONE	RPOR
		RTW0	RIN13	RONE13	RTW013	SALB	SC1
		SDA1	SDL1	SGA1	SGB1	SGBC	SGE1
		SGF1	SGFC	SGK1	SGL1	SS	SS2
		STA1	PD1S	PD2S	PD3S	MD1S	MD2S
		MD3S	DG1S	DG2S	DG3S	PD1M	PD2M
		PD3M	MD1M	MD2M	MD3M	DG1M	DG2M
		DG3M	MVS	MA	MVM	FILV	IAM
		TA	PVM	PVS	IAS	SSTAT	QPD1
		QPD2	QPD3	QMD1	QMD2	QMD3	QDG1
		QDG2	QDG3	QMA	QTA	QFILV	QMV
		QPV	QIA	DERR	DCNT	QPK1	QSA1
		PKS1	ASPEC1	HOC	FE2XC	ISSC	RINC
		ISSN	RDEN	WDTH1	RICSC	CSSR	G1R
		G2R	ISSR	SSR	SS2R	RATOR	RAT013R
		RBORR	RICSR	RINR	RIN13R	RONER	RPORR
		RTWOR					
SYSTEM	0.000	TEN	TTEN				

Company : WILLIAMS PRODUCTION COMPANY  
Well : FEDERAL RGU 13-24-198  
File Name : d:\welldata\williams\federal rgu 13-24-198\rpm13\main2.xtf  
Mode : PlotMgr 5.4.504  
Interval : 0.00 - 12688.00 feet UP  
Created : 11/20/2011 9:00:52 AM

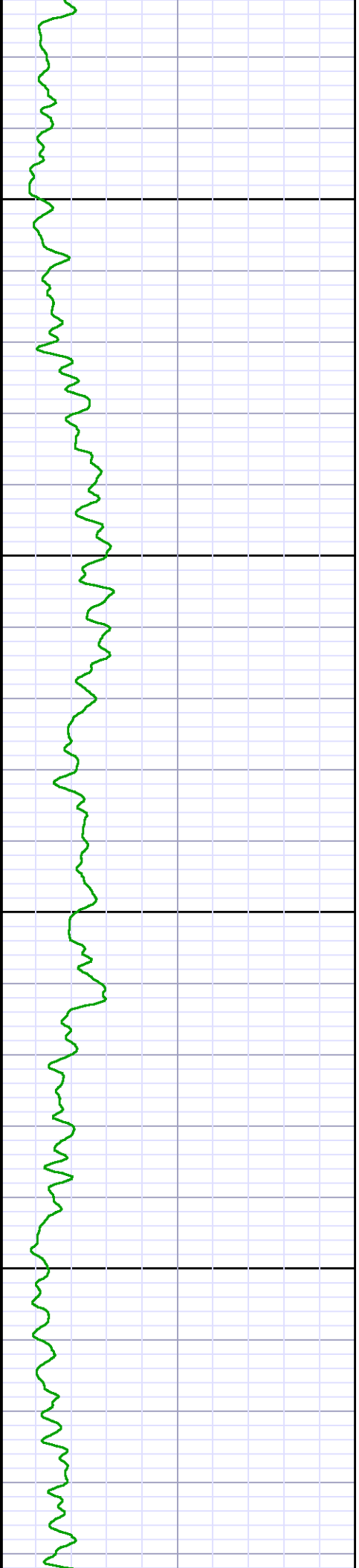


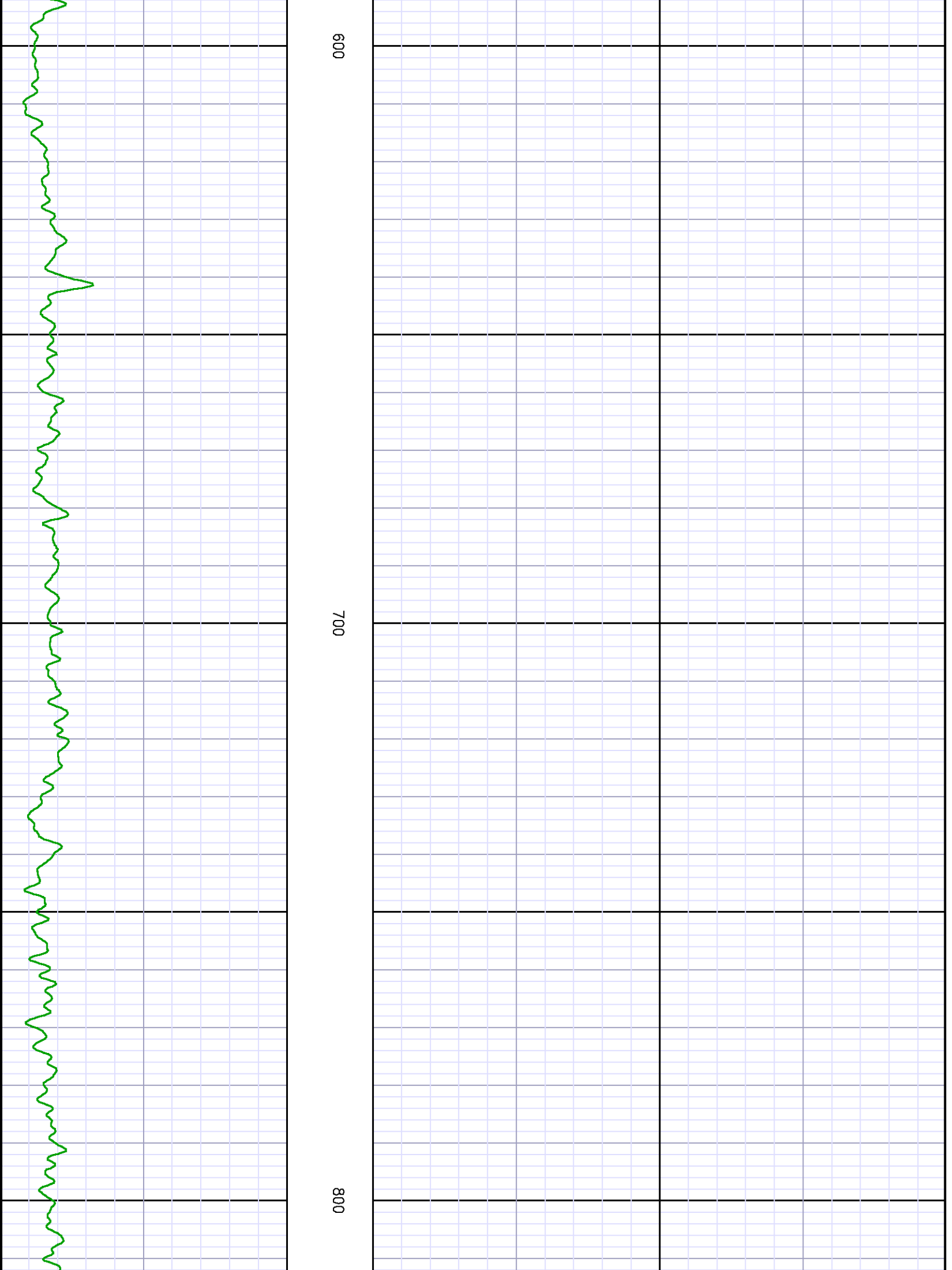


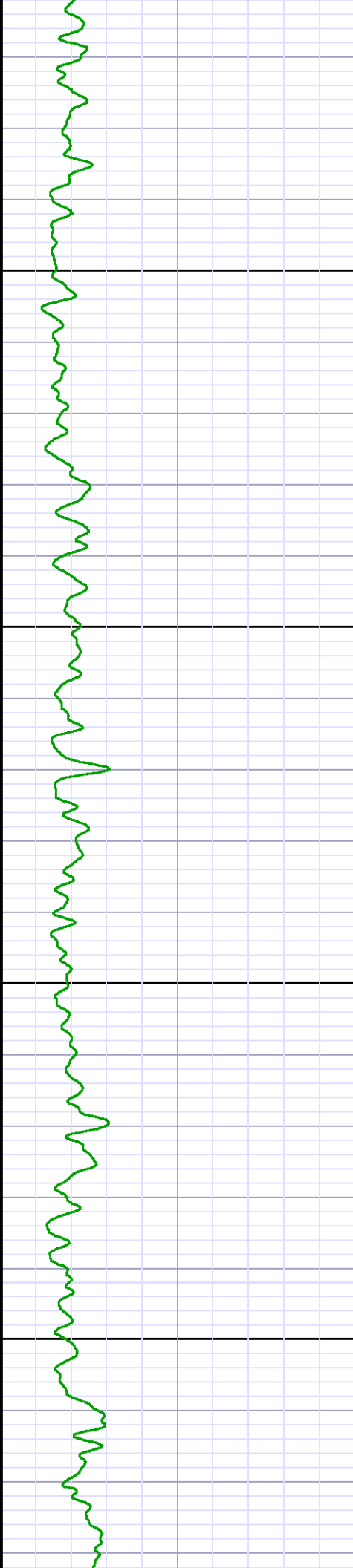


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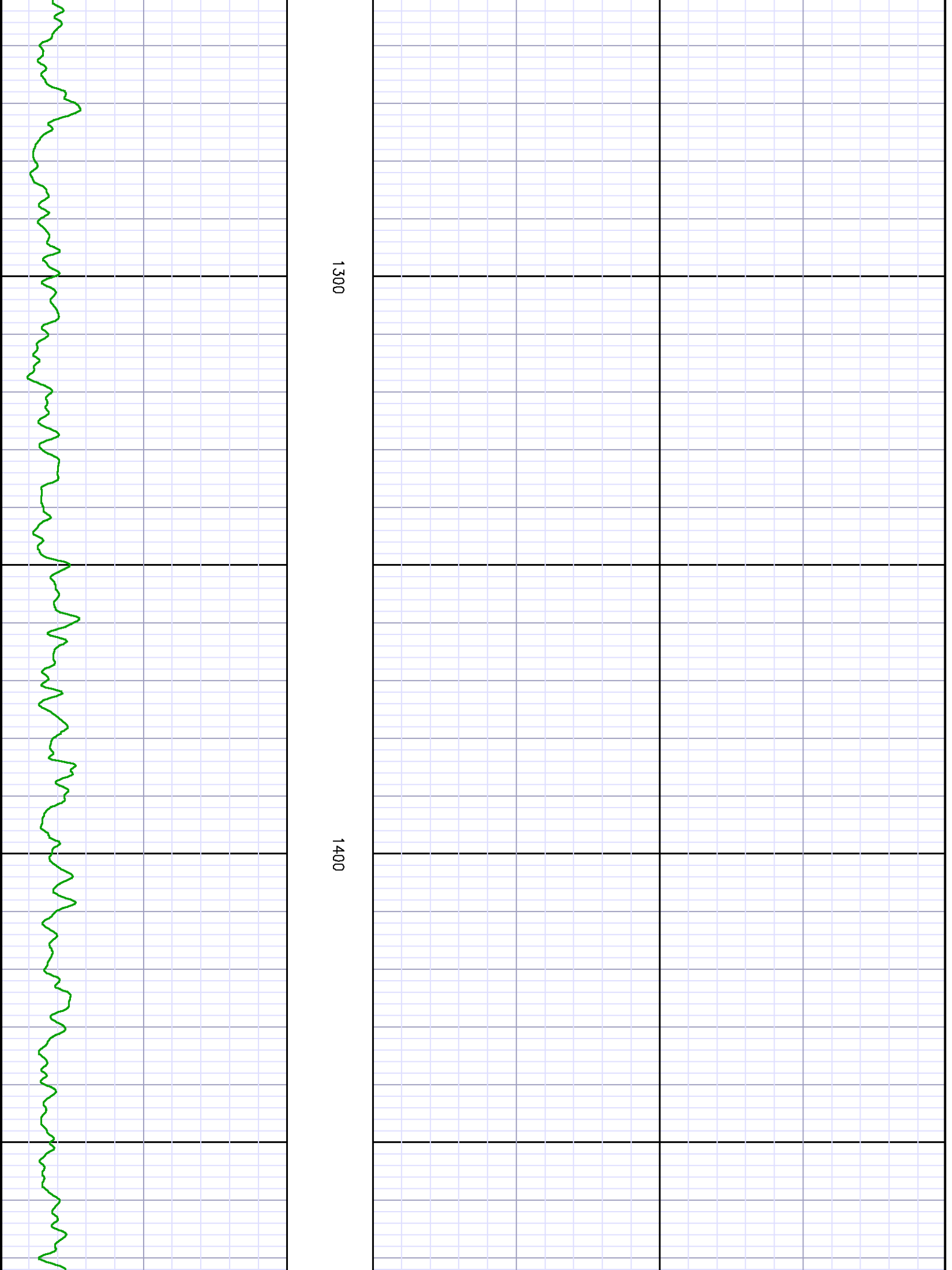
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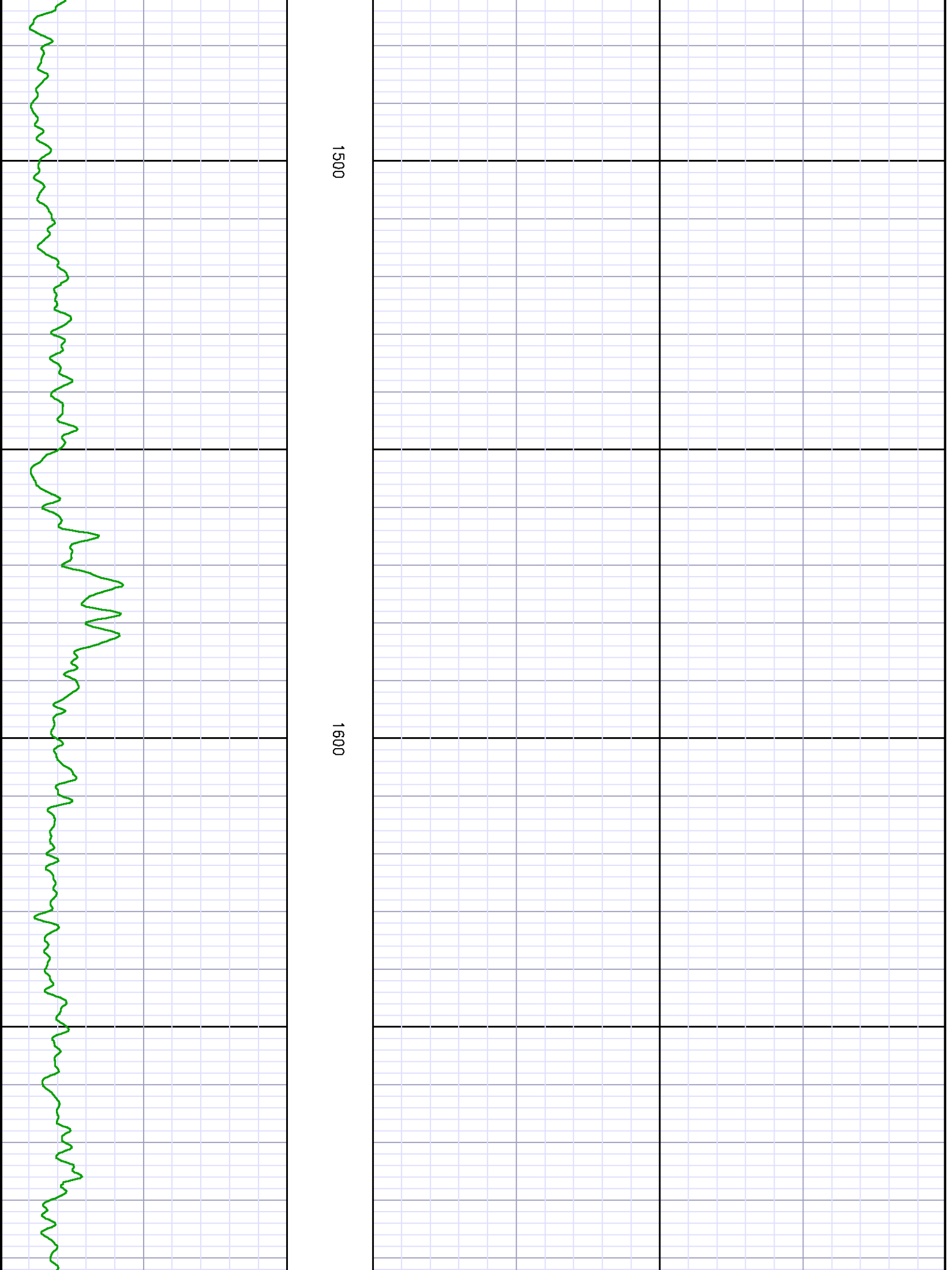
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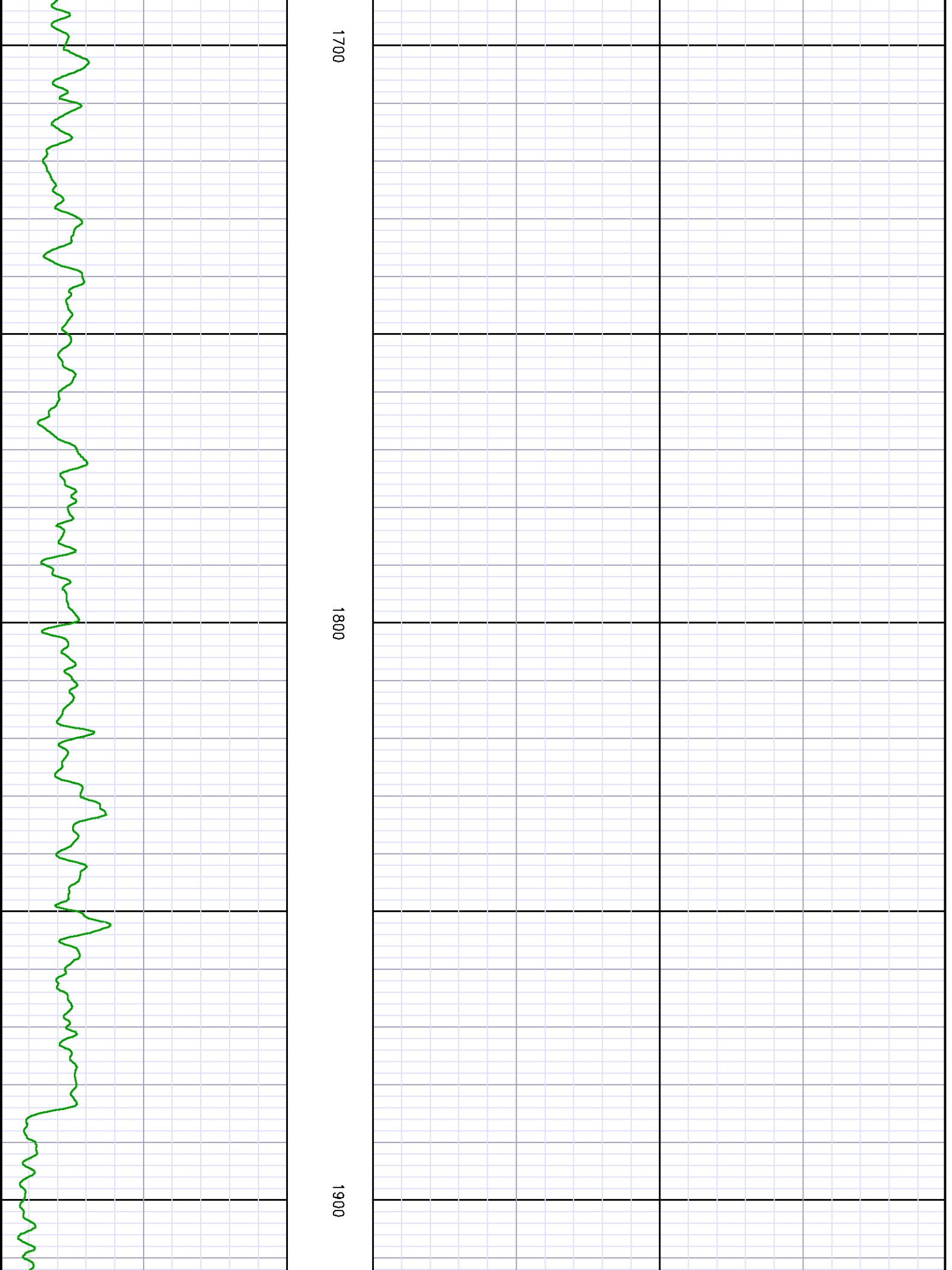


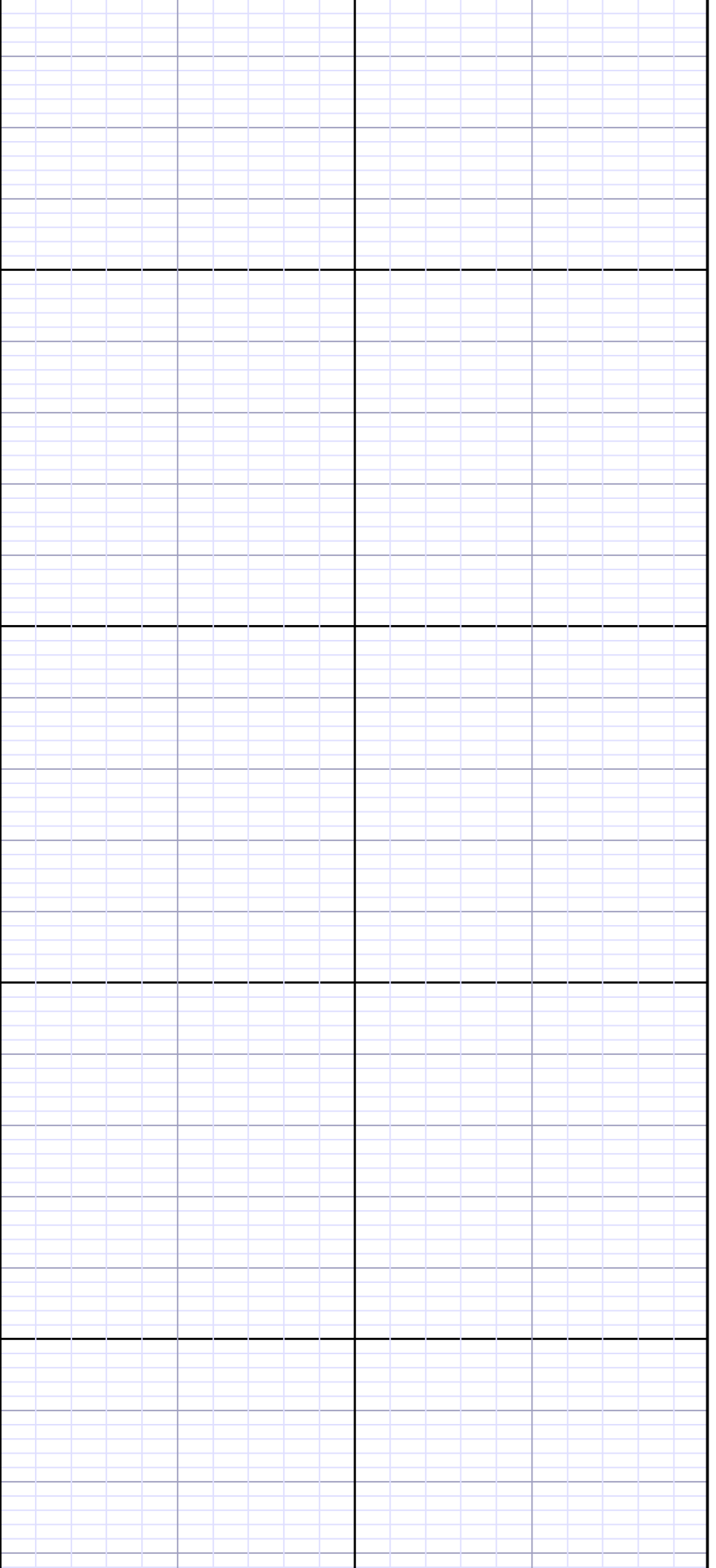
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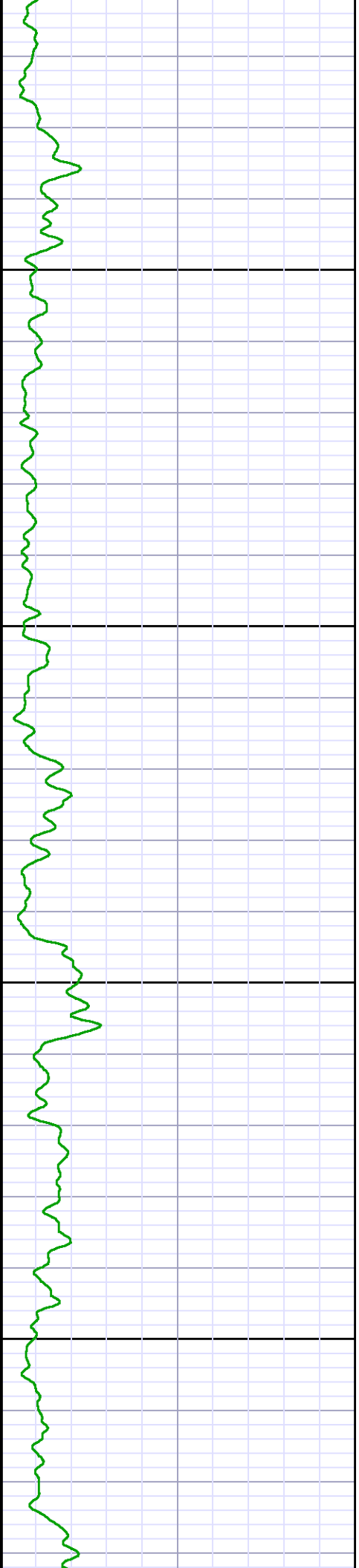


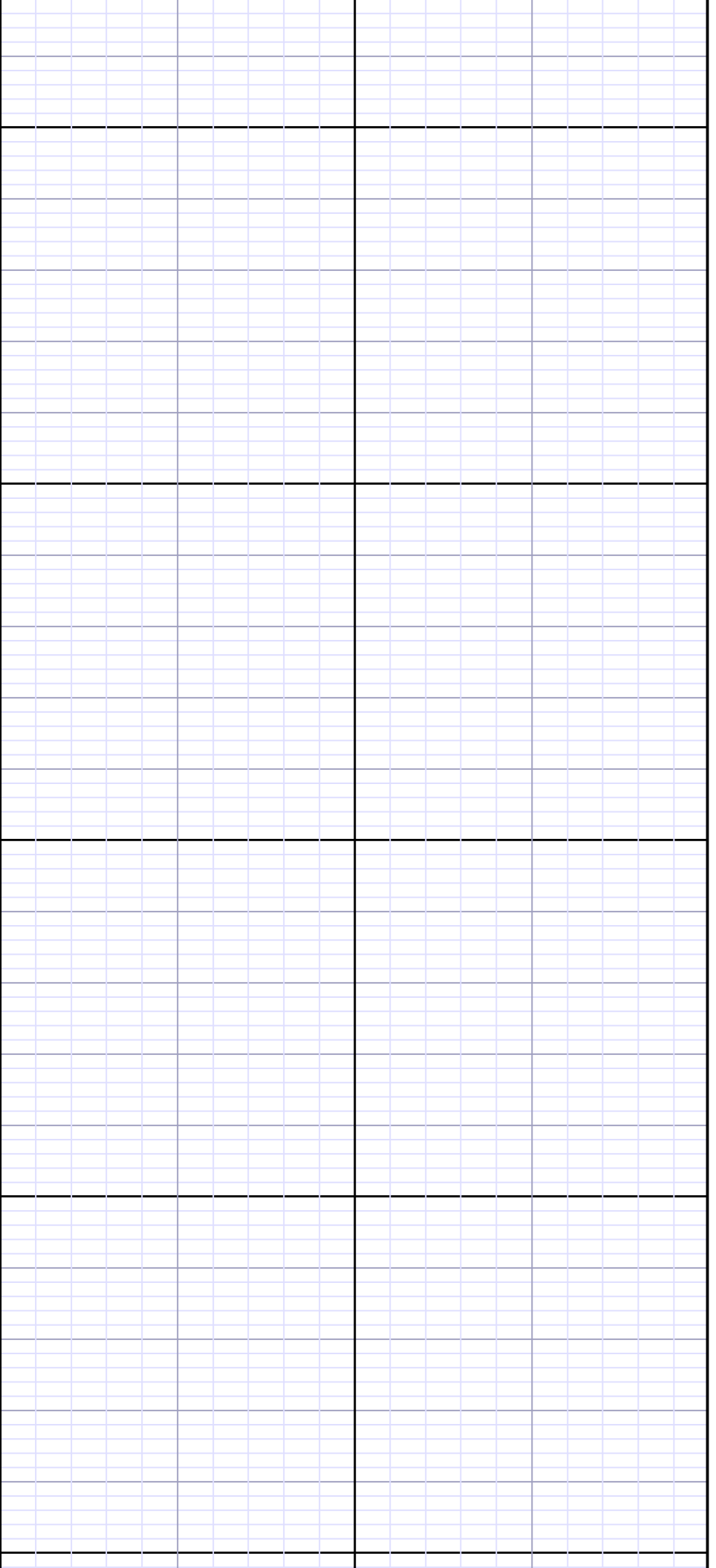




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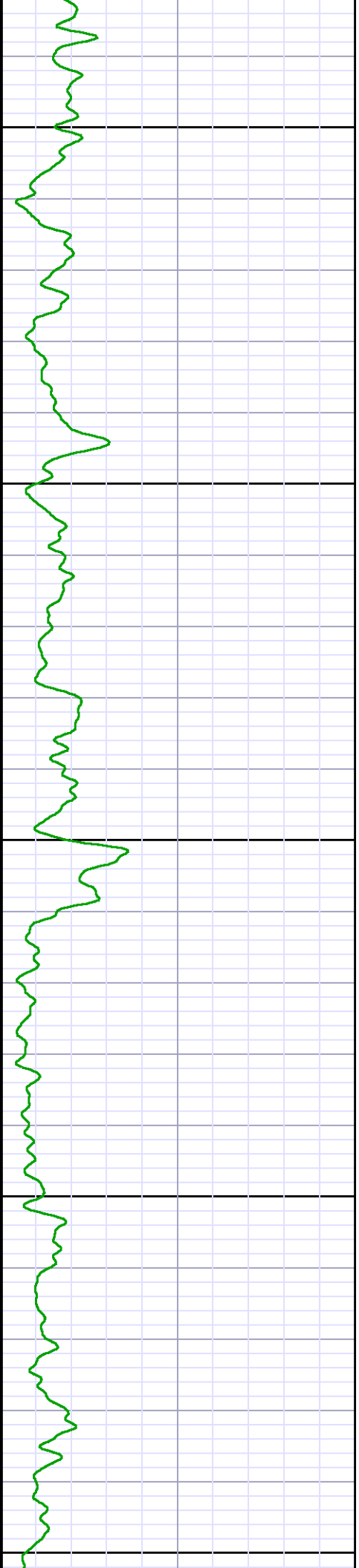
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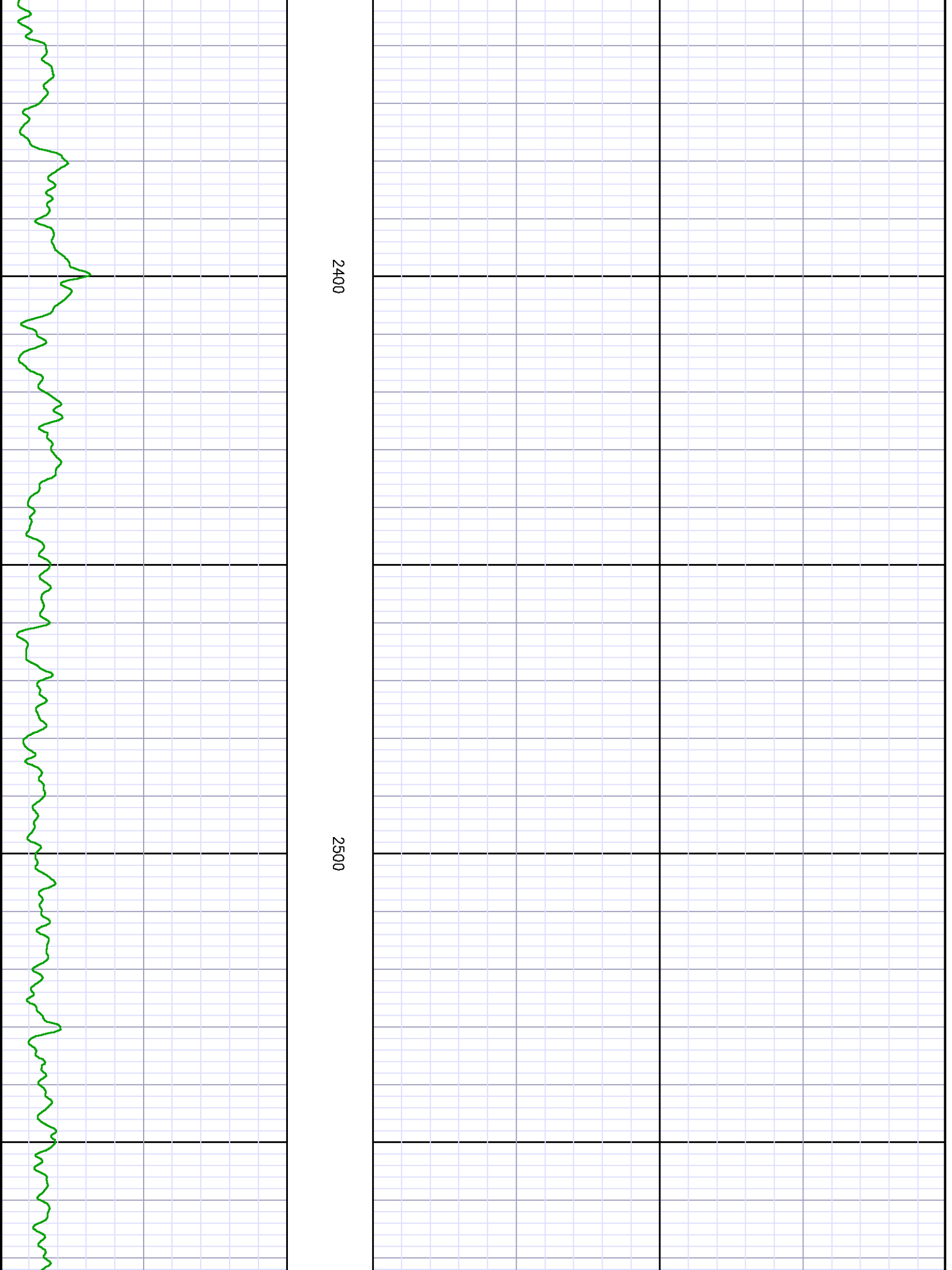


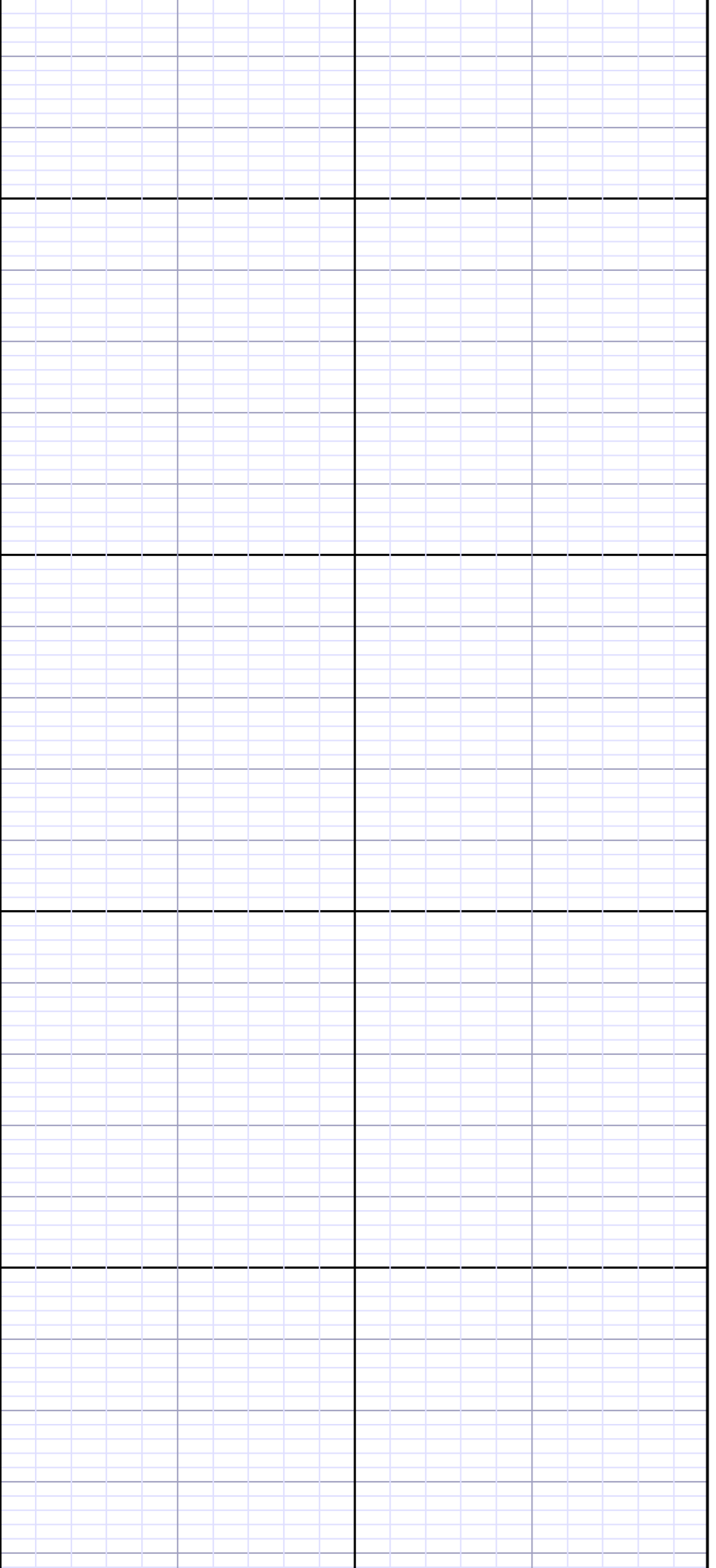


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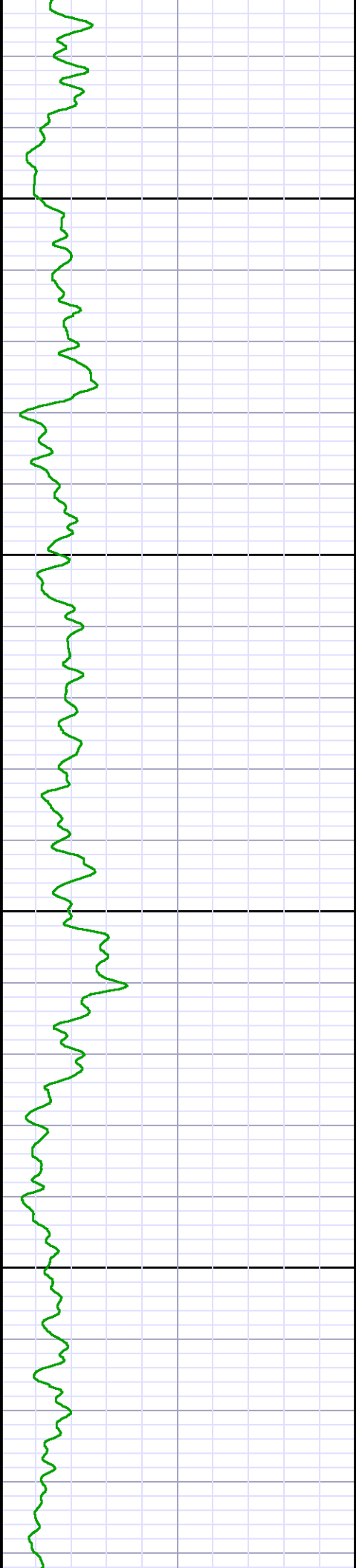


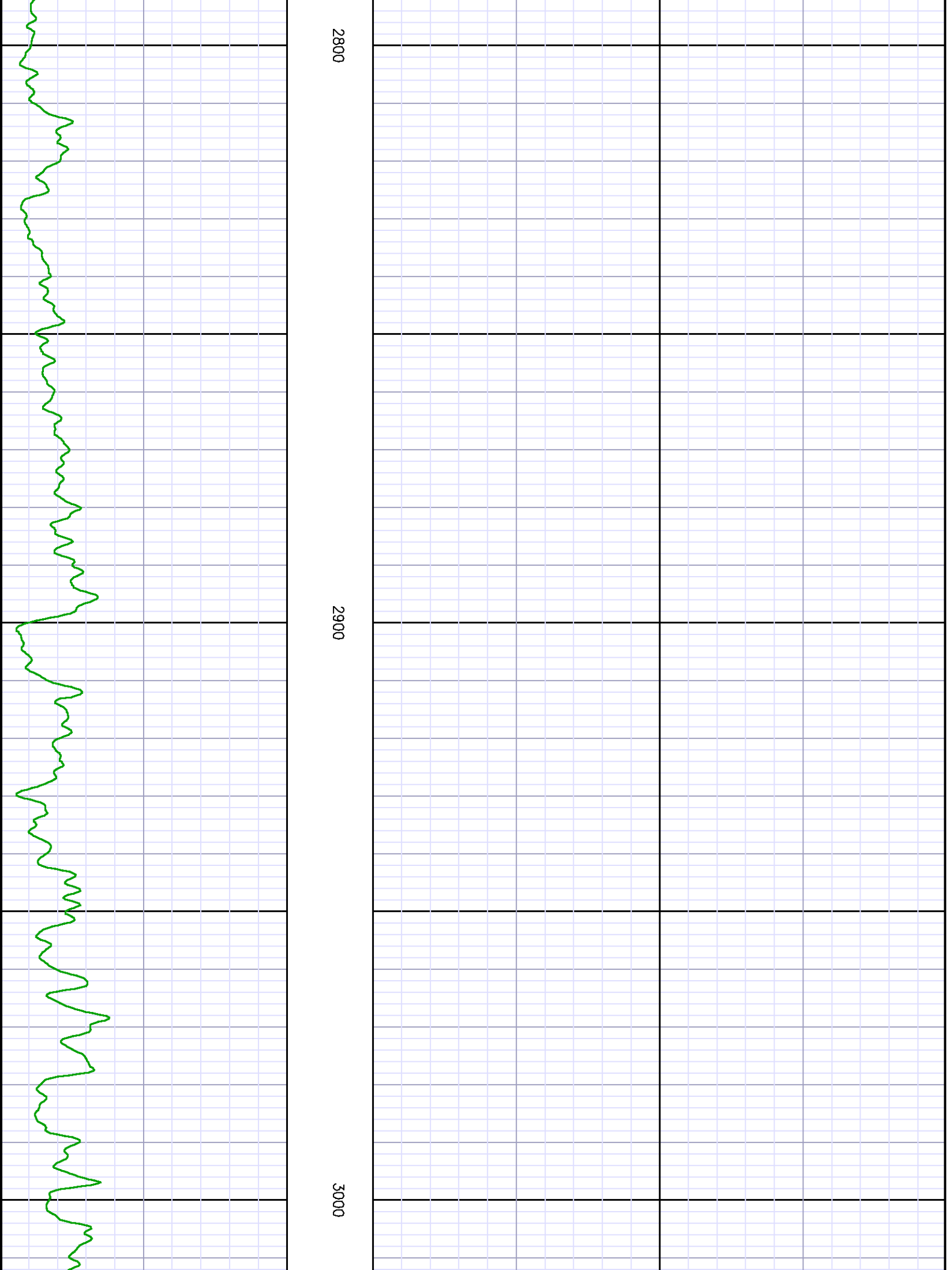


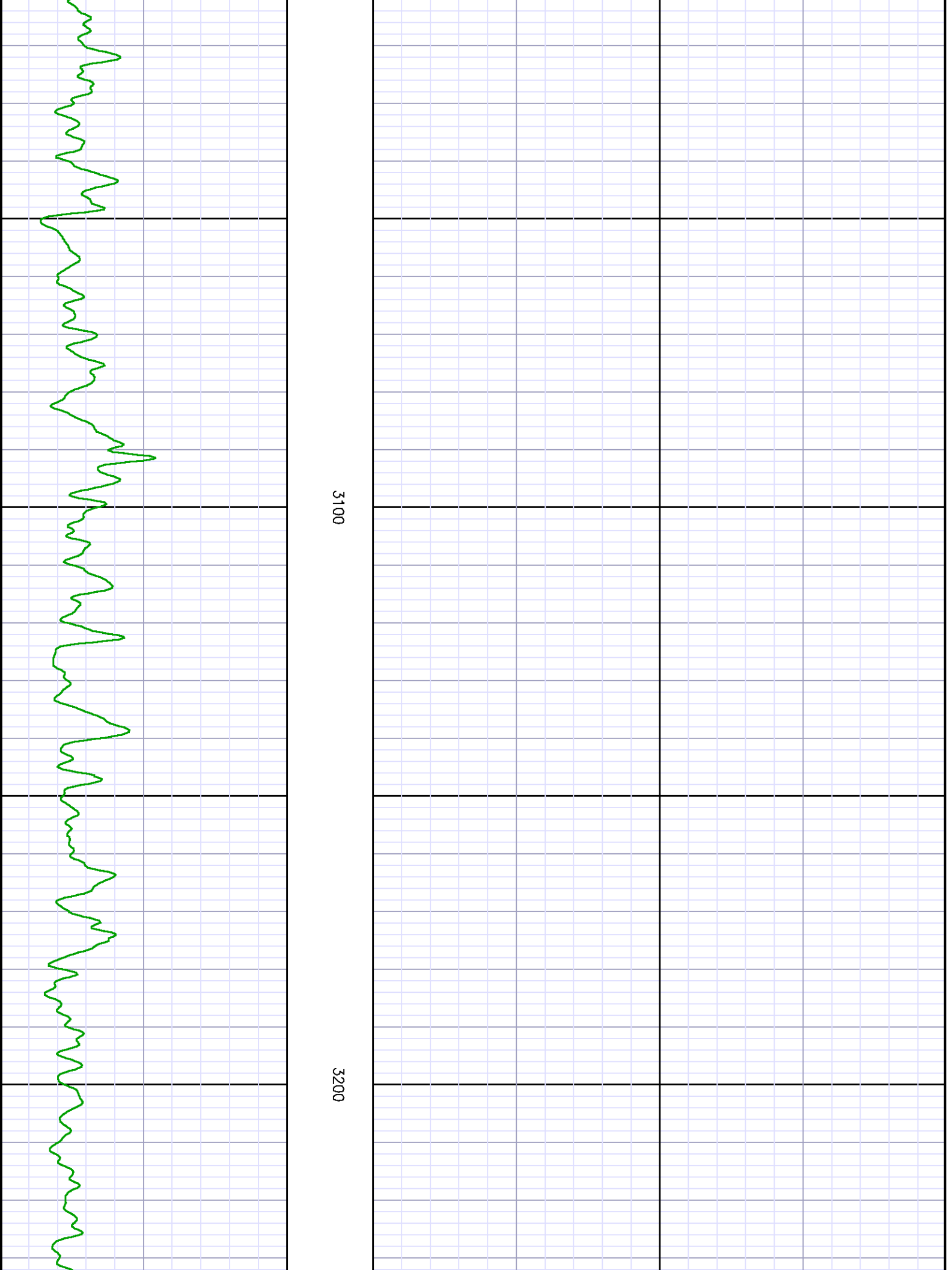


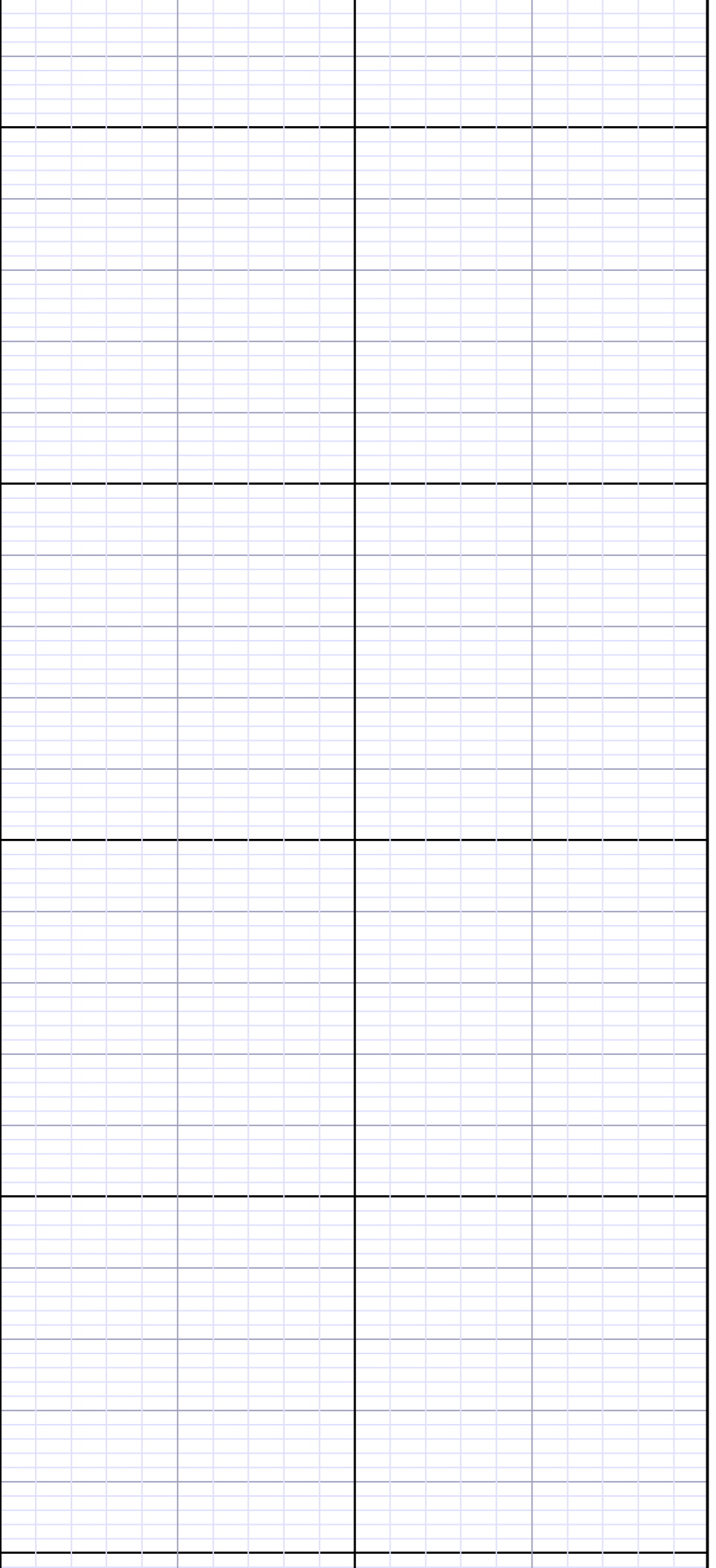
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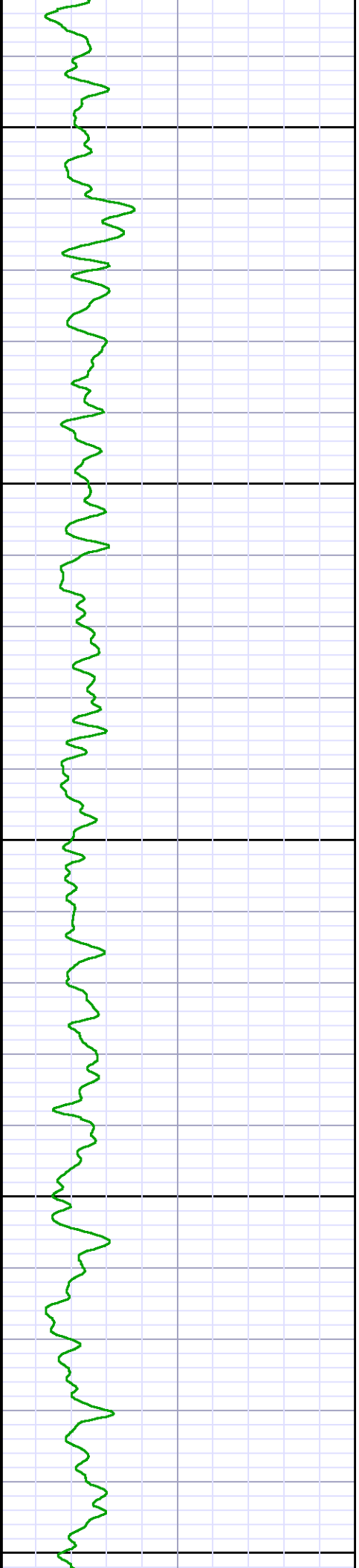


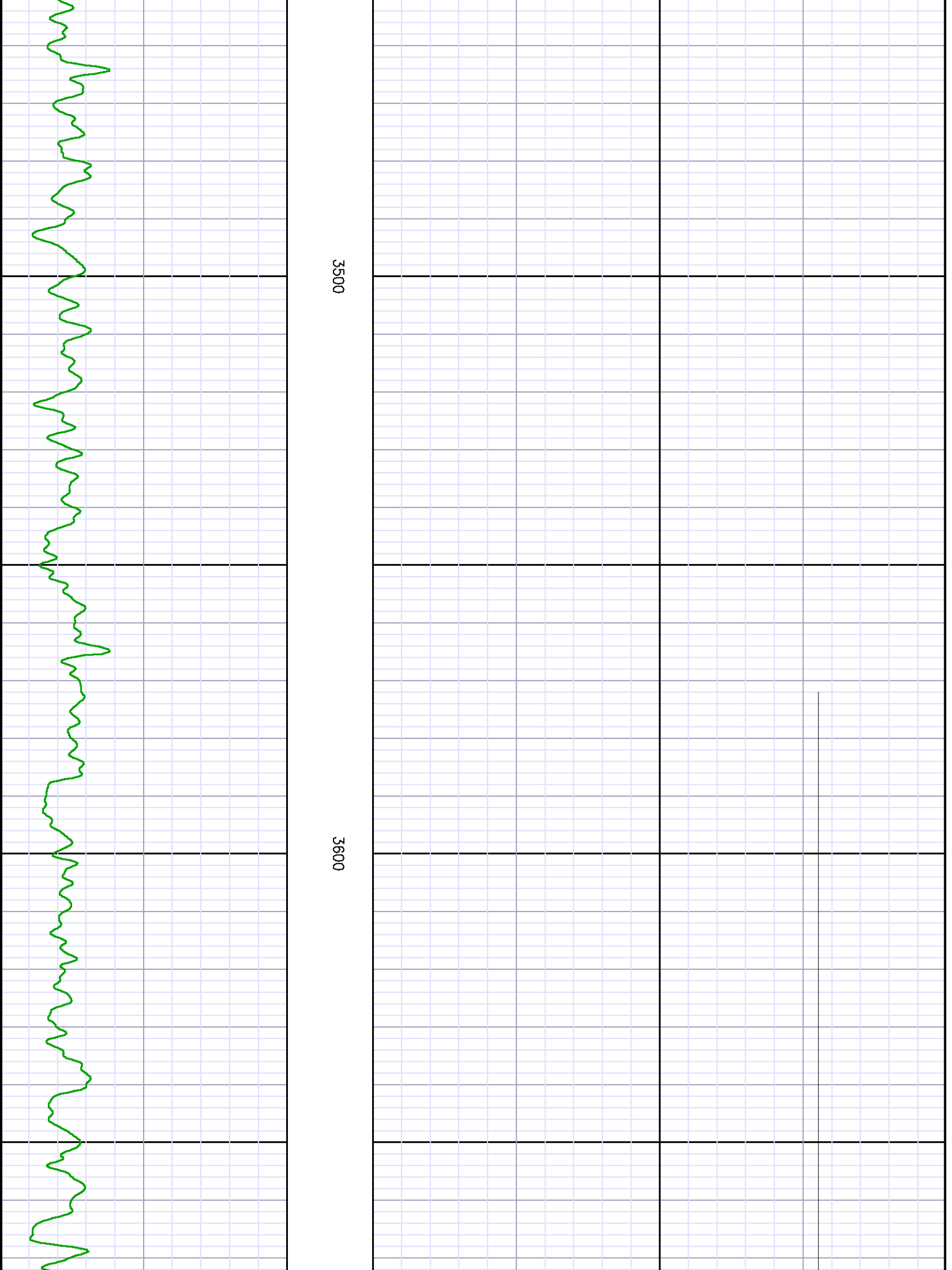


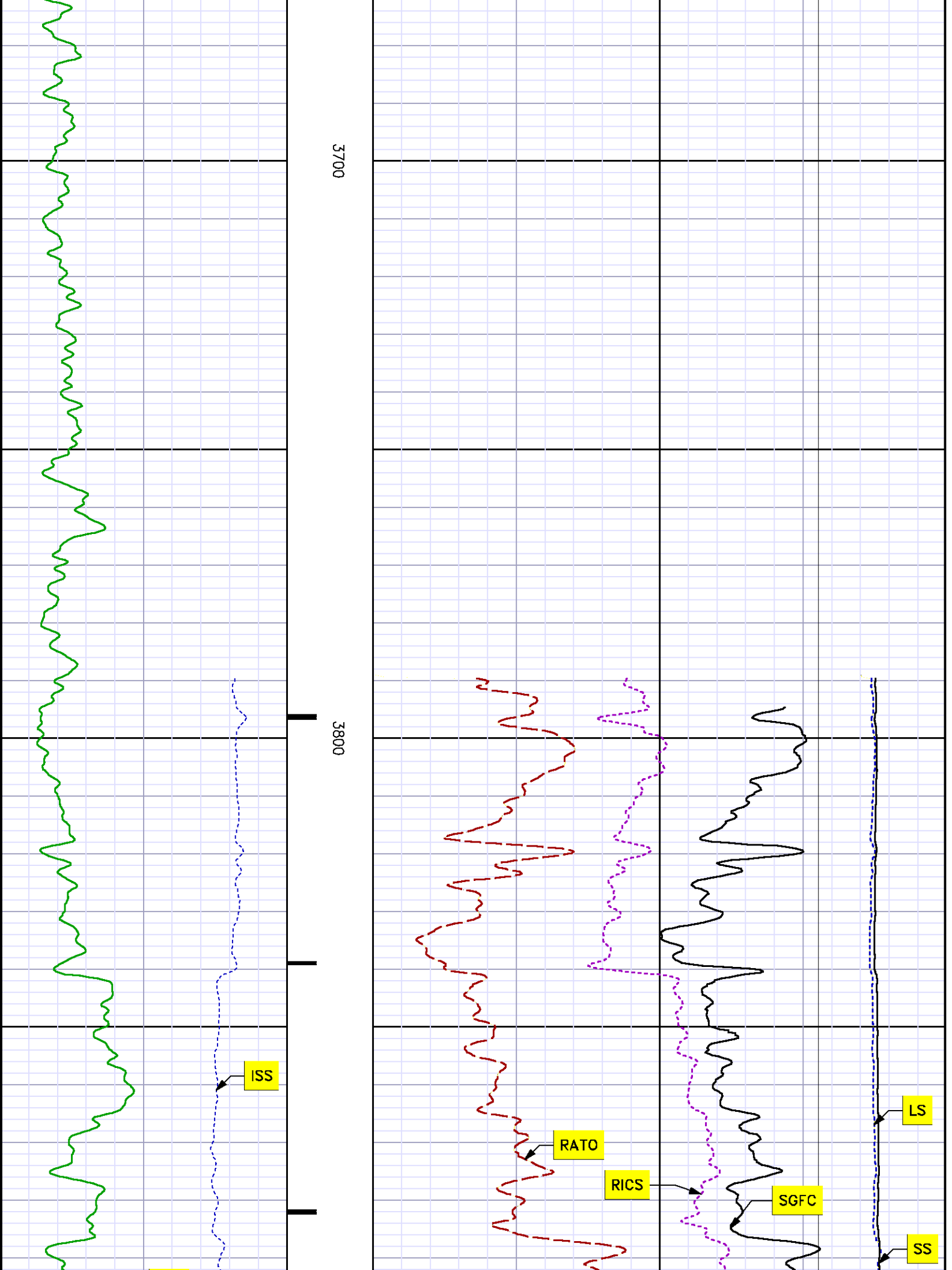


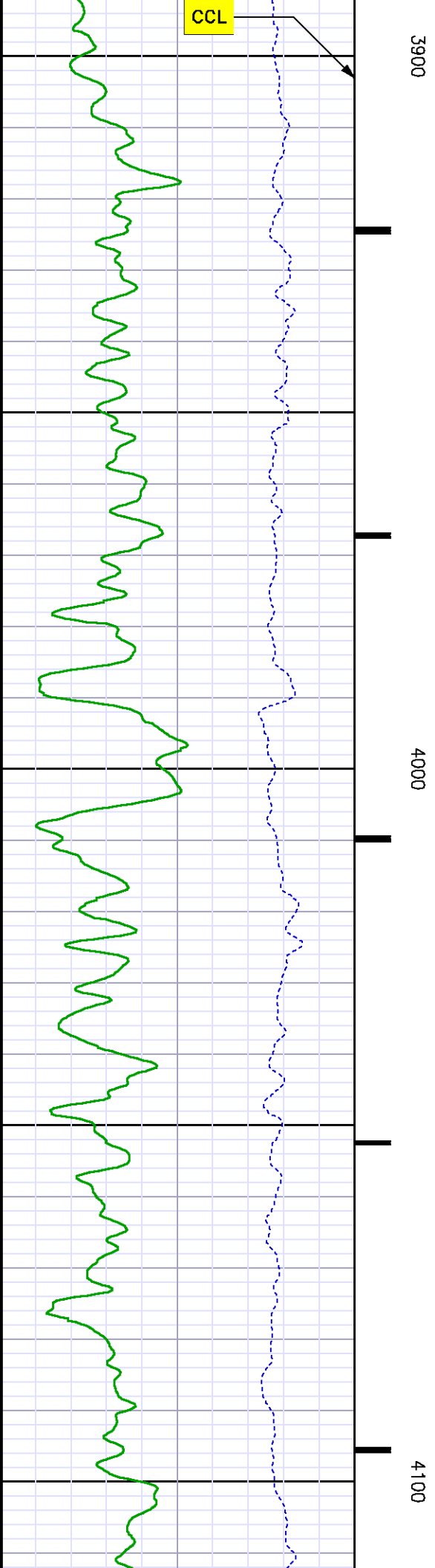
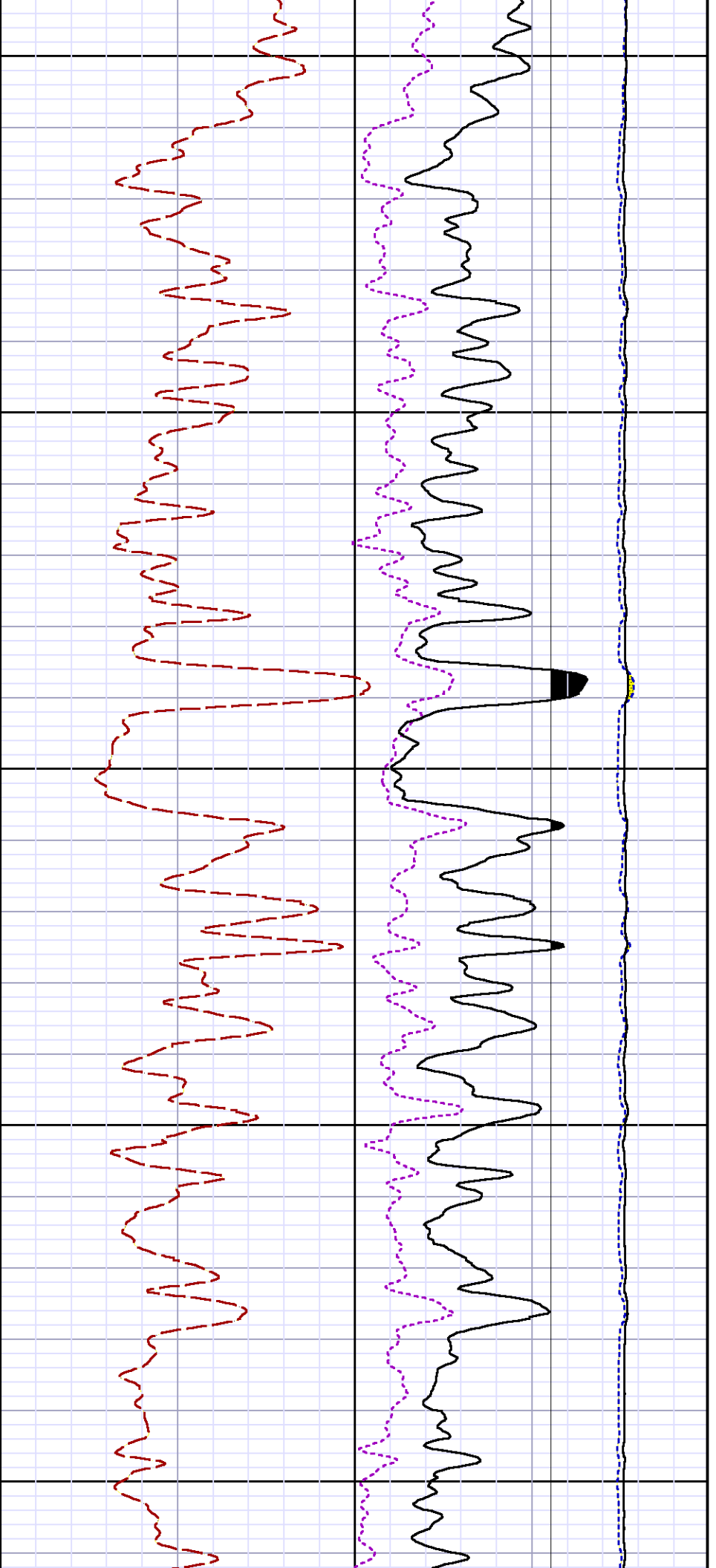
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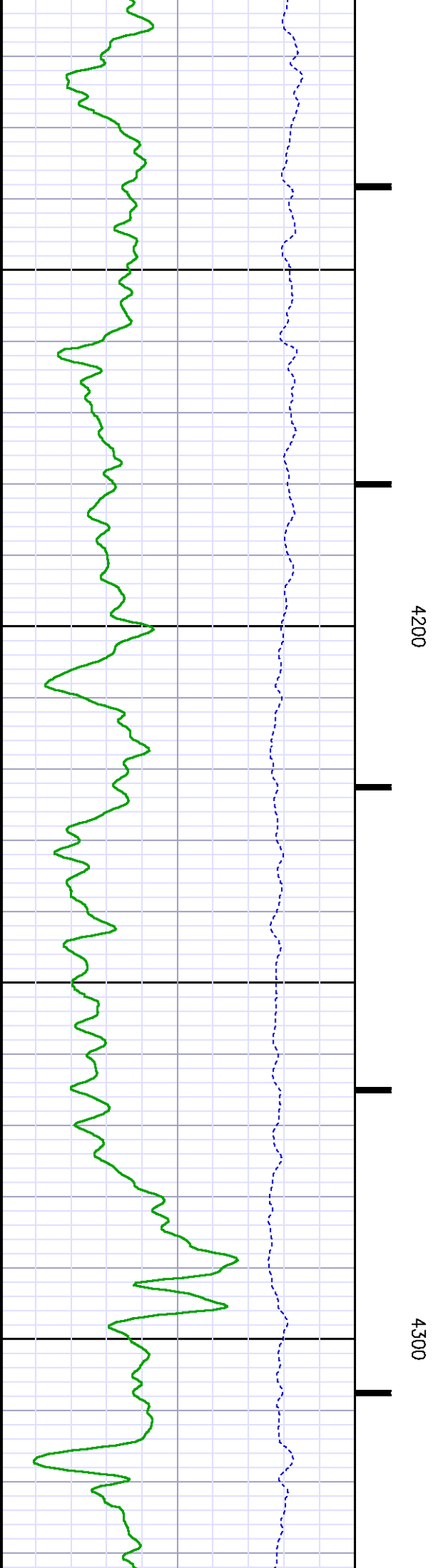
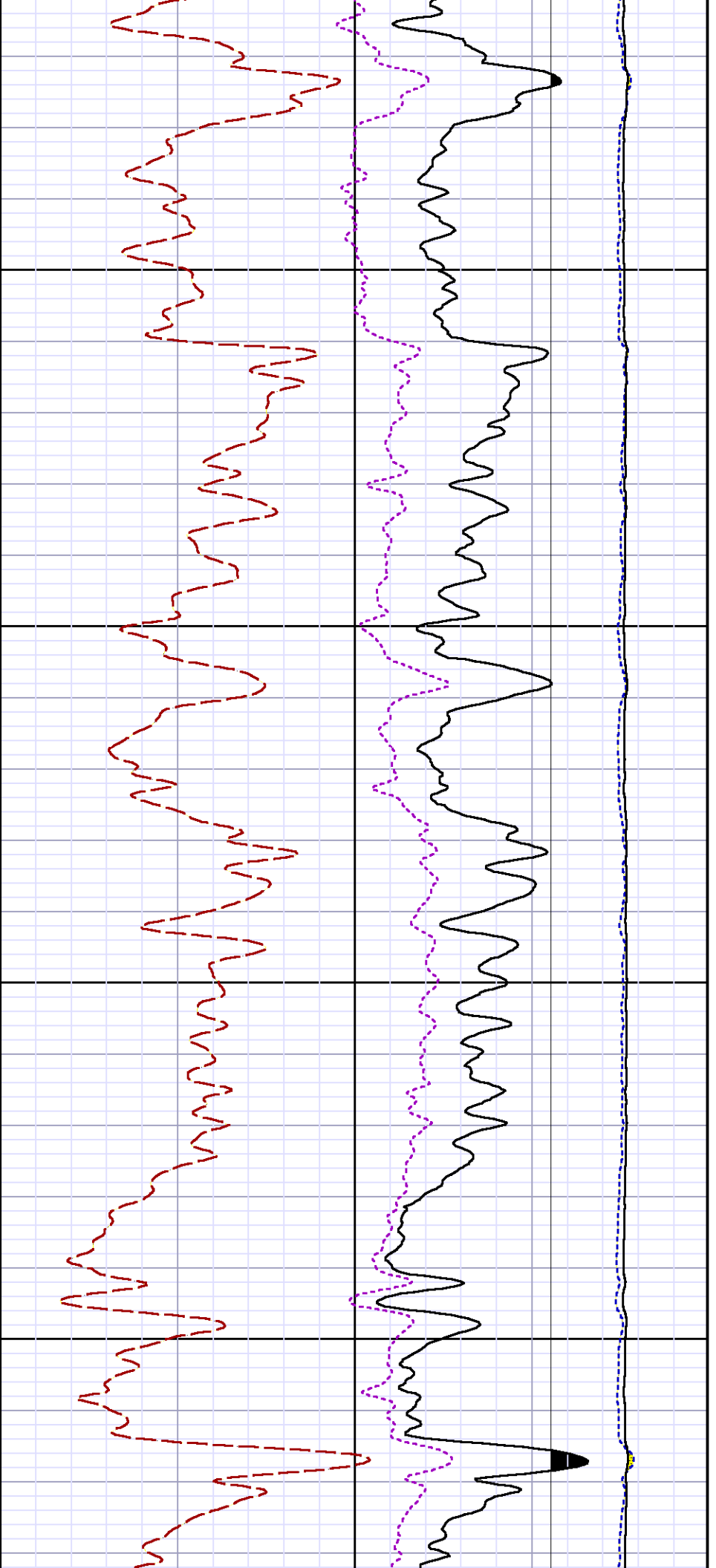
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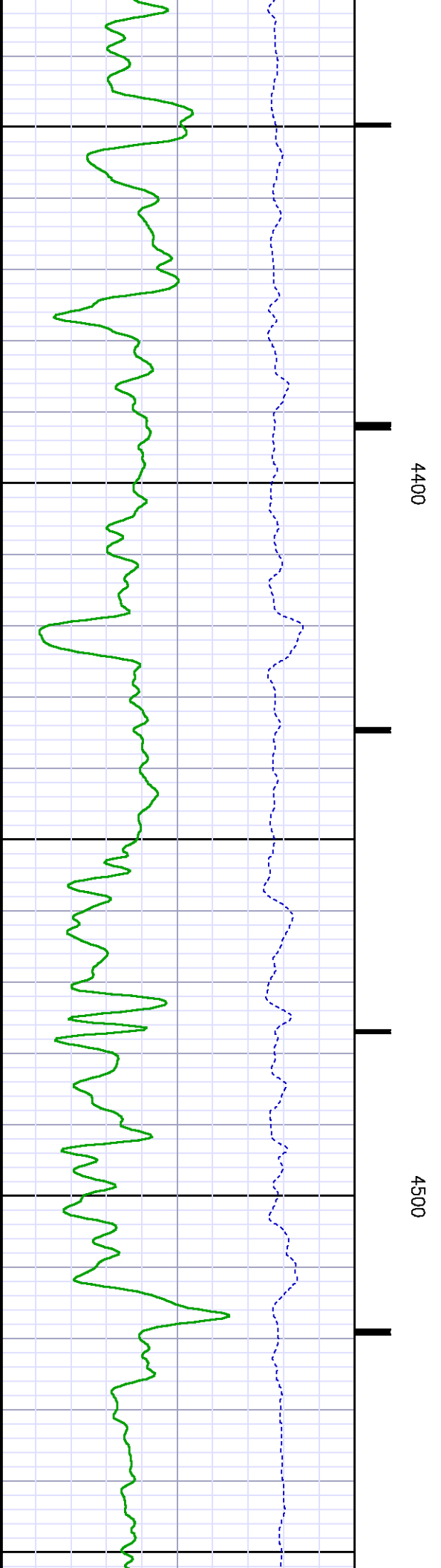
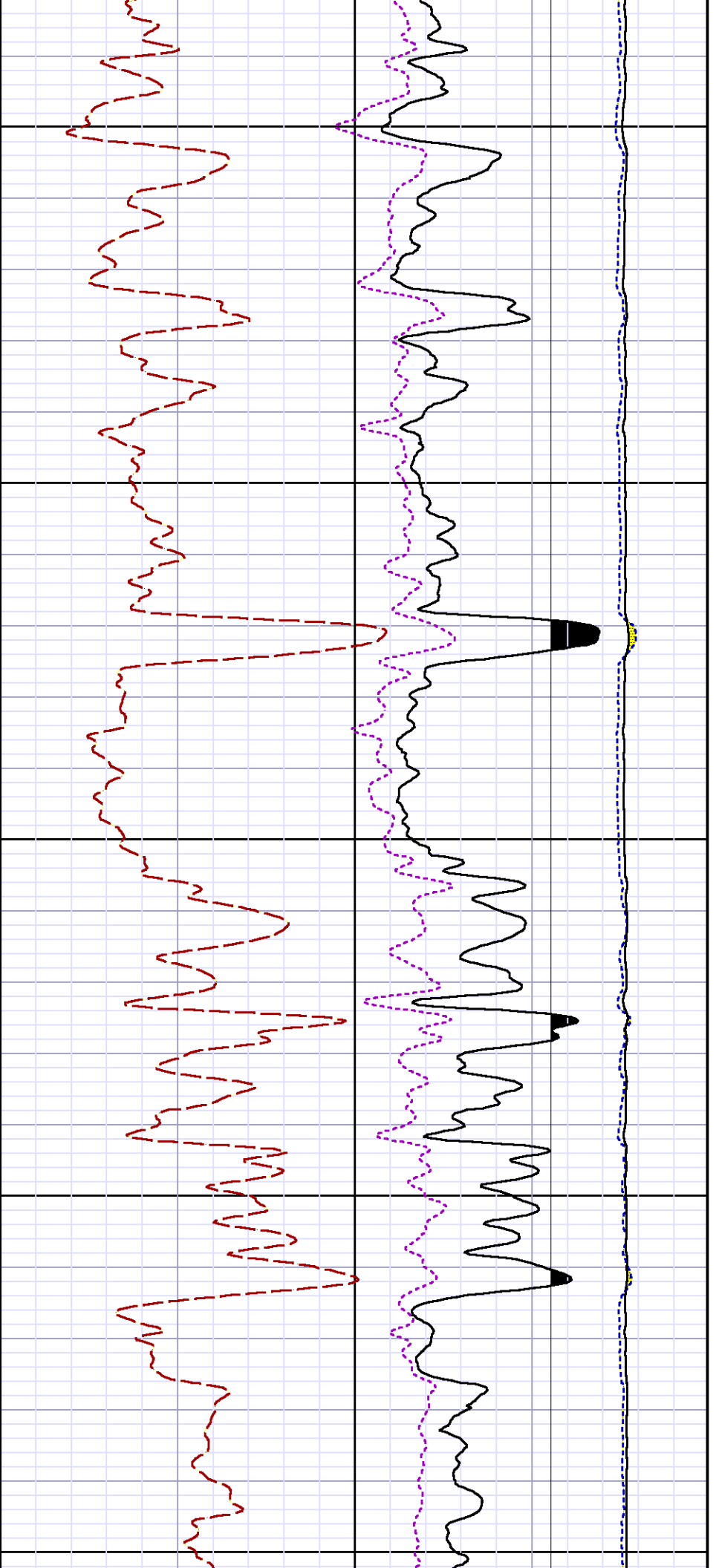


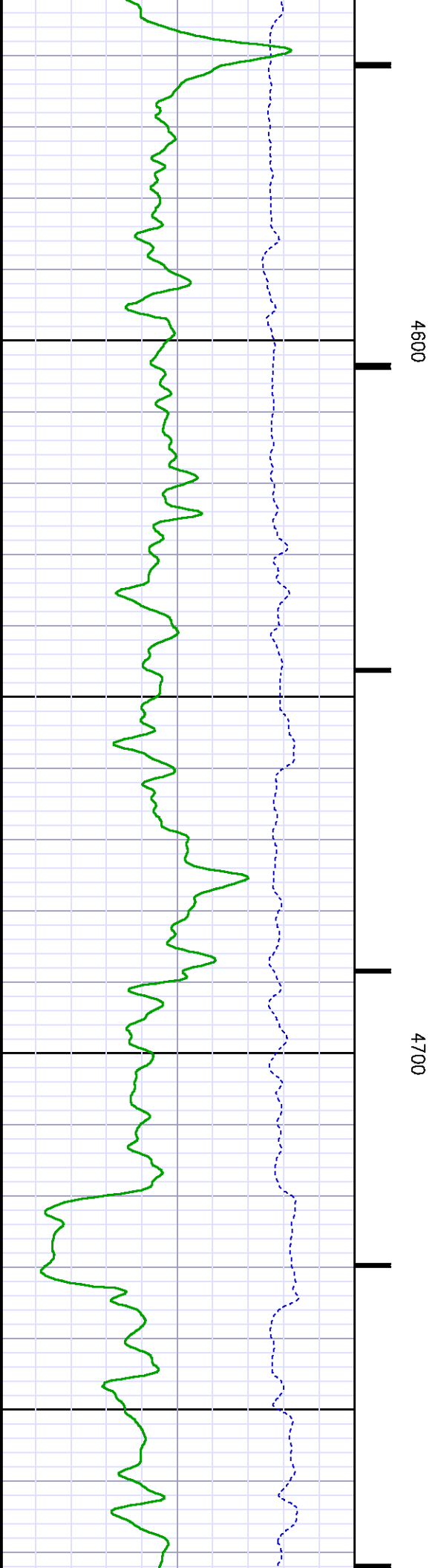
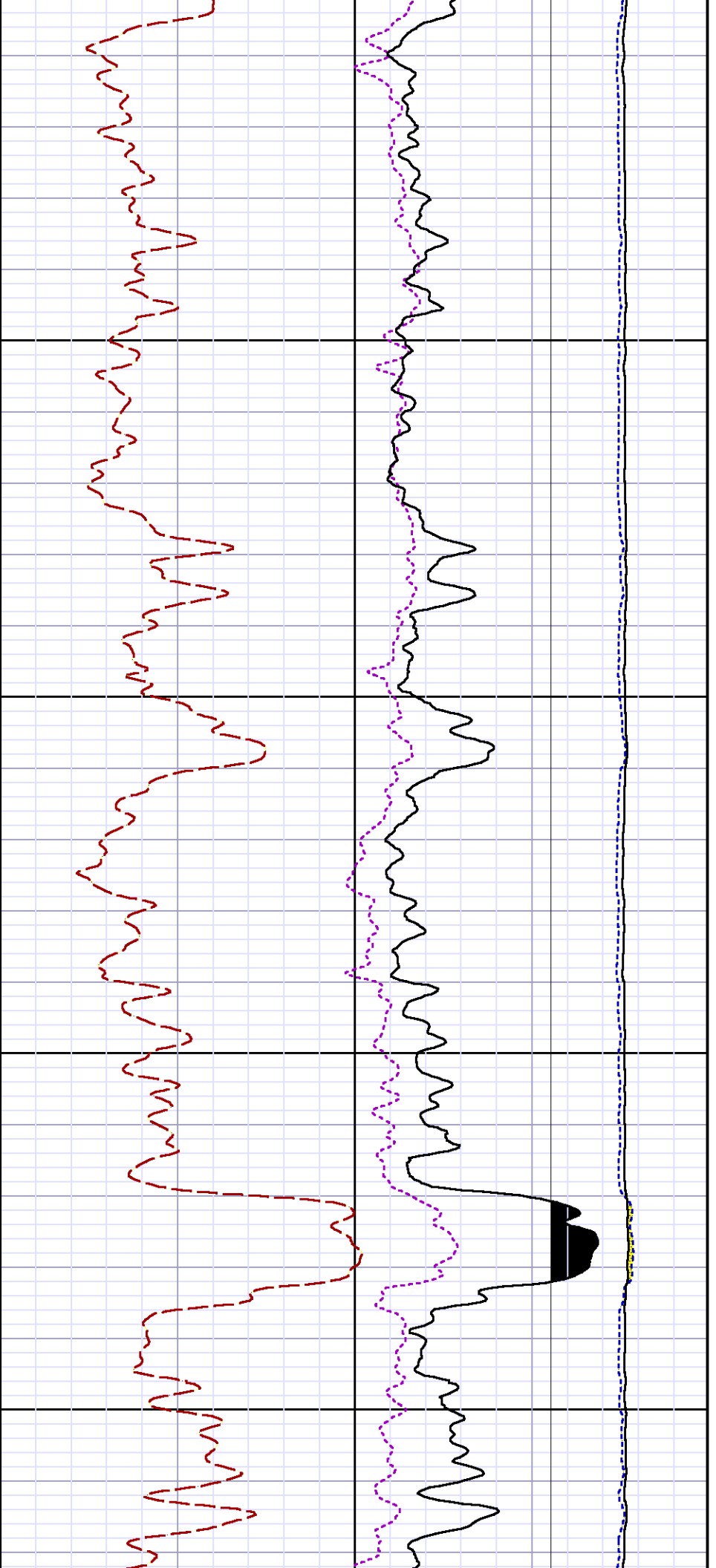


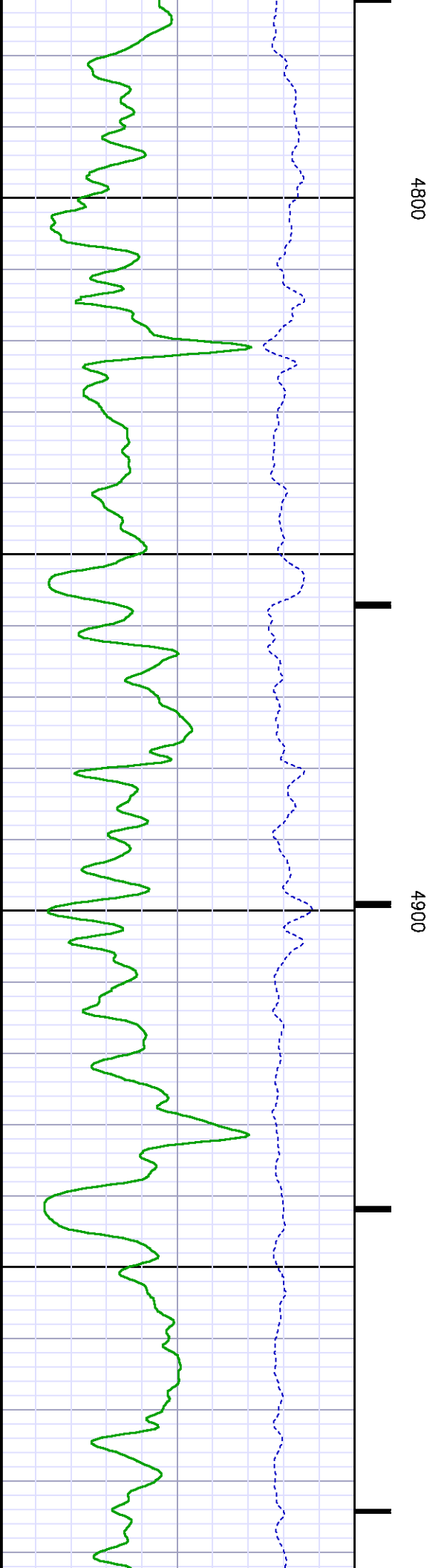
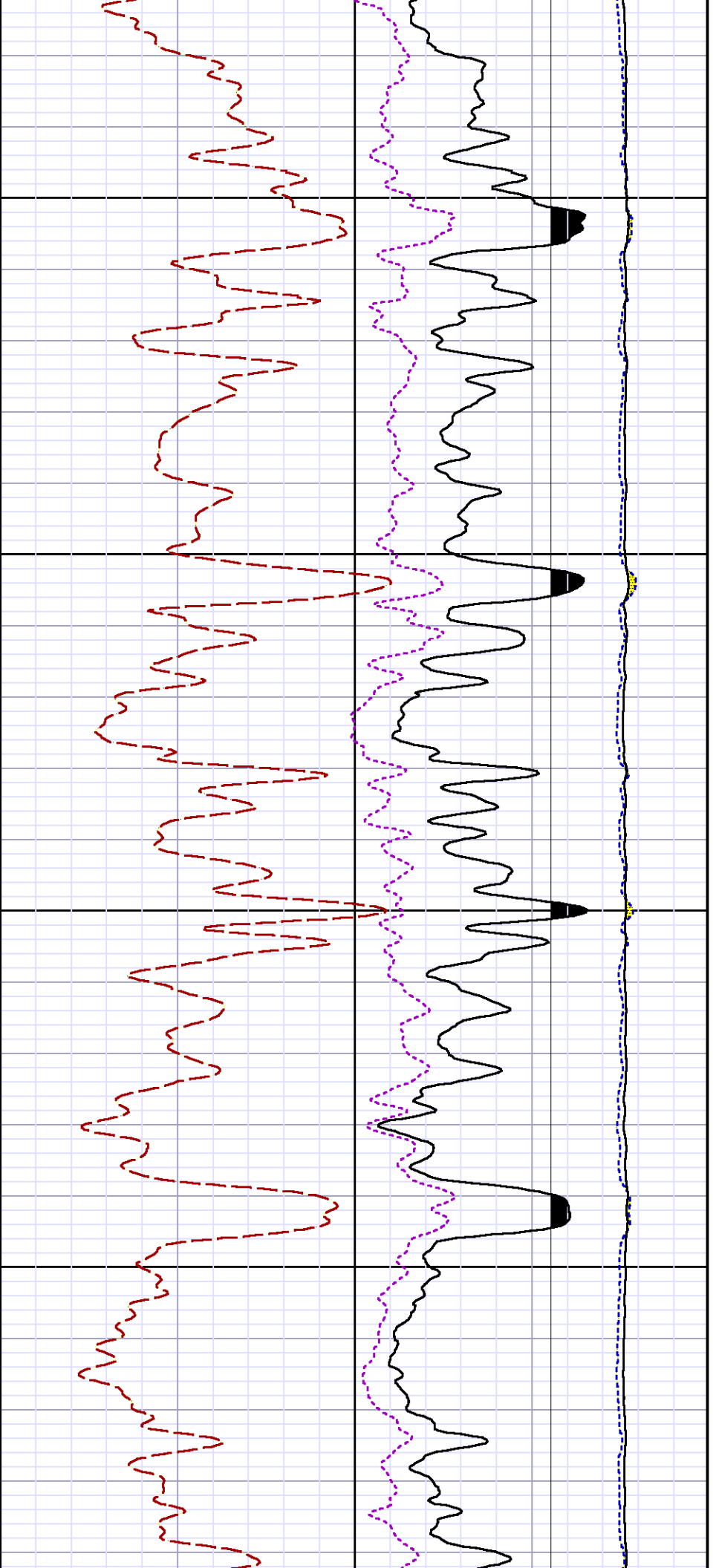


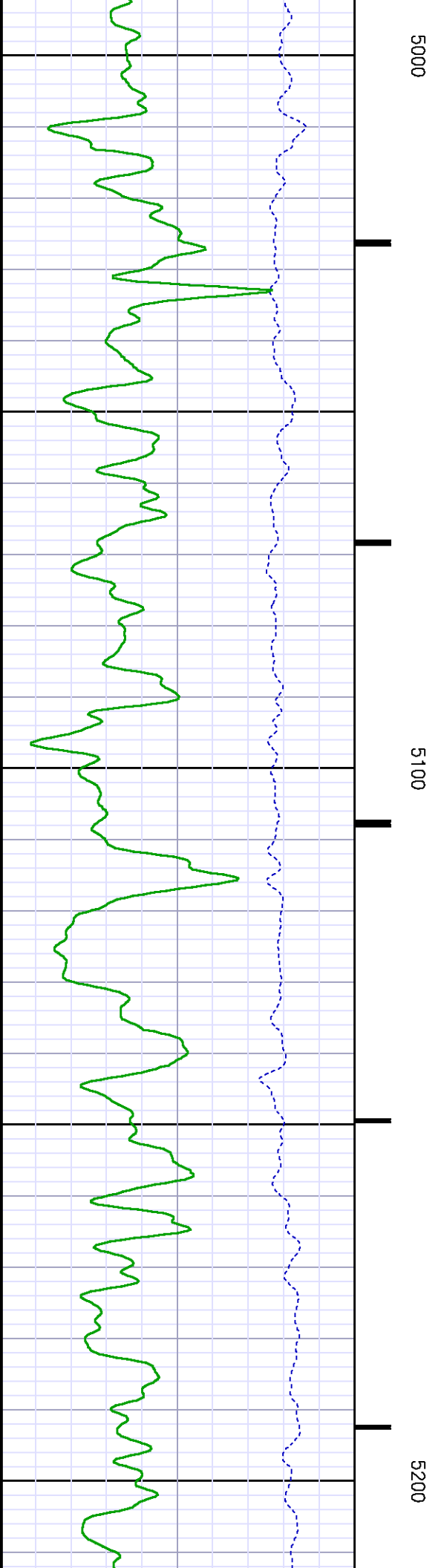
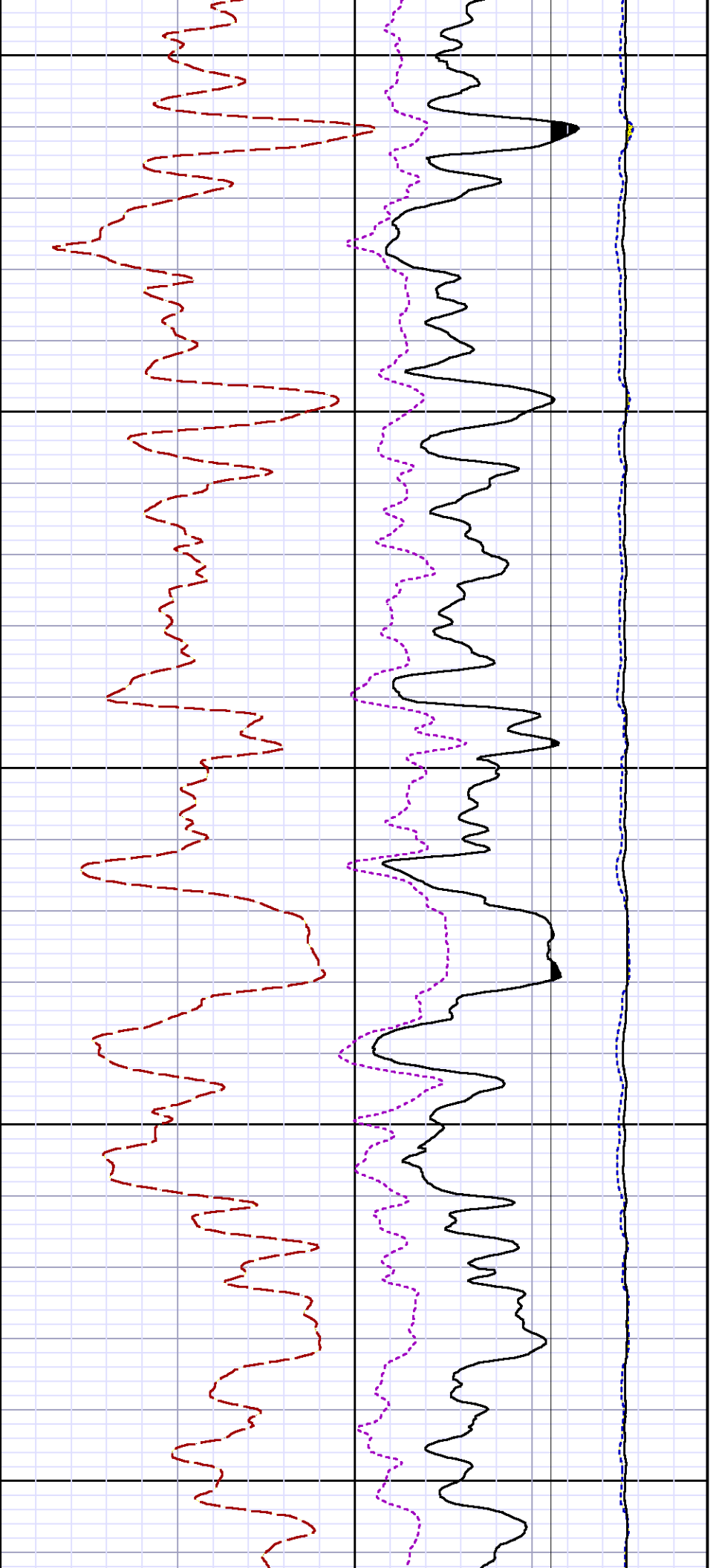


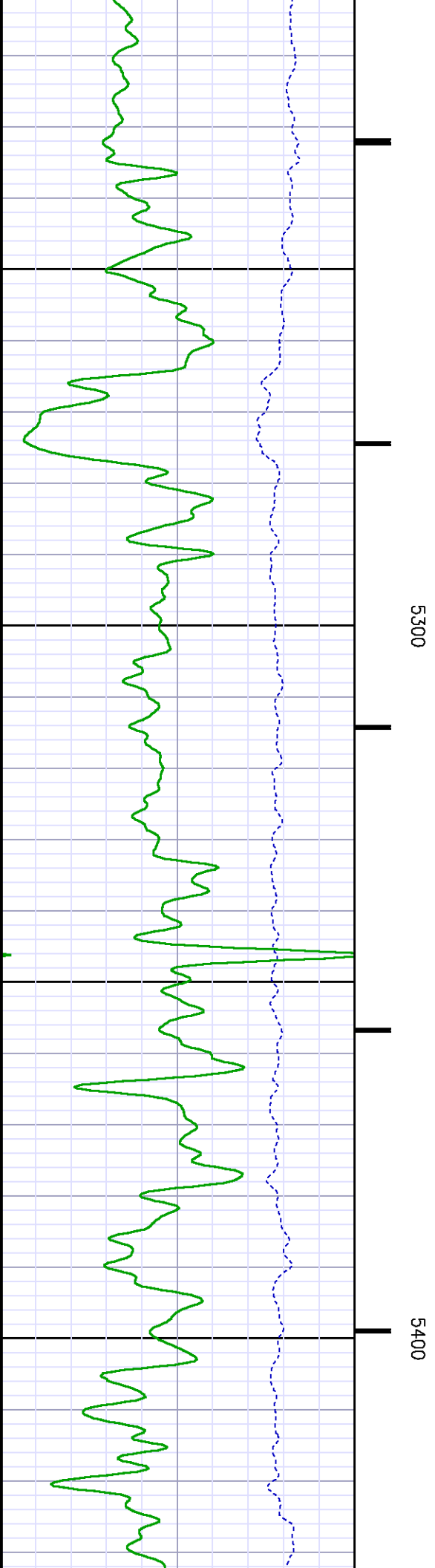
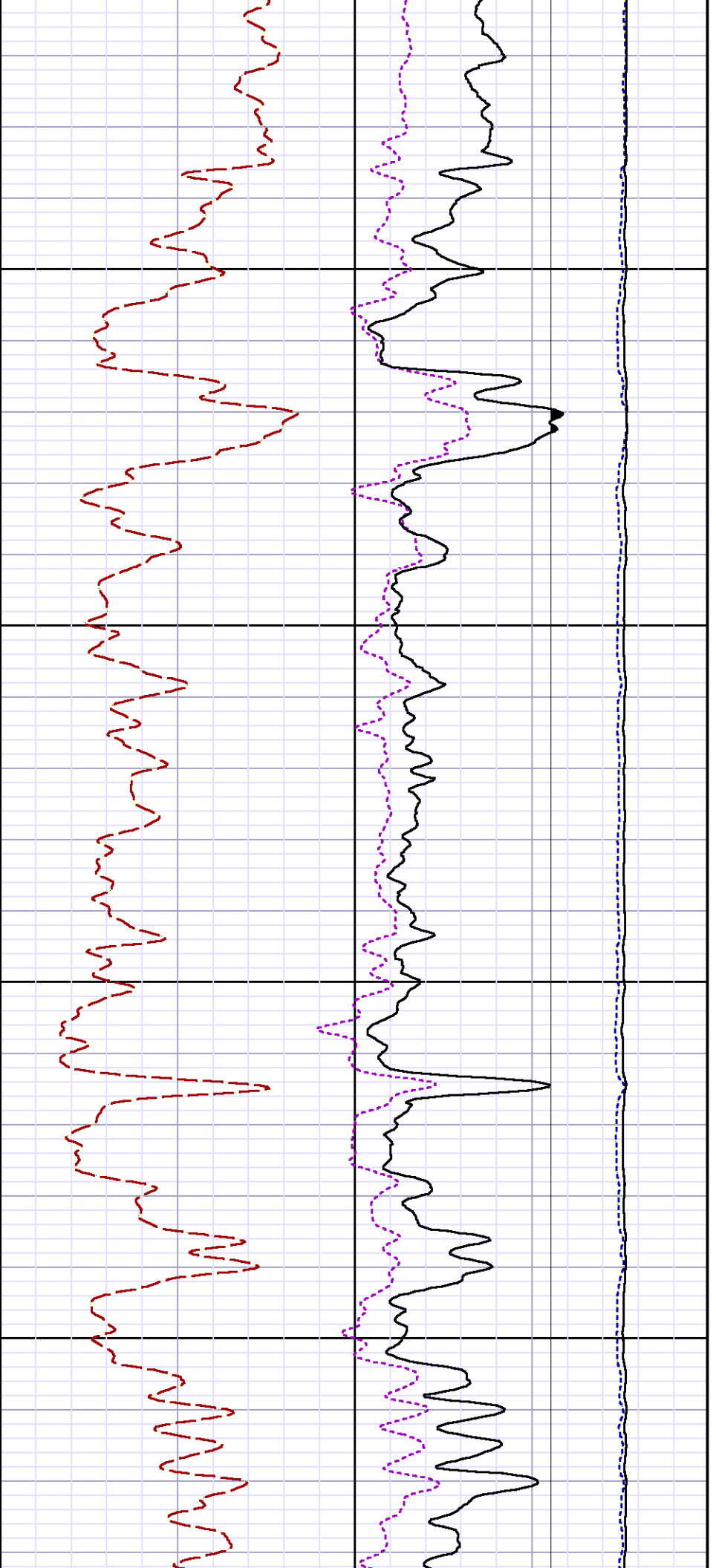


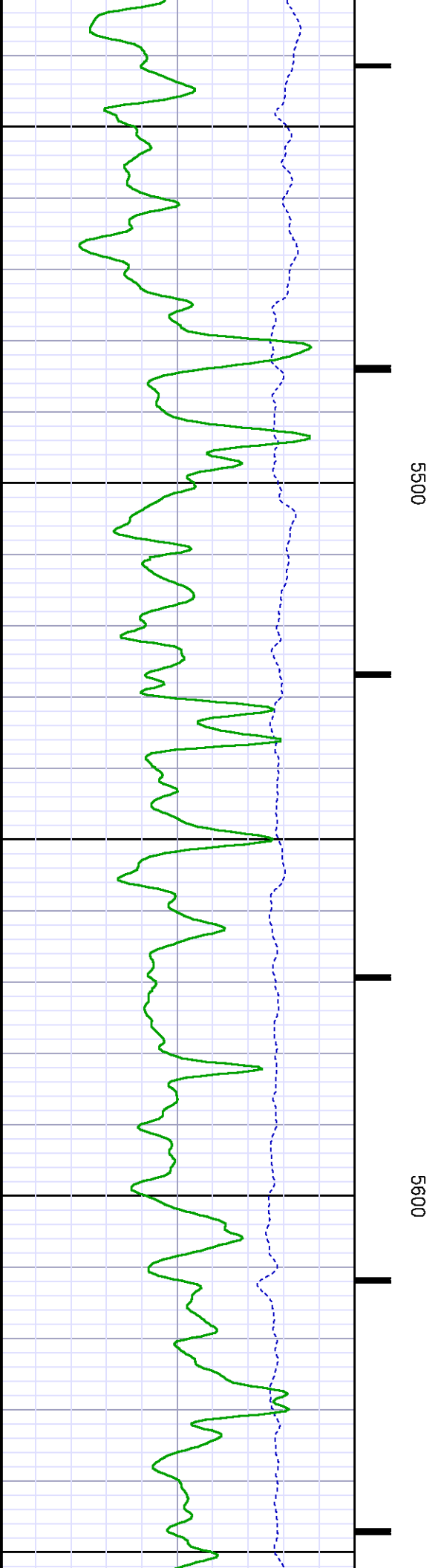
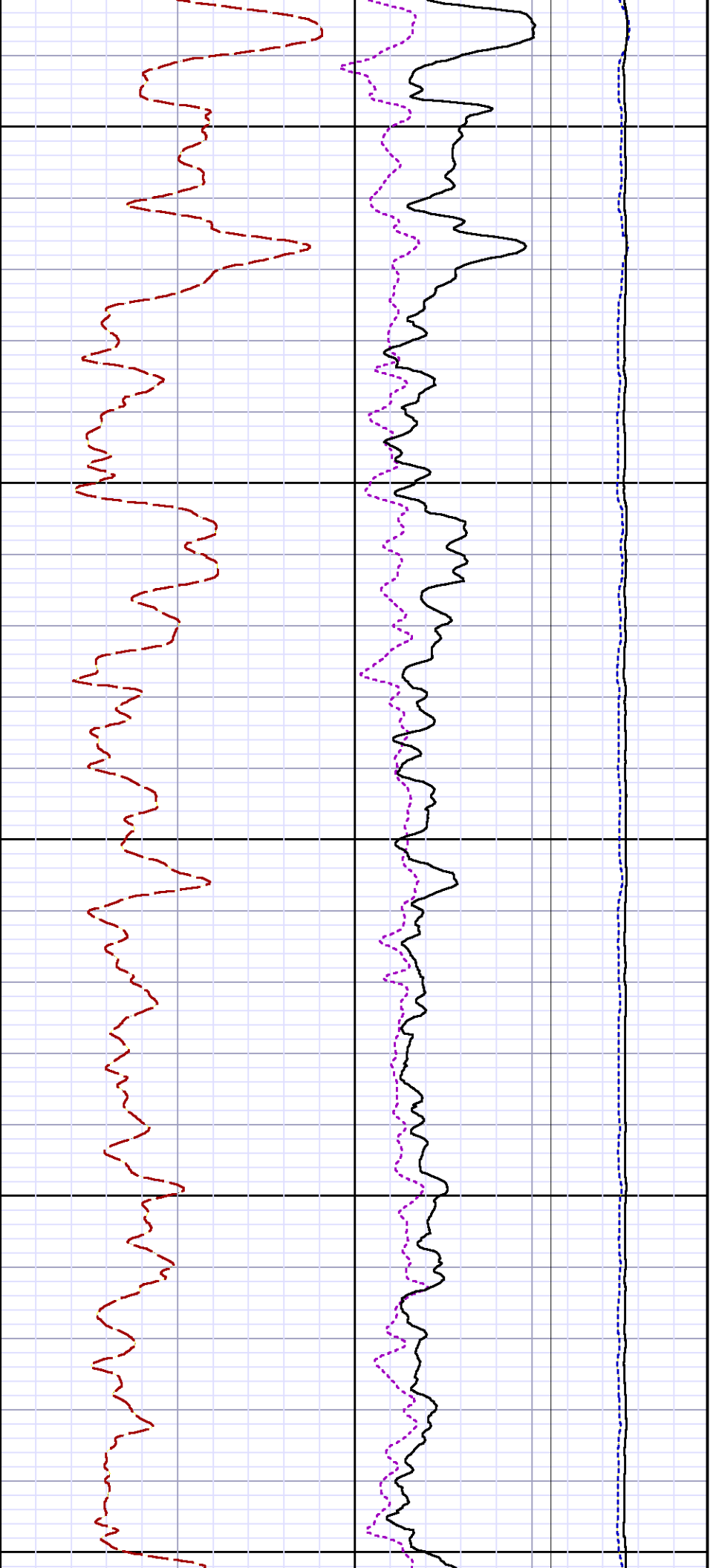


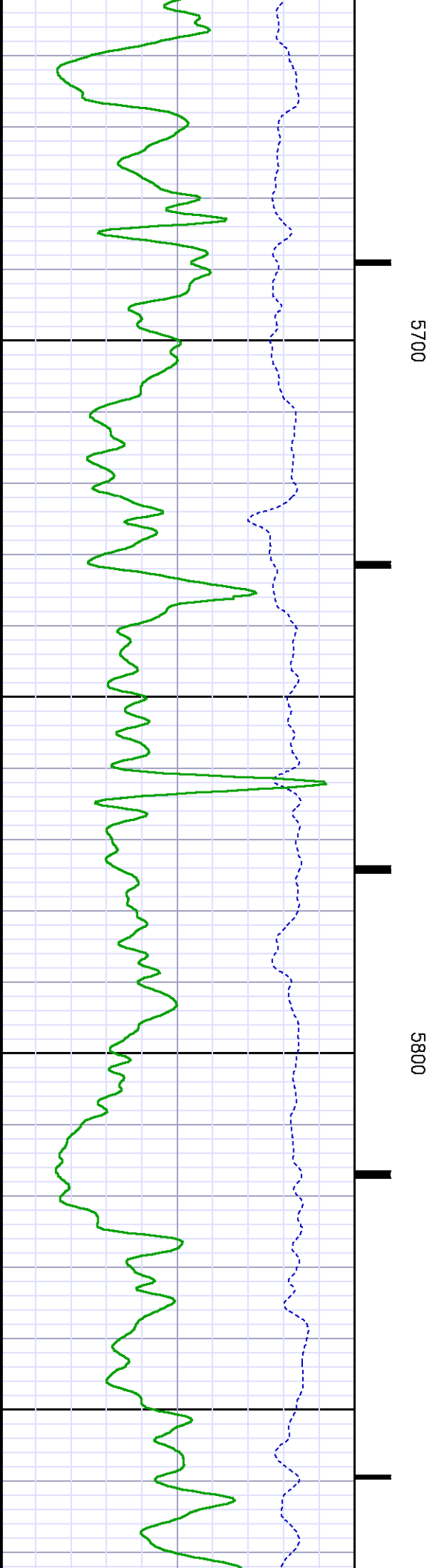
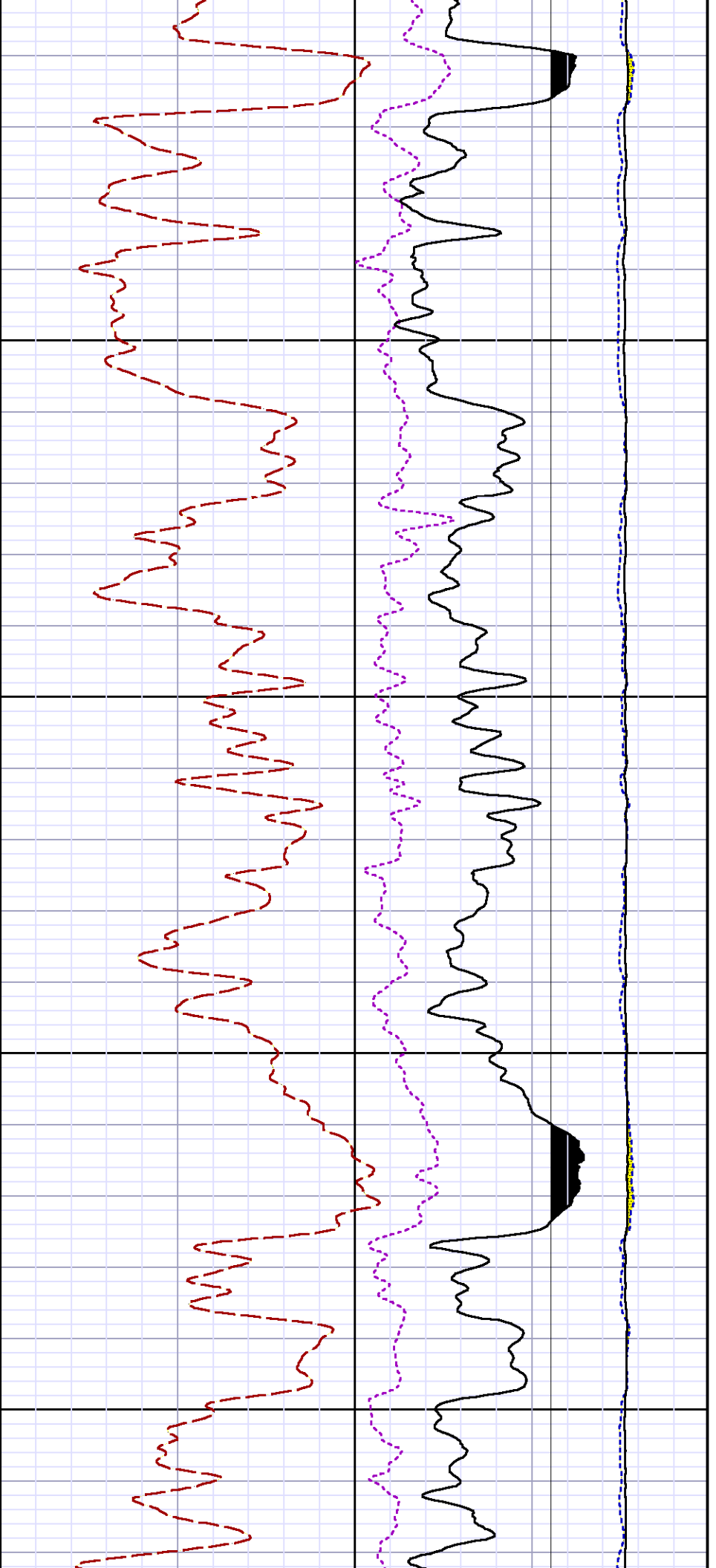


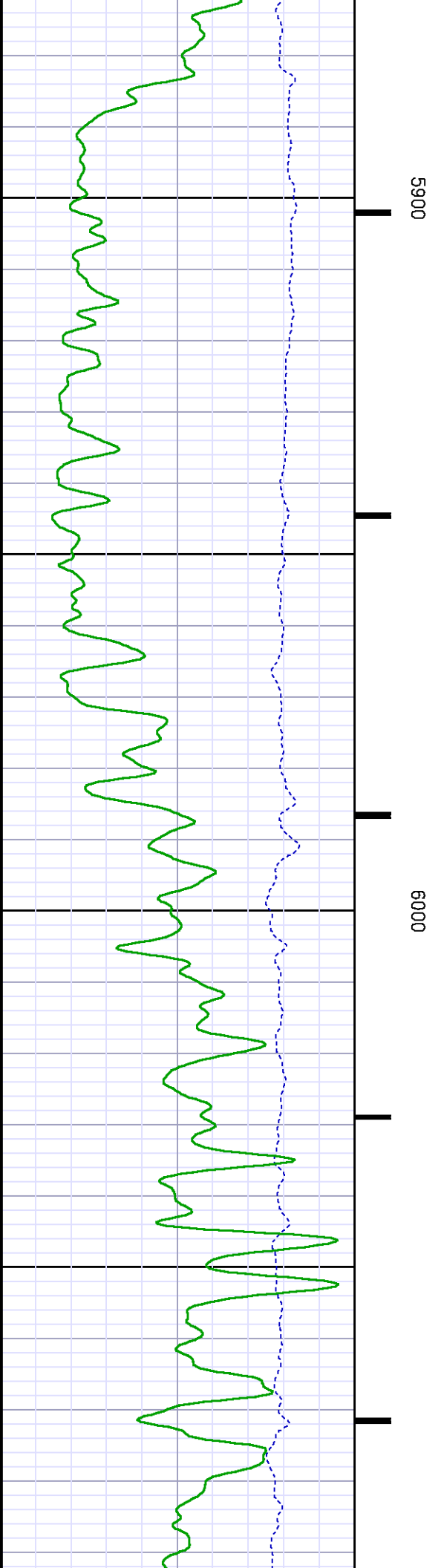
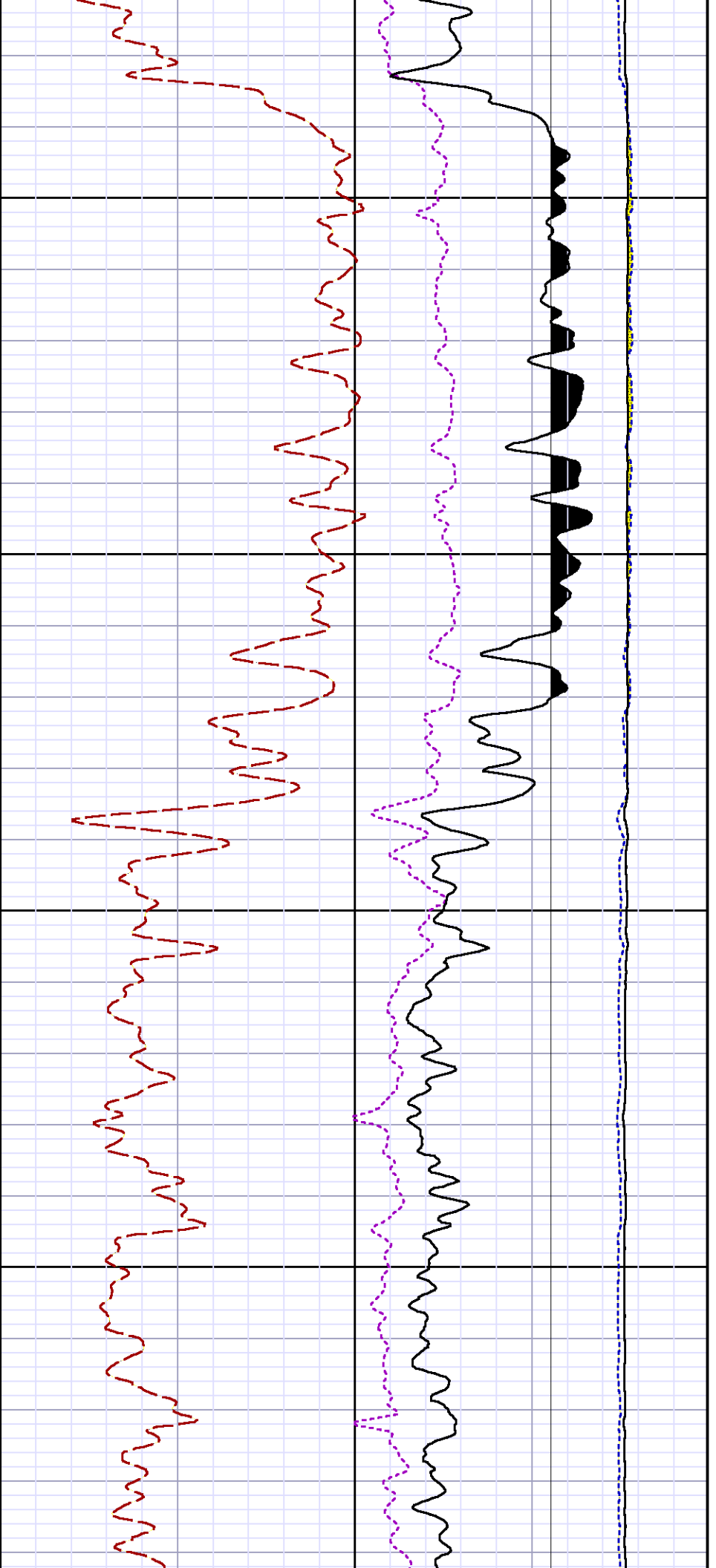


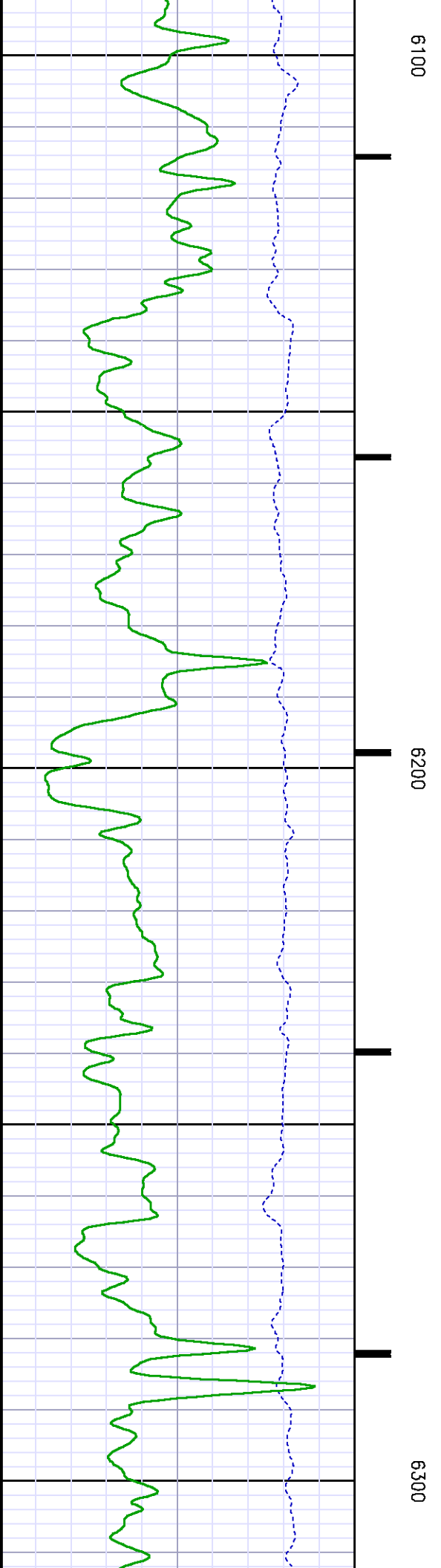
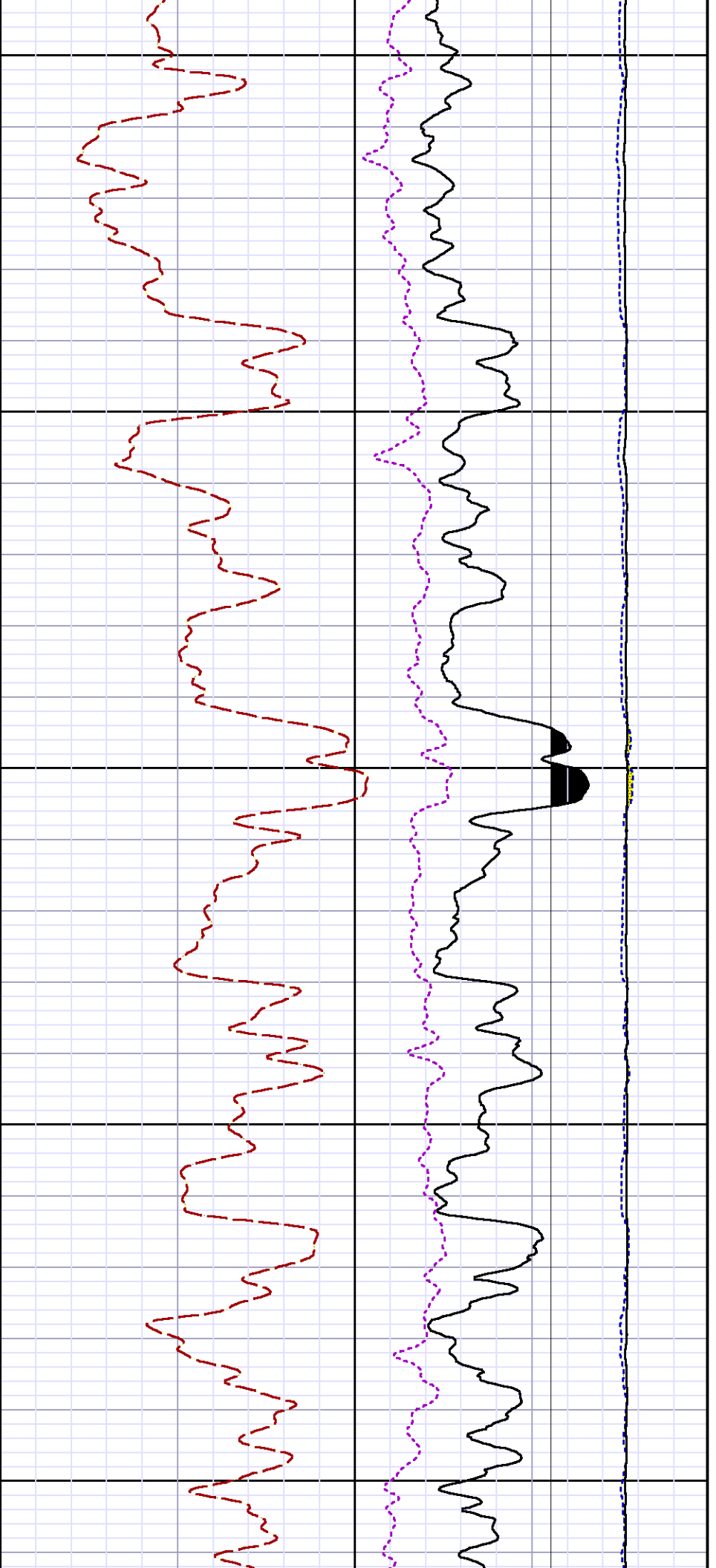


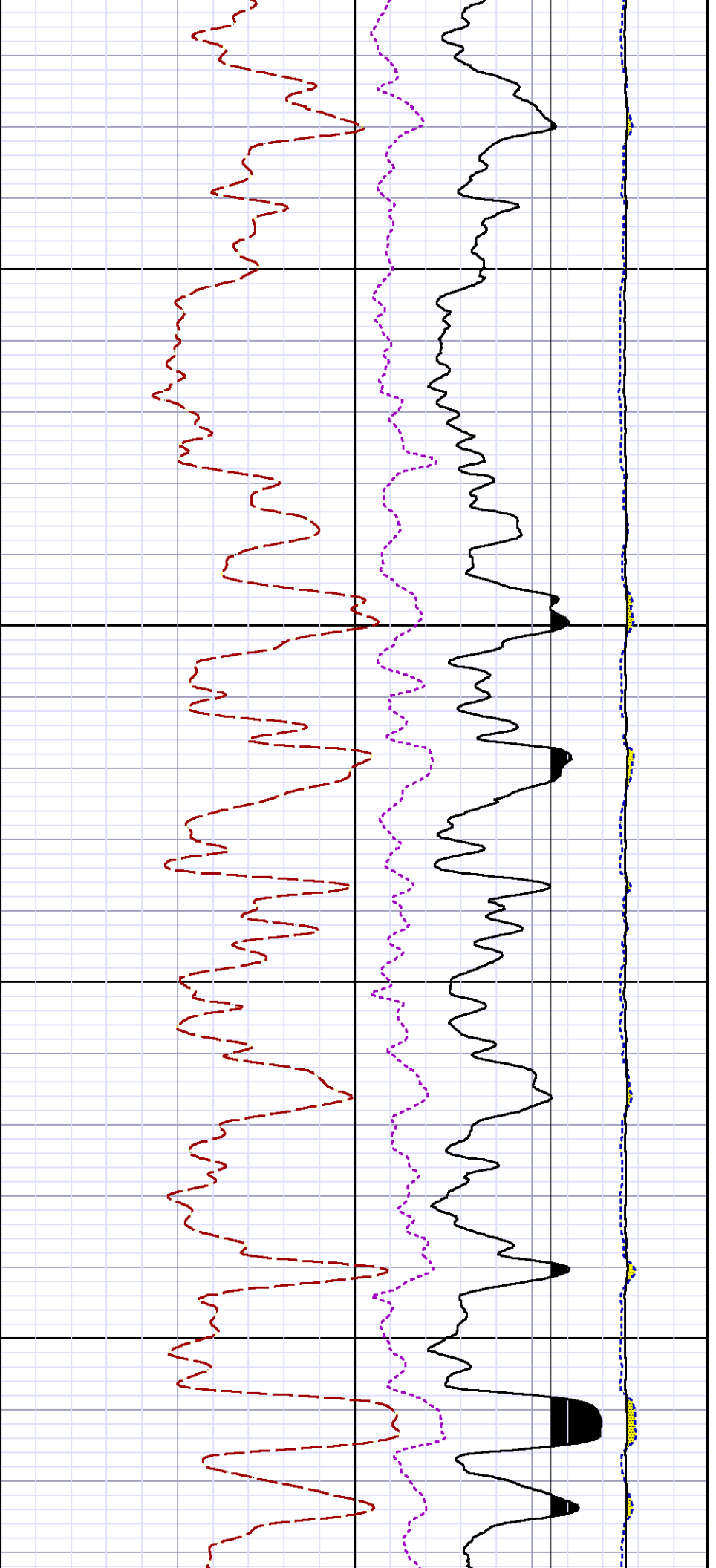






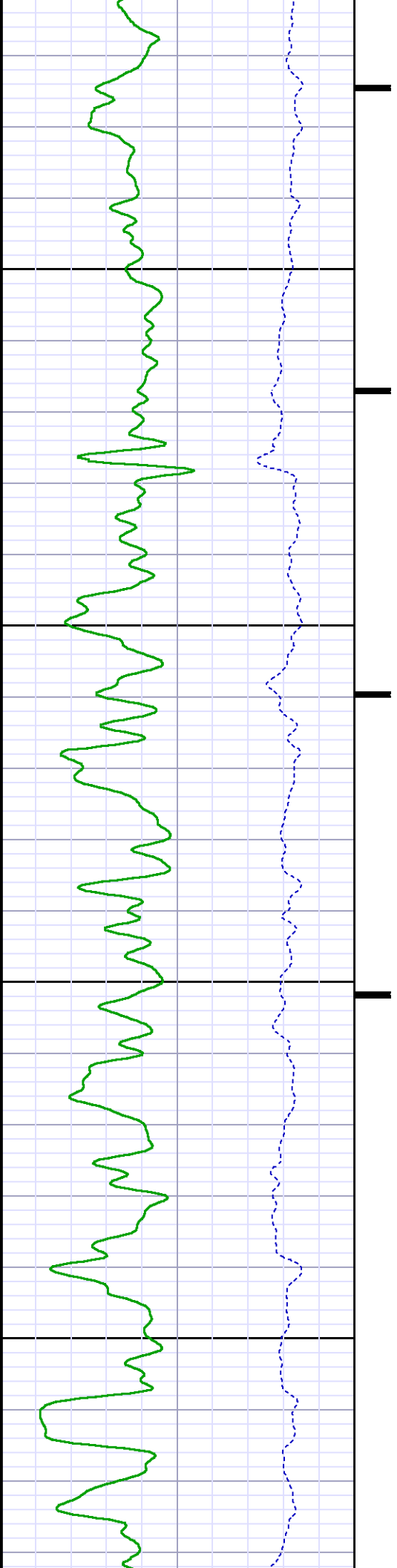


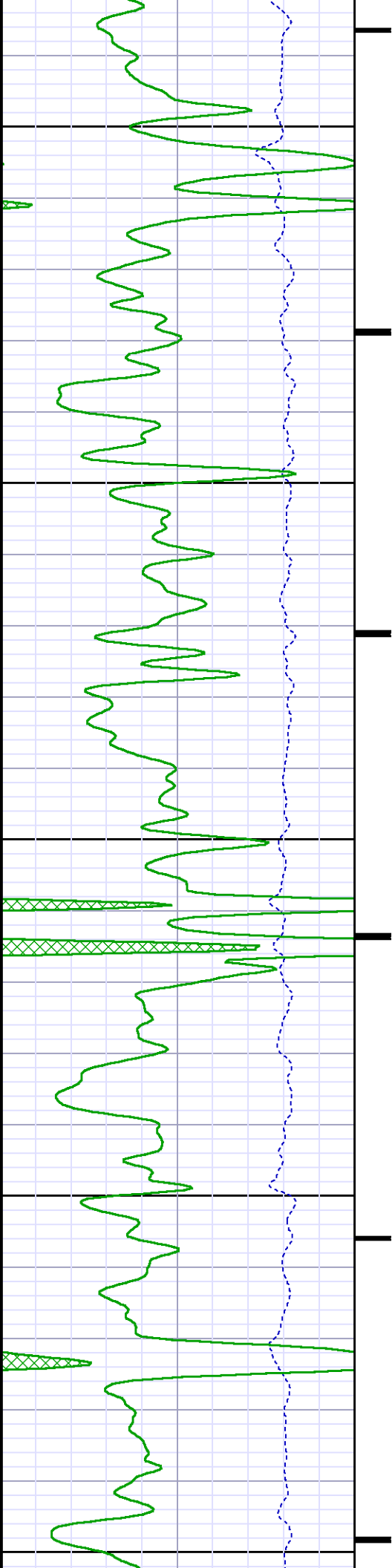




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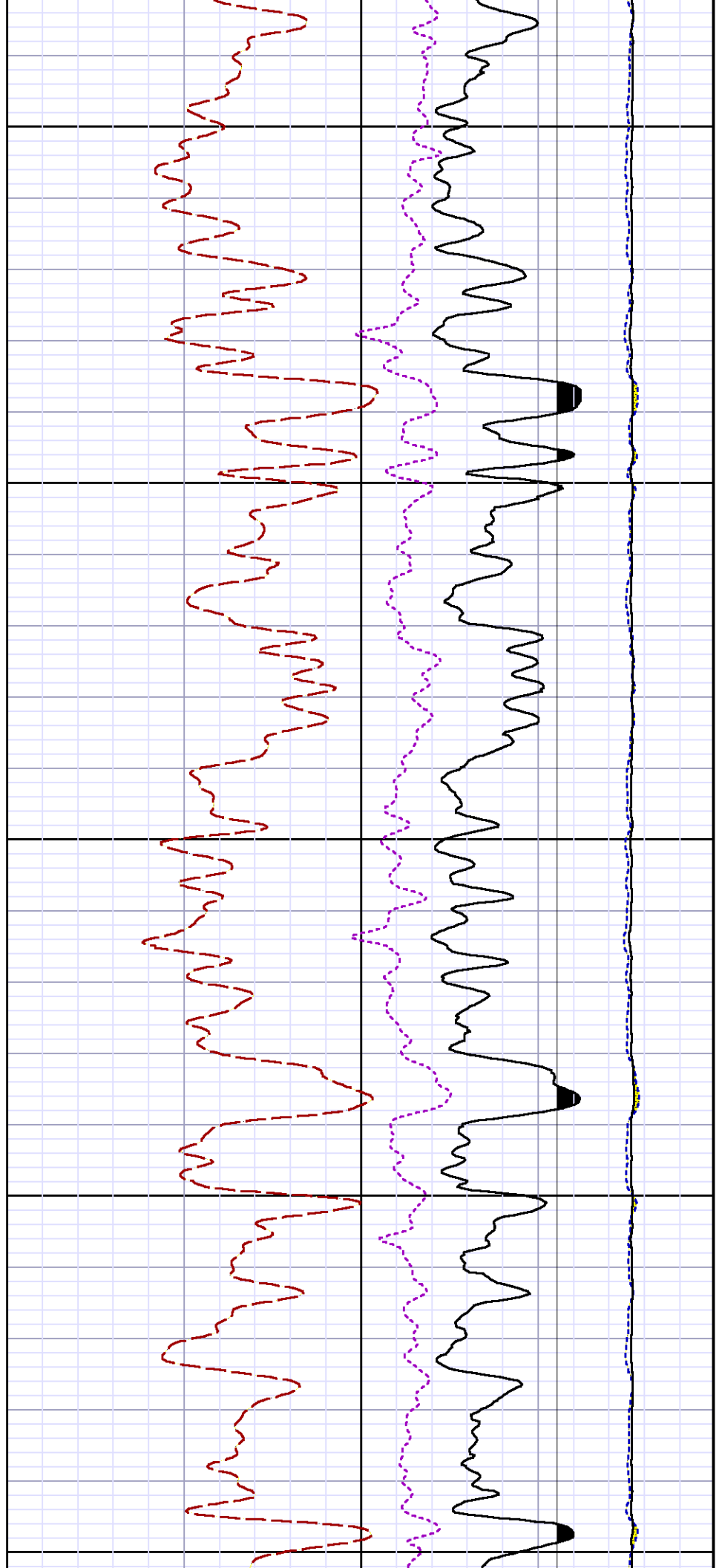
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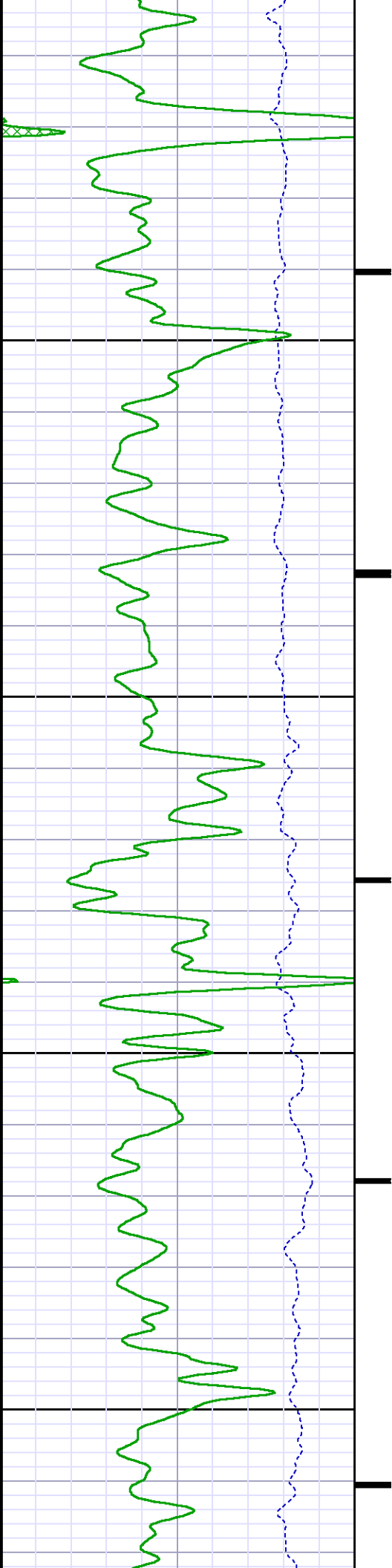




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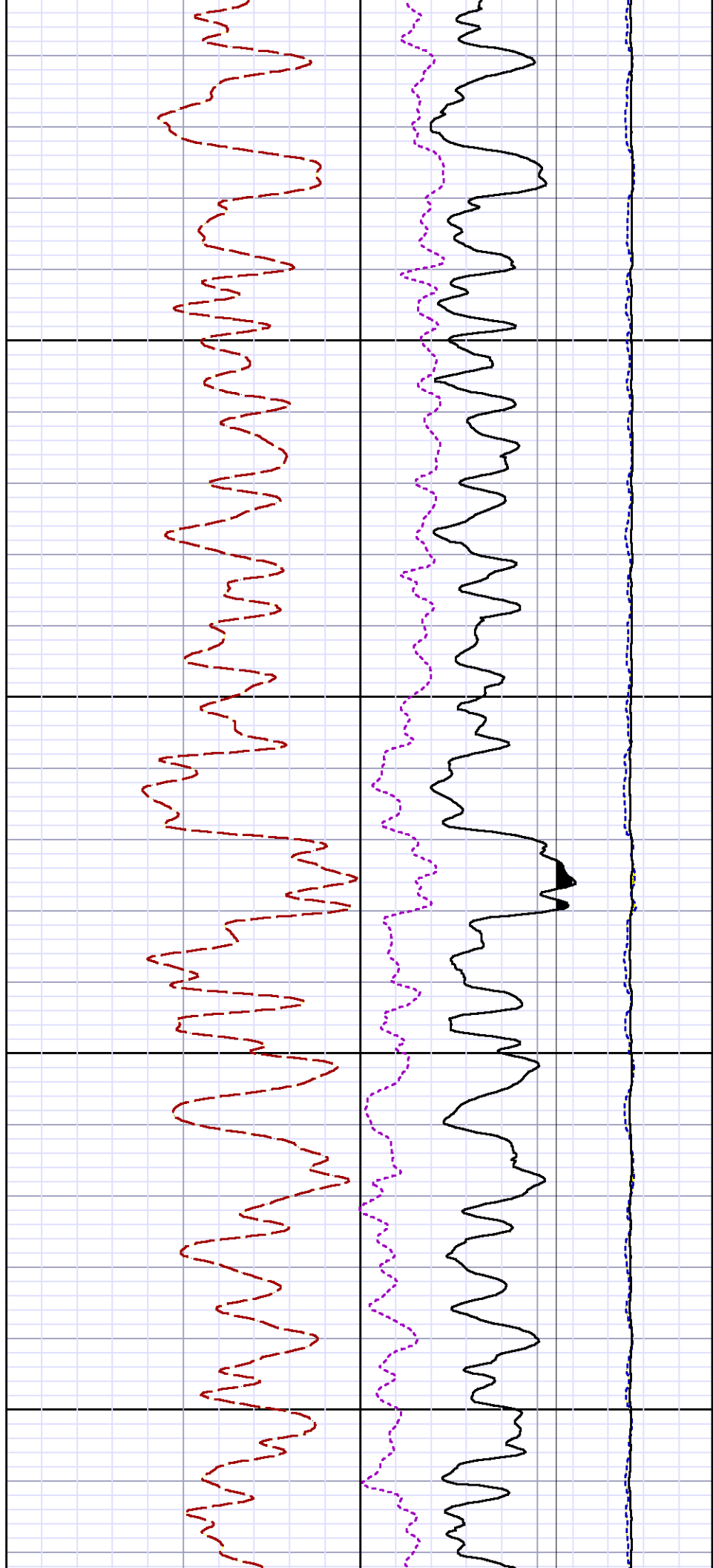
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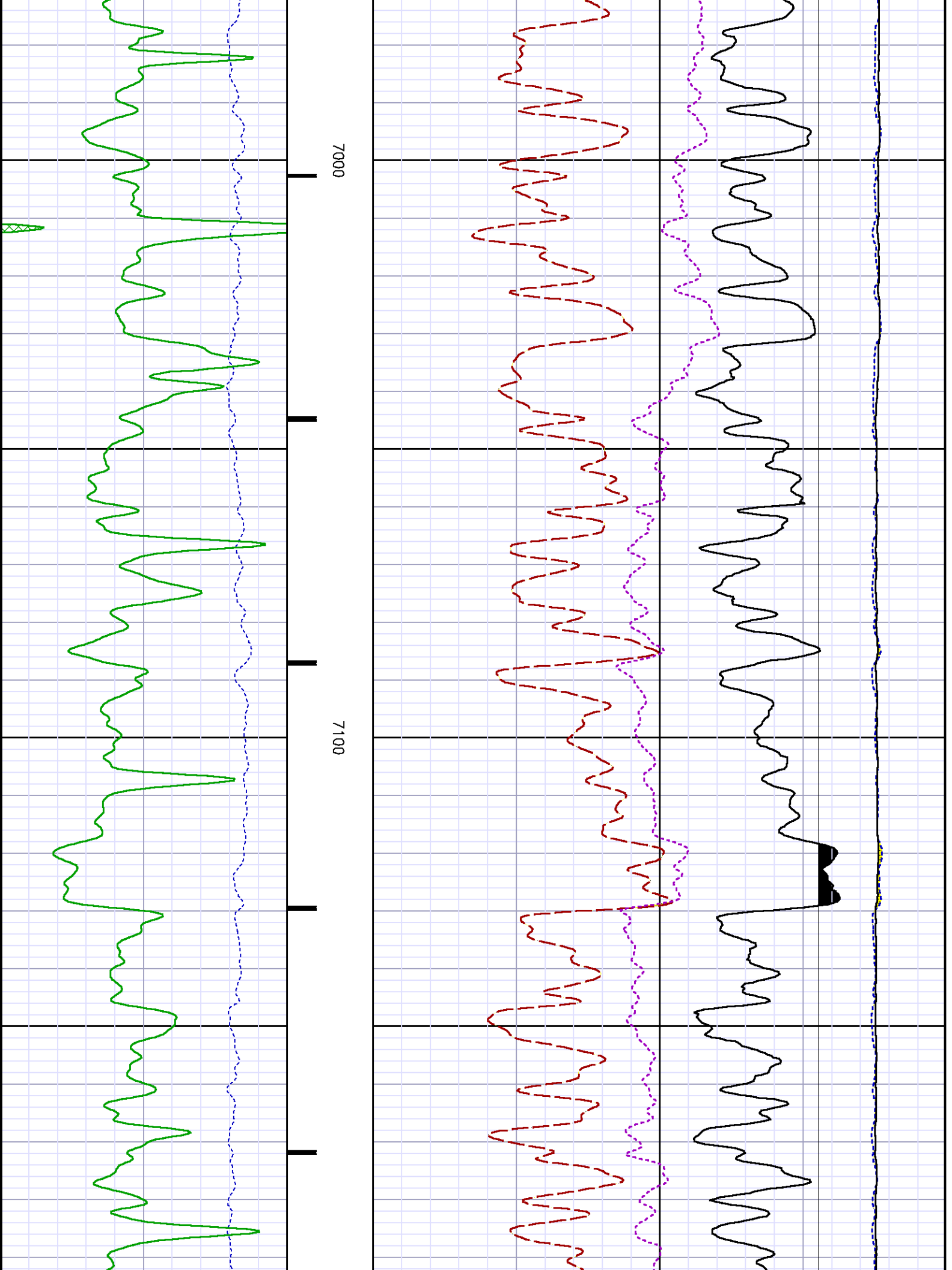


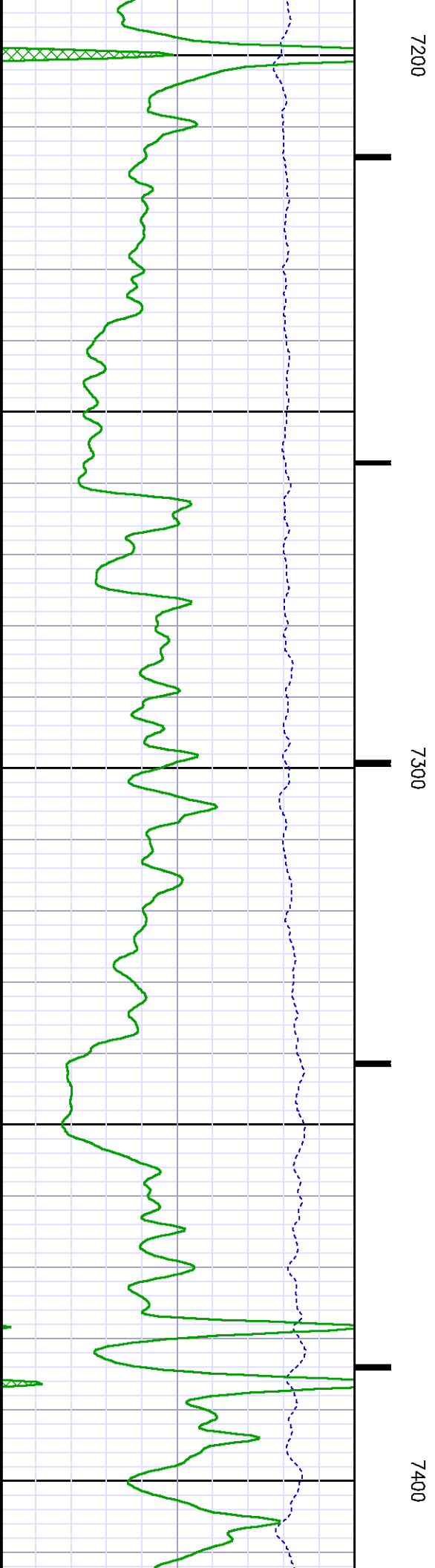
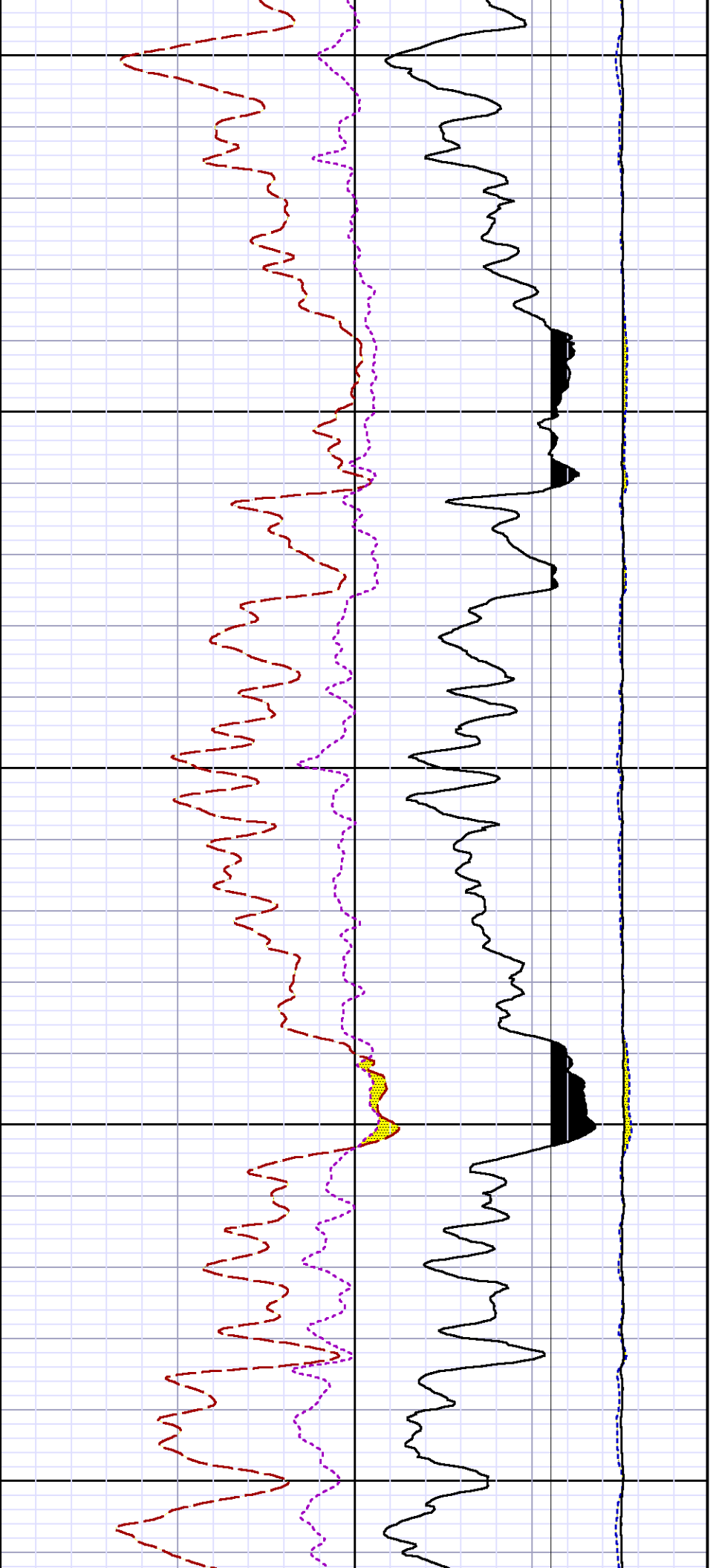


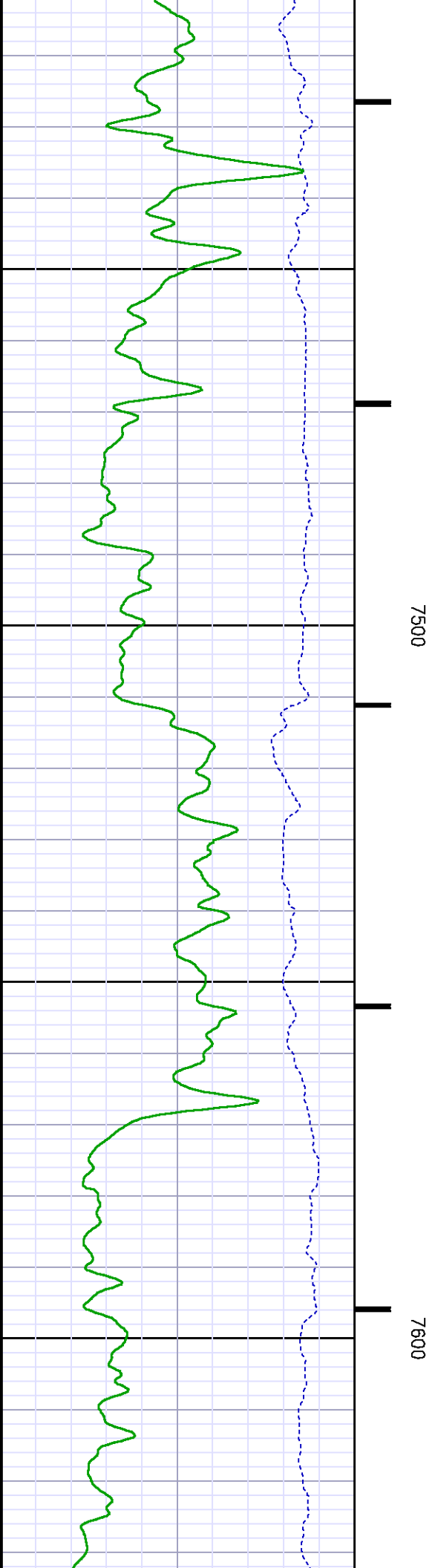
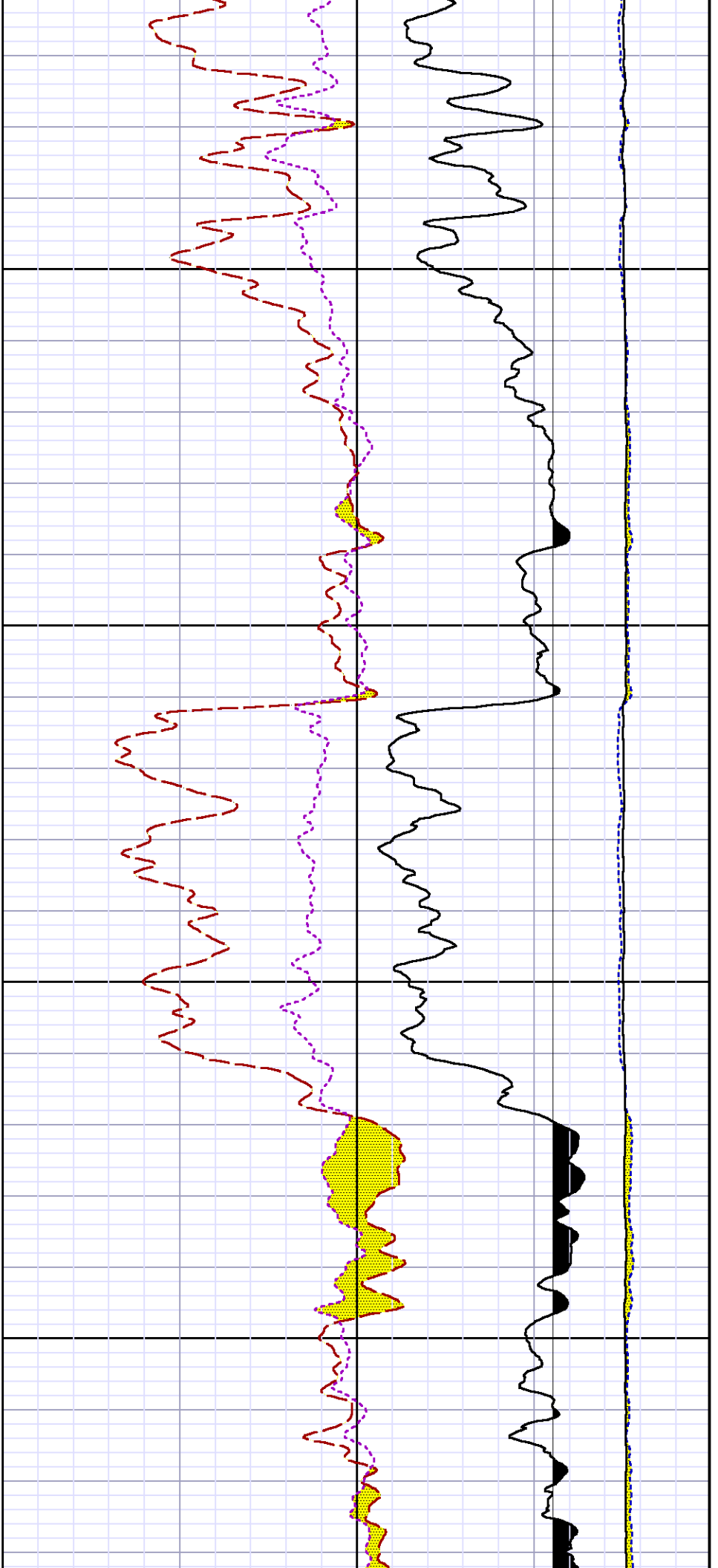
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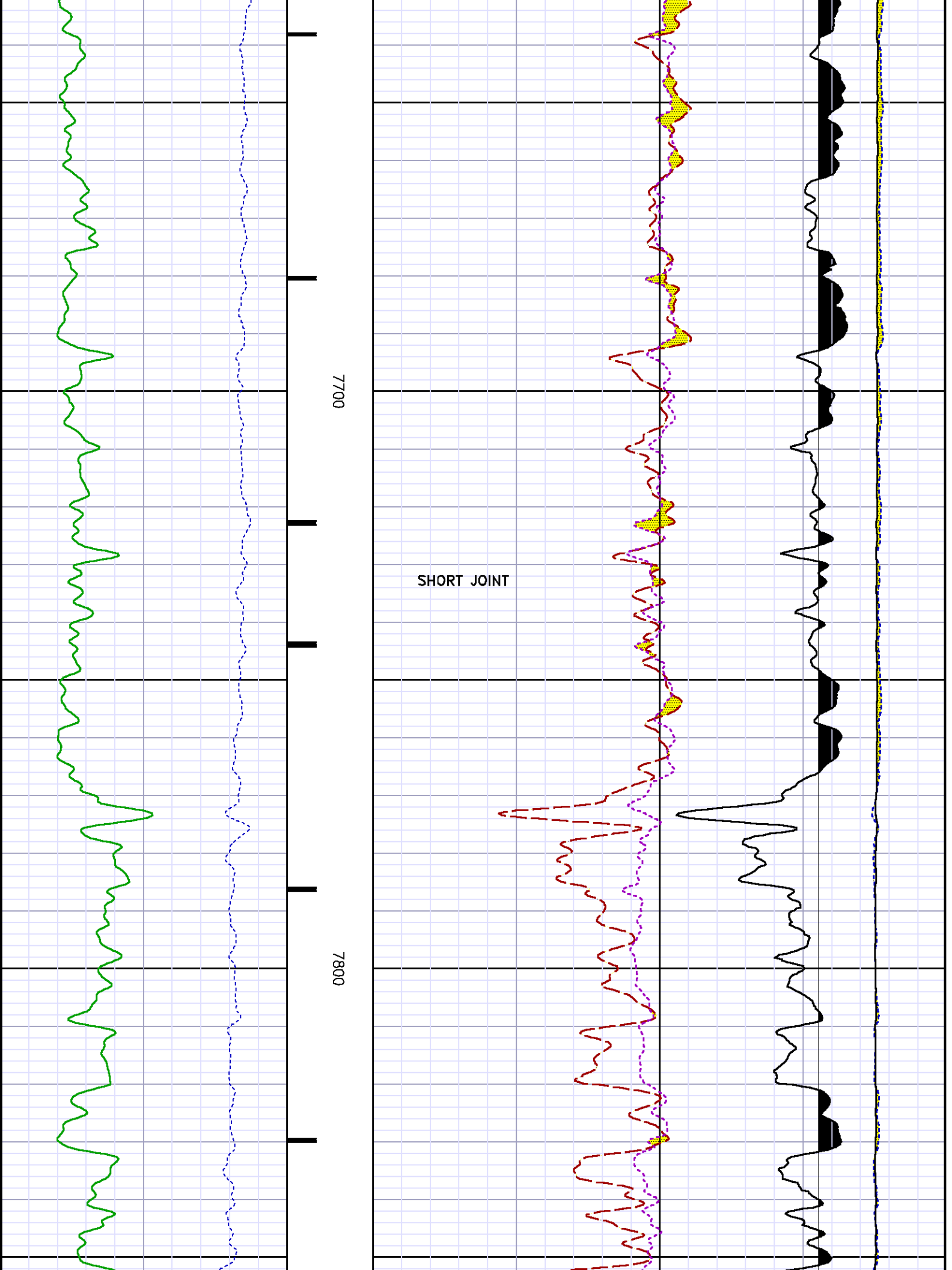
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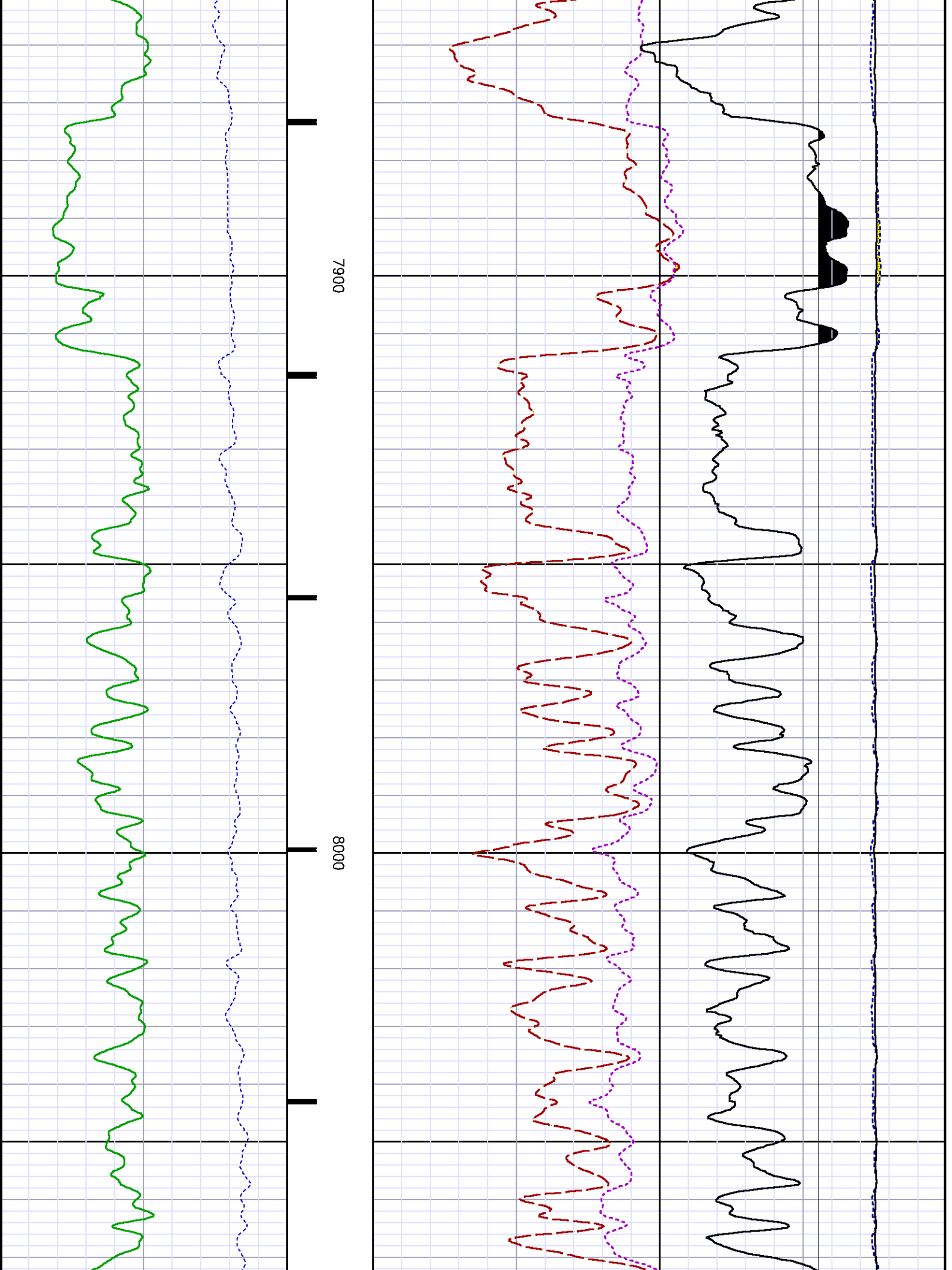


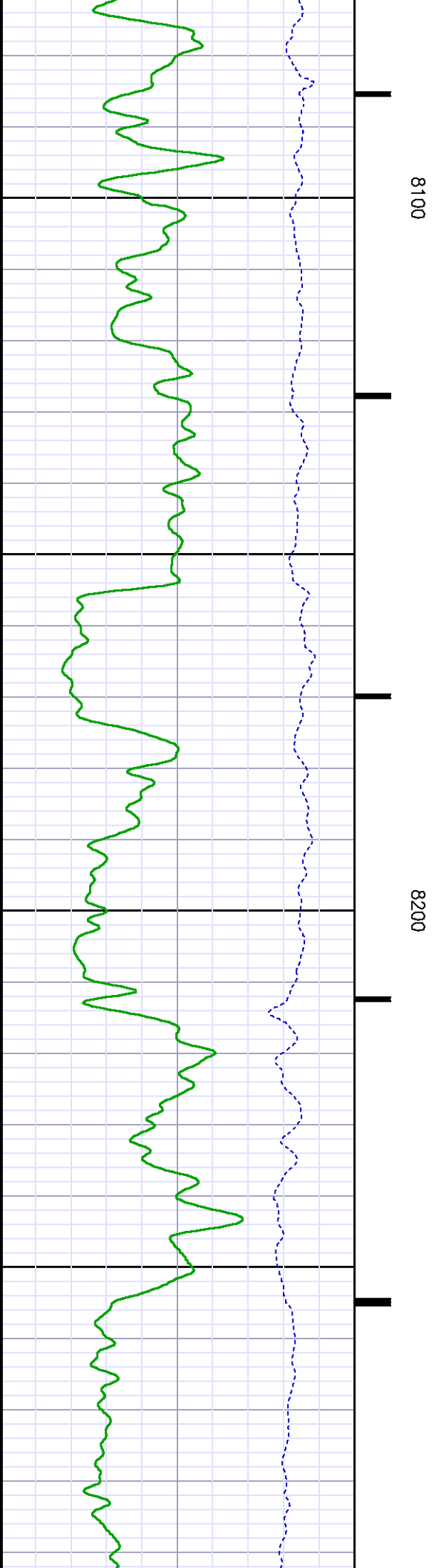
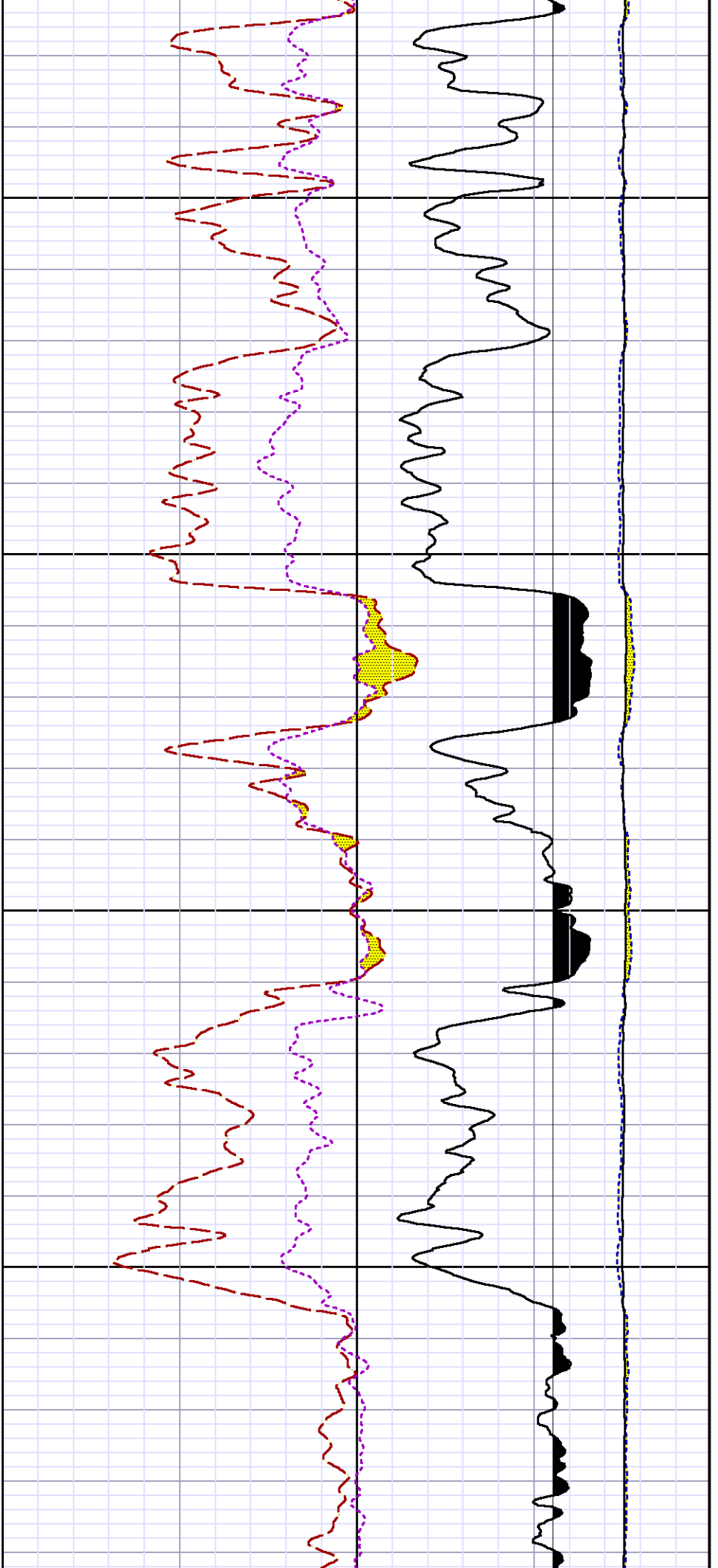


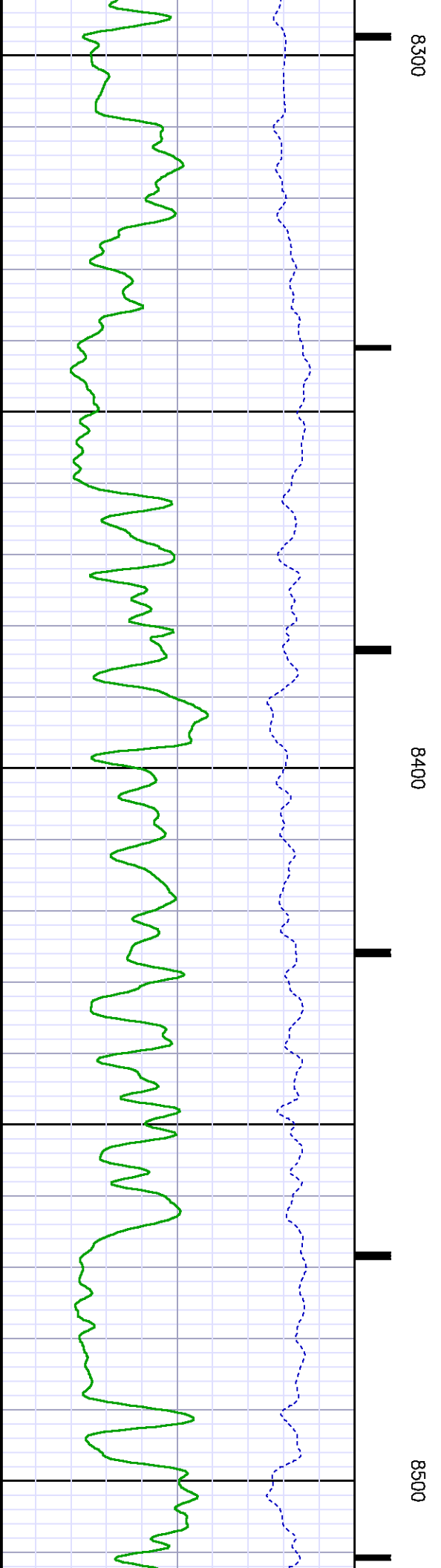
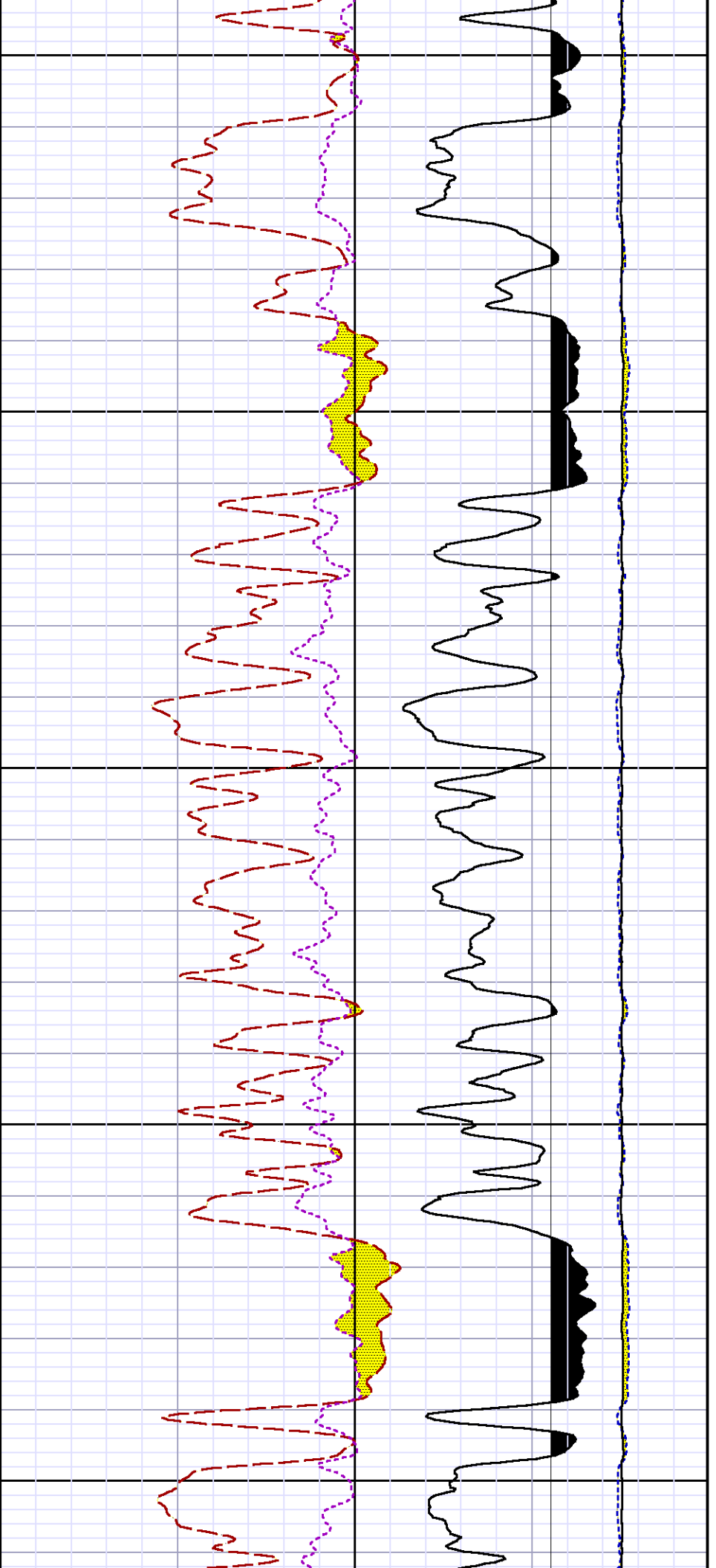


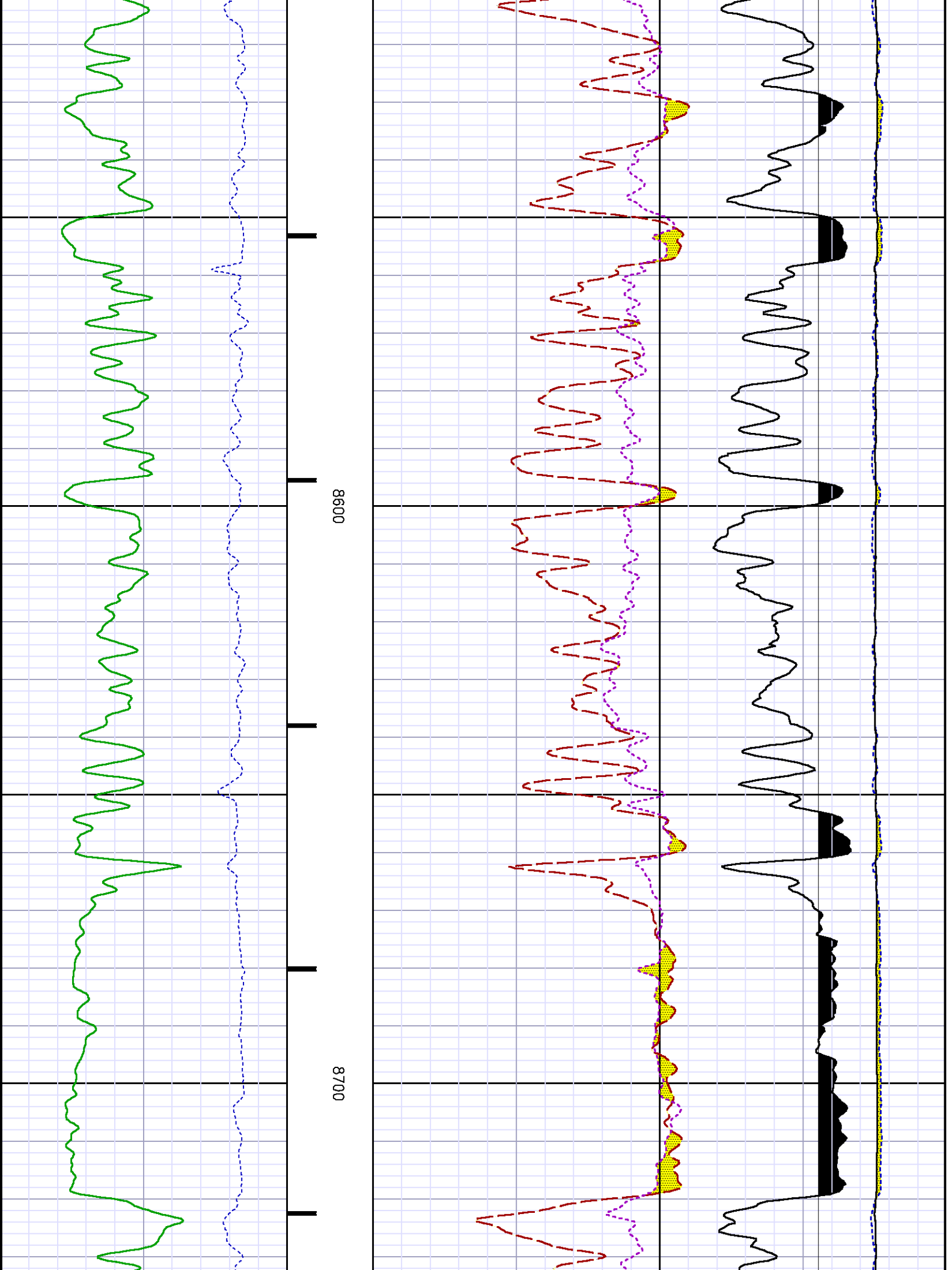


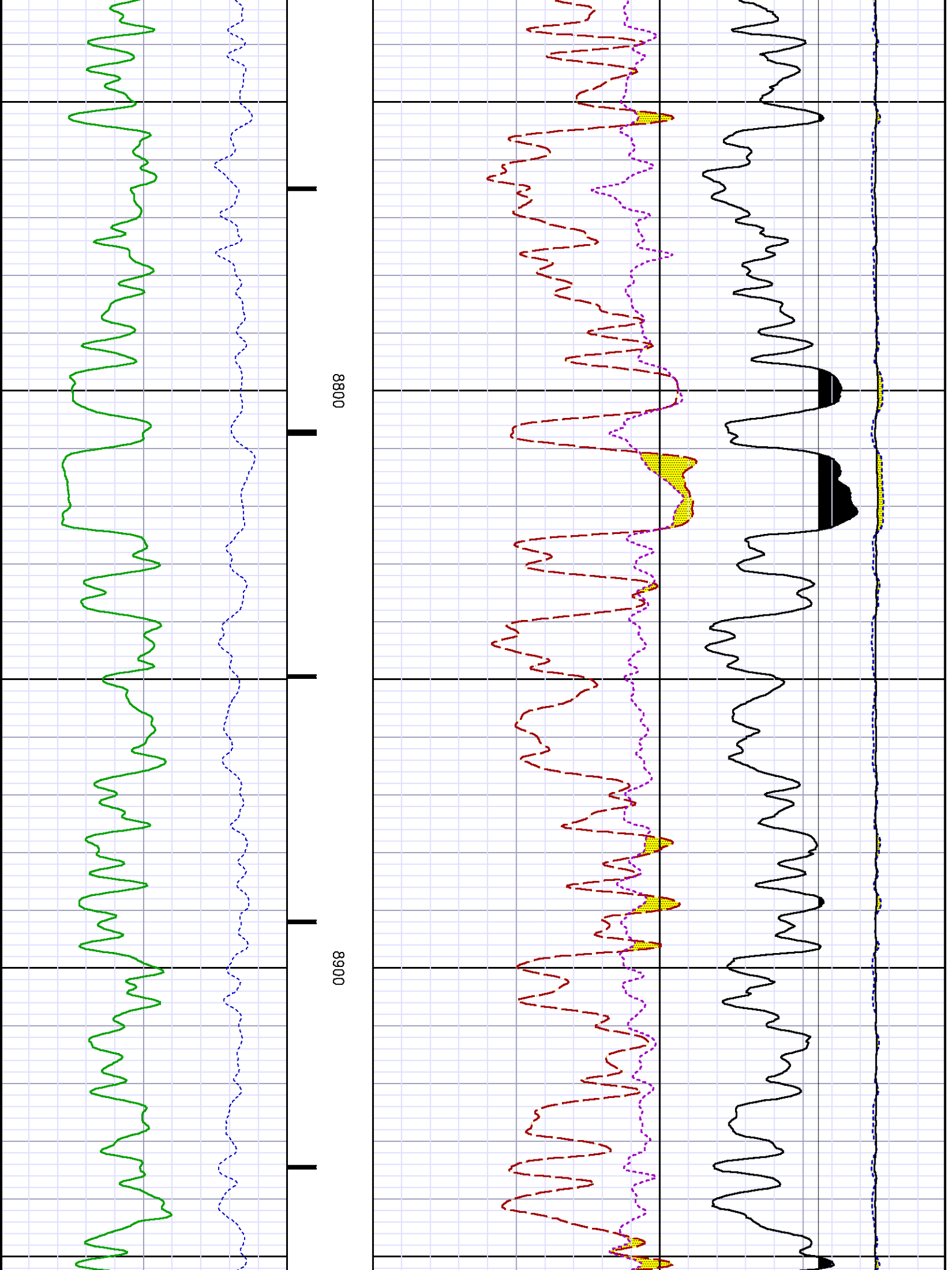


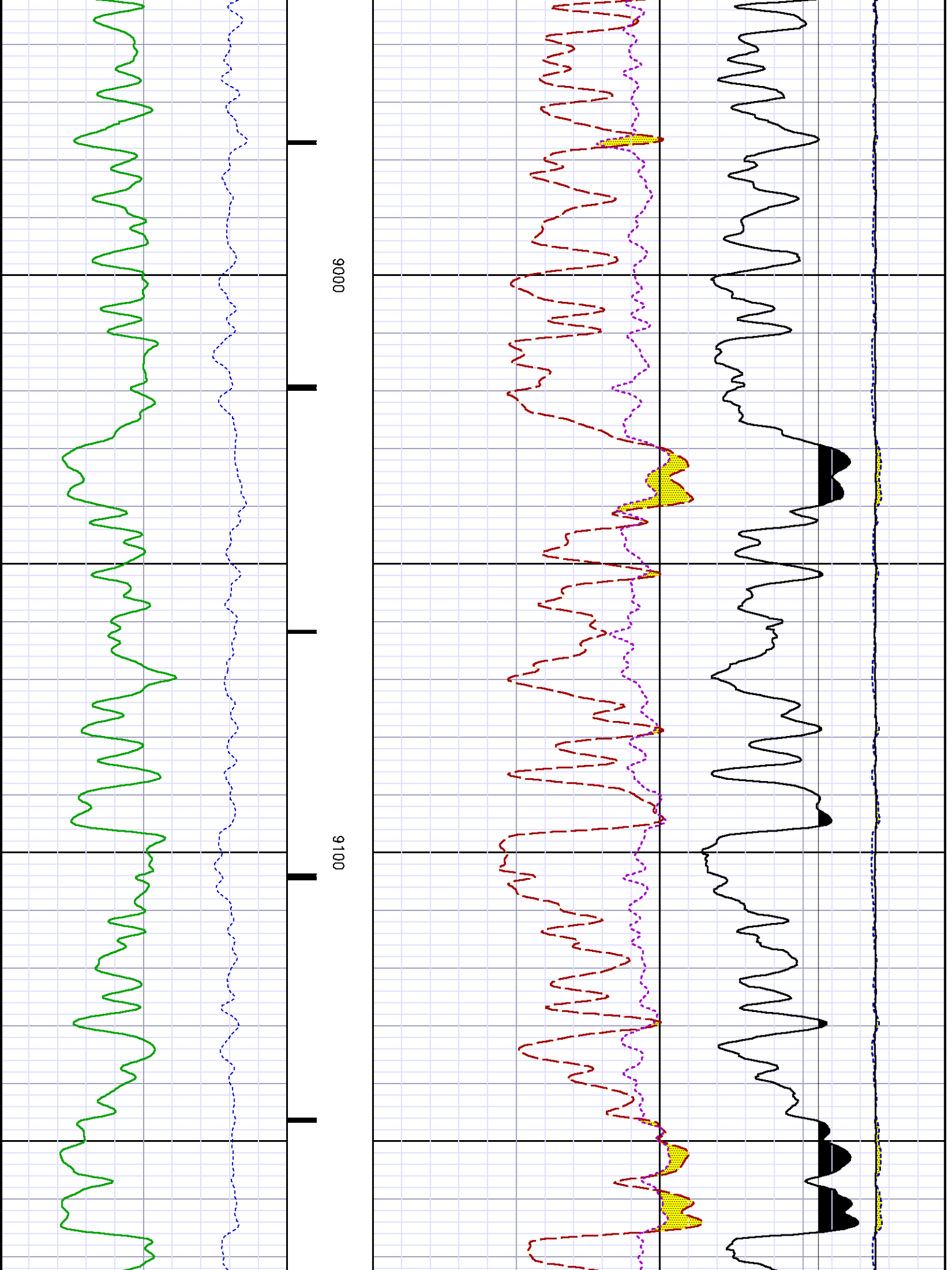


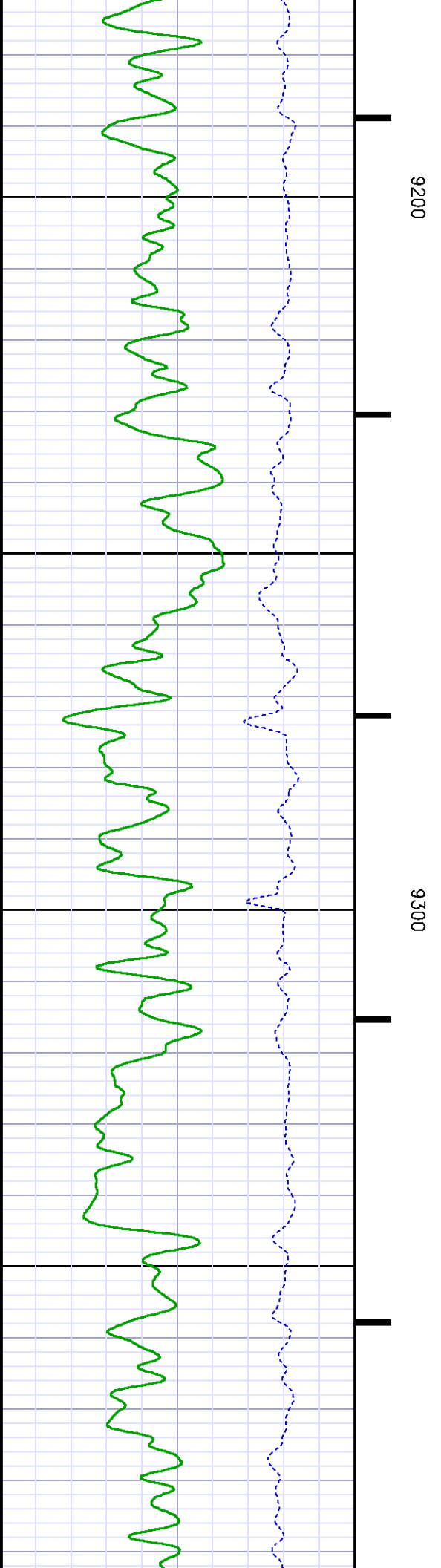
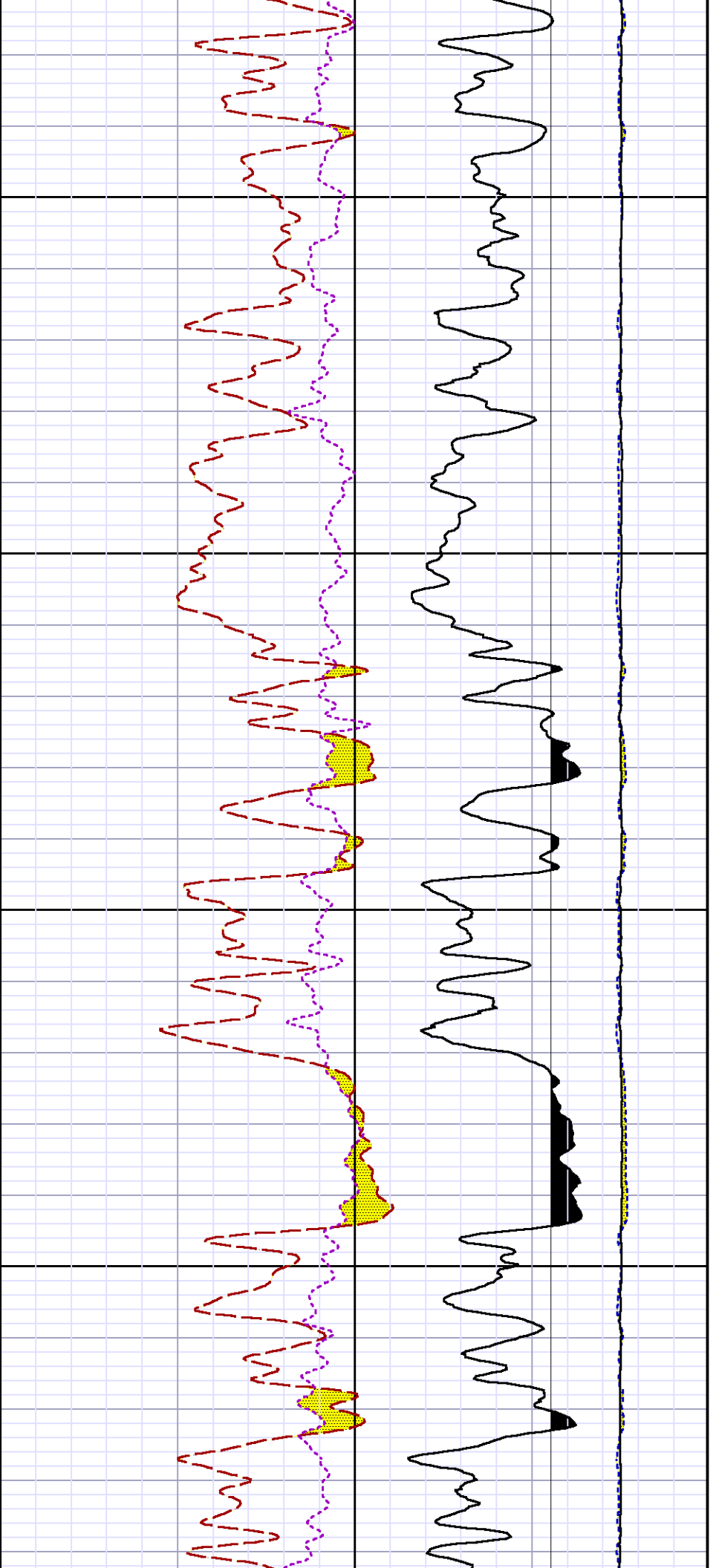


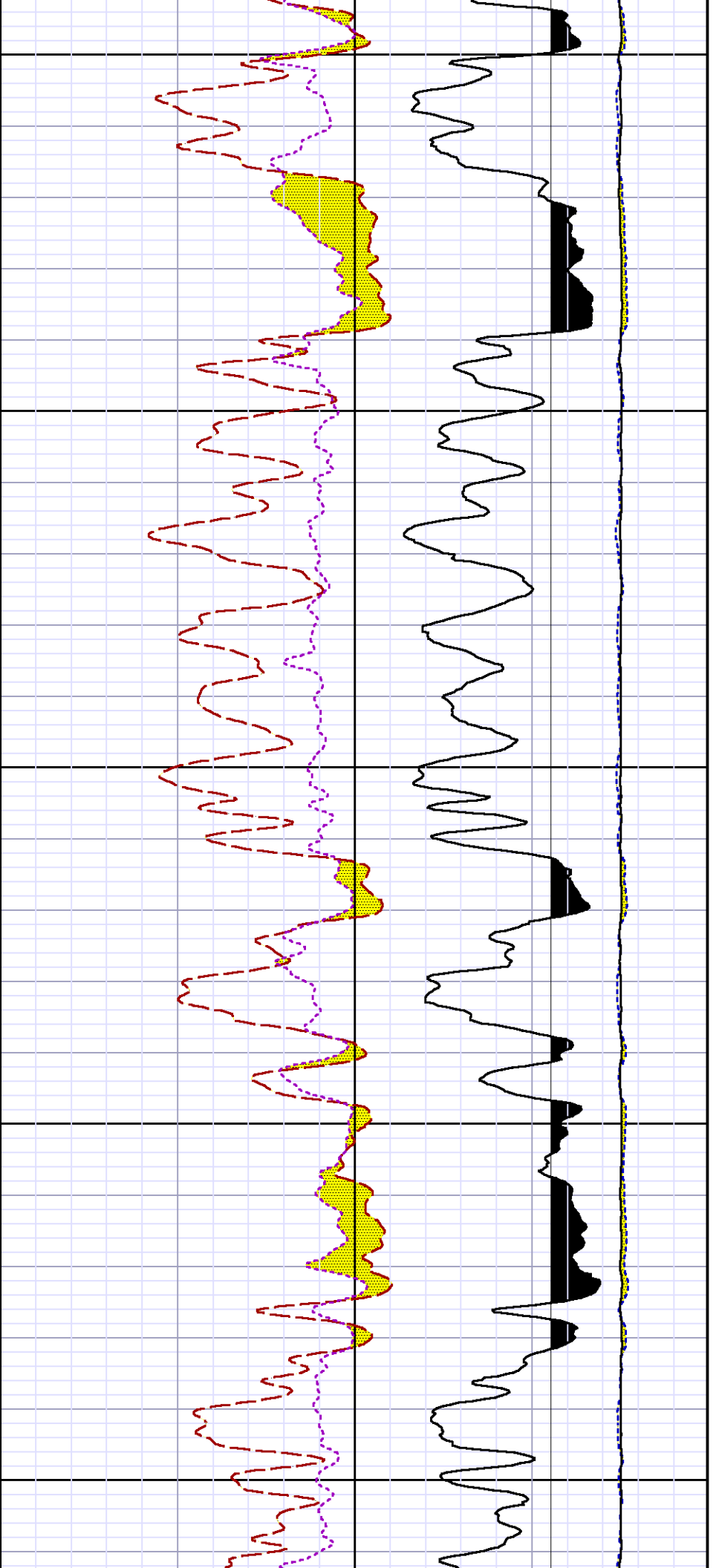






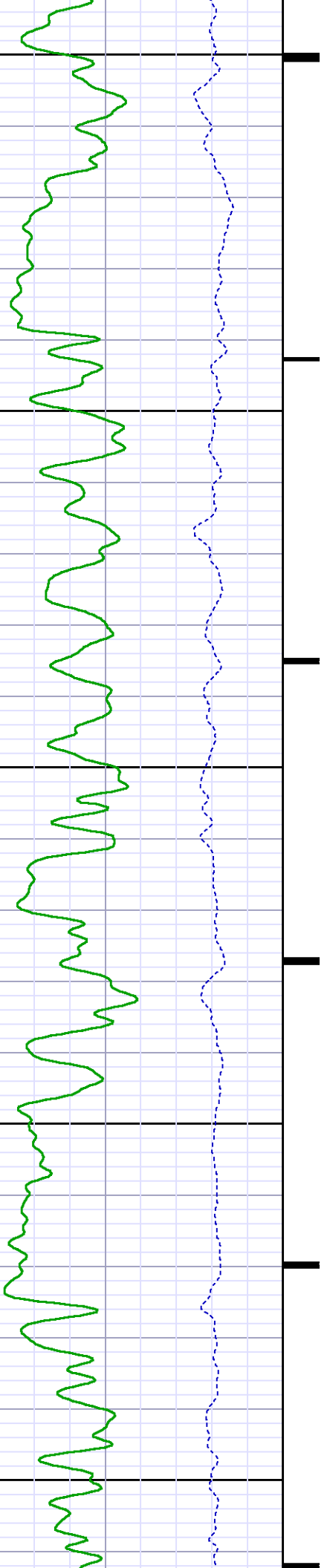


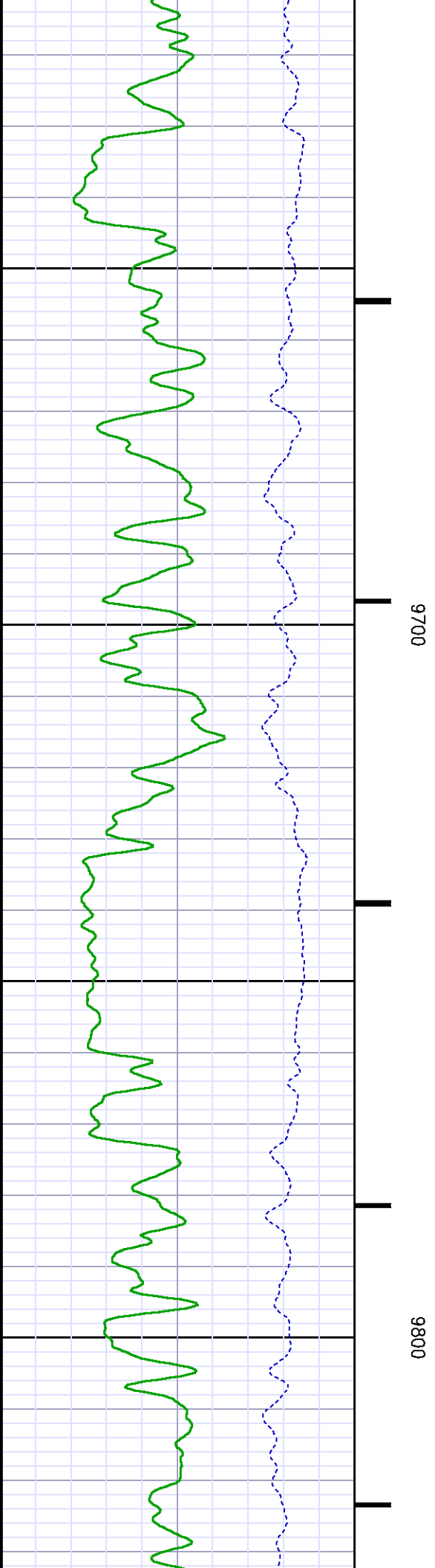
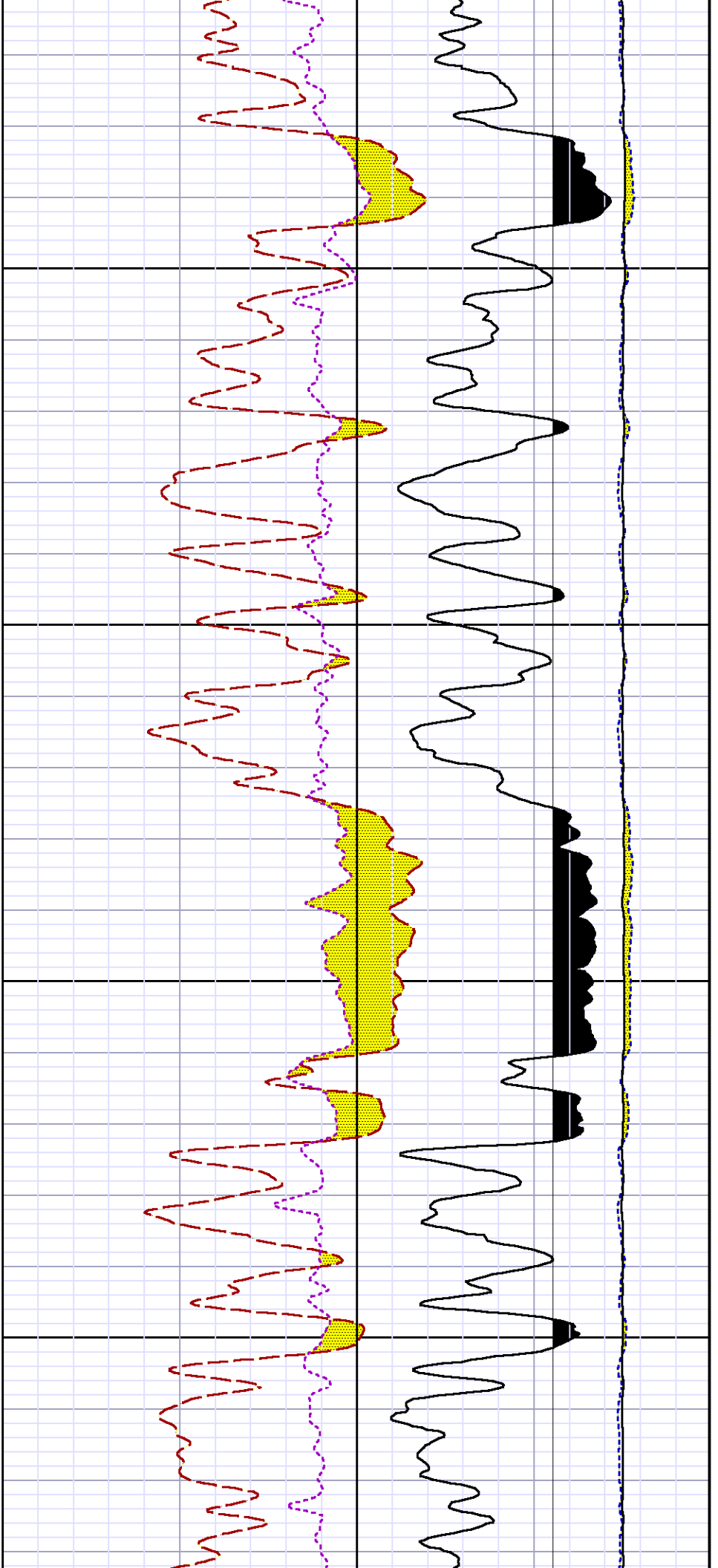


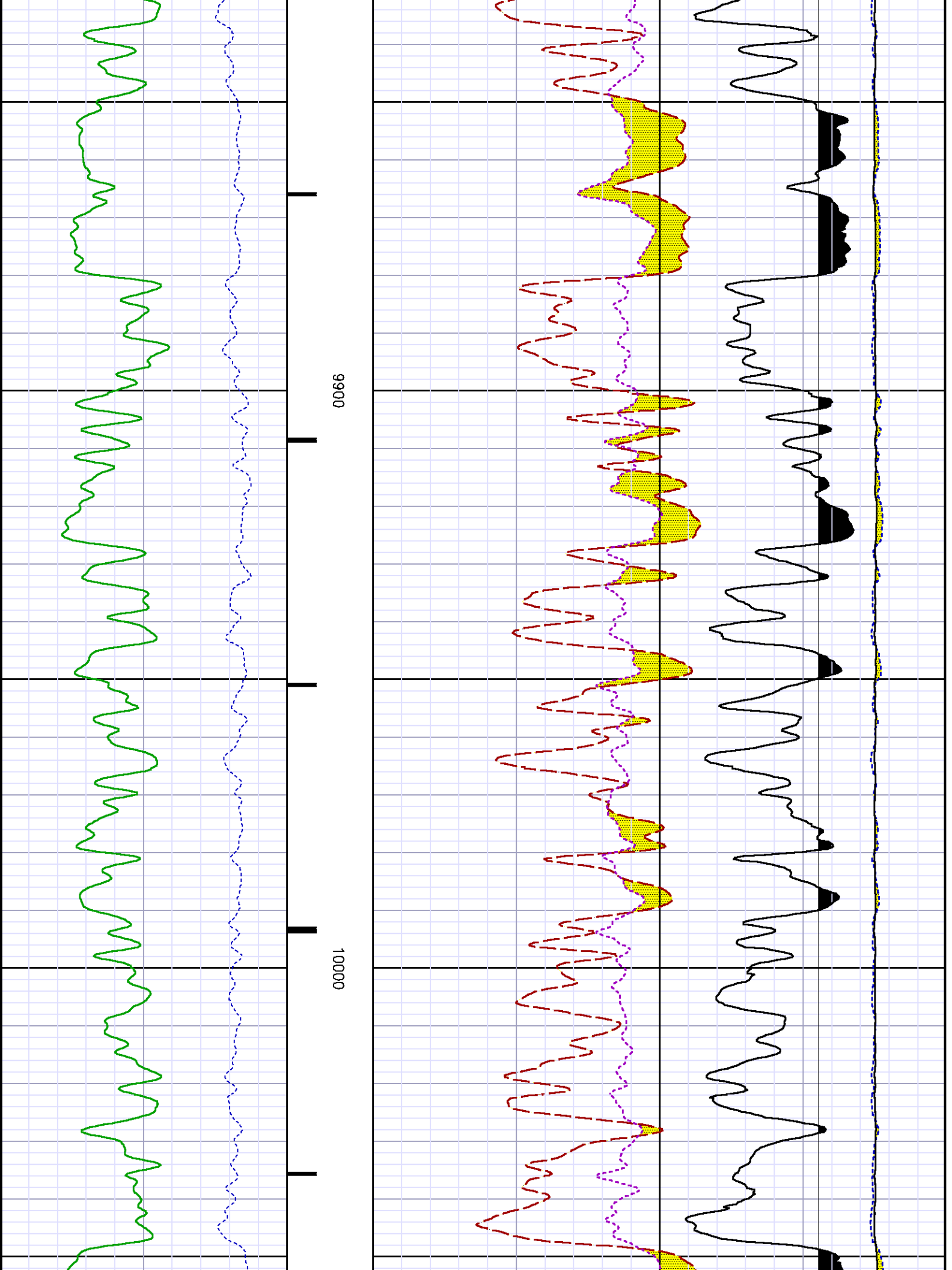


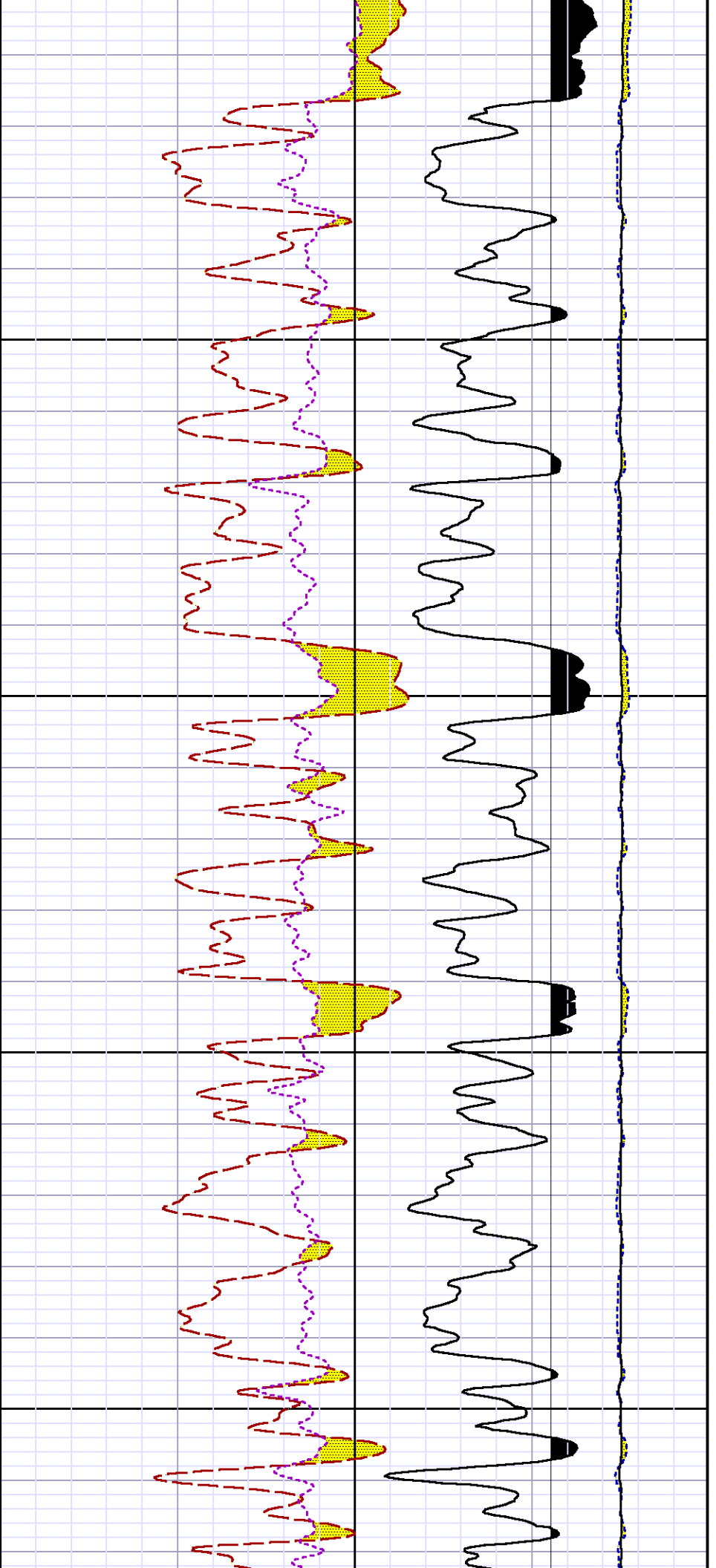
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9600



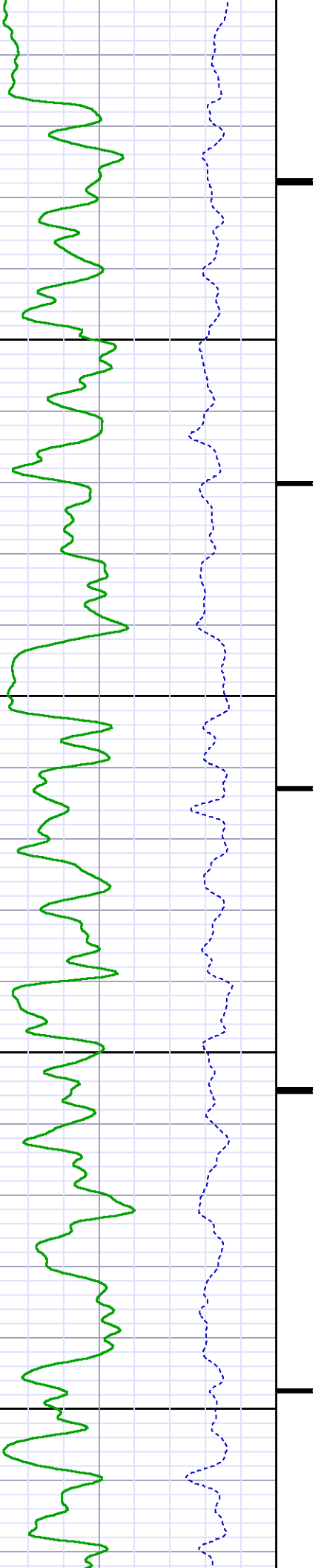


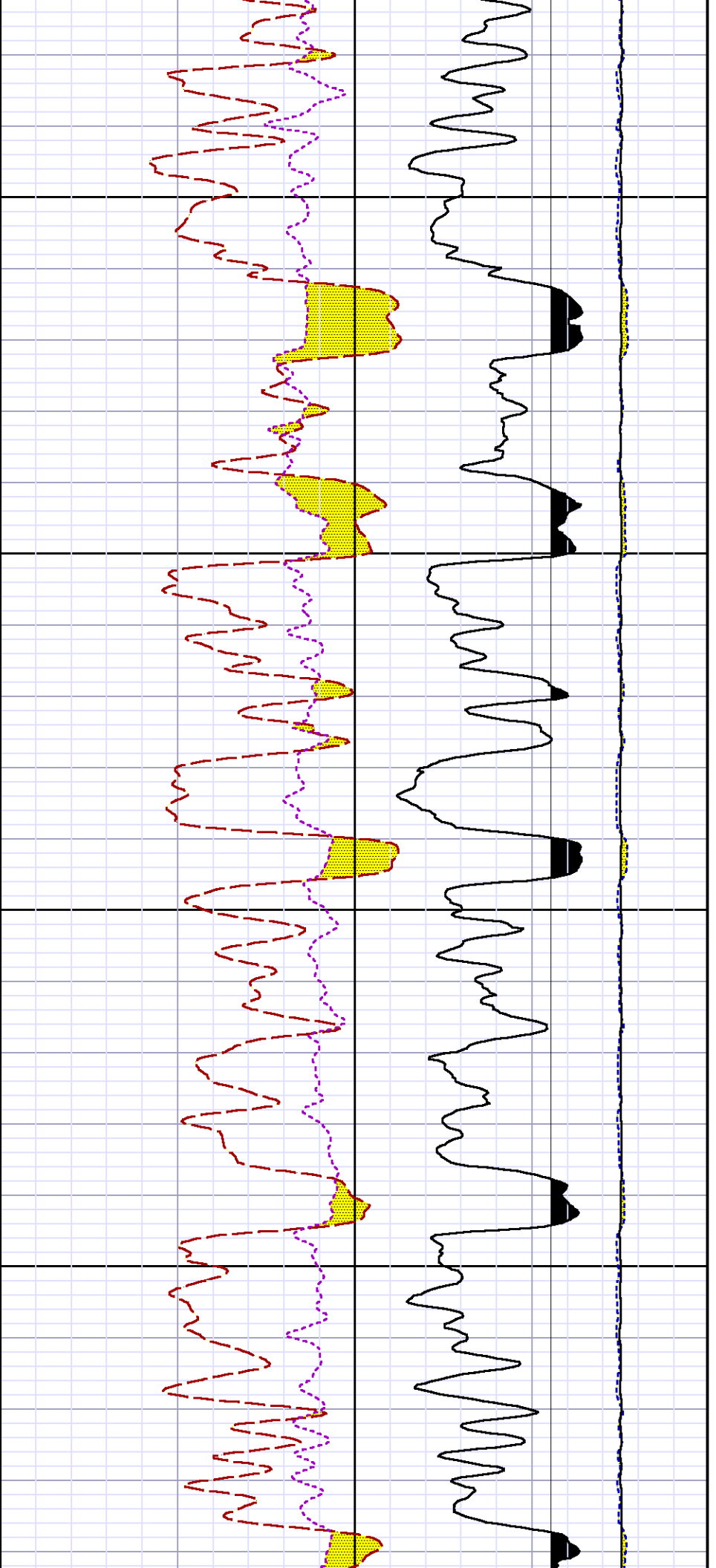




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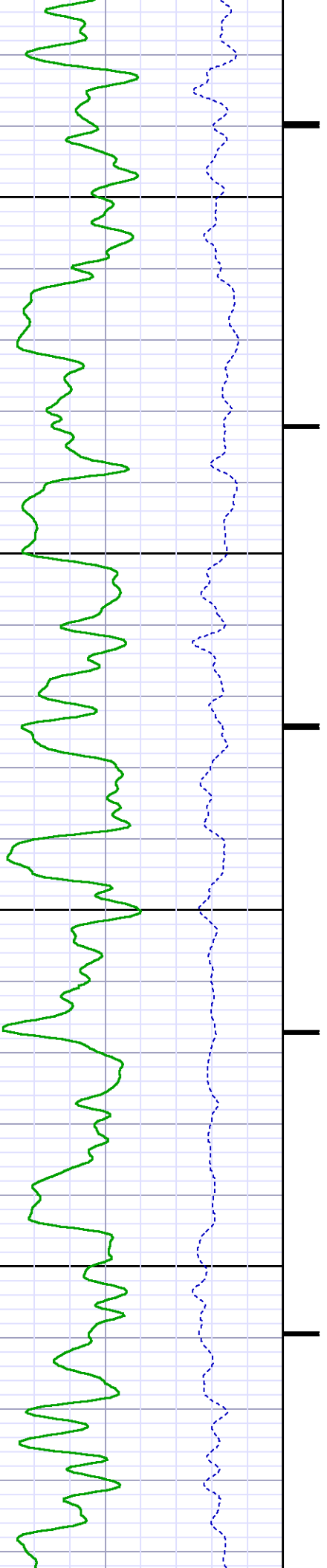
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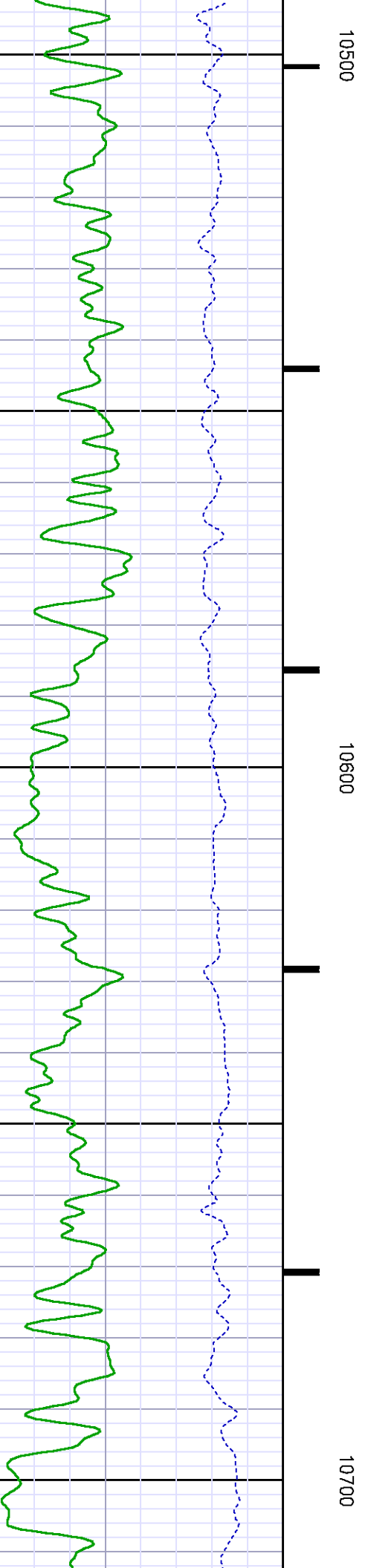
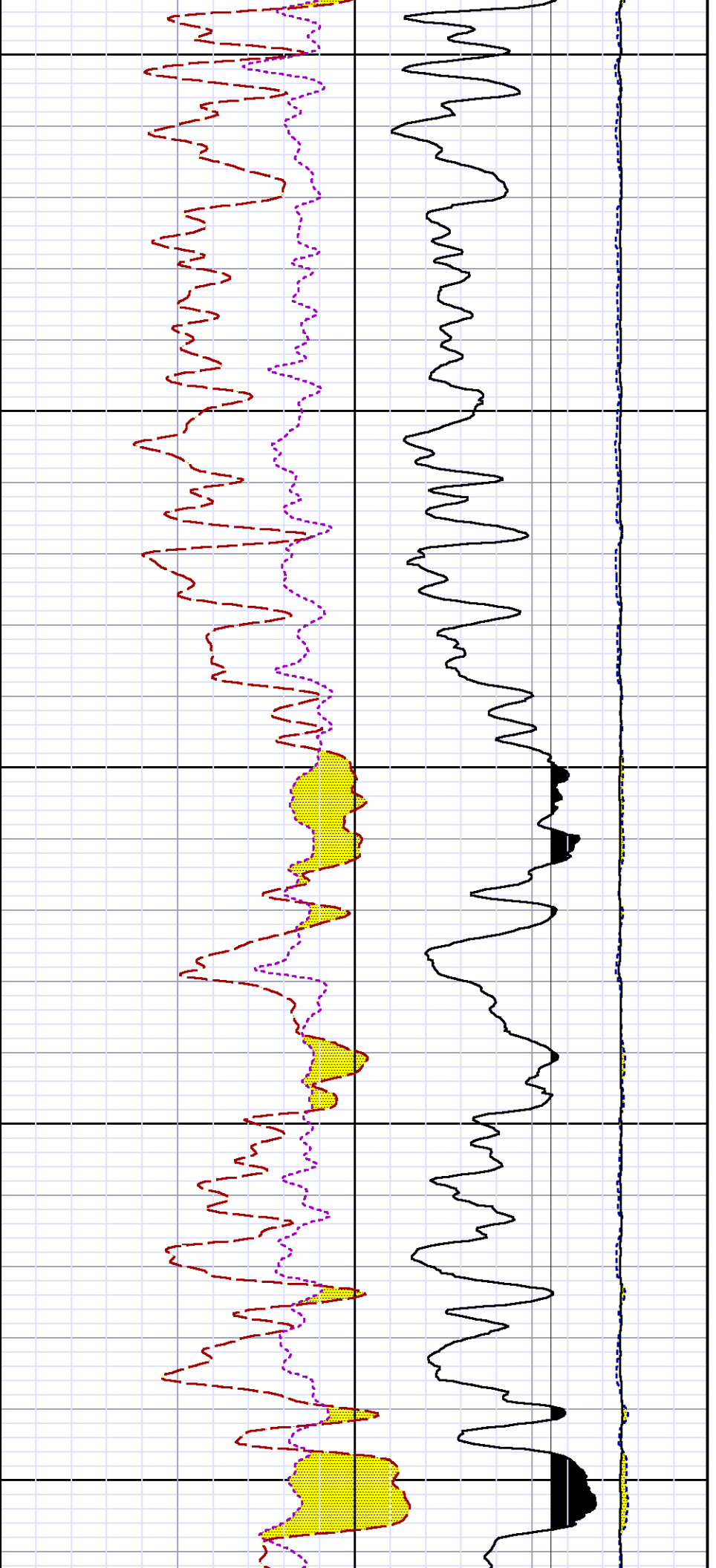


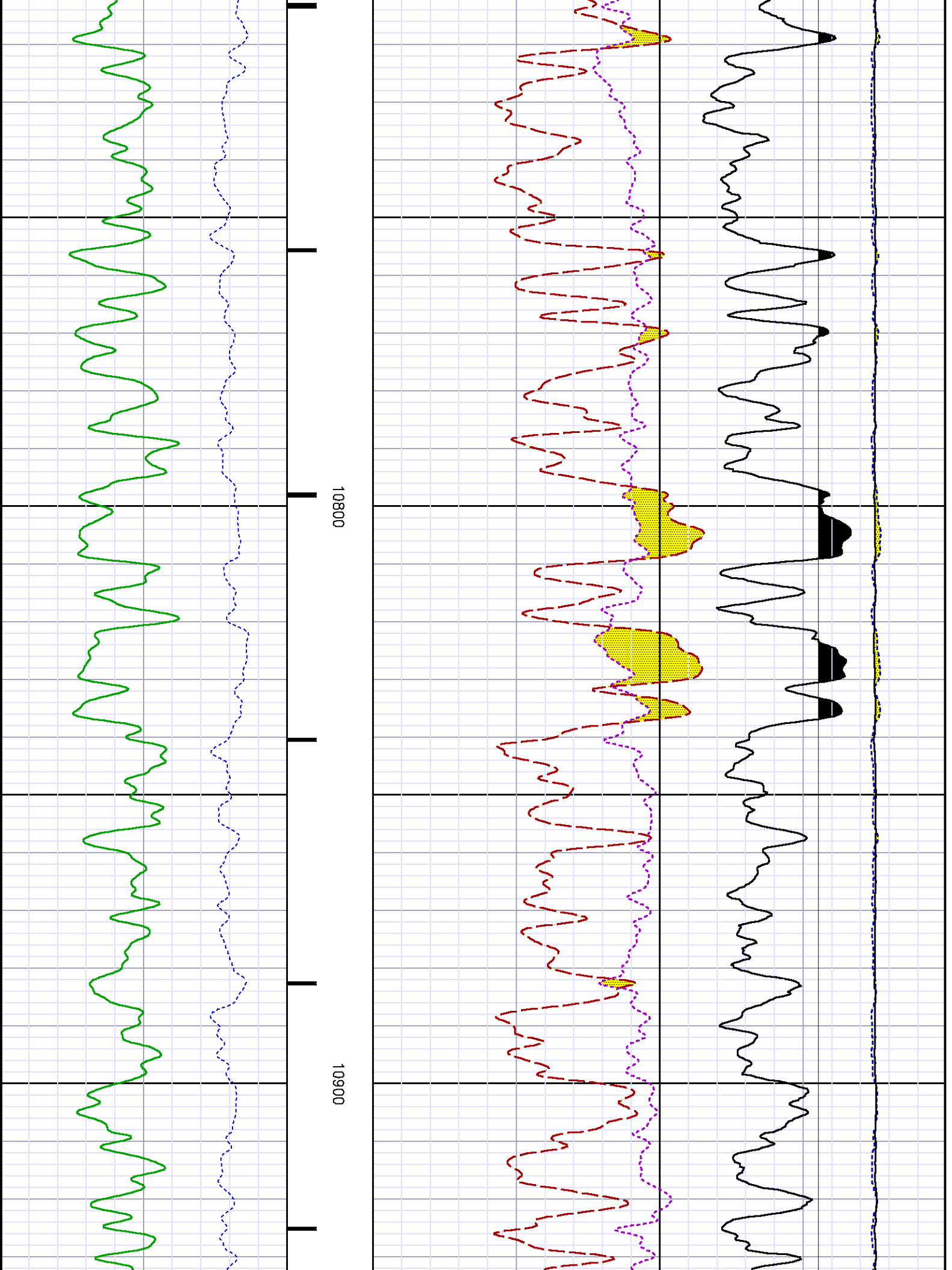


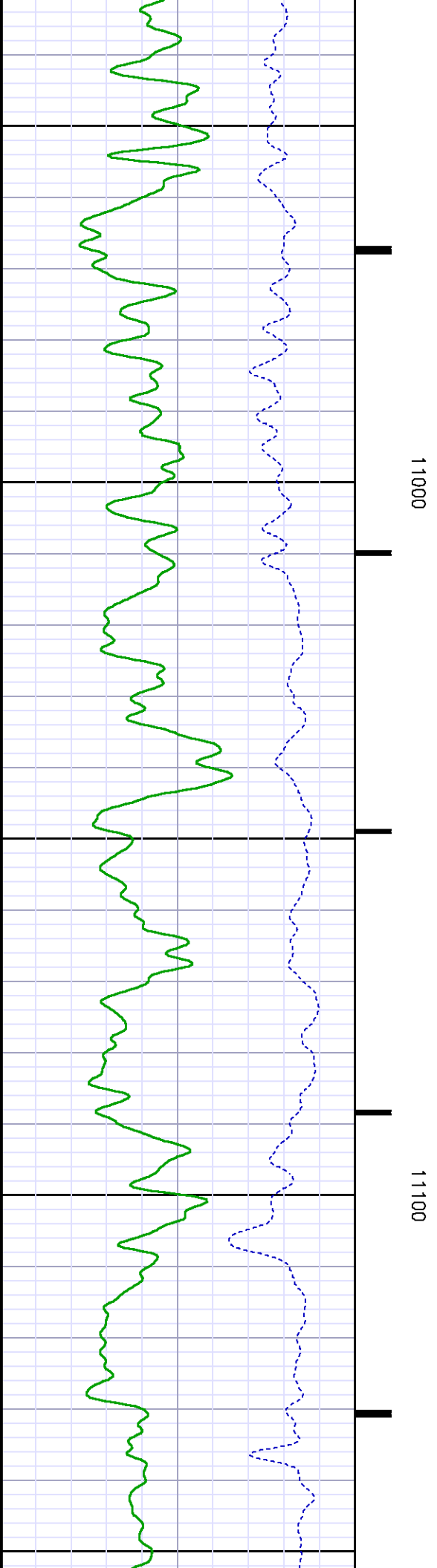
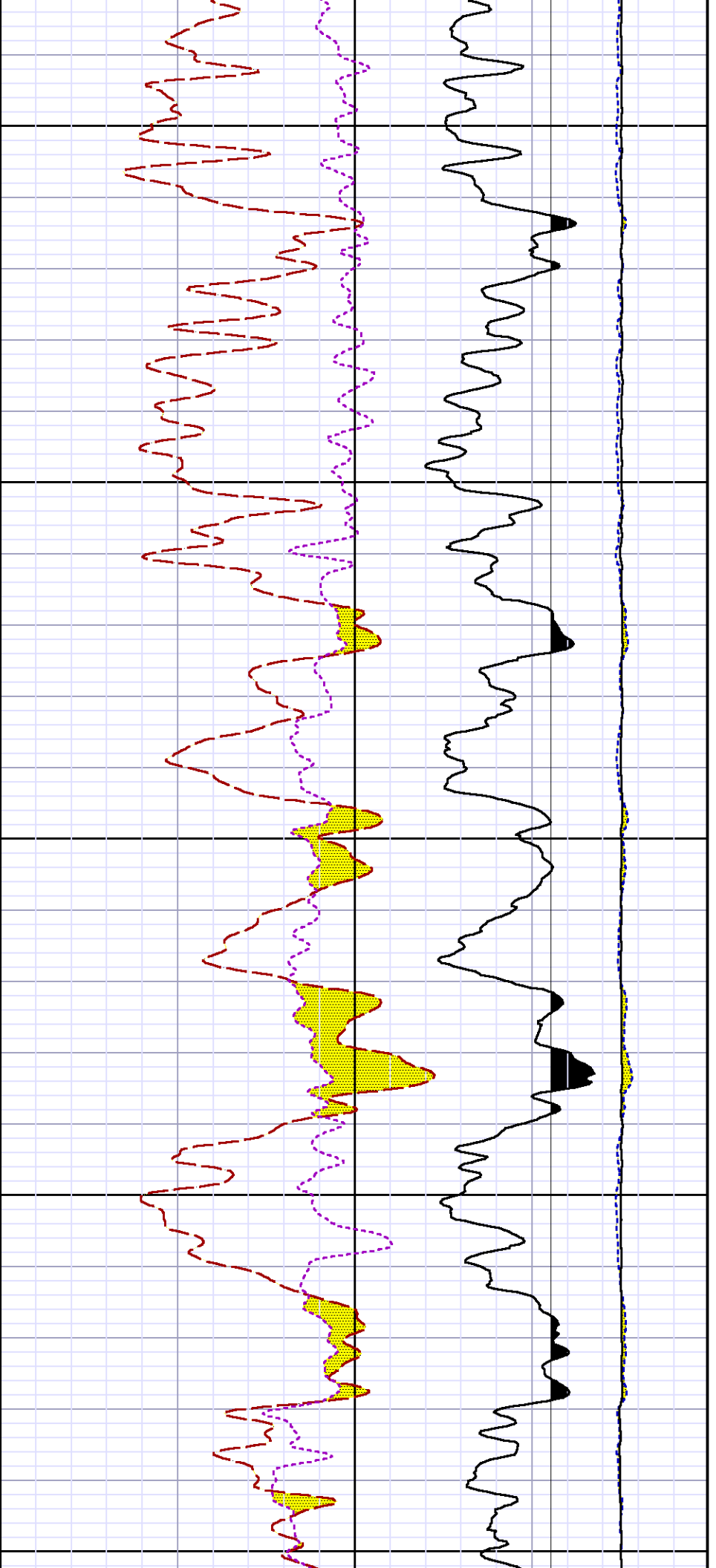
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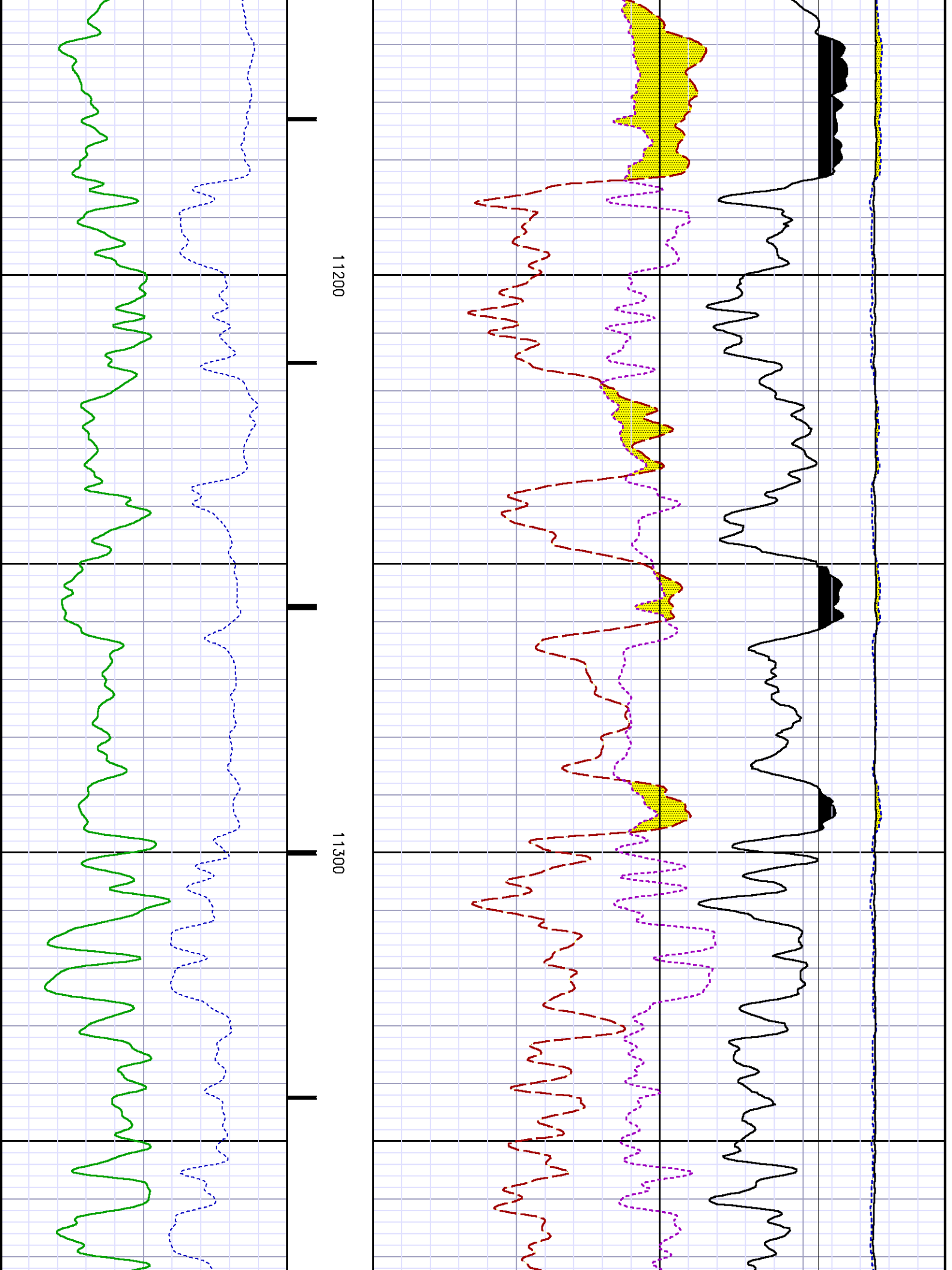
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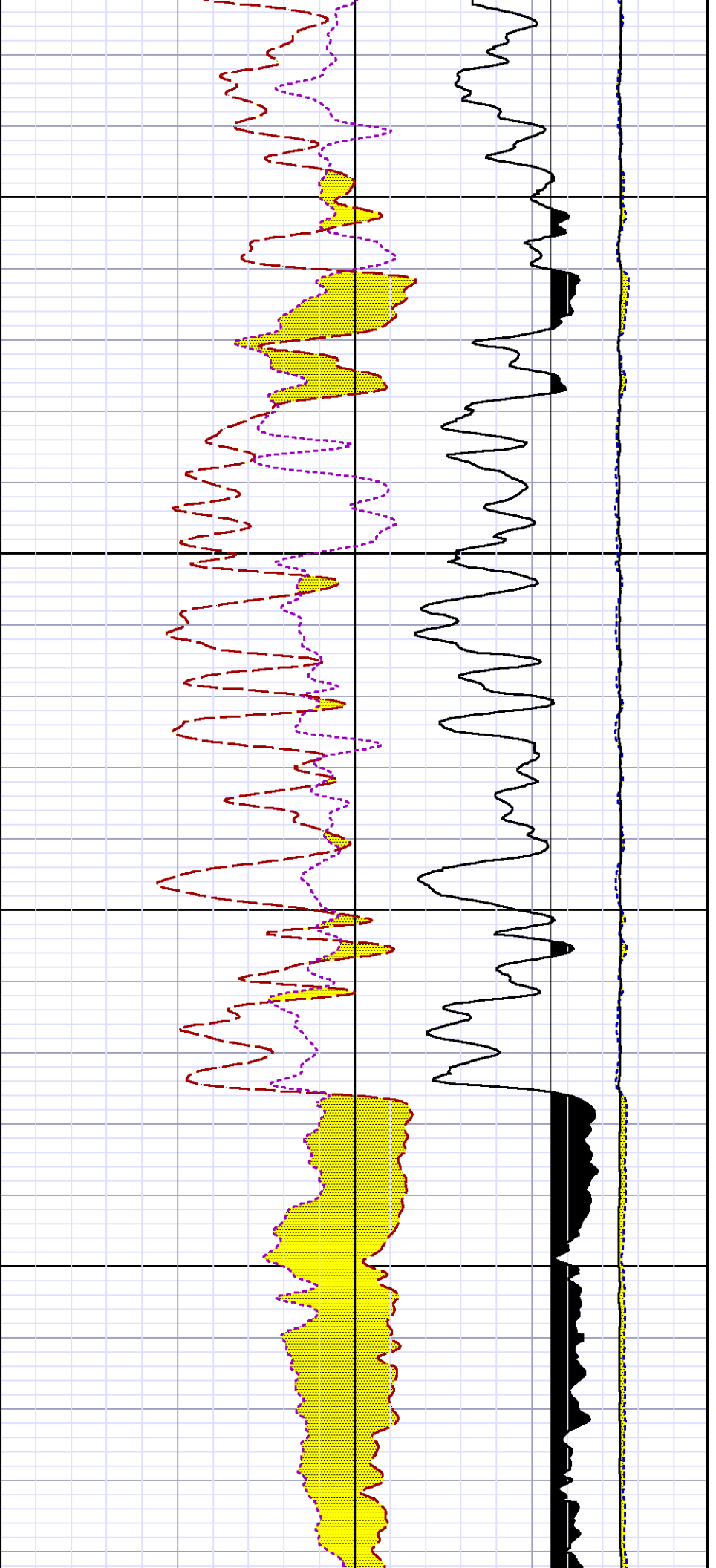






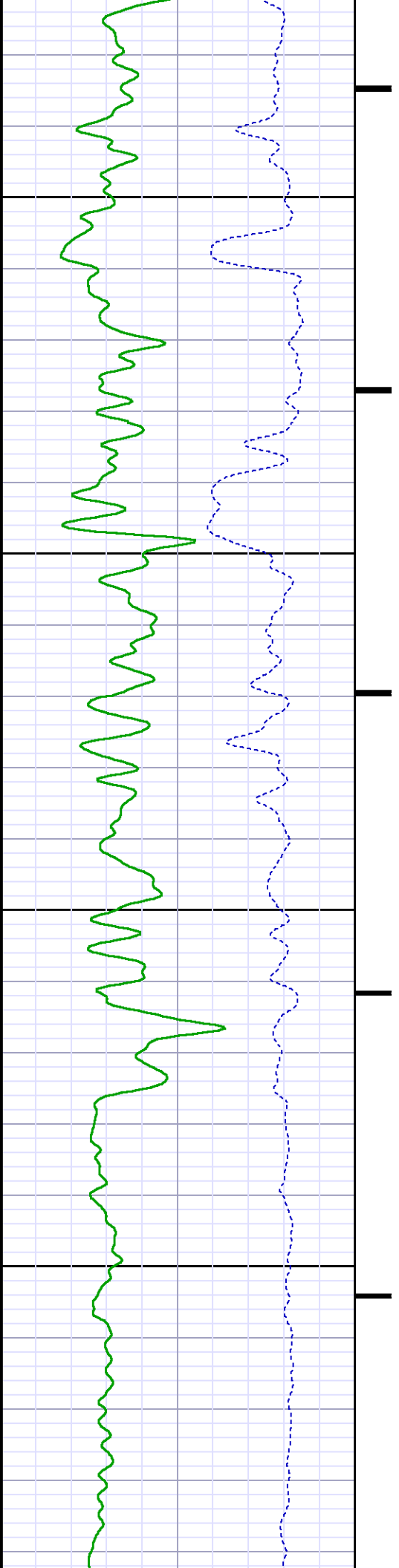


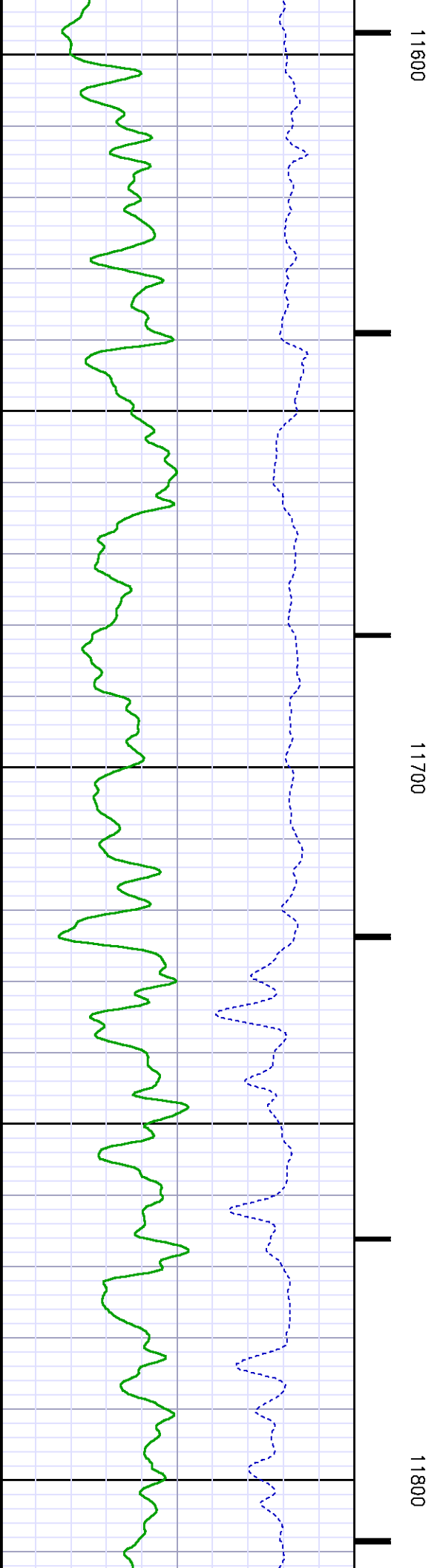
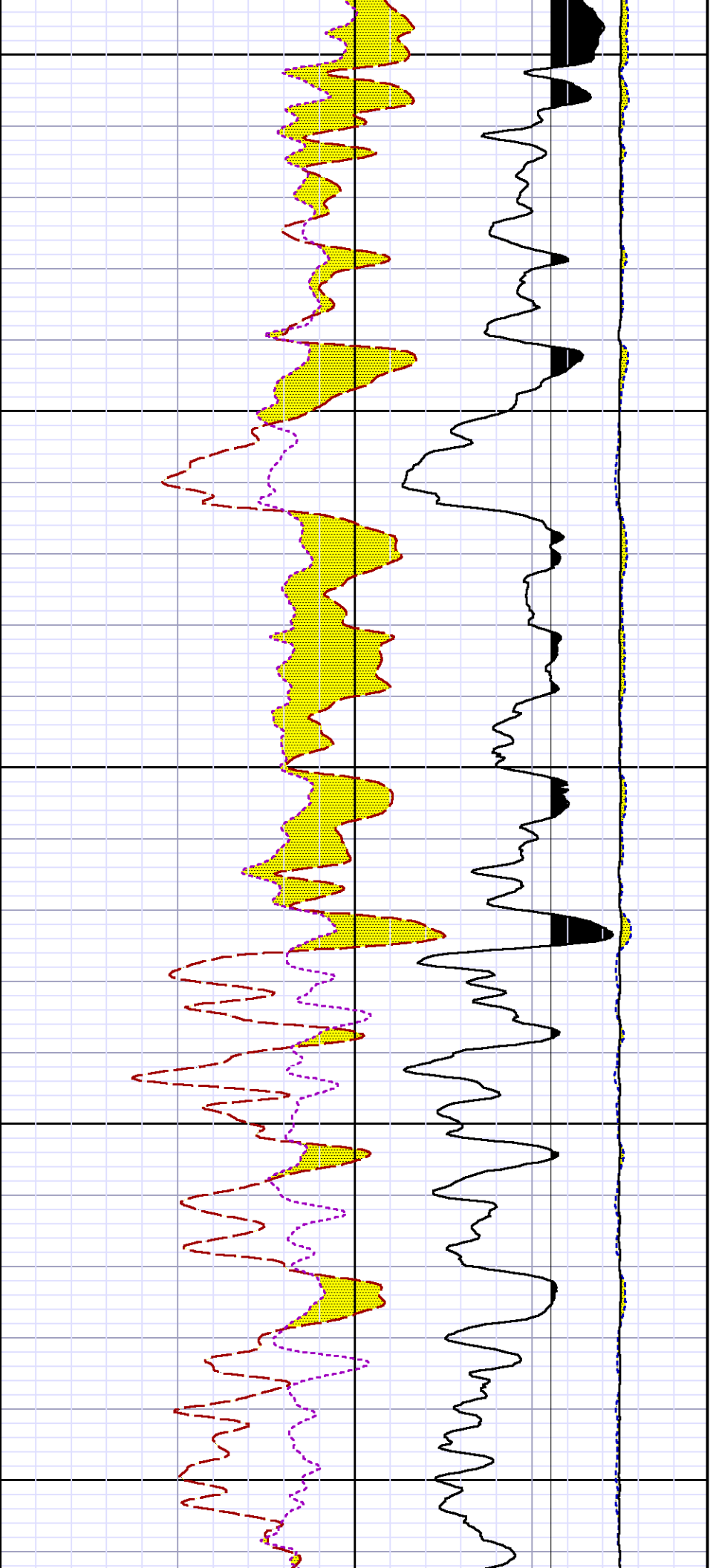


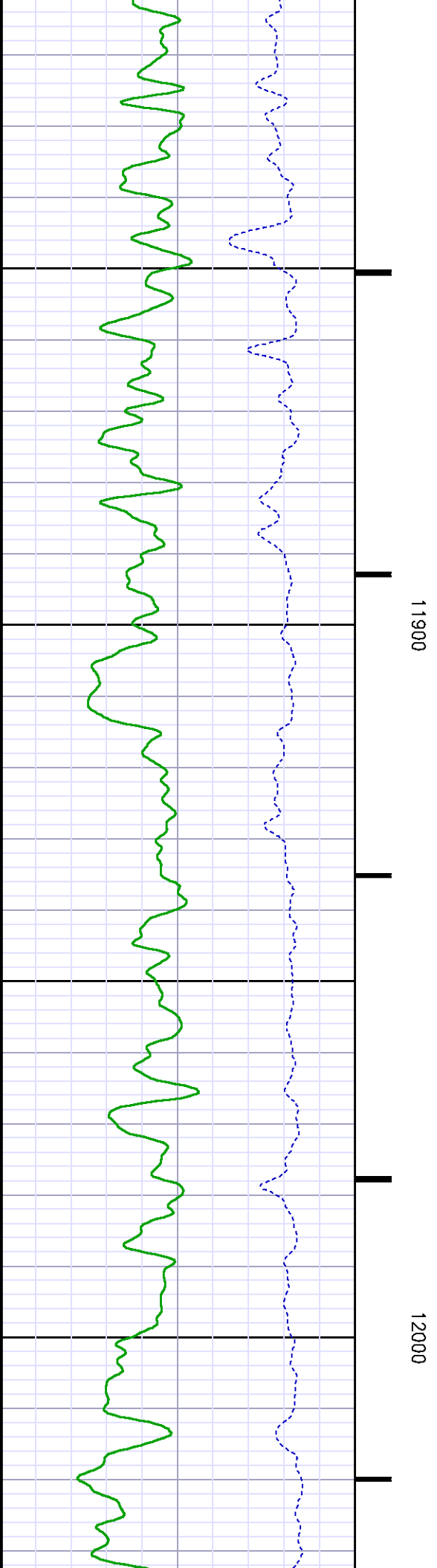
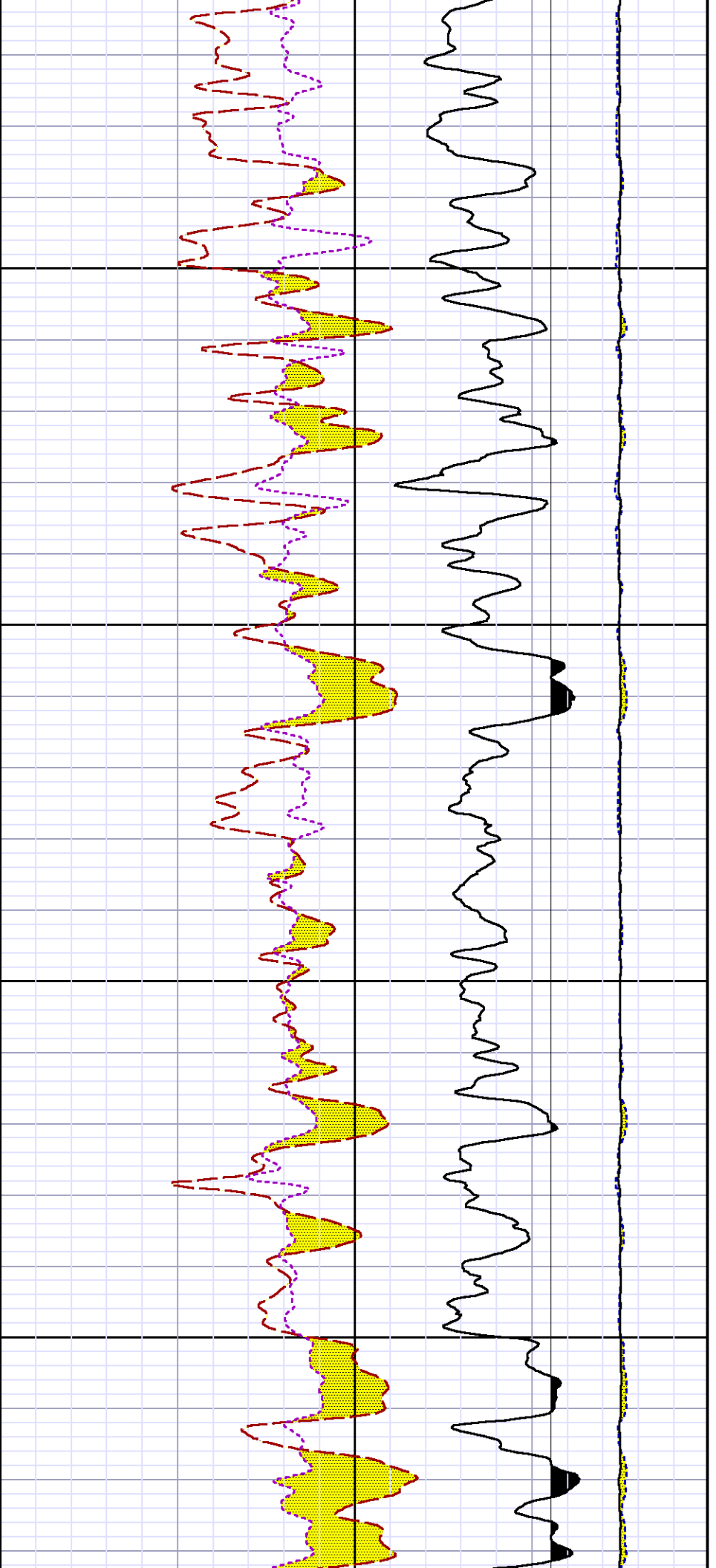


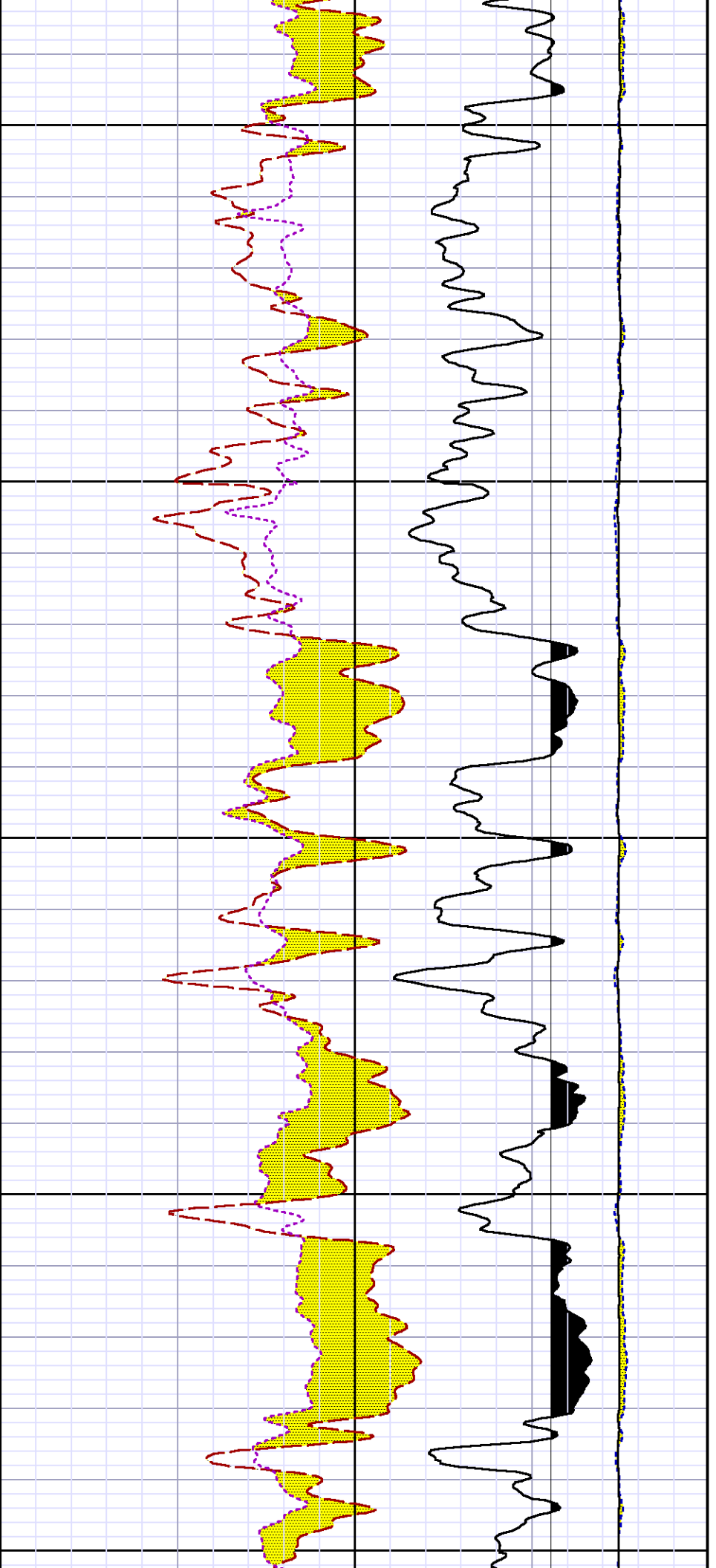
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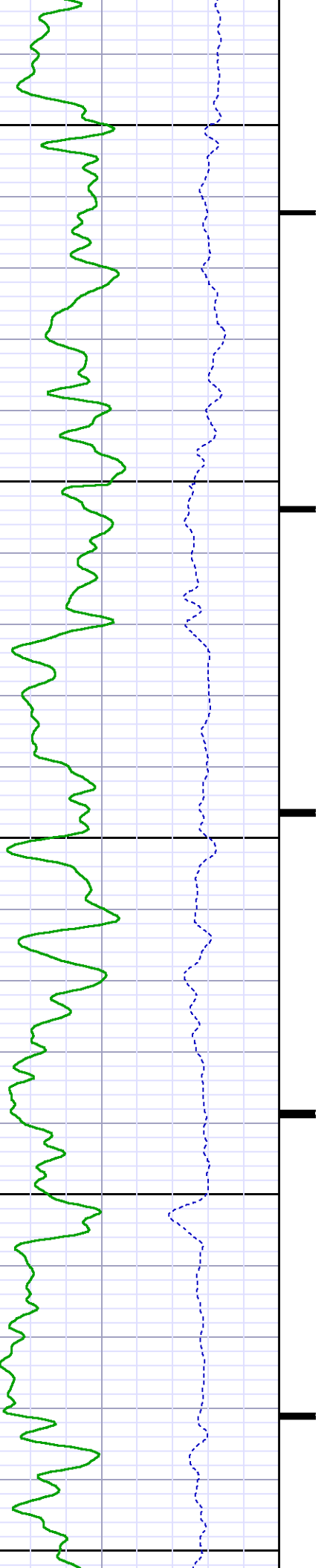


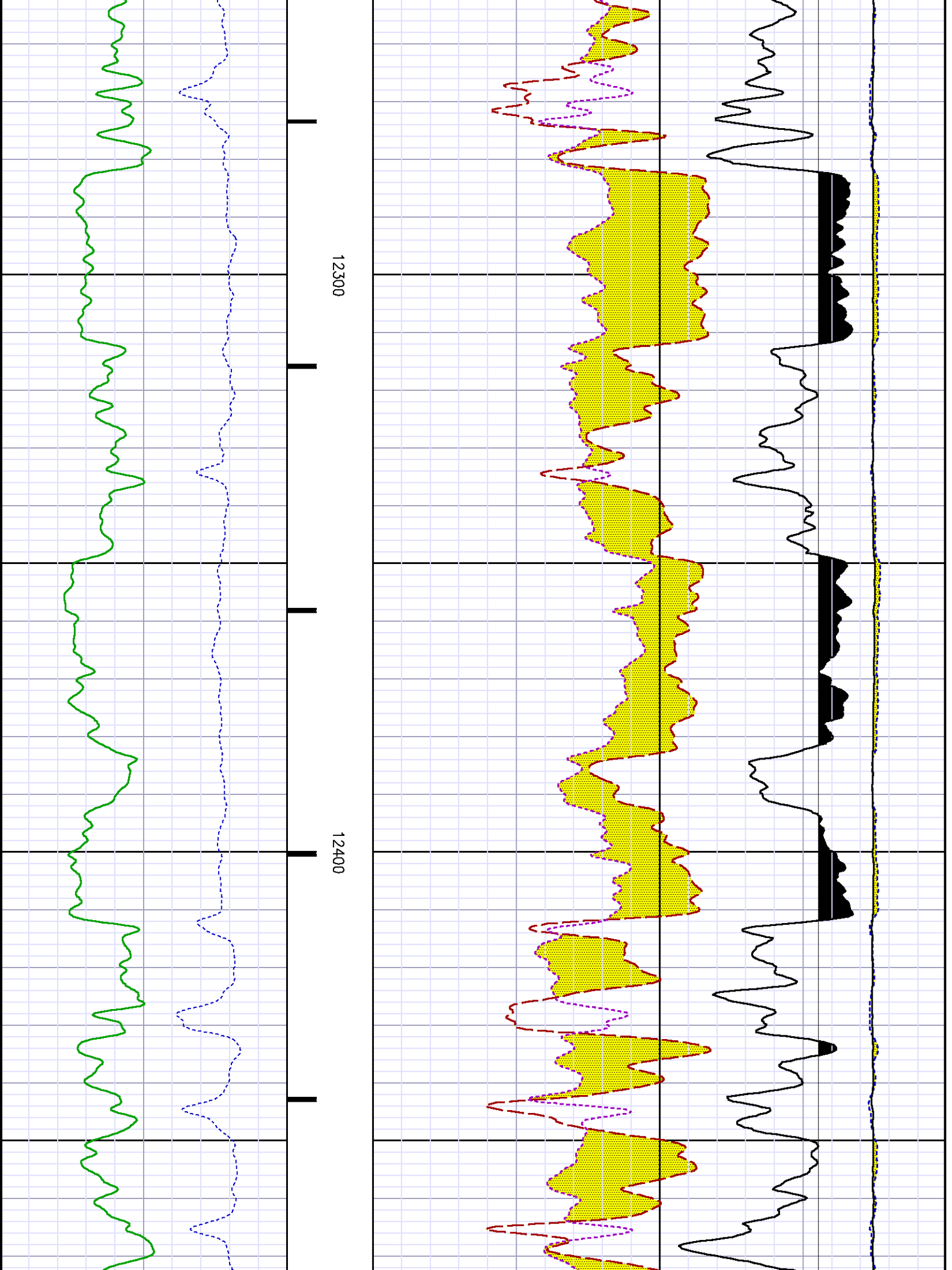


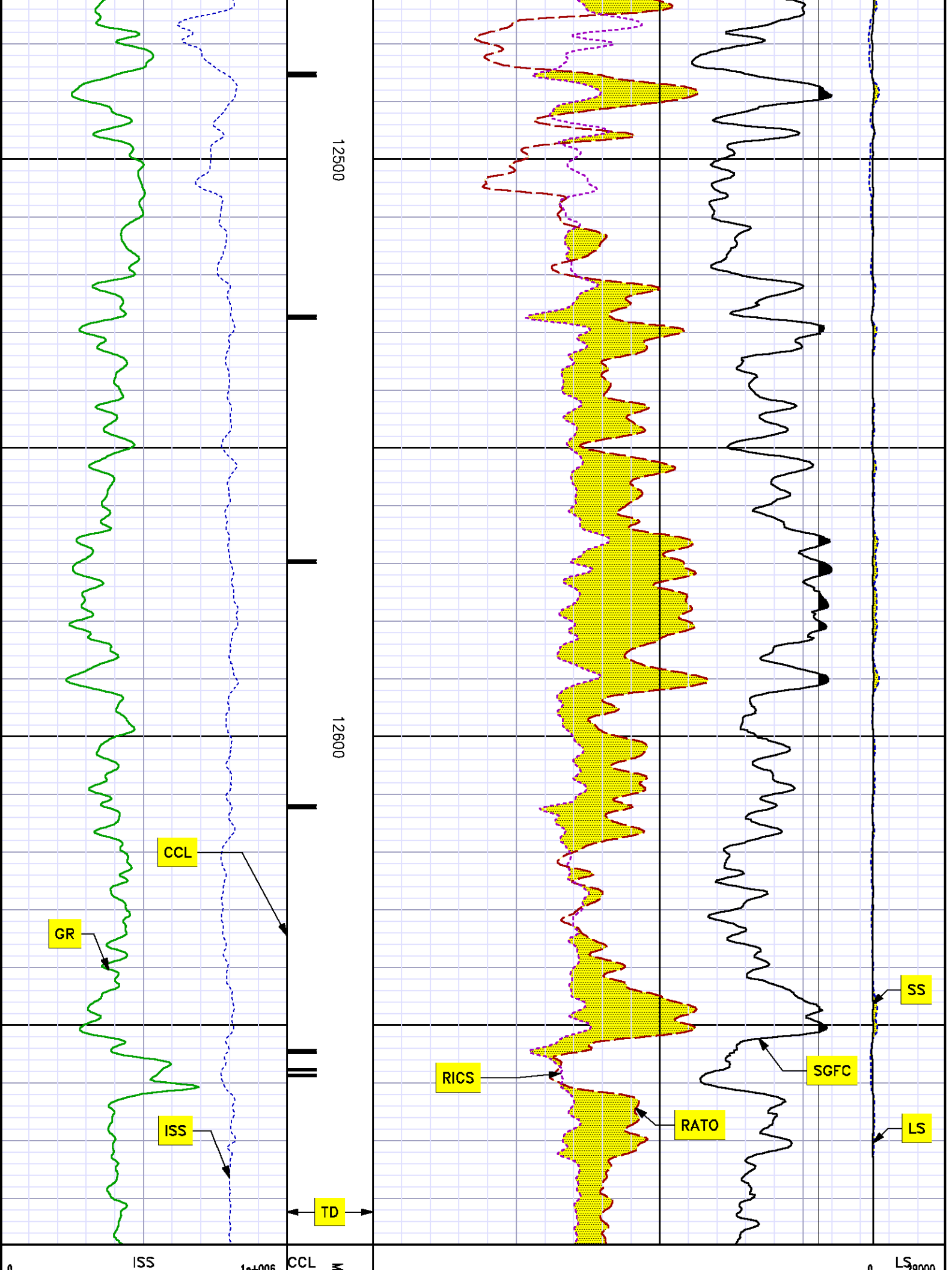


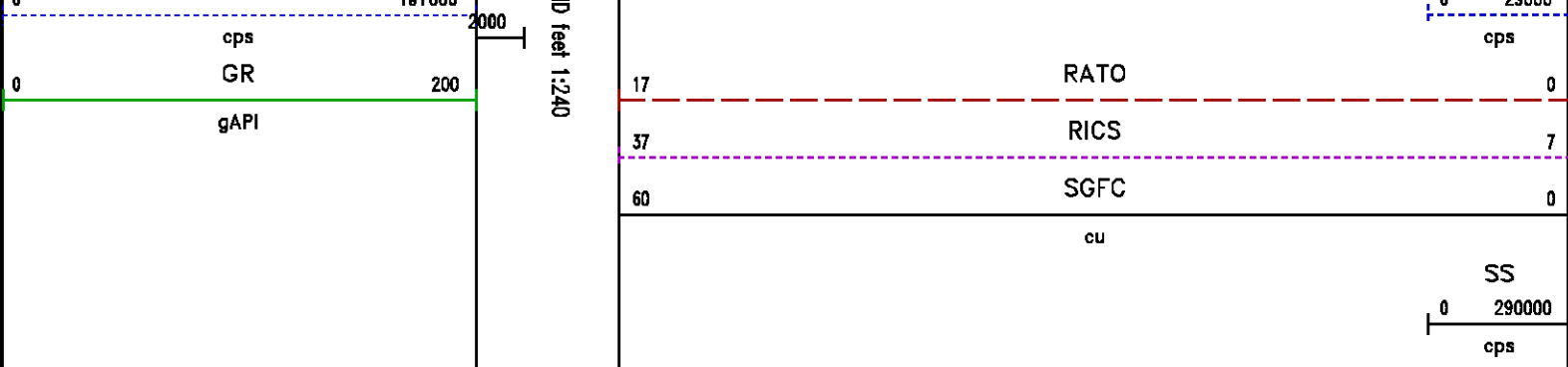
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12200









## REPEAT SECTION PNC 3-D MODE

### SPL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	TOP	BOTTOM
PNC Porosity	Borehole	Cased		9496.950	9912.200
PNC Porosity	Borehole Size	8.750	inch	9496.950	9912.200
PNC Porosity	Casing Size	4.500	inch	9496.950	9912.200
PNC Porosity	Gas Filled	Non Gas Filled		9496.950	9912.200
PNC Porosity	Matrix	Sandstone		9496.950	9912.200

### DEPTH OFFSETS (for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES					
8248EA	-15.320	FLTM					
8248EA	-13.320	CCL	CHV				
8262XA	-10.189	GR					
8281XA	-0.662	HVC3Q0	SEQ3	AMA3	AML3	BKX	CXS
		CPT3Q0	CPT3Q2	CPT3Q3	CPT3Q4	ET3	IXS
		MCS3	MCS3Q0	QCAL3	RGN3	RICX	SDA3
		SDL3	SGA3	SGL3	STA3	XS	ASPEC3
		AMB3	AMF3	CHF3	IXSC	IXSN	RAT023
		RICXC	RIN13C	RIN23	RIN23C	SD3D	SG3D
		SGB3	SGF3	WDTH3	CXSR	IXSR	XSR
		RICXR					

8281XA

-0.250

HVC2Q0

SEQ2

AMA2

AMB2

AMF2

AML2

BKL

CHF2

CLS

CPT2Q0

CPT2Q2

CPT2Q3

CPT2Q4

ET2

ILS

LS

MCS2

MCS2Q0

QCAL2

RGN2

RICL

RONE23

RTW023

SDA2

SDL2

SGA2

SGB2

SGF2

SGK2

SGL2

STA2

ASPEC2

ILSC

ILSN

WDTH2

RICLC

CLSR

ILSR

LSR

RICLR

8281XA

0.000

CPRS

HVC1Q0

MV

SEQ

SEQ1

AMA1

AMB1

AME1

AMF1

AML1

BKS

CHF1

CSS

CORB

CORF

CPT1Q0

CPT1Q2

CPT1Q2A

CPT1Q2B

CPT1Q2C

CPT1Q3

CPT1Q4

CPT1Q5

ET1

G1

G2

GE1S

GE2S

ISS

MCS1

MCS1Q0

QA1

QCAL1

QM1

RATO

RATO13

RBOR

RGN1

RICS

RIN

RONE

RPOR

RTW0

RIN13

RONE13

RTW013

SALB

SC1

SDA1

SDL1

SGA1

SGB1

SGBC

SGE1

SGF1

SGFC

SGK1

SGL1

SS

SS2

STA1

PD1S

PD2S

PD3S

MD1S

MD2S

MD3S

DG1S

DG2S

DG3S

PD1M

PD2M

PD3M

MD1M

MD2M

MD3M

DG1M

DG2M

DG3M

MVS

MA

MVM

FILV

IAM

TA

PVM

PVS

IAS

SSTAT

QPD1

QPD2

QPD3

QMD1

QMD2

QMD3

QDG1

QDG2

QDG3

QMA

QTA

QFILV

QMV

QPV

QIA

DERR

DCNT

QPK1

QSA1

PKS1

ASPEC1

HOC

FE2XC

ISSC

RINC

ISSN

RDEN

WDTH1

RICSC

CSSR

G1R

G2R

ISSR

SSR

SS2R

RATOR

RATO13R

RBORR

RICSR

RINR

RIN13R

RONER

RPORR

RTWOR

SYSTEM

0.000

TEN

TTEN

Created by : RPM9, v5.3.1.0

Plotted by : PlotMgr, v5.4.504

Company : WILLIAMS PRODUCTION COMPANY

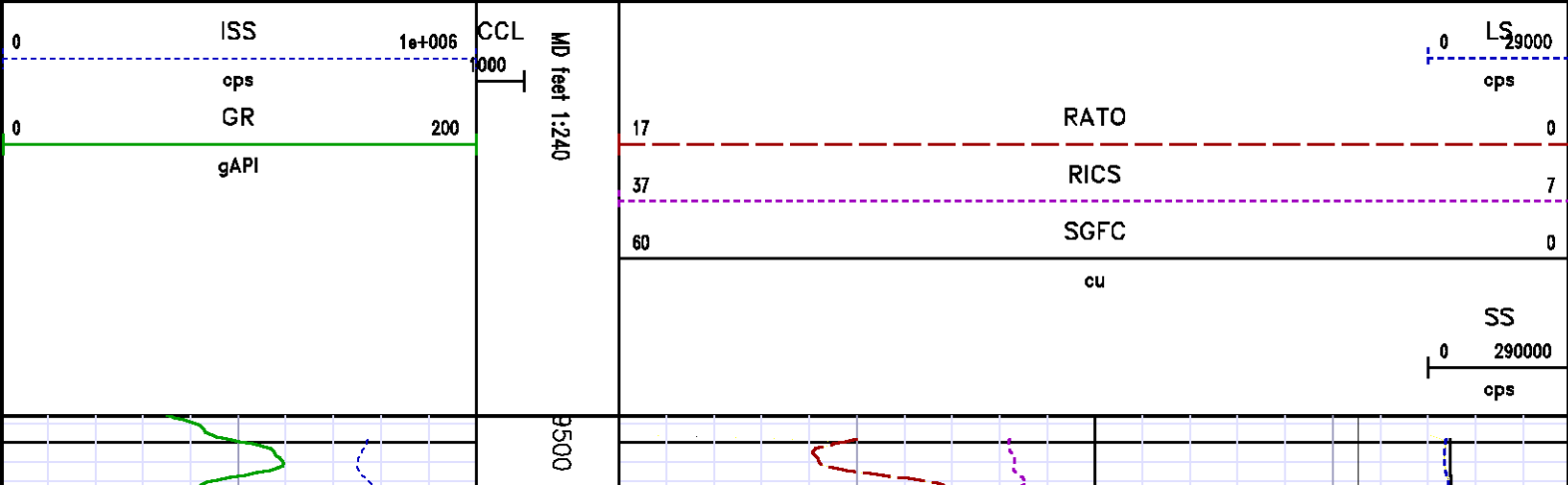
Well : FEDERAL RGU 13-24-198

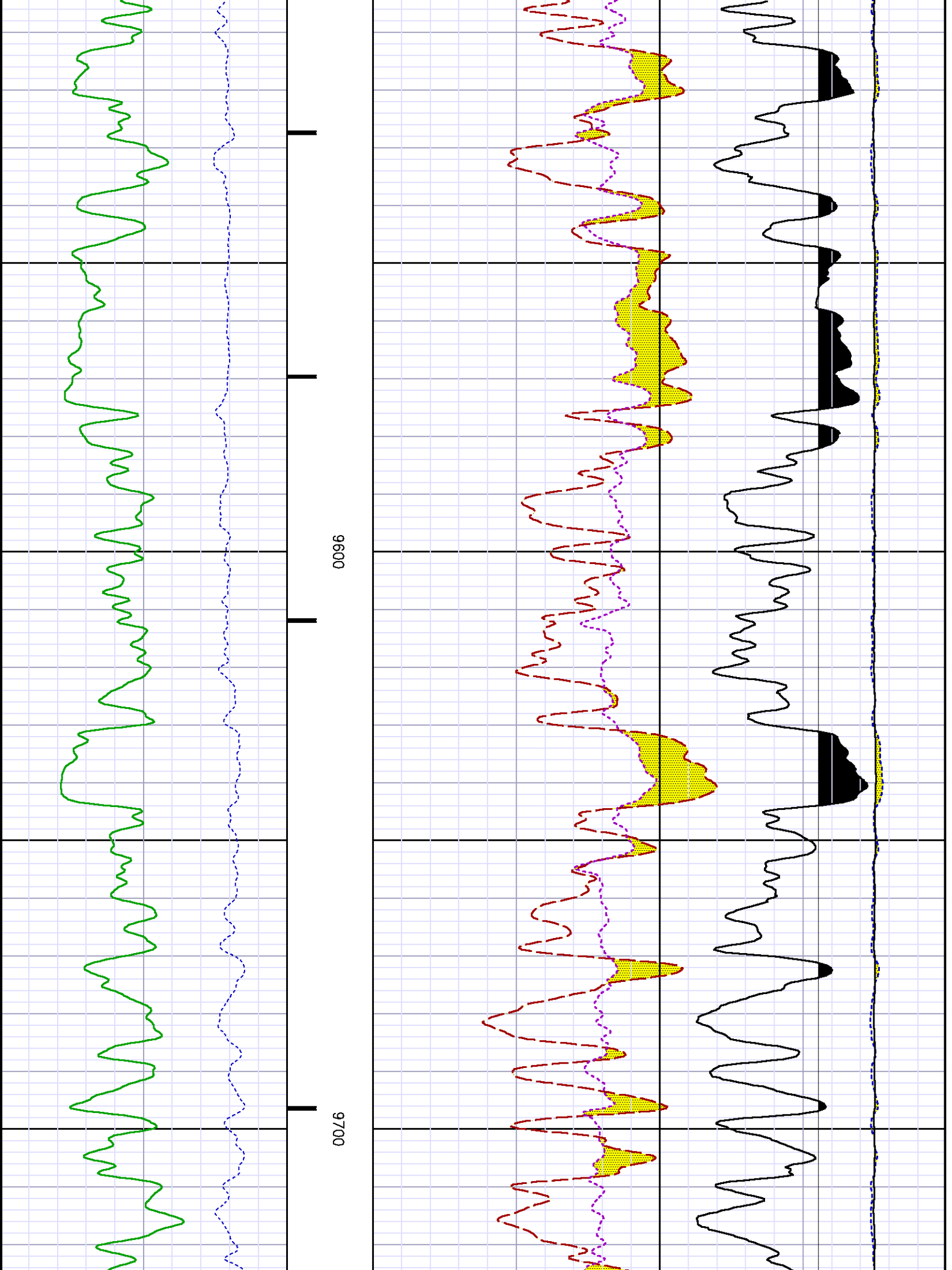
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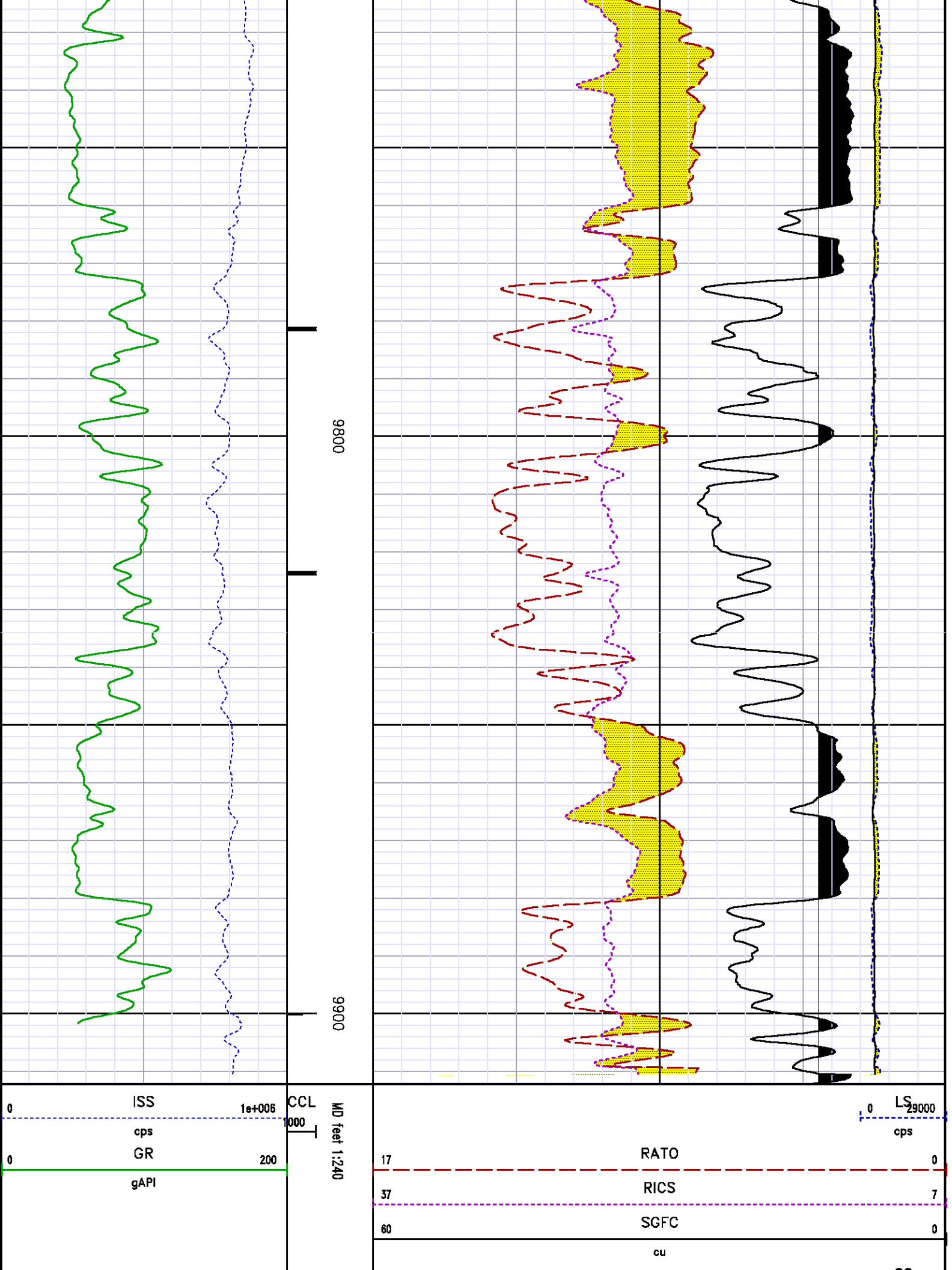
Mode : PlotMgr 5.4.504

Interval : 9497.20 - 9912.20 feet UP

Created : 11/18/2011 3:51:37 PM







# CALIBRATION SUMMARY

## GAMMA RAY

Calibration File: C:\case\calver\GR\470N9.cal

## CALIBRATION SUMMARY

DATE/TIME PERFORMED: Wed Nov 09 10:05:24 2011

TOOL SERIES: 8262XA ASSET: 470 SEQ: N9

Calibrator #	Background [cps]	Calibrator On [cps]	Multiplicative	Background [api]	Calibrator On [api]	Differential [api]
S2K BA-905	92.84	433.93	0.528	49.00	229.00	180.00

Verification File: C:\case\calver\GR\470N9.VP

## PRIMARY VERIFICATION

DATE/TIME PERFORMED: Wed Nov 09 10:10:32 2011

TOOL SERIES: 8262XA ASSET: 470 SEQ: N9

Calibrator #	Background [cps]	Calibrator On [cps]	Multiplicative	Background [api]	Calibrator On [api]	Differential [api]
S2K BA-905	93.11	434.69	0.528	49.14	229.39	180.26

## PNC

Calibration File: C:\case\calver\PNC\753NV.cal

## PNC 3D CALIBRATION SUMMARY

DATE/TIME PERFORMED: Mon Nov 14 17:53:07 2011

TOOL SERIES: 8281XA ASSET: 753 SEQ: NV

Calibrator #

Source #

SHOP BAR

8281AA 10220691

ISS

Mtr Vlt  
(V)

SS Gain

LS Gain

XLS Gain

EA Temp  
(degF)Sync Delay  
(usec)

RCAL

Raw Data	820353	129.00	2208.00	2193.00	2093.00	105.99	7.00	0.9706
Interpolated	1300000	150.67	2188.93	2185.28	2090.28			

	ISS	BKS	BKL	BKX	SGA1	SDA1	SGA2	SDA2
Raw Data	820353	6693.98	1048.04	170.94	25.86	0.14	24.35	0.28
					25.35 26.40	0.00 0.20	23.60 24.80	0.00 0.40

	ISS	ILS	IXS	SS	SS2	LS	CSS	CLS
Raw Data	820353	170371.23	24975.67	90495.93	32208.64	8295.27	54770.32	13278.14
Fit Quality %		0.49	0.24	0.68	0.66	0.51	0.63	0.51

	ISS	RBOR	RIN ISS/ILS	RIN13 ISS/IXS	RICS ISS/CSS	RATO SS/LS	RTWO SS2/LS	RONE CSS/CLS
Raw Data	820353	1.43	4.82	32.85	14.98	10.91	3.88	4.12
		1.42 1.45	3.55 5.52	22.20 32.70	10.99 16.34	10.06 11.10	3.57 3.95	3.76 4.22
Fit Quality %		0.09	0.32	0.46	0.14	0.20	0.21	0.18
Reduced	1393416	1.43	4.82	32.86	15.03	10.88	3.87	4.11
		1.42 1.45	4.33 5.52	27.60 32.70	13.70 16.34	10.06 11.10	3.57 3.95	3.76 4.22

## PNC #2

Calibration File: C:\case\calver\PNC\383NV.cal

### PNC 3D CALIBRATION SUMMARY

DATE/TIME PERFORMED: Sat Nov 19 14:12:12 2011 TOOL SERIES: 8281XA ASSET: 383 SEQ: NV

Calibrator #

SHOP BAR

Source #

8281AA 10160601

	ISS	Mtr Vltz (V)	SS Gain	LS Gain	XLS Gain	EA Temp (degF)	Sync Delay (usec)	RCAL
Raw Data	813759	128.00	2237.00	2268.00	2226.00	104.13	8.00	1.0115
Interpolated	1300000	155.32	2223.03	2259.73	2227.63			

	ISS	BKS	BKL	BKX	SGA1	SDA1	SGA2	SDA2
Raw Data	813759	7626.71	1208.97	189.51	25.81	0.13	24.38	0.26
					25.35 26.40	0.00 0.20	23.60 24.80	0.00 0.40

	ISS	ILS	IXS	SS	SS2	LS	CSS	CLS
Raw Data	813759	186736.13	28773.02	97398.34	34706.66	9288.02	58855.05	14882.62

Fit Quality %

7.04

3.20

4.49

4.22

2.87

5.89

3.05

	ISS	RBOR		RIN ISS/ILS		RIN13 ISS/IXS		RICS ISS/CSS		RATO SS/LS		RTWO SS2/LS		RONE CSS/CLS	
Raw Data	813759	1.43		4.36		28.28		13.83		10.49		3.74		3.95	
		1.42	1.45	3.55	5.52	22.20	32.70	10.99	16.34	10.06	11.10	3.57	3.95	3.76	4.22
Fit Quality %		0.58		1.06		0.49		1.10		0.58		0.51		0.94	
Reduced	1372430	1.43		4.32		28.31		13.69		10.54		3.76		3.99	
		1.42	1.45	4.33	5.52	27.60	32.70	13.70	16.34	10.06	11.10	3.57	3.95	3.76	4.22

## TOOL DIAGRAM

### OTA SHORT CABLE HEAD

#### PCM POWER SUPPLY

Series 8250EA  
 Mnemonic PCM  
 Diameter 1.70"  
 Weight 18.00 lb  
 Length 3.86'  
 Temp Rating 350.00 °F

#### TELEMETRY / CCL

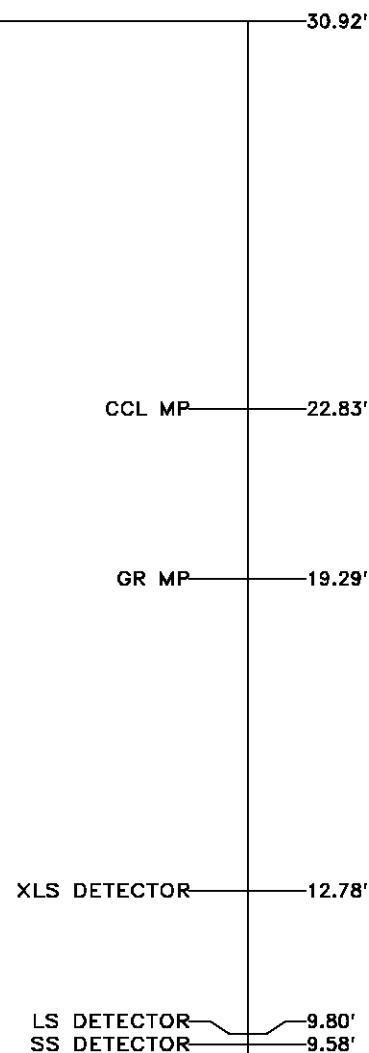
Series 8248EA  
 Mnemonic PCM  
 Diameter 1.70"  
 Weight 20.00 lb  
 Length 4.46'  
 Measure Point 1.00' CCL MP  
 Temp Rating 350.00 °F  
 Press Rating 15000.00 PSI

#### GAMMA RAY

Series 8262XA  
 Mnemonic GR  
 Diameter 1.70"  
 Weight 15.00 lb  
 Length 3.17'

### RESERVOIR PERFORMANCE MONITOR

Series 8281XA  
 Mnemonic RPM  
 Diameter 1.70"  
 Weight 75.00 lb  
 Length 18.58'  
 Measure Point 9.49' SS DETECTOR  
 Measure Point 9.72' LS DETECTOR  
 Measure Point 12.69' XLS DETECTOR  
 Temp Rating 350.00 °F



Press Rating 20000.00 PSI

0.00'

Total Length: 30.92'  
Total Weight: Not Available  
Max Diameter: 0' 1.70"



Company

WILLIAMS PRODUCTION COMPANY

Well

FEDERAL RGU 13-24-198

Field

Sulphur Creek

County

Rio Blanco

State

COLORADO

File No:

CH045471

API No:

05103116130000

Location

SHL: 1751' FSL 1076' FWL (NWSW)

BHL: 2287' FSL 632' FWL (NWSW)

Elevations

KB 6562 ft

DF 6561 ft

GL 6540 ft

24 1S 98W

RGU 13-24-198 Pad

FRONTIER 10

SEC 24

TWP 1S

RGE 98W

CASE

Baker Atlas