



PROPAGATION RESISTIVITY  
GAMMA RAY

5" = 100' MD

COMPANY : TERRA EP WELL : SG 321-22 FIELD : GRAND VALLEY COUNTY : GARFIELD STATE : COLORADO COUNTRY : USA UWI : 05-045-24143-00									
DEPTH REF. : RKB REF. HEIGHT : 24.000 ft GROUND LEVEL : 6092.400 ft RKB to Ground Level G.L. to MEAN SEA LEVEL									
WELL LOCATION LAT:39.4277556°N LONG:108.1039440°W SEC:22 TWP:7S RANGE:96W									
OTHER SERVICES DIRECTIONAL ROP CONDUCTIVITY FETTR									
BOREHOLE RECORD DEVIATION RECORD									
HOLE SIZE in	FROM ft	TO ft	INCLINATION deg	FROM ft	TO ft				
13.5	0	1045	0.00 - 0.00	0	120				
8.75	1045	6377	0.00 - 28.03	120	920.83				
			28.03 - 28.01	920.83	2856.66				
			28.03 - 0.00	2856.66	4725.26				
			0.00 - 0.00	4725.26	6552.26				
CASING RECORD									
CASING SIZE in	FROM ft	TO ft							
9.625	0	1045							
4.5	0	6367							
DRILLING CO.: H&P RIG: 318 LMD UNIT NO.: KIT ELECTRICISTRICT: GRAND JUNCTION SPUD DATE: 2/14/2019 LMD START DATE: 2/15/2019 LMD END DATE: 2/17/2019 DEPTH: 1045 ft DEPTH: 6334.38 ft TOTAL DEPTH: 6377 ft									

Run Data						
RUN NUMBER	MWD-002					
START DATE	2/15/2019					
START TIME	14:00					
END DATE	2/17/2019					
END TIME	05:00					
DEPTH IN (ft)	1045					
DEPTH OUT (ft)	6377					
LOG TOP (ft)	1045					
LOG BOTTOM (ft)	6334.38					
HOLE SIZE (in)	8.75					
MUD DATA @ (ft)	6377					
MUD TYPE	LSND					
DENSITY (lb / gal)	9.7					
VISCOSITY (s / qt)	51					
pH	96					
FLUID LOSS (cm3 / 30)	7.2					
SALINITY (ppm)	-					
Rm (ohmm @ deg F)	-					
Rmf (ohmm @ deg F)	-					
MAX TEMP (deg F)	134					
Rm @ MAX TEMP (ohmm)	-					
LWD ENGINEER #1	T. HEIL					
LWD ENGINEER #2	-					
LWD ENGINEER #3	-					
LOG WITNESS #1	-					
LOG WITNESS #2	-					

Remarks

TERRA EP PRODUCTION AFE# 70-050600732

SCIENTIFIC DRILLING INTERNATIONAL JOB# OP.016596

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 TOTAL CURVE

RUN #2: MWD / PRT-GAMMA LOGGING RUN

SENSORS S/N: CONT = 916 / MWD EYE = 1405 / PRT= / GAMMA=1378

B TO S OFFSETS: CONT = 24.00 FT. / MWD EYE = 58.00 FT. / PRT = 46.02 FT. / GAMMA= 42.62 FT.

MNEMONICS LIST:

GR = GAMMA RAY TOTAL

T-TEMP = TOOL TEMPERATURE

ROP = RATE OF PENETRATION

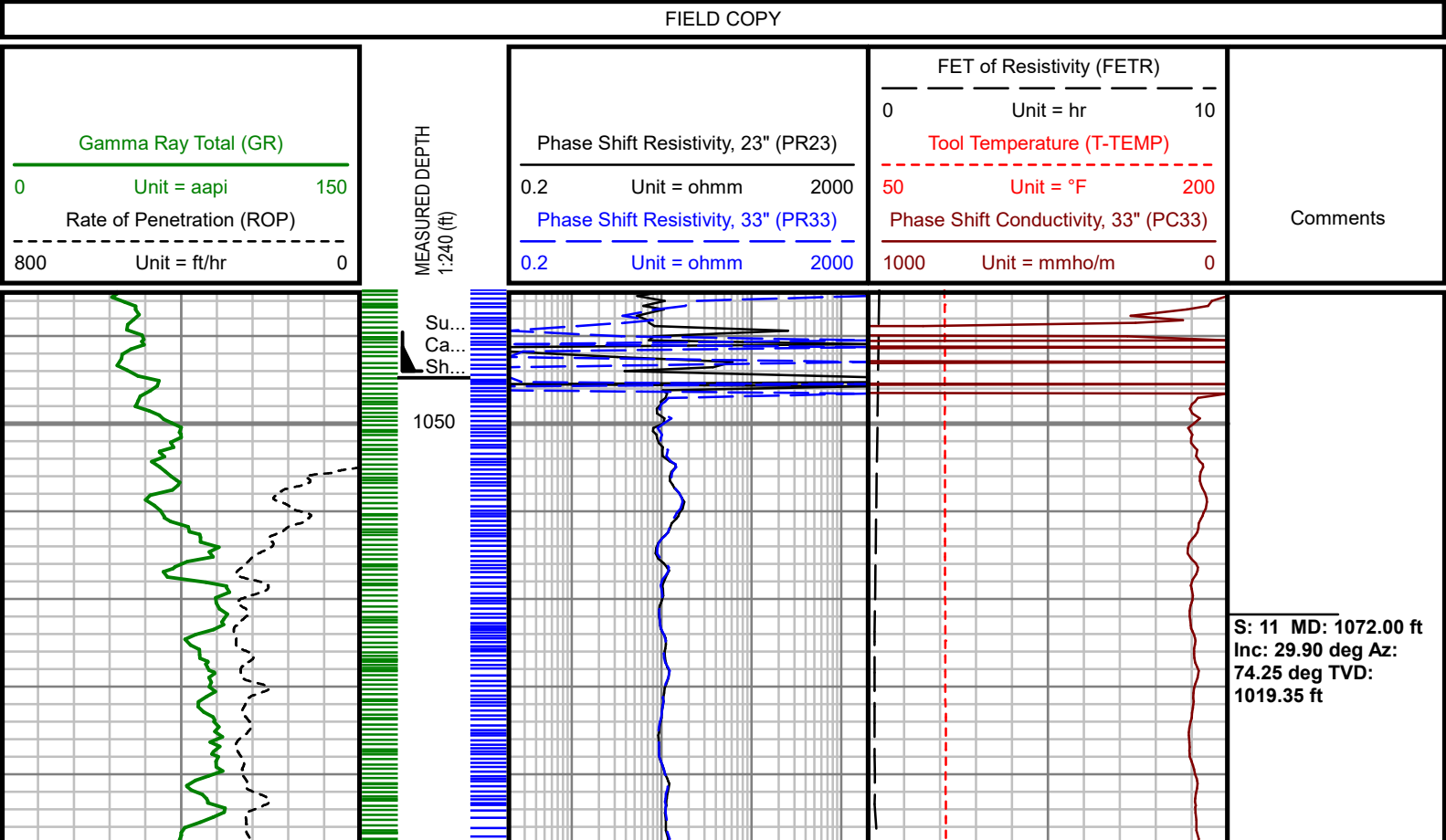
PC33 = PHASE SHIFT CONDUCTIVITY, 33"

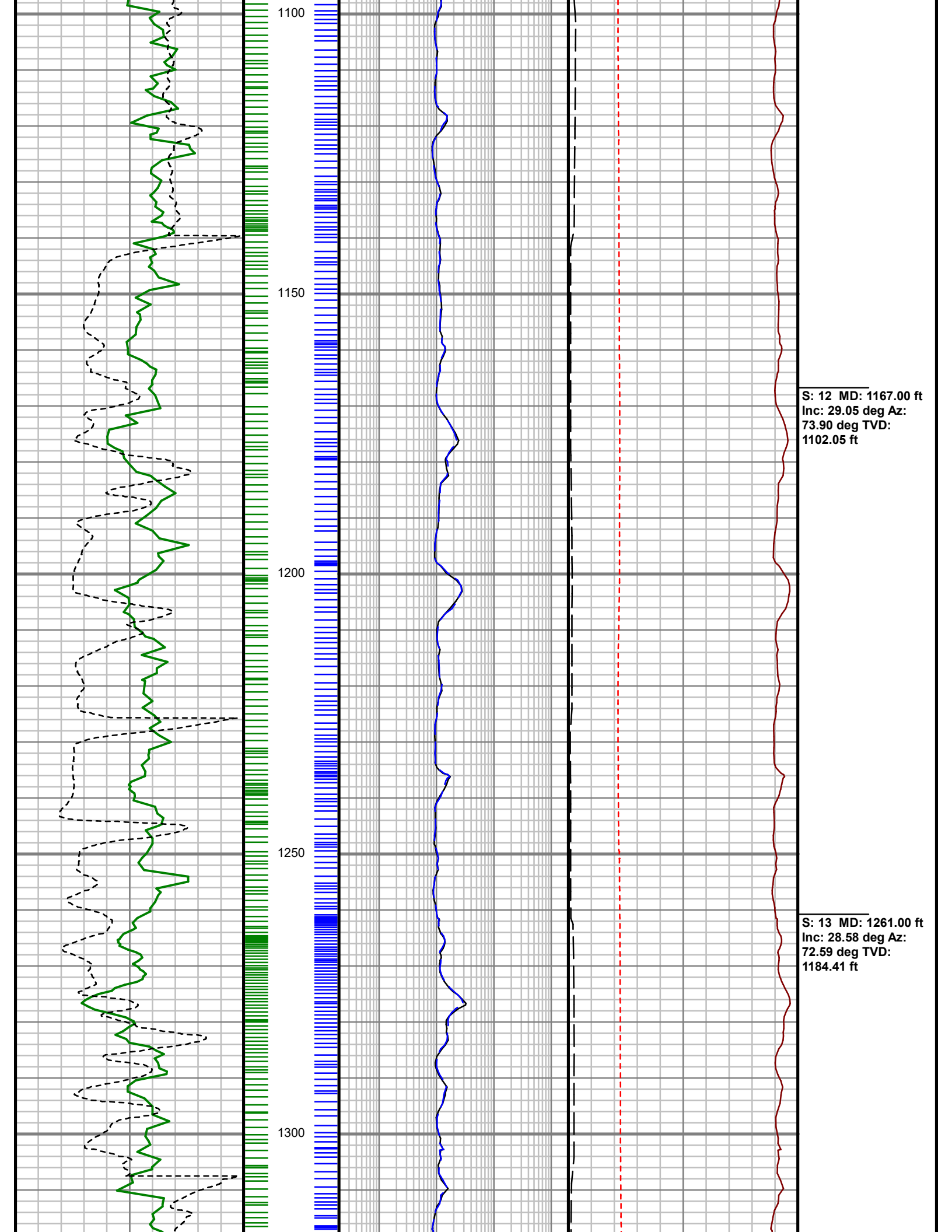
PR23 = PHASE SHIFT RESISTIVITY, 23"

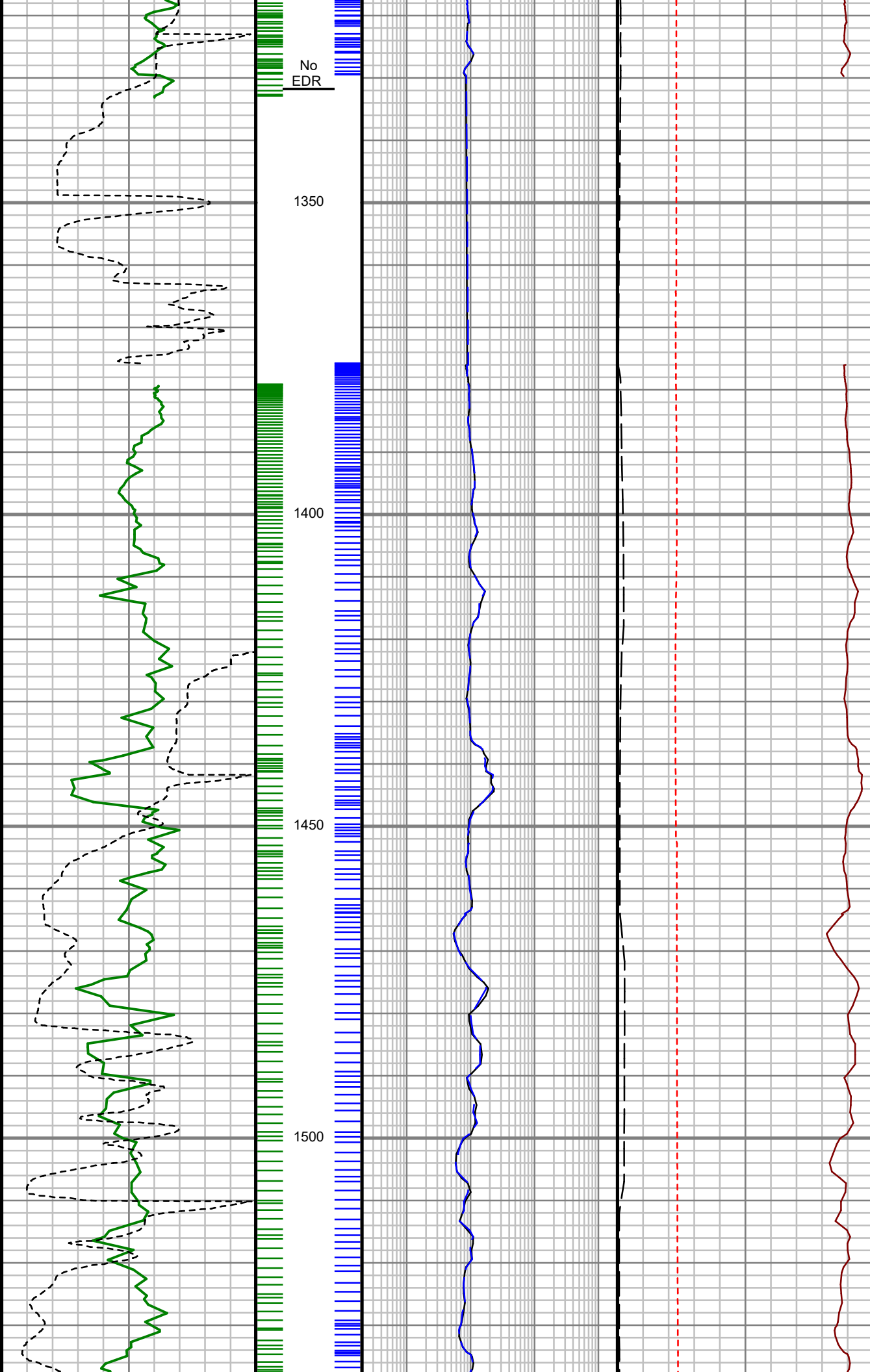
PR33 = PHASE SHIFT RESISTIVITY, 33"

FETR = FET OF RESISTIVITY

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.







No  
EDR

1350

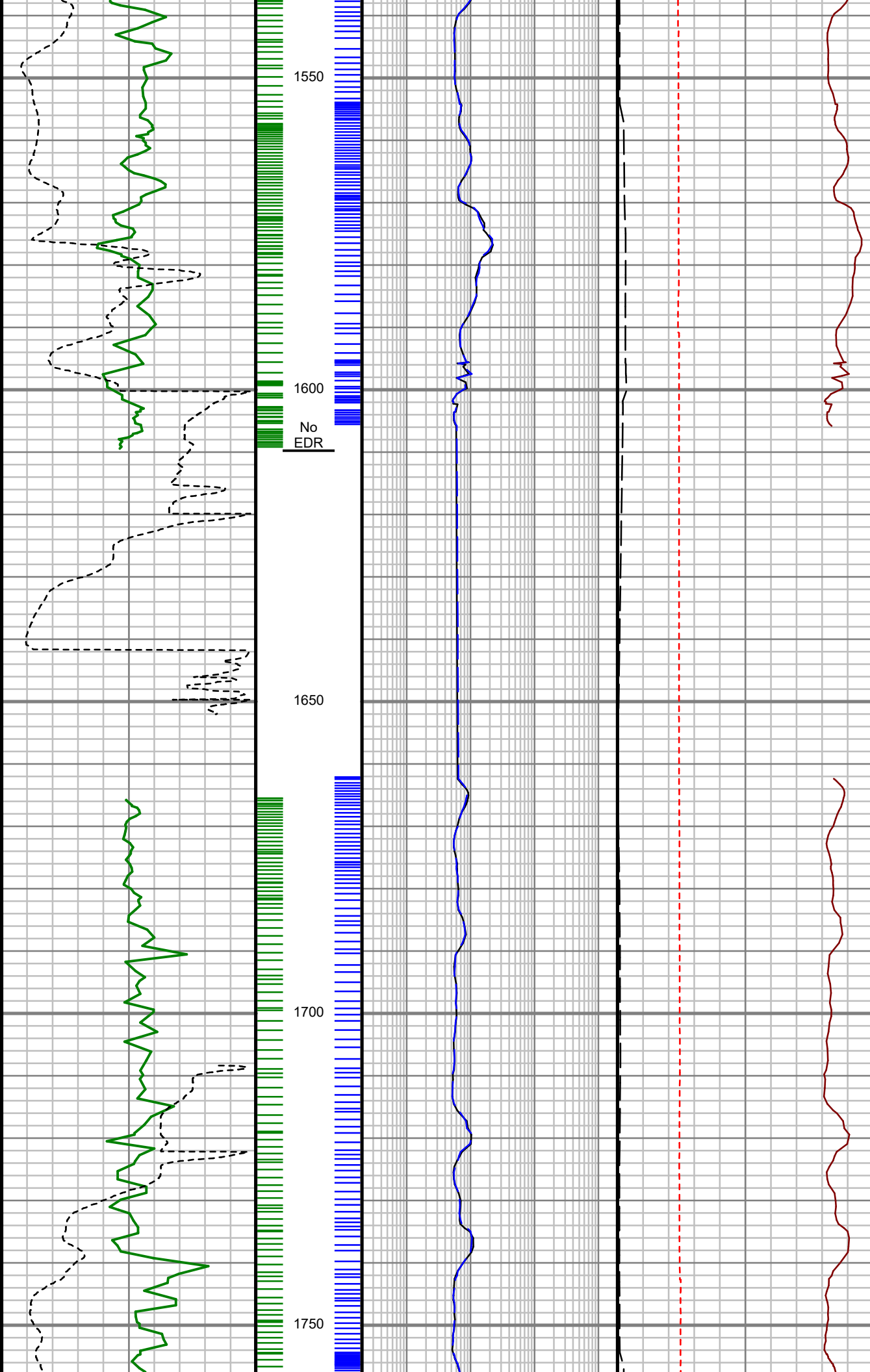
1400

1450

1500

S: 14 MD: 1355.00 ft  
Inc: 28.69 deg Az:  
76.67 deg TVD:  
1266.92 ft

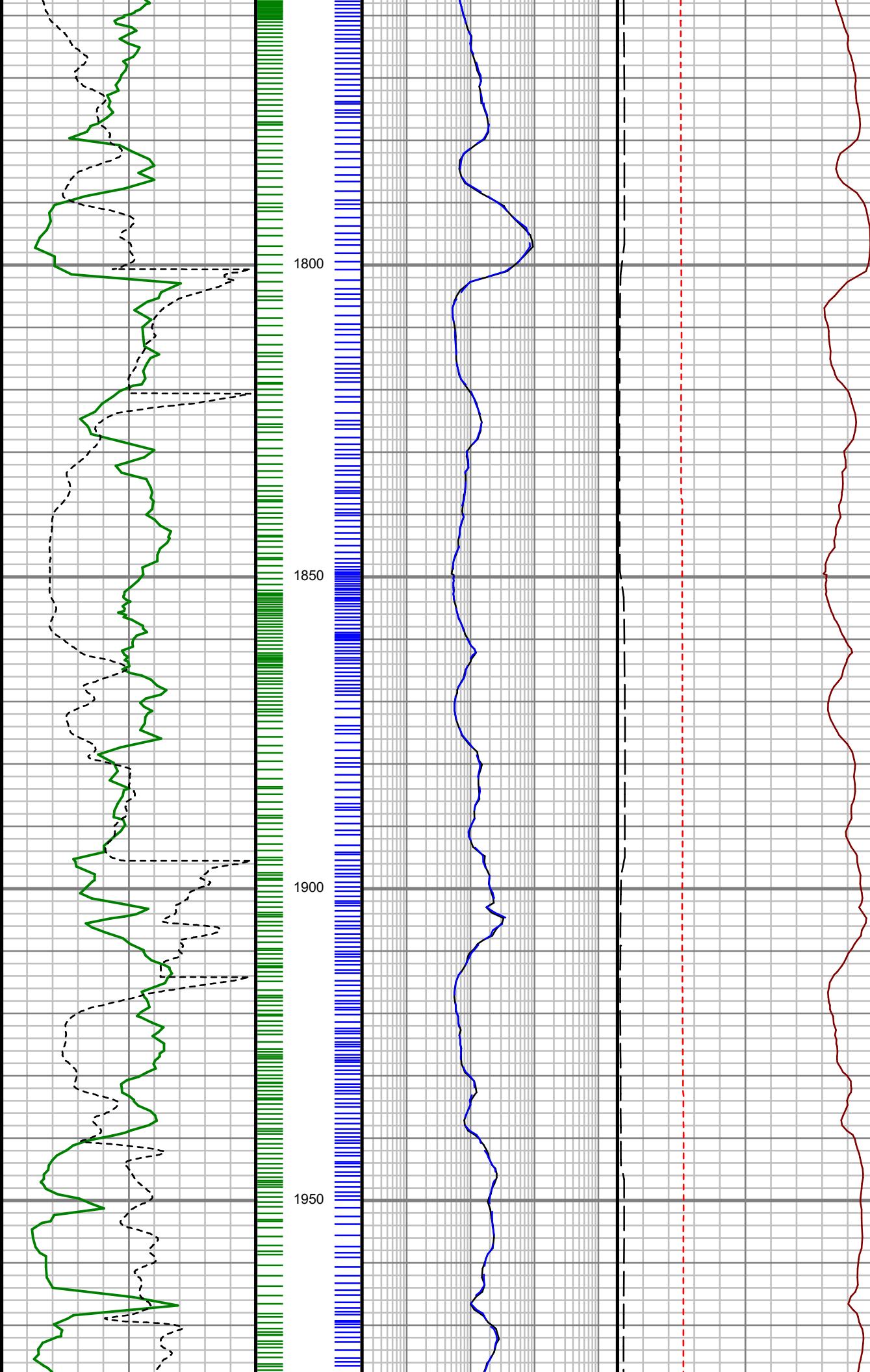
S: 15 MD: 1450.00 ft  
Inc: 29.84 deg Az:  
77.94 deg TVD:  
1349.79 ft



S: 16 MD: 1544.00 ft  
Inc: 28.03 deg Az:  
76.54 deg TVD:  
1432.06 ft

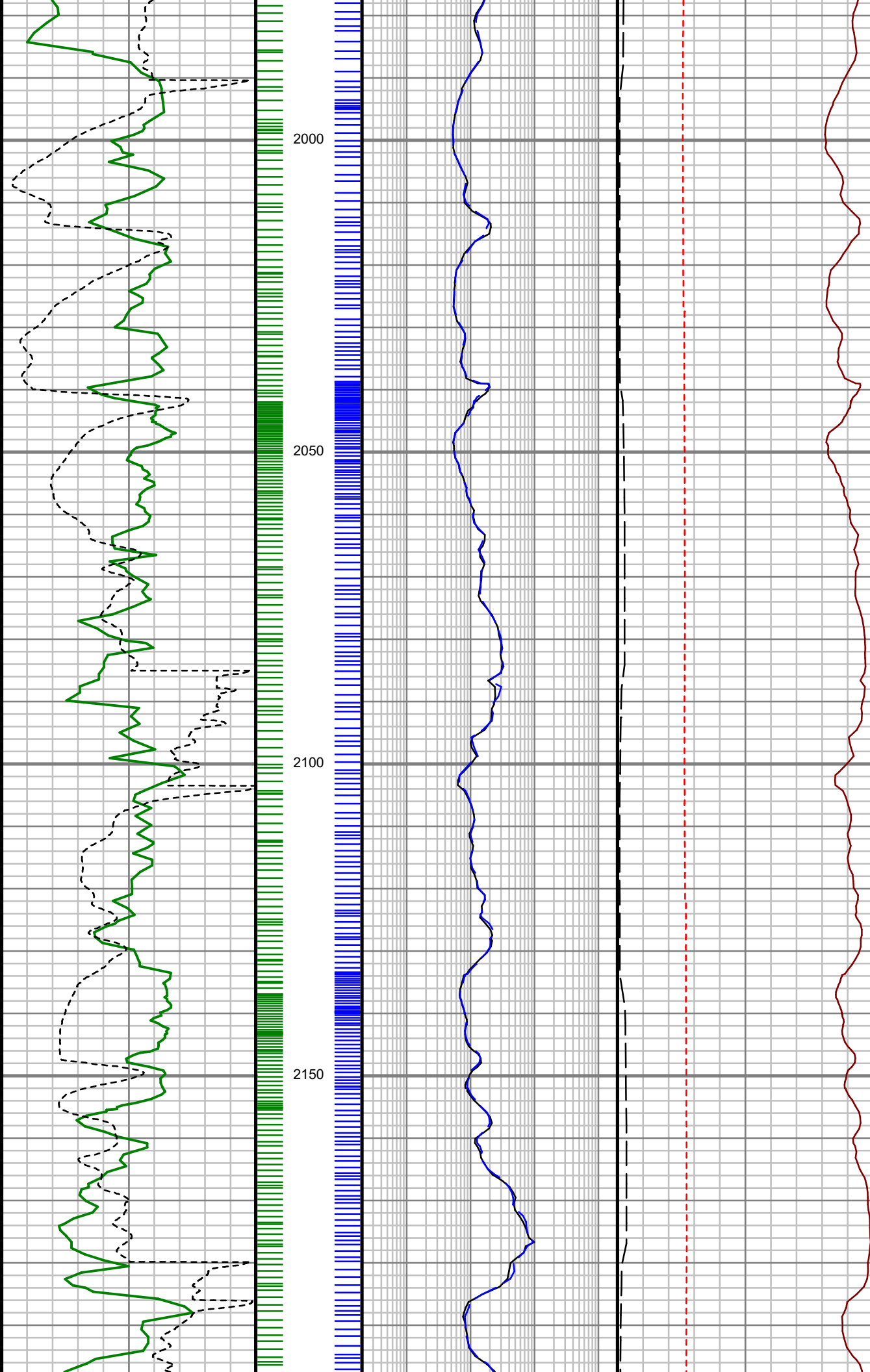
S: 17 MD: 1638.00 ft  
Inc: 29.05 deg Az:  
78.55 deg TVD:  
1514.64 ft

S: 18 MD: 1733.00 ft  
Inc: 29.16 deg Az:  
78.18 deg TVD:  
1597.64 ft



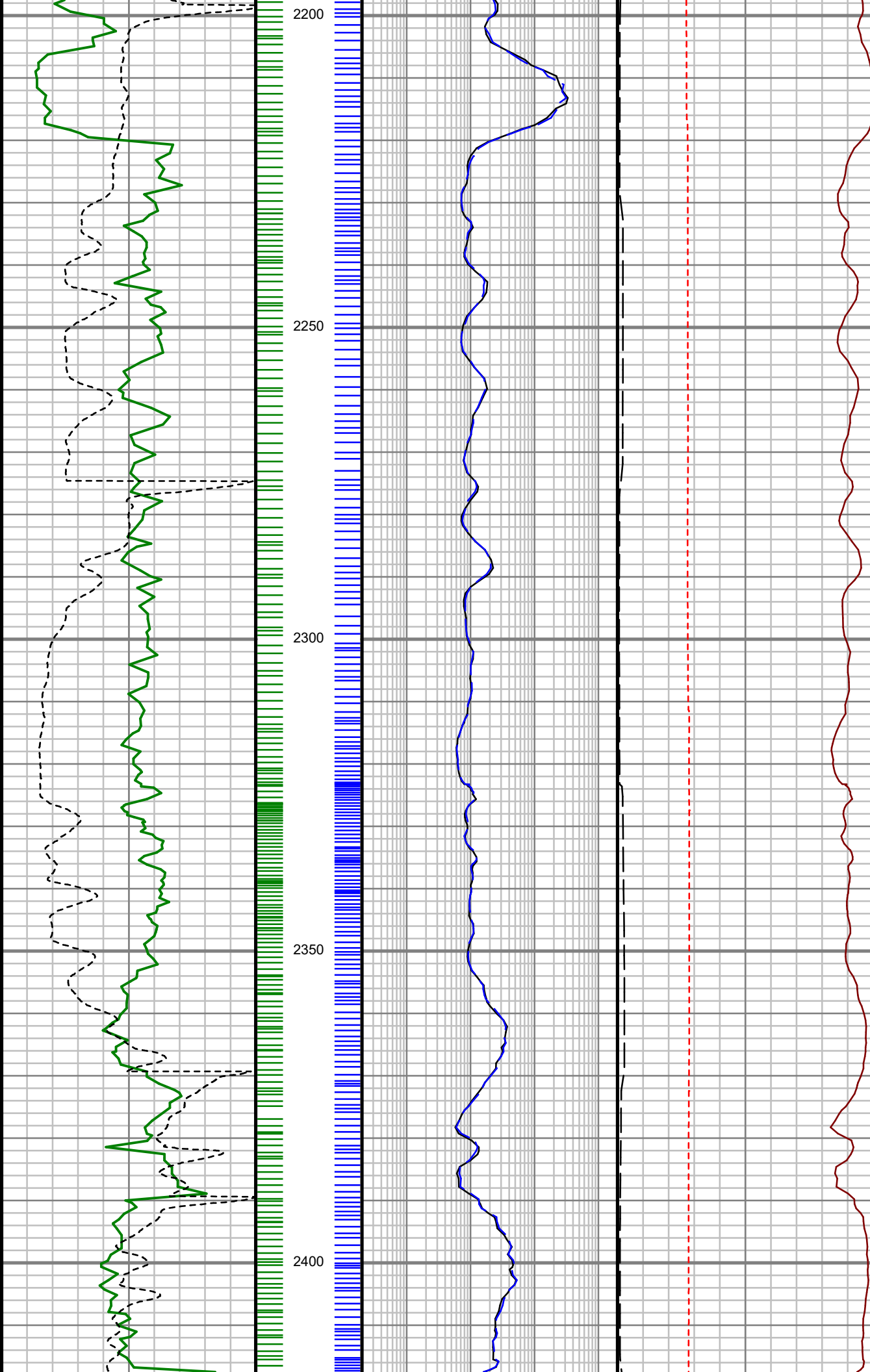
S: 19 MD: 1827.00 ft  
Inc: 29.50 deg Az:  
73.12 deg TVD:  
1679.60 ft

S: 20 MD: 1922.00 ft  
Inc: 29.86 deg Az:  
72.22 deg TVD:  
1762.14 ft



S: 21 MD: 2016.00 ft  
Inc: 28.62 deg Az:  
72.81 deg TVD:  
1844.16 ft

S: 22 MD: 2110.00 ft  
Inc: 29.19 deg Az:  
73.85 deg TVD:  
1926.45 ft

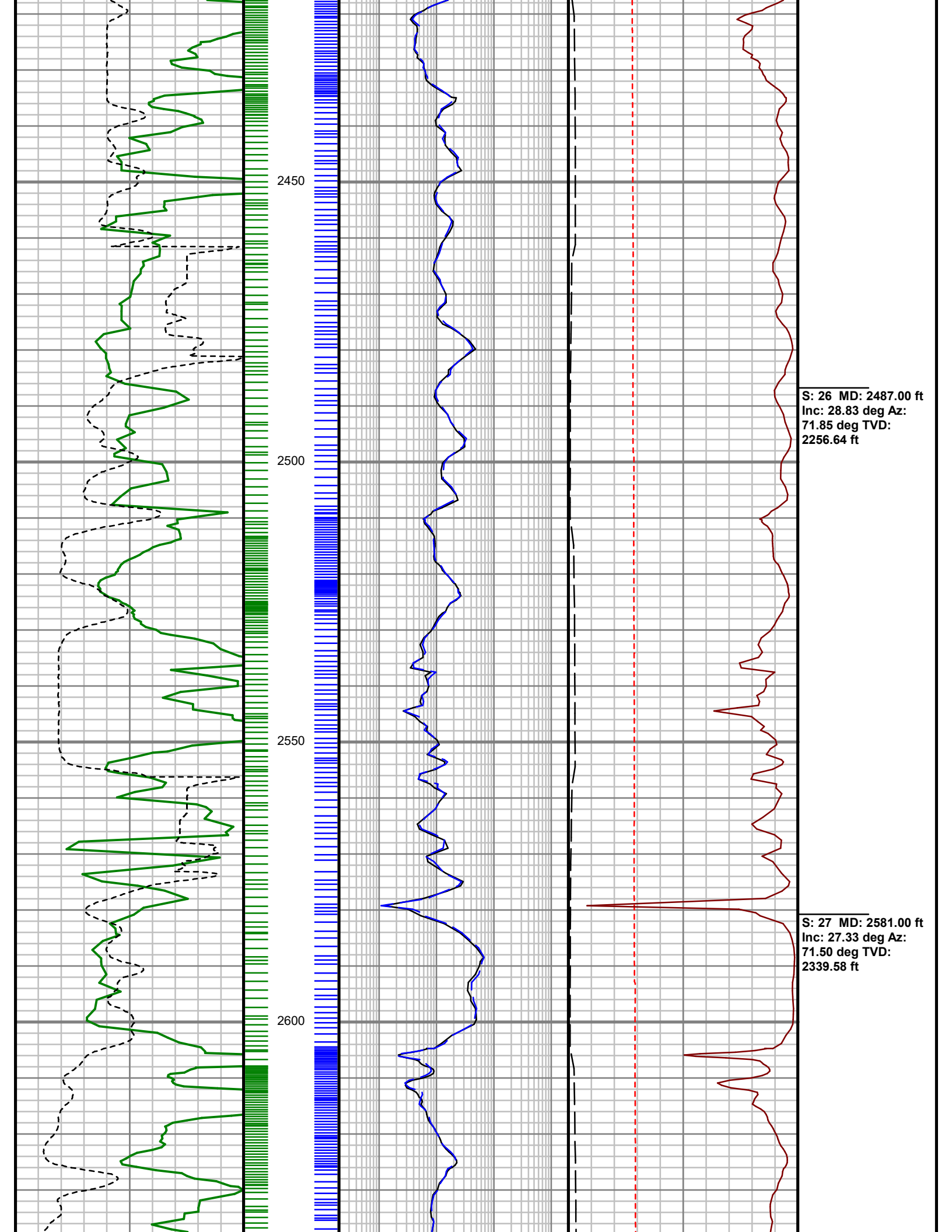


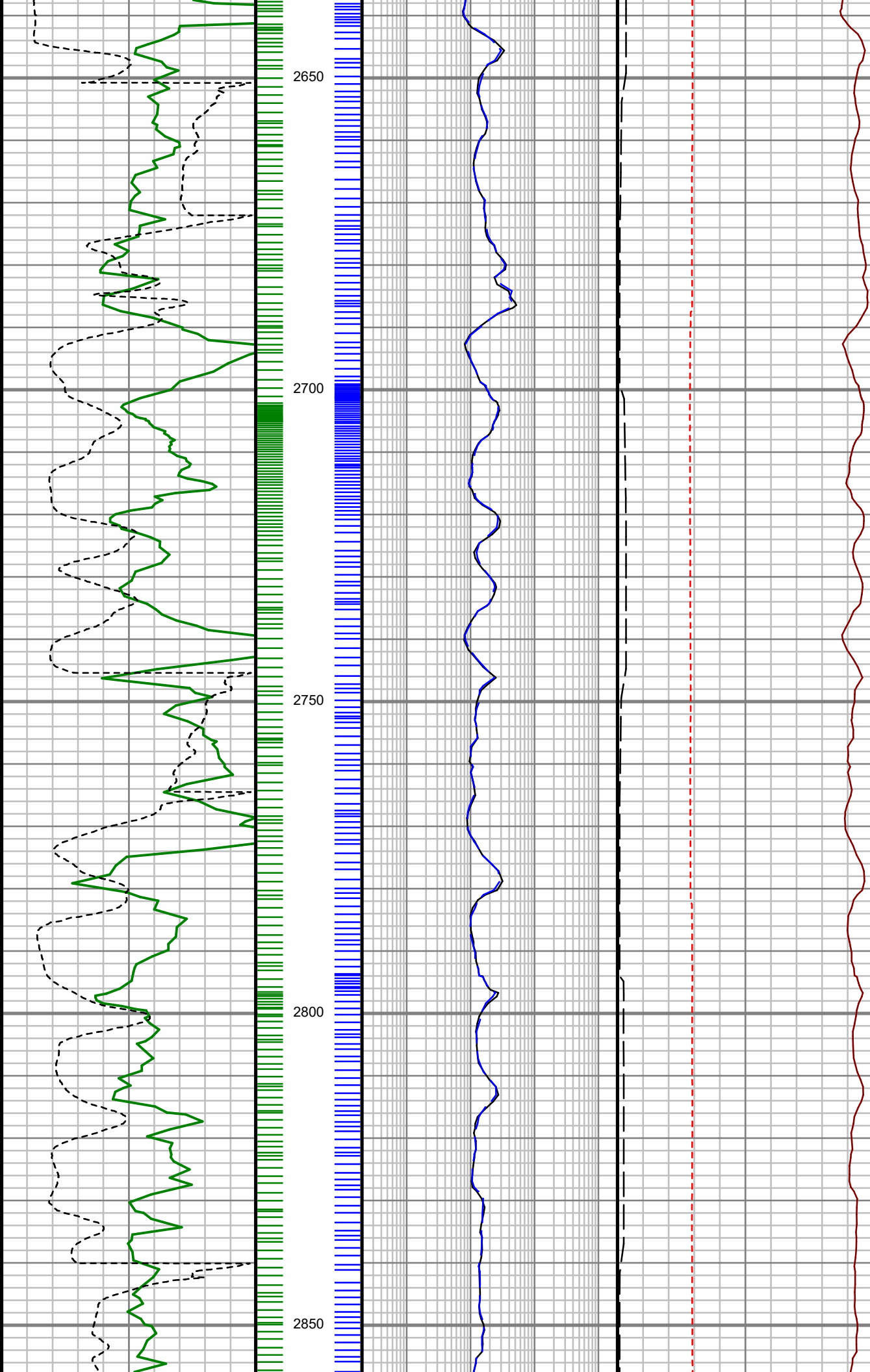
S: 23 MD: 2204.00 ft  
Inc: 29.46 deg Az:  
71.16 deg TVD:  
2008.41 ft

S: 24 MD: 2298.00 ft  
Inc: 28.46 deg Az:  
69.90 deg TVD:  
2090.65 ft

S: 25 MD: 2393.00 ft  
Inc: 28.50 deg Az:  
70.43 deg TVD:  
2174.16 ft

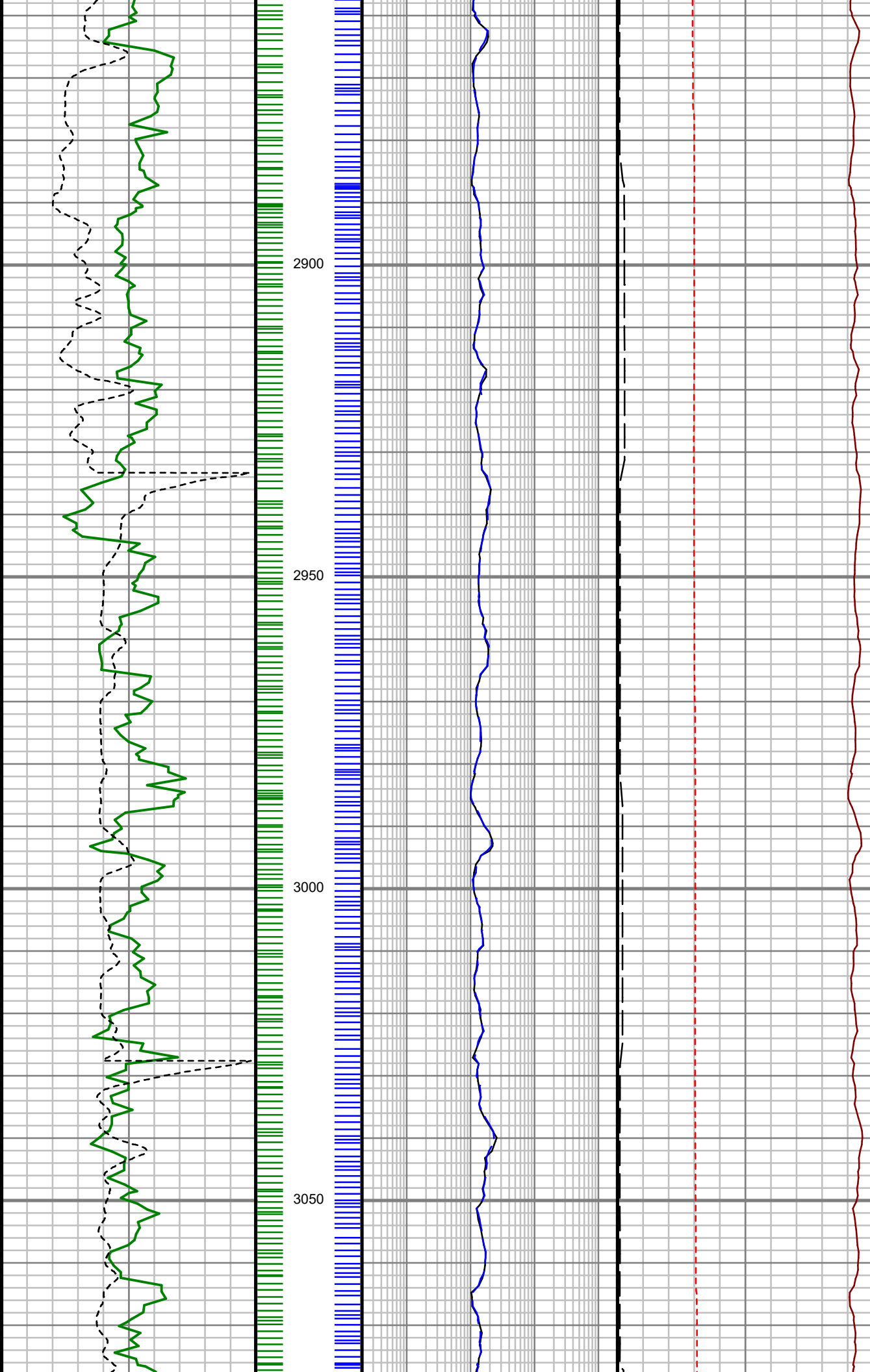






S: 28 MD: 2676.00 ft  
Inc: 27.80 deg Az:  
70.77 deg TVD:  
2423.80 ft

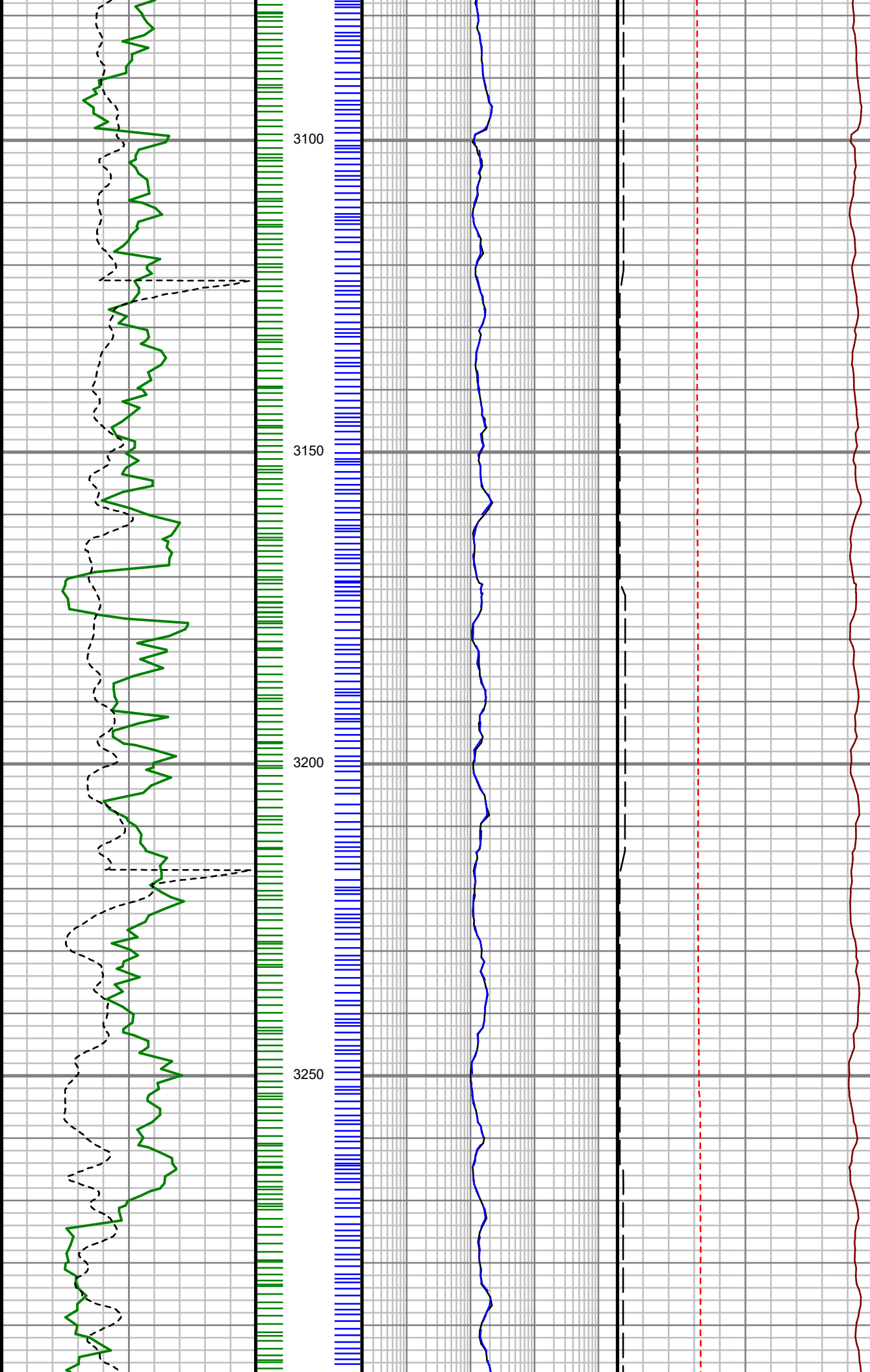
S: 29 MD: 2770.00 ft  
Inc: 28.07 deg Az:  
71.27 deg TVD:  
2506.84 ft



S: 30 MD: 2865.00 ft  
Inc: 26.69 deg Az:  
70.75 deg TVD:  
2591.20 ft

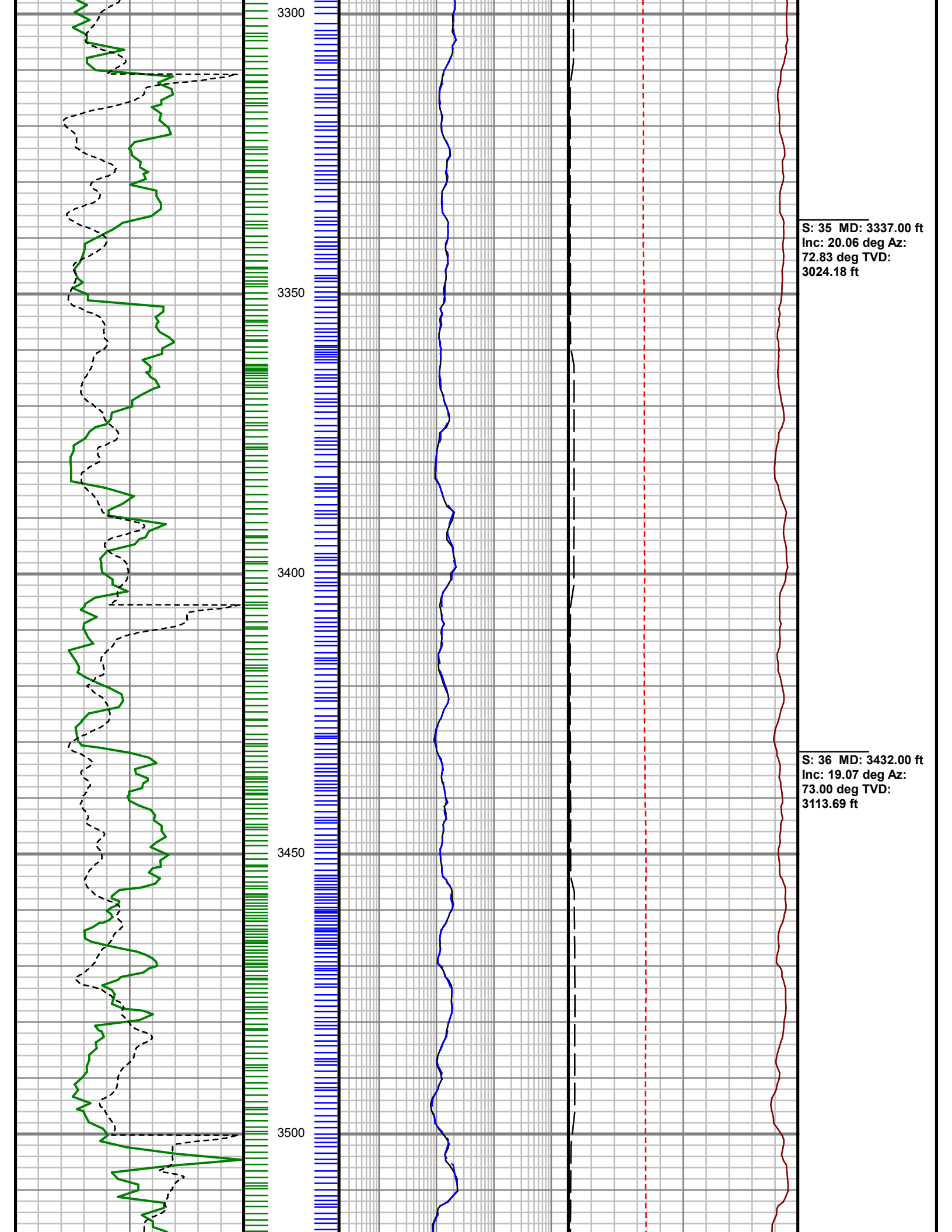
S: 31 MD: 2959.00 ft  
Inc: 25.34 deg Az:  
71.05 deg TVD:  
2675.67 ft

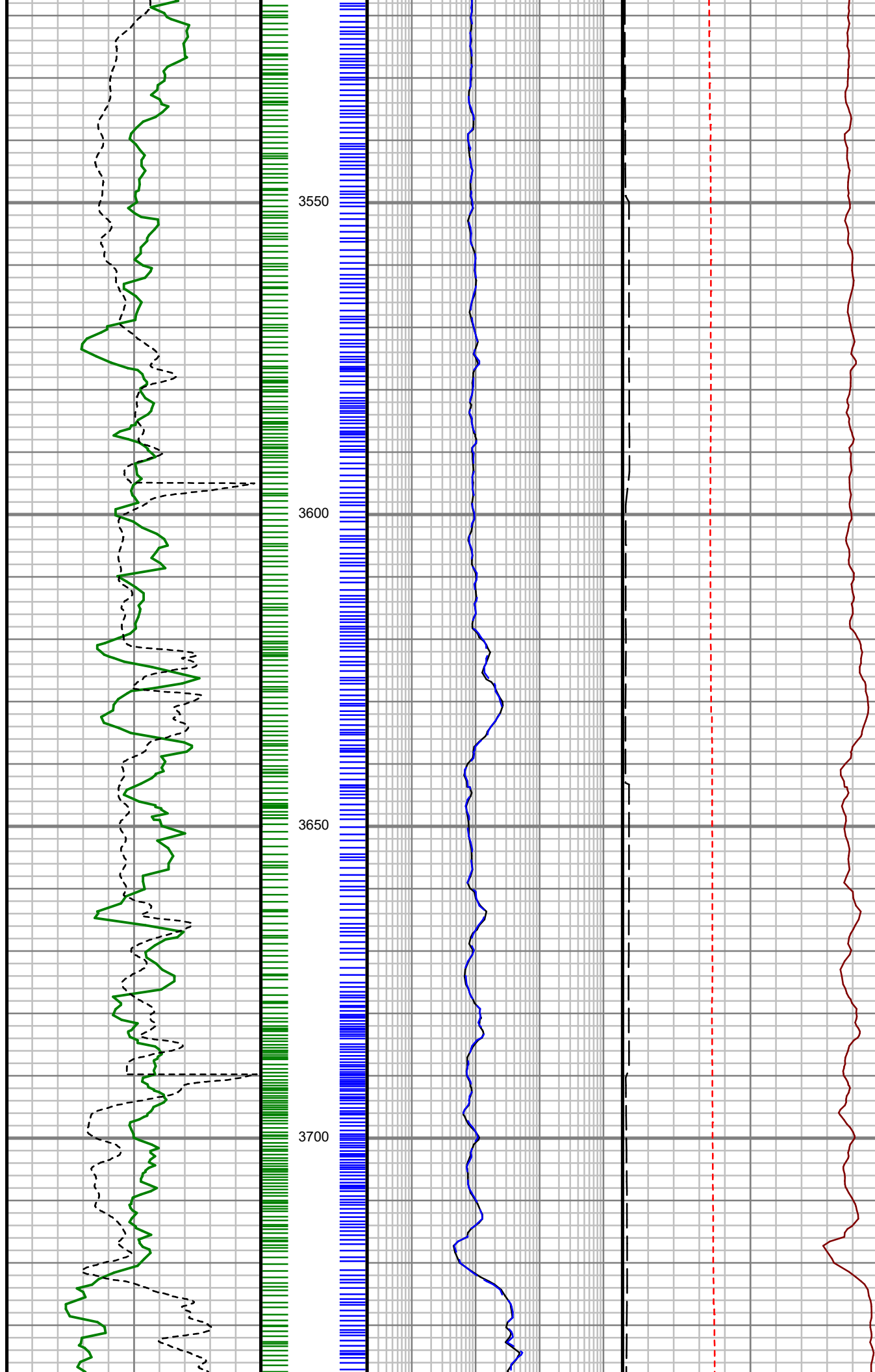
S: 32 MD: 3054.00 ft  
Inc: 24.28 deg Az:  
70.71 deg TVD:  
2761.90 ft



S: 33 MD: 3148.00 ft  
Inc: 22.73 deg Az:  
71.29 deg TVD:  
2848.10 ft

S: 34 MD: 3243.00 ft  
Inc: 21.19 deg Az:  
71.99 deg TVD:  
2936.20 ft

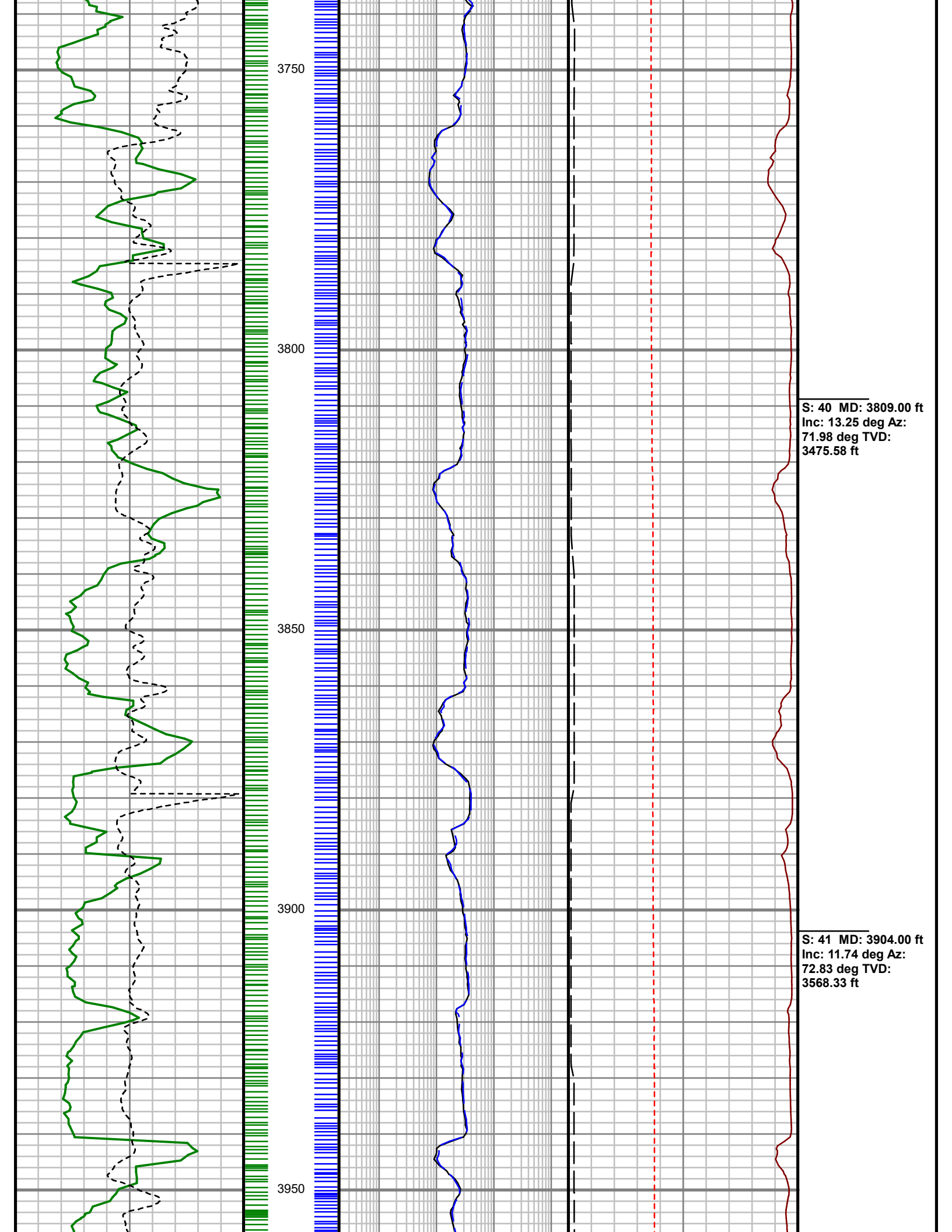


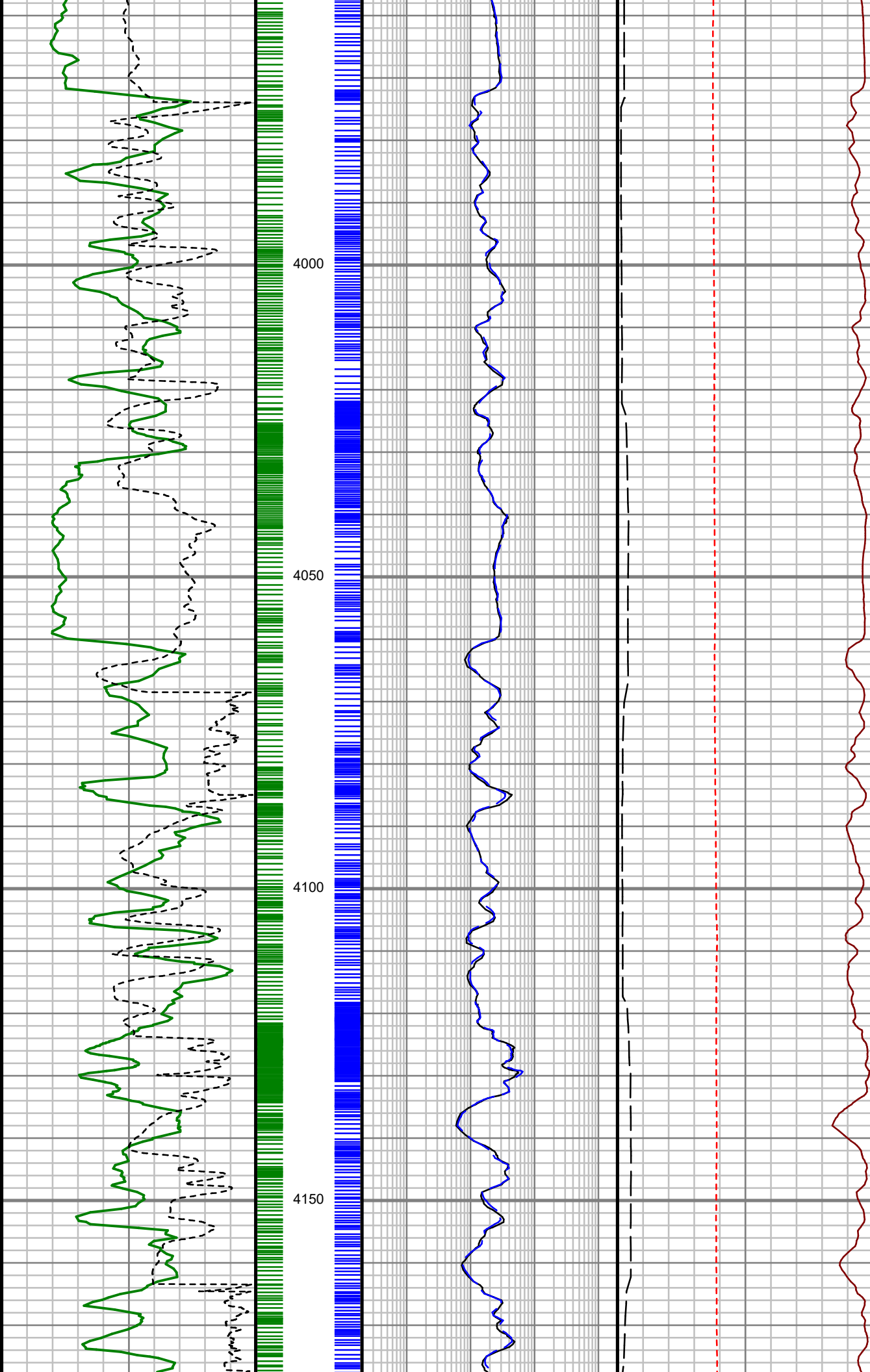


S: 37 MD: 3526.00 ft  
Inc: 17.62 deg Az:  
73.21 deg TVD:  
3202.91 ft

S: 38 MD: 3620.00 ft  
Inc: 16.47 deg Az:  
72.10 deg TVD:  
3292.78 ft

S: 39 MD: 3715.00 ft  
Inc: 14.50 deg Az:  
73.03 deg TVD:  
3384.33 ft

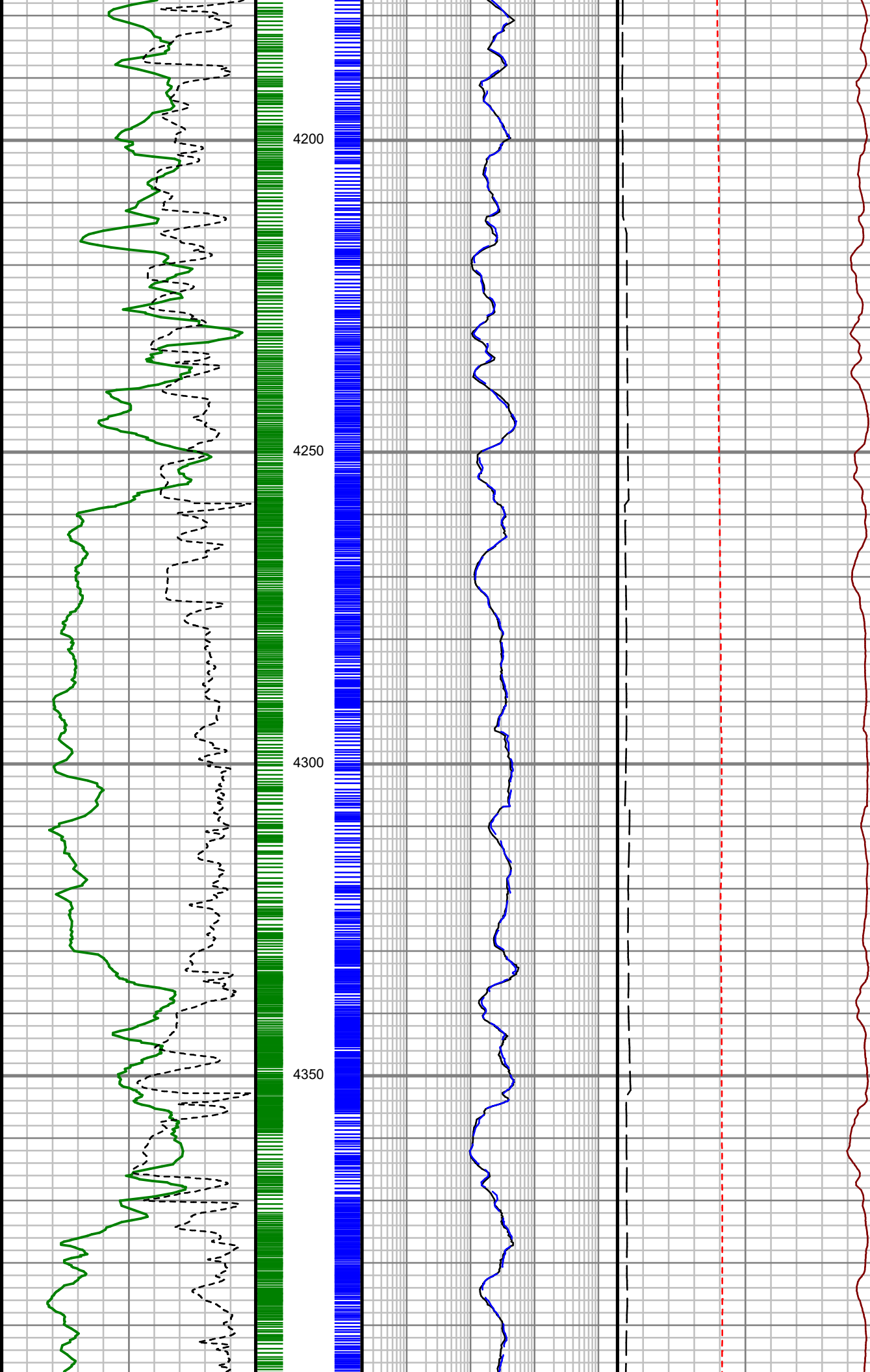




S: 42 MD: 3998.00 ft  
Inc: 10.75 deg Az:  
74.09 deg TVD:  
3660.53 ft

S: 43 MD: 4093.00 ft  
Inc: 7.93 deg Az: 73.56  
deg TVD: 3754.26 ft

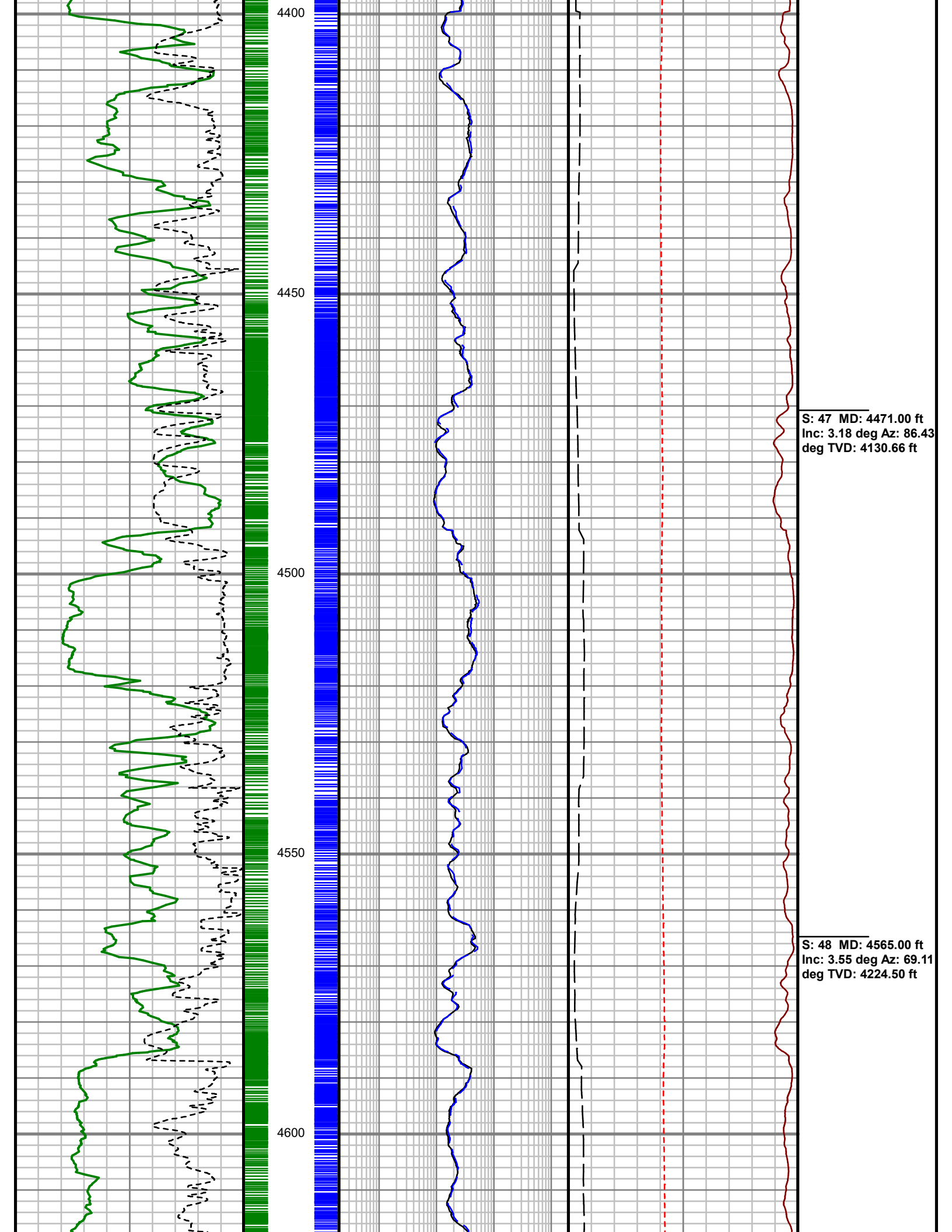


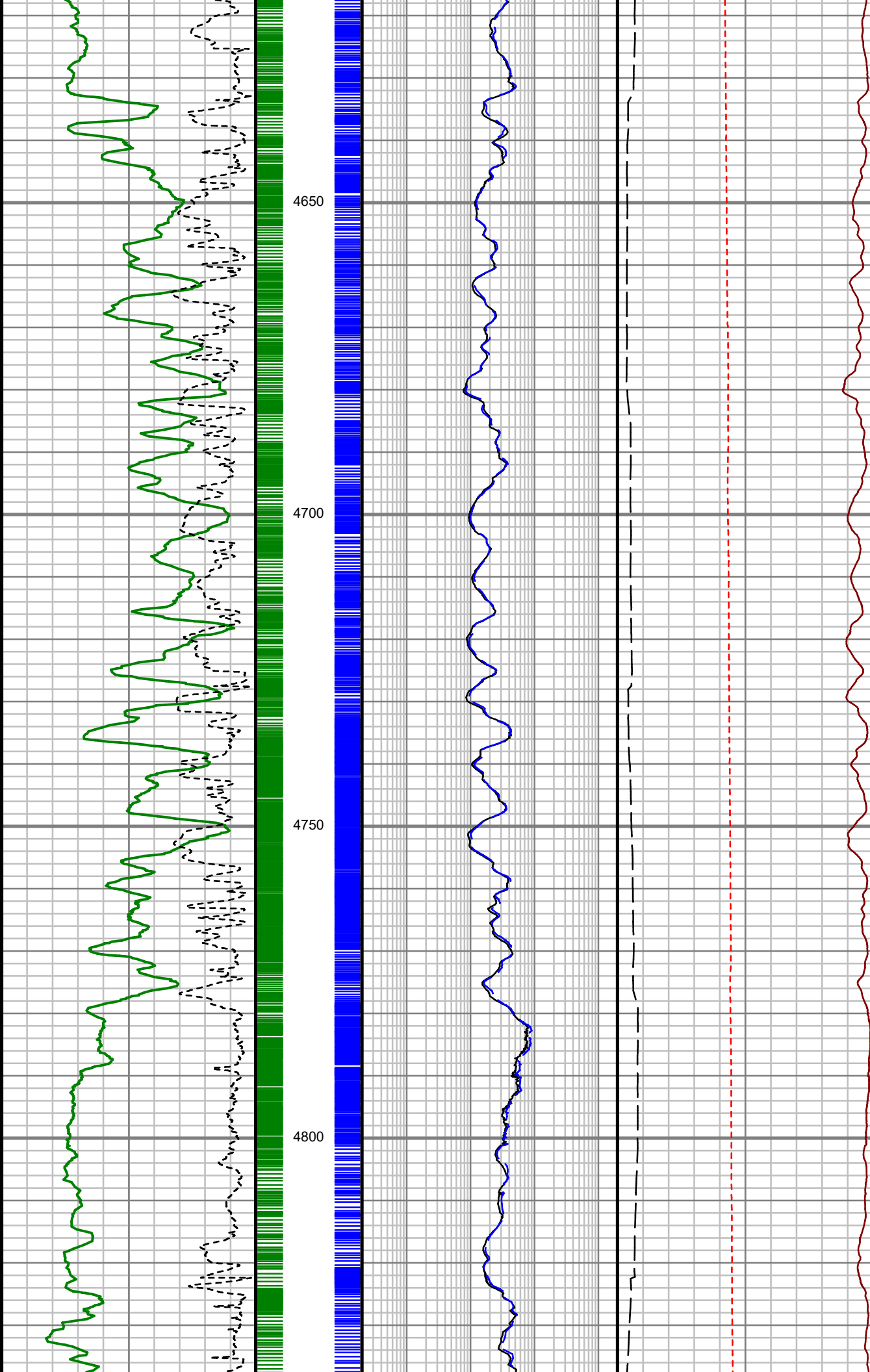


S: 44 MD: 4187.00 ft  
Inc: 5.55 deg Az: 75.15  
deg TVD: 3847.60 ft

S: 45 MD: 4282.00 ft  
Inc: 5.24 deg Az: 78.31  
deg TVD: 3942.18 ft

S: 46 MD: 4376.00 ft  
Inc: 4.23 deg Az: 79.45  
deg TVD: 4035.86 ft





4650

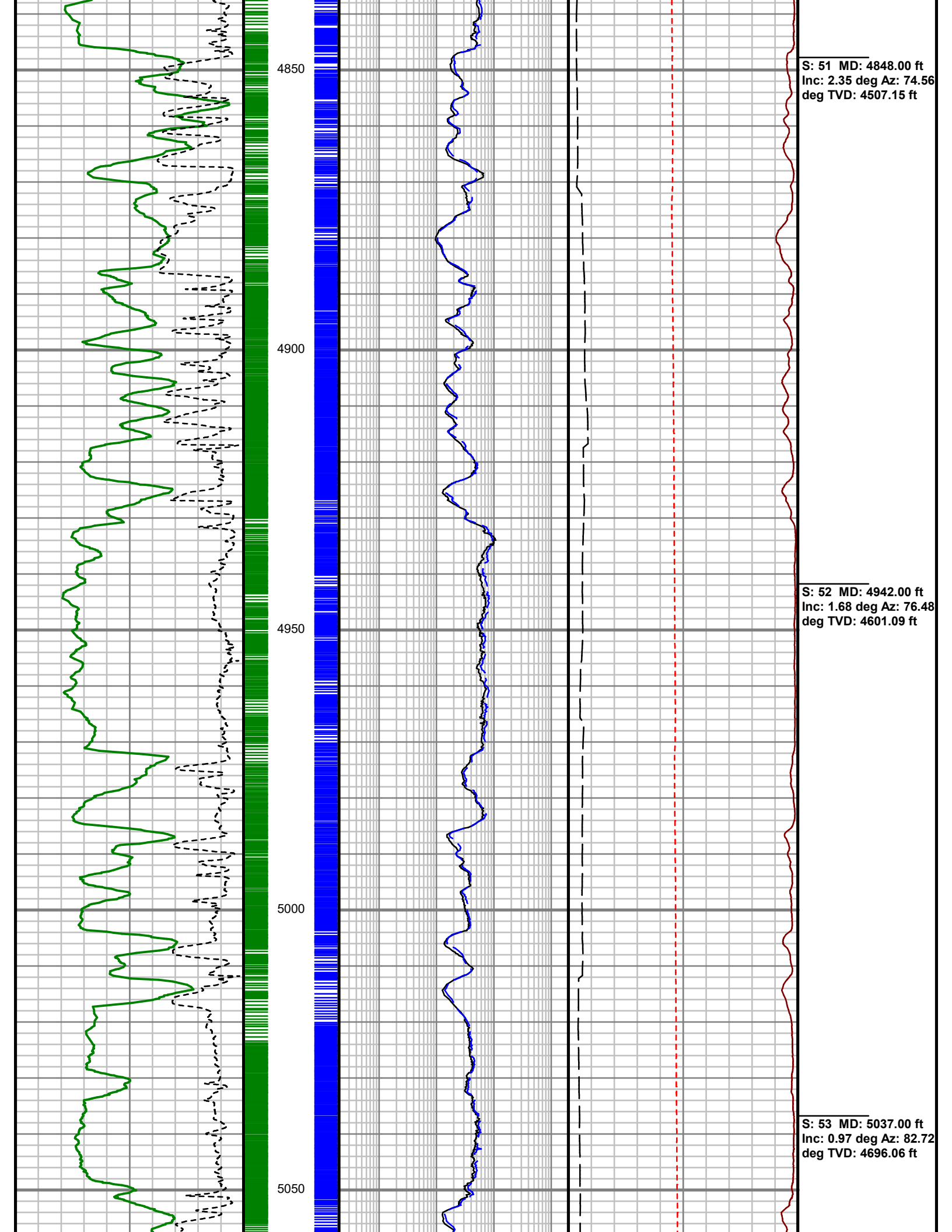
4700

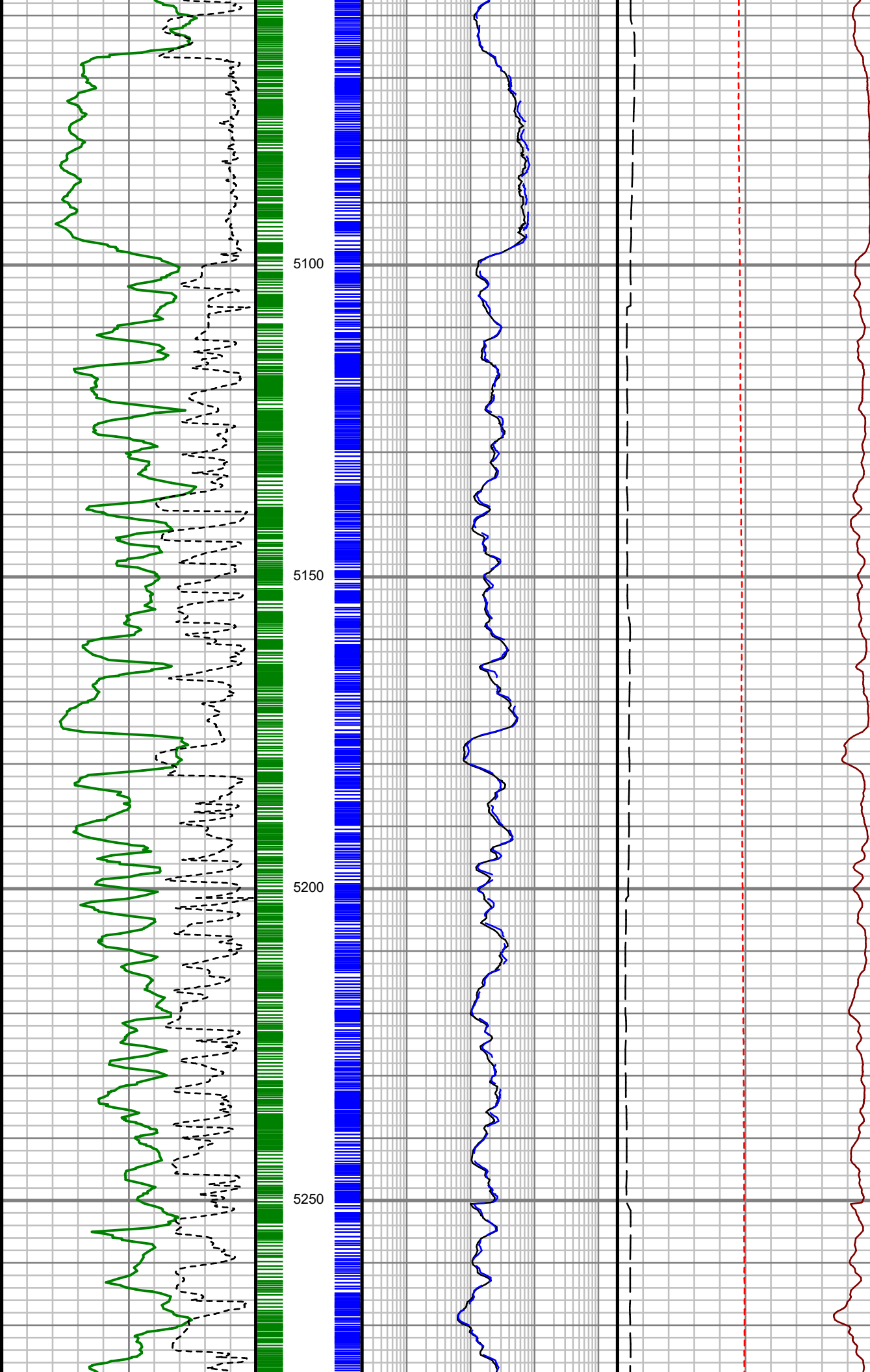
4750

4800

S: 49 MD: 4659.00 ft  
Inc: 3.03 deg Az: 67.88  
deg TVD: 4318.34 ft

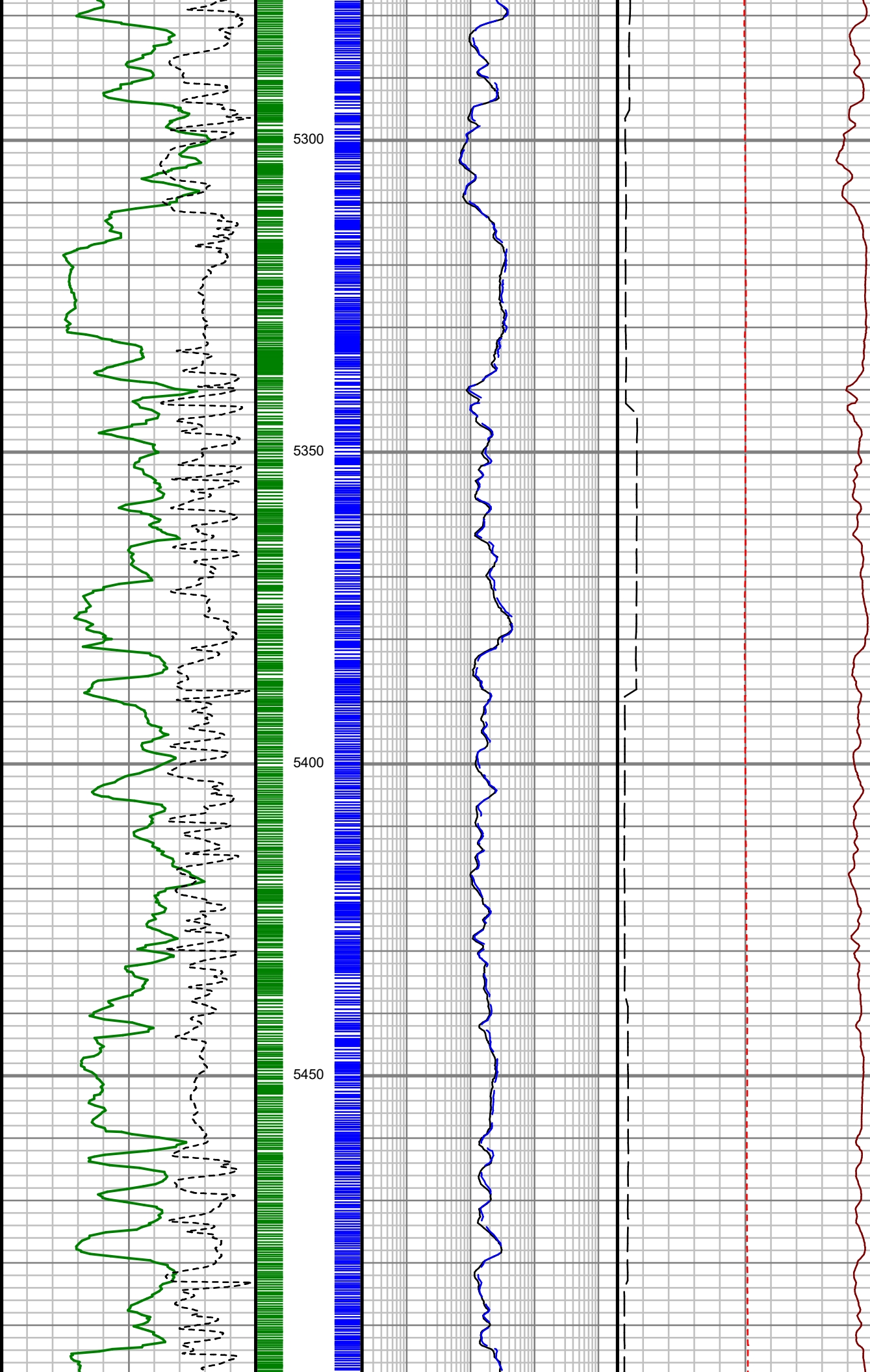
S: 50 MD: 4753.00 ft  
Inc: 2.56 deg Az: 71.22  
deg TVD: 4412.23 ft





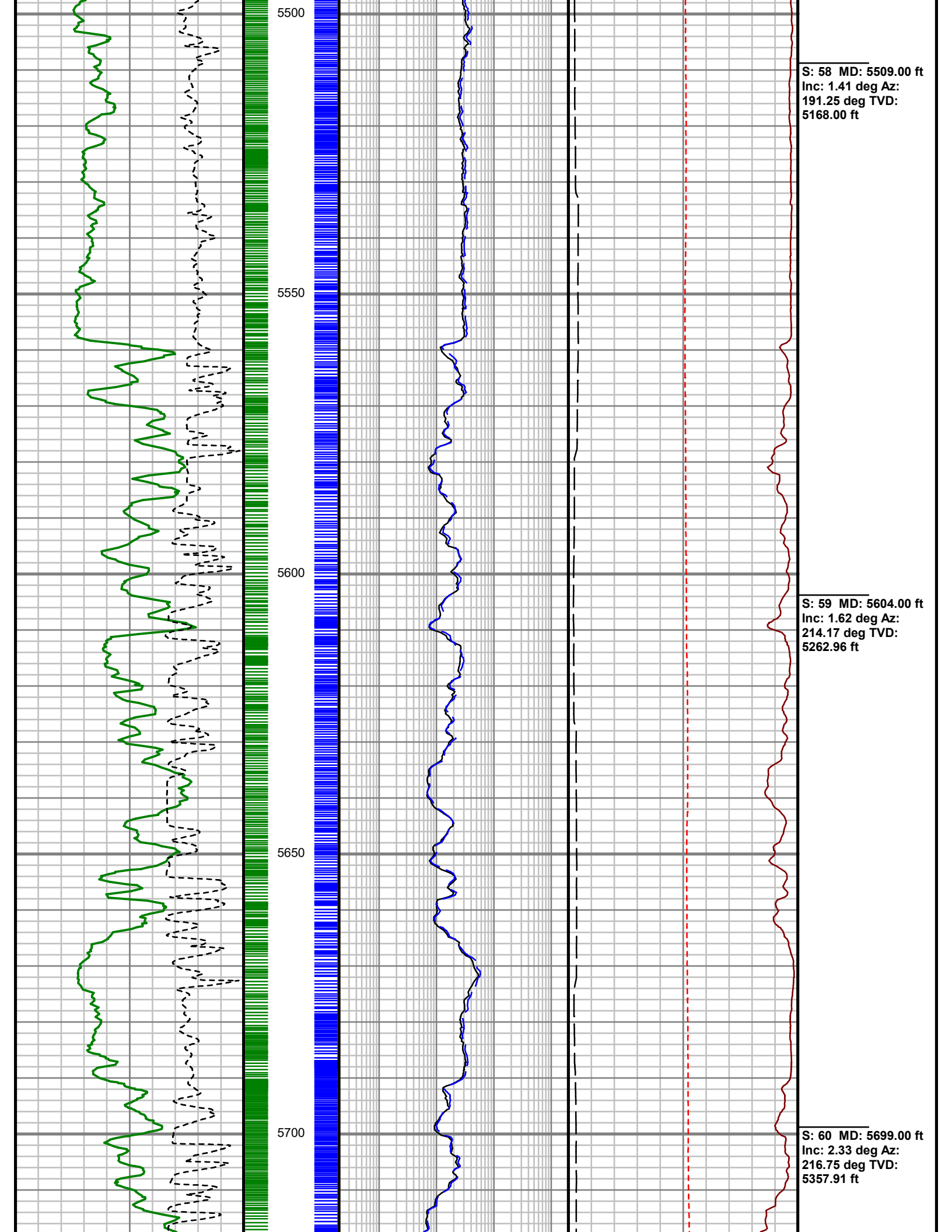
S: 54 MD: 5131.00 ft  
Inc: 0.93 deg Az: 95.04  
deg TVD: 4790.05 ft

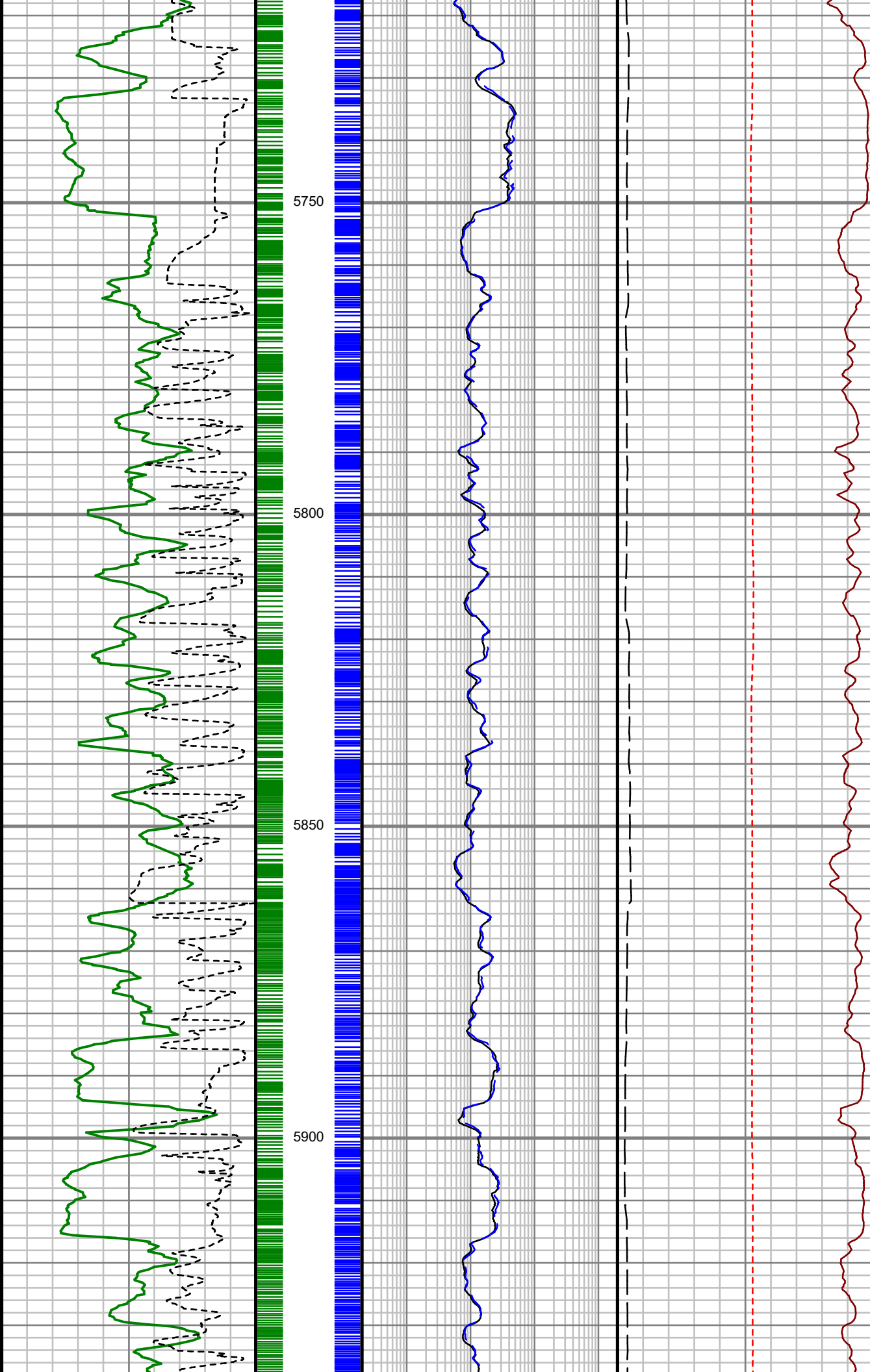
S: 55 MD: 5226.00 ft  
Inc: 0.70 deg Az:  
108.62 deg TVD:  
4885.04 ft



S: 56 MD: 5320.00 ft  
Inc: 0.81 deg Az:  
154.08 deg TVD:  
4979.03 ft

S: 57 MD: 5415.00 ft  
Inc: 1.09 deg Az:  
178.03 deg TVD:  
5074.02 ft

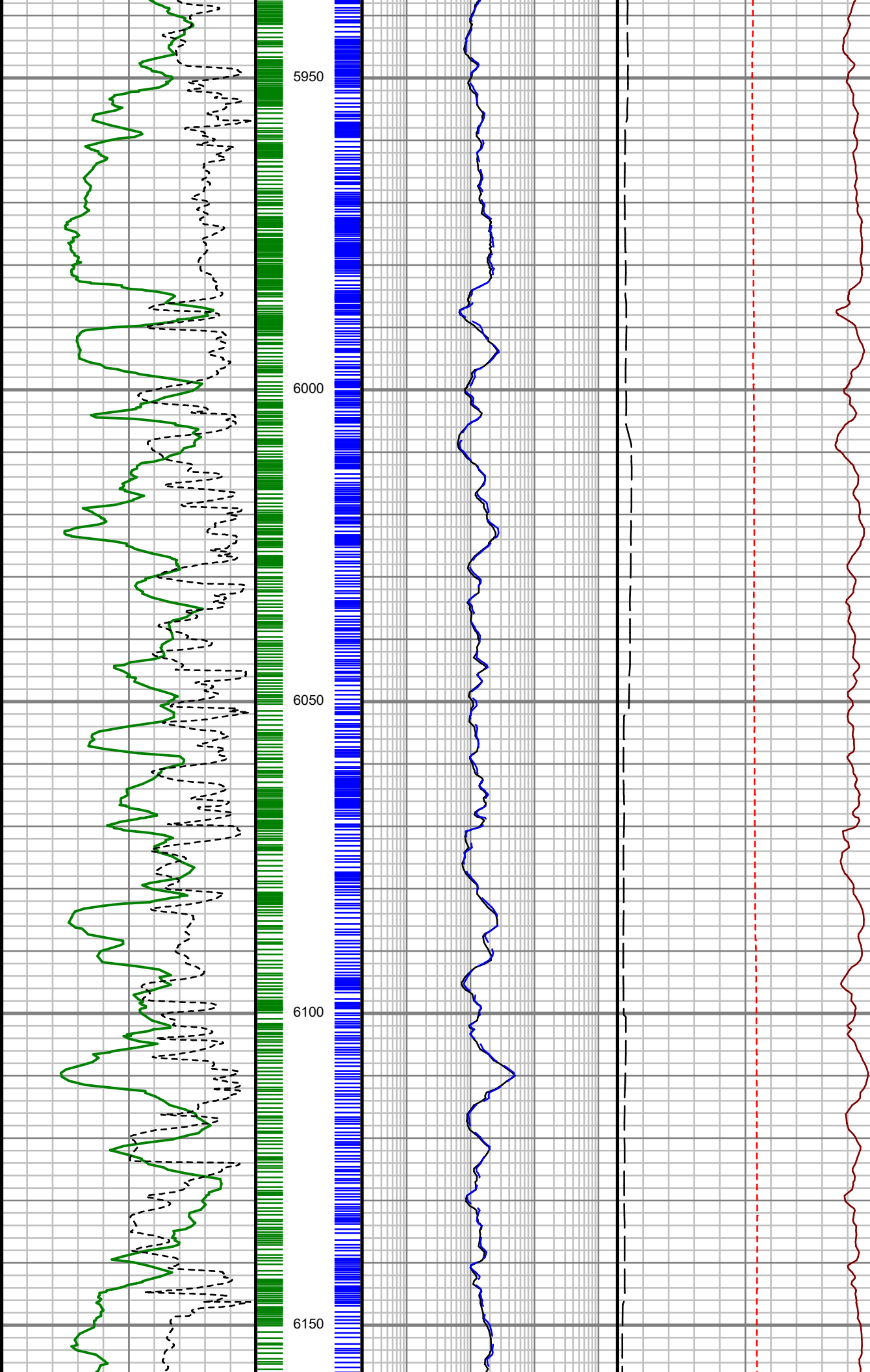




S: 61 MD: 5793.00 ft  
Inc: 2.51 deg Az:  
221.09 deg TVD:  
5451.82 ft

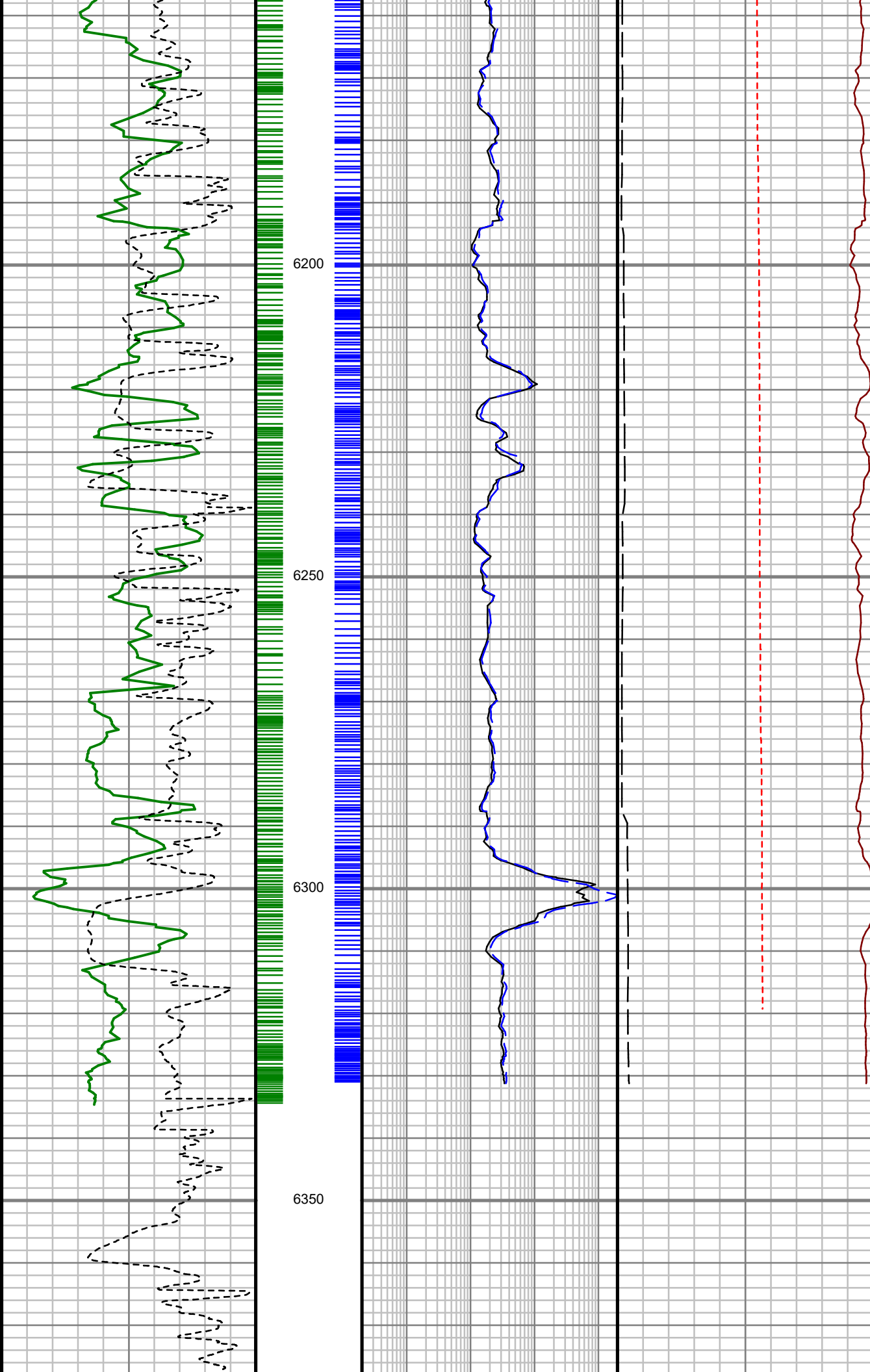
S: 62 MD: 5887.00 ft  
Inc: 2.65 deg Az:  
223.87 deg TVD:  
5545.73 ft





S: 63 MD: 5982.00 ft  
Inc: 2.52 deg Az:  
214.06 deg TVD:  
5640.63 ft

S: 64 MD: 6076.00 ft  
Inc: 2.97 deg Az:  
202.12 deg TVD:  
5734.52 ft



S: 65 MD: 6171.00 ft  
Inc: 3.32 deg Az:  
210.55 deg TVD:  
5829.38 ft

S: 66 MD: 6265.00 ft  
Inc: 3.61 deg Az:  
213.65 deg TVD:  
5923.21 ft

S: 67 MD: 6307.00 ft  
Inc: 4.06 deg Az:  
221.86 deg TVD:  
5965.12 ft

Log Bottom/ PRT -  
6330.98'  
Log Bottom/ GAMMA -  
6334.38'

**TD/ 6377'**

Comments

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