



LOGGING SOLUTIONS

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

Company SANDRIDGE ENERGY, INC.
Well BRAD 1-12H
Field BOUSE
County HARPER
State KANSAS

Company SANDRIDGE ENERGY, INC.
Well BRAD 1-12H
Field BOUSE
County HARPER State KANSAS

Location: API #: 1507721795000
200' FSL & 1980' FWL OF
SEC 12 TWP 35S RGE 8W
Permanent Datum G.L. Elevation 1287'
Log Measured From K.B. @15' ABOVE PERM DATUM
Drilling Measured From K.B.
Other Services
THRUBIT
PORTAL
BIT
Elevation
K.B. 1302'
D.F. 1302'
G.L. 1287'

Date	13-FEB-2012
Run Number	ONE
Depth Driller	11754'
Depth Logger	11711'
Bottom Logged Interval	11700'
Top Log Interval	3000'
Casing Driller	5178'
Casing Logger	5171'
Bit Size	6.125"
Type Fluid in Hole	WBM
Density / Viscosity	8.2 / 27
pH / Fluid Loss	10 / 8
Source of Sample	MUD PIT
Rm @ Meas. Temp	2.2 OHM @ 109 DEGF
Rmf @ Meas. Temp	1.65 OHM @ 109 DEGF
Rmc @ Meas. Temp	2.75 OHM @ 109 DEGF
Source of Rmf / Rmc	CALCULATED
Rm @ BHT	1.8 OHM @ 140 DEGF
Time Circulation Stopped	05:00 12-FEB-2012
Time Logger on Bottom	05:45 12-FEB-2012
Maximum Recorded Temperature	140 DEGF
Equipment Number	T006
Location	TYLER
Recorded By	ROBERT KENNEDY
Witnessed By	T. ALCORN

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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

HORIZONTAL MEMORY PUMPDOWN BIT DEPTH 11662', LOGGED TO 3000 '
ALL SCALES AND PRESENTATIONS PER CLIENT REQUEST
LIMESTONE MATRIX, 2.71 g/cc USED FOR POROSITY MEASUREMENTS
TOOLSTRING RAN WITH DECENTRALIZER AND SWIVEL
TBHV REPRESENTS TOTAL BOREHOLE VOLUME, ft³
ABHV REPRESENTS ANNULAR HOLE VOLUME, CALCULATED FOR 4.5 CSG ft³
DEPTH REFERENCED TO BAKER HUGHS MWD LOG DATED 11-FEB-2012 AND THRUBIT DOWNLOG
10 INCH INDUCTION CURVE REMOVED FROM LOG

RIG: UNIT 310

CREW: R. KENNEDY, B. WILSON, B. CROSS

Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	ONE
Serial No.	PS29T	Serial No.	PS28N	Serial No.	PS26D	Serial No.	PS25R
Model No.	TMG	Model No.	TBN	Model No.	TBD	Model No.	TBAI
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			
MERGE1	11711'	3000'		30			

	GAMMA RAY		NEUTRON		DENSITY		INDUCTION	
Pass	Scale		Scale		Scale		Scale	
No.	L	R	L	R	L	R	L	L
ONE	0	150	30	-10	30	-10	0.2	2000

DIRECTIONAL INFORMATION

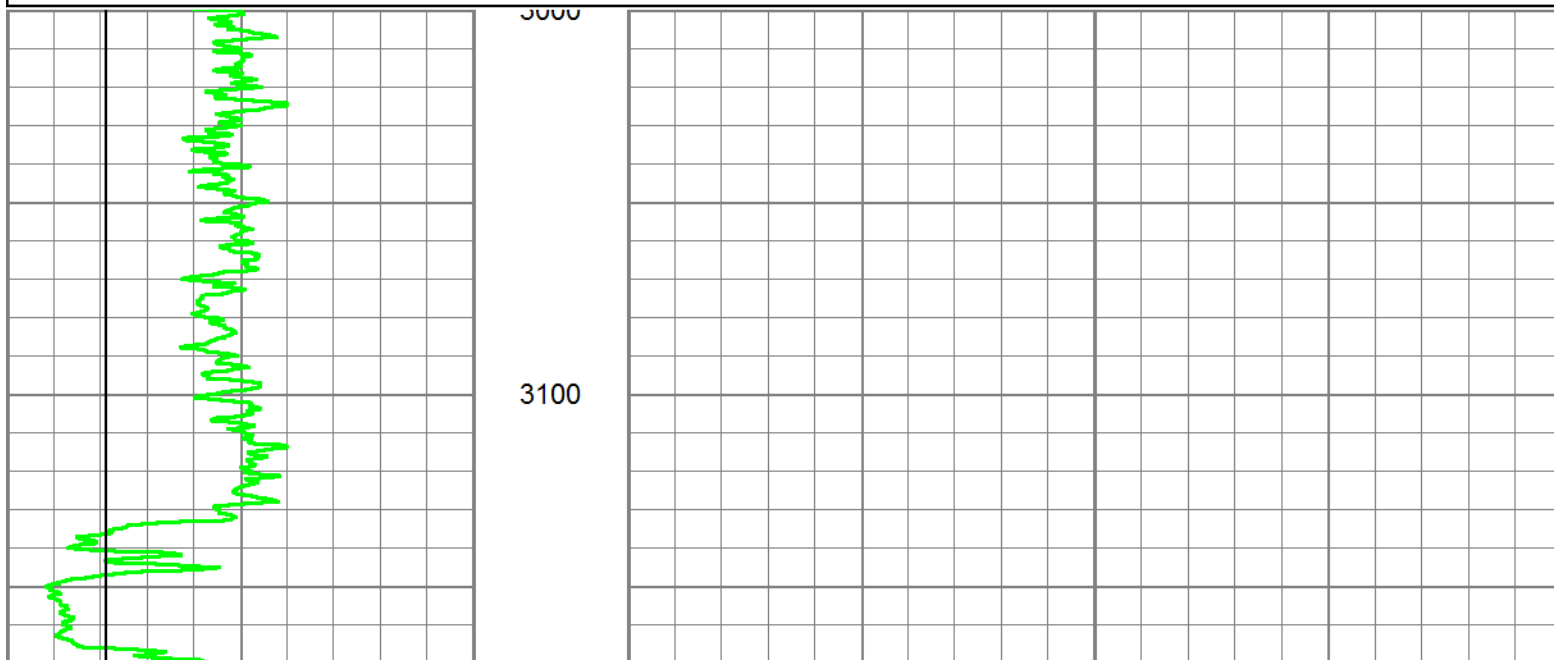
Maximum Deviation	90.8	deg. @	11754'	KOP	4003'	
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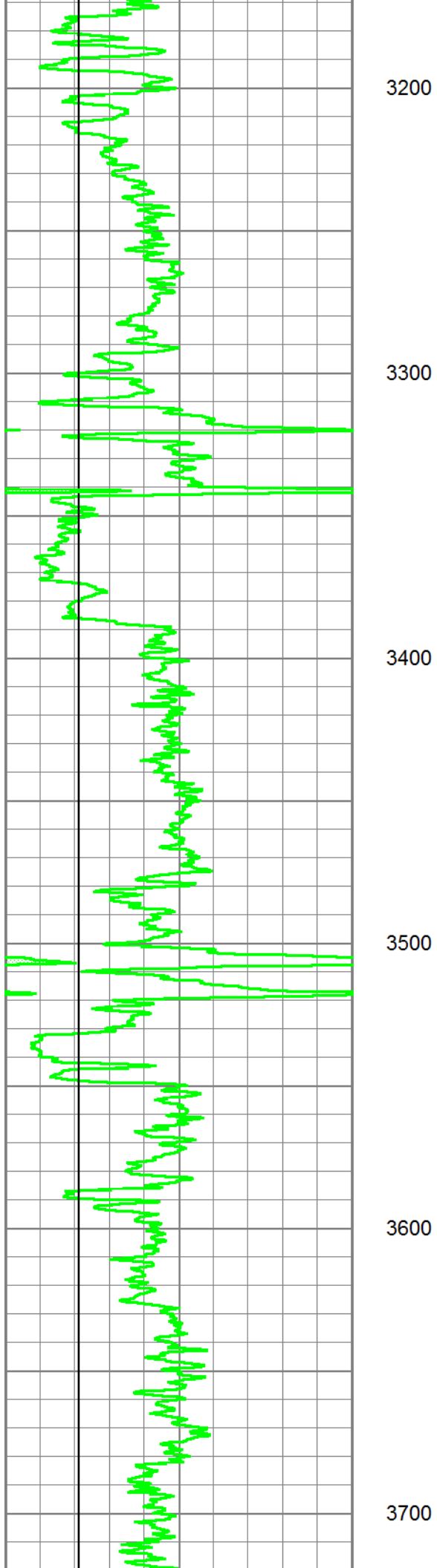


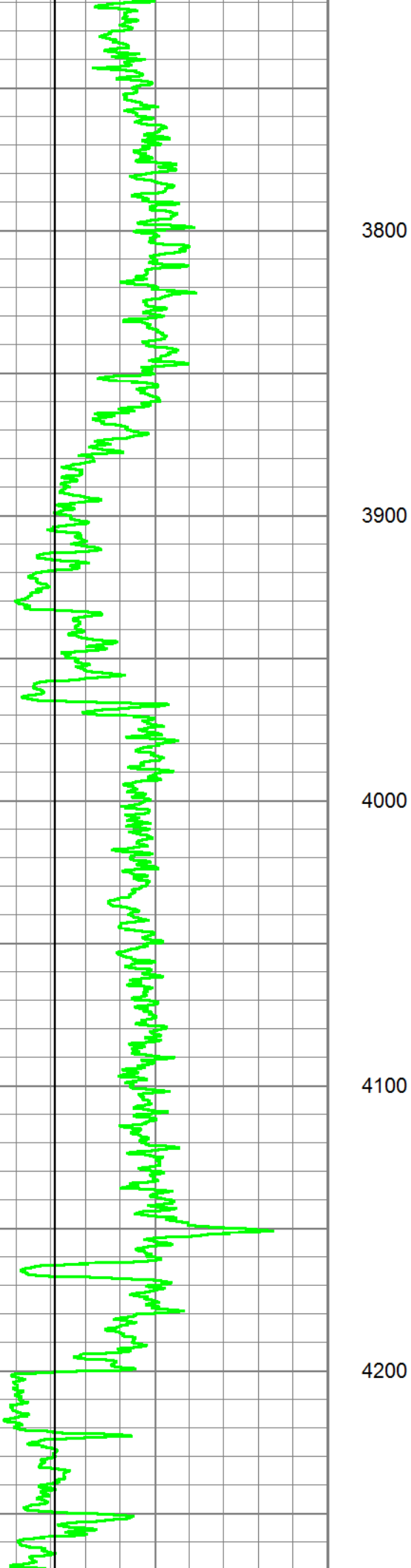
MAIN PASS

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 Presentation Format: sand2n
 Dataset Creation: Mon Feb 13 22:42:12 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						







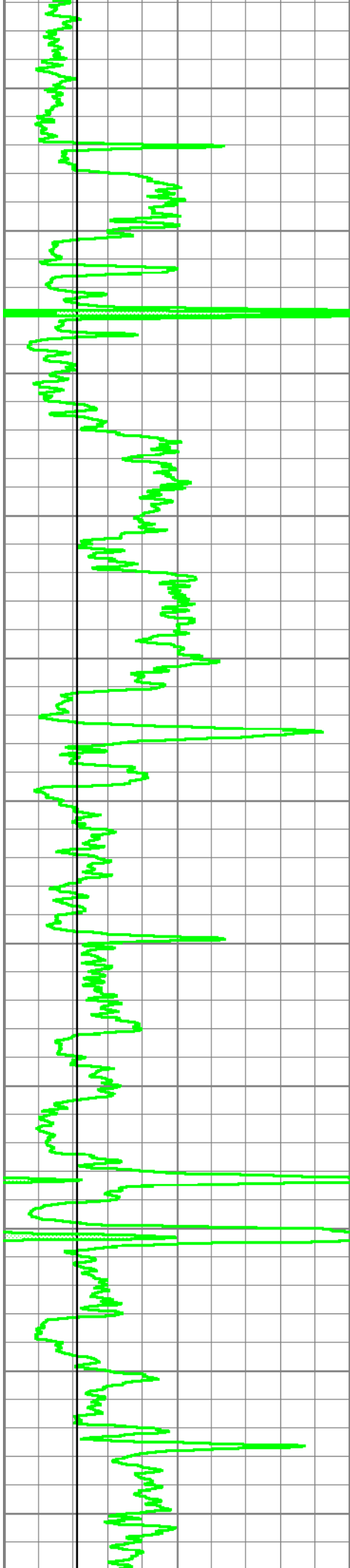
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4000

4100

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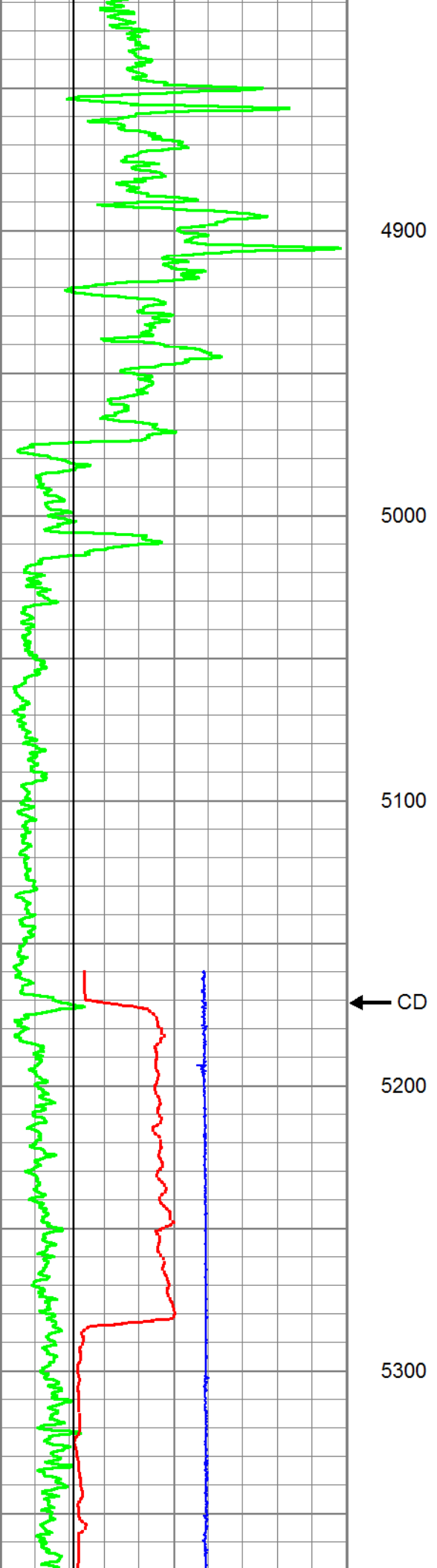
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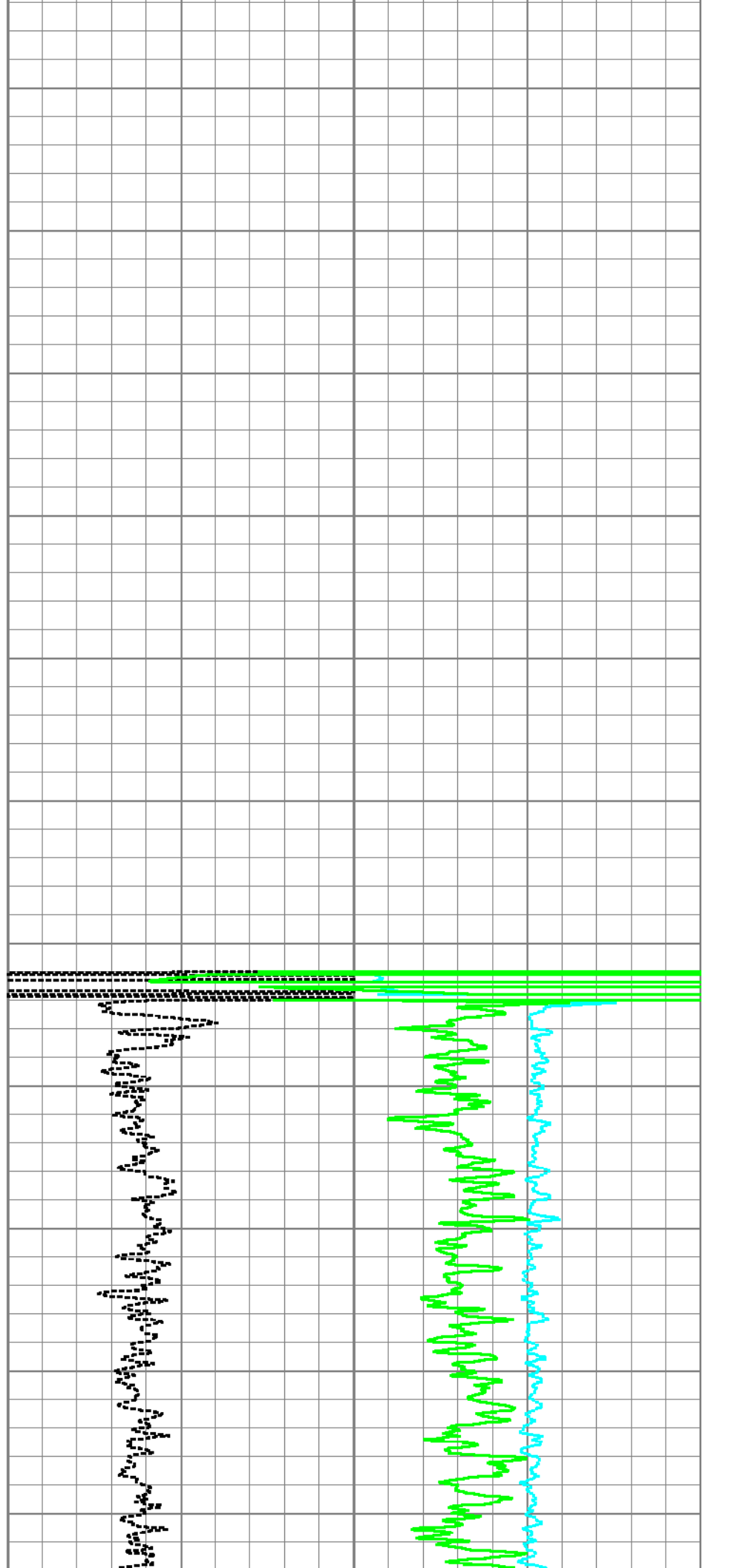
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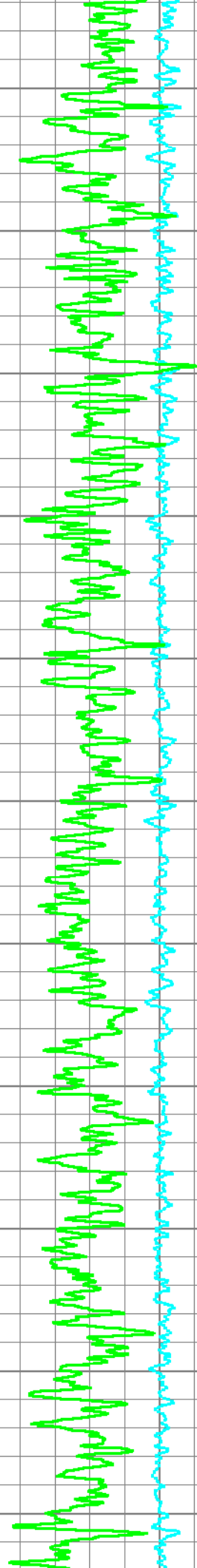
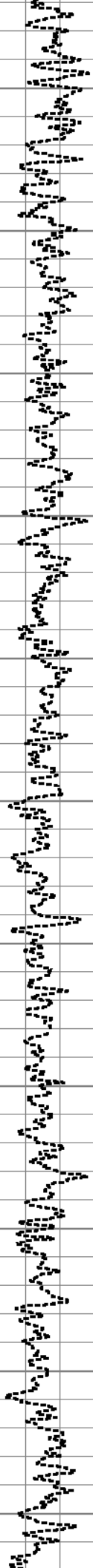
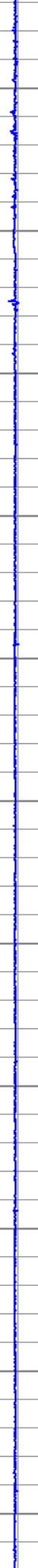
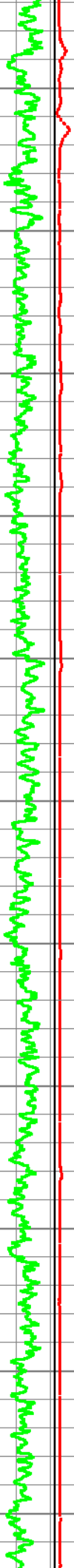
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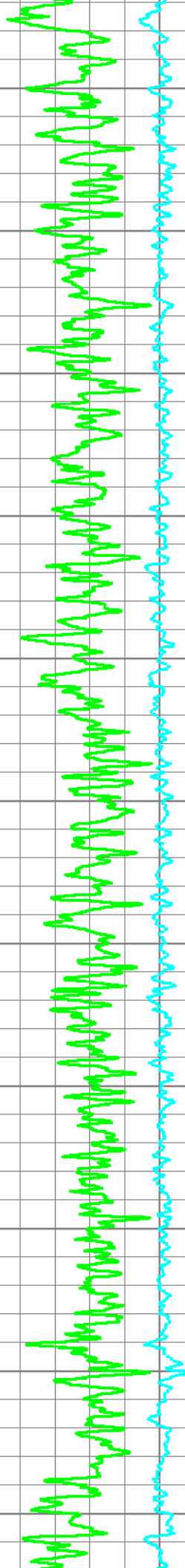
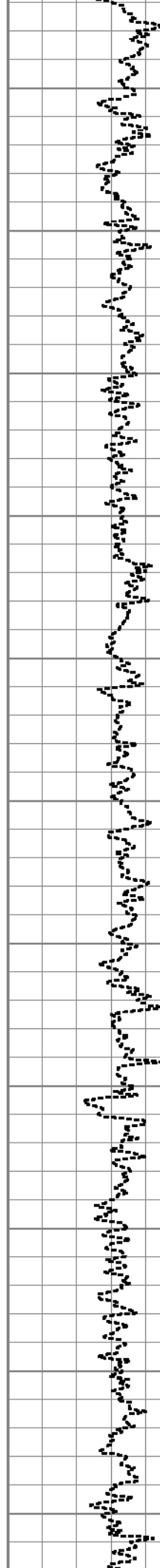
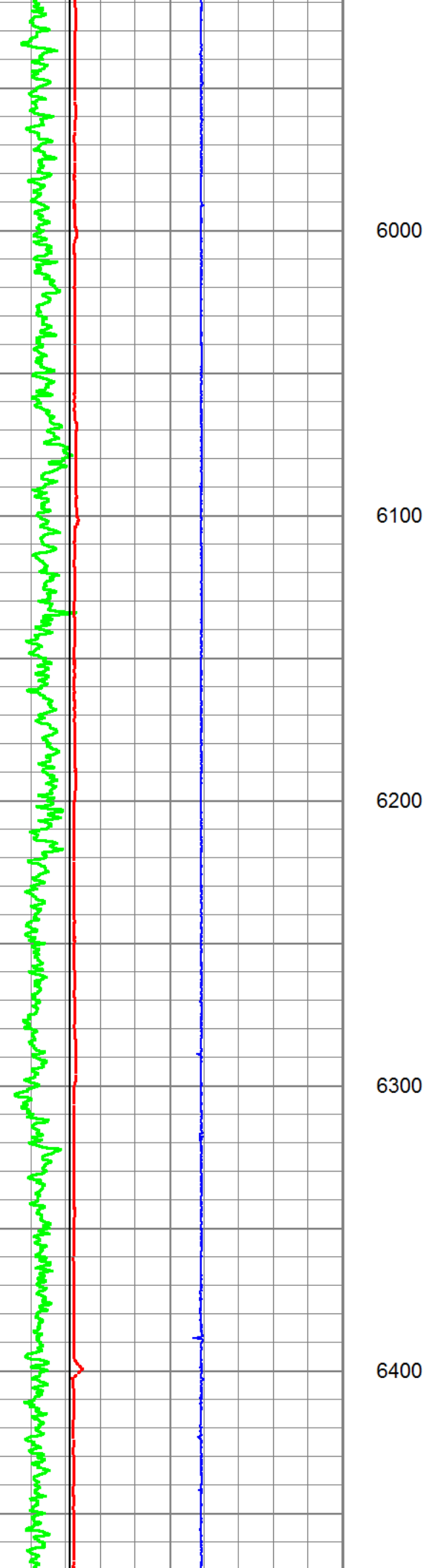
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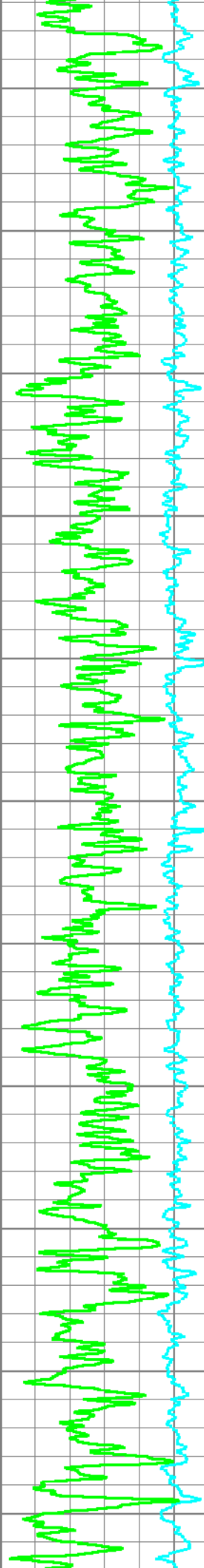
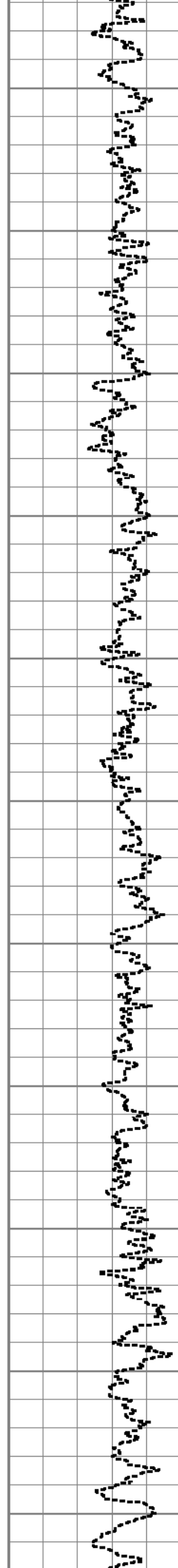
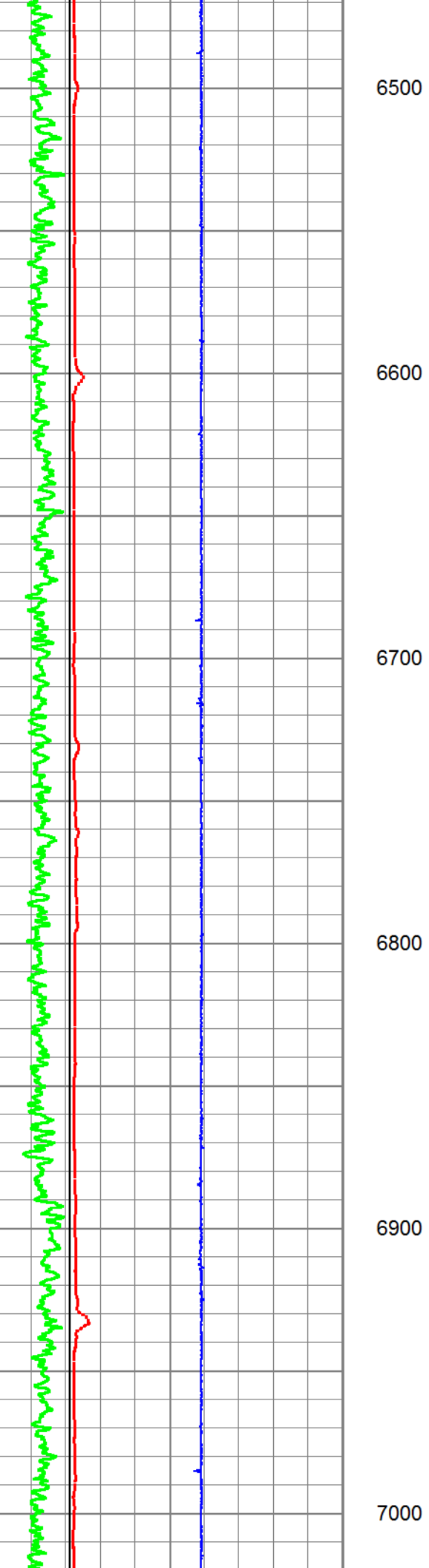
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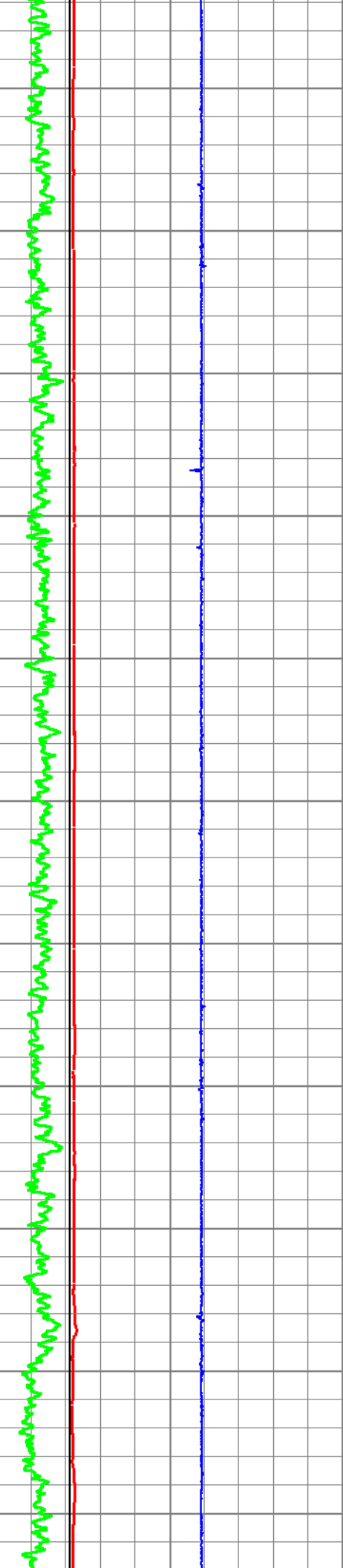
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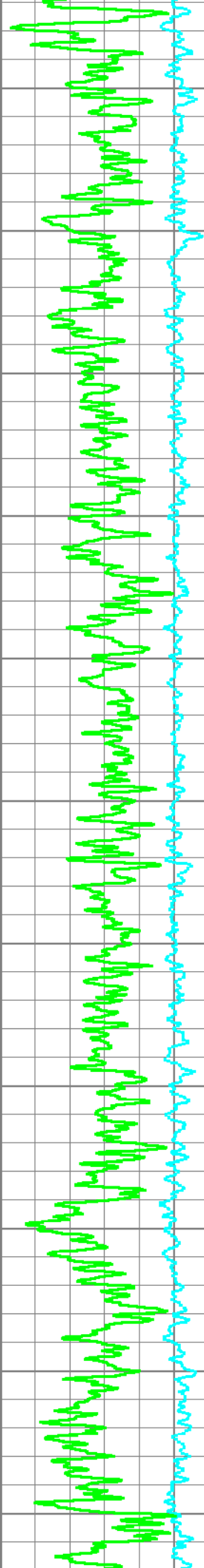
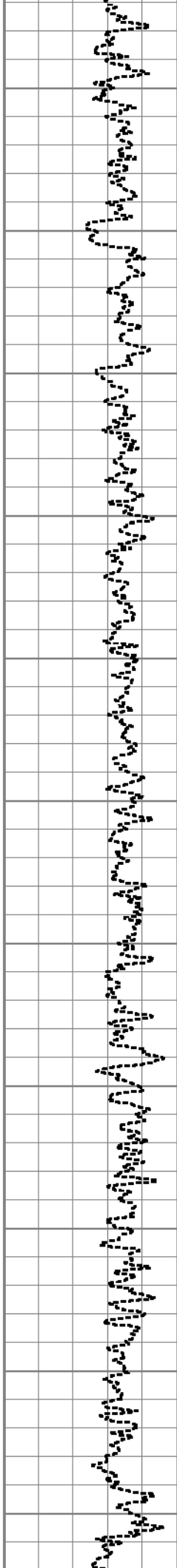
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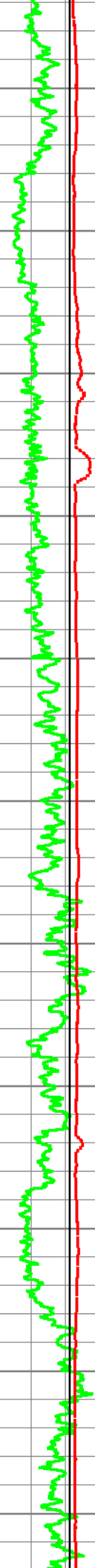
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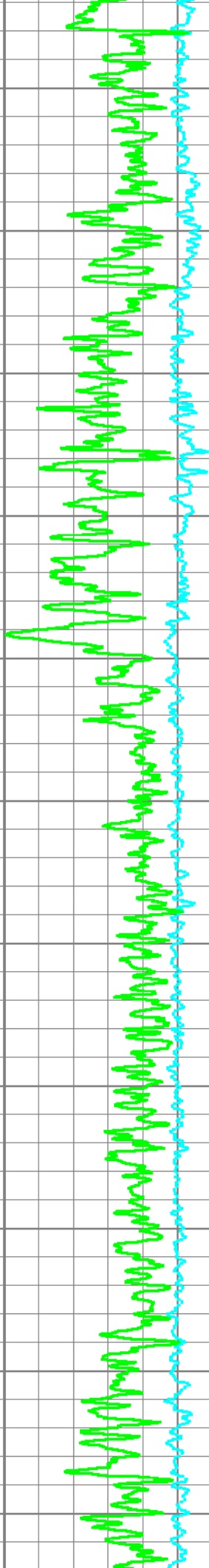
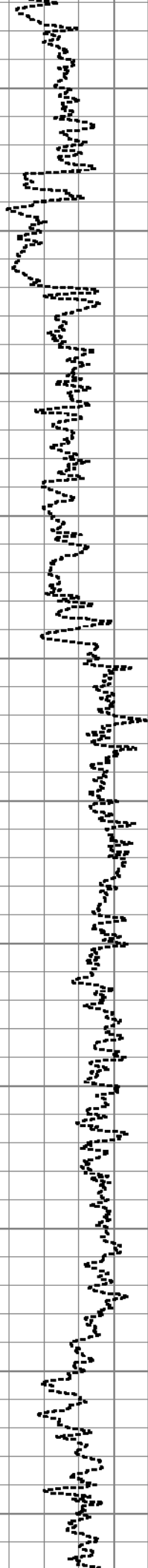
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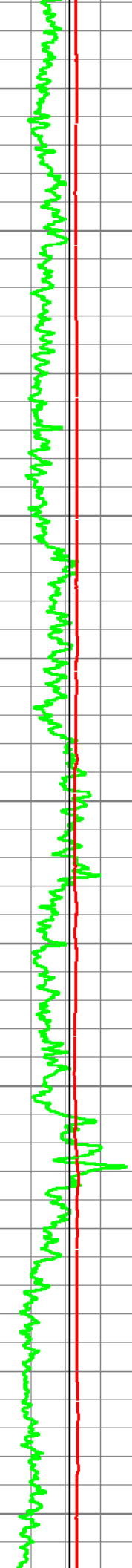
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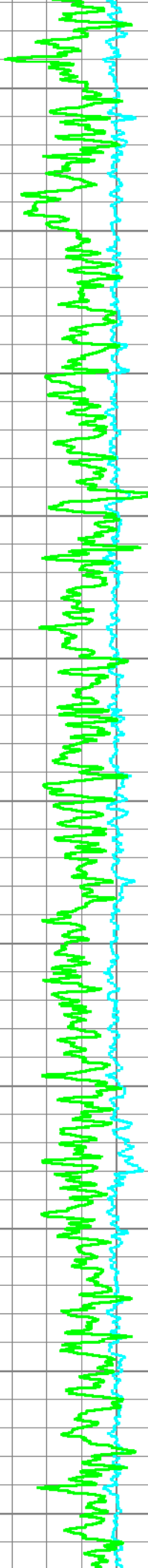
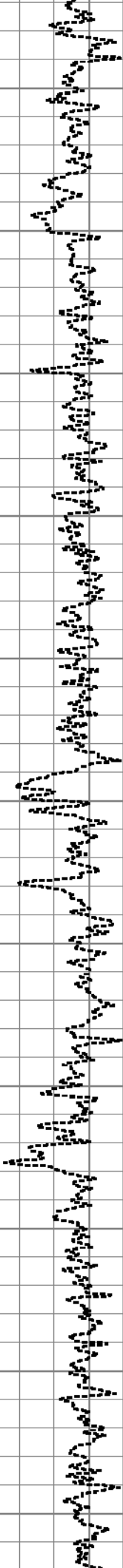
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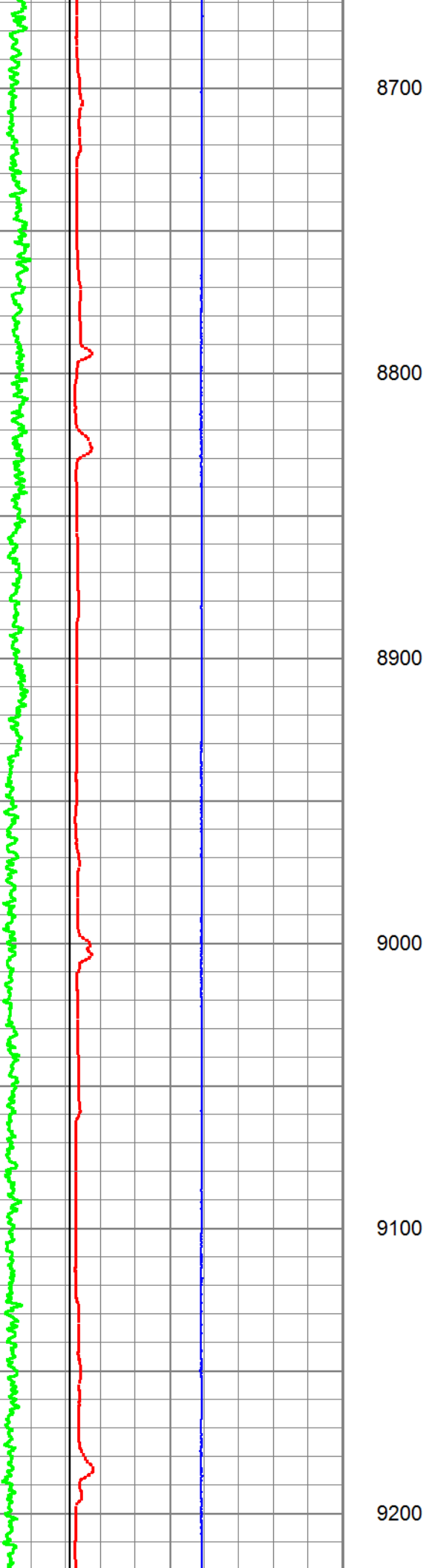
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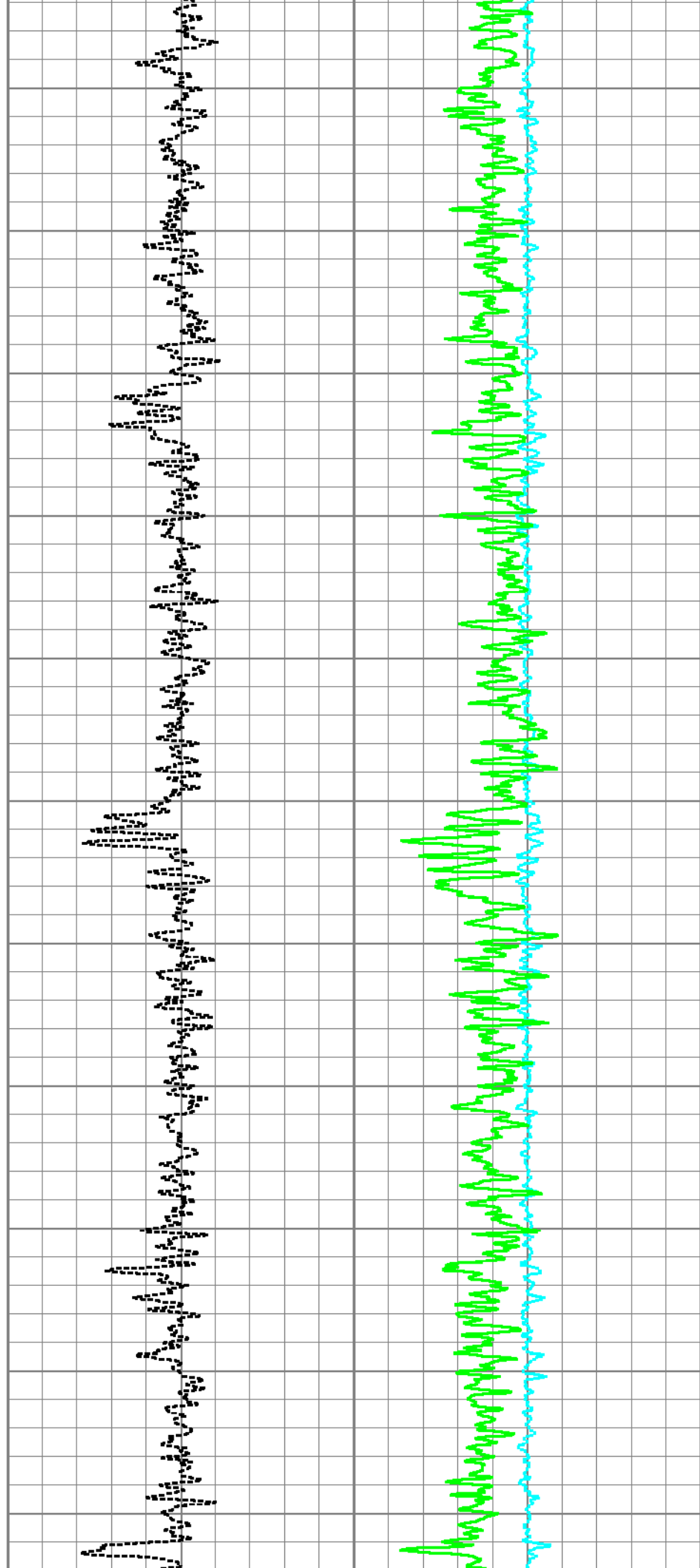
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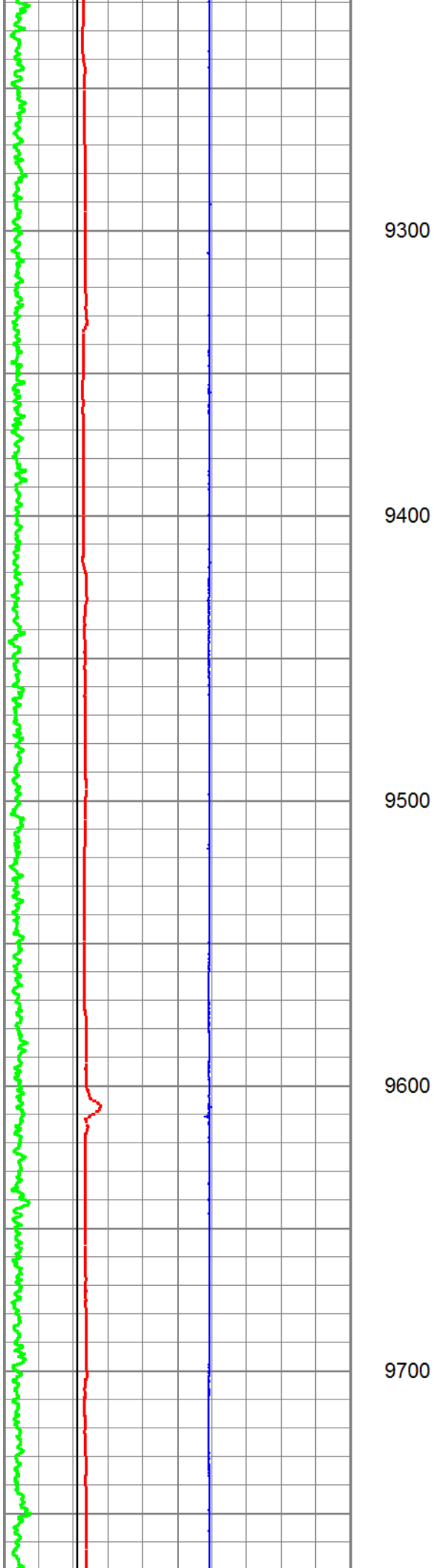
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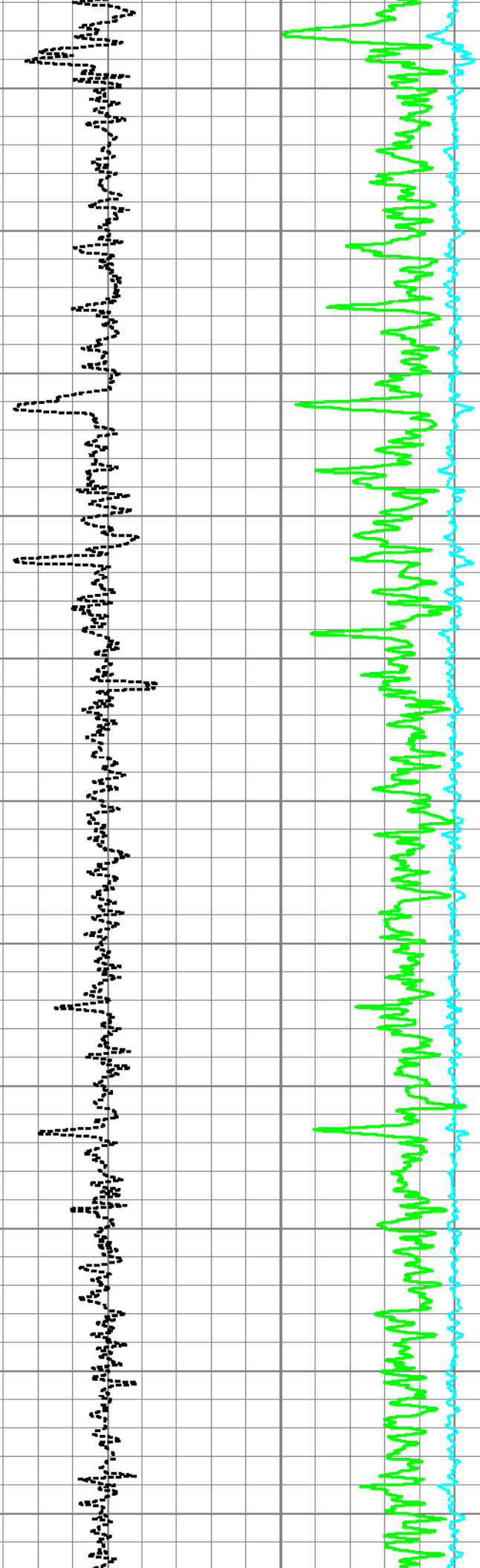
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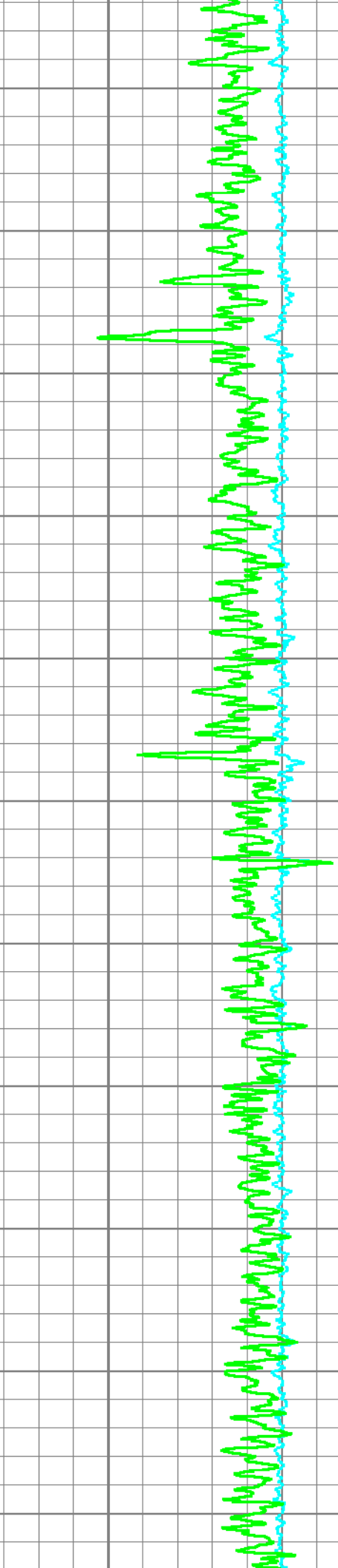
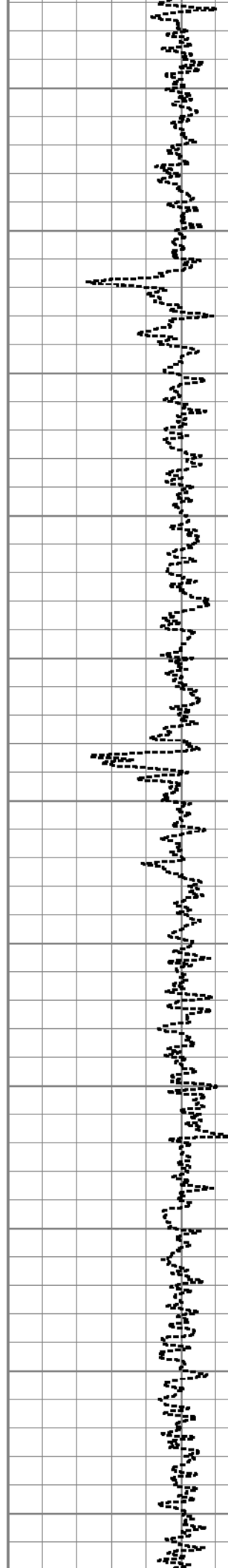
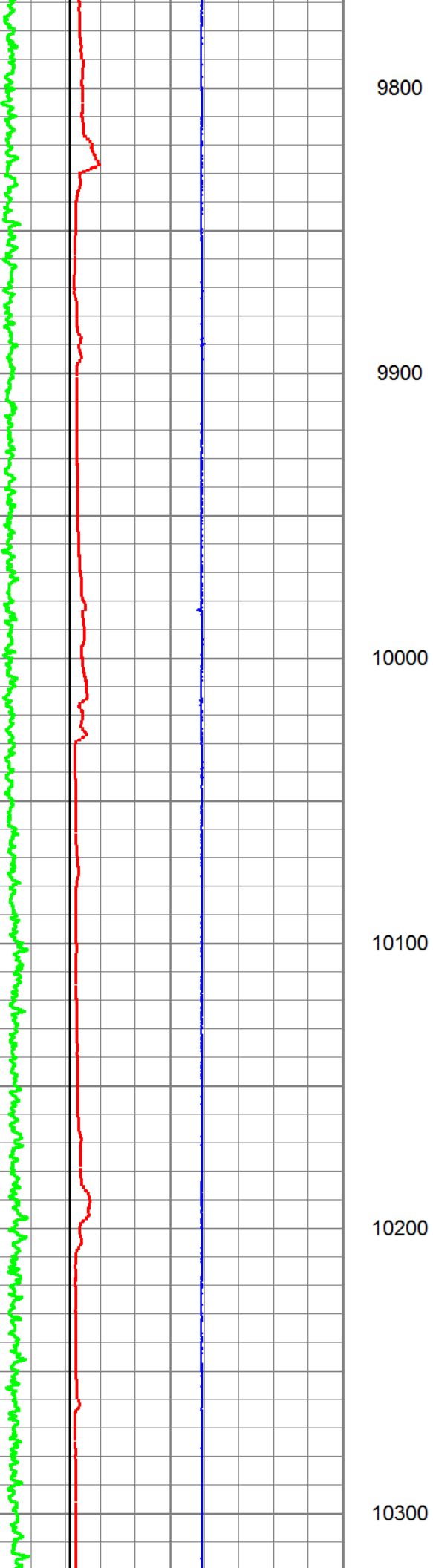
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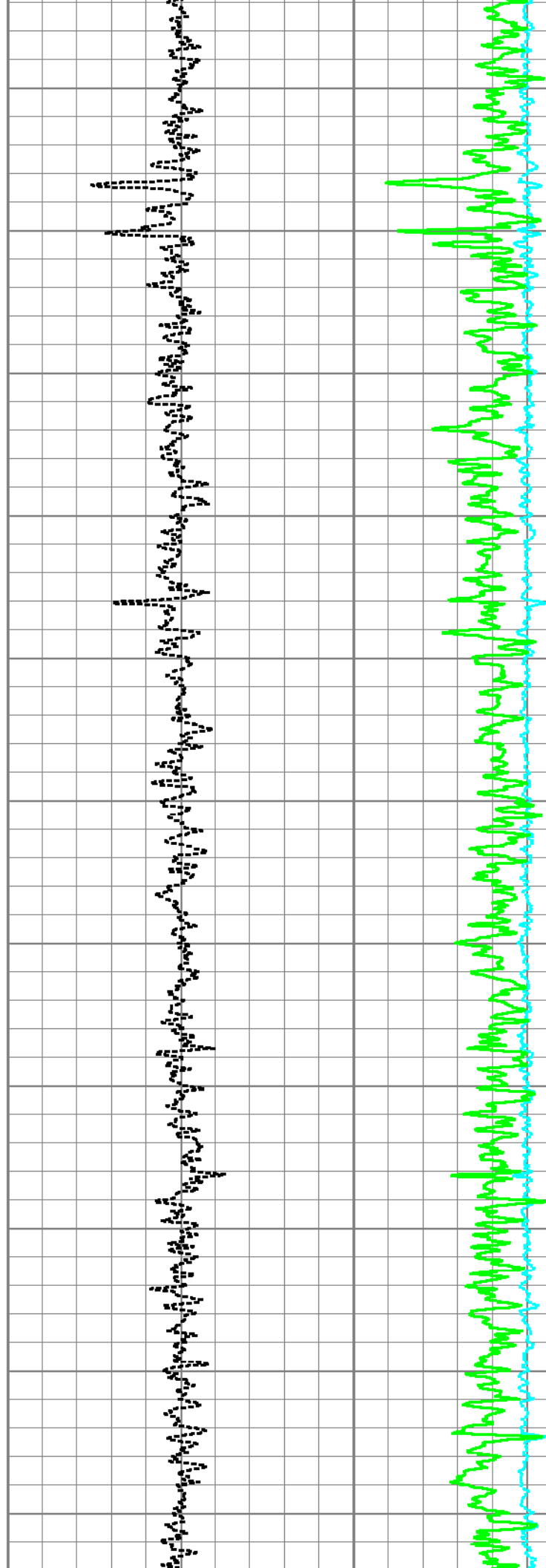
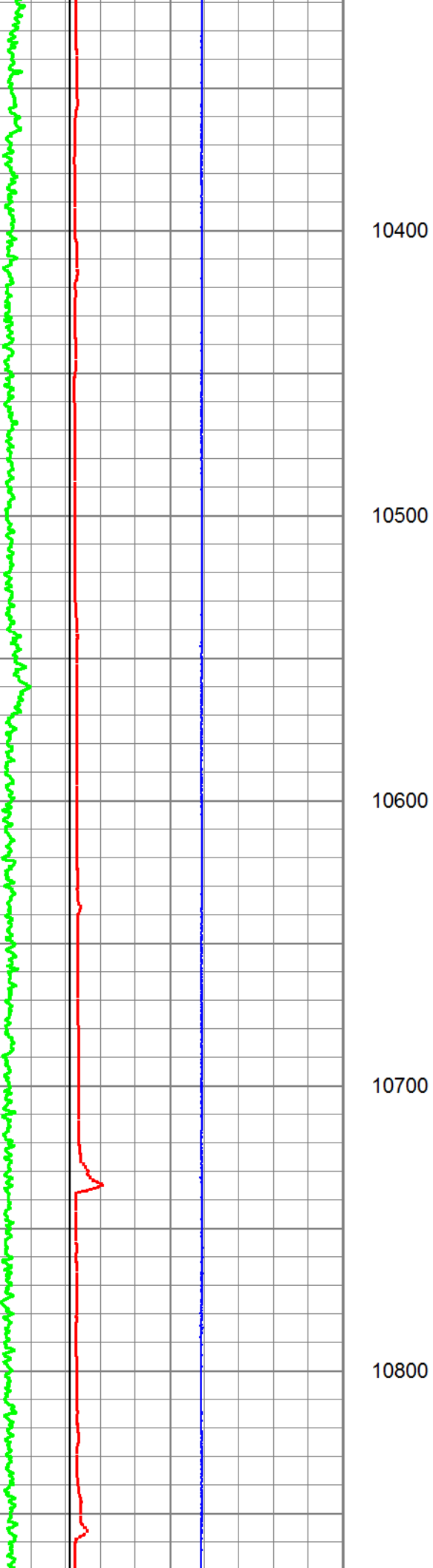
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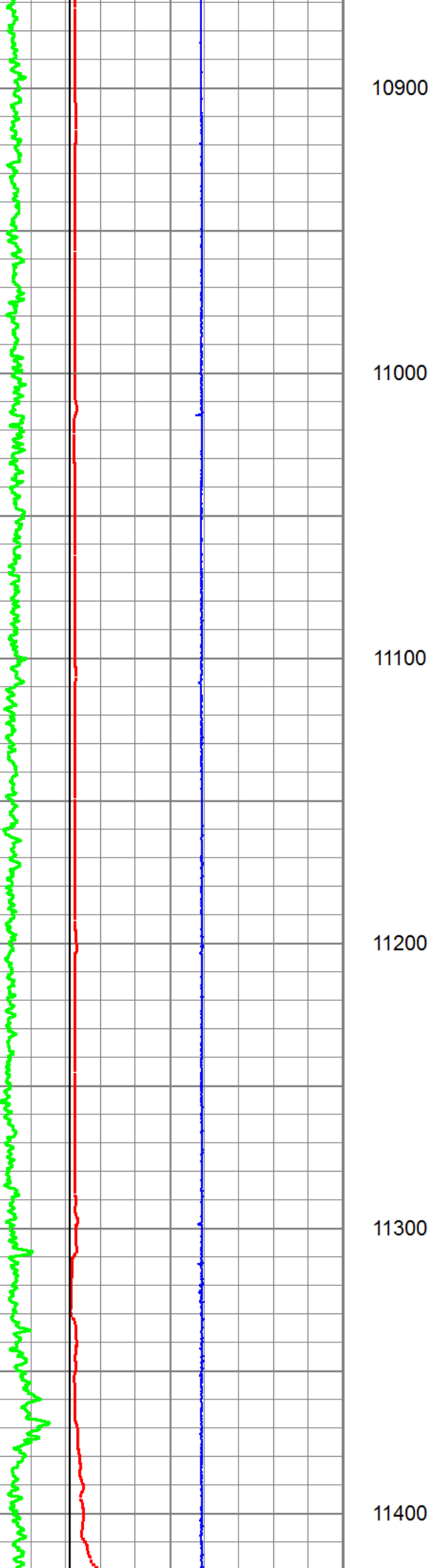
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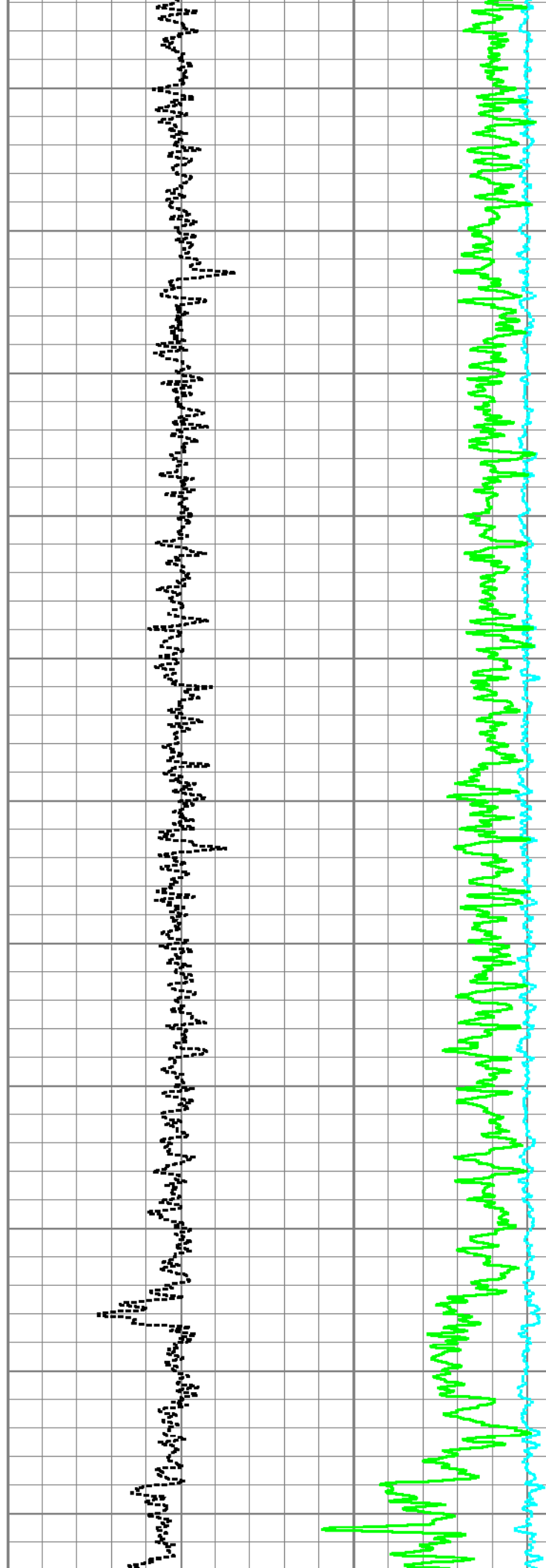
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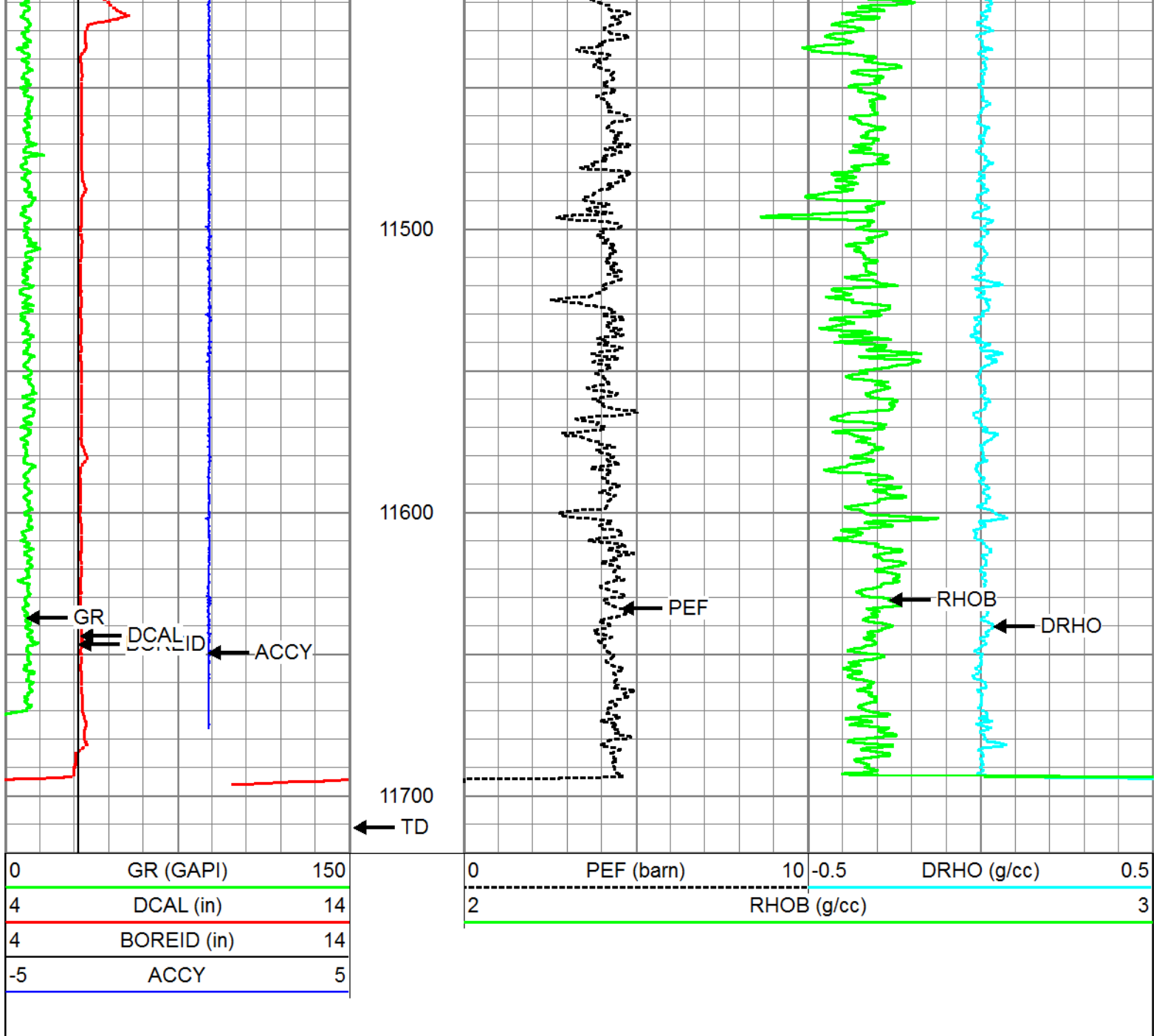
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MAIN PASS



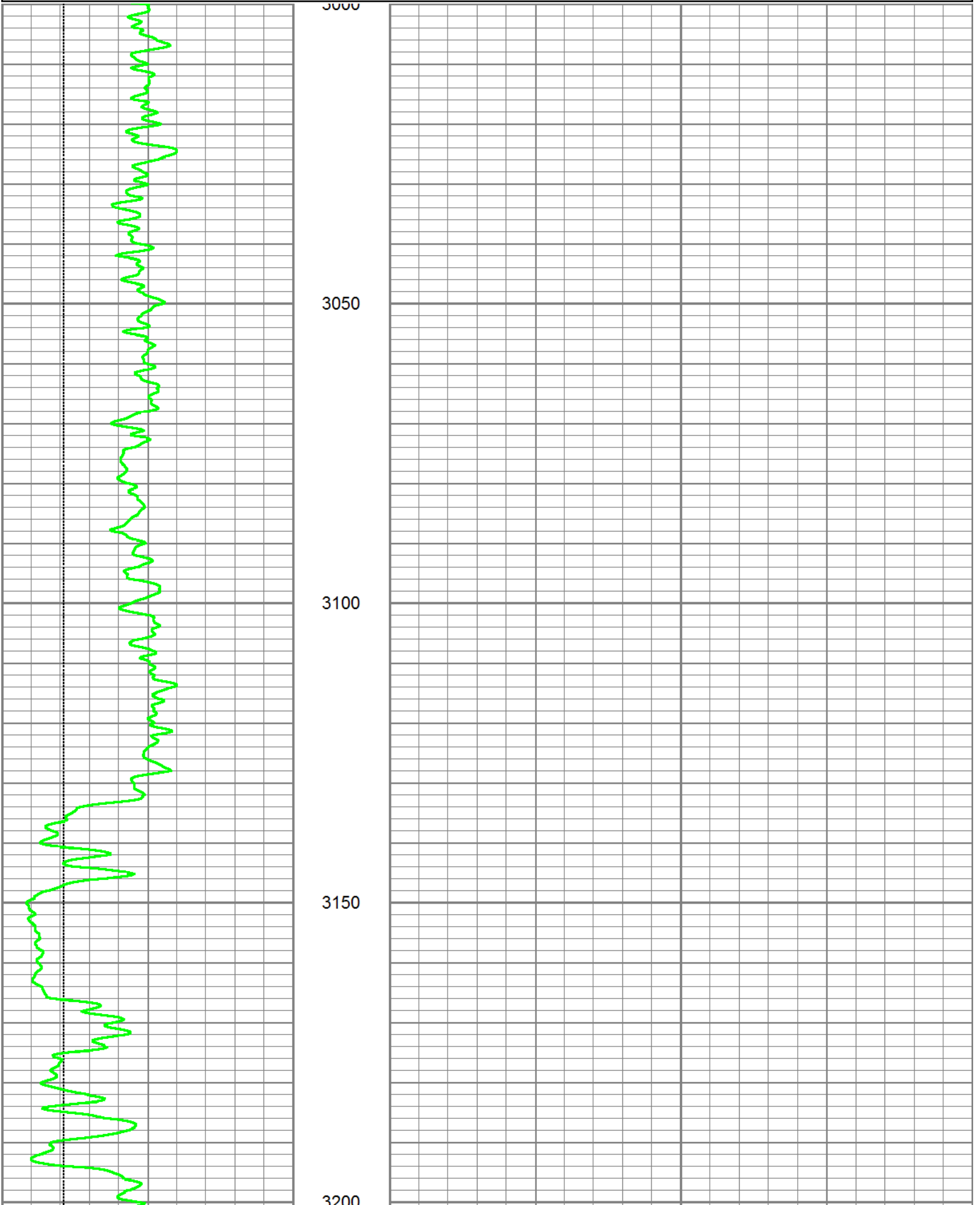
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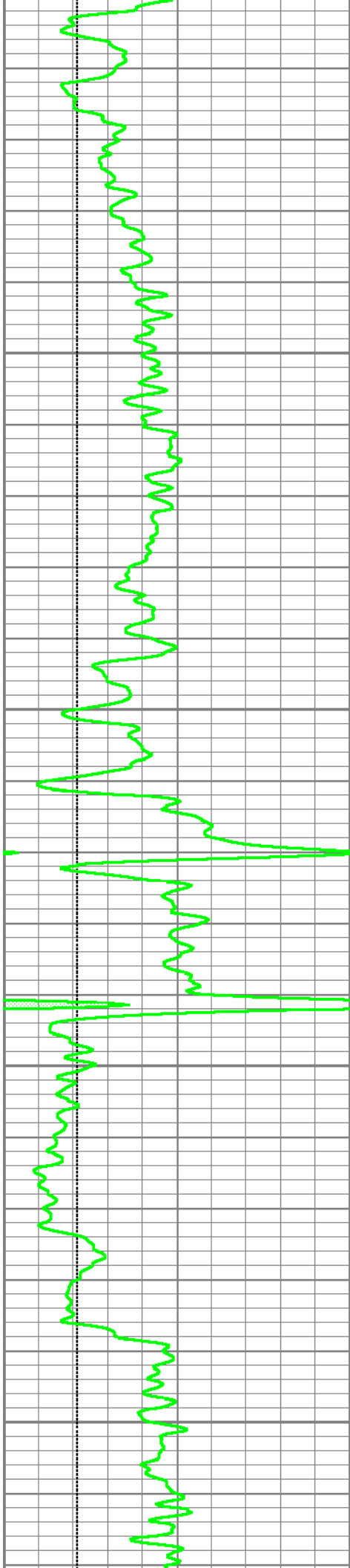
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 Presentation Format: sand5n
 Dataset Creation: Mon Feb 13 22:42:12 2012
 Charted by: Depth in Feet scaled 1:240

4	DCAL (in)	14	30	CNPOR (pu)	-10
4	BOREID (in)	14	30	DRHO (g/cc)	10

4	BOREID (in)	14
0	GR (GAPI)	150
-5	ACCY	5
	TBHV (ft3)	

30	DPHI (pu)	-10
0	PEF (barn)	10
-0.25	DRHO (g/cc)	0.25
	ABHV (ft3)	





3200

3250

3300

3350

3400



3450

3500

3550

3600



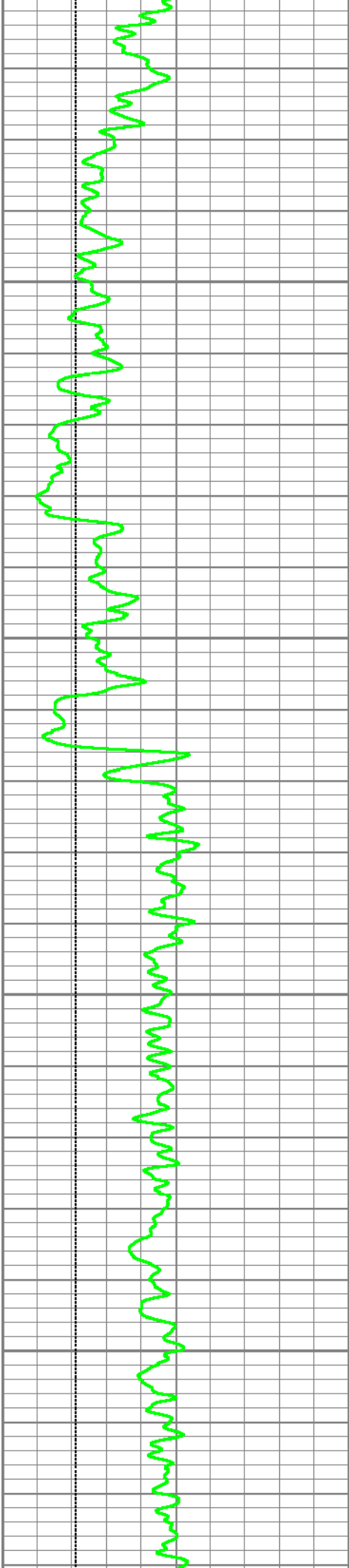
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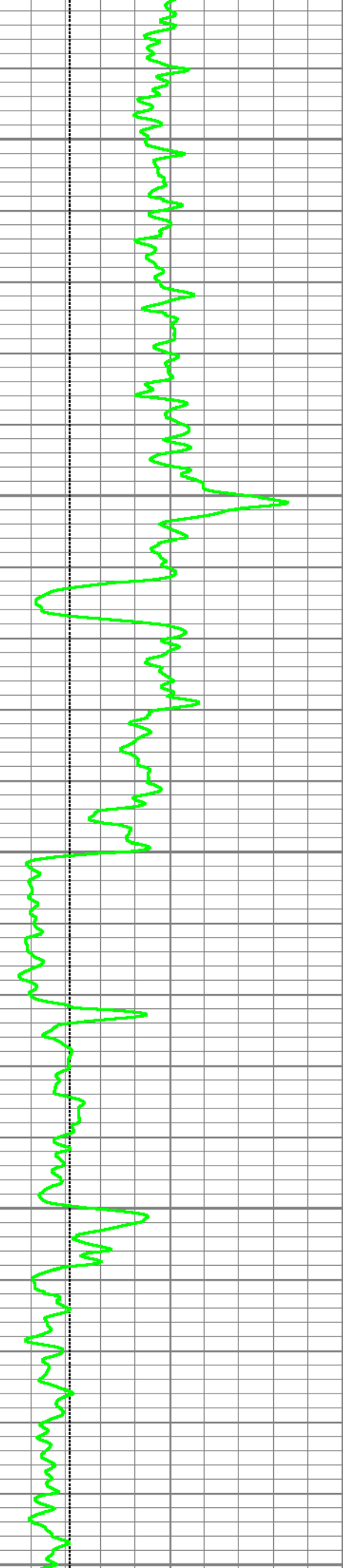


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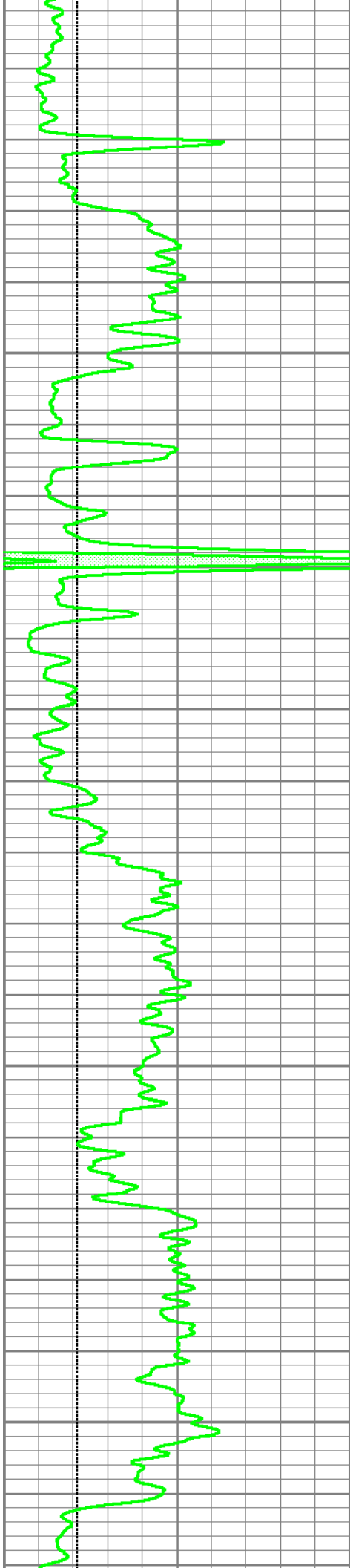
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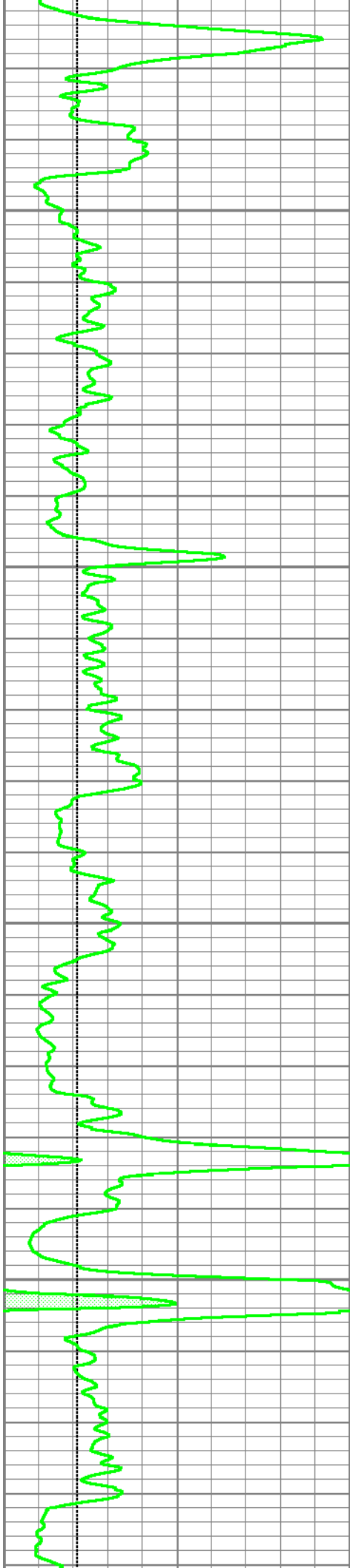


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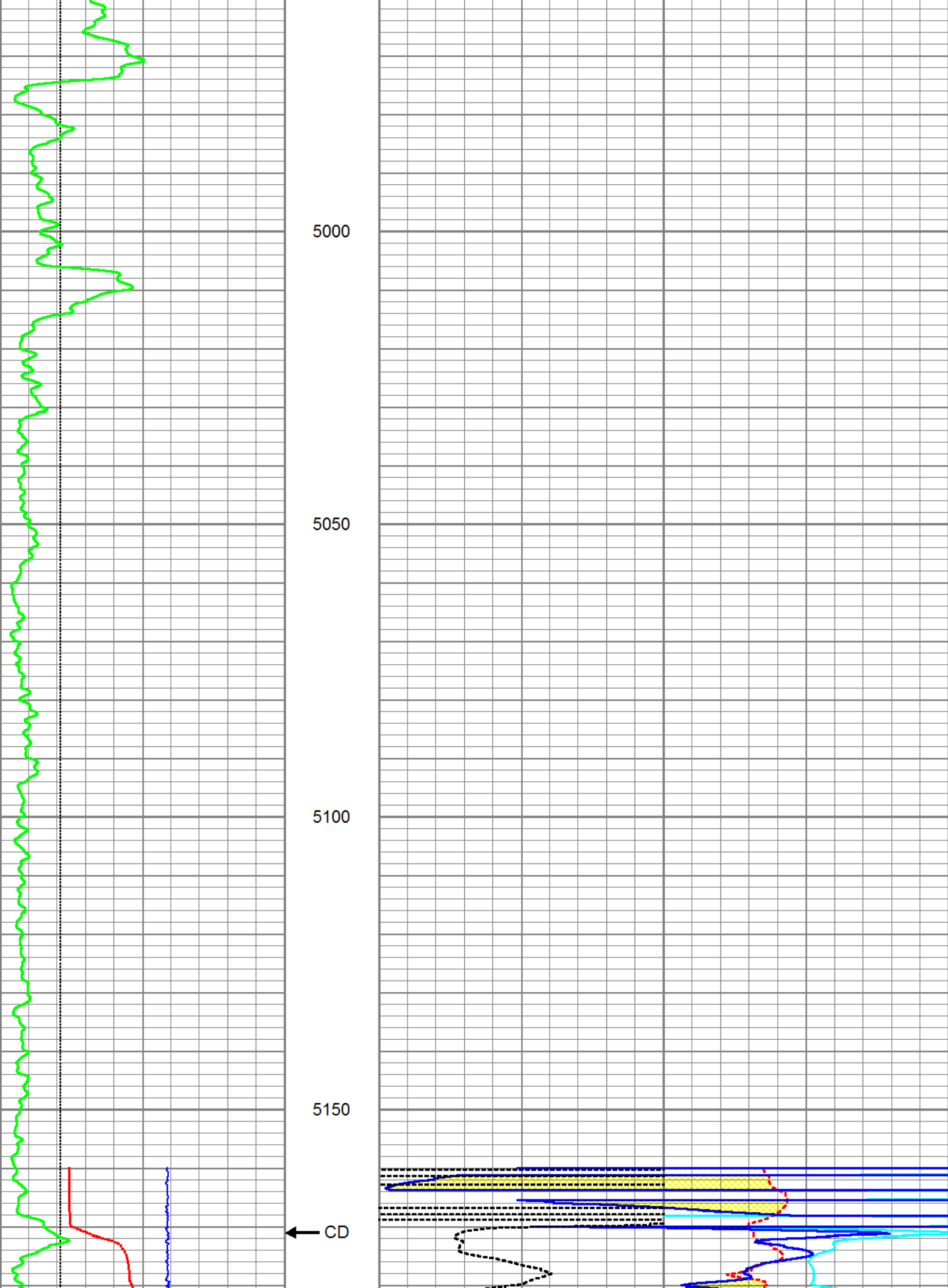
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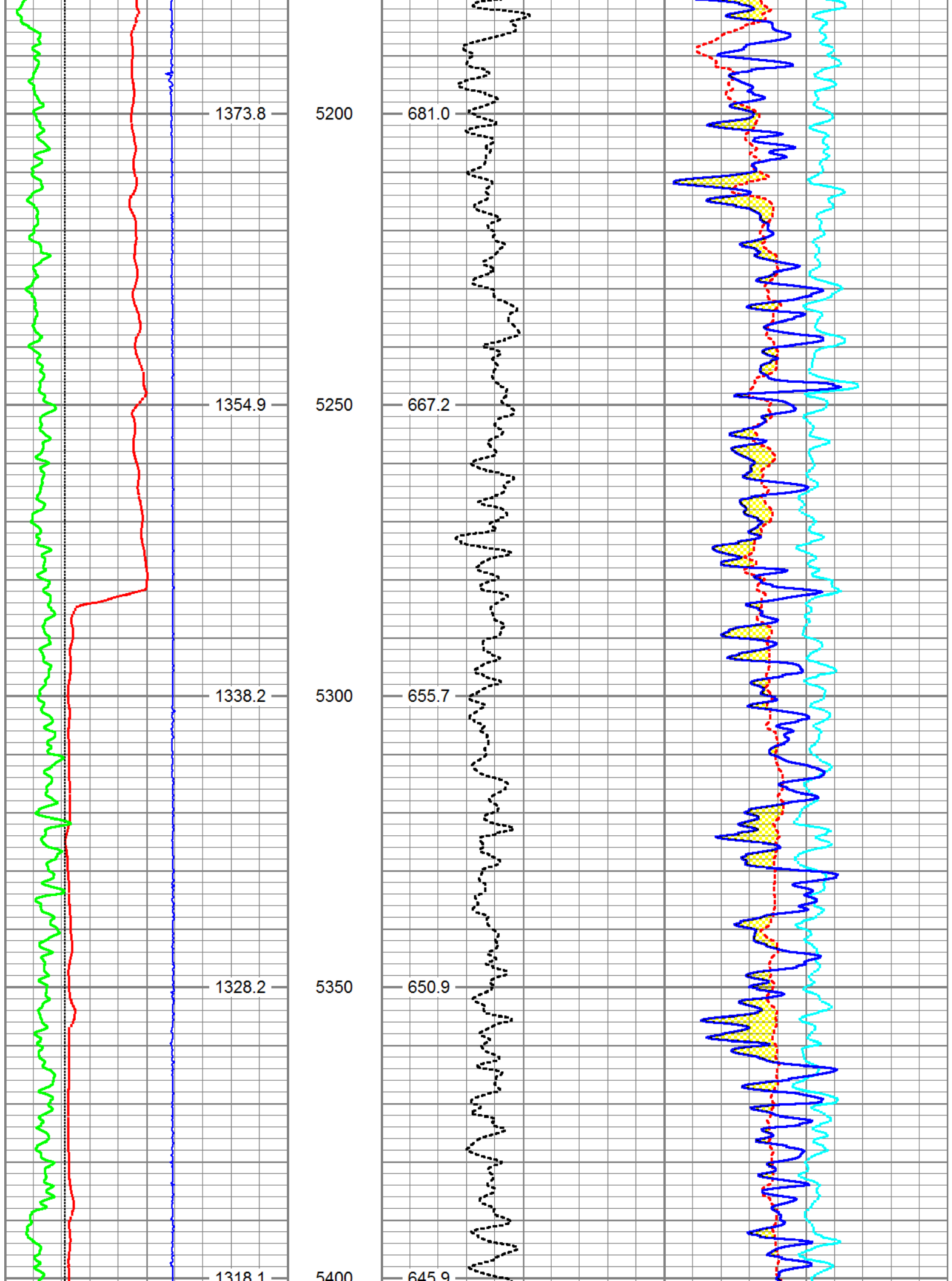
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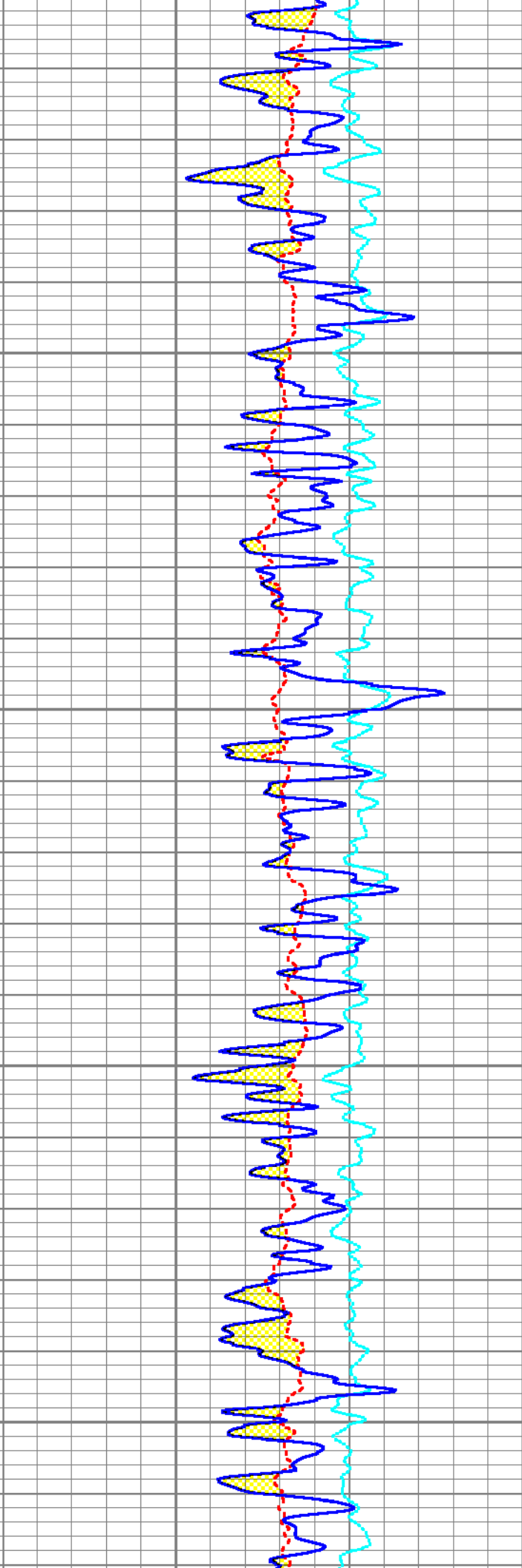
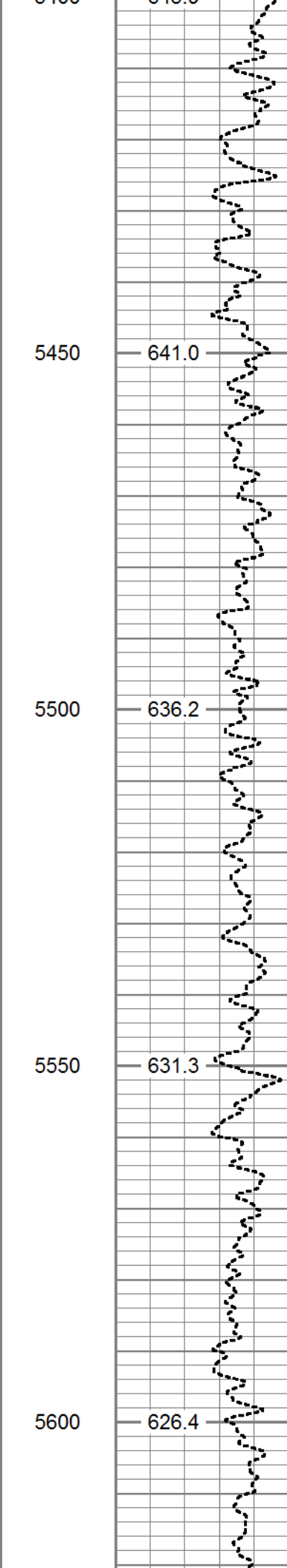
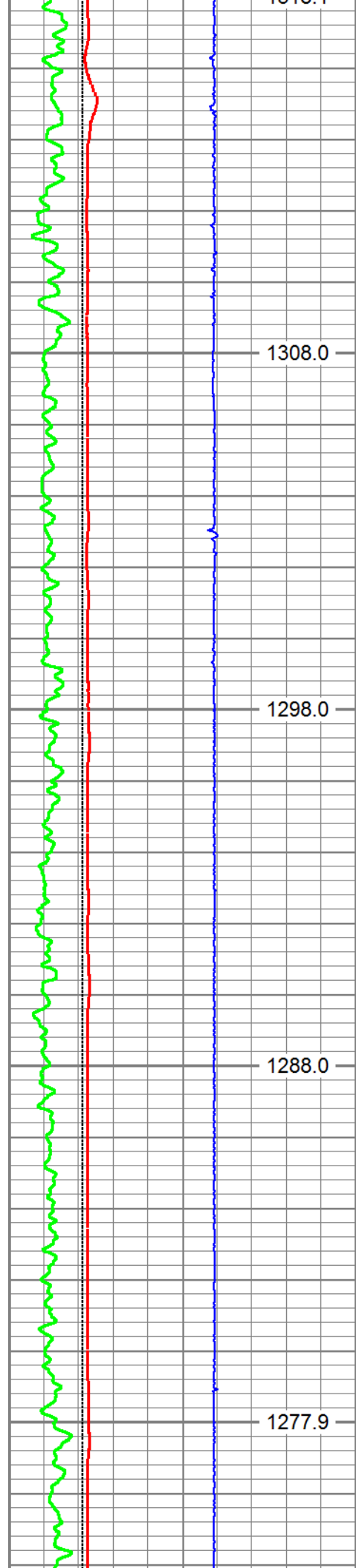
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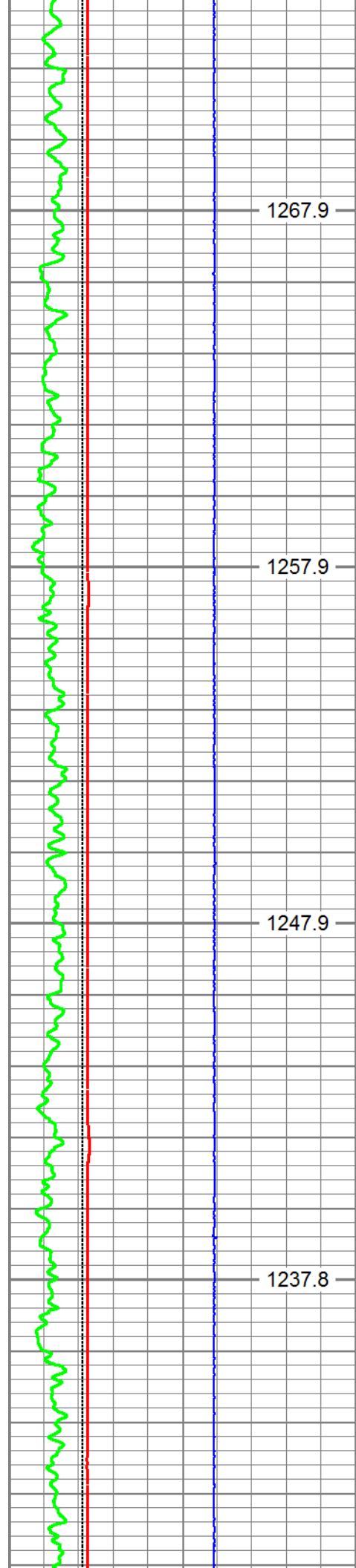
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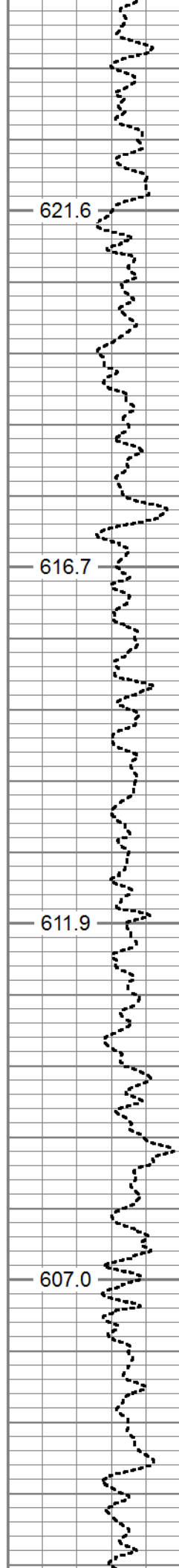
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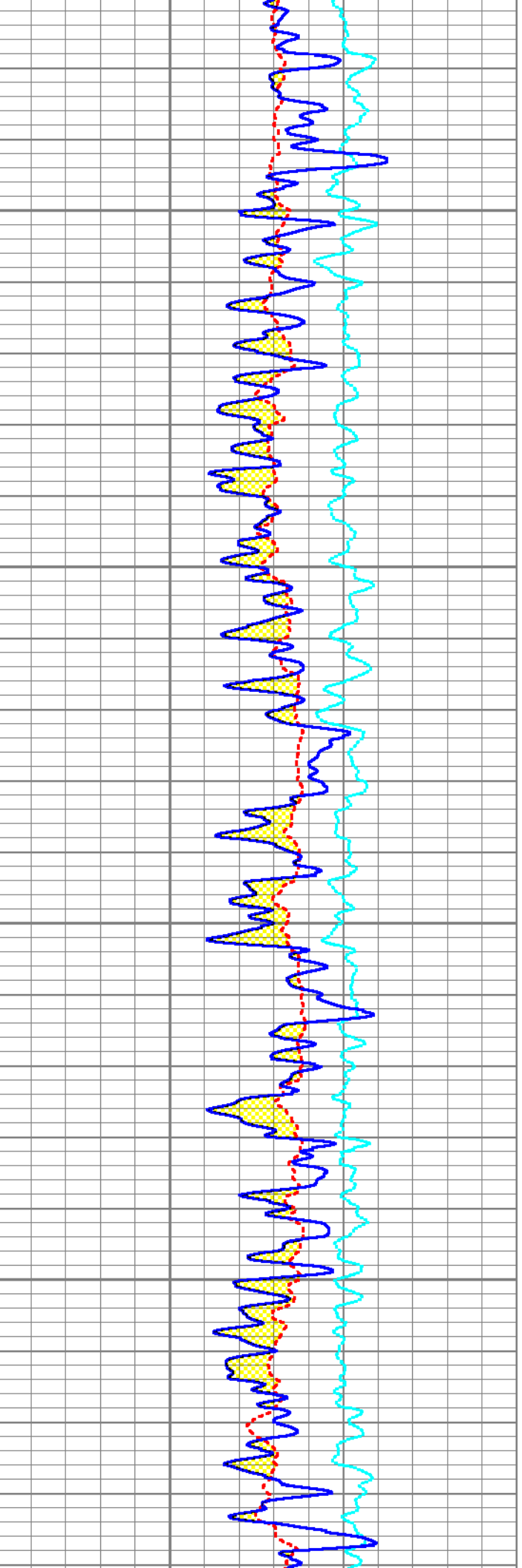


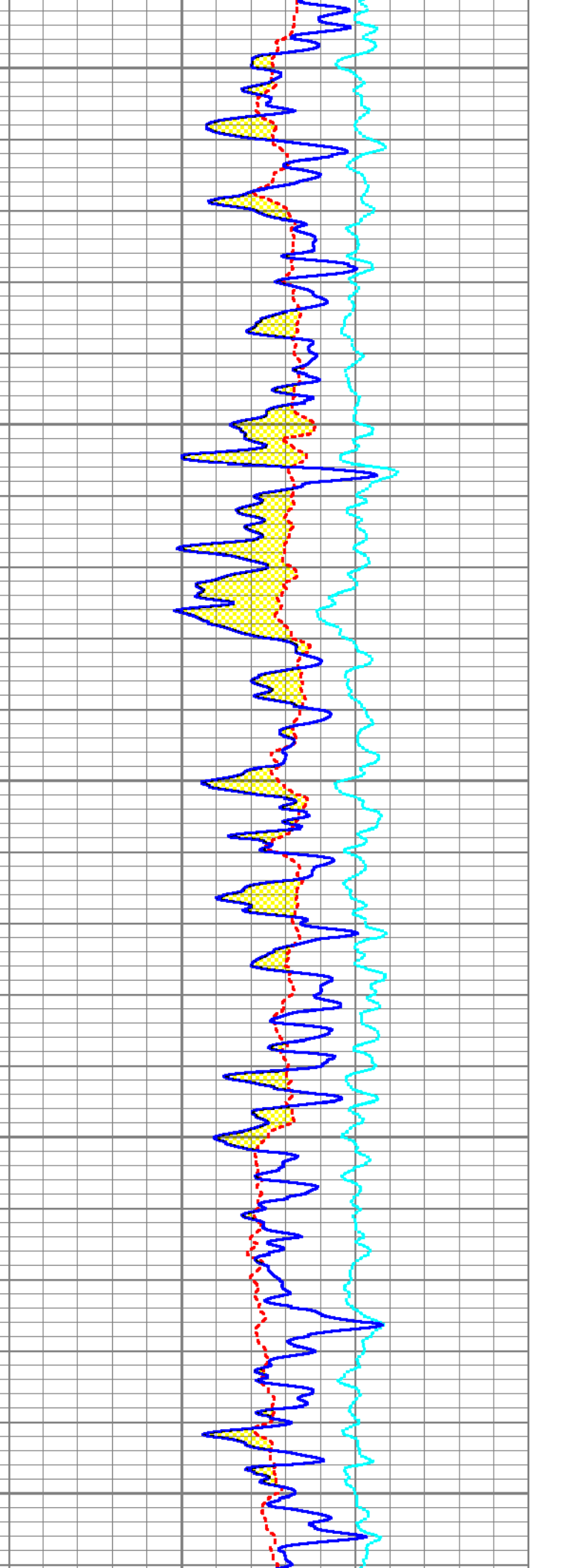
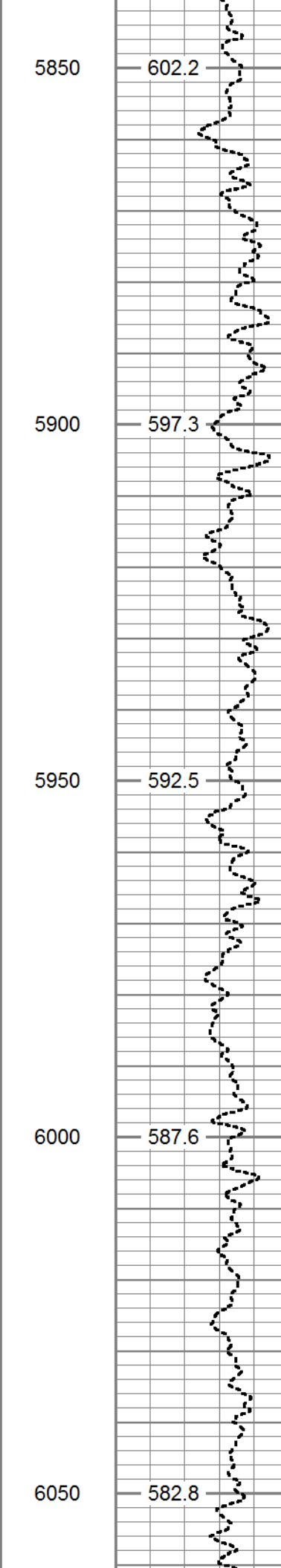
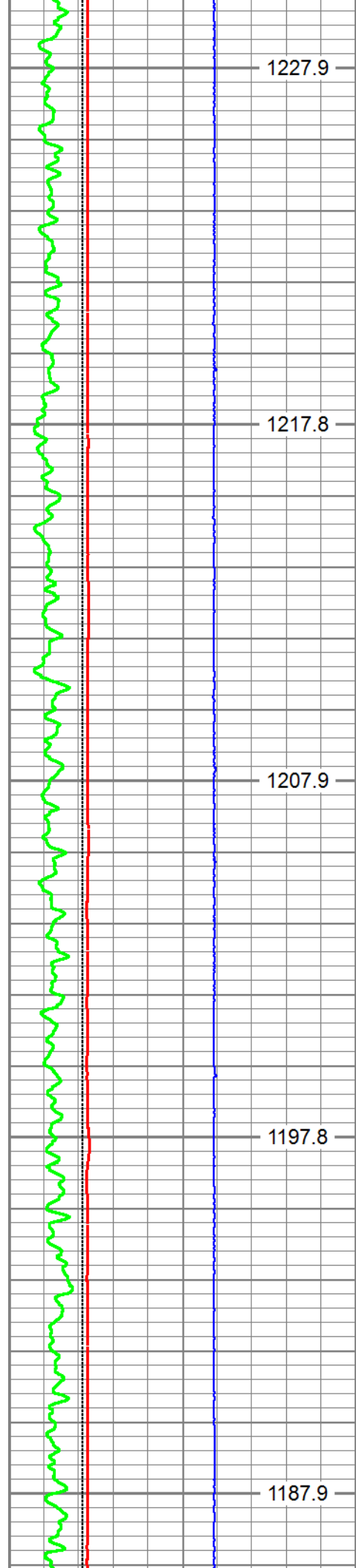
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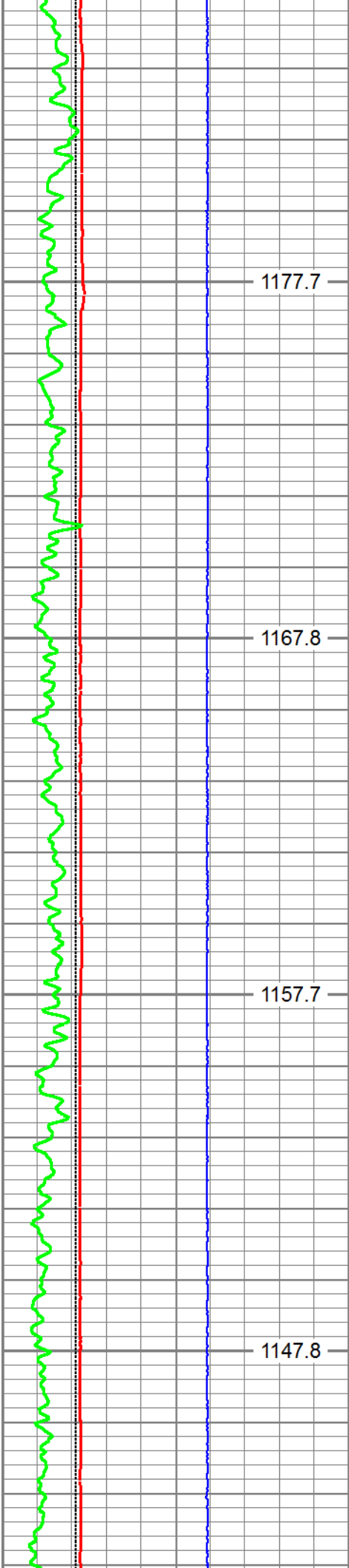
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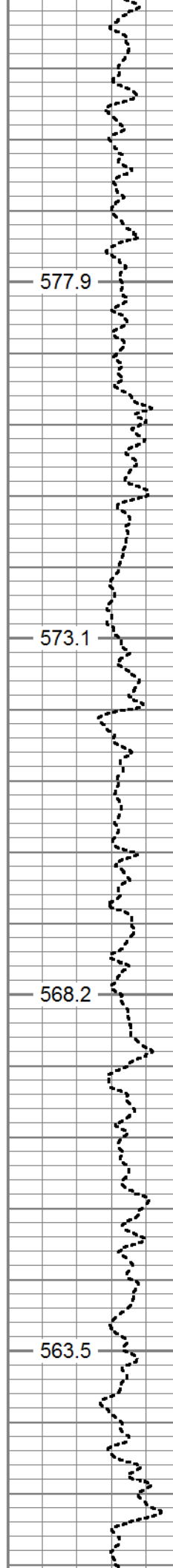


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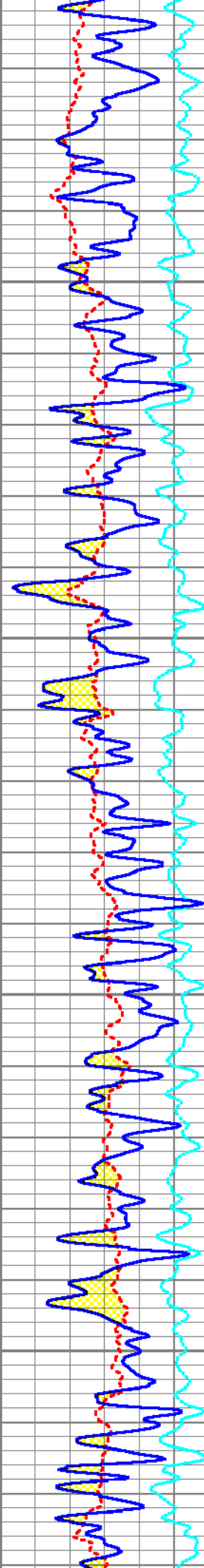


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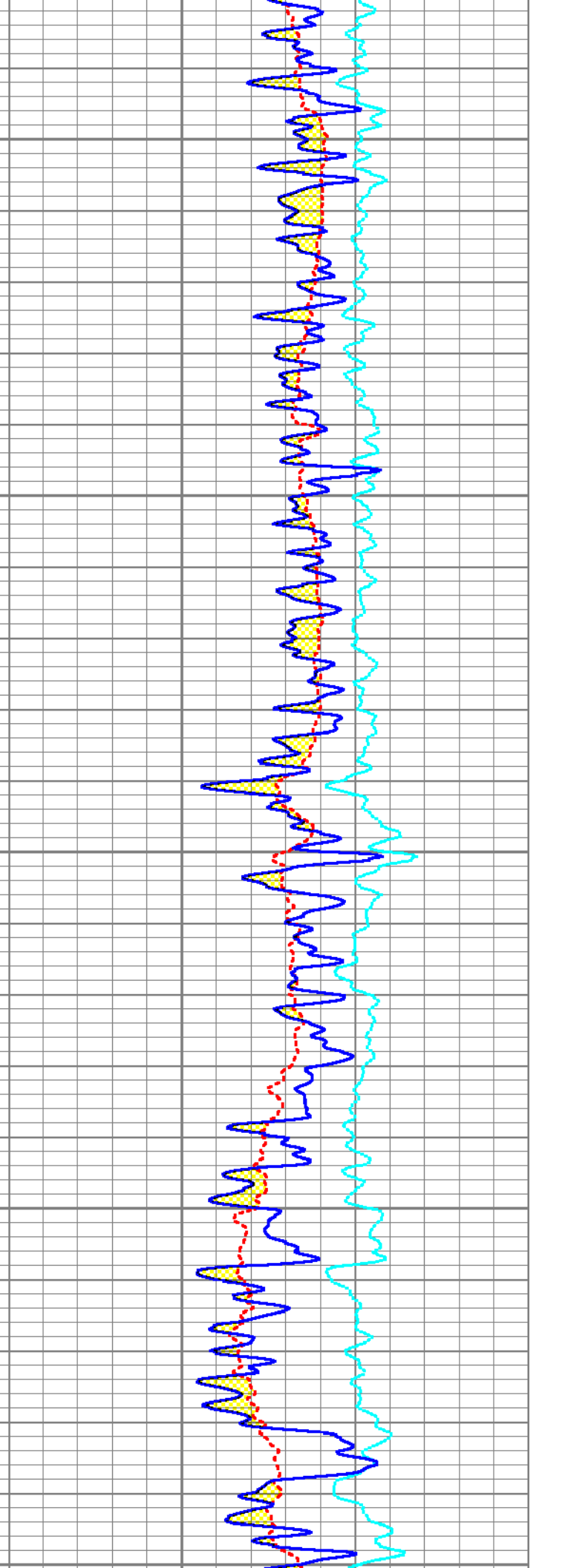
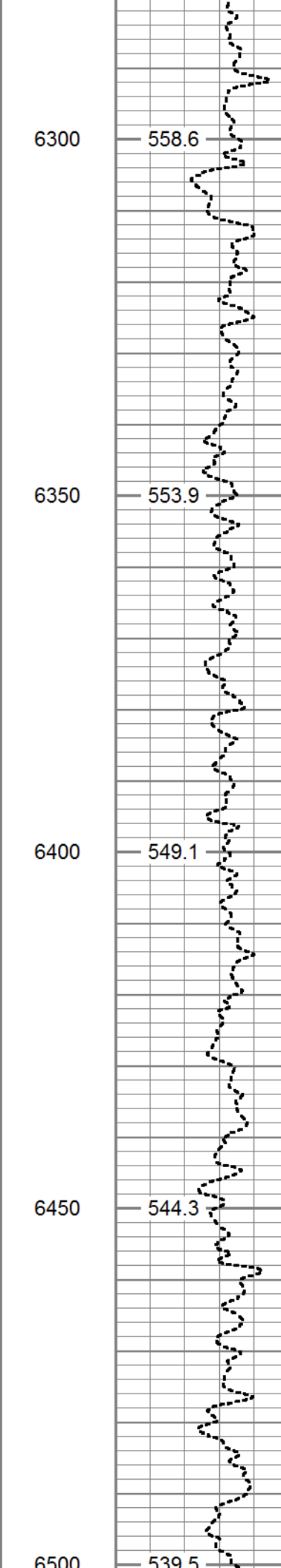
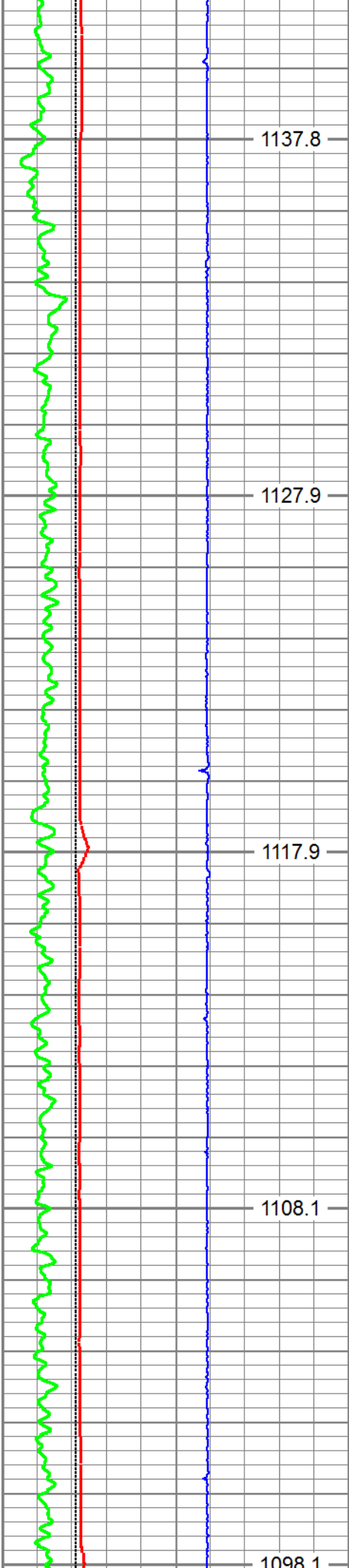


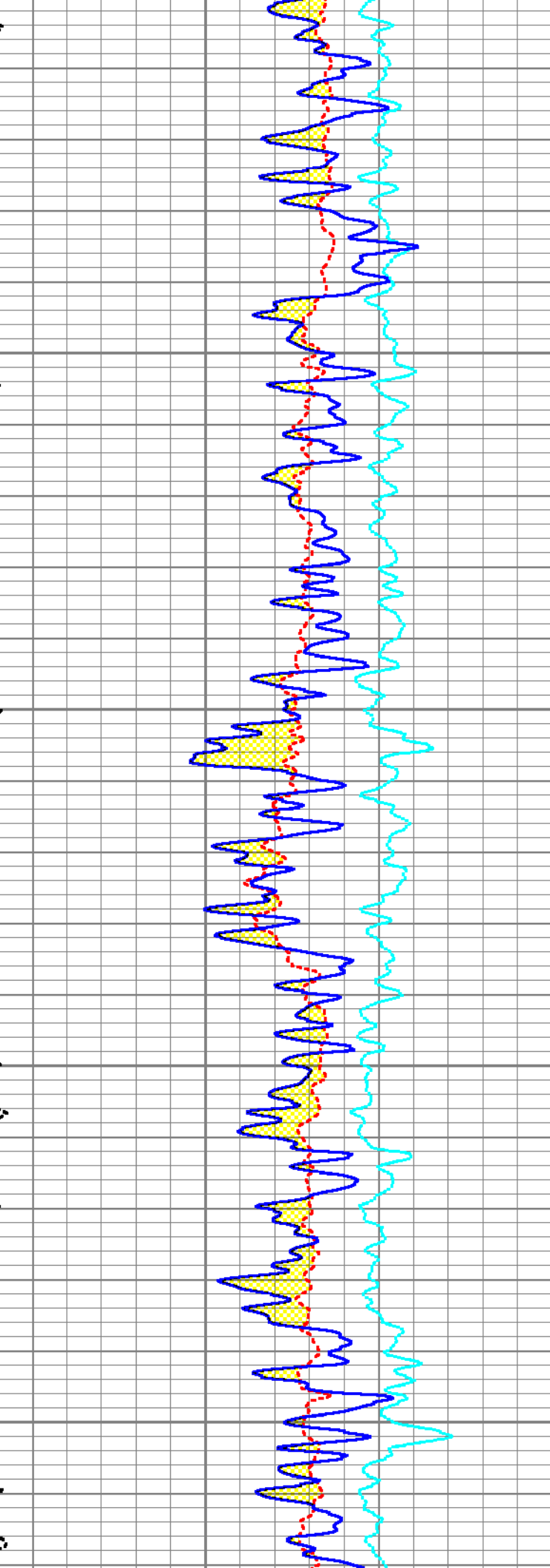
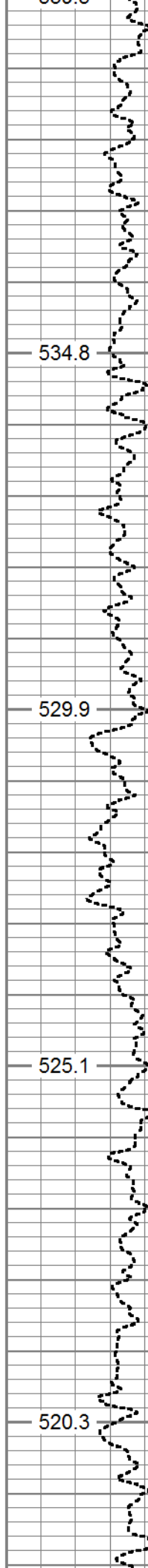
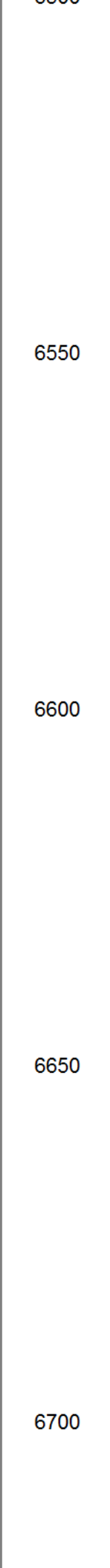
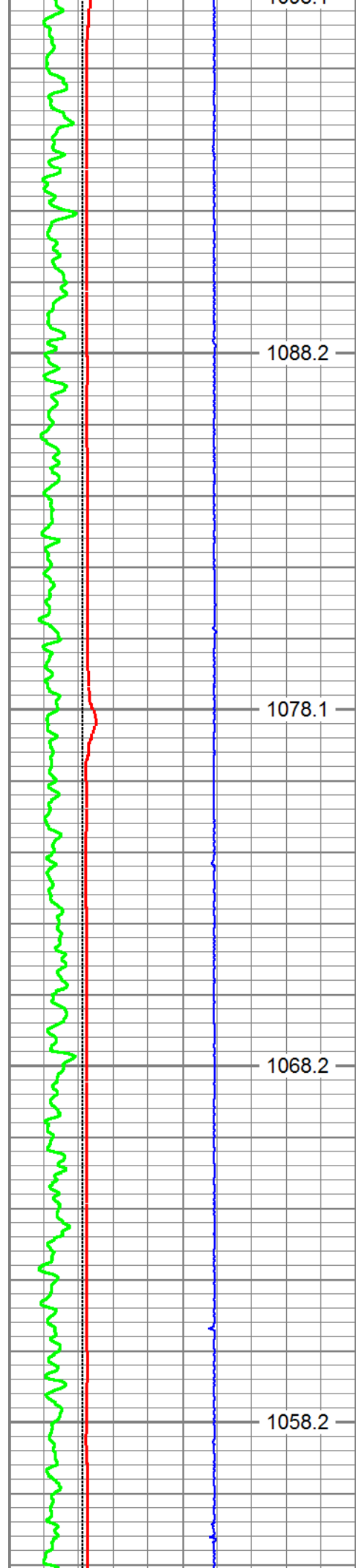
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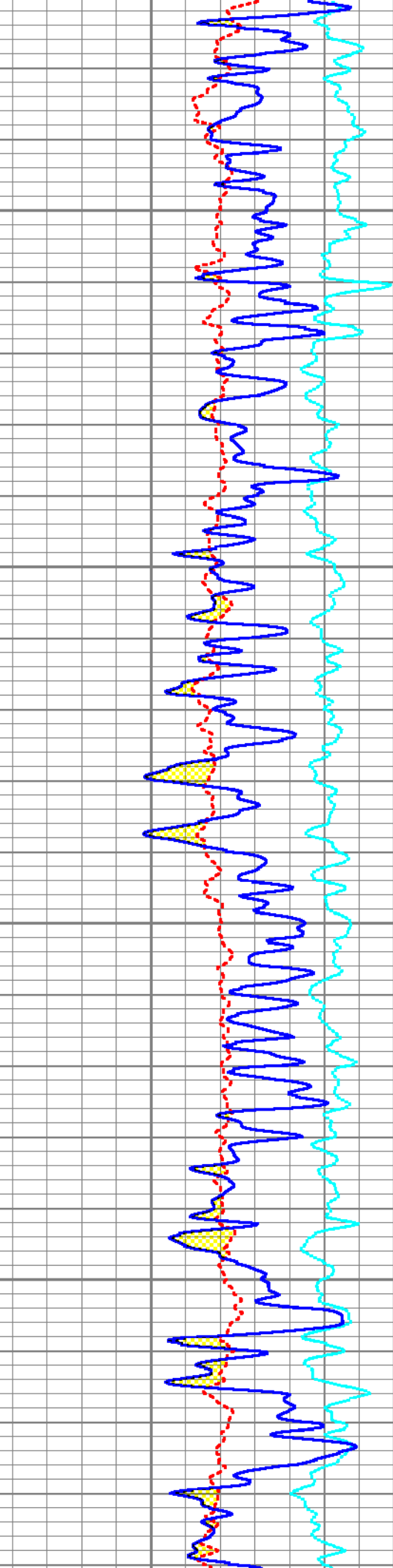
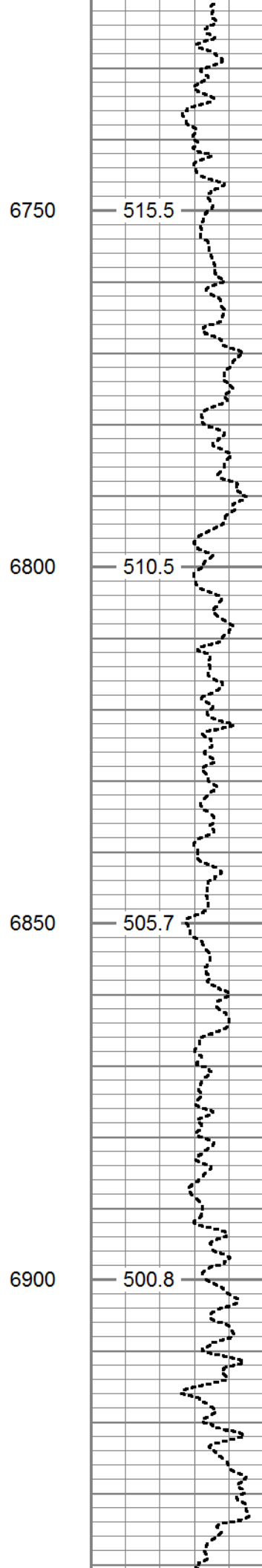
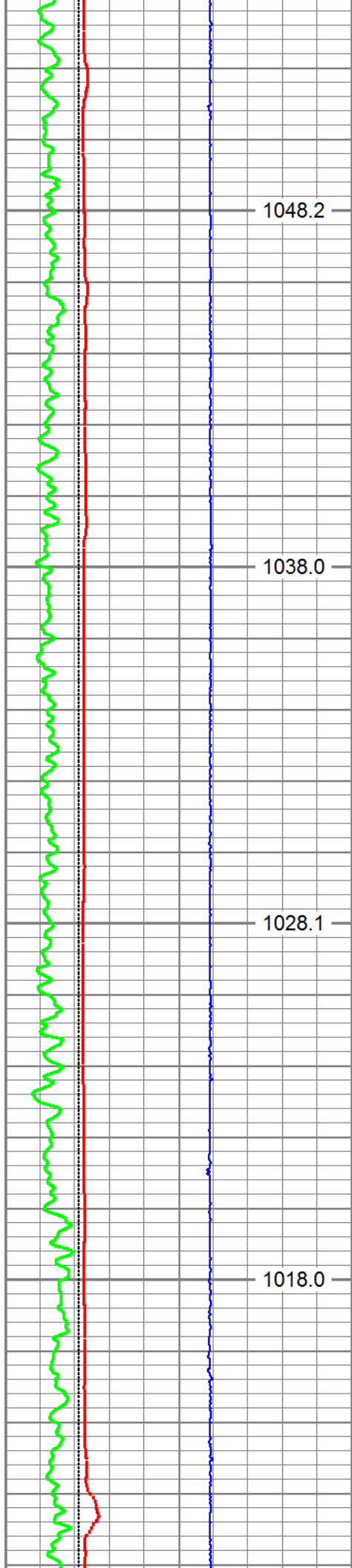
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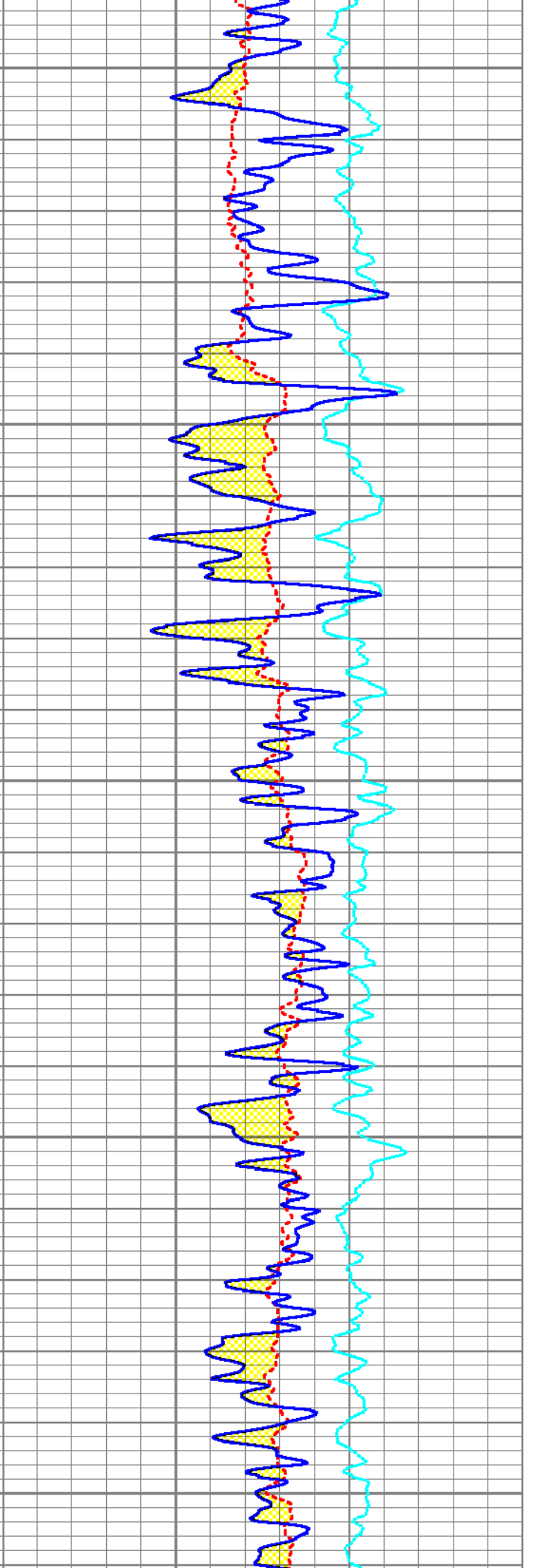
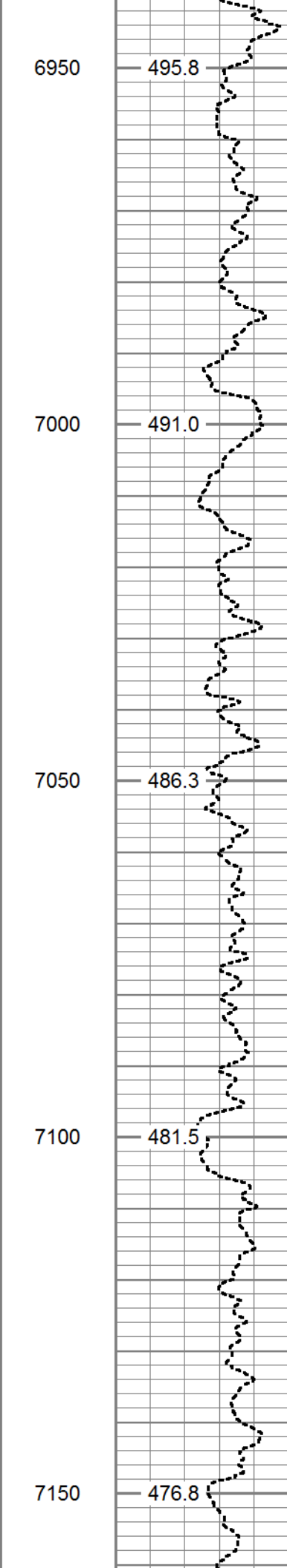
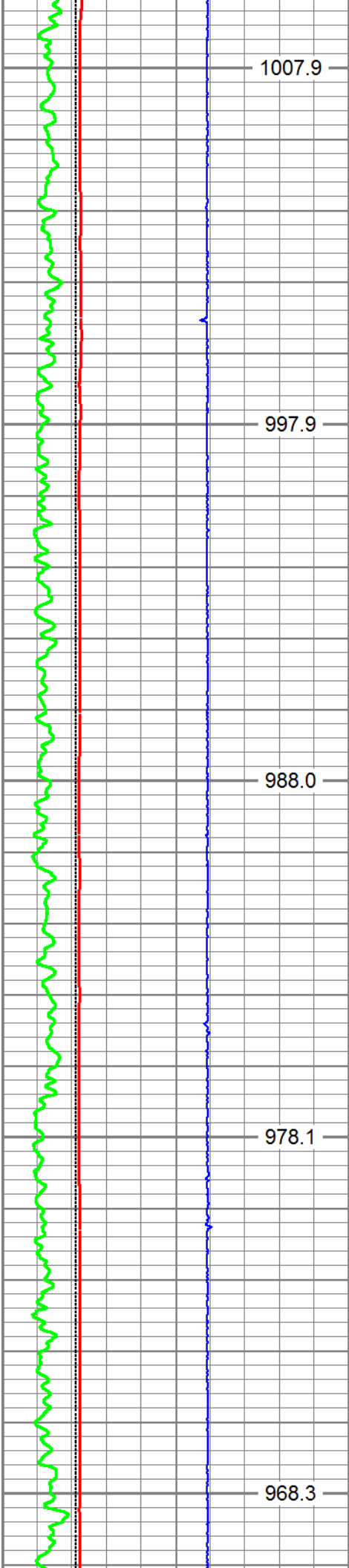
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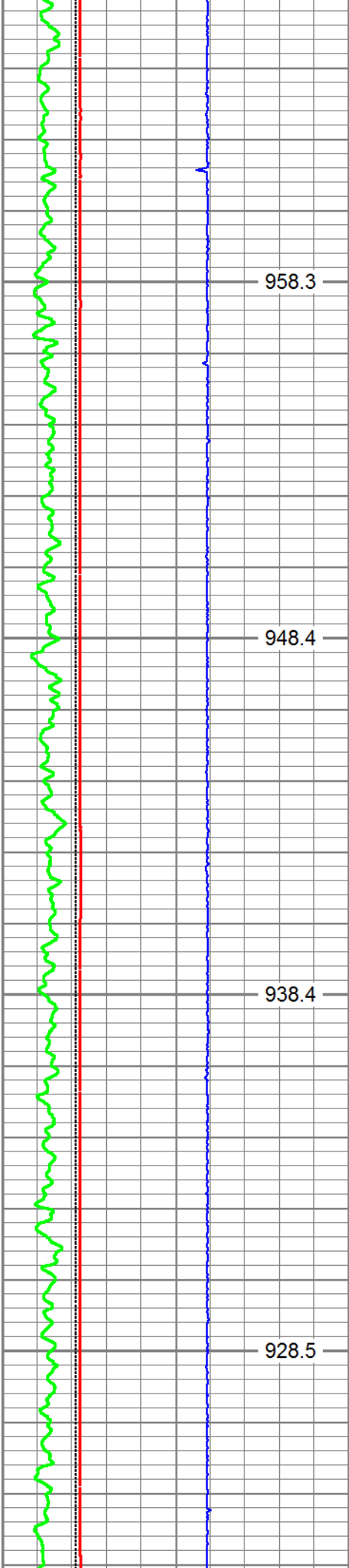
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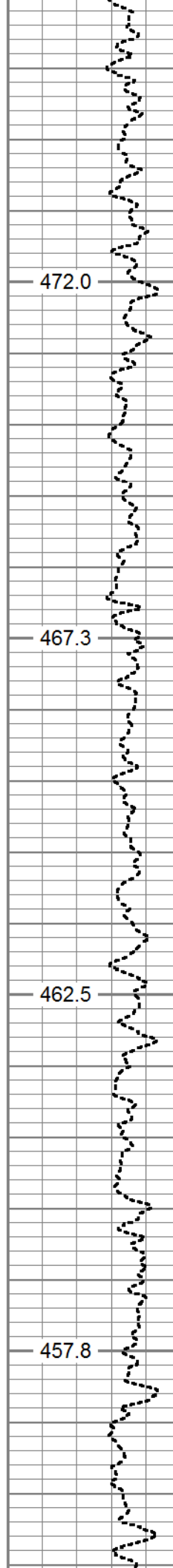
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928.5

7350

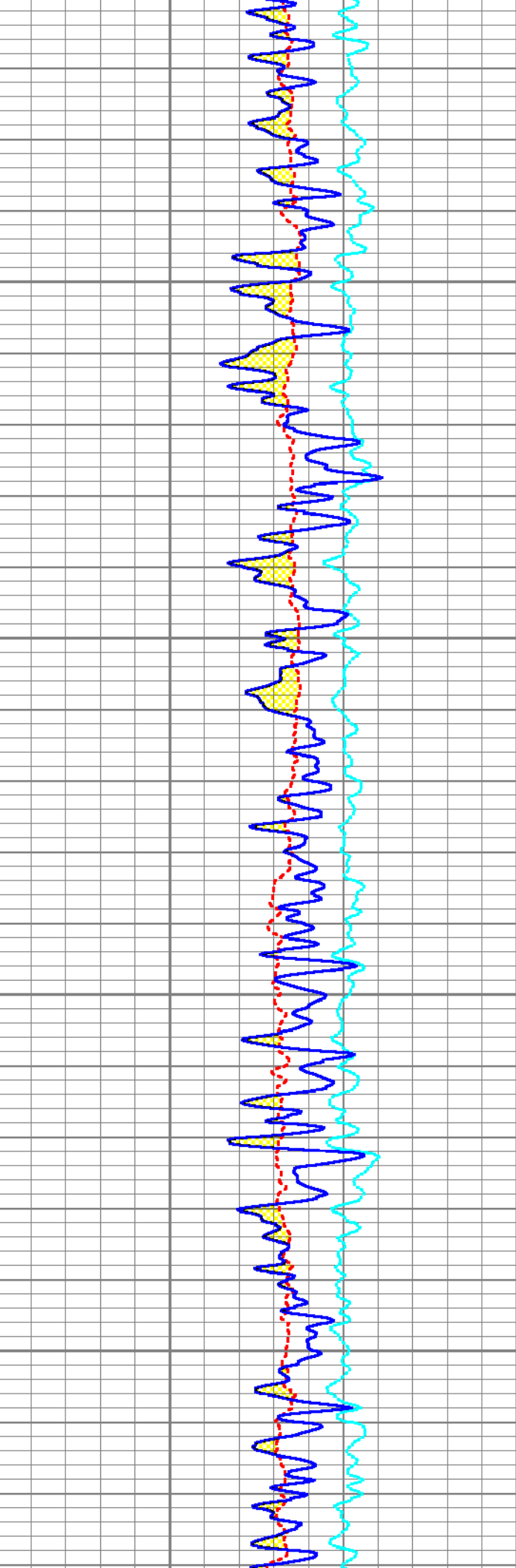


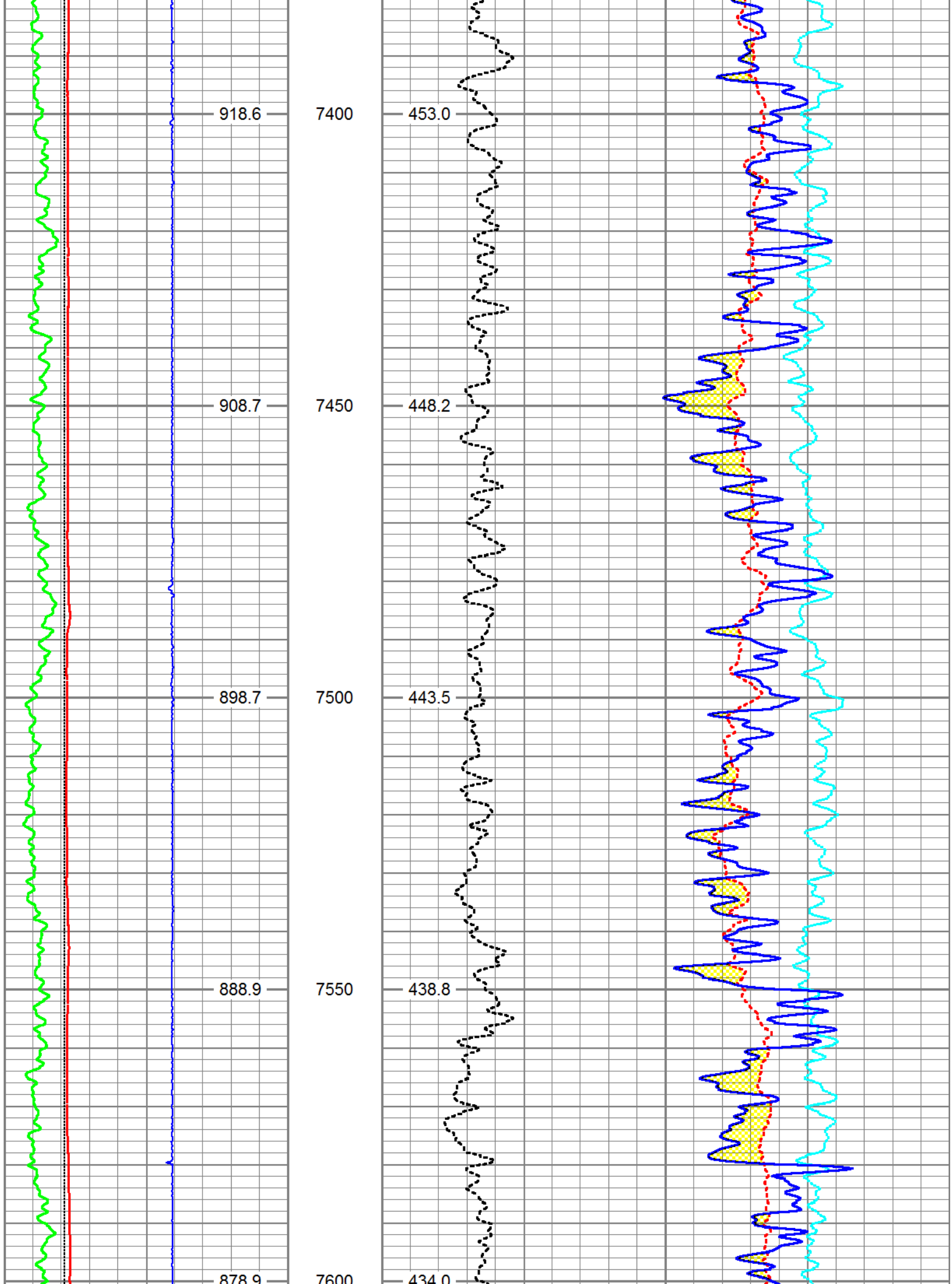
472.0

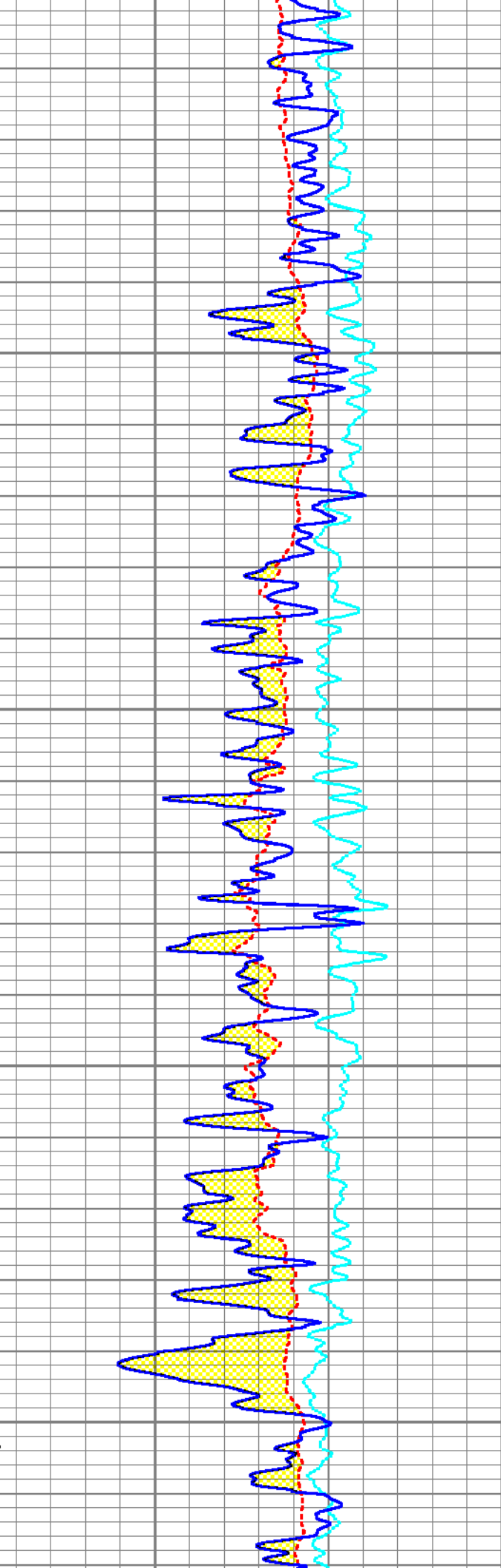
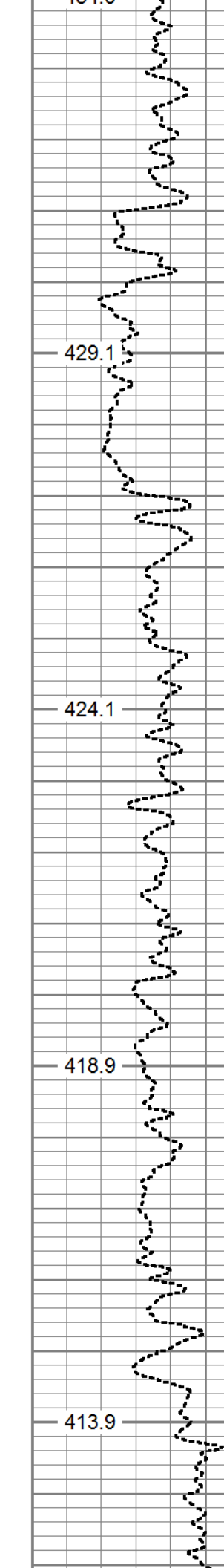
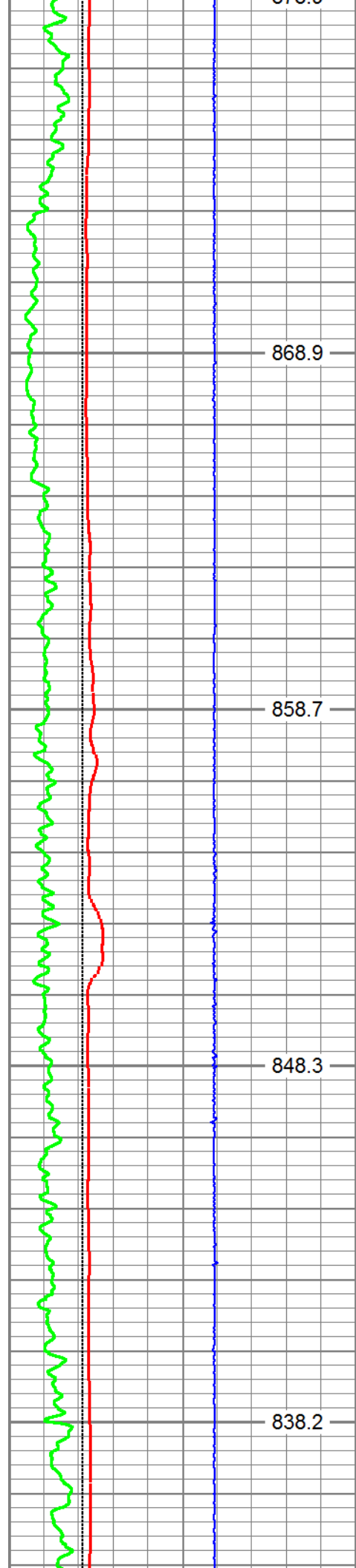
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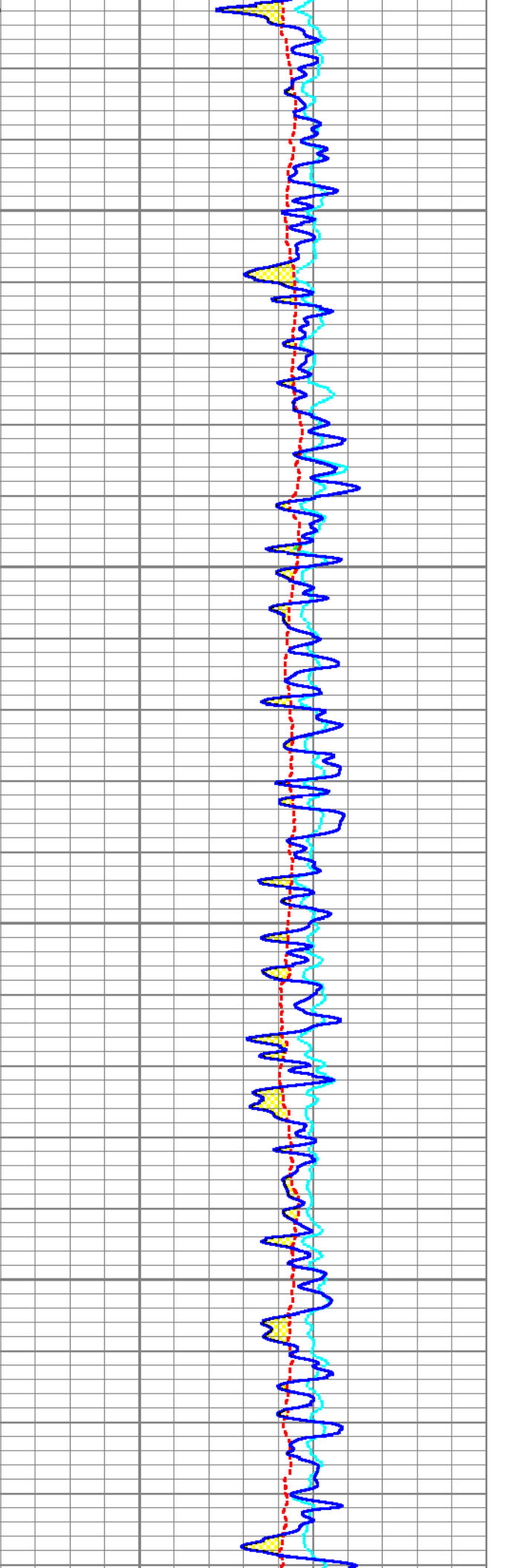
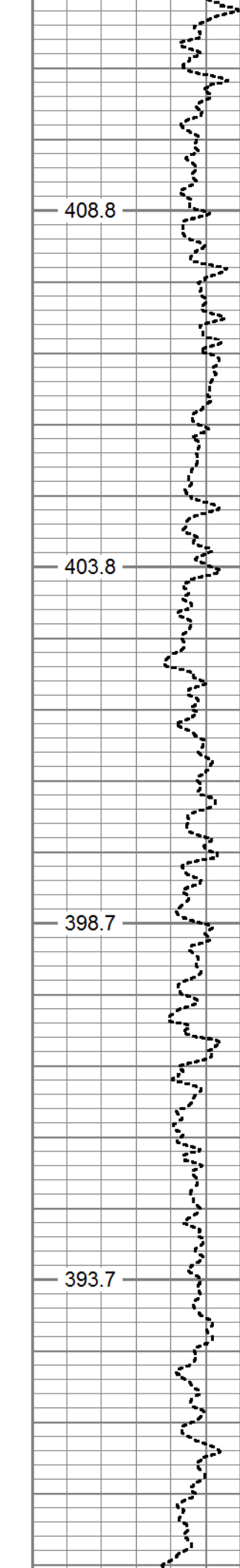
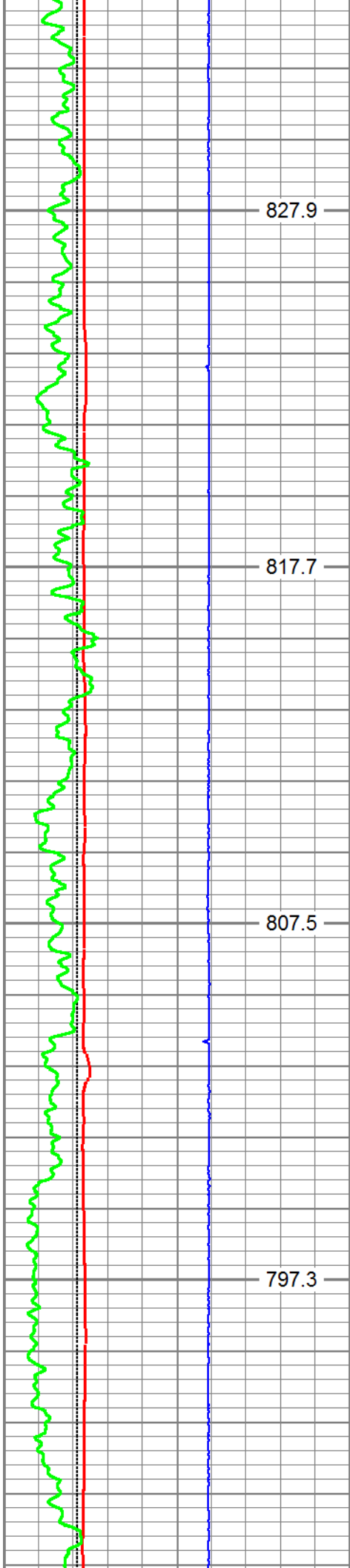
462.5

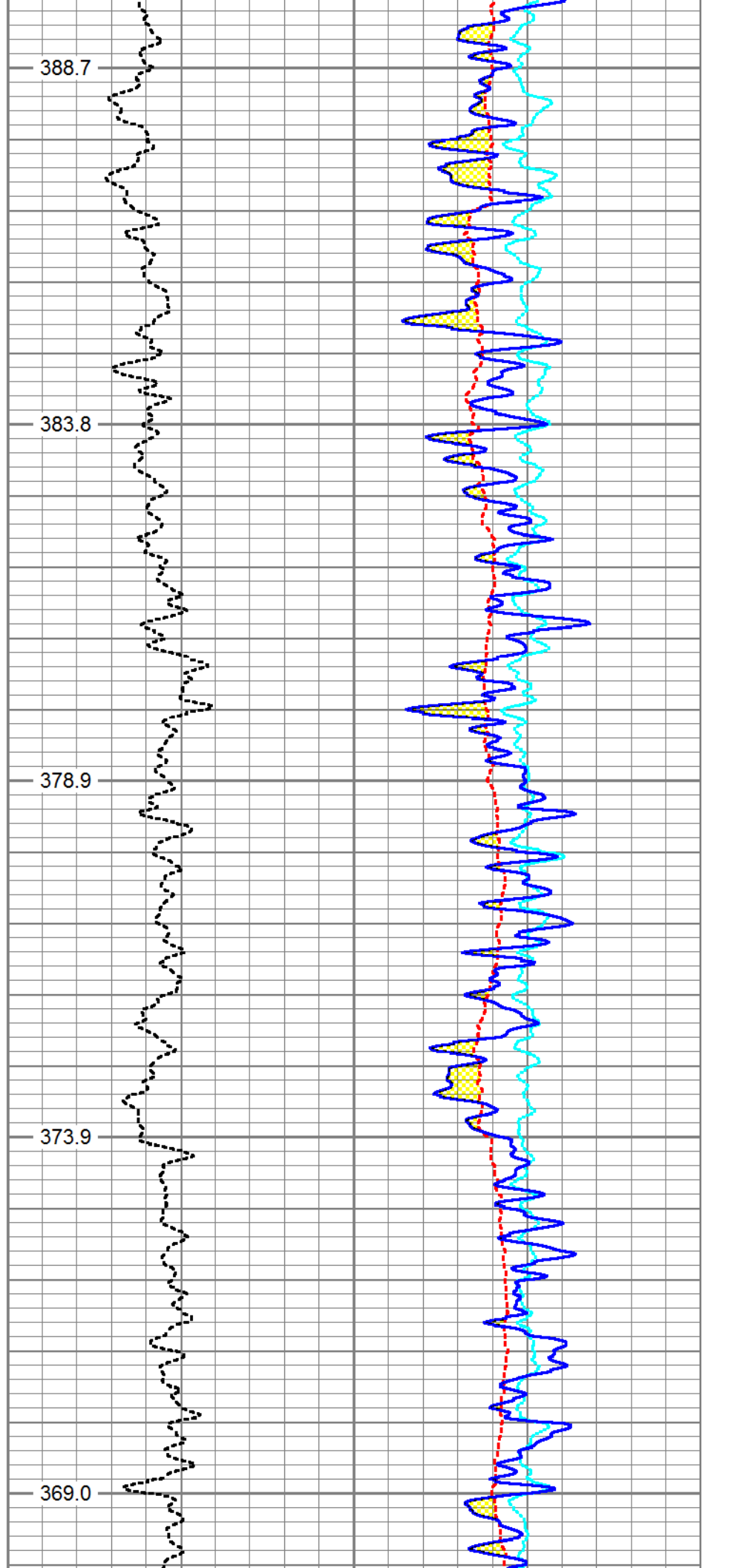
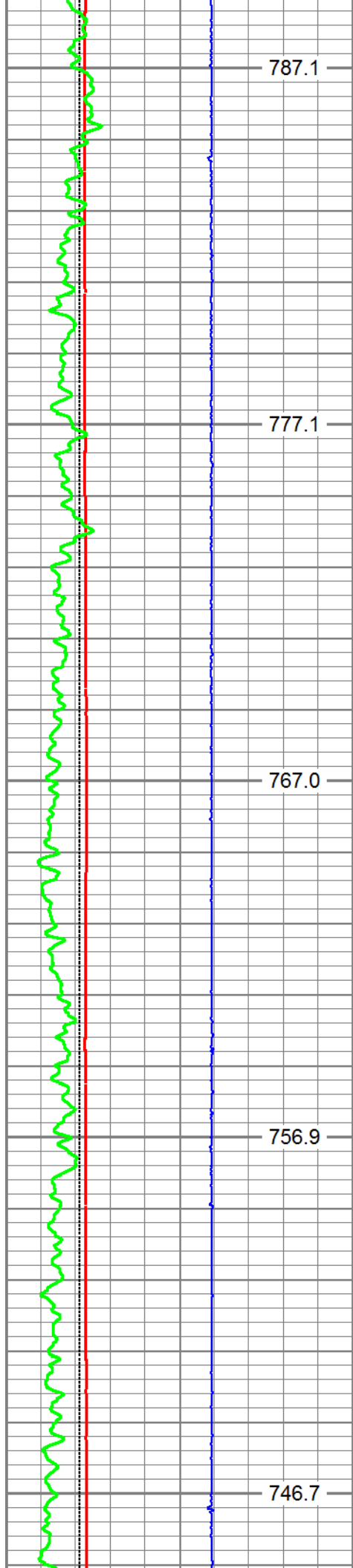
457.8

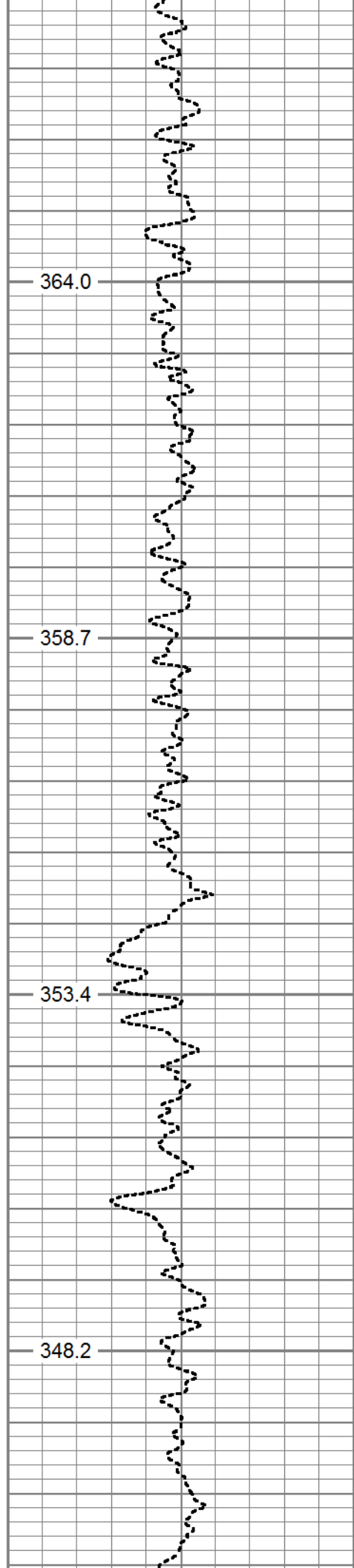
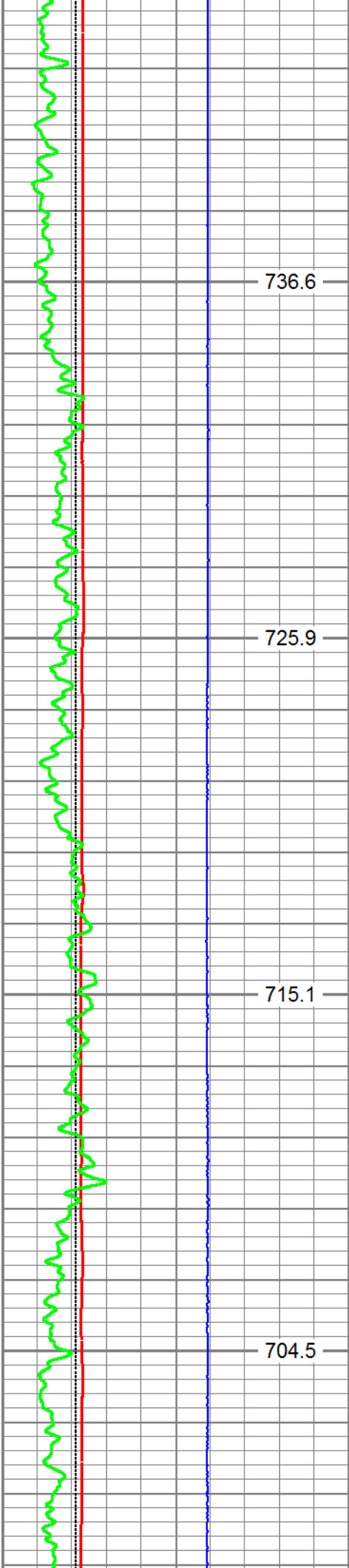


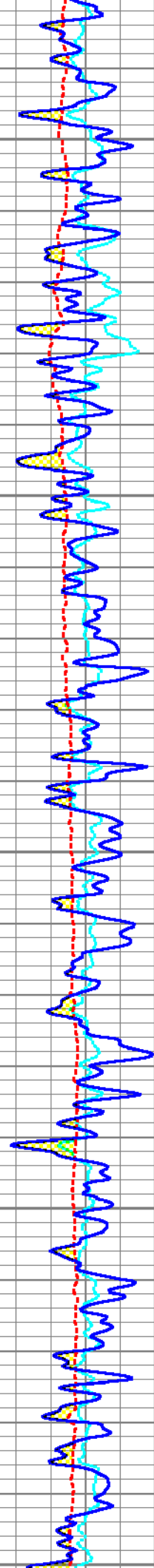
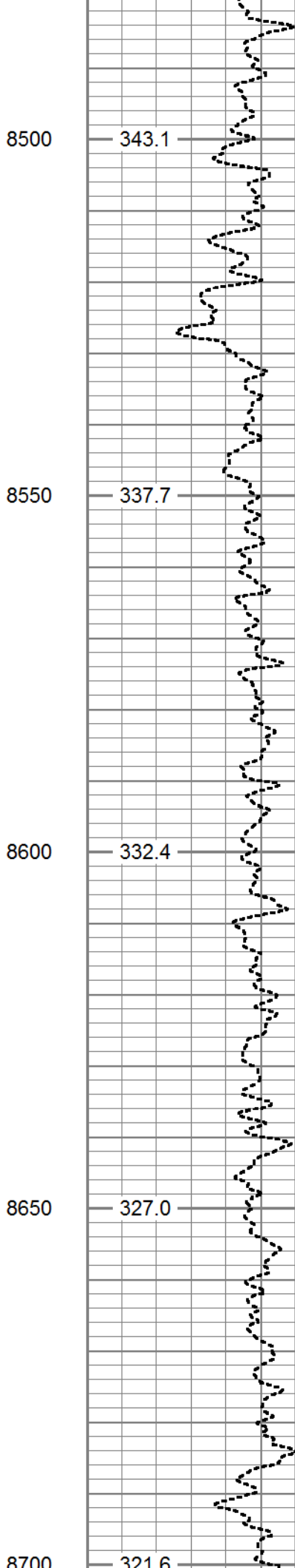
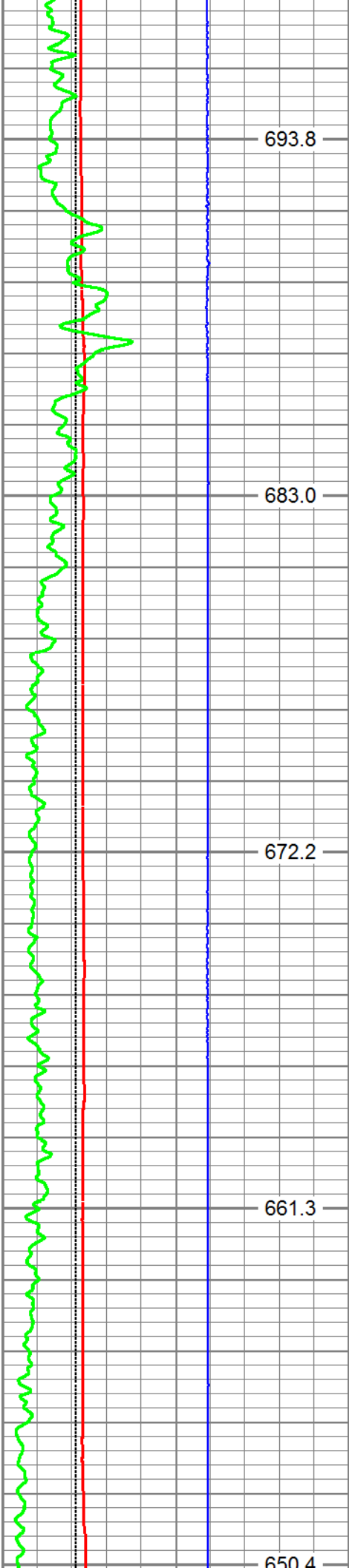


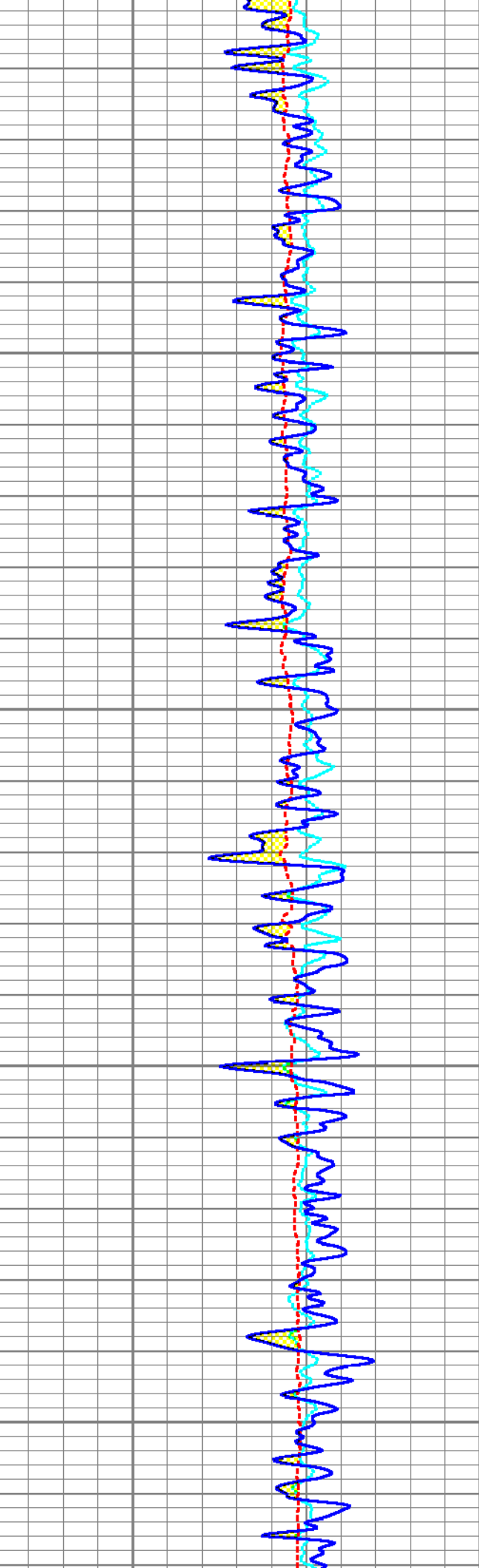
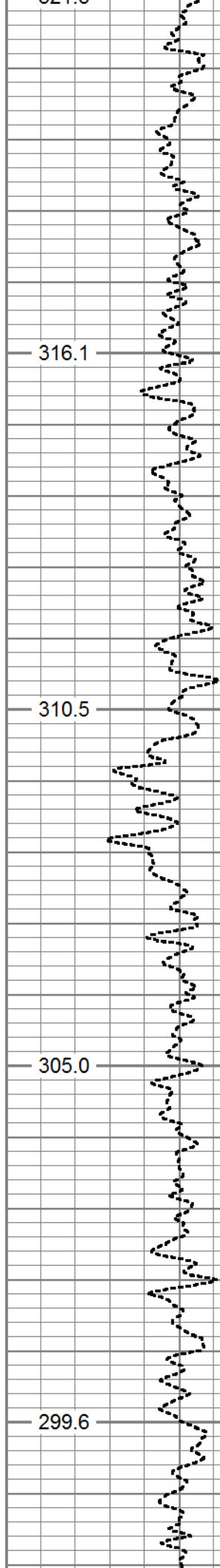
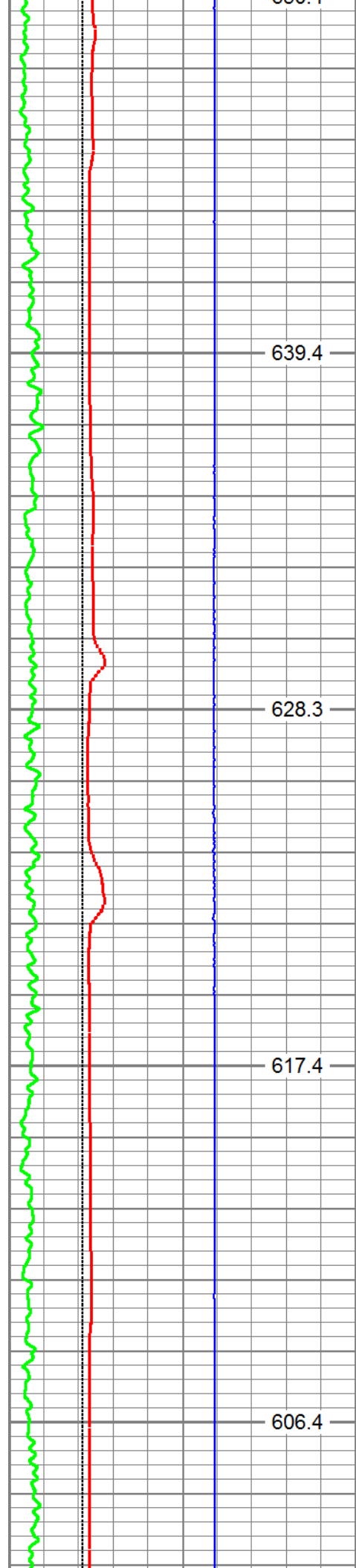


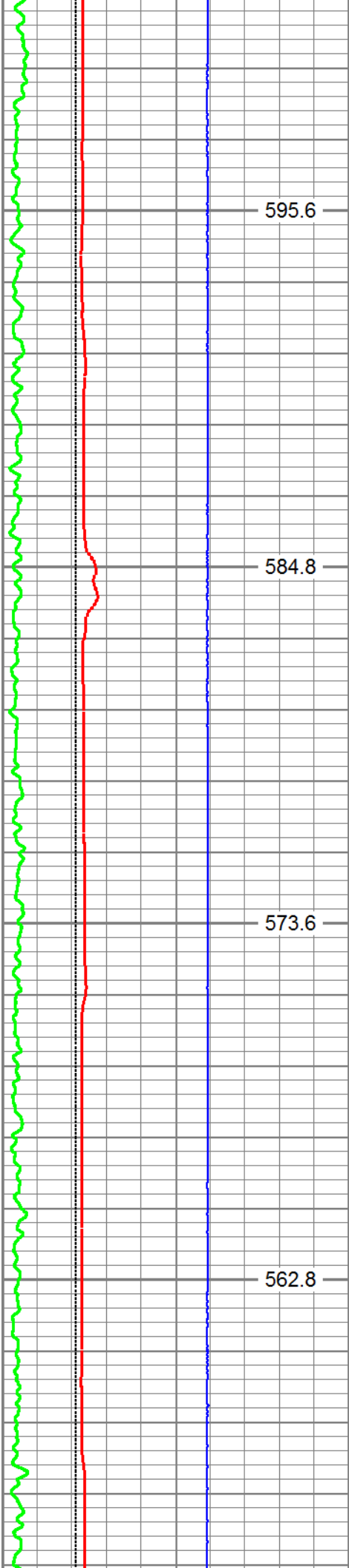












8950

9000

9050

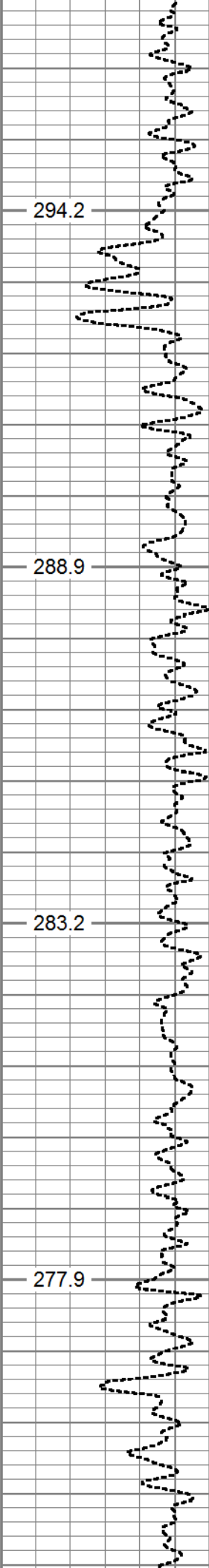
9100

595.6

584.8

573.6

562.8

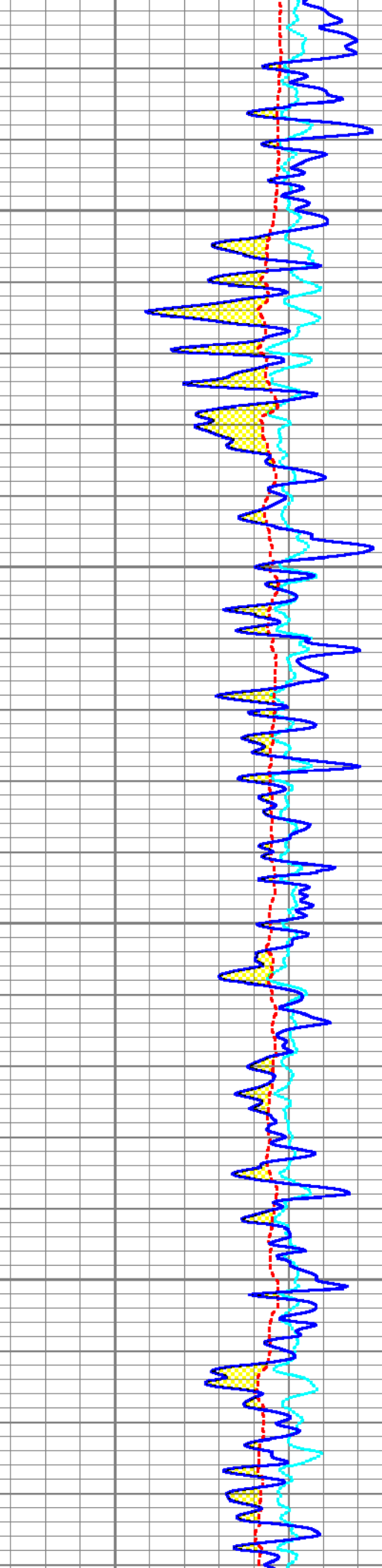


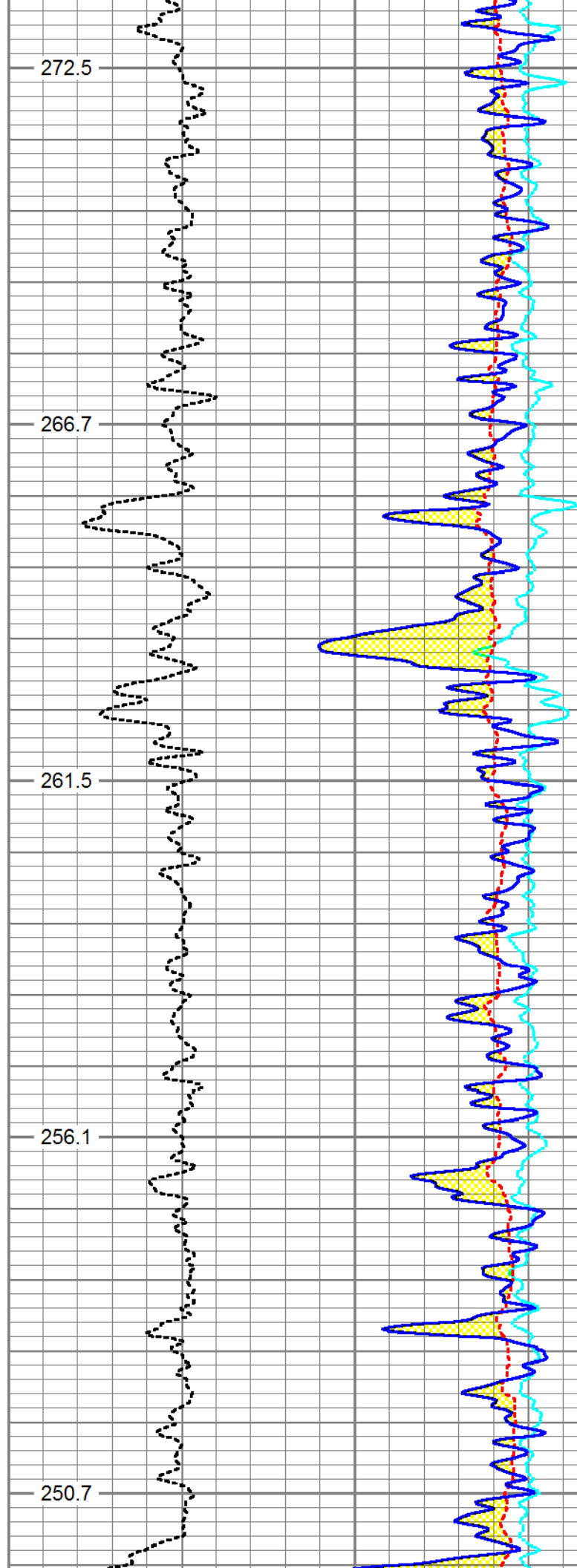
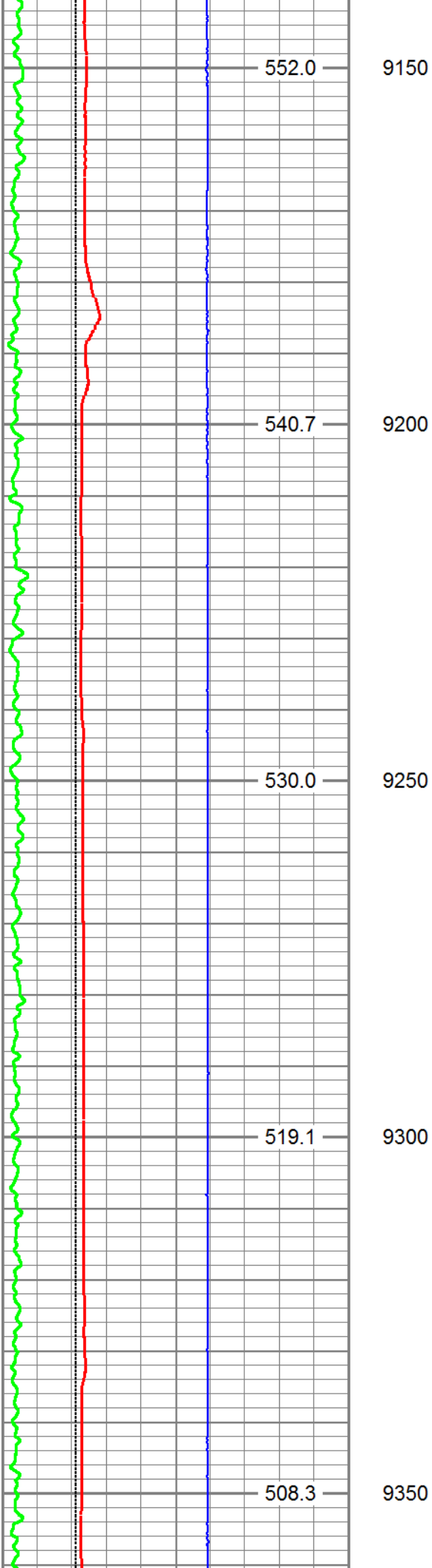
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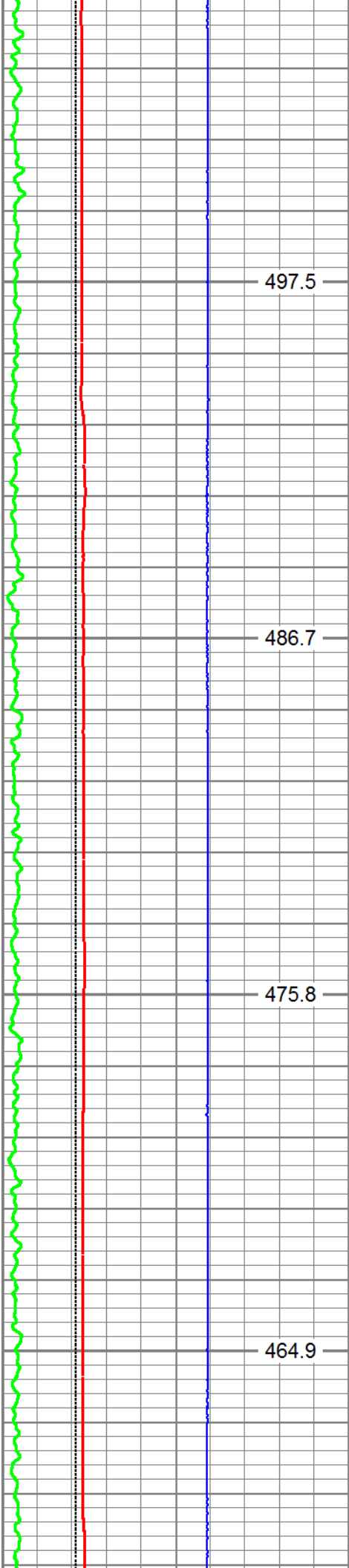
288.9

283.2

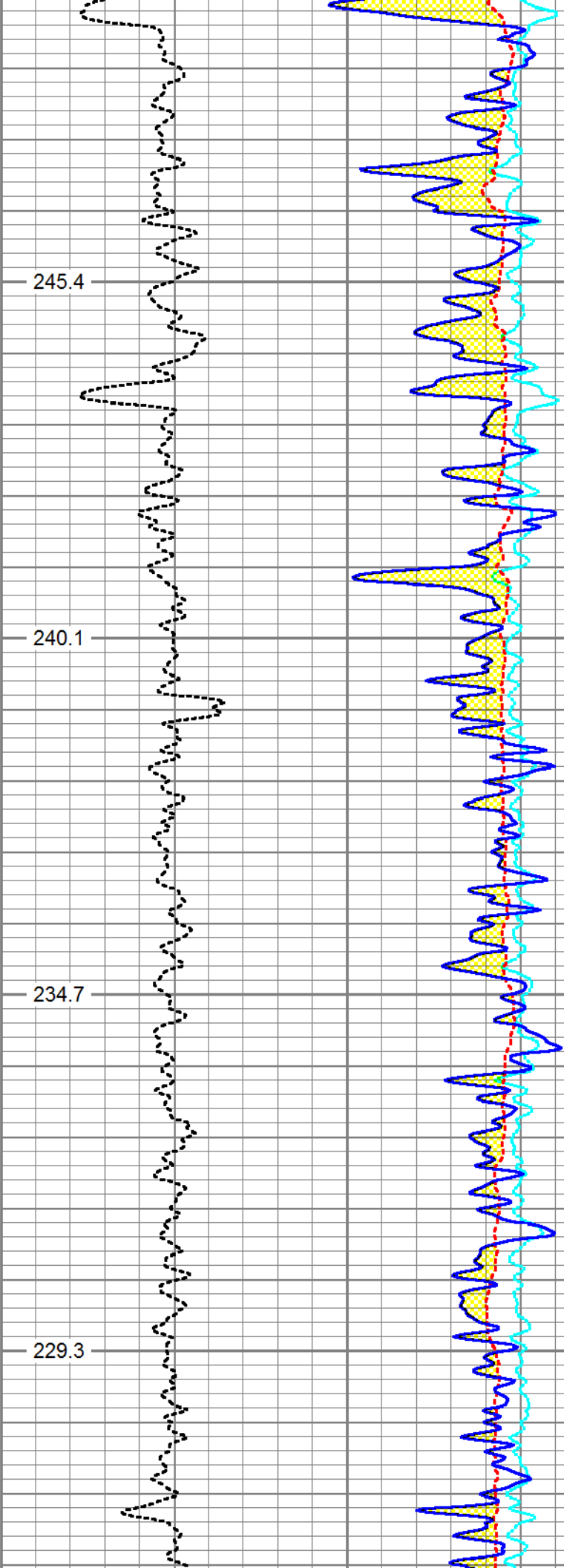
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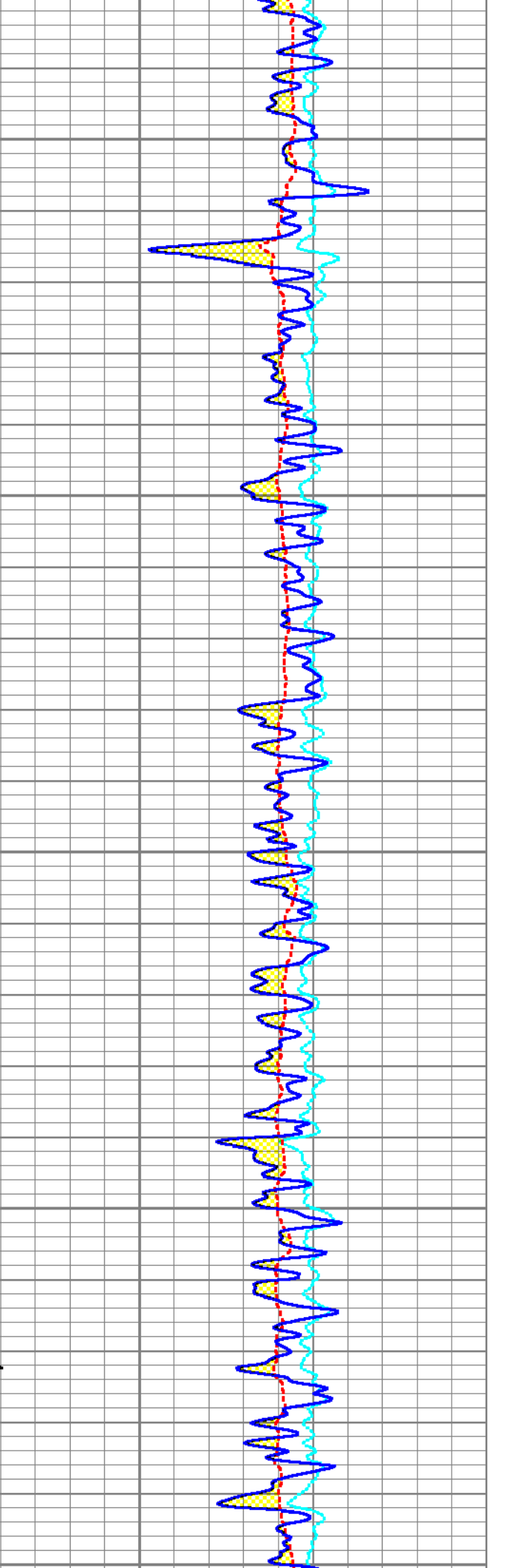
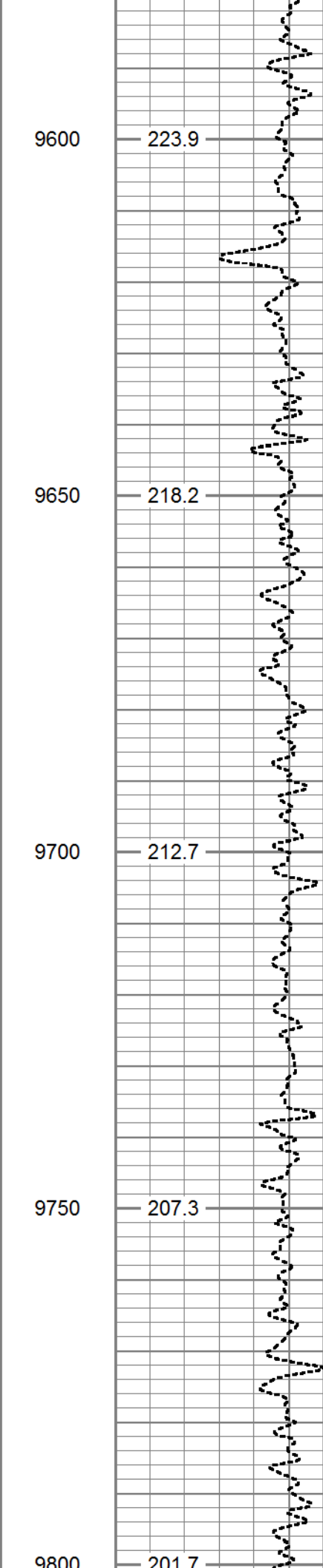
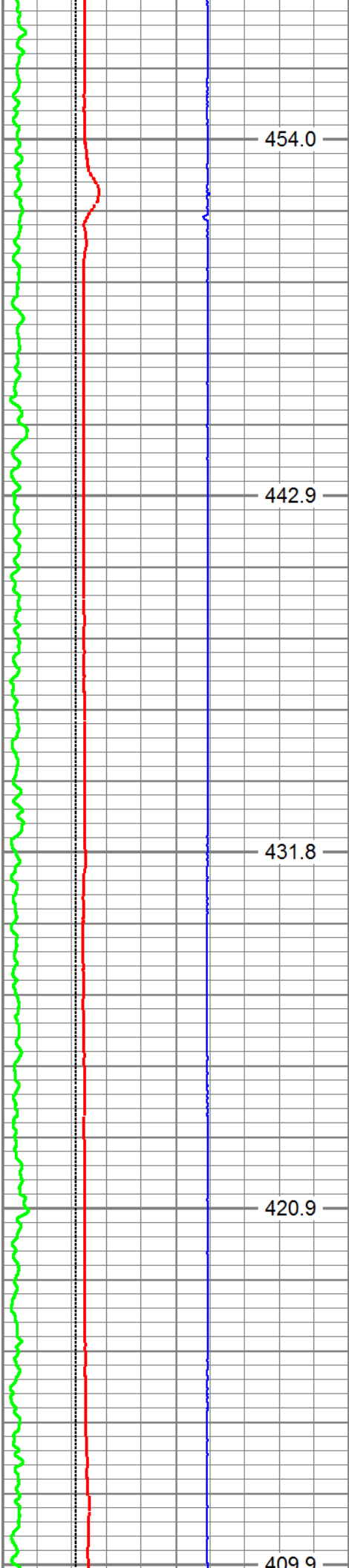


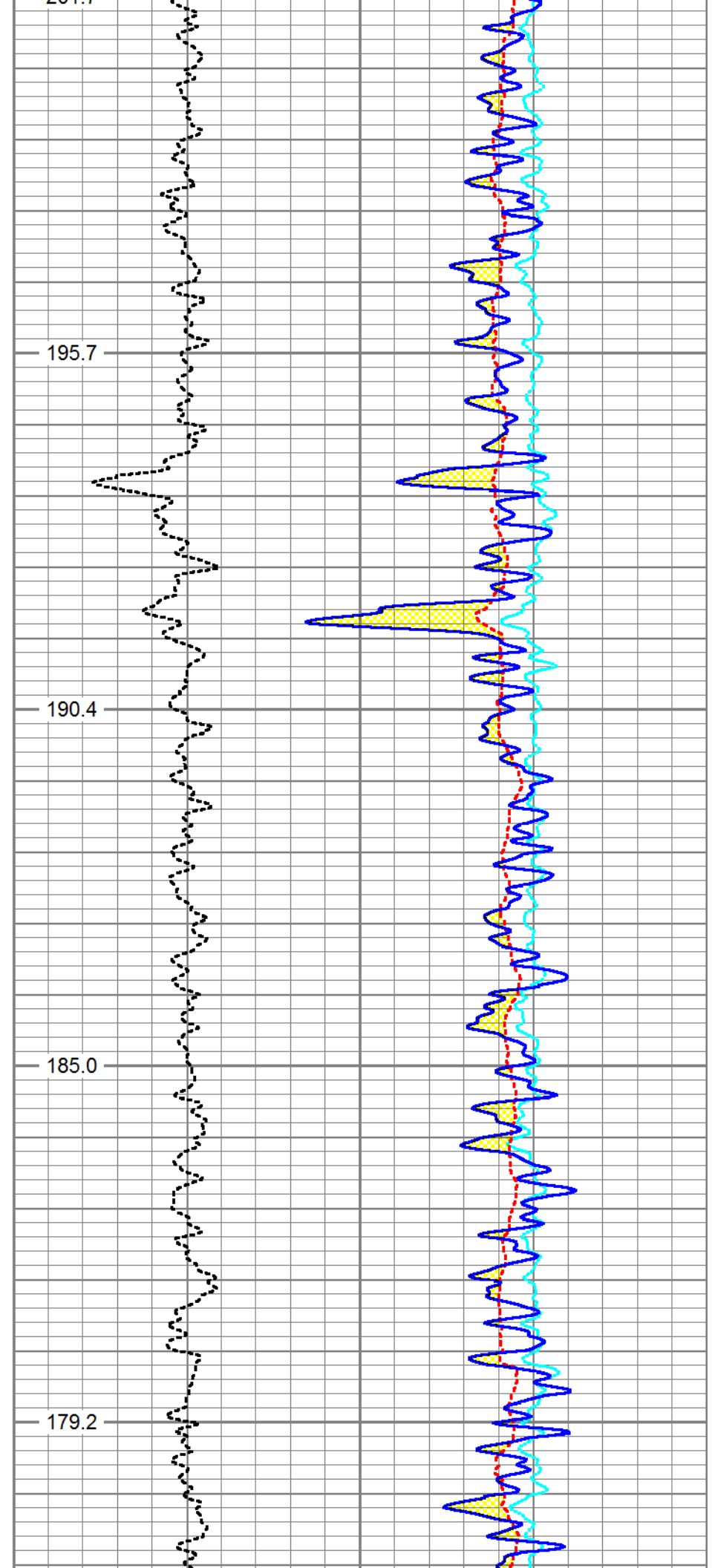
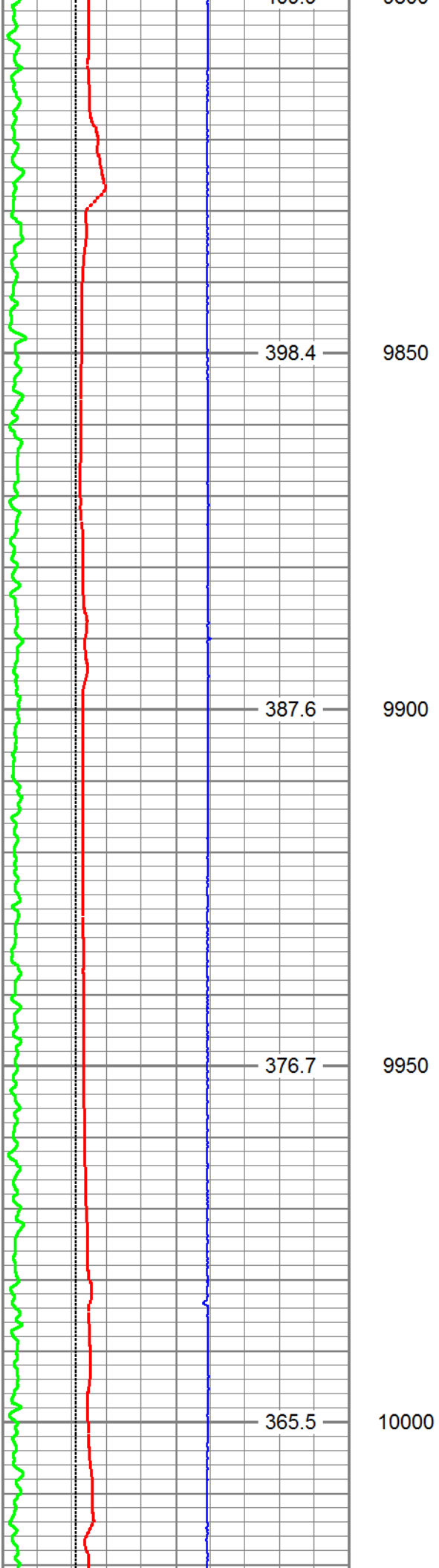


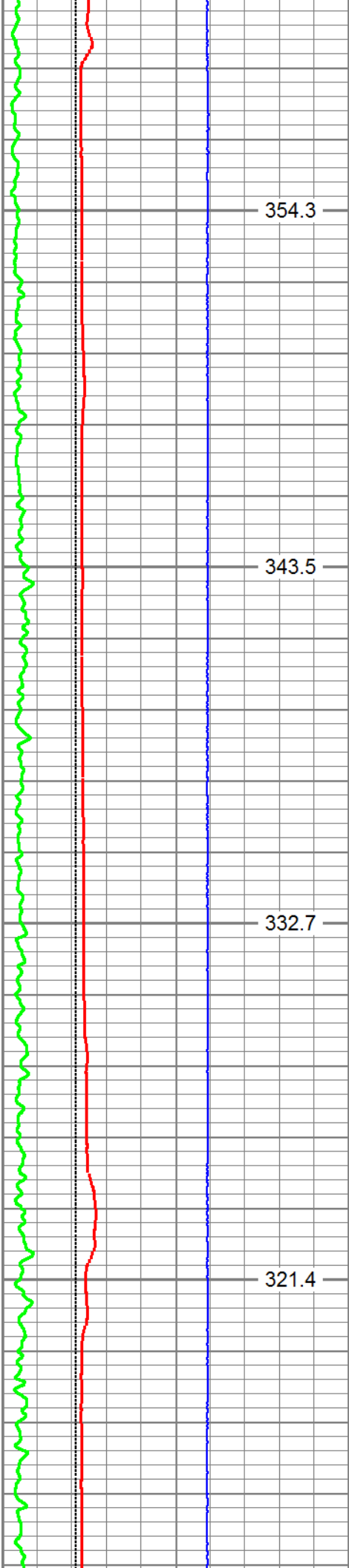


9400
9450
9500
9550







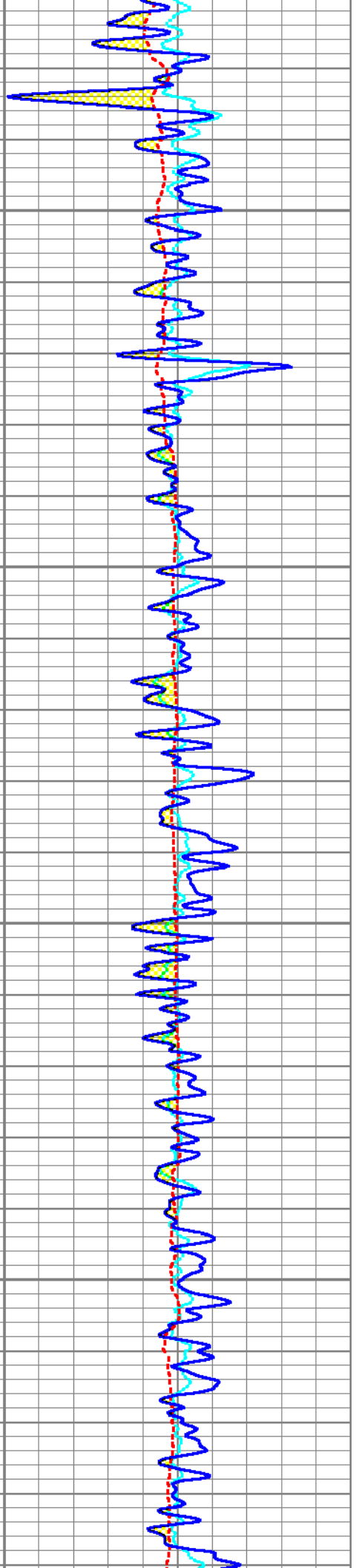
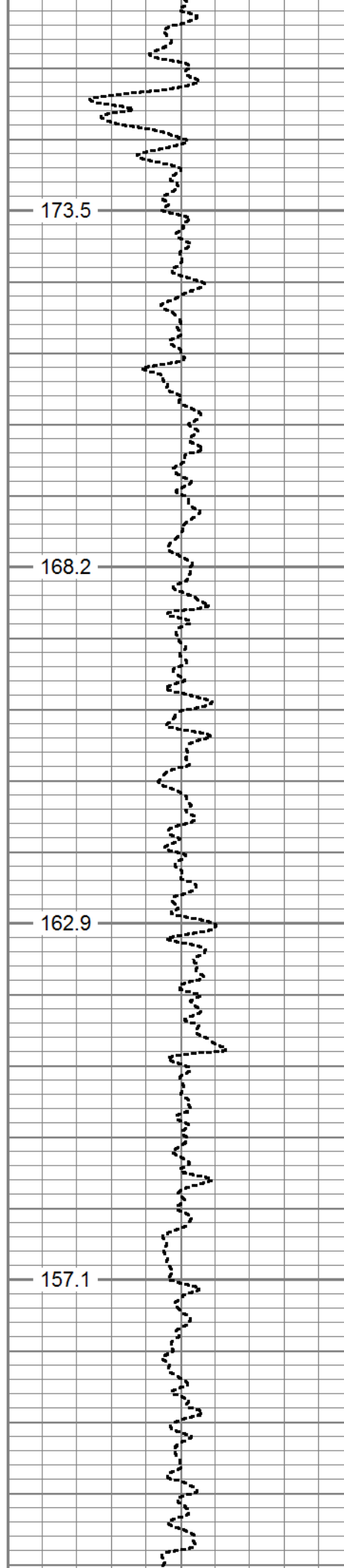


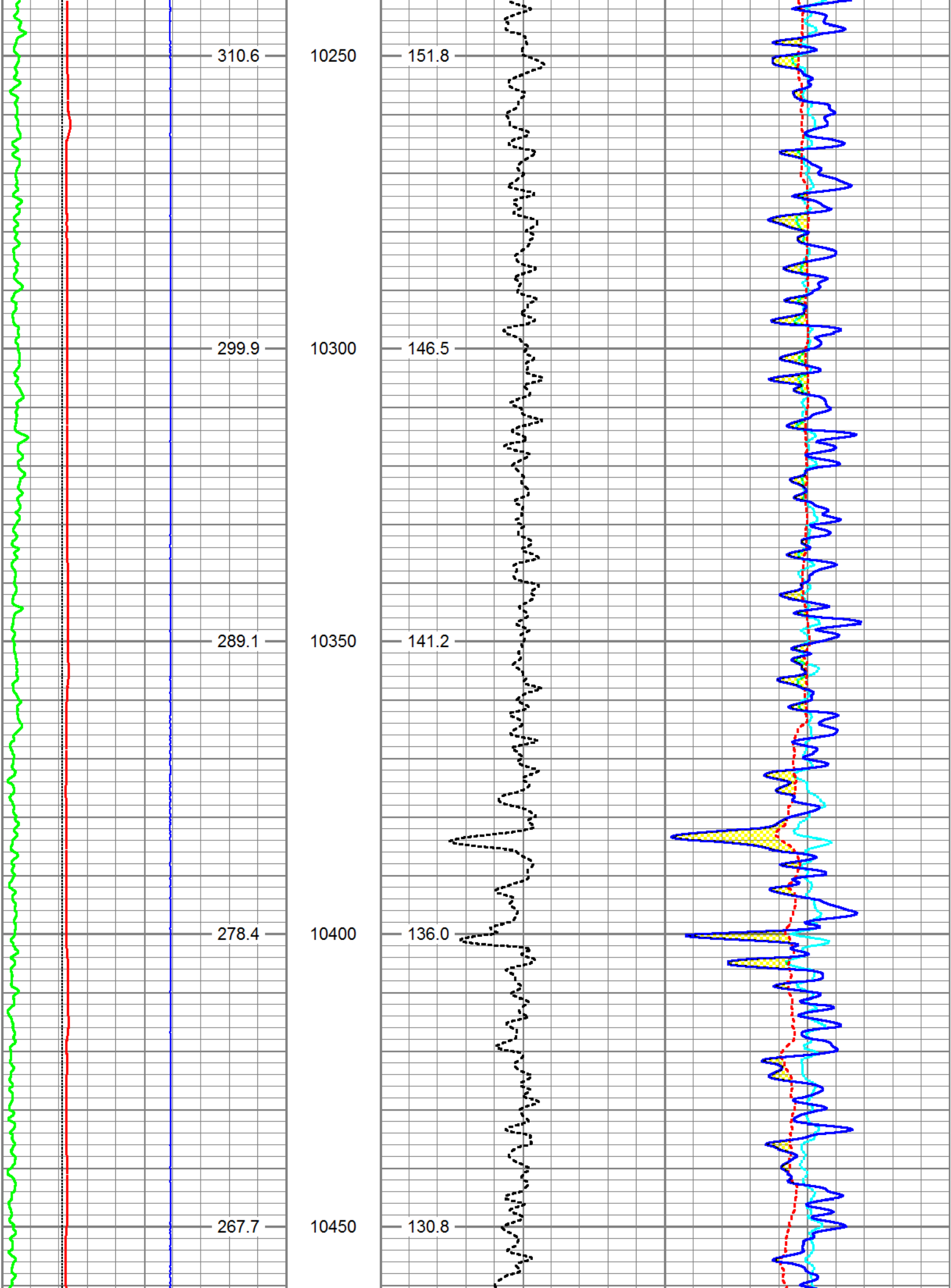
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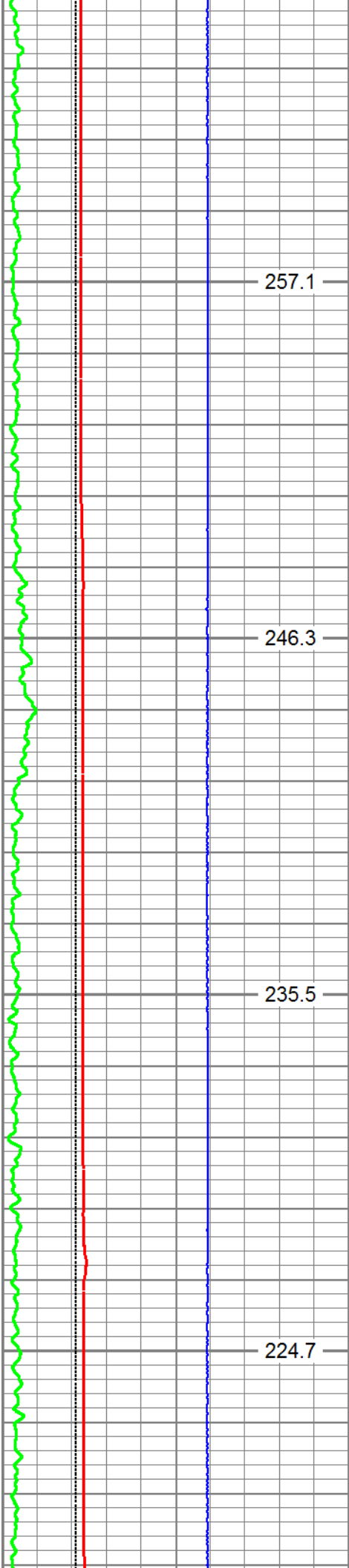
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10150

10200





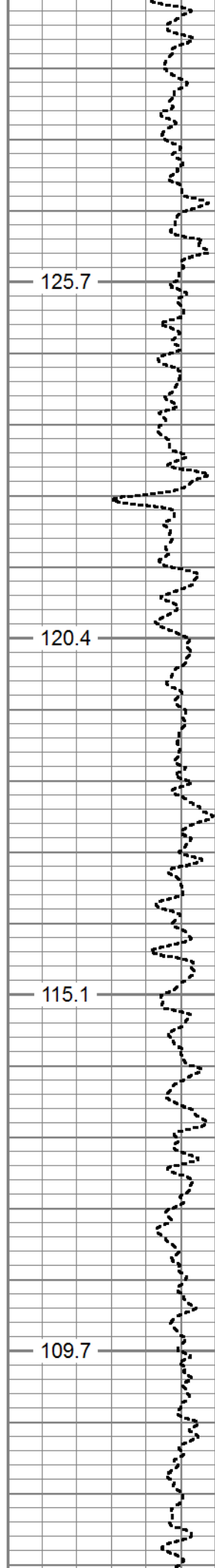


10500

10550

10600

10650

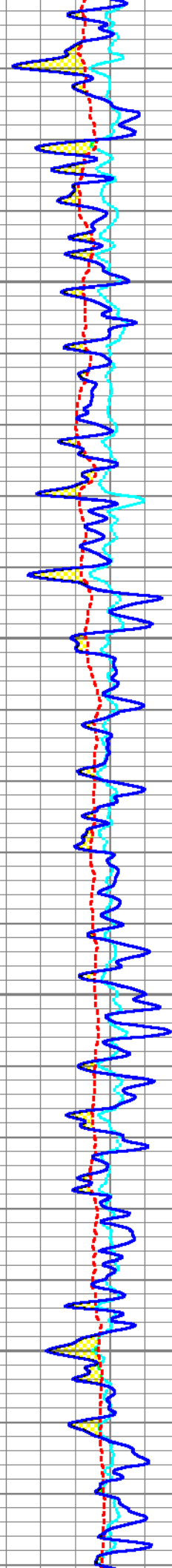


125.7

120.4

115.1

109.7

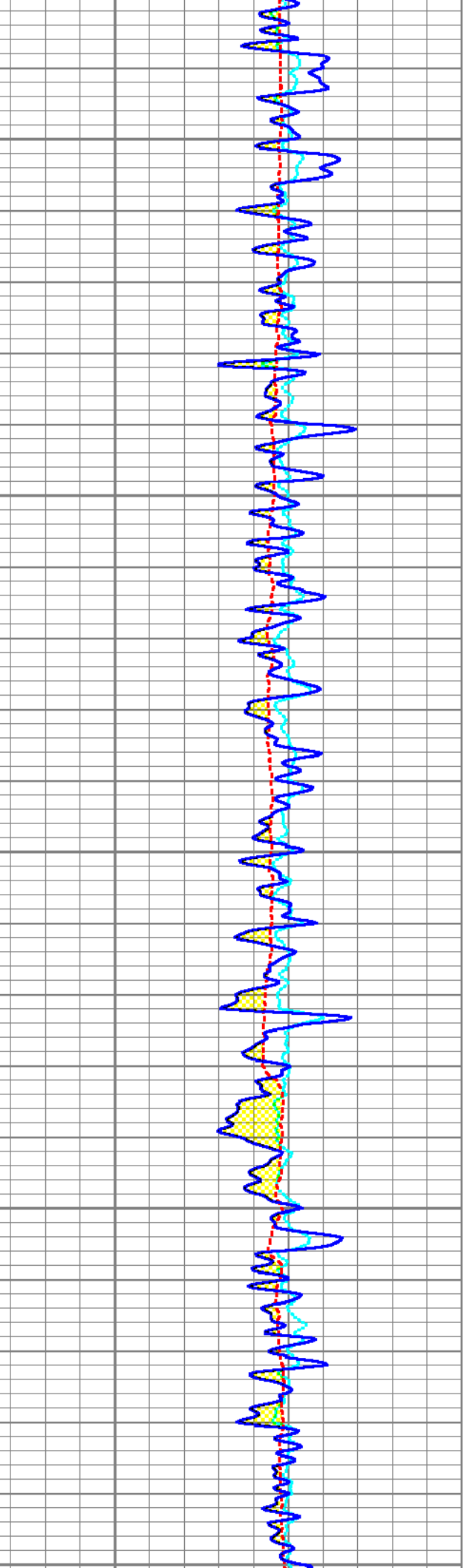
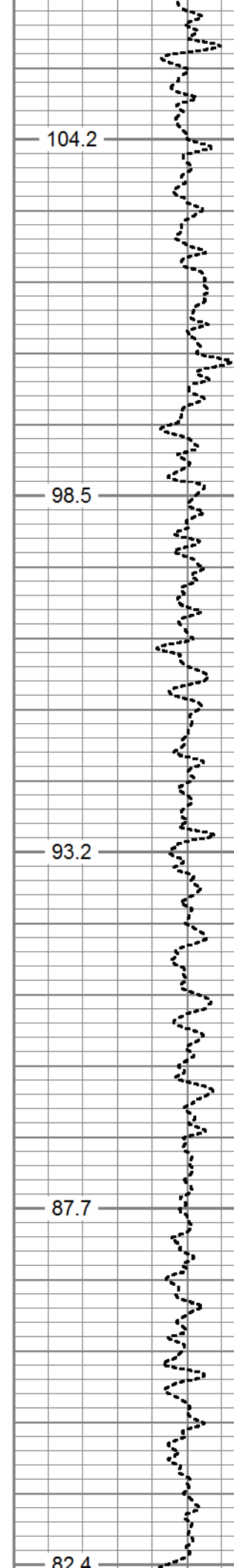
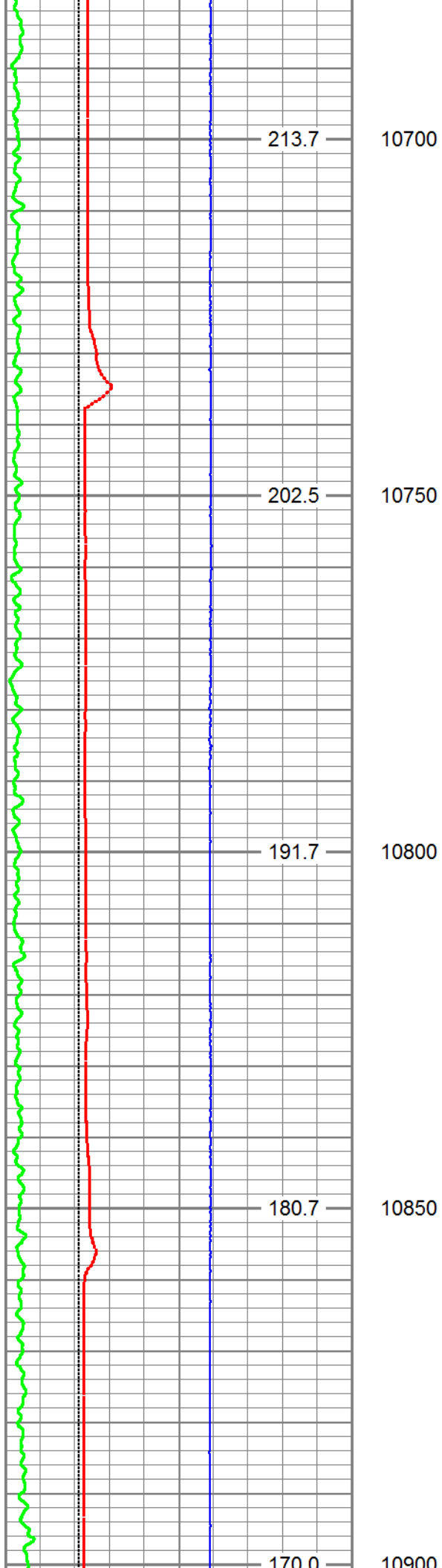


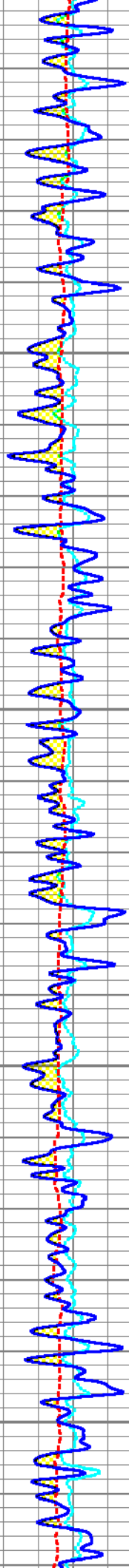
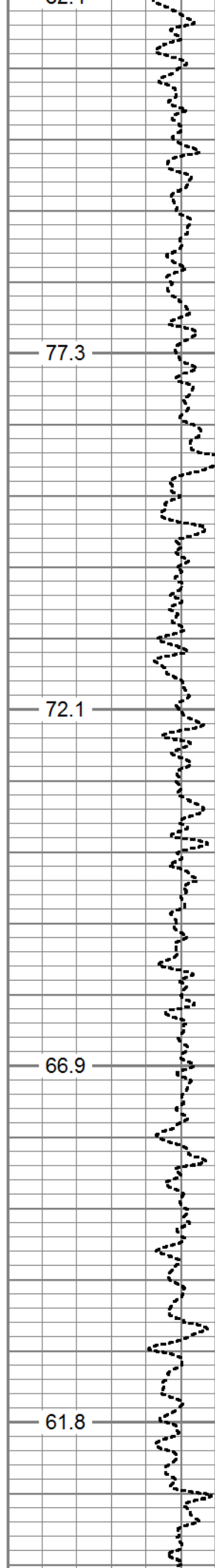
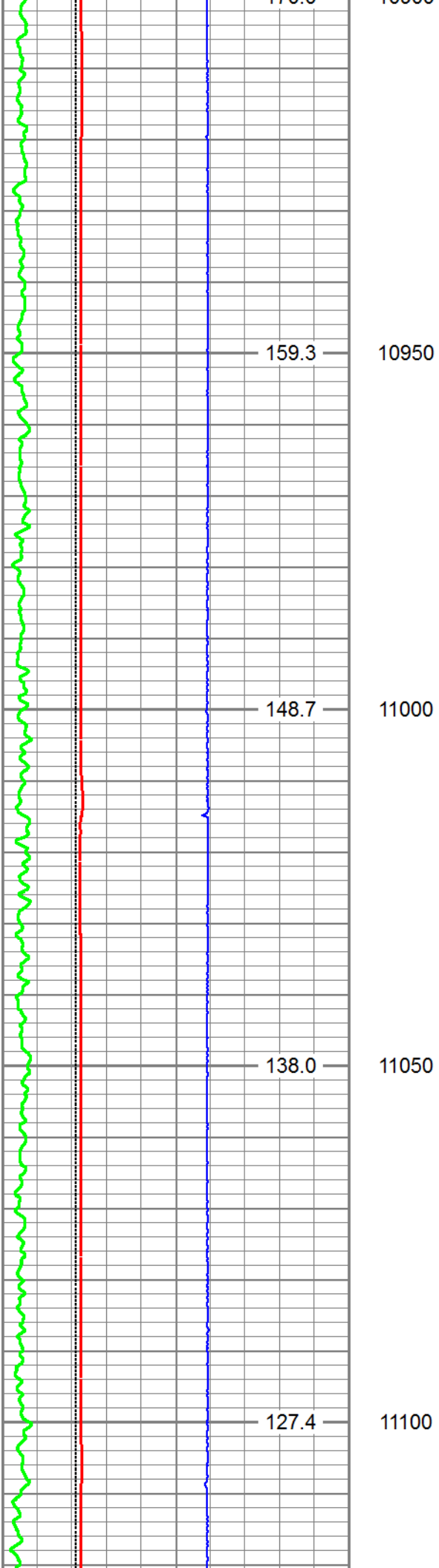
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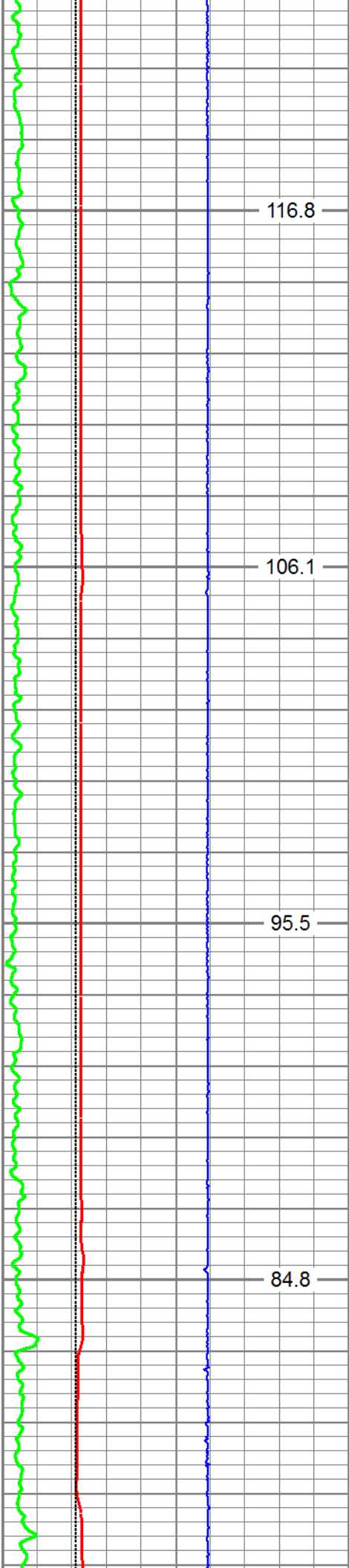
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115.1

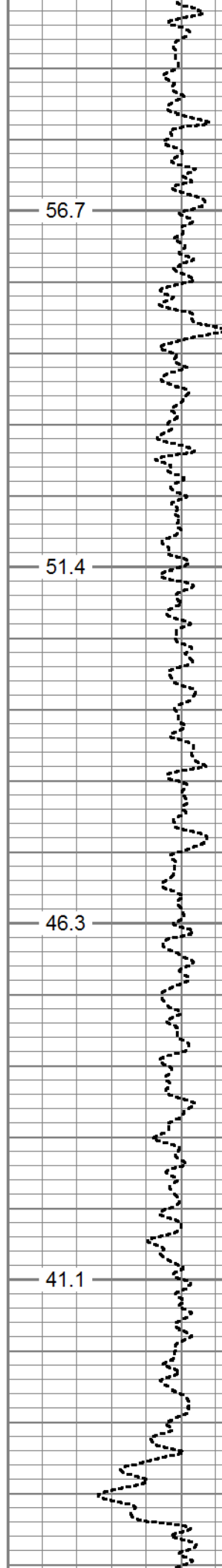
109.7



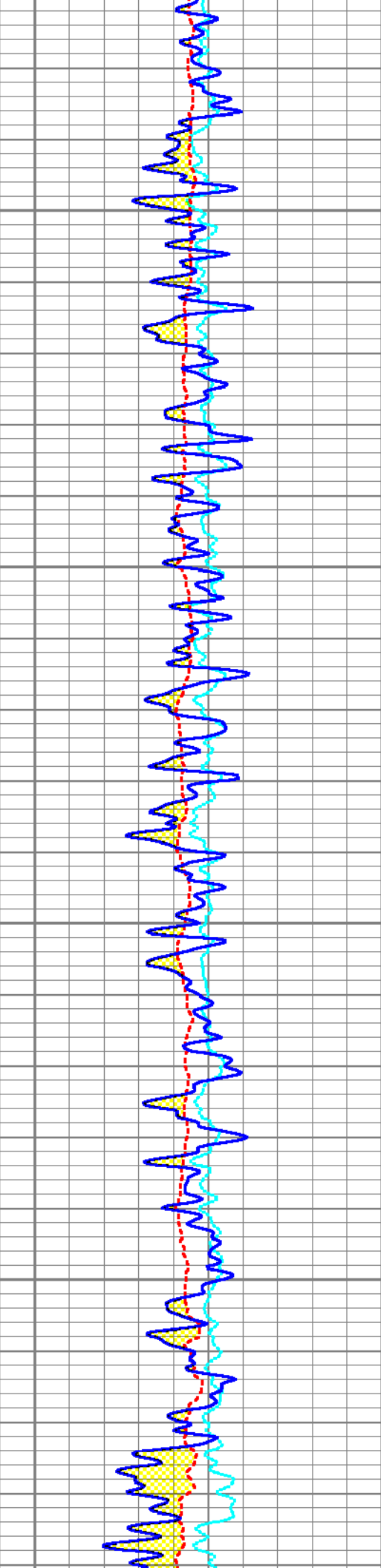




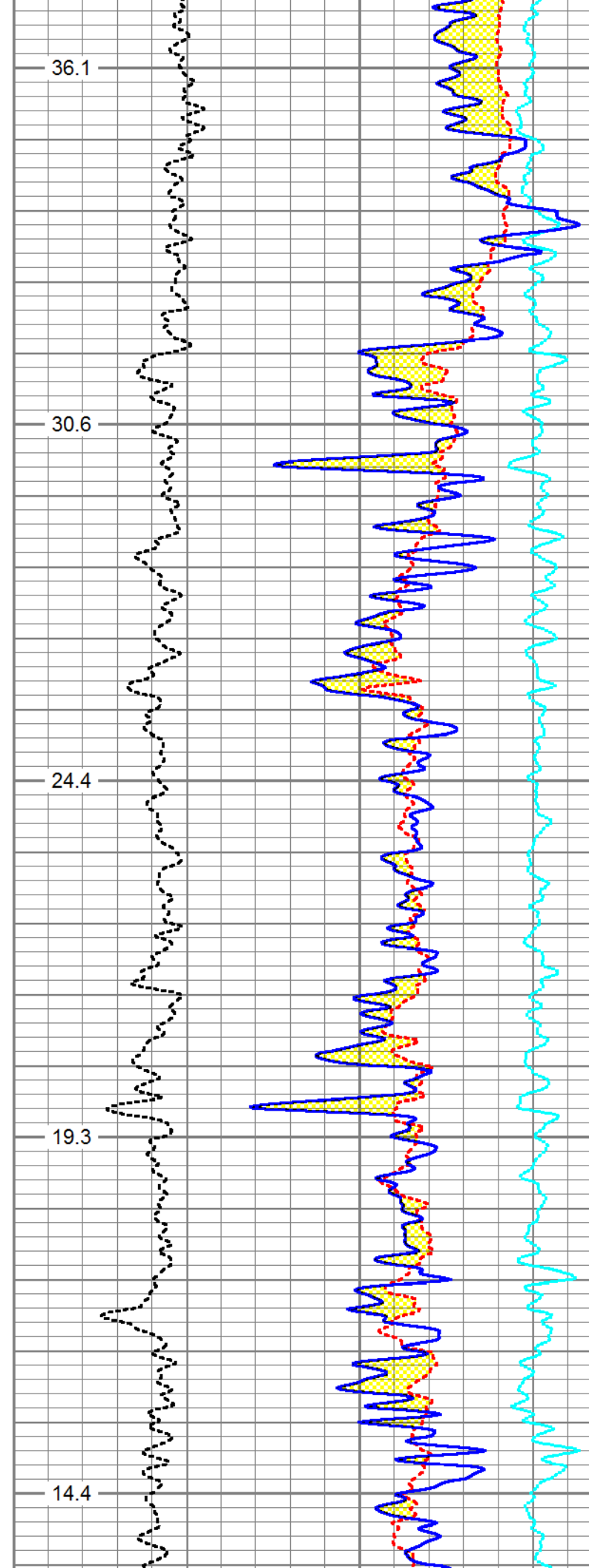
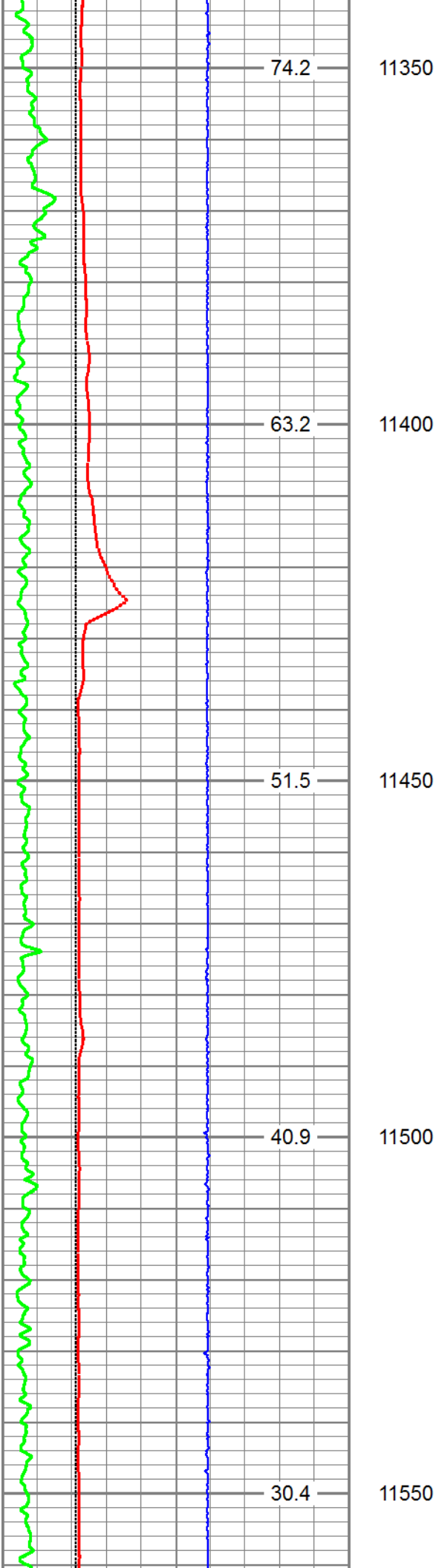
11150
11200
11250
11300

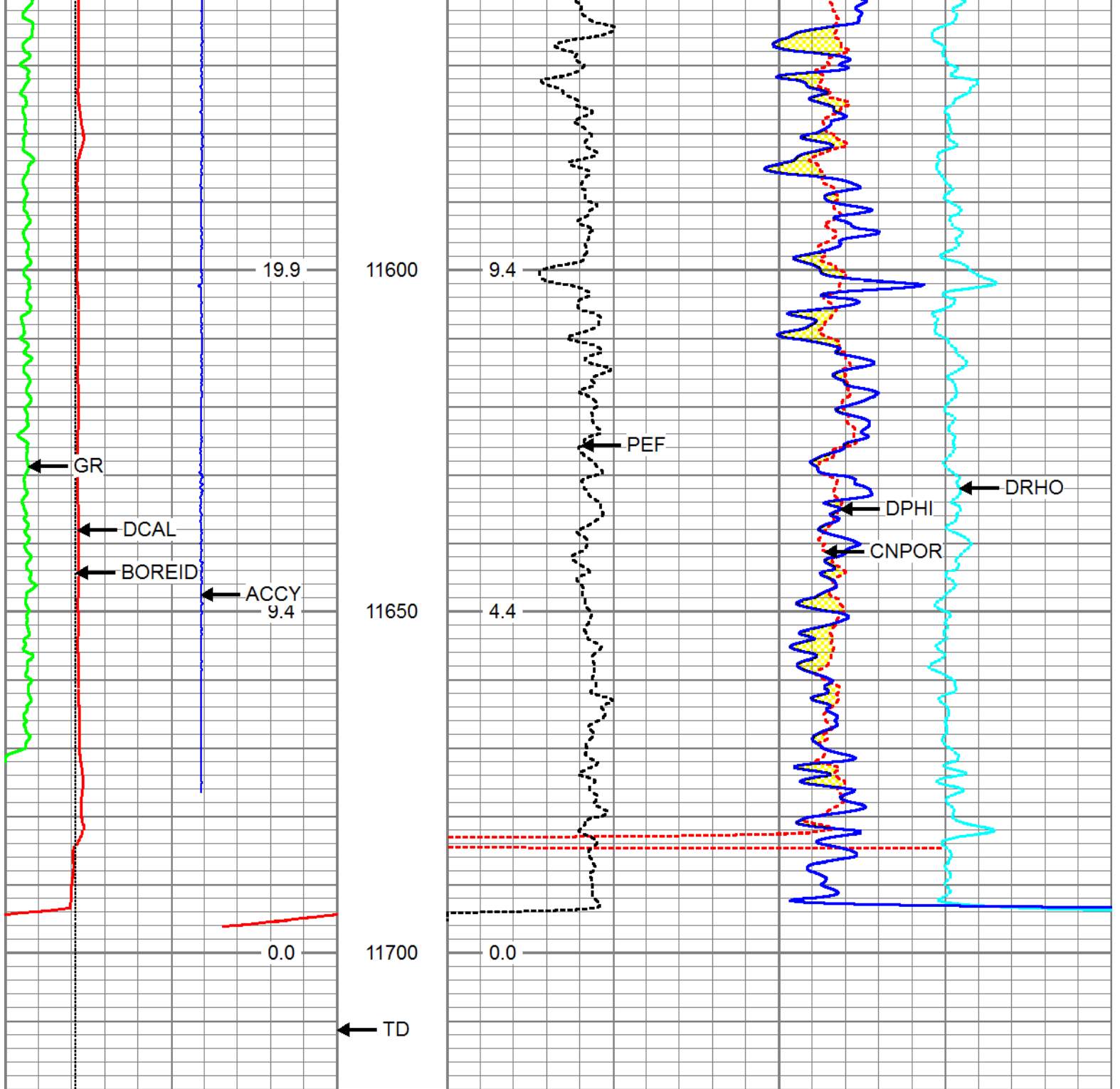


56.7
51.4
46.3
41.1



56.7
51.4
46.3
41.1





4	DCAL (in)	14
4	BOREID (in)	14
0	GR (GAPI)	150
-5	ACCY	5
TBHV (ft3)		

30	CNPOR (pu)	-10
30	DPHI (pu)	-10
0	PEF (barn)	10 -0.25
ABHV (ft3)		DRHO (g/cc) 0.25



MAIN PASS

Log Variables

Database: C:\Warrior\Data\brad 1-12h mem.db
 Dataset: field/well/proc3/MERGE1

Top - Bottom

A 1	BHCOR On	BHFL_TYPE WBM	BHFLRES Ohm-m 0	BHFLRESSRC MUDCELL	BHIDSRC CURVE	BOREID in 6.125
BOTTEMP degF 140	CASED? No	CASEOD in 4.5	CASETHCK in 0	CEMWATERSA kppm 0	CMNTTHCK in 0	DNBHC? NO
DPORSEL RHOB	FLUIDDEN g/cc 1	FRMSALIN kppm 0	LATNOR Off	M 2	MATRXDEN g/cc 2.71	MUDSALIN kppm 0.5
MudWgt lb/gal 8.2	NPORSEL Limestone	PEBHC? YES	PERFS 0	RESTMPSRC INTERNAL	SO in 0.5	SRFTEMP degF 65
SZCOR On	TDEPTH ft 11711	TMPCOR On	TOOLPOS Free			

Calibration Report

Database File: brad 1-12h tool ck.db
 Dataset Pathname: pass1
 Dataset Creation: Sun Feb 12 00:05:29 2012 by Log ThruBit 110523

ThruBit Induction Calibration Report

Tool Model-Serial Number: PS-PS25R
 Shop Calibration Performed: Tue Nov 15 11:17:53 2011

BASELINE

	R	Expected	X	Expected
Freq 1				
A1	-454.9800	[-500.00, -400.00]	315.7810	[-500.00, 500.00]
A2	-145.8610	[-180.00, -100.00]	293.8830	[-500.00, 500.00]
A3	-33.2543	[-50.00, -10.00]	-8.4904	[-500.00, 500.00]
A4	-15.5625	[-30.00, -10.00]	259.2240	[-500.00, 500.00]
A5	-13.1964	[-30.00, -10.00]	101.3950	[-500.00, 500.00]
Freq 2				
A1	-235.8650	[-280.00, -180.00]	174.6280	[-500.00, 500.00]
A2	-94.7325	[-130.00, -50.00]	163.0440	[-500.00, 500.00]
A3	-24.8774	[-50.00, -10.00]	-55.2476	[-500.00, 500.00]
A4	-18.6333	[-30.00, -10.00]	86.1766	[-500.00, 500.00]
A5	-17.8894	[-30.00, -10.00]	-28.2449	[-500.00, 500.00]
Freq 3				
A1	-147.9980	[-180.00, -80.00]	59.5462	[-500.00, 500.00]
A2	-71.9207	[-130.00, -30.00]	78.0794	[-500.00, 500.00]
A3	-19.7890	[-50.00, -10.00]	-96.3198	[-500.00, 500.00]
A4	-19.5054	[-30.00, -10.00]	-27.1267	[-500.00, 500.00]
A5	-19.8623	[-30.00, -10.00]	-124.3060	[-500.00, 500.00]
Freq 4				
A1	-79.8178	[-120.00, -40.00]	-118.8280	[-500.00, 500.00]
A2	52.7112	[-110.00, -10.00]	35.6581	[-500.00, 500.00]

A2	-52.7112	[-110.00, -10.00]	-33.6381	[-500.00, 500.00]
A3	-16.4369	[-50.00, -10.00]	-166.8140	[-500.00, 500.00]
A4	-22.9153	[-30.00, -10.00]	-192.6260	[-500.00, 500.00]
A5	-25.8370	[-30.00, -10.00]	-287.8920	[-500.00, 500.00]

CALIBRATION COEFFICIENTS

	R	Expected	X	Expected
Freq 1				
A1	0.9935	[0.95, 1.05]	0.0010	[-0.05, 0.05]
A2	0.9930	[0.95, 1.05]	0.0018	[-0.05, 0.05]
A3	1.0007	[0.95, 1.05]	-0.0051	[-0.05, 0.05]
A4	0.9881	[0.95, 1.05]	0.0039	[-0.05, 0.05]
A5	0.9952	[0.95, 1.05]	0.0043	[-0.05, 0.05]
Freq 2				
A1	0.9880	[0.95, 1.05]	-0.0085	[-0.05, 0.05]
A2	0.9869	[0.95, 1.05]	-0.0075	[-0.05, 0.05]
A3	0.9890	[0.95, 1.05]	-0.0075	[-0.05, 0.05]
A4	0.9815	[0.95, 1.05]	-0.0052	[-0.05, 0.05]
A5	0.9911	[0.95, 1.05]	-0.0060	[-0.05, 0.05]
Freq 3				
A1	0.9961	[0.95, 1.05]	-0.0079	[-0.05, 0.05]
A2	0.9955	[0.95, 1.05]	-0.0068	[-0.05, 0.05]
A3	0.9973	[0.95, 1.05]	-0.0071	[-0.05, 0.05]
A4	0.9870	[0.95, 1.05]	-0.0050	[-0.05, 0.05]
A5	1.0023	[0.95, 1.05]	-0.0044	[-0.05, 0.05]
Freq 4				
A1	0.9895	[0.95, 1.05]	-0.0152	[-0.05, 0.05]
A2	0.9893	[0.95, 1.05]	-0.0139	[-0.05, 0.05]
A3	0.9934	[0.95, 1.05]	-0.0161	[-0.05, 0.05]
A4	0.9756	[0.95, 1.05]	-0.0112	[-0.05, 0.05]
A5	1.0066	[0.95, 1.05]	-0.0118	[-0.05, 0.05]
Temperature	29.1571 degC			

ThruBit Density Calibration Report

Tool Model-Serial Number: PS-PS26D
Source Number:
Shop Calibration Performed: Mon Jan 30 11:33:36 2012

REFERENCE

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

READINGS

Outputs	Counts	Units	Expected
SS1 Background	143.85	cps	[130.00, 170.00]
LS1 Background	165.88	cps	[130.00, 170.00]
LS4 Background	34.24	cps	[27.00, 35.00]

SS1 Aluminium	4467.16	cps	[4500.00, 5500.00]
LS1 Aluminium	903.31	cps	[750.00, 950.00]
LS4 Aluminium	994.90	cps	[843.00, 1068.00]
SS1 Magnesium	7398.31	cps	[7000.00, 9000.00]
LS1 Magnesium	5893.85	cps	[5250.00, 6250.00]
LS1 Al + Fe	807.06	cps	[650.00, 800.00]
LS4 Al + Fe	463.13	cps	[382.00, 471.00]

RESULTS

SS Slope	1.65		[1.52, 1.77]
LS Slope	0.42		[0.38, 0.45]
PEF K Factor	5.082		[3.510, 6.170]
PEF B Factor	-0.518		[-0.700, -0.410]

Caliper Shop Calibration performed: Mon Jan 30 11:33:36 2012

RESULTS

Reference	Reading	Units
12.00	2108.93	in
9.00	2272.68	in
6.00	2451.72	in

DENSITY PRE-SURVEY CHECK Performed: Sun Feb 12 00:00:29 2012

Outputs	Counts	Units	Expected
SS1 Background	145.20	cps	[139.53, 148.16]
LS1 Background	166.88	cps	[160.91, 170.86]
LS4 Background	35.52	cps	[32.19, 36.30]

CALIPER PRE-SURVEY CHECK Performed: Wed Feb 08 18:22:28 2012

Reference	Readings	Units	Expected
6.00	5.98	in	[5.80, 6.20]

Compensated Neutron Calibration Report

Tool Model-Serial Number: PS-PS28N
 Source Number:
 Calibration Tank Temperature: 62.9 degF
 Shop Calibration Performed: Mon Jan 30 15:44:17 2012

BACKGROUND MEASUREMENT

Outputs	Measured	Units	Expected
SS Counts	0.0	cps	<10
LS Counts	0.0	cps	<4

WATER TANK REFERENCE

Outputs	Measured	Units	Expected
SS Counts	3550.3	cps	
LS Counts	98.5	cps	
Tank Ratio Ref	30.9580	SS/LS	
Tank Ratio	36.0554	SS/LS	
Tank Ratio Gain	0.8586		[0.85, 1.15]

ALUMINUM SLEEVE REFERENCE

Outputs	Measured	Units	Expected
SS Counts	41552.7	cps	
LS Counts	3204.2	cps	
Al Ratio Ref	10.797	SS/LS	
Al Ratio	11.135	SS/LS	
Al Ratio Gain	0.97		[0.90, 1.10]
Sleeve Porosity	14.46	pu	

PRE-SURVEY BACKGROUND CHECK Performed: Sun Feb 12 00:05:03 2012

Outputs	Measured	Units	Expected
SS Counts	1.0	cps	<10
LS Counts	2.2	cps	<4

Gamma Ray Calibration Report

Tool Model-Serial Number: PS-PS29T
 Performed: Mon Jan 30 10:34:41 2012
 Calibrator Value: 152.0 GAPI
 Background Reading: 62.6 cps
 Calibrator Reading: 372.9 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	69.67		Cablehead-S Solid Weakpoint	2.31	2.13	5.00
CCL	66.15		CCL-SDSCCL (SDS) CCL For Testing	1.71	2.13	5.00
ThruBit	65.65		PSBDOT	3.87	2.25	35.00
ThruBit	61.79		HangOff_Tool	5.00	2.38	60.00
ThruBit	56.79		10-1	0.88	2.13	3.95
ThruBit	55.91		Swivel	2.50	2.06	25.00
TBBAT	53.41		TBBAT-A (PS09B) ThruBit Battery	12.25	2.13	38.20
TMG	41.16		TMG-PS (PS29T) ThruBit Telemetry Gamma Ray	6.13	2.13	45.00
GR	41.04					
GRTEMP	40.20					
ThruBit	35.04		Decentralizer Decentralizer (Small)	4.50	2.13	70.00
CNLSC	28.60		TBN-PS (PS28N) ThruBit Neutron	4.77	2.13	63.00
LSW1	18.04		TBD-PS (PS26D) ThruBit Density	10.48	2.13	91.00
	DCAL					
A1_P	10.60		TBI-PS (PS25R) ThruBit Induction	15.29	2.13	94.00
A2_P	10.10					
A3_P	9.35					
A4_P	8.35					
A5_P	6.60					

Total Length: 69.67 ft
Total Weight: 535.15 lb
O.D. 2.38 in



Company	SANDRIDGE ENERGY, INC.
Well	BRAD 1-12H
Field	BOUSE
County	HARPER
State	KANSAS