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OS1:  
OS2:  
OS3:  
OS4:  
OS5:

OS1:  
OS2:  
OS3:  
OS4:  
OS5:

1. THIS IS THE FIRST RUN IN THE WELL
2. TOOL RAN AS PER TOOL SKETCH
3. LOG DATA RECORDED ON PIPE CONVEYED MEMORY
4. LOG DEPTH RECORDED REAL TIME WITH PASON
5. LOG CORRELATED WITH PIPE TALLY AND MWD GAMMA RAY

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

SERVICE ORDER #:  
PROGRAM VERSION:  
FLUID LEVEL:

**STOP**

RUN 2

## WITM (ThruBit)

TBT-A  
CCL  
BDOT-B  
THOT  
T10\_1  
SAH-TB  
TBAT1  
WCIB

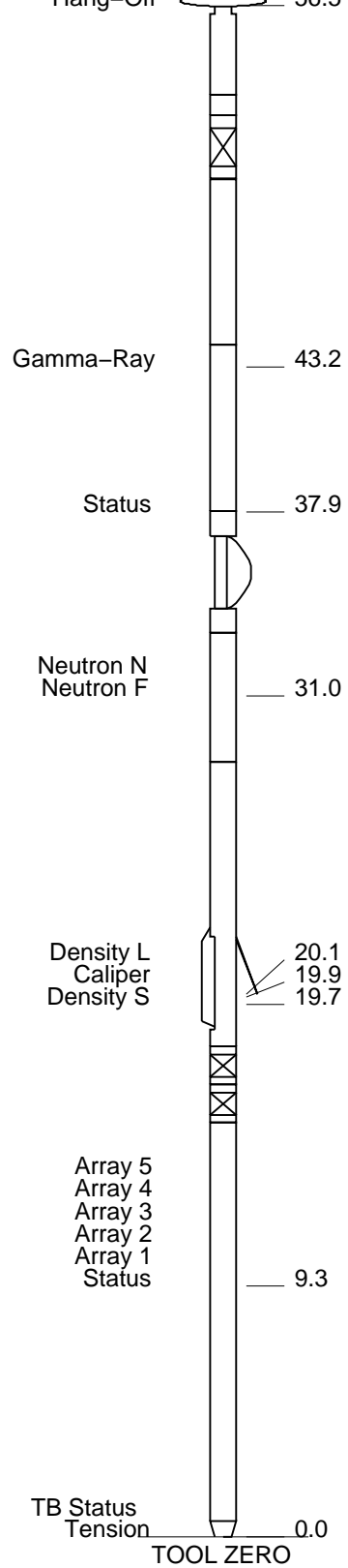
CCl ☐ 63.0

63.6

Hang-Off

56 5

TMG-A  
TILE-A  
TBN-A  
NNLS-EWA  
TBD-A  
GGLS-FZ  
KAH-TB\_1  
KAH-TB\_2  
TBI-A

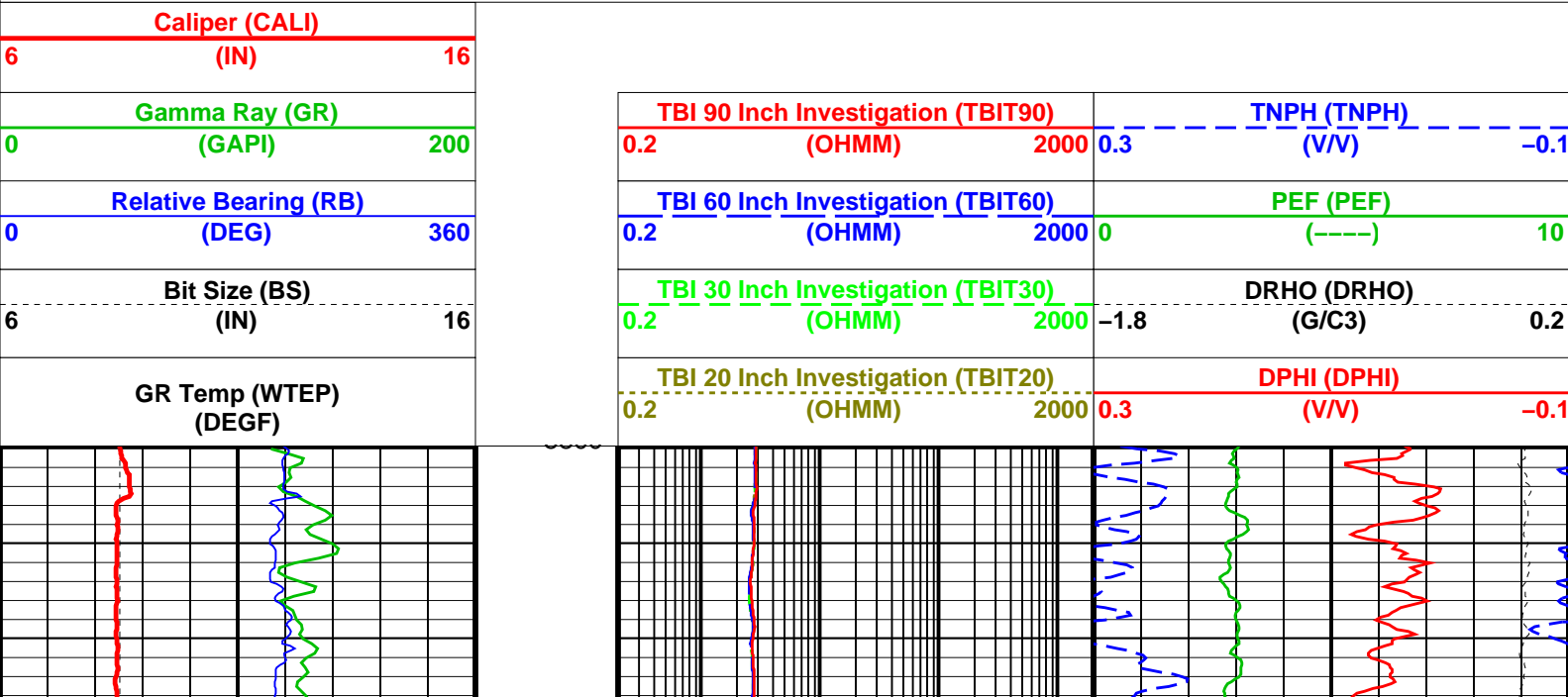


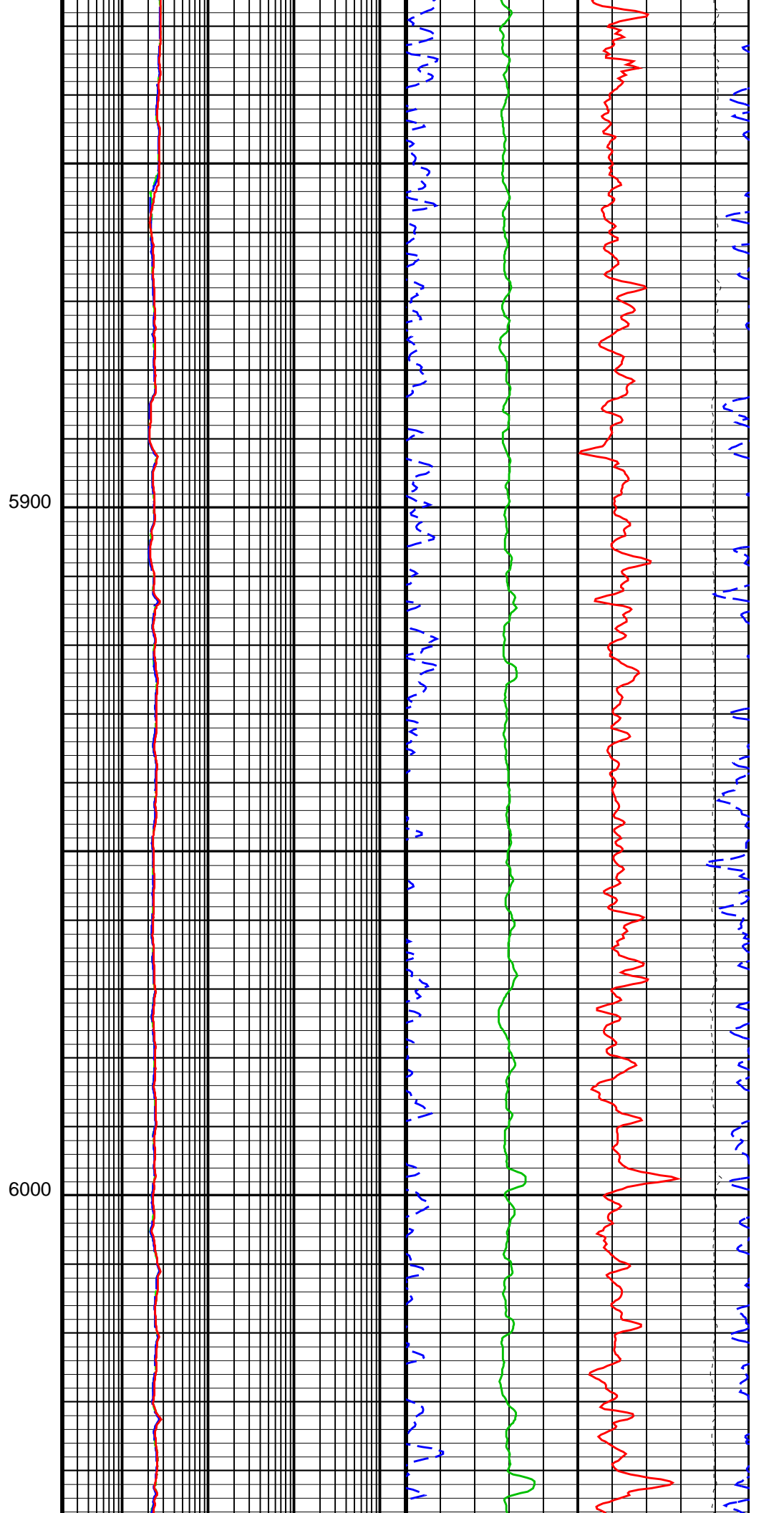
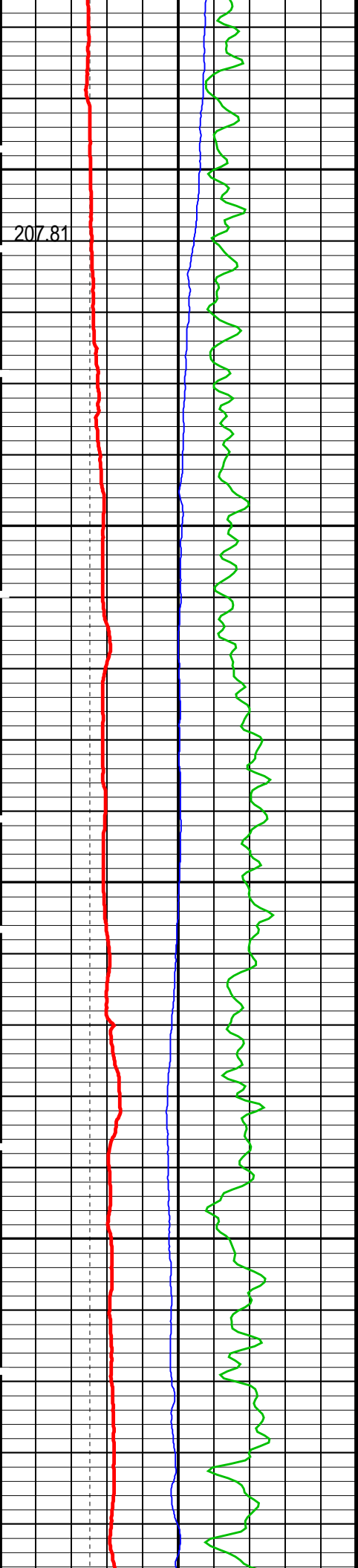
MAXIMUM STRING DIAMETER 2.13 IN  
MEASUREMENTS RELATIVE TO TOOL ZERO  
ALL LENGTHS IN FEET

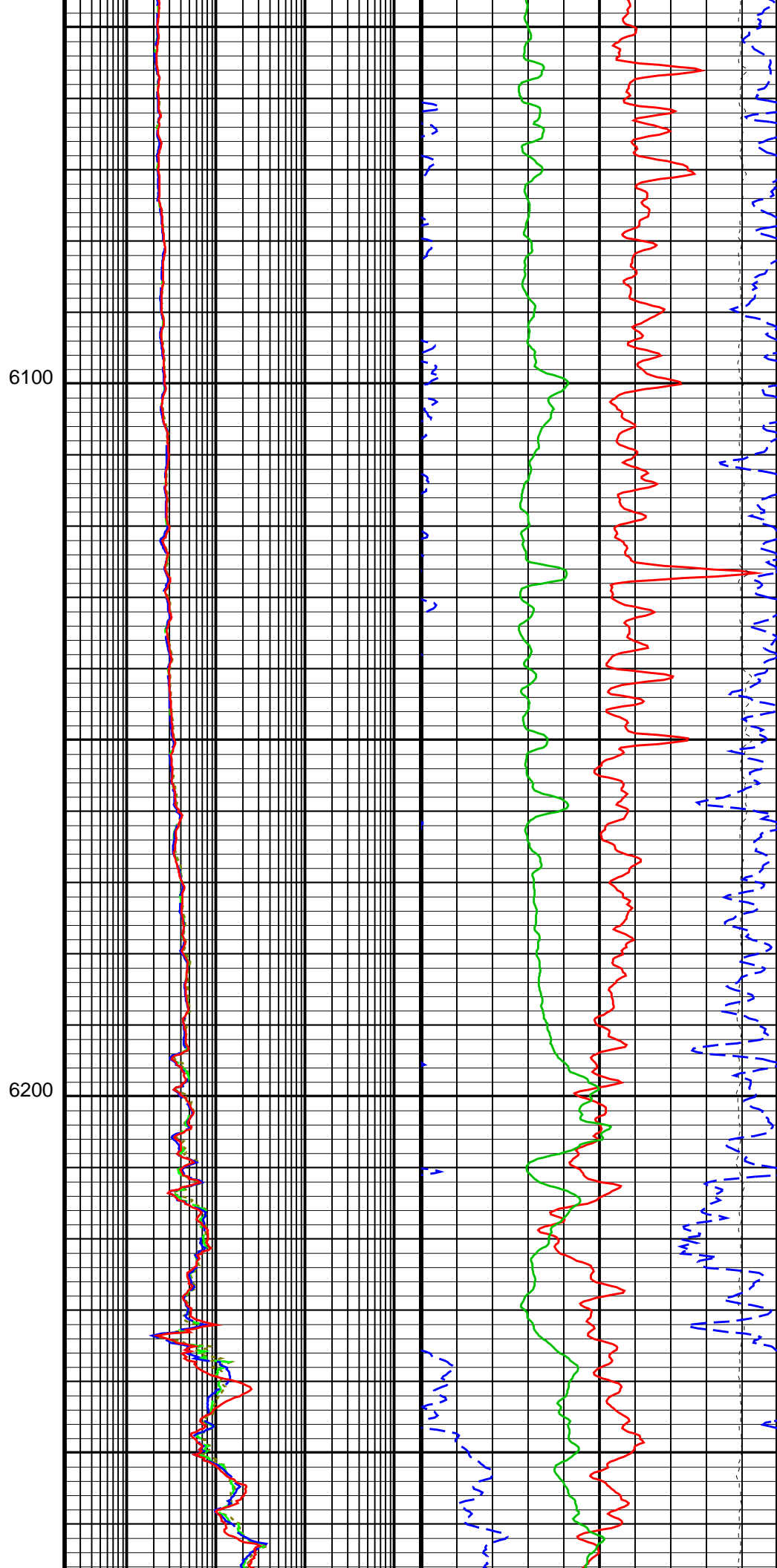
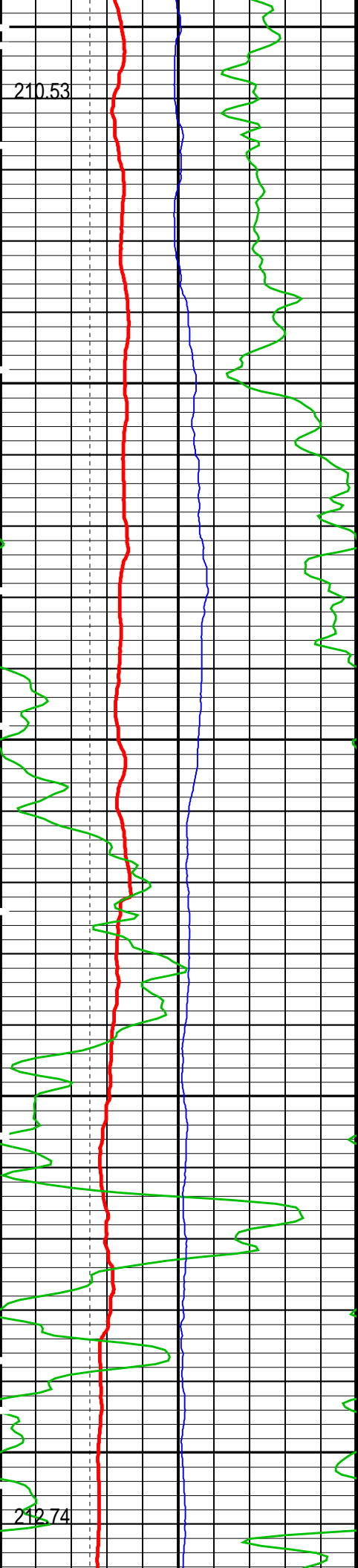
Input DLIS Files					
DEFAULT	ThruBit_007PUP	FN:6	PRODUCER	02-Jul-2017 14:09	17265.2 FT 362.2 FT
Output DLIS Files					
DEFAULT	ThruBit_008PUP	FN:7	PRODUCER	02-Jul-2017 14:21	17265.0 FT 5799.5 FT

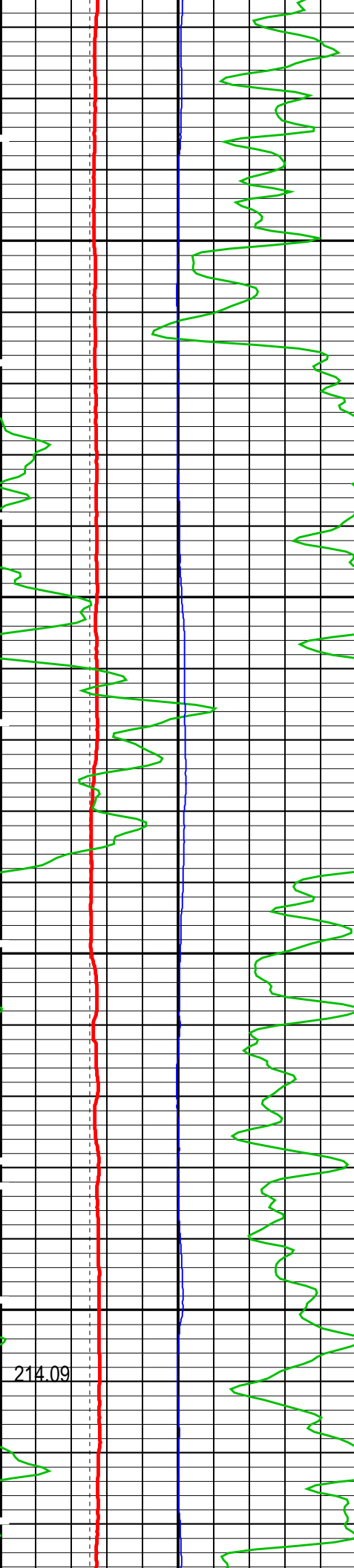
OP System Version: 19C2-270	
TBT-A	SRPC-5318-Thrubit-SP3.4

PIP SUMMARY	
<div><div></div>Time Mark Every 60 S</div>	



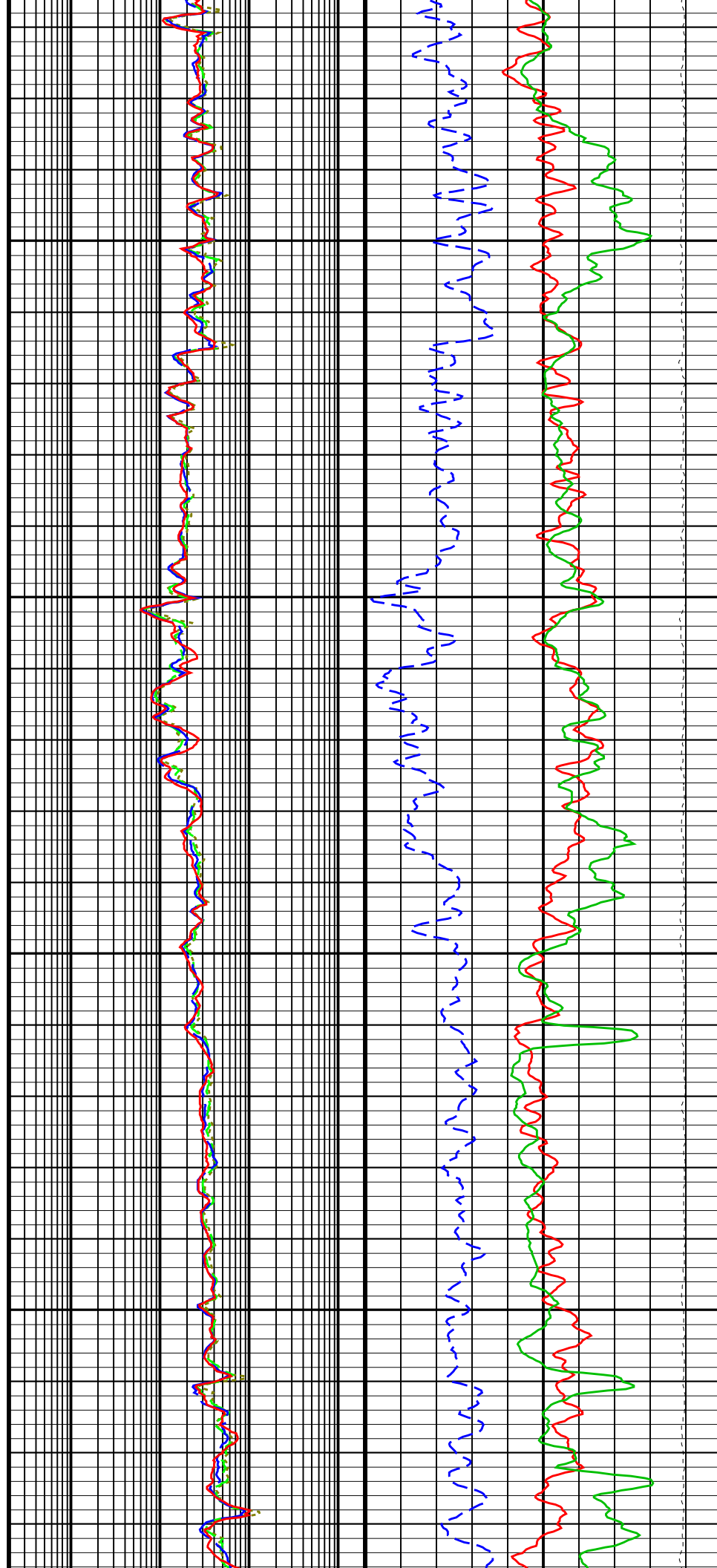


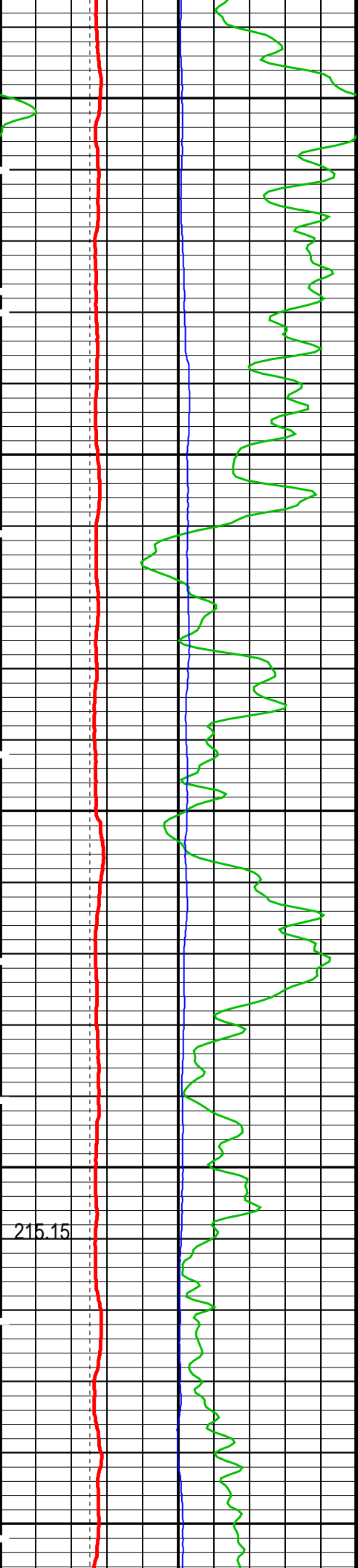




6300

6400



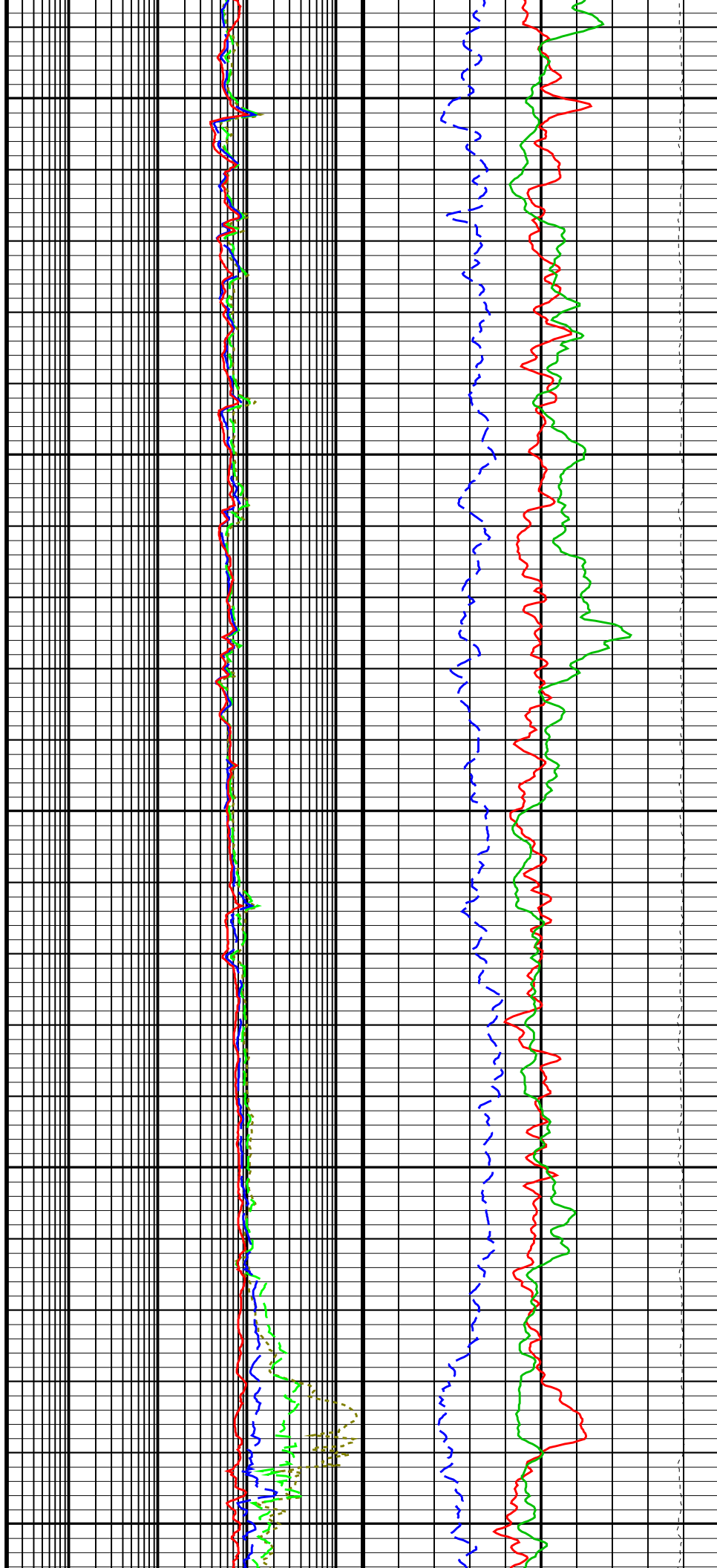


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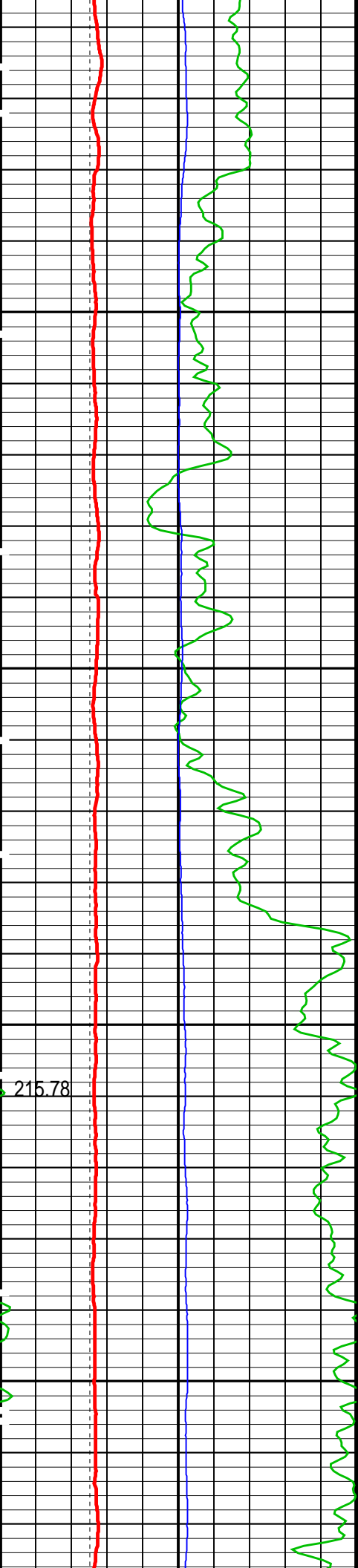
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215.15

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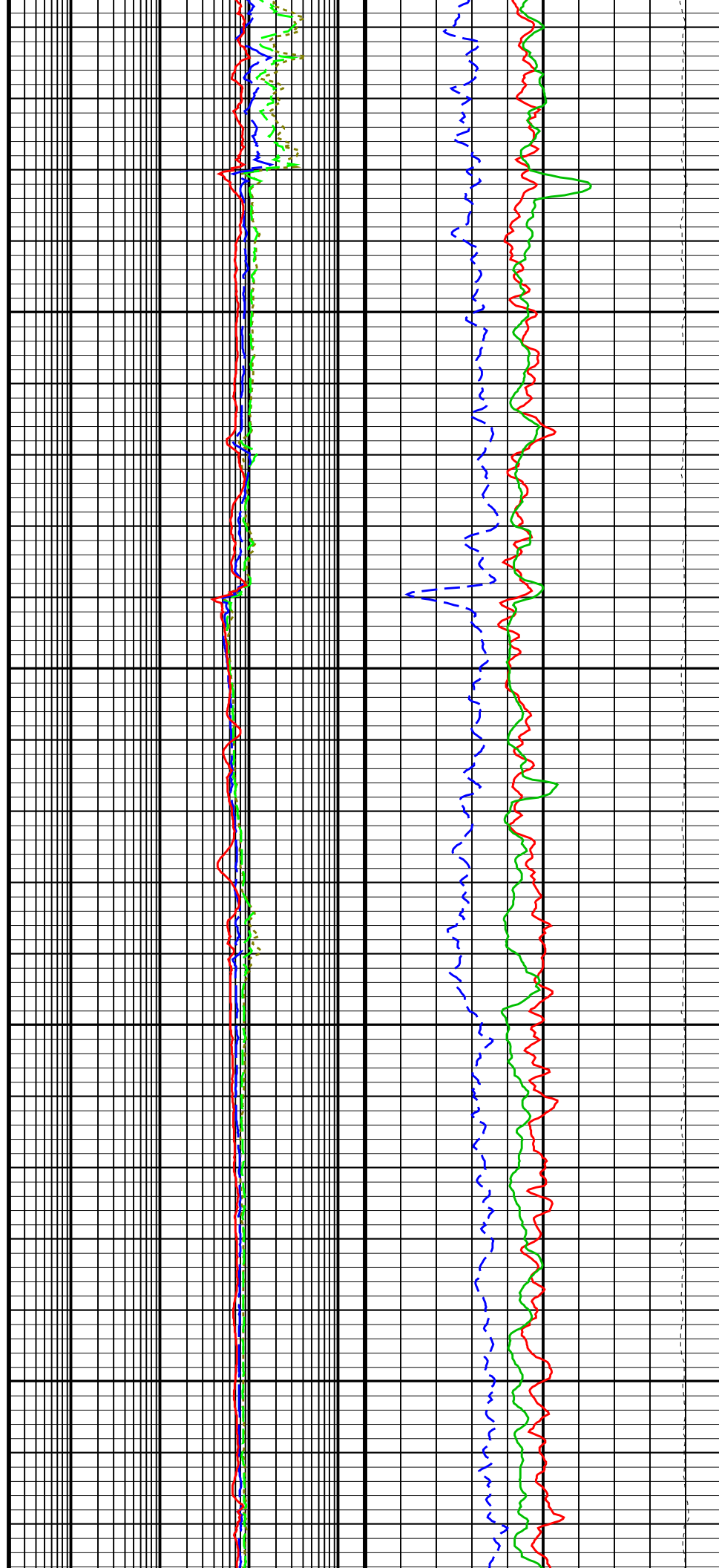


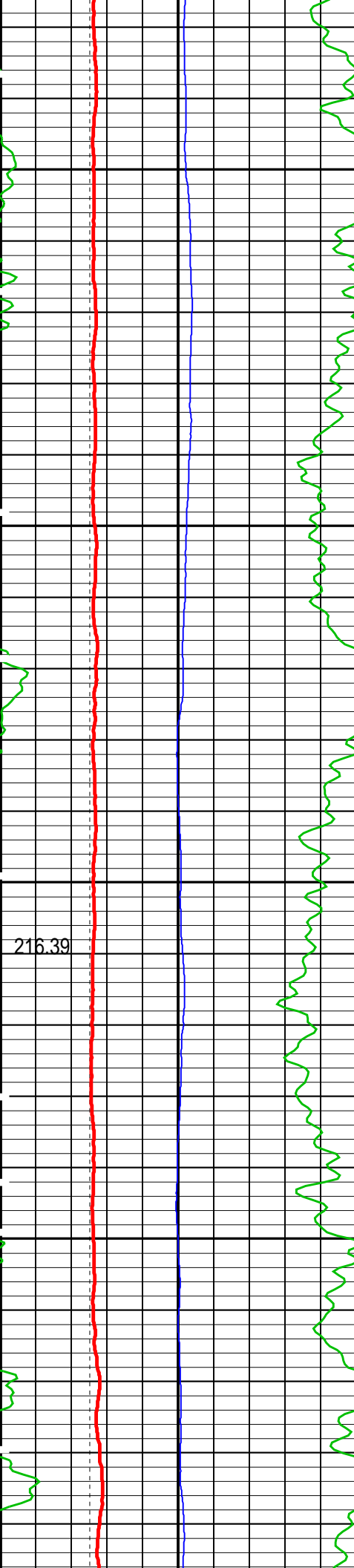




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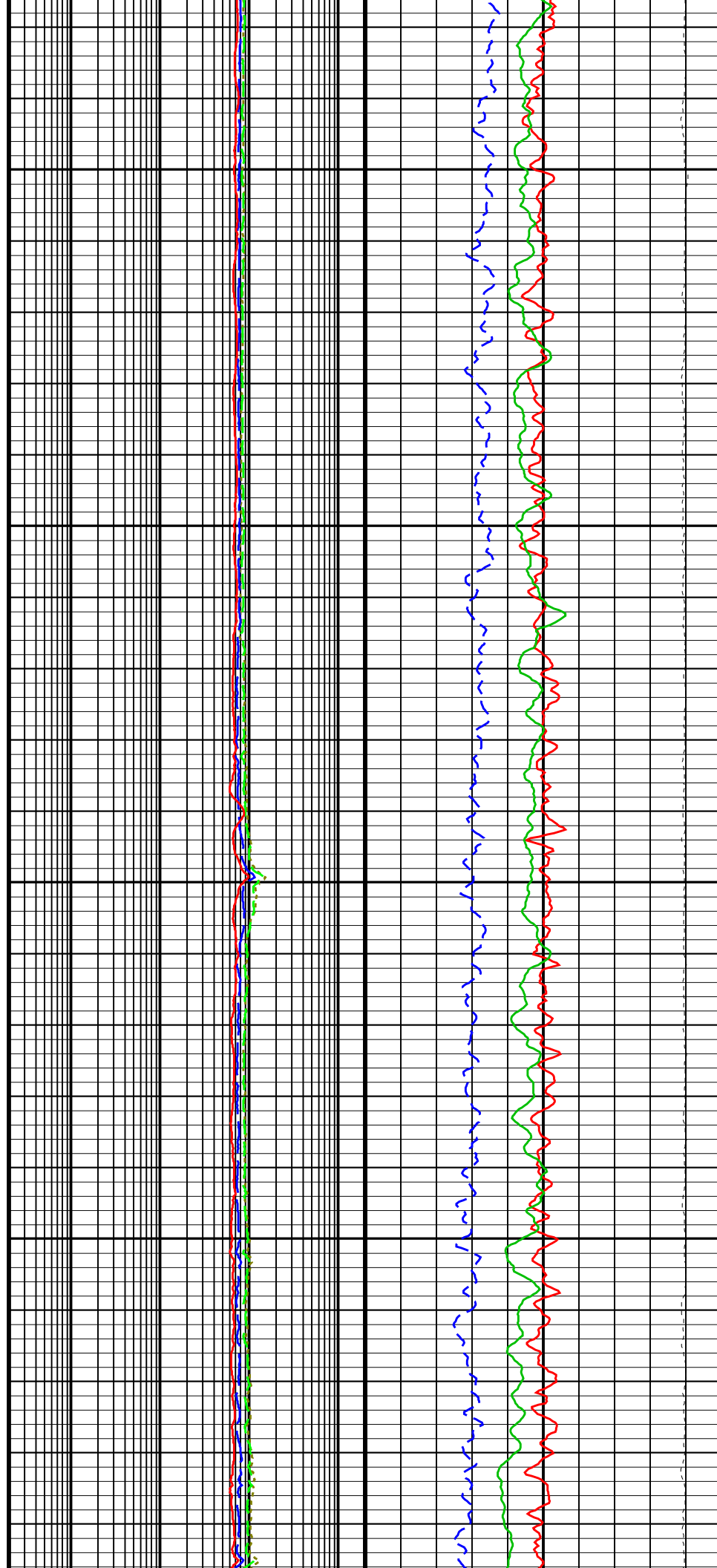
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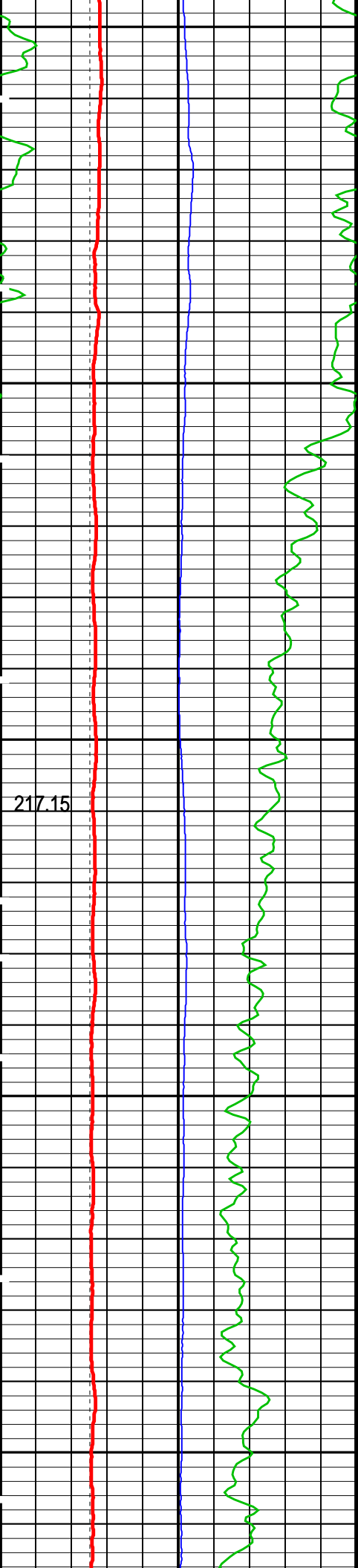




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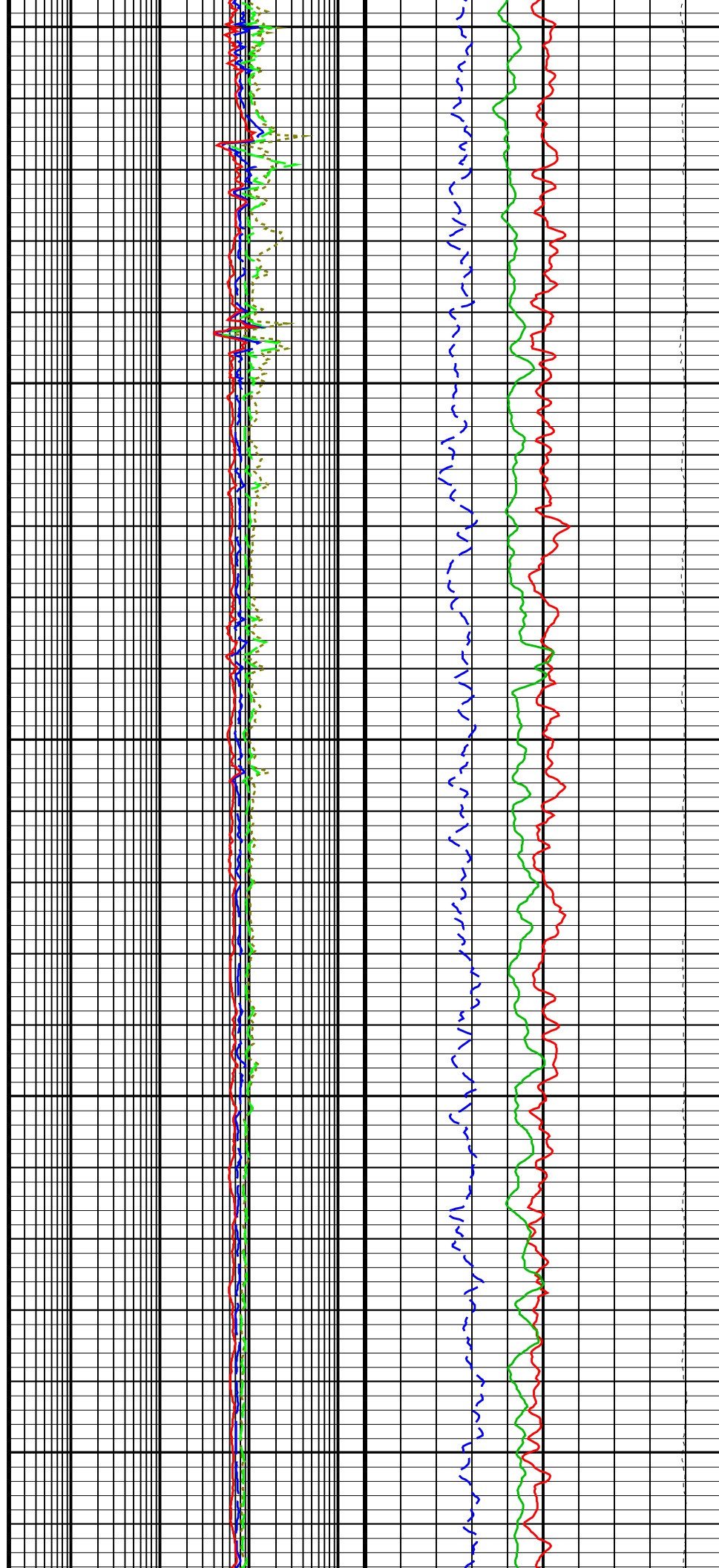
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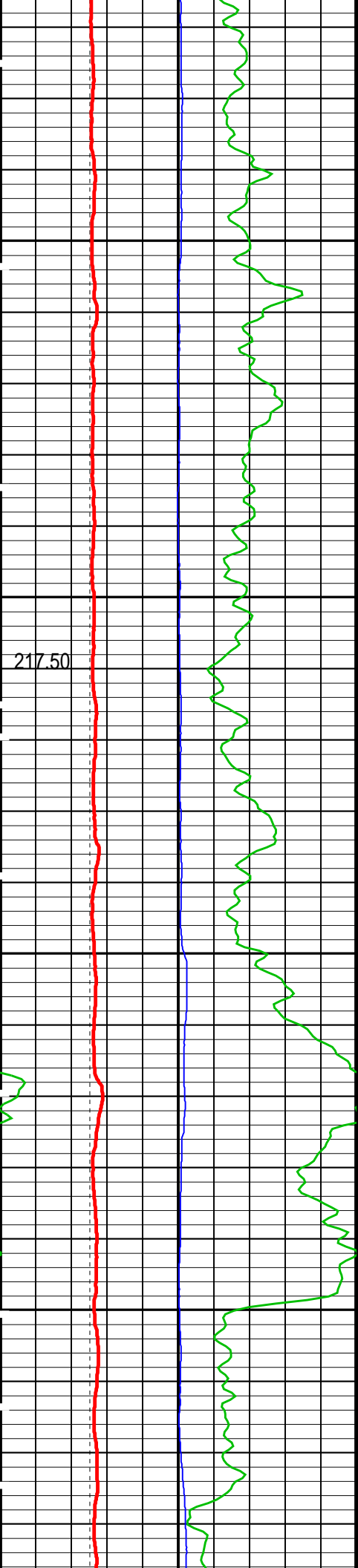




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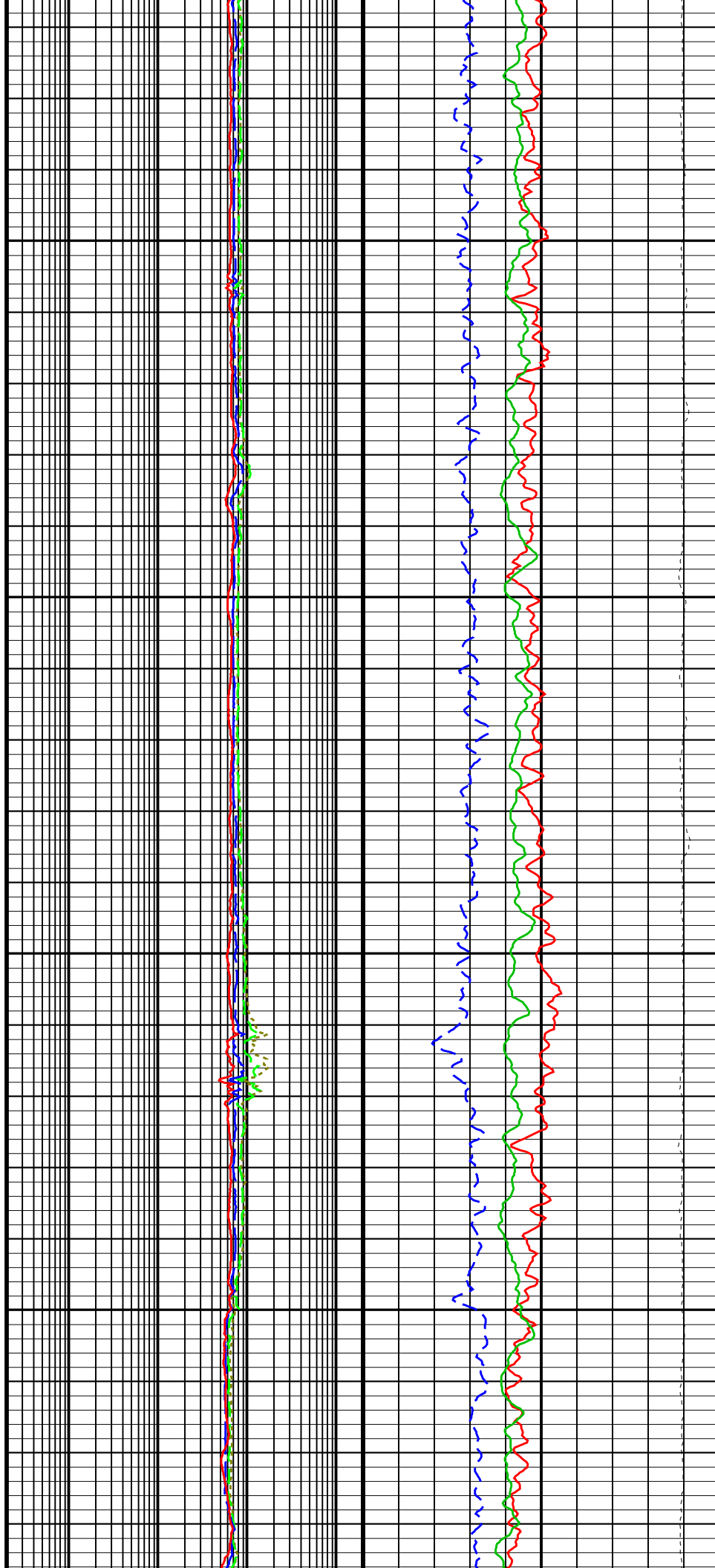
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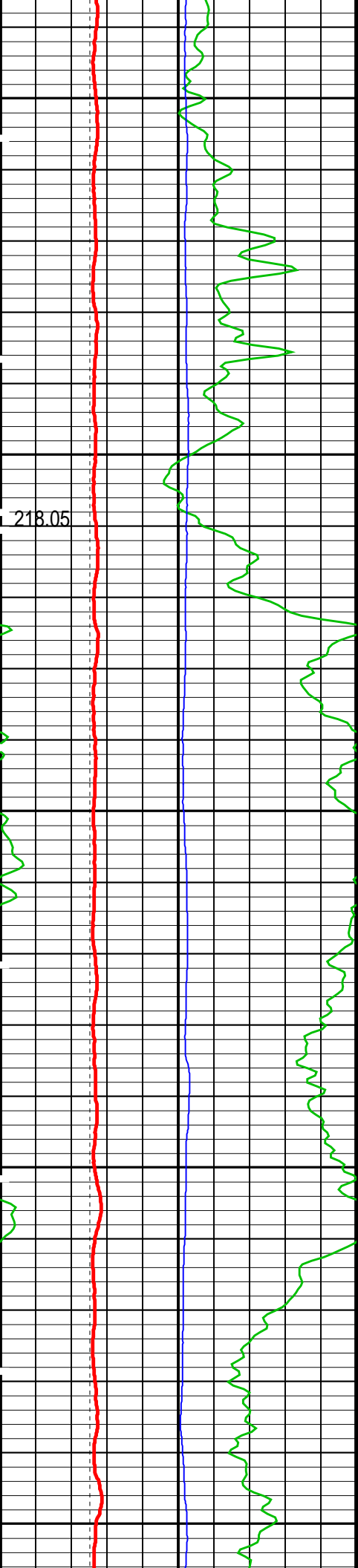




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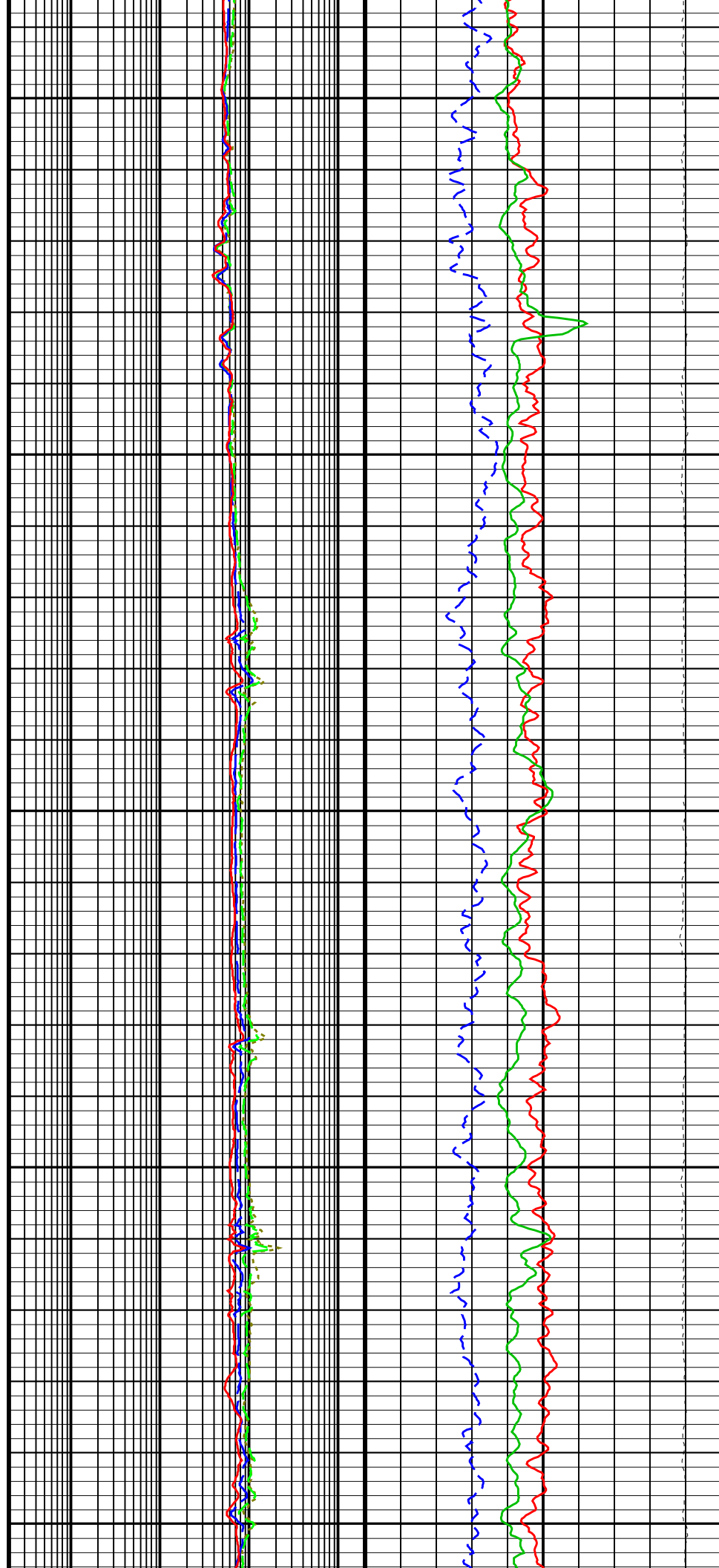


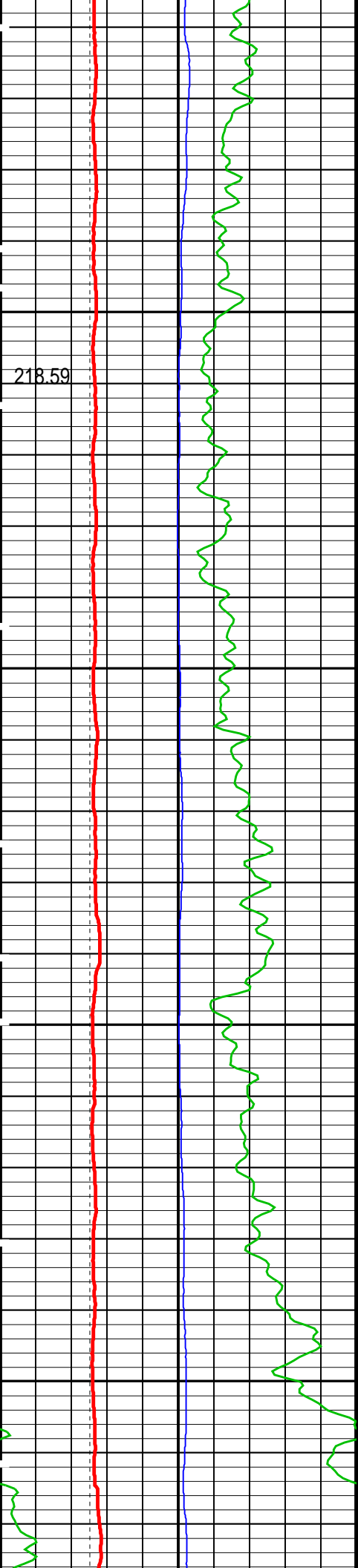


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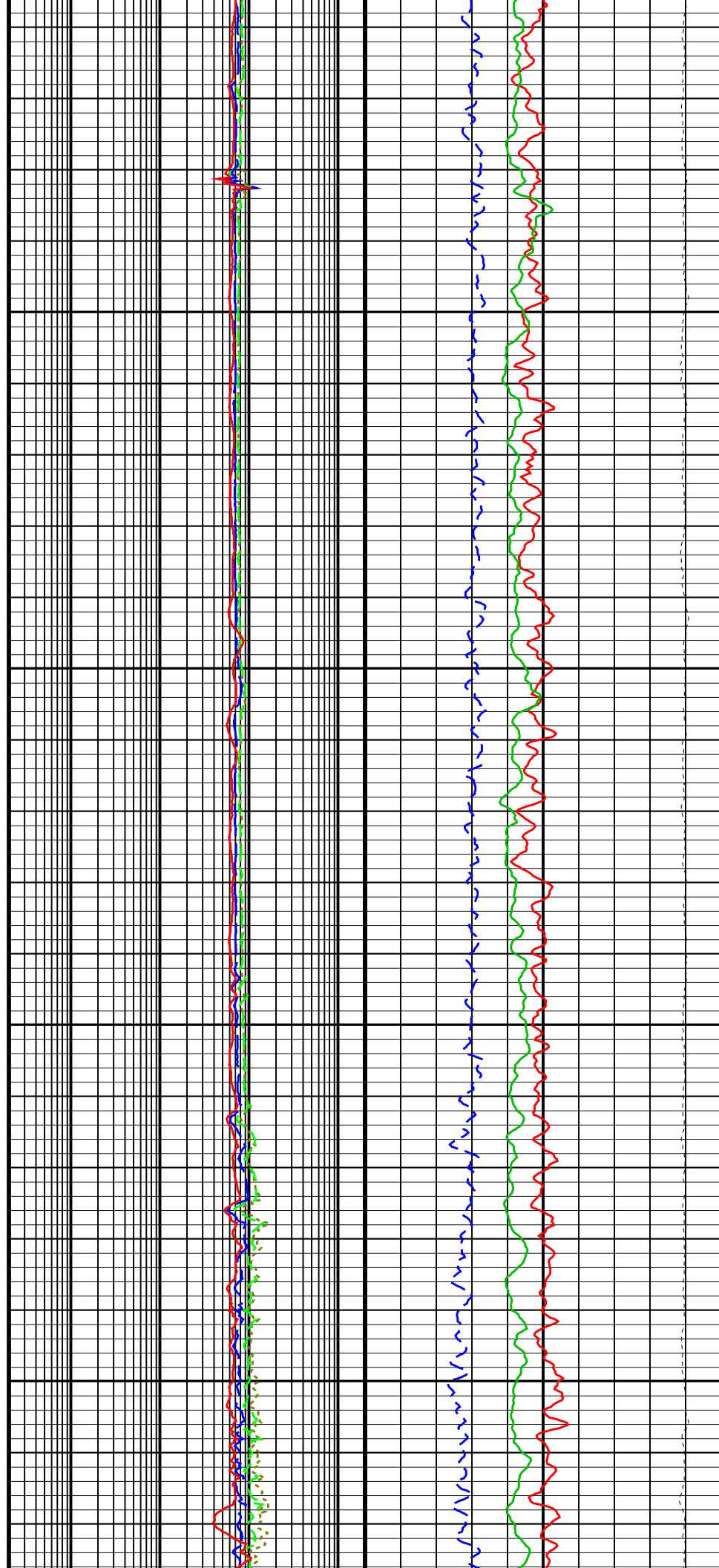
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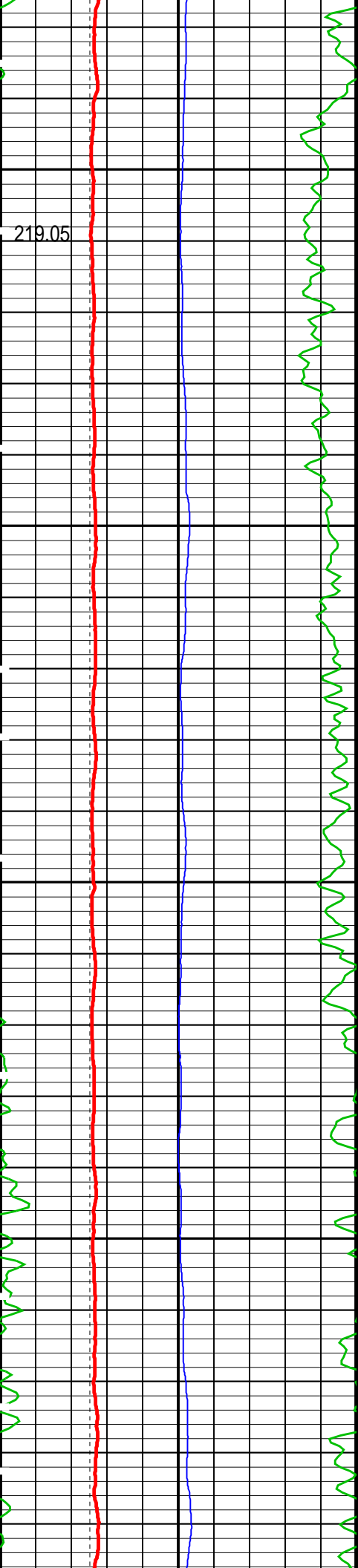




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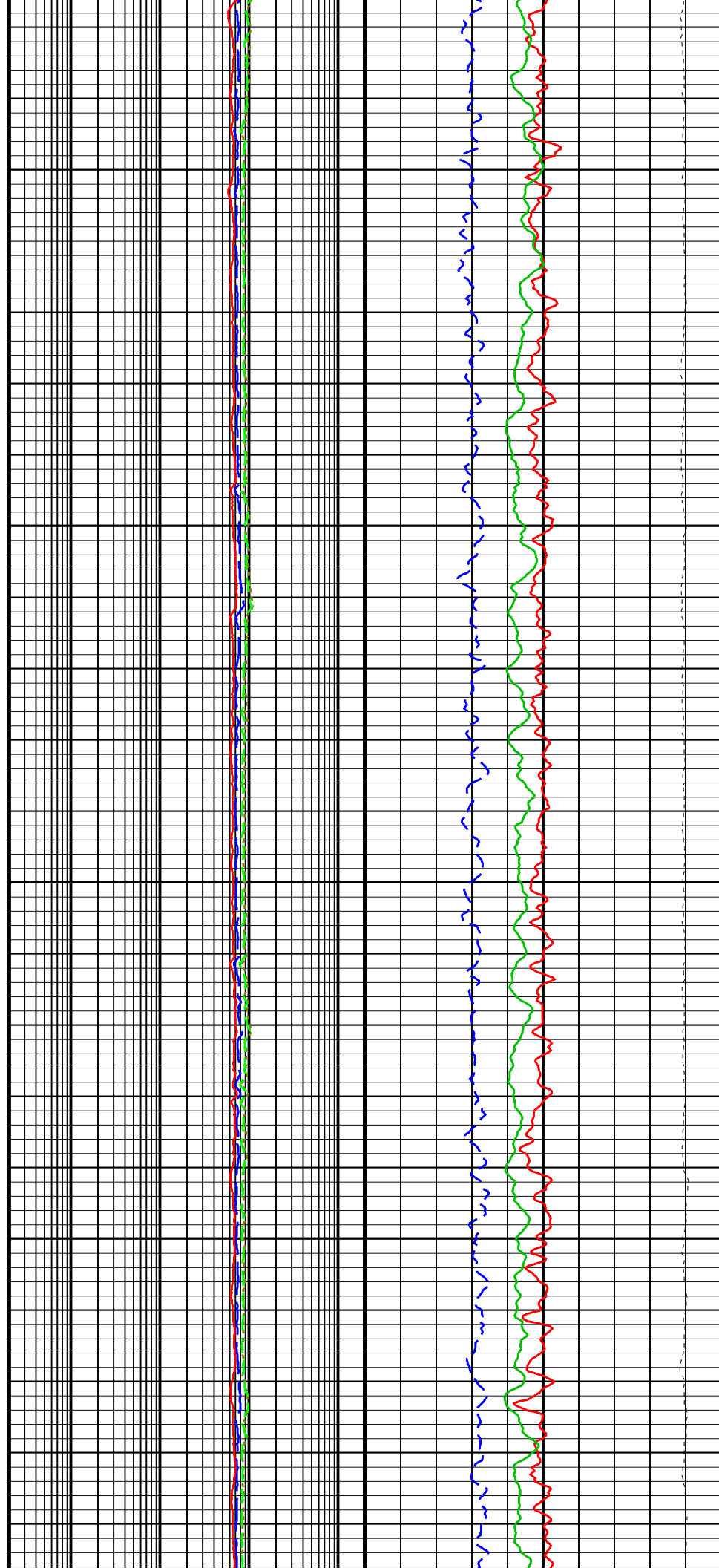
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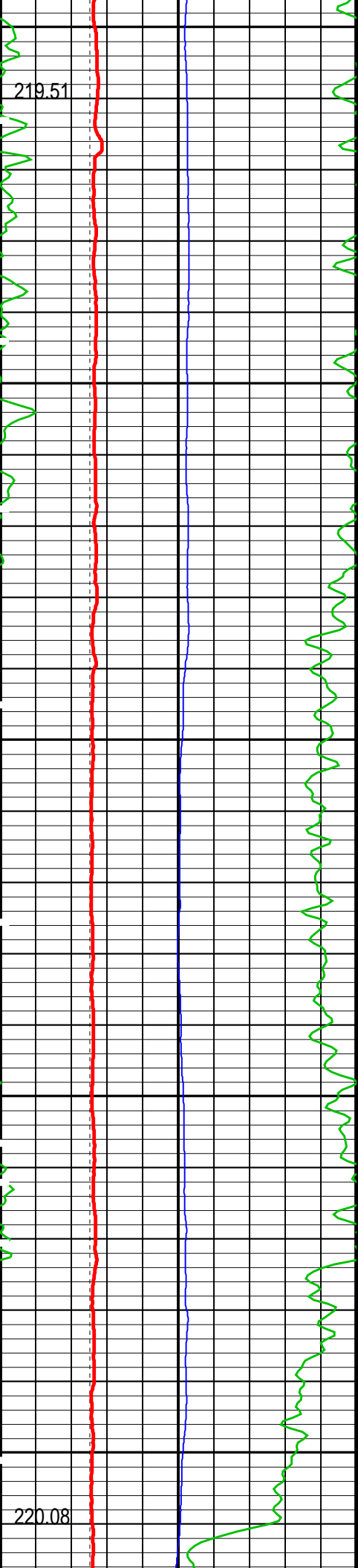




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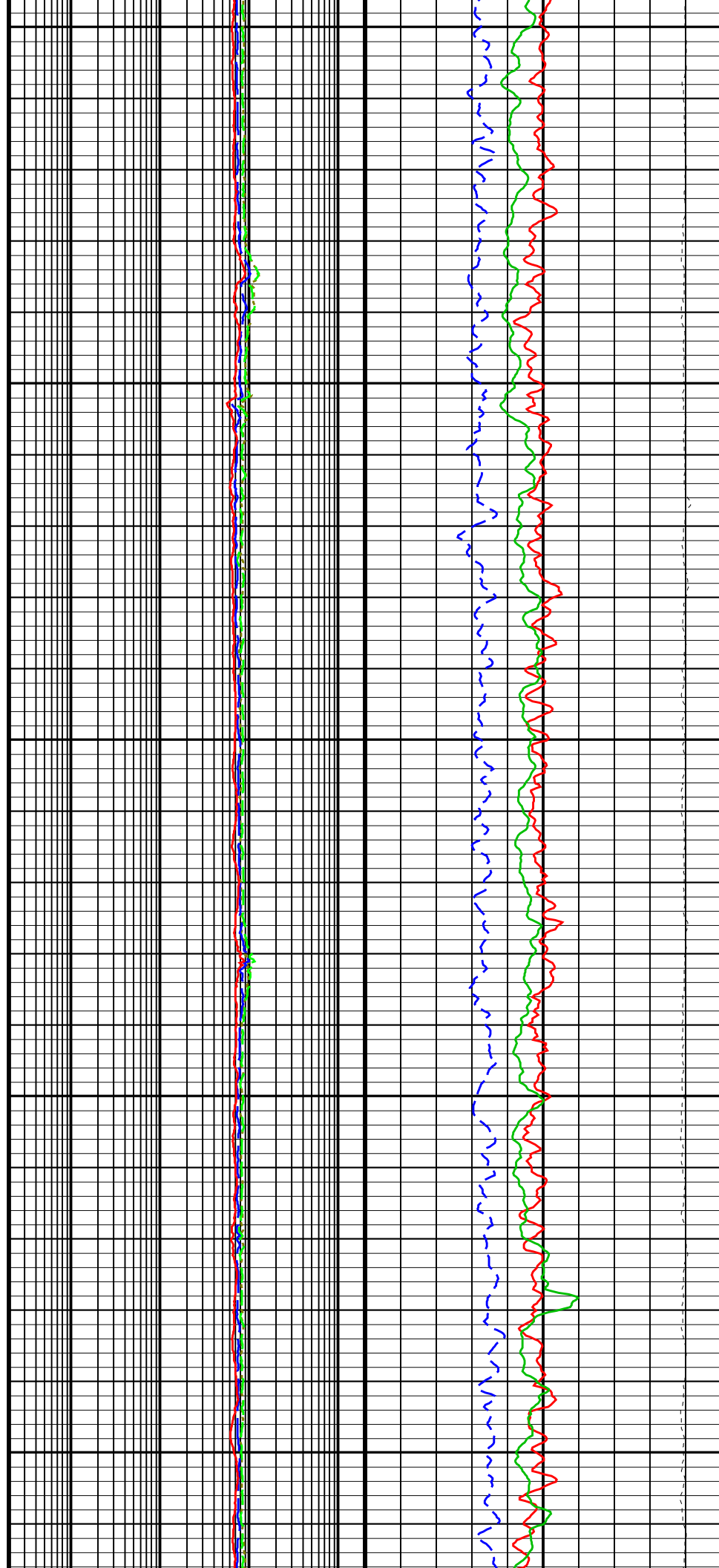
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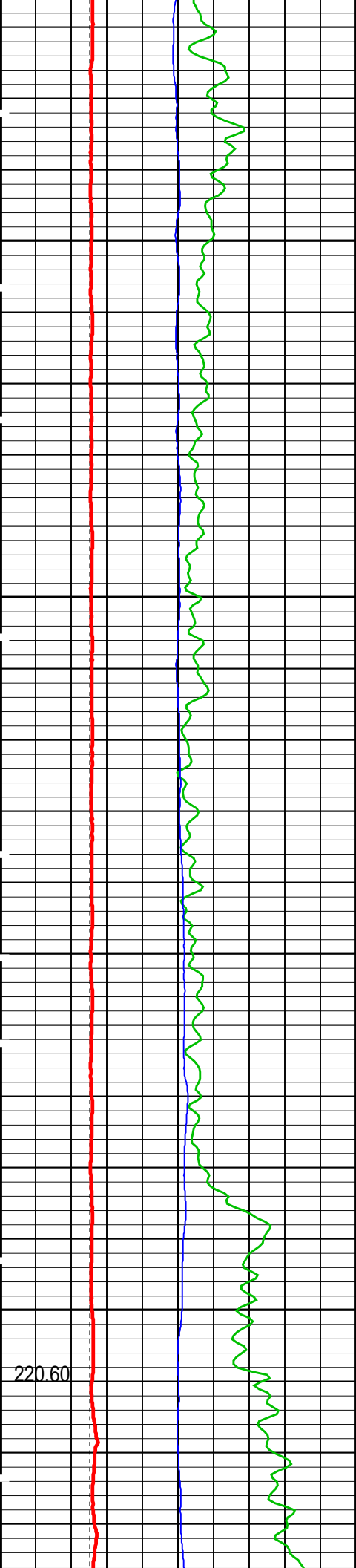


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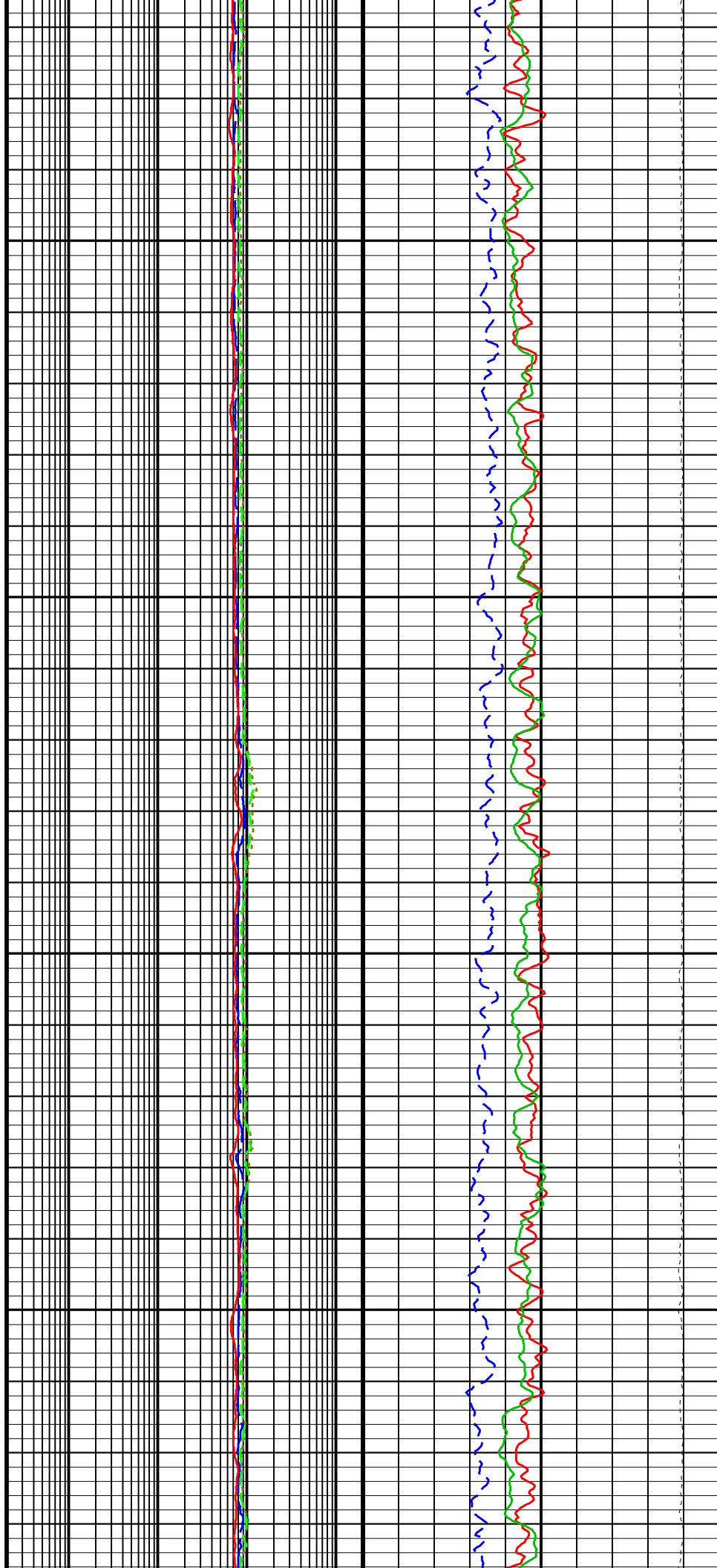


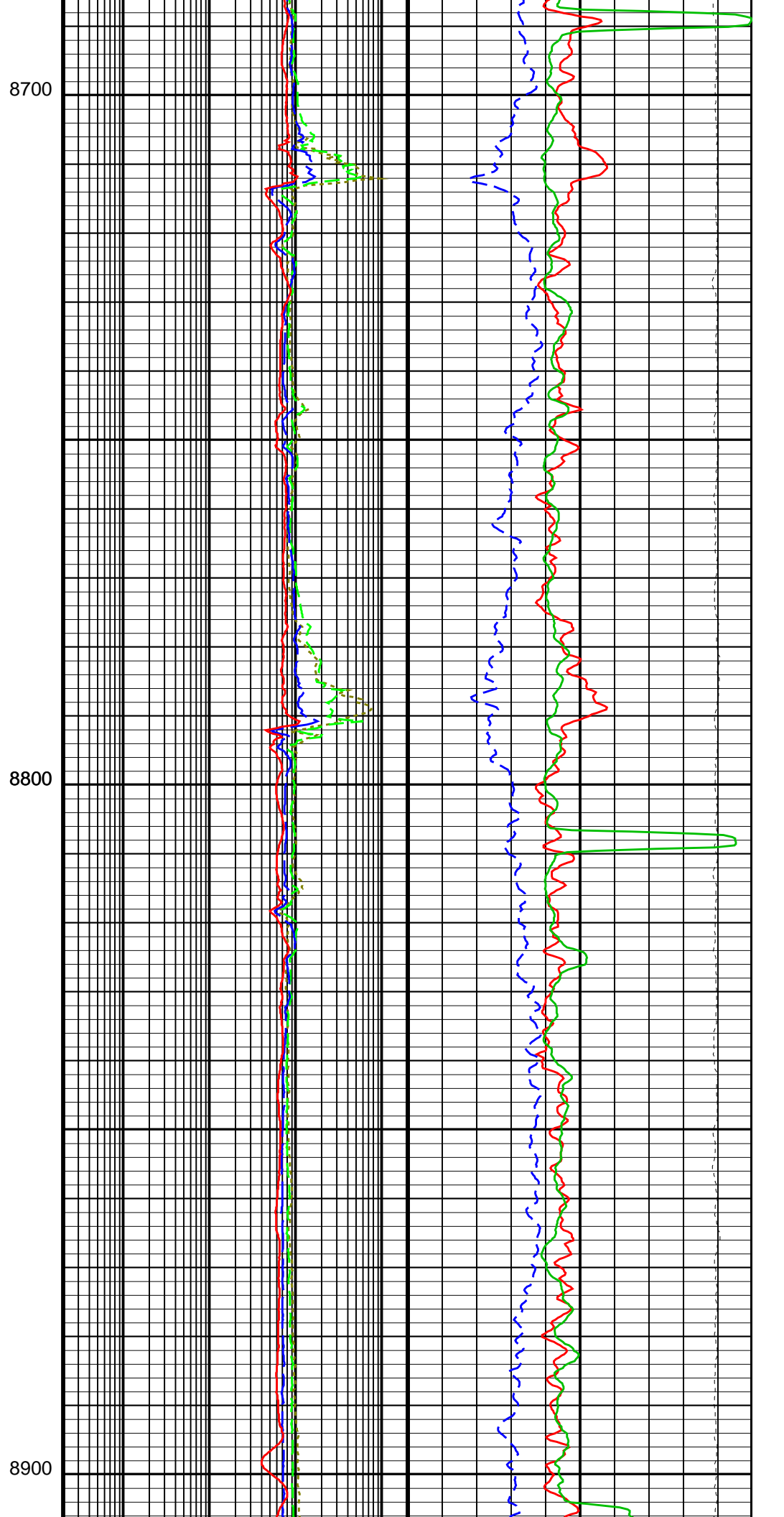
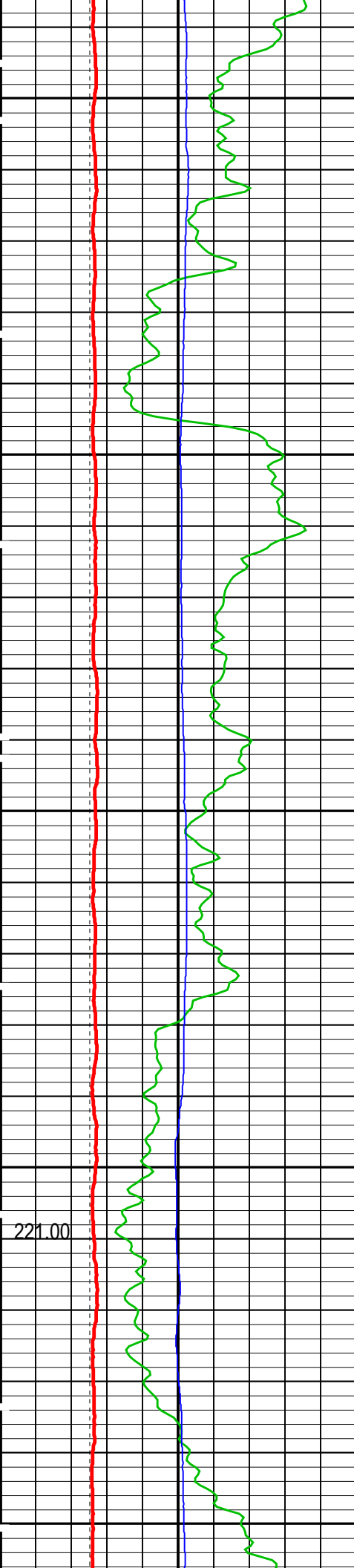


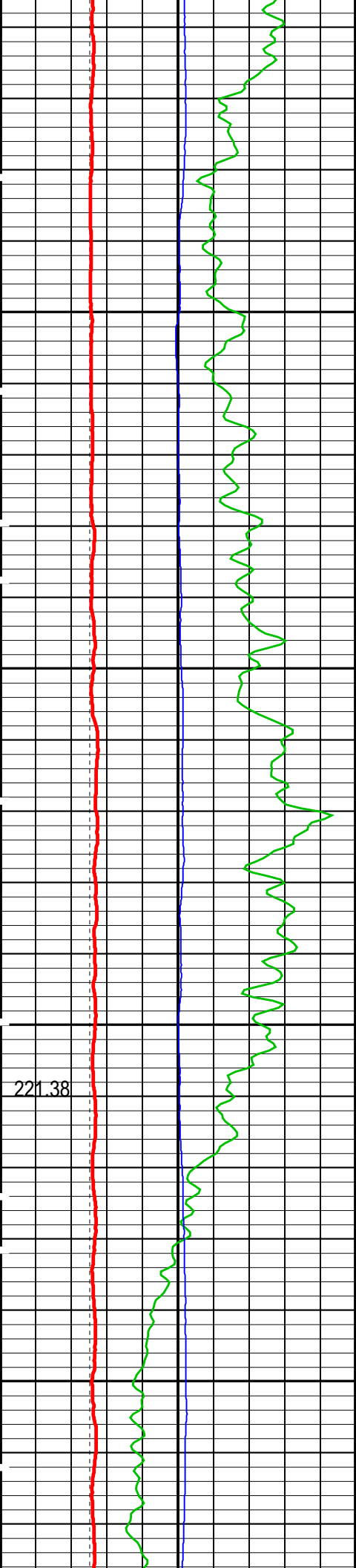


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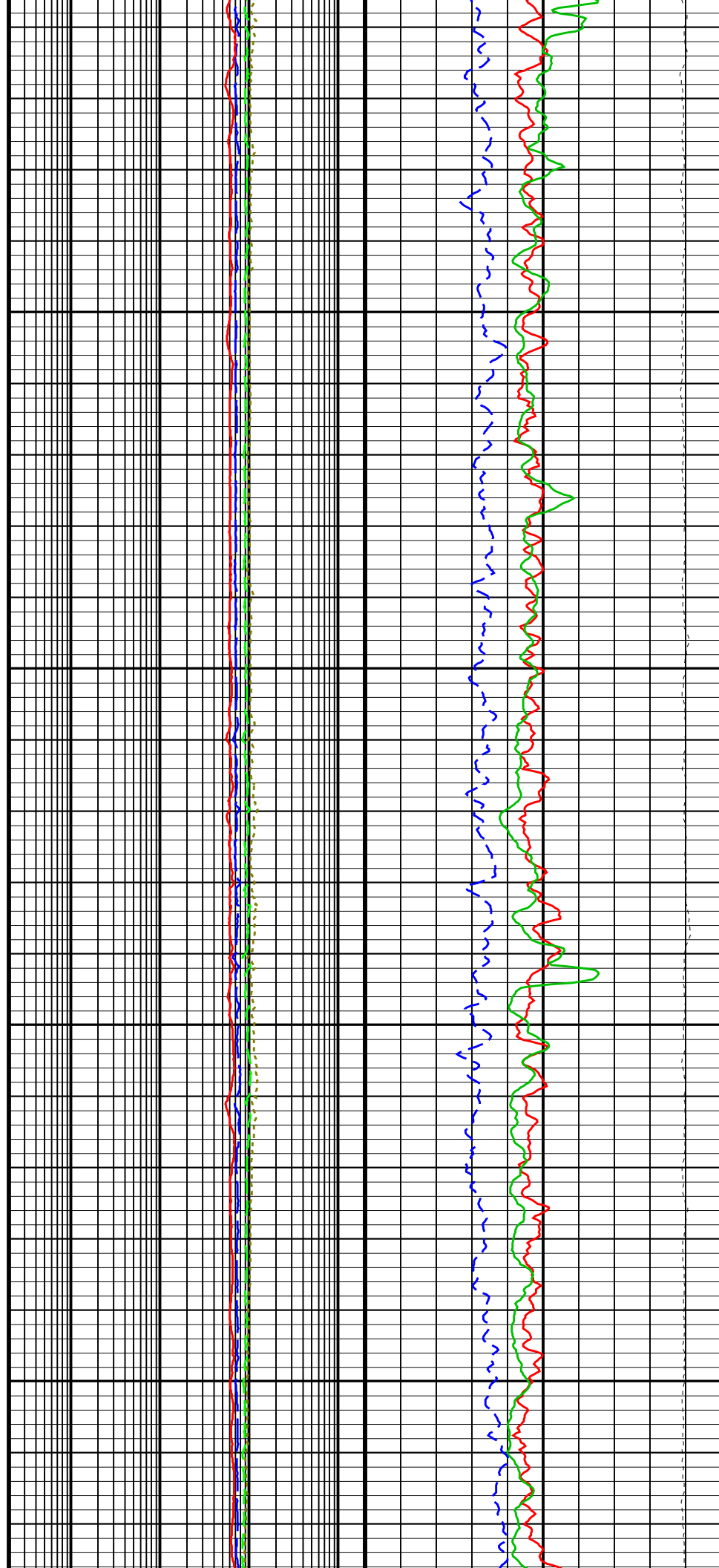


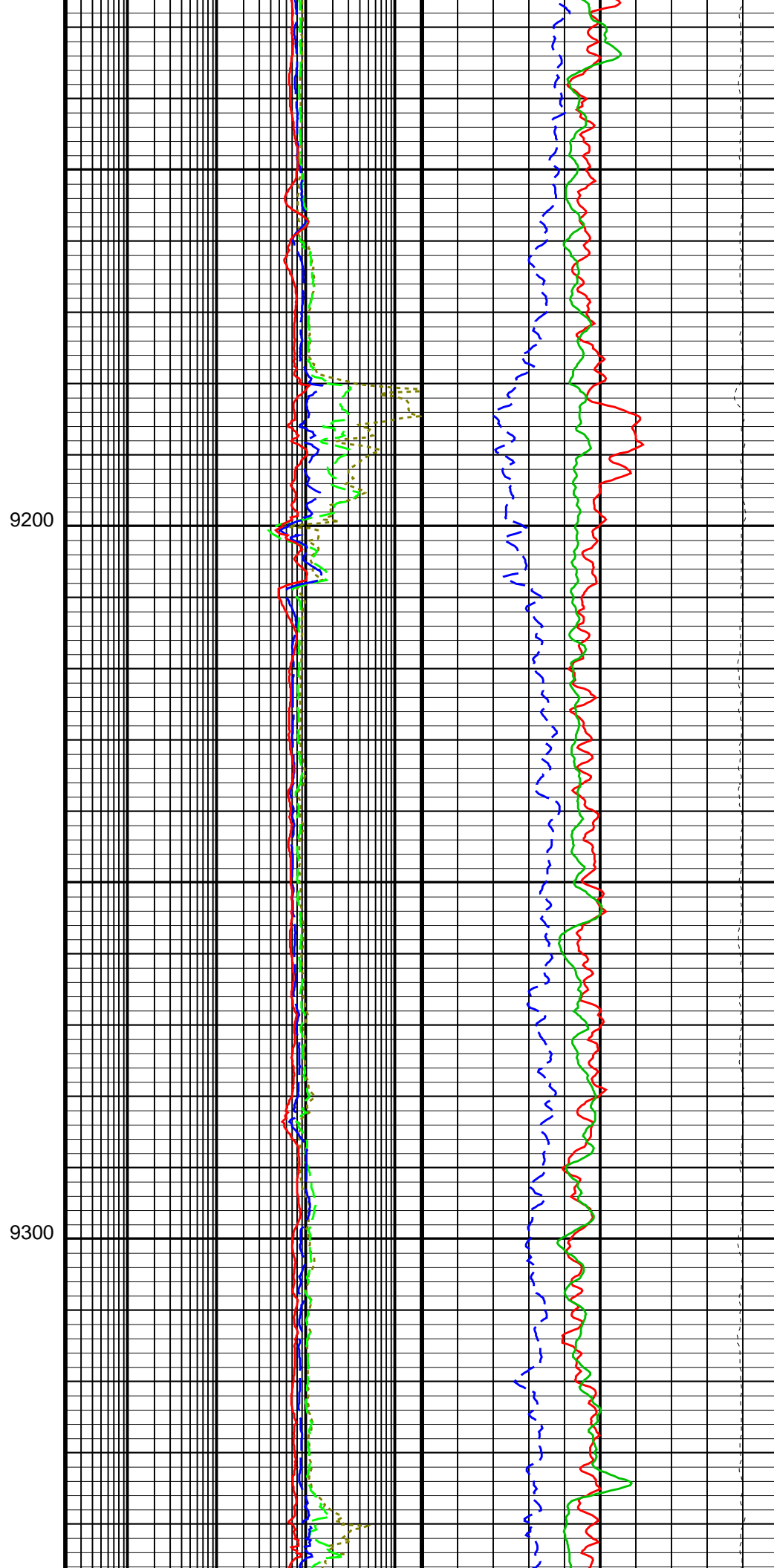
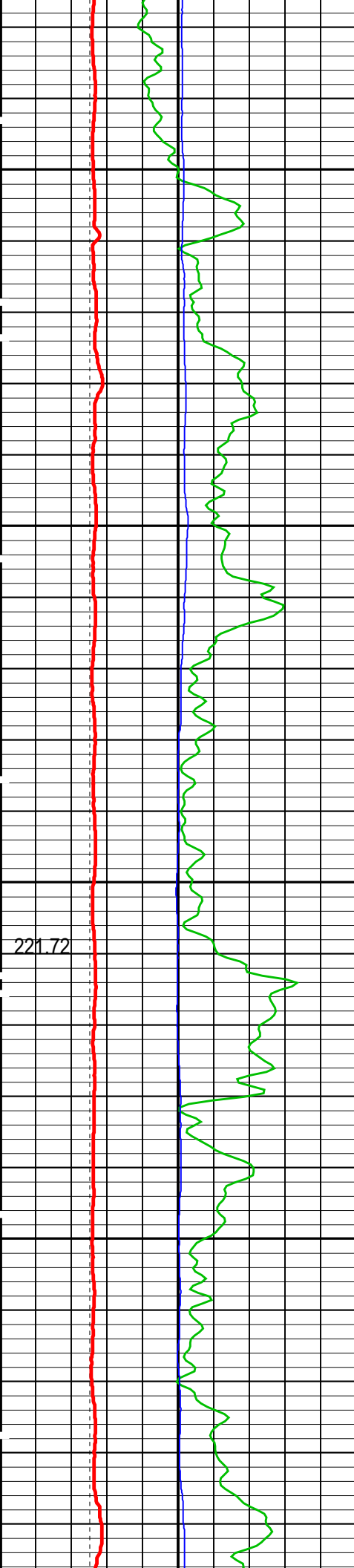


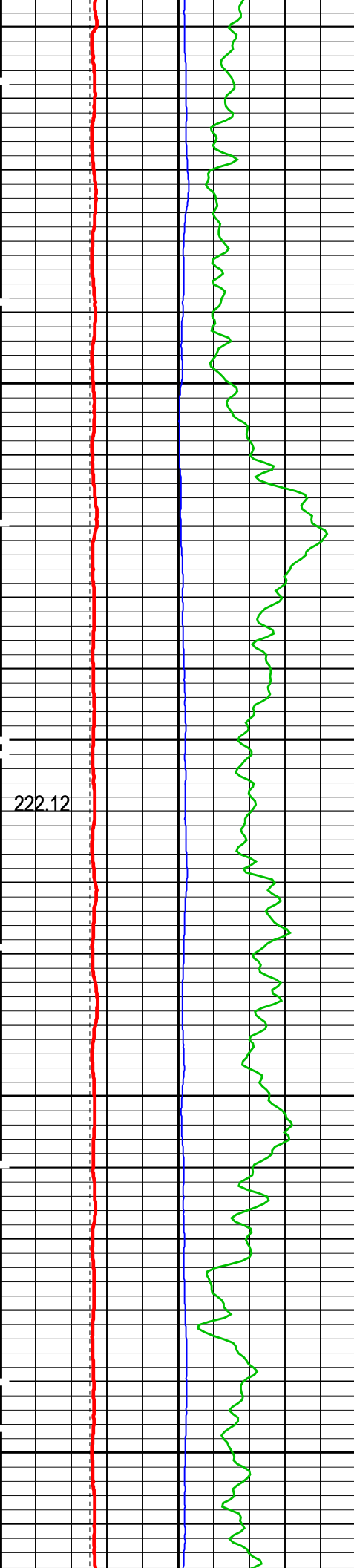


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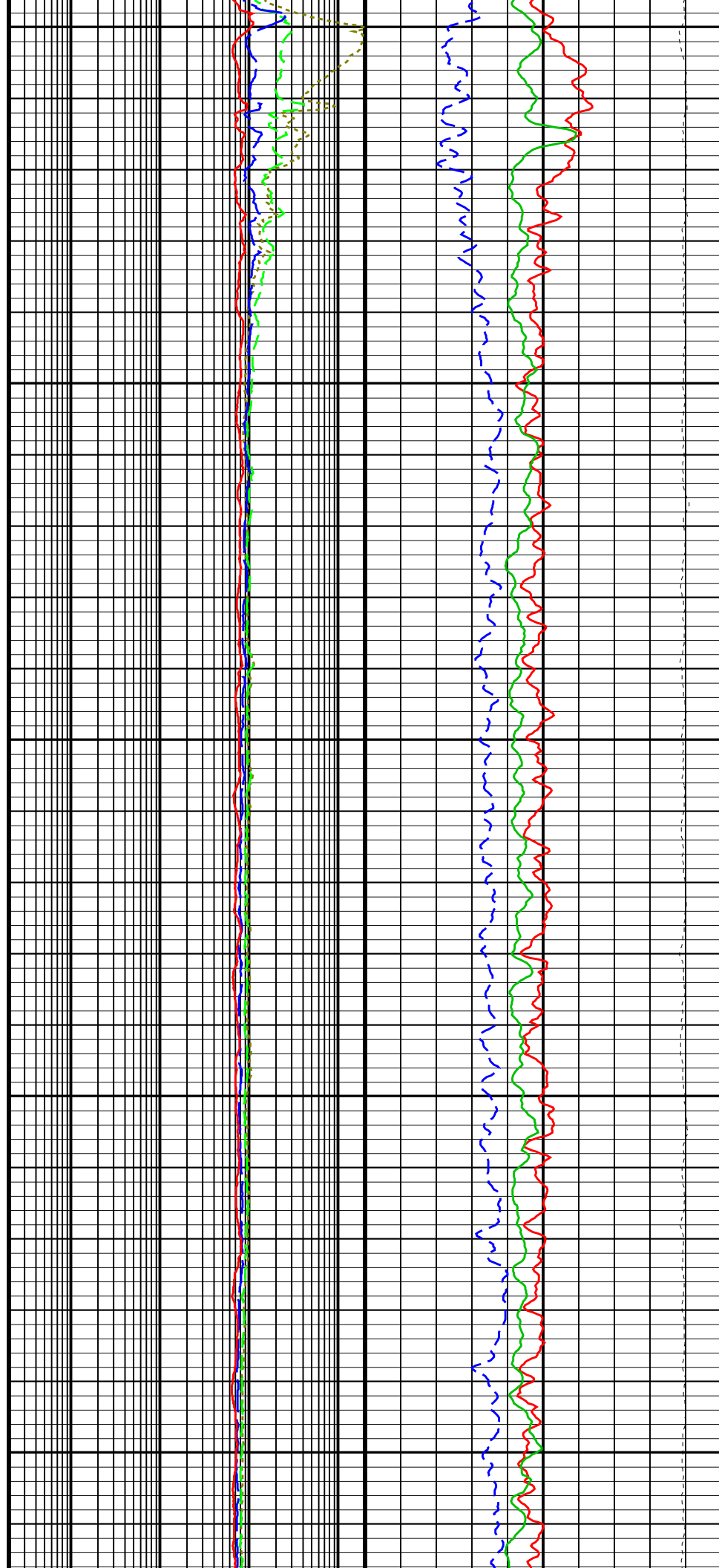


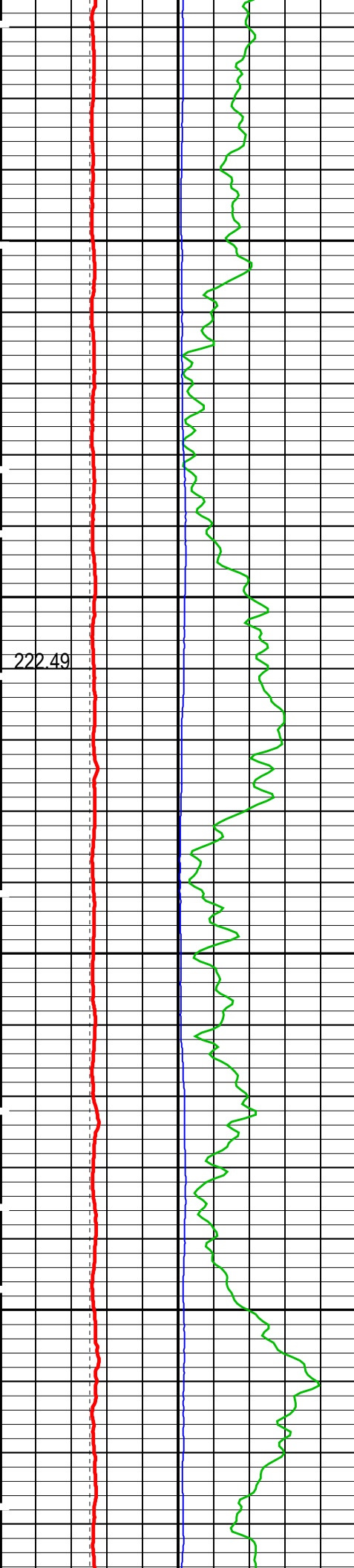




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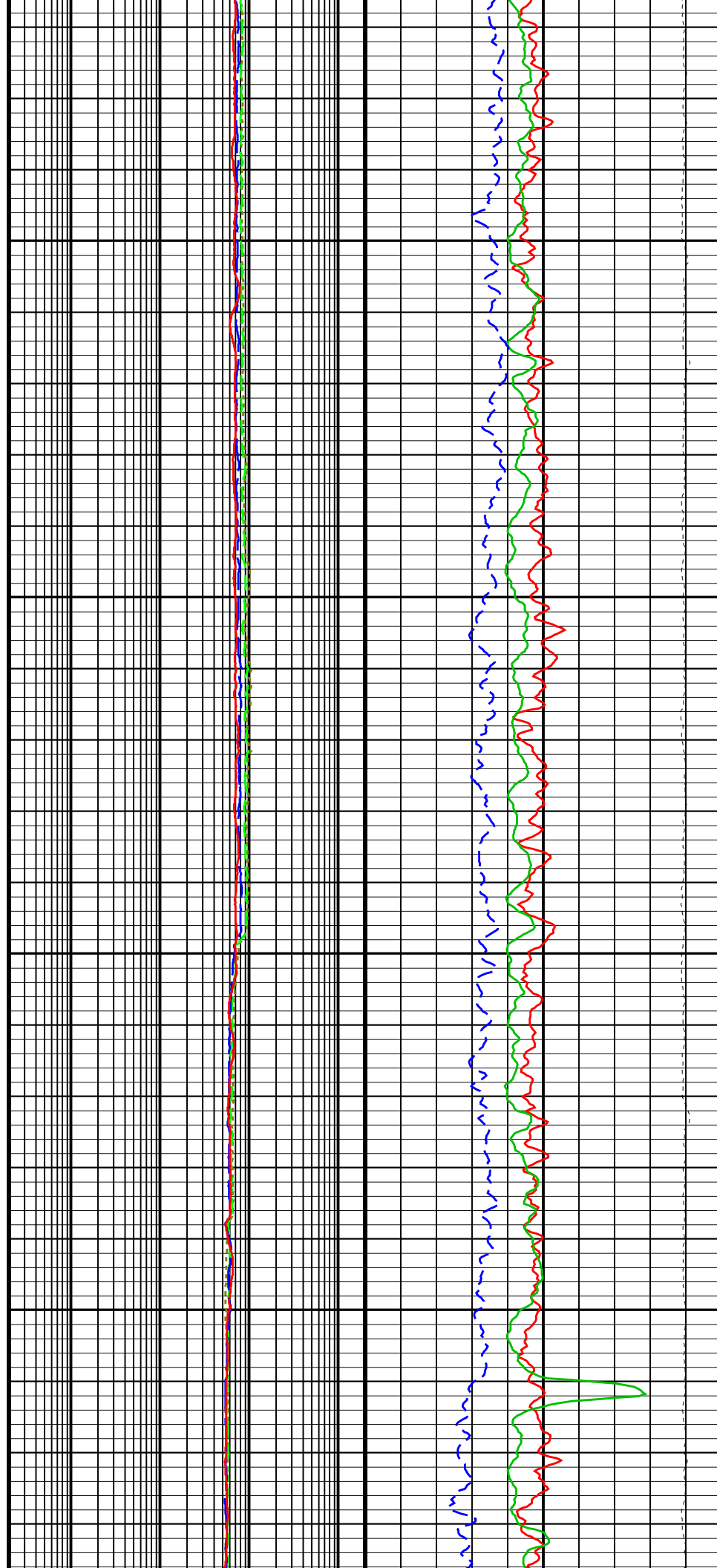
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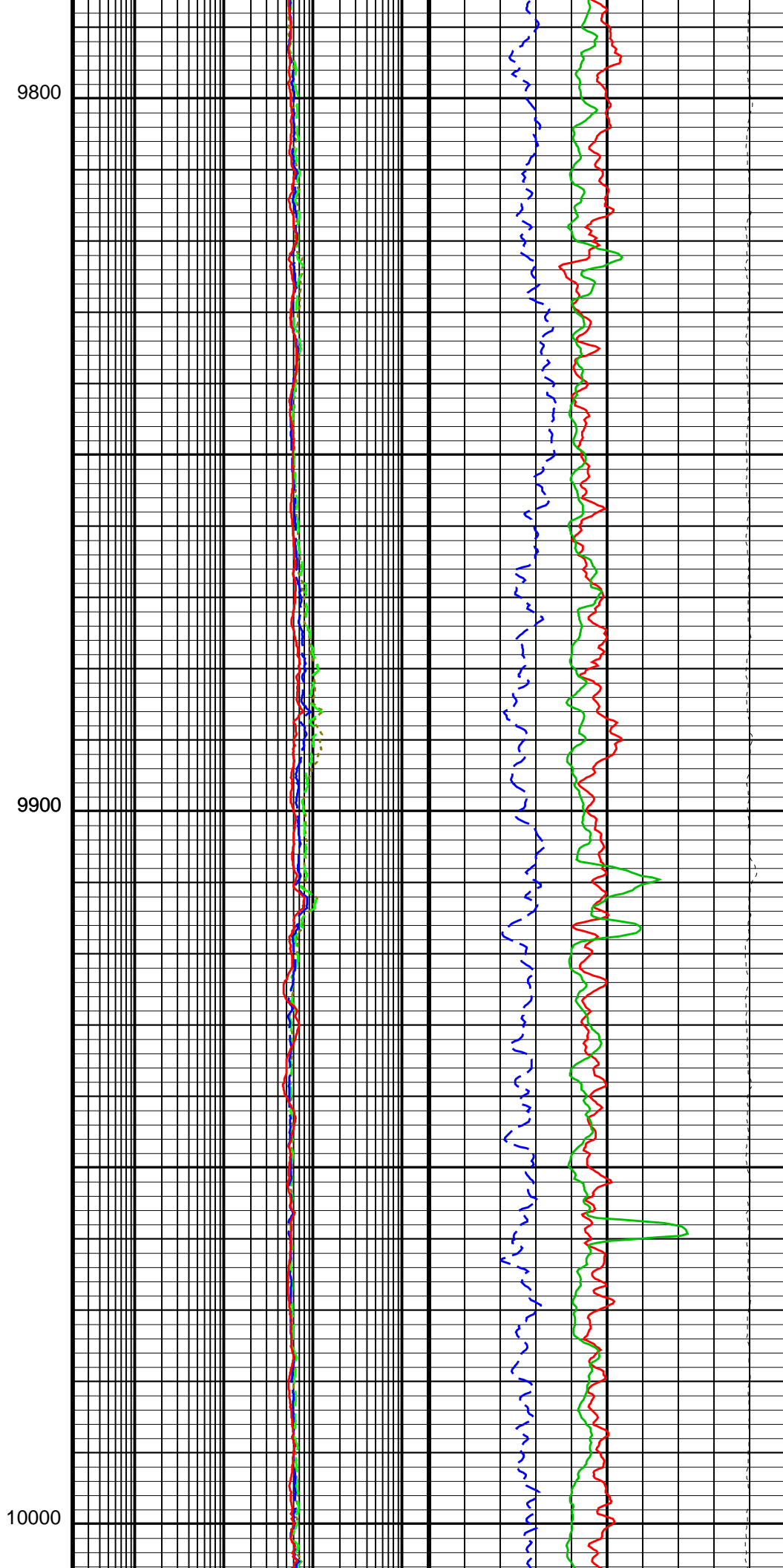
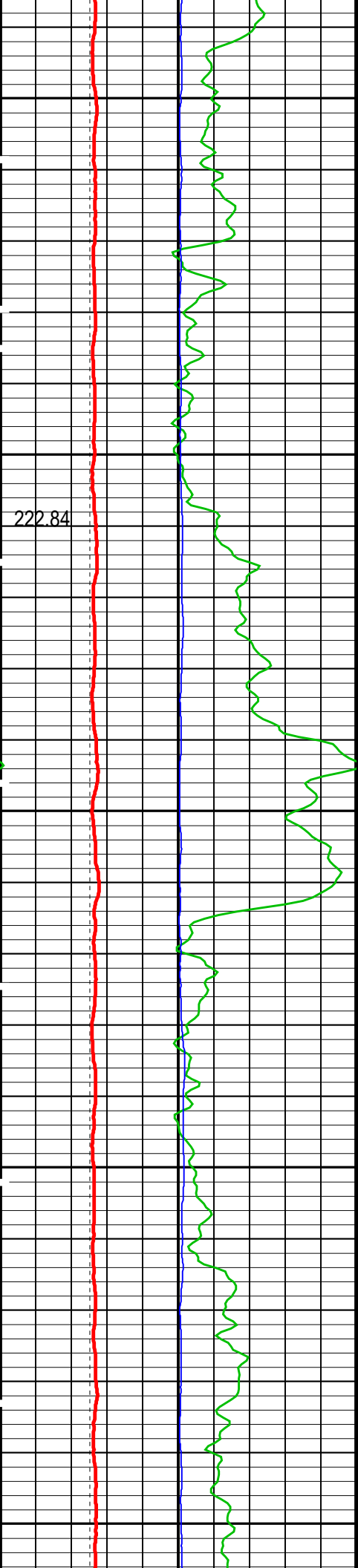


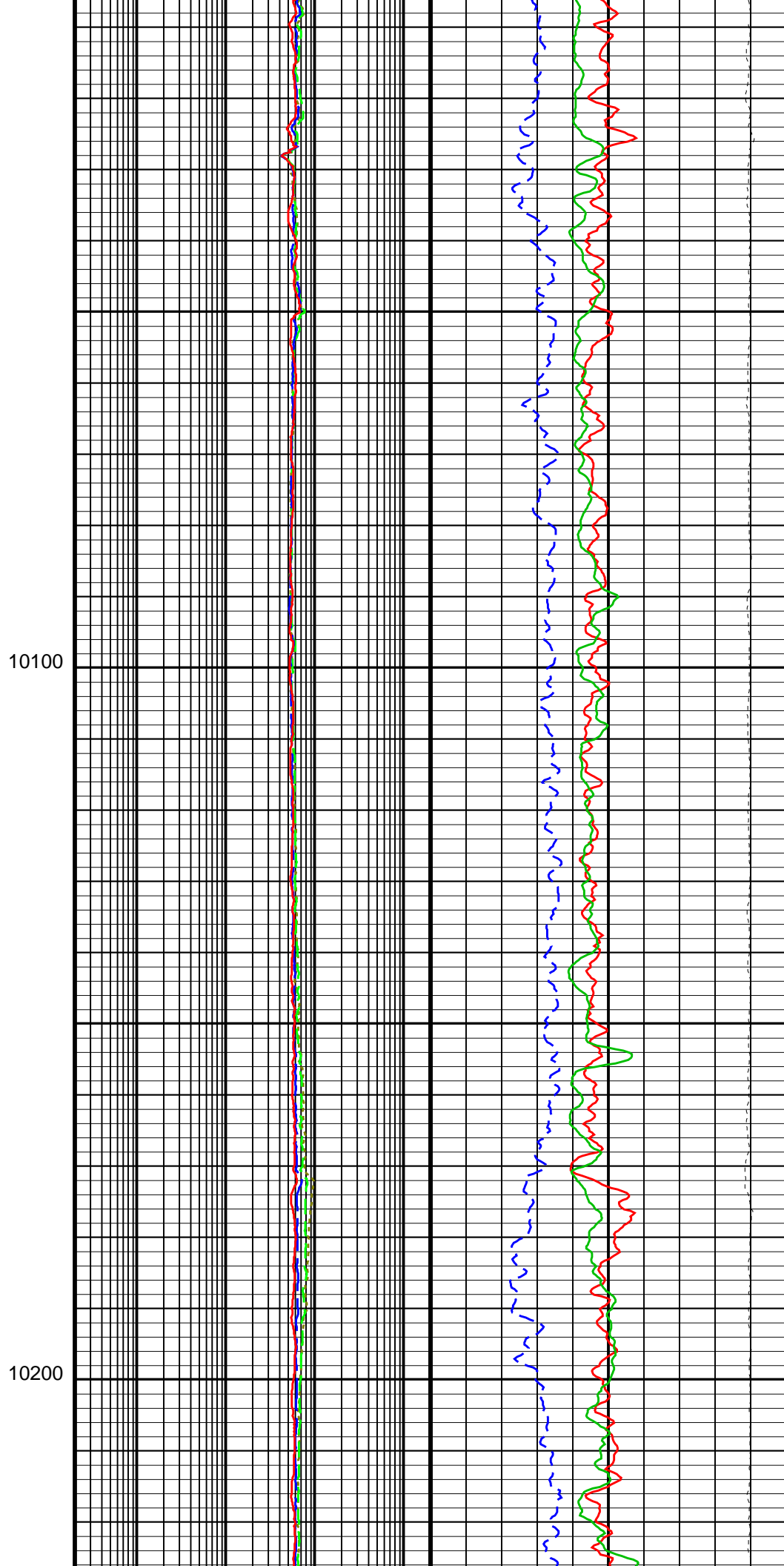
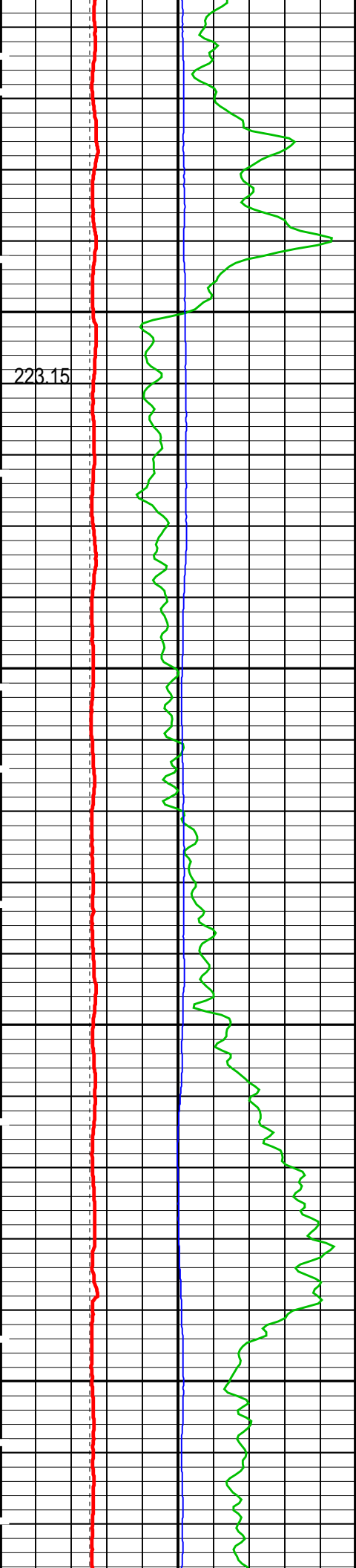


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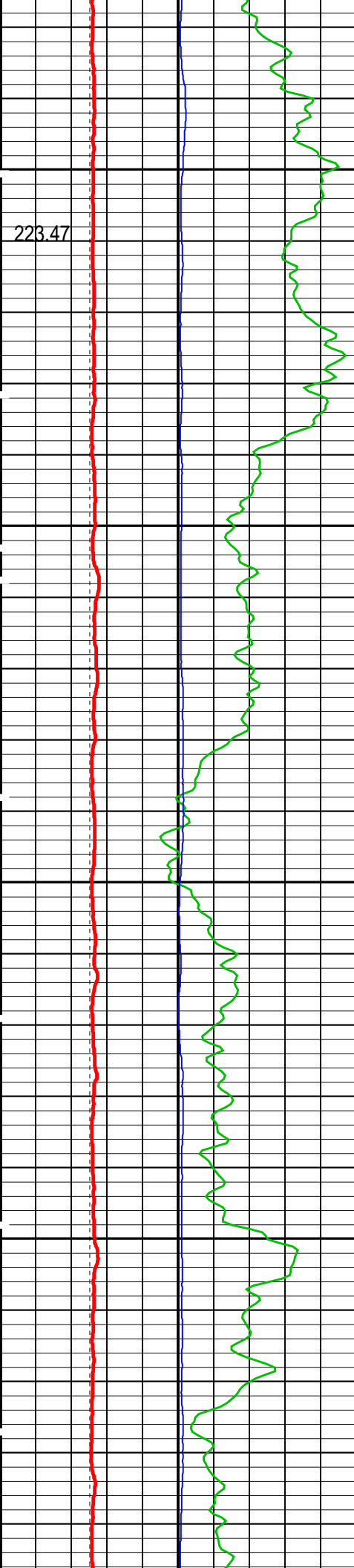
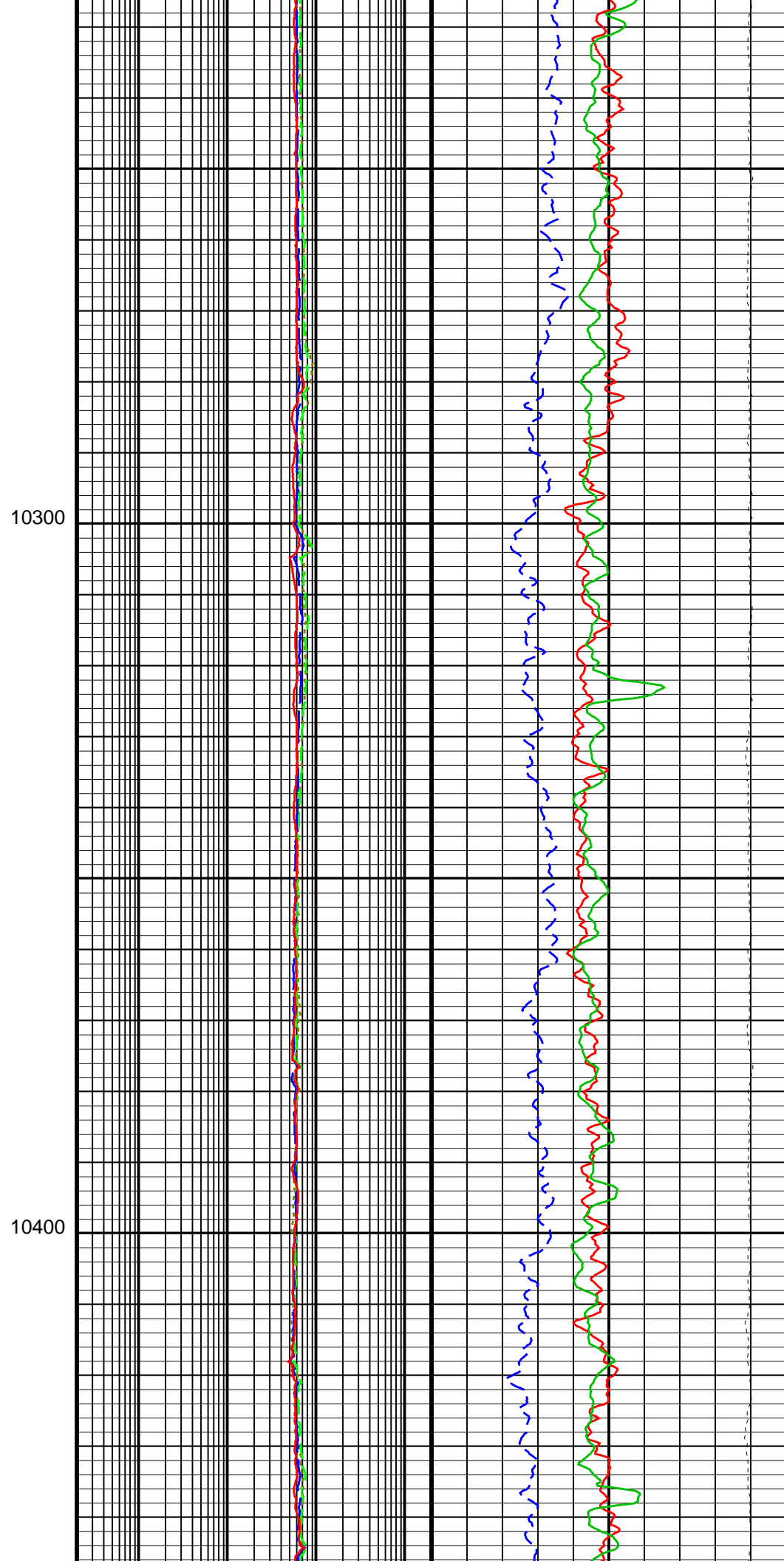
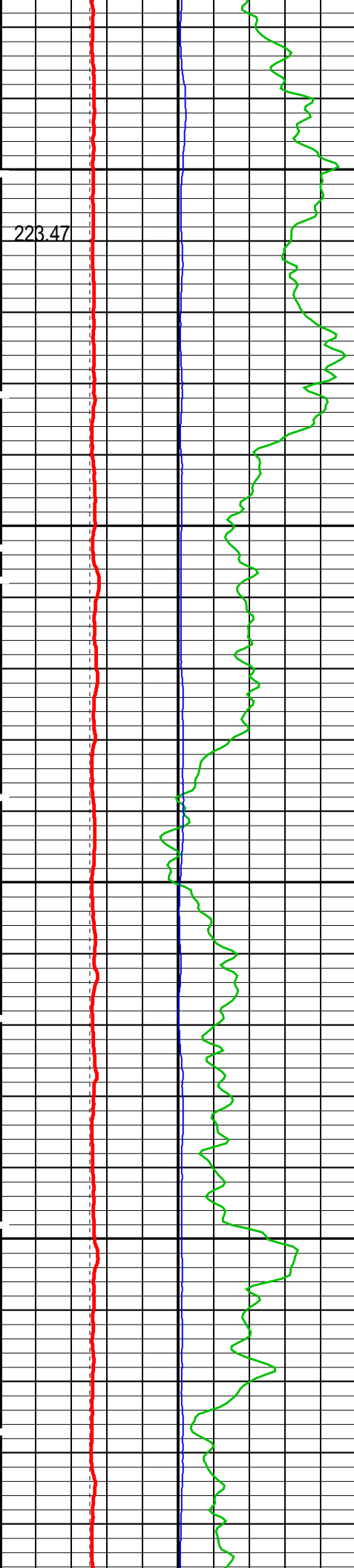
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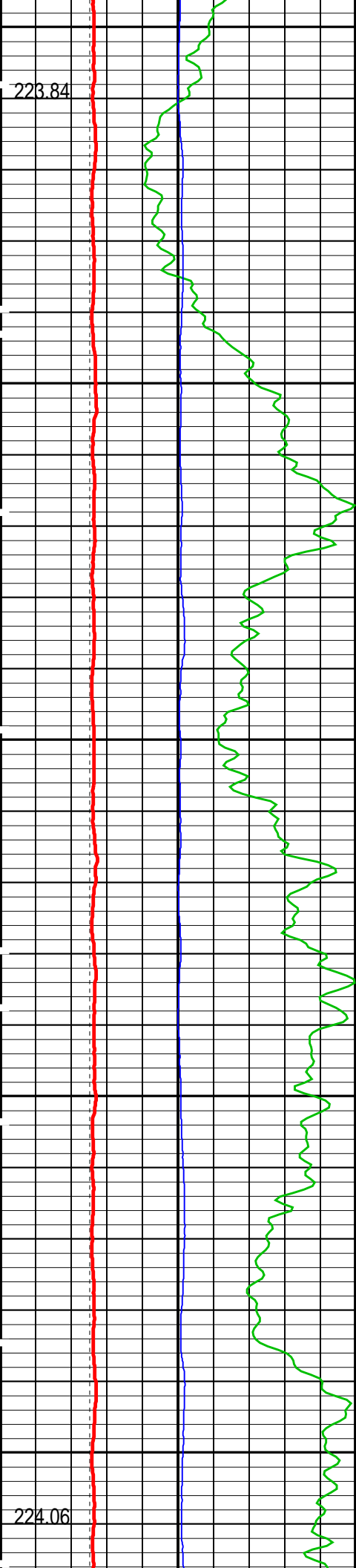






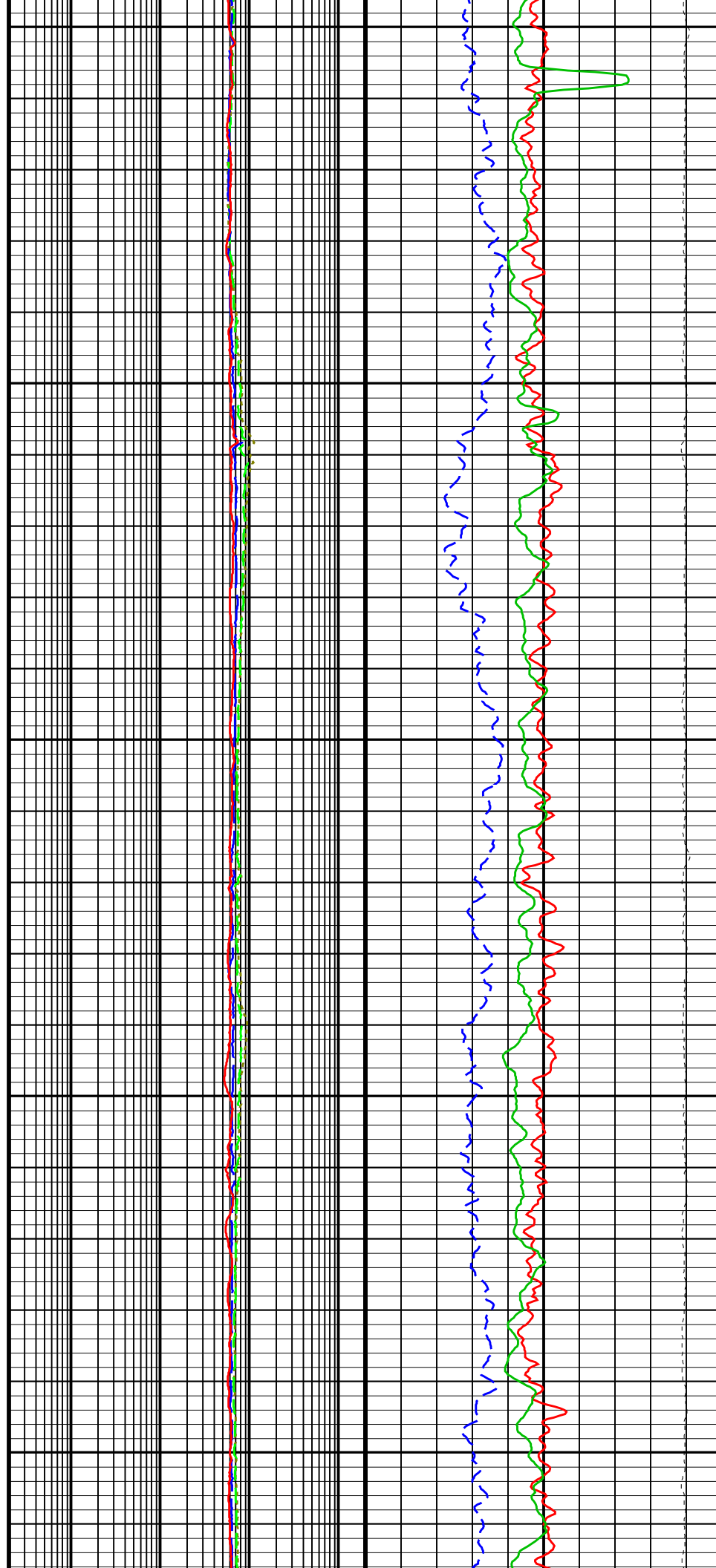


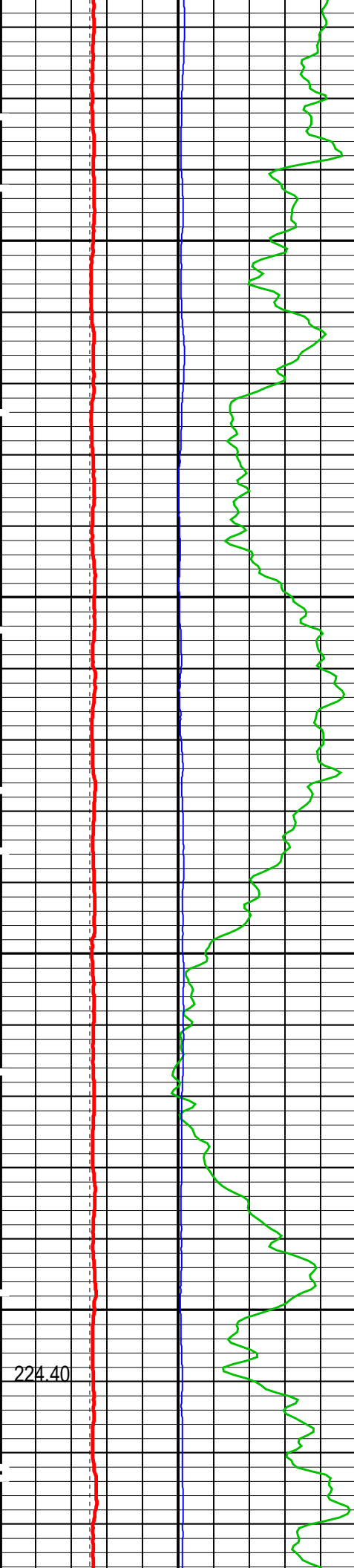




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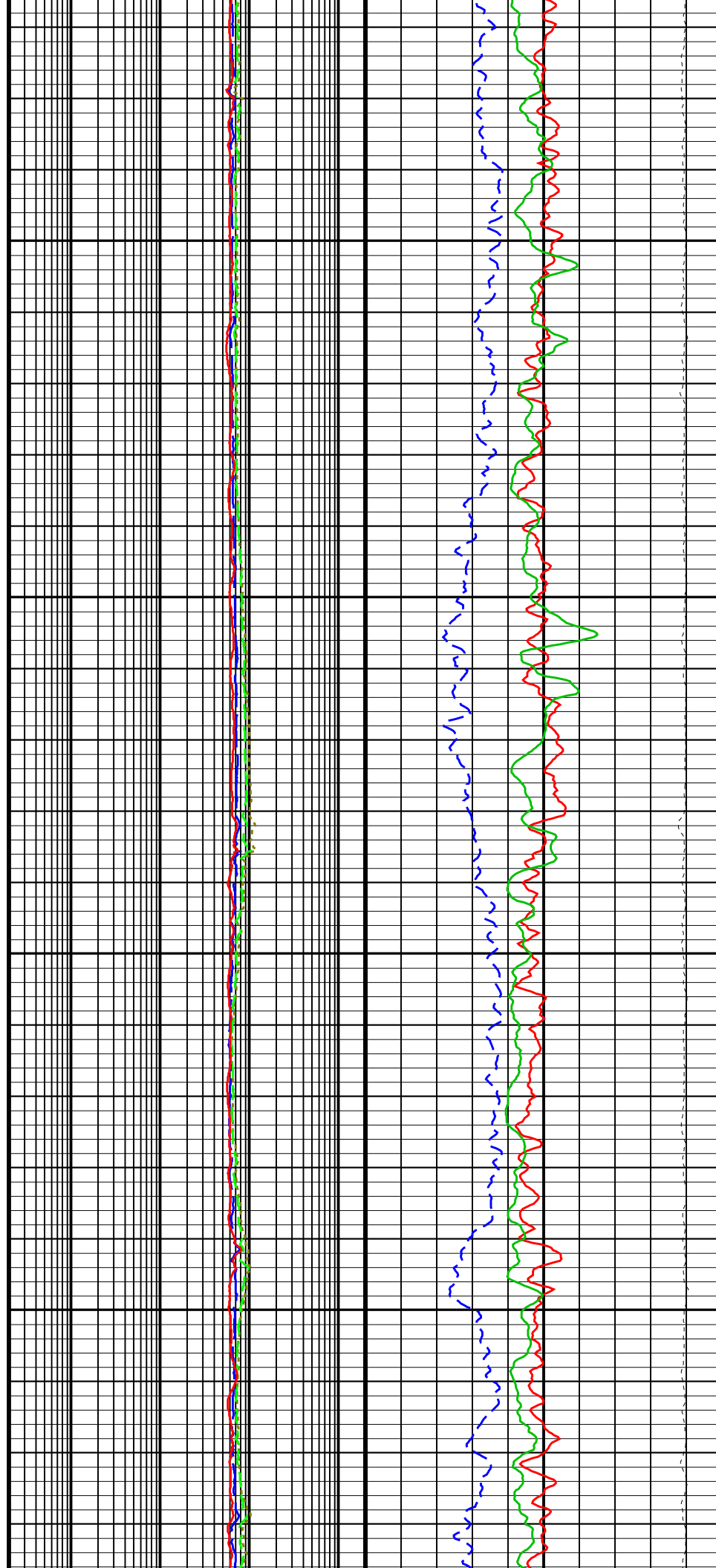
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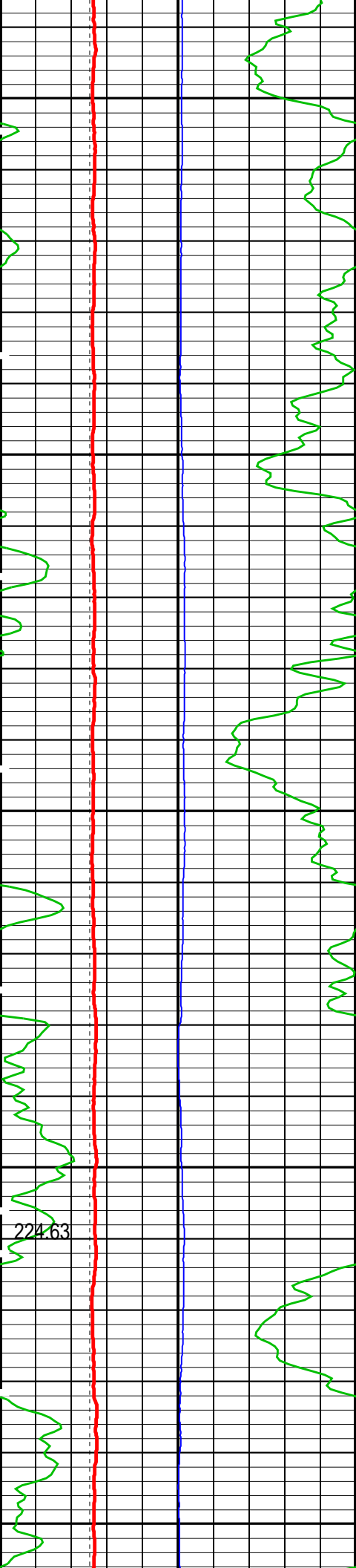




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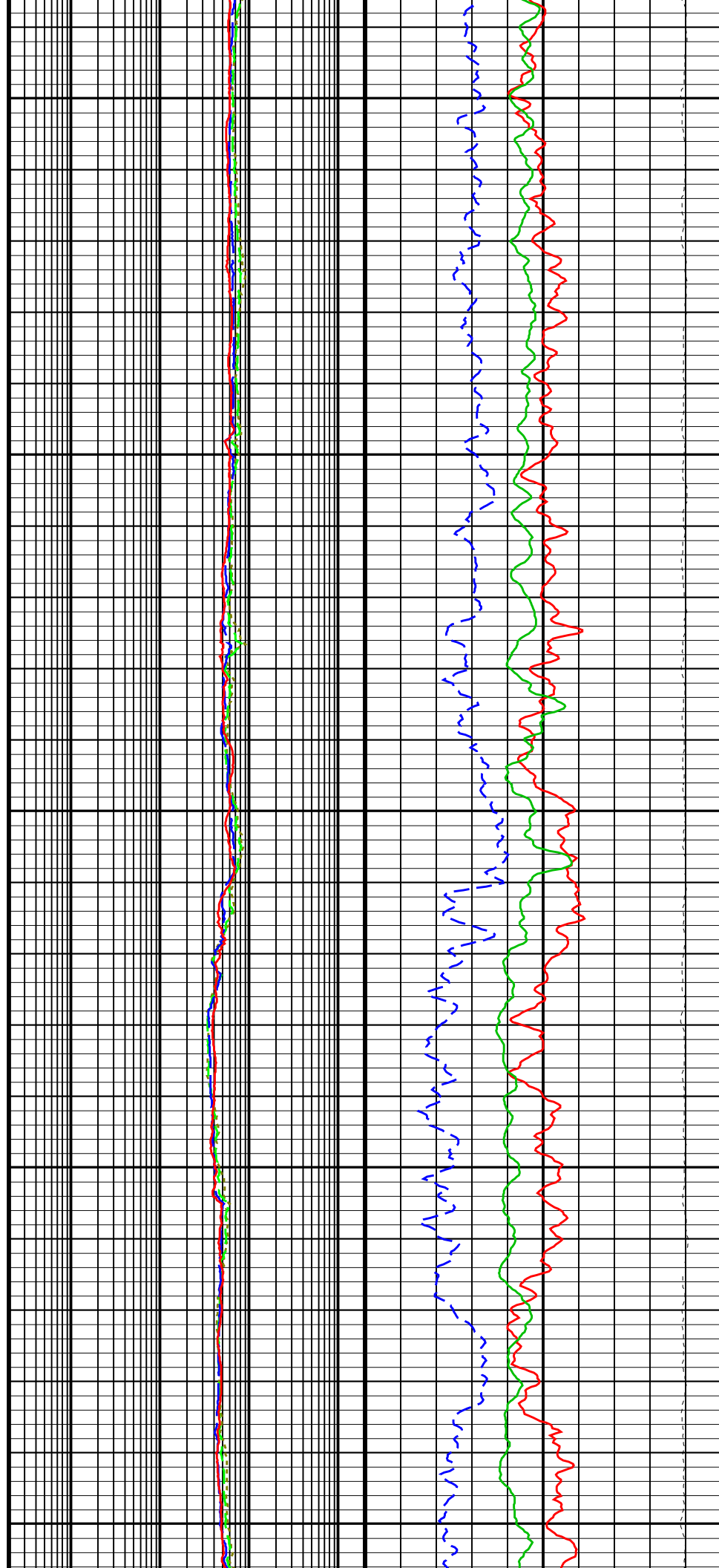


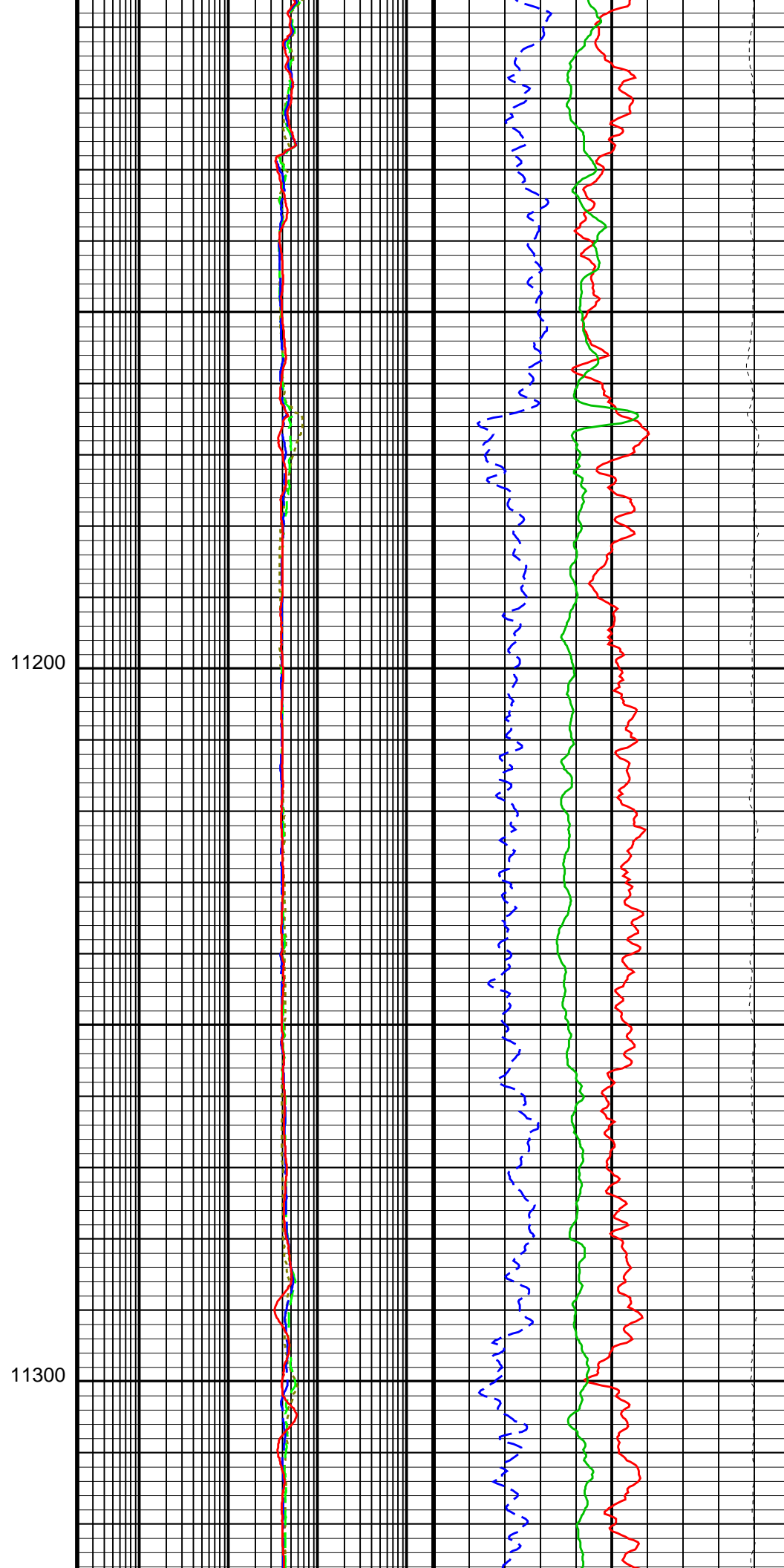
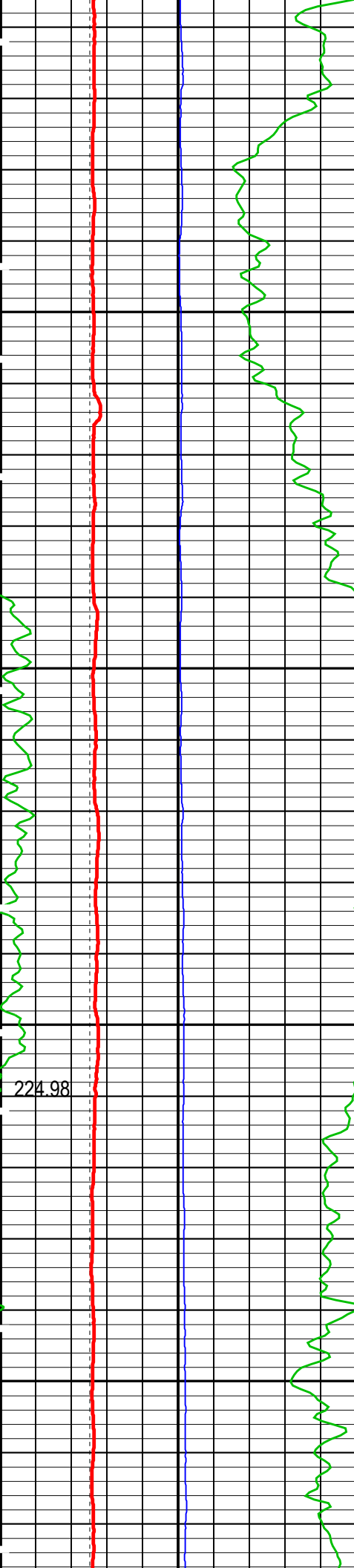


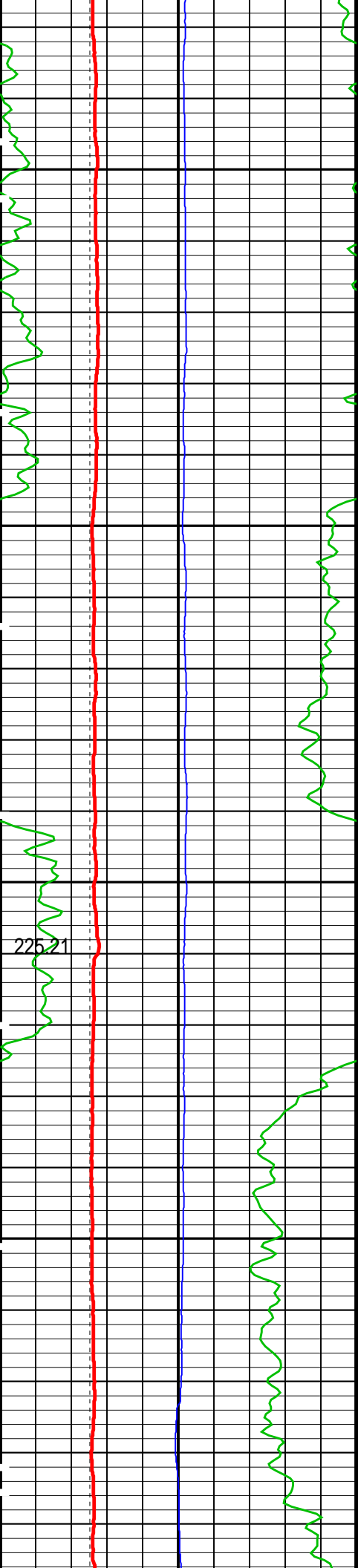
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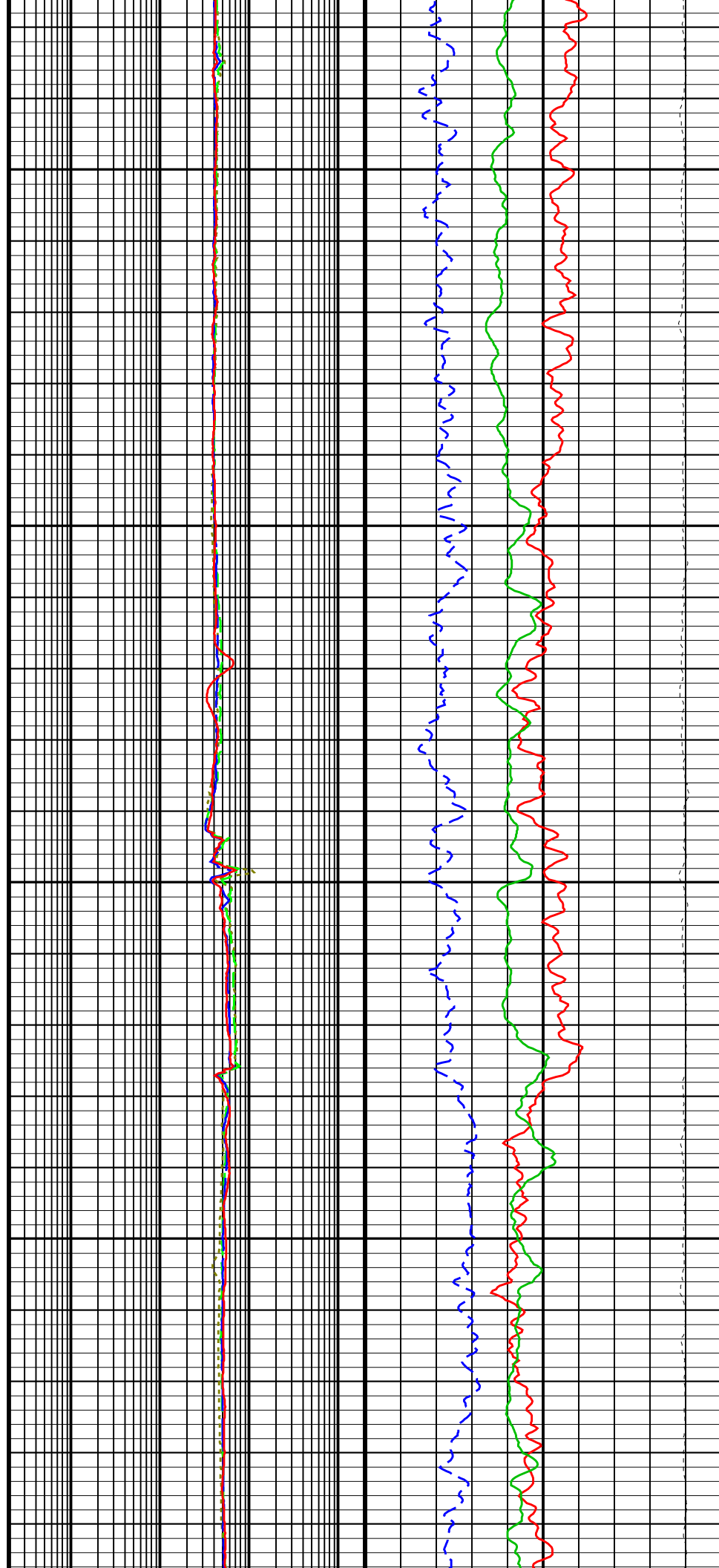


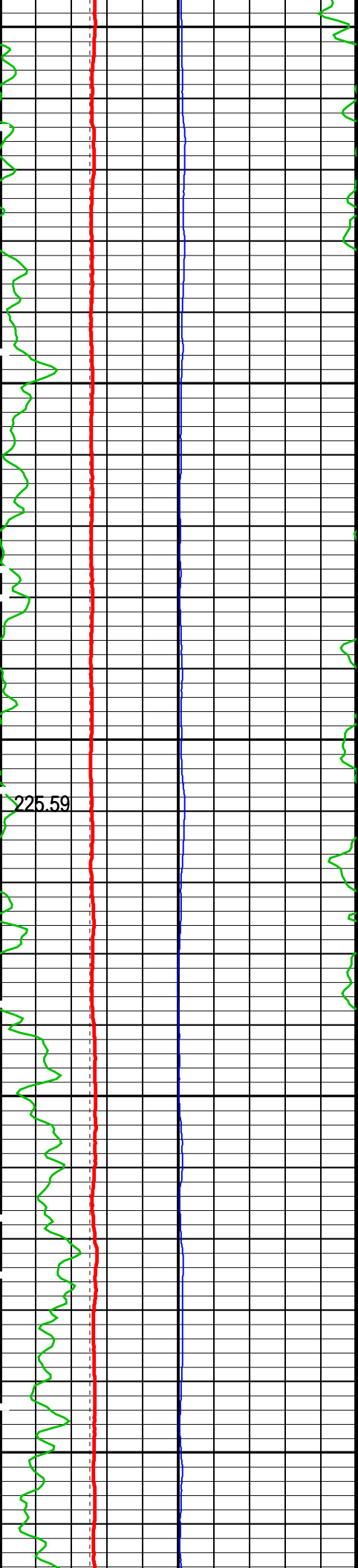




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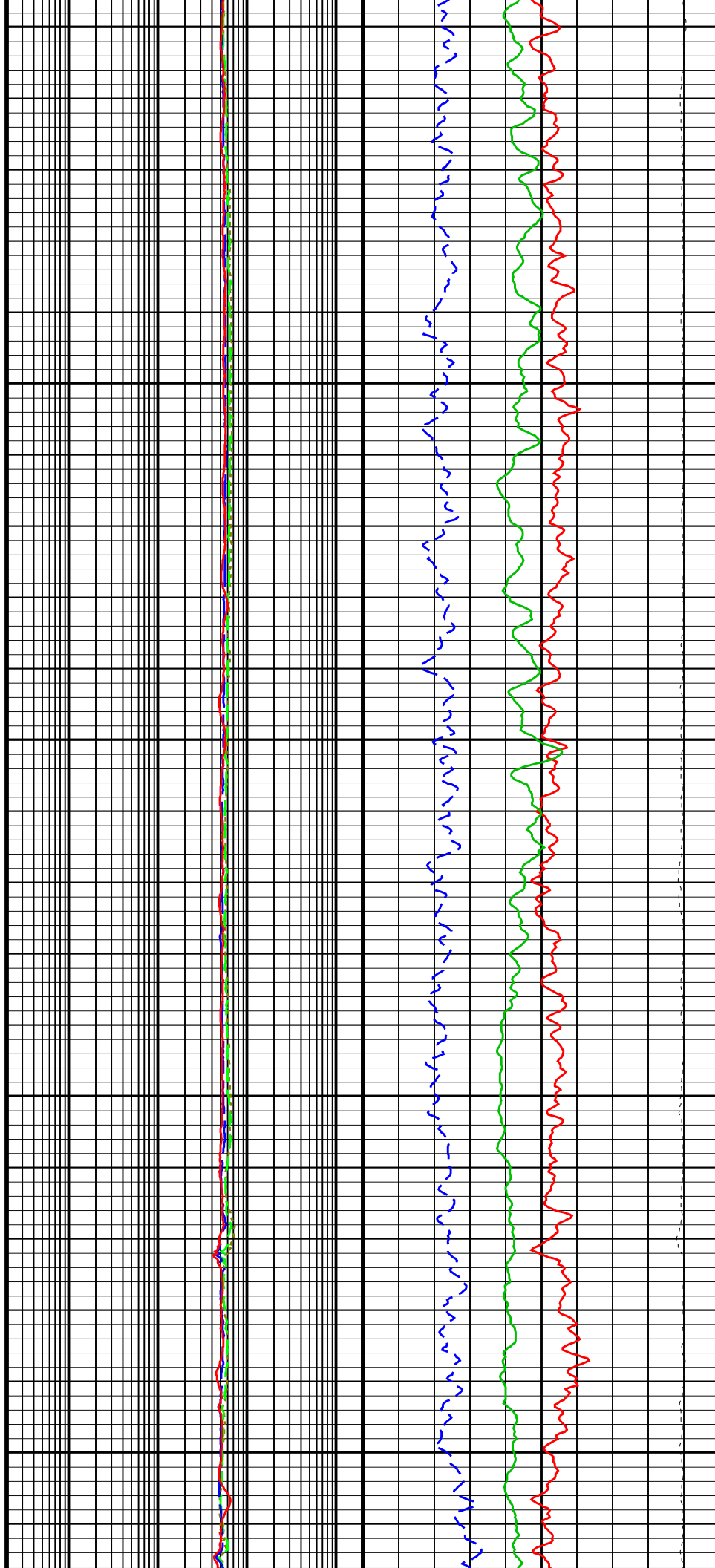
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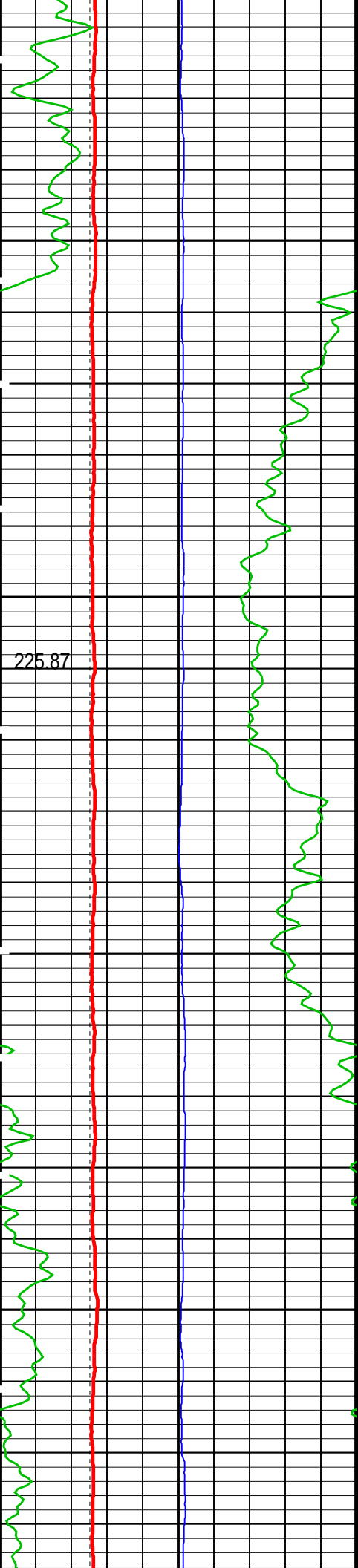




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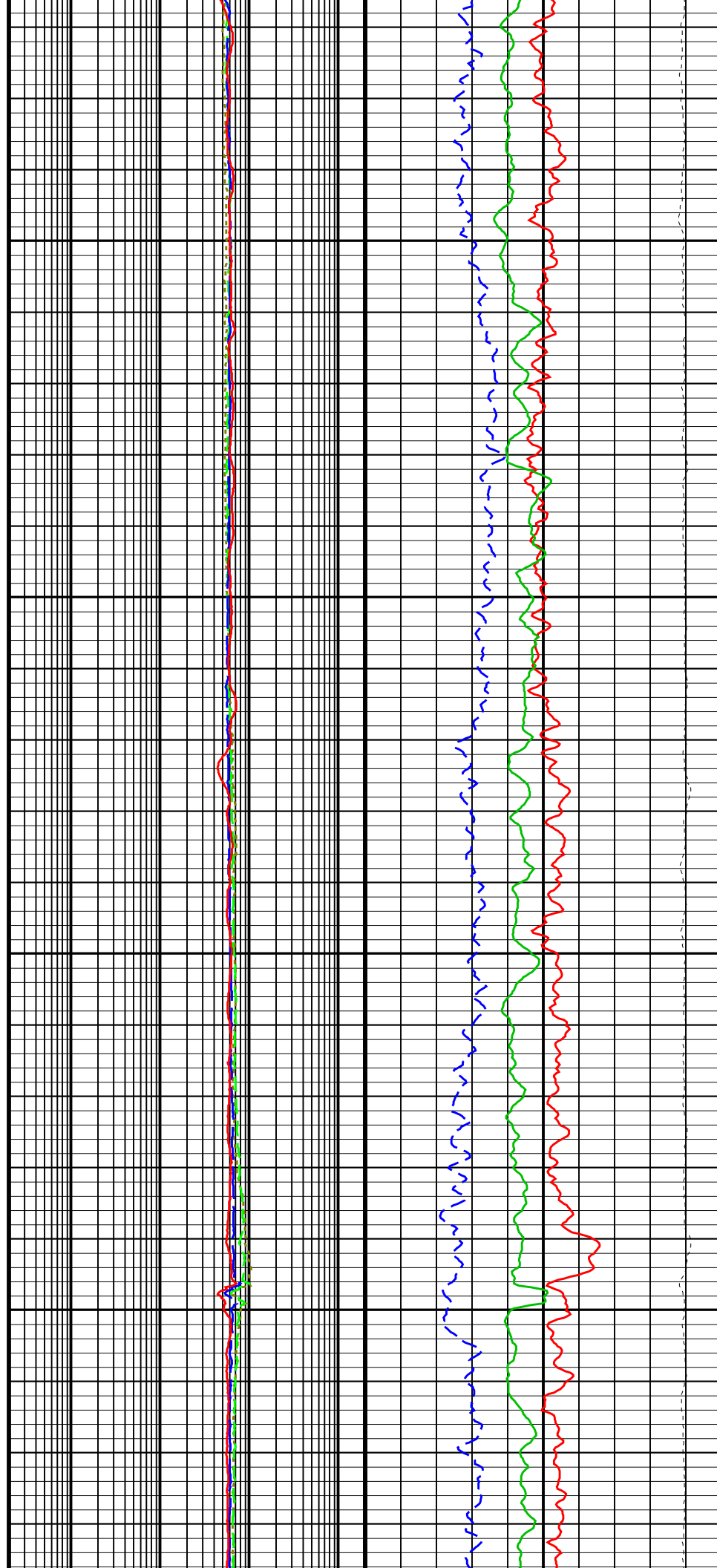
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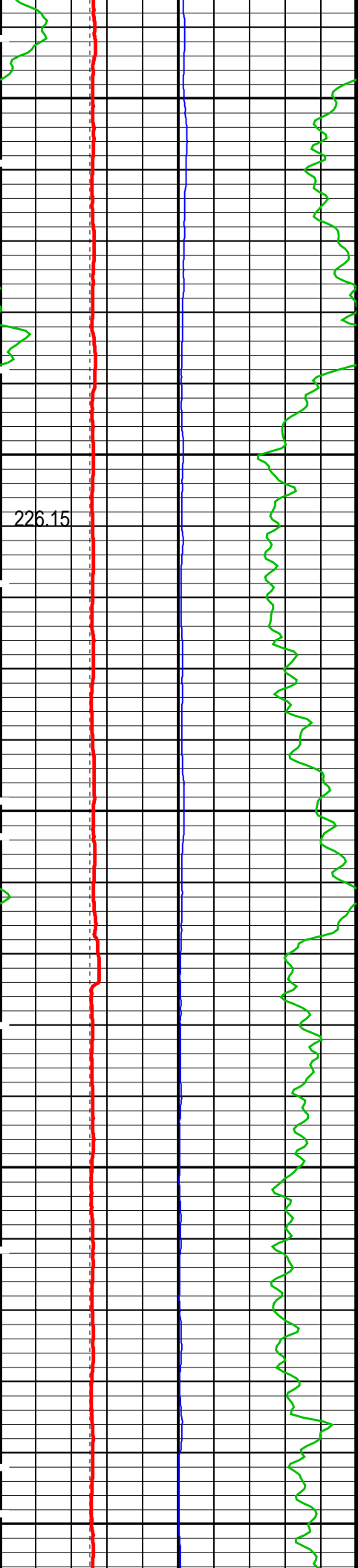


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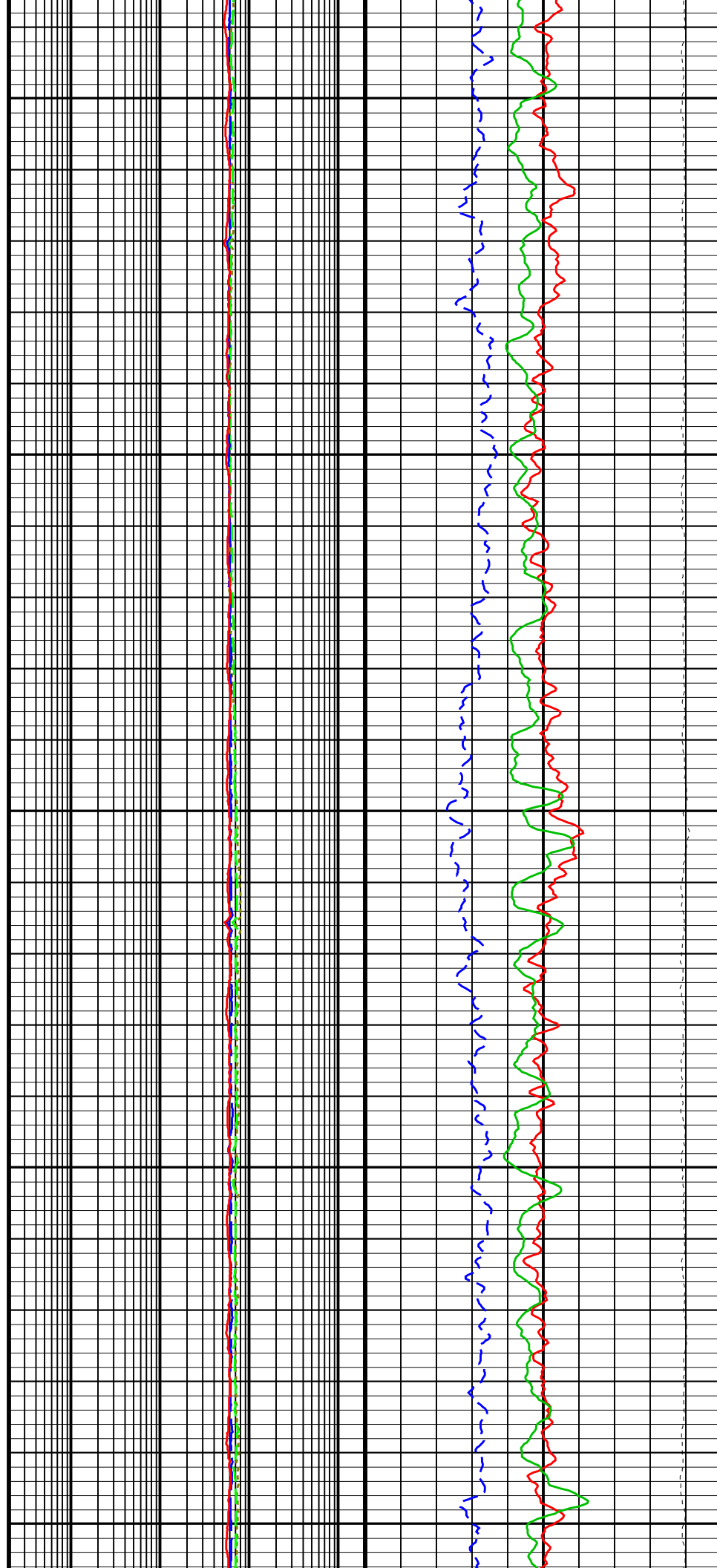


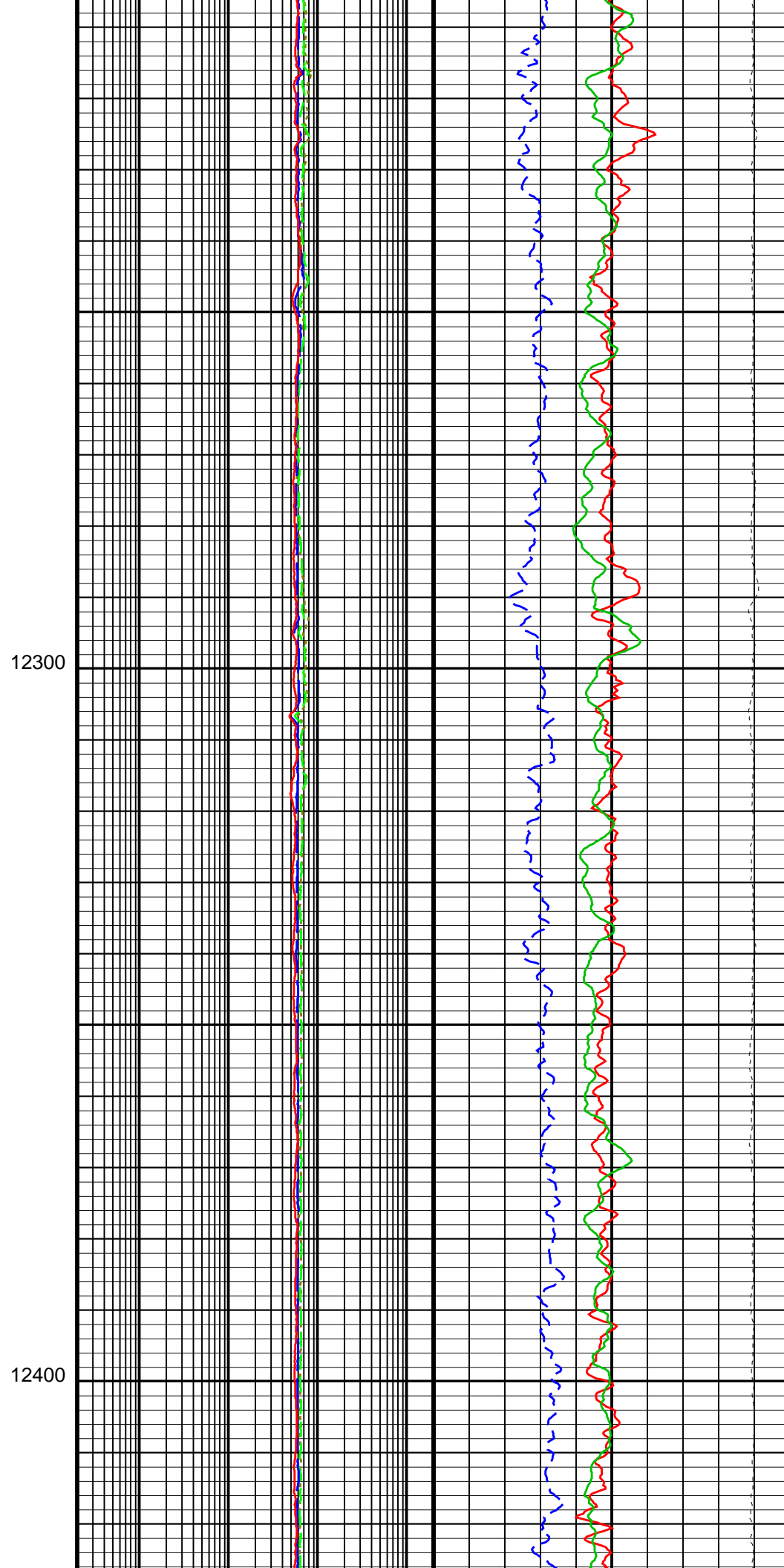
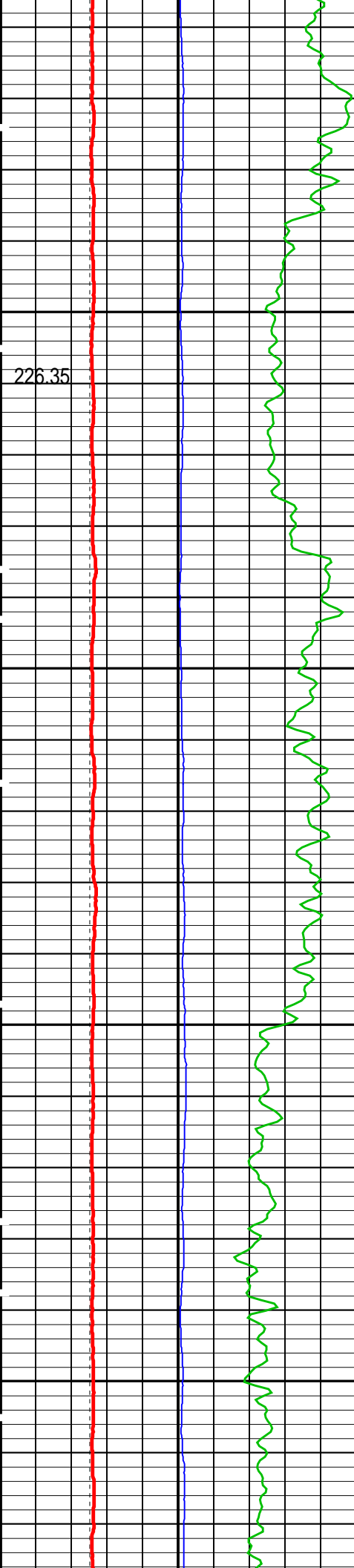


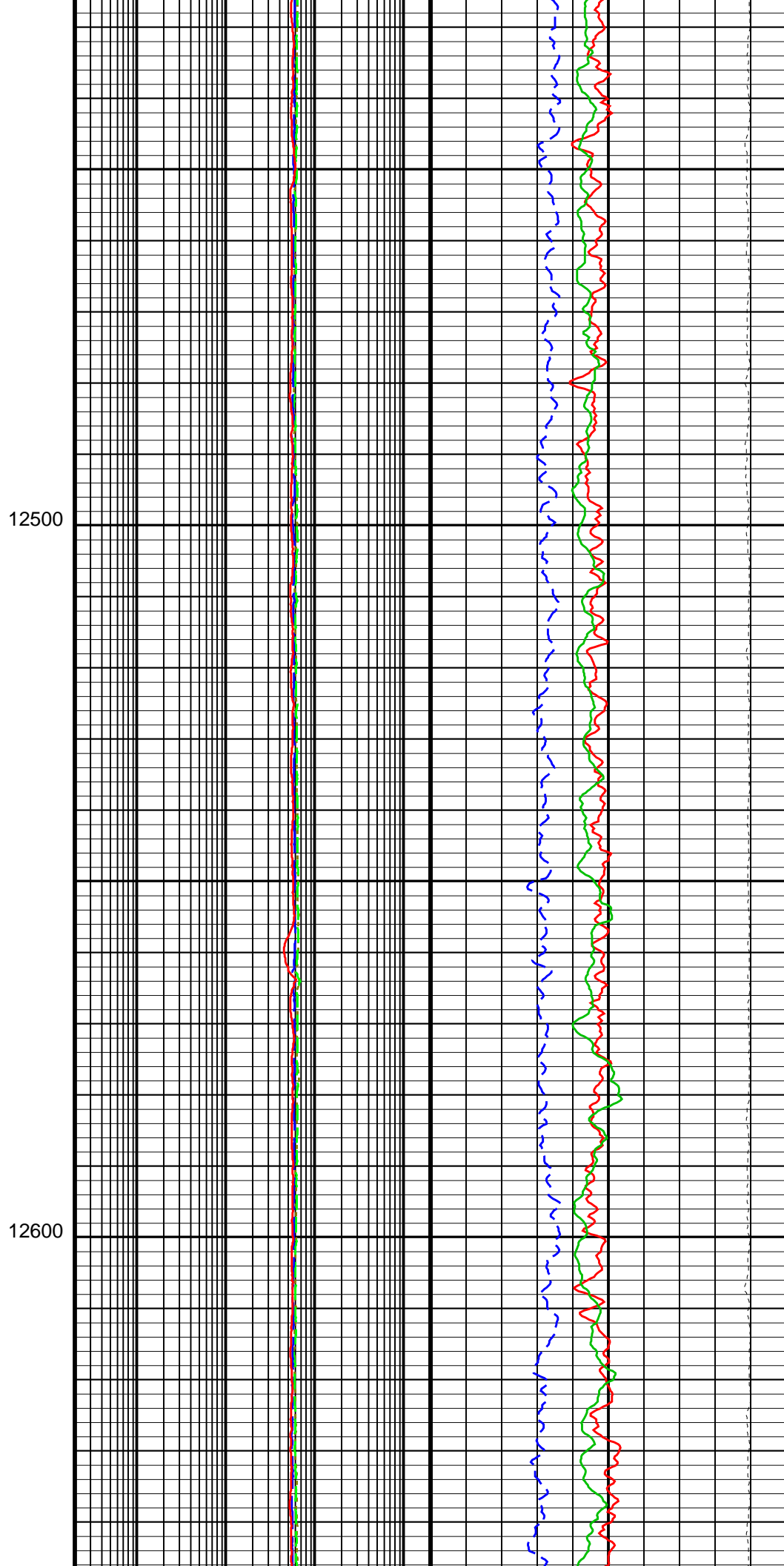
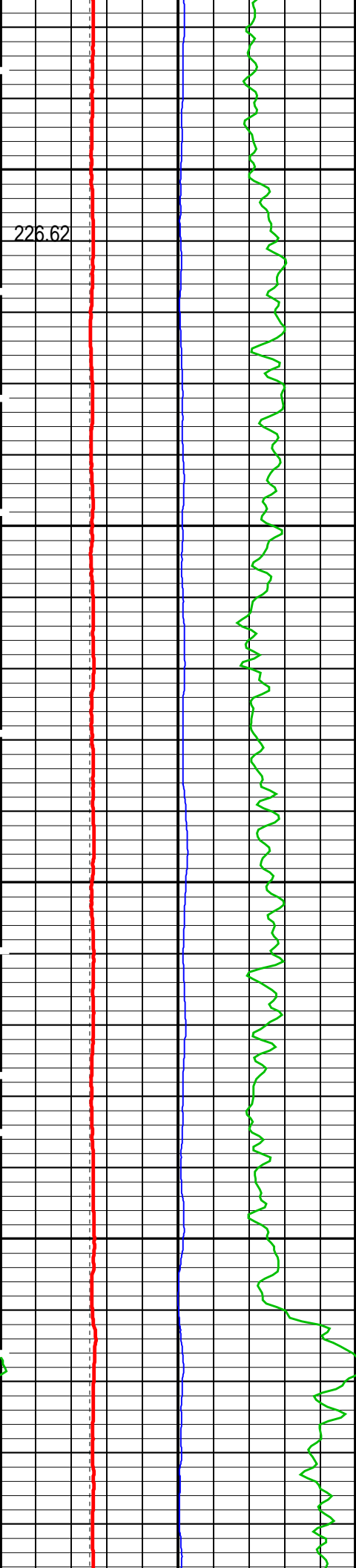
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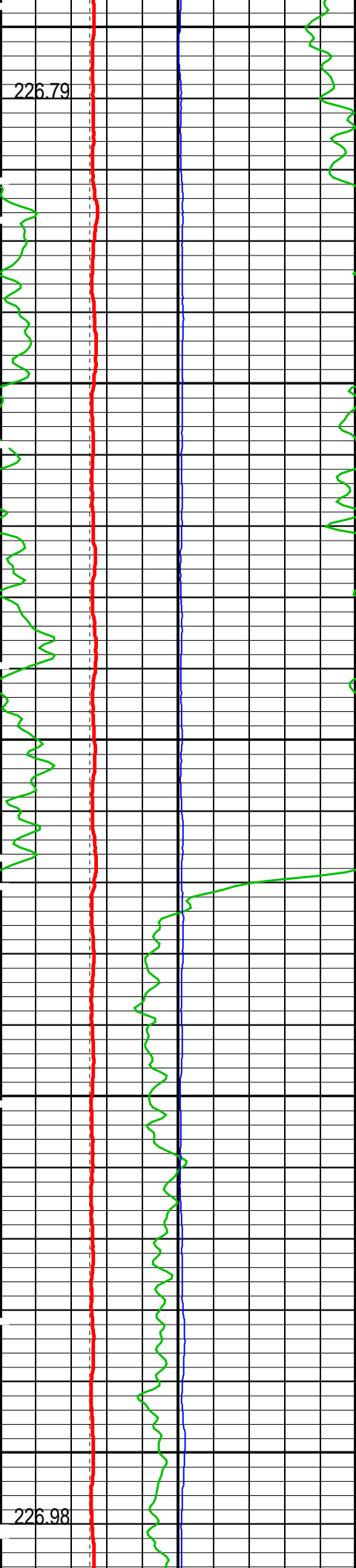
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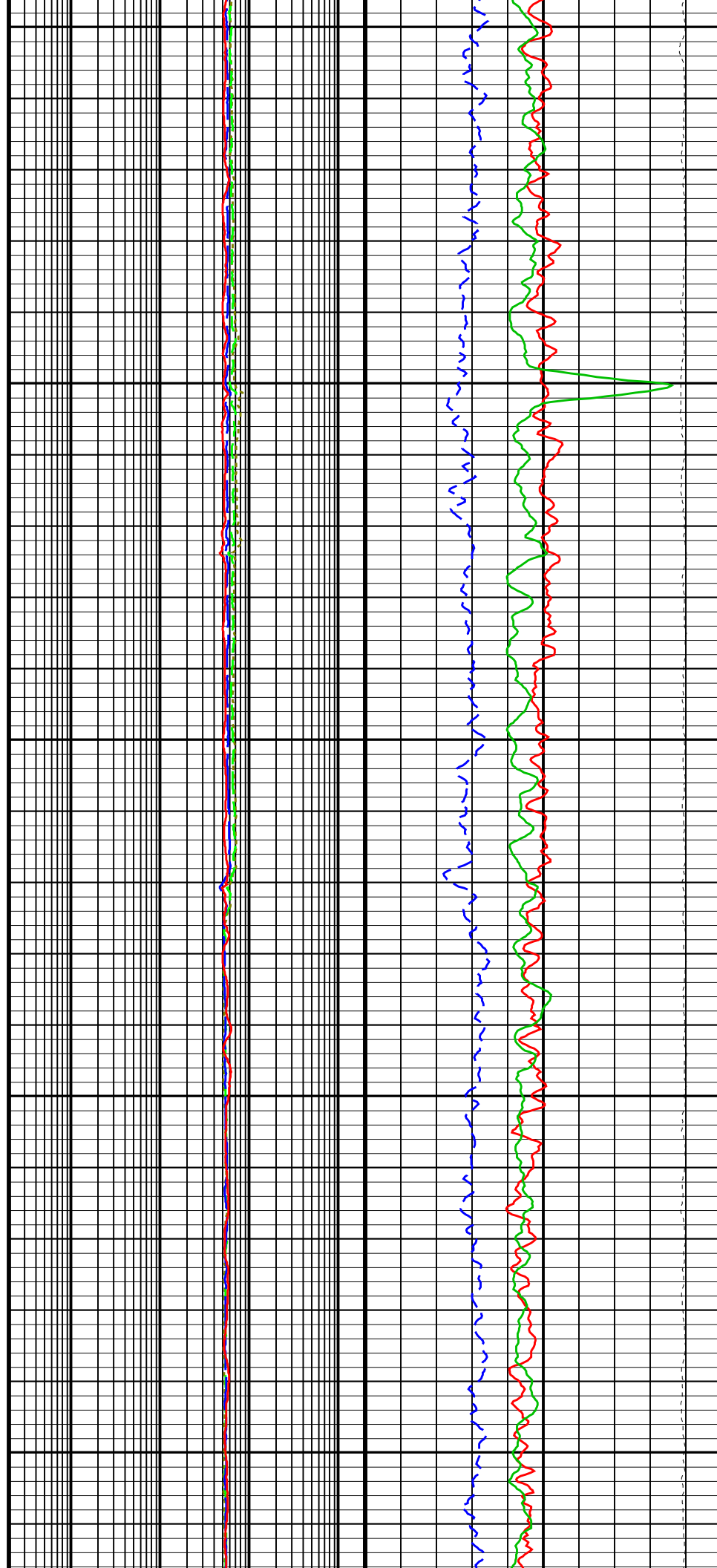


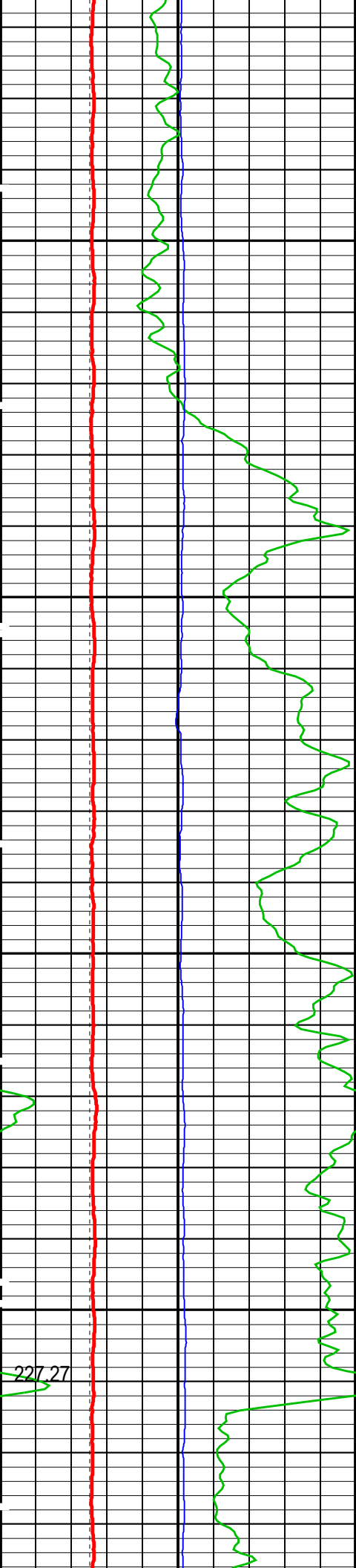




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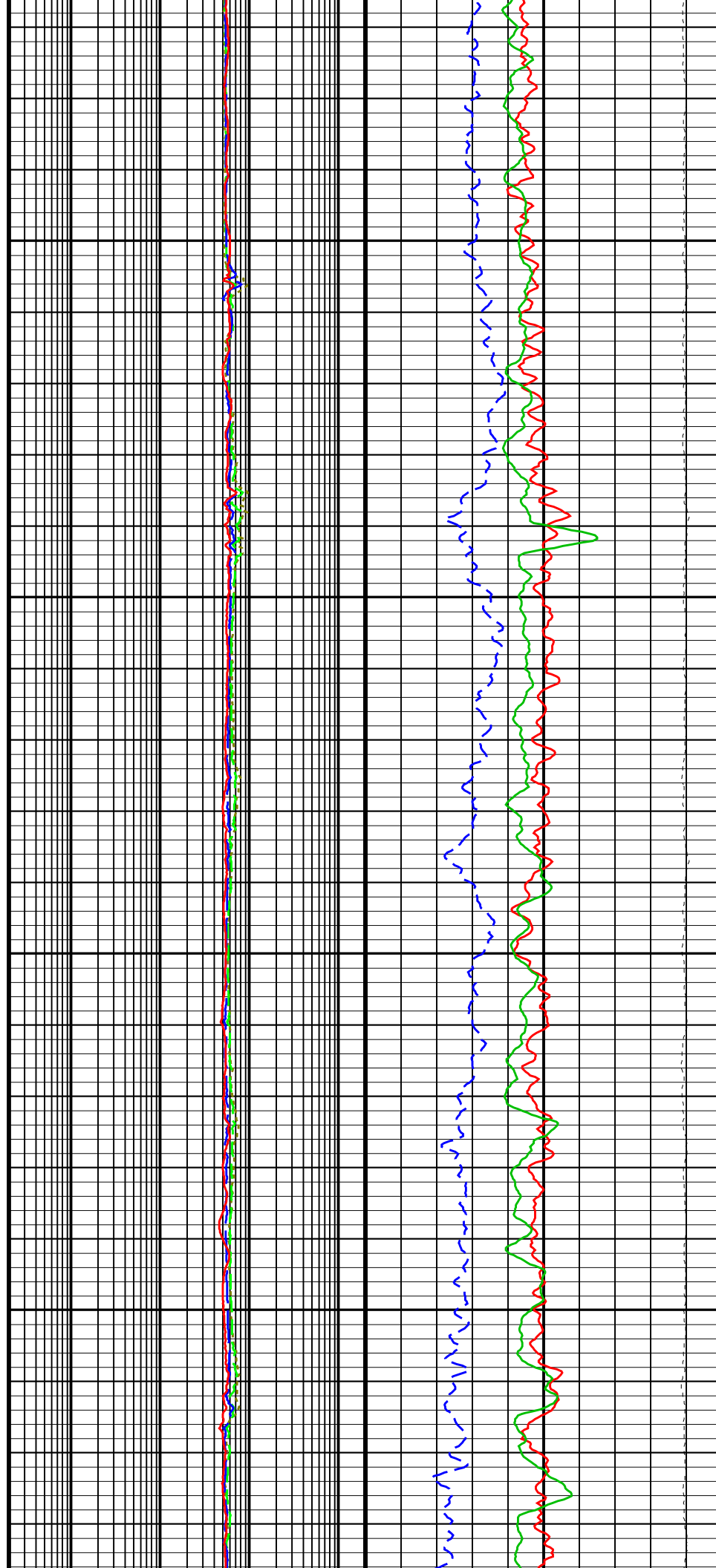
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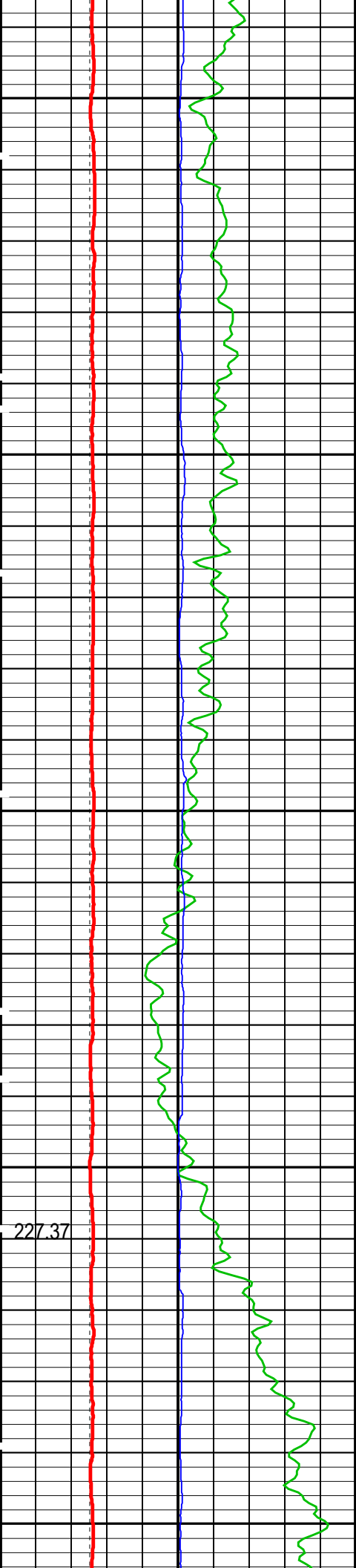




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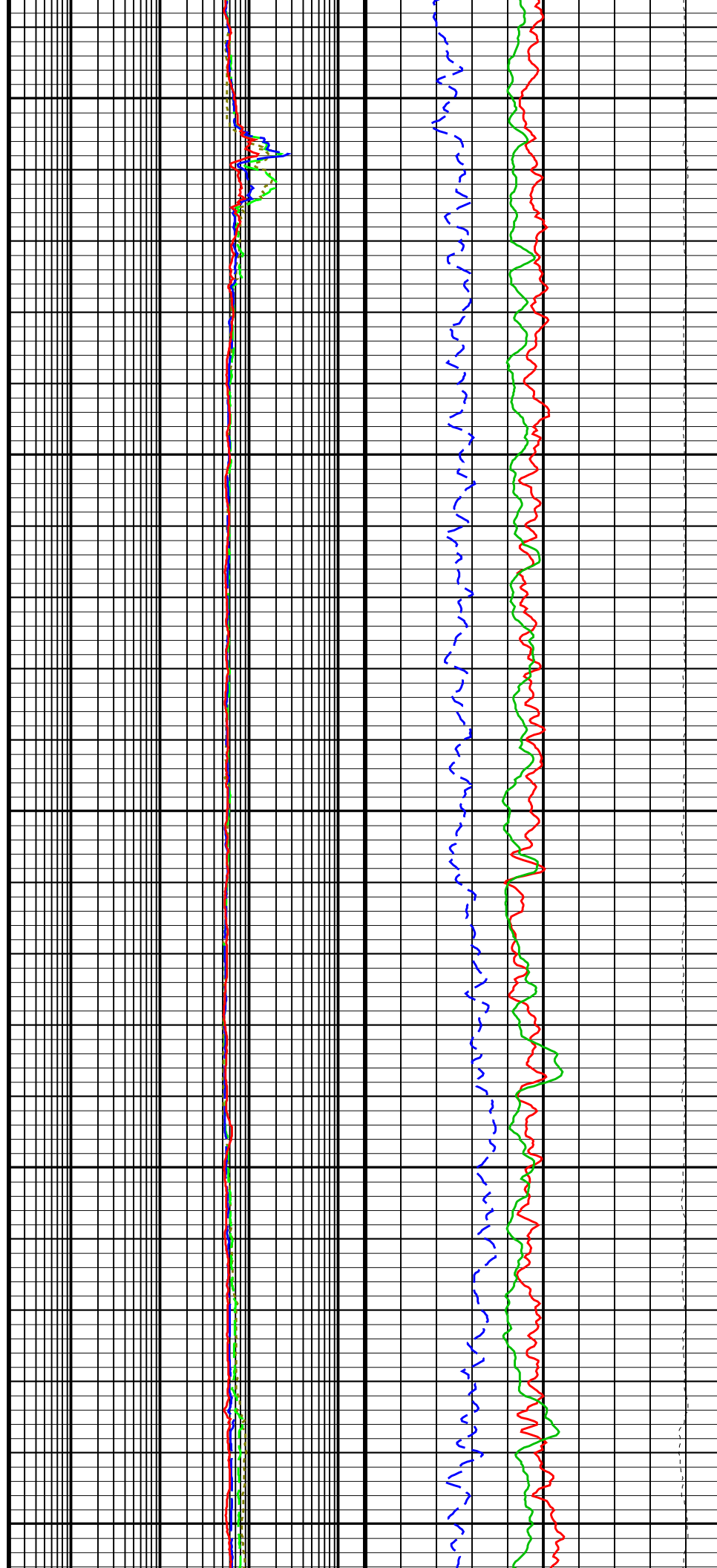


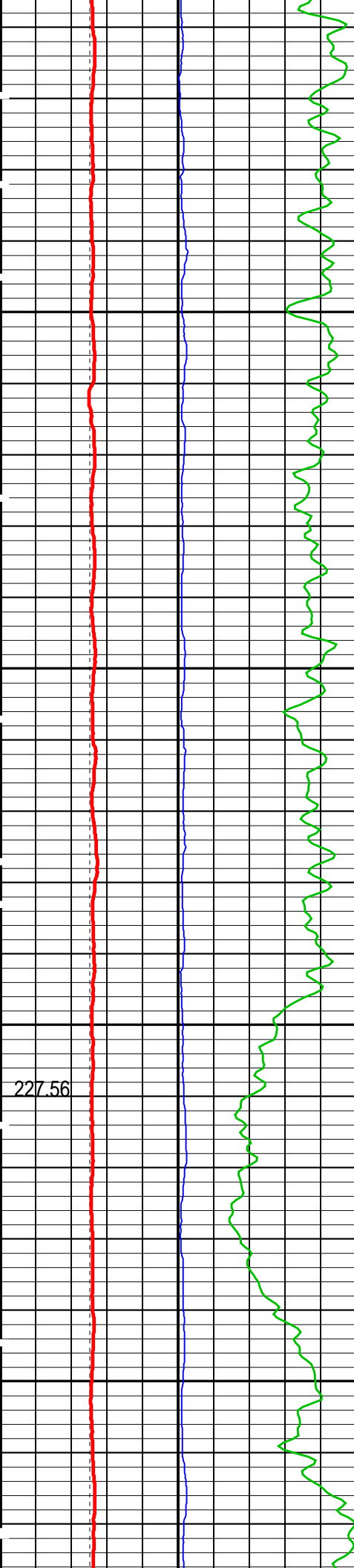


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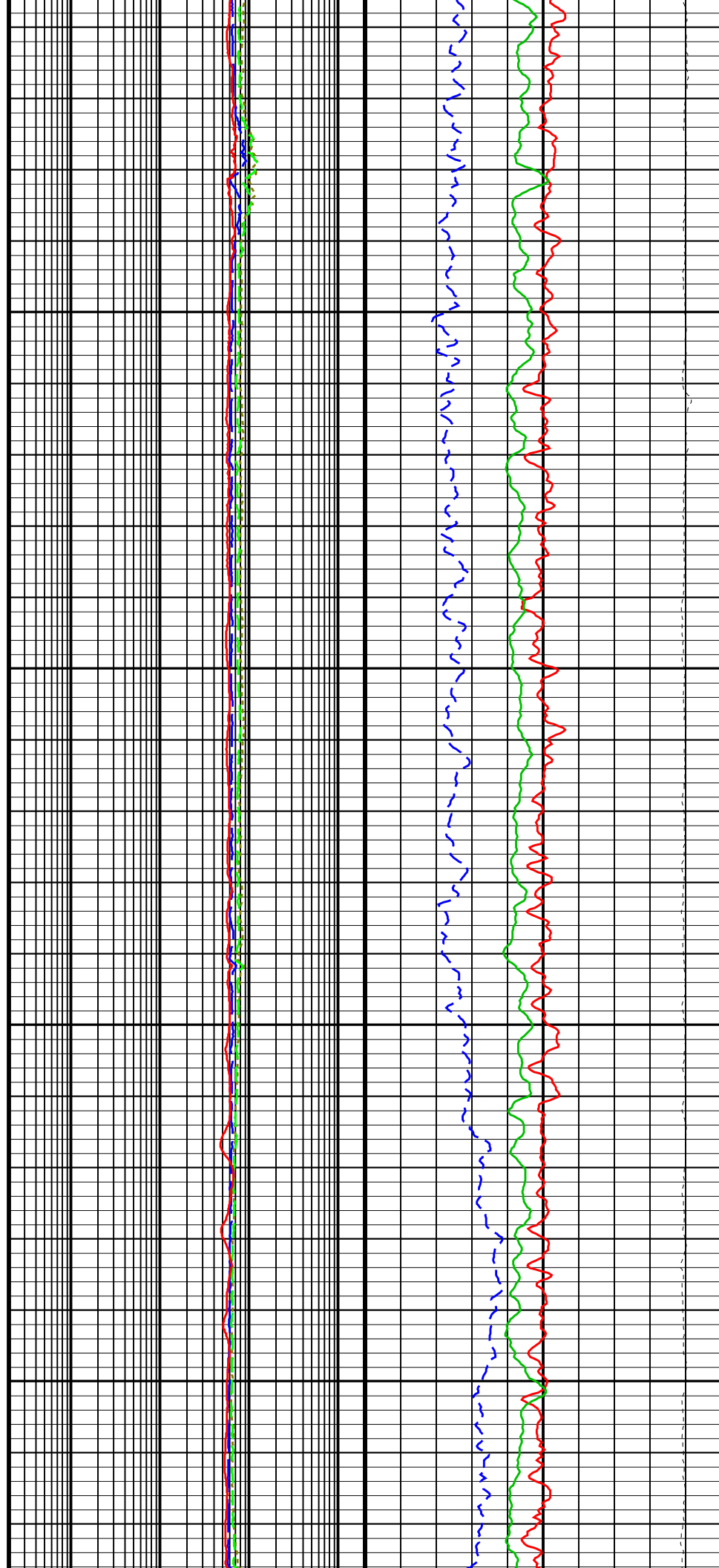
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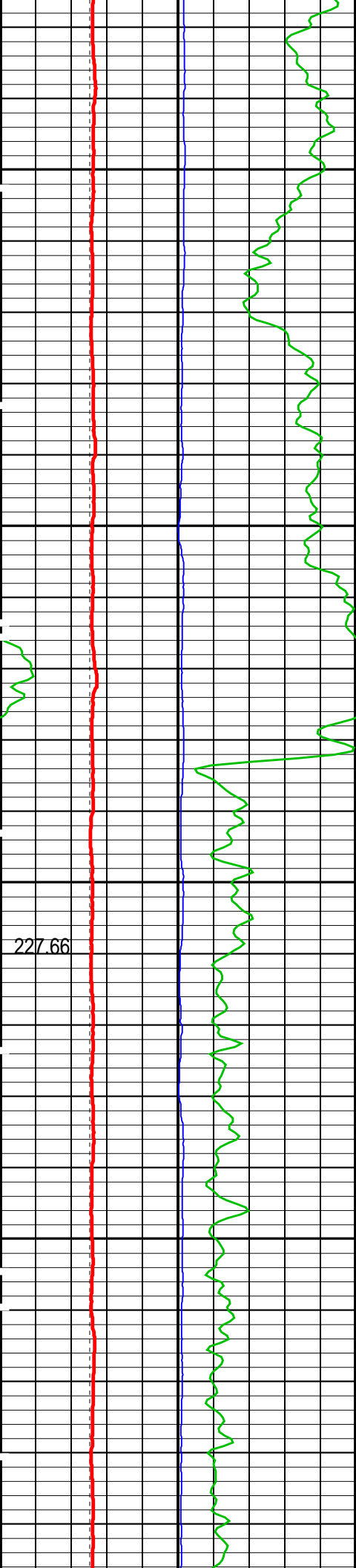




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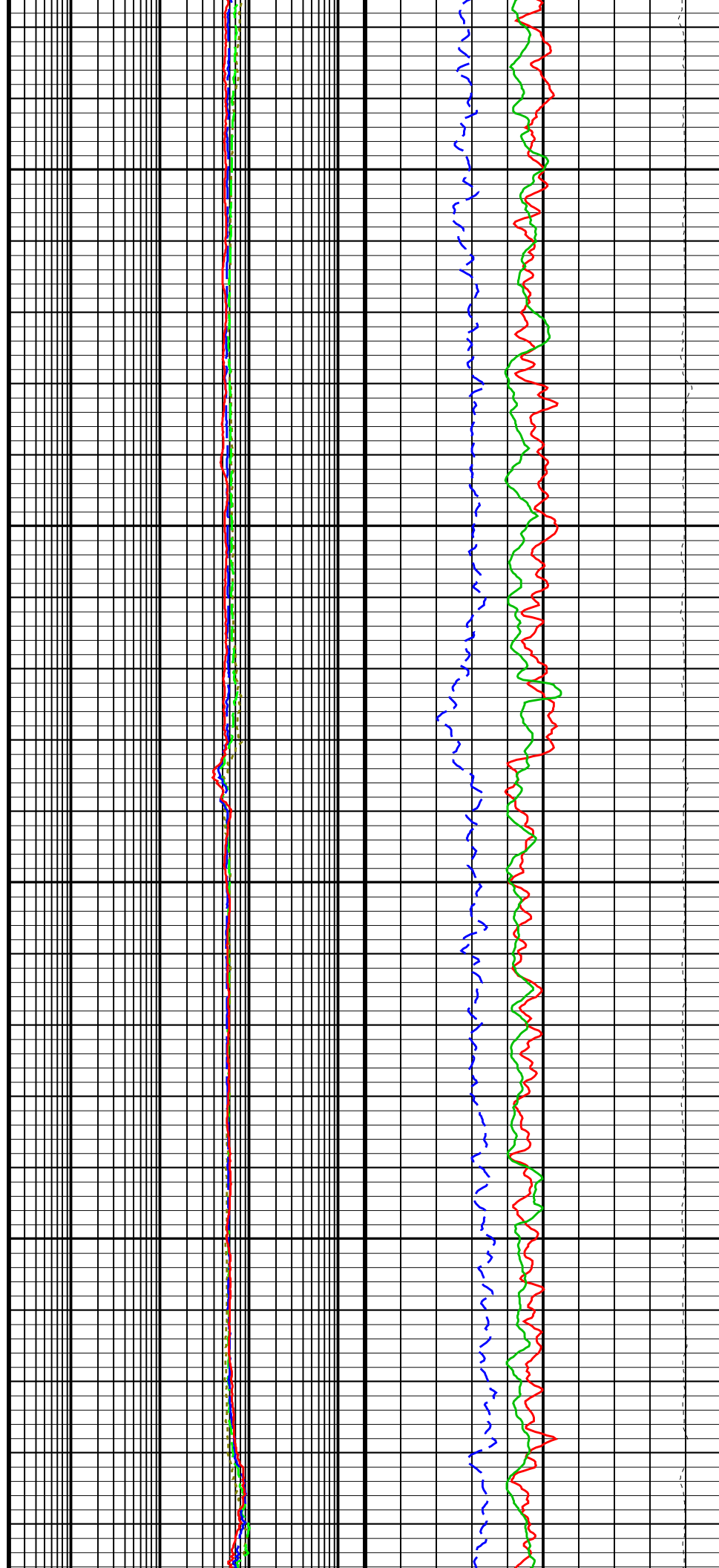
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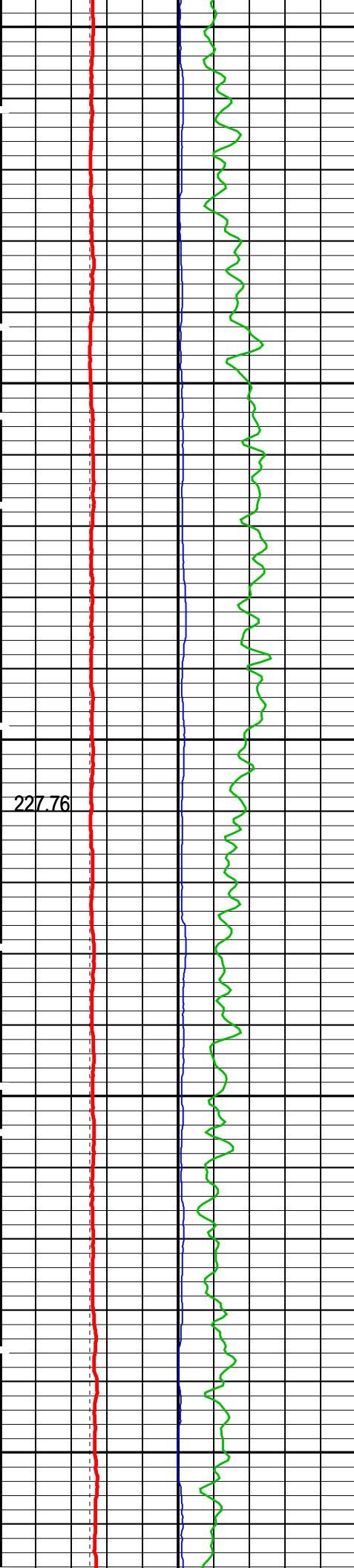


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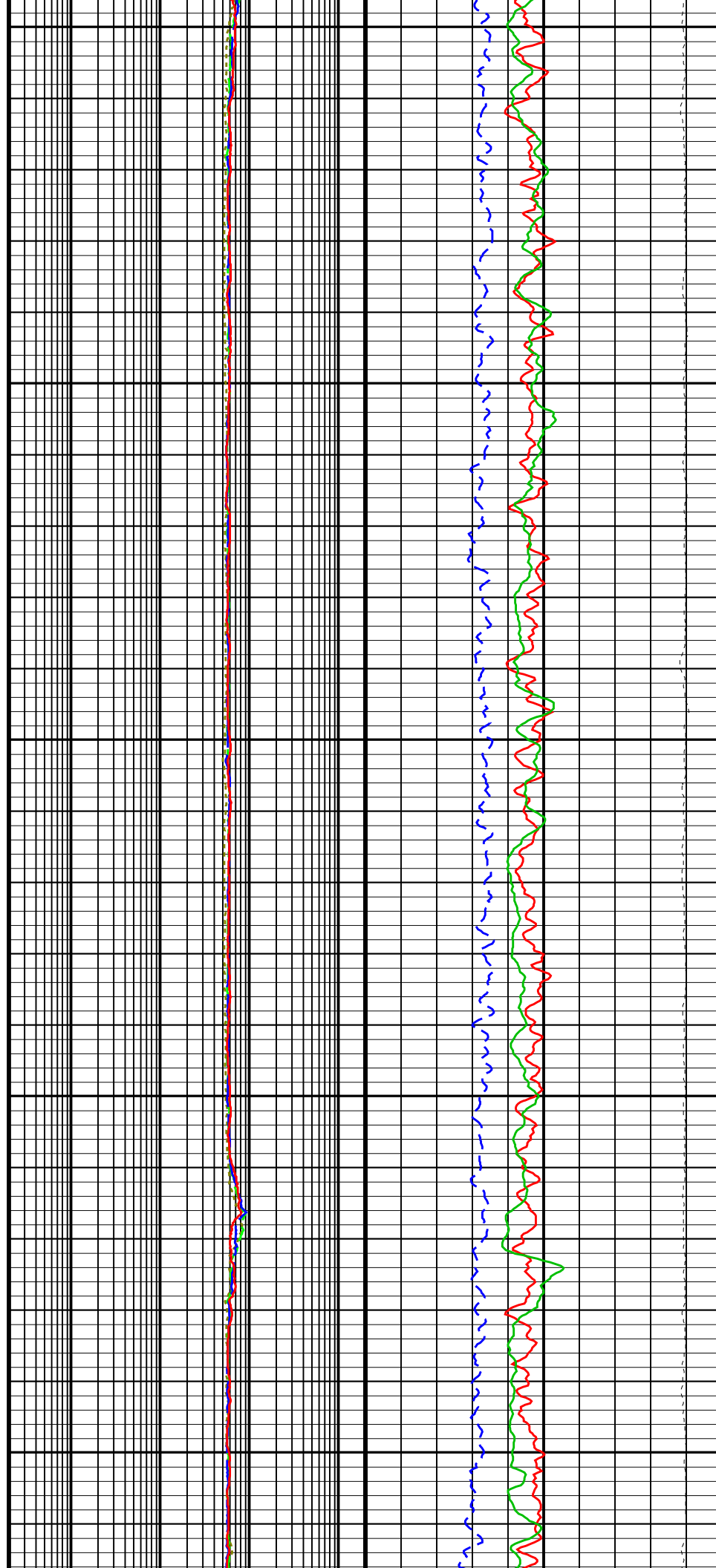


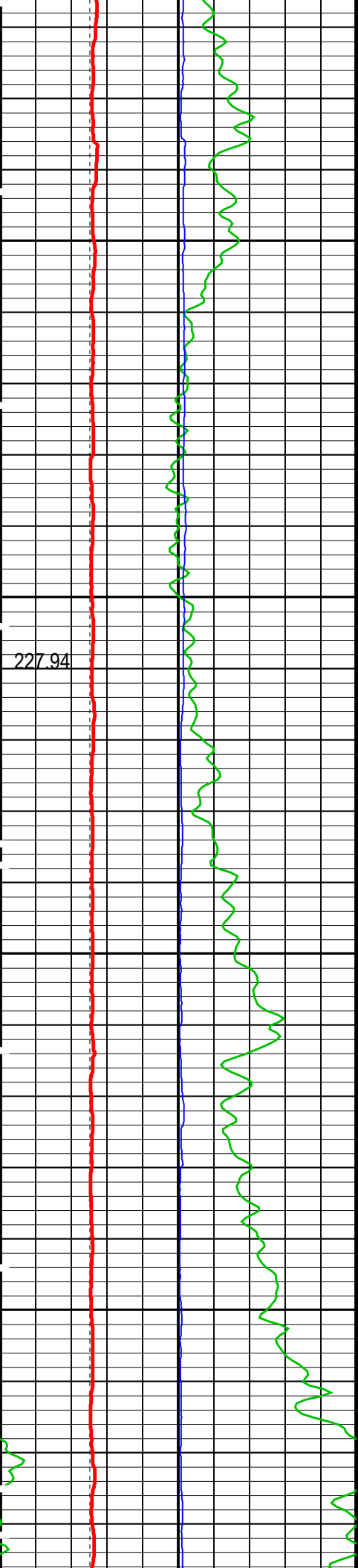




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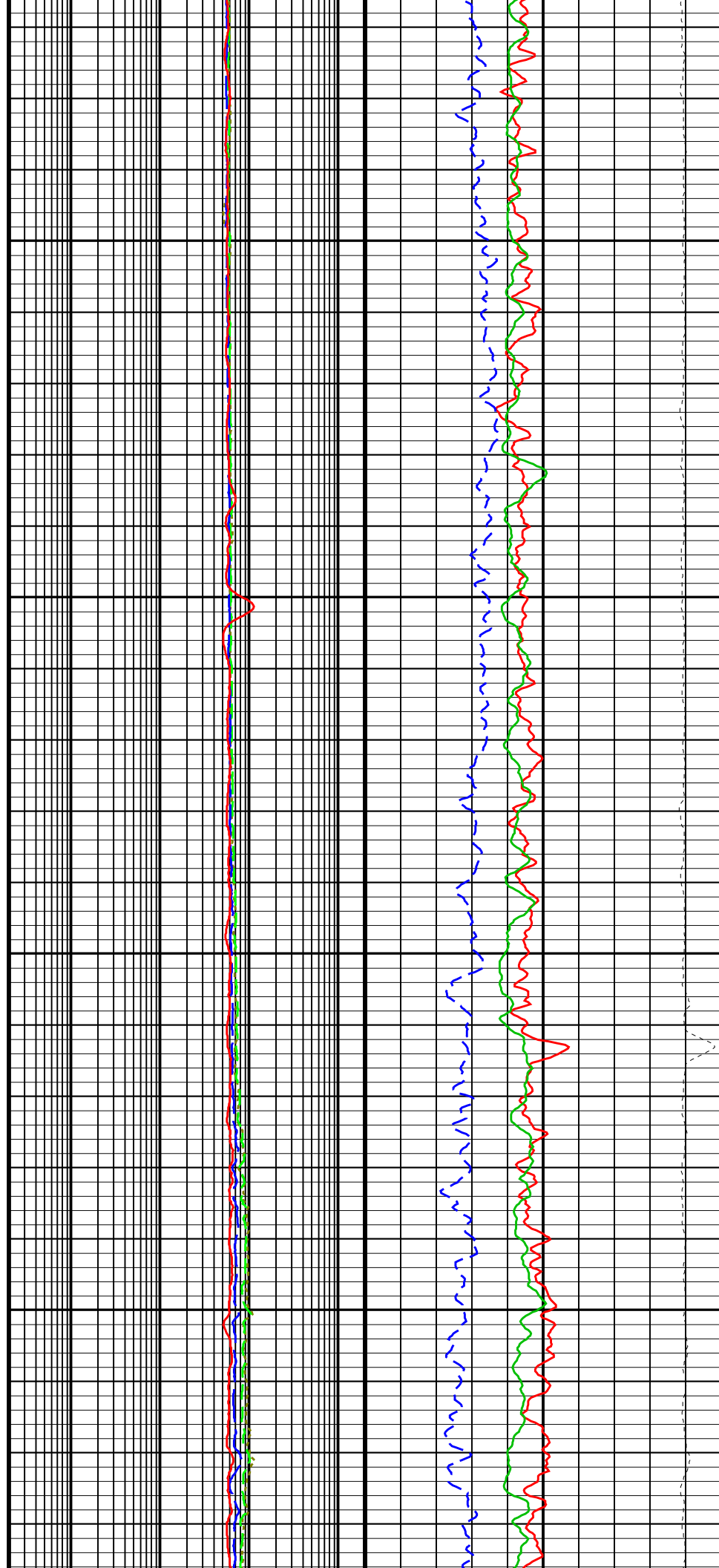
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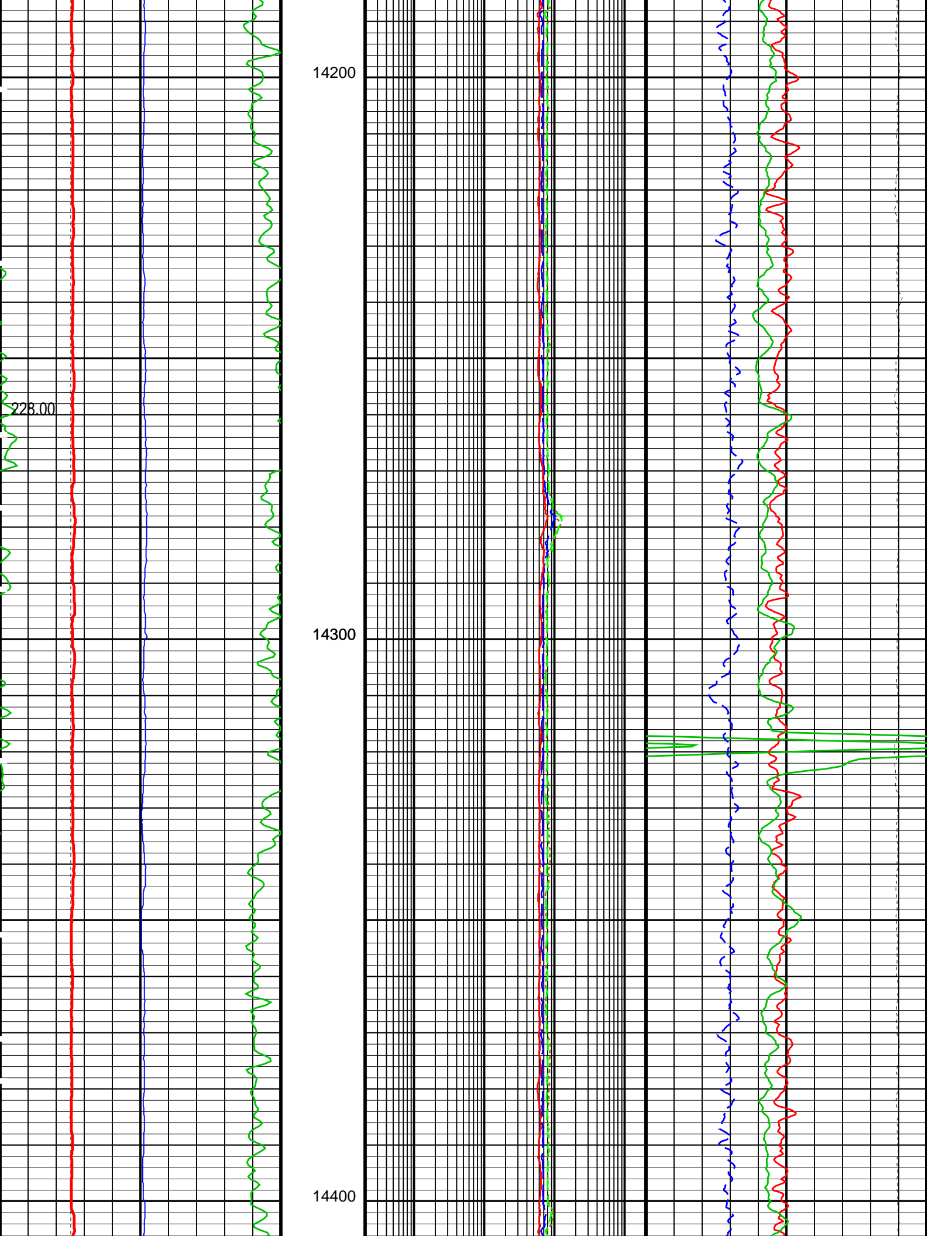


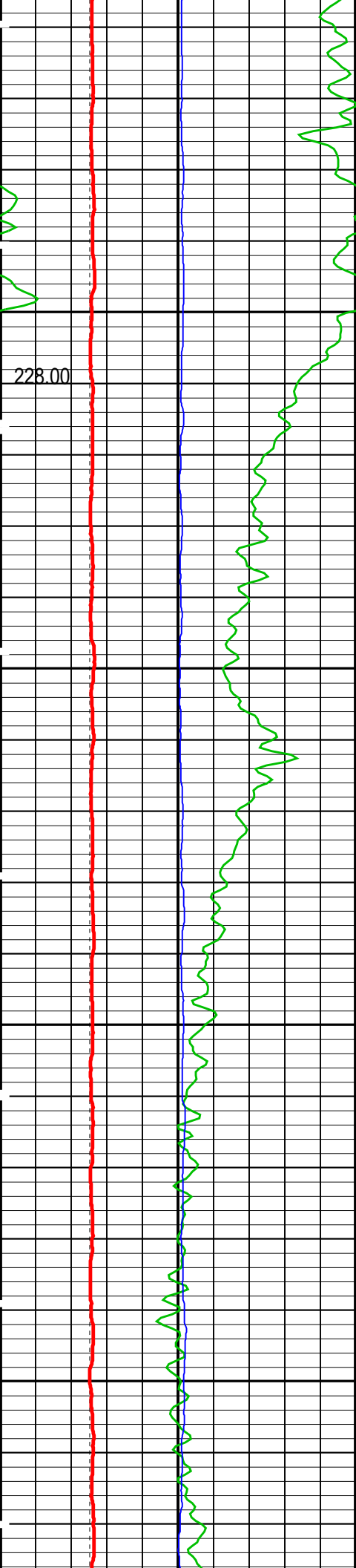


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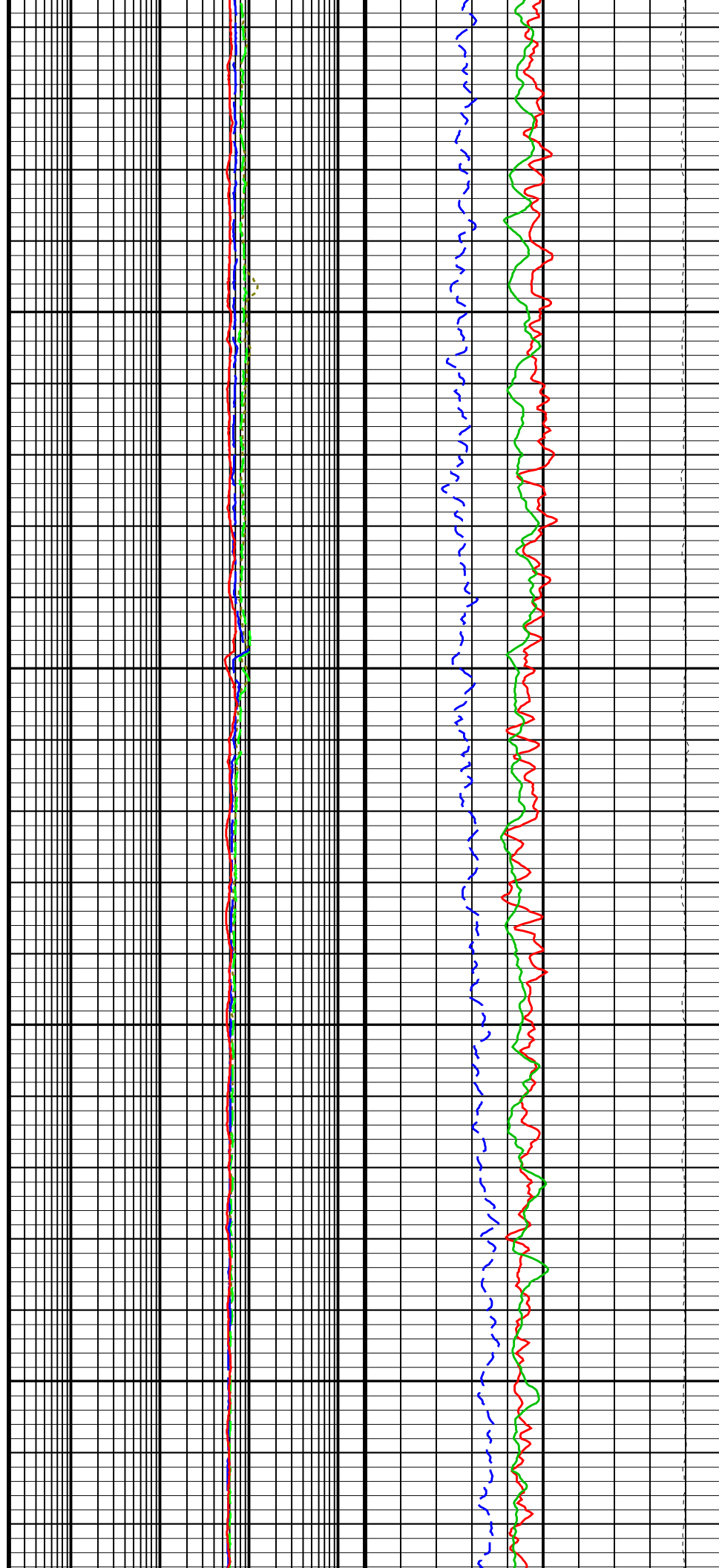


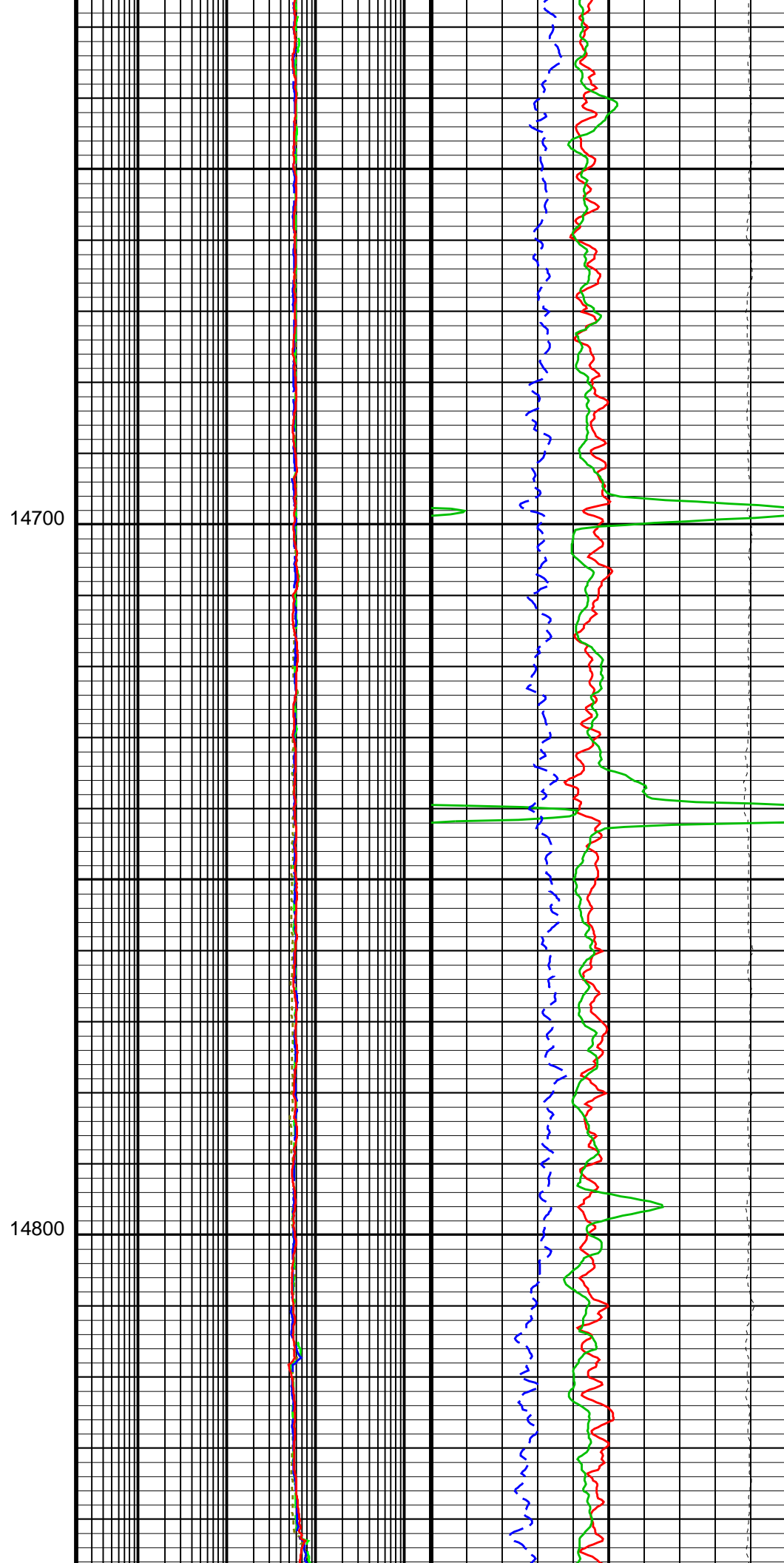
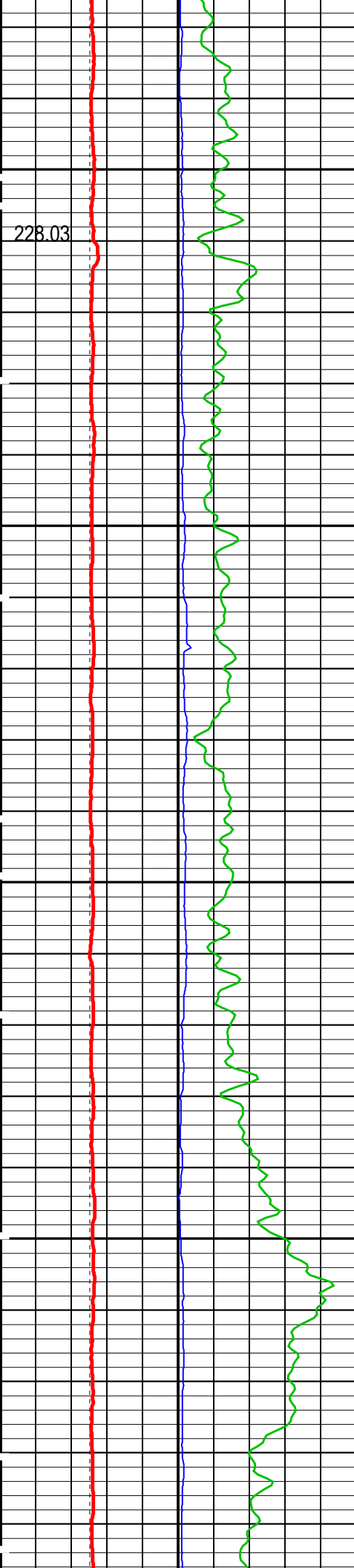


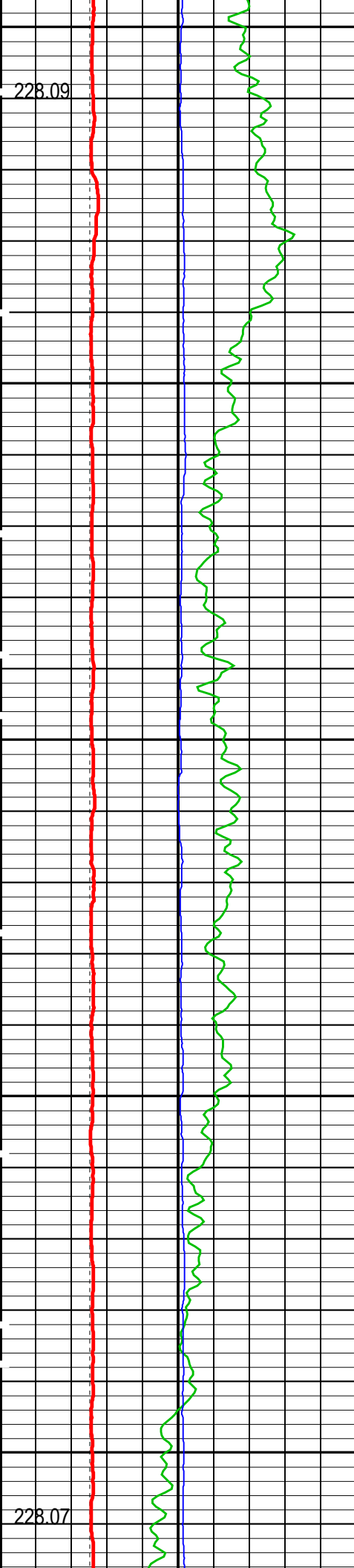


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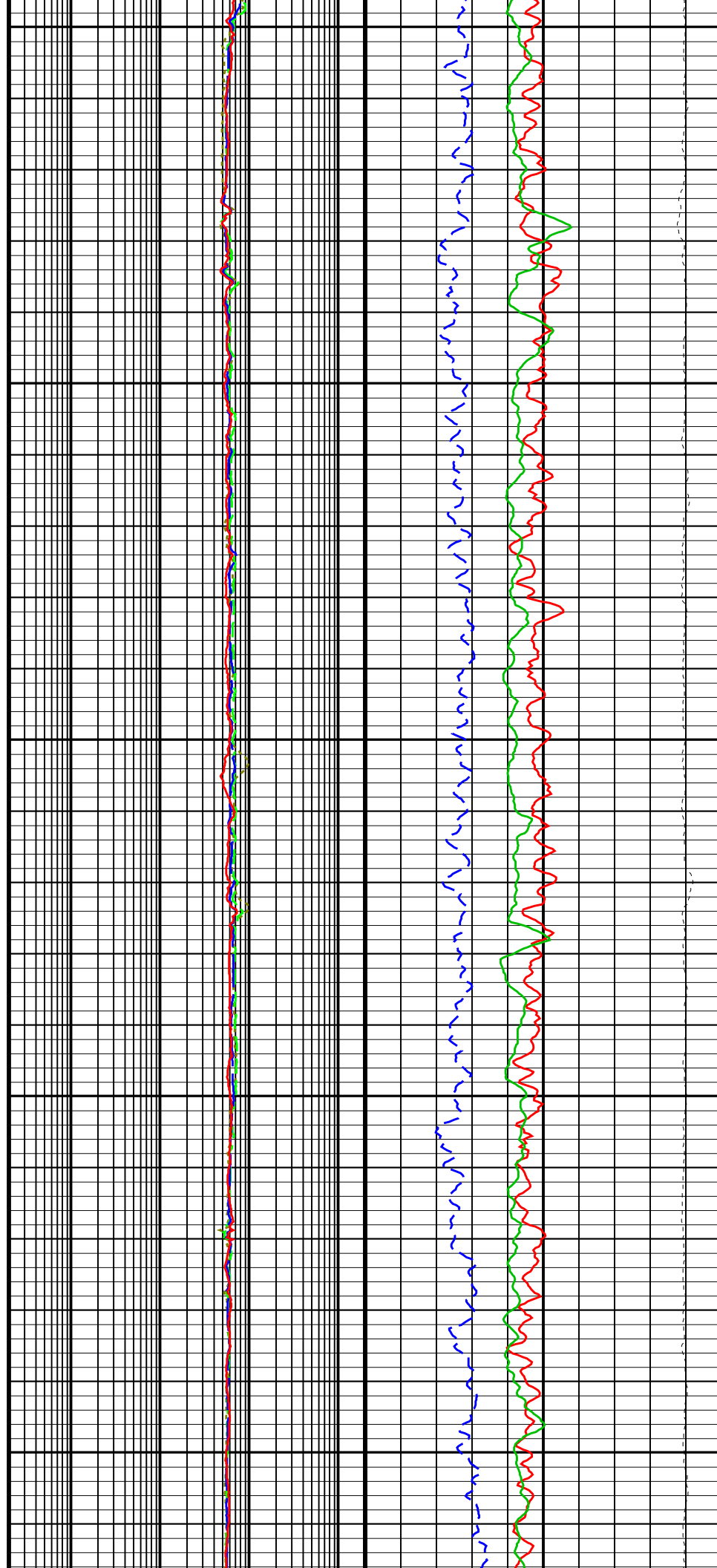


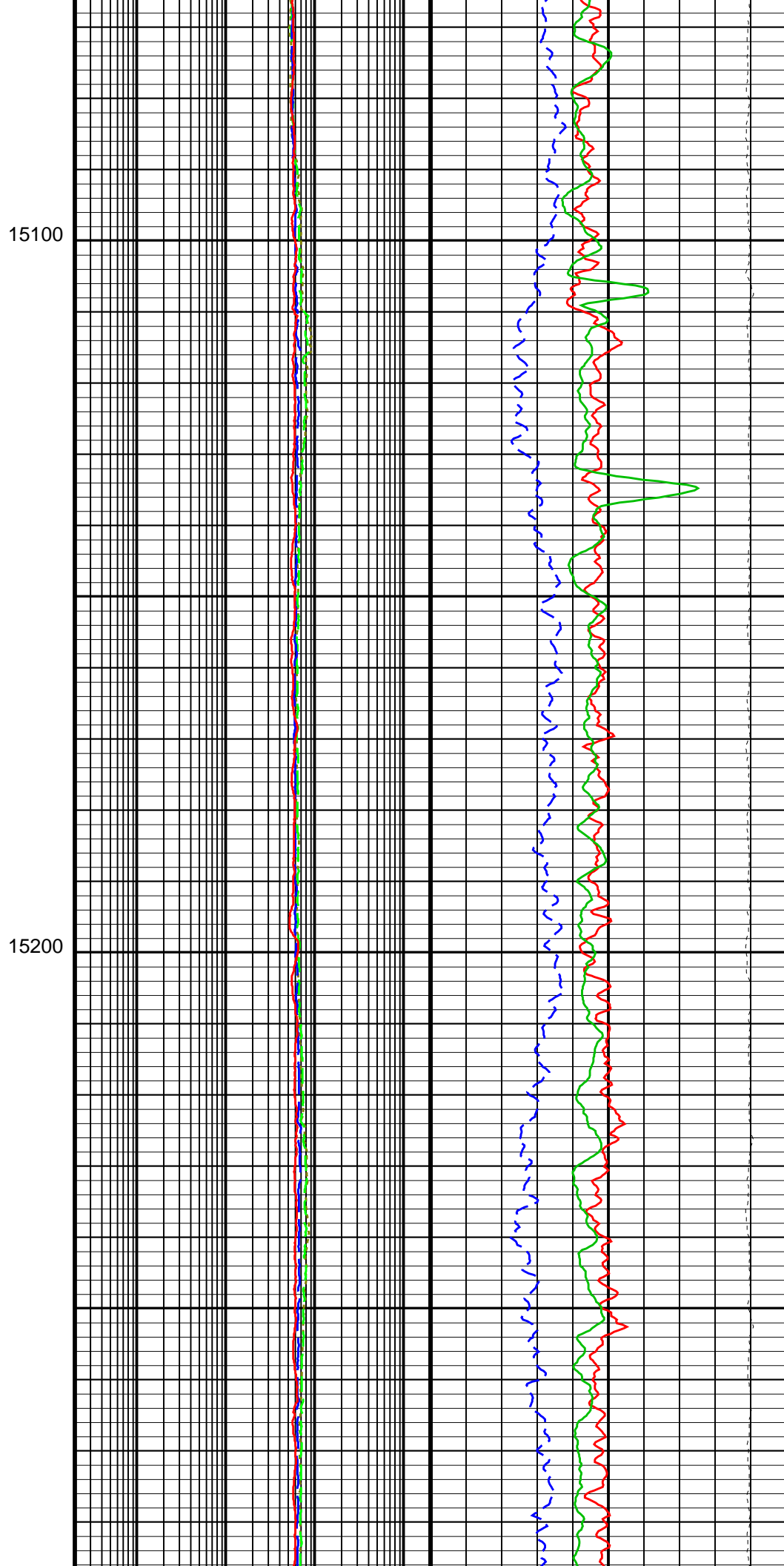
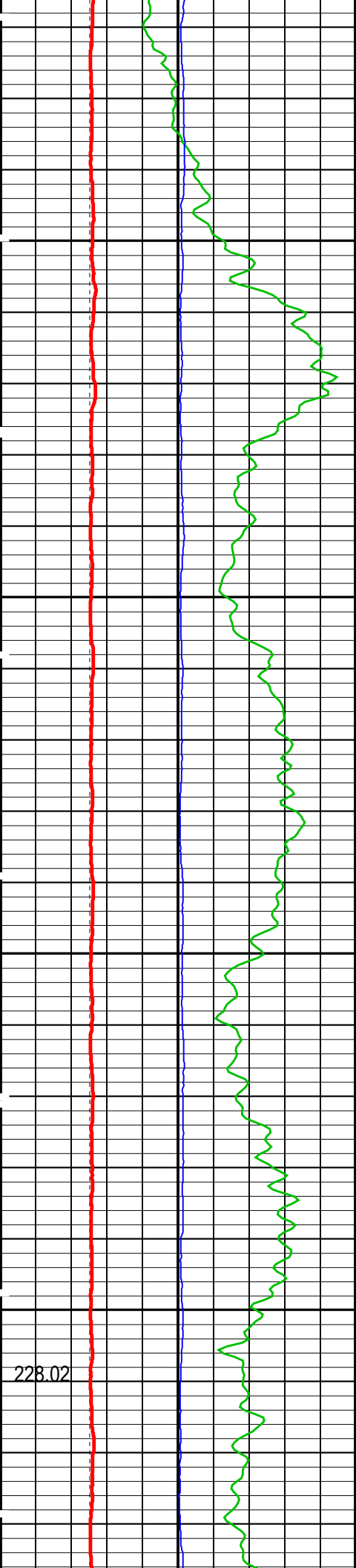


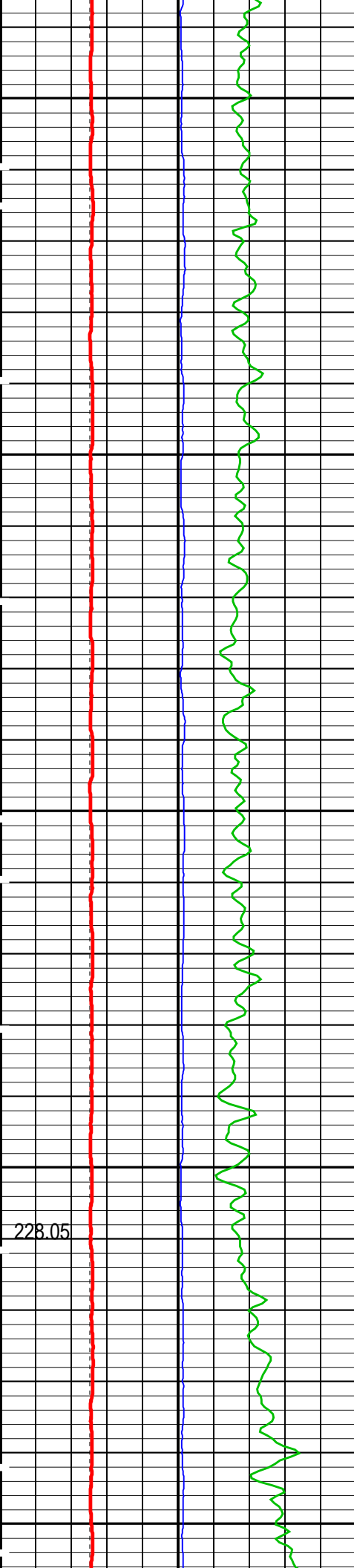


14900

15000



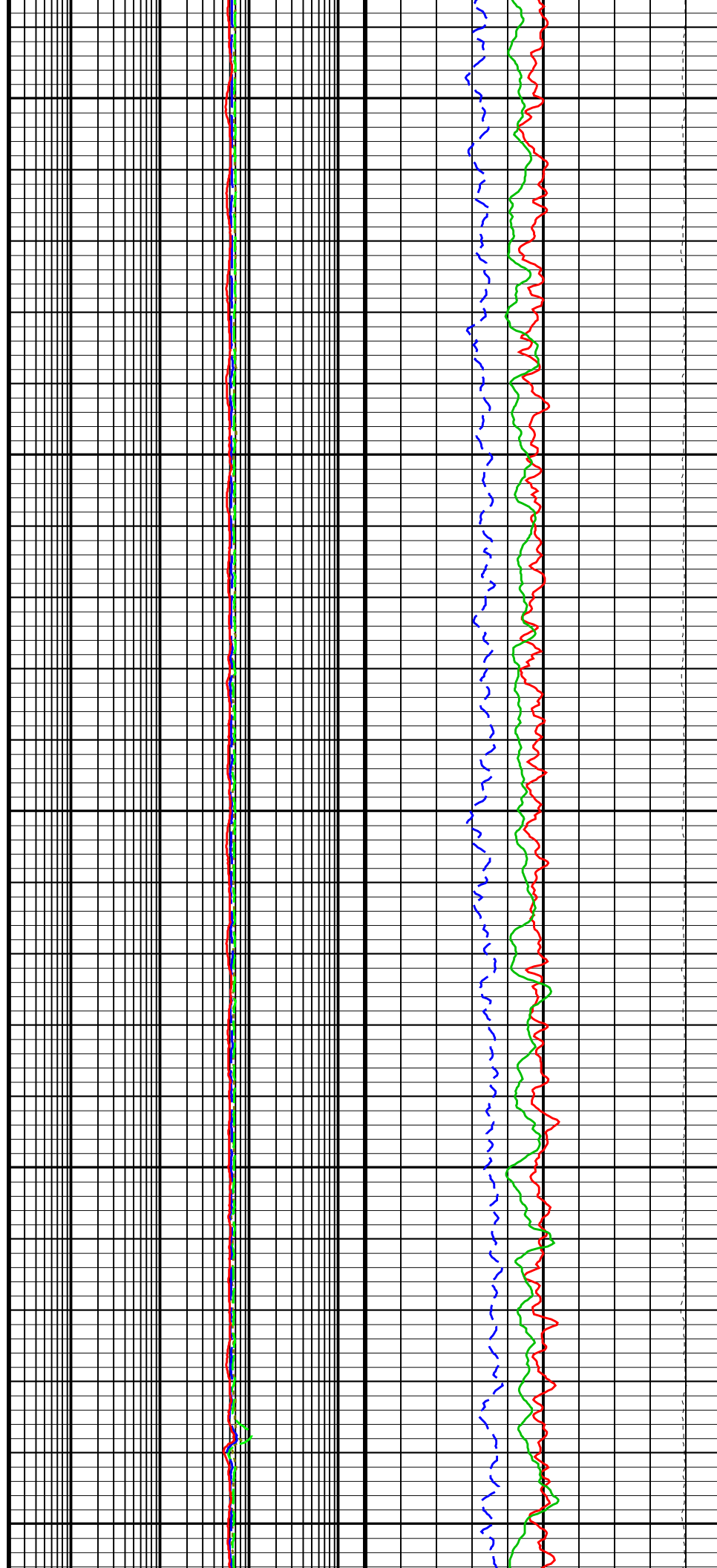




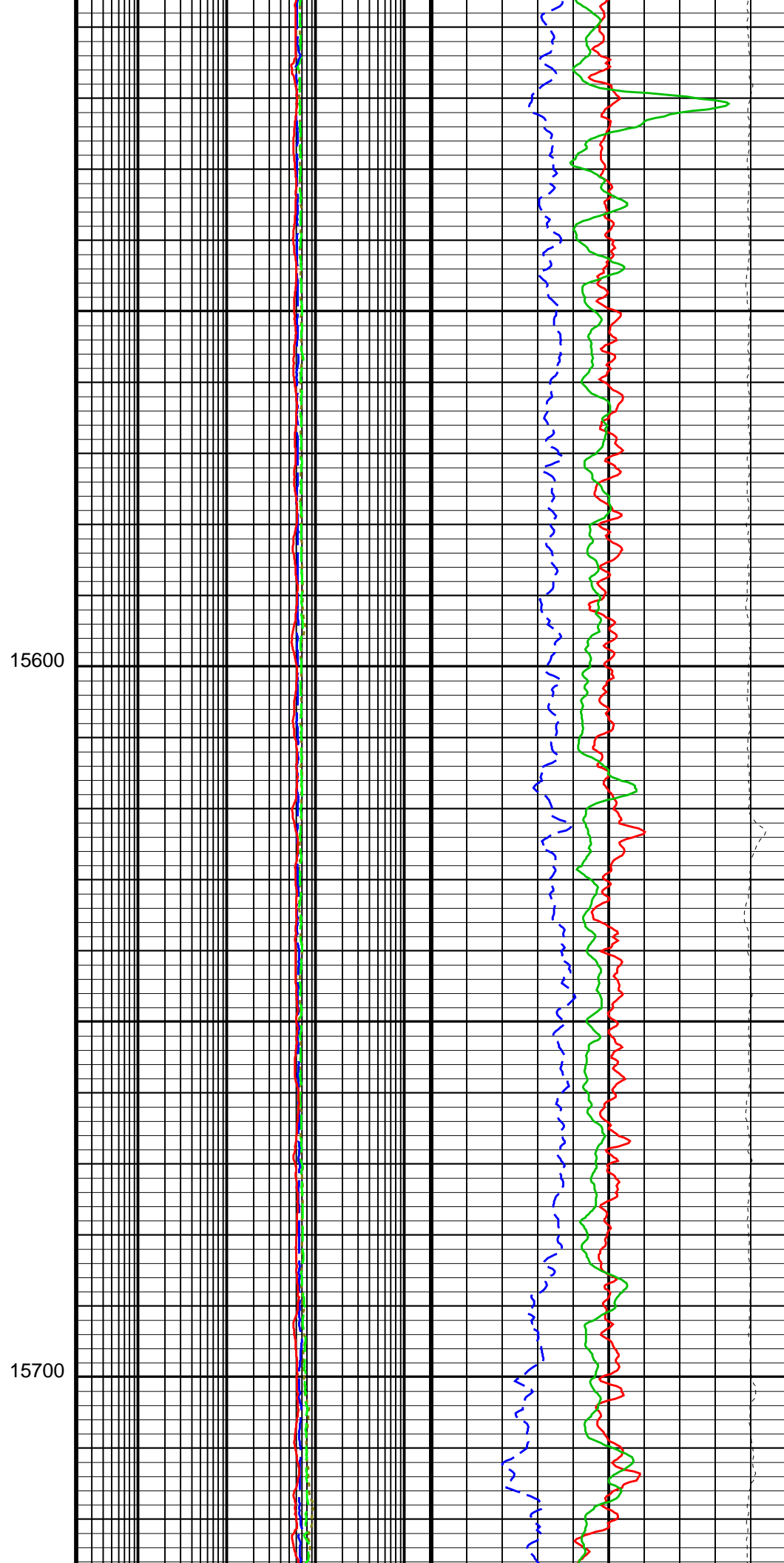
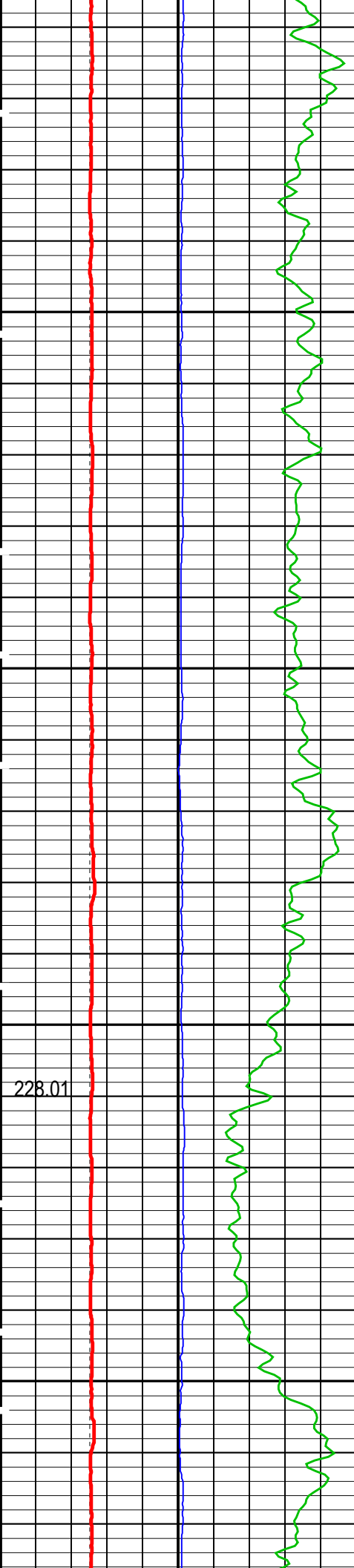
15300

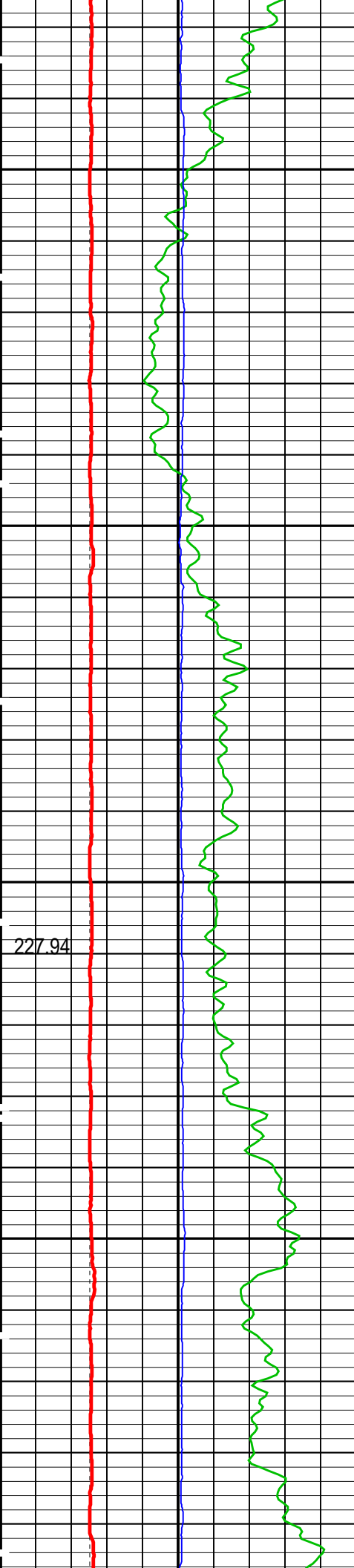
15400

15500



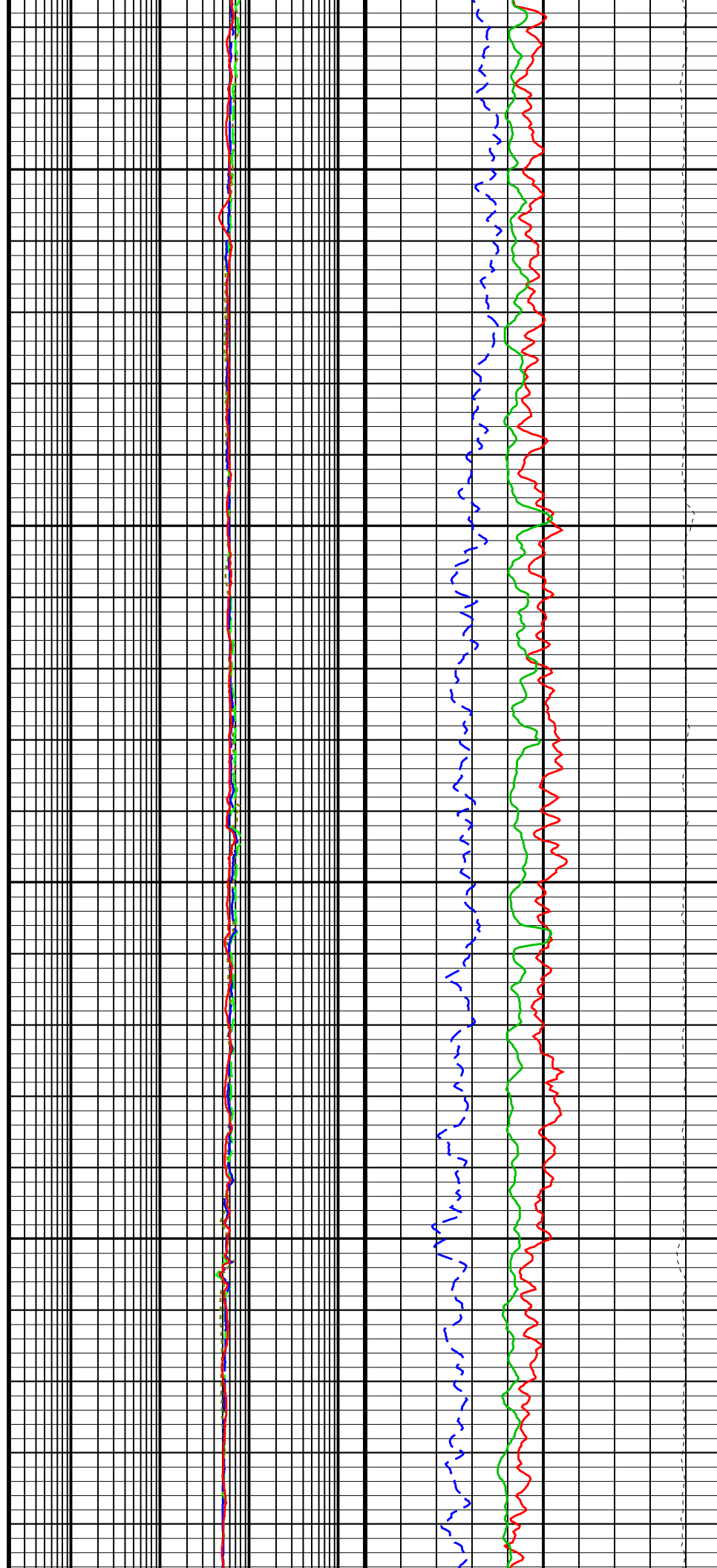


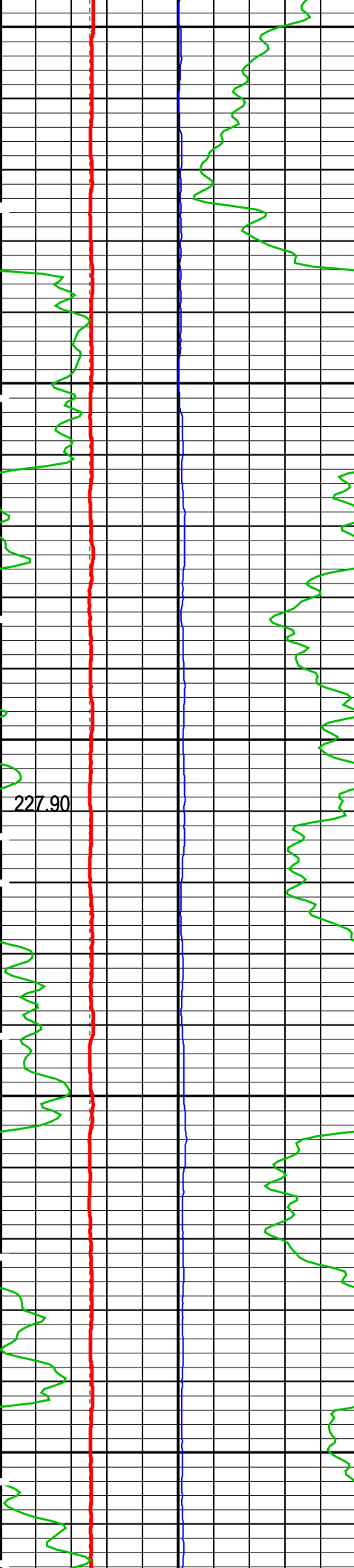




15800

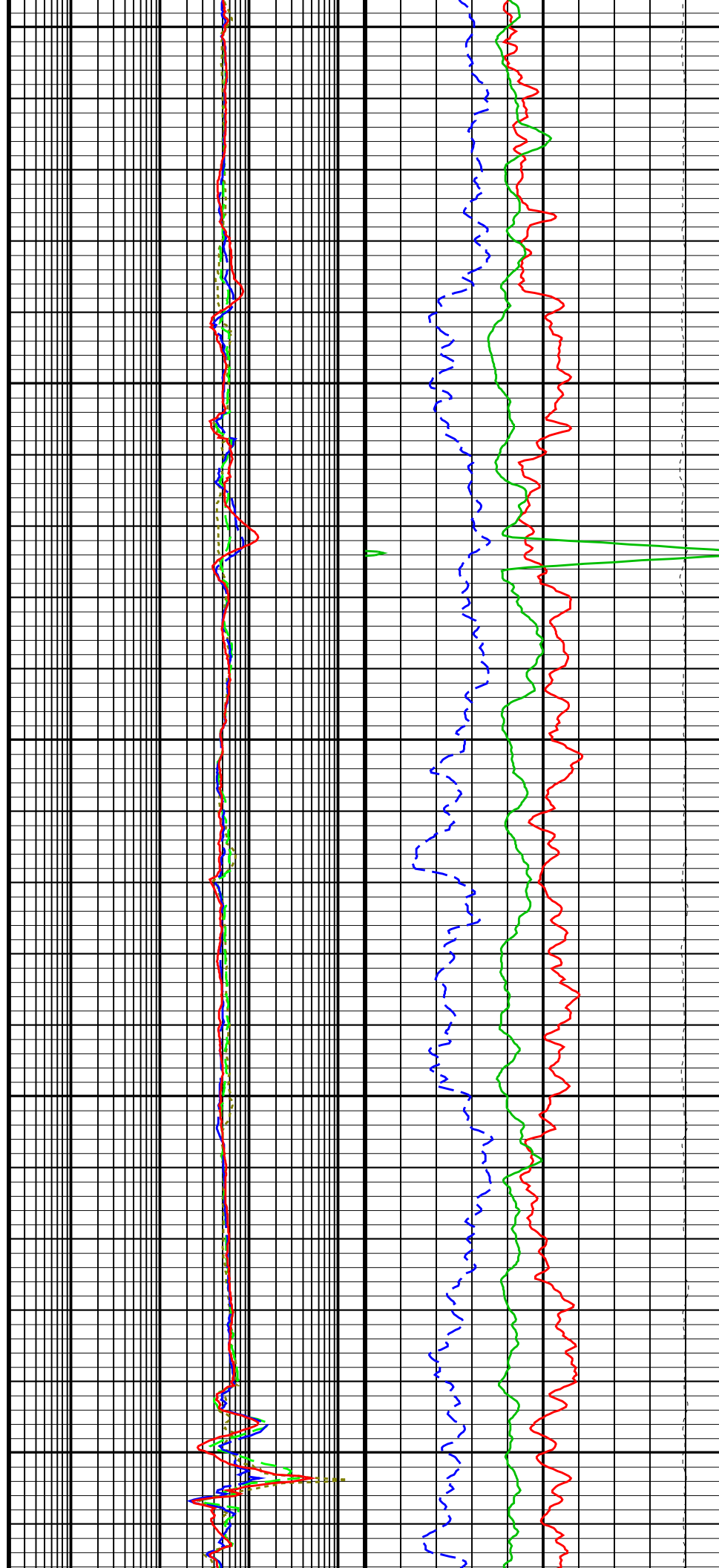
15900

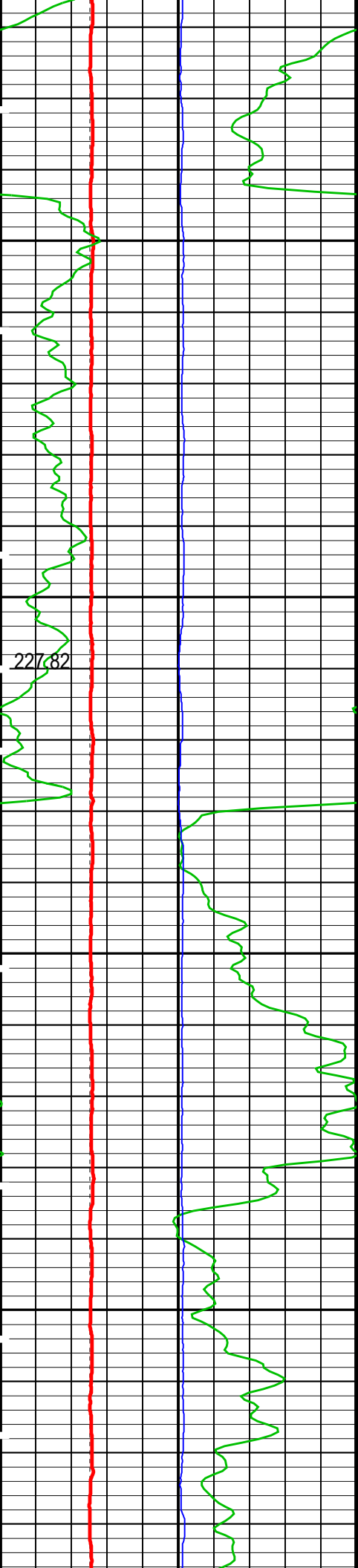




16000

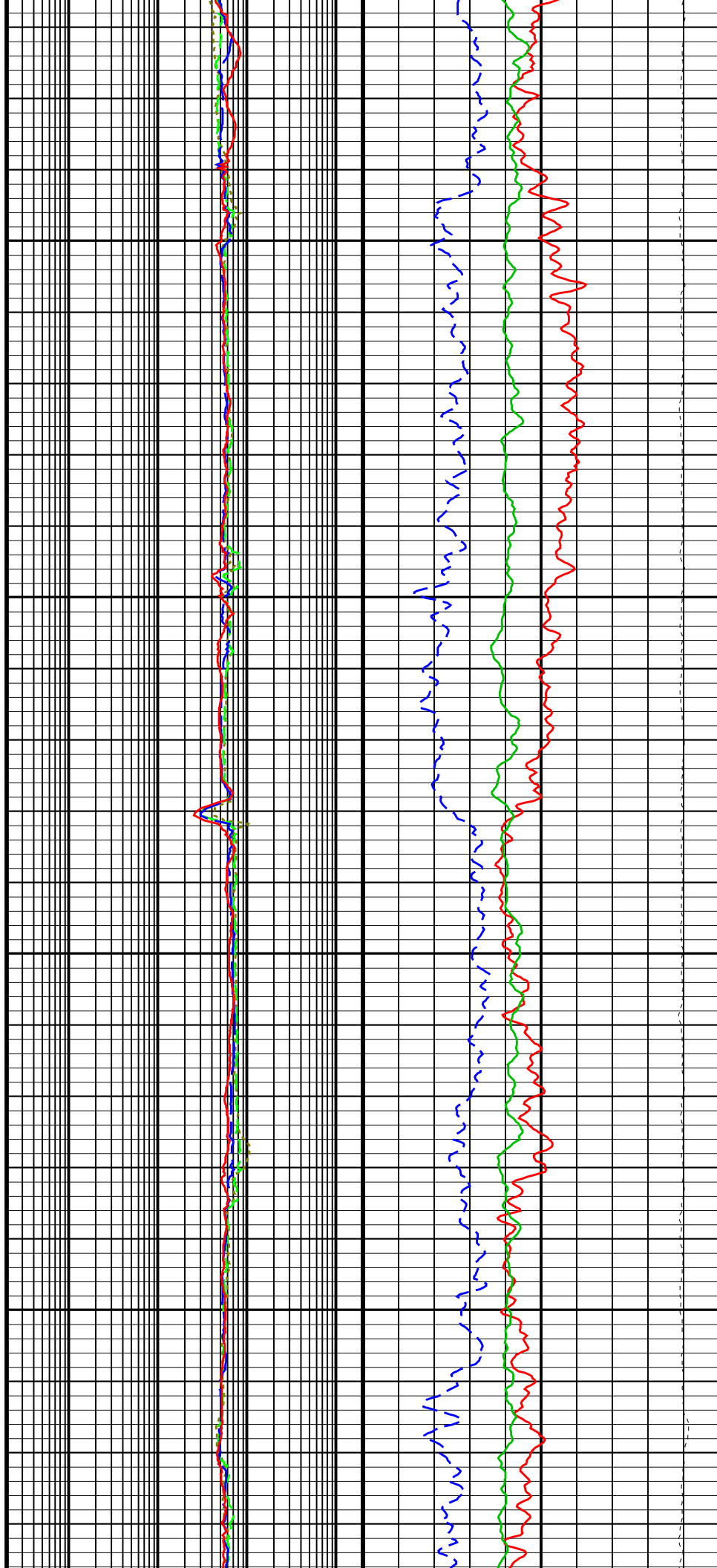
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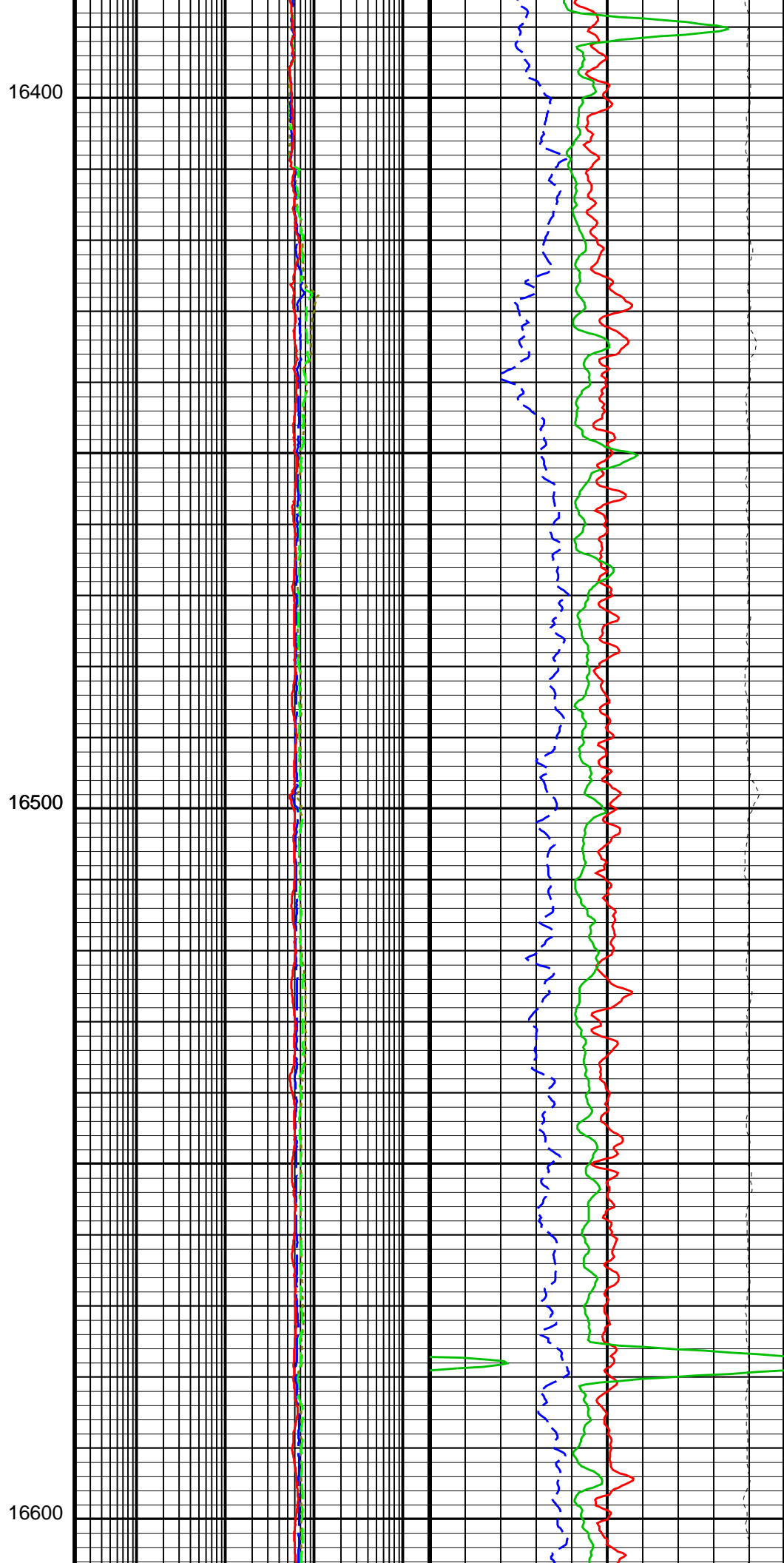
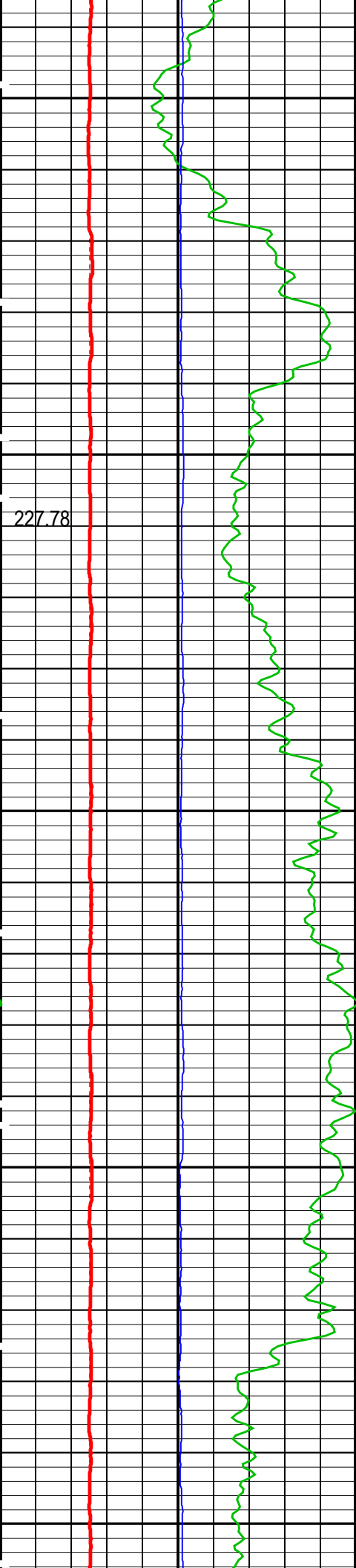


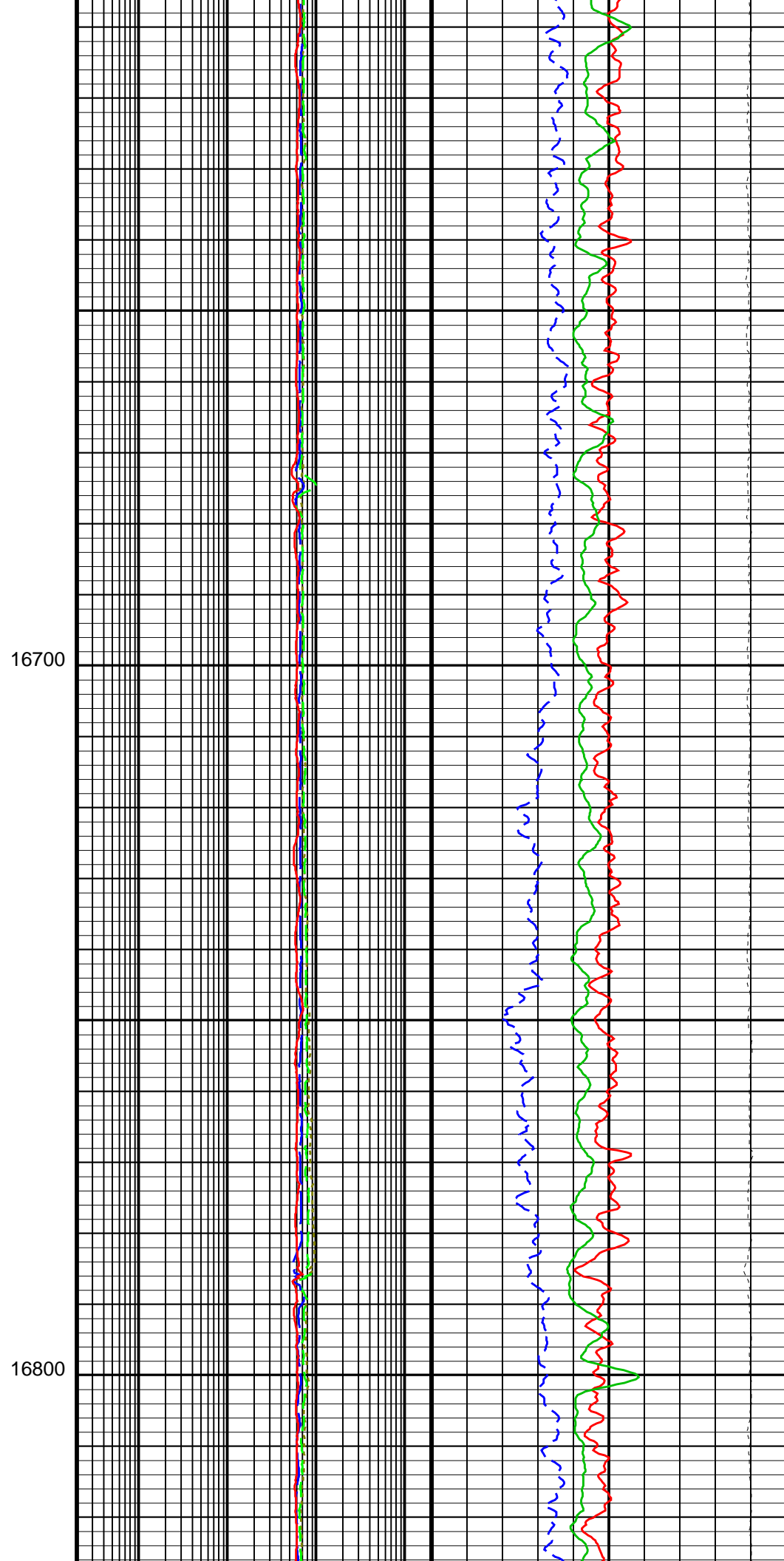
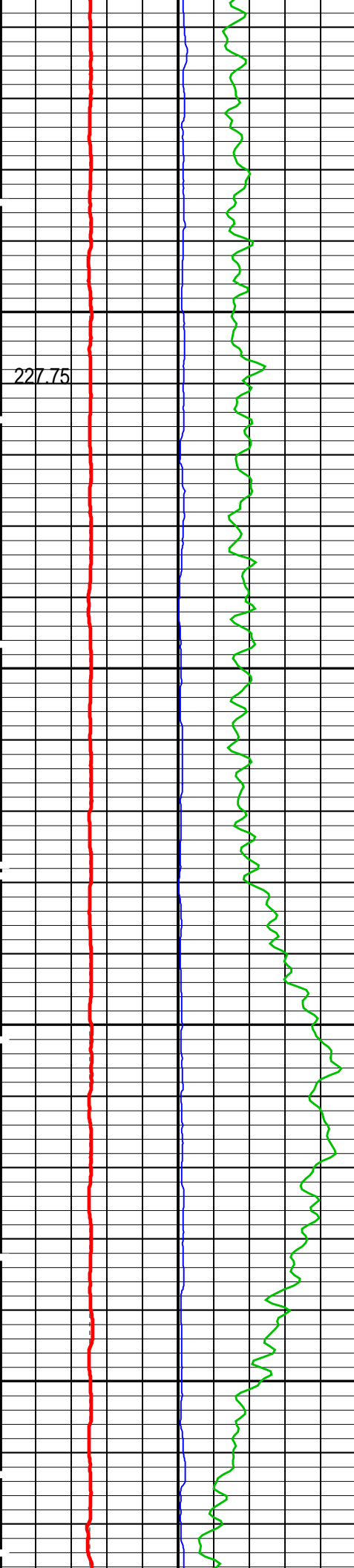


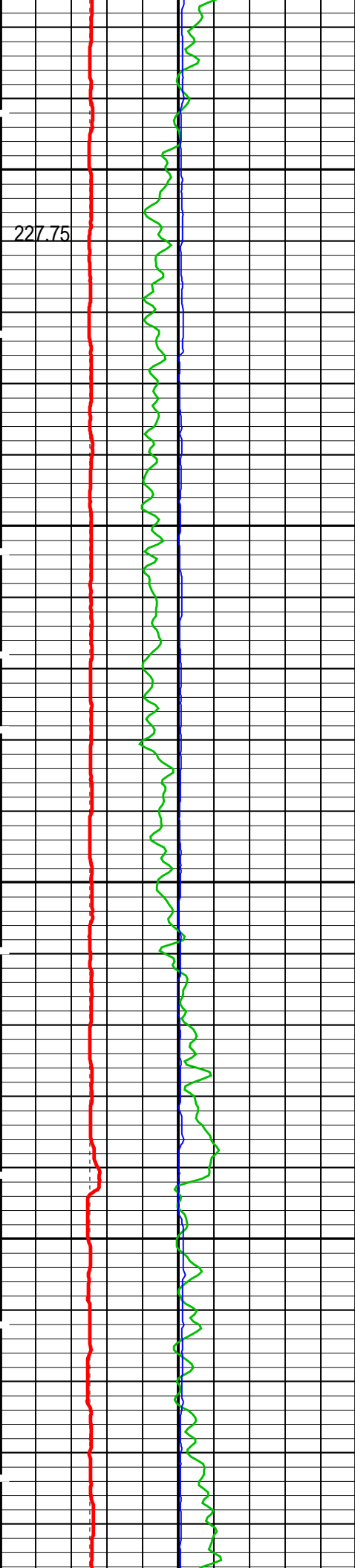
16200

16300



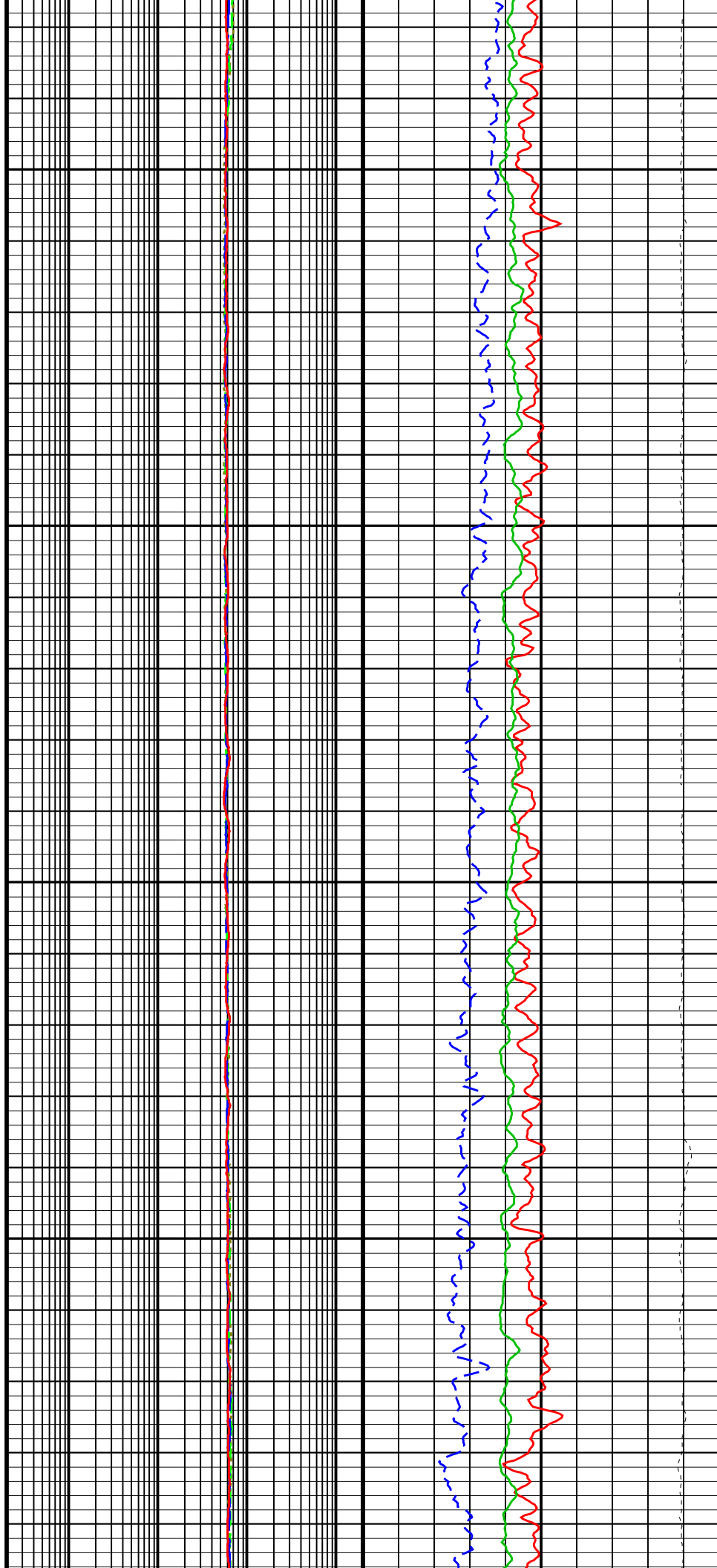


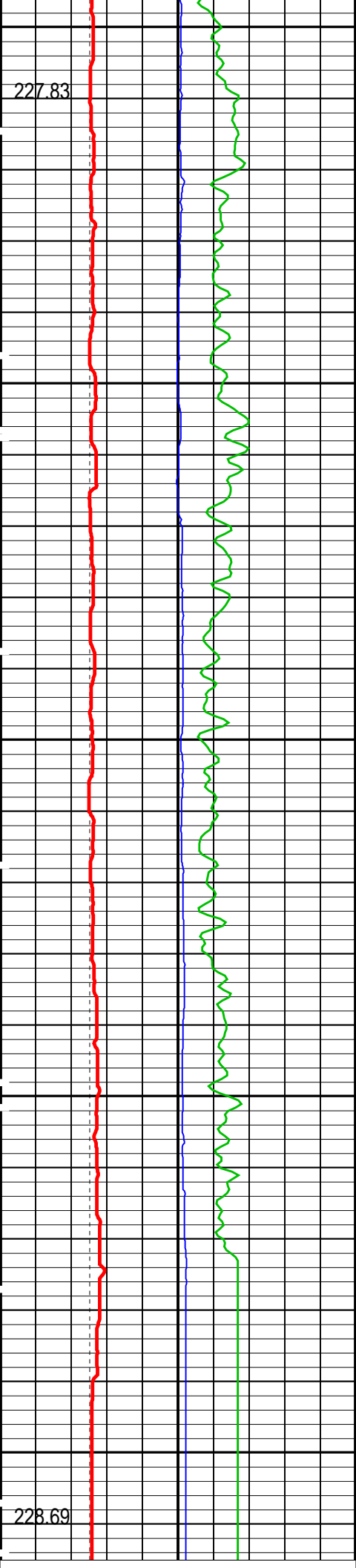




16900

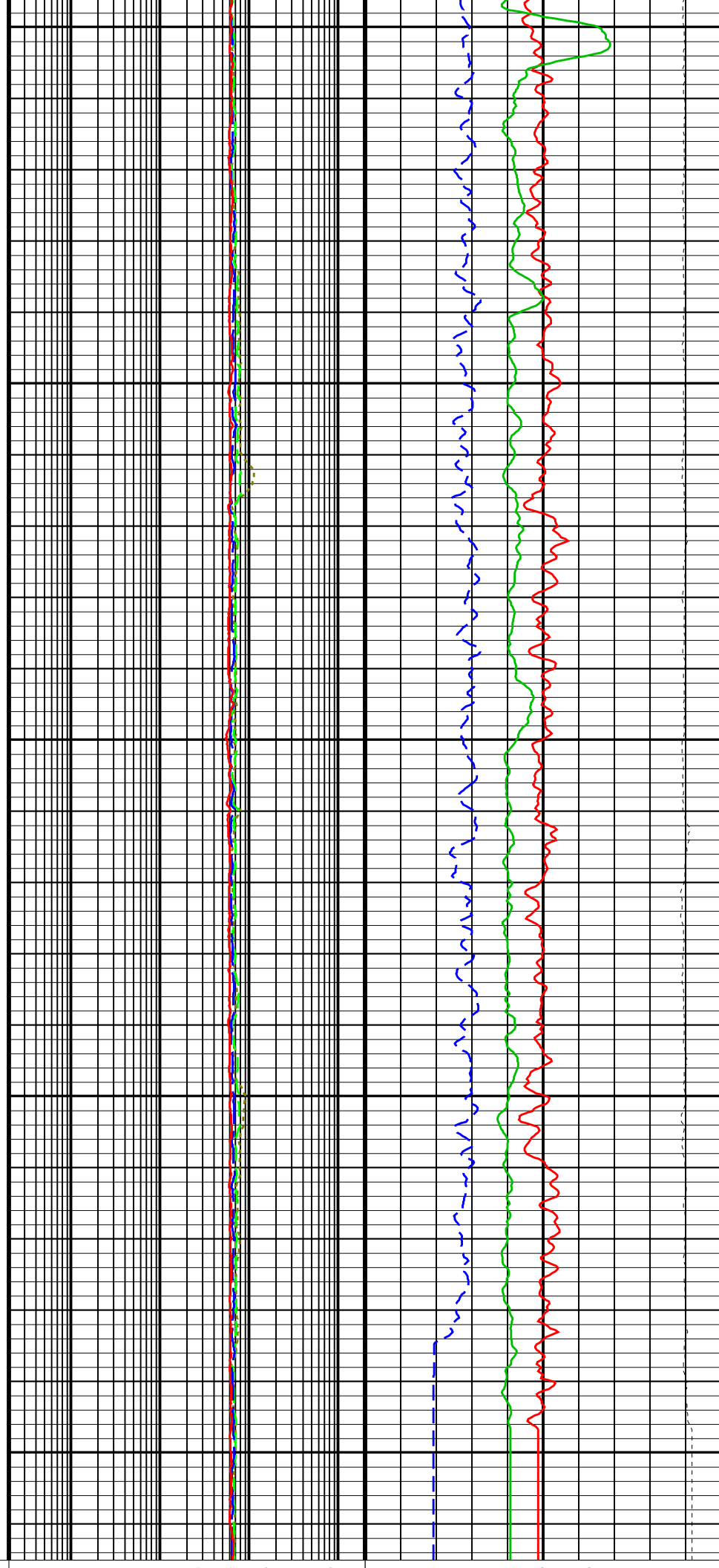
17000





17100

17200





GR Temp (WTEP) (DEGF)			TBI 20 Inch Investigation (TBIT20)			DPHI (DPHI)		
			0.2	(OHMM)	2000	0.3	(V/V)	-0.1
Bit Size (BS)			TBI 30 Inch Investigation (TBIT30)			DRHO (DRHO)		
6	(IN)	16	0.2	(OHMM)	2000	-1.8	(G/C3)	0.2
Relative Bearing (RB)			TBI 60 Inch Investigation (TBIT60)			PEF (PEF)		
0	(DEG)	360	0.2	(OHMM)	2000	0	(-----)	10
Gamma Ray (GR)			TBI 90 Inch Investigation (TBIT90)			TNPH (TNPH)		
0	(GAPI)	200	0.2	(OHMM)	2000	0.3	(V/V)	-0.1
Caliper (CALI)								
6	(IN)	16						

#### PIP SUMMARY

Time Mark Every 60 S

Parameters			
DLIS Name	Description	Value	
TBT-A: ThruBit String			
	Description of this pass		
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Enabled? (for TBN)	No	
CSAL	Cement Salinity	0	PPM
CSID	Casing Size I.D.	8.9	IN
DHC	Density Hole Correction	CALIPER	
FD	Fluid Density	1	G/C3
FSAL	Formation Salinity	0	PPM
FSCO	Formation Salinity Correction Enabled? (for TBN)	No	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
MDEN	Matrix Density	2.65	G/C3
MT	Mud Type (for TBN and TBI correction)	OBM	
MWCO	Mud Weight Correction Enabled? (for TBN)	No	
RB_OFFSET	TMG additional RB offset (degrees)	0	DEG
SOCO	Stand-Off Correction Enabled? (for TBN)	No	
SOFF	TBN Standoff	0	IN
TBD_CAL_BLOCK	TBD Calibration Block Type	Schlumberger	
TBD_SPIKE_REJECT	TBD Spike Detection Option	Correct	
TBD_SPIKE_THRESHOLD	TBD Attenuation Change Threshold for Spike Detection	5	%
TBI_ALGO	TBI Algorithm Selection	AIT	
TBI_BHC_MODE	Borehole Correction Mode (for TBI)	Solve_For_Standoff	
TBI_BHC_OP	Borehole Correction Option (for TBI)	Caliper	
TBI_CALTYP	TBI Mastercal Type	Schlumberger	
TBI_REPL_ARRAY_DEST	TBI: Replace This Array	None	
TBI_REPL_ARRAY_SOURCE	TBI: With This Array	None	
TBI_RMUD_SRC	RMUD Source for Borehole Correction (for TBI)	Data_Channel_RMUD	
TBI_TC_OP	Induction Temperature Correction Option	Lower	
TBN_ALGO	Porosity Algorithm	Schmid_McKeon	
TBN_BHC_OP	Borehole Correction Option (for TBN)	Caliper	
TBN_CAL_TANK	TBN Calibration Tank Type	Schlumberger	
TBN_FILTER	Filter Length	3_point	
TBN_PRES_OP	Pressure Correction Enabled? (for TBN)	No	
TBN_TEMP_OP	Temperature Correction Enabled? (for TBN)	No	
TBN_WPRE	Well Pressure (for TBN)	0	PSIG
WMUD	Mud Weight	9.4	LB/G
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
System and Miscellaneous			
BS	Bit Size	8.500	IN
BSAL	Borehole Salinity	24000.00	PPM
CSIZ	Current Casing Size	9.625	IN
DO	Depth Offset for Playback	0.0	FT
MST	Mud Sample Temperature	-50000.00	DEGF
PP	Playback Processing	NORMAL	
RMB	Resistivity of Mud - BHT	-50000.0000	OHMM
RMS	Resistivity of Mud Sample	-50000.0000	OHMM

Format: TB\_TCOM Vertical Scale: 5" per 100'

Graphics File Created: 02-Jul-2017 14:21

OP System Version: 19C2-270

TBT-A SRPC-5318-ThruBit-SP3.4

Input DLIS Files

Output DLIS Files

Calibration and Check Summary							
Measurement	Nominal	Master	Before	After	Change	Limit	Units
ThruBit String Master Calibration – TBI Master Calibration Sonde Errors							
Master: 20-Mar-2017 18:14							
Freq 2, A1, R	-249.000	-254.421	--	--	--	--	
Freq 2, A1, X	150.000	-76.5135	--	--	--	--	
Freq 2, A2, R	-98.0000	-93.9884	--	--	--	--	
Freq 2, A2, X	160.000	-36.3633	--	--	--	--	
Freq 2, A3, R	-23.0000	-20.0154	--	--	--	--	
Freq 2, A3, X	-20.0000	-106.806	--	--	--	--	
Freq 2, A4, R	-19.0000	-23.8106	--	--	--	--	
Freq 2, A4, X	100.000	29.2106	--	--	--	--	
Freq 2, A5, R	-20.0000	-23.5114	--	--	--	--	
Freq 2, A5, X	-25.0000	-36.7101	--	--	--	--	
ThruBit String Master Calibration – TBI Master Calibration COMPLEX GAINS							
Master: 20-Mar-2017 18:14							
Freq 2, R – 0	1.000	0.9976	--	--	--	--	
Freq 2, R – 1	1.000	1.001	--	--	--	--	
Freq 2, R – 2	1.000	1.006	--	--	--	--	
Freq 2, R – 3	1.000	1.007	--	--	--	--	
Freq 2, R – 4	1.000	1.017	--	--	--	--	
Freq 2, X – 0	0	0.03788	--	--	--	--	
Freq 2, X – 1	0	0.01388	--	--	--	--	
Freq 2, X – 2	0	0.01509	--	--	--	--	
Freq 2, X – 3	0	0.01001	--	--	--	--	
Freq 2, X – 4	0	0.007482	--	--	--	--	
ThruBit String Master Calibration – TBD Caliper Master Calibration							
Master: 20-Jun-2017 8:59							
Caliper 12in Ring	1949.8	1881.7	--	--	--	--	IN
Caliper 9in Ring	2096.7	2036.0	--	--	--	--	IN
Caliper 6in Ring	2285.7	2193.9	--	--	--	--	IN
ThruBit String Master Calibration – TBD Density Master Calibration							
Master: 20-Jun-2017 8:59							
Aluminium Density	2.607	2.607	--	--	--	--	G/C3
Magnesium Density	1.752	1.752	--	--	--	--	G/C3
LS1 Background	143.00	127.71	--	--	--	--	CPS
SS1 Background	143.00	122.65	--	--	--	--	CPS
LS4 Background	30.00	25.78	--	--	--	--	CPS
SS1 Aluminium	7900.00	7405.00	--	--	--	--	CPS
LS1 Aluminium	1220.0	1116.0	--	--	--	--	CPS
SS1 Magnesium	13160.0	12192.7	--	--	--	--	CPS
LS4 Aluminium	830.00	775.64	--	--	--	--	CPS
SS Slope	1.645	1.672	--	--	--	--	
LS1 Block + Sleeve	50000	4716.7	--	--	--	--	CPS
LS Slope	0.4150	0.4204	--	--	--	--	
LS4 Block + Sleeve	50000	1852.4	--	--	--	--	CPS
Pef K Factor	4.840	11.74	--	--	--	--	
LS1 Magnesium	8260.00	7568.93	--	--	--	--	CPS
Pef B Factor	-0.5550	-0.3377	--	--	--	--	
ThruBit String Master Calibration – TBD Density Master Calibration. Ti Window, Schlumberger blocks							
Master: 20-Jun-2017 8:59							
SS1 Background	143.00	122.65	--	--	--	--	CPS
SS2 Background	38.0000	32.5997	--	--	--	--	CPS
SS3 Background	23.0000	19.5394	--	--	--	--	CPS
SS4 Background	31.0000	27.1074	--	--	--	--	CPS
LS1 Background	143.00	127.71	--	--	--	--	CPS
LS2 Background	37.0000	32.8275	--	--	--	--	CPS
LS3 Background	22.0000	19.4501	--	--	--	--	CPS
LS4 Background	30.00	25.78	--	--	--	--	CPS
SS1 Aluminium	7900.00	7405.00	--	--	--	--	CPS
SS2 Aluminium	4050.00	3586.41	--	--	--	--	CPS
SS3 Aluminium	3420.00	2976.87	--	--	--	--	CPS
SS4 Aluminium	3360.0000	2968.1230	--	--	--	--	CPS

LS1 Aluminium	1220.0	1116.0	--	--	--	--	CPS
LS2 Aluminium	1140.00	1059.95	--	--	--	--	CPS
LS3 Aluminium	1080.00	1008.01	--	--	--	--	CPS
LS4 Aluminium	830.00	775.64	--	--	--	--	CPS
Magnesium RHOS	1.6700	1.6617	--	--	--	--	
Magnesium RHOLS	1.6880	1.6845	--	--	--	--	
Magnesium RHOB	1.7040	1.7037	--	--	--	--	
Magnesium PEF	2.5210	2.4693	--	--	--	--	
Magnesium + Sleeve RHOS	2.1520	2.1910	--	--	--	--	
Magnesium + Sleeve RHOLS	1.8550	1.8666	--	--	--	--	
Magnesium + Sleeve RHOB	1.6060	1.5867	--	--	--	--	
Magnesium + Sleeve PEF	6.8000	7.2675	--	--	--	--	

#### ThruBit String Master Calibration – Thermal Neutron Master Calibration

Master: 20-Jun-2017 10:17

TNF, Background	1.0	0.16	--	--	--	--	CPS
TNN, Background	1.0	0	--	--	--	--	CPS
TNF, Tank	27990	10720	--	--	--	--	CPS
TNN, Tank	69600	30980	--	--	--	--	CPS
TNF, Tank + Al Sleeve	1750.0	627.32	--	--	--	--	CPS
TNN, Tank + Al Sleeve	18350.0	7102.70	--	--	--	--	CPS
Tank + Al Sleeve Ratio	11.128	11.322	--	--	--	--	
Tank + Al Sleeve Porosity	15.19	15.19	--	--	--	--	PU
Tank, Ratio	2.6300	2.8891	--	--	--	--	
Tank, Temperature	70.0	92.0	--	--	--	--	DEGF

#### ThruBit String Master Calibration – TMG Accelerometer Calibration

Master: 5-Jun-2017 5:17

Minimum Ax, m/s2	-9.810	-9.807	--	--	--	--	
Maximum Ax, m/s2	9.810	10.20	--	--	--	--	
Minimum Ay, m/s2	-9.810	-10.00	--	--	--	--	
Maximum Ay, m/s2	9.810	9.905	--	--	--	--	
Minimum Az, m/s2	0	0.1209	--	--	--	--	
Maximum Az, m/s2	9.810	10.10	--	--	--	--	
RB Offset, degrees	0	-10.68	--	--	--	--	

#### ThruBit String Master Calibration – TMG Gamma-Ray Calibration

Master: 5-Jun-2017 5:14




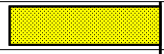


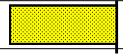

GR Background	30.00	20.55	--	--	--	--	GAPI
GR Jig-Background	160.0	141.5	--	--	--	--	GAPI

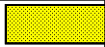

#### ThruBit String / Equipment Identification


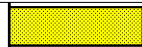








##### Primary Equipment:




Induction Resistivity	TBI – A
Density	TBD – A
Gamma-Ray Logging Source	GGLS – FZ
Thermal Neutron	TBN – A
Neutron Logging Source	NNLS – EWA
Telemetry Memory GR	TMG – A
Telemetry	WCIB –
Battery 1	TBAT –



















##### Auxiliary Equipment:

ThruBit String Master Calibration					
TBI Master Calibration Sonde Errors					
Freq 2, A1, R	Value	Nominal	Freq 2, A1, X	Value	Nominal
	-254.421	-249.000		-76.5135	150.000
-336.000 (Minimum)	-186.000 (Maximum)		-375.000 (Minimum)	675.000 (Maximum)	
Freq 2, A2, R	Value	Nominal	Freq 2, A2, X	Value	Nominal
	-93.9884	-98.0000		-36.3633	160.000
-138.000 (Minimum)	-76.0000 (Maximum)		-100.000 (Minimum)	425.000 (Maximum)	
Freq 2, A3, R	Value	Nominal	Freq 2, A3, X	Value	Nominal
	-20.0154	-23.0000		-106.806	-20.0000
-31.0000 (Minimum)	-13.0000 (Maximum)		-325.000 (Minimum)	250.000 (Maximum)	
Freq 2, A4, R	Value	Nominal	Freq 2, A4, X	Value	Nominal
	-23.8106	-19.0000		29.2106	100.000
-38.0000 (Minimum)	-7.0000 (Maximum)		-75.0000 (Minimum)	275.000 (Maximum)	

-28.0000 (Minimum)		(Nominal)	-7.00000 (Maximum)		-73.0000 (Minimum)		(Nominal)	273.000 (Maximum)	
Freq 2, A5, R			Value	Nominal	Freq 2, A5, X			Value	Nominal
			-23.5114	-20.0000				-36.7101	-25.0000
-27.0000 (Minimum)		-10.0000 (Maximum)		-125.000 (Minimum)		(Nominal)	100.000 (Maximum)		
Master: 20-Mar-2017 18:14									

ThruBit String Master Calibration					
TBI Master Calibration COMPLEX GAINS					
Freq 2, R	Value	Nominal	Freq 2, X	Value	Nominal
	0.9976	1.000		0.03788	0
	1.001	1.000		0.01388	0
	1.006	1.000		0.01509	0
	1.007	1.000		0.01001	0
	1.017	1.000		0.007482	0
0.9500 (Minimum)		1.050 (Maximum)	-0.05000 (Minimum)		0.05000 (Maximum)
Master: 20-Mar-2017 18:14					

ThruBit String Master Calibration								
TBD Caliper Master Calibration								
Caliper 12in Ring IN	Value	Nominal	Caliper 9in Ring IN	Value	Nominal	Caliper 6in Ring IN	Value	Nominal
	1881.7	1949.8		2036.0	2096.7		2193.9	2285.7
1799.8 (Minimum)		2099.8 (Maximum)	1946.7 (Minimum)		2246.7 (Maximum)	2135.7 (Minimum)		2435.7 (Maximum)
Master: 20-Jun-2017 8:59								

ThruBit String Master Calibration					
TBD Density Master Calibration. Ti Window, Schlumberger blocks					
LS1 Background CPS	Value	Nominal	SS1 Background CPS	Value	Nominal
	127.71	143.00		122.65	143.00
100.00 (Minimum)		186.00 (Maximum)	100.00 (Minimum)		186.00 (Maximum)
LS2 Background CPS	Value	Nominal	SS2 Background CPS	Value	Nominal
	32.8275	37.0000		32.5997	38.0000
26.0000 (Minimum)		48.0000 (Maximum)	27.0000 (Minimum)		50.0000 (Maximum)
LS3 Background CPS	Value	Nominal	SS3 Background CPS	Value	Nominal
	19.4501	22.0000		19.5394	23.0000
15.0000 (Minimum)		29.0000 (Maximum)	16.0000 (Minimum)		30.0000 (Maximum)
LS4 Background CPS	Value	Nominal	SS4 Background CPS	Value	Nominal
	25.78	30.00		27.1074	31.0000
20.00 (Minimum)		40.00 (Maximum)	22.0000 (Minimum)		40.0000 (Maximum)
LS1 Aluminium CPS	Value	Nominal	SS1 Aluminium CPS	Value	Nominal
	1116.0	1220.0		7405.00	7900.00
850.00 (Minimum)		1590.0 (Maximum)	5530.00 (Minimum)		10270.0 (Maximum)
LS2 Aluminium CPS	Value	Nominal	SS2 Aluminium CPS	Value	Nominal
	1059.95	1140.00		3586.41	4050.00
800.000 (Minimum)		1480.00 (Maximum)	2840.00 (Minimum)		5270.00 (Maximum)
LS3 Aluminium CPS	Value	Nominal	SS3 Aluminium CPS	Value	Nominal
	1008.01	1080.00		2976.87	3420.00
760.000 (Minimum)		1400.00 (Maximum)	2400.00 (Minimum)		4450.00 (Maximum)
LS4 Aluminium CPS	Value	Nominal	SS4 Aluminium CPS	Value	Nominal
	775.64	830.00		2968.1230	3360.0000
580.00 (Minimum)		1080.0 (Maximum)	2350.0000 (Minimum)		3700.0000 (Maximum)
Magnesium RHOLS	Value	Nominal	Magnesium RHOSS	Value	Nominal
	1.2215	1.2200		1.2215	1.2200



0		120.0		128.0		192.0	
(Minimum)	(Nominal)	(Maximum)		(Minimum)	(Nominal)	(Maximum)	
Master: 5-Jun-2017 5:14							

Company:

Well:

Field:

County:

State:

Noble Energy Inc

Rattlesnake Federal LC10-785

Wildcat

Weld

Colorado

Schlumberger

THRU BIT LEVEL 4 TCOM

TRIPLE COMBO

INDUCTION-CNL-DENSITY-GR-CALIPER