ThruBit
A Schlumberger Company

ARRAY INDUCTION GAMMA RAY MEMORY LOG

Company SANDRIDGE ENERGY
Well MYRA 3406 1-8H
Field EASTHAM
County HARPER State KANSAS

Location: API # : 15-077-21911-01-00
SHL: 240' FSL & 660' FWL
BHL: 330' FNL & 660' FWL
SEC 8 TWP 34S RGE 6W

Other Services
THRUBIT
PORTAL
BIT

Elevation
K.B. 1304'
D.F. 1304'
G.L. 1288'

Permanent Datum G.L. Elevation 1288'
Log Measured From K.B. 16' ABOVE PERM DATUM
Drilling Measured From K.B.

Date	14 MAR 2013		
Run Number	ONE		
Depth Driller	8867'		
Depth Logger	8830'		
Bottom Logged Interval	8819'		
Top Log Interval	5411'		
Casing Driller	7.0" @ 5410'		
Casing Logger	7.0" @ 5411'		
Bit Size	6.125"		
Type Fluid in Hole	WBM		
Density / Viscosity	8.5 / 27		
pH / Fluid Loss	8.5 / NA		
Source of Sample	ACTIVE PIT		
Rm @ Meas. Temp	2.01 OHMS @ 70DEGF		
Rmf @ Meas. Temp	1.50 OHMS @ 70DEGF		
Rmc @ Meas. Temp	2.51 OHMS @70DEGF		
Source of Rmf / Rmc	CALCULATED		
Rm @ BHT	1.04 OHMS @ 143DEGF		
Time Circulation Stopped	1630 14 MAR 2013		
Time Logger on Bottom	1840 14 MAR 2013		
Maximum Recorded Temperature	143 DEGF		
Equipment Number	T011		
Location	OKC, OK		
Recorded By	R. BROOMFIELD	Z. HAGAN	
Witnessed By	ANTONIO LEIJA JR		

<<< Fold Here >>>

Comments

SERVICE: LEVEL 4- HORIZONTAL MEMORY PUMPDOWN - BIT DEPTH 8770' LOG TO 2500'
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 4.5" CASING
RIGMINDER LITE AND PASON USED TO CREATE DEPTH LOG
LOG DEPTH CORRELATED TO MWD GAMMA RAY

RIG: UNIT 310
CREW: R. BROOMFIELD, Z. HOWARD, Z. HAGAN, J. HIRSCHLER

Service Ticket No. 1797 API No. 15-077-21911-01-00 PGM Ver WARRIOR 7.0

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

EQUIPMENT DATA

GAMMA RAY	NEUTRON	DENSITY	INDUCTION

Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	ONE
Serial No.	PS09T	Serial No.	PS35N	Serial No.	PS52D	Serial No.	PS23R
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	8830'	2500'	0	30 FPM	

	GAMMA RAY		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 OHM-M	2000 OHM-M

DIRECTIONAL INFORMATION

Maximum Deviation	92.5	deg. @	8257'	KOP	3688'	

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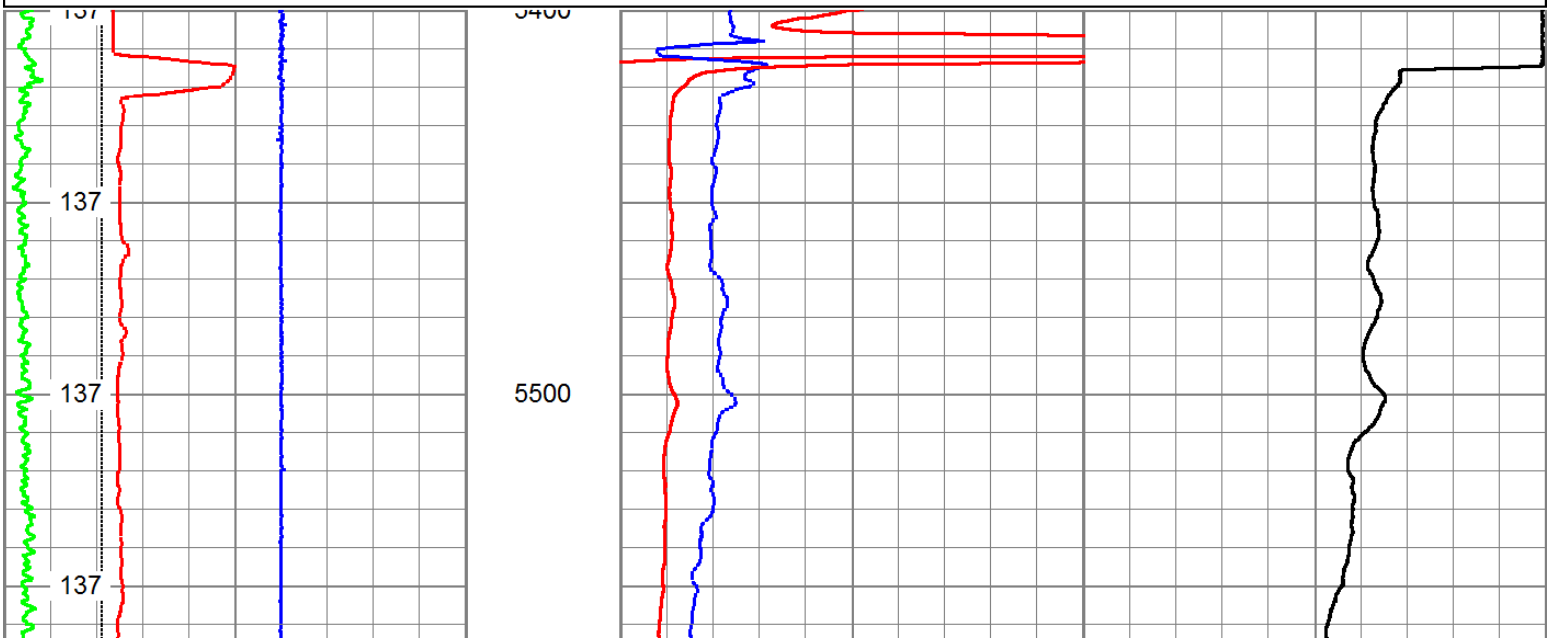
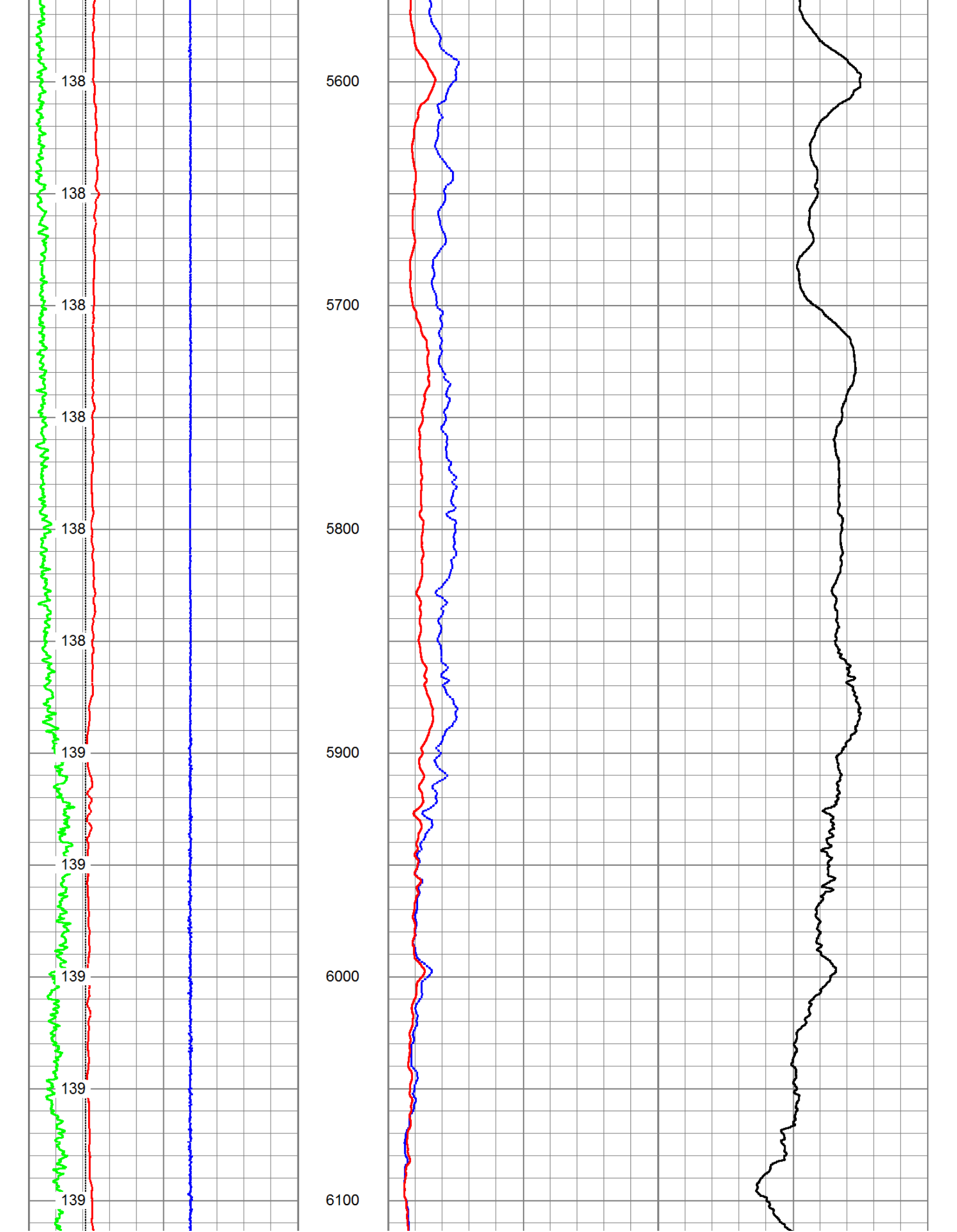
MAIN PASS

Database File: sandridge_myra_3406_mem9.db
Dataset Pathname: proc1/MERGE3
Presentation Format: 6_2r_chk
Dataset Creation: Fri Mar 15 04:21:56 2013
Charted by: Depth in Feet scaled 1:600

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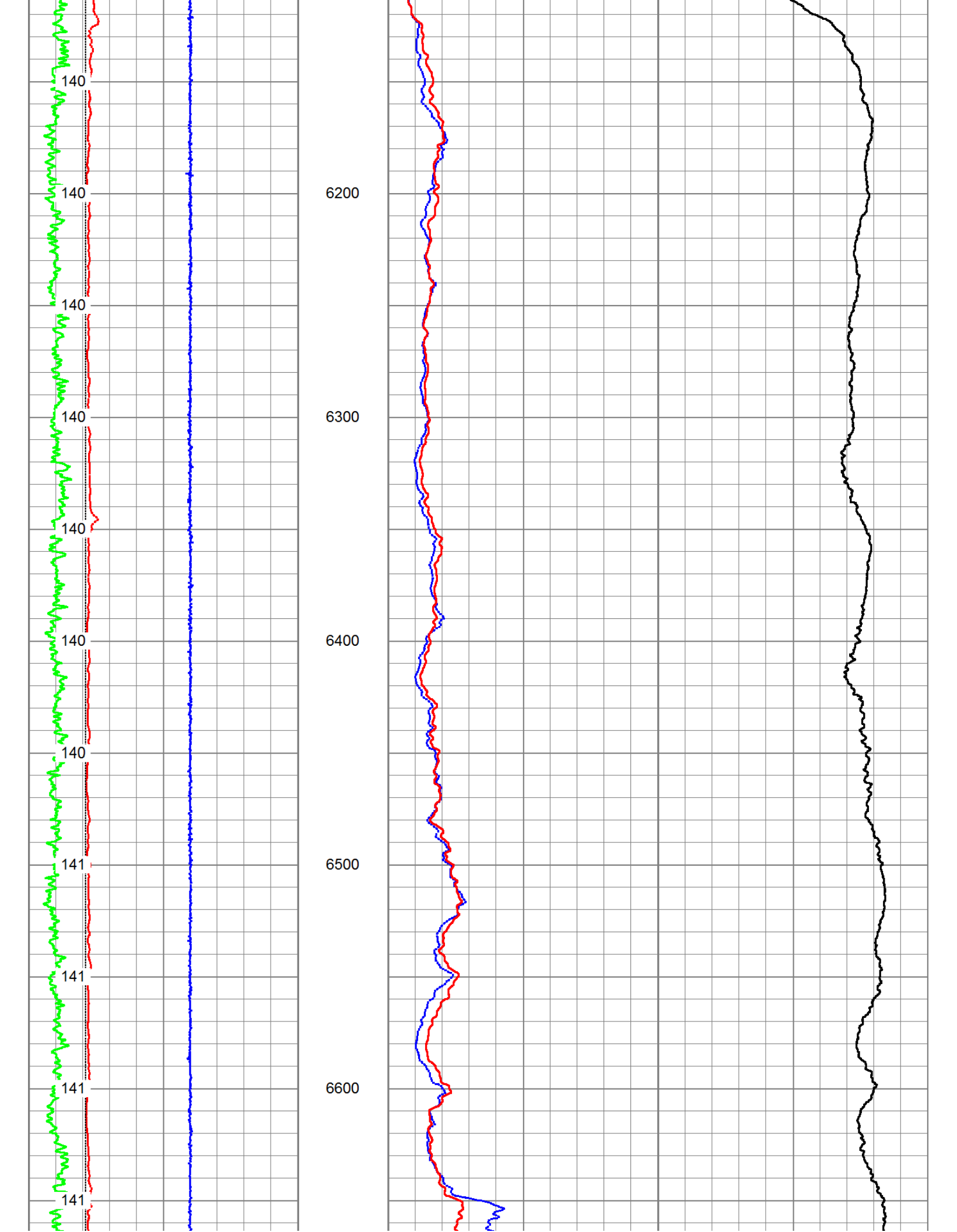
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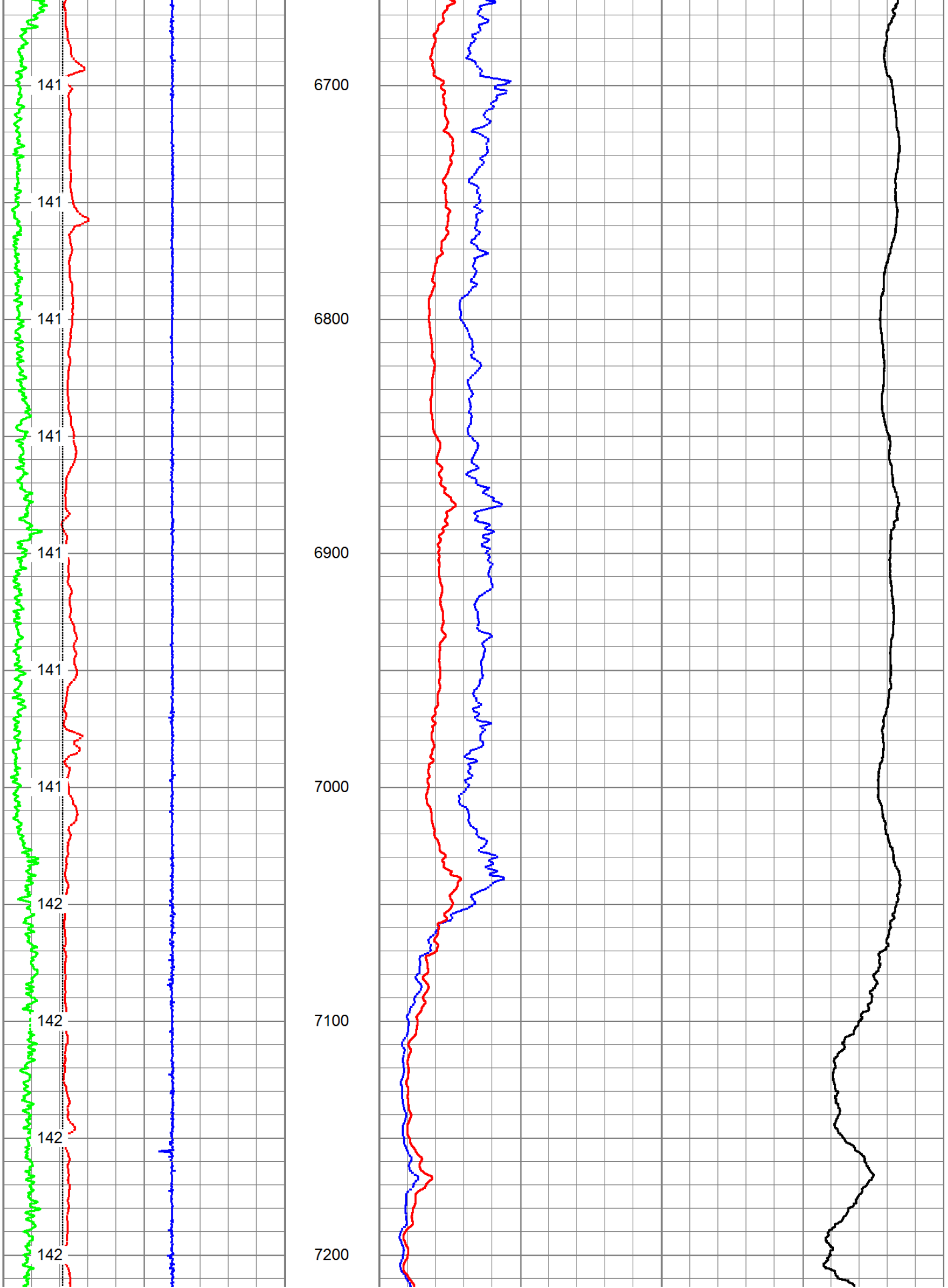
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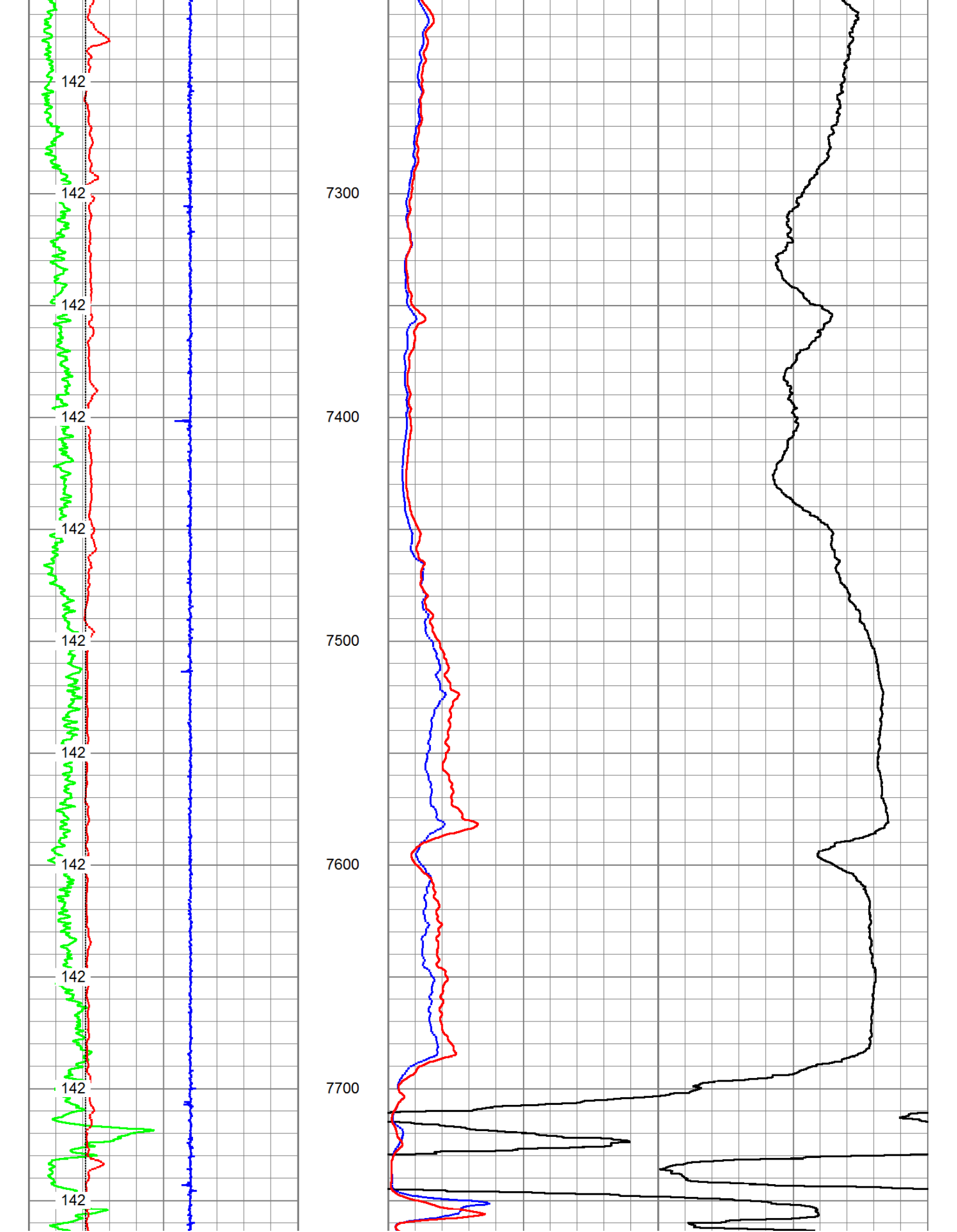
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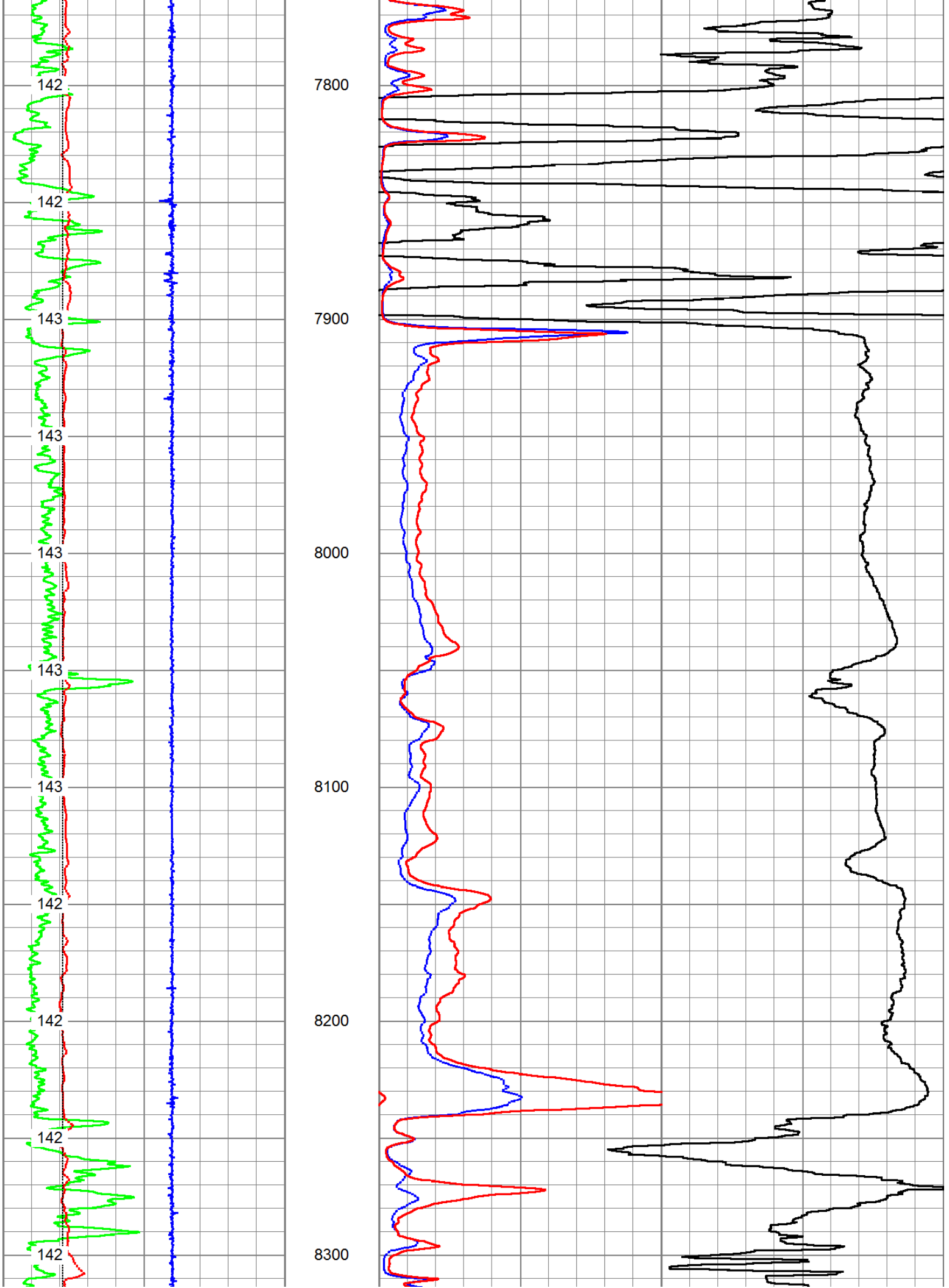
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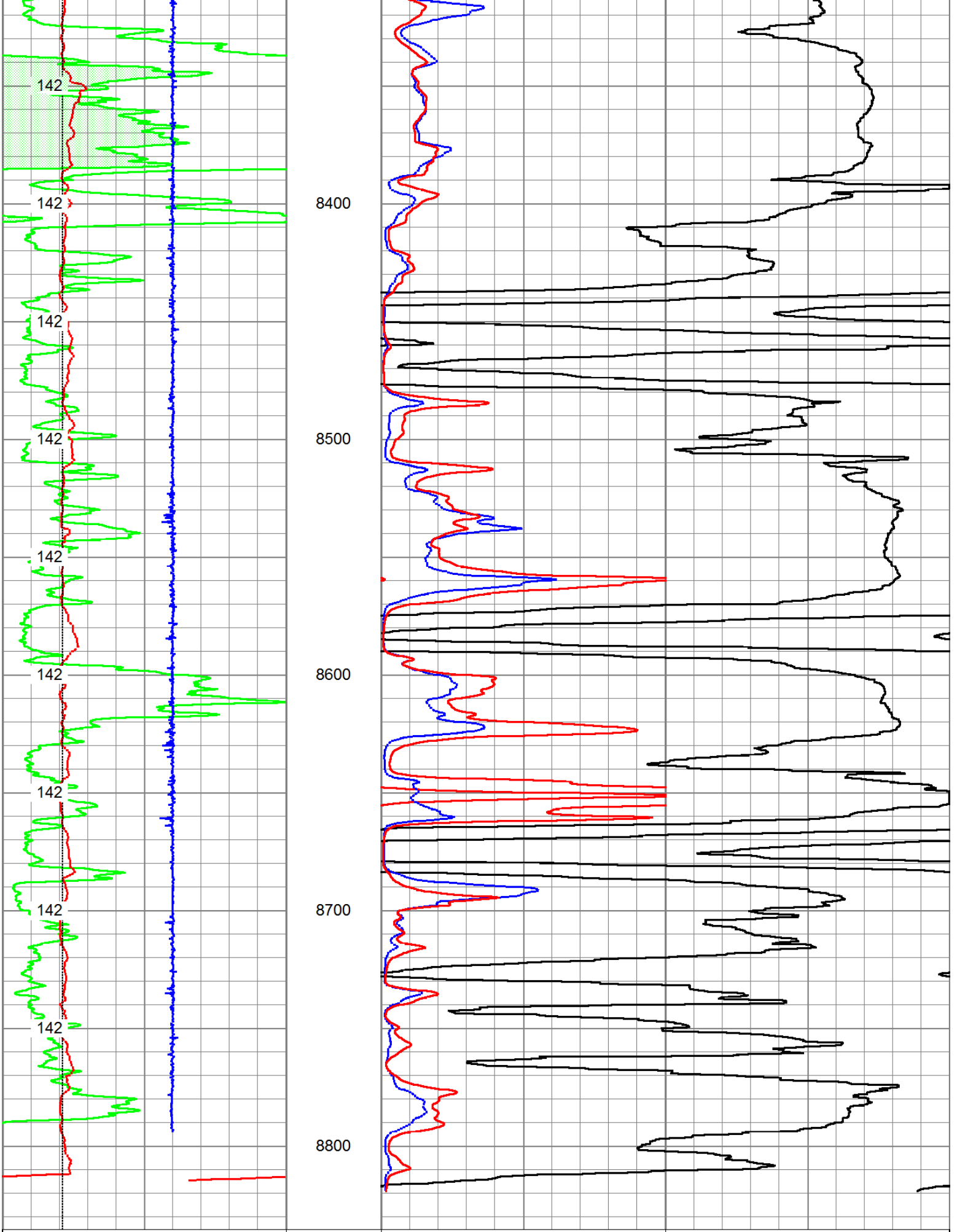

0	GR (GAPI)	150
4	DCAL (in)	14
-5	ACCY	5
50	20in 2ft Res (Ohm-m)	500
50	90in 2ft Res (Ohm-m)	500
1000	DEEP COND (mmho/m)	0

-5	ACCY	5
4	BOREID (in)	14
	GRTEMP (degF)	

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

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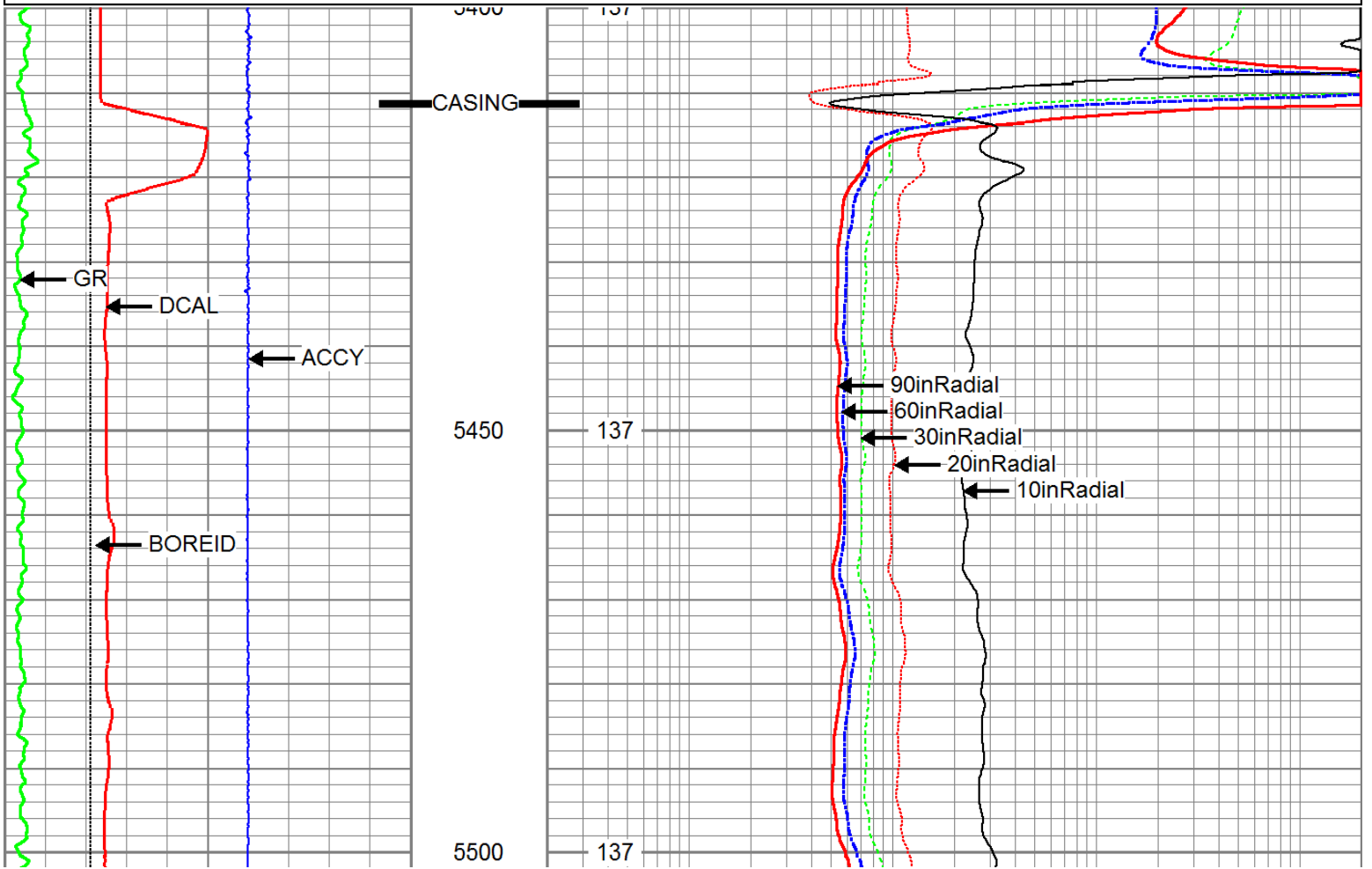
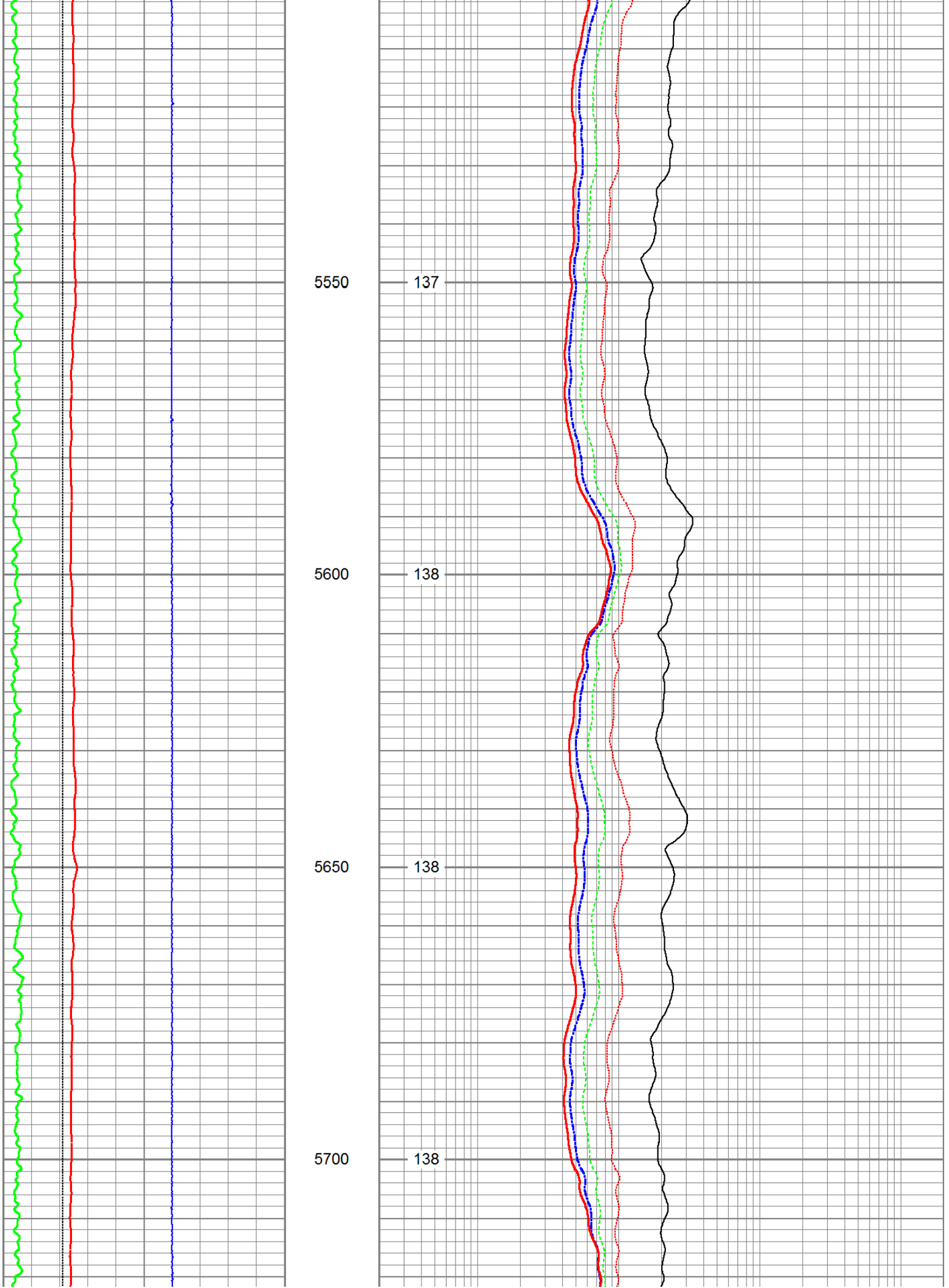
MAIN PASS

Database File: sandridge_myra_3406_mem9.db
Dataset Pathname: proc1/MERGE3
Presentation Format: 6_5r_chk
Dataset Creation: Fri Mar 15 04:21:56 2013
Charted by: Depth in Feet scaled 1:240

0	GR (GAPI)	150
4	BOREID (in)	14
4	DCAL (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
0.2	10inRadial (Ohm-m)	2000
	GRTEMP (degF)	

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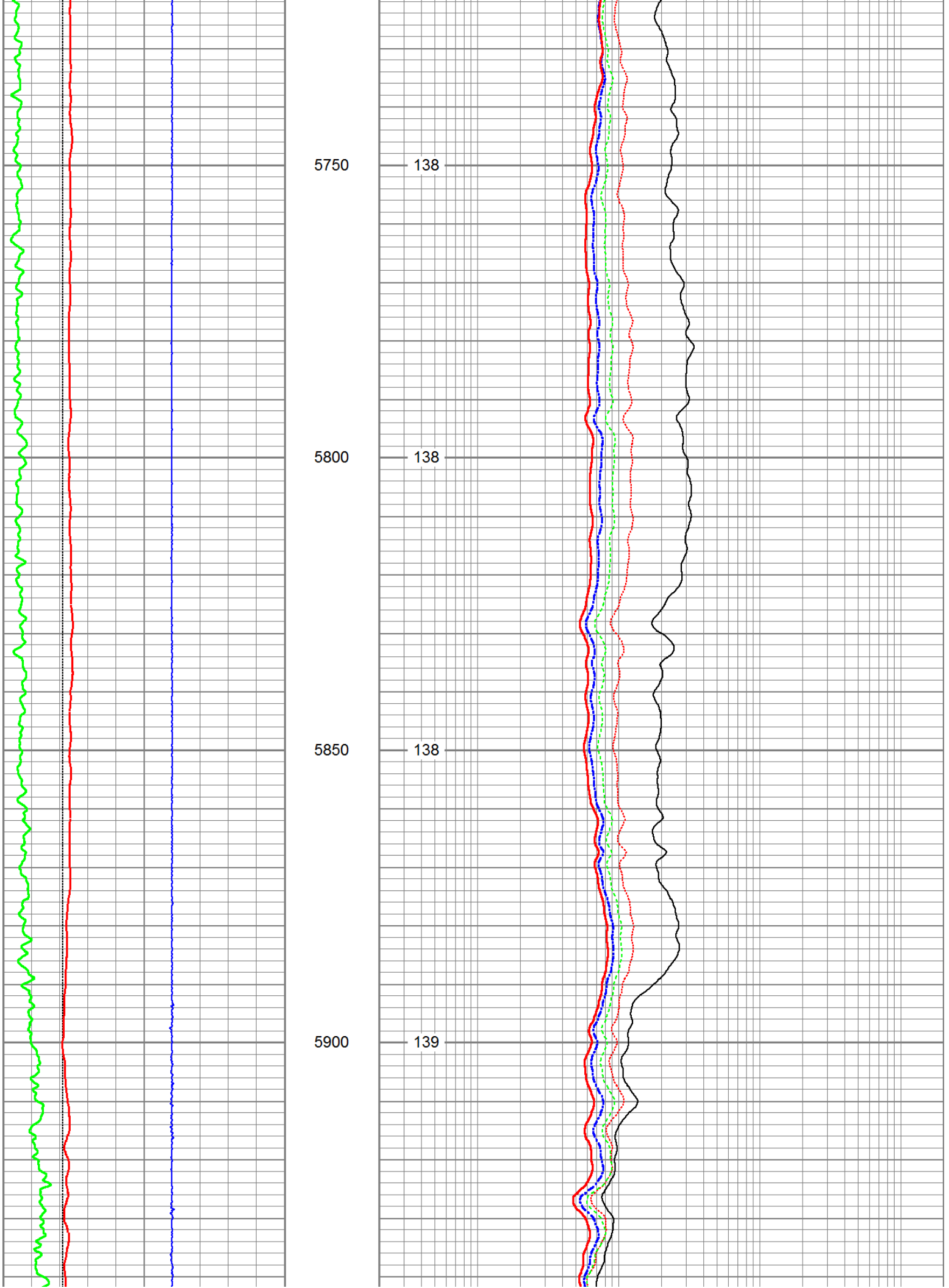
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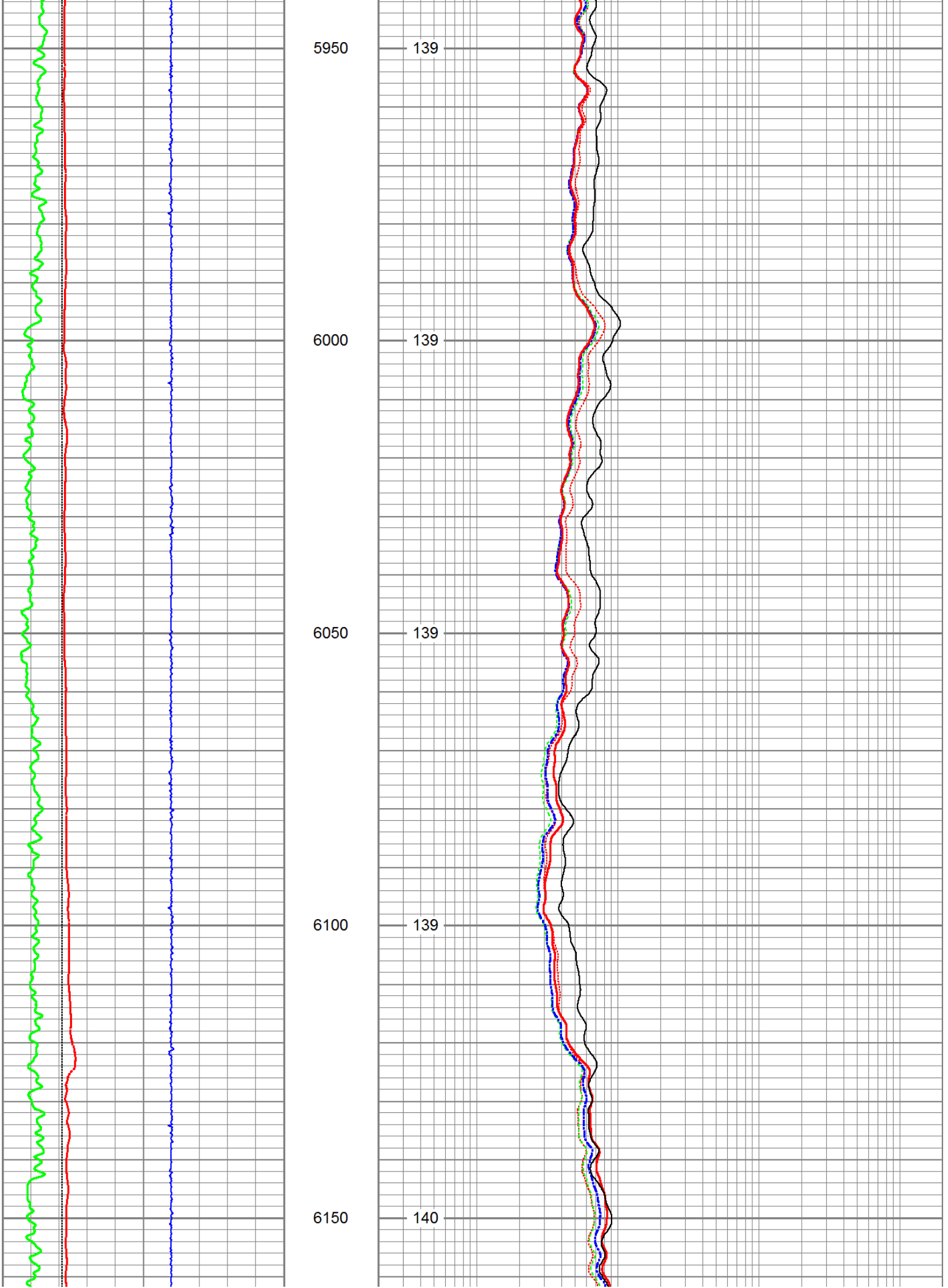
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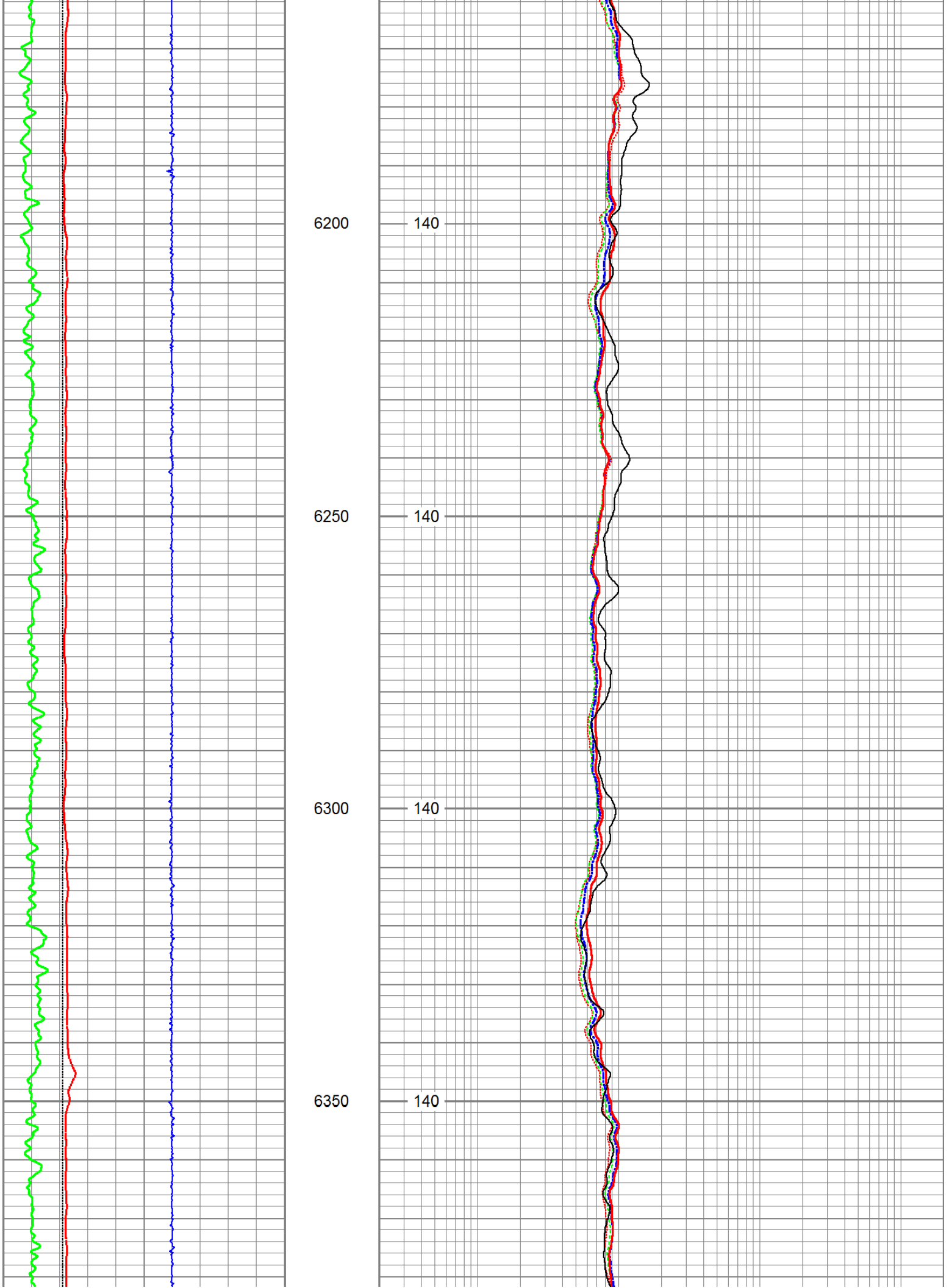
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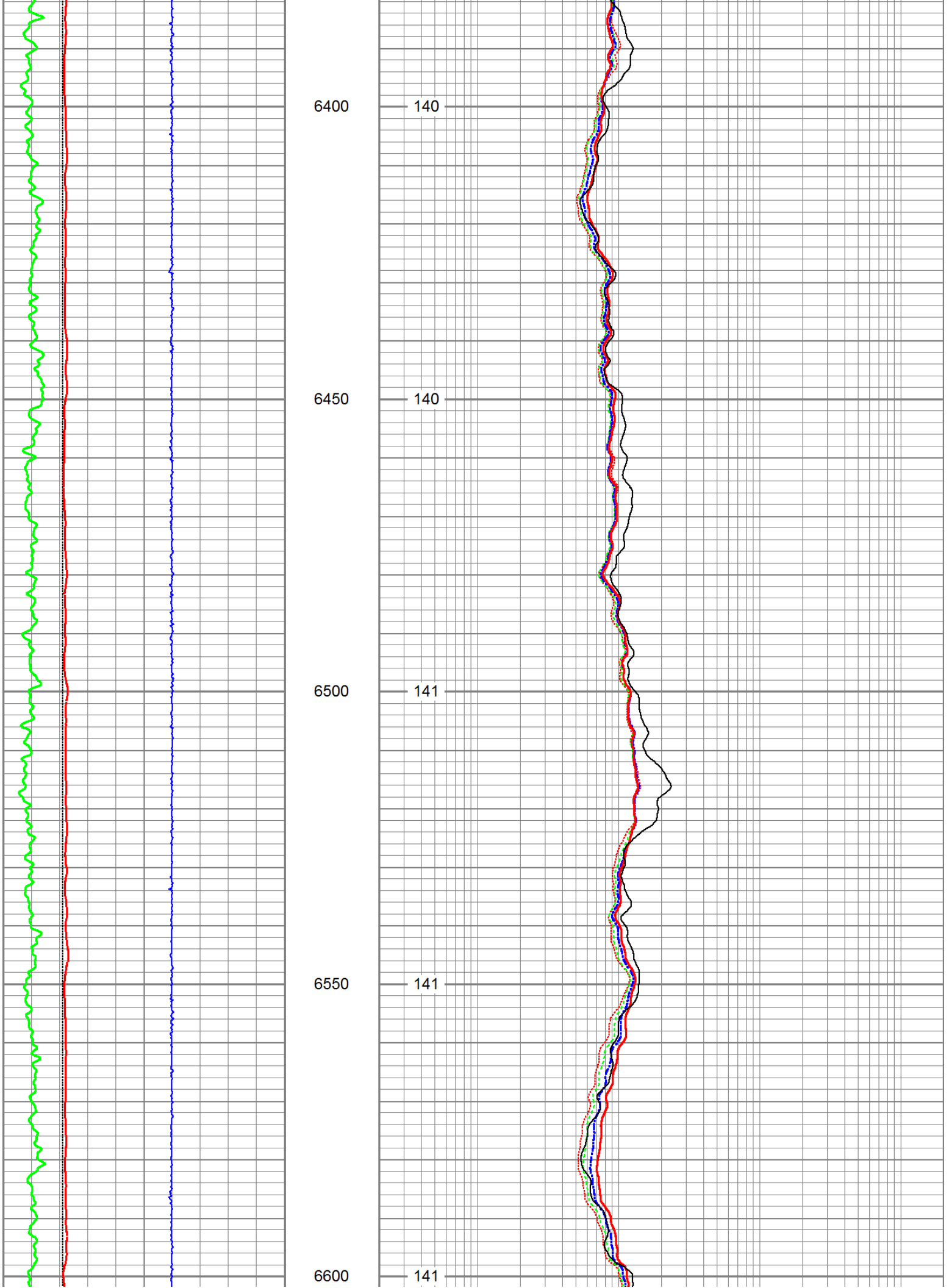
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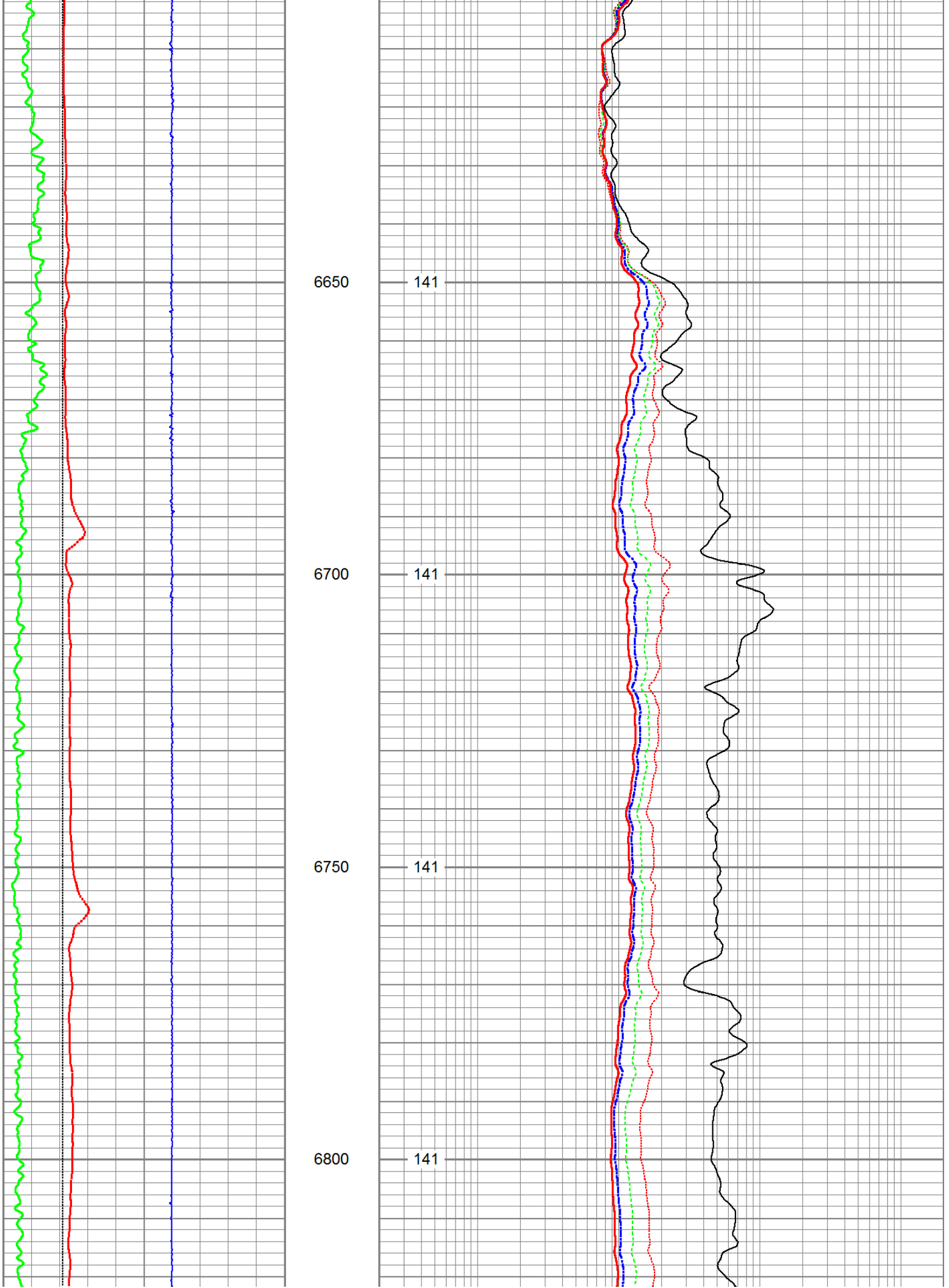
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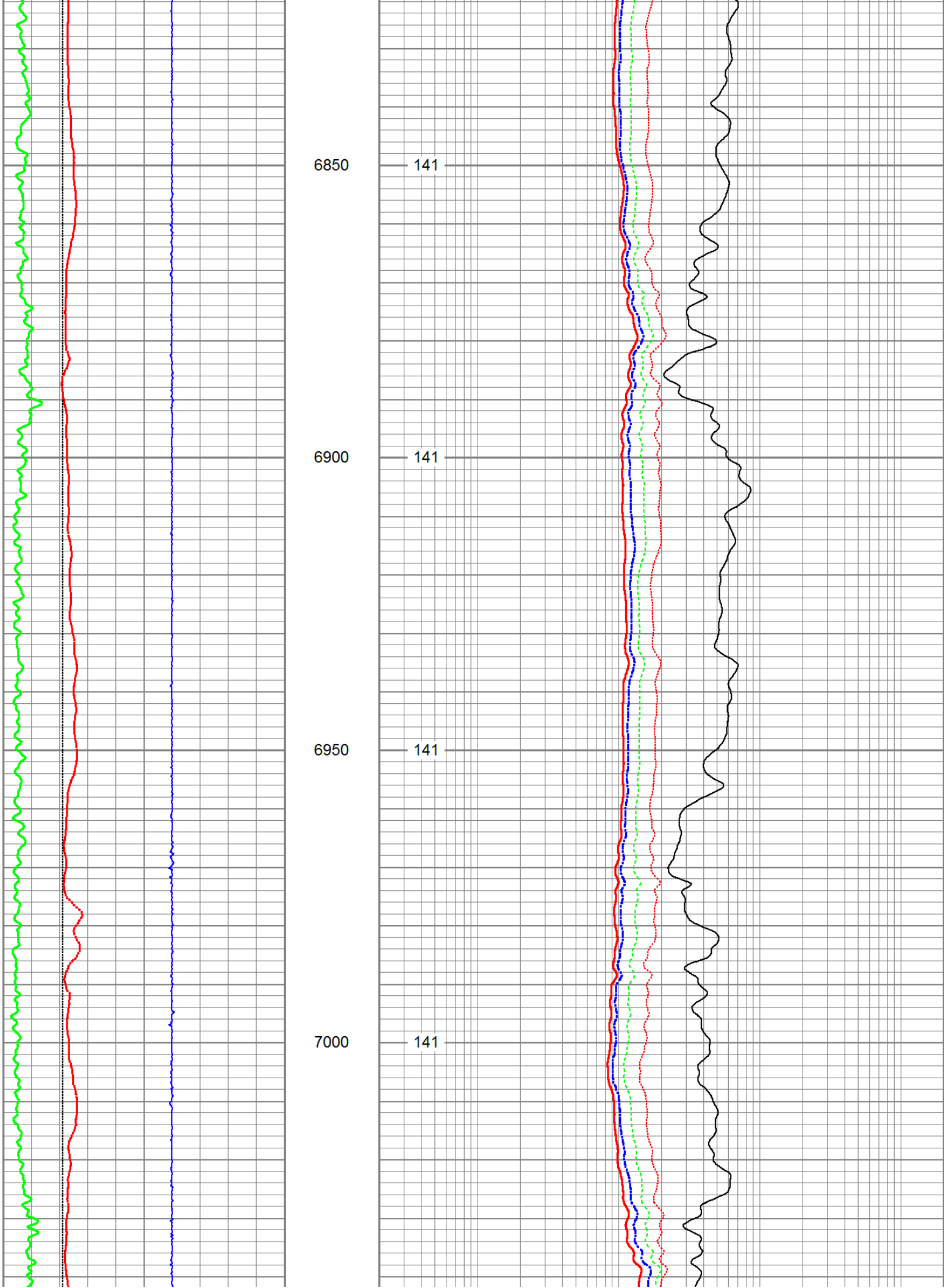
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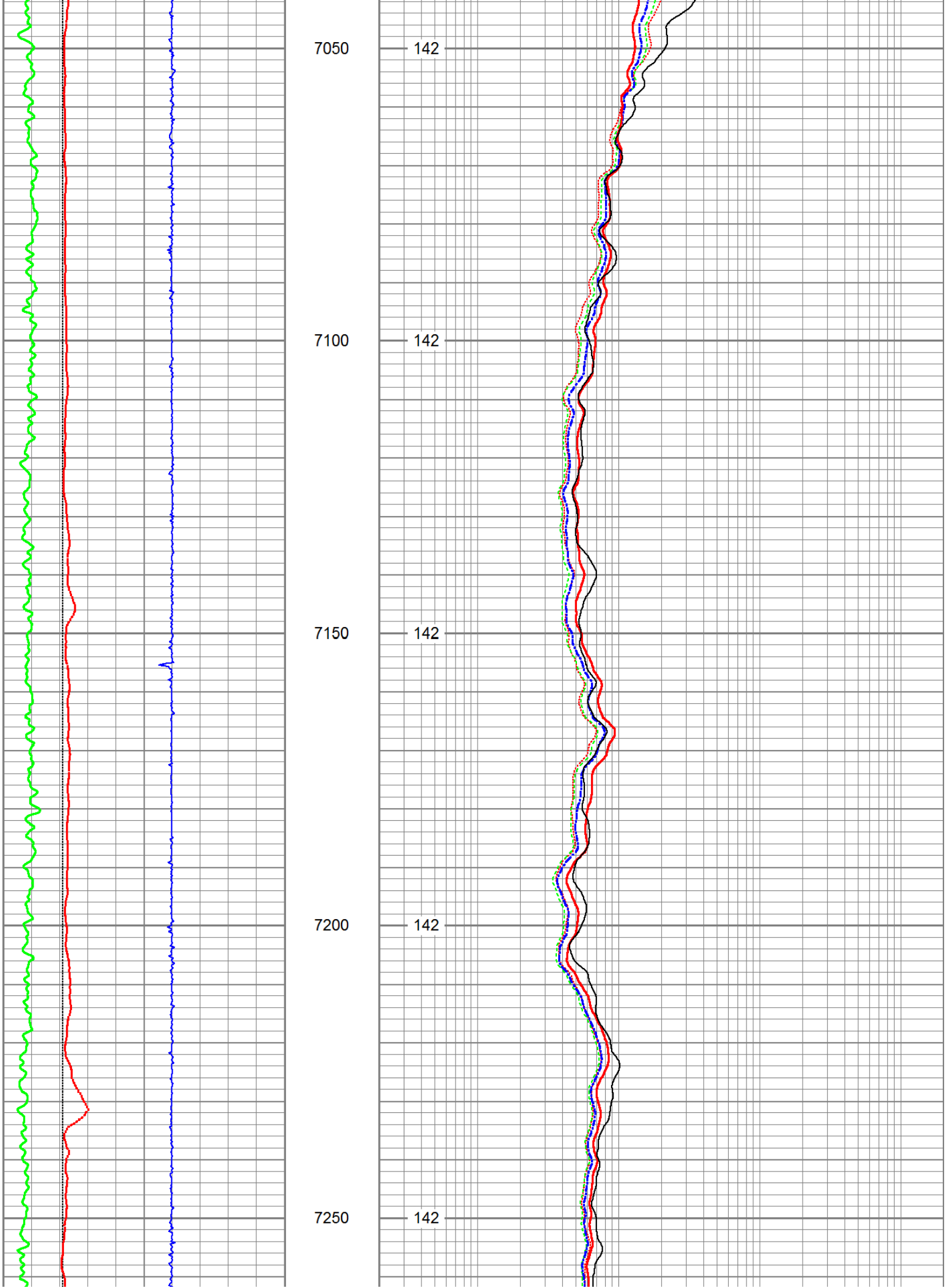
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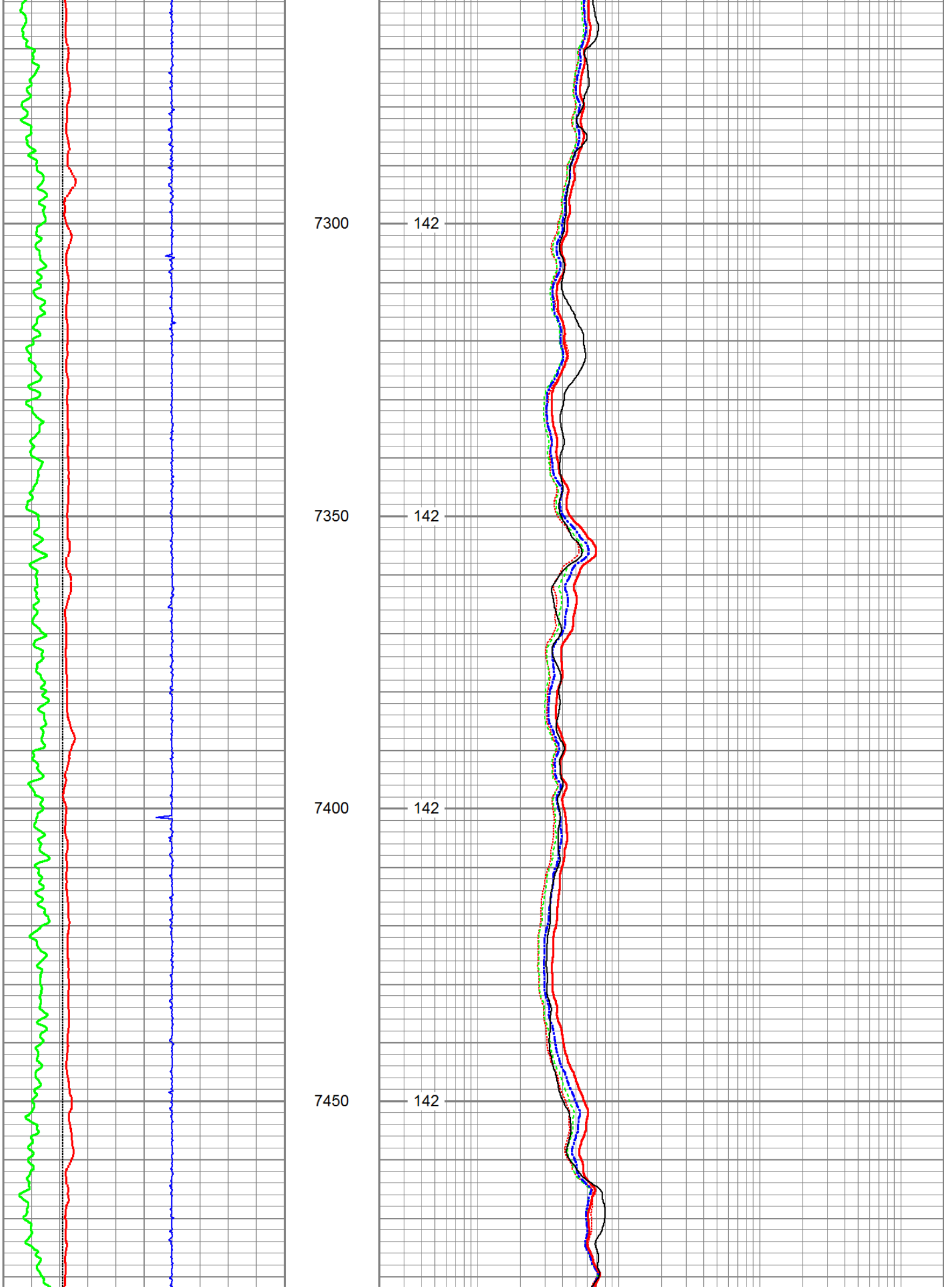
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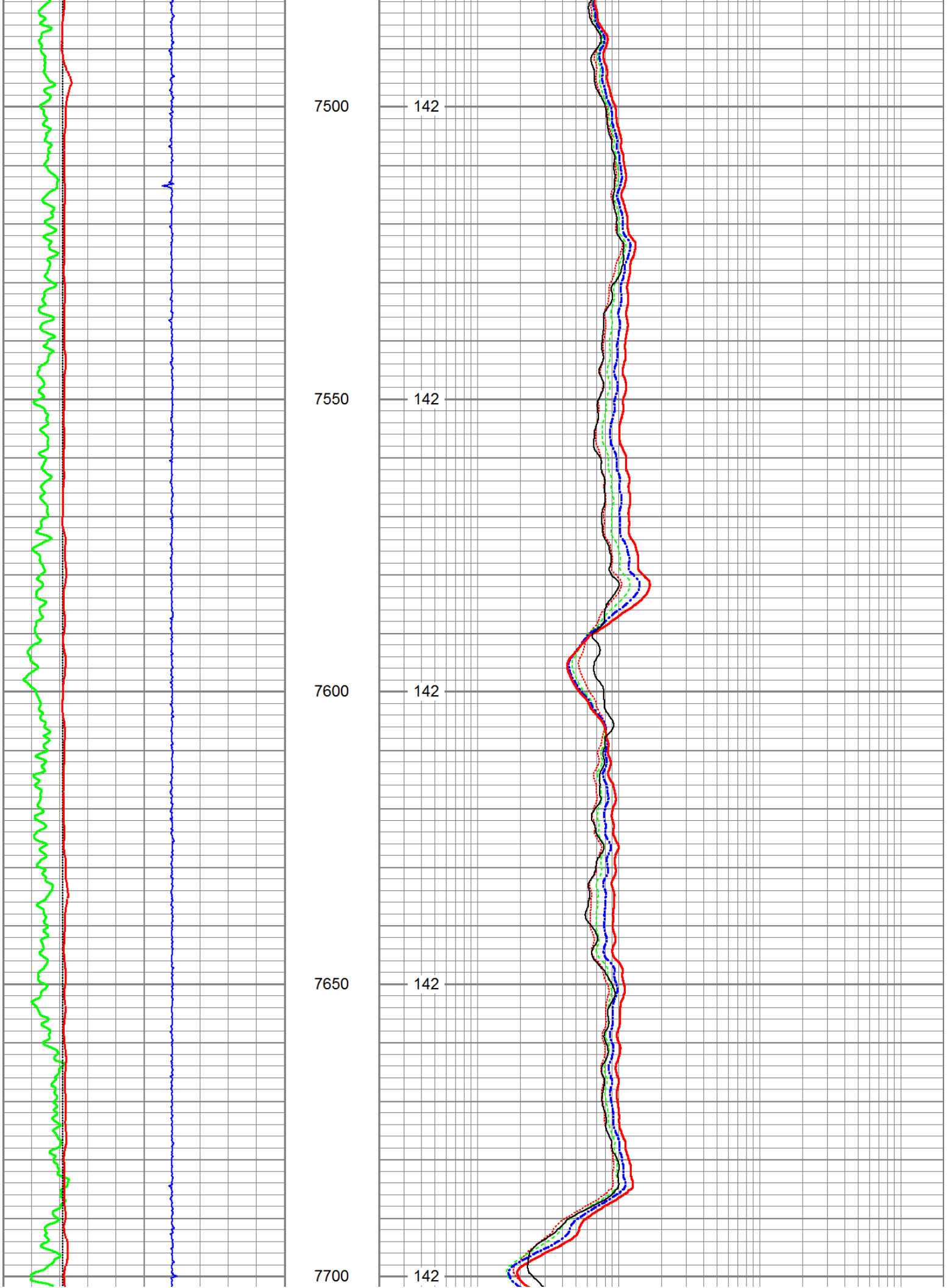
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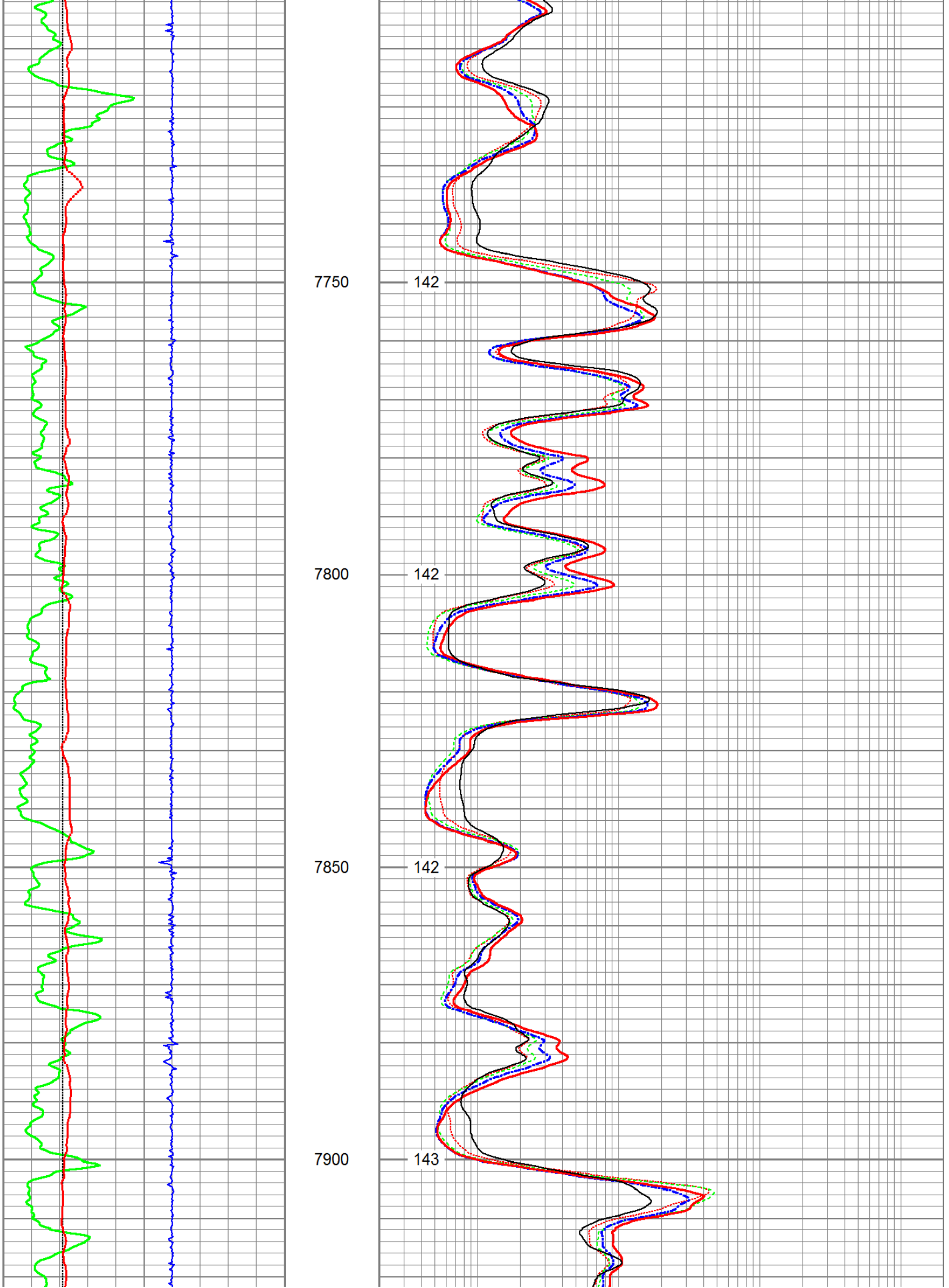
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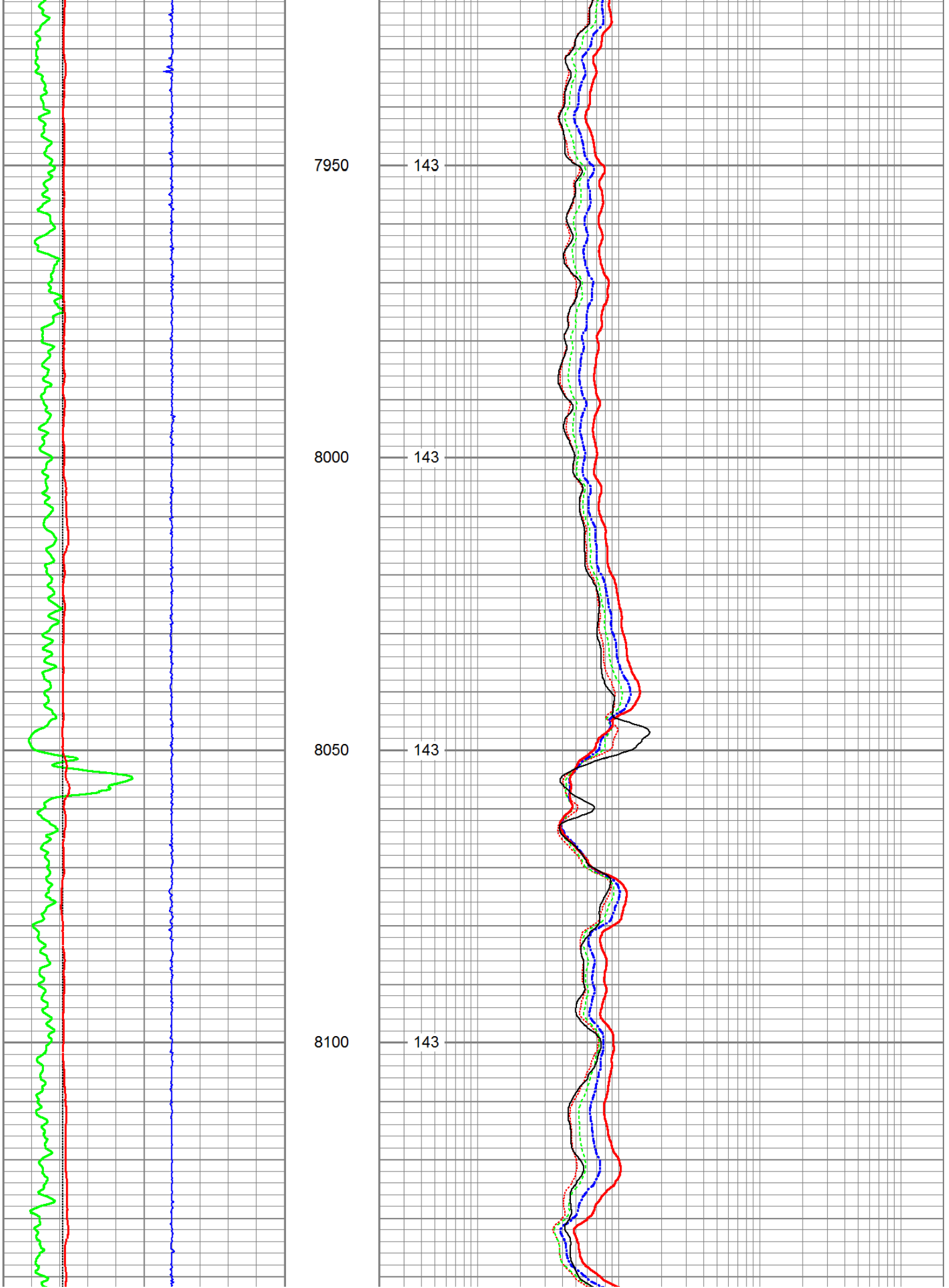
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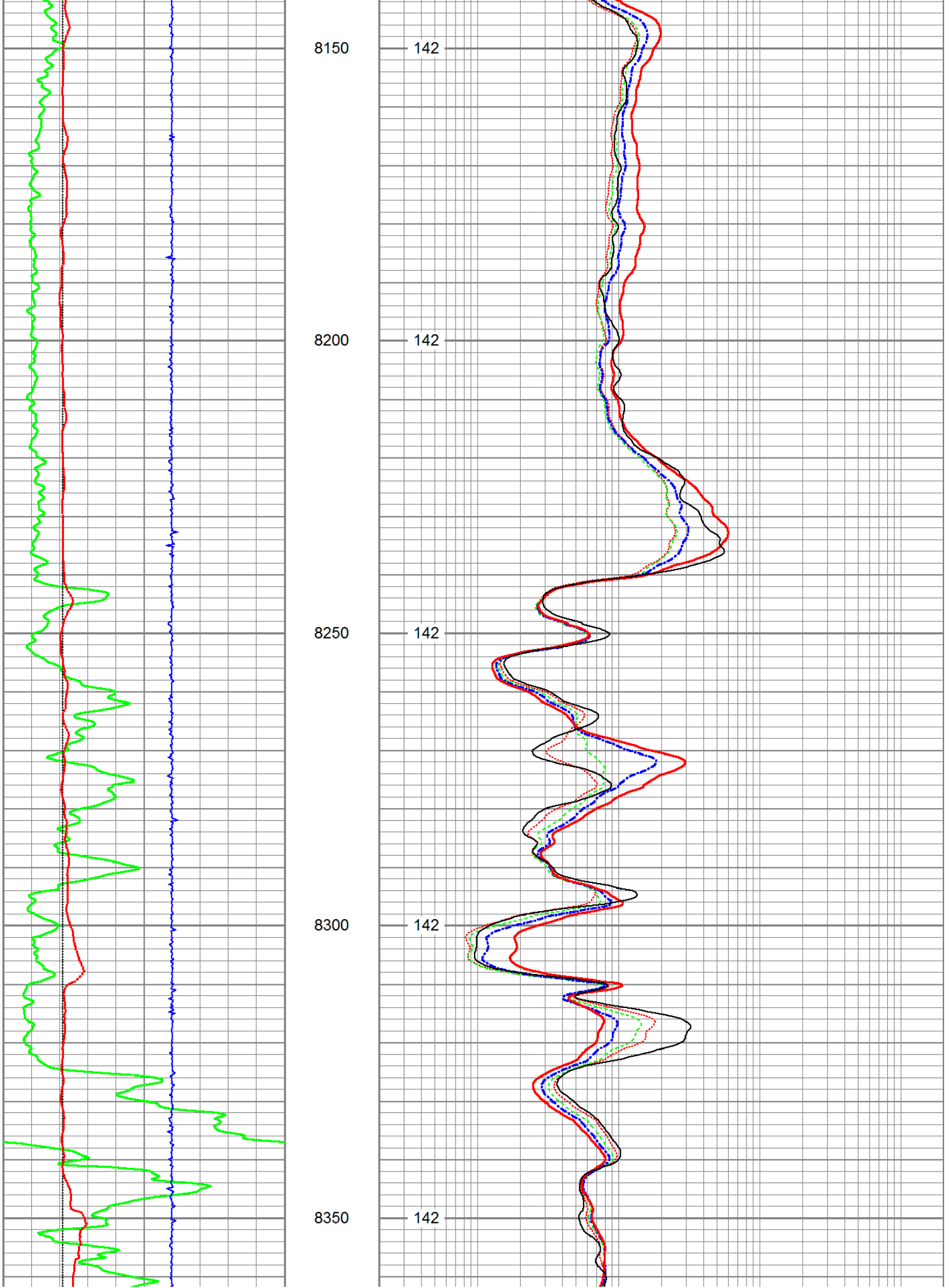
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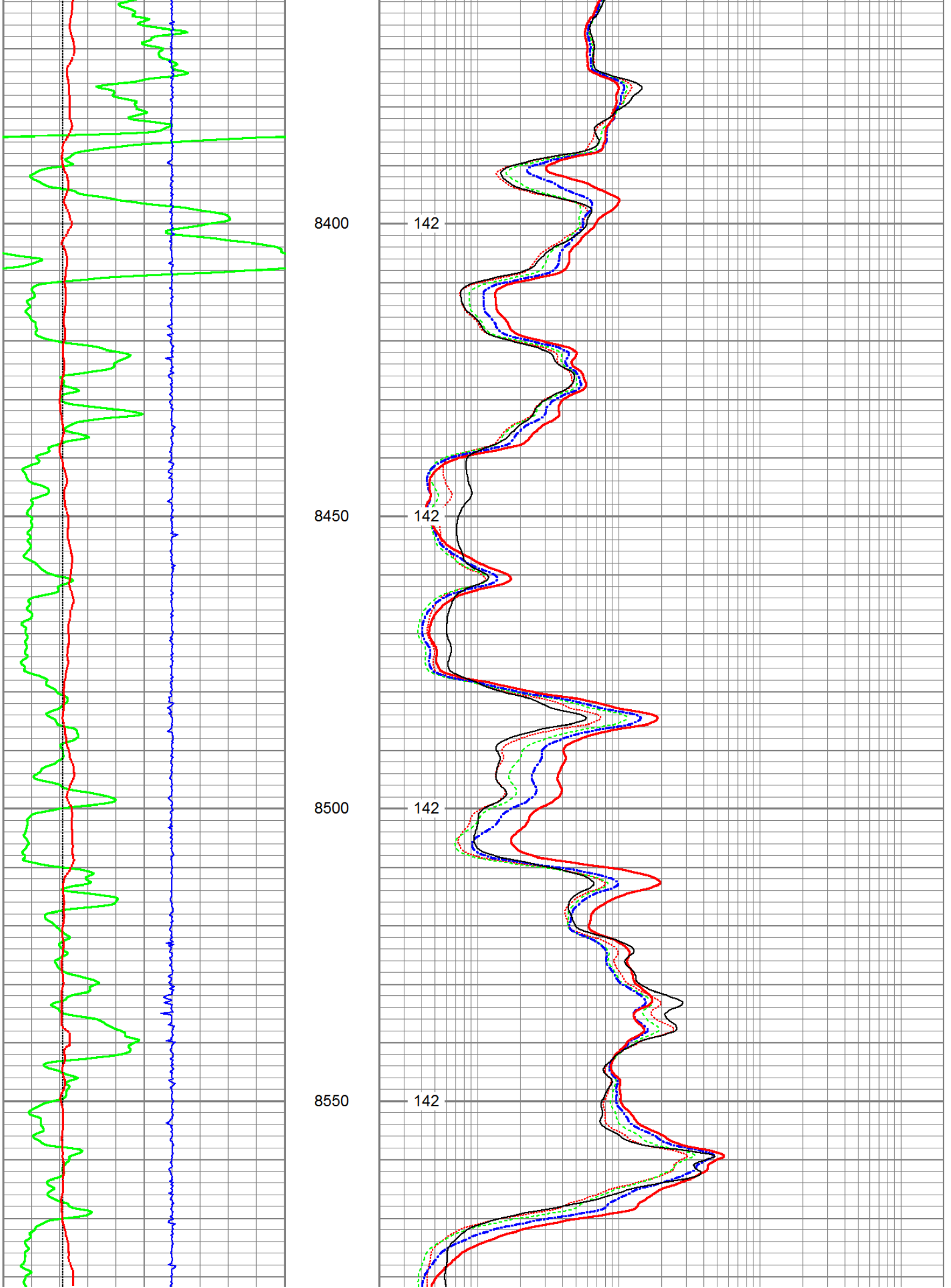
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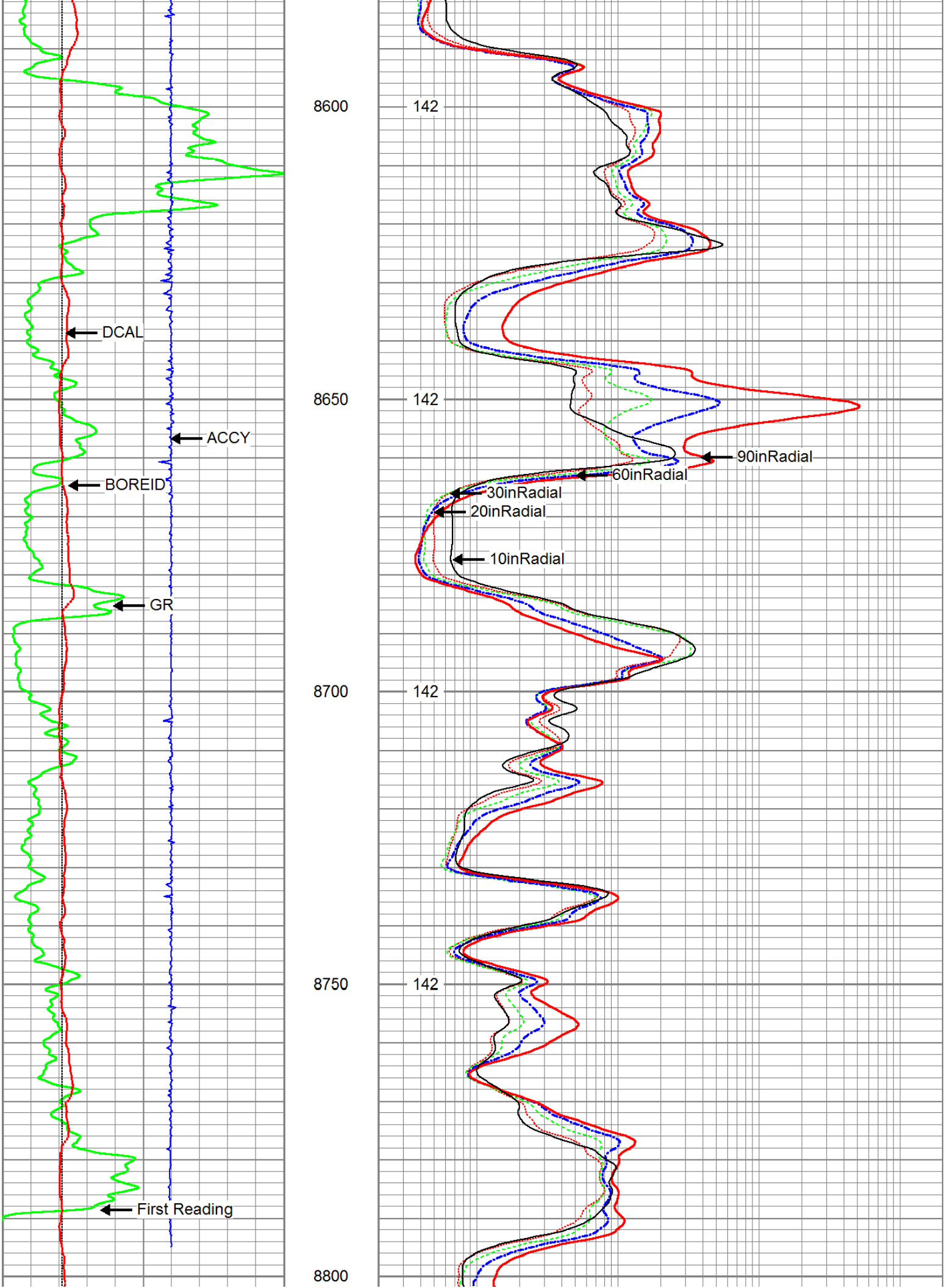
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DCAL
ACCY
BOREID
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First Reading
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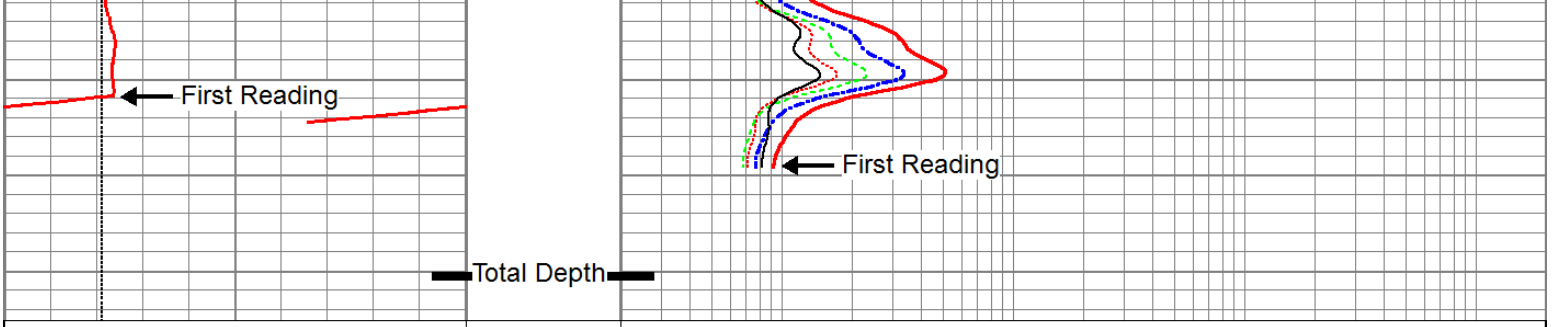
60inRadial
30inRadial
20inRadial
10inRadial



0	GR (GAPI)	150
4	BOREID (in)	14
4	DCAL (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
0.2	10inRadial (Ohm-m)	2000

GRTEMP (degF)

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MAIN PASS

Log Variables

Database:C:\Warrior\Data\sandridge_myra_3406_mem9.db
Dataset: field/well/proc1/MERGE3

Top - Bottom

BHCOR On	BHFL_TYPE WBM	BHFLRES Ohm-m 1	BHFLRESSRC MUDCELL	BHIDSRC CURVE	BOREID in 6.125	BOTTEMP degF 142
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	MATRXDEN g/cc 2.71	MUDSALIN kppm 2.5	MudWgt lb/gal 8.5	NPORSEL Limestone
PEBHC? YES	PERFS 0	RESTMPSRC INTERNAL	SO in 0.5	SRFTEMP degF 65	SZCOR On	TDEPTH ft 8867
TMPCOR On	TOOLPOS Free					

Calibration Report

Database File: sandridge_myra_3406_mem9.db
Dataset Pathname: proc1/MERGE3
Dataset Creation: Fri Mar 15 04:21:56 2013

ThruBit Induction Calibration Report

Tool Model-Serial Number: PS-PS23R

Shop Calibration Performed: Sat Jan 26 12:28:42 2013

BASELINE

	R	Expected	X	Expected
Freq 1				
A1	-457.3100	[-500.00, -400.00]	256.3010	[-500.00, 500.00]
A2	-145.4560	[-180.00, -100.00]	247.8900	[-500.00, 500.00]
A3	-25.6104	[-50.00, -10.00]	116.3500	[-500.00, 500.00]
A4	-16.1336	[-30.00, -10.00]	259.0180	[-500.00, 500.00]
A5	-13.4292	[-30.00, -10.00]	128.6200	[-500.00, 500.00]
Freq 2				
A1	-237.3430	[-280.00, -180.00]	141.2030	[-500.00, 500.00]
A2	-94.1453	[-130.00, -50.00]	135.9830	[-500.00, 500.00]
A3	-19.7894	[-50.00, -10.00]	26.5205	[-500.00, 500.00]
A4	-18.9741	[-30.00, -10.00]	82.0617	[-500.00, 500.00]
A5	-18.4405	[-30.00, -10.00]	-15.0761	[-500.00, 500.00]
Freq 3				
A1	-146.9990	[-180.00, -80.00]	37.9341	[-500.00, 500.00]
A2	-71.2932	[-130.00, -30.00]	61.1558	[-500.00, 500.00]
A3	-15.5223	[-50.00, -10.00]	-34.6275	[-500.00, 500.00]
A4	-20.1992	[-30.00, -10.00]	-34.3692	[-500.00, 500.00]
A5	-20.8153	[-30.00, -10.00]	-119.2170	[-500.00, 500.00]
Freq 4				
A1	-77.7103	[-120.00, -40.00]	-123.3250	[-500.00, 500.00]
A2	-51.5767	[-110.00, -10.00]	-41.4020	[-500.00, 500.00]
A3	-13.8820	[-50.00, -10.00]	-125.5870	[-500.00, 500.00]
A4	-23.8216	[-30.00, -10.00]	-206.6320	[-500.00, 500.00]
A5	-27.4306	[-30.00, -10.00]	-295.9180	[-500.00, 500.00]

CALIBRATION COEFFICIENTS

	R	Expected	X	Expected
Freq 1				
A1	0.9850	[0.95, 1.05]	0.0025	[-0.05, 0.05]
A2	0.9905	[0.95, 1.05]	0.0032	[-0.05, 0.05]
A3	0.9970	[0.95, 1.05]	-0.0059	[-0.05, 0.05]
A4	0.9868	[0.95, 1.05]	0.0037	[-0.05, 0.05]
A5	0.9907	[0.95, 1.05]	0.0010	[-0.05, 0.05]
Freq 2				
A1	0.9797	[0.95, 1.05]	-0.0063	[-0.05, 0.05]
A2	0.9850	[0.95, 1.05]	-0.0056	[-0.05, 0.05]
A3	0.9847	[0.95, 1.05]	-0.0084	[-0.05, 0.05]
A4	0.9821	[0.95, 1.05]	-0.0054	[-0.05, 0.05]
A5	0.9880	[0.95, 1.05]	-0.0083	[-0.05, 0.05]
Freq 3				
A1	0.9879	[0.95, 1.05]	-0.0032	[-0.05, 0.05]
A2	0.9935	[0.95, 1.05]	-0.0025	[-0.05, 0.05]
A3	0.9934	[0.95, 1.05]	-0.0054	[-0.05, 0.05]
A4	0.9886	[0.95, 1.05]	-0.0027	[-0.05, 0.05]
A5	0.9941	[0.95, 1.05]	-0.0049	[-0.05, 0.05]
Freq 4				
A1	0.9824	[0.95, 1.05]	-0.0055	[-0.05, 0.05]
A2	0.9877	[0.95, 1.05]	-0.0052	[-0.05, 0.05]
A3	0.9897	[0.95, 1.05]	-0.0102	[-0.05, 0.05]
A4	0.9827	[0.95, 1.05]	-0.0056	[-0.05, 0.05]
A5	1.0007	[0.95, 1.05]	-0.0105	[-0.05, 0.05]

Temperature 34.2699 degC

Tool Model-Serial Number: PS-PS52D

Source Number:

Shop Calibration Performed: Sat Feb 16 15:13:42 2013

REFERENCE

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

READINGS

Outputs	Counts	Units	Expected
SS1 Background	135.59	cps	[130.00, 170.00]
LS1 Background	133.80	cps	[130.00, 170.00]
LS4 Background	28.88	cps	[27.00, 35.00]
SS1 Aluminium	4692.63	cps	[4500.00, 5500.00]
LS1 Aluminium	848.79	cps	[750.00, 950.00]
LS4 Aluminium	959.31	cps	[843.00, 1068.00]
SS1 Magnesium	7807.87	cps	[7000.00, 9000.00]
LS1 Magnesium	5610.59	cps	[5250.00, 6250.00]
LS1 Al + Fe	733.04	cps	[650.00, 800.00]
LS4 Al + Fe	436.03	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	4.993		[3.510, 6.170]
PEF B Factor	-0.543		[-0.700, -0.410]

Caliper Shop Calibration performed: Sat Feb 16 15:13:42 2013

RESULTS

Reference	Reading	Units
12.00	1894.46	in
9.00	2059.77	in
6.00	2208.49	in

DENSITY PRE-SURVEY CHECK Performed: Thu Mar 07 13:31:05 2013

Outputs	Counts	Units	Expected
SS1 Background	136.03	cps	[131.52, 139.66]
LS1 Background	135.84	cps	[129.78, 137.81]
LS4 Background	28.14	cps	[27.14, 30.61]

CALIPER PRE-SURVEY CHECK Performed: Thu Mar 07 13:24:34 2013

Reference	Readings	Units	Expected
6.00	5.93	in	[5.80, 6.20]

Compensated Neutron Calibration Report

Tool Model-Serial Number:	PS-PS35N
Source Number:	
Calibration Tank Temperature:	59.4 degF
Shop Calibration Performed:	Thu Feb 21 14:48:07 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	3011.8	cps	
LS Counts	97.6	cps	
Tank Ratio Ref	30.9580	SS/LS	
Tank Ratio	30.0792	SS/LS	
Tank Ratio Gain	1.0292		[0.85, 1.15]

ALUMINUM SLEEVE REFERENCE

Outputs	Measured	Units	Expected
SS Counts	35540.7	cps	
LS Counts	3226.6	cps	
Al Ratio Ref	10.797	SS/LS	
Al Ratio	11.054	SS/LS	
Al Ratio Gain	0.95		[0.90, 1.10]
Sleeve Porosity	14.46	pu	

PRE-SURVEY BACKGROUND CHECK Performed: Wed Mar 13 14:25:48 2013

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

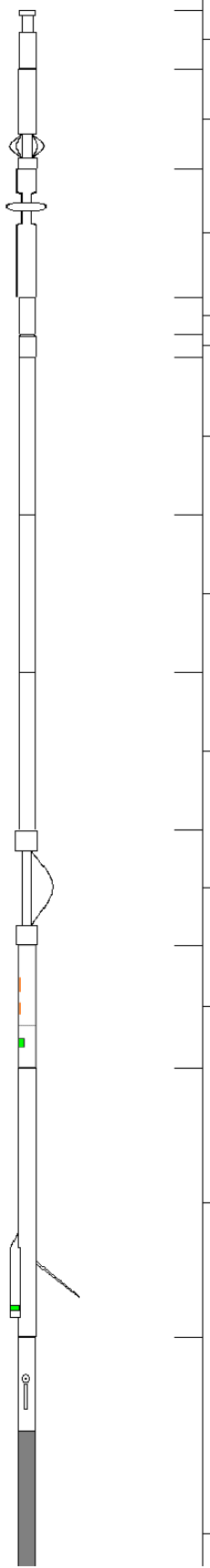
Gamma Ray Calibration Report

Tool Model-Serial Number:	PS-PS09T	
Performed:	Thu Feb 21 08:09:51 2013	
Calibrator Value:	162.7	GAPI
Background Reading:	62.4	cps
Calibrator Reading:	435.2	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 (PS30B) Thrubit Battery	6.13	2.13	38.20
TBBAT2	47.29		TBBAT2-A (PS29B) Thrubit Battery	6.13	2.13	40.00
TMG	41.16		TMG-PS (PS09T) 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 (PS35N) 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		TBI-PS (PS23R) Thrubit Induction	15.29	2.13	94.00
A4_P	8.35					

A5_P	6.60					

Dataset:	sandridge_myra_3406_mem9.db: field/well/proc1/MERGE3
Total Length:	66.92 ft
Total Weight:	560.15 lb
O.D.	2.38 in

ThruBit
A Schlumberger Company

Company	SANDRIDGE ENERGY
Well	MYRA 3406 1-8H
Field	EASTHAM
County	HARPER
State	KANSAS

ThruBit
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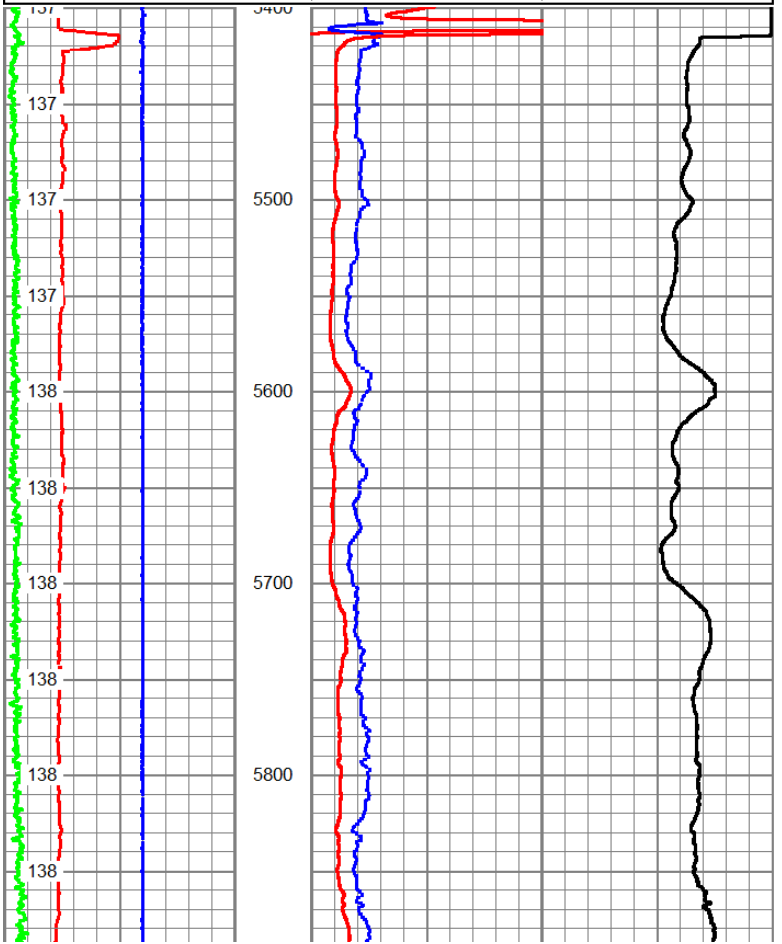
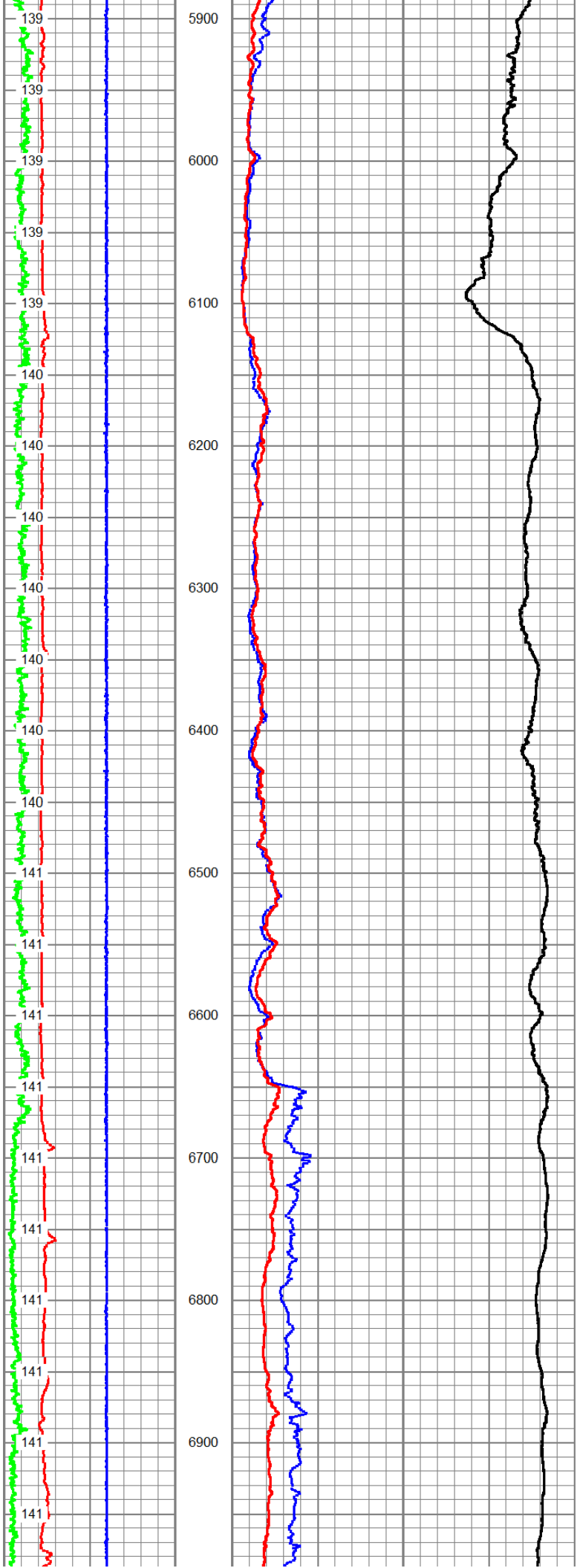
MAIN PASS

Database File:	sandridge_myra_3406_mem9.db
Dataset Pathname:	proc1/MERGE3
Presentation Format:	6_1r_chk
Dataset Creation:	Fri Mar 15 04:21:56 2013
Charted by:	Depth in Feet scaled 1:1200

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

	20in 2ft Res	
50	(Ohm-m)	500
	90in 2ft Res	
50	(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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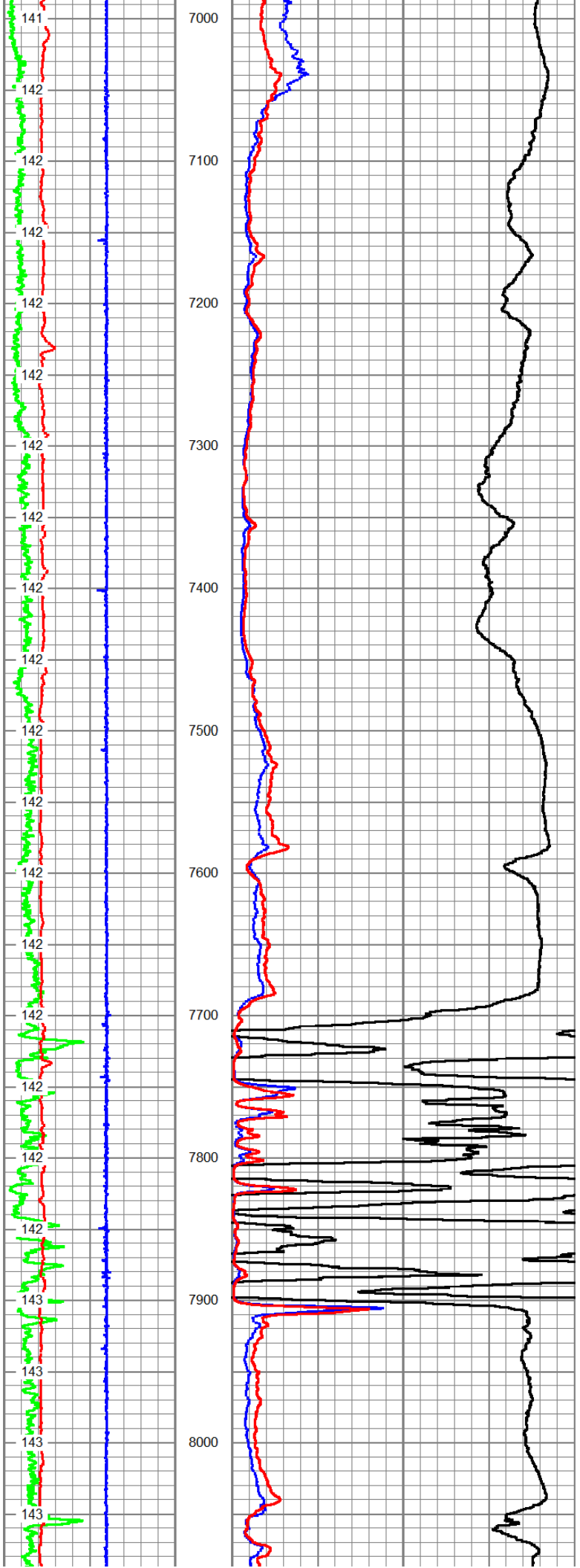
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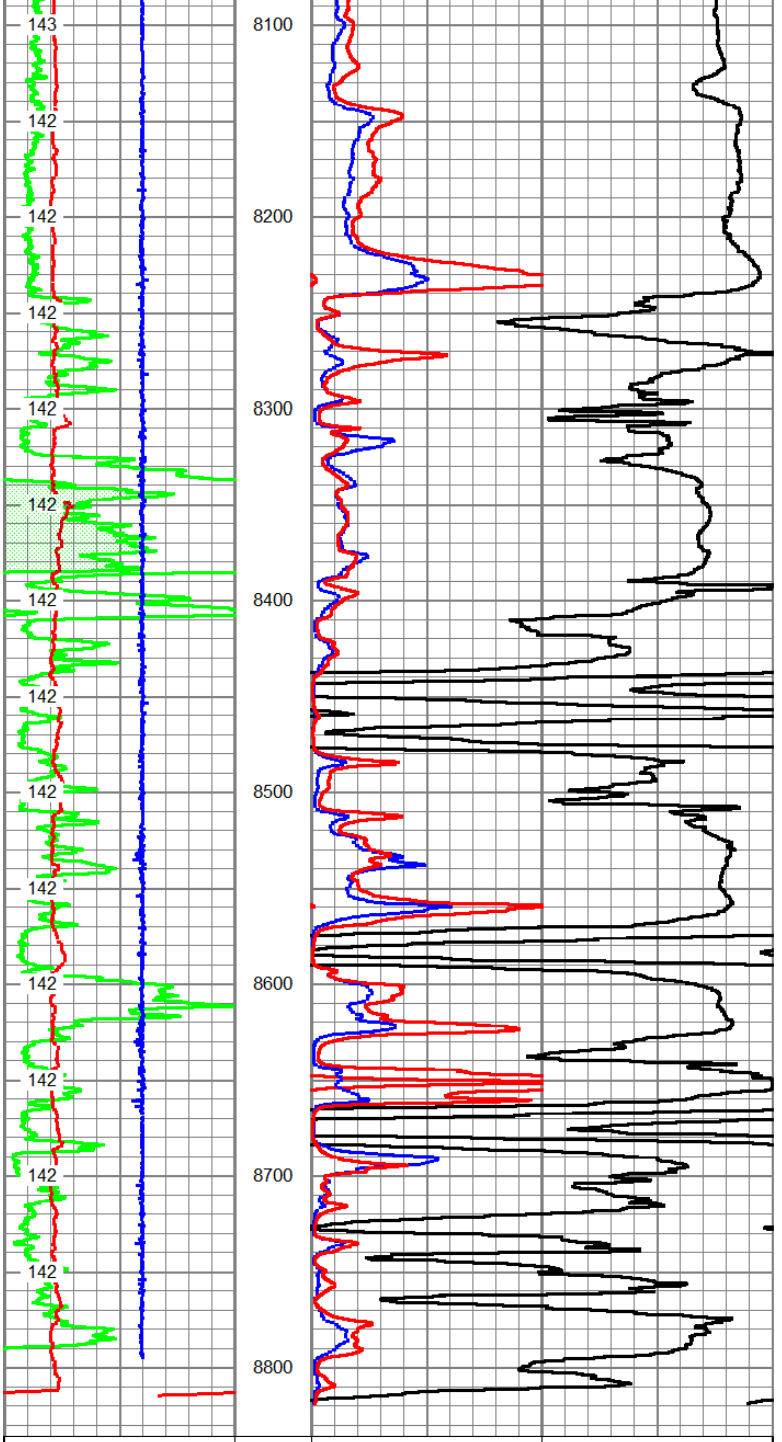

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4	DCAL (in)	14
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GRTEMP (degF)		

	20in 2ft Res	
50	(Ohm-m)	500
	90in 2ft Res	
50	(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