

COMPANY : ANADARKO E&P ONSHORE LLC.
WELL : FOLLEY SOUTH 1
FIELD : WATTENBERG
COUNTY : WELD
STATE : COLORADO
COUNTRY : U.S.A.
UWI : 05069064840000

UWI : 05069064840000

SEC:13 TWP:5N RANGE:68W

ROP
CONDUCTIVITY
FETR

G.L. to MEAN SEA LEVEL

DEVIATION RECORD

CASING RECORD

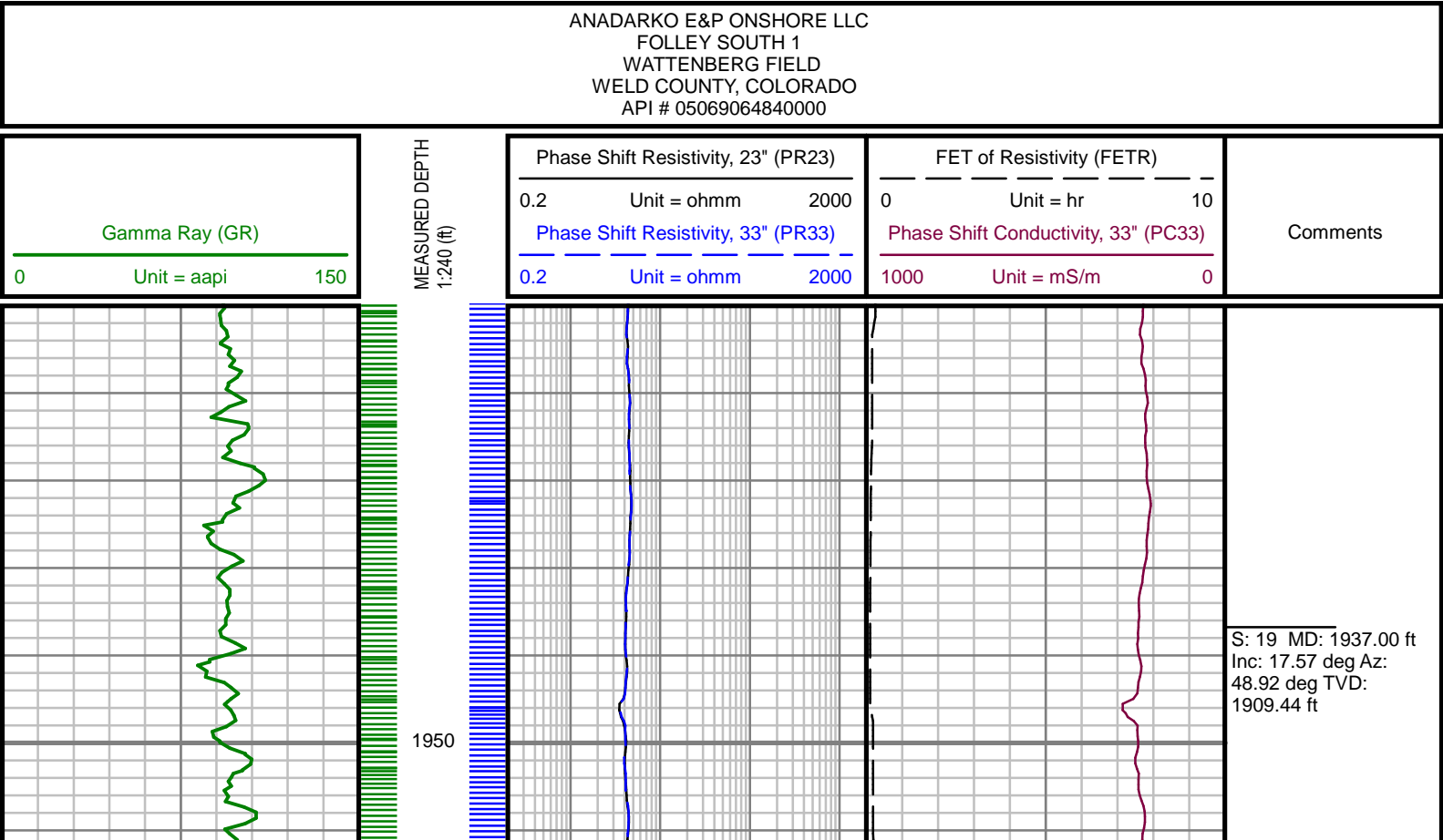
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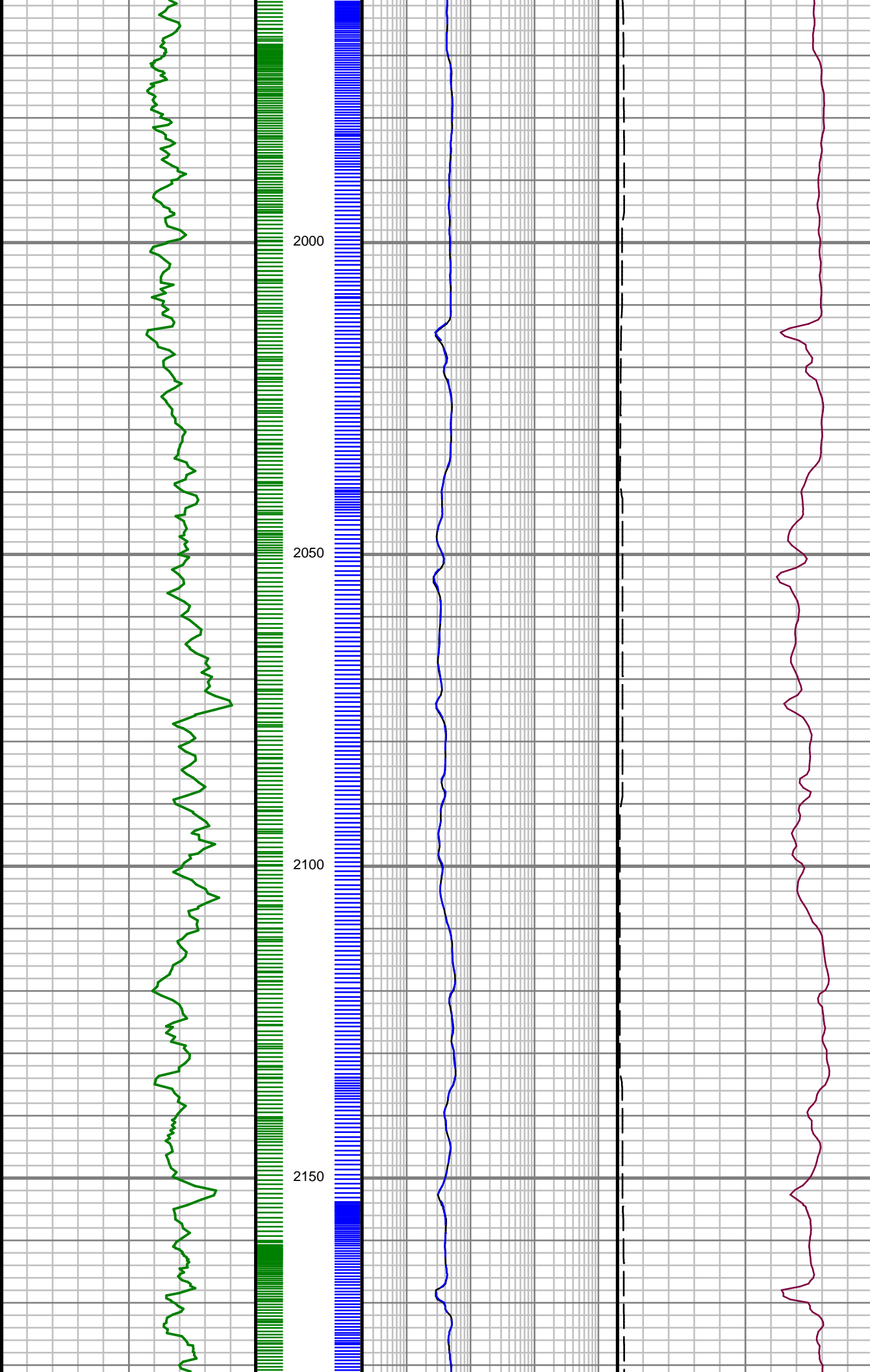
TOTAL DEPTH : 17048 ft

Run Data

Remarks
ANADARKO E&P ONSHORE LLC. PRODUCTION AFE# 2123185
SCIENTIFIC DRILLING INTERNATIONAL JOB# 380592
ALL REFERENCES IN THE DEPTH TRACK ARE AT BIT DEPTH.
ALL DATA IS MEMORY DATA UNLESS STATED OTHERWISE.
FLAT AVERAGE FILTER OF 1.00 FT APPLIED TO GAMMA RAY CURVE
FLAT AVERAGE FILTER OF 1.00 FT APPLIED TO PHASE SHIFT RESISTIVITY, 23" CURVE
FLAT AVERAGE FILTER OF 1.00 FT APPLIED TO PHASE SHIFT RESISTIVITY, 33" CURVE
FLAT AVERAGE FILTER OF 1.00 FT APPLIED TO FET OF RESISTIVITY CURVE
FLAT AVERAGE FILTER OF 1.00 FT APPLIED TO PHASE SHIFT CONDUCTIVITY, 33" CURVE
RUN #1: PROPAGATION RESISTIVITY / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 128-294 / CONT = 493 / MWD EYE = 0041 / PRT = 360 / GAMMA RAY = 1264
BIT TO SENSOR OFFSETS: SURVEY = 60.40 FT. / PRT = 49.85 FT. / GAMMA RAY = 42.95 FT.
MNEMONICS LIST:
GR = GAMMA RAY
PR23 = PHASE SHIFT RESISTIVITY, 23"
PR33 = PHASE SHIFT RESISTIVITY, 33"
FETR = FET OF RESISTIVITY
PC33 = PHASE SHIFT CONDUCTIVITY, 33"

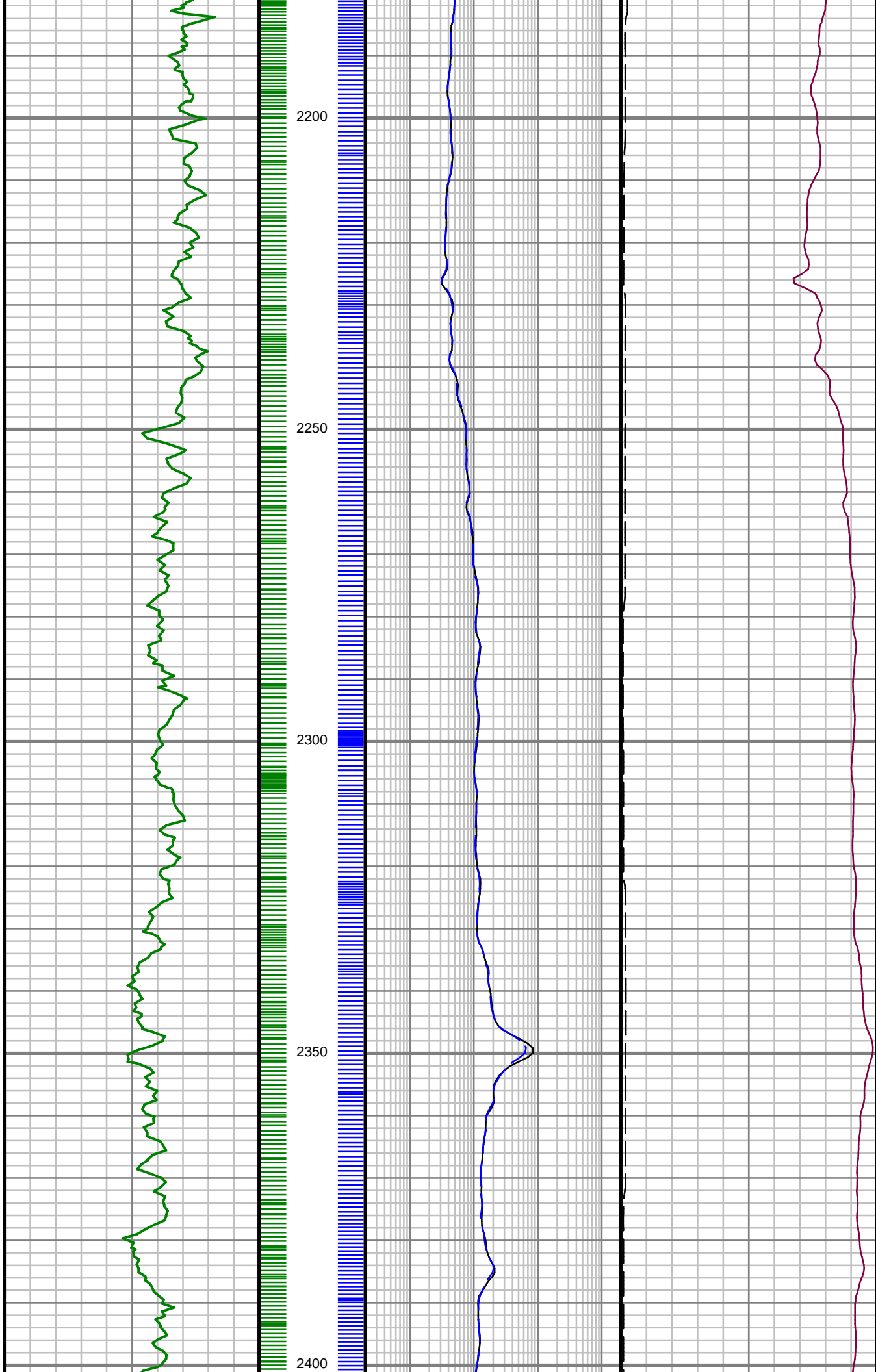
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions as set out in our current price schedule.





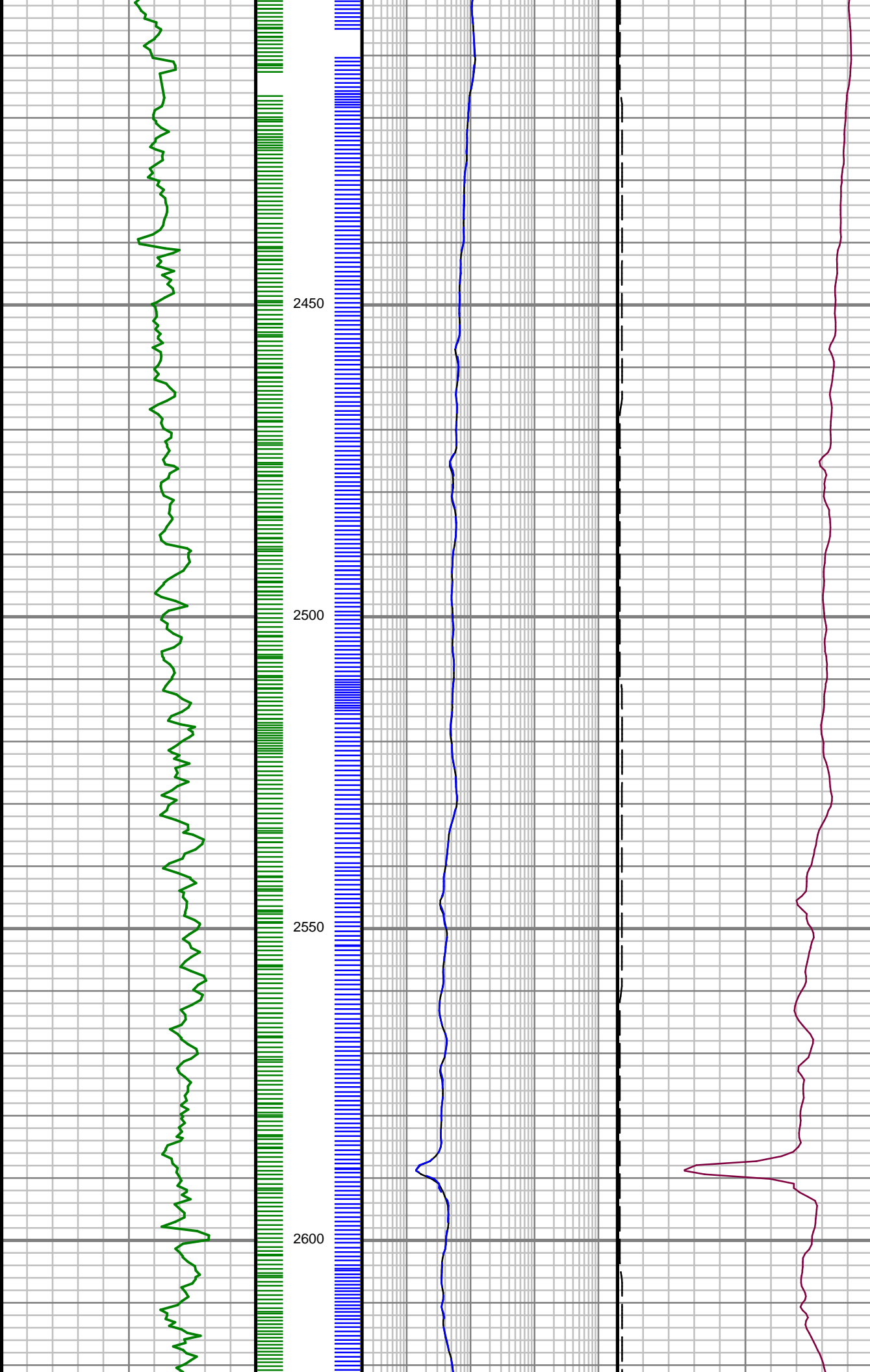
S: 20 MD: 2029.00 ft
Inc: 18.43 deg Az:
51.87 deg TVD:
1996.94 ft

S: 21 MD: 2124.00 ft
Inc: 18.15 deg Az:
52.68 deg TVD:
2087.14 ft



S: 22 MD: 2218.00 ft
Inc: 19.21 deg Az:
53.40 deg TVD:
2176.19 ft

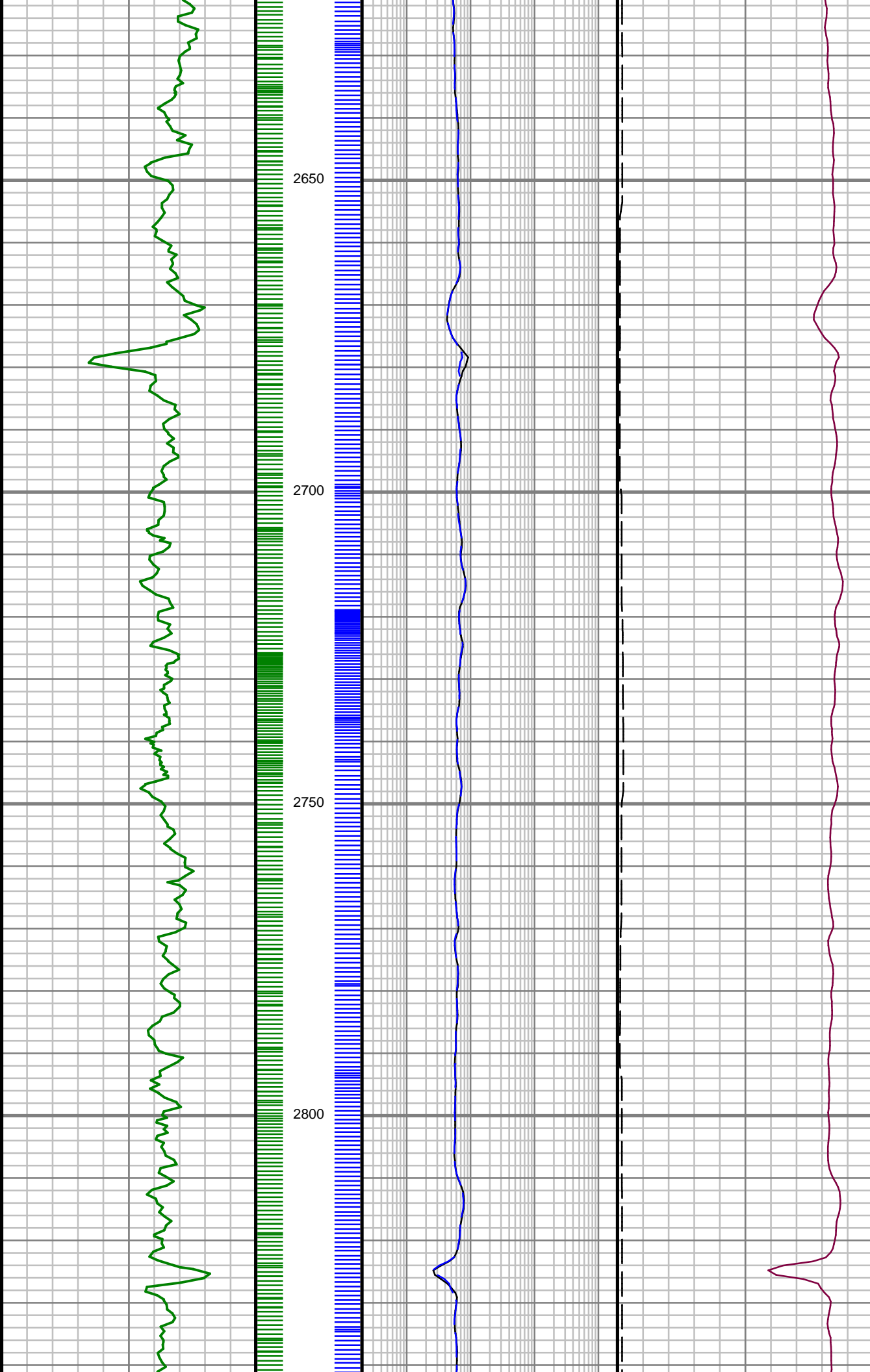
S: 23 MD: 2312.00 ft
Inc: 20.14 deg Az:
53.84 deg TVD:
2264.70 ft



S: 24 MD: 2406.00 ft
Inc: 20.20 deg Az:
55.09 deg TVD:
2352.93 ft

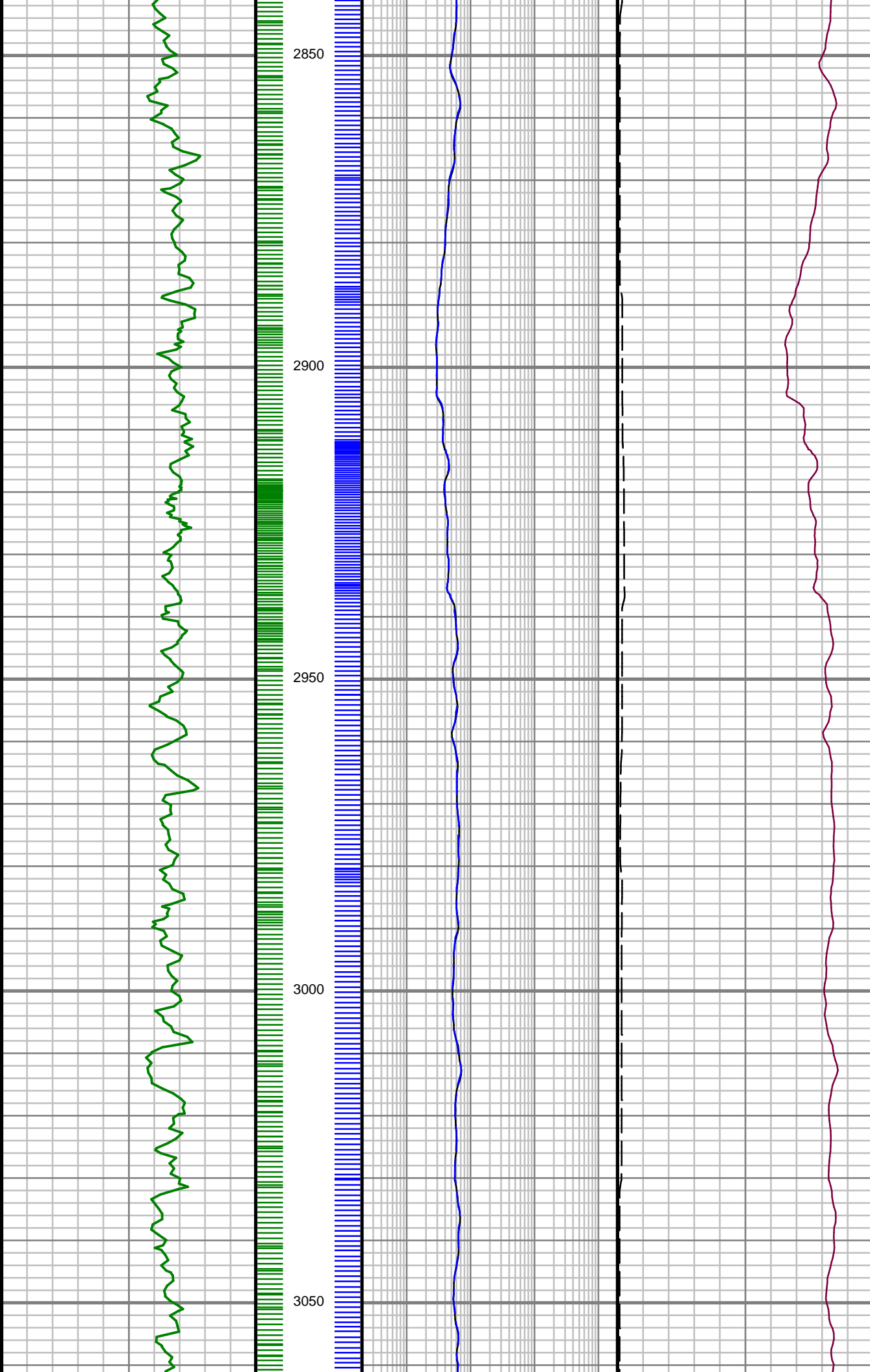
S: 25 MD: 2499.00 ft
Inc: 19.78 deg Az:
55.21 deg TVD:
2440.33 ft

S: 26 MD: 2595.00 ft
Inc: 18.68 deg Az:
54.15 deg TVD:
2530.97 ft



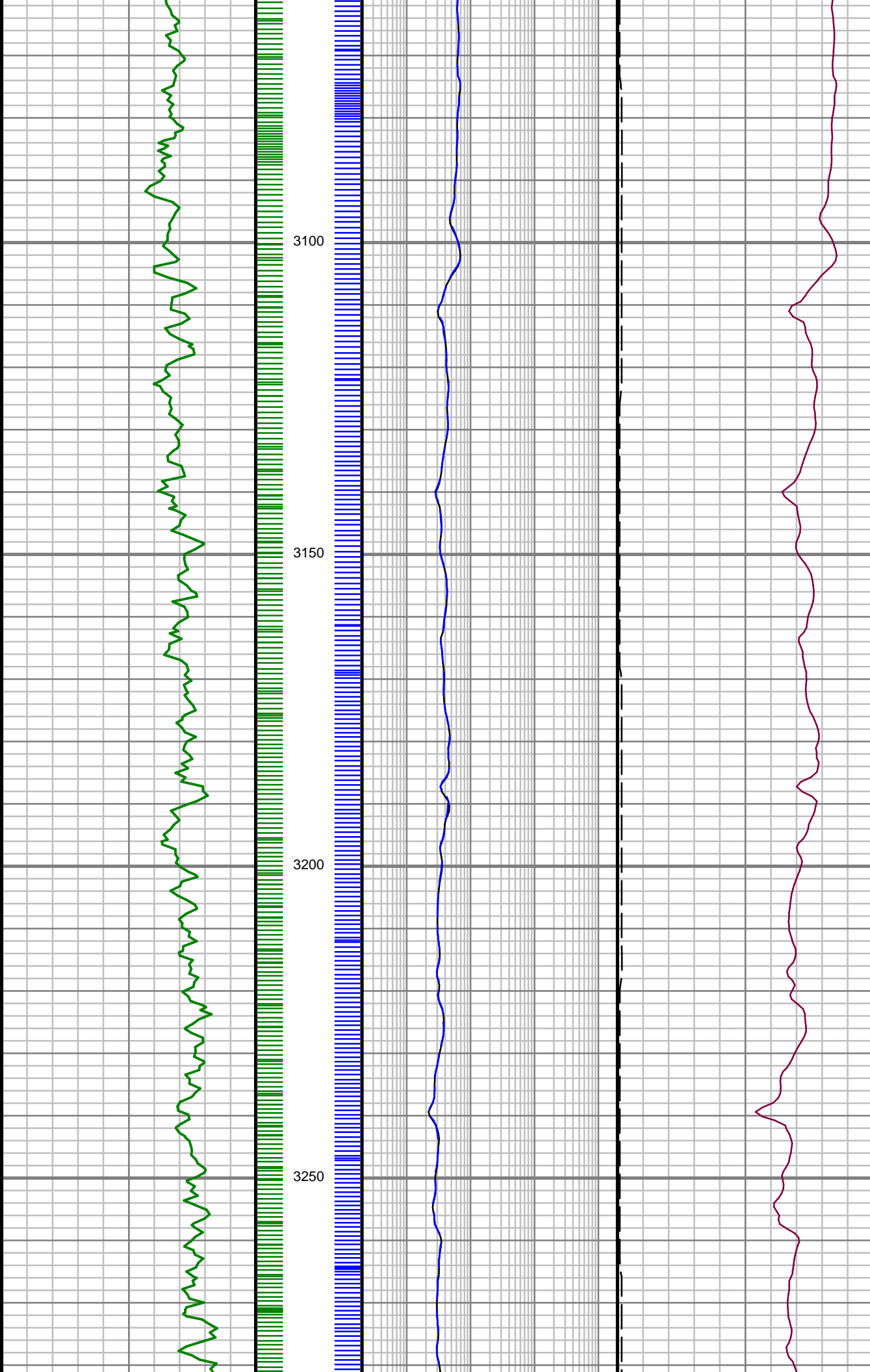
S: 27 MD: 2688.00 ft
Inc: 17.59 deg Az:
53.39 deg TVD:
2619.35 ft

S: 28 MD: 2783.00 ft
Inc: 18.13 deg Az:
55.53 deg TVD:
2709.77 ft



S: 29 MD: 2876.00 ft
Inc: 17.51 deg Az:
56.73 deg TVD:
2798.31 ft

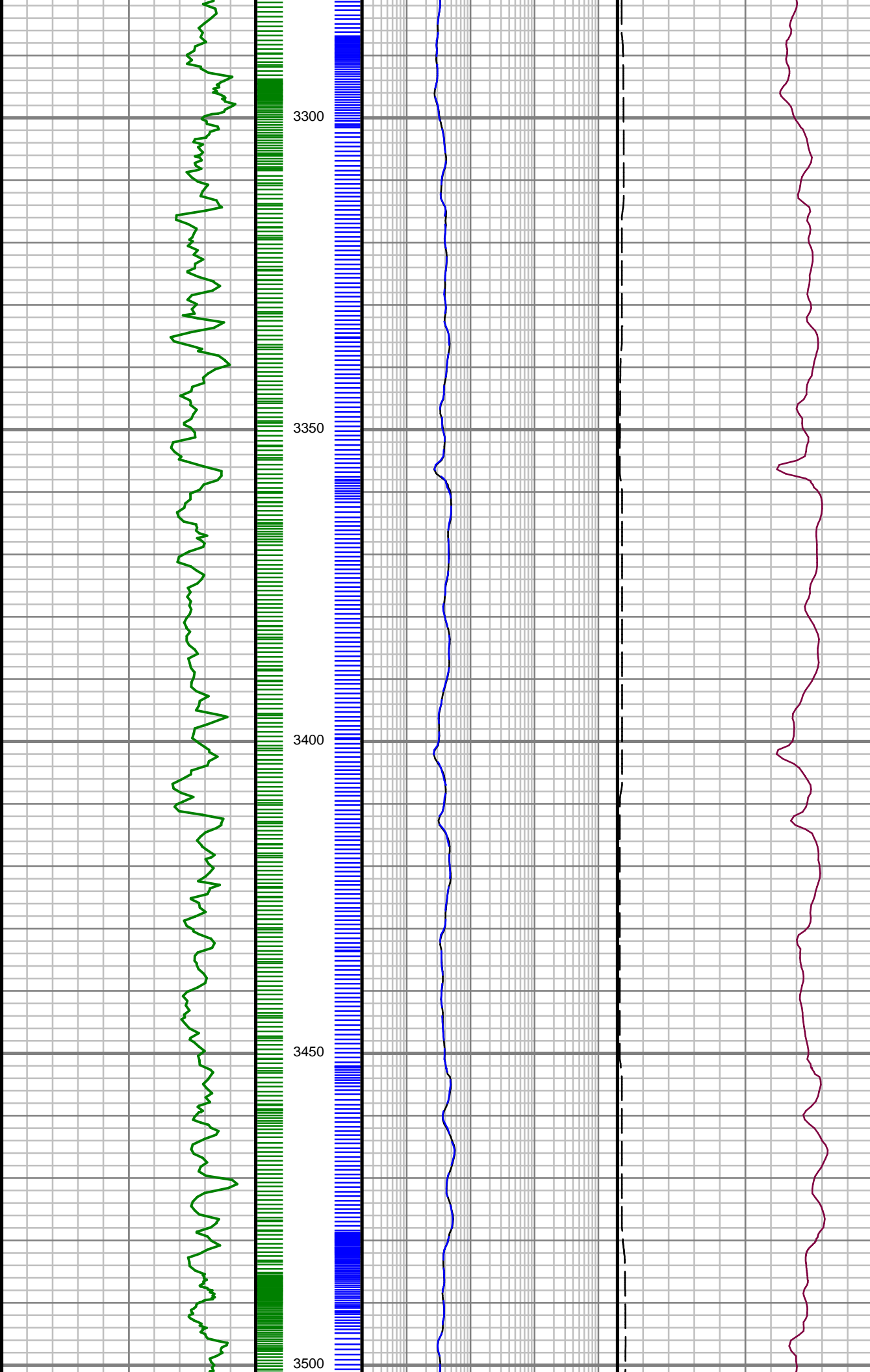
S: 30 MD: 2969.00 ft
Inc: 17.53 deg Az:
52.73 deg TVD:
2887.00 ft



S: 31 MD: 3063.00 ft
Inc: 17.88 deg Az:
49.97 deg TVD:
2976.54 ft

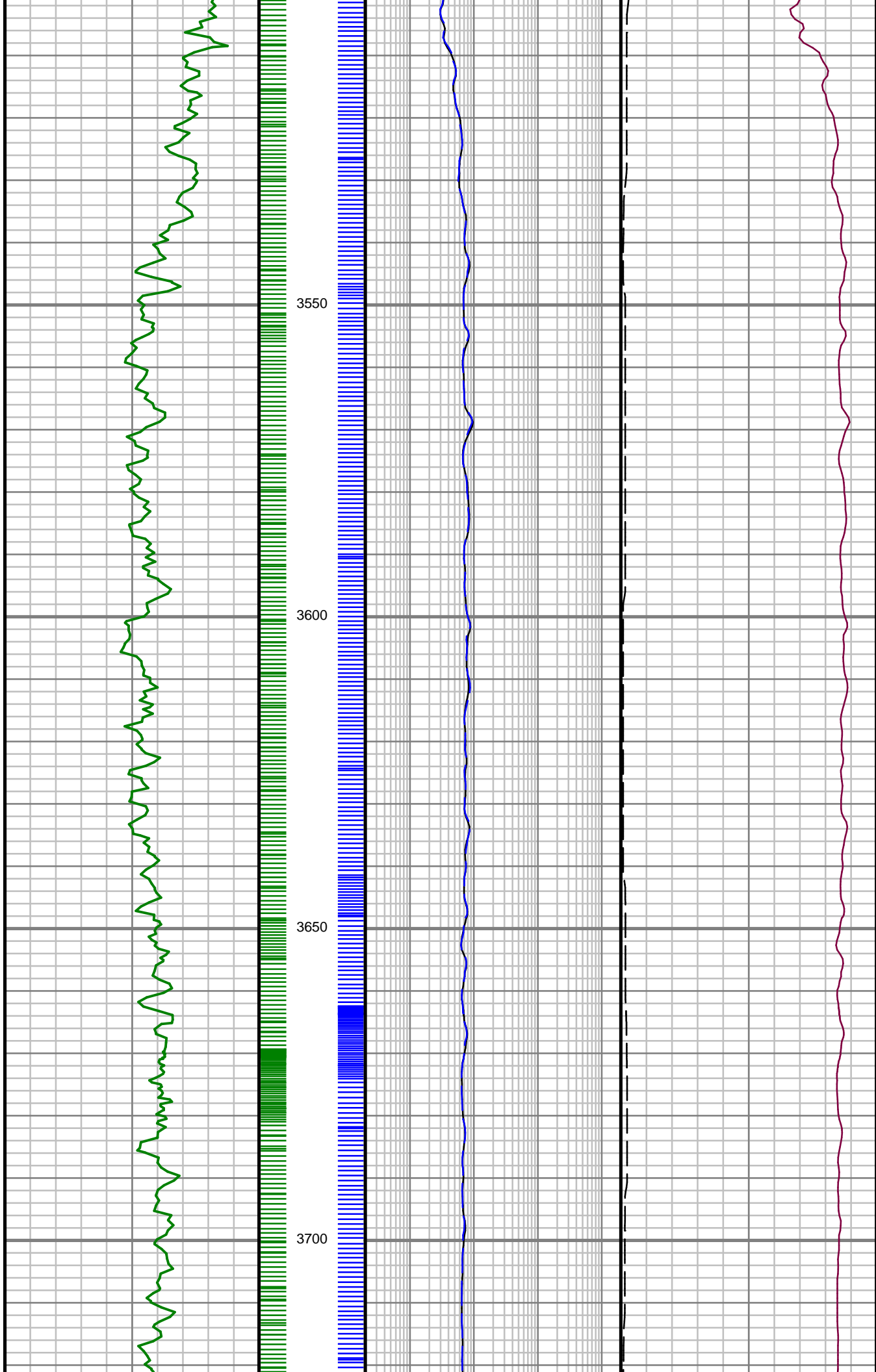
S: 32 MD: 3156.00 ft
Inc: 16.02 deg Az:
48.62 deg TVD:
3065.50 ft

S: 33 MD: 3252.00 ft
Inc: 14.38 deg Az:
45.82 deg TVD:
3158.14 ft



S: 34 MD: 3345.00 ft
Inc: 12.59 deg Az:
49.50 deg TVD:
3248.57 ft

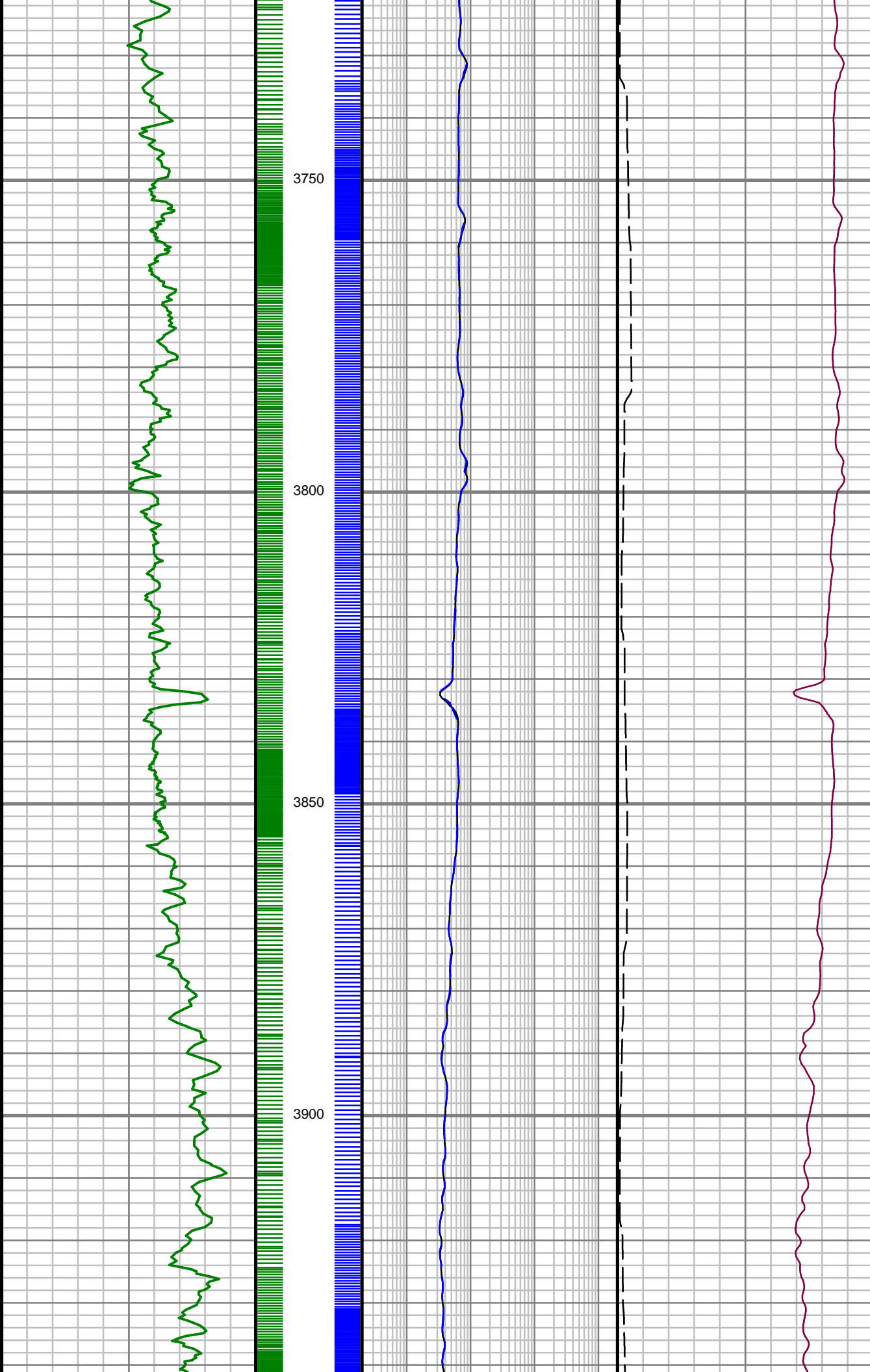
S: 35 MD: 3439.00 ft
Inc: 10.20 deg Az:
50.98 deg TVD:
3340.72 ft



S: 36 MD: 3533.00 ft
Inc: 8.72 deg Az: 54.98
deg TVD: 3433.44 ft

S: 37 MD: 3628.00 ft
Inc: 8.50 deg Az: 58.54
deg TVD: 3527.37 ft

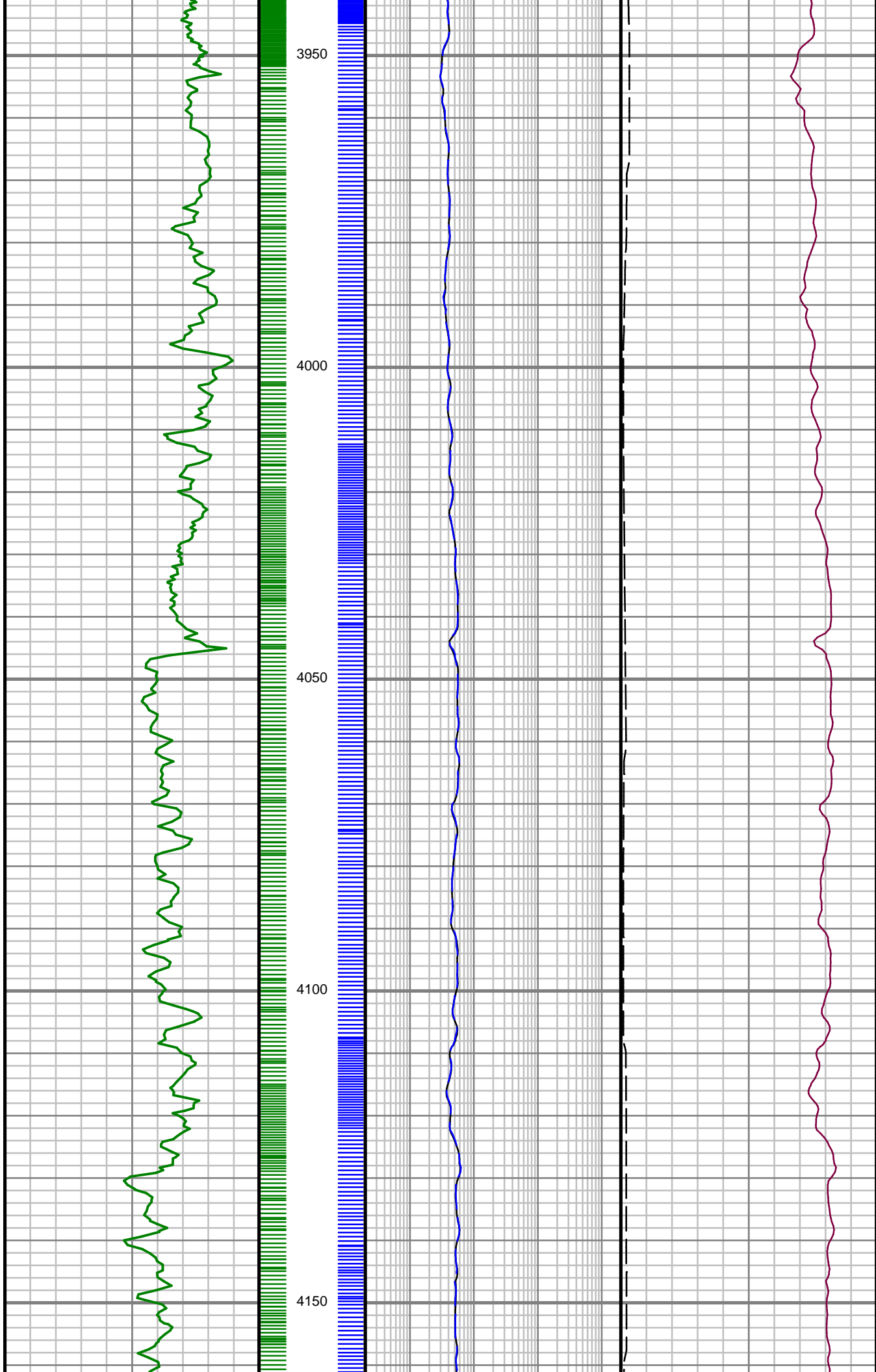
S: 38 MD: 3720.00 ft

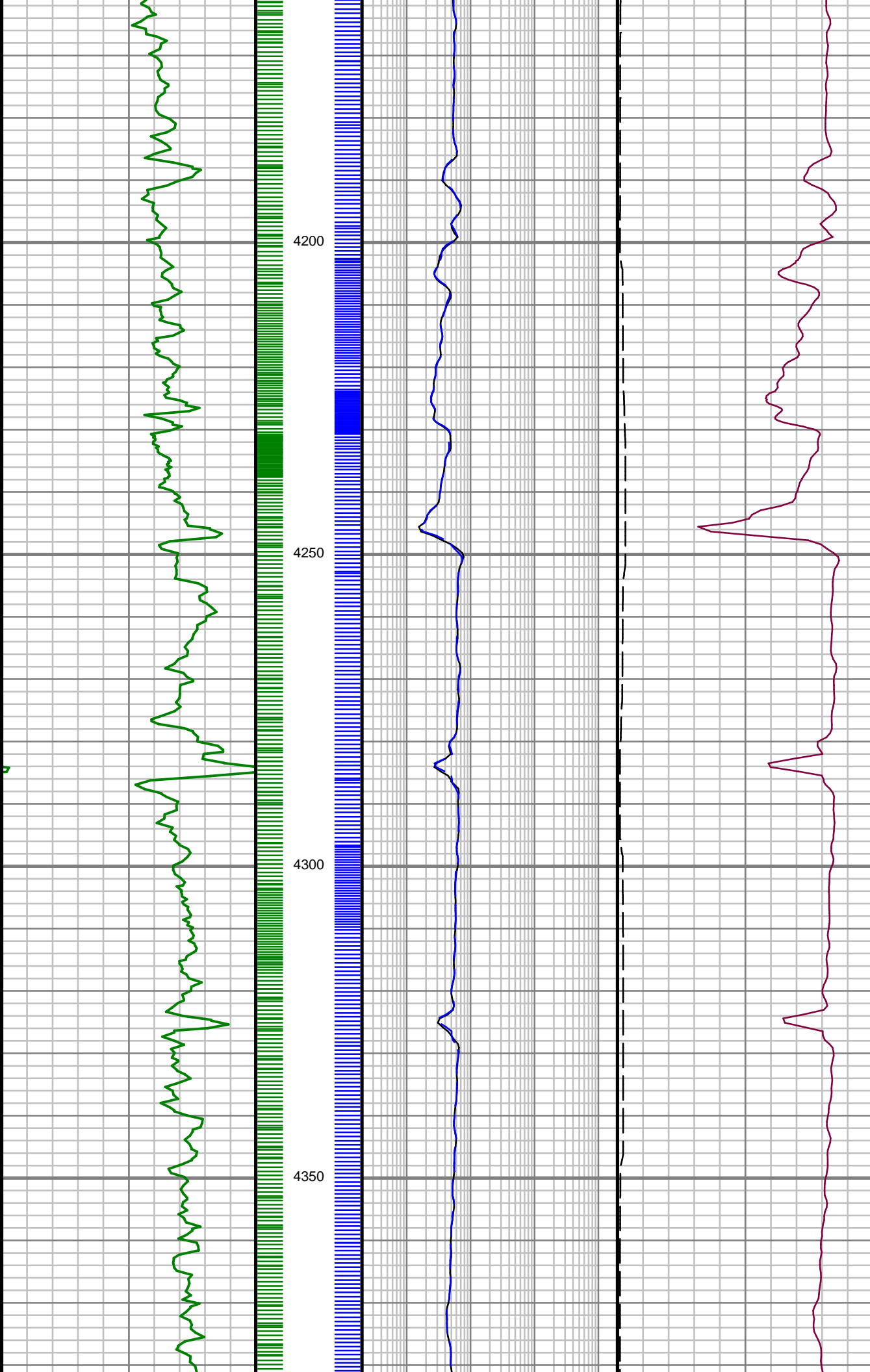


S: 38 MD: 3720.00 ft
Inc: 7.42 deg Az: 55.26
deg TVD: 3618.48 ft

S: 39 MD: 3813.00 ft
Inc: 6.15 deg Az: 56.86
deg TVD: 3710.83 ft

S: 40 MD: 3908.00 ft
Inc: 3.64 deg Az: 57.87
deg TVD: 3805.47 ft

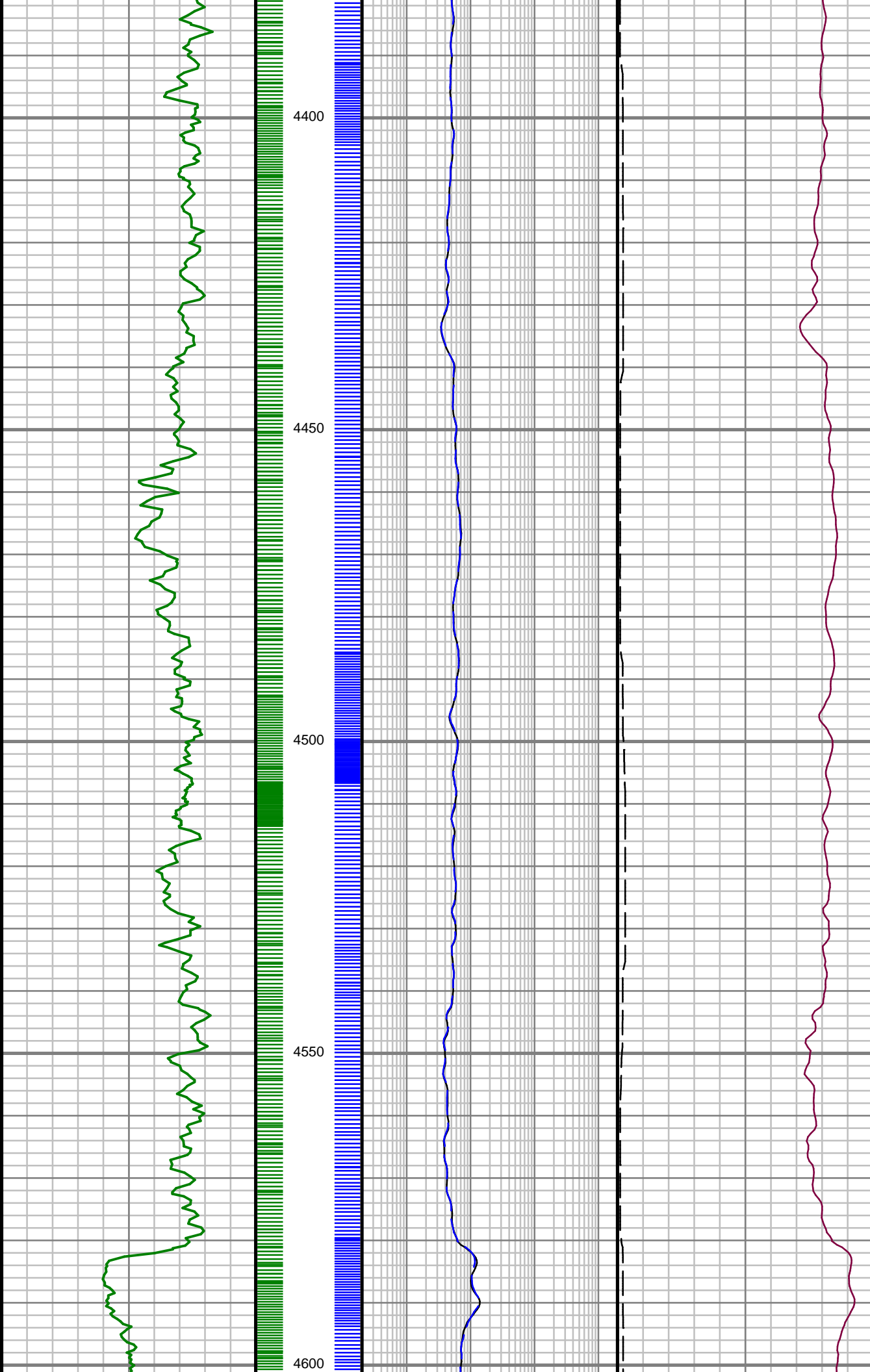




S: 43 MD: 4193.00 ft
Inc: 0.66 deg Az: 78.83
deg TVD: 4090.37 ft

S: 44 MD: 4286.00 ft
Inc: 0.46 deg Az: 220.23 deg
TVD: 4183.37 ft

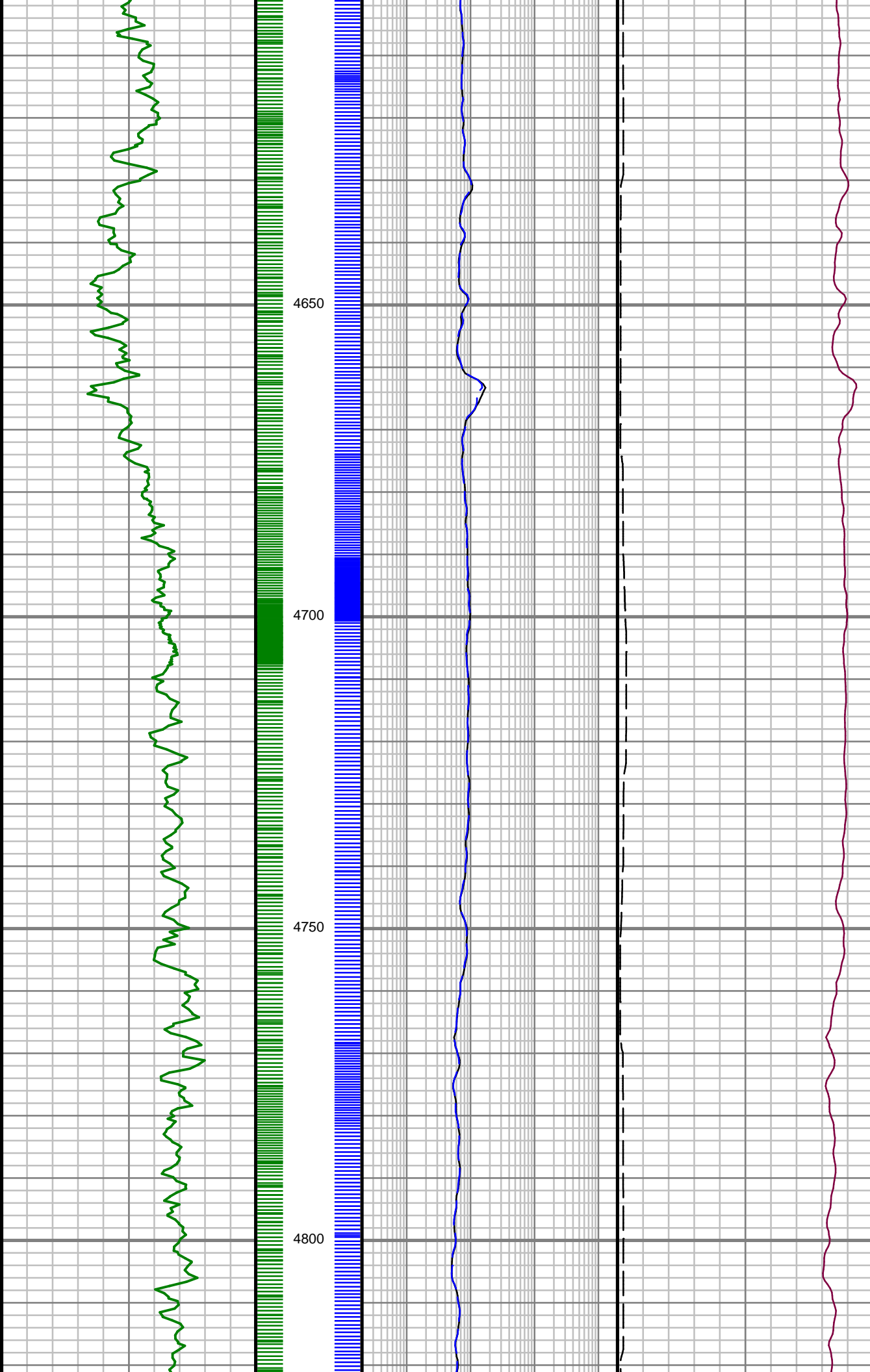
S: 45 MD: 4380.00 ft



S: 45 MD: 4380.00 ft
Inc: 0.62 deg Az:
234.56 deg TVD:
4277.36 ft

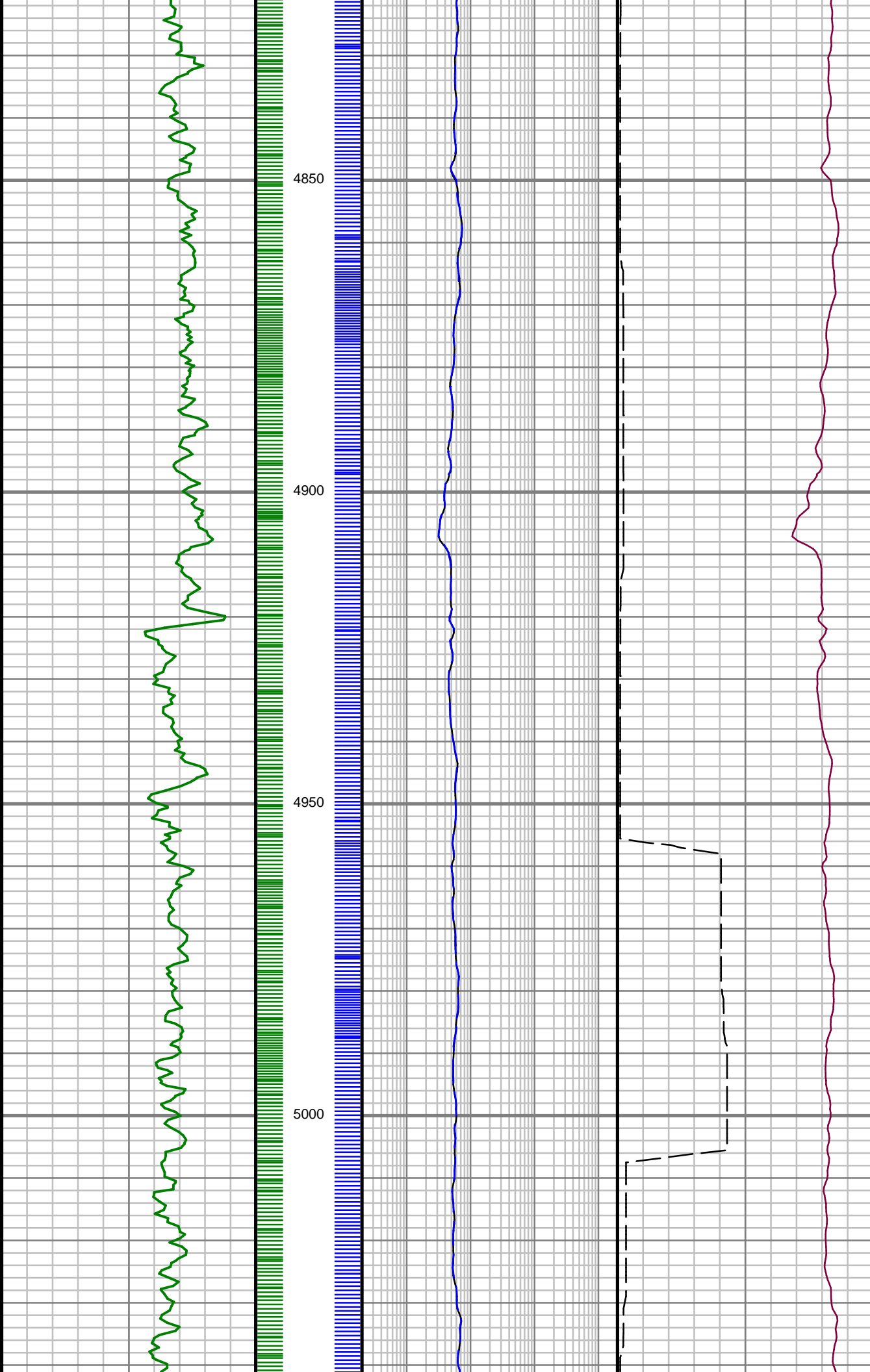
S: 46 MD: 4475.00 ft
Inc: 0.57 deg Az:
286.90 deg TVD:
4372.36 ft

S: 47 MD: 4570.00 ft
Inc: 0.53 deg Az:
229.90 deg TVD:
4467.35 ft



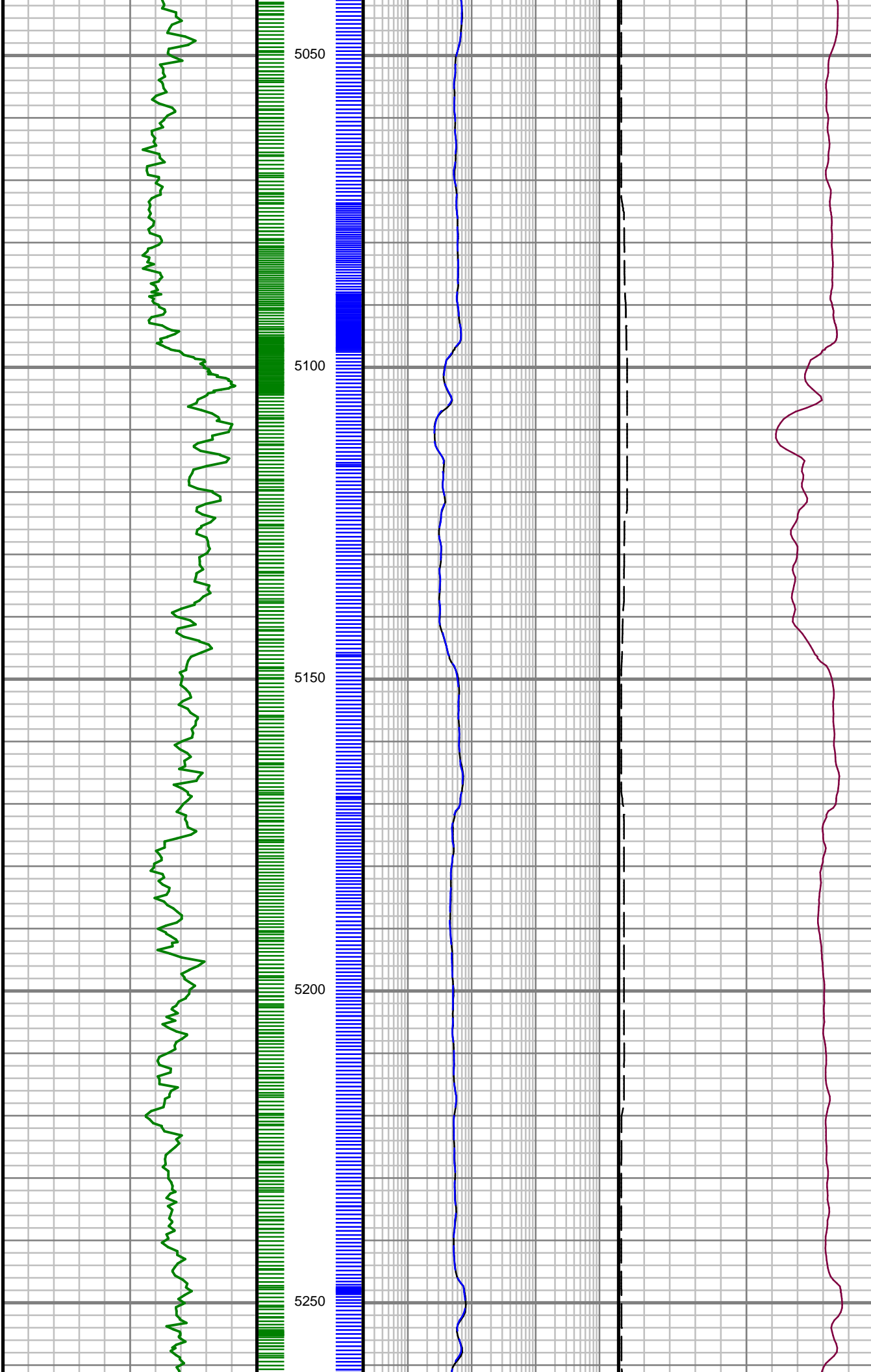
S: 48 MD: 4663.00 ft
Inc: 0.93 deg Az:
264.87 deg TVD:
4560.35 ft

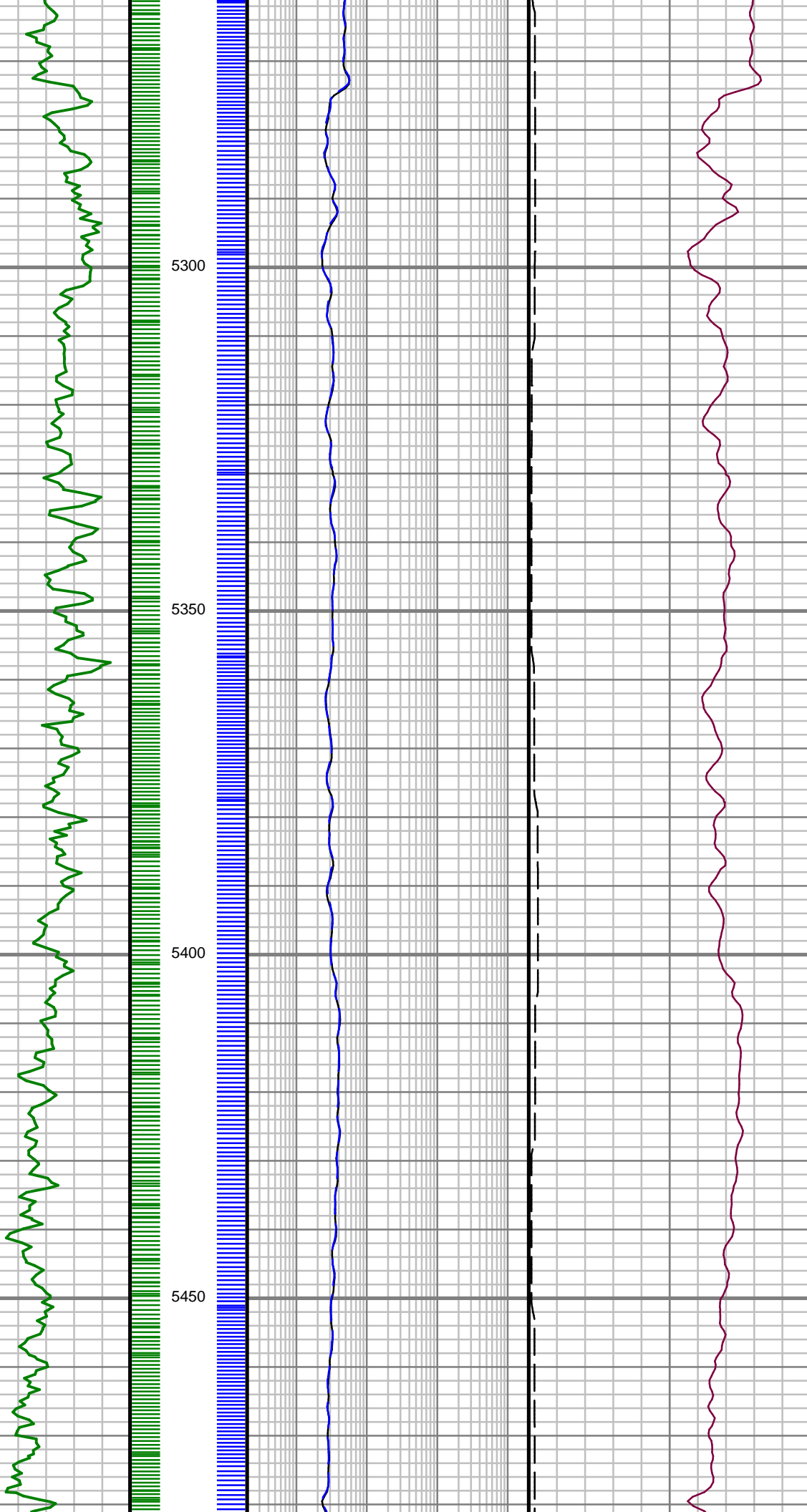
S: 49 MD: 4757.00 ft
Inc: 0.34 deg Az:
180.10 deg TVD:
4654.34 ft



S: 50 MD: 4852.00 ft
Inc: 0.57 deg Az:
199.03 deg TVD:
4749.34 ft

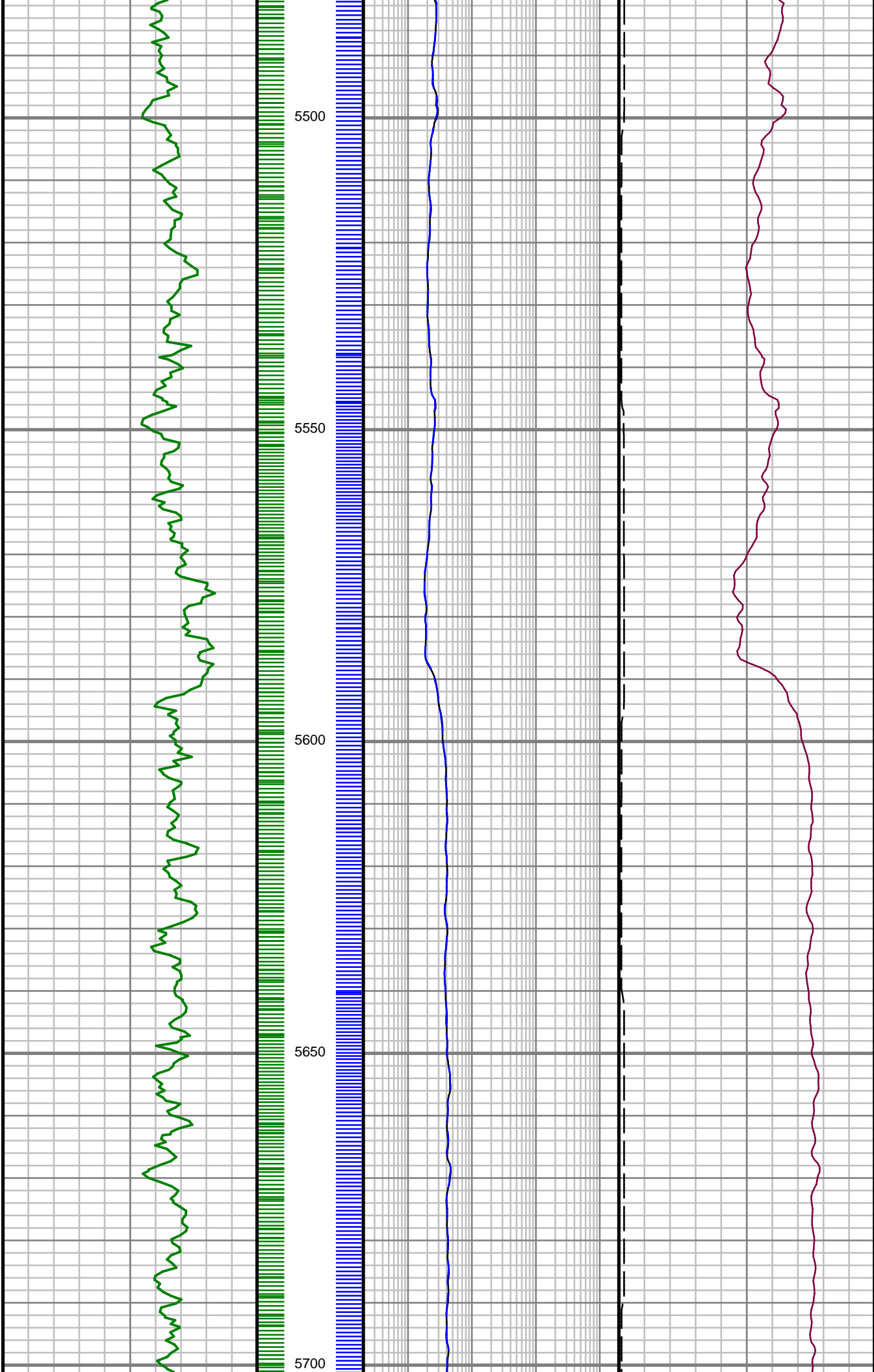
S: 51 MD: 4970.00 ft
Inc: 0.39 deg Az:
244.28 deg TVD:
4867.33 ft





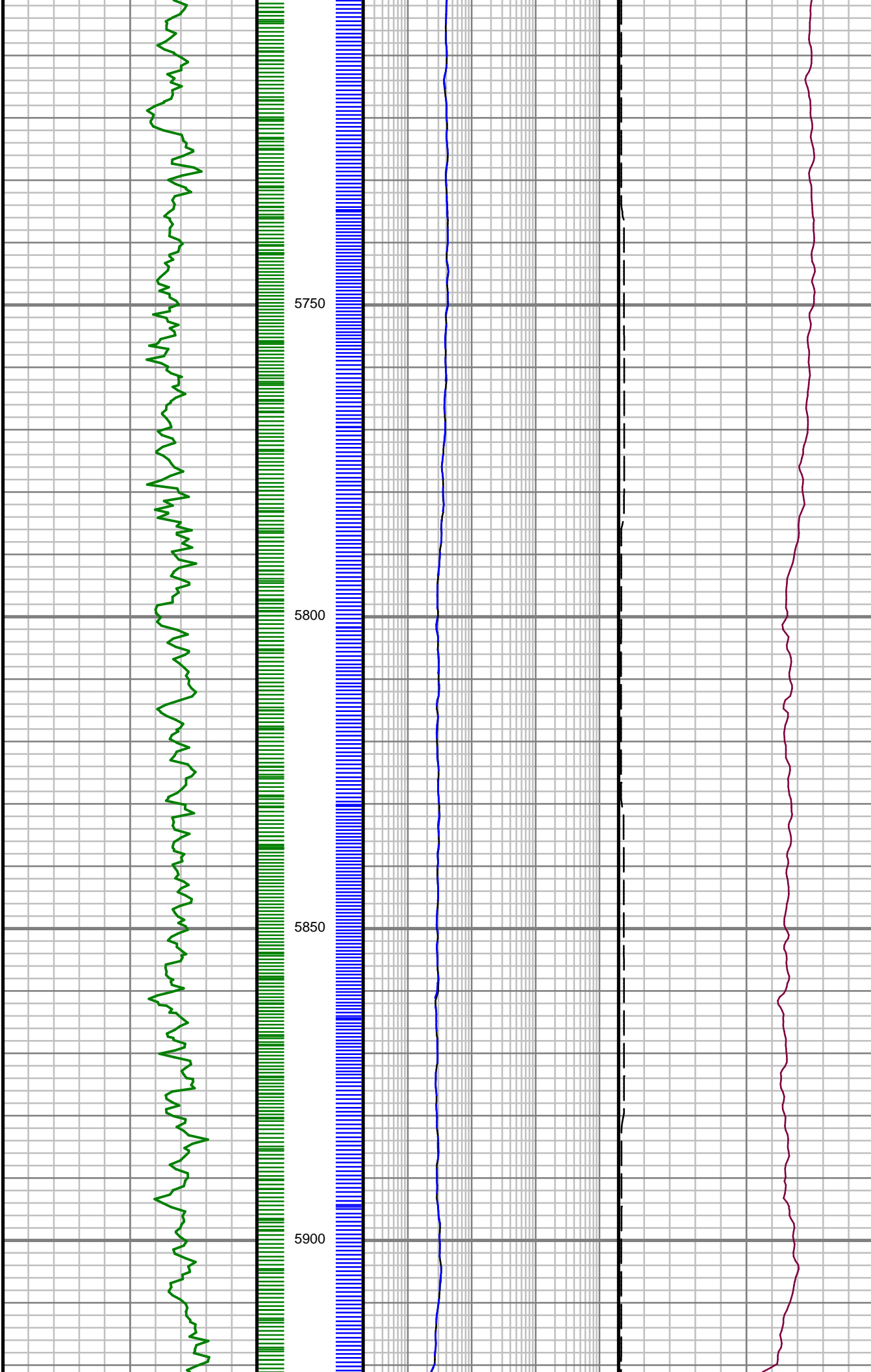
S: 55 MD: 5348.00 ft
Inc: 1.28 deg Az:
231.00 deg TVD:
5245.30 ft

S: 56 MD: 5442.00 ft
Inc: 1.63 deg Az:
246.31 deg TVD:
5339.27 ft



S: 57 MD: 5536.00 ft
Inc: 1.31 deg Az:
239.71 deg TVD:
5433.24 ft

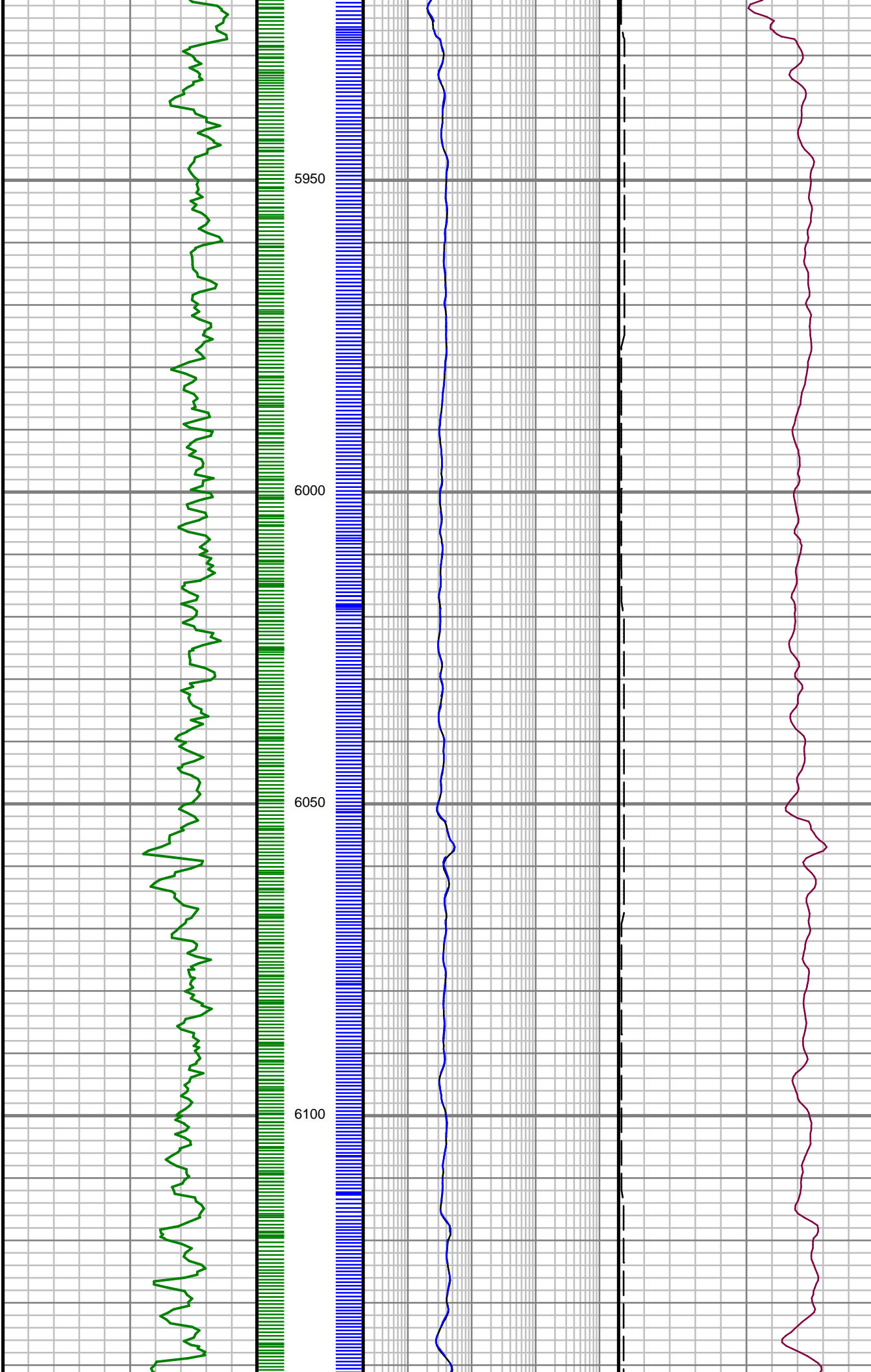
S: 58 MD: 5631.00 ft
Inc: 0.74 deg Az:
249.70 deg TVD:
5528.23 ft



S: 59 MD: 5725.00 ft
Inc: 0.64 deg Az:
269.11 deg TVD:
5622.22 ft

S: 60 MD: 5820.00 ft
Inc: 0.84 deg Az:
274.98 deg TVD:
5717.21 ft

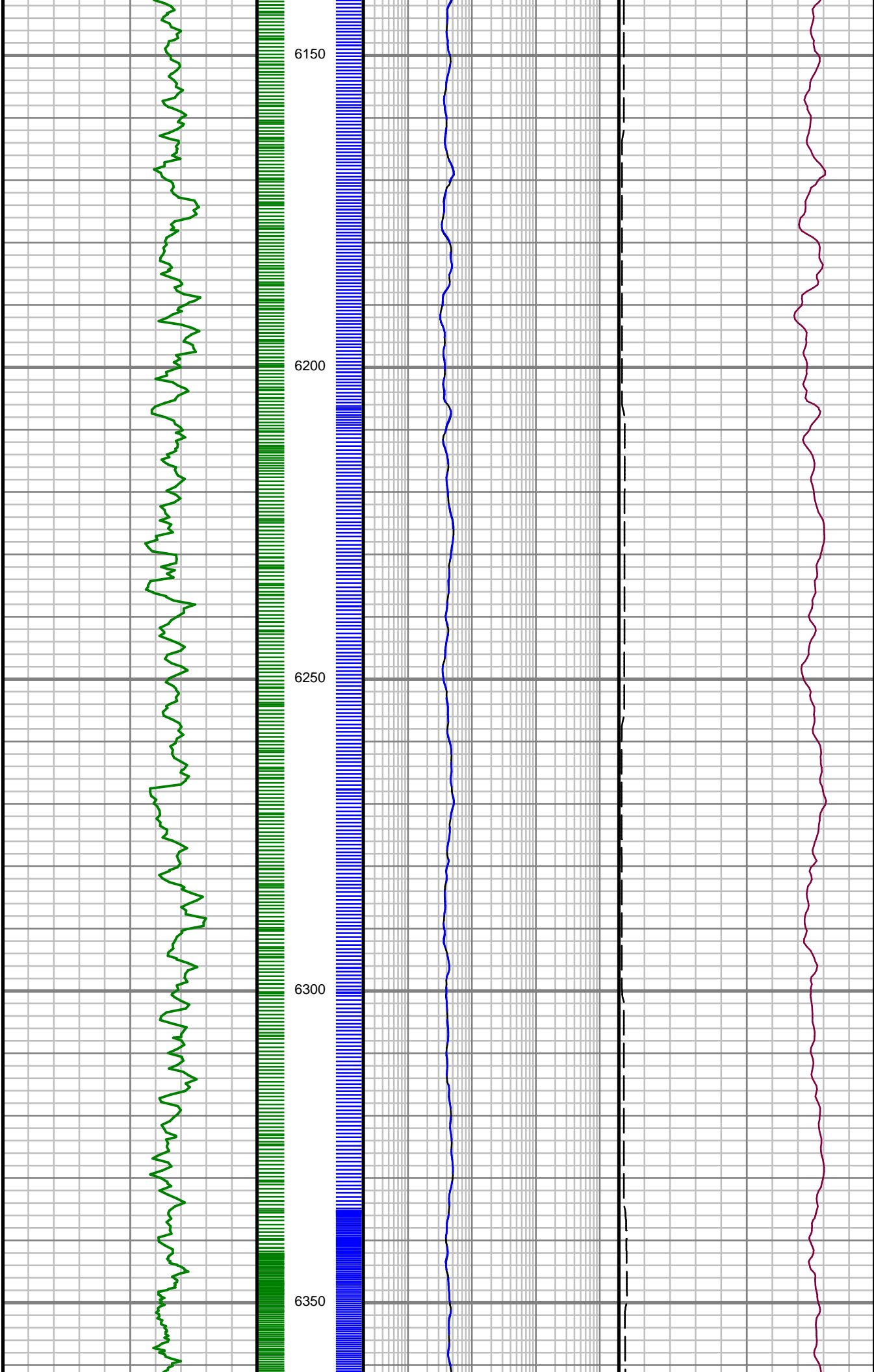
S: 61 MD: 5915.00 ft
Inc: 0.87 deg Az:
276.54 deg TVD:



276.34 deg TVD:
5812.20 ft

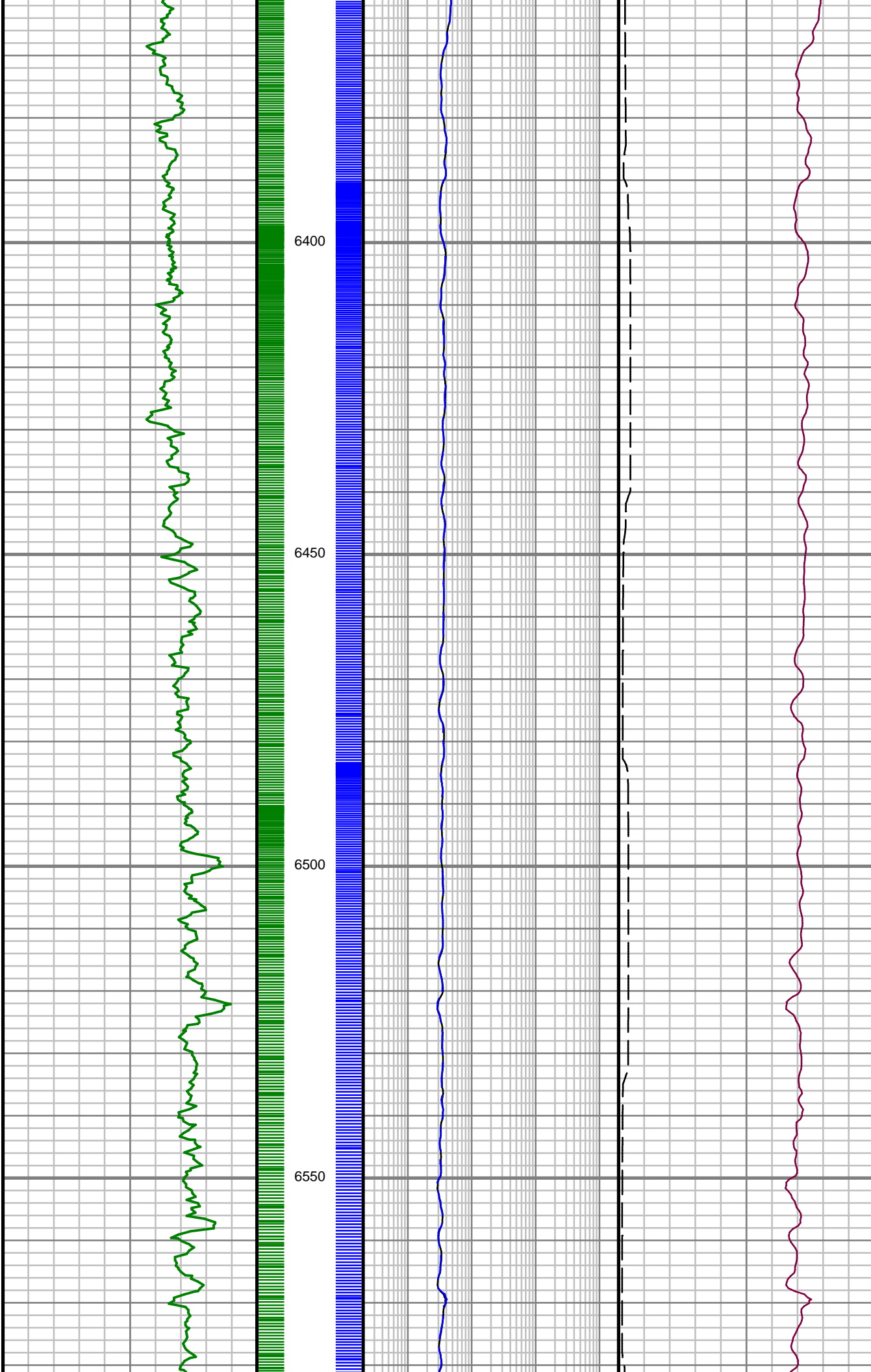
S: 62 MD: 6008.00 ft
Inc: 0.74 deg Az:
273.60 deg TVD:
5905.19 ft

S: 63 MD: 6102.00 ft
Inc: 0.88 deg Az:
262.87 deg TVD:
5999.18 ft



S: 64 MD: 6195.00 ft
Inc: 0.76 deg Az:
265.93 deg TVD:
6092.17 ft

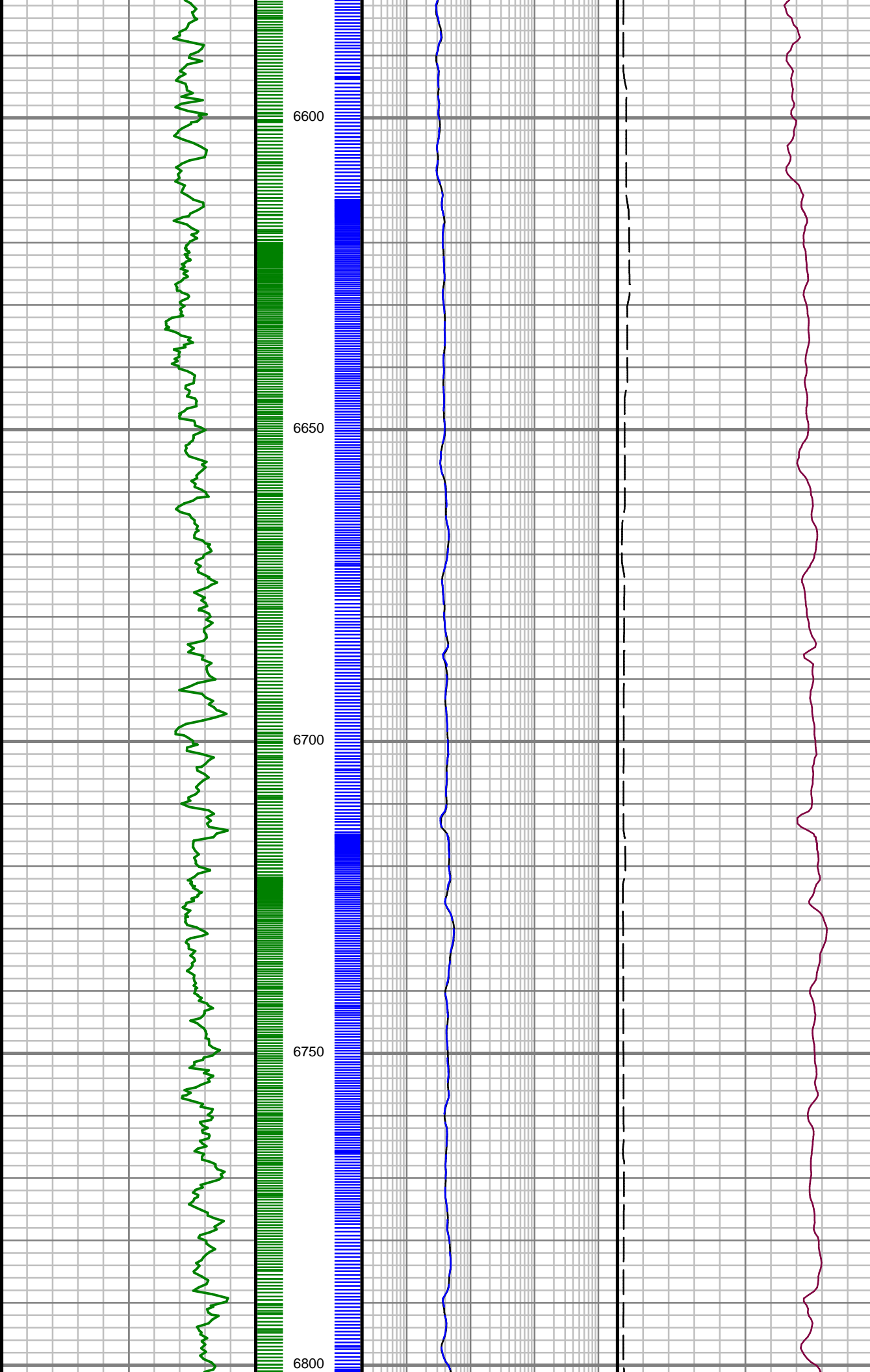
S: 65 MD: 6288.00 ft
Inc: 0.51 deg Az:
288.50 deg TVD:
6185.17 ft



S: 66 MD: 6381.00 ft
Inc: 0.69 deg Az:
258.98 deg TVD:
6278.16 ft

S: 67 MD: 6474.00 ft
Inc: 10.68 deg Az:
278.75 deg TVD:
6370.59 ft

S: 68 MD: 6569.00 ft
Inc: 22.11 deg Az:
277.77 deg TVD:
6461.58 ft



6600

6650

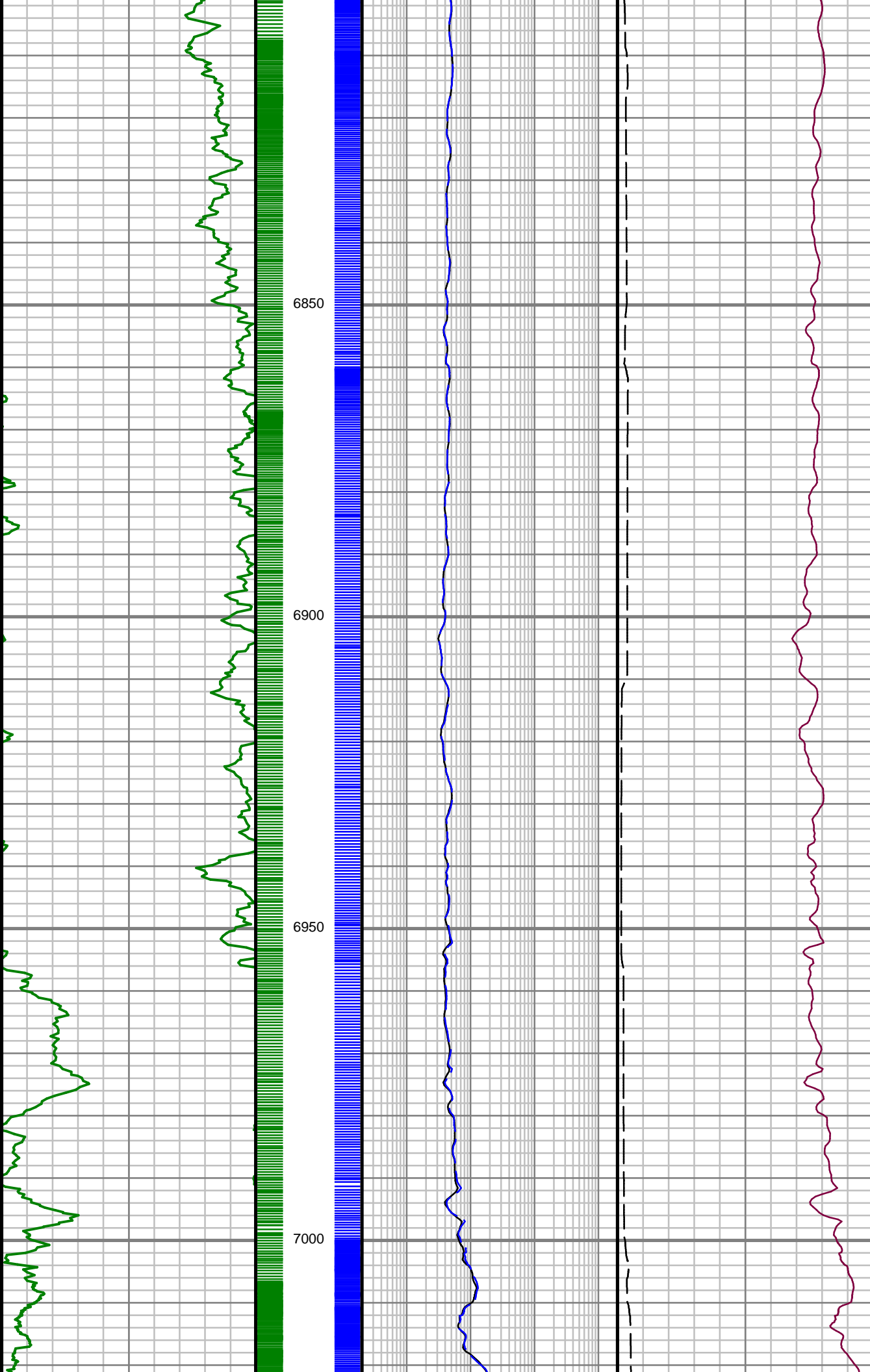
6700

6750

6800

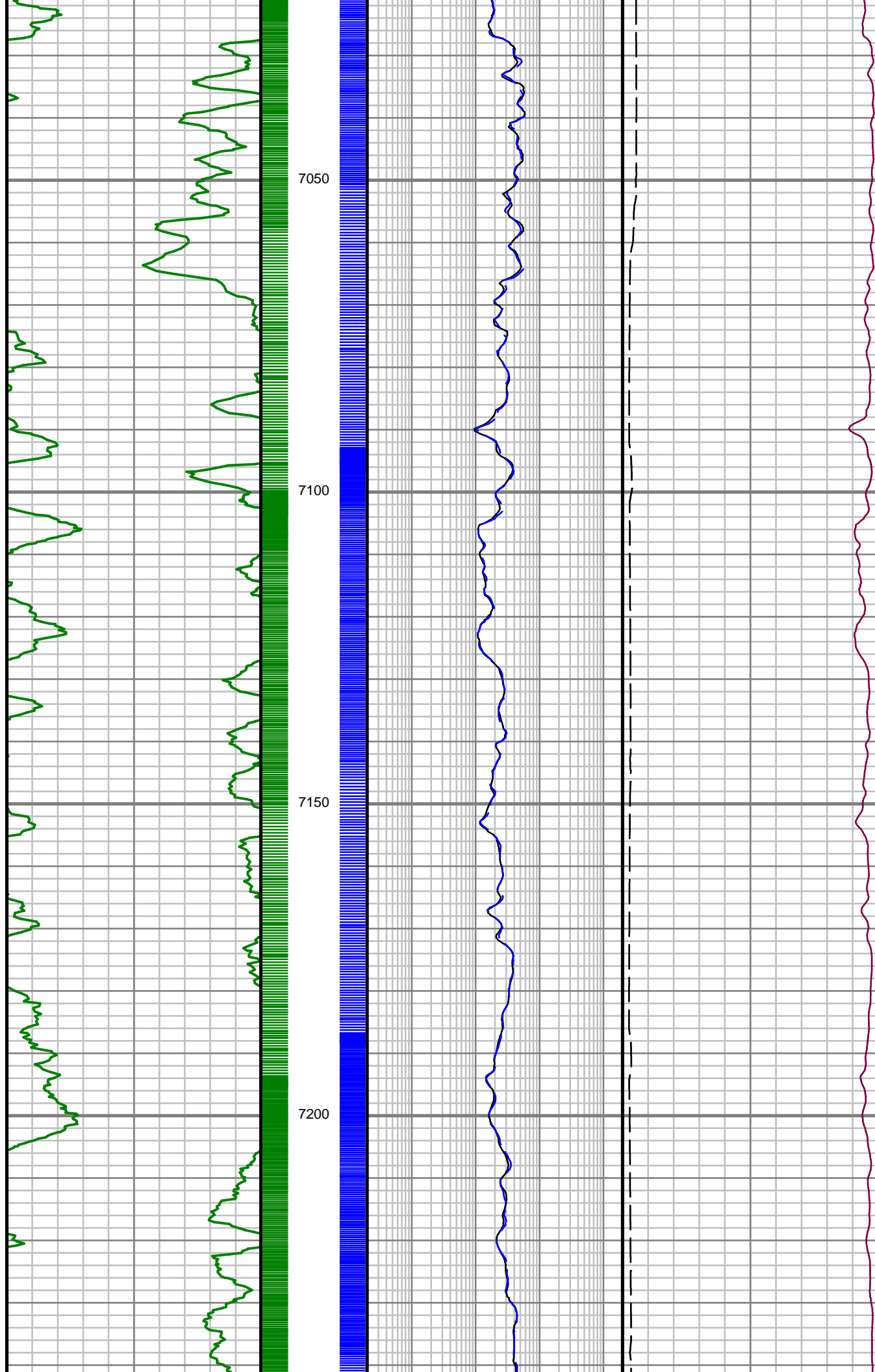
S: 69 MD: 6662.00 ft
Inc: 29.39 deg Az:
268.95 deg TVD:
6545.31 ft

S: 70 MD: 6755.00 ft
Inc: 33.21 deg Az:
269.18 deg TVD:
6624.76 ft



S: 71 MD: 6849.00 ft
Inc: 36.20 deg Az:
269.97 deg TVD:
6702.03 ft

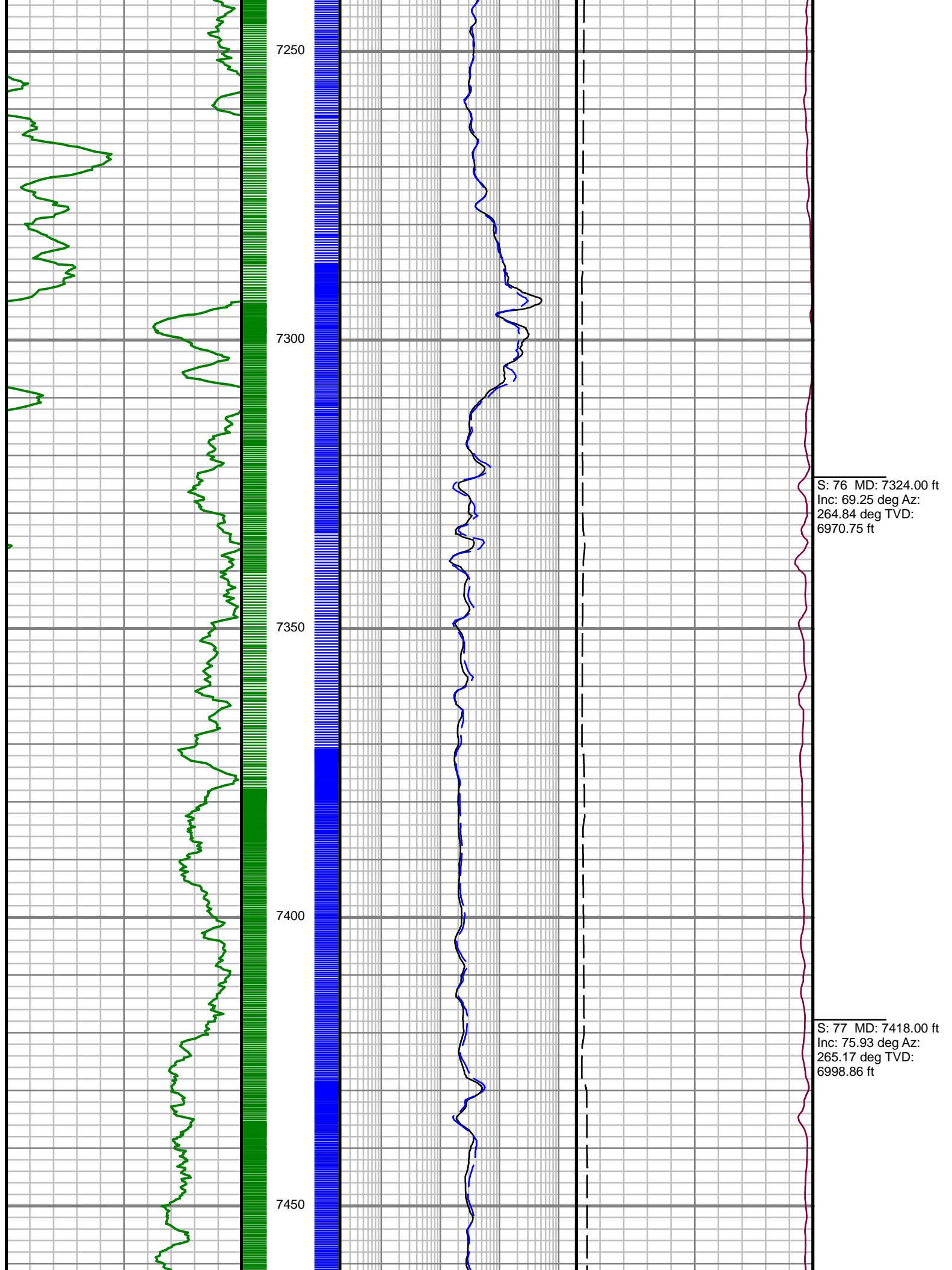
S: 72 MD: 6944.00 ft
Inc: 45.67 deg Az:
274.35 deg TVD:
6773.73 ft

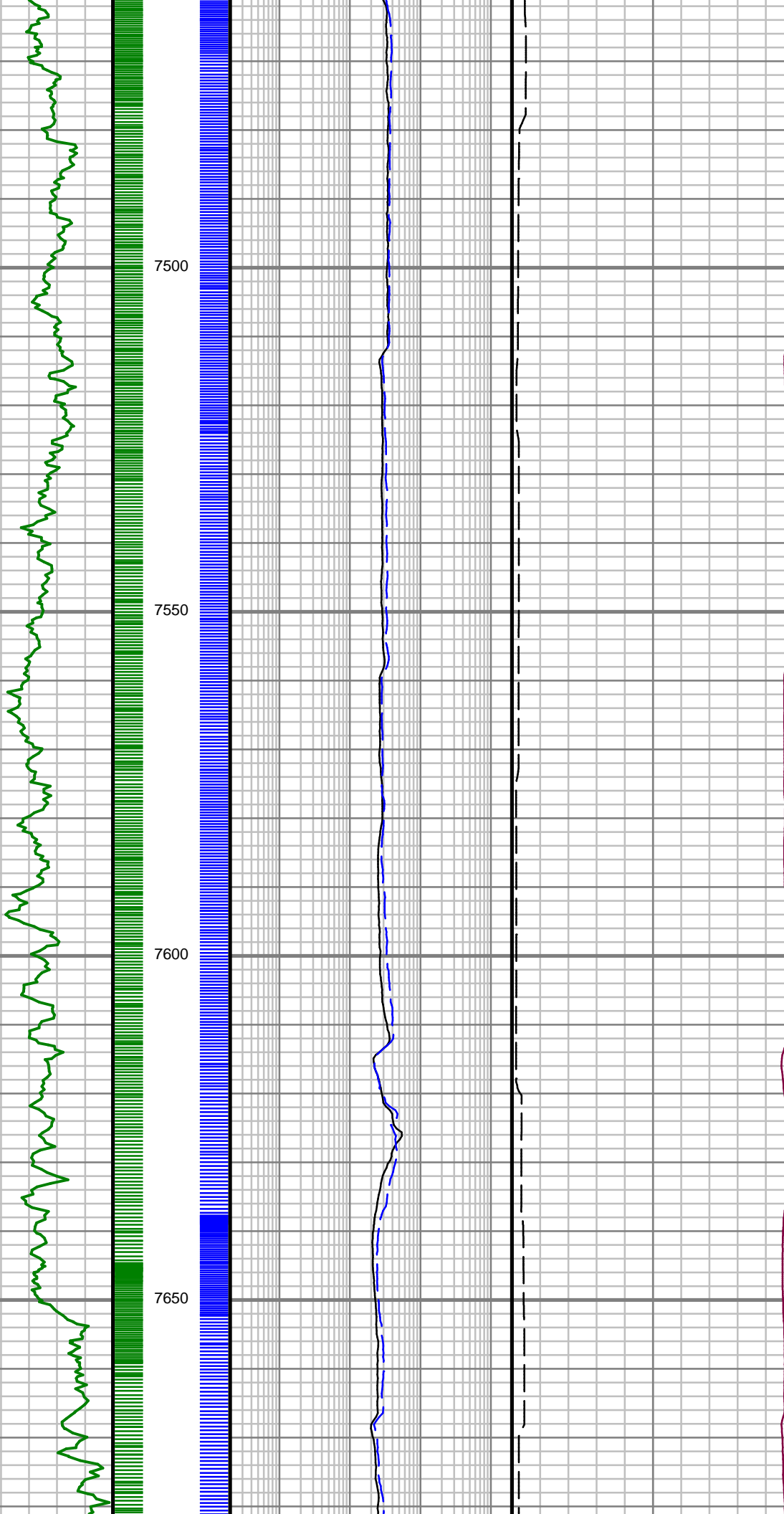


S: 73 MD: 7039.00 ft
Inc: 54.59 deg Az:
280.63 deg TVD:
6834.61 ft

S: 74 MD: 7134.00 ft
Inc: 58.44 deg Az:
275.43 deg TVD:
6887.04 ft

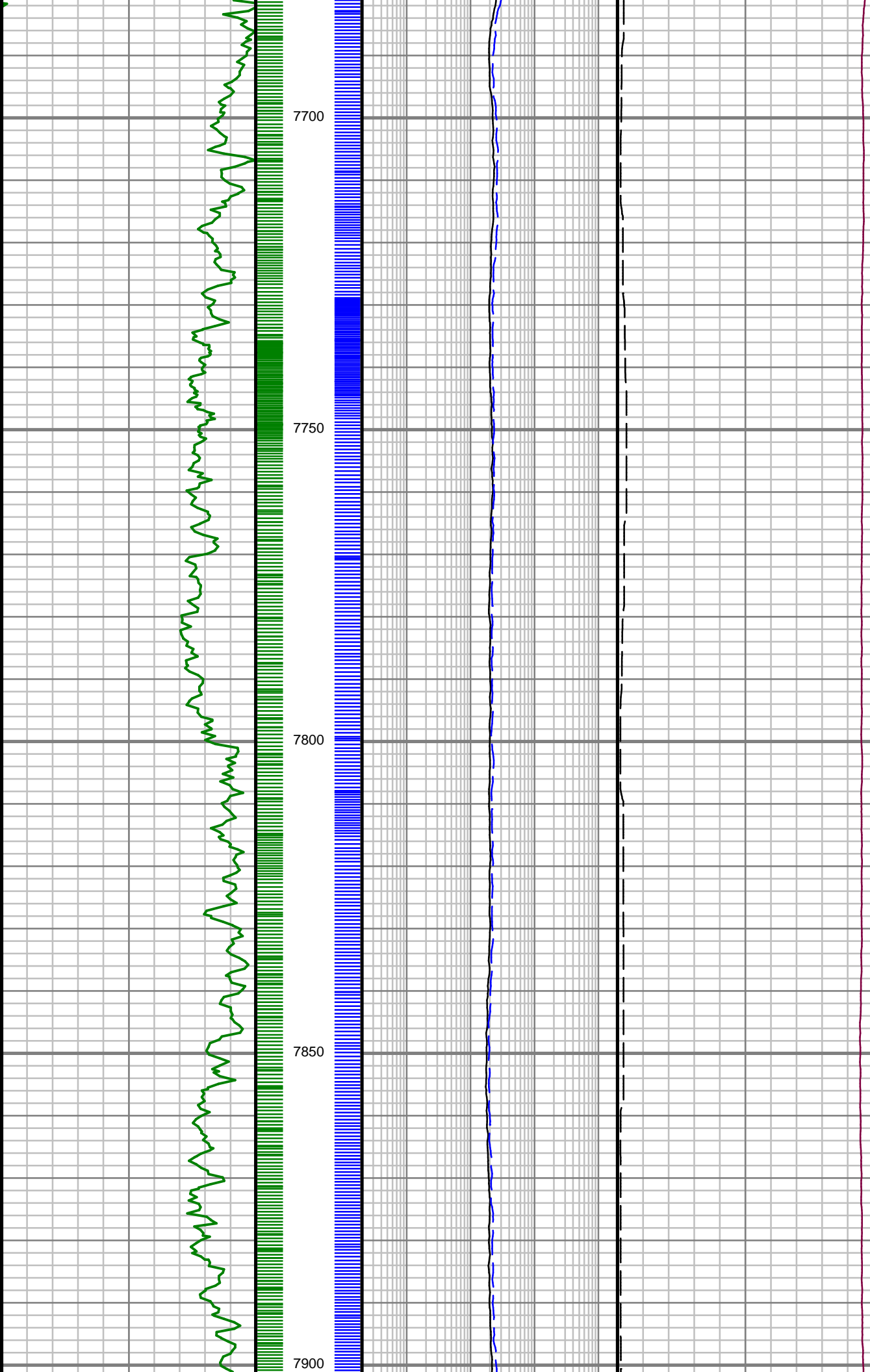
S: 75 MD: 7229.00 ft
Inc: 63.82 deg Az:
269.99 deg TVD:
6932.92 ft





S: 78 MD: 7513.00 ft
Inc: 88.96 deg Az:
267.48 deg TVD:
7011.32 ft

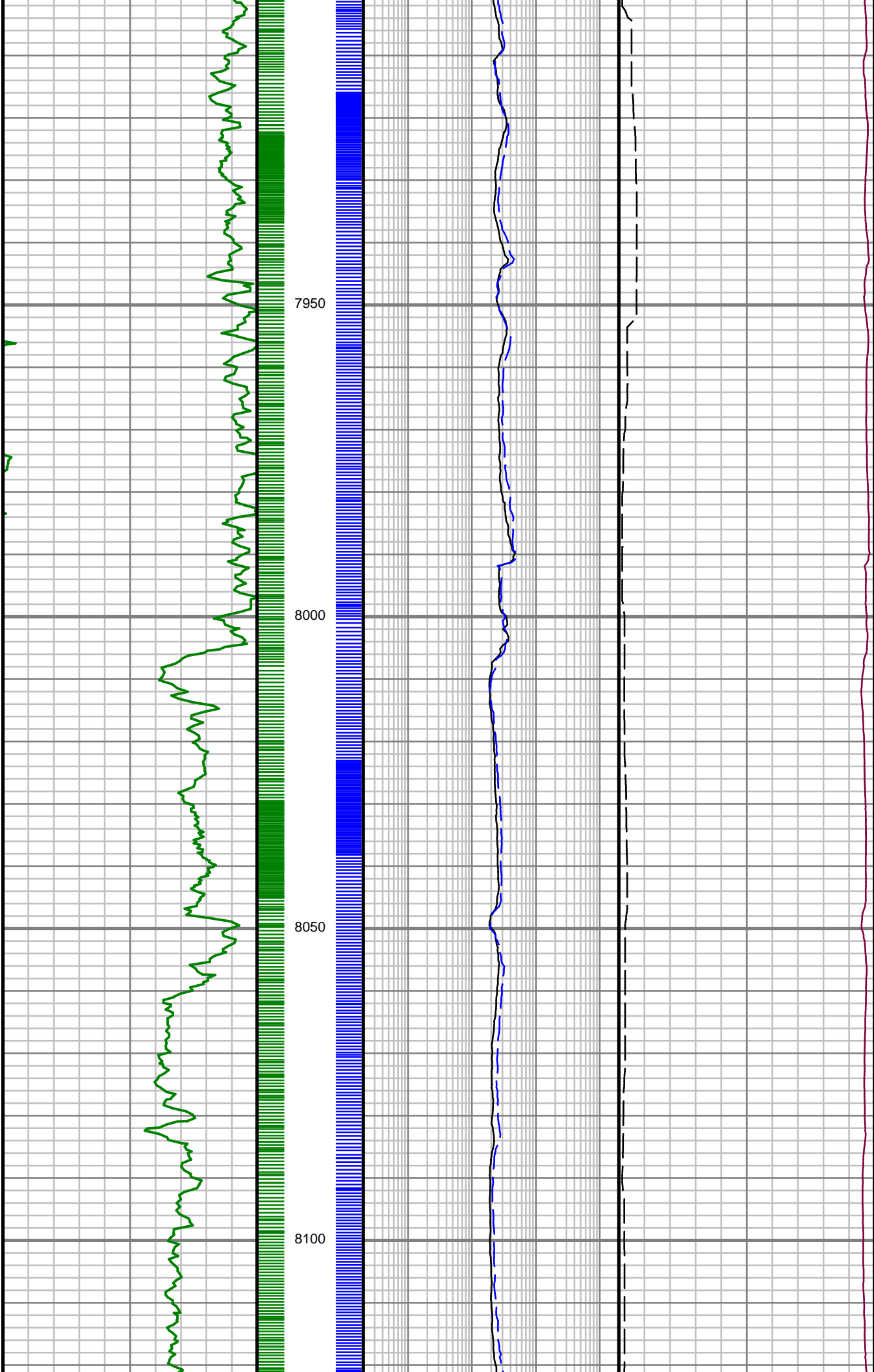
S: 79 MD: 7608.00 ft
Inc: 91.34 deg Az:
267.45 deg TVD:
7011.08 ft



S: 80 MD: 7702.00 ft
Inc: 90.60 deg Az:
267.25 deg TVD:
7009.48 ft

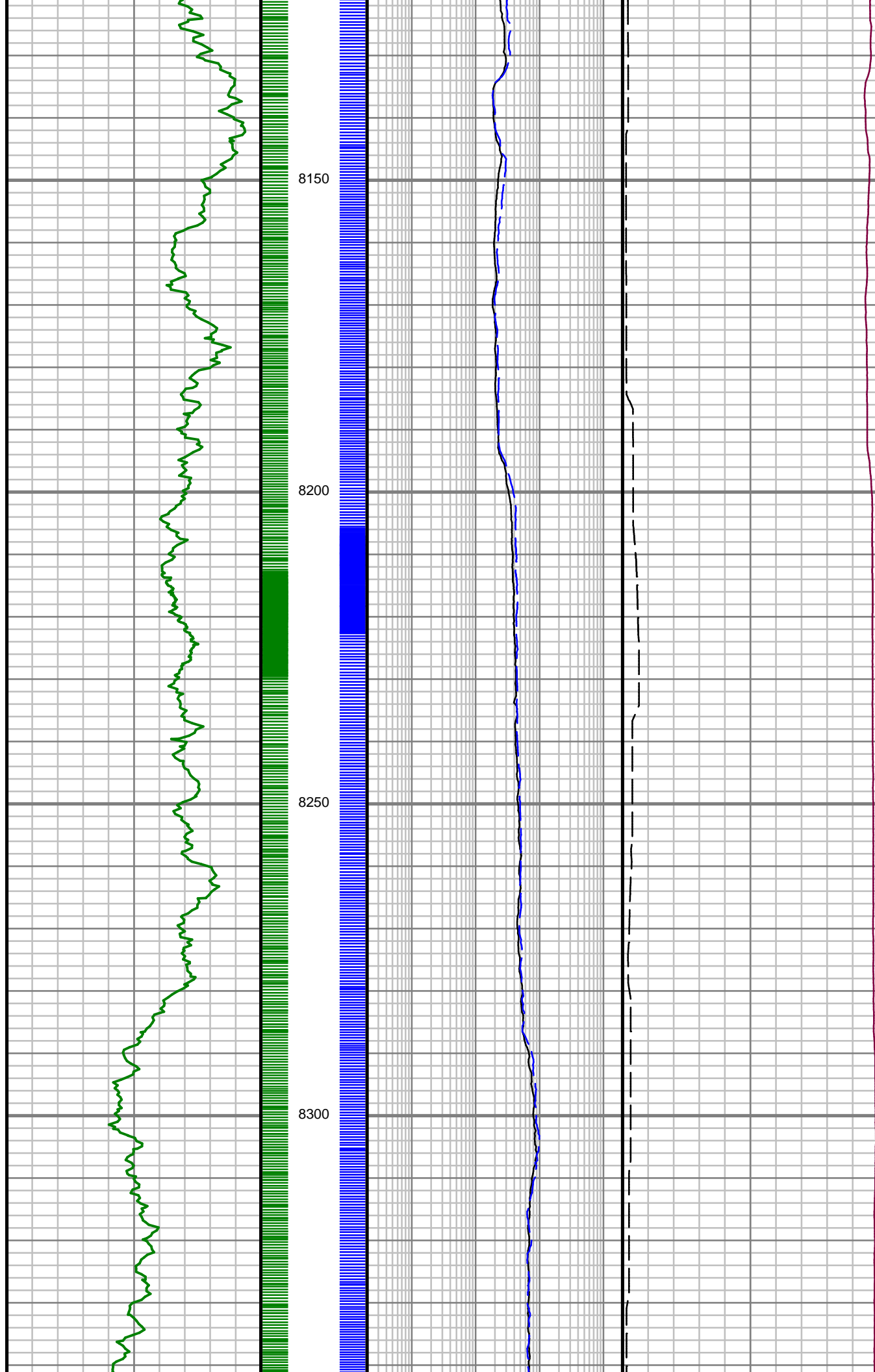
S: 81 MD: 7796.00 ft
Inc: 89.56 deg Az:
267.59 deg TVD:
7009.34 ft

S: 82 MD: 7891.00 ft
Inc: 90.20 deg Az:
267.48 deg TVD:
7009.54 ft



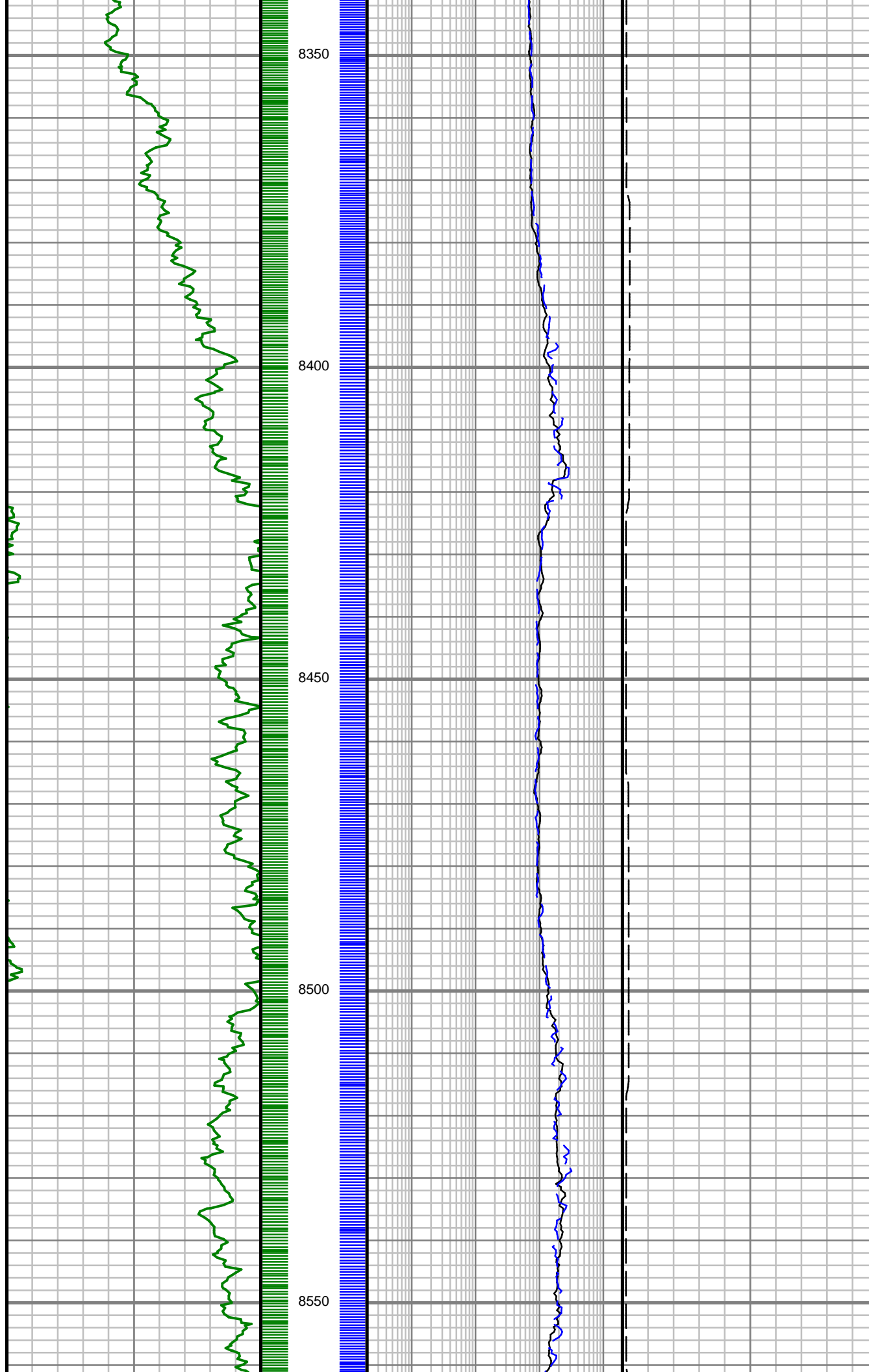
S: 83 MD: 7986.00 ft
Inc: 90.47 deg Az:
268.37 deg TVD:
7008.98 ft

S: 84 MD: 8079.00 ft
Inc: 90.40 deg Az:
268.54 deg TVD:
7008.27 ft



S: 85 MD: 8172.00 ft
Inc: 89.90 deg Az:
269.01 deg TVD:
7008.03 ft

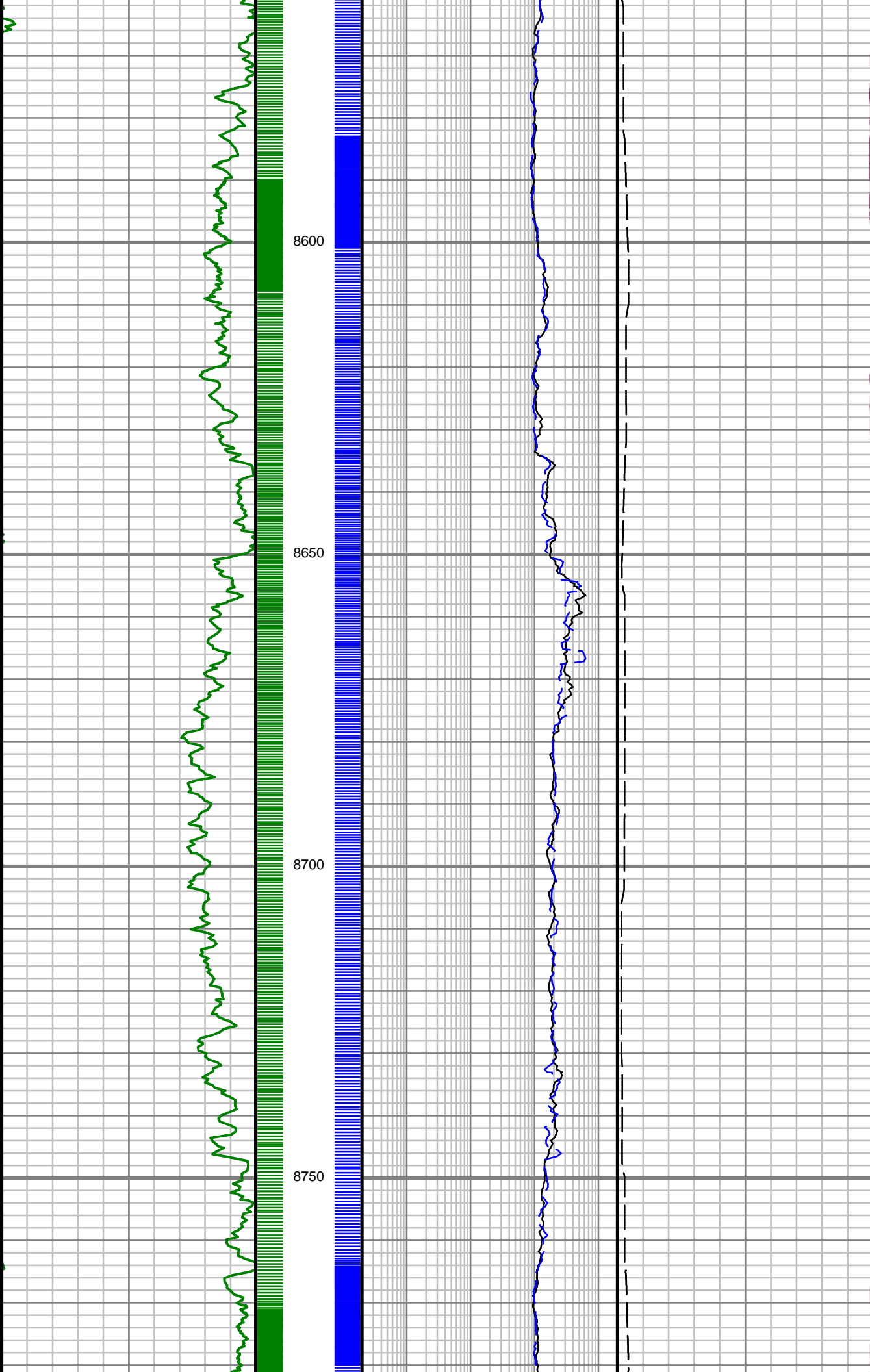
S: 86 MD: 8266.00 ft
Inc: 89.43 deg Az:
269.55 deg TVD:
7008.58 ft



S: 87 MD: 8359.00 ft
Inc: 88.99 deg Az:
269.81 deg TVD:
7009.86 ft

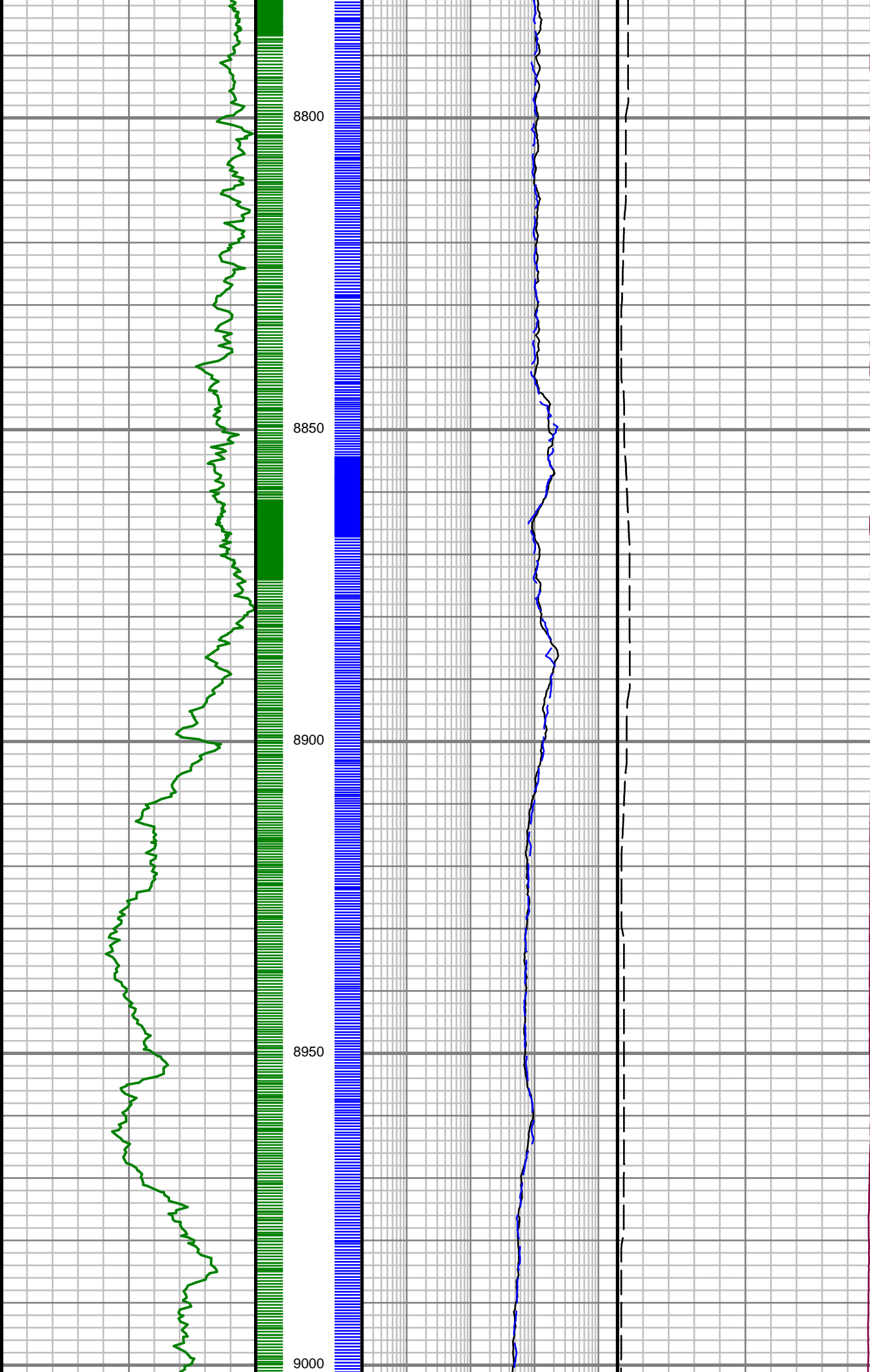
S: 88 MD: 8451.00 ft
Inc: 89.26 deg Az:
269.41 deg TVD:
7011.26 ft

S: 89 MD: 8546.00 ft
Inc: 88.69 deg Az:
267.99 deg TVD:
7012.96 ft



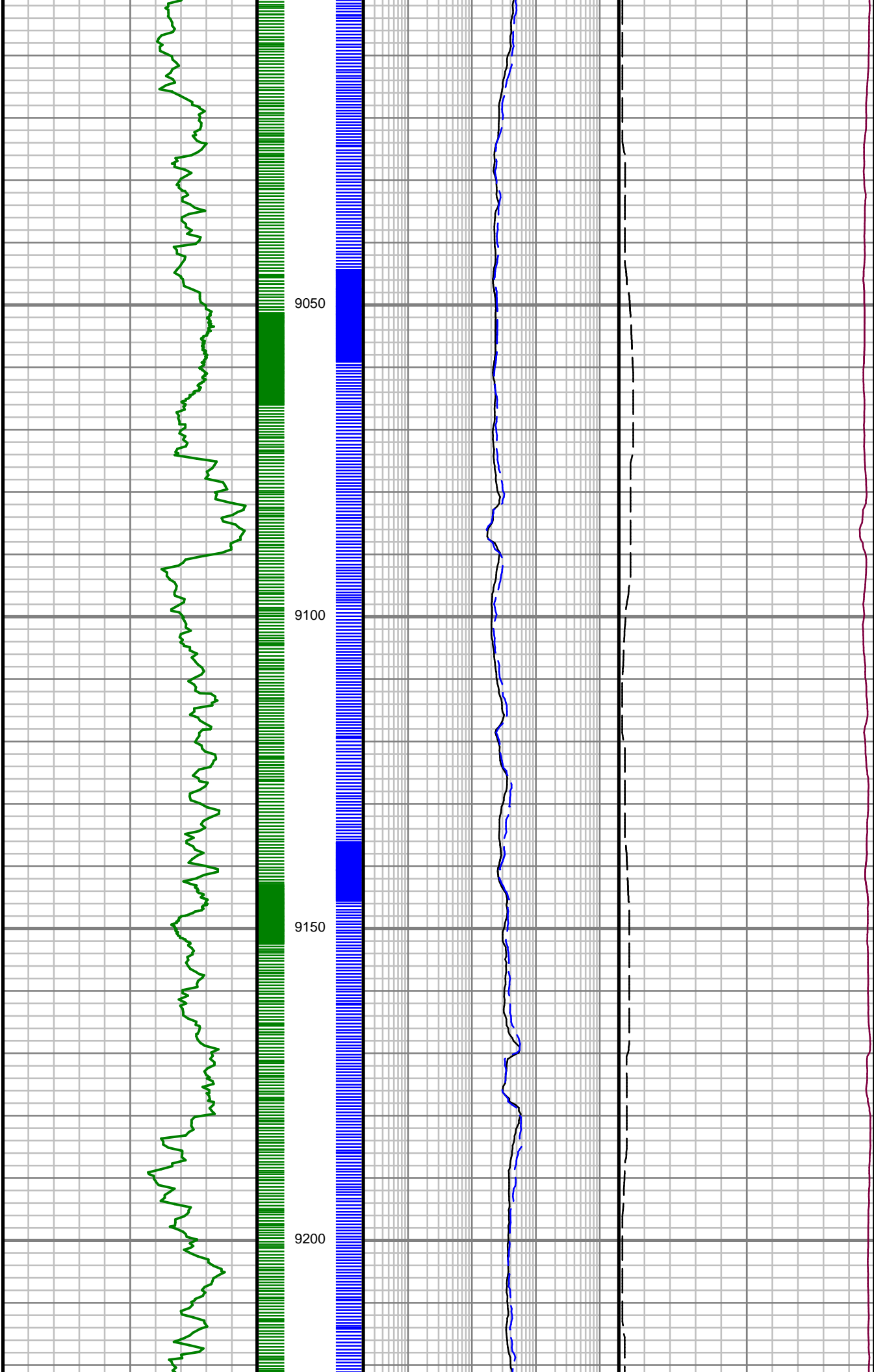
S: 90 MD: 8640.00 ft
Inc: 89.87 deg Az:
270.22 deg TVD:
7014.14 ft

S: 91 MD: 8733.00 ft
Inc: 87.01 deg Az:
268.47 deg TVD:
7016.68 ft



S: 92 MD: 8827.00 ft
Inc: 88.15 deg Az:
268.93 deg TVD:
7020.65 ft

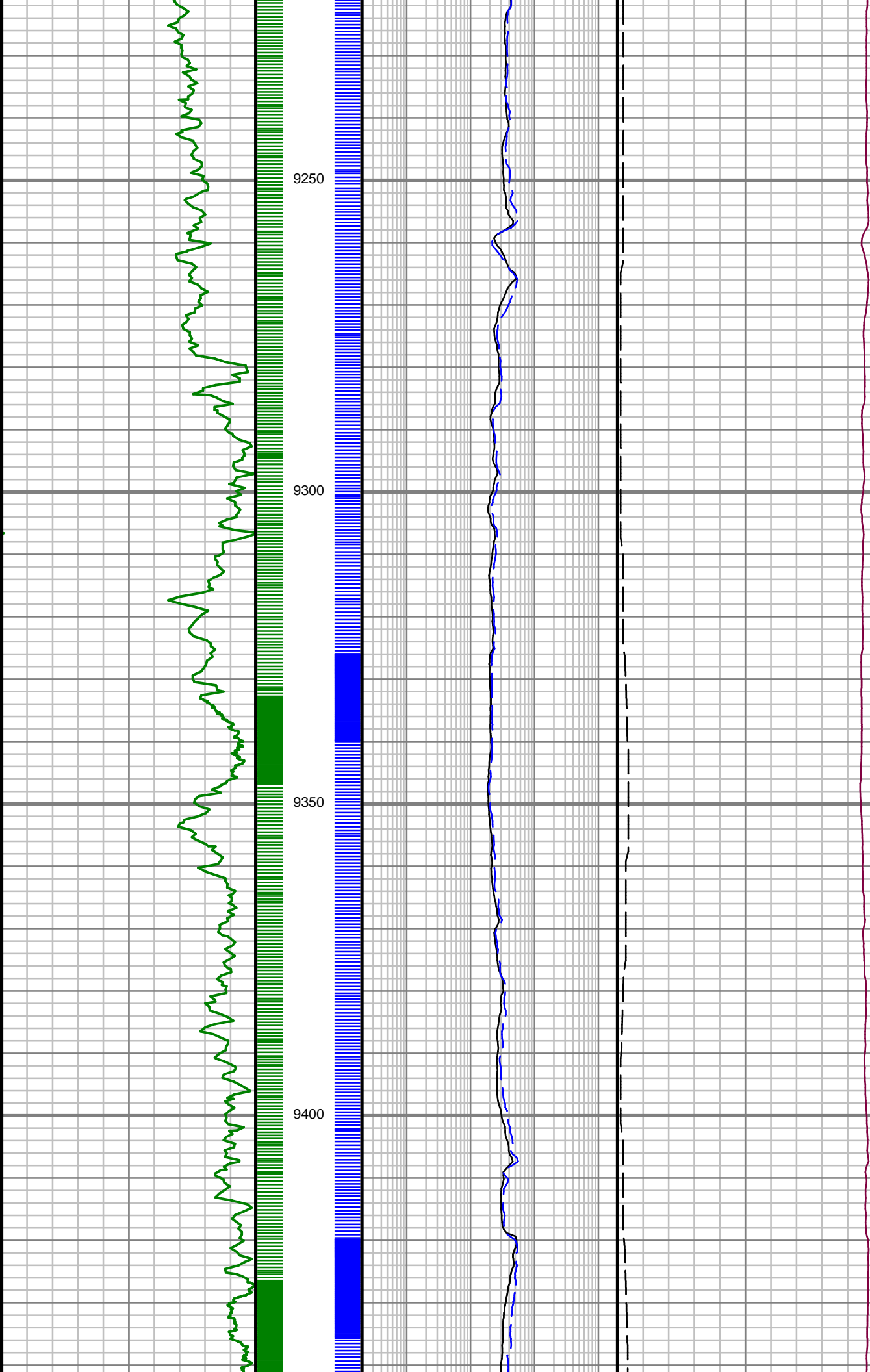
S: 93 MD: 8921.00 ft
Inc: 89.90 deg Az:
270.82 deg TVD:
7022.25 ft



S: 94 MD: 9015.00 ft
Inc: 91.48 deg Az:
270.77 deg TVD:
7021.12 ft

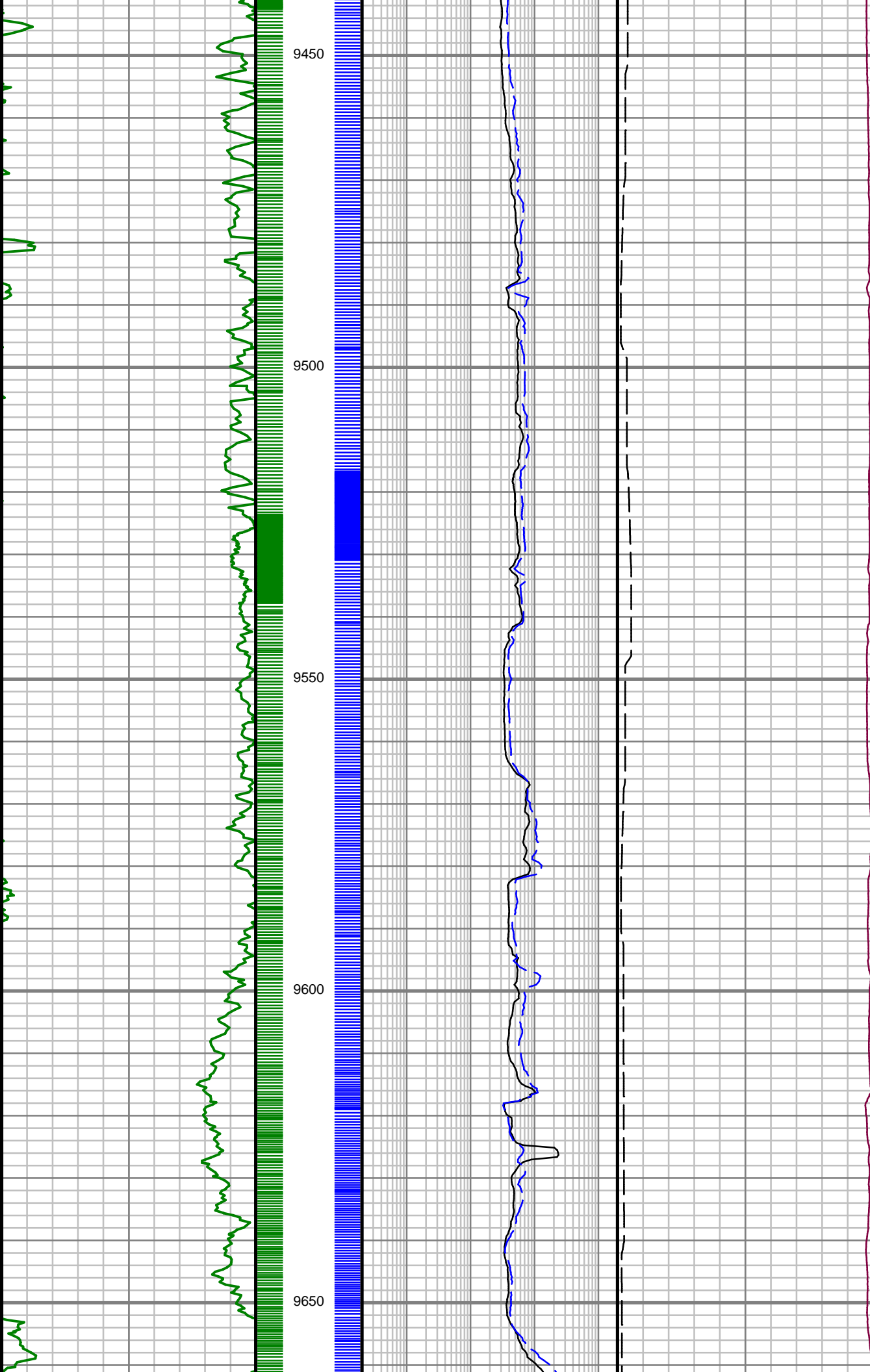
S: 95 MD: 9109.00 ft
Inc: 91.31 deg Az:
271.14 deg TVD:
7018.84 ft

S: 96 MD: 9203.00 ft
Inc: 90.40 deg Az:
270.96 deg TVD:
7017.43 ft



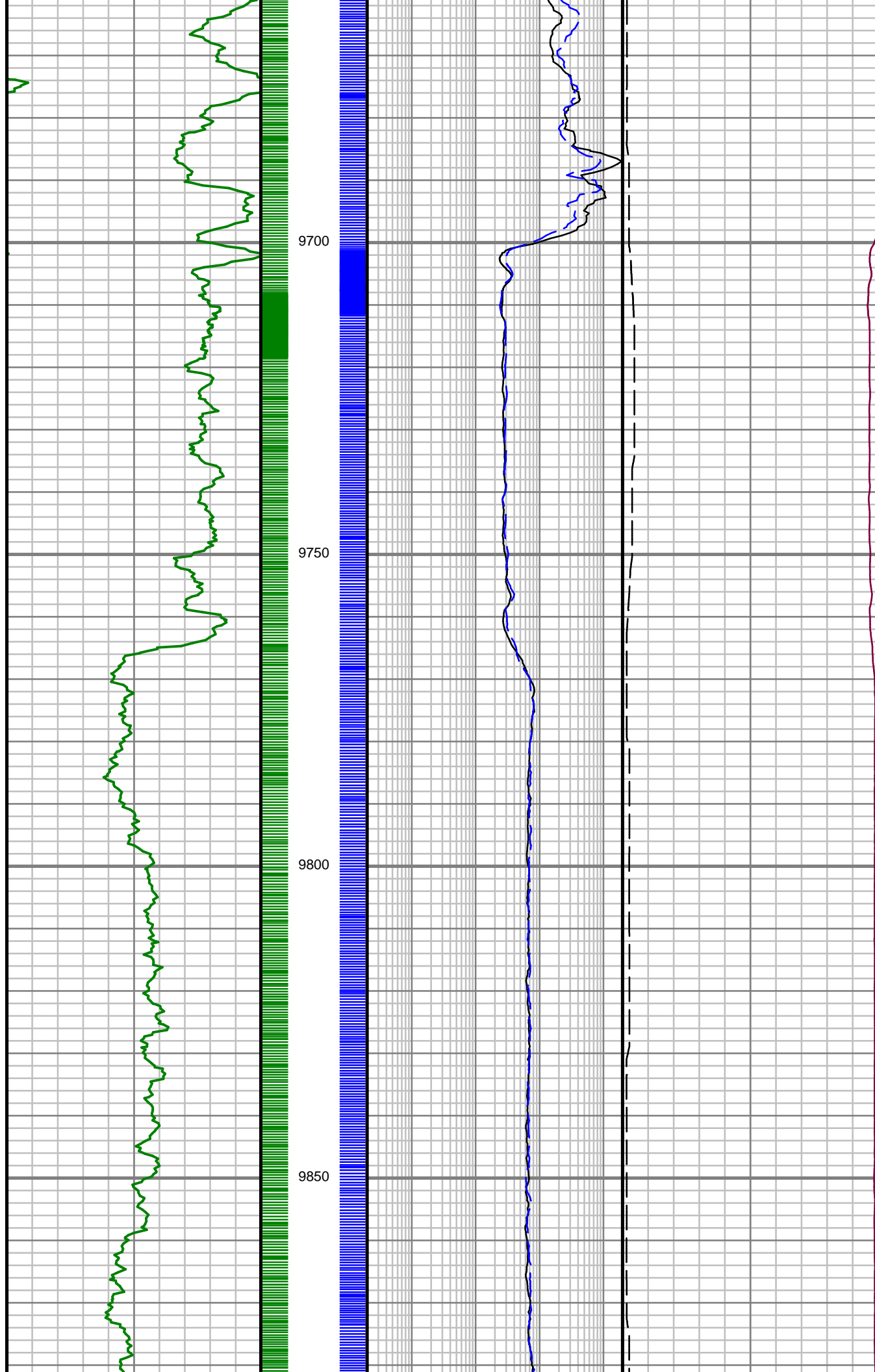
S: 97 MD: 9297.00 ft
Inc: 91.81 deg Az:
270.17 deg TVD:
7015.61 ft

S: 98 MD: 9391.00 ft
Inc: 91.11 deg Az:
269.23 deg TVD:
7013.22 ft



S: 99 MD: 9485.00 ft
Inc: 89.80 deg Az:
269.72 deg TVD:
7012.48 ft

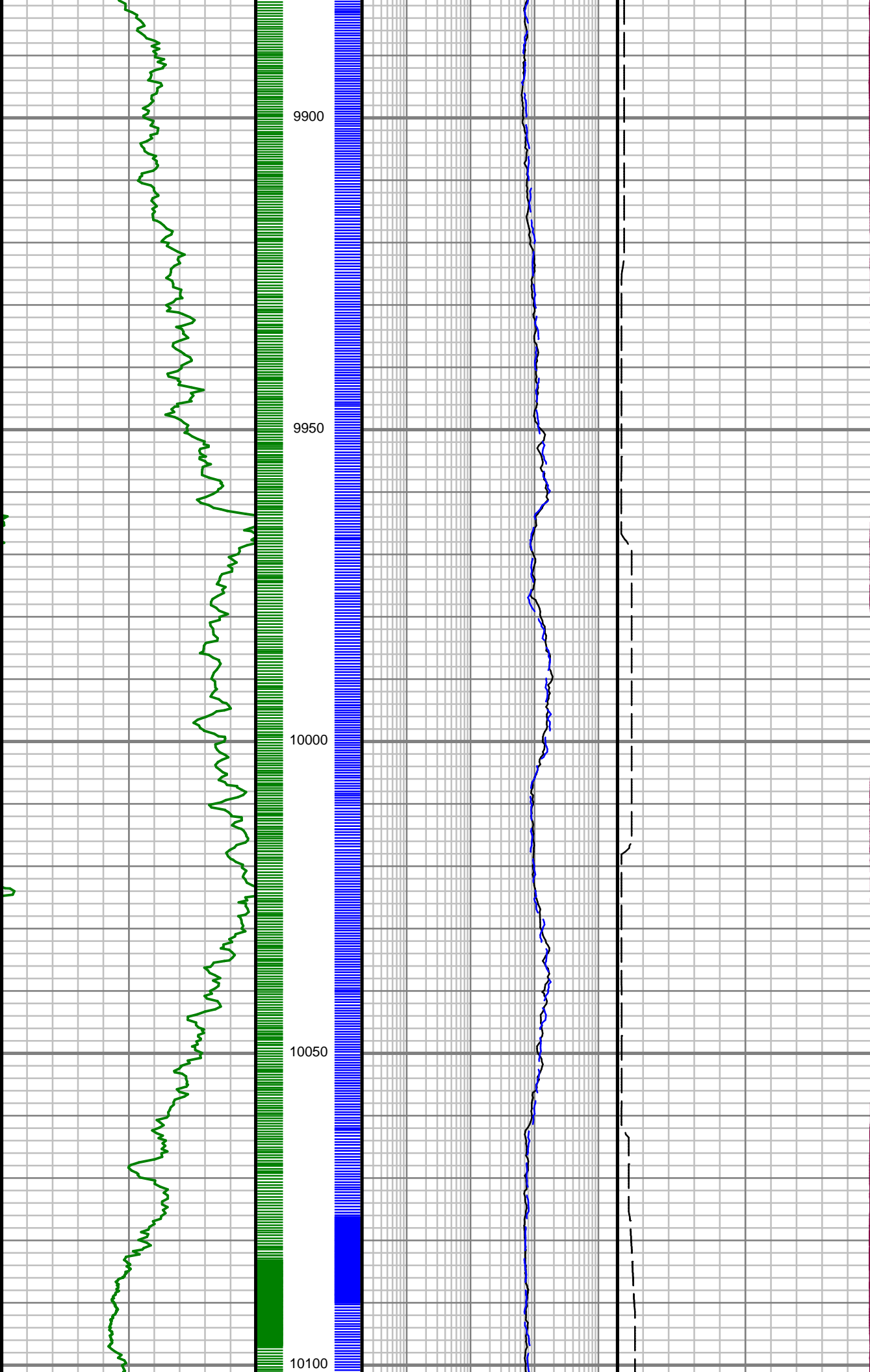
S: 100 MD: 9579.00 ft
Inc: 89.40 deg Az:
271.59 deg TVD:
7013.14 ft



S: 101 MD: 9673.00 ft
Inc: 90.60 deg Az:
271.56 deg TVD:
7013.14 ft

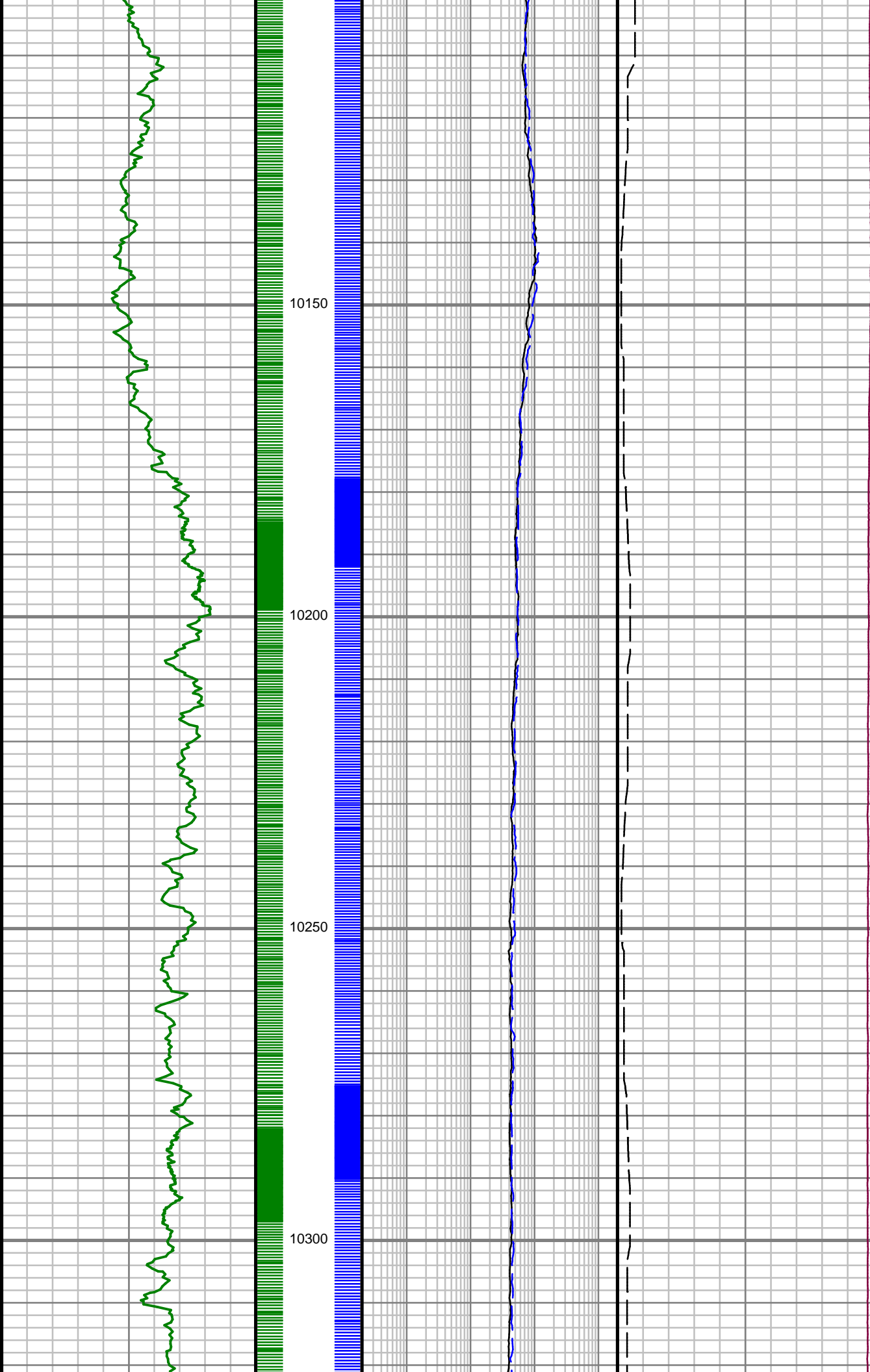
S: 102 MD: 9767.00 ft
Inc: 88.66 deg Az:
272.12 deg TVD:
7013.74 ft

S: 103 MD: 9861.00 ft
Inc: 89.46 deg Az:
272.27 deg TVD:
7015.29 ft



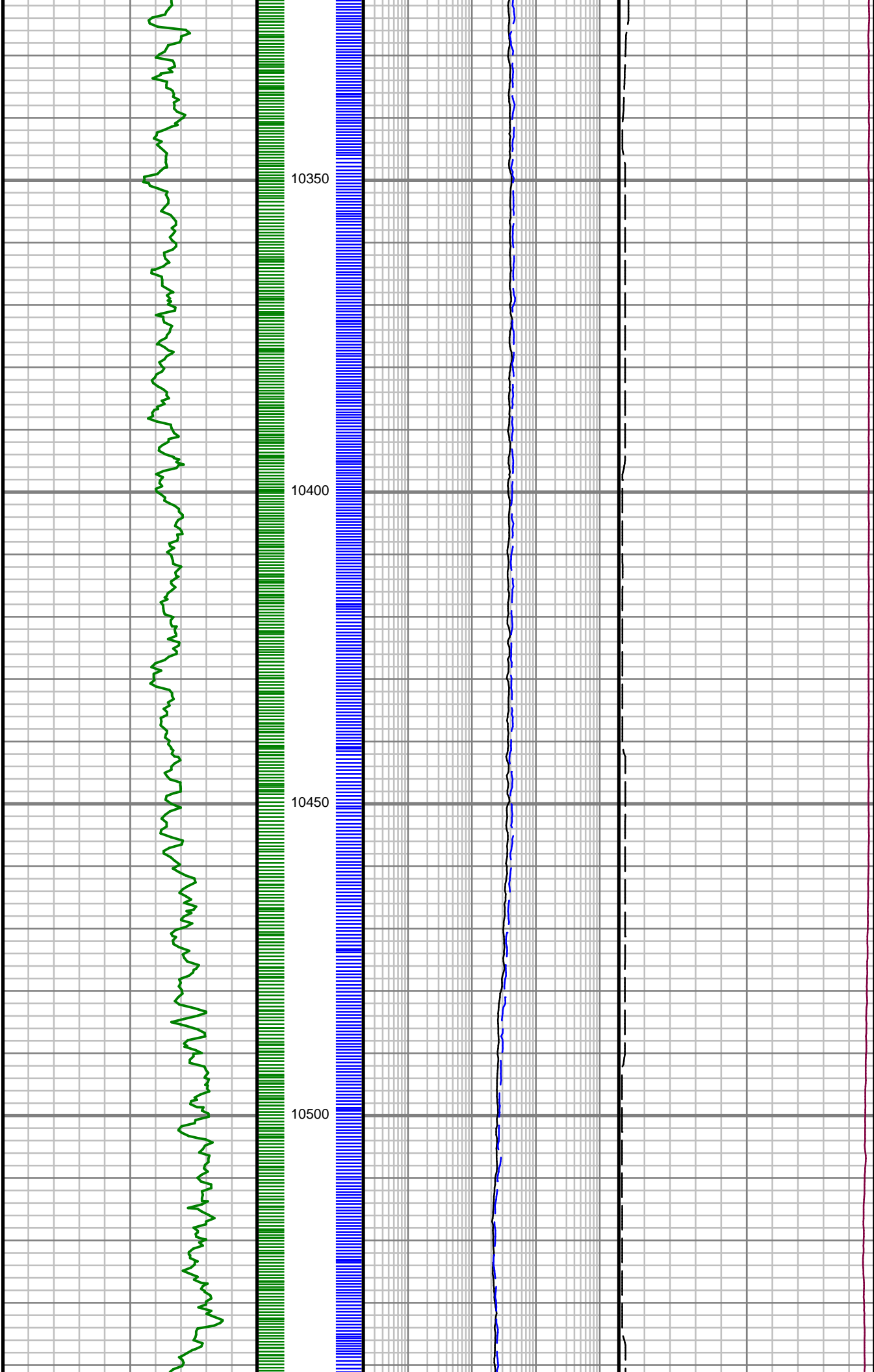
S: 104 MD: 9954.00 ft
Inc: 90.20 deg Az:
273.13 deg TVD:
7015.56 ft

S: 105 MD: 10049.00 ft
Inc: 91.41 deg Az:
274.01 deg TVD:
7014.22 ft



S: 106 MD: 10144.00 ft
Inc: 90.67 deg Az:
272.91 deg TVD:
7012.50 ft

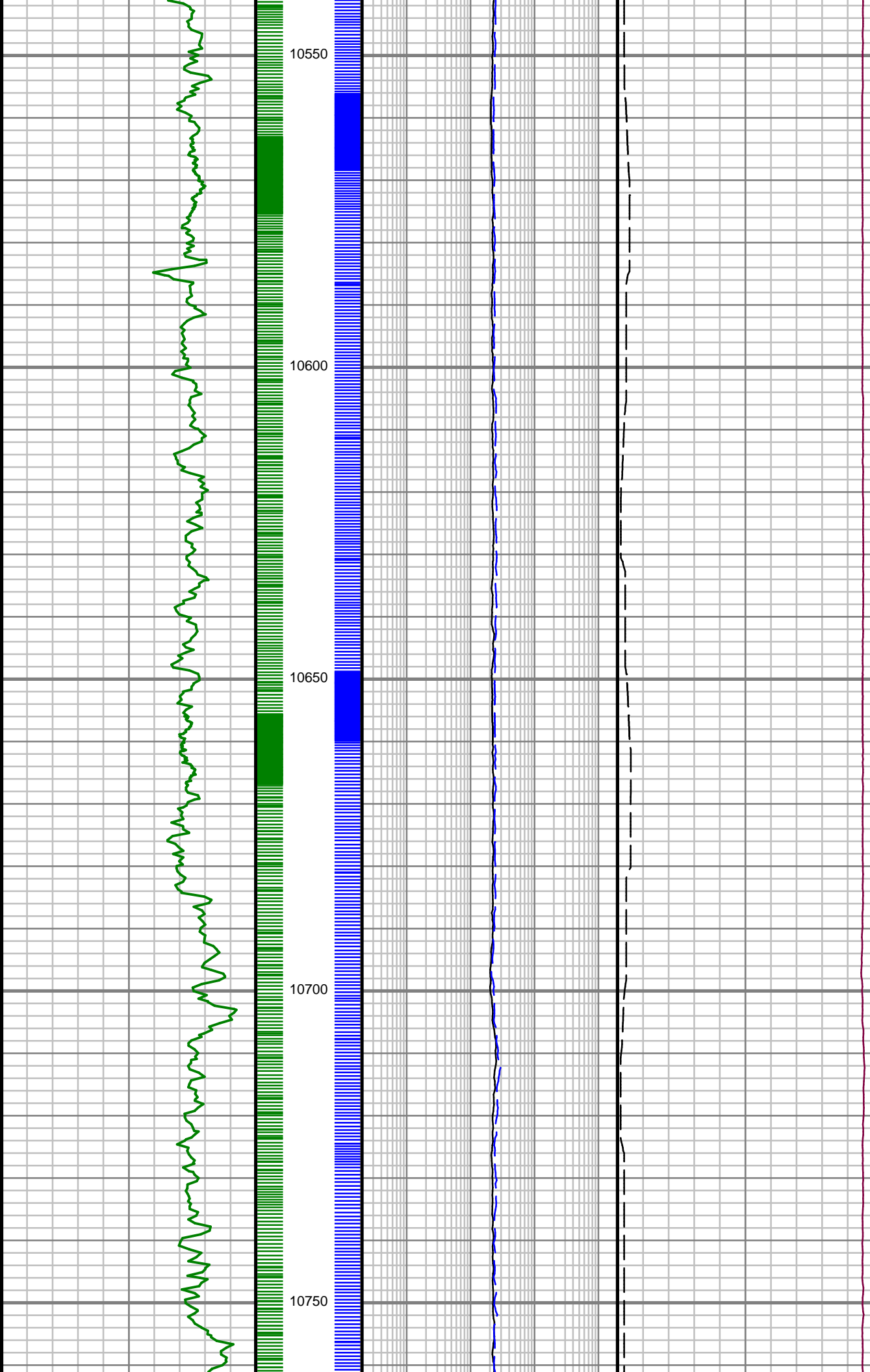
S: 107 MD: 10238.00 ft
Inc: 90.40 deg Az:
272.00 deg TVD:
7011.62 ft



S: 108 MD: 10332.00 ft
Inc: 90.13 deg Az:
271.25 deg TVD:
7011.18 ft

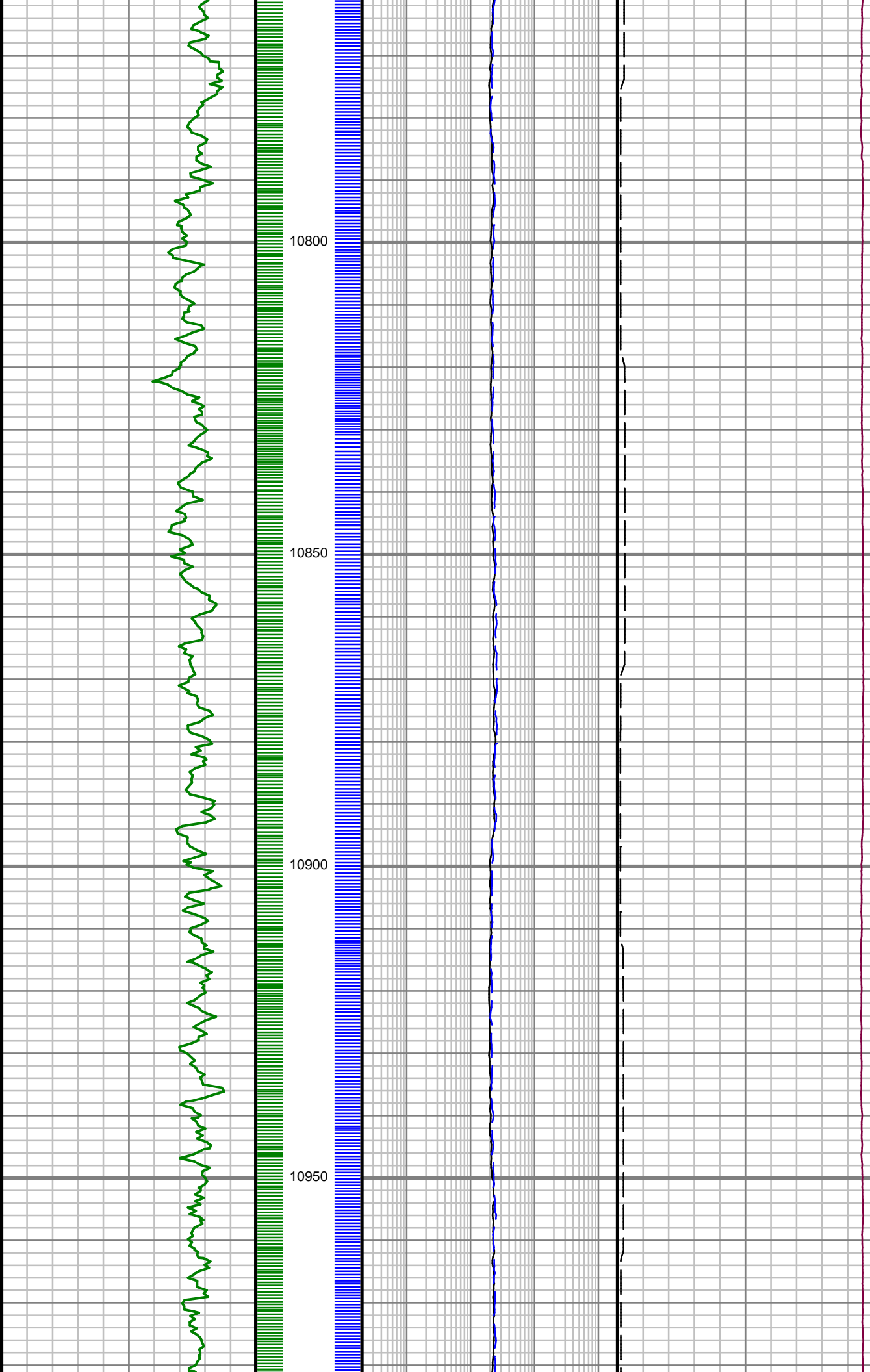
S: 109 MD: 10427.00 ft
Inc: 89.87 deg Az:
269.66 deg TVD:
7011.18 ft

S: 110 MD: 10521.00 ft
Inc: 90.97 deg Az:
270.18 deg TVD:
7010.49 ft



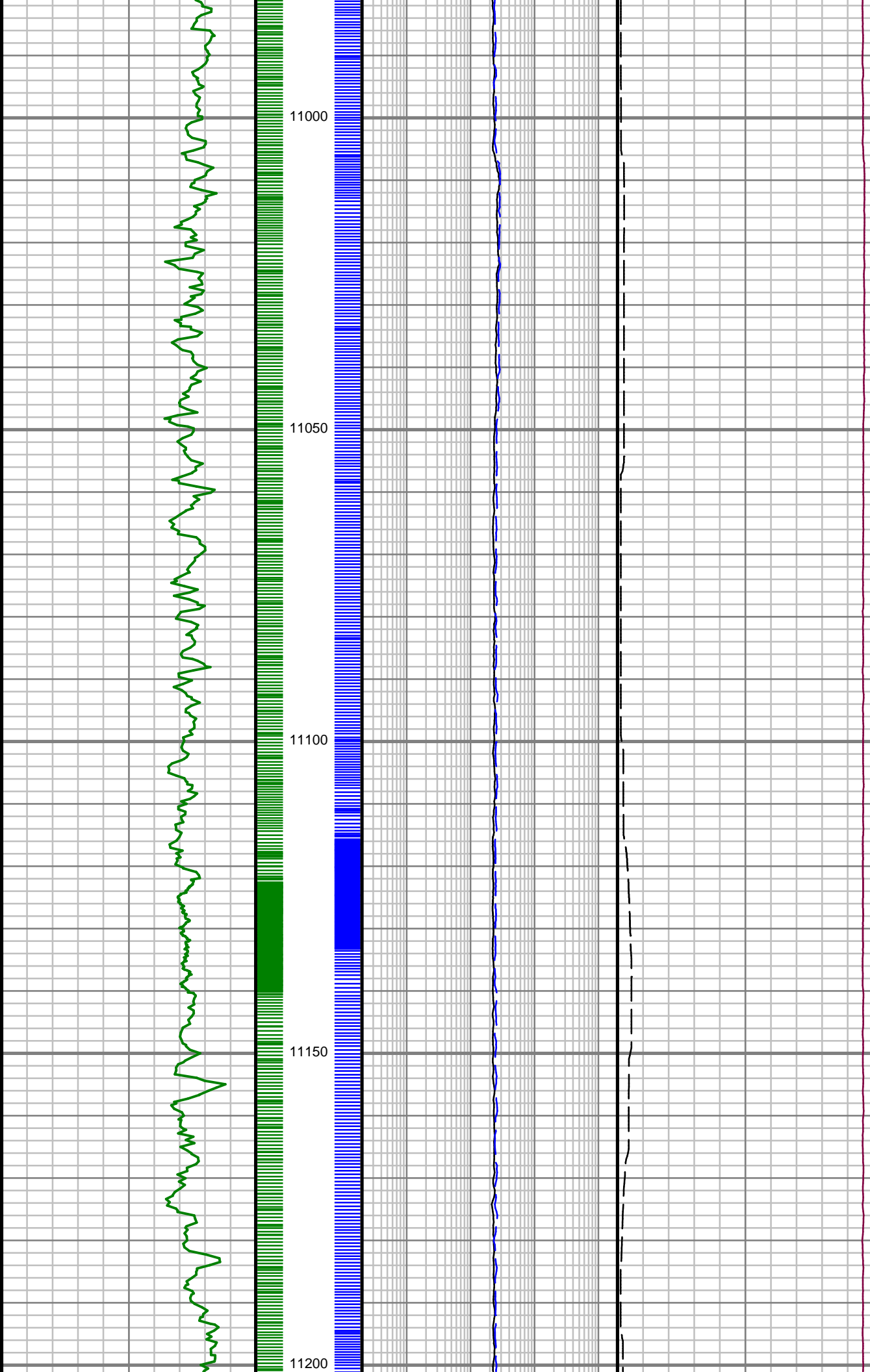
S: 111 MD: 10616.00 ft
Inc: 90.44 deg Az:
269.59 deg TVD:
7009.32 ft

S: 112 MD: 10710.00 ft
Inc: 89.19 deg Az:
269.50 deg TVD:
7009.62 ft



S: 113 MD: 10805.00 ft
Inc: 88.96 deg Az:
268.81 deg TVD:
7011.15 ft

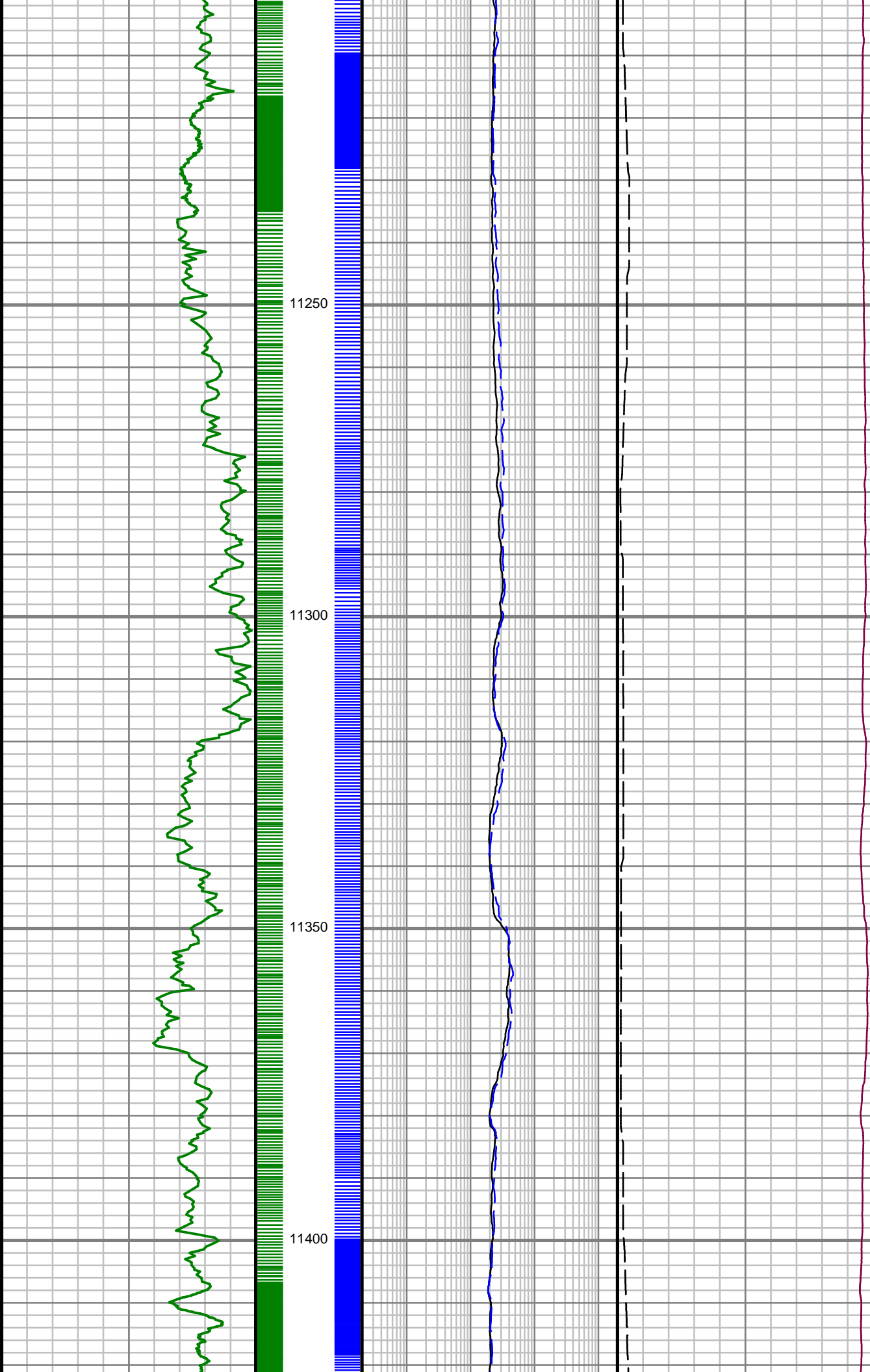
S: 114 MD: 10898.00 ft
Inc: 89.46 deg Az:
268.63 deg TVD:
7012.43 ft



S: 115 MD: 10993.00 ft
Inc: 89.03 deg Az:
267.28 deg TVD:
7013.68 ft

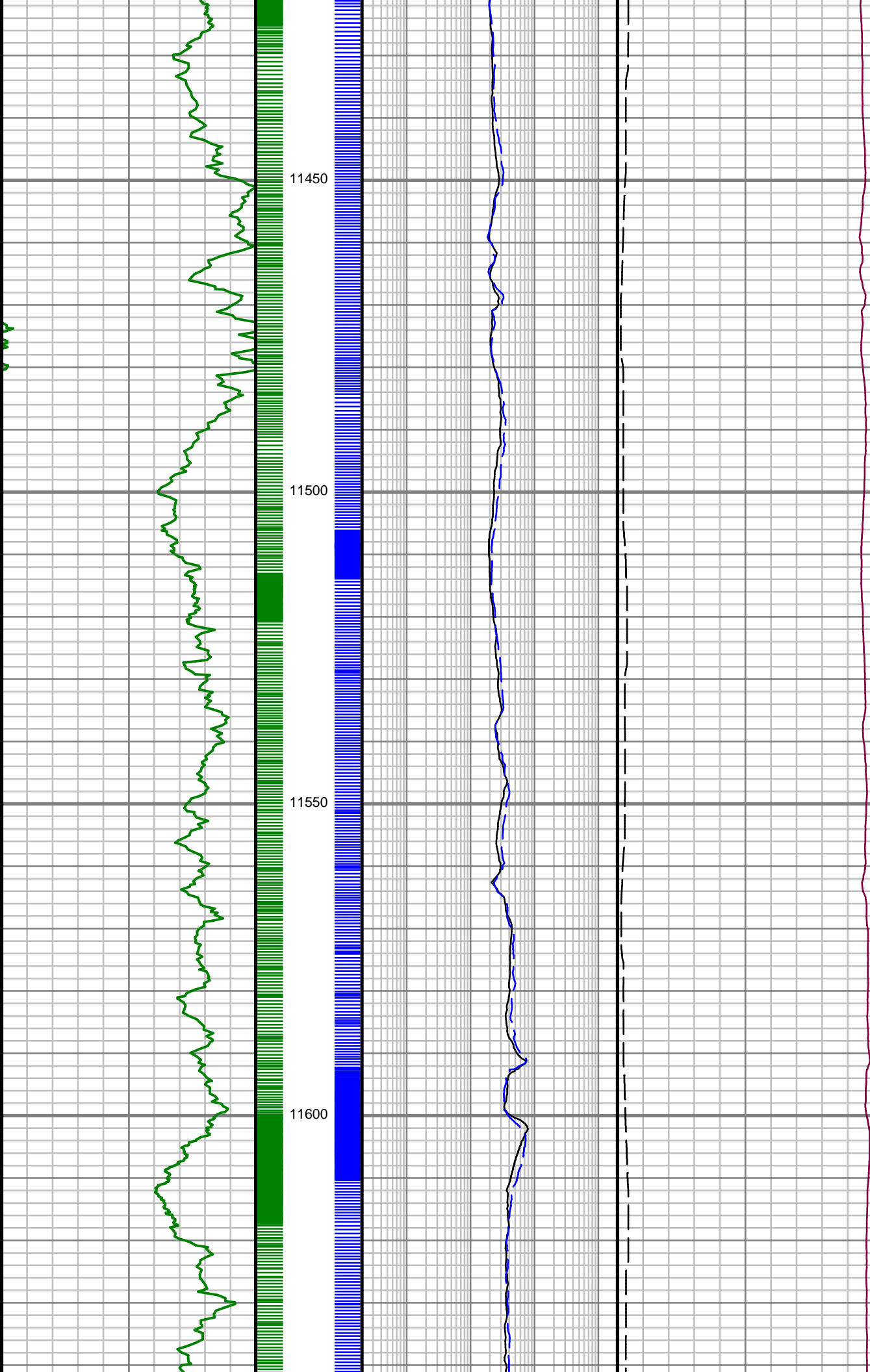
S: 116 MD: 11088.00 ft
Inc: 89.13 deg Az:
266.82 deg TVD:
7015.21 ft

S: 117 MD: 11182.00 ft
Inc: 88.59 deg Az:
267.18 deg TVD:
7017.09 ft



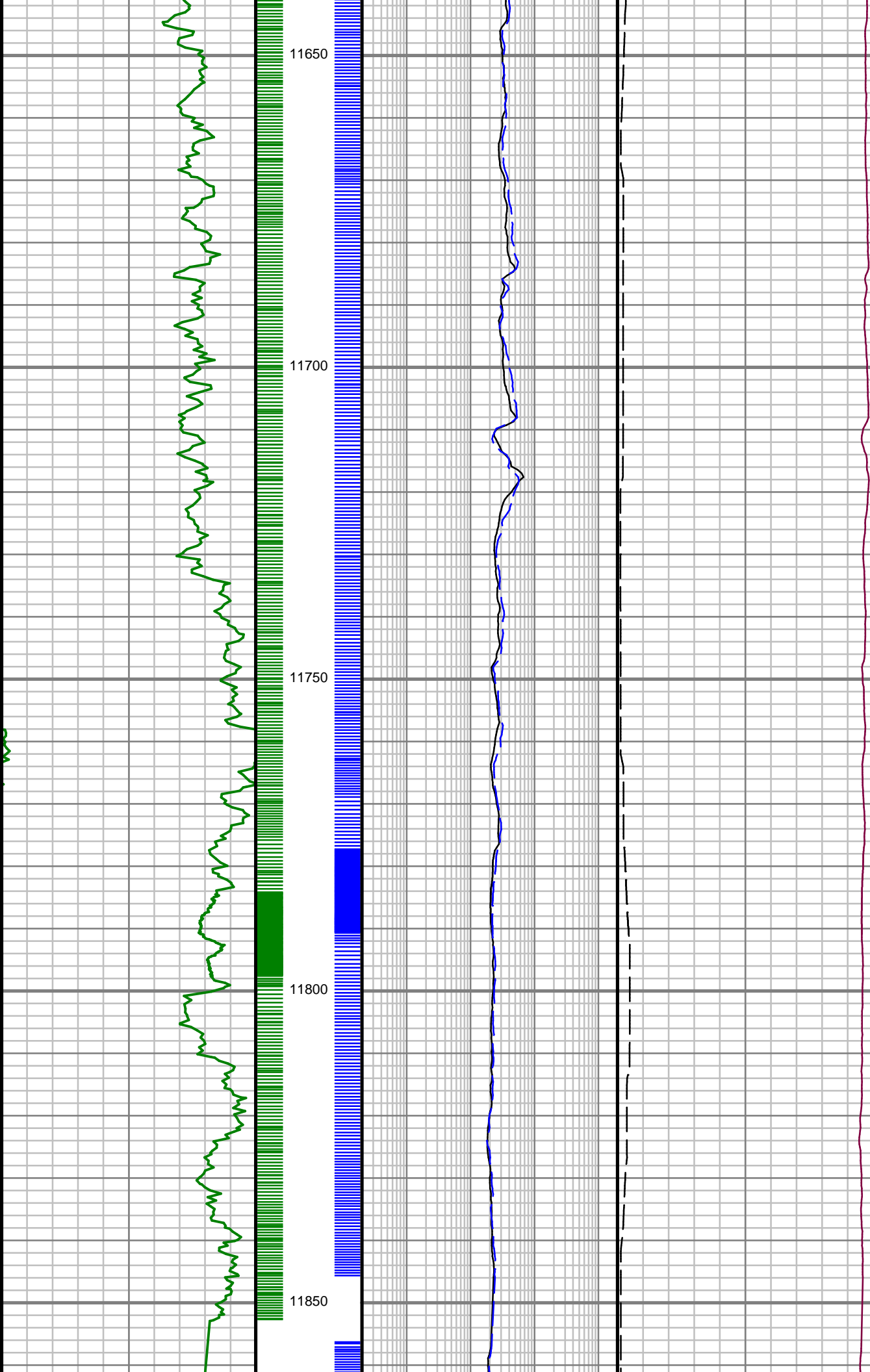
S: 118 MD: 11276.00 ft
Inc: 87.82 deg Az:
269.36 deg TVD:
7020.03 ft

S: 119 MD: 11371.00 ft
Inc: 88.56 deg Az:
269.25 deg TVD:
7023.04 ft



S: 120 MD: 11460.00 ft
Inc: 89.06 deg Az:
270.52 deg TVD:
7024.89 ft

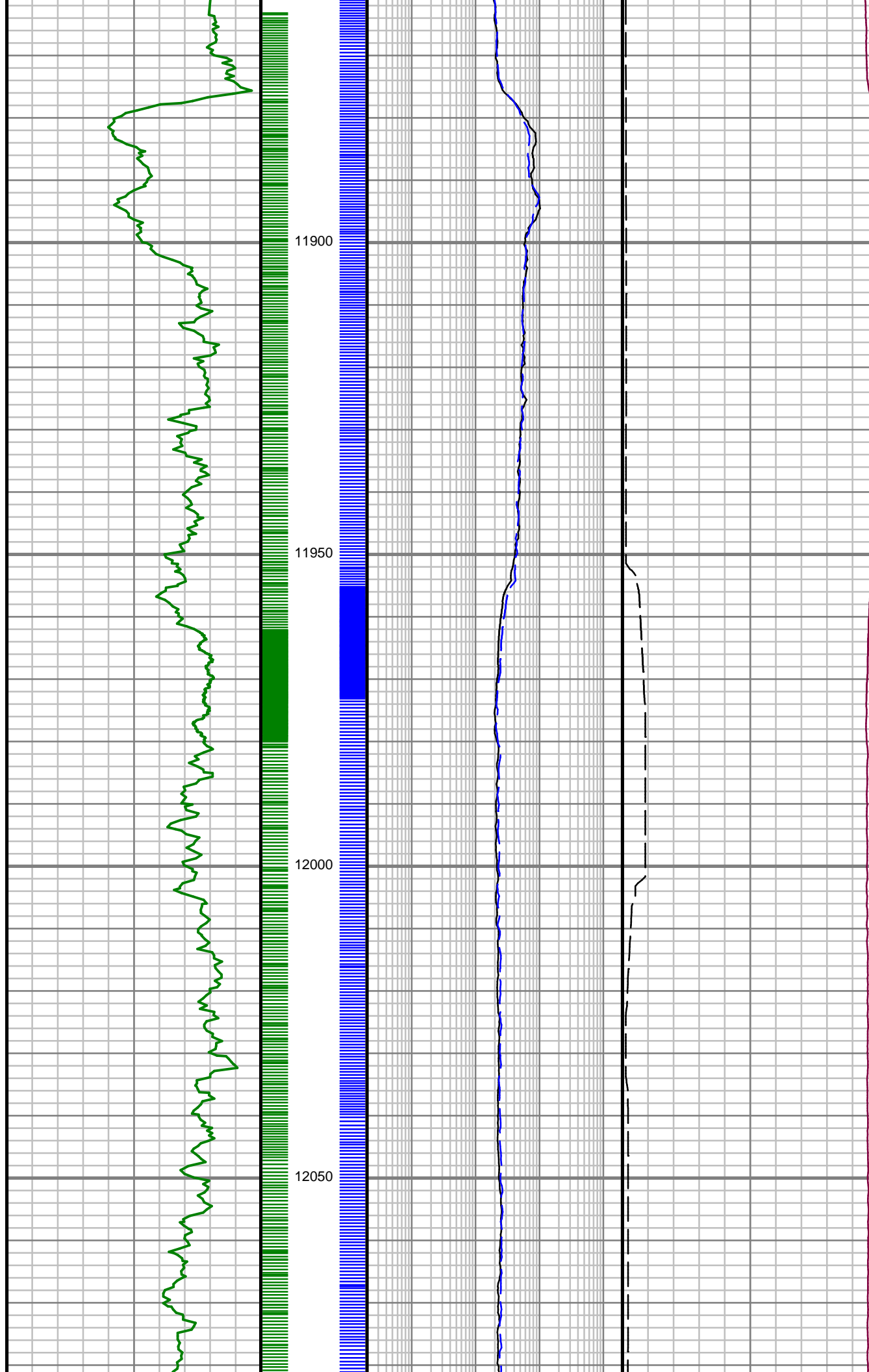
S: 121 MD: 11555.00 ft
Inc: 90.44 deg Az:
270.09 deg TVD:
7025.31 ft



S: 122 MD: 11649.00 ft
Inc: 90.70 deg Az:
271.05 deg TVD:
7024.37 ft

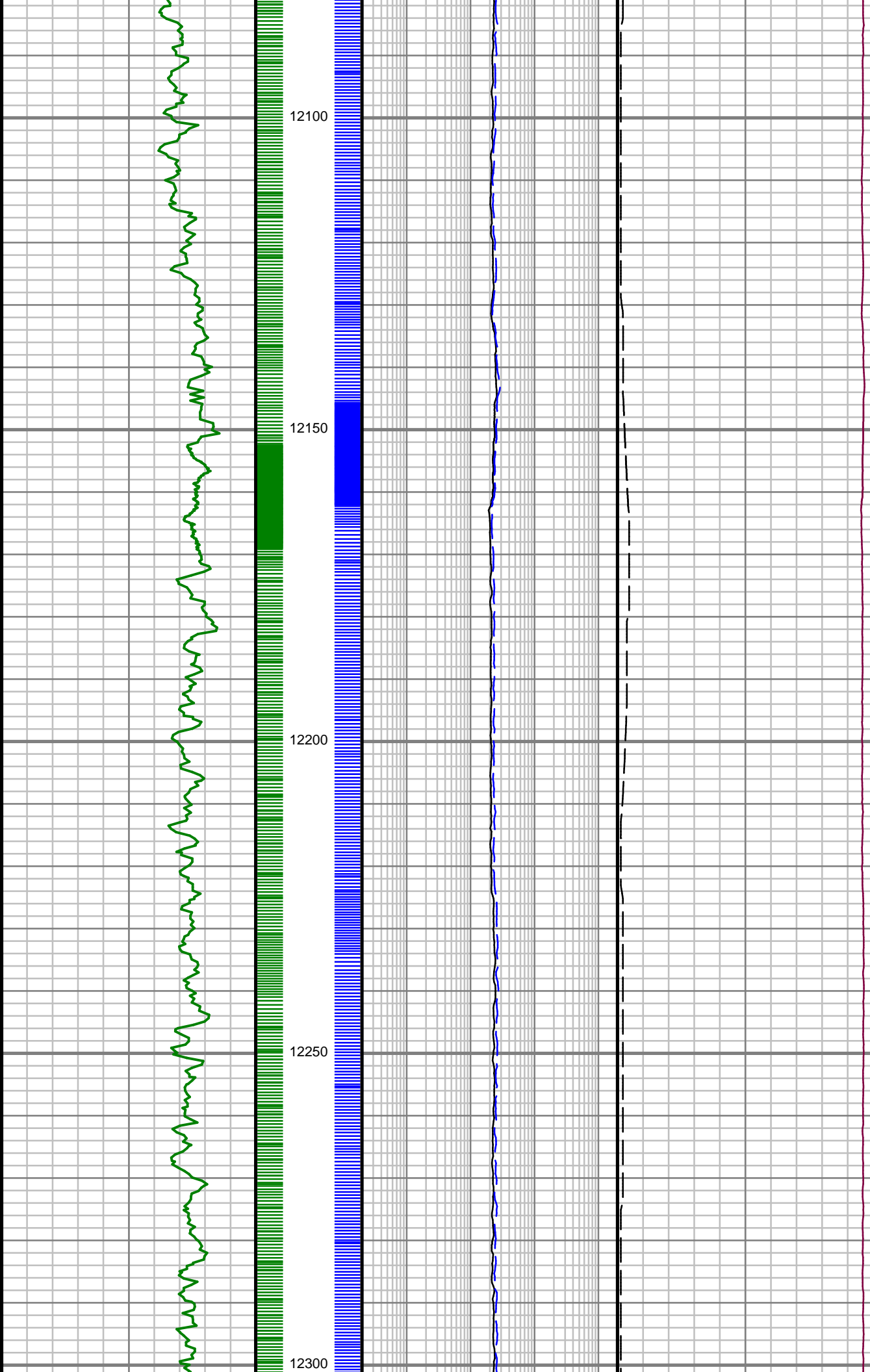
S: 123 MD: 11743.00 ft
Inc: 91.58 deg Az:
271.16 deg TVD:
7022.50 ft

S: 124 MD: 11838.00 ft
Inc: 90.30 deg Az:
270.58 deg TVD:
7020.94 ft



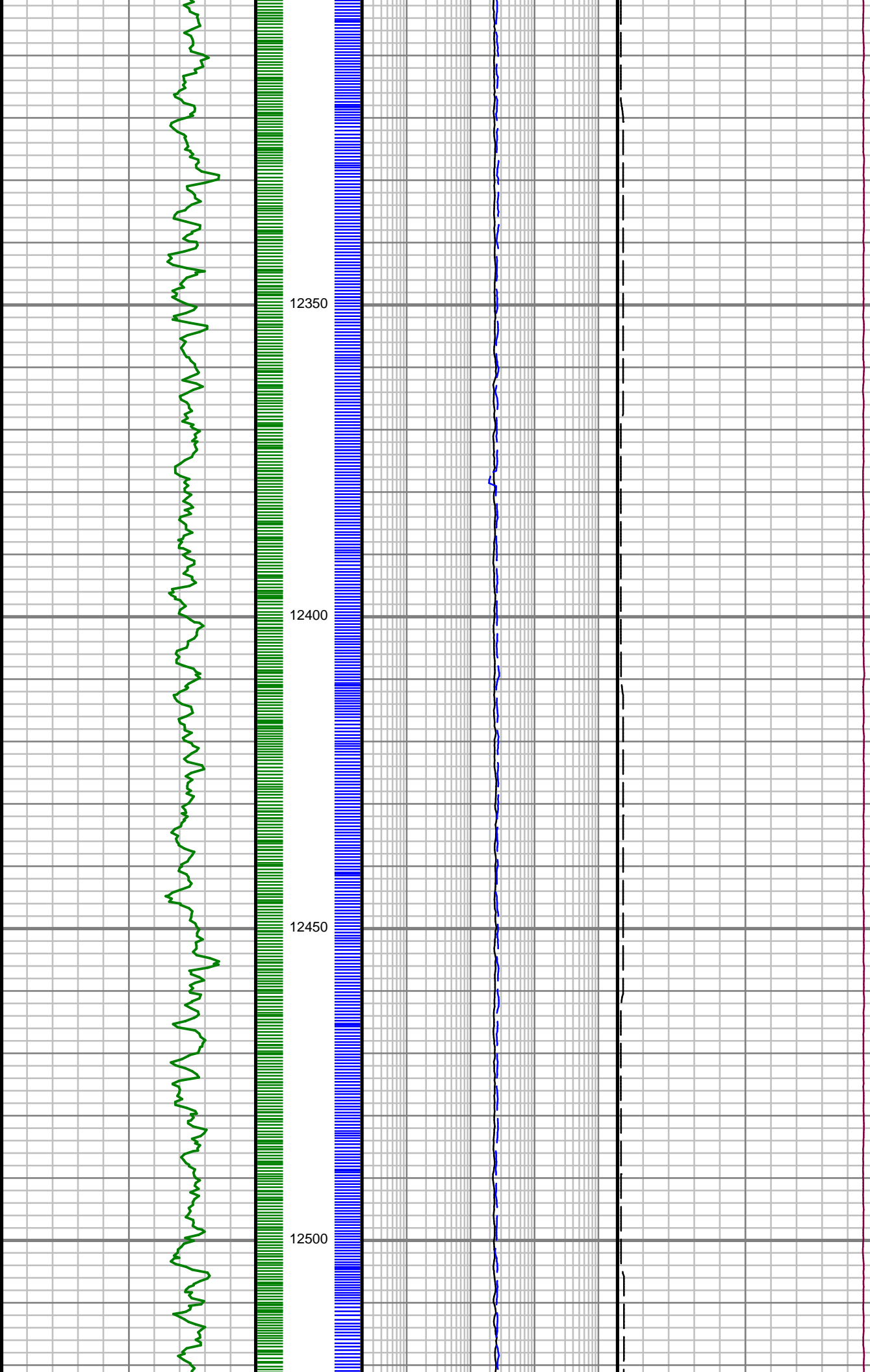
S: 125 MD: 11932.00 ft
Inc: 91.55 deg Az:
270.54 deg TVD:
7019.43 ft

S: 126 MD: 12026.00 ft
Inc: 90.47 deg Az:
271.24 deg TVD:
7017.77 ft



S: 127 MD: 12120.00 ft
Inc: 91.04 deg Az:
271.95 deg TVD:
7016.53 ft

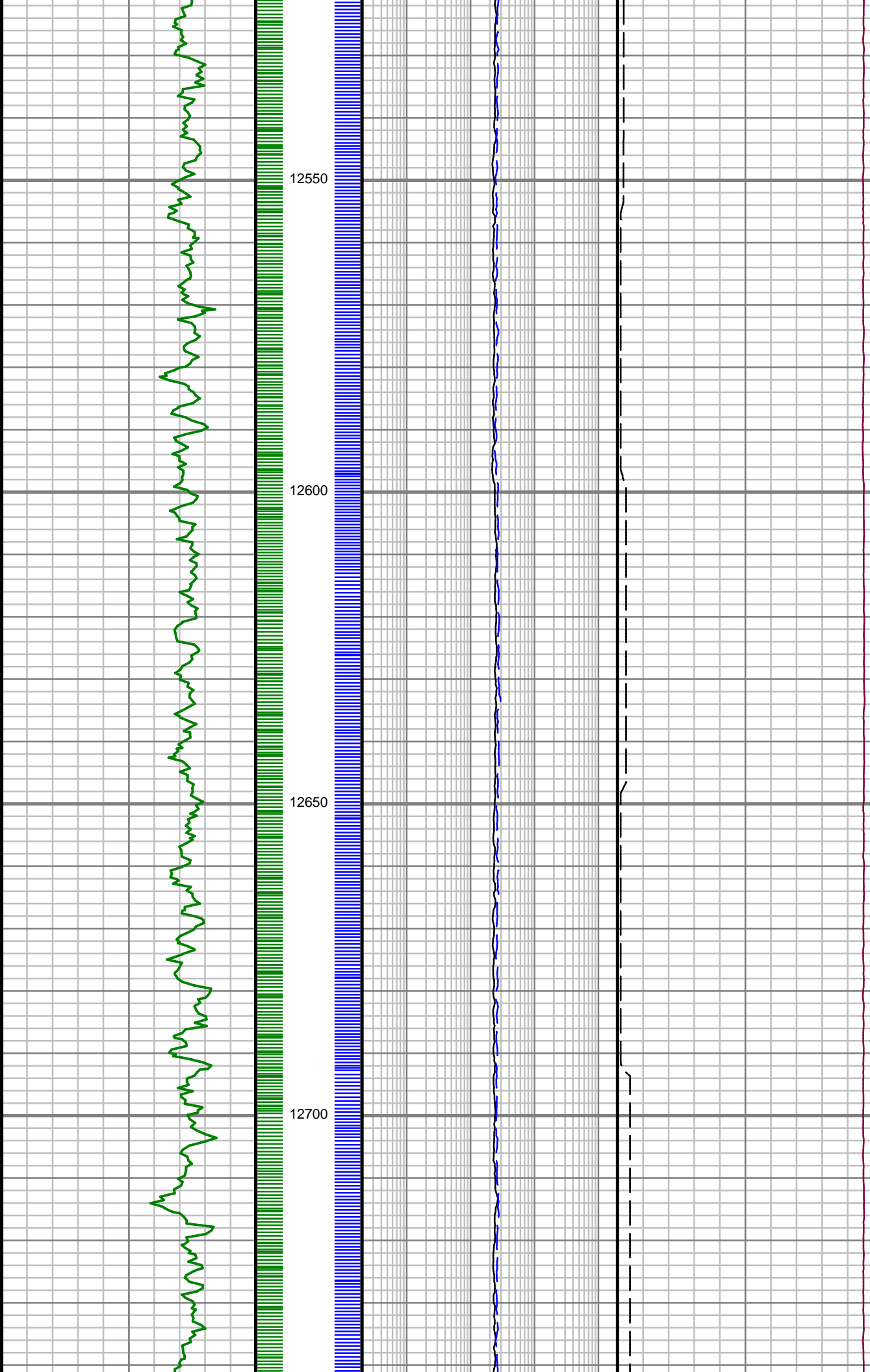
S: 128 MD: 12214.00 ft
Inc: 89.63 deg Az:
270.86 deg TVD:
7015.98 ft



S: 129 MD: 12309.00 ft
Inc: 90.00 deg Az:
272.13 deg TVD:
7016.29 ft

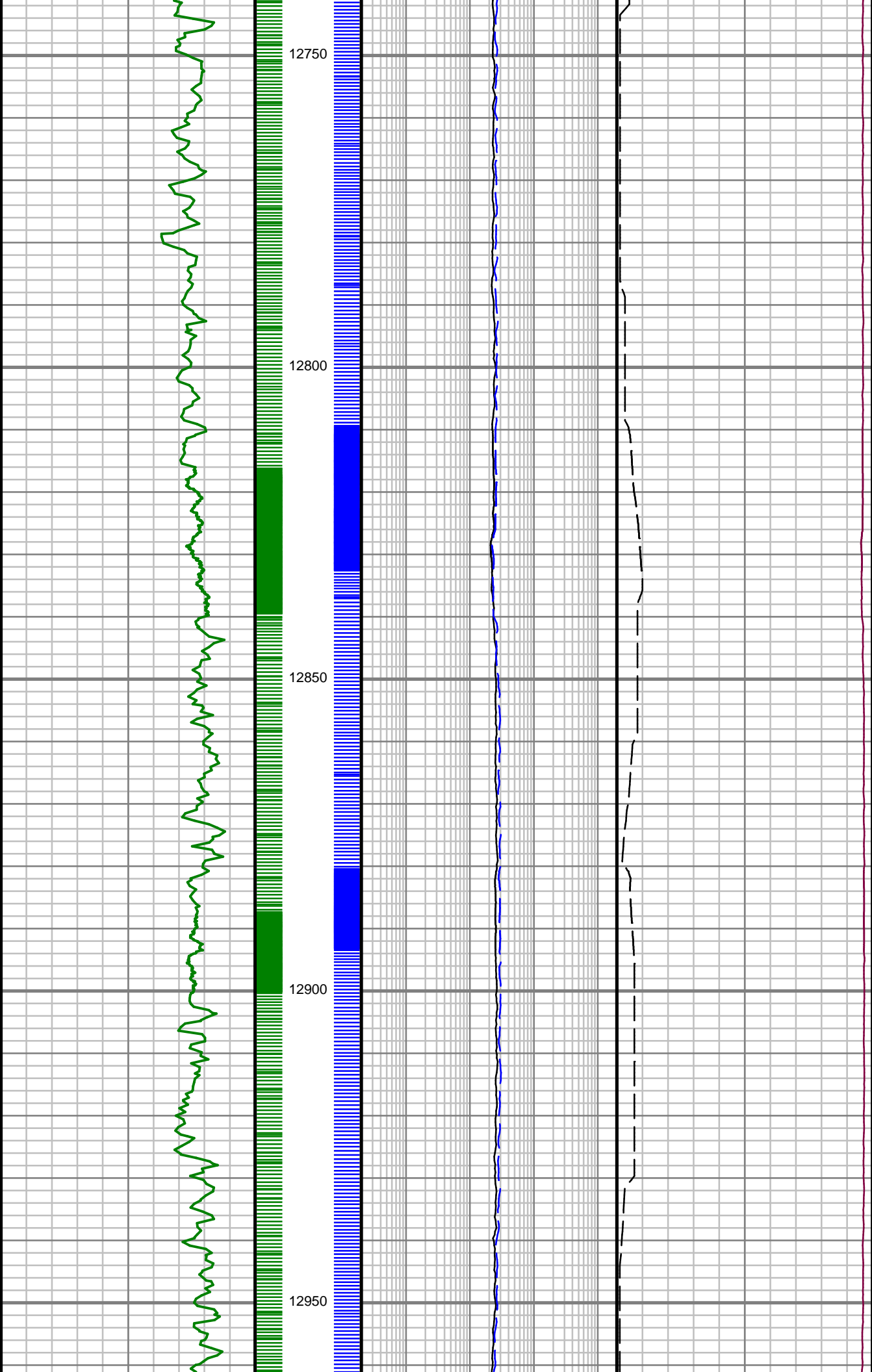
S: 130 MD: 12401.00 ft
Inc: 89.03 deg Az:
269.25 deg TVD:
7017.07 ft

S: 131 MD: 12494.00 ft
Inc: 90.20 deg Az:
271.24 deg TVD:
7017.69 ft



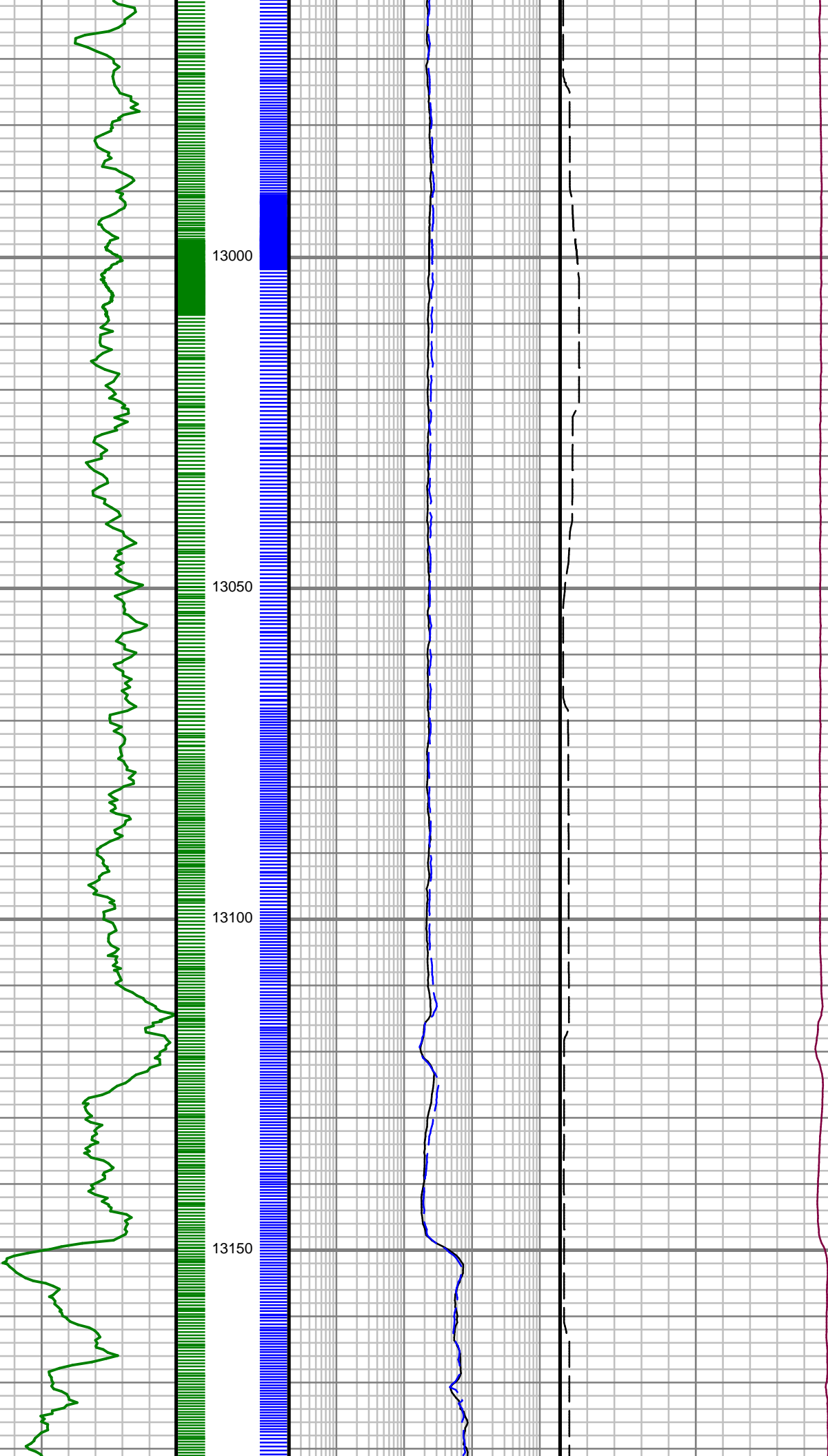
S: 132 MD: 12587.00 ft
Inc: 89.77 deg Az:
269.67 deg TVD:
7017.72 ft

S: 133 MD: 12682.00 ft
Inc: 90.13 deg Az:
269.70 deg TVD:
7017.80 ft



S: 134 MD: 12777.00 ft
Inc: 88.62 deg Az:
265.81 deg TVD:
7018.83 ft

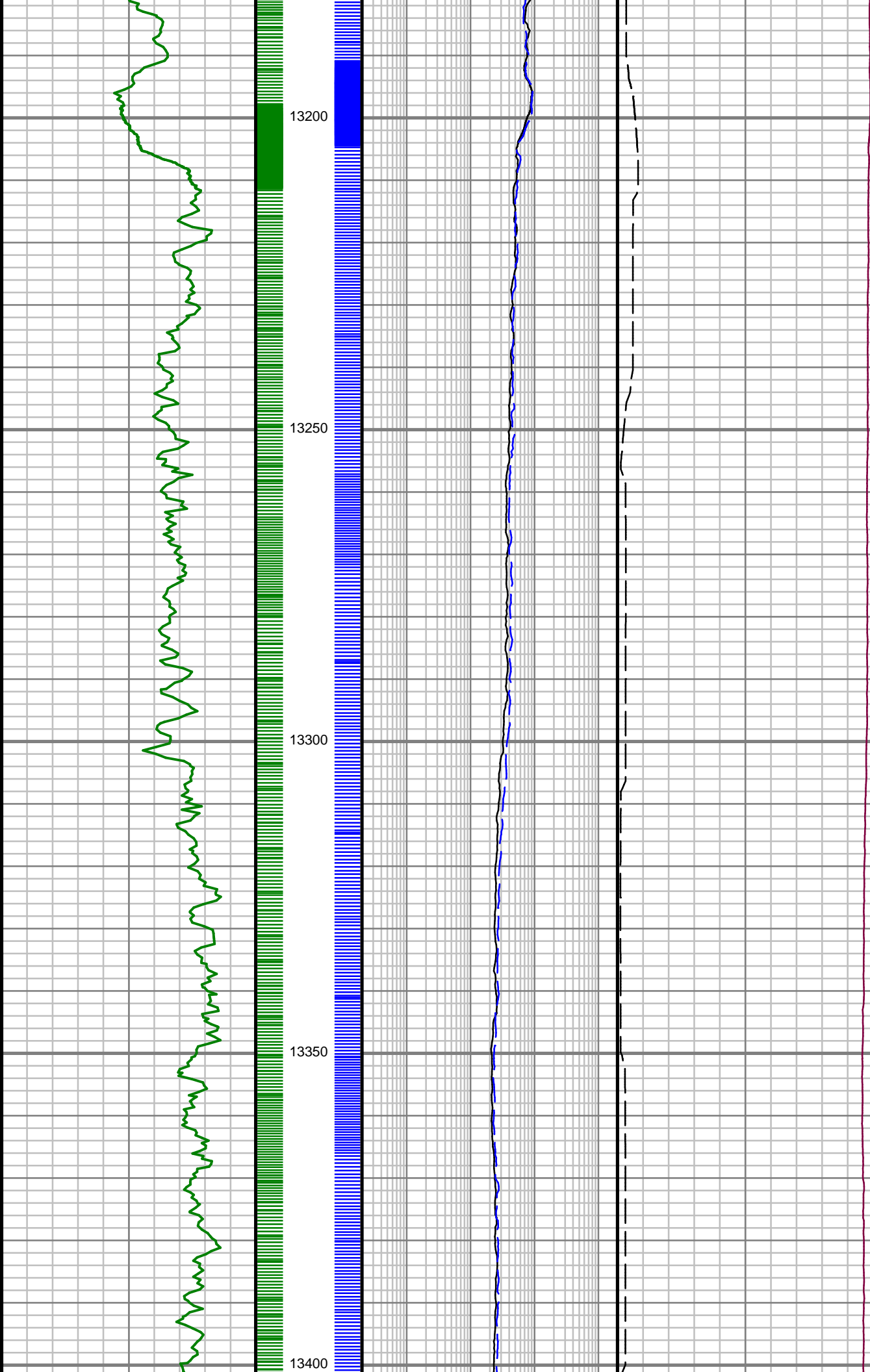
S: 135 MD: 12872.00 ft
Inc: 88.99 deg Az:
267.30 deg TVD:
7020.81 ft



S: 136 MD: 12963.00 ft
Inc: 89.40 deg Az:
269.63 deg TVD:
7022.09 ft

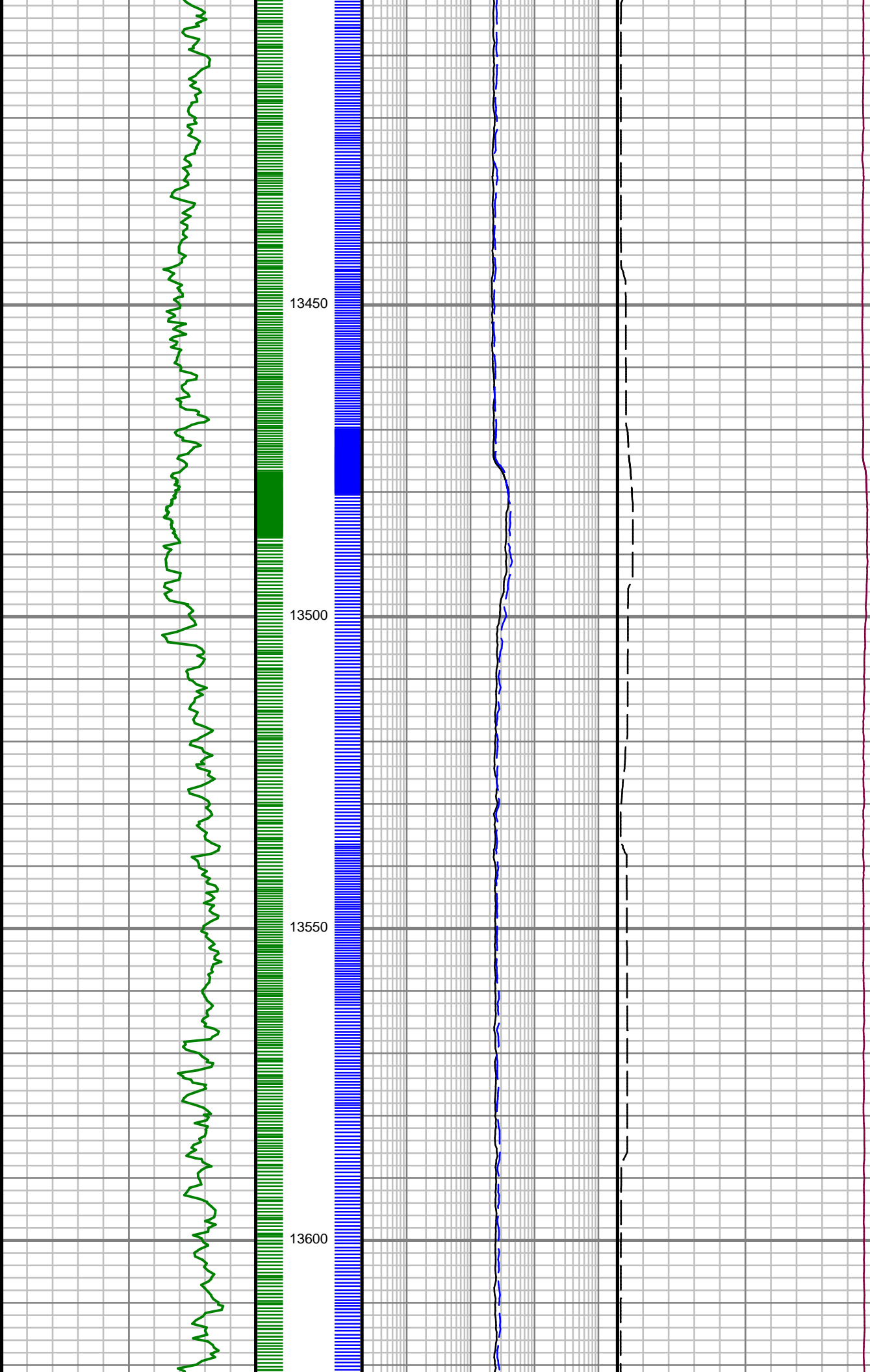
S: 137 MD: 13057.00 ft
Inc: 89.66 deg Az:
270.28 deg TVD:
7022.86 ft

S: 138 MD: 13152.00 ft
Inc: 90.64 deg Az:
270.31 deg TVD:
7022.61 ft



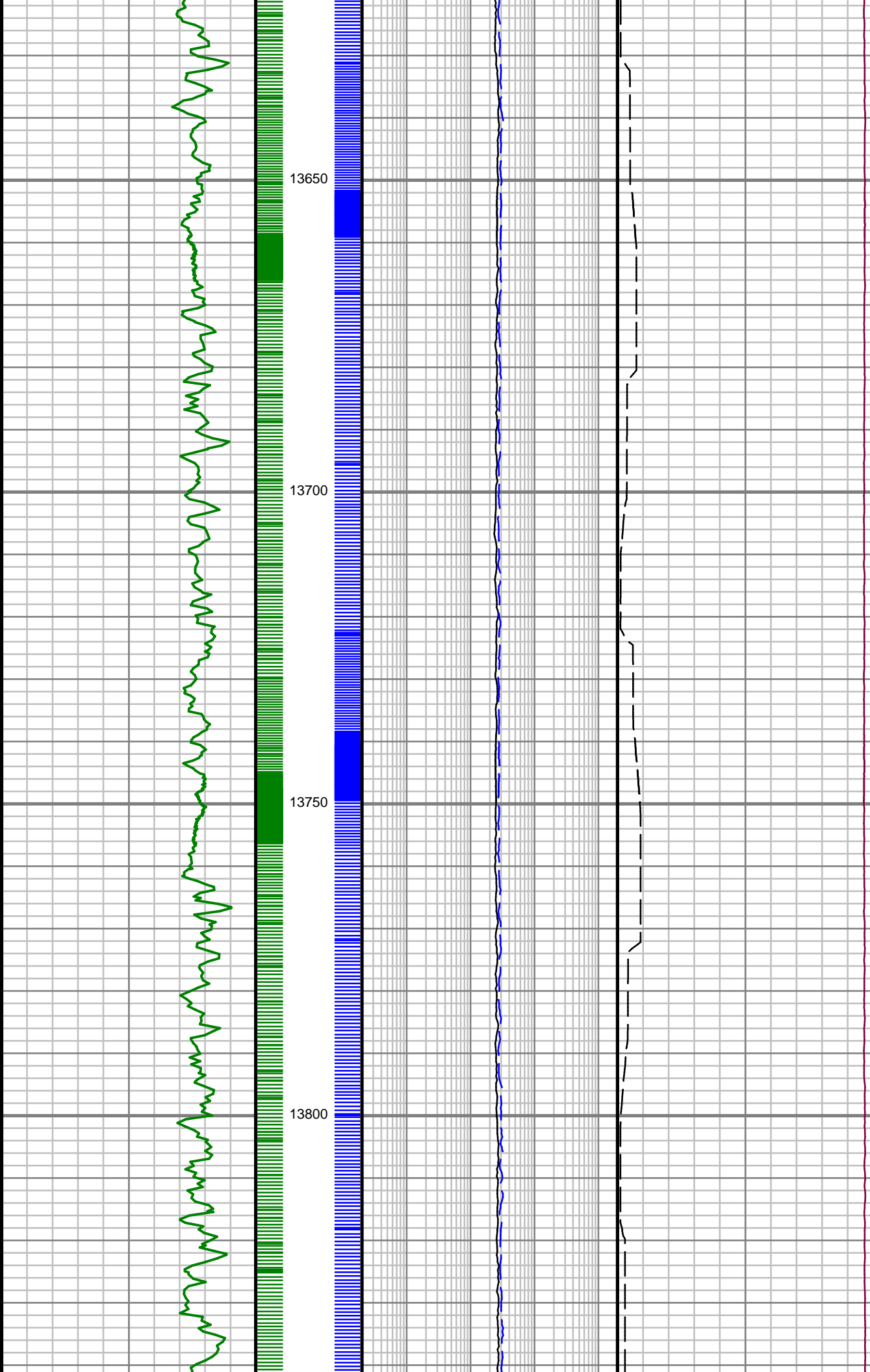
S: 139 MD: 13247.00 ft
Inc: 90.57 deg Az:
270.35 deg TVD:
7021.61 ft

S: 140 MD: 13340.00 ft
Inc: 90.44 deg Az:
271.55 deg TVD:
7020.79 ft



S: 141 MD: 13434.00 ft
Inc: 90.71 deg Az:
271.59 deg TVD:
7019.86 ft

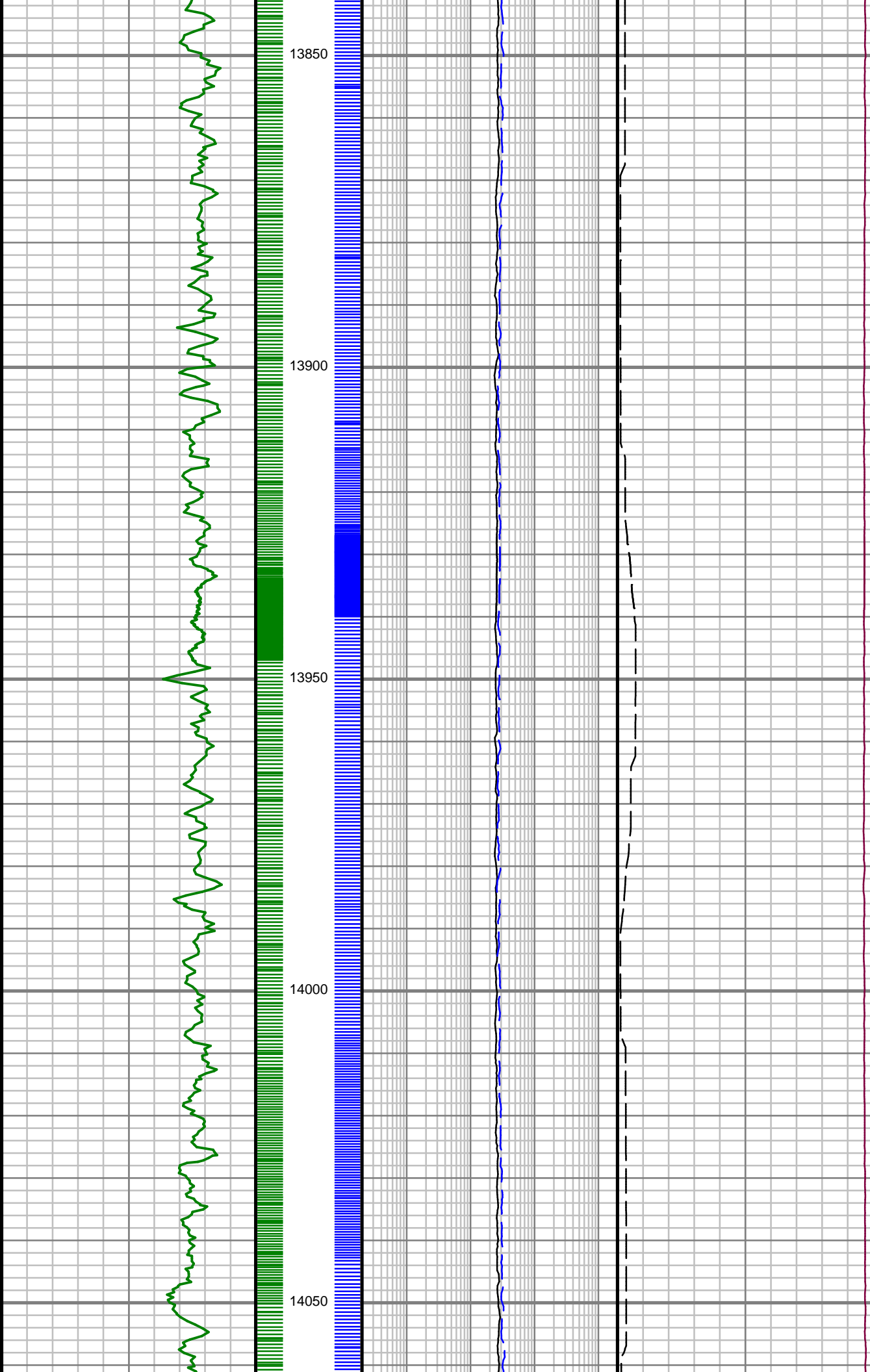
S: 142 MD: 13527.00 ft
Inc: 90.37 deg Az:
272.44 deg TVD:
7018.98 ft



S: 143 MD: 13621.00 ft
Inc: 89.46 deg Az:
272.59 deg TVD:
7019.12 ft

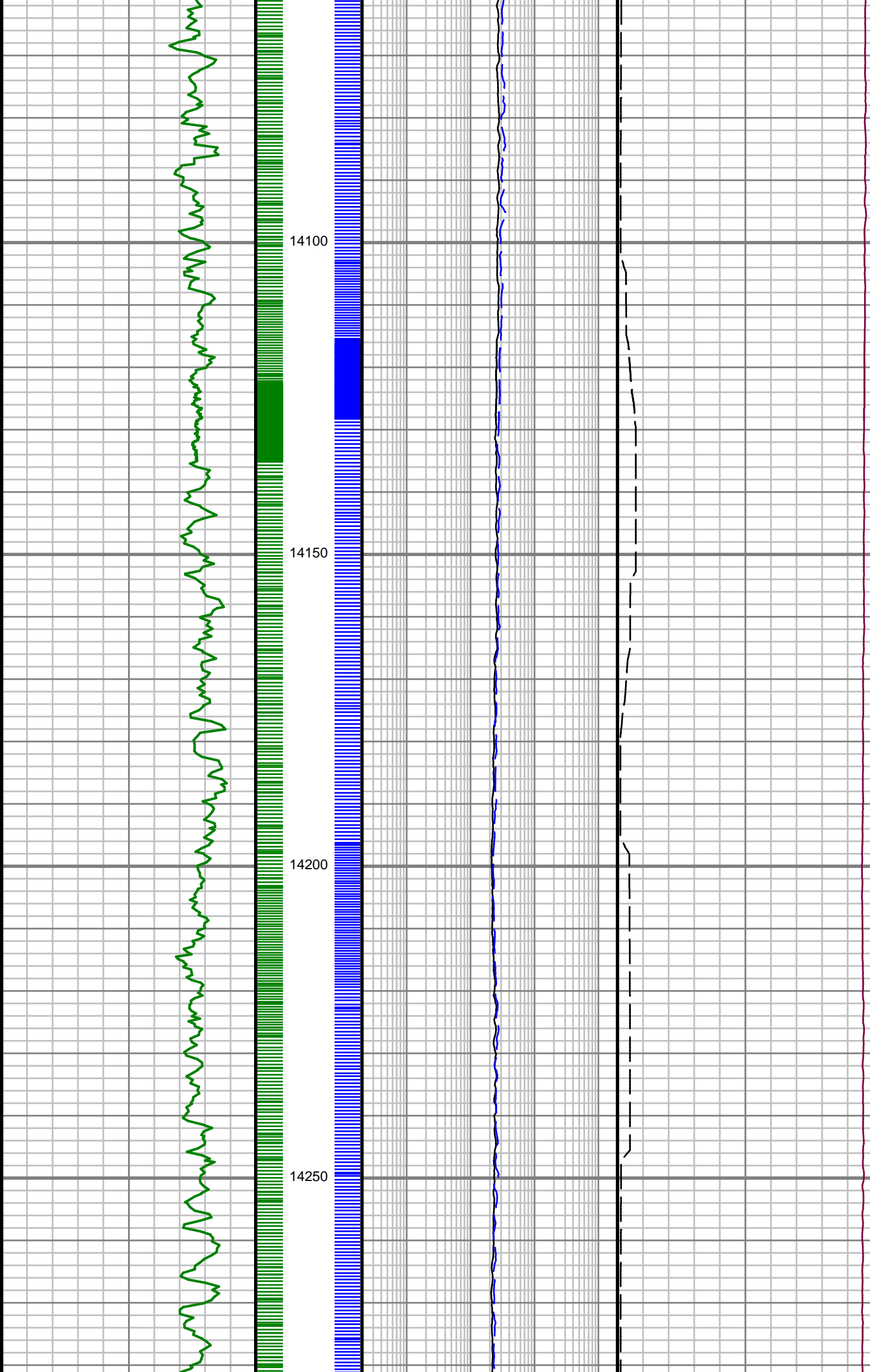
S: 144 MD: 13713.00 ft
Inc: 89.73 deg Az:
272.54 deg TVD:
7019.77 ft

S: 145 MD: 13808.00 ft
Inc: 89.36 deg Az:
271.82 deg TVD:
7020.52 ft



S: 146 MD: 13902.00 ft
Inc: 90.24 deg Az:
272.51 deg TVD:
7020.85 ft

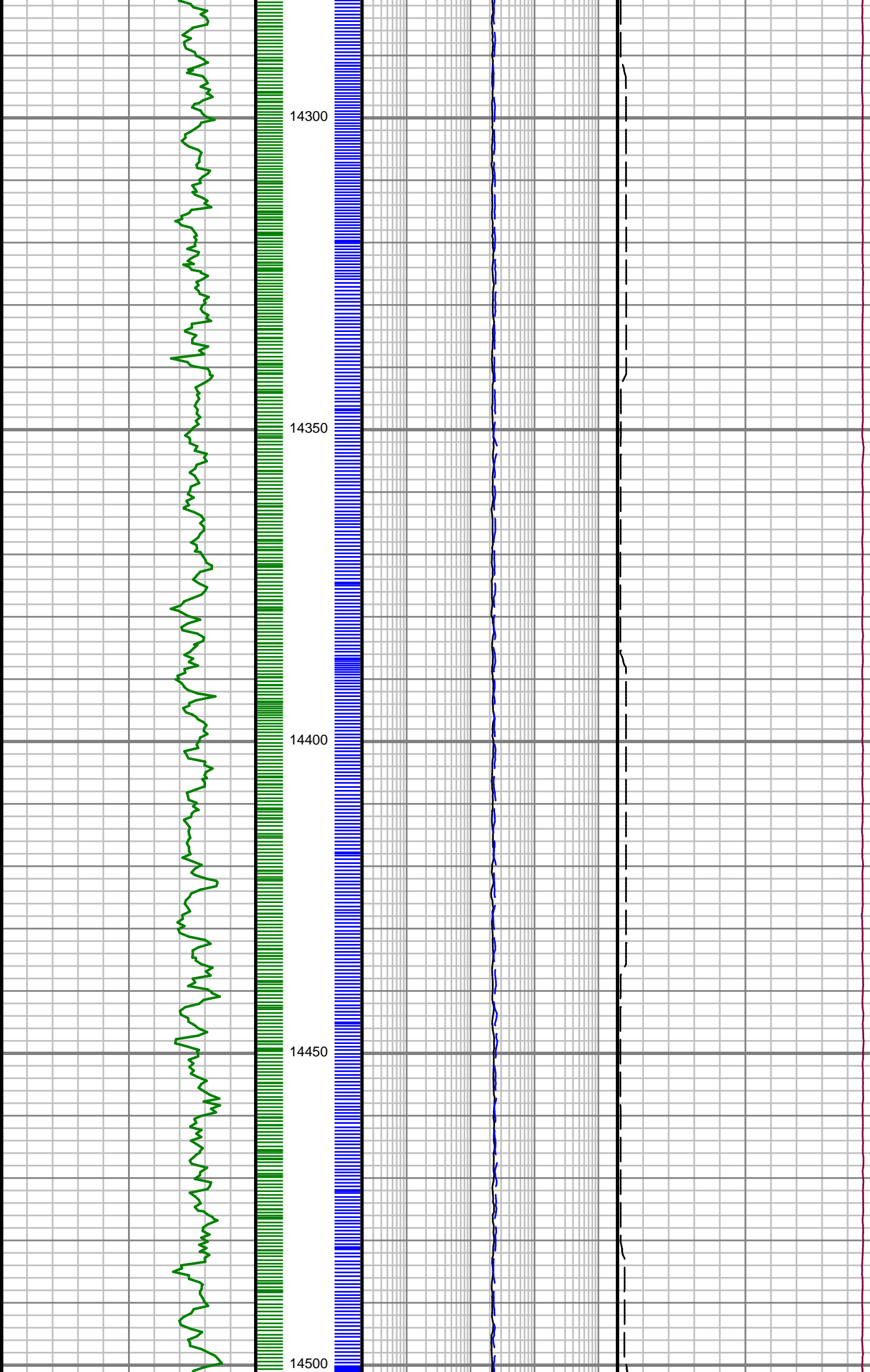
S: 147 MD: 13997.00 ft
Inc: 89.06 deg Az:
270.40 deg TVD:
7021.44 ft



S: 148 MD: 14092.00 ft
Inc: 90.24 deg Az:
270.88 deg TVD:
7022.02 ft

S: 149 MD: 14185.00 ft
Inc: 89.93 deg Az:
270.20 deg TVD:
7021.88 ft

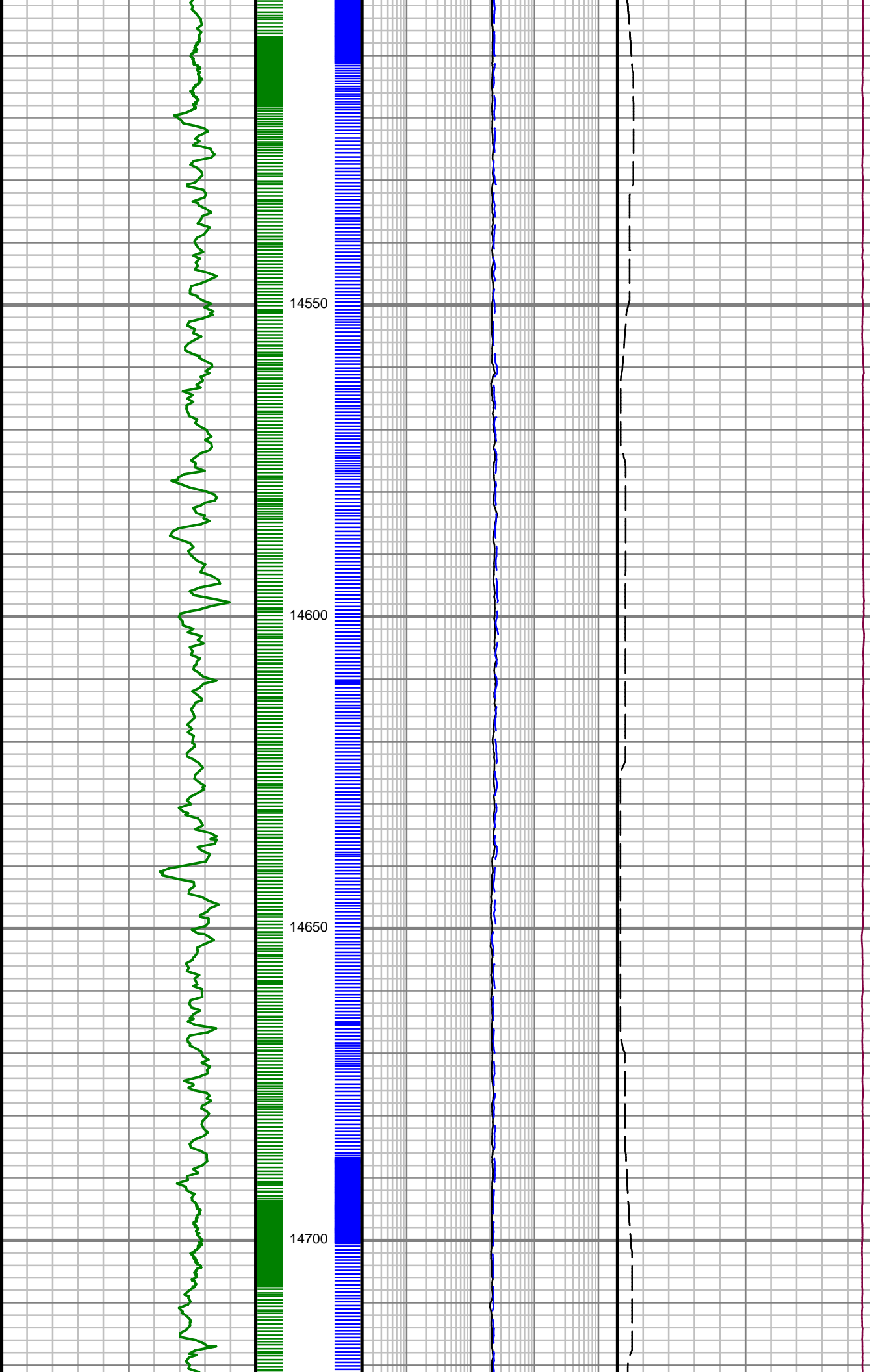
S: 150 MD: 14280.00 ft



S: 150 MD: 14280.00 ft
Inc: 89.66 deg Az:
269.41 deg TVD:
7022.22 ft

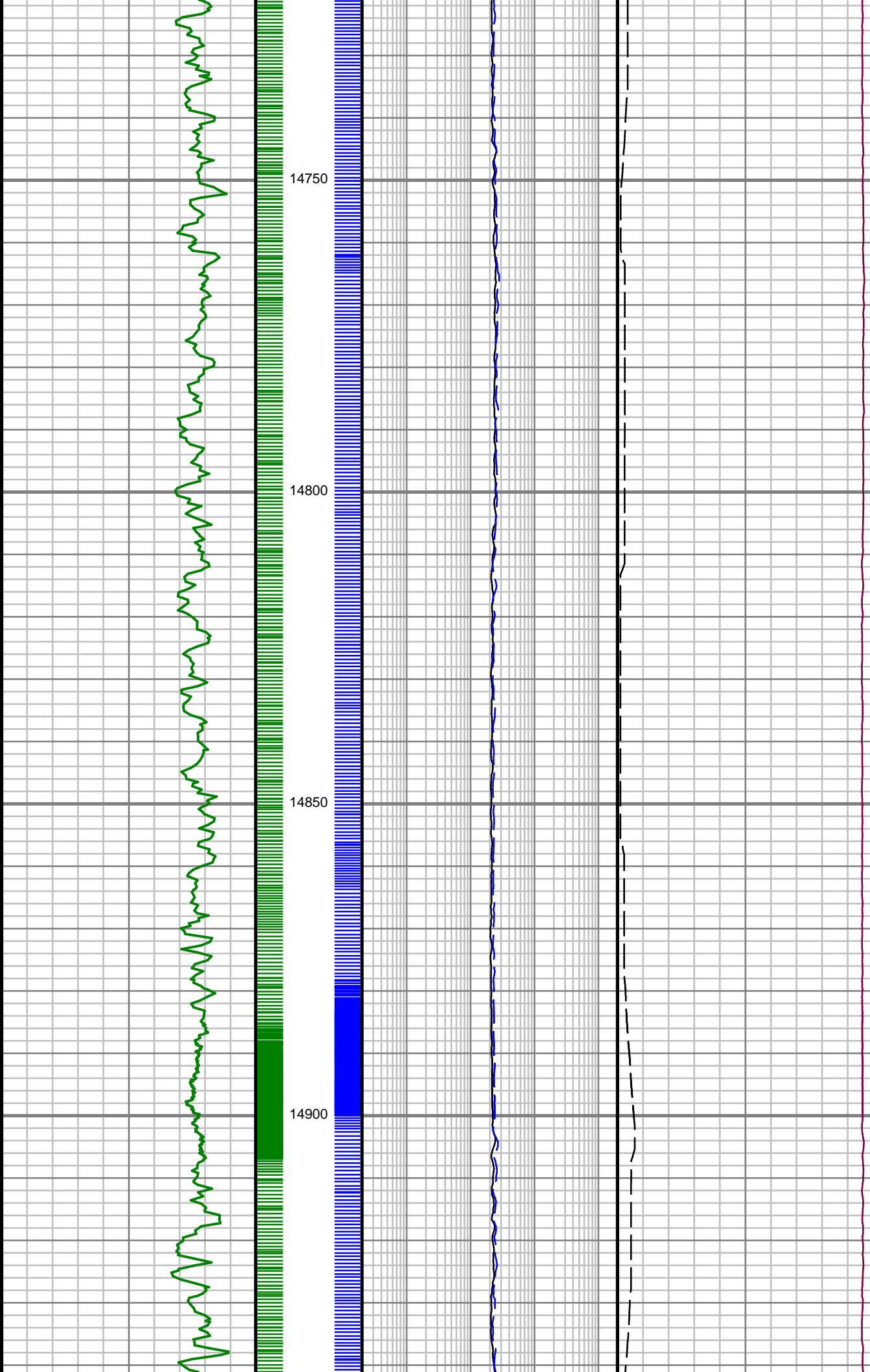
S: 151 MD: 14375.00 ft
Inc: 89.56 deg Az:
269.39 deg TVD:
7022.86 ft

S: 152 MD: 14469.00 ft
Inc: 89.60 deg Az:
269.51 deg TVD:
7023.55 ft



S: 153 MD: 14563.00 ft
Inc: 90.20 deg Az:
269.15 deg TVD:
7023.71 ft

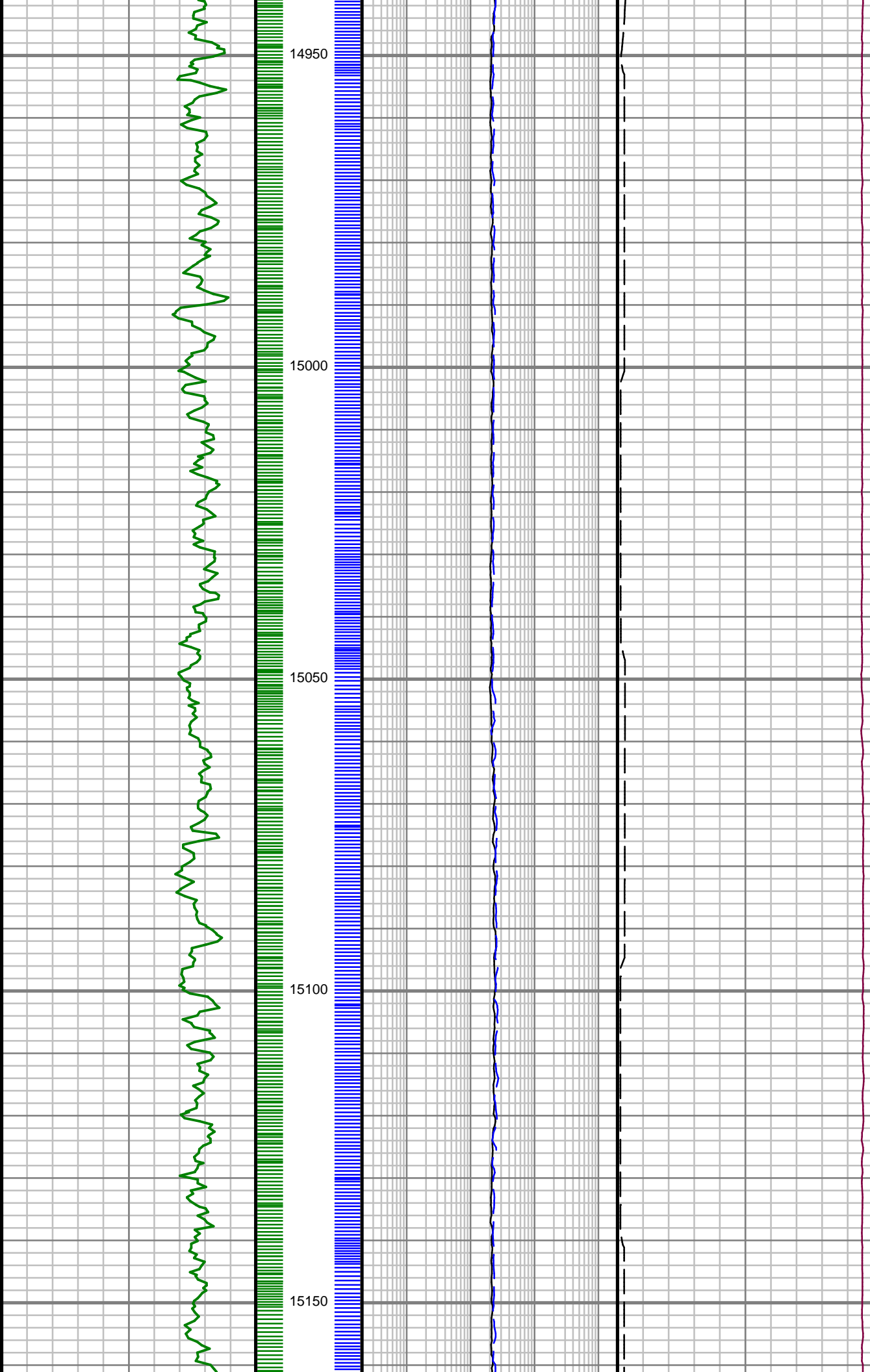
S: 154 MD: 14658.00 ft
Inc: 89.46 deg Az:
267.15 deg TVD:
7023.99 ft



S: 155 MD: 14751.00 ft
Inc: 90.37 deg Az:
267.99 deg TVD:
7024.13 ft

S: 156 MD: 14845.00 ft
Inc: 90.03 deg Az:
266.67 deg TVD:
7023.80 ft

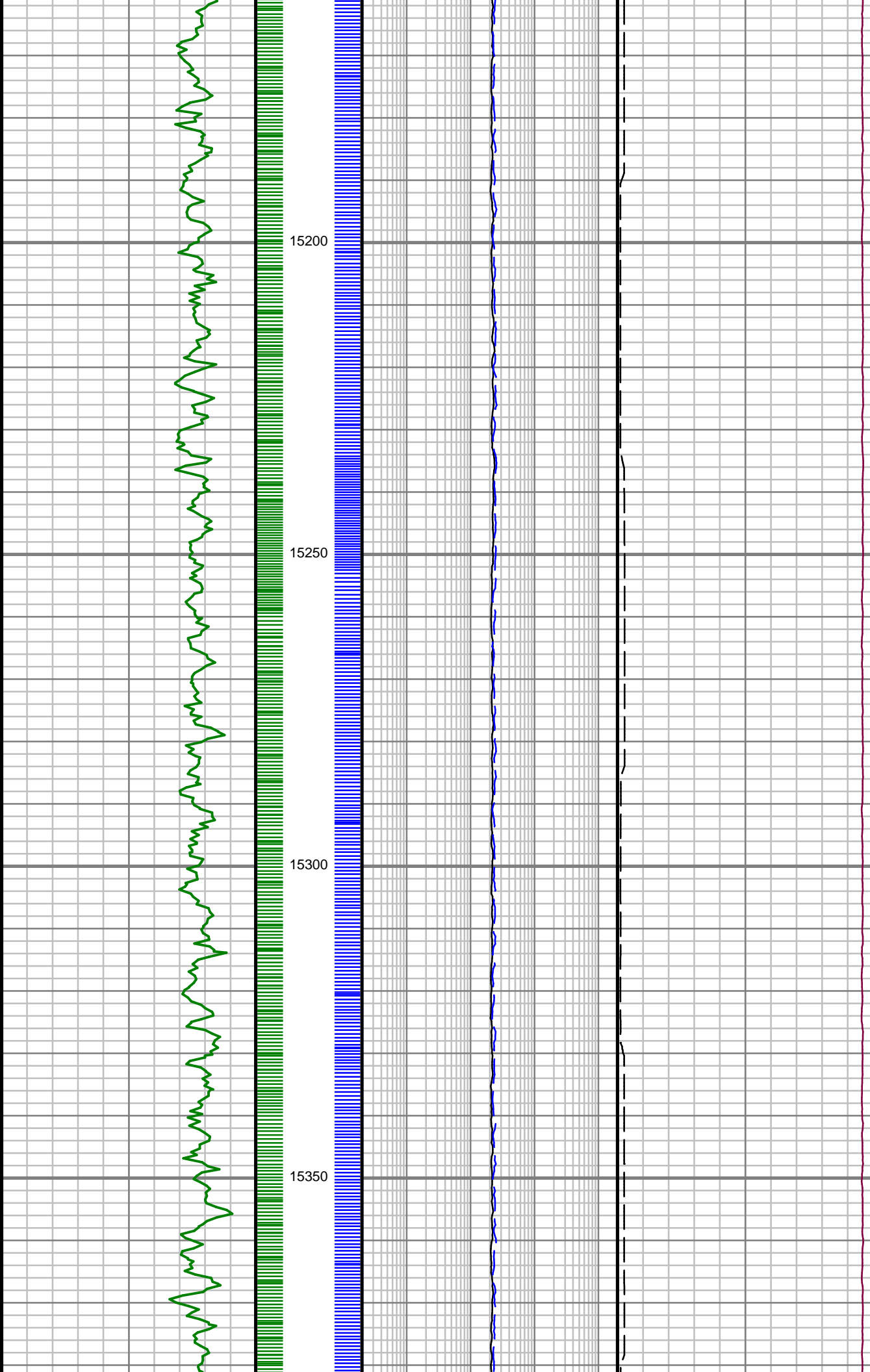
S: 157 MD: 14940.00 ft



S: 157 MD: 14940.00 ft
Inc: 90.07 deg Az:
266.87 deg TVD:
7023.71 ft

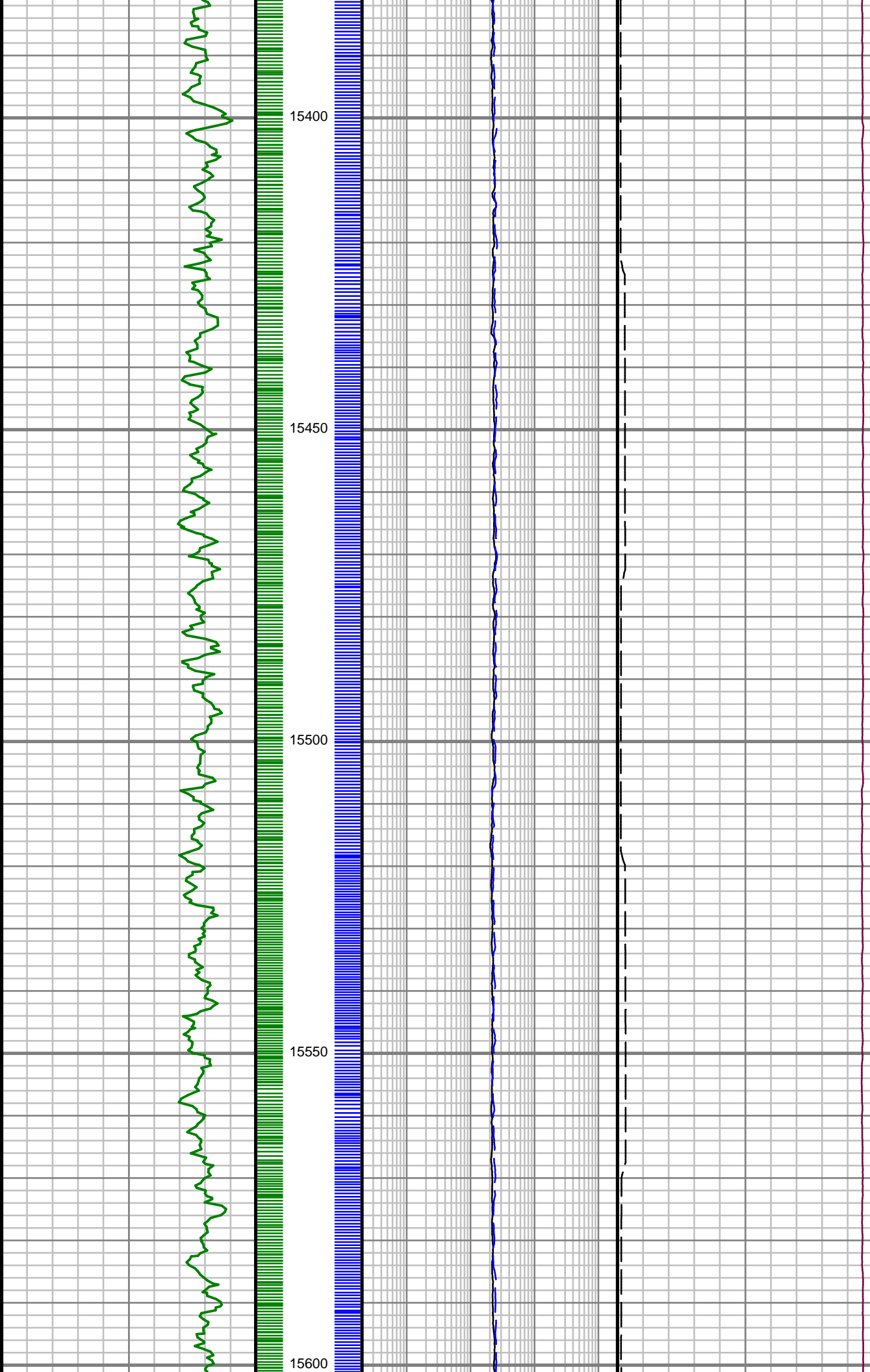
S: 158 MD: 15033.00 ft
Inc: 91.01 deg Az:
270.06 deg TVD:
7022.84 ft

S: 159 MD: 15127.00 ft
Inc: 89.80 deg Az:
268.81 deg TVD:
7022.18 ft



S: 160 MD: 15222.00 ft
Inc: 90.37 deg Az:
269.40 deg TVD:
7022.04 ft

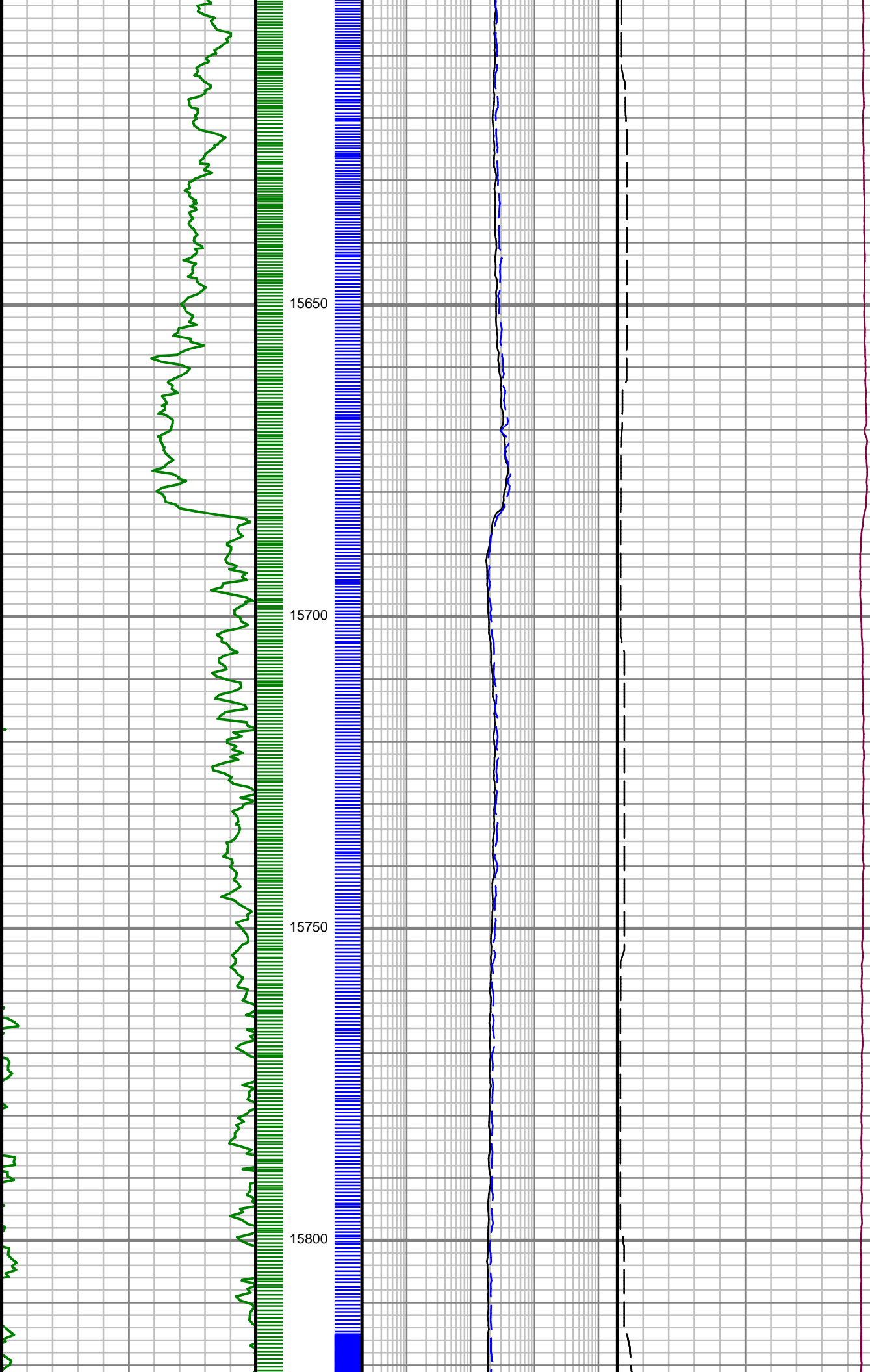
S: 161 MD: 15316.00 ft
Inc: 91.21 deg Az:
270.03 deg TVD:
7020.74 ft



S: 162 MD: 15411.00 ft
Inc: 90.94 deg Az:
269.92 deg TVD:
7018.96 ft

S: 163 MD: 15505.00 ft
Inc: 89.56 deg Az:
268.21 deg TVD:
7018.55 ft

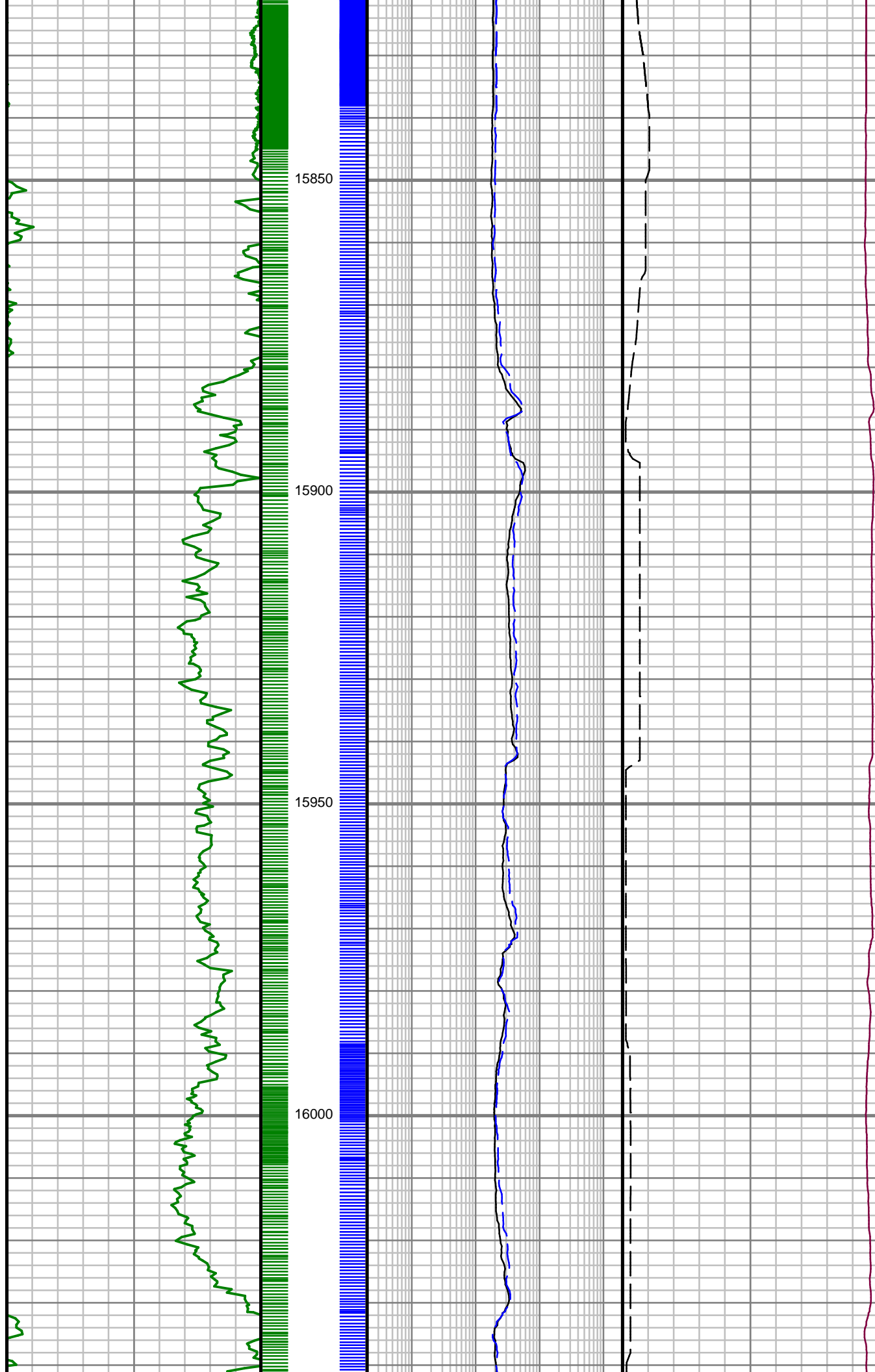
S: 164 MD: 15600.00 ft



S: 164 MD: 15600.00 ft
Inc: 90.84 deg Az:
269.30 deg TVD:
7018.21 ft

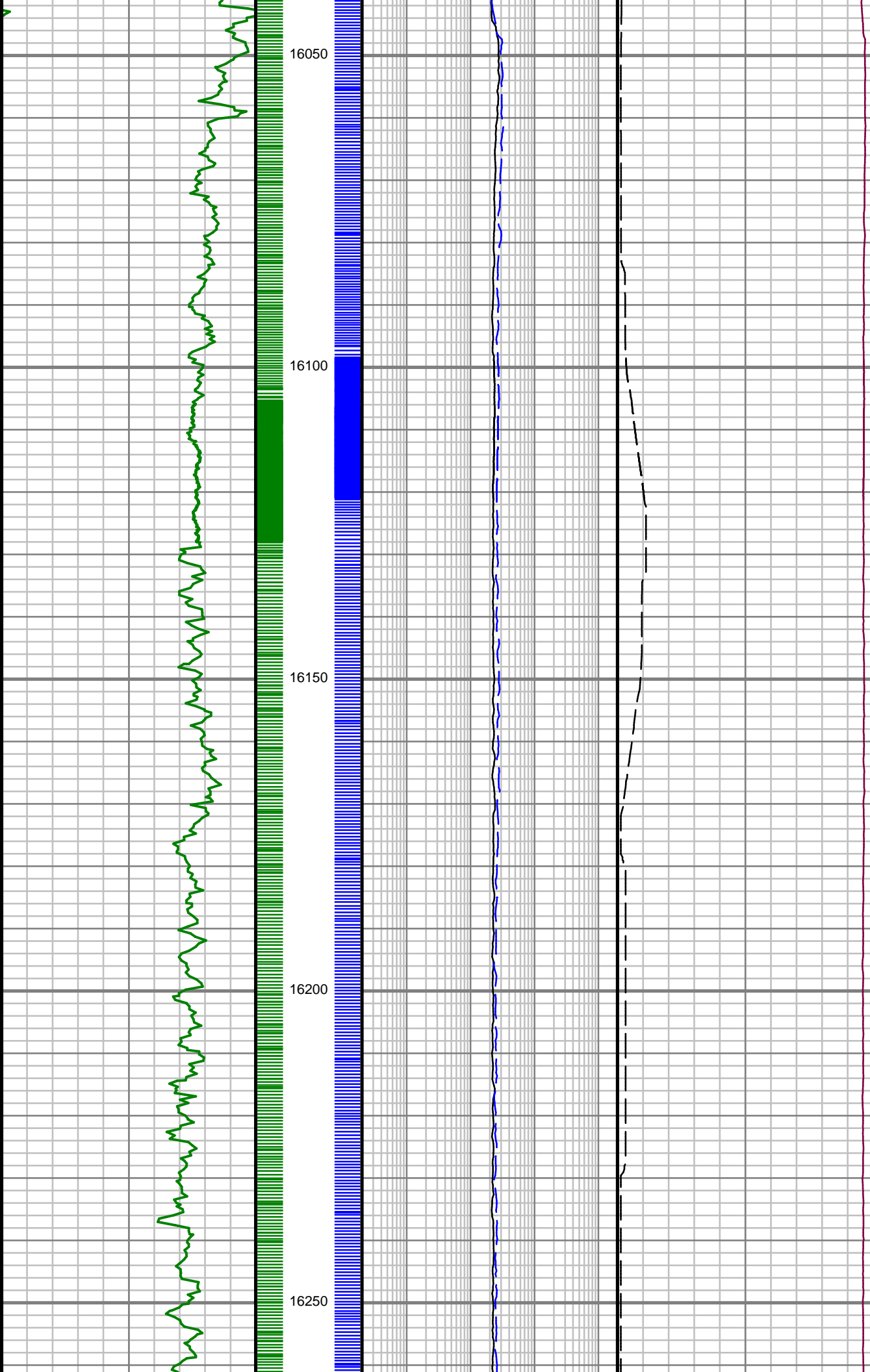
S: 165 MD: 15695.00 ft
Inc: 91.72 deg Az:
269.90 deg TVD:
7016.10 ft

S: 166 MD: 15789.00 ft
Inc: 92.22 deg Az:
270.32 deg TVD:
7012.87 ft



S: 167 MD: 15884.00 ft
Inc: 91.28 deg Az:
271.78 deg TVD:
7009.98 ft

S: 168 MD: 15979.00 ft
Inc: 90.81 deg Az:
272.31 deg TVD:
7008.25 ft



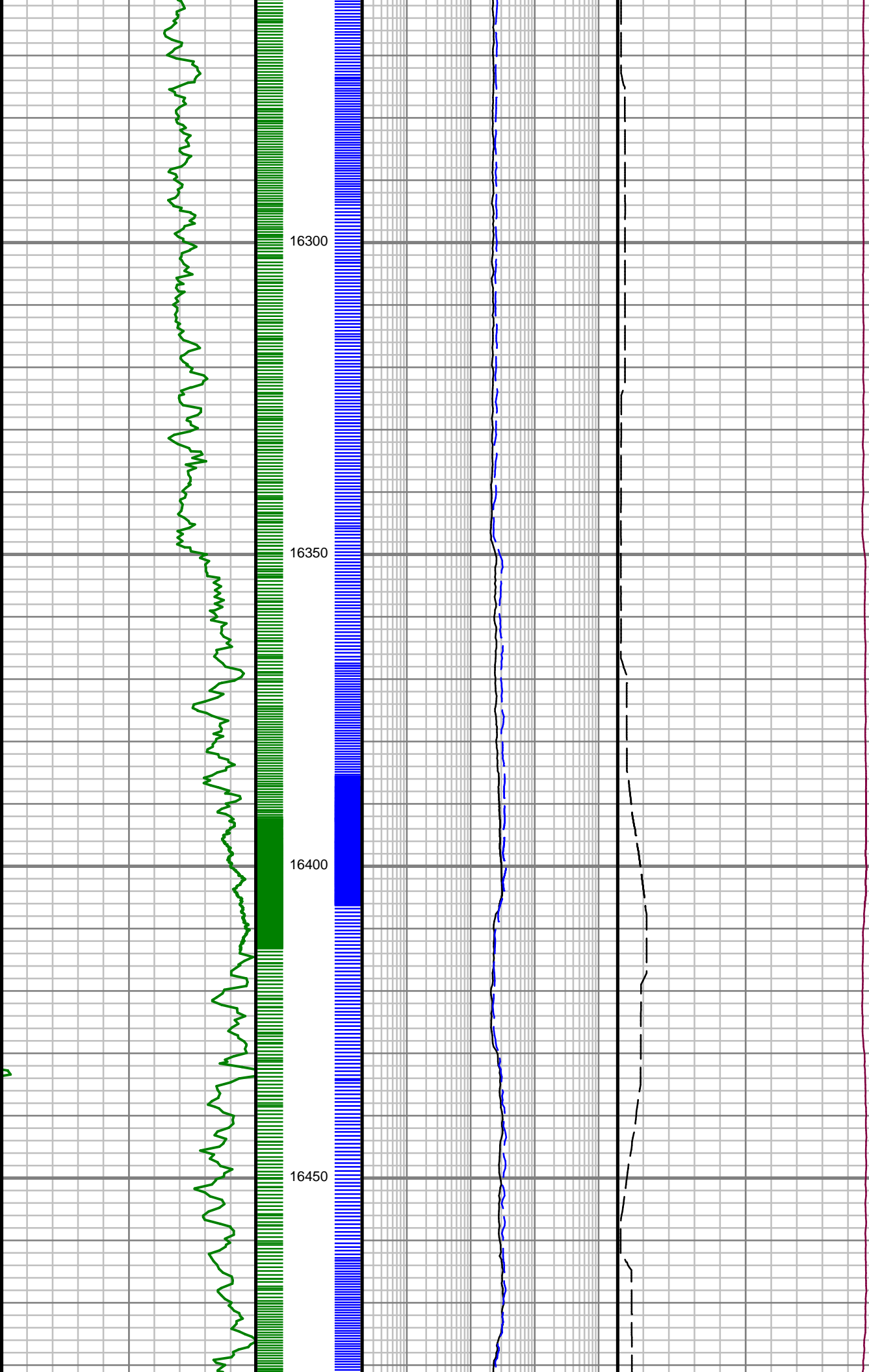
S: 169 MD: 16074.00 ft
Inc: 91.31 deg Az:
272.92 deg TVD:
7006.50 ft

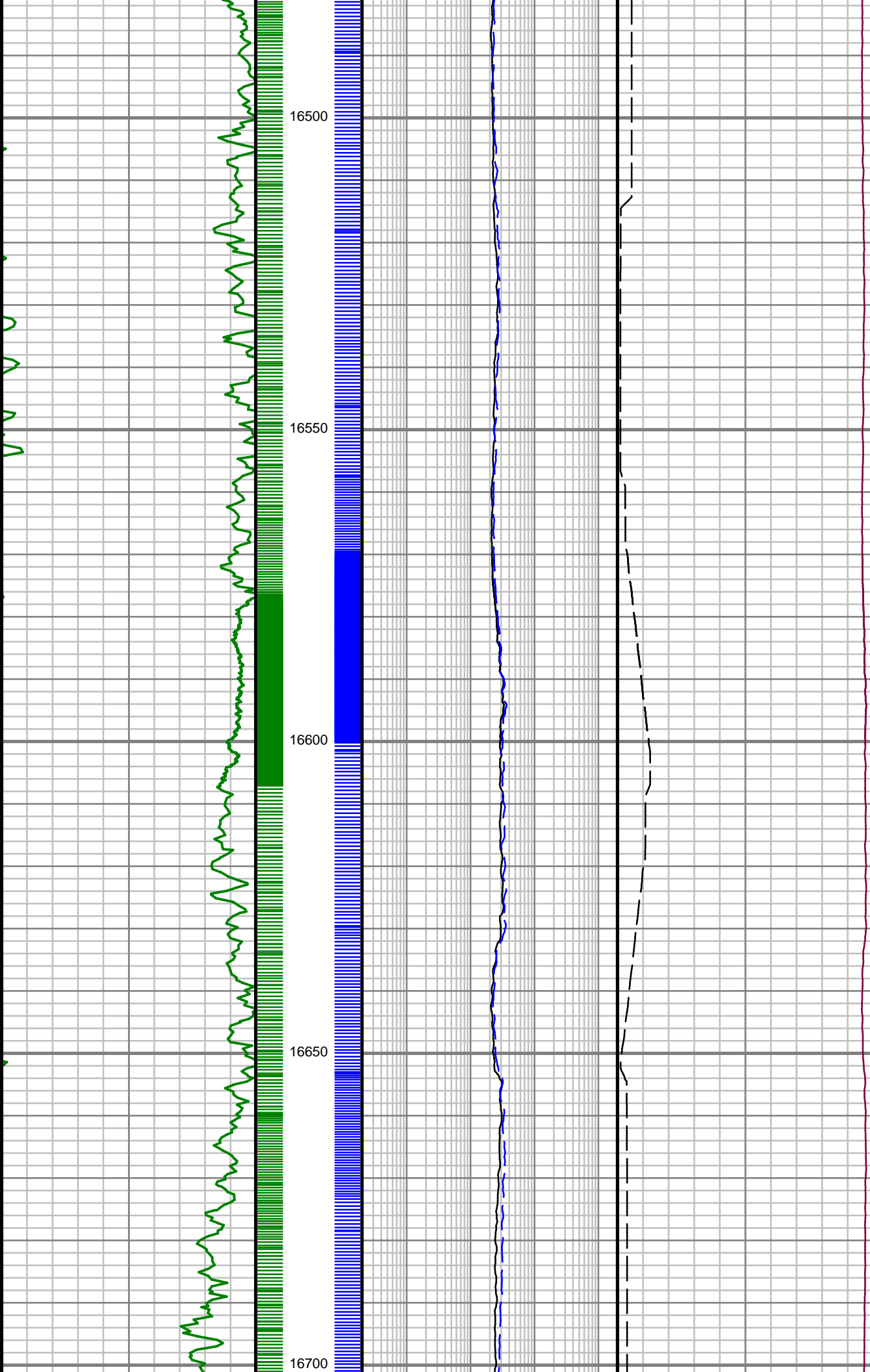
S: 170 MD: 16168.00 ft
Inc: 90.17 deg Az:
272.23 deg TVD:
7005.29 ft

S: 171 MD: 16263.00 ft
Inc: 90.30 deg Az:
272.30 deg TVD:
7004.90 ft

S: 172 MD: 16357.00 ft
Inc: 91.08 deg Az:
272.75 deg TVD:
7003.76 ft

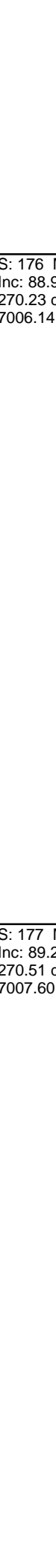
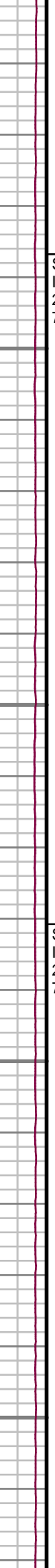
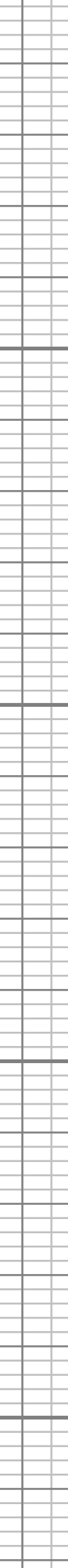
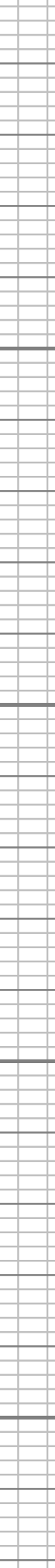
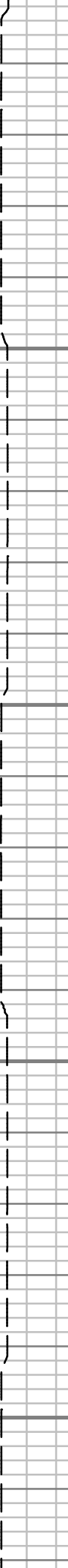
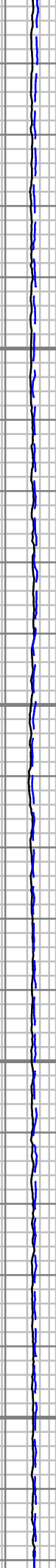
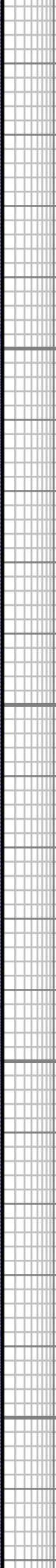
S: 173 MD: 16452.00 ft
Inc: 89.87 deg Az:
271.52 deg TVD:
7002.98 ft





S: 174 MD: 16546.00 ft
Inc: 90.60 deg Az:
272.63 deg TVD:
7002.60 ft

S: 175 MD: 16642.00 ft
Inc: 88.09 deg Az:
269.70 deg TVD:
7003.69 ft



S: 176 MD: 16737.00 ft
Inc: 88.96 deg Az:
270.23 deg TVD:
7006.14 ft

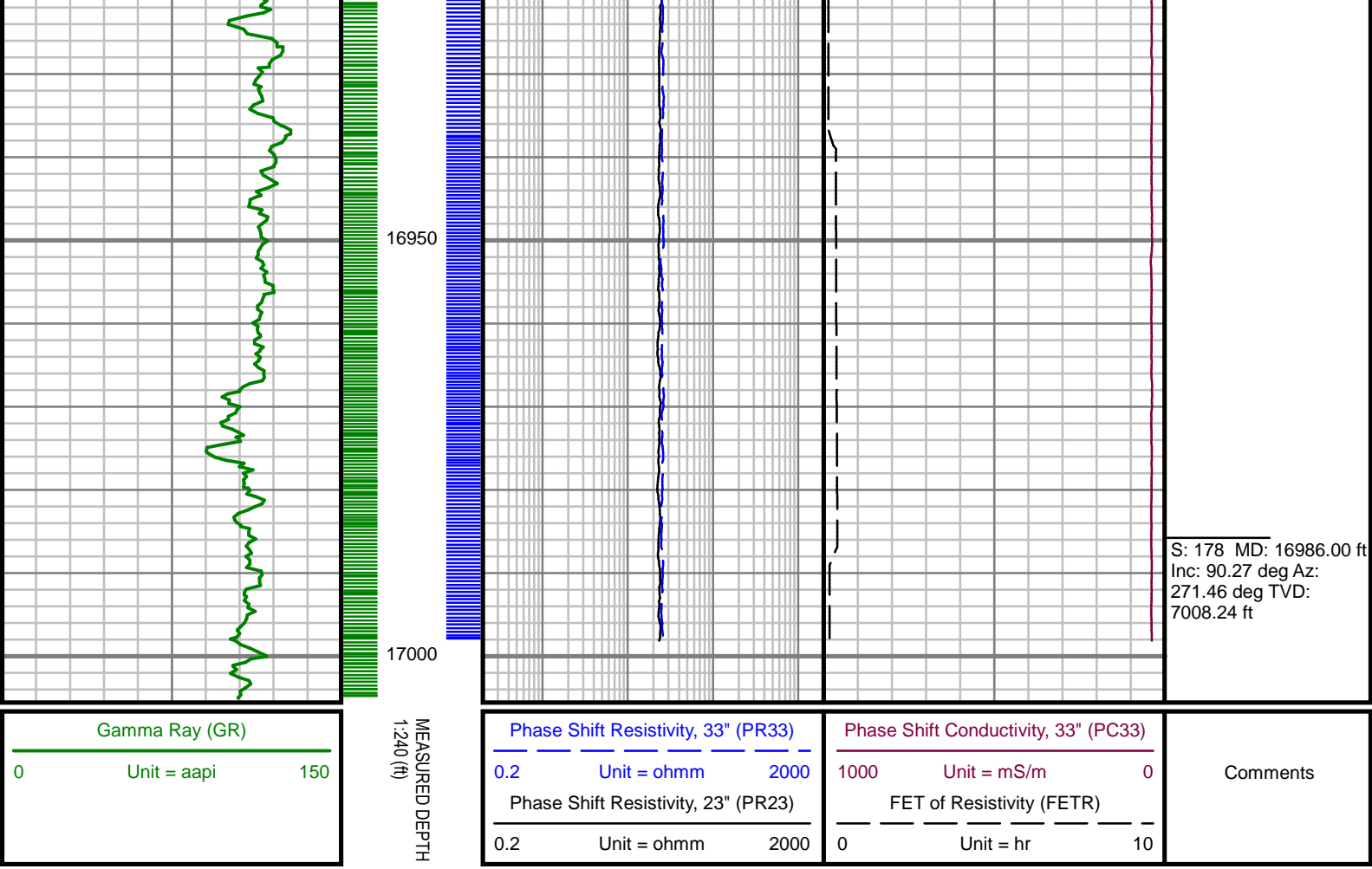
S: 177 MD: 16831.00 ft
Inc: 89.26 deg Az:
270.51 deg TVD:
7007.60 ft

16750

16800

16850

16900



SURVEY REPORT

FOLLEY SOUTH 1

FOLLEY SOUTH 1 COMPUTED SURVEYS

CUSTOMER ANADARKO E&P ONSHORE LLC.
PROJECT FOLLEY
FIELD WATTENBERG

WELL INFORMATION

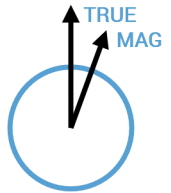
Lat/Long 40° 23' 37.831" N, 104° 56' 48.588" W
Northing 14,670,156.6 ft
Easting 1,655,221.07 ft
UWI 05069064840000

MAP INFORMATION

North Reference True North
Grid Correction
System Universal Transverse Mercator (US Survey Feet)
Datum North American Datum 1983 (GRS 1980)
Map Zone Zone 13N (108 W to 102 W)

VERTICAL SECTION REFERENCE

+N/-S 0 ft
+E/-W 0 ft
Proposal Direction 270.43°
Calculation Method Minimum Curvature



GEOMAGNETIC REFERENCE INFORMATION

Local Gravity: 999.074 mG [computed]

MD	MODEL	DATE	DECLINATION	MAG TO TRUE
0-1792 ft	ANADARKO MAGVAR	19 Aug 2016	8.42°	add 8.42°
1792-4002 ft	ANADARKO MAGVAR	19 Aug 2016	8.44°	add 8.44°
4002-11836 ft	ANADARKO MAGVAR	19 Aug 2016	8.51°	add 8.51°

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid
214.00	0.59	257.55	214.00	1.07	-0.24	-1.07	0.27
308.00	0.07	130.00	307.99	1.49	-0.38	-1.49	0.68
401.00	0.19	314.24	400.99	1.55	-0.31	-1.56	0.28
494.00	0.84	43.98	493.99	1.19	0.29	-1.19	0.93
588.00	2.16	52.69	587.96	-0.68	1.86	0.69	1.42
681.00	3.27	54.84	680.85	-4.22	4.44	4.25	1.20
774.00	4.20	55.33	773.65	-9.16	7.90	9.22	1.00
867.00	5.08	55.53	866.35	-15.32	12.17	15.41	0.95
961.00	6.62	56.99	959.86	-23.25	17.48	23.38	1.65
1055.00	7.49	55.54	1053.14	-32.80	23.90	32.98	0.94
1150.00	8.65	52.43	1147.20	-43.51	31.76	43.75	1.31
1243.00	10.05	48.78	1238.96	-55.09	41.37	55.40	1.64
1336.00	11.12	46.19	1330.38	-67.58	52.93	67.98	1.25
1431.00	12.95	47.32	1423.29	-81.91	66.49	82.41	1.95
1523.00	14.16	48.51	1512.72	-97.81	80.93	98.42	1.34
1618.00	15.50	47.57	1604.56	-115.76	97.20	116.50	1.44
1712.00	17.02	48.42	1694.79	-135.19	114.80	136.06	1.63
1790.00	17.52	49.19	1769.28	-152.50	130.05	153.48	0.71
1937.00	17.57	48.92	1909.44	-185.75	159.09	186.95	0.07

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
2029.00	18.43	51.87	1996.94	-207.52	177.20	208.86	1.36
2124.00	18.15	52.68	2087.14	-230.96	195.44	232.44	0.40
2218.00	19.21	53.40	2176.19	-254.88	213.54	256.49	1.16
2312.00	20.14	53.84	2264.70	-280.23	232.31	281.98	1.00
2406.00	20.20	55.09	2352.93	-306.46	251.15	308.35	0.46
2499.00	19.78	55.21	2440.33	-332.42	269.32	334.45	0.46
2595.00	18.68	54.15	2530.97	-358.09	287.59	360.26	1.20
2688.00	17.59	53.39	2619.35	-381.31	304.69	383.61	1.21
2783.00	18.13	55.53	2709.77	-404.89	321.62	407.32	0.90
2876.00	17.51	56.73	2798.31	-428.40	337.49	430.95	0.78
2969.00	17.53	52.73	2887.00	-451.12	353.65	453.79	1.30
3063.00	17.88	49.97	2976.54	-473.31	371.50	476.11	0.96
3156.00	16.02	48.62	3065.50	-493.74	389.17	496.67	2.05
3252.00	14.38	45.82	3158.14	-512.10	406.23	515.16	1.87
3345.00	12.59	49.50	3248.57	-527.98	420.86	531.15	2.14
3439.00	10.20	50.98	3340.72	-542.14	432.76	545.41	2.56
3533.00	8.72	54.98	3433.44	-554.38	442.08	557.71	1.72
3628.00	8.50	58.54	3527.37	-566.20	449.88	569.59	0.61
3720.00	7.42	55.26	3618.48	-576.83	456.81	580.27	1.27
3813.00	6.15	56.86	3710.83	-585.89	462.96	589.38	1.38

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
3908.00	3.64	57.87	3805.47	-592.67	467.35	596.20	2.65
4003.00	1.05	61.66	3900.38	-595.97	469.36	599.51	2.73
4098.00	0.66	87.78	3995.37	-597.28	469.80	600.82	0.57
4193.00	0.66	78.83	4090.37	-598.36	469.92	601.91	0.11
4286.00	0.46	220.23	4183.37	-598.65	469.74	602.19	1.13
4380.00	0.62	234.56	4277.36	-598.00	469.16	601.54	0.22
4475.00	0.57	286.90	4372.36	-597.13	469.01	600.67	0.55
4570.00	0.53	229.90	4467.35	-596.34	468.86	599.88	0.55
4663.00	0.93	264.87	4560.35	-595.27	468.52	598.80	0.62
4757.00	0.34	180.10	4654.34	-594.51	468.17	598.04	1.02
4852.00	0.57	199.03	4749.34	-594.36	467.44	597.89	0.28
4970.00	0.39	244.28	4867.33	-593.81	466.71	597.33	0.34
5063.00	0.70	257.44	4960.33	-592.97	466.44	596.49	0.36
5158.00	0.57	165.24	5055.33	-592.53	465.86	596.04	0.97
5253.00	0.82	203.81	5150.32	-592.38	464.78	595.89	0.54
5348.00	1.28	231.00	5245.30	-591.29	463.49	594.79	0.71
5442.00	1.63	246.31	5339.27	-589.26	462.30	592.75	0.55
5536.00	1.31	239.71	5433.24	-587.12	461.22	590.60	0.38
5631.00	0.74	249.70	5528.23	-585.61	460.46	589.09	0.63
5725.00	0.64	269.11	5622.22	-584.52	460.24	588.00	0.27

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
5820.00	0.84	274.98	5717.21	-583.30	460.29	586.77	0.23
5915.00	0.87	276.54	5812.20	-581.89	460.43	585.37	0.04
6008.00	0.74	273.60	5905.19	-580.59	460.55	584.06	0.14
6102.00	0.88	262.87	5999.18	-579.26	460.50	582.73	0.22
6195.00	0.76	265.93	6092.17	-577.94	460.37	581.41	0.14
6288.00	0.51	288.50	6185.17	-576.93	460.46	580.40	0.38
6381.00	0.69	258.98	6278.16	-575.99	460.48	579.46	0.38
6474.00	10.68	278.75	6370.59	-566.89	461.69	570.37	10.79
6569.00	22.11	277.77	6461.58	-540.35	465.46	543.86	12.03
6662.00	29.39	268.95	6545.31	-500.11	467.41	503.63	8.83
6755.00	33.21	269.18	6624.76	-451.82	466.63	455.33	4.10
6849.00	36.20	269.97	6702.03	-398.31	466.24	401.82	3.22
6944.00	45.67	274.35	6773.73	-336.21	468.81	339.74	10.41
7039.00	54.59	280.63	6834.61	-264.02	478.55	267.62	10.66
7134.00	58.44	275.43	6887.04	-185.53	489.53	189.21	6.10
7229.00	63.82	269.99	6932.92	-102.48	493.36	106.18	7.57
7324.00	69.25	264.84	6970.75	-15.53	489.35	19.20	7.57
7418.00	75.93	265.17	6998.86	73.71	481.54	-70.10	7.12
7513.00	88.96	267.48	7011.32	167.44	475.55	-163.88	13.92
7608.00	91.34	267.45	7011.08	262.31	471.35	-258.78	2.51

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
7702.00	90.60	267.25	7009.48	356.16	467.00	-352.66	0.81
7796.00	89.56	267.59	7009.34	450.02	462.76	-446.56	1.16
7891.00	90.20	267.48	7009.54	544.90	458.67	-541.47	0.68
7986.00	90.47	268.37	7008.98	639.81	455.22	-636.41	0.98
8079.00	90.40	268.54	7008.27	732.75	452.71	-729.37	0.20
8172.00	89.90	269.01	7008.03	825.71	450.72	-822.35	0.74
8266.00	89.43	269.55	7008.58	919.69	449.54	-916.34	0.76
8359.00	88.99	269.81	7009.86	1012.67	449.02	-1009.33	0.54
8451.00	89.26	269.41	7011.26	1104.65	448.39	-1101.32	0.52
8546.00	88.69	267.99	7012.96	1199.59	446.23	-1196.27	1.60
8640.00	89.87	270.22	7014.14	1293.55	444.77	-1290.25	2.68
8733.00	87.01	268.47	7016.68	1386.49	443.70	-1383.19	3.60
8827.00	88.15	268.93	7020.65	1480.36	441.57	-1477.08	1.31
8921.00	89.90	270.82	7022.25	1574.33	441.36	-1571.06	2.74
9015.00	91.48	270.77	7021.12	1668.32	442.66	-1665.04	1.68
9109.00	91.31	271.14	7018.84	1762.29	444.23	-1759.00	0.43
9203.00	90.40	270.96	7017.43	1856.27	445.95	-1852.98	0.98
9297.00	91.81	270.17	7015.61	1950.25	446.88	-1946.95	1.72
9391.00	91.11	269.23	7013.22	2044.21	446.39	-2040.92	1.26
9485.00	89.80	269.72	7012.48	2138.19	445.52	-2134.91	1.49

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
9579.00	89.40	271.59	7013.14	2232.18	446.60	-2228.89	2.04
9673.00	90.60	271.56	7013.14	2326.16	449.19	-2322.86	1.29
9767.00	88.66	272.12	7013.74	2420.13	452.21	-2416.80	2.15
9861.00	89.46	272.27	7015.29	2514.07	455.80	-2510.72	0.87
9954.00	90.20	273.13	7015.56	2606.99	460.18	-2603.61	1.22
10049.00	91.41	274.01	7014.22	2701.84	466.09	-2698.42	1.57
10144.00	90.67	272.91	7012.50	2796.69	471.83	-2793.23	1.39
10238.00	90.40	272.00	7011.62	2890.63	475.85	-2887.14	1.01
10332.00	90.13	271.25	7011.18	2984.60	478.52	-2981.10	0.84
10427.00	89.87	269.66	7011.18	3079.60	479.28	-3076.09	1.70
10521.00	90.97	270.18	7010.49	3173.59	479.14	-3170.09	1.30
10616.00	90.44	269.59	7009.32	3268.58	478.96	-3265.08	0.84
10710.00	89.19	269.50	7009.62	3362.57	478.21	-3359.07	1.33
10805.00	88.96	268.81	7011.15	3457.53	476.80	-3454.05	0.76
10898.00	89.46	268.63	7012.43	3550.48	474.73	-3547.02	0.58
10993.00	89.03	267.28	7013.68	3645.38	471.34	-3641.95	1.49
11088.00	89.13	266.82	7015.21	3740.20	466.45	-3736.81	0.50
11182.00	88.59	267.18	7017.09	3834.01	461.53	-3830.66	0.69
11276.00	87.82	269.36	7020.03	3927.90	458.69	-3924.56	2.45
11371.00	88.56	269.25	7023.04	4022.83	457.54	-4019.51	0.79

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
11460.00	89.06	270.52	7024.89	4111.80	457.36	-4108.49	1.54
11555.00	90.44	270.09	7025.31	4206.80	457.87	-4203.48	1.52
11649.00	90.70	271.05	7024.37	4300.79	458.80	-4297.47	1.06
11743.00	91.58	271.16	7022.50	4394.77	460.61	-4391.43	0.94
11838.00	90.30	270.58	7020.94	4489.75	462.05	-4486.41	1.48
11932.00	91.55	270.54	7019.43	4583.74	462.97	-4580.39	1.33
12026.00	90.47	271.24	7017.77	4677.72	464.43	-4674.36	1.36
12120.00	91.04	271.95	7016.53	4771.69	467.04	-4768.32	0.97
12214.00	89.63	270.86	7015.98	4865.67	469.35	-4862.28	1.90
12309.00	90.00	272.13	7016.29	4960.65	471.83	-4957.25	1.39
12401.00	89.03	269.25	7017.07	5052.63	472.94	-5049.23	3.30
12494.00	90.20	271.24	7017.69	5145.63	473.35	-5142.22	2.49
12587.00	89.77	269.67	7017.72	5238.62	474.09	-5235.21	1.75
12682.00	90.13	269.70	7017.80	5333.61	473.57	-5330.21	0.39
12777.00	88.62	265.81	7018.83	5428.48	469.85	-5425.11	4.39
12872.00	88.99	267.30	7020.81	5523.24	464.15	-5519.92	1.62
12963.00	89.40	269.63	7022.09	5614.18	461.72	-5610.87	2.60
13057.00	89.66	270.28	7022.86	5708.17	461.65	-5704.86	0.75
13152.00	90.64	270.31	7022.61	5803.17	462.14	-5799.86	1.03
13247.00	90.57	270.35	7021.61	5898.16	462.69	-5894.85	0.08

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
13340.00	90.44	271.55	7020.79	5991.15	464.23	-5987.84	1.30
13434.00	90.71	271.59	7019.86	6085.13	466.81	-6081.80	0.29
13527.00	90.37	272.44	7018.98	6178.09	470.09	-6174.73	0.98
13621.00	89.46	272.59	7019.12	6272.02	474.22	-6268.64	0.98
13713.00	89.73	272.54	7019.77	6363.96	478.34	-6360.55	0.30
13808.00	89.36	271.82	7020.52	6458.91	481.95	-6455.47	0.85
13902.00	90.24	272.51	7020.85	6552.86	485.49	-6549.41	1.18
13997.00	89.06	270.40	7021.44	6647.84	487.90	-6644.37	2.54
14092.00	90.24	270.88	7022.02	6742.84	488.96	-6739.36	1.34
14185.00	89.93	270.20	7021.88	6835.84	489.83	-6832.35	0.80
14280.00	89.66	269.41	7022.22	6930.83	489.51	-6927.35	0.87
14375.00	89.56	269.39	7022.86	7025.81	488.51	-7022.34	0.11
14469.00	89.60	269.51	7023.55	7119.79	487.61	-7116.34	0.13
14563.00	90.20	269.15	7023.71	7213.78	486.51	-7210.33	0.75
14658.00	89.46	267.15	7023.99	7308.70	483.44	-7305.27	2.25
14751.00	90.37	267.99	7024.13	7401.58	479.49	-7398.19	1.33
14845.00	90.03	266.67	7023.80	7495.44	475.11	-7492.08	1.45
14940.00	90.07	266.87	7023.71	7590.24	469.75	-7586.93	0.21
15033.00	91.01	270.06	7022.84	7683.17	467.26	-7679.88	3.58
15127.00	89.80	268.81	7022.18	7777.15	466.33	-7773.87	1.85

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
15222.00	90.37	269.40	7022.04	7872.12	464.84	-7868.86	0.86
15316.00	91.21	270.03	7020.74	7966.11	464.38	-7962.85	1.12
15411.00	90.94	269.92	7018.96	8061.09	464.34	-8057.83	0.31
15505.00	89.56	268.21	7018.55	8155.05	462.81	-8151.81	2.34
15600.00	90.84	269.30	7018.21	8250.01	460.75	-8246.78	1.77
15695.00	91.72	269.90	7016.10	8344.97	460.08	-8341.76	1.12
15789.00	92.22	270.32	7012.87	8438.92	460.27	-8435.70	0.70
15884.00	91.28	271.78	7009.98	8533.86	462.01	-8530.64	1.83
15979.00	90.81	272.31	7008.25	8628.81	465.40	-8625.56	0.74
16074.00	91.31	272.92	7006.50	8723.72	469.73	-8720.44	0.84
16168.00	90.17	272.23	7005.29	8817.65	473.96	-8814.34	1.42
16263.00	90.30	272.30	7004.90	8912.60	477.72	-8909.26	0.16
16357.00	91.08	272.75	7003.76	9006.53	481.86	-9003.16	0.95
16452.00	89.87	271.52	7002.98	9101.48	485.40	-9098.09	1.81
16546.00	90.60	272.63	7002.60	9195.44	488.80	-9192.03	1.42
16642.00	88.09	269.70	7003.69	9291.40	490.76	-9287.98	4.02
16737.00	88.96	270.23	7006.14	9386.37	490.70	-9382.95	1.07
16831.00	89.26	270.51	7007.60	9480.36	491.30	-9476.94	0.43
16986.00	90.27	271.46	7008.24	9635.34	493.97	-9631.91	0.90



PROPAGATION RESISTIVITY
GAMMA RAY

5" = 100' FEET MD