



5" = 100' FEET MD

COMPANY : ANDARKO E&P ONSHORE LLC
WELL : LAND FED 30N-29HZ
FIELD : WATTENBURG
COUNTY : WELD
STATE : COLORADO
COUNTRY : U.S.A.
UWI : 051234239800

COMPANY : ANDARKO E&P ONSHORE LLC

WELL : LAND FED 30N-29HZ

FIELD : WATTENBURG

COUNTY : WELD

STATE : COLORADO

COUNTRY : U.S.A.

UWI : 051234239800

WELL LOCATION

LAT:40.0990280°N LONG:104.8056810°W

N:14562853.23 ft E:1694757.21 ft

SEC:32

TWP: 2N

RANGE: 66W

OTHER SERVICES

DIRECTIONAL
ROP

DEPTH REF. : RKB

REF. HEIGHT : 20.000 ft

RKB to Ground Level

GROUND LEVEL : 4899.000 ft

G.L. to MEAN SEA LEVEL

BOREHOLE RECORD

DEVIATION RECORD

HOLE SIZE in	FROM ft	TO ft	INCLINATION deg	FROM ft	TO ft
13.5	0	1862	0 - 12	0	2173
8.5	1862	12910	12	2173	5854
			12 - 0	5854	6604
			0 - 90	6604	7736
			88 - 92	7736	12910

CASING RECORD

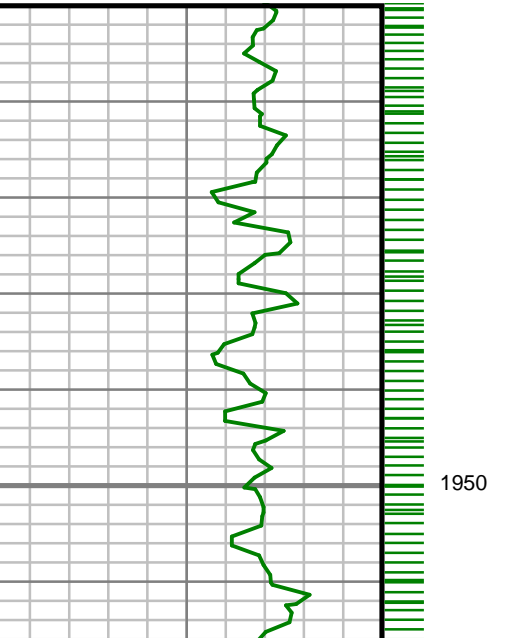
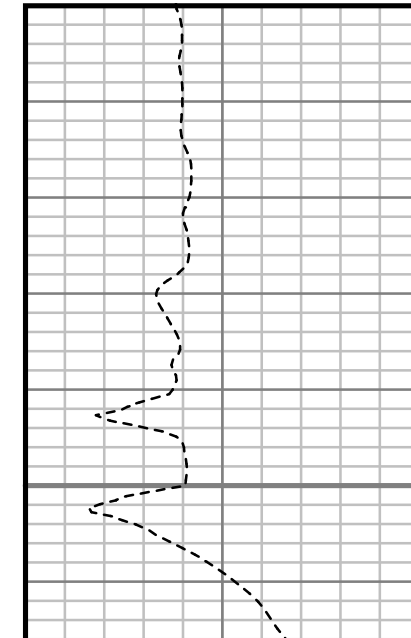
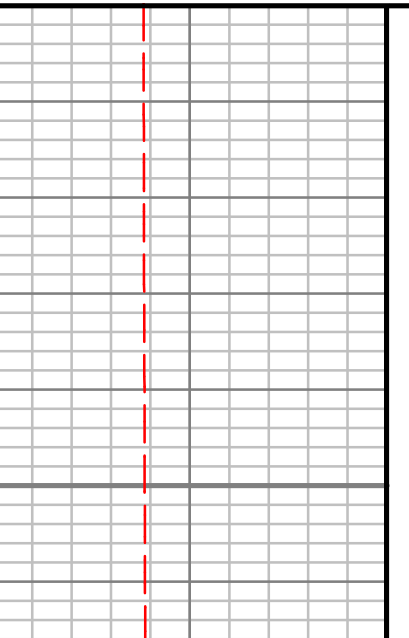
CASING SIZE in	FROM ft	TO ft			
9.625	0	1850			
			DRILLING CO. : PRECISION DRILLING		
			RIG : 461		
			LWD UNIT NO. : MWD-00282-CDISTRICT : CASPER		
			SPUD DATE : 06/05/2016		
			LWD START DATE : 06/05/2016	DEPTH : 1900 ft	
			LWD END DATE : 06/08/2016	DEPTH : 12910 ft	
			TOTAL DEPTH : 12910 ft		

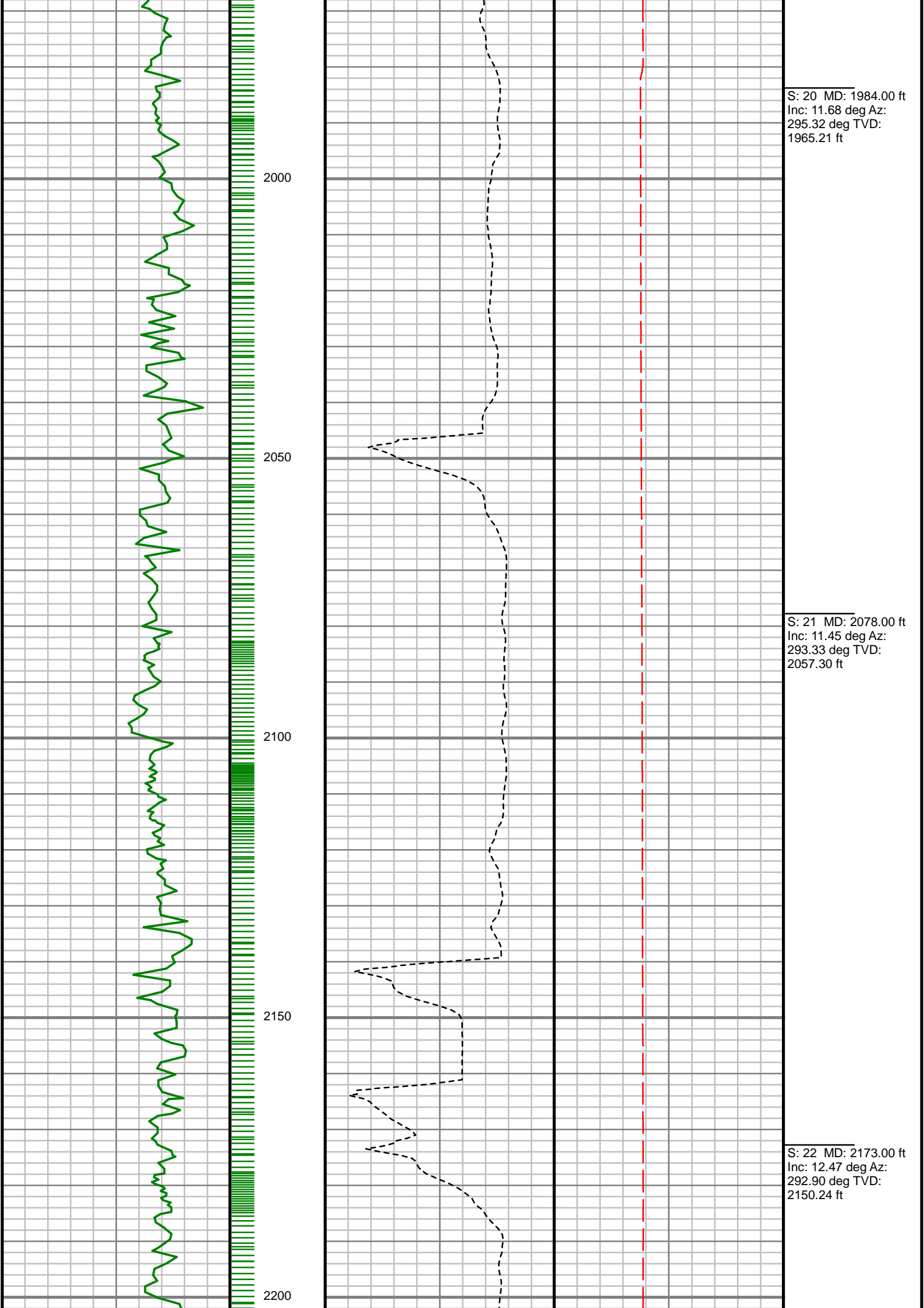
Run Data

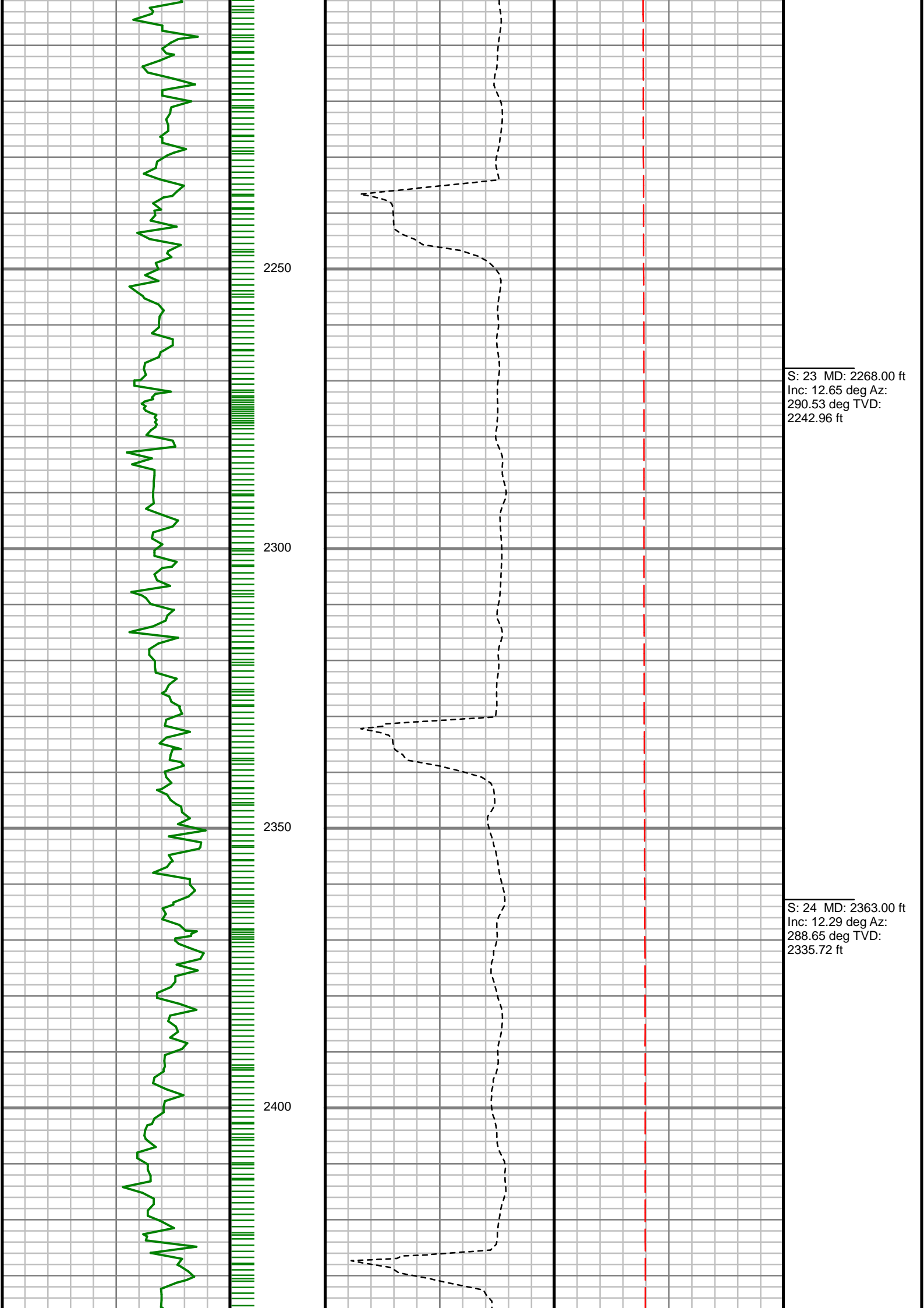
[illegible]

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.

ANADARKO E&P ONSHORE LLC
LAND FED 30N-29HZ
WATTENBERG FIELD
WELD COUNTY, COLORADO
05123423980000

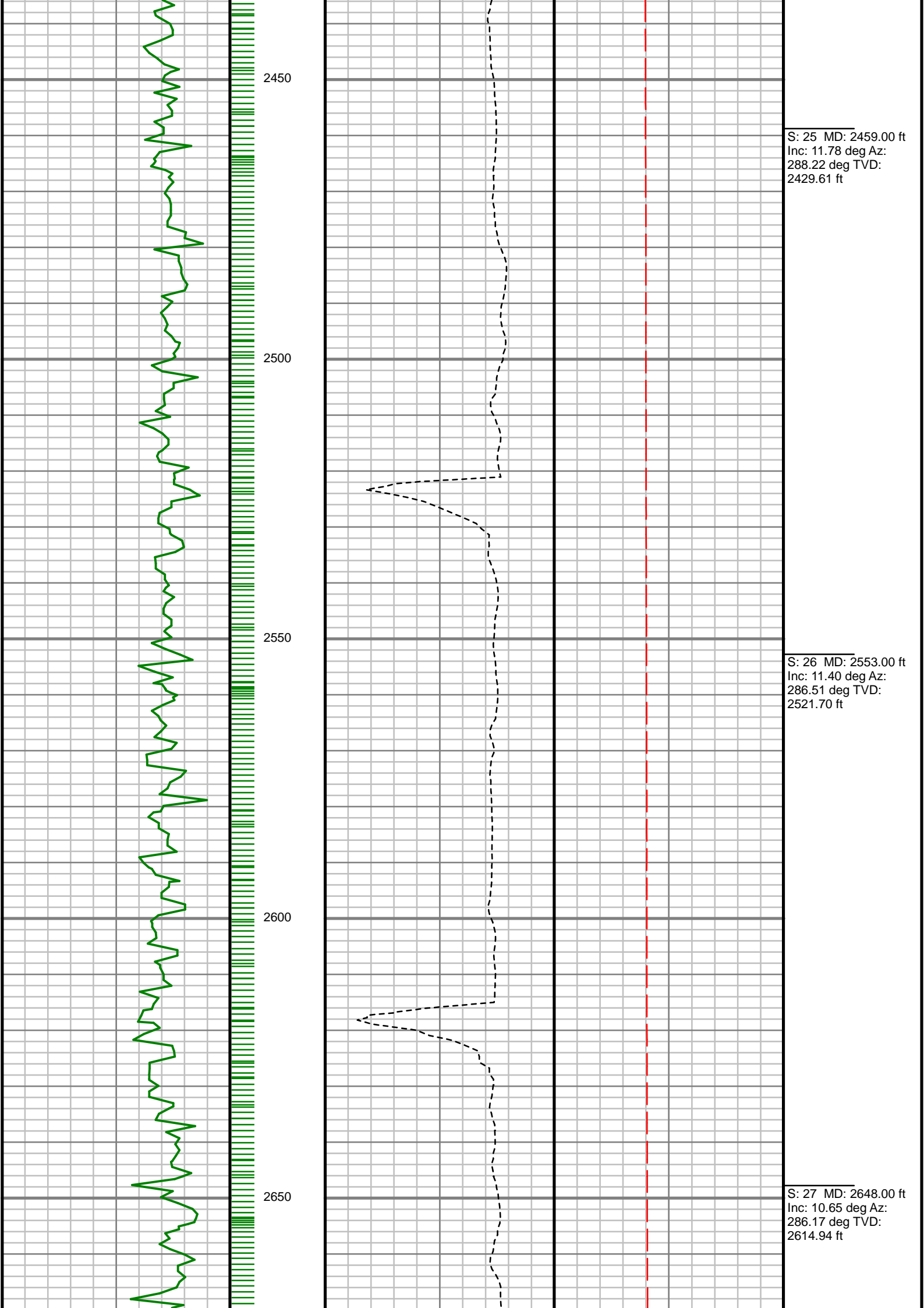
Gamma Ray (GR) Unit = aapi	Rate of Penetration (ROP) Unit = ft/hr	Tool Temperature (TEMP) Unit = °F	Comments
			

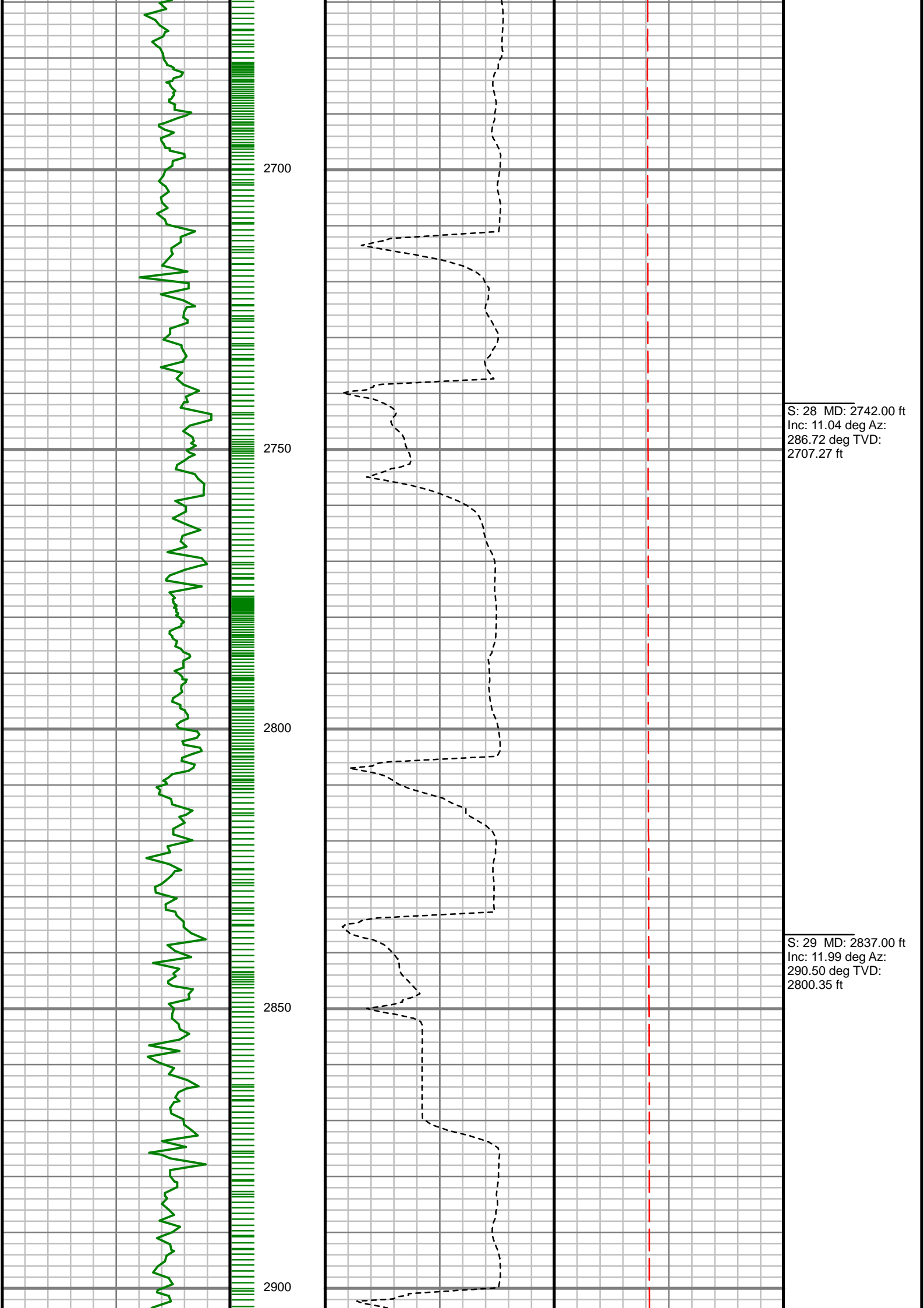


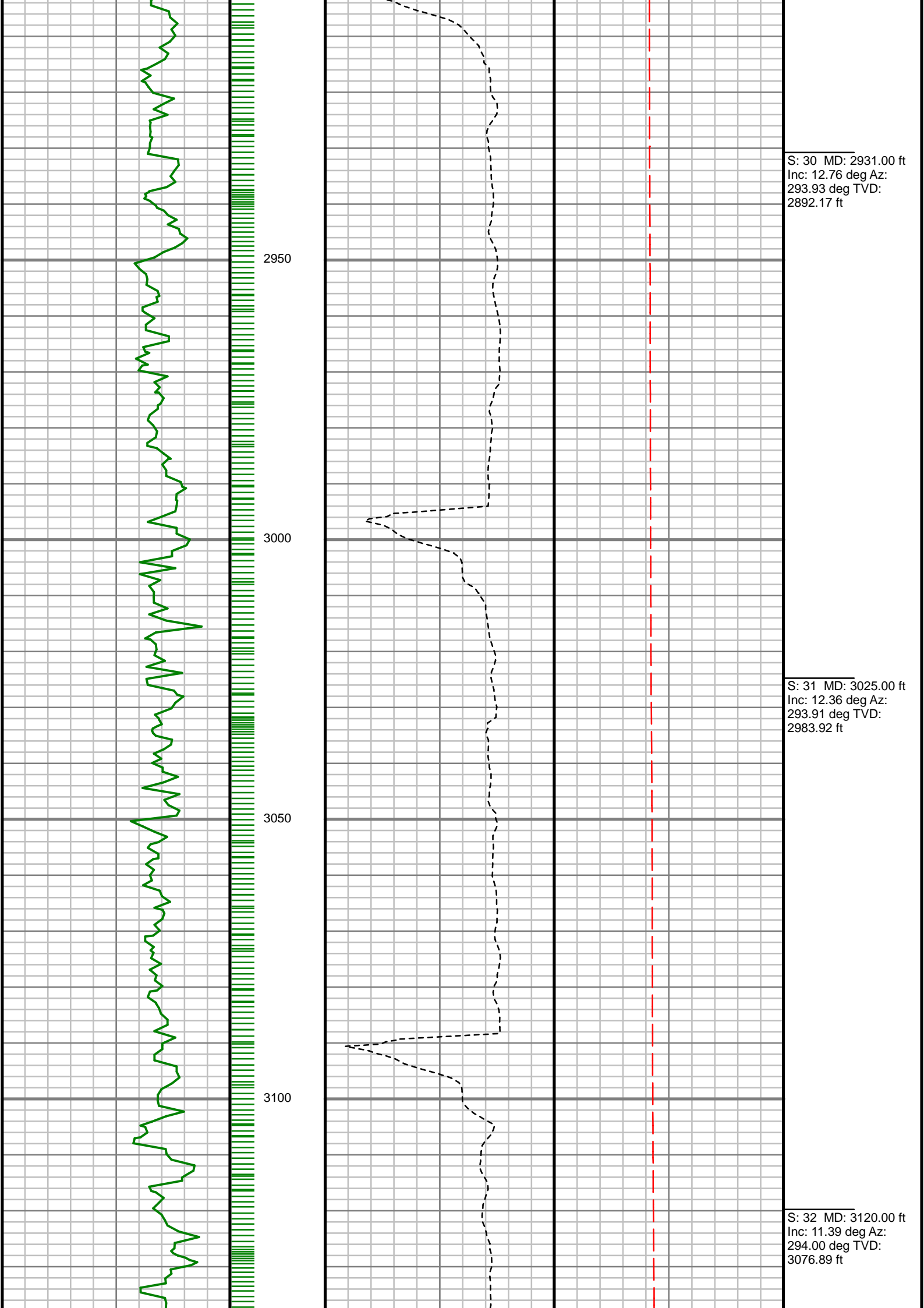


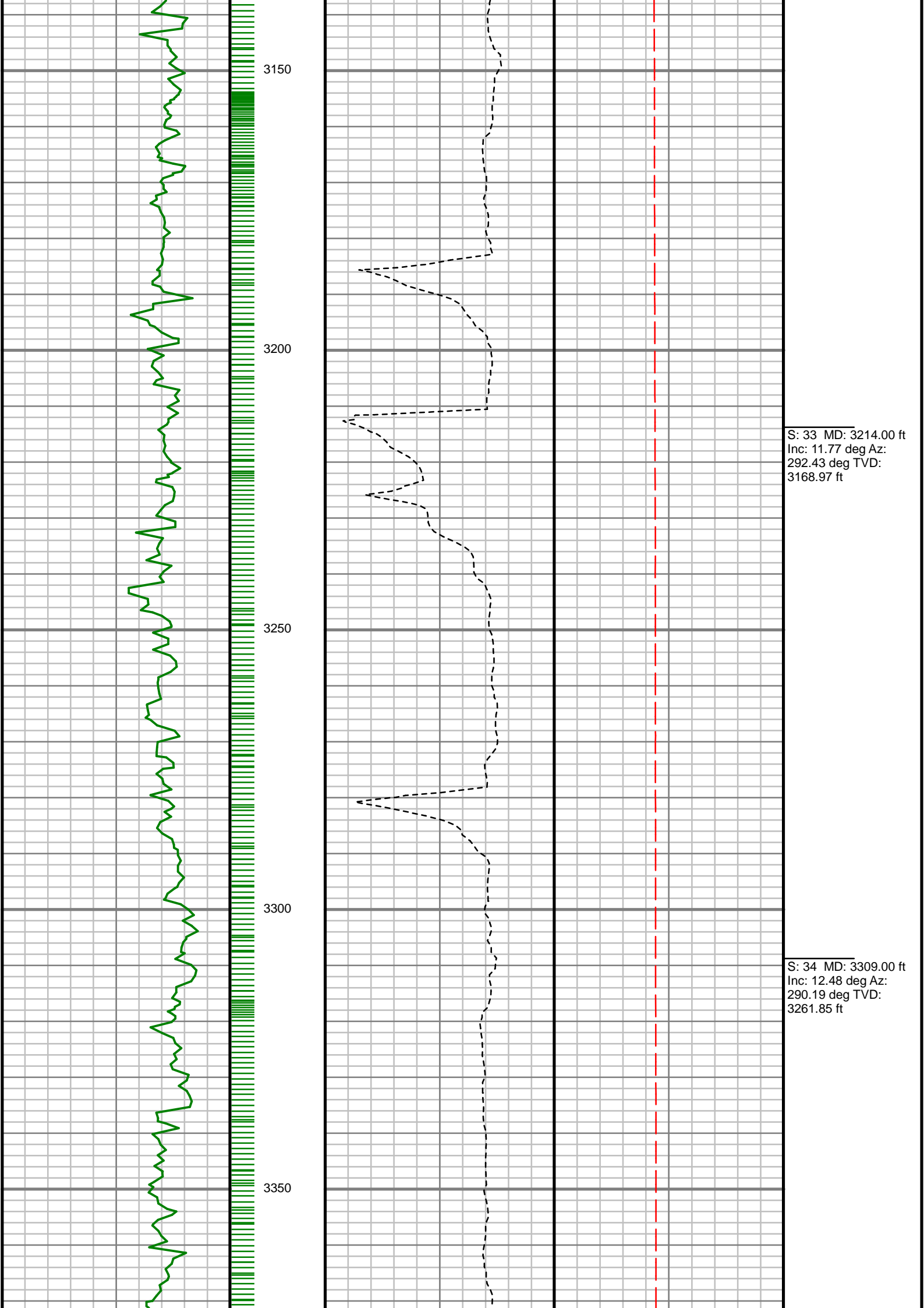
S: 23 MD: 2268.00 ft
Inc: 12.65 deg Az:
290.53 deg TVD:
2242.96 ft

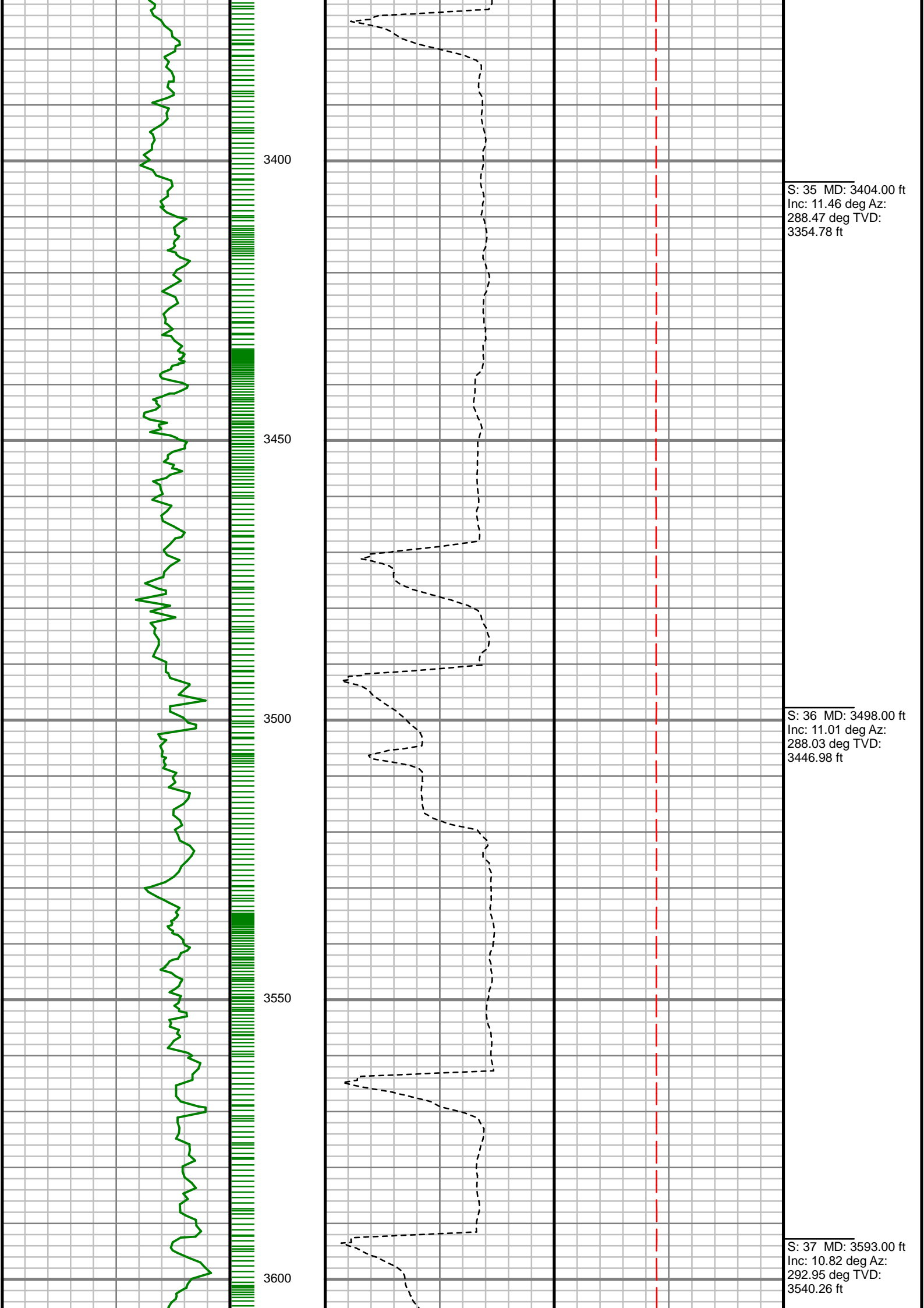
S: 24 MD: 2363.00 ft
Inc: 12.29 deg Az:
288.65 deg TVD:
2335.72 ft

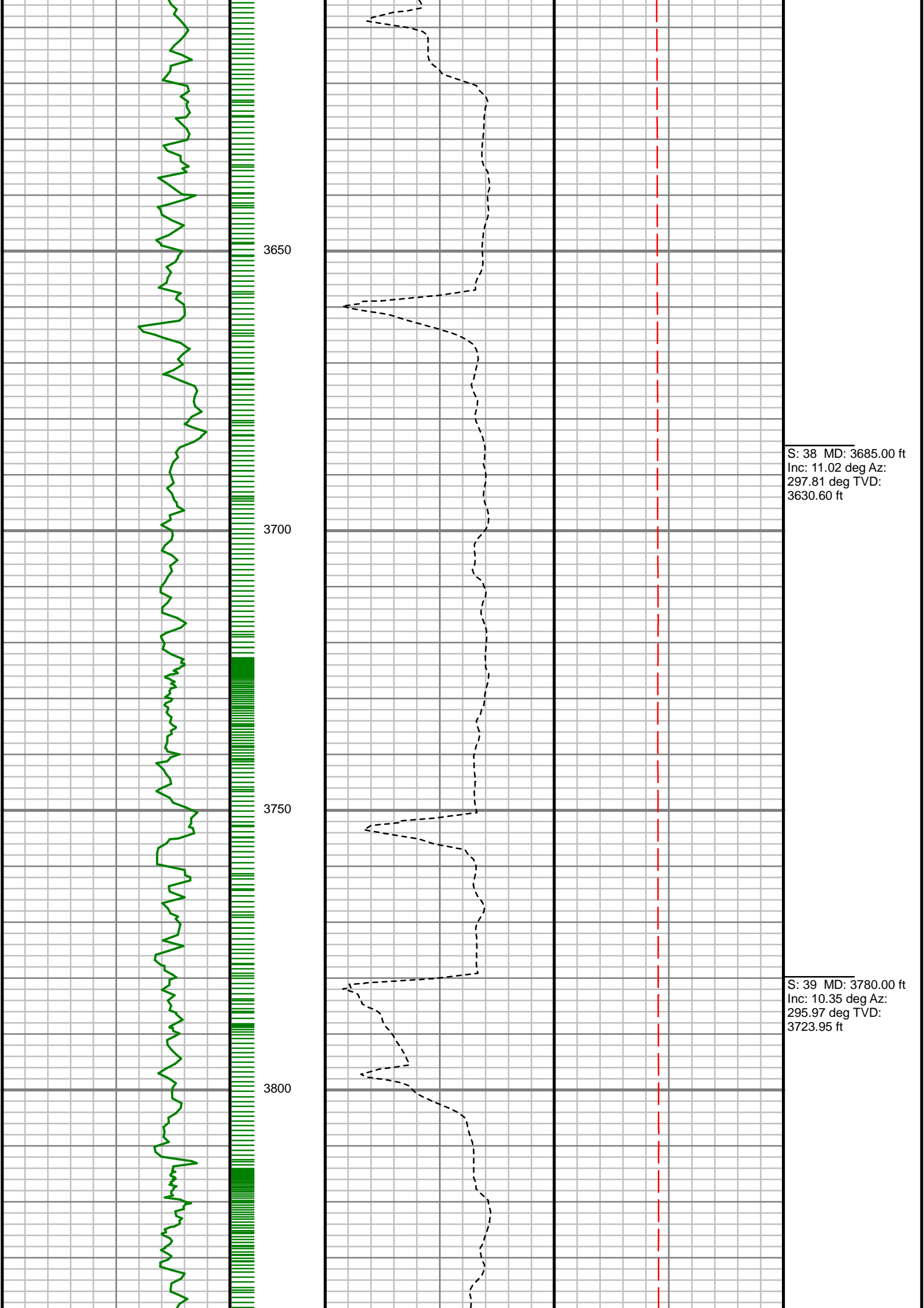


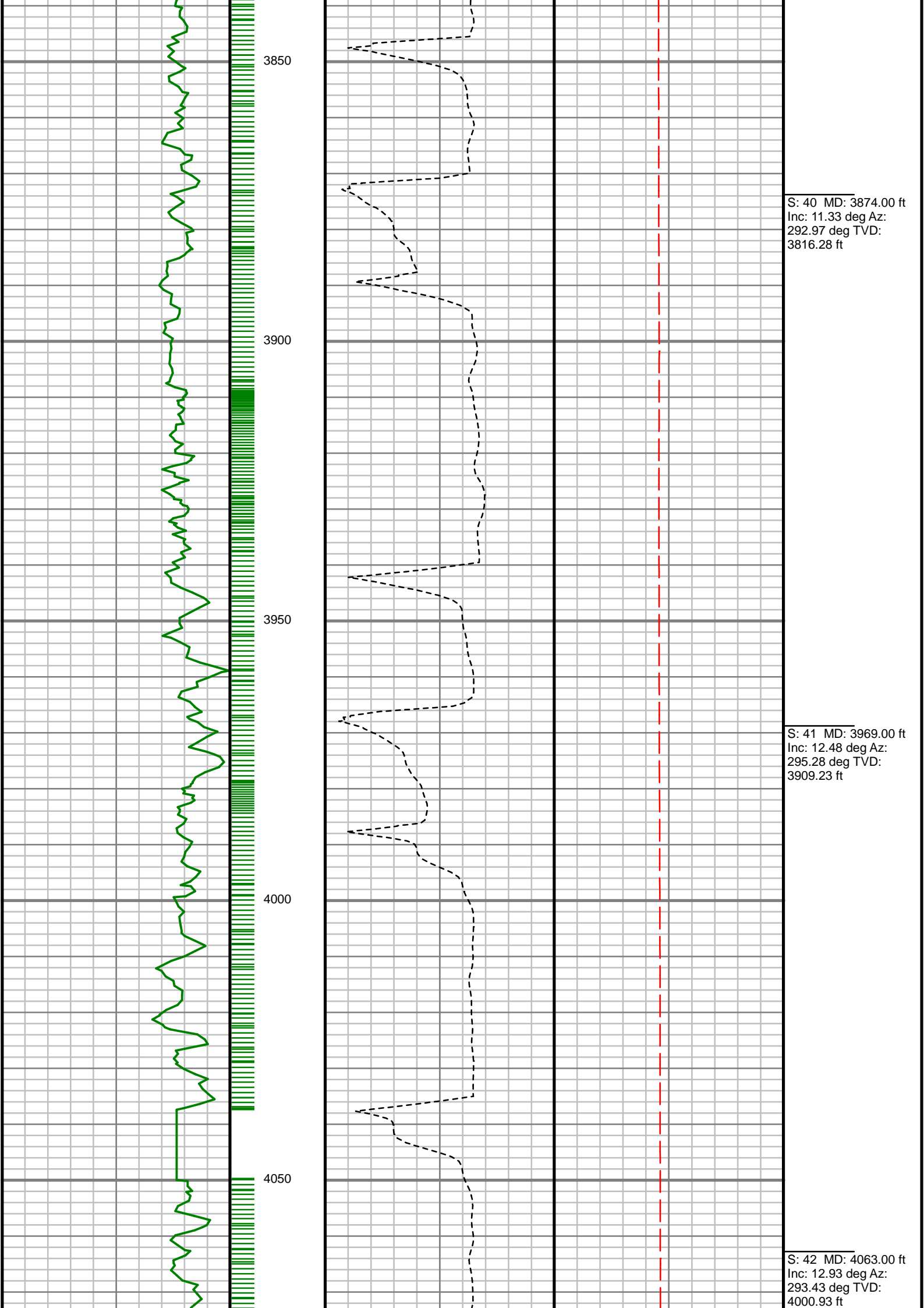


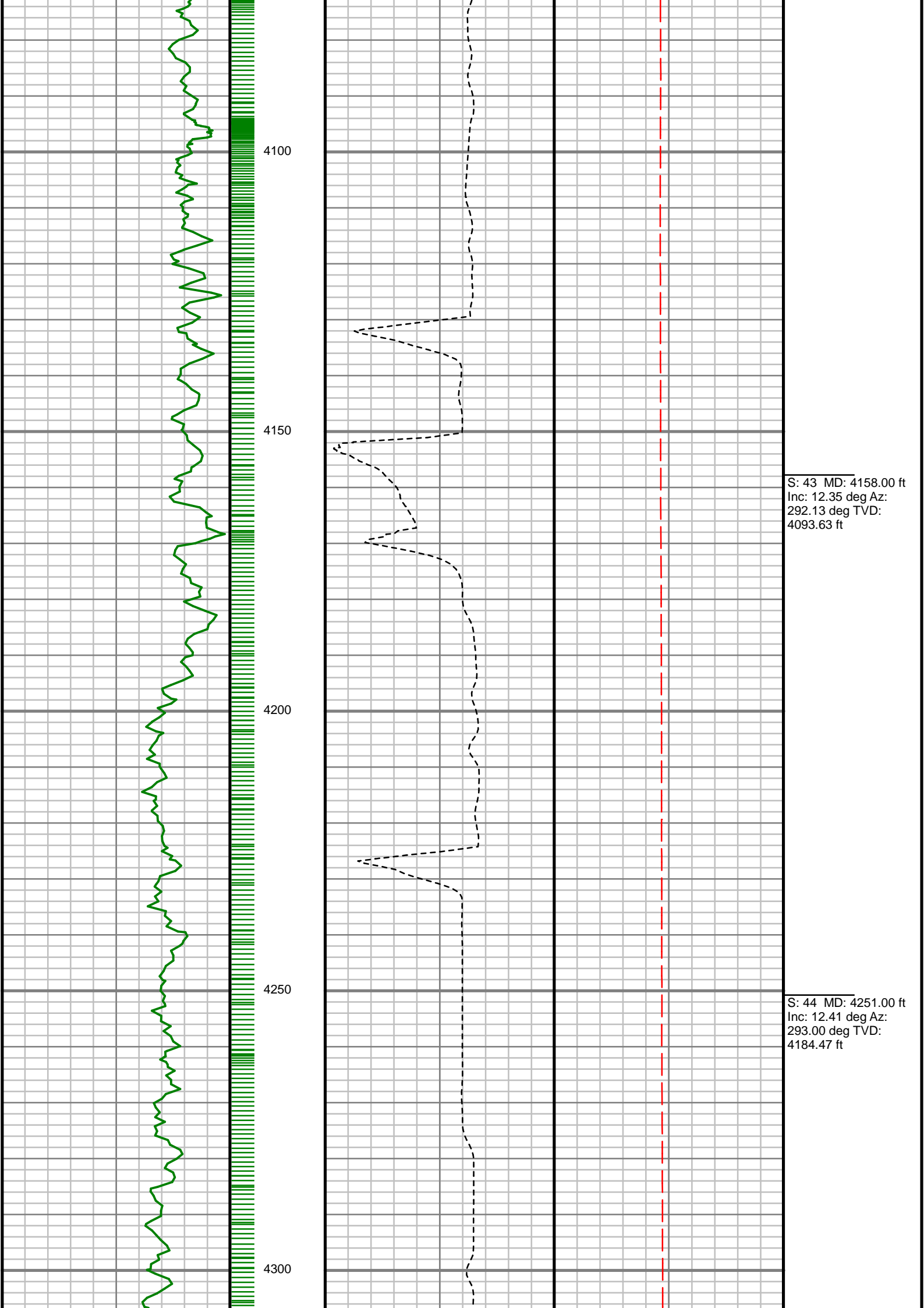


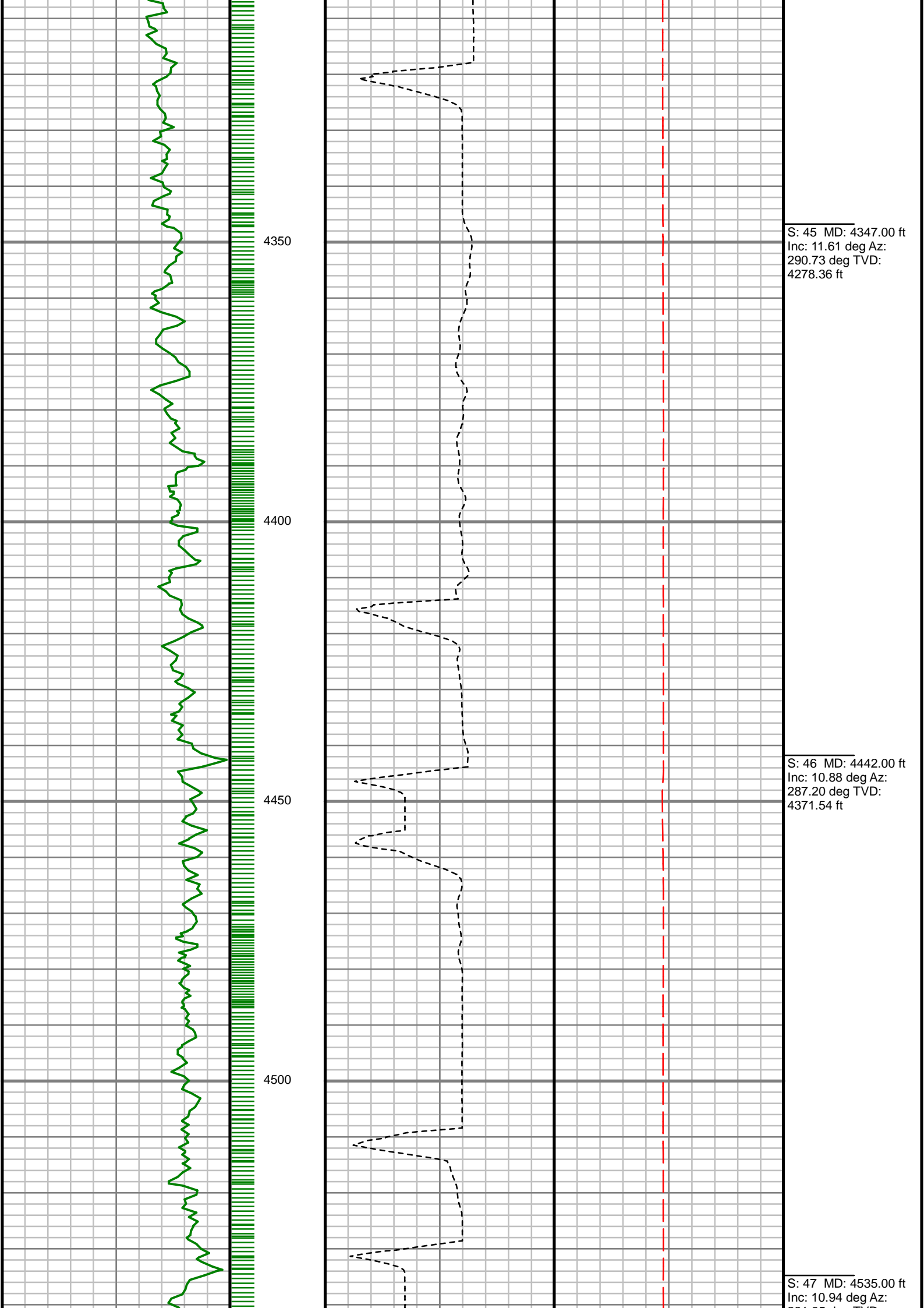


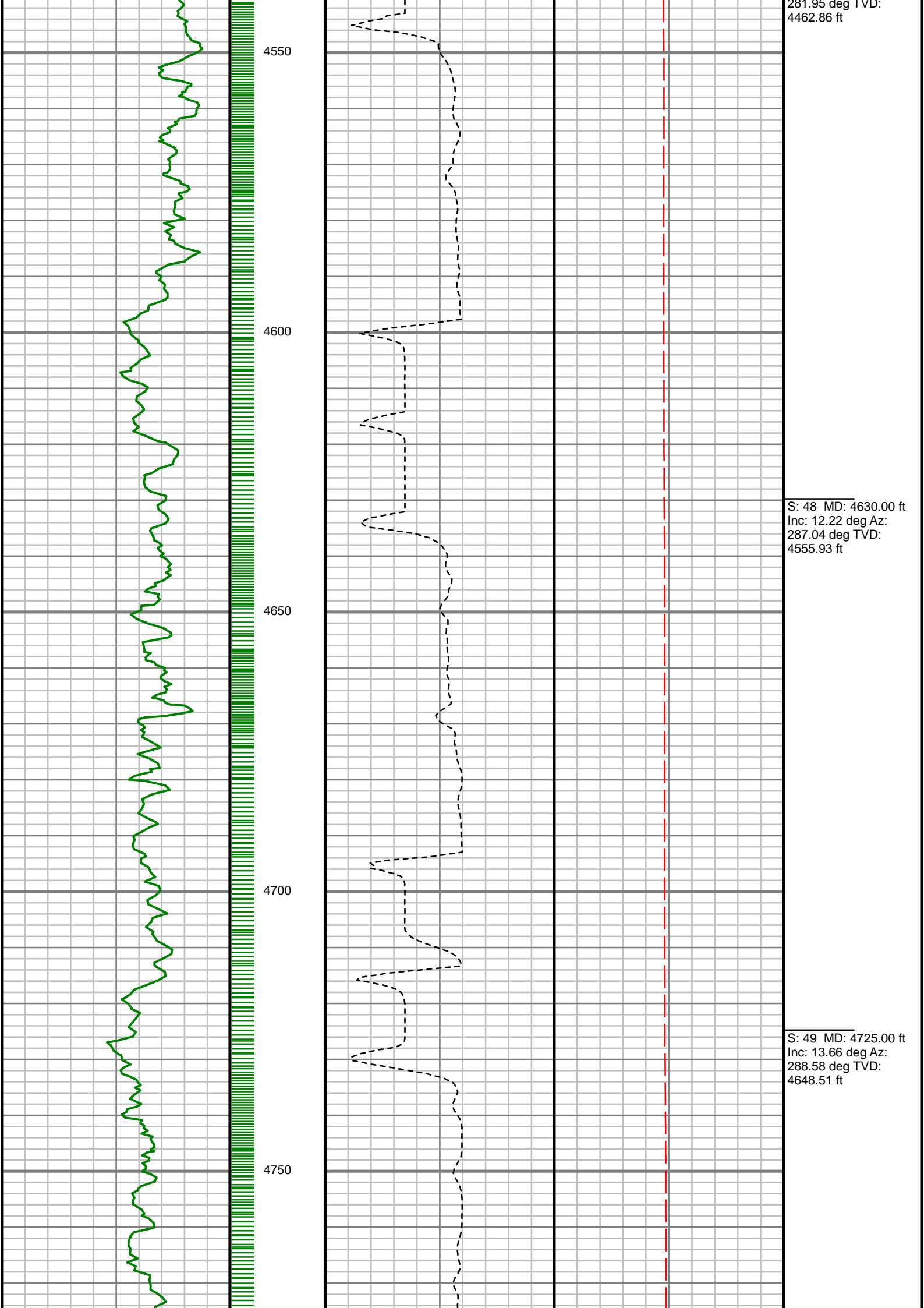


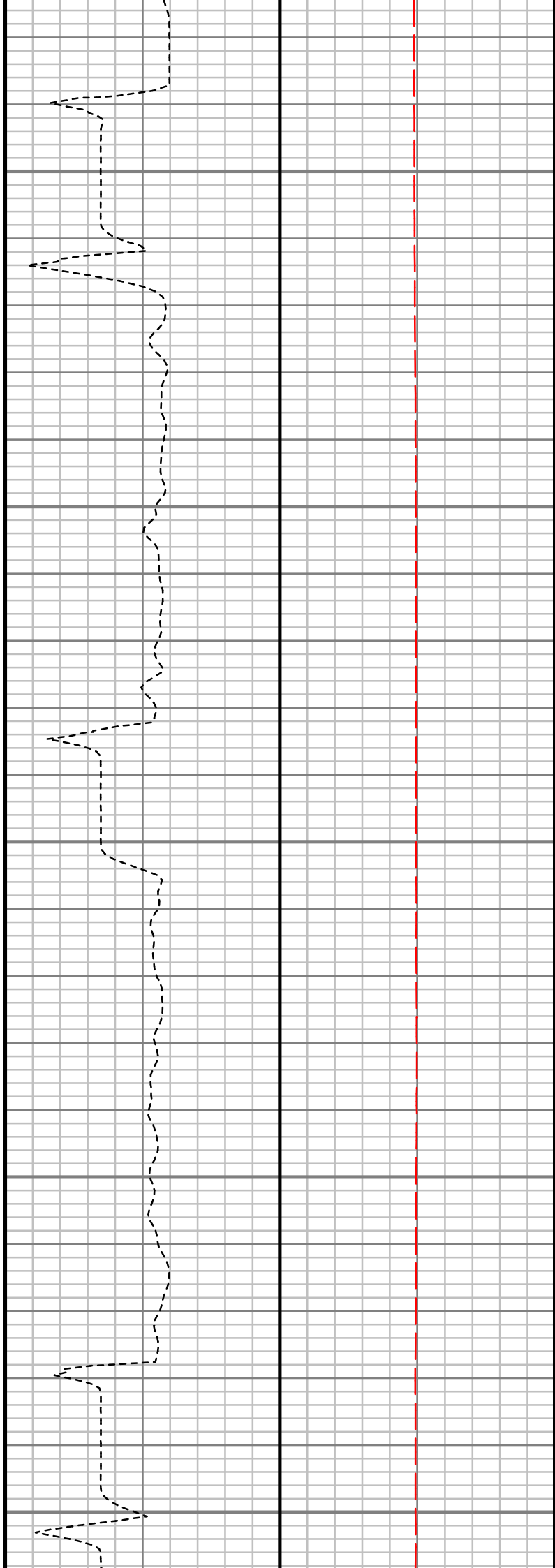
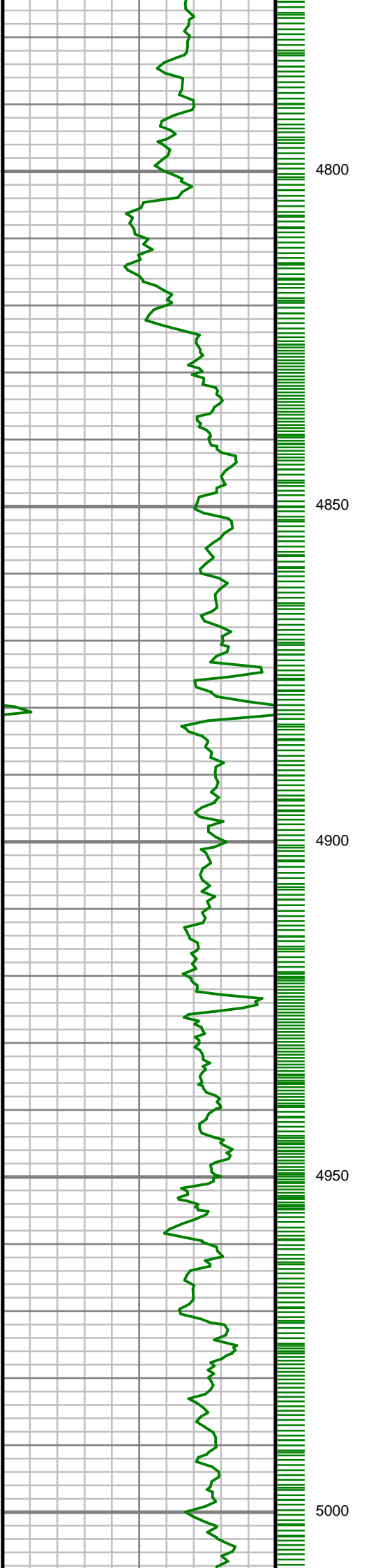








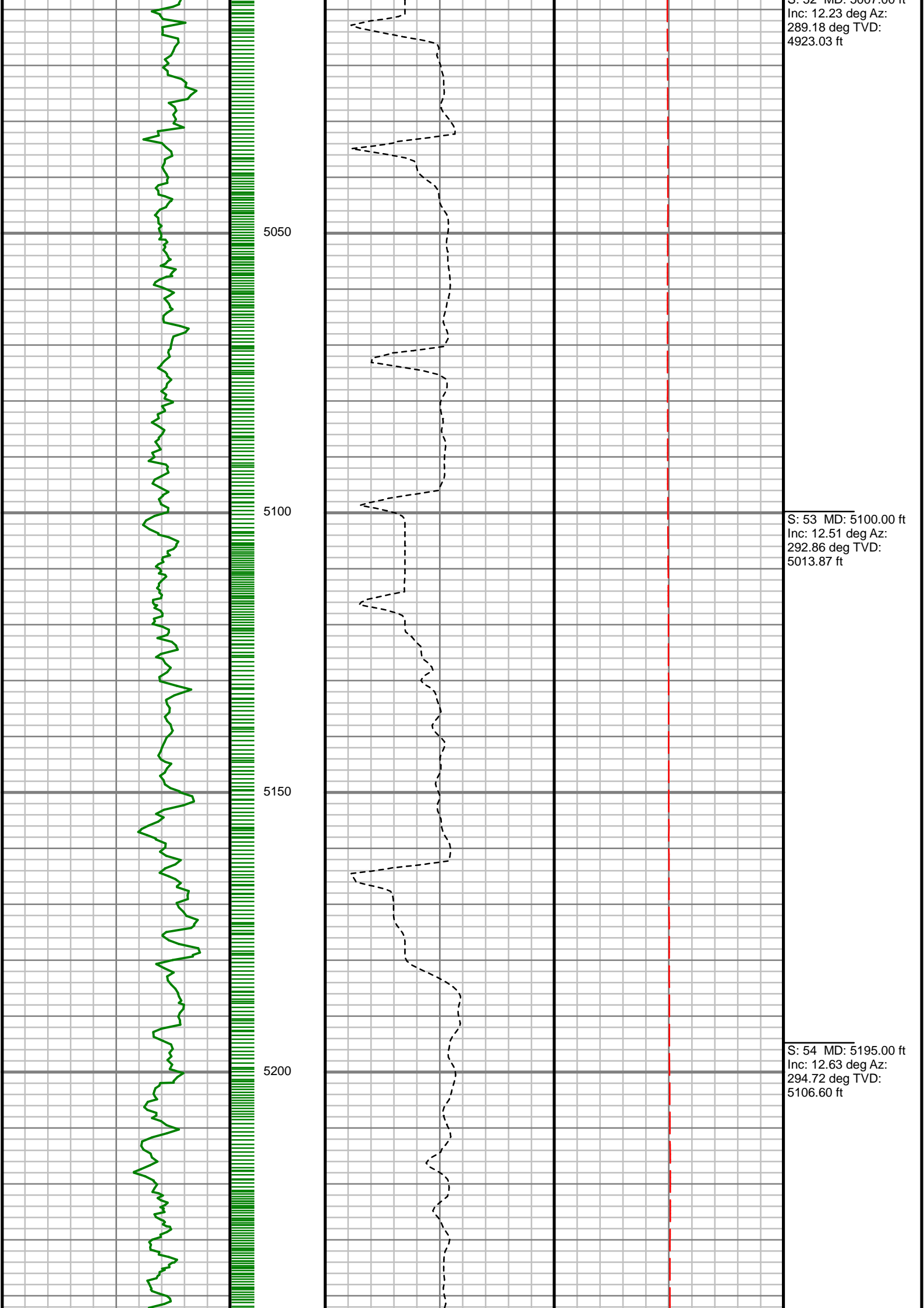


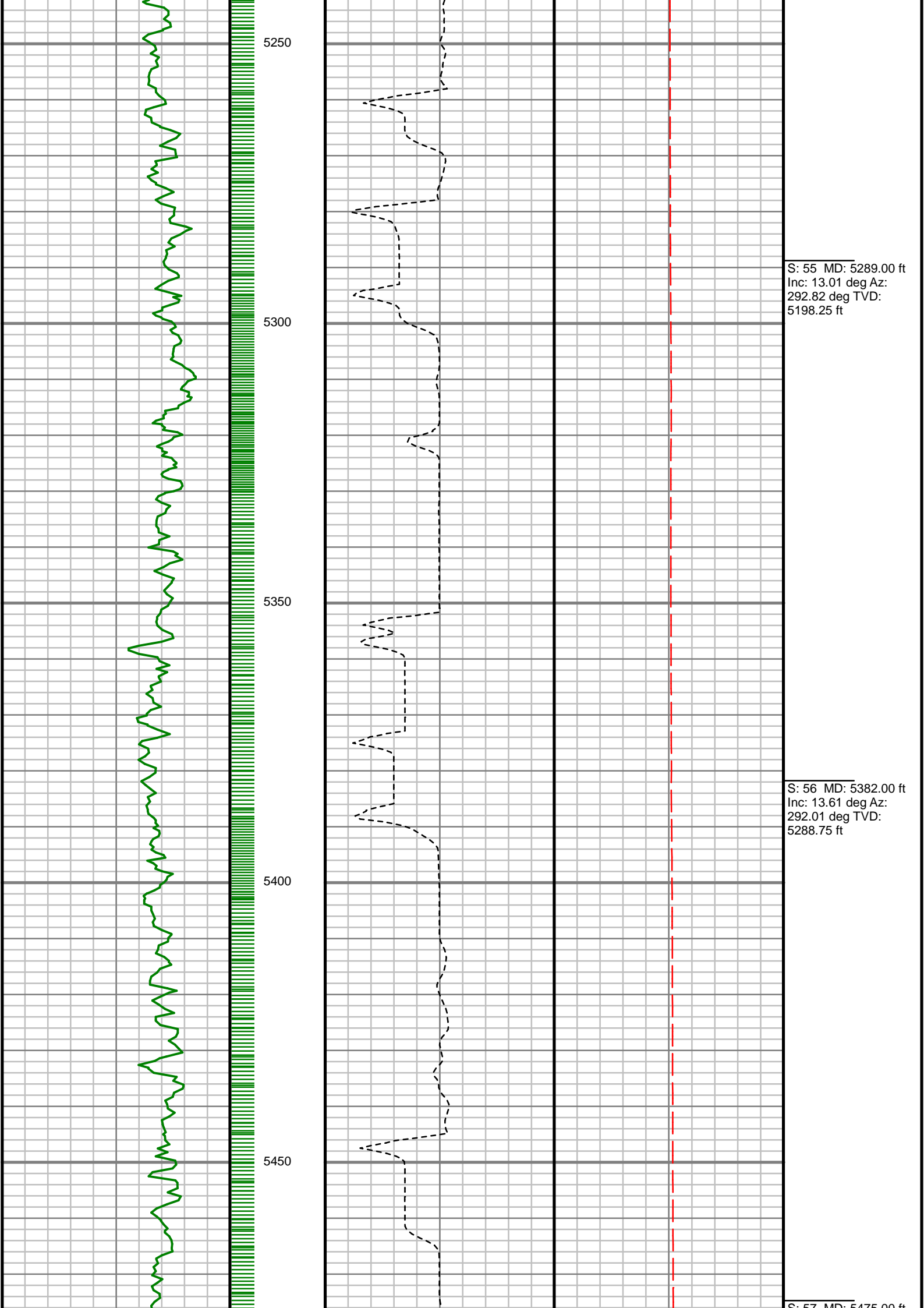


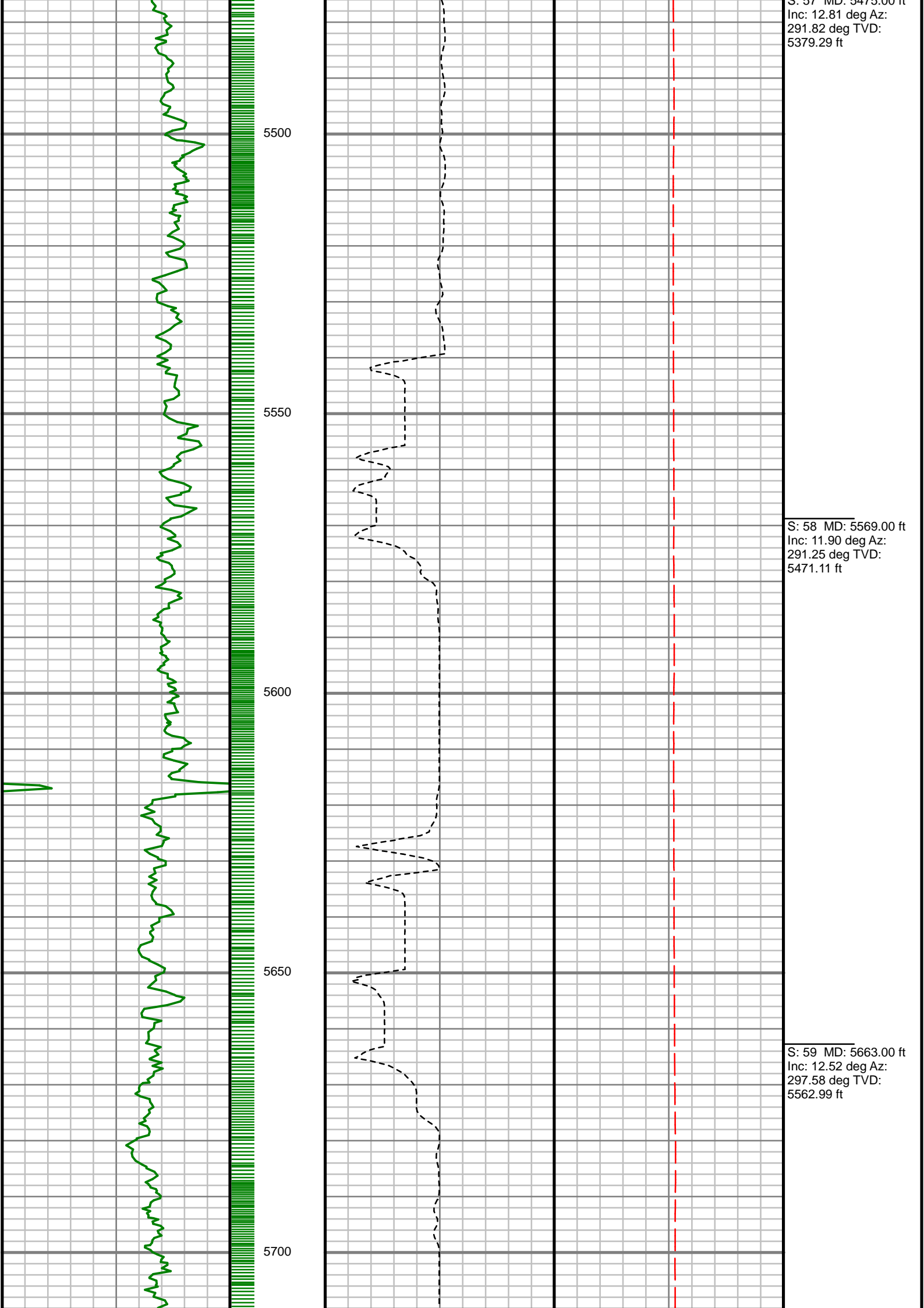
S: 50 MD: 4819.00 ft
Inc: 13.66 deg Az:
286.62 deg TVD:
4739.86 ft

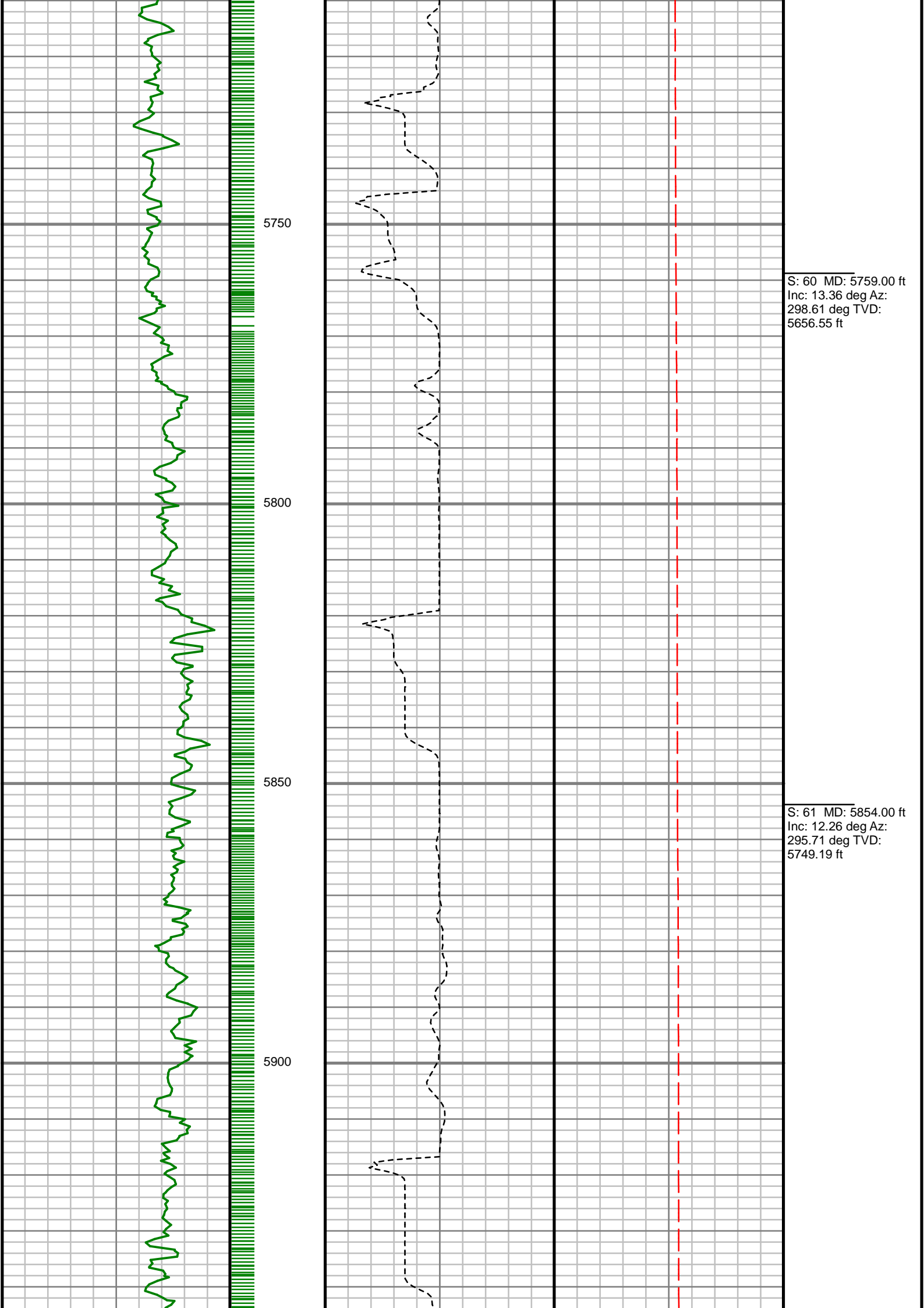
S: 51 MD: 4914.00 ft
Inc: 13.07 deg Az:
285.63 deg TVD:
4832.29 ft

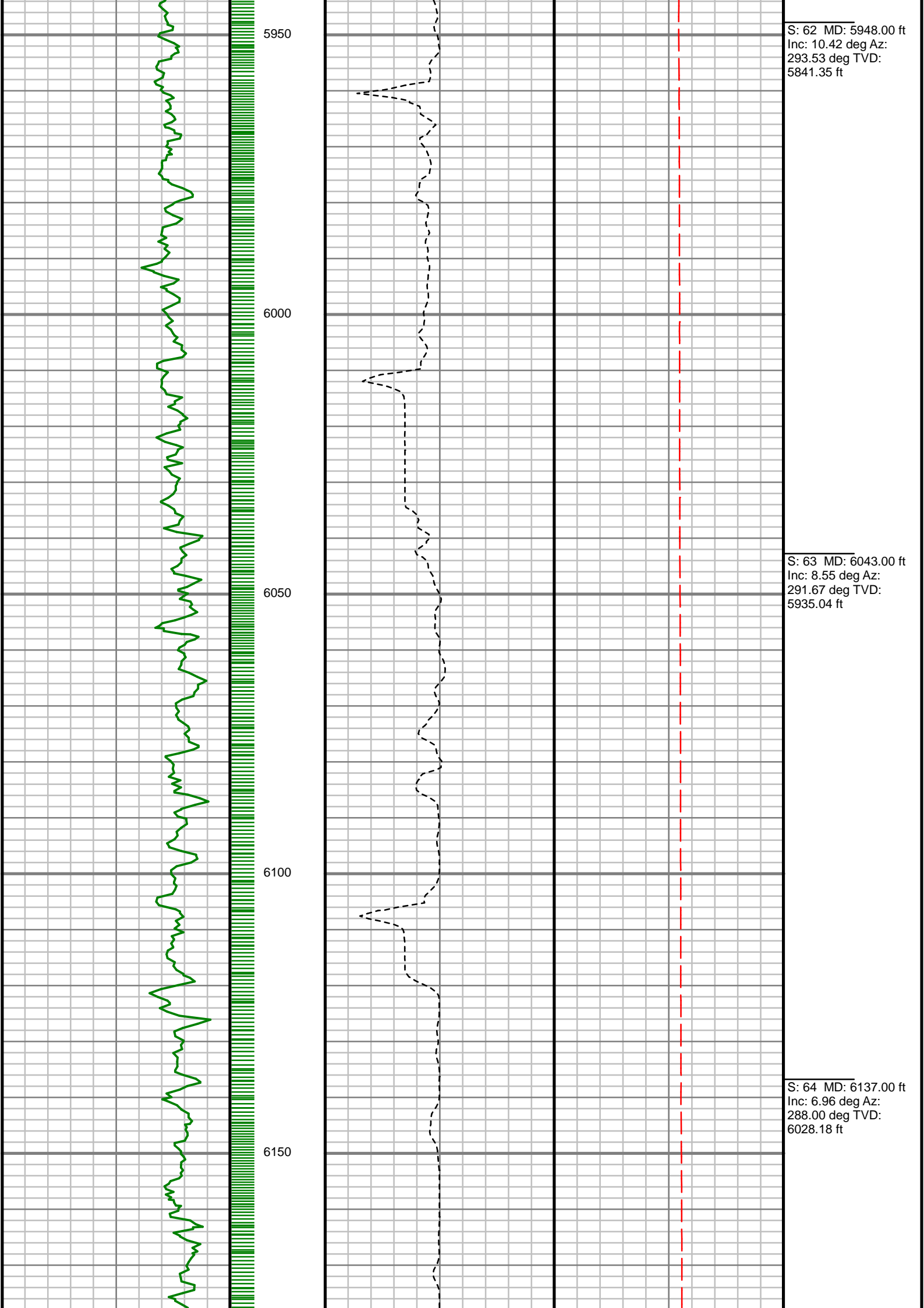
S: 52 MD: 5007.00 ft

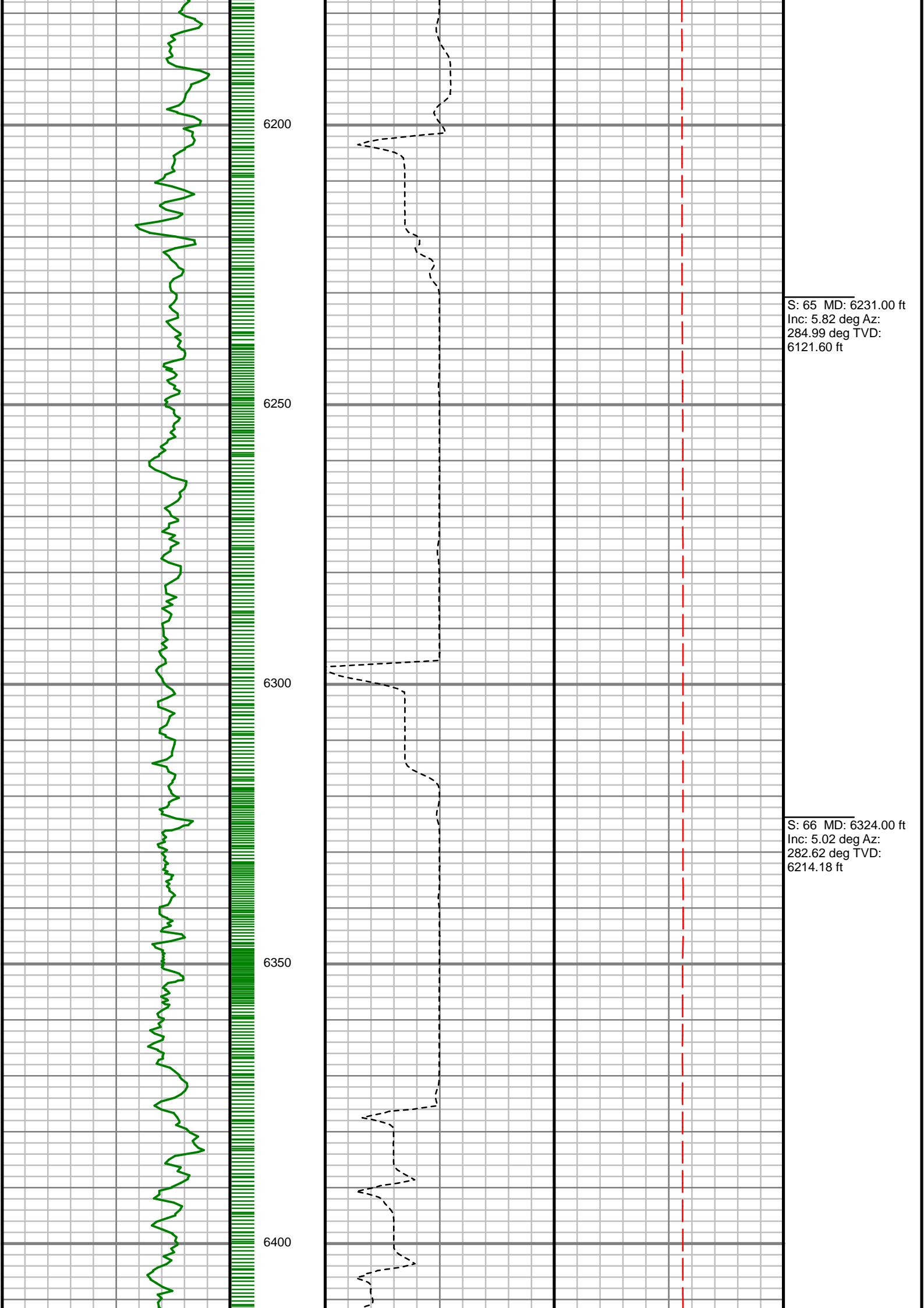






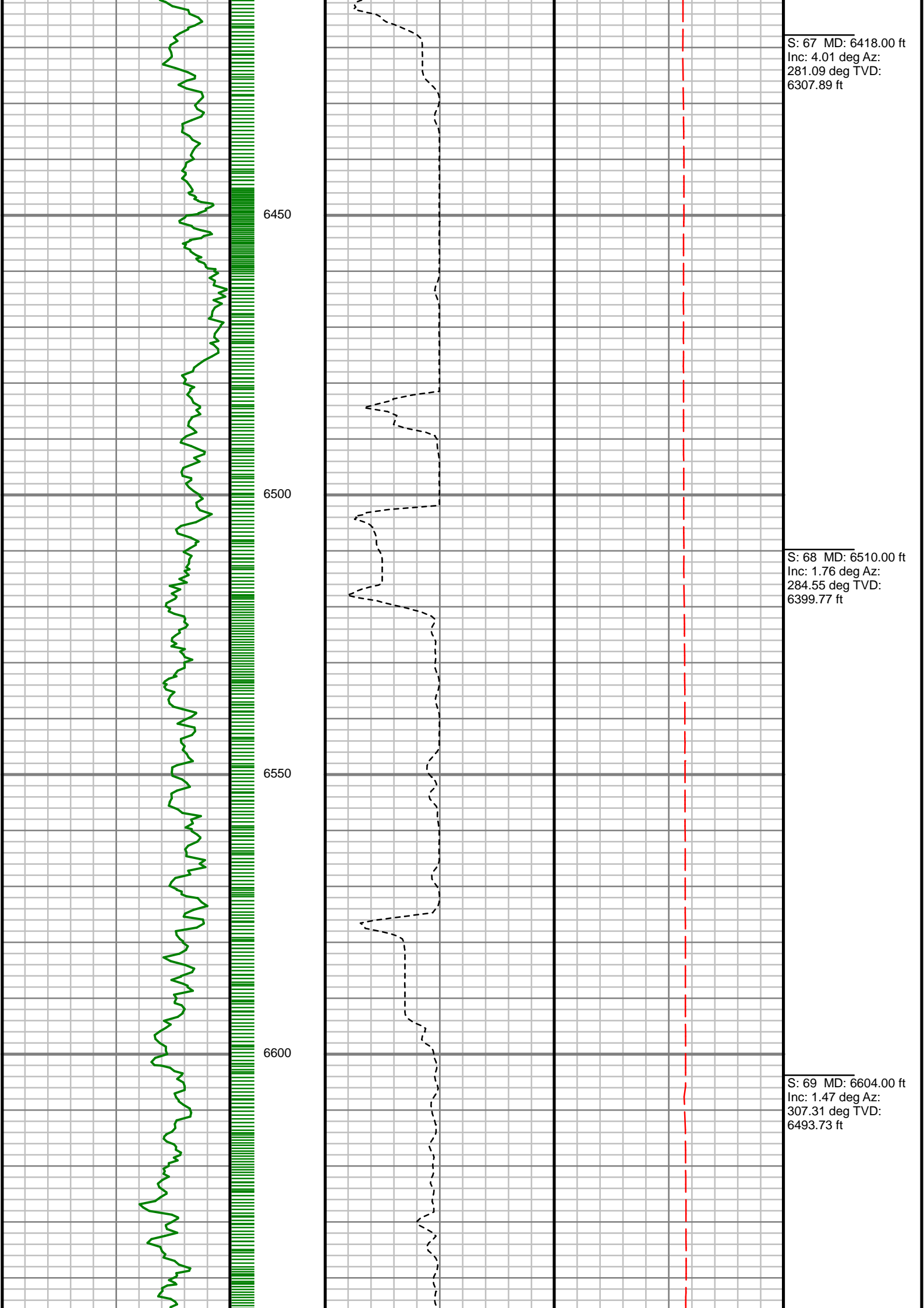


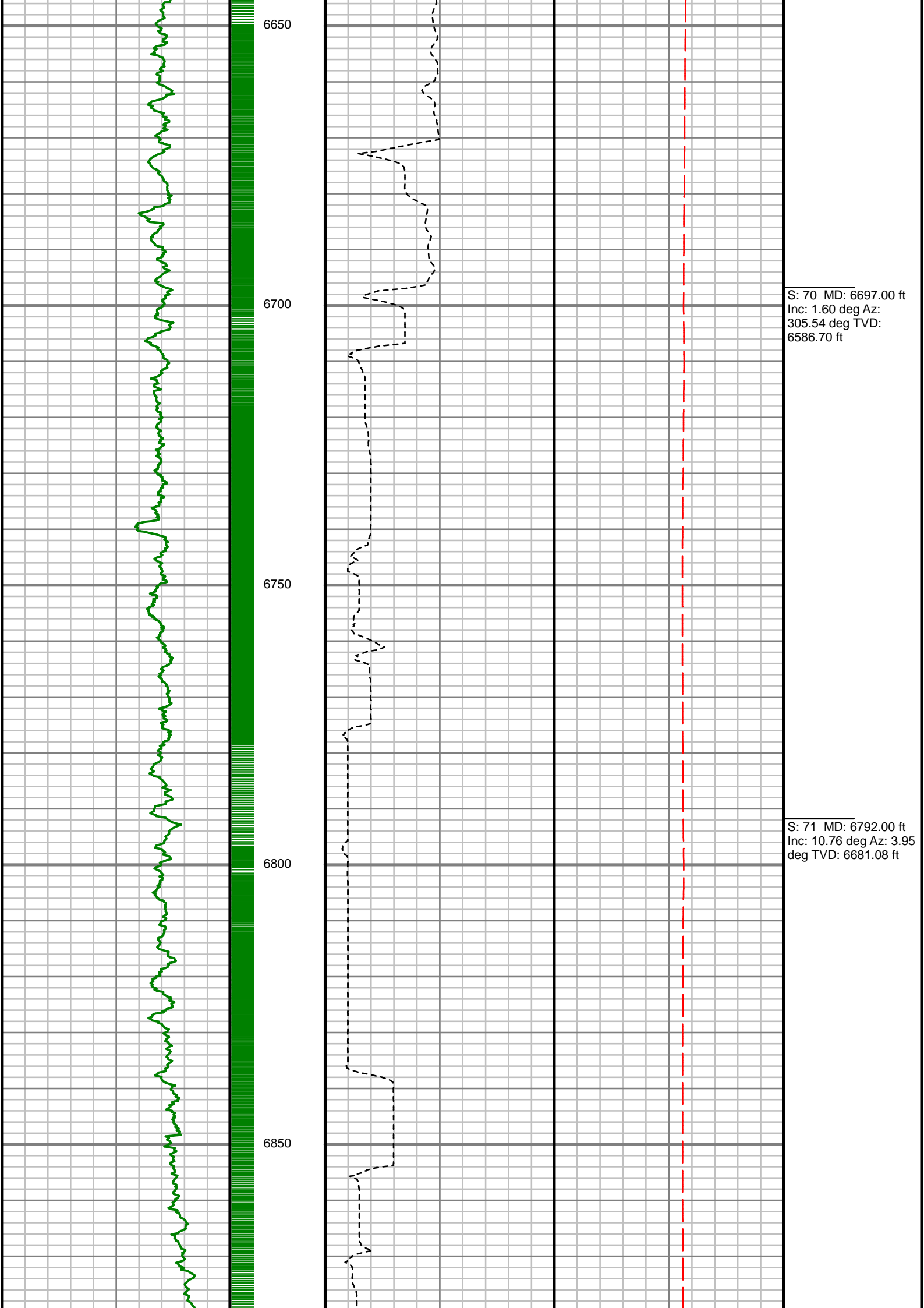


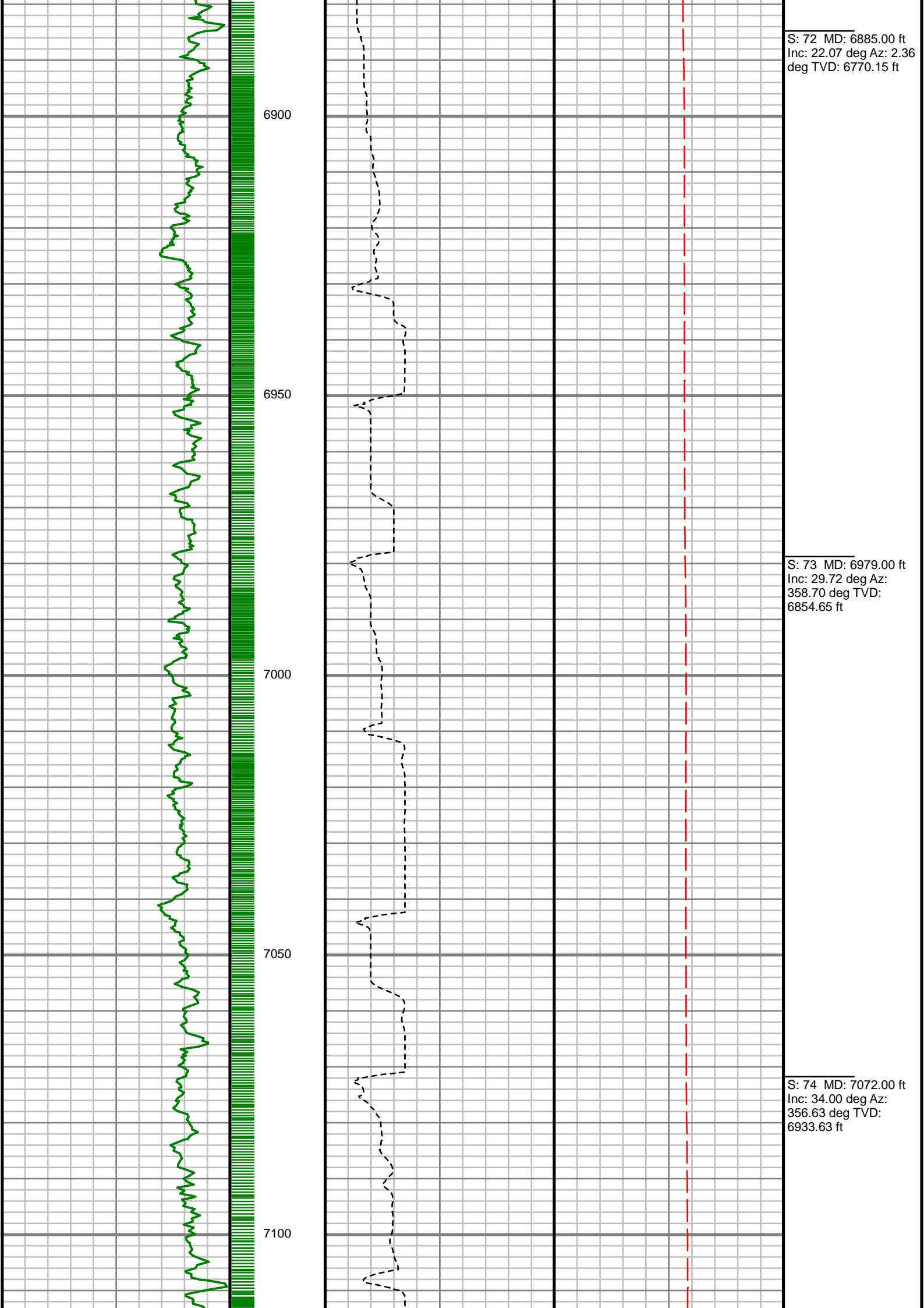


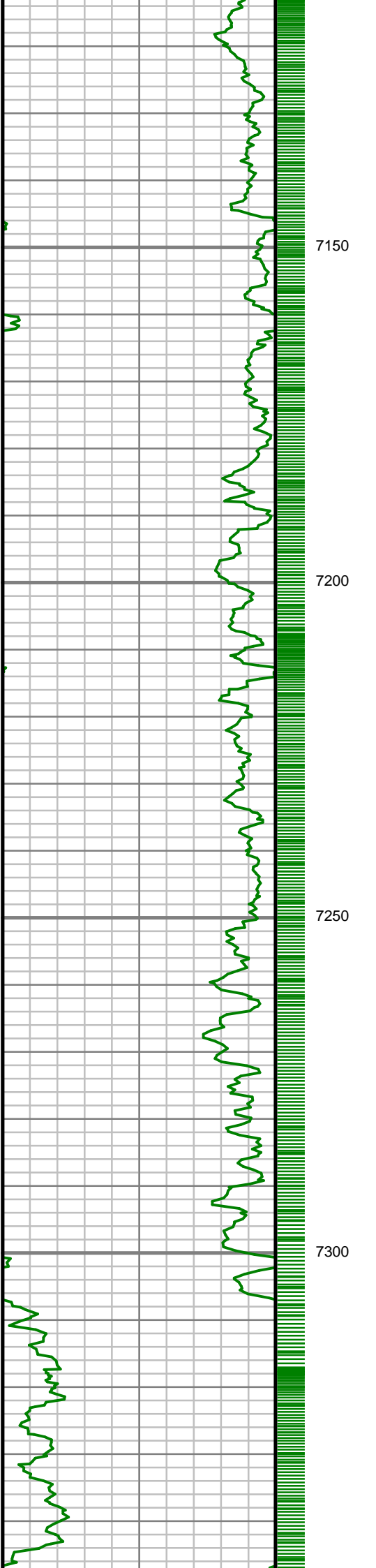
S: 65 MD: 6231.00 ft
Inc: 5.82 deg Az:
284.99 deg TVD:
6121.60 ft

S: 66 MD: 6324.00 ft
Inc: 5.02 deg Az:
282.62 deg TVD:
6214.18 ft



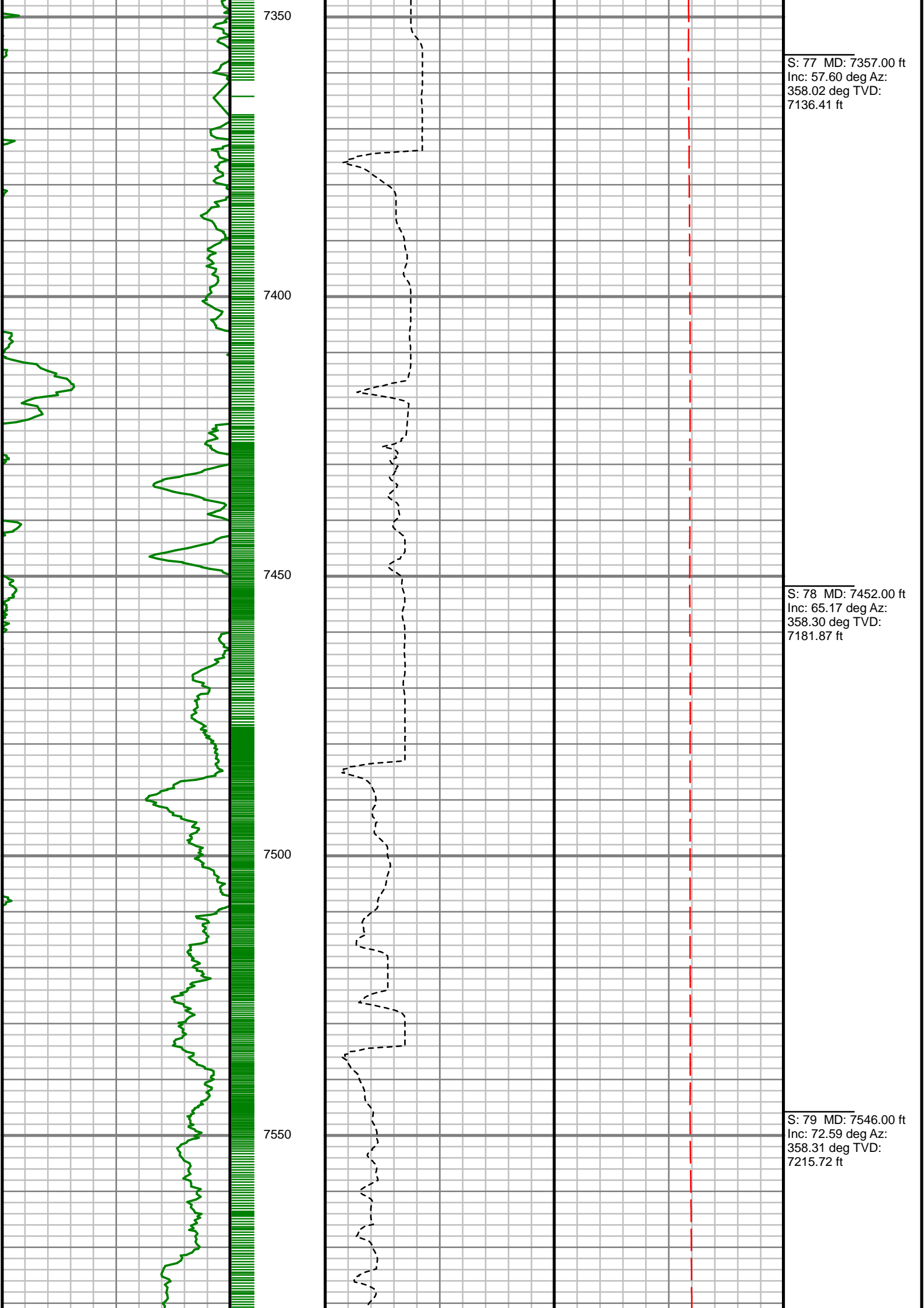


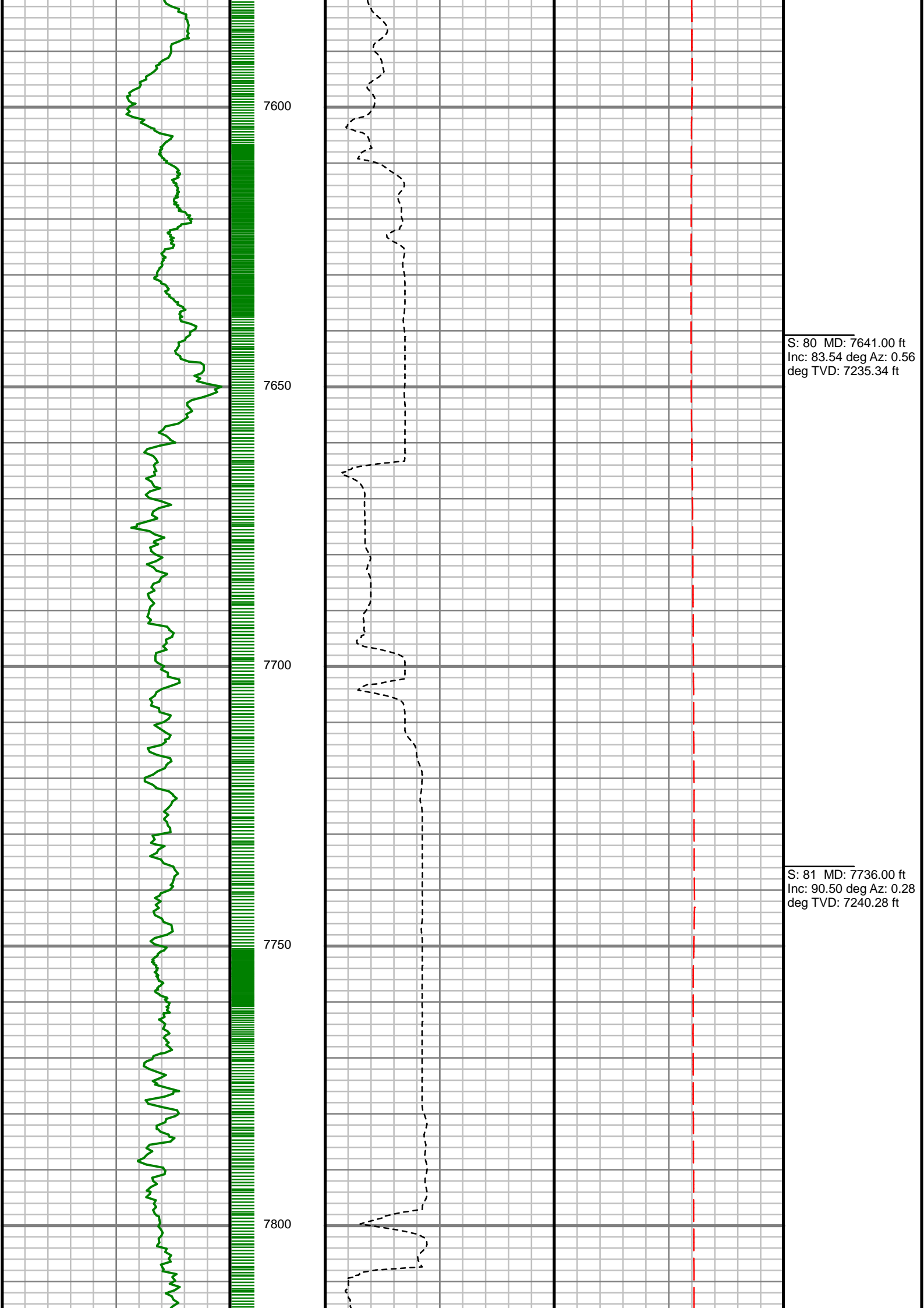


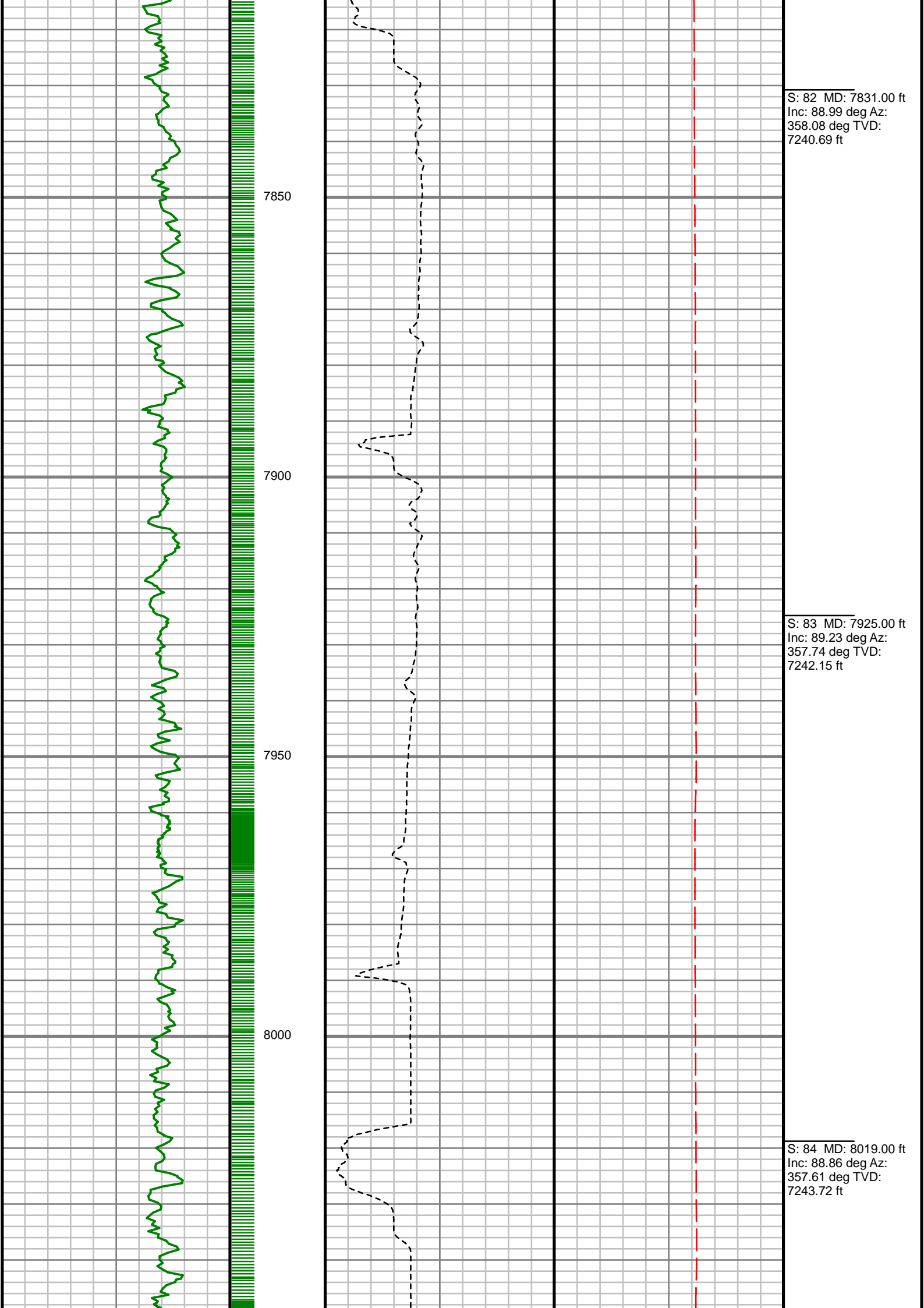


S: 75 MD: 7166.00 ft
Inc: 38.67 deg Az:
357.98 deg TVD:
7009.33 ft

S: 76 MD: 7262.00 ft
Inc: 48.02 deg Az:
357.69 deg TVD:
7079.06 ft



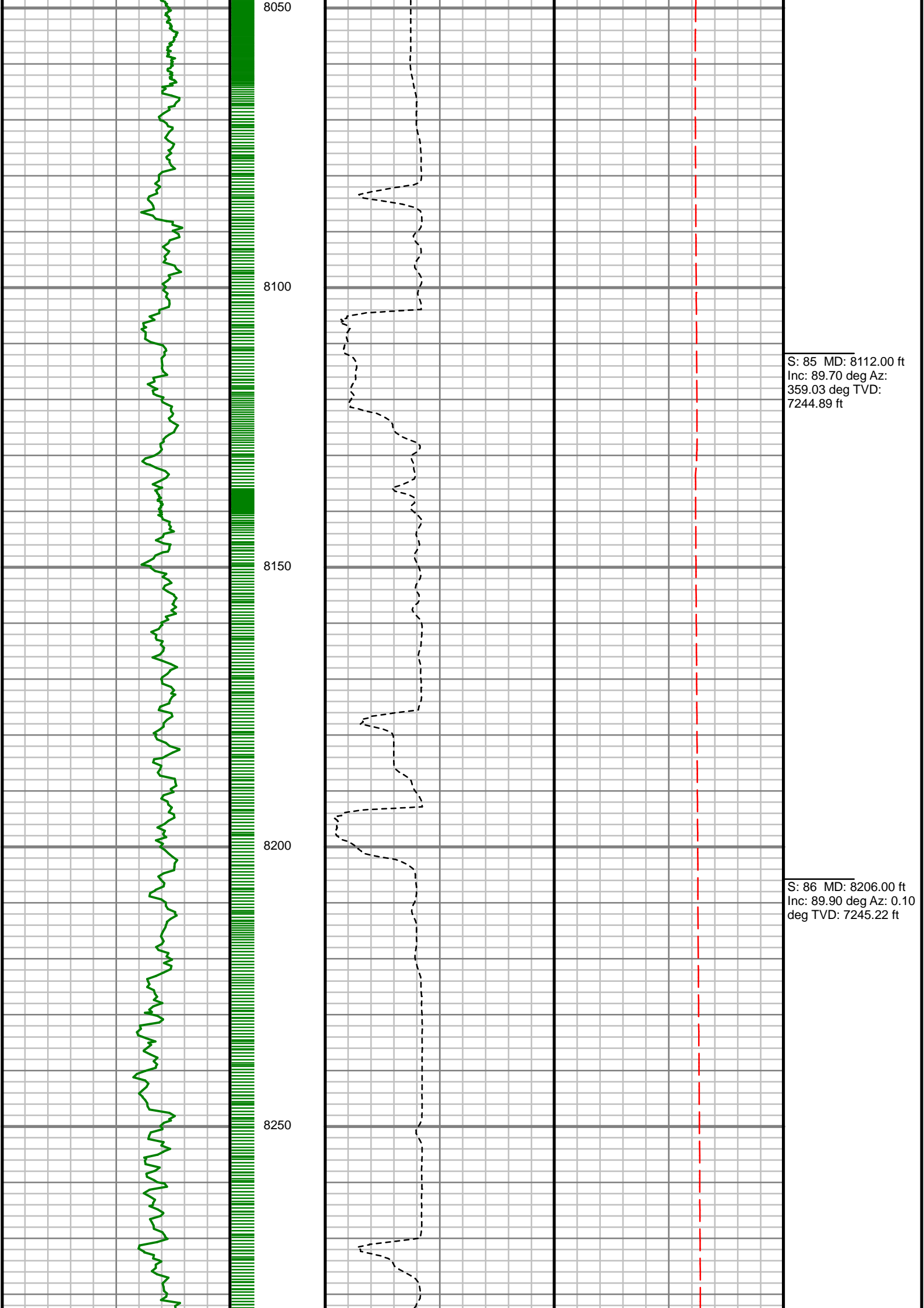


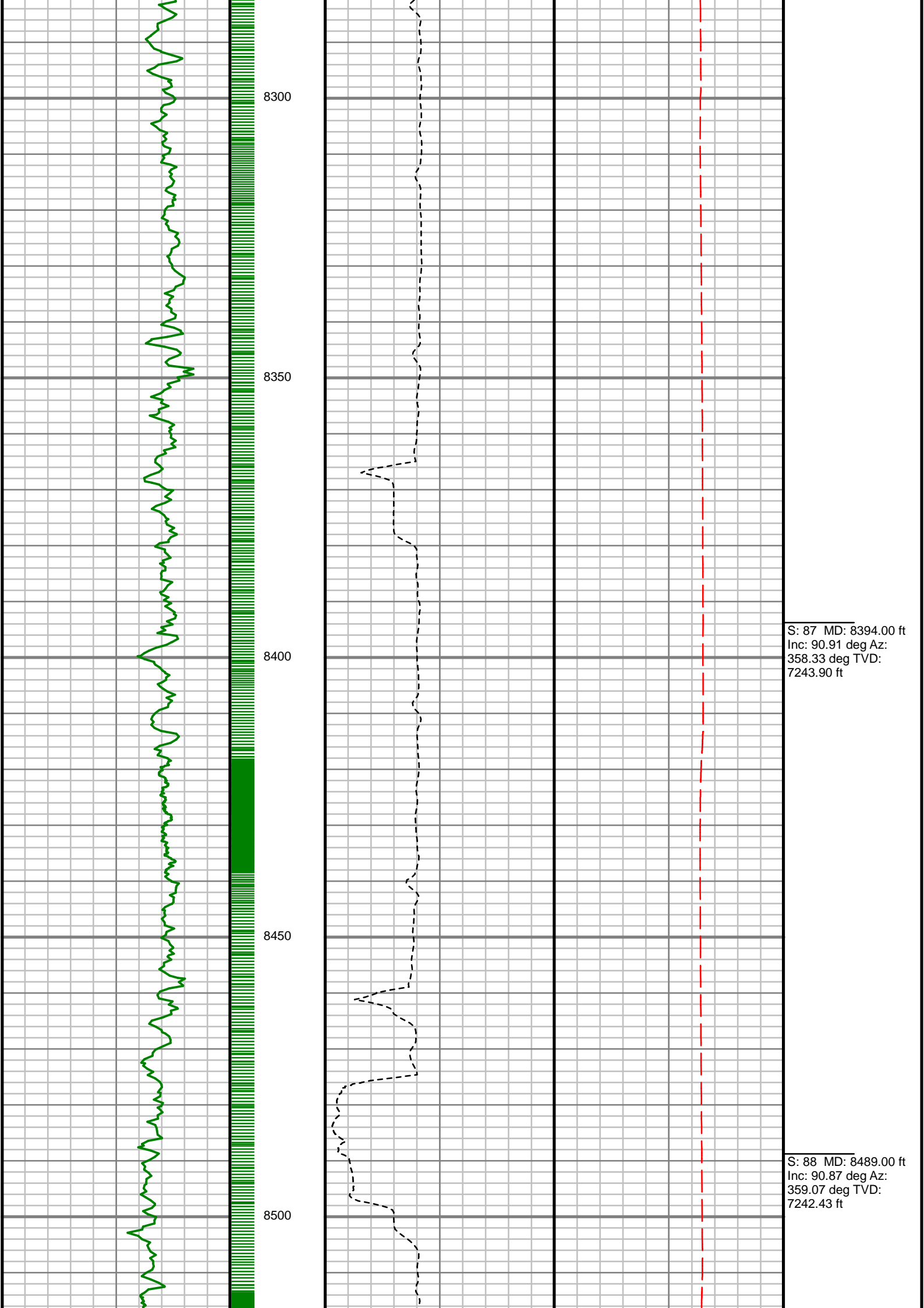


S: 82 MD: 7831.00 ft
Inc: 88.99 deg Az:
358.08 deg TVD:
7240.69 ft

S: 83 MD: 7925.00 ft
Inc: 89.23 deg Az:
357.74 deg TVD:
7242.15 ft

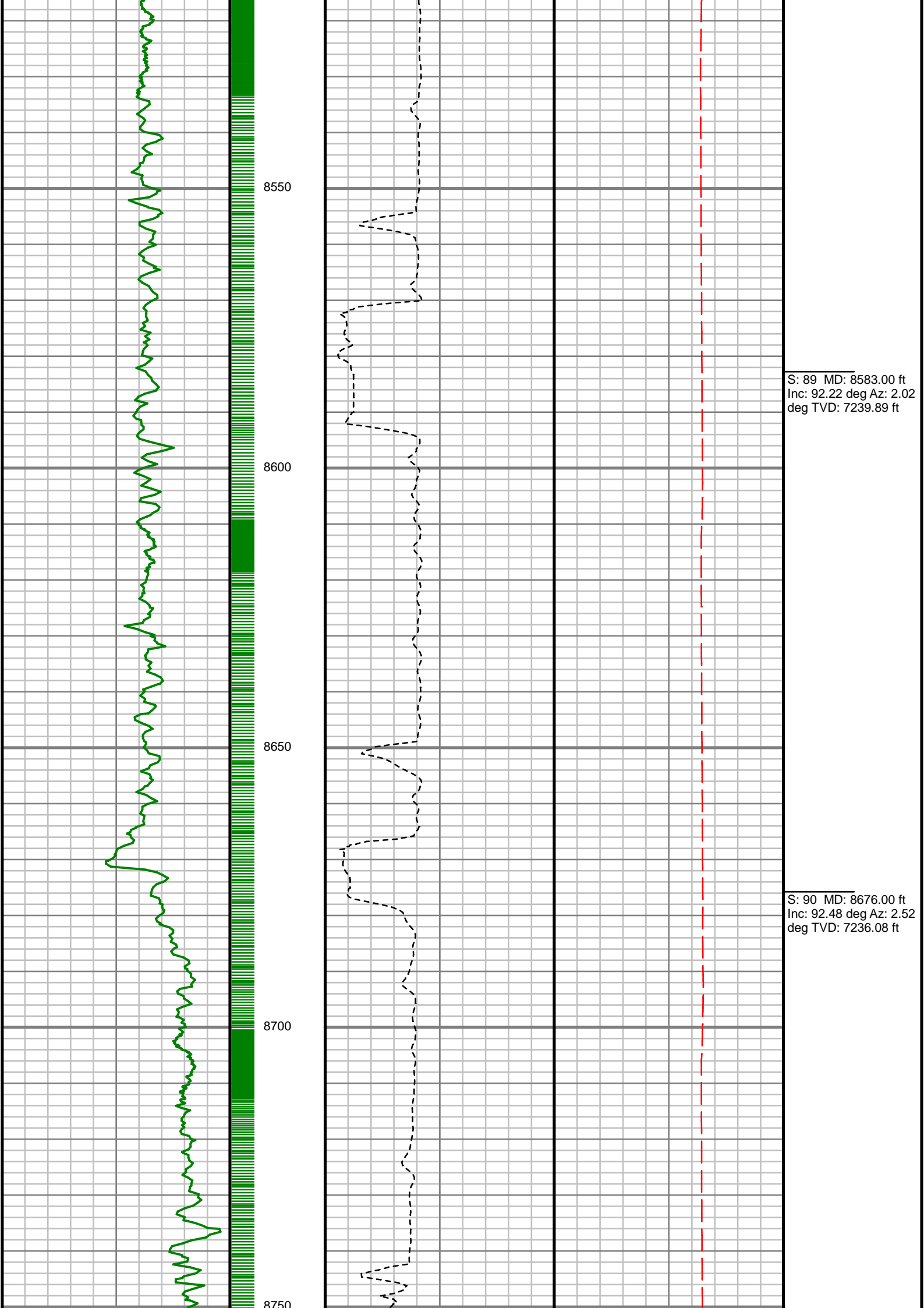
S: 84 MD: 8019.00 ft
Inc: 88.86 deg Az:
357.61 deg TVD:
7243.72 ft

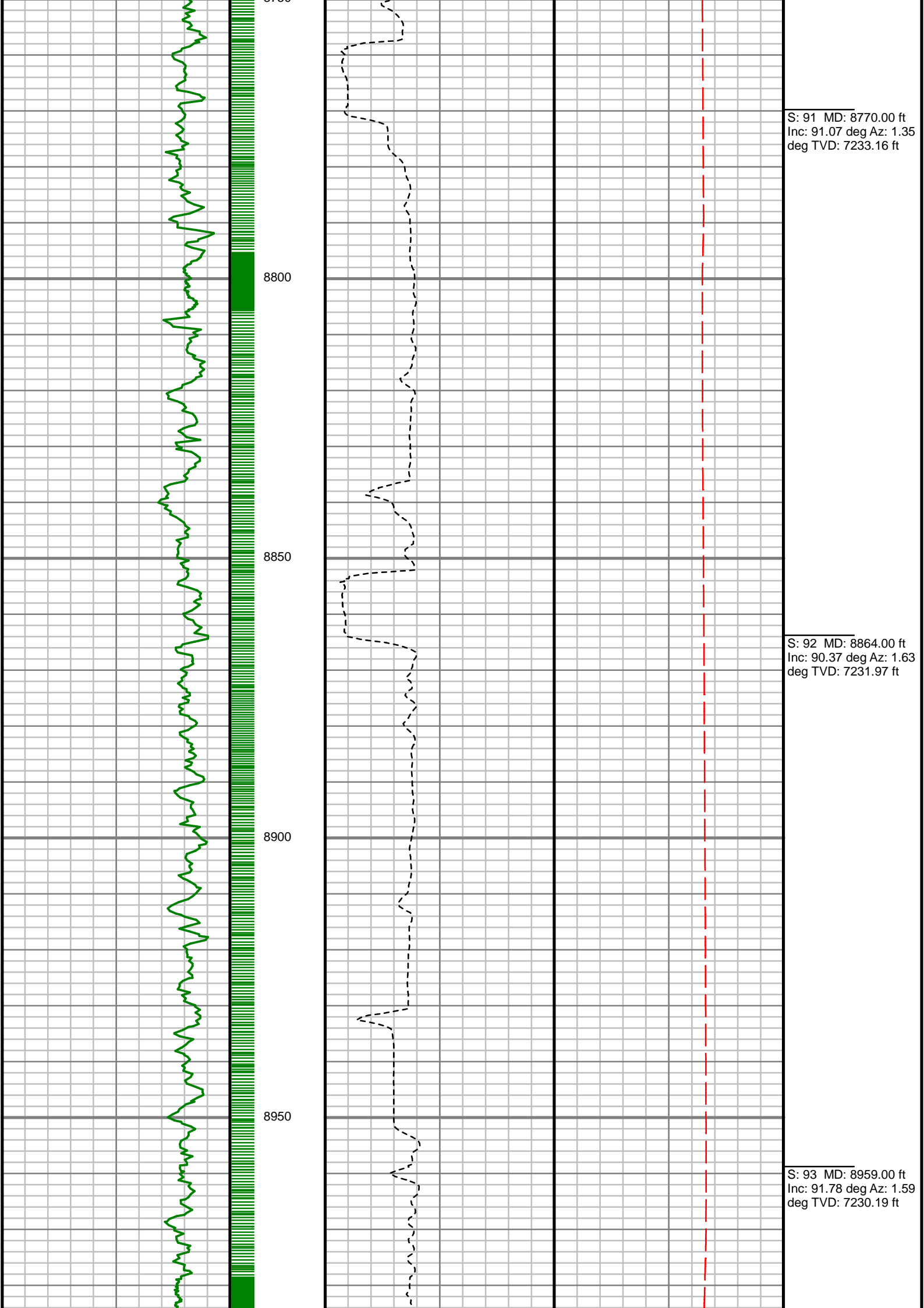


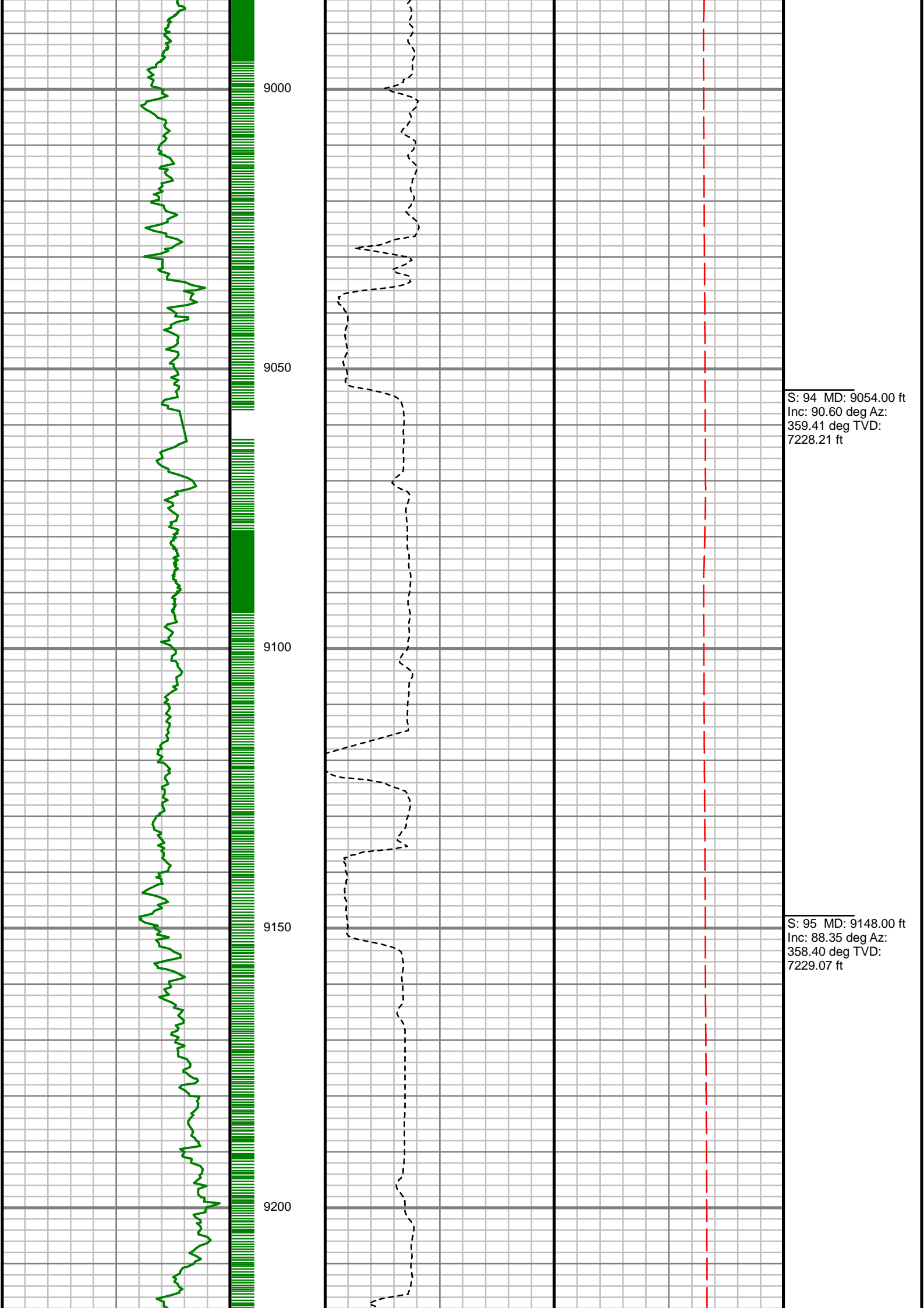


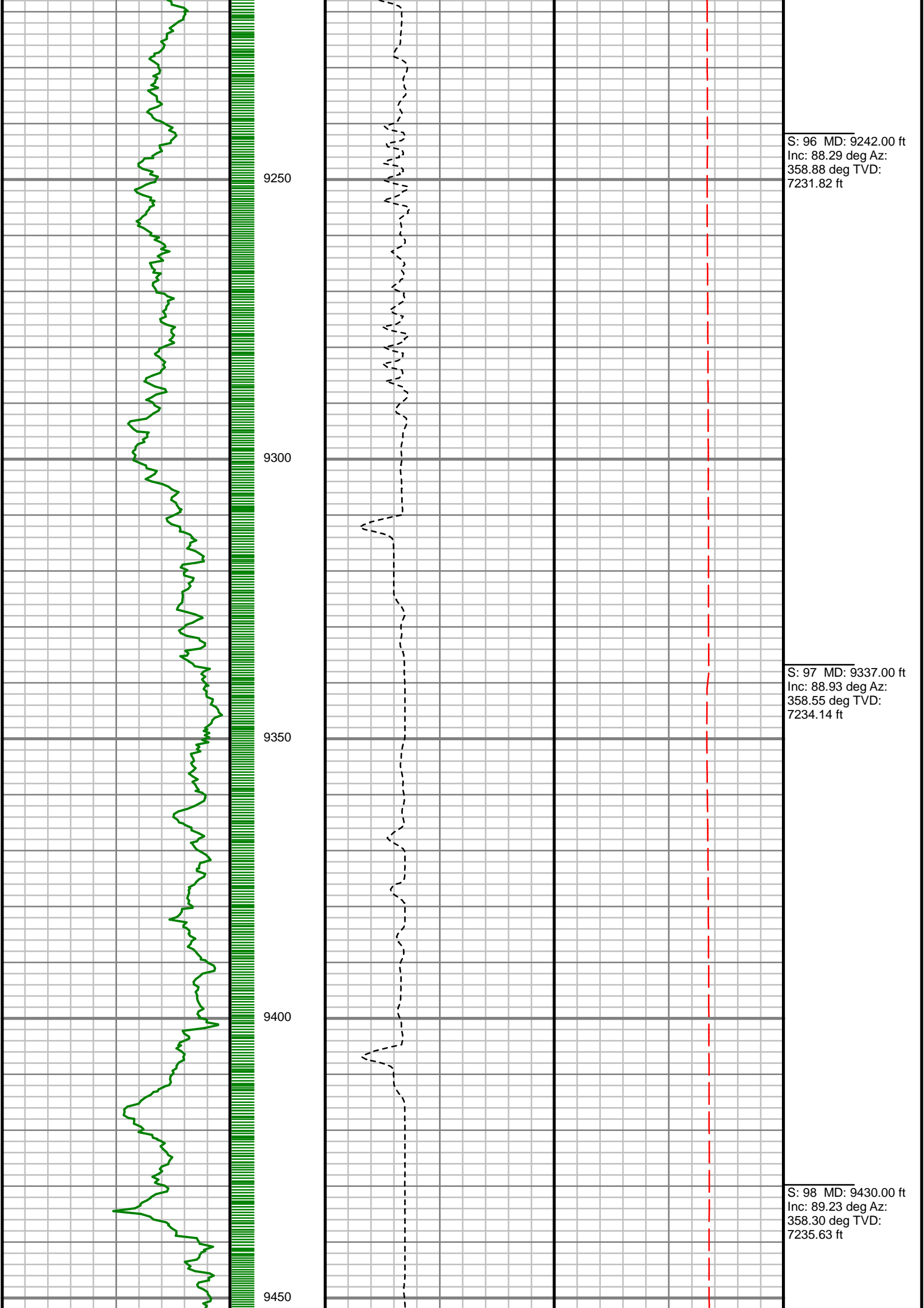
S: 87 MD: 8394.00 ft
Inc: 90.91 deg Az:
358.33 deg TVD:
7243.90 ft

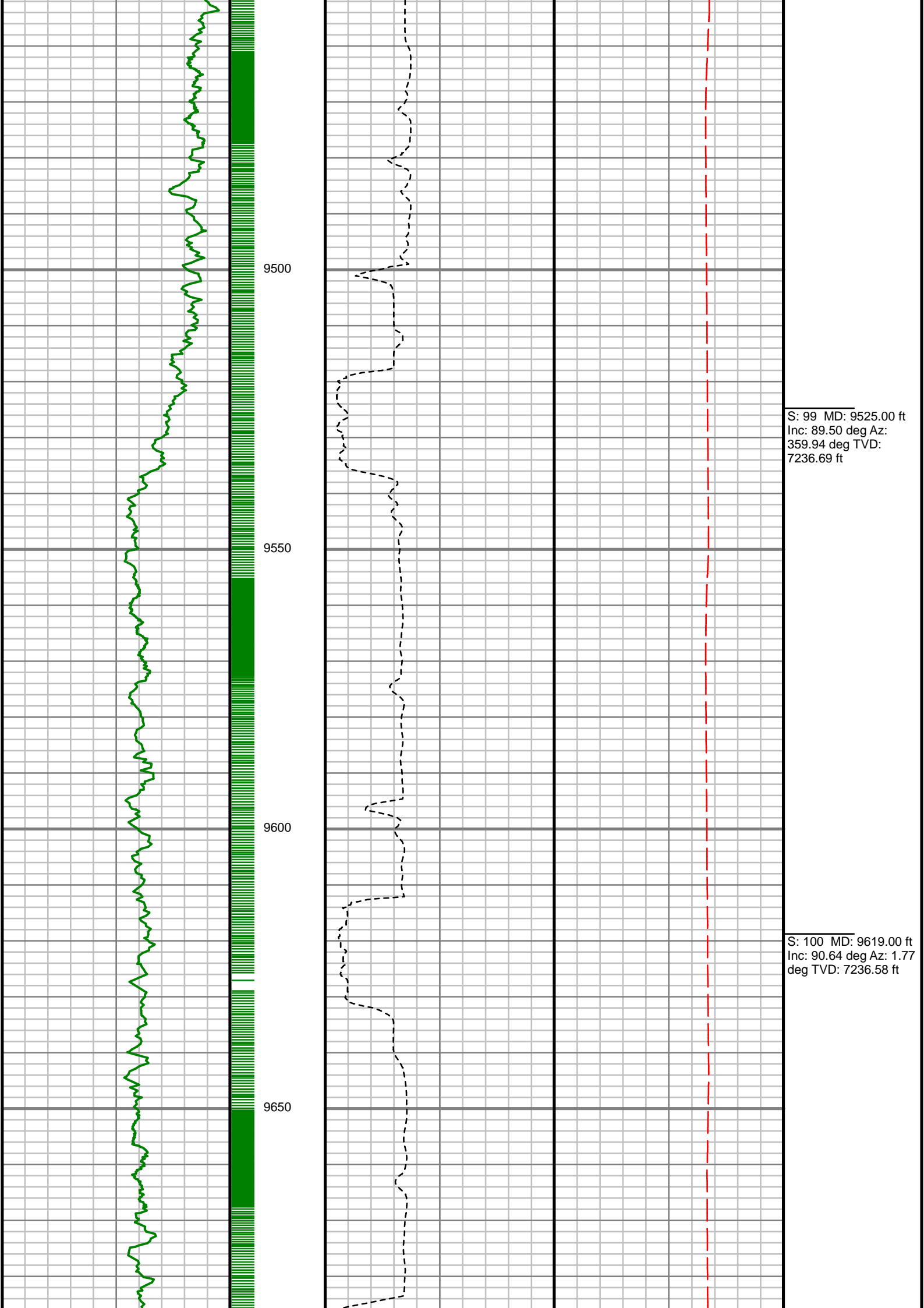
S: 88 MD: 8489.00 ft
Inc: 90.87 deg Az:
359.07 deg TVD:
7242.43 ft

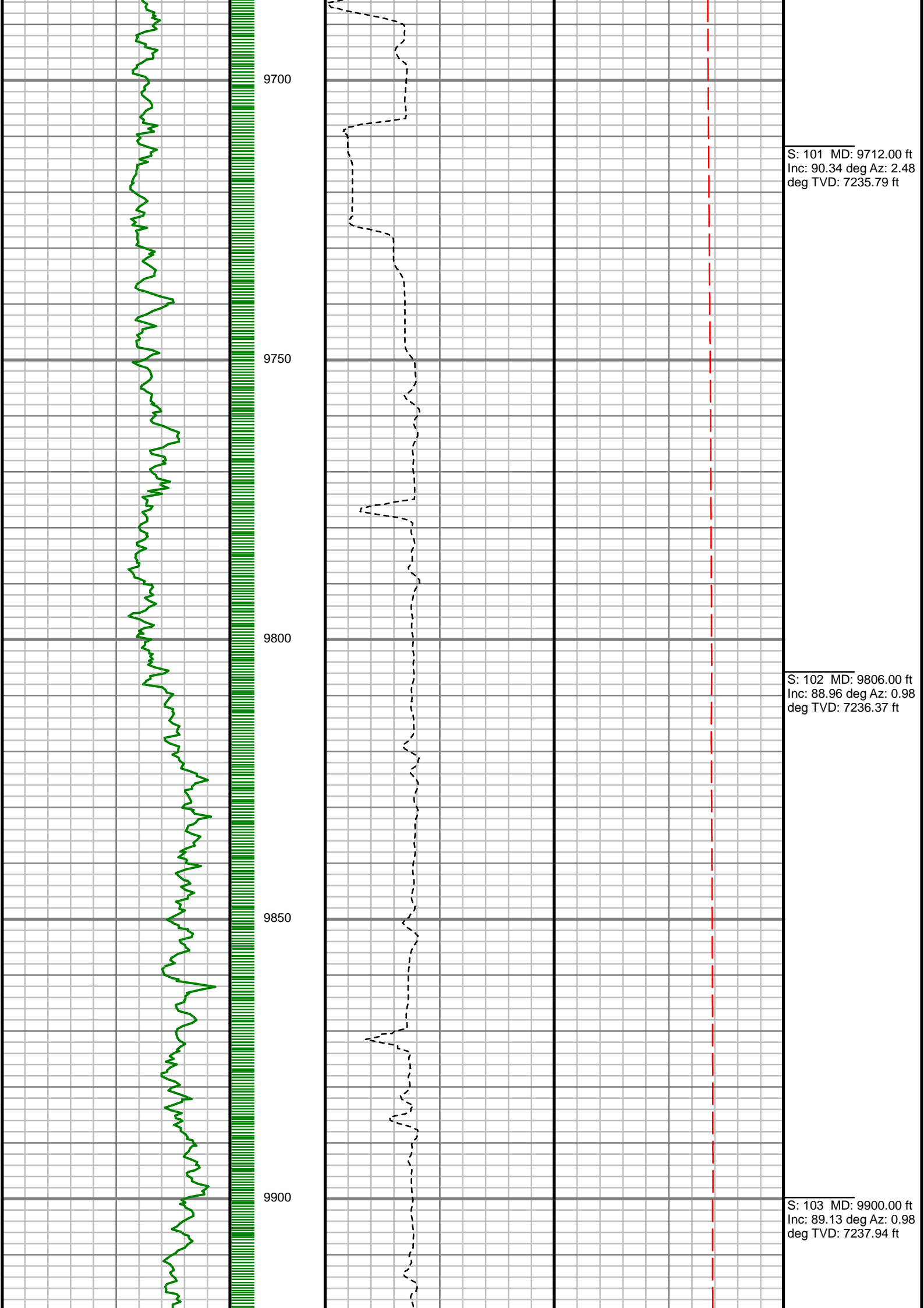


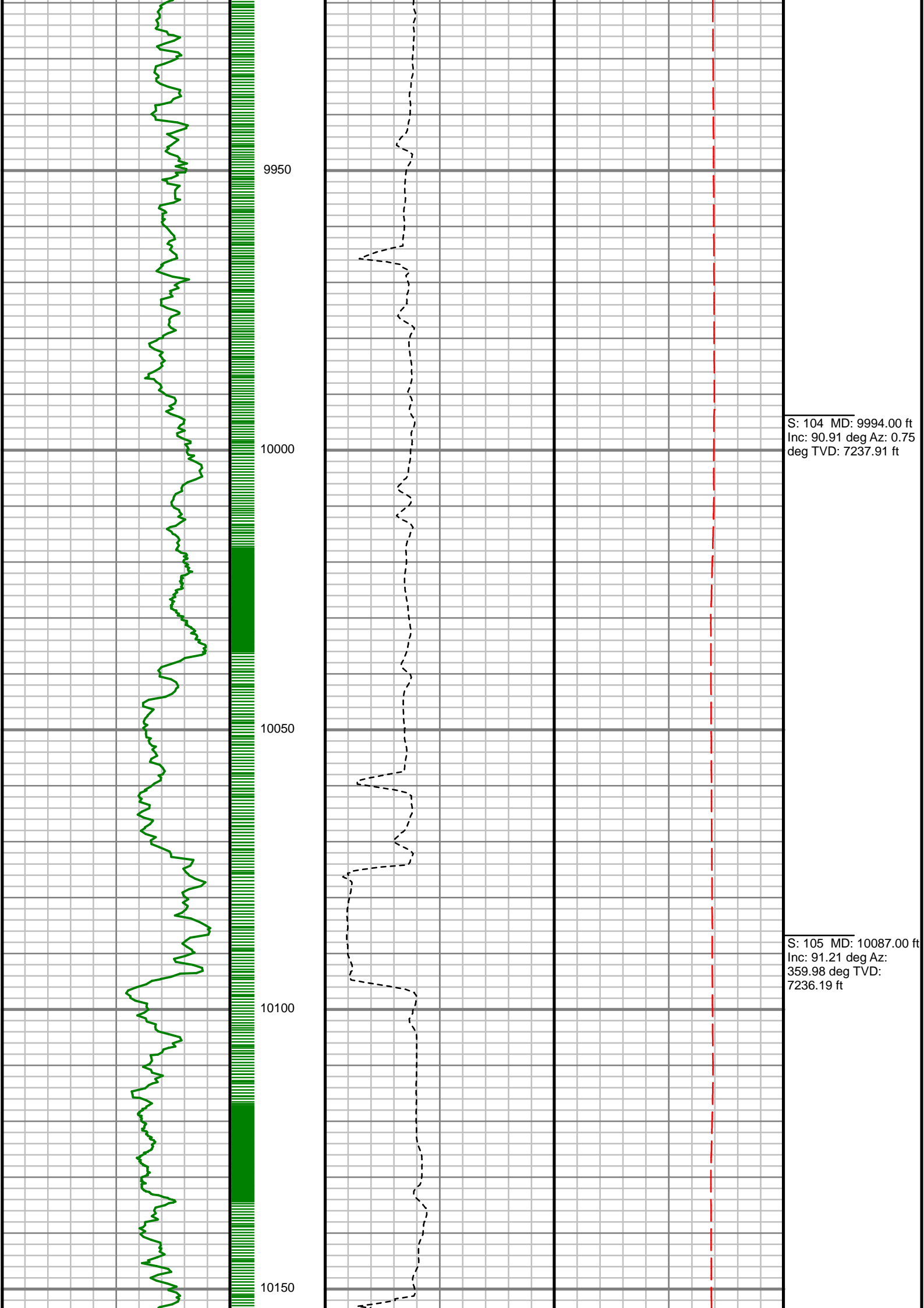


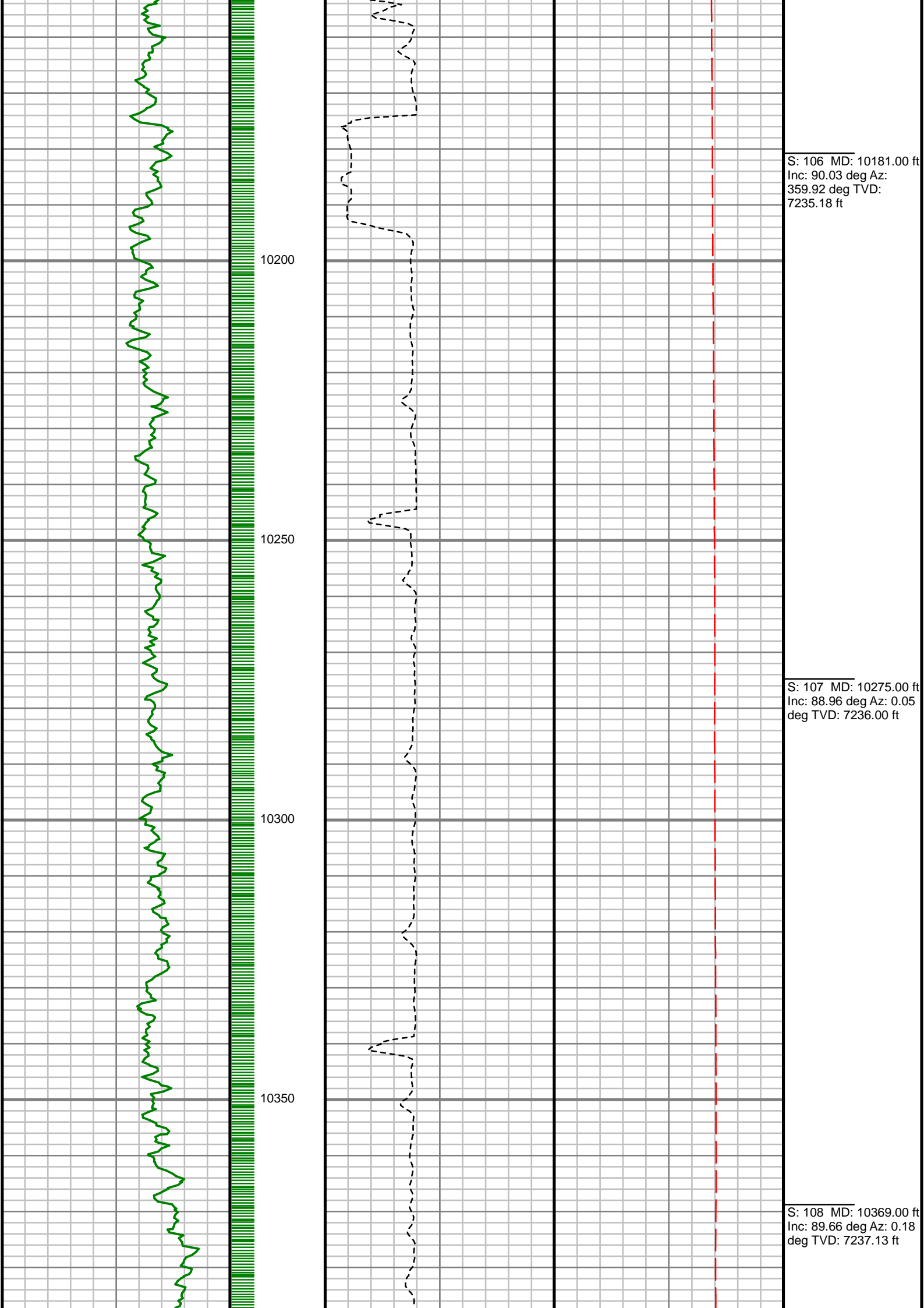


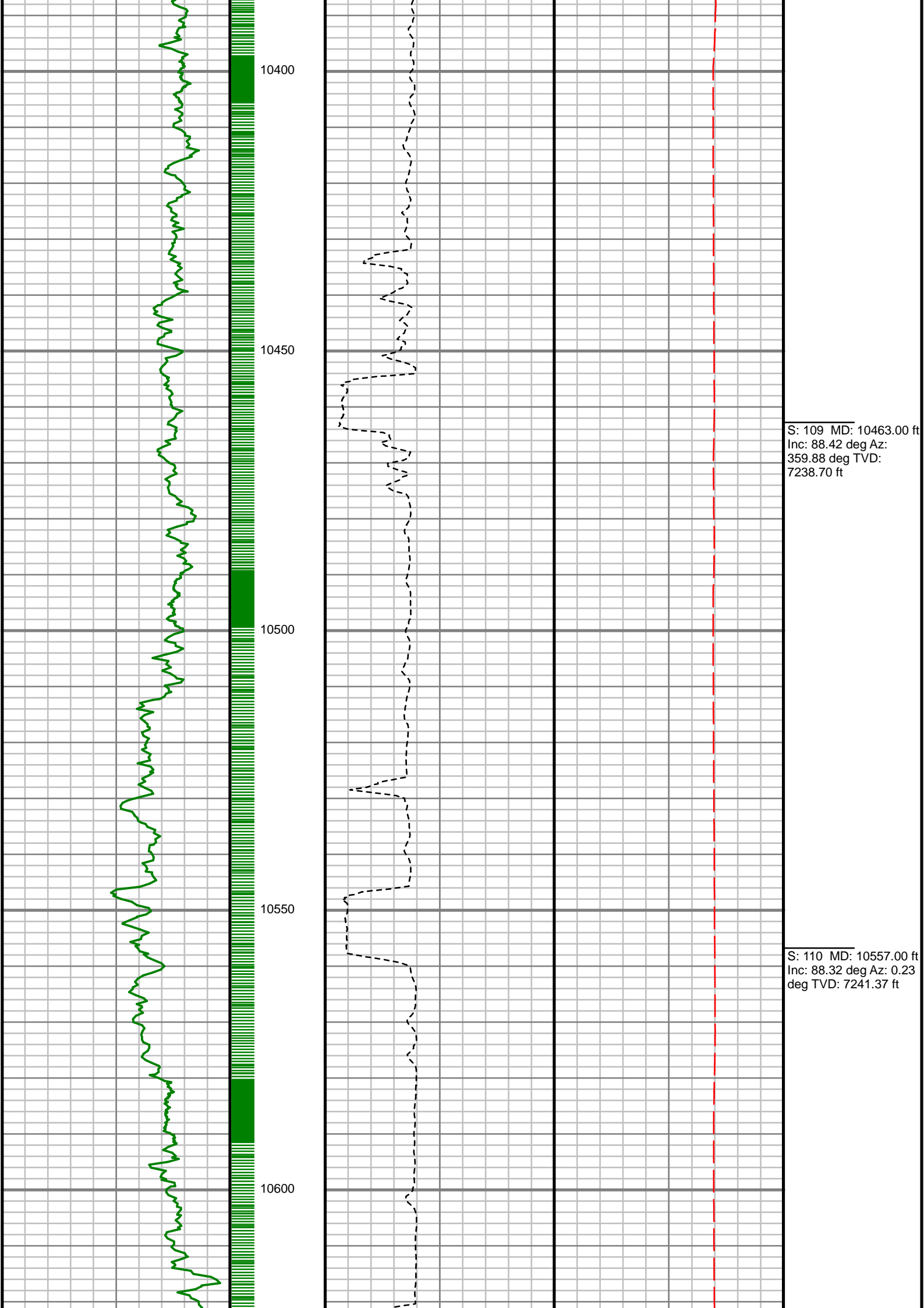


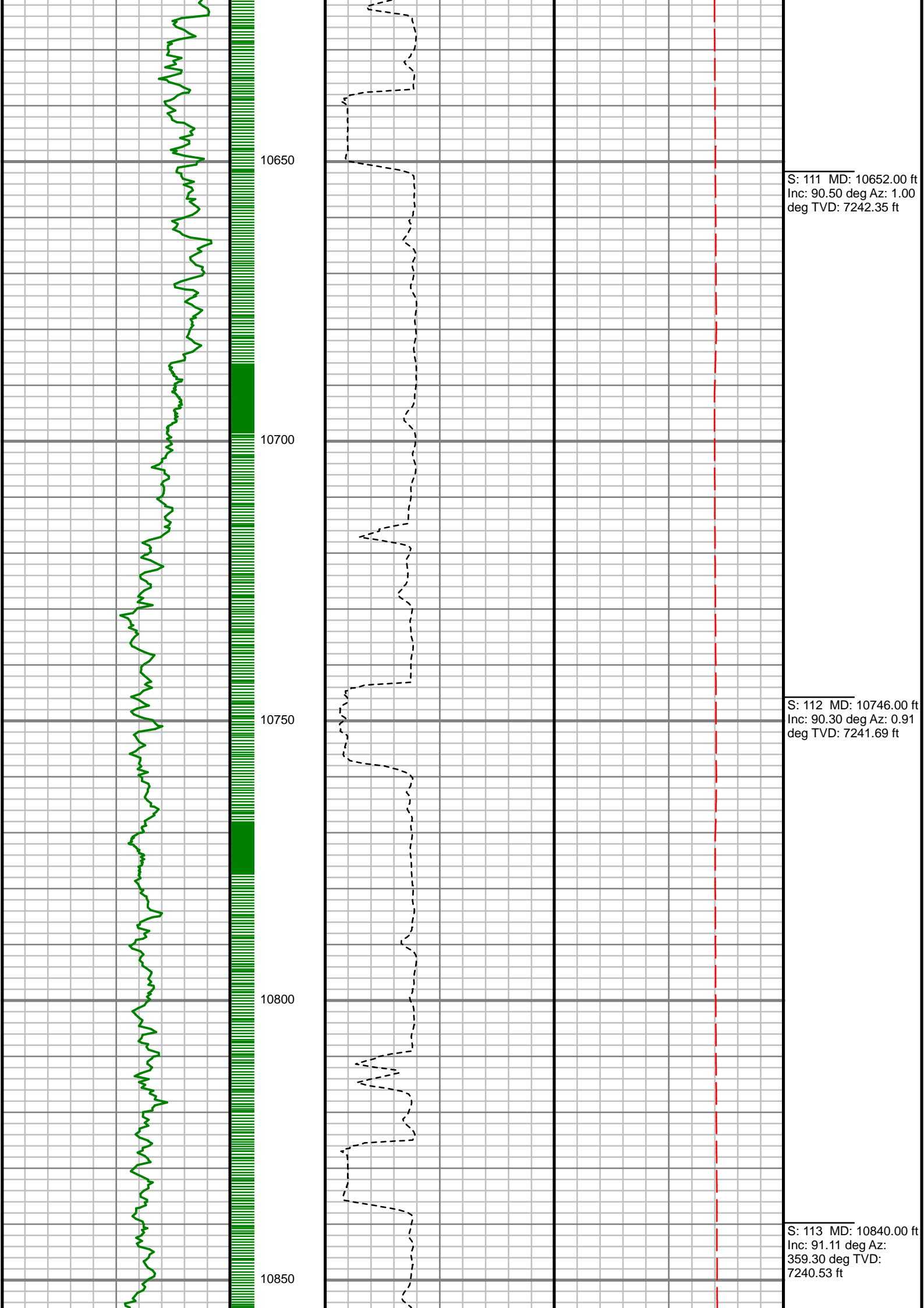


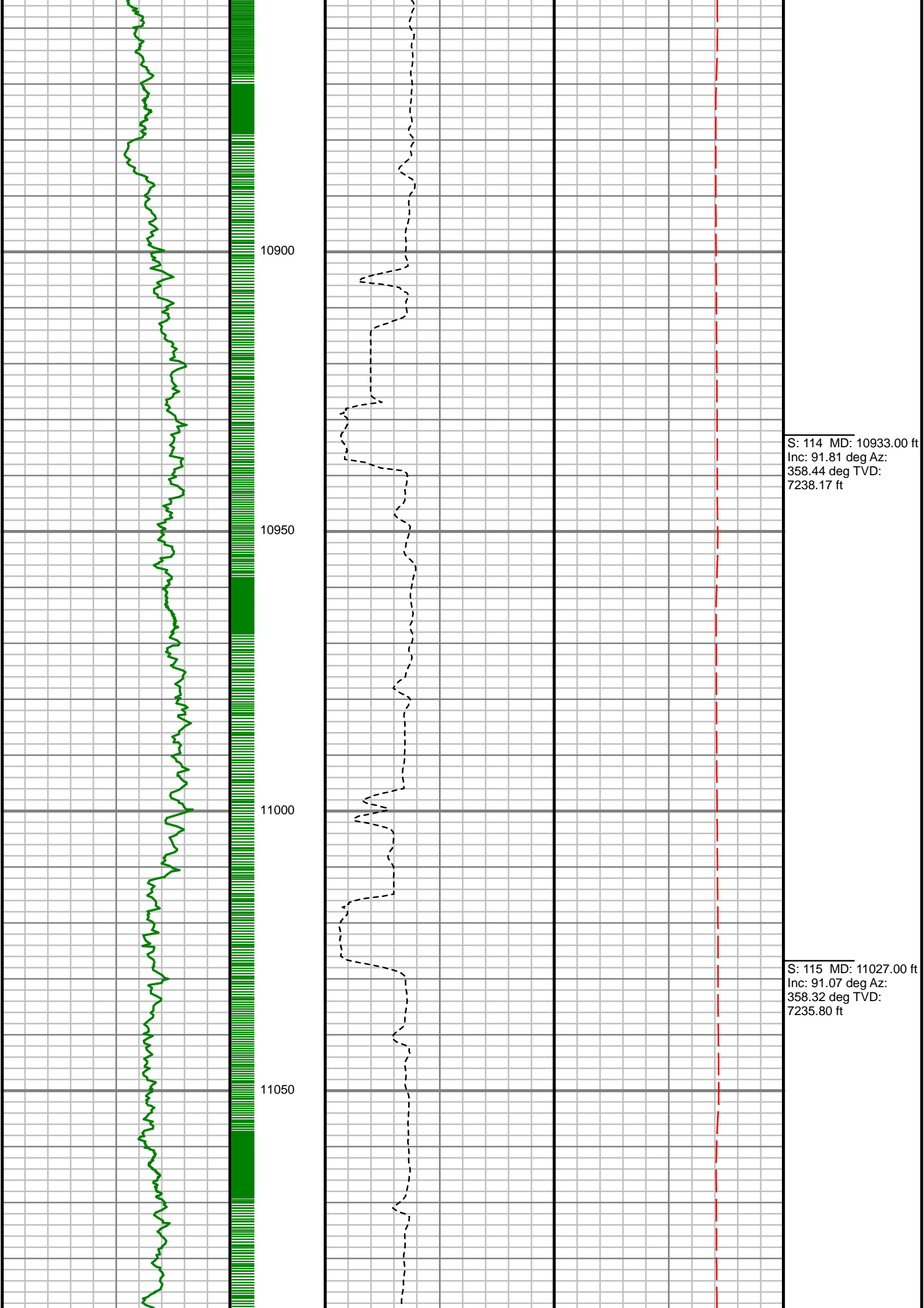


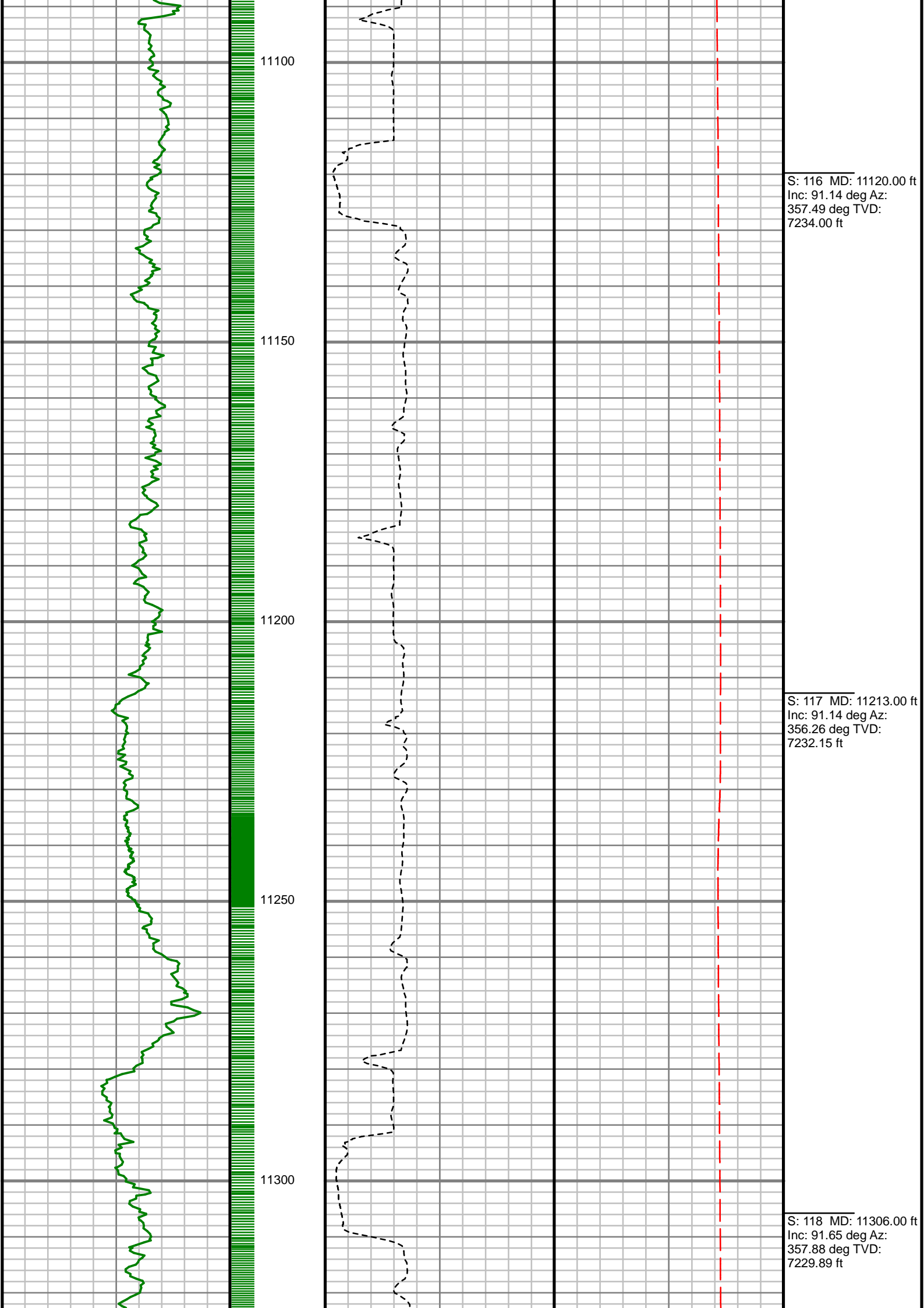


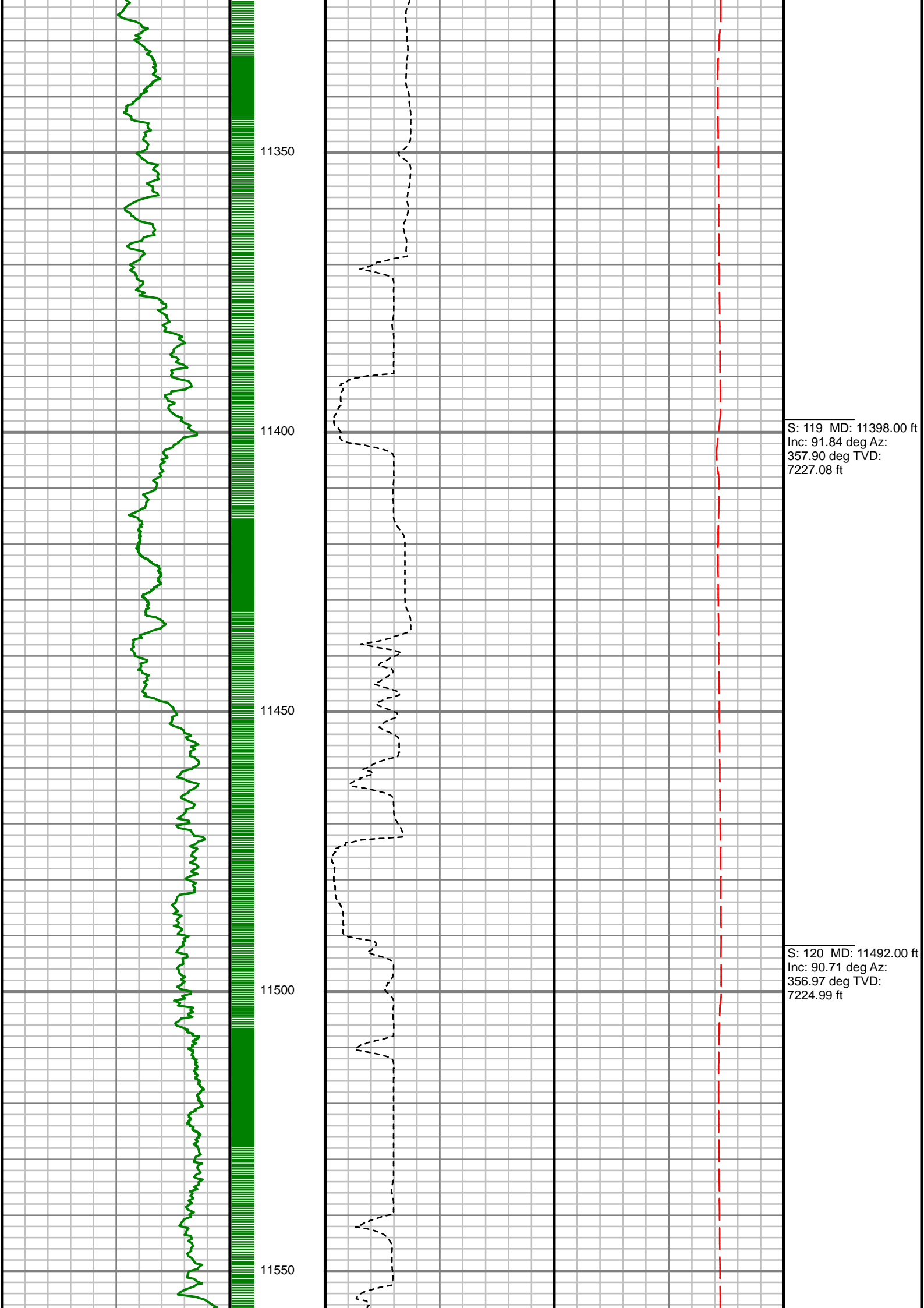


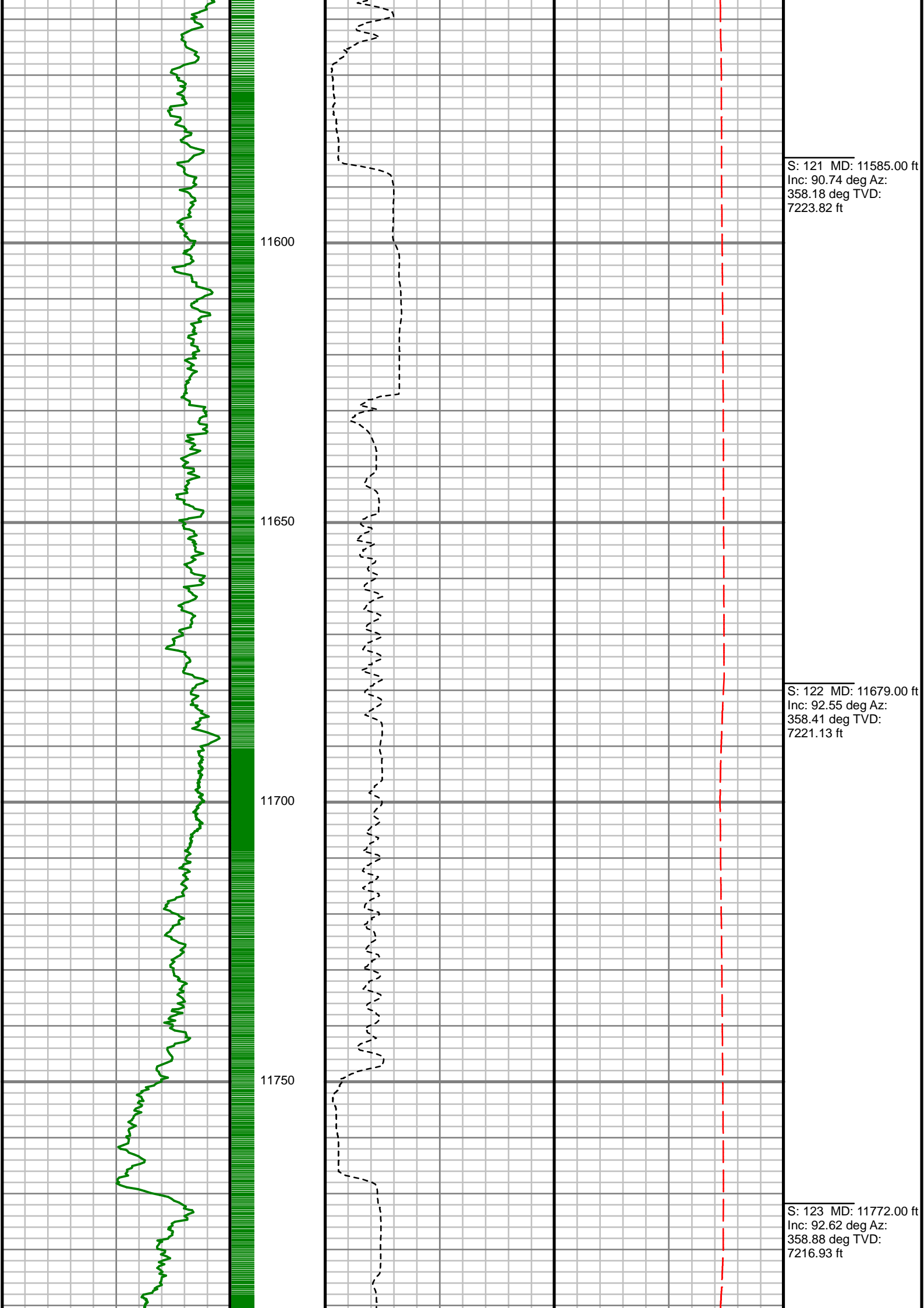


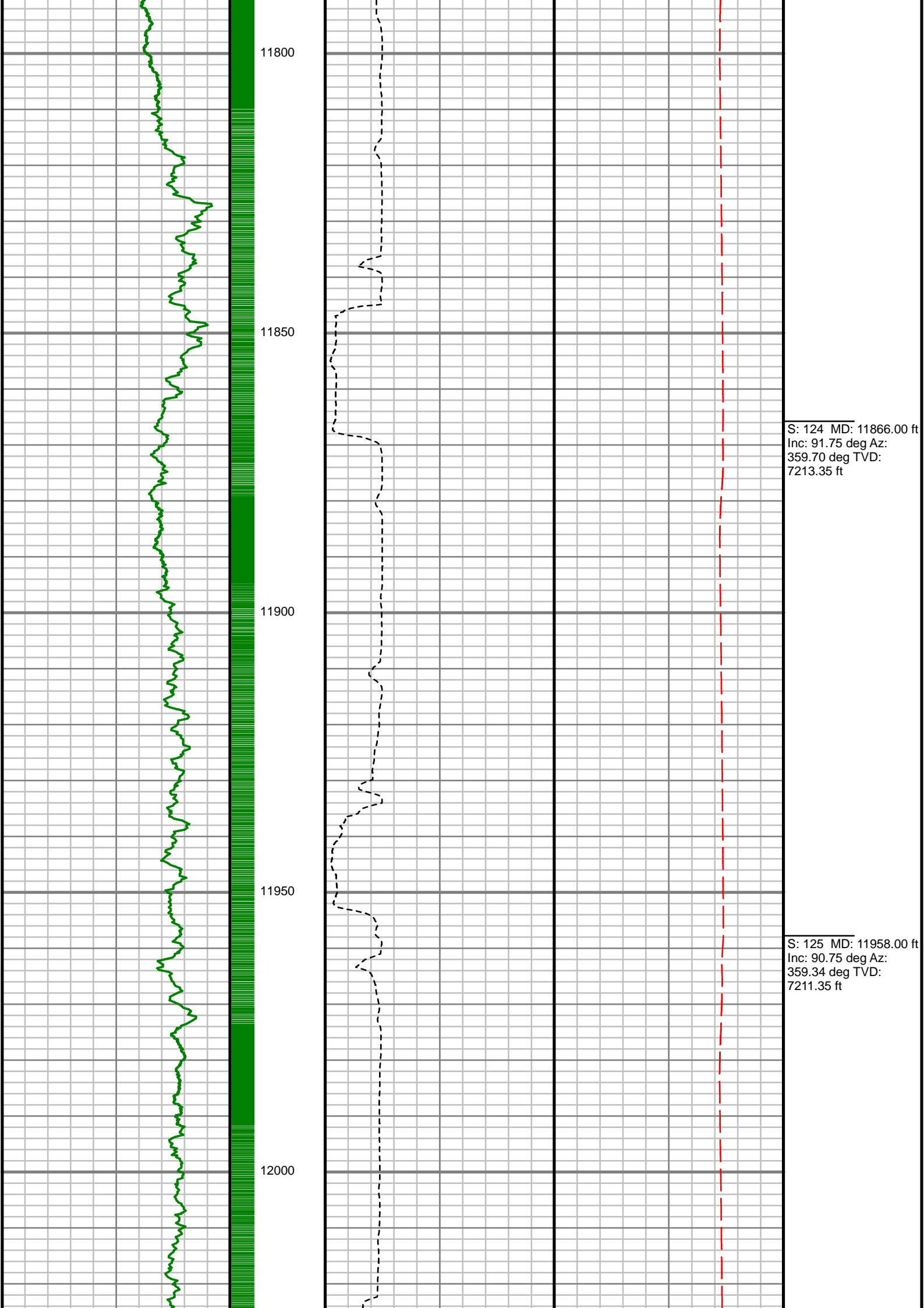


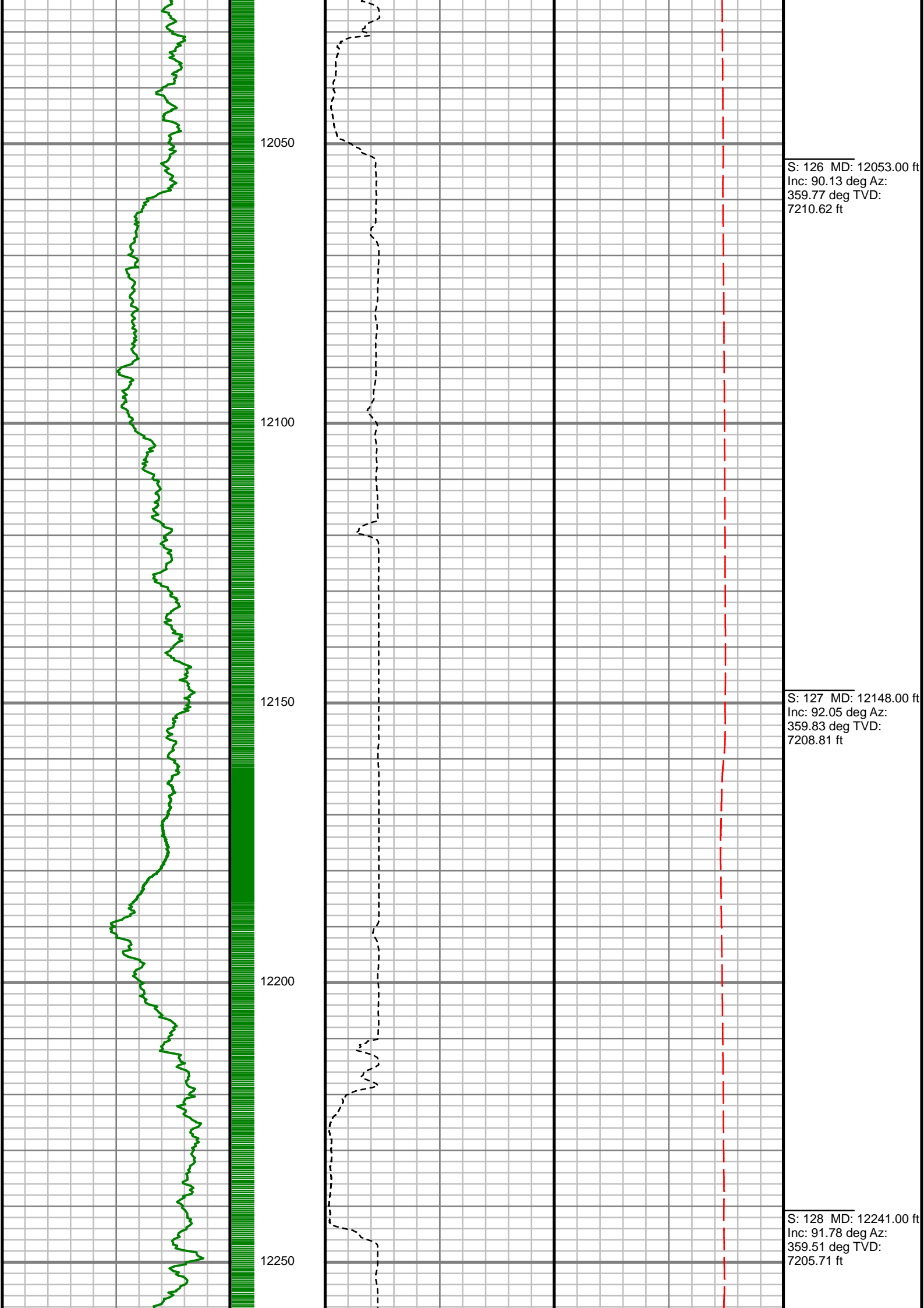


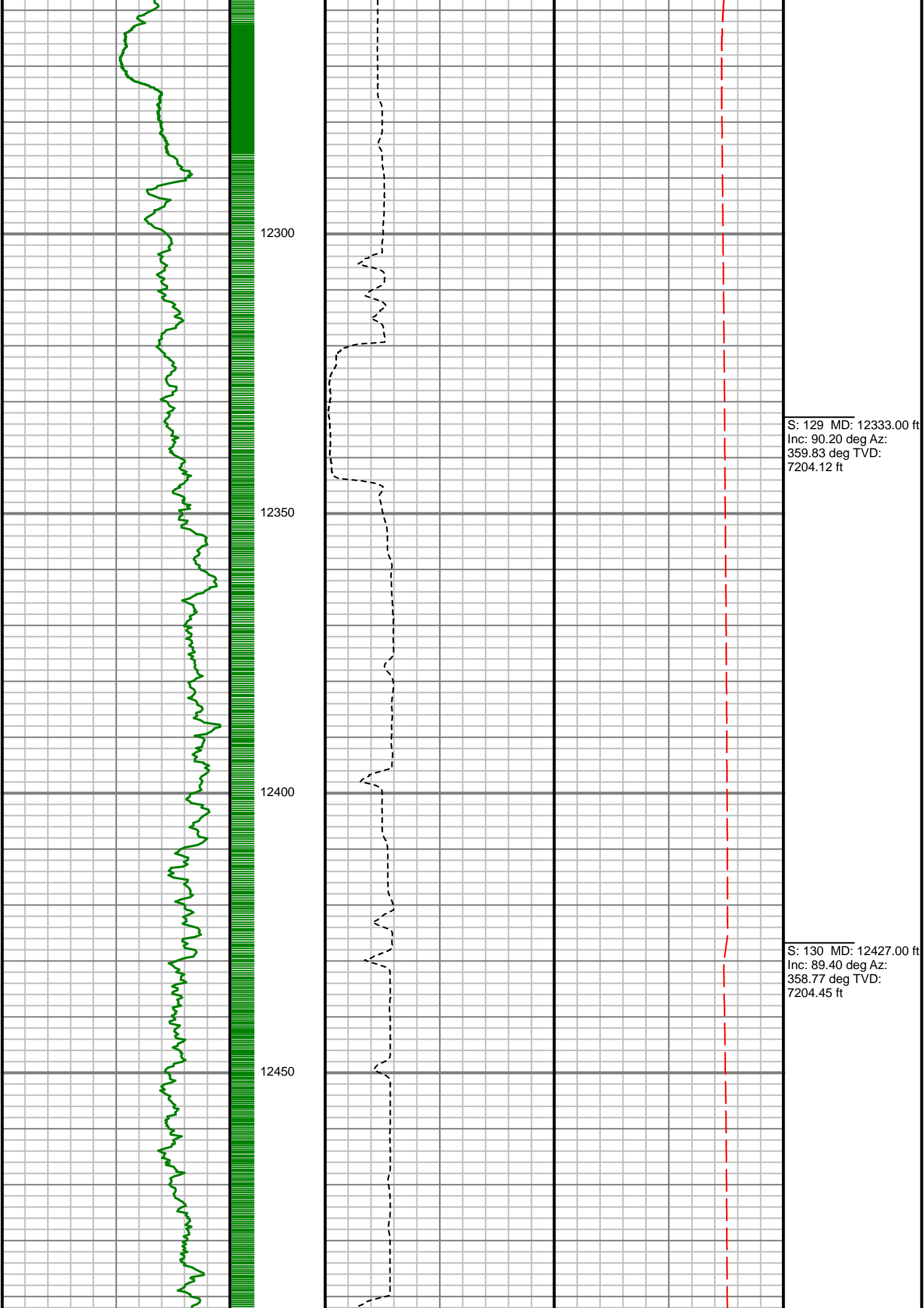


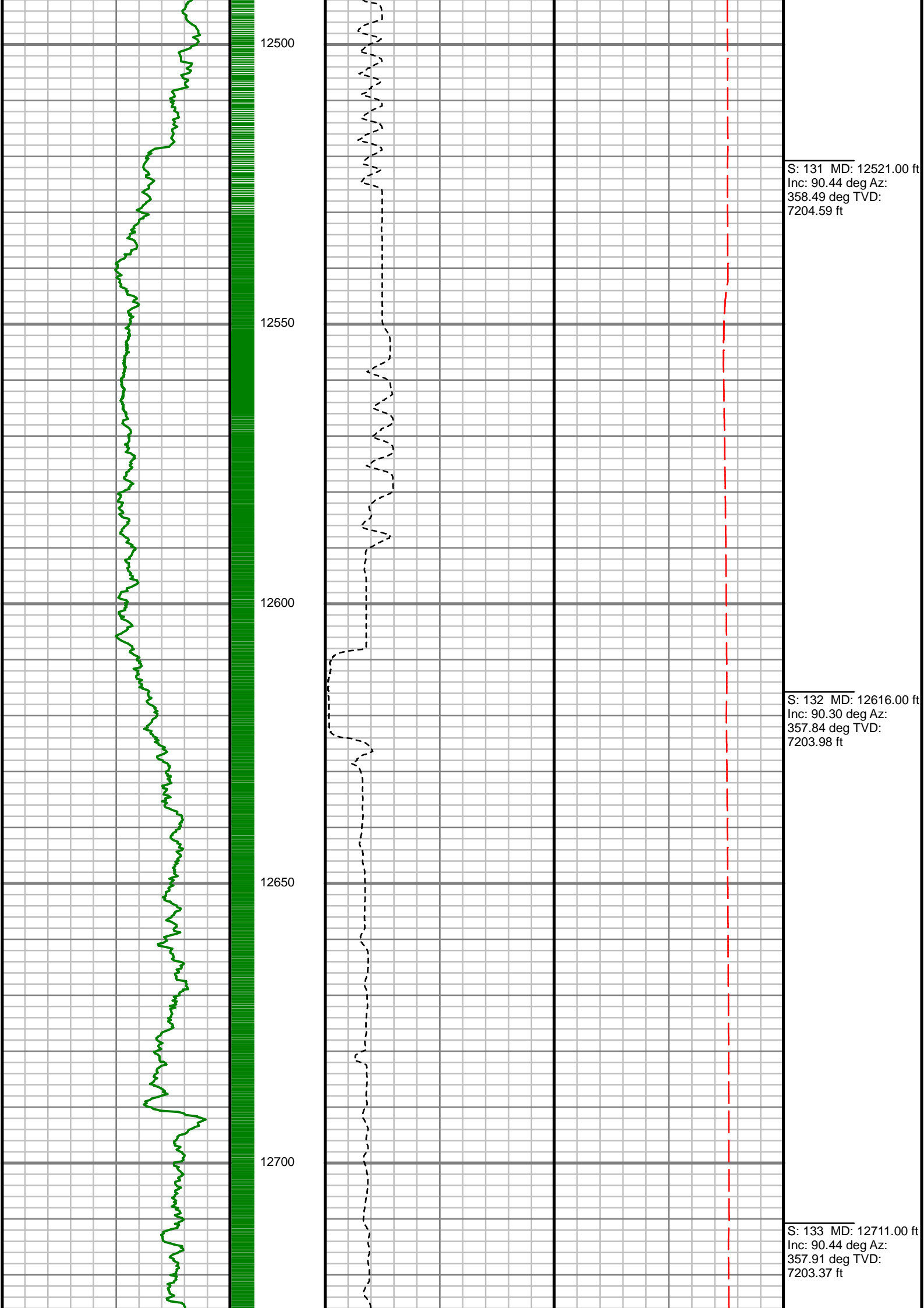


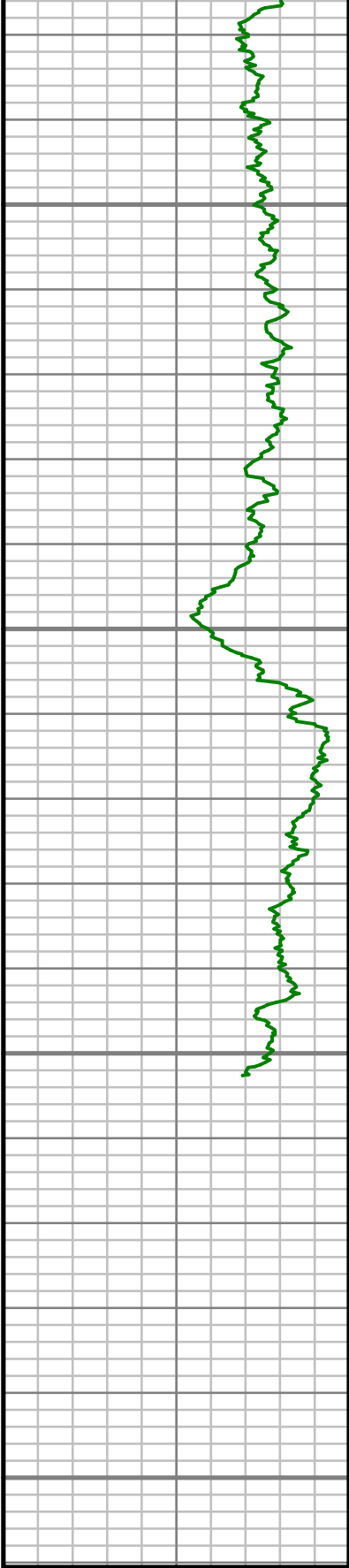






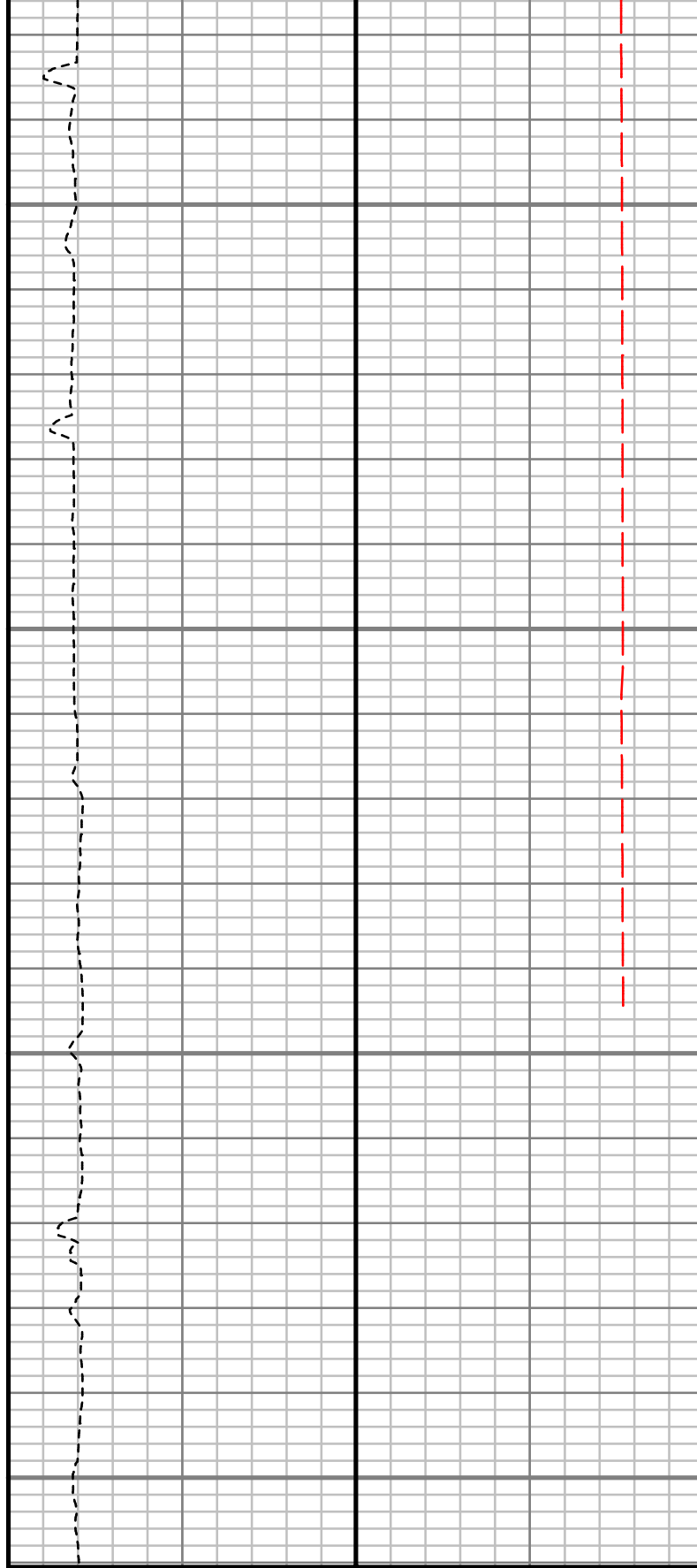






Gamma Ray (GR)		
0	Unit = aapi	150

MEASURED DEPTH
1:240 (ft)



Rate of Penetration (ROP)		
0	Unit = ft/hr	1000

Tool Temperature (TEMP)		
0	Unit = °F	300

S: 134 MD: 12805.00 ft
Inc: 92.92 deg Az:
357.88 deg TVD:
7200.62 ft

S: 135 MD: 12843.00 ft
Inc: 94.20 deg Az:
357.87 deg TVD:
7198.26 ft

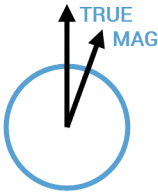
Comments

CUSTOMER ANDARKO E&P ONSHORE LLC
PROJECT LAND FED
FIELD WATTENBURG

WELL INFORMATION
Lat/Long 40.099028° N, 104.805681° W
Northing 14,562,853.23 ft
Easting 1,694,757.21 ft
UWI 051234239800

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 359.44°
Calculation Method Minimum Curvature



GEOMAGNETIC REFERENCE INFORMATION Local Gravity: 999.046 mG [computed]

MD	MODEL	DATE	DECLINATION	MAG TO TRUE
0-4034 ft	ANADARKO MAGVAR	03 Jun 2016	8.36°	add 8.36°
4034-6230 ft	ANADARKO MAGVAR	03 Jun 2016	8.38°	add 8.38°
6230-12843 ft	ANADARKO MAGVAR	03 Jun 2016	8.39°	add 8.39°

WELL NOTES

OPERATORS

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
77.50	0.26	206.52	77.50	-0.16	-0.16	-0.08	0.34
171.50	0.52	221.89	171.50	-0.66	-0.67	-0.46	0.30
265.50	0.63	219.38	265.49	-1.37	-1.38	-1.07	0.12
359.50	1.09	237.75	359.48	-2.24	-2.26	-2.16	0.56
453.50	1.41	244.27	453.46	-3.20	-3.24	-3.95	0.37
547.50	1.42	245.79	547.43	-4.16	-4.22	-6.06	0.04
641.50	1.43	250.08	641.40	-5.01	-5.10	-8.22	0.11
735.50	1.80	260.84	735.36	-5.62	-5.73	-10.78	0.51
829.50	2.85	298.06	829.29	-4.73	-4.87	-14.30	1.90
923.50	4.70	311.74	923.08	-1.01	-1.20	-19.24	2.18
1017.50	6.34	313.66	1016.65	5.20	4.95	-25.87	1.76
1111.50	7.68	315.50	1109.94	13.34	13.01	-34.03	1.45
1205.50	8.76	311.73	1202.97	22.68	22.25	-43.77	1.28
1298.50	10.21	311.01	1294.70	32.92	32.38	-55.28	1.56
1392.50	11.88	303.95	1386.96	43.93	43.25	-69.59	2.28
1488.50	12.69	298.25	1480.77	54.61	53.76	-87.08	1.52
1583.50	12.59	295.48	1573.46	64.18	63.15	-105.61	0.65
1662.50	12.36	295.12	1650.60	71.62	70.44	-121.04	0.31
1889.00	11.60	294.05	1872.16	91.62	90.02	-163.79	0.35

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
1984.00	11.68	295.32	1965.21	99.79	98.02	-181.21	0.28
2078.00	11.45	293.33	2057.30	107.72	105.79	-198.38	0.49
2173.00	12.47	292.90	2150.24	115.62	113.51	-216.49	1.07
2268.00	12.65	290.53	2242.96	123.45	121.15	-235.67	0.58
2363.00	12.29	288.65	2335.72	130.52	128.03	-255.00	0.57
2459.00	11.78	288.22	2429.61	137.04	134.36	-273.98	0.54
2553.00	11.40	286.51	2521.70	142.85	140.00	-292.00	0.54
2648.00	10.65	286.17	2614.94	148.13	145.12	-309.43	0.79
2742.00	11.04	286.72	2707.27	153.31	150.12	-326.39	0.42
2837.00	11.99	290.50	2800.35	159.56	156.20	-344.35	1.28
2931.00	12.76	293.93	2892.17	167.37	163.83	-362.98	1.13
3025.00	12.36	293.91	2983.92	175.84	172.12	-381.67	0.43
3120.00	11.39	294.00	3076.89	183.95	180.05	-399.54	1.02
3214.00	11.77	292.43	3168.97	191.55	187.49	-416.89	0.52
3309.00	12.48	290.19	3261.85	198.98	194.73	-435.48	0.90
3404.00	11.46	288.47	3354.78	205.69	201.26	-454.07	1.14
3498.00	11.01	288.03	3446.98	211.60	207.00	-471.46	0.48
3593.00	10.82	292.95	3540.26	218.04	213.28	-488.30	1.00
3685.00	11.02	297.81	3630.60	225.67	220.75	-504.03	1.02
3780.00	10.35	295.97	3723.95	233.79	228.72	-519.73	0.79

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
3874.00	11.33	292.97	3816.28	241.25	236.02	-535.82	1.21
3969.00	12.48	295.28	3909.23	249.45	244.05	-553.69	1.31
4063.00	12.93	293.43	4000.93	258.15	252.57	-572.53	0.65
4158.00	12.35	292.13	4093.63	266.39	260.62	-591.69	0.68
4251.00	12.41	293.00	4184.47	274.22	268.27	-610.10	0.21
4347.00	11.61	290.73	4278.36	281.85	275.72	-628.63	0.97
4442.00	10.88	287.20	4371.54	288.06	281.76	-646.14	1.05
4535.00	10.94	281.95	4462.86	292.65	286.18	-663.16	1.07
4630.00	12.22	287.04	4555.93	297.64	290.99	-681.59	1.72
4725.00	13.66	288.58	4648.51	304.36	297.51	-701.84	1.55
4819.00	13.66	286.62	4739.86	311.27	304.22	-722.99	0.49
4914.00	13.07	285.63	4832.29	317.58	310.32	-744.08	0.66
5007.00	12.23	289.18	4923.03	323.84	316.39	-763.51	1.23
5100.00	12.51	292.86	5013.87	331.17	323.54	-782.10	0.90
5195.00	12.63	294.72	5106.60	339.69	331.88	-801.01	0.44
5289.00	13.01	292.82	5198.25	348.28	340.28	-820.10	0.61
5382.00	13.61	292.01	5288.75	356.64	348.44	-839.90	0.67
5475.00	12.81	291.82	5379.29	364.76	356.38	-859.61	0.87
5569.00	11.90	291.25	5471.11	372.33	363.76	-878.31	0.97
5663.00	12.52	297.58	5562.99	380.73	371.99	-896.38	1.57

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
5759.00	13.36	298.61	5656.55	391.05	382.12	-915.34	0.91
5854.00	12.26	295.71	5749.19	400.87	391.76	-934.07	1.35
5948.00	10.42	293.53	5841.35	408.75	399.48	-950.86	2.01
6043.00	8.55	291.67	5935.04	414.93	405.52	-965.30	1.99
6137.00	6.96	288.00	6028.18	419.39	409.86	-977.21	1.78
6231.00	5.82	284.99	6121.60	422.48	412.85	-987.22	1.26
6324.00	5.02	282.62	6214.18	424.67	414.96	-995.75	0.90
6418.00	4.01	281.09	6307.89	426.27	416.49	-1002.98	1.08
6510.00	1.76	284.55	6399.77	427.29	417.46	-1007.50	2.46
6604.00	1.47	307.31	6493.73	428.40	418.55	-1009.85	0.74
6697.00	1.60	305.54	6586.70	429.90	420.03	-1011.86	0.15
6792.00	10.76	3.95	6681.08	439.55	429.68	-1012.33	10.55
6885.00	22.07	2.36	6770.15	465.75	455.89	-1011.01	12.17
6979.00	29.72	358.70	6854.65	506.75	496.89	-1010.81	8.31
7072.00	34.00	356.63	6933.63	555.79	545.92	-1012.86	4.75
7166.00	38.67	357.98	7009.33	611.43	601.53	-1015.44	5.05
7262.00	48.02	357.69	7079.06	677.23	667.31	-1017.94	9.74
7357.00	57.60	358.02	7136.41	752.80	742.86	-1020.75	10.09
7452.00	65.17	358.30	7181.87	836.11	826.15	-1023.42	7.97
7546.00	72.59	358.31	7215.72	923.72	913.74	-1026.02	7.89

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
7641.00	83.54	0.56	7235.34	1016.52	1006.53	-1026.90	11.76
7736.00	90.50	0.28	7240.28	1111.32	1101.34	-1026.21	7.34
7831.00	88.99	358.08	7240.69	1206.31	1196.32	-1027.57	2.80
7925.00	89.23	357.74	7242.15	1300.26	1290.25	-1030.99	0.45
8019.00	88.86	357.61	7243.72	1394.21	1384.16	-1034.81	0.42
8112.00	89.70	359.03	7244.89	1487.18	1477.11	-1037.54	1.78
8206.00	89.90	0.10	7245.22	1581.18	1571.10	-1038.26	1.16
8394.00	90.91	358.33	7243.90	1769.16	1759.07	-1040.83	1.08
8489.00	90.87	359.07	7242.43	1864.14	1854.03	-1042.98	0.78
8583.00	92.22	2.02	7239.89	1958.08	1947.98	-1042.08	3.44
8676.00	92.48	2.52	7236.08	2050.88	2040.83	-1038.40	0.61
8770.00	91.07	1.35	7233.16	2144.74	2134.73	-1035.23	1.95
8864.00	90.37	1.63	7231.97	2238.68	2228.69	-1032.79	0.81
8959.00	91.78	1.59	7230.19	2333.59	2323.63	-1030.12	1.49
9054.00	90.60	359.41	7228.21	2428.54	2418.60	-1029.29	2.61
9148.00	88.35	358.40	7229.07	2522.53	2512.57	-1031.09	2.62
9242.00	88.29	358.88	7231.82	2616.48	2606.51	-1033.32	0.51
9337.00	88.93	358.55	7234.14	2711.44	2701.45	-1035.44	0.75
9430.00	89.23	358.30	7235.63	2804.42	2794.41	-1038.00	0.42
9525.00	89.50	359.94	7236.69	2899.41	2889.38	-1039.45	1.75

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
9619.00	90.64	1.77	7236.58	2993.37	2983.37	-1038.05	2.29
9712.00	90.34	2.48	7235.79	3086.27	3076.30	-1034.60	0.83
9806.00	88.96	0.98	7236.37	3180.18	3170.25	-1031.77	2.16
9900.00	89.13	0.98	7237.94	3274.14	3264.22	-1030.16	0.18
9994.00	90.91	0.75	7237.91	3368.10	3358.21	-1028.73	1.91
10087.00	91.21	359.98	7236.19	3461.08	3451.19	-1028.13	0.89
10181.00	90.03	359.92	7235.18	3555.06	3545.18	-1028.22	1.25
10275.00	88.96	0.05	7236.00	3649.05	3639.18	-1028.24	1.15
10369.00	89.66	0.18	7237.13	3743.04	3733.17	-1028.05	0.76
10463.00	88.42	359.88	7238.70	3837.02	3827.16	-1028.00	1.36
10557.00	88.32	0.23	7241.37	3930.98	3921.12	-1027.91	0.38
10652.00	90.50	1.00	7242.35	4025.95	4016.10	-1026.89	2.44
10746.00	90.30	0.91	7241.69	4119.91	4110.09	-1025.33	0.24
10840.00	91.11	359.30	7240.53	4213.89	4204.07	-1025.16	1.92
10933.00	91.81	358.44	7238.17	4306.86	4297.02	-1026.99	1.19
11027.00	91.07	358.32	7235.80	4400.81	4390.96	-1029.65	0.79
11120.00	91.14	357.49	7234.00	4493.76	4483.88	-1033.05	0.89
11213.00	91.14	356.26	7232.15	4586.65	4576.72	-1038.11	1.32
11306.00	91.65	357.88	7229.89	4679.54	4669.57	-1042.87	1.82
11398.00	91.84	357.90	7227.08	4771.46	4761.46	-1046.25	0.22

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
11492.00	90.71	356.97	7224.99	4865.38	4855.34	-1050.46	1.57
11585.00	90.74	358.18	7223.82	4958.32	4948.25	-1054.40	1.31
11679.00	92.55	358.41	7221.13	5052.26	5042.16	-1057.19	1.94
11772.00	92.62	358.88	7216.93	5145.15	5135.04	-1059.38	0.51
11866.00	91.75	359.70	7213.35	5239.08	5228.97	-1060.53	1.27
11958.00	90.75	359.34	7211.35	5331.06	5320.94	-1061.30	1.16
12053.00	90.13	359.77	7210.62	5426.05	5415.93	-1062.05	0.79
12148.00	92.05	359.83	7208.81	5521.03	5510.91	-1062.38	2.01
12241.00	91.78	359.51	7205.71	5613.98	5603.86	-1062.92	0.45
12333.00	90.20	359.83	7204.12	5705.96	5695.84	-1063.45	1.75
12427.00	89.40	358.77	7204.45	5799.96	5789.83	-1064.60	1.42
12521.00	90.44	358.49	7204.59	5893.95	5883.80	-1066.85	1.15
12616.00	90.30	357.84	7203.98	5988.92	5978.75	-1069.90	0.70
12711.00	90.44	357.91	7203.37	6083.88	6073.68	-1073.43	0.16
12805.00	92.92	357.88	7200.62	6177.80	6167.57	-1076.88	2.64
12843.00	94.20	357.87	7198.26	6215.71	6205.47	-1078.28	3.37

5" = 100' FEET MD