ThruBit
A Schlumberger Company

ARRAY INDUCTION GAMMA RAY MEMORY LOG

Company SANDRIDGE ENERGY
Well ELLIS 3119 2-19H
Field ARLIE
County COMANCHE State KANSAS
Location: API # : 15033216600100
SHL: 250' FNL & 1050' FEL
PBHL: 330' FSL & 1050' FEL
SEC 19 TWP 31S RGE 19W

Permanent Datum G.L. Elevation 2174'
Log Measured From K.B. 19.6' ABOVE PERM DATUM
Drilling Measured From K.B.

Other Services
THRUBIT
PORTAL BIT

Elevation
K.B. 2193.6'
D.F. 2193.6'
G.L. 2174'

Company SANDRIDGE ENERGY
Well ELLIS 3119 2-19H
Field ARLIE
County COMANCHE State KANSAS
Location: API # : 15033216600100

Date	15 AUG 2012		
Run Number	ONE		
Depth Driller	9605'		
Depth Logger	9576'		
Bottom Logged Interval	9565'		
Top Log Interval	5000'		
Casing Driller	7" @ 5645'		
Casing Logger	7" @ 5635'		
Bit Size	6.125"		
Type Fluid in Hole	WBM		
Density / Viscosity	8.5 / 32		
pH / Fluid Loss	11.0 / 9.0		
Source of Sample	MUD PIT		
Rm @ Meas. Temp	0.42 OHMS @ 90 DEGF		
Rmf @ Meas. Temp	0.32 OHMS @ 90 DEGF		
Rmc @ Meas. Temp	0.53 OHMS @ 90 DEGF		
Source of Rmf / Rmc	CALCULATED		
Rm @ BHT	0.29 OHMS @ 133 DEGF		
Time Circulation Stopped	23:30 14 AUG 2012		
Time Logger on Bottom	01:00 15 AUG 2012		
Maximum Recorded Temperature	133 DEGF		
Equipment Number	T011		
Location	OKC, OK		
Recorded By	RICK BROOMFIELD		
Witnessed By	JESSIE NEW		

<<< Fold Here >>>

Comments

SERVICE: LEVEL 4- HORIZONTAL MEMORY PUMPDOWN - BIT DEPTH 9508' LOG TO 5000'
ALL SCALES AND PRESENTATION PER CLIENT REQUEST
LIMESTONE POROSITY , 2.71 G/CC, USED FOR POROSITY CALCULATIONS
LOG RAN WITH SWIVEL AND SMALL DECENTRALIZER
TBHV REPRESENTS TOTAL BOREHOLE VOLUME, FT3
ABHV REPRESENTS ANNULAR BOREHOLE VOLUME, FT3, CALCULATED FOR 4.50" CASING
RIGMINDER LITE AND RIGSENSE USED TO CREATE DEPTH LOG
LOG DEPTH CORRELATED TO MWD GAMMA RAY

RIG: LARIAT 45
CREW: R. BROOMFIELD, J. HIRSCHLER, Z. HOWARD

Service Ticket No.	1347	API No.	15033216600100	PGM Ver	WARRIO 7.0

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

EQUIPMENT DATA

GAMMA RAY	NEUTRON	DENSITY	INDUCTION

Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	ONE
Serial No.	PS5T	Serial No.	ENP03N	Serial No.	PS52D	Serial No.	PS20R
Model No.	PS	Model No.	ENP	Model No.	PS	Model No.	PS
Diameter	2.125"	Diameter	2.125"	Diameter	2.125"	Diameter	2.125"

LOGGING DATA

General Data

Pass	Depths		Well Head	Speed	Logging Run Comments
No.	From	To	Pressure	Ft/Min	
ONE	9576'	5000'	0	30	

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

DIRECTIONAL INFORMATION

Maximum Deviation	91.4	deg. @	8950'	KOP	4334'	

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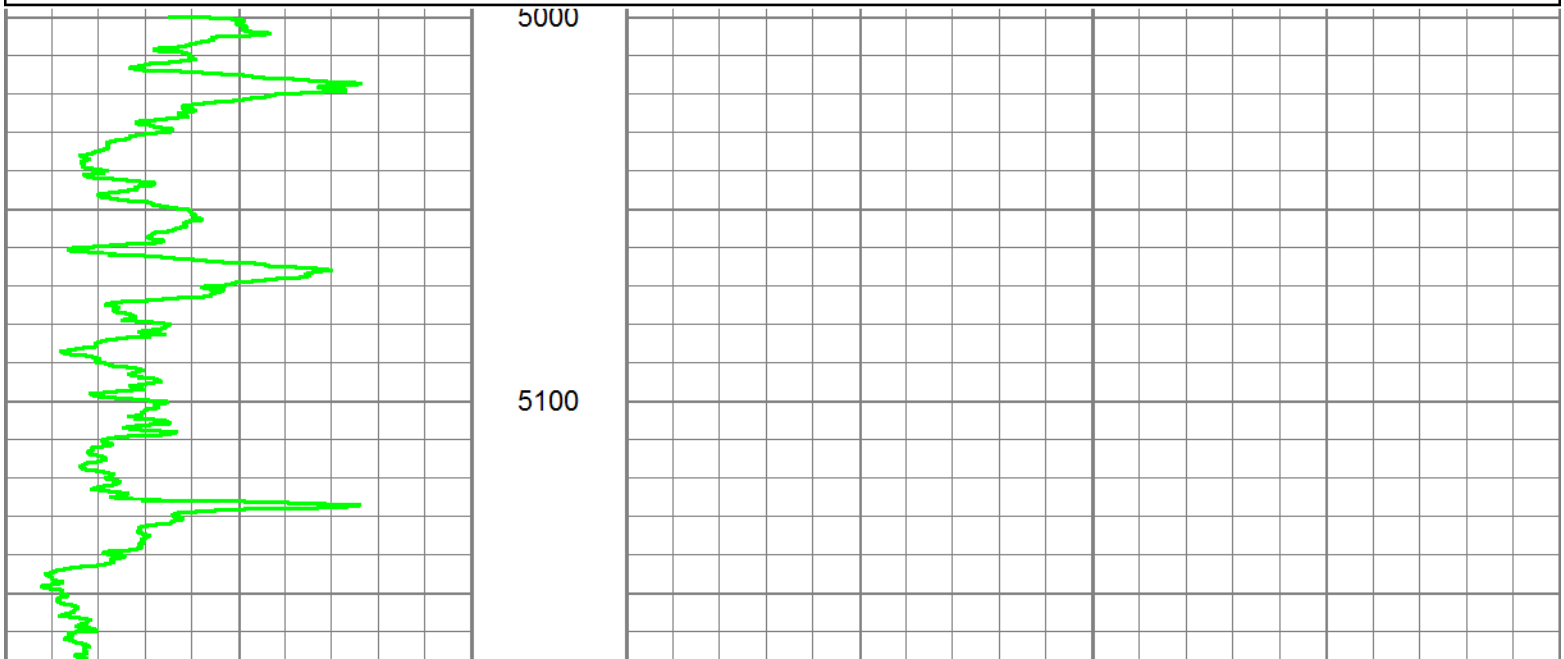
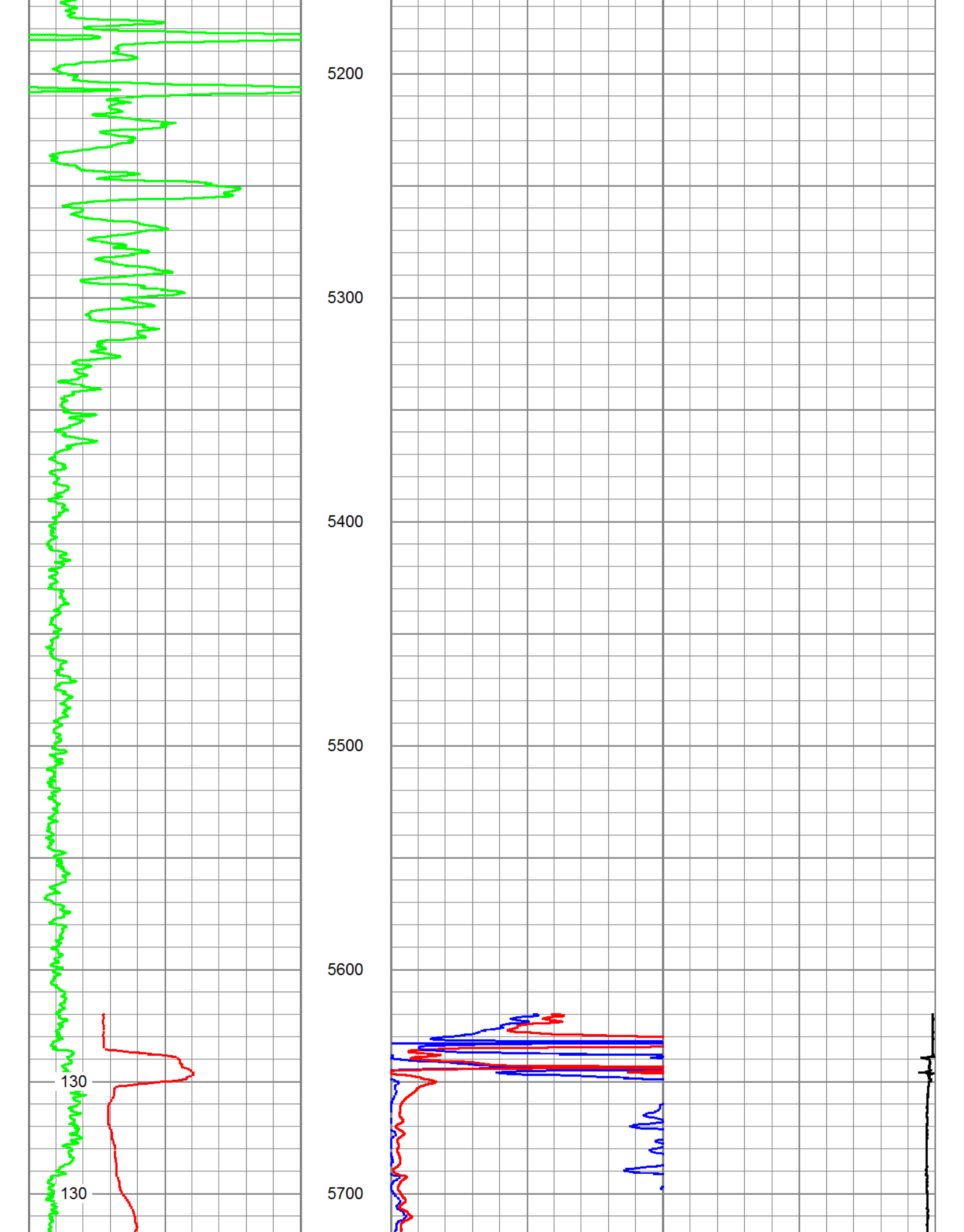
MAIN PASS

Database File: sandridge_ellis_mem.db
Dataset Pathname: proc1/pass1.5
Presentation Format: chespk2r
Dataset Creation: Wed Aug 15 11:32:28 2012
Charted by: Depth in Feet scaled 1:600

0	GR (GAPI)	150
4	DCAL (in)	14
GRTEMP (degF)		

50	20in 2ft Res (Ohm-m)	500
50	90in 2ft Res (Ohm-m)	500
1000	DEEP COND (mmho/m)	0
0	20in 2ft Res (Ohm-m)	50
0	90in 2ft Res (Ohm-m)	50

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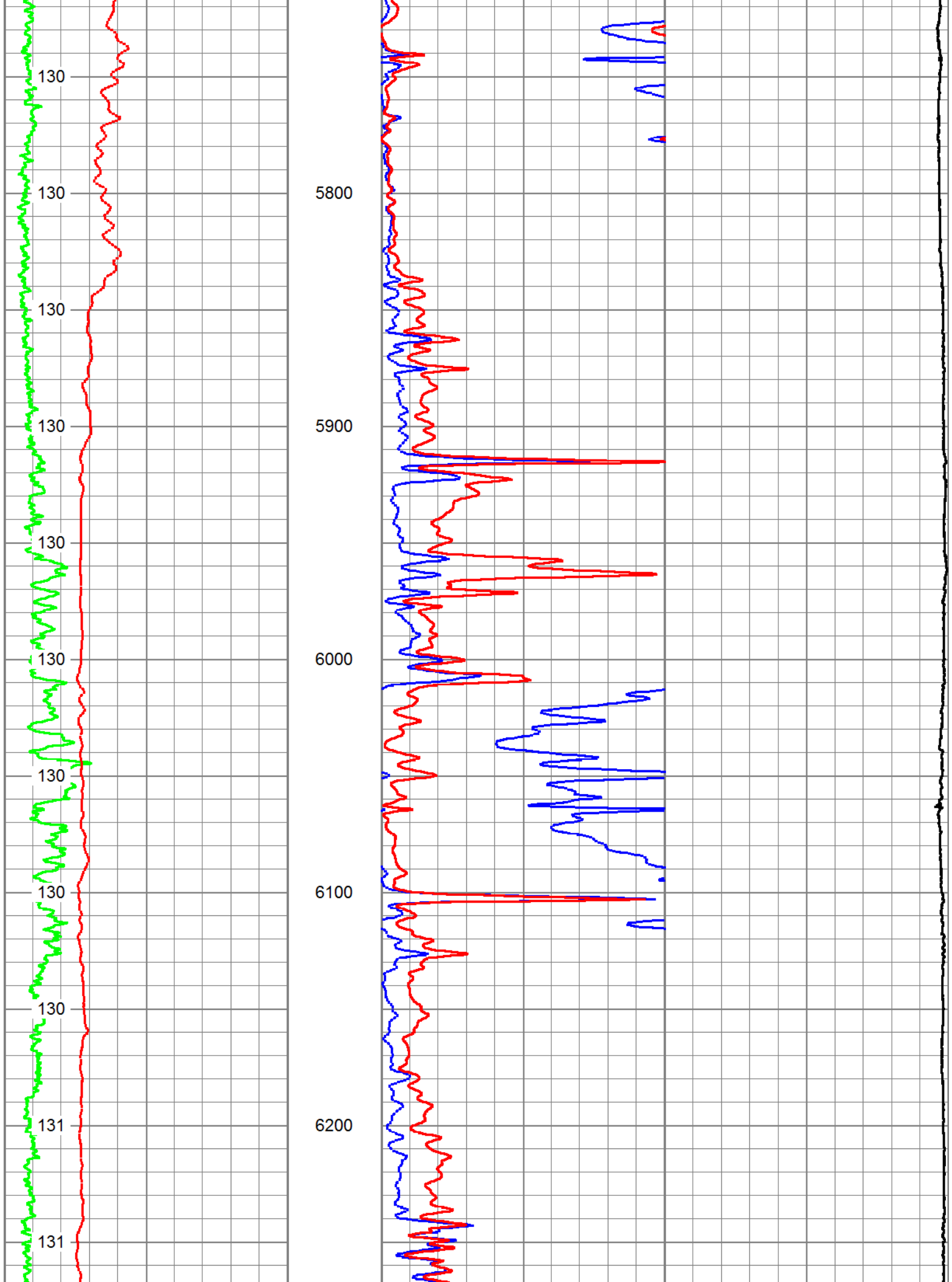
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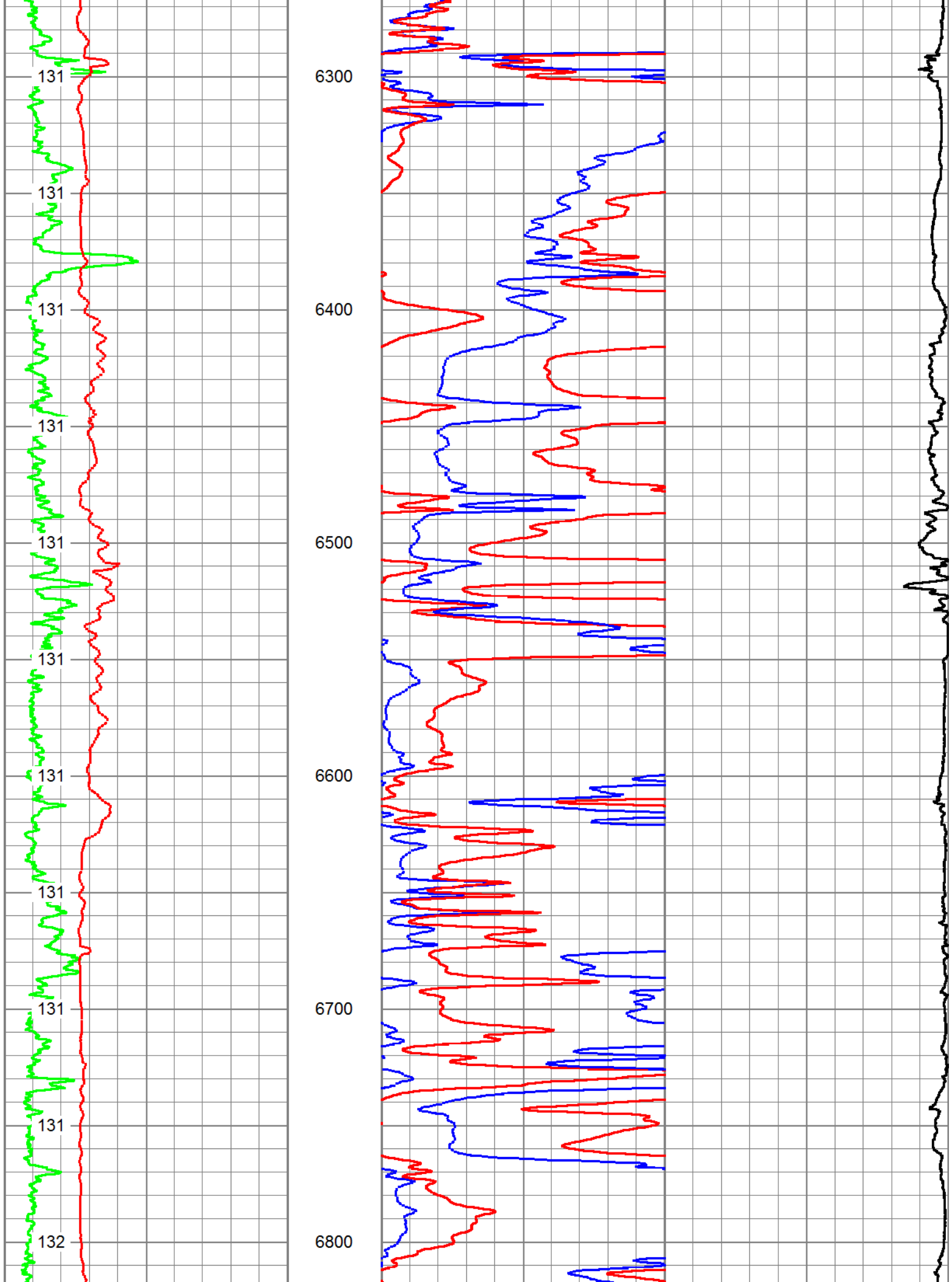
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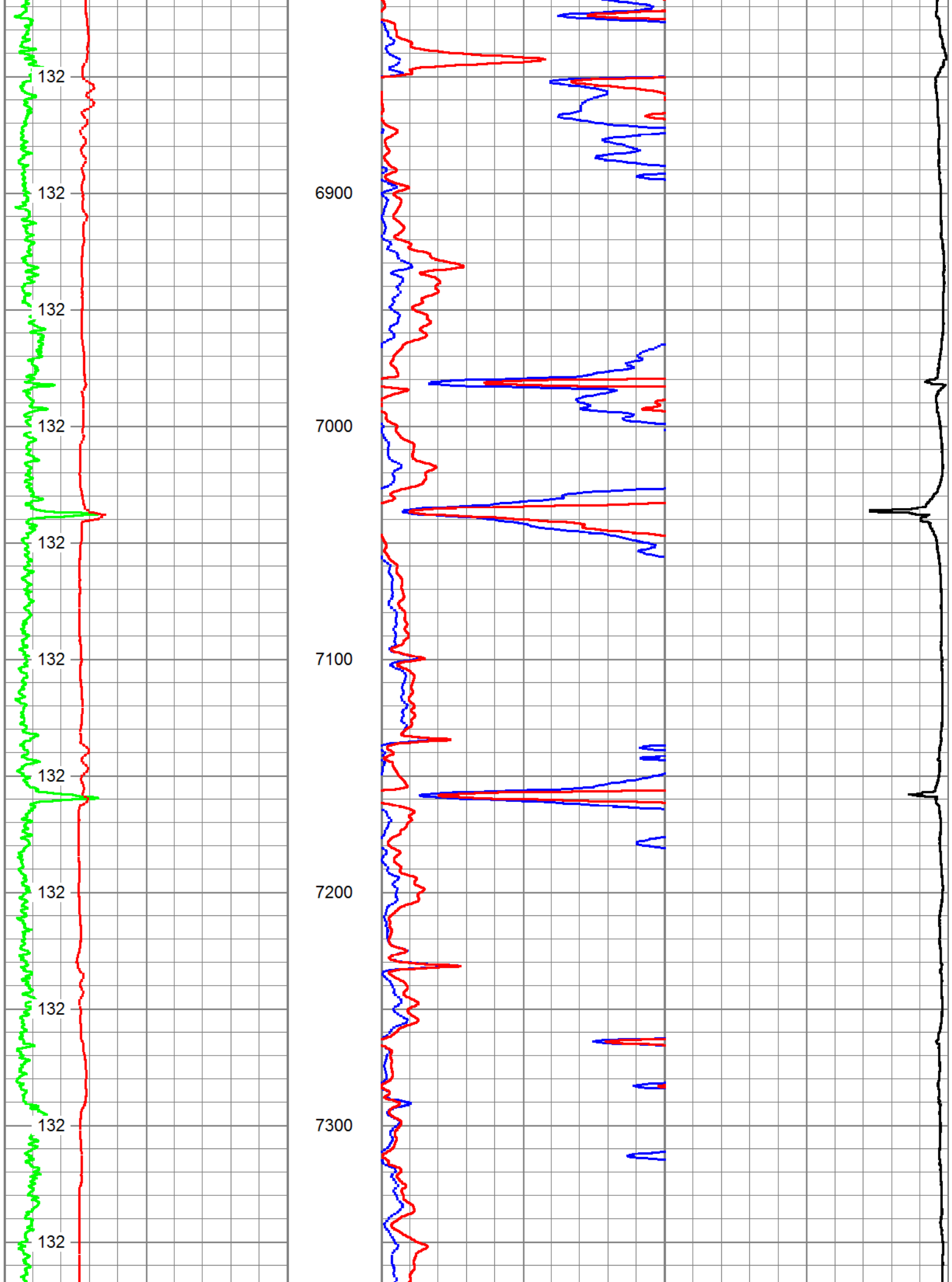
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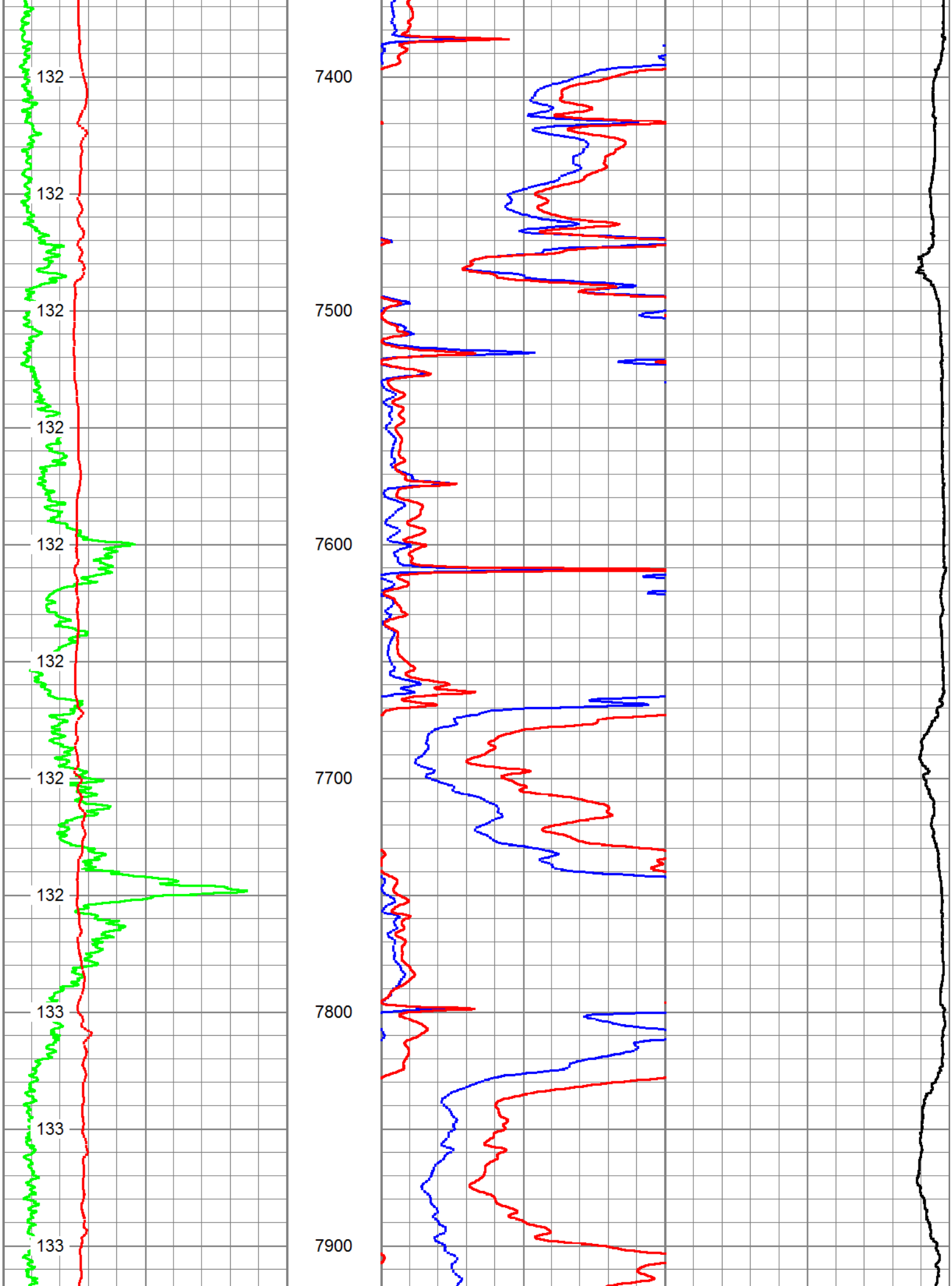
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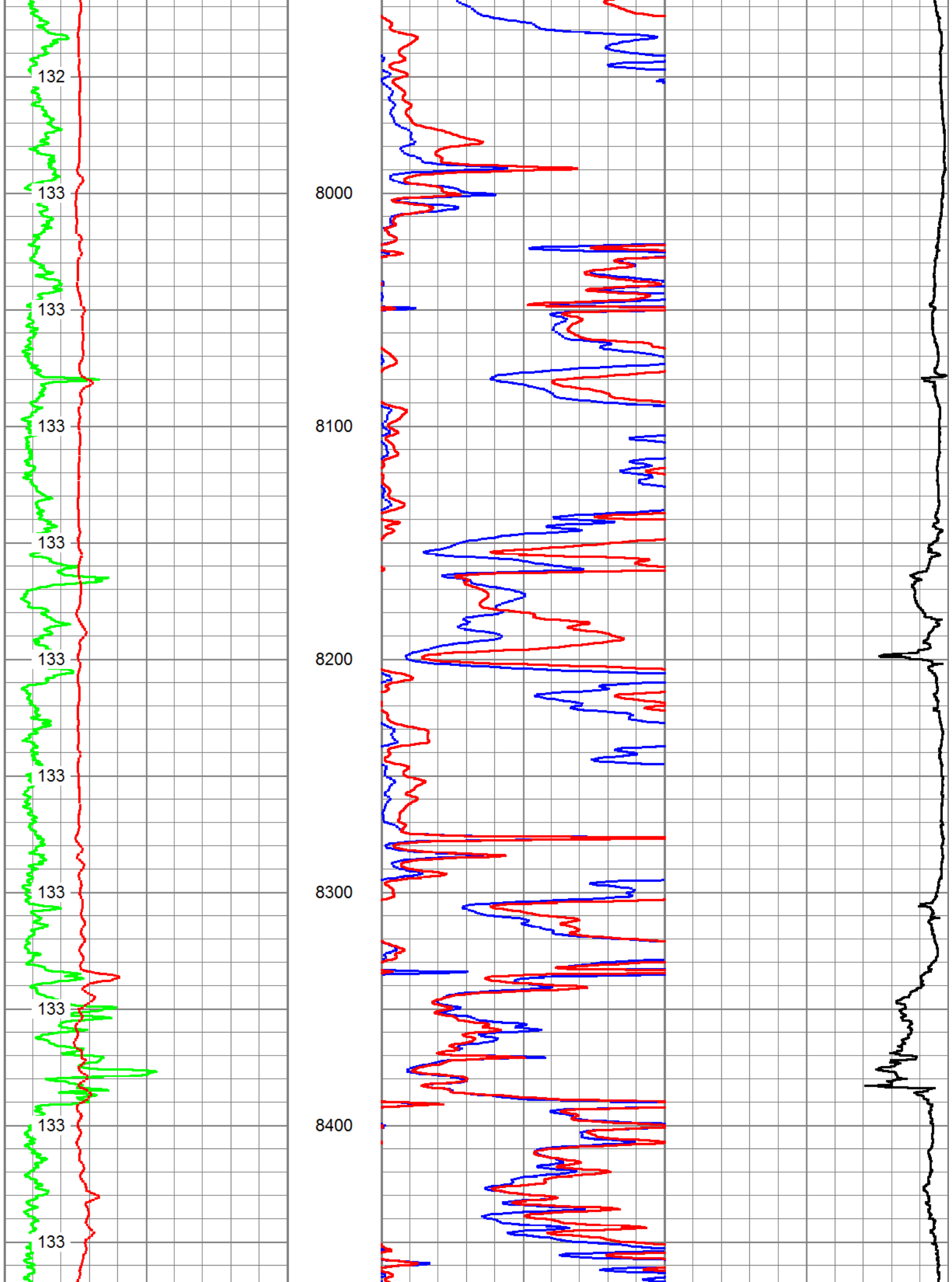
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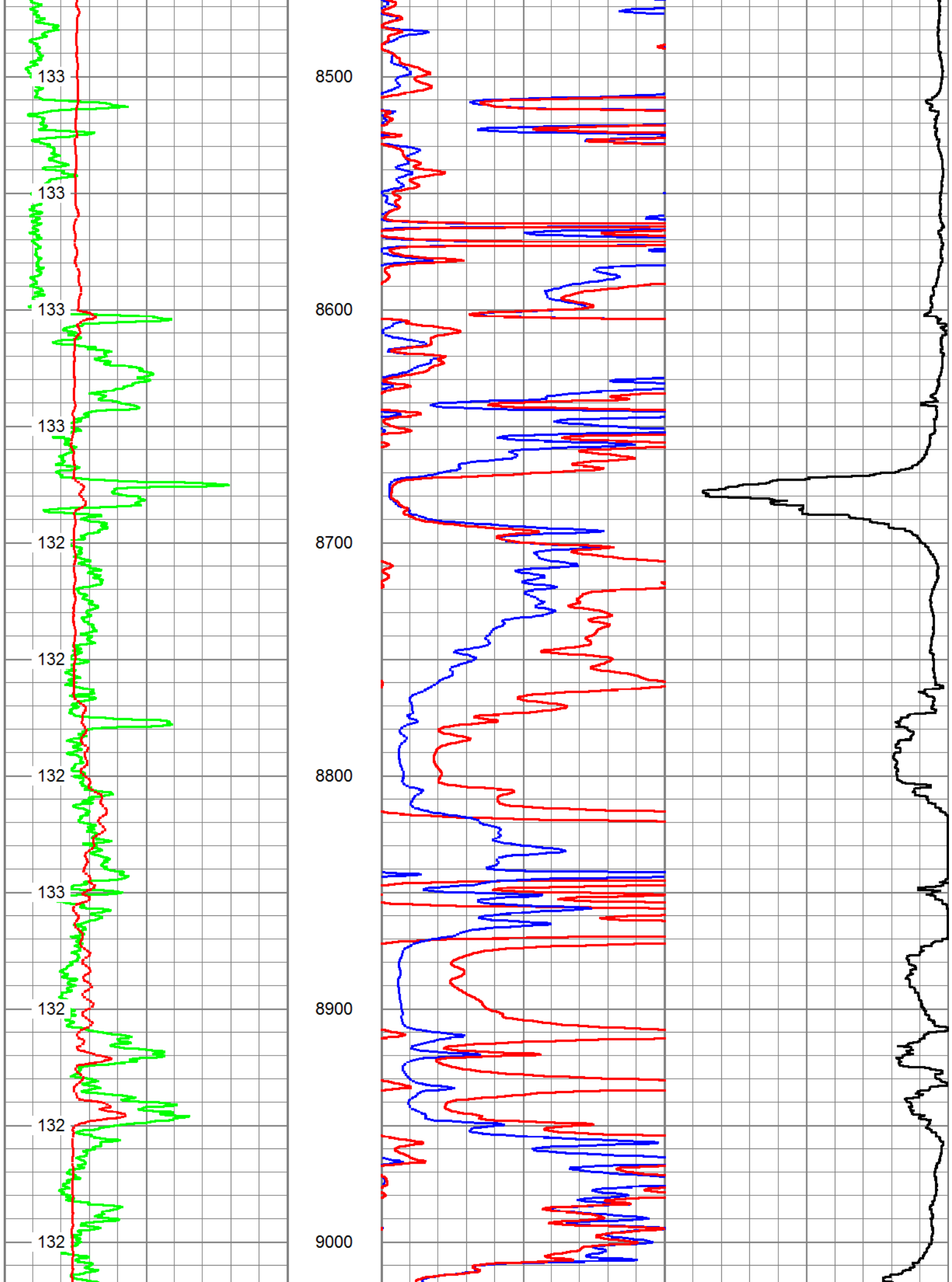
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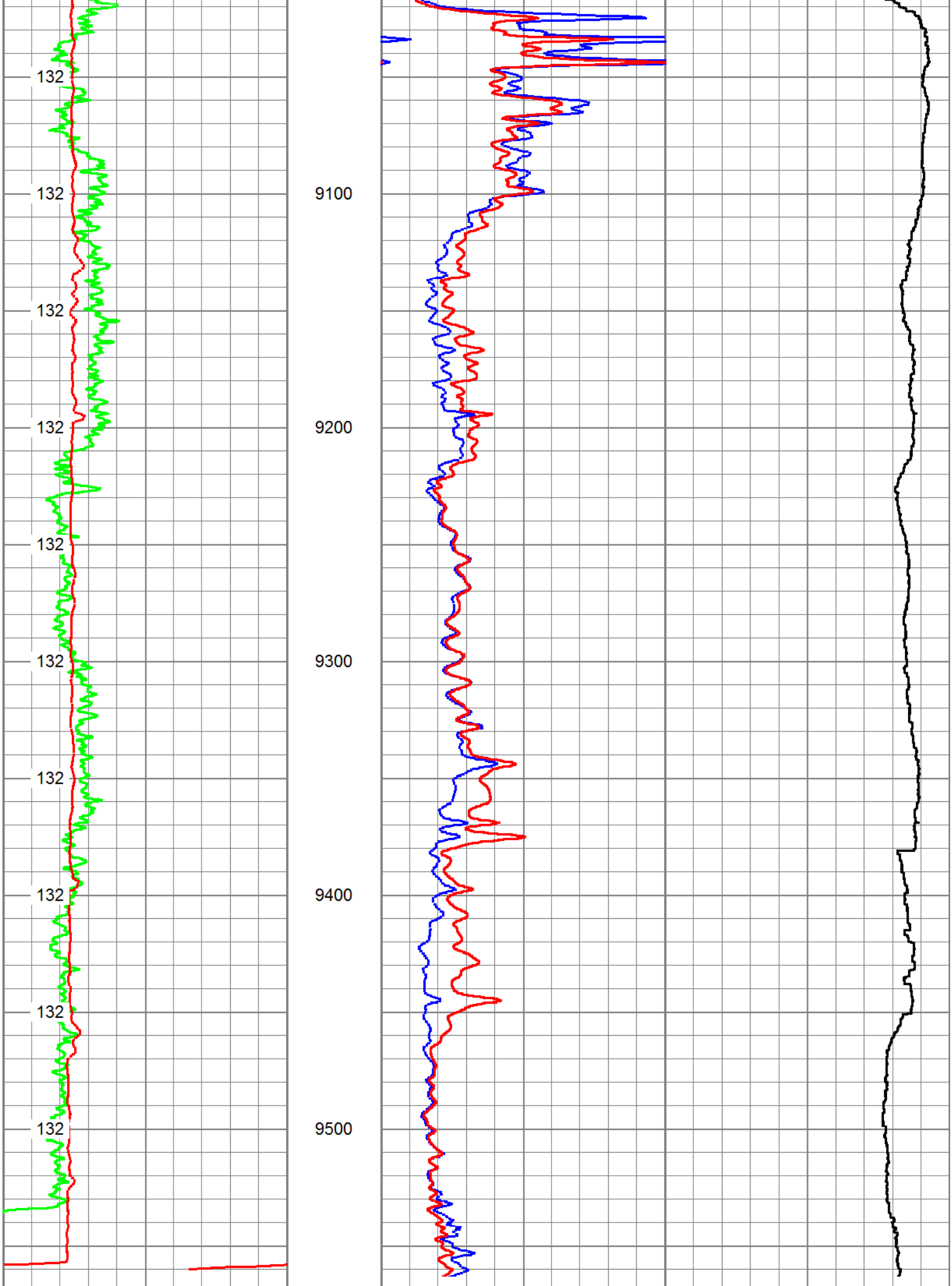
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0	GR (GAPI)	150
4	DCAL (in)	14
GRTEMP (degF)		

50	20in 2ft Res (Ohm-m)	500
50	90in 2ft Res (Ohm-m)	500
1000	DEEP COND (mmho/m)	0
0	20in 2ft Res (Ohm-m)	50
0	90in 2ft Res (Ohm-m)	50

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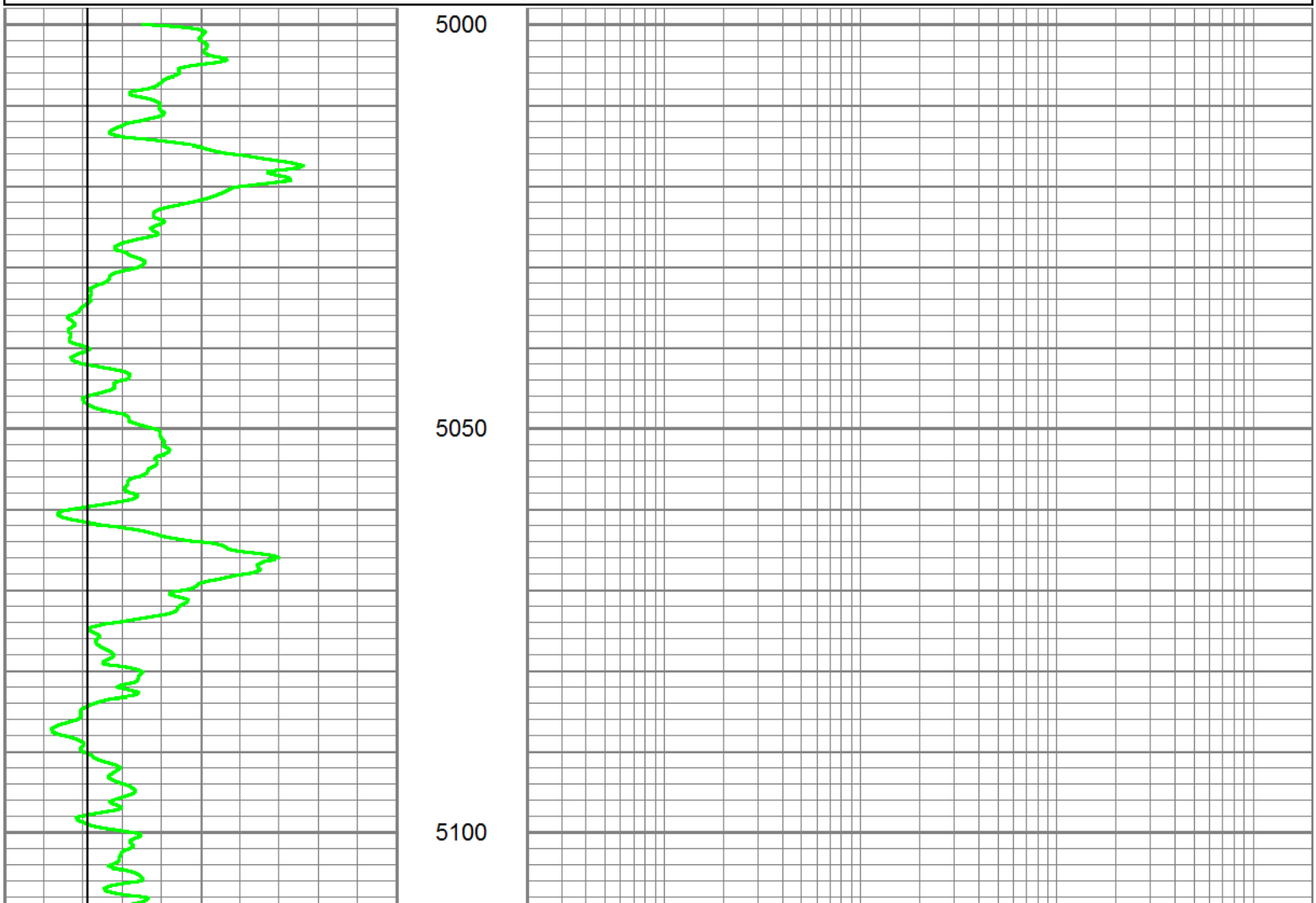
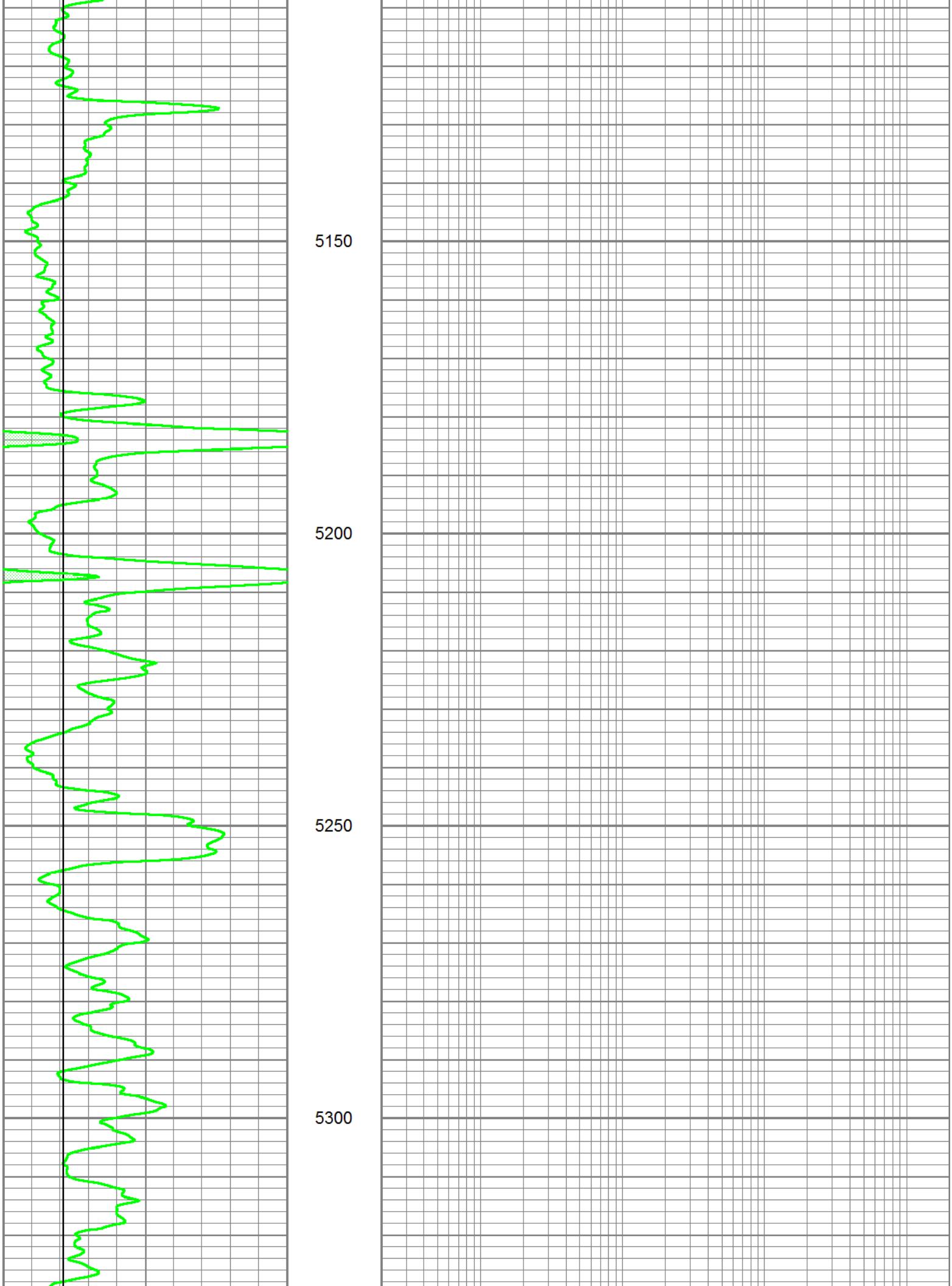
MAIN PASS

Database File: sandridge_ellis_mem.db
Dataset Pathname: proc1/pass1.5
Presentation Format: ches5r10
Dataset Creation: Wed Aug 15 11:32:28 2012
Charted by: Depth in Feet scaled 1:240

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

0.2	20inRadial (Ohm-m)	2000
0.2	30inRadial (Ohm-m)	2000
0.2	60inRadial (Ohm-m)	2000
0.2	90inRadial (Ohm-m)	2000
GRTEMP (degF)		

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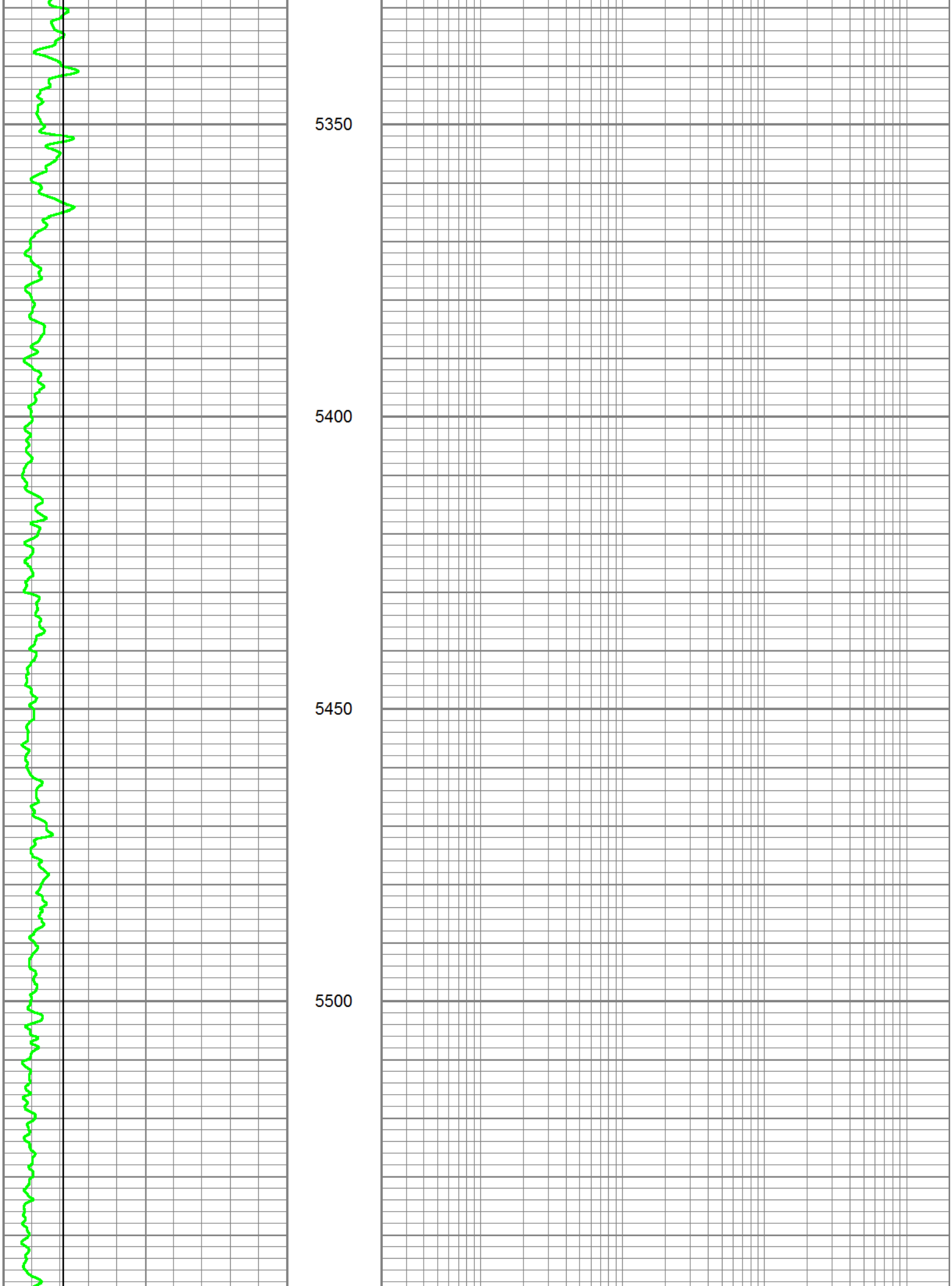
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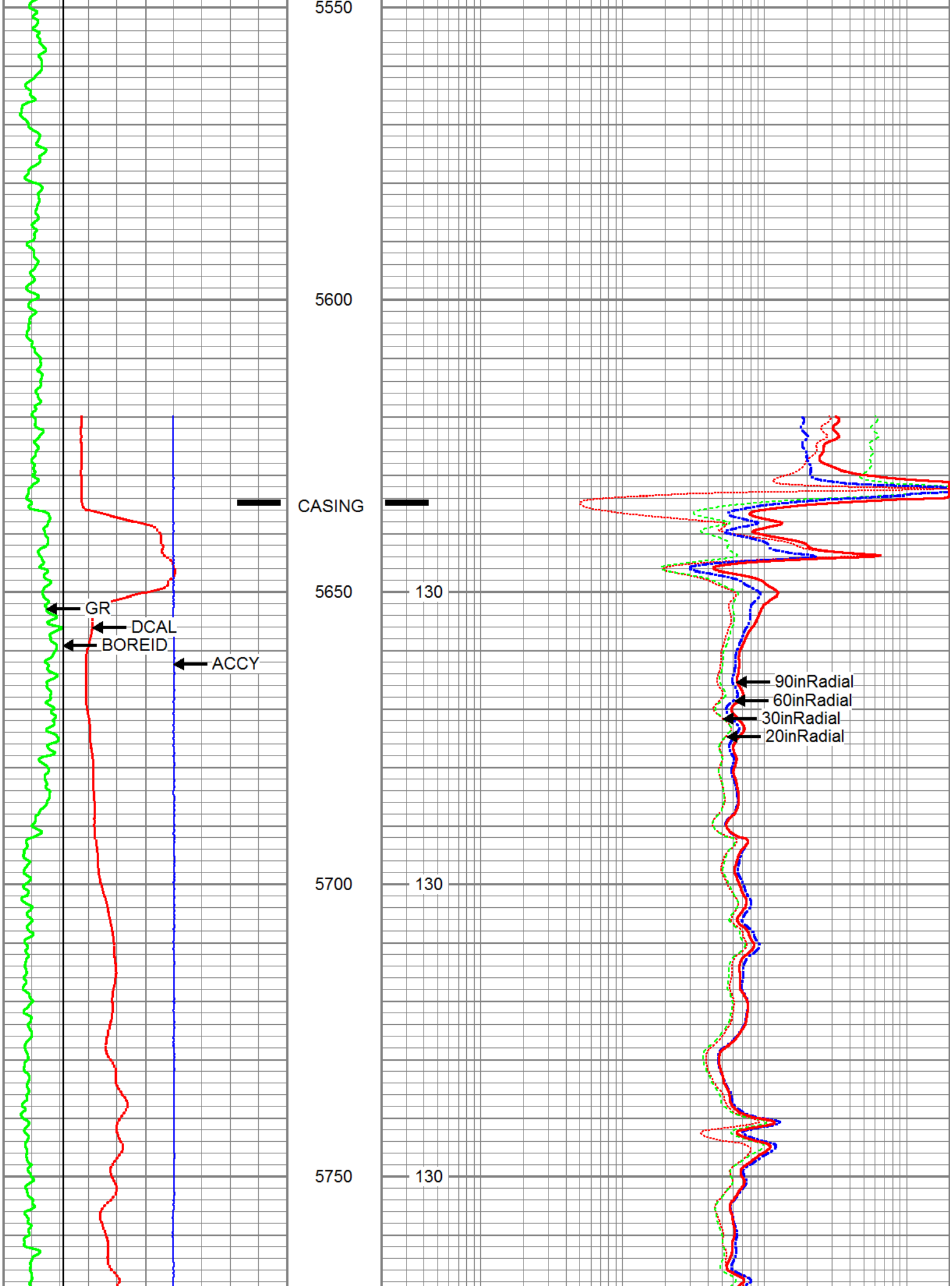
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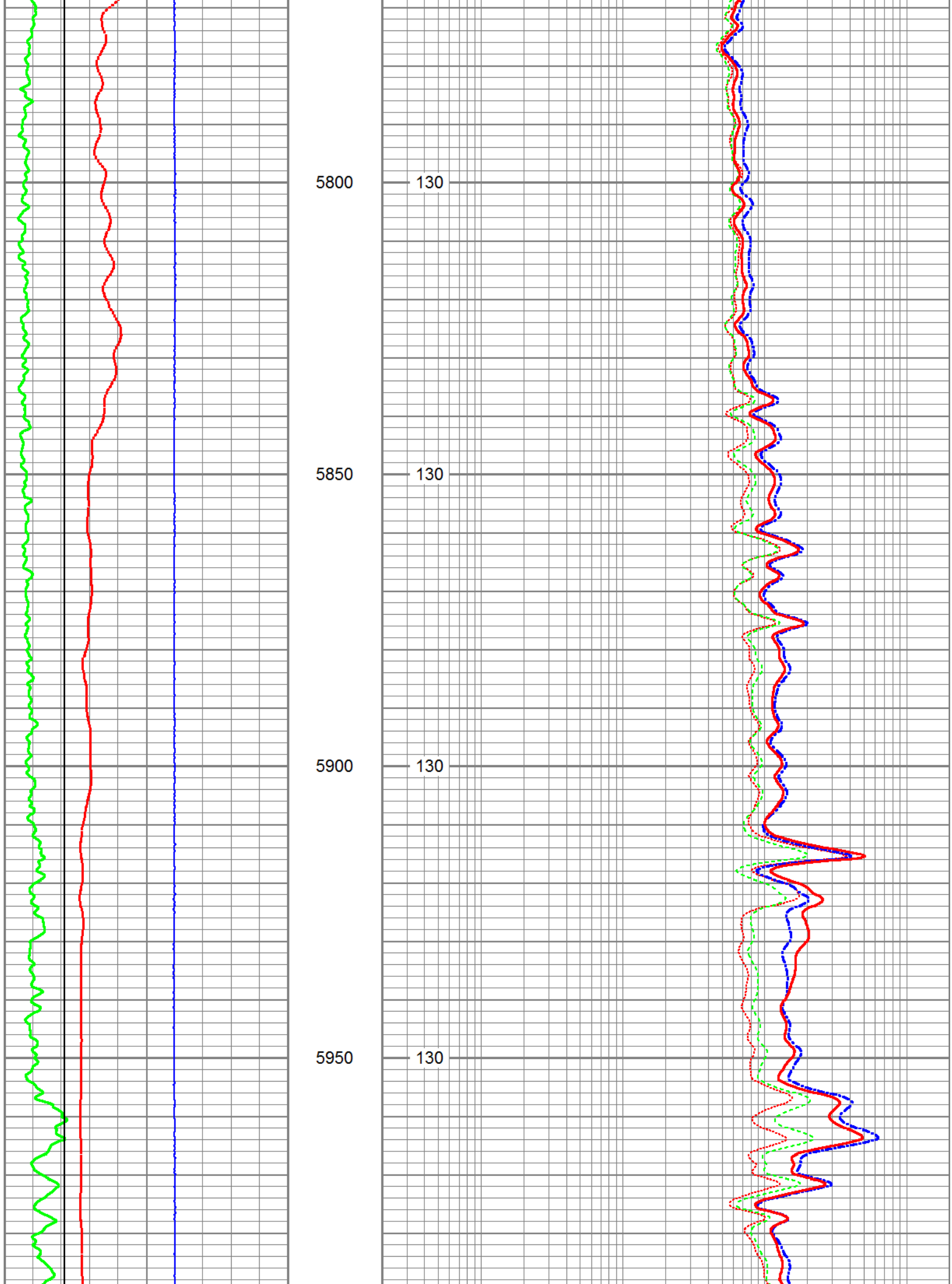
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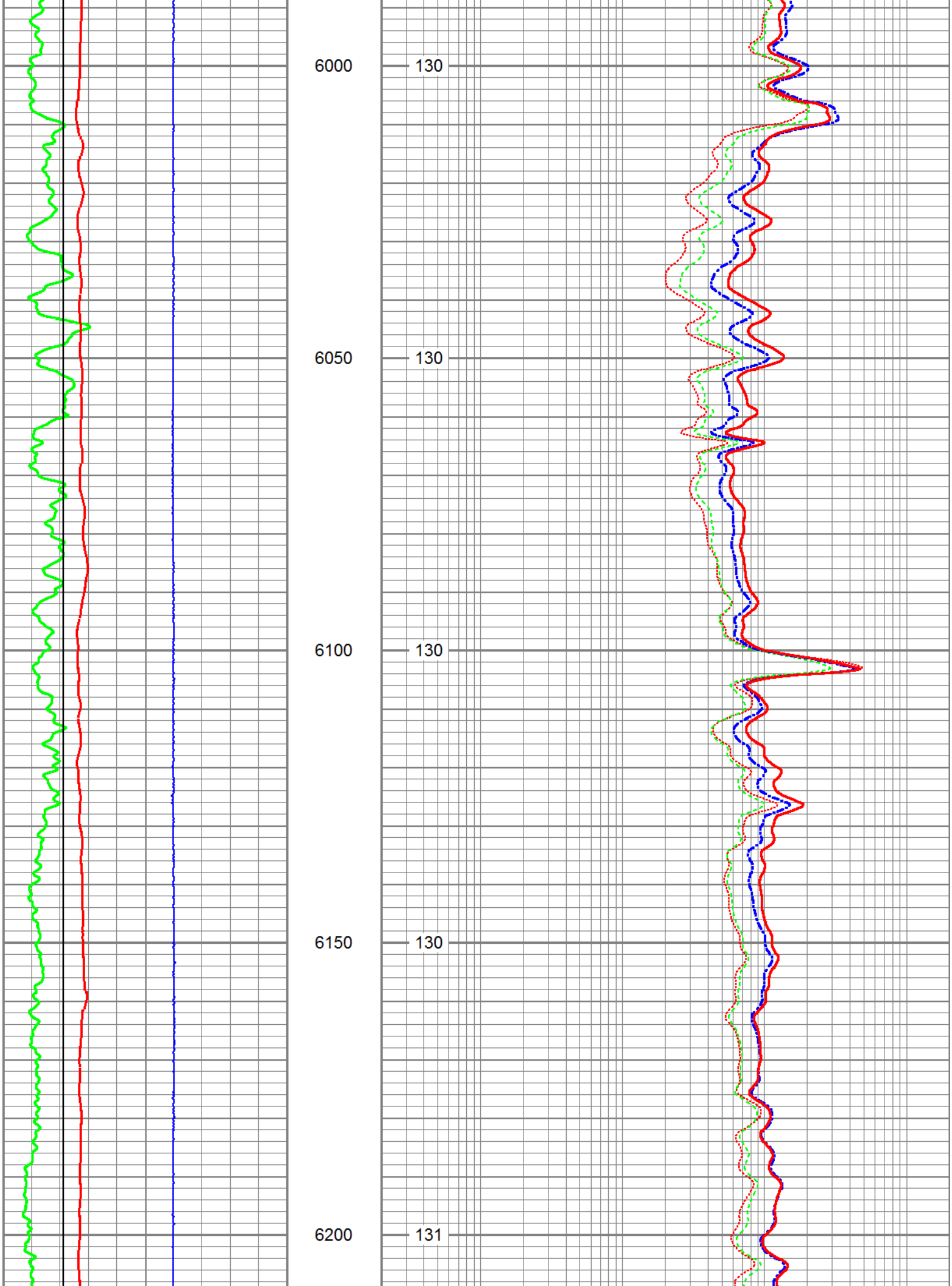
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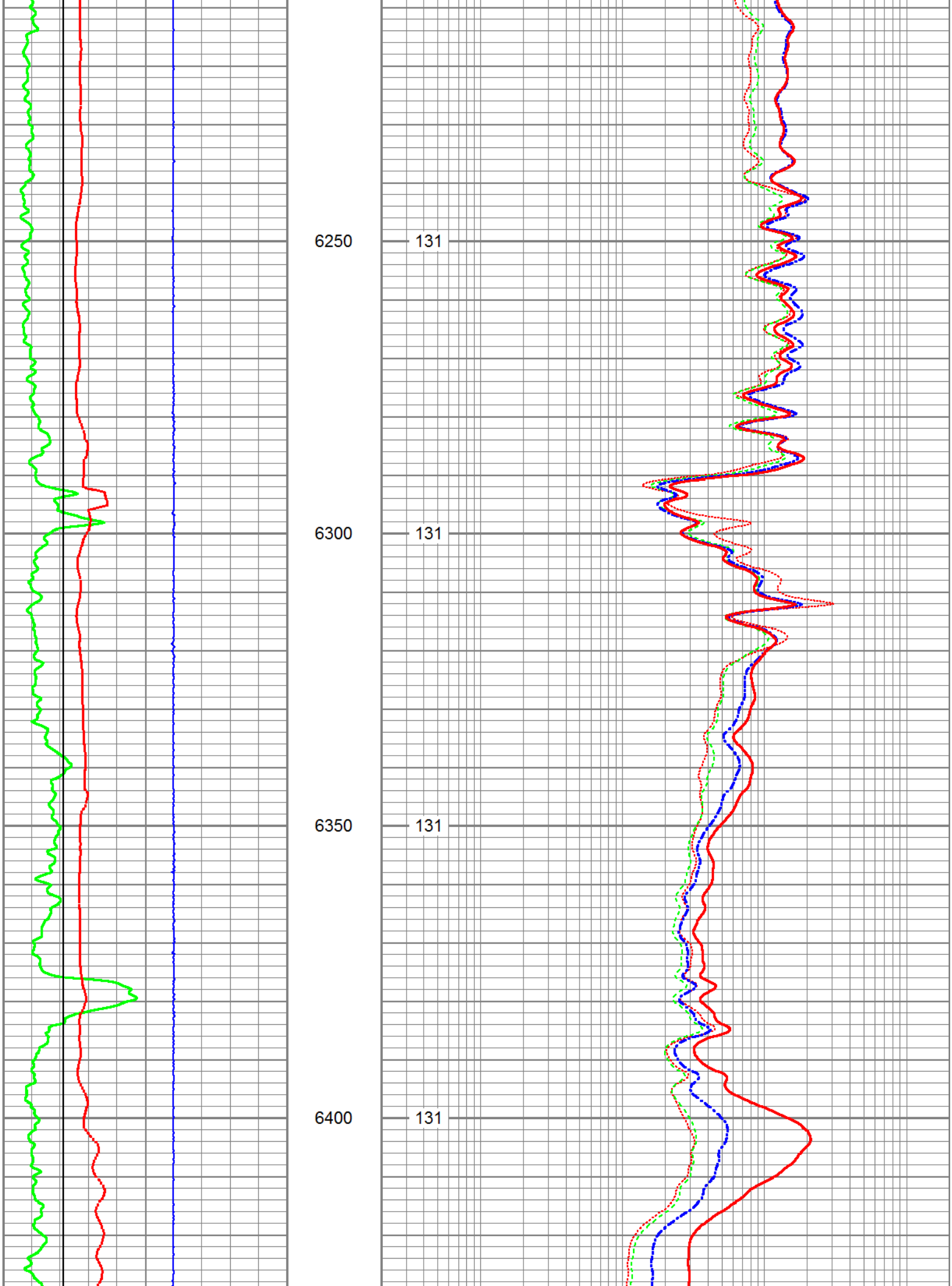
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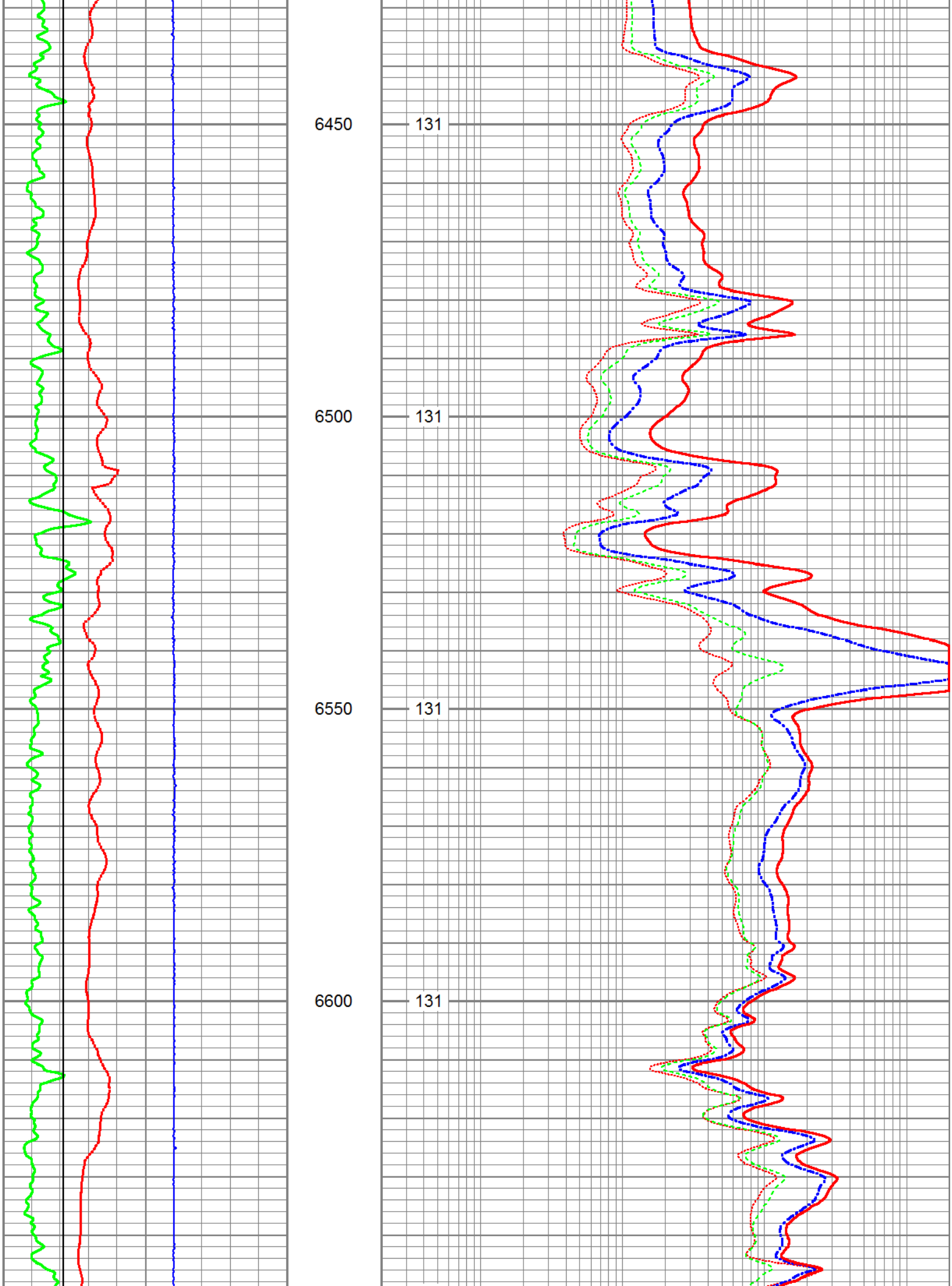
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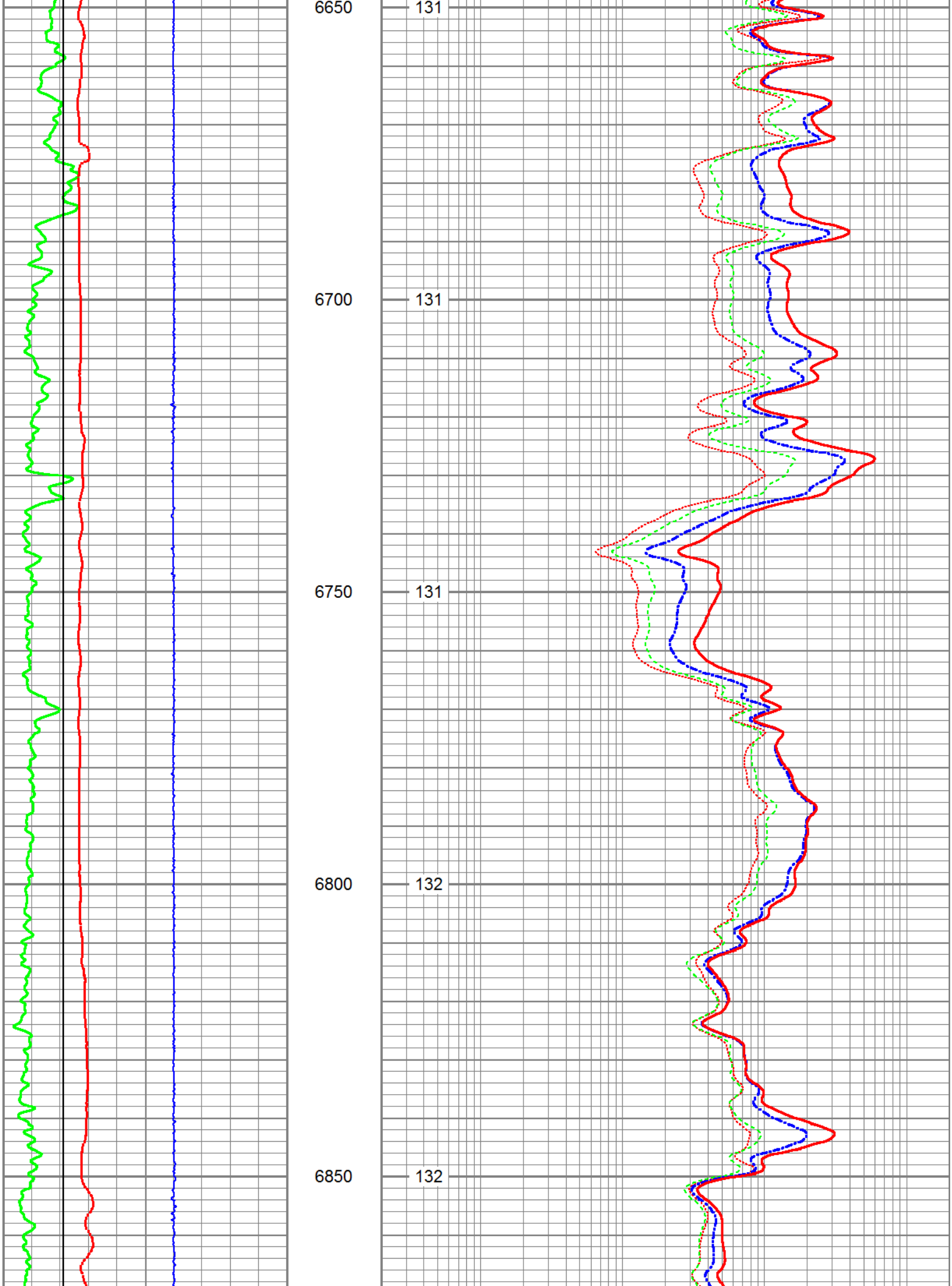
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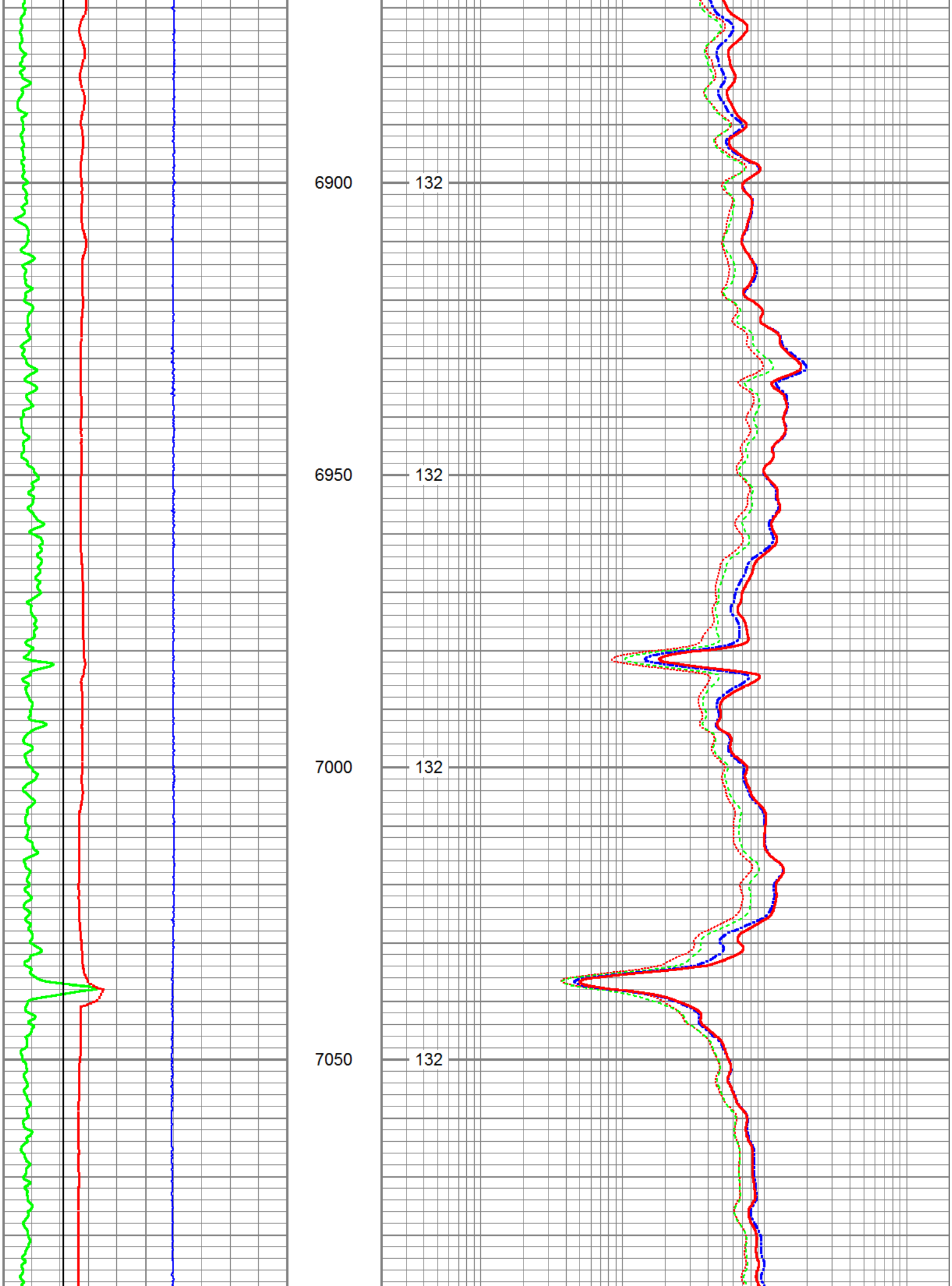
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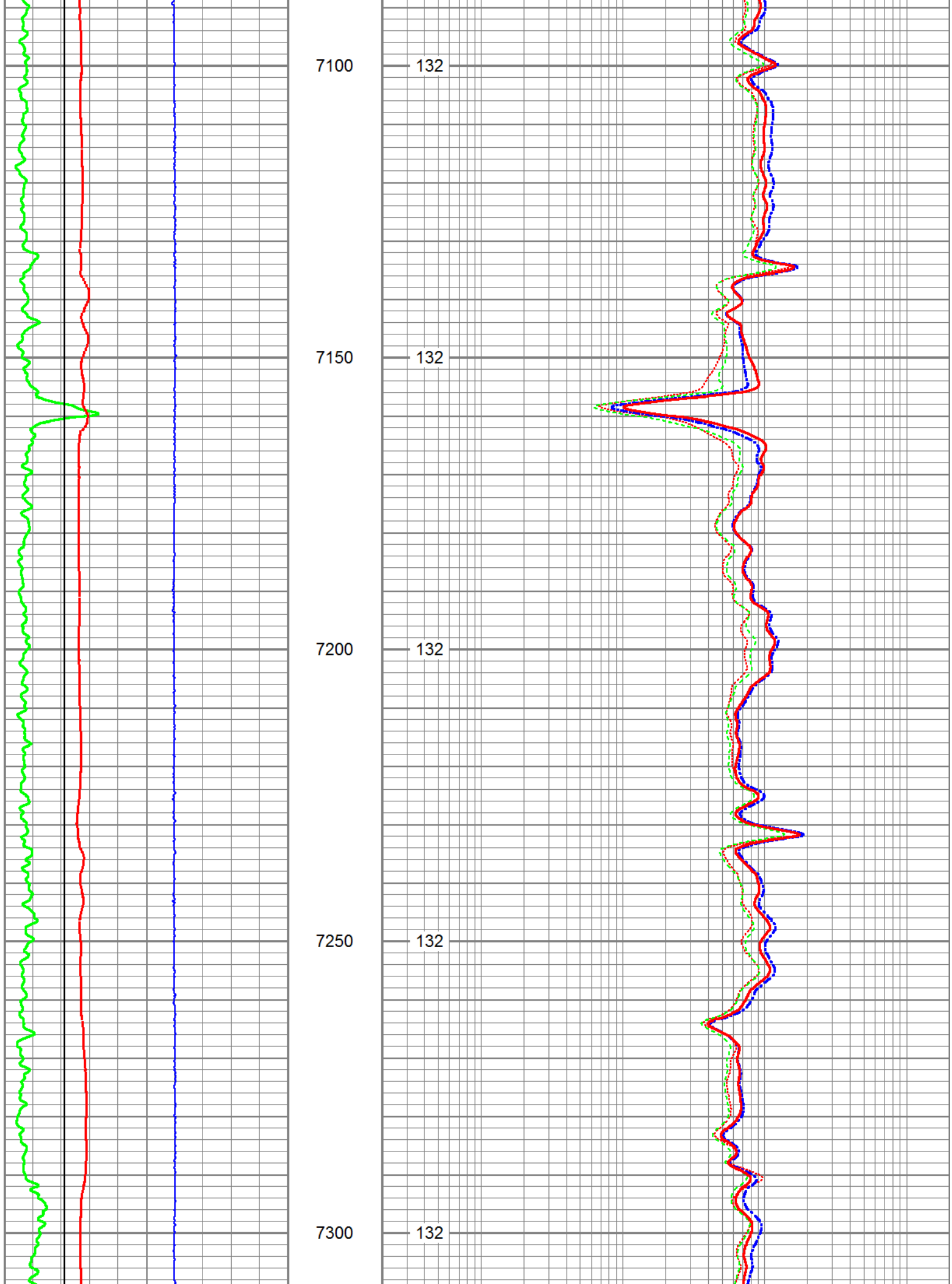
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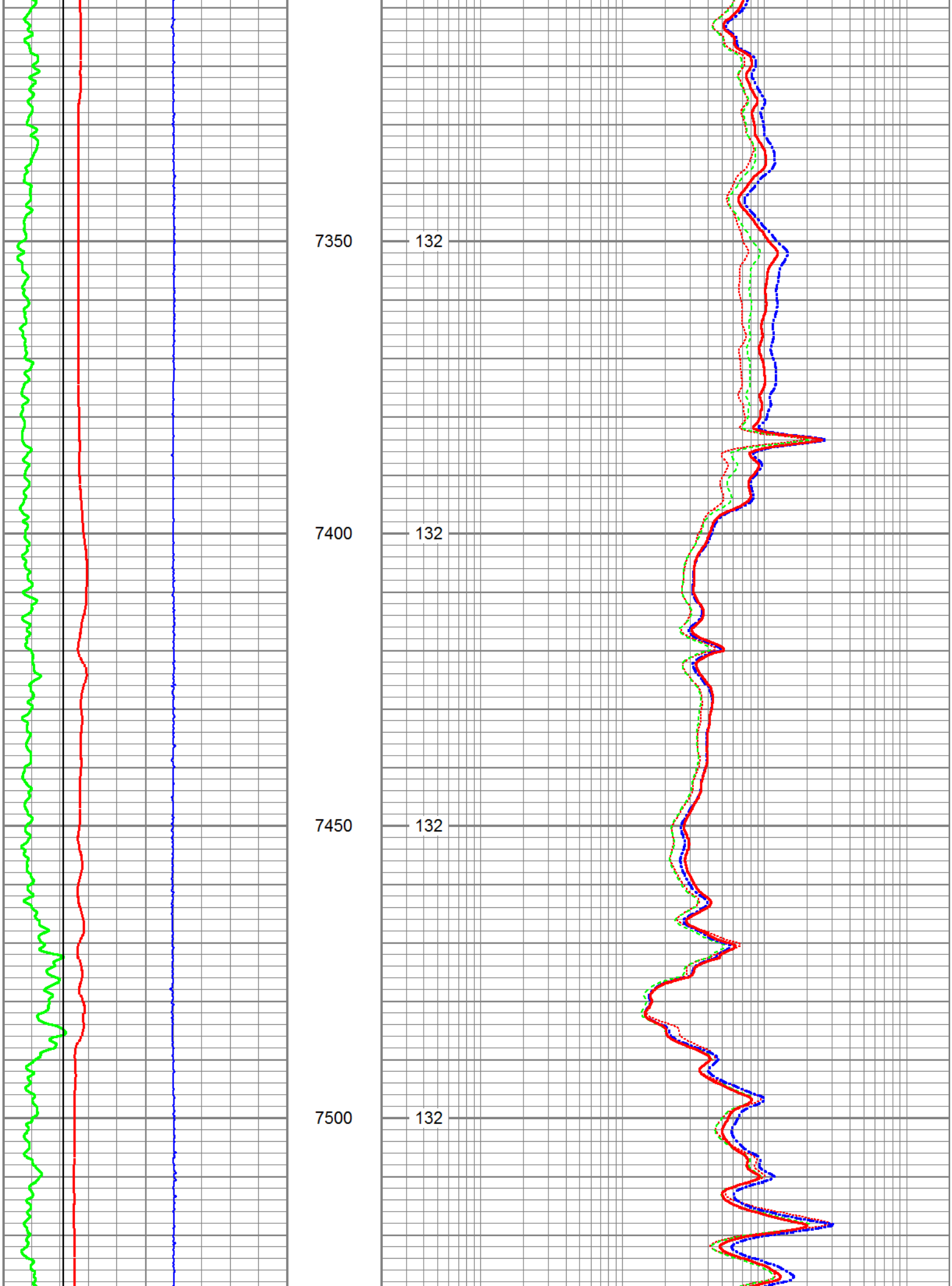
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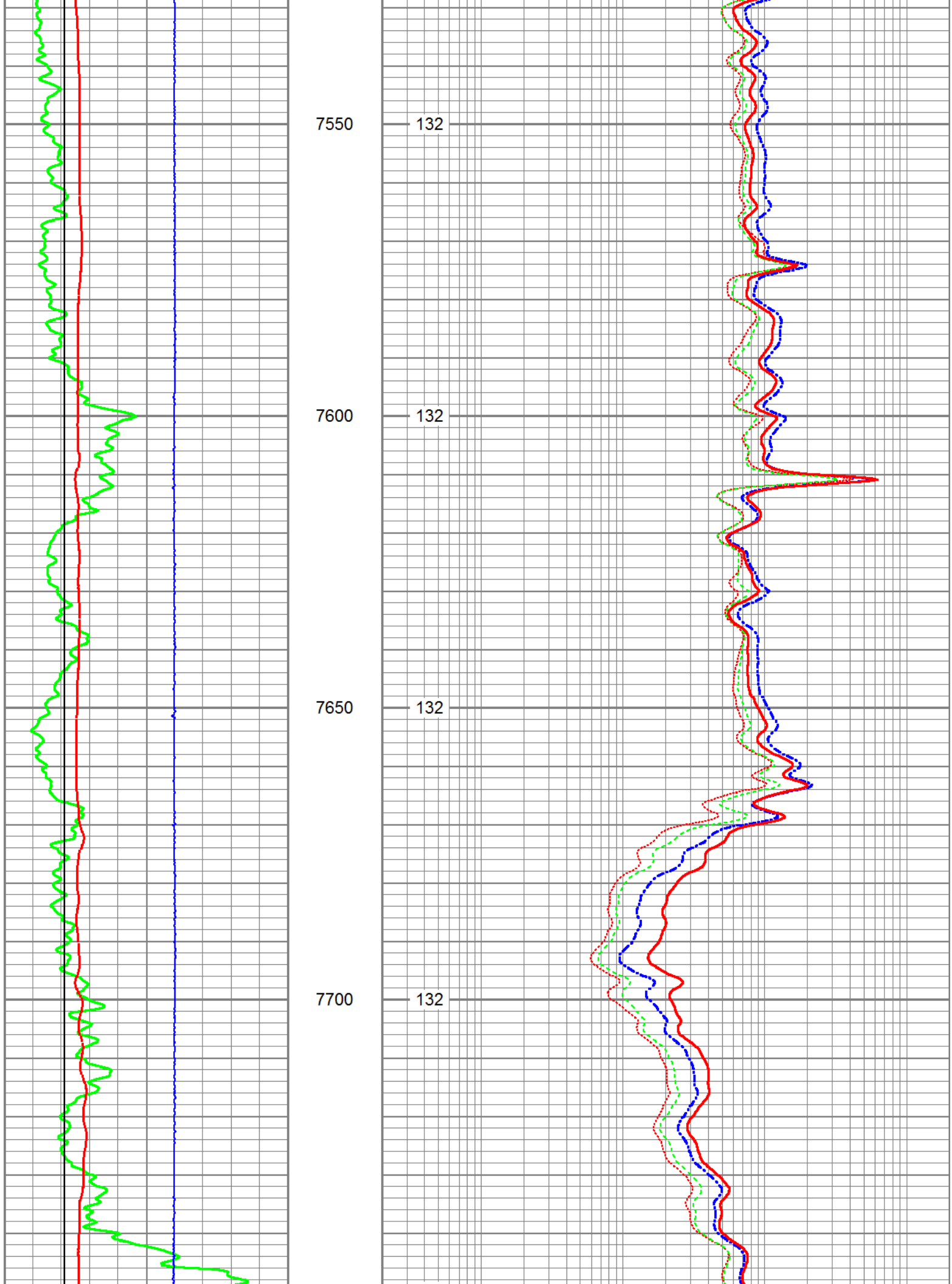
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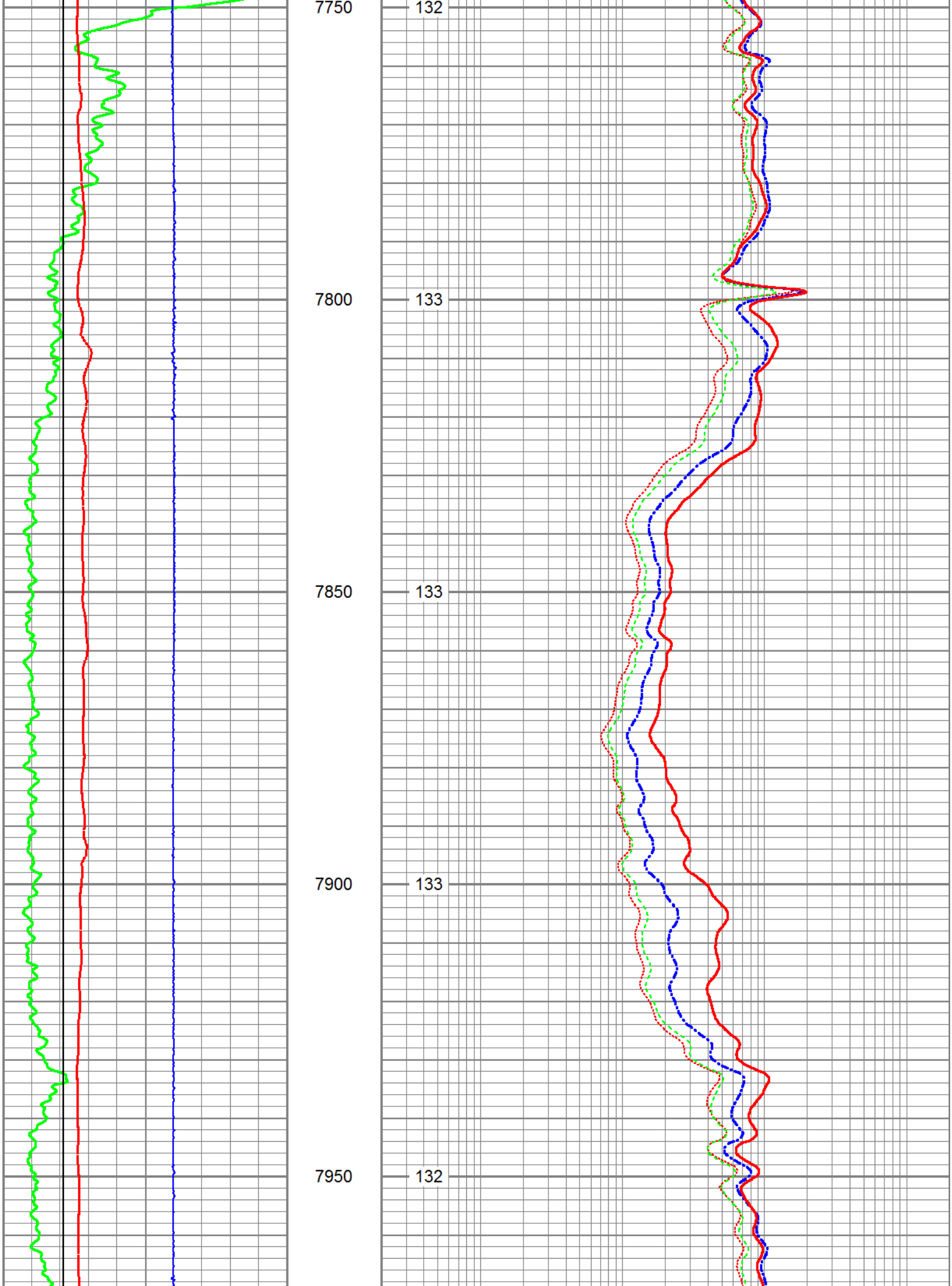
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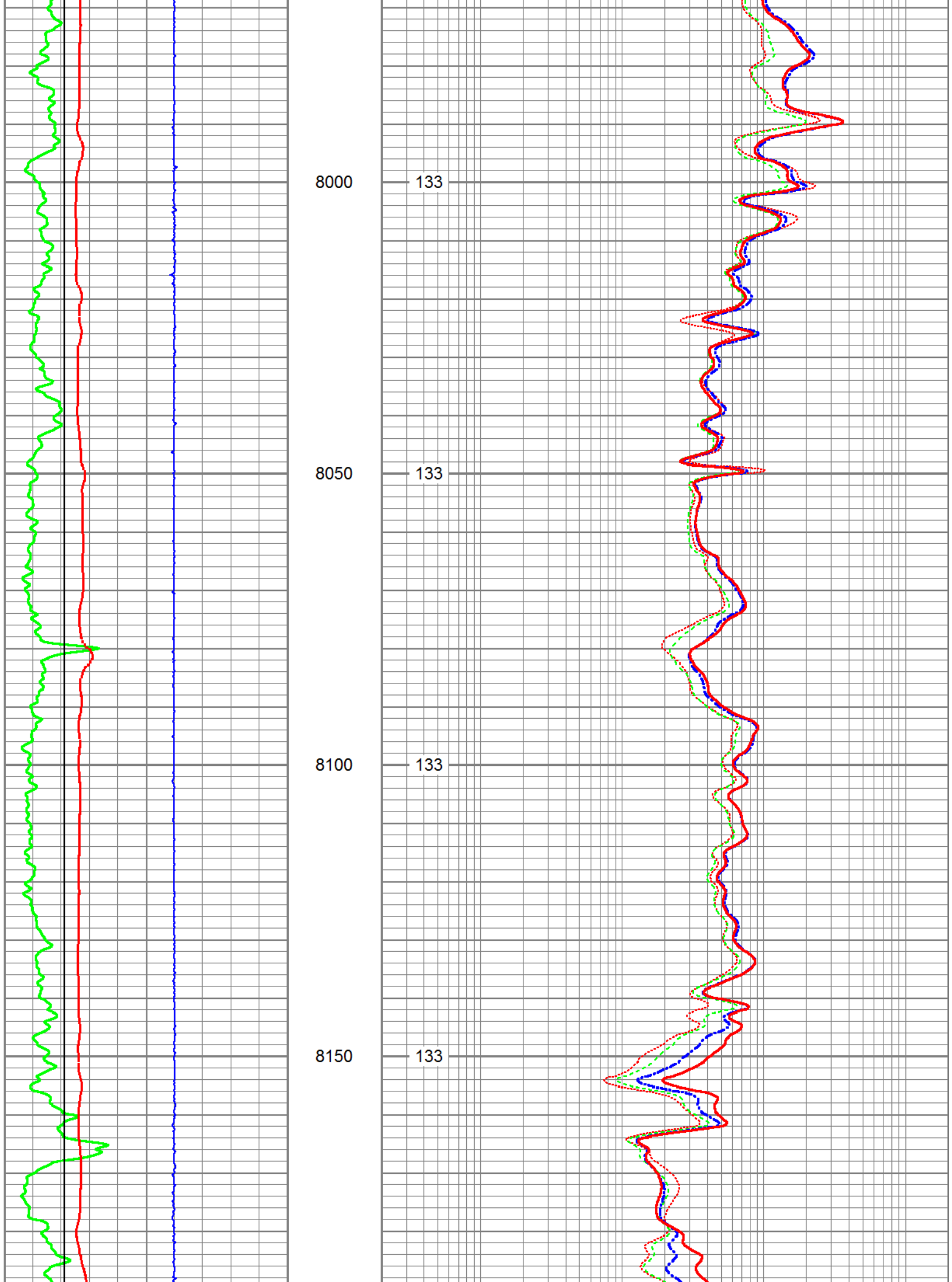
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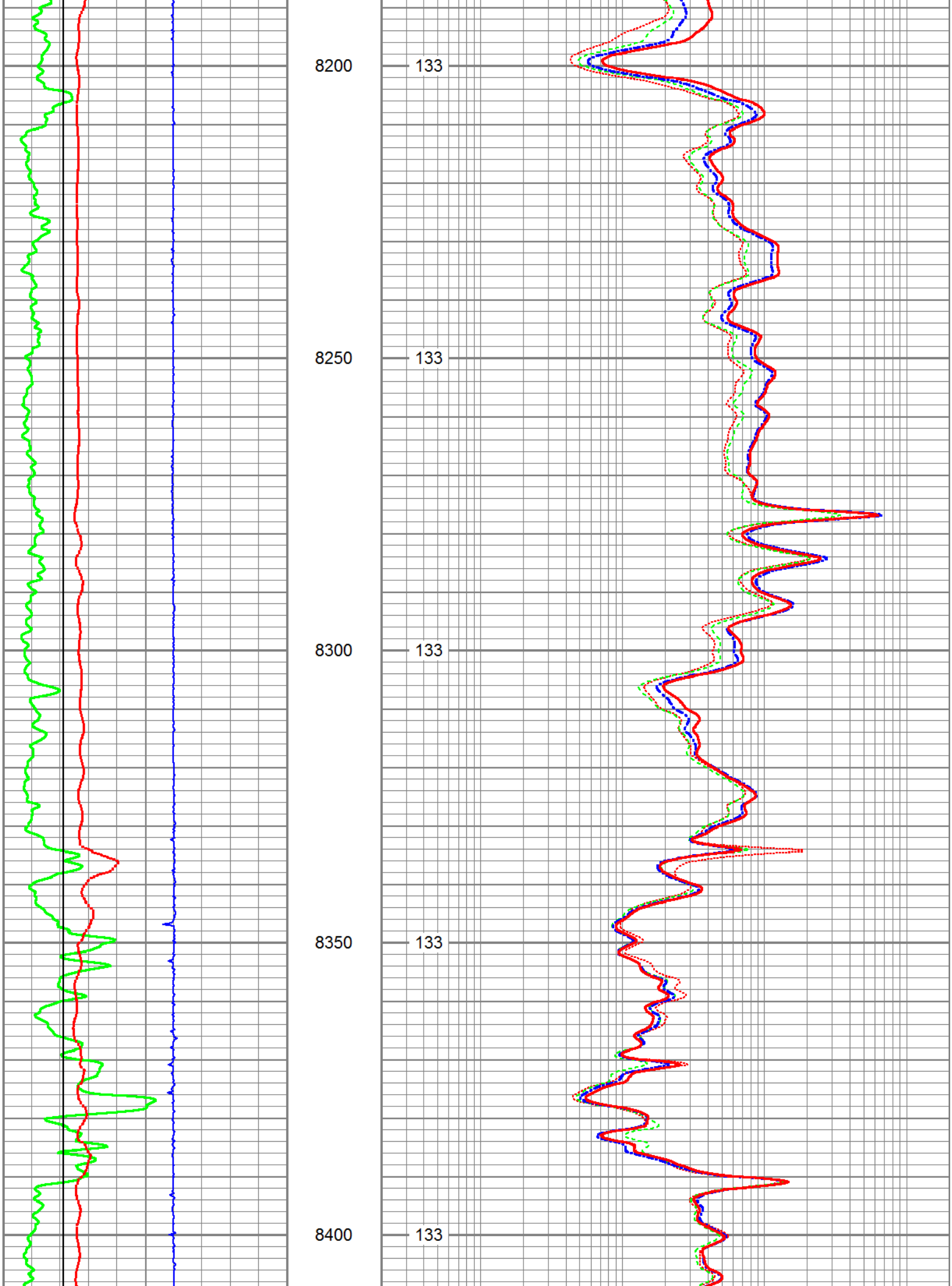
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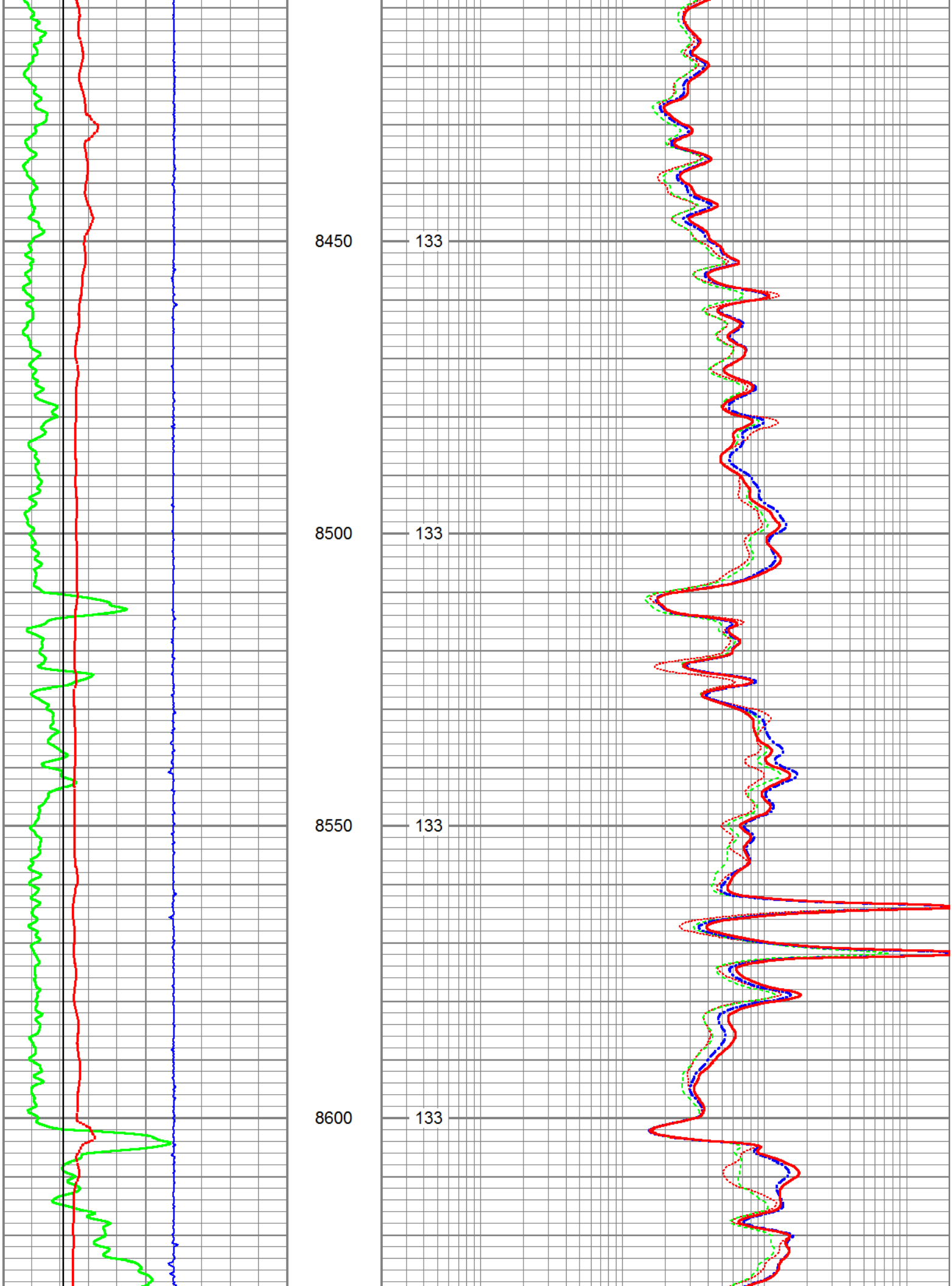
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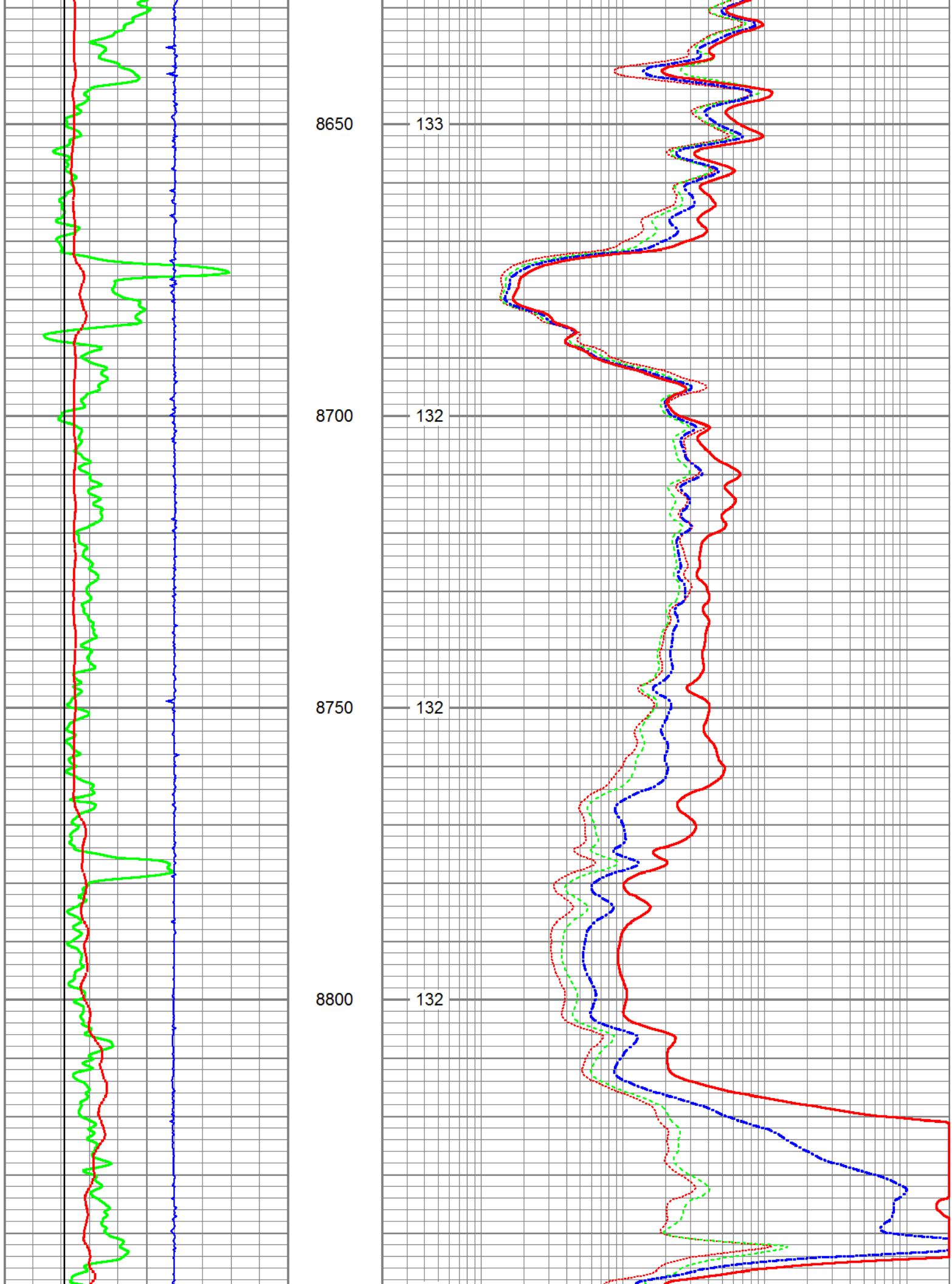
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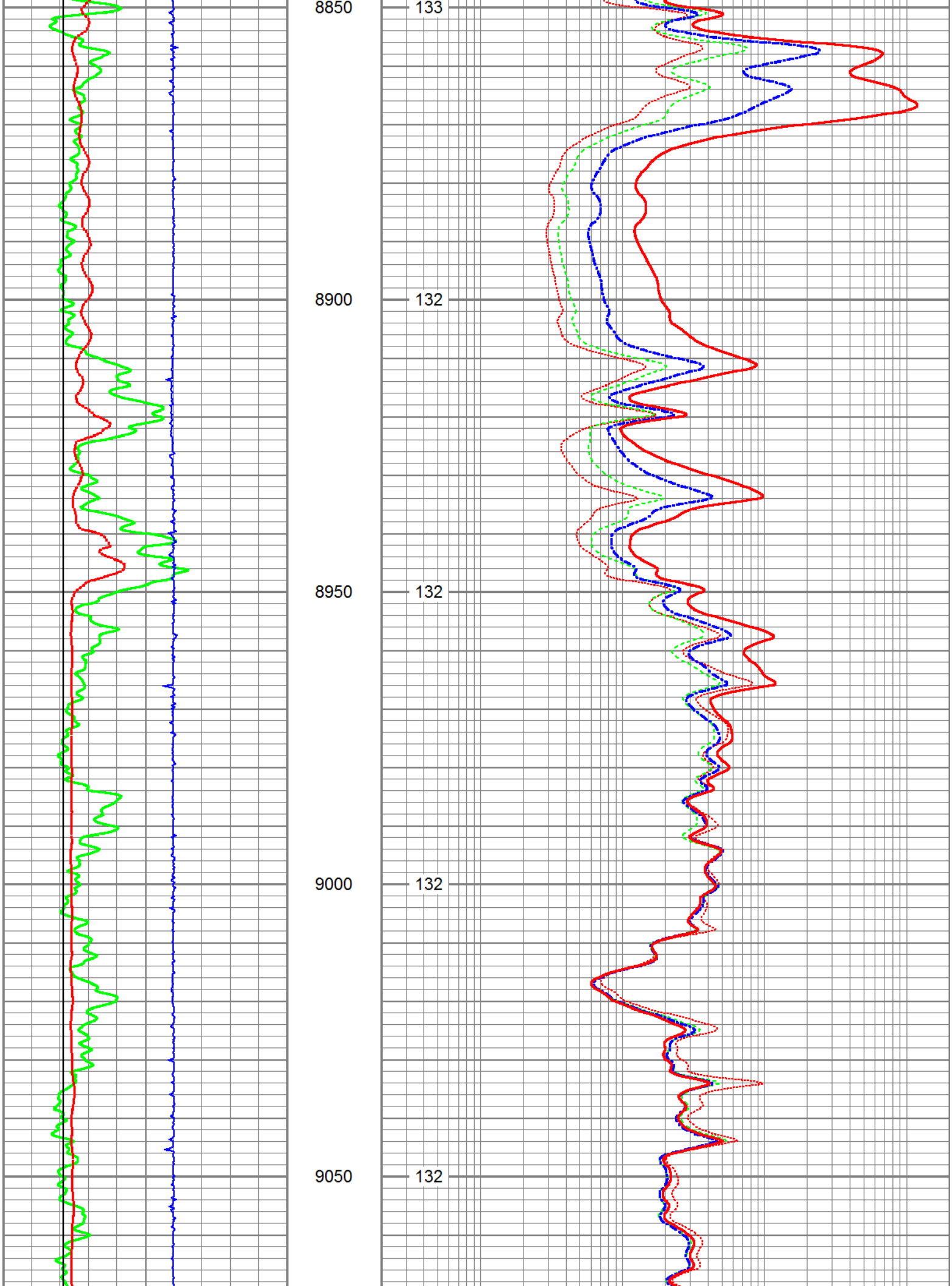
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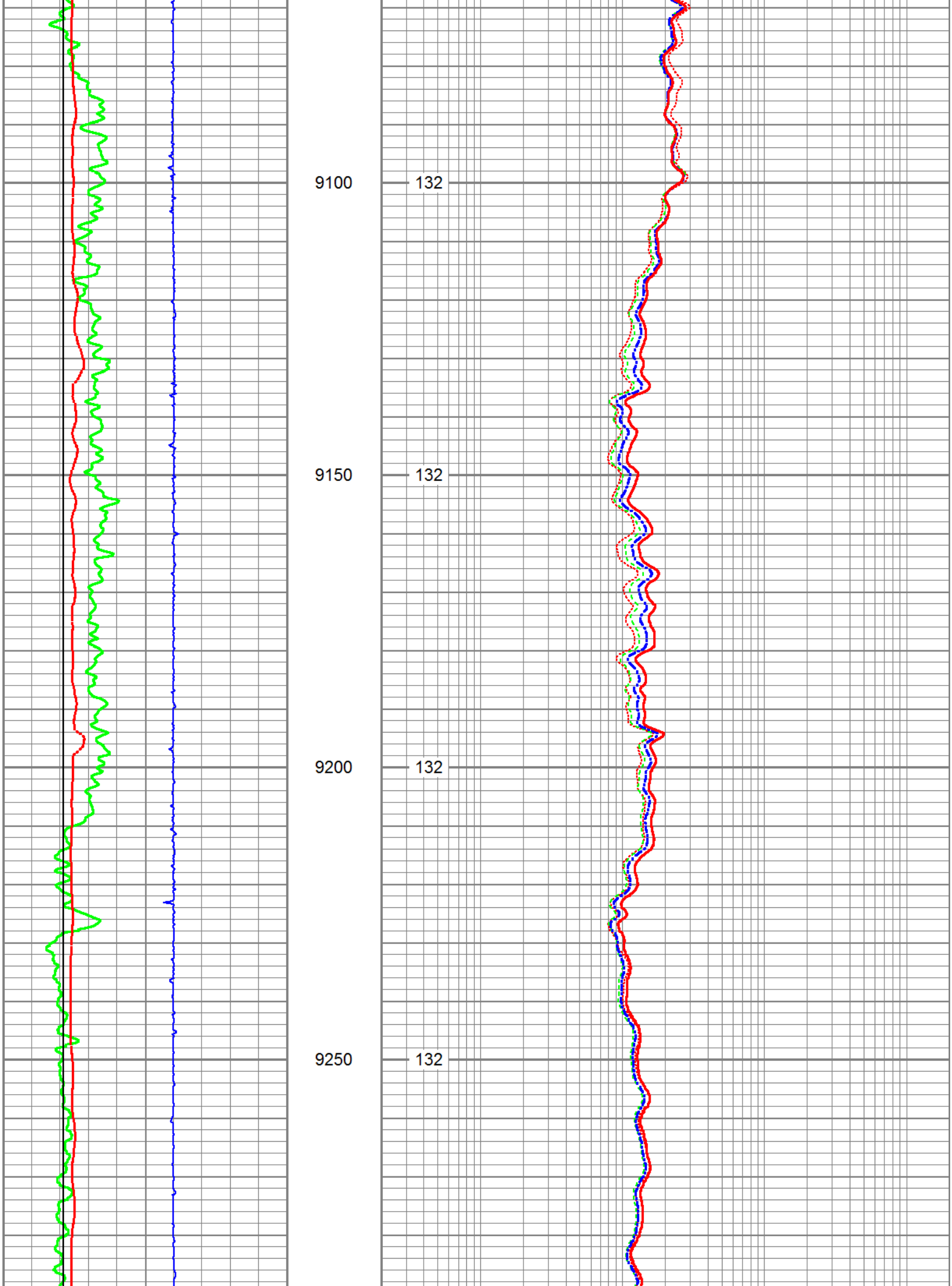
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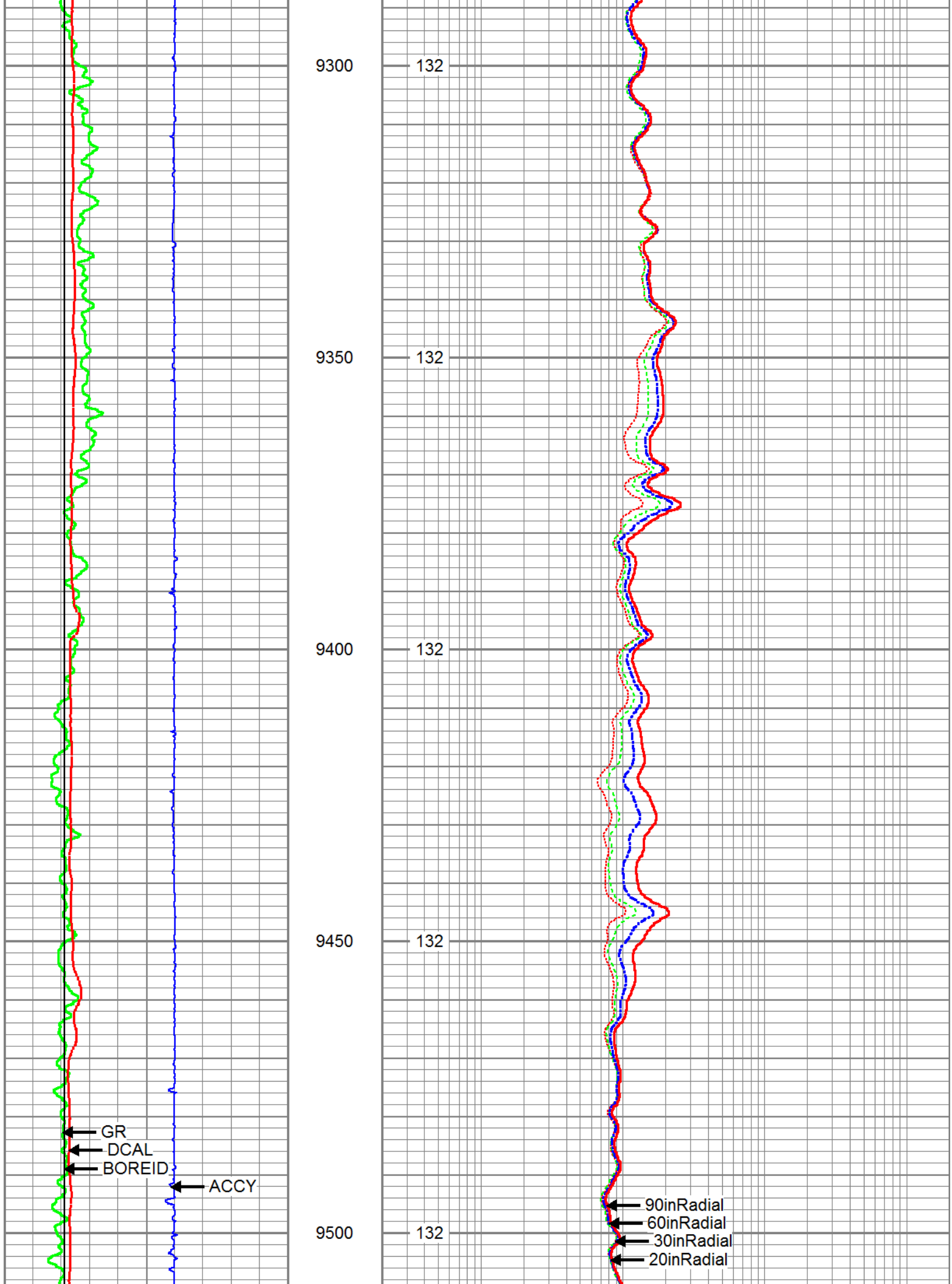
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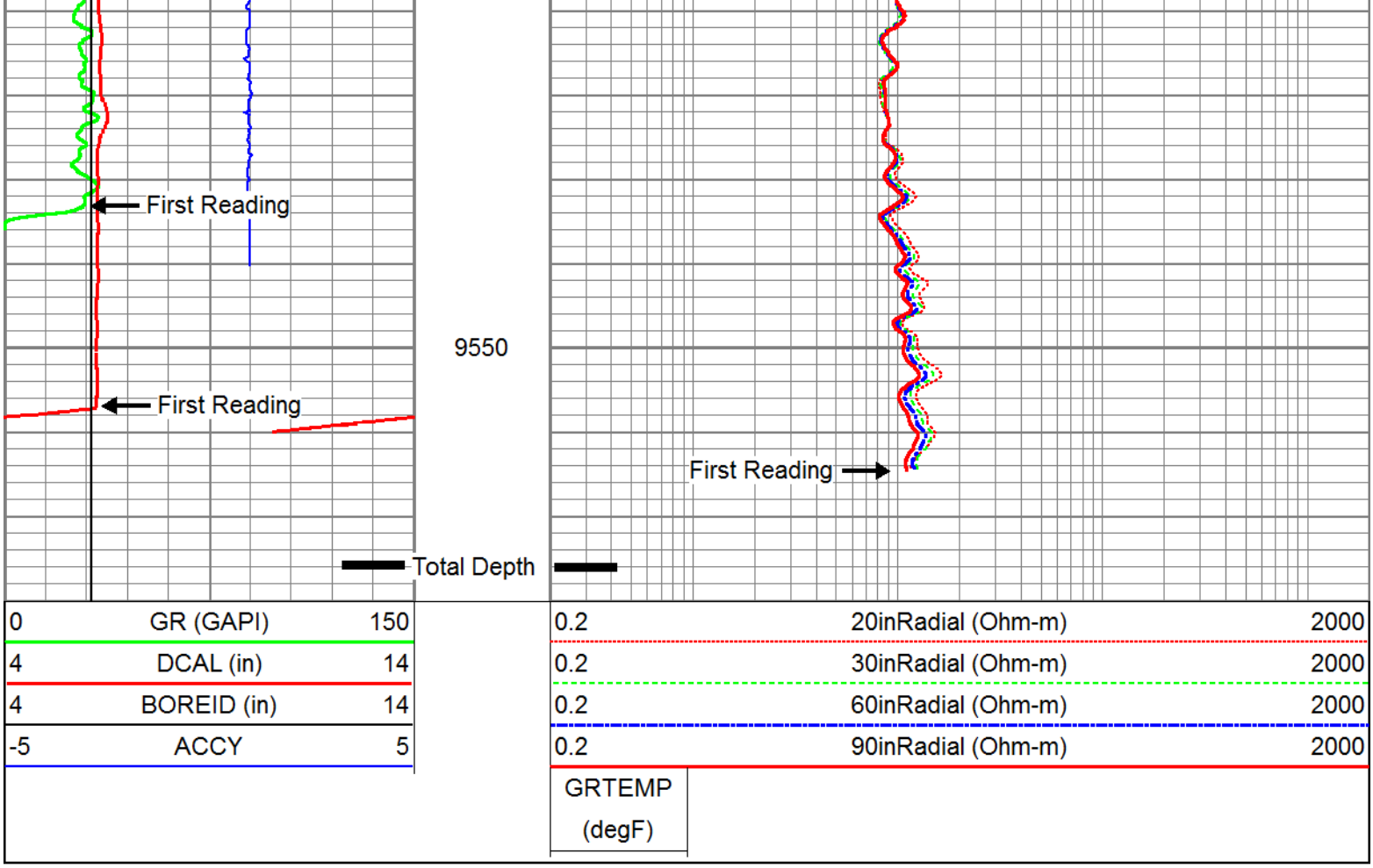


Log Variables

Database:C:\Warrior\Data\sandridge_ellis_mem.db
Dataset: field/well/proc1/pass1.5

Top - Bottom

BHCOR	BHFL_TYPE	BHFLRES Ohm-m	BHFLRESSRC	BHIDSRC	BOREID in	BOTTEMP degF
On	WBM	1	MUDCELL	CURVE	6.125	133

CASED?	CASEOD in	CASETHCK in	CEMWATERSA kppm	CMNTTHCK in	DNBHC?	DPORSEL
No	4.5	0	0	0	NO	RHOB

FLUIDDEN g/cc	FRMSALIN kppm	LATNOR	MATRXDEN g/cc	MUDSALIN kppm	MudWgt lb/gal	NPORSEL
1	0	Off	2.71	4	8.5	Limestone

PEBHC?	PERFS	RESTMPSRC	SO in	SRFTEMP degF	SZCOR	TDEPTH ft
YES	0	INTERNAL	0.5	65	On	9605

TMPCOR	TOOLPOS
On	Free

Calibration Report

Database File: sandridge_ellis_mem.db
Dataset Pathname: proc1/pass1.5
Dataset Creation: Wed Aug 15 11:32:28 2012

ThruBit Induction Calibration Report

Tool Model-Serial Number: PS-PS20R

Shop Calibration Performed: Fri May 25 15:59:03 2012

BASELINE

	R	Expected	X	Expected
Freq 1				
A1	-466.3120	[-500.00, -400.00]	274.1160	[-500.00, 500.00]
A2	-137.4230	[-180.00, -100.00]	295.2880	[-500.00, 500.00]
A3	-26.7238	[-50.00, -10.00]	12.1522	[-500.00, 500.00]
A4	-15.3811	[-30.00, -10.00]	321.5260	[-500.00, 500.00]
A5	-12.6010	[-30.00, -10.00]	122.1460	[-500.00, 500.00]
Freq 2				
A1	-246.9050	[-280.00, -180.00]	151.8670	[-500.00, 500.00]
A2	-90.1241	[-130.00, -50.00]	162.9470	[-500.00, 500.00]
A3	-20.5446	[-50.00, -10.00]	-44.4156	[-500.00, 500.00]
A4	-18.1491	[-30.00, -10.00]	126.7500	[-500.00, 500.00]
A5	-17.6529	[-30.00, -10.00]	-12.6931	[-500.00, 500.00]
Freq 3				
A1	-158.0780	[-180.00, -80.00]	42.2089	[-500.00, 500.00]
A2	-69.7733	[-130.00, -30.00]	77.4876	[-500.00, 500.00]
A3	-17.2164	[-50.00, -10.00]	-89.8846	[-500.00, 500.00]
A4	-19.7958	[-30.00, -10.00]	2.4050	[-500.00, 500.00]
A5	-20.2183	[-30.00, -10.00]	-110.5650	[-500.00, 500.00]
Freq 4				
A1	-87.9098	[-120.00, -40.00]	-128.1980	[-500.00, 500.00]
A2	-52.1283	[-110.00, -10.00]	-37.1596	[-500.00, 500.00]
A3	-13.9754	[-50.00, -10.00]	-168.1260	[-500.00, 500.00]
A4	-22.0367	[-30.00, -10.00]	-176.1500	[-500.00, 500.00]
A5	-24.3232	[-30.00, -10.00]	-275.3130	[-500.00, 500.00]

CALIBRATION COEFFICIENTS

	R	Expected	X	Expected
Freq 1				
A1	0.9944	[0.95, 1.05]	0.0017	[-0.05, 0.05]
A2	0.9923	[0.95, 1.05]	0.0024	[-0.05, 0.05]
A3	0.9985	[0.95, 1.05]	-0.0051	[-0.05, 0.05]
A4	0.9892	[0.95, 1.05]	0.0044	[-0.05, 0.05]
A5	0.9952	[0.95, 1.05]	0.0022	[-0.05, 0.05]
Freq 2				
A1	0.9889	[0.95, 1.05]	-0.0060	[-0.05, 0.05]
A2	0.9865	[0.95, 1.05]	-0.0053	[-0.05, 0.05]
A3	0.9868	[0.95, 1.05]	-0.0053	[-0.05, 0.05]
A4	0.9846	[0.95, 1.05]	-0.0035	[-0.05, 0.05]
A5	0.9927	[0.95, 1.05]	-0.0063	[-0.05, 0.05]
Freq 3				
A1	1.0028	[0.95, 1.05]	-0.0066	[-0.05, 0.05]
A2	1.0008	[0.95, 1.05]	-0.0057	[-0.05, 0.05]
A3	1.0007	[0.95, 1.05]	-0.0062	[-0.05, 0.05]
A4	0.9975	[0.95, 1.05]	-0.0042	[-0.05, 0.05]
A5	1.0093	[0.95, 1.05]	-0.0069	[-0.05, 0.05]

A5	1.0093	[0.95, 1.05]	-0.0069	[-0.05, 0.05]
Freq 4				
A1	0.9905	[0.95, 1.05]	0.0029	[-0.05, 0.05]
A2	0.9882	[0.95, 1.05]	0.0036	[-0.05, 0.05]
A3	0.9902	[0.95, 1.05]	0.0011	[-0.05, 0.05]
A4	0.9853	[0.95, 1.05]	0.0046	[-0.05, 0.05]
A5	1.0085	[0.95, 1.05]	0.0003	[-0.05, 0.05]

Temperature 36.9815 degC

ThruBit Density Calibration Report

Tool Model-Serial Number: PS-PS52D

Source Number:

Shop Calibration Performed: Tue Jul 31 17:20:35 2012

REFERENCE

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

READINGS

Outputs	Counts	Units	Expected
SS1 Background	136.99	cps	[130.00, 170.00]
LS1 Background	134.99	cps	[130.00, 170.00]
LS4 Background	29.79	cps	[27.00, 35.00]
SS1 Aluminium	4509.94	cps	[4500.00, 5500.00]
LS1 Aluminium	841.93	cps	[750.00, 950.00]
LS4 Aluminium	965.25	cps	[843.00, 1068.00]
SS1 Magnesium	7455.89	cps	[7000.00, 9000.00]
LS1 Magnesium	5442.06	cps	[5250.00, 6250.00]
LS1 Al + Fe	717.00	cps	[650.00, 800.00]
LS4 Al + Fe	427.17	cps	[382.00, 471.00]

RESULTS

SS Slope	1.66	[1.52, 1.77]
LS Slope	0.42	[0.38, 0.45]
PEF K Factor	5.143	[3.510, 6.170]
PEF B Factor	-0.523	[-0.700, -0.410]

Caliper Shop Calibration performed: Tue Jul 31 17:20:35 2012

RESULTS

Reference	Reading	Units
12.00	1913.81	in
9.00	2071.73	in
6.00	2230.09	in

DENSITY PRE-SURVEY CHECK Performed: Mon Aug 13 10:55:00 2012

Outputs	Counts	Units	Expected
SS1 Background	136.88	cps	[132.88, 141.10]
LS1 Background	133.28	cps	[130.94, 139.04]
LS4 Background	30.11	cps	[28.00, 31.58]

CALIPER PRE-SURVEY CHECK Performed: Mon Aug 13 10:52:39 2012

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

Compensated Neutron Calibration Report

Tool Model-Serial Number: ENP-ENP3N
Source Number:

Calibration Tank Temperature: 90.5 degF
Shop Calibration Performed: Wed Jul 25 15:06:56 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	3873.3	cps	
LS Counts	118.3	cps	
Tank Ratio Ref	30.9580	SS/LS	
Tank Ratio	32.7391	SS/LS	
Tank Ratio Gain	0.9456		[0.85, 1.15]

ALUMINUM SLEEVE REFERENCE

Outputs	Measured	Units	Expected
SS Counts	44270.6	cps	
LS Counts	3786.2	cps	
Al Ratio Ref	10.797	SS/LS	
Al Ratio	11.057	SS/LS	
Al Ratio Gain	0.98		[0.90, 1.10]
Sleeve Porosity	14.46	pu	

PRE-SURVEY BACKGROUND CHECK Performed: Tue Aug 14 09:01:32 2012

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

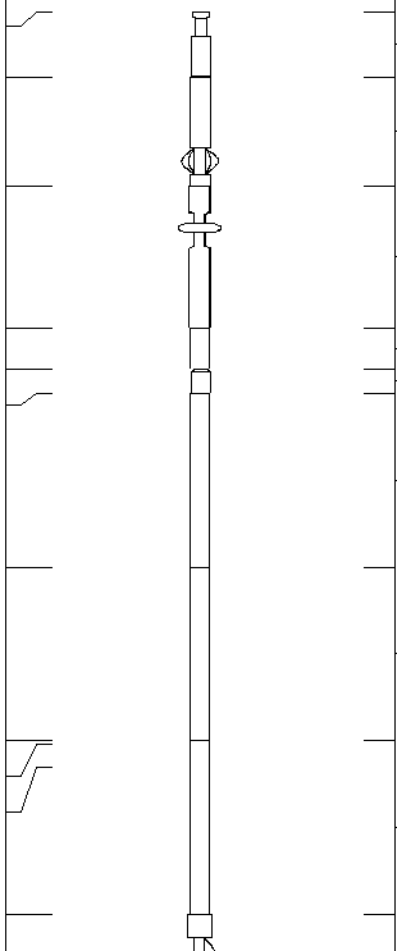
Gamma Ray Calibration Report

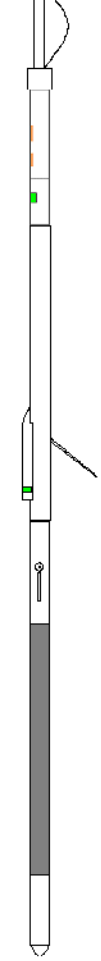
Tool Model-Serial Number:	PS-PS05T	
Performed:	Wed Jul 25 14:25:23 2012	
Calibrator Value:	162.7	GAPI
Background Reading:	72.1	cps
Calibrator Reading:	442.2	cps
Sensitivity:	0.3750	GAPI/cps

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	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		Universal Joint	1.46	2.06	15.00
Thrubit	54.29		10-1	0.88	2.13	3.95
TBBAT	53.41		TBBAT-A (PS07B) Thrubit Battery	6.13	2.13	38.20
TBBAT2	47.29		TBBAT2-A (PS22B) Thrubit Battery	6.13	2.13	40.00
TMG	41.16					
GR	41.04					
GRTEMP	40.20		TMG-PS (PS05T) 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-ENP (ENP3N) ThruBit Neutron	4.77	2.13	63.00
		TBD-PS (PS52D) 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				
A5_P	6.60				
		TBI-PS (PS20R) Thrubit Induction	15.29	2.13	94.00

Dataset:	sandridge_ellis_mem.db: field/well/proc1/pass1.5
Total Length:	66.92 ft
Total Weight:	560.15 lb
O.D.	2.38 in

ThruBit
A Schlumberger Company

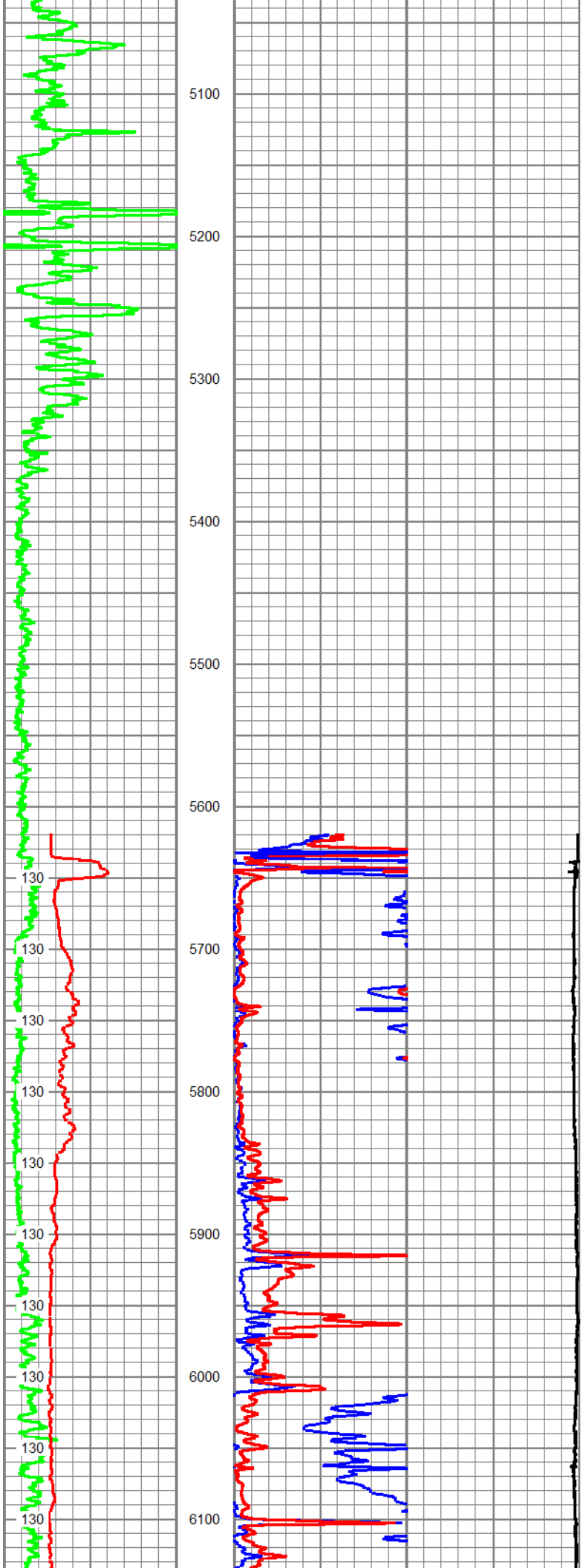
Company	SANDRIDGE ENERGY
Well	ELLIS 3119 2-19H
Field	ARLIE
County	COMANCHE
State	KANSAS

ThruBit
A Schlumberger Company

MAIN PASS

Database File:	sandridge_ellis_mem.db
Dataset Pathname:	proc1/pass1.5
Presentation Format:	chespk1r
Dataset Creation:	Wed Aug 15 11:32:28 2012
Charted by:	Depth in Feet scaled 1:1200

0 GR (GAPI) 150		20in 2ft Res 50 (Ohm-m) 500	
4 DCAL (in) 14		90in 2ft Res 50 (Ohm-m) 500	
GRTEMP (degF)		1000 DEEP COND (mmho/m) 0	
		20in 2ft Res 0 (Ohm-m) 50	
		90in 2ft Res 0 (Ohm-m) 50	
5000			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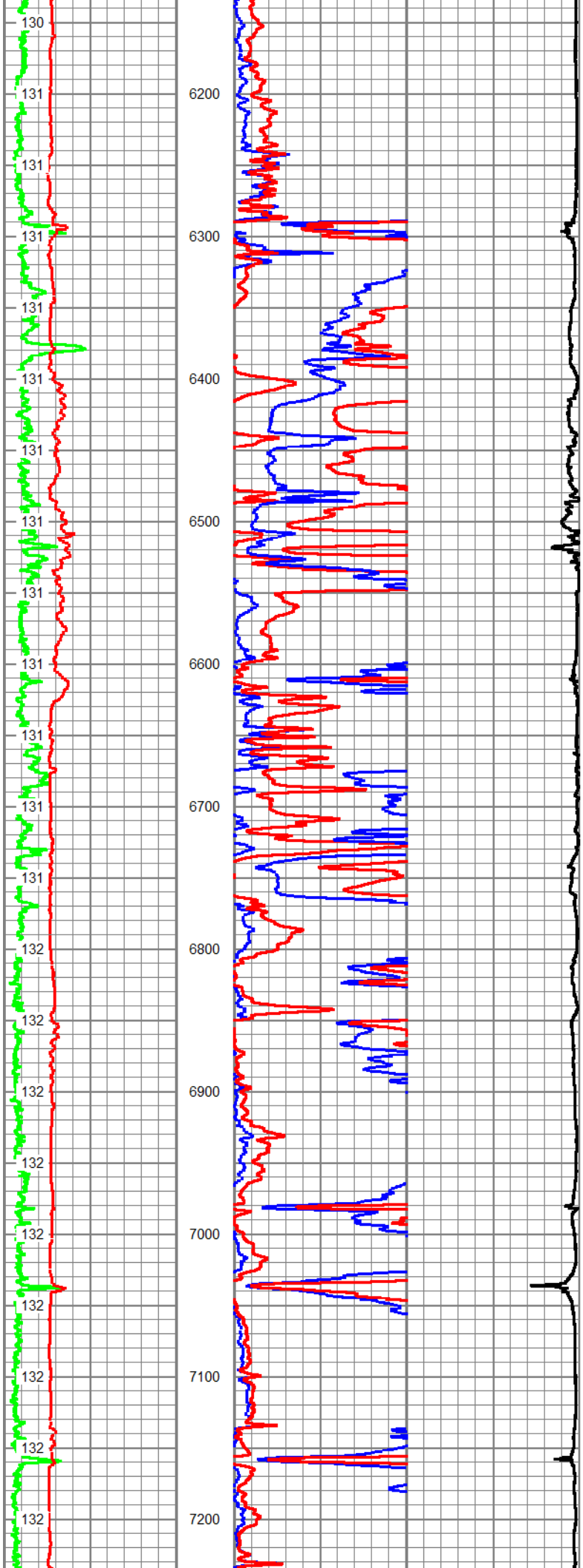
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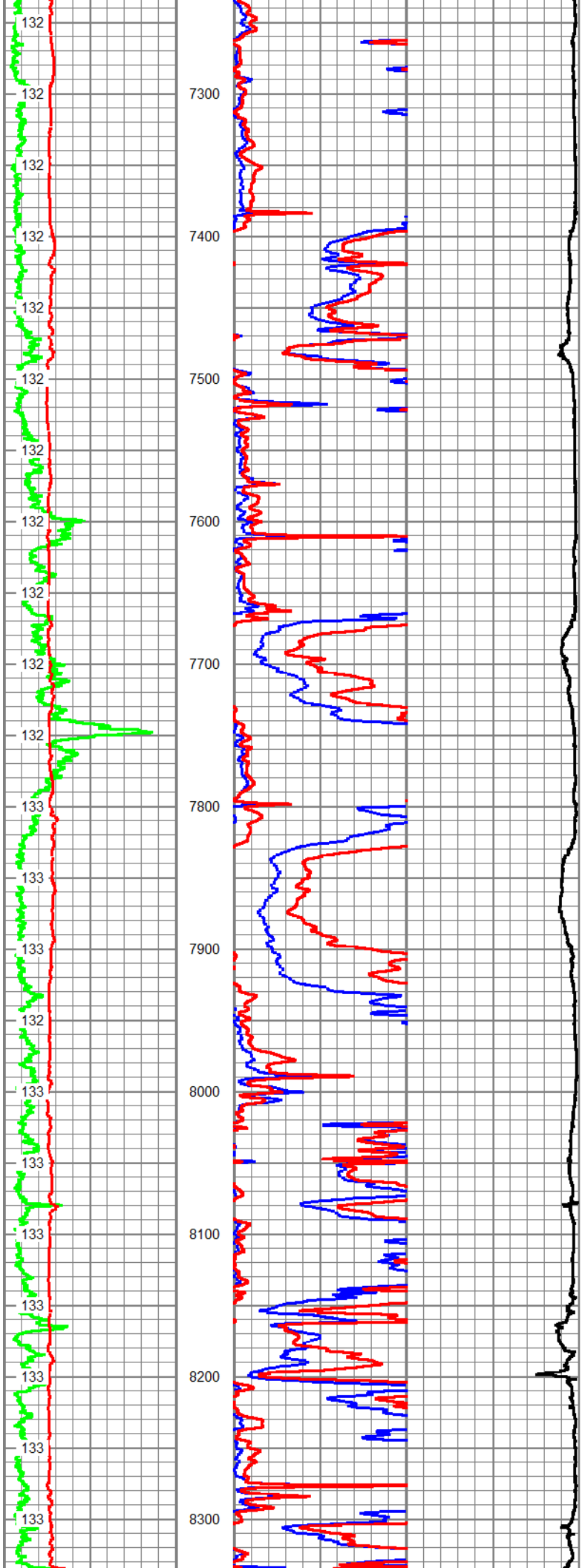
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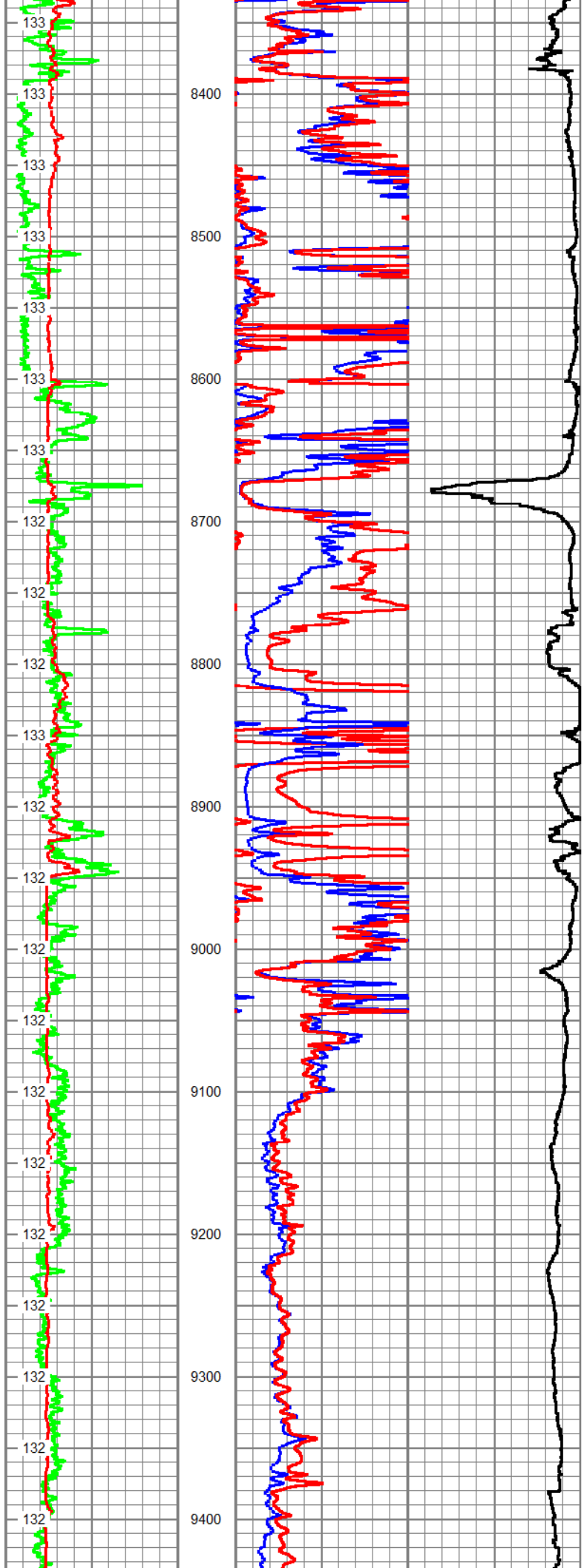
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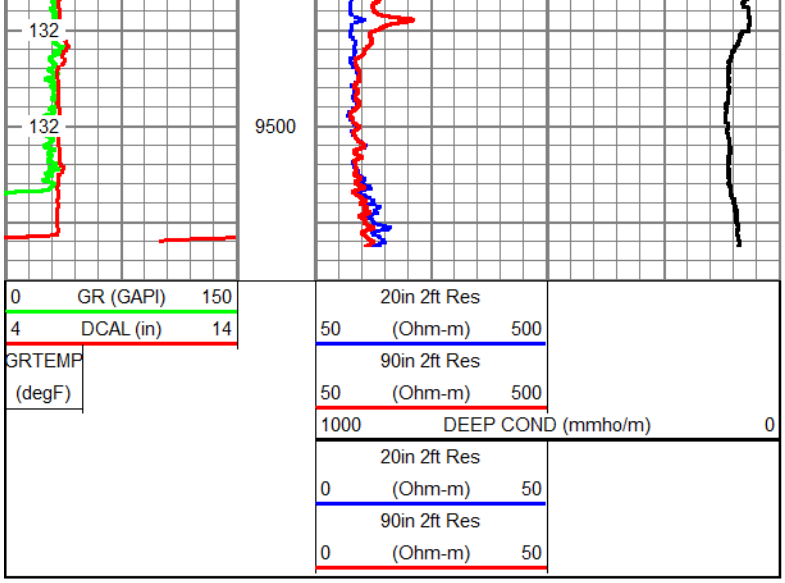

0	GR (GAPI)	150
4	DCAL (in)	14
GRTEMP (degF)		
	20in 2ft Res	
50	(Ohm-m)	500
	90in 2ft Res	
50	(Ohm-m)	500
1000	DEEP COND (mmho/m)	0
	20in 2ft Res	
0	(Ohm-m)	50
	90in 2ft Res	
0	(Ohm-m)	50