



ThruBit
A Schlumberger Company

**SPECTRAL DENSITY
DUAL SPACED NEUTRON
GAMMA RAY
MEMORY LOG**

Company	SANDRIDGE ENERGY	Company	SANDRIDGE ENERGY
Well	LORI 3510 3-2H	Well	LORI 3510 3-2H
Field	GUDEMAN	Field	GUDEMAN
County	BARBER	County	BARBER
State	KANSAS	State	KANSAS
Location:	API #: 15-077-23969-01-00 200' FNL & 2130' FWL	Other Services THRUBIT PORTAL BIT	
Permanent Datum	SEC 11 TWP 35S RGE 10W	Elevation	
Log Measured From	G.L. K.B. 16' ABOVE PERM DATUM	K.B. 1328' D.F. 1328' G.L. 1312'	
Drilling Measured From	K.B.		
Date	11 DEC 2012		
Run Number	ONE		
Depth Driller	12255'		
Depth Logger	12239'		
Bottom Logged Interval	12221'		
Top Log Interval	3000'		
Casing Driller	7" @ 5298'		
Casing Logger	5298'		
Bit Size	6.125"		
Type Fluid in Hole	WBM		
Density / Viscosity	9.0 / 27		
pH / Fluid Loss	7.0 / 60		
Source of Sample	MUD SENSOR		
Rim @ Meas. Temp	0.36 OHM@65DEGF		
Rinf @ Meas. Temp	0.30 OHM@65DEGF		
Rmc @ Meas. Temp	0.45 OHM@65DEGF		
Source of Rinf / Rmc	CALCULATED		
Rim @ BHT	0.15 OHM@129DEGF		
Time Circulation Stopped	20:12 10 DEC 2012		
Time Logger on Bottom	21:29 10 DEC 2012		
Maximum Recorded Temperature	129 DEGF		
Equipment Number	T005		
Location	OKC, OK		
Recorded By	C. PARKER		
Witnessed By	D. BURT		

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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 ThruBit LLC 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.

Comments

SERVICE: HORIZONTAL PUMP DOWN MEMORY BIT DEPTH: 12180' LOG TO: 3000'
ALL SCALES AND PRESENTATIONS PER CLIENT REQUEST
LIMESTONE MATRIX, 2.71 g/cc, USED FOR POROSITY MEASUREMENTS
TOOLS RAN WITH DECENTRALIZER AND SWIVEL
TBHV REPRESENTS TOTAL BOREHOLE VOLUME, ft3
ABHV REPRESENTS ANNULAR BOREHOLE VOLUME, ft3, CALCULATED FOR 4.5" CASING
USED RIGMINDER WITH PASON TO ACQUIRE LOG DEPTH
CORRELATED TO MWD LOG PROVIDED BY CUSTOMER

RIG: UNIT 9
CREW: C.PARKER R.WILSON I.HERNANDEZ

Service Ticket No.	1625	API No.	15-077-23969-01-00	PGM Ver	WARRIOR 7.0
The Well Name, Location, Borehole Description, and / or Cementing Data Furnished by Client					
EQUIPMENT DATA					
GAMMA RAY		NEUTRON		INDUCTION	

Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	ONE
Serial No.	PS27T	Serial No.	ENP5N	Serial No.	PS44D	Serial No.	PS38R
Model No.	PS	Model No.	ENP	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	12228'	3000'		35 FPM			
	GAMMA RAY		NEUTRON		DENSITY		INDUCTION
Pass	Scale		Scale		Scale		Scale
No.	L	R	L	R	L	R	L
ONE	0 API	150 API	30 %	-10 %	30 %	-10 %	0.2 OHM-M 2000 OHM-M
DIRECTIONAL INFORMATION							
Maximum Deviation	93.8	deg. @	12255'	KOP	3912'		

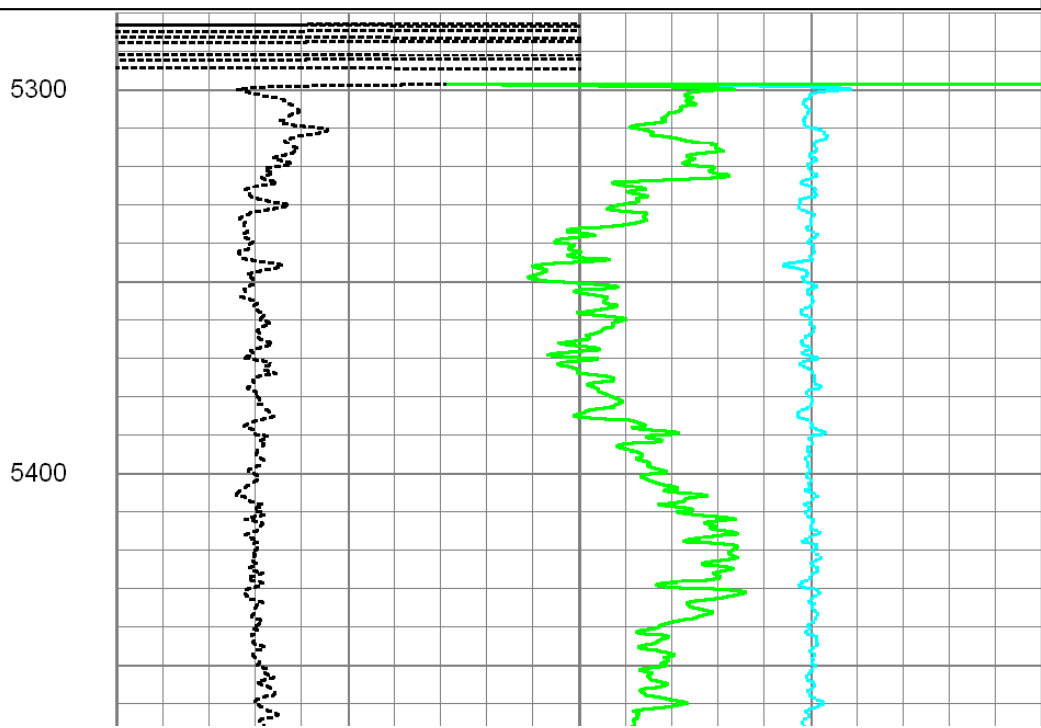


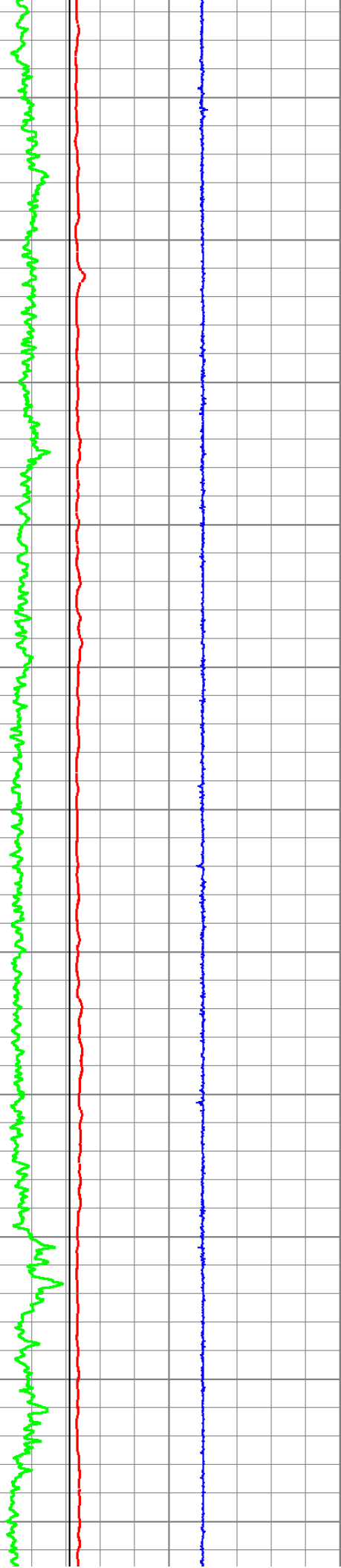
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 Dataset Pathname: proc1/pass1.3
 Presentation Format: 6_2n_chk
 Dataset Creation: Tue Dec 11 06:18:07 2012
 Charted by: Depth in Feet scaled 1:600

0	GR (GAPI)	150
4	DCAL (in)	14
4	BOREID (in)	14
-5	ACCY	5

0	PEF (barn)	10	-0.5	DRHO (g/cc)	0.5
2	RHOB (g/cc)				3





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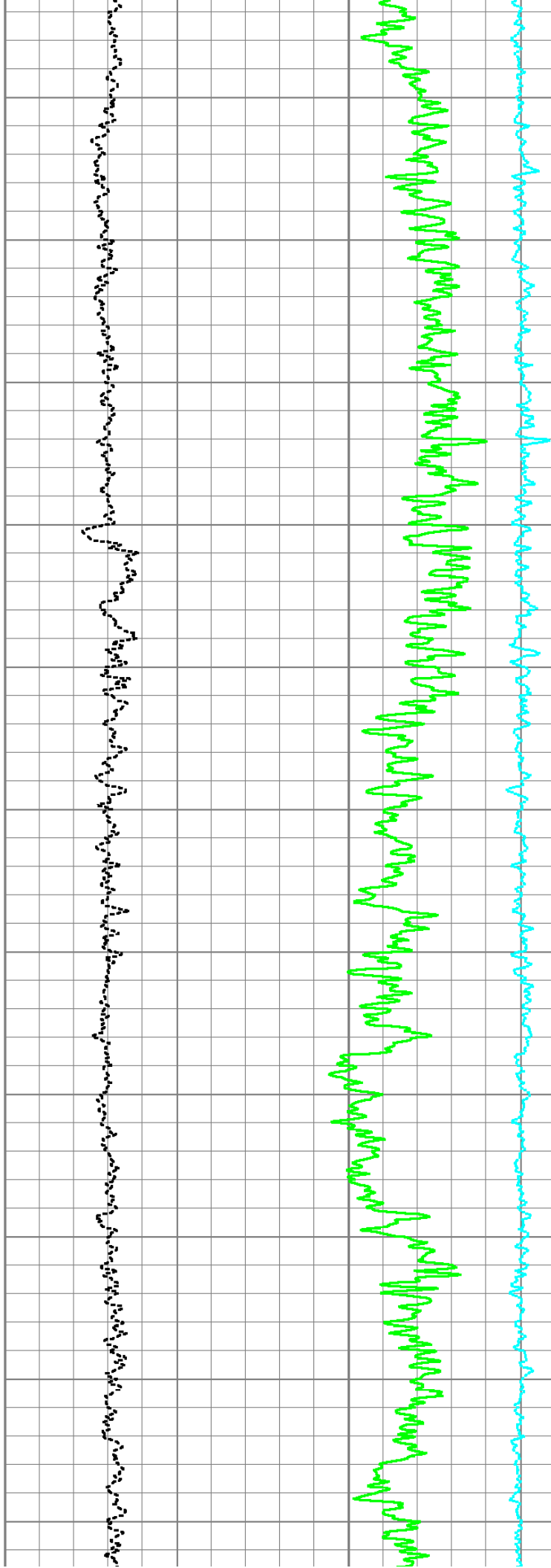
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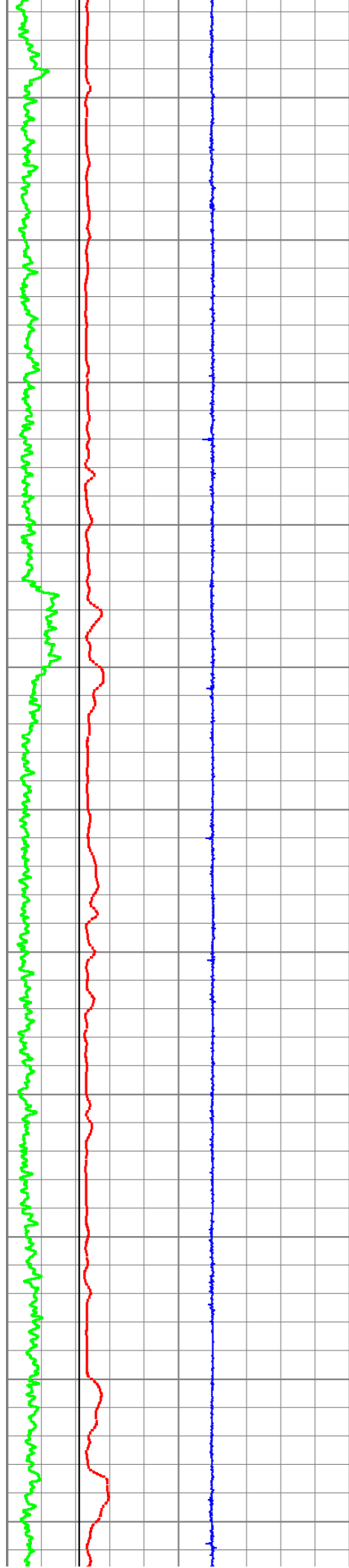
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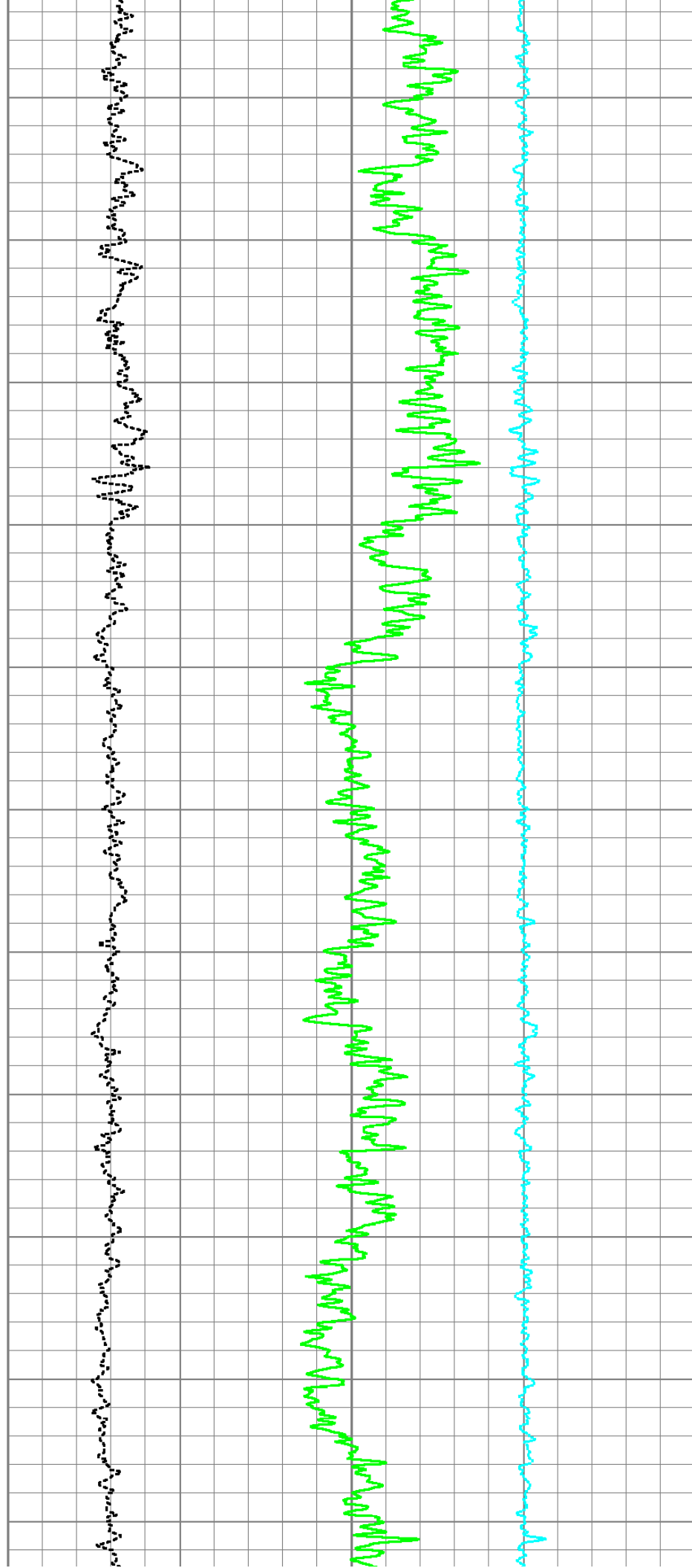
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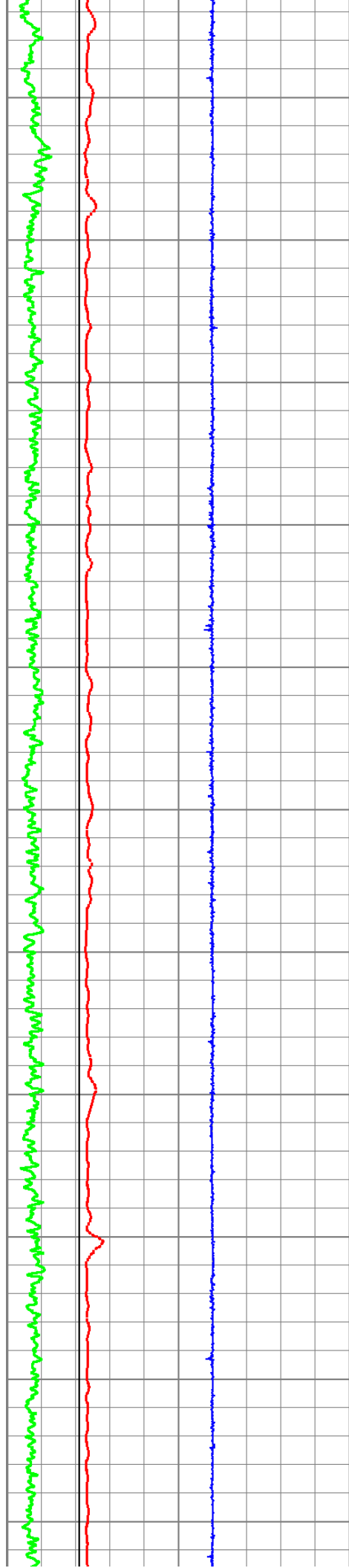
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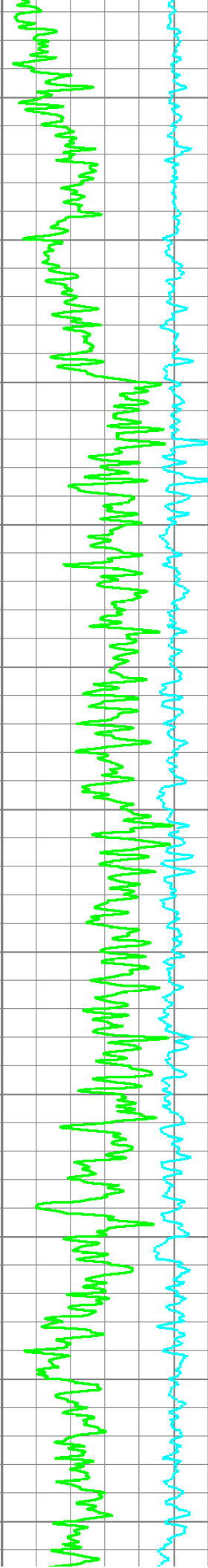
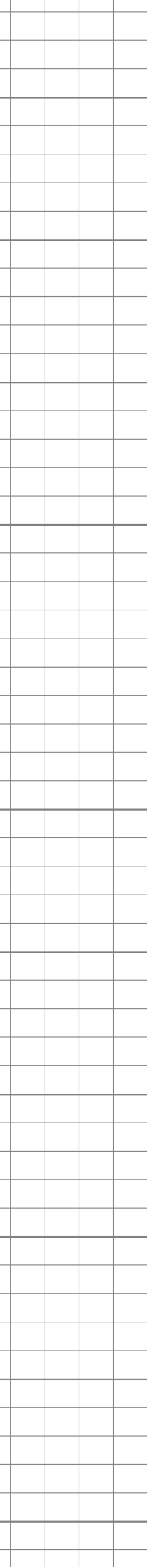
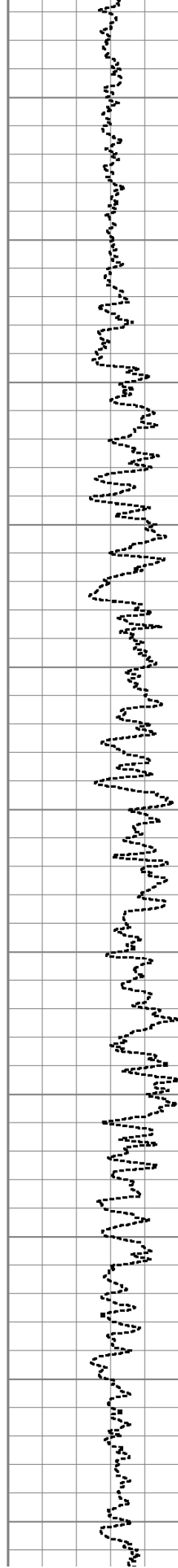
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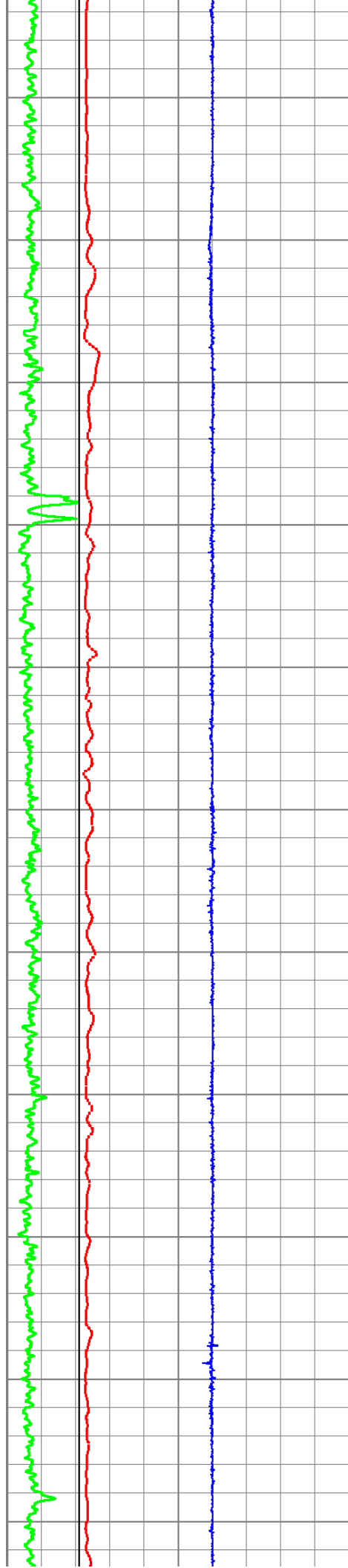
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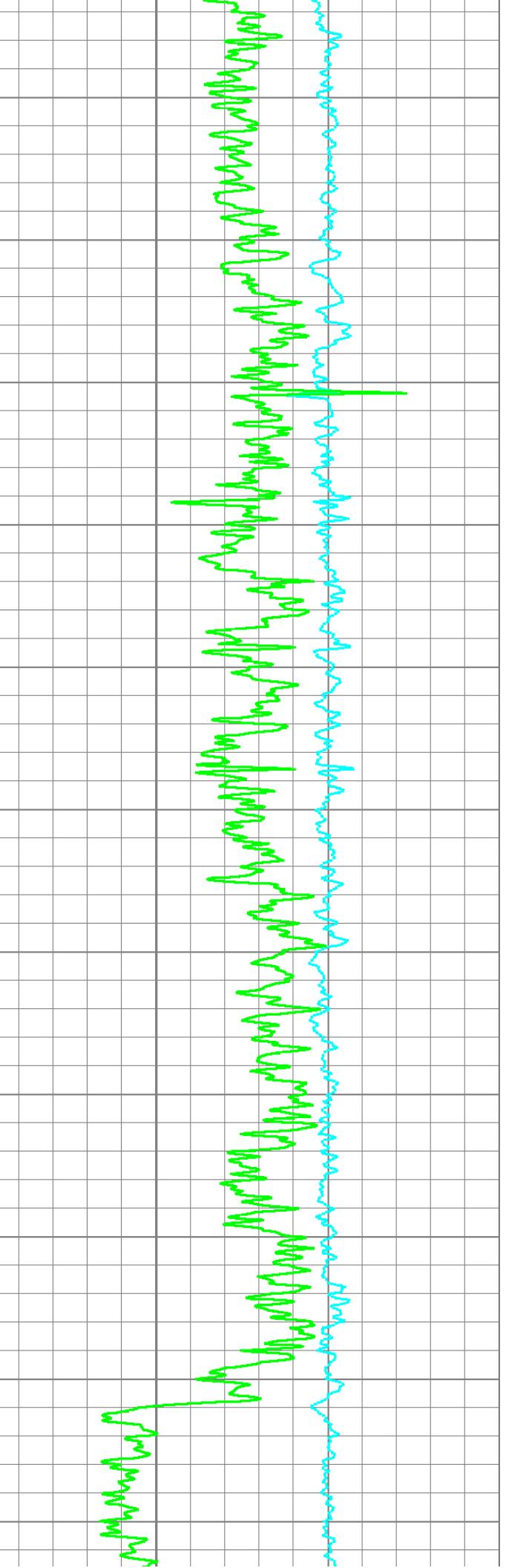
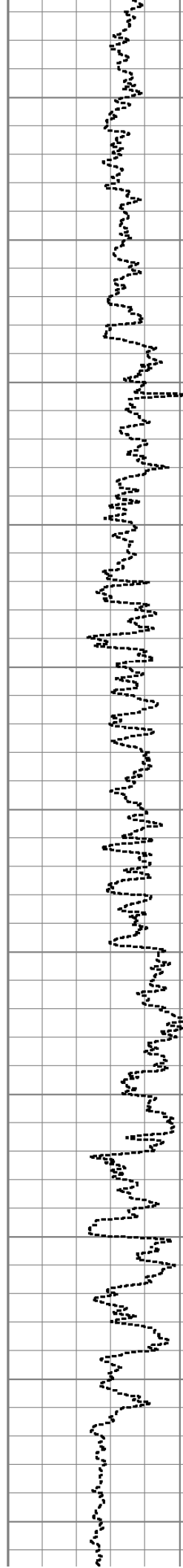
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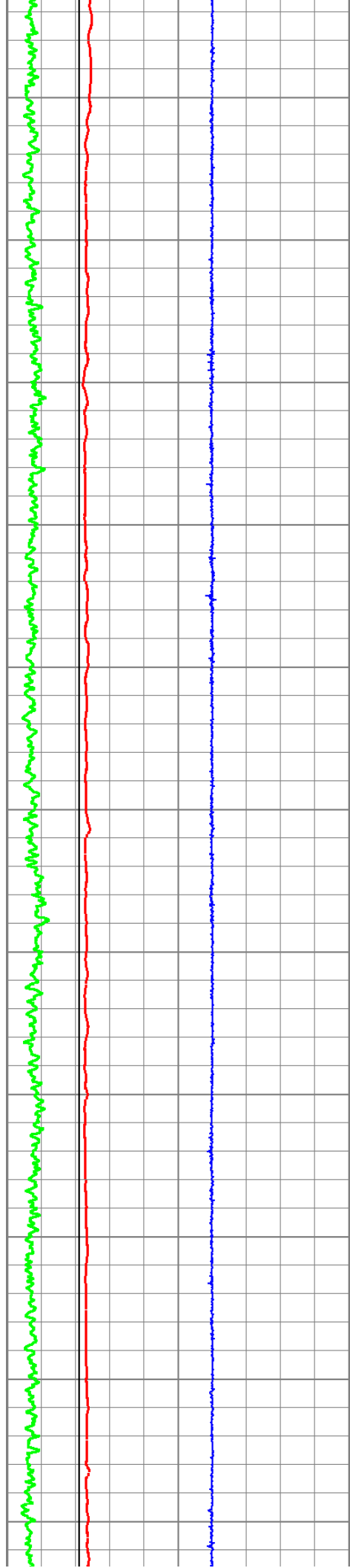
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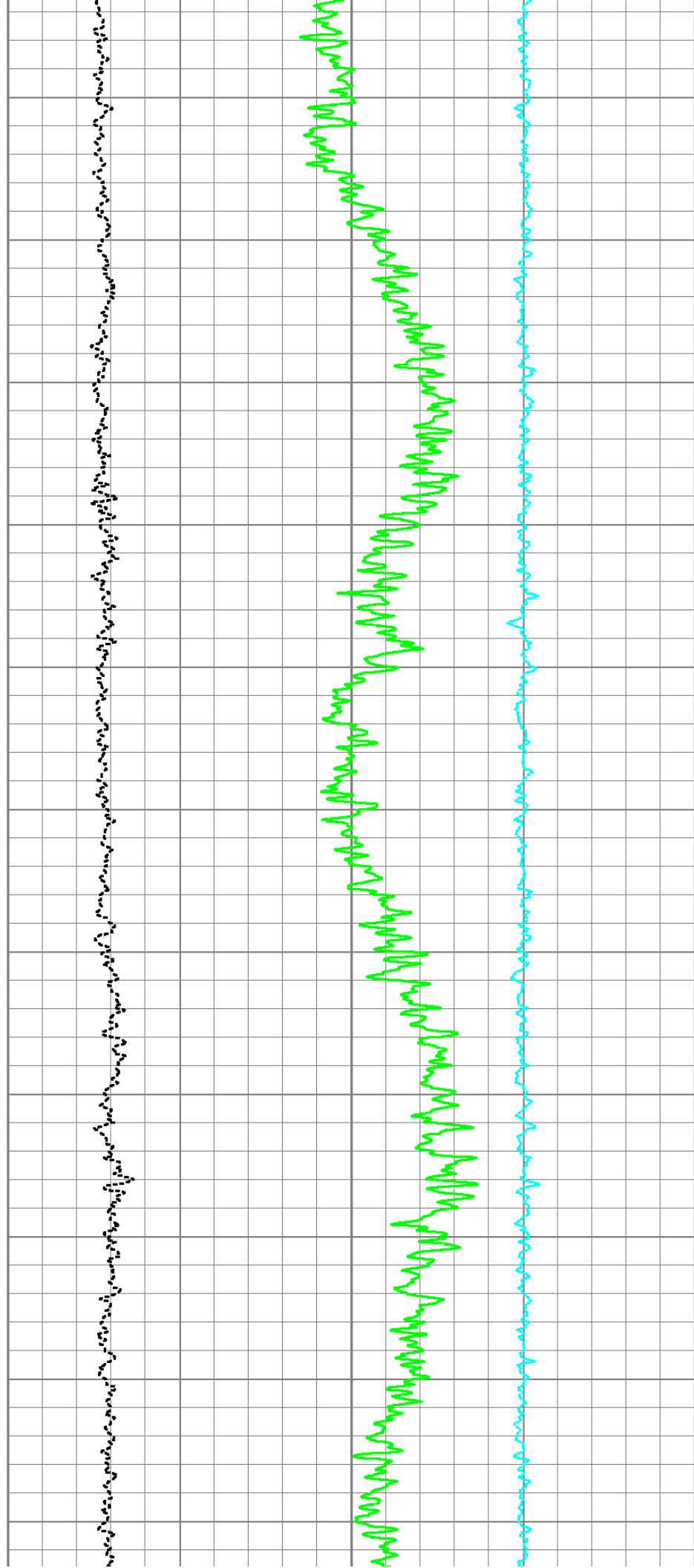
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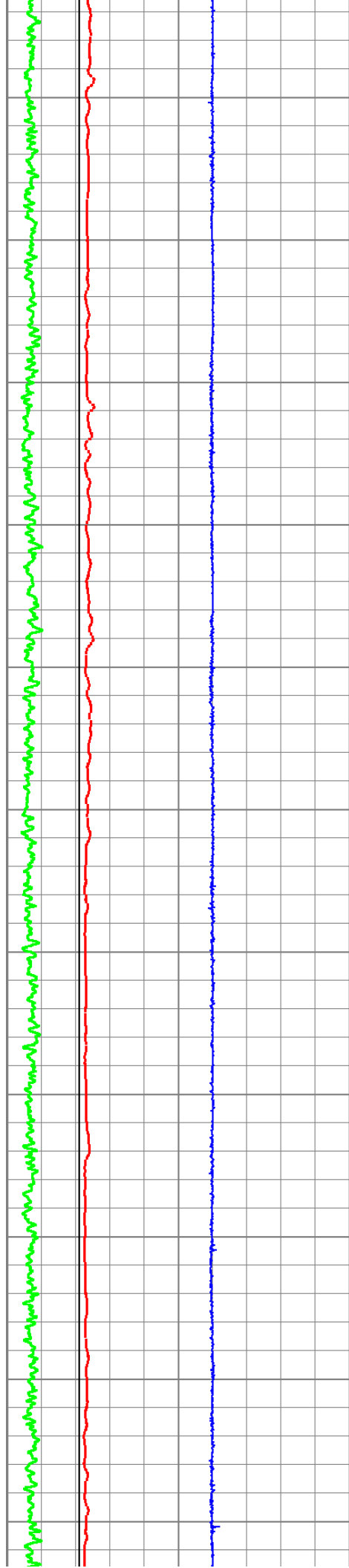
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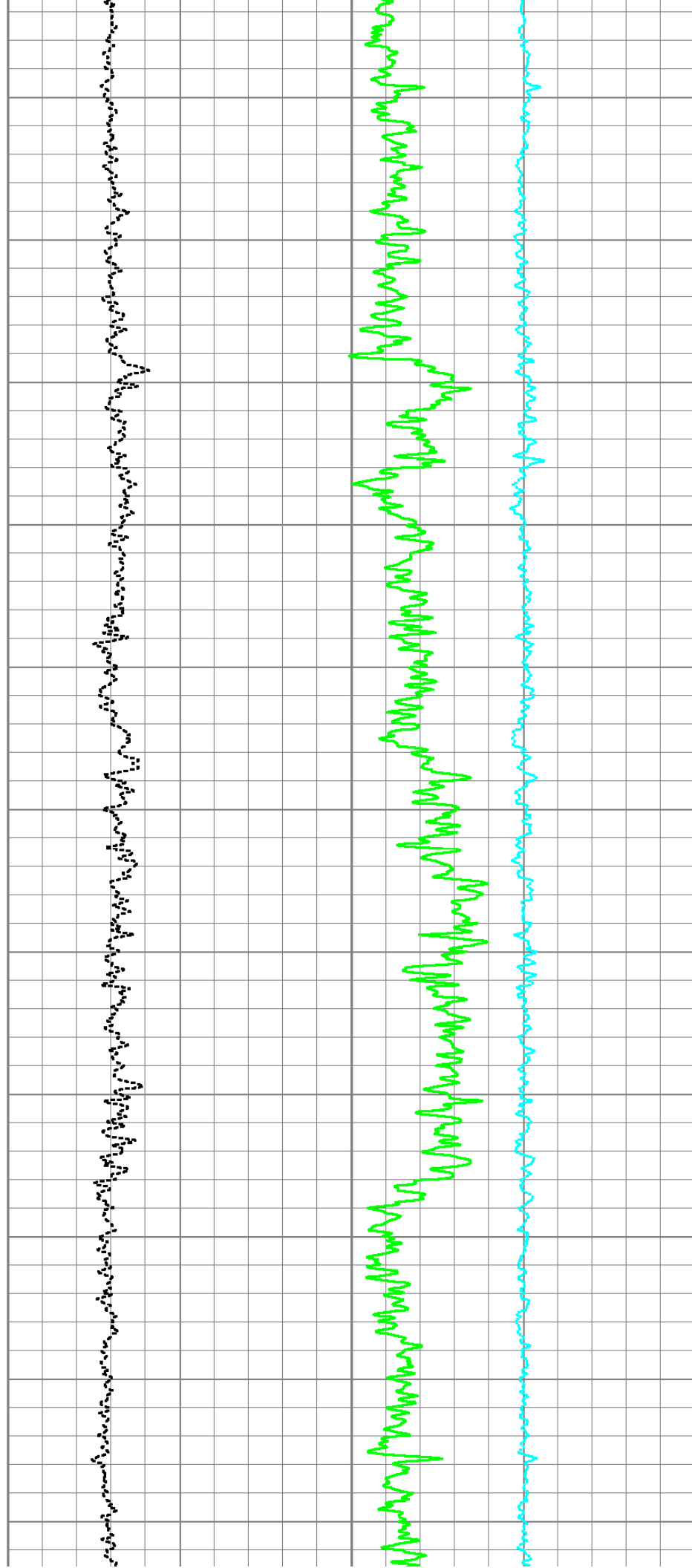
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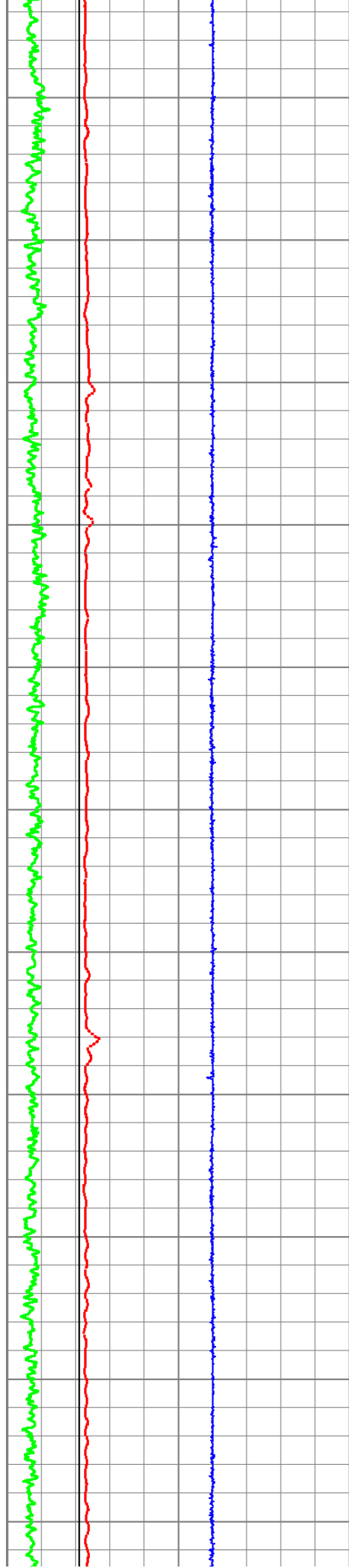
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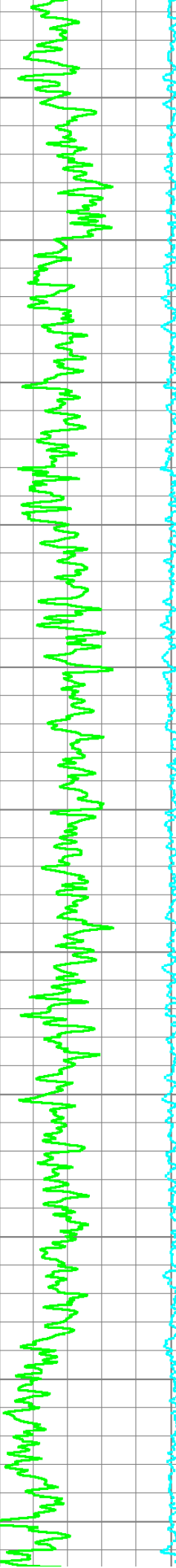
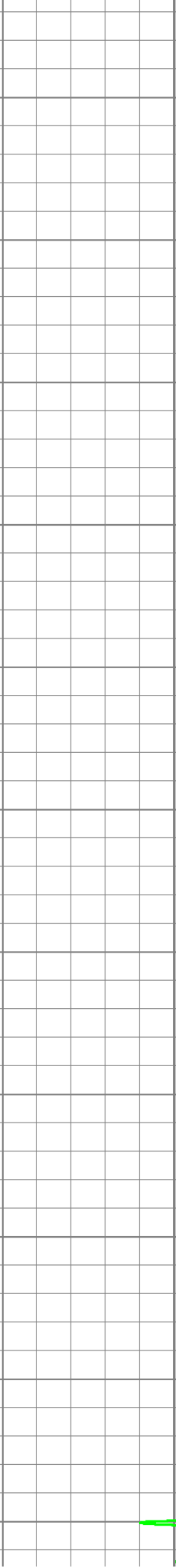
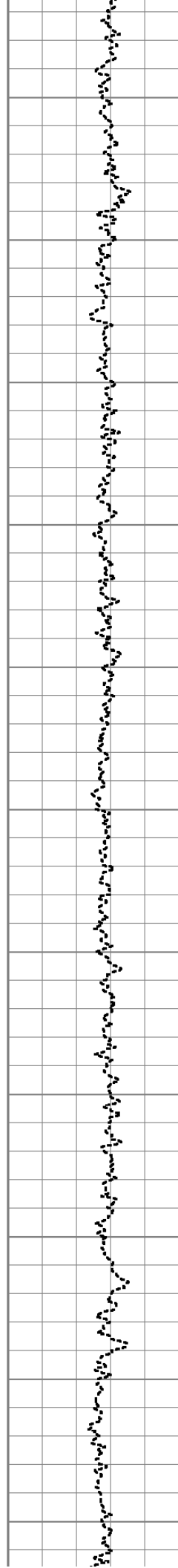
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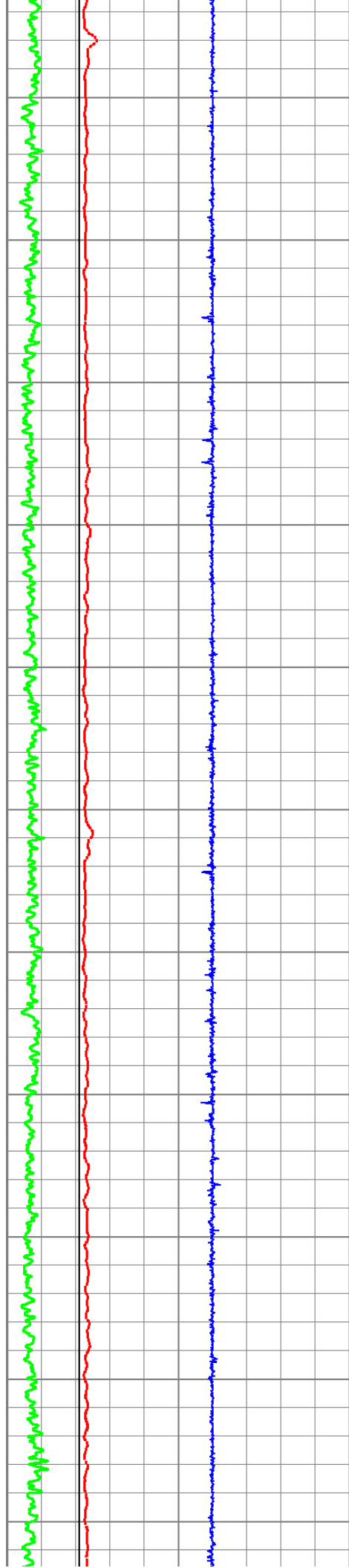
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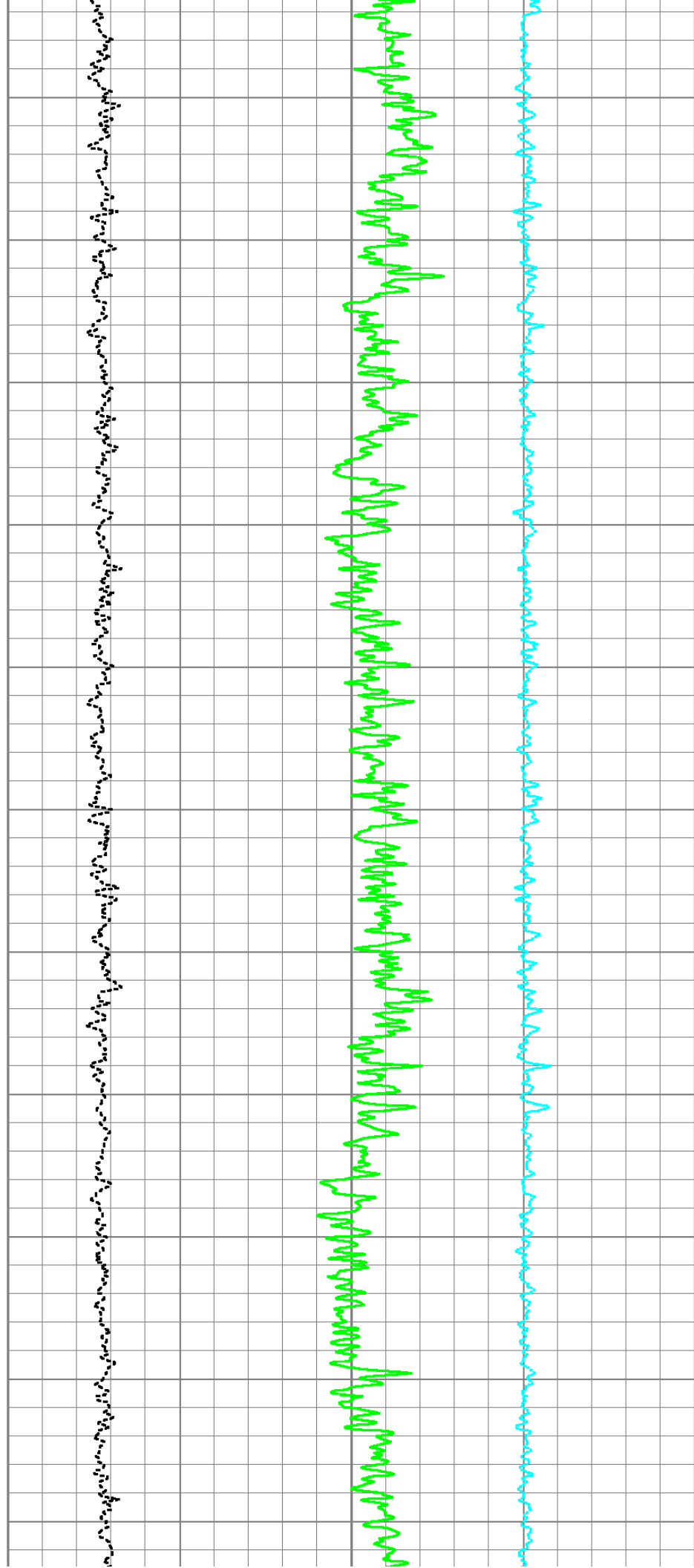
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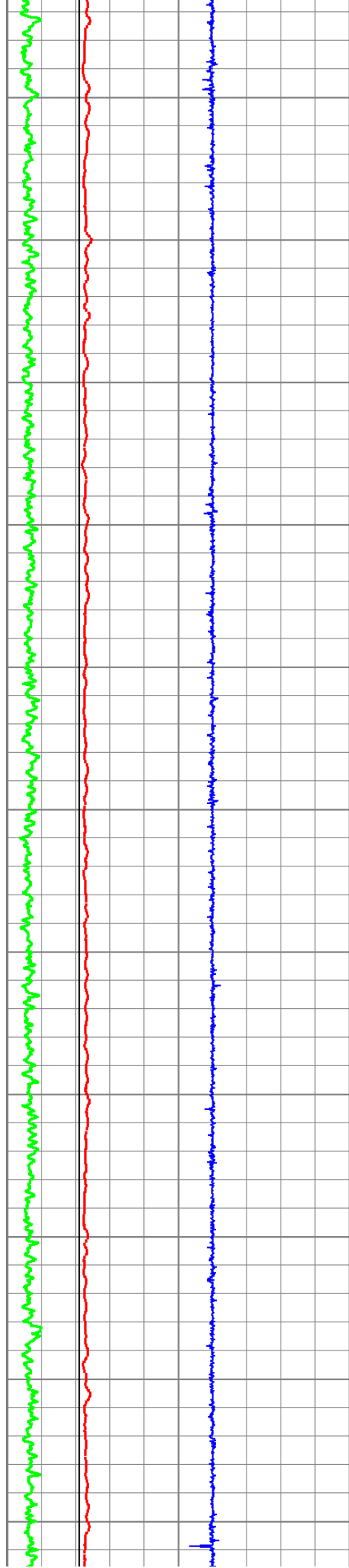
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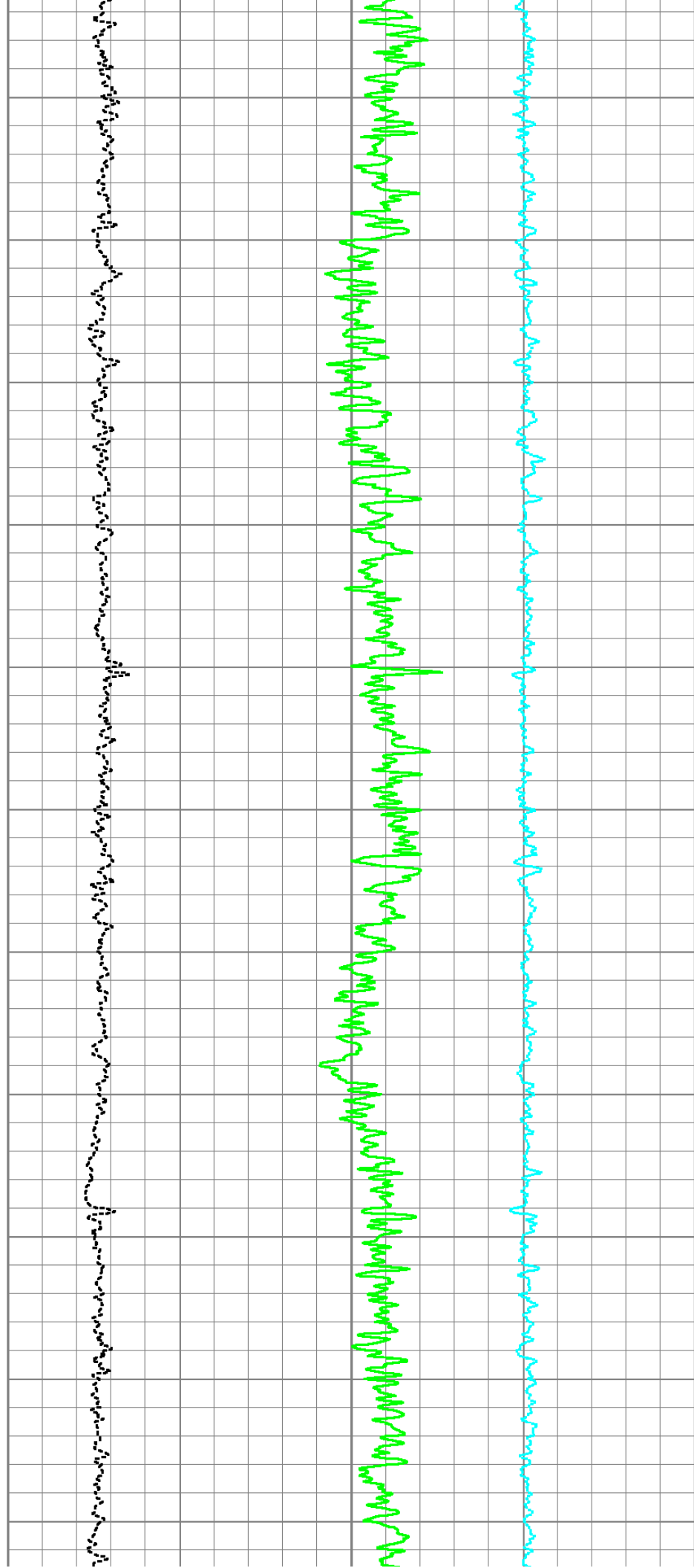
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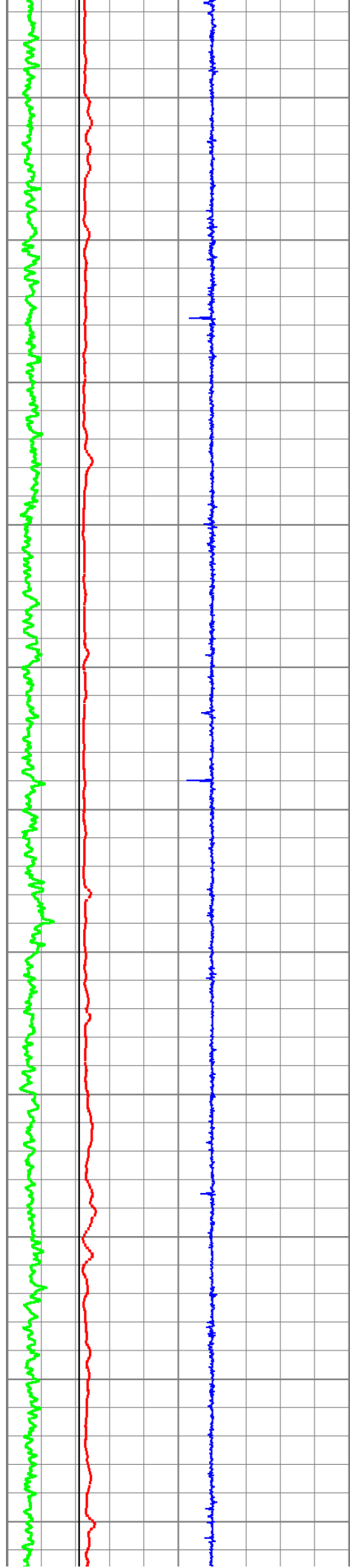
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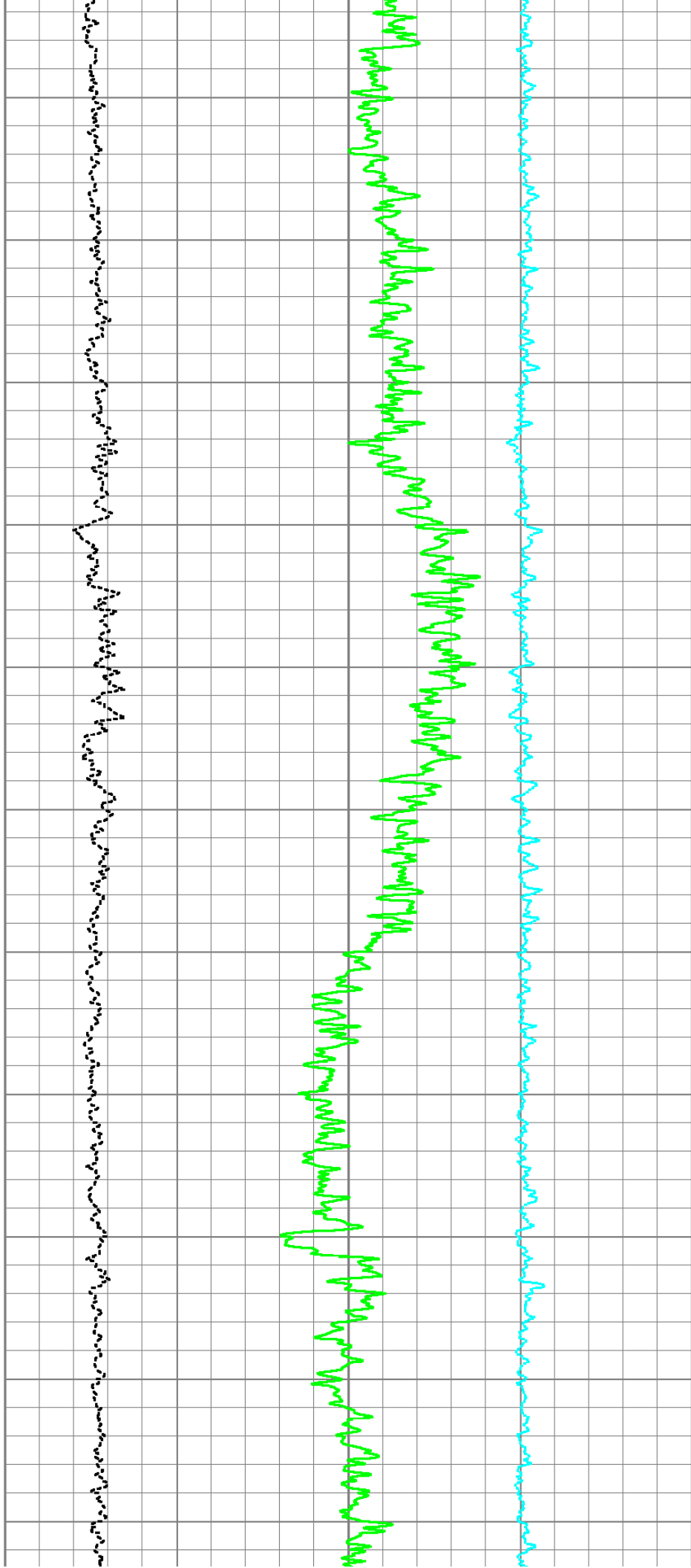
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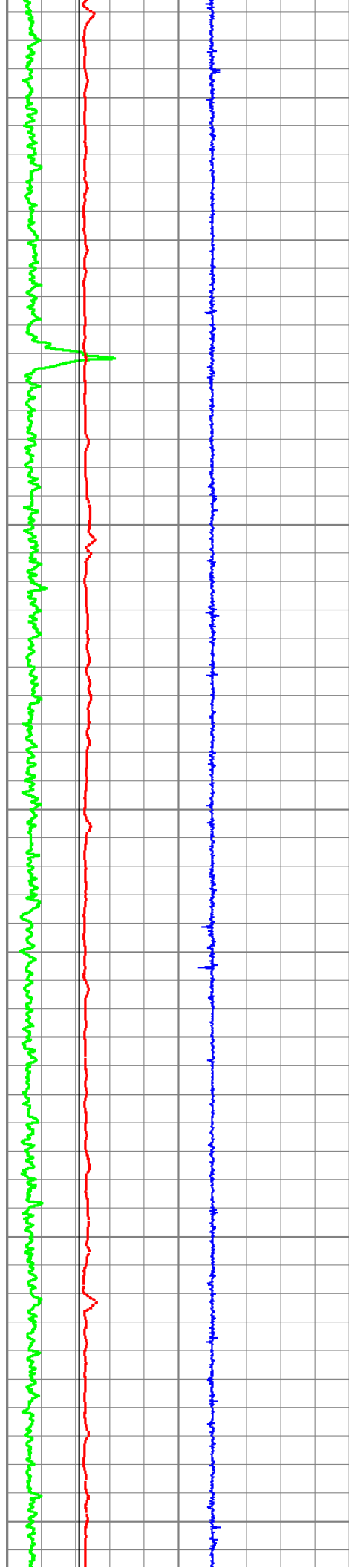
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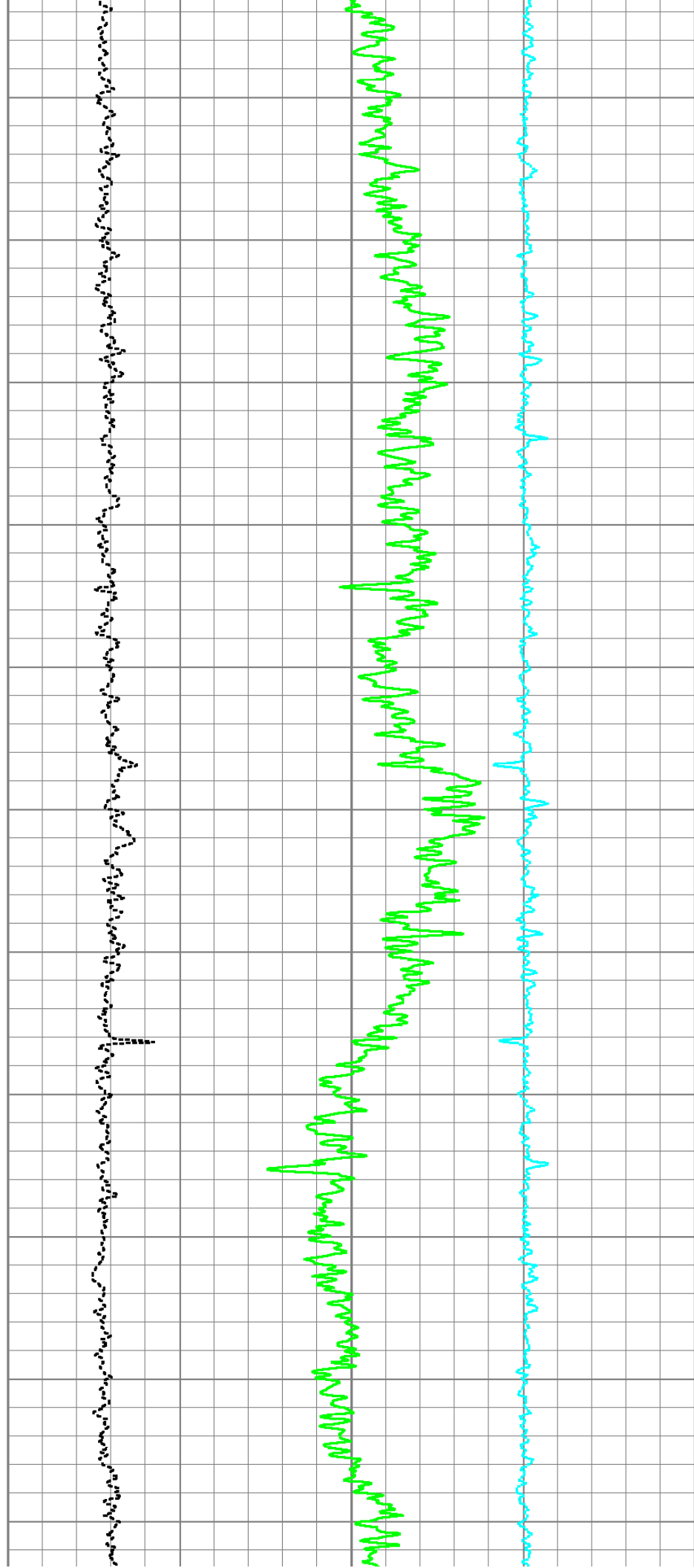
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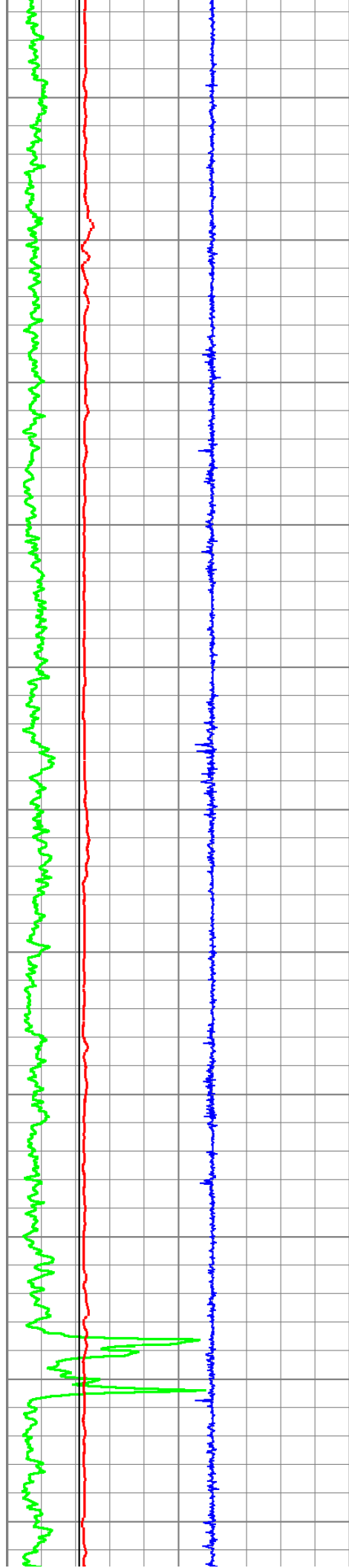
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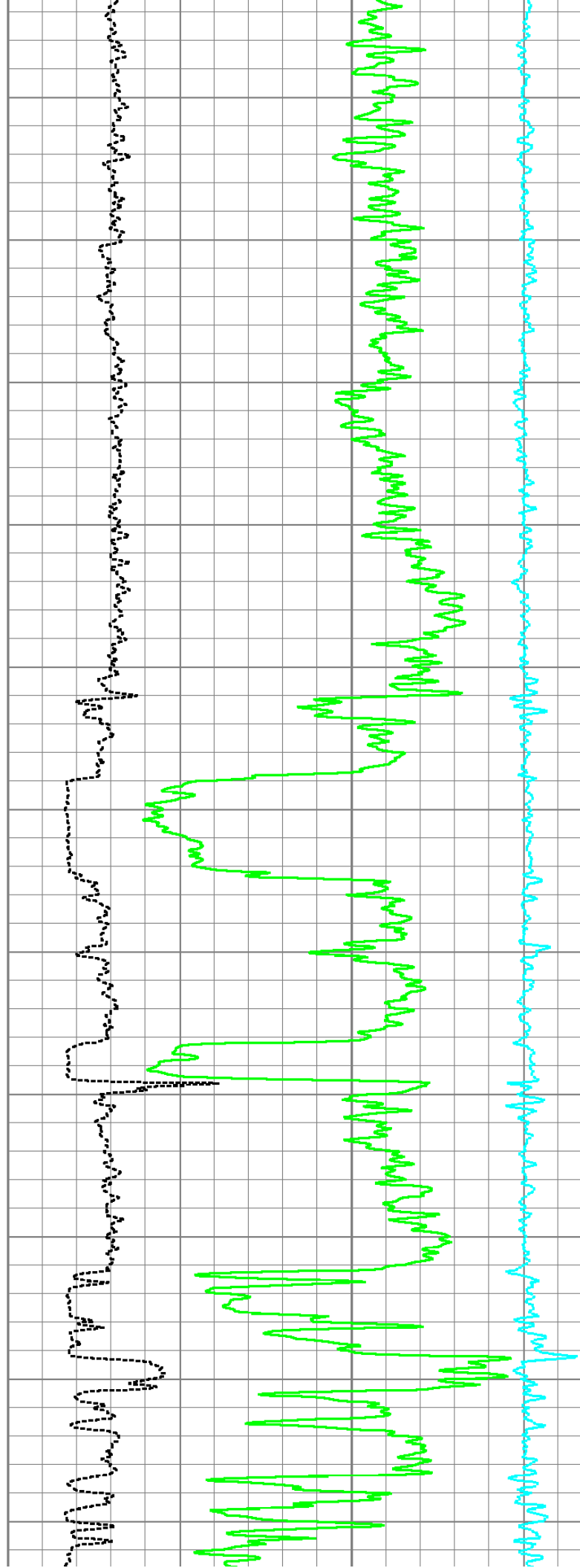
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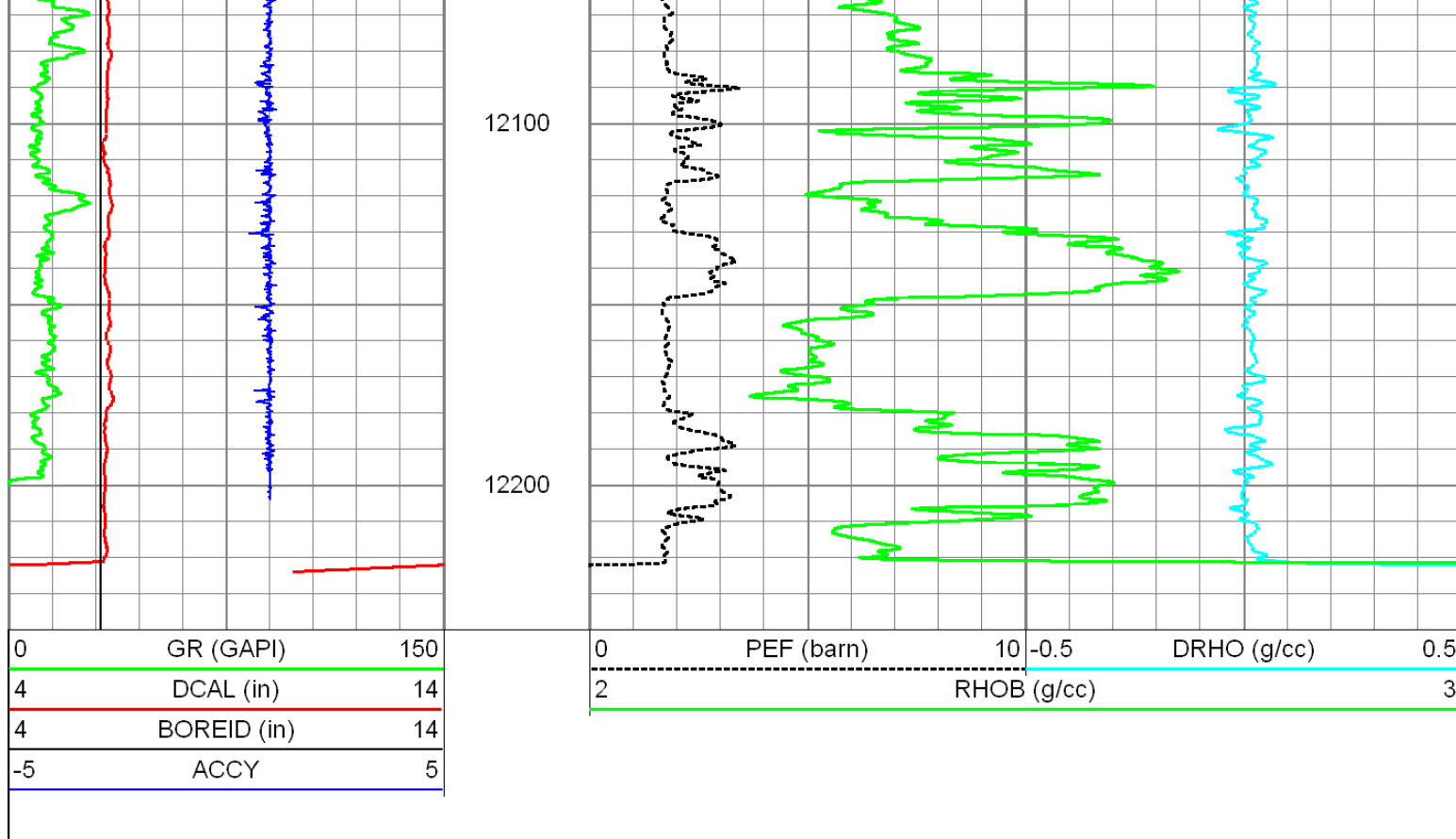
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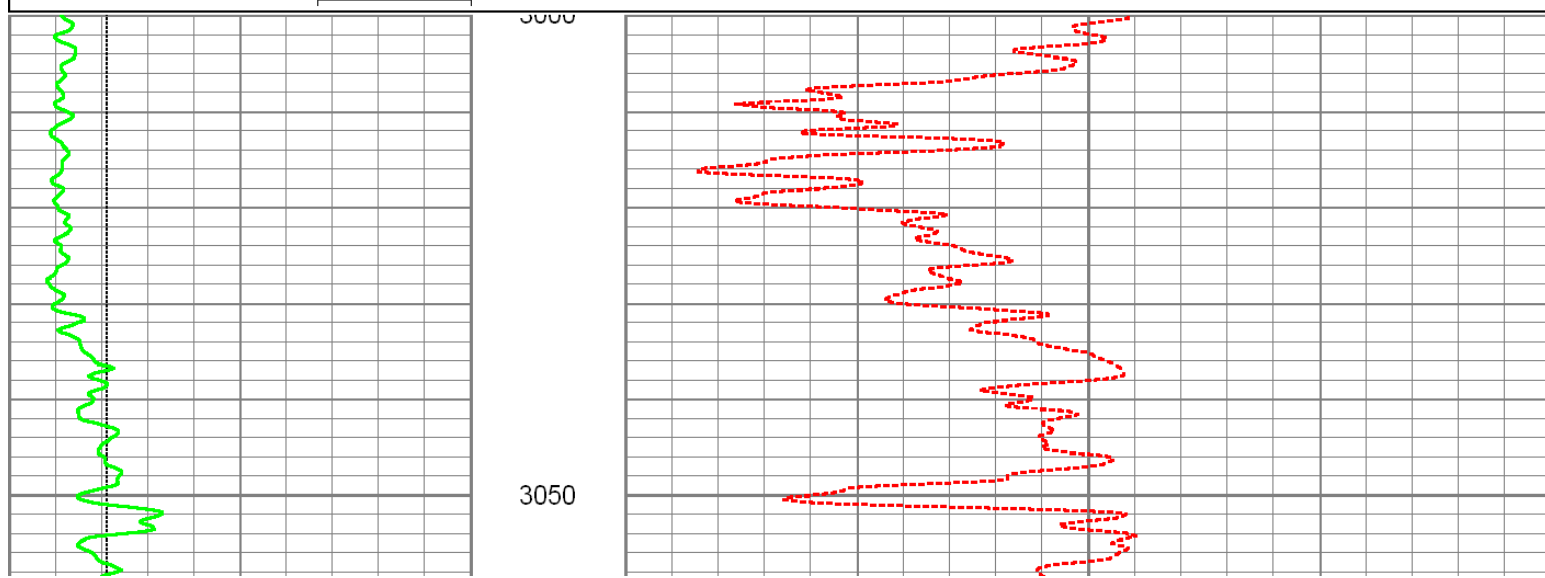


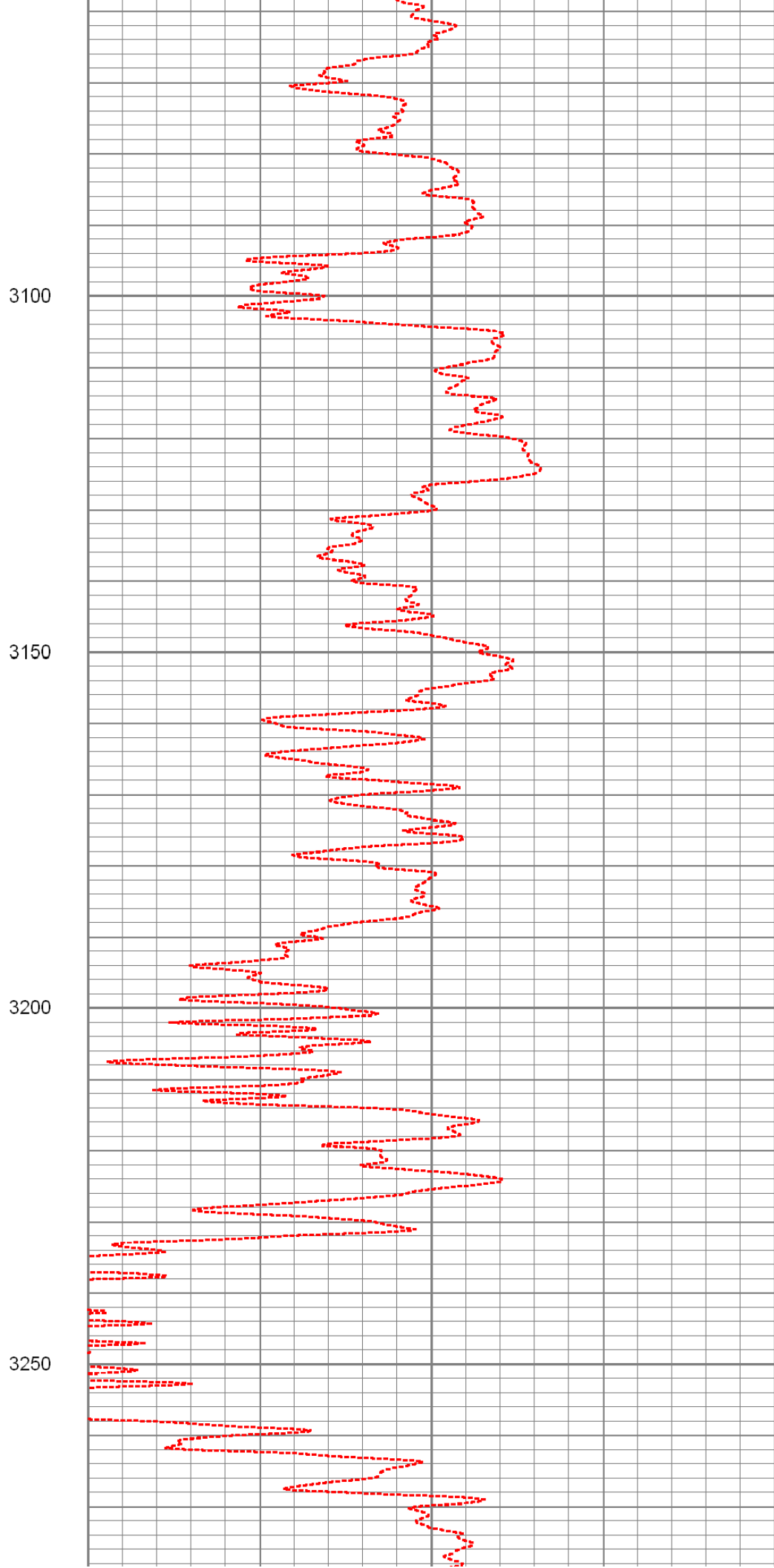
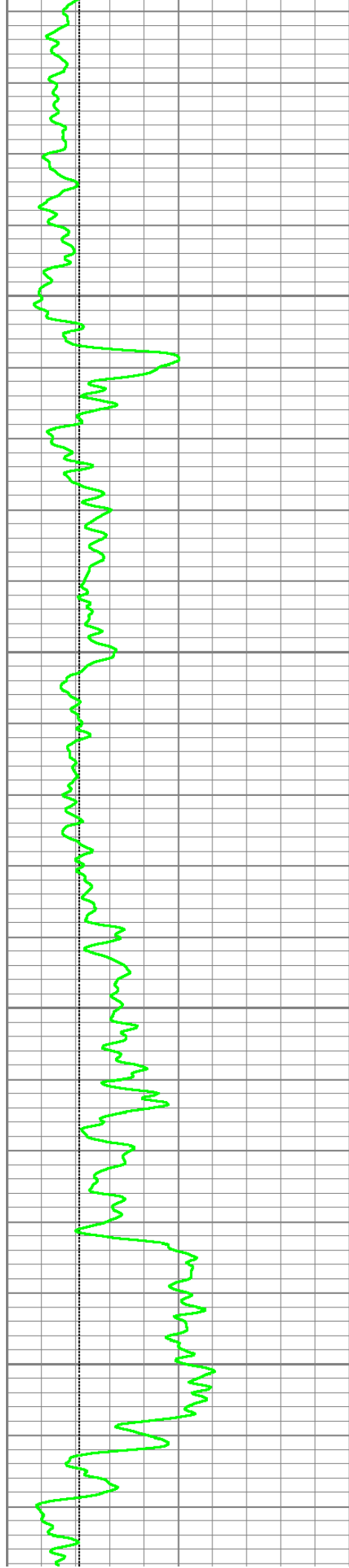


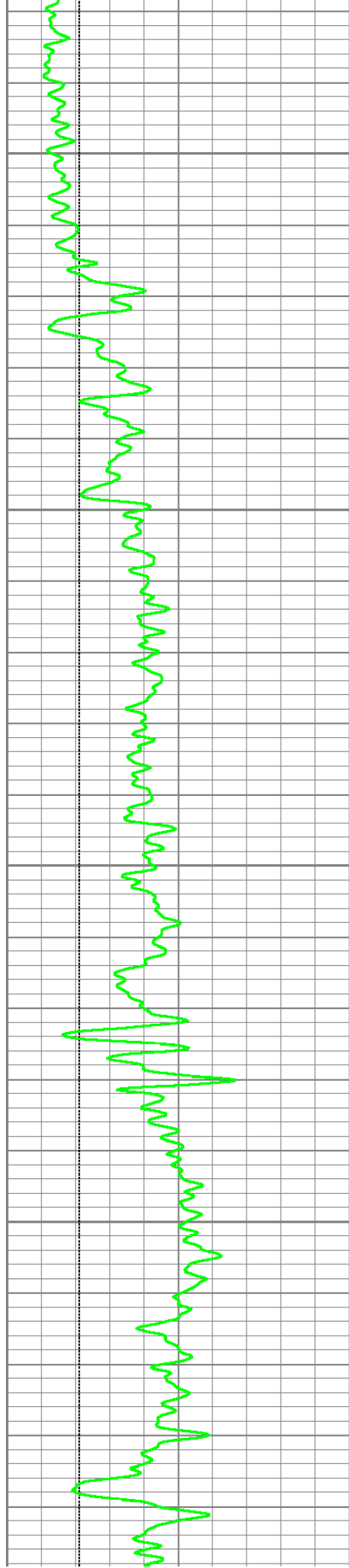
MAIN PASS

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 Dataset Pathname: proc1/pass1.3
 Presentation Format: 6_5n_chk
 Dataset Creation: Tue Dec 11 06:18:07 2012
 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
-5	ACCY	5	-0.5	DRHO (g/cc)	0.5
	TBHV (ft3)		ABHV (ft3)		







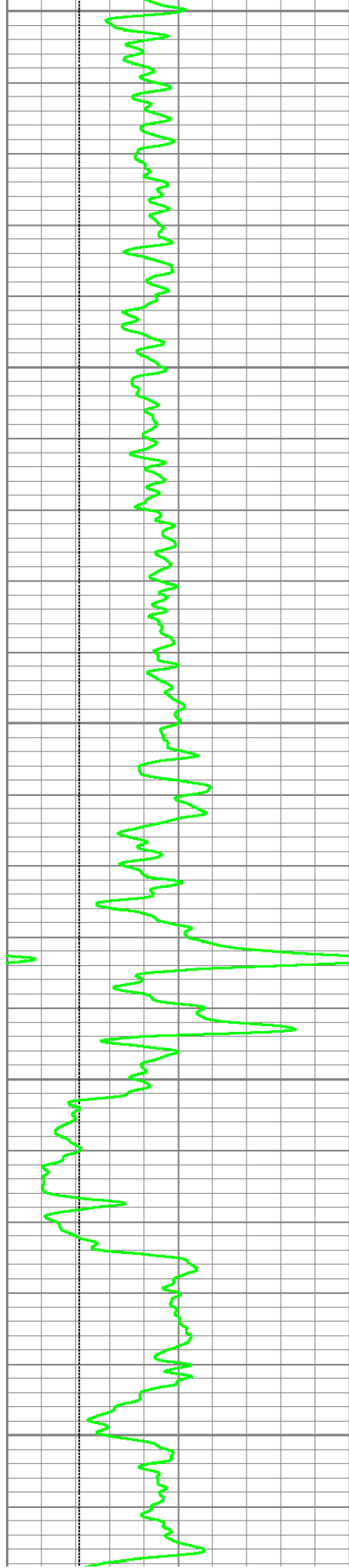
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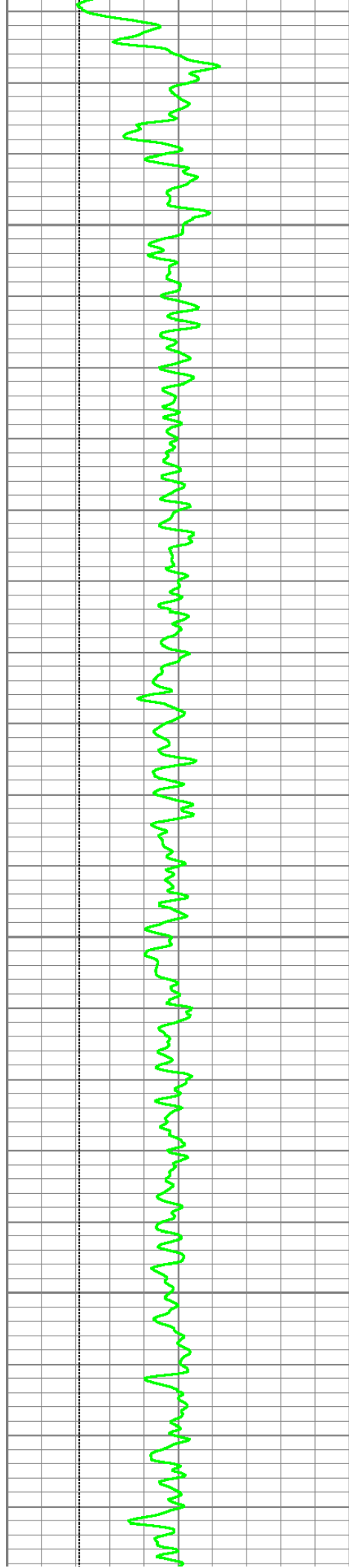
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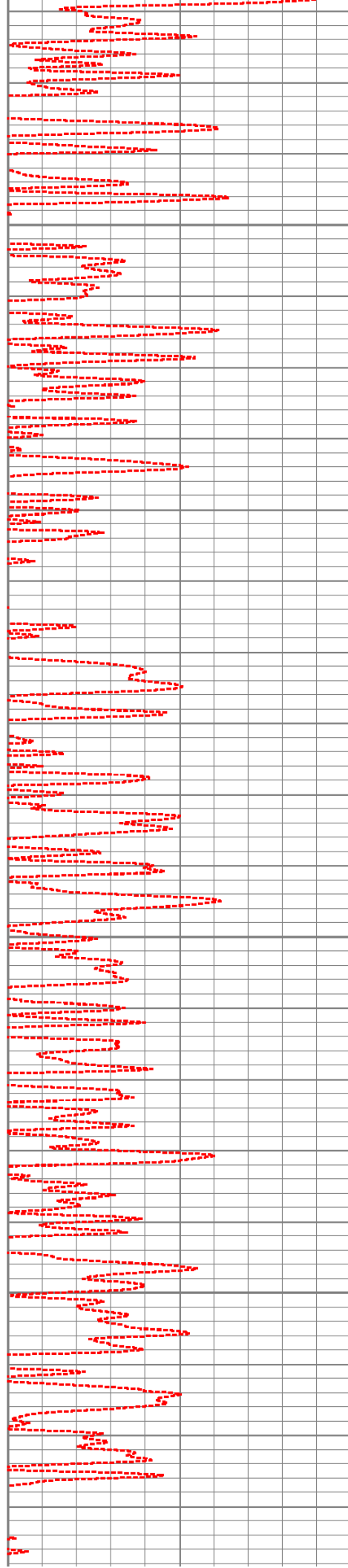


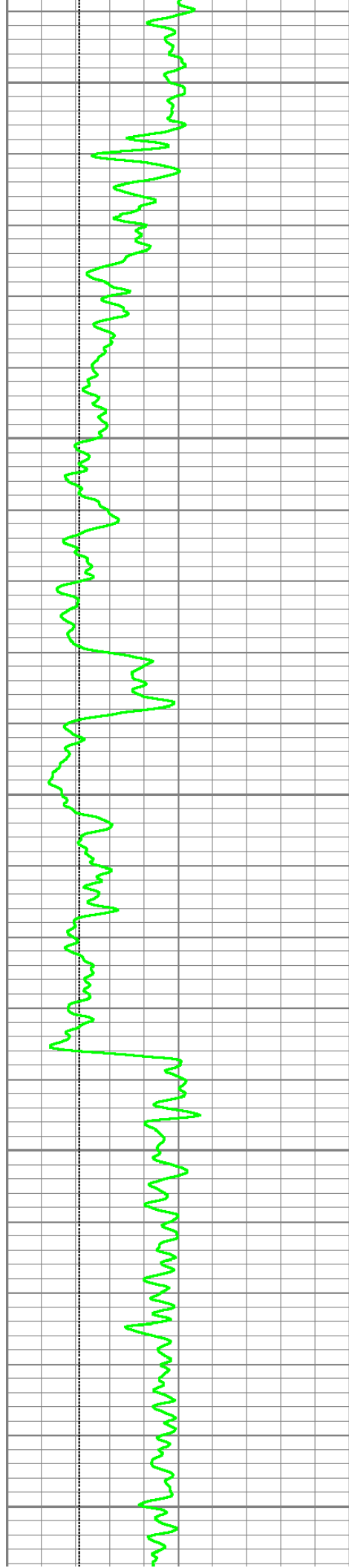
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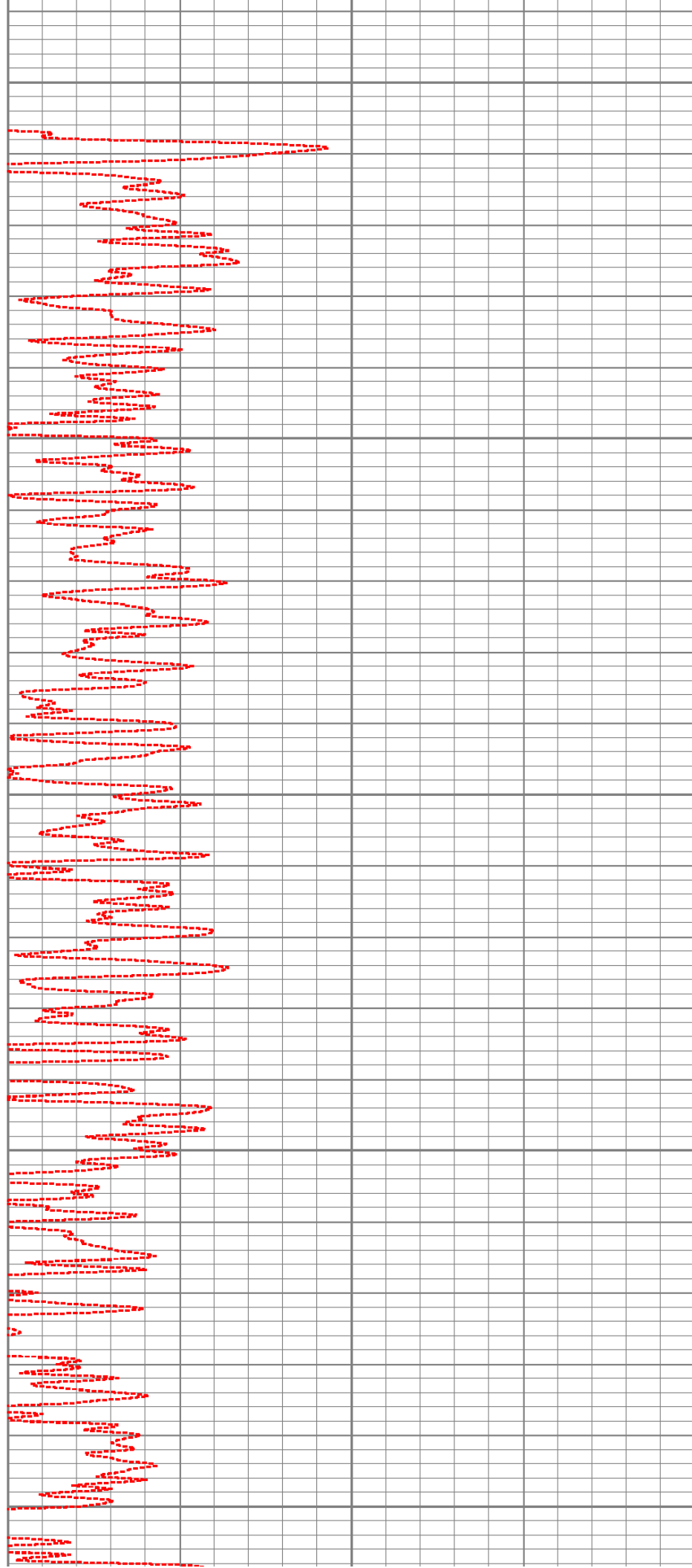
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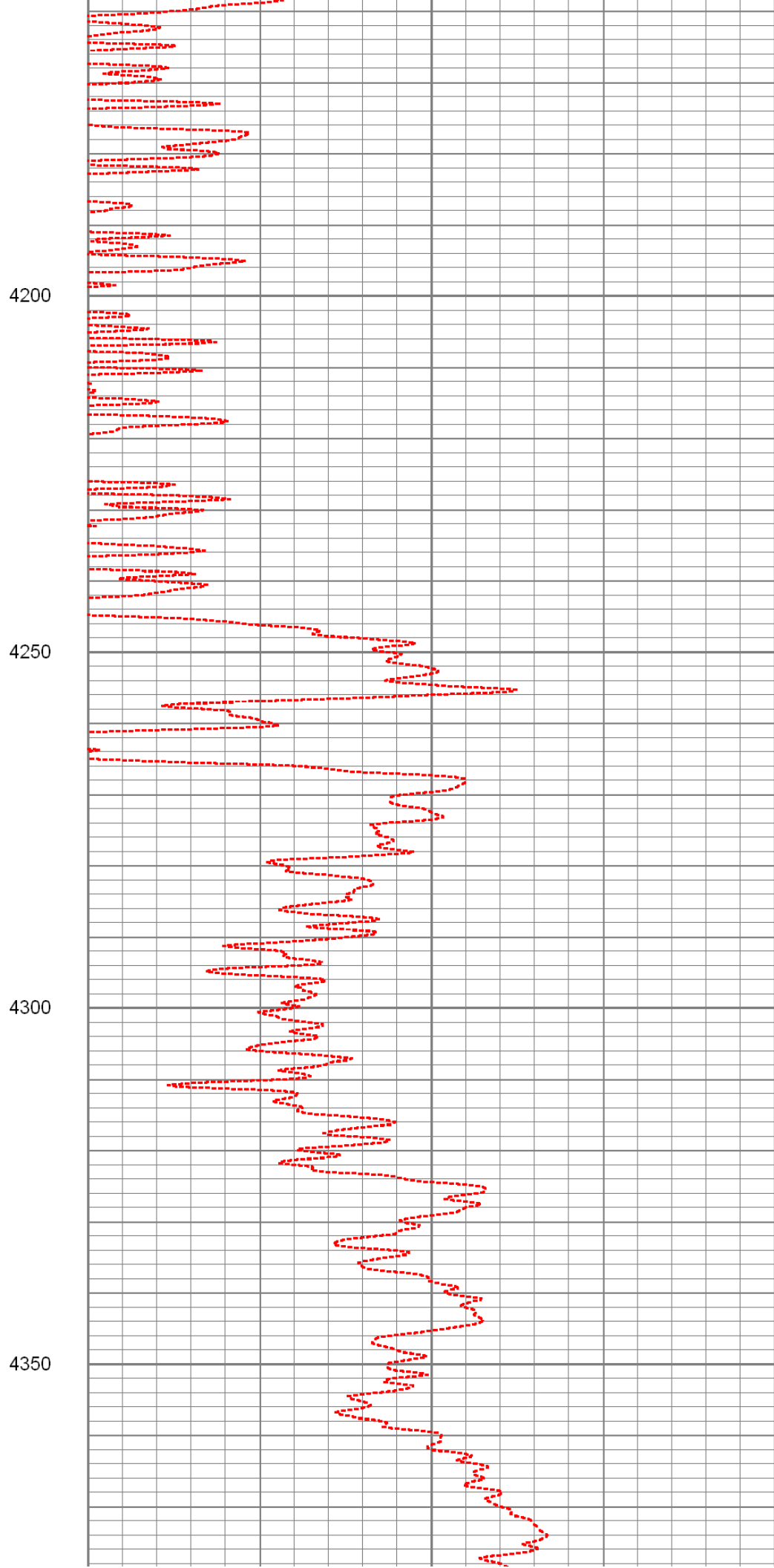
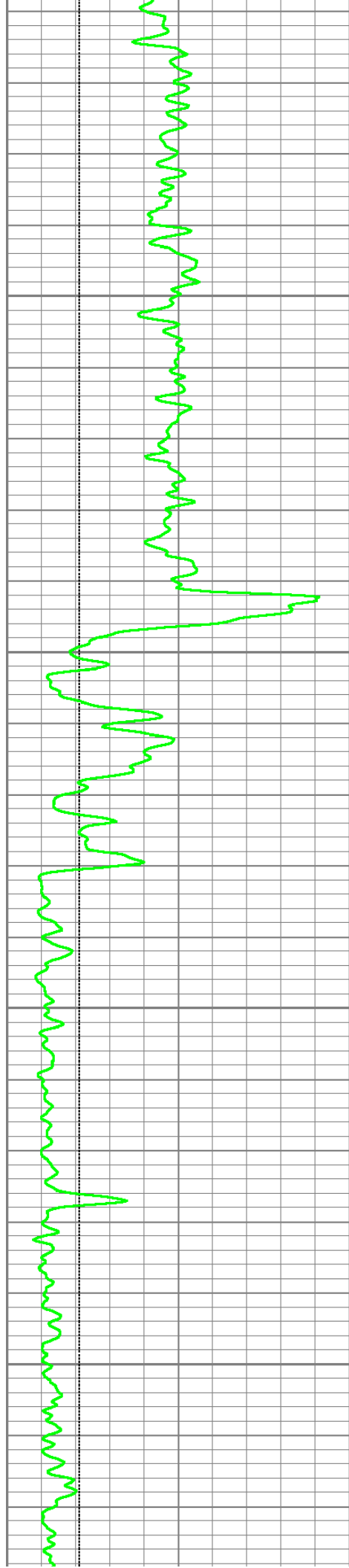
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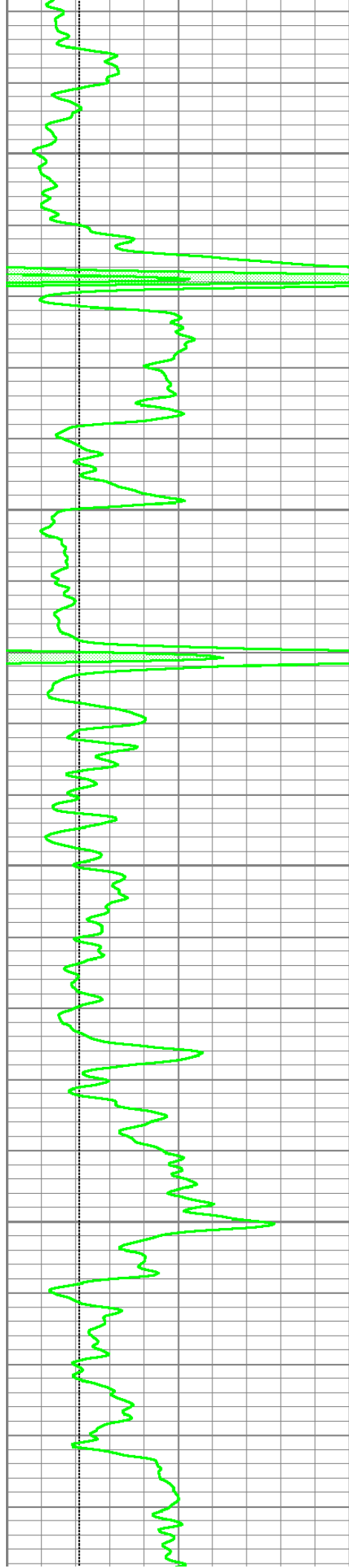
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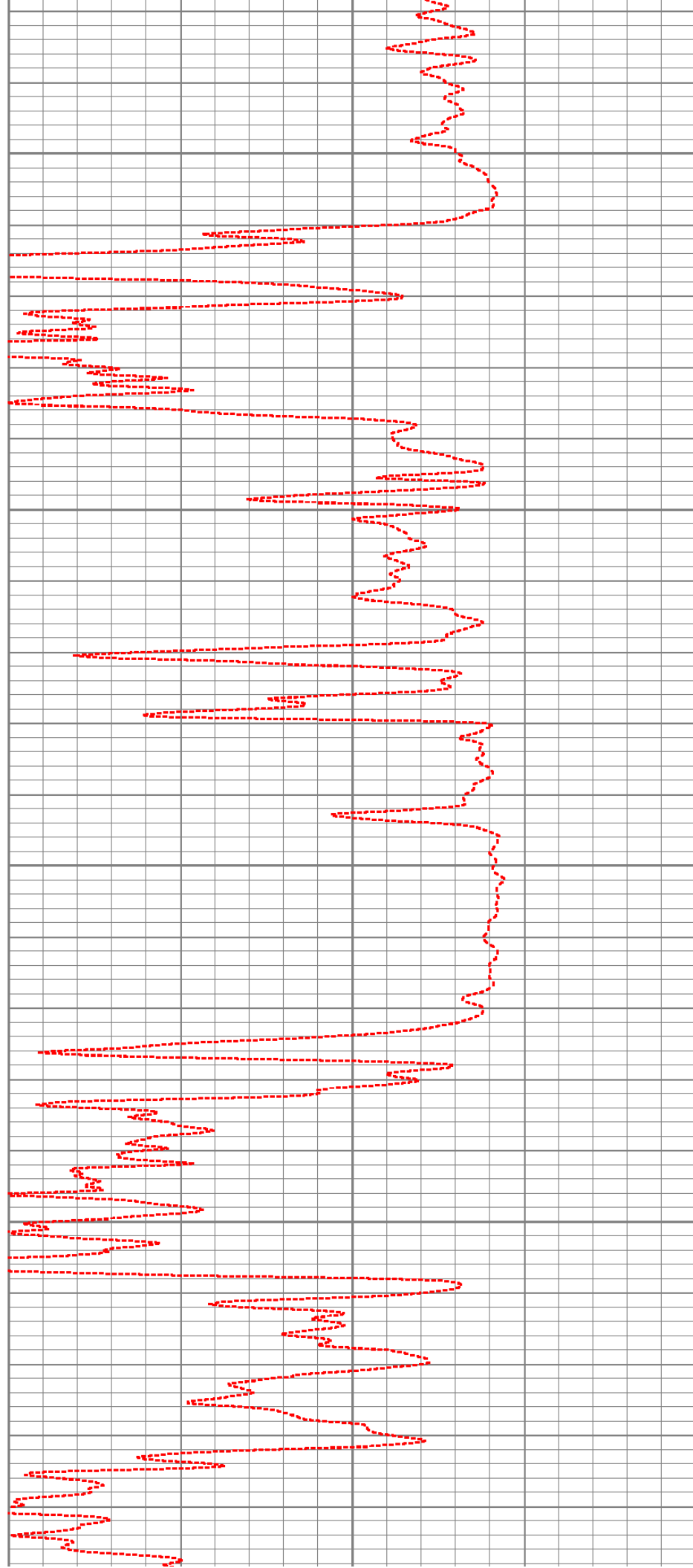


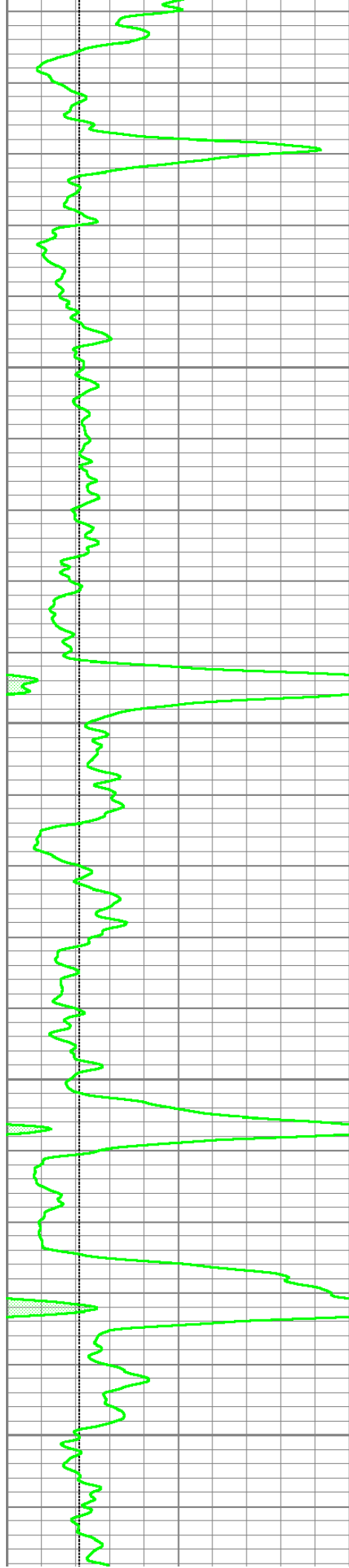
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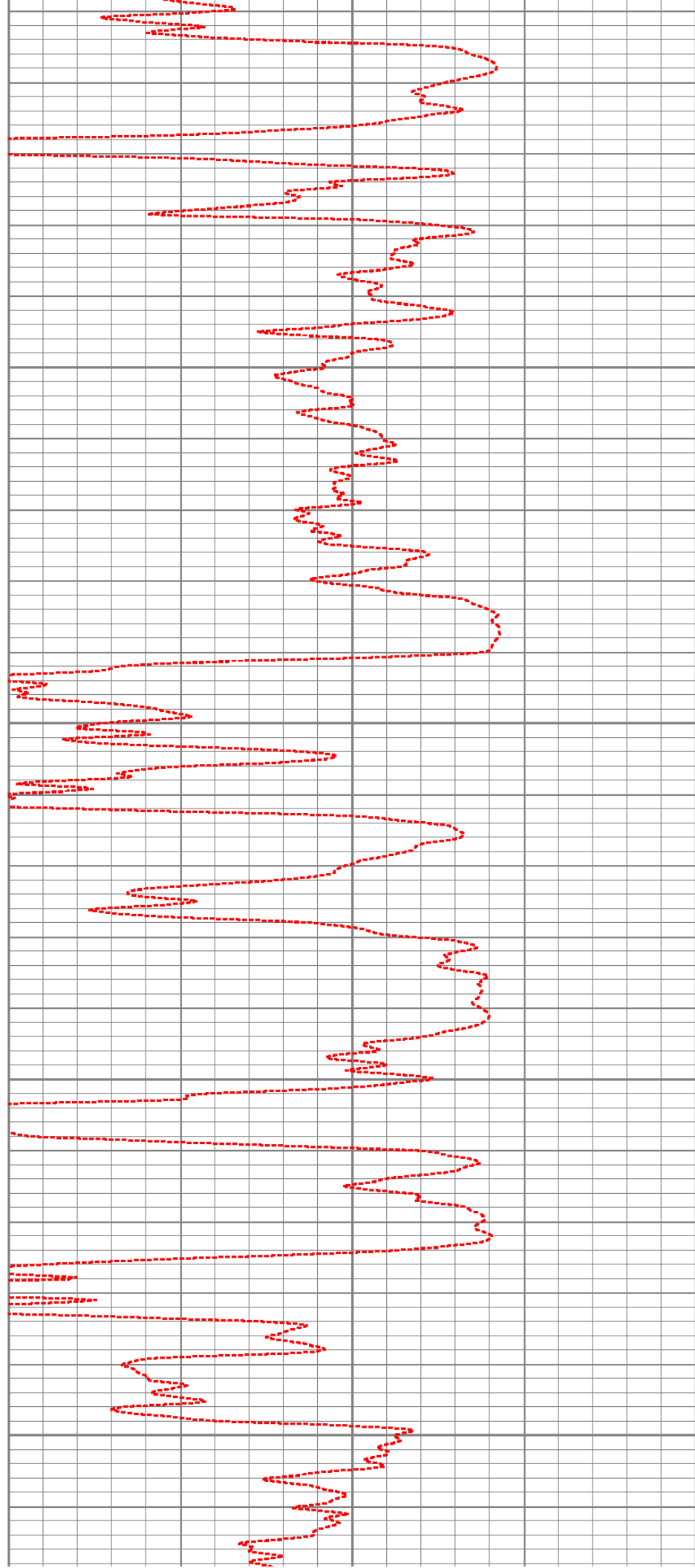
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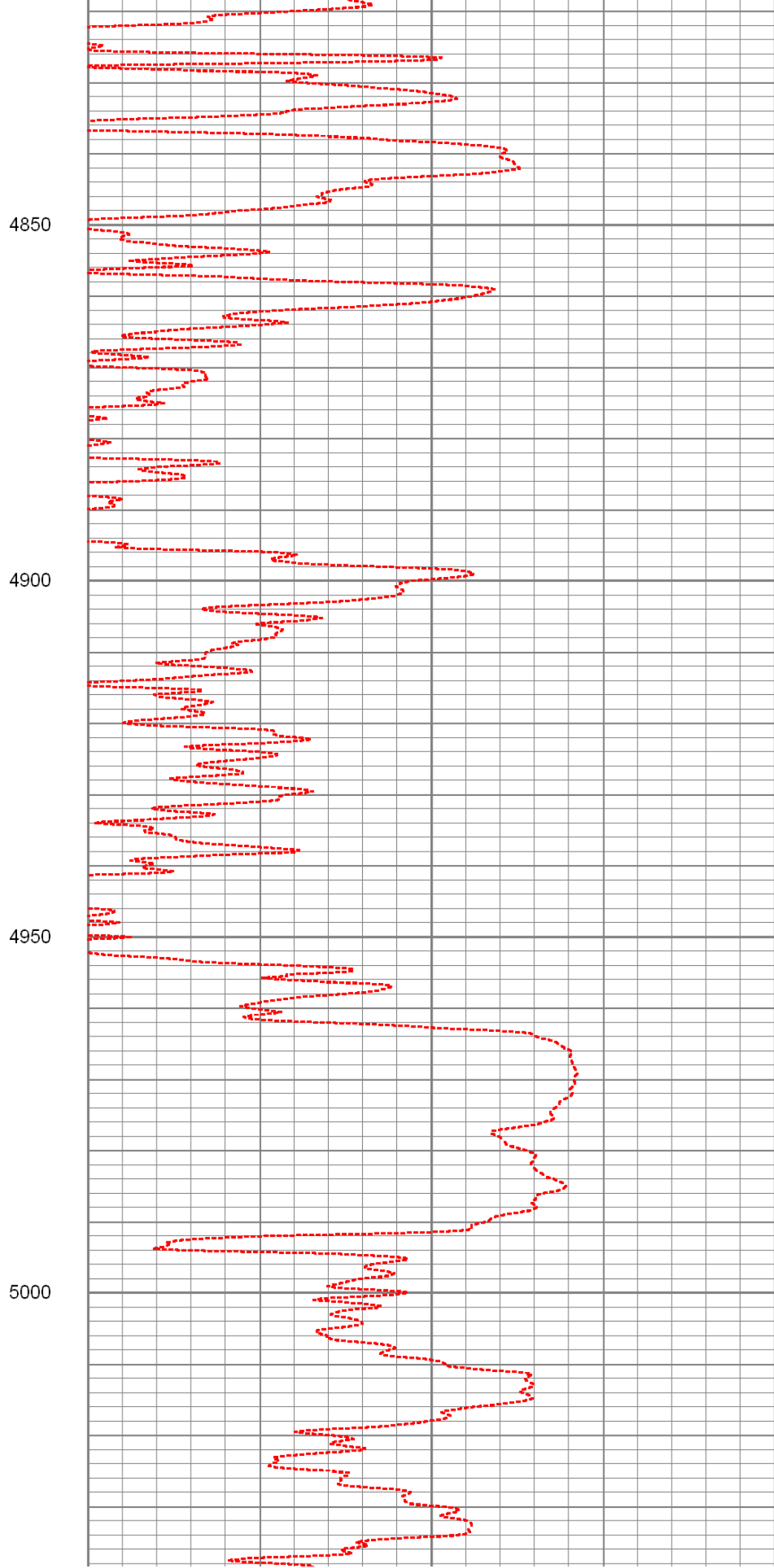
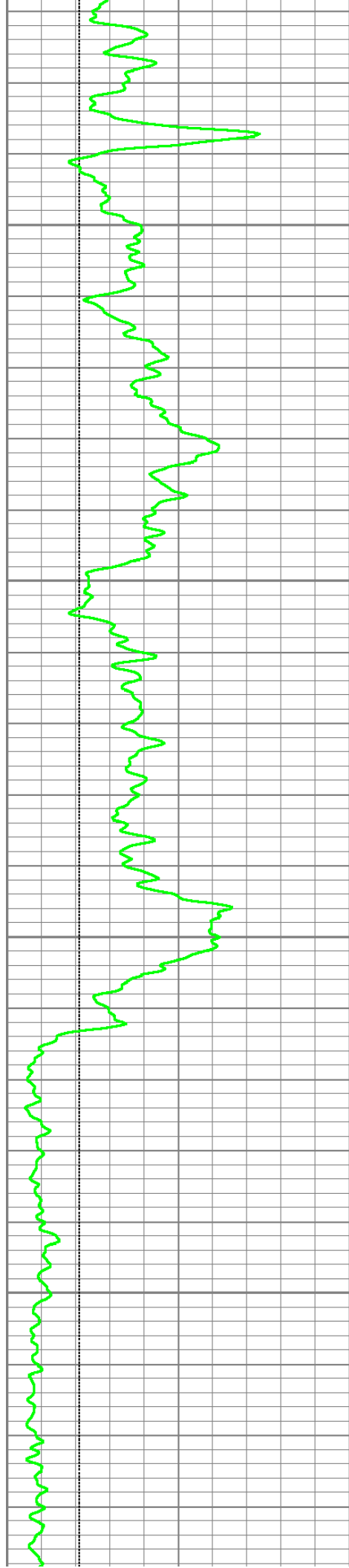
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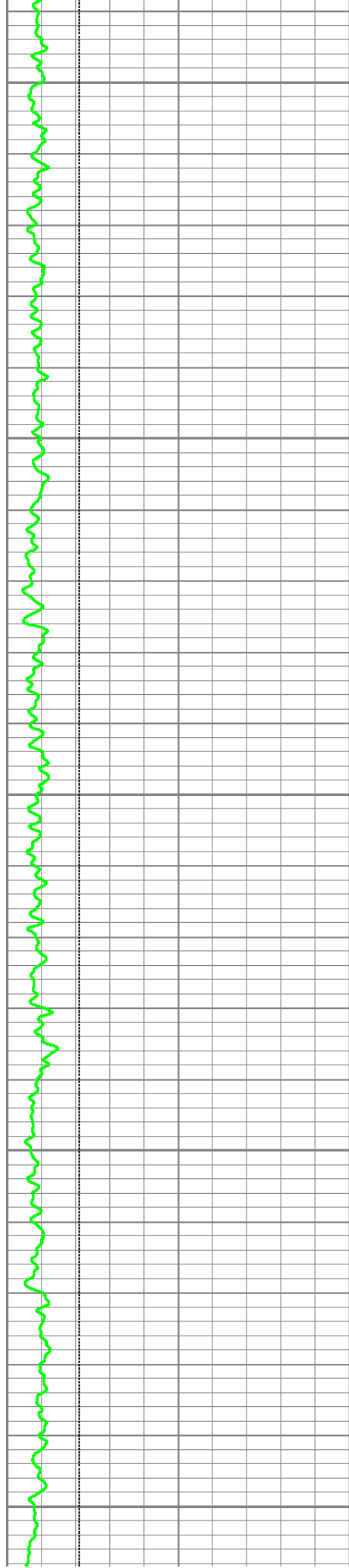
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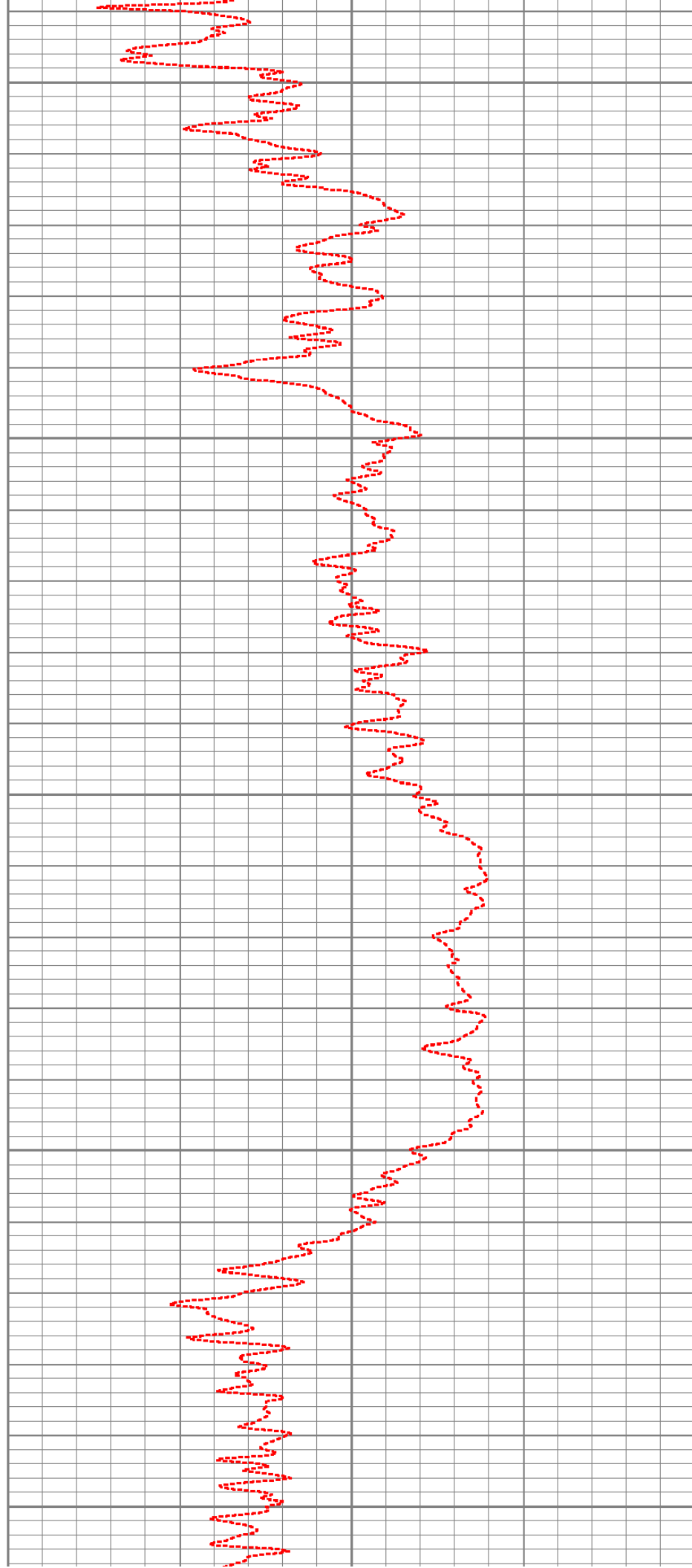
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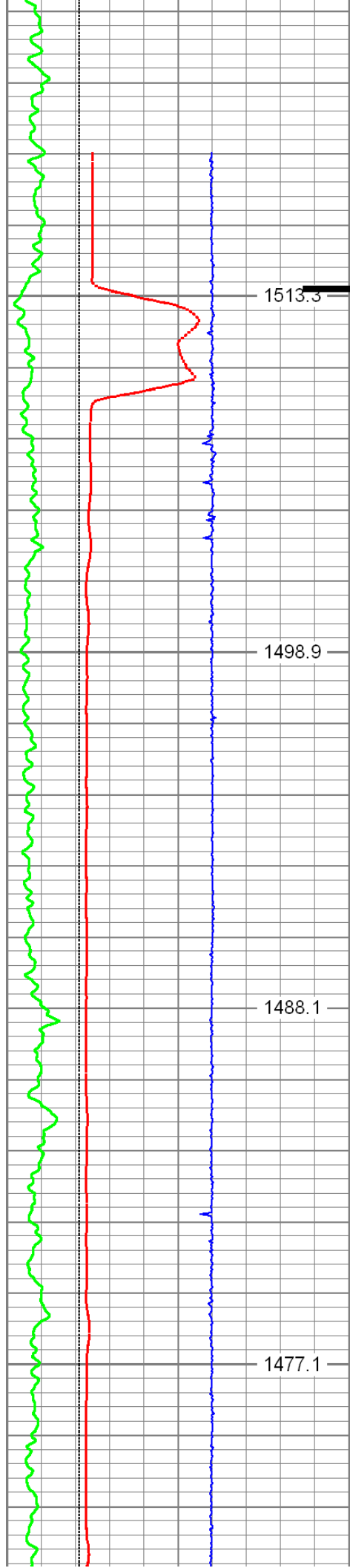
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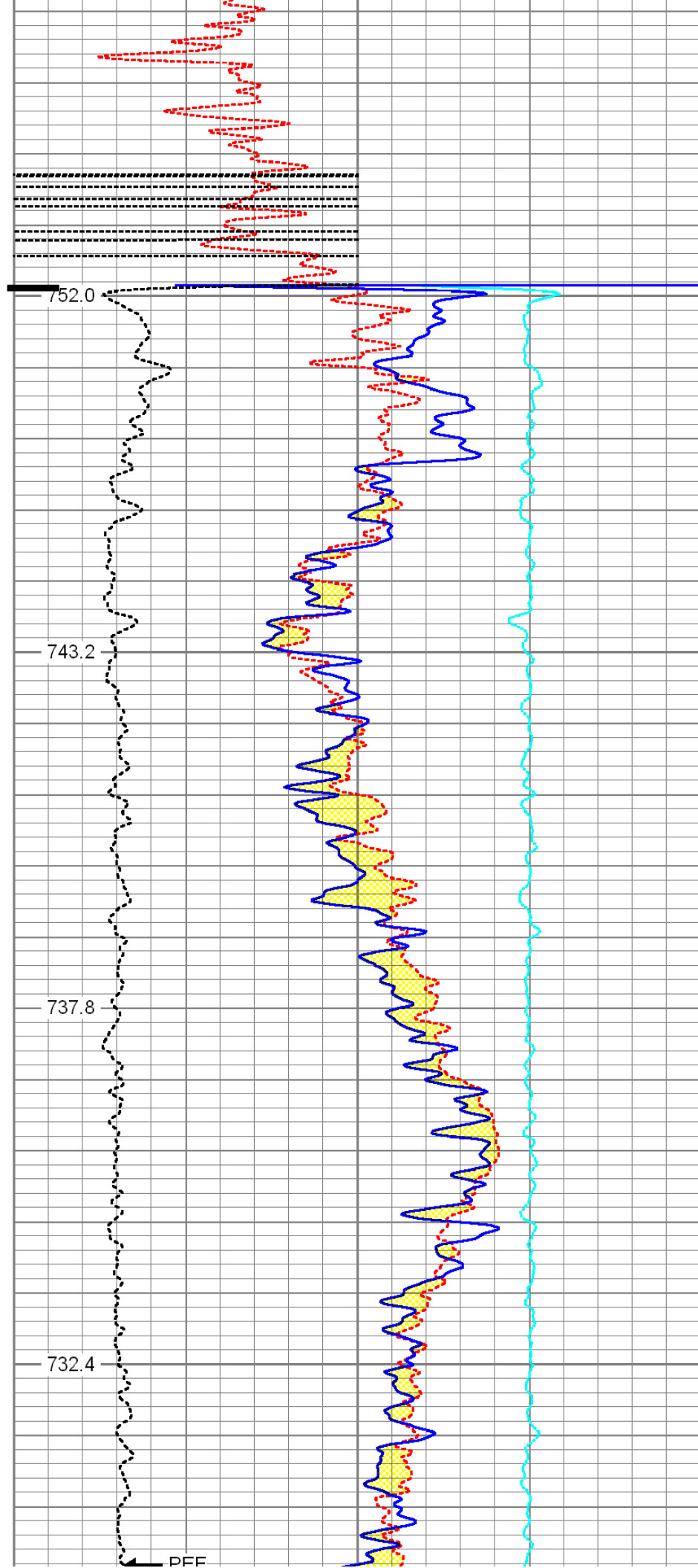


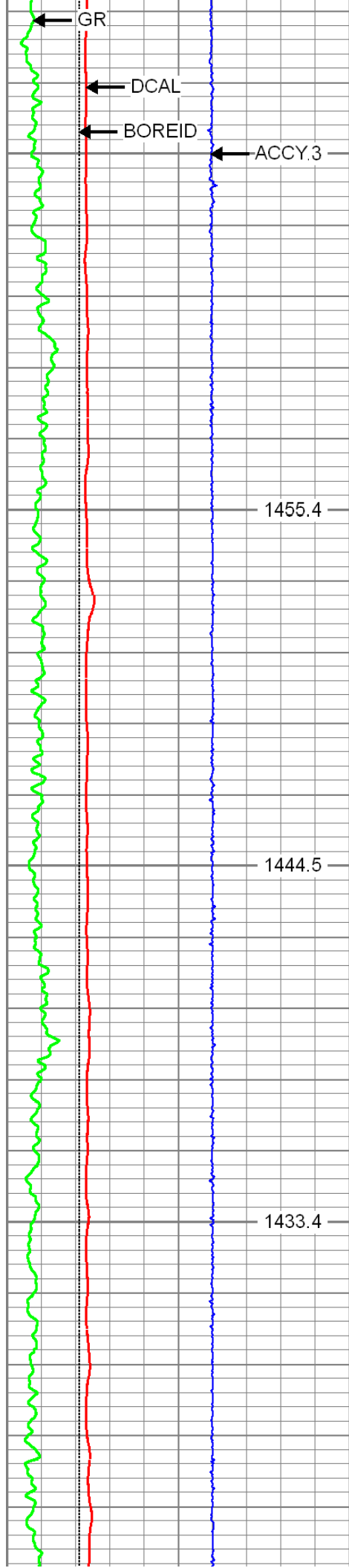
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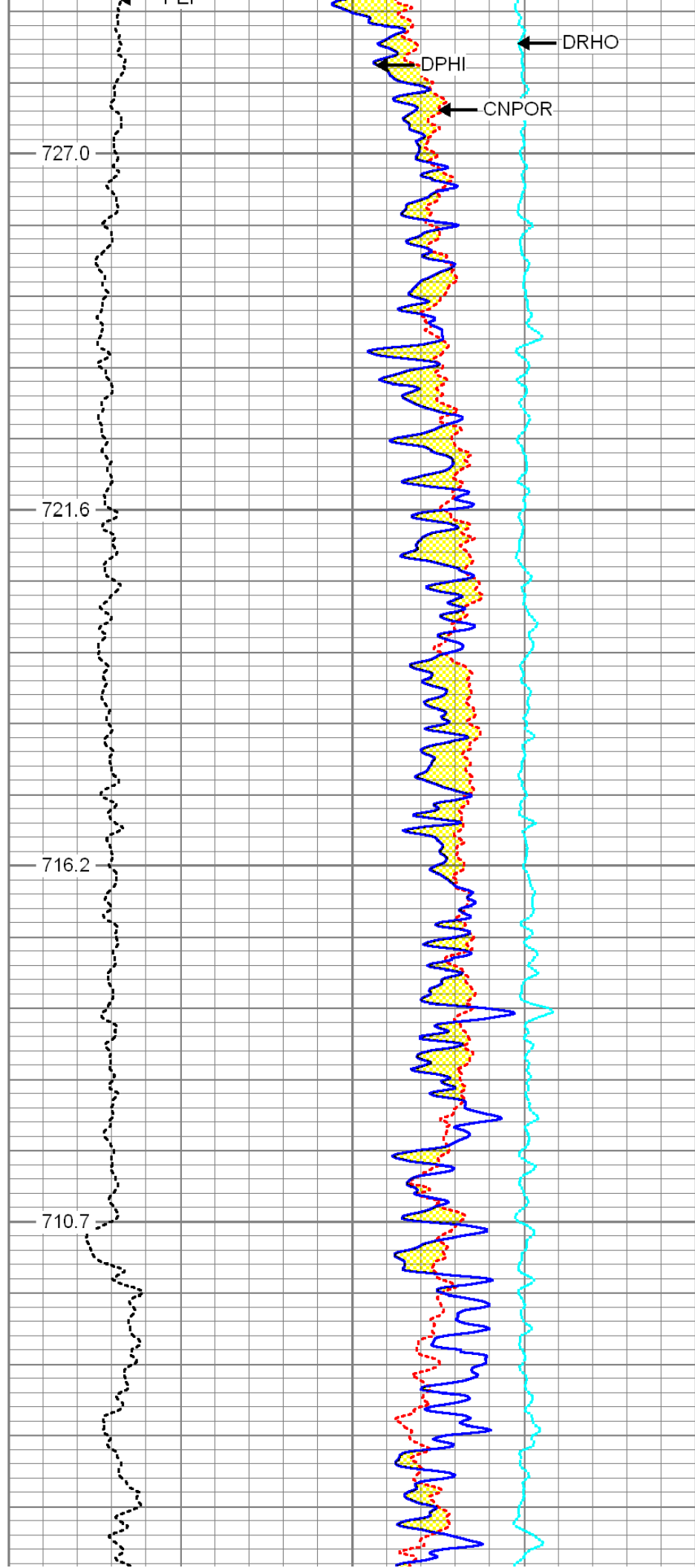
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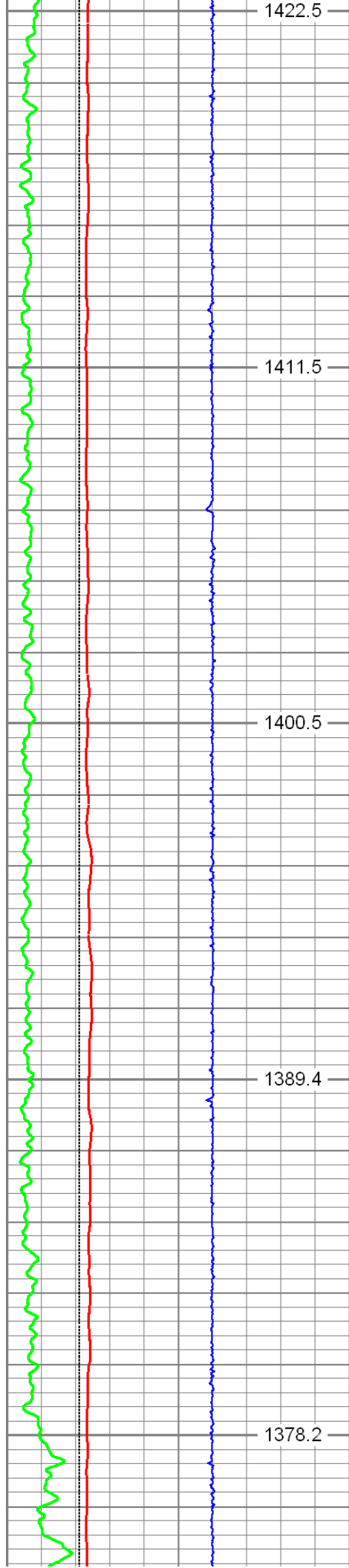


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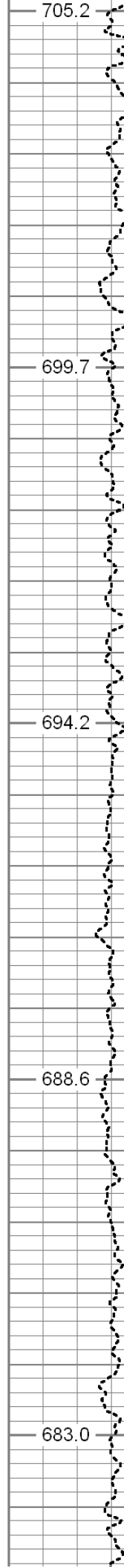
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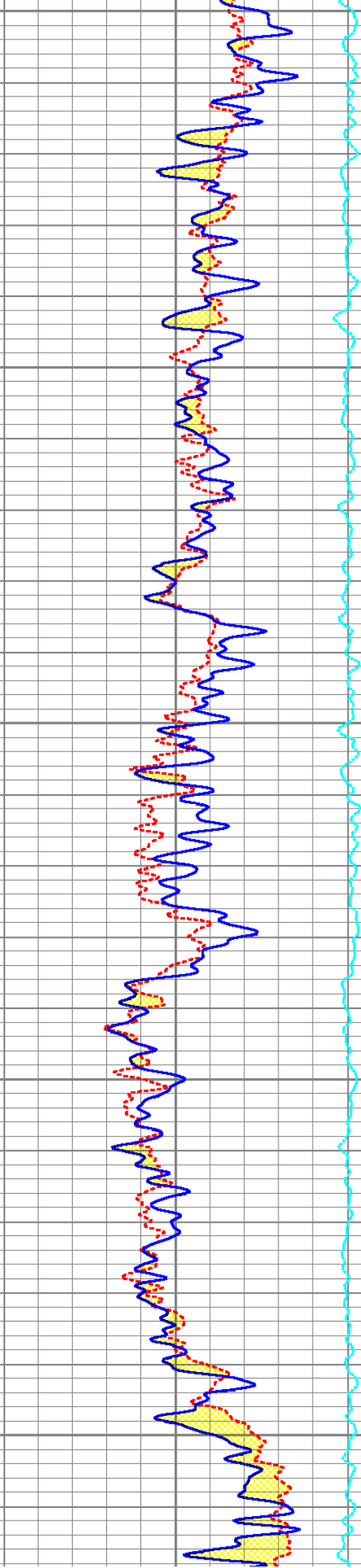
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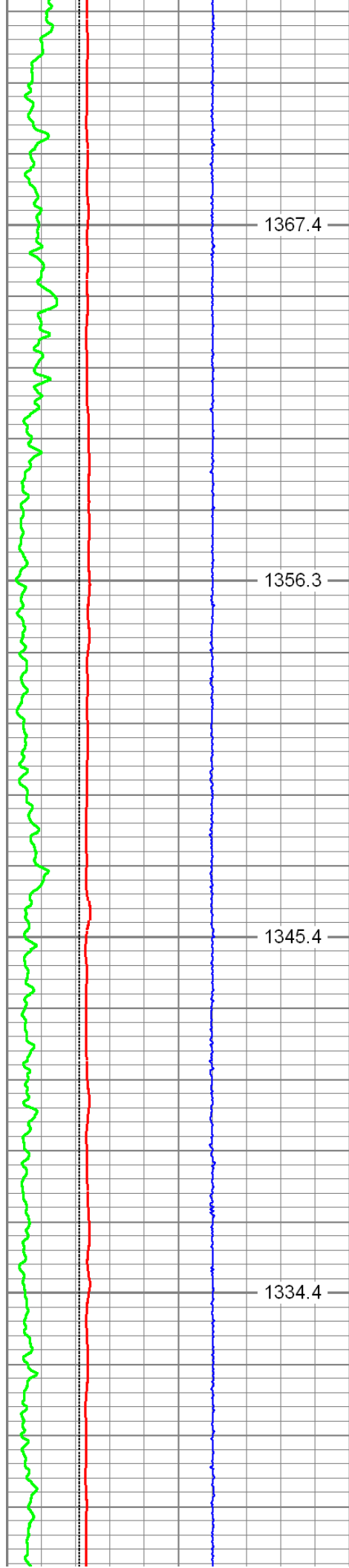


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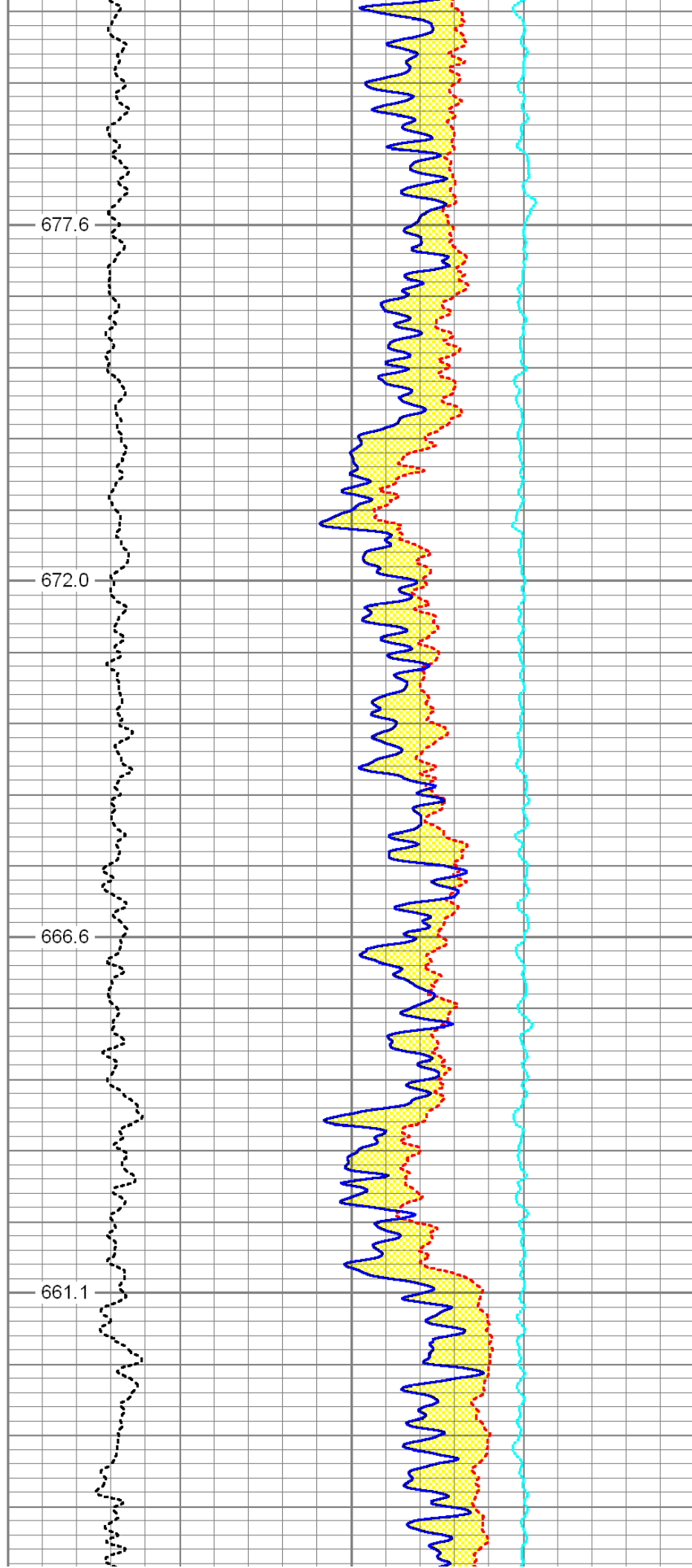


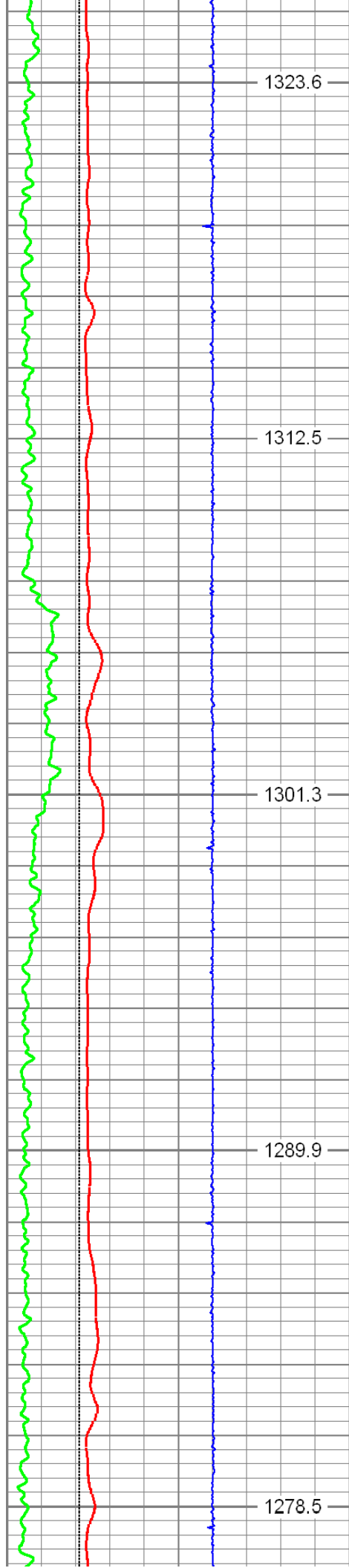
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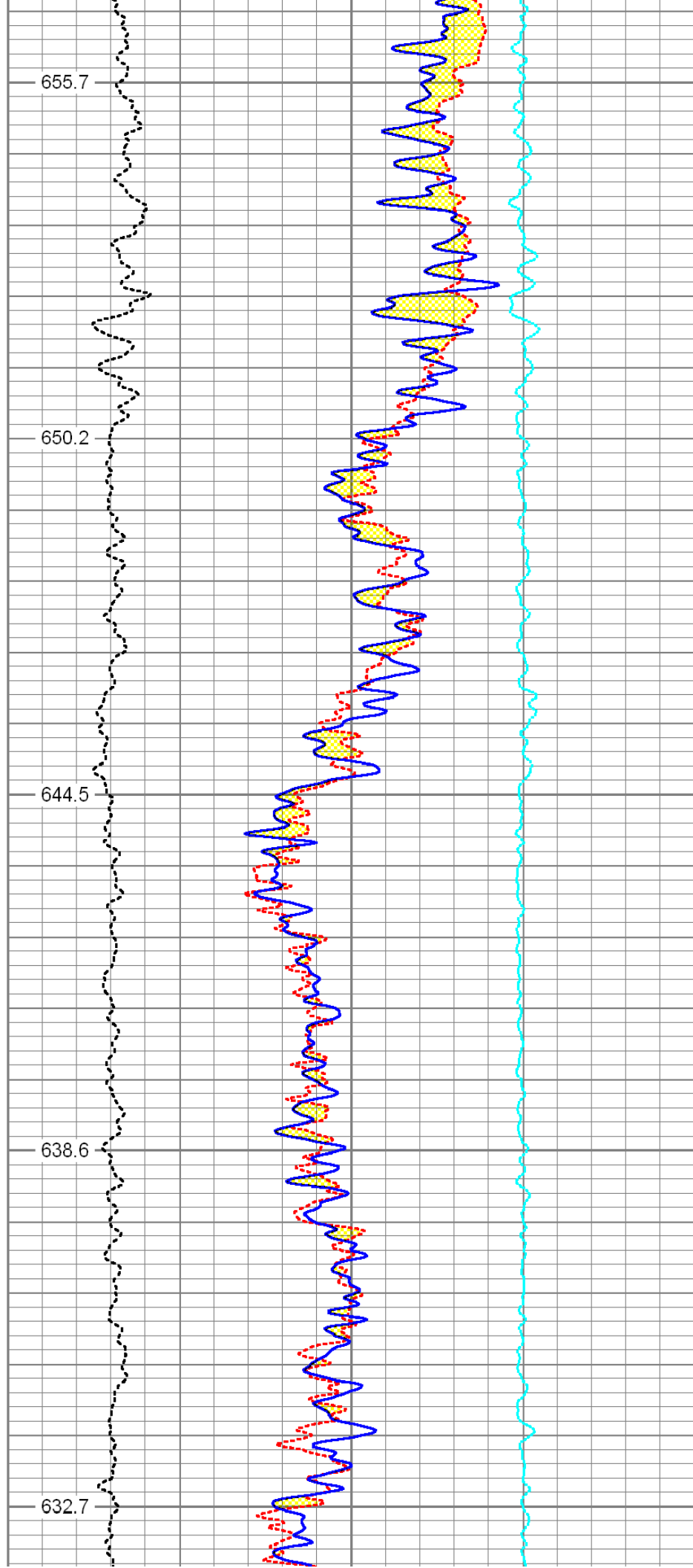
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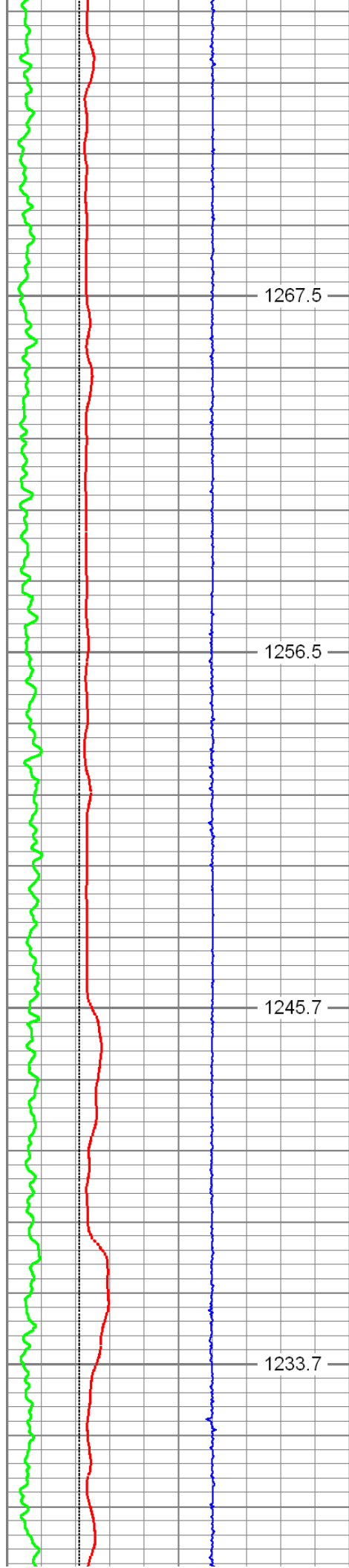
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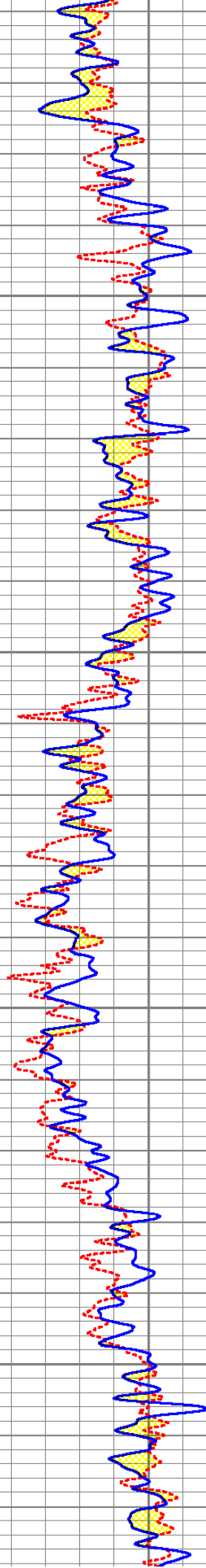
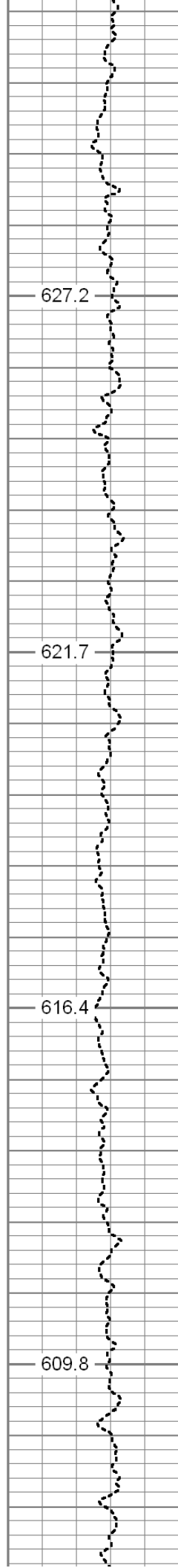


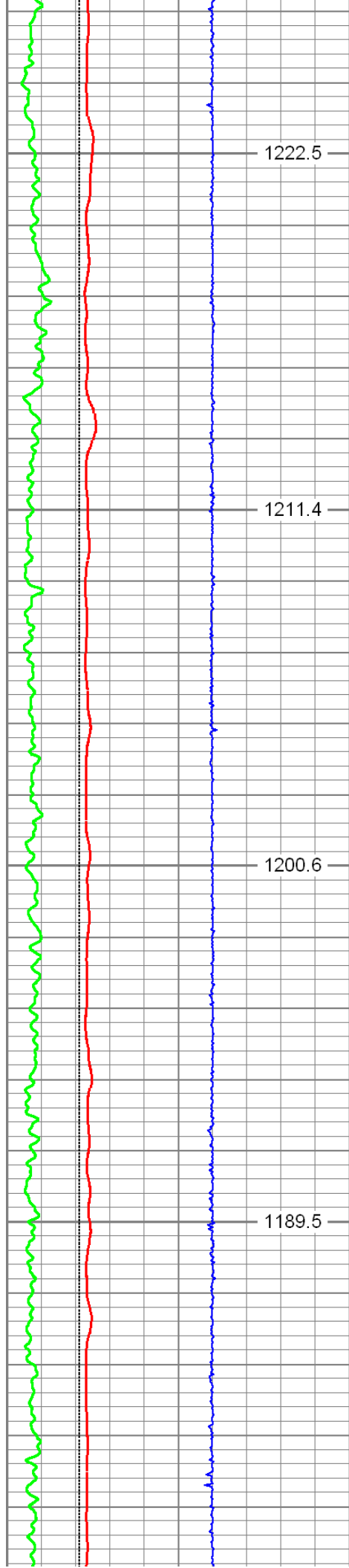
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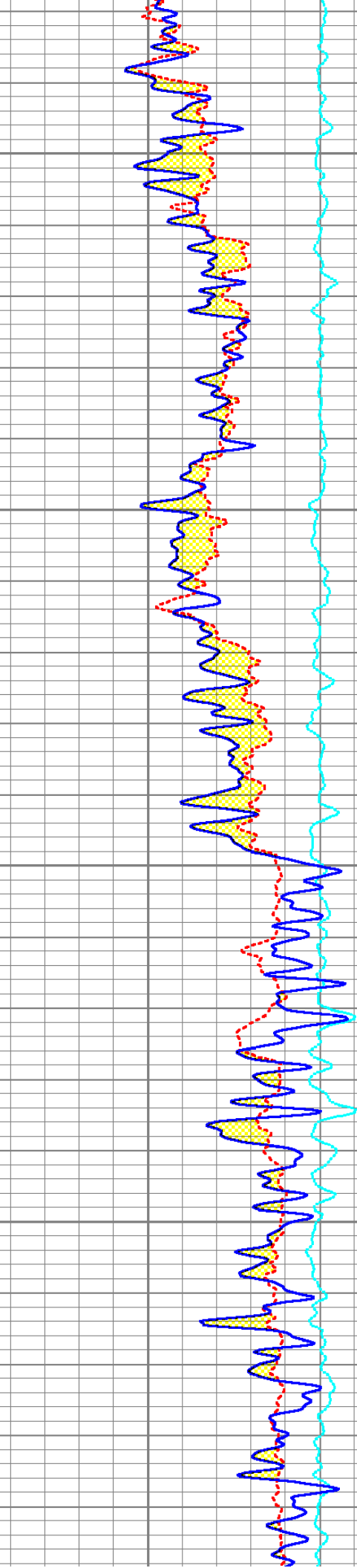
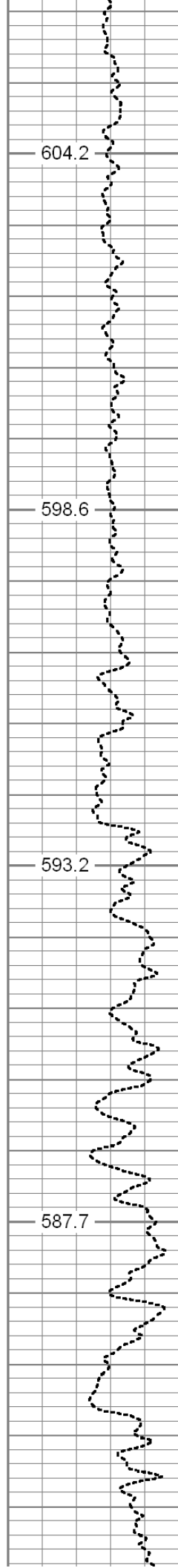


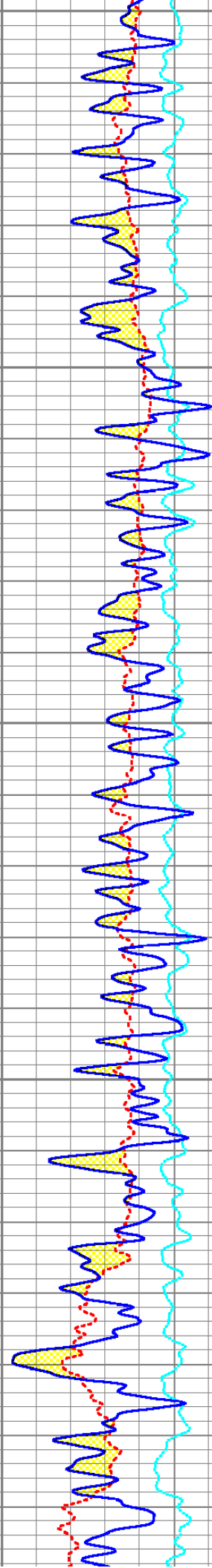
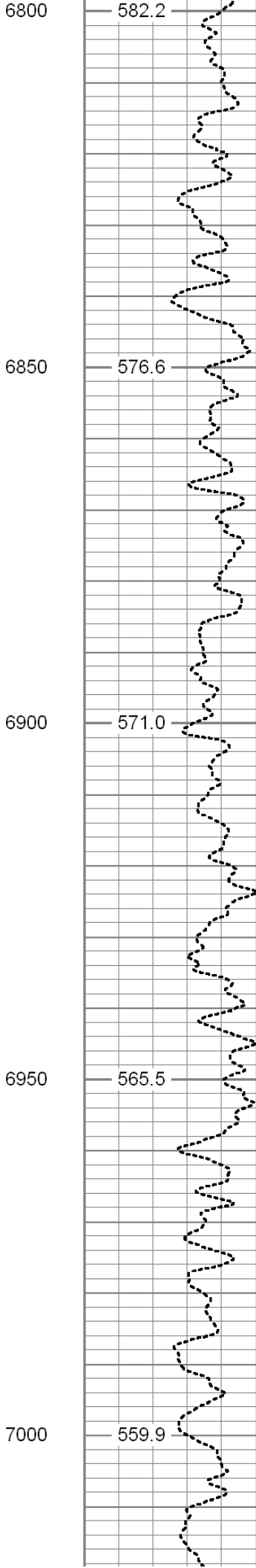
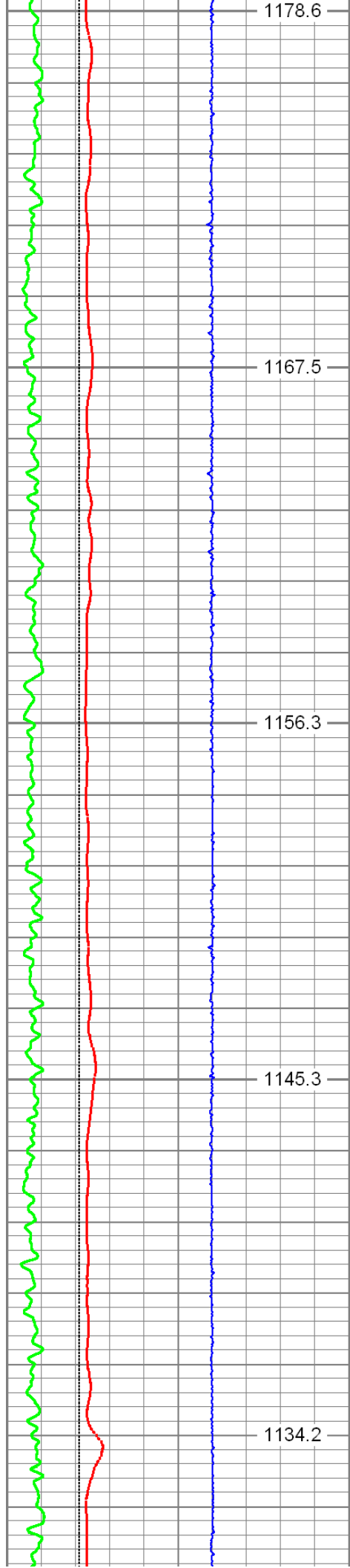
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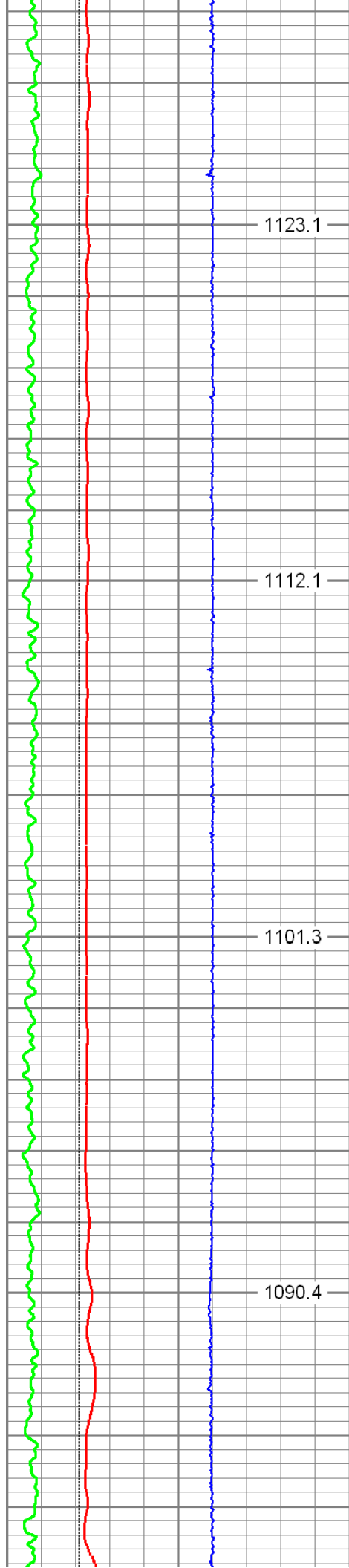
6650

6700

6750





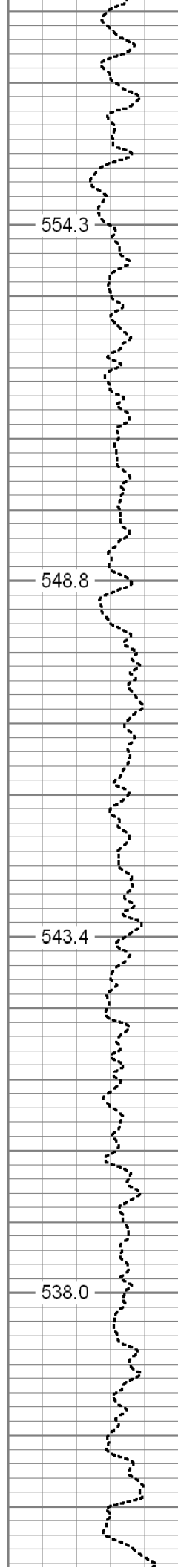


7050

7100

7150

7200

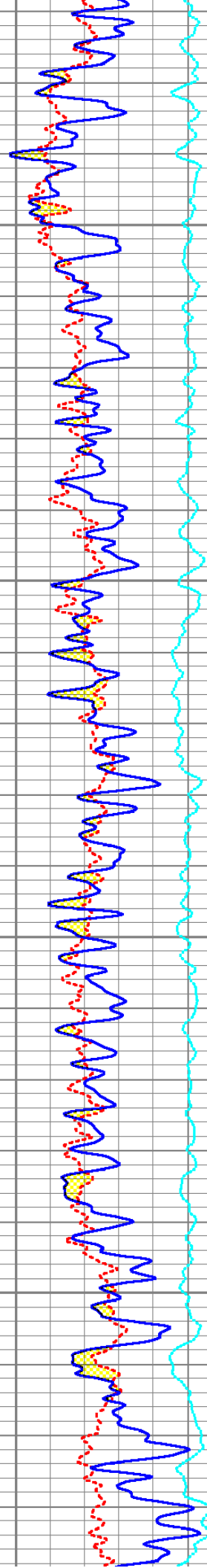


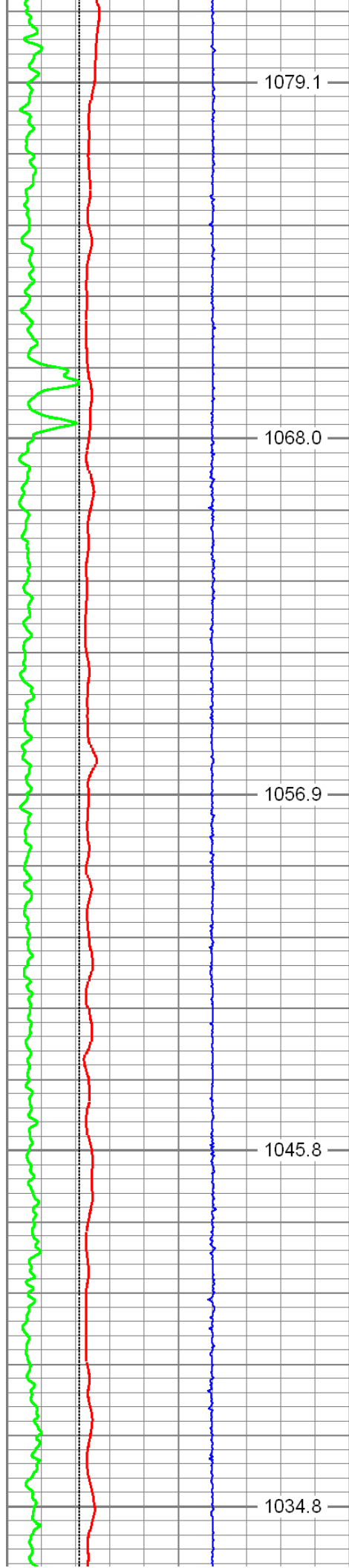
554.3

548.8

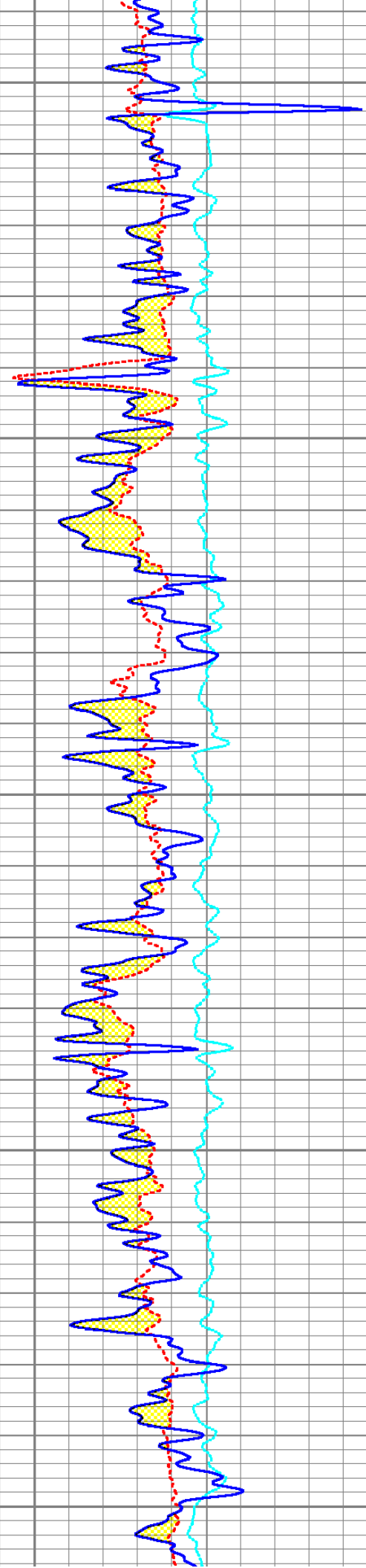
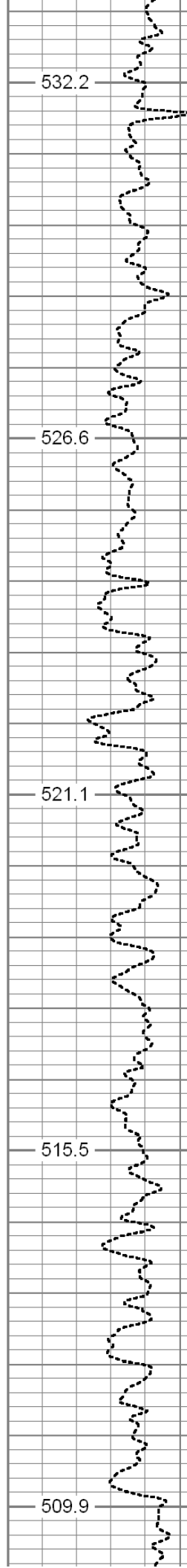
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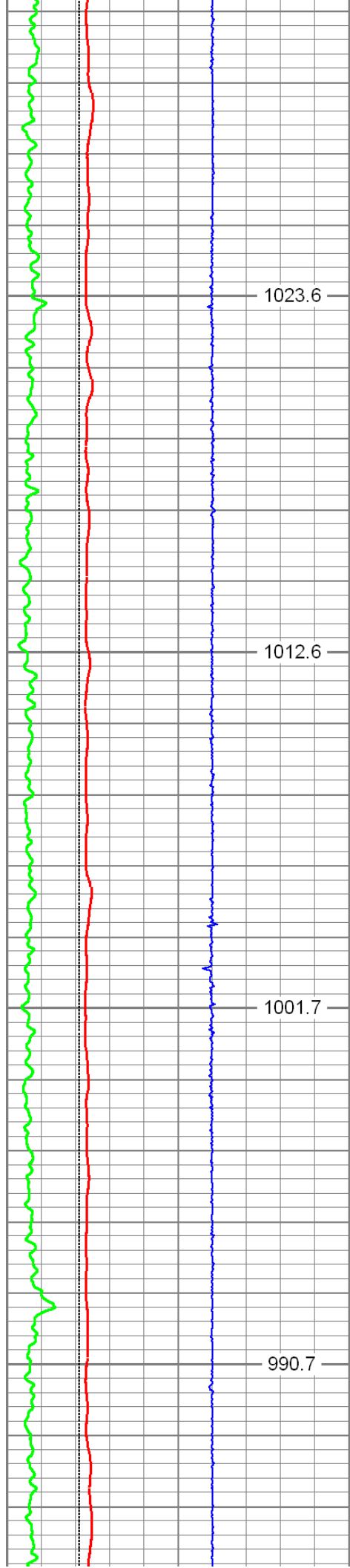
538.0





Wavelength (Å)
7250
7300
7350
7400
7450



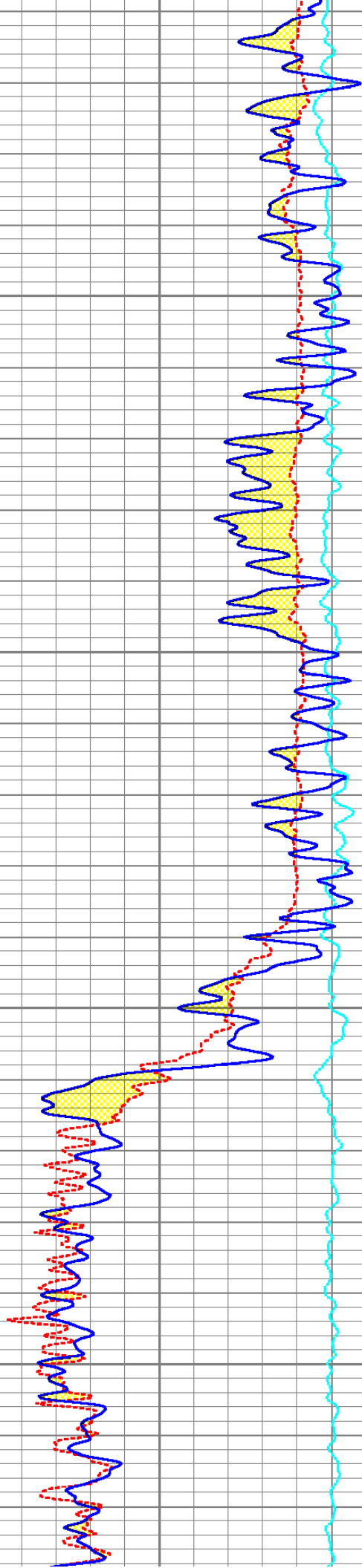
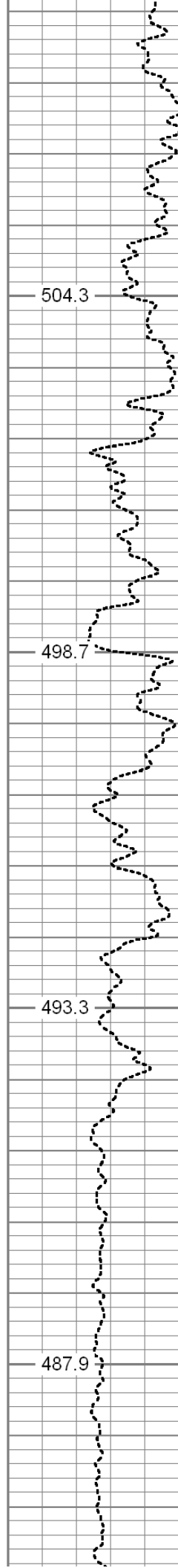


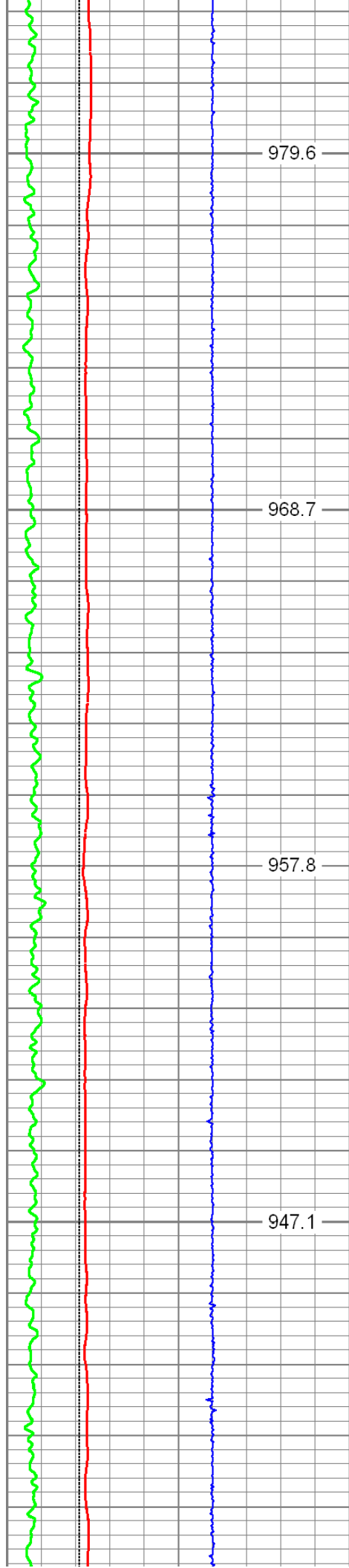
7500

7550

7600

7650



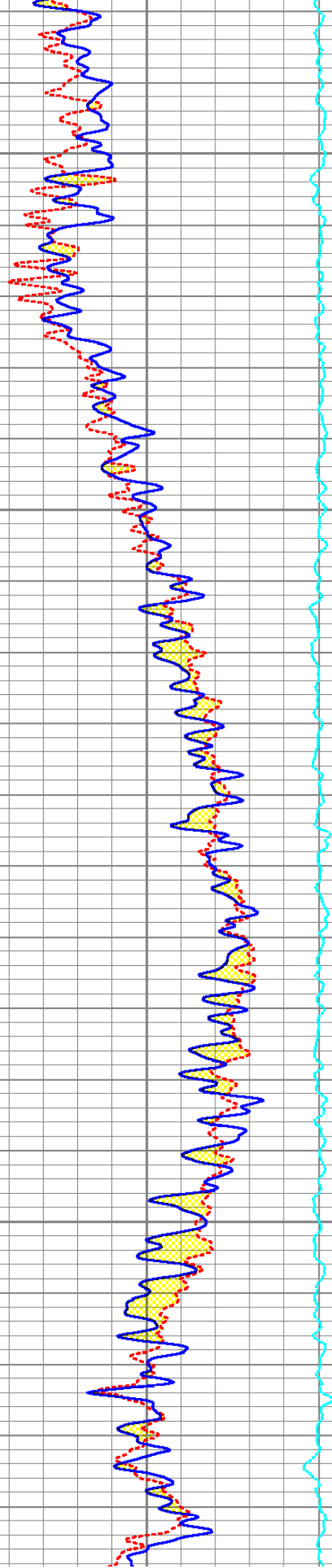
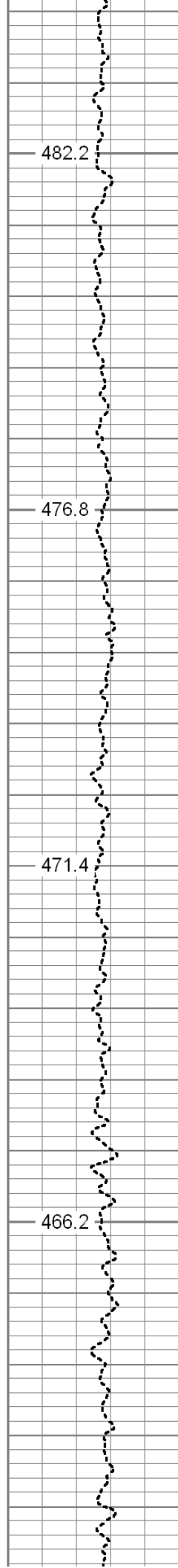


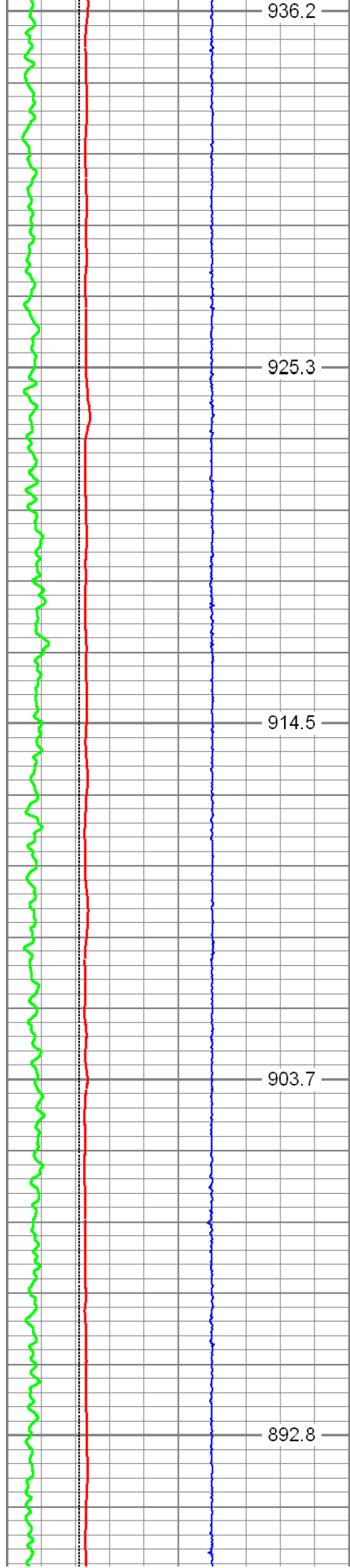
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7750

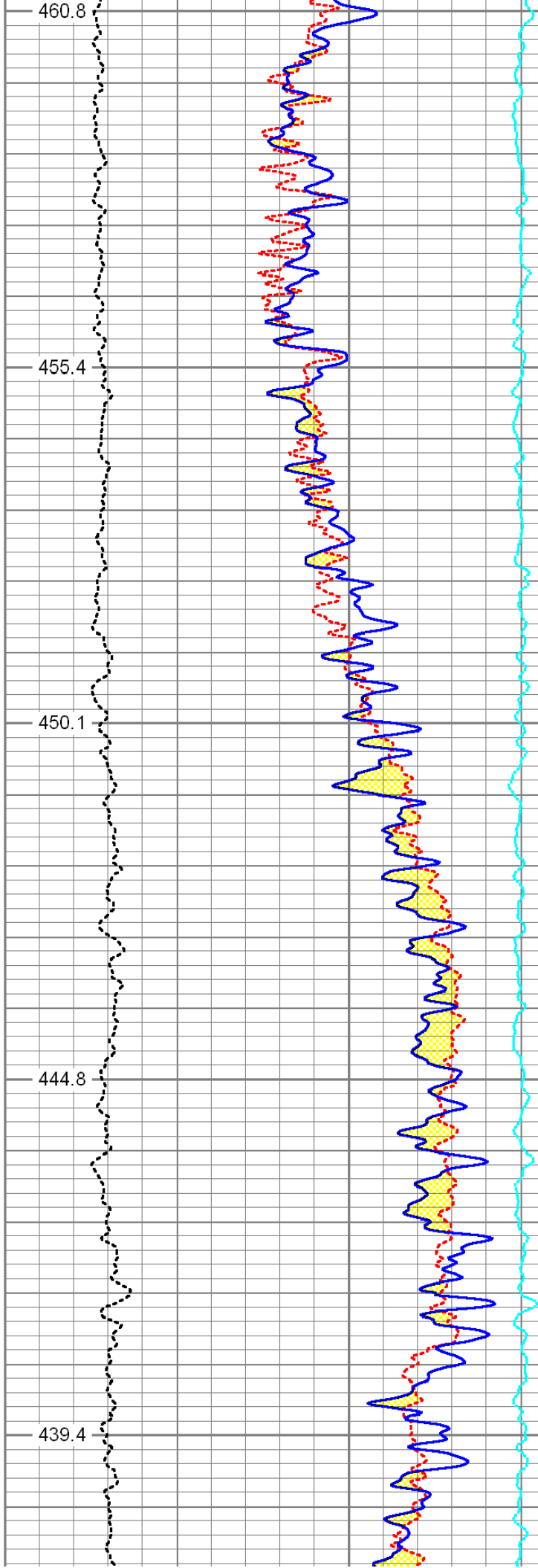
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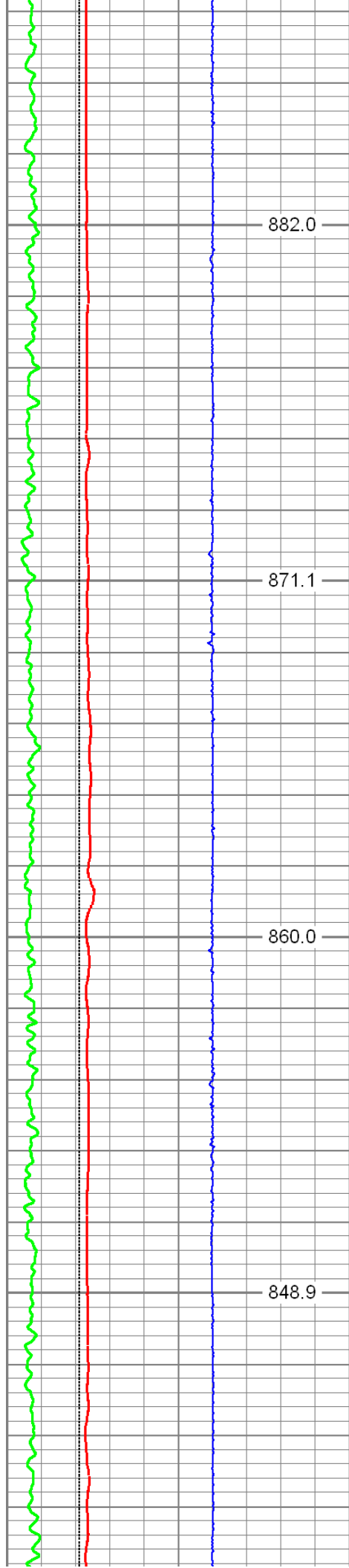
7850





7900
7950
8000
8050
8100



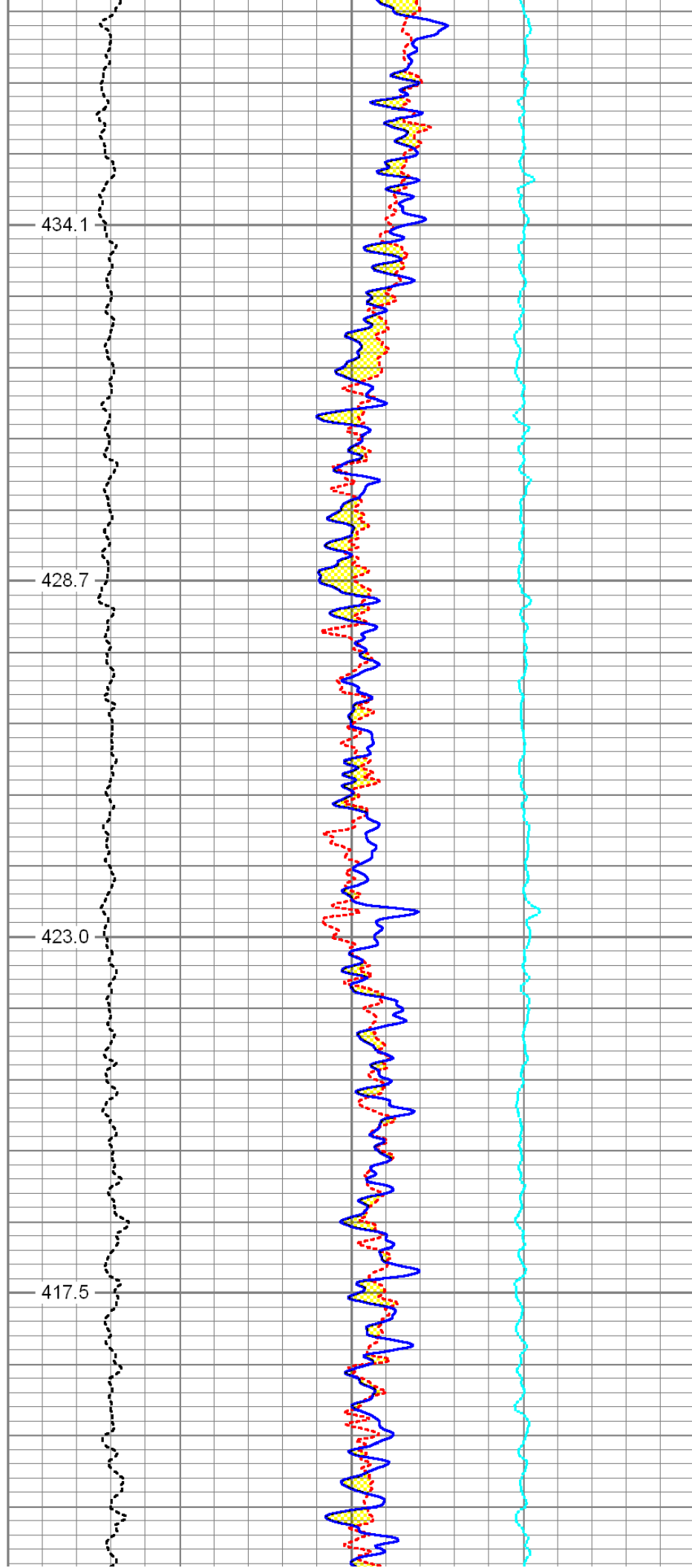


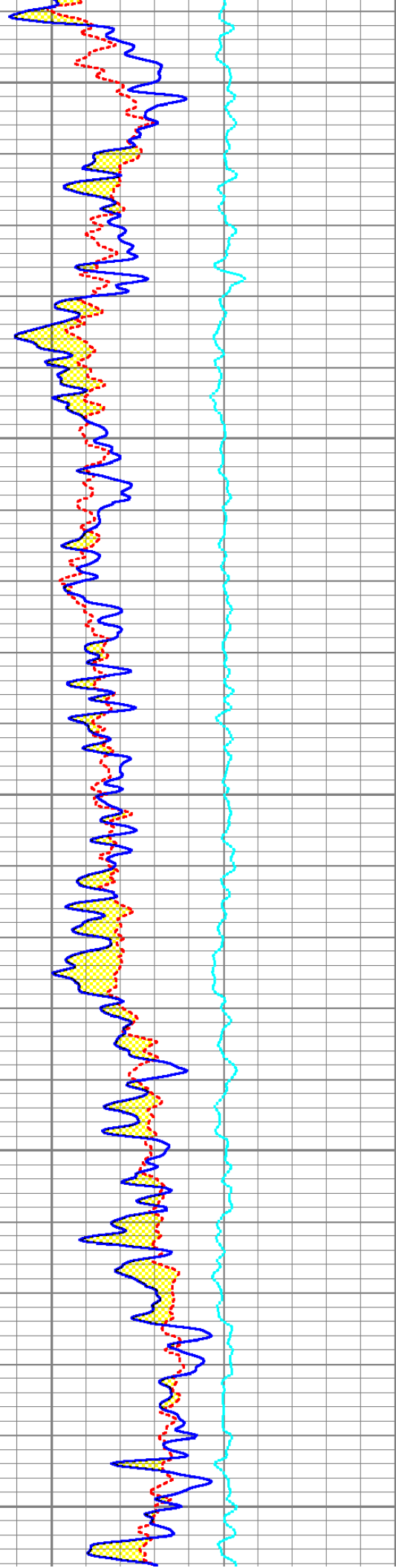
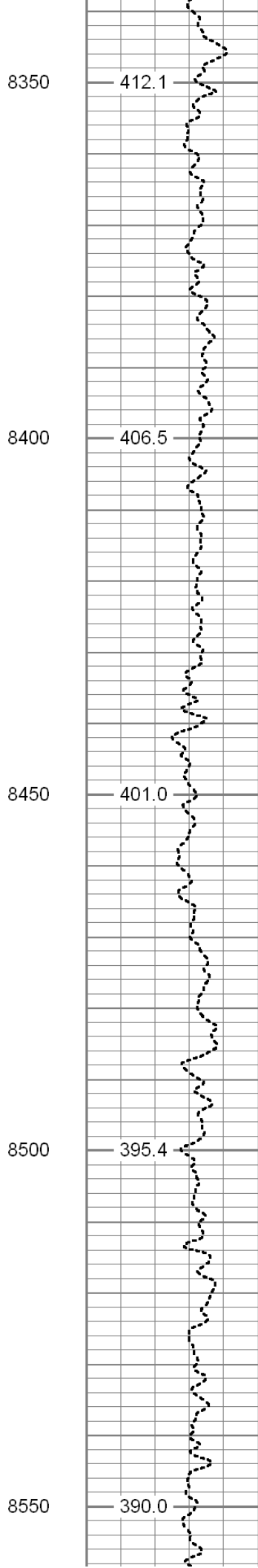
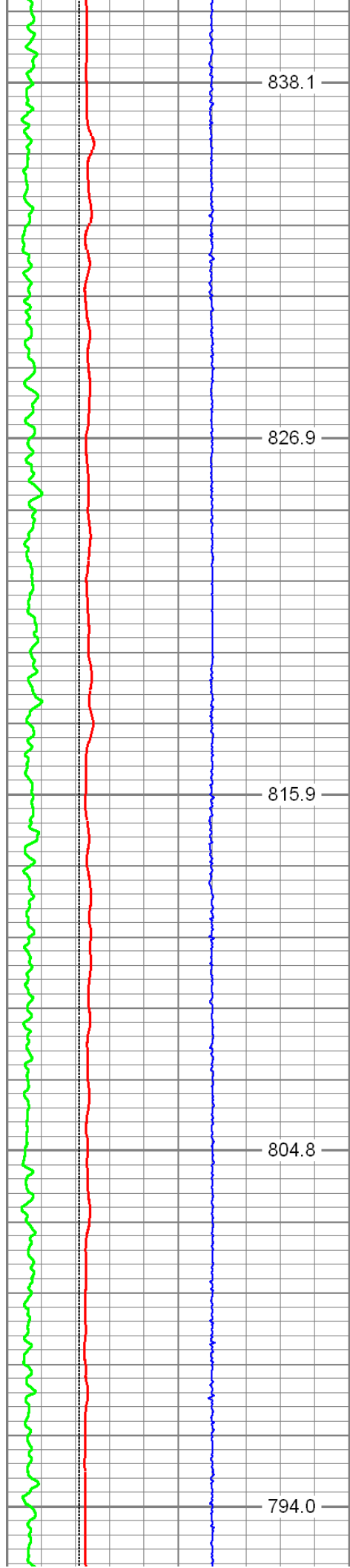
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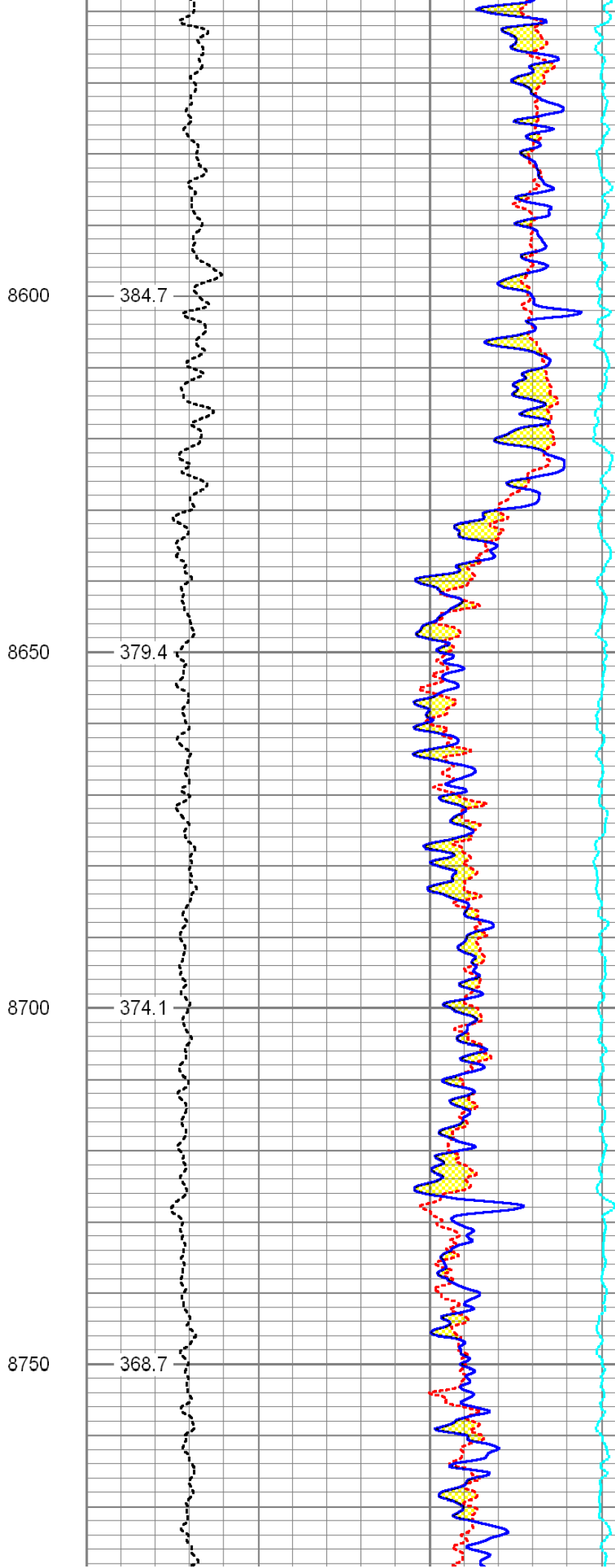
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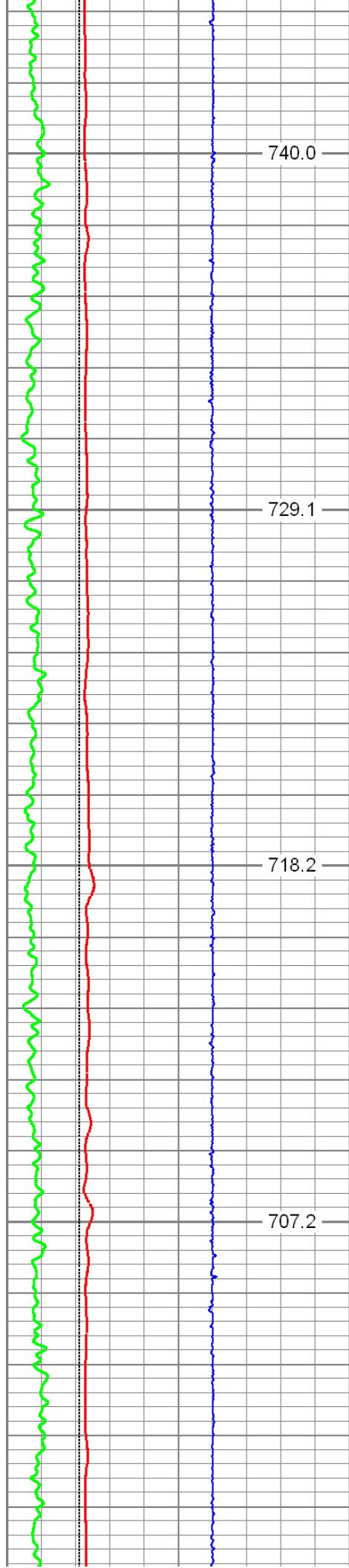
8250

8300









740.0

729.1

718.2

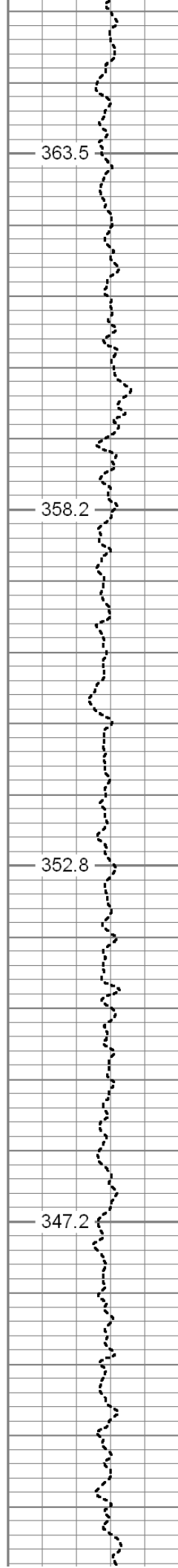
707.2

8800

8850

8900

8950

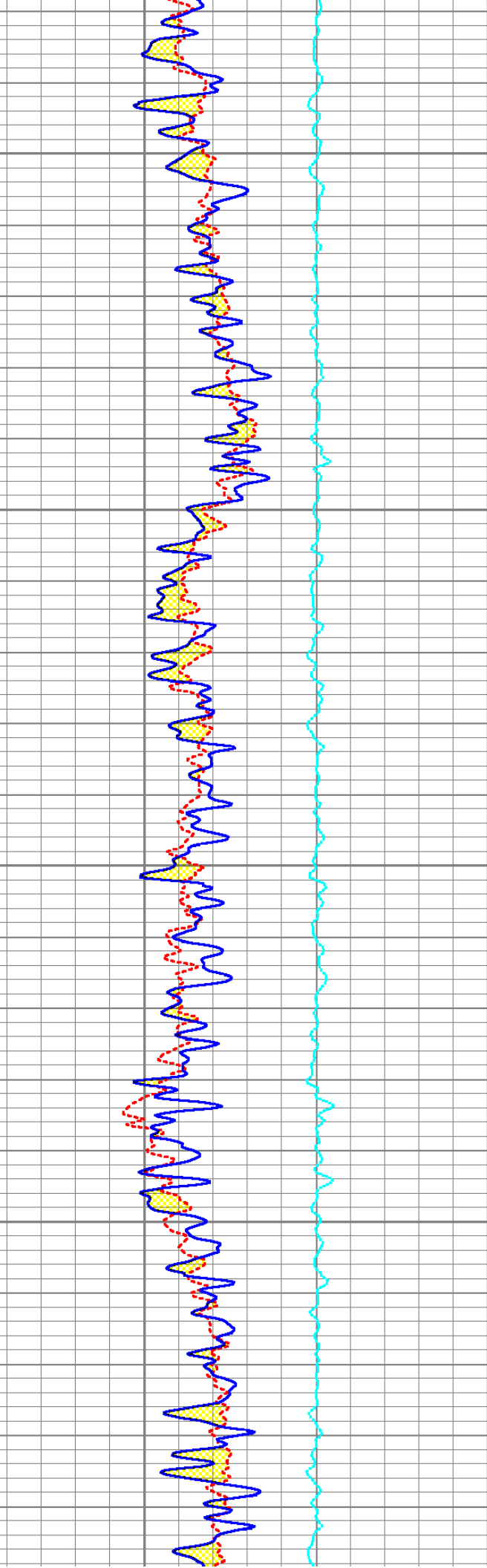


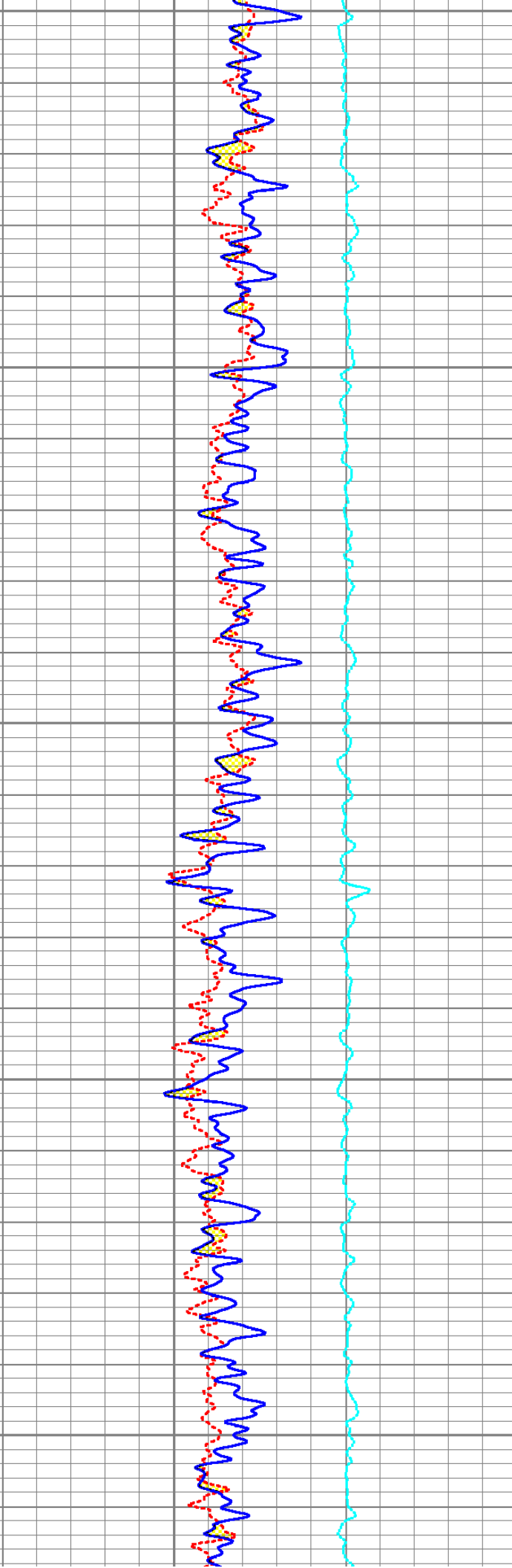
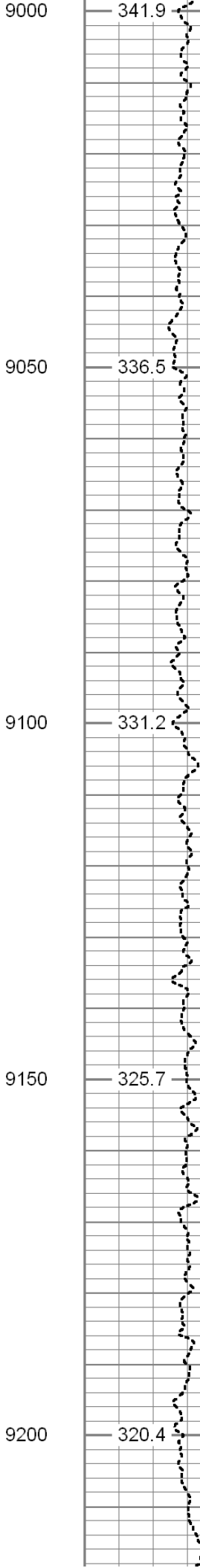
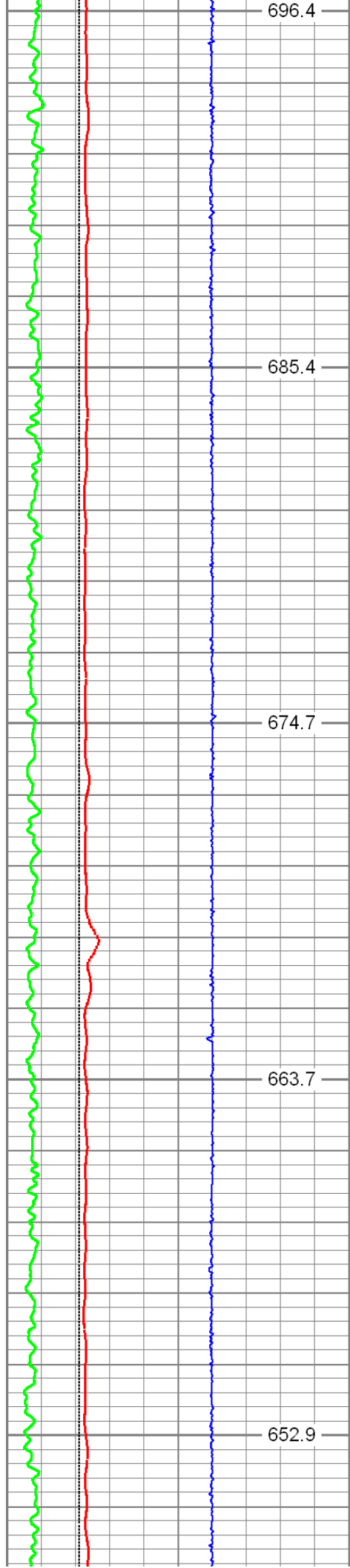
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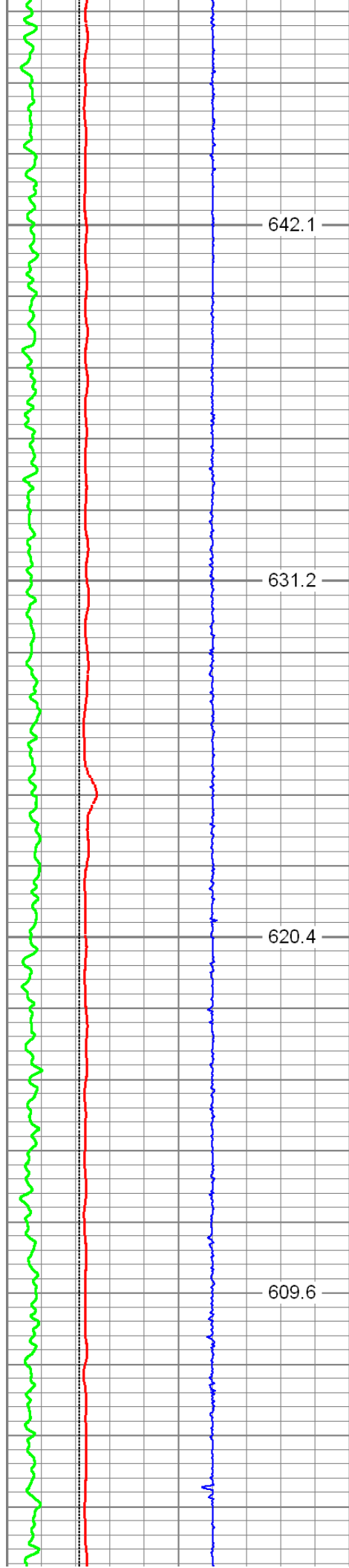
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352.8

347.2





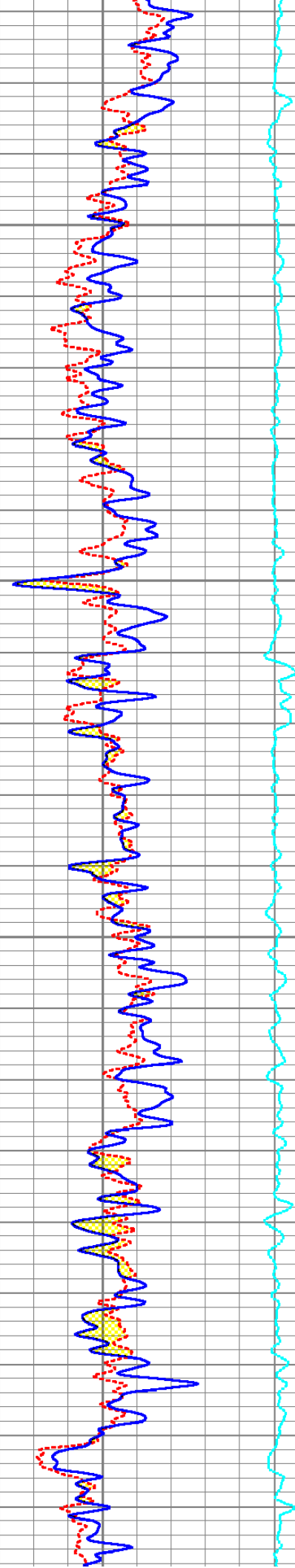
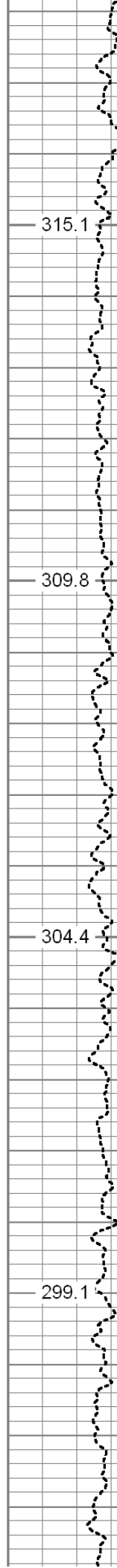


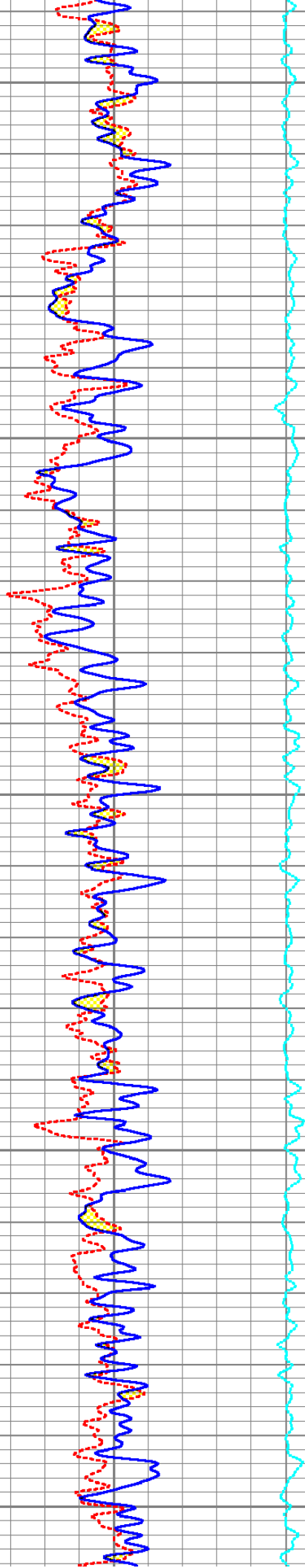
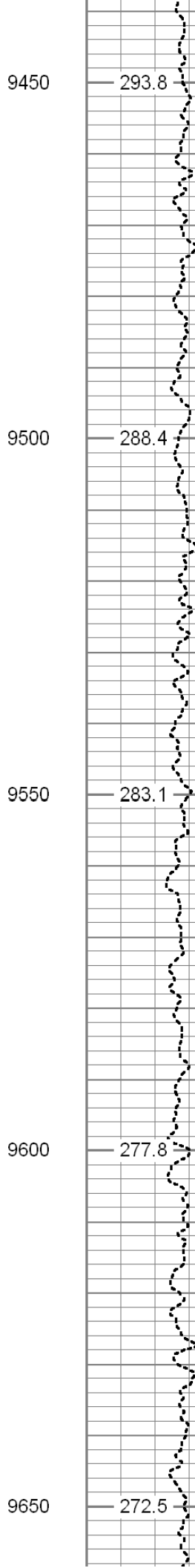
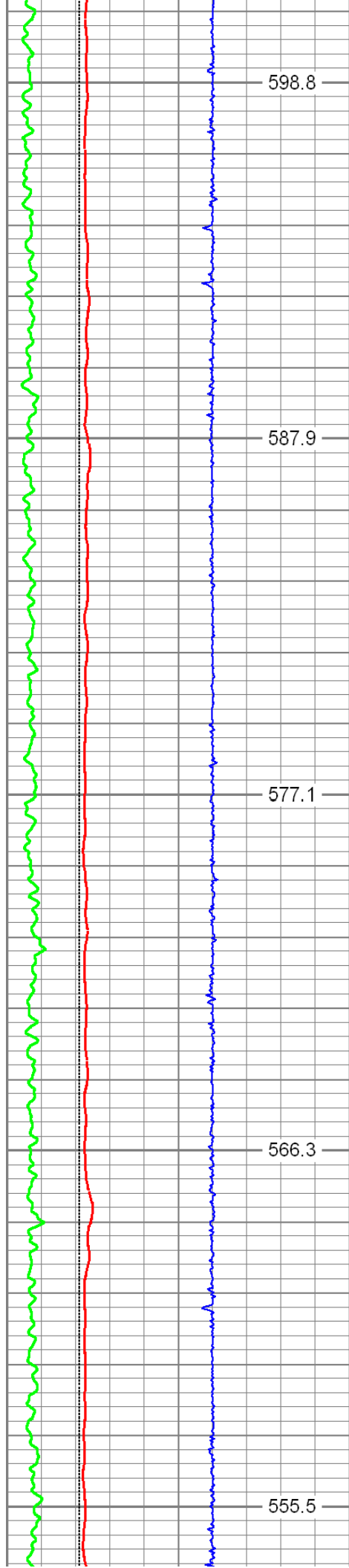
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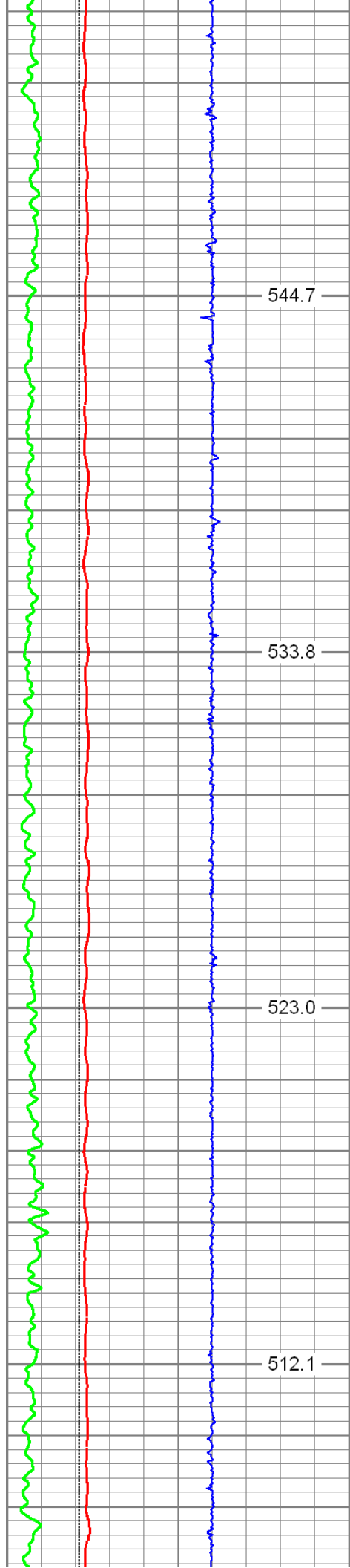
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9350

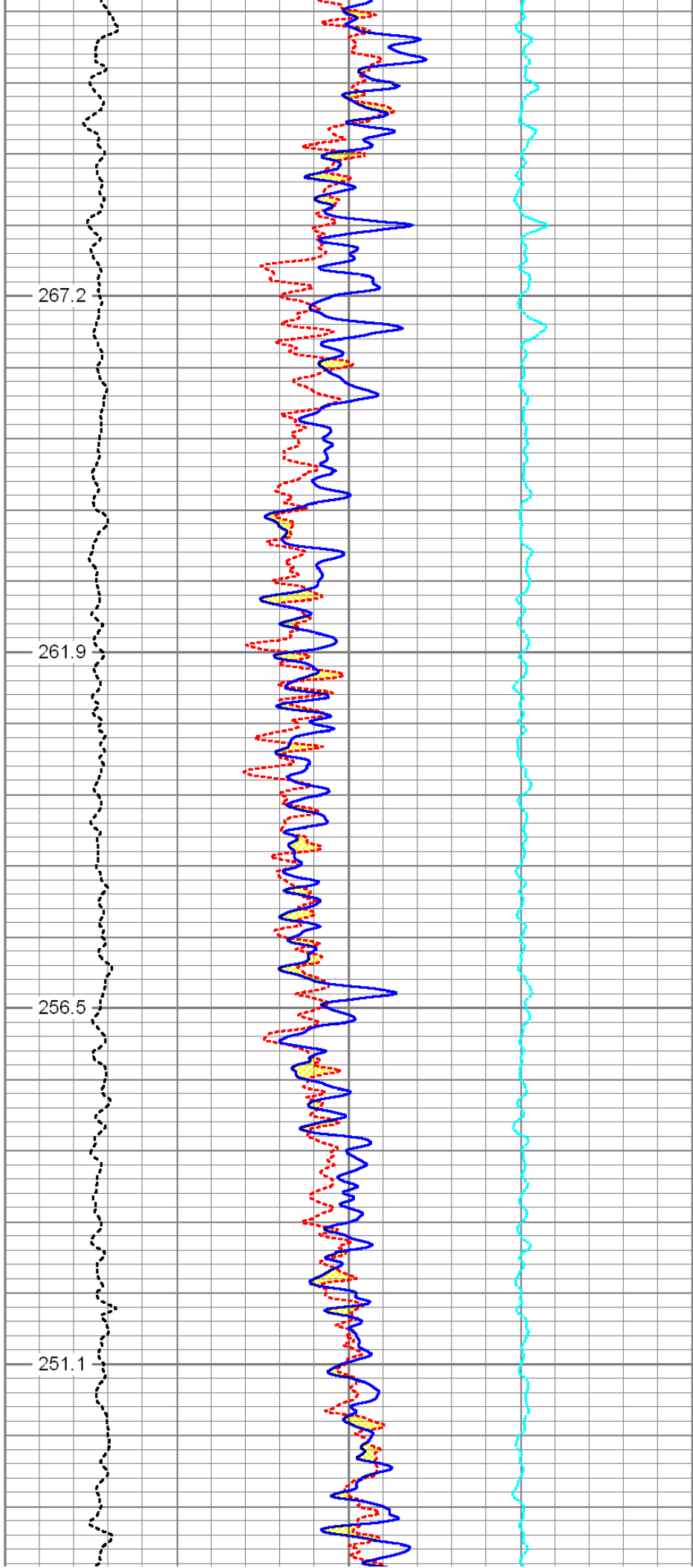
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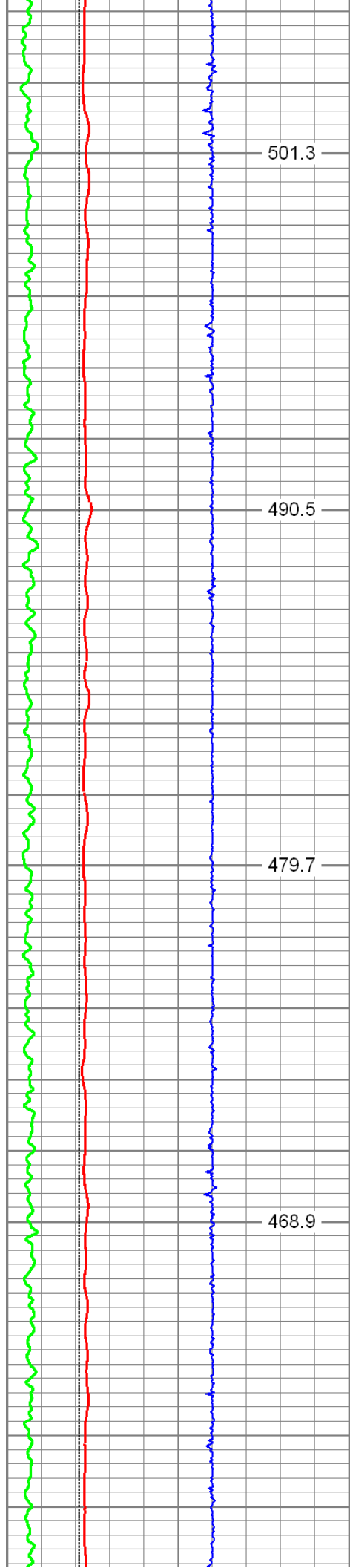




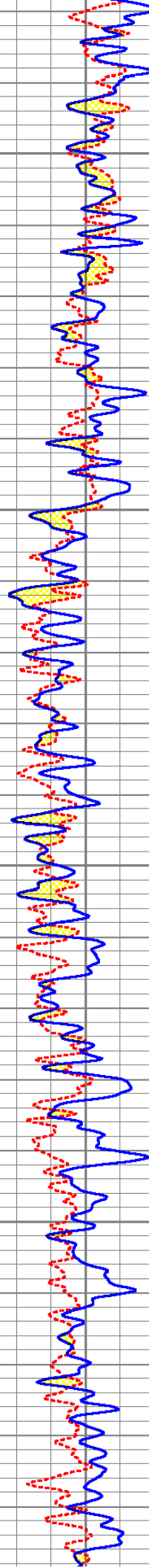
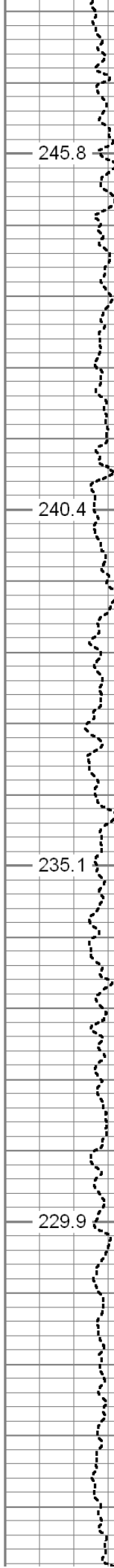


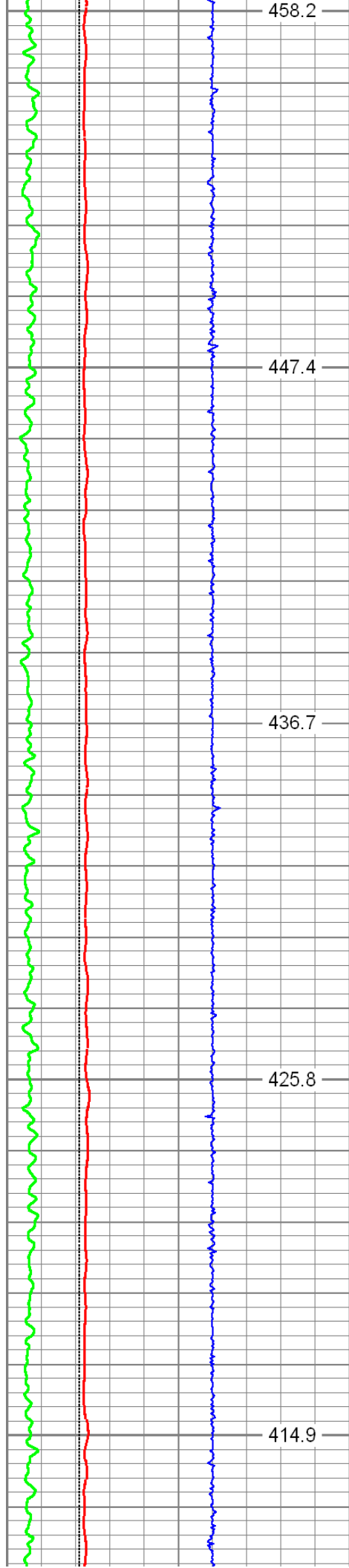
544.7 9700
533.8 9750
523.0 9800
512.1 9850



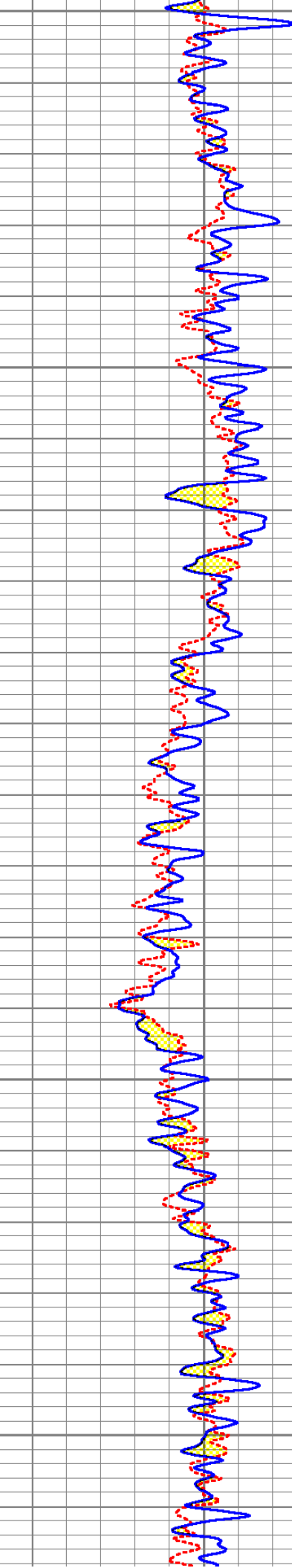
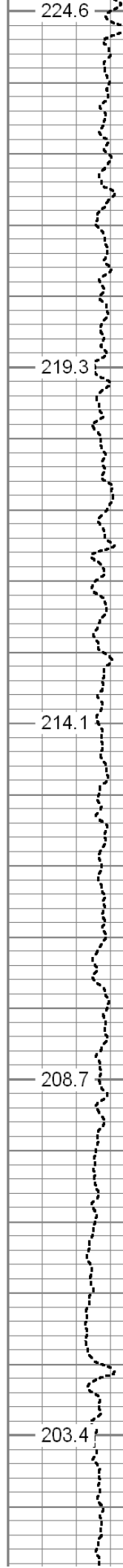


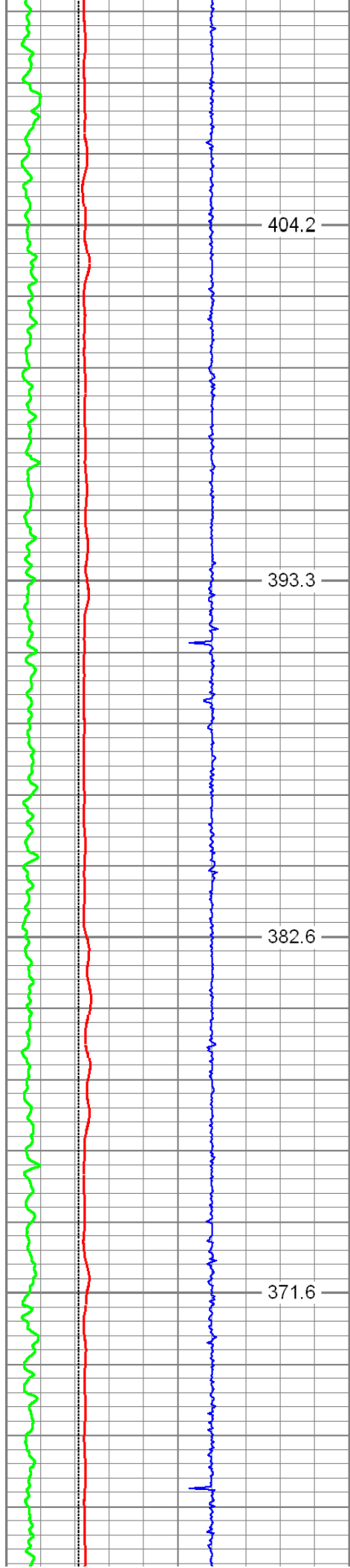
9900
9950
10000
10050





10100
10150
10200
10250
10300



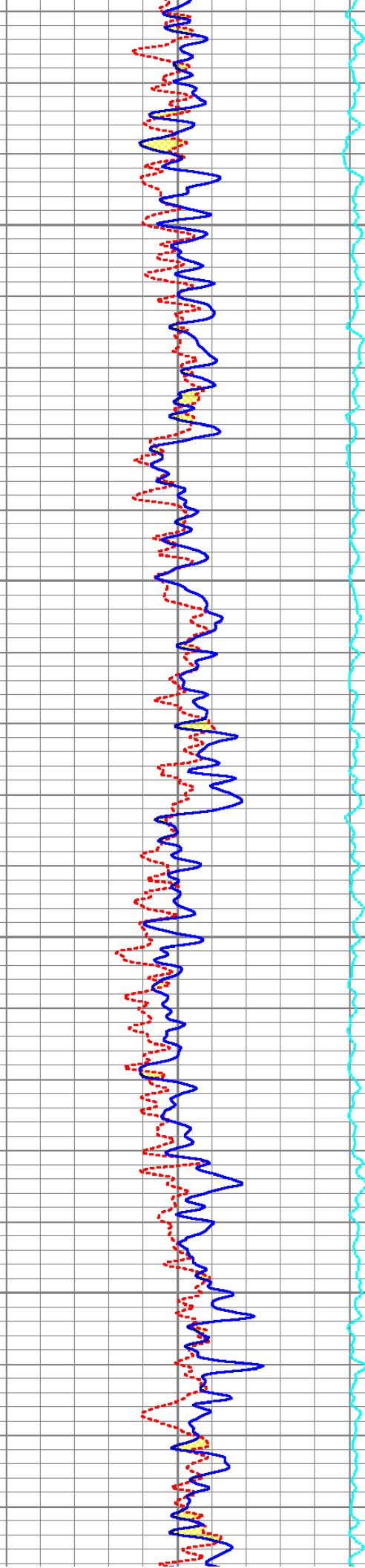
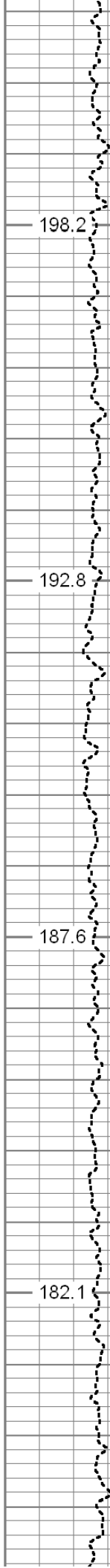


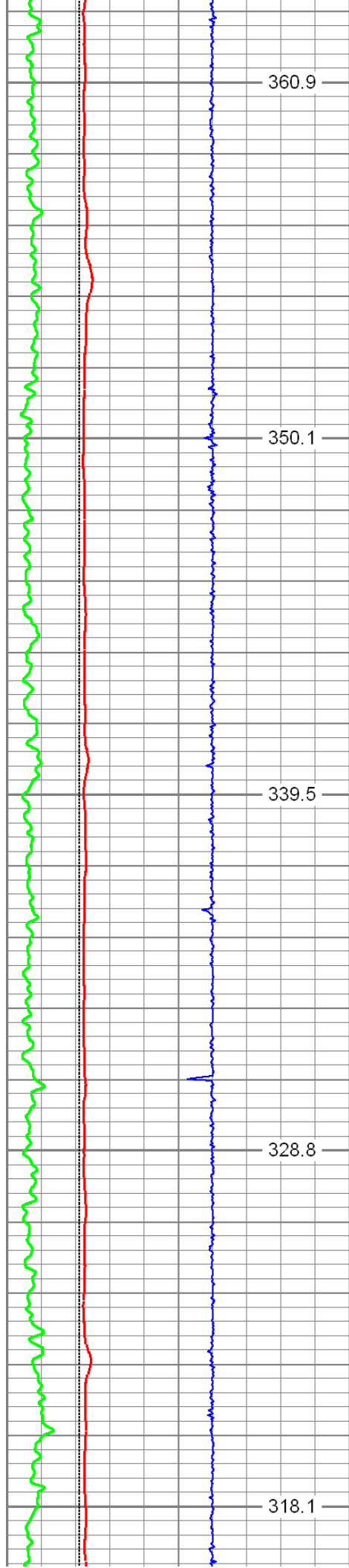
10350

10400

10450

10500





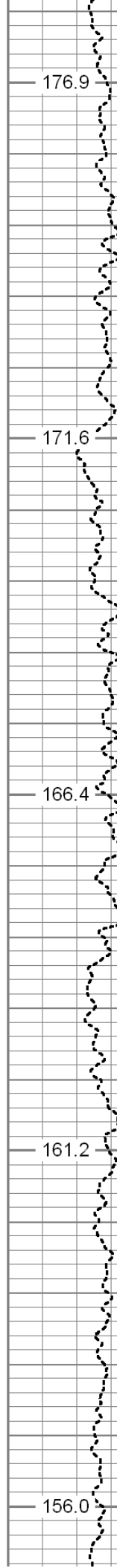
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10600

10650

10700

10750



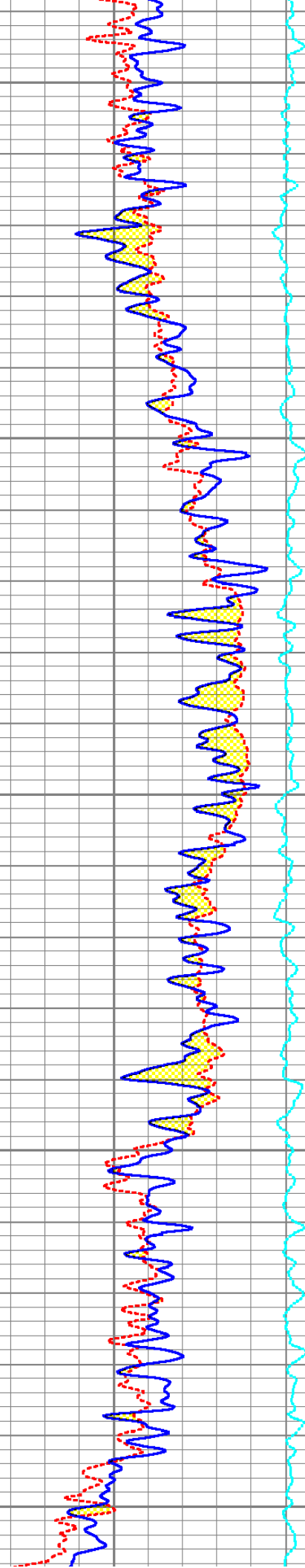
176.9

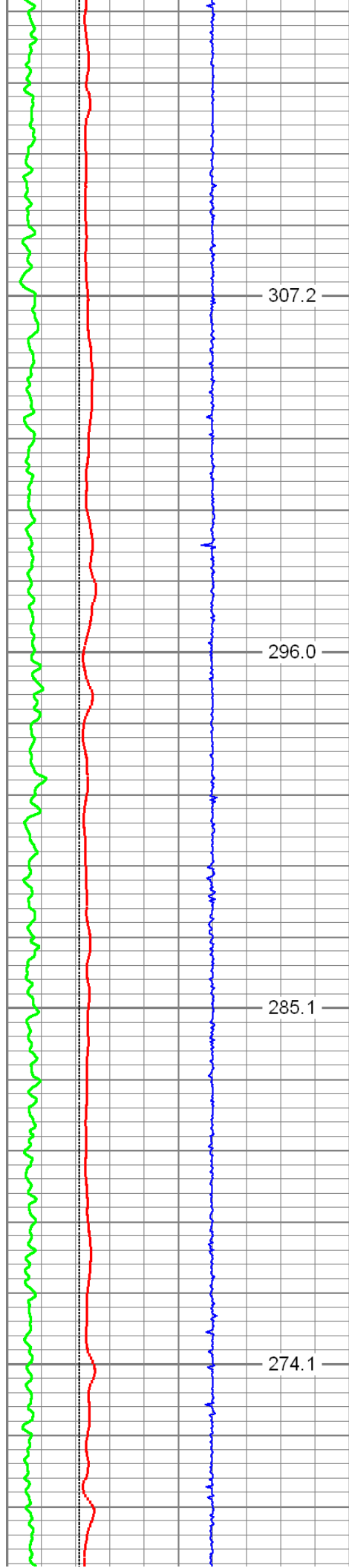
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166.4

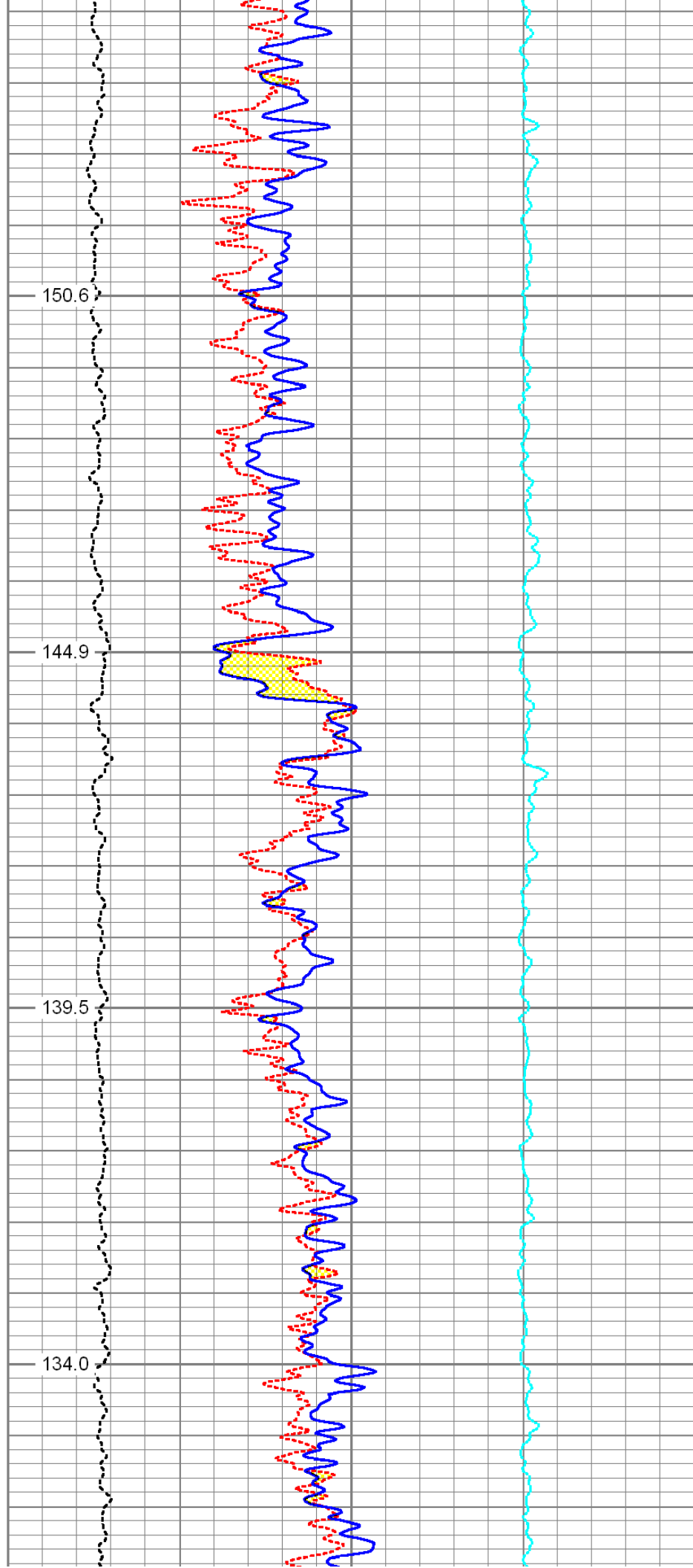
161.2

156.0

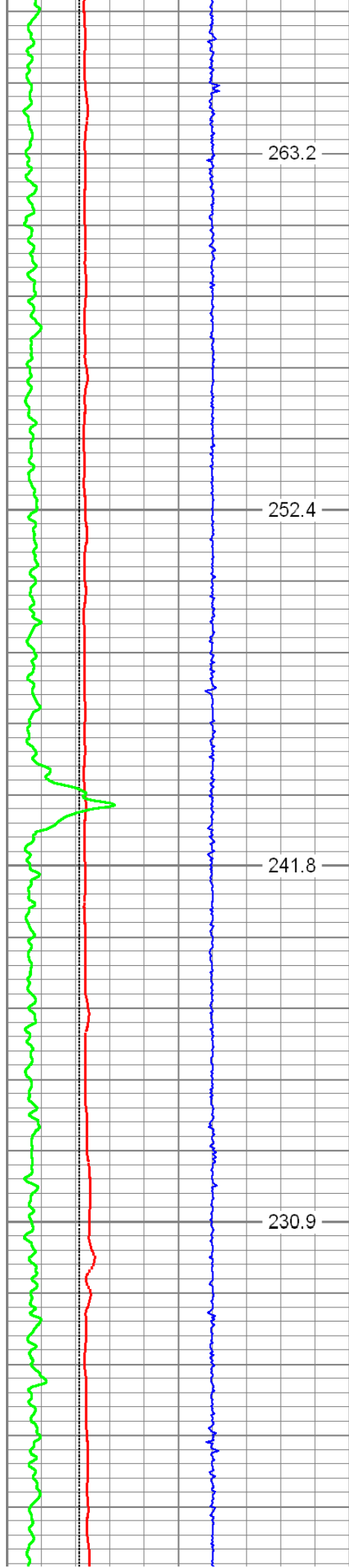




307.2 10800
296.0 10850
285.1 10900
274.1 10950



150.6 10800
144.9 10850
139.5 10900
134.0 10950

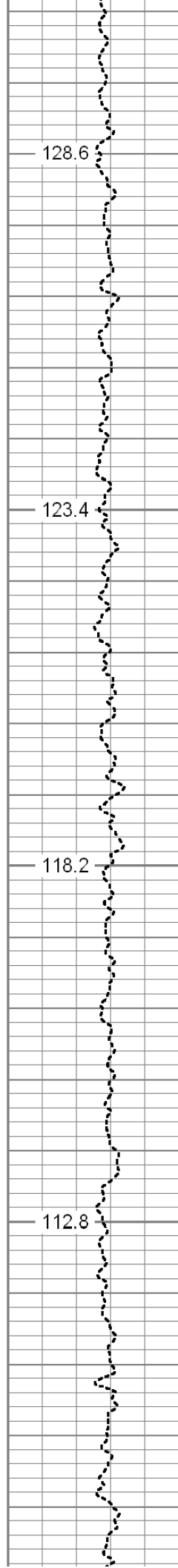


11000

11050

11100

11150

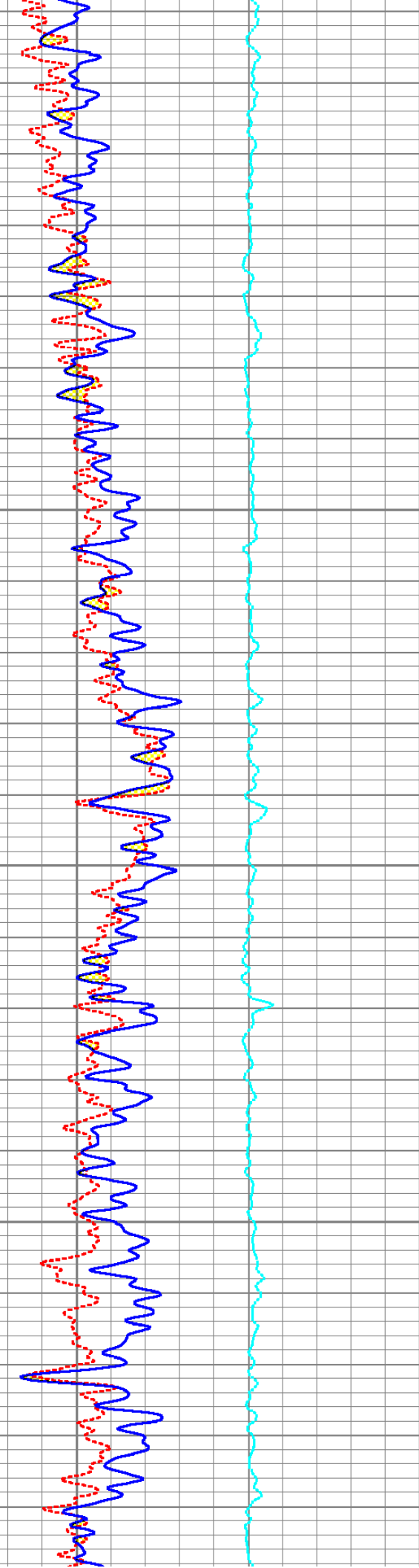


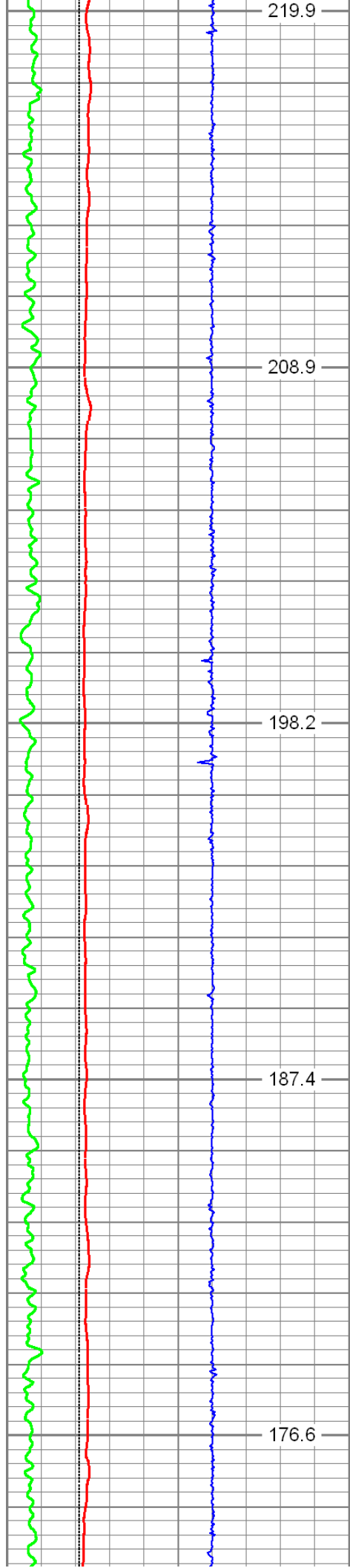
11000

11050

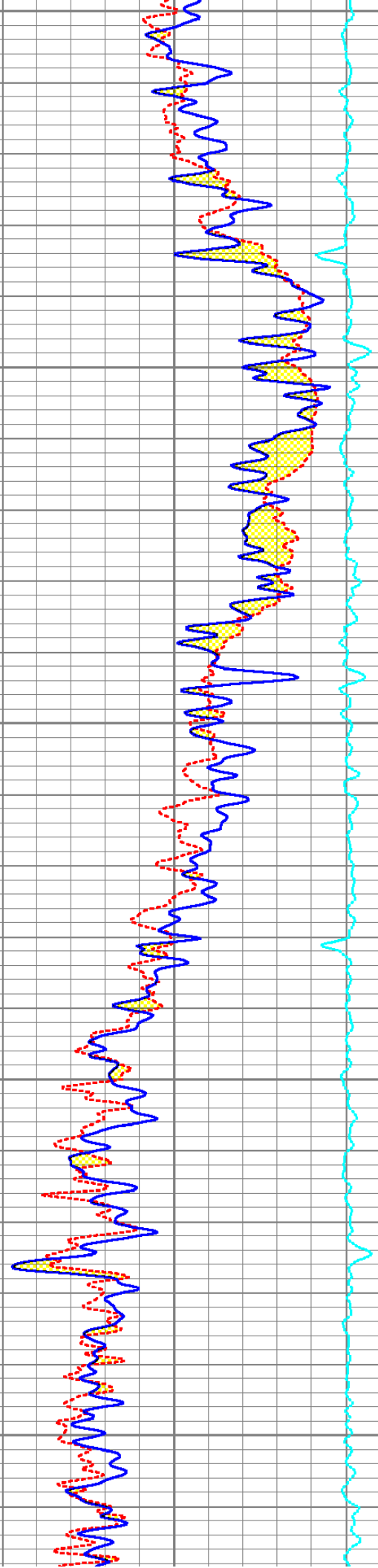
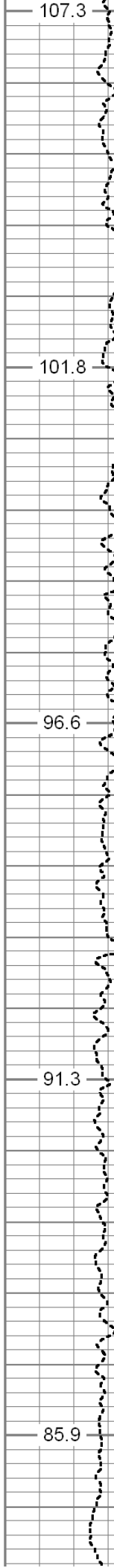
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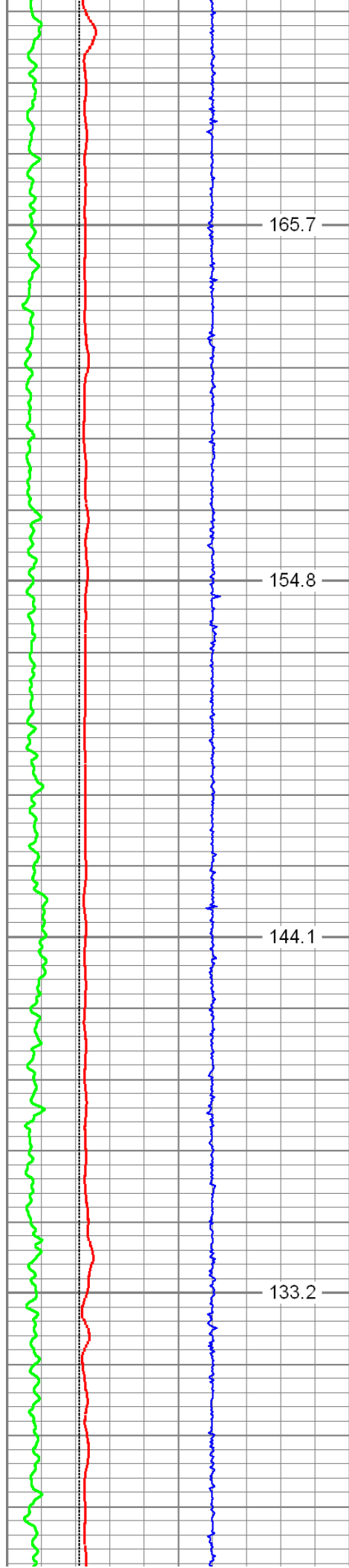
11150





11200
11250
11300
11350
11400



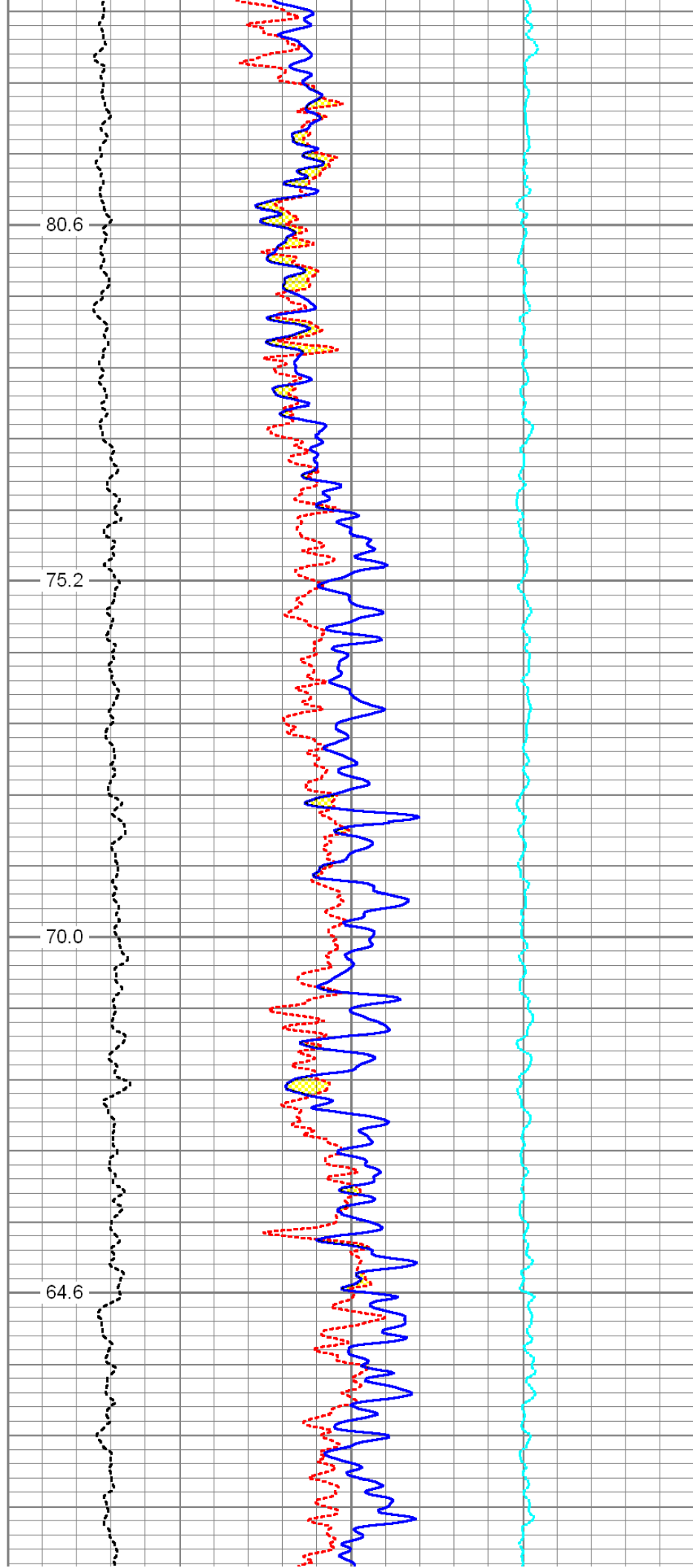


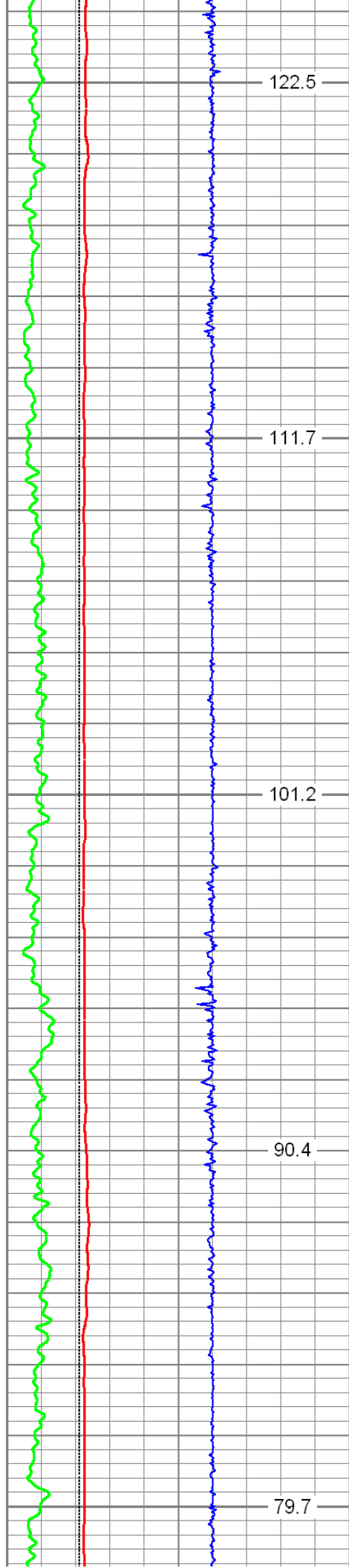
11450

11500

11550

11600





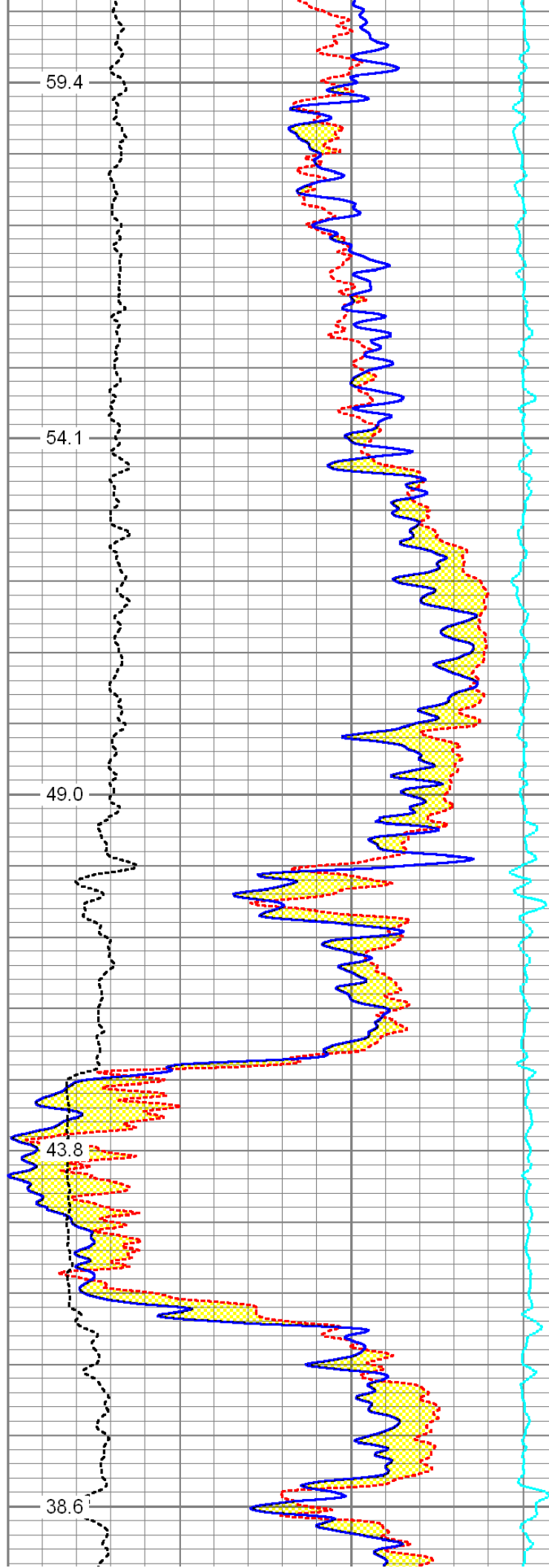
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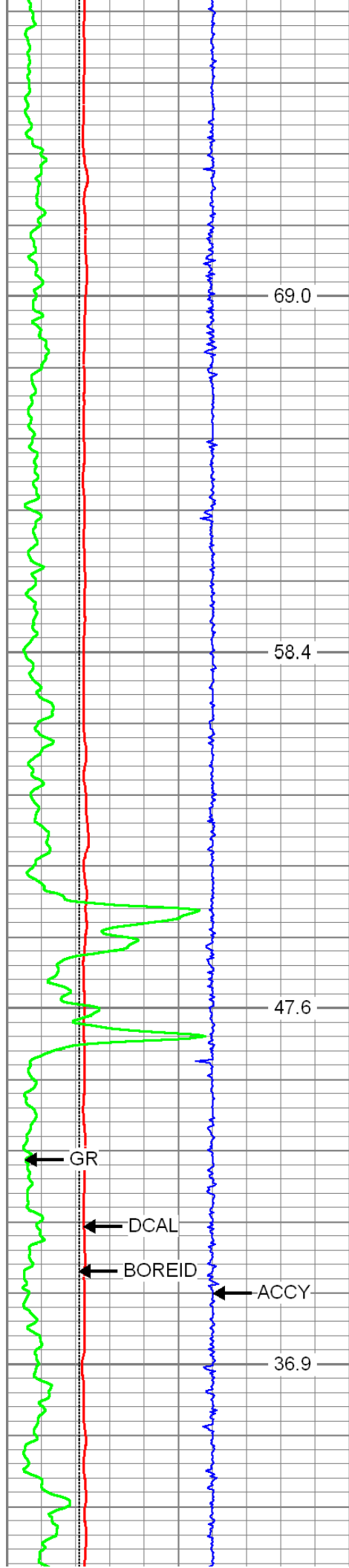
11700

11750

11800

11850



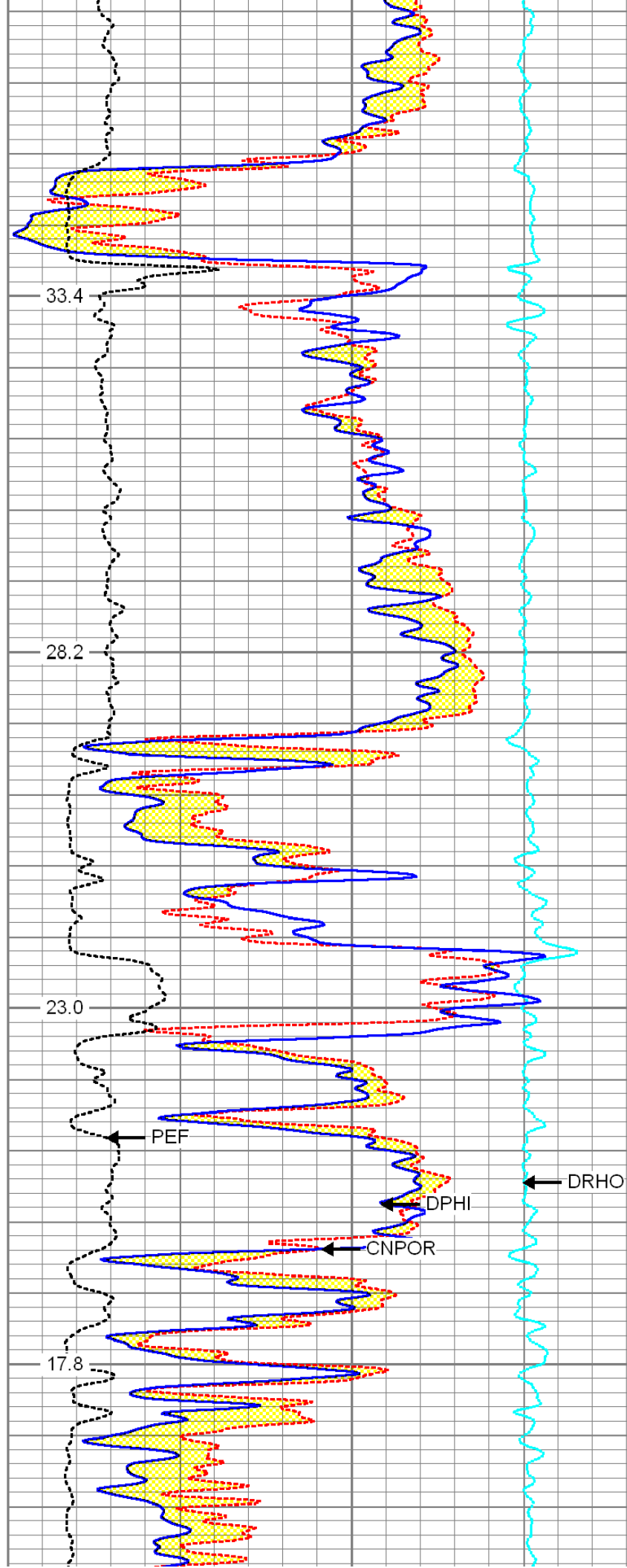


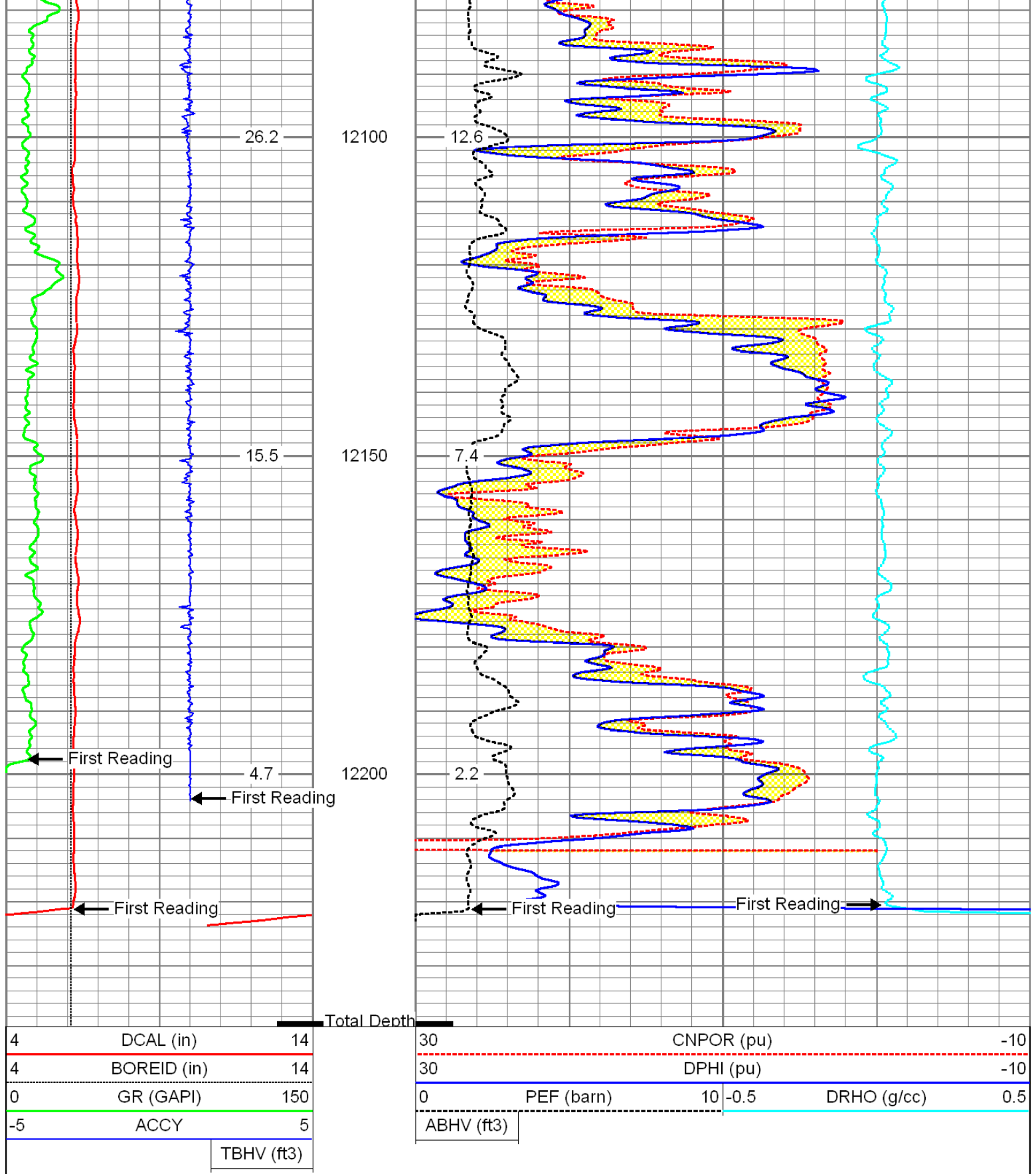
11900

11950

12000

12050





Log Variables

Database: c:\documents and settings\t006\desktop\lori 3510 3-2h\sandridge_lori_3510_3_2h_mem.dkt
Dataset: field/well/proc1/pass1.3

Top - Bottom

BHCOR	BHFL_TYPE	BHFLRES Ohm-m	BHFLRESSRC	BHIDSRC	BOREID in	BOTTEMP degF
On	WBM	1	MUDCELL	CURVE	6.125	129
CASEP3	CASEOP	CASETHICK	CEM/WATER/CA	CMNTTHICK	DRORCEP	FLUIDREN

CASED?	CASEOD in 4.5	CASETHCK in 0	CEMWATERSA kppm 0	CMNTTHCK in 0	DPORSEL RHOB	FLUIDDEN g/cc 1
FRMSALIN kppm 0	LATNOR Off	MATRXDEN g/cc 2.71	MUDSALIN kppm 84	MudWgt lb/gal 9	NPORSEL Limestone	PERFS 0
RESTMPSRC INTERNAL	SO in 0.5	SRFTEMP degF 65	SZCOR On	TDEPTH ft 12255	TMPCOR On	TOOLPOS Ec-centered
XXXX 0						

Calibration Report				
Database File:	c:\documents and settings\t006\desktop\lori 3510 3-2h\sandridge_lori_3510_3_2h_mem.db			
Dataset Pathname:	proc1/pass1.3			
Dataset Creation:	Tue Dec 11 06:18:07 2012			
ThruBit Induction Calibration Report				
Tool Model-Serial Number:		PS-PS38R		
Shop Calibration Performed:		Wed Sep 19 09:28:12 2012		
BASELINE				
	R	Expected	X	Expected
Freq 1				
A1	-478.6470	[-500.00, -400.00]	173.0000	[-500.00, 500.00]
A2	-136.1660	[-180.00, -100.00]	298.4330	[-500.00, 500.00]
A3	-26.9944	[-50.00, -10.00]	-68.1870	[-500.00, 500.00]
A4	-16.5753	[-30.00, -10.00]	252.8430	[-500.00, 500.00]
A5	-14.5693	[-30.00, -10.00]	150.3510	[-500.00, 500.00]
Freq 2				
A1	-252.6960	[-280.00, -180.00]	84.1946	[-500.00, 500.00]
A2	-87.5233	[-130.00, -50.00]	165.5460	[-500.00, 500.00]
A3	-19.5990	[-50.00, -10.00]	-97.2460	[-500.00, 500.00]
A4	-19.8898	[-30.00, -10.00]	75.3812	[-500.00, 500.00]
A5	-19.5554	[-30.00, -10.00]	-0.3546	[-500.00, 500.00]
Freq 3				
A1	-163.6960	[-180.00, -80.00]	-7.9103	[-500.00, 500.00]
A2	-67.0263	[-130.00, -30.00]	78.9750	[-500.00, 500.00]
A3	-16.3076	[-50.00, -10.00]	-130.2510	[-500.00, 500.00]
A4	-21.4341	[-30.00, -10.00]	-42.9782	[-500.00, 500.00]
A5	-22.0719	[-30.00, -10.00]	-109.4460	[-500.00, 500.00]
Freq 4				
A1	-91.5984	[-120.00, -40.00]	-163.9400	[-500.00, 500.00]
A2	-48.3989	[-110.00, -10.00]	-37.1792	[-500.00, 500.00]
A3	-13.2104	[-50.00, -10.00]	-195.2460	[-500.00, 500.00]
A4	-24.0555	[-30.00, -10.00]	-219.8520	[-500.00, 500.00]
A5	-26.9658	[-30.00, -10.00]	-291.9350	[-500.00, 500.00]
CALIBRATION COEFFICIENTS				
	R	Expected	X	Expected

Freq 1				
A1	0.9932	[0.95, 1.05]	-0.0014	[-0.05, 0.05]
A2	0.9912	[0.95, 1.05]	0.0015	[-0.05, 0.05]
A3	1.0012	[0.95, 1.05]	-0.0059	[-0.05, 0.05]
A4	0.9886	[0.95, 1.05]	0.0041	[-0.05, 0.05]
A5	0.9941	[0.95, 1.05]	0.0005	[-0.05, 0.05]
Freq 2				
A1	0.9875	[0.95, 1.05]	-0.0069	[-0.05, 0.05]
A2	0.9856	[0.95, 1.05]	-0.0048	[-0.05, 0.05]
A3	0.9898	[0.95, 1.05]	-0.0048	[-0.05, 0.05]
A4	0.9843	[0.95, 1.05]	-0.0026	[-0.05, 0.05]
A5	0.9899	[0.95, 1.05]	-0.0066	[-0.05, 0.05]
Freq 3				
A1	0.9906	[0.95, 1.05]	-0.0084	[-0.05, 0.05]
A2	0.9890	[0.95, 1.05]	-0.0064	[-0.05, 0.05]
A3	0.9929	[0.95, 1.05]	-0.0065	[-0.05, 0.05]
A4	0.9861	[0.95, 1.05]	-0.0043	[-0.05, 0.05]
A5	0.9936	[0.95, 1.05]	-0.0085	[-0.05, 0.05]
Freq 4				
A1	0.9898	[0.95, 1.05]	-0.0038	[-0.05, 0.05]
A2	0.9878	[0.95, 1.05]	-0.0023	[-0.05, 0.05]
A3	0.9935	[0.95, 1.05]	-0.0043	[-0.05, 0.05]
A4	0.9844	[0.95, 1.05]	0.0001	[-0.05, 0.05]
A5	0.9985	[0.95, 1.05]	-0.0062	[-0.05, 0.05]
Temperature	26.7102 degC			

ThruBit Density Calibration Report

Tool Model-Serial Number:	PS-PS44D
Source Number:	
Shop Calibration Performed:	Thu Nov 29 11:41:46 2012

REFERENCE			
	Density	Units	
Aluminium	2.607	g/cc	
Magnesium	1.752	g/cc	
READINGS			
Outputs	Counts	Units	Expected
SS1 Background	130.13	cps	[130.00, 170.00]
LS1 Background	146.20	cps	[130.00, 170.00]
LS4 Background	29.56	cps	[27.00, 35.00]
SS1 Aluminium	5613.30	cps	[4500.00, 5500.00]
LS1 Aluminium	950.33	cps	[750.00, 950.00]
LS4 Aluminium	1057.35	cps	[843.00, 1068.00]
SS1 Magnesium	9246.22	cps	[7000.00, 9000.00]
LS1 Magnesium	6219.22	cps	[5250.00, 6250.00]
LS1 Al + Fe	795.70	cps	[650.00, 800.00]
LS4 Al + Fe	456.59	cps	[382.00, 471.00]
RESULTS			
SS Slope	1.68		[1.52, 1.77]
LS Slope	0.42		[0.38, 0.45]
PEF K Factor	5.058		[3.510, 6.170]
PEF B Factor	-0.501		[-0.700, -0.410]

RESULTS			
Caliper Shop Calibration performed:		Thu Nov 29 11:41:46 2012	
Reference	Reading	Units	
12.00	1853.08	in	
9.00	2007.18	in	
6.00	2165.36	in	

DENSITY PRE-SURVEY CHECK Performed:		Sun Dec 02 07:23:17 2012	
Outputs	Counts	Units	Expected
SS1 Background	128.67	cps	[126.23, 134.04]
LS1 Background	145.78	cps	[141.82, 150.59]
LS4 Background	29.61	cps	[27.79, 31.34]

DENSITY POST-SURVEY CHECK Performed:		Wed Dec 31 18:00:00 1969	
Outputs	Counts	Units	Expected
SS1 Background	0.00	cps	[126.23, 134.04]
LS1 Background	0.00	cps	[141.82, 150.59]
LS4 Background	0.00	cps	[27.79, 31.34]

CALIPER PRE-SURVEY CHECK Performed:		Sun Dec 02 07:21:04 2012	
Reference	Readings	Units	Expected
9.00	8.89	in	[8.80, 9.20]

CALIPER POST-SURVEY CHECK Performed:		Wed Dec 31 18:00:00 1969	
Reference	Readings	Units	Expected
0.00	0.00	in	[-0.20, 0.20]

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Compensated Neutron Calibration Report			
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Tool Model-Serial Number:		ENP-ENP5N	
Source Number:			
Calibration Tank Temperature:		63.7 degF	
Shop Calibration Performed:		Fri Nov 16 09:23:04 2012	

BACKGROUND MEASUREMENT			
Outputs	Measured	Units	Expected
SS Counts	0.1	cps	<10
LS Counts	0.3	cps	<4

WATER TANK REFERENCE			
Outputs	Measured	Units	Expected
SS Counts	875.1	cps	
LS Counts	29.6	cps	
Tank Ratio Ref	30.9580	SS/LS	

Tank Ratio	29.5826	SS/LS	
Tank Ratio Gain	1.0465		[0.85, 1.15]
ALUMINUM SLEEVE REFERENCE			
Outputs	Measured	Units	Expected
SS Counts	9775.7	cps	
LS Counts	925.1	cps	
AI Ratio Ref	10.797	SS/LS	
AI Ratio	11.059	SS/LS	
AI Ratio Gain	0.98		[0.90, 1.10]
Sleeve Porosity	14.46	pu	
PRE-SURVEY BACKGROUND CHECK Performed: Sun Dec 02 07:20:40 2012			
Outputs	Measured	Units	Expected
SS Counts	0.1	cps	<10
LS Counts	0.5	cps	<4
POST-SURVEY BACKGROUND CHECK Performed:			
Outputs	Measured	Units	Expected
SS Counts	0.0	cps	<10
LS Counts	0.0	cps	<4
Gamma Ray Calibration Report			
Tool Model-Serial Number:	PS-PS27T		
Performed:	Thu Sep 27 07:45:16 2012		
Calibrator Value:	162.7	GAPI	
Background Reading:	65.1	cps	
Calibrator Reading:	402.7	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
Z Accelerometer	0.00	1.00	0.00 1.00 gee

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
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ThruBit

A Schlumberger Company

Company	SANDRIDGE ENERGY
Well	LORI 3510 3-2H
Field	GUDEMAN
County	BARBER
State	KANSAS