



ThruBit
A Schlumberger Company

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

Company SANDRIDGE ENERGY
Well HOPKINS 1-14H
Field KANSAS / WALDRON
County HARPER
State KANSAS

Company SANDRIDGE ENERGY
Well HOPKINS 1-14H
Field KANSAS / WALDRON
County HARPER State KANSAS

Location: API #: 15077217910000
SURF LOC: 200' FSL & 660' FEEL OF SE/4
SEC 14 TWP 35S RGE 7W
Permanent Datum G.L. Elevation 1330'
Log Measured From D.F. 16' ABOVE PERM DATUM
Drilling Measured From D.F.
Other Services
THRUBIT
PORTAL BIT
Elevation
K.B. 1346'
D.F. 1346'
G.L. 1330'

Date	09 APRIL 2012
Run Number	ONE
Depth Driller	12589'
Depth Logger	12565'
Bottom Logged Interval	12546'
Top Log Interval	3300'
Casing Driller	7" @ 5360'
Casing Logger	7" @ 5365'
Bit Size	6.125"
Type Fluid In Hole	WBM
Density / Viscosity	8.50 / 28
pH / Fluid Loss	9.0 / NA
Source of Sample	MUD PIT
Rm @ Meas. Temp	1.1 OHMS@72 DEGF
Rmf @ Meas. Temp	0.8 OHMS@72 DEGF
Rmc @ Meas. Temp	1.4 OHMS@72 DEGF
Source of Rmf / Rmc	CALCULATED
Rm @ BHT	55 OHMS@ 151 DEG
Time Circulation Stopped	20:30 09APRIL2012
Time Logger on Bottom	22:10 09APRIL2012
Maximum Recorded Temperature	151 DEGF
Equipment Number	T004
Location	OKC. OK
Recorded By	D. THOMAS
Witnessed By	BRENT SEGREST
	PHILLIP GARCIA

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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 - MEMORY PUMP DOWN - BIT DEPTH: 12503' LOG TO: 3300'
ALL SCALES AND PRESENTATIONS PER CLIENT REQUEST
LIMESTONE MATRIX, 2.71 G/CC, USED TO CALCULATE POROSITIES
TOOL STRING RAN WITH EVANS SWIVEL, S. DECENTRALIZER, NO STANDOFFS
TBHV = TOTAL BOREHOLE VOLUME, FT3
ABHV = ANNULAR BOREHOLE VOLUME, FT3, CALCULATED FOR 4.50" CSG
RIGMINDER LITE AND PASON USED TO CREATE LOG DEPTH
LOG DEPTH CORRELATED TO MWD GAMMA AT CUSTOMERS REQUEST

RIG: UNIT # 310
CREW: D. THOMAS/T. DENNIS/J. DOTY

Service Ticket No. 1059 API No. 15077217910000 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
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Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	ONE
Serial No.	PS21T	Serial No.	PS27N	Serial No.	PS30D	Serial No.	PS12R
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	12565'	3300'		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	-10 %	30 %	-10 %	30 %	0.2 OHMS-M	2000 OHM-M

DIRECTIONAL INFORMATION

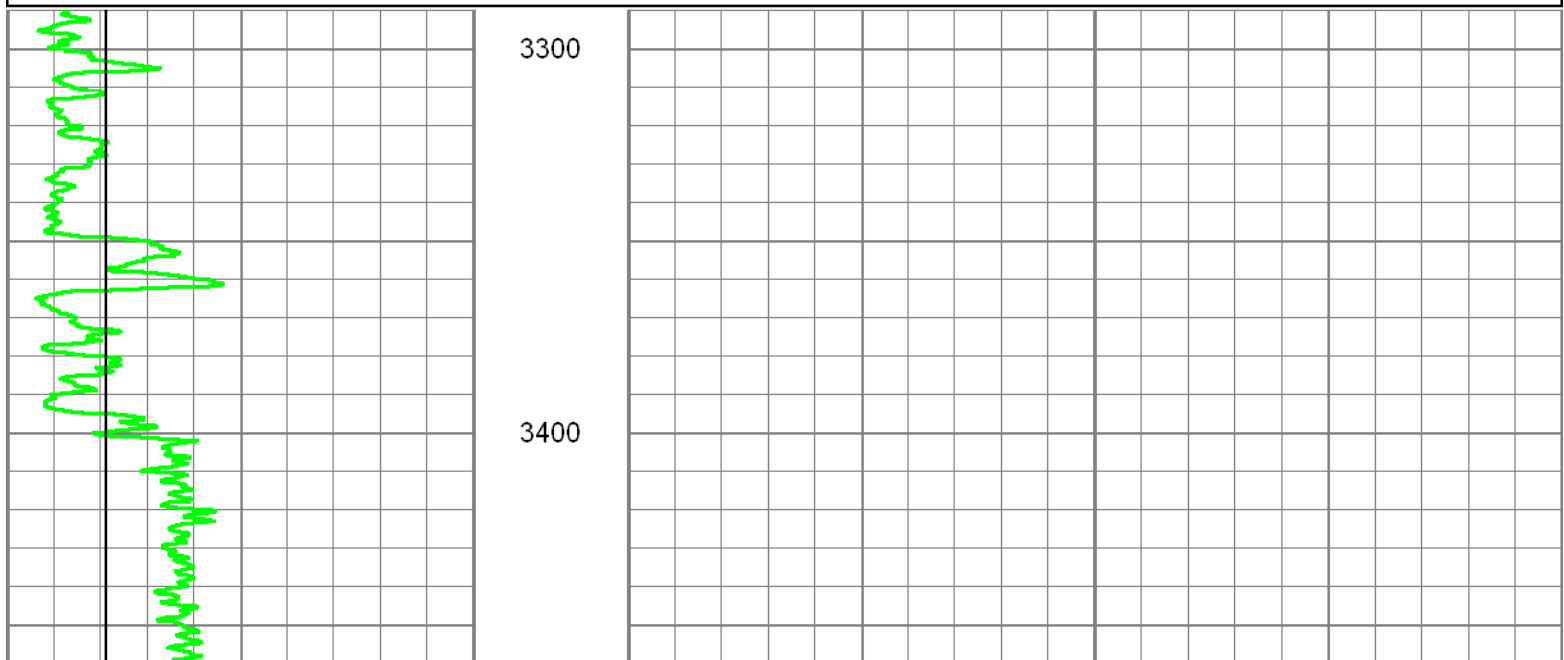
Maximum Deviation	95.4	deg. @	8396'	KOP	3971'	
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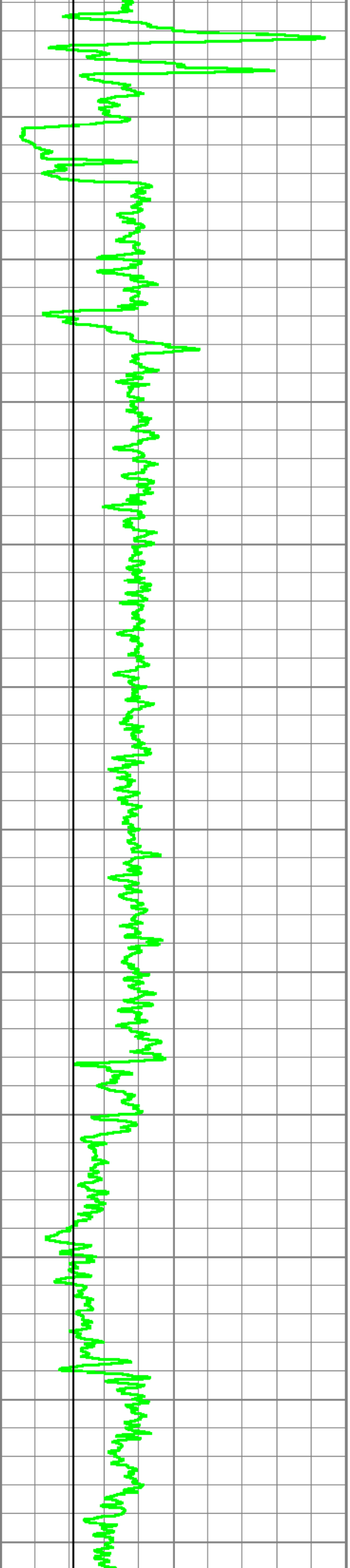


MAIN PASS

Database File: hopkins_mem.db
 Dataset Pathname: proc1/pass1.4
 Presentation Format: 6_2n_chk
 Dataset Creation: Tue Apr 10 09:51:08 2012
 Charted by: Depth in Feet scaled 1:600

0	GR (GAPI)	150	0	PEF (barn)	10	-0.5	DRHO (g/cc)	0.5
4	DCAL (in)	14	2	RHOB (g/cc)				3
4	BOREID (in)	14						
-5	ACCY	5						





3500

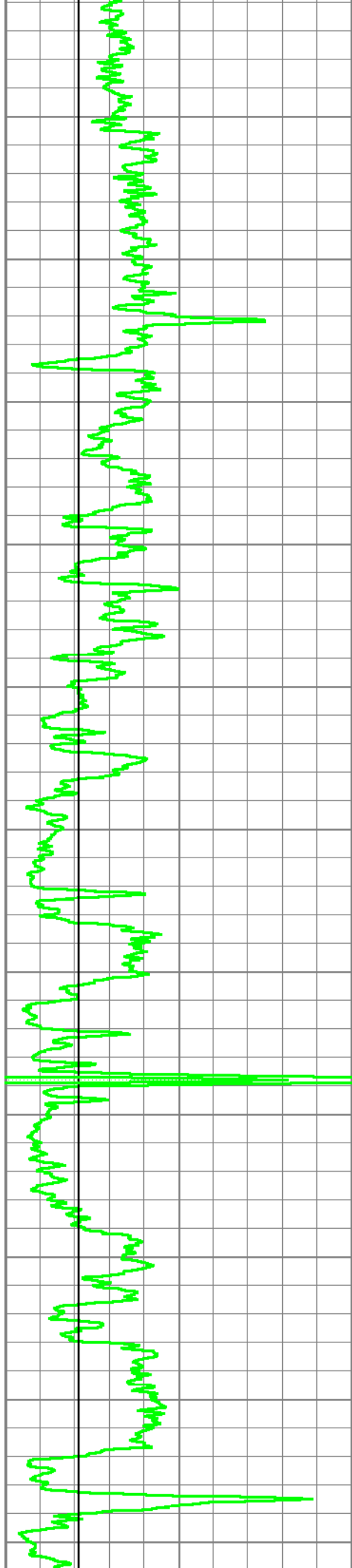
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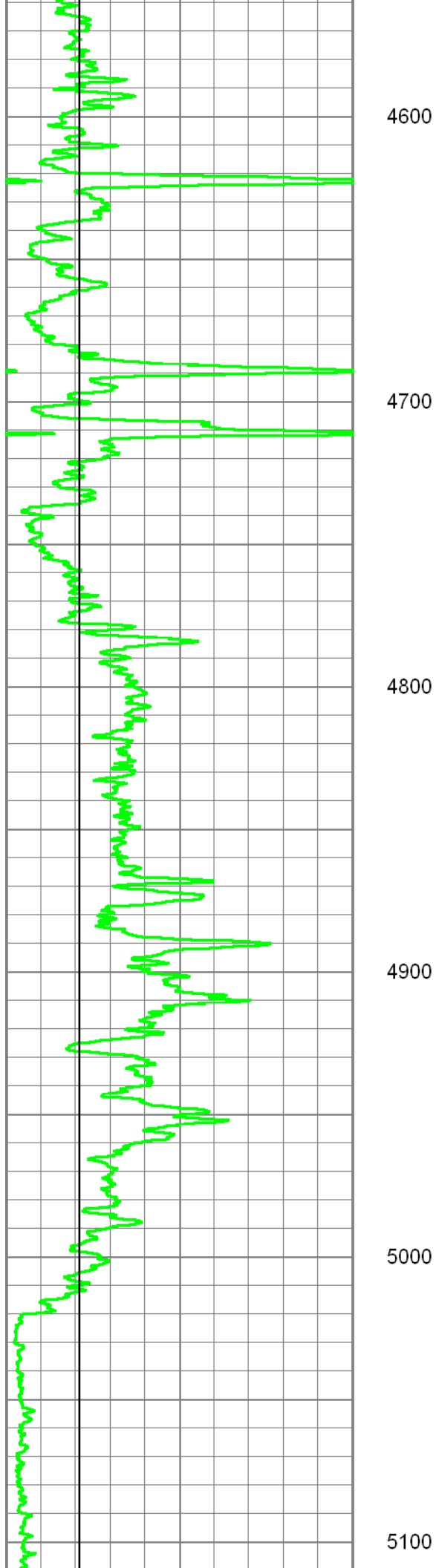
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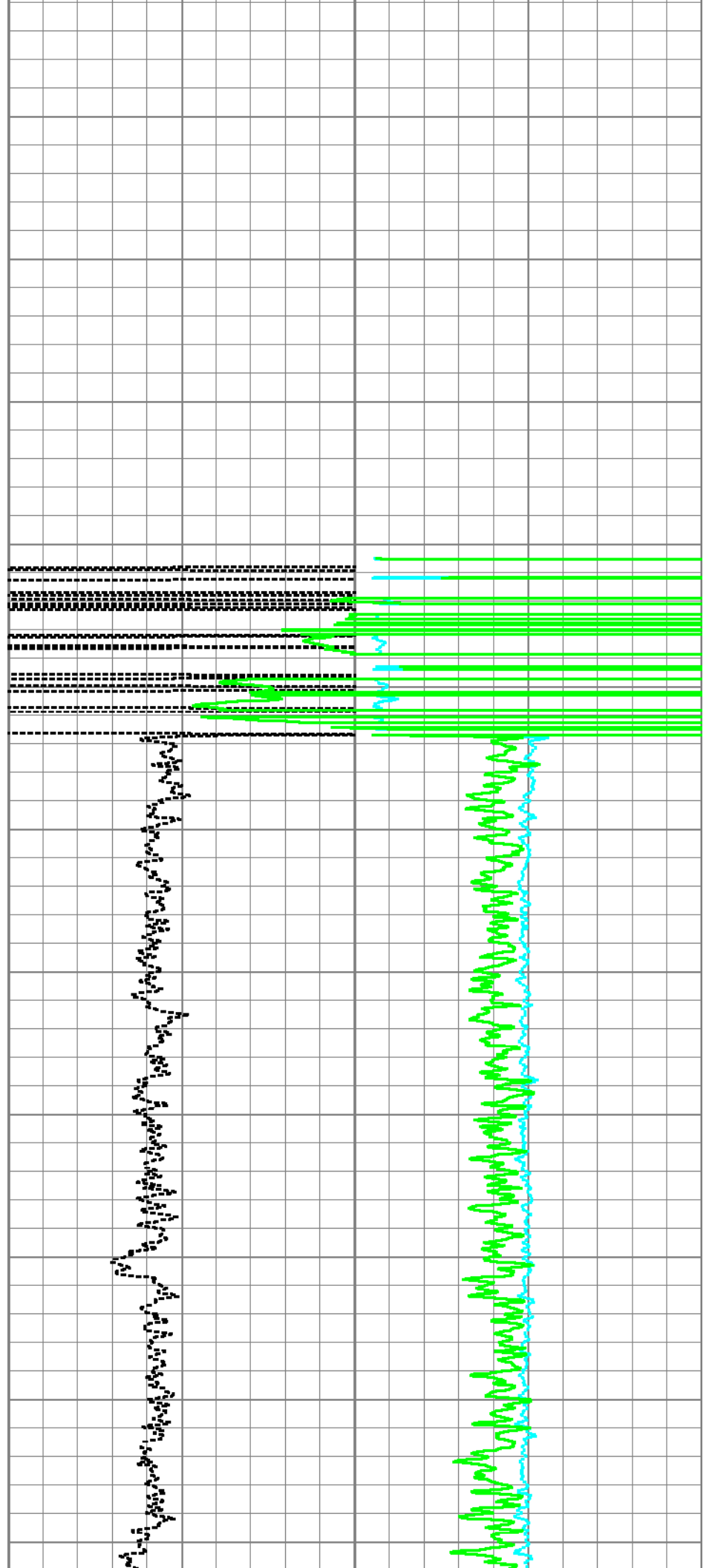
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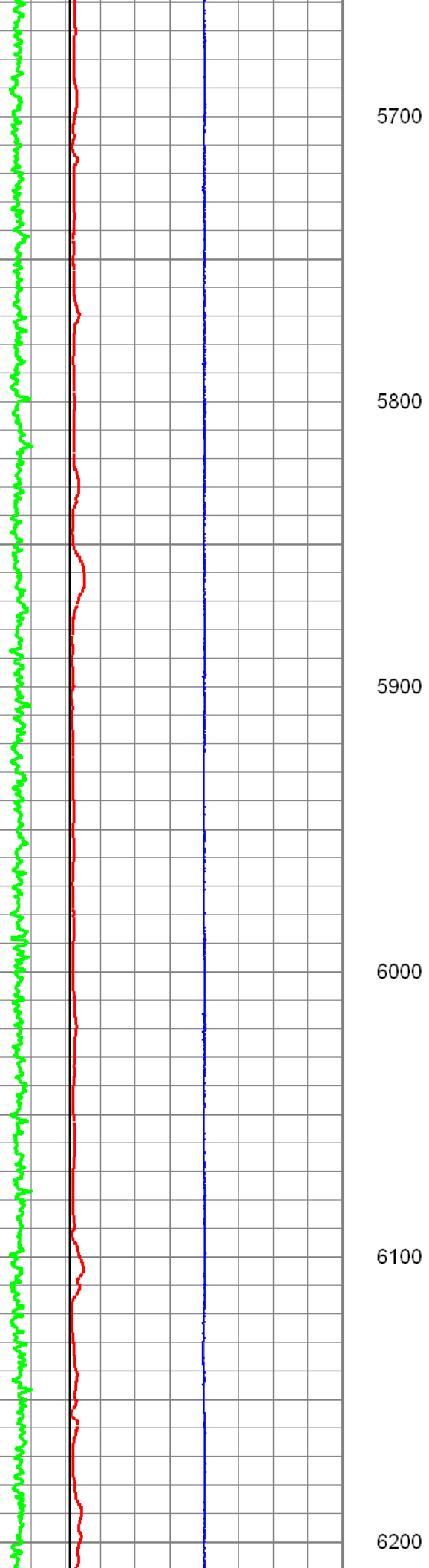
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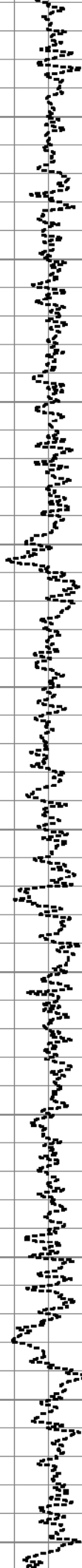
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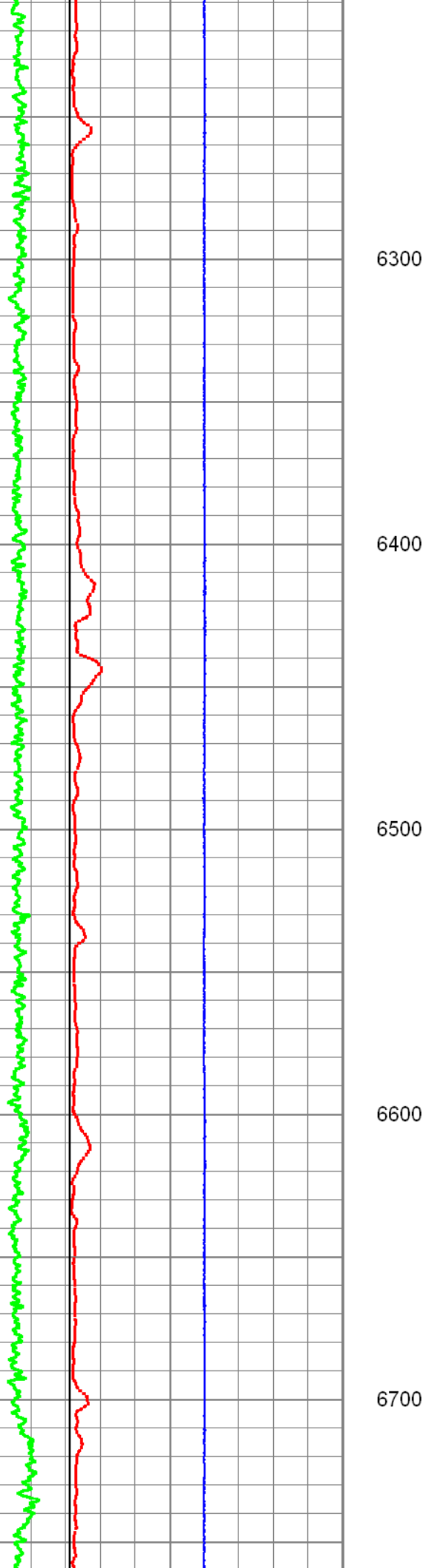
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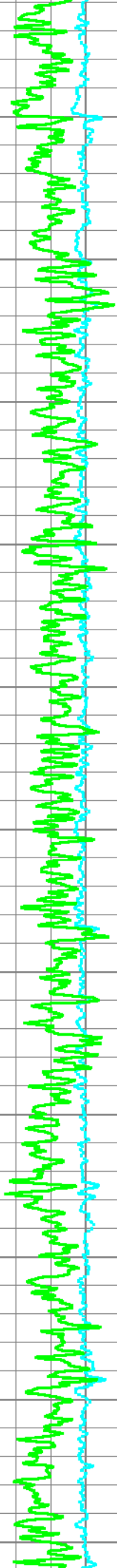
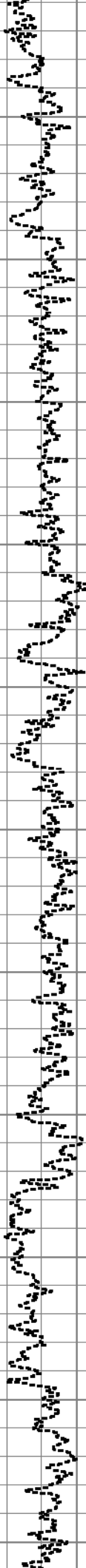
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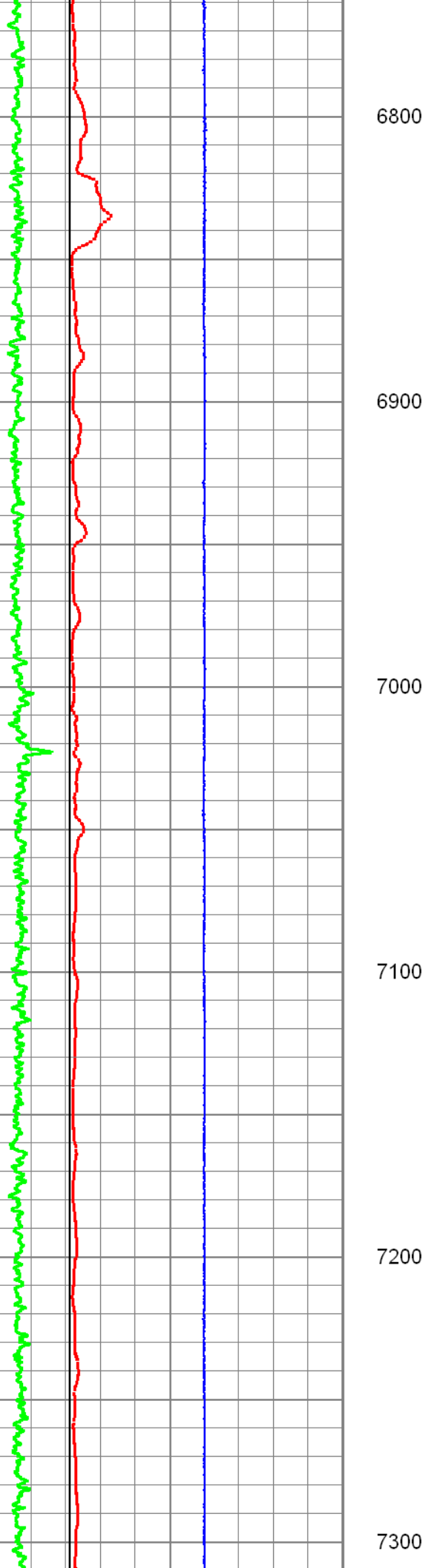
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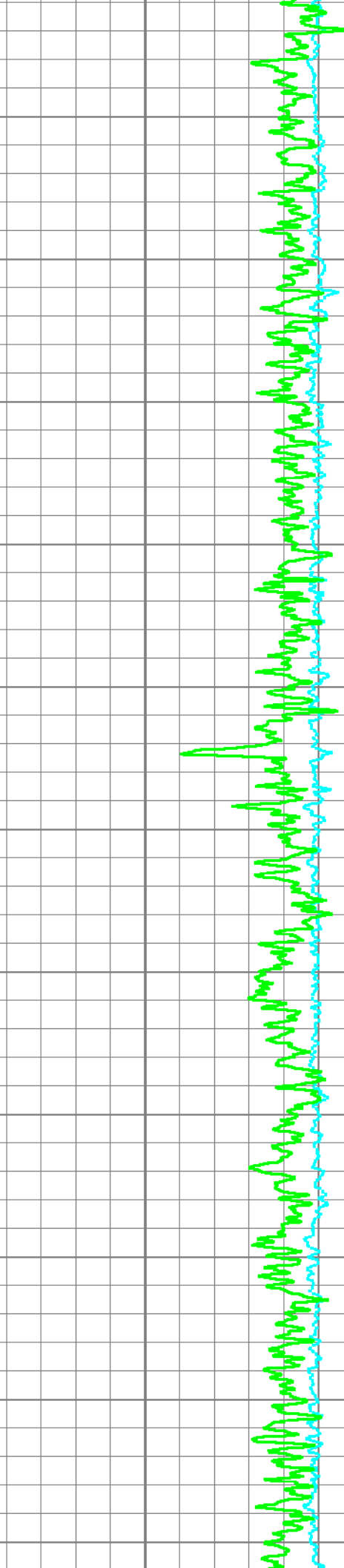
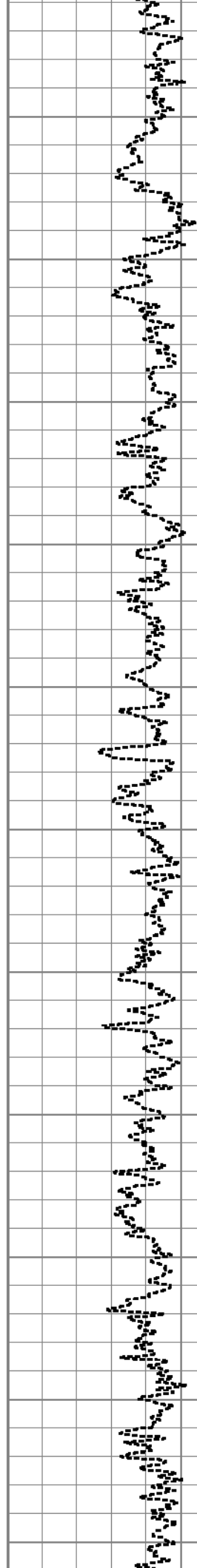
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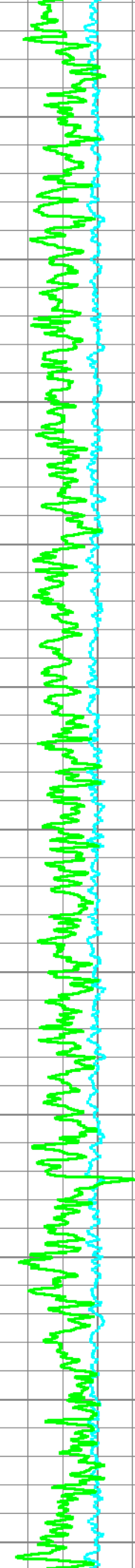
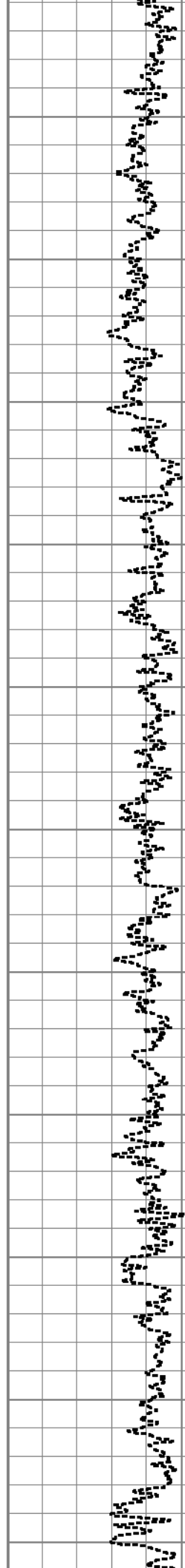
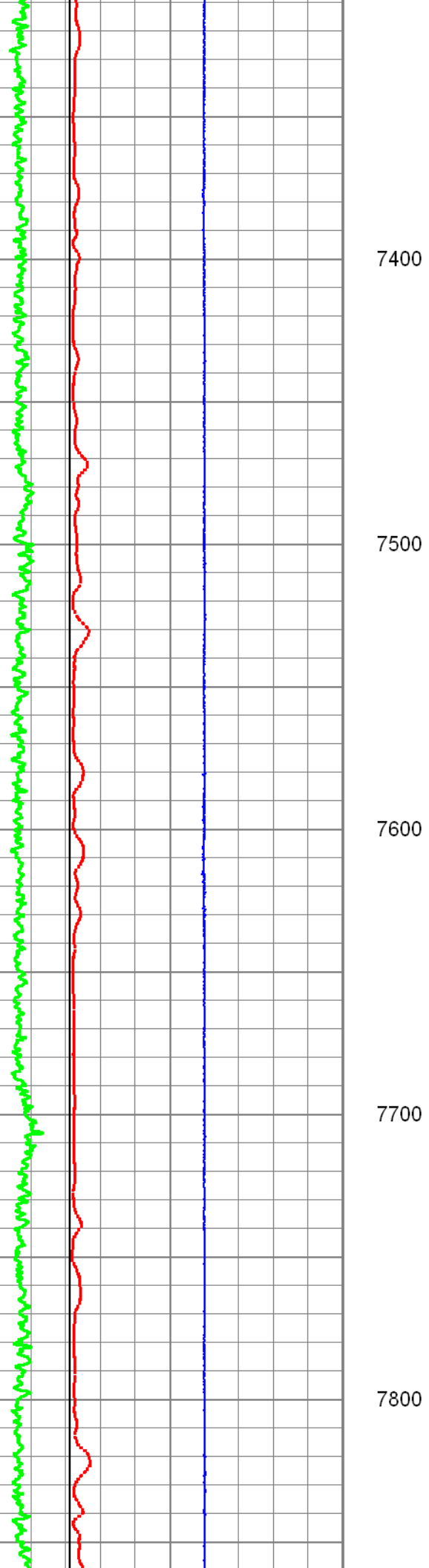
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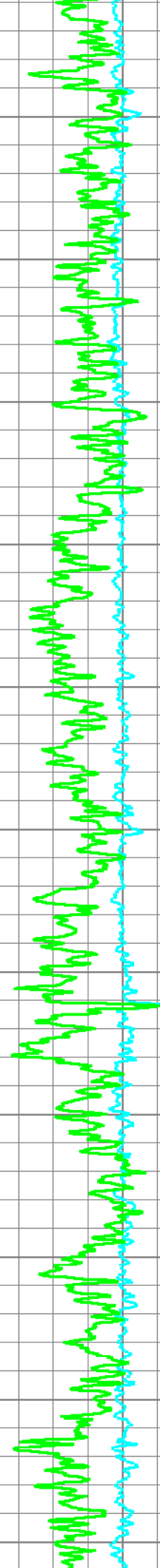
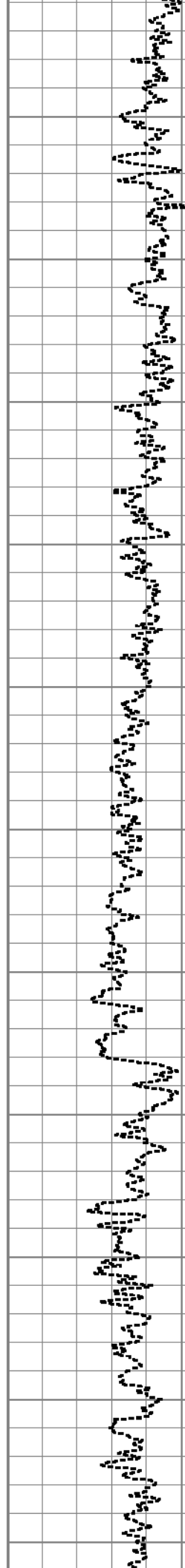
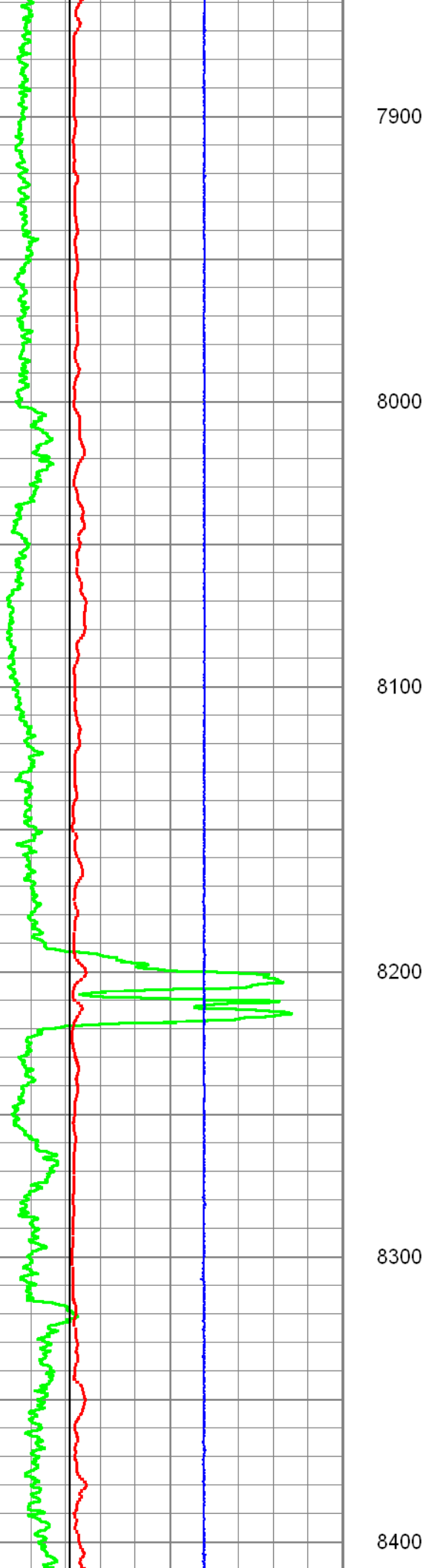
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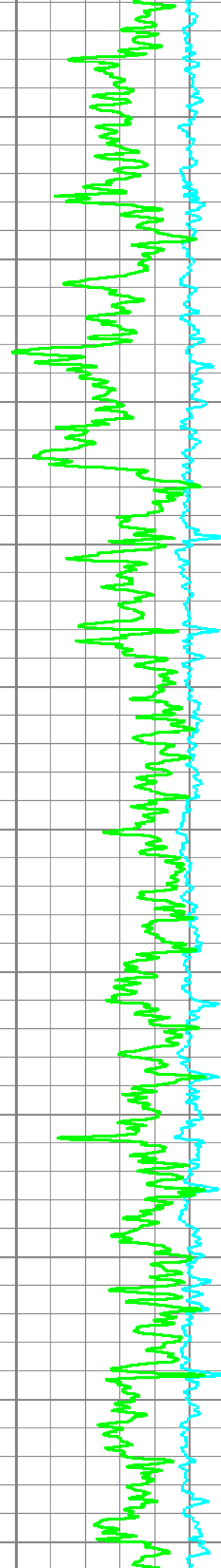
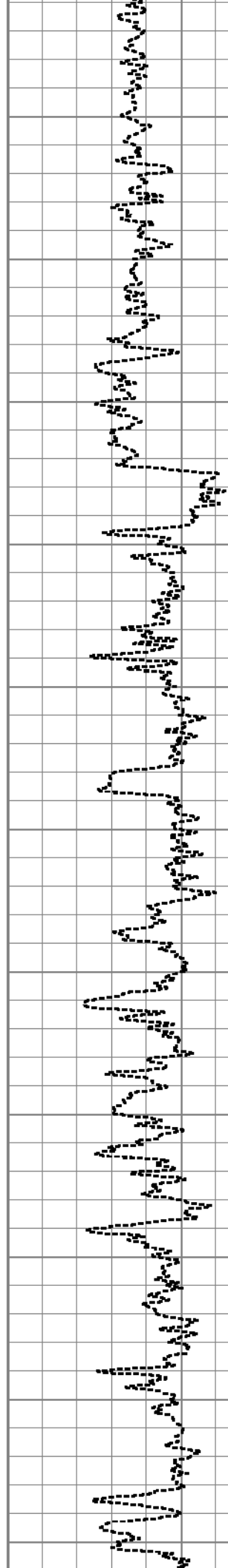
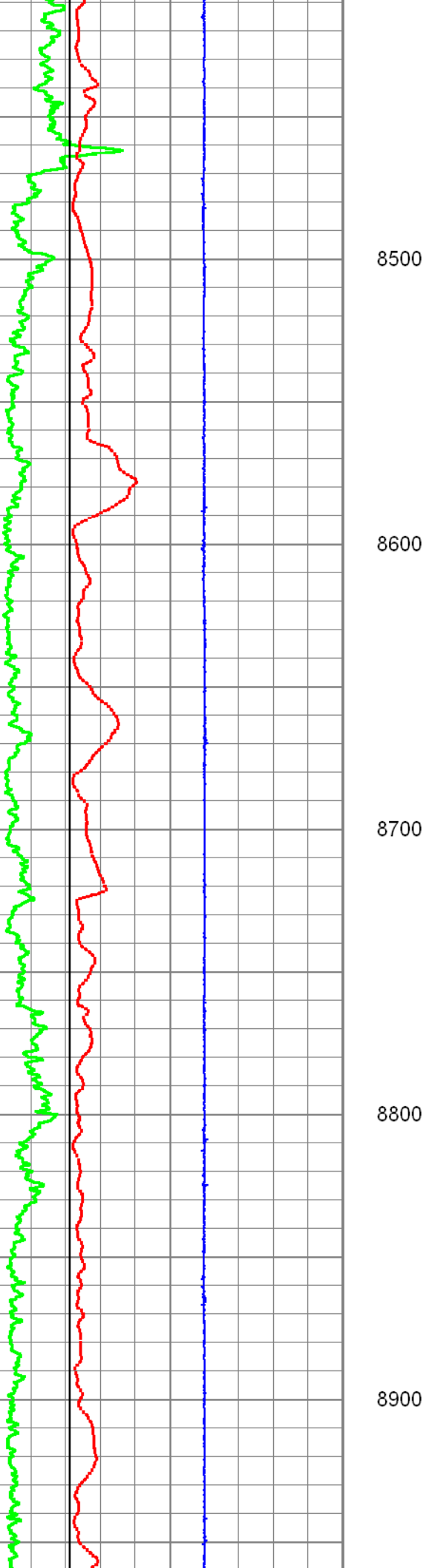
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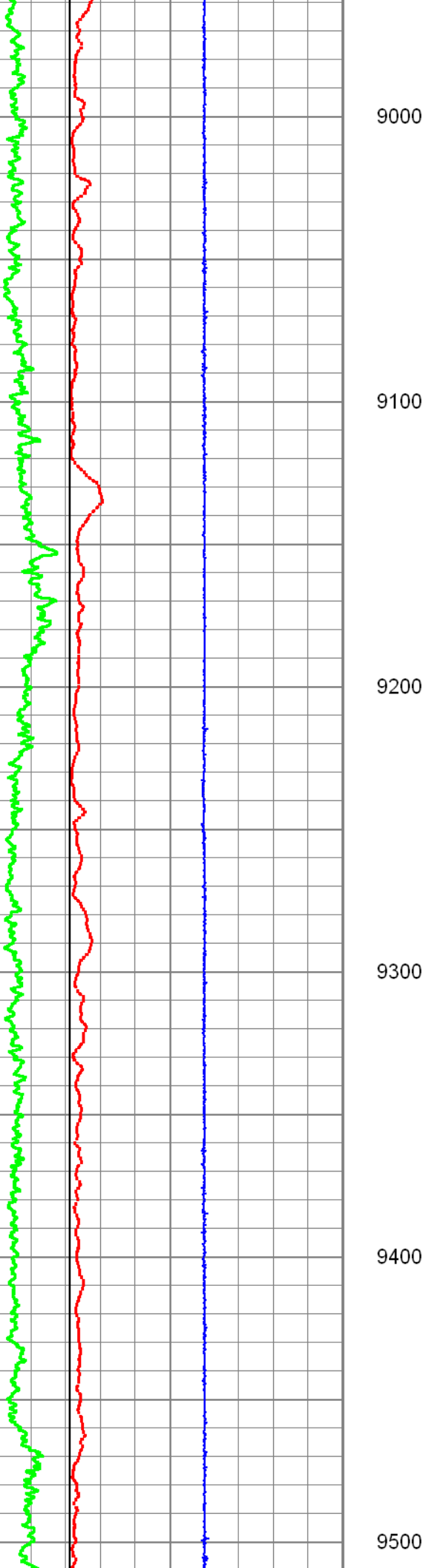
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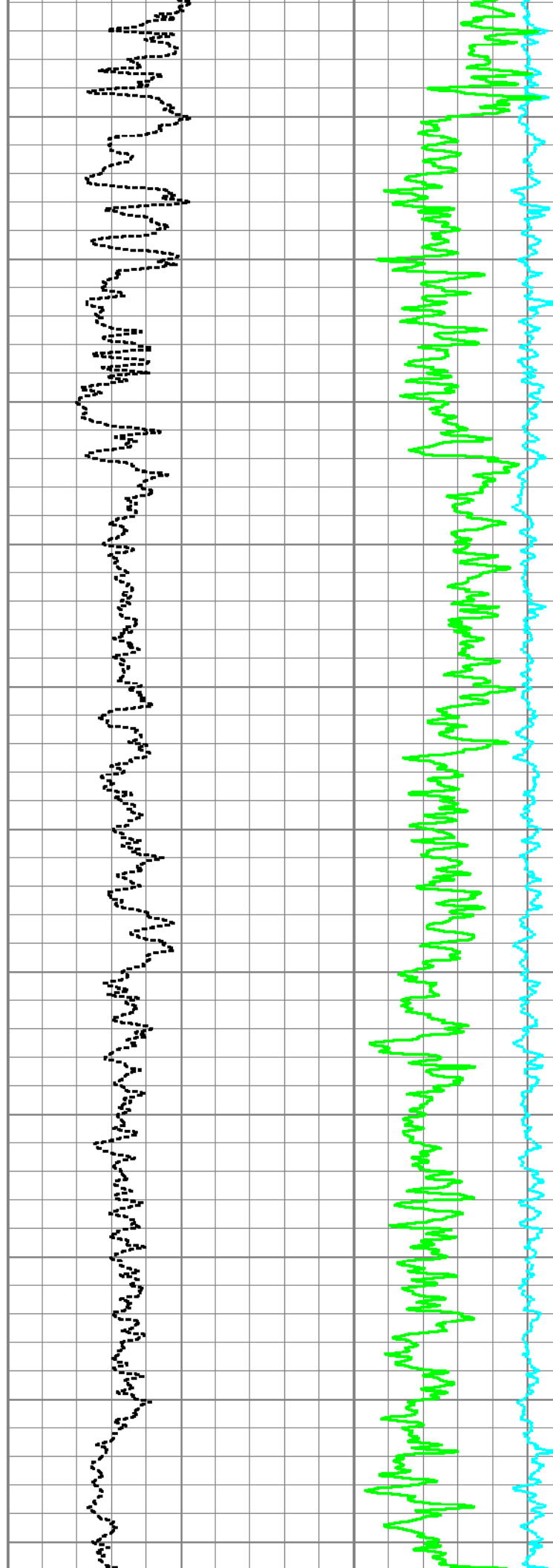
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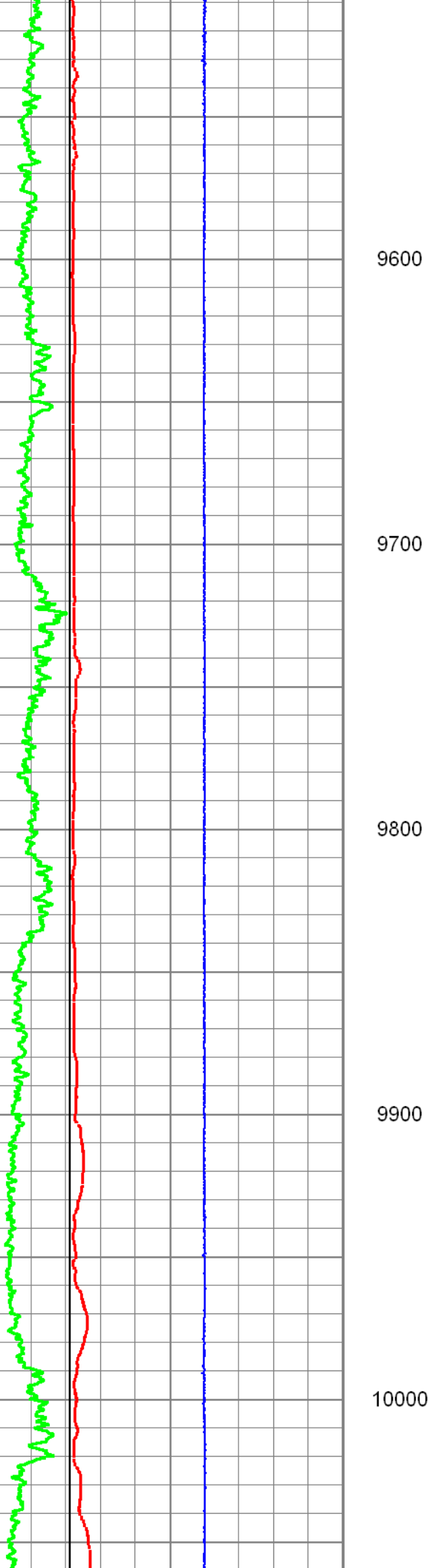
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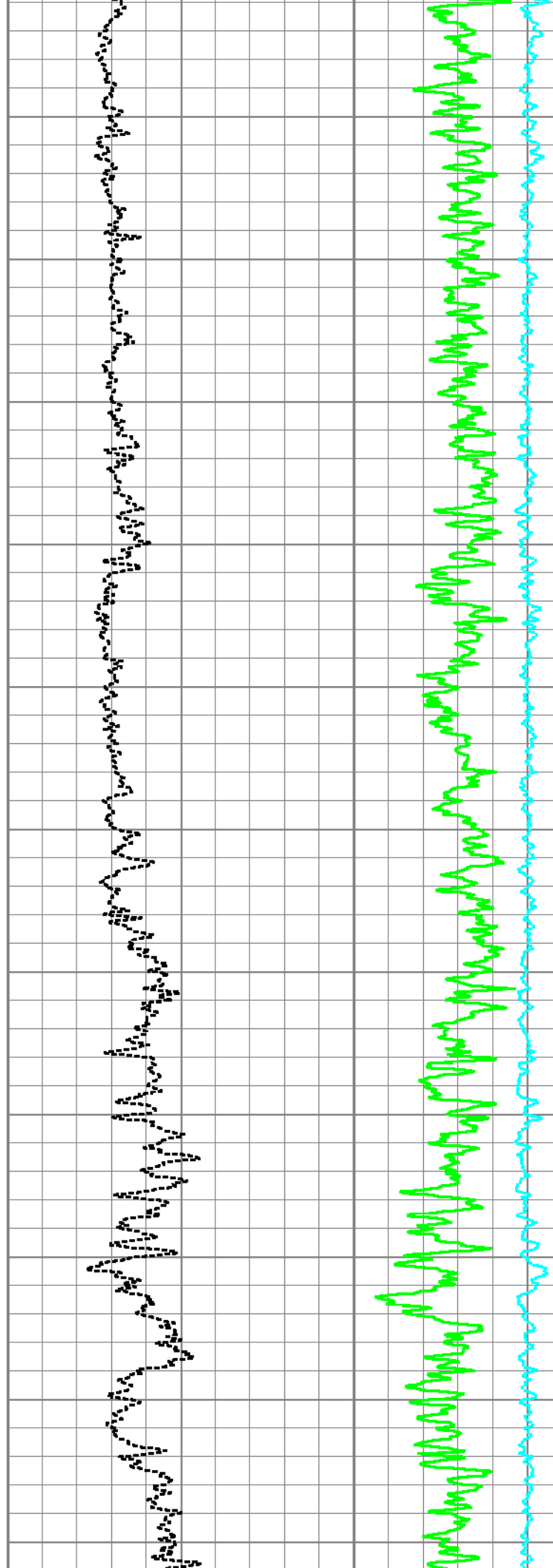
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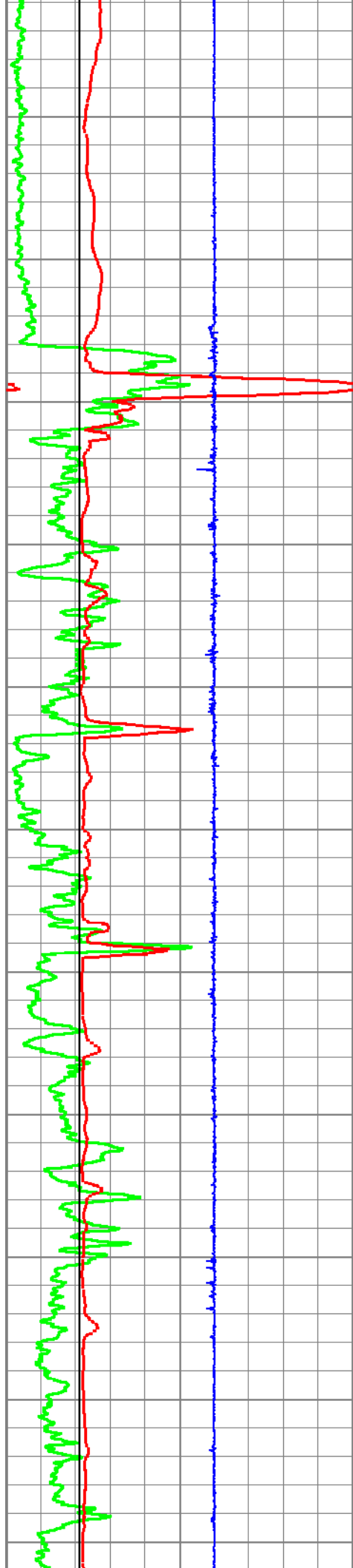
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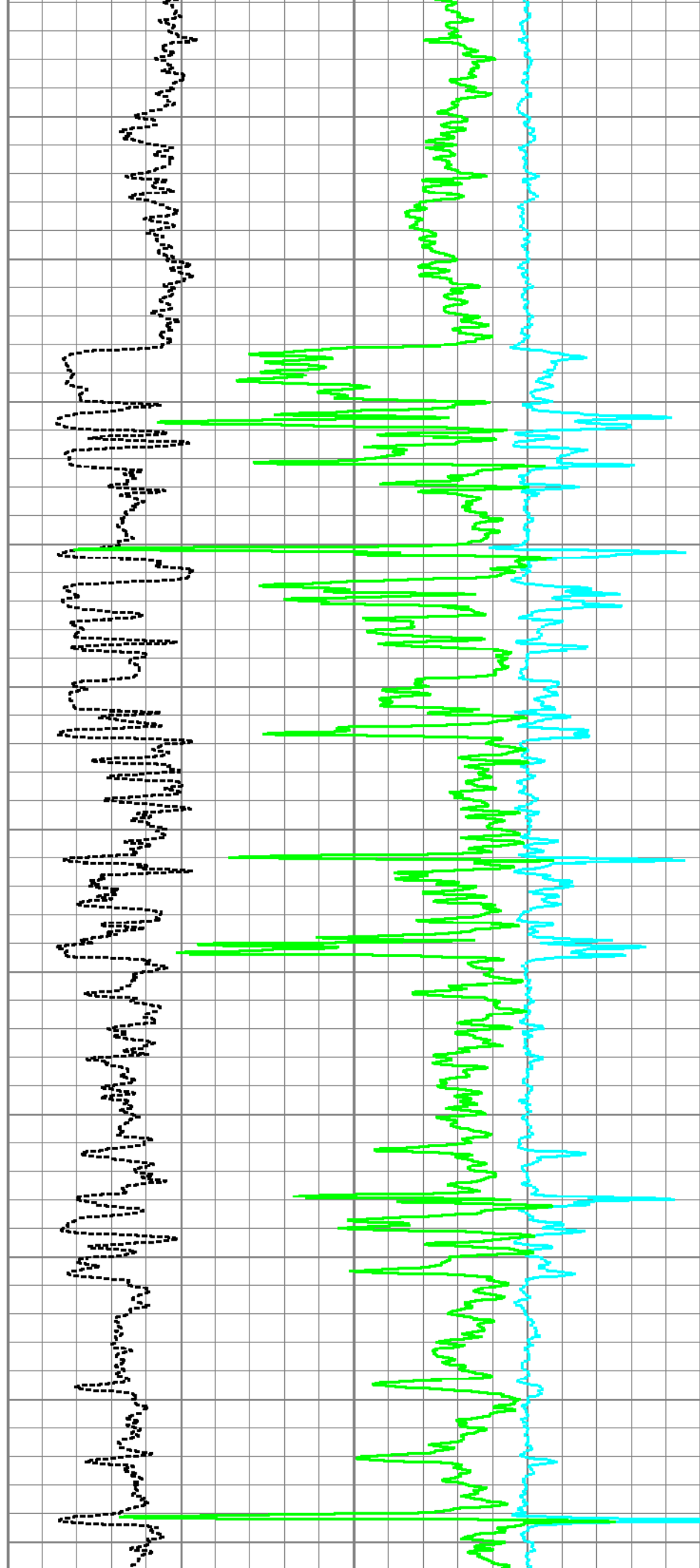
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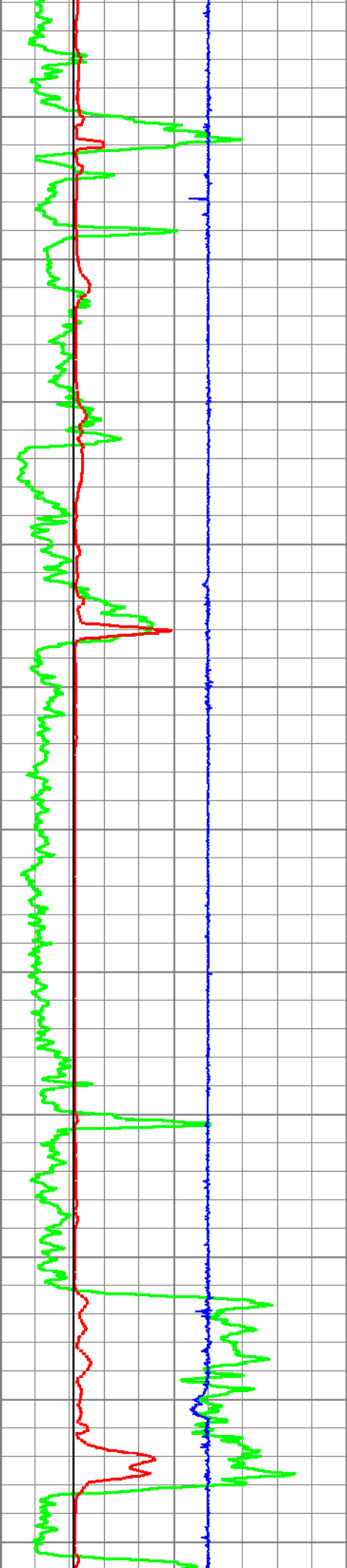
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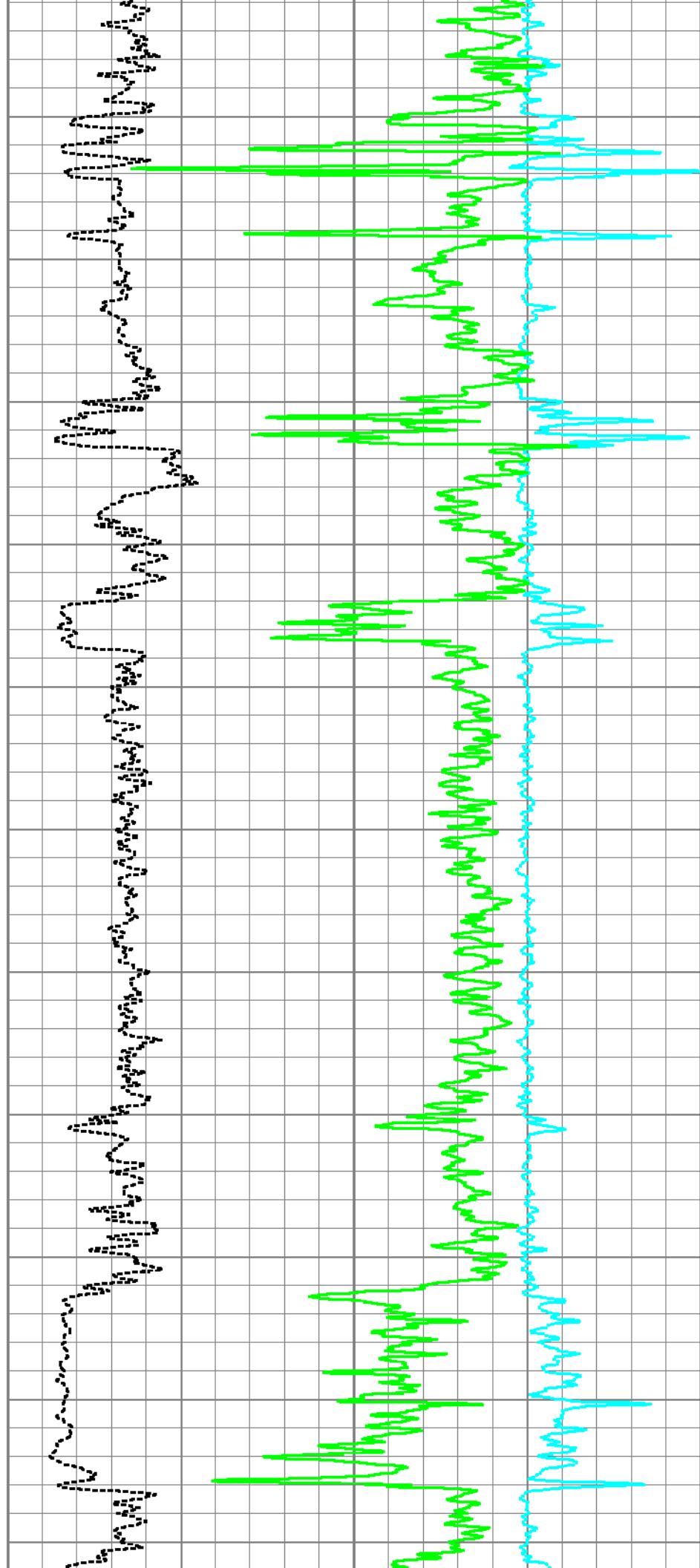
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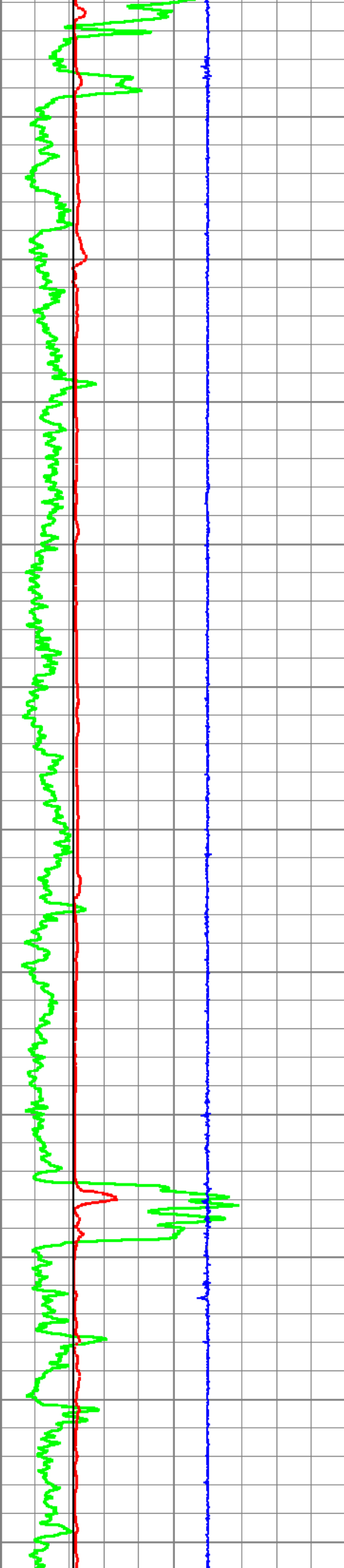
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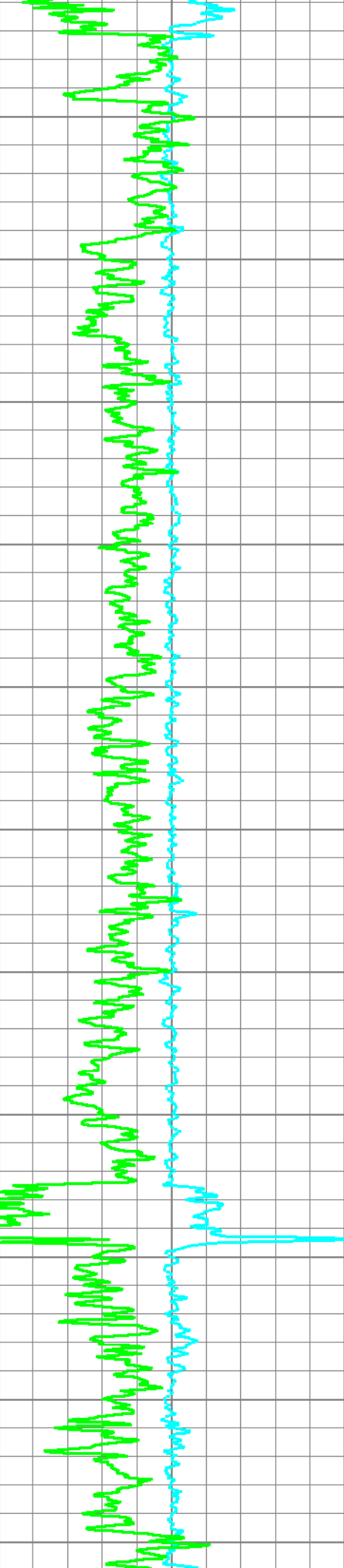
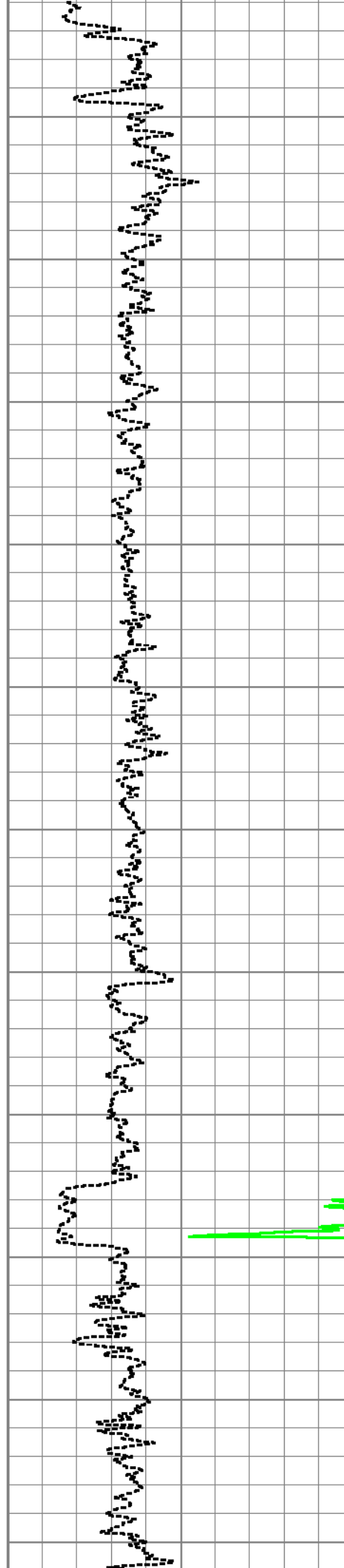
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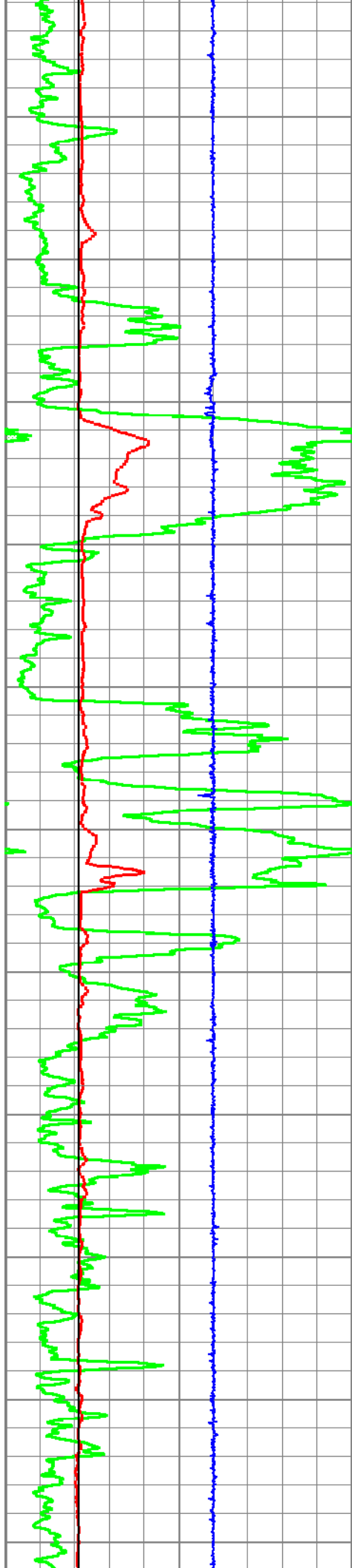
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11700





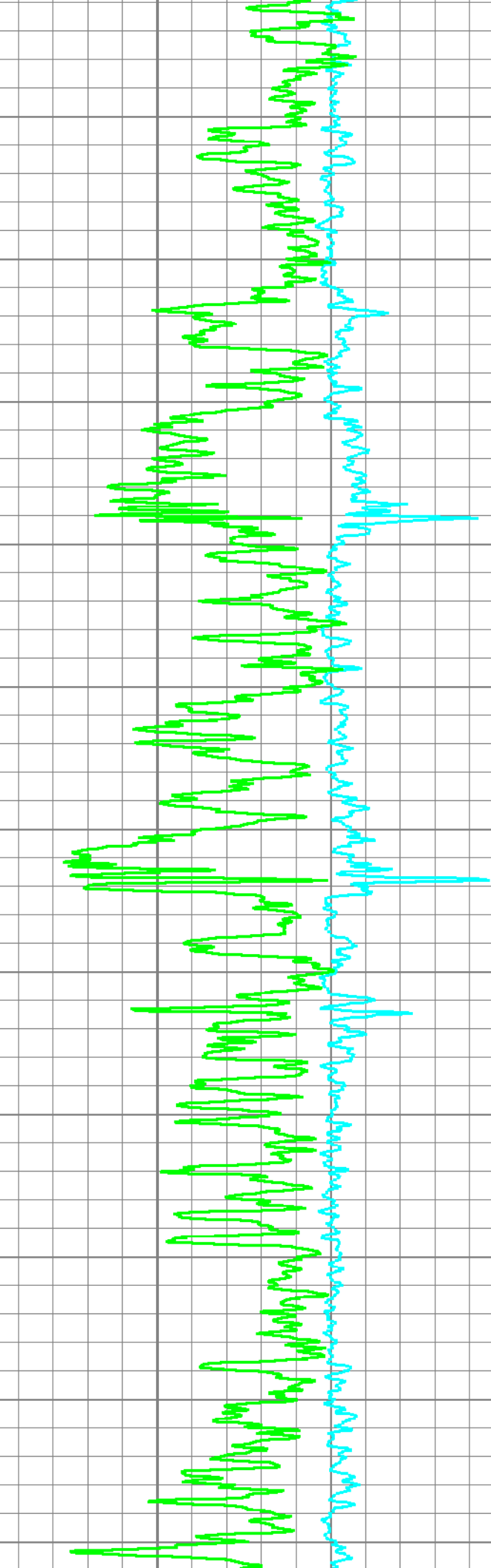
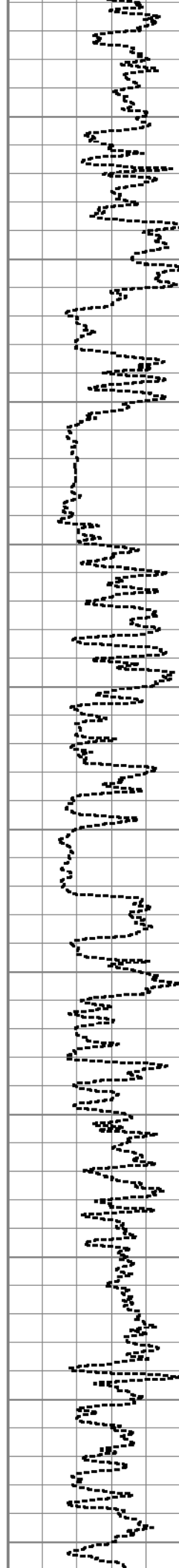
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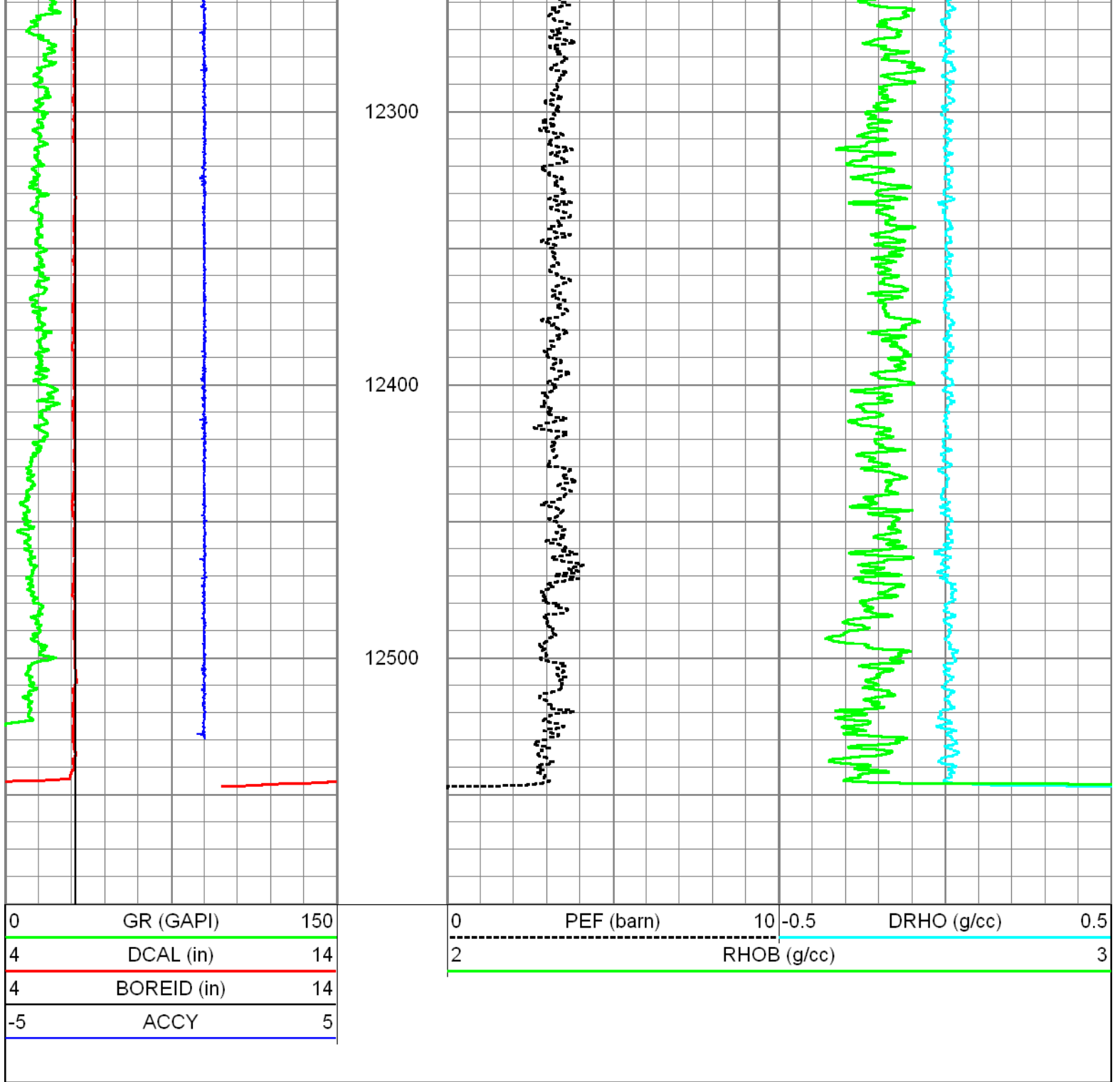
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MAIN PASS

Database File: hopkins_mem.db
 Dataset Pathname: proc1/pass1.4
 Presentation Format: 6_5n_chk
 Dataset Creation: Tue Apr 10 09:51:08 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	
				-0.5	DRHO (g/cc)	0.5

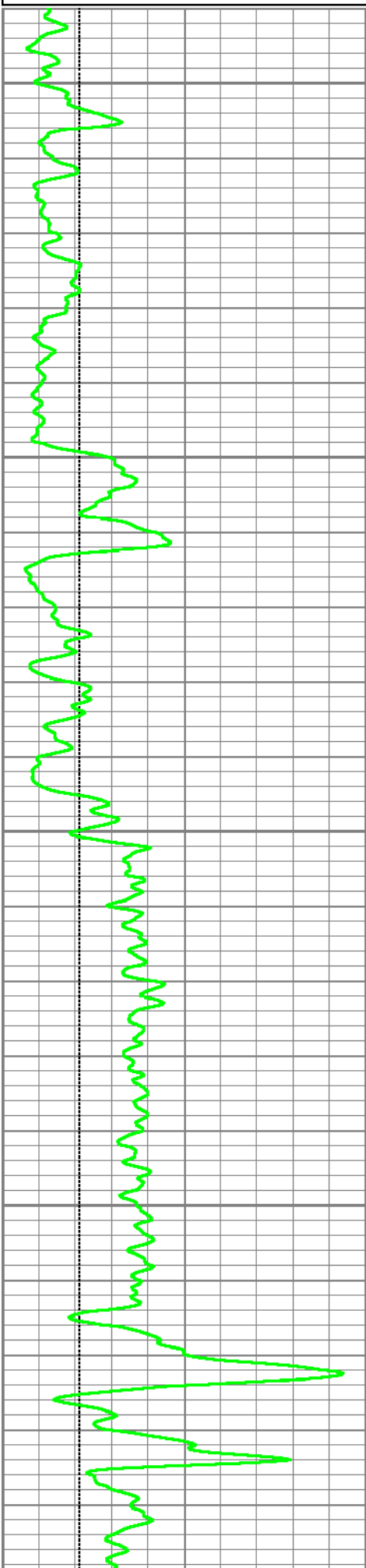
-5

ACCY

5

ABHV (ft3)

TBHV (ft3)

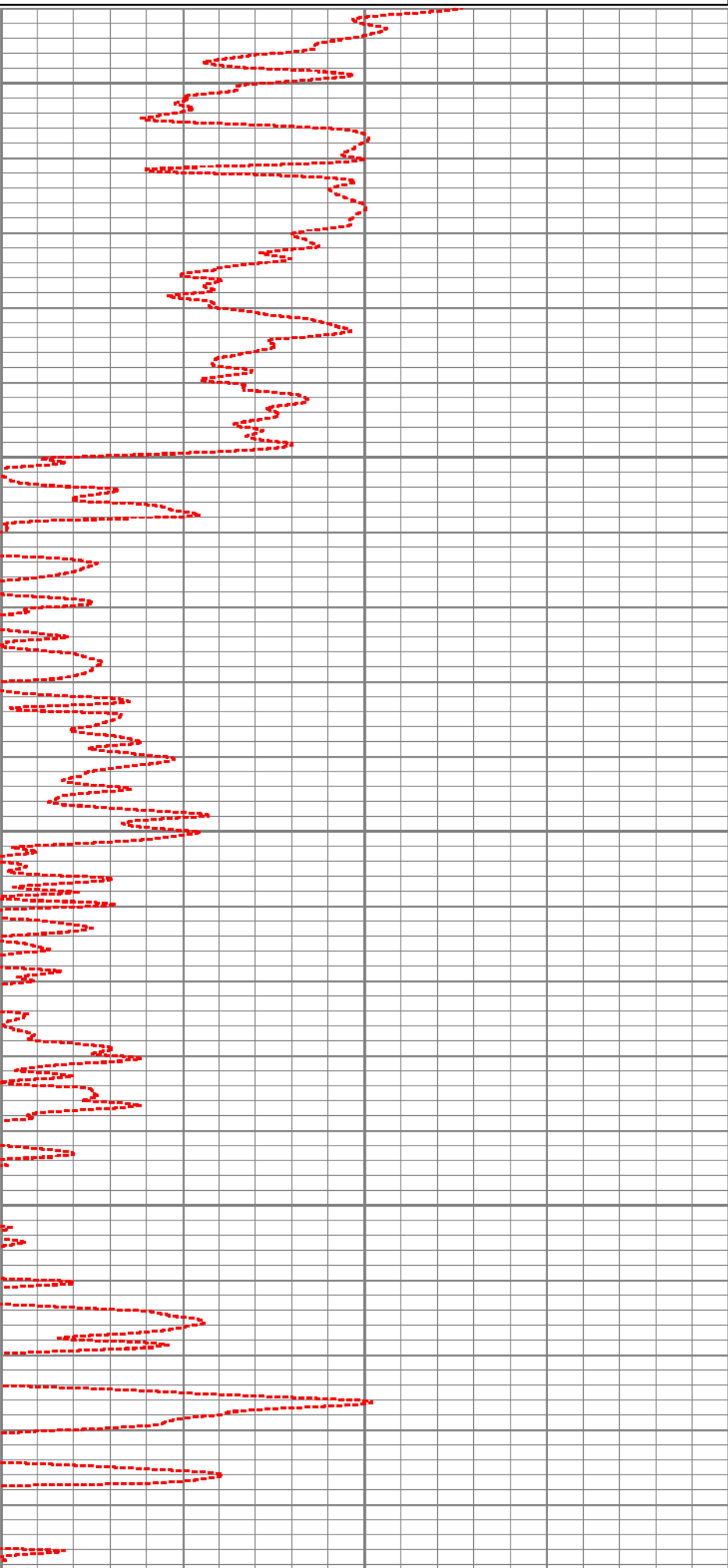


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3450



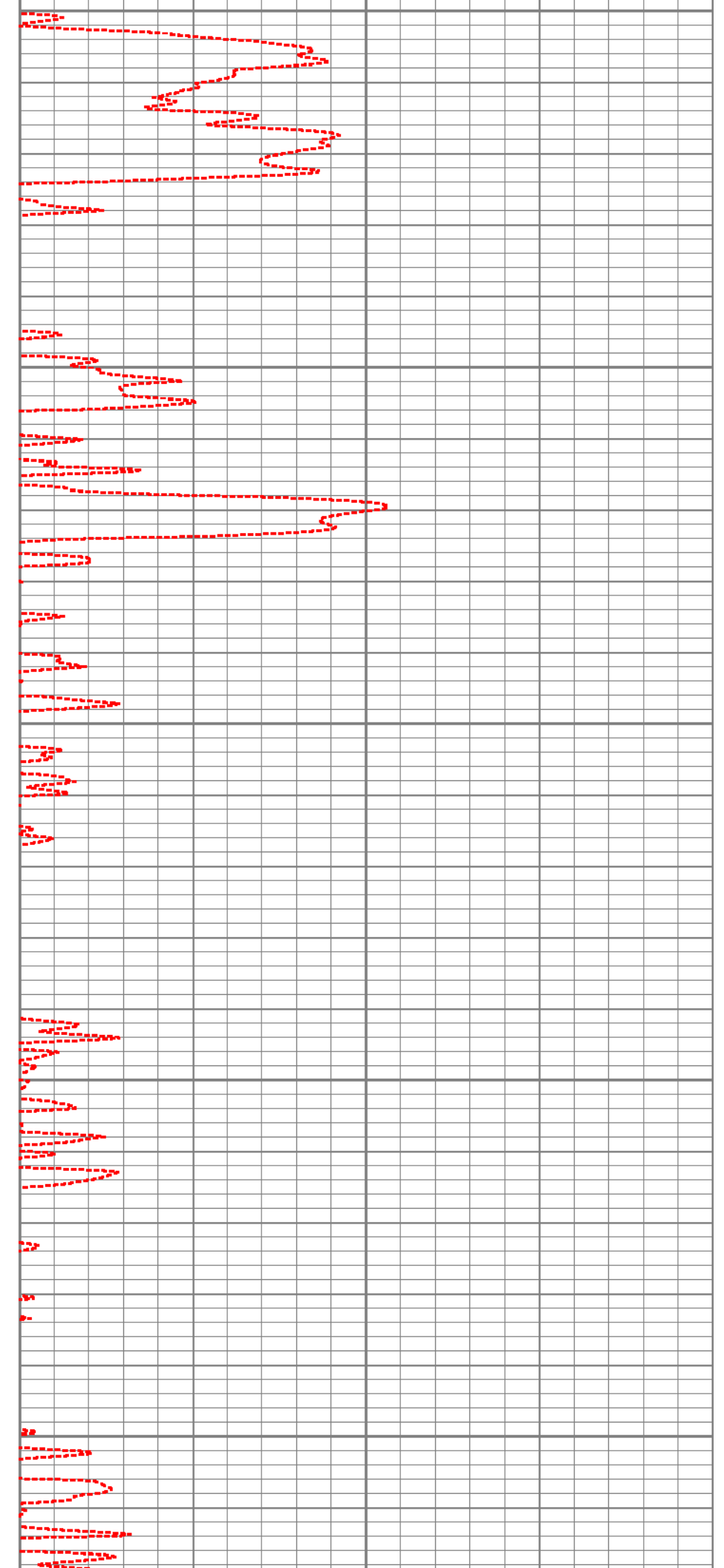
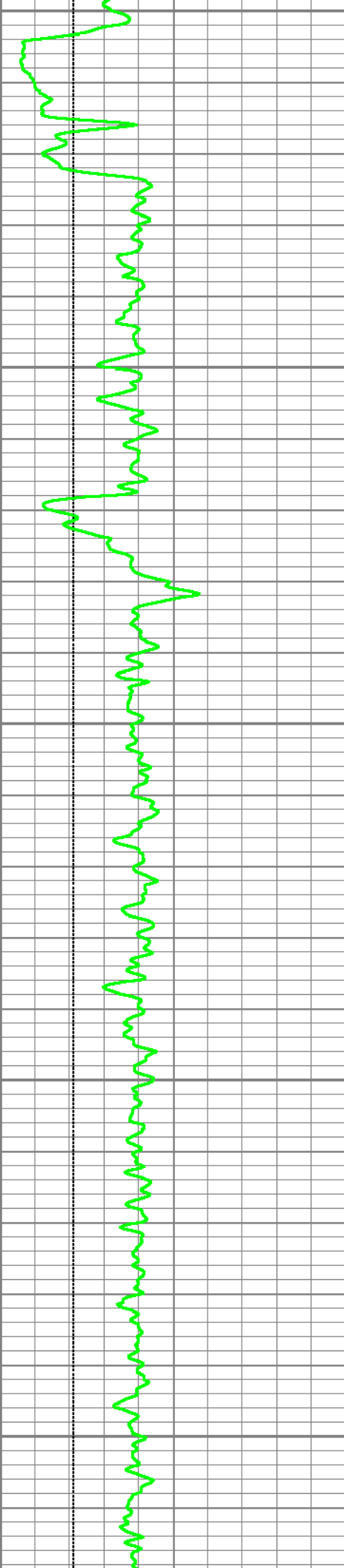
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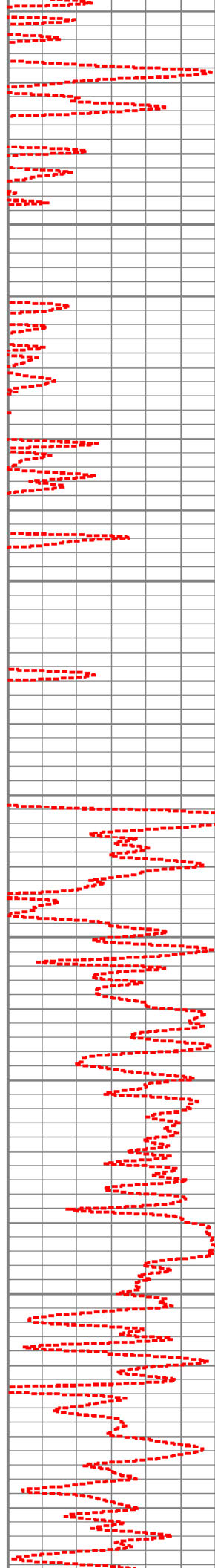


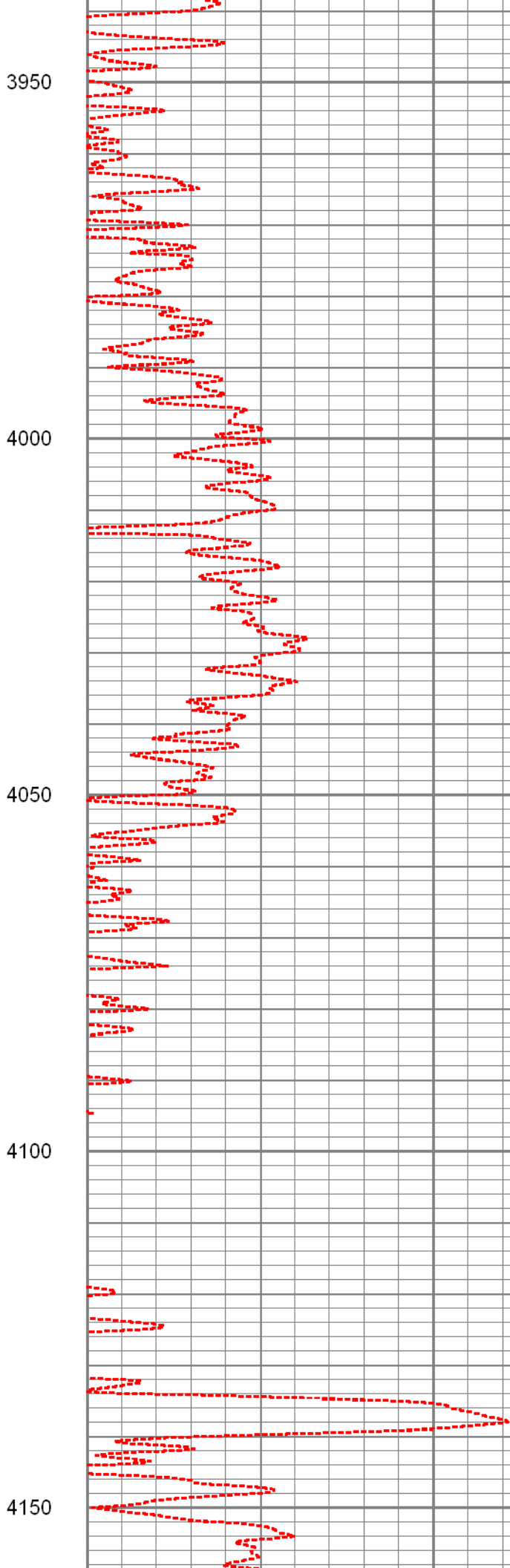
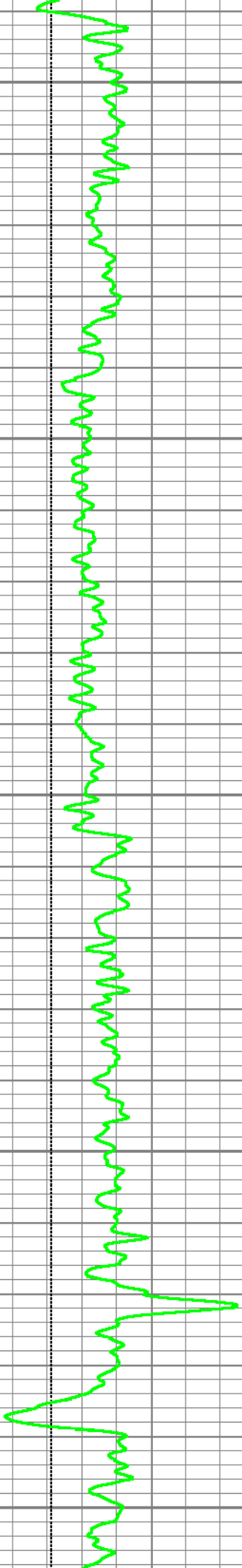
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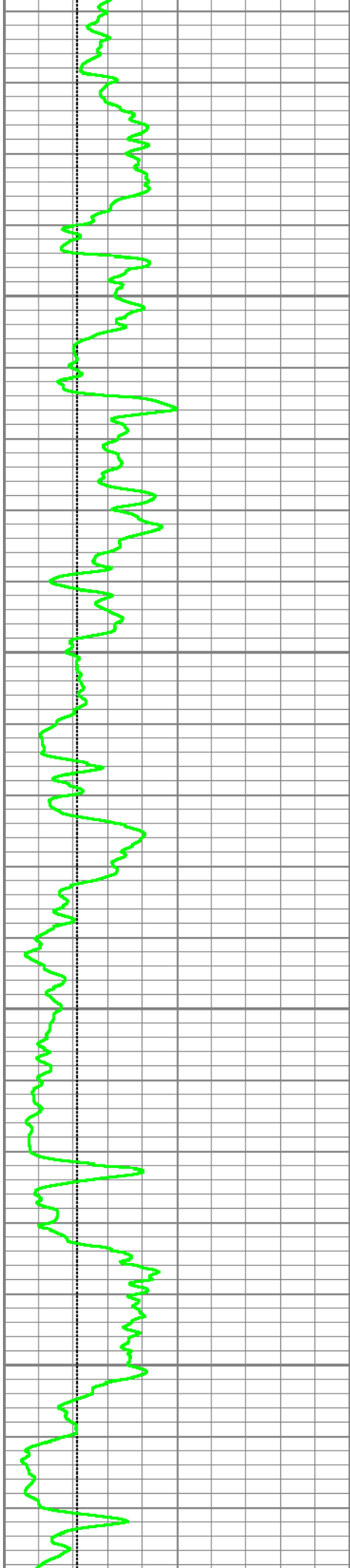
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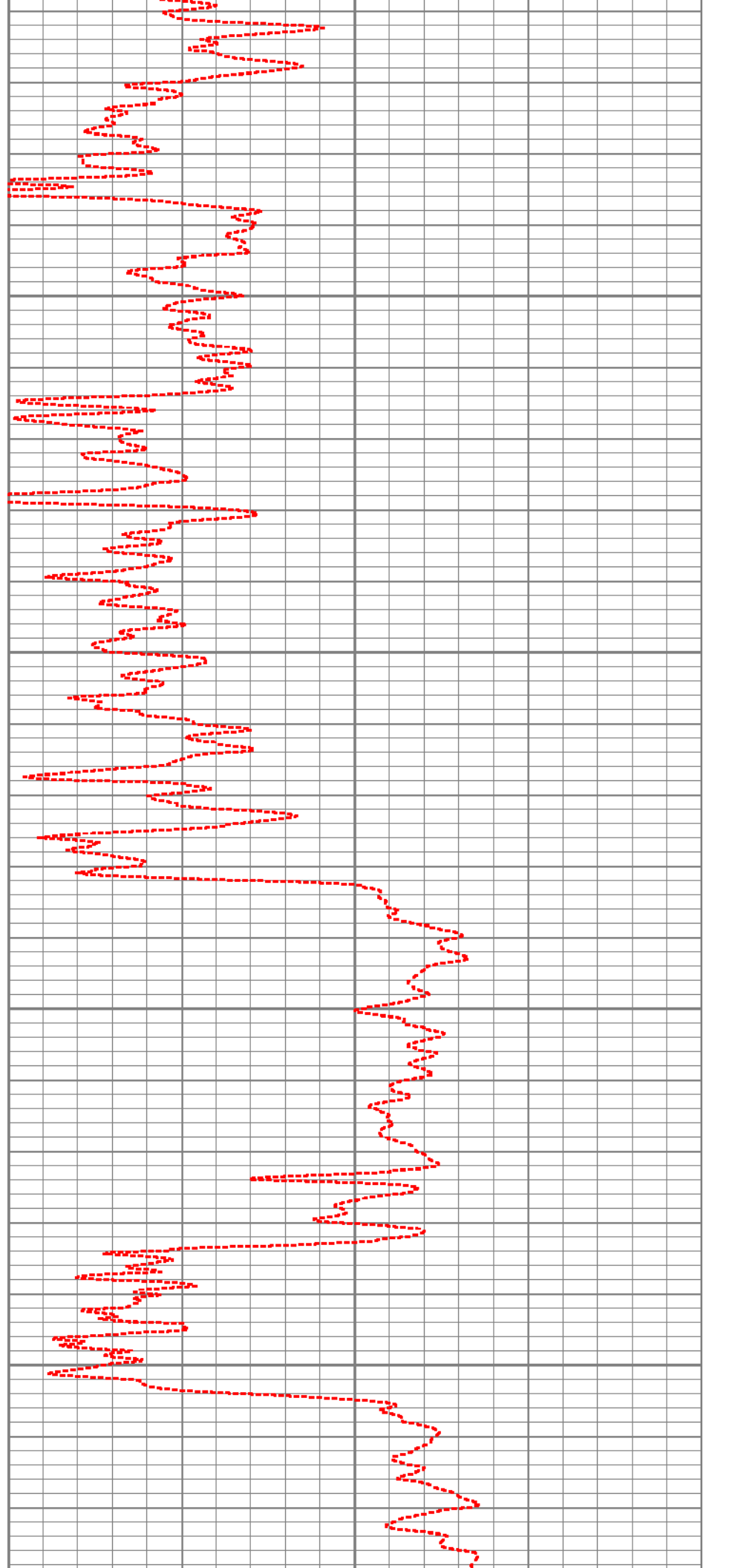


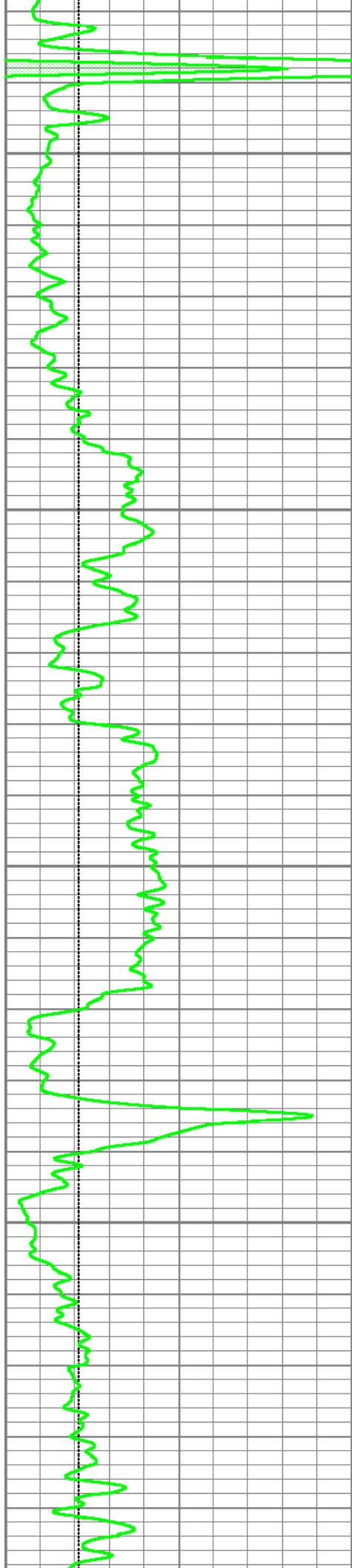
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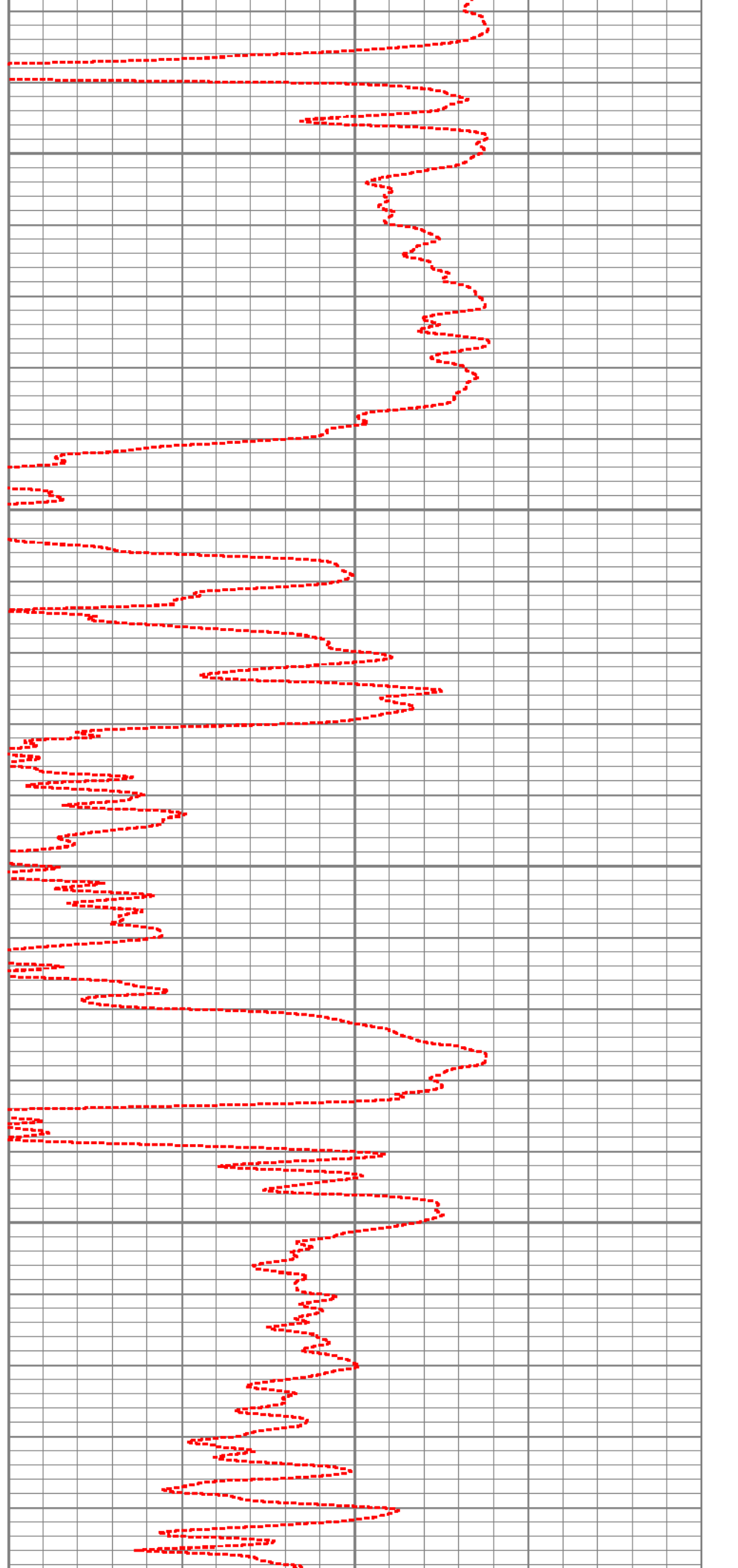


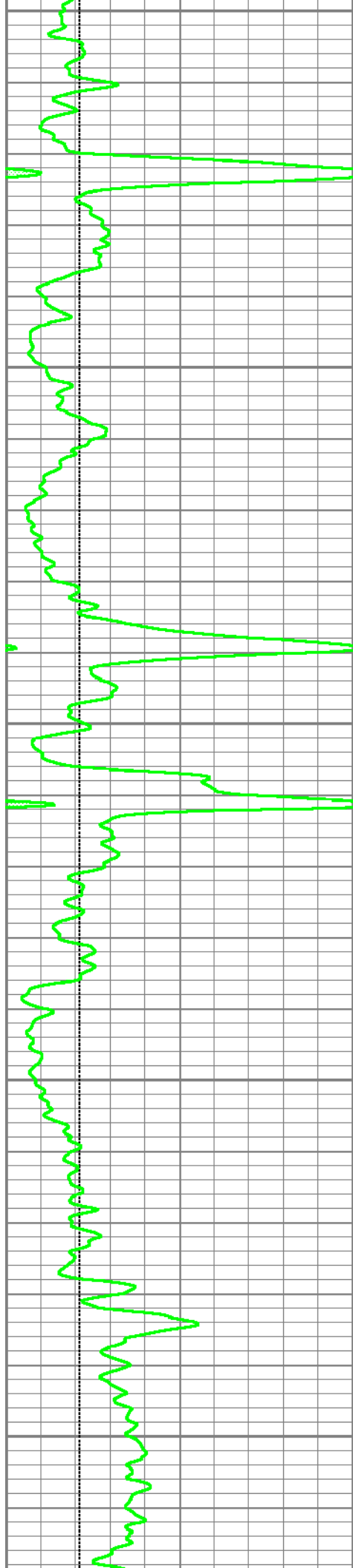
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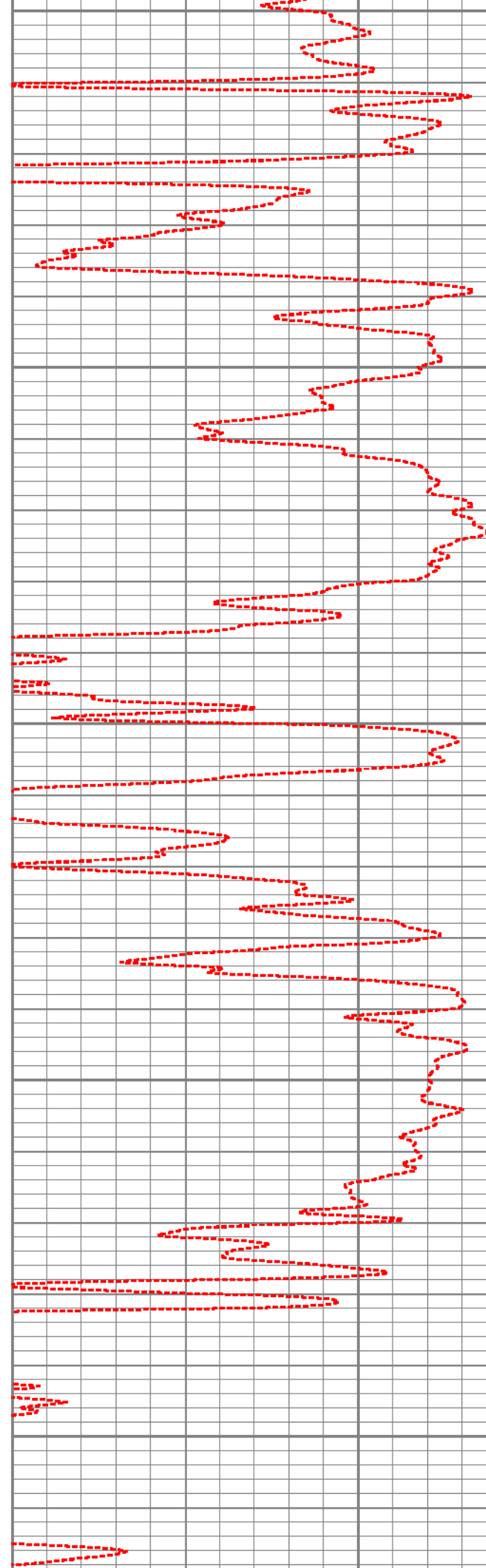
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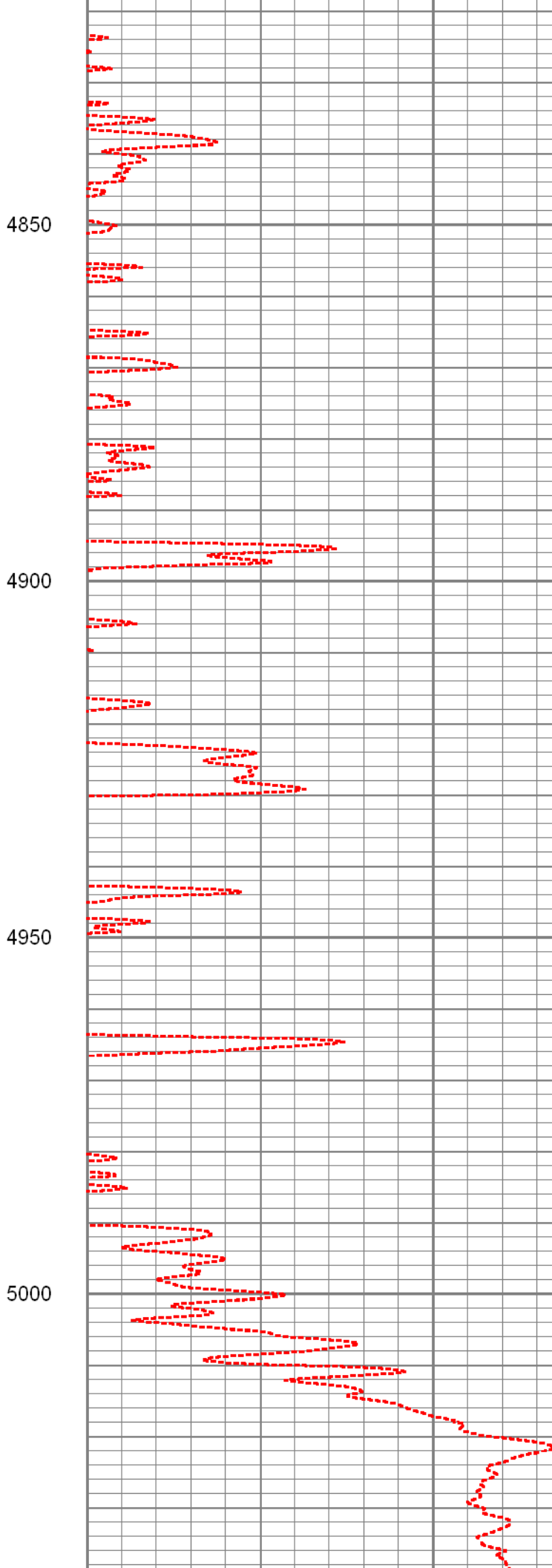
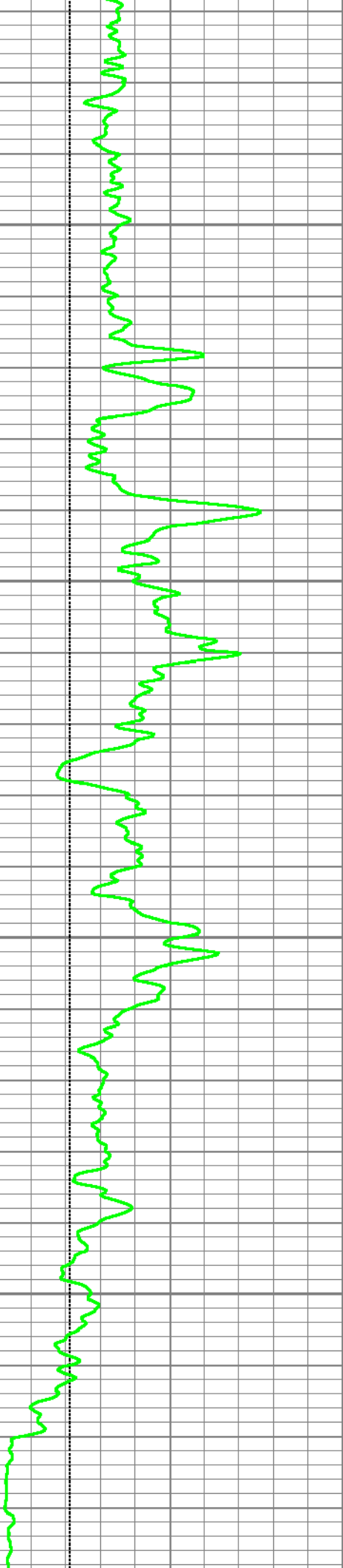
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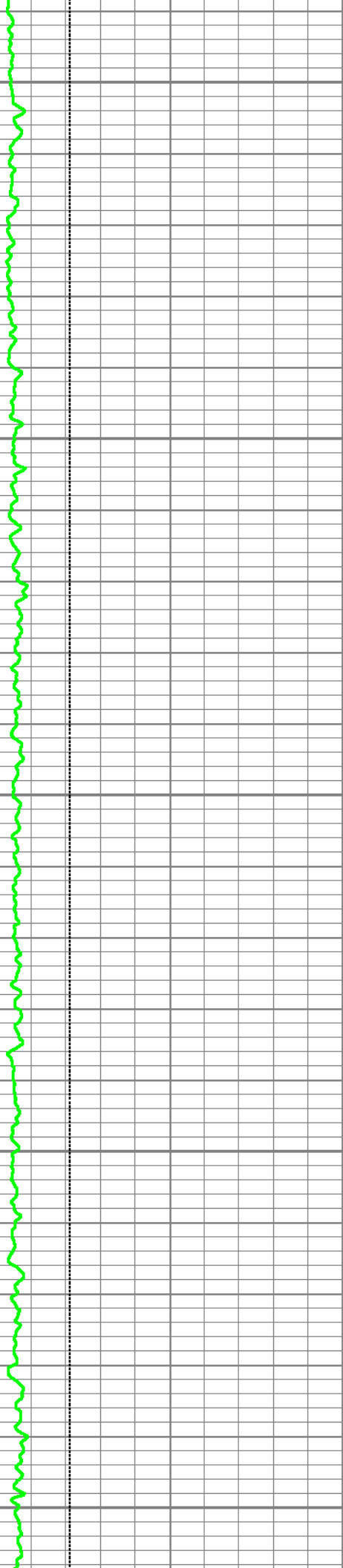
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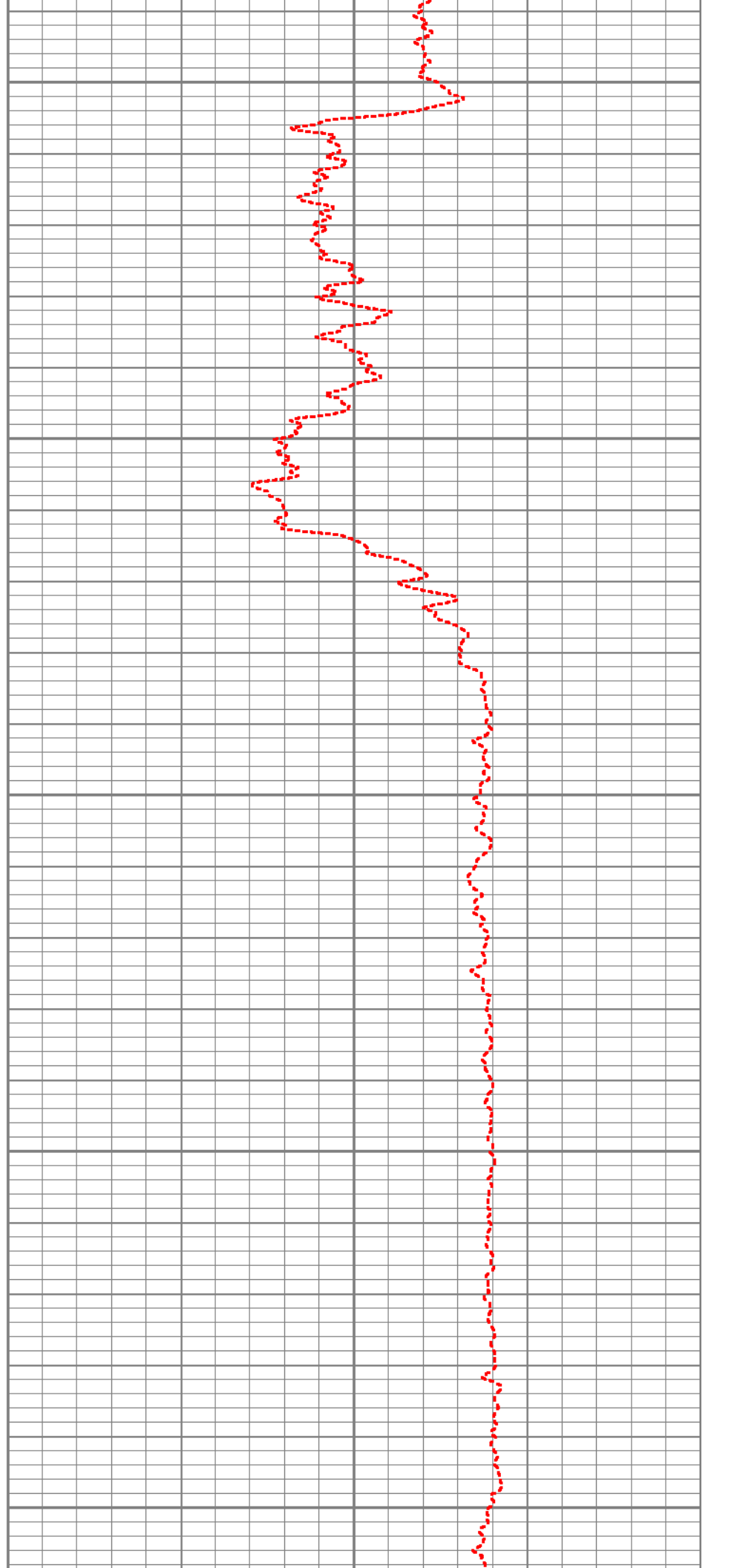
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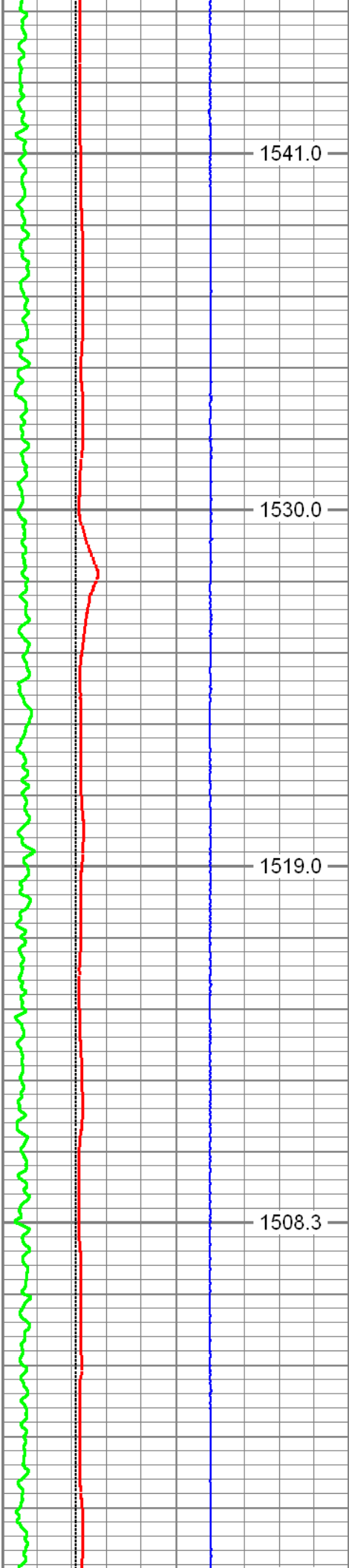
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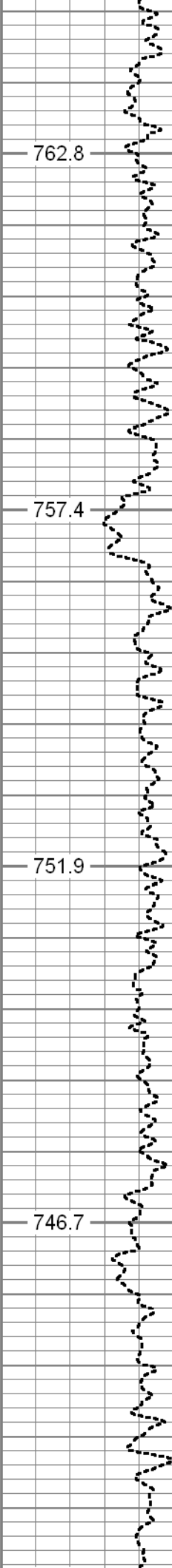
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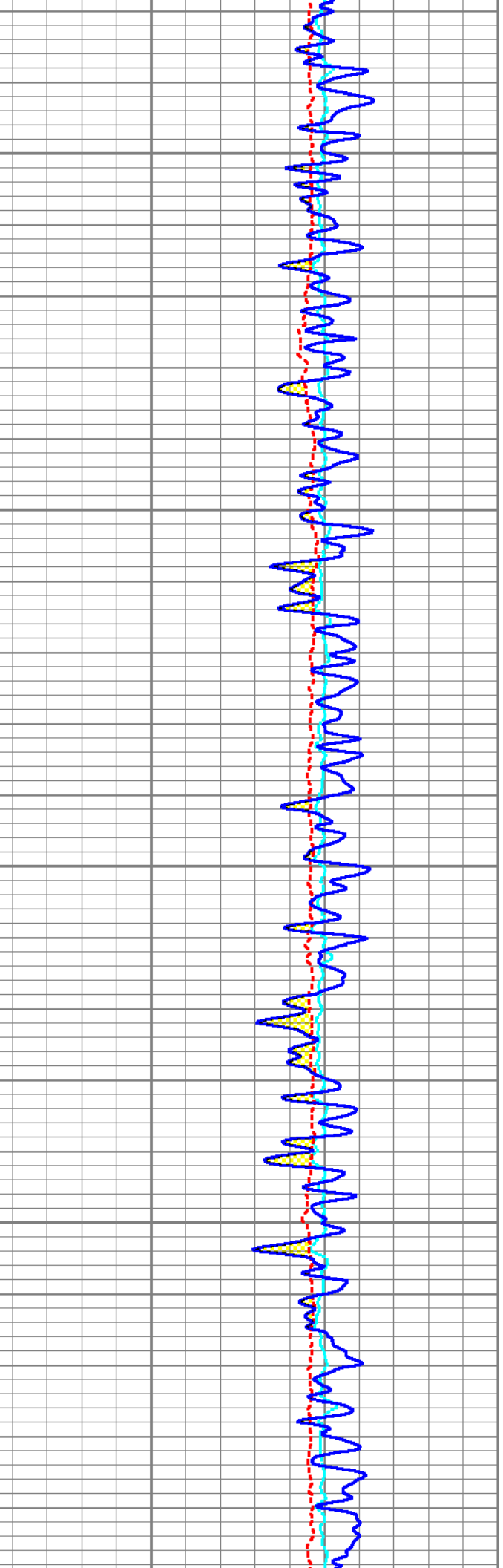


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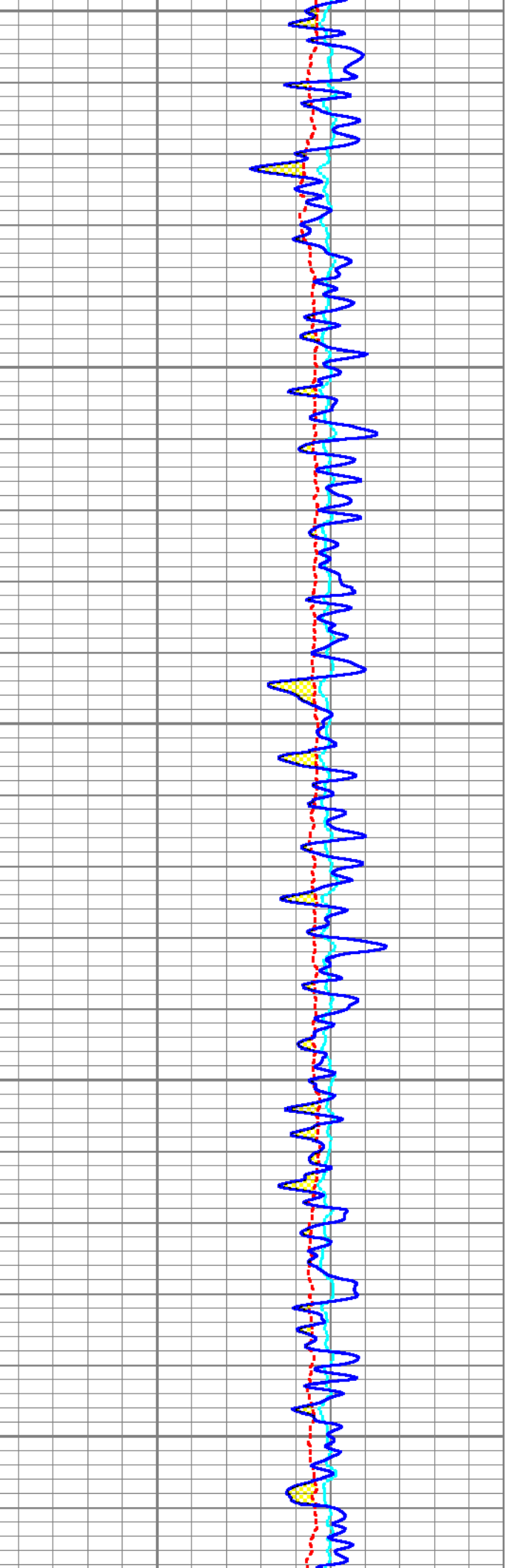
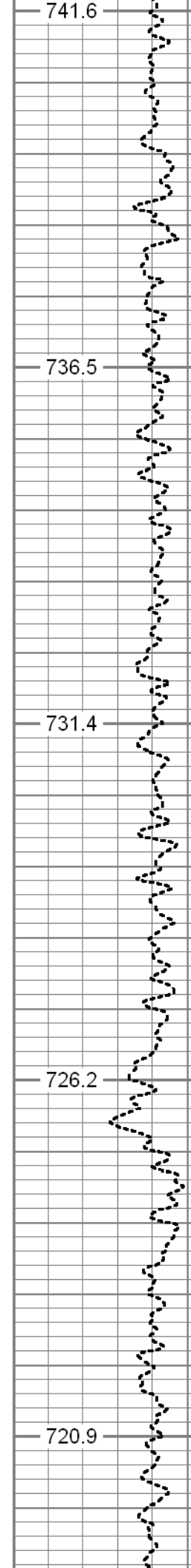
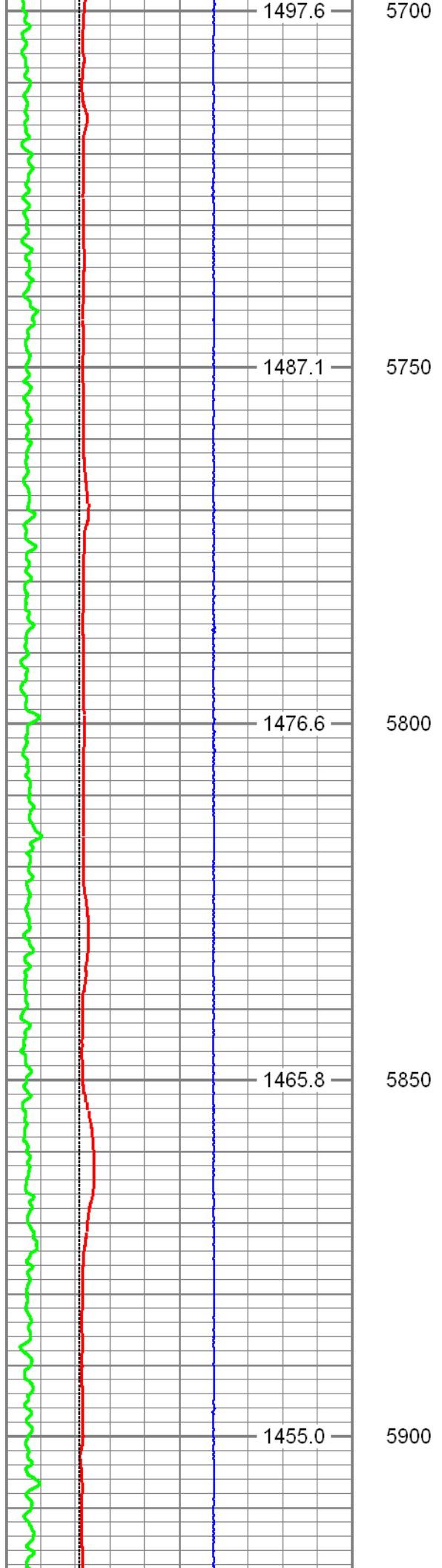


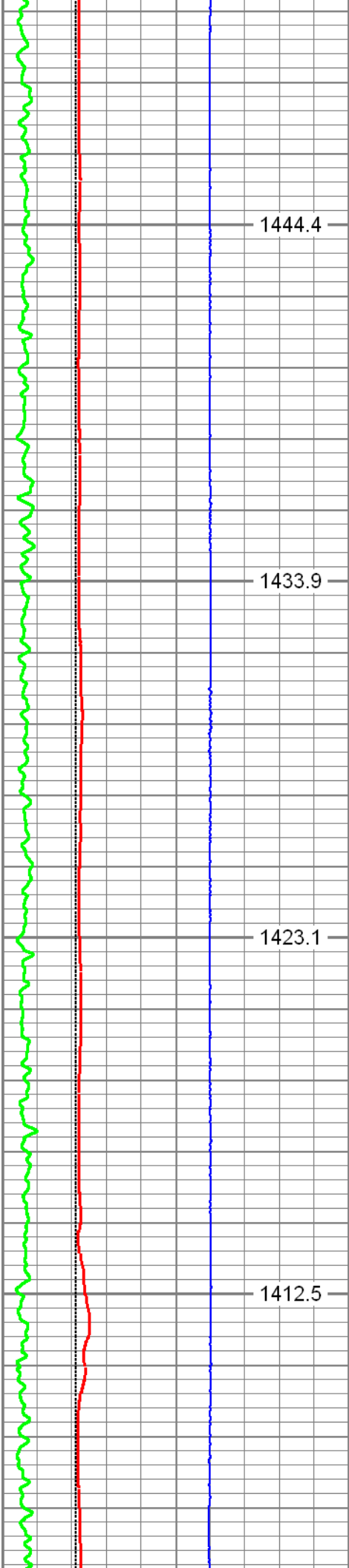
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746.7





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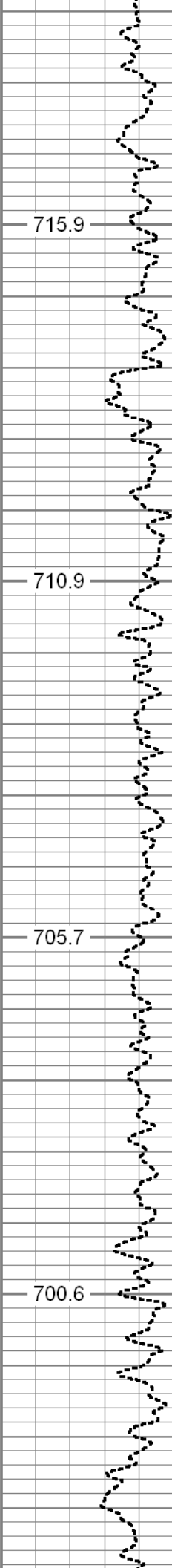
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6050

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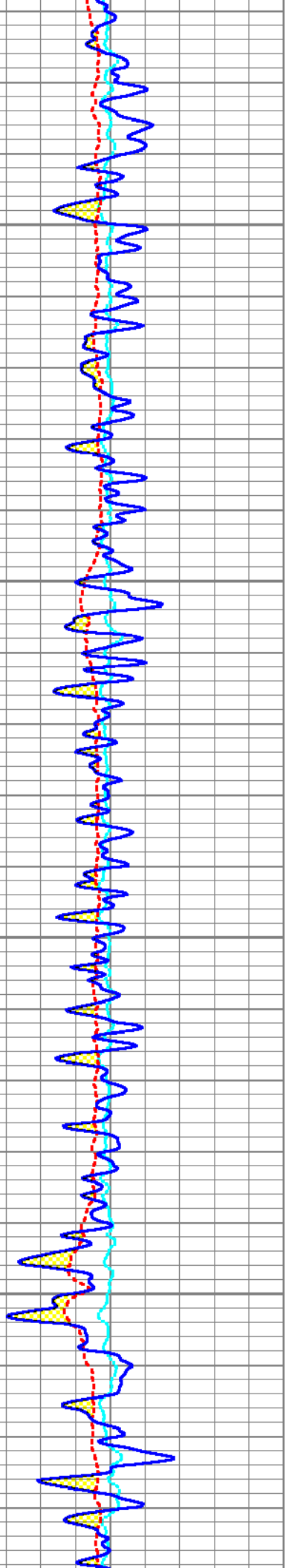
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6000

6050

6100



715.9

710.9

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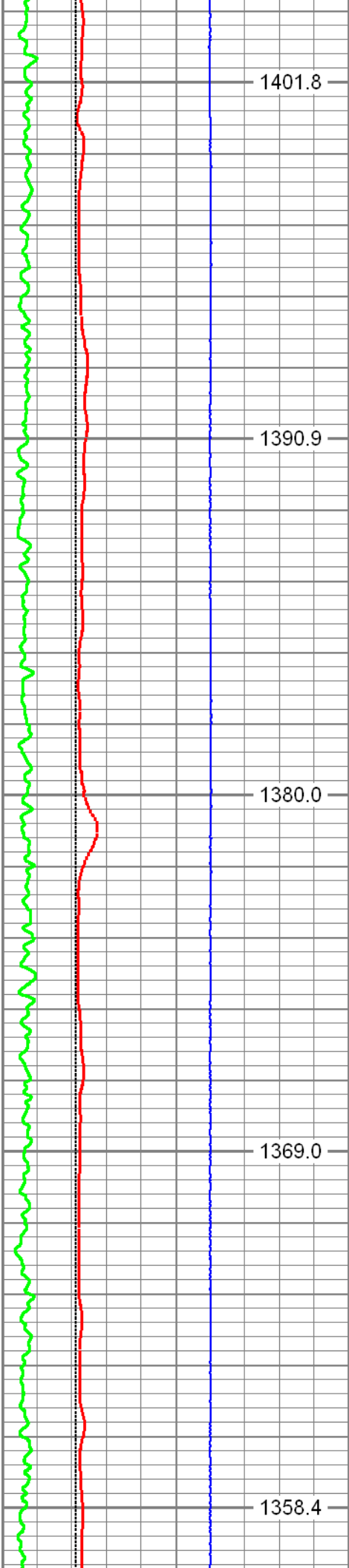
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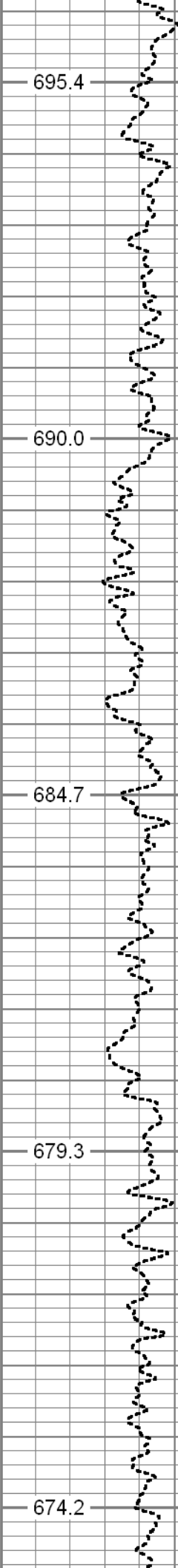
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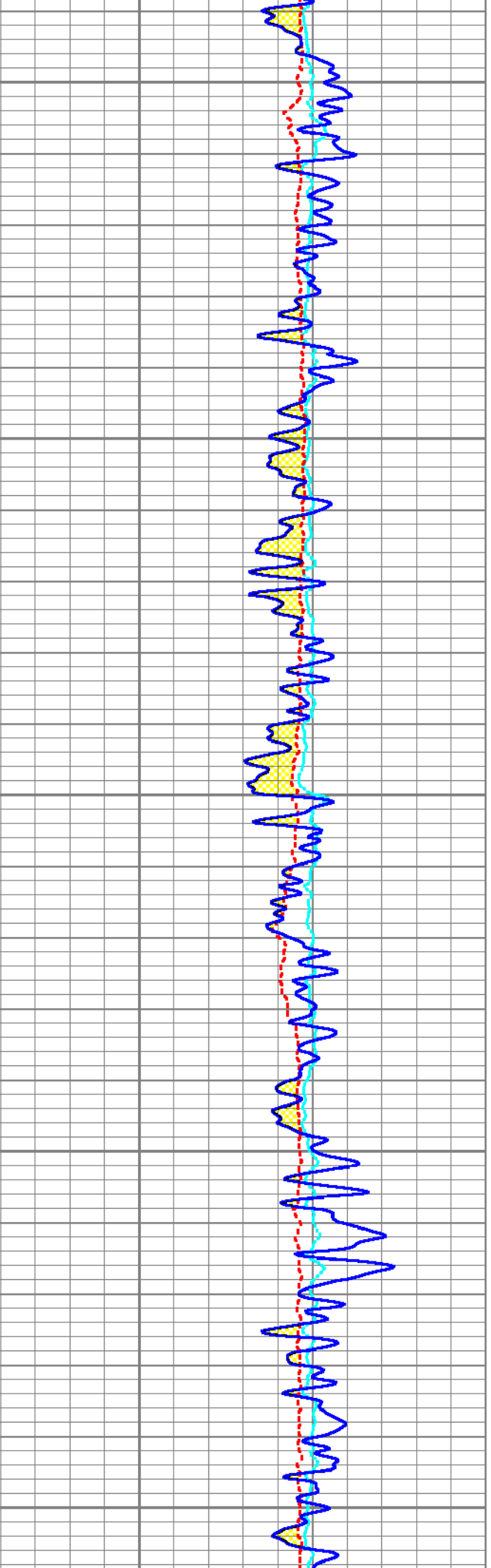
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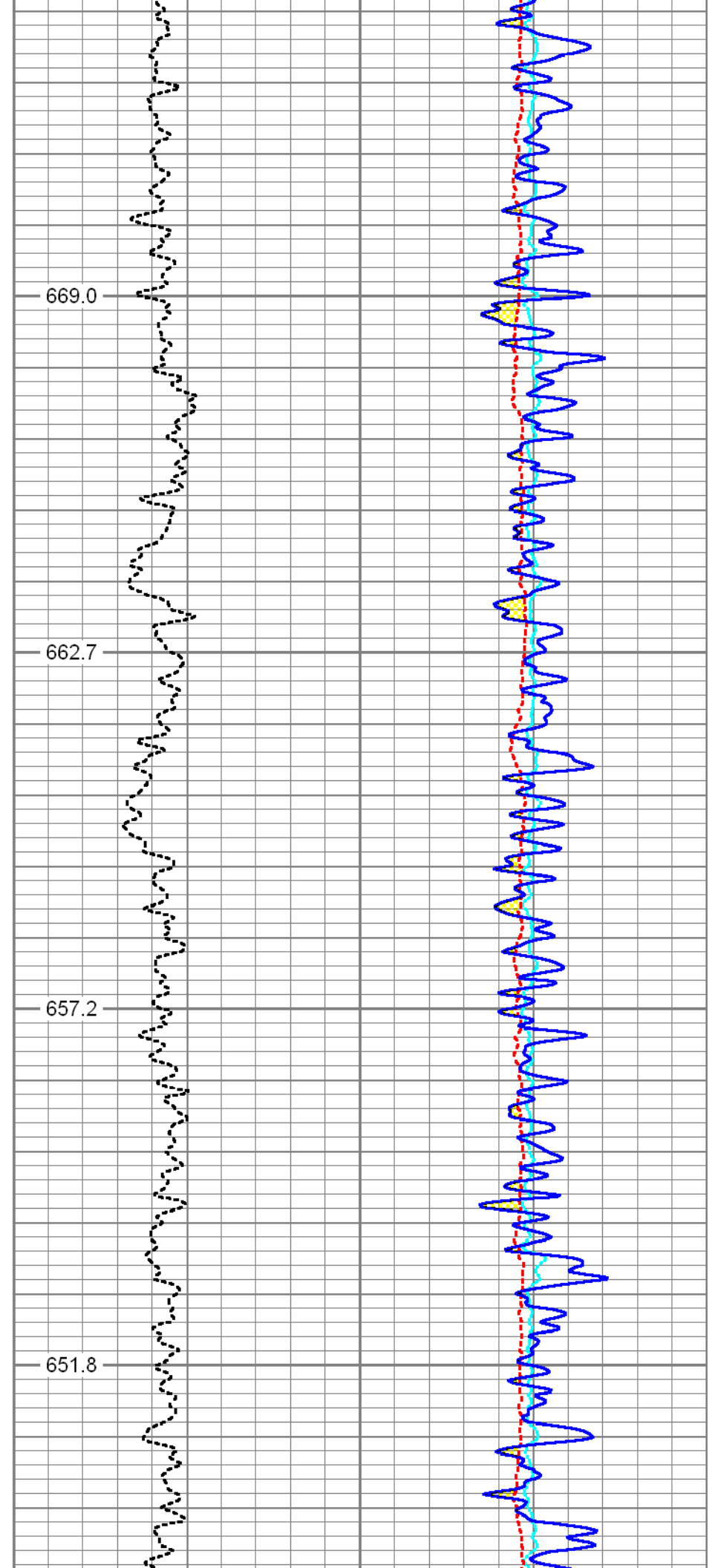
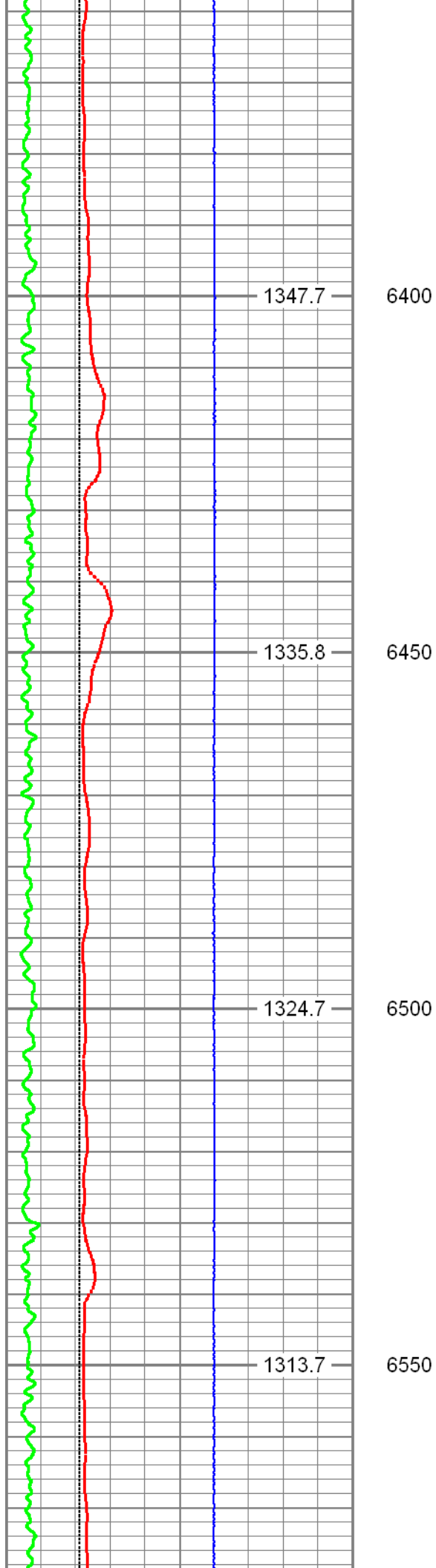
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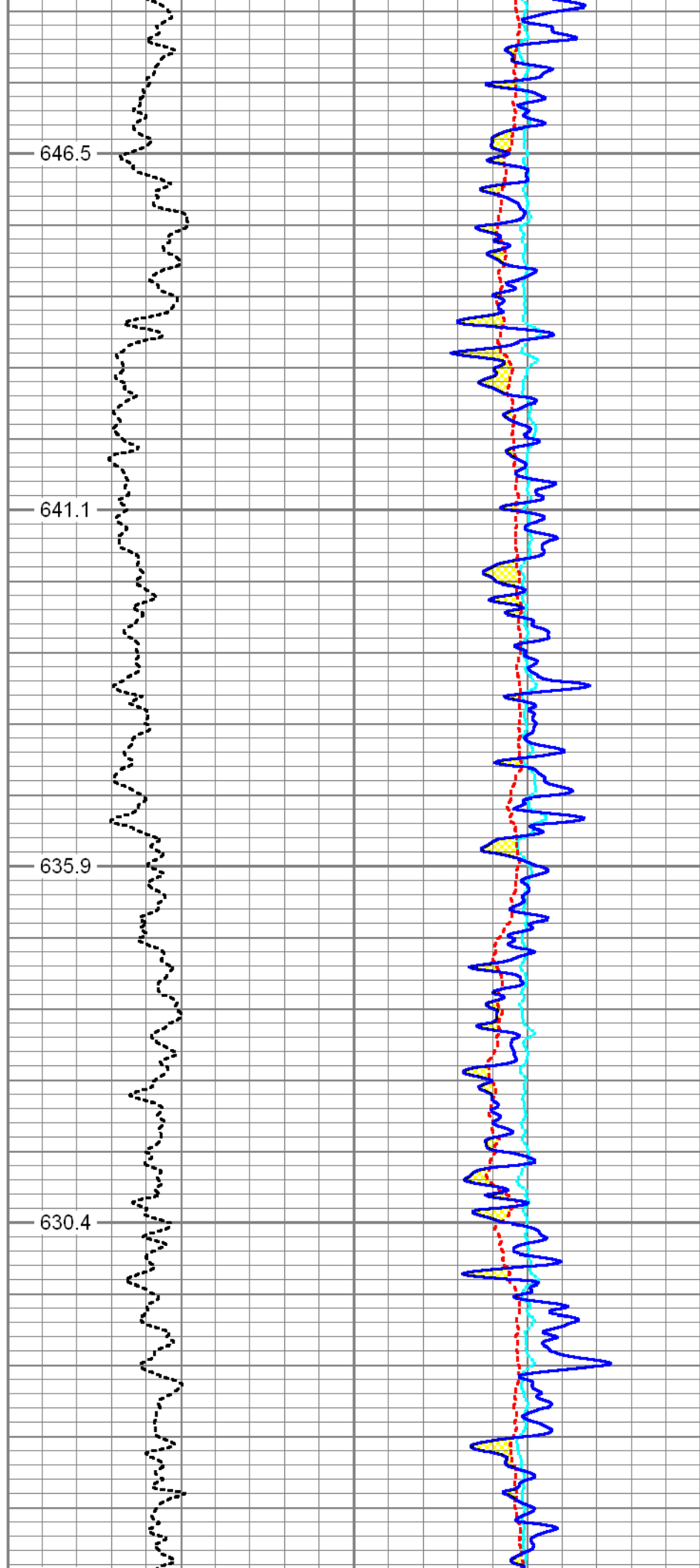
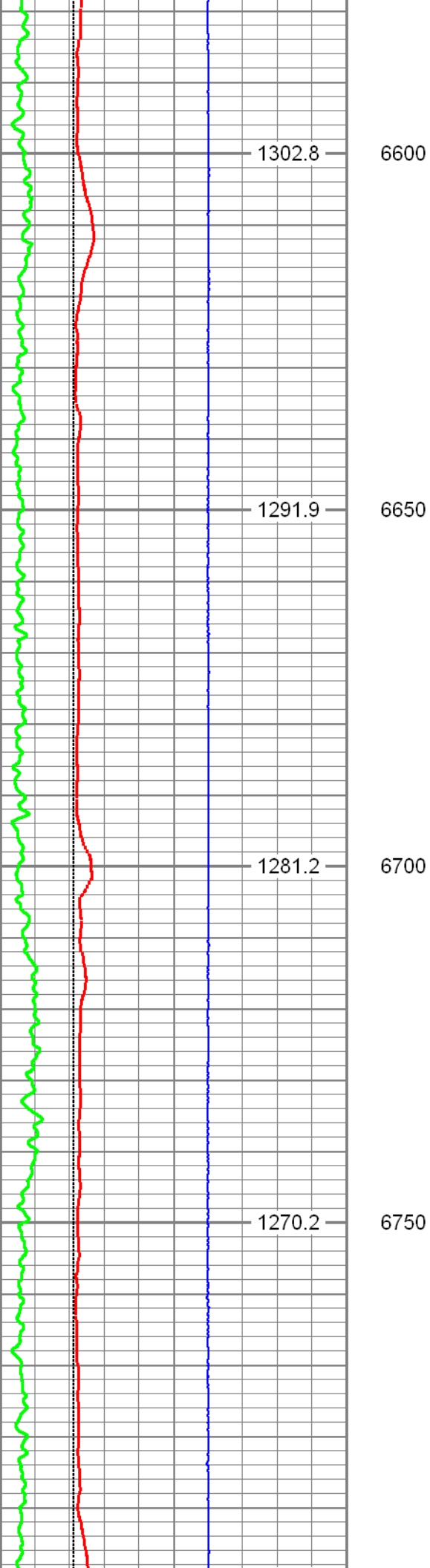
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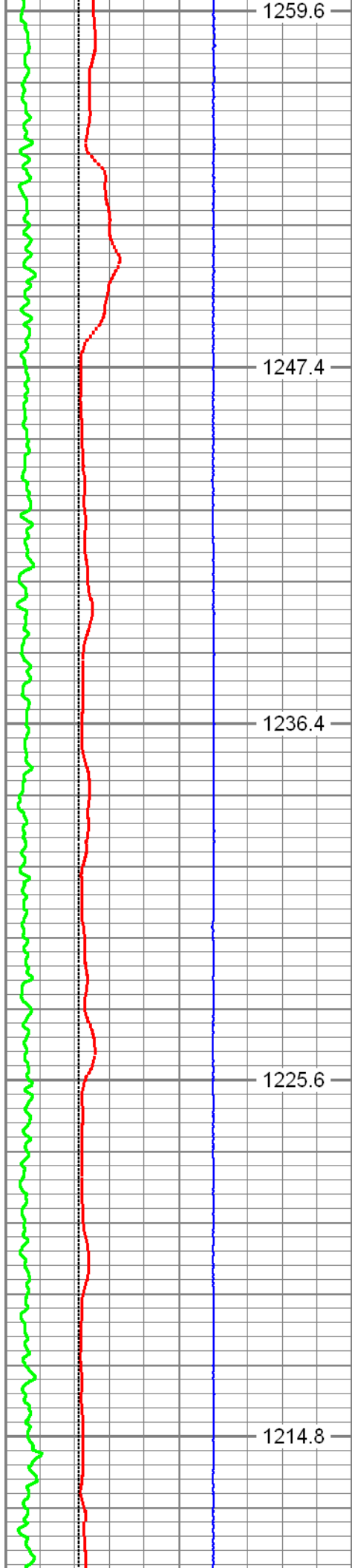
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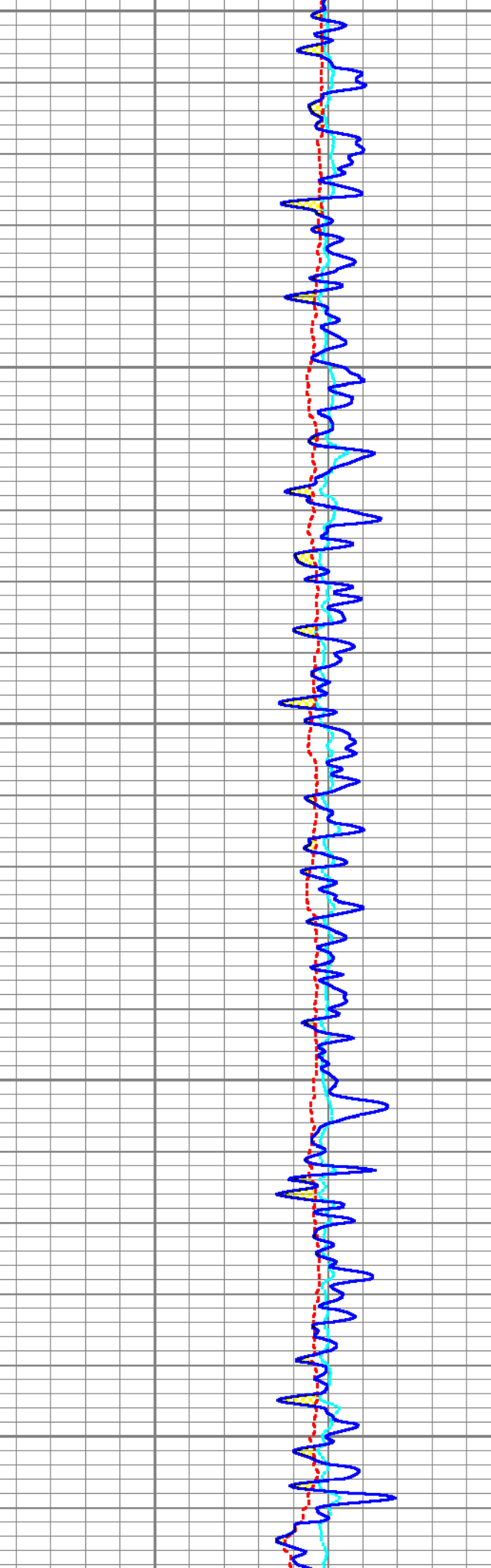
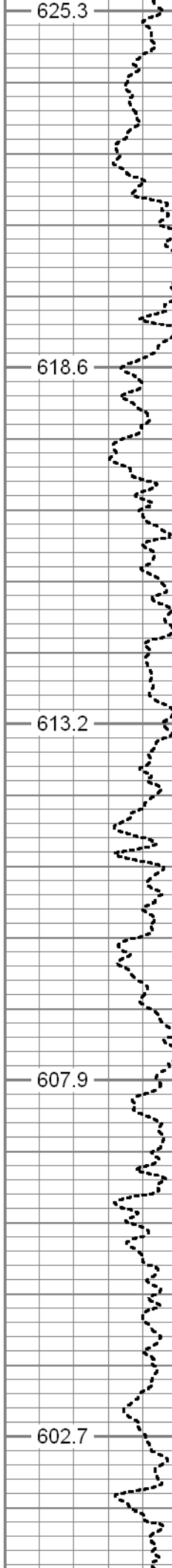


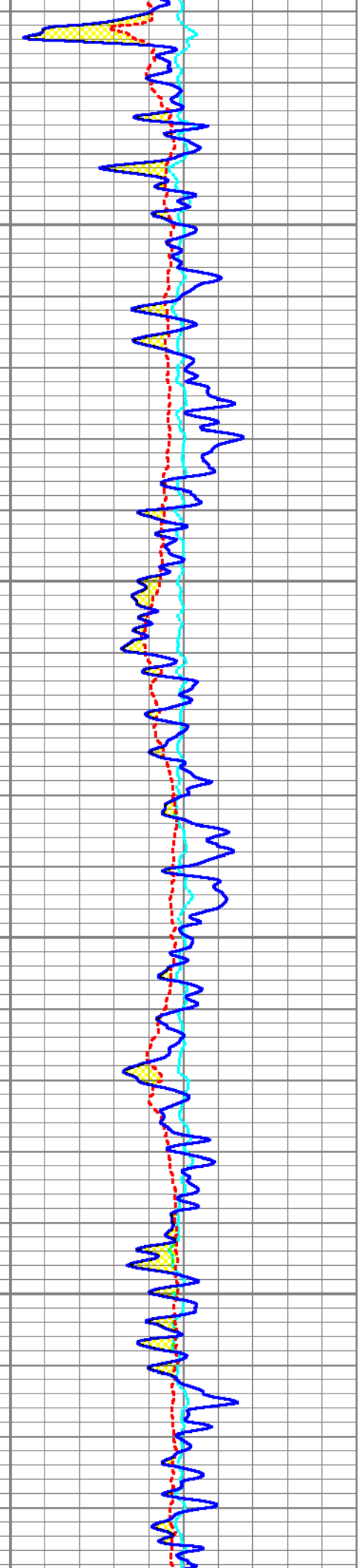
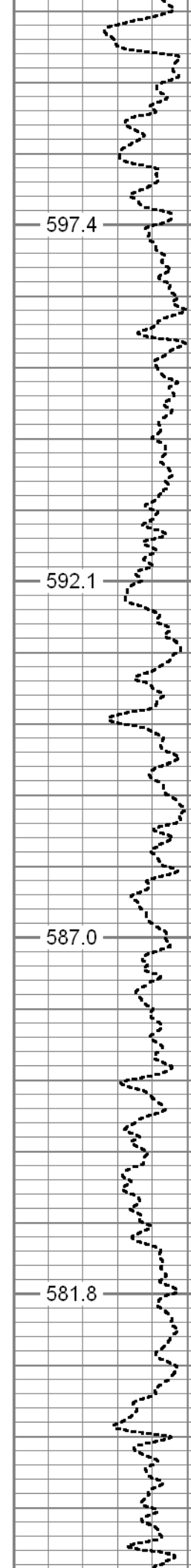
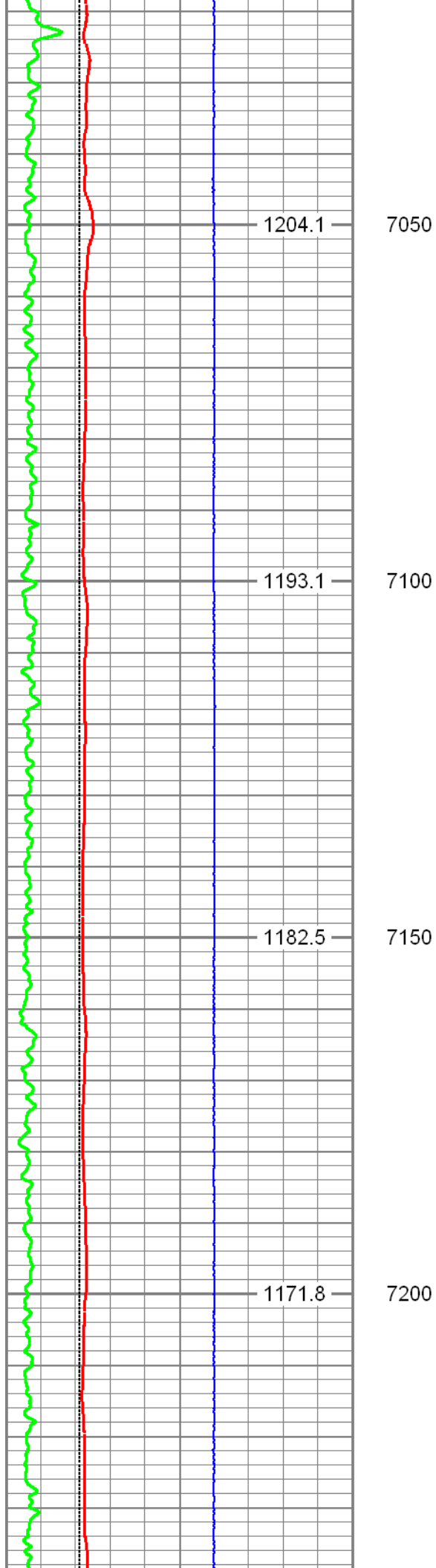


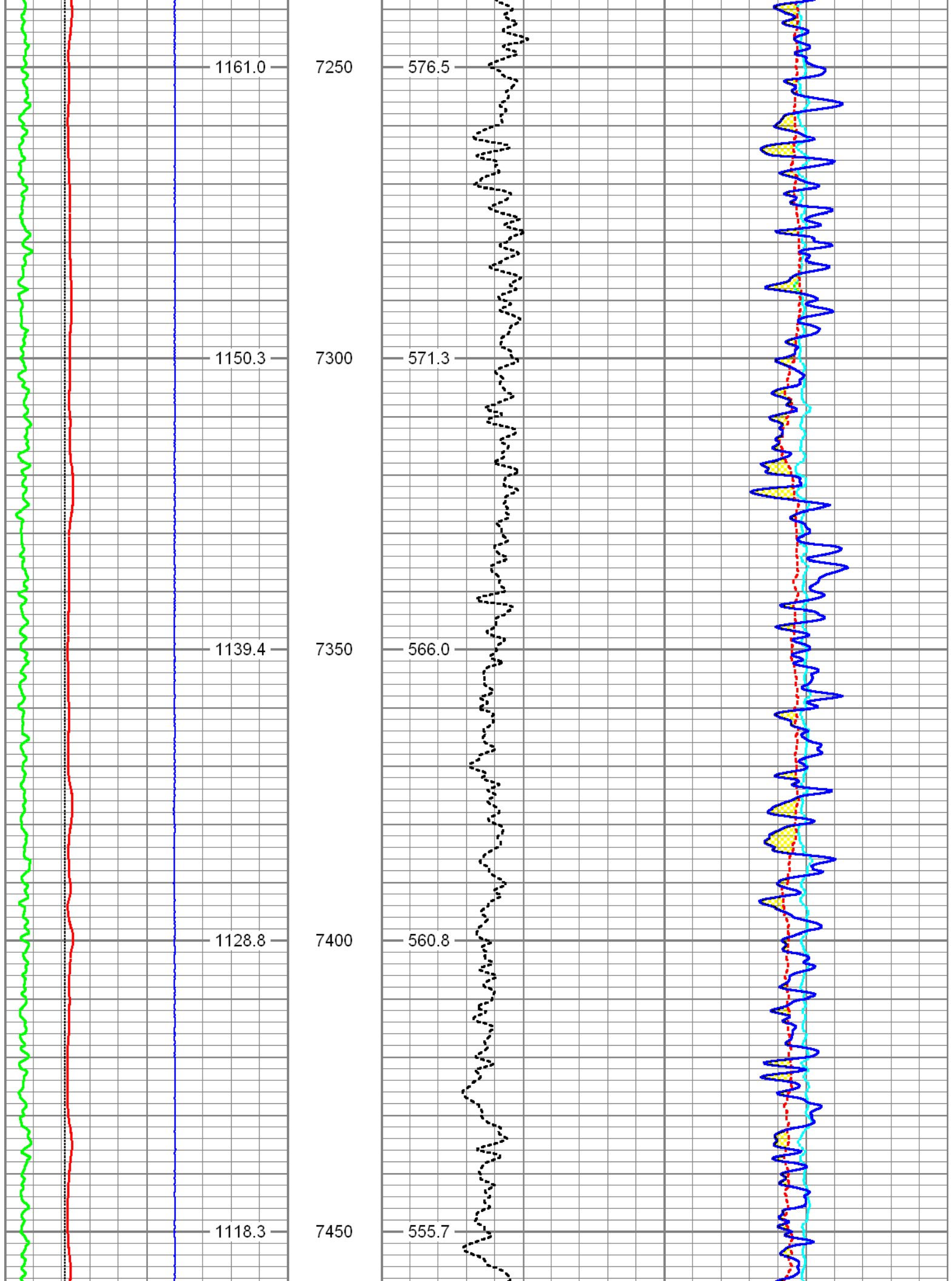


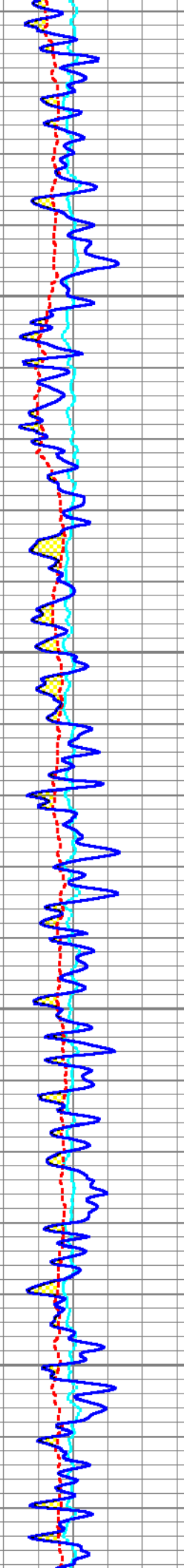
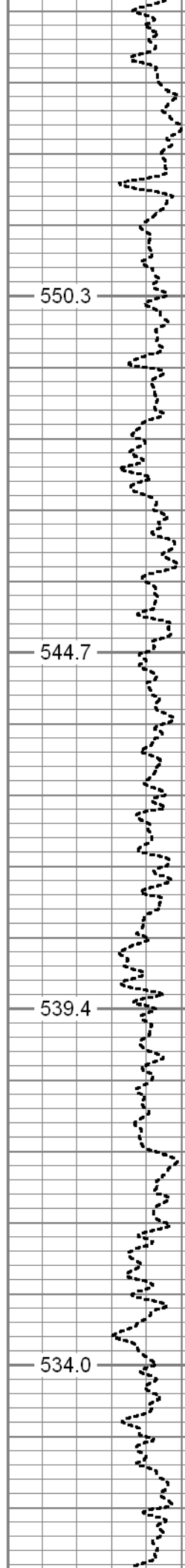
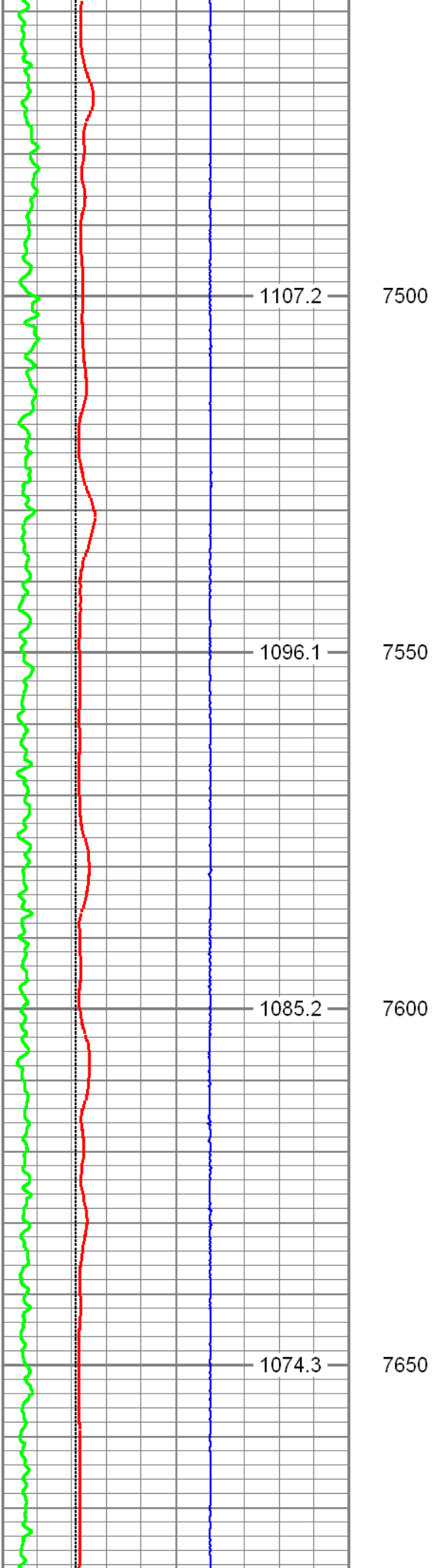


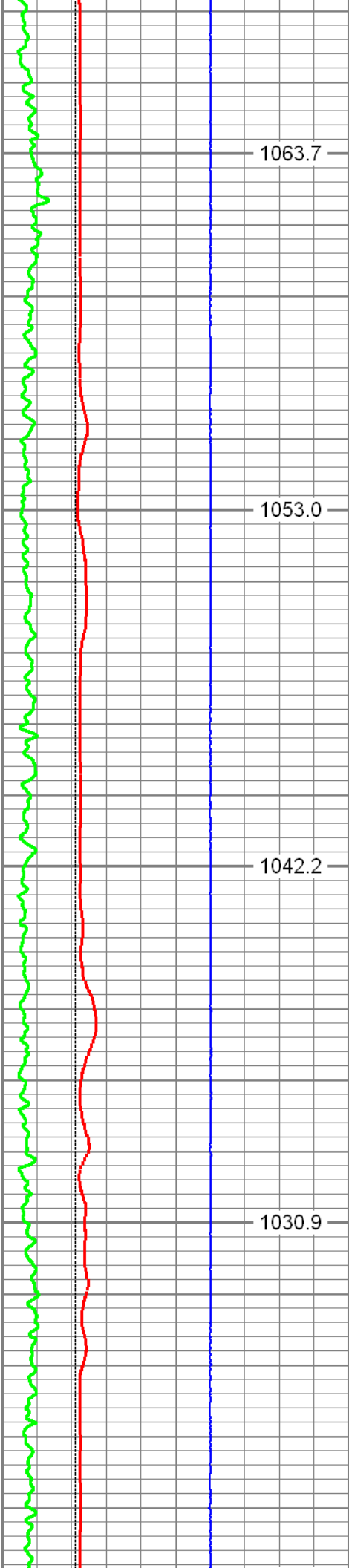
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7700

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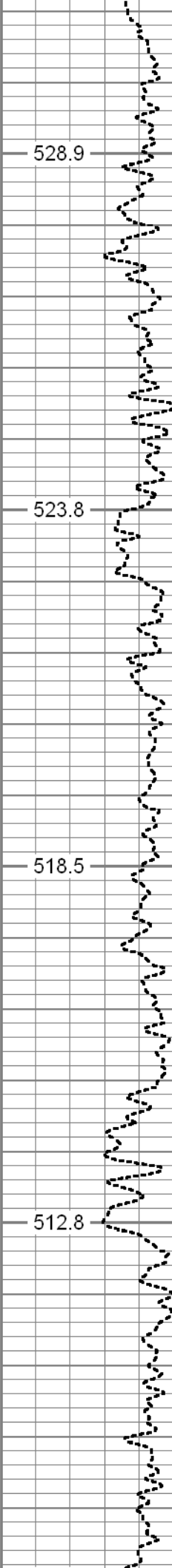
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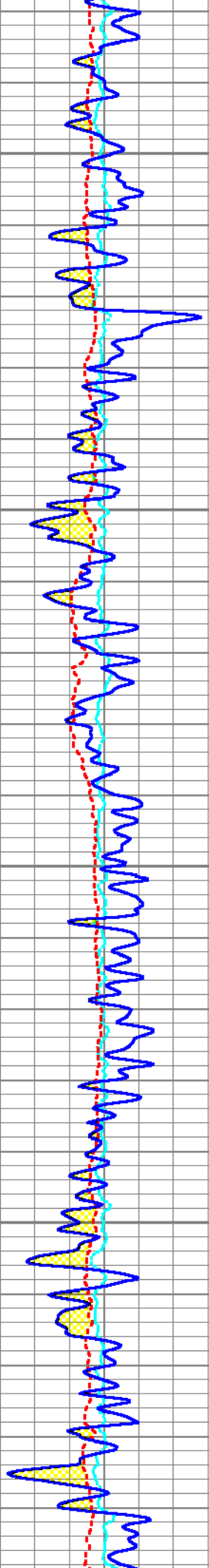


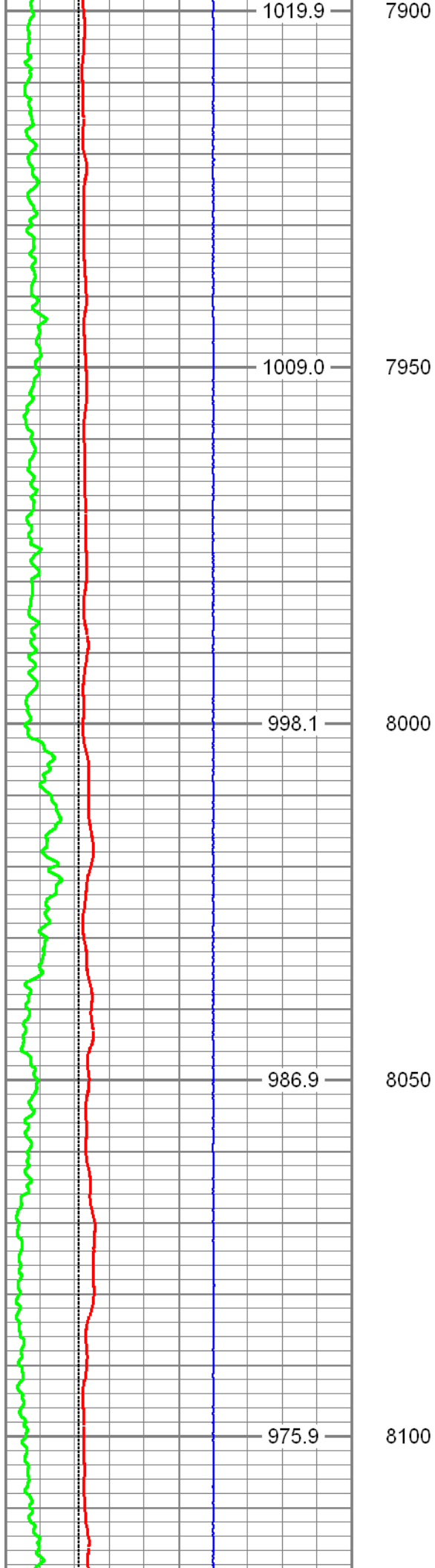
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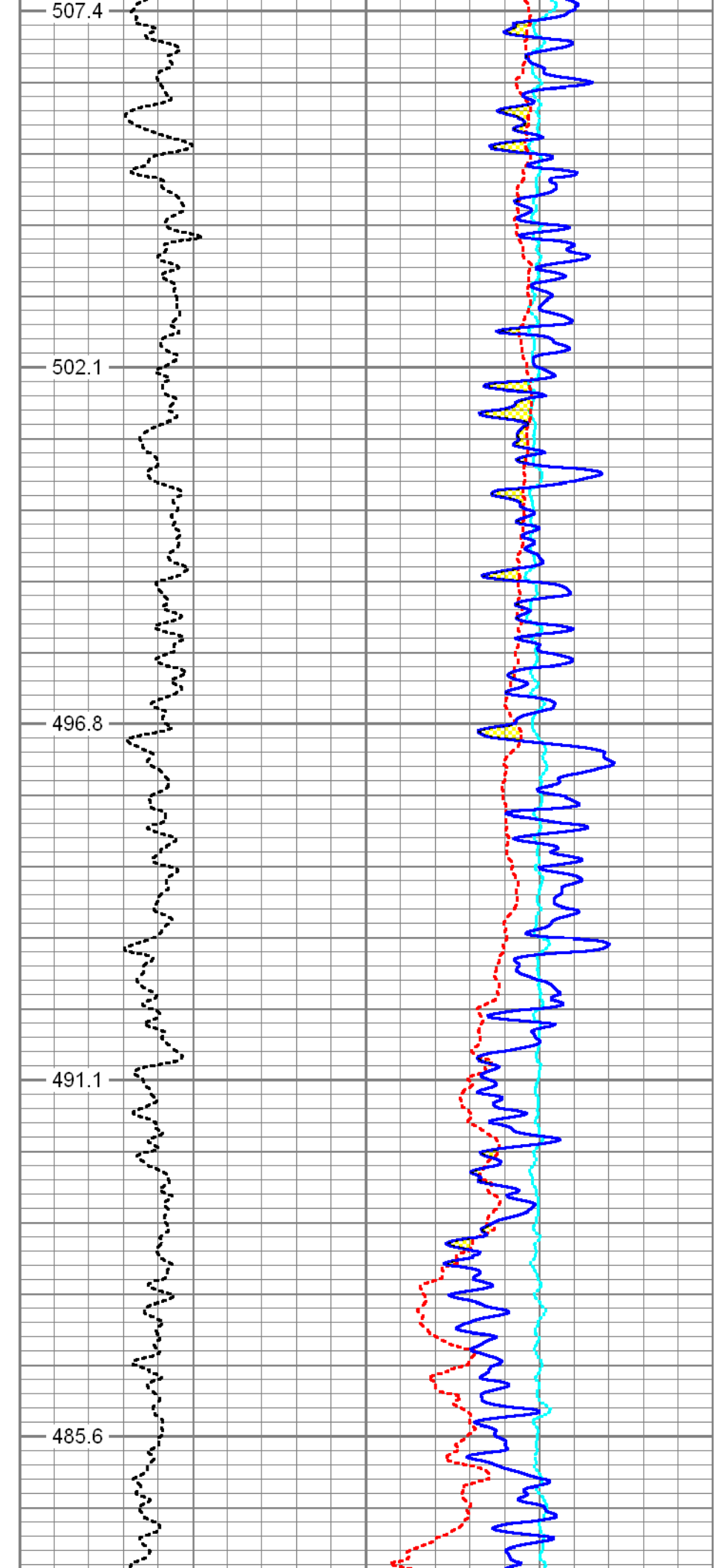
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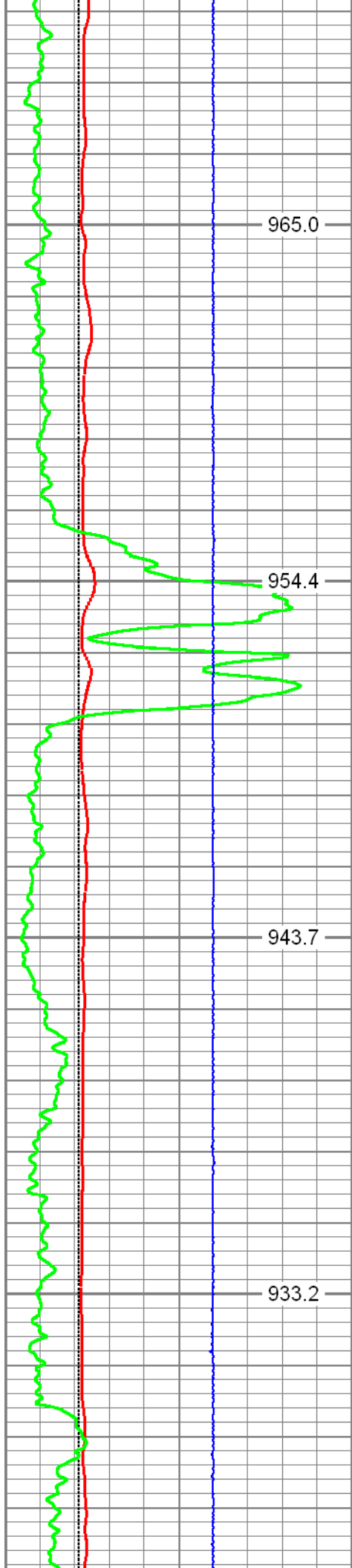


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8050
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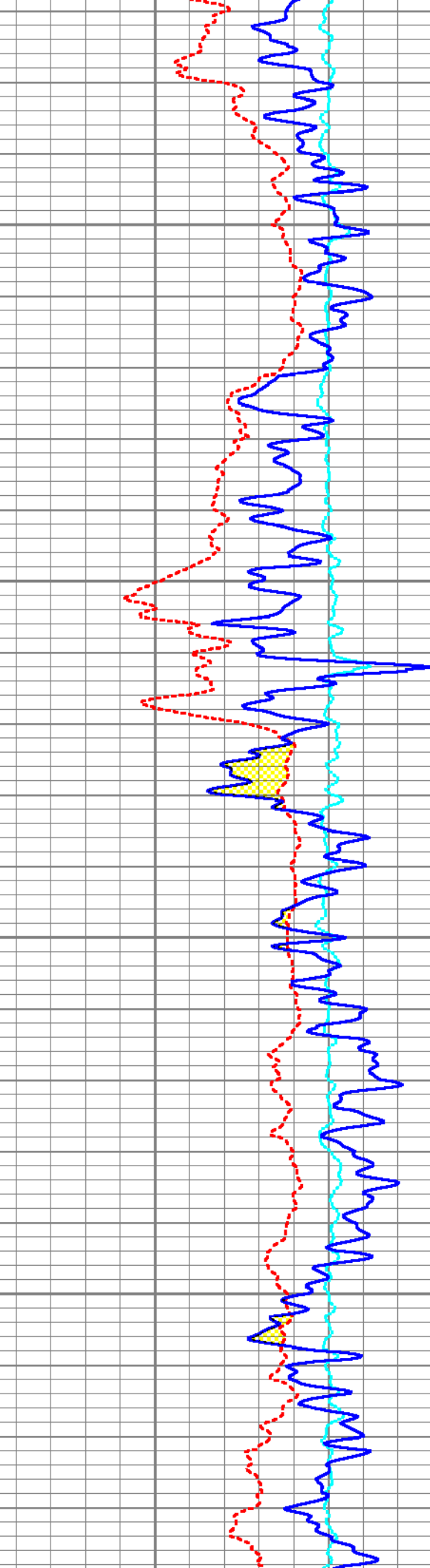
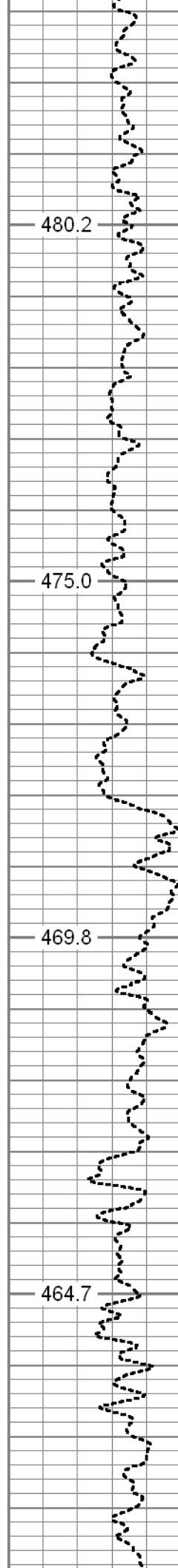


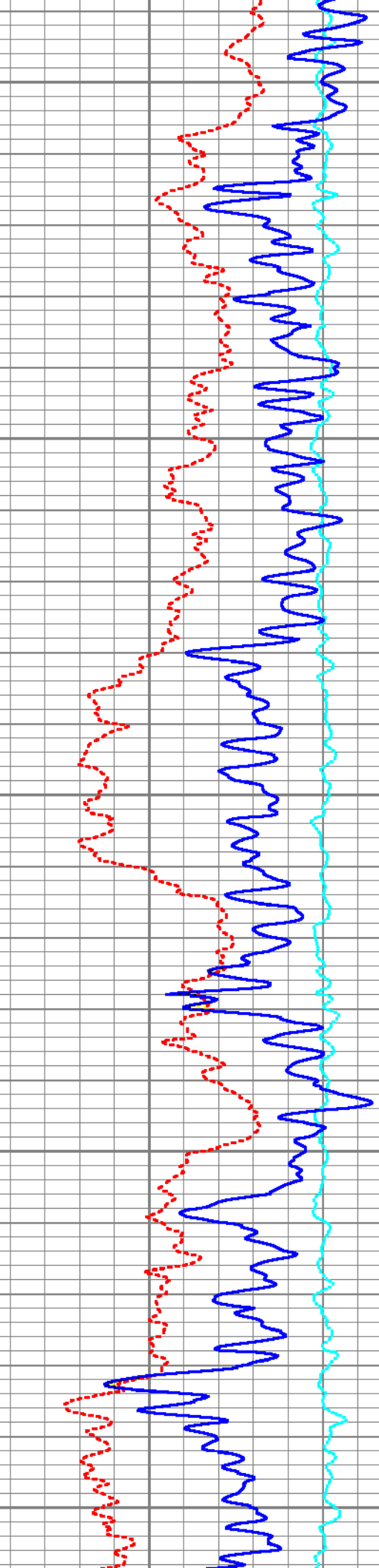
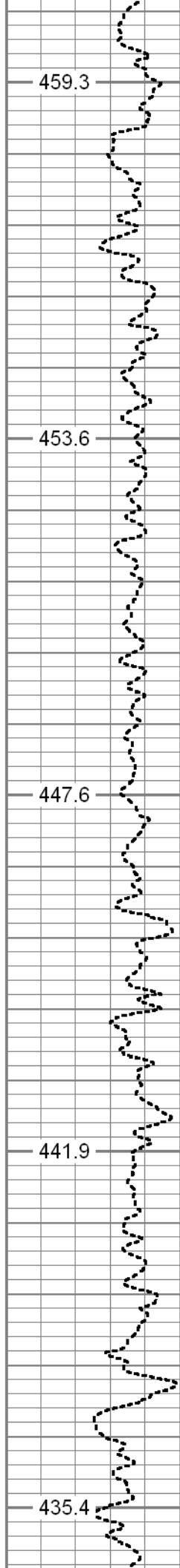
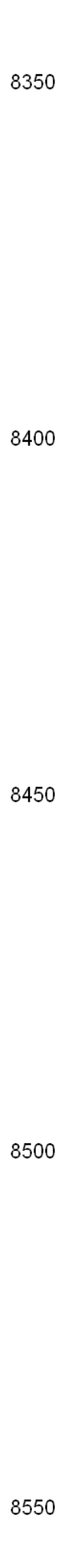
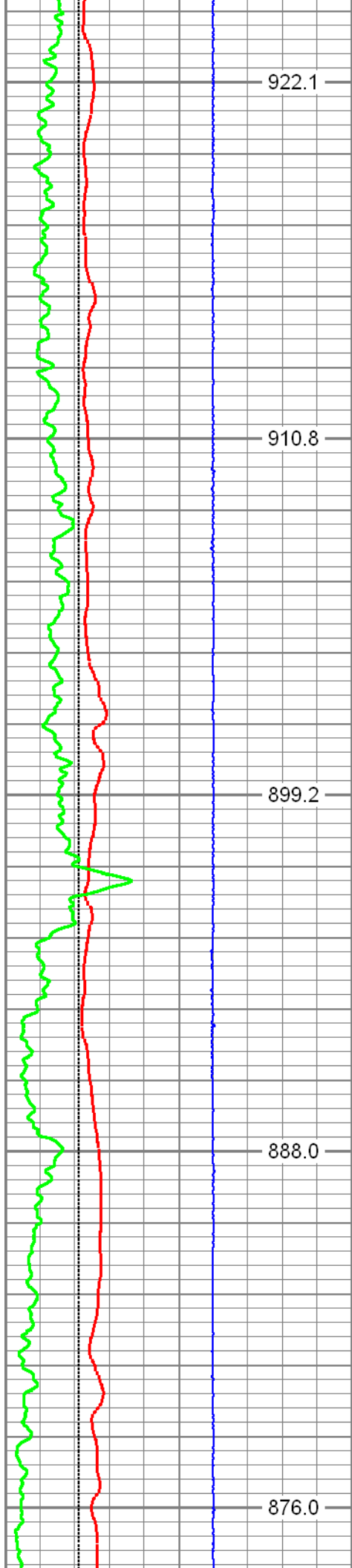
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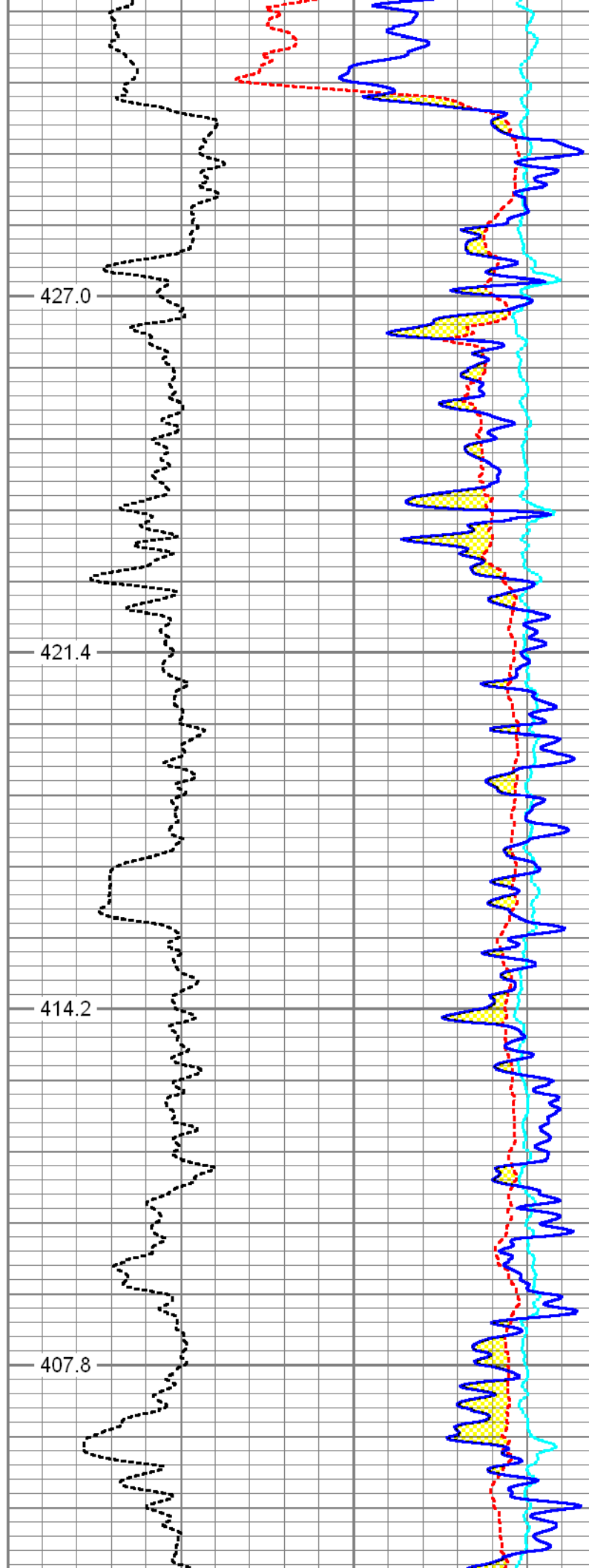
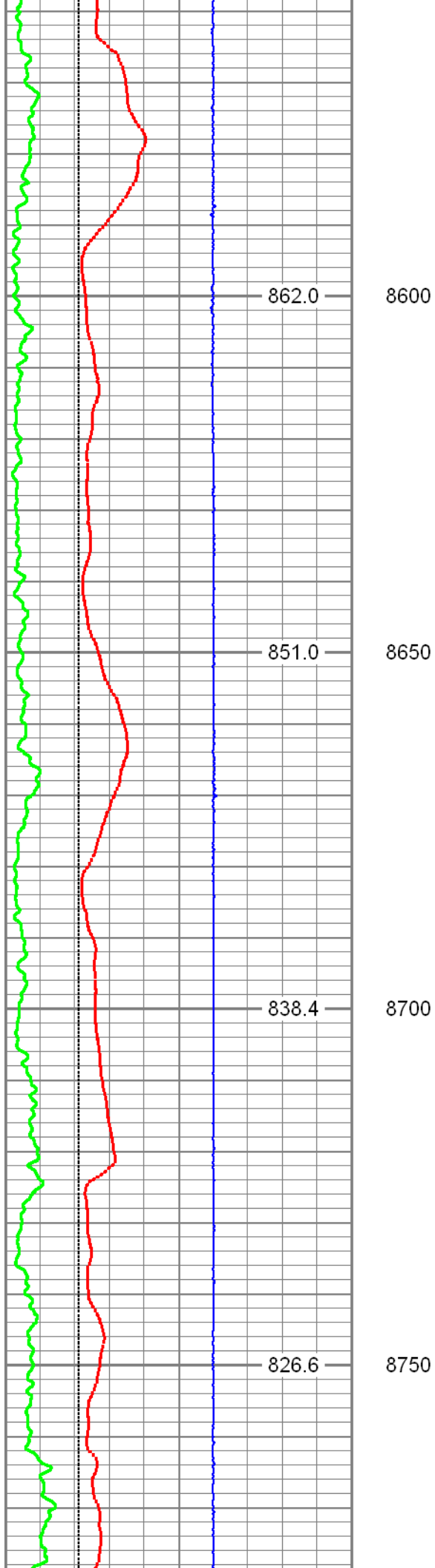
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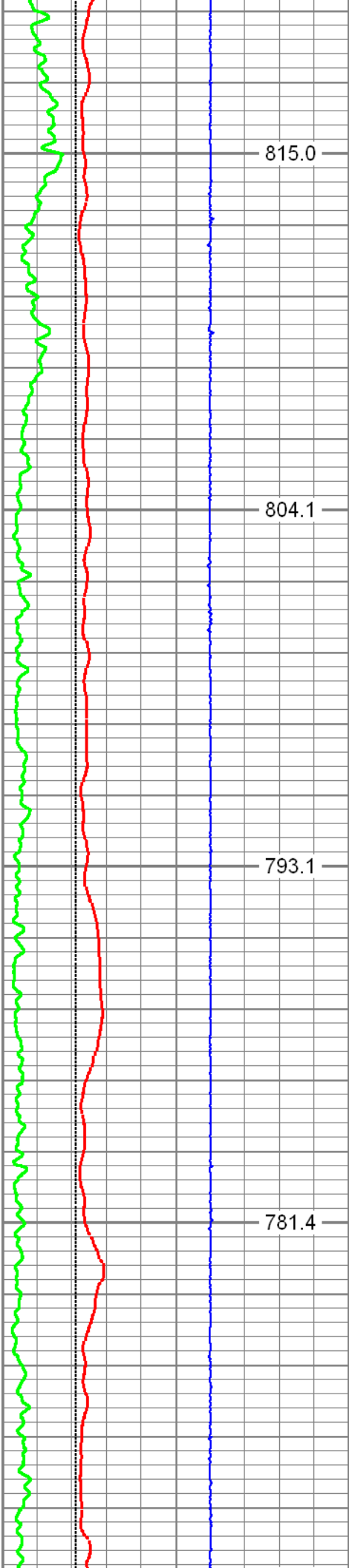
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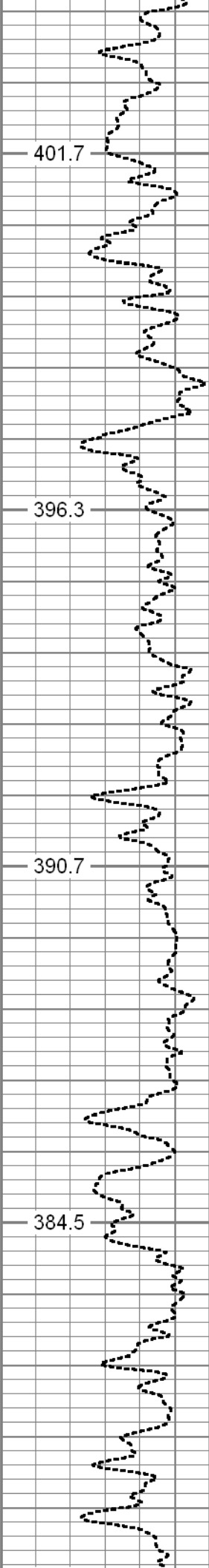


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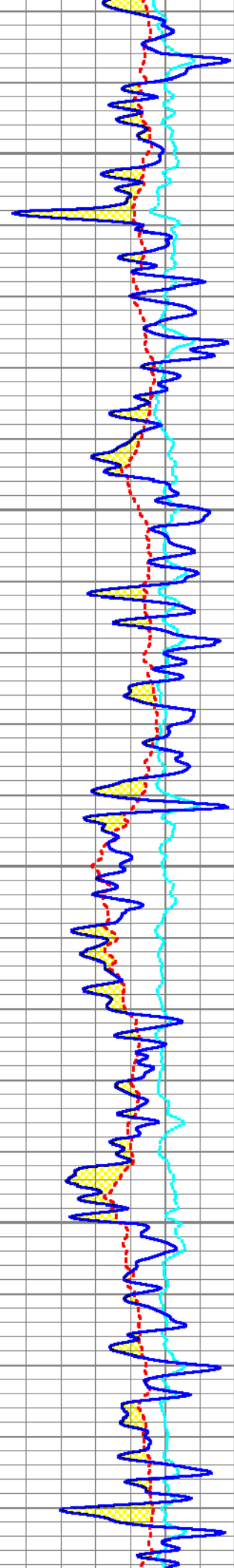


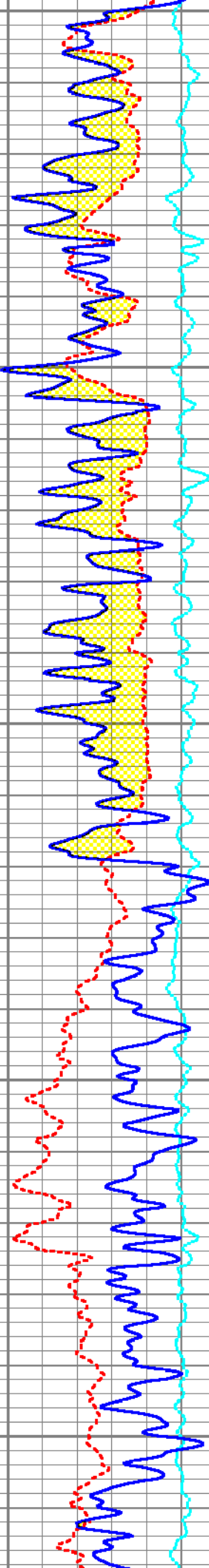
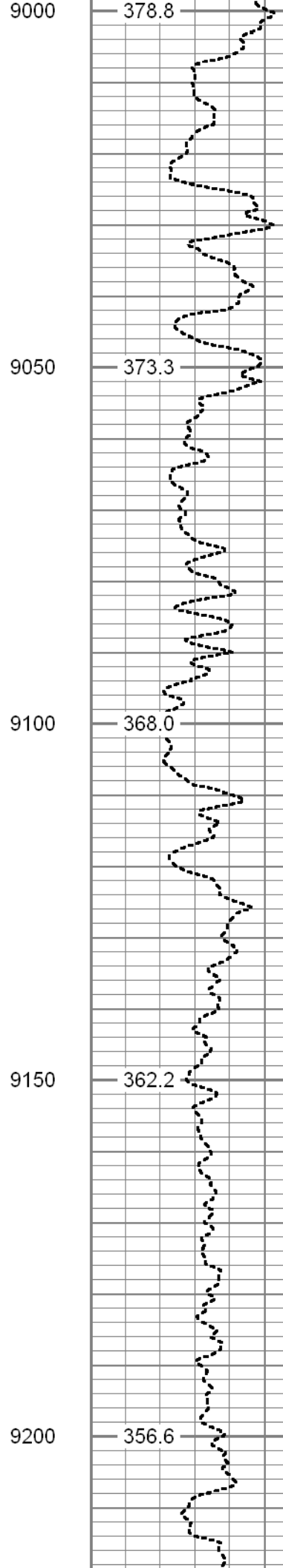
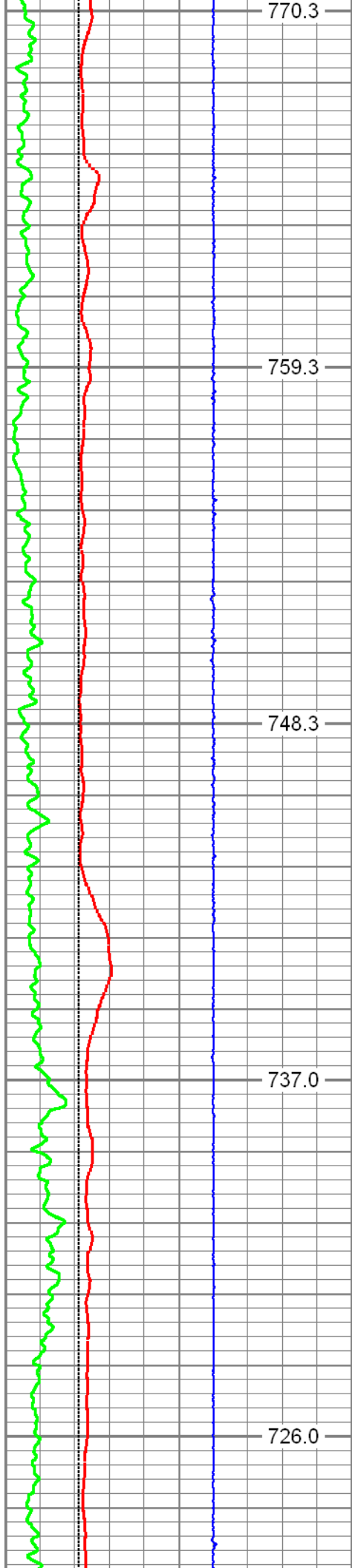
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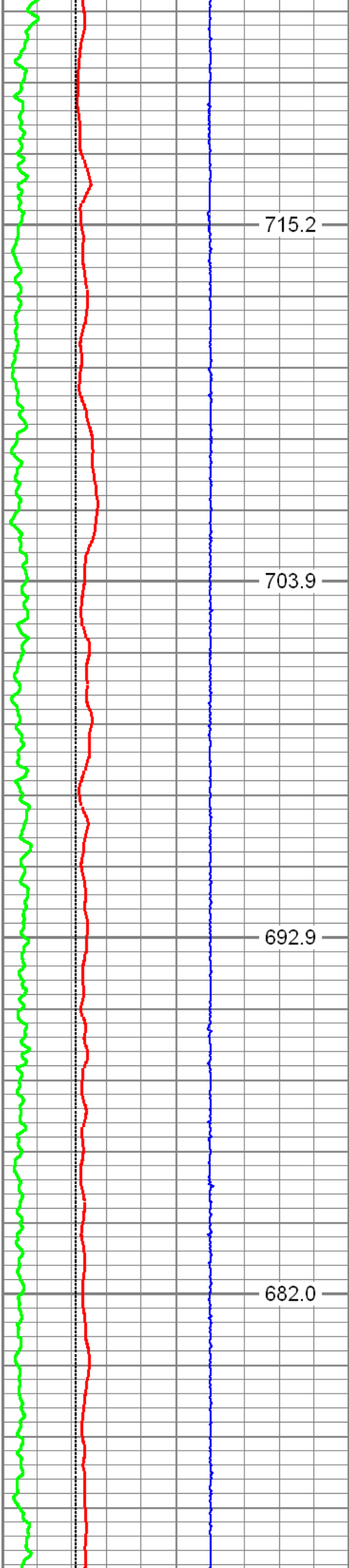
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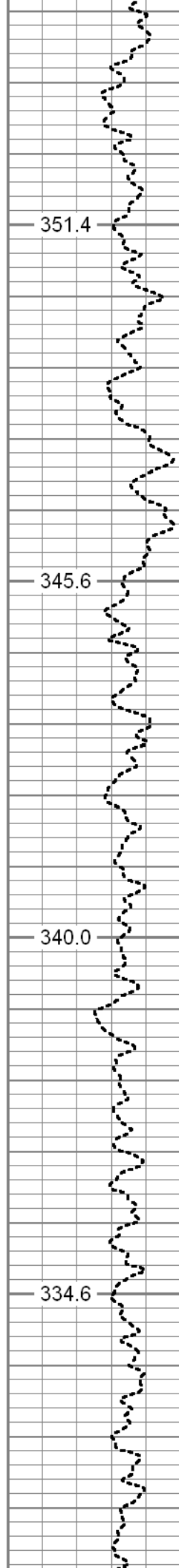


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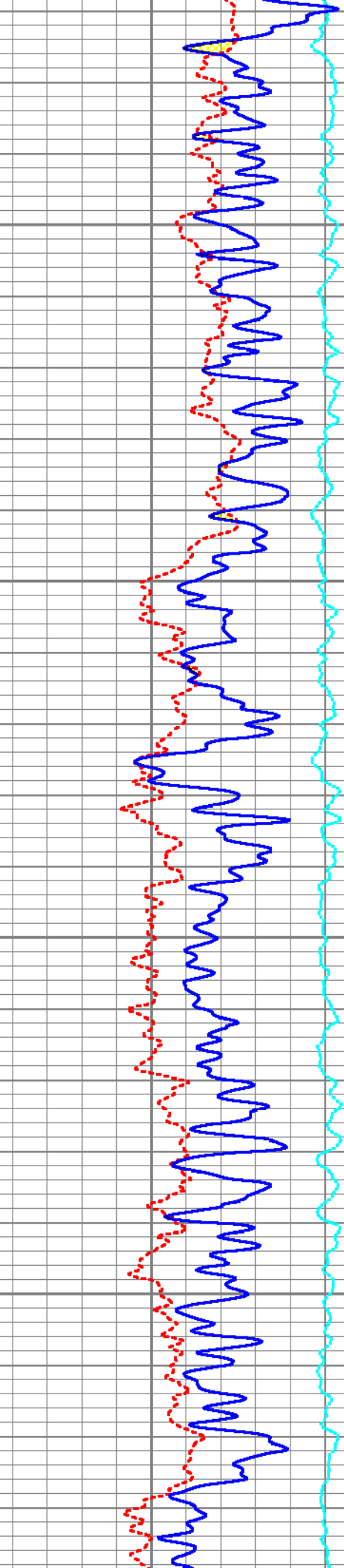


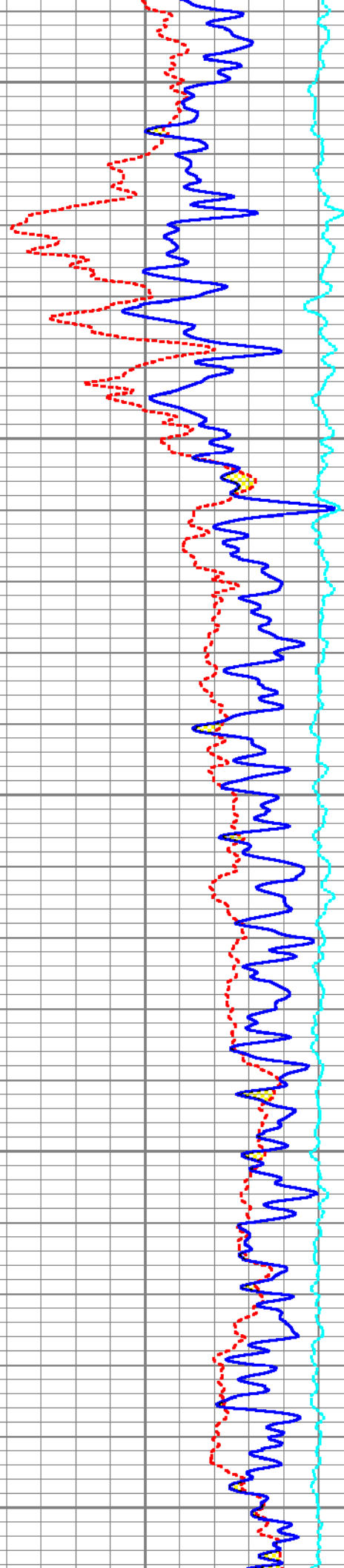
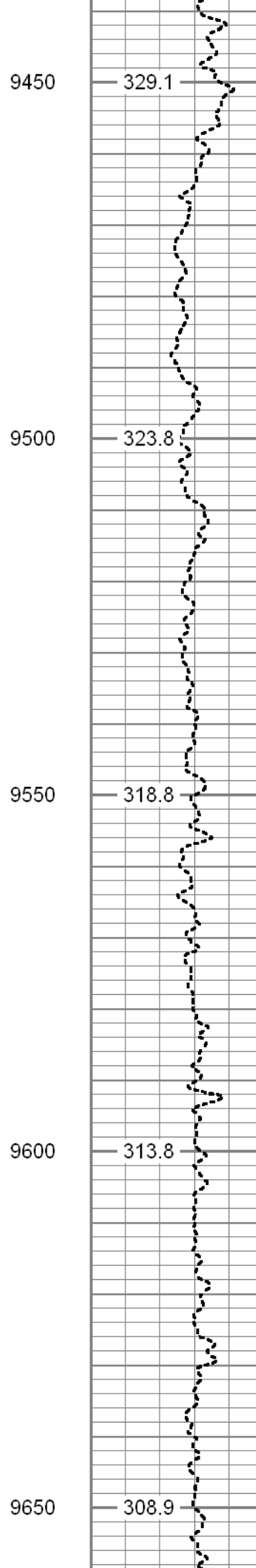
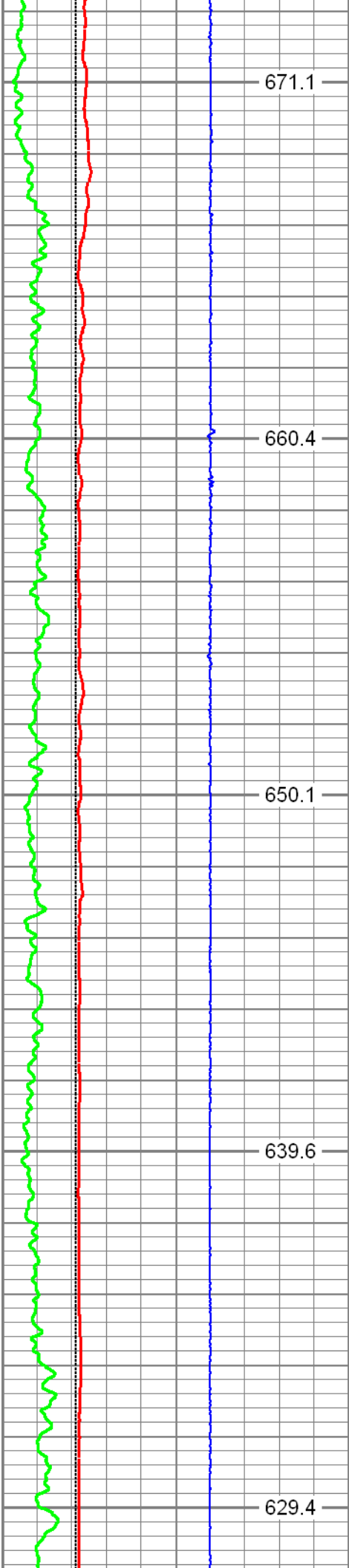
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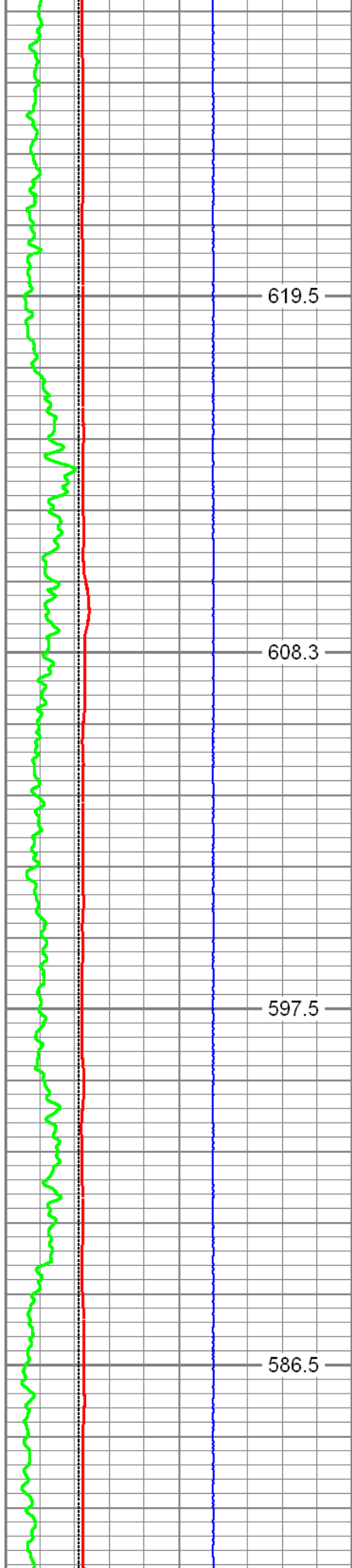
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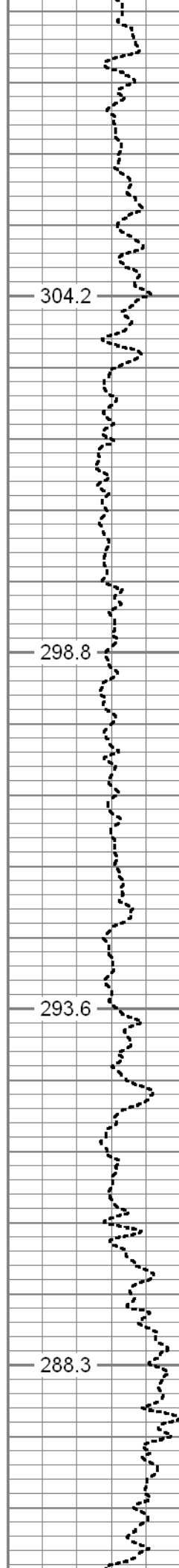
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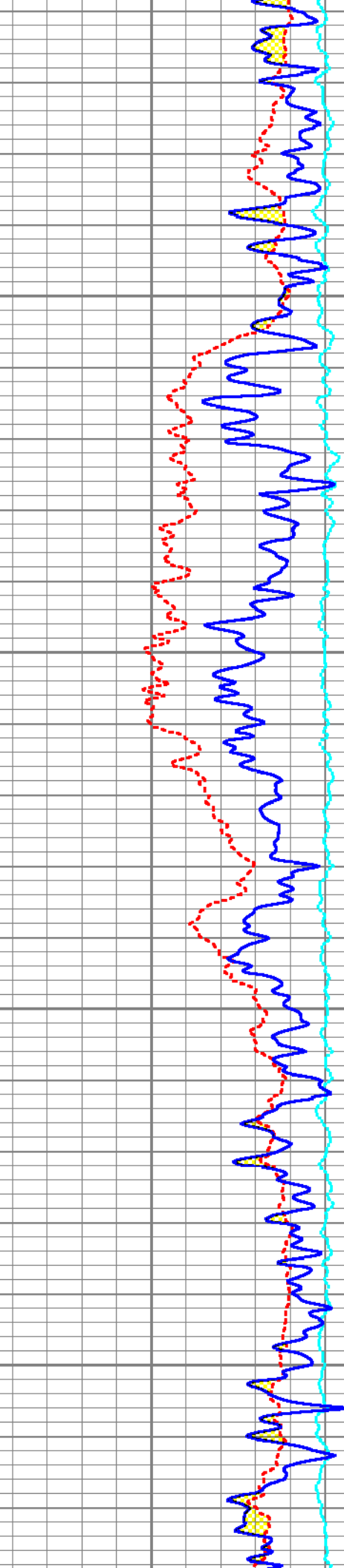


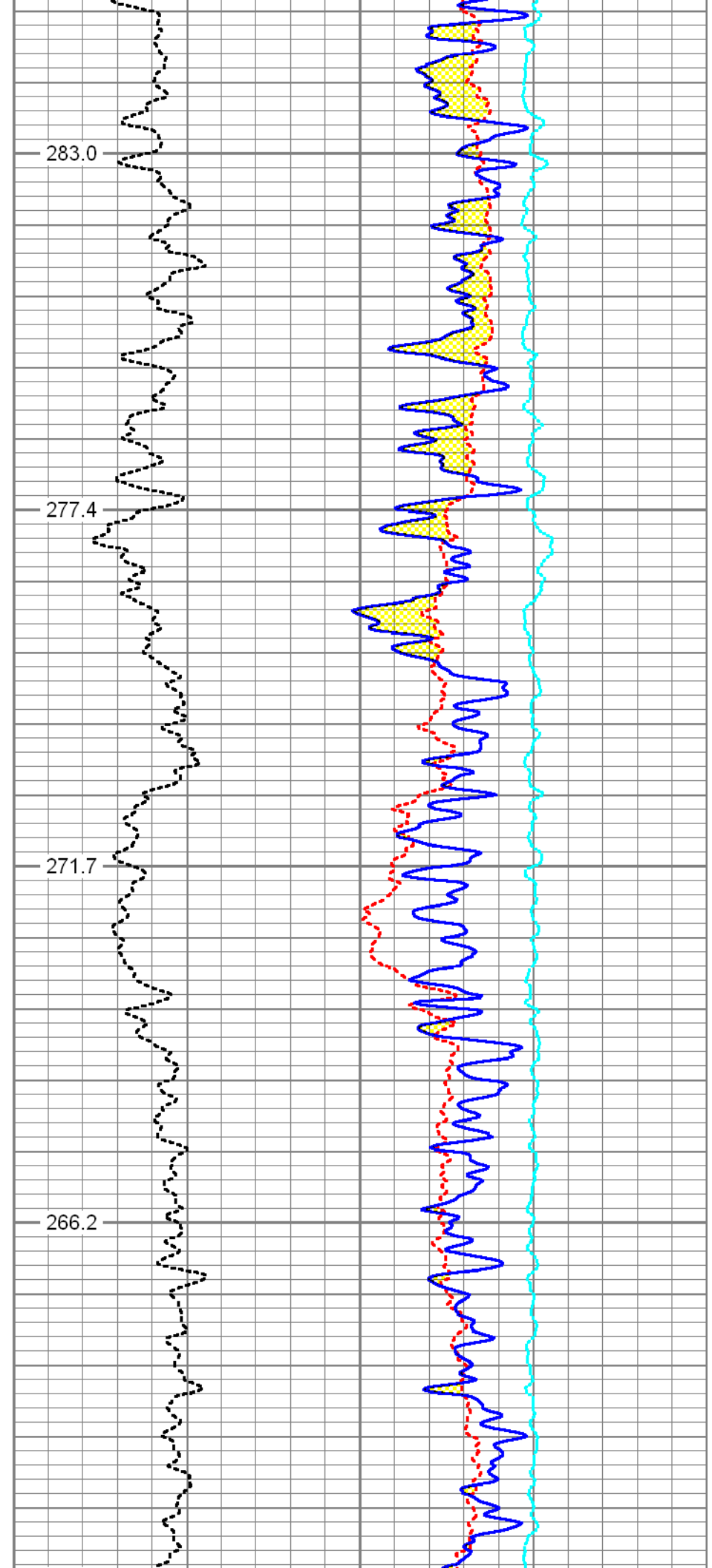
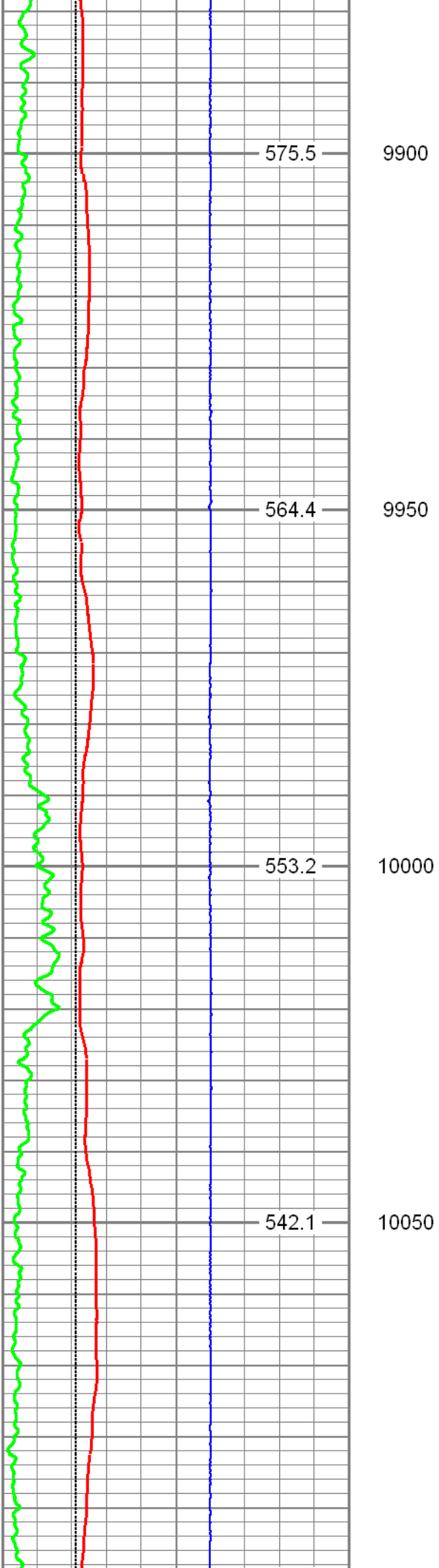
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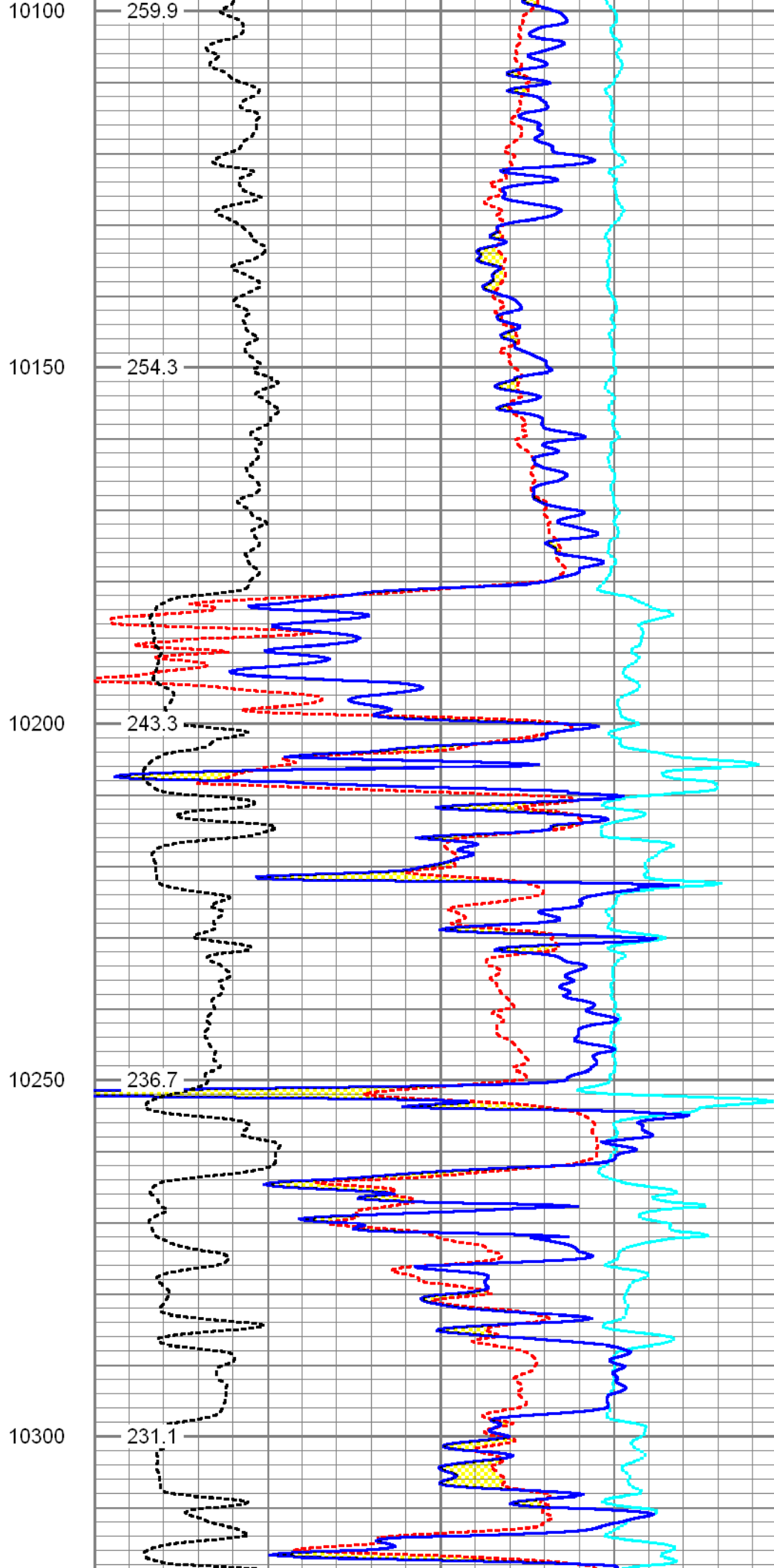
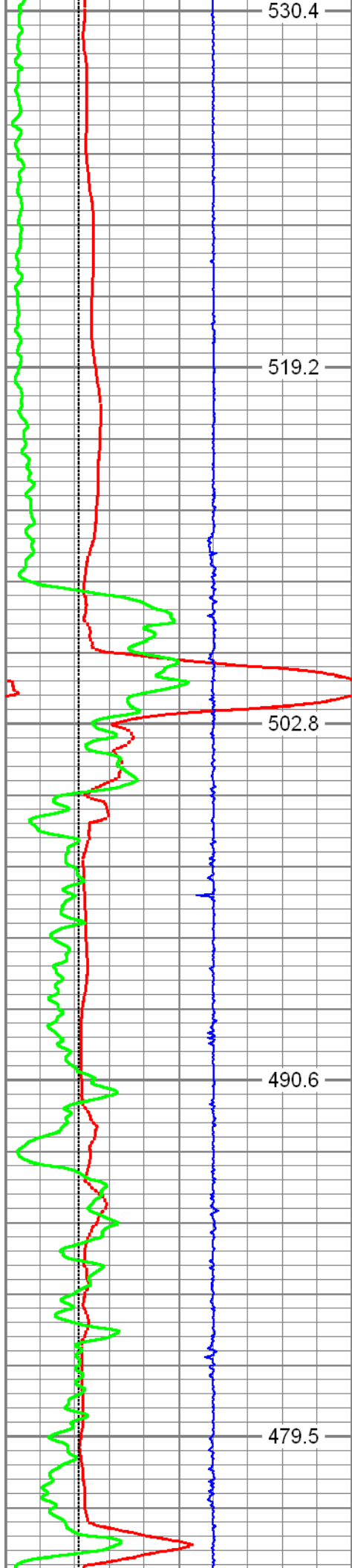
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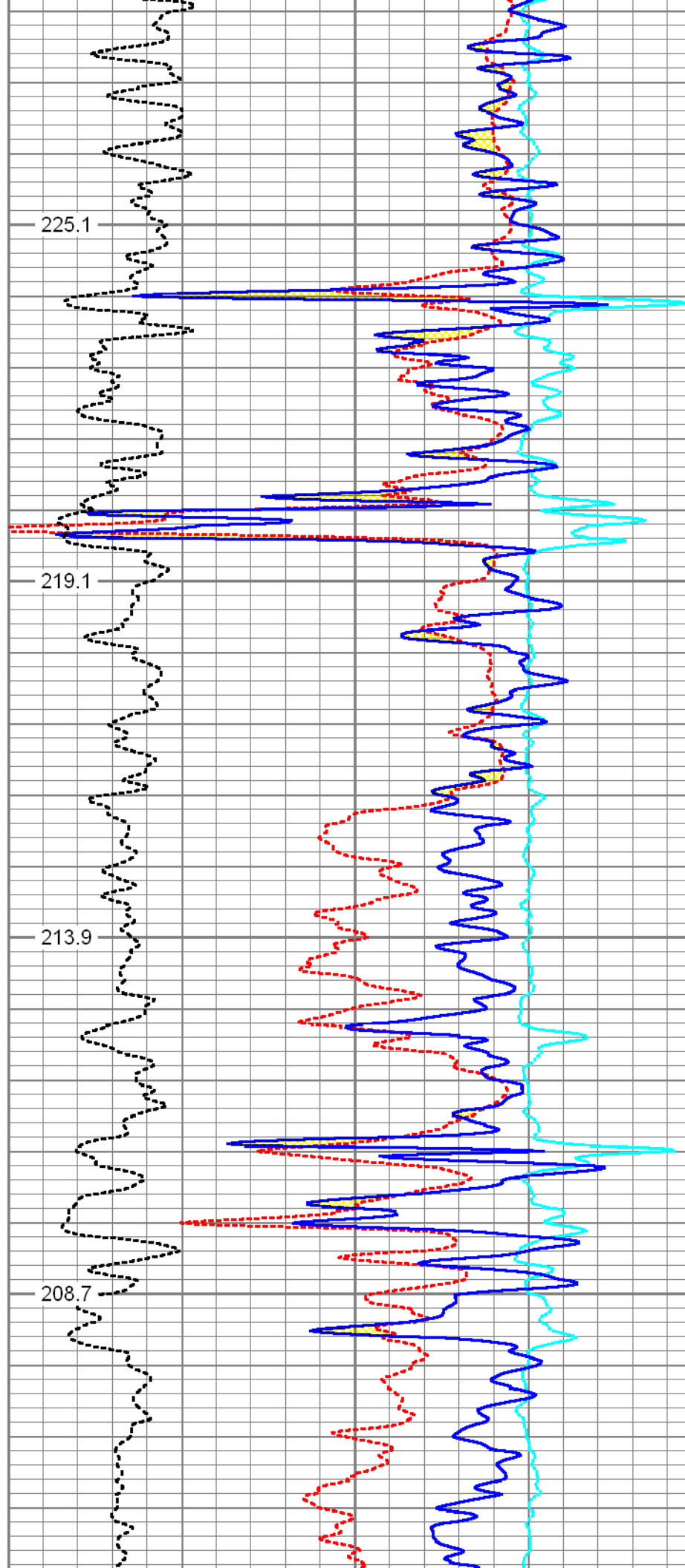
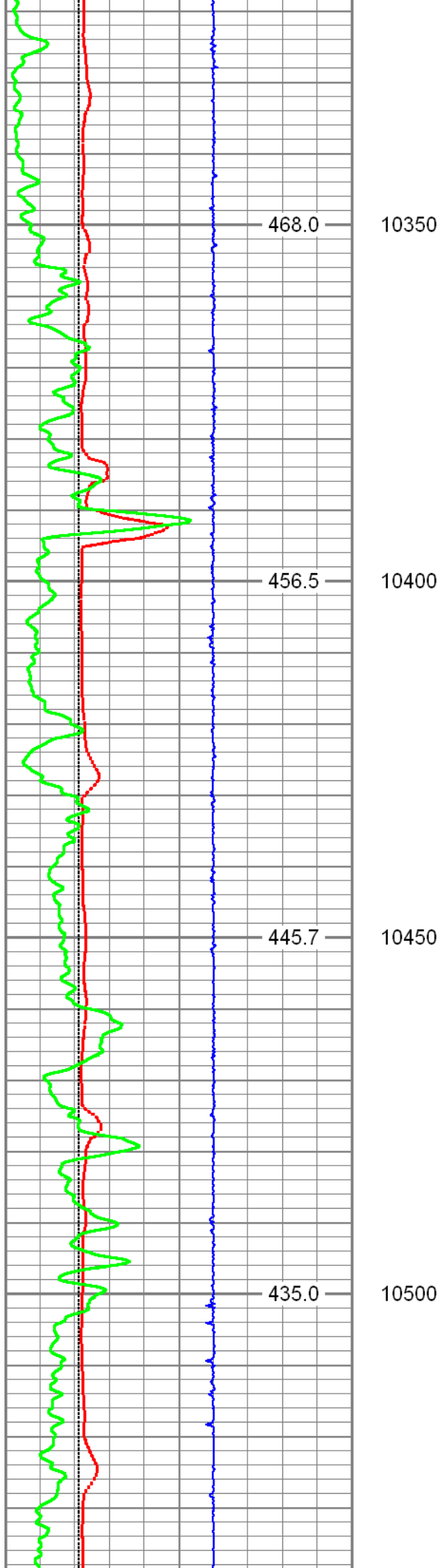
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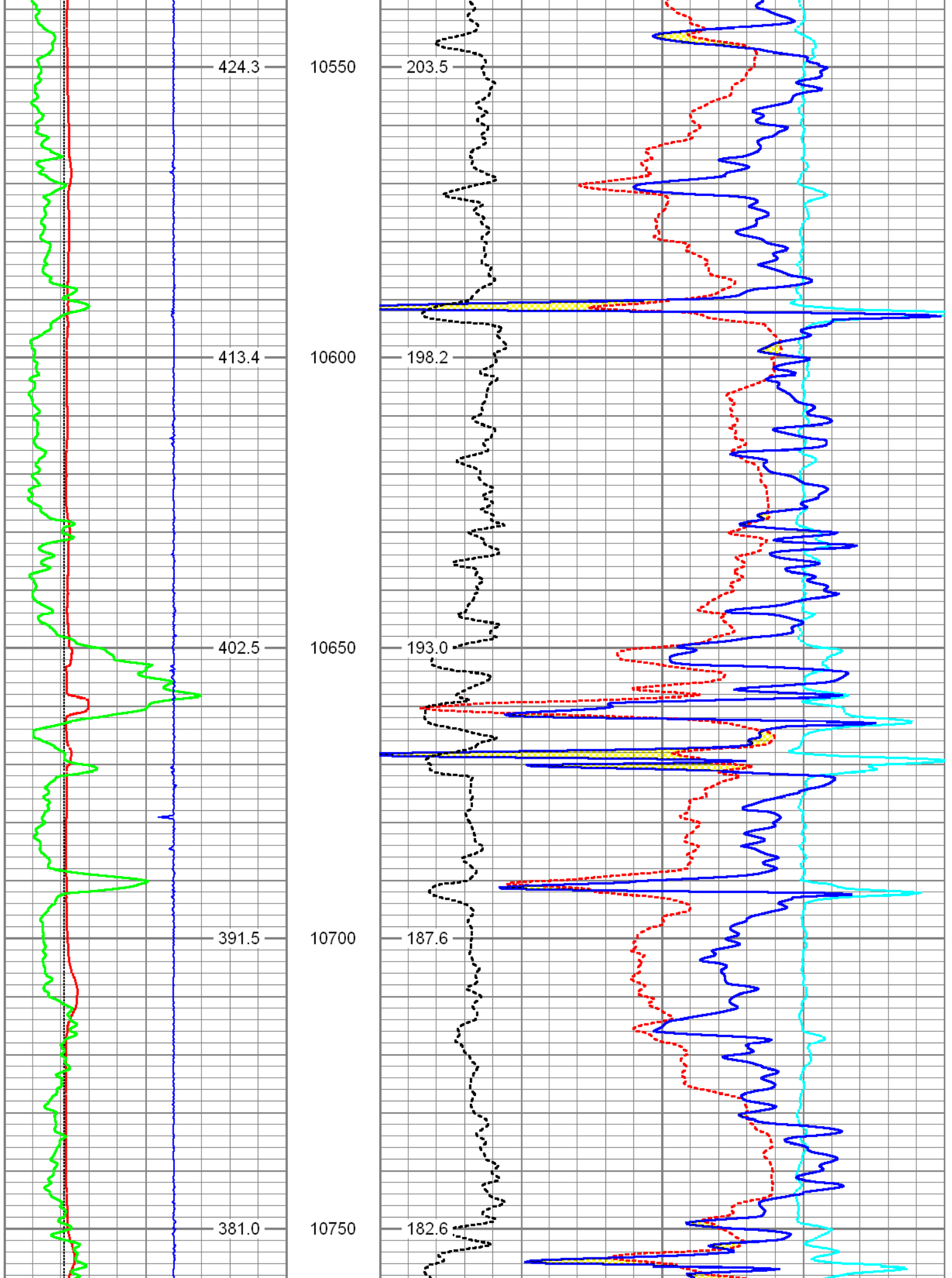
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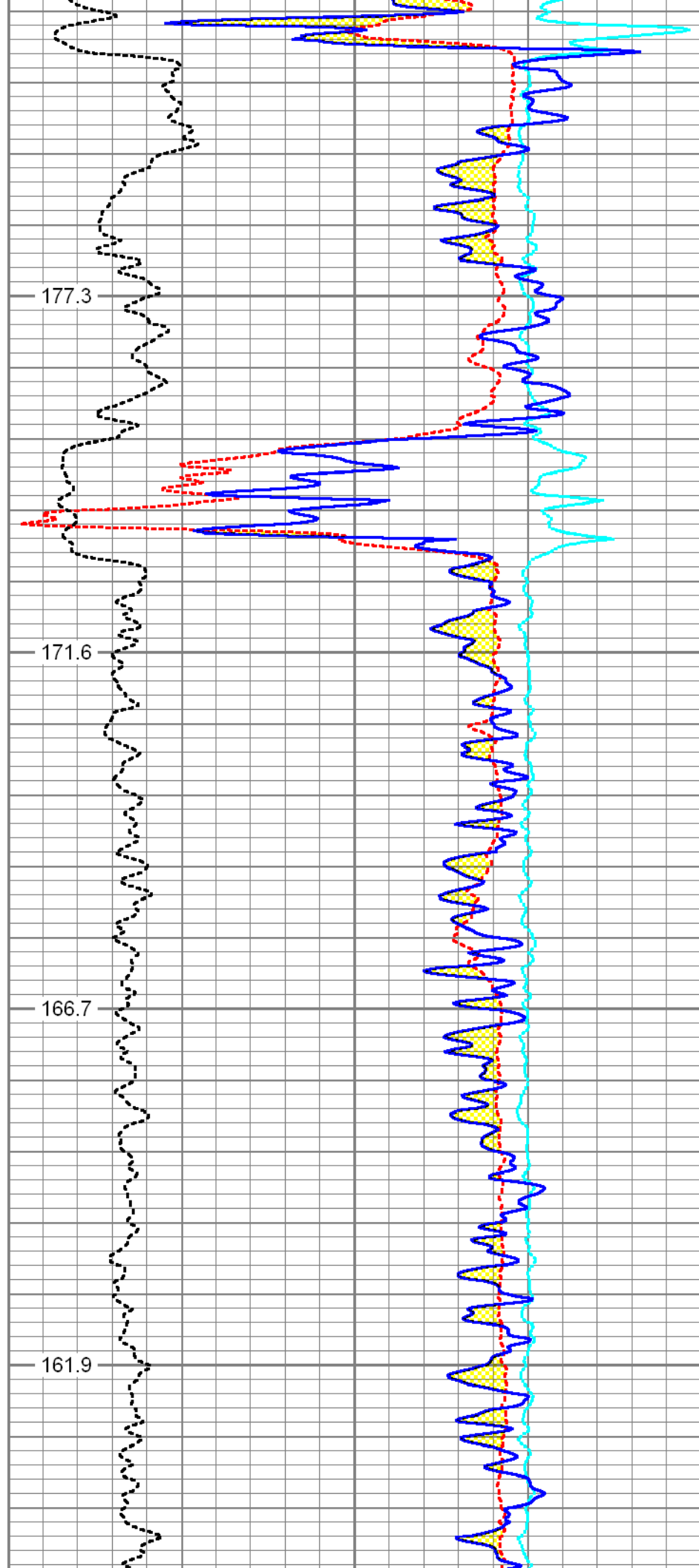
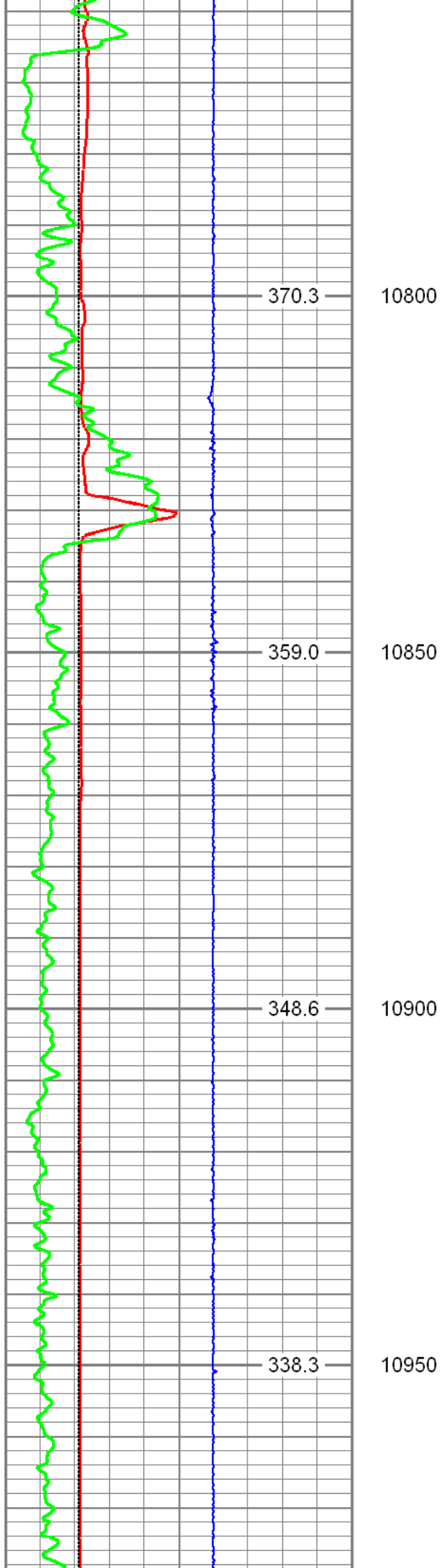


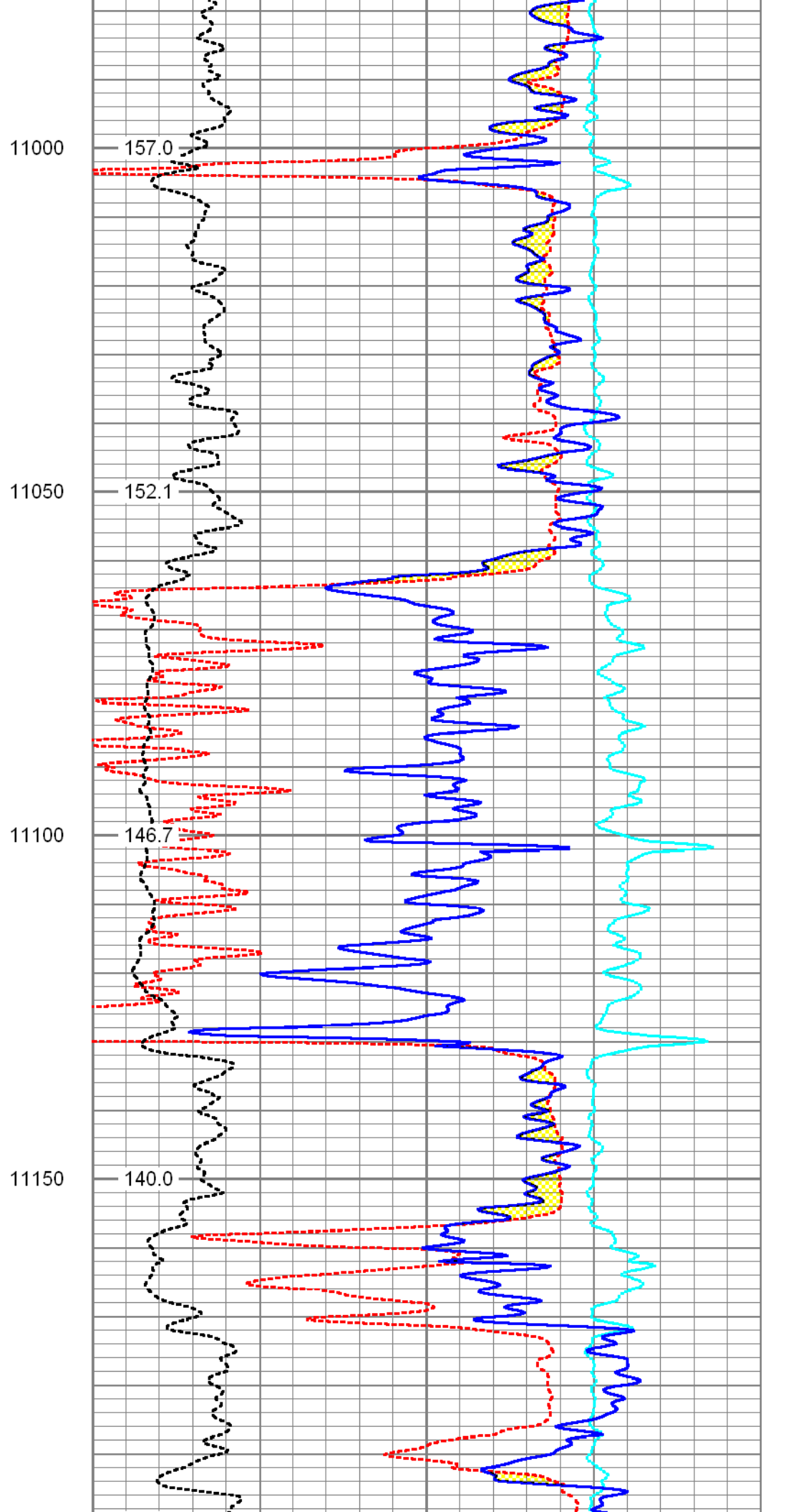
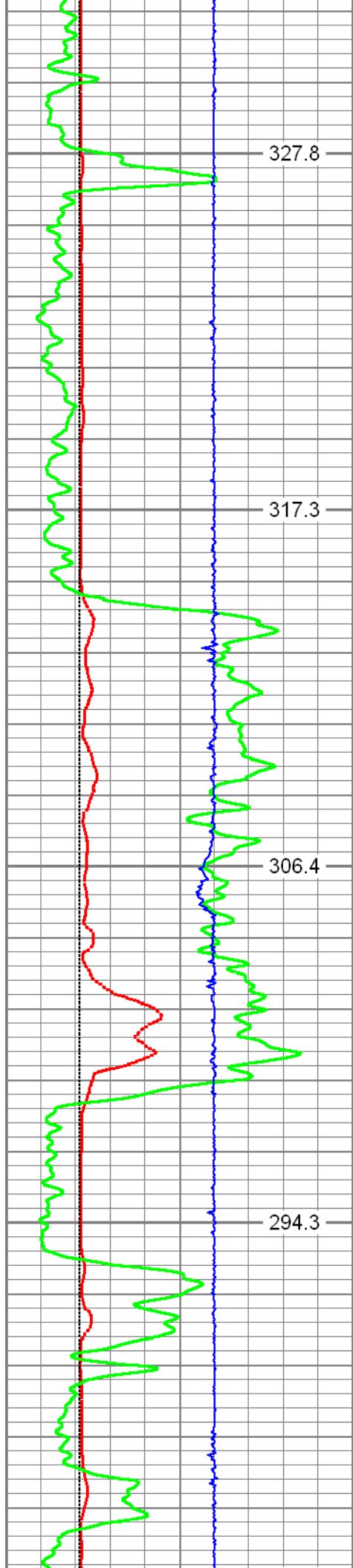


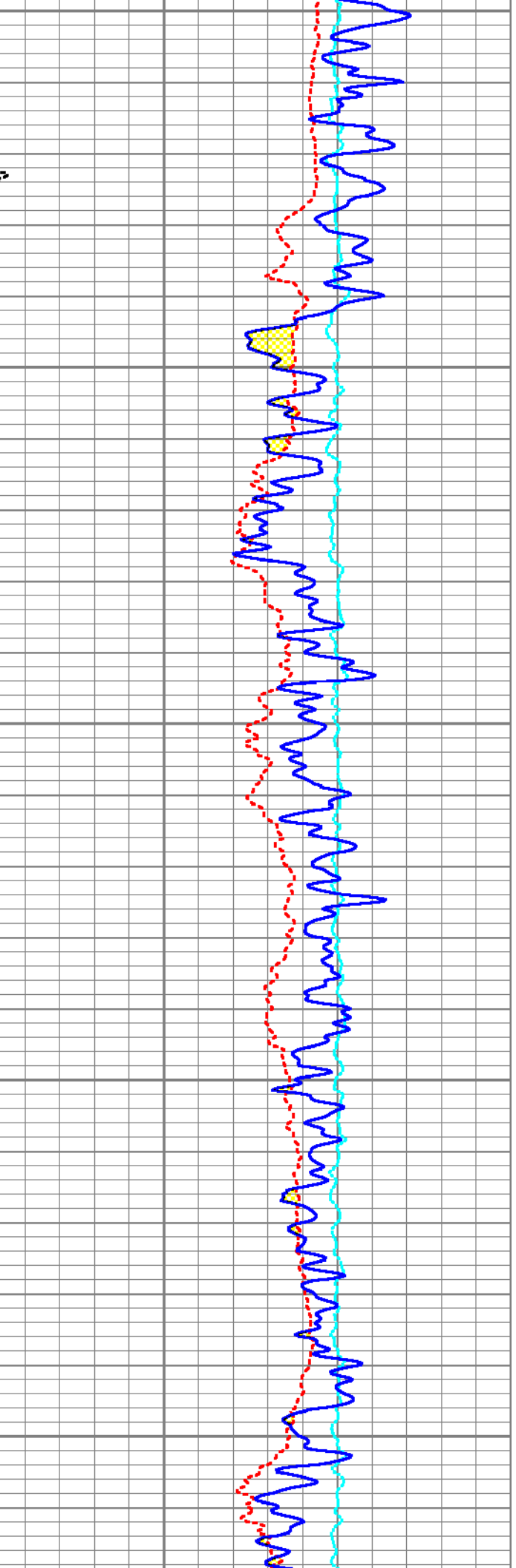
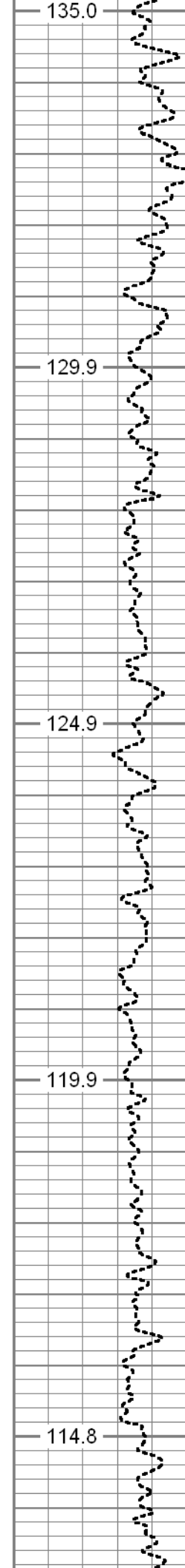
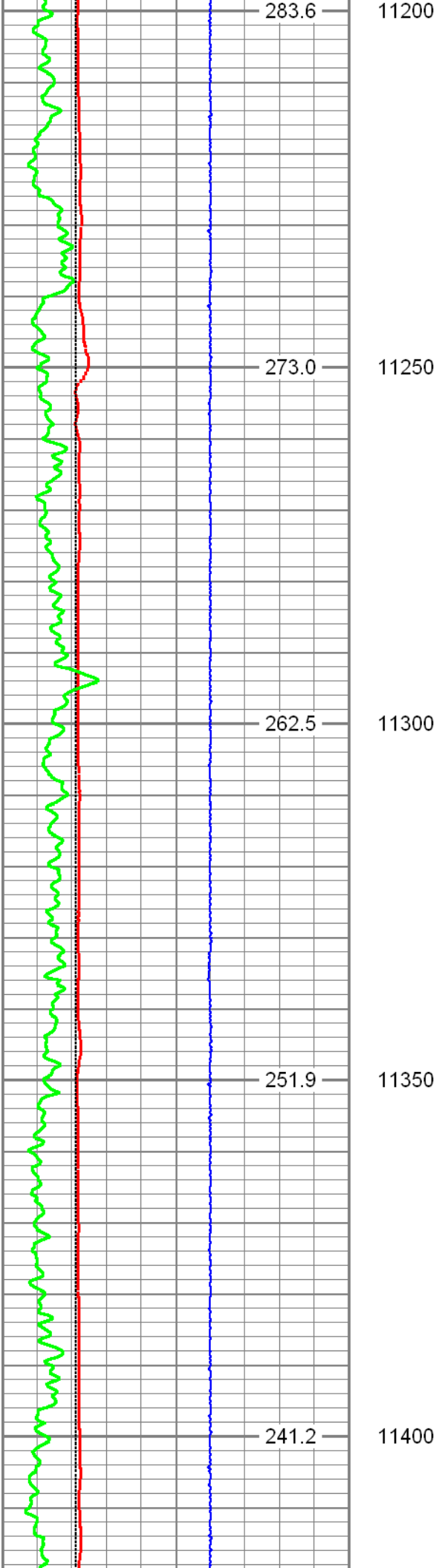


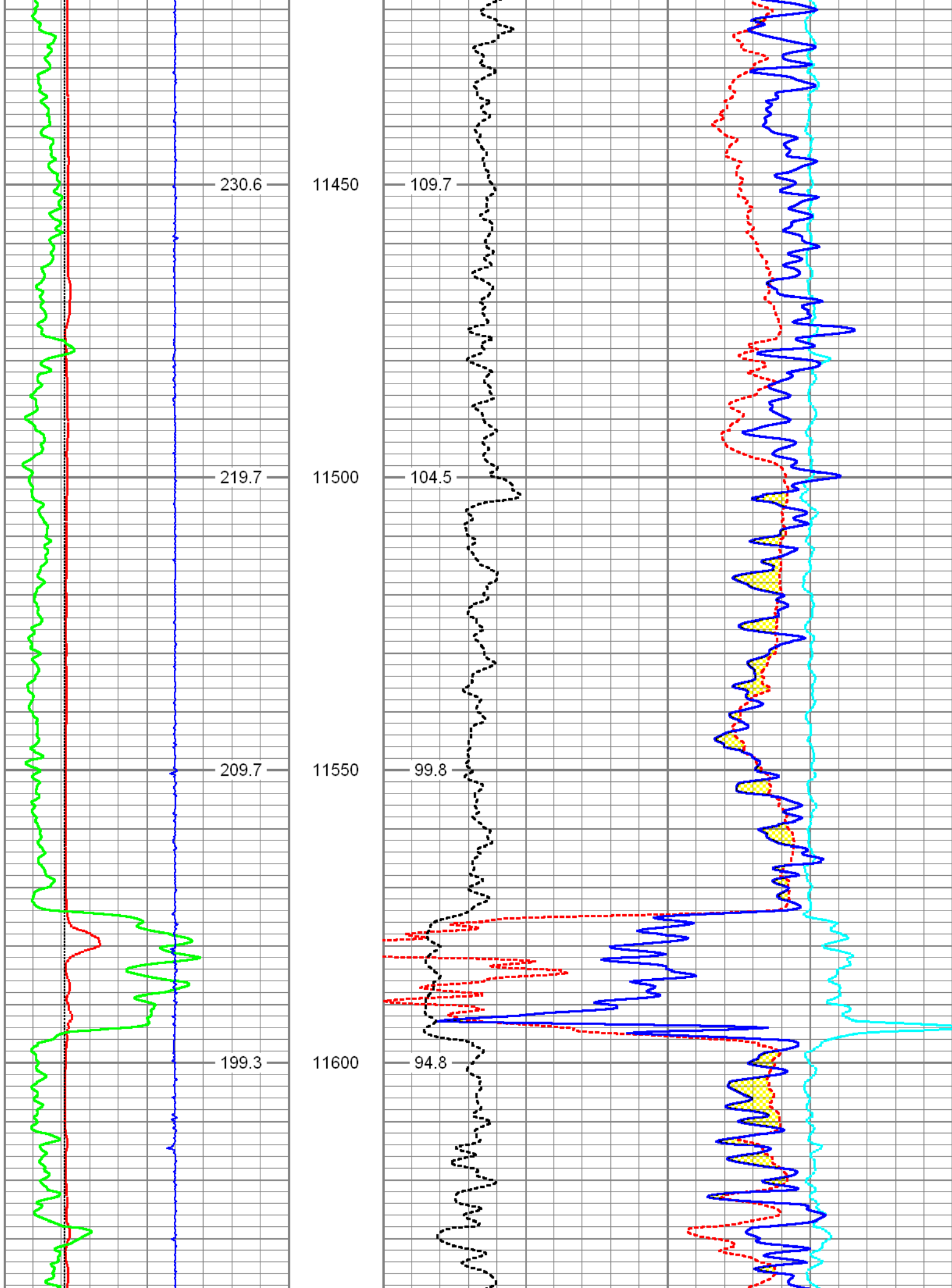


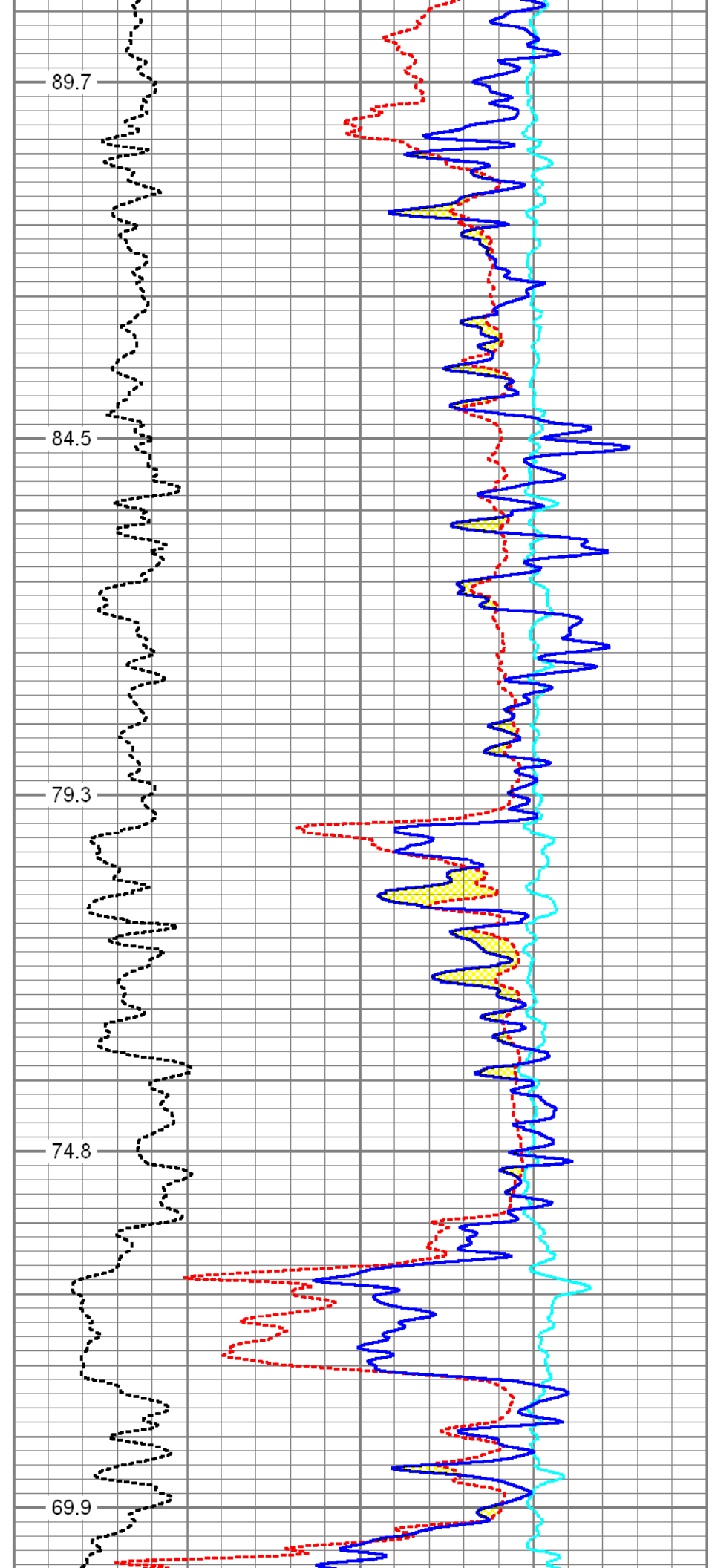
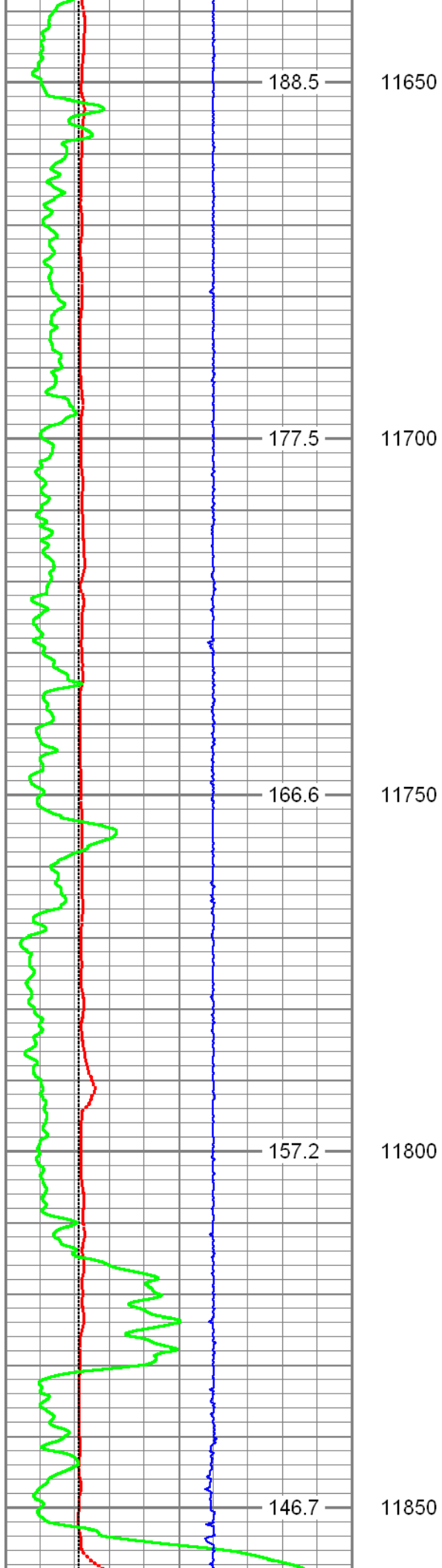


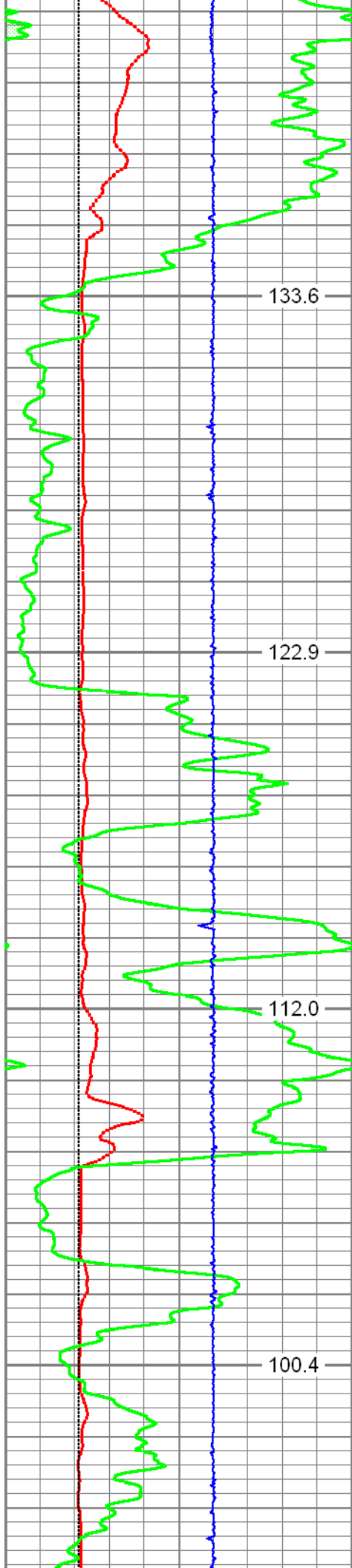




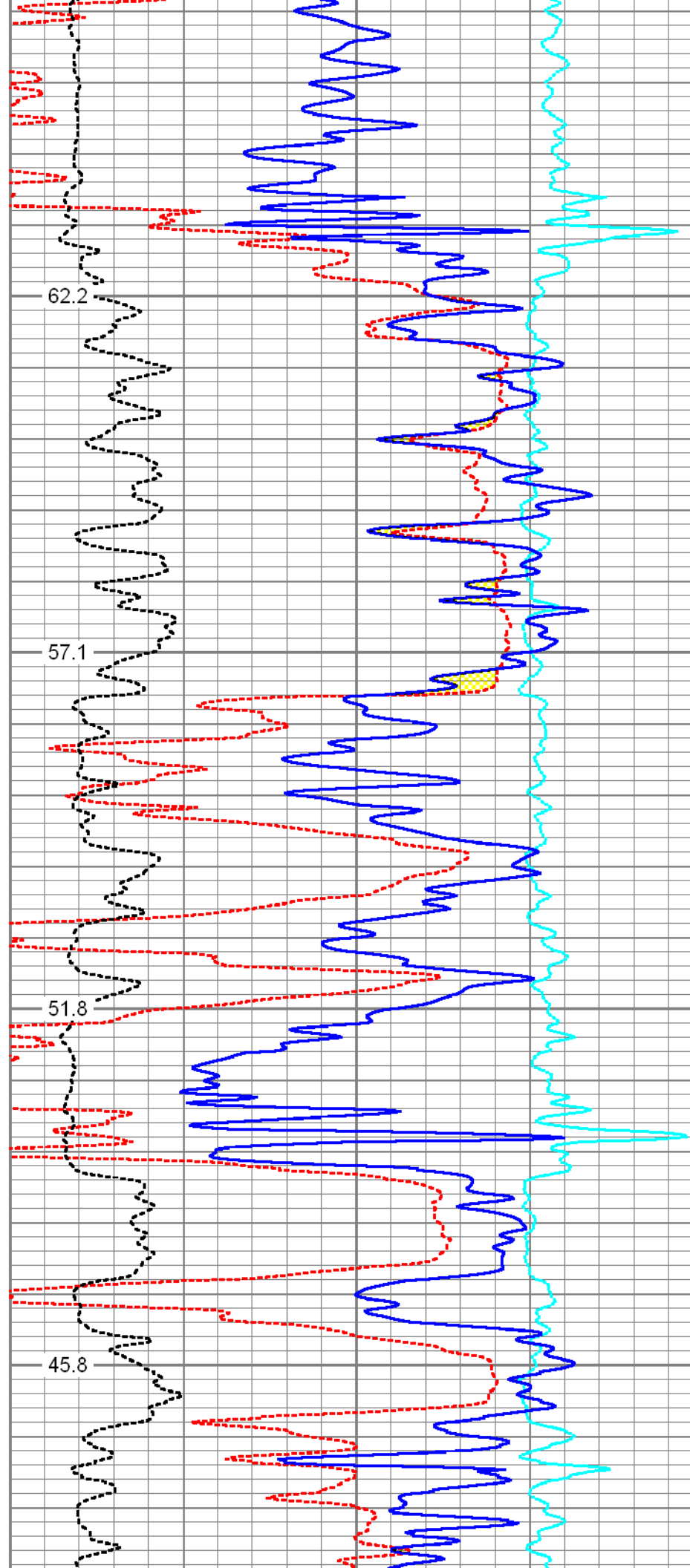


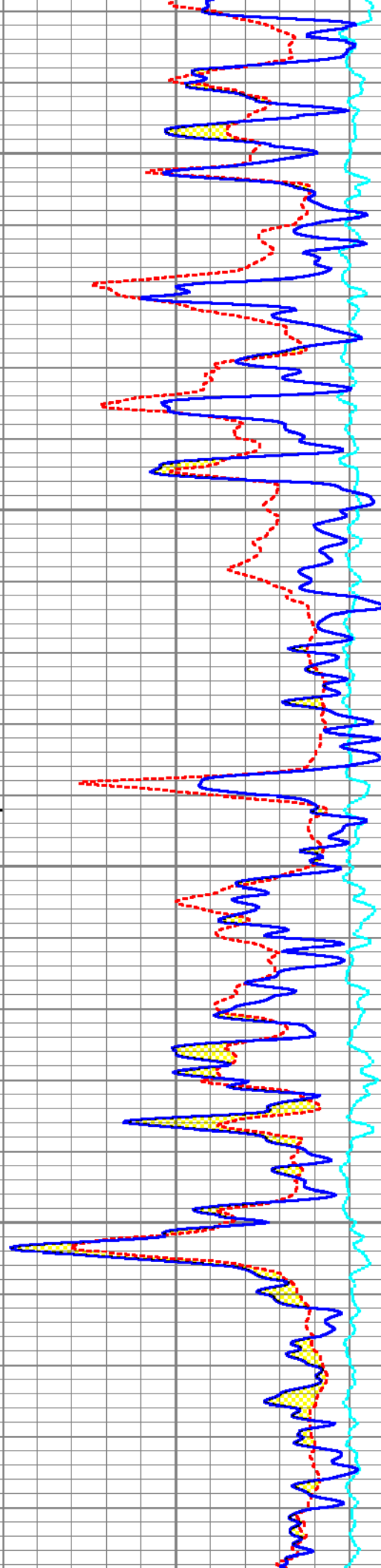
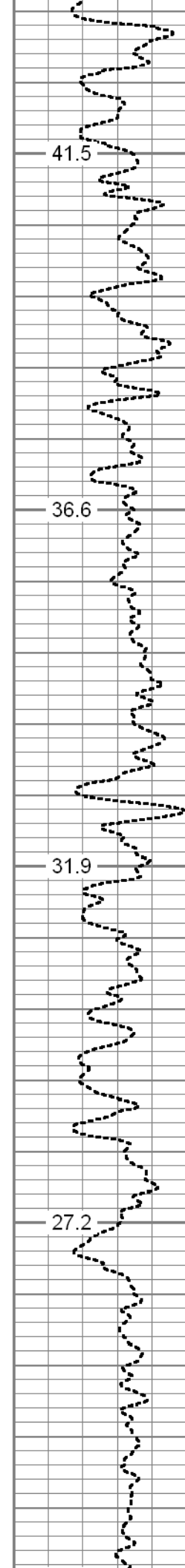
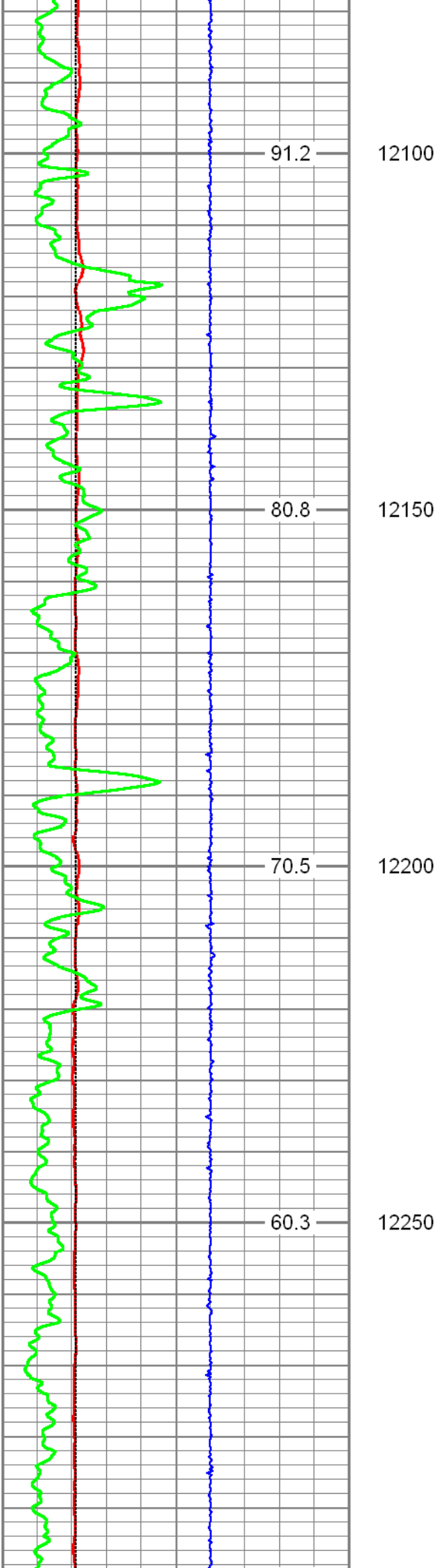


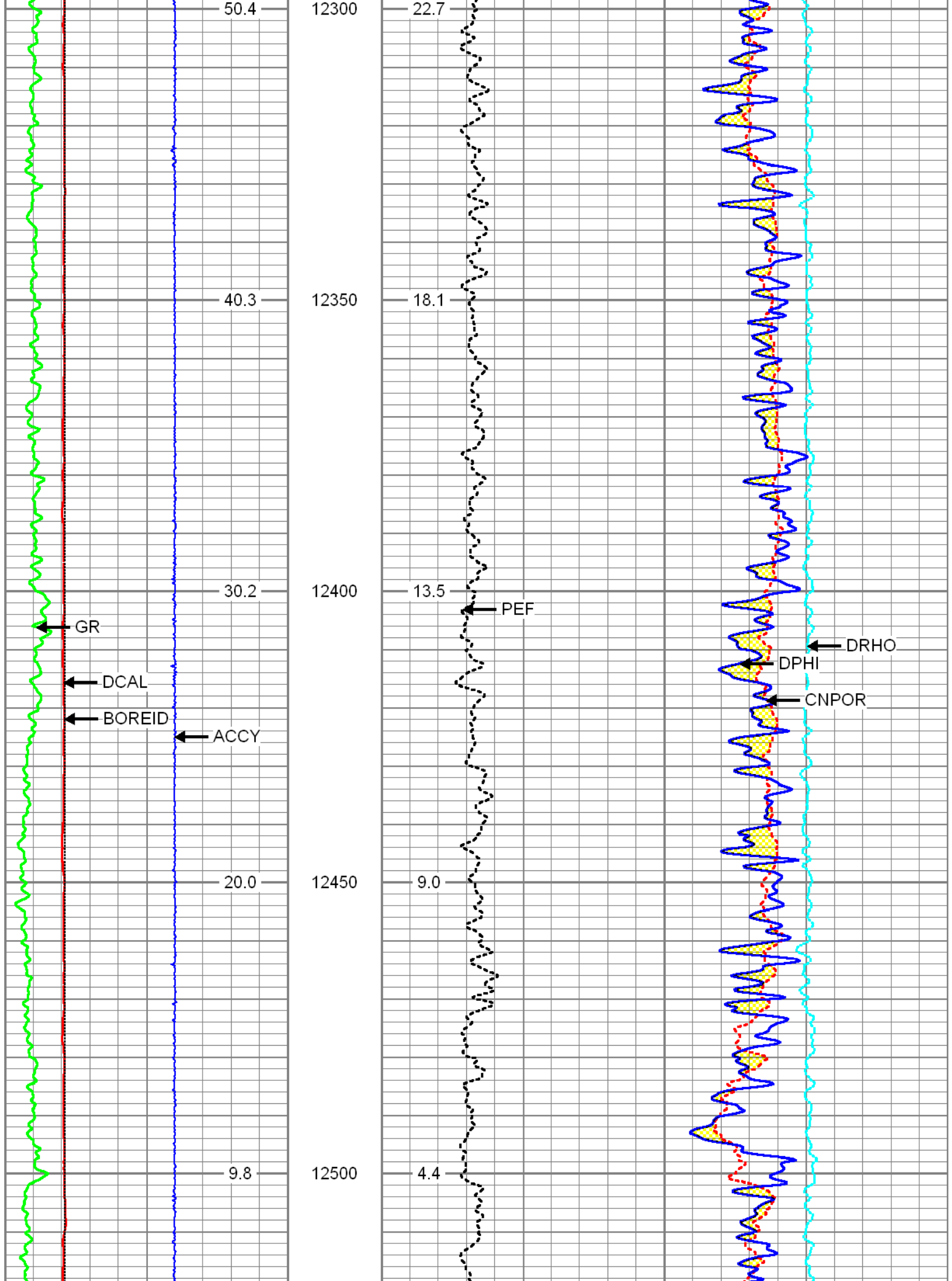


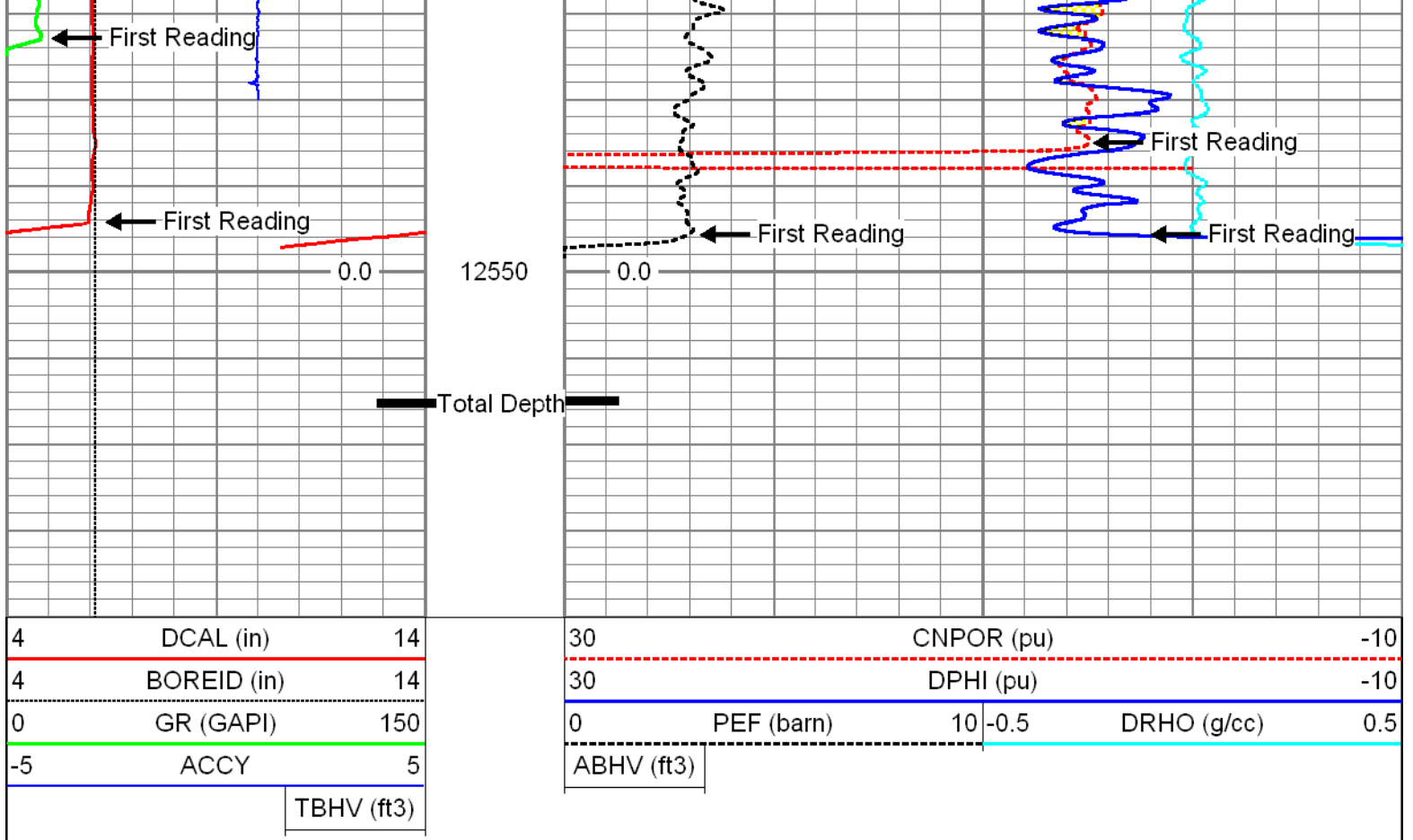


11900
11950
12000
12050









Log Variables

Database: C:\Warrior\Data\hopkins_mem.db
Dataset: field/well/proc1/pass1.4

Top - Bottom

A	BHCOR	BHFL_TYPE	BHFLRES Ohm-m	BHFLRESSRC	BHIDSRC	BOREID in
1	On	WBM	1	MUDCELL	CURVE	6.125
BOTTEMP degF	CASED?	CASEOD in	CASETHCK in	CEMWATERSA kppm	CMNTTHCK in	DNBHC?
151	No	4.5	0	0	0	NO
DPORSEL	FLUIDDEN g/cc	FRMSALIN kppm	LATNOR	M	MATRXDEN g/cc	MUDSALIN kppm
RHOB	1	0	Off	2	2.71	6.4
MudWgt lb/gal	NPORSEL	PEBHC?	PERFS	RESTMPSRC	SO in	SRFTEMP degF
8.5	Limestone	YES	0	INTERNAL	2.5	65
SZCOR	TDEPTH ft	TMPCOR	TOOLPOS			
On	12589	On	Ec-centered			

Calibration Report

Database File: hopkins_mem.db
Dataset Pathname: proc1/pass1.4
Dataset Creation: Tue Apr 10 09:51:08 2012

Tool Model-Serial Number:

PS-PS12R

Shop Calibration Performed:

Sun Mar 18 12:09:00 2012

BASELINE

	R	Expected	X	Expected
Freq 1				
A1	-444.7680	[-500.00, -400.00]	360.4830	[-500.00, 500.00]
A2	-135.8470	[-180.00, -100.00]	342.0540	[-500.00, 500.00]
A3	-28.0414	[-50.00, -10.00]	42.4355	[-500.00, 500.00]
A4	-14.1751	[-30.00, -10.00]	294.5030	[-500.00, 500.00]
A5	-14.4353	[-30.00, -10.00]	137.4160	[-500.00, 500.00]
Freq 2				
A1	-228.6050	[-280.00, -180.00]	202.7520	[-500.00, 500.00]
A2	-87.6561	[-130.00, -50.00]	193.1140	[-500.00, 500.00]
A3	-20.9946	[-50.00, -10.00]	-24.6789	[-500.00, 500.00]
A4	-17.9897	[-30.00, -10.00]	104.9090	[-500.00, 500.00]
A5	-19.2653	[-30.00, -10.00]	-6.0731	[-500.00, 500.00]
Freq 3				
A1	-142.5700	[-180.00, -80.00]	75.3272	[-500.00, 500.00]
A2	-66.4380	[-130.00, -30.00]	98.1865	[-500.00, 500.00]
A3	-16.8818	[-50.00, -10.00]	-76.7036	[-500.00, 500.00]
A4	-19.6149	[-30.00, -10.00]	-18.6520	[-500.00, 500.00]
A5	-21.5785	[-30.00, -10.00]	-110.2220	[-500.00, 500.00]
Freq 4				
A1	-76.0956	[-120.00, -40.00]	-116.4930	[-500.00, 500.00]
A2	-48.5395	[-110.00, -10.00]	-27.2366	[-500.00, 500.00]
A3	-13.2584	[-50.00, -10.00]	-160.1260	[-500.00, 500.00]
A4	-22.7620	[-30.00, -10.00]	-197.5240	[-500.00, 500.00]
A5	-26.7818	[-30.00, -10.00]	-283.3550	[-500.00, 500.00]

CALIBRATION COEFFICIENTS

	R	Expected	X	Expected
Freq 1				
A1	0.9897	[0.95, 1.05]	-0.0006	[-0.05, 0.05]
A2	0.9887	[0.95, 1.05]	0.0016	[-0.05, 0.05]
A3	0.9989	[0.95, 1.05]	-0.0056	[-0.05, 0.05]
A4	0.9874	[0.95, 1.05]	0.0041	[-0.05, 0.05]
A5	0.9954	[0.95, 1.05]	0.0015	[-0.05, 0.05]
Freq 2				
A1	0.9854	[0.95, 1.05]	-0.0082	[-0.05, 0.05]
A2	0.9831	[0.95, 1.05]	-0.0054	[-0.05, 0.05]
A3	0.9872	[0.95, 1.05]	-0.0053	[-0.05, 0.05]
A4	0.9828	[0.95, 1.05]	-0.0033	[-0.05, 0.05]
A5	0.9916	[0.95, 1.05]	-0.0060	[-0.05, 0.05]
Freq 3				
A1	0.9874	[0.95, 1.05]	-0.0027	[-0.05, 0.05]
A2	0.9853	[0.95, 1.05]	-0.0001	[-0.05, 0.05]
A3	0.9890	[0.95, 1.05]	-0.0002	[-0.05, 0.05]
A4	0.9840	[0.95, 1.05]	0.0020	[-0.05, 0.05]
A5	0.9948	[0.95, 1.05]	-0.0004	[-0.05, 0.05]

Freq 4				
A1	0.9894	[0.95, 1.05]	0.0008	[-0.05, 0.05]
A2	0.9867	[0.95, 1.05]	0.0027	[-0.05, 0.05]
A3	0.9922	[0.95, 1.05]	0.0006	[-0.05, 0.05]
A4	0.9862	[0.95, 1.05]	0.0040	[-0.05, 0.05]
A5	1.0046	[0.95, 1.05]	0.0003	[-0.05, 0.05]
Temperature	22.3167 degC			

ThruBit Density Calibration Report

Tool Model-Serial Number: PS-PS30D
Source Number:
Shop Calibration Performed: Thu Apr 05 14:44:07 2012

REFERENCE

	Density	Units
Aluminium	2.607	g/cc
Magnesium	1.752	g/cc

READINGS

Outputs	Counts	Units	Expected
SS1 Background	141.71	cps	[130.00, 170.00]
LS1 Background	144.95	cps	[130.00, 170.00]
LS4 Background	30.13	cps	[27.00, 35.00]
SS1 Aluminium	4901.07	cps	[4500.00, 5500.00]
LS1 Aluminium	896.18	cps	[750.00, 950.00]
LS4 Aluminium	933.10	cps	[843.00, 1068.00]
SS1 Magnesium	8153.24	cps	[7000.00, 9000.00]
LS1 Magnesium	5807.36	cps	[5250.00, 6250.00]
LS1 Al + Fe	766.62	cps	[650.00, 800.00]
LS4 Al + Fe	420.79	cps	[382.00, 471.00]

RESULTS

SS Slope	1.64	[1.52, 1.77]
LS Slope	0.42	[0.38, 0.45]
PEF K Factor	4.635	[3.510, 6.170]
PEF B Factor	-0.504	[-0.700, -0.410]

Caliper Shop Calibration performed: Thu Apr 05 14:44:07 2012

RESULTS

Reference	Reading	Units
12.00	1961.16	in
9.00	2120.27	in
6.00	2286.12	in

DENSITY PRE-SURVEY CHECK Performed: Sat Apr 07 12:37:06 2012

Outputs	Counts	Units	Expected
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Outputs	Counts	Units	Expected
SS1 Background	141.76	cps	[137.46, 145.96]
LS1 Background	146.19	cps	[140.60, 149.30]
LS4 Background	30.74	cps	[28.32, 31.93]

CALIPER PRE-SURVEY CHECK Performed: Sat Apr 07 12:37:34 2012

Reference	Readings	Units	Expected
9.00	9.00	in	[8.80, 9.20]

Compensated Neutron Calibration Report

Tool Model-Serial Number: PS-PS27N
 Source Number:
 Calibration Tank Temperature: 62.1 degF
 Shop Calibration Performed: Thu Mar 22 14:02:19 2012

BACKGROUND MEASUREMENT

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

WATER TANK REFERENCE

Outputs	Measured	Units	Expected
SS Counts	949.1	cps	
LS Counts	32.1	cps	
Tank Ratio Ref	30.9580	SS/LS	
Tank Ratio	29.5972	SS/LS	
Tank Ratio Gain	1.0460		[0.85, 1.15]

ALUMINUM SLEEVE REFERENCE

Outputs	Measured	Units	Expected
SS Counts	10593.8	cps	
LS Counts	1035.0	cps	
Al Ratio Ref	10.797	SS/LS	
Al Ratio	10.706	SS/LS	
Al Ratio Gain	1.01		[0.90, 1.10]
Sleeve Porosity	14.46	pu	

PRE-SURVEY BACKGROUND CHECK Performed: Sat Apr 07 12:42:12 2012

Outputs	Measured	Units	Expected
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Outputs	Measured	Units	Expected
SS Counts	0.6	cps	<10
LS Counts	1.8	cps	<4

Gamma Ray Calibration Report

Tool Model-Serial Number:	PS-PS21T		
Performed:	Thu Mar 22 14:19:49 2012		
Calibrator Value:	166.6	GAPI	
Background Reading:	53.2	cps	
Calibrator Reading:	385.7	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)	
Thrubit	67.59		Cablehead-S	2.31	2.13	5.00	
Thrubit	65.28		Solid Weakpoint				
			PSBDOT	3.87	2.25	35.00	
Thrubit	61.41		HangOff_Tool	5.00	2.38	60.00	
Thrubit	56.41		Swivel	2.25	2.06	25.00	
Thrubit	54.16		10-1	0.75	2.13	3.95	
TBBAT	53.41		TBBAT-A (PS01B)	6.13	2.13	38.20	
			Thrubit Battery				
TBBAT2	47.29		TBBAT2-A (PS13B)	6.13	2.13	40.00	
			Thrubit Battery				
TMG	41.16		TMG-PS (PS21T)	ThruBit Telemetry Gamma Ray	6.13	2.13	45.00
GR	41.04						
GRTEMP	40.20						
Thrubit	35.04		Decentralizer	4.50	2.13	70.00	

CNLSC	28.60		Decentralizer (Small)			
			TBN-PS (PS27N) ThruBit Neutron	4.77	2.13	63.00
			TBD-PS (PS30D) ThruBit Density	10.48	2.13	91.00
LSW1	18.04					
DCAL	17.13					
A1_P	10.60					
A2_P	10.10					
A3_P	9.35					
A4_P	8.35		TBI-PS (PS12R) ThruBit Induction	15.29	2.13	94.00
A5_P	6.60					

Dataset: hopkins_mem.db: field/well/proc1/pass1.4
 Total Length: 67.59 ft
 Total Weight: 570.15 lb
 O.D.: 2.38 in



Company SANDRIDGE ENERGY
 Well HOPKINS 1-14H
 Field KANSAS / WALDRON
 County HARPER
 State KANSAS