

Company: EXXONMOBIL PRODUCTION CO

Well: PCU 297-12A7

Field: PICEANCE CREEK

County: RIO BLANCO

State: COLORADO

CORRELATION PRINT

GAMMA RAY / CCL

Field: PICEANCE CREEK
 Location: NWSW, 1730' FSL & 291' FWL
 Well: PCU 297-12A7
 Company: EXXONMOBIL PRODUCTION CO

LOCATION			
NWSW, 1730' FSL & 291' FWL		Elev.: K.B. 7213.20 ft	
		G.L. 7183.00 ft	
		D.F. 7212.20 ft	
Permanent Datum: _____	GROUND LEVEL _____	Elev.: 7183.00 ft	
Log Measured From: _____	KELLY BUSHING _____	30.20 ft above Perm. Datum	
Drilling Measured From: _____	KELLY BUSHING _____		
API Serial No. _____	Section 12	Township 2S	Range 97W
05-103-11161-0C			

Logging Date	17-Nov-2009
Run Number	1
Depth Driller	8881 ft
Schlumberger Depth	8800 ft
Bottom Log Interval	8800 ft
Top Log Interval	3500 ft
Casing Fluid Type	WBM
Salinity	2100 ppm
Density	9.2 lbm/gal
Fluid Level	10 ft
BIT/CASING/TUBING STRING	
Bit Size	9.875 in
From	3978 ft
To	8800 ft
Casing/Tubing Size	7.000 in
Weight	26 lbm/ft
Grade	
From	30.2 ft
To	8800 ft
Maximum Recorded Temperatures	195 degF
Logger On Bottom	17-Nov-2009
Unit Number	2379
Recorded By	Ashley Chipman / Saurabh Dass
Witnessed By	John Wood

		Run 1	Run 2	Run 3
PVT DATA				
Oil Density				
Water Salinity	2100 ppm			
Gas Gravity				
Bo				
Bw				
1/Bg				
Bubble Point Pressure				
Bubble Point Temperature				
Solution GOR				
Maximum Deviation	2.4 deg			
CEMENTING DATA				
Primary/Squeeze	Primary			
Casing String No				
Lead Cement Type				
Volume				
Density	10.5 lbm/gal			
Water Loss				
Additives				
Tail Cement Type				
Volume				
Density	12 lbm/gal			
Water Loss				
Additives				
Expected Cement Top	4000 ft			
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				

DEPTH SUMMARY LISTING

Date Created: 18-NOV-2009 4:22:57

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: 07-Nov-2009	Length: 30100 FT
Calibrator Serial Number: 33	Calibrator Serial Number: 1	Conveyance Method: Wireline Rig Type: LAND
Calibration Cable Type: 7-46P	Number of Calibration Points: 9	
Wheel Correction 1: -13	Calibration RMS: 65	
Wheel Correction 2: -11	Calibration Peak Error: 106	

Depth Control Parameters

Log Sequence: First Log In the Well
Rig Up Length At Surface: 230.70 FT
Rig Up Length At Bottom: 230.20 FT
Rig Up Length Correction: 0.50 FT
Stretch Correction: 4.50 FT
Tool Zero Check At Surface: 0.30 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 monitored realtime by virtual SQC	
Vertical resolution = 6 inch	
Horizontal resolution = 5 degree	
UFAO = -14	

Max temp = 195 degF

IBC log stopped at 3500 ft at clients request

Data spliced at 8500 ft

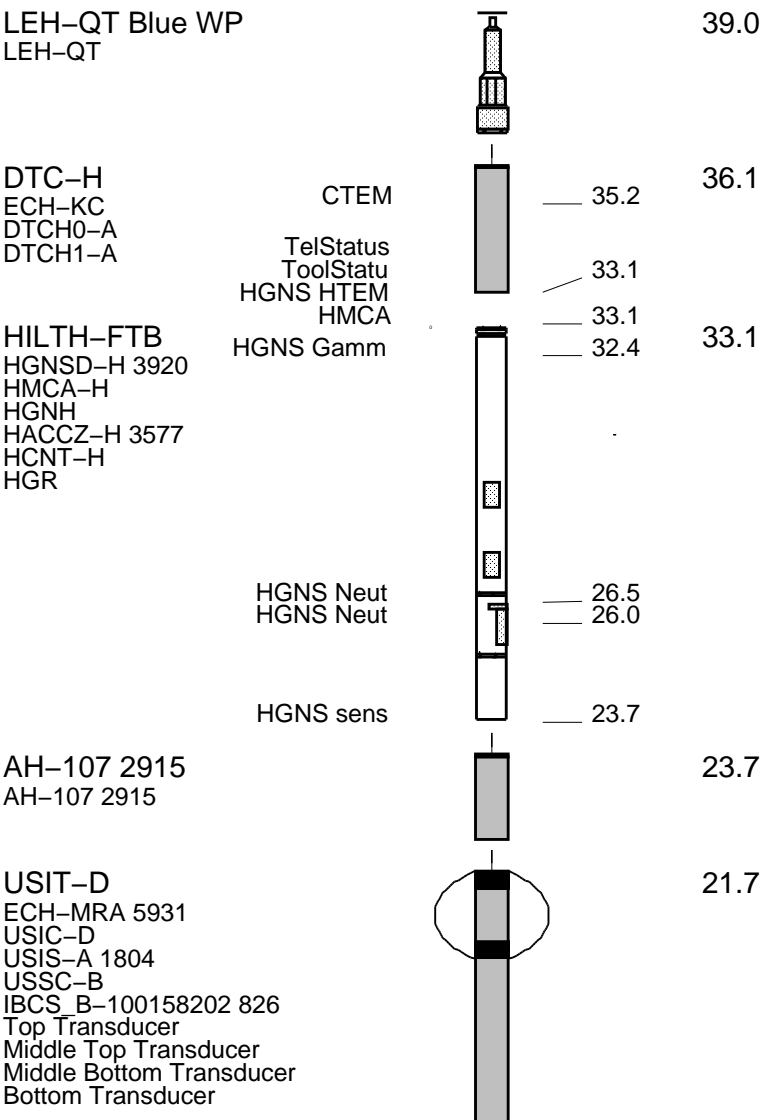
RUN 1			RUN 2		
SERVICE ORDER #:		AZNW-00037	SERVICE ORDER #:		
PROGRAM VERSION:		17C0-154	PROGRAM VERSION:		
FLUID LEVEL:		10 ft	FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

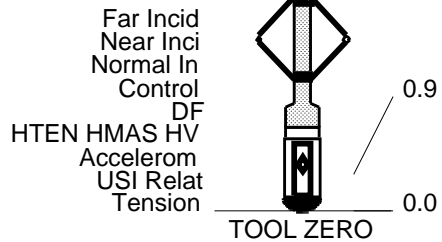
RUN 1 RUN 2

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

DOWNHOLE EQUIPMENT



RUN 2



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

Client: EXXONMOBIL PRODUCTION CO

Drawing Date: 11/17/2009

Well: PCU 297-12A7

API #: 05-103-11161-00

Field: PICEANCE CREEK

Rig Name: H&P 326

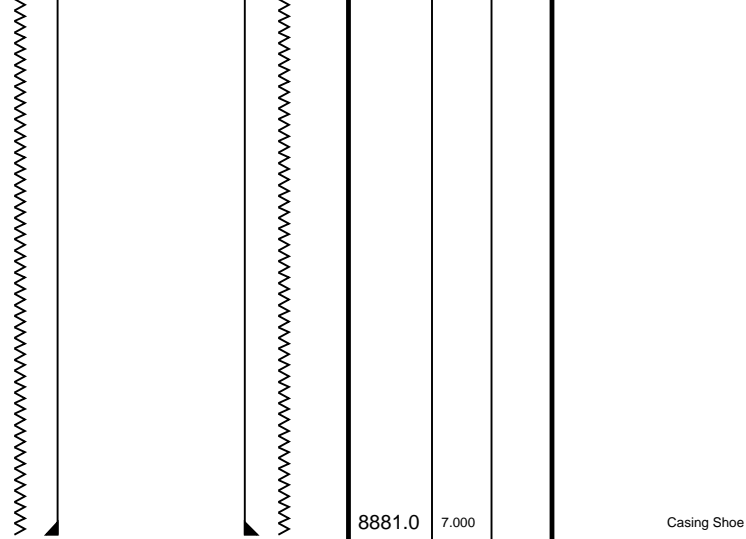
State: COLORADO

Reference Datum: Kelly Bushing

Country: USA

Elevation: 7213.2 ft

Production String	(in)			Well Schematic	(ft)			Casing String
	OD	ID	MD		MD	OD	ID	
					30.2	10.750 7.000		Surface Casing String Intermediate Casing String
					3978.0 3978.0	10.750 9.875		Casing Shoe Borehole Segment



All depths are referenced to driller's depths



CORRELATION

MAXIS Field Log

Company: EXXONMOBIL PRODUCTION CO

Well: PCU 297-12A7

Input DLIS Files

DEFAULT	SPLICE_USI_TLD_MCFL_016	FN:1	PRODUCER	18-Nov-2009 03:45	8799.5 FT	199.6 FT
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Output DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_019PUP	FN:22	PRODUCER	18-Nov-2009 03:58	8799.5 FT	3499.5 FT
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OP System Version: 17C0-154

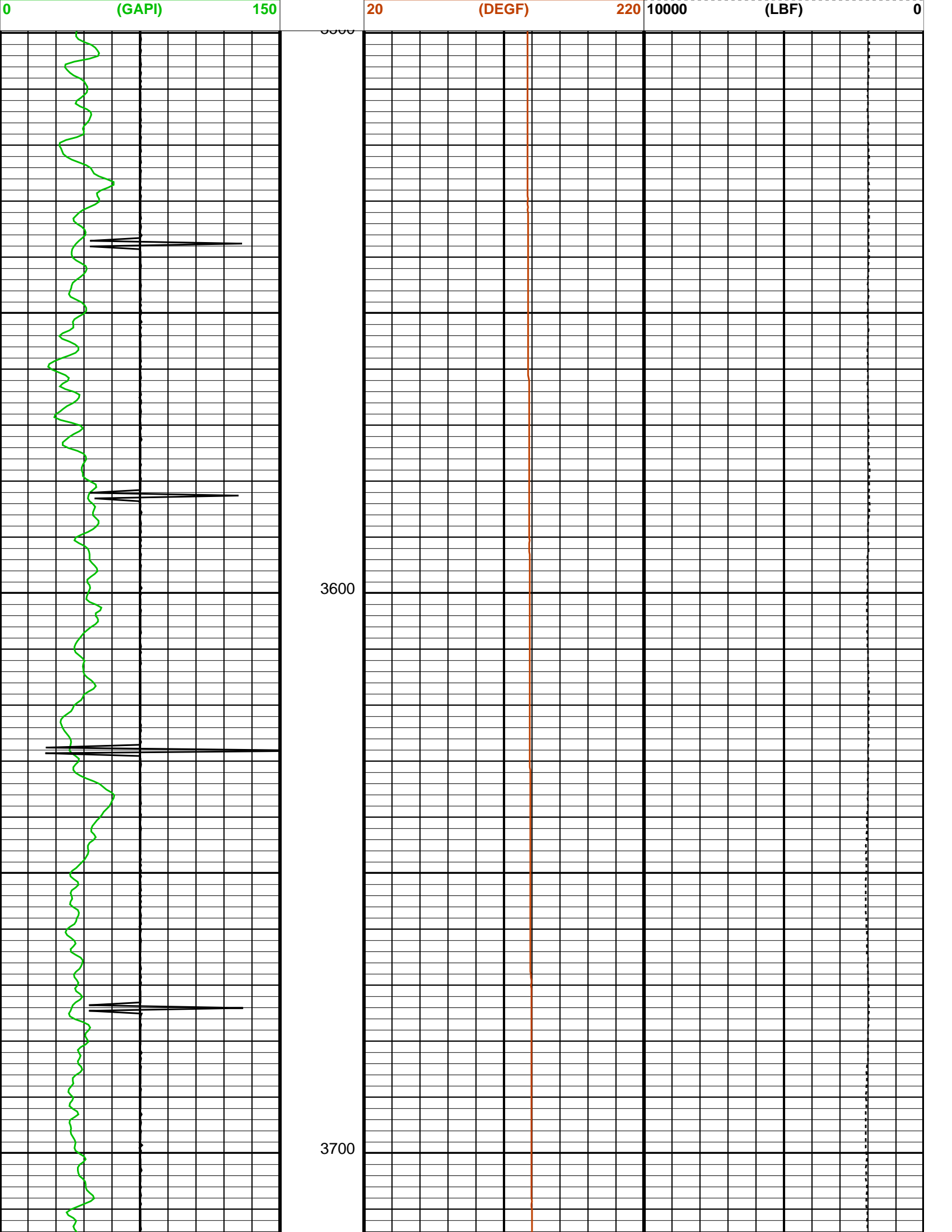
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DTC-H	17C0-154		

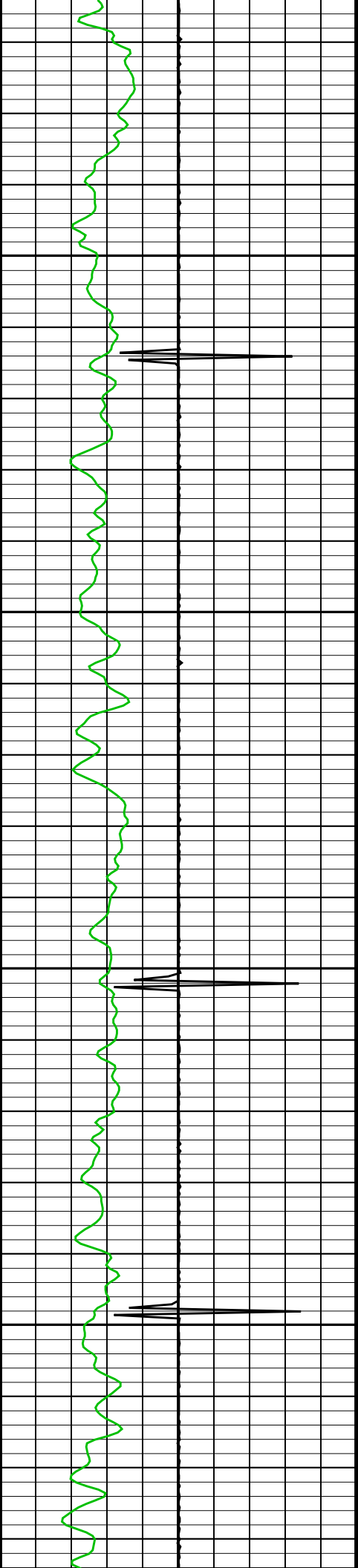
CCL (CCLU)	
-20	20

Gamma Ray (GR)

HTC Cartridge Temperature (HTEM)

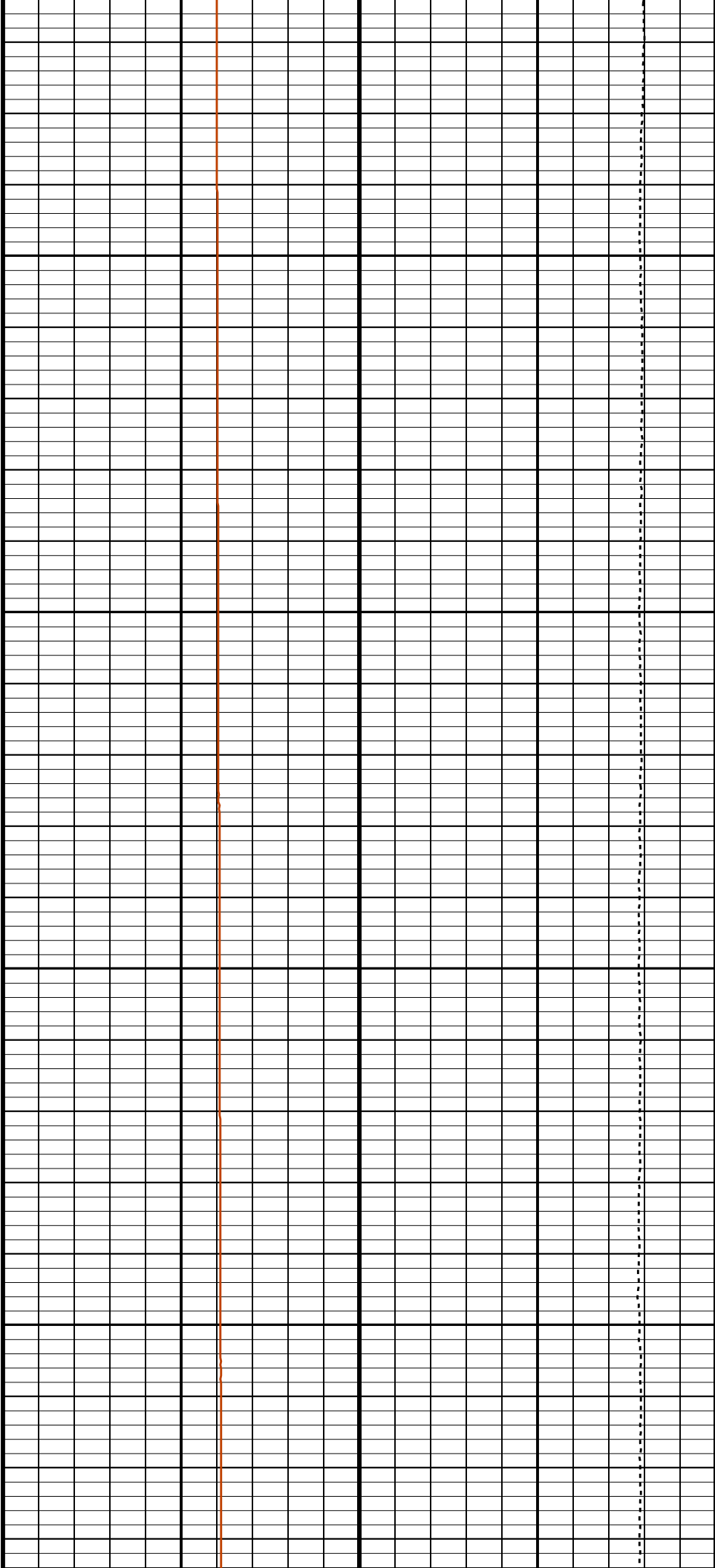
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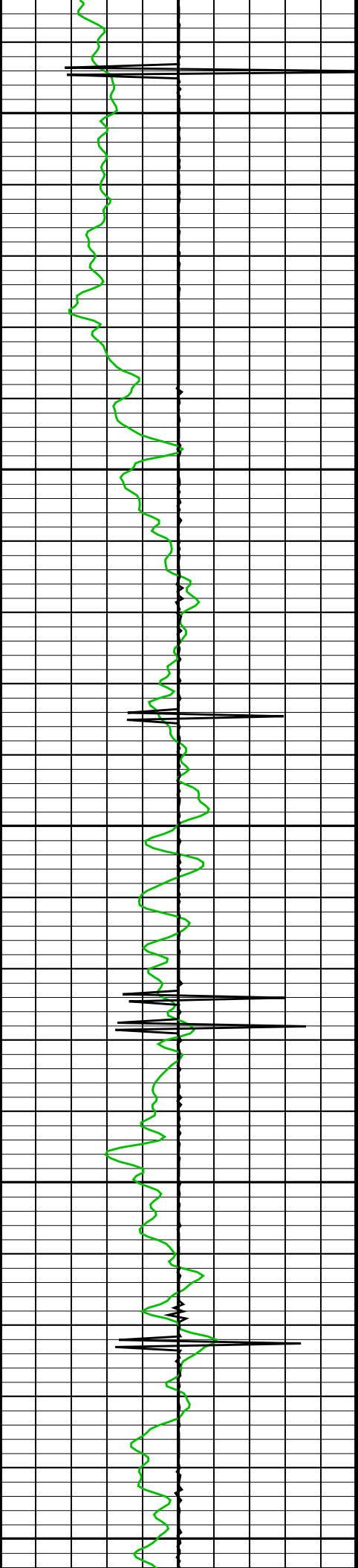




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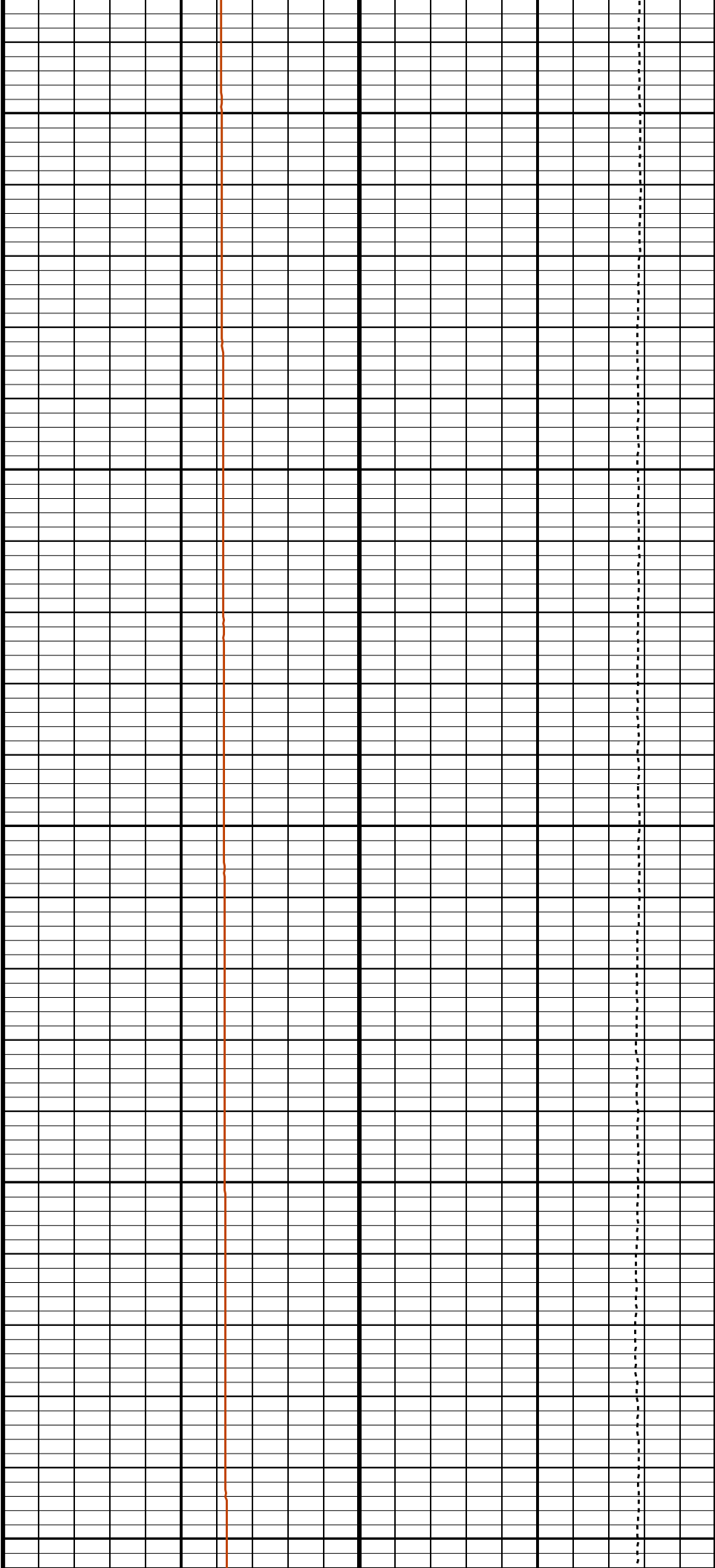
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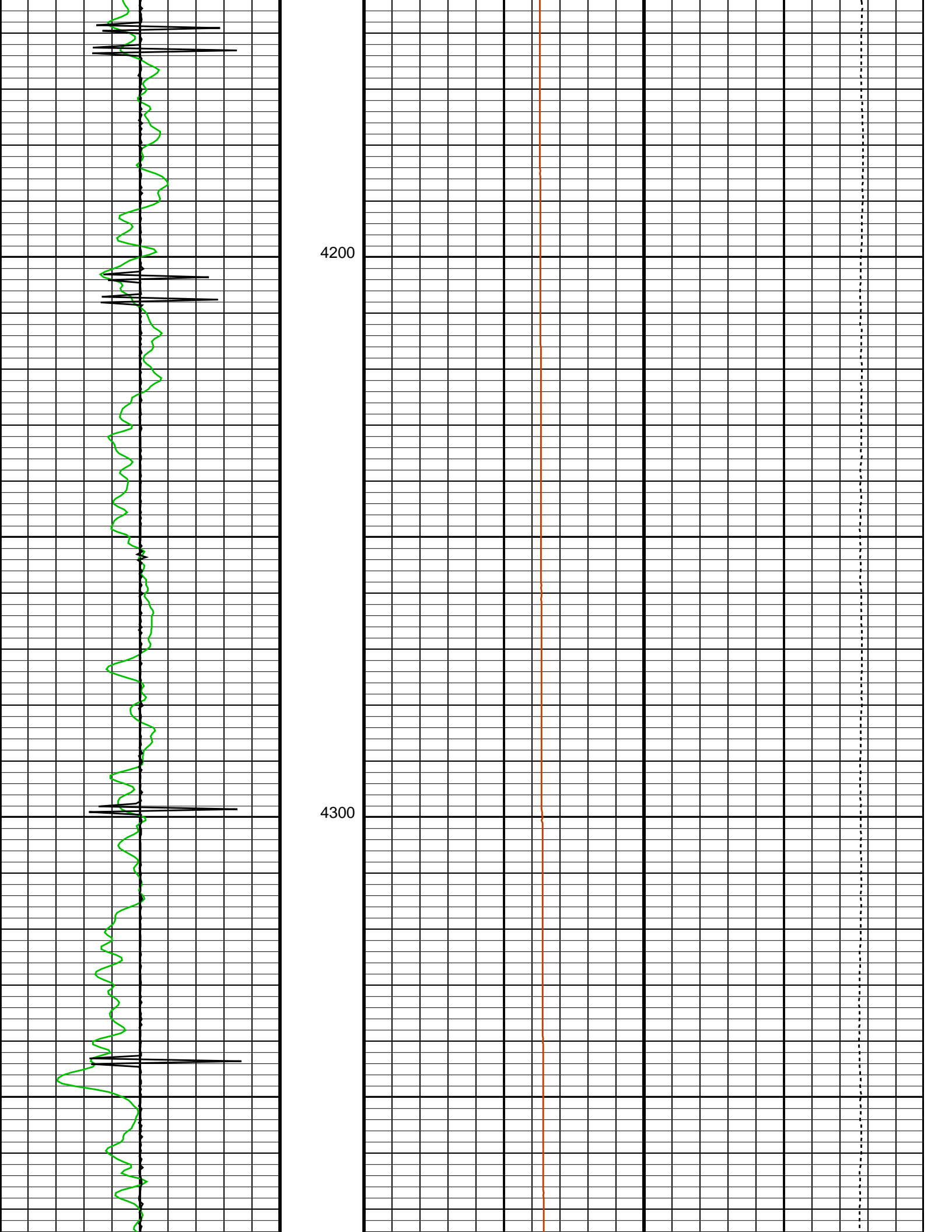


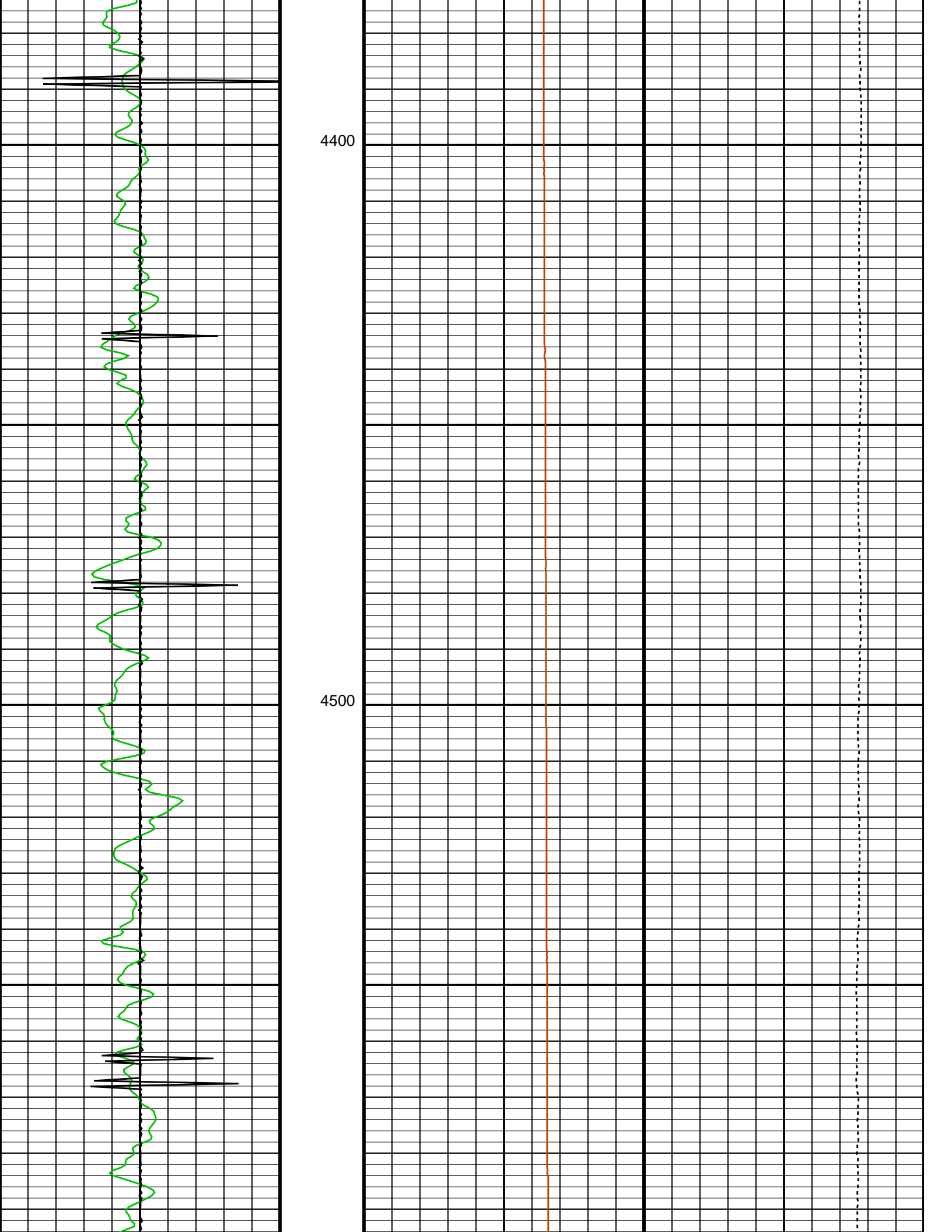


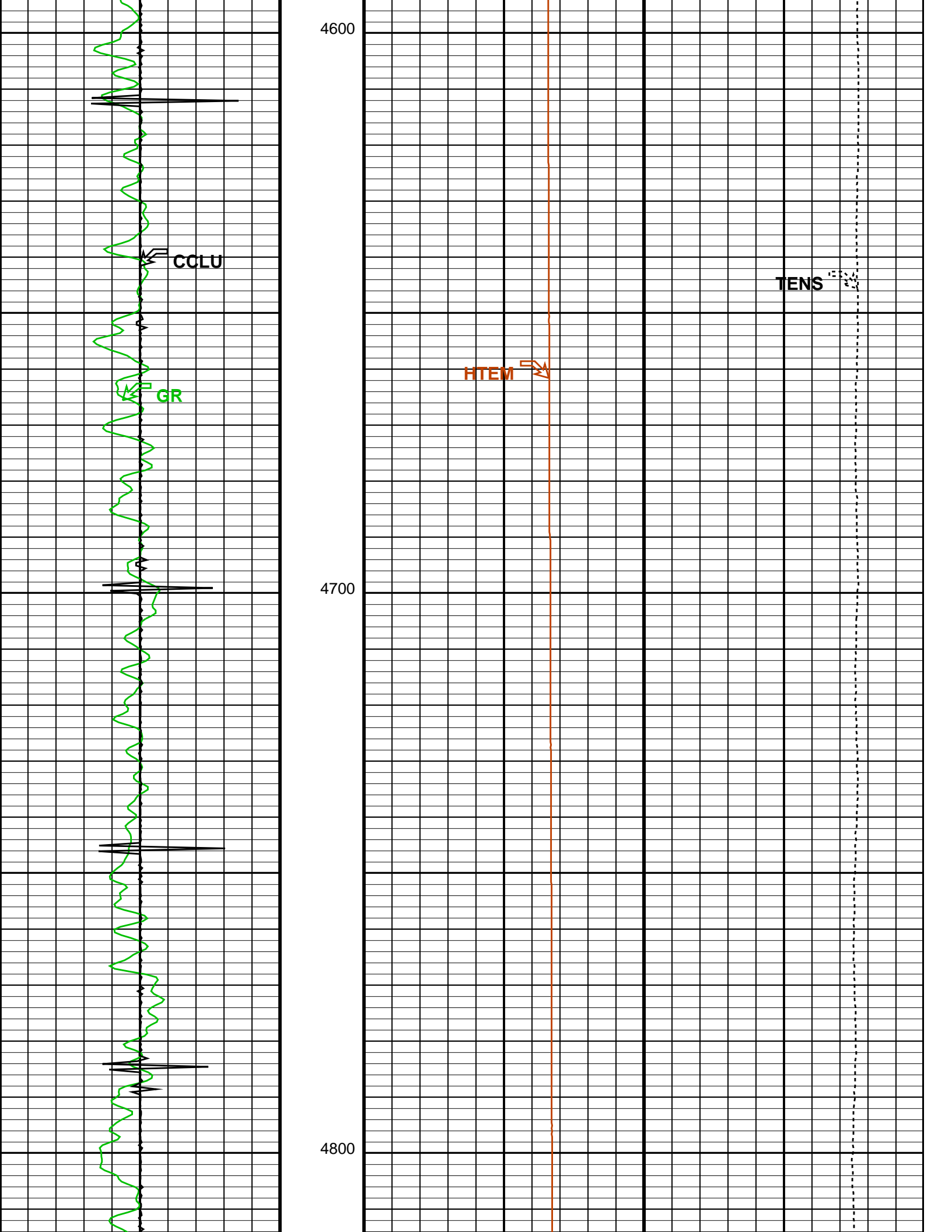
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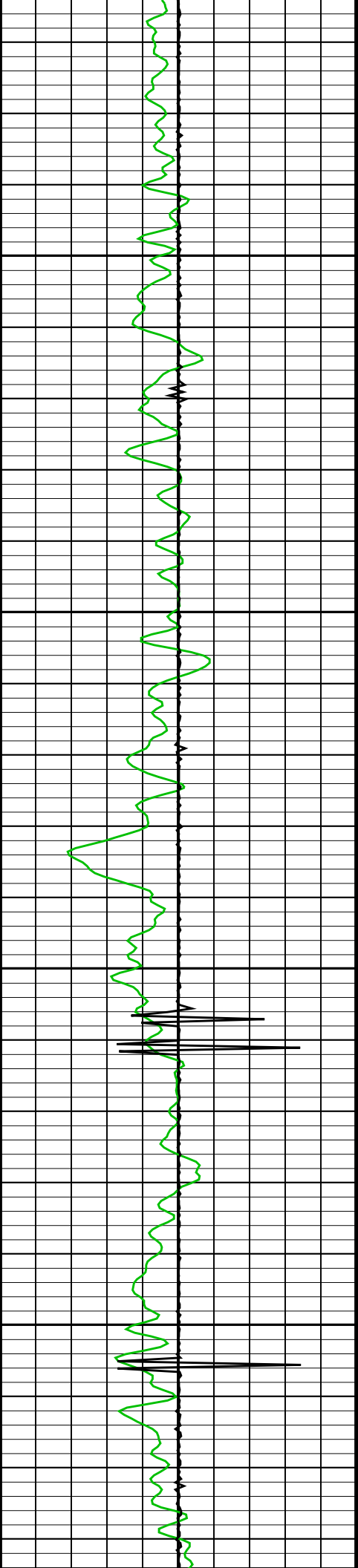
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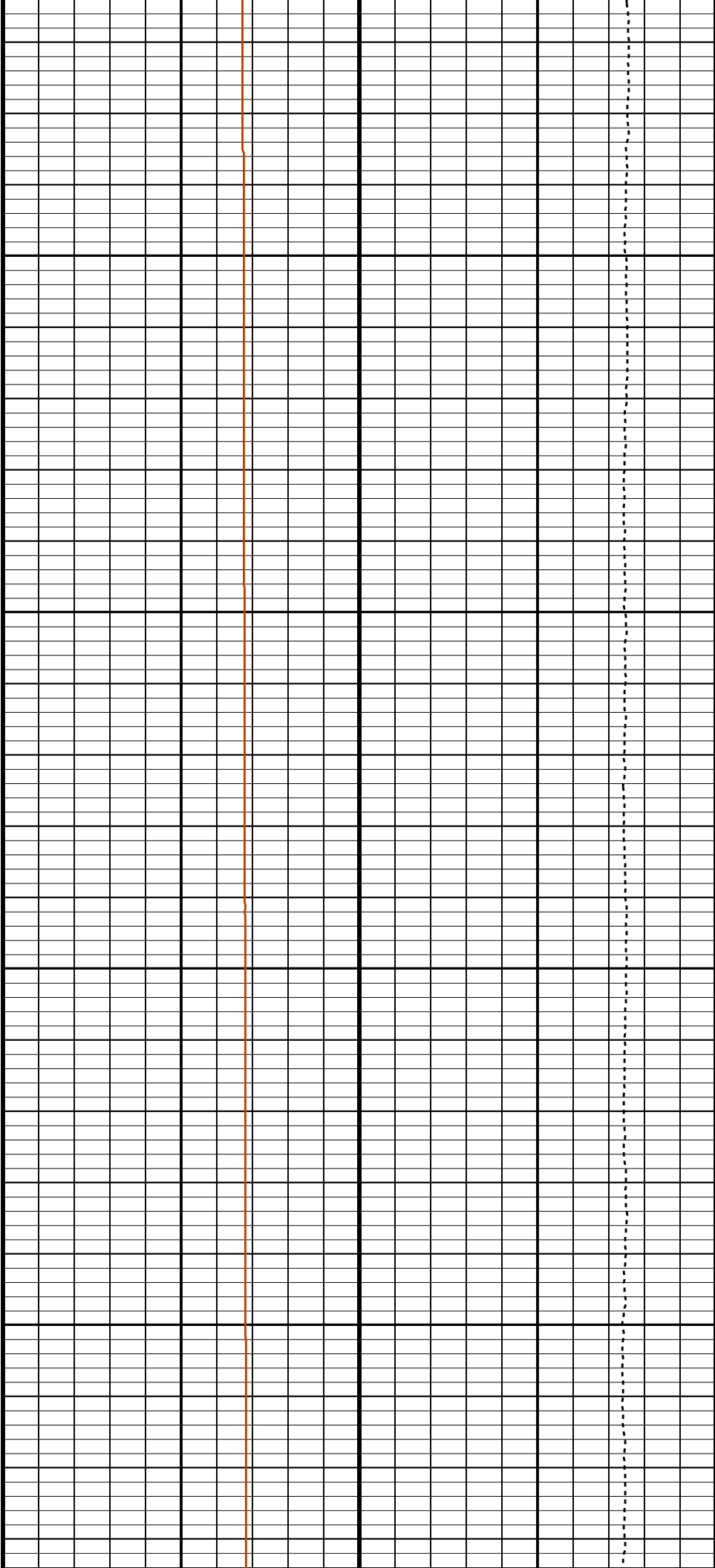


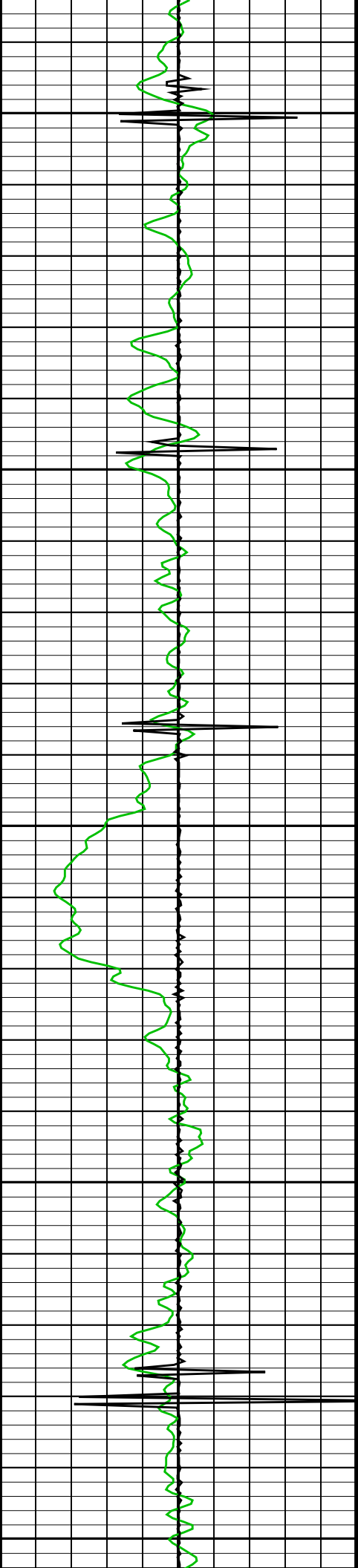




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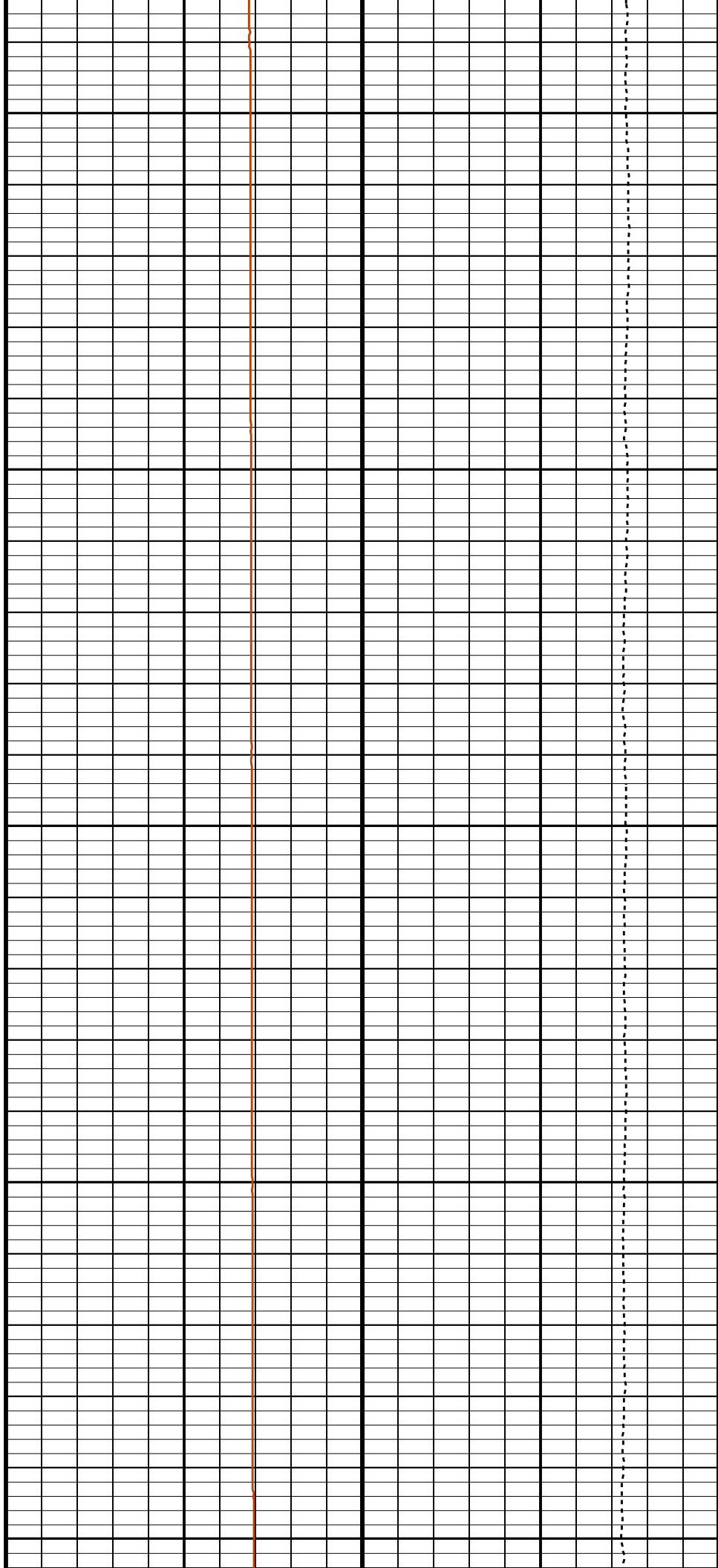
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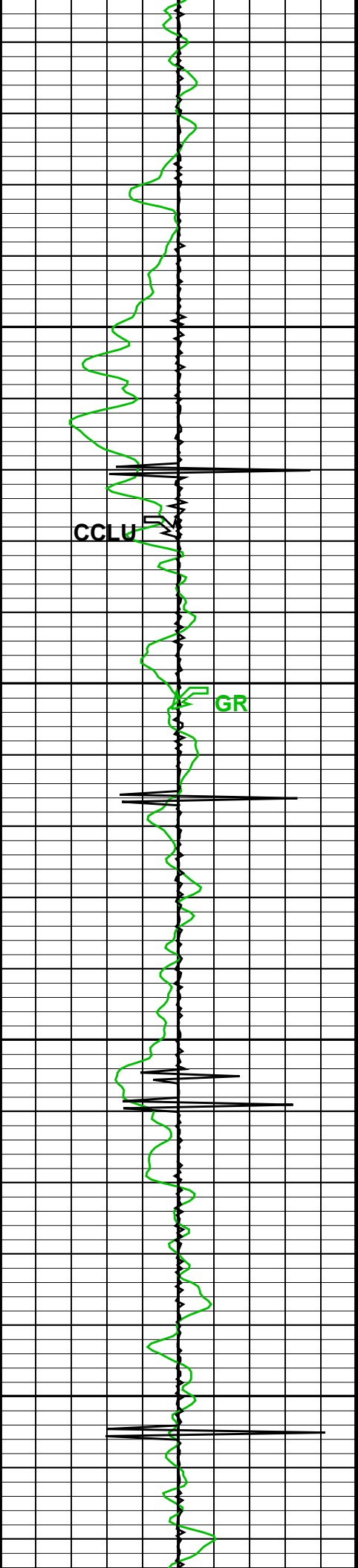




5100

5200





5300

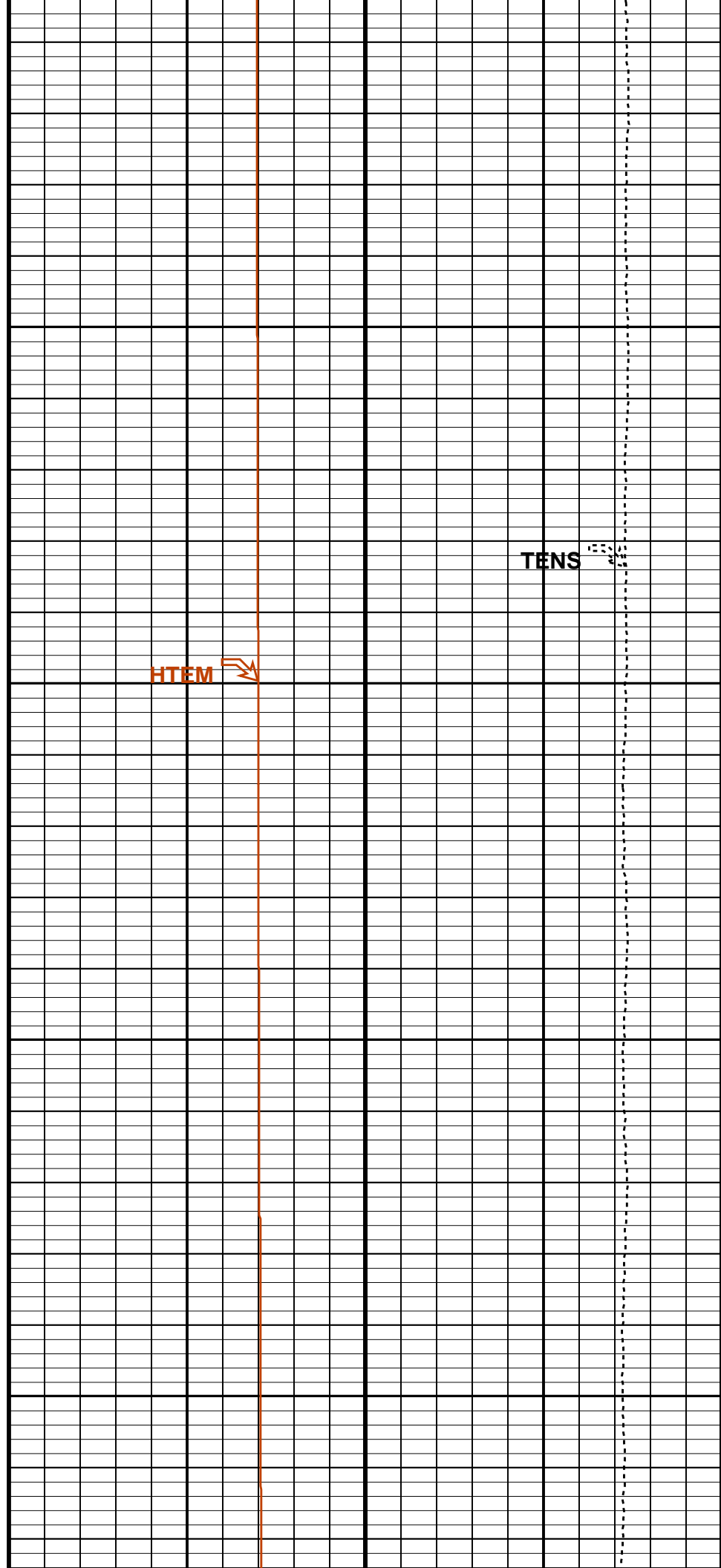
CCLU

GR

TENS

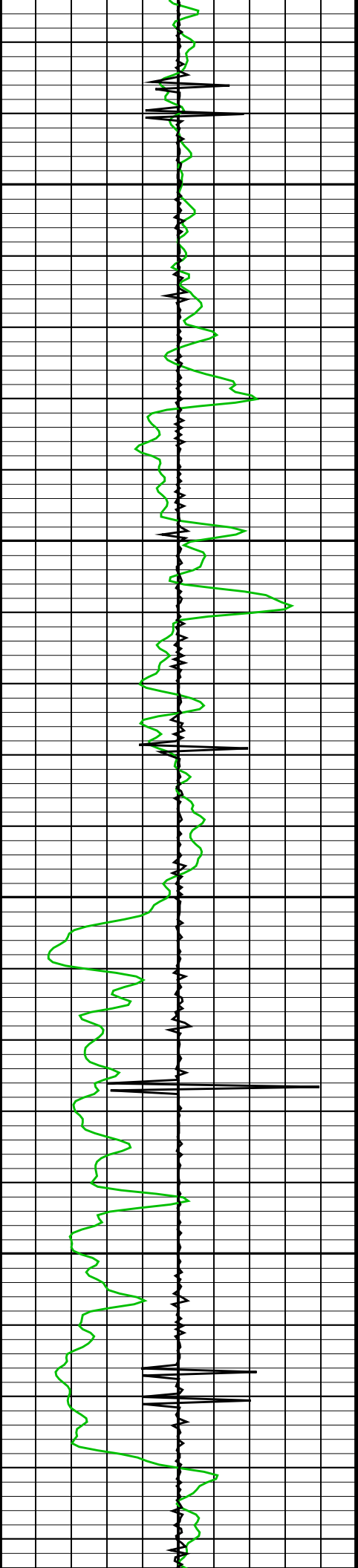
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5400



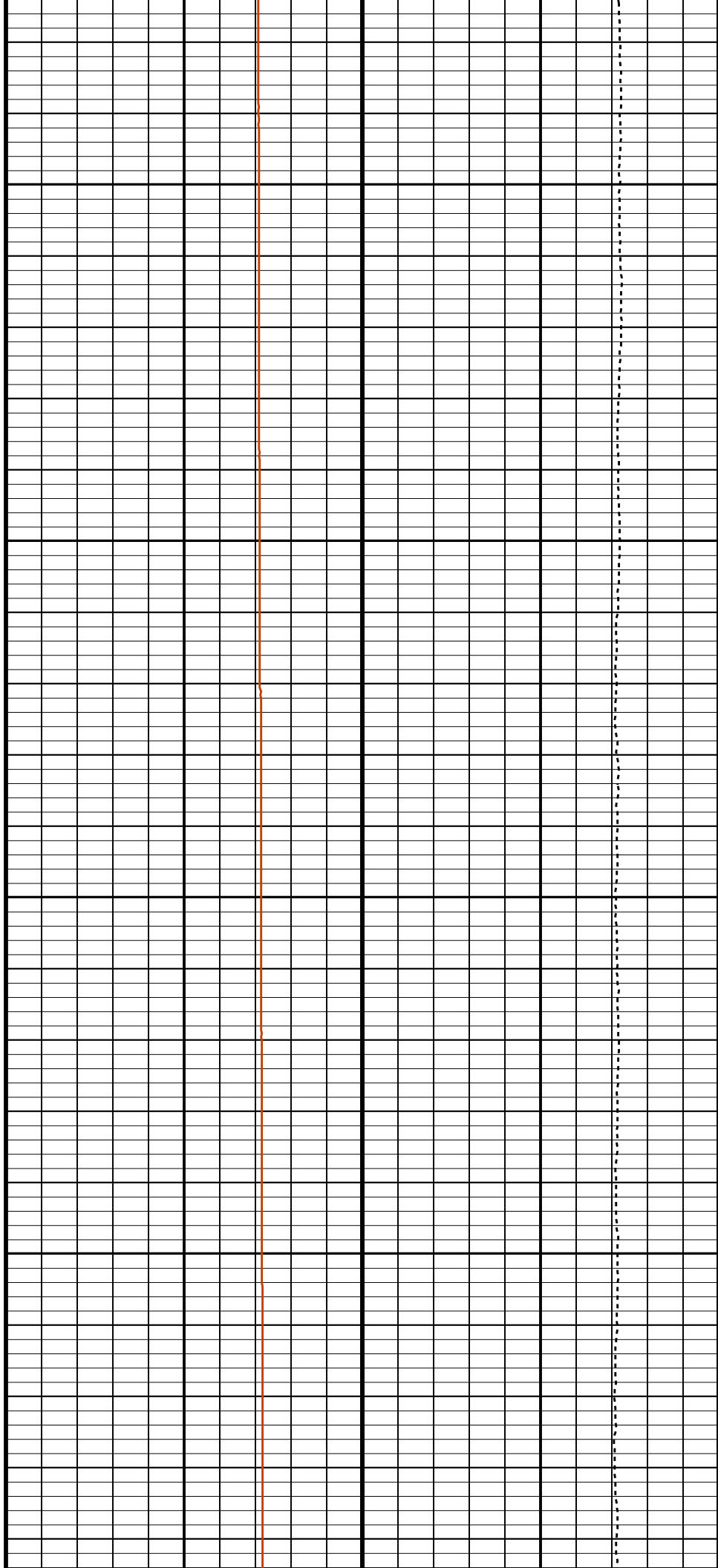
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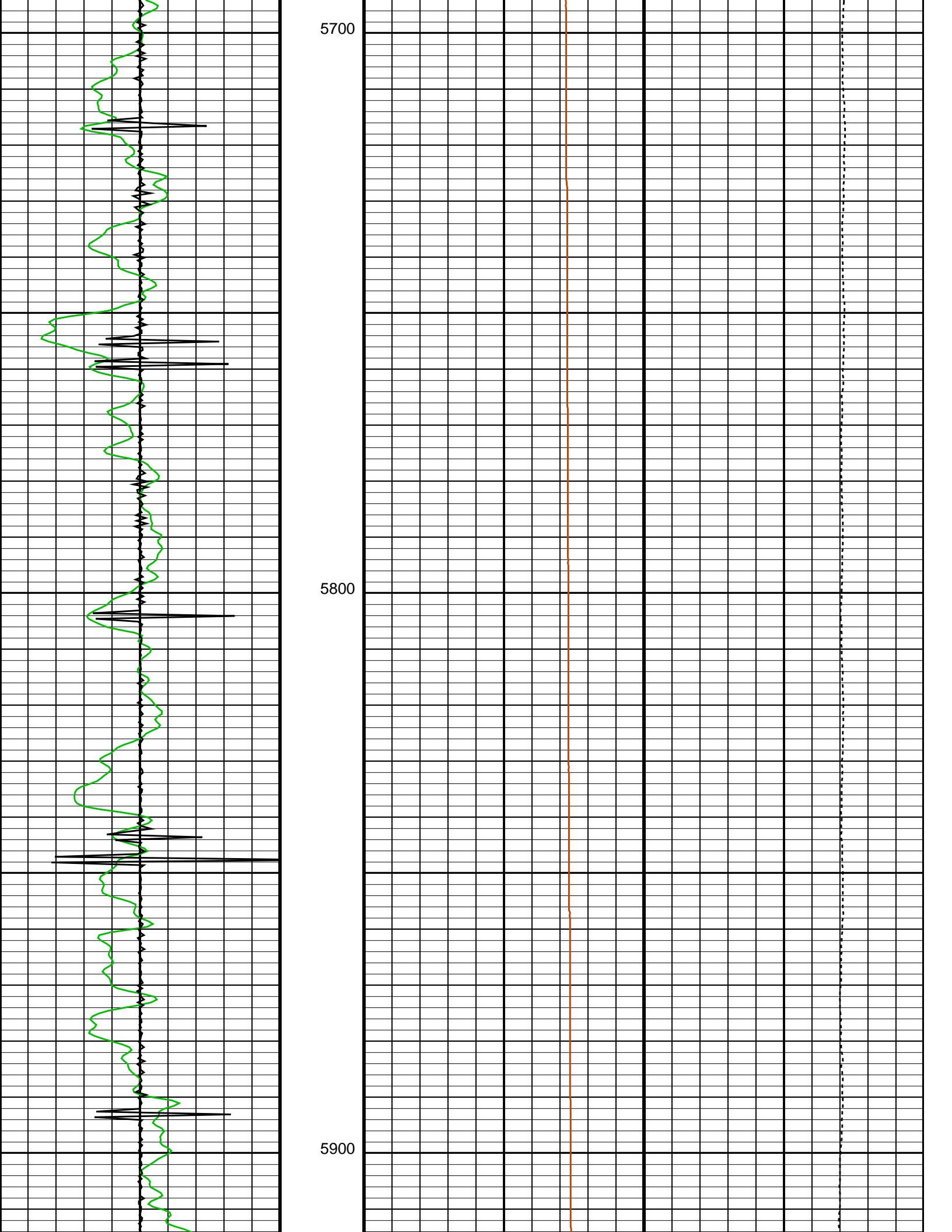
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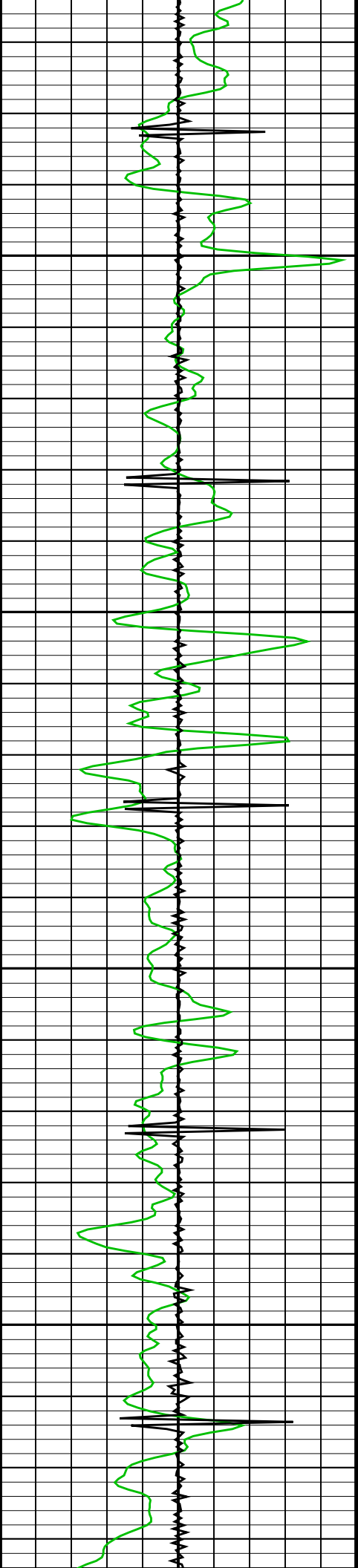


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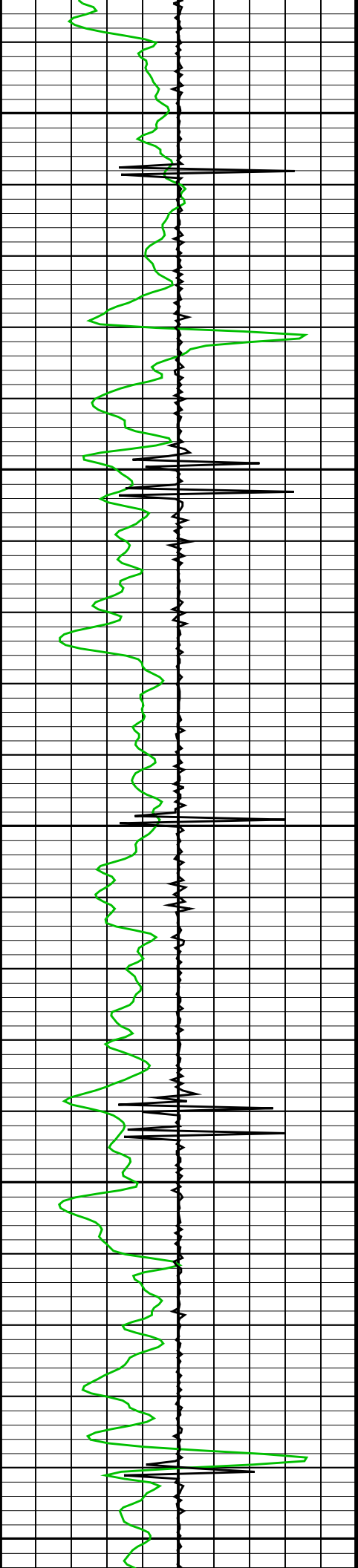






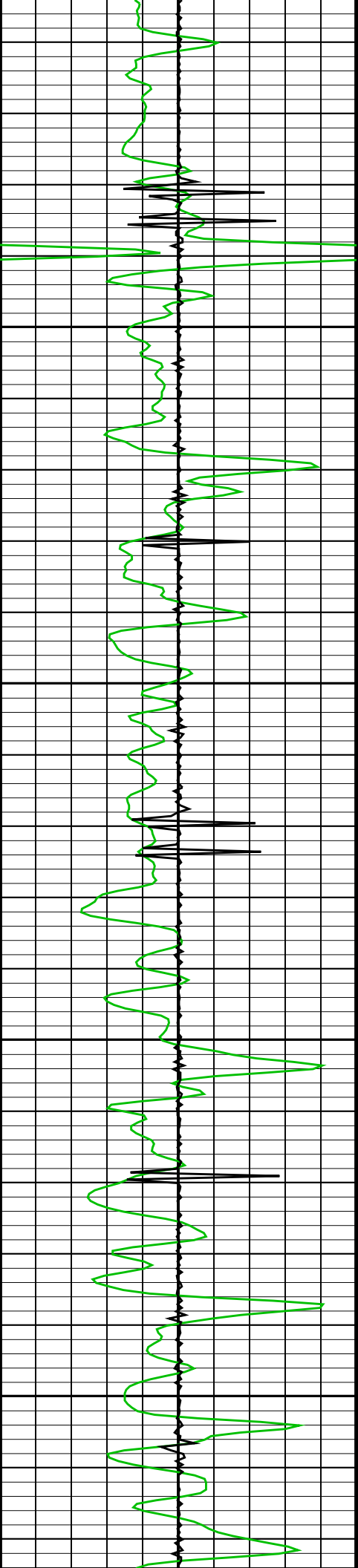
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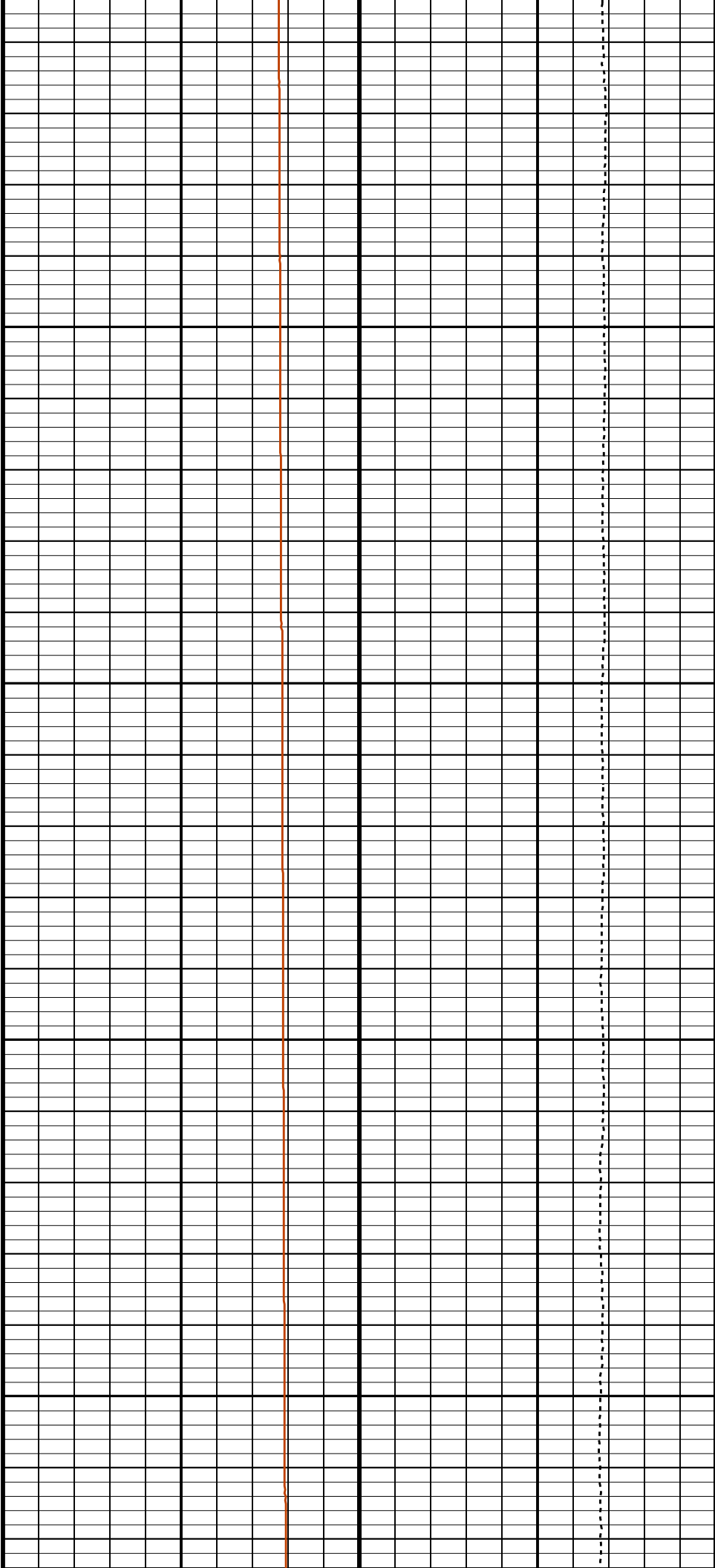
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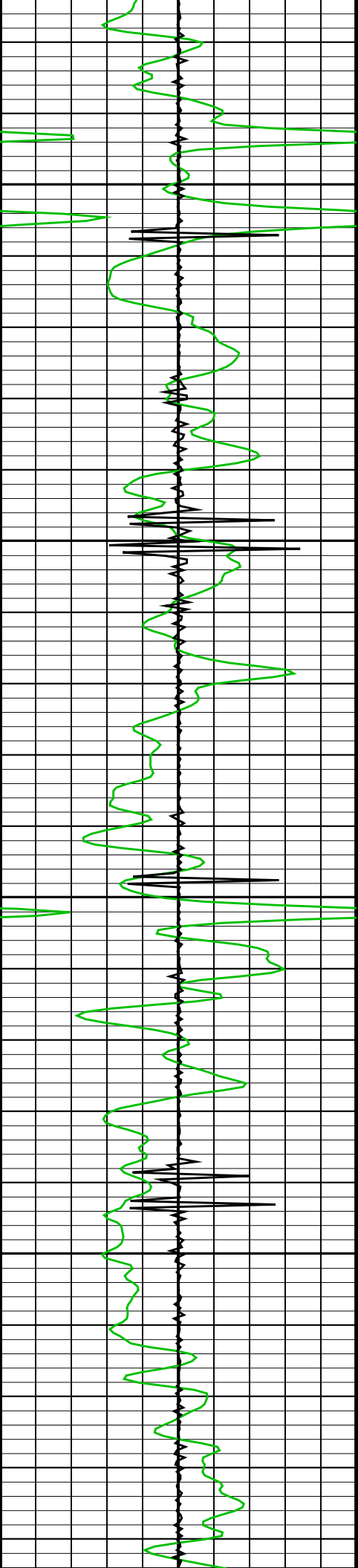
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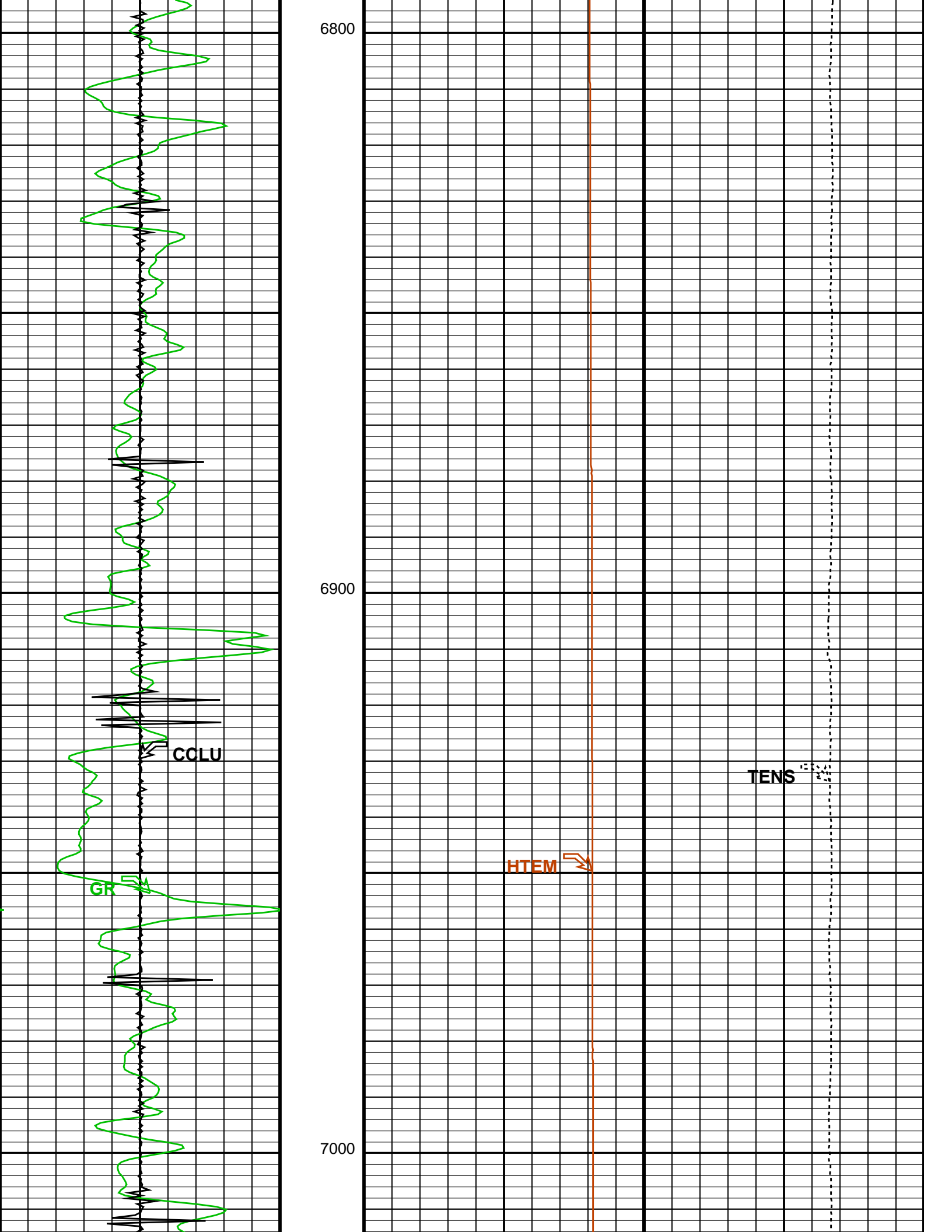
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6600

6700



6800

6900

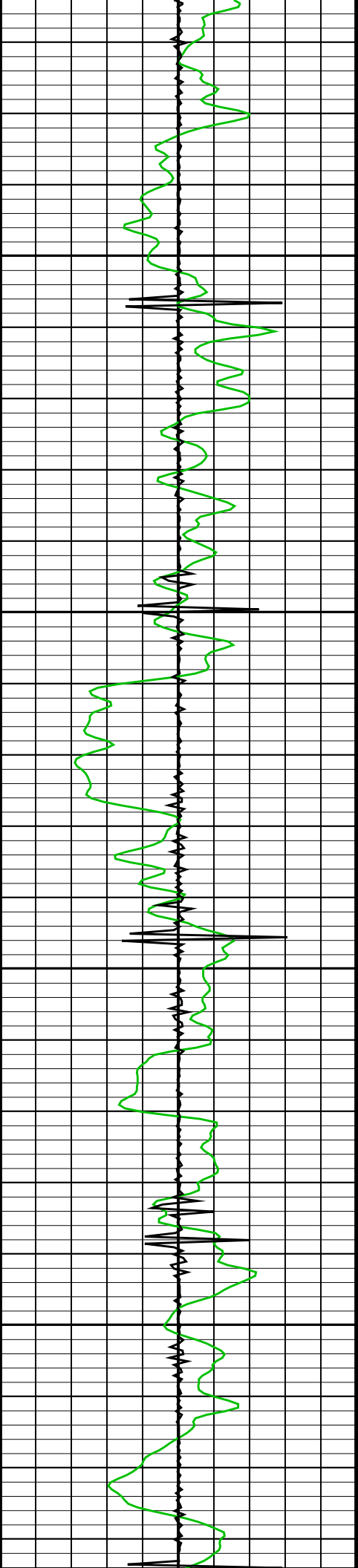
7000

GR

CCLU

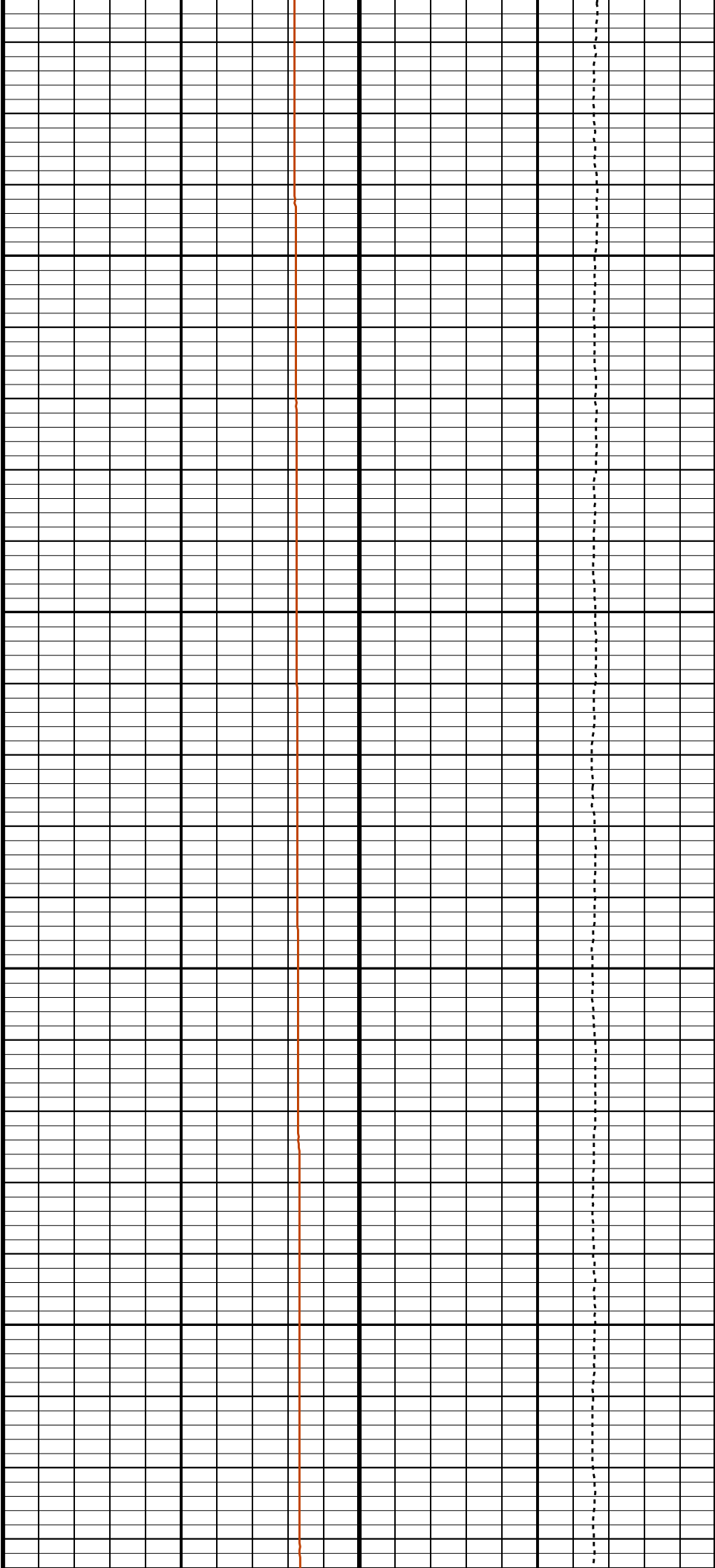
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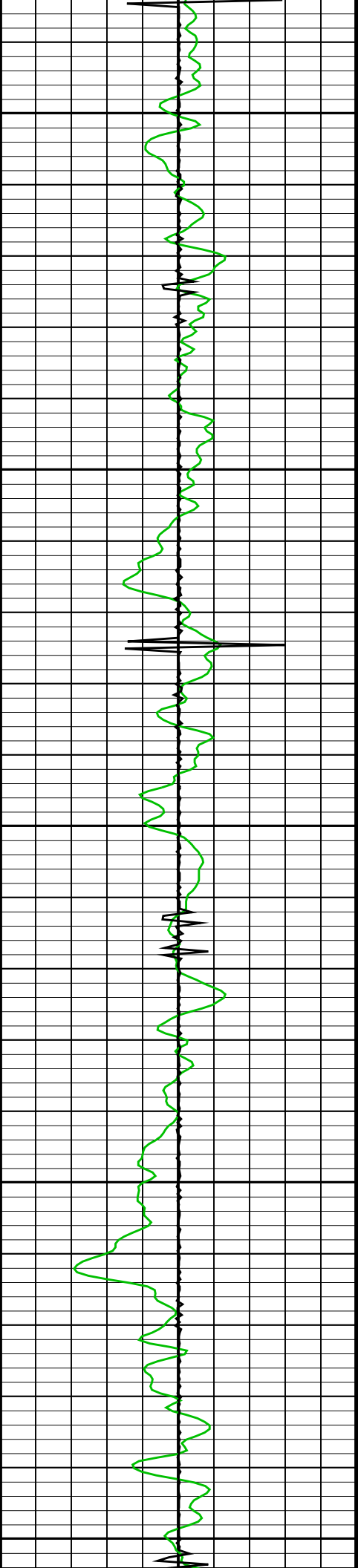
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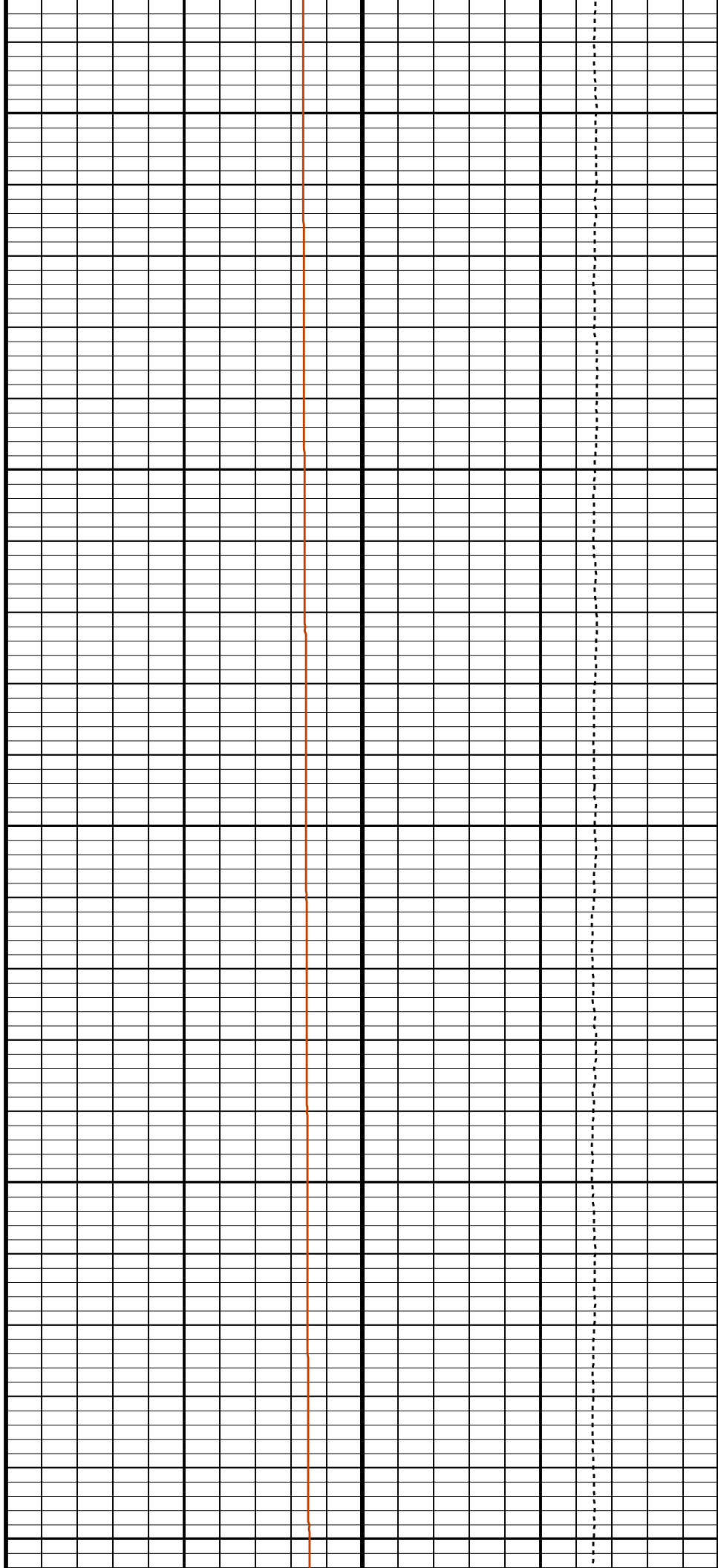
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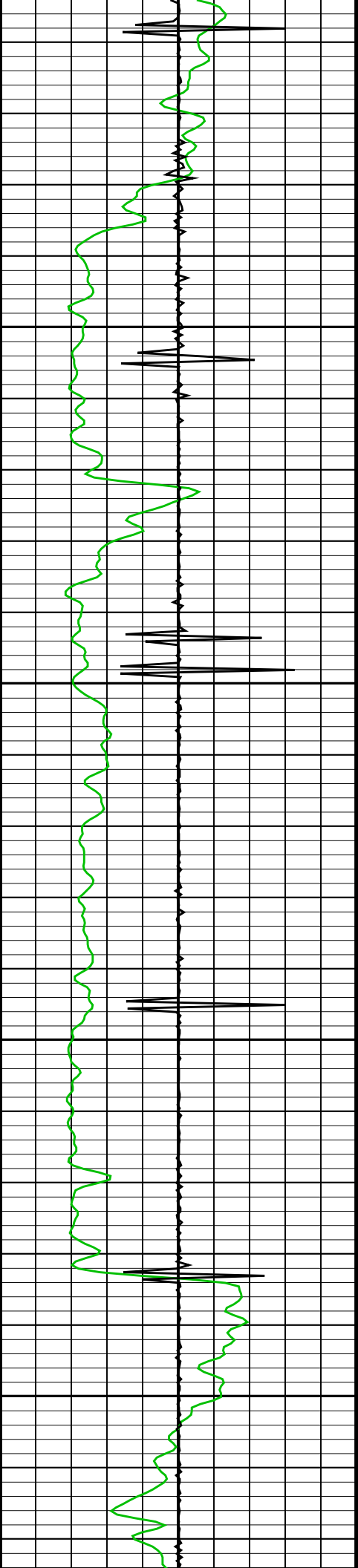




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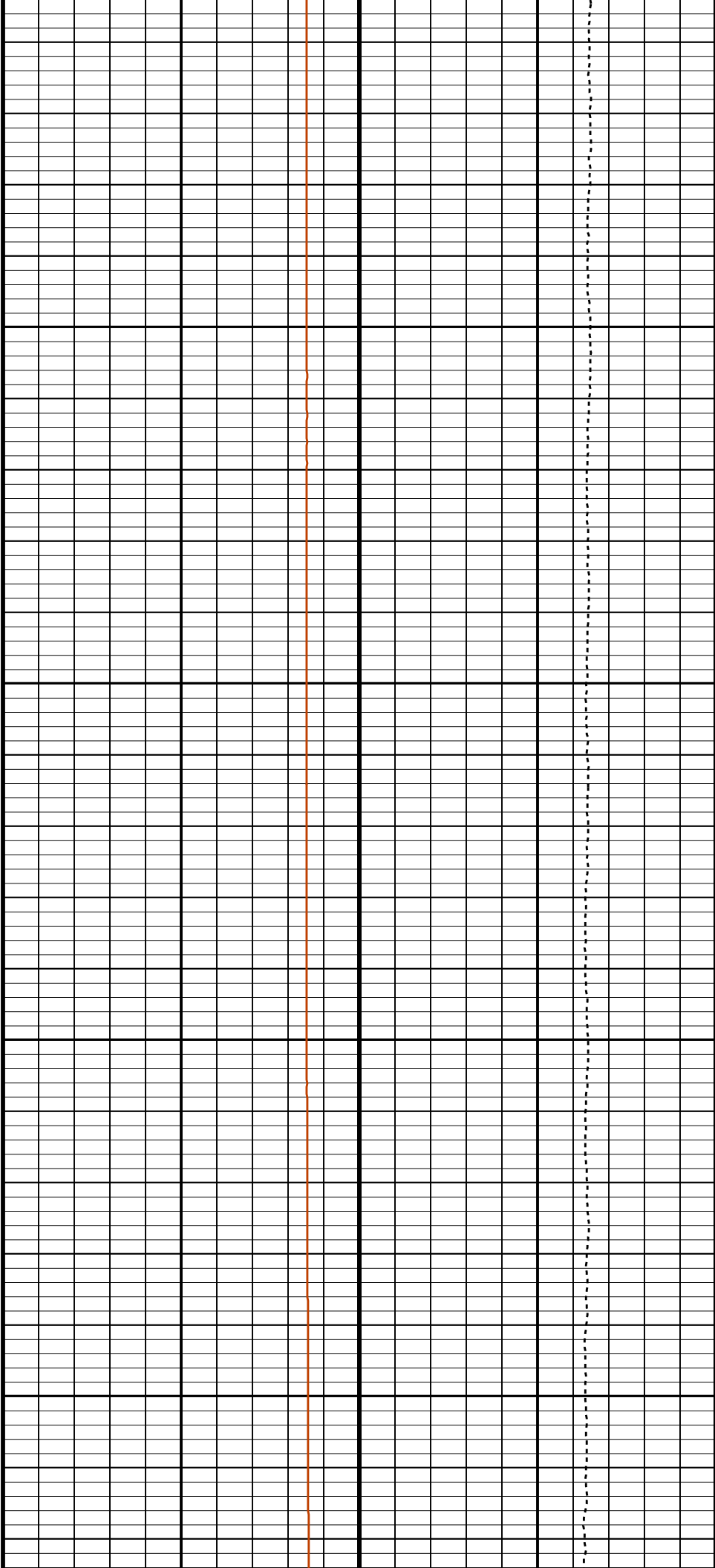
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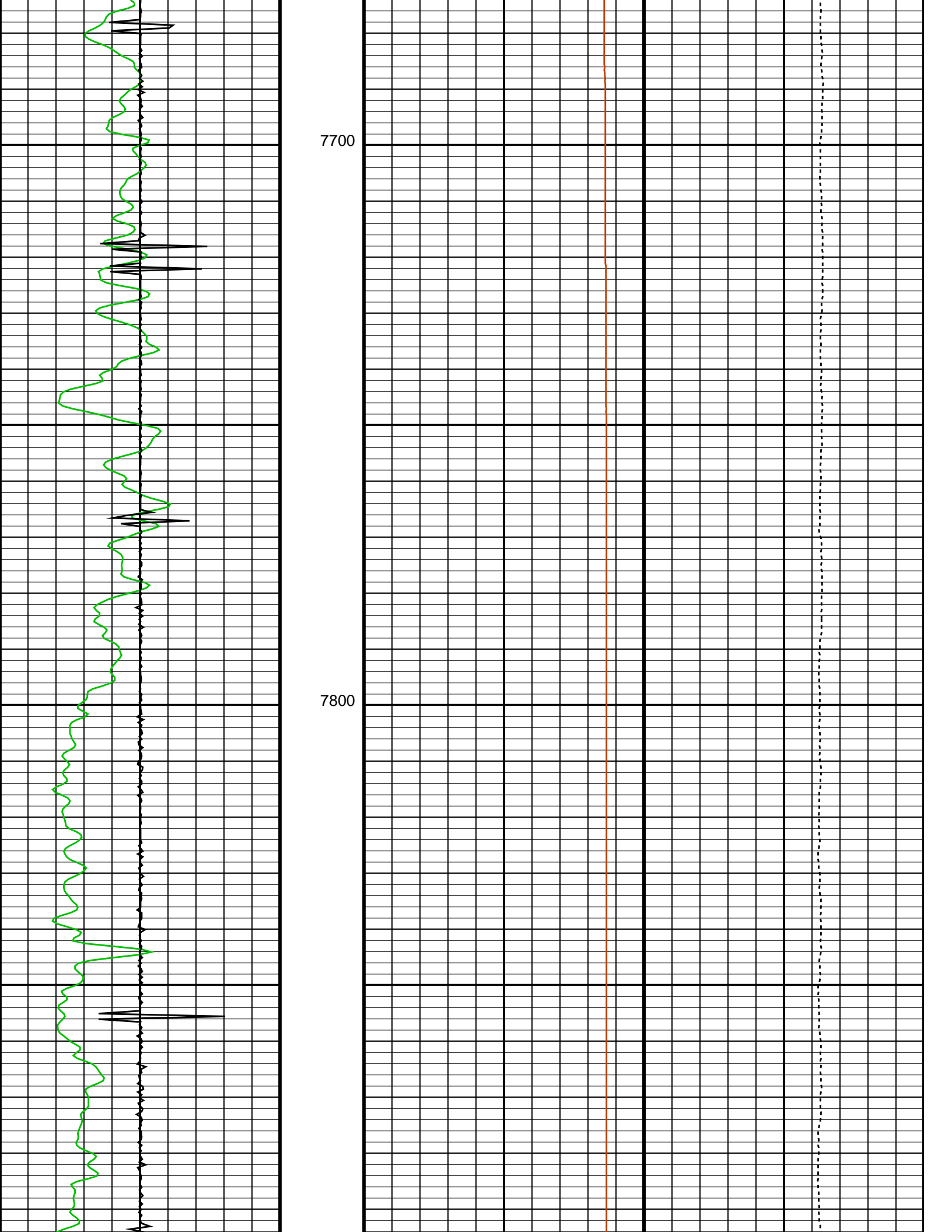




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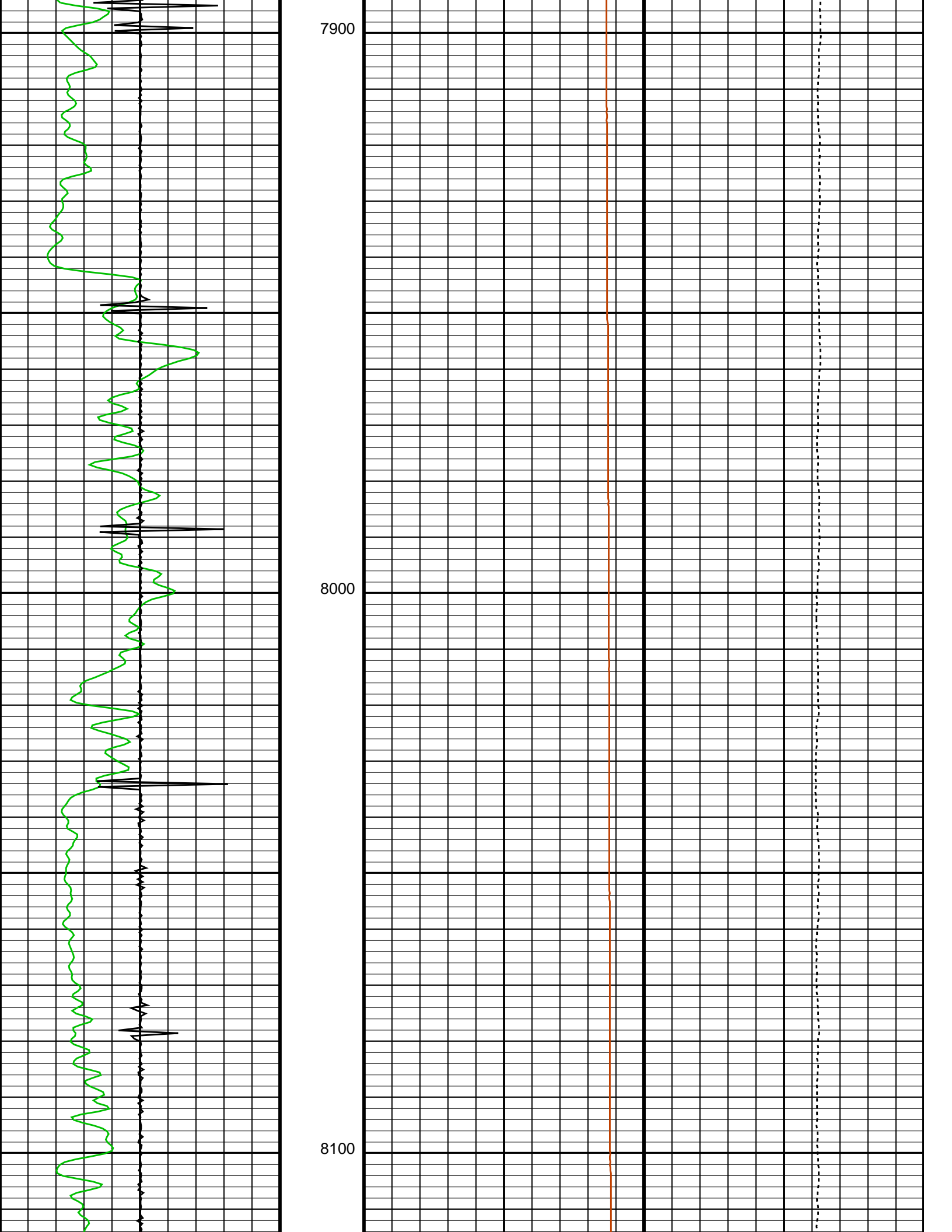
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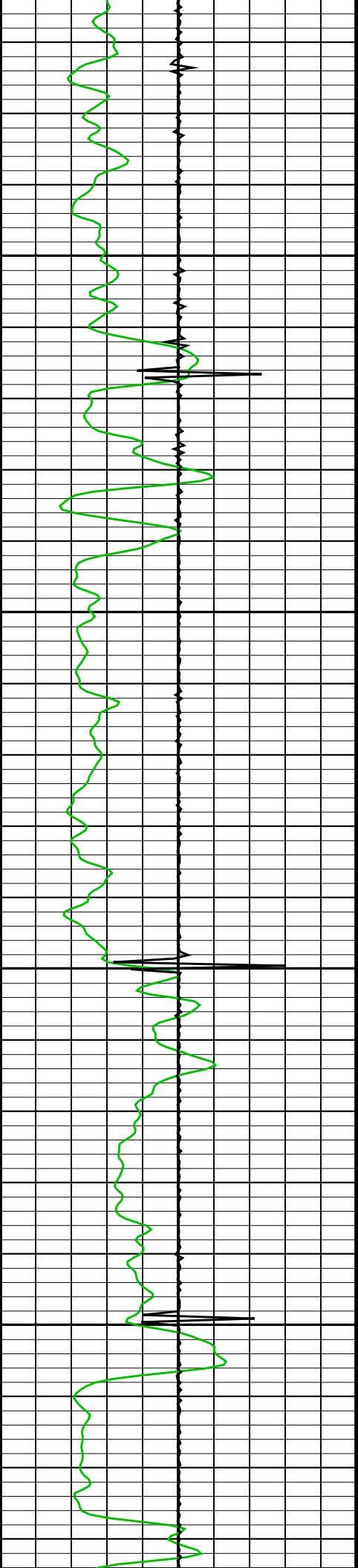




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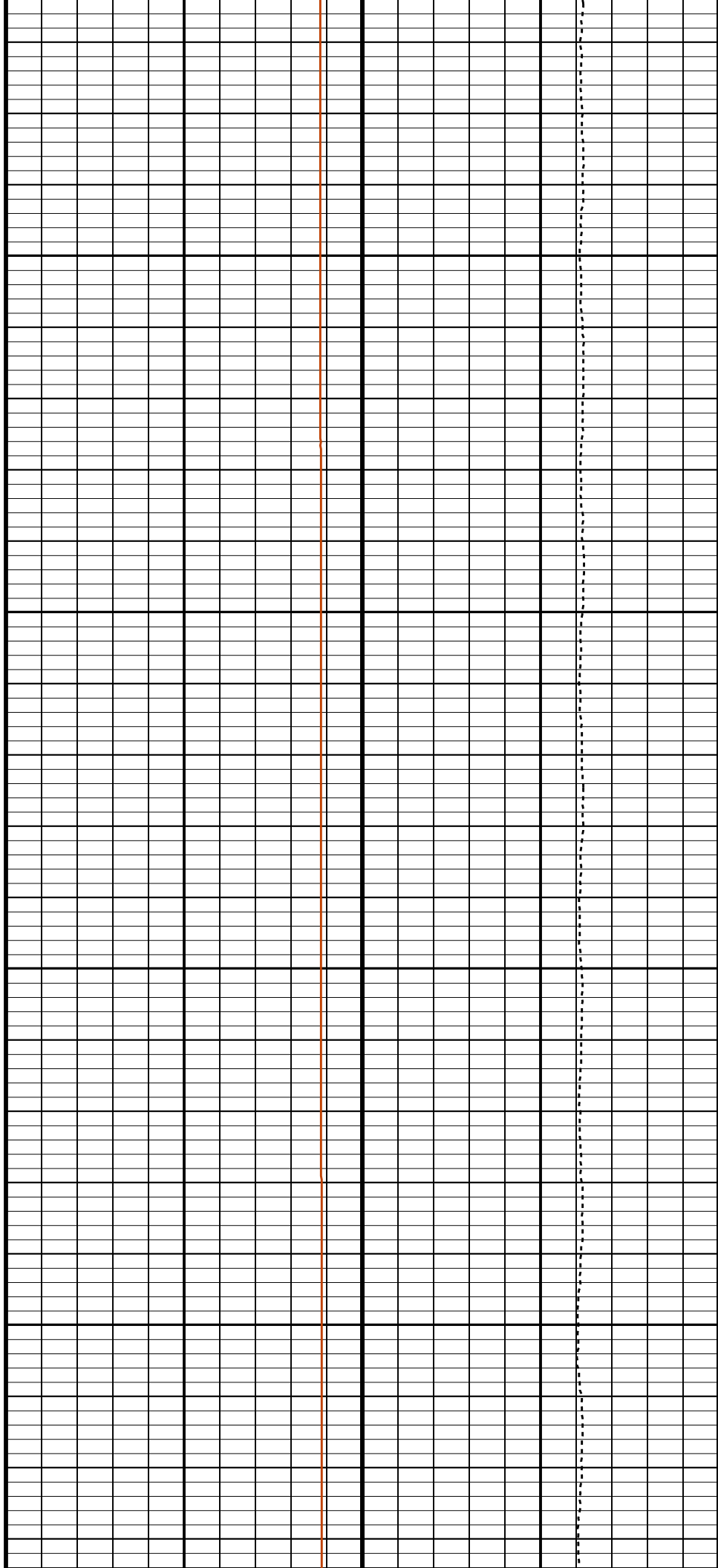
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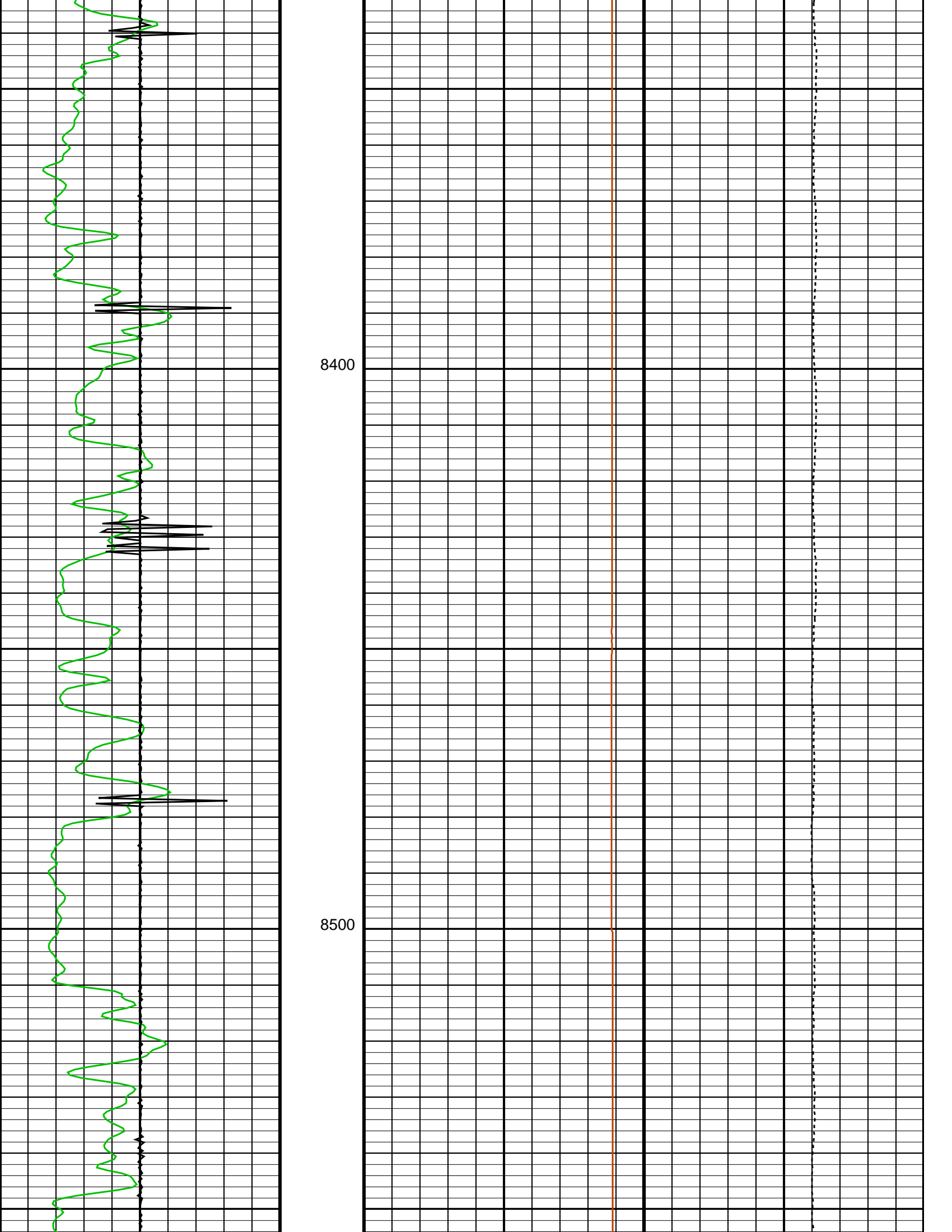


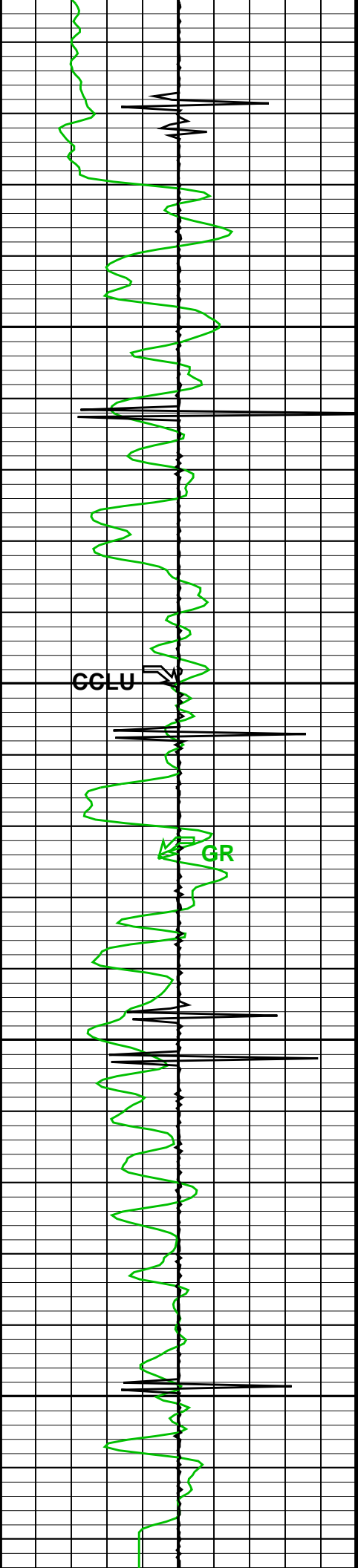


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8300







8600

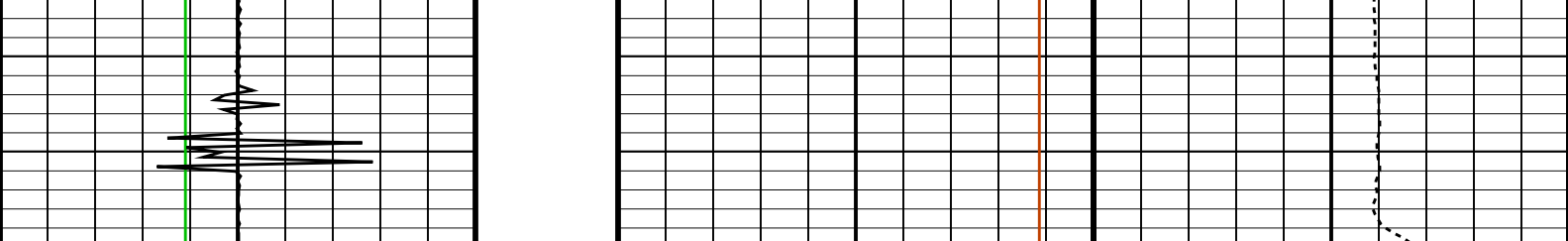
CGLU

GR

HTEM

TENS

8700



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

Parameters

DLIS Name	Description	Value
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	9.2 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 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	0.0 FT
DORL	Depth Offset for Repeat Analysis	0.0 FT
PP	Playback Processing	RECOMPUTE

Format: CORRELATION Vertical Scale: 5" per 100' Graphics File Created: 18-Nov-2009 03:58

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	SPLICE_USI_TLD_MCFL_016	FN:1	PRODUCER	18-Nov-2009 03:45	8799.5 FT	199.6 FT
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Output DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_019PUP	FN:22	PRODUCER	18-Nov-2009 03:58	
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Company: EXXONMOBIL PRODUCTION CO

Well: PCU 297-12A7

Input DLIS Files

DEFAULT	SPLICE_USI_TLD_MCFL_016	FN:1	PRODUCER	18-Nov-2009 03:45	8799.5 FT	199.6 FT
DEFAULT	USI_TLD_MCFL_CNL_017PUP	FN:20	PRODUCER	18-Nov-2009 03:53	8804.5 FT	8504.5 FT

Output DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_019PUP	FN:22	PRODUCER	18-Nov-2009 03:58
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OP System Version: 17C0-154

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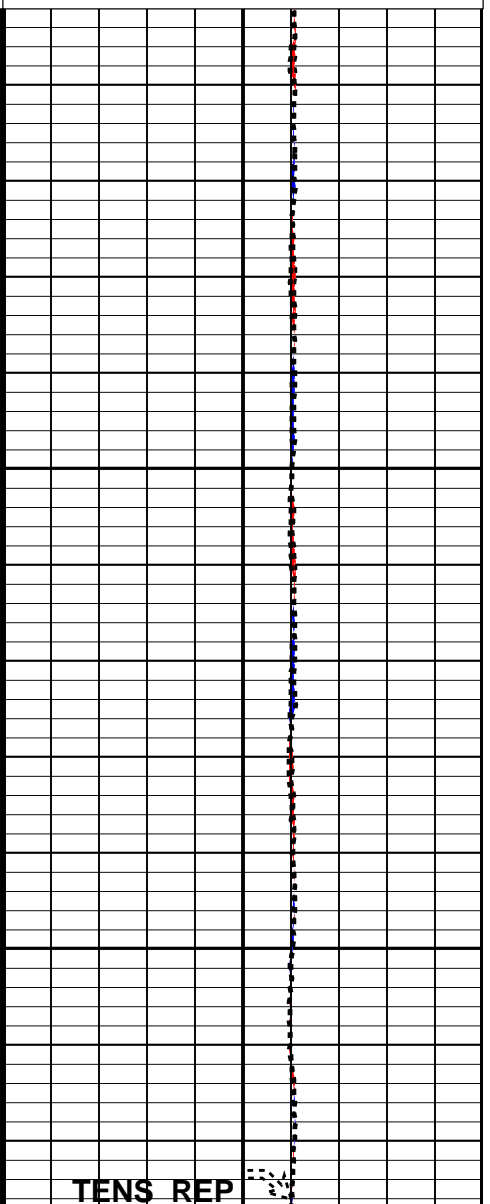
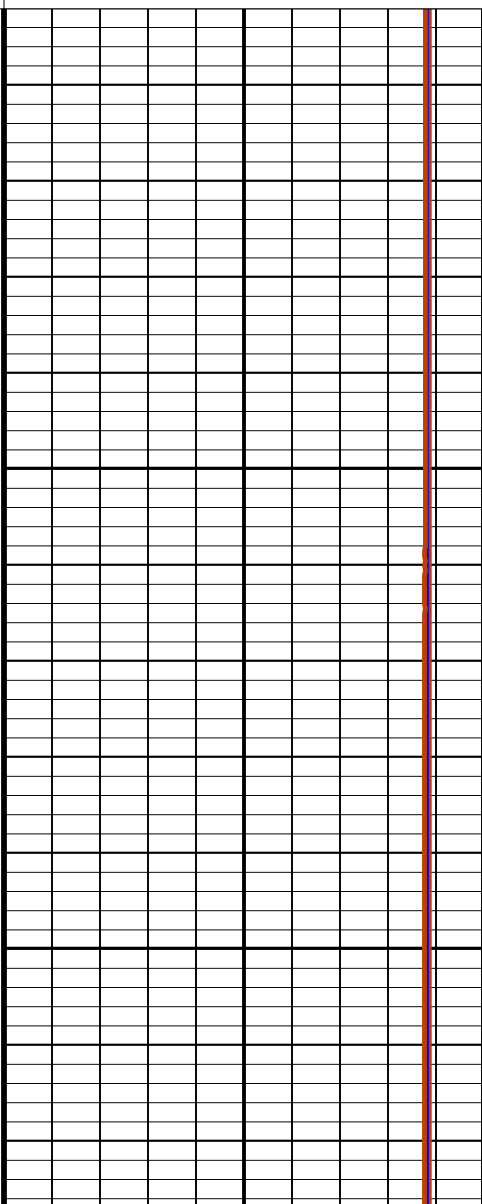
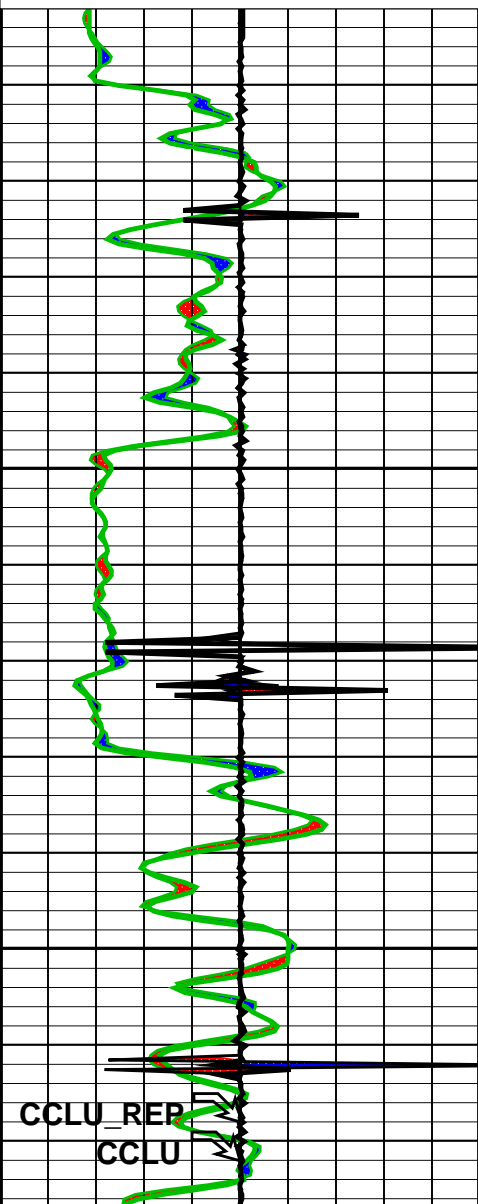
USIT_CCLU_curve_REP Curve (CCLU_REP)

-20 (----) 20

GR_REP Curve (GR_REP)
0 (GAPI) 150

HTEM_REP Curve (HTEM_REP)
20 (DEGF) 220

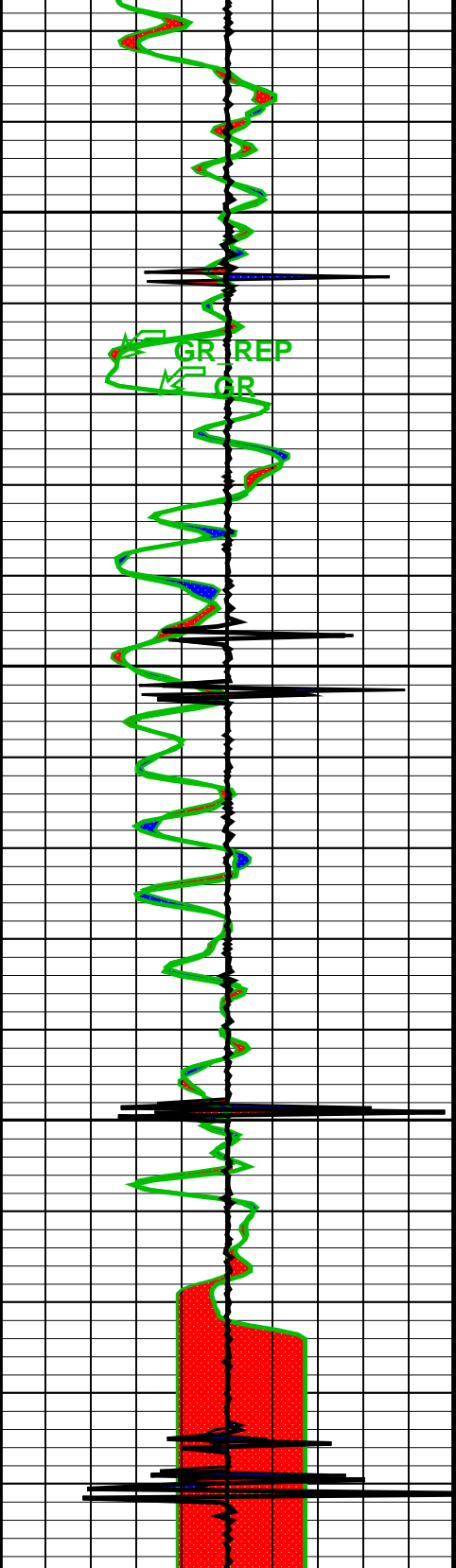
TENS_REP Curve (TENS_REP)
10000 (LBF) 0



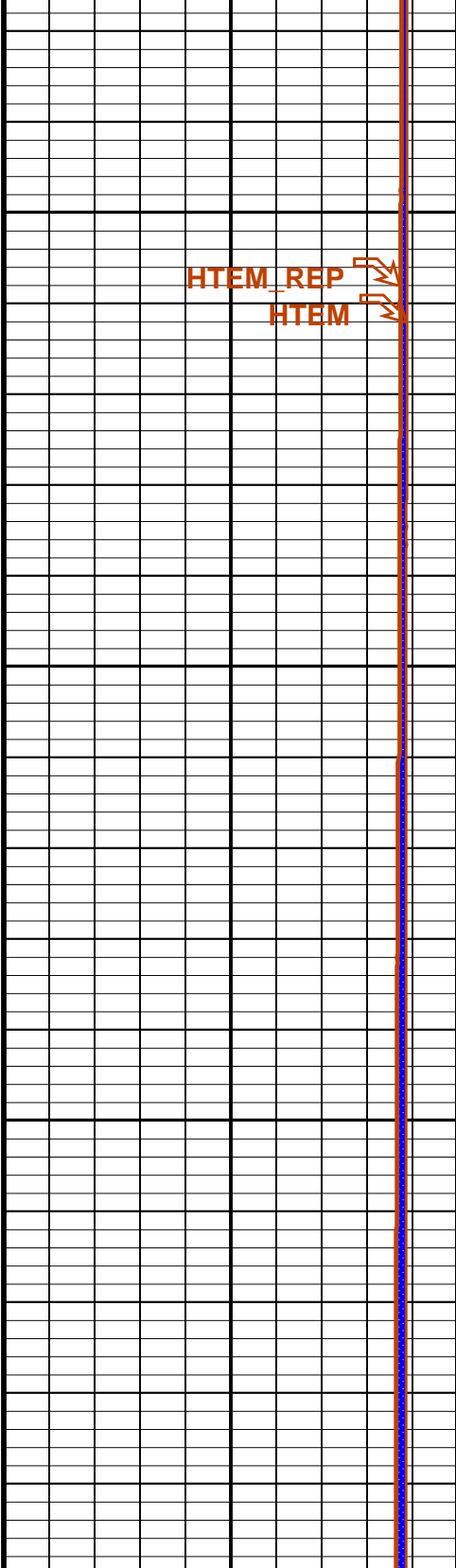
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CCLU_REP
CCLU

TENS_REP

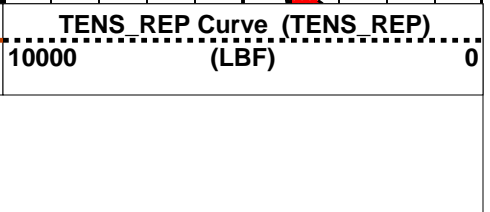
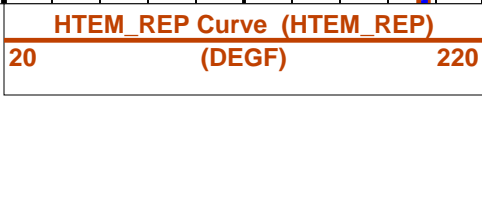
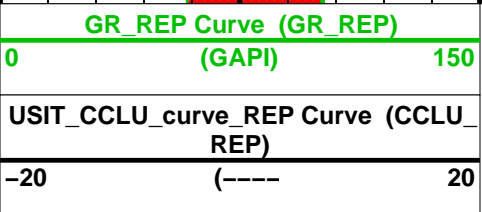


8700



TENS

HTEM_REP
HTEM



USIT_CCLU_curve_REP Curve (CCLU_REP)		
-20	(----	20

HTEM_REP Curve (HTEM_REP)		
20	(DEGF)	220

TENS_REP Curve (TENS_REP)		
10000	(LBF)	0

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	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	9.2	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	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	0.0	FT
DORL	Depth Offset for Repeat Analysis	0.0	FT
PP	Playback Processing	RECOMPUTE	

Format: CORRELATION_REP Vertical Scale: 5" per 100' Graphics File Created: 18-Nov-2009 03:58

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	SPLICE_USI_TLD_MCFL_016	FN:1	PRODUCER	18-Nov-2009 03:45	8799.5 FT	199.6 FT
DEFAULT	USI_TLD_MCFL_CNL_017PUP	FN:20	PRODUCER	18-Nov-2009 03:53	8804.5 FT	8504.5 FT

Output DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_019PUP	FN:22	PRODUCER	18-Nov-2009 03:58
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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: 17-Nov-2009 11:58							
Gamma Ray Background	30.00	N/A	43.28	N/A	N/A	N/A	GAPI
Gamma Ray (Jig - Bkgd)	167.0	N/A	172.1	N/A	N/A	15.18	GAPI
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Zero Measurement							
Master: Calibration out of date 8-Aug-2009 14:34 Before: 17-Nov-2009 11:57							
CNTC Background	27.02	27.02	28.00	N/A	N/A	4.053	CPS
CFTC Background	20.01	20.01	20.31	N/A	N/A	4.627	CPS

CFTC Background	30.91	30.91	29.21	N/A	N/A	4.637	CPS
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Ratio Measurement							
Master: Calibration out of date 8–Aug–2009 14:34							
Thermal Near Corr. (Tank)	5800	5661	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2311	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.450	N/A	N/A	N/A	N/A	
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Accelerometer Calibration							
Before: 17–Nov–2009 21:21							
Z–Axis Acceleration	32.19	N/A	32.33	N/A	N/A	N/A	F/S2

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

NCT–B Water Temperature 66.0 DEG.F.
 Thermal Housing Size 3.362 IN.
 NSR–F serial number 0

High resolution Integrated Logging Tool–DTS / Equipment Identification			
Primary Equipment:			
HILT Gamma–Ray Neutron Sonde–DTS	HGNS – H	3920	
HGNS Gamma–Ray Device	HGR –		
HGNS Neutron Detector with Alpha Source	HCNT – H		
Z–Axis Accelerometer	HACC – H	3577	
Compensated Neutron Box	CNB – AB		
HTBC Communication Assembly DTS Mode	HMCA – H		
Auxiliary Equipment:			
Neutron Calibration Tank	NCT – B		
Gamma Source Radioactive	GSR – U/Y		
HGNS Housing	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		43.28	Before		172.1		
	0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)			159.0 (Minimum) 167.0 (Nominal) 208.8 (Maximum)			
Before: 17–Nov–2009 11:58							

High resolution Integrated Logging Tool–DTS Wellsite Calibration							
Zero Measurement							
Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value		
Master		27.02	Master		30.91		
Before		28.00	Before		29.21		
	5.000 (Minimum) 27.02 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 30.91 (Nominal) 40.00 (Maximum)			
Master: Calibration out of date 8–Aug–2009 14:34 Before: 17–Nov–2009 11:57							

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		5661	Master		2311	Master		2.450		
	4700 (Minimum) 5800 (Nominal) 6900 (Maximum)			1900 (Minimum) 2400 (Nominal) 2900 (Maximum)			2.120 (Minimum) 2.159 (Nominal) 2.540 (Maximum)			
Master: Calibration out of date 8–Aug–2009 14:34										

High resolution Integrated Logging Tool–DTS Wellsite Calibration		
Accelerometer Calibration		
Phase	Z–Axis Acceleration F/S2	Value
Before		32.33
	31.53 (Minimum) 32.19 (Nominal) 32.84 (Maximum)	
Before: 17–Nov–2009 21:21		

DTS Telemetry Tool / Equipment Identification

Primary Equipment:

DTC-H Auxiliary Cartridge
DTC-H Telemetry Cartridge

DTCH - A
DTCH - A

Auxiliary Equipment:

DTCH Telemetry Cartridge Housing

ECH - KC

Company: **EXXONMOBIL PRODUCTION CO**

Schlumberger

Well: **PCU 297-12A7**

Field: **PICEANCE CREEK**

County: **RIO BLANCO**

State: **COLORADO**

CORRELATION PRINT

GAMMA RAY / CCL