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County: RIO BLANCO





Company: EXXONMOBIL PRODUCTION CO

Well: PCU 197-34B7

Field: PICEANCE CREEK

County: RIO BLANCO

State: COLORADO

State: COLORADO

Company: EXXONMOBIL PRODUCTION CO

CORRELATION PRINT

GAMMA RAY / CCL

SESE, 831' FSL & 951' FEL

Elev.: K.B. 6678.10 ft
G.L. 6647.90 ft
D.F. 6677.10 ft

LOCATION

Permanent Datum: GROUND LEVEL Elev.: 6647.90 ft
Log Measured From: KELLY BUSHING 30.20 ft above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No. 05-103-11086-0C

Section 34

Township 1S

Range 97W

Logging Date 3-Nov-2009

Run Number 1

Depth Driller 9220 ft

Schlumberger Depth 7402 ft

Bottom Log Interval 7402 ft

Top Log Interval 300 ft

Casing Fluid Type WBM

Salinity 400 ppm

Density 9.7 lbm/gal

Fluid Level 10 ft

BIT/CASING/TUBING STRING

Bit Size 9.875 in

From 3900 ft

To 9220 ft

Casing/Tubing Size 7.000 in

Weight 26 lbm/ft

Grade

From 30.2 ft

To 9220 ft

Maximum Recorded Temperatures 192 degF

Logger On Bottom 3-Nov-2009

Unit Number 2379

Recorded By VERNAL

Witnessed By Ryan Stewart

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

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

Unit Number

Recorded By

Witnessed By

Run 1

Run 2

Run 3

400 ppm

4000 ft

DEPTH SUMMARY LISTING

Date Created: 3-NOV-2009 18:22:06

Depth System Equipment

Depth Measuring Device	Tension Device	Logging Cable
Type: IDW-B	Type: CMTD-B/A	Type: 7-46V XS
Serial Number: 6195	Serial Number: 8093	Serial Number: 709025
Calibration Date: 22-OCT-2009	Calibration Date: 17-OCT-200	Length: 30100 FT
Calibrator Serial Number: 33	Calibrator Serial Number: 1	Conveyance Method: Wireline
Calibration Cable Type: 7-46P	Number of Calibration Points: 9	Rig Type: LAND
Wheel Correction 1: -13	Calibration RMS: 23	
Wheel Correction 2: -11	Calibration Peak Error: 41	

Depth Control Parameters

Log Sequence: First Log In the Well
Rig Up Length At Surface: 211.00 FT
Rig Up Length At Bottom: 210.30 FT
Rig Up Length Correction: 0.70 FT
Stretch Correction: 7.50 FT
Tool Zero Check At Surface: 0.50 FT

Depth Control Remarks

1. All Schlumberger depth control policies followed
2. IDW used as primary depth reference, z-chart used as secondary reference
3.
4.
5.
6.

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: IBC/USIT	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
Tool run as per tool sketch	
Tool run with 2 x gemcos and 2 x in-line centralizers	
Neutron run for gamma ray purpose only	
Transducer angle = 33 degrees	
Log taken from 7402 ft due to obstruction in well	
Vertical resolution = 6 inch	
Horizontal resolution = 5 degree	
UFAO = -14	
Max temp = 192 F	

IBC log stopped at 3500 ft at clients request

RUN 1		
SERVICE ORDER #:		
PROGRAM VERSION:	17C0-154	
FLUID LEVEL:	10 ft	
LOGGED INTERVAL	START	STOP

RUN 2		
SERVICE ORDER #:		
PROGRAM VERSION:		
FLUID LEVEL:		
LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

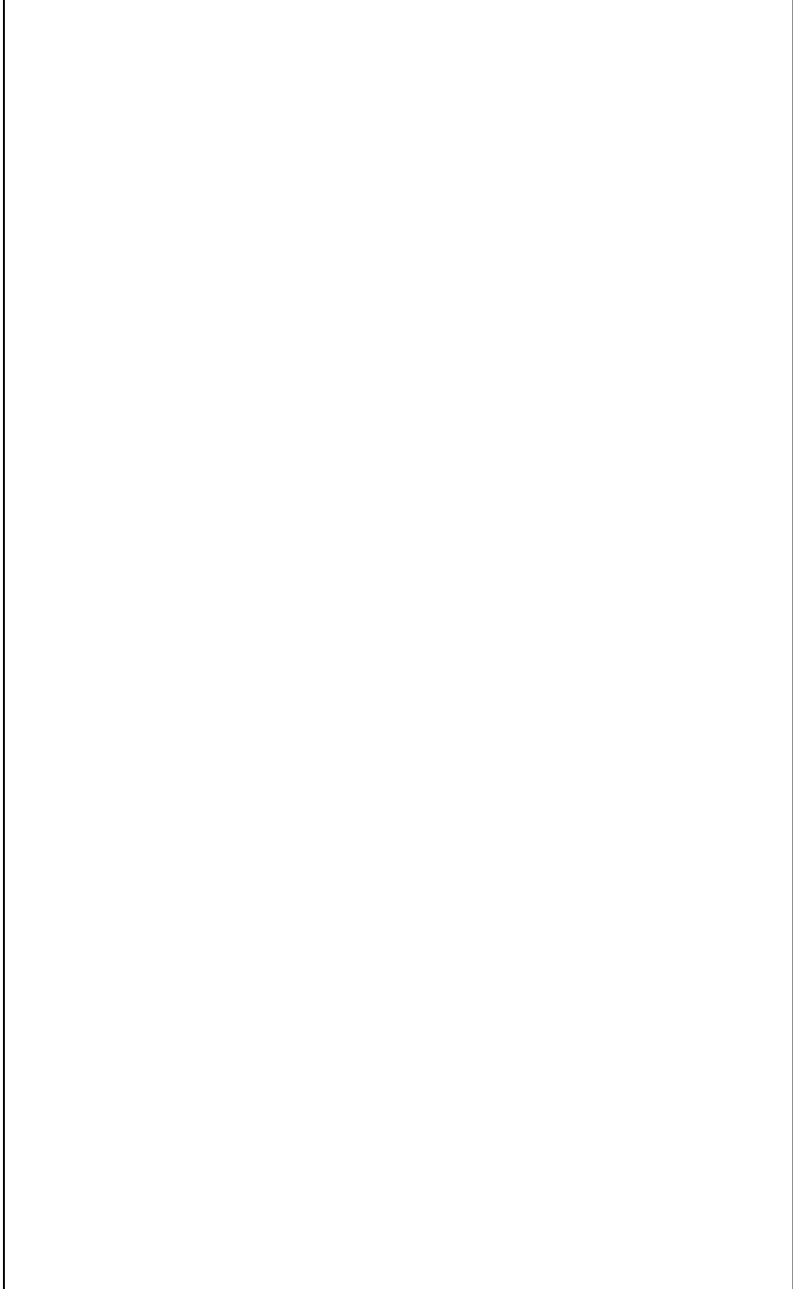
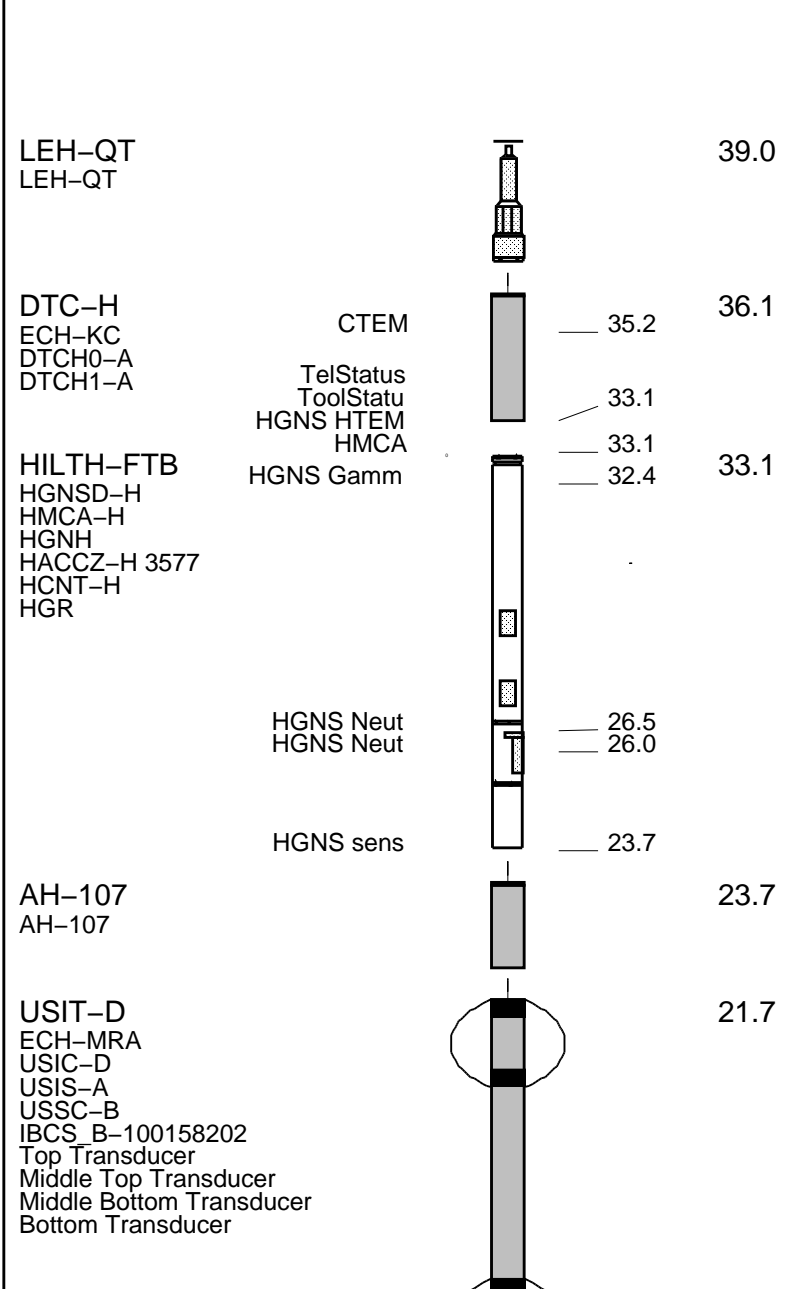
RUN 1

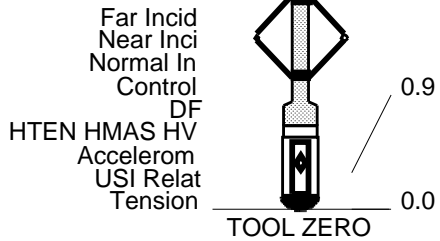
SURFACE EQUIPMENT

GSR-U/Y
NCT-B
CNB-AB
WITM (DTS)-A

RUN 2

DOWNHOLE EQUIPMENT





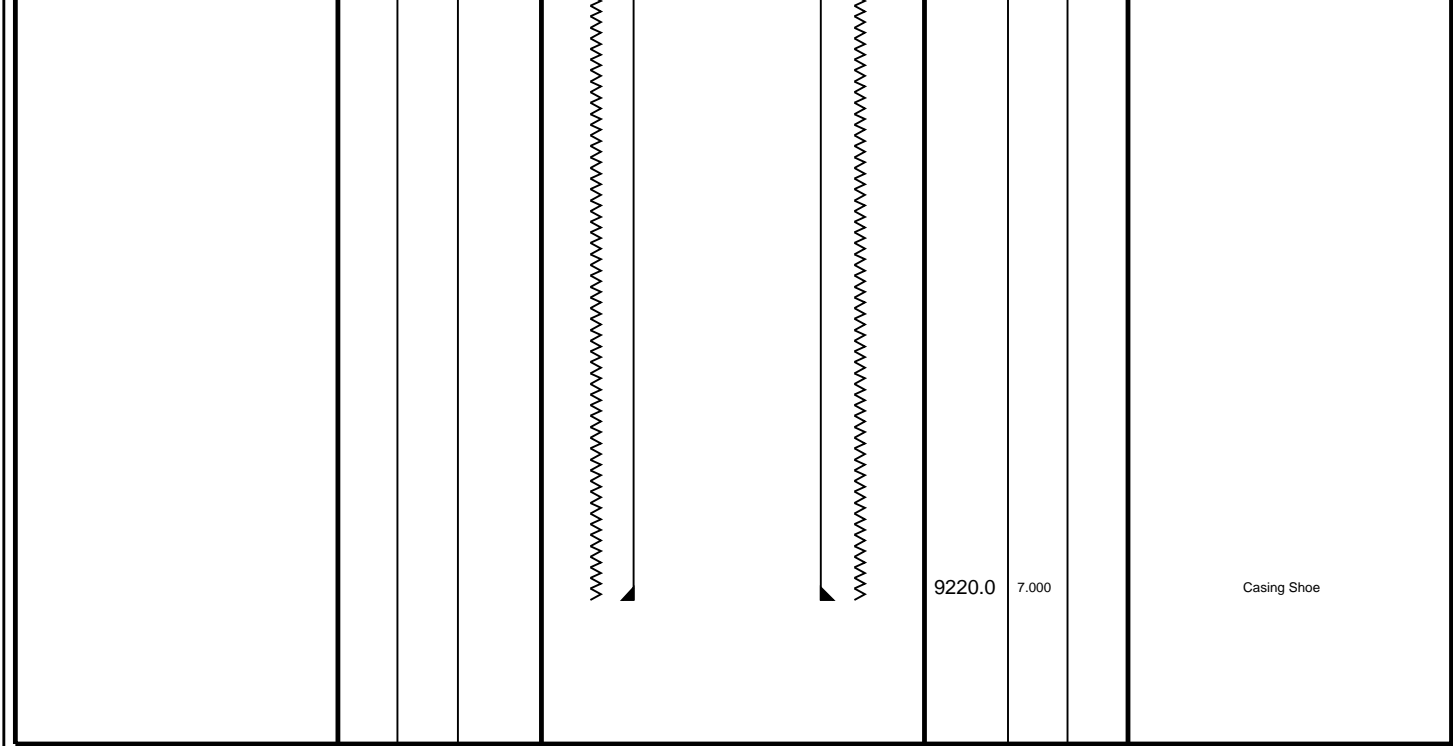
MAXIMUM STRING DIAMETER 7.50 IN
 MEASUREMENTS RELATIVE TO TOOL ZERO
 ALL LENGTHS IN FEET

Client: EXXONMOBIL PRODUCTION CO
 Well: PCU 197-34B7
 Field: PICEANCE CREEK
 State: COLORADO
 Country: USA

Rig Name: Mast
 Reference Datum: GROUND LEVEL
 Elevation: 6647.8 ft

Drawing Date: 11/3/2009
 API #: 05-103-11086-00

Production String	(in)		(ft)	Well Schematic		(ft)	(in)		Casing String
	OD	ID	MD			MD	OD	ID	
						30.2	10.000 7.000	10.750	Casing String Liner Hanger
						3900.0 3900.0	10.750 9.875		Casing Shoe Borehole Segment



CORRELATION

MAXIS Field Log

Company: EXXONMOBIL PRODUCTION CO

Well: PCU 197-34B7

Input DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_011LUP	FN:10	PRODUCER	03-Nov-2009 14:08	7397.0 FT	199.5 FT
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Output DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_014PUP	FN:13	PRODUCER	03-Nov-2009 19:04	7404.5 FT	207.0 FT
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OP System Version: 17C0-154

USIT-D DTC-H	SRPC-3779-Q1_2009_OP17_b 17C0-154	HILTH-FTB	SRPC-3779-Q1_2009_OP17_b
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Changed Parameter Summary

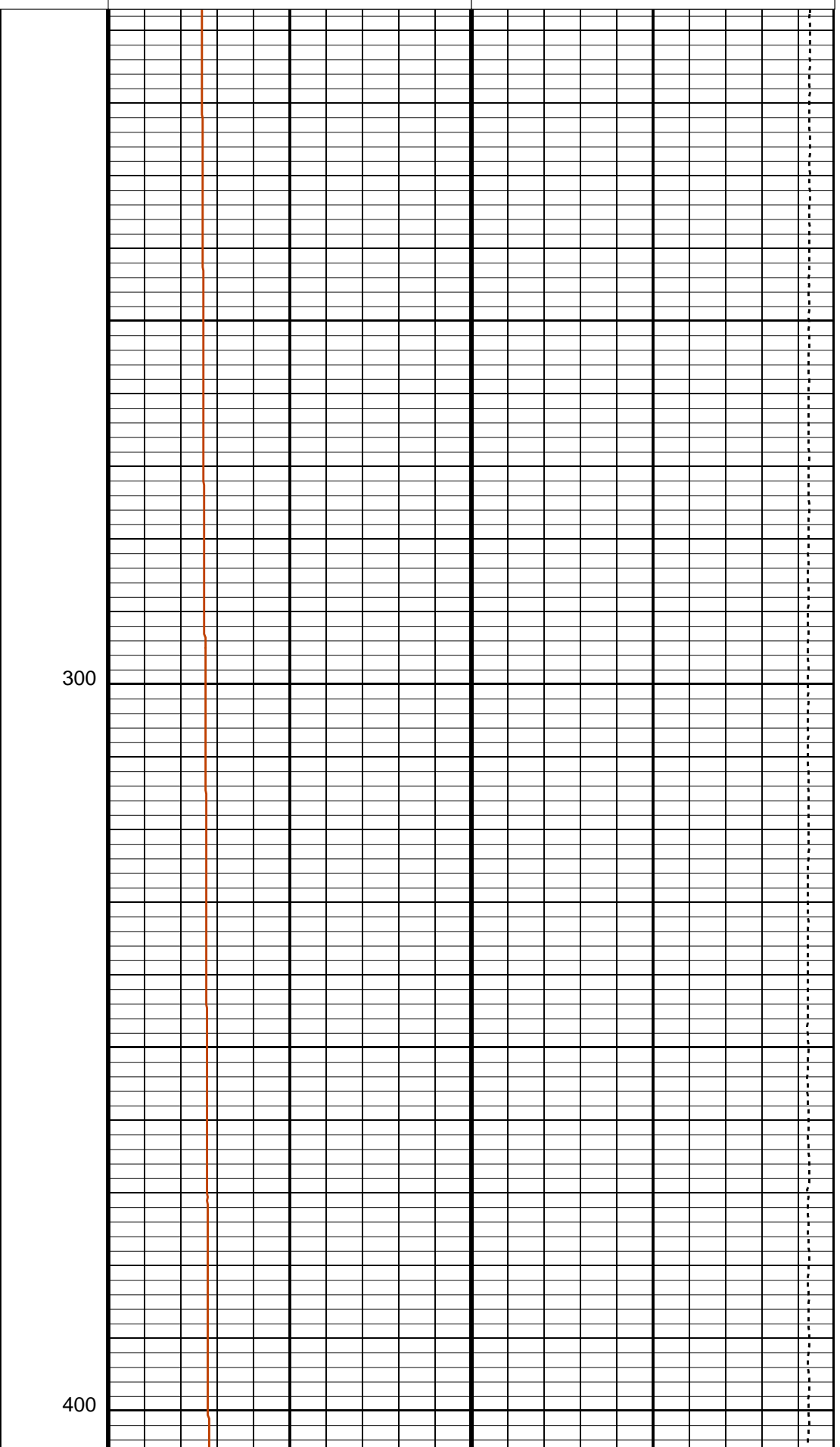
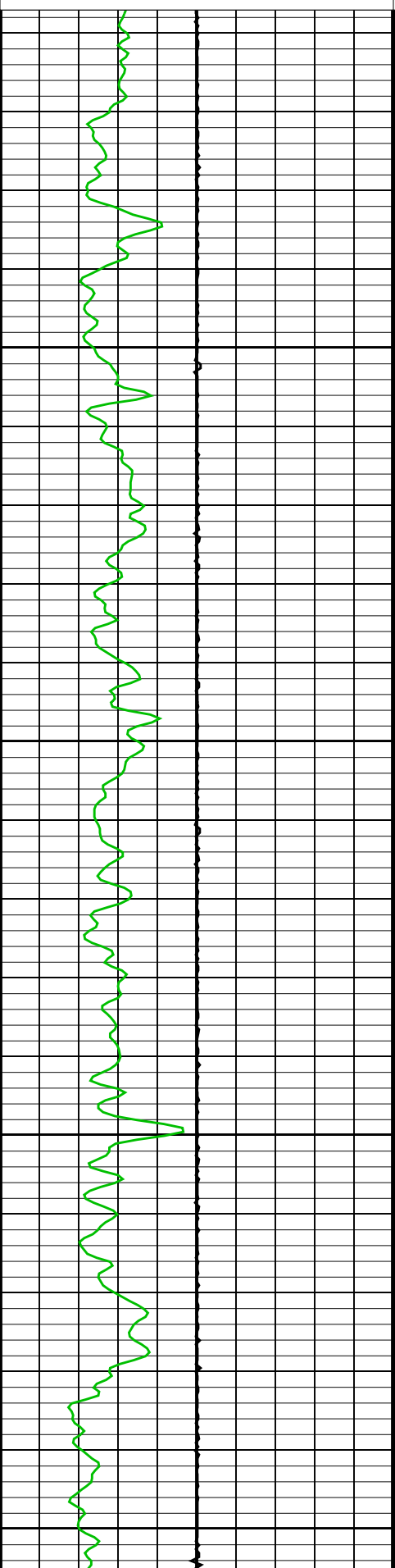
DLIS Name	New Value	Previous Value	Depth & Time
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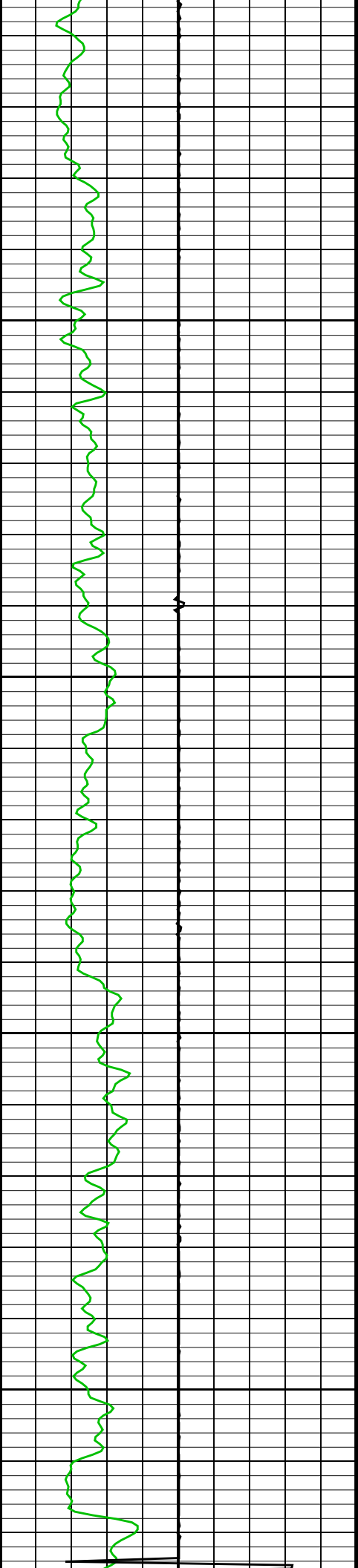
CCL (CCLU)
-20 (----) 20

Gamma Ray (GR)
(GAPI) 0 150

HTC Cartridge Temperature (HTEM)
20 (DEGF) 220

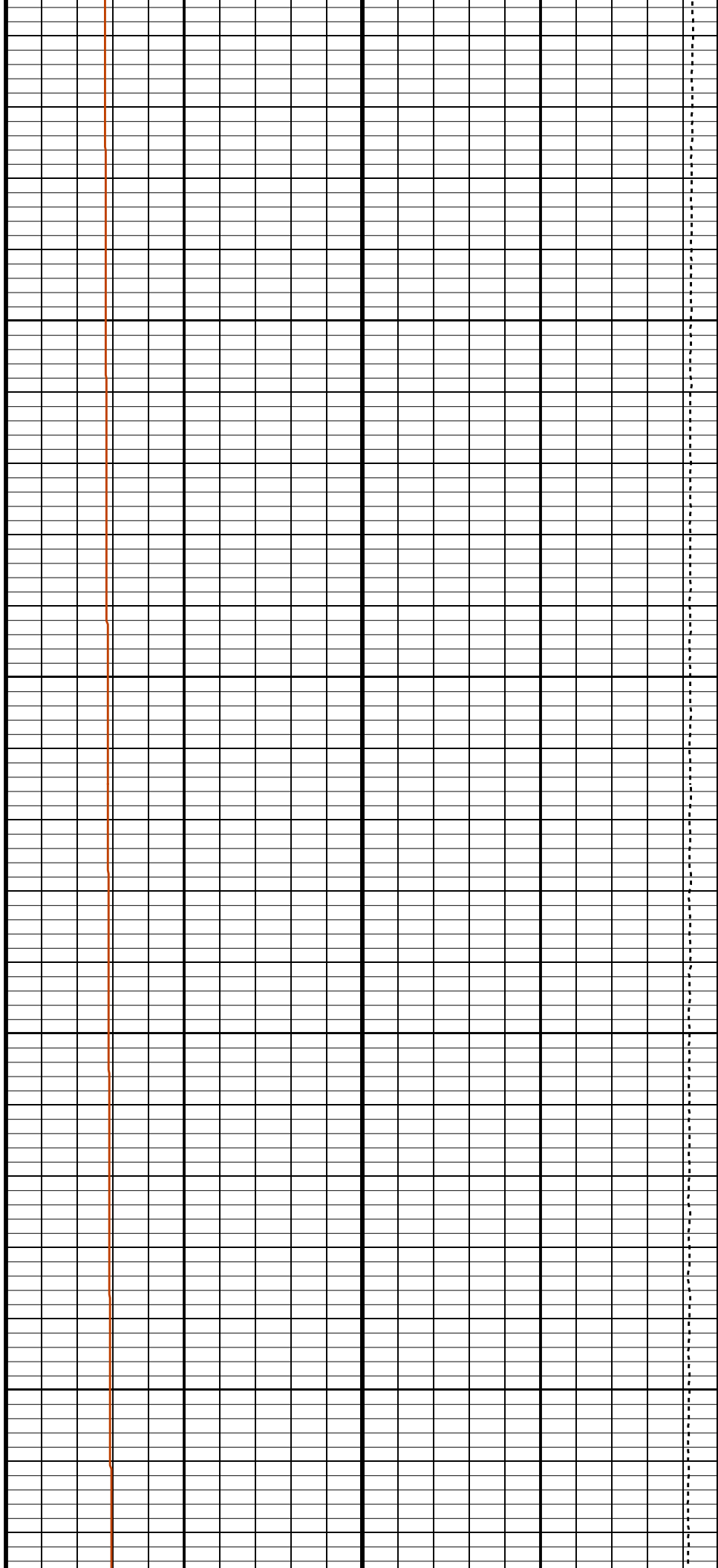
Tension (TENS)
10000 (LBF) 0

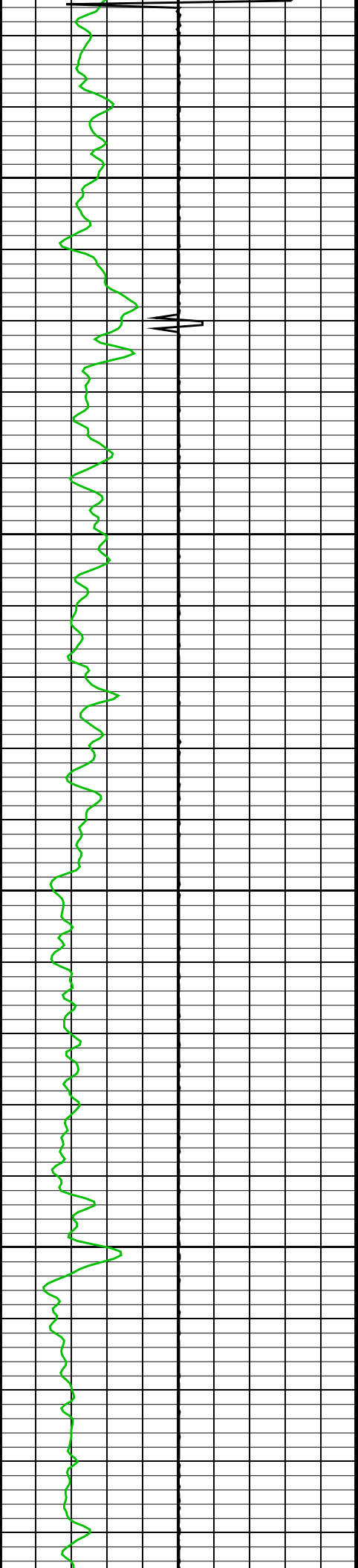




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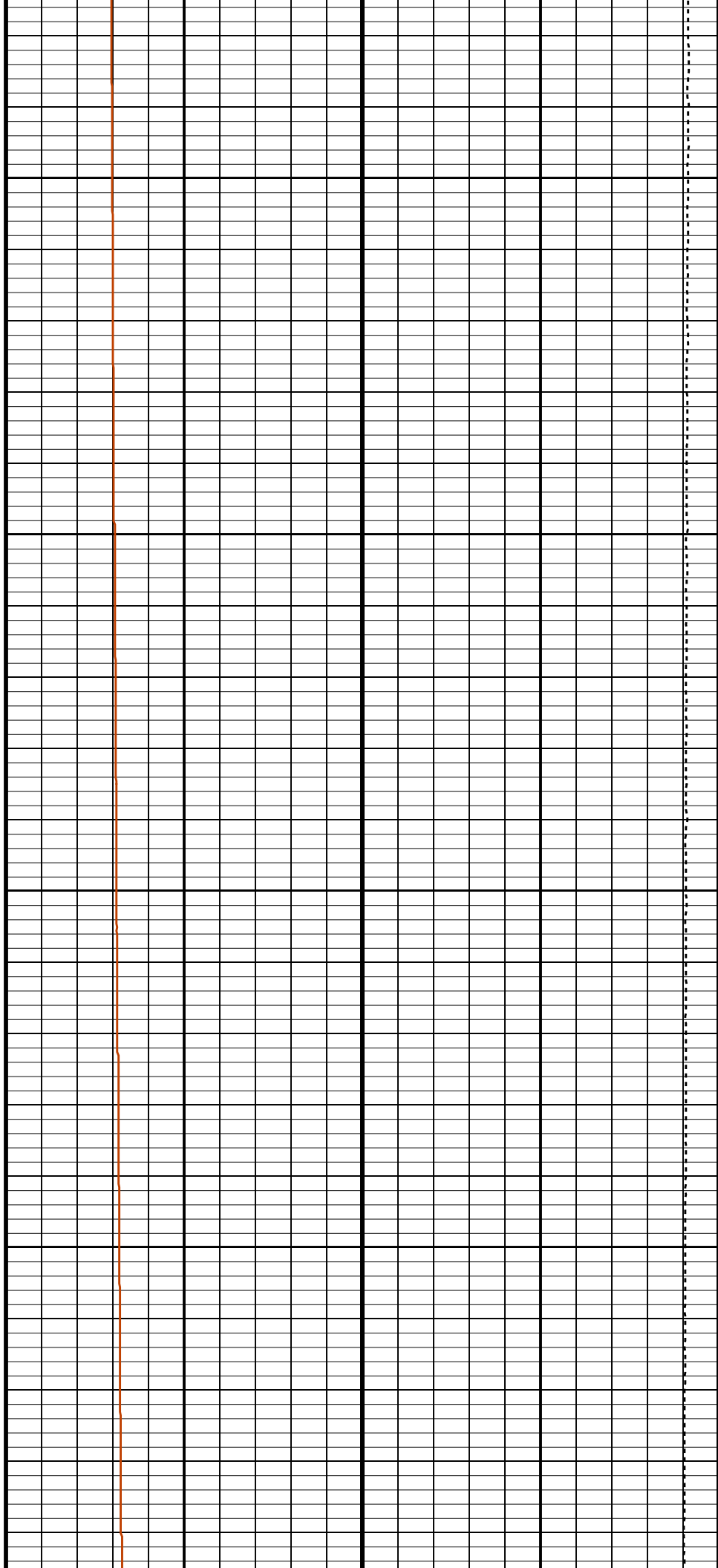
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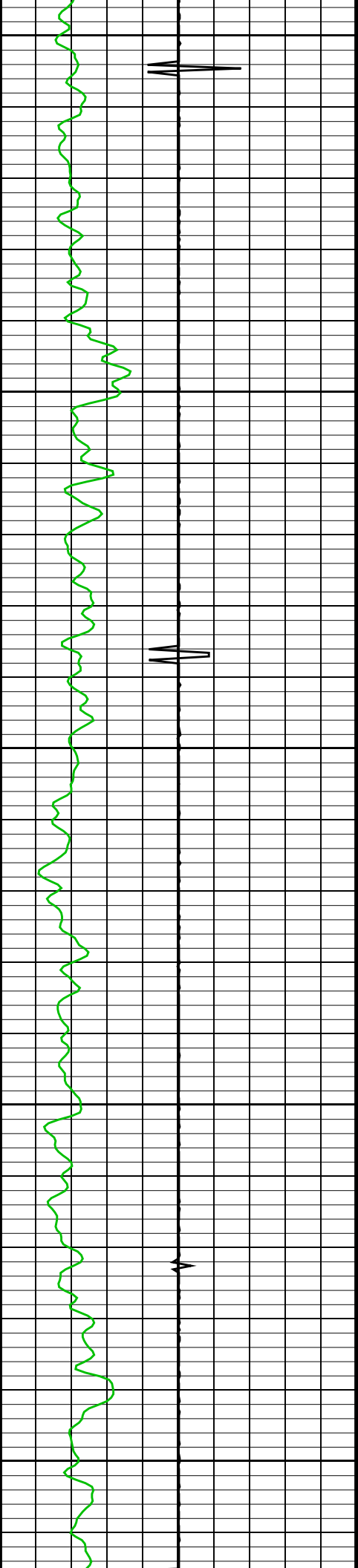




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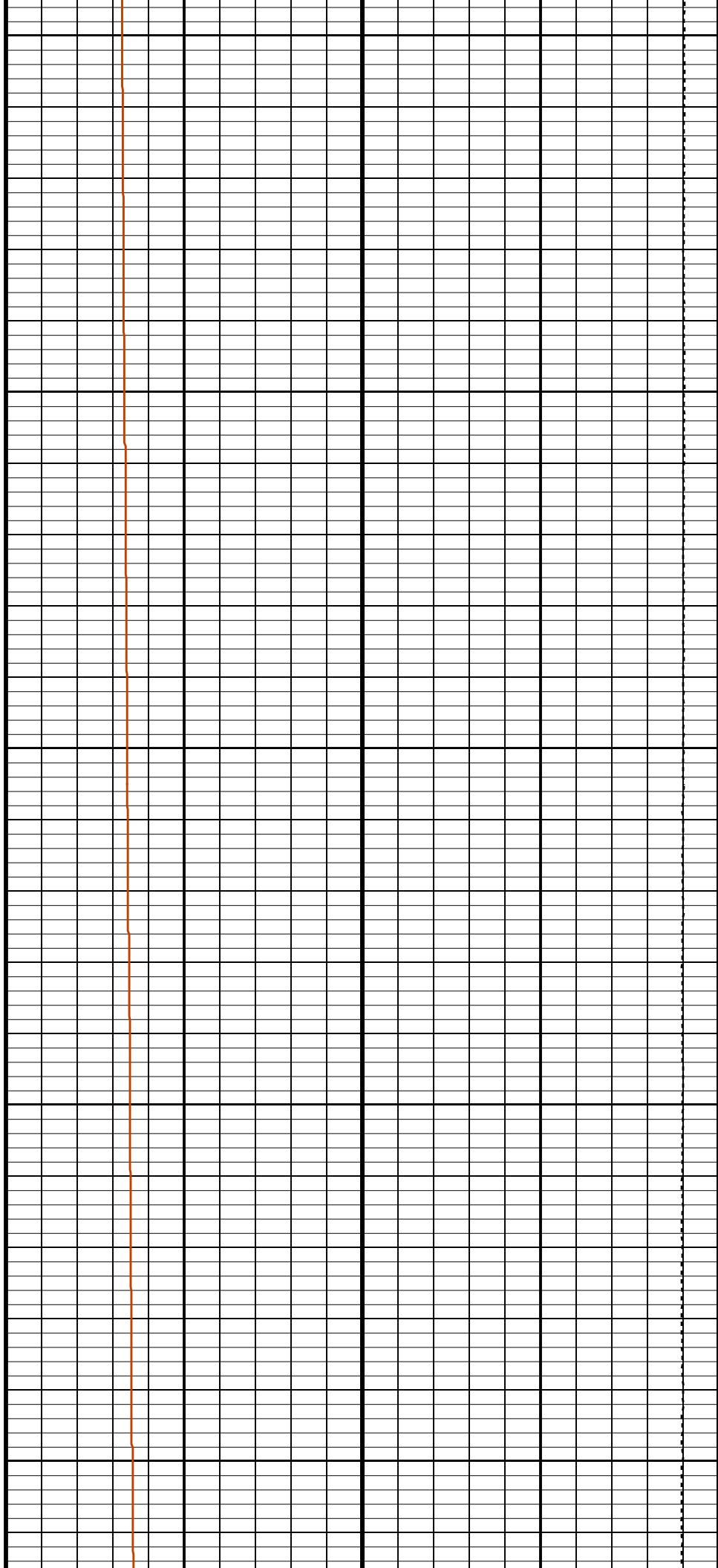
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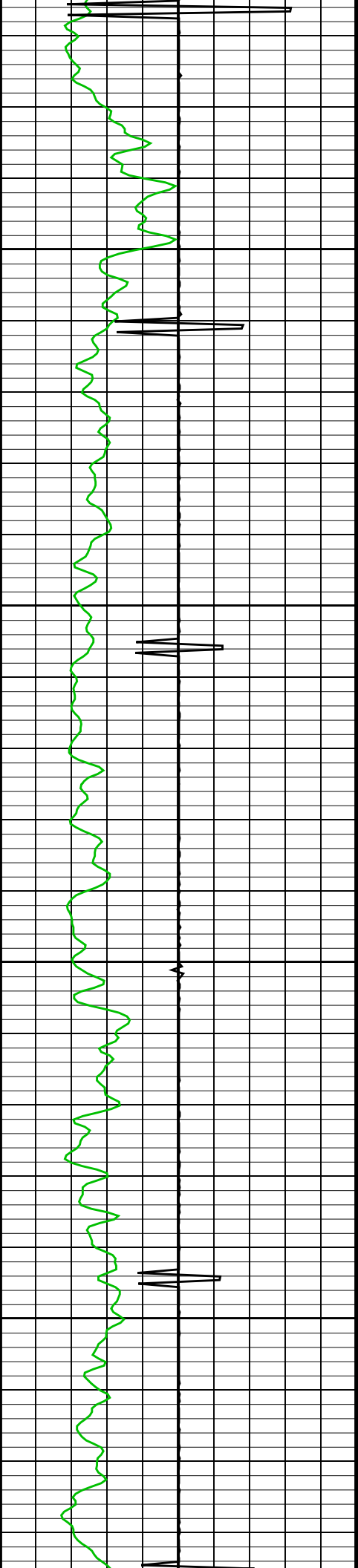




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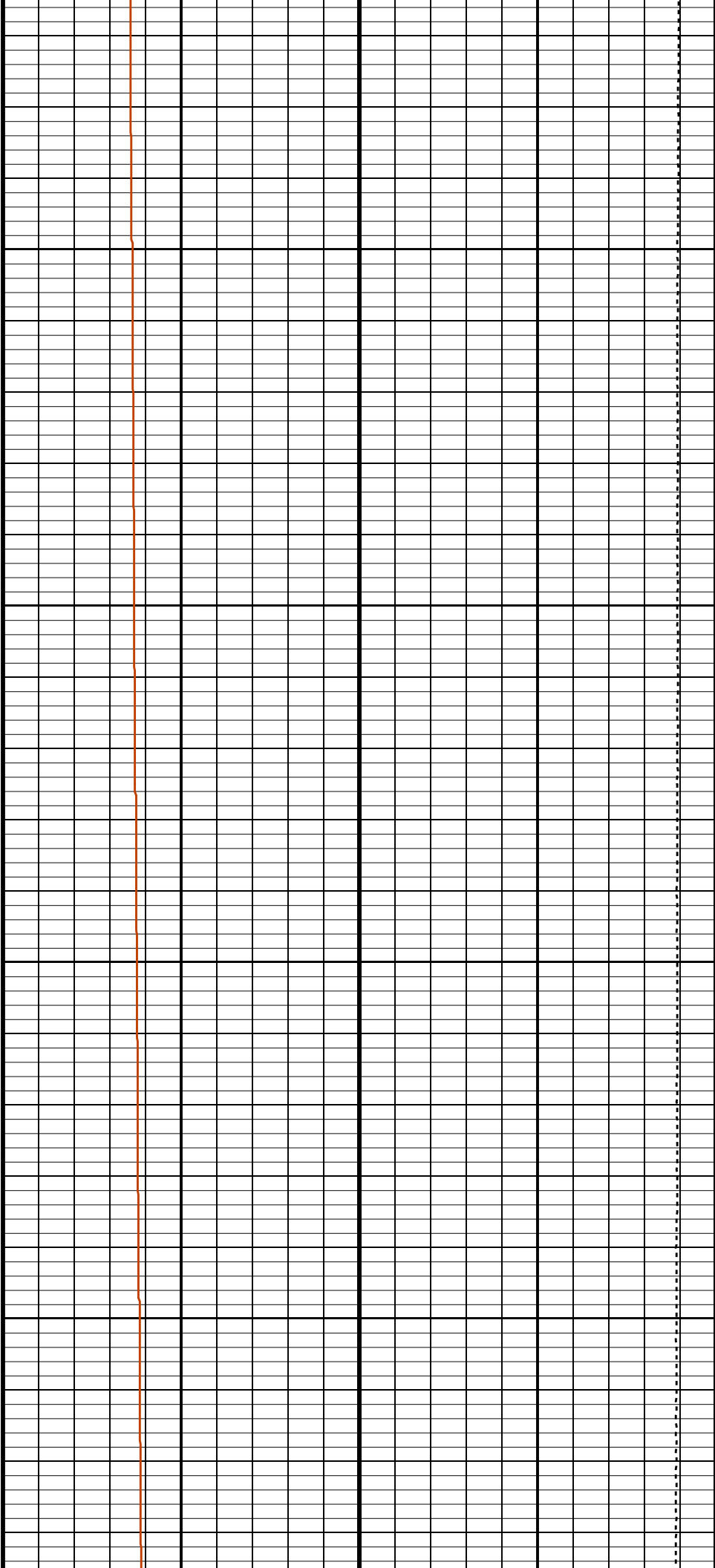
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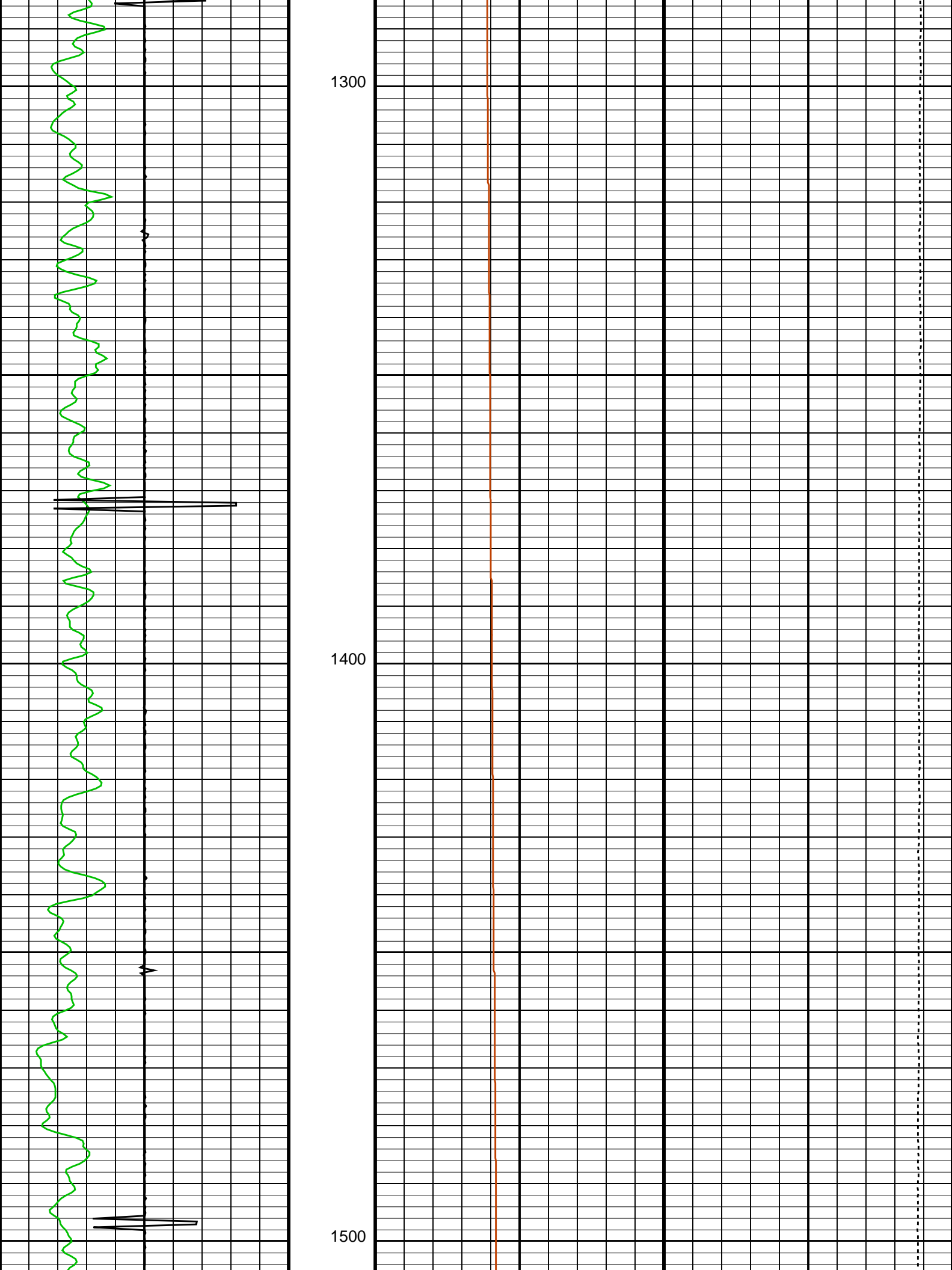


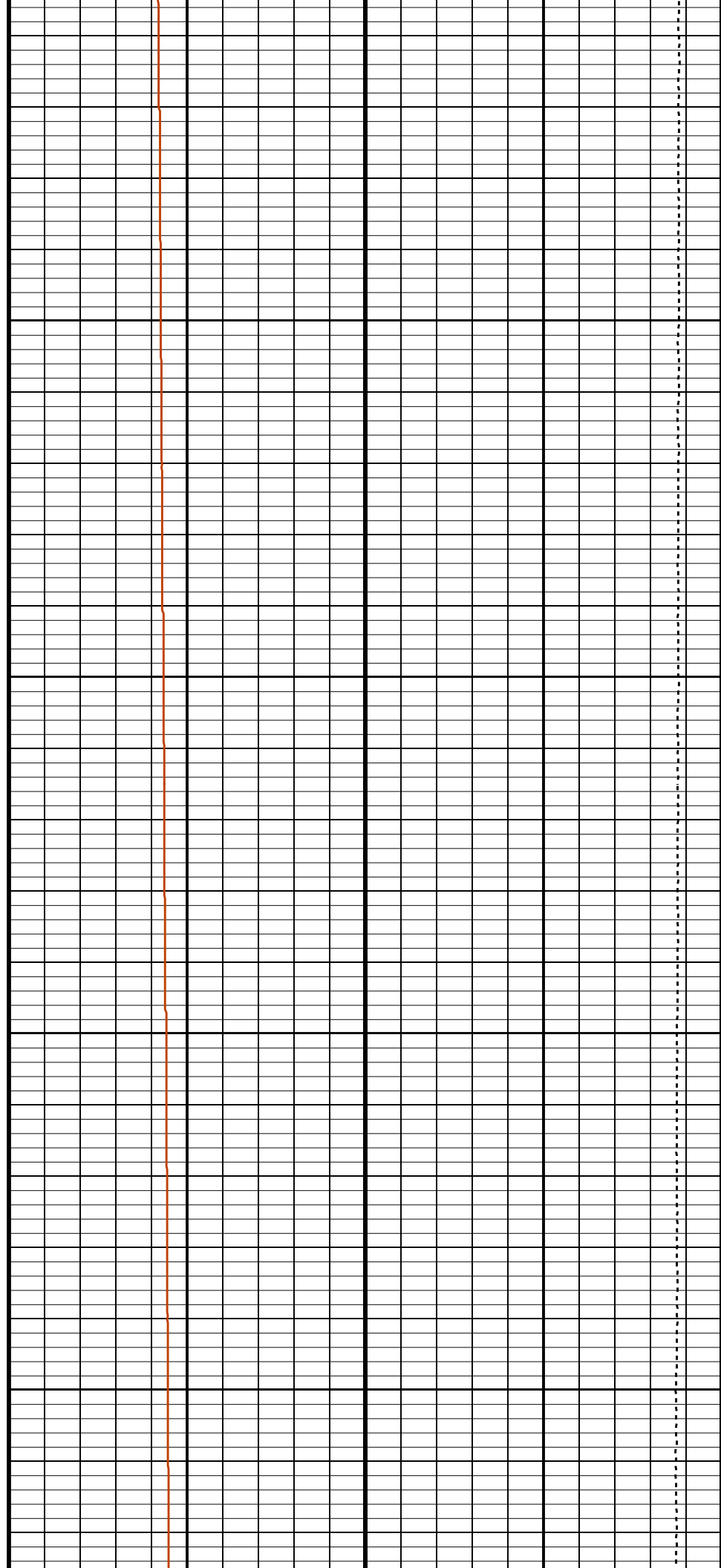
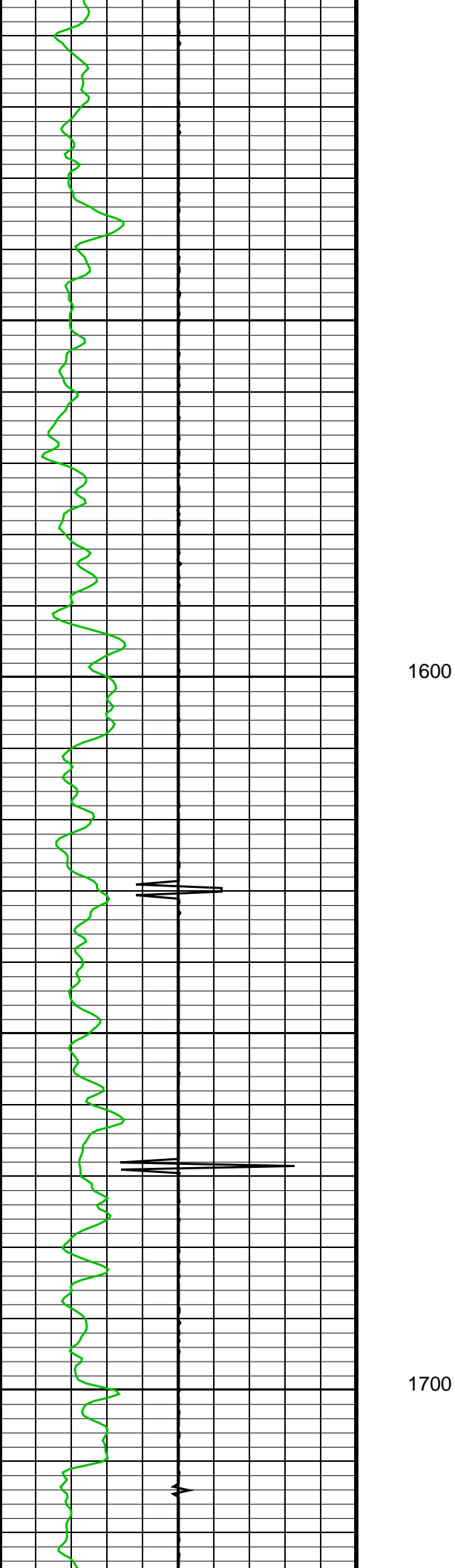


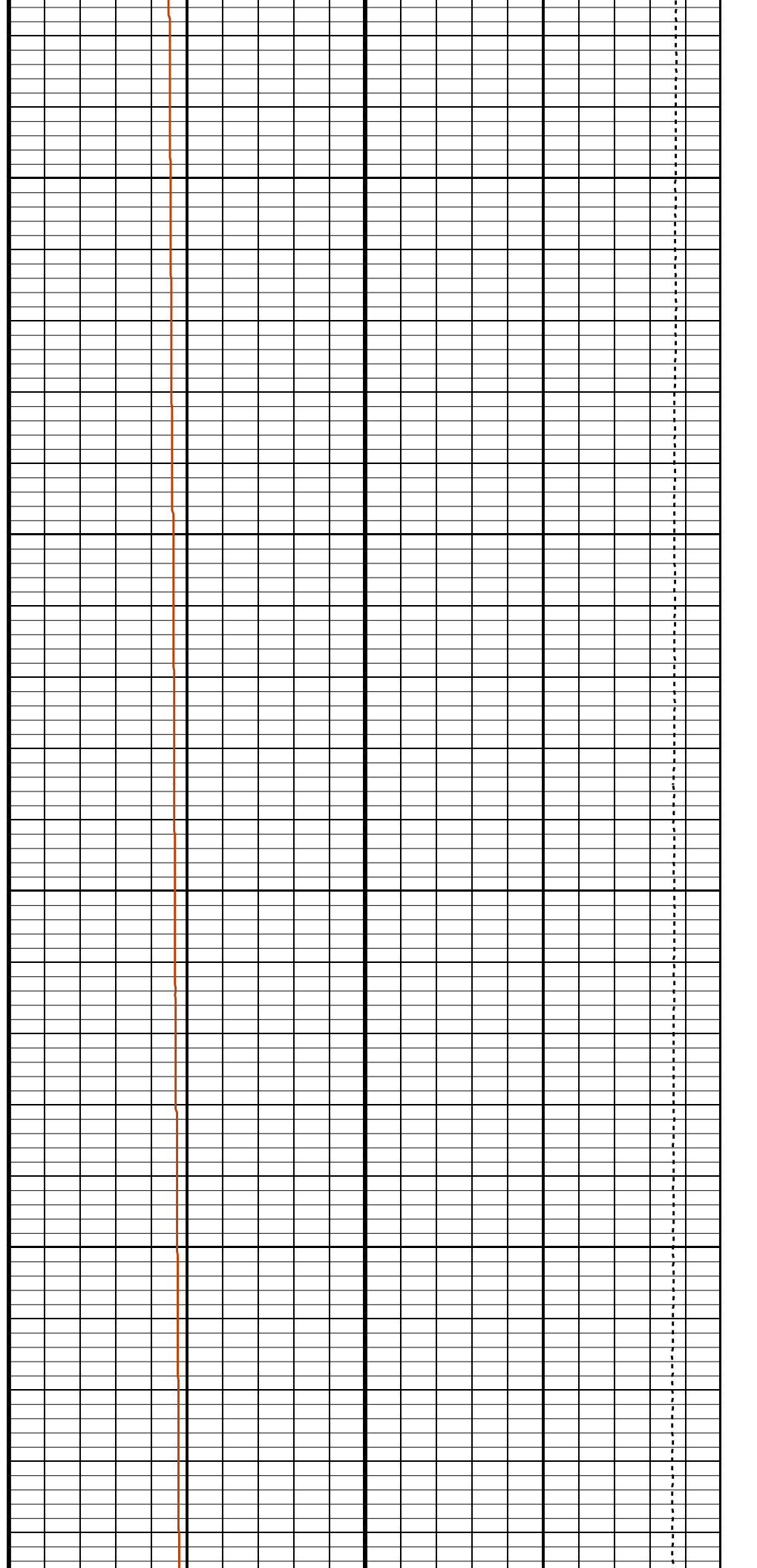
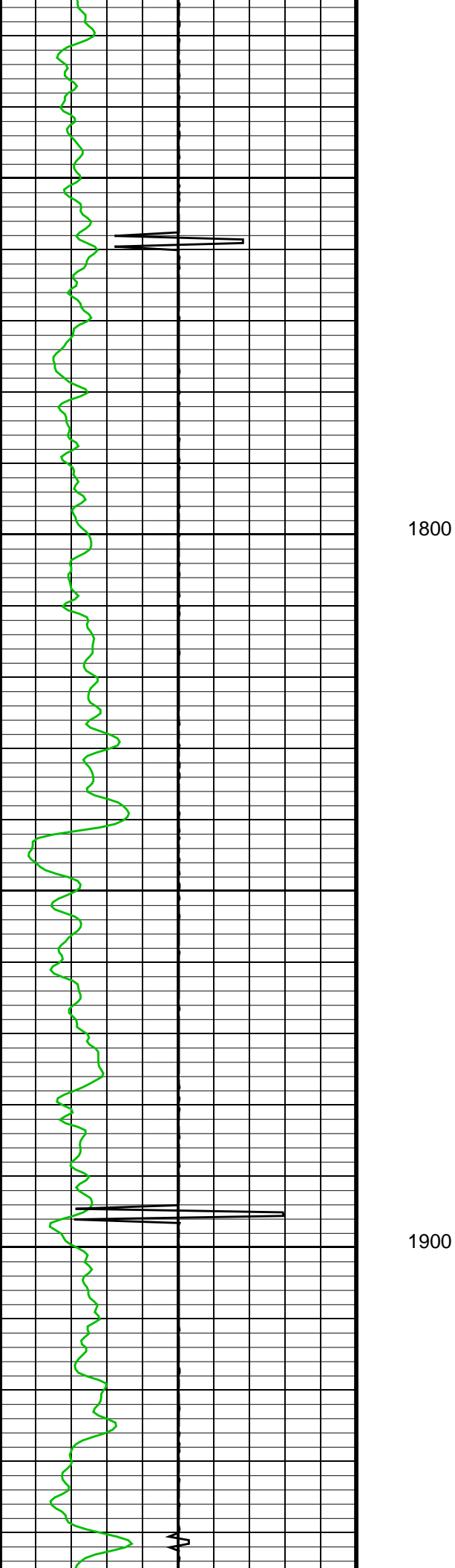
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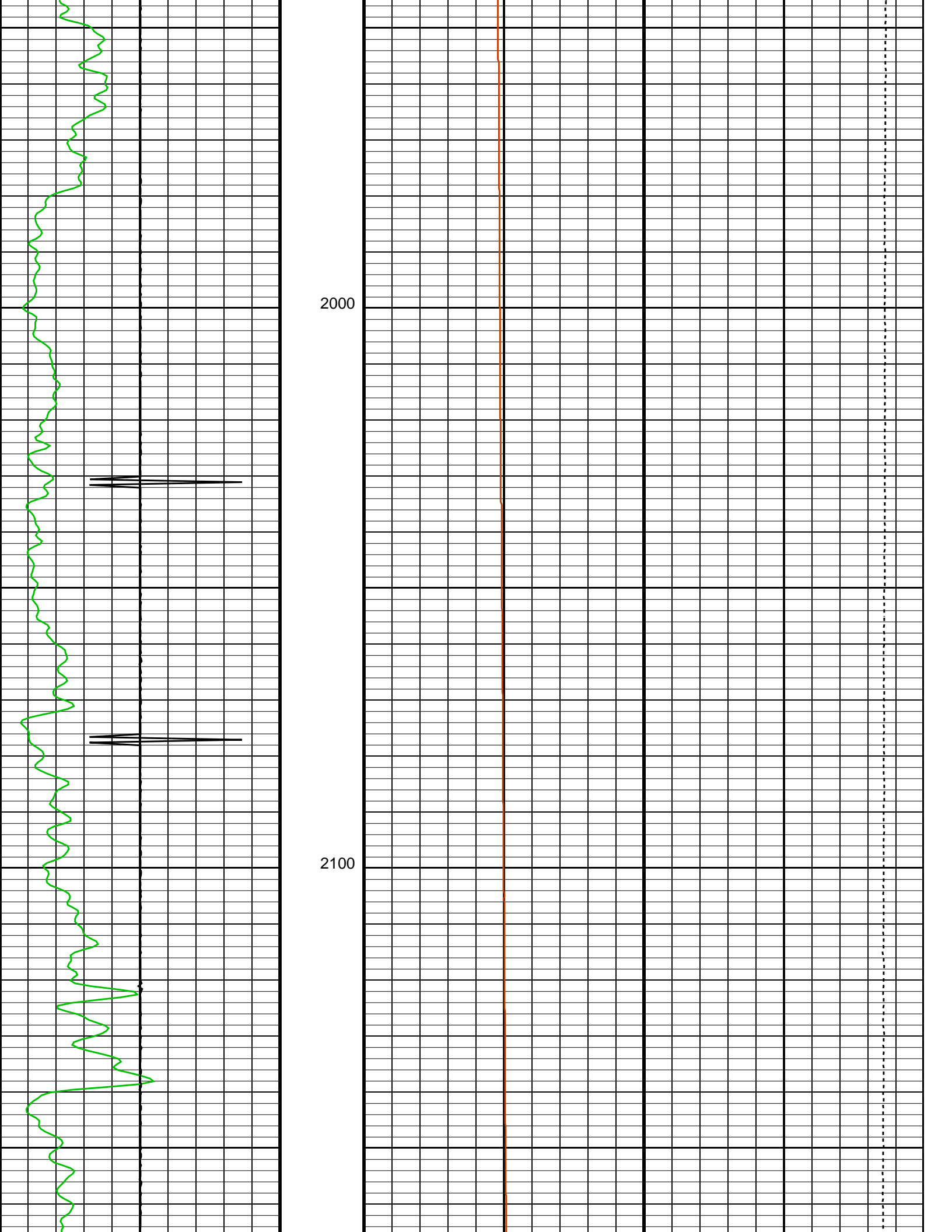
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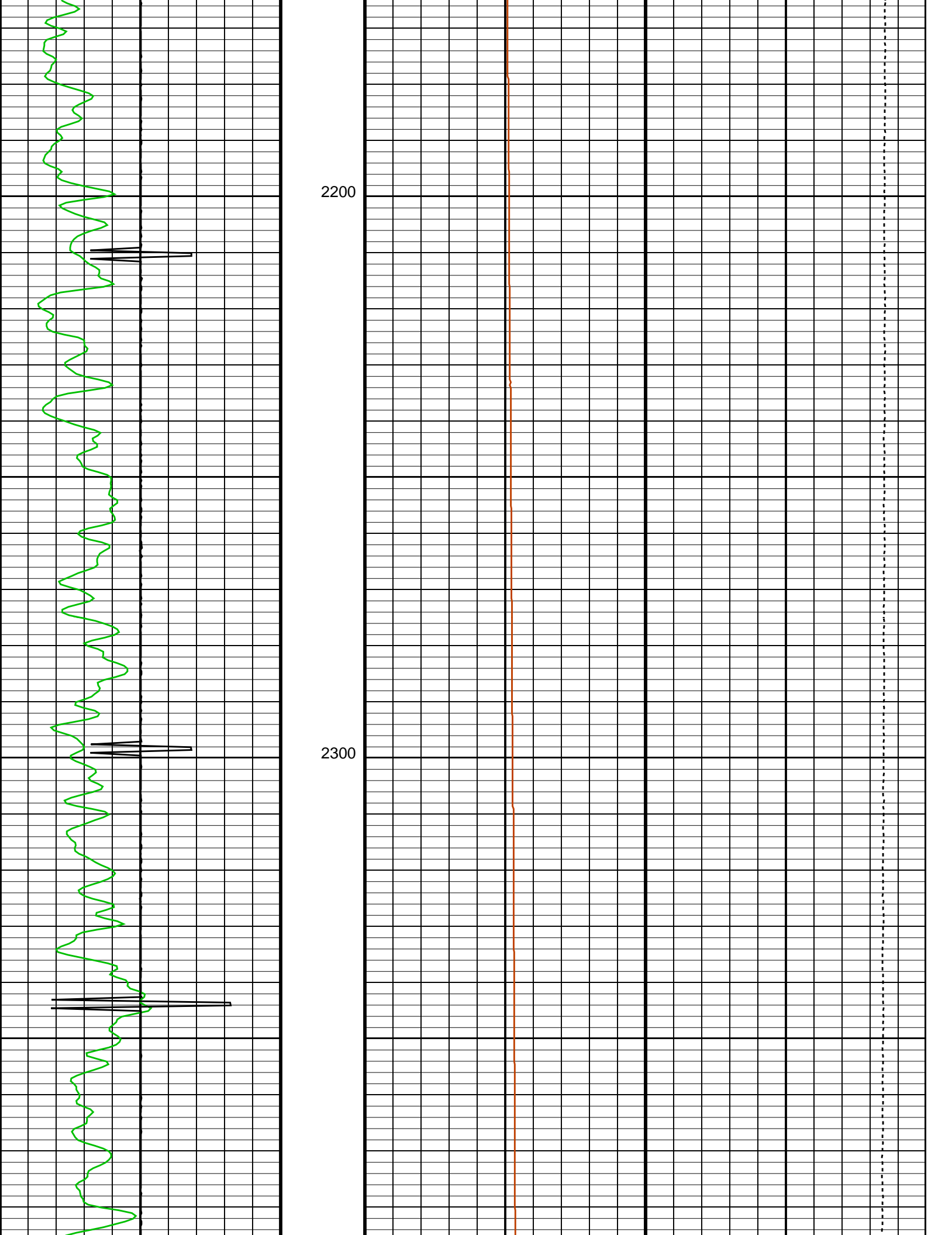


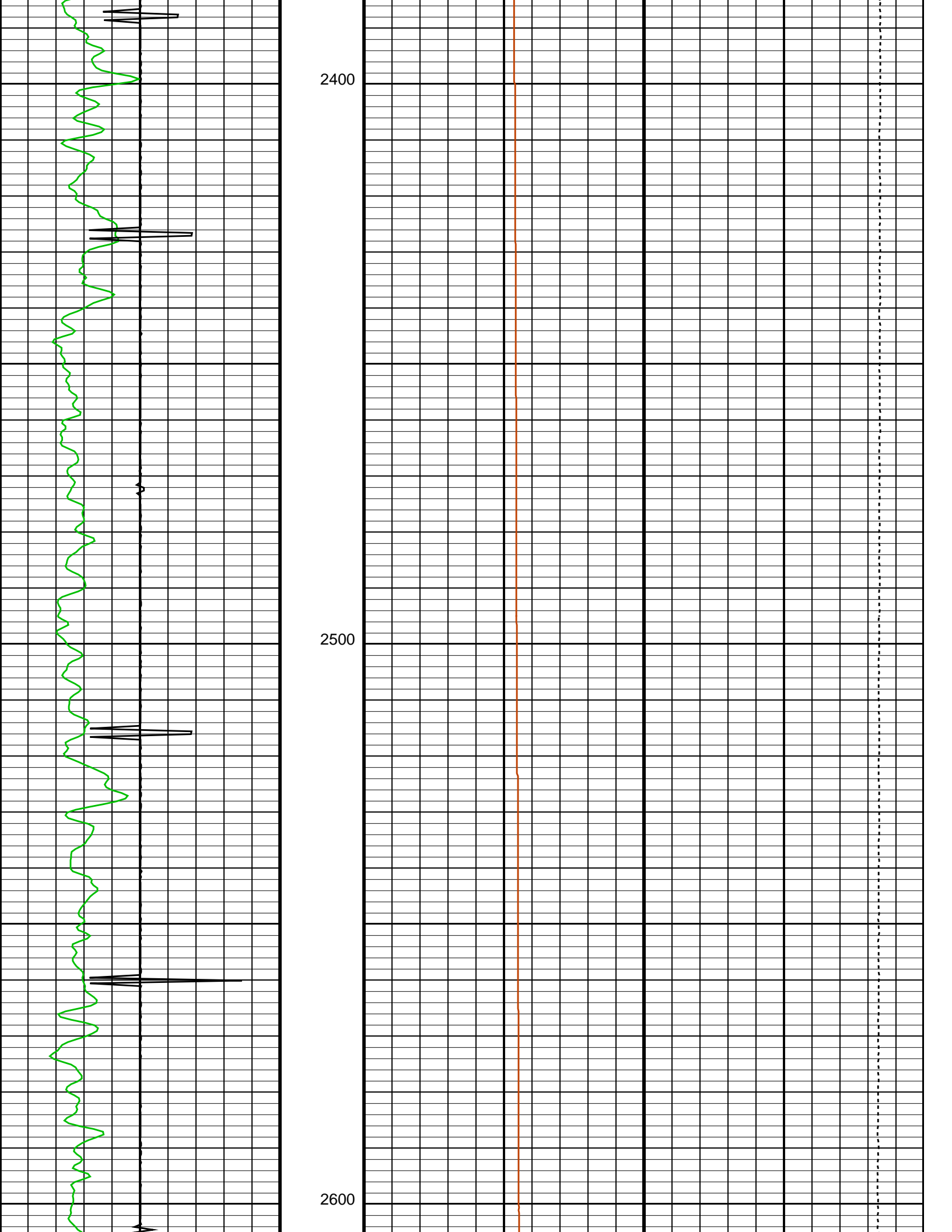


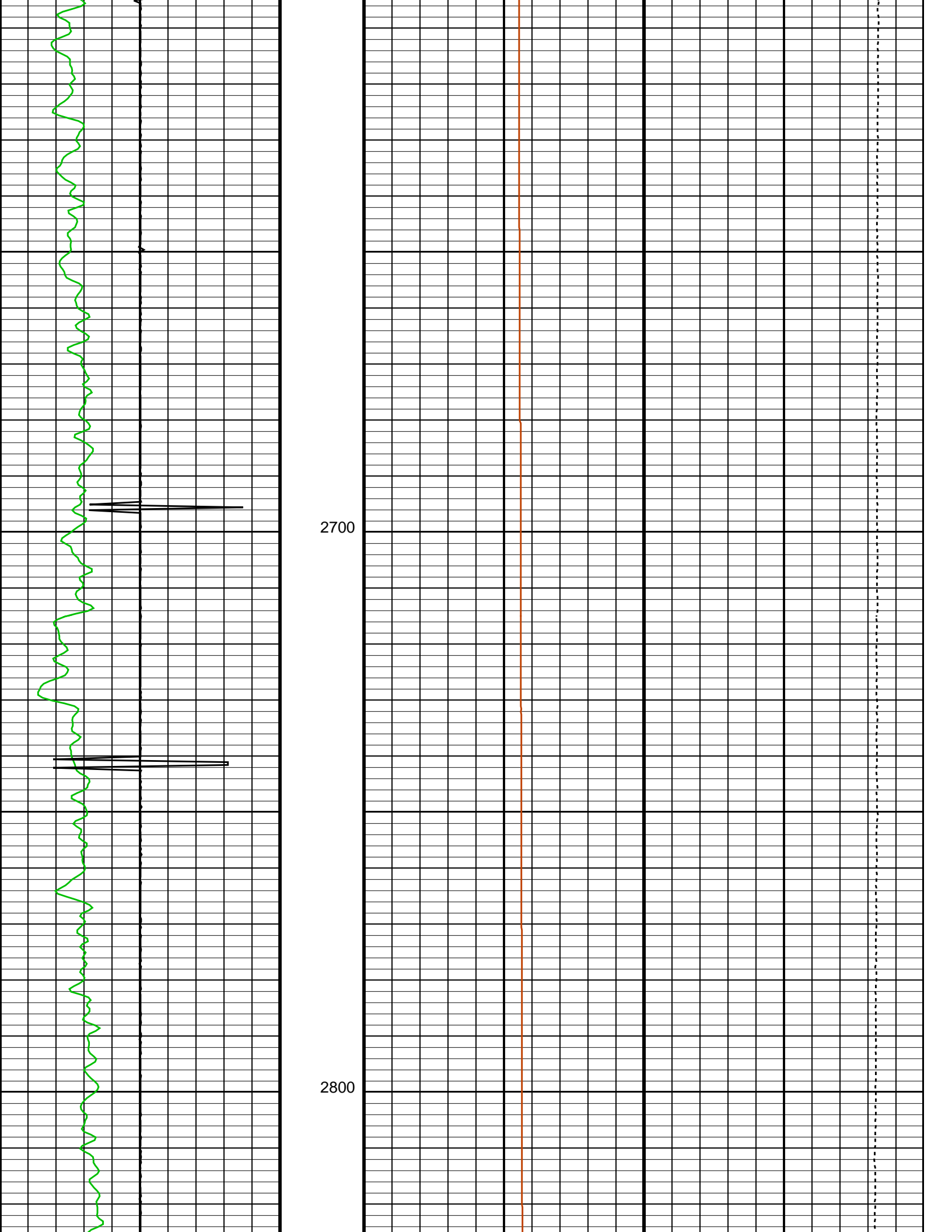






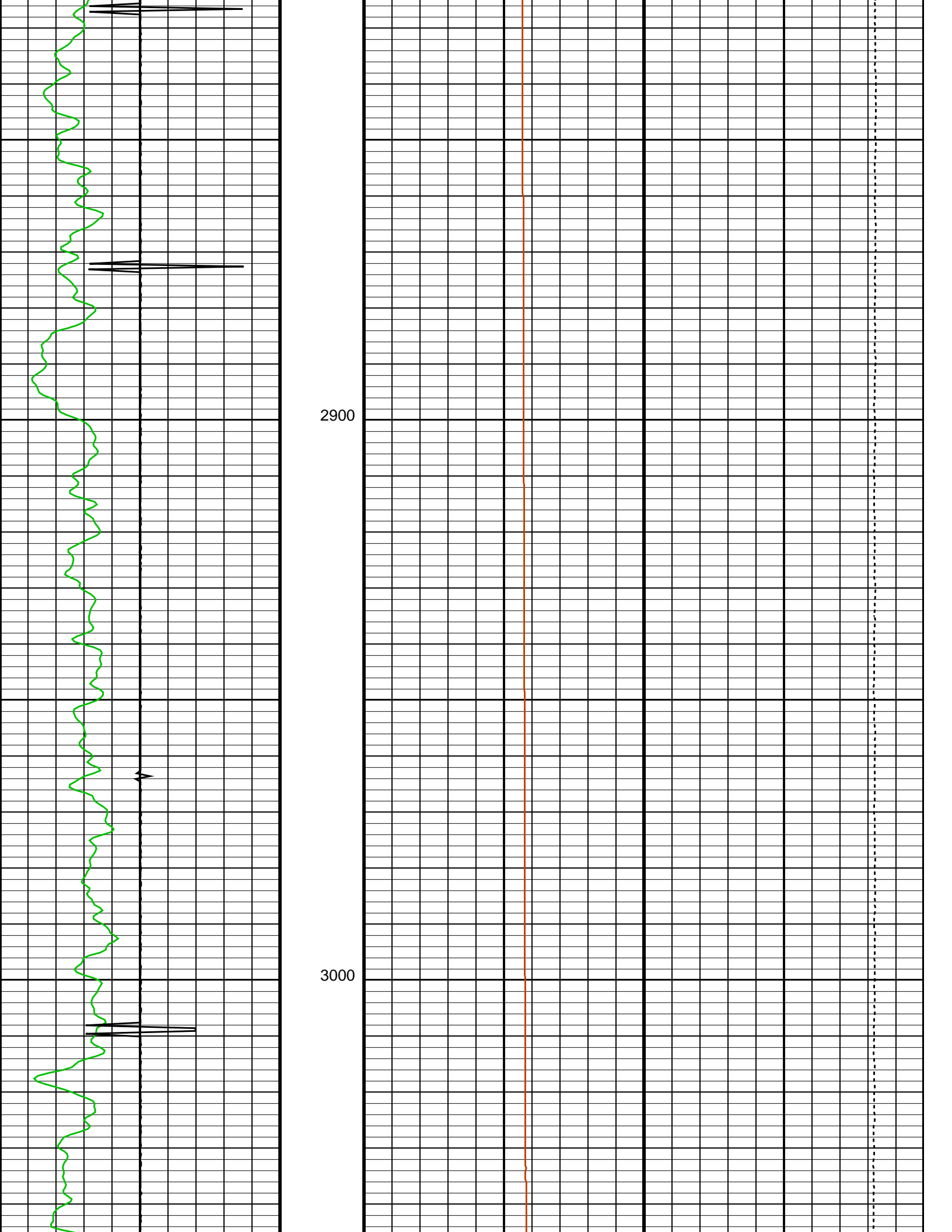


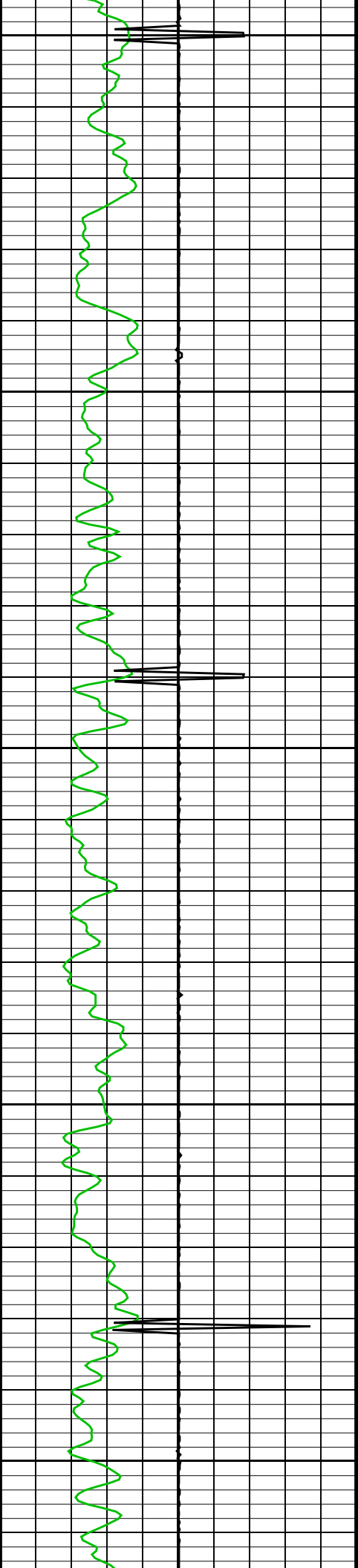




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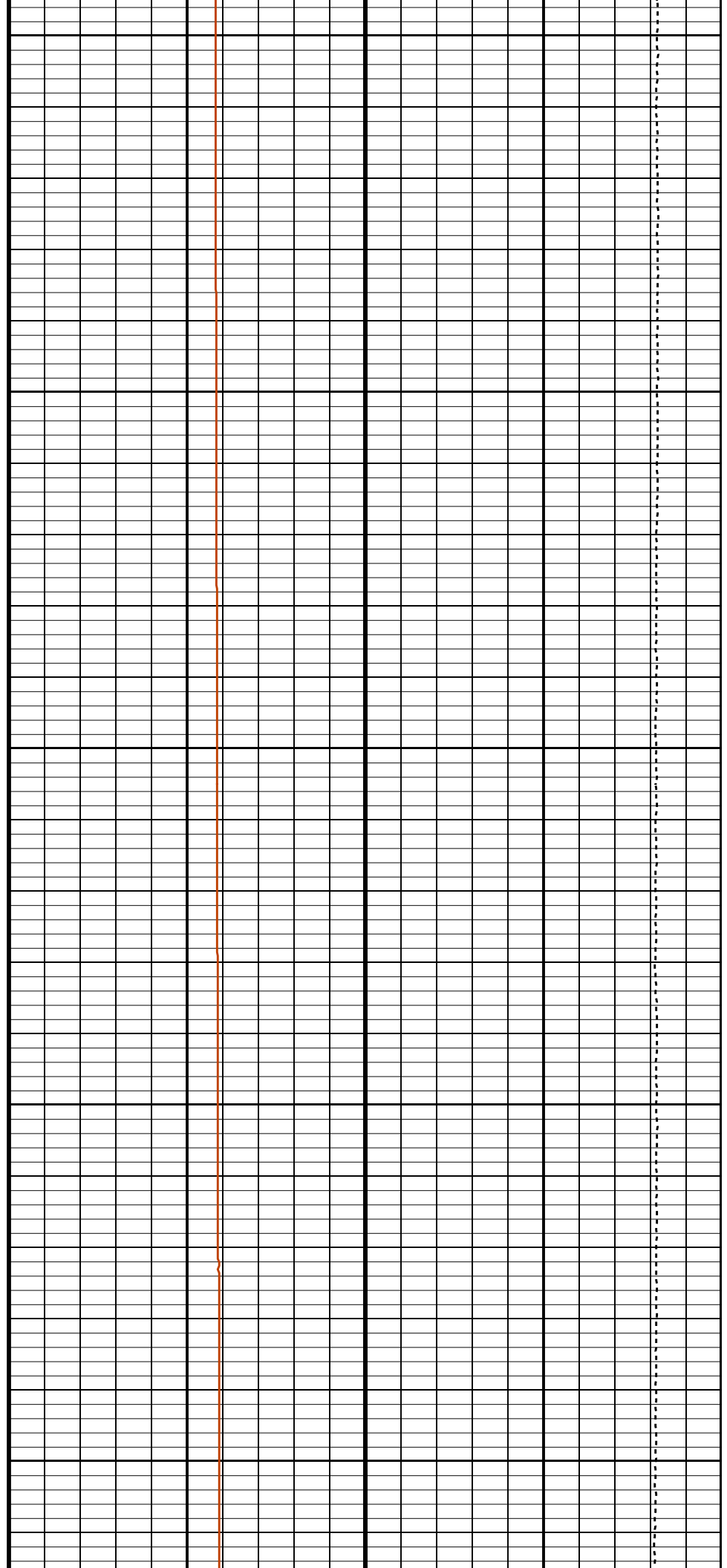
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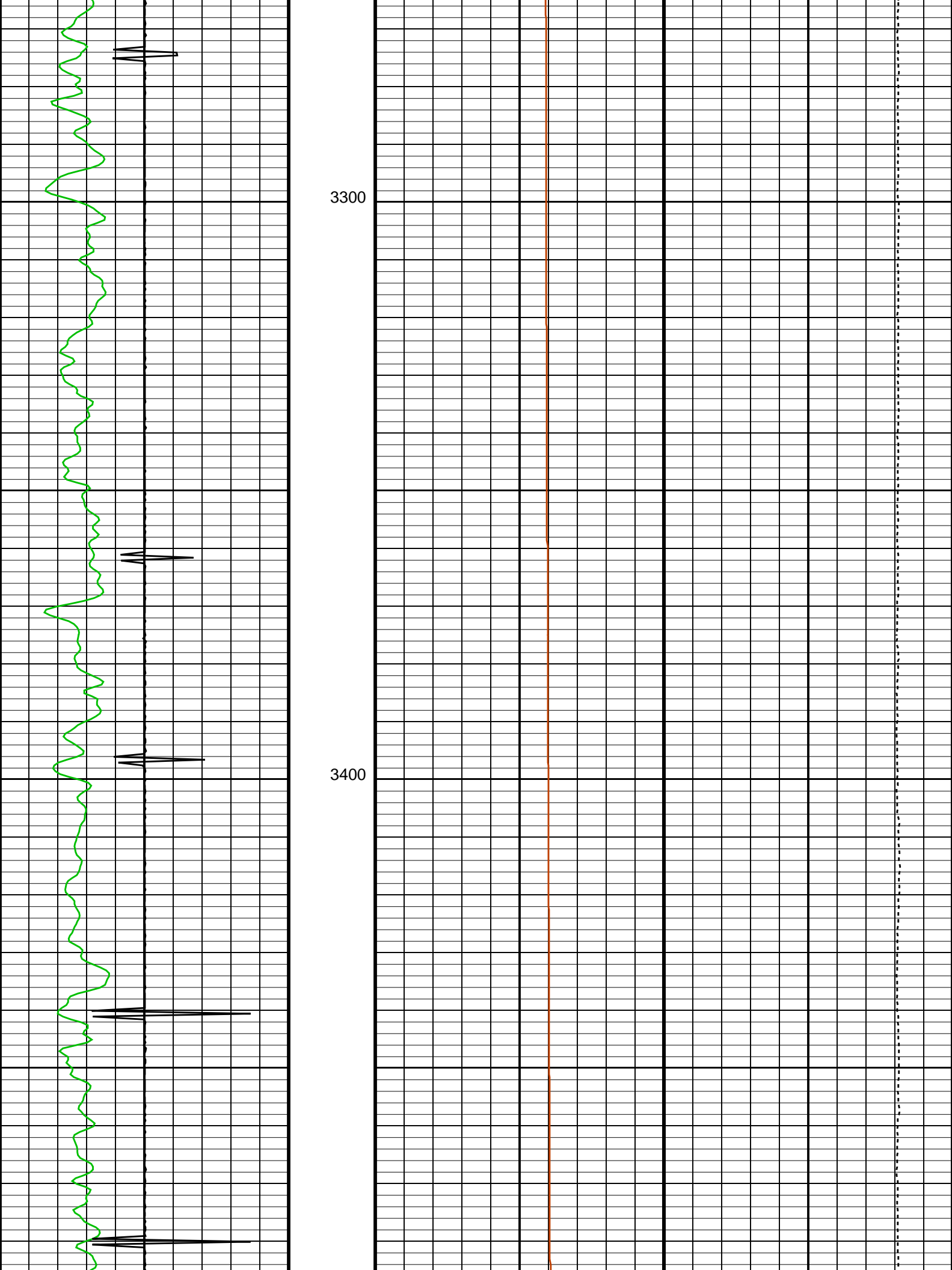


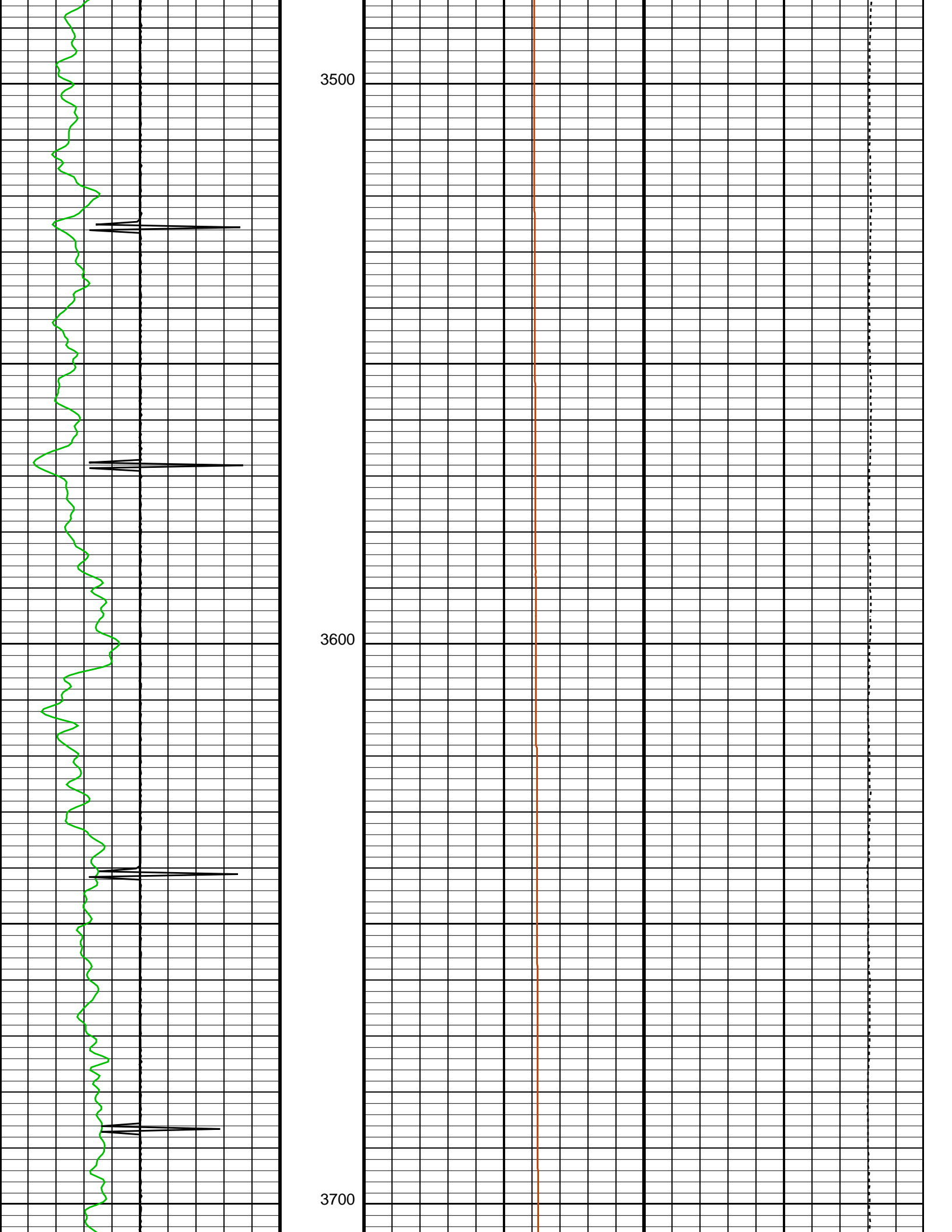


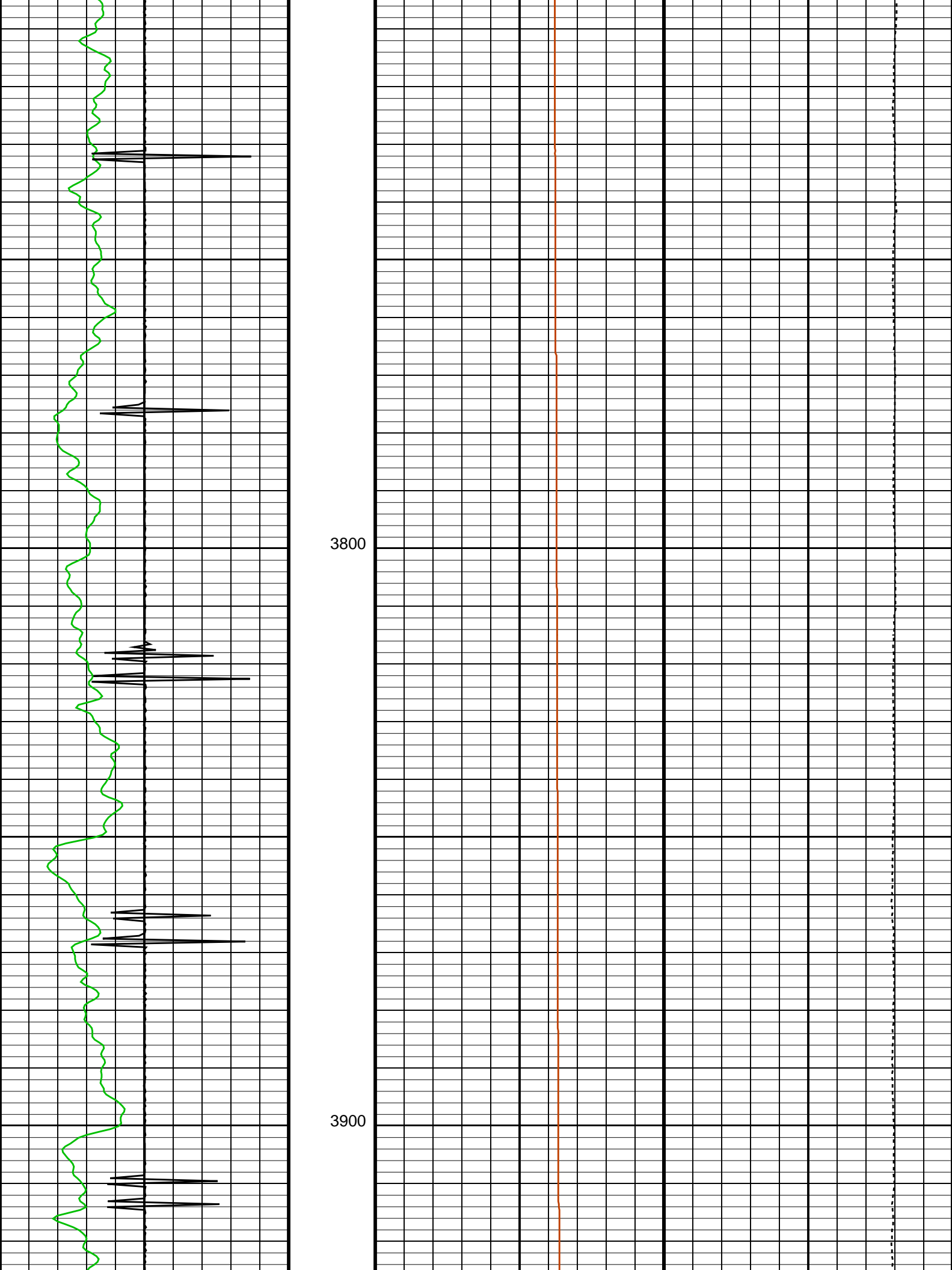
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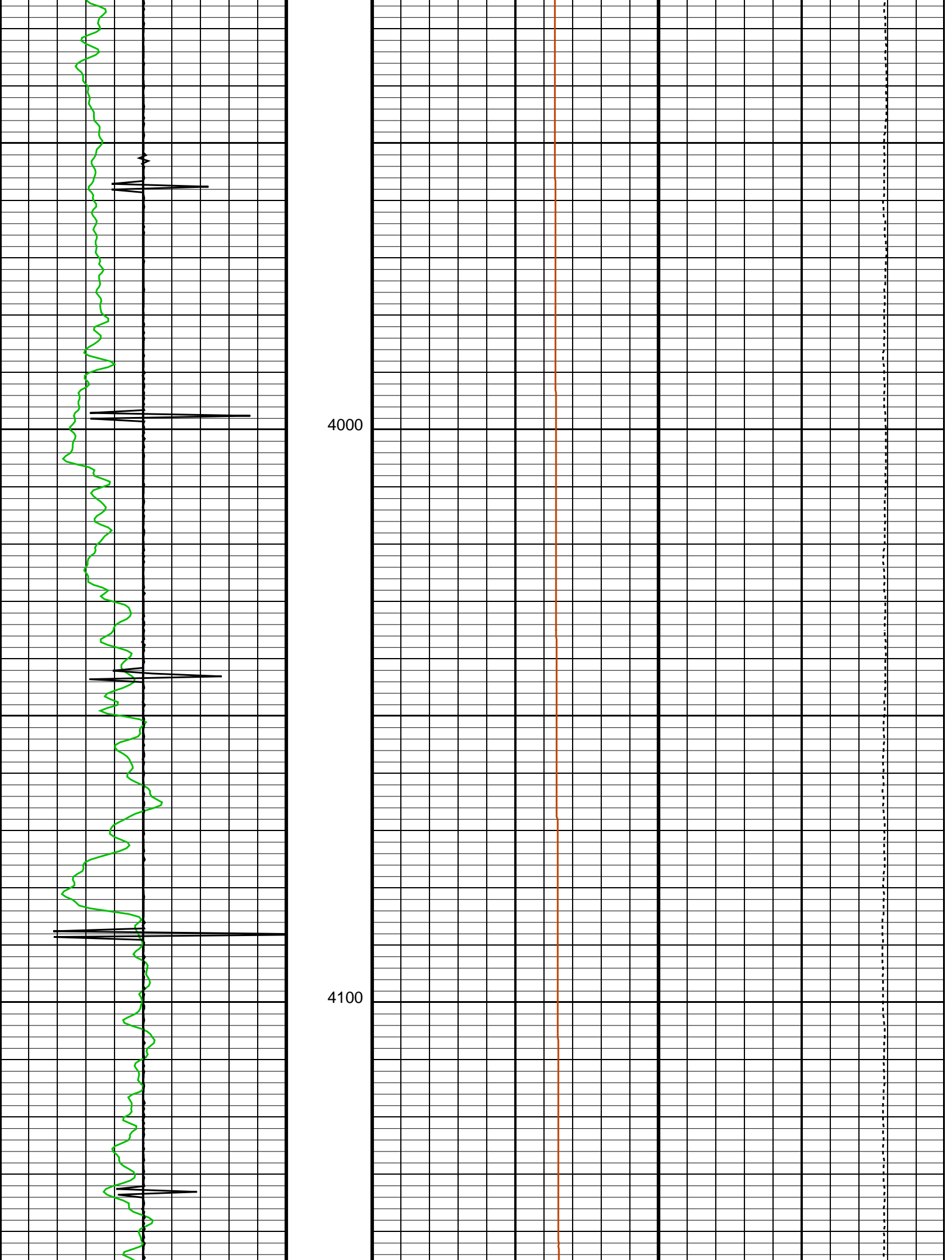
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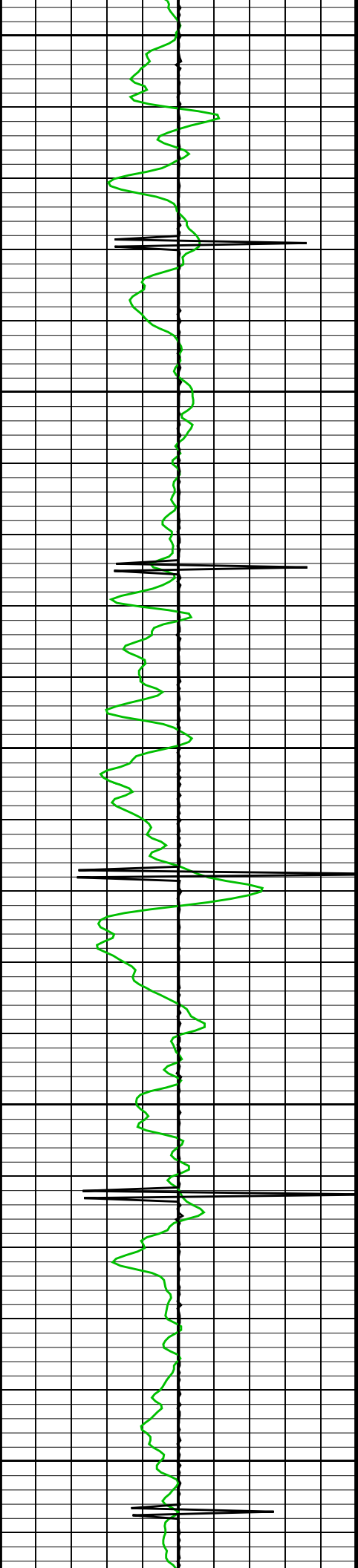






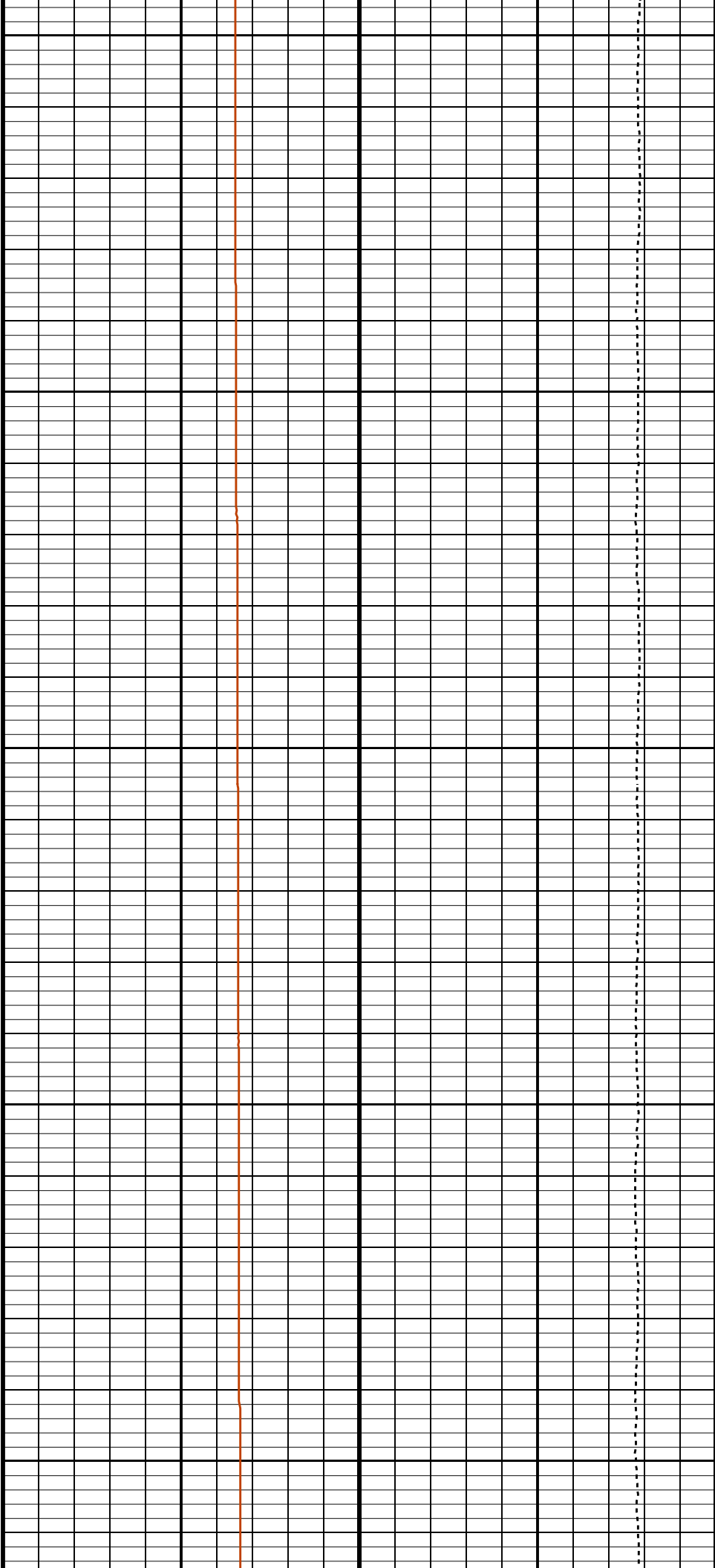


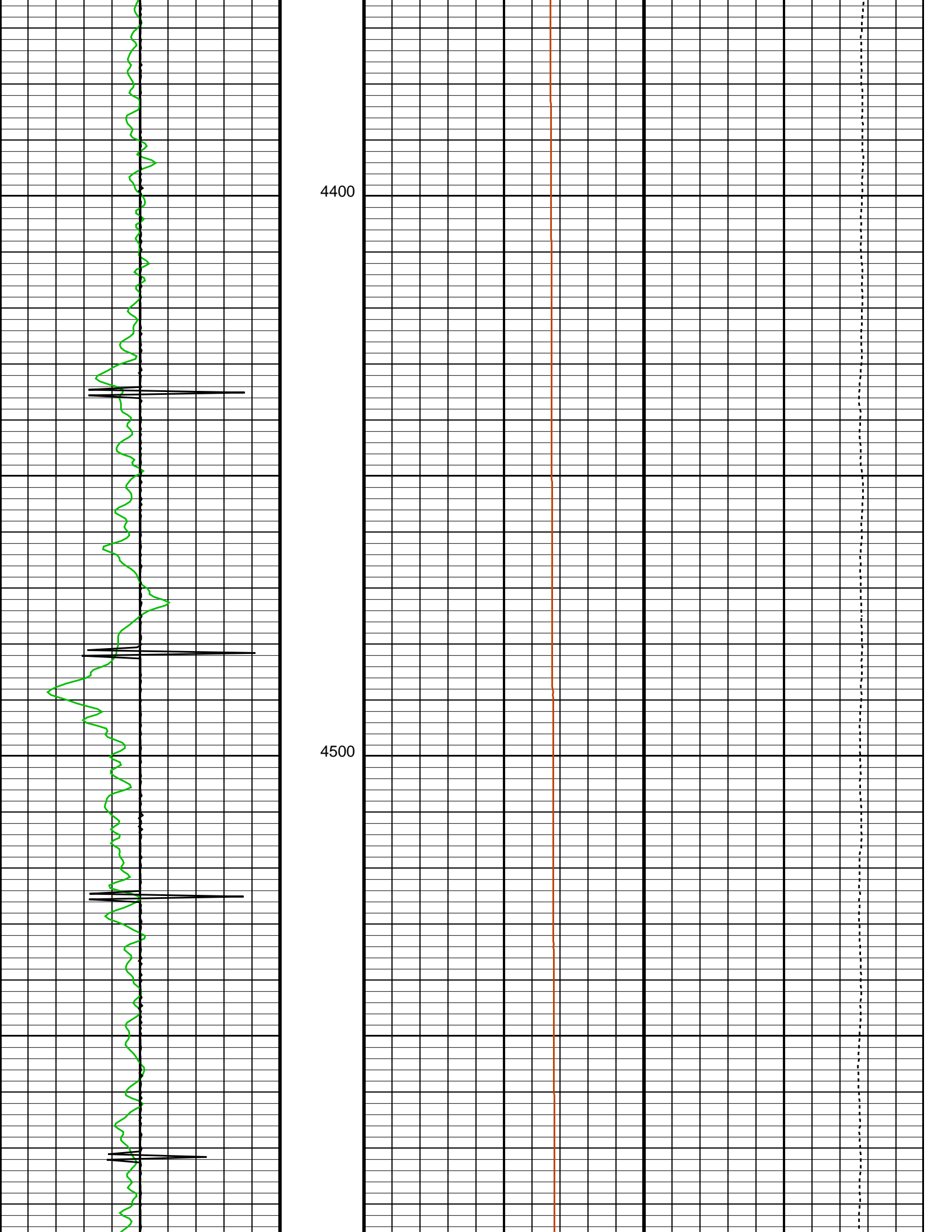


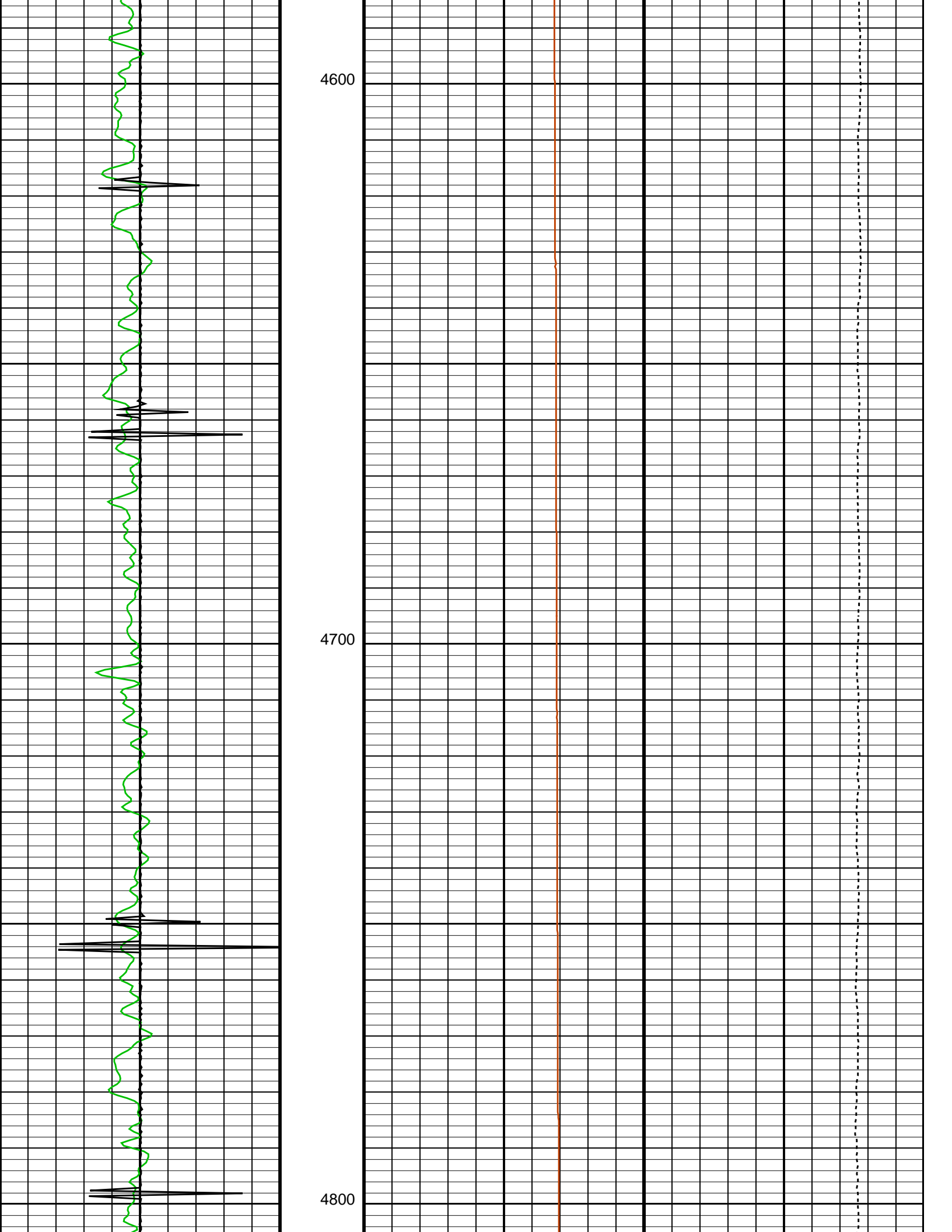


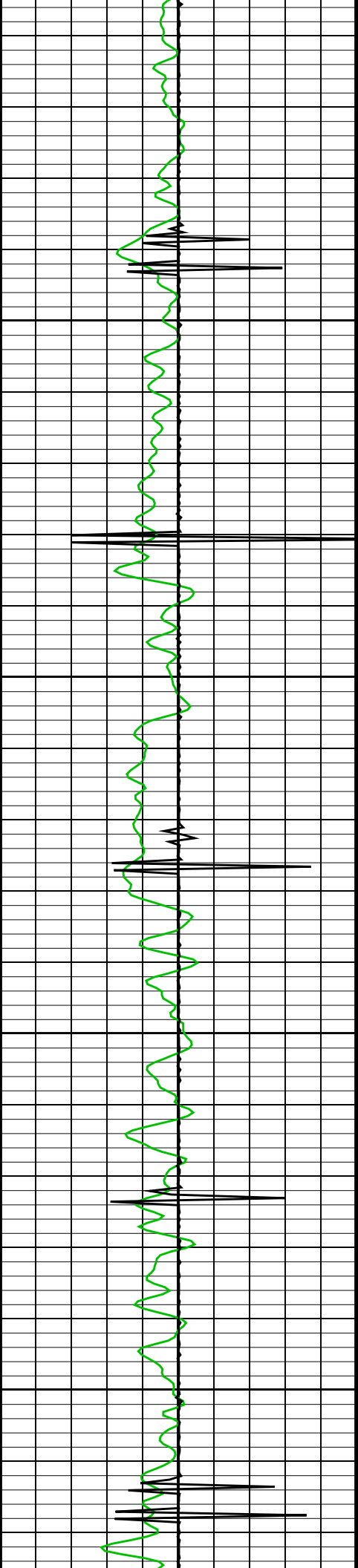
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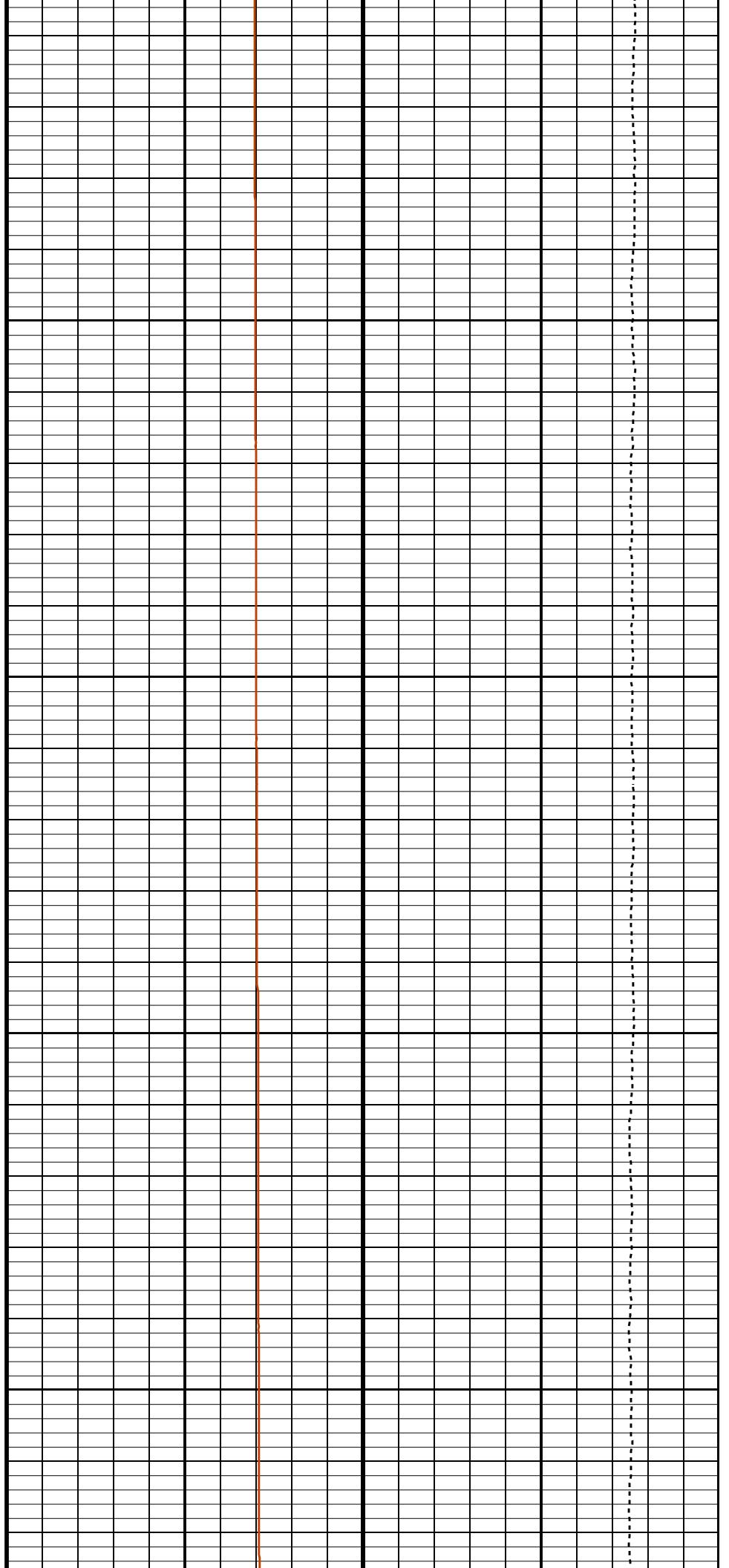


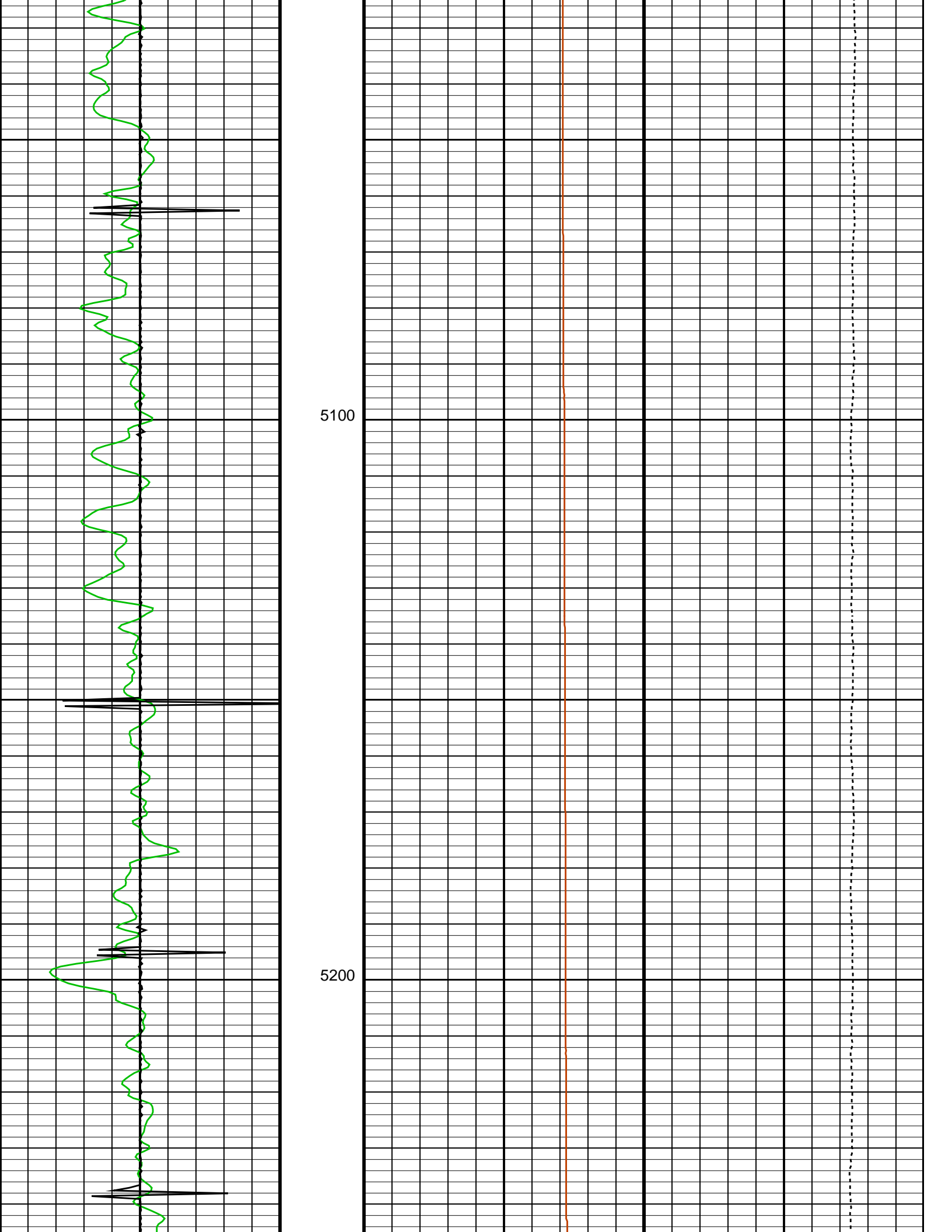


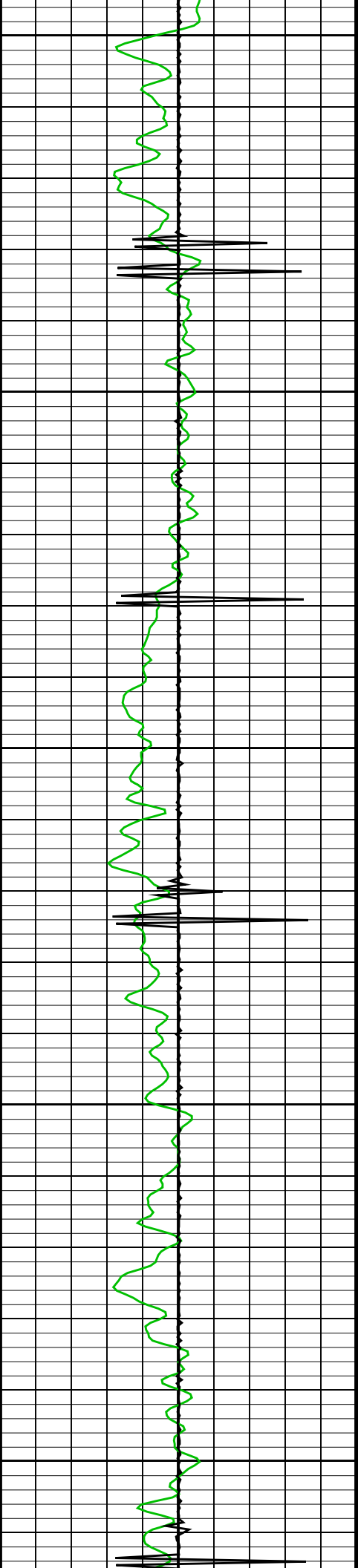


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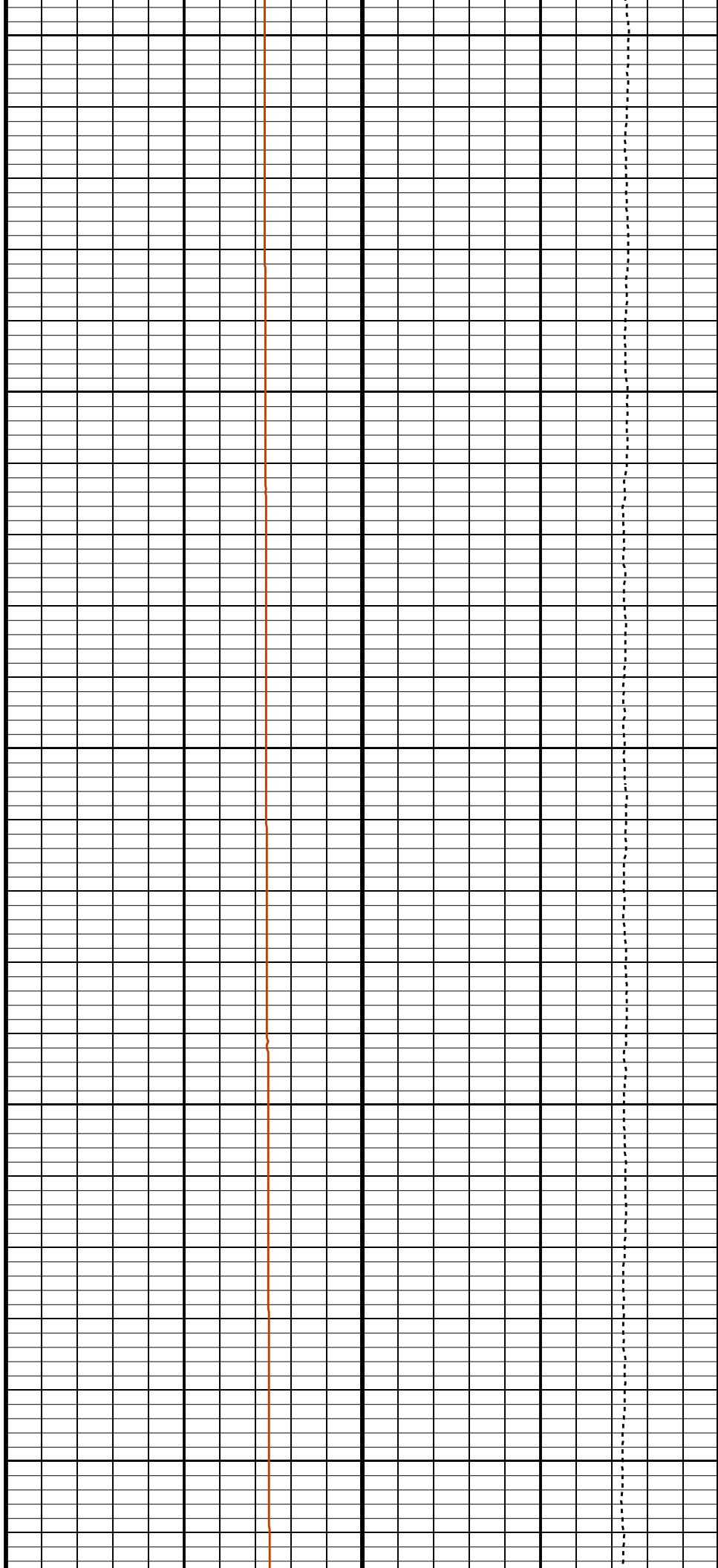


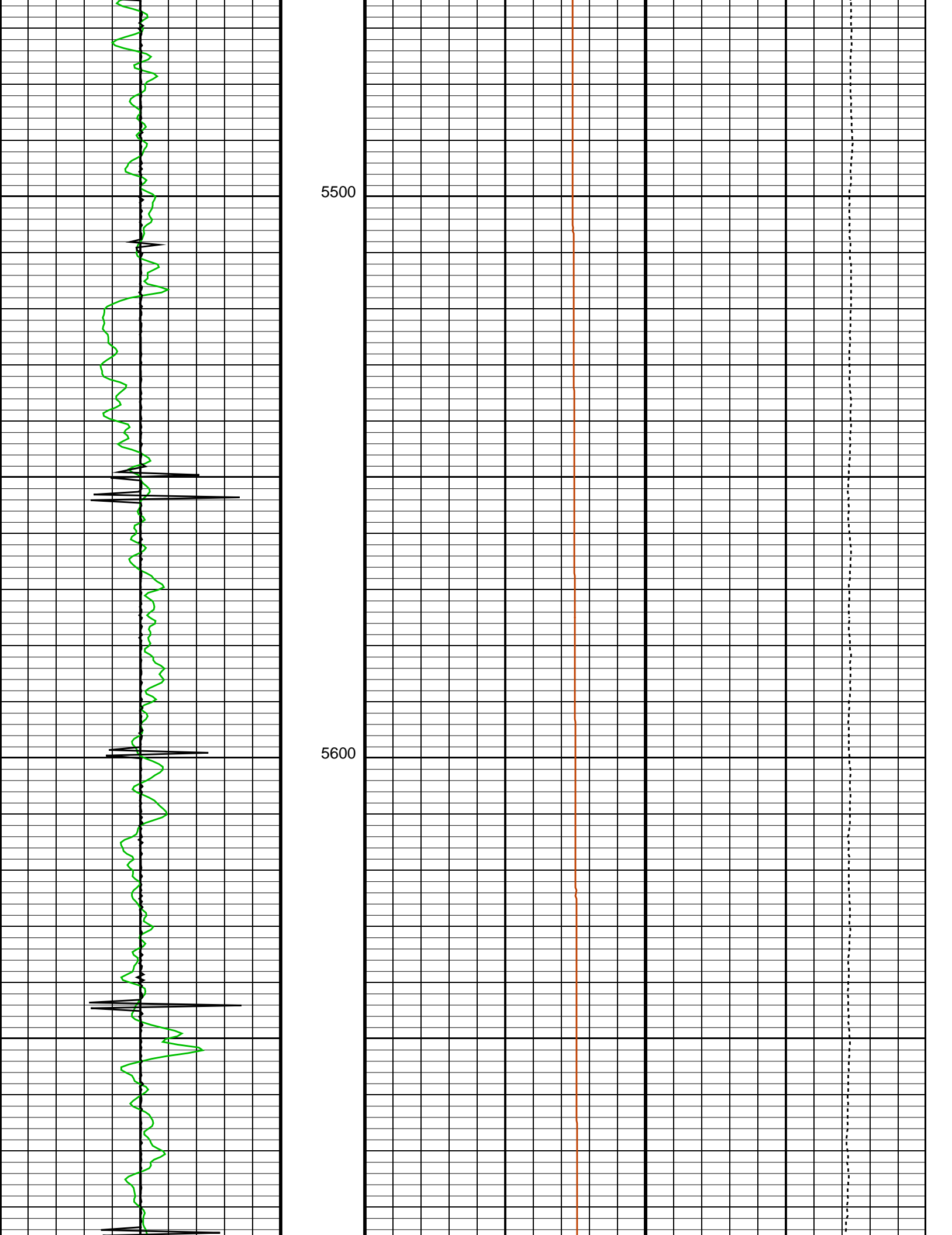


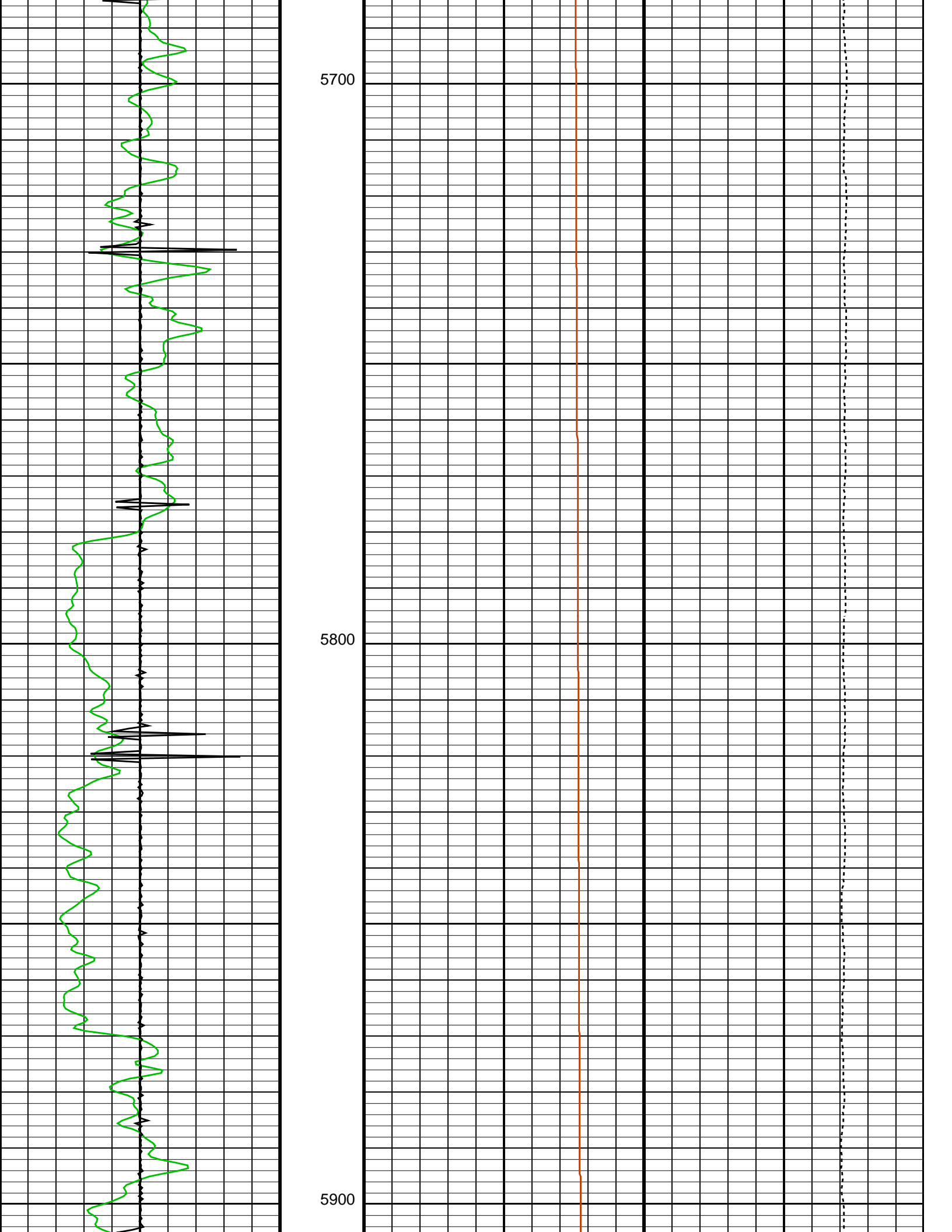


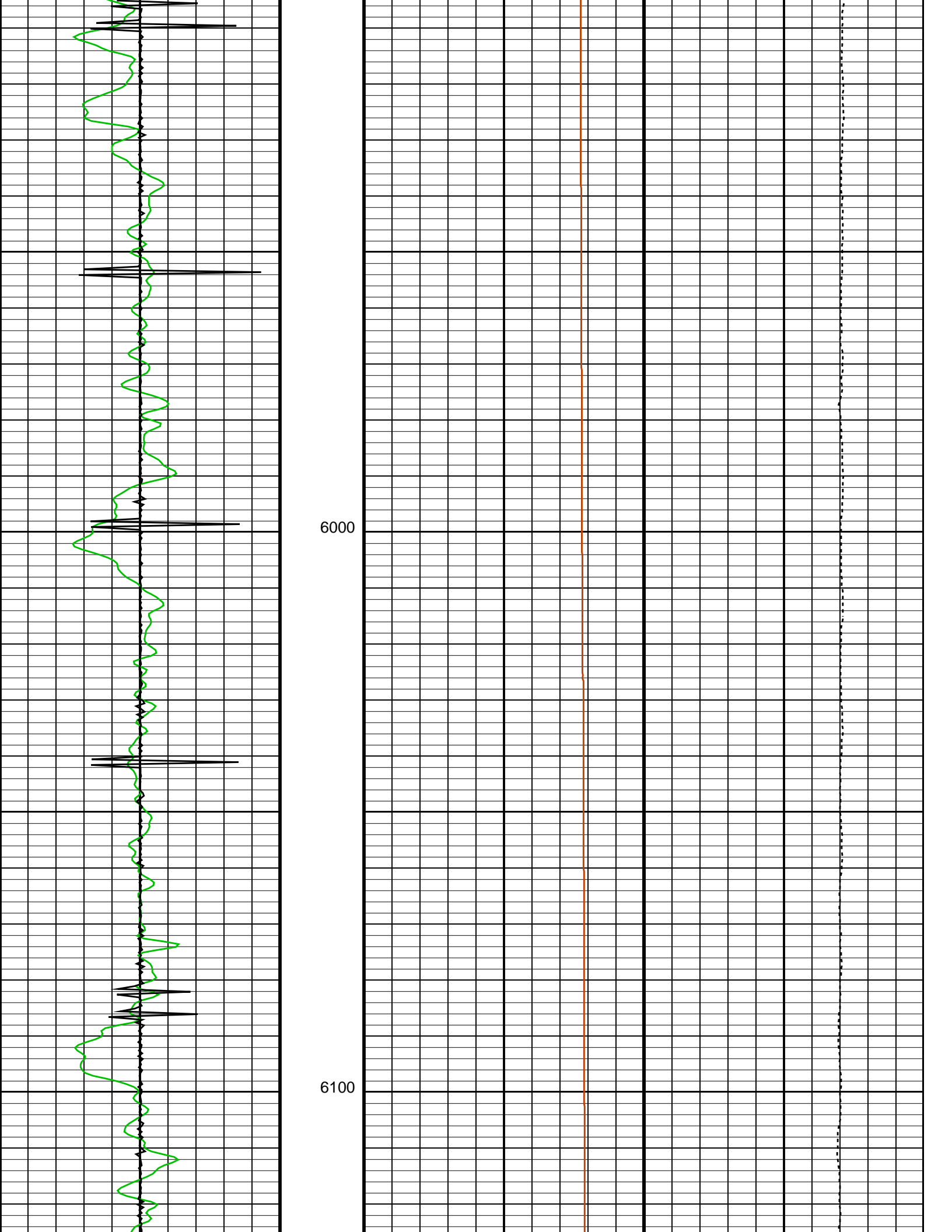
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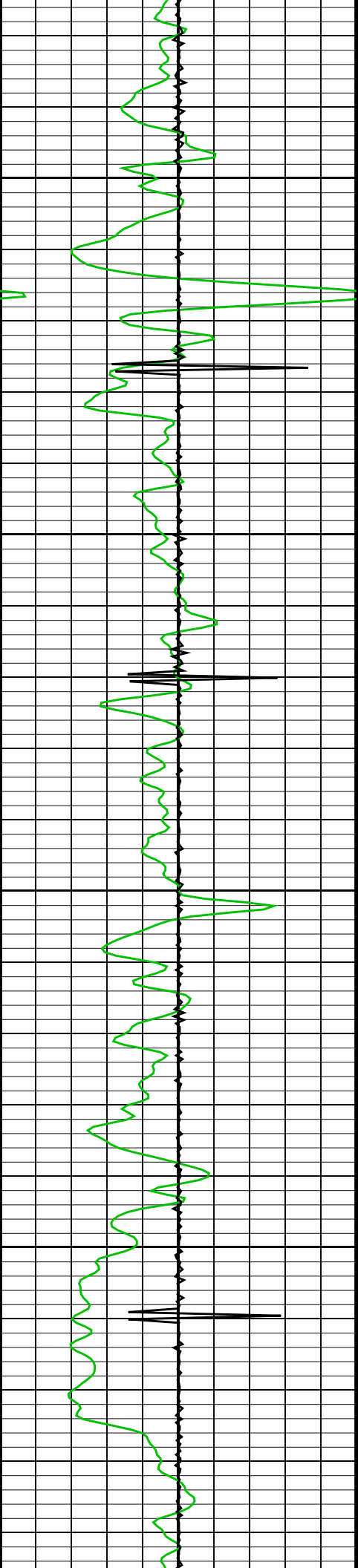
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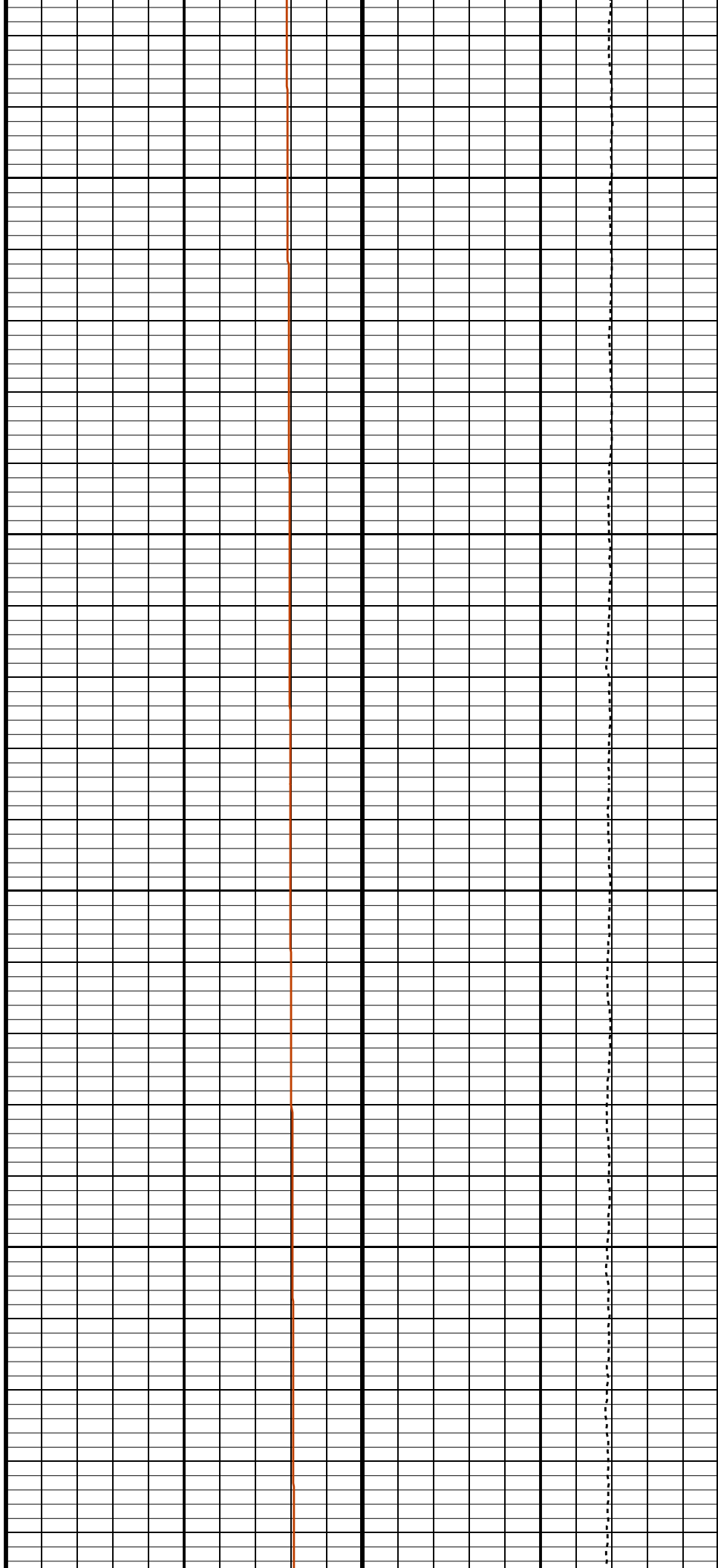


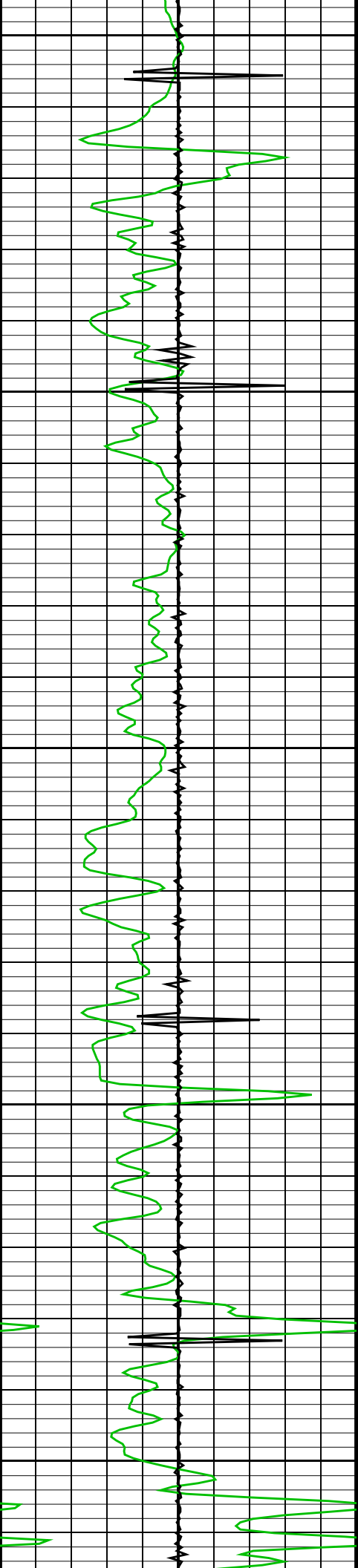




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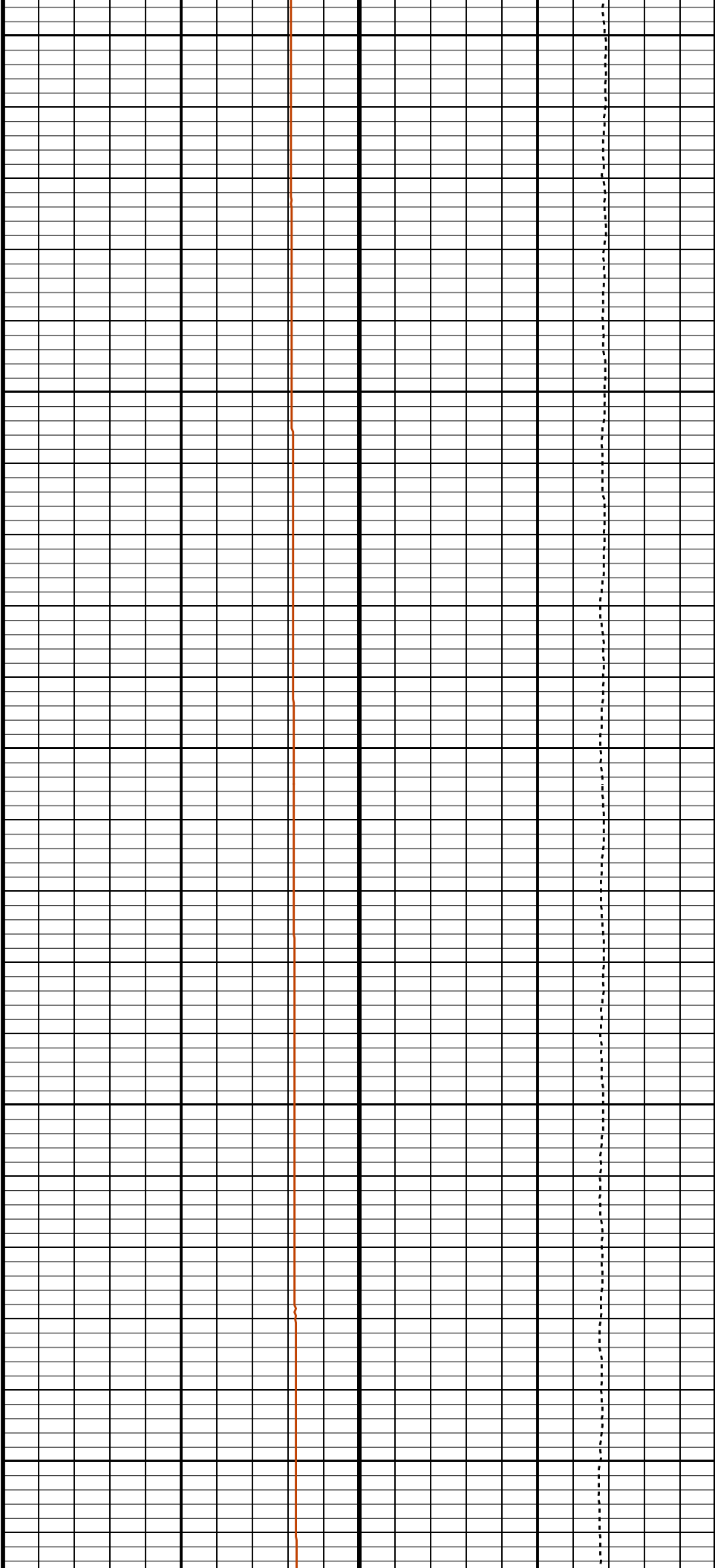
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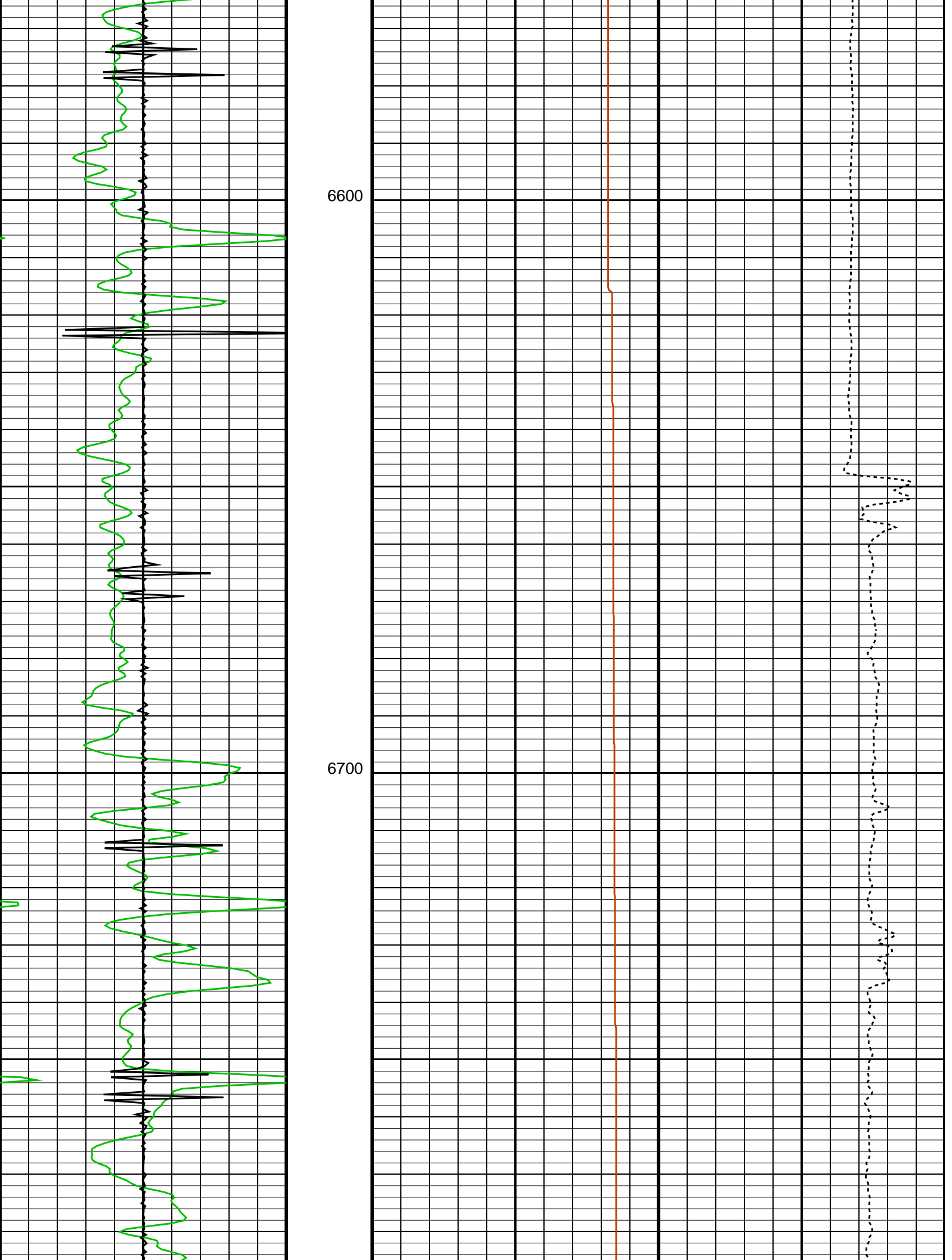


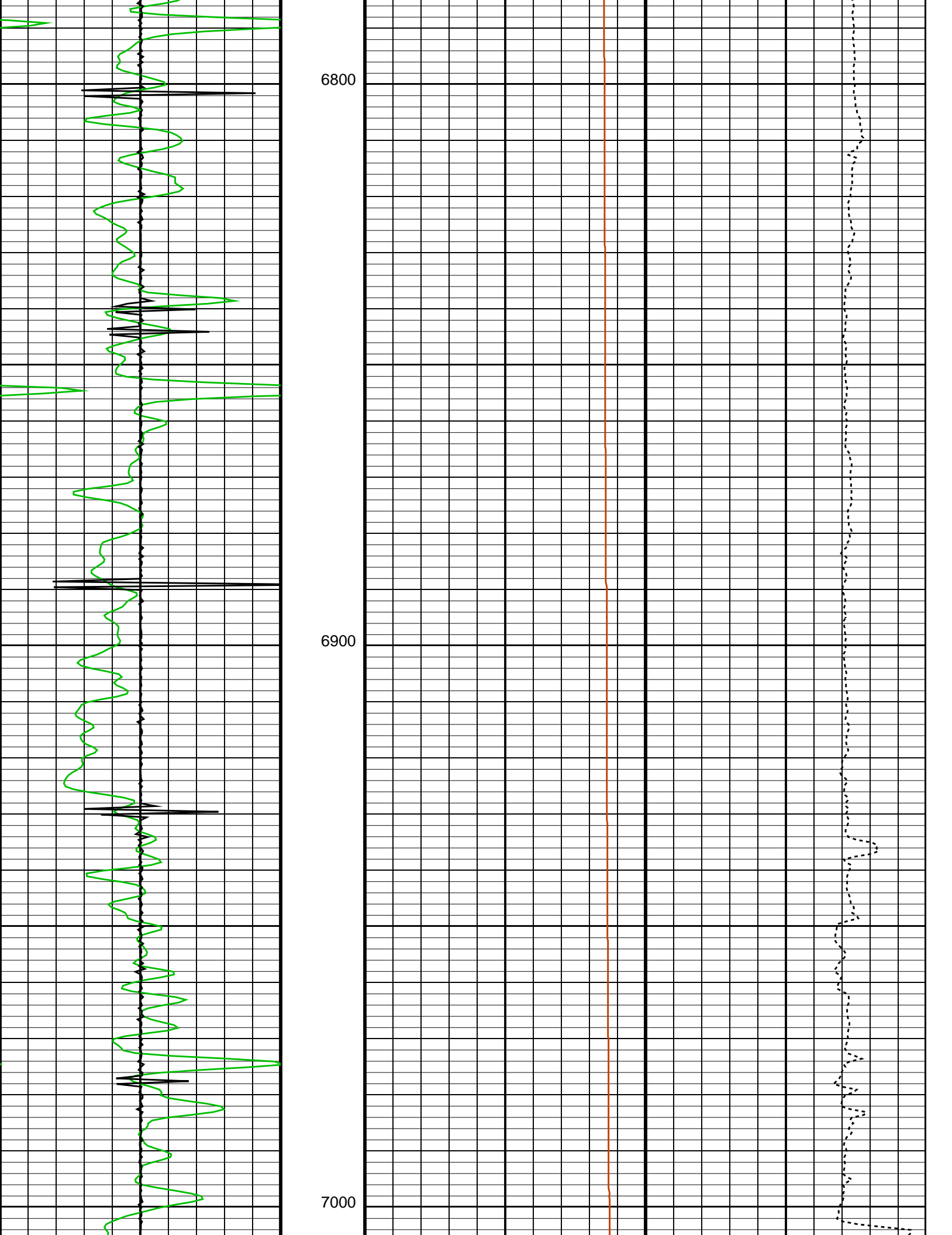


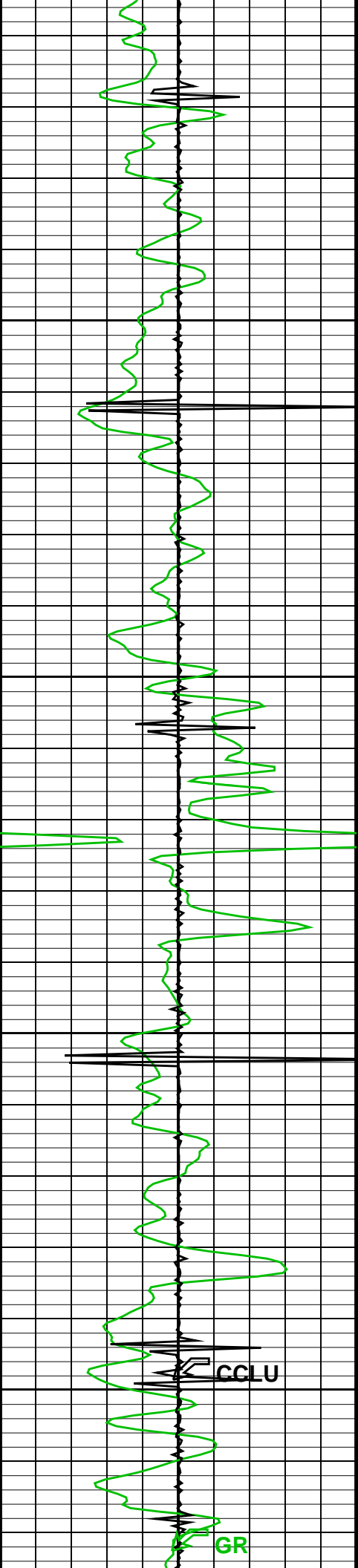
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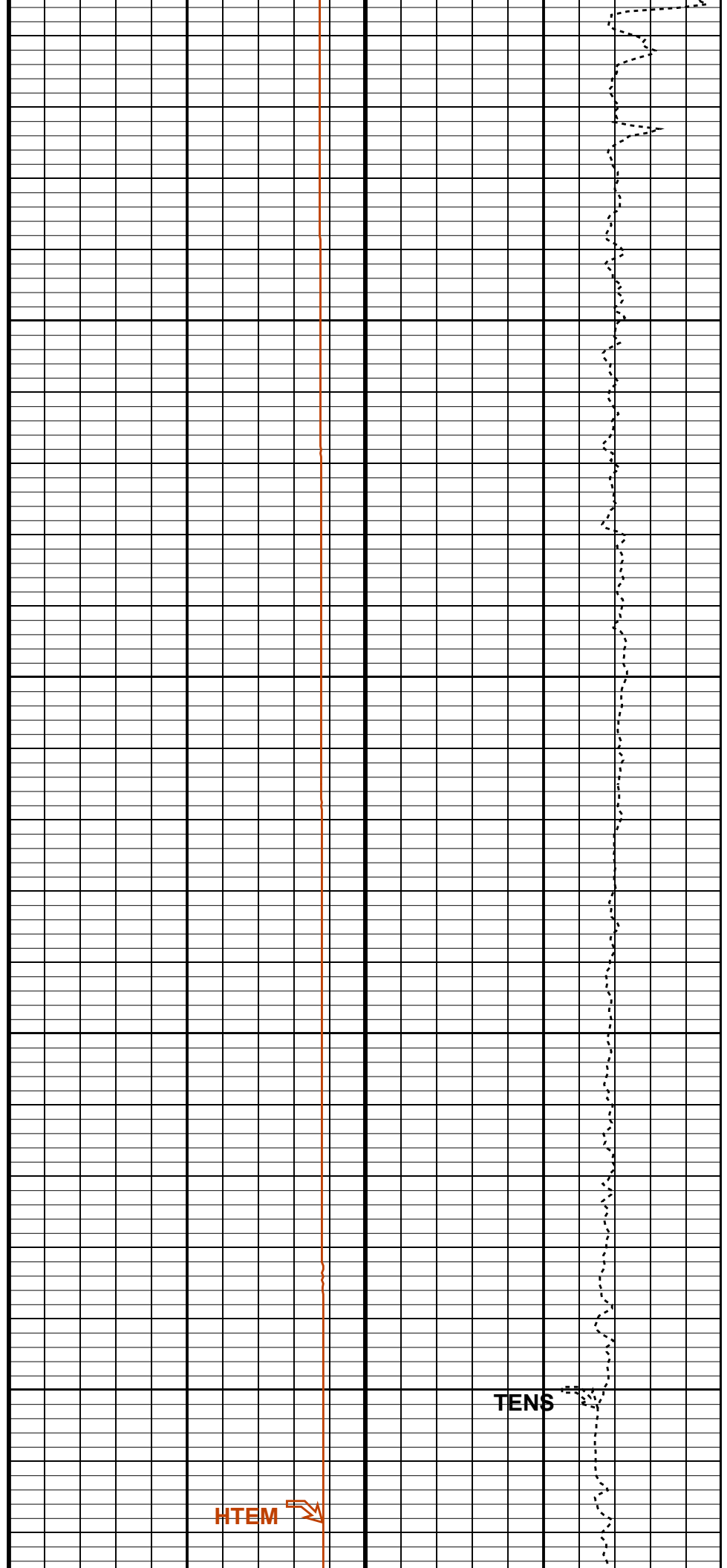






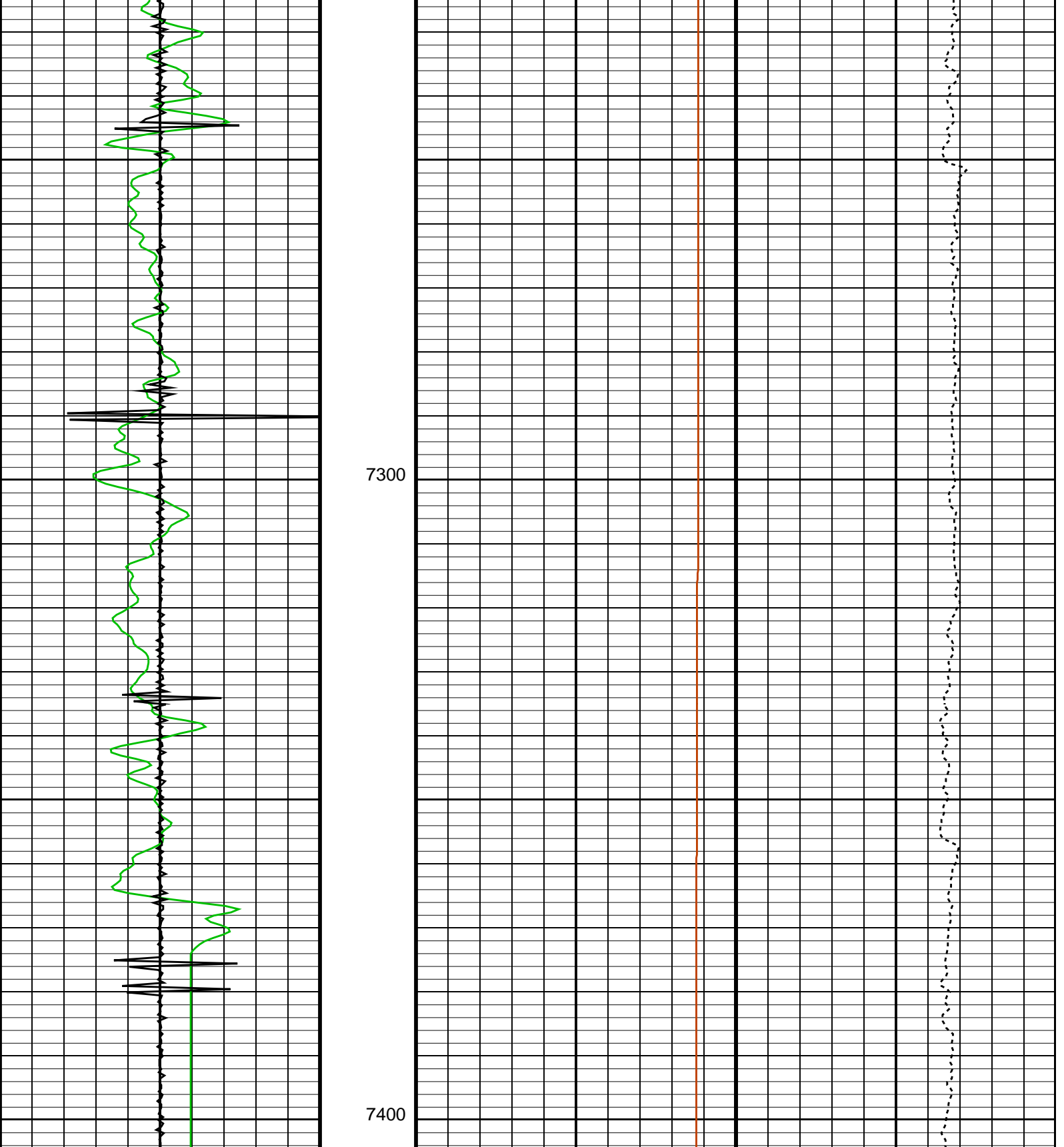
7100

7200



HTEM

TENS



Gamma Ray (GR) (GAPI) 0 150	HTC Cartridge Temperature (HTEM) (DEGF) 20 220	Tension (TENS) (LBF) 10000 0
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CCL (CCLU)
-20 (----) 20

Parameters

DLIS Name	Description	Value
USIT-D	USIT-D: Ultrasonic Imaging - D	
AGMN	Minimum Gain of Cartridge	-4 DB
AGMX	Maximum Gain of Cartridge	20 DB

BERJ	Maximum Annular Cartridge	ON	ON
CDIA	Casing Outer Diameter	7	IN
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	6.276	IN
DFVL	Default Fluid Velocity	203	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	120	V
MW	Mud Weight	9.4	LB/G
RCOD	Reference Calibrator Outer Diameter	7	IN
RCSO	Reference Calibrator Standoff	1.1811	IN
RCTH	Reference Calibrator Thickness	0.2952	IN
TCUB	T^3 Processing Level	Vax_Loop	
THDH	Maximum Search Thickness (percentage of nominal)	130	
THDL	Minimum Search Thickness (percentage of nominal)	70	
THDP	Thickness Detection Policy	Fundamental	
THNO	Nominal Thickness of Casing	0.362	IN
USTO	Ultrasonic Time Offset	-2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	5DEG_6IN_136UNF_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.7078	US
ZCAS	Acoustic Impedance of Casing	46.25	MRAY
ZINI	Initial Estimate of Cement Impedance	-1	MRAY
ZMUD	Acoustic Impedance of Mud	2.1	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
	System and Miscellaneous		
CWEI	Casing Weight	26.00	LB/F
DO	Depth Offset for Playback	7.5	FT
DORL	Depth Offset for Repeat Analysis	0.0	FT
PP	Playback Processing	RECOMPUTE	

Format: CORRELATION Vertical Scale: 5" per 100' Graphics File Created: 03-Nov-2009 19:04

OP System Version: 17C0-154

USIT-D	SRPC-3779-Q1_2009_OP17_b	HILTH-FTB	SRPC-3779-Q1_2009_OP17_b
DTC-H	17C0-154		

Input DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_011LUP	FN:10	PRODUCER	03-Nov-2009 14:08	7397.0 FT	199.5 FT
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Output DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_014PUP	FN:13	PRODUCER	03-Nov-2009 19:04		
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Repeat Analysis

MAXIS Field Log

Company: EXXONMOBIL PRODUCTION CO Well: PCU 197-34B7

Input DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_011LUP	FN:10	PRODUCER	03-Nov-2009 14:08	7397.0 FT	199.5 FT
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Output DLIS Files

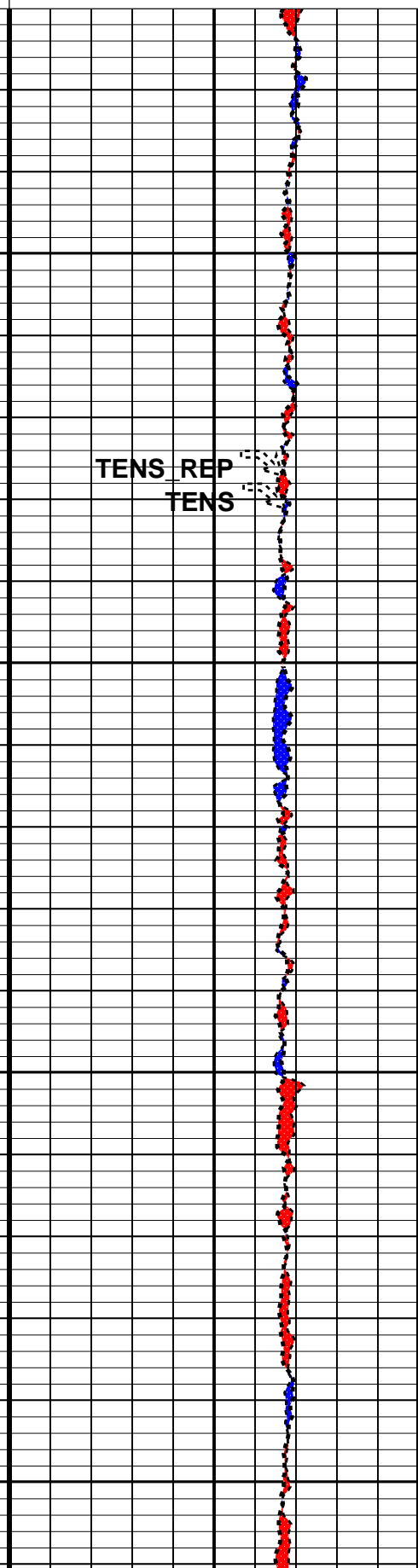
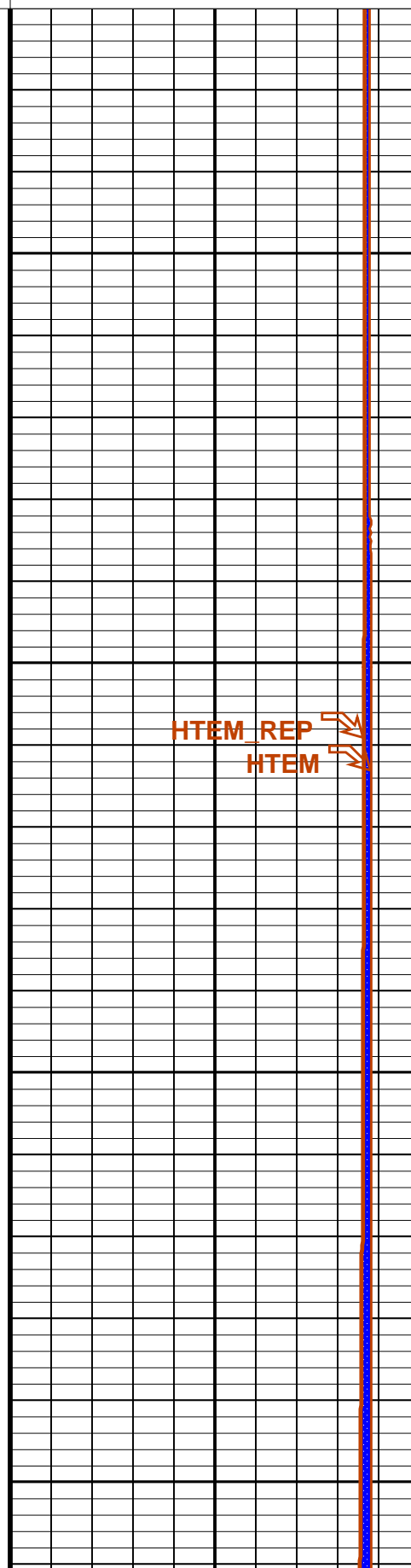
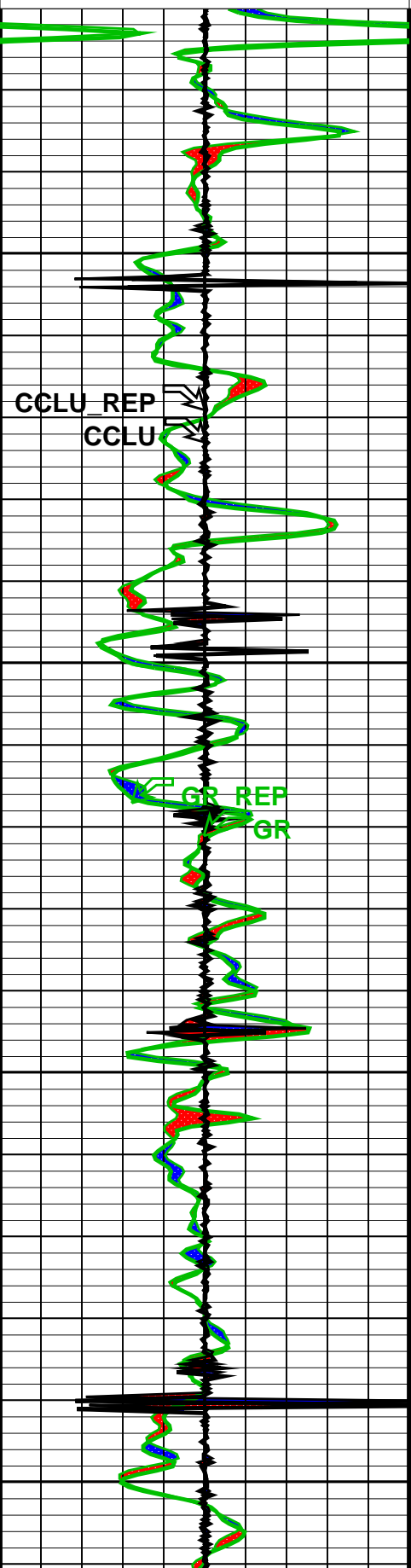
DEFAULT	USI_TLD_MCFL_CNL_014PUP	FN:13	PRODUCER	03-Nov-2009 19:04		
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OP System Version: 17C0-154

USIT_CCLU_curve_REP Curve (CCLU_REP)
-20 (----) 20
GR_REP Curve (GR_REP)
0 (GAPI) 150

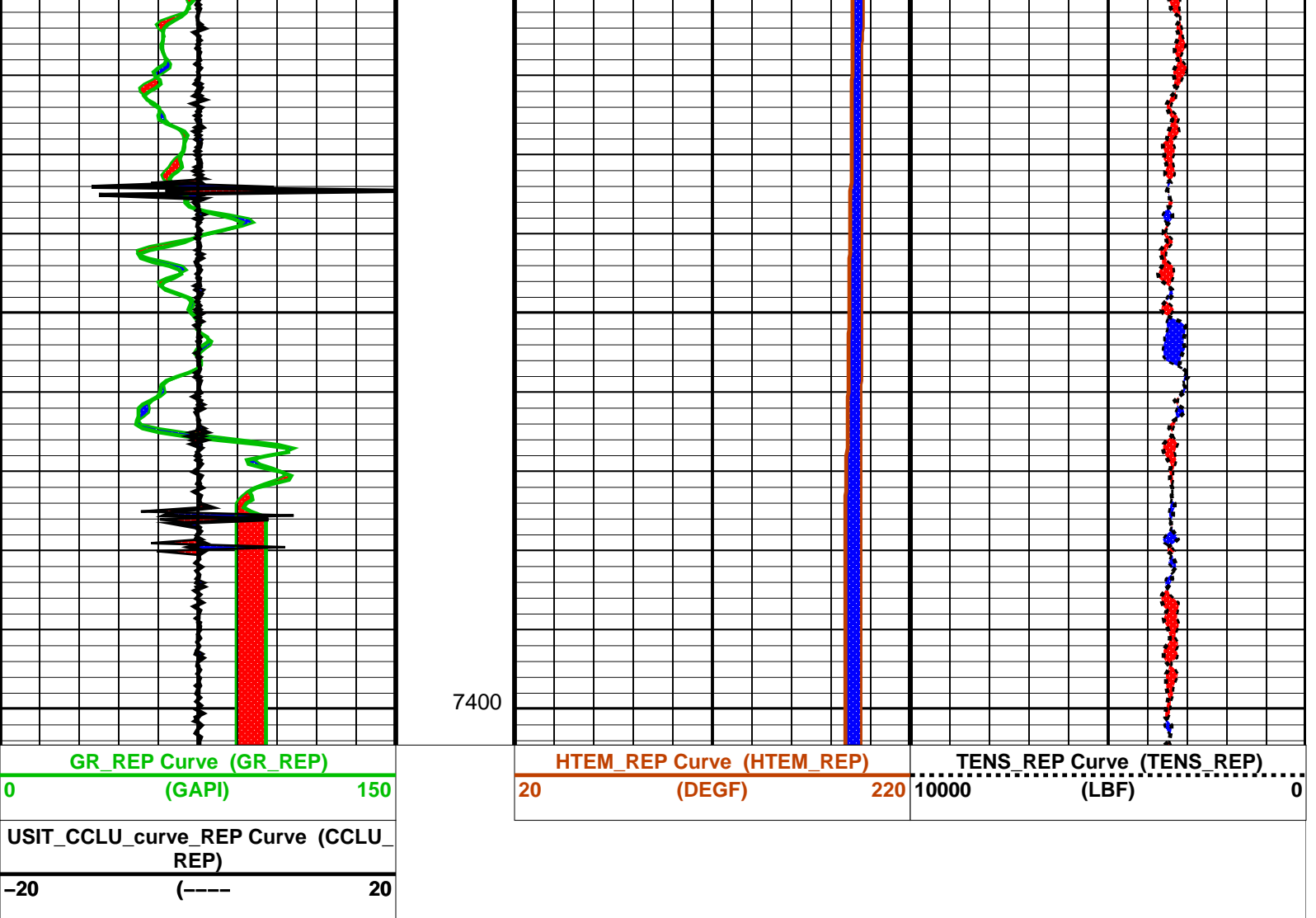
HTEM_REP Curve (HTEM_REP)
20 (DEGF) 220

TENS_REP Curve (TENS_REP)
10000 (LBF) 0



7200

7300



Parameters

DLIS Name	Description	Value	Units
USIT-D: Ultrasonic Imaging - D			
AGMN	Minimum Gain of Cartridge	-4	DB
AGMX	Maximum Gain of Cartridge	20	DB
BERJ	Bad Echo Rejection	ON	
CDIA	Casing Outer Diameter	7	IN
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	6.276	IN
DFVL	Default Fluid Velocity	203	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	120	V
MW	Mud Weight	9.4	LB/G
RCOD	Reference Calibrator Outer Diameter	7	IN
RCSO	Reference Calibrator Standoff	1.1811	IN
RCTH	Reference Calibrator Thickness	0.2952	IN
TCUB	T^3 Processing Level	Vax_Loop	
THDH	Maximum Search Thickness (percentage of nominal)	130	
THDL	Minimum Search Thickness (percentage of nominal)	70	
THDP	Thickness Detection Policy	Fundamental	
THNO	Nominal Thickness of Casing	0.362	IN
USTO	Ultrasonic Time Offset	-2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	5DEG_6IN_136UNF_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.7078	US
ZCAS	Acoustic Impedance of Casing	46.25	MRAY
ZINI	Initial Estimate of Cement Impedance	-1	MRAY
ZMUD	Acoustic Impedance of Mud	2.1	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
System and Miscellaneous			
CWEI	Casing Weight	26.00	LB/F
DO	Depth Offset for Playback	7.5	FT
DORL	Depth Offset for Repeat Analysis	0.0	FT
PP	Playback Processing	RECOMPUTE	

OP System Version: 17C0-154

USIT-D SRPC-3779-Q1_2009_OP17_b HILTH-FTB SRPC-3779-Q1_2009_OP17_b
DTC-H 17C0-154

Input DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_011LUP	FN:10	PRODUCER	03-Nov-2009 14:08	7397.0 FT	199.5 FT
DEFAULT	USI_TLD_MCFL_CNL_013PUP	FN:12	PRODUCER	03-Nov-2009 19:01	7406.5 FT	7119.5 FT

Output DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_014PUP	FN:13	PRODUCER	03-Nov-2009 19:04
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Schlumberger**CALIBRATIONS**

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High resolution Integrated Logging Tool-DTS Wellsite Calibration – Detector Calibration							
Before: 31-Oct-2009 13:26							
Gamma Ray Background	30.00	N/A	15.63	N/A	N/A	N/A	GAPI
Gamma Ray (Jig – Bkgd)	165.0	N/A	168.9	N/A	N/A	15.00	GAPI
High resolution Integrated Logging Tool-DTS Wellsite Calibration – Zero Measurement							
Master: 14-Aug-2009 10:31 Before: 1-Nov-2009 17:29							
CNTC Background	27.70	27.70	27.61	N/A	N/A	4.155	CPS
CFTC Background	32.32	32.32	36.17	N/A	N/A	4.848	CPS
High resolution Integrated Logging Tool-DTS Wellsite Calibration – Ratio Measurement							
Master: 14-Aug-2009 10:31							
Thermal Near Corr. (Tank)	5800	5240	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2150	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.437	N/A	N/A	N/A	N/A	
High resolution Integrated Logging Tool-DTS Wellsite Calibration – Accelerometer Calibration							
Before: 31-Oct-2009 13:25							
Z-Axis Acceleration	32.19	N/A	32.14	N/A	N/A	N/A	F/S2

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

NCT-B Water Temperature	67.8	DEGF.
Thermal Housing Size	3.374	IN.
NSR-F serial number	0	

High resolution Integrated Logging Tool-DTS / Equipment Identification

Primary Equipment:

HILT Gamma-Ray Neutron Sonde-DTS	HGNS – H
HGNS Gamma-Ray Device	HGR –
HGNS Neutron Detector with Alpha Source	HCNT – H

Auxiliary Equipment:
 Neutron Calibration Tank
 Gamma Source Radioactive
 HGNS Housing

NCT - B
 GSR - U/Y
 HGNH -

High resolution Integrated Logging Tool-DTS Wellsite Calibration					
Detector Calibration					
Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig - Bkgd) GAPI	Value
Before		15.63	Before		168.9
	0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)			157.1 (Minimum) 165.0 (Nominal) 206.3 (Maximum)	
Before: 31-Oct-2009 13:26					

High resolution Integrated Logging Tool-DTS Wellsite Calibration					
Zero Measurement					
Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		27.70	Master		32.32
Before		27.61	Before		36.17
	5.000 (Minimum) 27.70 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 32.32 (Nominal) 40.00 (Maximum)	
Master: 14-Aug-2009 10:31			Before: 1-Nov-2009 17:29		

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		5240	Master		2150	Master		2.437	
	4700 (Minimum) 5800 (Nominal) 6900 (Maximum)			1900 (Minimum) 2400 (Nominal) 2900 (Maximum)			2.120 (Minimum) 2.159 (Nominal) 2.540 (Maximum)		
Master: 14-Aug-2009 10:31									

High resolution Integrated Logging Tool-DTS Wellsite Calibration		
Accelerometer Calibration		
Phase	Z-Axis Acceleration F/S2	Value
Before		32.14
	31.53 (Minimum) 32.19 (Nominal) 32.84 (Maximum)	
Before: 31-Oct-2009 13:25		

High resolution Integrated Logging Tool-DTS Master Calibration					
Zero Measurement					
Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		27.70	Master		32.32
	5.000 (Minimum) 27.70 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 32.32 (Nominal) 40.00 (Maximum)	
Master: 14-Aug-2009 10:31					

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		5240	Master		2150	Master		2.437	
	4700 (Minimum) 5800 (Nominal) 6900 (Maximum)			1900 (Minimum) 2400 (Nominal) 2900 (Maximum)			2.120 (Minimum) 2.159 (Nominal) 2.540 (Maximum)		
Master: 14-Aug-2009 10:31									

DTS Telemetry Tool / Equipment Identification

Primary Equipment:
 DTC-H Auxiliary Cartridge
 DTC-H Telemetry Cartridge

DTCH - A
 DTCH - A

Auxiliary Equipment:

Company: **EXXONMOBIL PRODUCTION CO**

Schlumberger

Well: **PCU 197-34B7**

Field: **PICEANCE CREEK**

County: **RIO BLANCO**

State: **COLORADO**

CORRELATION PRINT

GAMMA RAY / CCL