ThruBit
A Schlumberger Company

SPECTRAL DENSITY DUAL SPACE NEUTRON GAMMA RAY MEMORY LOG

Company	SANDRIDGE ENERGY
Well	TAYLOR 3406 3-29H
Field	EASTHAM
County	HARPER
State	KANSAS

Company SANDRIDGE ENERGY
Well TAYLOR 3406 3-29H
Field EASTHAM
County HARPER State KANSAS
Location: API # : 15-077-21928-0100
200' FNL & 1640' FWL
SEC 29 TWP 34S RGE 6W

Other Services
THRUBIT
PORTAL BIT

Permanent Datum G.L. Elevation 1295'
Log Measured From D.F. 15' ABOVE PERM DATUM
Drilling Measured From D.F.

Elevation
K.B. 1310'
D.F. 1310'
G.L. 1295'

Date	26 MAY 2013			
Run Number	ONE			
Depth Driller	9233'			
Depth Logger	9192'			
Bottom Logged Interval	9171'			
Top Log Interval	2500'			
Casing Driller	7.0" @ 5370'			
Casing Logger	5368'			
Bit Size	6.125"			
Type Fluid in Hole	WBM			
Density / Viscosity	8.3 / 27			
pH / Fluid Loss	9.0 /100			
Source of Sample	MUD SENSOR			
Rm @ Meas. Temp	1.76 OHM@65DEGF			
Rmf @ Meas. Temp	1.53 OHM@65DEGF			
Rmc @ Meas. Temp	1.98 OHM@65DEGF			
Source of Rmf / Rmc	CALCULATED			
Rm @ BHT	1.11 OHM@108DEGF			
Time Circulation Stopped	20:24 25 MAY 2013			
Time Logger on Bottom	21:14 25 MAY 2013			
Maximum Recorded Temperature	108 DEGF			
Equipment Number	T005			
Location	OKC, OK			
Recorded By	C.PARKER			
Witnessed By	S.FOX			

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Comments

SERVICE: HORIZONTAL PUMP DOWN MEMORY BIT DEPTH: 9140' LOGGED TO: 2500'
ALL SCALES AND PRESENTATIONS PER CLIENT REQUEST
LIMESTONE MATRIX, 2.71 g/cc. USED FOR POROSITY MEASUREMENTS
TOOLSTING RAN WITH SWIVEL AND SMALL DE-CENTRALIZER
TBHV REPRESENTS TOTAL BOREHOLE VOLUME, ft3
ABHV REPRESENTS ANNULAR HOLE VOLUME, CALCULATED FOR 4.5" CSG., ft3
RIGMINDER USED TO ACQUIRE LOG DEPTH
LOG CORRELATED TO MWD GR
RIG: UNIT 310

CREW: C.PARKER J.HIRSHEL R.CRESSWELL

Service Ticket No.	1923	API No.	15-077-21928-0100	PGM Ver	WARRIOR 7.0

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

EQUIPMENT DATA

GAMMA	NEUTRON	DENSITY	INDUCTION

Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	ONE
Serial No.	ENP5T	Serial No.	PS14N	Serial No.	PS01D	Serial No.	PS38R
Model No.	ENP	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	9181'	2500'	0 PSI	35 FPM	

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

DIRECTIONAL INFORMATION

Maximum Deviation	93.21°	deg. @	5971'	KOP	3802'	

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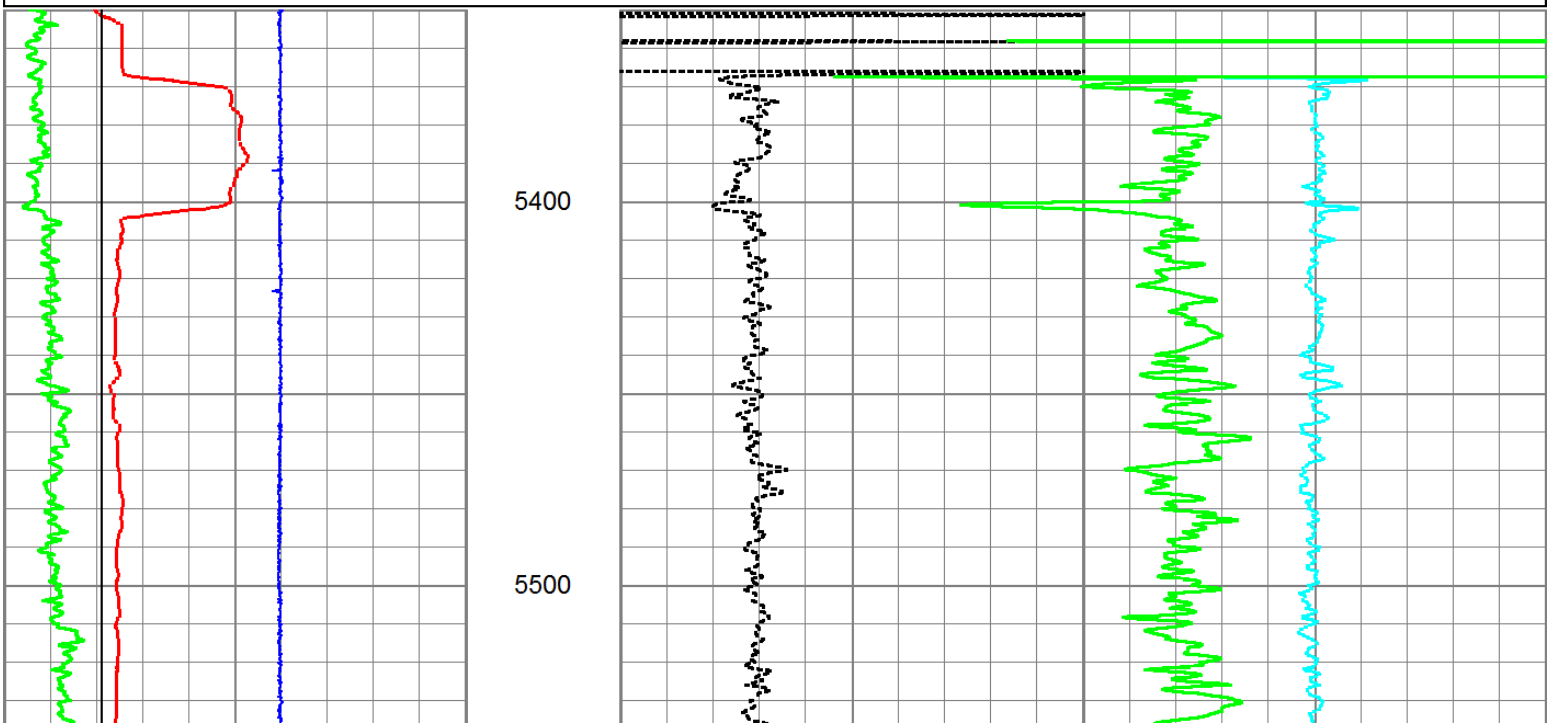
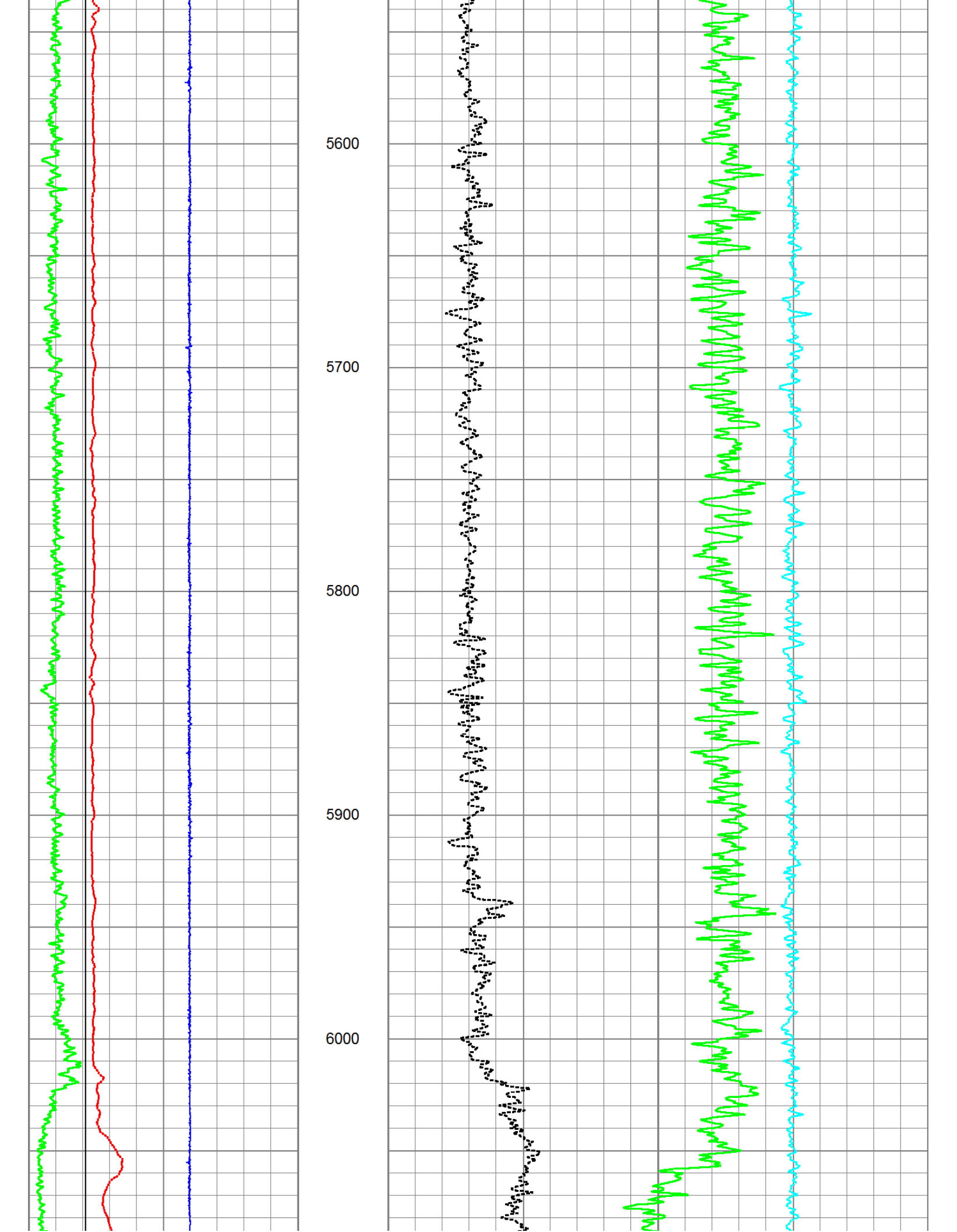
MAIN PASS

Database File: c:\users\kris.wetzel\desktop\taylor 3406 3-29h\sandridge_taylor_3406_3-29h_mem.db
Dataset Pathname: proc1/pass1.2
Presentation Format: 6_2n_chk
Dataset Creation: Sun May 26 05:23:01 2013
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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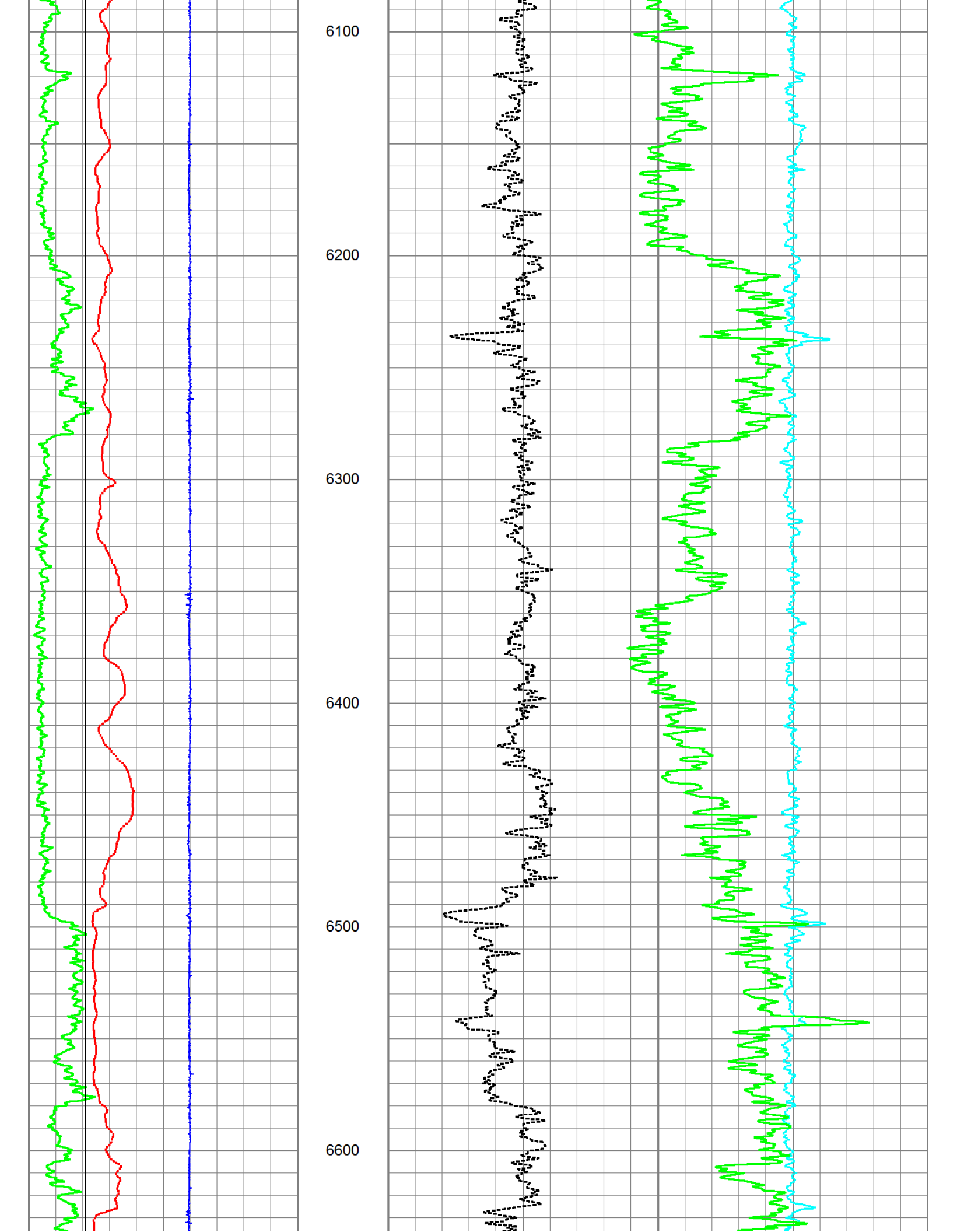
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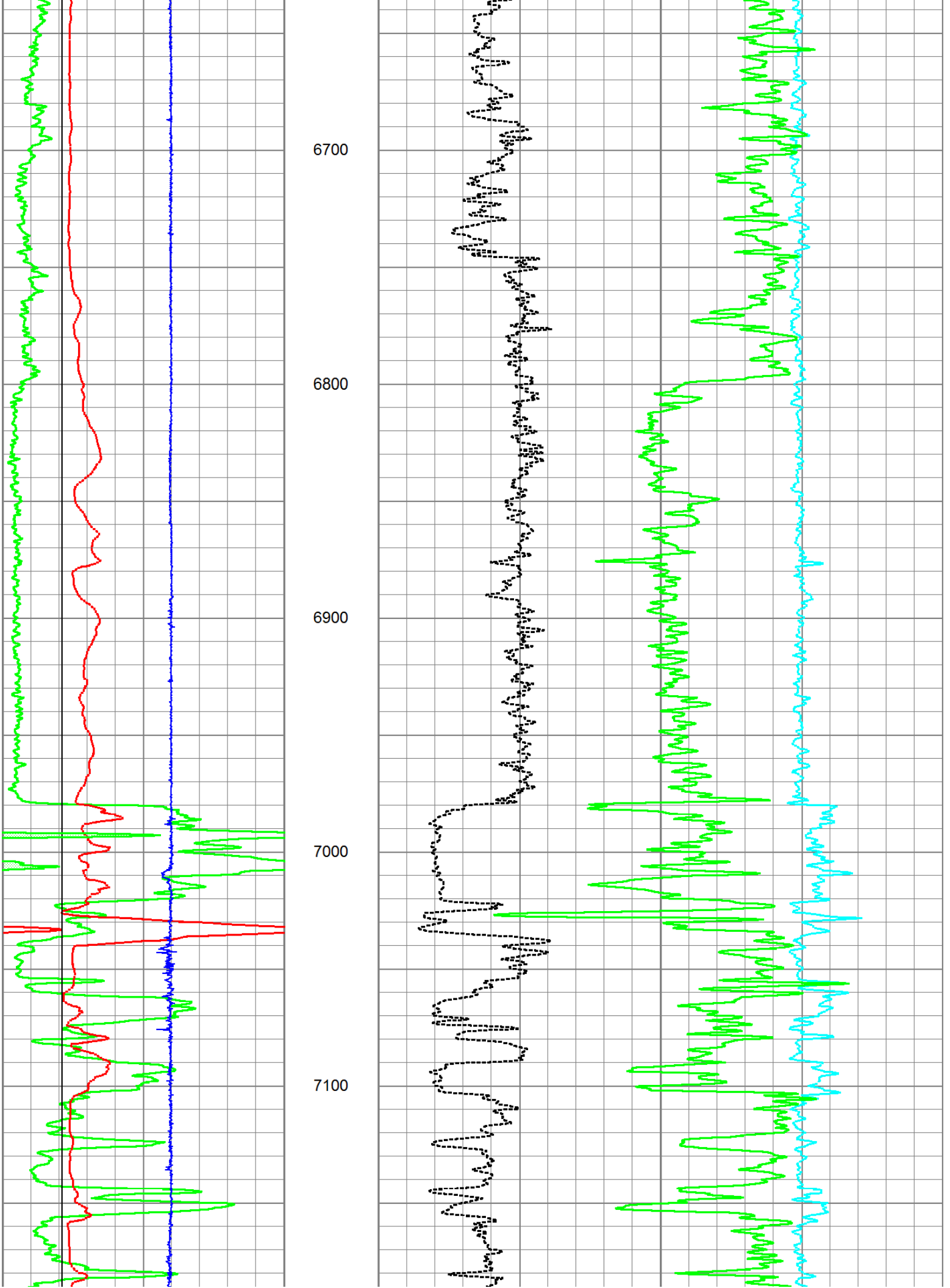
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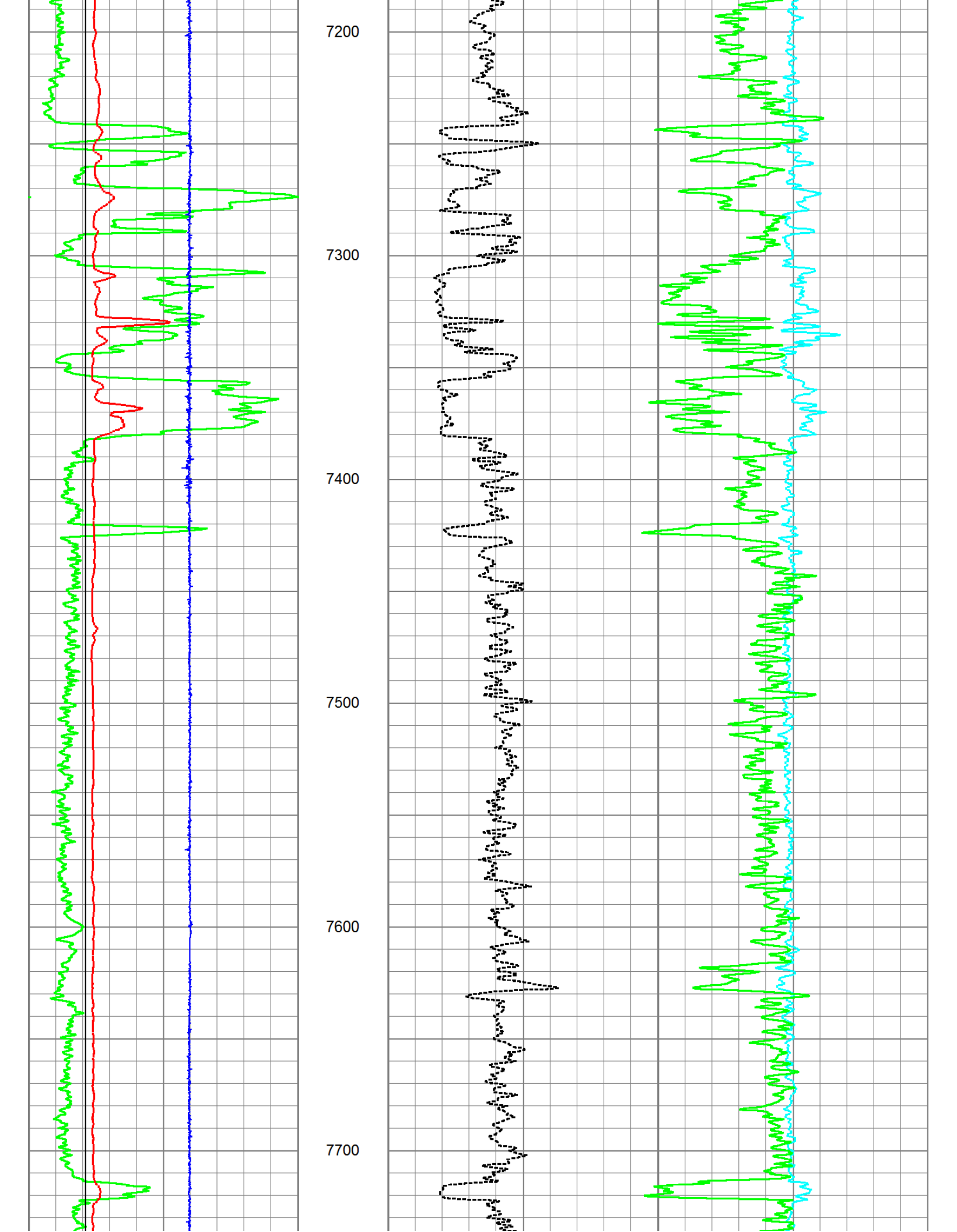
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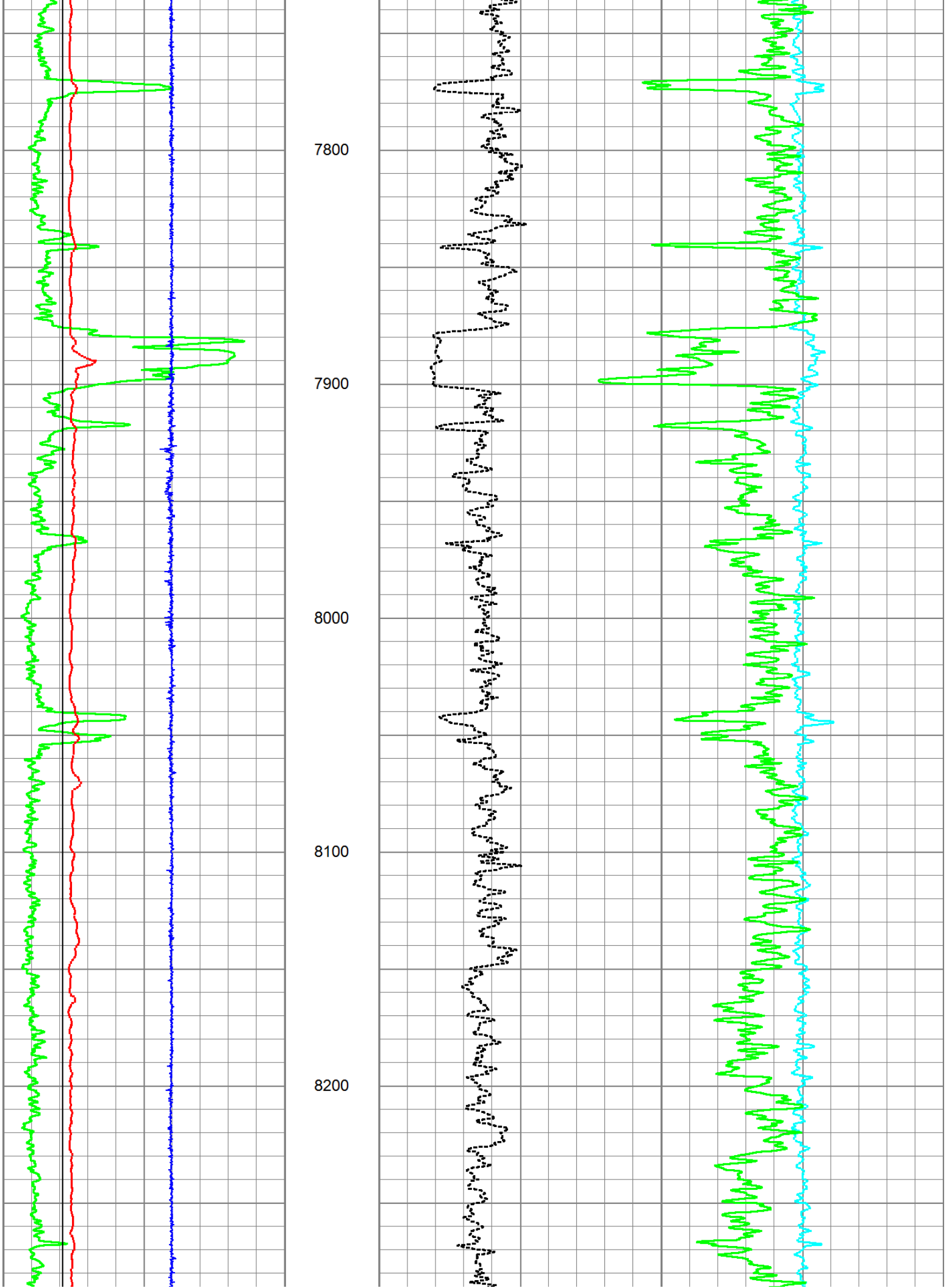
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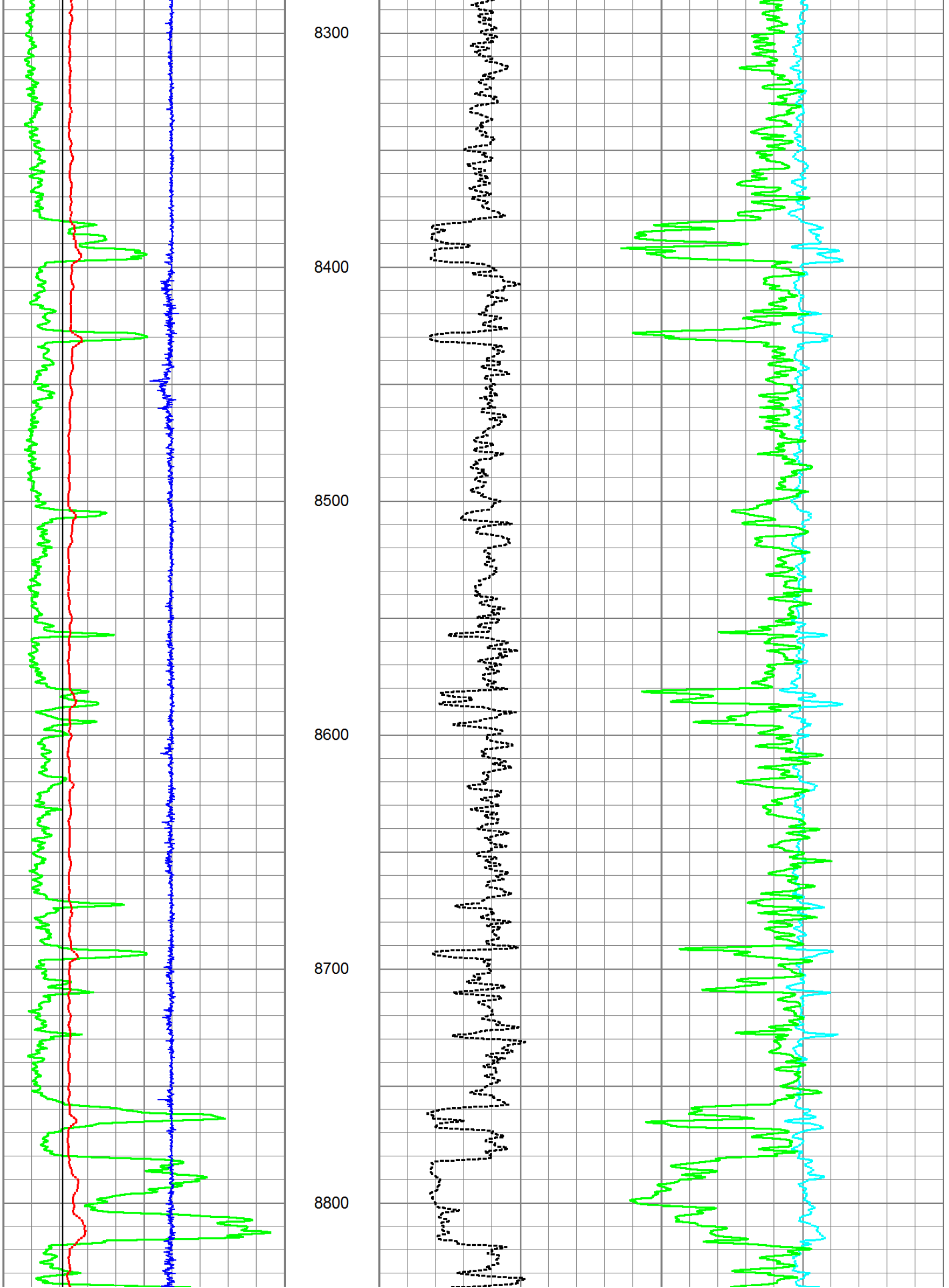
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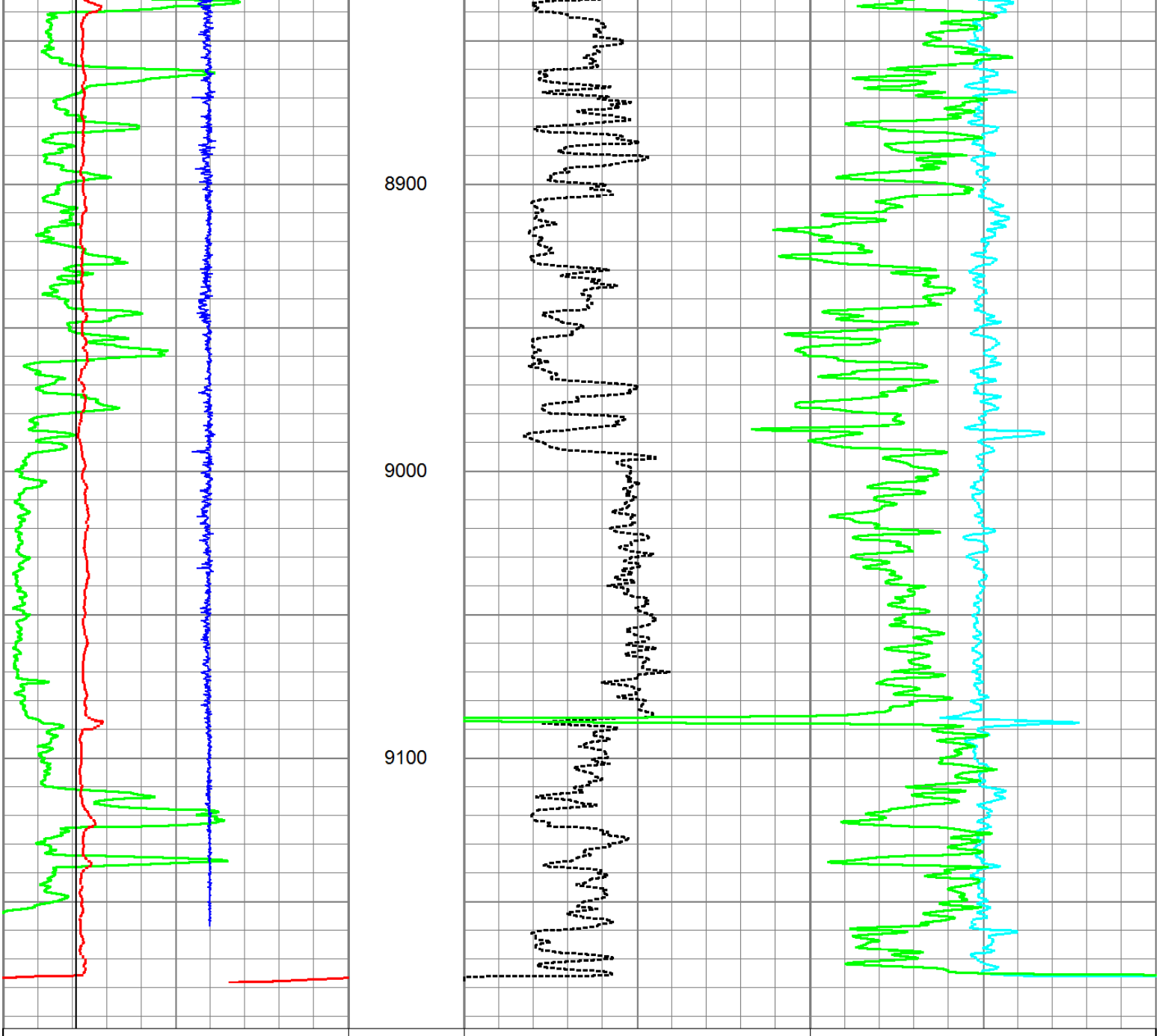

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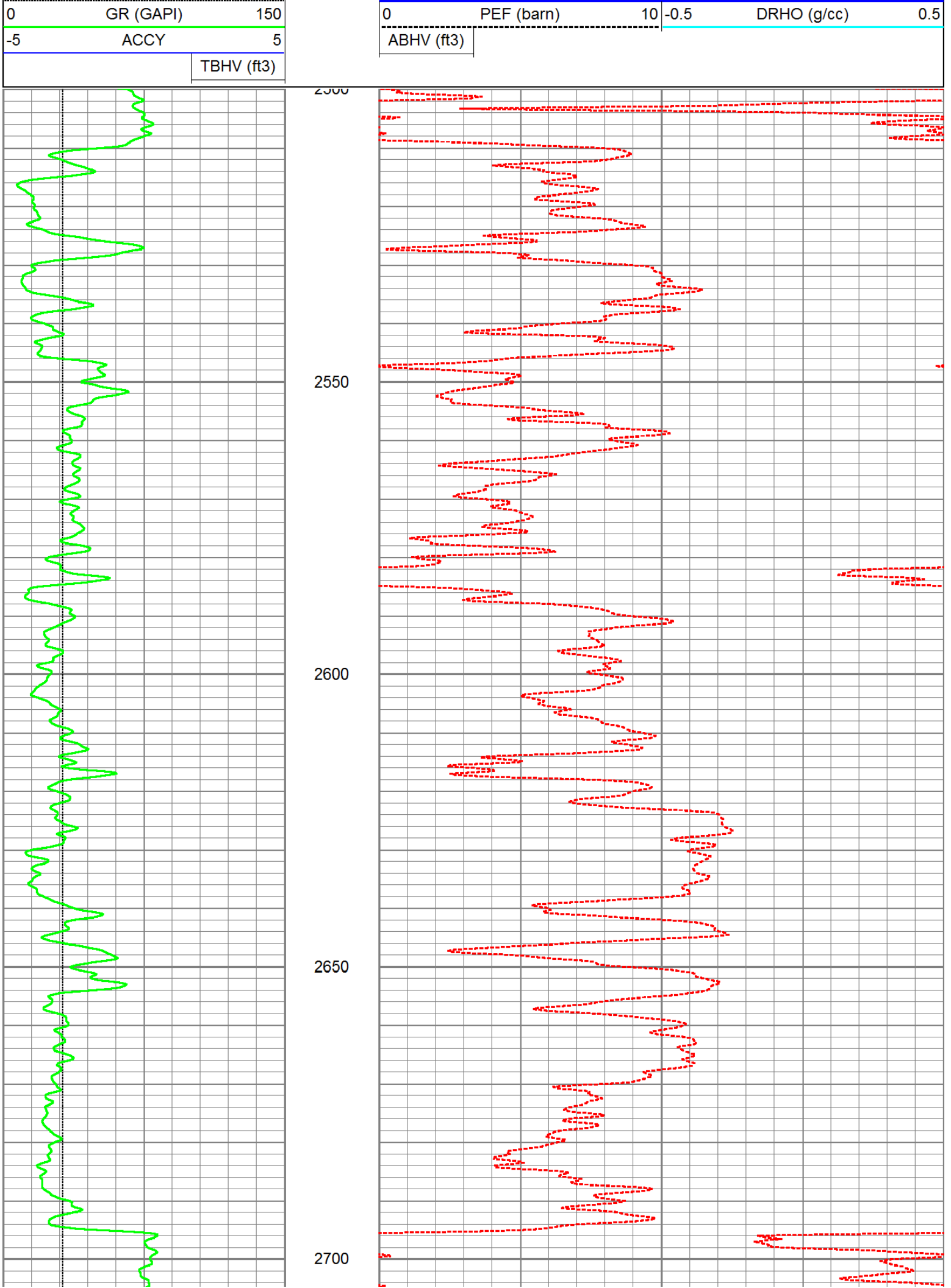
MAIN PASS

Database File:	c:\users\kris.wetzel\desktop\taylor 3406 3-29h\sandridge_taylor_3406_3-29h_mem.db
Dataset Pathname:	proc1/pass1.2
Presentation Format:	6_5n_chk
Dataset Creation:	Sun May 26 05:23:01 2013
Charted by:	Depth in Feet scaled 1:240

4	DCAL (in)	14	30	CNPOR (pu)	-10
4	BOREID (in)	14	30	DPHI (pu)	-10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ACCY
5
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ABHV (ft3)
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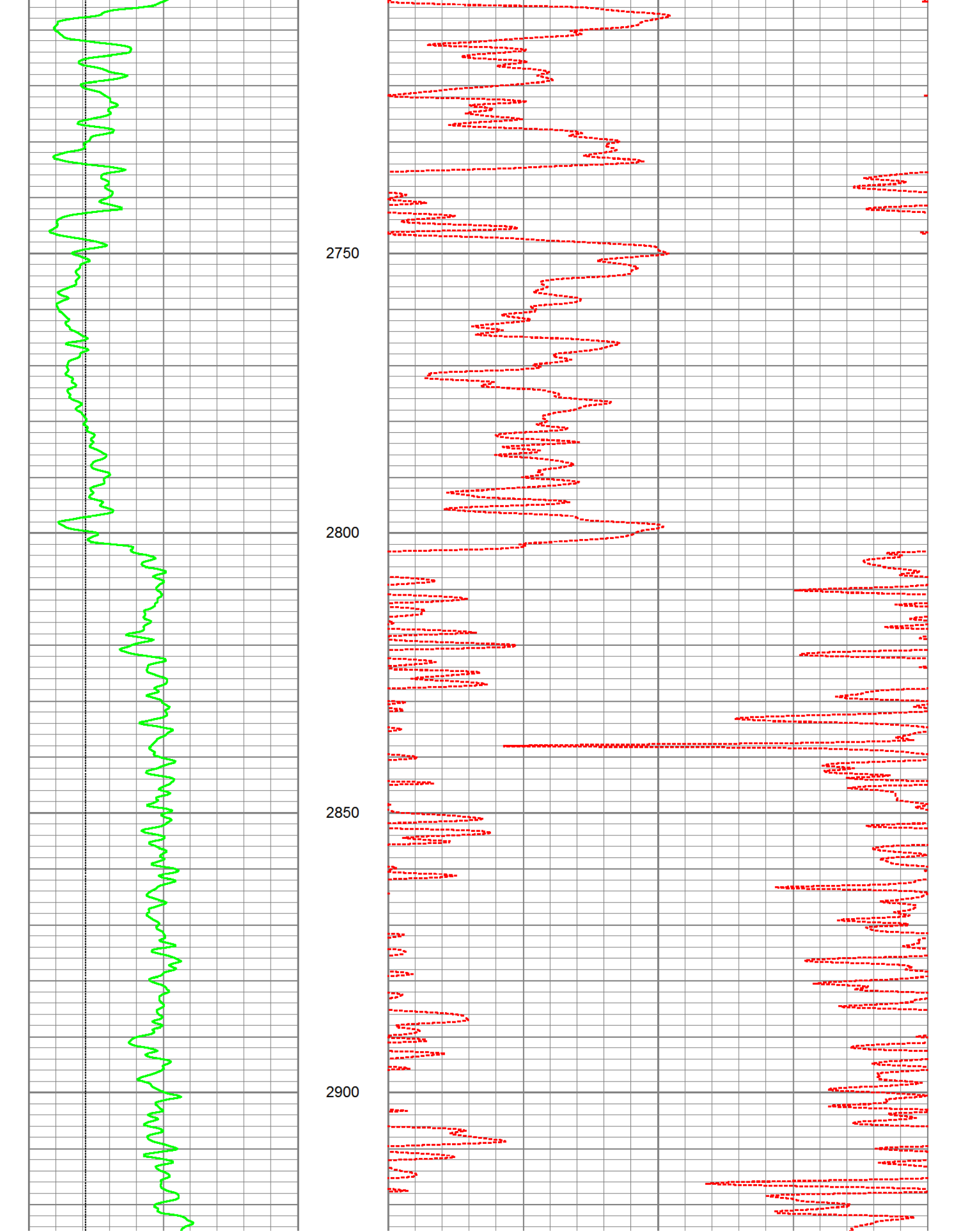
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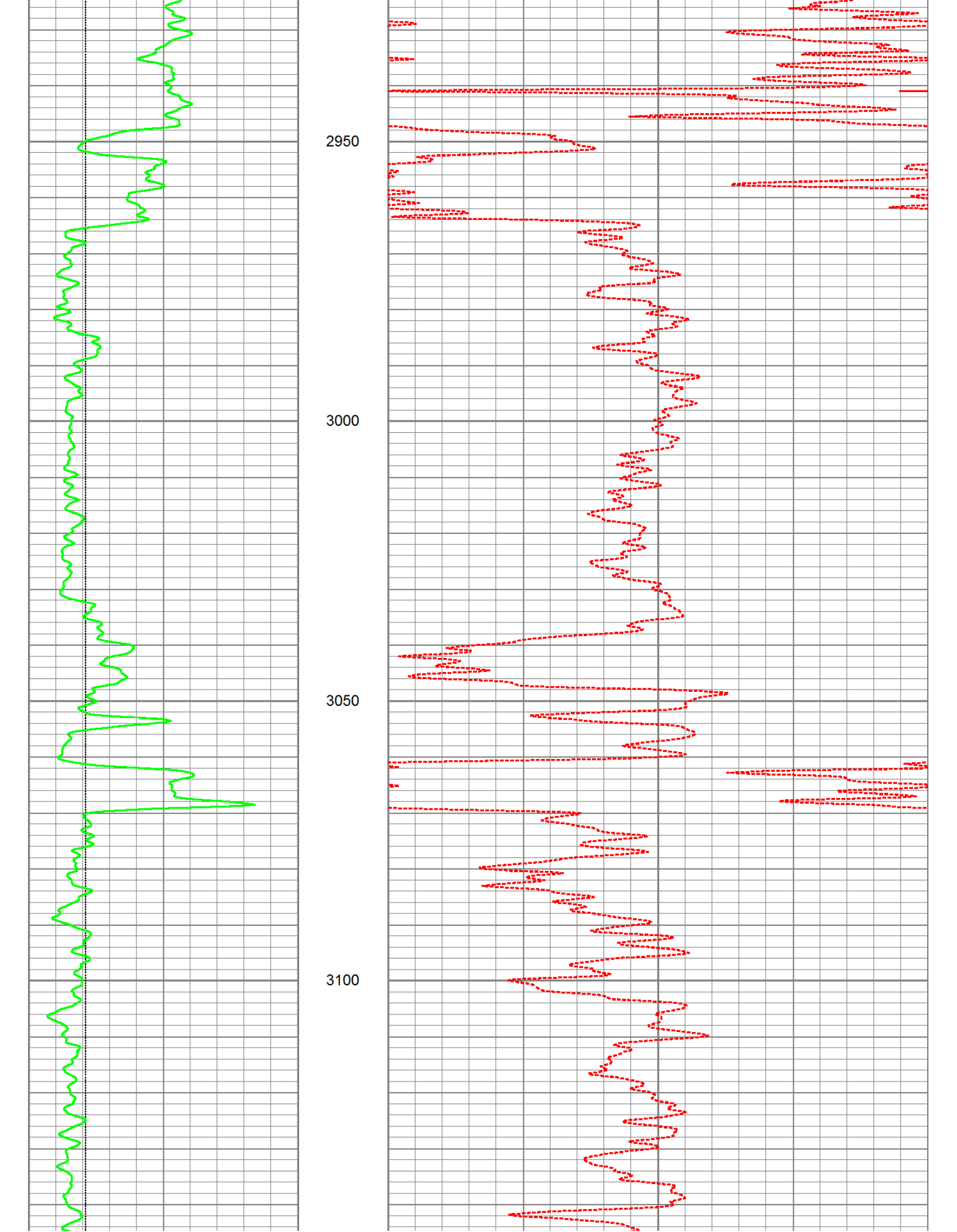
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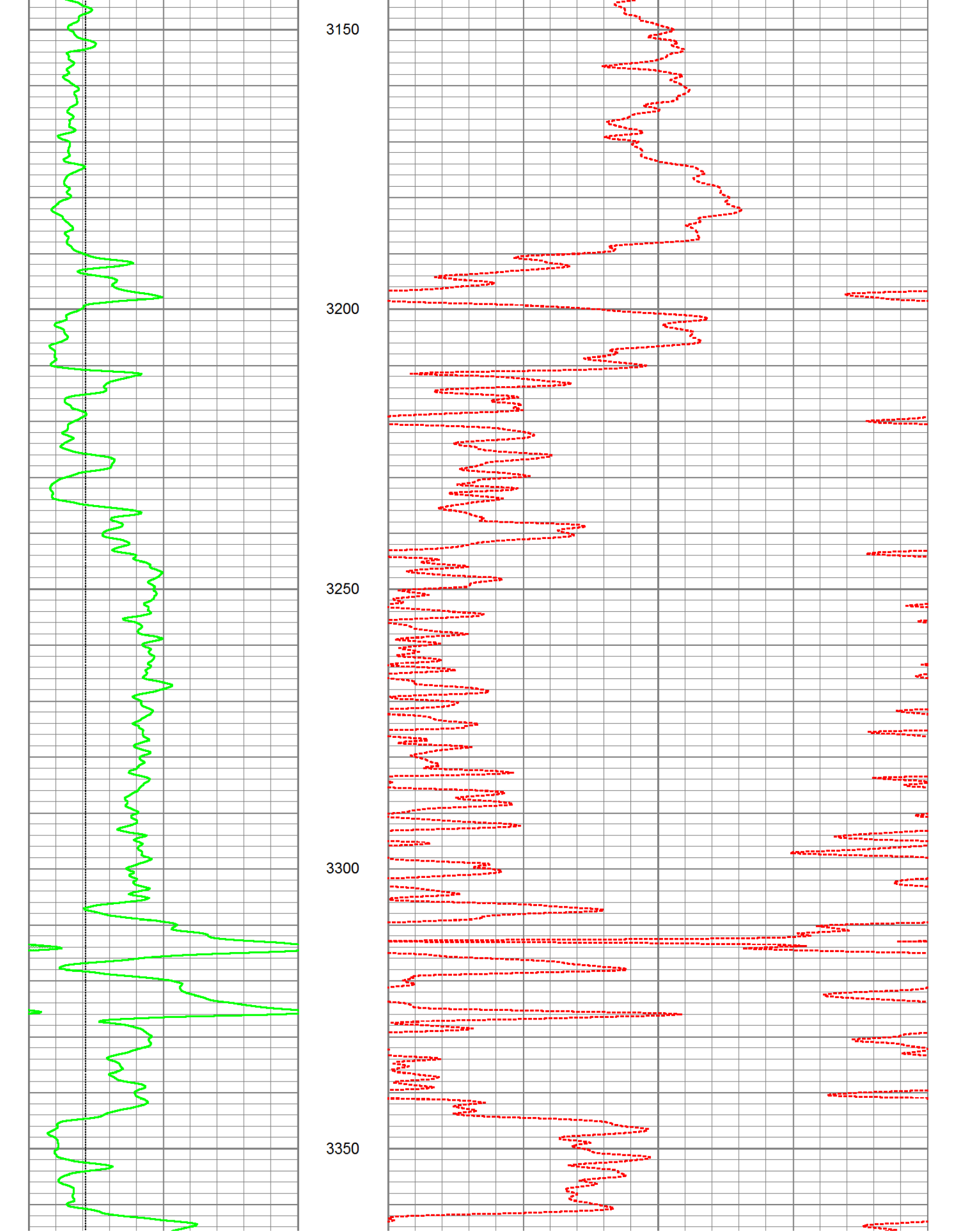
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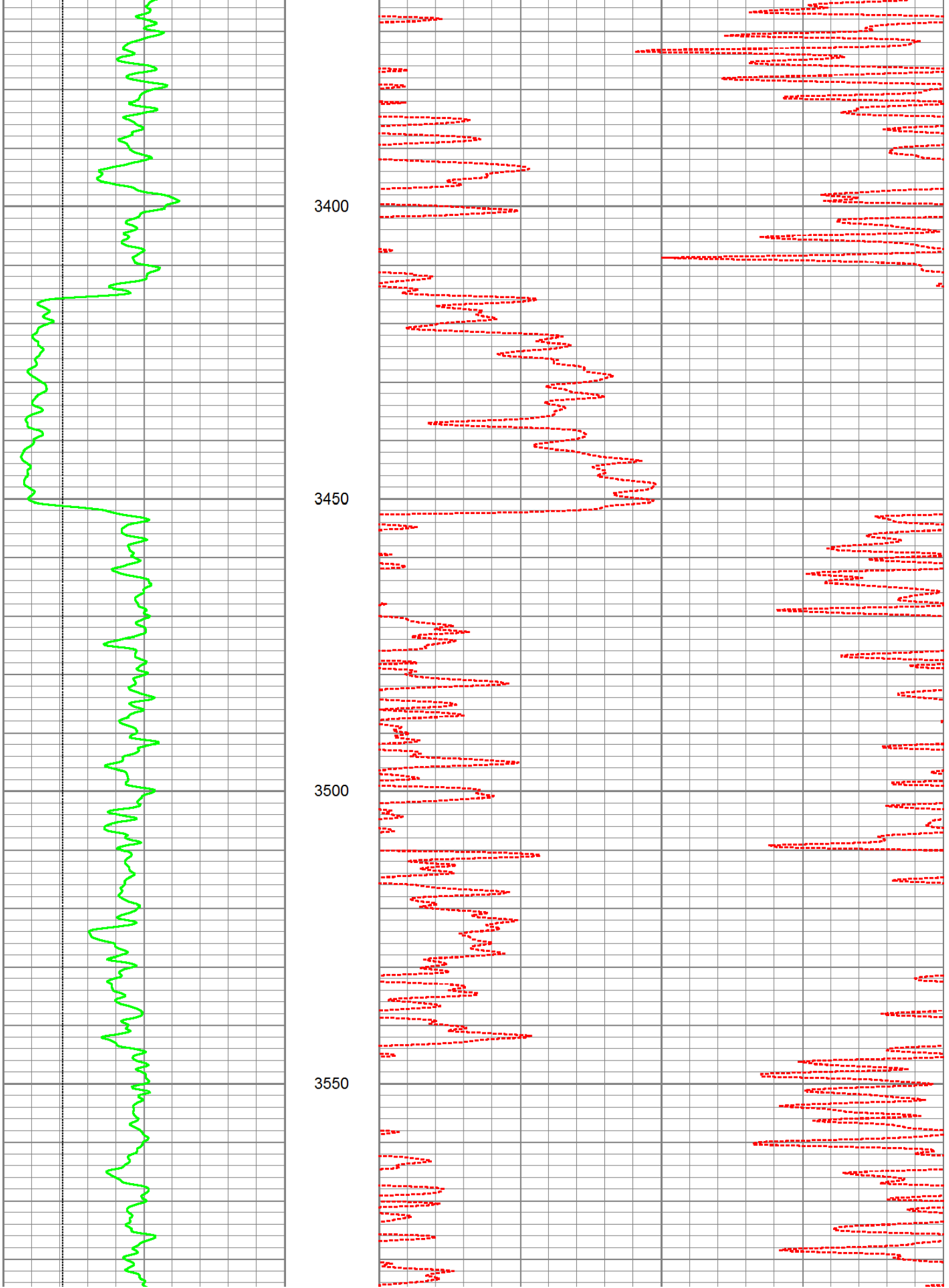
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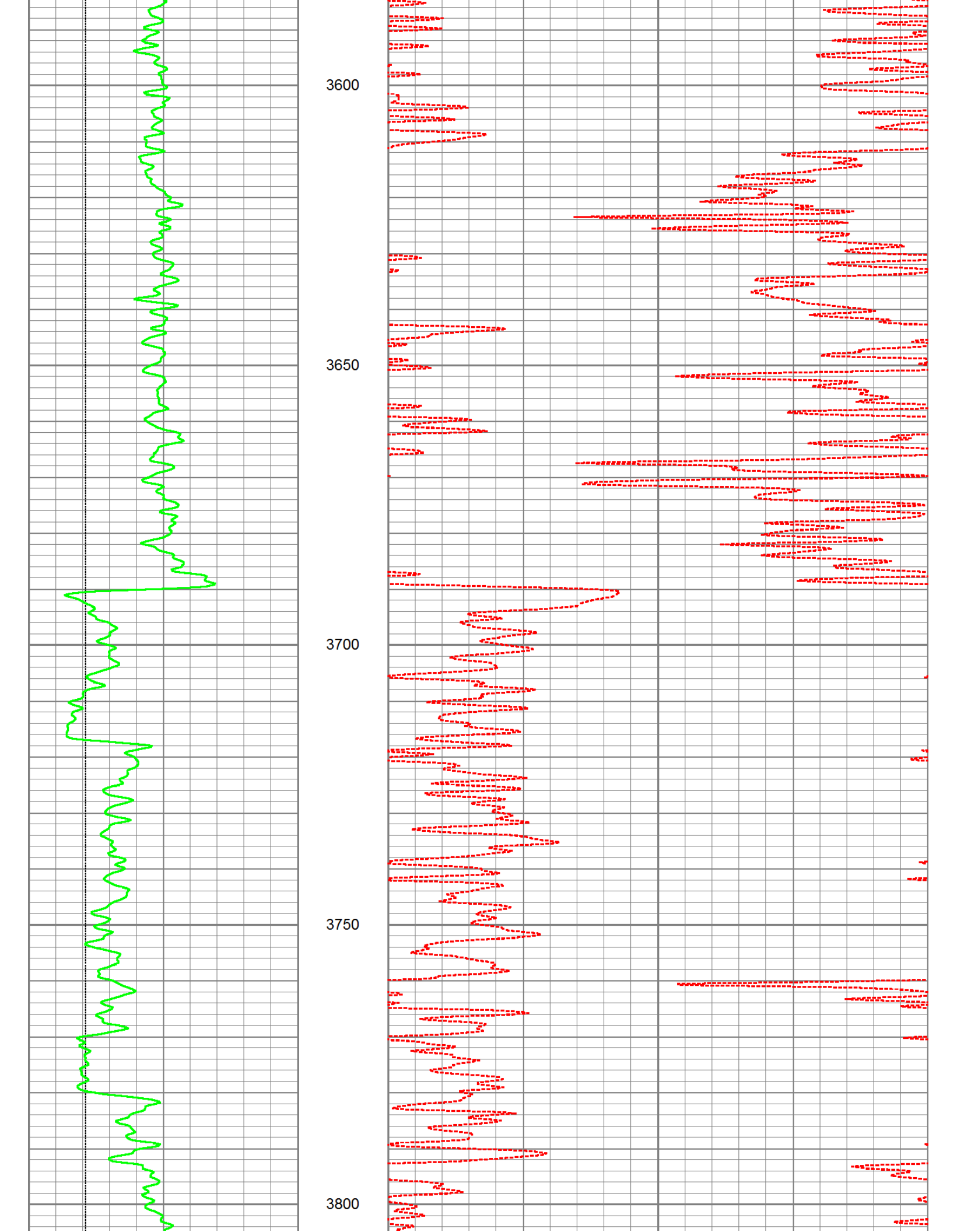
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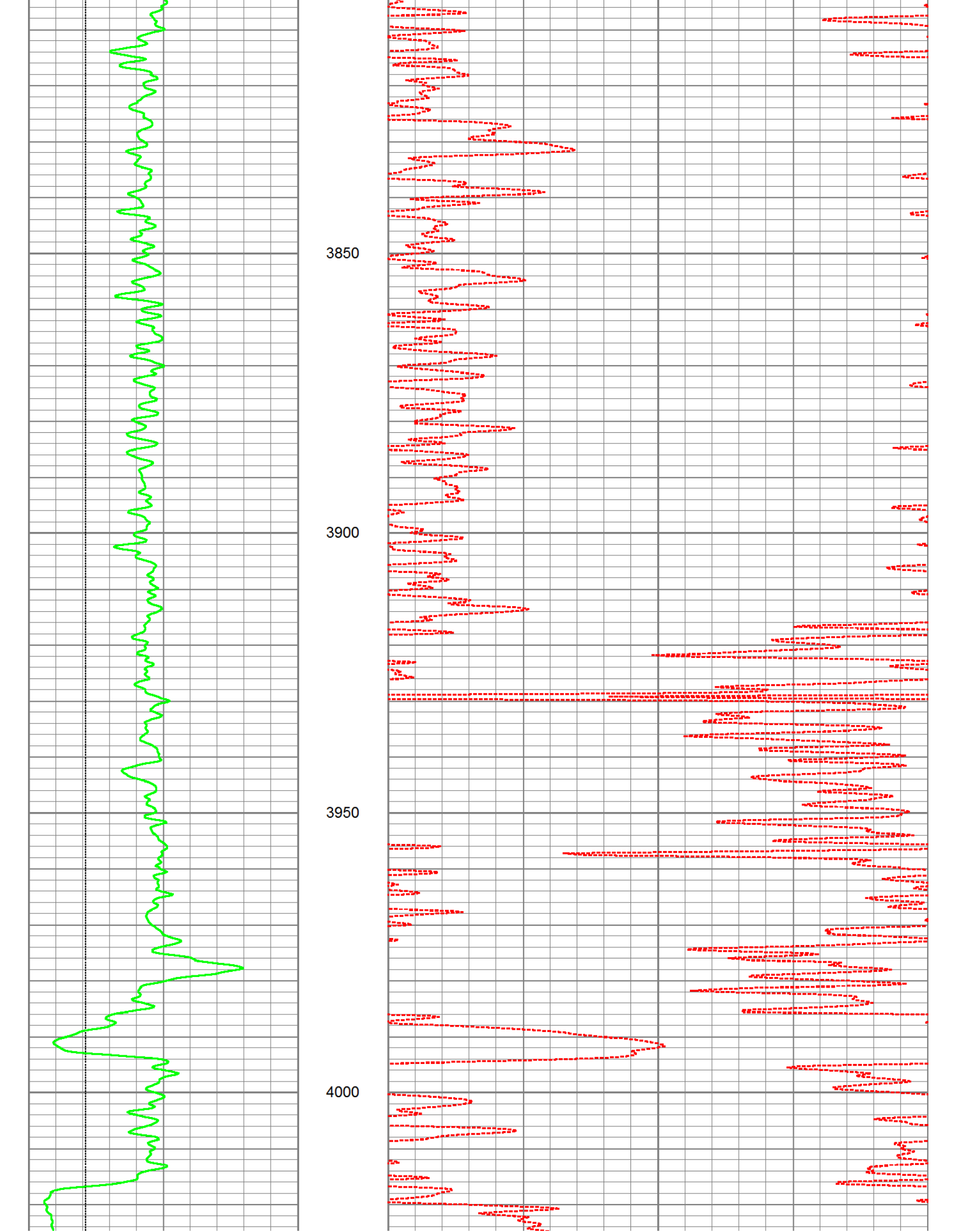
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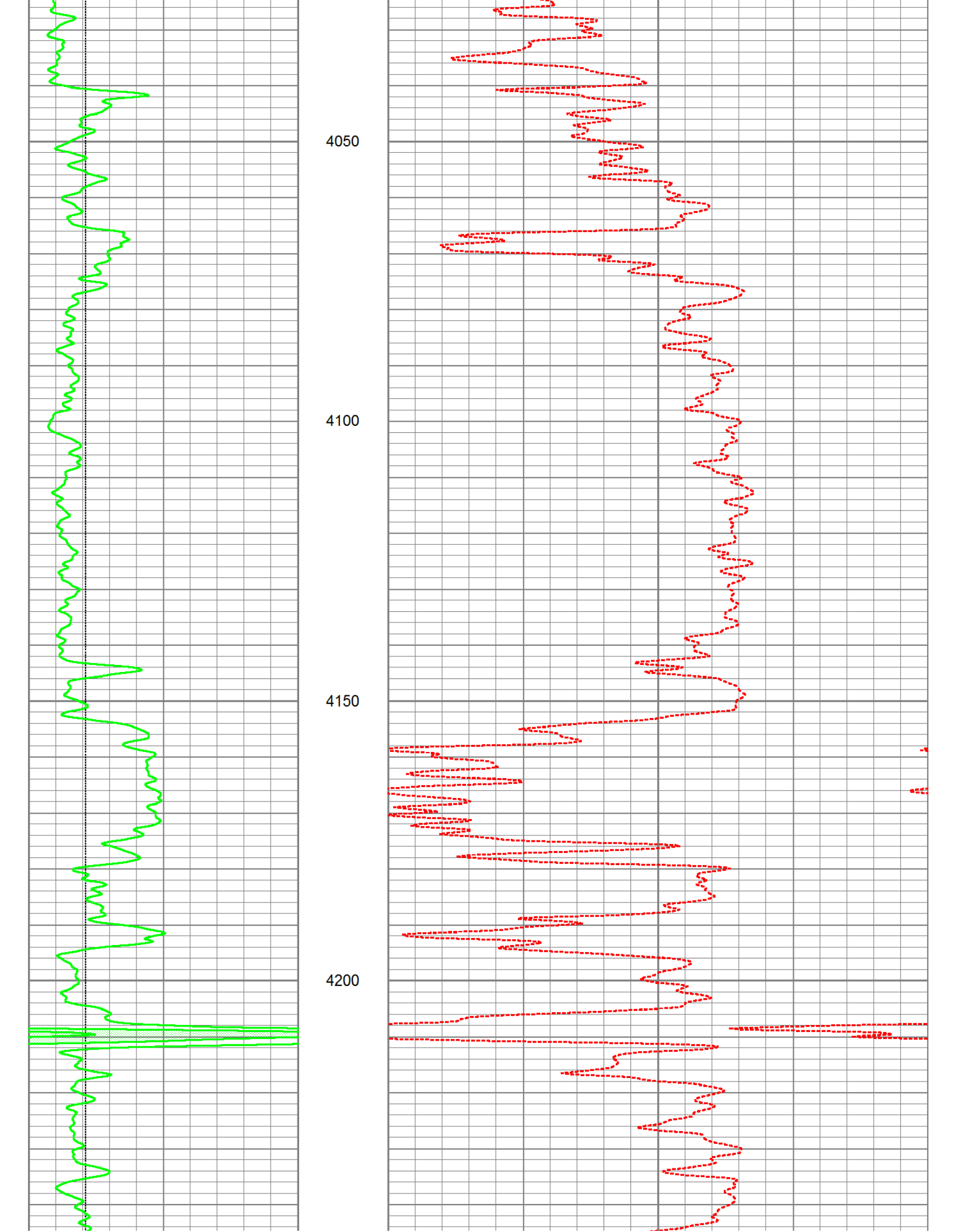
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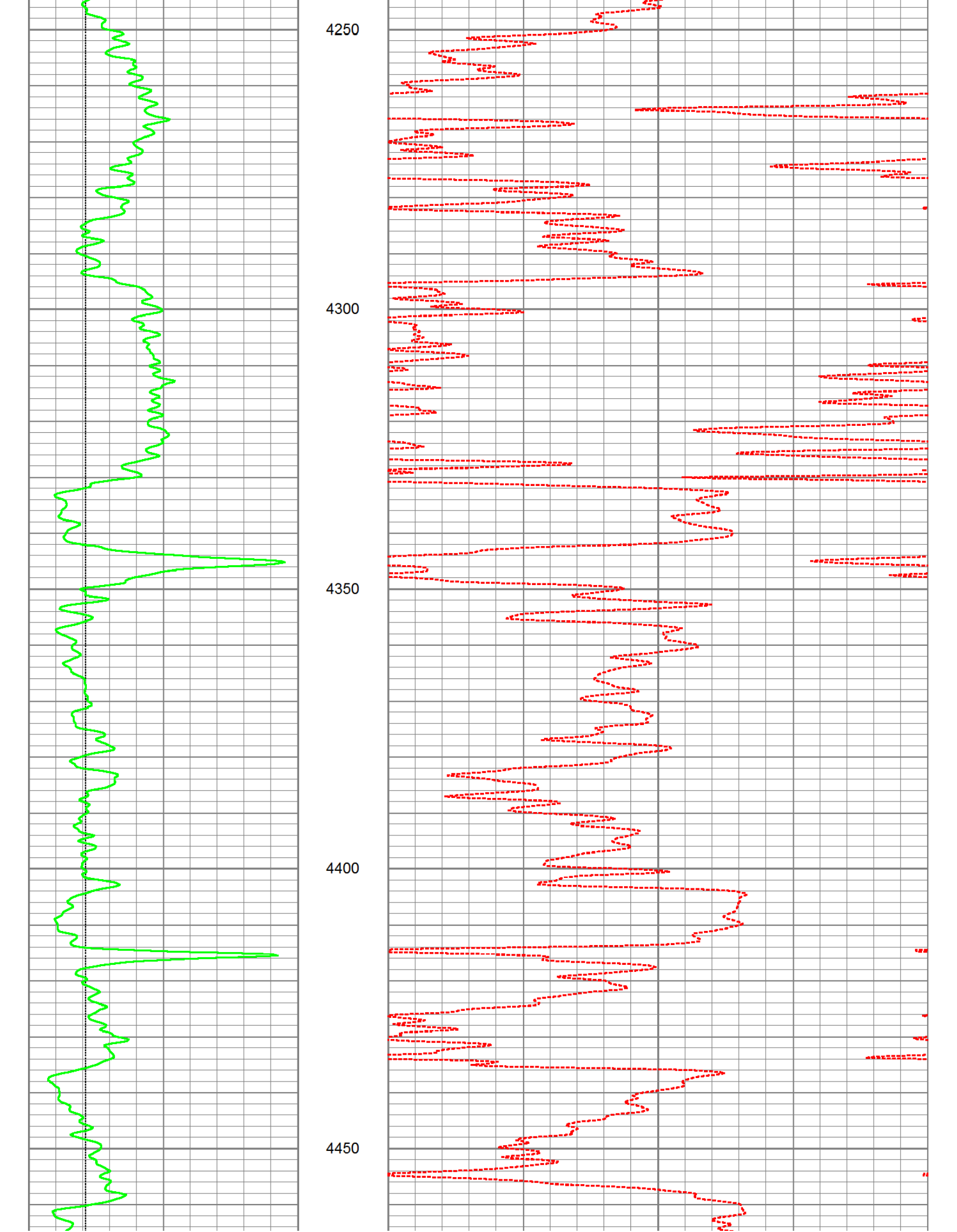
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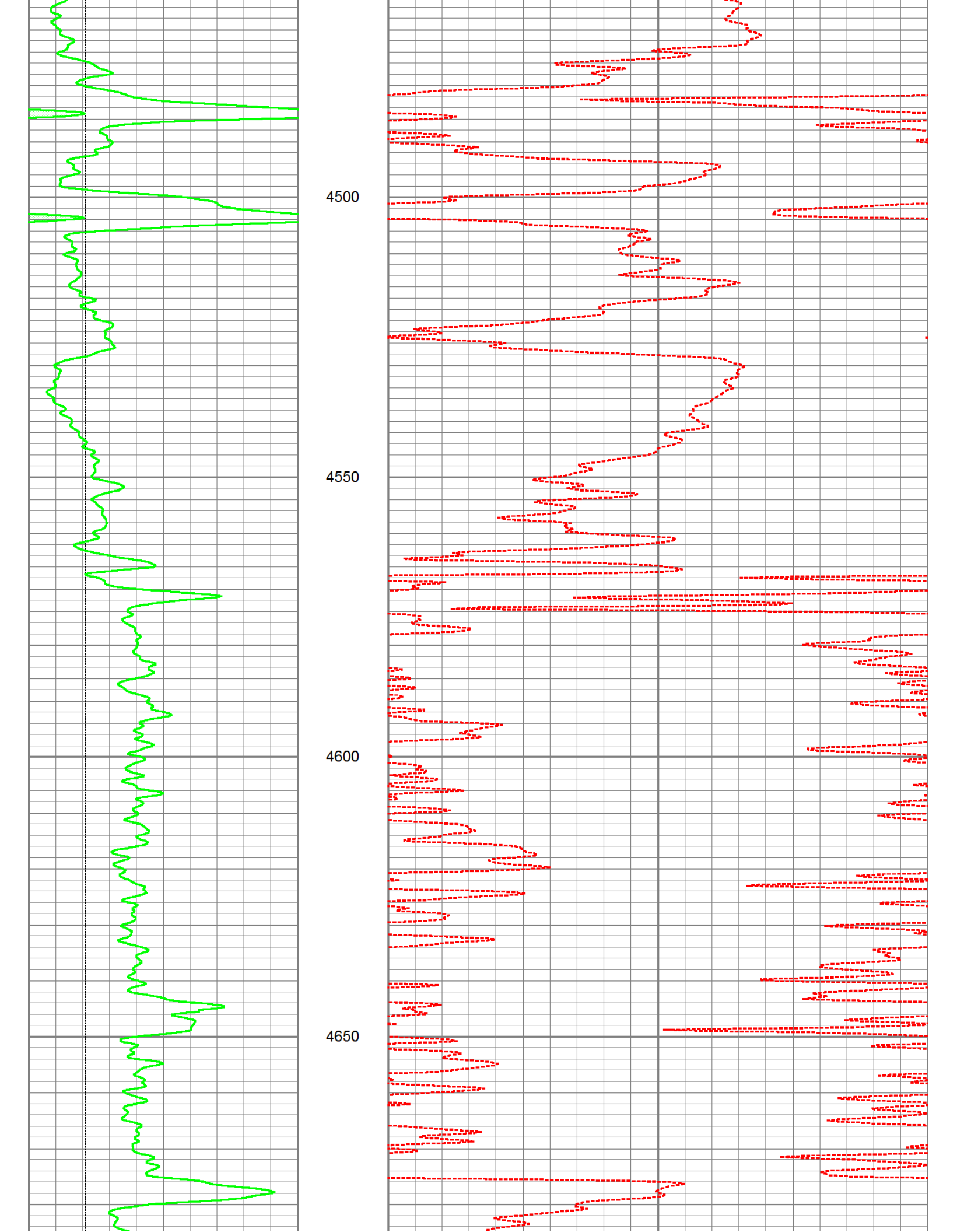
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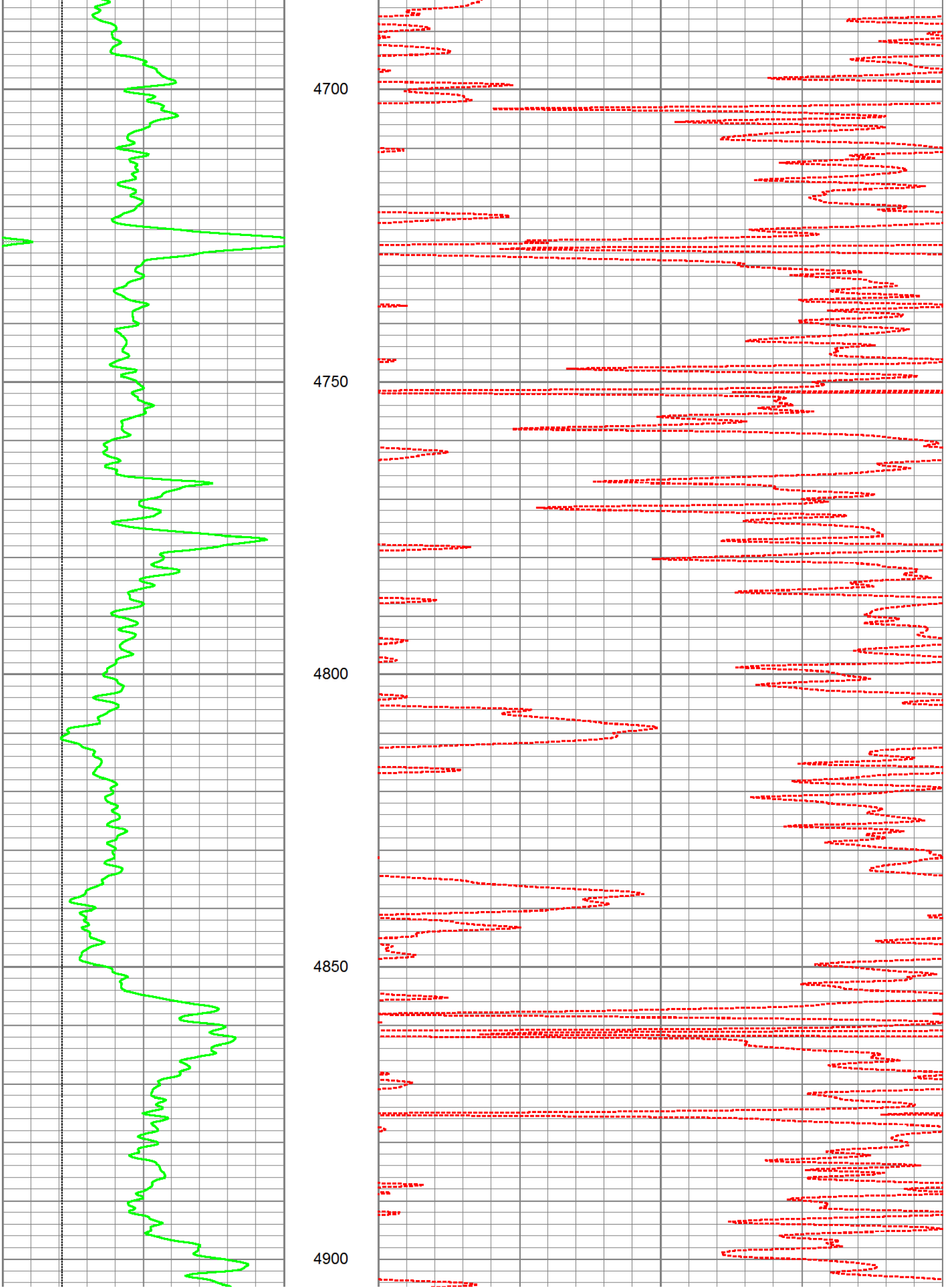
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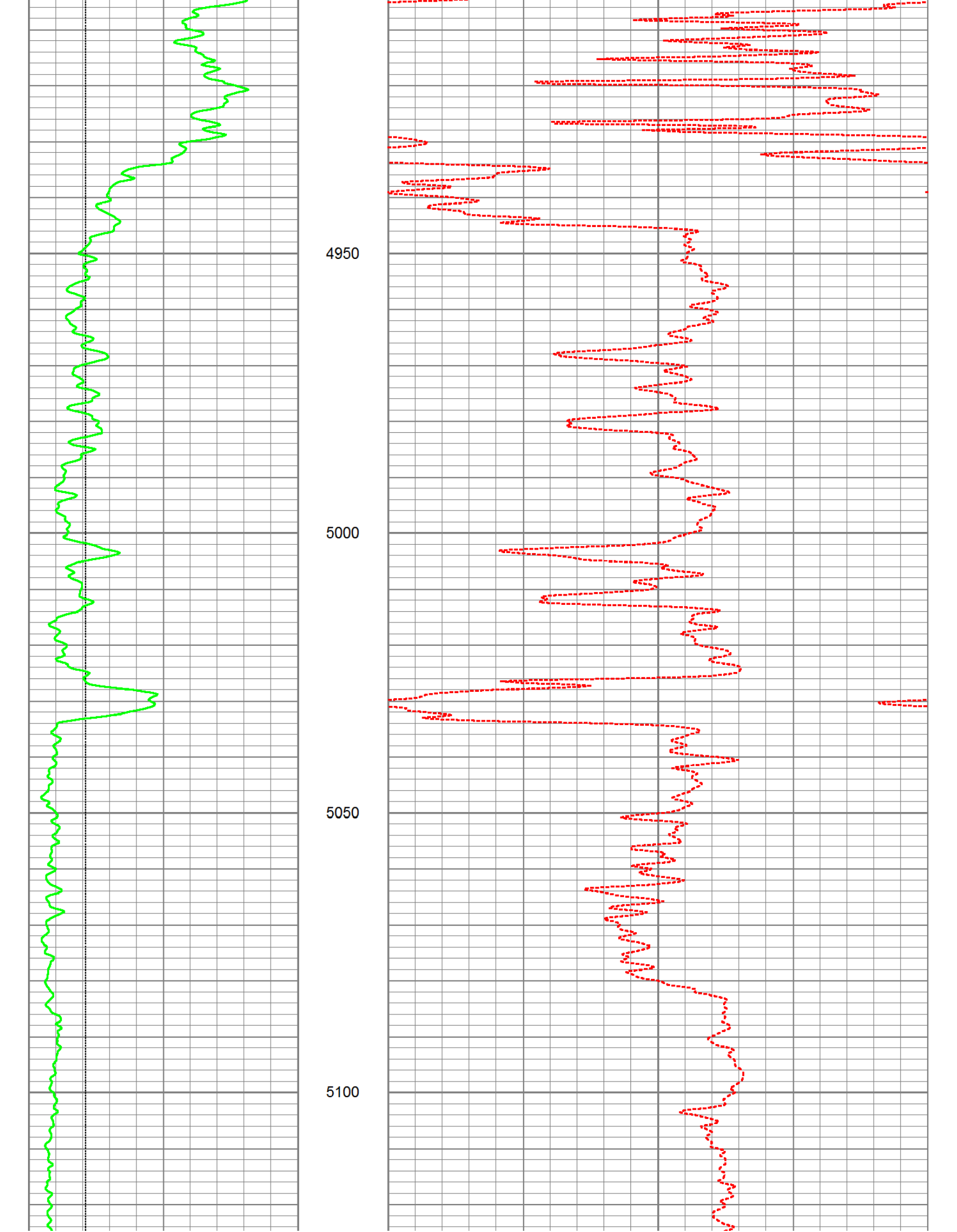
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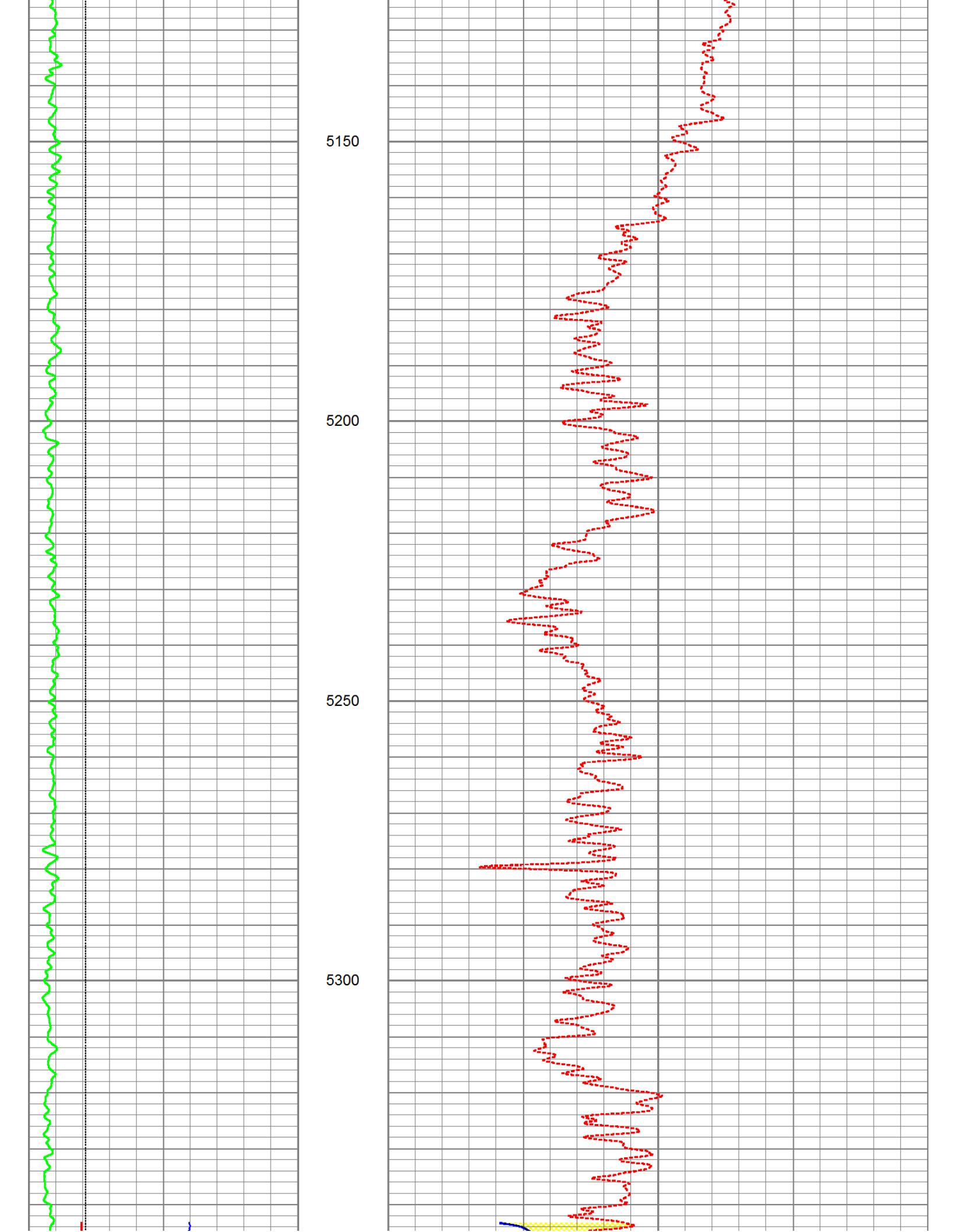
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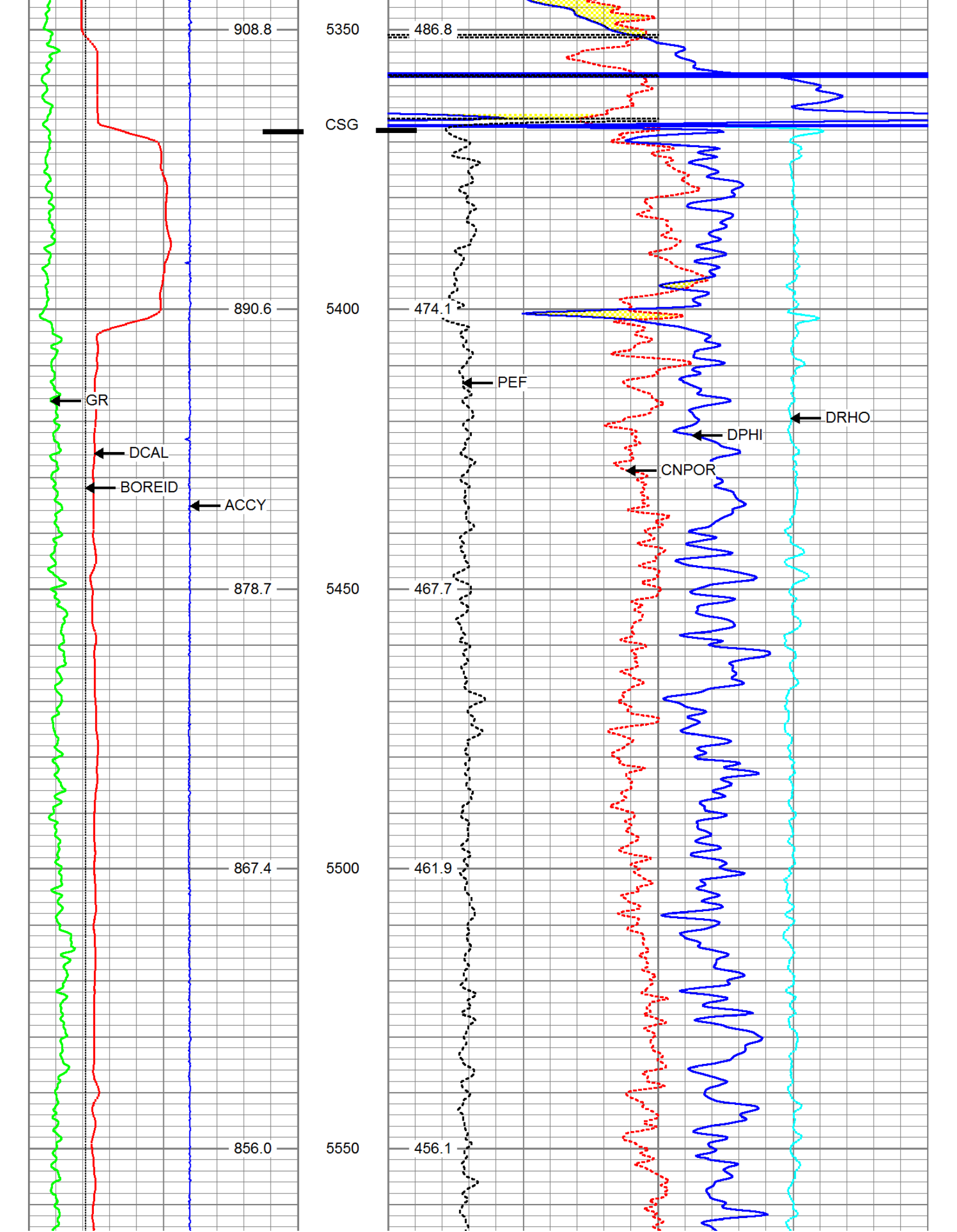
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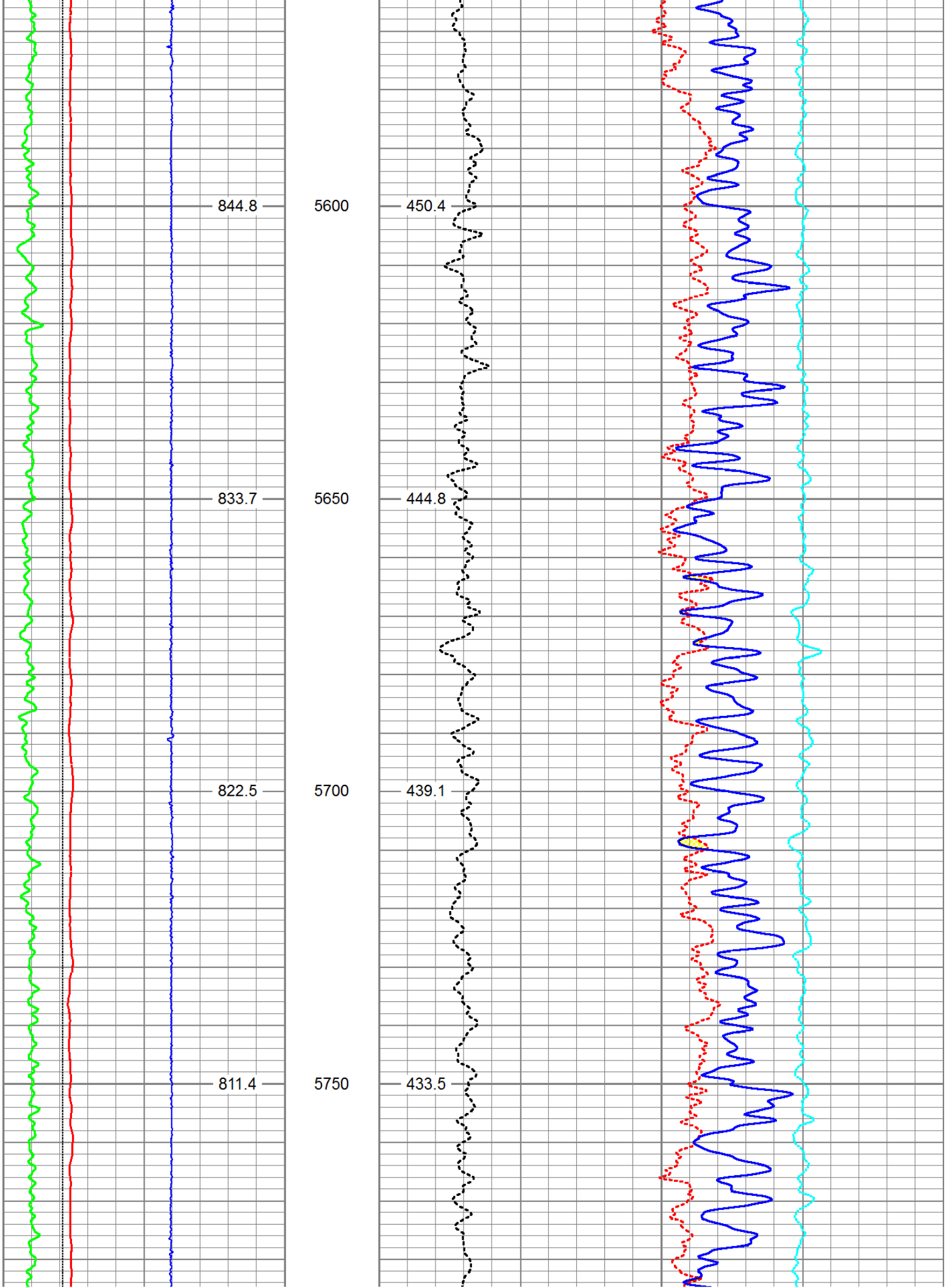
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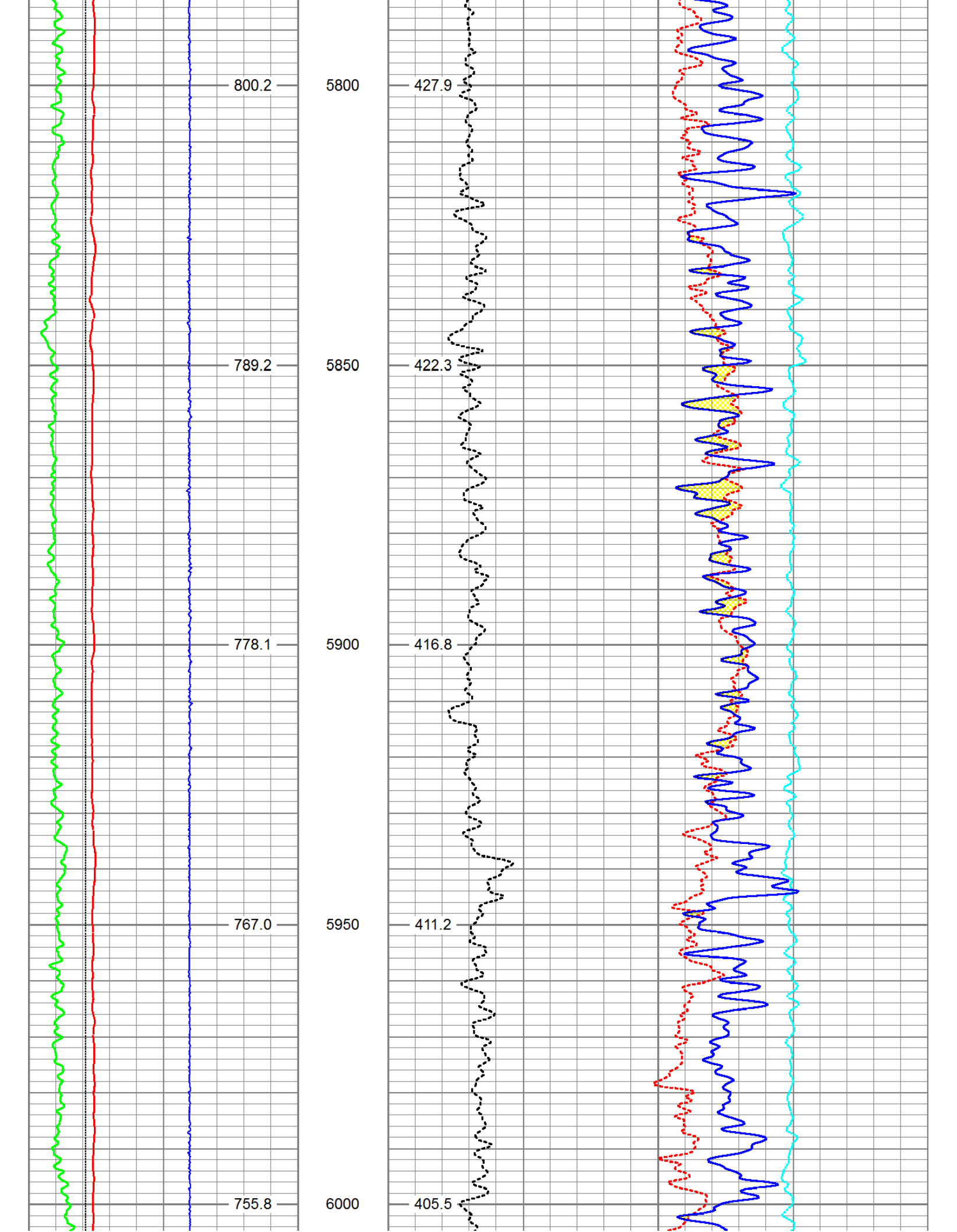
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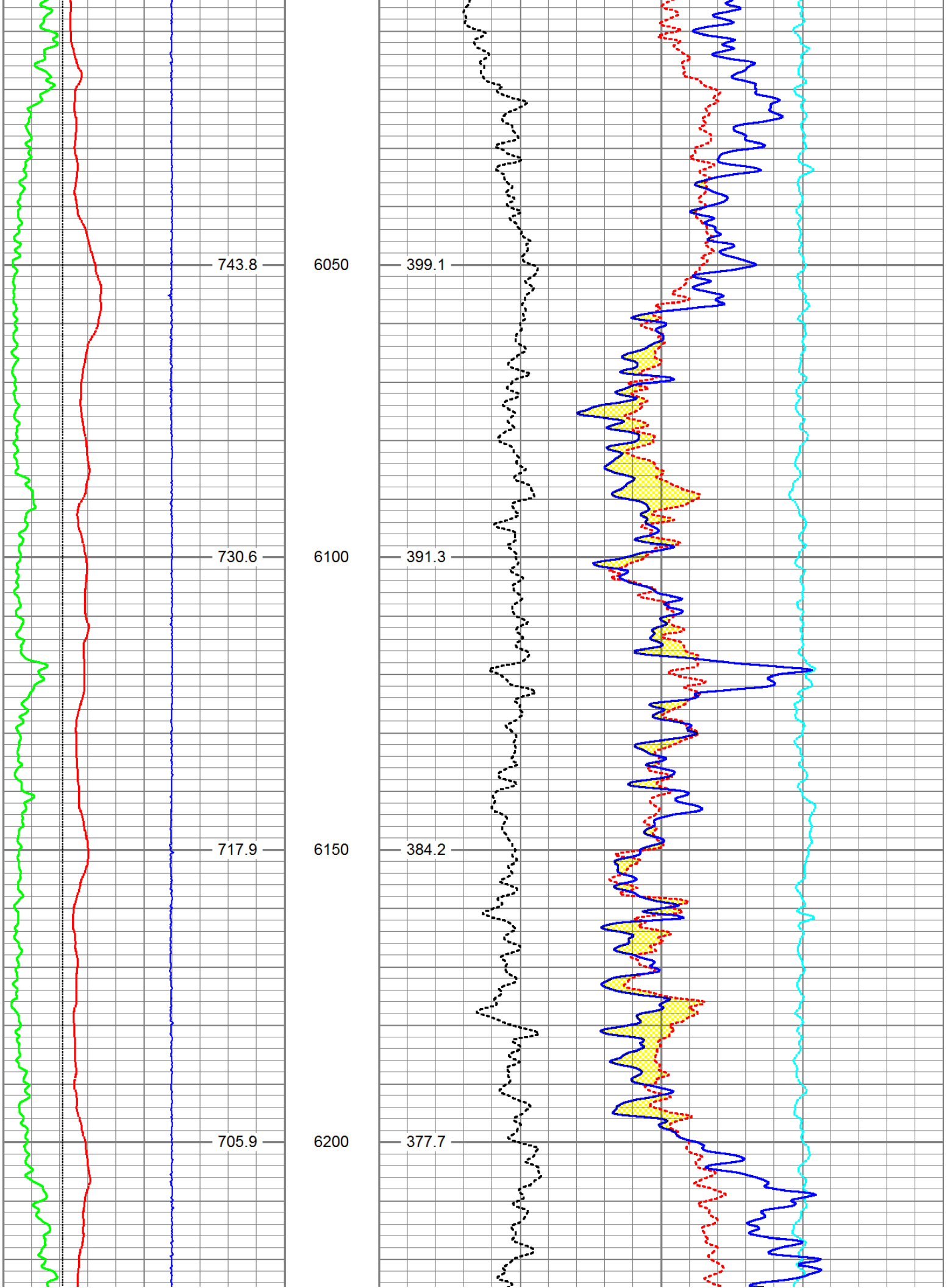
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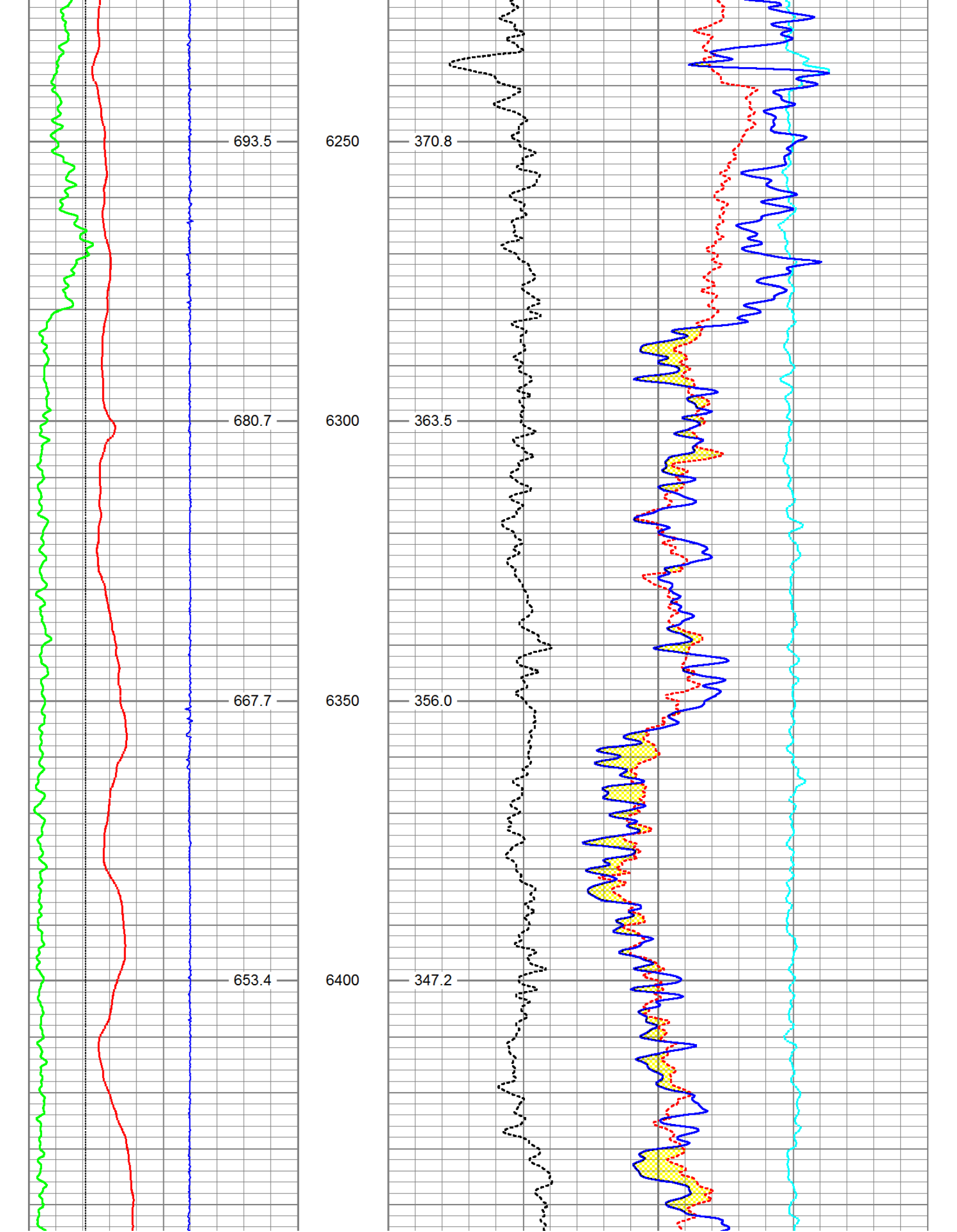
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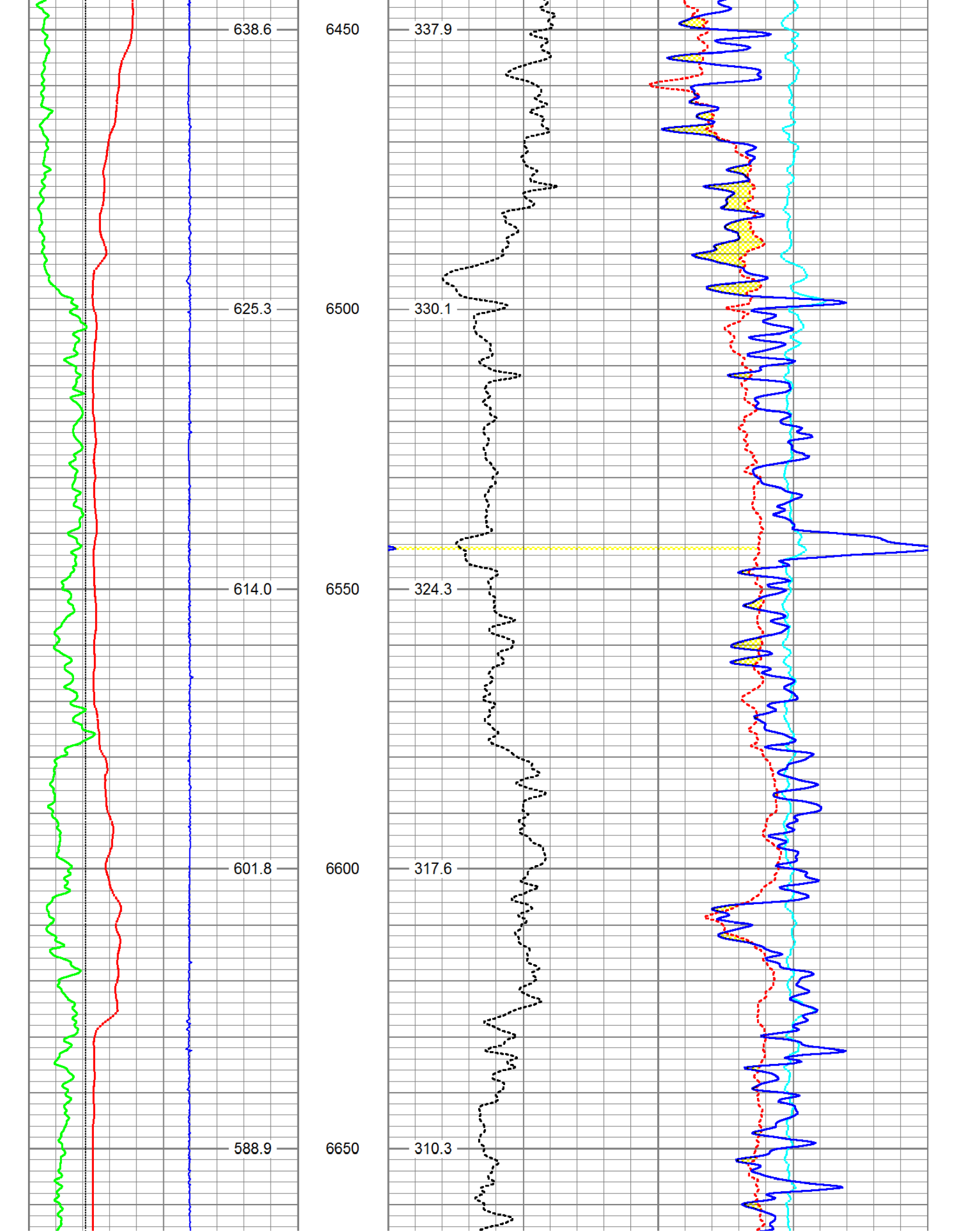
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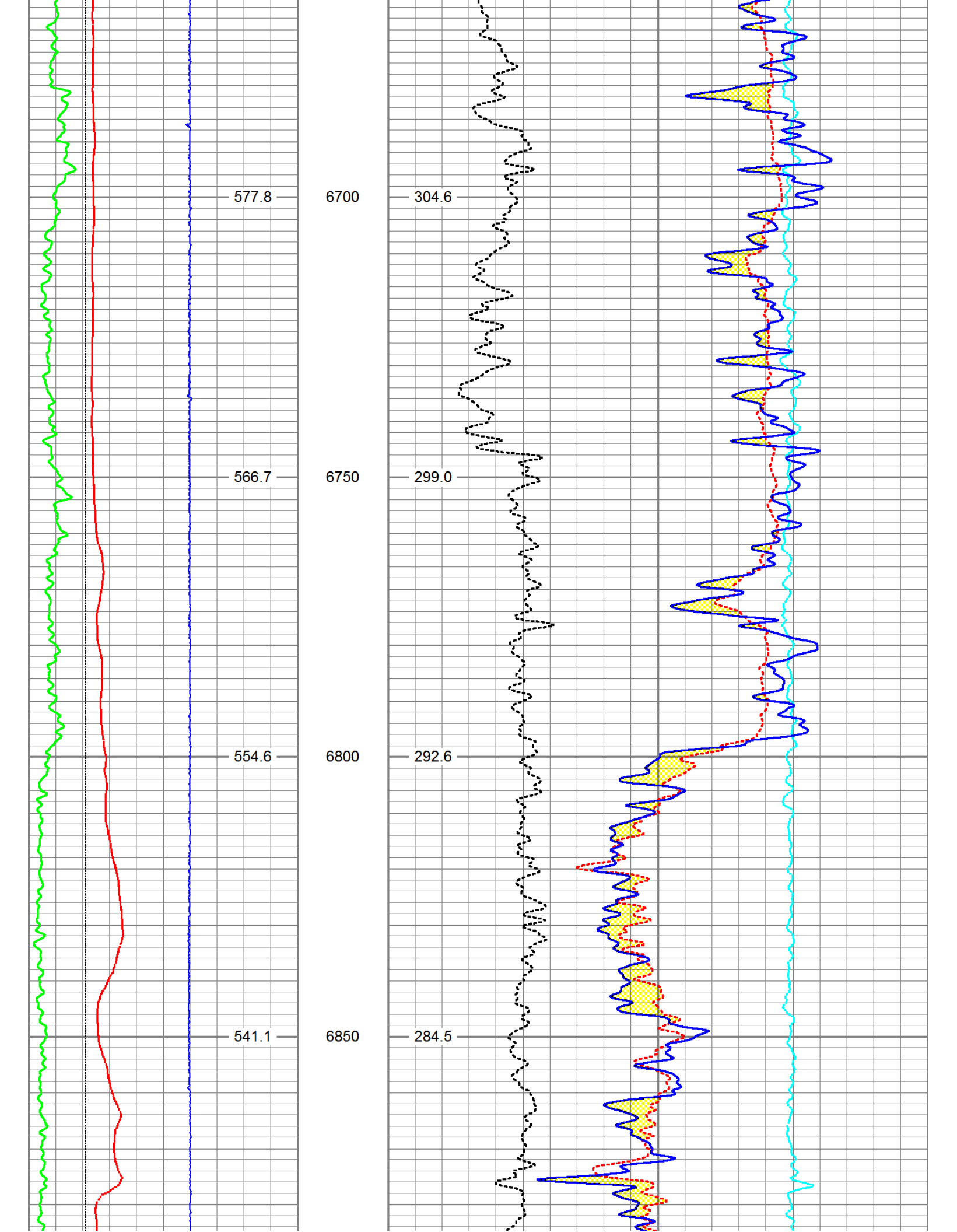
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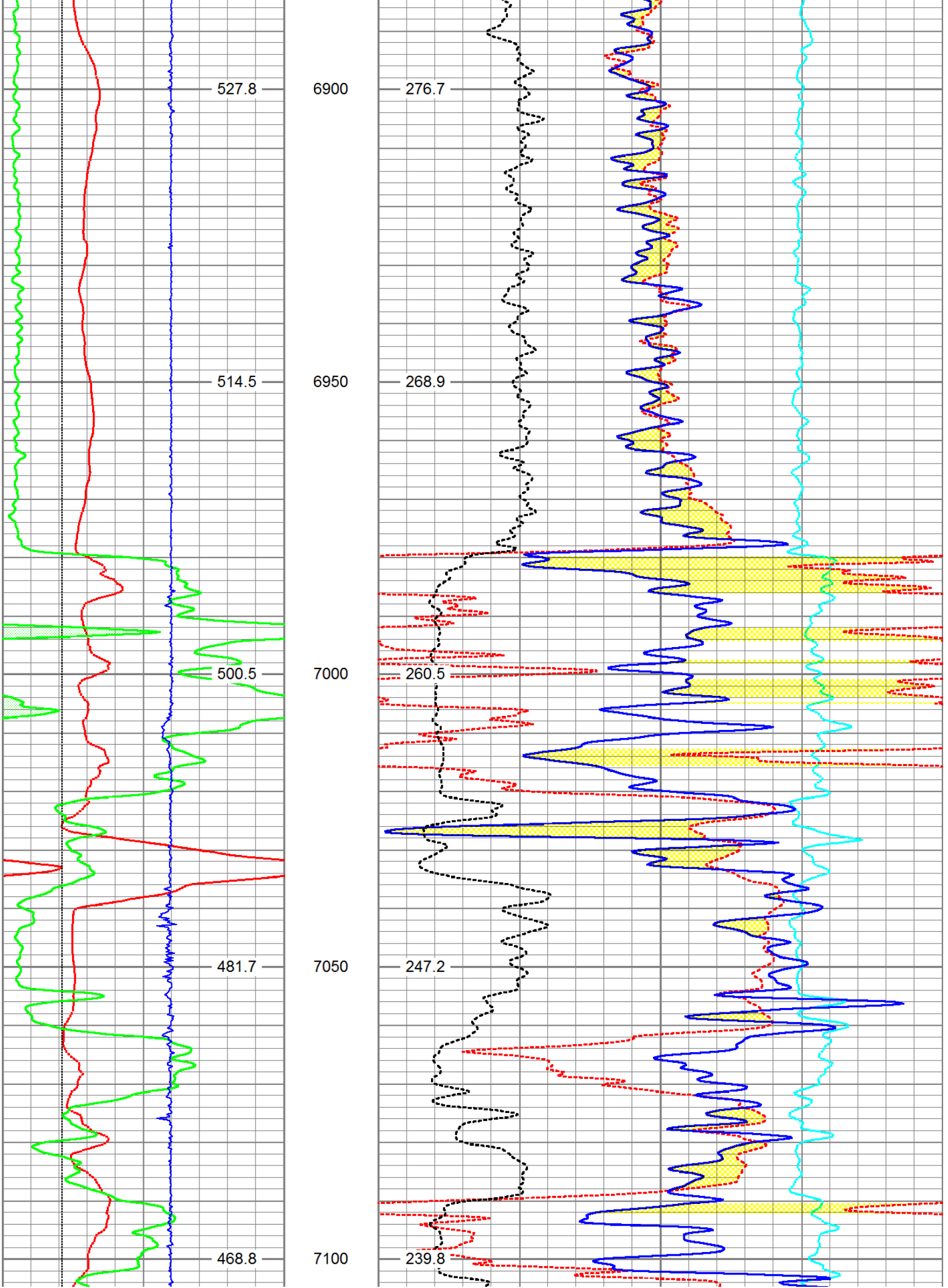
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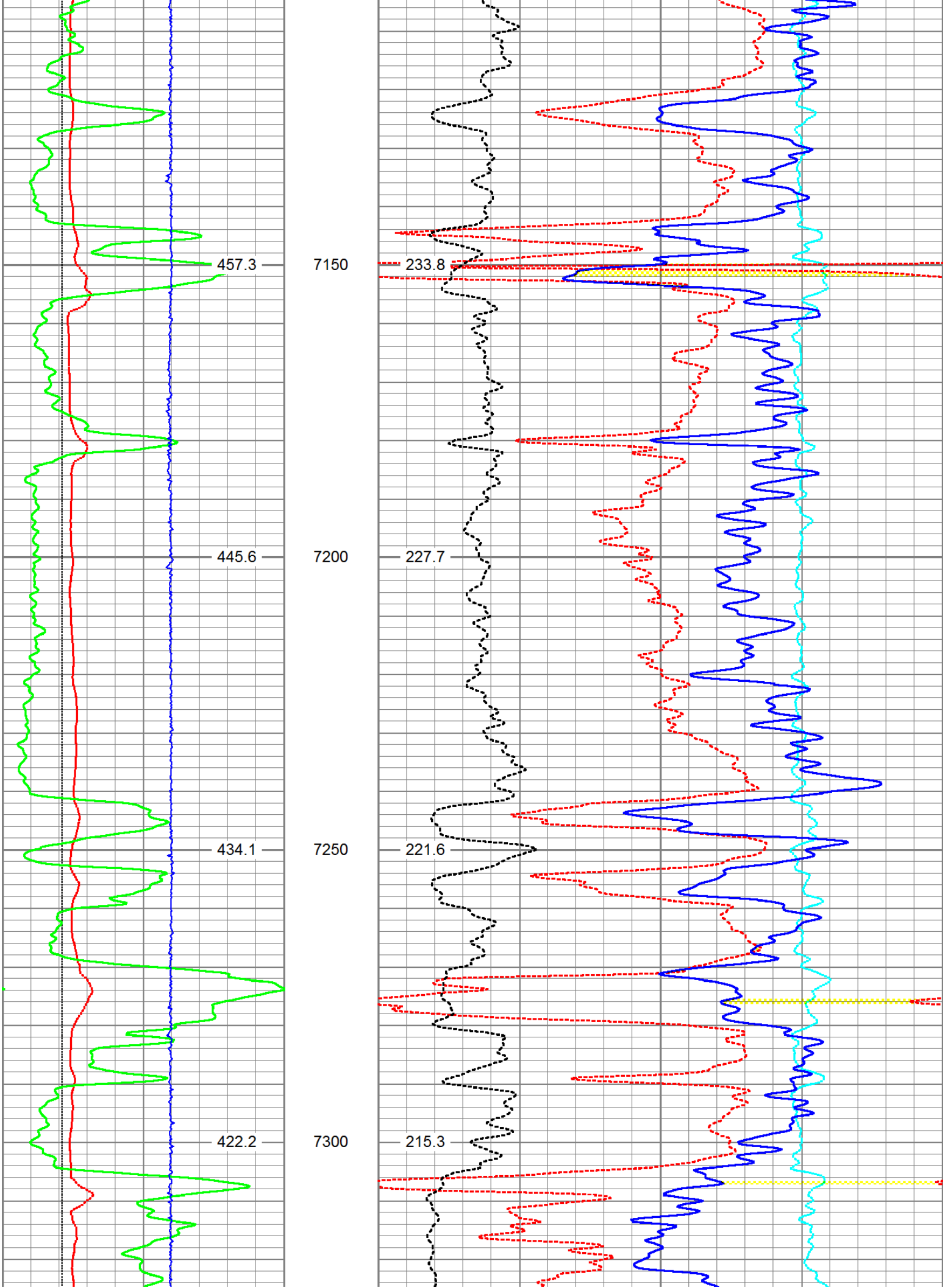
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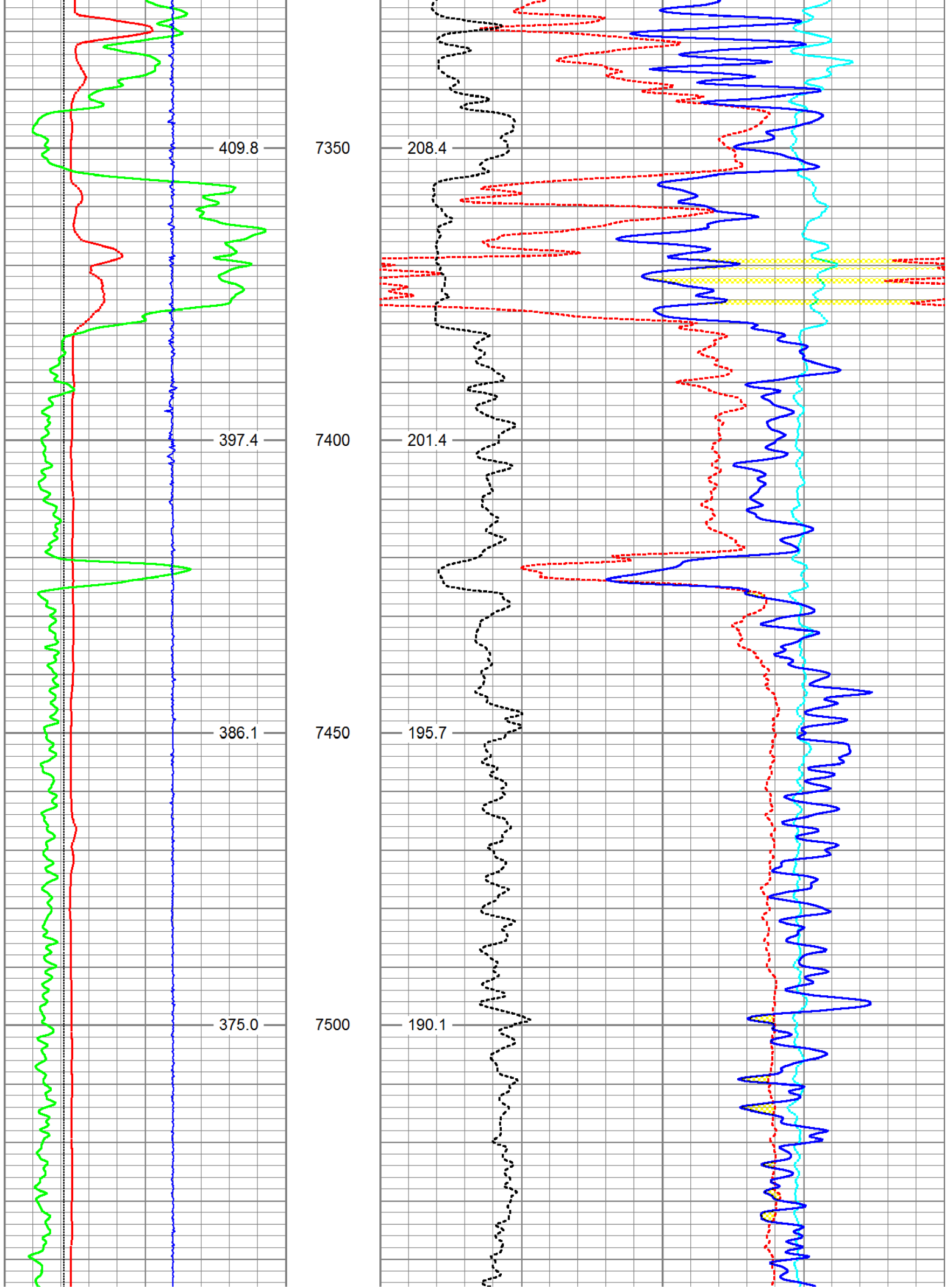
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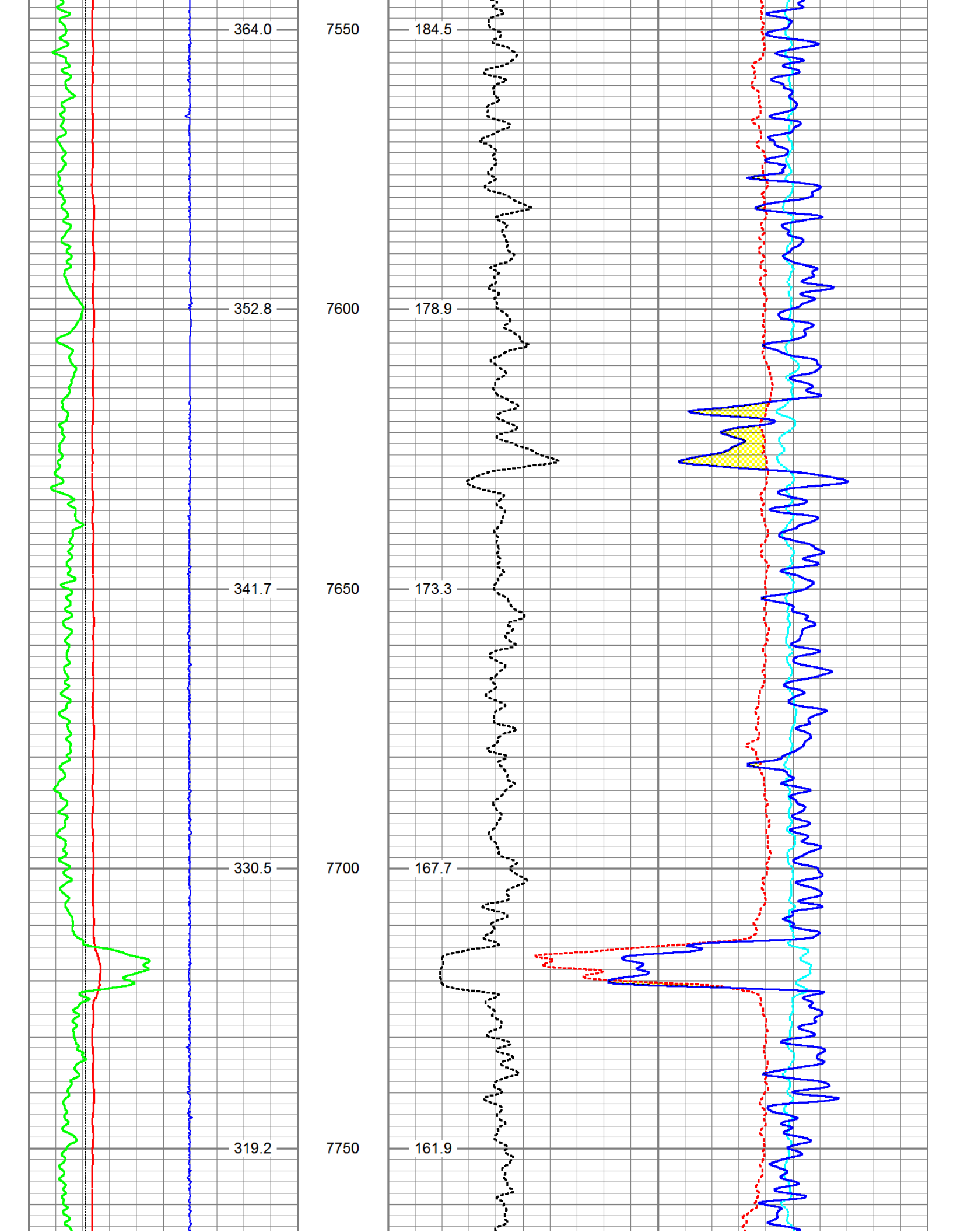
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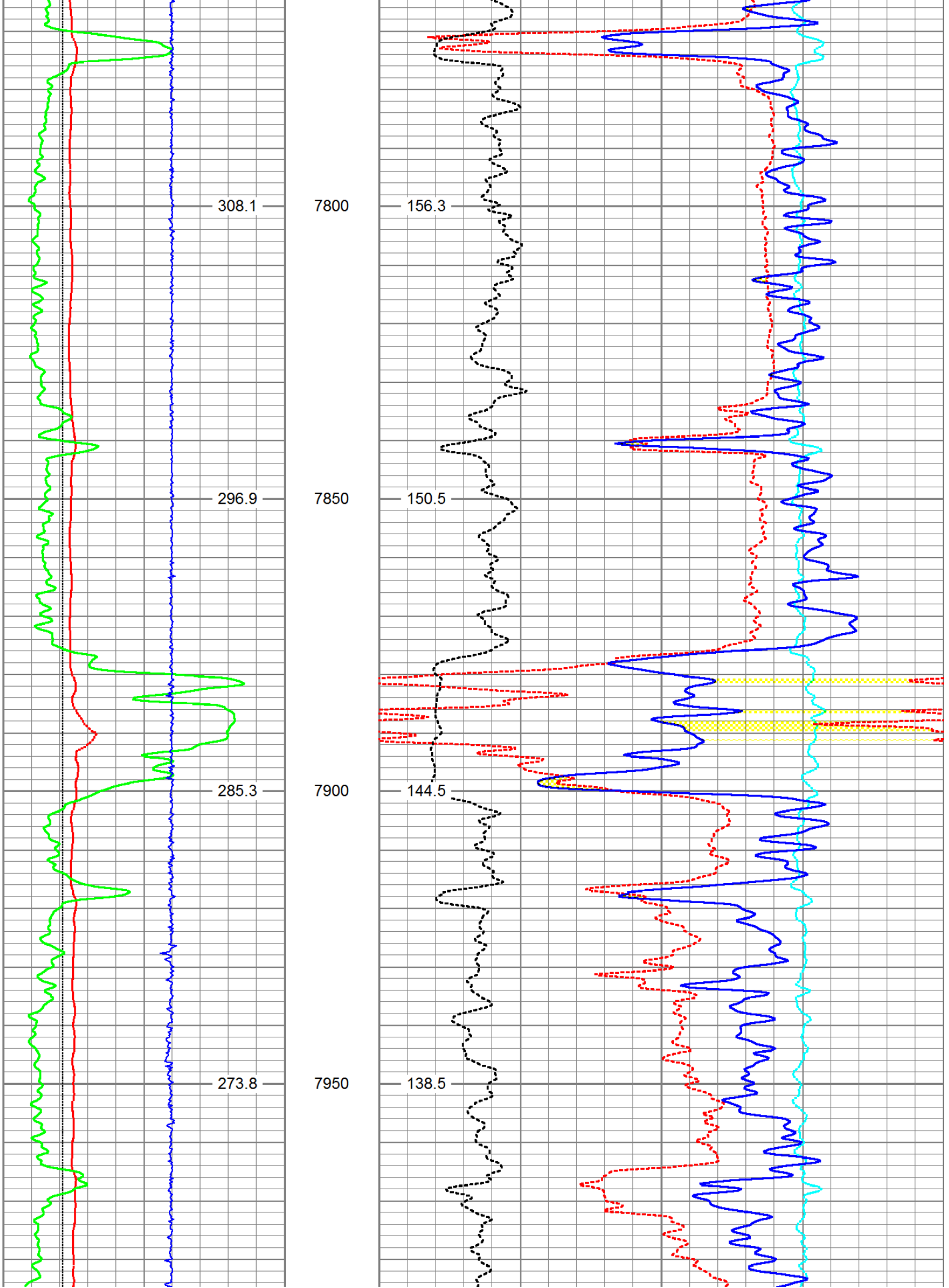
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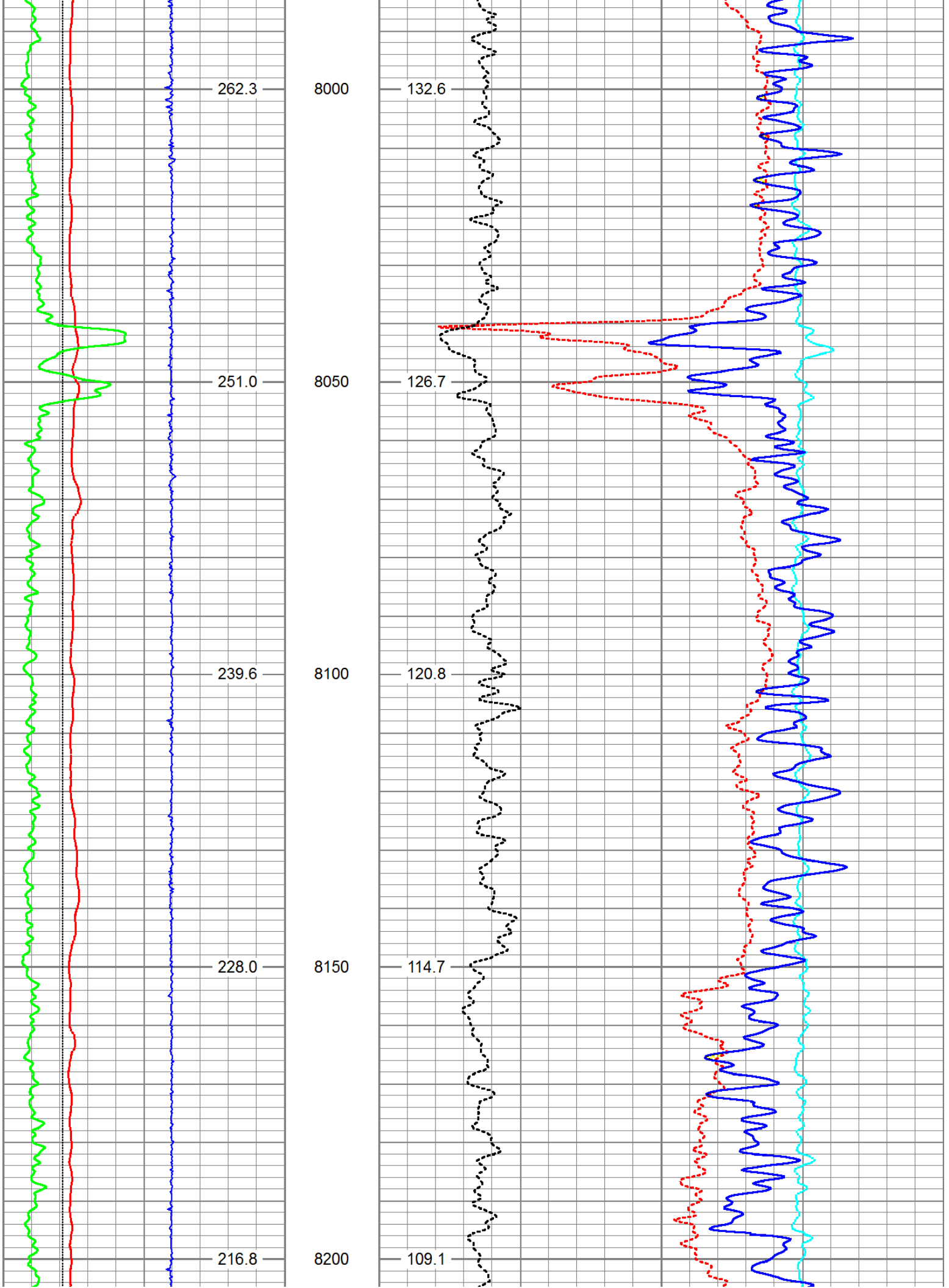
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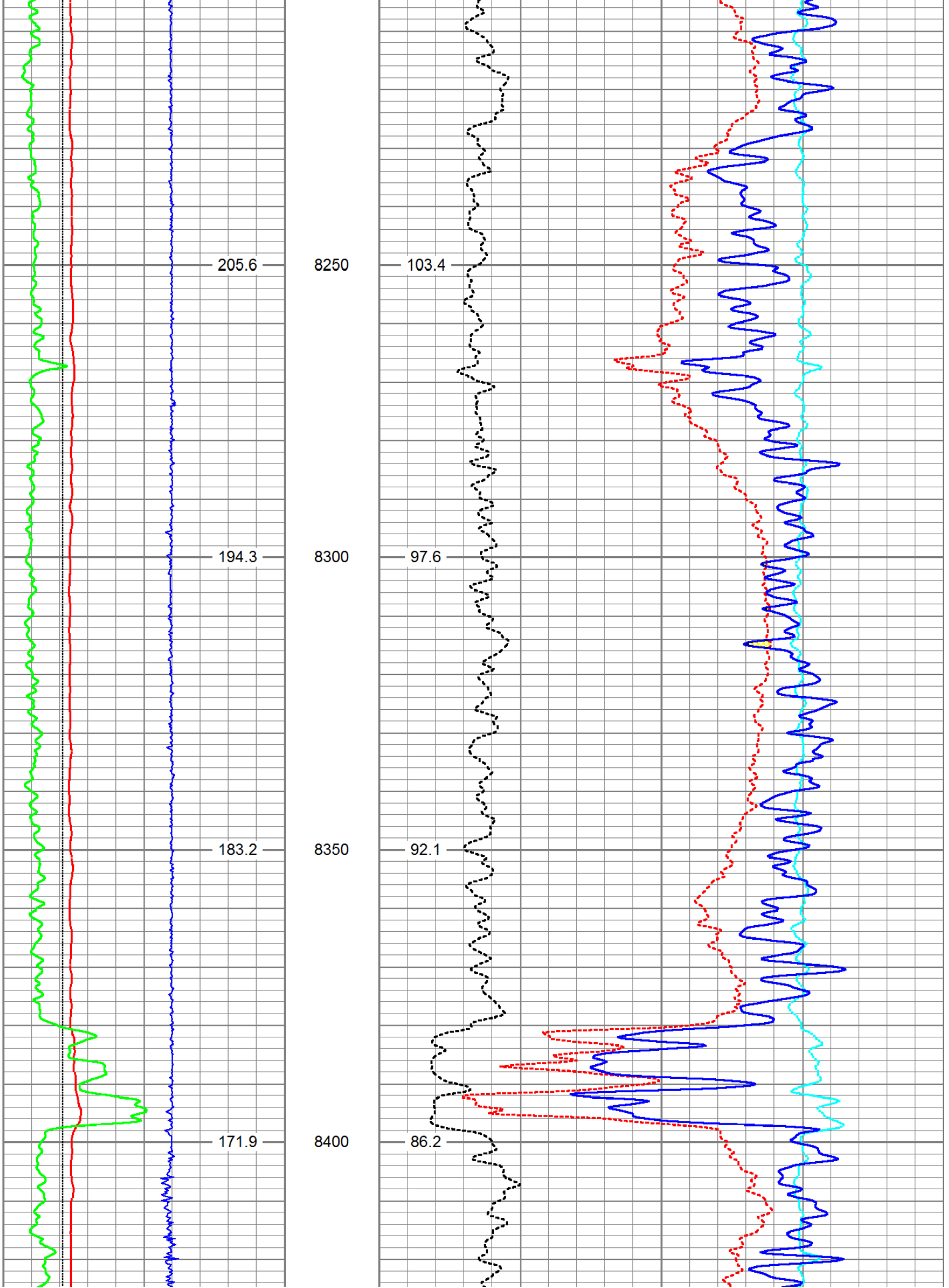
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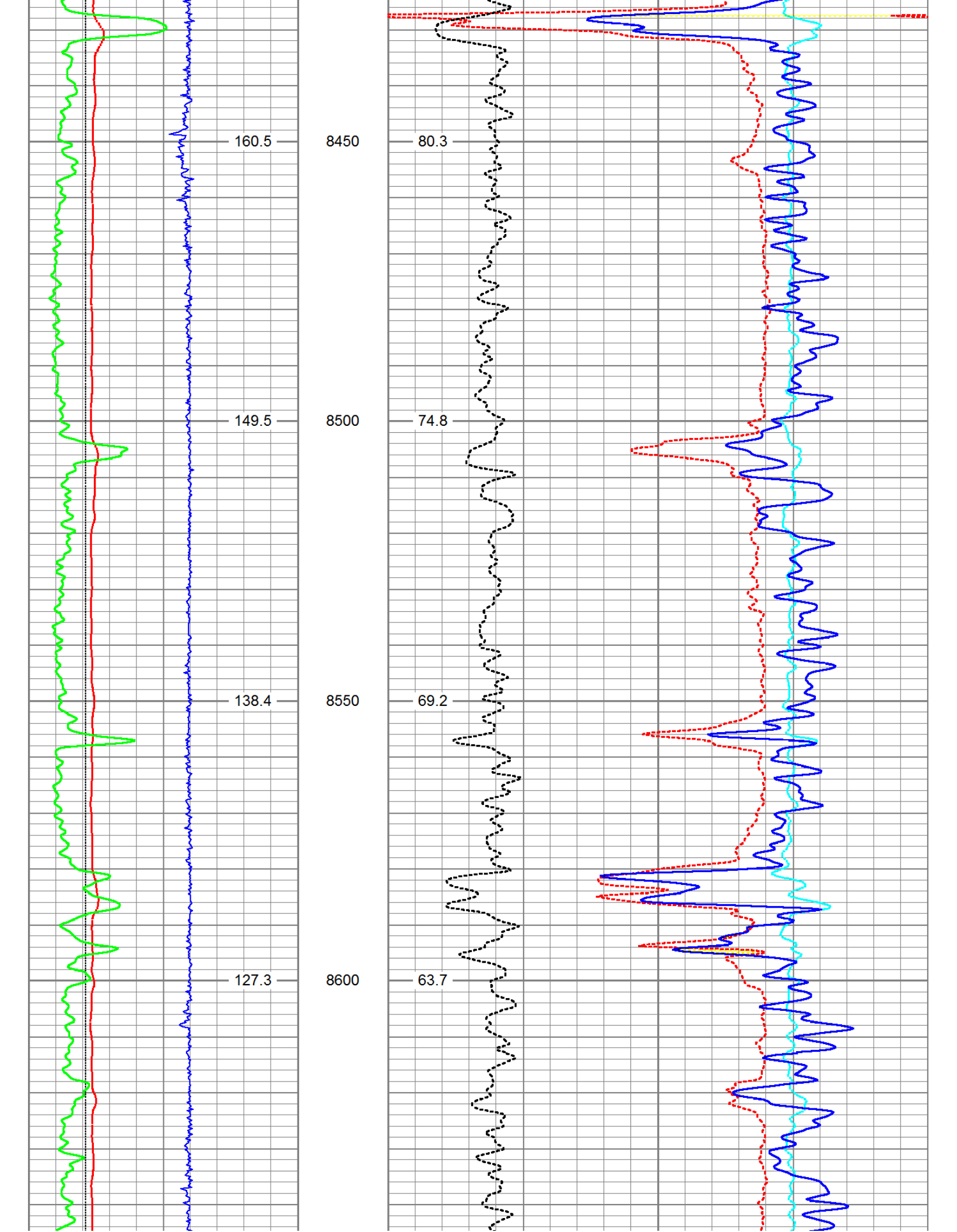
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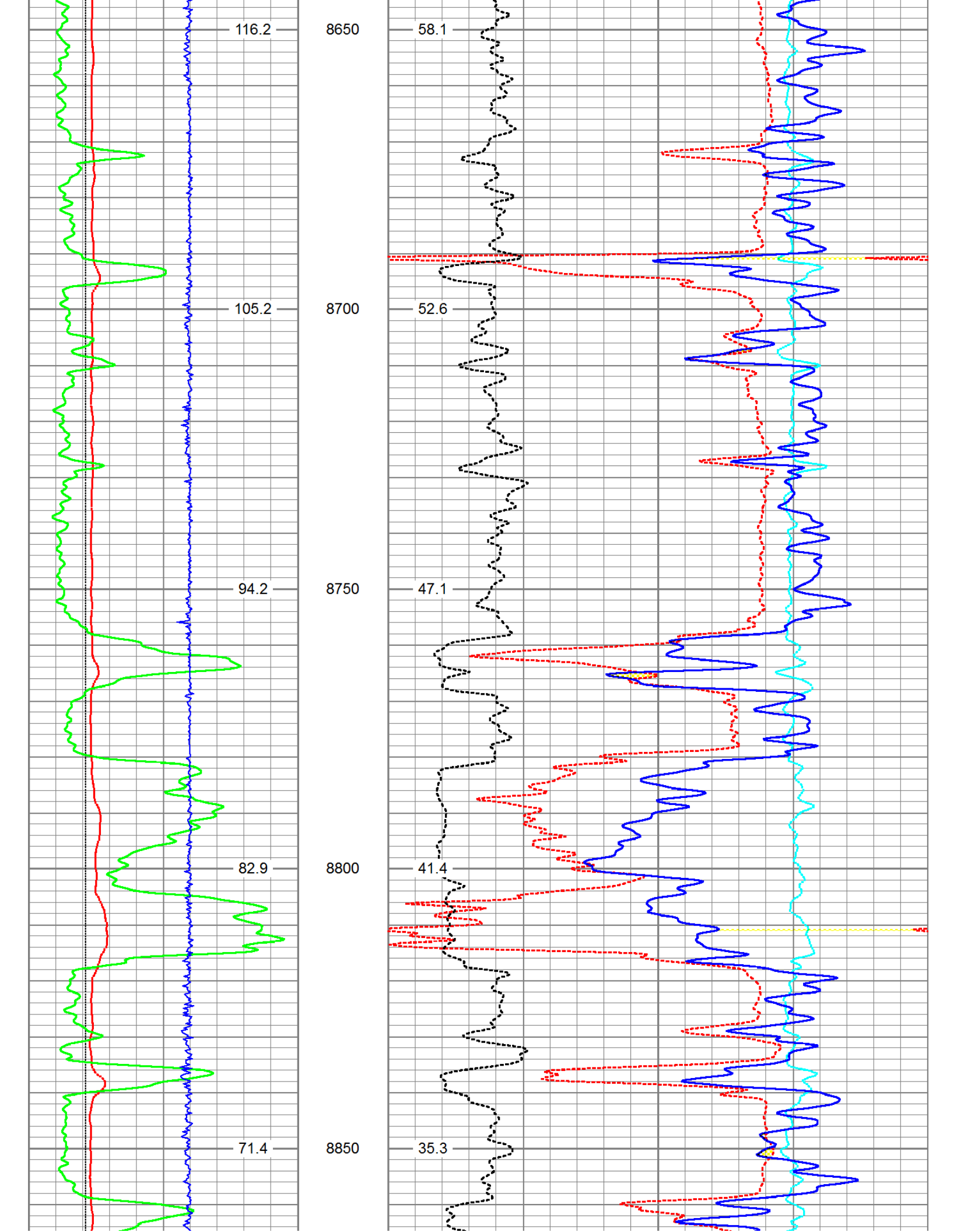
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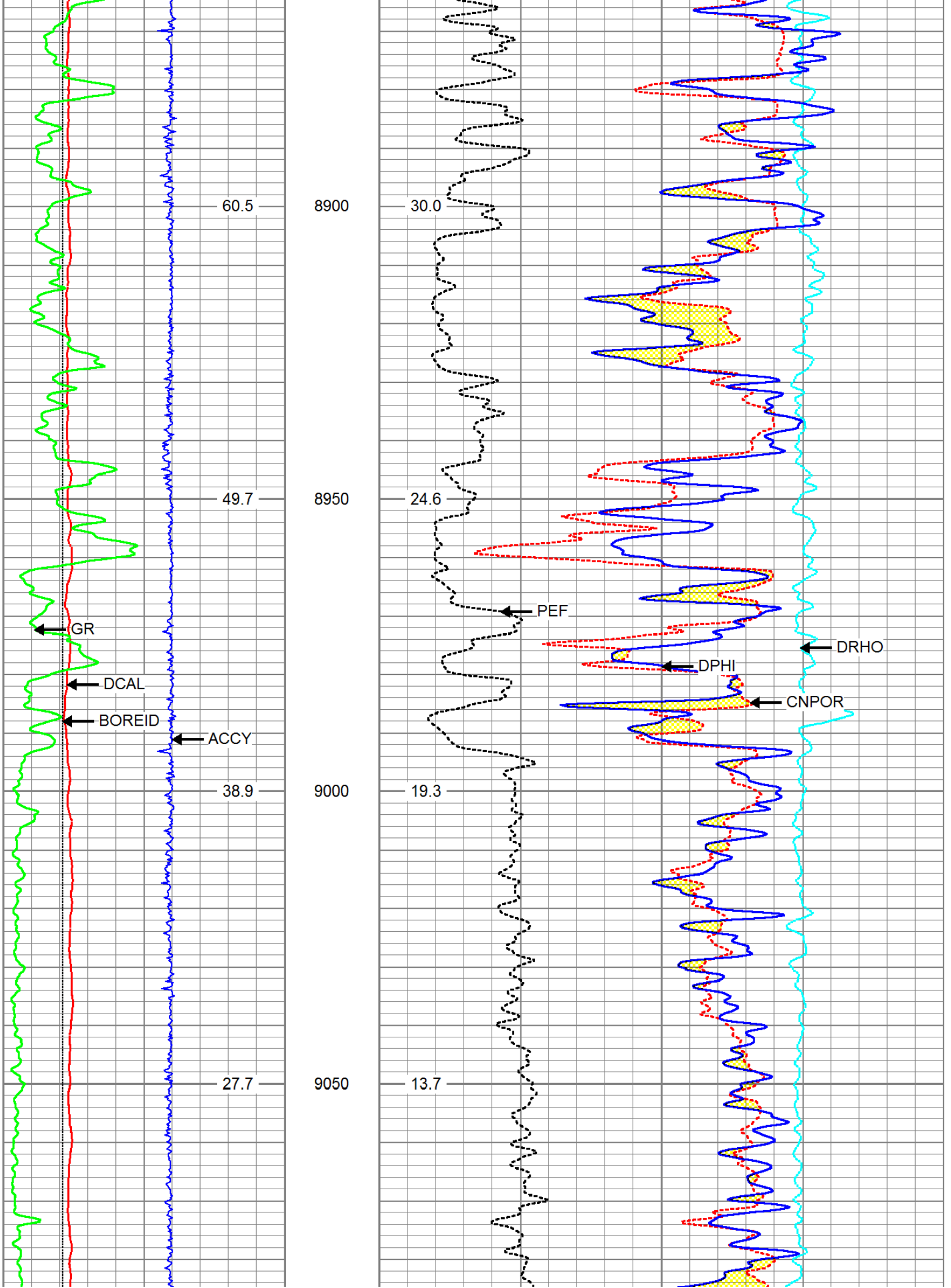
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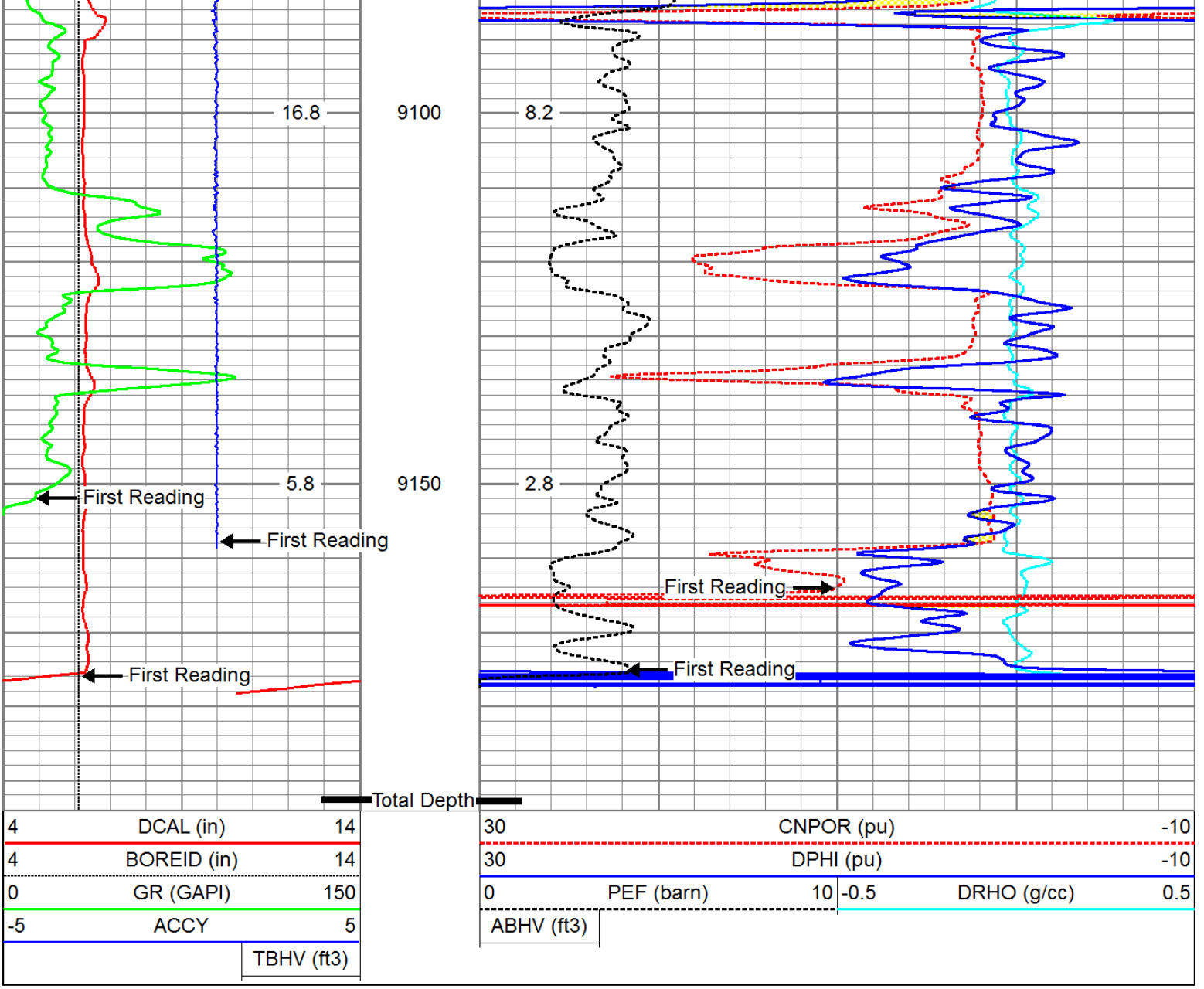


Log Variables

Database:c:\users\kris.wetzel\desktop\taylor 3406 3-29h\sandridge_taylor_3406_3-29h_mem.db
Dataset: field/well/proc1/pass1.2

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?
108	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	0.2
MudWgt lb/gal	NPORSEL	PEBHC?	PERFS	RESTMPSRC	SO in	SRFTEMP degF
8.3	Limestone	YES	0	INTERNAL	0.5	65
SZCOR	TDEPTH ft	TMPCOR	TOOLPOS			
On	9233	On	Ec-centered			

Calibration Report

Database File: c:\users\kris.wetzel\desktop\taylor 3406 3-29h\sandridge_taylor_3406_3-29h_mem.db
Dataset Pathname: proc1/pass1.2
Dataset Creation: Sun May 26 05:23:01 2013

ThruBit Induction Calibration Report

Tool Model-Serial Number: PS-PS38R

Shop Calibration Performed: Fri Mar 01 12:30:29 2013

BASELINE

	R	Expected	X	Expected
Freq 1				
A1	-478.4900	[-500.00, -400.00]	175.3190	[-500.00, 500.00]
A2	-135.7360	[-180.00, -100.00]	302.3650	[-500.00, 500.00]
A3	-26.2781	[-50.00, -10.00]	-65.5454	[-500.00, 500.00]
A4	-16.7549	[-30.00, -10.00]	254.1780	[-500.00, 500.00]
A5	-14.3211	[-30.00, -10.00]	151.4720	[-500.00, 500.00]
Freq 2				
A1	-252.3300	[-280.00, -180.00]	90.6894	[-500.00, 500.00]
A2	-86.4805	[-130.00, -50.00]	170.3340	[-500.00, 500.00]
A3	-19.2593	[-50.00, -10.00]	-94.3423	[-500.00, 500.00]
A4	-19.7630	[-30.00, -10.00]	78.5474	[-500.00, 500.00]
A5	-19.2330	[-30.00, -10.00]	2.2441	[-500.00, 500.00]
Freq 3				
A1	-162.5760	[-180.00, -80.00]	-2.4436	[-500.00, 500.00]
A2	-65.8174	[-130.00, -30.00]	84.6667	[-500.00, 500.00]
A3	-15.1583	[-50.00, -10.00]	-126.5820	[-500.00, 500.00]
A4	-21.2009	[-30.00, -10.00]	-38.0339	[-500.00, 500.00]
A5	-21.8735	[-30.00, -10.00]	-105.2590	[-500.00, 500.00]
Freq 4				
A1	-89.4241	[-120.00, -40.00]	-152.8680	[-500.00, 500.00]
A2	-46.8994	[-110.00, -10.00]	-29.1757	[-500.00, 500.00]
A3	-12.3098	[-50.00, -10.00]	-189.9740	[-500.00, 500.00]
A4	-23.7794	[-30.00, -10.00]	-211.1800	[-500.00, 500.00]
A5	-26.9272	[-30.00, -10.00]	-283.6760	[-500.00, 500.00]

CALIBRATION COEFFICIENTS

	R	Expected	X	Expected
Freq 1				
A1	0.9910	[0.95, 1.05]	0.0019	[-0.05, 0.05]
A2	0.9910	[0.95, 1.05]	0.0018	[-0.05, 0.05]
A3	1.0009	[0.95, 1.05]	-0.0054	[-0.05, 0.05]
A4	0.9885	[0.95, 1.05]	0.0047	[-0.05, 0.05]
A5	0.9939	[0.95, 1.05]	0.0015	[-0.05, 0.05]
Freq 2				
A1	0.9860	[0.95, 1.05]	-0.0059	[-0.05, 0.05]
A2	0.9858	[0.95, 1.05]	-0.0055	[-0.05, 0.05]
A3	0.9901	[0.95, 1.05]	-0.0051	[-0.05, 0.05]
A4	0.9836	[0.95, 1.05]	-0.0030	[-0.05, 0.05]
A5	0.9887	[0.95, 1.05]	-0.0069	[-0.05, 0.05]
Freq 3				
A1	0.9930	[0.95, 1.05]	-0.0045	[-0.05, 0.05]
A2	0.9931	[0.95, 1.05]	-0.0041	[-0.05, 0.05]

A3	0.9966	[0.95, 1.05]	-0.0041	[-0.05, 0.05]
A4	0.9891	[0.95, 1.05]	-0.0015	[-0.05, 0.05]
A5	0.9978	[0.95, 1.05]	-0.0052	[-0.05, 0.05]
Freq 4				
A1	0.9848	[0.95, 1.05]	-0.0070	[-0.05, 0.05]
A2	0.9844	[0.95, 1.05]	-0.0066	[-0.05, 0.05]
A3	0.9901	[0.95, 1.05]	-0.0084	[-0.05, 0.05]
A4	0.9809	[0.95, 1.05]	-0.0036	[-0.05, 0.05]
A5	0.9965	[0.95, 1.05]	-0.0100	[-0.05, 0.05]

Temperature 34.5229 degC

ThruBit Density Calibration Report

Tool Model-Serial Number: PS-PS01D

Source Number:

Shop Calibration Performed: Fri May 17 09:36:11 2013

REFERENCE

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

READINGS

Outputs	Counts	Units	Expected
SS1 Background	133.63	cps	[130.00, 170.00]
LS1 Background	143.47	cps	[130.00, 170.00]
LS4 Background	30.64	cps	[27.00, 35.00]
SS1 Aluminium	4869.52	cps	[4500.00, 5500.00]
LS1 Aluminium	900.79	cps	[750.00, 950.00]
LS4 Aluminium	1058.65	cps	[843.00, 1068.00]
SS1 Magnesium	7940.15	cps	[7000.00, 9000.00]
LS1 Magnesium	5747.93	cps	[5250.00, 6250.00]
LS1 Al + Fe	779.29	cps	[650.00, 800.00]
LS4 Al + Fe	491.38	cps	[382.00, 471.00]

RESULTS

SS Slope	1.71	[1.52, 1.77]
LS Slope	0.43	[0.38, 0.45]
PEF K Factor	5.113	[3.510, 6.170]
PEF B Factor	-0.619	[-0.700, -0.410]

Caliper Shop Calibration performed: Fri May 17 09:36:11 2013

RESULTS

Reference	Reading	Units
12.00	1827.26	in
9.00	1981.10	in
6.00	2149.14	in

DENSITY PRE-SURVEY CHECK Performed: Wed May 22 17:56:53 2013

Outputs	Counts	Units	Expected

SS1 Background	132.62	cps	[129.62, 137.64]
LS1 Background	142.86	cps	[139.17, 147.78]
LS4 Background	30.42	cps	[28.80, 32.48]

CALIPER PRE-SURVEY CHECK Performed: Wed May 22 17:57:11 2013

Reference	Readings	Units	Expected
6.00	5.96	in	[5.80, 6.20]

Compensated Neutron Calibration Report

Tool Model-Serial Number: PS-PS14N
Source Number:

Calibration Tank Temperature: 71.8 degF
Shop Calibration Performed: Thu May 23 10:51:50 2013

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	751.8	cps	
LS Counts	25.4	cps	
Tank Ratio Ref	30.9580	SS/LS	
Tank Ratio	29.5738	SS/LS	
Tank Ratio Gain	1.0468		[0.85, 1.15]

ALUMINUM SLEEVE REFERENCE

Outputs	Measured	Units	Expected
SS Counts	8361.0	cps	
LS Counts	807.3	cps	
Al Ratio Ref	10.797	SS/LS	
Al Ratio	10.841	SS/LS	
Al Ratio Gain	1.00		[0.90, 1.10]
Sleeve Porosity	14.46	pu	

PRE-SURVEY BACKGROUND CHECK Performed: Thu May 23 10:56:59 2013

Outputs	Measured	Units	Expected
SS Counts	0.0	cps	<10
LS Counts	0.1	cps	<4

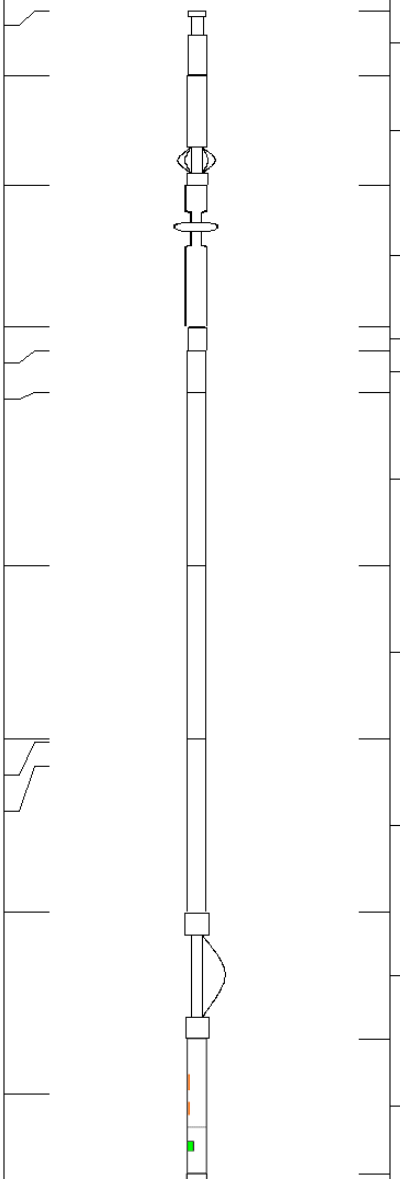
Gamma Ray Calibration Report

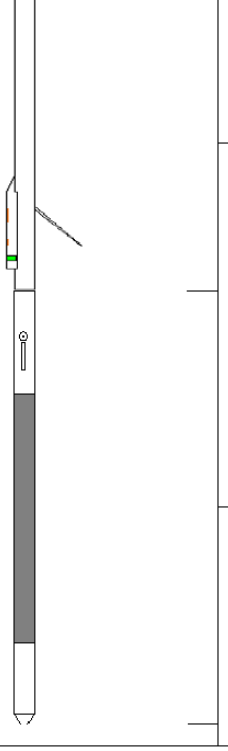
Tool Model-Serial Number:	ENP-ENP5T	
Performed:	Wed Apr 24 10:34:01 2013	
Calibrator Value:	165.0	GAPI
Background Reading:	68.2	cps
Calibrator Reading:	447.3	cps
Sensitivity:	0.3650	GAPI/cps

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	66.92		Cablehead-S Solid Weakpoint	2.31	2.13	5.00
Thrubit	64.61					
			PSBDOT	3.87	2.25	35.00
Thrubit	60.75					
			HangOff_Tool	5.00	2.38	60.00
Thrubit	55.75		10-1	0.88	2.13	3.95
Thrubit	54.87		Universal Joint	1.46	2.06	15.00
TBBAT	53.41					
			TBBAT-A (PS13B) Thrubit Battery	6.13	2.13	38.20
TBBAT2	47.29					
			TBBAT2-A (PS33B) Thrubit Battery	6.13	2.13	40.00
TMG	41.16					
GR	41.04					
GRTEMP	40.20		TMG-ENP (ENP5T) ThruBit Telemetry Gamma Ray	6.13	2.13	45.00
Thrubit	35.04					
			Decentralizer Decentralizer (Small)	4.50	2.13	70.00
CNLSC	28.60		TBN-PS (PS14N) ThruBit Neutron	4.77	2.13	63.00



		TBD-PS (PS01D) 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	TBI-PS (PS38R) Thrubit Induction	15.29	2.13	94.00
A4_P	8.35				
A5_P	6.60				

Dataset:	sandridge_taylor_3406_3-29h_mem.db: field/well/proc1/pass1.2
Total Length:	66.92 ft
Total Weight:	560.15 lb
O.D.	2.38 in

ThruBit
A Schlumberger Company

Company	SANDRIDGE ENERGY
Well	TAYLOR 3406 3-29H
Field	EASTHAM
County	HARPER
State	KANSAS