



Weatherford®

6 3/4 in. & 4 3/4 in. WeatherfordM/LWD™
Spectral Gamma Ray & Resistivity
1 in. & 5 in. MEASURED DEPTH
RECORDED DATA
FINAL PRINT

Company: Anadarko Petroleum Corpore
Well: Howard 30C-28HZ
Field: Wattenburg
Rig: Xtreme 23
County: Weld

COMPANY Anadarko Petroleum Corporation
WELL Howard 30C-28HZ
FIELD Wattenburg
RIG Xtreme 23
COUNTY Weld STATE Colorado
API # 05-123-37681

Location
Latitude: 40.015625° N x = 3,167,953 ft Mag Decl: 8.65°
Longitude: 104.800356° W y = 1,249,106 ft Mag Dip: 66.64°
Other Services: Directional

Permanent Datum: Mean Sea Level
Log Measured From: Drill Floor Elev: 5024 ft above perm. datum
Depth Reference: Drillers Tally Total Depth: 12858 ft
Depth Logged: 7320 ft to 12858 ft Runs: 5
Date Logged: 28-Aug-13 to 18-Jul-13 Spud Date: 23-Aug-13

Elevation	
K.B.	Top Drive
G.L.	5008 ft
D.F.	5024 ft
W.D.	Land

Borehole Record			Casing Record			
Hole Size	From	To	Size	Weight	From	To
12.250 in.	Surface	1025 ft	9.625 in.	57.0 lb/ft	Surface	1025 ft
8.750 in.	1025 ft	8282 ft	7.000 in.	26.0 lb/ft	Surface	8277 ft
6.125 in.	8282 ft	12858 ft				

Borehole Deviation Record			Mud Record			
Hole Size	Min. Inc.	Max. Inc.	Type	Weight	From	To
8.750 in.	0.16°	83.76°	WBM	8.45 - 10.10 ppq	1025 ft	12858 ft
6.125 in.	89.88°	93.64°				

All interpretations of log data are opinions based on inferences from electrical or other measurements. Weatherford International does not guarantee the accuracy or correctness of any interpretation or recommendation and we shall not be liable or responsible for any loss, cost, damages or expenses incurred or sustained by anyone resulting from any interpretation or recommendation made by any of our employees or agents.

RUN SUMMARY							
M/LWD Run Number	1	2	3	4	5		
Bit Size in.	8.750	8.750	8.750	6.125	6.125		
Bit Type	PDC	PDC	PDC	PDC	PDC		
Bit TFA sq.in.	1.250	1.250	1.530	1.240	1.240		
Bit Start Depth ft	1025	5496	7320	8282	8452		
Bit End Depth ft	5496	7320	8282	8452	12858		
Top Log Interval ft	NA	NA	7320	8207	8349		
Bottom Log Interval ft	NA	NA	8282	8452	12858		
Begin Log Time hrs	NA	NA	9:59	19:33	11:08		
Begin Log Date DD-MMM-YY	NA	NA	28-Aug-13	31-Aug-13	1-Sep-13		
End Log Time hrs	NA	NA	13:25	21:42	21:33		
End Log Date DD-MMM-YY	NA	NA	29-Aug-13	31-Aug-13	2-Sep-13		
Drill or Wipe	NA	NA	Drill	Drill	Drill		
Flow Rate gal/min	576	546	524	298	298		
Max AV / CV @ MWD ft/min	466 / 100	427 / 310	427 / 356	488 / 361	488 / 372		
Min Inc @ Depth deg @ ft	0.16 @ 1054	0.31 @ 6689	8.14 @ 7376	89.88 @ 8293	88.83 @ 10087		
Max Inc @ Depth deg @ ft	19.92 @ 5067	12.23 @ 5580	83.76 @ 8221	92.03 @ 8378	93.64 @ 9062		
MUD DATA							
Depth ft	5496	7320	8282	8452	12858		
Fluid Type	WBM	WBM	WBM	WBM	WBM		
Mud Weight ppg	8.45	9.90	10.10	10.00	9.15		
Plastic Viscosity cP	1	10	13	11	6		
Solids / Sand %	0.7 / 0.1	7.2 / 0.3	8.7 / 0.1	9.2 / 0.3	6.2 / 0.3		
NaCl Equiv. Chlorides ppm	1980	1980	2310	2970	2640		
pH	8.9	9.0	9.5	9.5	9.1		
Oil:Water Ratio % Vol	0.0 : 100.0	1.0 : 99.0	2.0 : 98.0	2.0 : 98.0	1.0 : 99.0		
Rm @ Temperature ohm-m @ deg F	NA	NA	NA	1.920 @ 70	1.910 @ 70		
Rmc @ Temperature ohm-m @ deg F	NA	NA	NA	1.702 @ 70	1.693 @ 70		
Rmf @ Temperature ohm-m @ deg F	NA	NA	NA	1.619 @ 70	1.608 @ 70		
KCl % Vol	0	0	0	0	0		
Client Representative	J. Tettleton	J. Tettleton	J. Tettleton	R. McPeters	R. McPeters		
WeatherfordM/LWD Engineer	D. Palmer	D. Palmer	D. Palmer	M. Nguyen	M. Nguyen		

EQUIPMENT SUMMARY

M/LWD Run Number	1	2	3	4	5
BTR / CDS Serial Number	44702 / 44736	44702 / 44736	44702 / 44736	NA	NA
Battery Serial Number	403715890	403715890	403715890	NA	NA
Gamma Ray Serial Number	NA	NA	51262	NA	NA
HEL Serial Number	NA	NA	NA	NW132070PDBS4.75	NW132070PDBS4.75
MFR Serial Number	NA	NA	NA	NW132071RBBKV4.75	NW132071RBBKV4.75
SAGR Serial Number	NA	NA	NA	NW132073JB4.75	NW132077JB4.75
IDS Serial Number	NA	NA	NA	NW132072IB4.75	NW132072IB4.75
Sensor to Bit Offsets / Acquisition Rates					
Directional	ft / sec	63.90 / RT	59.19 / RT	59.22 / RT	55.18 / RT
Gamma Ray	ft / sec	NA	NA	45.01 / 16	66.88 / 5
Resistivity	ft / sec	NA	NA	NA	76.45 / 5
Spectral Gamma Ray	ft / sec	NA	NA	NA	40.40 / 5
Other Information					
Total BHA Length	ft	120.33	115.62	115.65	7228.09
BHA Assembly Type		Steerable	Steerable	Steerable	Steerable
Stabilizer Location	ft	NA	NA	NA	30.34
Run Circulating Time	hr	30.97	16.93	28.99	4.25
Run Drilling Time	hr	22.53	11.19	15.16	0.88

MUD SUMMARY

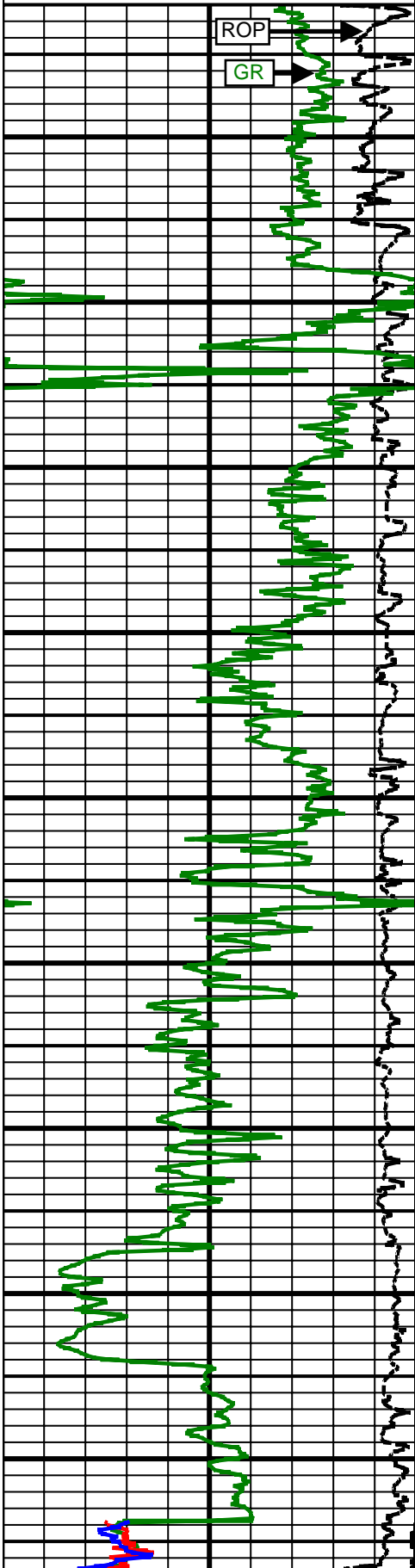
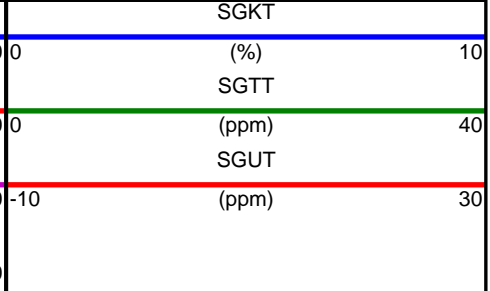
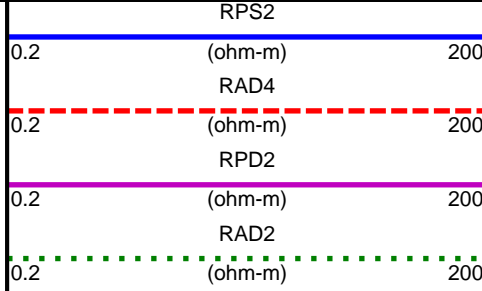
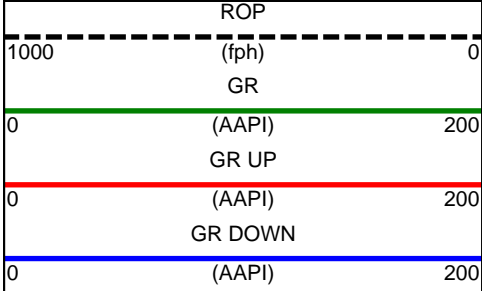
Date and Time	Run	Bit Depth	Mud Weight	% K	Rm @ Temp	Rmf @ Temp	Rmc @ Temp	BHCT
26 Aug 13 @ 15:00	01	5496 ft	8.45 ppg	0	NA	NA	NA	148 F
28 Aug 13 @ 00:00	02	7320 ft	9.90 ppg	0	NA	NA	NA	170 F
29 Aug 13 @ 22:00	03	8282 ft	10.10 ppg	0	NA	NA	NA	169 F
31 Aug 13 @ 21:42	04	8452 ft	10.00 ppg	0	1.920 ohm-m @ 70 F	1.702 ohm-m @ 70 F	1.619 ohm-m @ 70 F	183 F
02 Sept 13 @ 21:33	05	12858 ft	9.15 ppg	0	1.910 ohm-m @ 70 F	1.693 ohm-m @ 70 F	1.608 ohm-m @ 70 F	227 F

M/LWD RUN REMARKS			
Run Number: 1 :: RECORDED DATA LOG			
WFT Services Provided: Directional Services: On demand Inclination and Azimuth.			
Run Number: 2 :: RECORDED DATA LOG			
WFT Services Provided: Directional Services: On demand Inclination and Azimuth.			
Run Number: 3 :: RECORDED DATA LOG			
WFT Services Provided: Recorded and Real Time Logging: Gamma Ray and Temperature. Directional Services: On demand Inclination and Azimuth.			
Borehole and Environmental Correction:			
Hole Size:	8.750 in.	Gamma Ray: Hole size, mudweight, Collar O.D., Collar I.D. and K1 factor.	
Mud Weight:	10.20 ppg	Collar O.D.:	6.860 in.
K1 Factor:	3.18	Collar I.D.:	3.250 in.
Run Number: 4 :: RECORDED DATA LOG			
WFT Services Provided: Recorded and Real Time Logging: Spectral Gamma Ray, Deep, Medium and Shallow Resistivity, and Temperature. Directional Services: On demand Inclination and Azimuth.			
Borehole and Environmental Correction:			
Hole Size:	6.125 in.	Gamma Ray: Corrected for mud weight, hole size and KCl concentration.	
Mud Weight:	9.00 ppg	Resistivities: Corrected for borehole temperature, hole size, drilling fluid resistivity	
Borehole Temperature:	183° F	and dielectric correction.	
Drilling Fluid Resistivity:	WBM (0.777 ohm-m)		
KCl Concentration:	0%		
Run Number: 5 :: RECORDED DATA LOG			
WFT Services Provided: Recorded and Real Time Logging: Spectral Gamma Ray, Deep, Medium and Shallow Resistivity, and Temperature. Directional Services: On demand Inclination and Azimuth.			
Borehole and Environmental Correction:			
Hole Size:	6.125 in.	Gamma Ray: Corrected for mud weight, hole size and KCl concentration.	
Mud Weight:	9.00 ppg	Resistivities: Corrected for borehole temperature, hole size, drilling fluid resistivity	
Borehole Temperature:	200° F	and dielectric correction.	
Drilling Fluid Resistivity:	WBM (0.713 ohm-m)		
KCl Concentration:	0%		

M/LWD LOG COMMENTS	
Comment No. 1-1	No logging during this run.
Comment No. 2-1	No logging during this run.
Comment No. 3-1	RECORDED DATA LOG Start of M/LWD Drilling Run 03 Weatherford International provided 6 3/4 in. Directional and Gamma Ray for Run 03. Run 03 started formation drilling August 28, 2013 at 9:59 at 7320 MD / 7157 TVD. Weatherford International logged the 8.750 in. borehole. The WBM at the start of drilling was 10.10 ppg.
Comment No. 3-2	End of M/LWD Drilling Run 03 Run 03 ended drilling formation August 29, 2013 at 13:25 at 8282 MD / 7776 TVD. The WBM at the end of drilling was 10.10 ppg.
Comment No. 4-1	RECORDED DATA LOG Start of M/LWD Drilling Run 04 Weatherford International provided 4 3/4 in. Directional, Resistivity and Spectral Gamma Ray for Run 04. Run 04 started formation drilling August 31, 2013 at 19:33 at 8282 MD / 7776 TVD. Weatherford International logged the 6.125 in. borehole. The WBM at the start of drilling was 10.00 ppg.
Comment No. 4-2	End of M/LWD Drilling Run 04 Run 04 ended drilling formation August 31, 2013 at 21:42 at 8452 MD / 7772 TVD. The WBM at the end of drilling was 10.00 ppg.
Comment No. 5-1	RECORDED DATA LOG Start of M/LWD Drilling Run 05 Weatherford International provided 4 3/4 in. Directional, Resistivity and Spectral Gamma Ray for Run 05. Run 05 started formation drilling September 1, 2013 at 11:08 at 8452 MD / 7772 TVD. Weatherford International logged the 6.125 in. borehole. The WBM at the start of drilling was 9.50 ppg.
Comment No. 5-2	End of M/LWD Drilling Run 05 Run 05 ended drilling formation September 2, 2013 at 21:33 at 12858 MD / 7721 TVD. The WBM at the end of drilling was 9.15 ppg.

CURVE SPECIFICATIONS				
CURVE TYPE	MNEMONIC	UNITS	COMMENTS	CORRECTIONS
Rate of Penetration	ROP	fph	Rate of Penetration 3.0 ft window 0.5 ft Exponential Smoothing	None
Azimuthal Gamma Ray	GR	AAPI	Recorded Azimuthal Gamma Ray 3.0 ft window 0.5 ft Exponential Smoothing	See M/LWD Run Remarks
Azimuthal Gamma Ray	GR UP	AAPI	Recorded Azimuthal Gamma Ray 3.0 ft window 0.5 ft Exponential Smoothing	
Azimuthal Gamma Ray	GR DOWN	AAPI	Recorded Azimuthal Gamma Ray 3.0 ft window 0.5 ft Exponential Smoothing	
Potassium Concentration	SGKT	%	Potassium Concentration 3.0 ft window 0.5 ft Two Stage Smoothing	
Uranium Concentration	SGUT	ppm	Uranium Concentration 3.0 ft window 0.5 ft Two Stage Smoothing	
Thorium Concentration	SGTT	ppm	Thorium Concentration 3.0 ft window 0.5 ft Two Stage Smoothing	
Deep Phase Resistivity	RPD2	ohm-m	2MHz Deep Phase Resistivity 3.0 ft window 0.5 ft Exponential Smoothing	
Shallow Phase Resistivity	RPS2	ohm-m	2MHz Shallow Phase Resistivity 3.0 ft window 0.5 ft Exponential Smoothing	
Deep Attenuation Resistivity	RAD2	ohm-m	2MHz Shallow Phase Resistivity 3.0 ft window 0.5 ft Exponential Smoothing	
Deep Attenuation Resistivity	RAD4	mmho/m	400kHz Deep Phase Resistivity 3.0 ft window 0.5 ft Exponential Smoothing	

1 Inch - Measured Depth



7400 MD

7500 MD

7600 MD

7700 MD

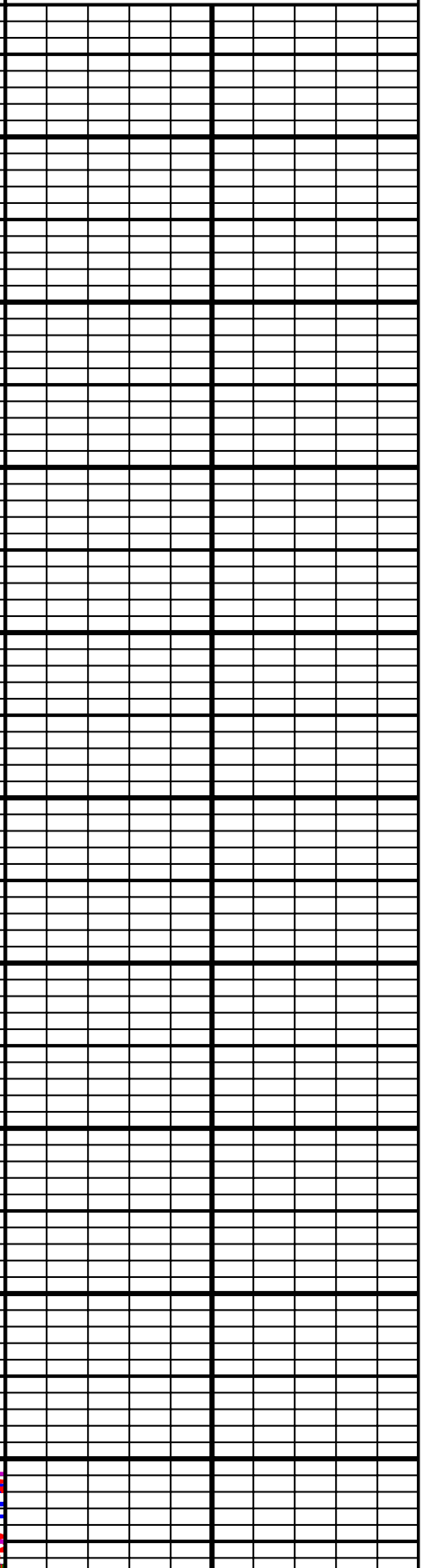
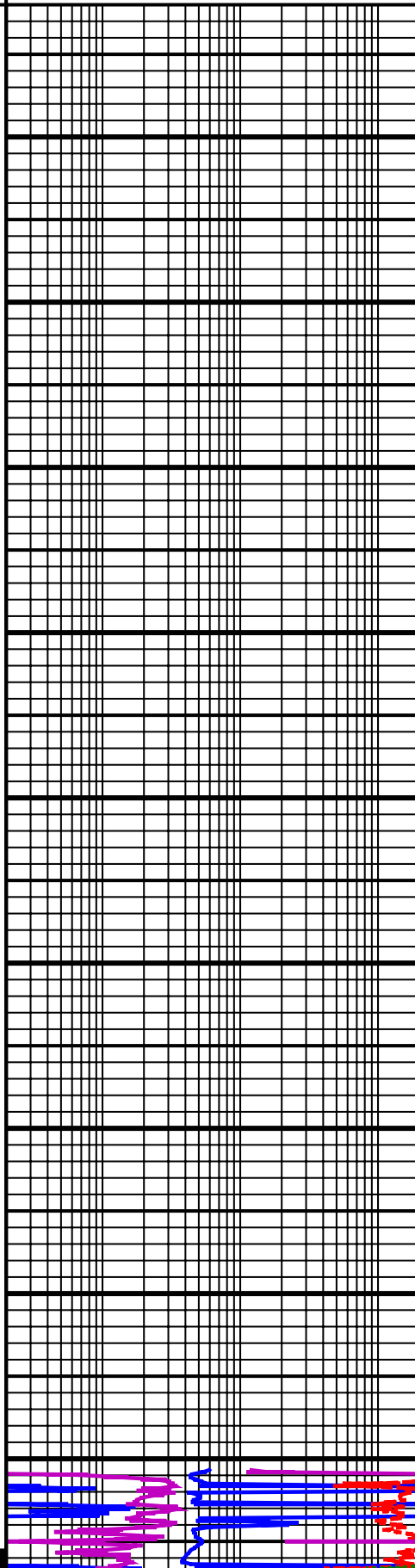
7800 MD

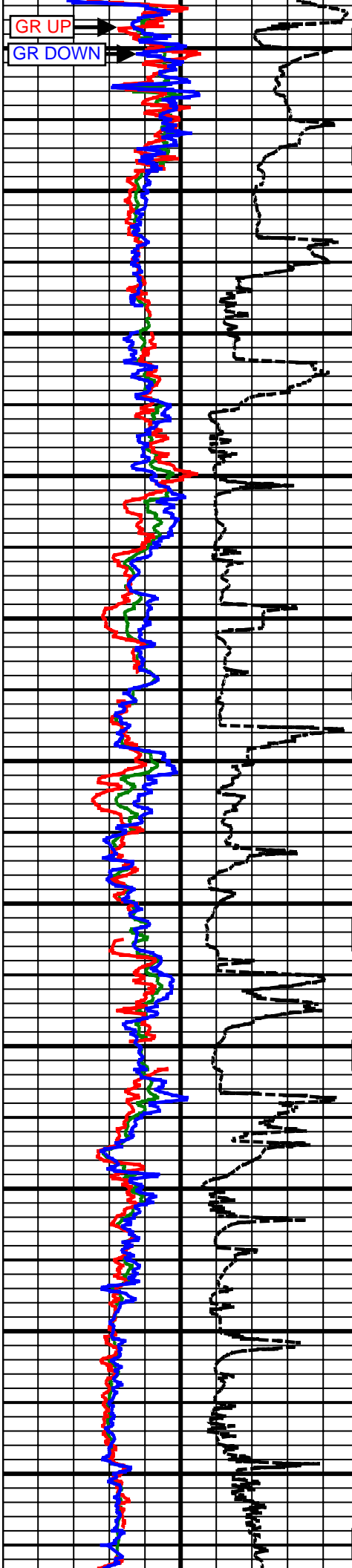
7900 MD

8000 MD

8100 MD

8200 MD





Casing

8300 MD

8400 MD

8500 MD

8600 MD

8700 MD

8800 MD

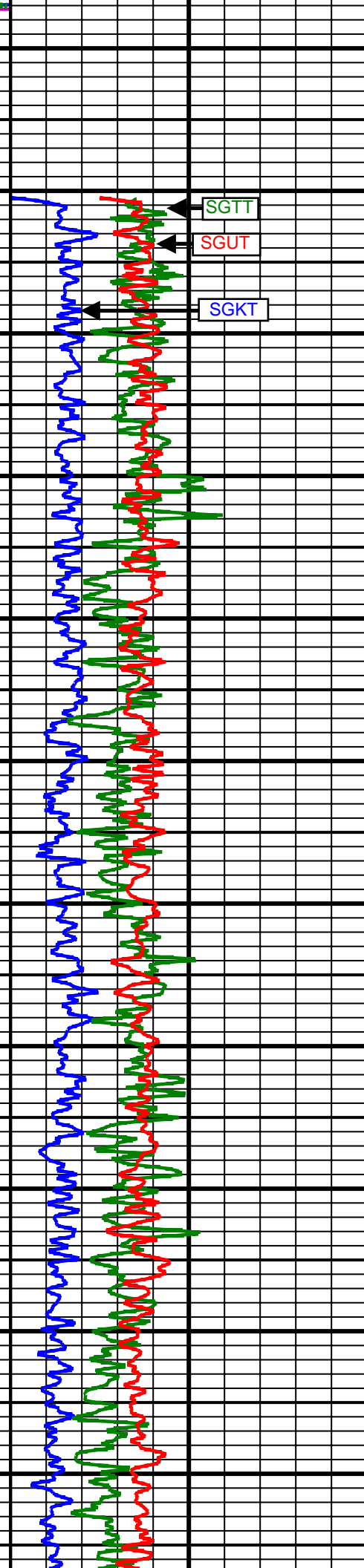
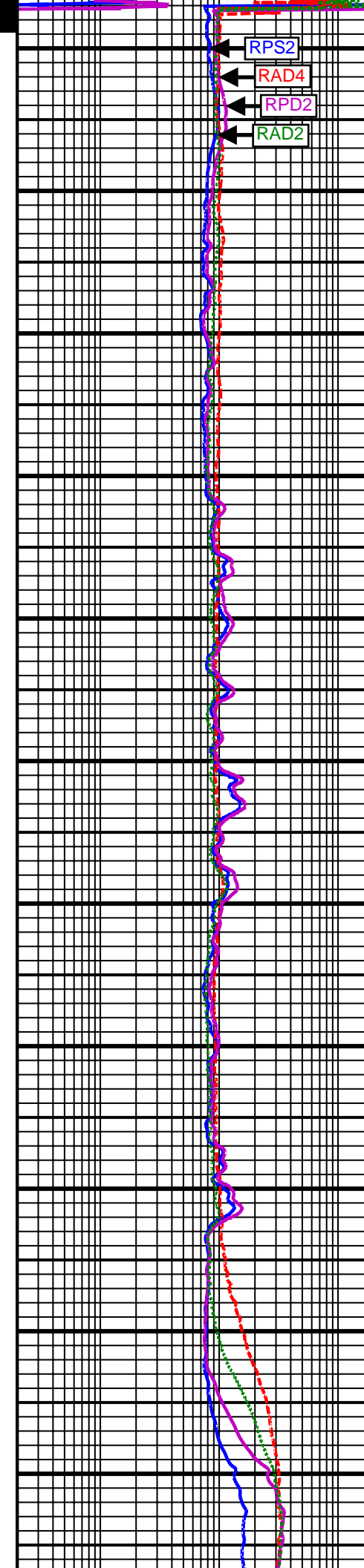
8900 MD

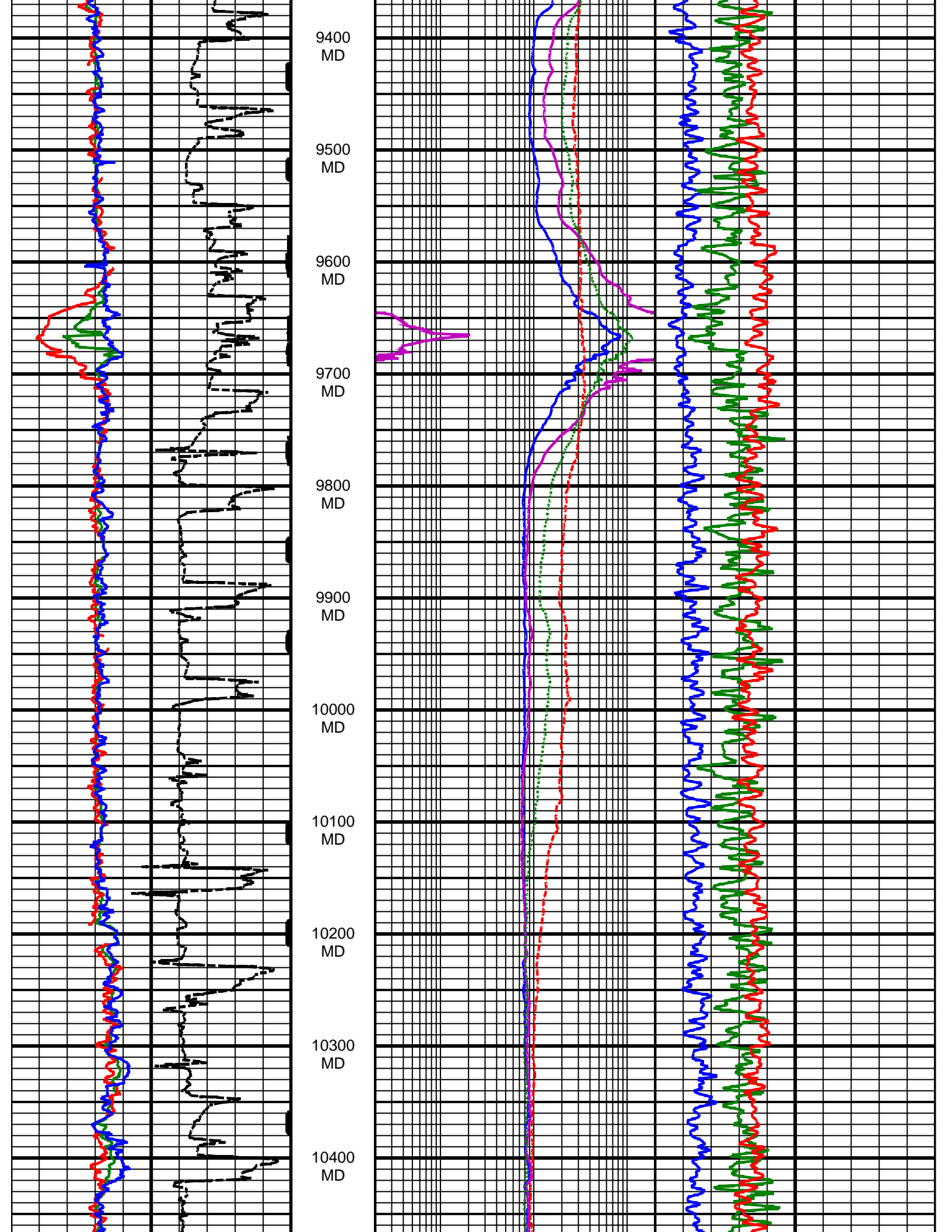
9000 MD

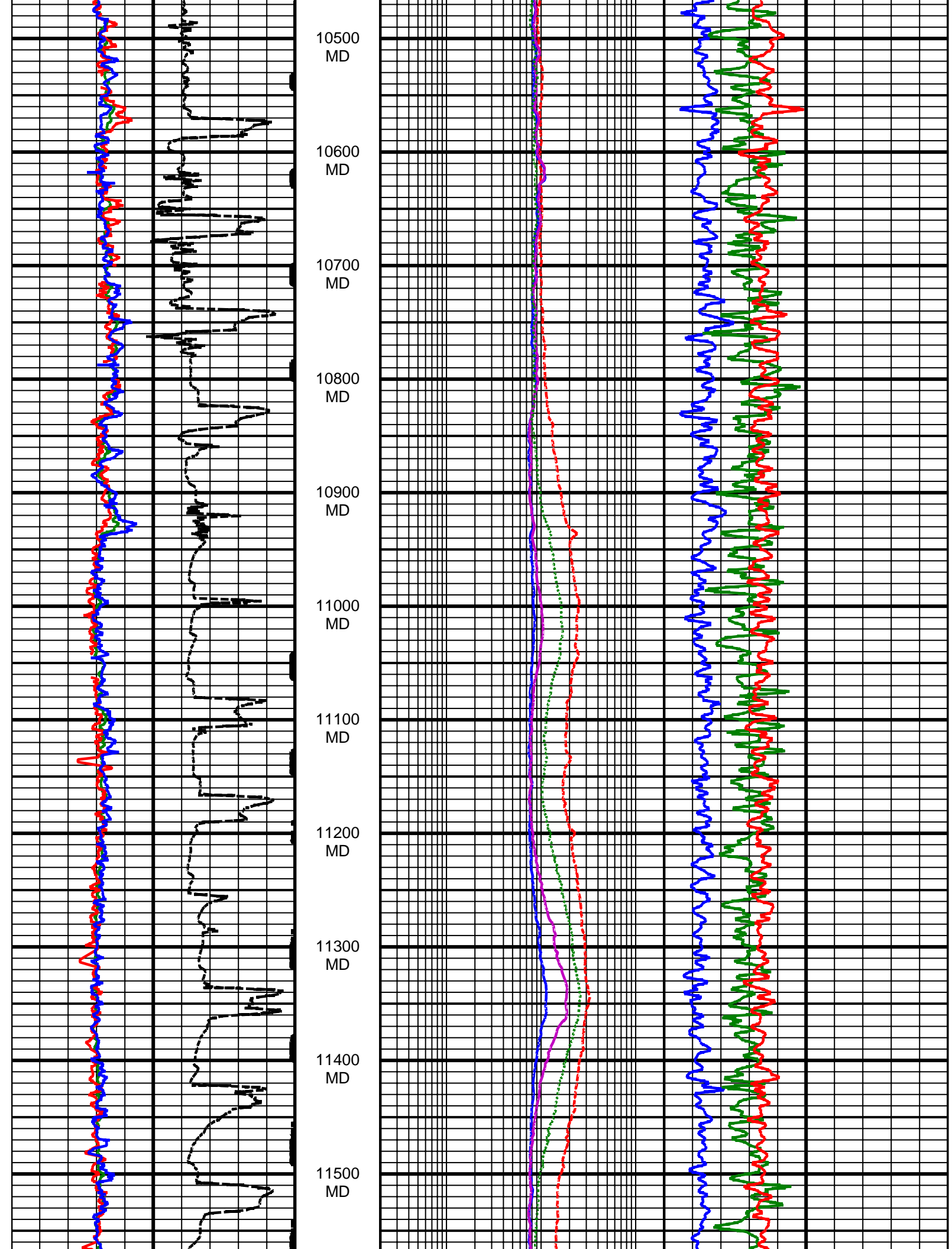
9100 MD

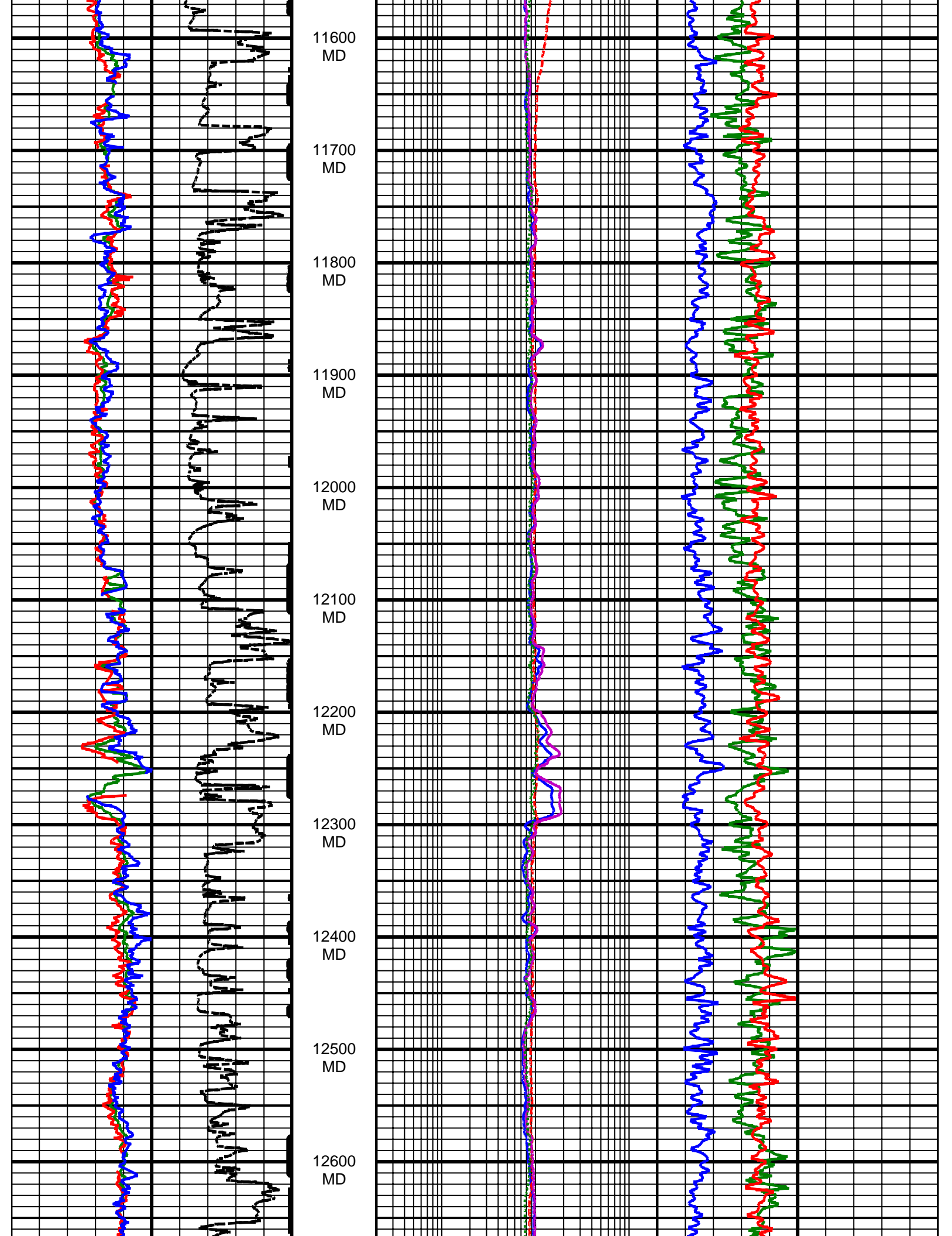
9200 MD

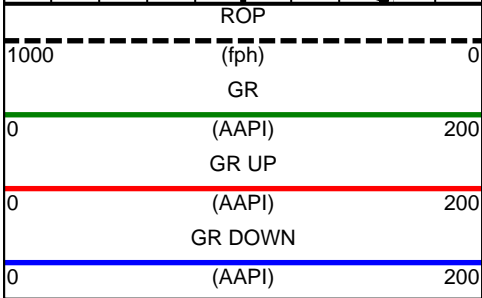
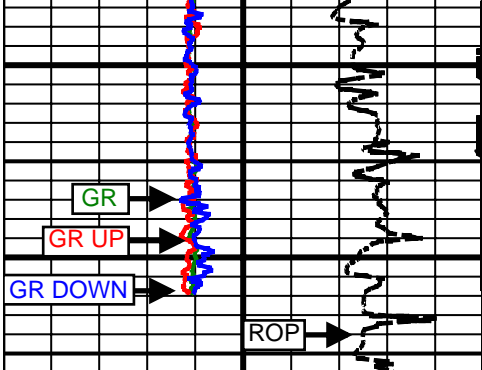
9300 MD





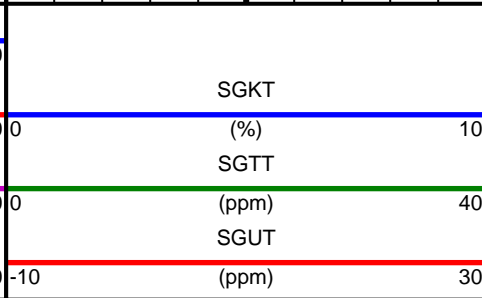
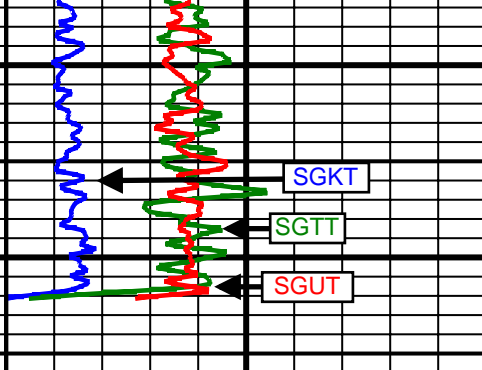
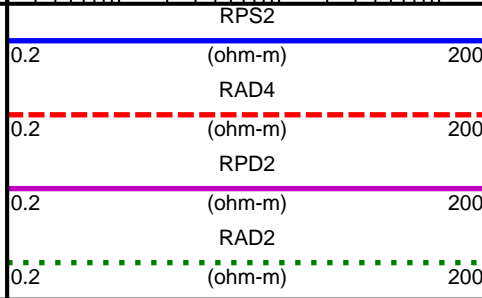
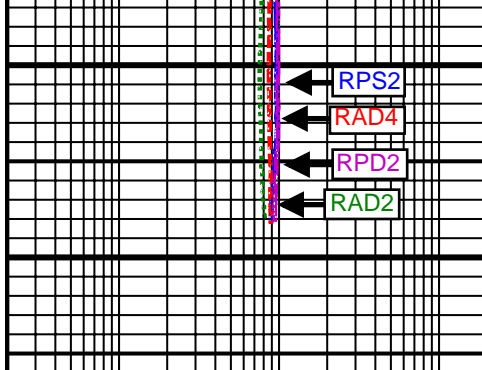






12700
MD

12800
MD

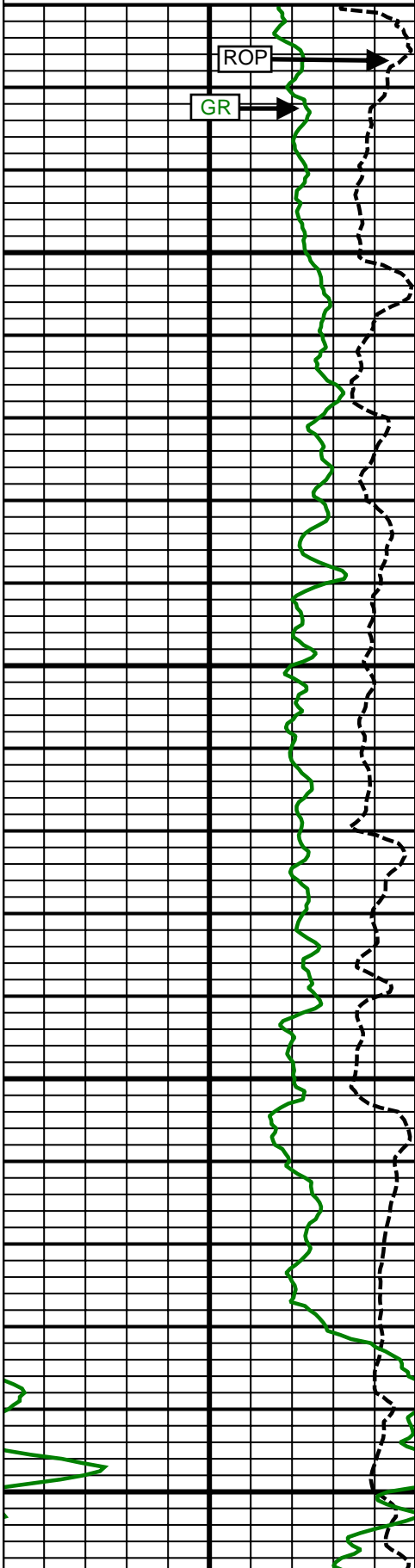


5 Inch - Measured Depth

1000	ROP	0
	(fph)	
	GR	
0	(AAPI)	200
	GR UP	
0	(AAPI)	200
	GR DN	
0	(AAPI)	200

0.2	RPS2	200
	(ohm-m)	
0.2	RAD4	200
	(ohm-m)	
0.2	RPD2	200
	(ohm-m)	
0.2	RAD2	200
	(ohm-m)	

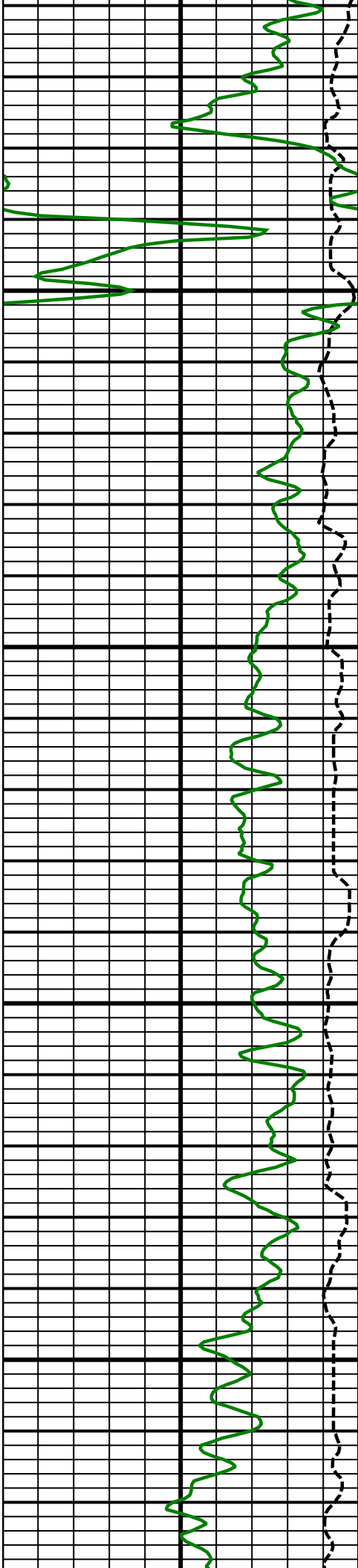
0	SGKT	10
	(%)	
0	SGTT	40
	(ppm)	
-10	SGUT	30
	(ppm)	



Comment
3-1

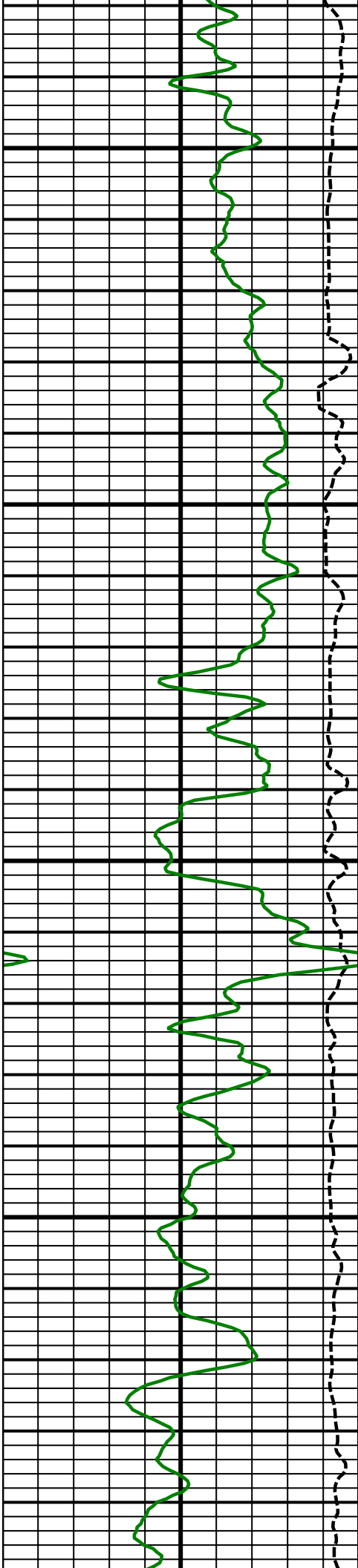
7400
MD

7500
MD



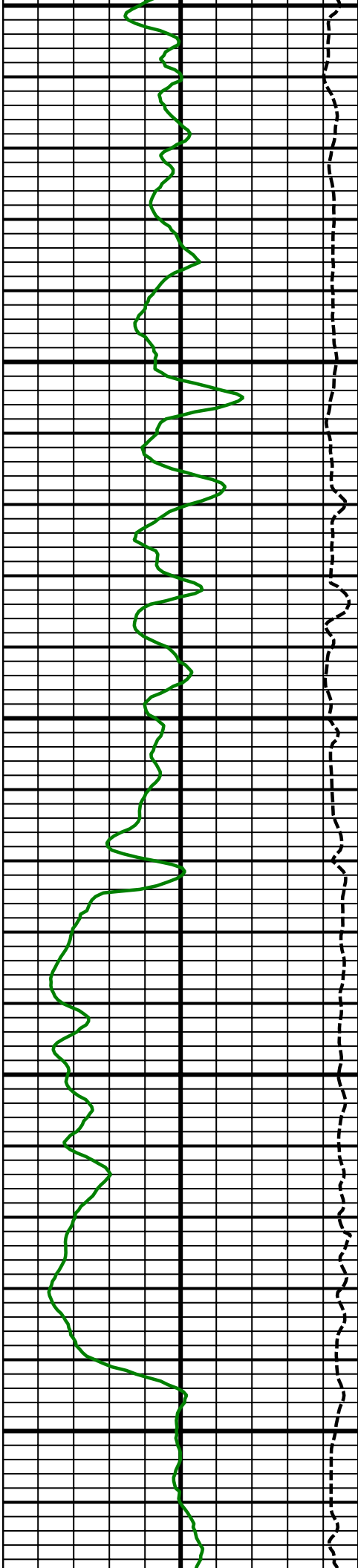
7600
MD

7700
MD



7800
MD

7900
MD



8000
MD

8100
MD

8200
MD

GR DOWN

GR UP

Casing

Comment
3-2

Comment
4-1

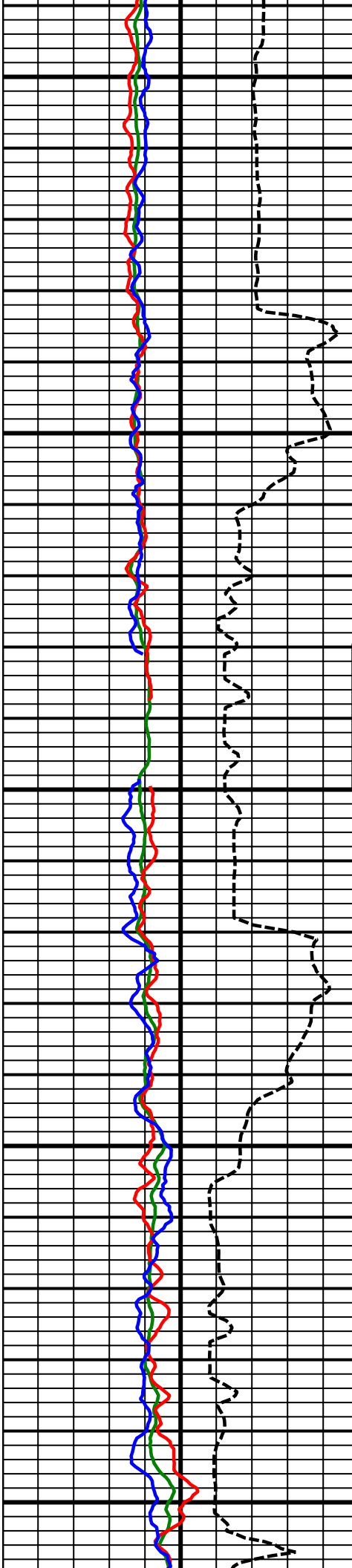
8300
MD

RAD2

RAD4

RPS2

RPD2



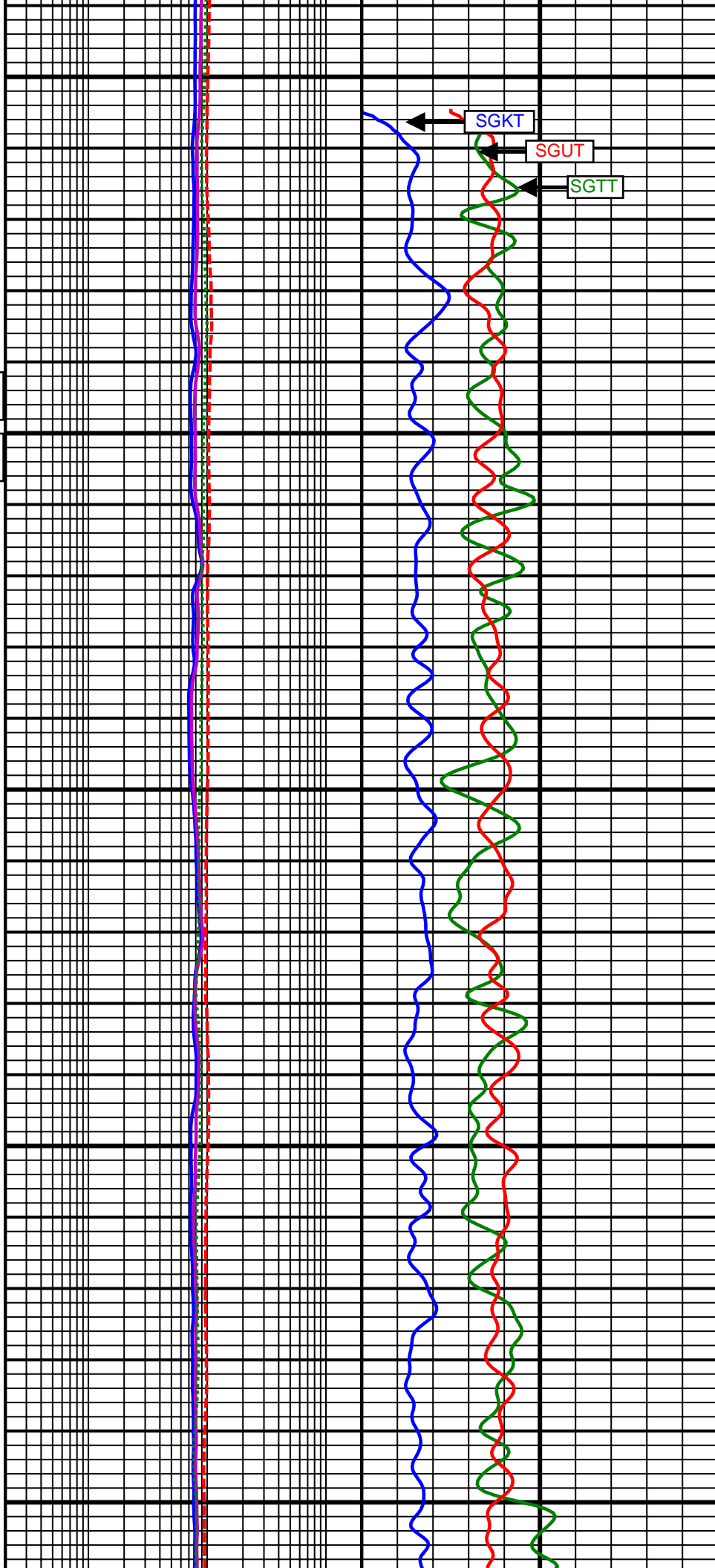
8400
MD

Comment
4-2

Comment
5-1

8500
MD

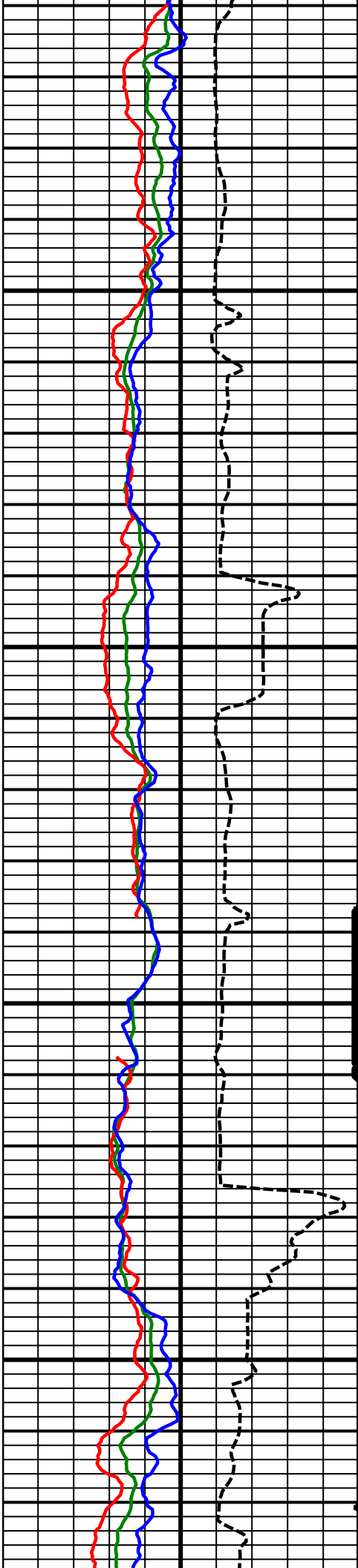
8600
MD



SGKT

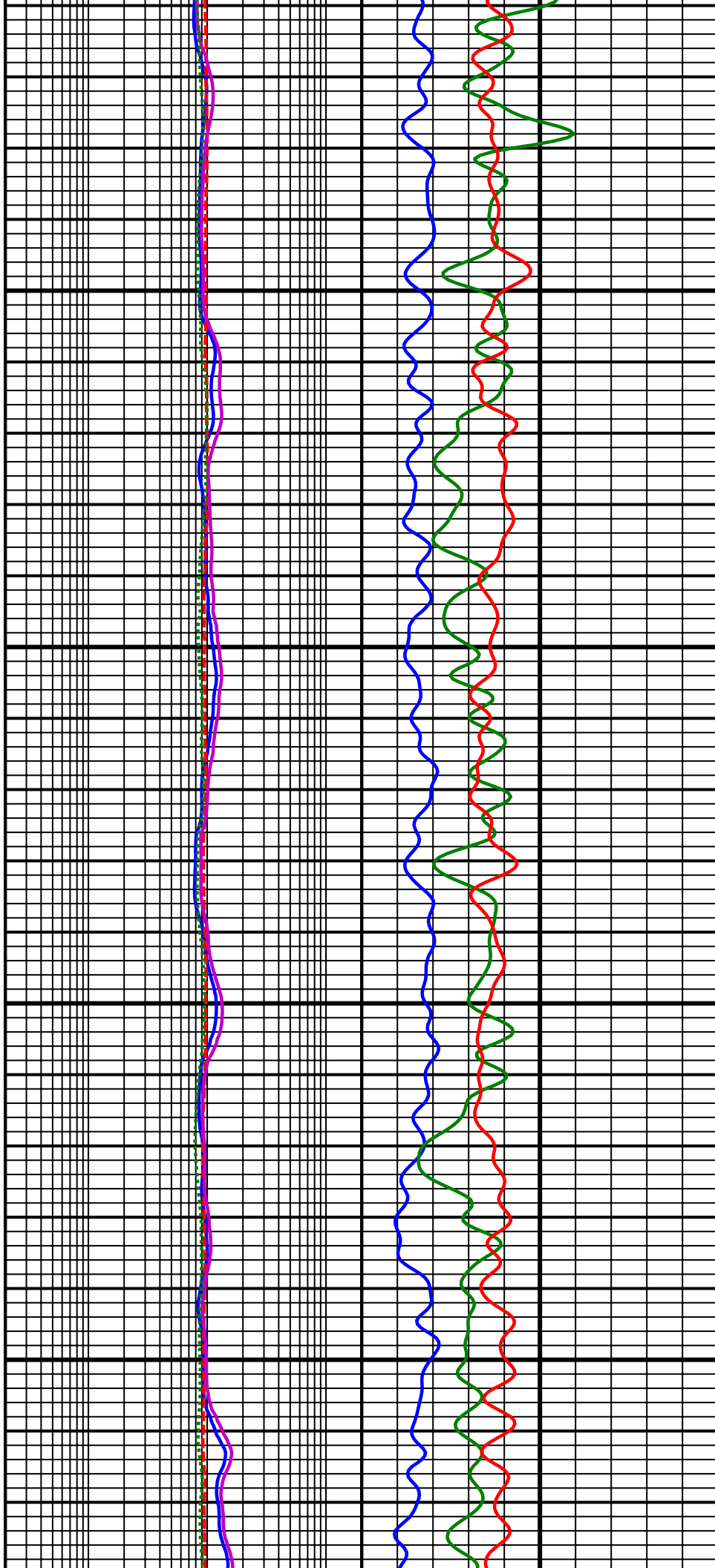
SGUT

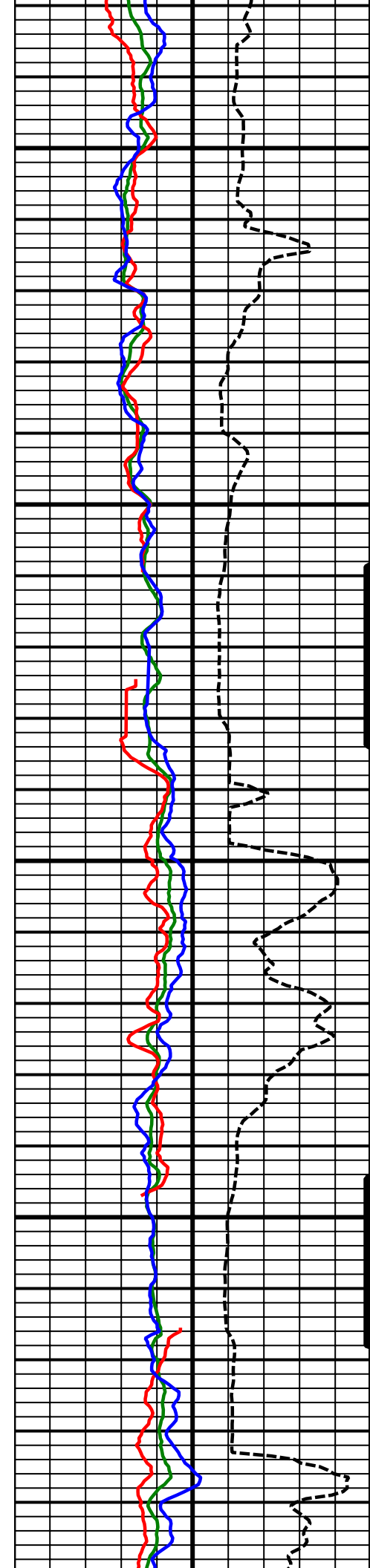
SGTI



8700
MD

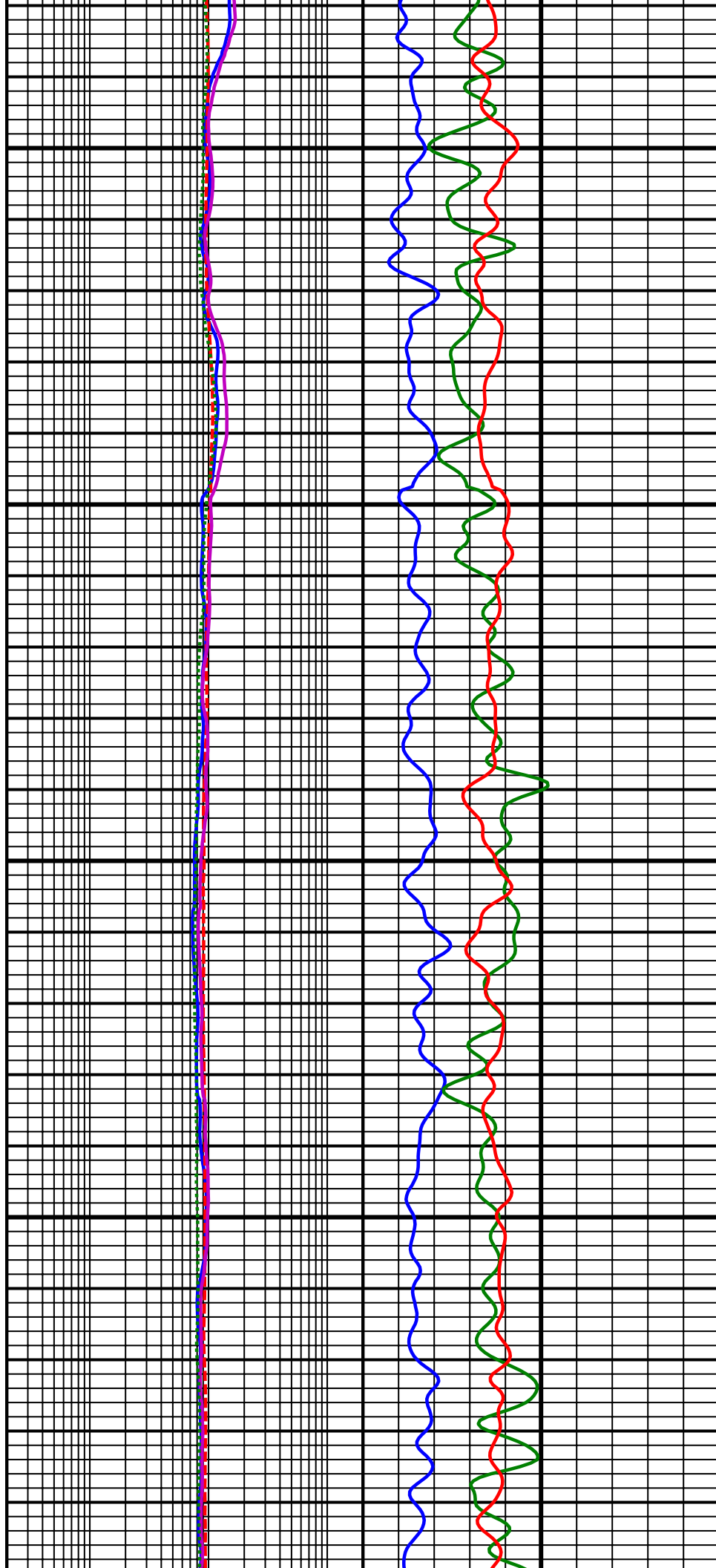
8800
MD

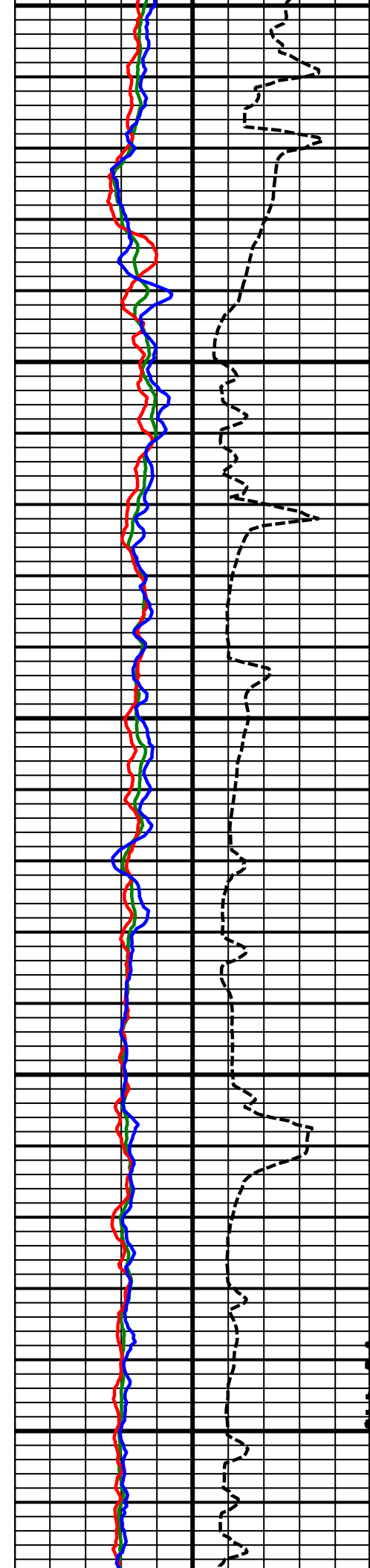




8900
MD

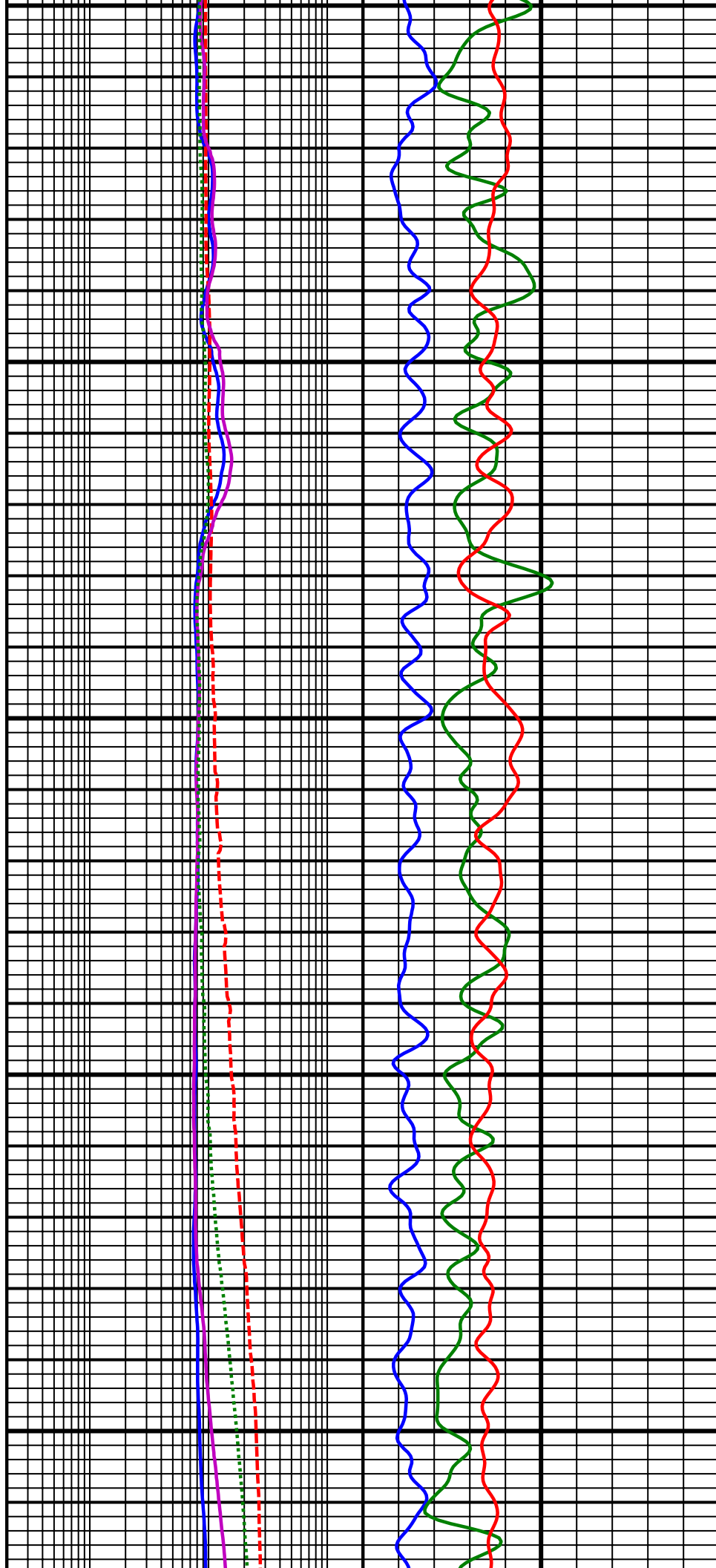
9000
MD

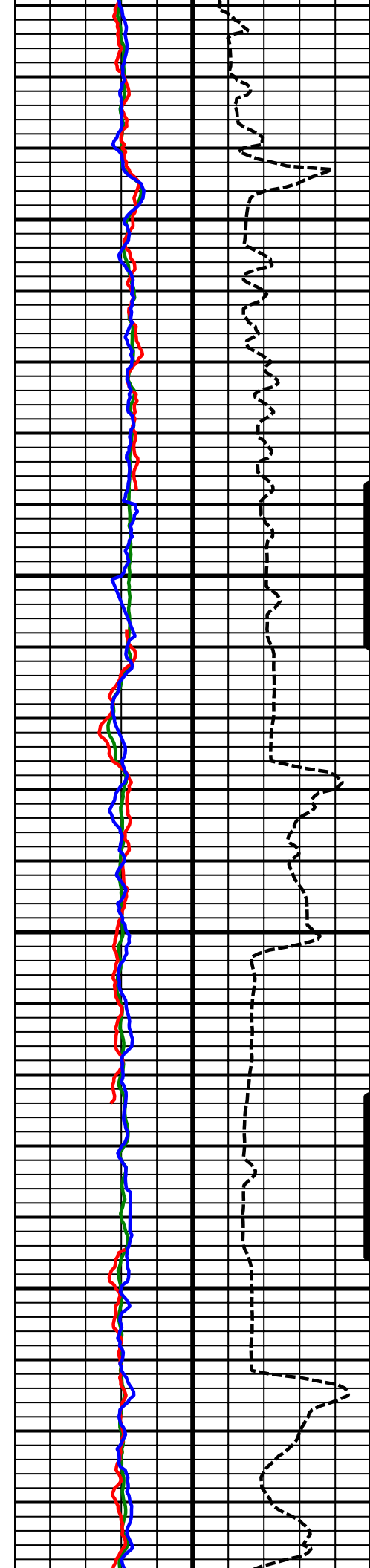




9100
MD

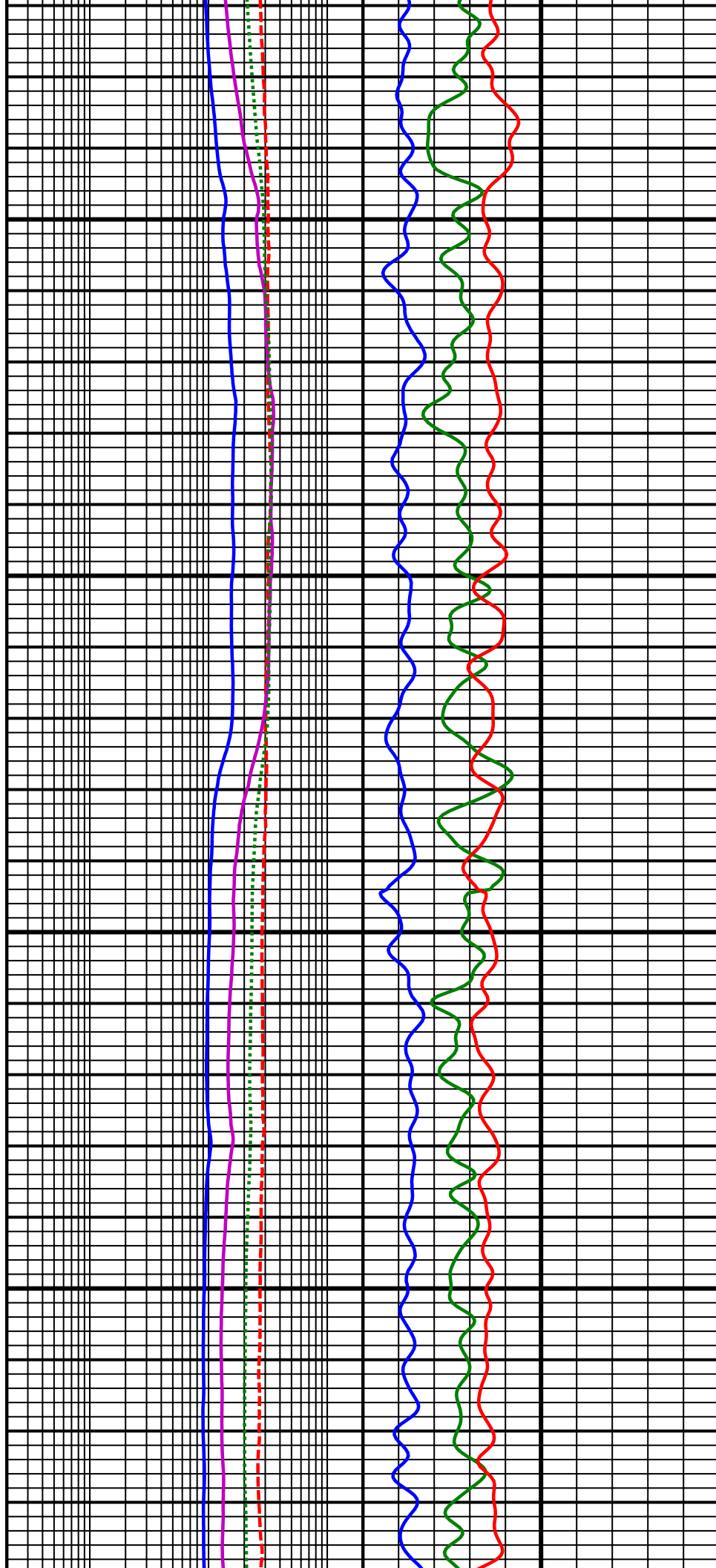
9200
MD





9300
MD

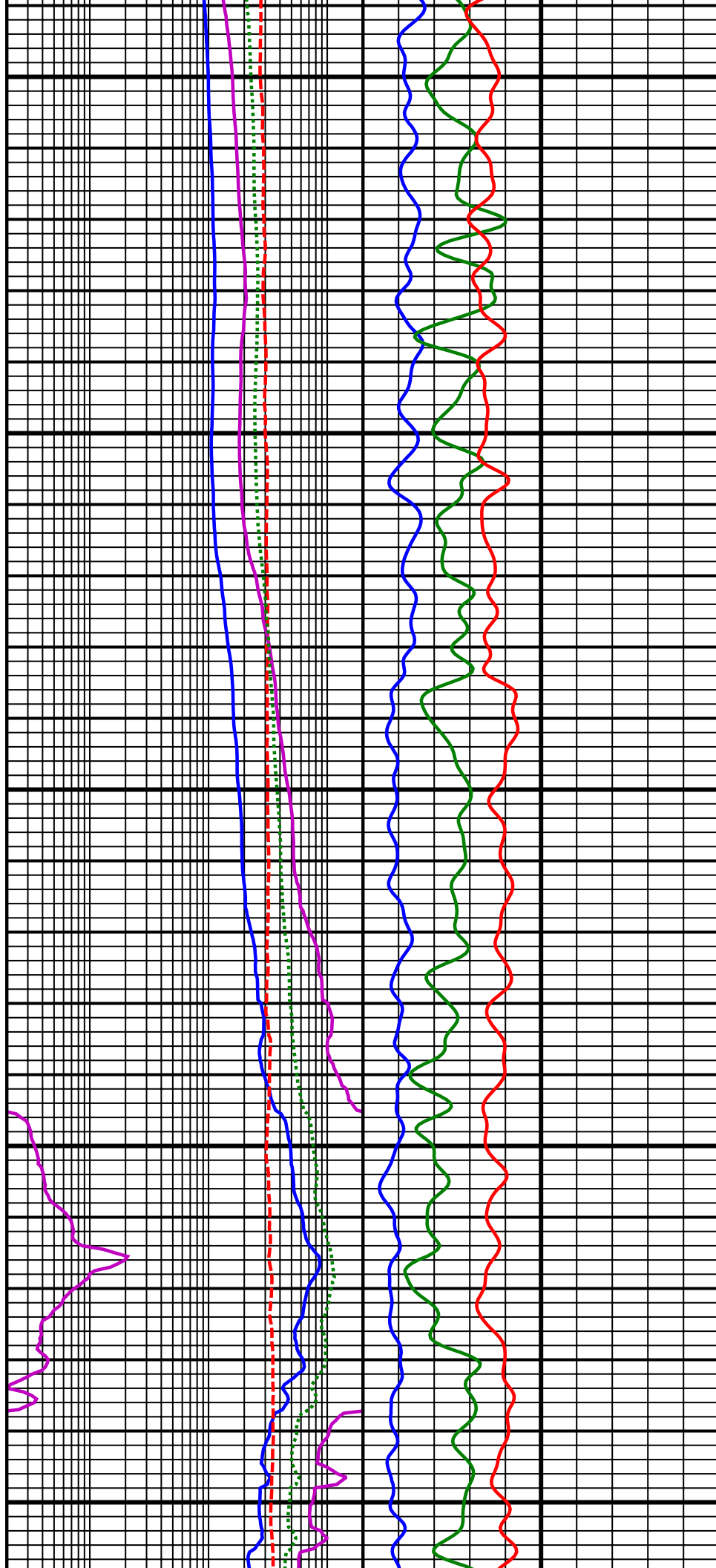
9400
MD

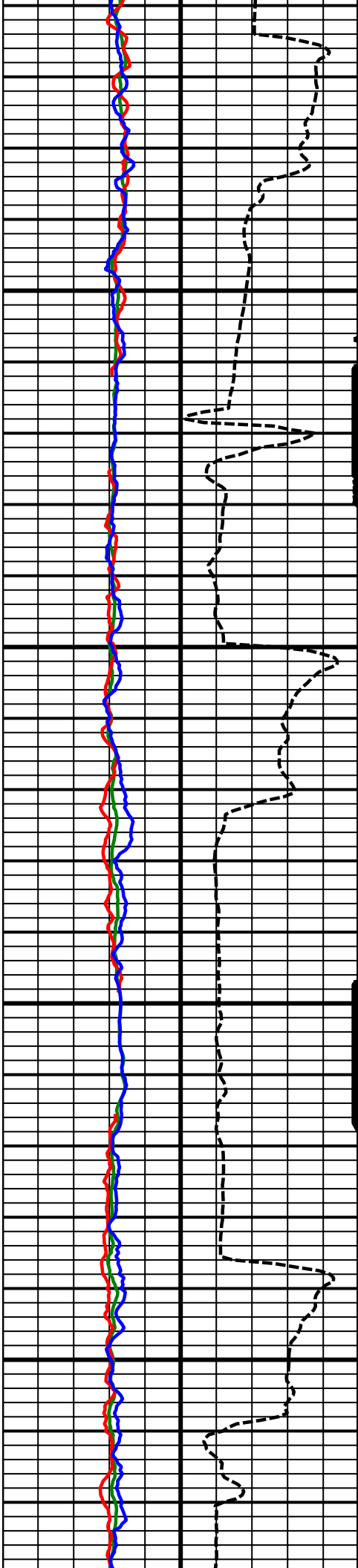


9500
MD

9600
MD

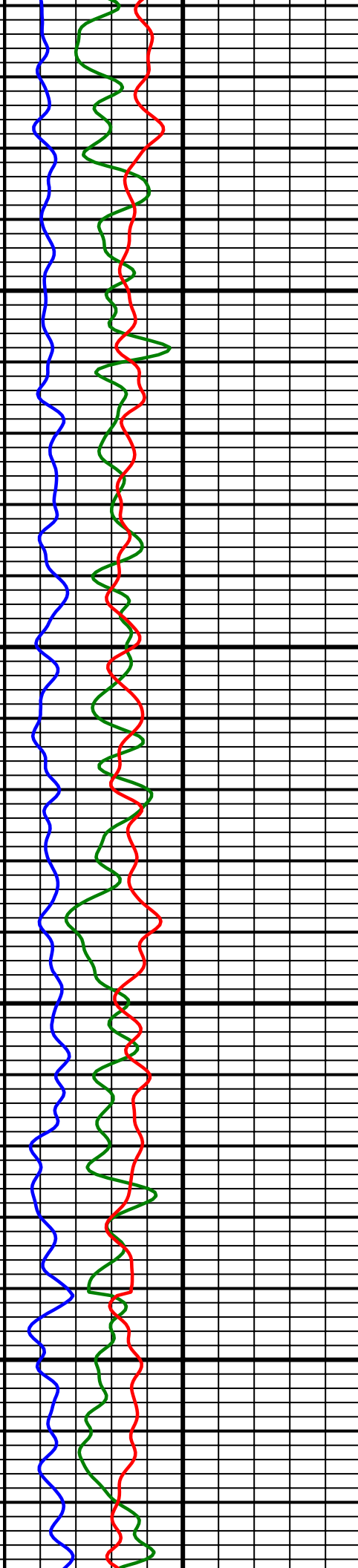
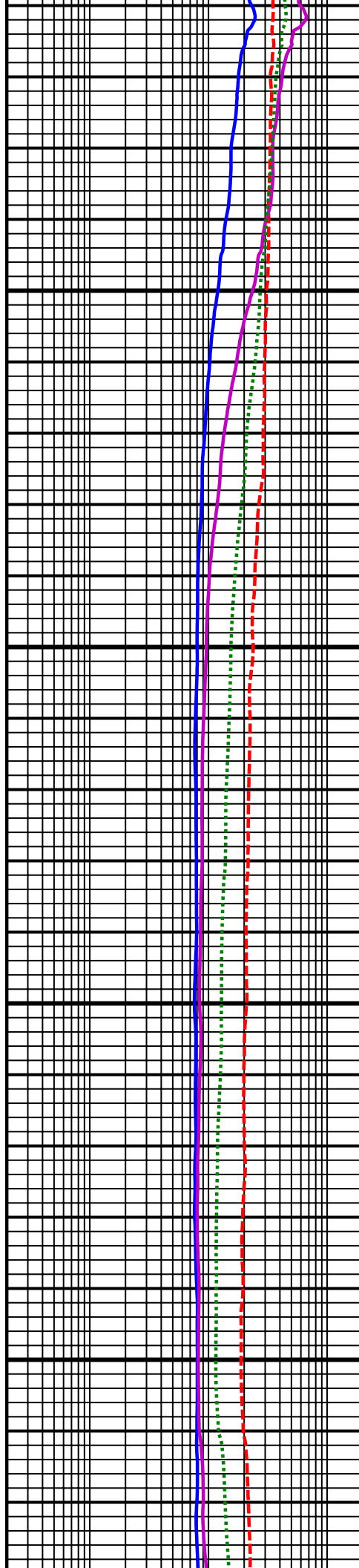
9700
MD

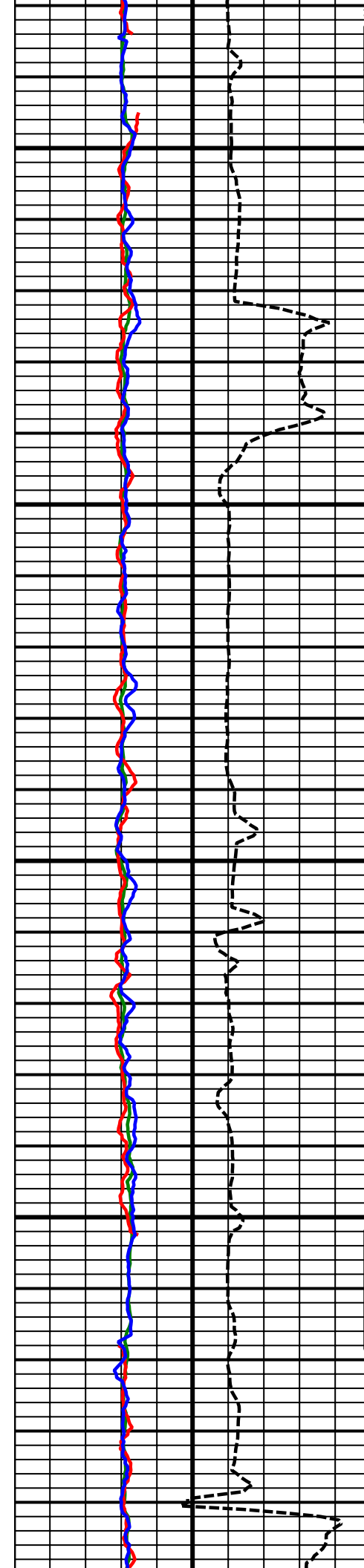




9800
MD

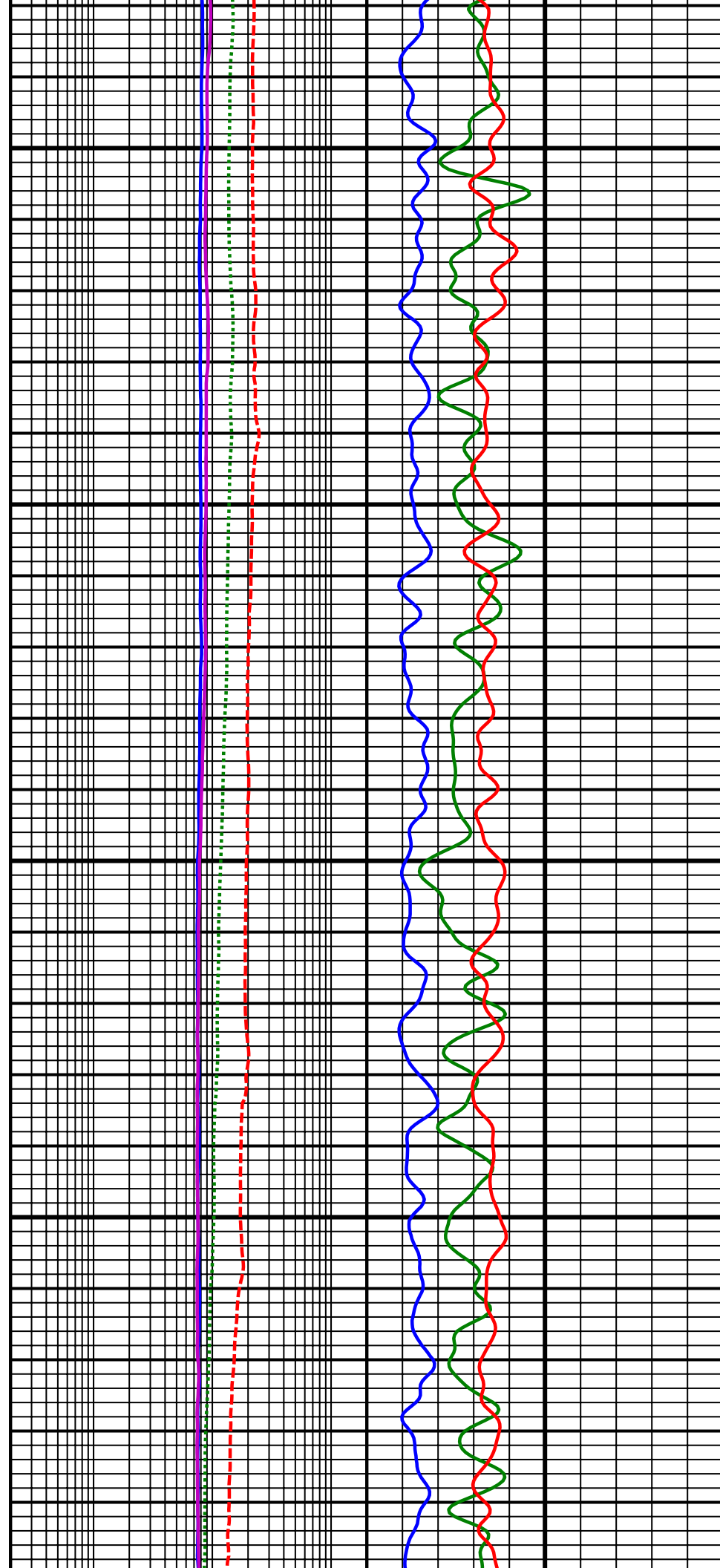
9900
MD

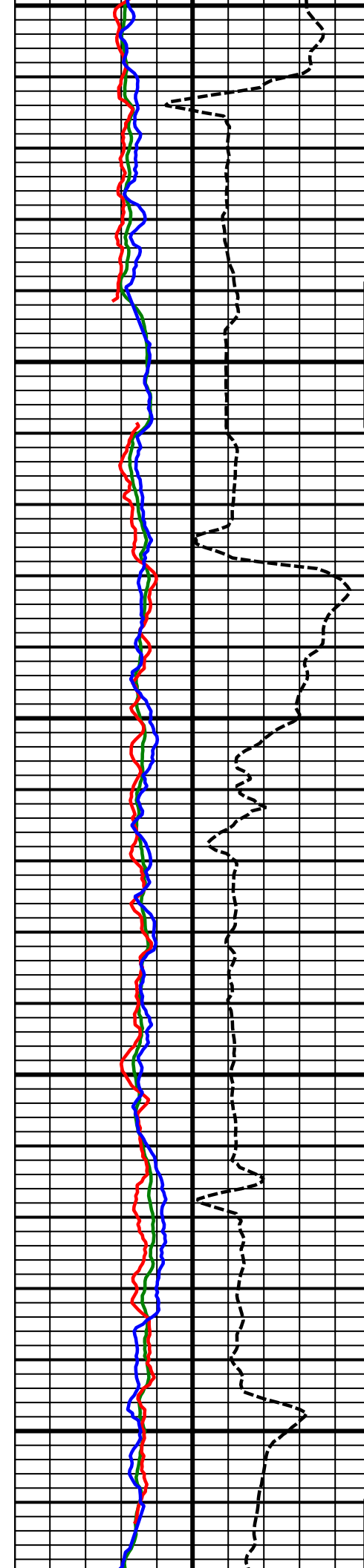




10000
MD

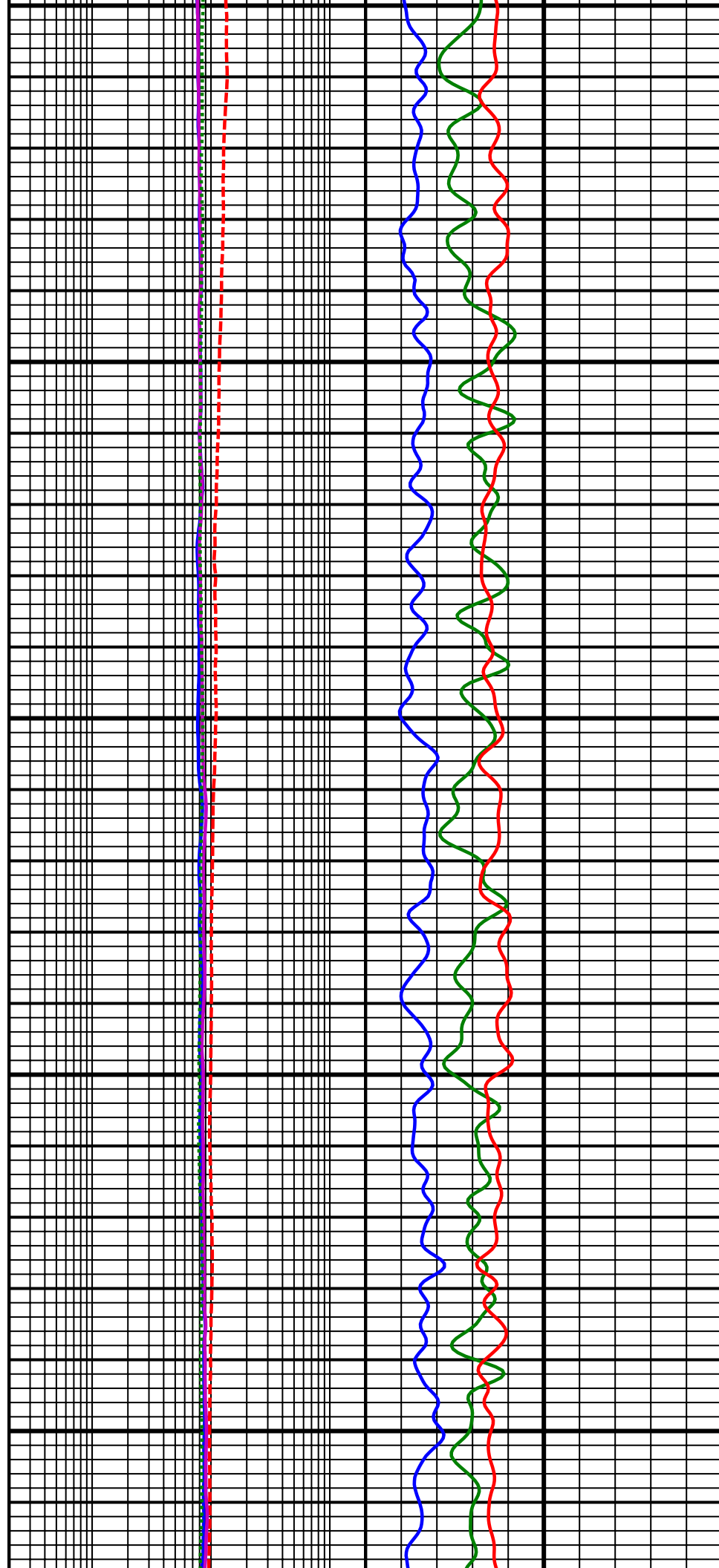
10100
MD

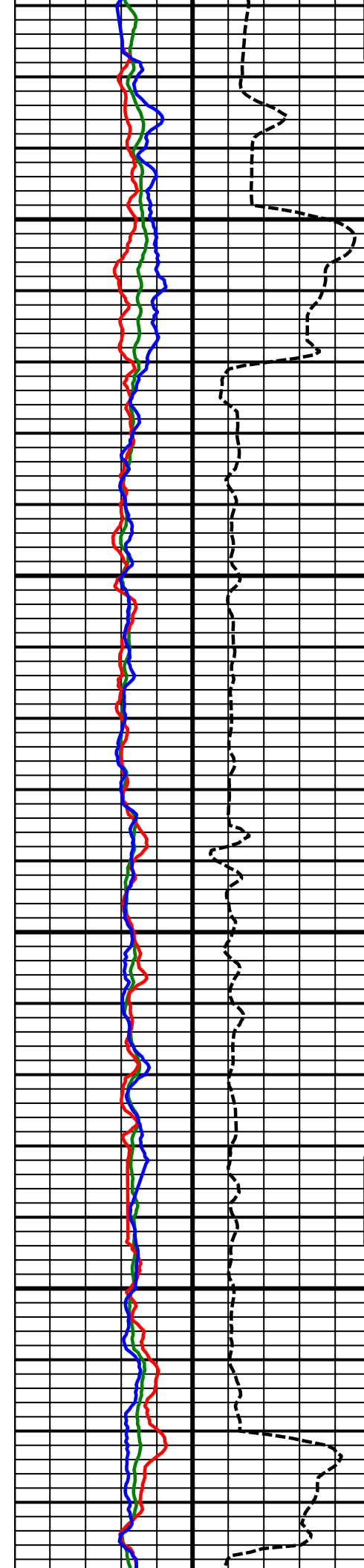




10200
MD

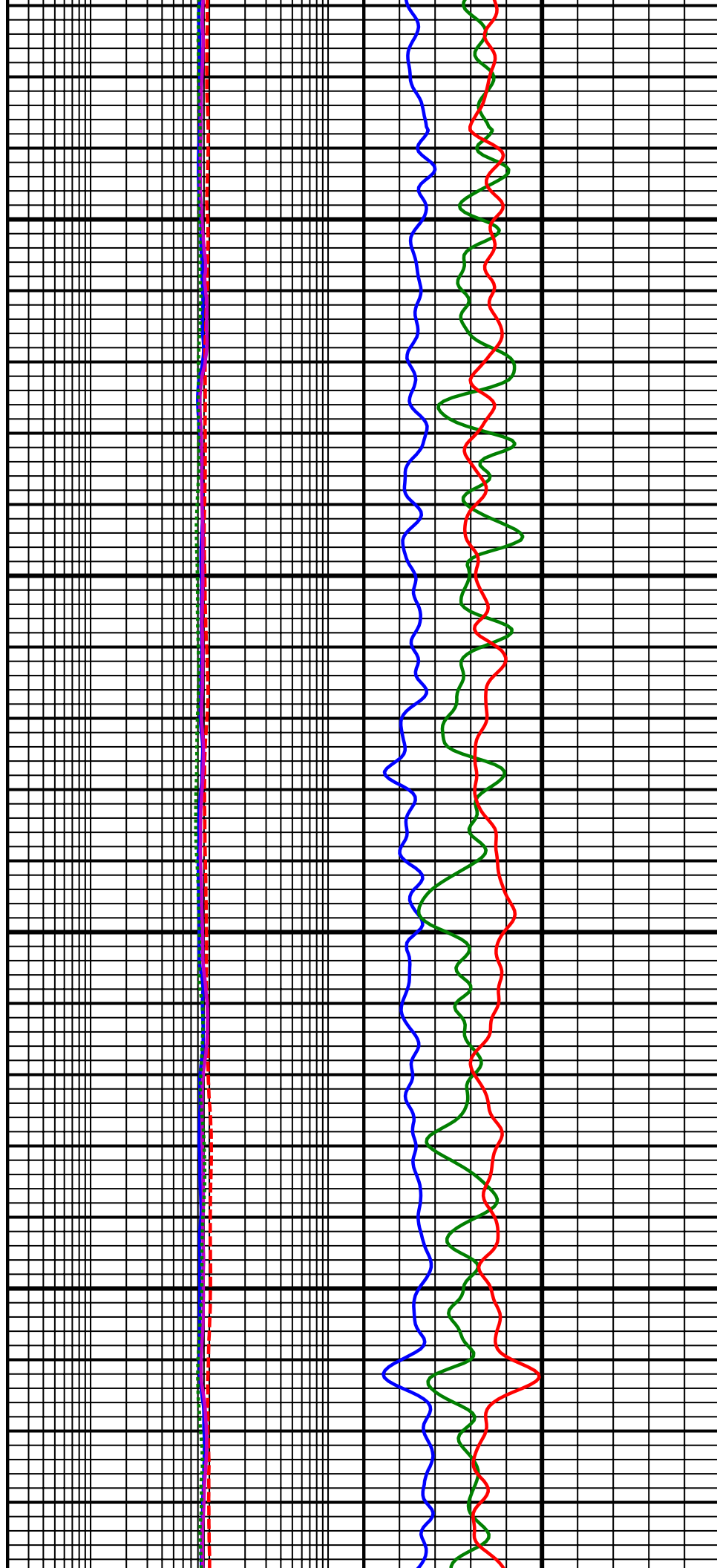
10300
MD

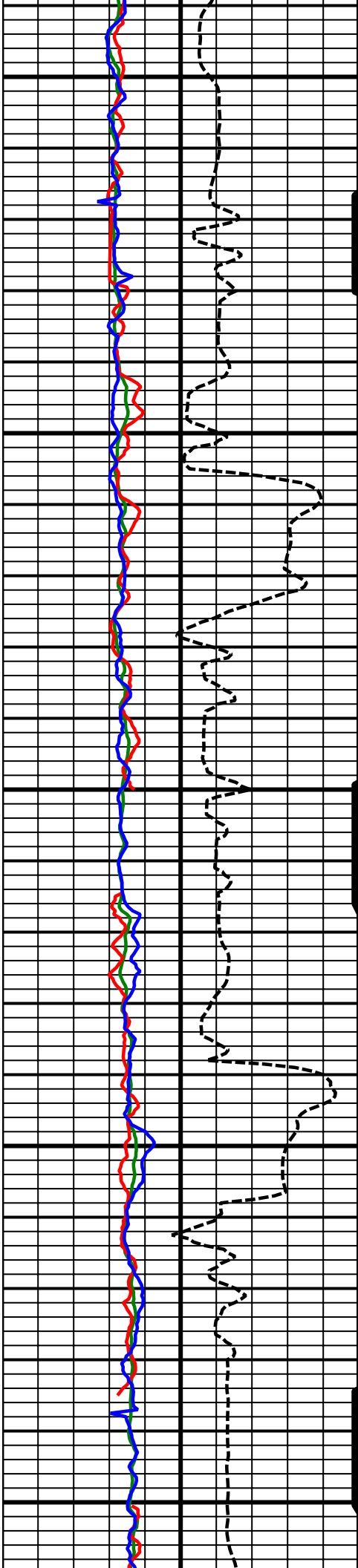




10400
MD

10500
MD

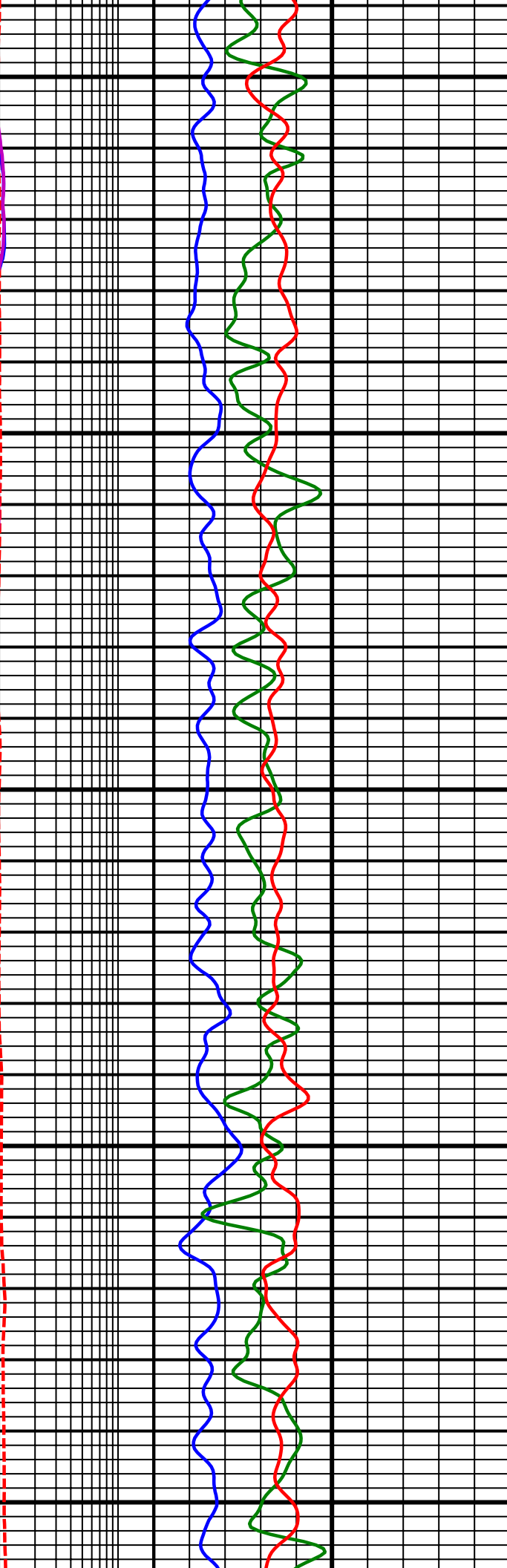


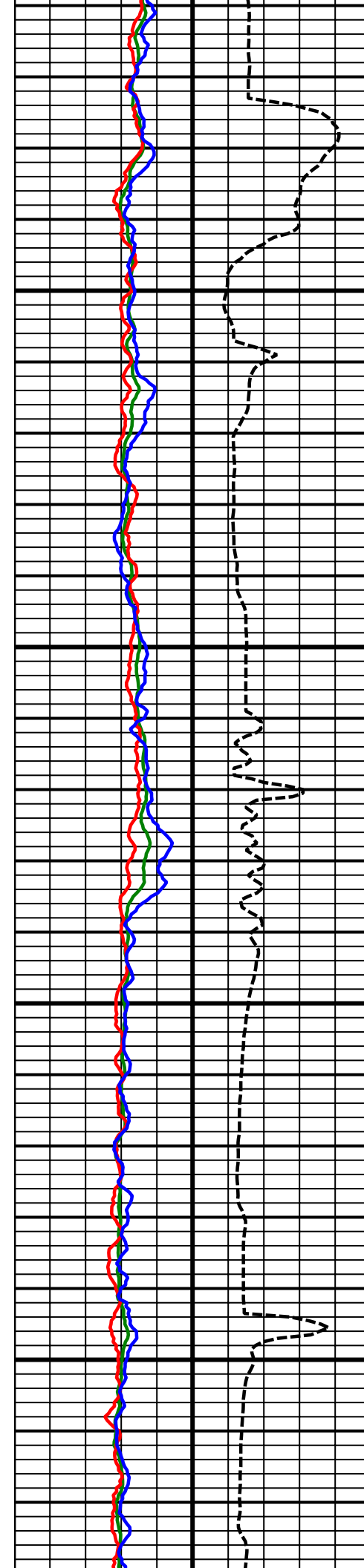


10600
MD

10700
MD

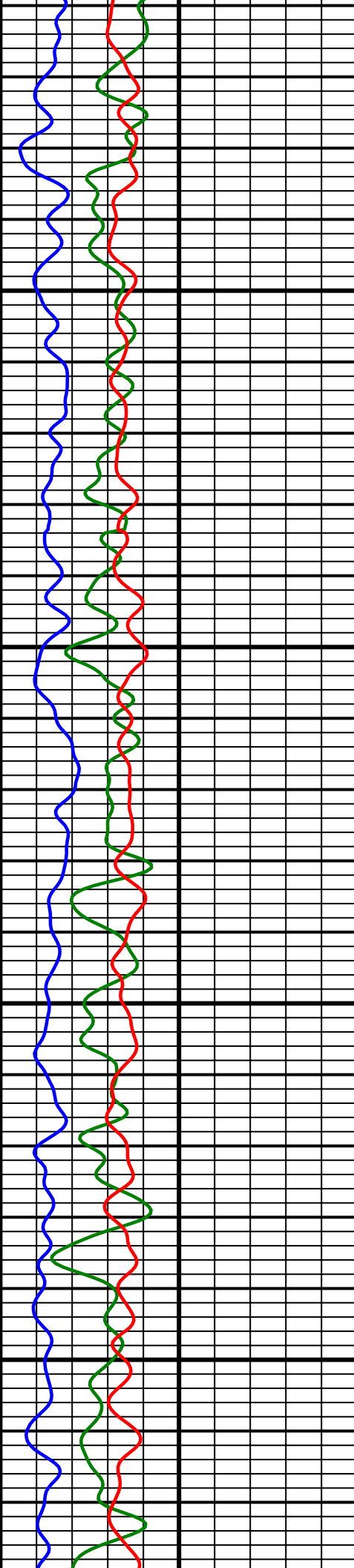
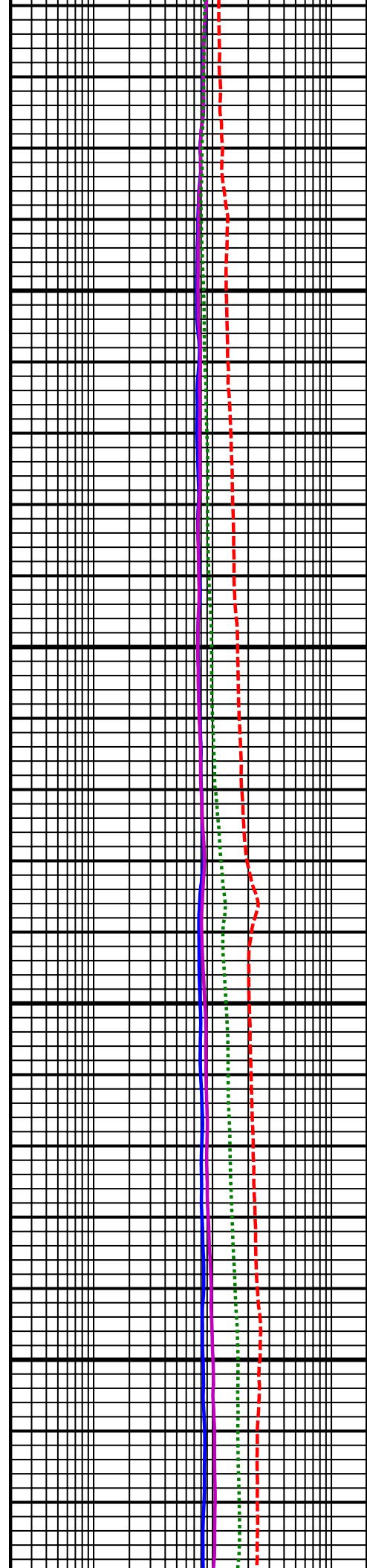
10800
MD

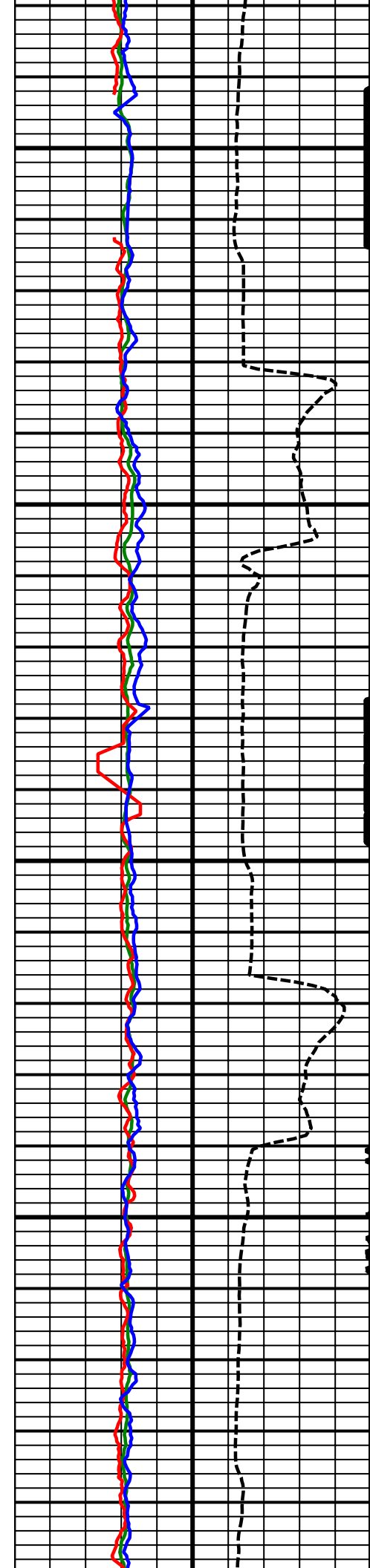




10900
MD

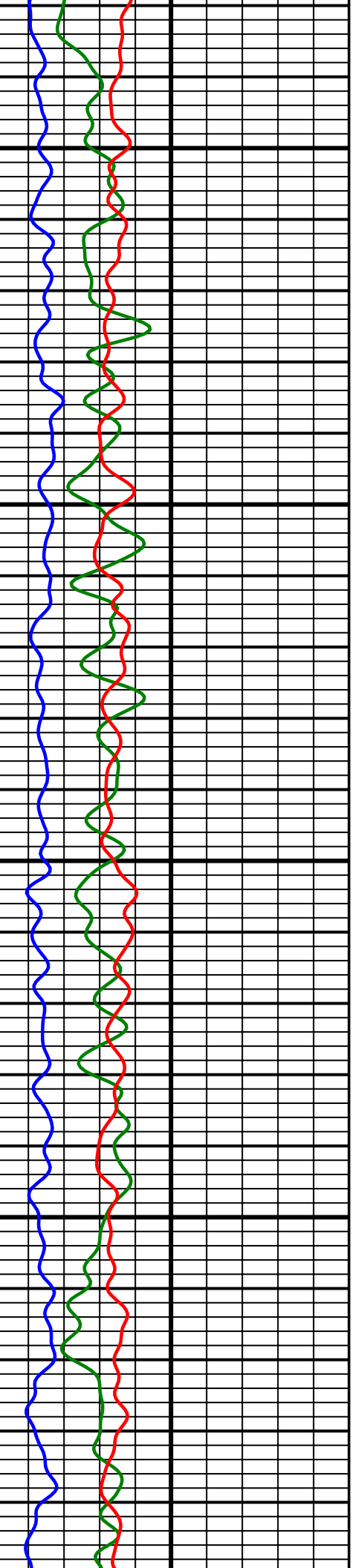
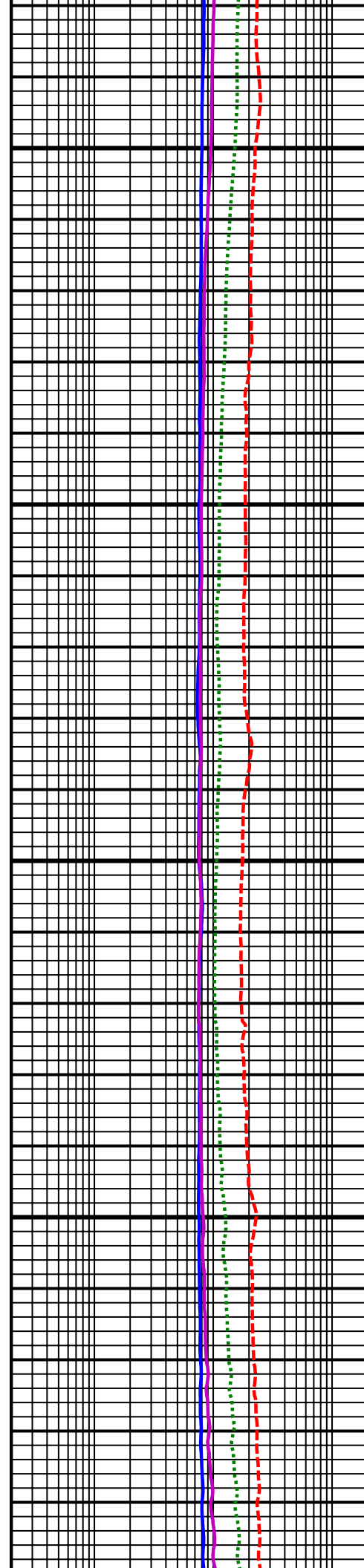
11000
MD

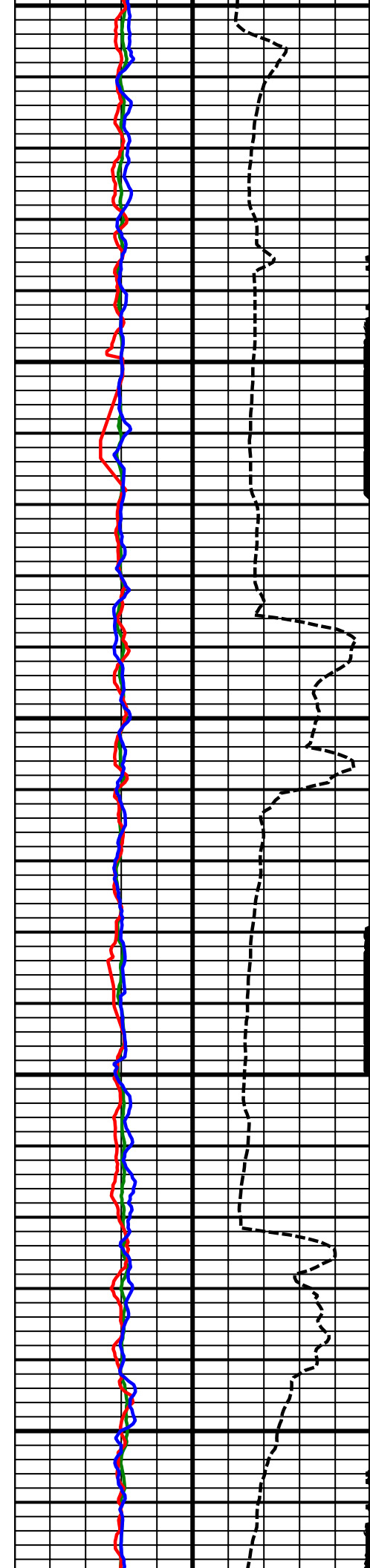




11100
MD

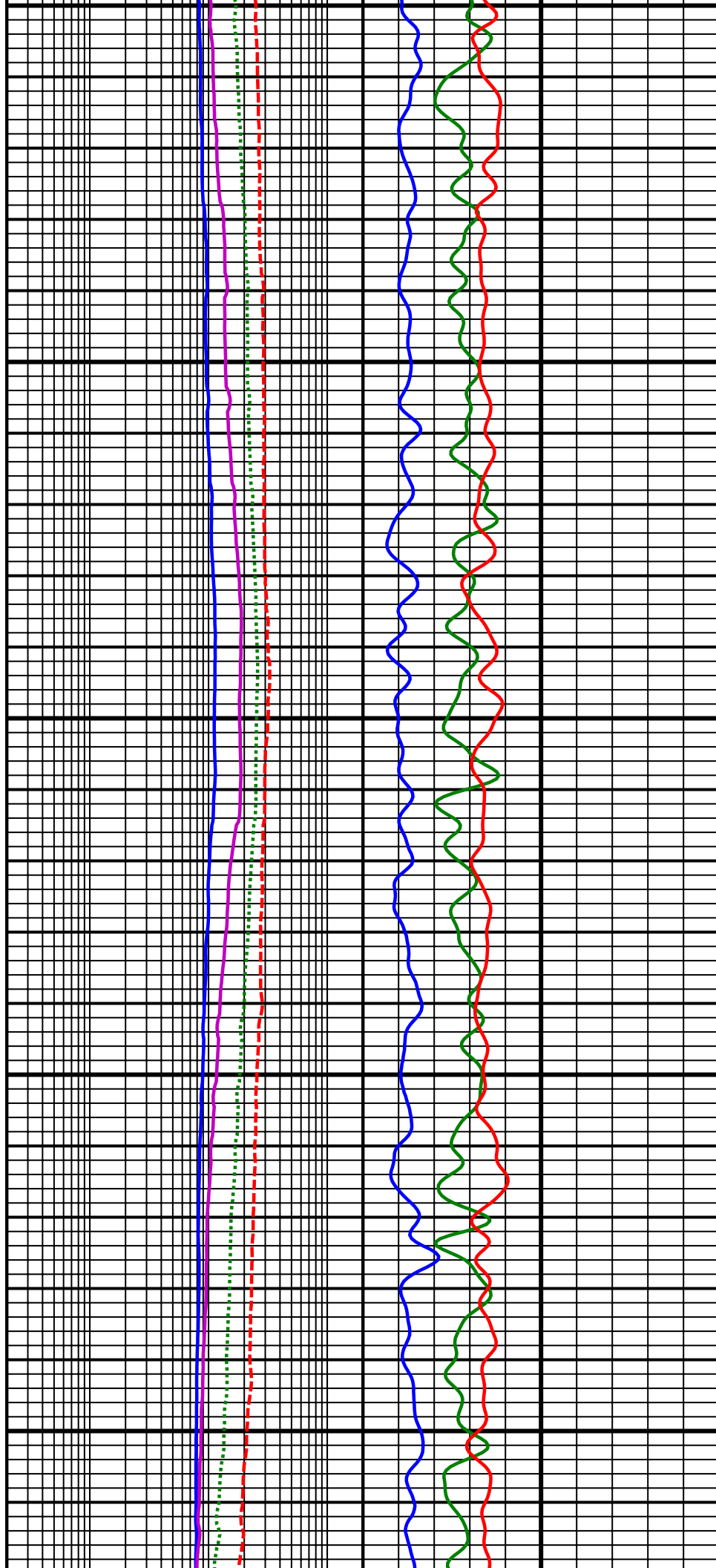
11200
MD

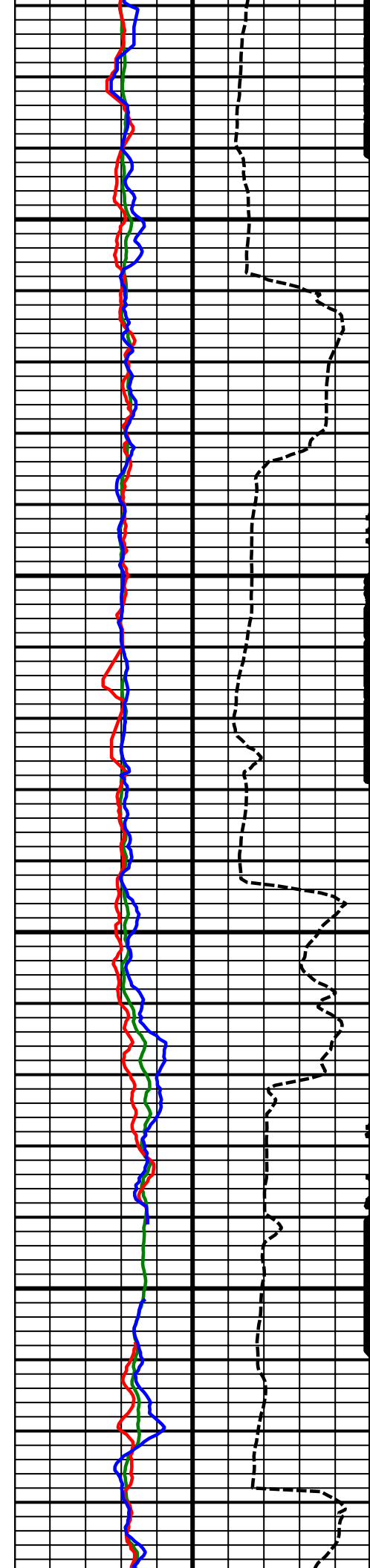




11300
MD

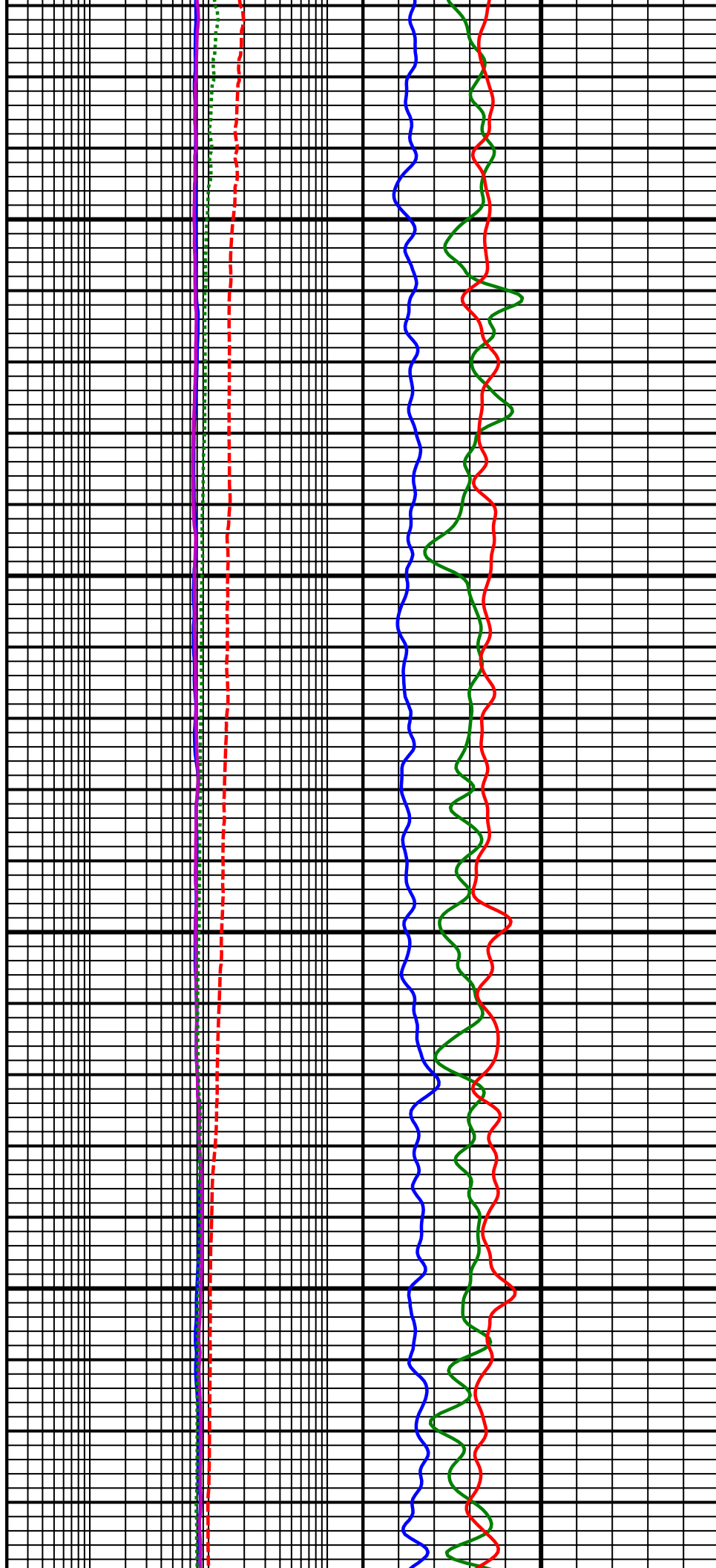
11400
MD

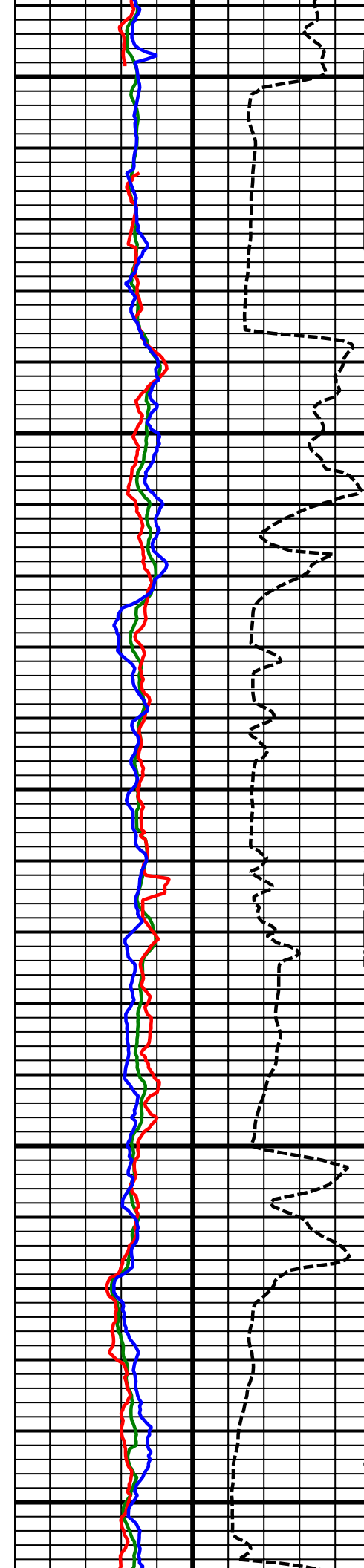




11500
MD

11600
MD

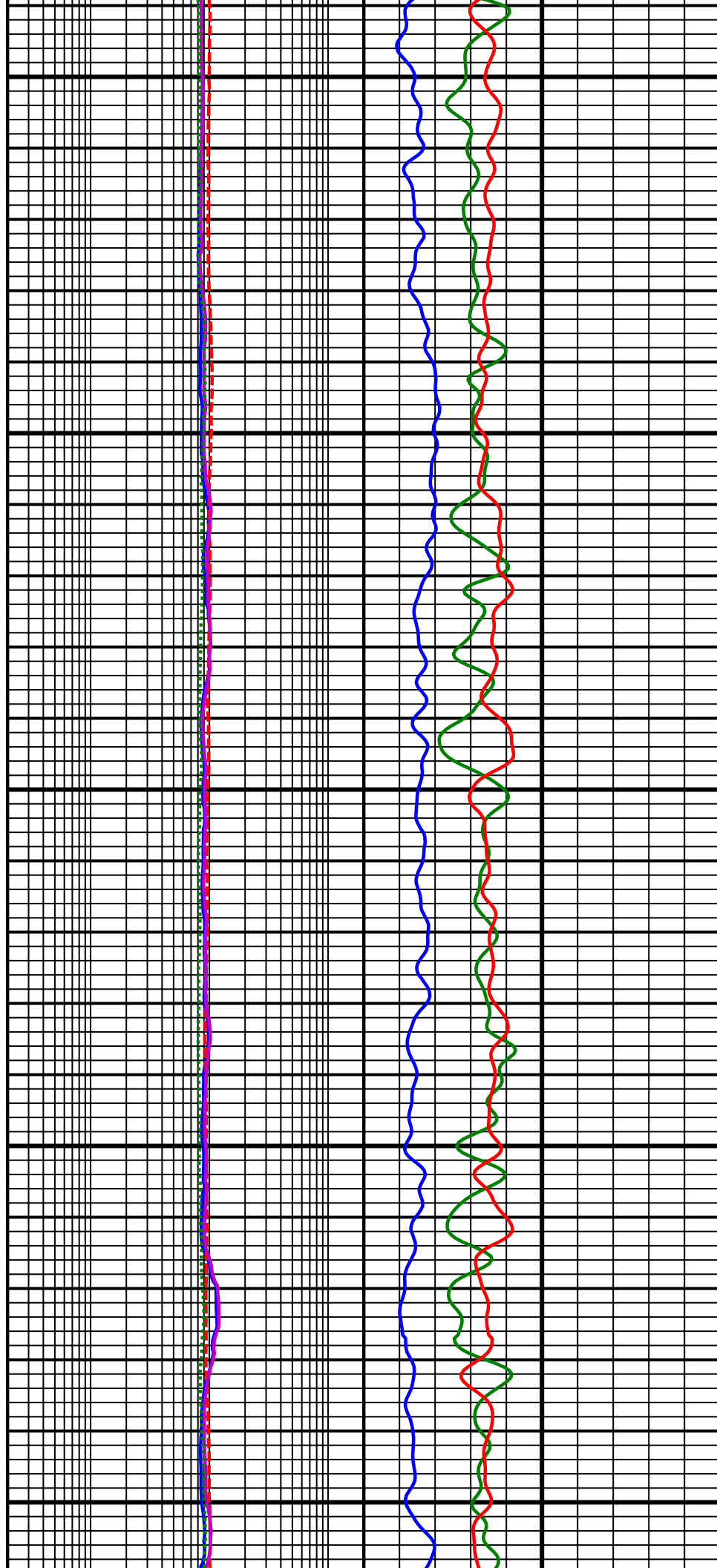


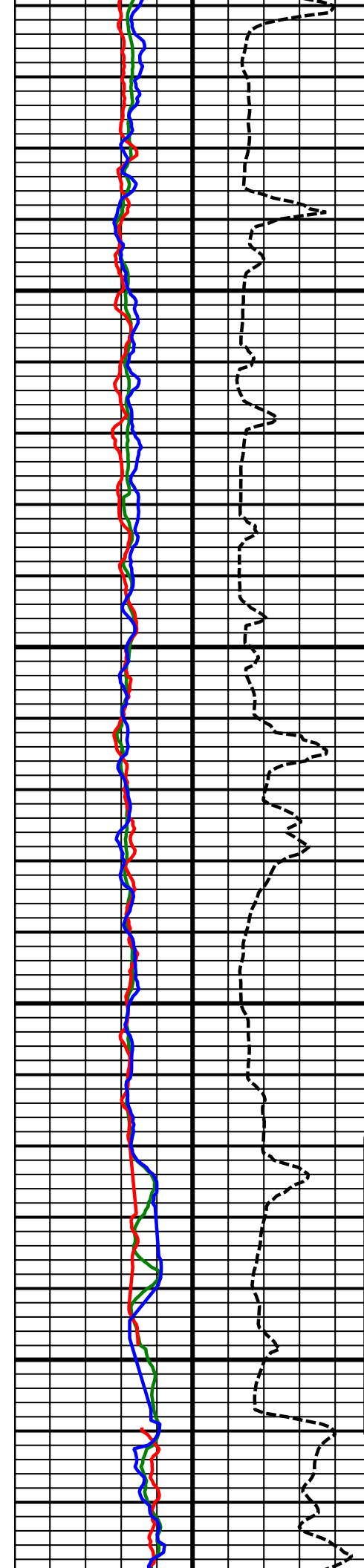


11700
MD

11800
MD

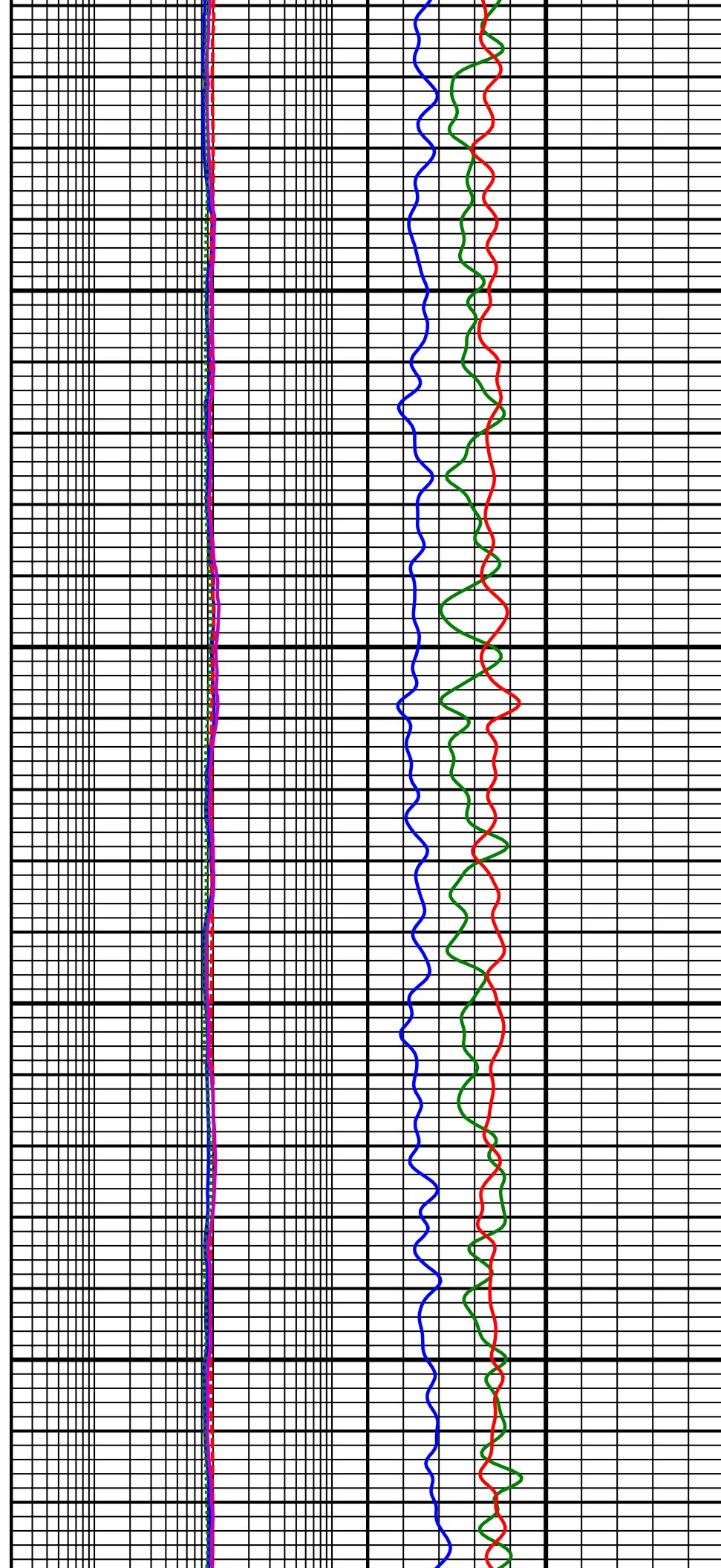
11900
MD

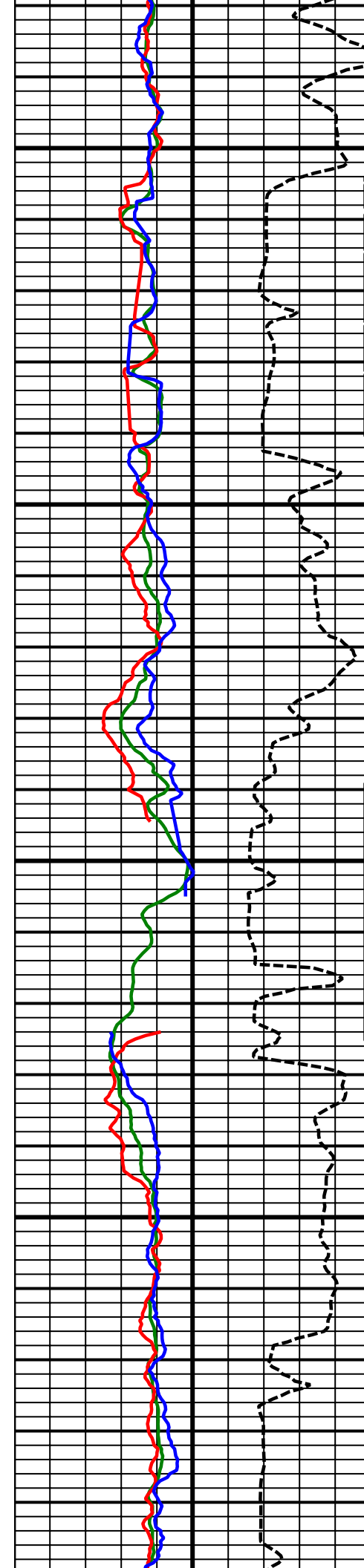




12000
MD

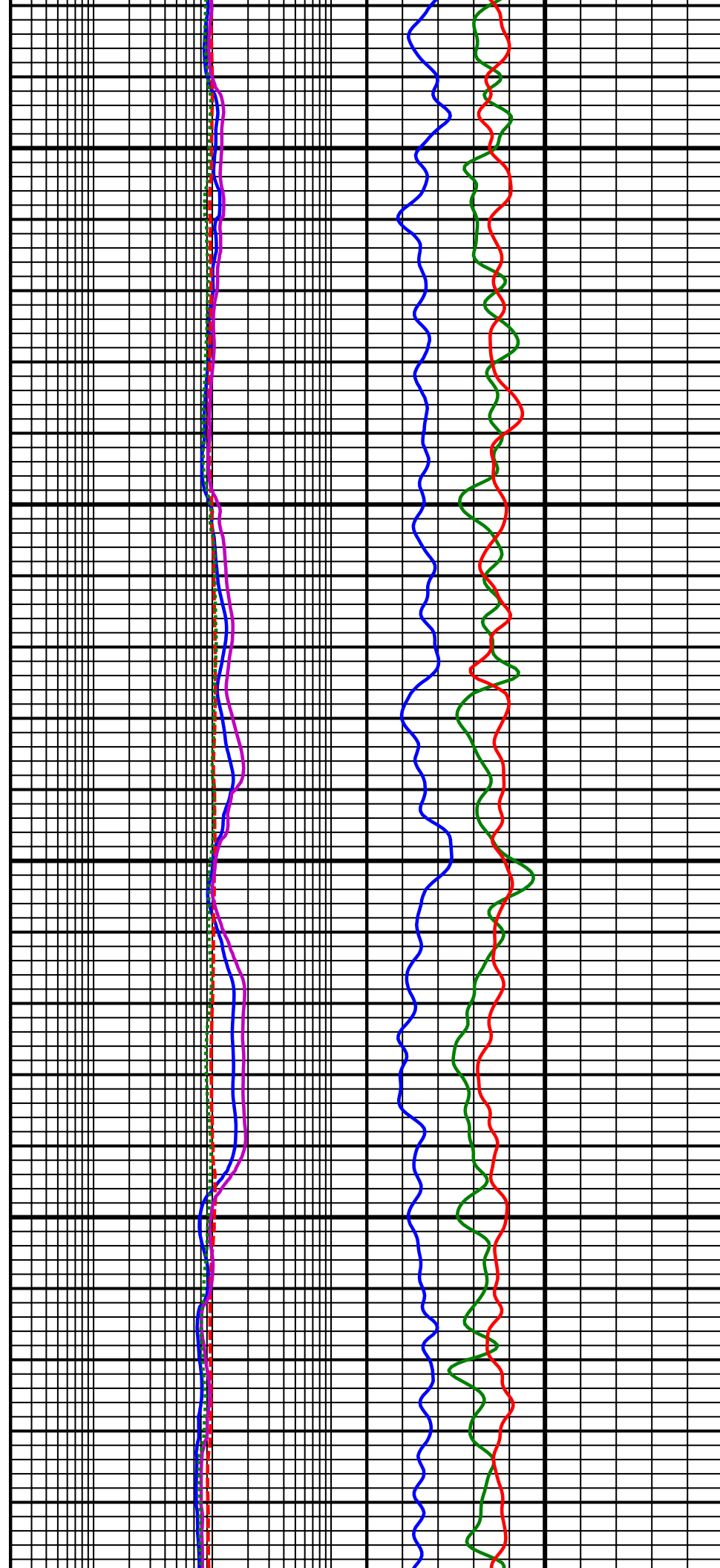
12100
MD

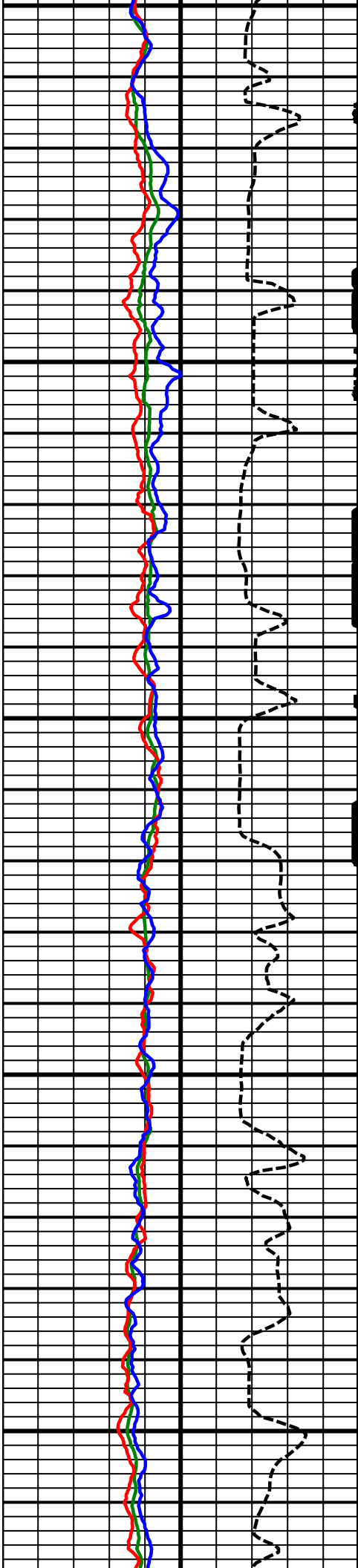




12200
MD

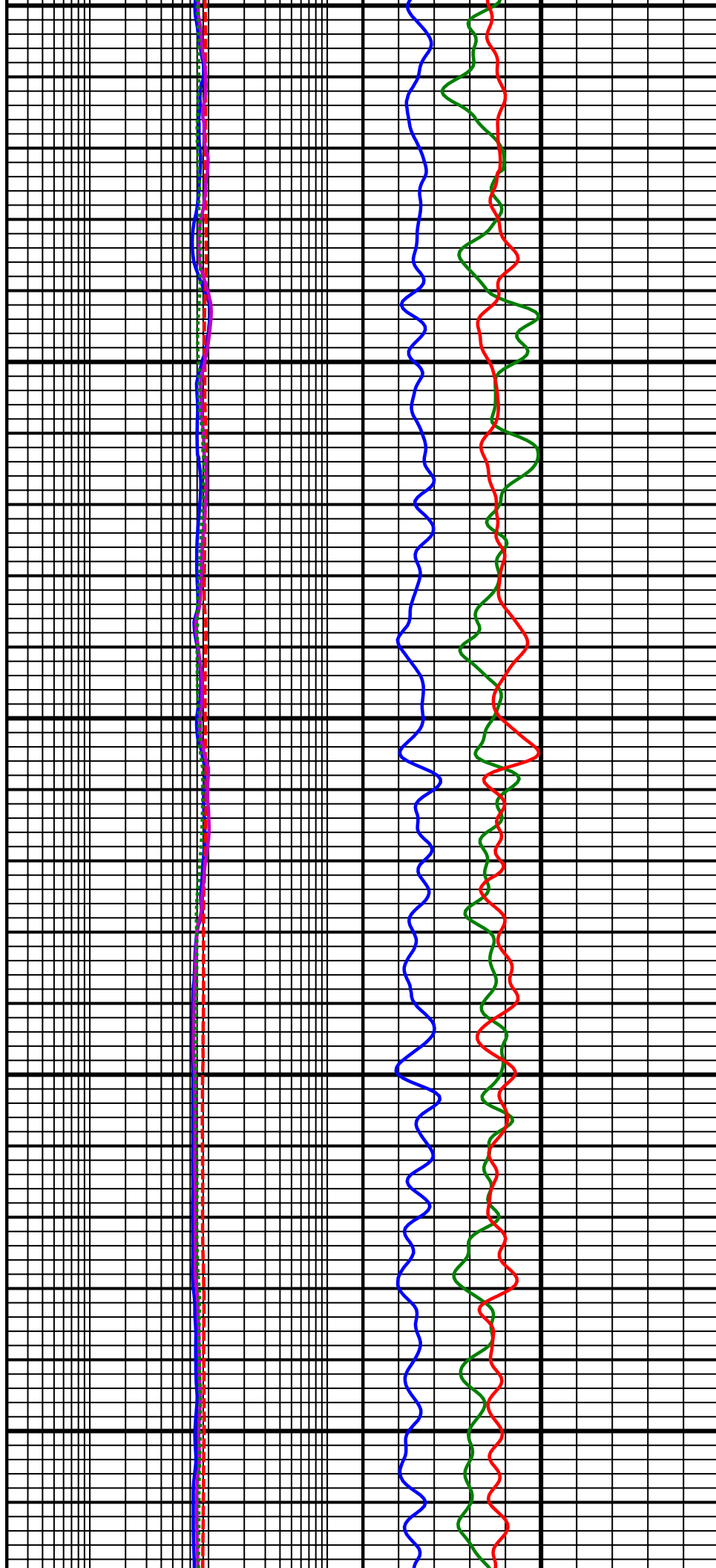
12300
MD

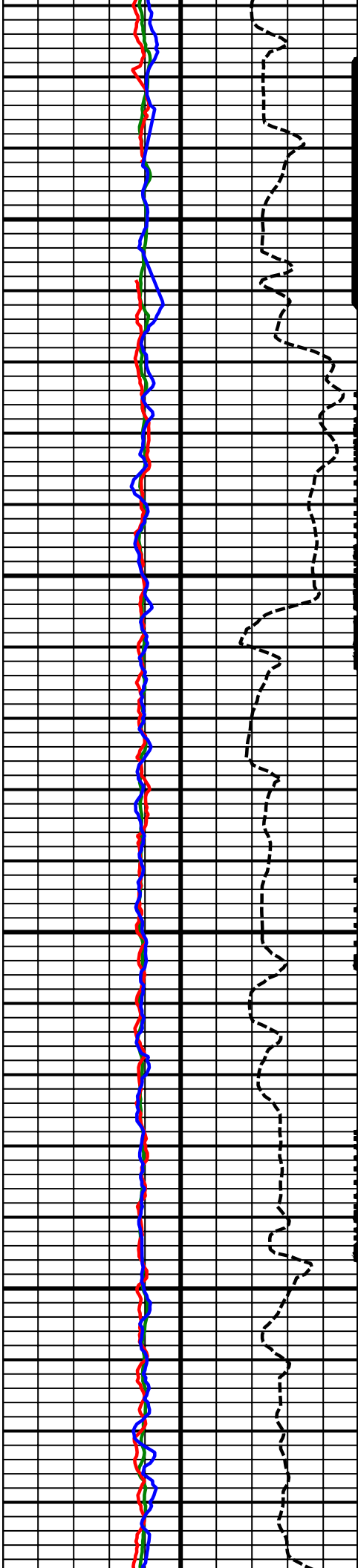




12400
MD

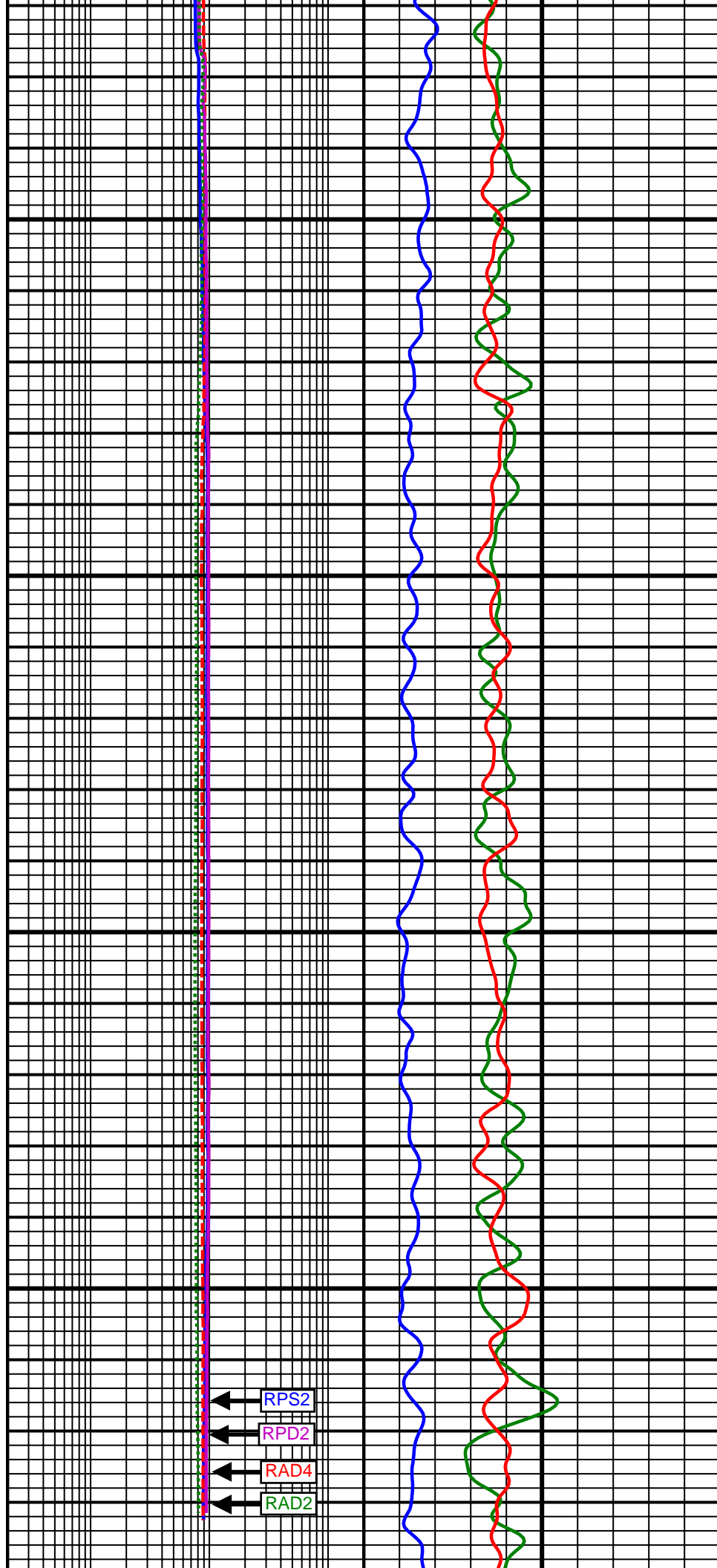
12500
MD

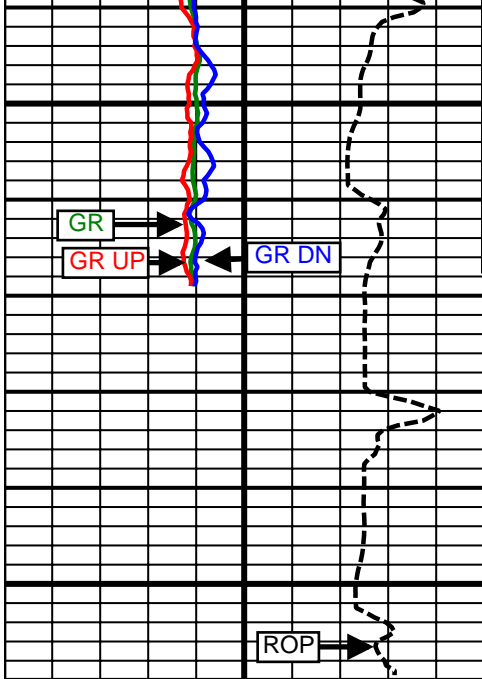




12600
MD

12700
MD

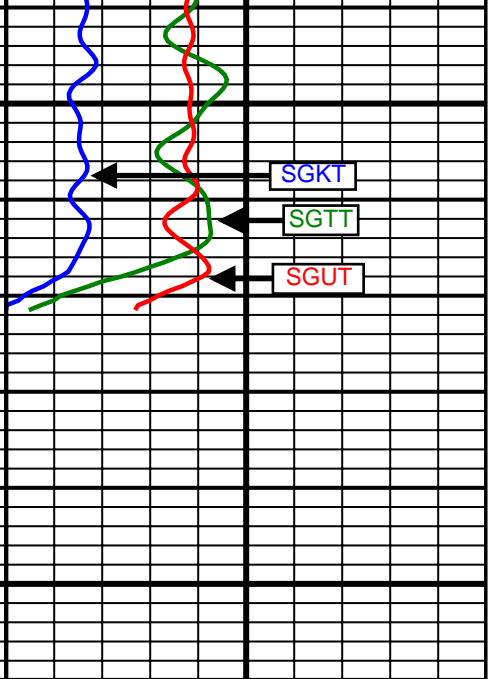
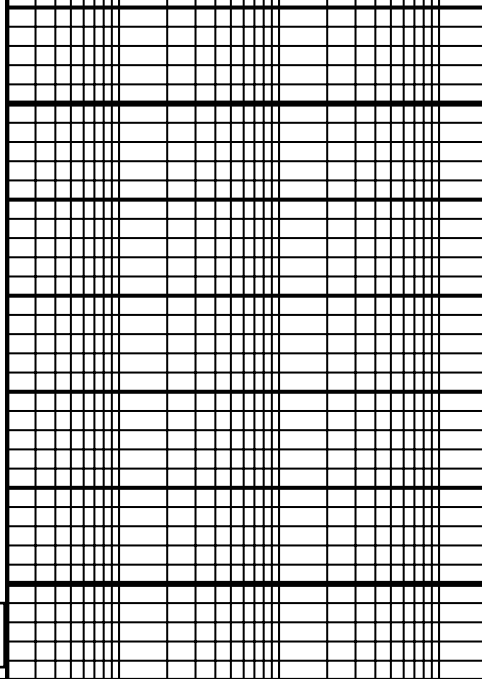




12800
MD

Comment
5-2

ROP		
1000	(fph)	0
GR		
0	(AAPI)	200
GR UP		
0	(AAPI)	200
GR DN		
0	(AAPI)	200



RPS2		
0.2	(ohm-m)	200
RAD4		
0.2	(ohm-m)	200
RPD2		
0.2	(ohm-m)	200
RAD2		
0.2	(ohm-m)	200

SGKT		
0	(%)	10
SGTT		
0	(ppm)	40
SGUT		
-10	(ppm)	30

SURVEY						
Survey Calculation Method: Minimum Curvature						
Magnetic Reference	Target Direction	Total Magnetic Field	Magnetic Dip Angle	Magnetic Declination	Grid Convergence	Total Correction
True North	359.65 deg	52617 nT	66.64 deg	8.65 deg	0.00 deg	8.65 deg
Survey Tie-On	Depth	INC	AZ	TVD	NS	EW
	931.00 ft	0.08 deg	167.35 deg	930.99 ft	-0.76 ft	-2.86 ft

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head		VSect (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)		
1054.00	0.16	46.37	1053.99	-0.73	-2.72	-0.71	0.17
1145.00	2.29	256.88	1144.97	-1.05	-4.40	-1.02	2.67
1236.00	4.01	267.28	1235.83	-1.61	-9.35	-1.56	1.98
1327.00	6.21	265.23	1326.46	-2.17	-17.43	-2.07	2.43
1418.00	7.54	265.53	1416.80	-3.05	-28.29	-2.88	1.46
1515.00	9.46	265.70	1512.73	-4.14	-42.58	-3.88	1.98
1607.00	10.79	264.00	1603.30	-5.61	-58.69	-5.25	1.48
1700.00	12.34	257.92	1694.41	-8.60	-77.06	-8.13	2.12
1793.00	13.64	256.33	1785.03	-13.27	-97.44	-12.68	1.45
1885.00	14.60	252.88	1874.25	-19.25	-119.06	-18.52	1.39
1979.00	16.23	251.78	1964.87	-26.84	-142.86	-25.97	1.76
2072.00	16.04	252.56	2054.20	-34.76	-167.46	-33.73	0.31
2165.00	16.49	253.28	2143.48	-42.41	-192.36	-41.23	0.53
2256.00	16.83	255.06	2230.66	-49.52	-217.46	-48.19	0.67
2348.00	15.29	254.62	2319.07	-56.17	-242.03	-54.69	1.68
2440.00	15.45	254.88	2407.78	-62.58	-265.55	-60.96	0.19
2533.00	14.84	257.25	2497.55	-68.44	-289.13	-66.68	0.93
2625.00	14.95	259.31	2586.46	-73.24	-312.28	-71.34	0.59
2718.00	15.02	260.46	2676.29	-77.47	-335.95	-75.41	0.33
2811.00	14.65	261.57	2766.19	-81.19	-359.47	-78.99	0.50
2904.00	14.63	260.08	2856.18	-84.94	-382.67	-82.60	0.41
2997.00	14.41	259.57	2946.21	-89.05	-405.62	-86.57	0.27
3089.00	13.93	262.64	3035.41	-92.54	-427.86	-89.93	0.97
3182.00	13.63	260.41	3125.73	-95.80	-449.77	-93.06	0.66
3274.00	14.79	266.88	3214.92	-98.25	-472.19	-95.36	2.14
3359.00	15.71	269.06	3296.93	-99.03	-494.53	-96.01	1.28
3445.00	16.33	267.10	3379.59	-99.83	-518.24	-96.66	0.96
3530.00	17.22	263.54	3460.97	-101.85	-542.68	-98.53	1.60
3616.00	17.08	262.84	3543.15	-104.86	-567.86	-101.39	0.29
3701.00	16.49	263.46	3624.53	-107.79	-592.23	-104.17	0.73
3786.00	15.04	262.49	3706.33	-110.60	-615.15	-106.84	1.73
3872.00	14.76	257.31	3789.44	-114.47	-636.90	-110.58	1.58
3957.00	15.71	255.52	3871.45	-119.72	-658.61	-115.70	1.25
4042.00	16.33	253.04	3953.15	-126.09	-681.18	-121.92	1.09
4128.00	16.56	254.43	4035.63	-132.90	-704.55	-128.60	0.53
4213.00	16.29	257.30	4117.16	-138.78	-727.85	-134.33	1.01
4299.00	17.08	257.88	4199.54	-144.08	-751.96	-139.48	0.94
4384.00	18.33	257.68	4280.52	-149.55	-777.23	-144.80	1.47
4469.00	18.06	257.21	4361.27	-155.32	-803.13	-150.41	0.36
4555.00	17.53	256.96	4443.15	-161.20	-828.75	-156.13	0.62
4640.00	18.47	255.75	4523.99	-167.40	-854.27	-162.18	1.19
4726.00	18.61	256.02	4605.53	-174.07	-880.79	-168.68	0.19

4811.00	17.78	258.05	4686.28	-180.03	-906.65	-174.49	1.23
4896.00	17.82	258.06	4767.21	-185.41	-932.07	-179.71	0.05
4982.00	18.23	258.29	4848.99	-190.86	-958.12	-185.00	0.48
5067.00	19.92	258.13	4929.32	-196.54	-985.31	-190.52	1.99
5153.00	18.65	257.43	5010.49	-202.54	-1013.07	-196.35	1.50
5238.00	17.01	257.88	5091.40	-208.11	-1038.49	-201.77	1.94
5324.00	14.62	258.41	5174.14	-212.94	-1061.43	-206.45	2.78
5409.00	13.43	256.33	5256.61	-217.42	-1081.53	-210.81	1.52
5495.00	11.76	252.58	5340.54	-222.41	-1099.60	-215.69	2.16
5580.00	12.23	256.02	5423.68	-227.18	-1116.60	-220.35	1.01
5666.00	11.12	258.03	5507.90	-231.10	-1133.55	-224.17	1.37
5751.00	9.41	258.66	5591.54	-234.16	-1148.38	-227.14	2.02
5836.00	7.94	260.55	5675.56	-236.49	-1160.99	-229.40	1.76
5922.00	6.67	261.60	5760.86	-238.20	-1171.79	-231.04	1.48
6007.00	6.13	263.34	5845.33	-239.45	-1181.18	-232.23	0.67
6093.00	4.90	265.48	5930.93	-240.27	-1189.40	-233.00	1.45
6178.00	4.10	268.69	6015.67	-240.62	-1196.06	-233.31	0.99
6263.00	3.39	271.23	6100.49	-240.64	-1201.61	-233.30	0.86
6349.00	3.31	281.24	6186.34	-240.10	-1206.59	-232.73	0.69
6434.00	0.97	276.72	6271.28	-239.54	-1209.71	-232.14	2.76
6519.00	0.88	286.49	6356.27	-239.27	-1211.05	-231.87	0.21
6605.00	1.05	307.10	6442.26	-238.61	-1212.31	-231.20	0.45
6689.00	0.31	6.99	6526.25	-237.92	-1212.90	-230.50	1.11
6775.00	1.75	95.50	6612.24	-237.81	-1211.56	-230.41	2.06
6860.00	0.38	50.47	6697.22	-237.76	-1210.05	-230.36	1.77
6946.00	0.78	19.45	6783.22	-237.02	-1209.64	-229.63	0.58
7031.00	0.70	11.30	6868.21	-235.97	-1209.34	-228.58	0.16
7116.00	0.87	10.92	6953.20	-234.83	-1209.12	-227.44	0.20
7201.00	0.84	17.30	7038.19	-233.60	-1208.81	-226.21	0.12
7259.00	0.72	17.90	7096.19	-232.84	-1208.57	-225.46	0.21
7291.00	0.74	7.25	7128.18	-232.45	-1208.48	-225.06	0.43
7376.00	8.14	9.92	7212.87	-225.97	-1207.38	-218.59	8.71
7462.00	16.11	358.51	7296.89	-208.01	-1206.64	-200.64	9.63
7547.00	23.07	357.43	7376.92	-179.55	-1207.69	-172.17	8.20
7632.00	29.49	356.59	7453.10	-141.99	-1209.68	-134.60	7.57
7718.00	35.97	357.54	7525.41	-95.57	-1212.03	-88.17	7.56
7803.00	43.06	1.47	7590.95	-41.55	-1212.36	-34.14	8.84
7888.00	53.39	3.11	7647.50	21.70	-1209.76	29.09	12.24
7974.00	59.52	357.64	7695.03	93.30	-1209.41	100.68	8.88
8059.00	66.83	355.27	7733.36	168.94	-1214.15	176.35	8.95
8144.00	77.66	359.40	7759.26	249.67	-1217.81	257.10	13.55
8221.00	83.76	2.73	7771.68	325.60	-1216.38	333.02	9.00
8293.00	89.88	1.97	7775.68	397.39	-1213.44	404.80	8.57
8378.00	92.03	1.68	7774.26	482.33	-1210.73	489.72	2.55
8464.00	91.05	1.93	7771.95	568.26	-1208.02	575.63	1.18
8549.00	92.28	1.40	7769.48	653.18	-1205.56	660.54	1.58
8634.00	91.60	0.92	7766.60	738.12	-1203.84	745.46	0.98
8720.00	90.25	359.18	7765.21	824.10	-1203.76	831.44	2.56
8805.00	91.60	0.30	7763.84	909.08	-1204.15	916.42	2.06
8891.00	90.12	359.14	7762.55	995.07	-1204.57	1002.41	2.19
8976.00	92.35	358.37	7760.72	1080.02	-1206.41	1087.37	2.78
9062.00	93.64	359.83	7756.22	1165.89	-1207.76	1173.25	2.26
9147.00	93.52	359.93	7750.92	1250.73	-1207.94	1258.08	0.18
9232.00	93.09	0.36	7746.02	1335.58	-1207.73	1342.94	0.71
9318.00	91.29	358.22	7742.73	1421.51	-1208.79	1428.86	3.25
9403.00	90.56	356.79	7741.36	1506.41	-1212.49	1513.79	1.89
9489.00	91.29	356.03	7739.97	1592.23	-1217.88	1599.64	1.23
9574.00	90.68	355.68	7738.51	1676.99	-1224.02	1684.44	0.83
9660.00	90.86	356.56	7737.35	1762.79	-1229.84	1770.27	1.04
9745.00	88.89	356.88	7737.54	1847.65	-1234.70	1855.15	2.35
9830.00	89.57	357.32	7738.68	1932.53	-1239.00	1940.06	0.95

9916.00	90.55	359.64	7738.59	2018.49	-1241.28	2026.04	2.93
10001.00	89.57	0.56	7738.50	2103.49	-1241.13	2111.03	1.58
10087.00	88.83	0.18	7739.70	2189.48	-1240.58	2197.01	0.97
10172.00	89.01	1.55	7741.30	2274.45	-1239.29	2281.98	1.63
10257.00	90.31	1.25	7741.81	2359.42	-1237.22	2366.94	1.57
10343.00	89.75	1.05	7741.76	2445.40	-1235.49	2452.91	0.69
10428.00	91.17	0.76	7741.08	2530.39	-1234.15	2537.88	1.71
10513.00	90.93	1.16	7739.52	2615.36	-1232.73	2622.84	0.55
10598.00	90.92	0.35	7738.15	2700.34	-1231.61	2707.82	0.95
10683.00	91.05	358.88	7736.69	2785.33	-1232.18	2792.80	1.74
10769.00	91.54	359.31	7734.75	2871.29	-1233.53	2878.77	0.76
10854.00	91.67	1.29	7732.36	2956.25	-1233.09	2963.73	2.33
10939.00	91.17	0.82	7730.26	3041.21	-1231.53	3048.68	0.81
11025.00	89.82	359.93	7729.51	3127.21	-1230.96	3134.67	1.88
11110.00	90.12	0.80	7729.56	3212.20	-1230.42	3219.66	1.08
11195.00	91.79	0.27	7728.14	3297.18	-1229.63	3304.63	2.06
11281.00	90.99	359.57	7726.06	3383.16	-1229.75	3390.61	1.24
11366.00	89.69	0.83	7725.55	3468.15	-1229.45	3475.60	2.13
11451.00	89.38	0.14	7726.24	3553.15	-1228.73	3560.58	0.89
11537.00	90.62	359.75	7726.24	3639.14	-1228.81	3646.58	1.51
11622.00	89.12	1.25	7726.43	3724.14	-1228.07	3731.57	2.50
11707.00	90.93	1.33	7726.40	3809.11	-1226.16	3816.53	2.13
11793.00	90.31	1.21	7725.47	3895.08	-1224.25	3902.49	0.73
11878.00	90.62	0.92	7724.78	3980.07	-1222.67	3987.46	0.50
11963.00	90.25	2.18	7724.13	4065.03	-1220.37	4072.41	1.54
12049.00	89.57	2.08	7724.27	4150.97	-1217.18	4158.33	0.80
12134.00	89.32	1.89	7725.09	4235.92	-1214.23	4243.25	0.37
12219.00	89.51	1.33	7725.96	4320.88	-1211.85	4328.20	0.70
12305.00	91.60	0.63	7725.13	4406.85	-1210.37	4414.17	2.56
12390.00	91.17	359.63	7723.07	4491.83	-1210.18	4499.14	1.28
12476.00	90.56	359.82	7721.77	4577.82	-1210.59	4585.13	0.74
12561.00	89.82	359.84	7721.49	4662.82	-1210.85	4670.13	0.87
12646.00	91.15	0.01	7720.77	4747.81	-1210.96	4755.12	1.58
12732.00	90.09	358.78	7719.84	4833.80	-1211.87	4841.11	1.89
12801.00	89.57	358.92	7720.05	4902.78	-1213.25	4910.10	0.78
12858.00	89.57	358.92	7720.47	4959.77	-1214.33	4967.10	0.00

Weatherford surveys from 1054 ft MD to 12801 ft MD.

TD well at 12858 ft MD.

The total correction is 8.65 deg relative to True North.



Weatherford®

Final Print

COMPANY	<u>Anadarko Petroleum Corporation</u>		
WELL	<u>Howard 30C-28HZ</u>		
FIELD	<u>Wattenburg</u>		
RIG	<u>Xtreme 23</u>		
LOC.	<u>Colorado</u>	COUNTY	<u>Weld</u>