



ARRAY INDUCTION
DENSITY/NEUTRON
GAMMA RAY
RUSH LOG

Company	CHESAPEAKE OPERATING, INC.		
Well	YORK 31-31-17 1H		
Field	MCKINNEY PROJECT/MISS LIME		
County	COMANCHE		
State	KANSAS		
Company	CHESAPEAKE OPERATING, INC.	Location:	API #: 15-033-21591
Well	YORK 31-31-17 1H	SURF LOC: SW SW 200' FSL & 760' FWL SEC 31 TWP 31S RGE 17W	
Field	MCKINNEY PROJECT/MISS LIME		
County	COMANCHE		
State	KANSAS	Permanent Datum	G.L. Elevation 2128'
		Log Measured From	D.F. 16' ABOVE PERM DATUM
		Drilling Measured From	D.F. G.L. 2128'
Date	16 SEPTEMBER 2011		
Run Number	ONE		
Depth Driller	8963'		
Depth Logger			
Bottom Logged Interval			
Top Log Interval			
Casing Driller	7" @ 5730'		
Casing Logger	7" @		
Bit Size	6.125"		
Type Fluid in Hole	FRESH WATER		
Density / Viscosity	8.6 / 33		
pH / Fluid Loss	9.8 / 14		
Source of Sample	MUD PIT		
Rm @ Meas. Temp	1.0 OHMS@70 DEGF		
Rmf @ Meas. Temp	0.75 HMS@70 DEGF		
Rmc @ Meas. Temp	1.25 OHMS@70 DEGF		
Source of Rmf / Rmc	CALCULATED		
Rm @ BHT	0.59 OHMS@123 DEGF		
Time Circulation Stopped	10:45 16SEPT2011		
Time Logger on Bottom	12:00 16SEPT2011		
Maximum Recorded Temperature	123 DEGF		
Equipment Number	T004		
Location	OKC. OK		
Recorded By	D. THOMAS		
Witnessed By	MR. BILL CANON		

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

SERVICE: LEVEL 4 - HORIZONTAL MEMORY PUMPDOWN - BIT DEPTH: 8782' LOG TO:
ALL SCALES AND PRESENTATIONS PER CLIENT REQUEST
LIMESTONE MATRIX, 2.71 G/CC, USED FOR POROSITY MEASUREMENTS
TOOL STRING RAN WITH EVANS SWIVEL, S. DECENTRALIZER, AND NO STANDOFFS
TBHV REPRESENTS TOTAL BOREHOLE VOLUME, FT3
ABHV REPRESENTS ANNULAR BOREHOLE VOLUME, FT3, CALCULATED FOR 4.50" CSG
RIG MINDER LITE USED WITH RIGSENSE TO CREATE LOG DEPTH
LOG DEPTH CORRELATED TO MWD GAMMA RAY PER CUSTOMER REQUEST

RIG: NOMAC #115
CREW: D. THOMAS/K. REED/T. DENNIS

Service Ticket No. 744

API No. 15-033-21591

PGM Ver WARRIOR 7.0

The Well Name, Location, Borehole Description, and / or Cementing Data Furnished by Client

EQUIPMENT DATA

GAMMA RAY

NEUTRON

DENSITY

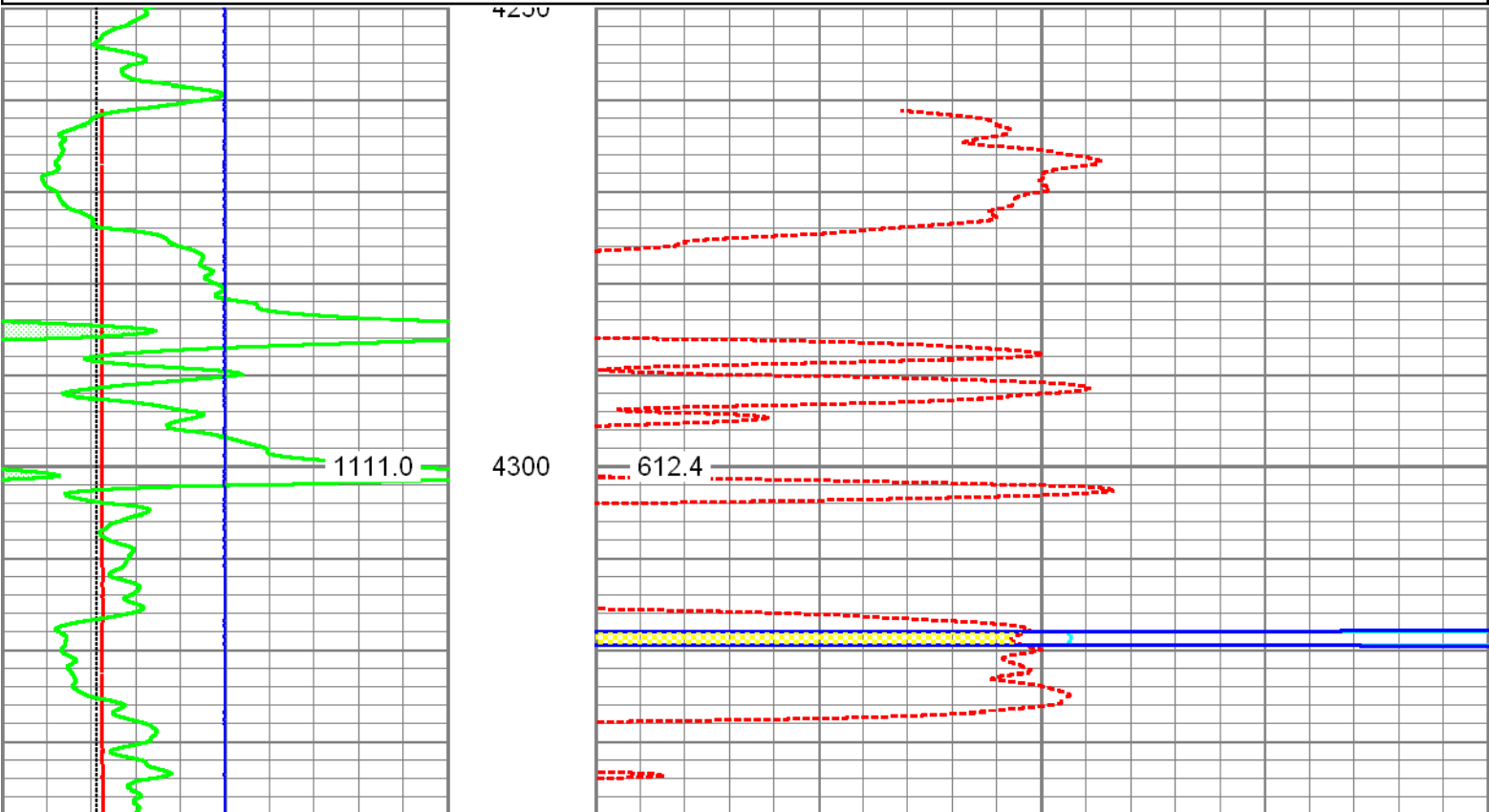
INDUCTION

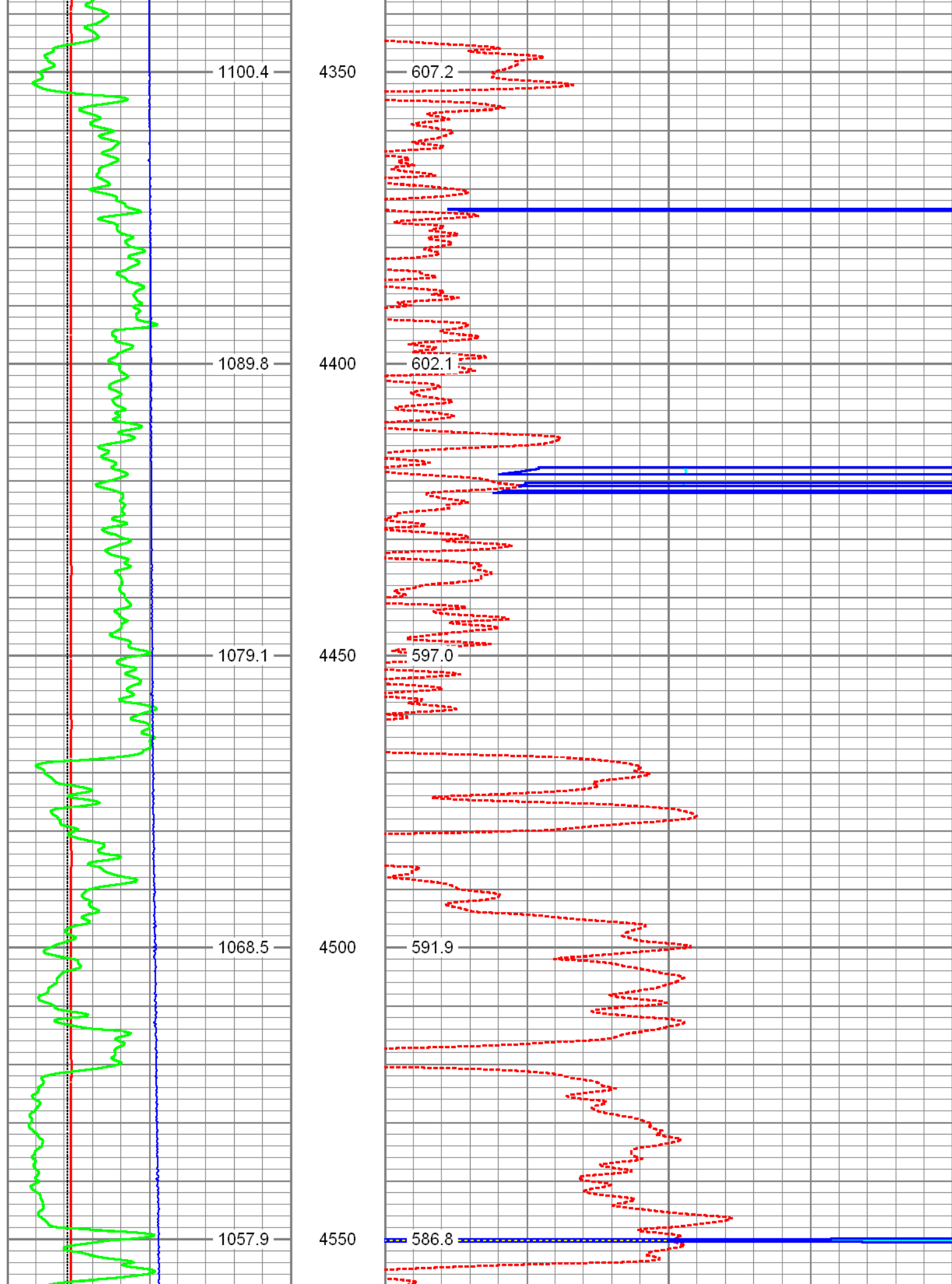
Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	ONE
Serial No.	PS27T	Serial No.	PS23N	Serial No.	PS43D	Serial No.	PS28R
Model No.	PS	Model No.	PS	Model No.	PS	Model No.	PS
Diameter	2.125"	Diameter	2.125"	Diameter	2.125"	Diameter	2.125"

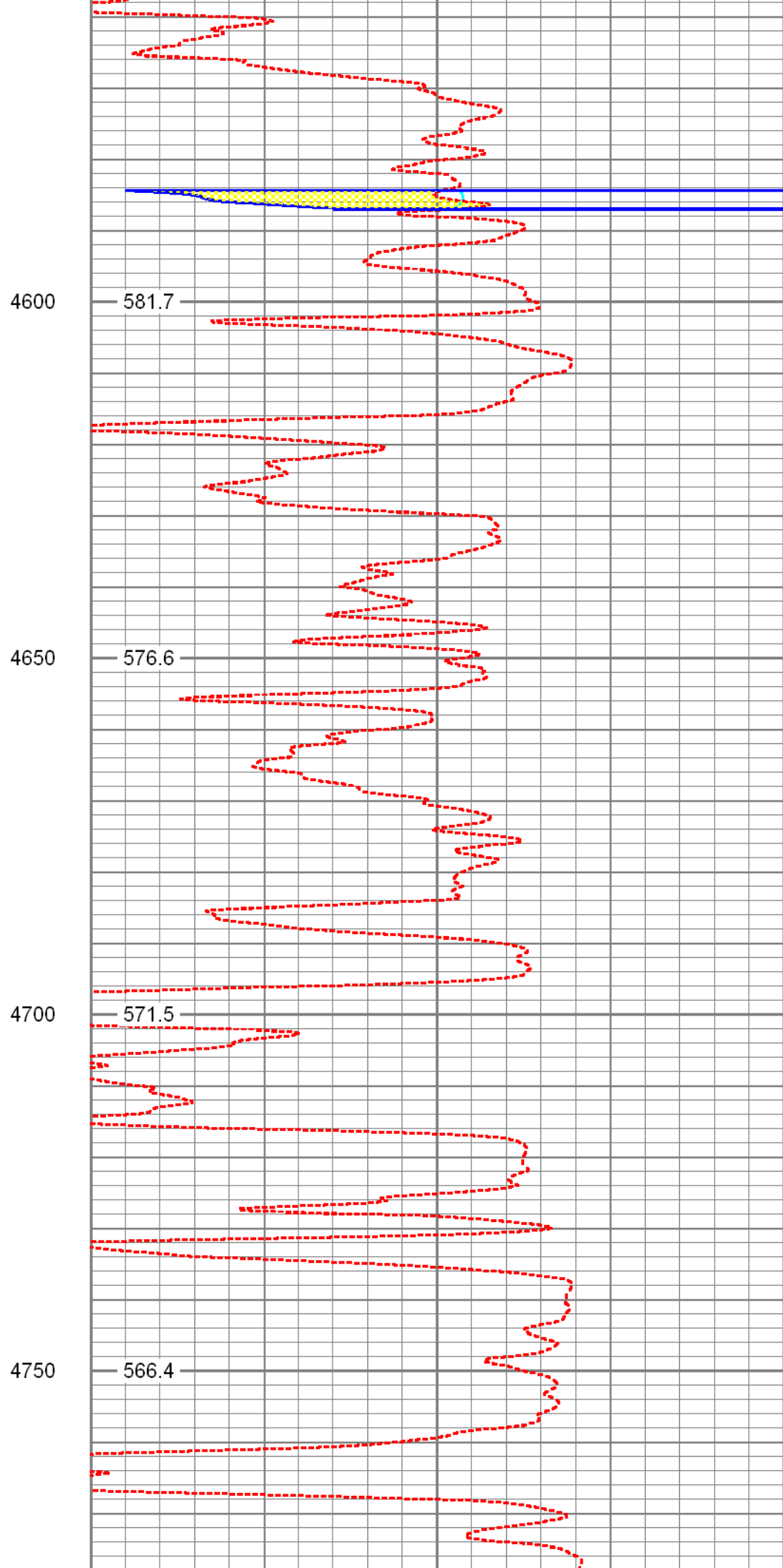
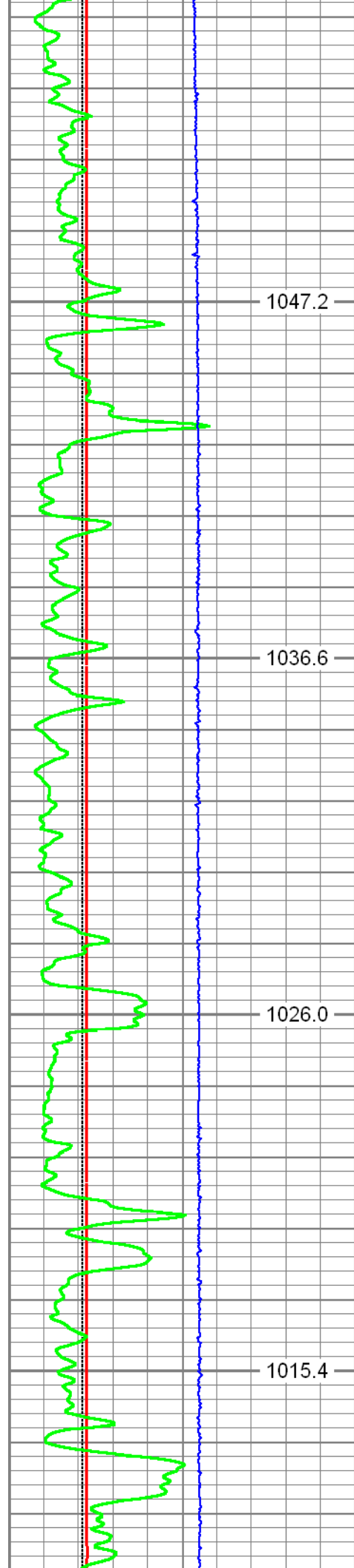
LOGGING DATA								
General Data								
Pass	Depths		Well Head	Speed	Logging Run Comments			
No.	From	To	Pressure	Ft/Min				
ONE				30				
	GAMMA RAY		NEUTRON		DENSITY		INDUCTION	
Pass	Scale		Scale		Scale		Scale	
No.	L	R	L	R	L	R	L	L
ONE	0 API	150 API	30 %	-10 %	30 %	-10 %	0.2 OHM-M	2000 OHM-M
DIRECTIONAL INFORMATION								
Maximum Deviation		94.3	deg. @	6381'	KOP	4335'		

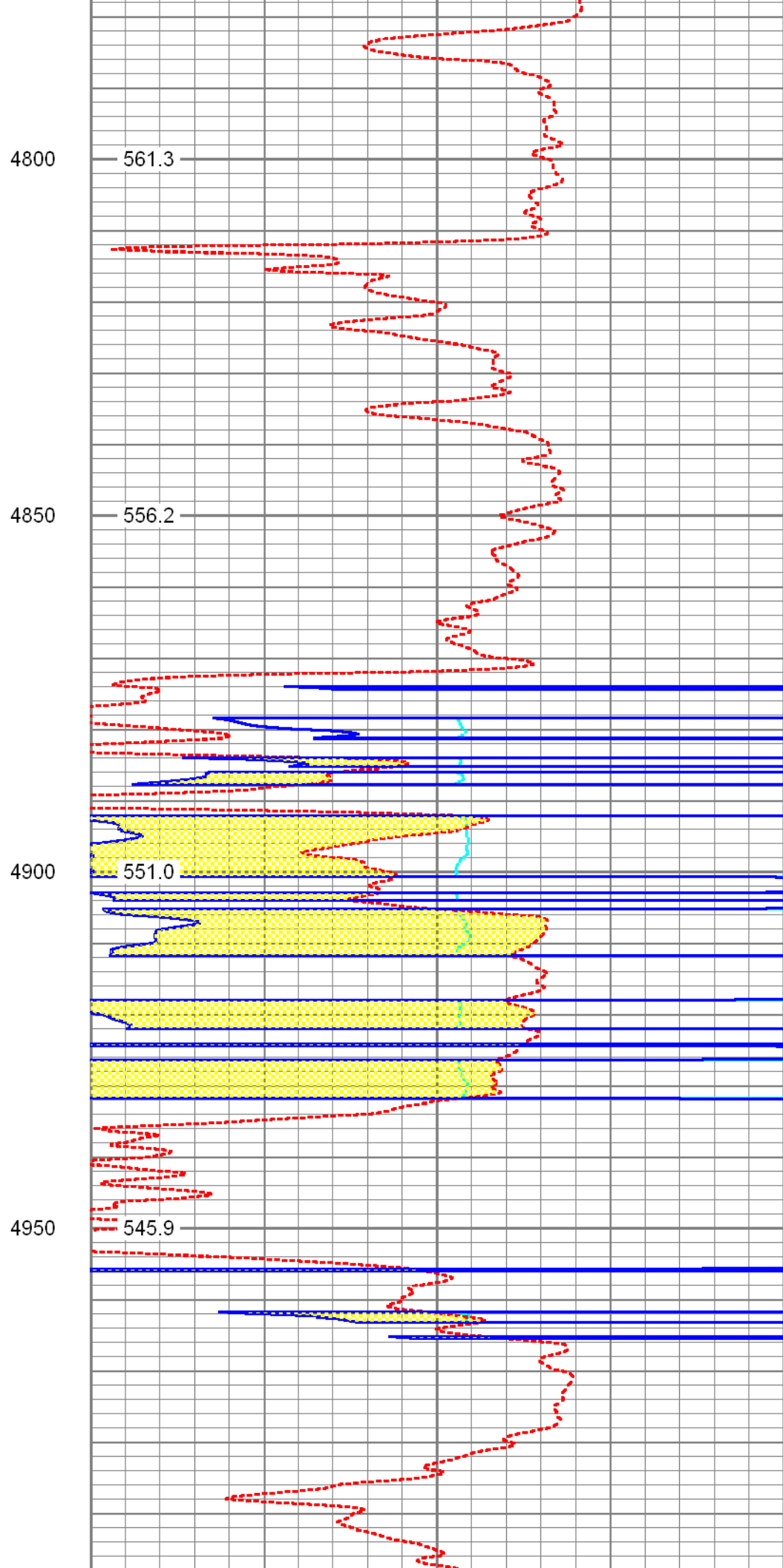
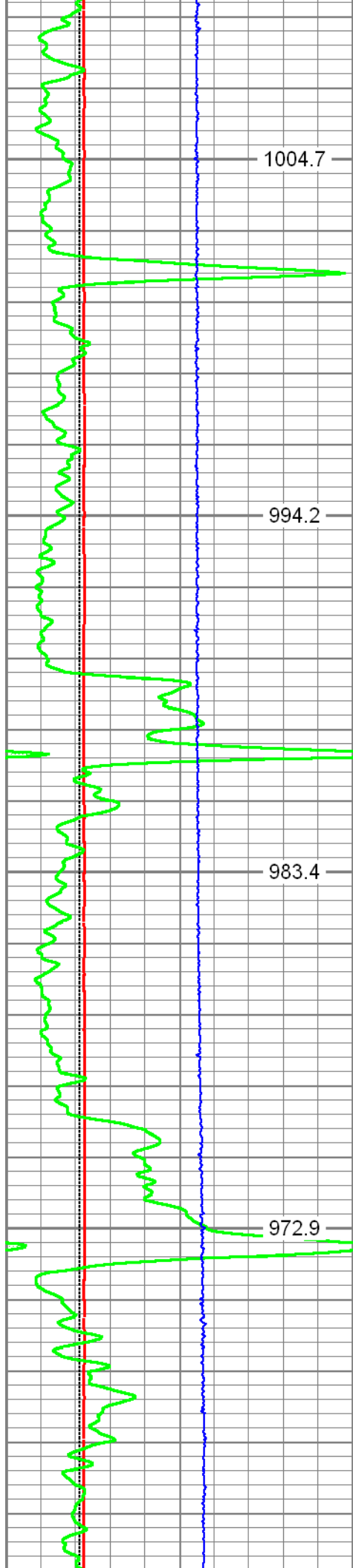
Database File:	york_mem.db
Dataset Pathname:	proc3/pass1.2
Presentation Format:	6_5n_chk
Dataset Creation:	Fri Sep 16 18:48:52 2011
Charted by:	Depth in Feet scaled 1:240

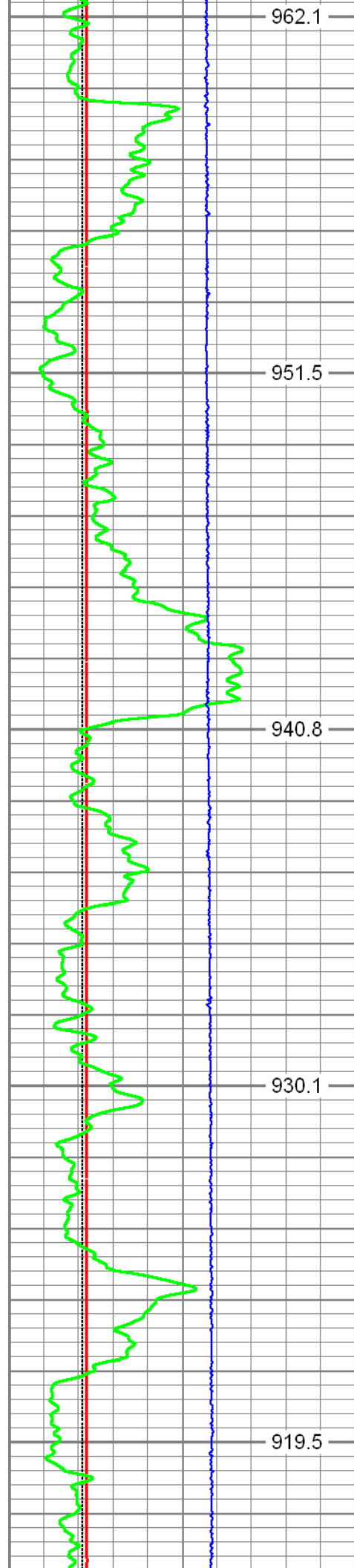
4	DCAL (in)	14	30	CNPOR (pu)		-10
4	BOREID (in)	14	30	DPHI (pu)		-10
0	GR (GAPI)	150	0	PEF (barn)	10	-0.5
-5	ACCY	5	ABHV (ft3)	DRHO (g/cc)		0.5
	TBHV (ft3)					











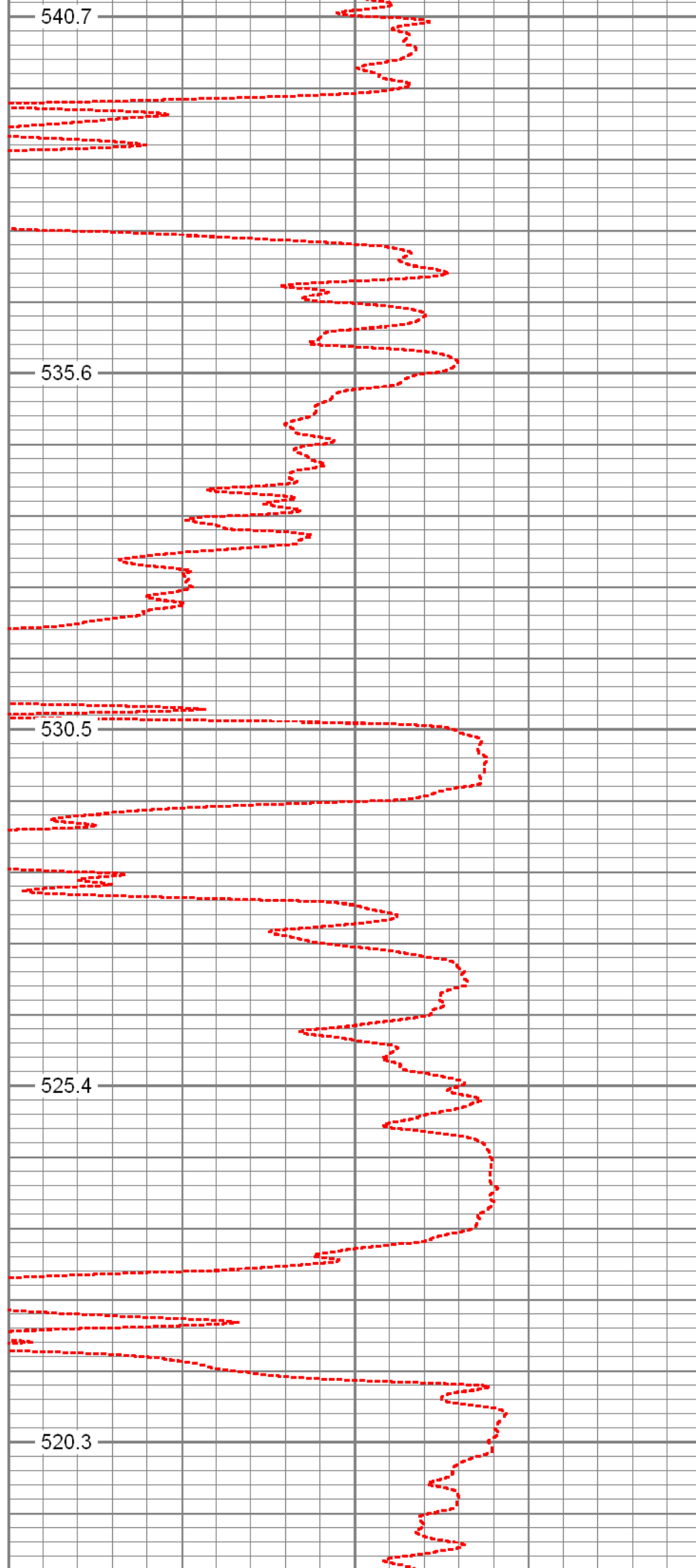
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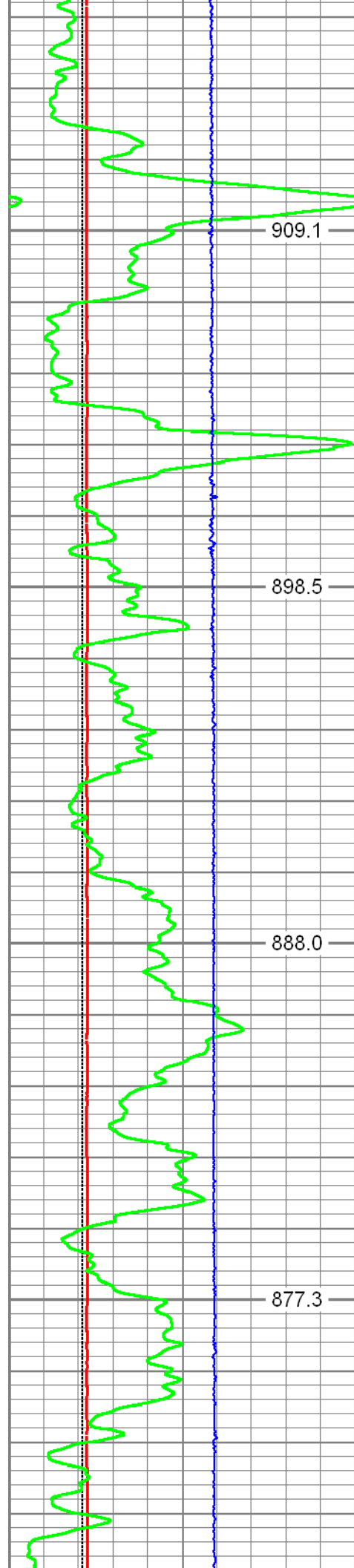
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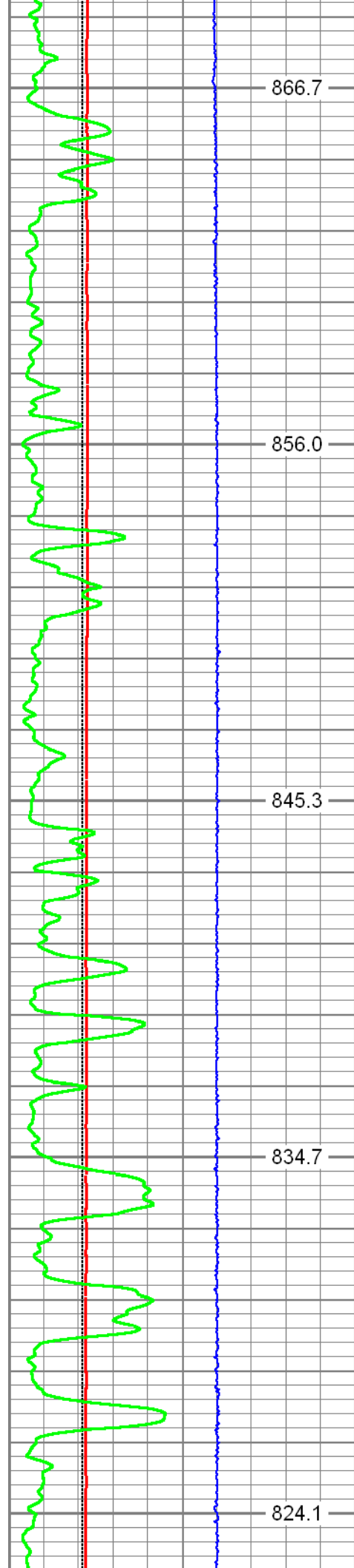
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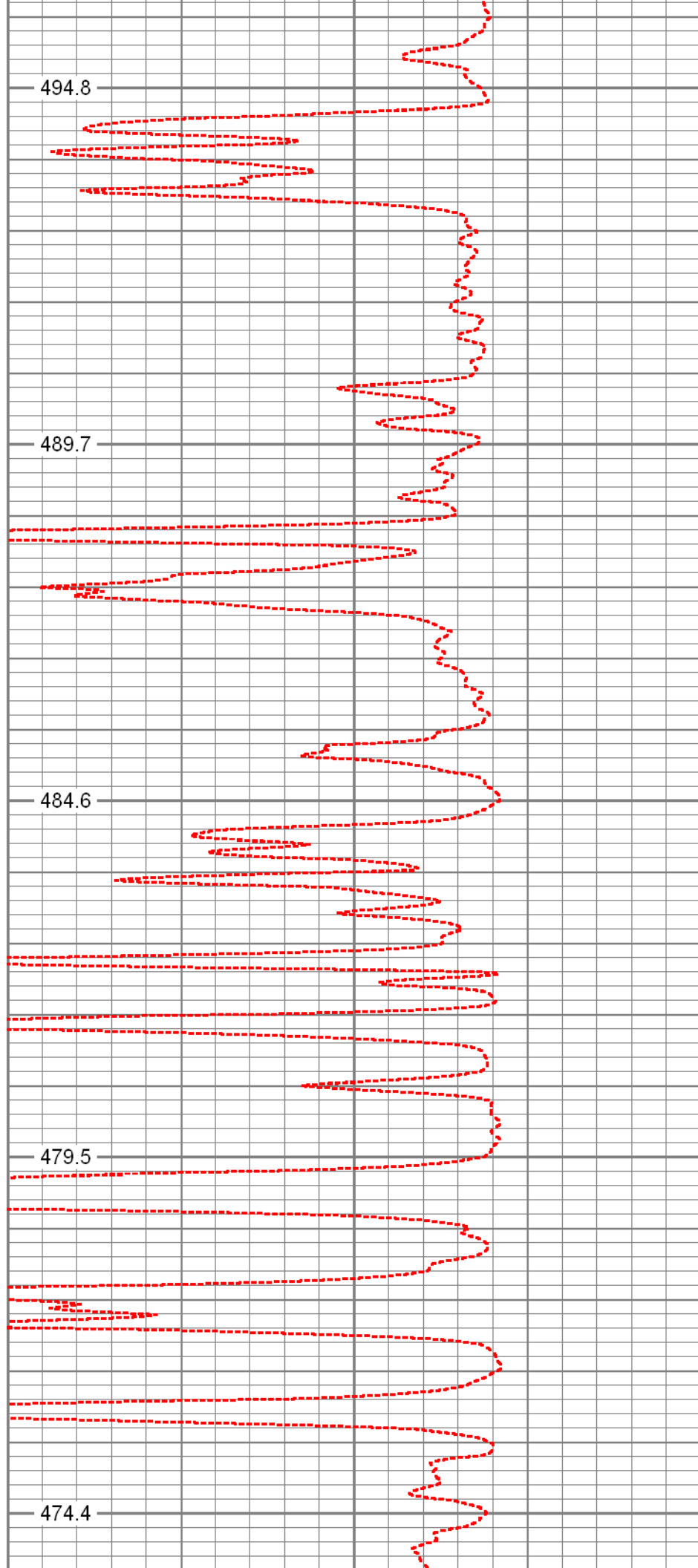
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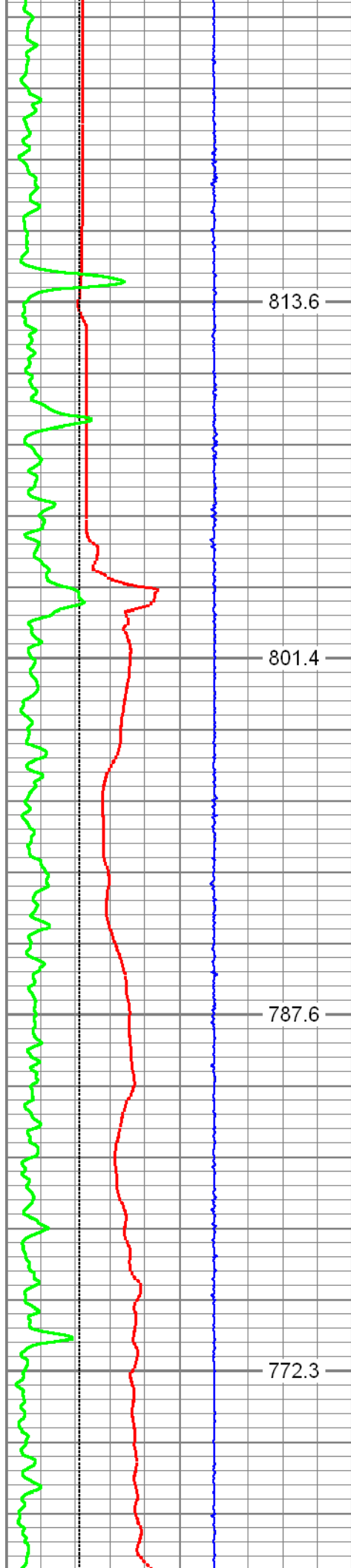
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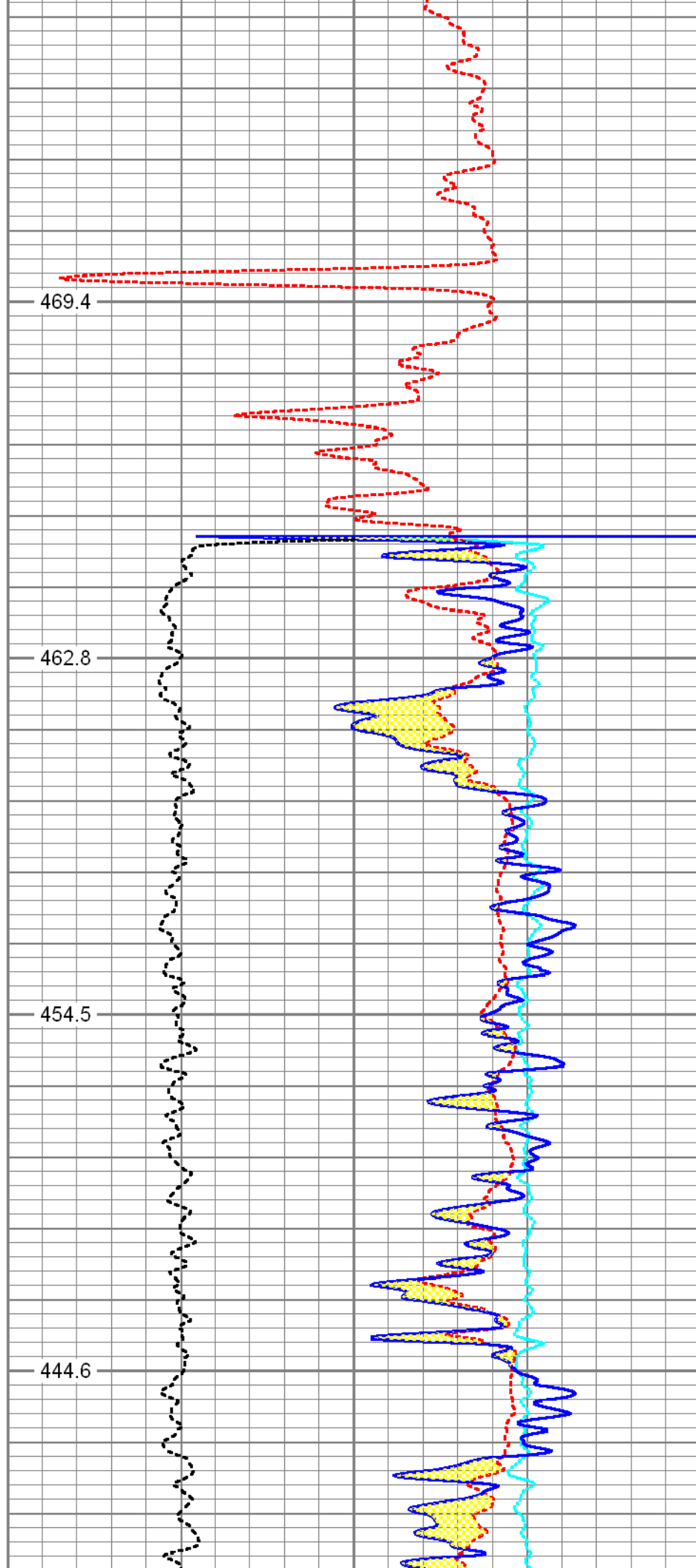
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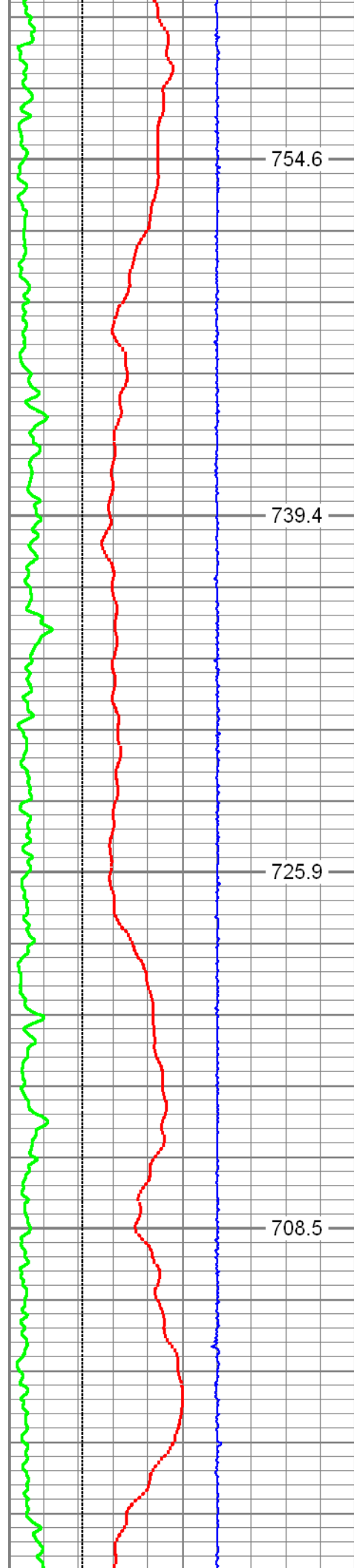


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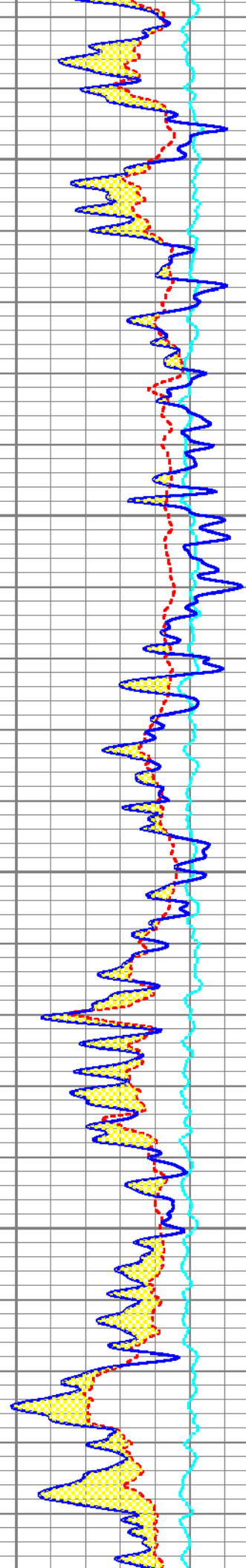
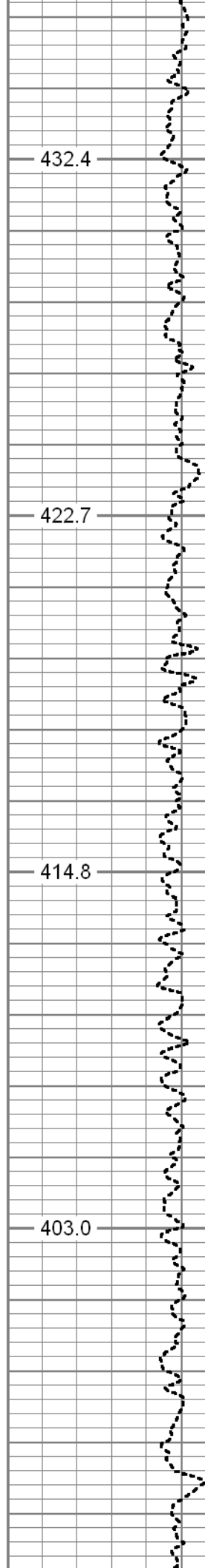


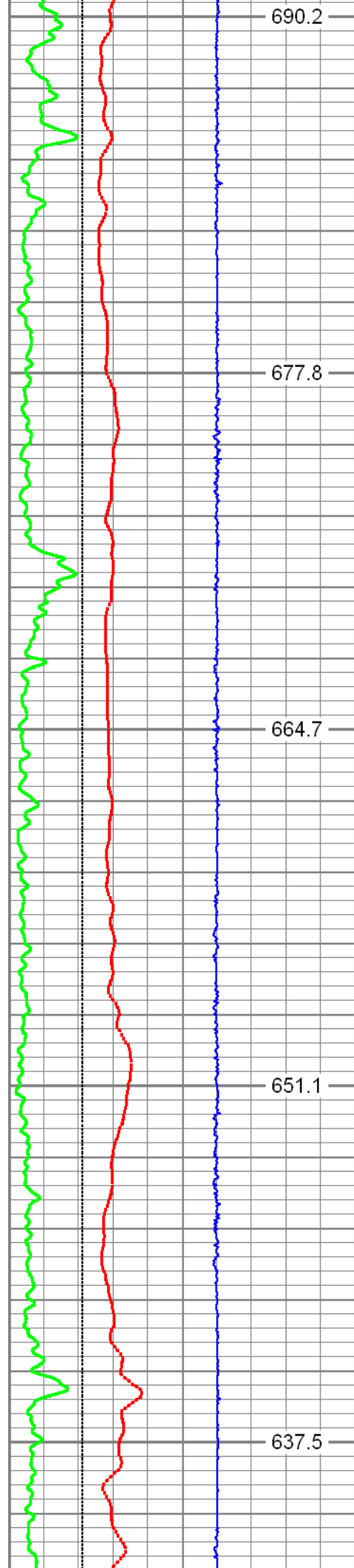
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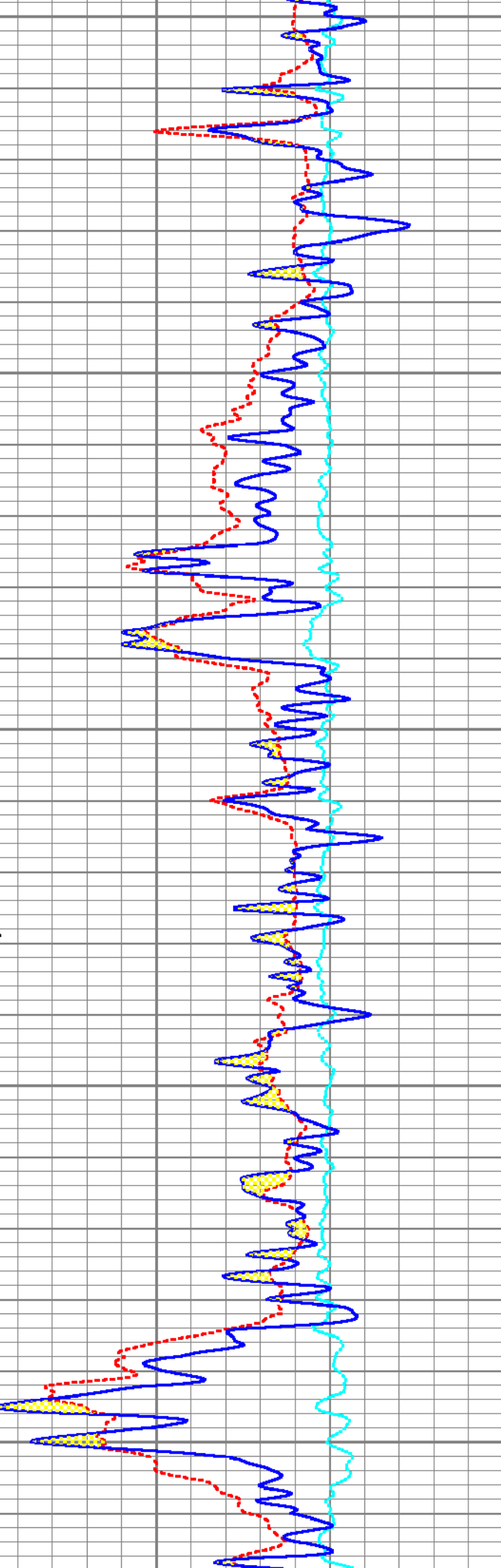
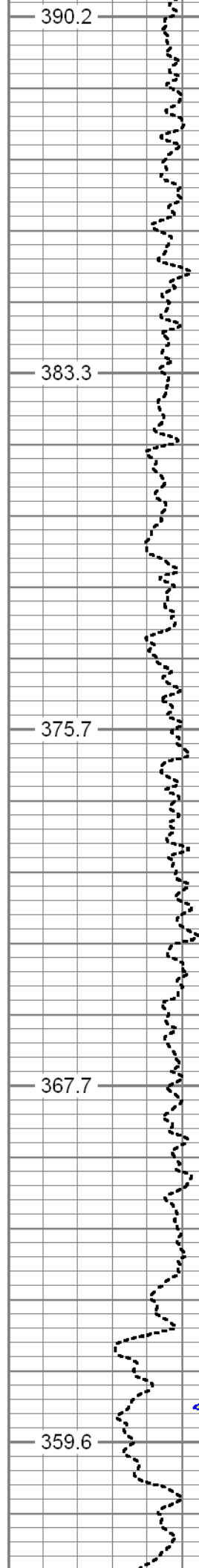
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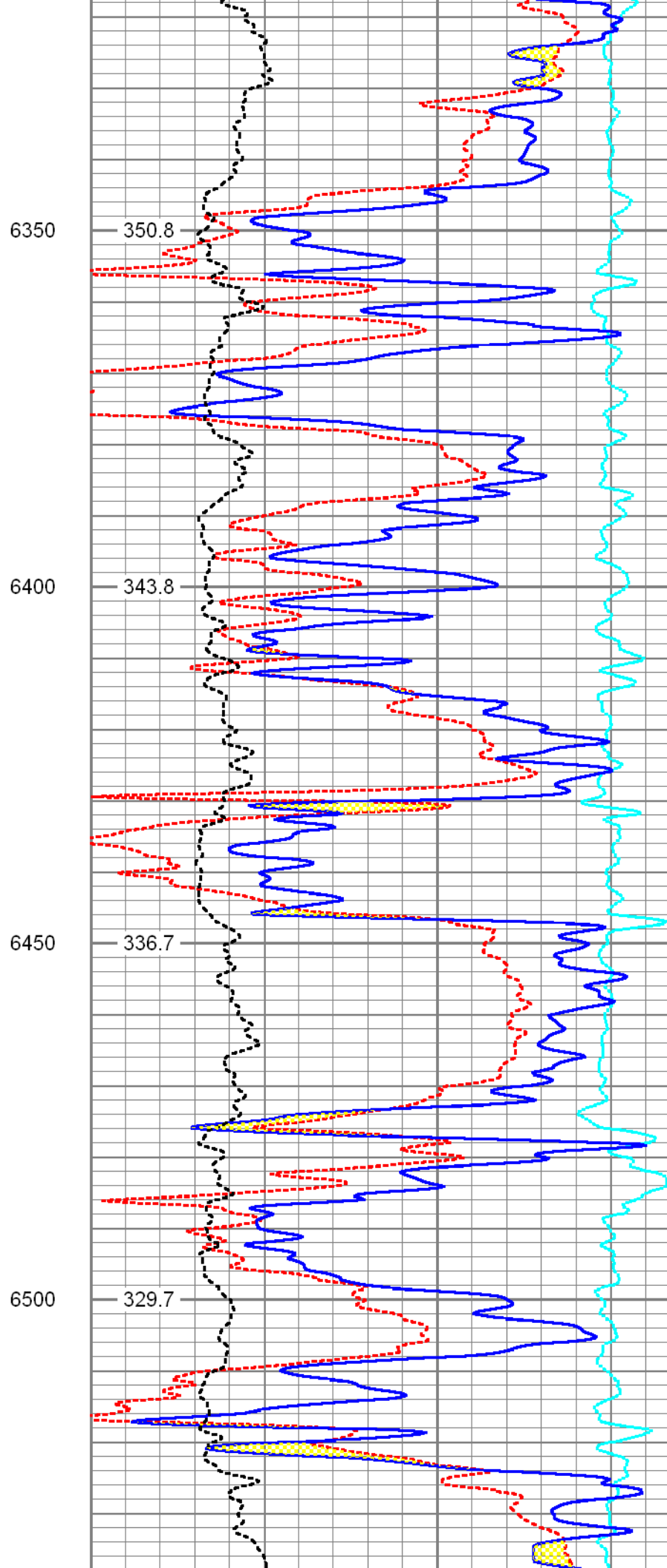
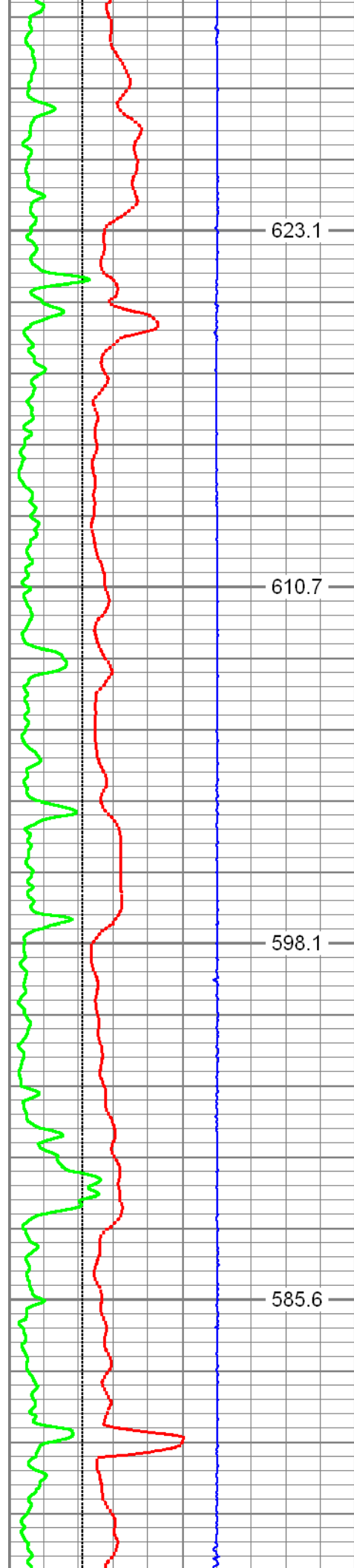
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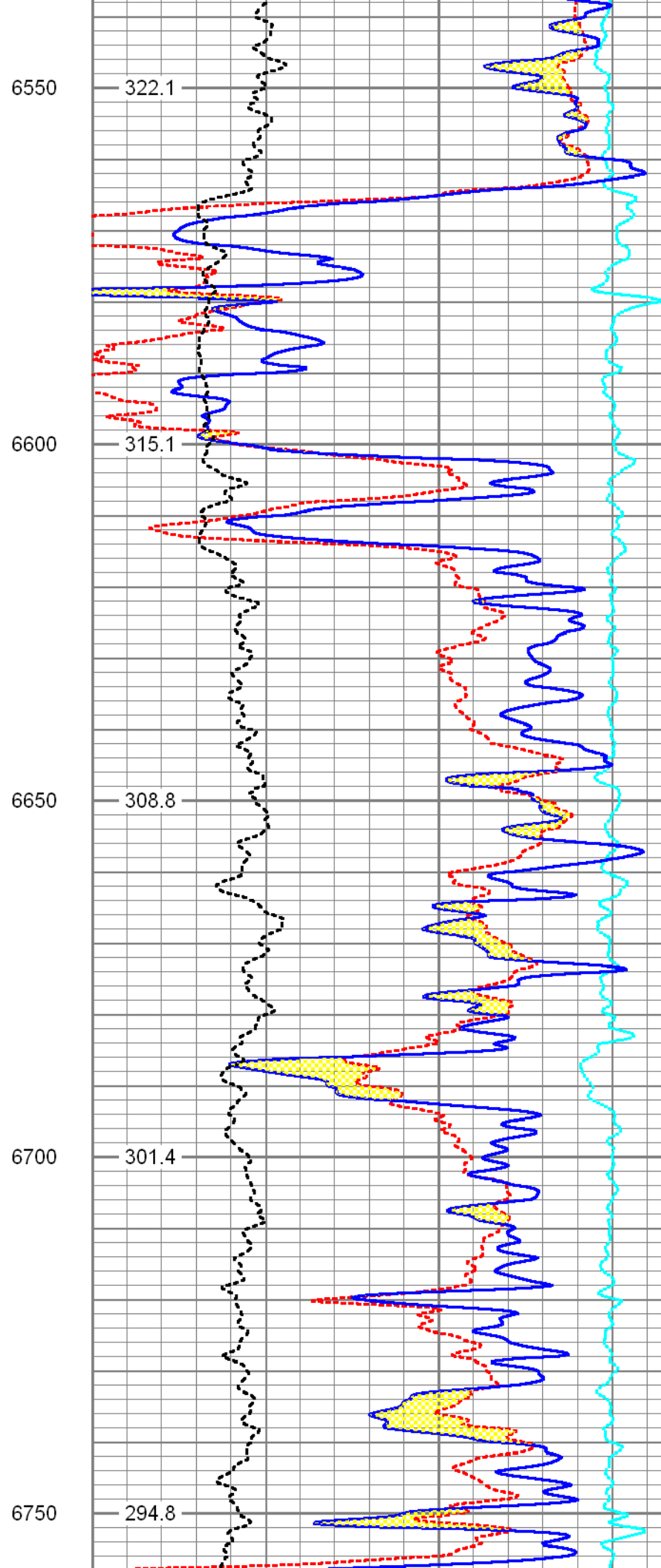
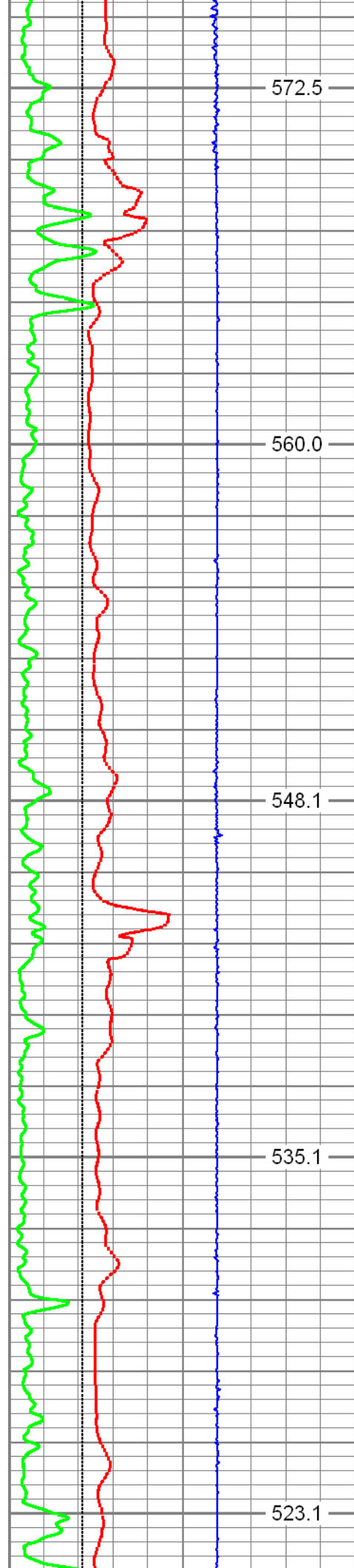


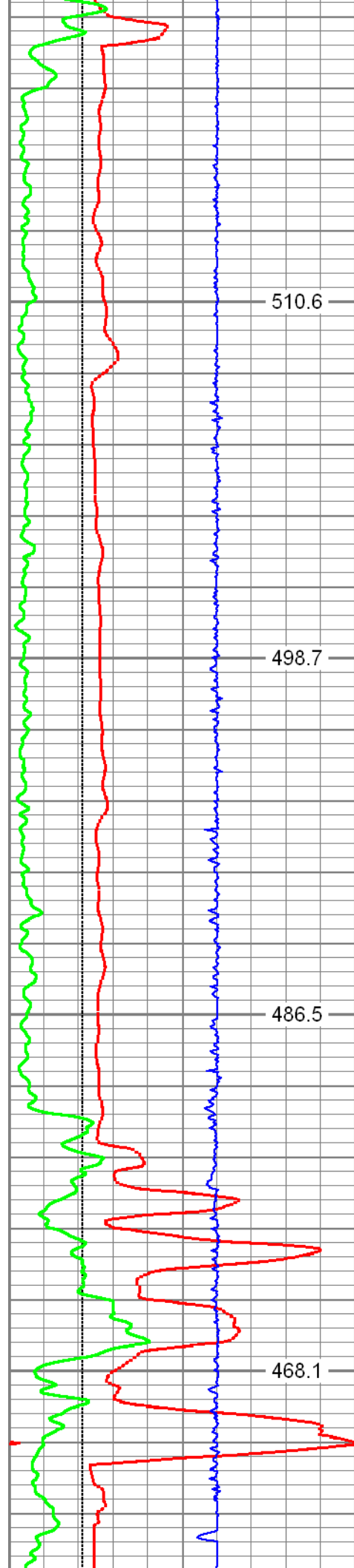


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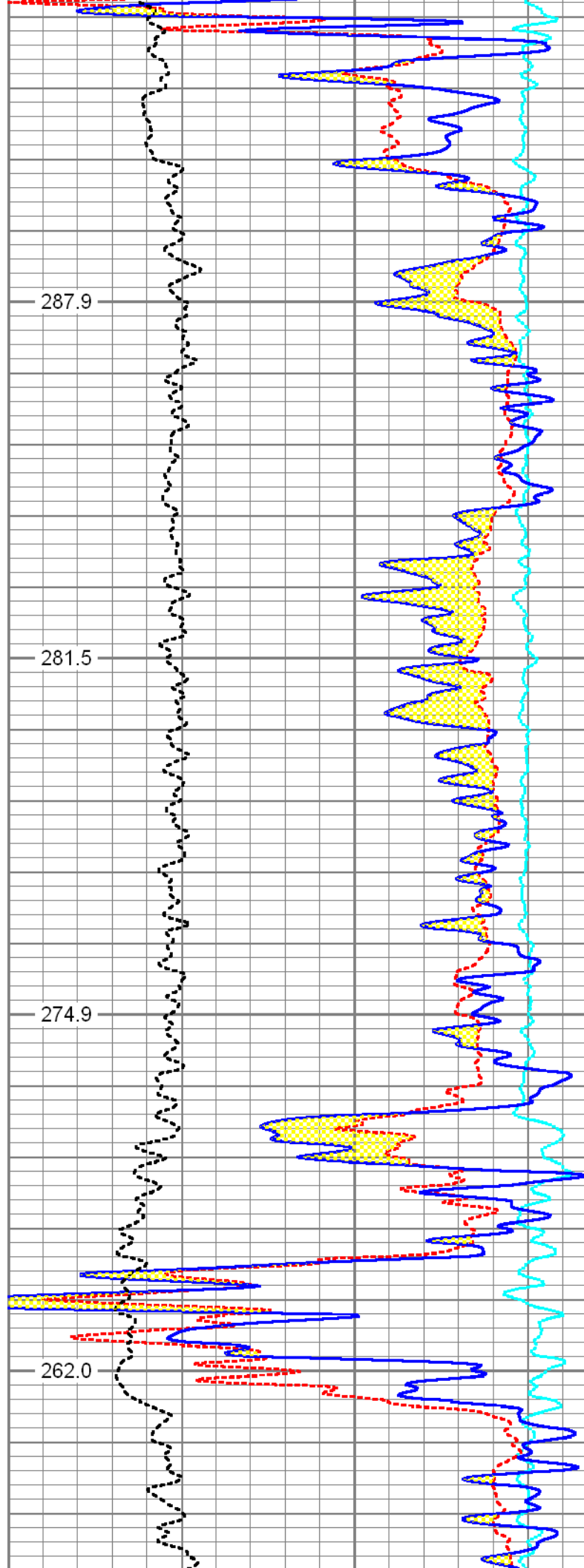
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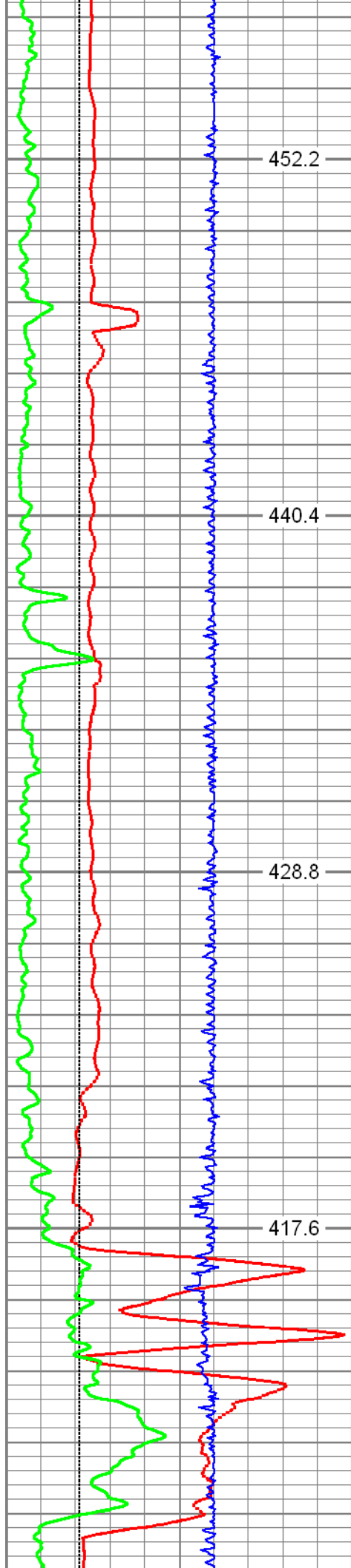


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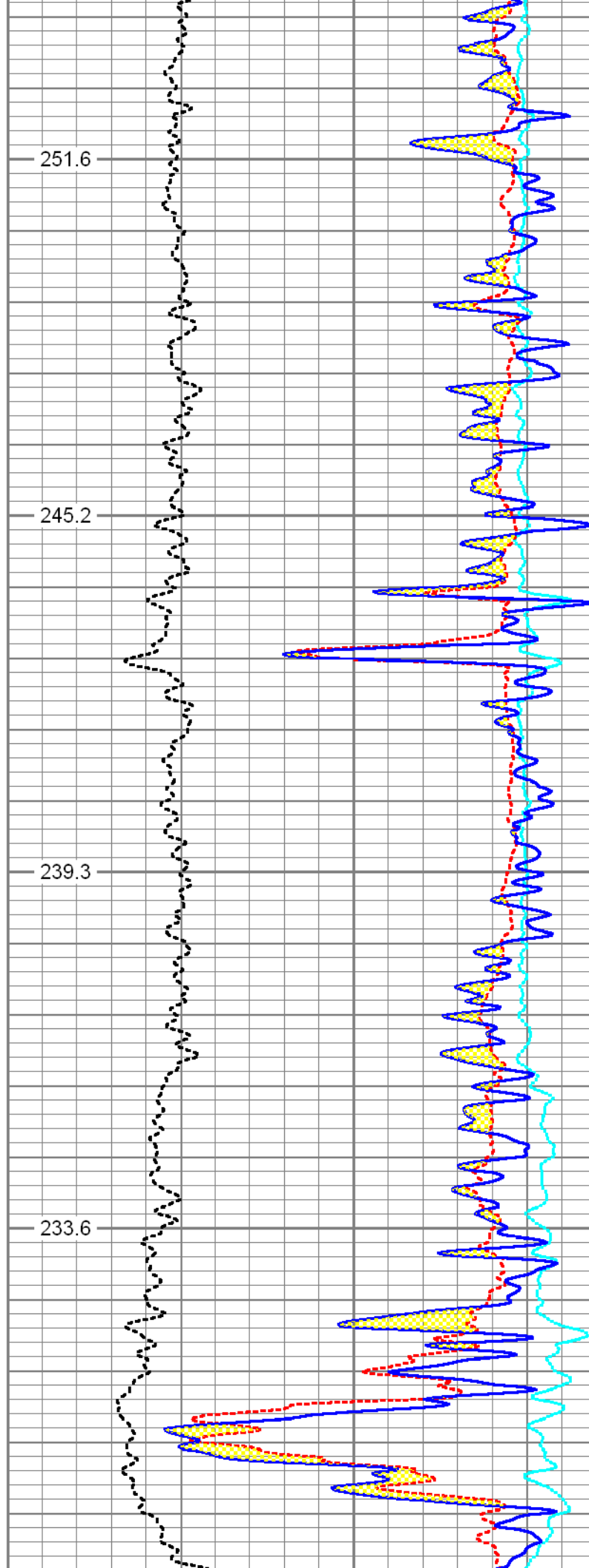


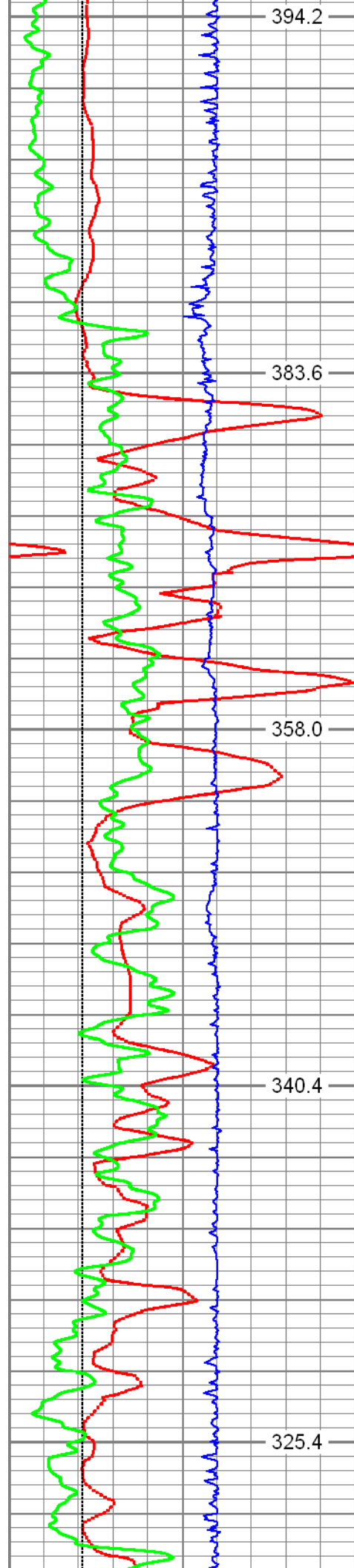
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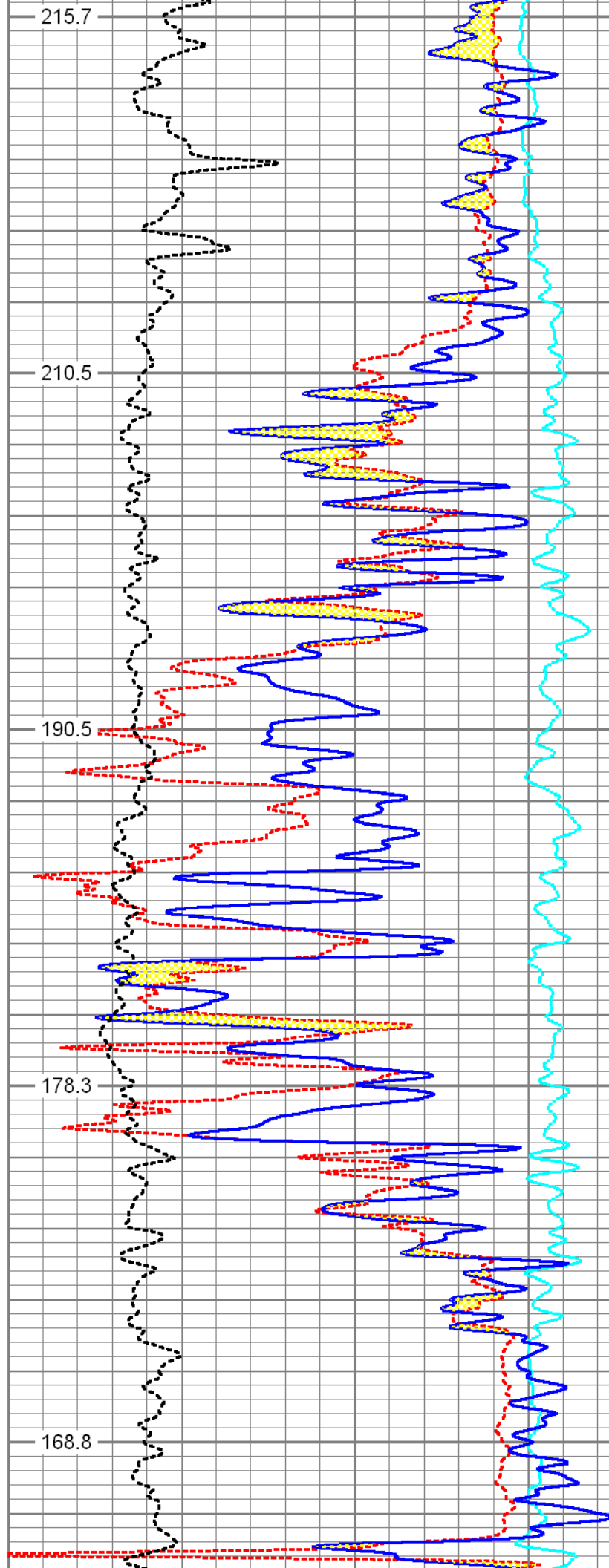
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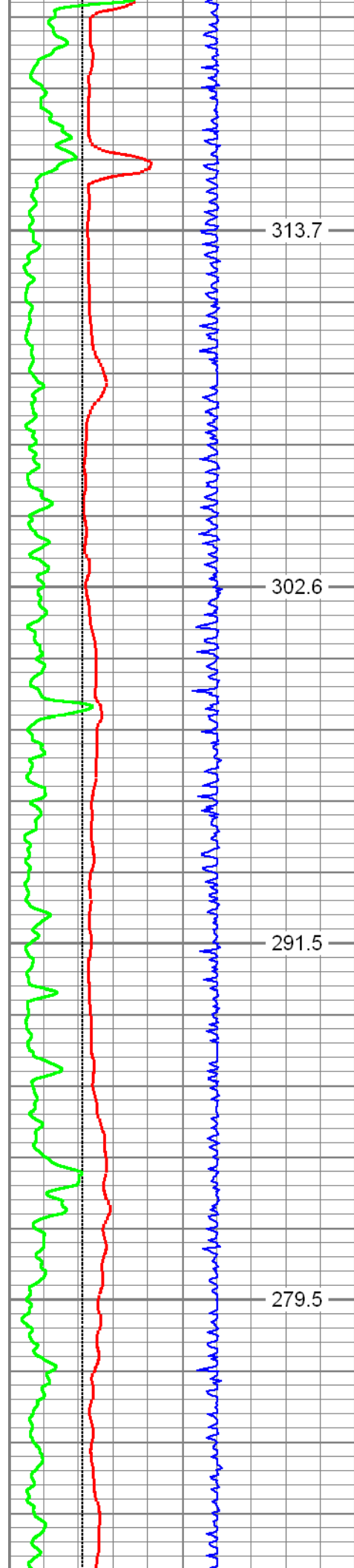
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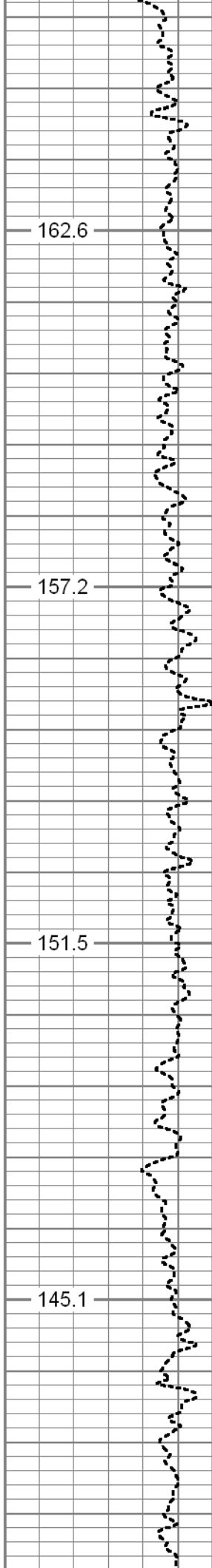


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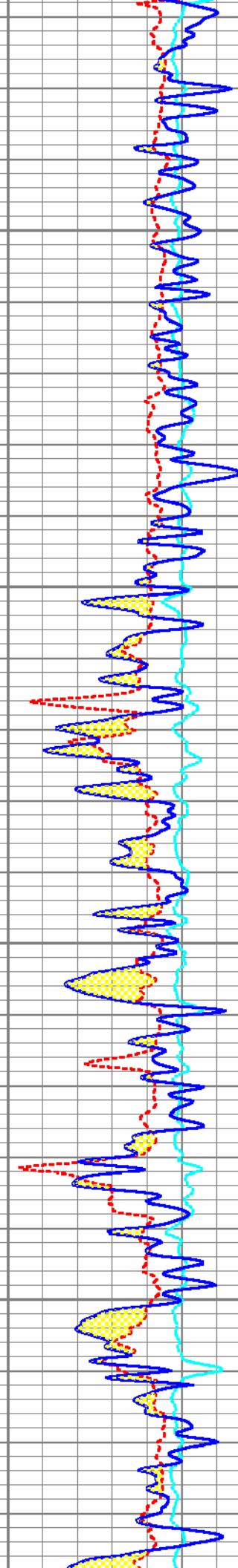


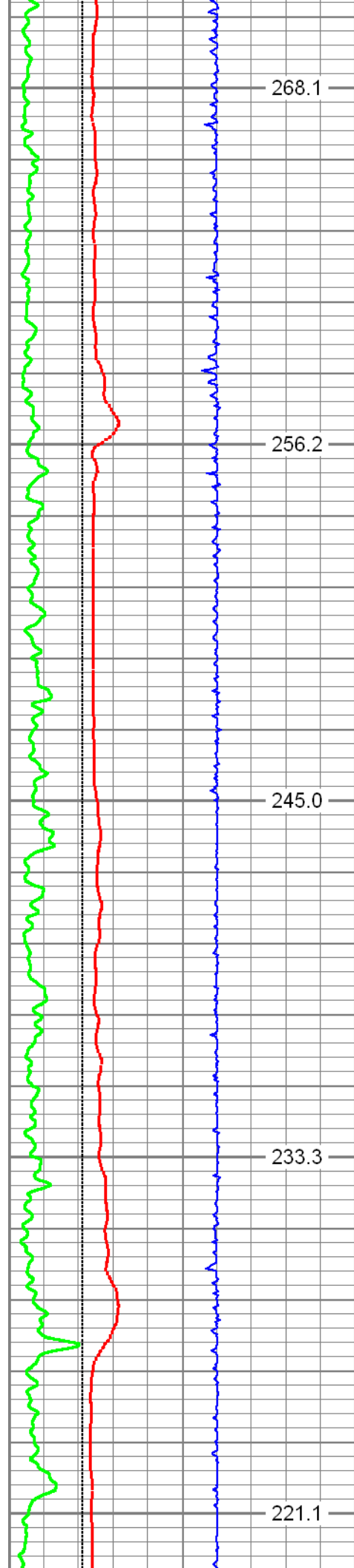
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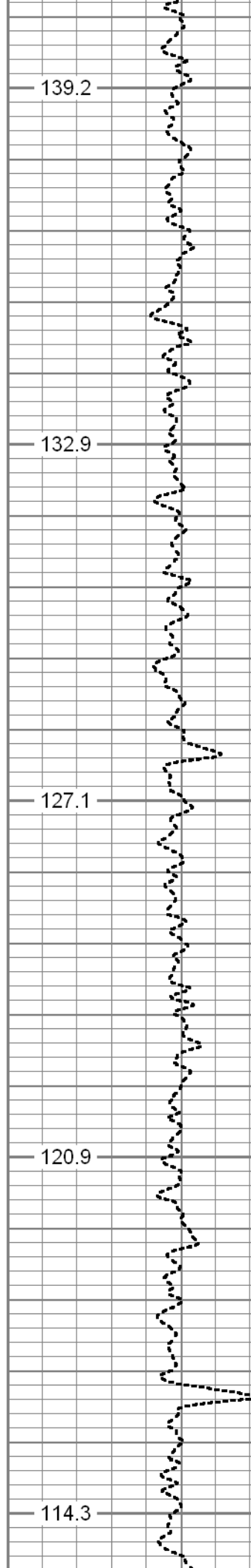
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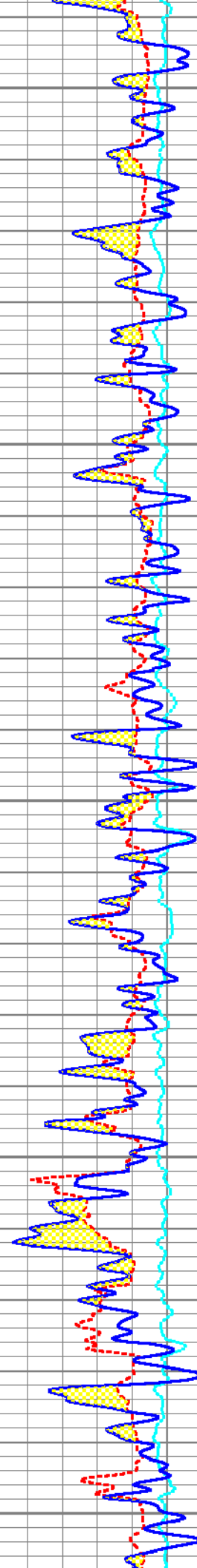
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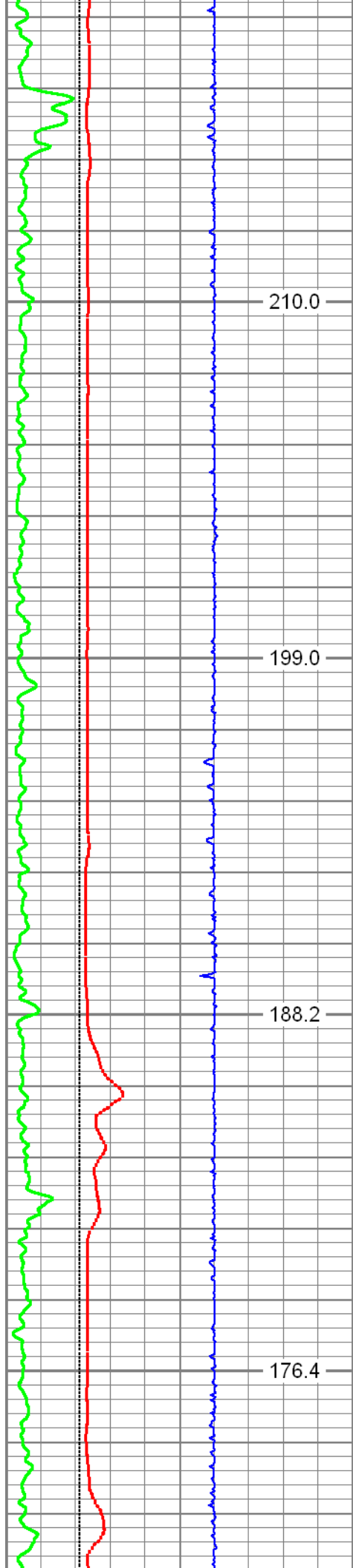
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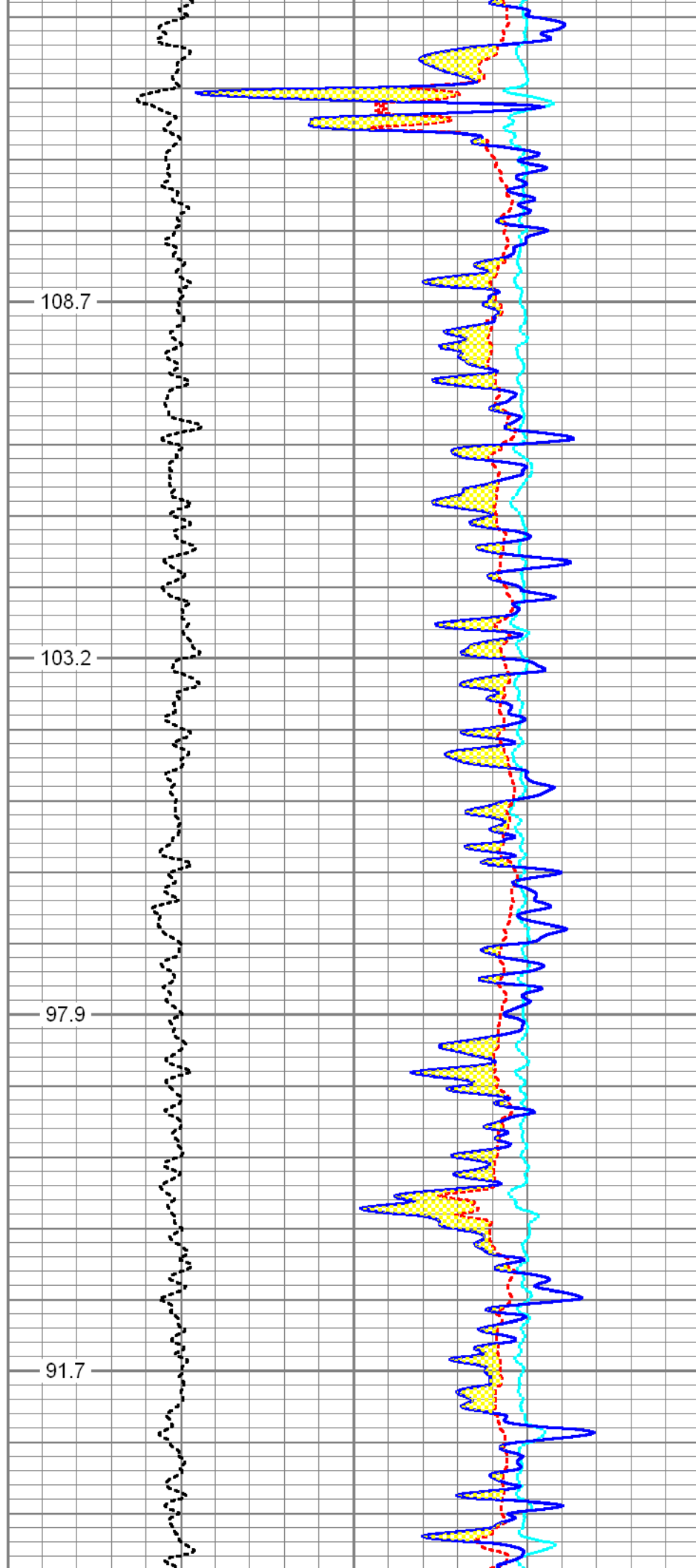


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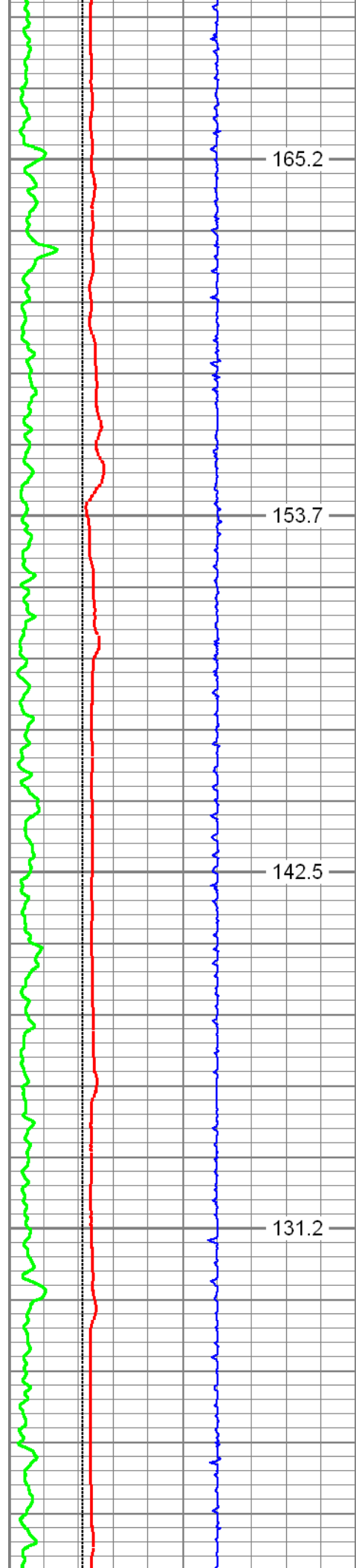


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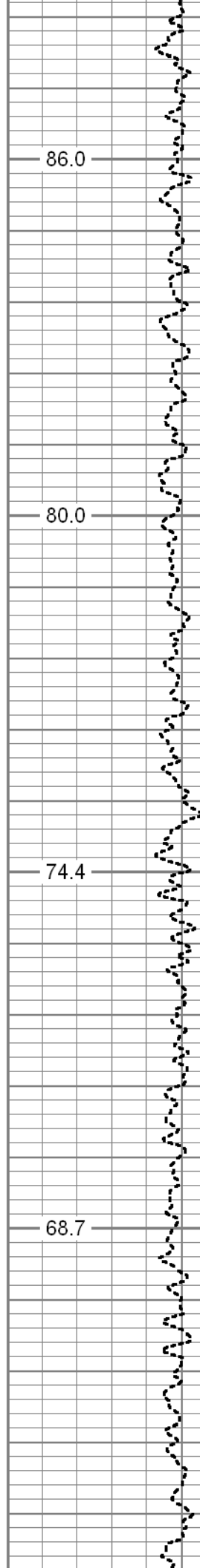


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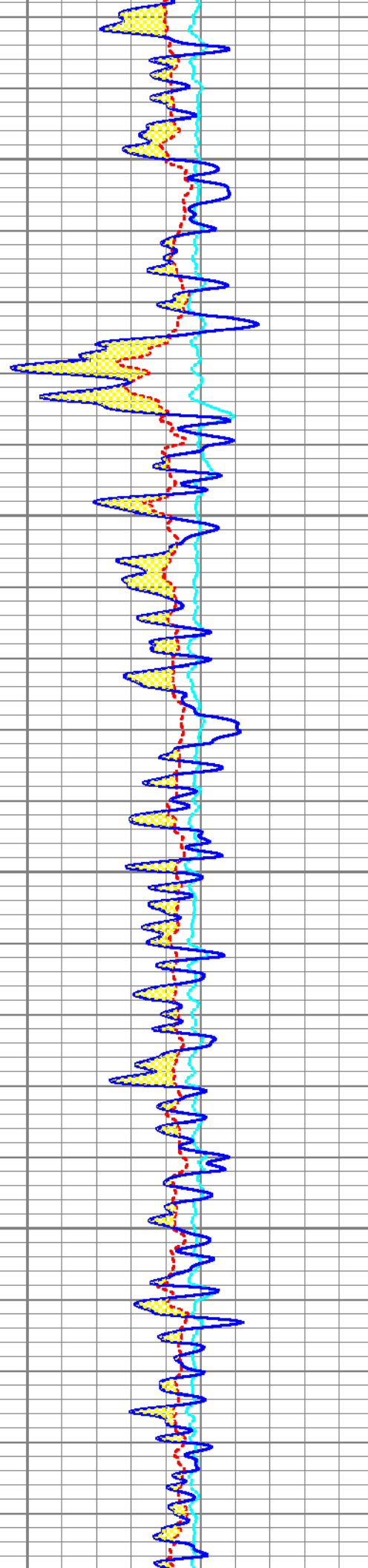


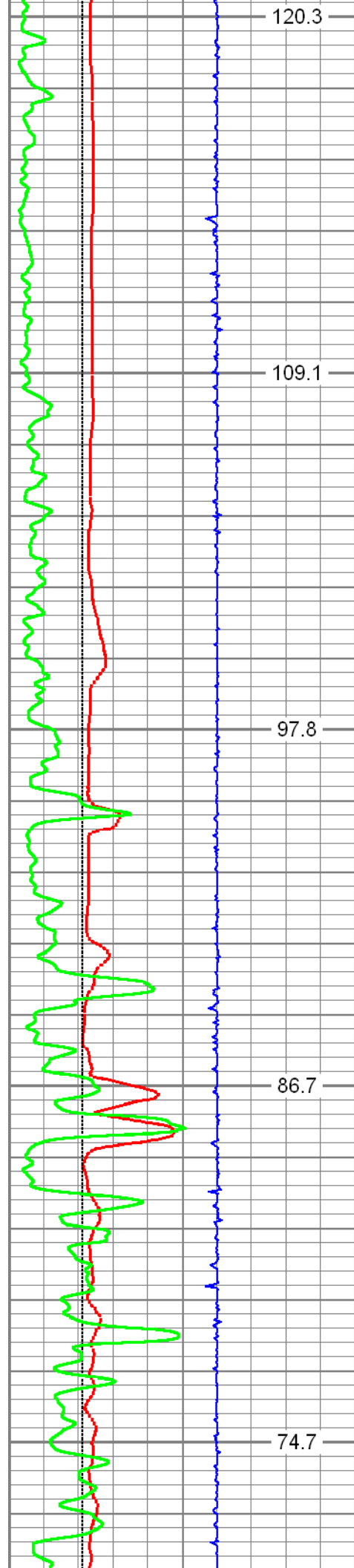
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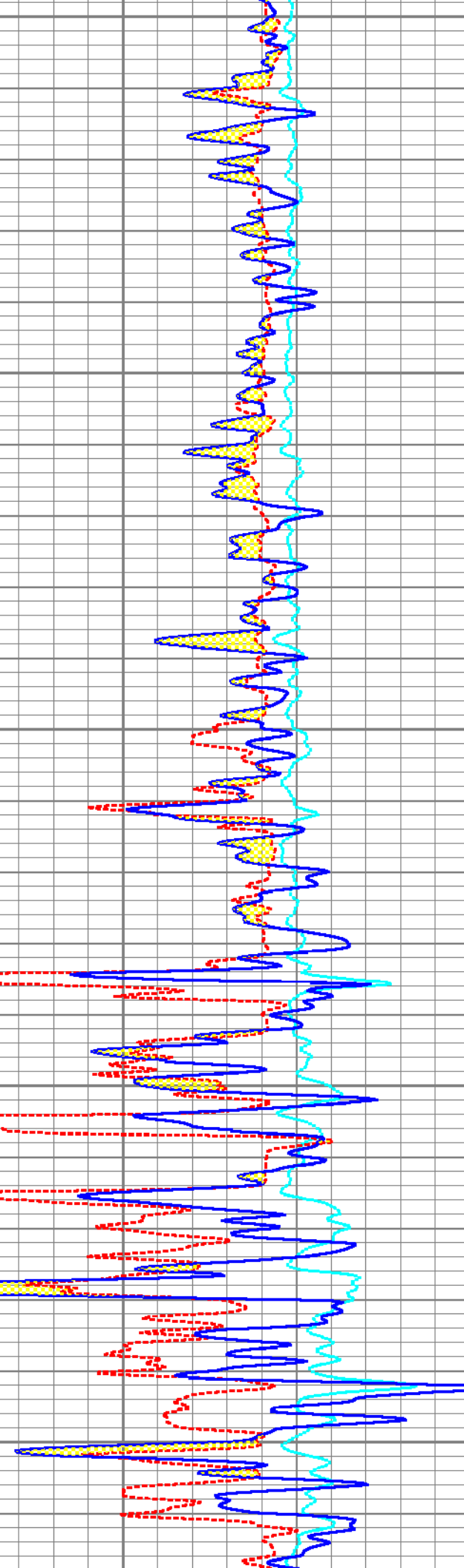
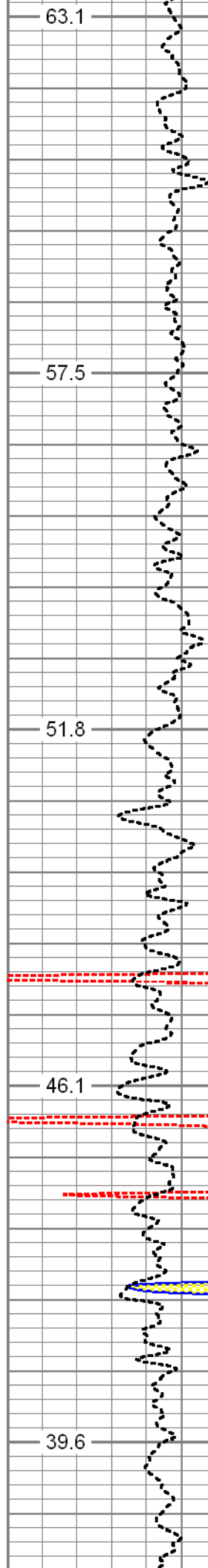
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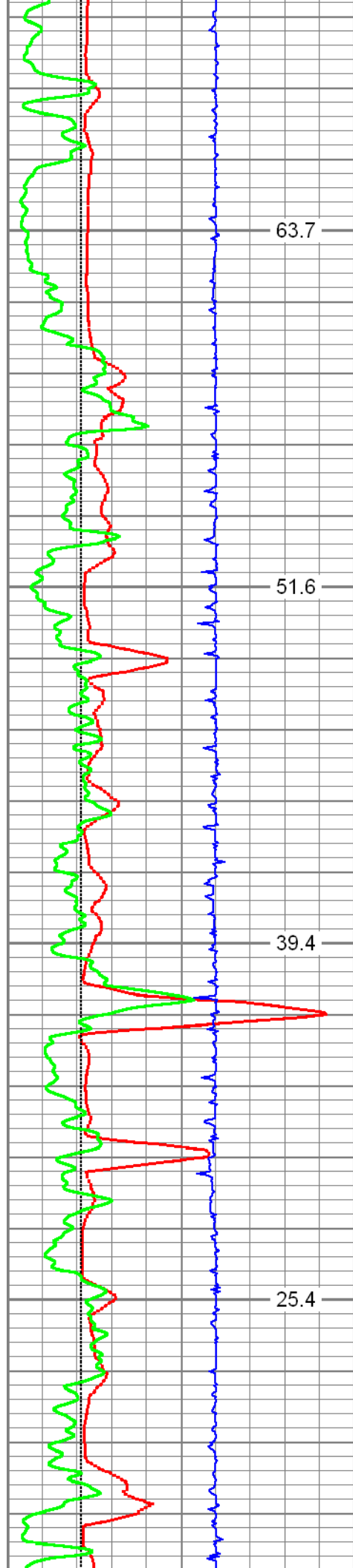
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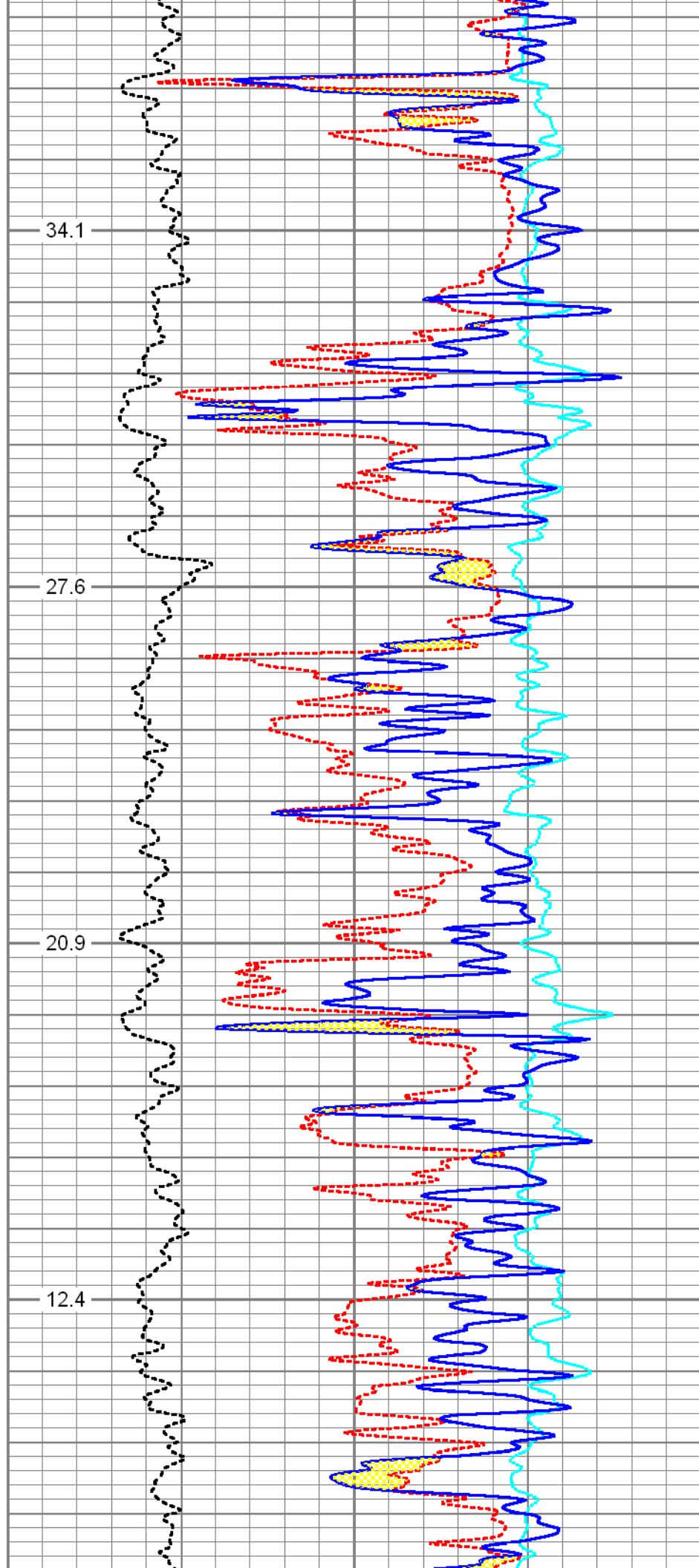


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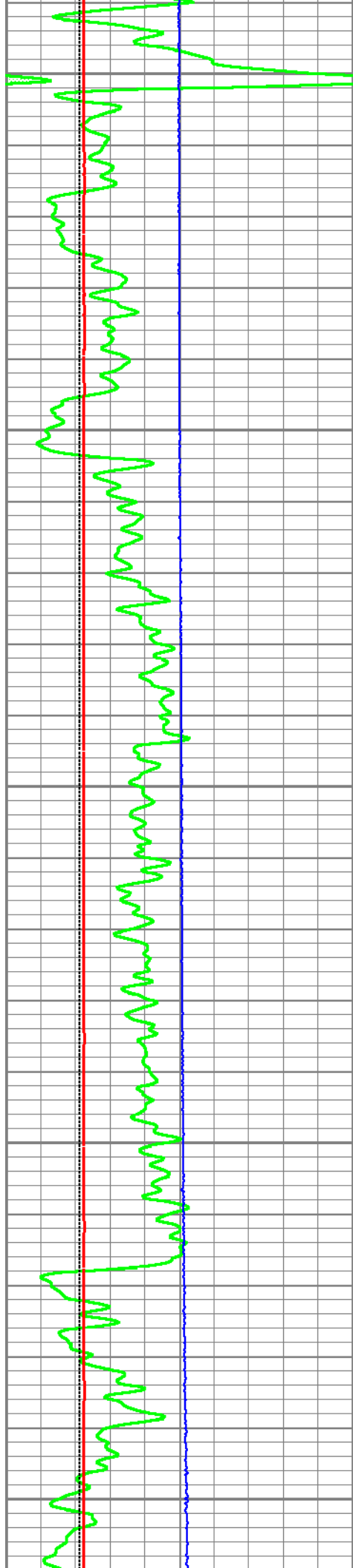
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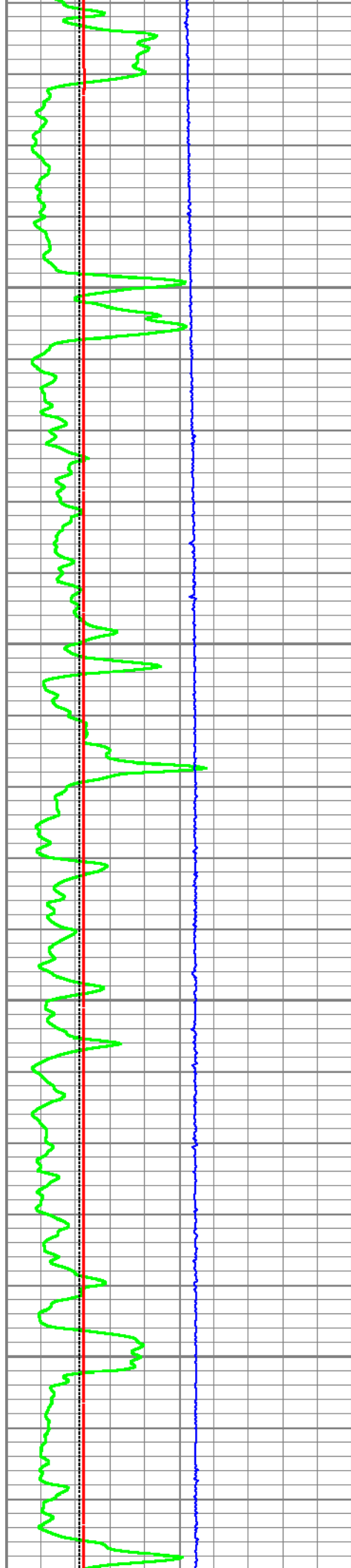
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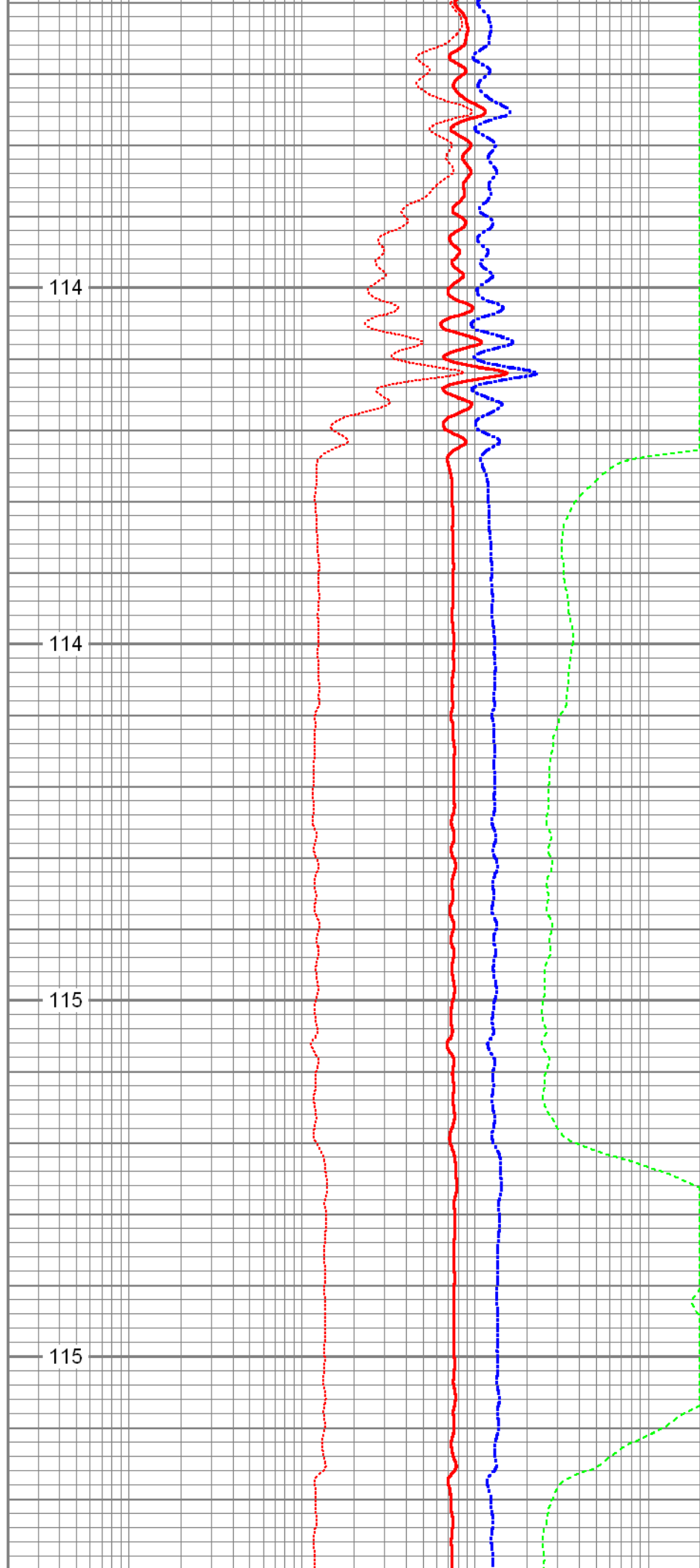
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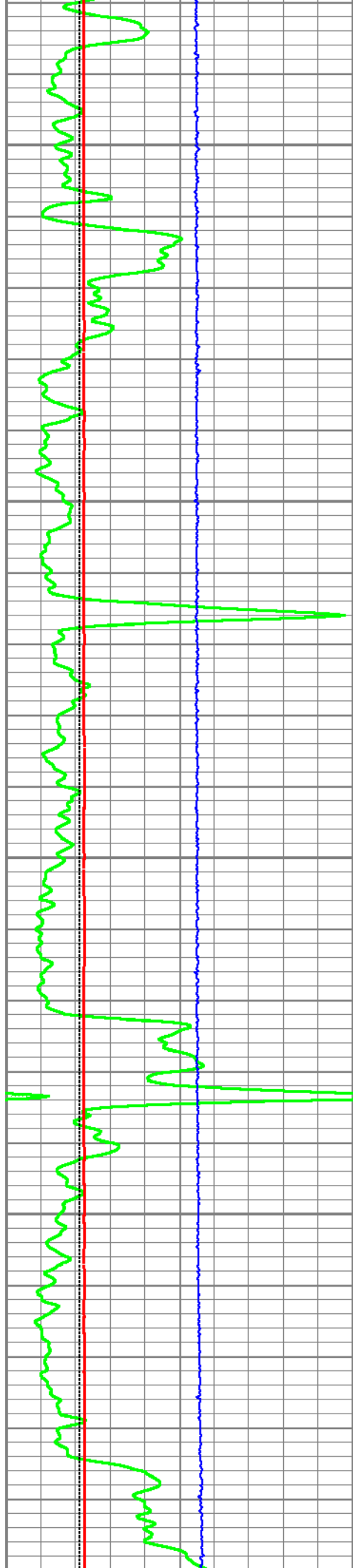
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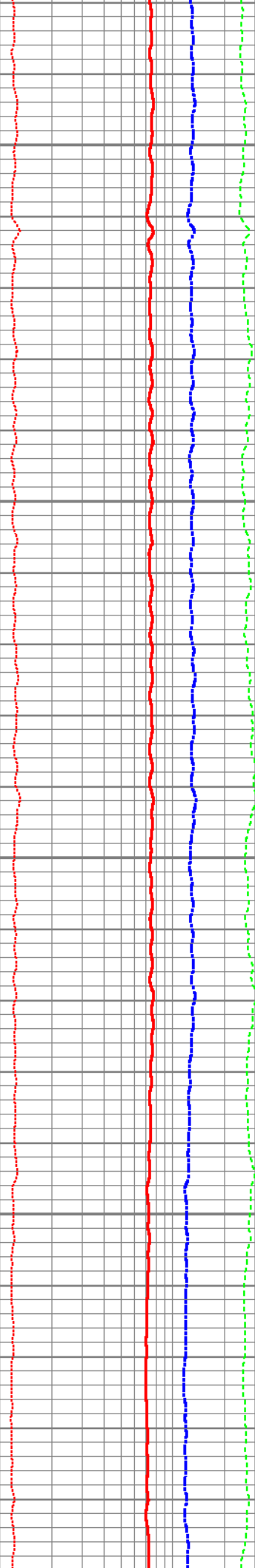
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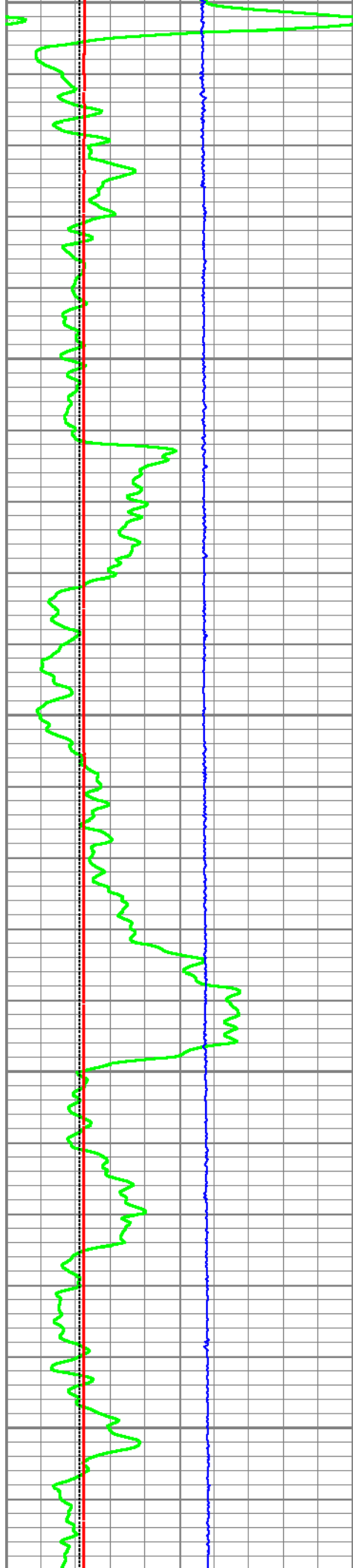
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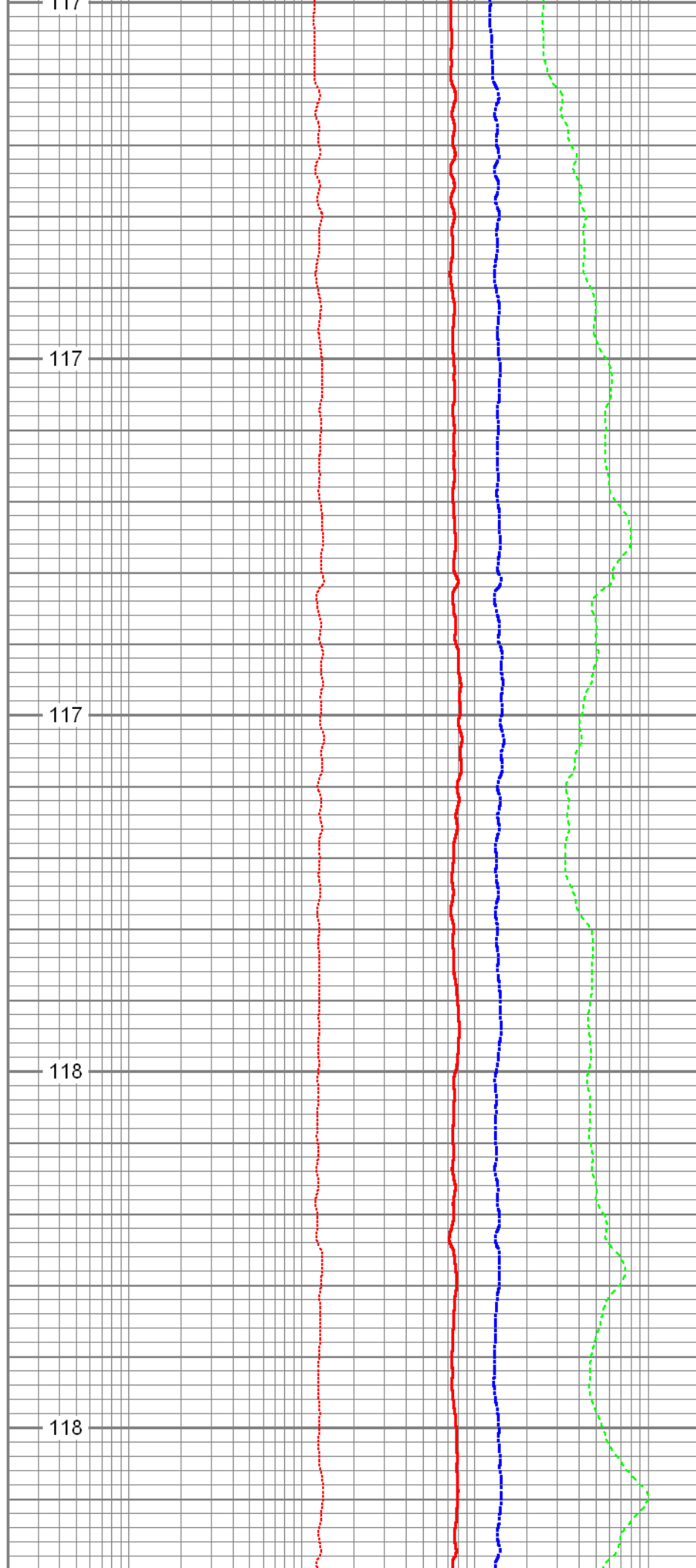
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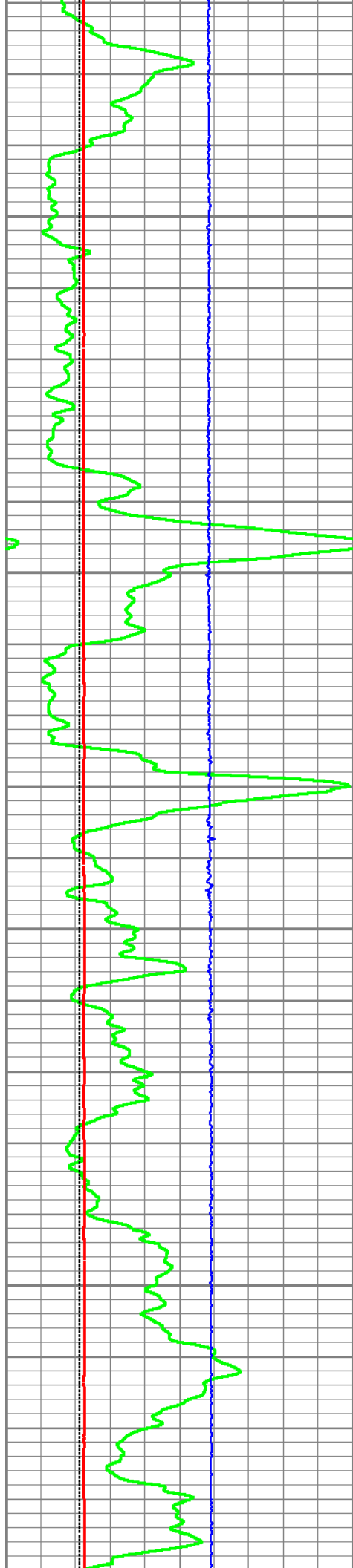


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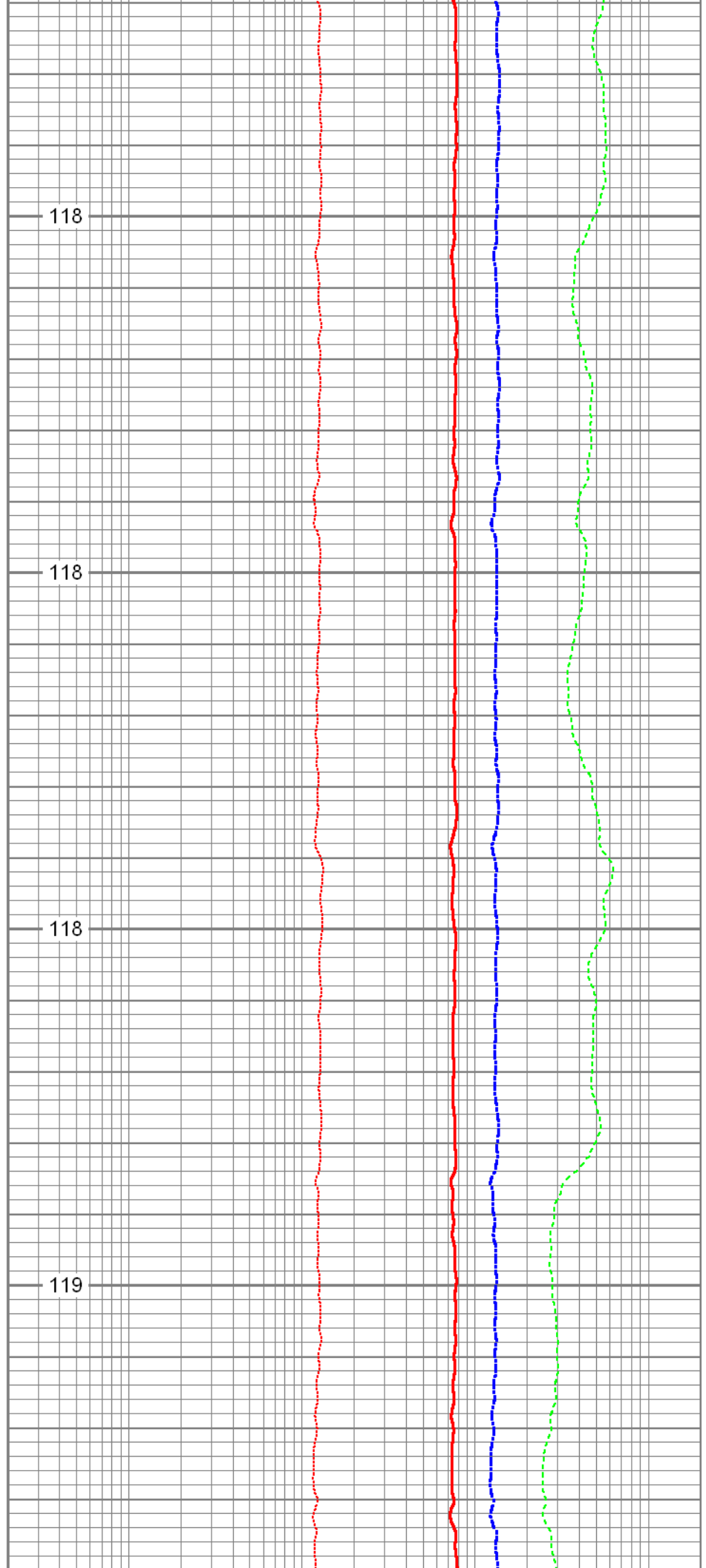
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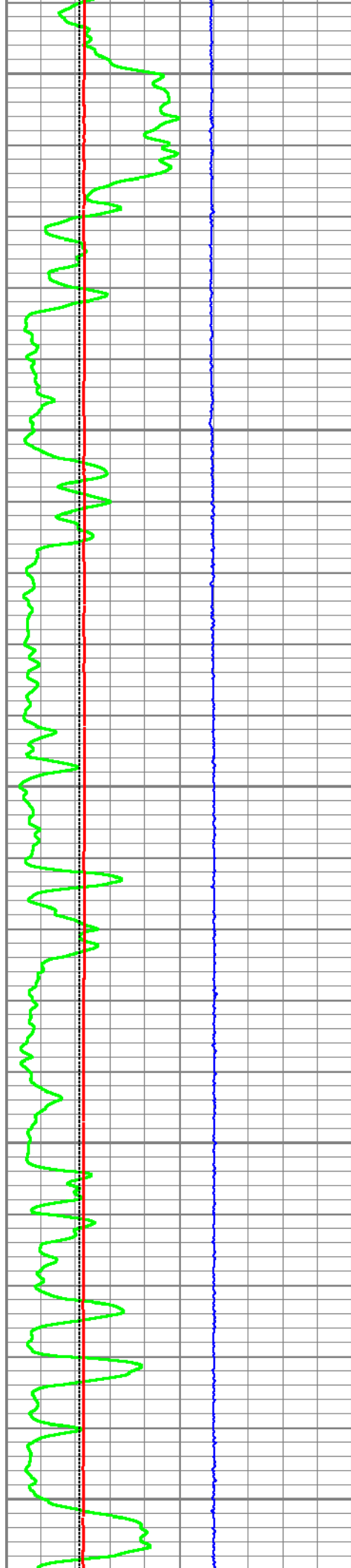
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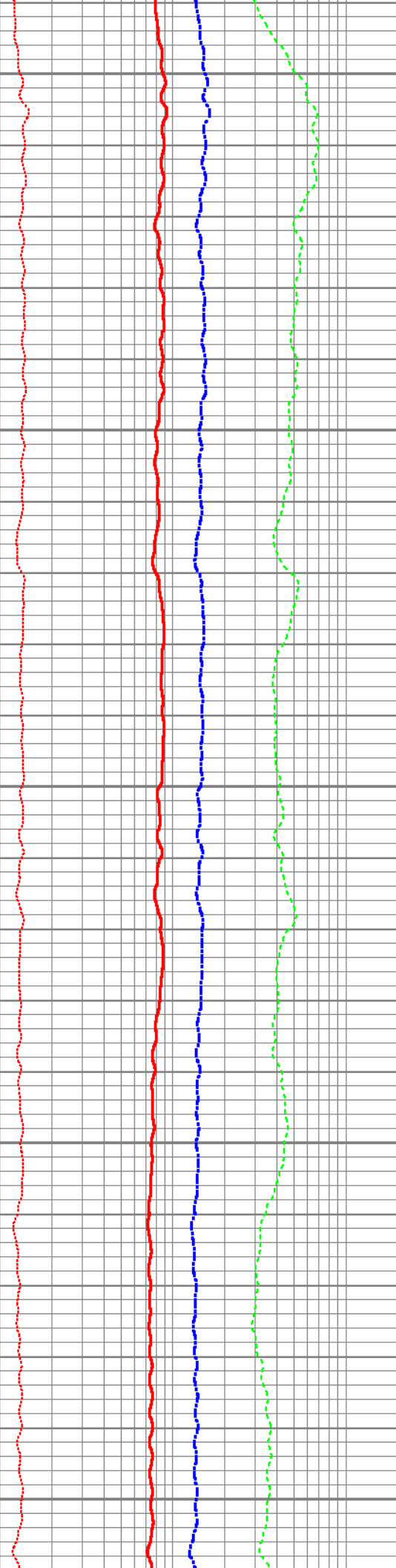
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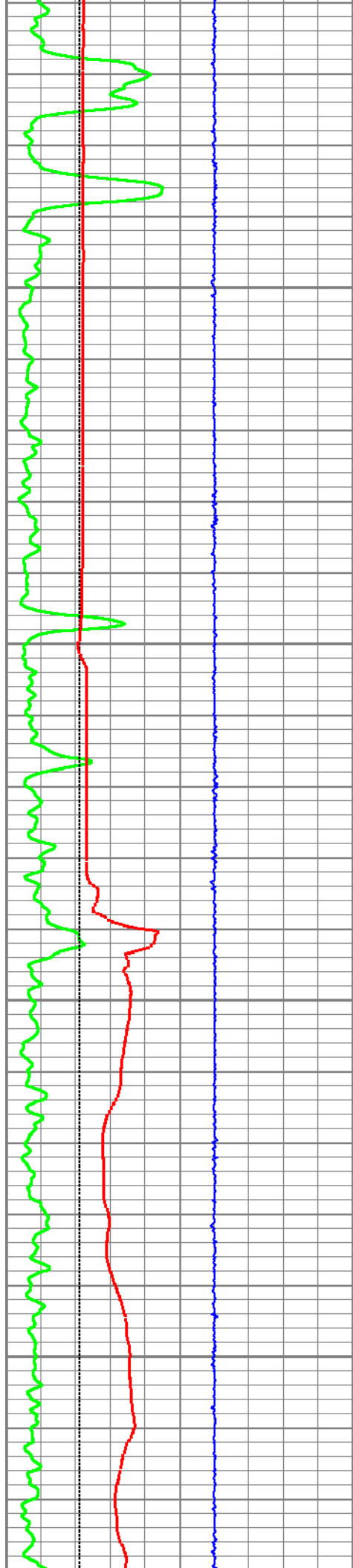
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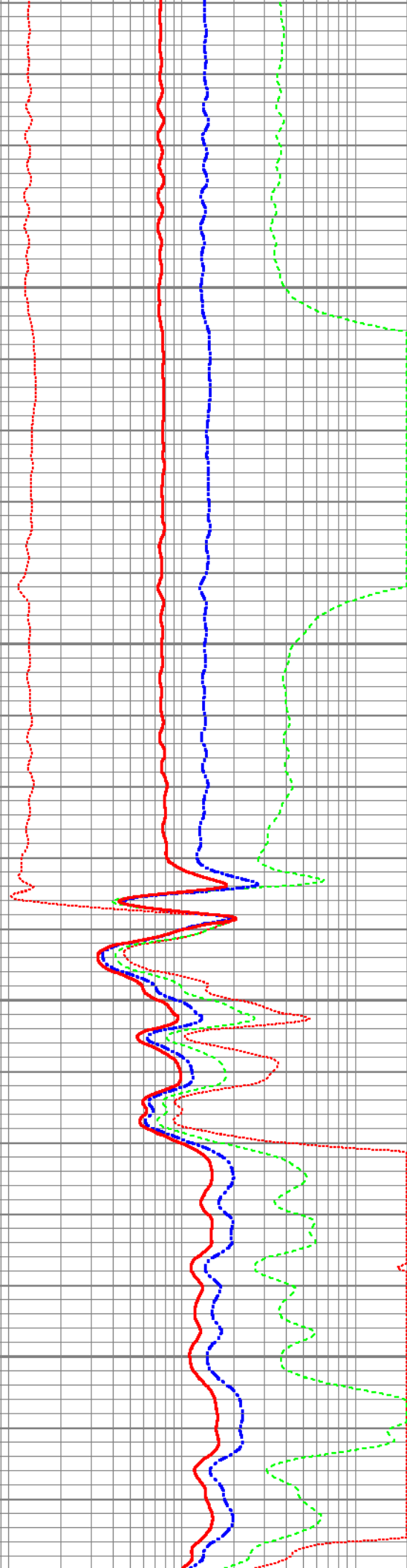
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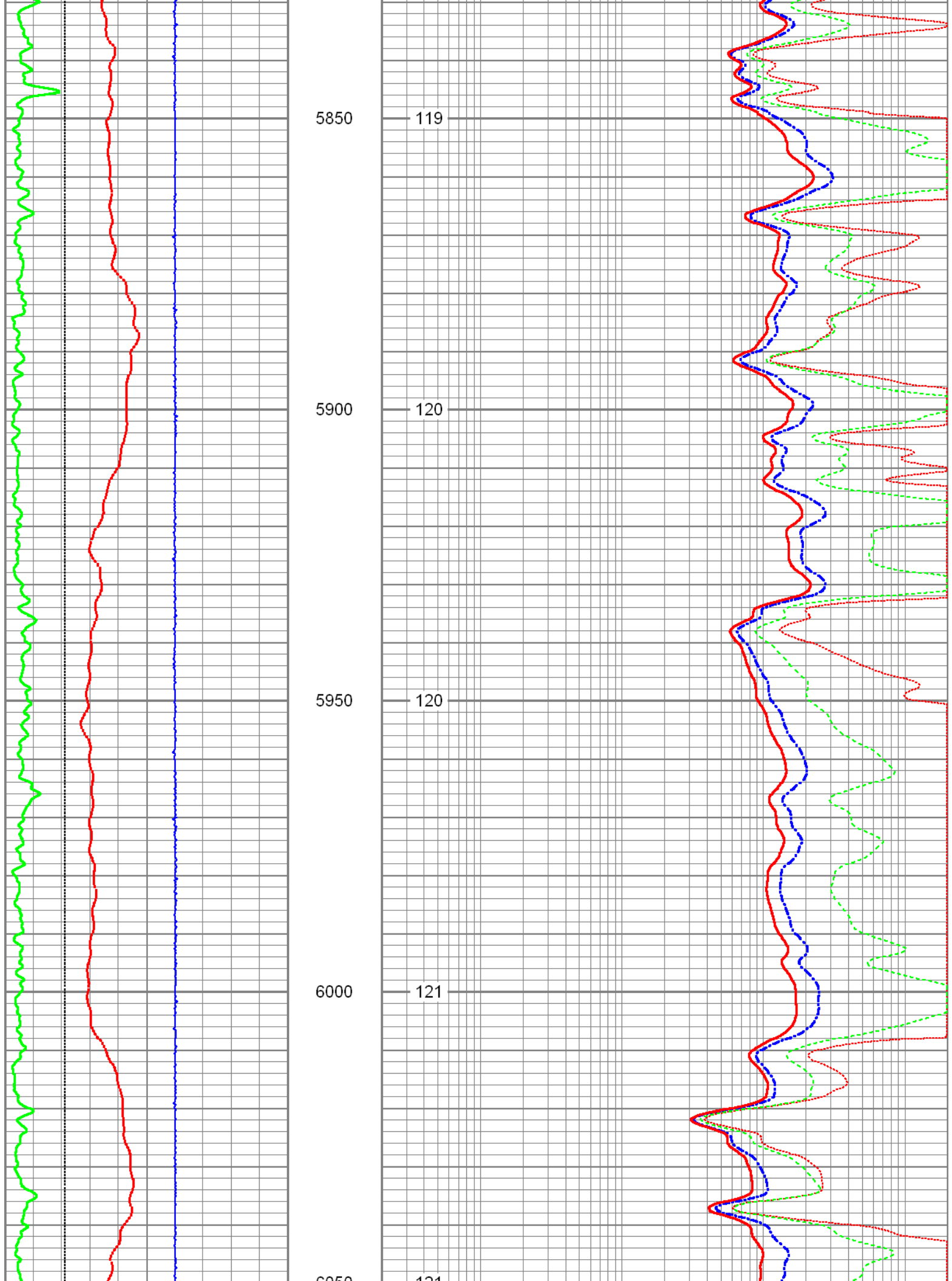
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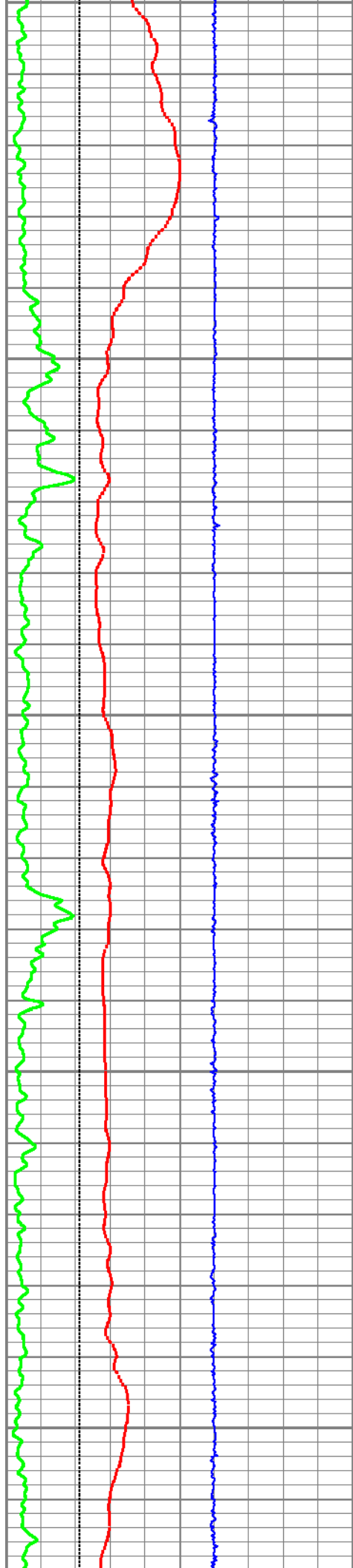
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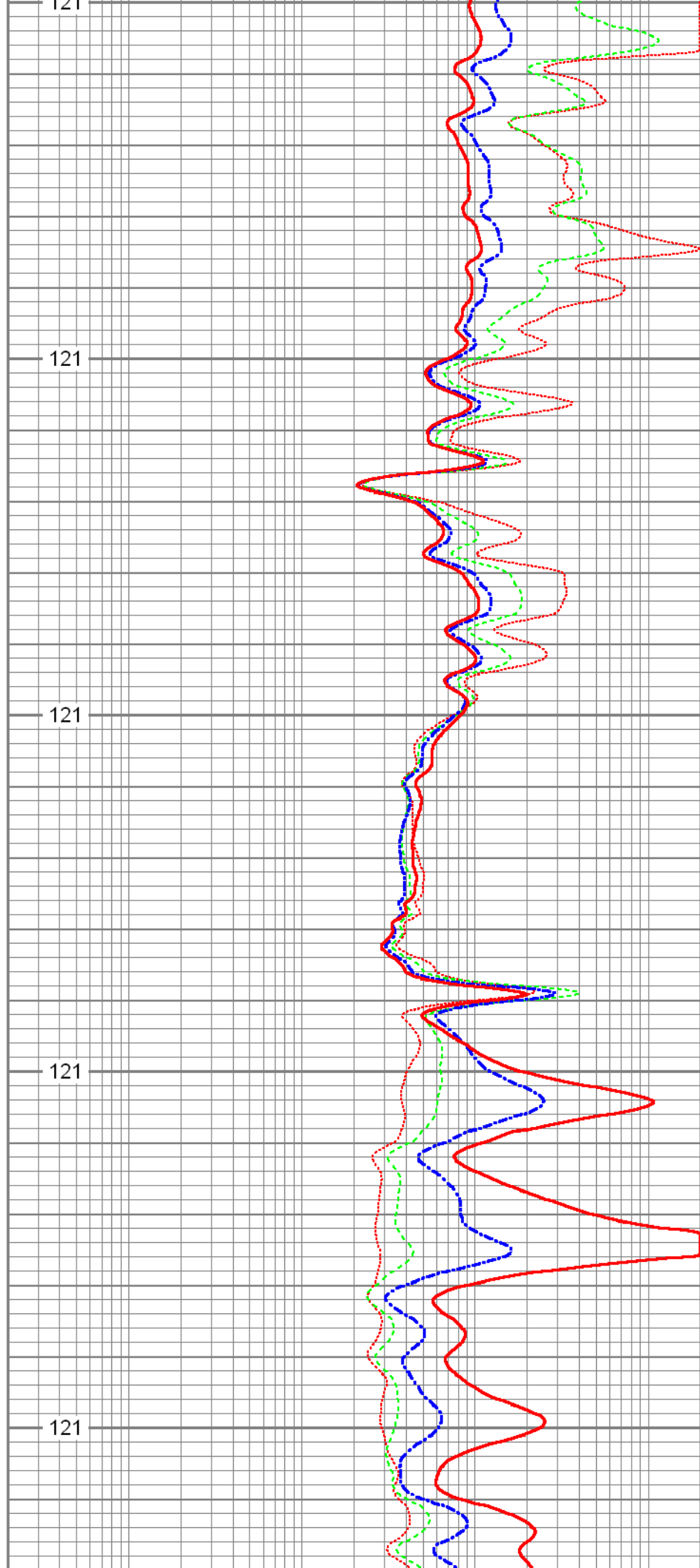
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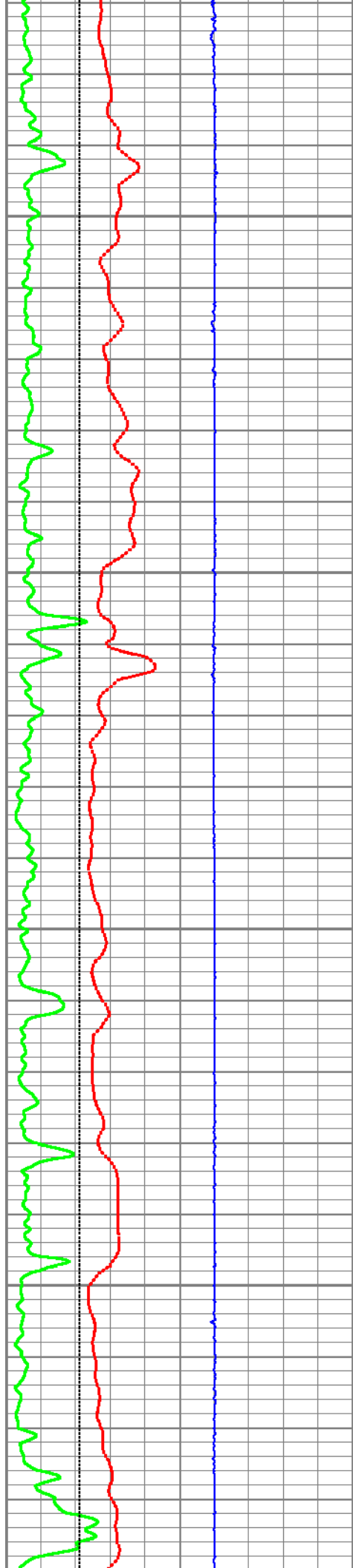






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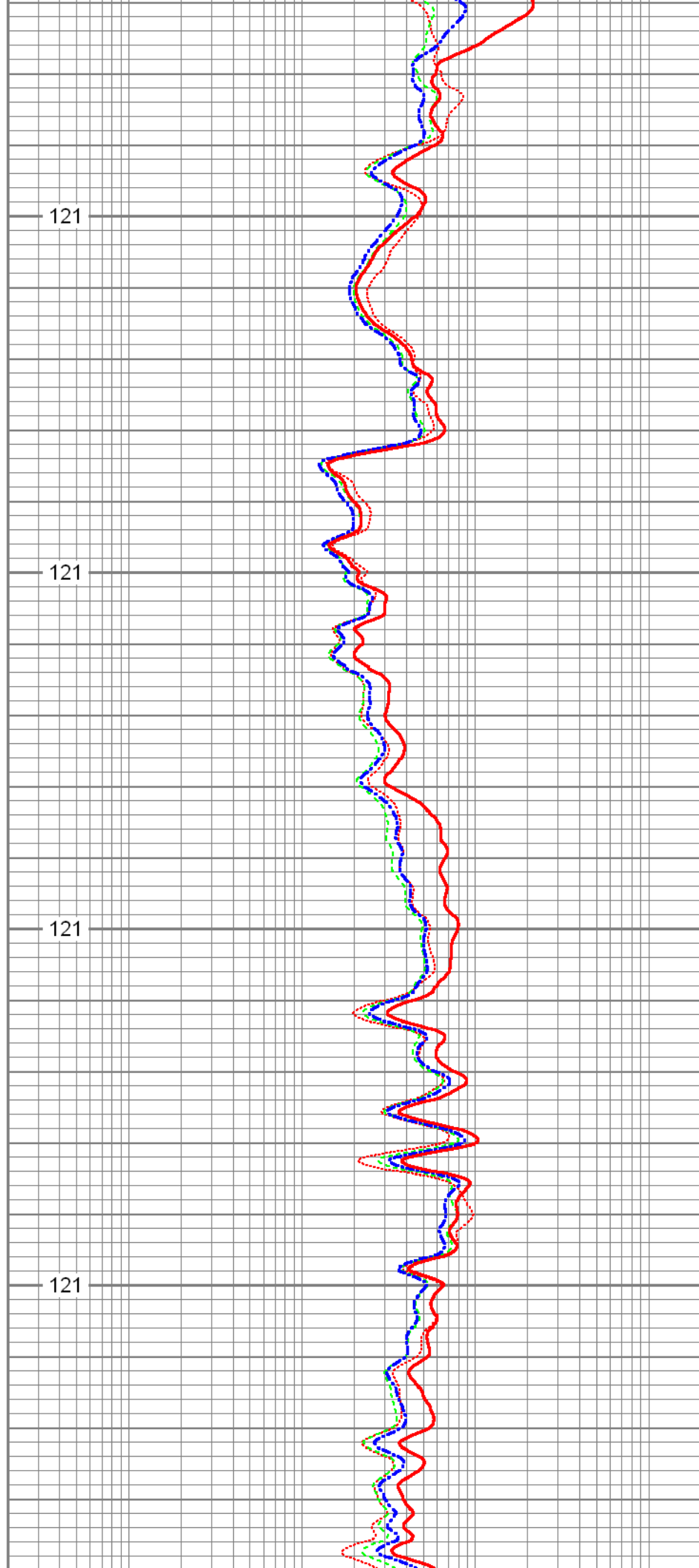
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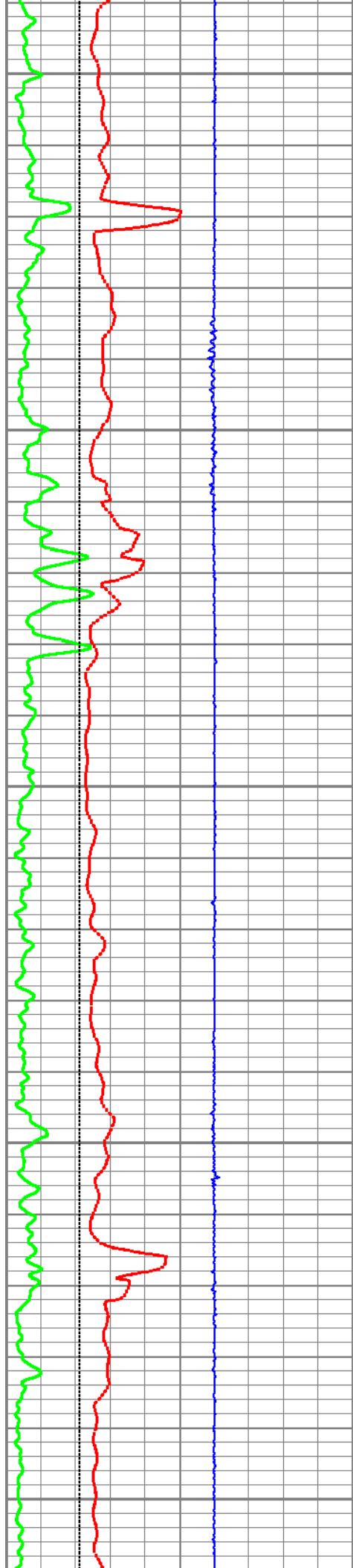
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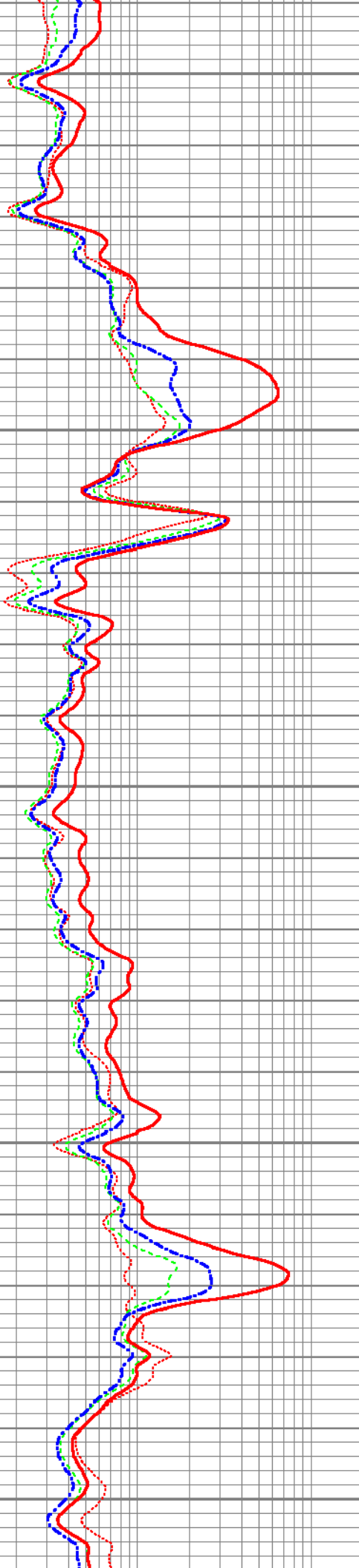
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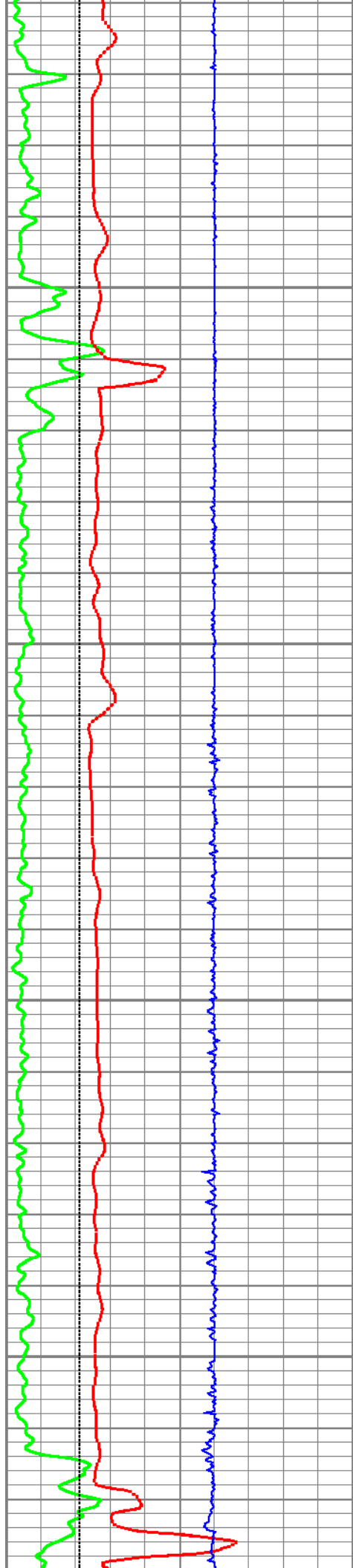
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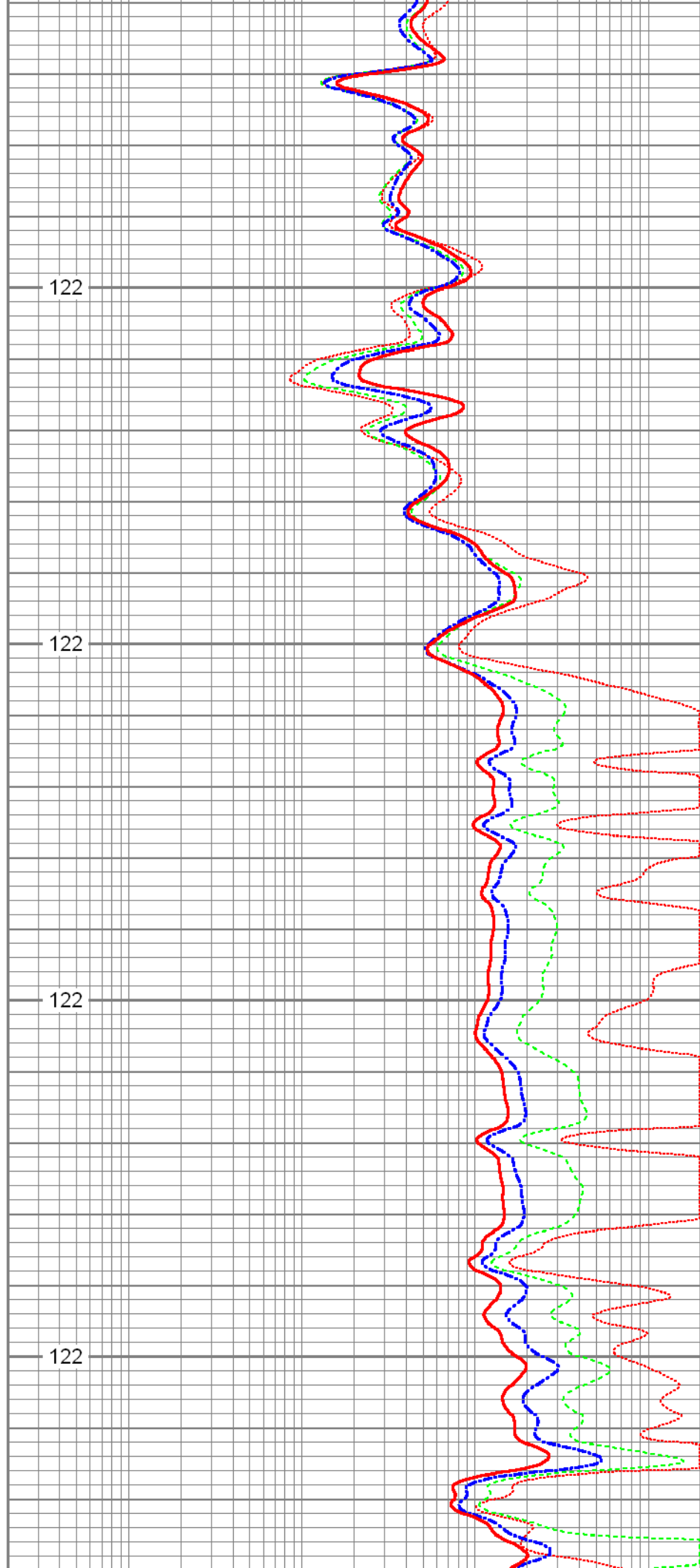
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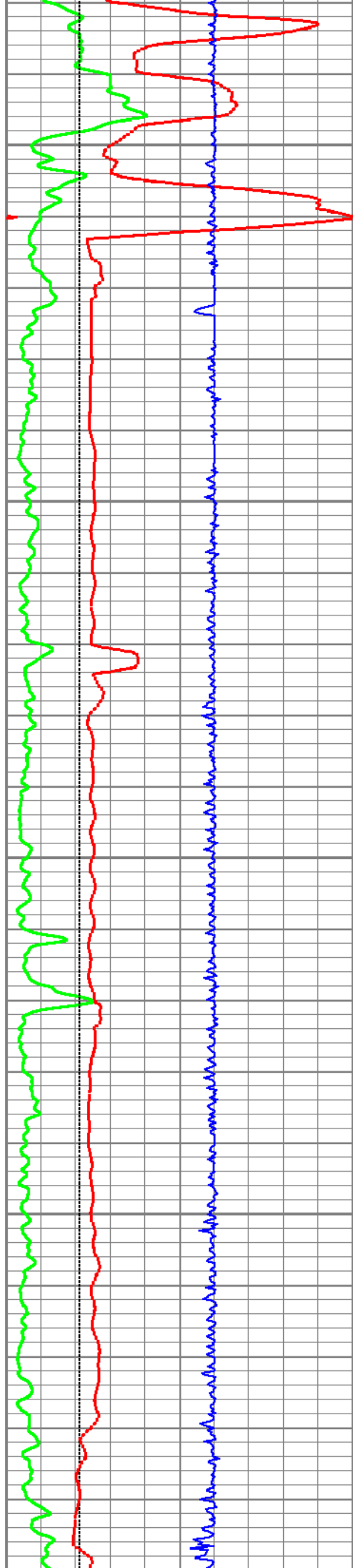
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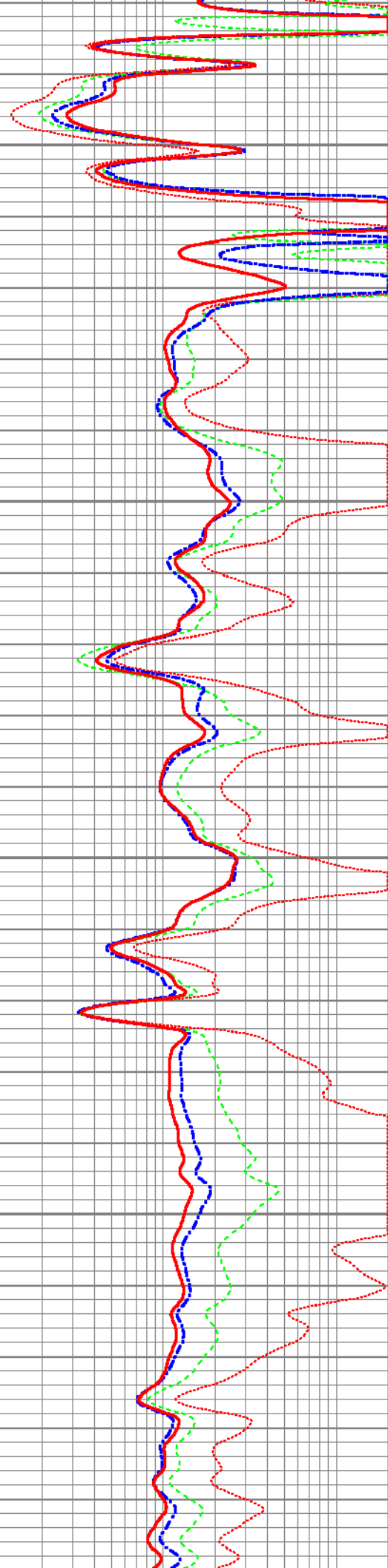
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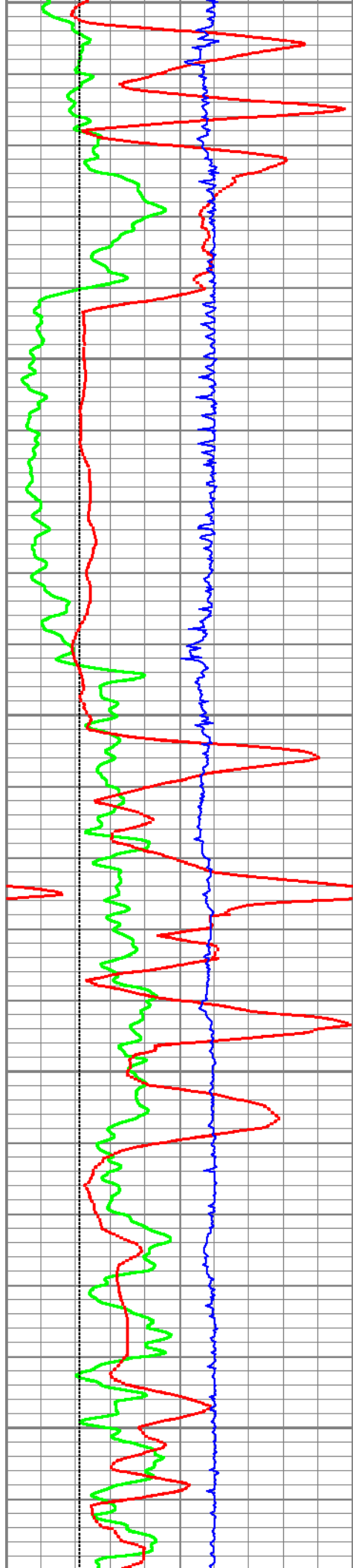
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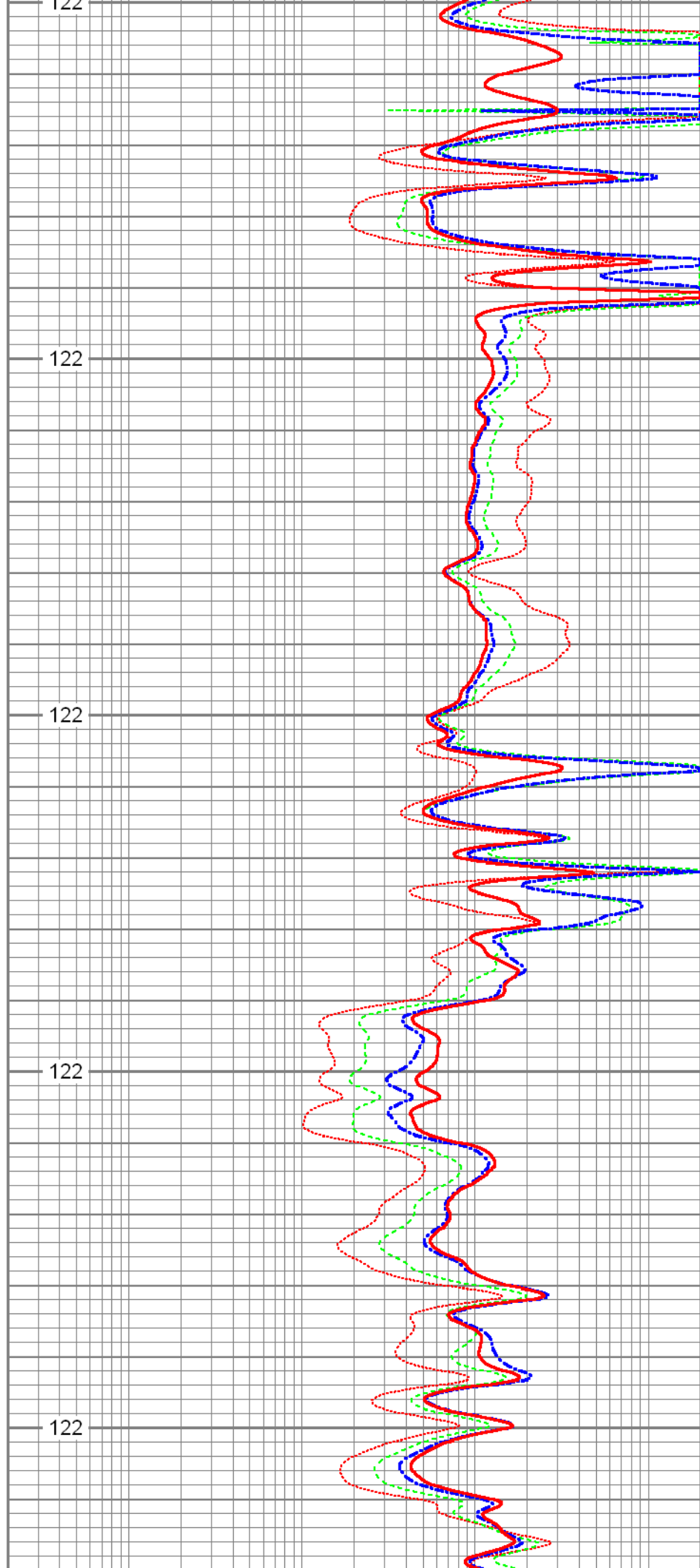
122

122

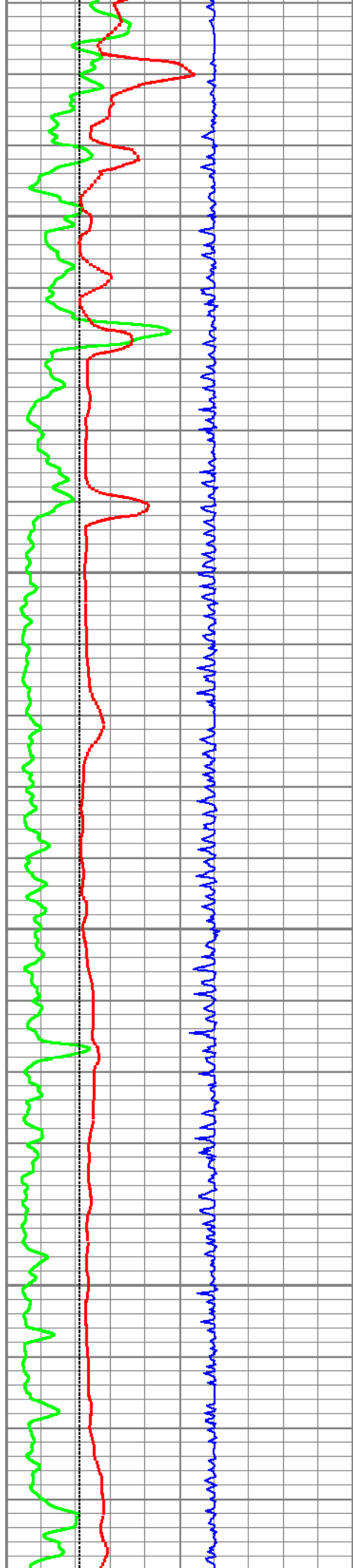




7150
7200
7250
7300
7350



122
122
122
122



7400

7450

7500

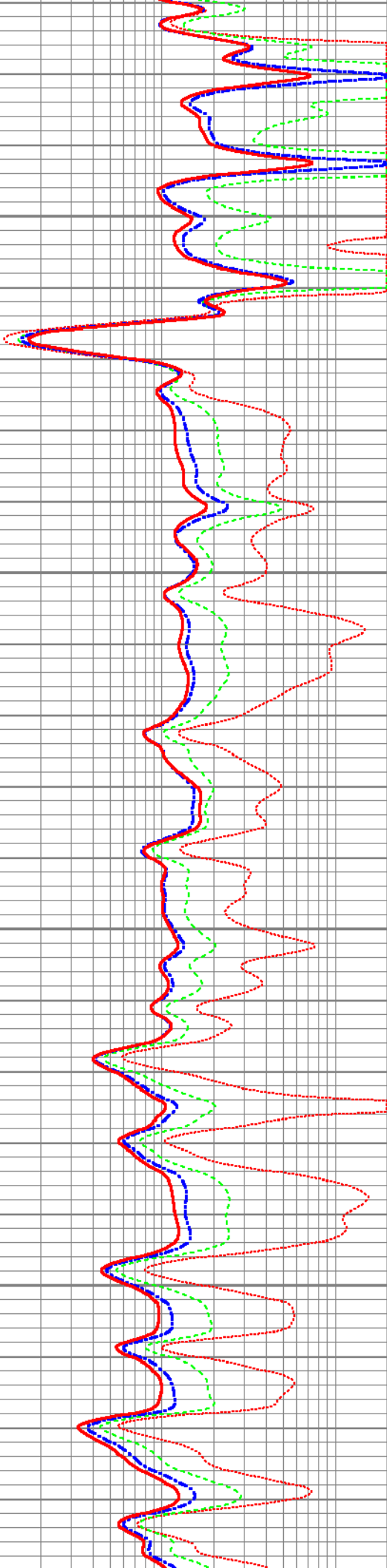
7550

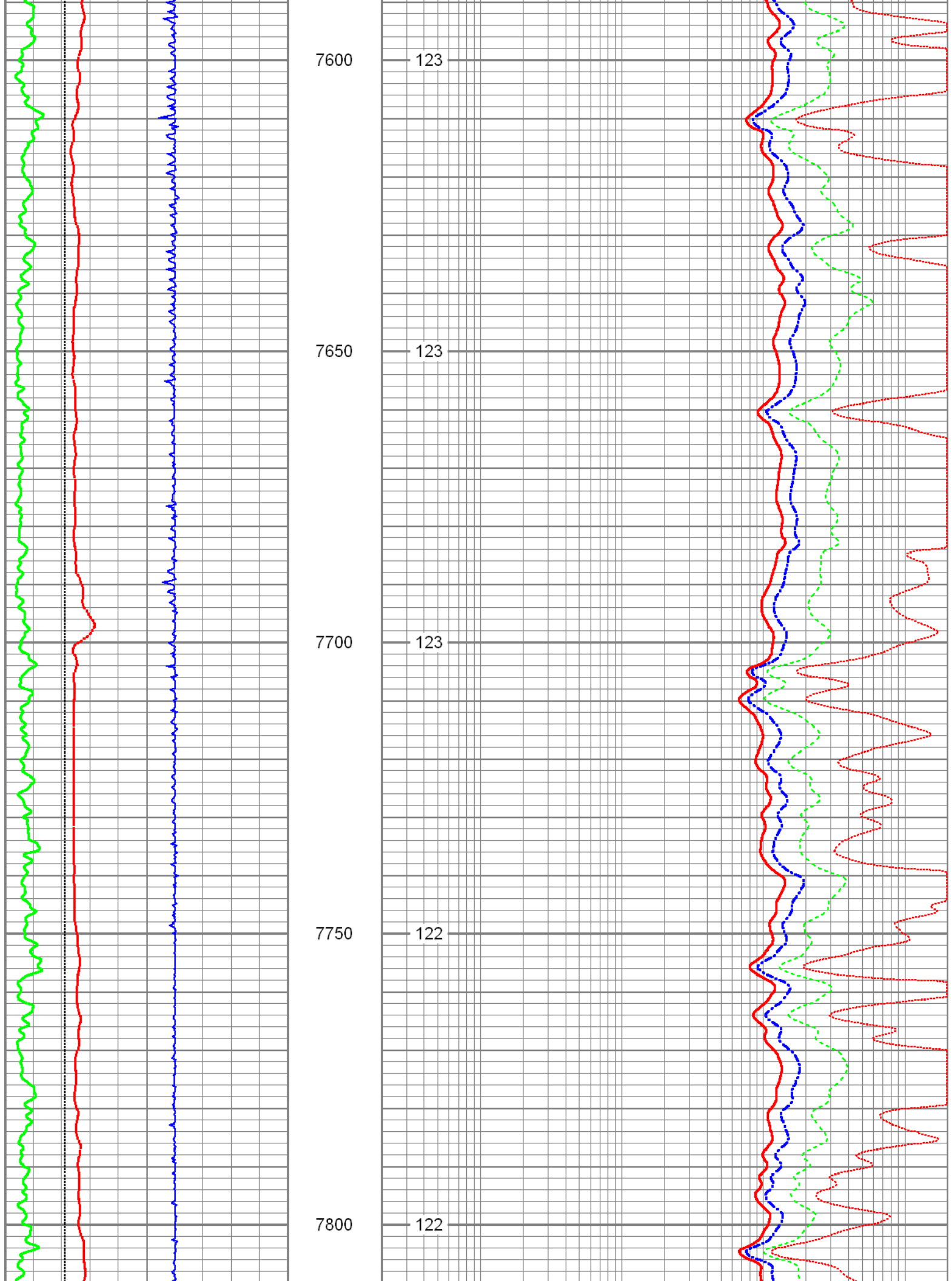
122

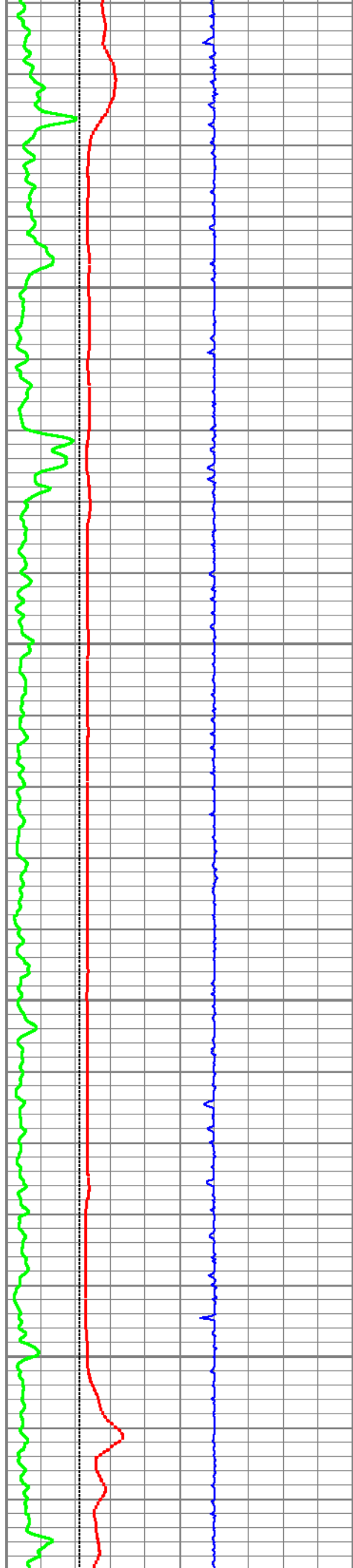
122

123

123







7850

7900

7950

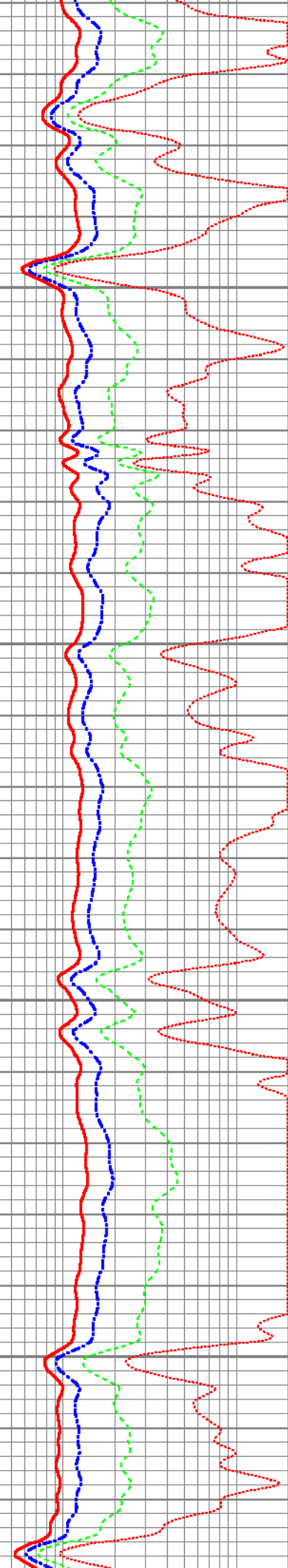
8000

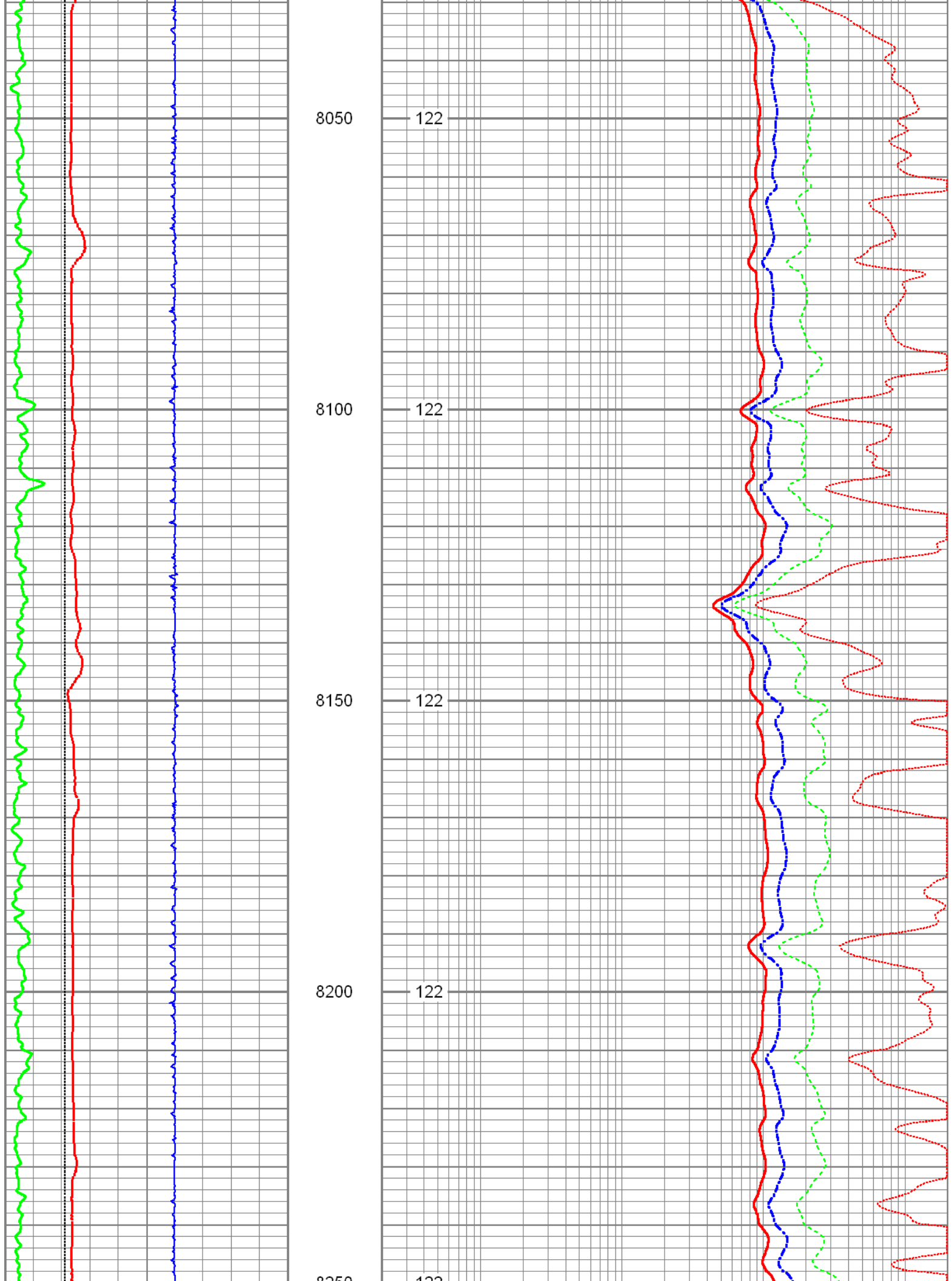
122

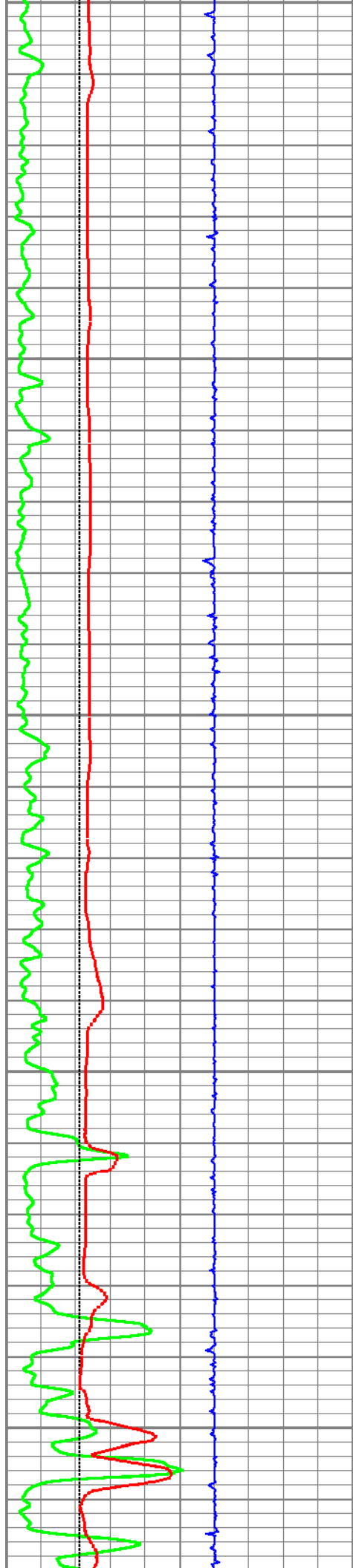
122

122

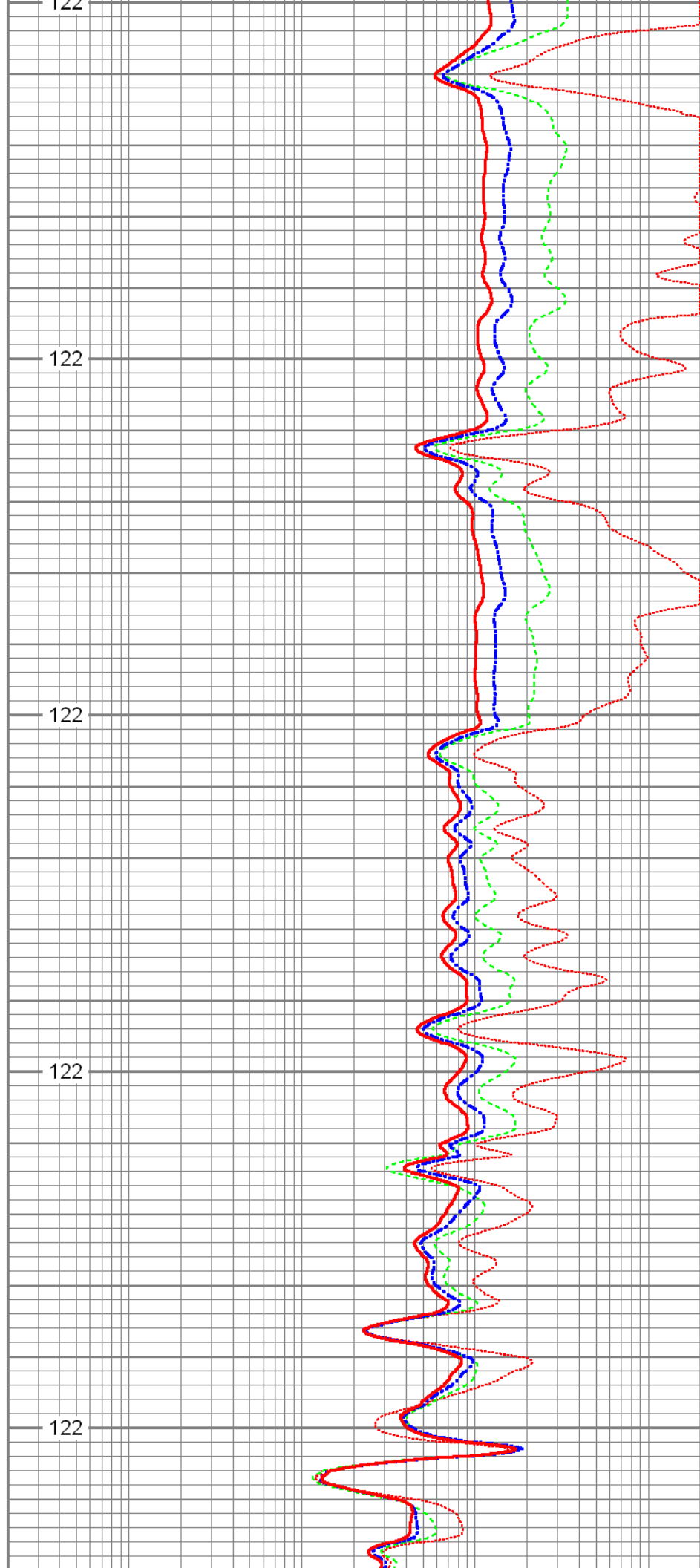
122

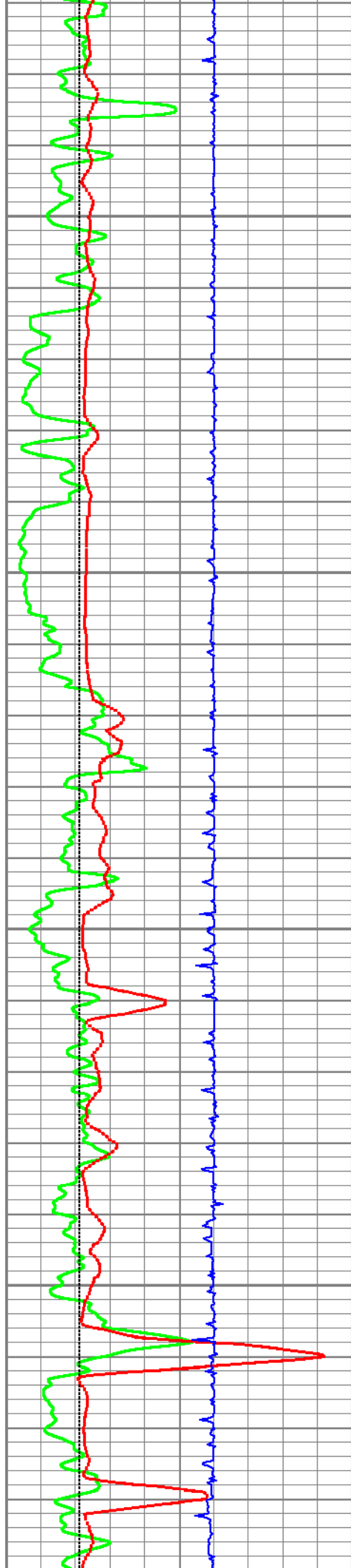






8250
8300
8350
8400
8450





8500

8550

8600

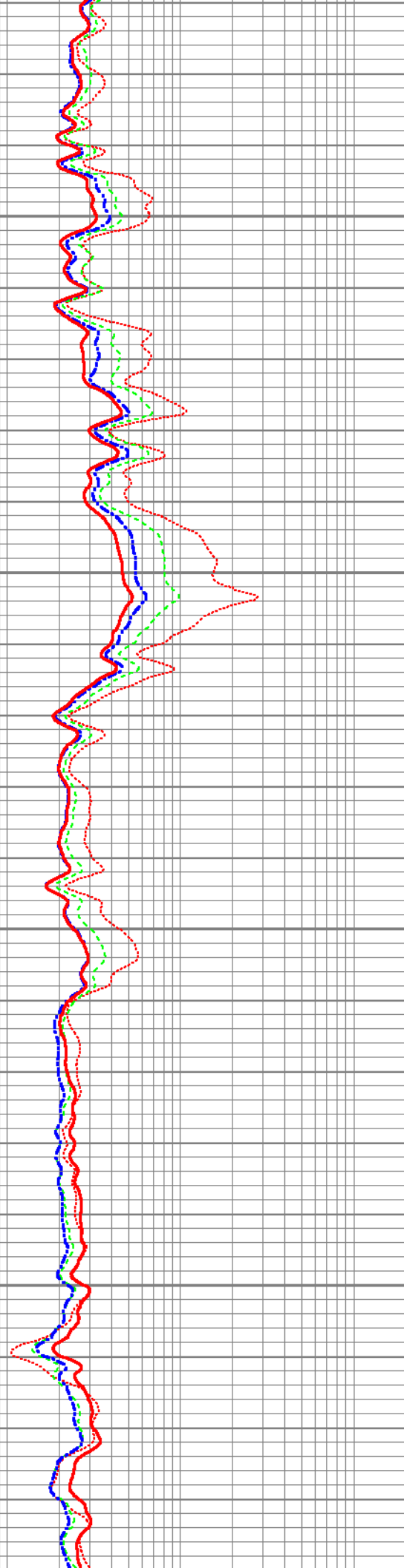
8650

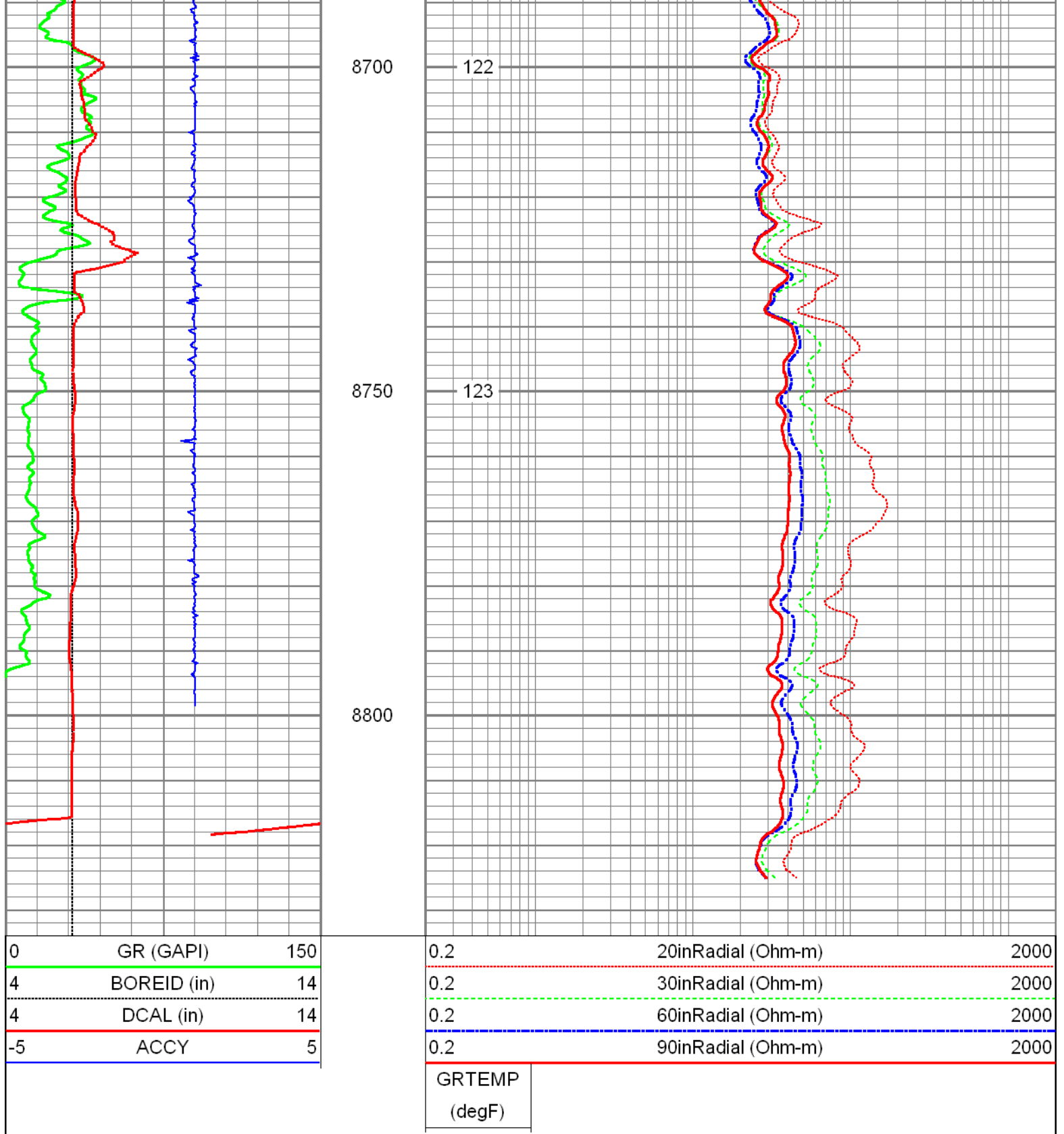
122

121

121

121





Log Variables

Database: C:\Warrior\Data\york_mem.db
Dataset: field/well/proc3/pass1.2

Top - Bottom

A	BHCOR	BHFL_TYPE	BHIDSRC	BOREID	BOTTEMP	CASED?
1	On	WBM	CURVE	in 6.125	degF 123	No
CASEOD	CASETHCK	CEMWATERSA	CMNTTHCK	FLUIDDEN	FRMSALIN	LATNOR
in 1.5	in 0	kppm 0	in 0	g/cc 1	kppm 0	Off

4.5	0	0	0	1	0	Off
M	MATRXDEN g/cc	MUDSALIN kppm	MudWgt lb/gal	NPORSEL	PERFS	RESTMP SRC
2	2.71	1.1	8.6	Limestone	0	INTERNAL
SO in	SRFTEMP degF	SZCOR	TDEPTH ft	TMPCOR	TOOLPOS	
0.5	65	On	8963	On	Free	

Calibration Report			
Database File:	york_mem.db		
Dataset Pathname:	proc3/pass1.2		
Dataset Creation:	Fri Sep 16 18:48:52 2011		
ThruBit Induction Calibration Report			
Serial-Model:		28-PS	
Shop Calibration Performed:		Sat Sep 03 11:16:18 2011	
BaseLine			
	R	X	
Freq 1			
A1	-469.2690	242.8270	
A2	-139.1180	356.2730	
A3	-24.2833	103.6150	
A4	-14.2774	241.3390	
A5	-13.0893	121.8110	
Freq 2			
A1	-244.3640	128.1320	
A2	-90.6536	203.7130	
A3	-18.7401	16.1688	
A4	-17.5485	71.9563	
A5	-17.7948	-14.4559	
Freq 3			
A1	-156.0320	21.3573	
A2	-70.1178	107.3870	
A3	-15.0995	-45.1136	
A4	-18.7864	-40.4596	
A5	-19.3813	-114.2380	
Freq 4			
A1	-84.6690	-146.4640	
A2	-50.7592	-18.2619	
A3	-13.1682	-136.4420	
A4	-22.5289	-207.0720	
A5	-25.4386	-280.4840	

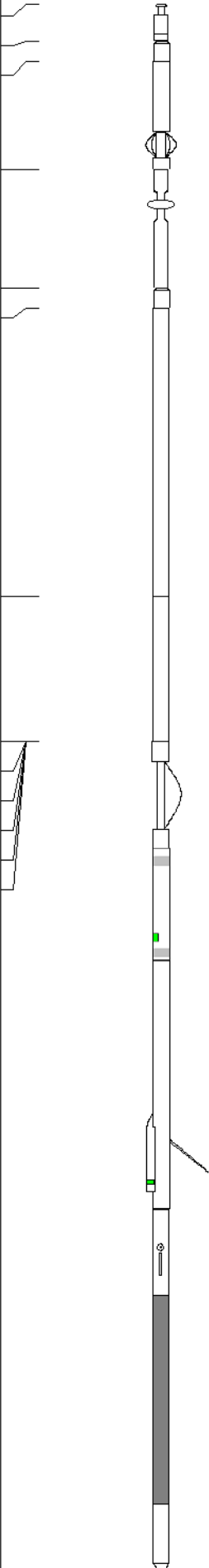
Calibration Coefficients			
	R	X	
Freq 1			
A1	0.9879	0.0034	

A2	0.9904	0.0043
A3	0.9950	-0.0032
A4	0.9867	0.0060
A5	0.9878	0.0045
Freq 2		
A1	0.9823	-0.0051
A2	0.9842	-0.0040
A3	0.9830	-0.0040
A4	0.9823	-0.0023
A5	0.9841	-0.0038
Freq 3		
A1	0.9980	-0.0098
A2	1.0002	-0.0087
A3	0.9986	-0.0089
A4	0.9975	-0.0071
A5	1.0003	-0.0087
Freq 4		
A1	0.9920	-0.0022
A2	0.9936	-0.0016
A3	0.9939	-0.0036
A4	0.9935	-0.0004
A5	1.0025	-0.0037
Temperature	34.7054	

ThruBit Density Calibration Report		
Serial-Model:		43-PS
Shop Calibration Performed:		Sun Sep 11 20:39:05 2011

References		
	Density	Units
Aluminium	2.602	g/cc
Magnesium	1.715	g/cc
Readings		
	Counts	Units
SS1 Background	141.44	cps
LS1 Background	146.61	cps
LS4 Background	30.83	cps
SS1 Aluminium	4203.29	cps
LS1 Aluminium	857.60	cps
LS4 Aluminium	953.05	cps
SS1 Magnesium	6865.62	cps
LS1 Magnesium	5300.34	cps
LS1 Al + Fe	732.72	cps
LS4 Al + Fe	420.95	cps
Results		
SS Slope	1.76	
LS Slope	0.45	
PEF K Factor	3.360	

PEF B Factor		-0.106			
Compensated Neutron Calibration Report					
		Serial Number:		23	
		Tool Model:		PS	
		Source Number:			
		Calibration Tank Temperature:		0.0 degF	
BACKGROUND MEASUREMENT					
		SS Counts		LS Counts	
		0.0		0.0	
WATER TANK REFERENCE		Sun Sep 11 19:08:54 2011			
		SS Counts		LS Counts	
		0.0 cps		0.0 cps	
		Tank Ratio Ref		Tank Ratio	
		30.9580 SS/LS		30.1831 SS/LS	
				Tank Ratio Gain	
				1.0257	
ALUMINUM SLEEVE REFERENCE					
		SS Counts		LS Counts	
		0.0 cps		0.0 cps	
		Al Ratio Ref		Al Ratio	
		0.000 SS/LS		0.000 SS/LS	
				Al Ratio Gain	
				1.01	
		Sleeve Porosity			
		0.00 pu			
Gamma Ray Calibration Report					
Serial Number:		27			
Tool Model:		PS			
Performed:		Sun Sep 11 19:18:56 2011			
Calibrator Value:		166.3		GAPI	
Background Reading:		76.5		cps	
Calibrator Reading:		438.4		cps	
Sensitivity:		0.3750		GAPI/cps	
Inclinometer Calibration Report					
Performed:		Sun Jun 13 14:33:21 1993			
		Low Read.		High Read.	
				Low Ref.	
				High Ref.	
X Accelerometer		0.00		1.00	
				0.00	
				1.00	
				gee	
Y Accelerometer		0.00		1.00	
				0.00	
				1.00	
				gee	

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
Thrubit	66.19		WPhead	1.58	2.13	5.15
Thrubit	64.61		Weak Point Cable Head			
Thrubit	63.73		10-1 Thrubit 10 to 1 Crossover	0.88	2.13	3.95
			Small_Release Thrubit Small Release Tool	4.54	2.13	42.00
Thrubit	59.19		HangOff_Tool Thrubit Hang Off Tool	5.00	2.25	35.00
Thrubit	54.19		10-1 Thrubit 10 to 1 Crossover	0.88	2.13	3.95
TBBAT	53.31		TBBAT-A (1) Thrubit Battery	12.17	2.13	38.20
			TMG-PS (27) ThruBit Telemetry Gamma Ray	6.13	2.13	45.00
TMG	41.15		Decentralizer Thrubit Small Decentralizer	4.50	2.13	60.00
Thrubit	35.02		TBN-PS (23) ThruBit Neutron	4.76	2.13	63.00
ACCX	35.02		TBD-PS (43) Thrubit Density	10.47	2.13	94.00
ACCY	35.02		TBI-PS (28) Thrubit Induction	15.29	2.13	94.00
ACCZ	35.02					
GRHEADV	35.02					
DHTEN	35.02					

Total Length:	66.19 ft
Total Weight:	484.25 lb
O.D.	2.25 in