Sperry Drilling Services

1 : 200

MWD

EWR Electromagnetic Wave Resistivity
DGR Dual Gamma Ray
SLD Stabilized Litho-Density
CNP Compensated Neutron Porosity
BAT Bi-Modal Acoustic

Country	: **Australia**
Field	: **Exploration**
Location	: **Lat: 38° 7' 47.91" South** **Long: 148° 9' 8.44" East**
Well	: **Fur Seal-1**
Company	: **Apache Energy Ltd**
Rig	: **Ocean Patriot**

LOCATION

Latitude : **38° 7' 47.91" South**
Longitude : **148° 9' 8.44" East**
UTM Easting = **600,995.50 m**
UTM Northing = **5,779,136.70 m**

Company : **Apache Energy Ltd**
Rig : **Ocean Patriot**
Well : **Fur Seal-1**
Field : **Exploration**
Country : **Australia**
DOE Number :

Other Services

Permanent Datum : **AHD** Elevation : **0.00 m**
Log Measured From : **Drill Floor** **21.50 m** Above Permanent Datum
Drilling Measured From : **Drill Floor**

MD LOG

Elev. KB
DF **21.50 m**
GL
WD **56.62 m**

Depth Logged : **111.70 m** To **2,610.00 m** Unit No. : **182** Job No. : : **AU-FE-0003890148**
Date Logged : **25-Oct-05** To **01-Nov-05** Plot Type : **Final**
Total Depth MD : **2,610.00 m** TVD: **2,609.73 m** Plot Date : **18-May-06**
Spud Date : **24-Oct-05**

Borehole Record (MD)

Run No.	Size	From	To
2	311.000 mm	111.70 m	824.00 m
3	216.000 mm	824.00 m	2610.00 m

Casing Record (MD)

Run No.	Size	Weight	From	To
	762.000 mm	307.00 kg/m	80.10 m	111.00 m
	340.000 mm	101.20 kg/m	80.10 m	817.60 m

Borehole Record (MD)

Run No.	Size	From	To

WELL INFORMATION

MWD Run Number	100	200			
Date run completed	26-Oct-05	01-Nov-05			
Rig Bit Number	2	3			
Bit Size (mm)	311	216			
Tool Nominal OD (mm)	203	171			
Log Start Depth (MD, m)	111.7	824.0			
Log End Depth (MD, m)	824.0	2,610			
Drill or Wipe	Drilling	Drilling			
Drill/Wipe Start Date and Time	25-Oct-05 04:40	28-Oct-05 05:10			
Drill/Wipe End Date and Time	25-Oct-05 23:59	01-Nov-05 01:45			
Min Inc (deg) @ Depth (MD, m)	0.19 @ 316.46	0.47 @ 2,030.20			
Max Inc (deg) @ Depth (MD, m)	1.36 @ 804.24	1.41 @ 2,517.63			
Bit TFA(in2) / Bit Type	1.74 / Security FS2563	1.11 / Smith S73VPX			
Flow Rate (gpm)	1,060	600			
Max AV (mpm) / CV (mpm) @ MWD	N/A / N/A	181.5 / 137.2			
Fluid Type	Seawater/PHG	KCl/PHPA			
Density (sg) / Viscosity (spqt)	1.06 / N/A	1.22 / 67.0			
Filtrate CL (ppm)	N/A	47,000			
pH / Fluid Loss (mptm)	N/A / N/A	8.9 / 4.8			
PV (cp) / YP (lhf2)	N/A / N/A	26 / 18.5			
% Solids / % Sand	N/A / N/A	14 / 0.6			
% Oil / Oil:Water Ratio	N/A / N/A	N/A / 0:91			
Rm @ Measured Temp (degC)	N/A @ N/A	0.11 @ 24.0			
Rmf @ Measured Temp (degC)	N/A @ N/A	0.09 @ 22.0			
Rmc @ Measured Temp (degC)	N/A @ N/A	0.25 @ 24.0			
Max Tool Temp (degC) / Source	25.0 / EWR-P4	78.0 / EWR-P4			
Rm @ Max Tool Temp (degC)	N/A @ 25.0	0.05 @ 78.0			
Lead MWD Engineer	A. Oraekwuotu	A.Oraekwuotu/A.Rule			
Customer Representative	J. Herriot	J. Herriot			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	HCIM	HCIM			
Software Version	68.18	68.18			
Sub Serial Number	198838	195232			
Insert Serial Number	074608	209729			
Logging String Serial Number	90086009H1GVR8	90086708H1RGV6			
Date and Time Initialized	25-Oct-05 03:08	28-Oct-05 12:54			
Date and Time Read	26-Oct-05 05:54:00	01-Nov-05 14:23:00			

Directional Sensor Information

Tool Type	PM	PM			
Distance From Bit (m)	18.36	32.73			
Software Version	N/A	N/A			
Sub Serial Number	124777	178482			
Sonde Serial Number	022873	126995			
Sensor ID Number	022873	126995			
Survey String Serial Number	90086411M8	90082559			
Toolface Offset (deg)	N/A	N/A			

Gamma Ray Sensor Information

Tool Type	DGR	DGR			
Distance From Bit (m)	14.98	11.51			
Recorded Sample Period (sec)	10	10			
Software Version	N/A	N/A			
Sub Serial Number	210651	64636			
Insert/Sonde Serial Number	184694	53520			

Resistivity Sensor Information

Tool Type	EWR-P4	EWR-P4			
Distance From Bit (m)	11.95	13.72			
Recorded Sample Period (sec)	12	12			
Software Version	1.38	1.38			
Sub Serial Number	122988	139216			
Receiver Insert Serial Number	123048	165129			
Transmitter Insert Serial Number	78411	110610			
Receiver Orientation	Down	Down			

Neutron Sensor Information

Tool Type		CNP			
Distance From Bit (m)		23.21			
Recorded Sample Period (sec)		10			
Sub Serial Number		186641			
Insert Serial Number		087644			
Source Serial Number		4070NK			
Source Factor		1.1400			
Pin Orientation		Up			

Density Sensor Information

Tool Type		SLD			
Distance From Bit (m)		20.40			
Recorded Sample Period (sec)		14			
Software Version		11.00			
Sub Serial Number		058245			
Insert Serial Number		071411			
Sensor ID Number		33			
Source Serial Number		2570			
Pin Orientation		Up			
Stabilizer Blade O.D. (mm)		209.55			
DPA Offset		N/A			

Sonic Sensor Information

Tool Type	BAT	BAT			

Distance From Bit (m)	26.13	28.03			
Recorded Sample Period (sec)	15	14			
Software Version	4.00	4.00			
Sub Serial Number	144401	1150515			
Receiver Insert Serial Number	136555	195076			
Transmitter Insert Serial Number	143996	191710			

REMARKS

1. All depths are bit depths and referenced to the drillers pipe tally unless otherwise noted.

2. AV/CV is calculated at the MWD collar using the Power Law for water based muds and is in m/min.

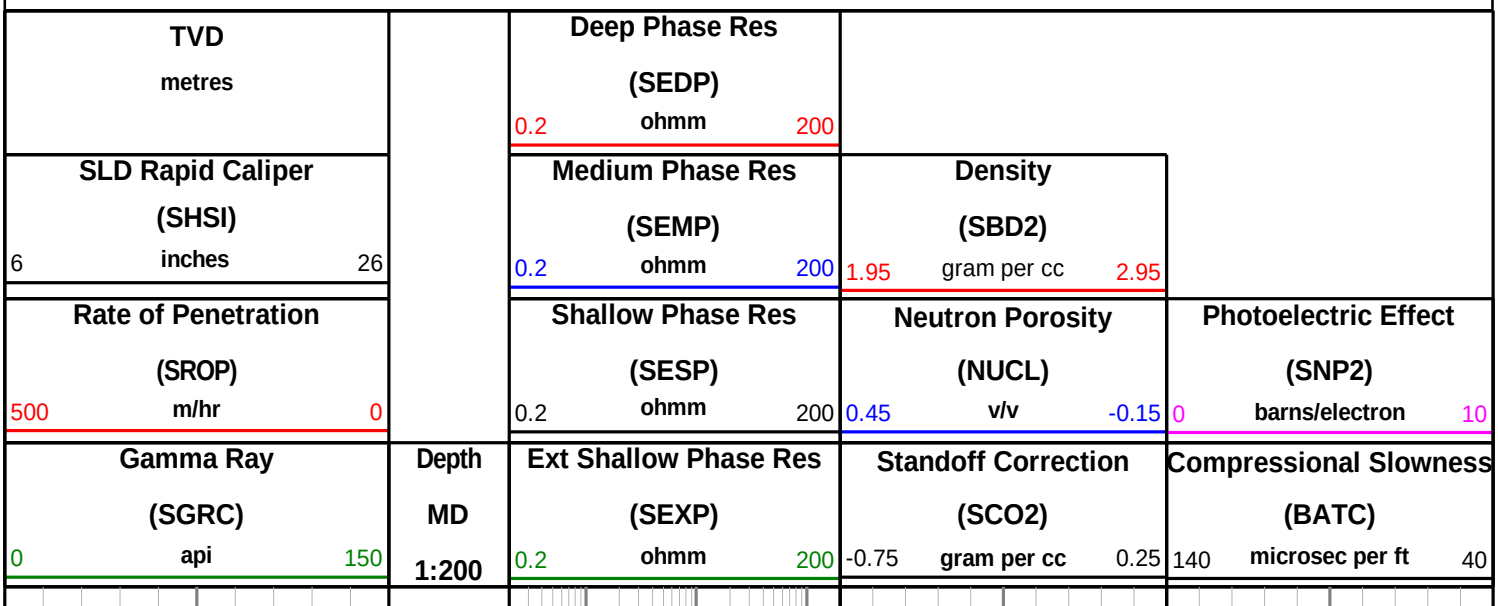
3. Curve mnemonics are :
   - SROP - Smoothed Rate of Penetration, m/hr
   - SGRC - Smoothed Dual Gamma Ray Combined, api
   - SHSI - Smoothed Hole Size Indicator from Density Tool, in
   - SEXP - Smoothed Extra Shallow Phase Shift Derived Resistivity, ohmm
   - SESP - Smoothed Shallow Phase Shift Derived Resistivity, ohmm
   - SEMP - Smoothed Medium Phase Shift Derived Resistivity, ohmm
   - SEDP - Smoothed Deep Phase Shift Derived Resistivity, ohmm
   - SBD2 - Smoothed Best Bin Bulk Density Compensated, g/cc
   - SCO2 - Smoothed Best Bin Stand-off Correction, g/cc
   - SNP2 - Smoothed Best Bin Near Photoelectric Effect, b/e
   - NUCL - Smoothed CNP Neutron Porosity, v/v
   - BATC - Bi-Modal Acoustic Compressional Slowness, us/ft

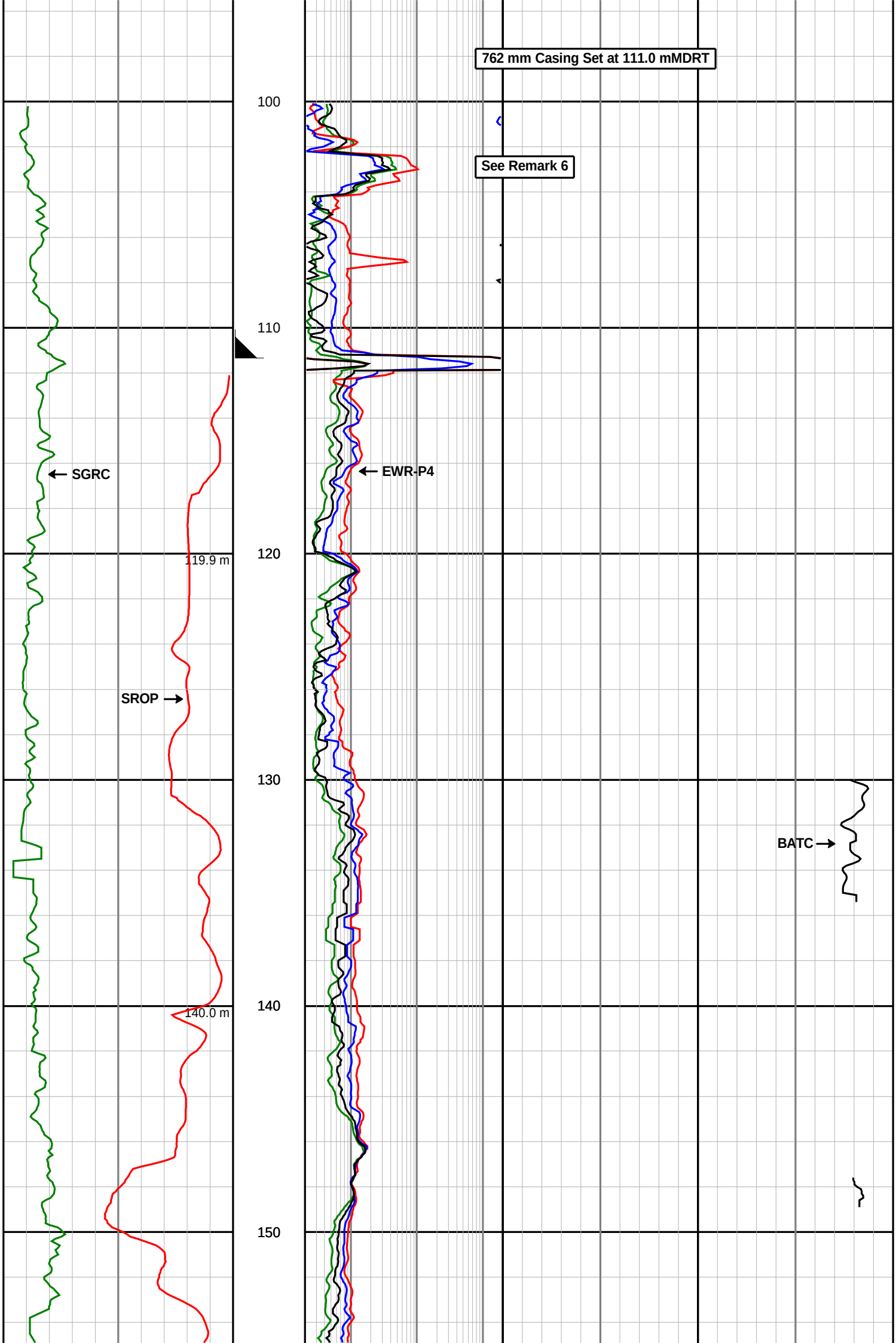
4. CNP data was processed uging the CNP-E algorithim using the following parameters and is based on a Limestone matrix:
   - MW = 1.20 - 1.22 SG
   - Formation Salinity = 24,000 ppm Cl
   - Mud Salinity = 27,000 - 47,000 ppm Cl
   - Matrix Density = 2.71 g/cc
   - Fluid Density = 1.00 g/cc

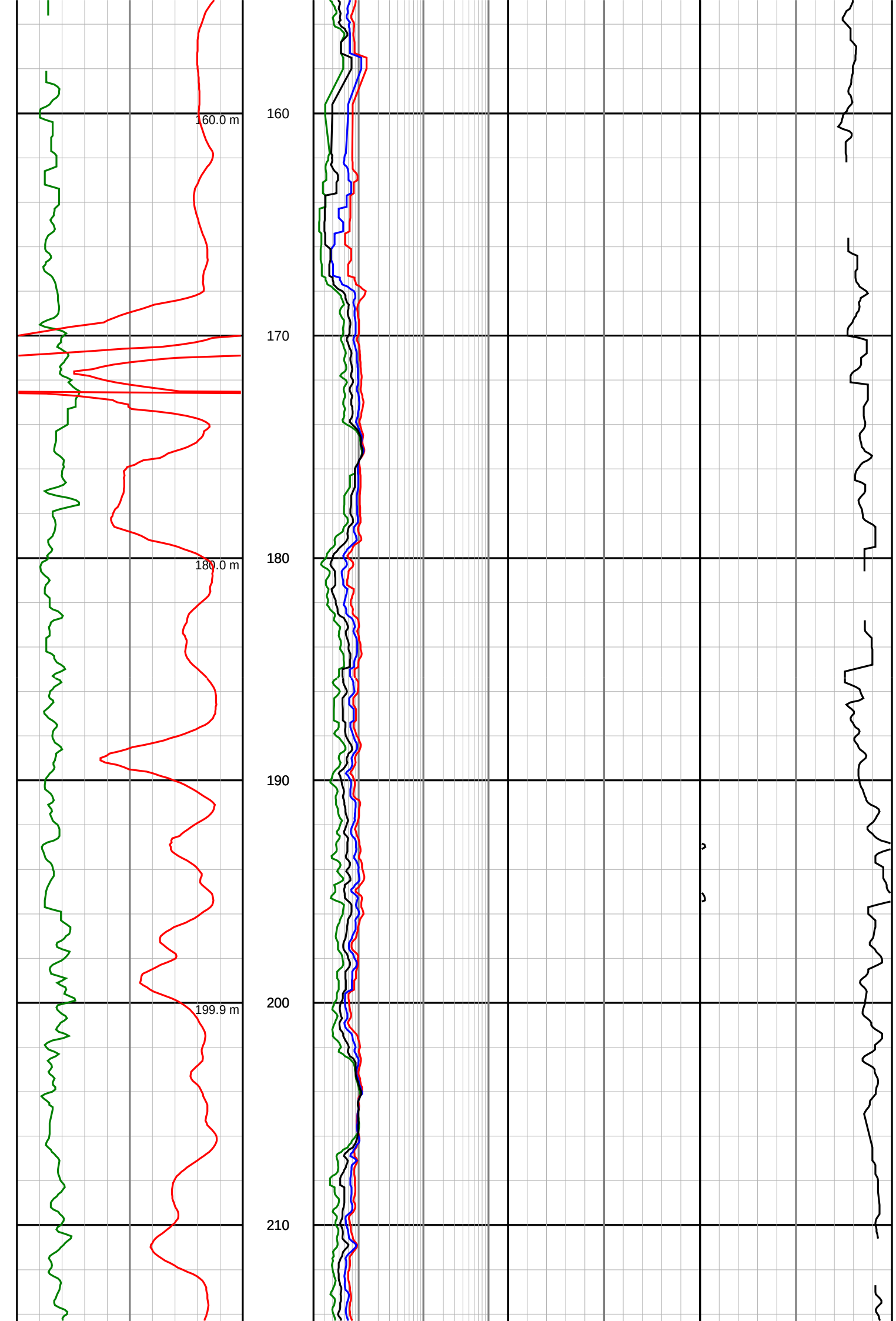
5. CNP data has been reprocessed using borehole diameterform the density tool.

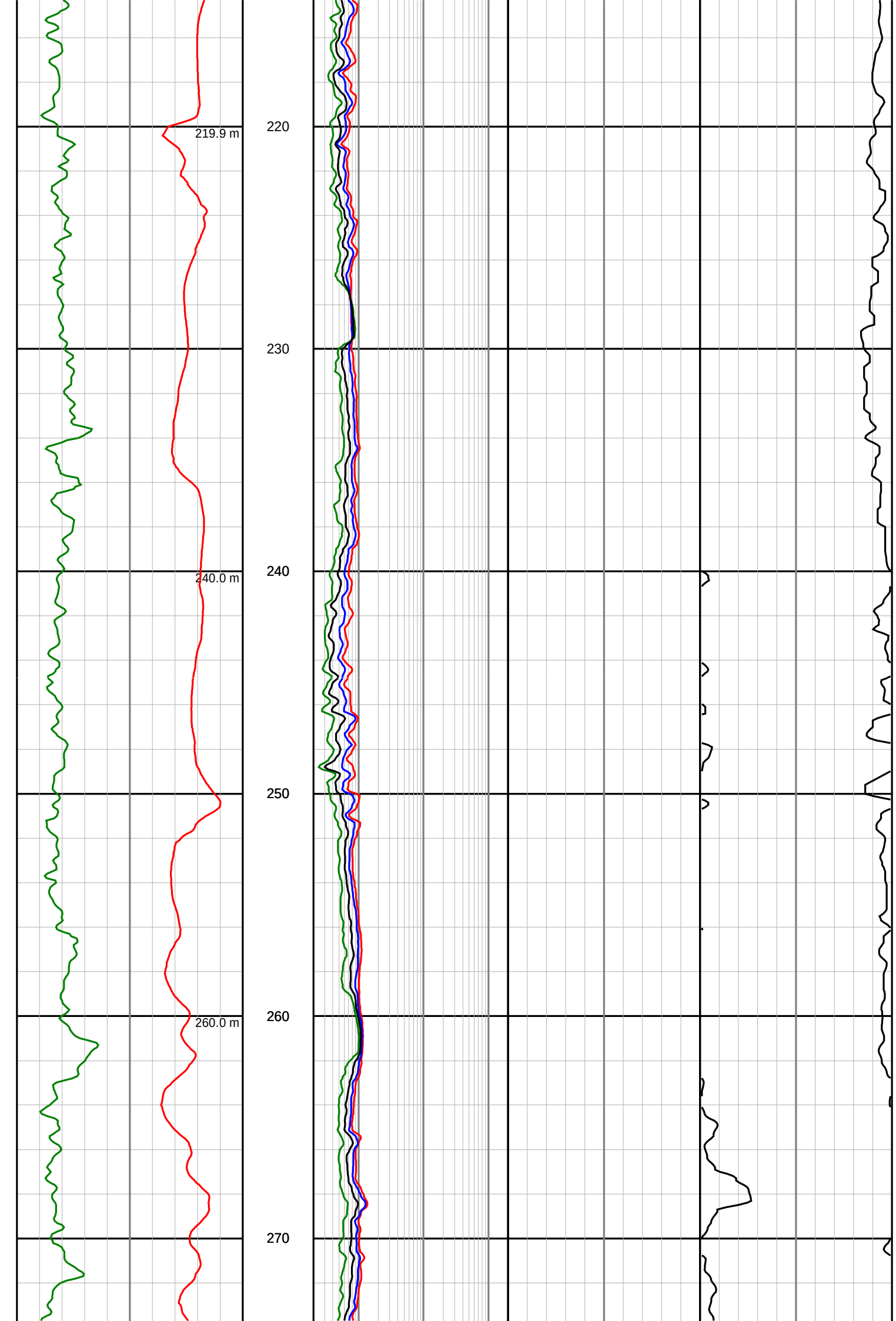
6. Data from intervals from 100.0 to 111.0 and 809.5 to 817.6 mMDRT were logged behind casing.

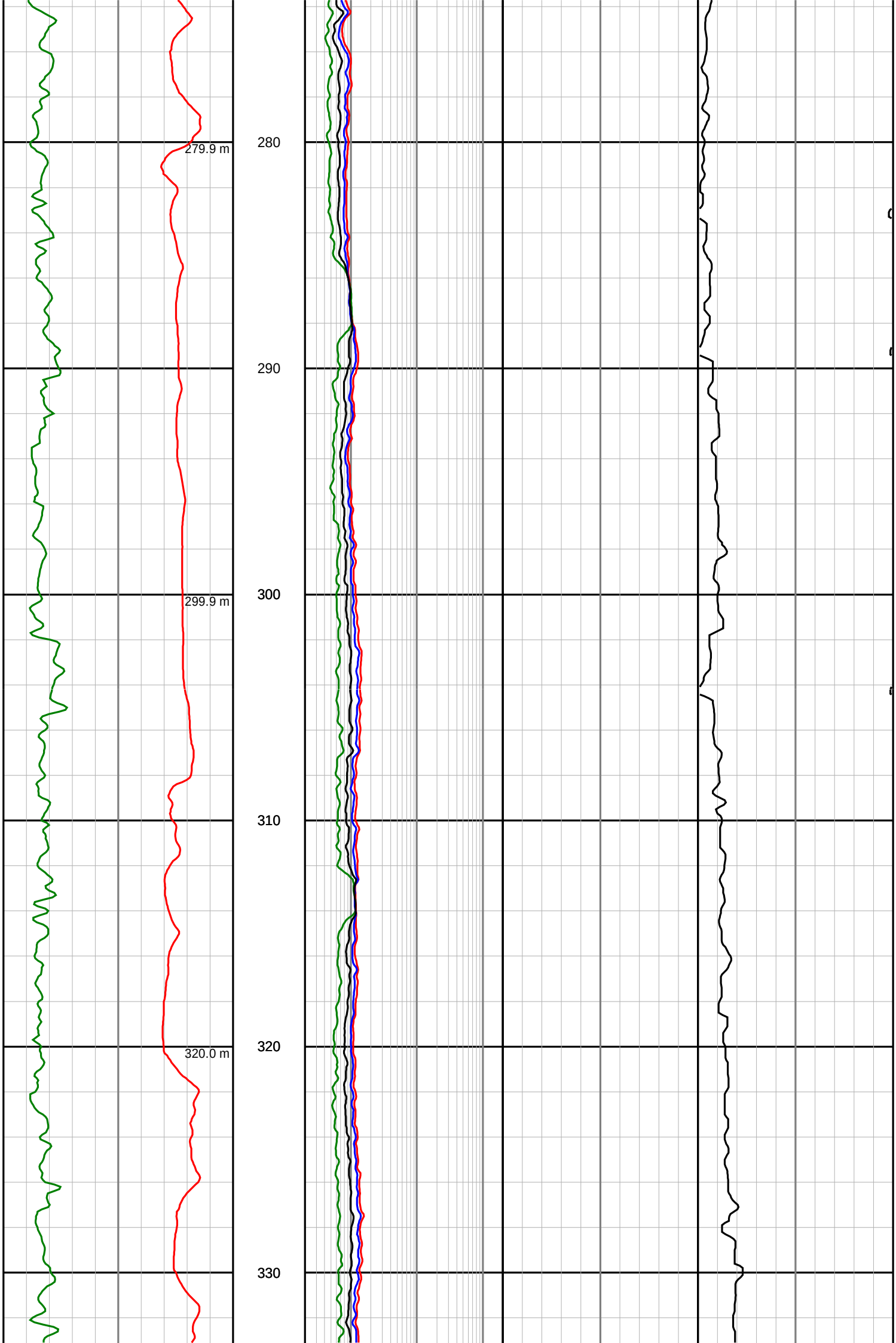
WARRANTY

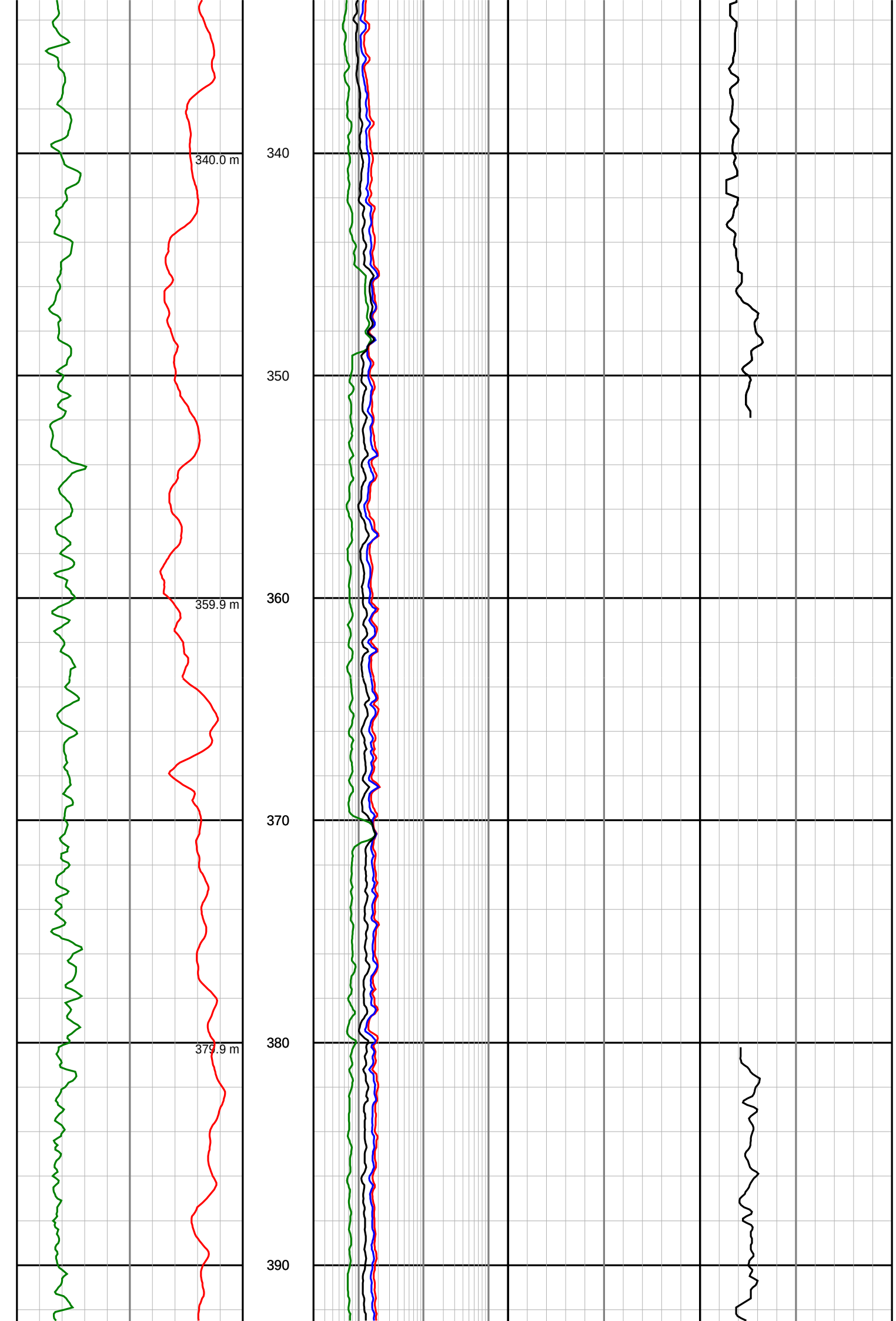


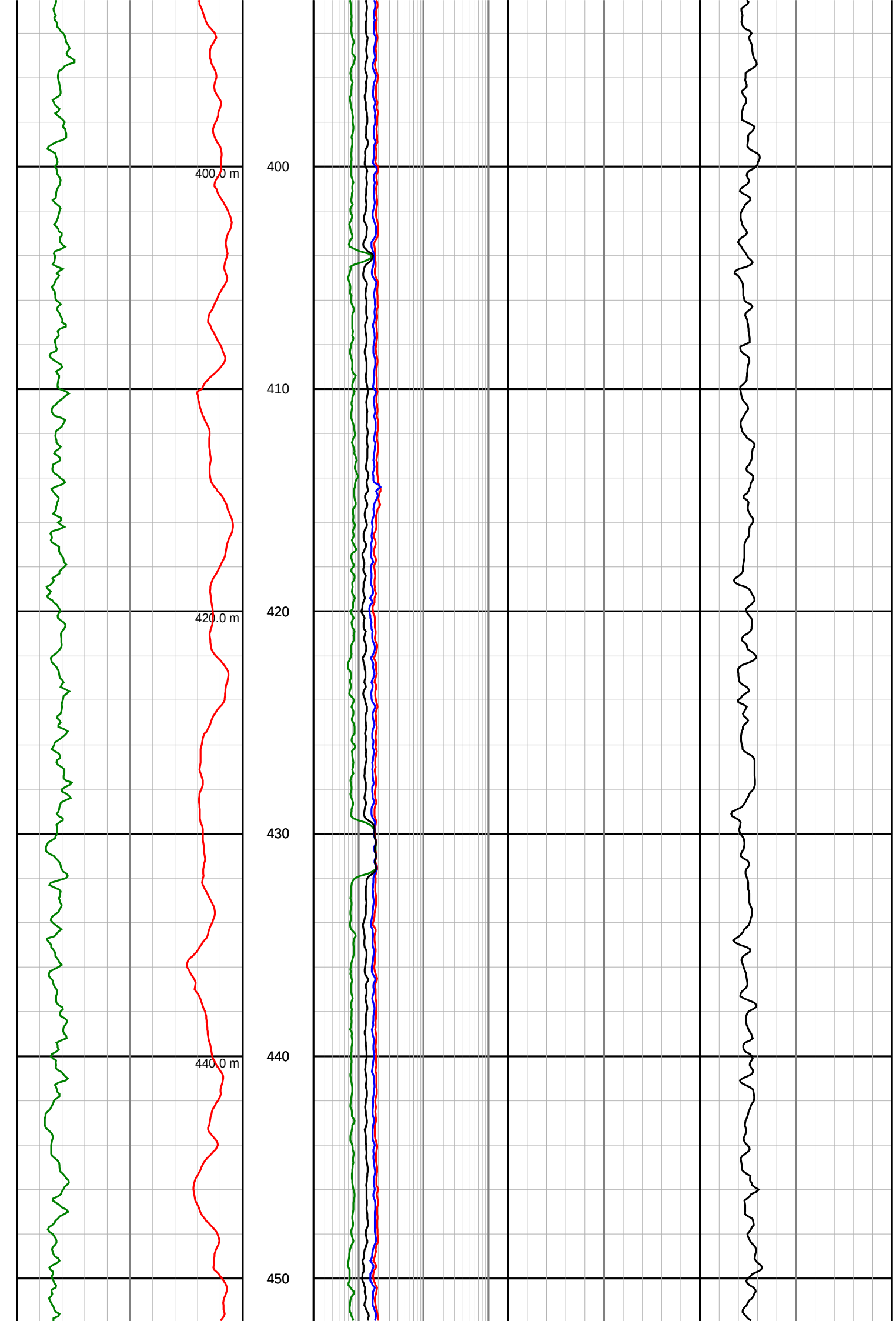

762 mm Casing Set at 111.0 mMDRT
See Remark 6
100
110
120
130
140
150
SGRC
EWR-P4
SROP
BATC
119.9 m
140.0 m

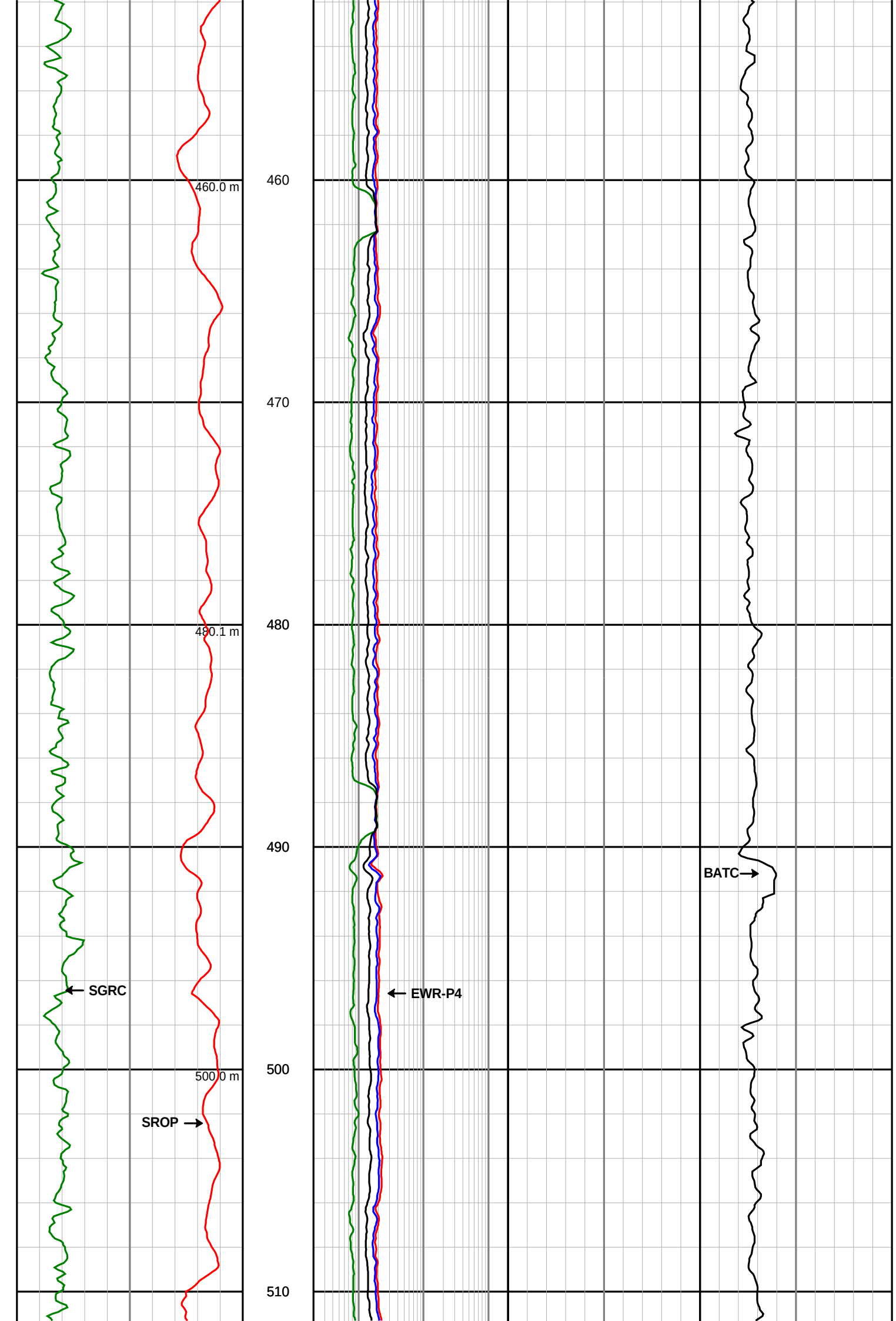

160.0 m
160
170
180.0 m
180
190
199.9 m
200
210

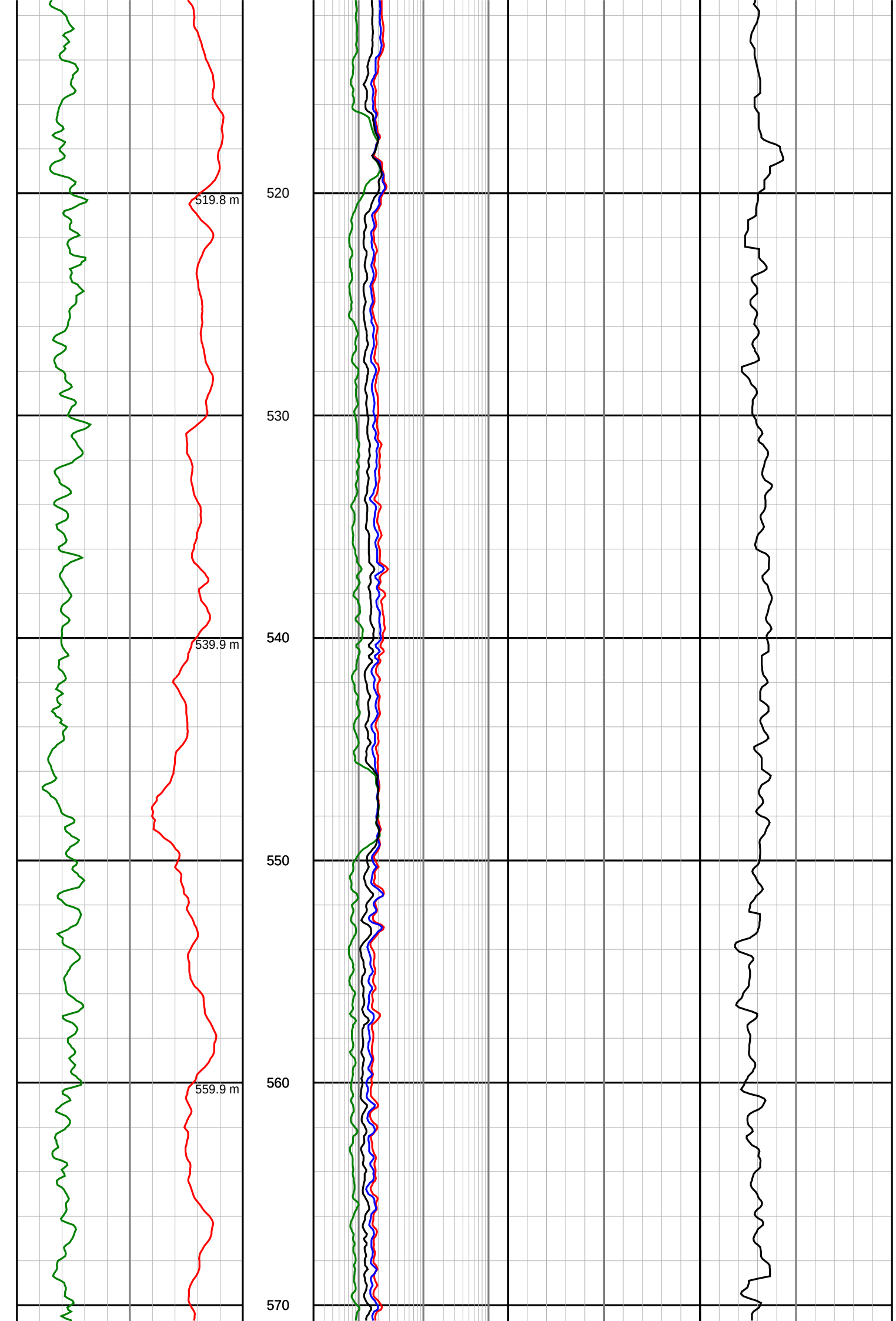

219.9 m
220
230
240.0 m
240
250
260.0 m
260
270


279.9 m
299.9 m
320.0 m
280
290
300
310
320
330


340.0 m
340
350
359.9 m
360
370
379.9 m
380
390


400.0 m
420.0 m
440.0 m
400
410
420
430
440
450


460.0 m
460
470
480.1 m
480
490
500.0 m
500
510
SGRC
SROP
EWR-P4
BATC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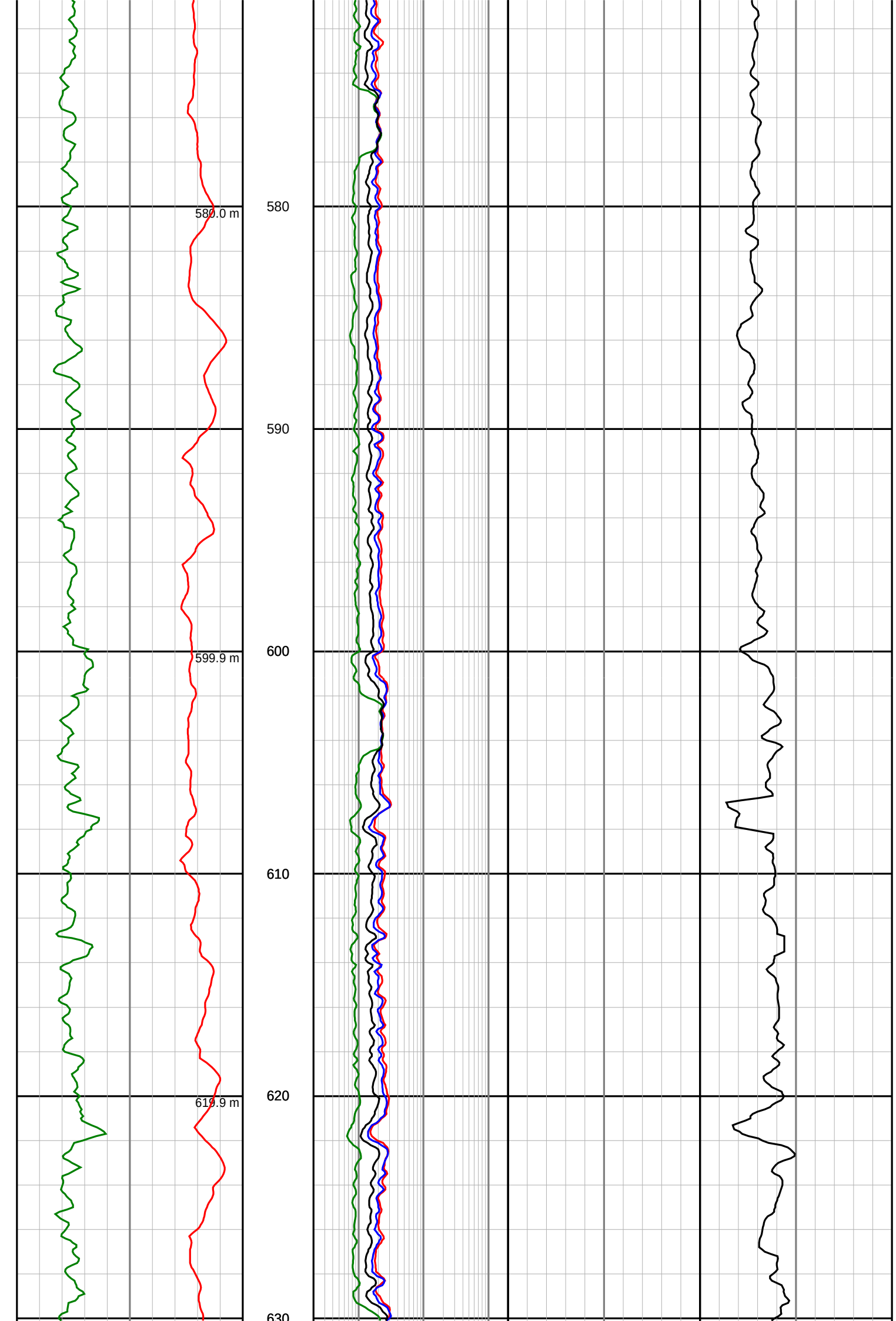
520
530
539.9 m
540
550
559.9 m
560
570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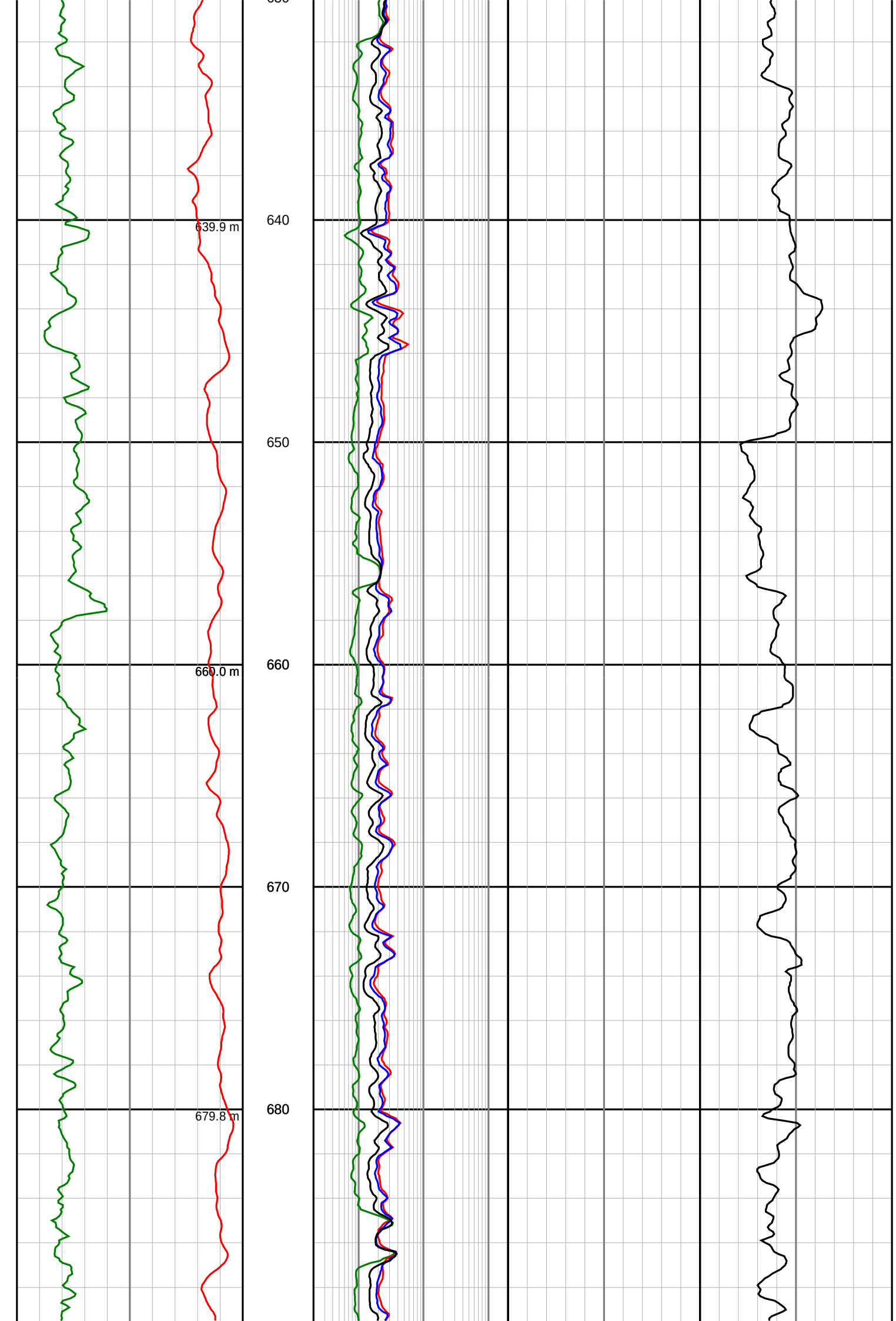
599.9 m
619.9 m
580
590
600
610
620
630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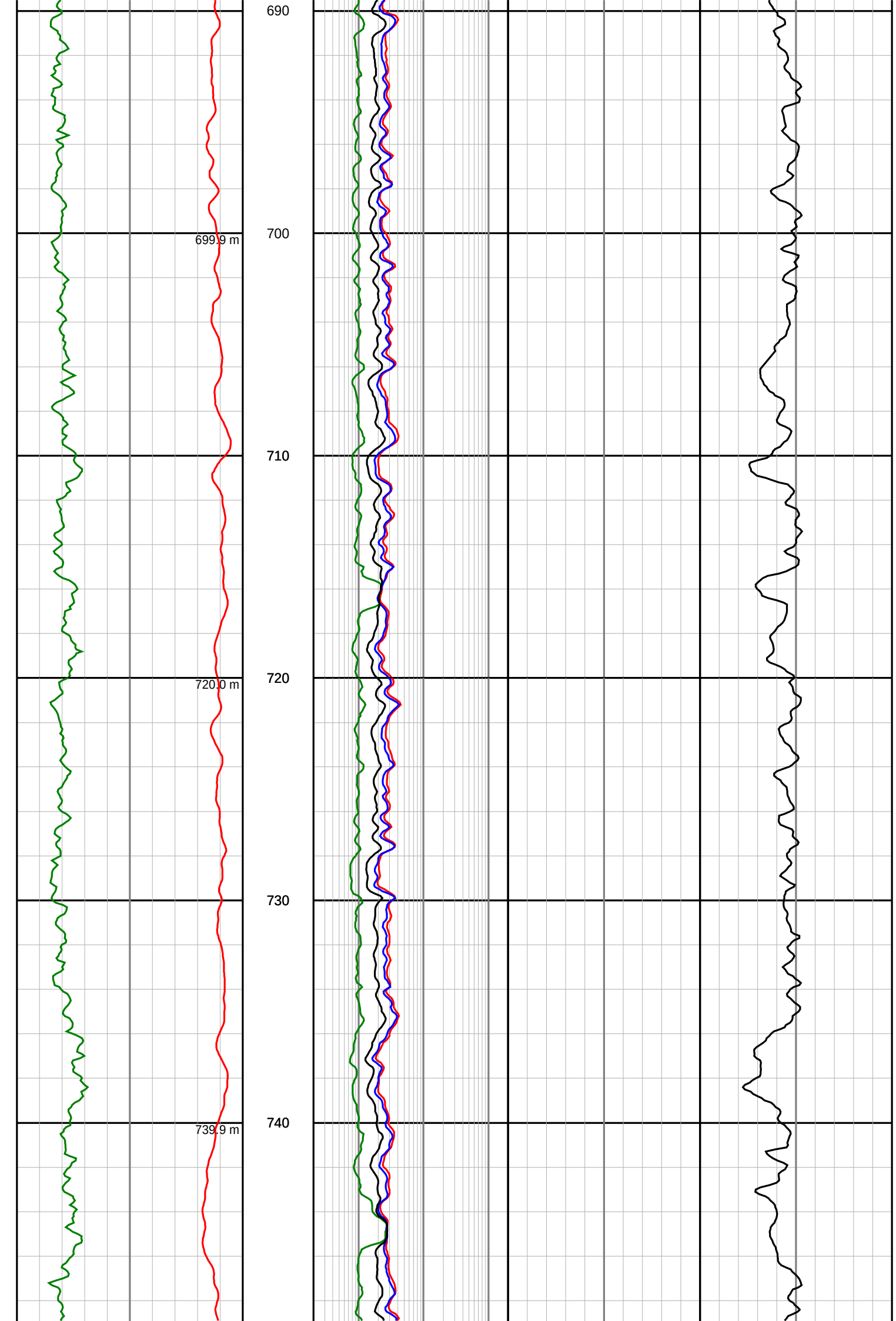
650
660.0 m
660
670
679.8 m
680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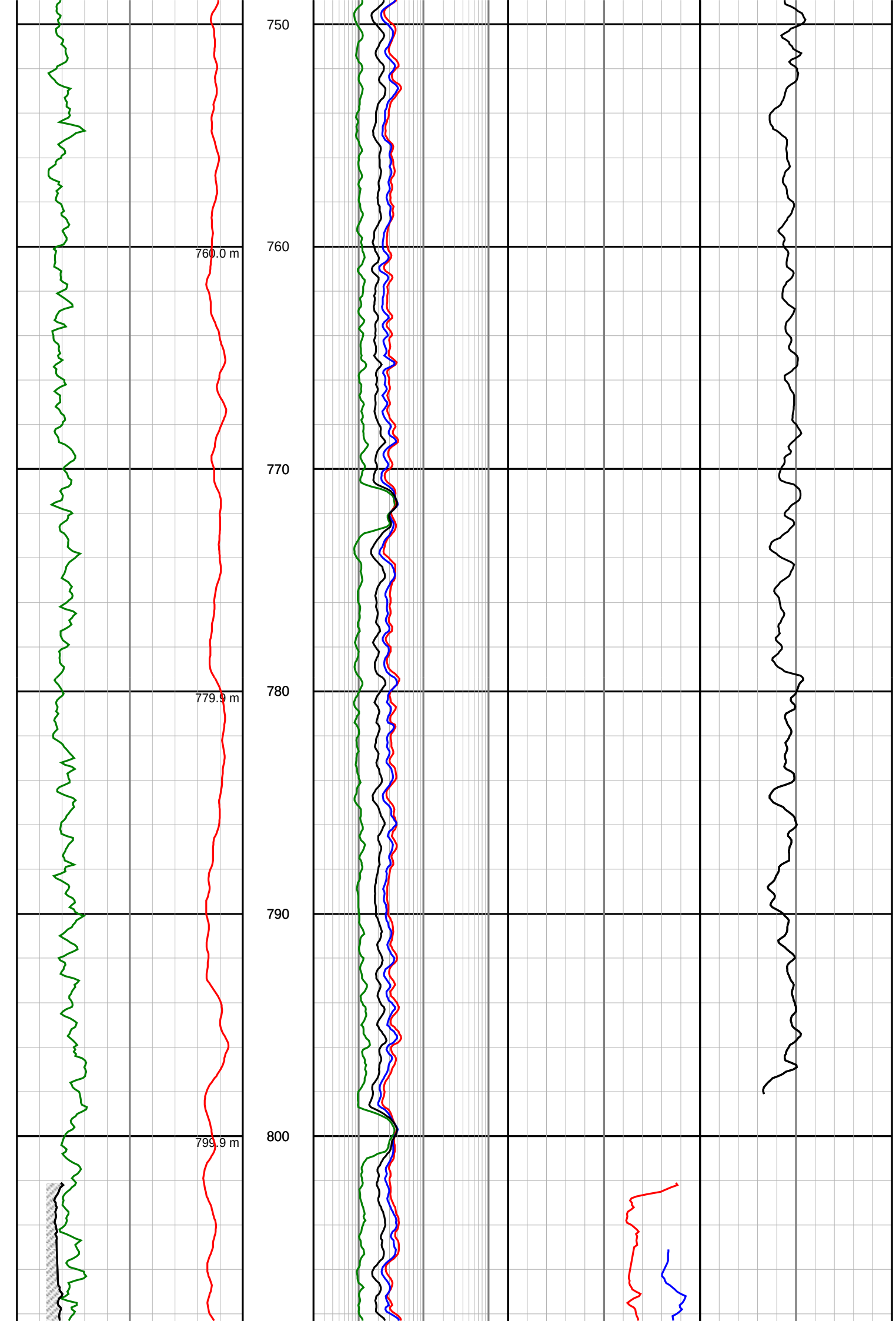
700
710
720.0 m
720
730
739.9 m
740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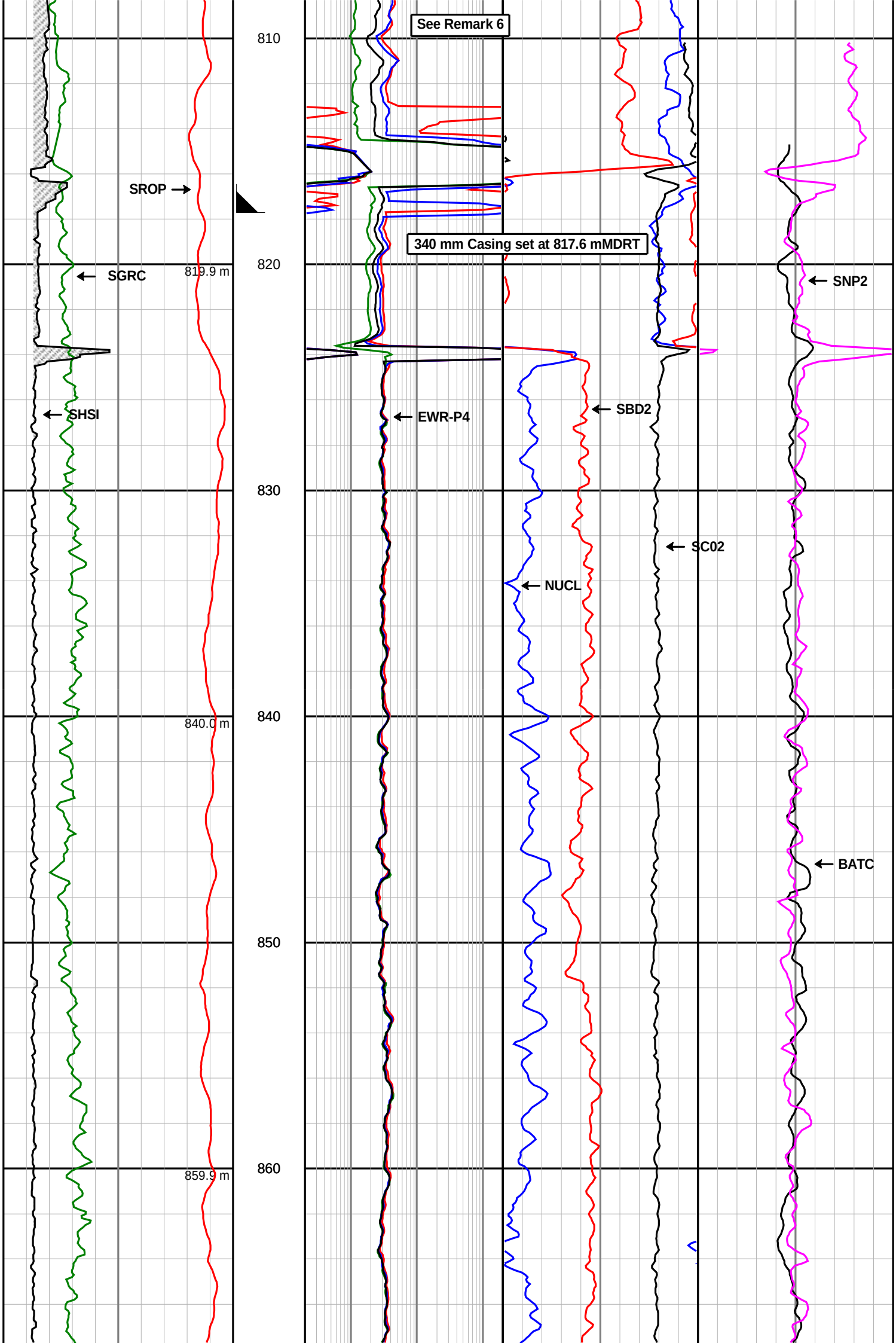
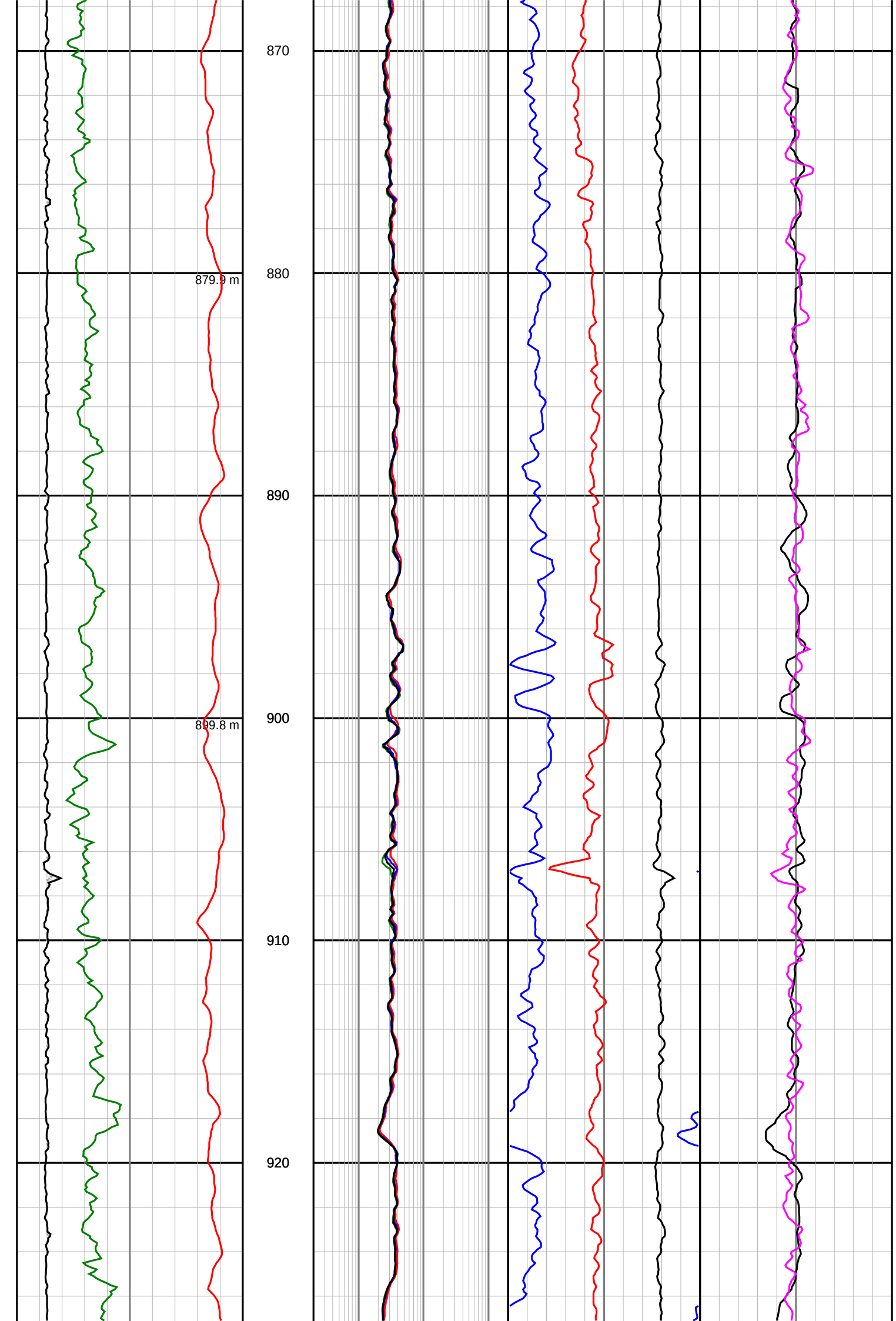
760.0 m
760
770
779.9 m
780
790
799.9 m
800


See Remark 6
340 mm Casing set at 817.6 mMDRT
SROP
SGRC
819.9 m
SHSI
EWR-P4
SBD2
SNP2
SC02
NUCL
BATC
840.0 m
859.9 m
810
820
830
840
850
860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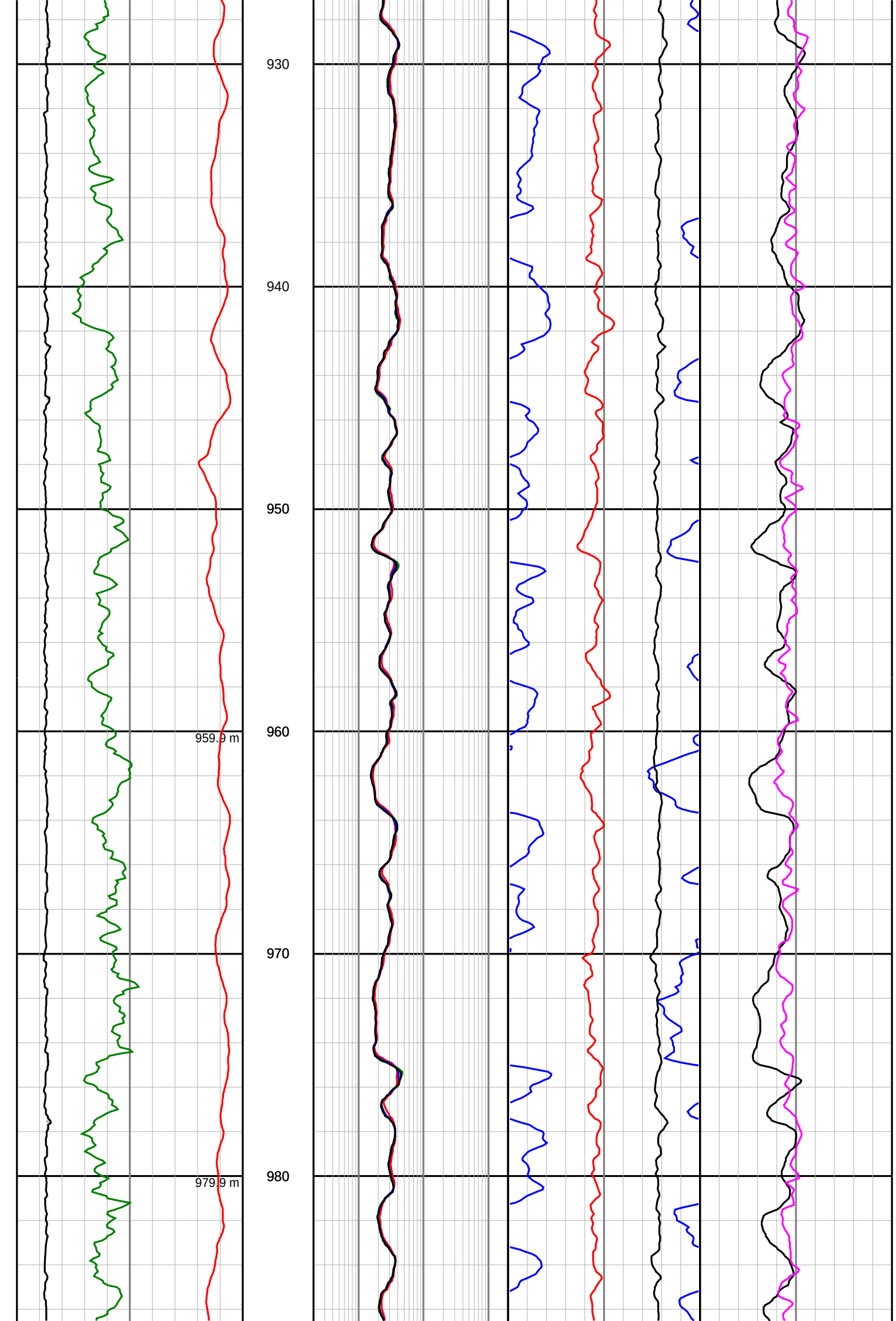
880
890
899.8 m
900
910
920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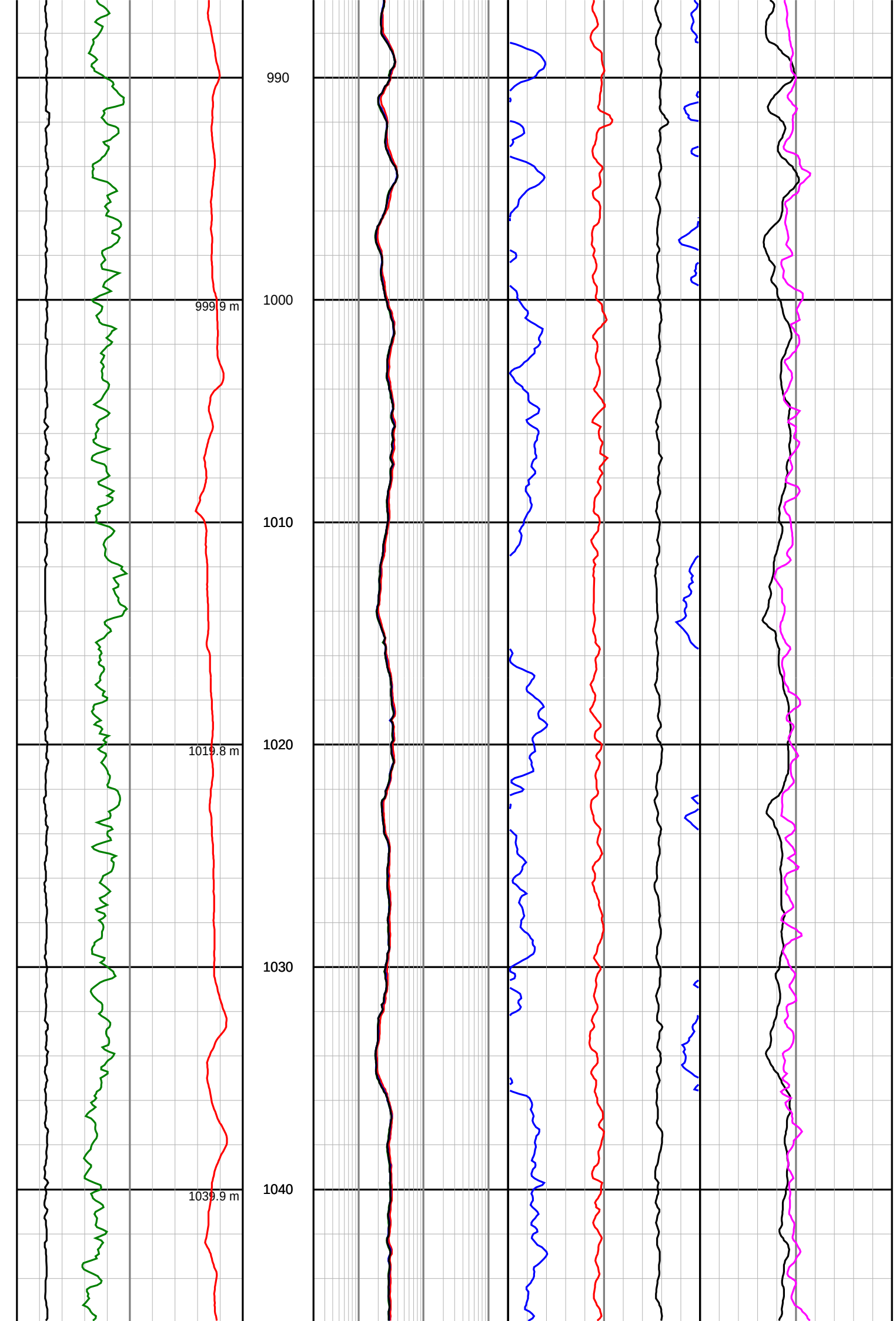
959.9 m
960
970
979.9 m
980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1010
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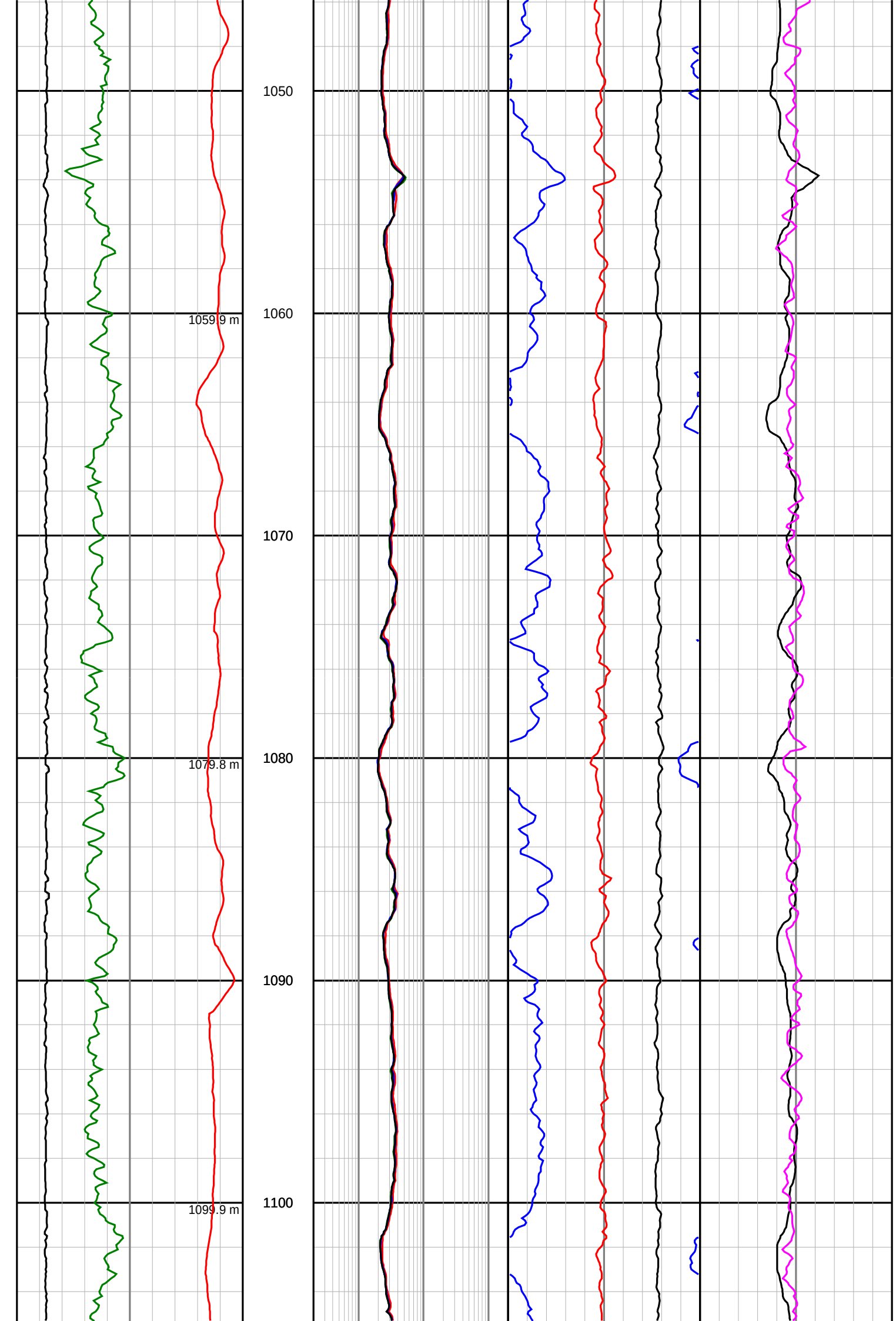
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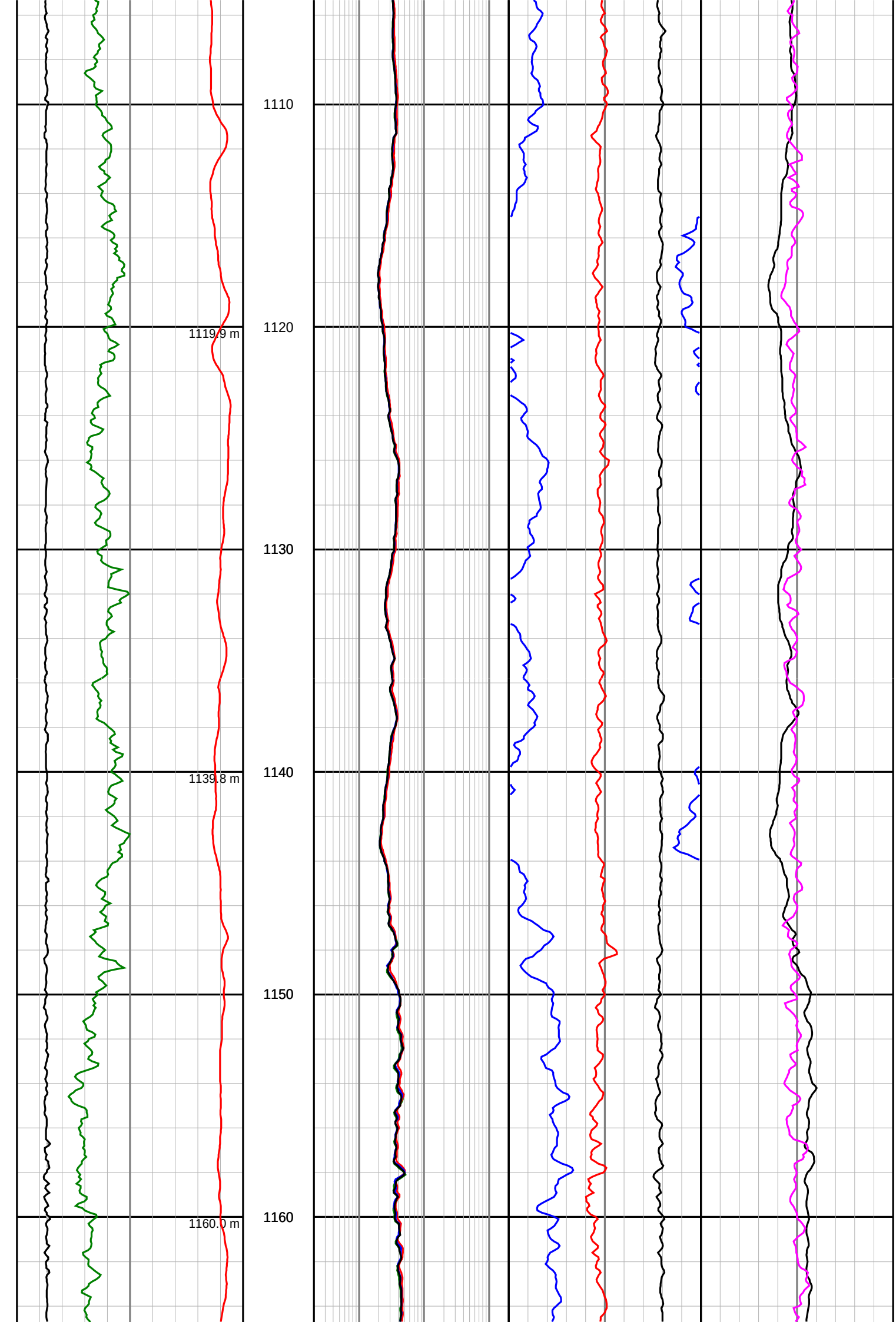
1100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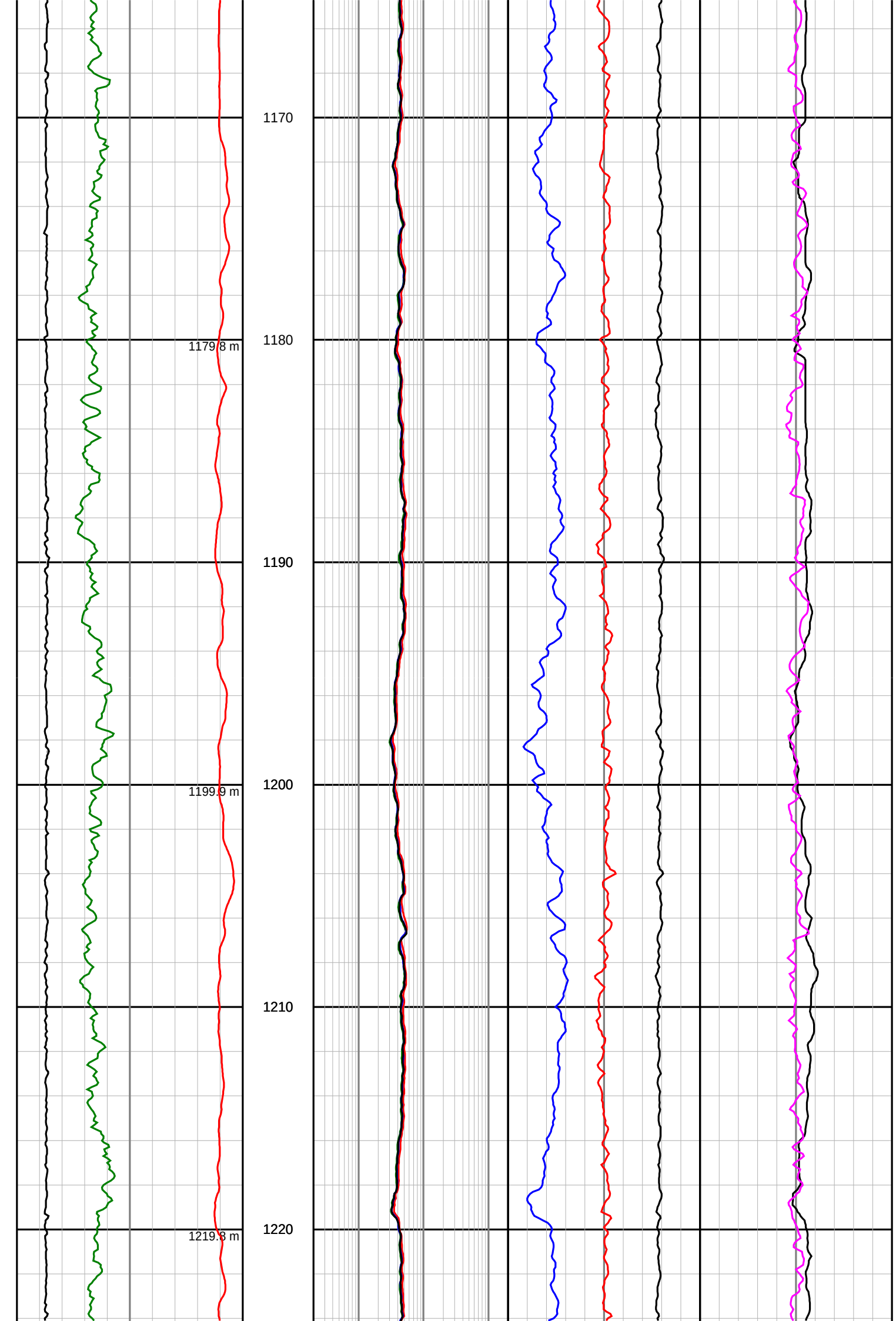
1150
1160
1160.0 m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1180
1190
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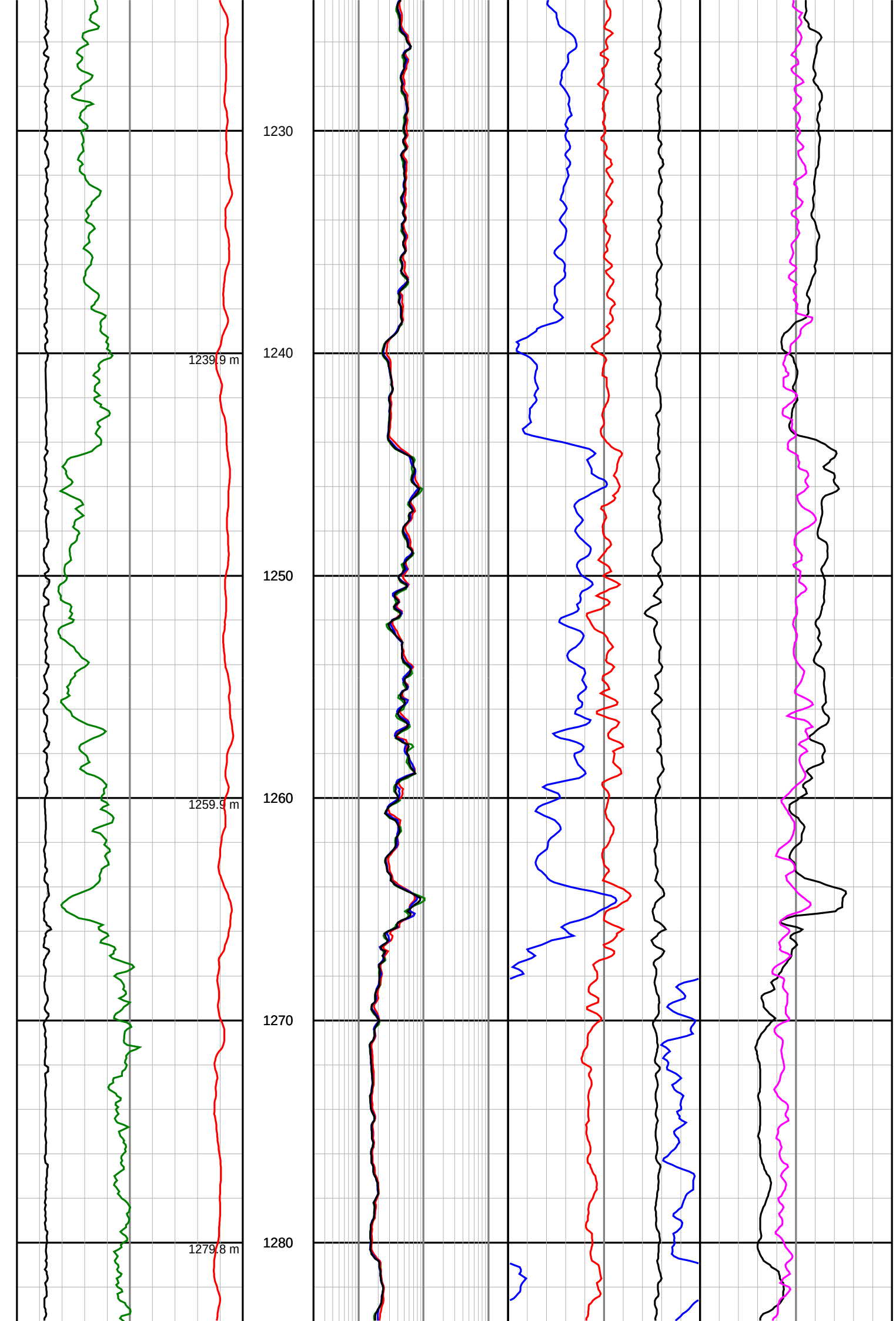
1200
1210
1219.3 m
1220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1270
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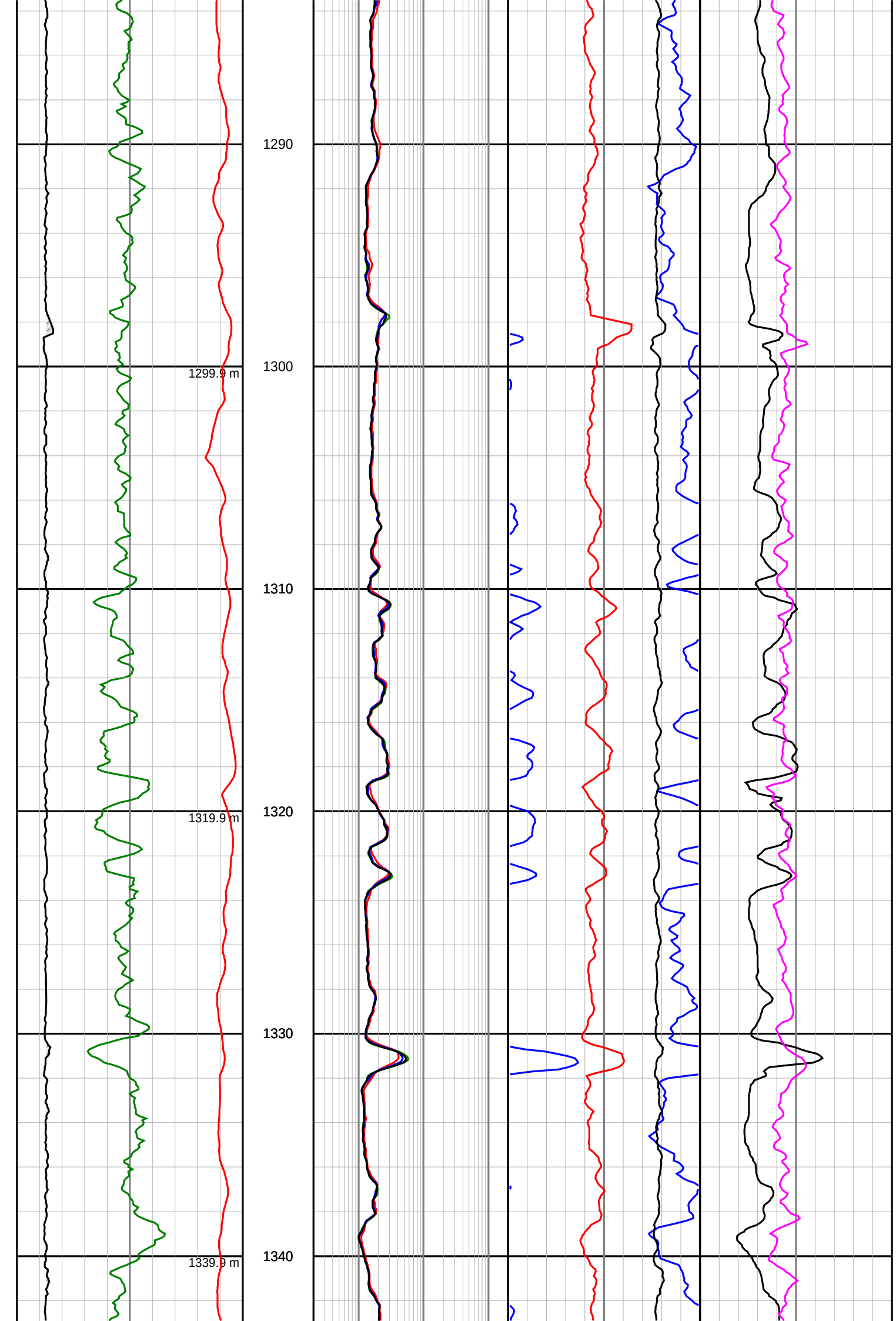
1280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1339.9 m
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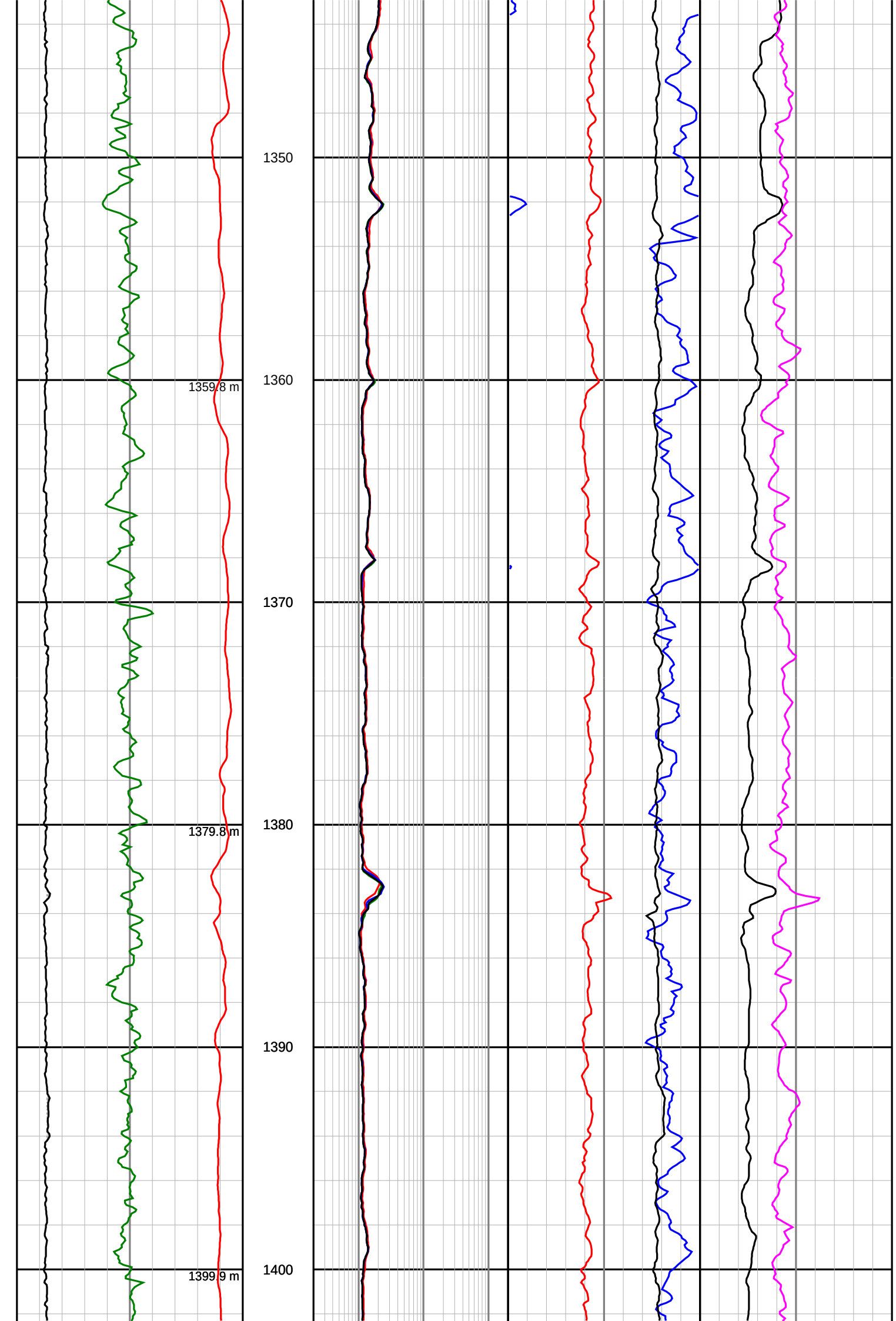
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1379.8 m
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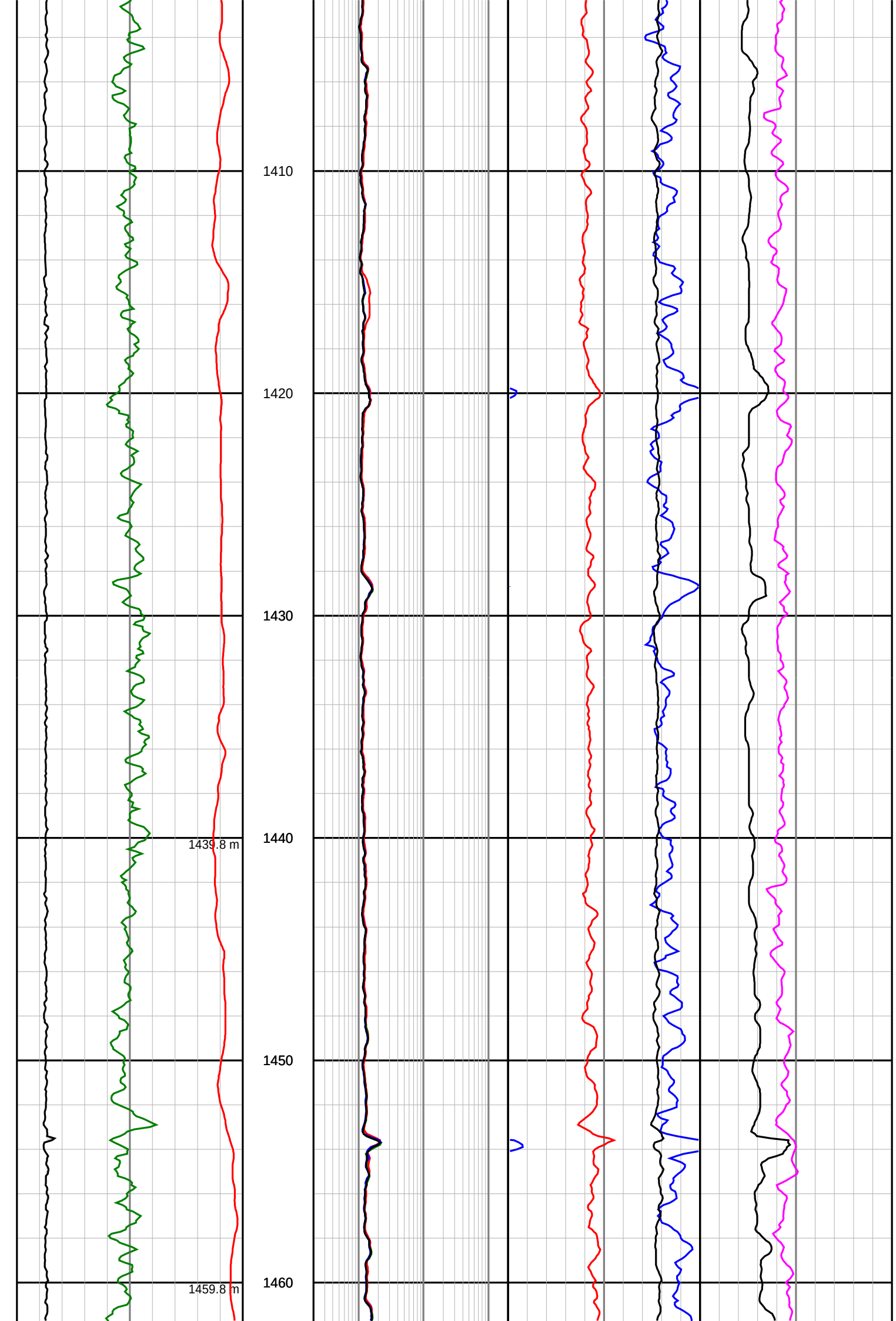
1390
1399.9 m
1400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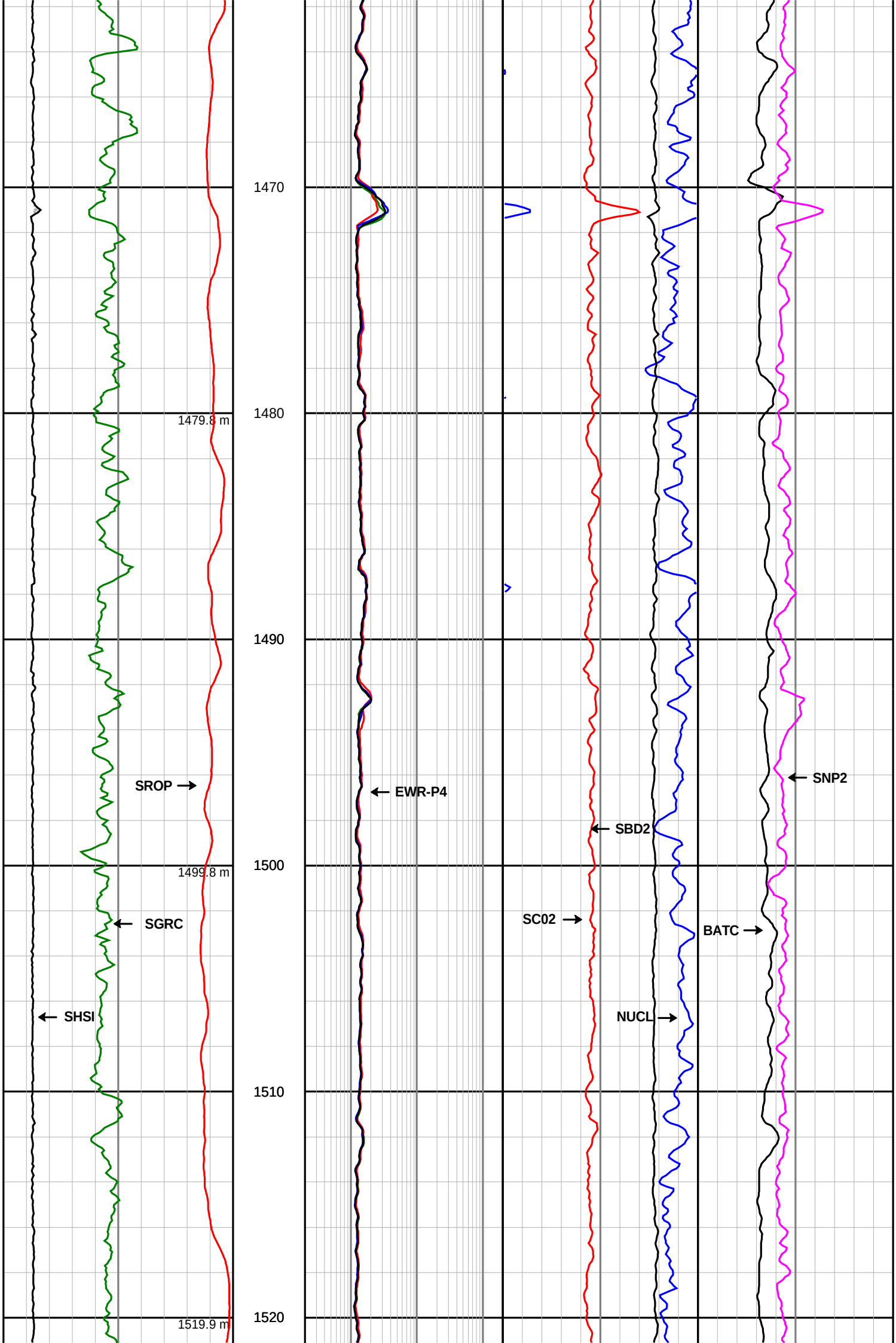
1460
1459.8 m


1470
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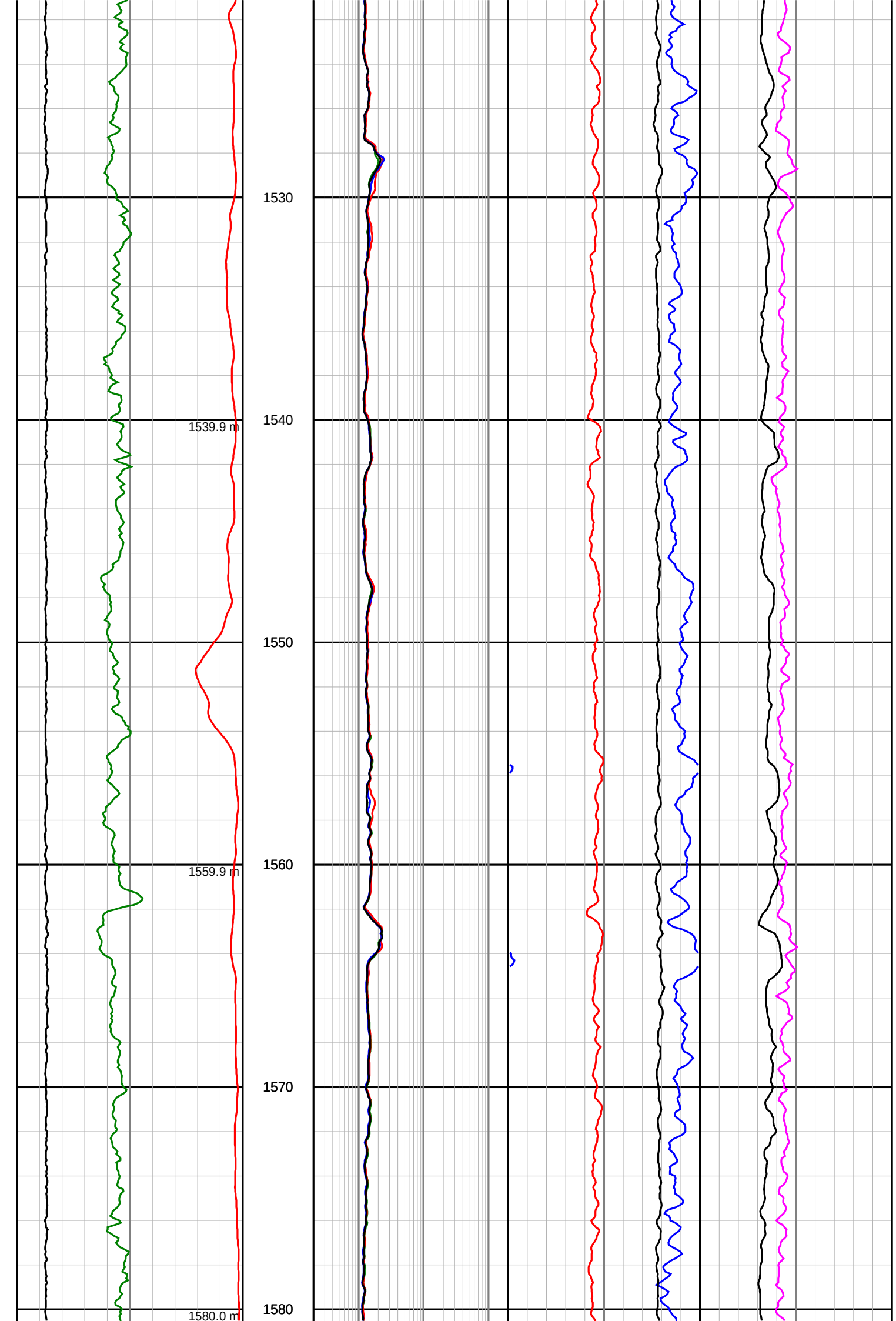
1490
1500
1510
1520
1479.8 m
1499.8 m
1519.9 m
SROP
SGRC
SHSI
EWR-P4
SBD2
SC02
NUCL
BATC
SNP2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1559.9 m
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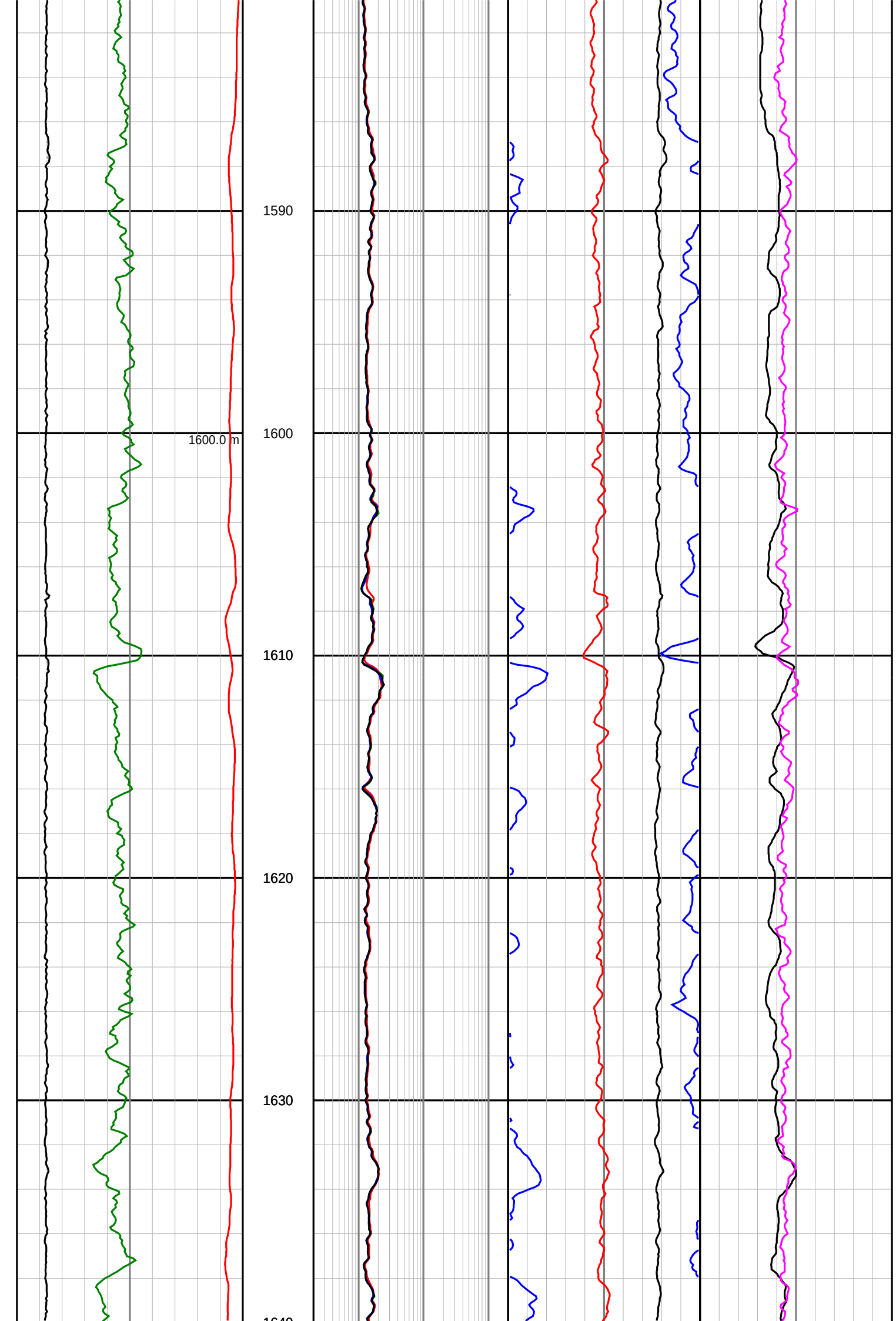
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1600
1610
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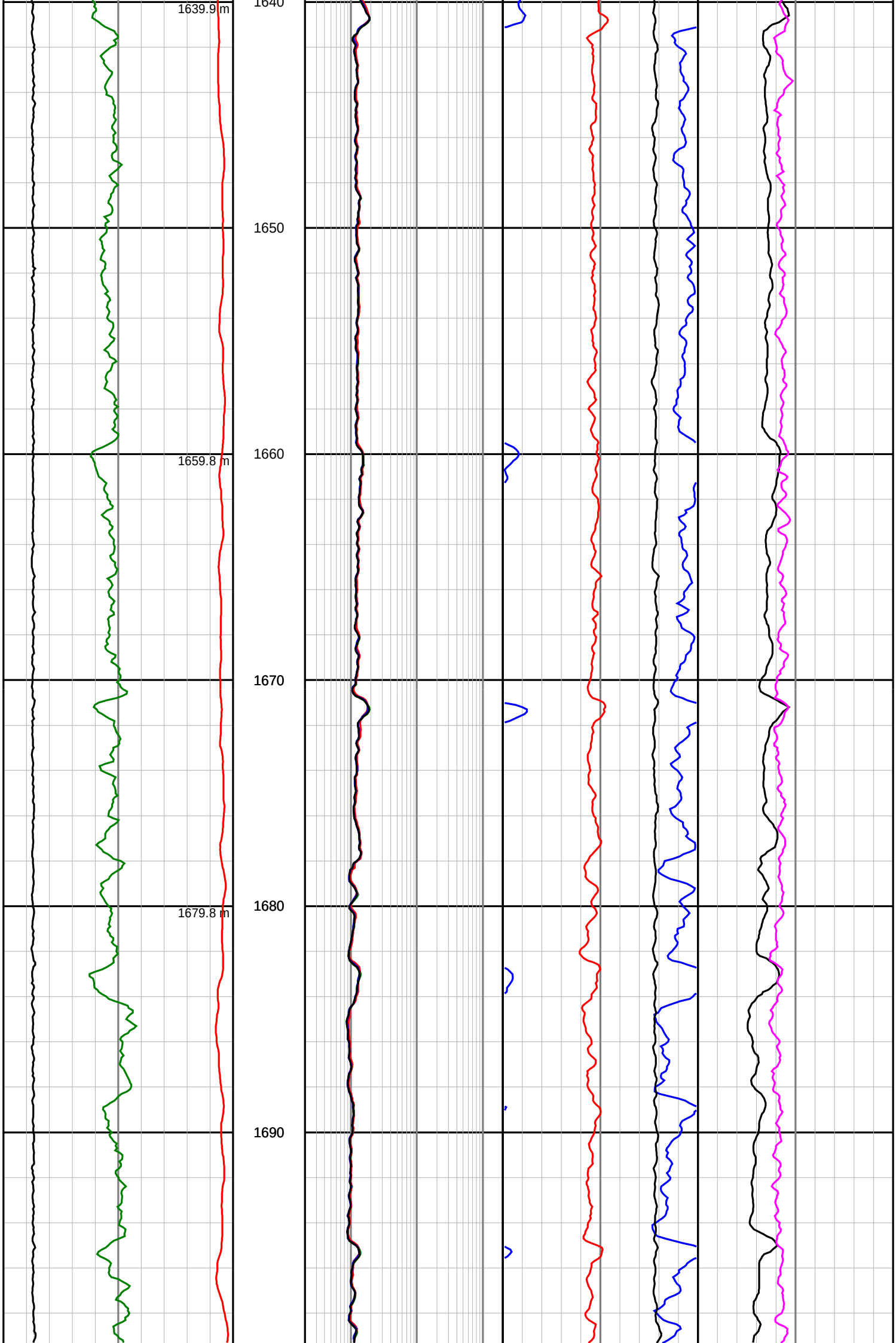
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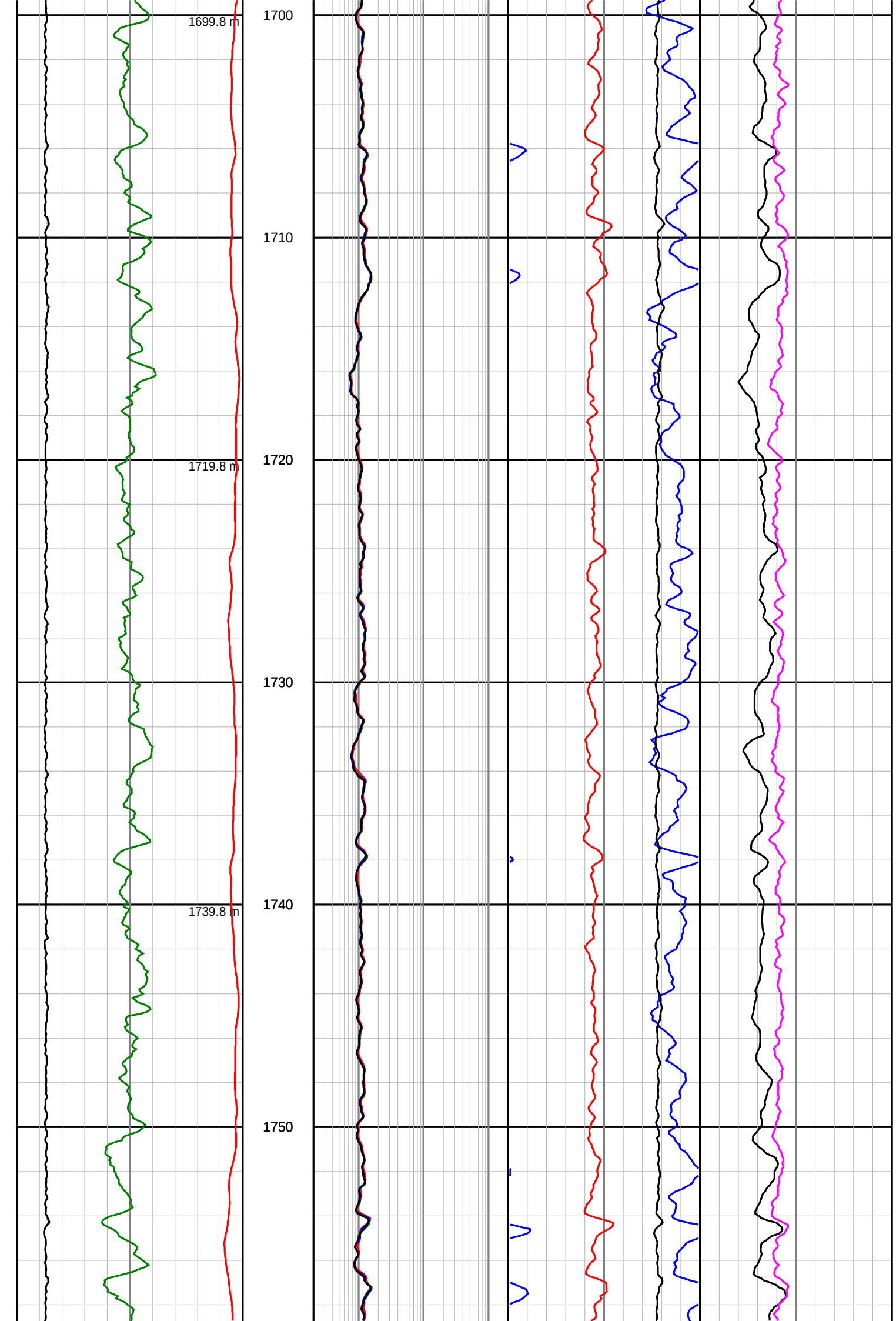
1659.8 m
1660
1670
1679.8 m
1680
1690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1710
1719.8 m
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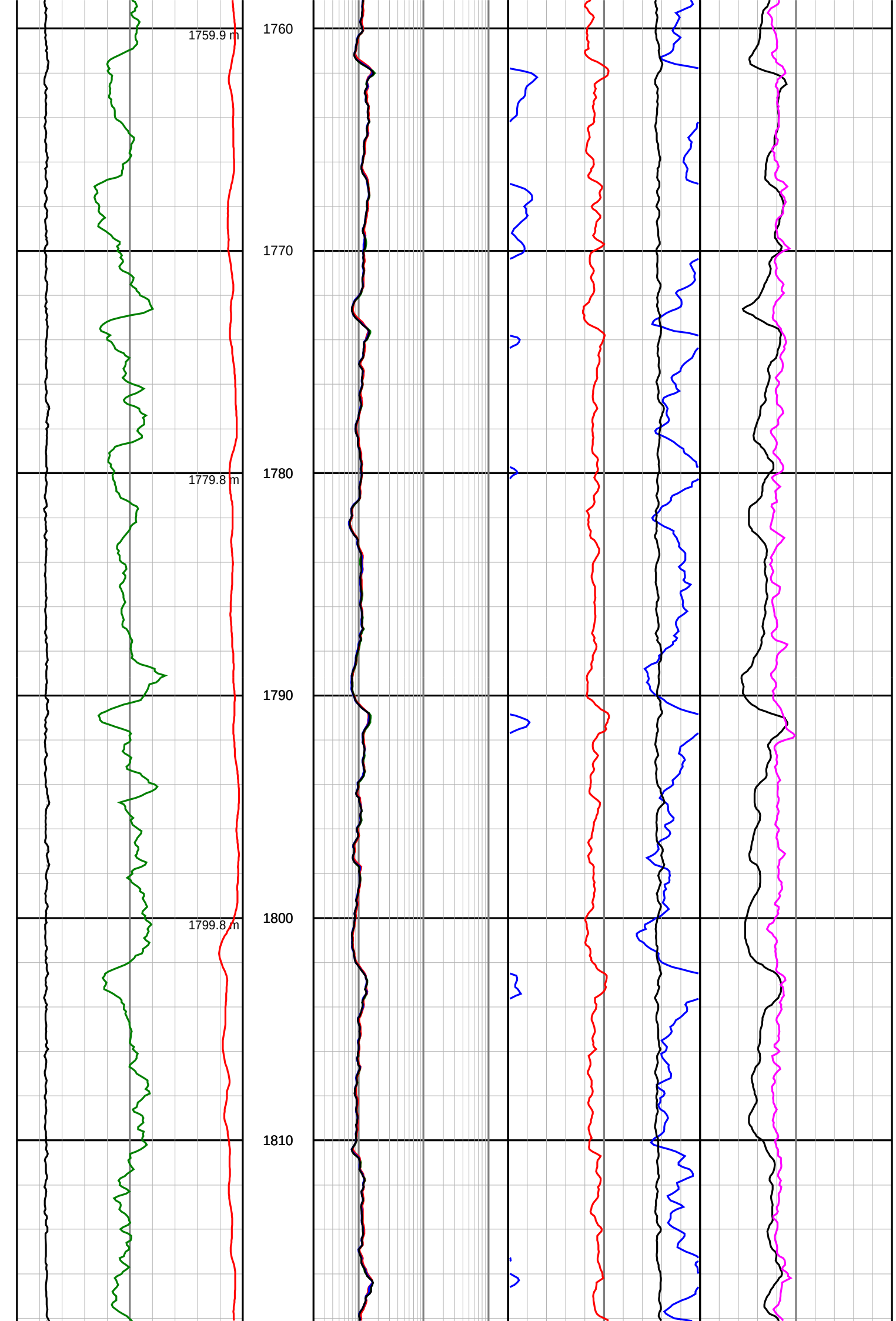
1739.8 m
1740
1750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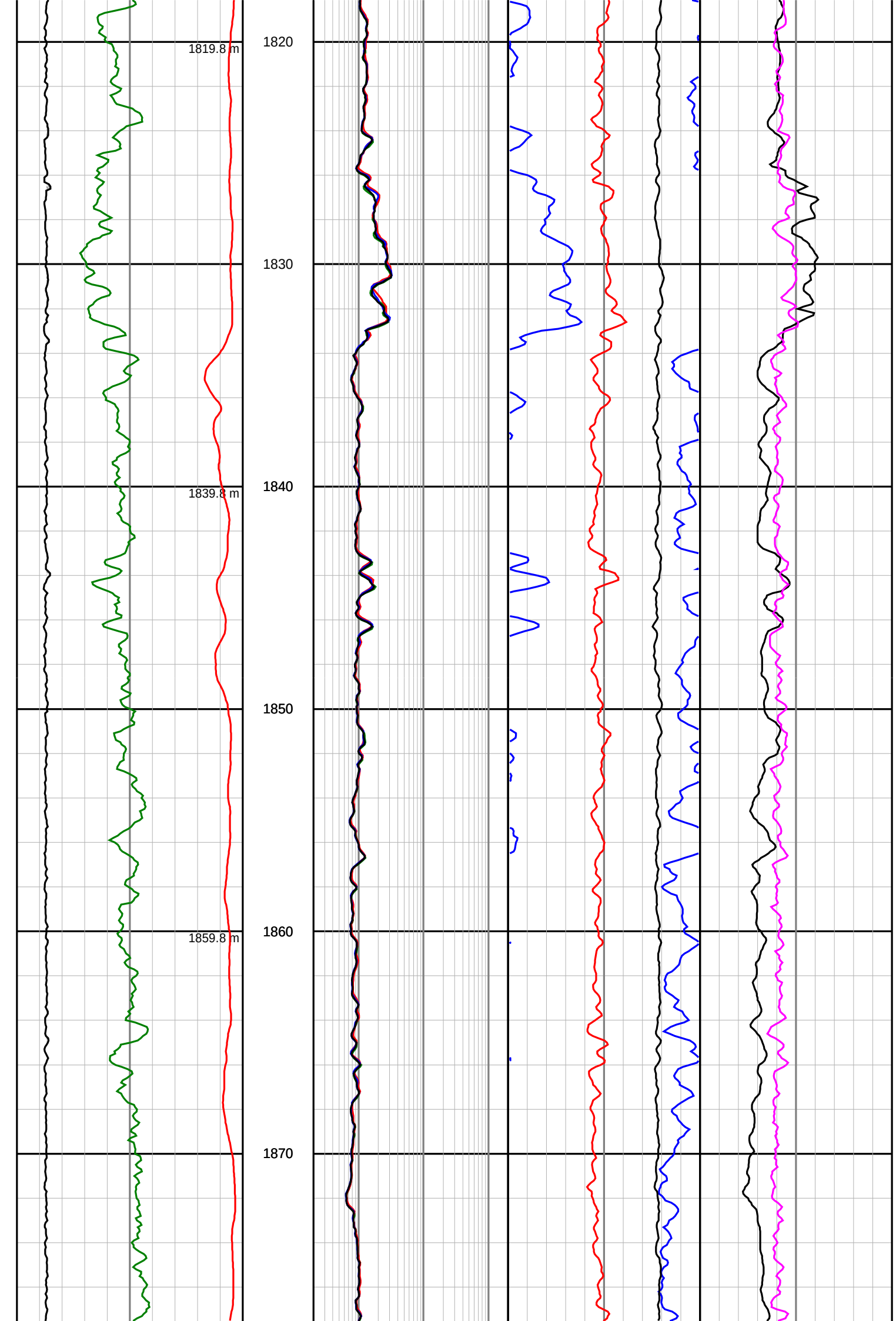
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1859.8 m
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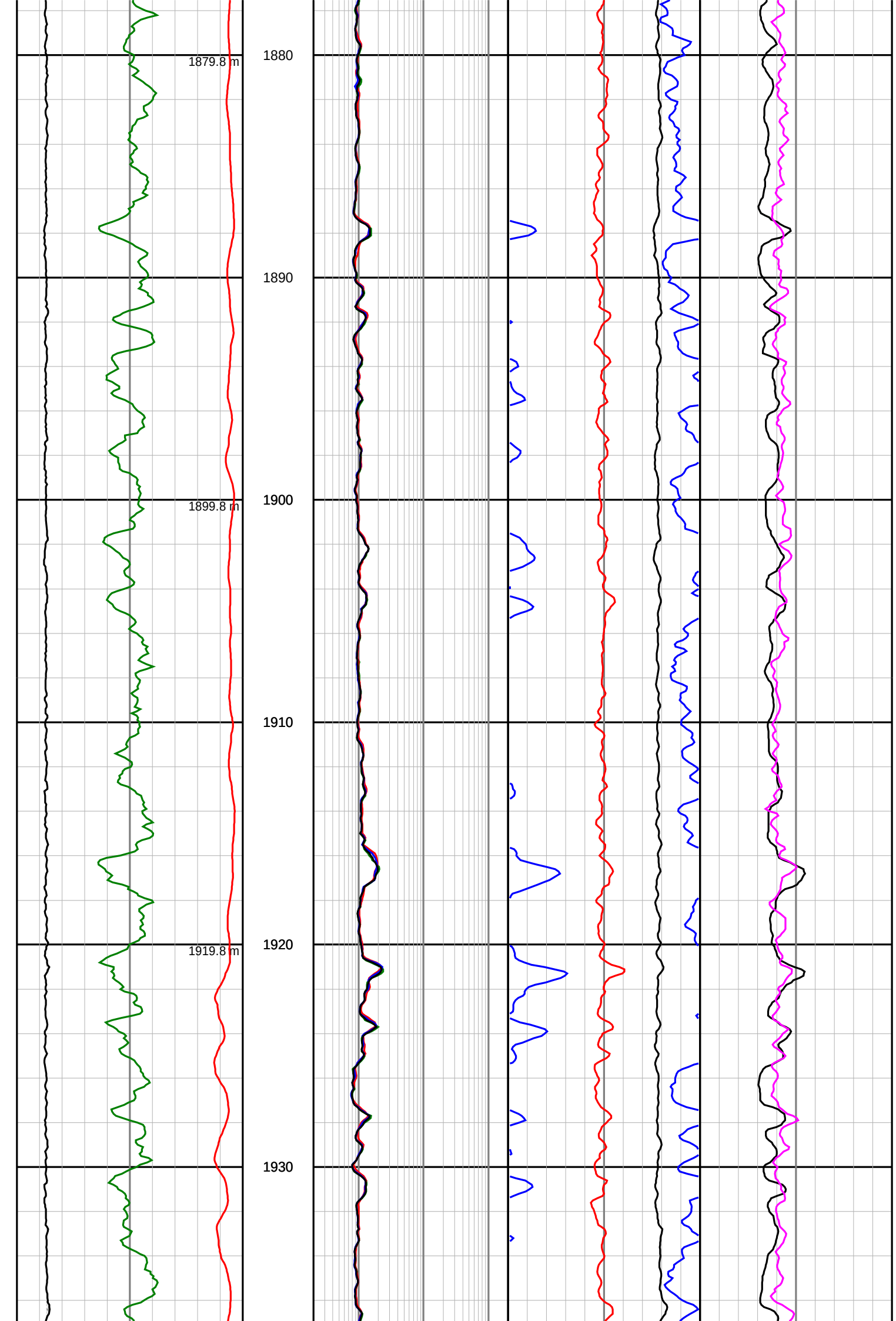
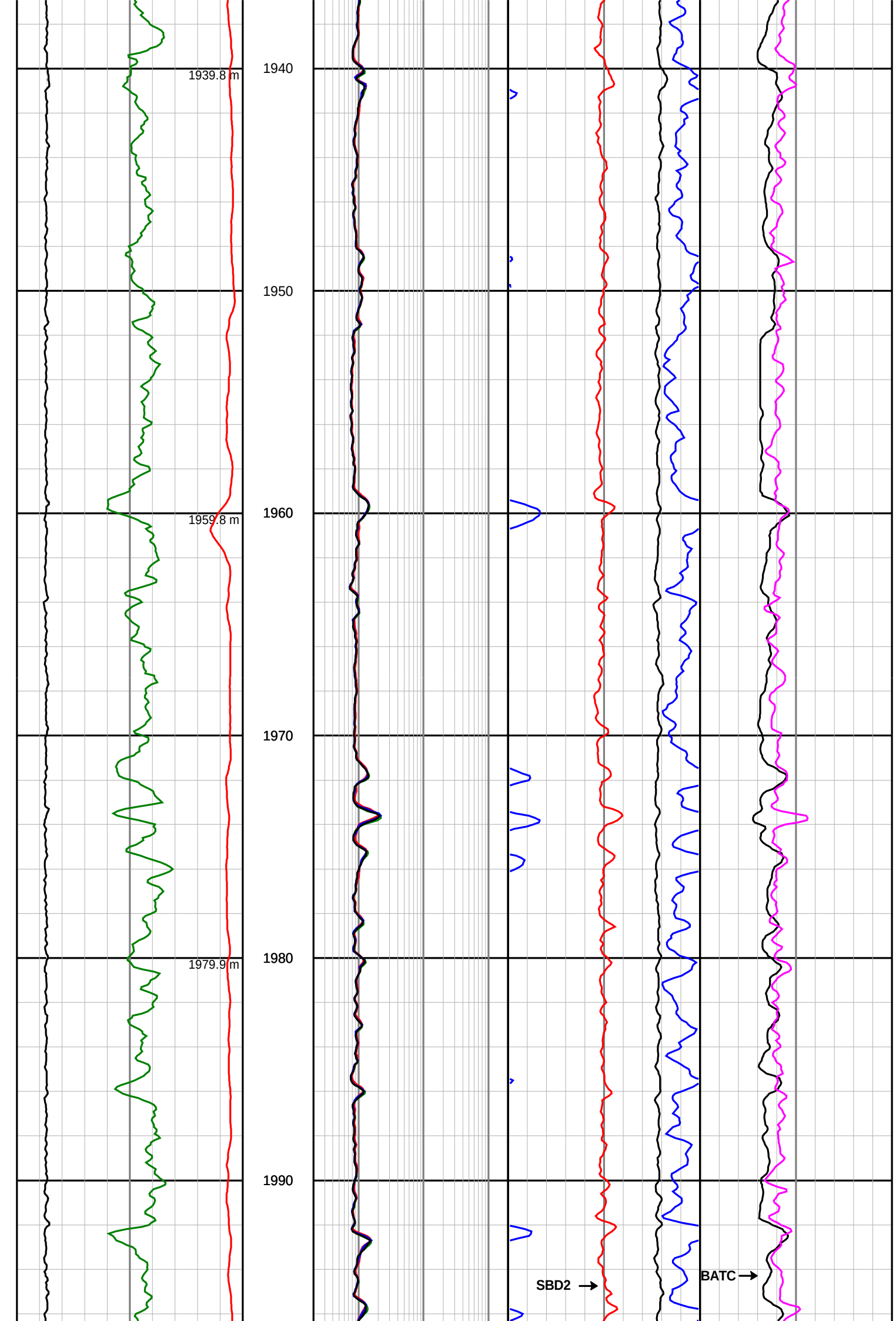
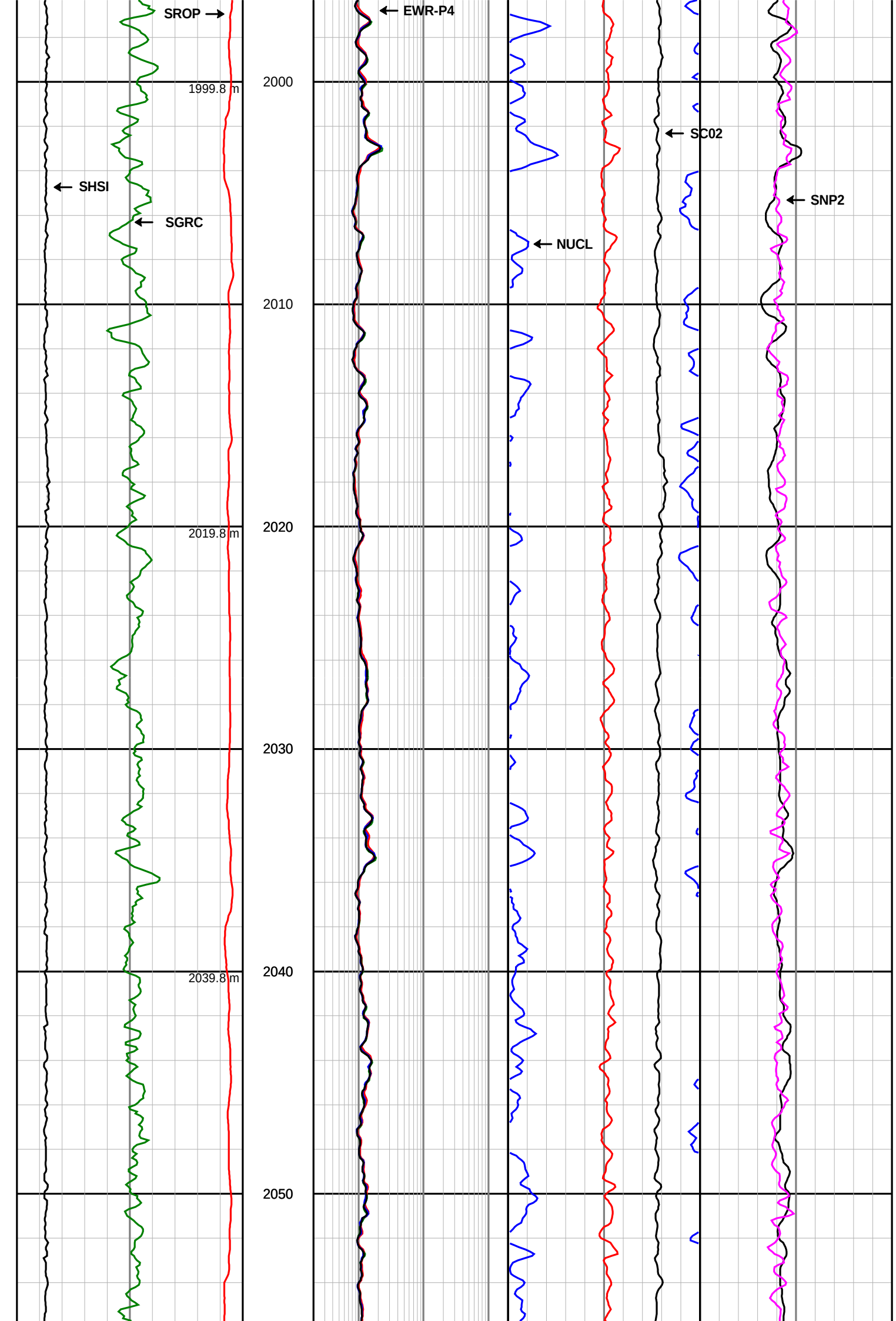
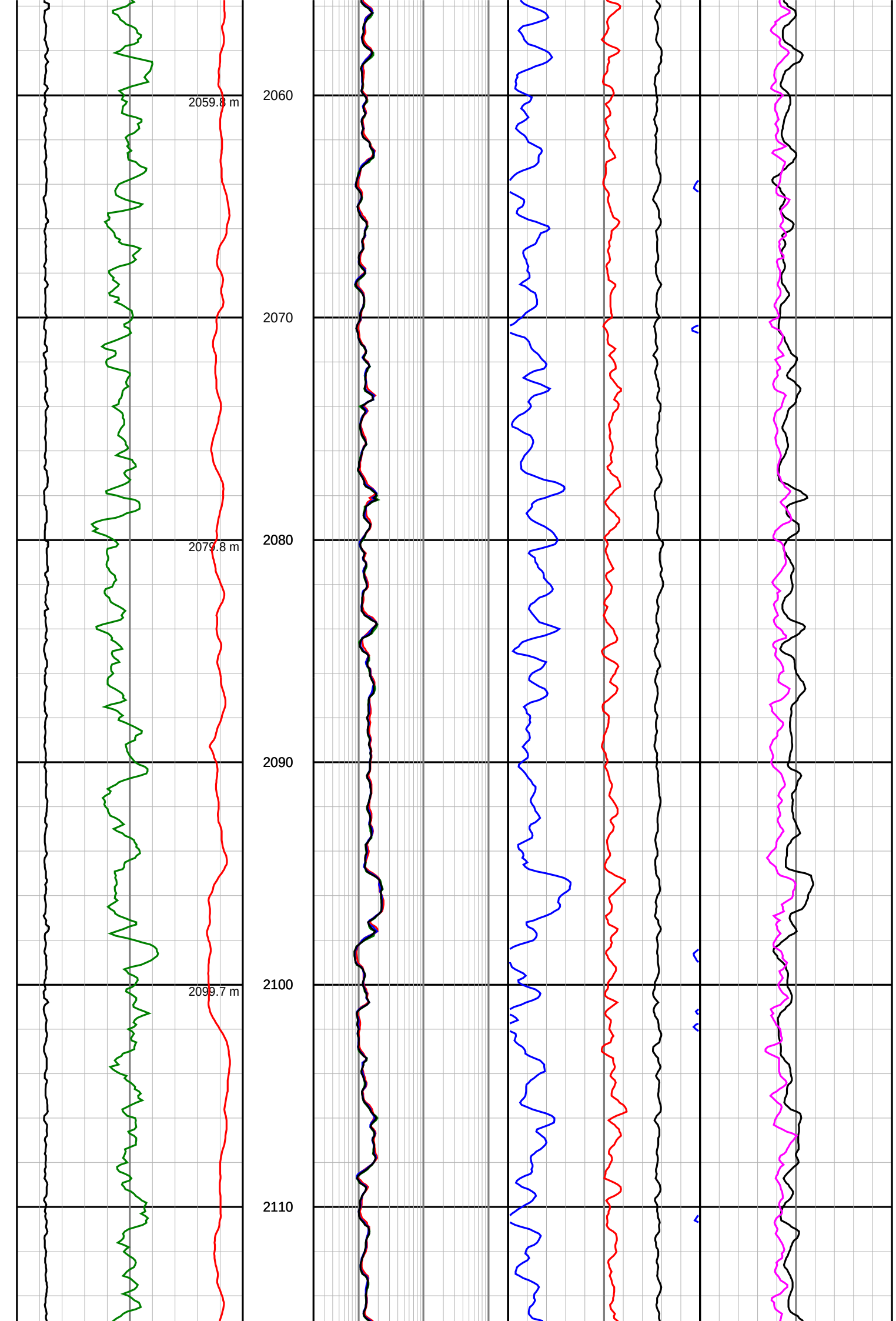
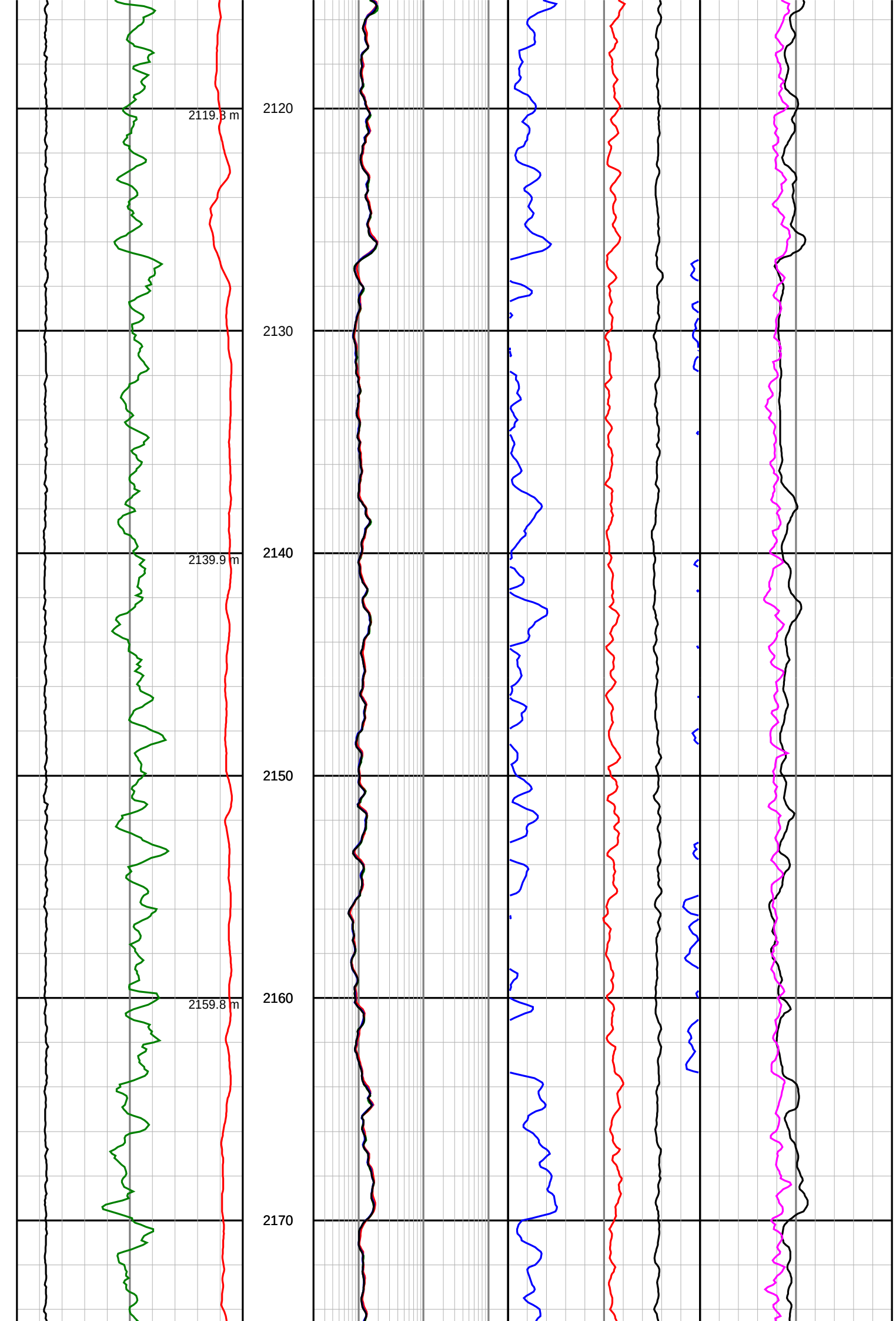
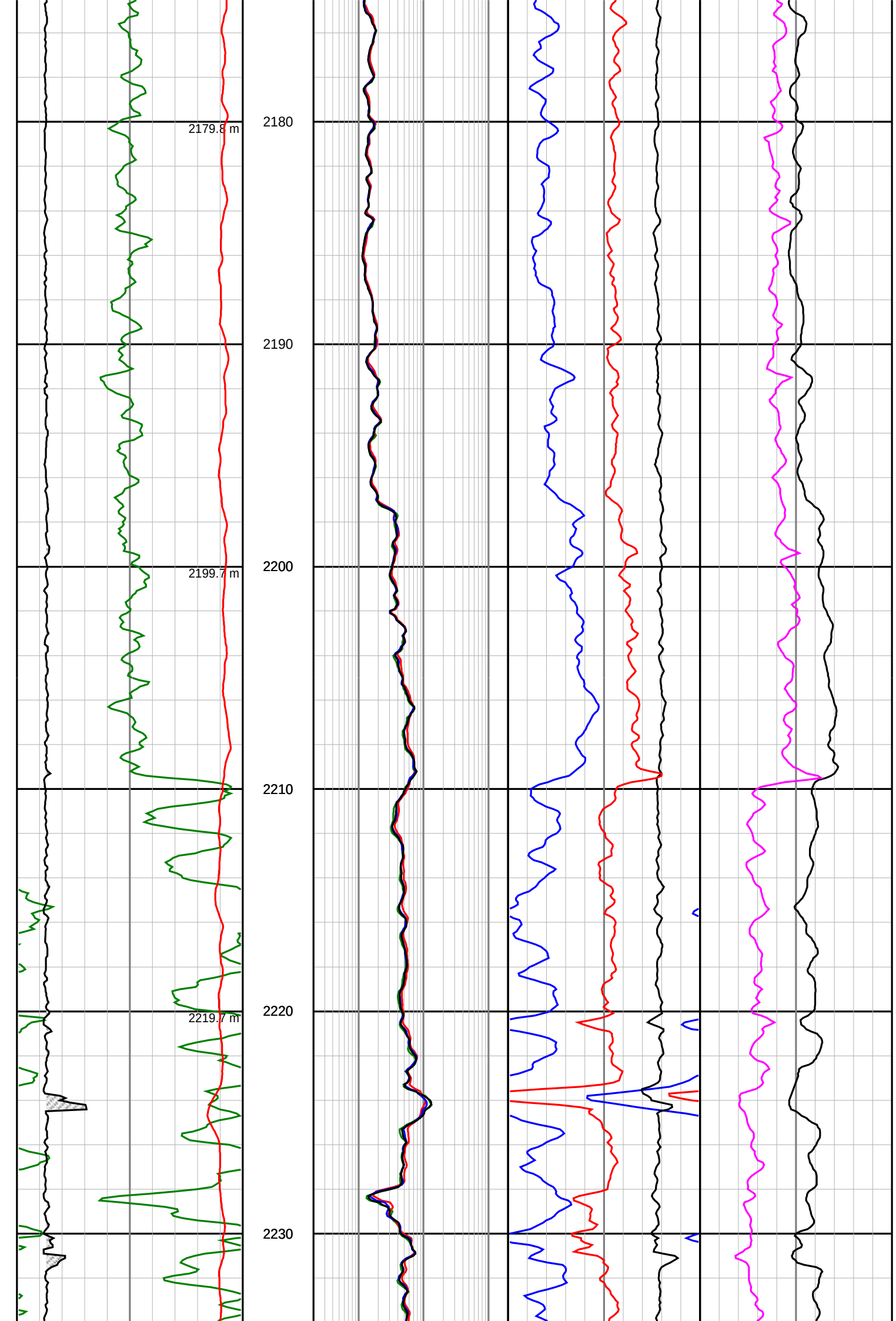

1879.8 m
1880
1890
1899.8 m
1900
1910
1919.8 m
1920
1930

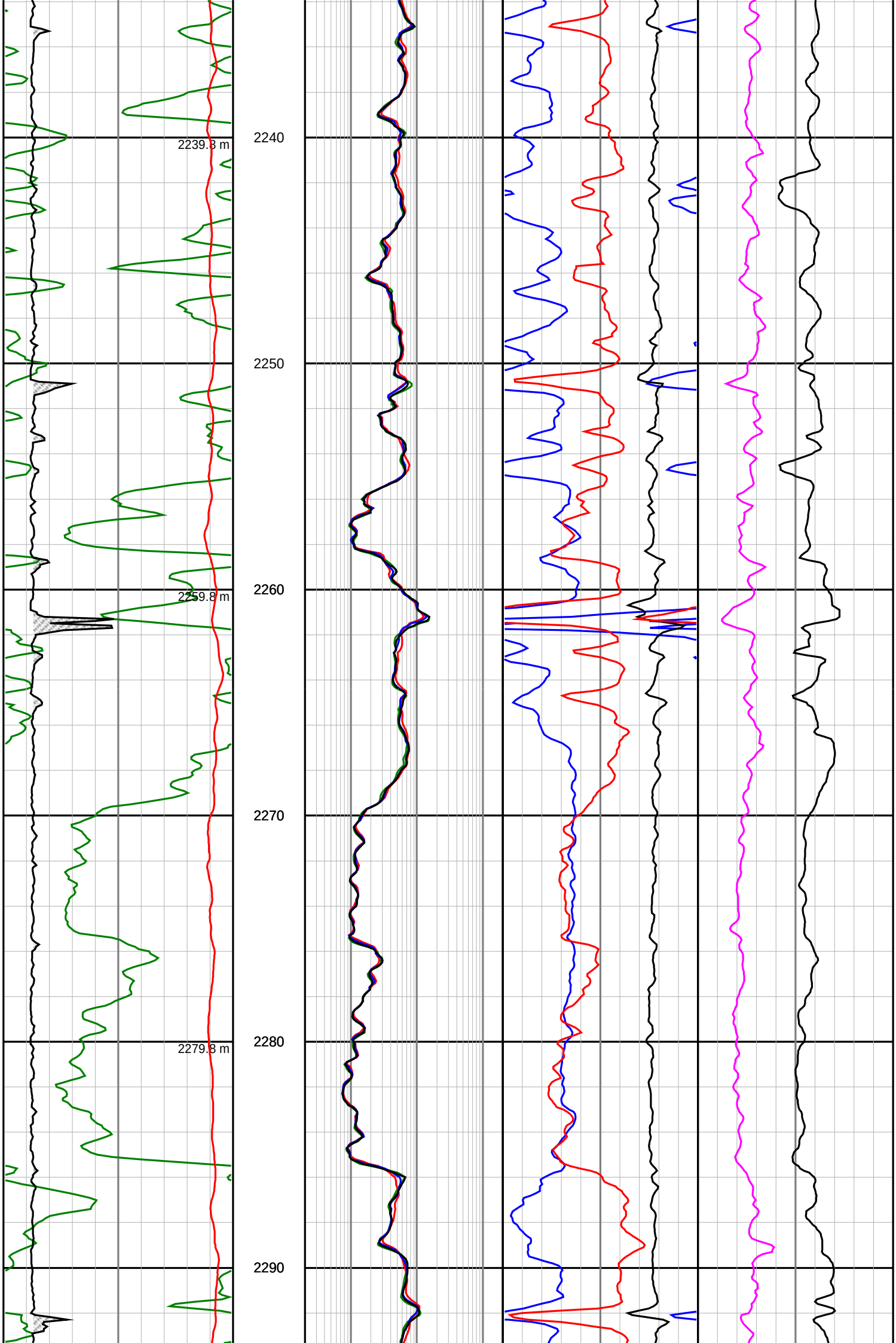

1939.8 m
1940
1950
1959.8 m
1960
1970
1979.9 m
1980
1990
SBD2
BATC

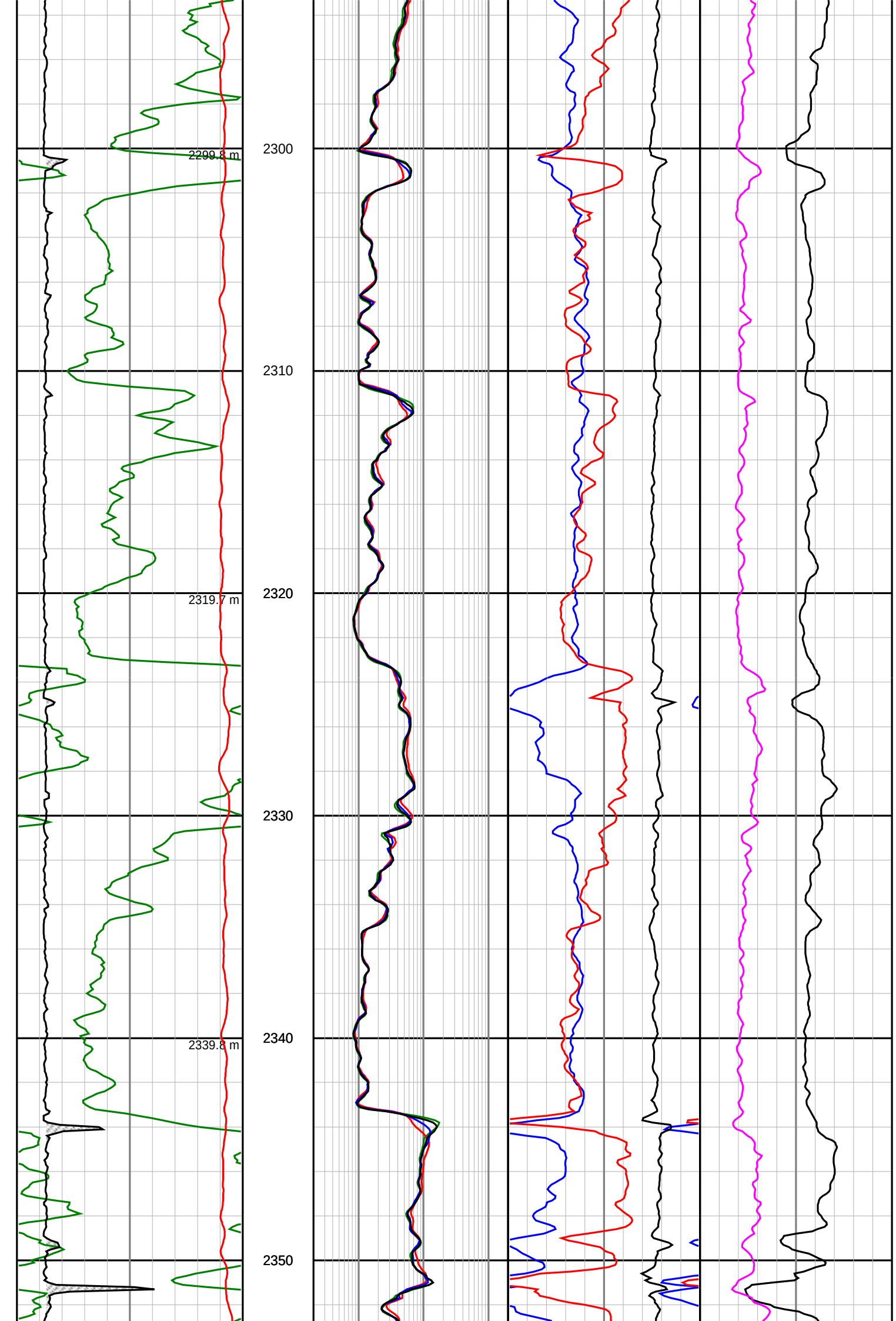

SROP
1999.8 m
SHSI
SGRC
2019.8 m
2039.8 m
2000
2010
2020
2030
2040
2050
EWR-P4
NUCL
SC02
SNP2

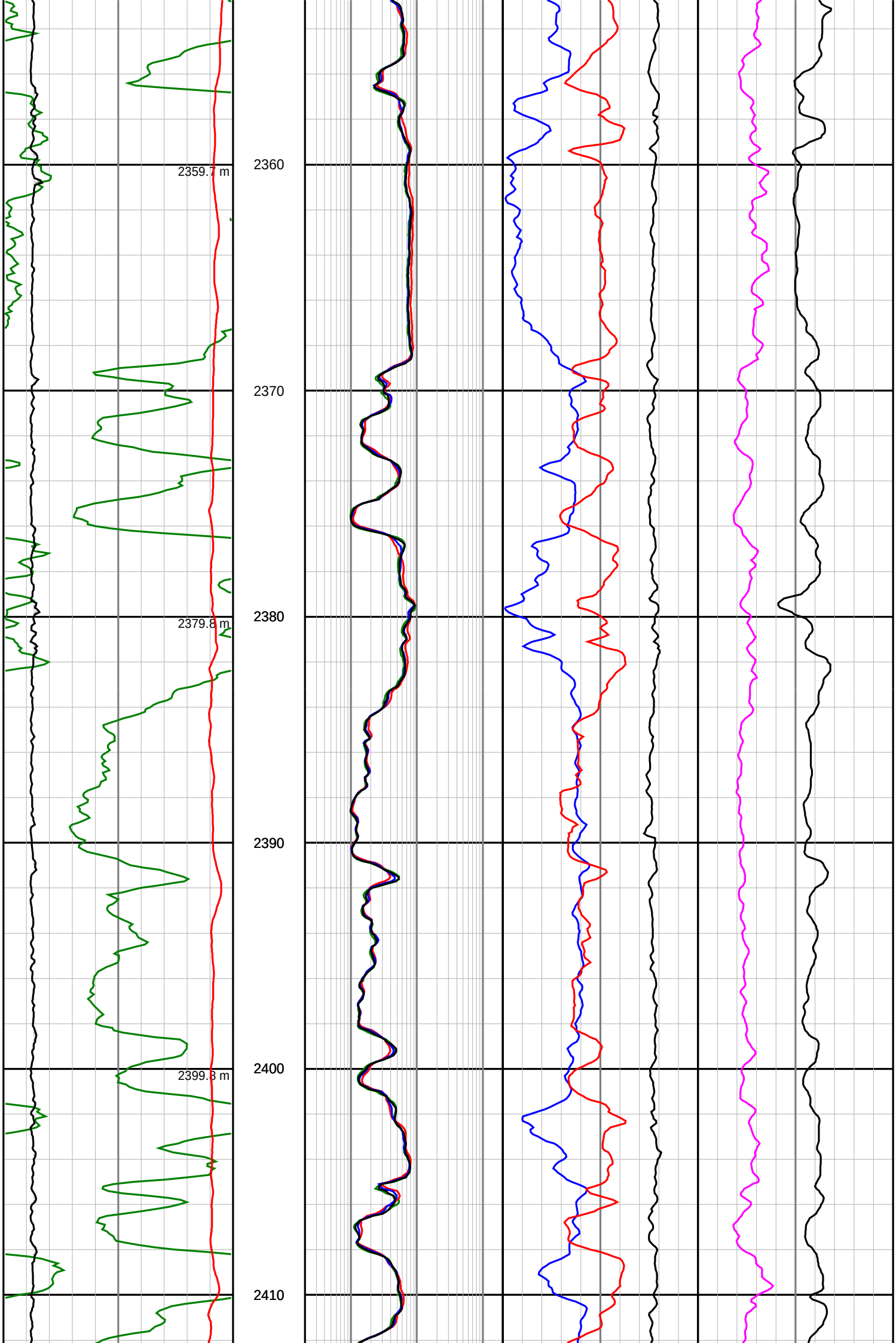

2059.8 m
2060
2070
2079.8 m
2080
2090
2099.7 m
2100
2110

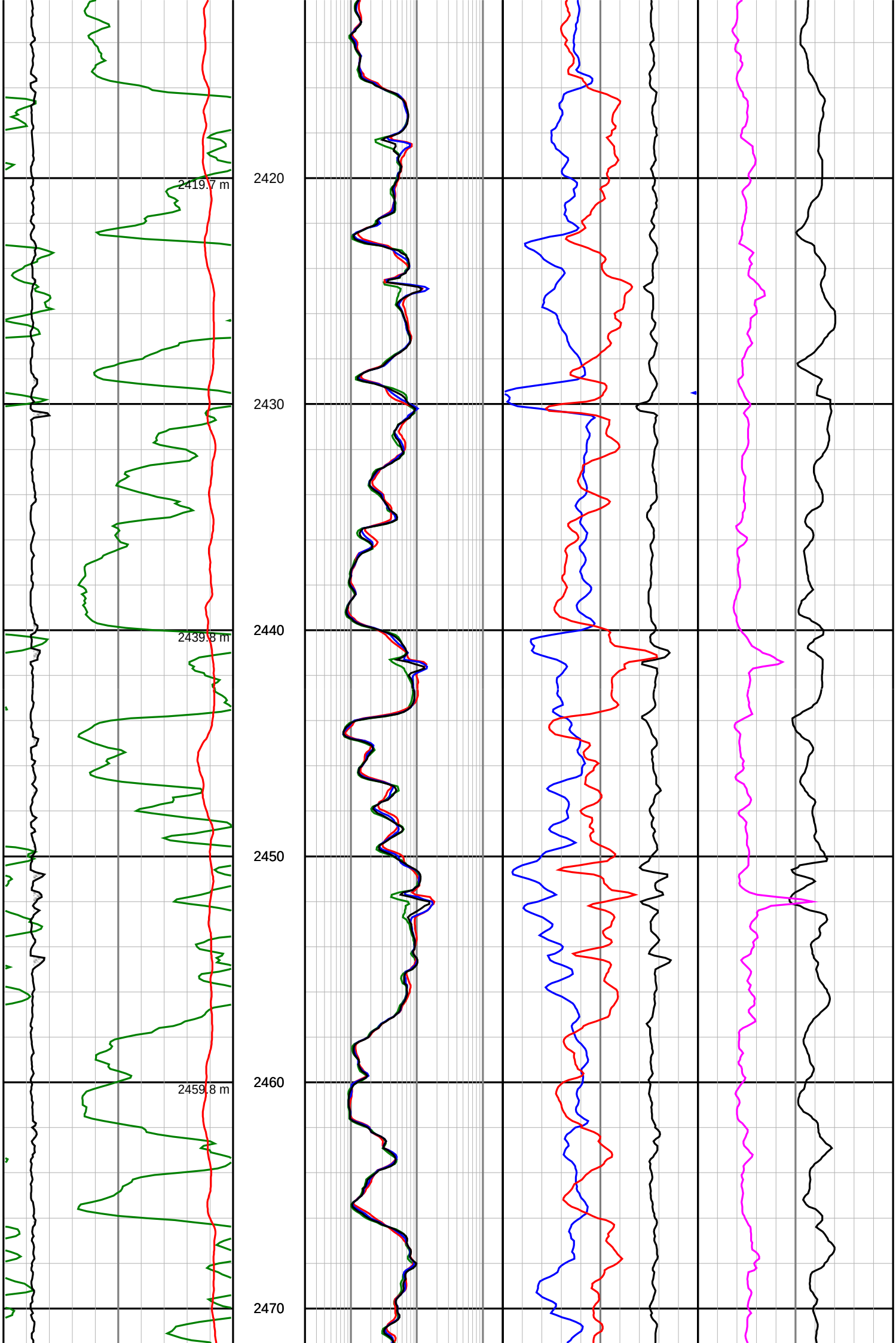

2119.3 m
2120
2130
2139.9 m
2140
2150
2159.8 m
2160
2170

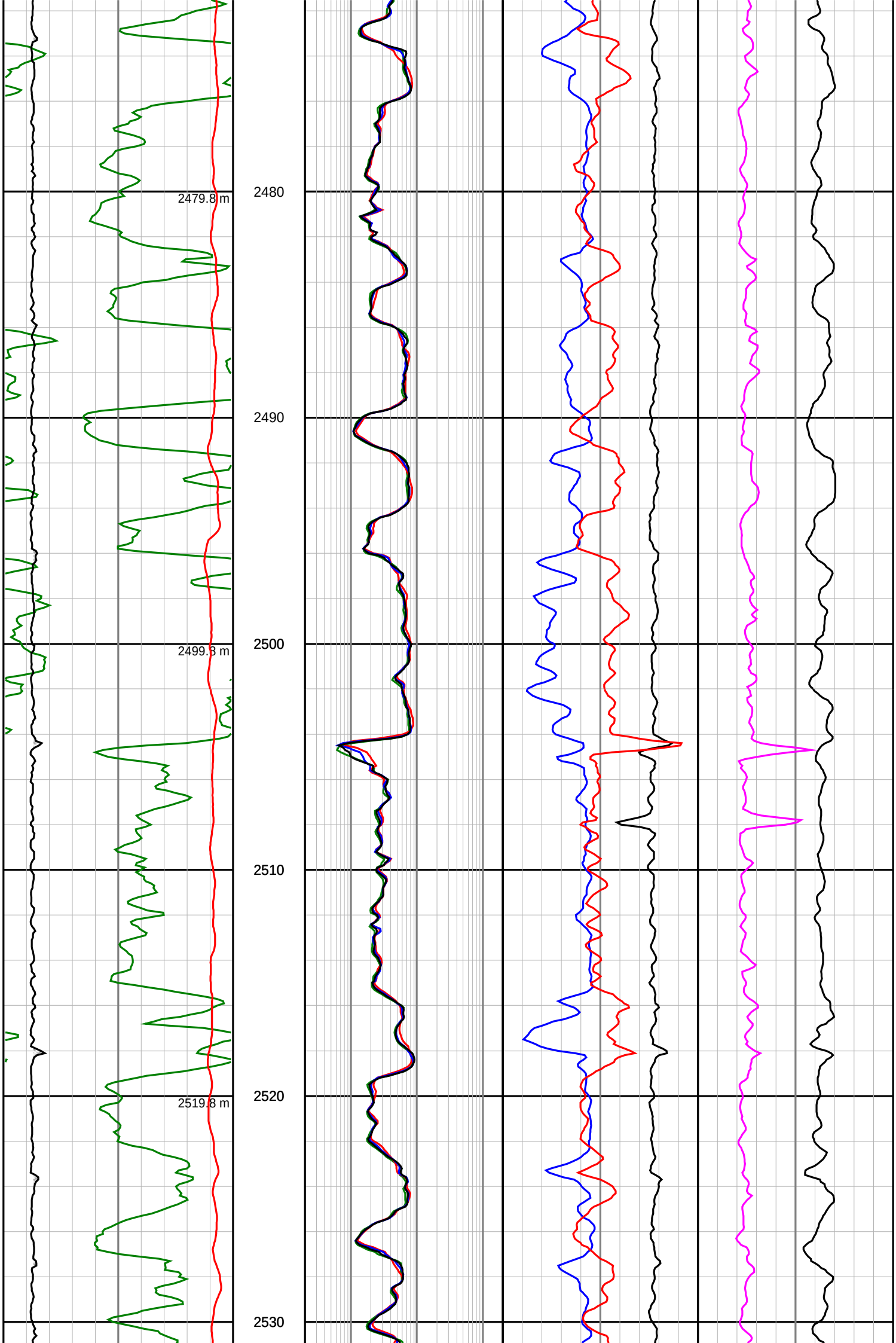

2179.8 m
2180
2190
2199.7 m
2200
2210
2219.7 m
2220
2230

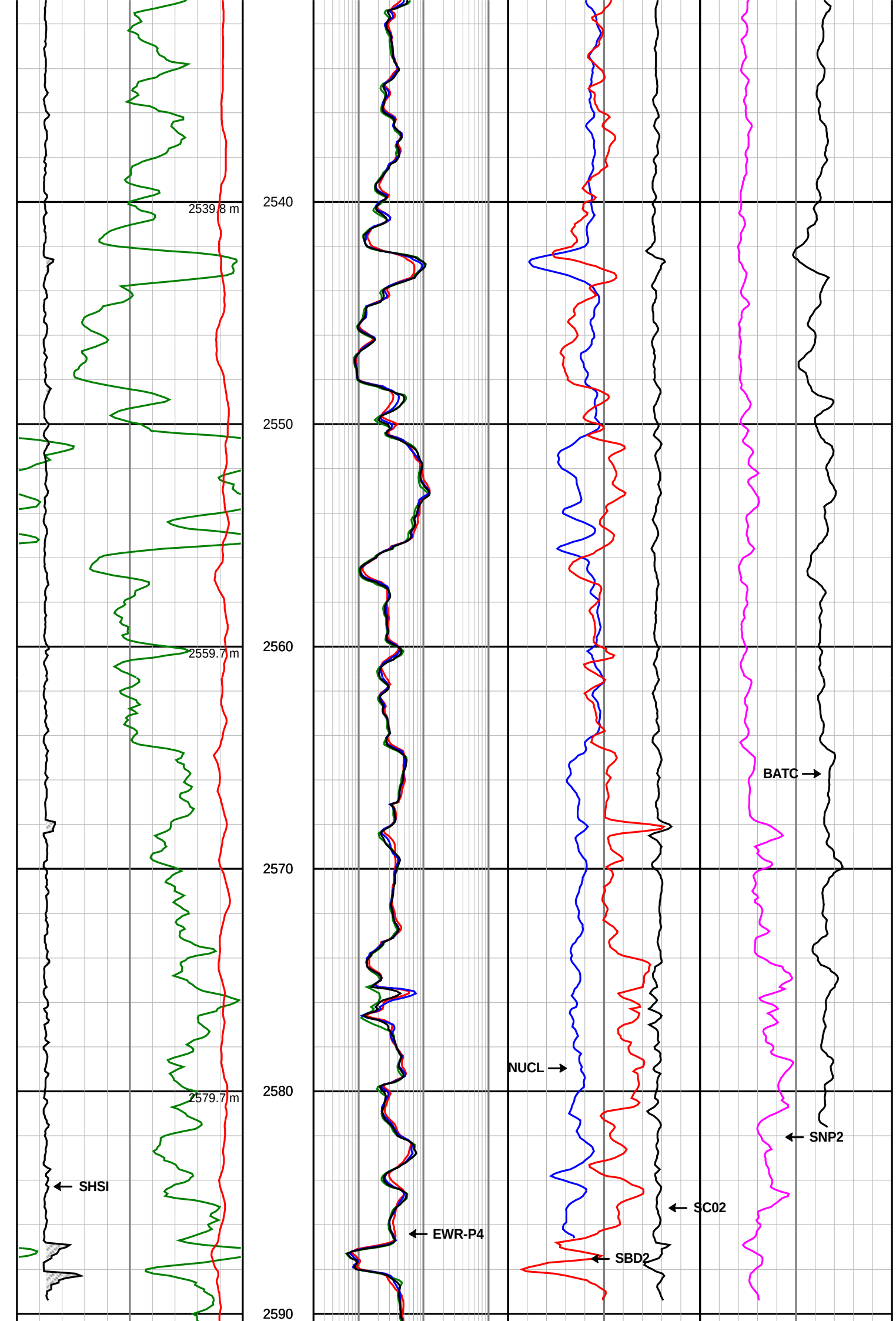

2239.8 m
2240
2250
2259.8 m
2260
2270
2279.8 m
2280
2290

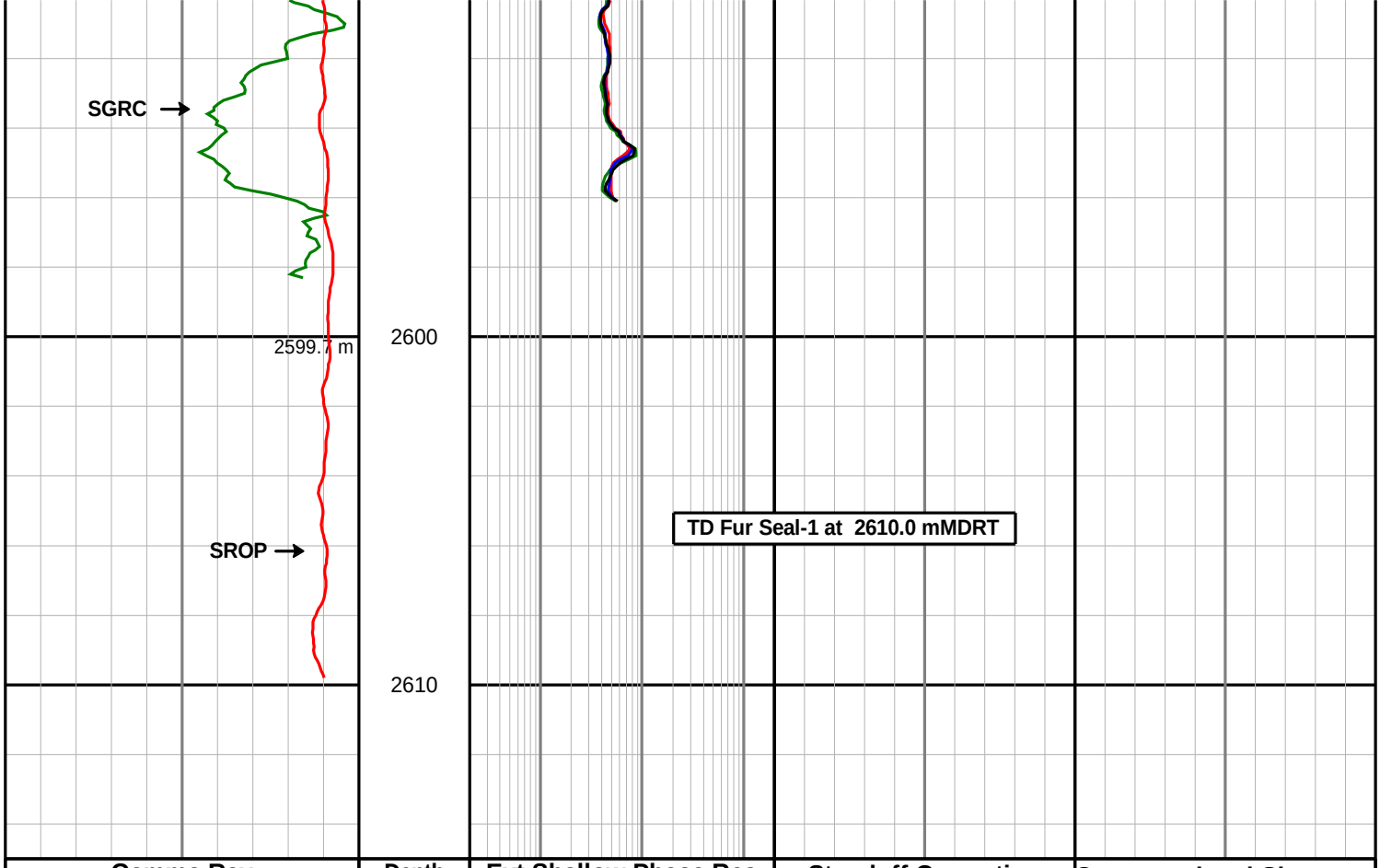

2299.8 m
2300
2310
2319.7 m
2320
2330
2339.8 m
2340
2350


2359.7 m
2360
2370
2379.8 m
2380
2390
2399.8 m
2400
2410


2419.7 m
2420
2430
2439.3 m
2440
2450
2459.8 m
2460
2470


2479.8 m
2480
2490
2499.3 m
2500
2510
2519.8 m
2520
2530


2539.8 m
2540
2550
2559.7 m
2560
2570
2579.7 m
2580
2590
SHSI
EWR-P4
NUCL
SC02
SBD2
BATC
SNP2



Gamma Ray (SGRC)	Depth	Ext Shallow Phase Res (SEXP)	Standoff Correction (SCO2)	Compressional Slowness (BATC)
0 api 150	MD	0.2 ohmm 200	-0.75 gram per cc 0.25	140 microsec per ft 40
	1:200			

Rate of Penetration (SROP)		Shallow Phase Res (SESP)	Neutron Porosity (NUCL)	Photoelectric Effect (SNP2)
500 m/hr 0		0.2 ohmm 200	0.45 v/v -0.15	0 barns/electron 10

SLD Rapid Caliper (SHSI)		Medium Phase Res (SEMP)	Density (SBD2)	
6 inches 26		0.2 ohmm 200	1.95 gram per cc 2.95	

TVD		Deep Phase Res (SEDP)		
metres		0.2 ohmm 200		

INSITE

HALLIBURTON

DIRECTIONAL SURVEY REPORT

Apache Energy Ltd
Fur Seal-1
Exploration
Victoria
Australia
AU-FE-0003890148
Final Survey projected to TD. RT to AHD = 21.5m.

Measured Depth (metres)	*Inclination (degrees)*	*Direction (degrees)*	*Vertical Depth (metres)*	*Latitude (metres)*	*Departure (metres)*	*Vertical Section (metres)*	*Dogleg (deg/30m)*

Fur Seal-1

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
0.000	0.00	0.00	0.000	0.000 N	0.000 E	0.000	TIE-IN
147.580	0.20	177.10	147.580	0.260 S	0.013 E	-0.260	0.04
202.770	0.44	176.34	202.769	0.569 S	0.032 E	-0.569	0.13
230.700	0.60	175.42	230.698	0.821 S	0.050 E	-0.821	0.17
259.170	0.44	182.26	259.166	1.079 S	0.058 E	-1.079	0.17
316.460	0.19	202.22	316.456	1.388 S	0.014 E	-1.388	0.14
431.050	0.42	169.27	431.044	1.977 S	0.022 E	-1.977	0.08
574.280	0.77	174.99	574.266	3.457 S	0.205 E	-3.457	0.07
631.930	0.59	187.00	631.912	4.138 S	0.203 E	-4.138	0.12
747.010	1.16	234.79	746.979	5.397 S	0.820 W	-5.397	0.23
804.240	1.36	261.58	804.196	5.830 S	1.963 W	-5.830	0.32
825.390	1.41	257.87	825.340	5.921 S	2.465 W	-5.921	0.15
854.170	1.08	262.66	854.113	6.030 S	3.081 W	-6.030	0.36
882.940	1.07	265.44	882.878	6.086 S	3.618 W	-6.086	0.05
911.810	1.19	271.36	911.742	6.100 S	4.189 W	-6.100	0.17
940.400	1.16	271.02	940.326	6.088 S	4.775 W	-6.088	0.04
969.000	1.14	275.16	968.921	6.057 S	5.347 W	-6.057	0.09
997.650	1.07	274.19	997.565	6.012 S	5.898 W	-6.012	0.09
1026.350	1.05	269.72	1026.260	5.994 S	6.426 W	-5.994	0.09
1054.970	0.93	273.03	1054.876	5.983 S	6.920 W	-5.983	0.14
1083.560	0.88	279.71	1083.463	5.934 S	7.368 W	-5.934	0.12
1112.050	0.86	280.50	1111.949	5.858 S	7.794 W	-5.858	0.02
1140.780	0.80	280.28	1140.676	5.782 S	8.205 W	-5.782	0.06
1169.420	0.69	281.95	1169.314	5.711 S	8.571 W	-5.711	0.12
1198.140	0.81	286.36	1198.031	5.618 S	8.934 W	-5.618	0.14
1255.860	1.01	305.38	1255.744	5.211 S	9.736 W	-5.211	0.19
1284.620	0.87	311.34	1284.500	4.921 S	10.105 W	-4.921	0.18
1313.270	0.86	333.94	1313.147	4.585 S	10.362 W	-4.585	0.35
1341.990	0.67	334.23	1341.865	4.241 S	10.529 W	-4.241	0.21
1370.650	0.68	330.15	1370.523	3.942 S	10.687 W	-3.942	0.05
1427.720	0.77	326.65	1427.588	3.328 S	11.066 W	-3.328	0.05
1456.160	0.82	328.79	1456.025	2.995 S	11.277 W	-2.995	0.07
1484.950	0.85	336.79	1484.812	2.622 S	11.468 W	-2.622	0.12
1513.890	0.88	324.92	1513.749	2.244 S	11.680 W	-2.244	0.19
1542.830	0.86	327.87	1542.686	1.878 S	11.923 W	-1.878	0.05
1571.590	0.87	324.35	1571.442	1.517 S	12.166 W	-1.517	0.06
1599.700	0.77	338.40	1599.549	1.166 S	12.360 W	-1.166	0.24
1657.300	0.97	353.39	1657.143	0.322 S	12.559 W	-0.322	0.15
1686.010	0.88	355.80	1685.849	0.138 N	12.603 W	0.138	0.10
1715.080	0.89	6.11	1714.916	0.585 N	12.596 W	0.585	0.16
1743.680	0.78	6.96	1743.513	1.000 N	12.548 W	1.000	0.12
1772.080	0.50	6.19	1771.911	1.316 N	12.511 W	1.316	0.29
1800.650	0.48	16.78	1800.480	1.554 N	12.464 W	1.554	0.10
1829.260	0.58	38.40	1829.089	1.782 N	12.339 W	1.782	0.23
1858.090	0.50	34.50	1857.917	2.000 N	12.178 W	2.000	0.09
1887.200	0.56	59.17	1887.026	2.177 N	11.984 W	2.177	0.24
1916.070	0.69	58.49	1915.894	2.340 N	11.715 W	2.340	0.14
1944.740	0.66	50.11	1944.562	2.536 N	11.442 W	2.536	0.11
1973.020	0.75	60.07	1972.840	2.732 N	11.157 W	2.732	0.16
2001.540	0.62	65.93	2001.358	2.888 N	10.854 W	2.888	0.15
2030.200	0.47	54.96	2030.017	3.020 N	10.615 W	3.020	0.19
2058.700	0.51	43.07	2058.516	3.179 N	10.433 W	3.179	0.11
2087.390	0.51	81.71	2087.205	3.290 N	10.221 W	3.290	0.35
2116.440	0.55	117.19	2116.254	3.244 N	9.970 W	3.244	0.34
2144.780	0.56	102.11	2144.592	3.153 N	9.713 W	3.153	0.16
2231.210	0.95	136.21	2231.015	2.547 N	8.802 W	2.547	0.20
2317.050	0.95	103.22	2316.844	1.871 N	7.619 W	1.871	0.19
2402.730	0.93	77.31	2402.513	1.861 N	6.254 W	1.861	0.15
2431.360	1.07	70.01	2431.139	2.003 N	5.778 W	2.003	0.20
2460.090	1.06	56.97	2459.864	2.239 N	5.303 W	2.239	0.25

HALLIBURTON

Fur Seal-1

Measured Depth (metres)	*Inclination (degrees)*	*Direction (degrees)*	*Vertical Depth (metres)*	*Latitude (metres)*	*Departure (metres)*	*Vertical Section (metres)*	*Dogleg (deg/30m)*
2488.890	1.28	60.60	2488.658	2.543 N	4.799 W	2.543	0.24
2517.630	1.41	56.39	2517.390	2.896 N	4.225 W	2.896	0.17
2610.000	1.41	56.39	2609.732	4.153 N	2.333 W	4.153	0.00

CALCULATION BASED ON MINIMUM CURVATURE METHOD

SURVEY COORDINATES RELATIVE TO WELL SYSTEM REFERENCE POINT
TVD VALUES GIVEN RELATIVE TO DRILLING MEASUREMENT POINT

VERTICAL SECTION RELATIVE TO WELL HEAD
VERTICAL SECTION IS COMPUTED ALONG A DIRECTION OF 0.00 DEGREES (GRID)
A TOTAL CORRECTION OF 13.79 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

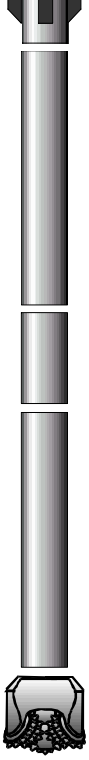
HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 2610.000 METRES
IS 4.764 METRES ALONG 330.68 DEGREES (GRID)

MWD RUN 100 - BHA

	Component Length (m)	Cumulative Length (m)
		267.89
HWDP	138.100	
		129.79
Cross Over Sub	1.100	
		128.69
Drill Collar	17.470	
		111.22
Drilling Jars	9.050	
		102.17
Drill Collar	70.480	
		31.69
Integral Blade Stabilizer	2.150	

MWD RUN 100 - MWD

	Sensor Measure Point Distance To Bit (m)
Sonic	
Pulser	
Processor	
Directional	18.360
Processor	



MWD

19.610

29.54

Cross Over Sub

.970

9.93

9-5/8" SperryDrill Lobe 3/4 - 4M, DI

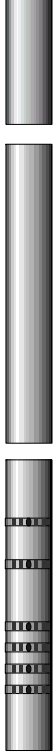
8.540

8.96

PDC

.420

0.42



Gamma Ray

14.980

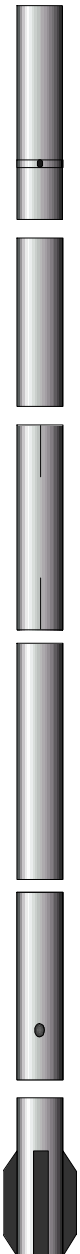
Resistivity

11.950

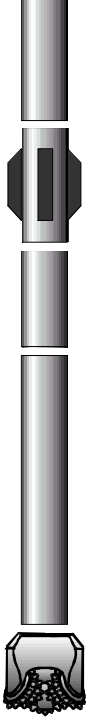
MWD RUN 200 - BHA

	Component Length (m)	Cumulative Length (m)
HWDP	110.550	259.78
Drill Collar	18.620	149.23
Drilling Jars	9.680	130.61
Drill Collar	83.680	120.93
MWD	26.920	37.25

MWD RUN 200 - MWD



	Sensor Measure Point Distance To Bit (m)
Pulser	
Processor	
Directional	32.730
Sonic	
Neutron	
Density	20.400



Integral Blade Stabilizer

1.530

10.33

Float Sub

.880

8.80

7.92

9-5/8" SperryDrill Lobe 3/4 - 4M, Dl

7.700

PDC

.220

0.22

Processor

Resistivity

13.720

Gamma Ray

11.510