



1 : 600 / 1 : 240

[illegible]

WELL INFORMATION

MWD Run Number	100	200	300		
Date run completed	18-Jul-13	19-Jul-13	22-Jul-13		
Rig Bit Number	2	3	4		
Bit Size (in)	8.750	8.750	6.125		
Tool Nominal OD (in)	6.750	6.750	4.750		
Log Start Depth (MD, ft)	639.00	5,960.00	6,996.00		
Log End Depth (MD, ft)	5,960.00	6,996.00	11,078.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	16-Jul-13 23:21	15-Jul-13 23:14	20-Jul-13 13:15		
Drill/Wipe End Date and Time	17-Jul-13 23:20	15-Jul-13 23:14	22-Jul-13 10:00		
Min Inc (deg) @ Depth (MD, ft)	0.06 @ 4,110.00	1.33 @ 5,965.00	84.45 @ 7,090.00		
Max Inc (deg) @ Depth (MD, ft)	11.44 @ 2,595.00	80.43 @ 6,941.00	92.78 @ 8,225.00		
Bit TFA(in2) / Bit Type	0.75 / PDC	0.90 / PDC	0.55 / PDC		
Flow Rate (gpm)	577.93	571.86	308.37		
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A	N/A / N/A	N/A / N/A		
Fluid Type	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel		
Density (ppg) / Viscosity (spqt)	8.90 / 36.00	10.55 / 46.00	9.47 / 38.00		
Filtrate CL (ppm)	1,350.00	1,700.00	1,900.00		
pH / Fluid Loss (mptm)	9.10 / 17	9.70 / 9	10.40 / 9		
PV (cP) / YP (lbf2)	7 / 7.00	15 / 15.00	10 / 8.00		
% Solids / % Sand	4.00 / 0.25	10.20 / 0.20	6.50 / 0.10		
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A	N/A / N/A		
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Min Temp (deg F) / S	115.00 / RPM	120.00 / RPM	210.40 / RPM		

Max Tool Temp (degF) / Source	145.90 / PCM	162.80 / PCM	213.40 / PCM		
Rm @ Max Tool Temp (degF)	N/A @ 145.90	N/A @ 162.80	N/A @ 213.40		
Lead MWD Engineer	Christopher Befort	Christopher Befort	Robert Barnes		
Customer Representative	Jim Turner	Stetson Neilsen	Stetson Neilsen		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.76	5.76	5.76		
Sub Serial Number	233811	233811	12177824		
Insert Serial Number	11227560	11227560	11227560		
Date and Time Initialized	15-Jul-13 04:10	15-Jul-13 04:10	19-Jul-13 19:27		
Date and Time Read	19-Jul-13 10:07	19-Jul-13 10:13	22-Jul-13 20:23		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	57.00	55.00	64.00		
Software Version	6.21	6.21	6.21		
Sub Serial Number	233811	233811	112177824		
Sonde Serial Number	11297582	11297582	11297582		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	308.80	340.21	283.61		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	49.77	48.07	67.37		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	233811	233811	12177842		
Insert/Sonde Serial Number	11293348	11293348	11293348		

REMARKS

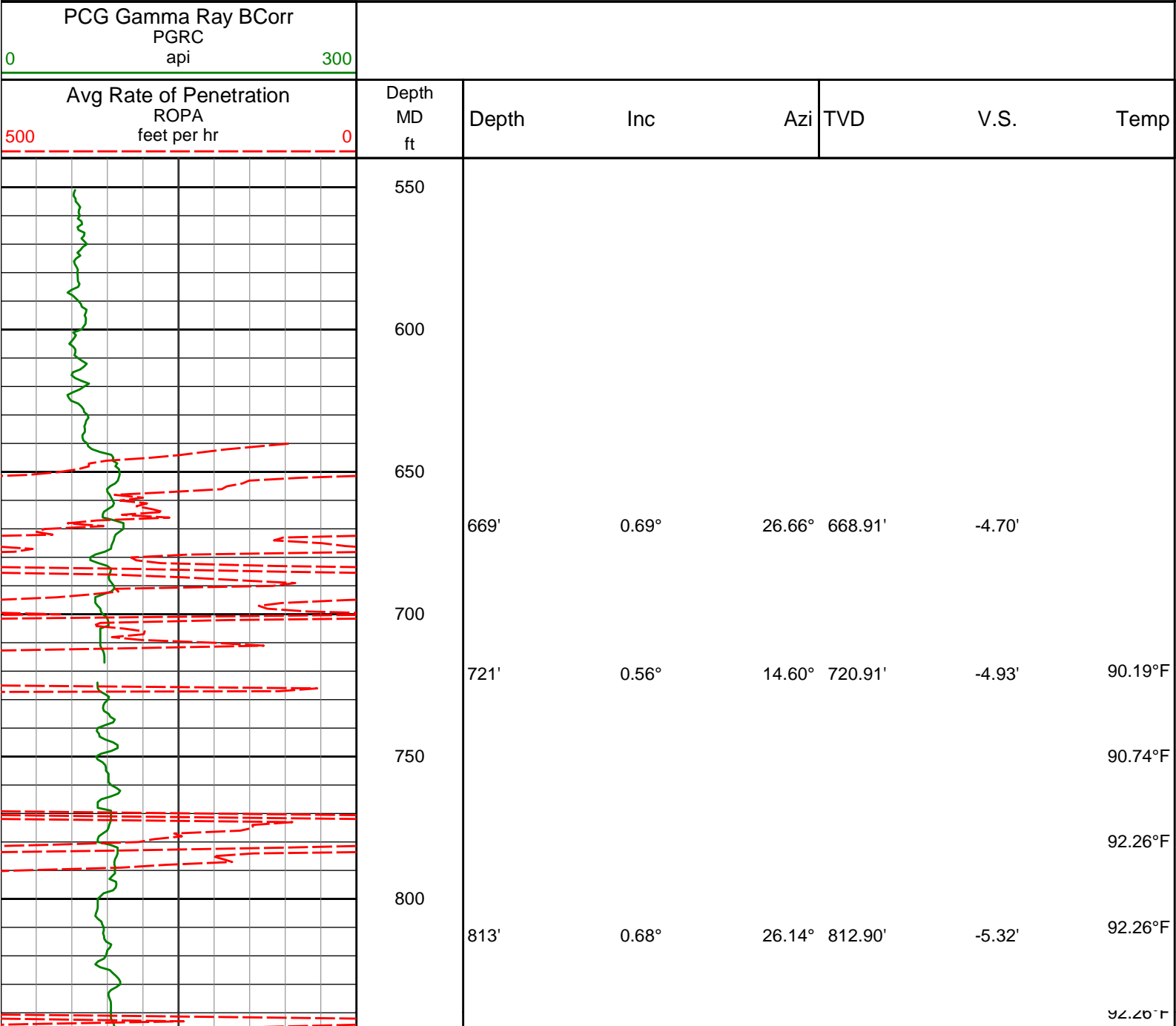
1. All depths are calibrated to the driller's pipe tally and are measured from the drill floor.
2. No depth corrections have been made for pipe stretch or compression.
3. All data presented is recorded (memory) data unless otherwise specified.
ROPA is real time data
4. The following smoothing parameters have been applied to the data:
1: 600
All curves: 1 ft interval, 3 ft coercion distance, 5 ft gap fill.

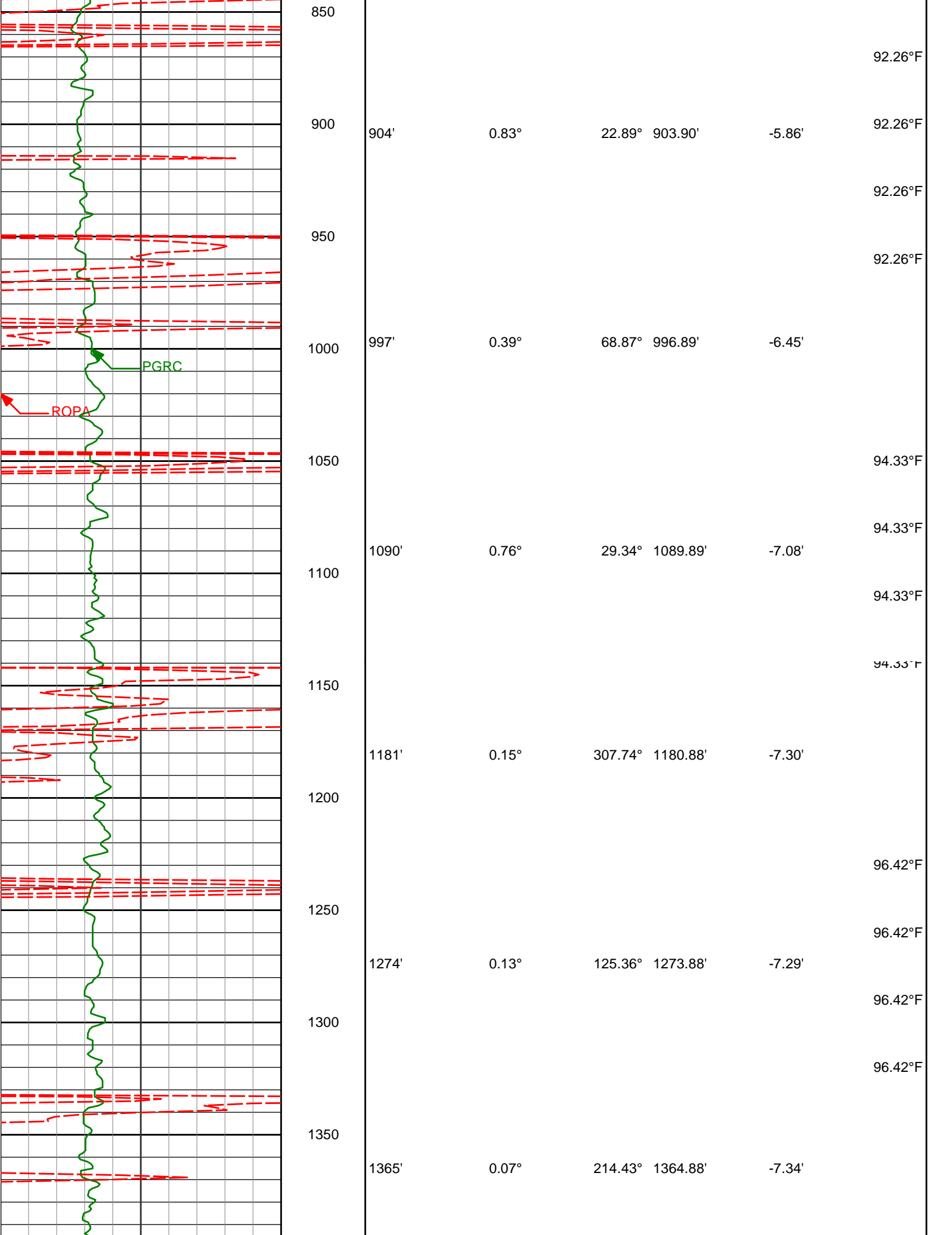
1: 240
ROPA: 0.5 ft interval, 1.2 ft coercion distance, 3 ft gap fill.
PGRC: 0.5 ft interval, 0.6 ft coercion distance, 3 ft gap fill.
5. Insite Version 7.4.2 (plot created in Insite Version 8.1.1)

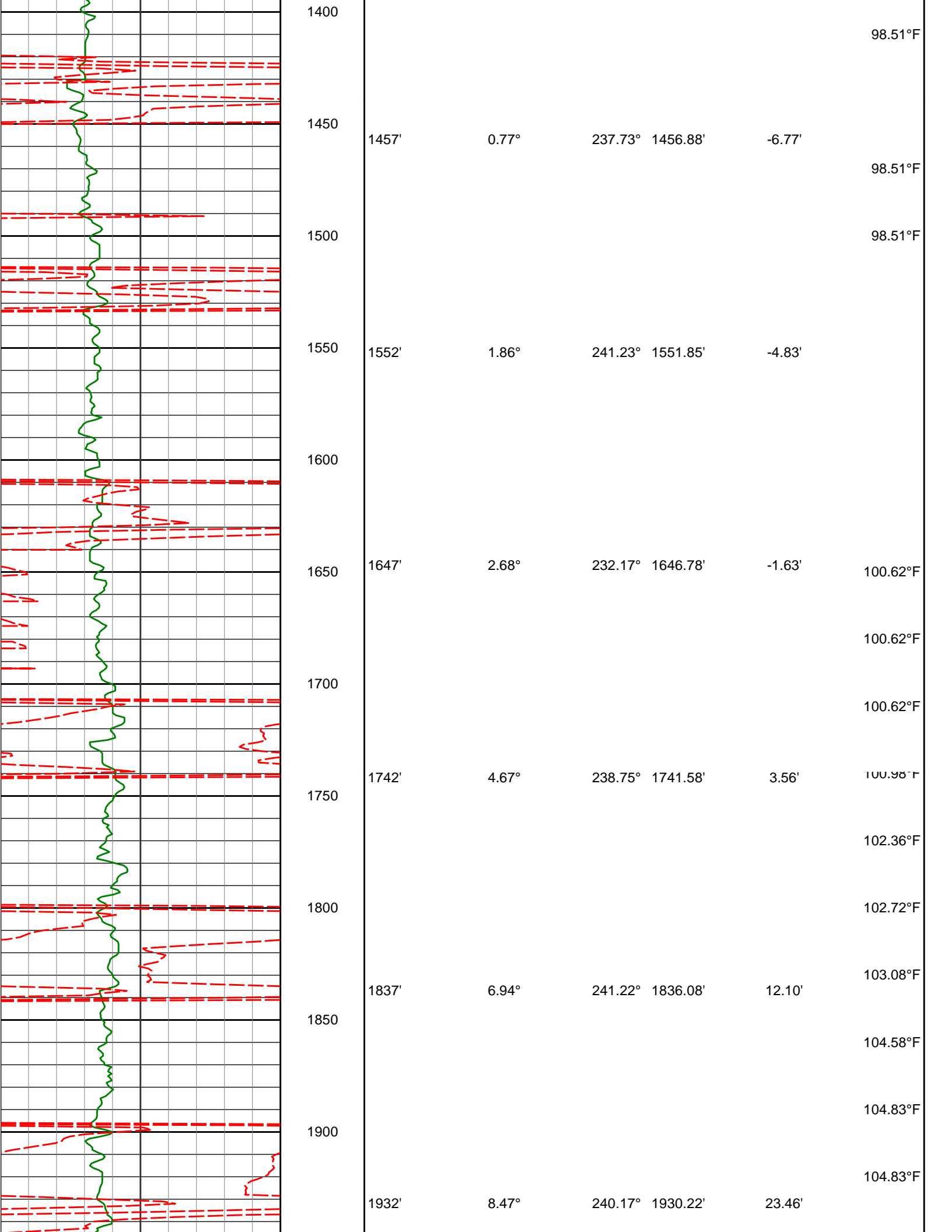
WARRANTY

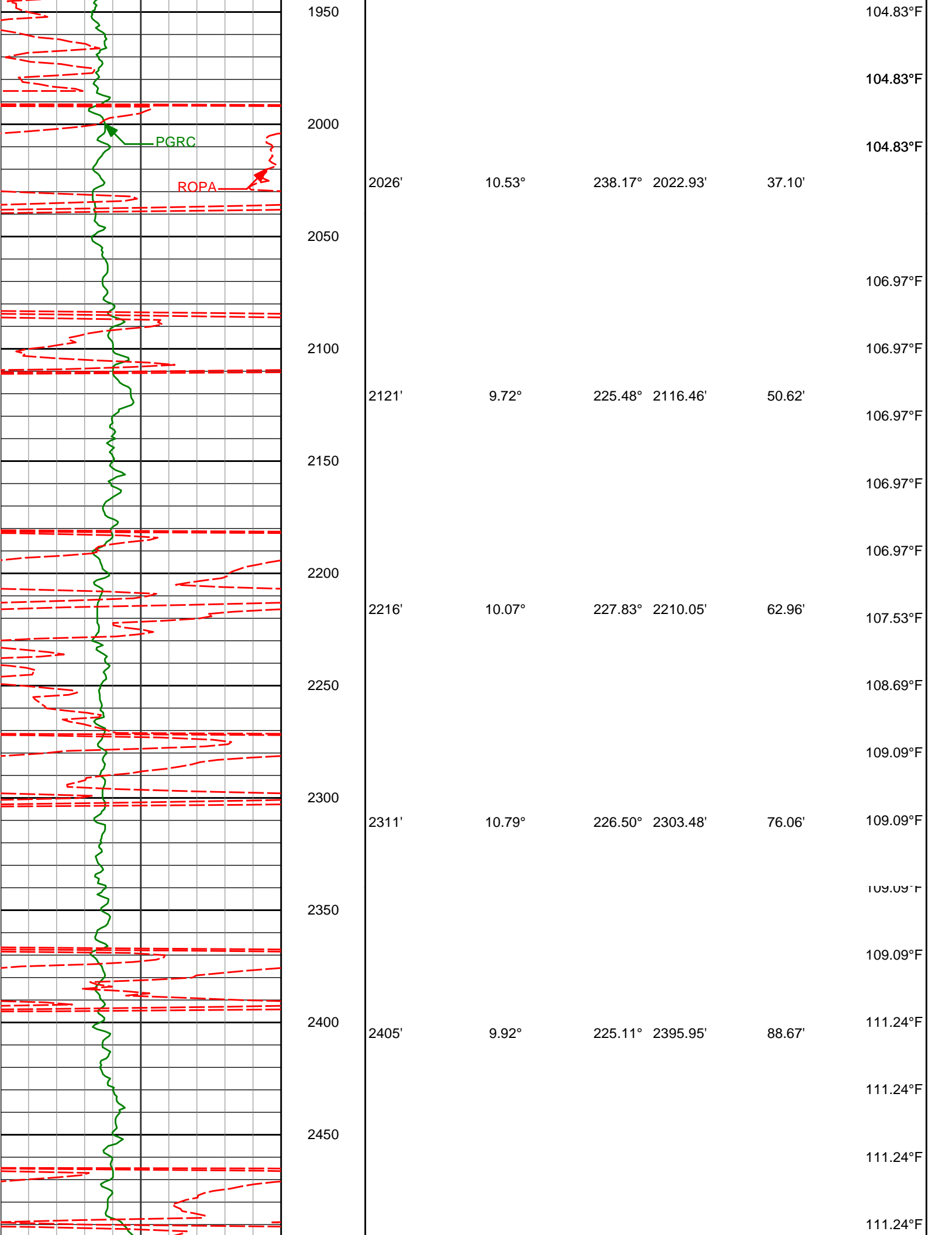
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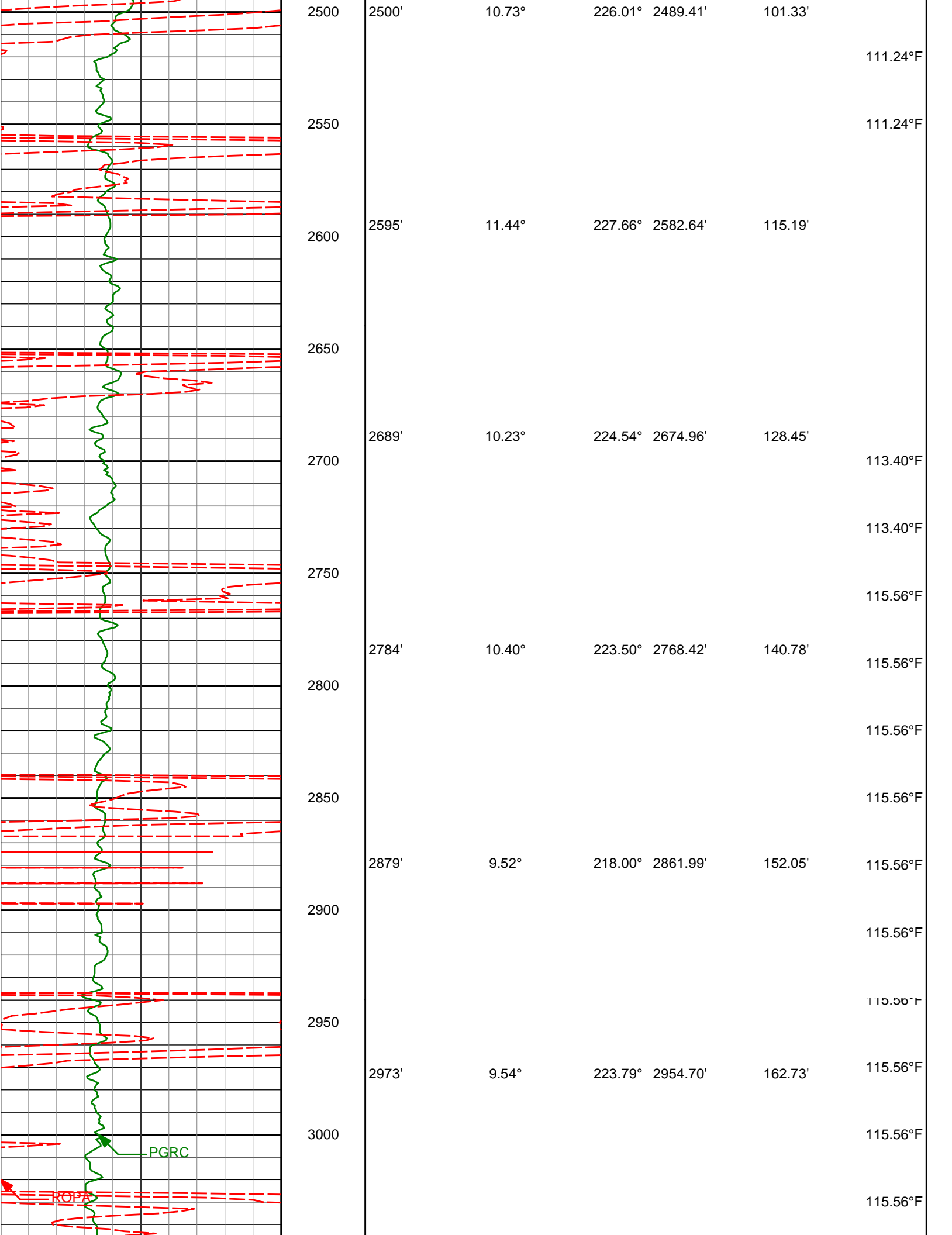
MD Detail 1:600 Scale

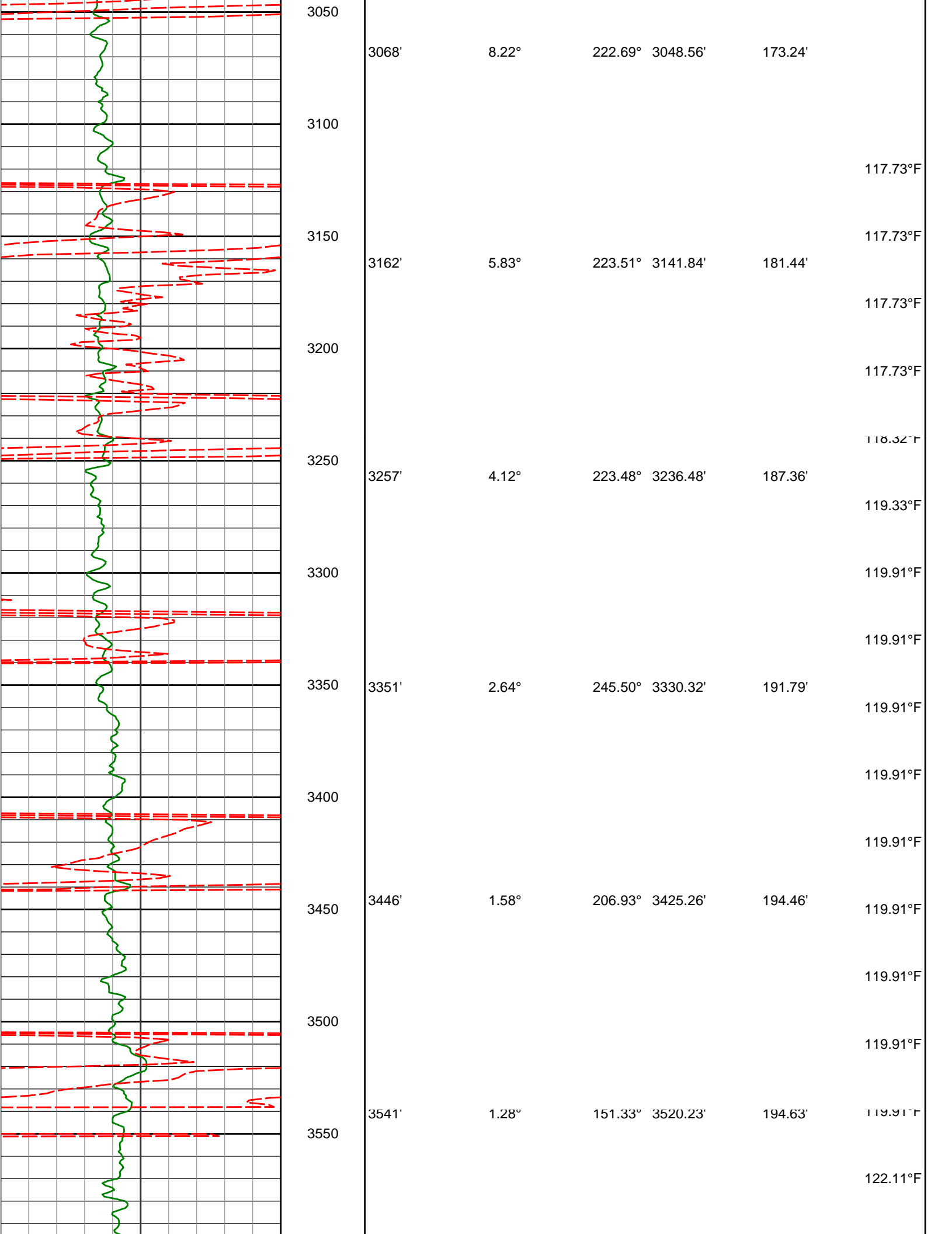


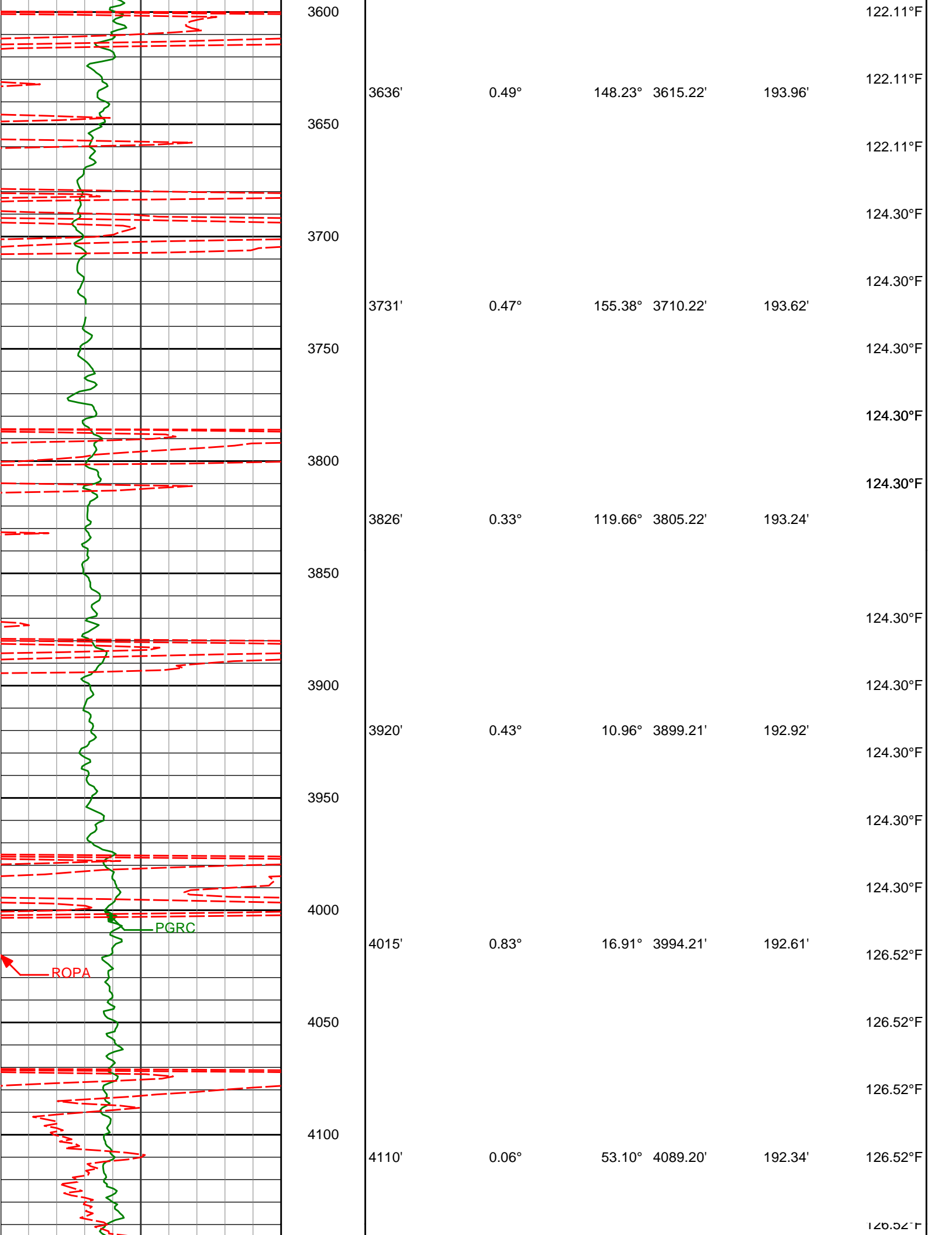


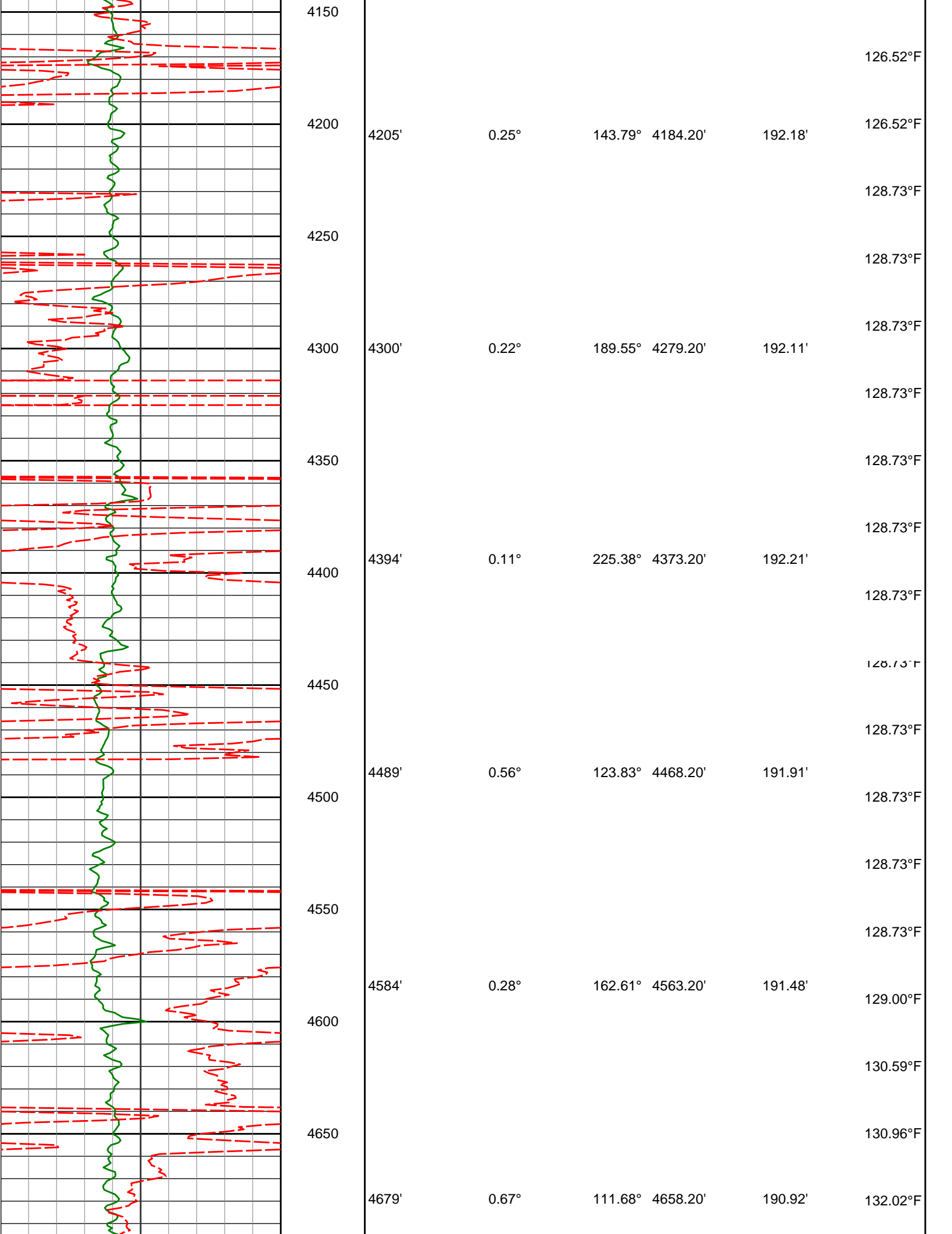


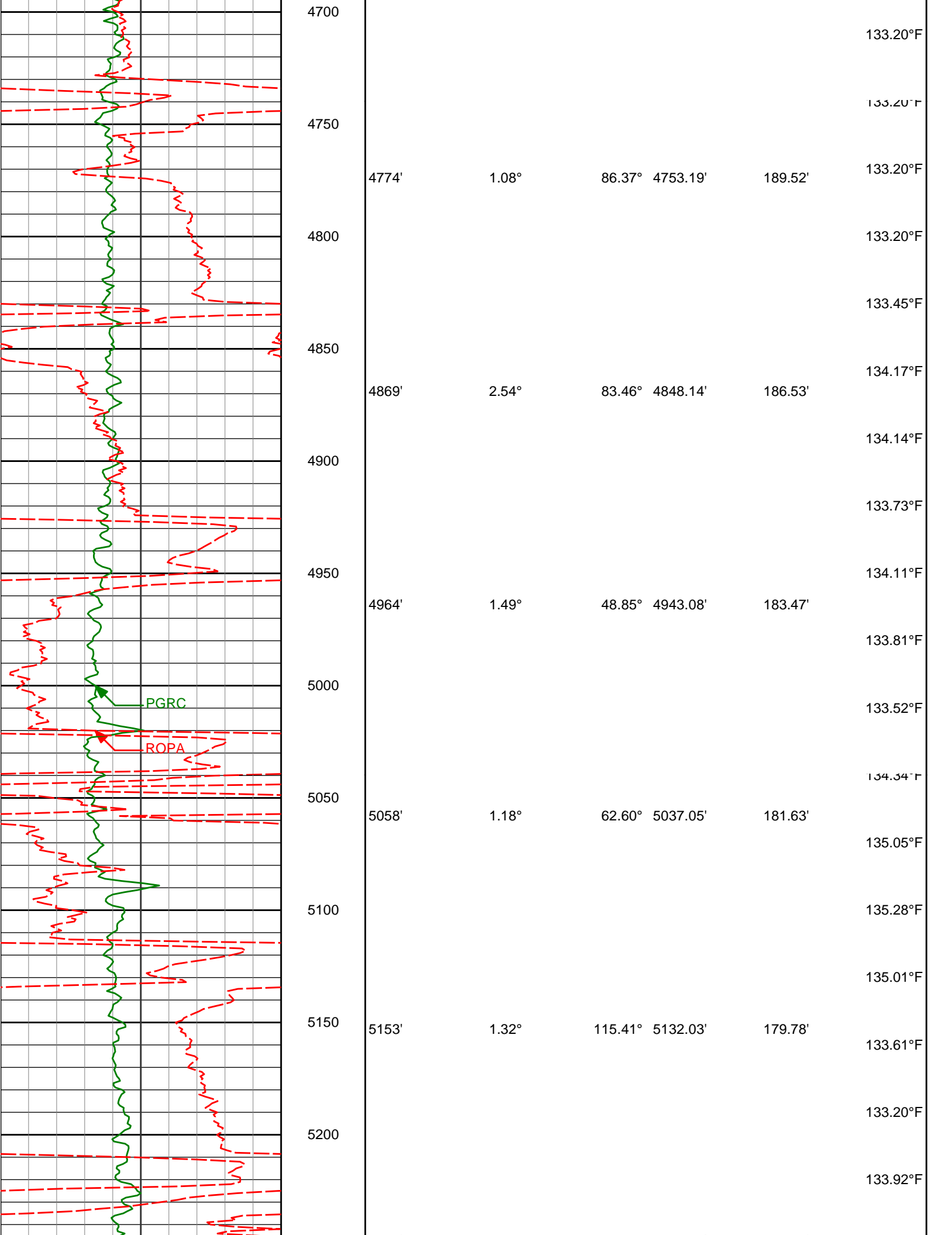


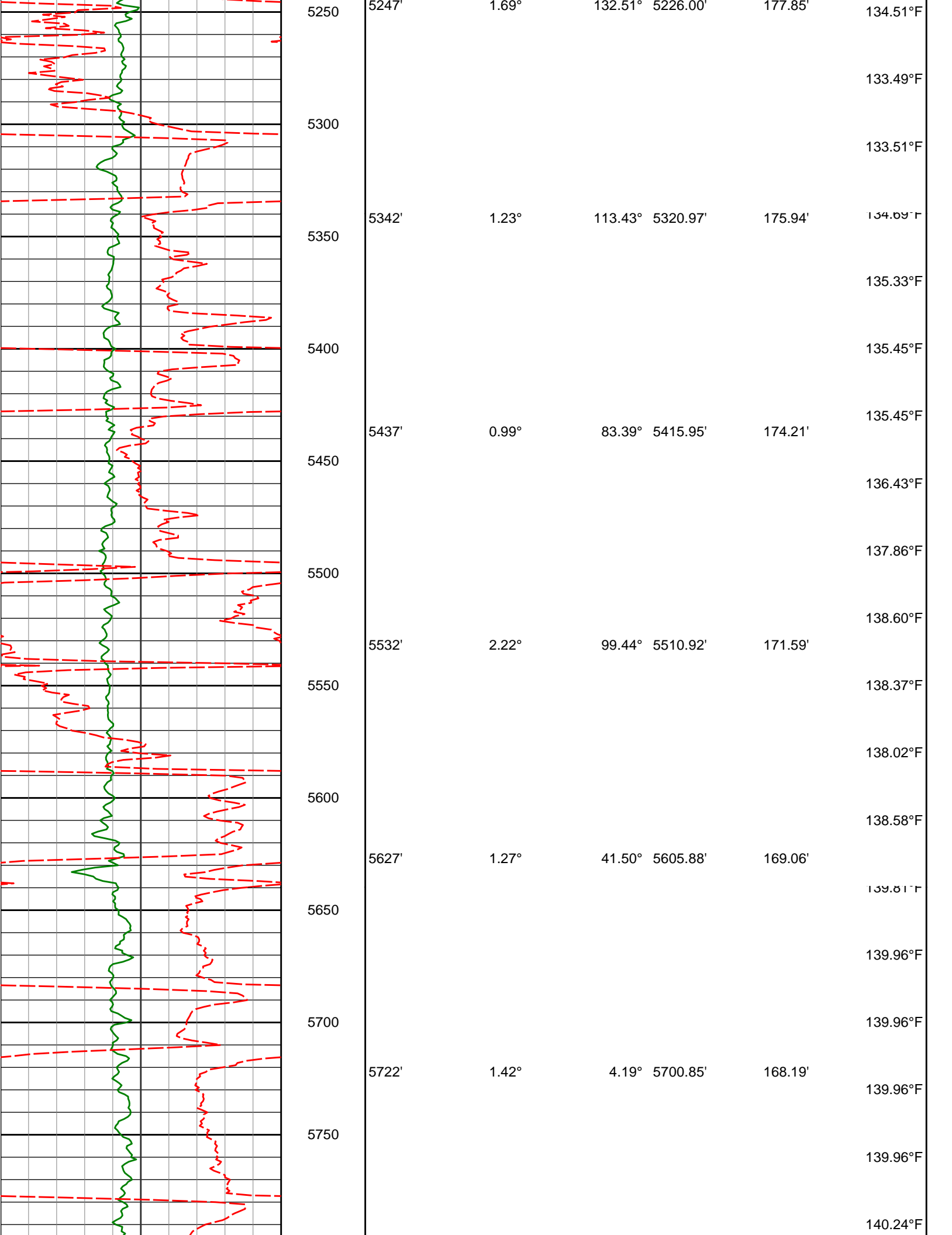


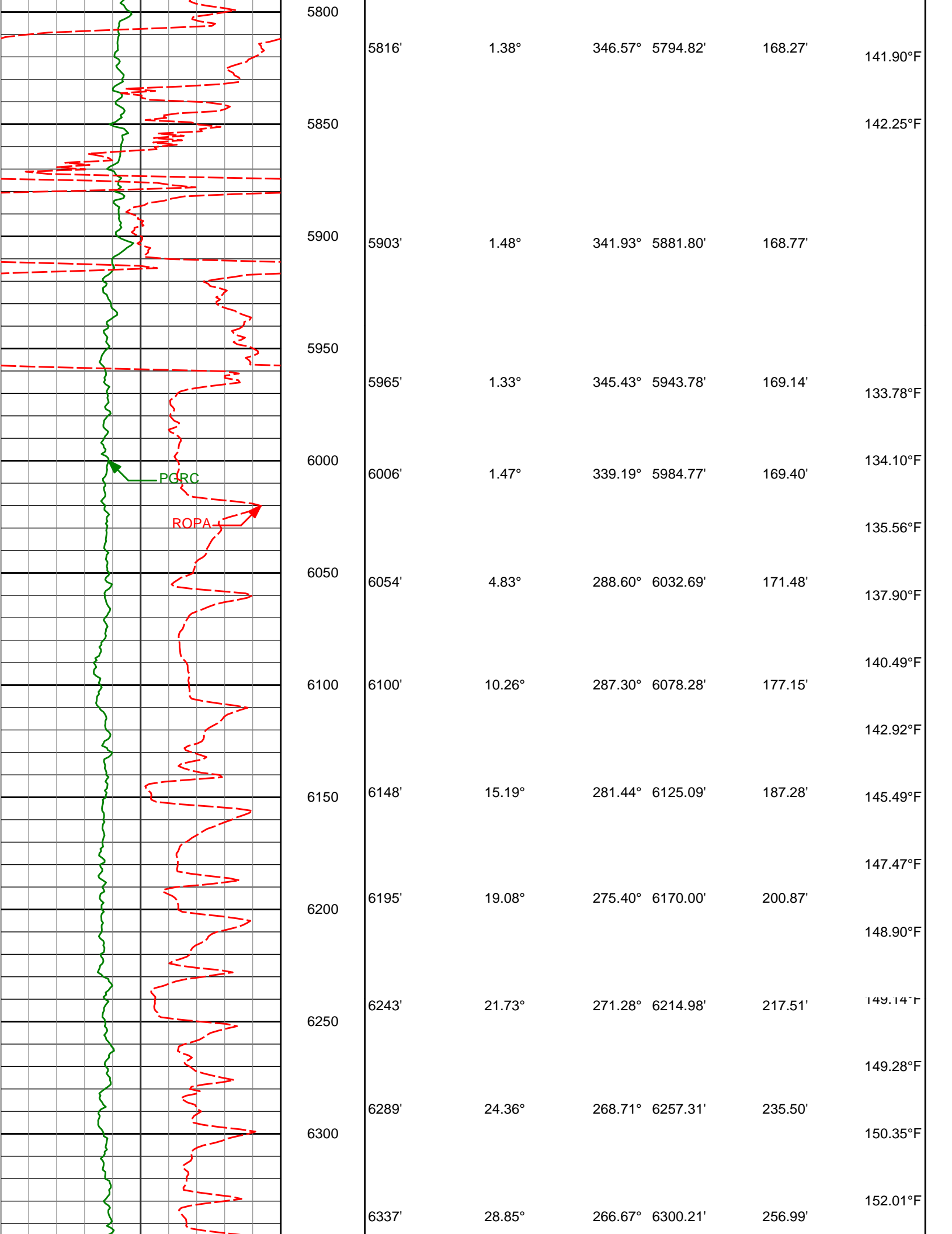


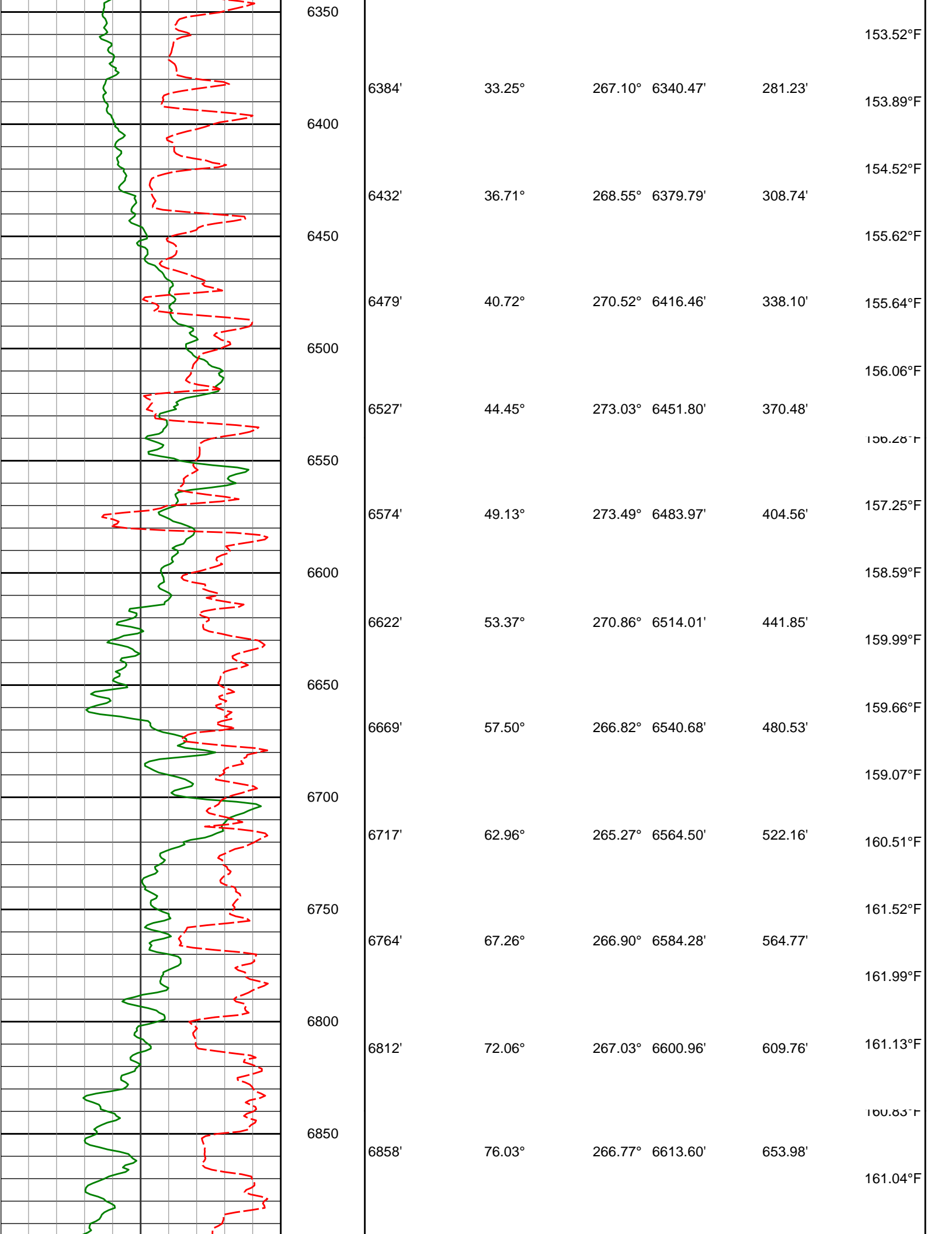


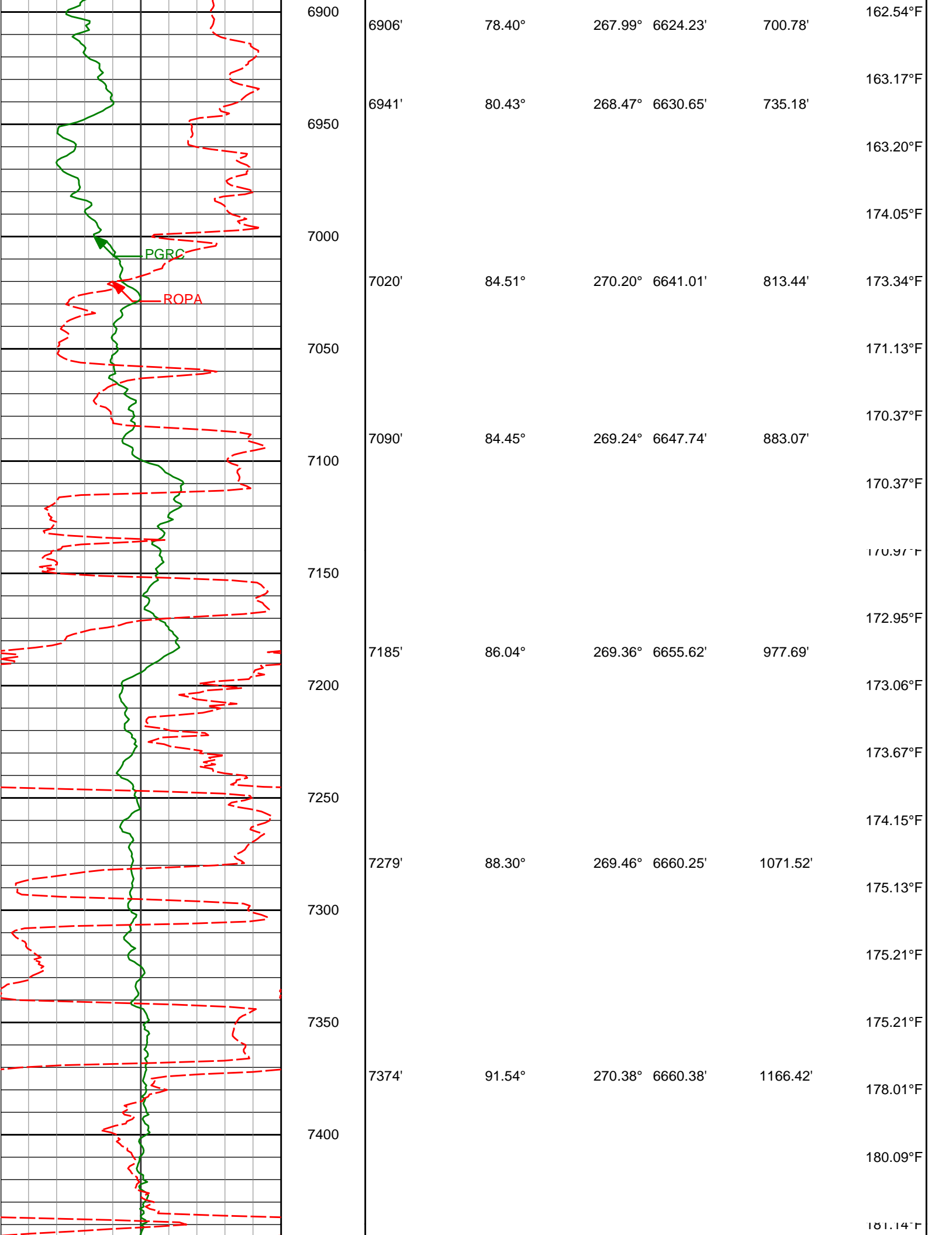


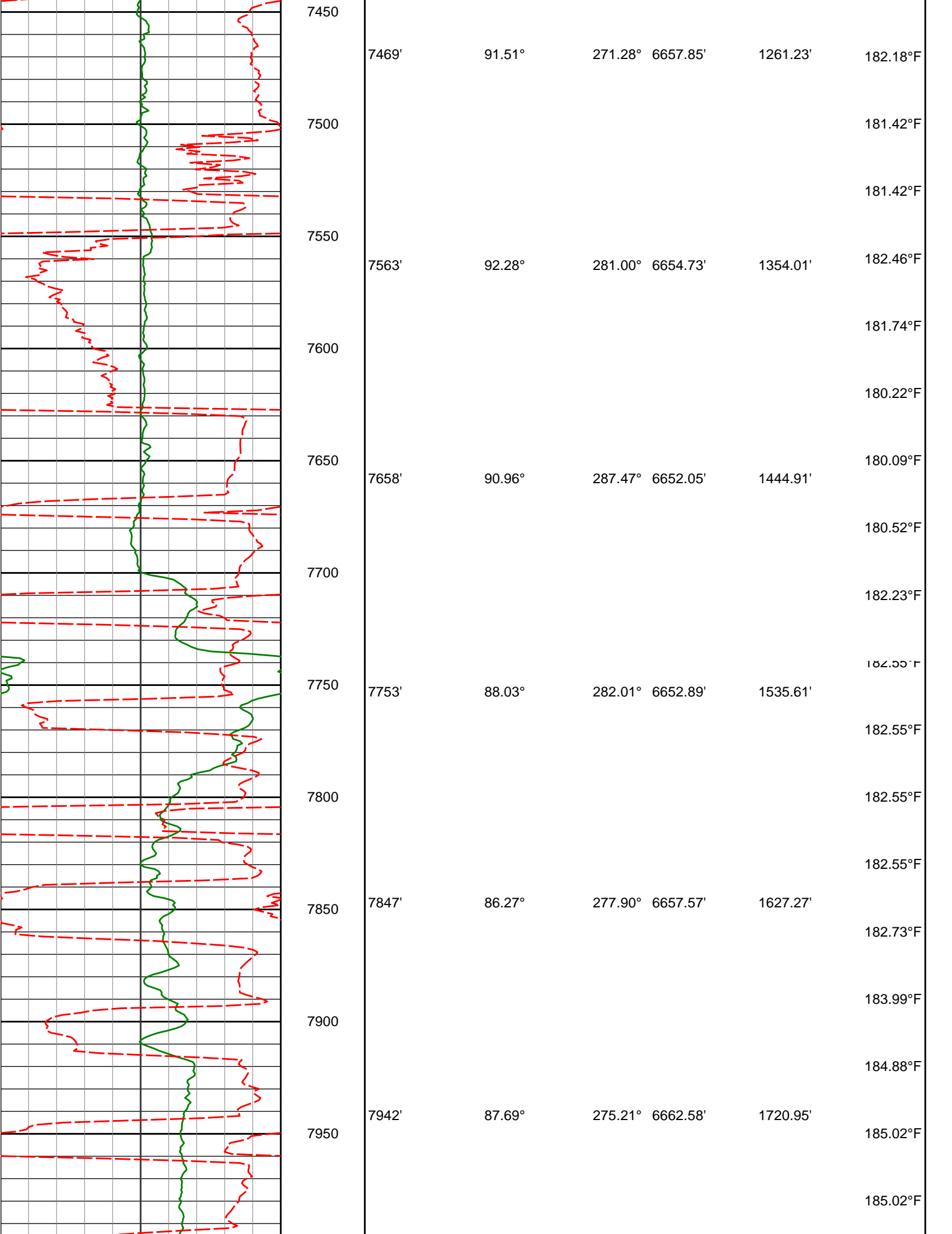


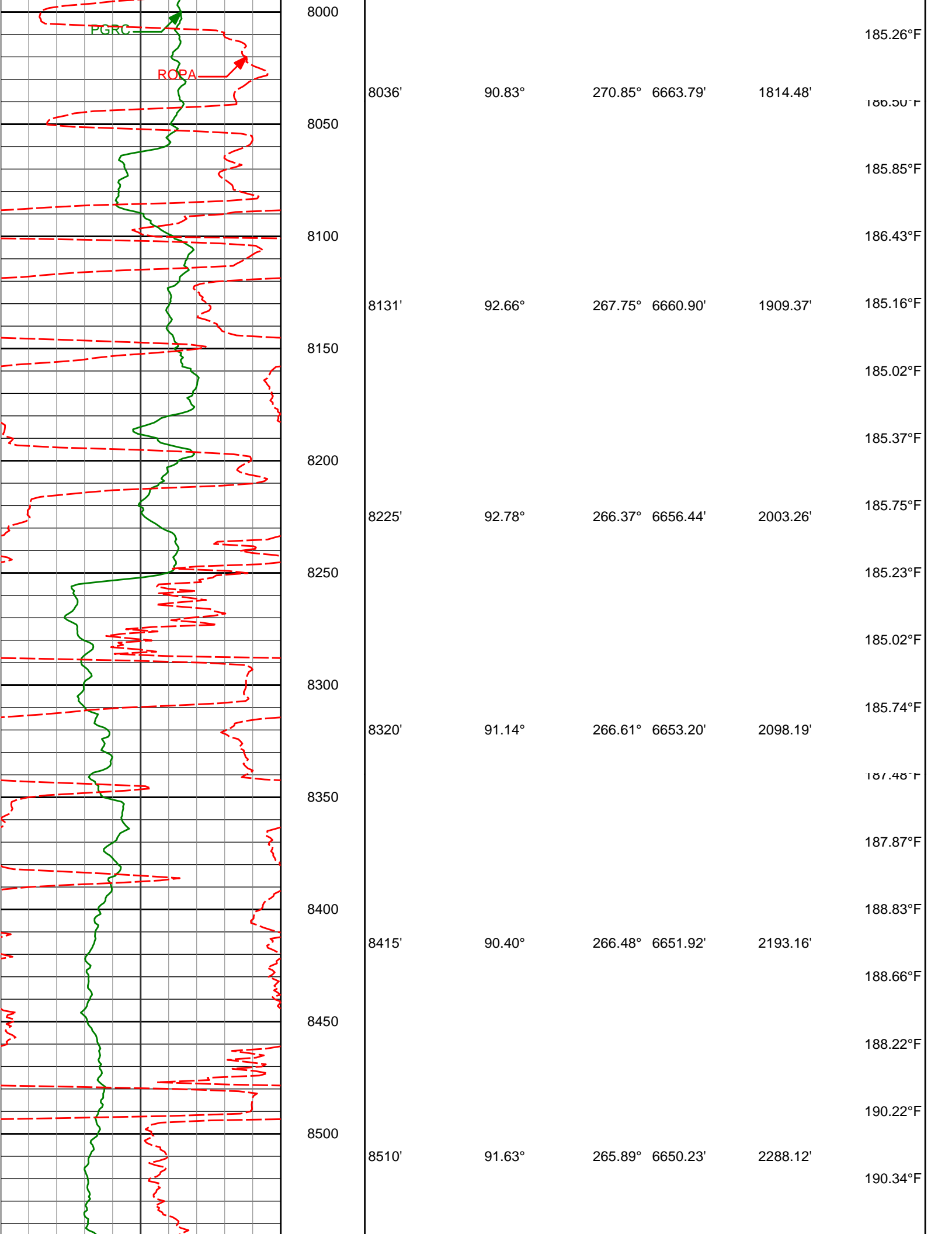


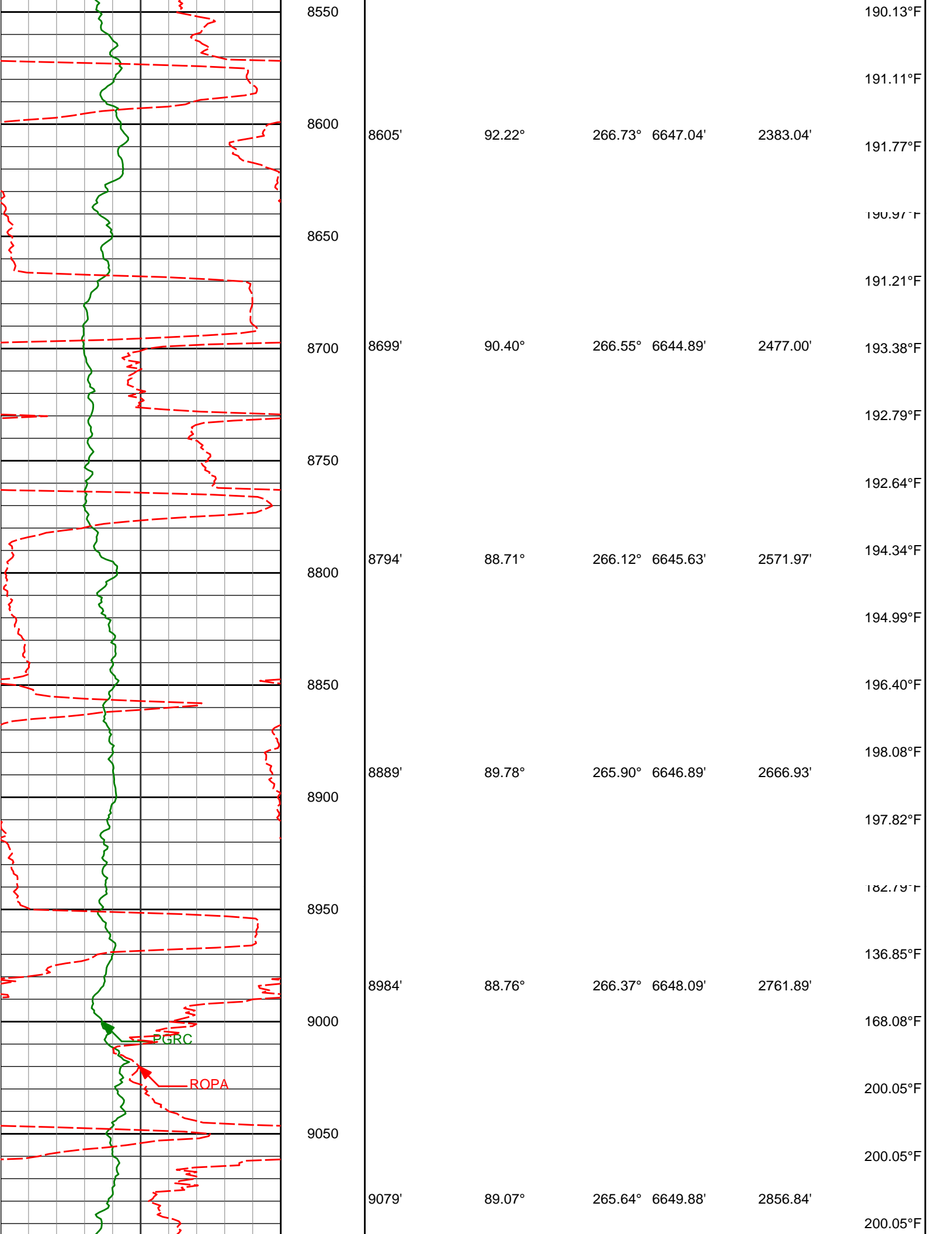


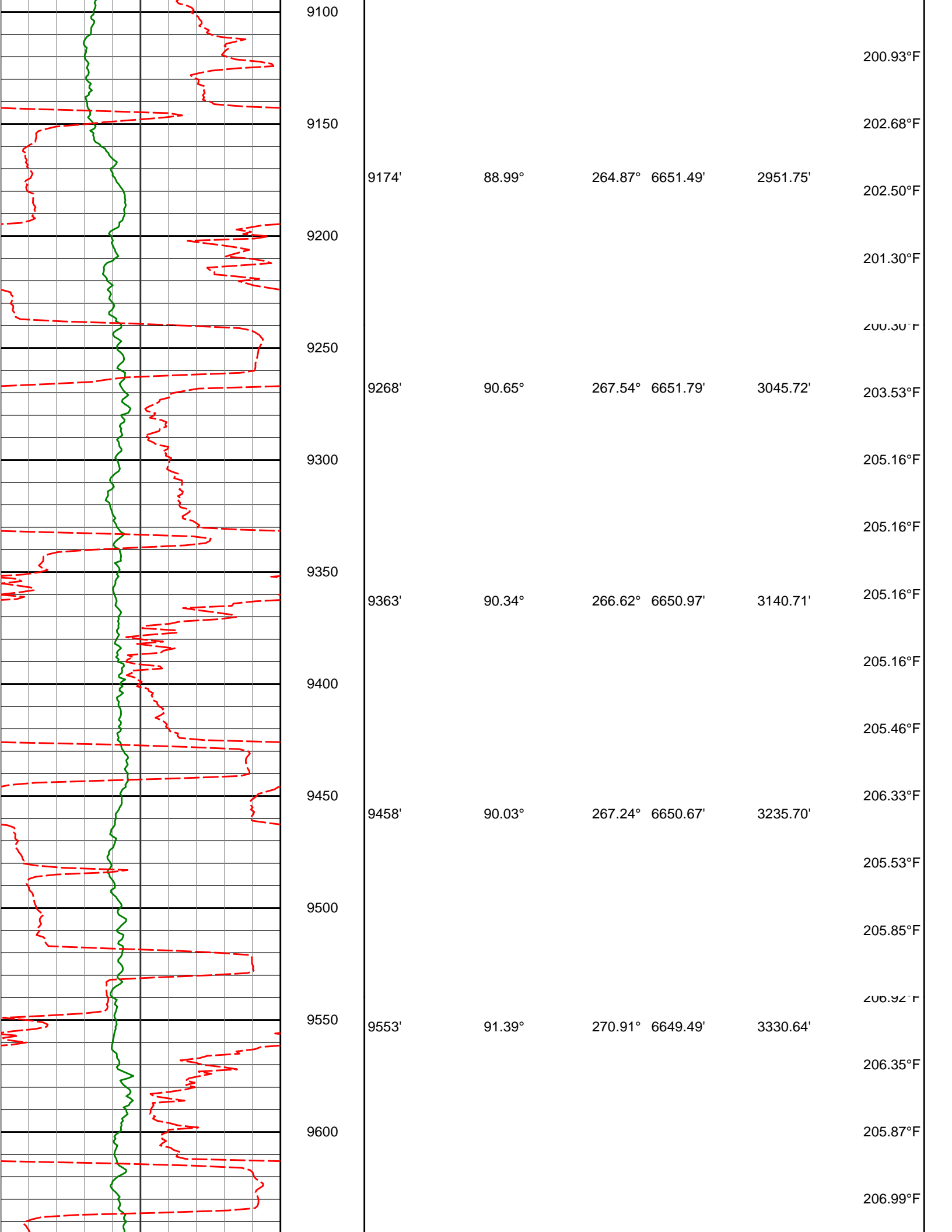


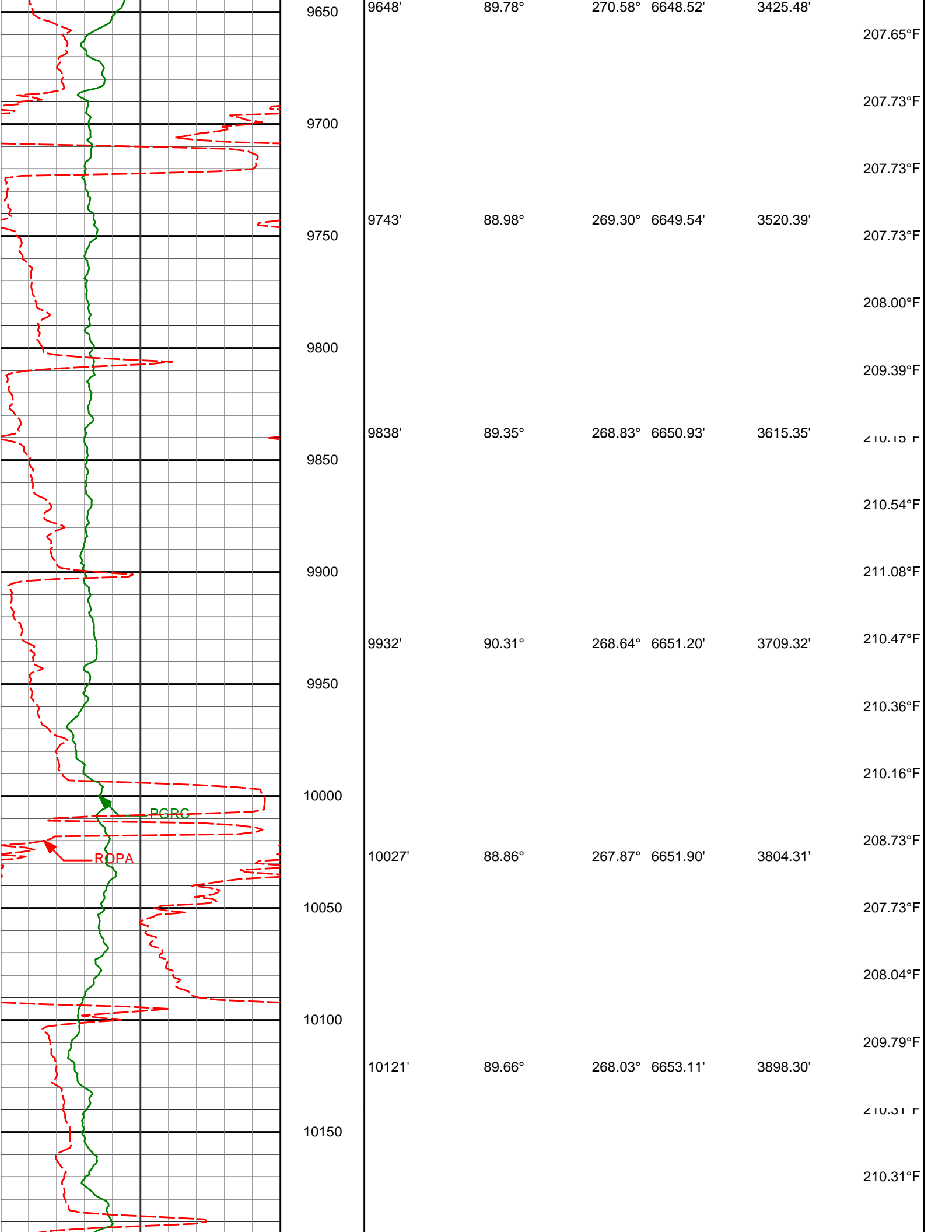


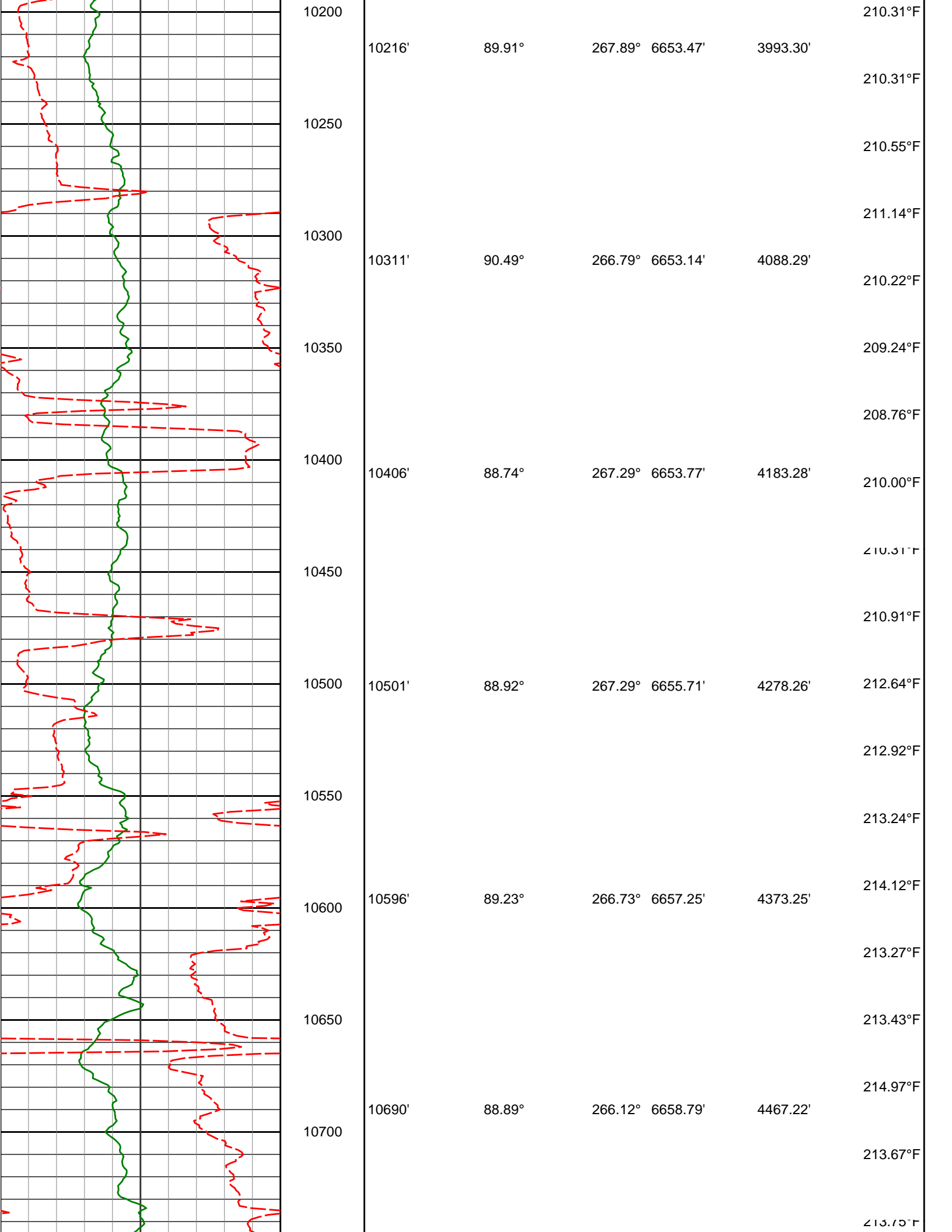


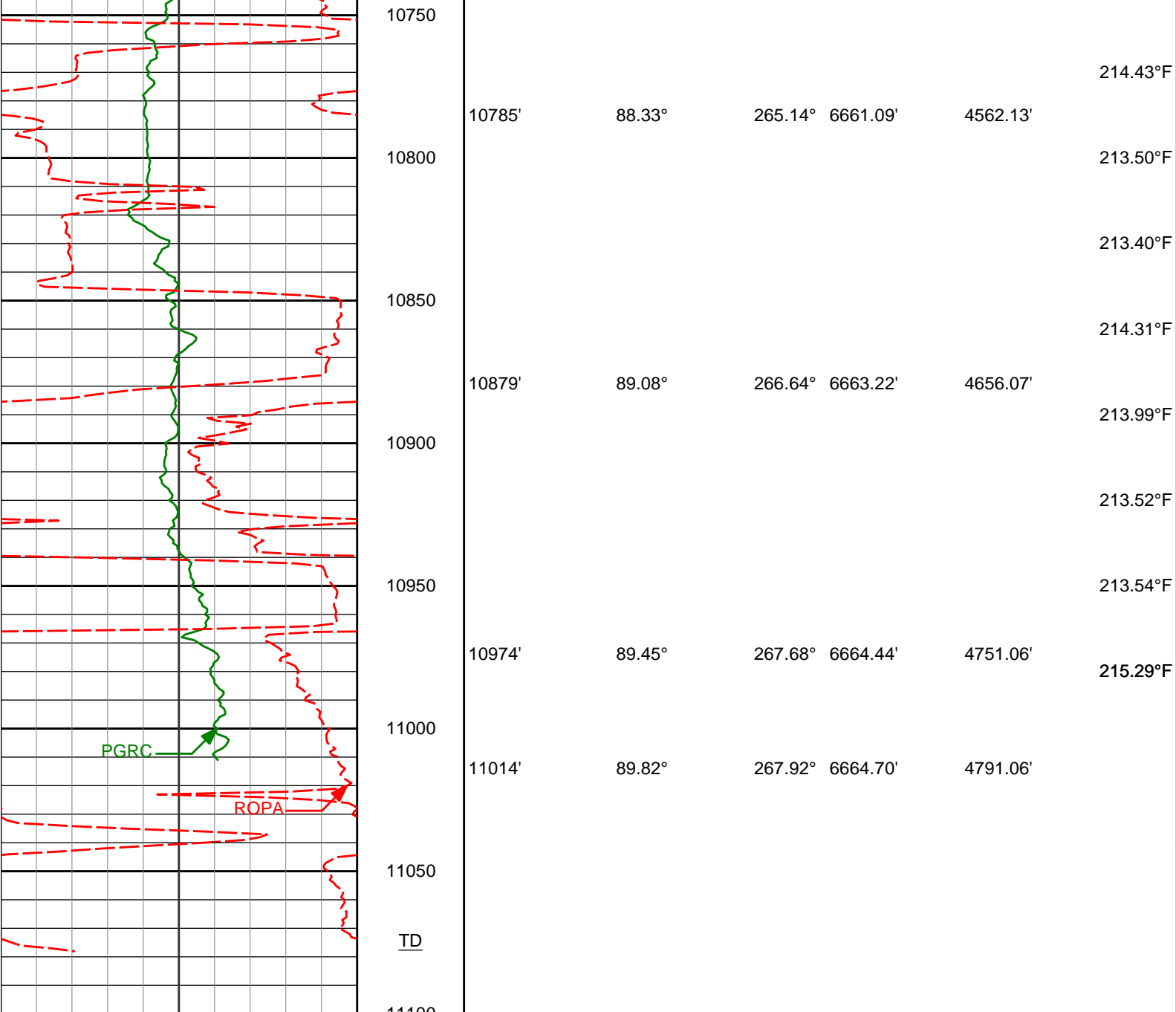








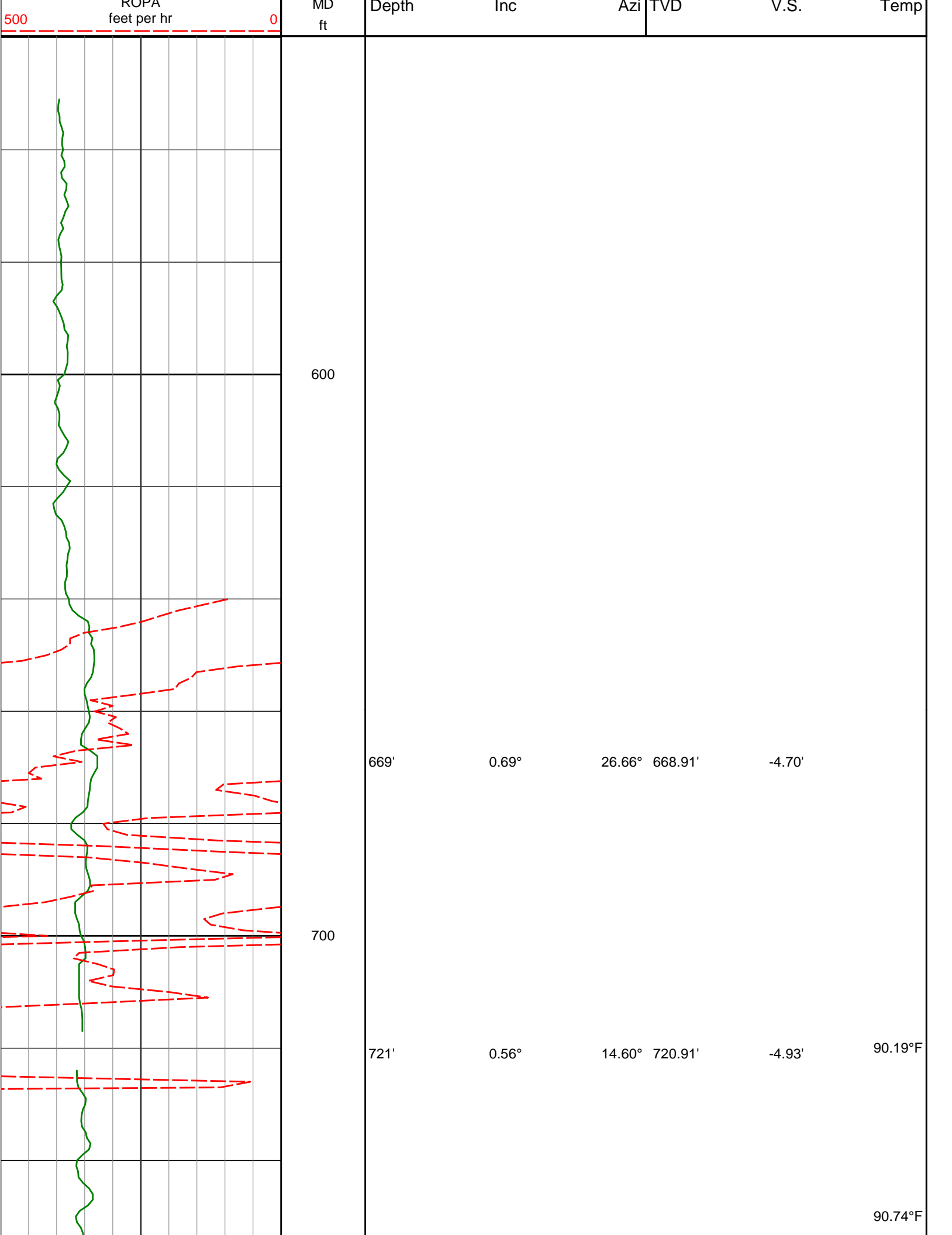


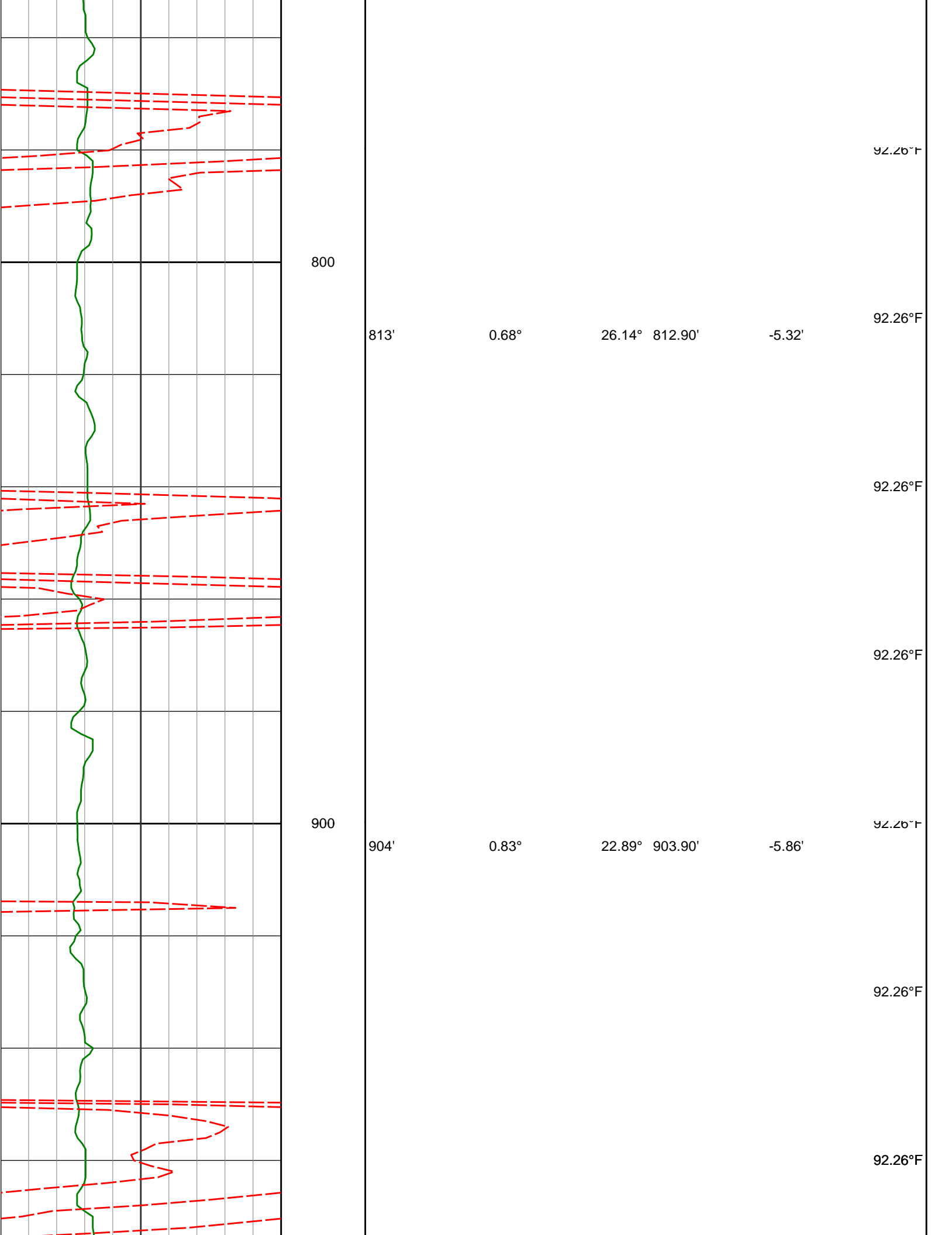


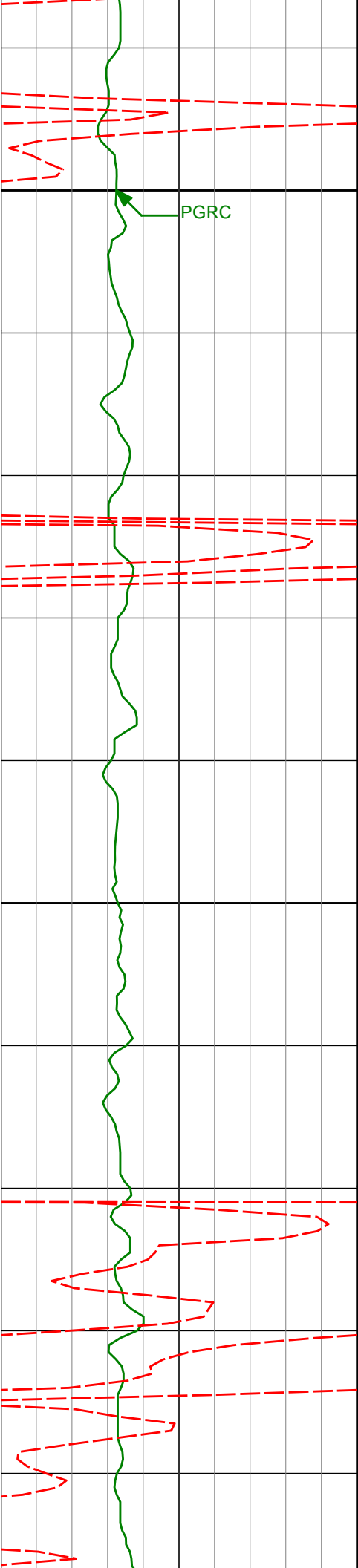
Avg Rate of Penetration ROPA feet per hr		Depth MD ft	Depth	Inc	Azi	TVD	V.S.	Temp
PCG Gamma Ray BCorr PGRC api								

MD Detail 1:240 Scale

PCG Gamma Ray BCorr PGRC api								
Avg Rate of Penetration ROPA feet per hr		Depth MD ft	Depth	Inc	Azi	TVD	V.S.	Temp







1000

1100

997'

0.39°

68.87° 996.89'

-6.45'

1090'

0.76°

29.34° 1089.89'

-7.08'

1181'

0.15°

307.74° 1180.88'

-7.30'

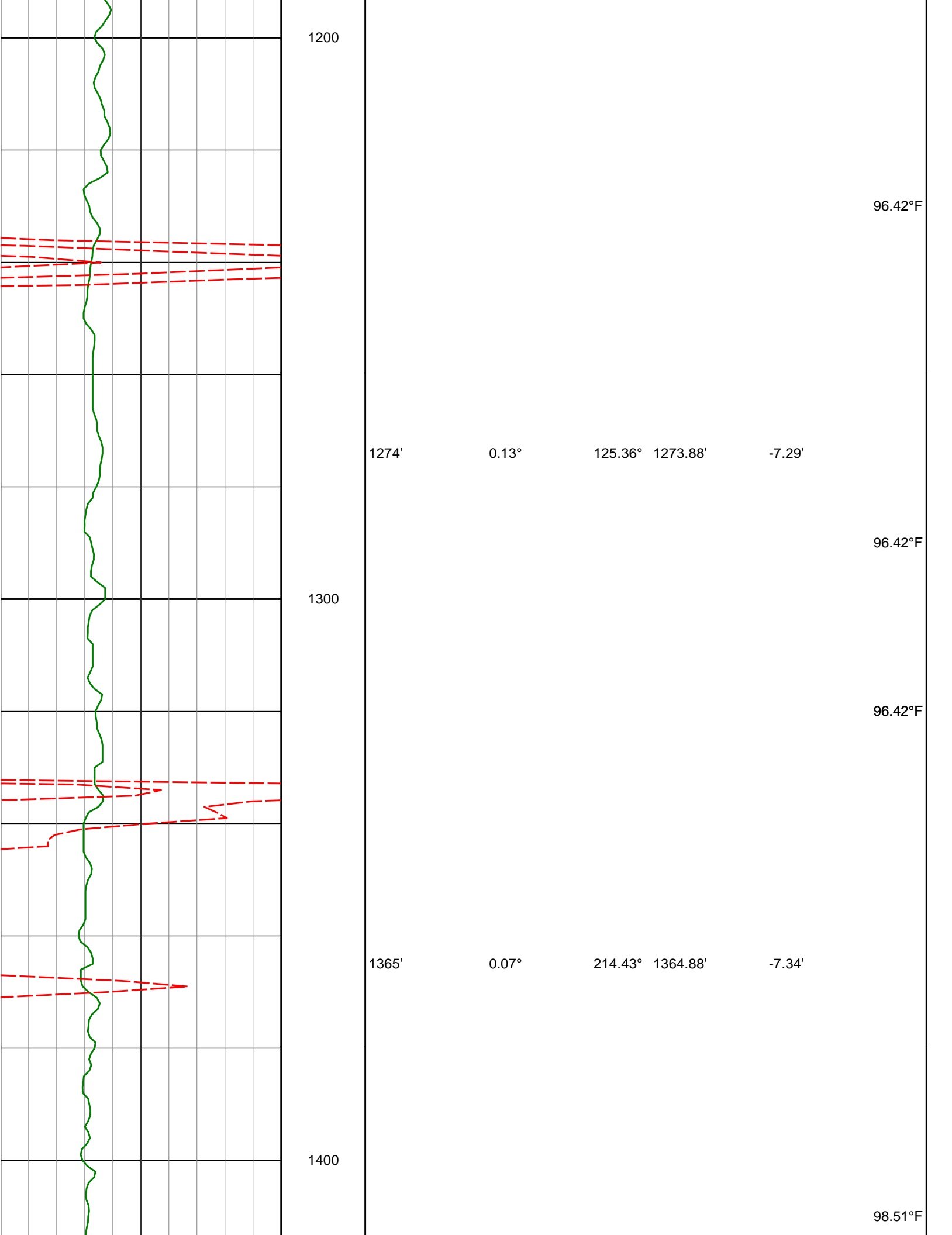
94.33°F

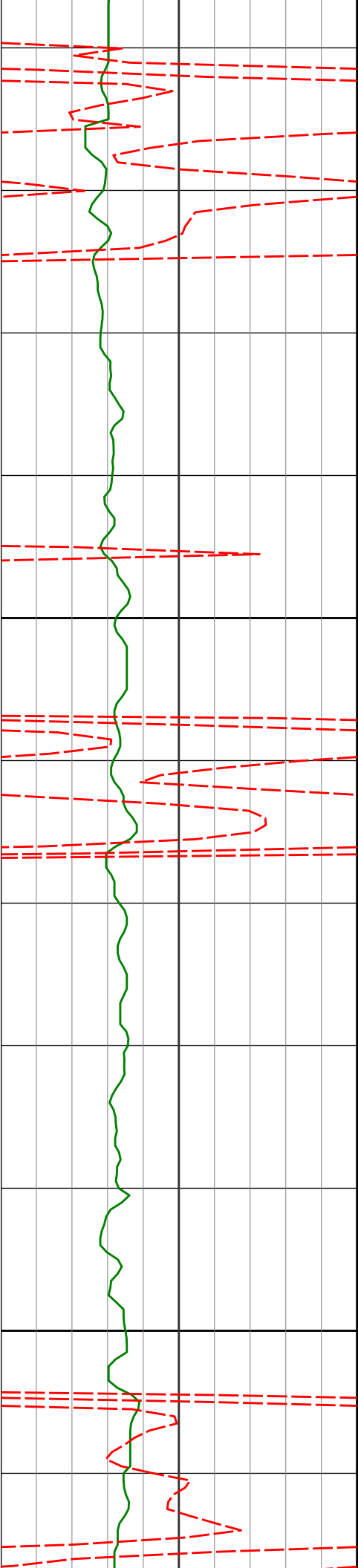
94.33°F

94.33°F

94.33°F

PGRC





1500

1600

1457'

0.77°

237.73°

1456.88'

-6.77'

1552'

1.86°

241.23°

1551.85'

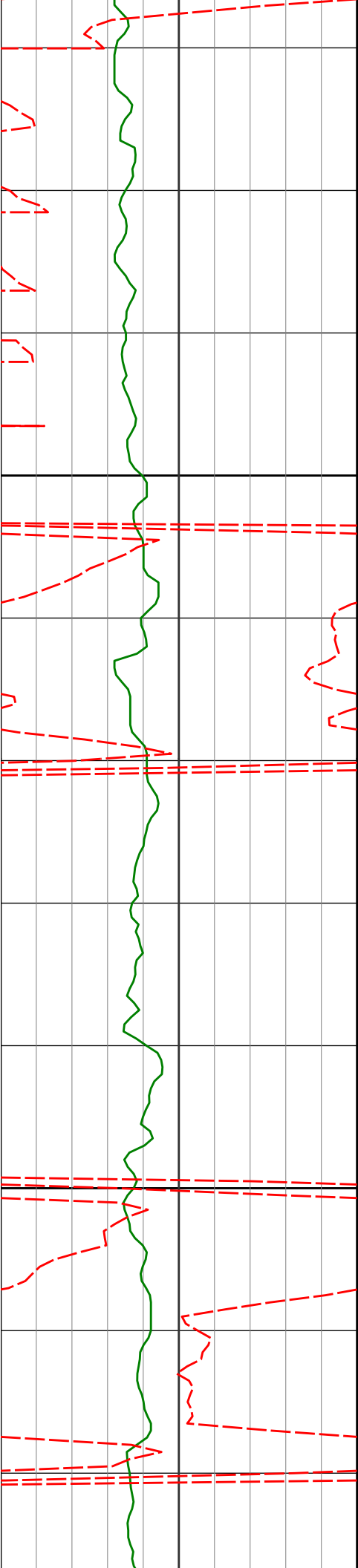
-4.83'

98.51°F

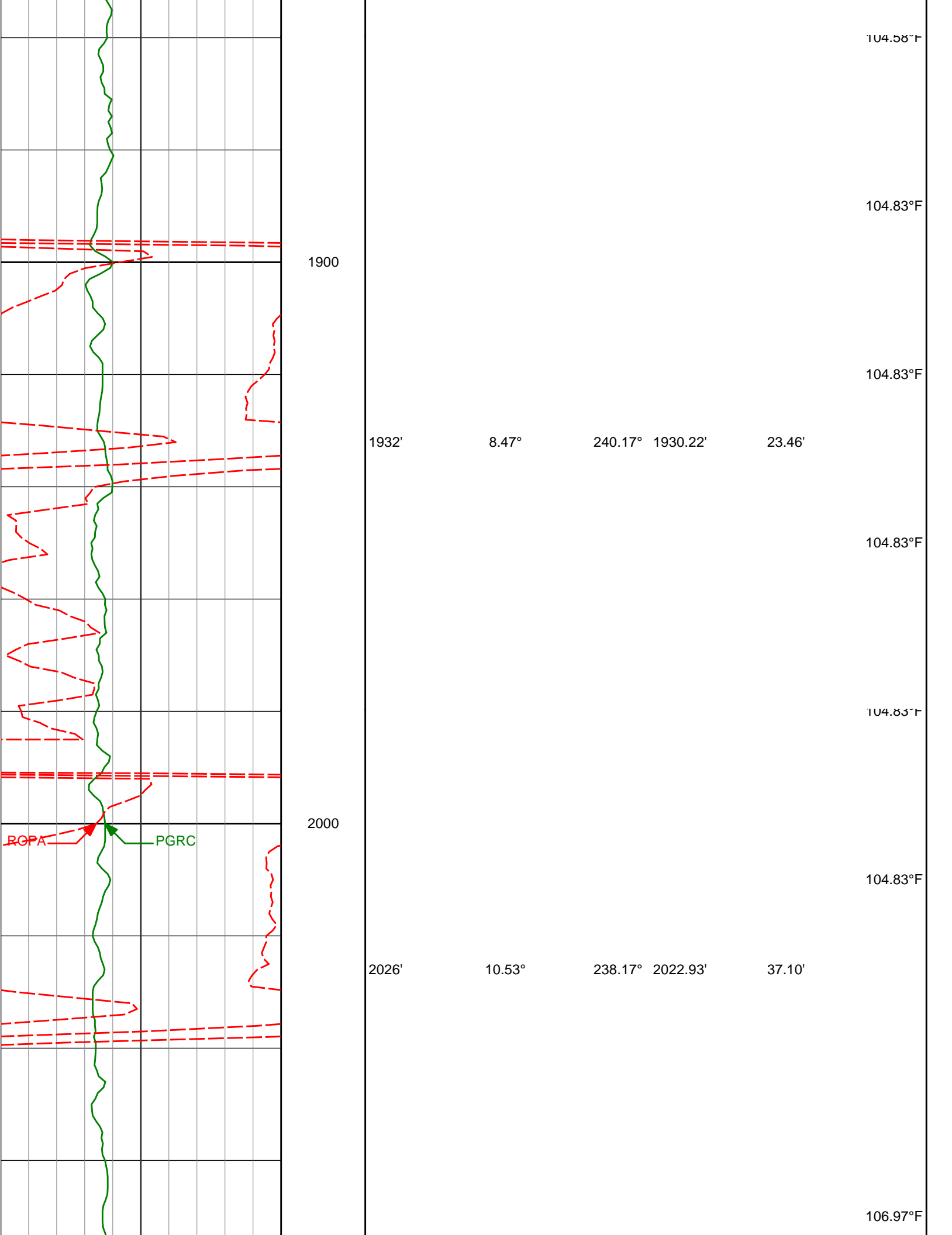
98.51°F

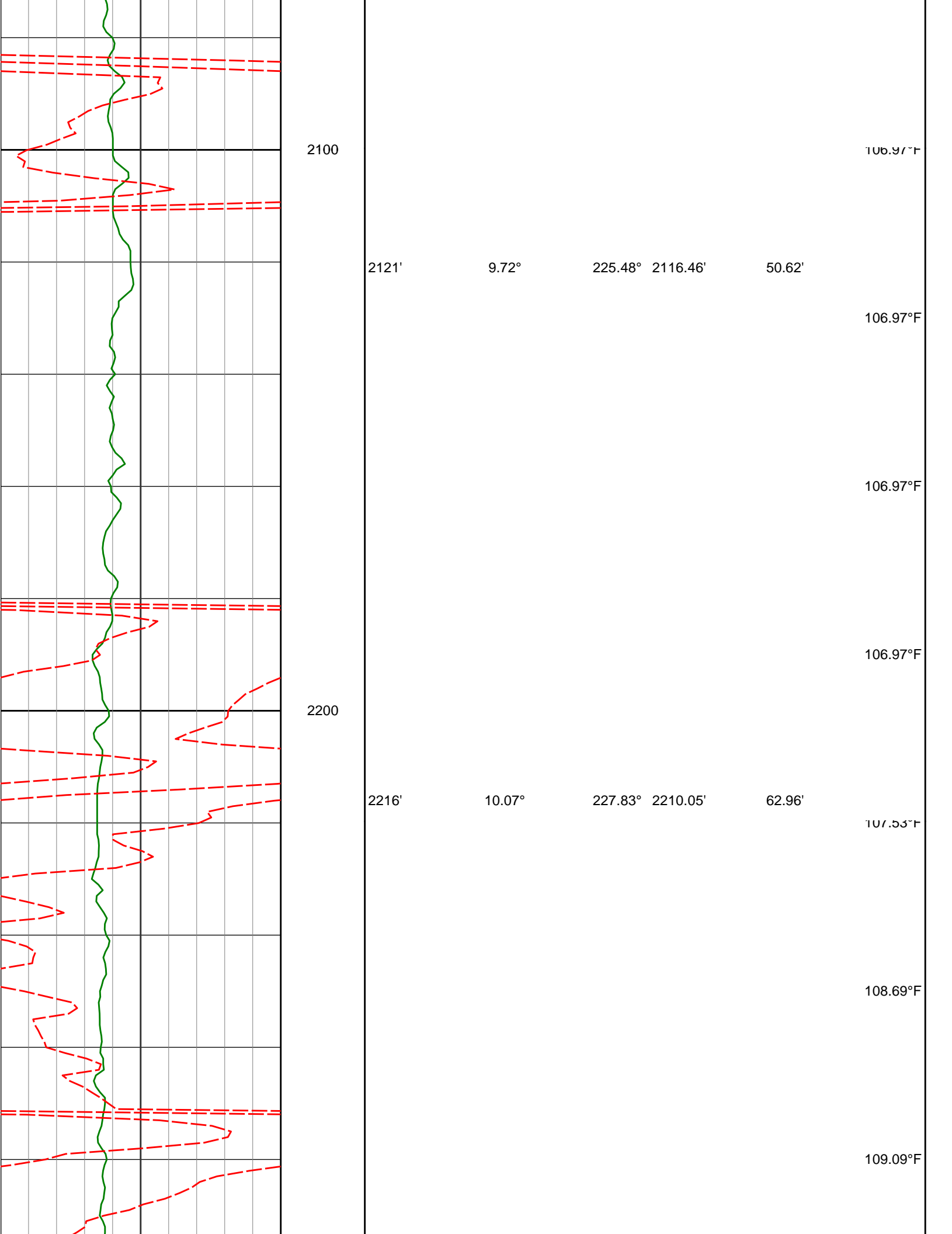
98.51°F

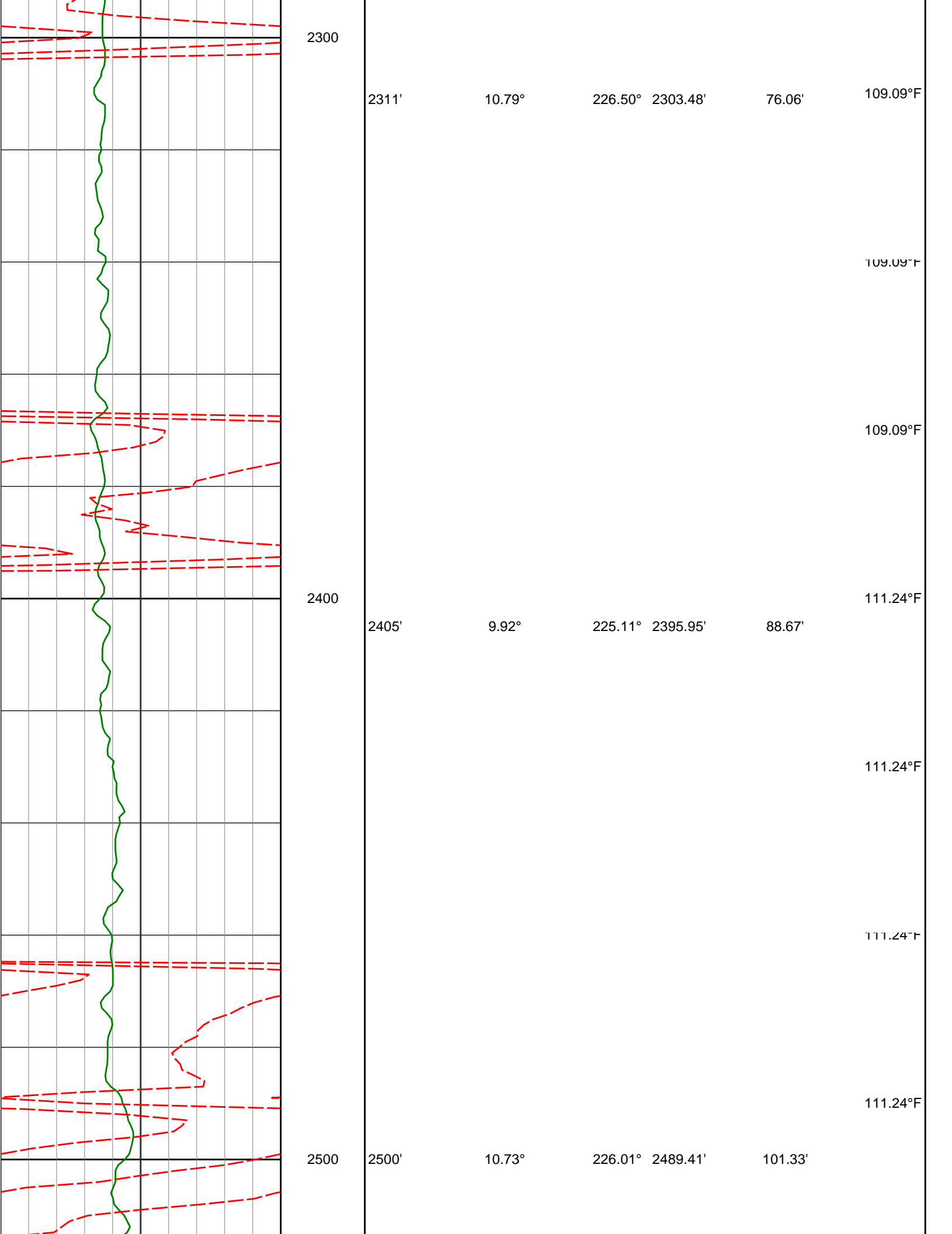
98.51°F

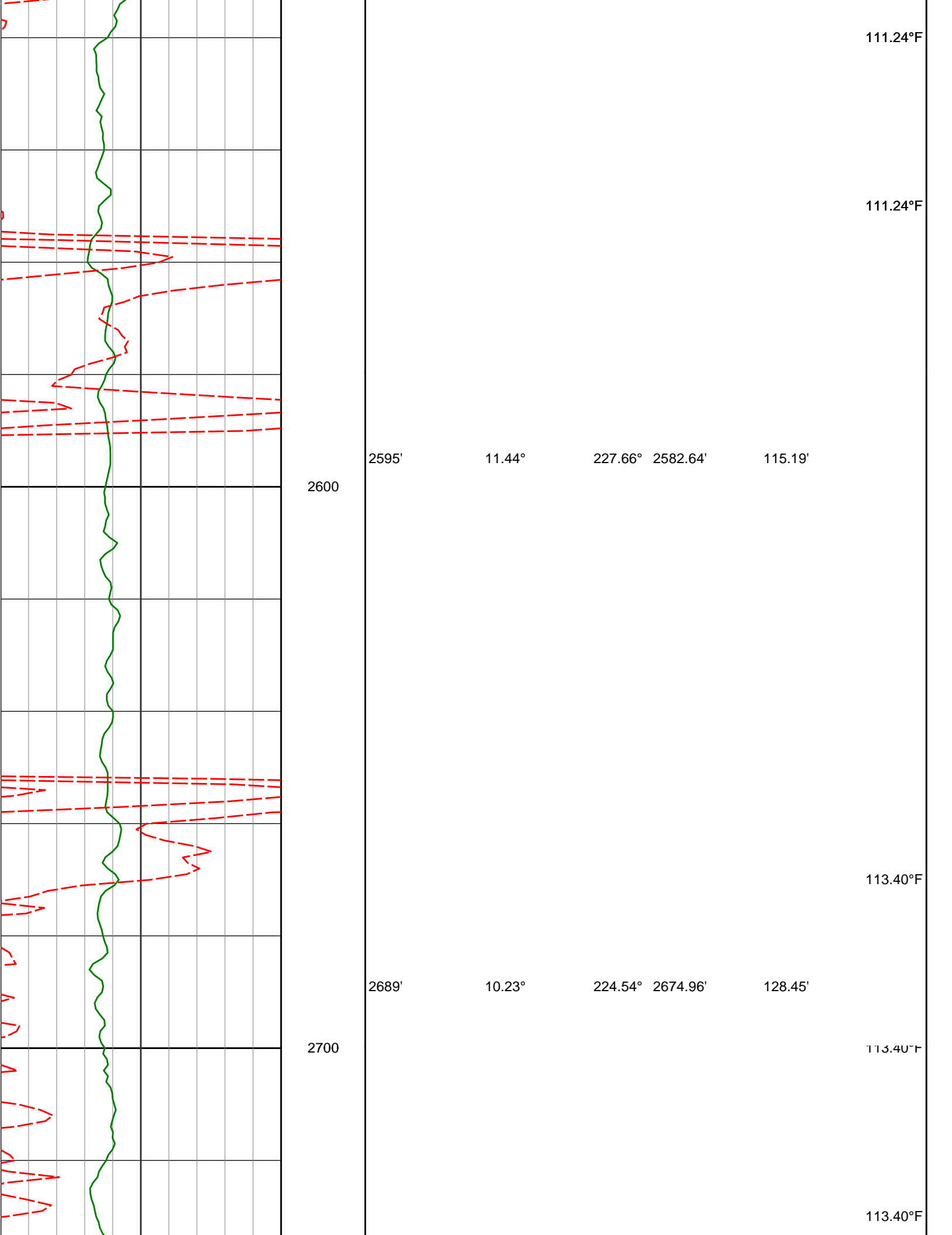


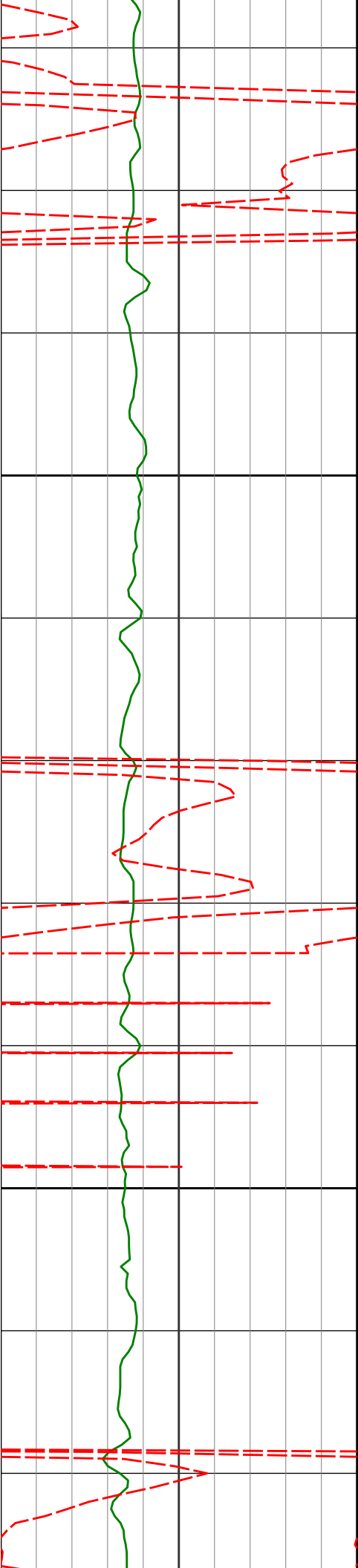
1700	1647'	2.68°	232.17°	1646.78'	-1.63'	
						100.62°F
						100.62°F
1800	1742'	4.67°	238.75°	1741.58'	3.56'	100.98°F
						102.36°F
	1837'	6.94°	241.22°	1836.08'	12.10'	103.08°F











2800

2900

2784'

10.40°

223.50°

2768.42'

140.78'

2879'

9.52°

218.00°

2861.99'

152.05'

115.56°F

115.56°F

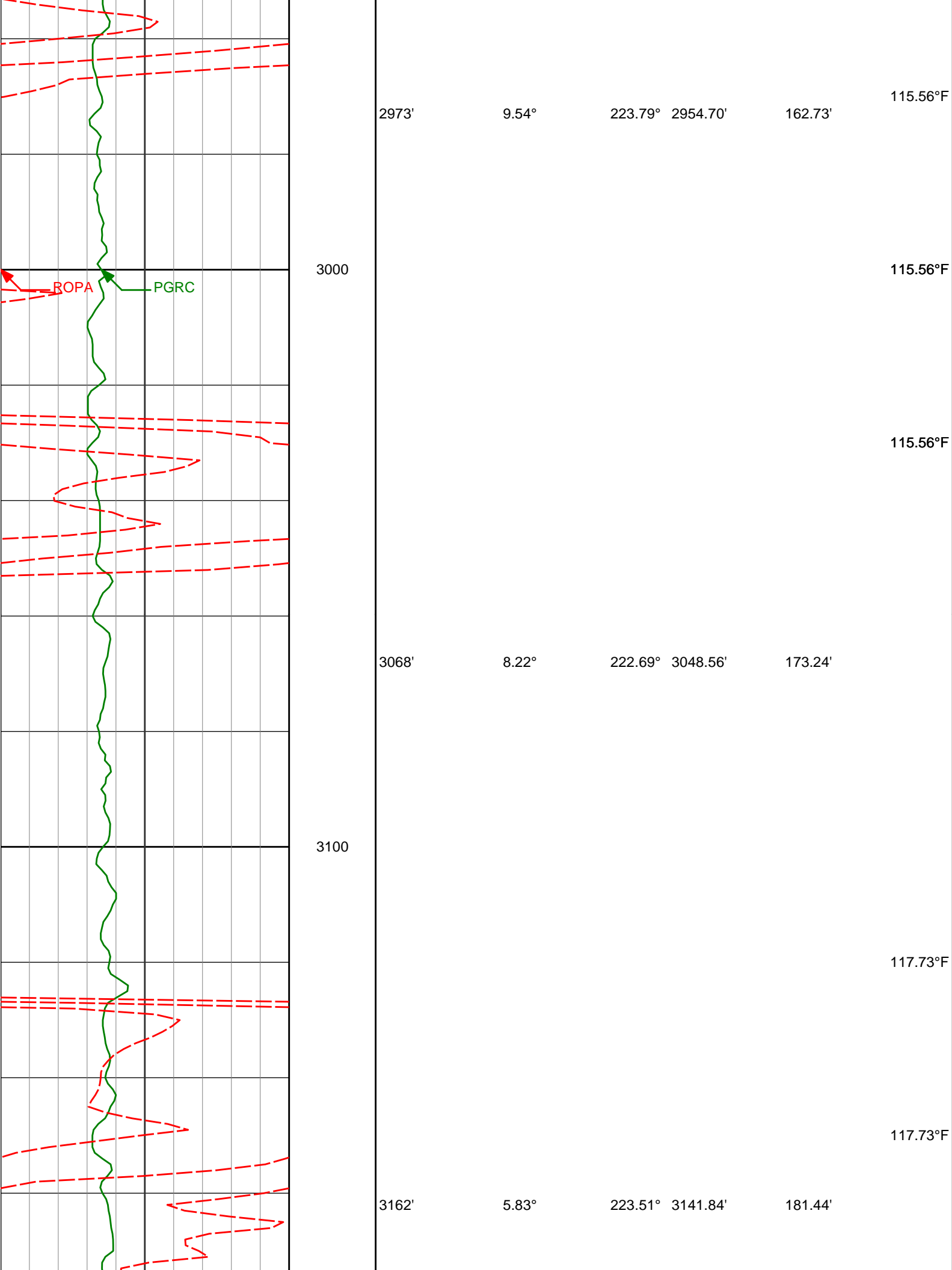
115.56°F

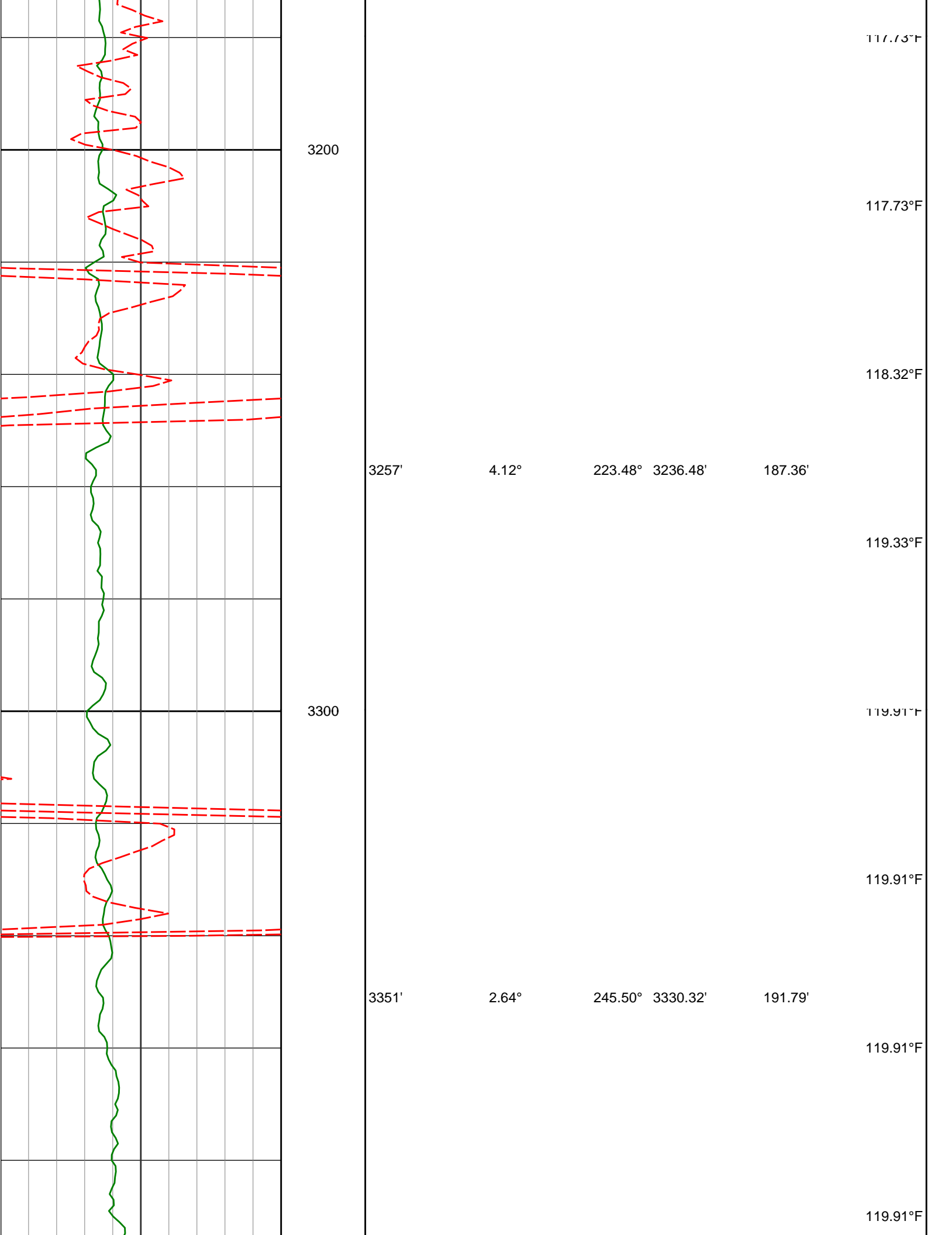
115.56°F

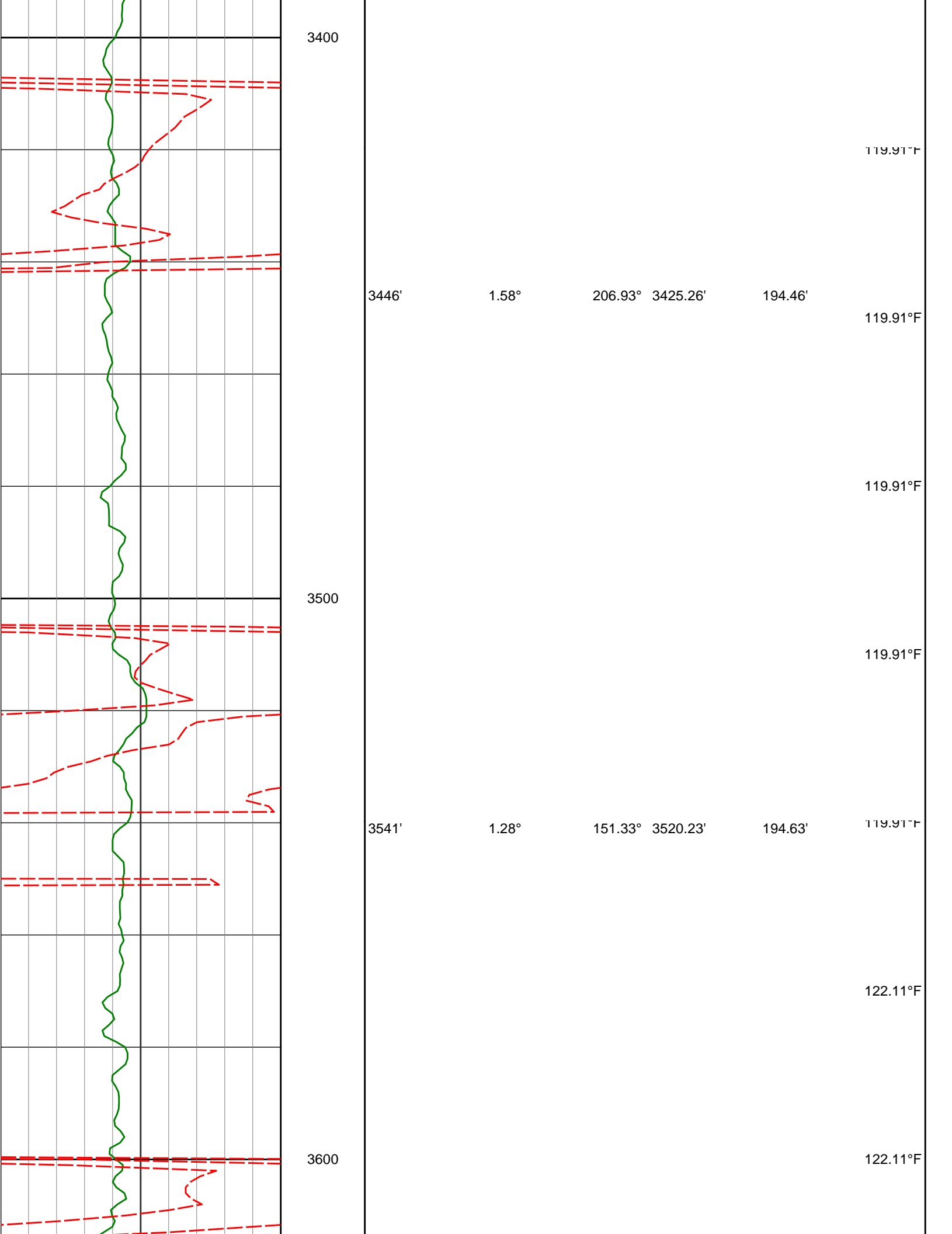
115.56°F

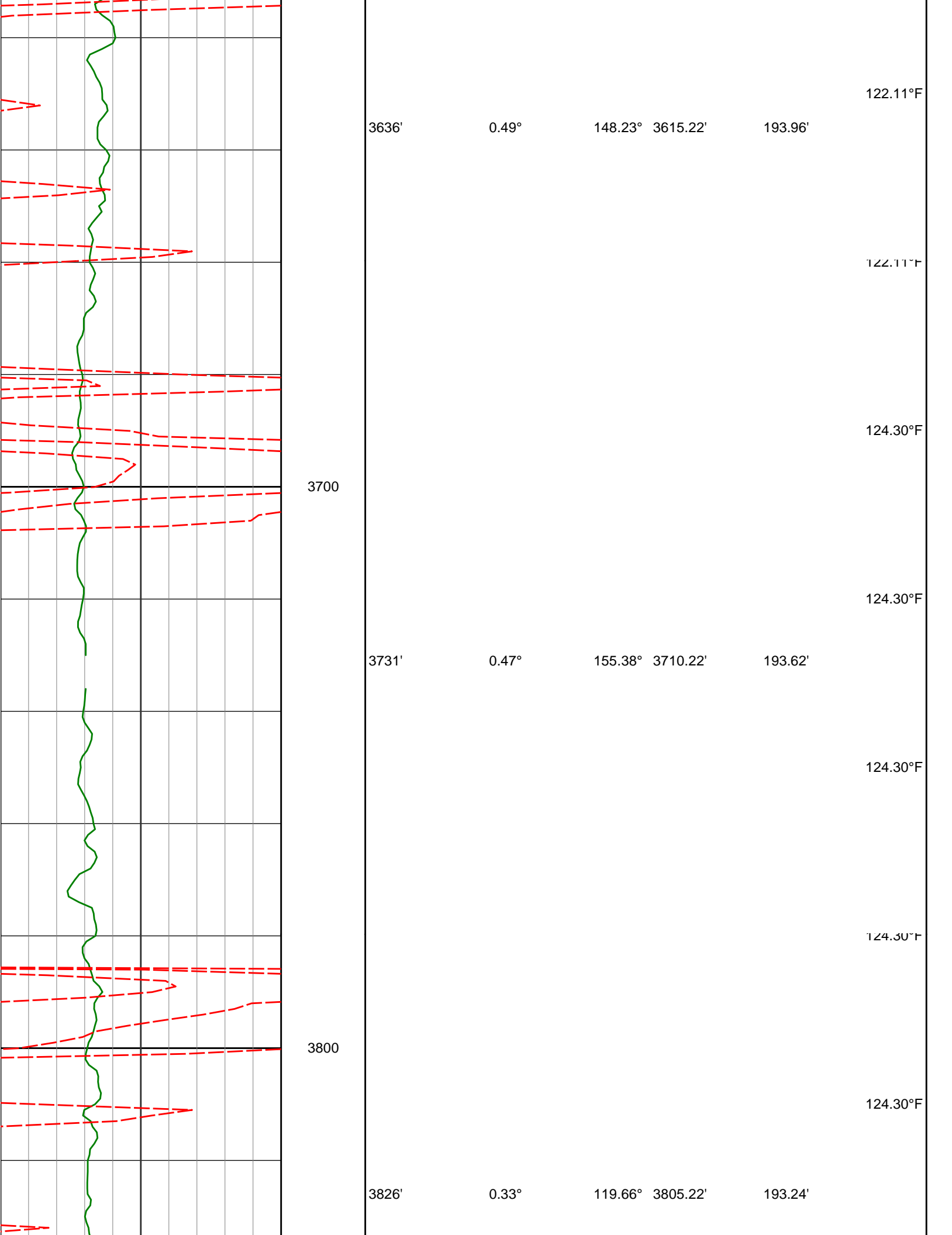
115.56°F

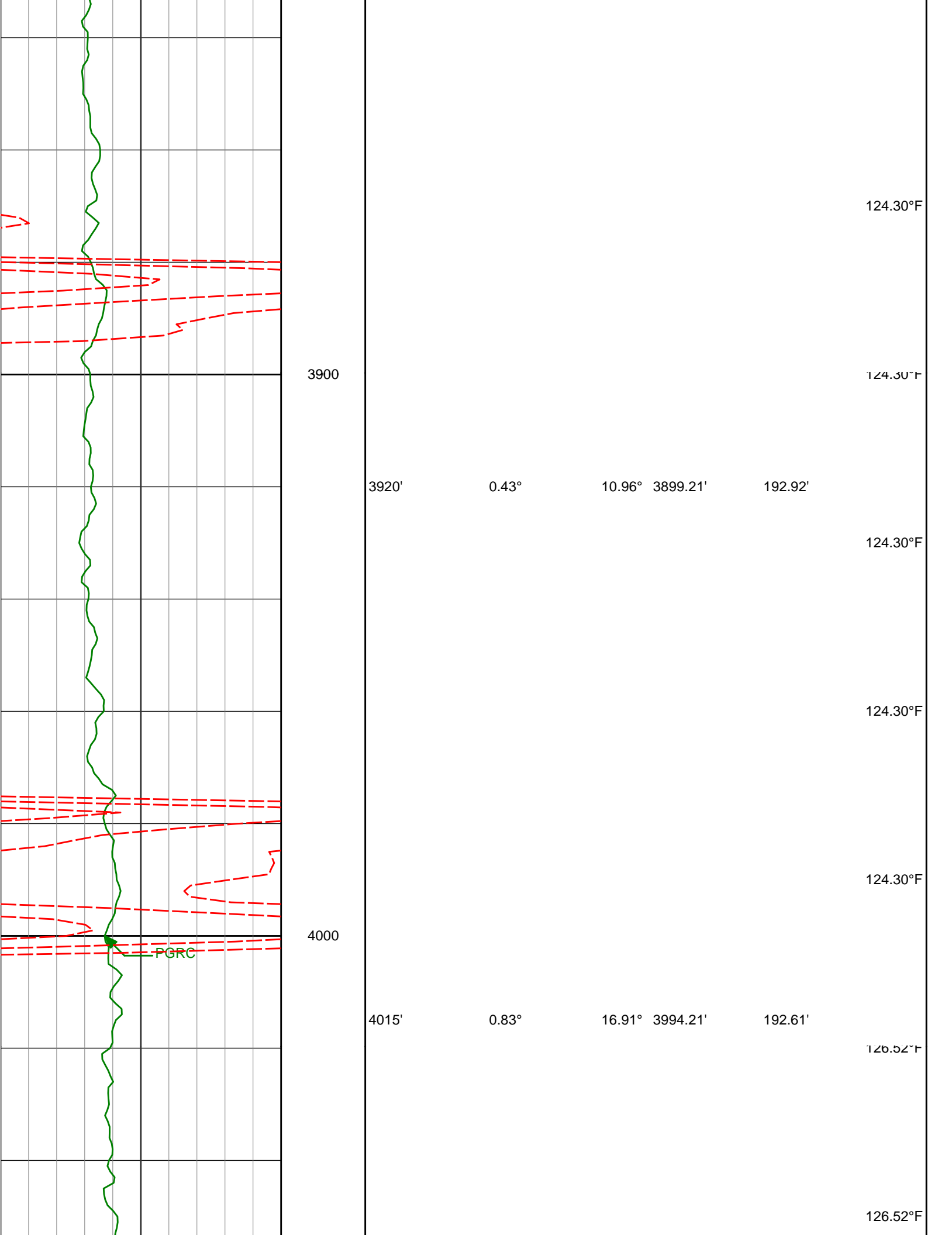
115.56°F

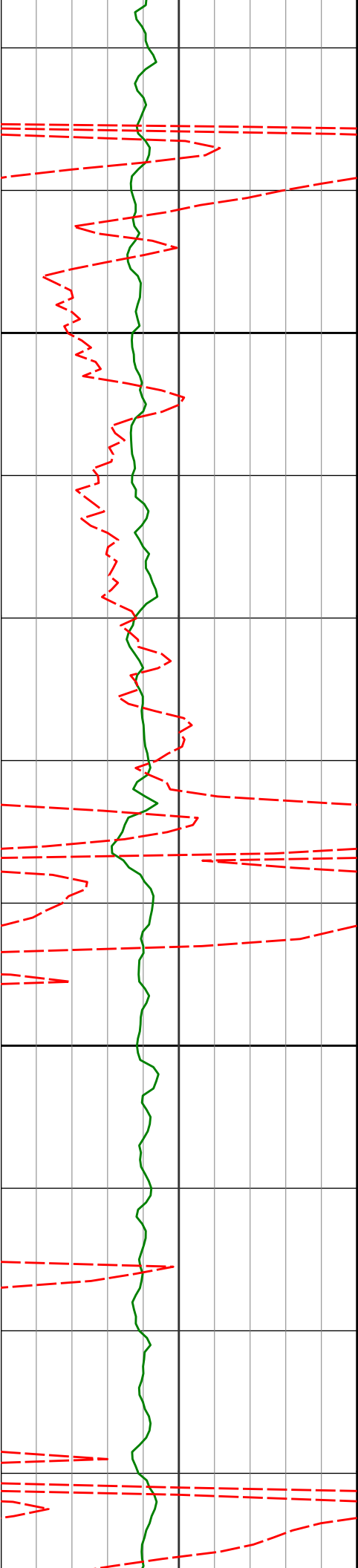












4100

4200

4110'

4205'

0.06°

0.25°

53.10°

143.79°

4089.20'

4184.20'

192.34'

192.18'

126.52°F

126.52°F

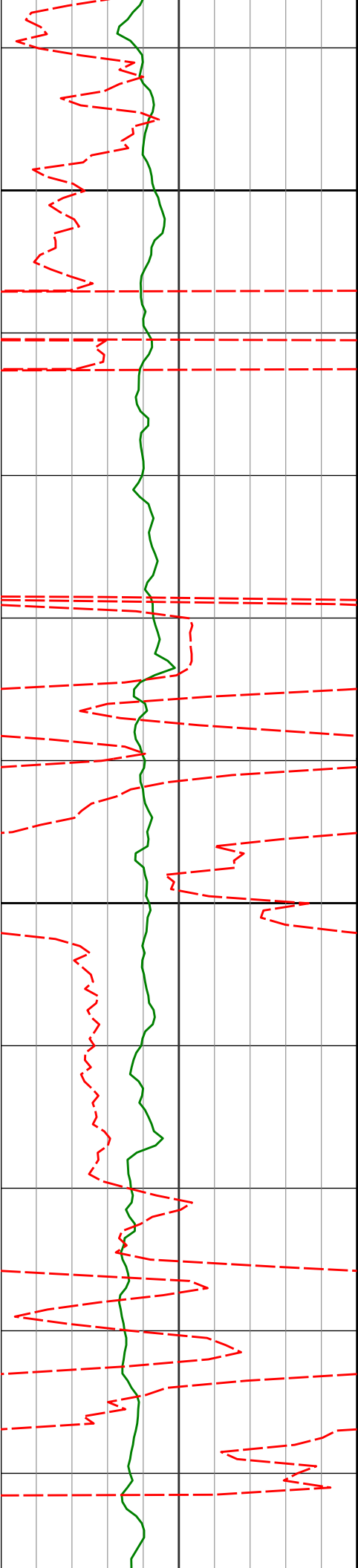
126.52°F

126.52°F

126.52°F

128.73°F

128.73°F



4300

4300'

0.22°

189.55° 4279.20'

192.11'

128.73°F

128.73°F

128.73°F

128.73°F

4400

4394'

0.11°

225.38° 4373.20'

192.21'

128.73°F

128.73°F

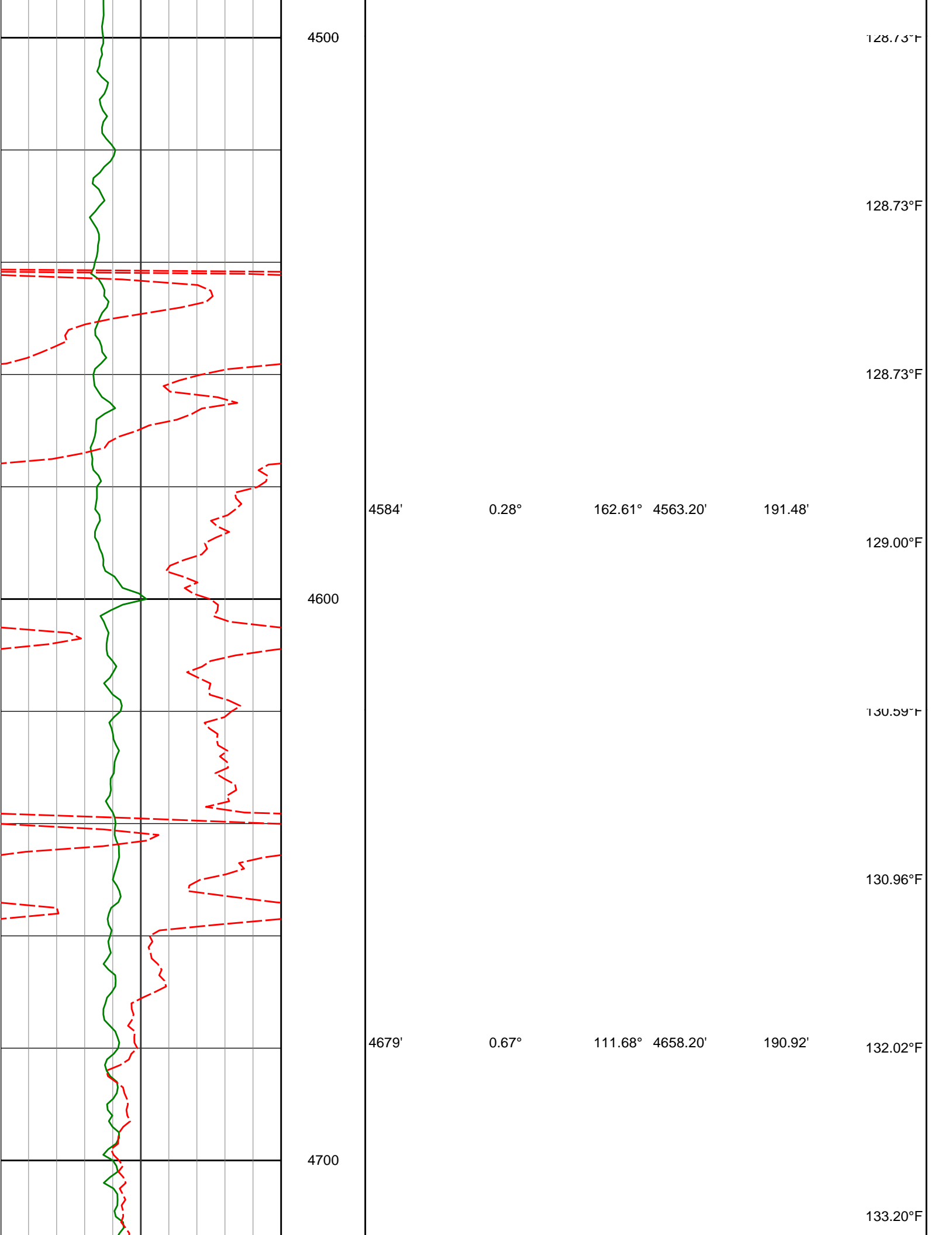
128.73°F

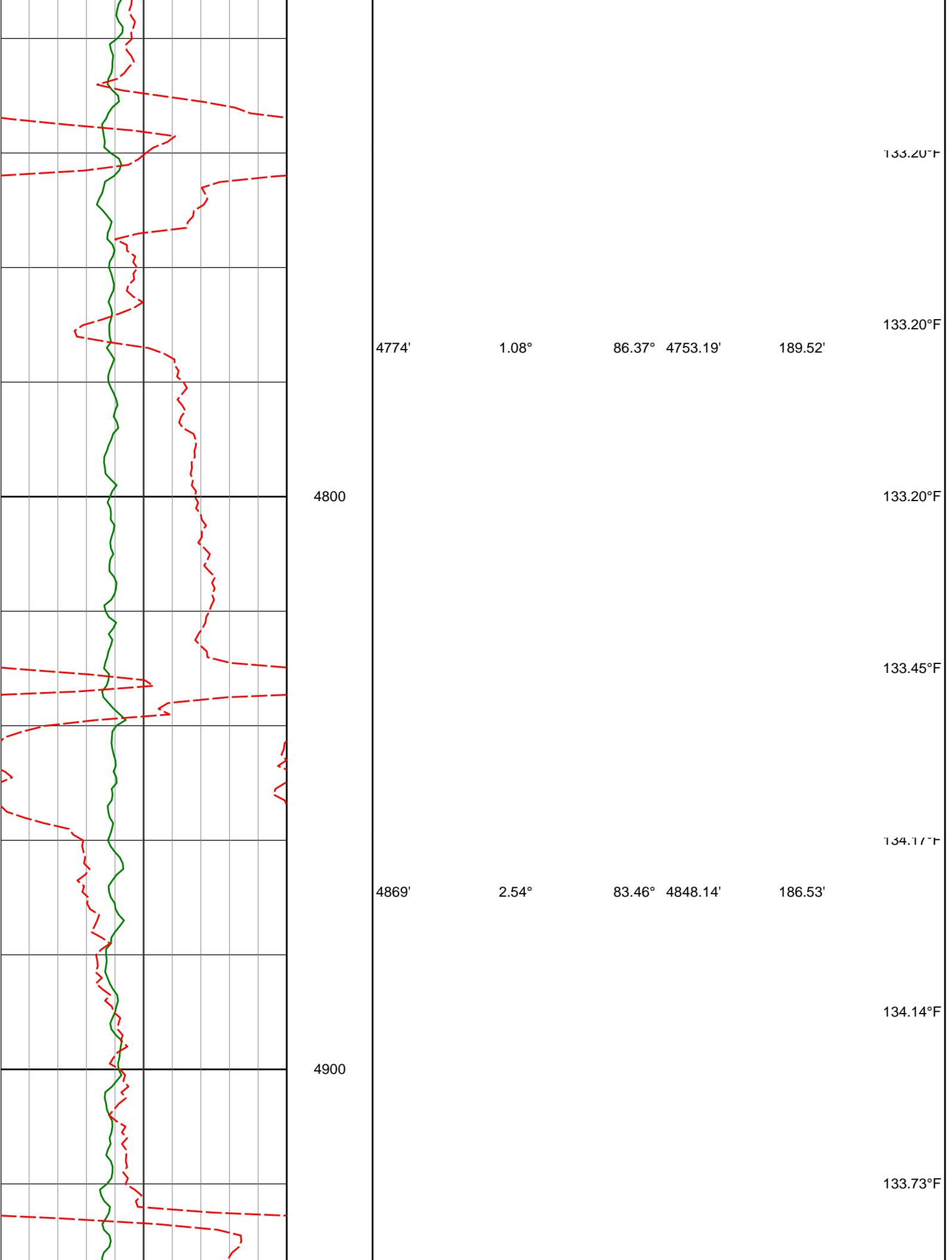
4489'

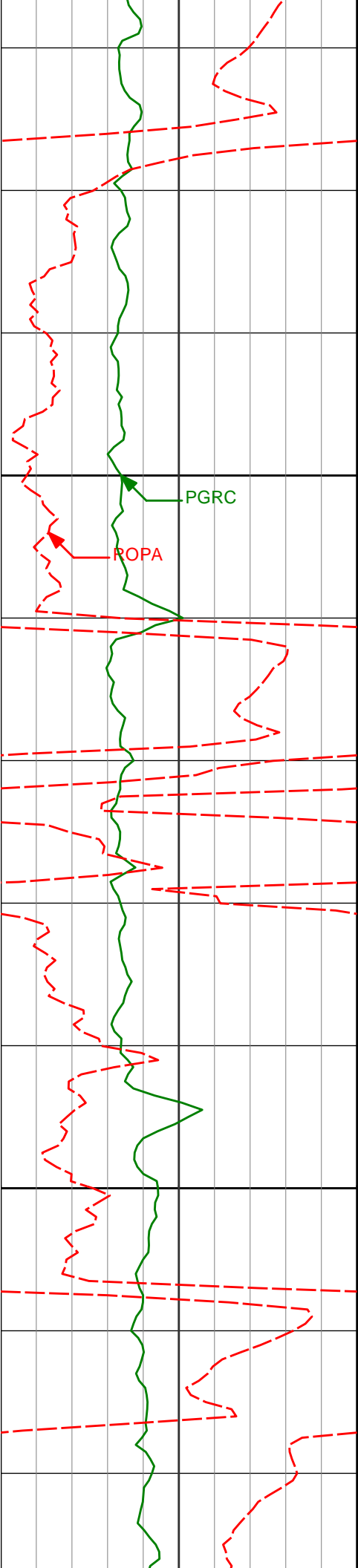
0.56°

123.83° 4468.20'

191.91'







5000

5100

4964'

1.49°

48.85° 4943.08'

183.47'

5058'

1.18°

62.60° 5037.05'

181.63'

5153'

1.32°

115.41° 5132.03'

179.78'

134.11°F

133.81°F

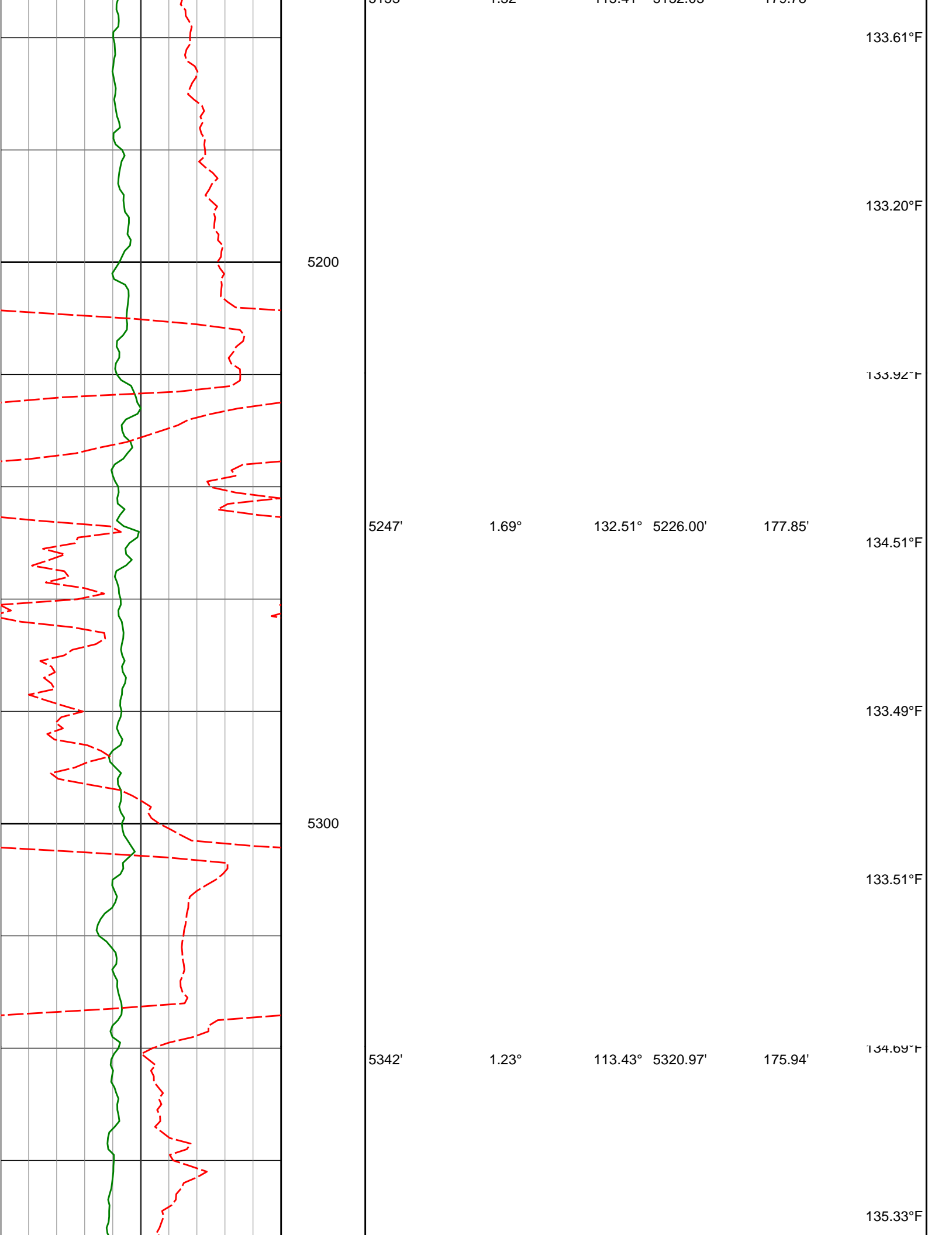
133.52°F

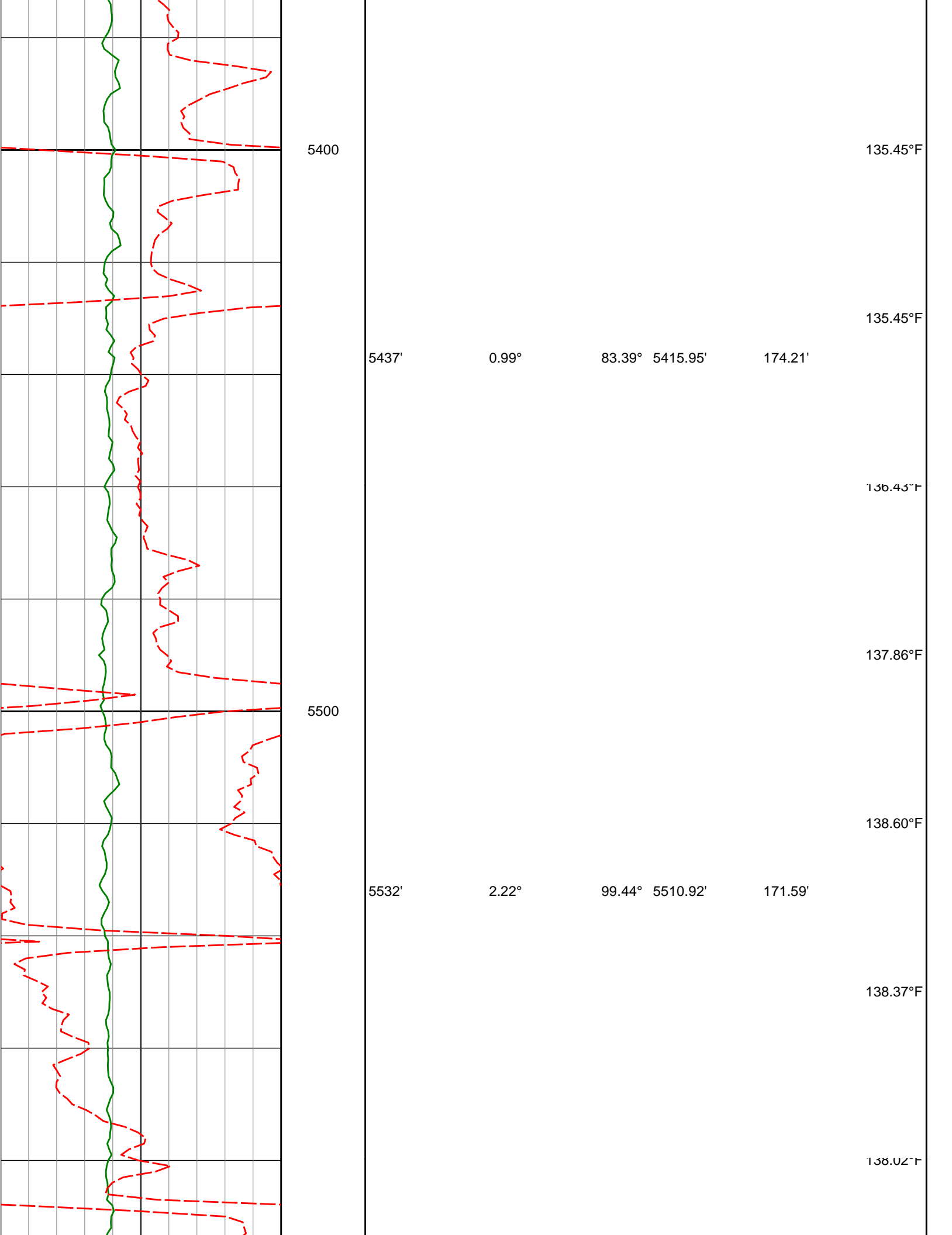
134.34°F

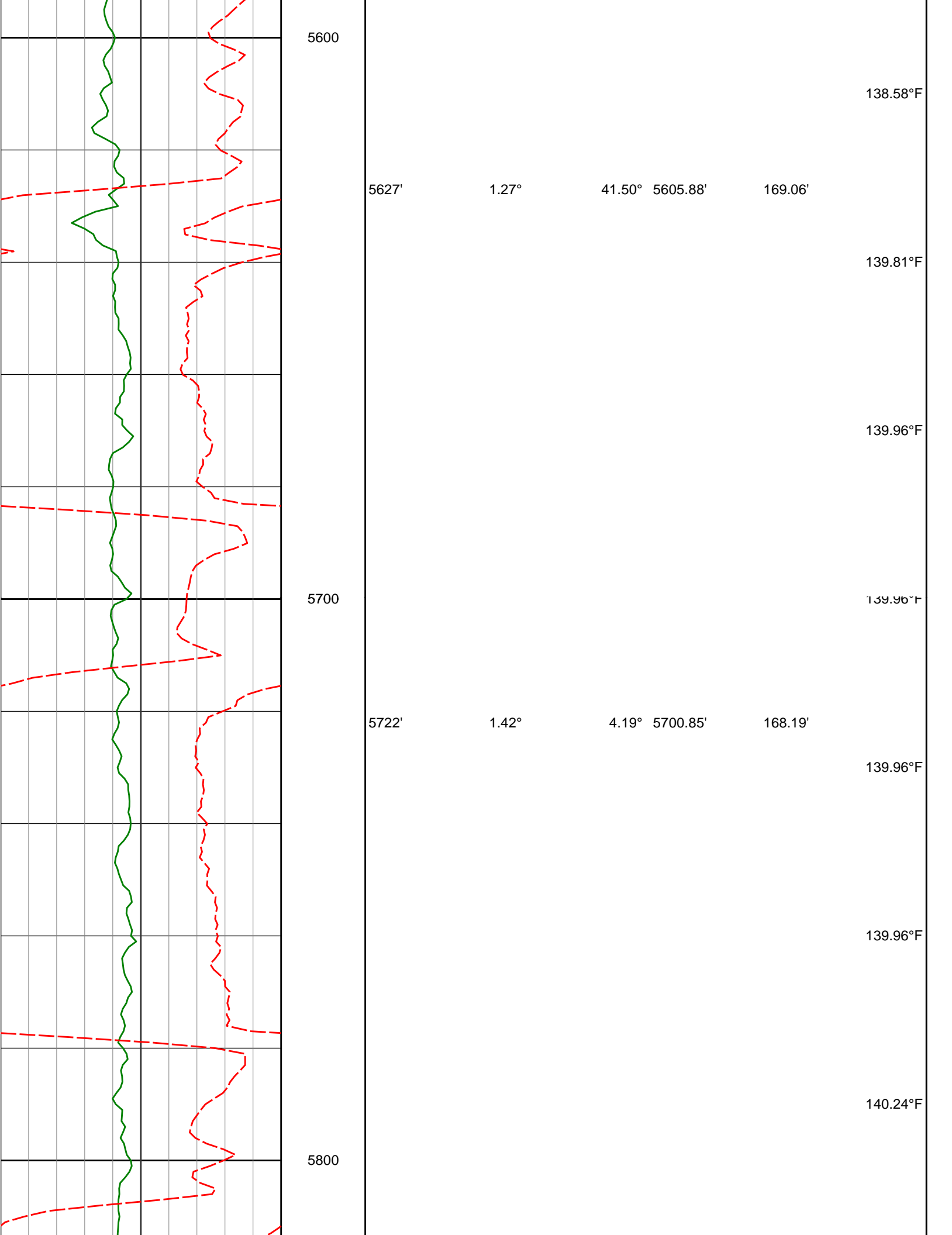
135.05°F

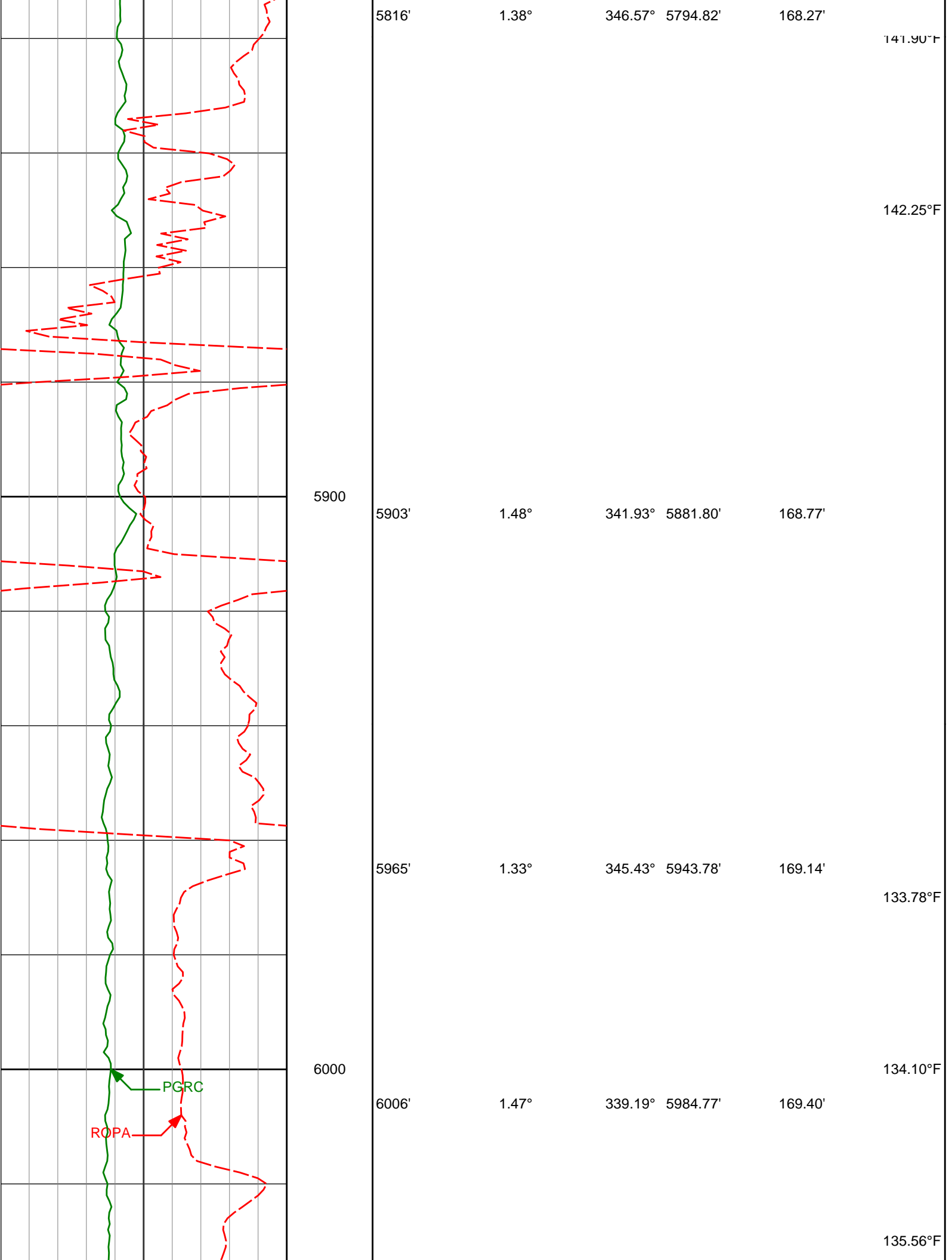
135.28°F

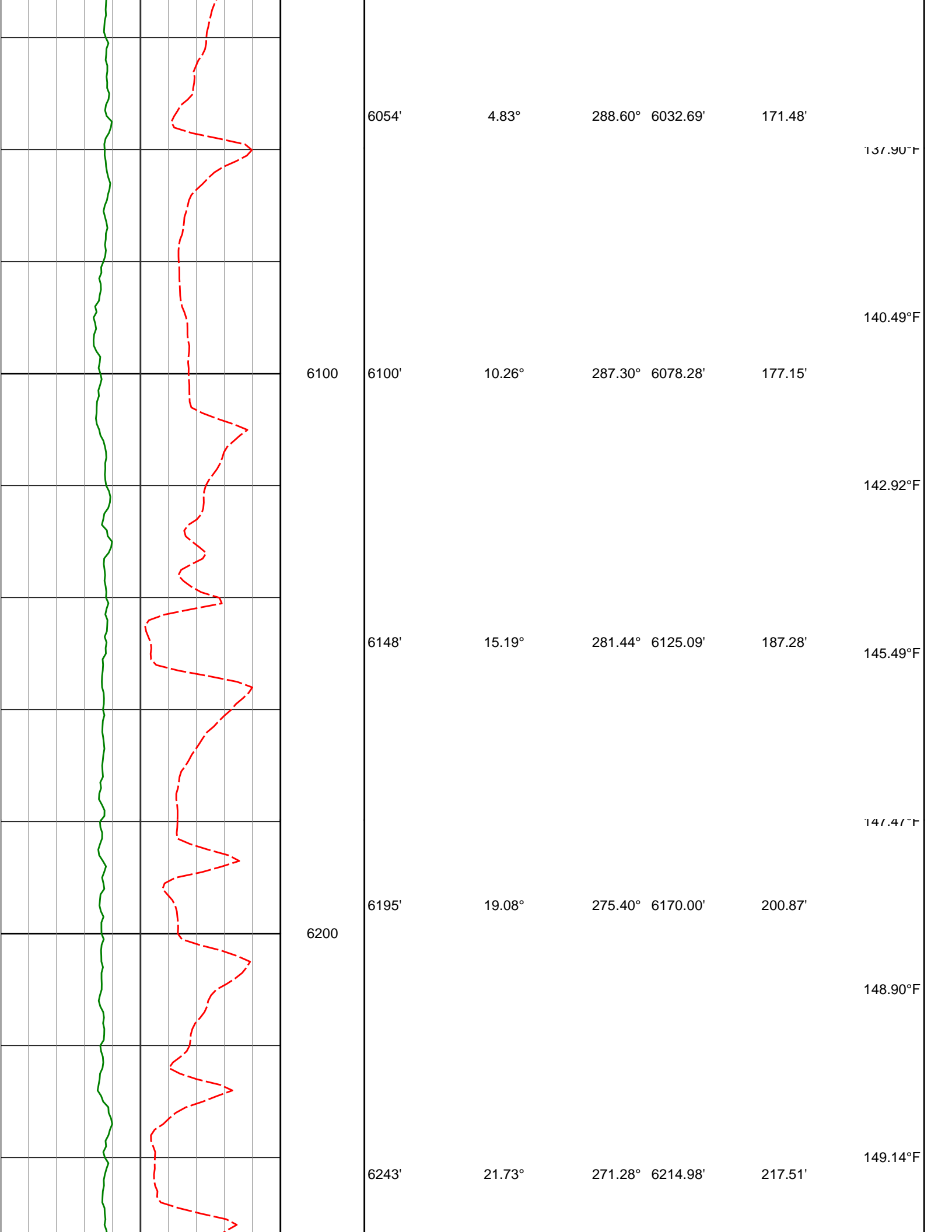
135.01°F

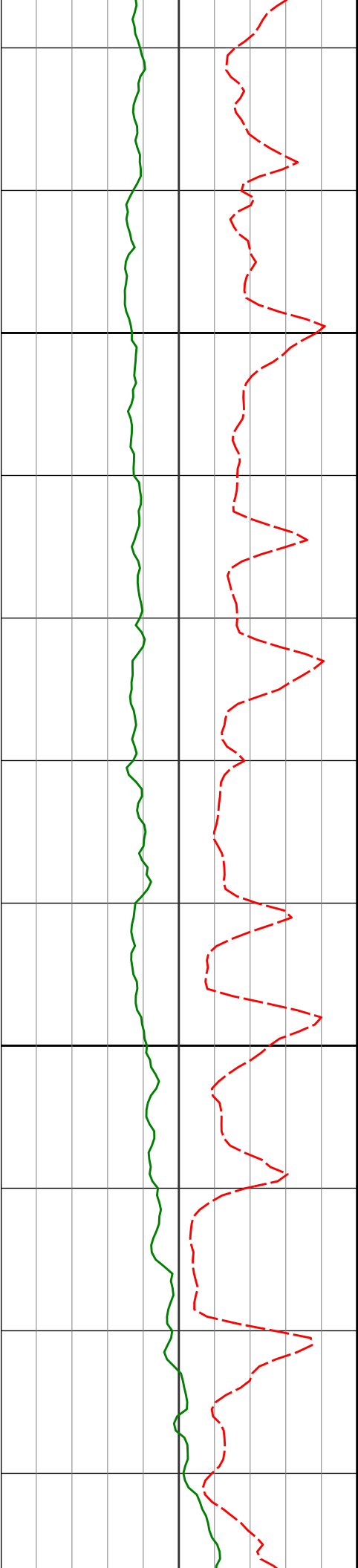












6300

6400

6289'

24.36°

268.71°

6257.31'

235.50'

6337'

28.85°

266.67°

6300.21'

256.99'

6384'

33.25°

267.10°

6340.47'

281.23'

6432'

36.71°

268.55°

6379.79'

308.74'

149.28°F

150.35°F

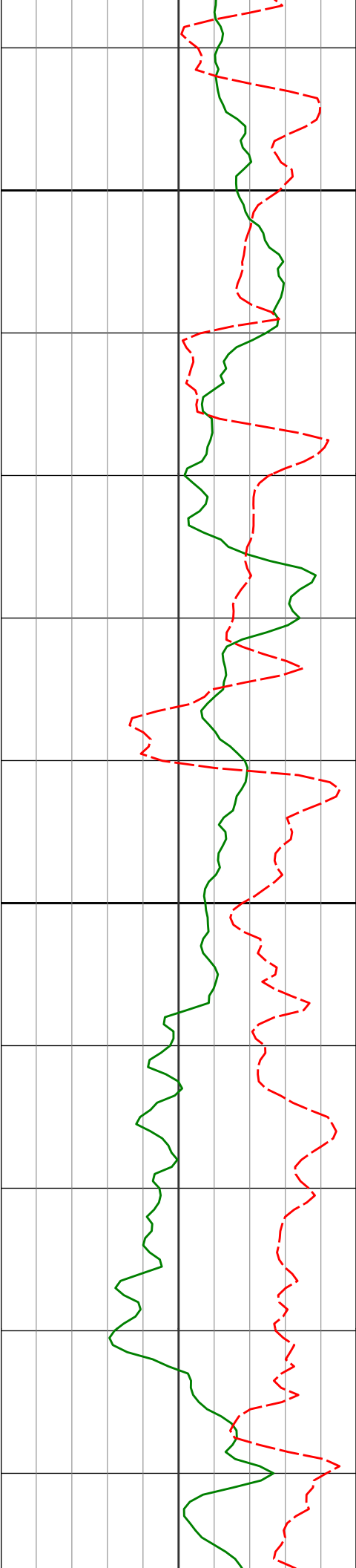
152.01°F

153.52°F

153.89°F

154.52°F

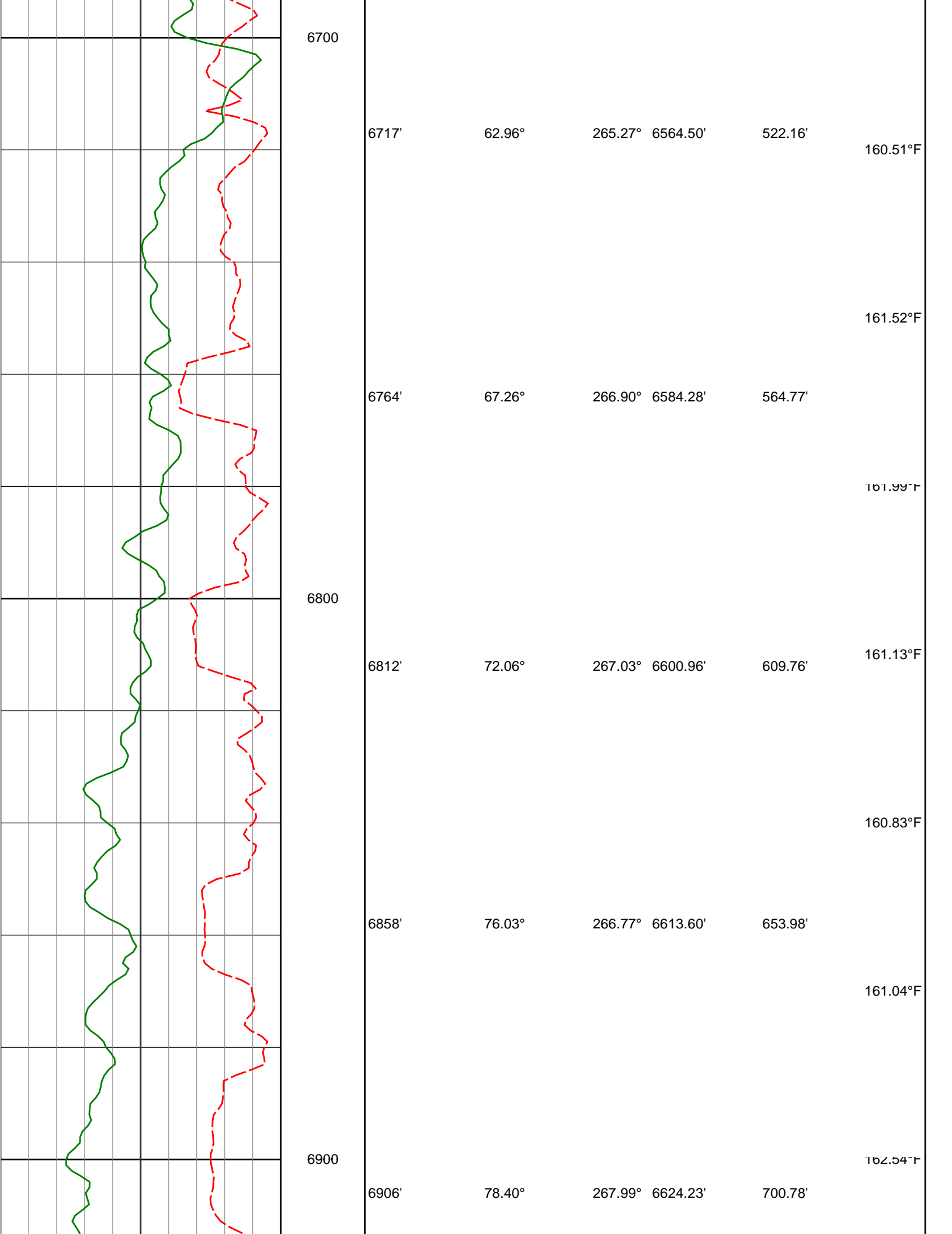
155.62°F

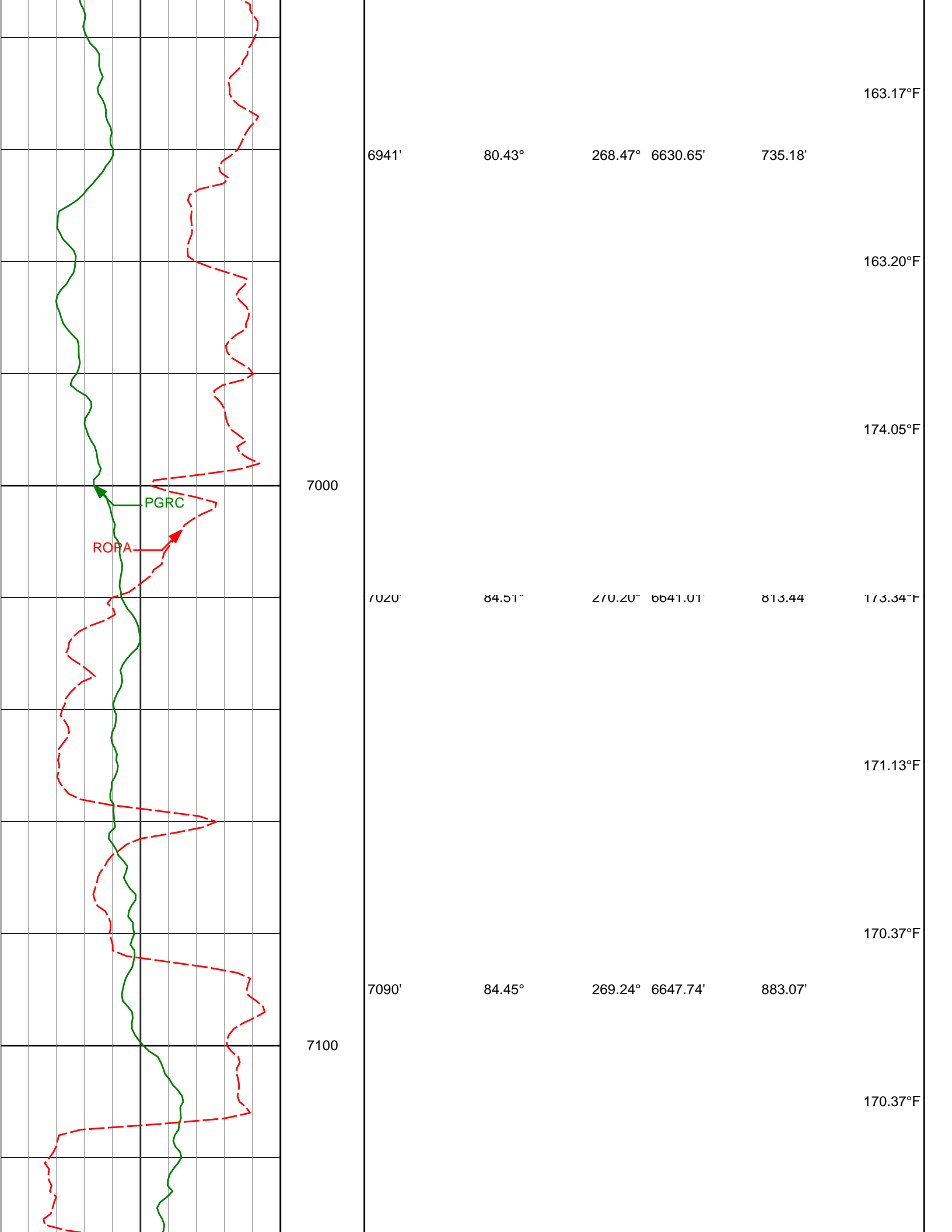


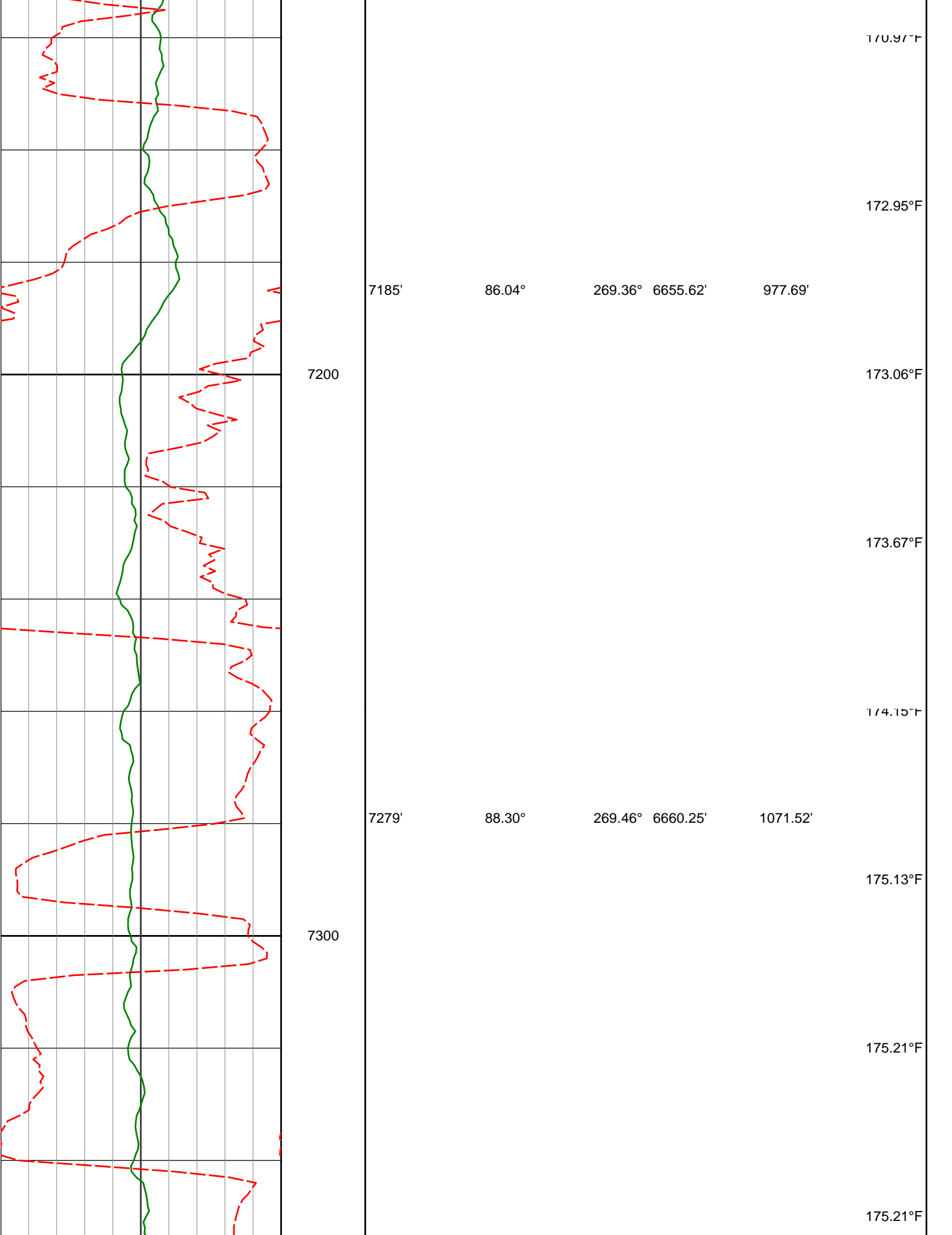
6500

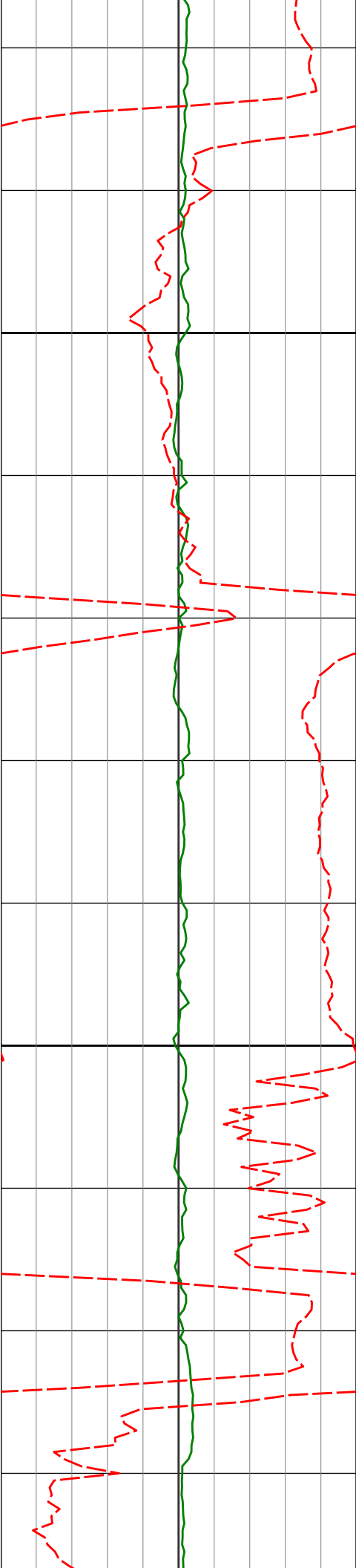
6600

6479'	40.72°	270.52°	6416.46'	338.10'	155.64°F
					156.06°F
6527'	44.45°	273.03°	6451.80'	370.48'	156.28°F
					157.25°F
6574'	49.13°	273.49°	6483.97'	404.56'	158.59°F
					159.99°F
6622'	53.37°	270.86°	6514.01'	441.85'	159.66°F
					159.07°F
6669'	57.50°	266.82°	6540.68'	480.53'	









7400

7500

7374'

7469'

7563'

91.54°

91.51°

92.28°

270.38°

271.28°

281.00°

6660.38'

6657.85'

6654.73'

1166.42'

1261.23'

1354.01'

178.01°F

180.09°F

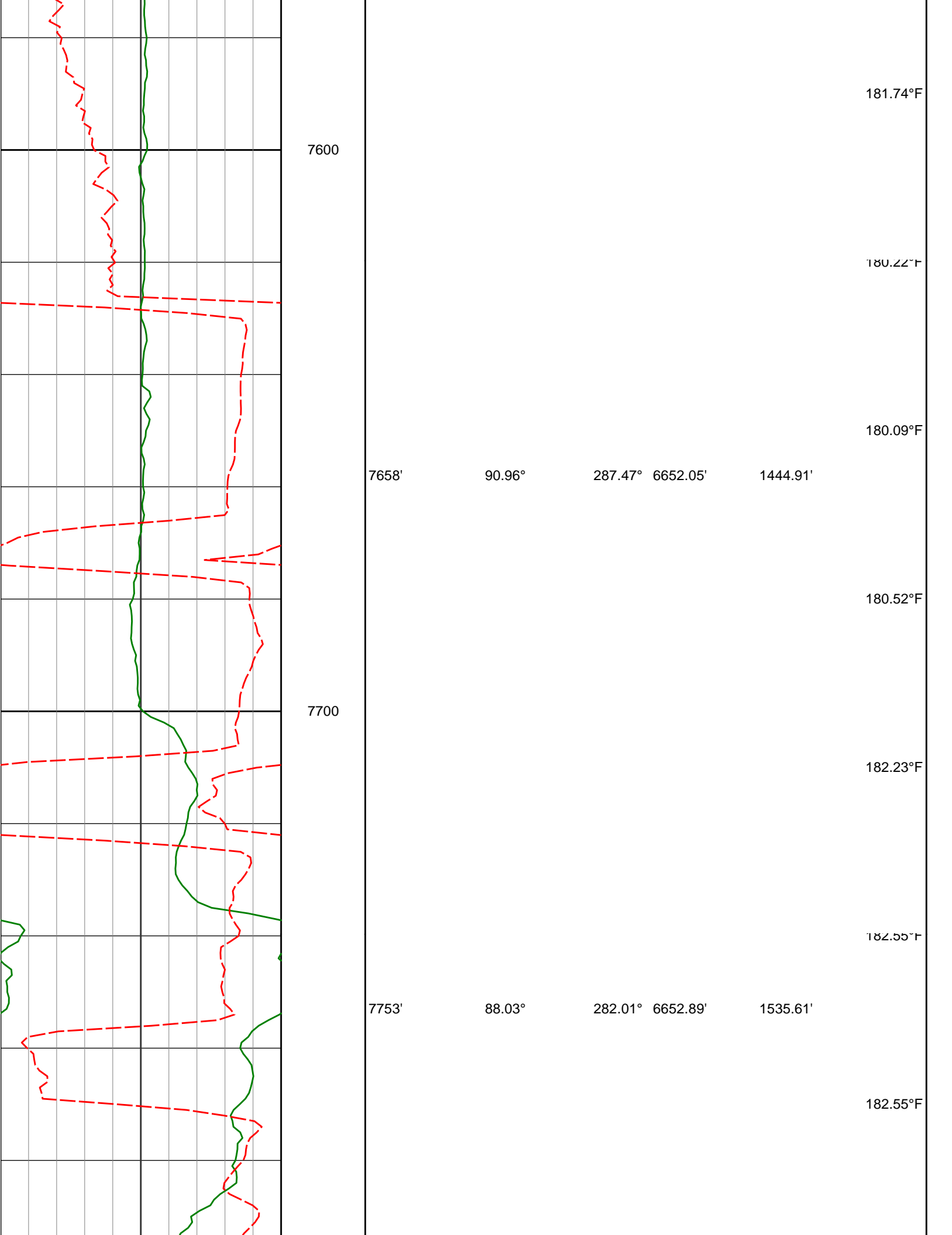
181.14°F

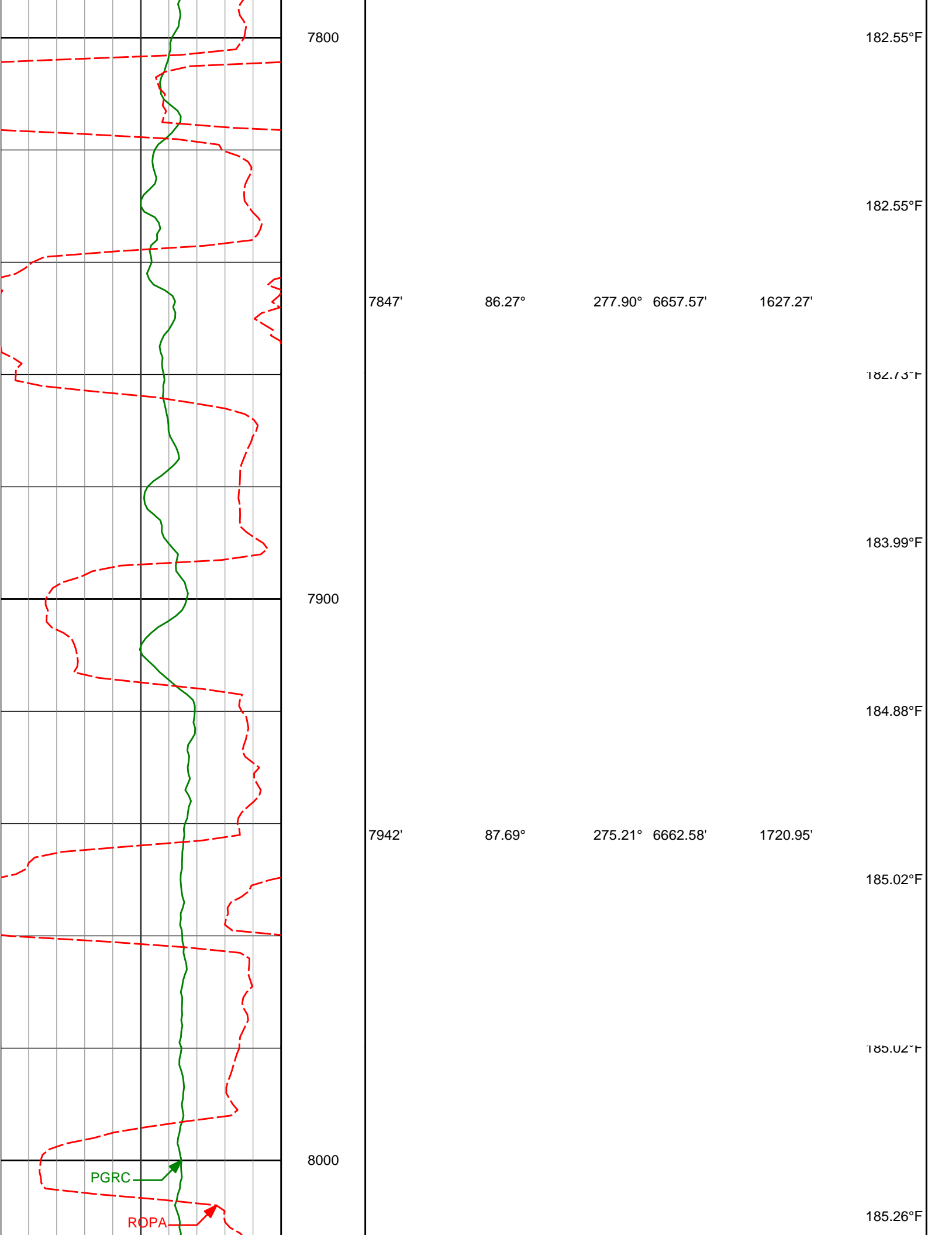
182.18°F

181.42°F

181.42°F

182.46°F







8100

8200

8036'

90.83°

270.85°

6663.79'

1814.48'

186.50°F

8131'

92.66°

267.75°

6660.90'

1909.37'

185.16°F

185.02°F

185.37°F

185.75°F

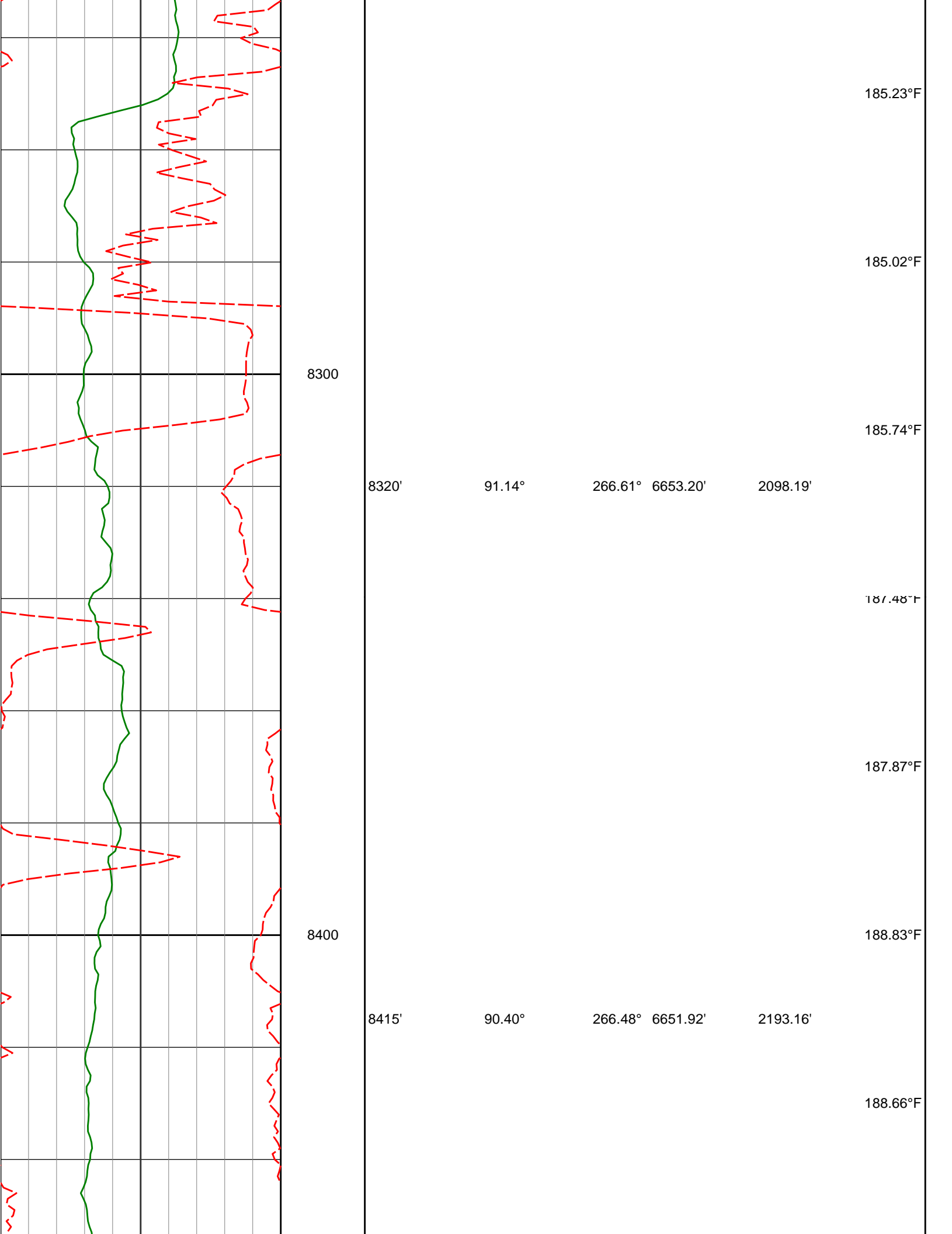
8225'

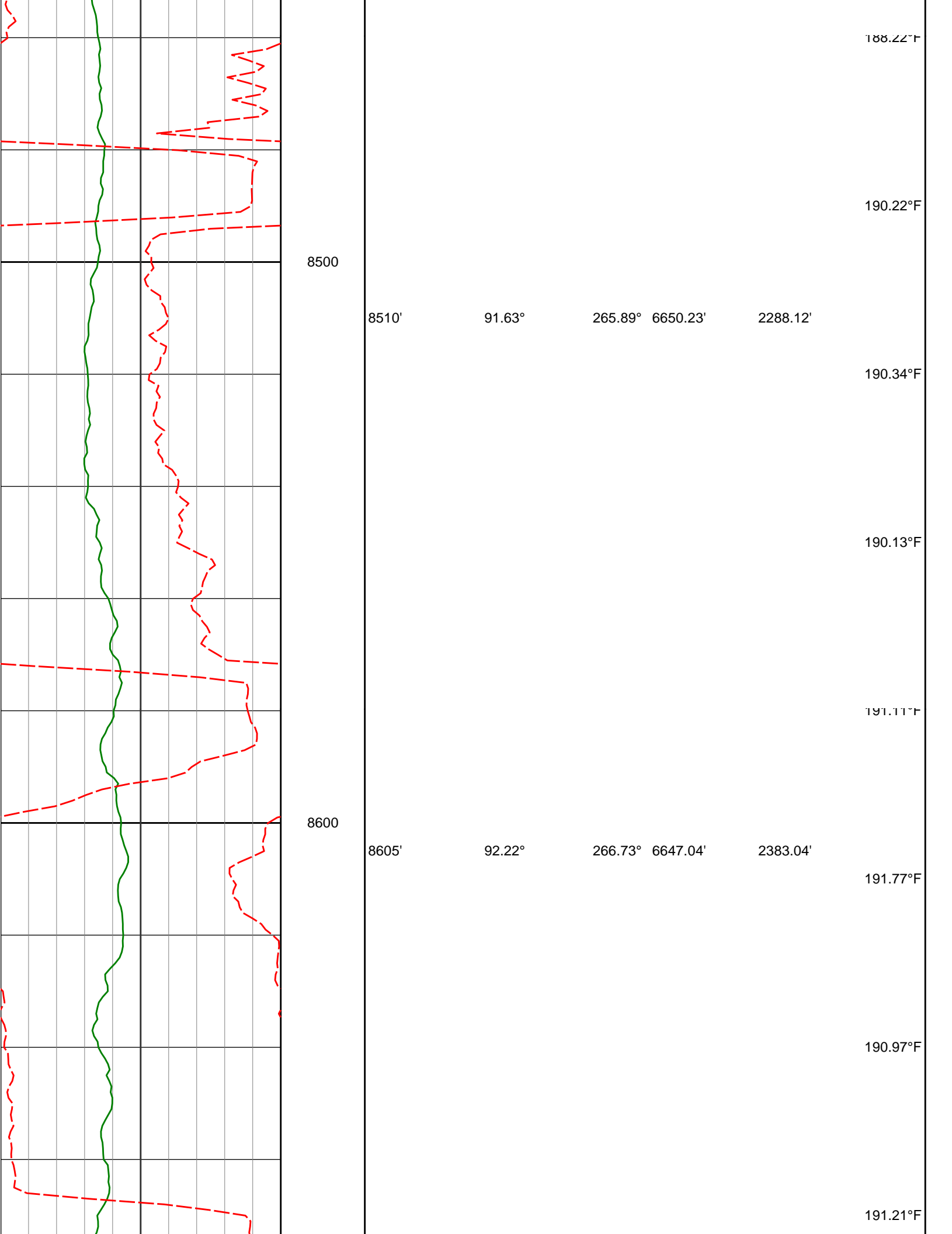
92.78°

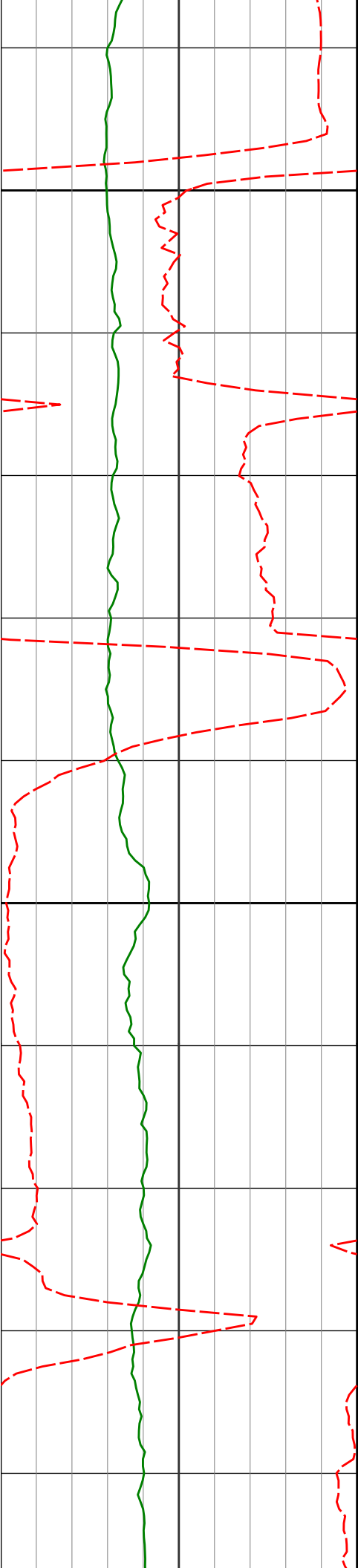
266.37°

6656.44'

2003.26'







8700

8800

8699'

8794'

8889'

90.40°

88.71°

89.78°

266.55° 6644.89'

266.12° 6645.63'

265.90° 6646.89'

2477.00'

2571.97'

2666.93'

193.38°F

192.79°F

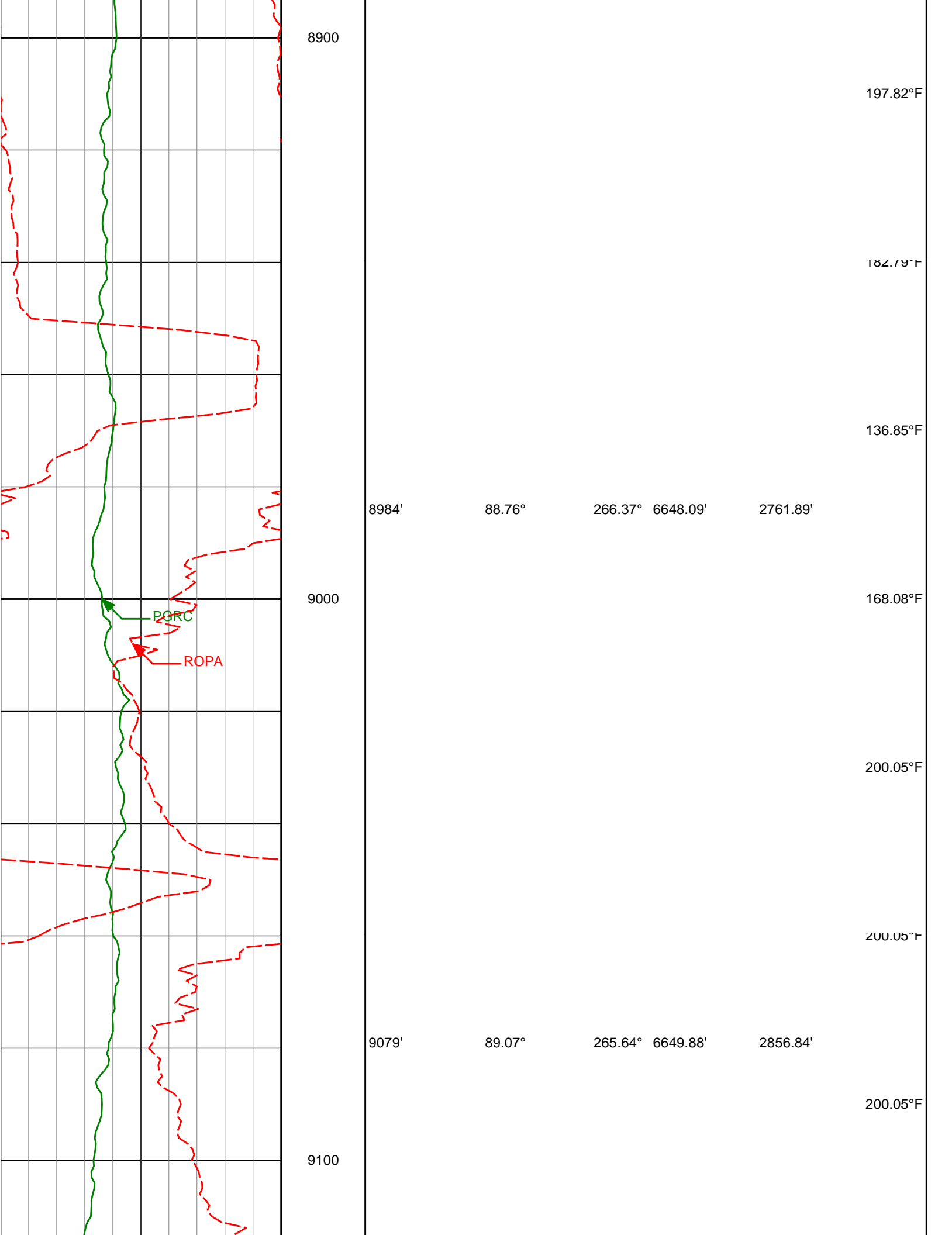
192.64°F

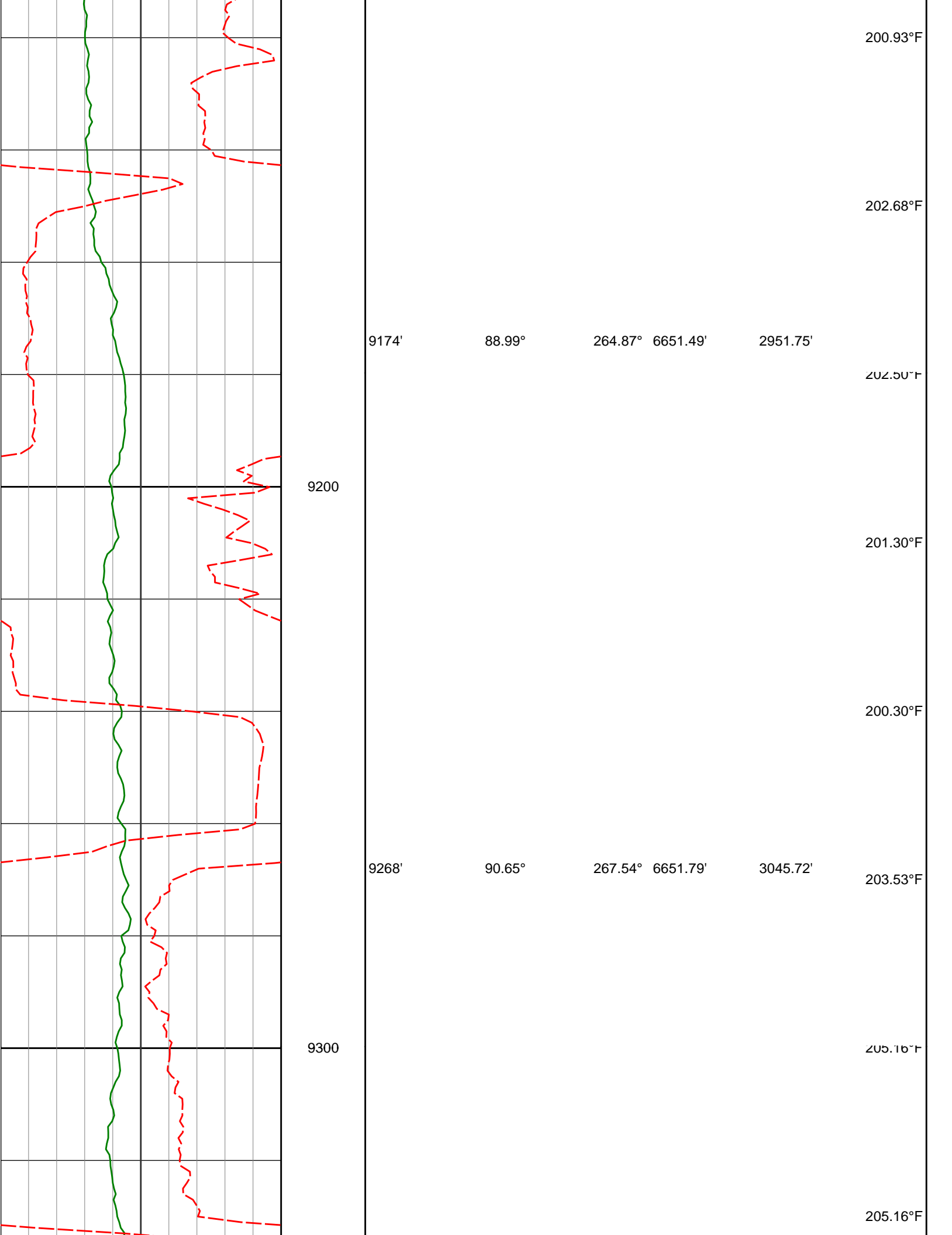
194.34°F

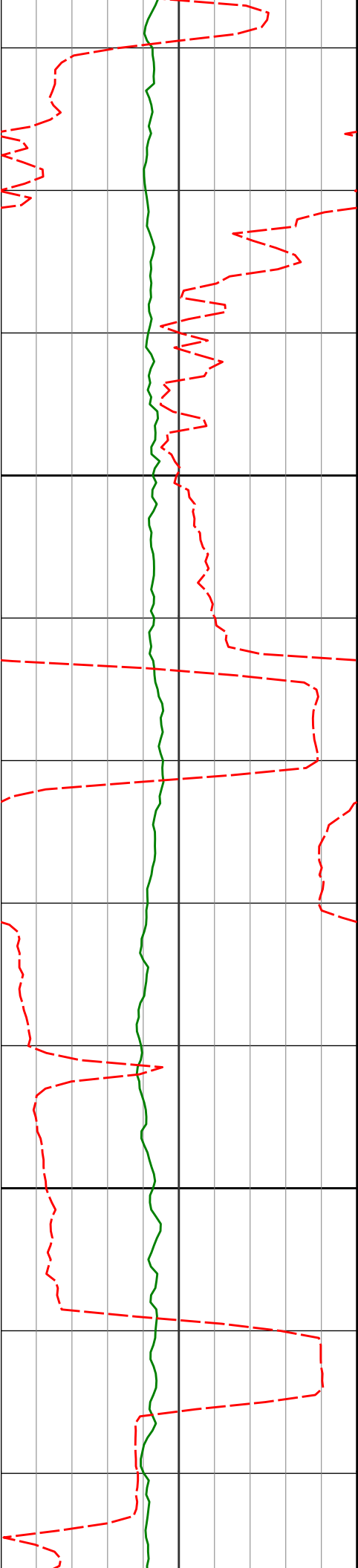
194.99°F

196.40°F

198.08°F







9400

9500

9363'

90.34°

266.62°

6650.97'

3140.71'

205.16°F

205.16°F

205.46°F

206.33°F

9458'

90.03°

267.24°

6650.67'

3235.70'

205.53°F

205.85°F

206.92°F

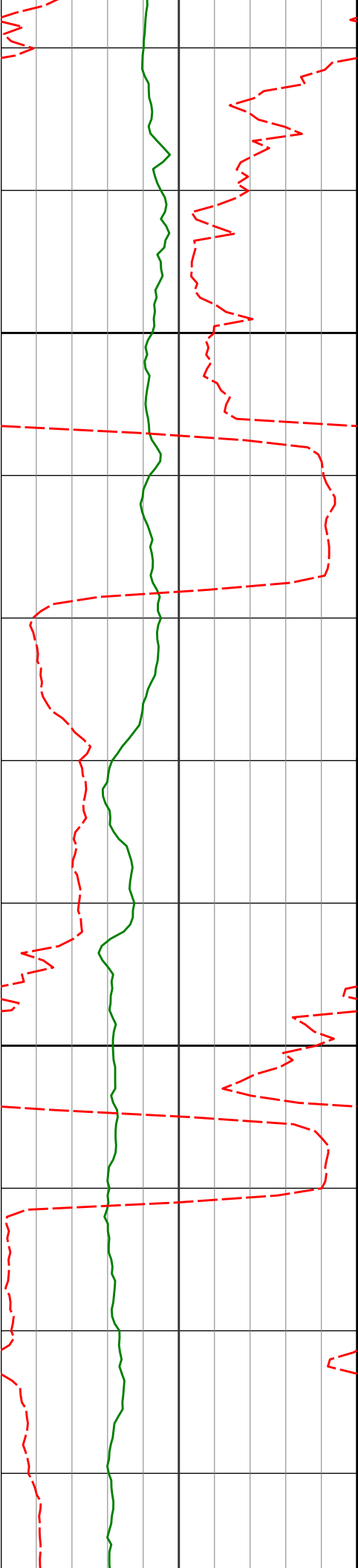
9553'

91.39°

270.91°

6649.49'

3330.64'



9600

9700

9648'

9743'

89.78°

88.98°

270.58°

269.30°

6648.52'

6649.54'

3425.48'

3520.39'

206.35°F

205.87°F

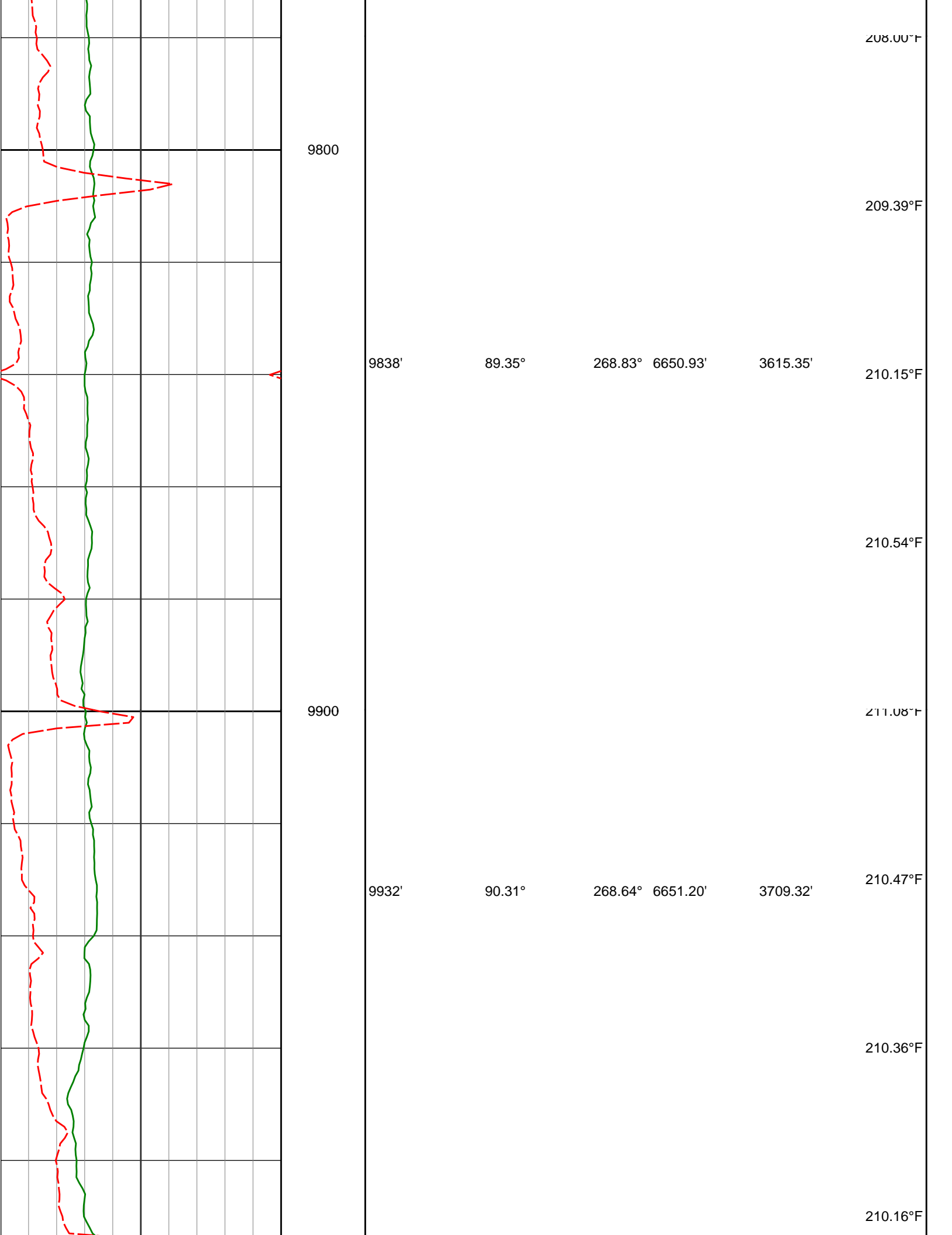
206.99°F

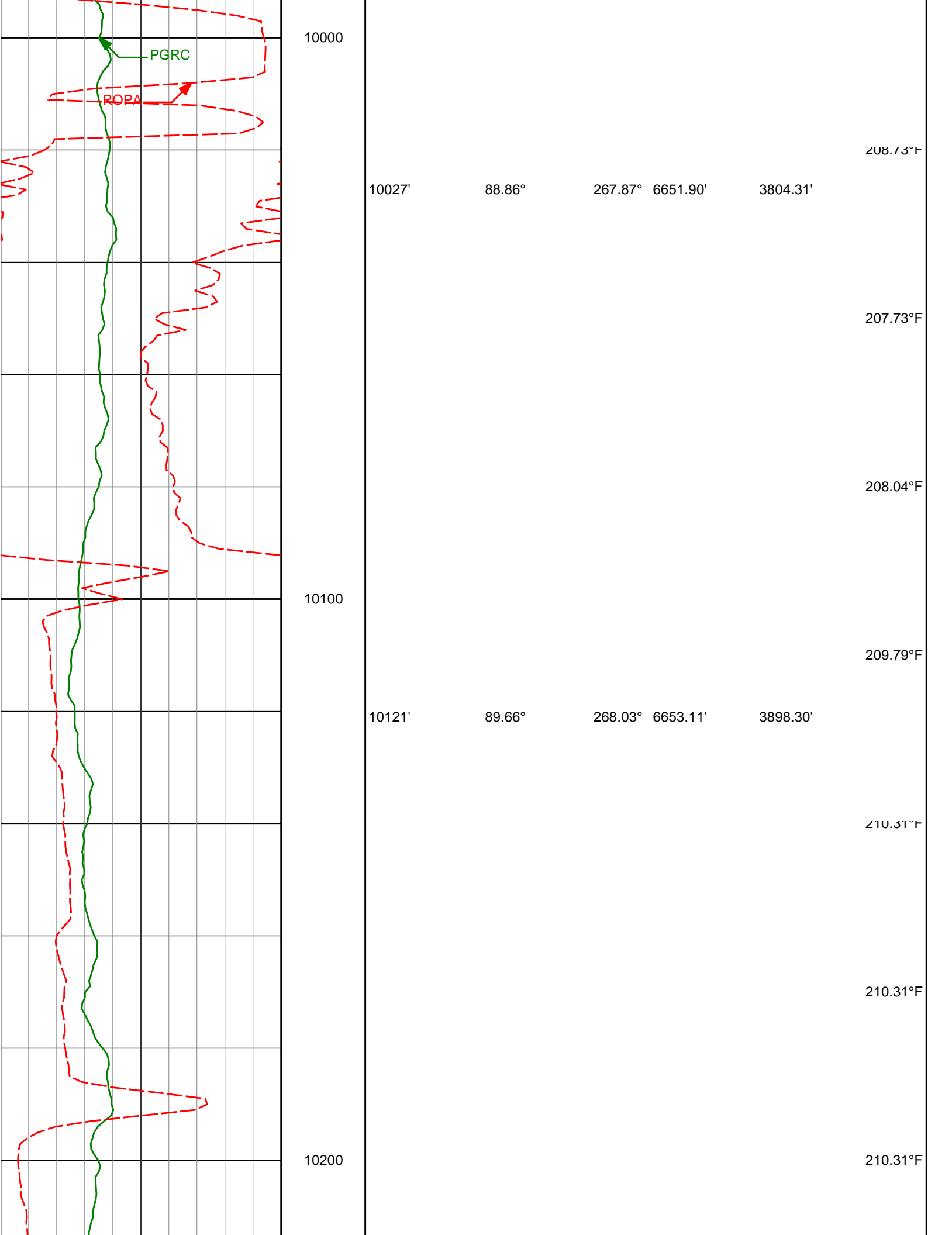
207.65°F

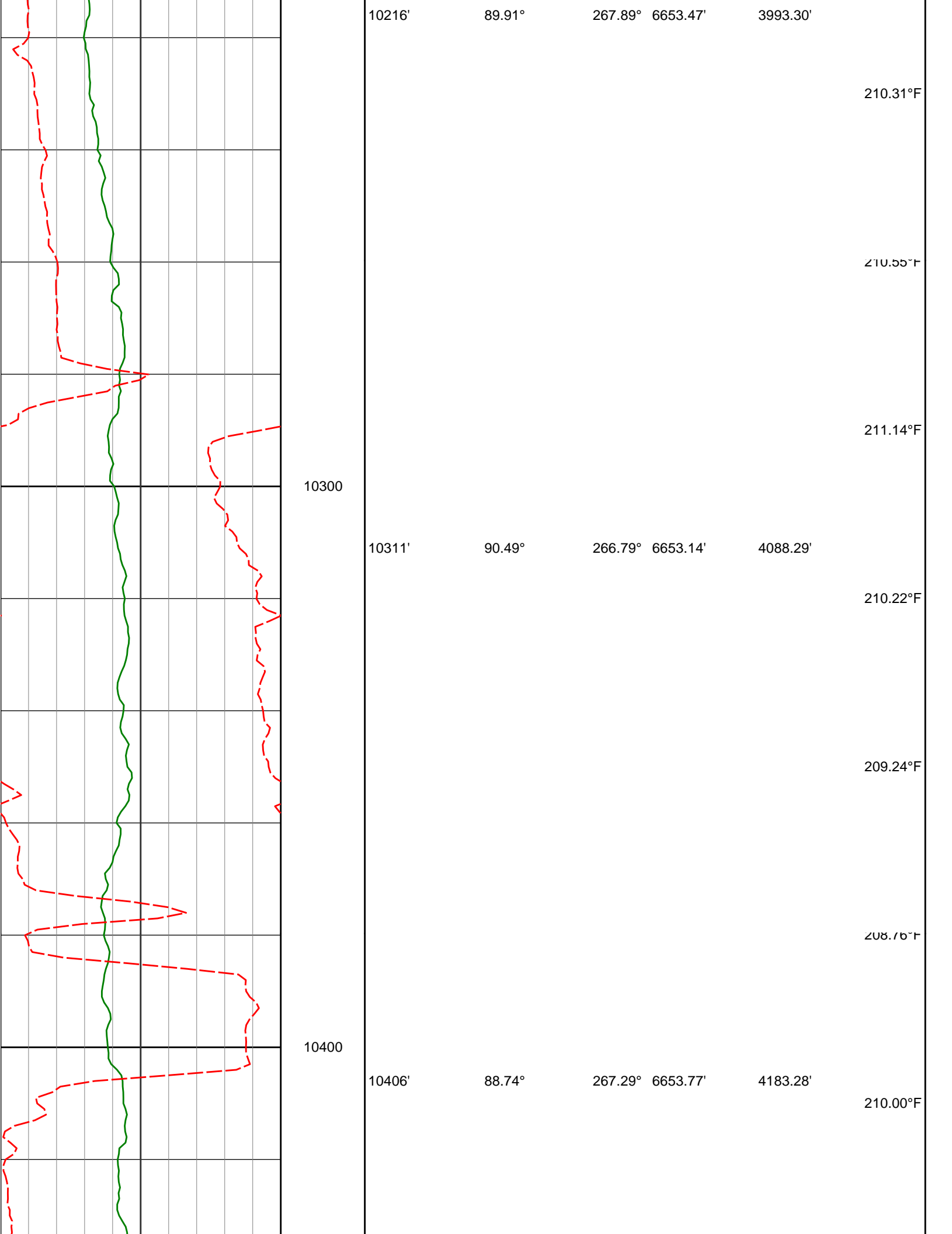
207.73°F

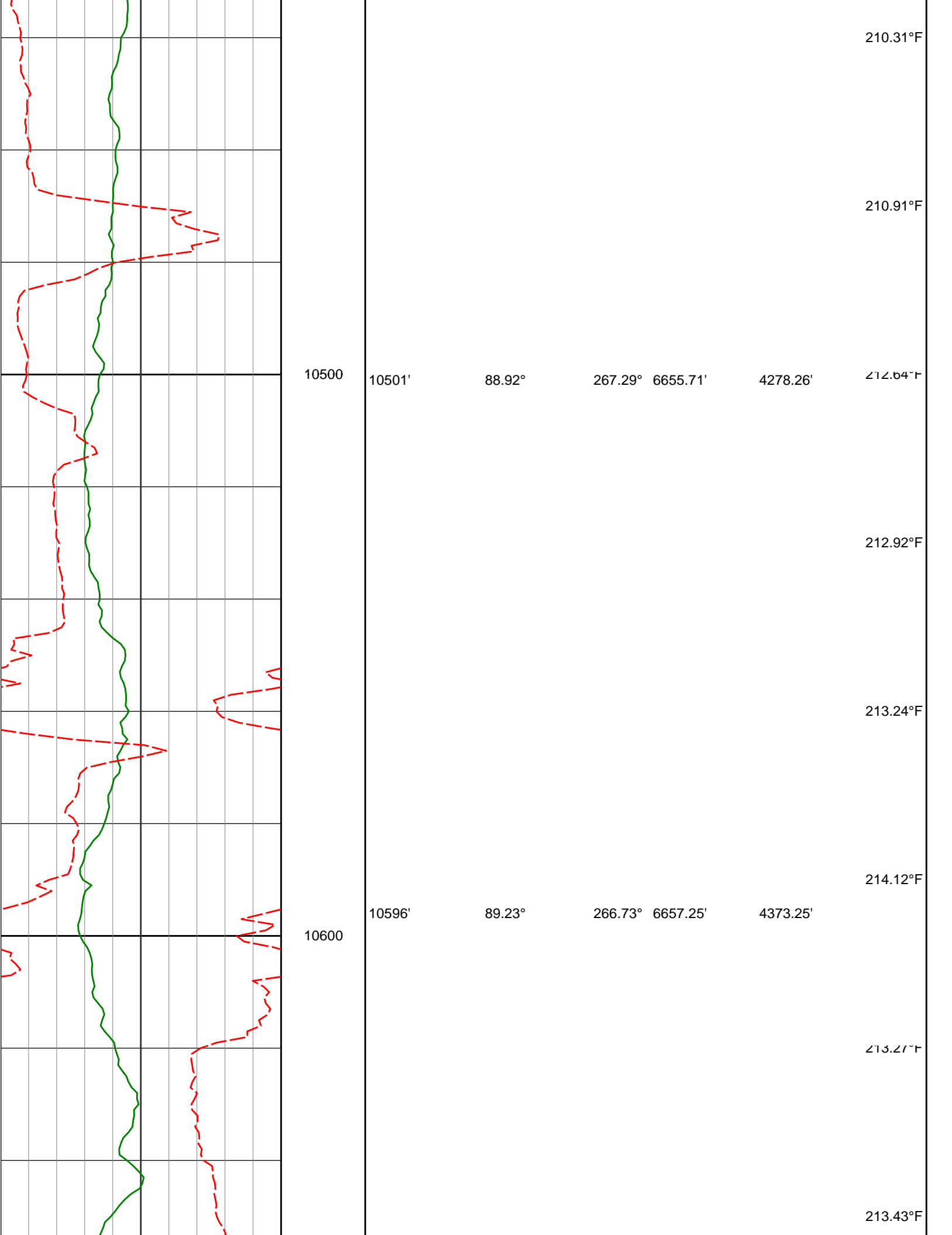
207.73°F

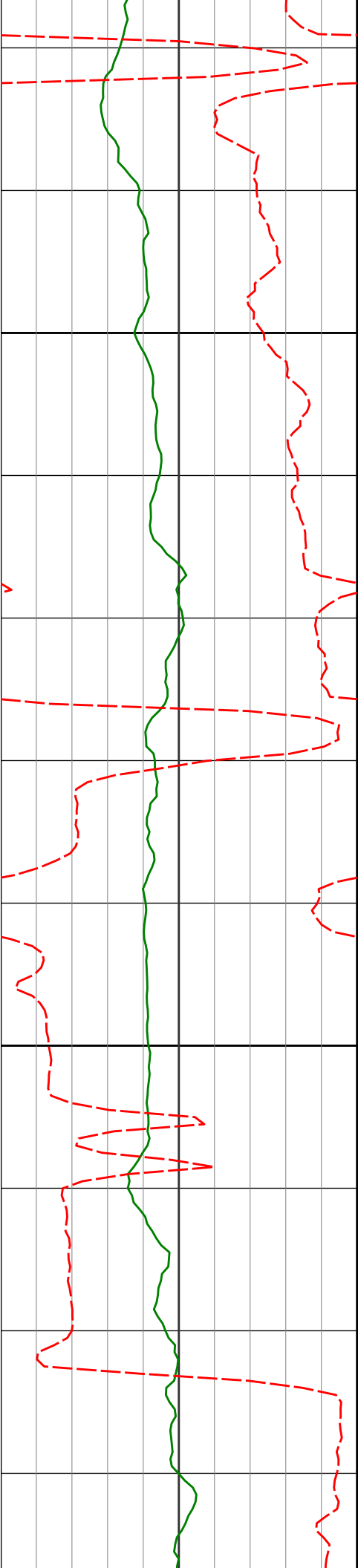
207.73°F











10700

10800

10690'

88.89°

266.12° 6658.79'

4467.22'

10785'

88.33°

265.14° 6661.09'

4562.13'

214.97°F

213.67°F

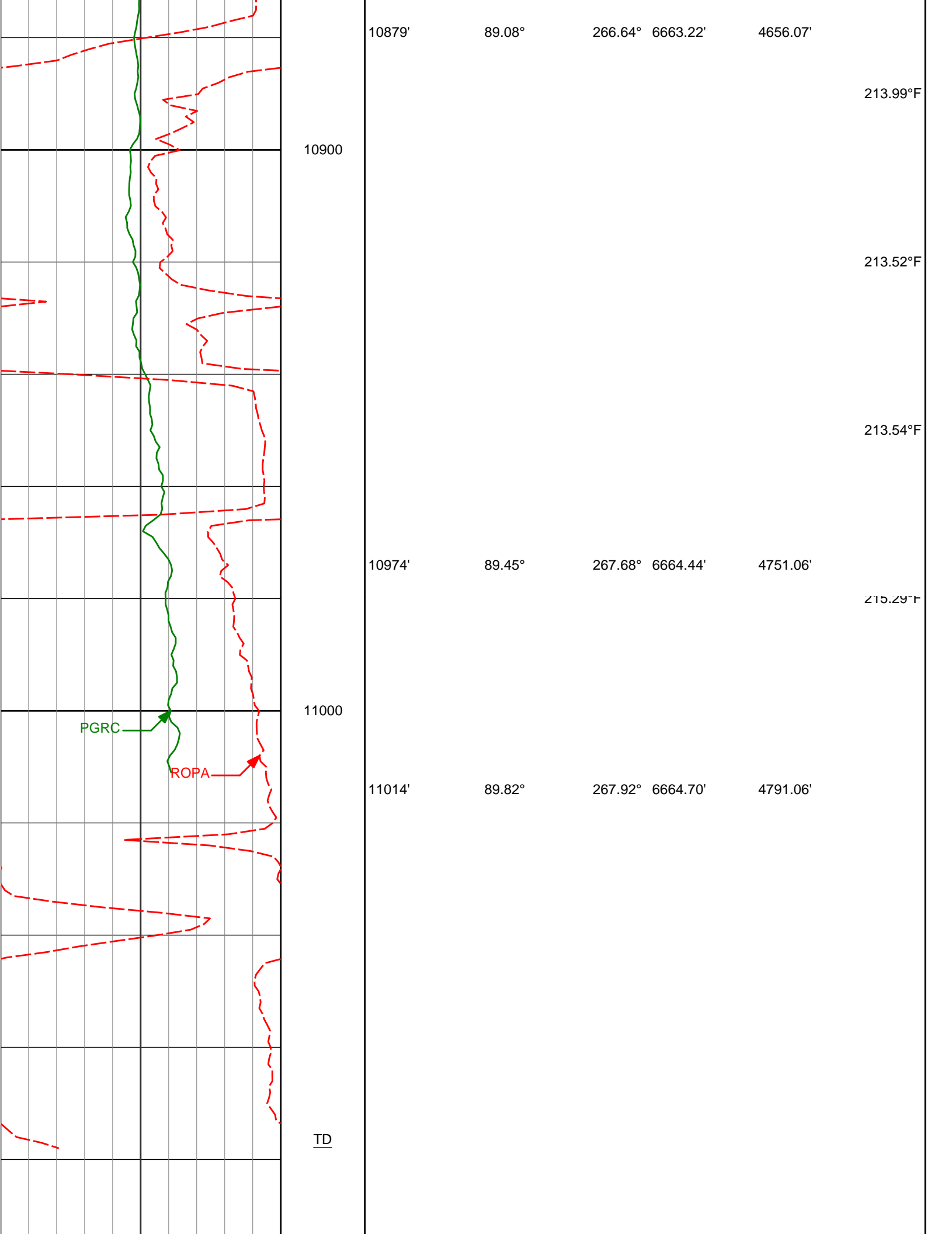
213.75°F

214.43°F

213.50°F

213.40°F

214.51°F



4200.00	0.20	140.75	4104.20	160.00 S	180.10 W	192.10	0.27
4300.00	0.22	189.55	4279.20	166.91 S	185.09 W	192.11	0.19
4394.00	0.11	225.38	4373.20	167.15 S	185.18 W	192.21	0.16
4489.00	0.56	123.83	4468.20	167.47 S	184.86 W	191.91	0.62
4584.00	0.28	162.61	4563.20	167.95 S	184.41 W	191.48	0.40
4679.00	0.67	111.68	4658.20	168.37 S	183.83 W	190.92	0.56
4774.00	1.08	86.37	4753.19	168.52 S	182.43 W	189.52	0.58
4869.00	2.54	83.46	4848.14	168.22 S	179.45 W	186.53	1.54
4964.00	1.49	48.85	4943.08	167.17 S	176.43 W	183.47	1.64
5058.00	1.18	62.60	5037.05	165.92 S	174.65 W	181.63	0.47
5153.00	1.32	115.41	5132.03	165.94 S	172.79 W	179.78	1.18
5247.00	1.69	132.51	5226.00	167.34 S	170.79 W	177.85	0.62
5342.00	1.23	113.43	5320.97	168.69 S	168.83 W	175.94	0.70
5437.00	0.99	83.39	5415.95	169.00 S	167.08 W	174.21	0.65
5532.00	2.22	99.44	5510.92	169.21 S	164.45 W	171.59	1.37
5627.00	1.27	41.50	5605.88	168.72 S	161.93 W	169.06	1.99
5722.00	1.42	4.19	5700.85	166.76 S	161.15 W	168.19	0.92
5816.00	1.38	346.57	5794.82	164.50 S	161.33 W	168.27	0.46
5903.00	1.48	341.93	5881.80	162.41 S	161.92 W	168.77	0.18
5965.00	1.33	345.43	5943.78	160.95 S	162.35 W	169.14	0.28
6006.00	1.47	339.19	5984.77	160.00 S	162.66 W	169.40	0.51
6054.00	4.83	288.60	6032.69	158.78 S	164.79 W	171.48	8.45
6100.00	10.26	287.30	6078.28	156.94 S	170.54 W	177.15	11.82
6148.00	15.19	281.44	6125.09	154.42 S	180.79 W	187.28	10.59
6195.00	19.08	275.40	6170.00	152.48 S	194.48 W	200.87	9.11
6243.00	21.73	271.28	6214.98	151.54 S	211.18 W	217.51	6.27
6289.00	24.36	268.71	6257.31	151.56 S	229.18 W	235.50	6.13
6337.00	28.85	266.67	6300.21	152.46 S	250.65 W	256.99	9.55
6384.00	33.25	267.10	6340.47	153.77 S	274.85 W	281.23	9.37
6432.00	36.71	268.55	6379.79	154.80 S	302.35 W	308.74	7.40
6479.00	40.72	270.52	6416.46	155.02 S	331.73 W	338.10	8.93
6527.00	44.45	273.03	6451.80	153.99 S	364.18 W	370.48	8.53
6574.00	49.13	273.49	6483.97	152.04 S	398.37 W	404.56	9.99
6622.00	53.37	270.86	6514.01	150.65 S	435.77 W	441.85	9.80
6669.00	57.50	266.82	6540.68	151.46 S	474.44 W	480.53	11.28
6717.00	62.96	265.27	6564.50	154.35 S	515.99 W	522.16	11.72
6764.00	67.26	266.90	6584.28	157.25 S	558.51 W	564.77	9.67
6812.00	72.06	267.03	6600.96	159.63 S	603.44 W	609.76	10.00
6858.00	76.03	266.77	6613.60	162.02 S	647.60 W	653.98	8.65
6906.00	78.40	267.99	6624.23	164.16 S	694.35 W	700.78	5.52
6941.00	80.43	268.47	6630.65	165.22 S	728.74 W	735.18	5.95
7020.00	84.51	270.20	6641.01	166.13 S	807.03 W	813.44	5.60
7090.00	84.45	269.24	6647.74	166.46 S	876.71 W	883.07	1.36
7185.00	86.04	269.36	6655.62	167.62 S	971.37 W	977.69	1.68
7279.00	88.30	269.46	6660.25	168.59 S	1065.24 W	1071.52	2.41
7374.00	91.54	270.38	6660.38	168.73 S	1160.23 W	1166.42	3.54
7469.00	91.51	271.28	6657.85	167.35 S	1255.19 W	1261.23	0.95
7563.00	92.28	281.00	6654.73	157.31 S	1348.48 W	1354.01	10.37
7658.00	90.96	287.47	6652.05	133.97 S	1440.48 W	1444.91	6.95
7753.00	88.03	282.01	6652.89	109.81 S	1532.30 W	1535.61	6.52
7847.00	86.27	277.90	6657.57	93.58 S	1624.75 W	1627.27	4.75
7942.00	87.69	275.21	6662.58	82.74 S	1718.98 W	1720.95	3.19
8036.00	90.83	270.85	6663.79	77.78 S	1812.81 W	1814.48	5.73
8131.00	92.66	267.75	6660.90	78.94 S	1907.74 W	1909.37	3.79
8225.00	92.78	266.37	6656.44	83.76 S	2001.51 W	2003.26	1.47
8320.00	91.14	266.61	6653.20	89.58 S	2096.27 W	2098.19	1.74
8415.00	90.40	266.48	6651.92	95.30 S	2191.09 W	2193.16	0.79
8510.00	91.63	265.89	6650.23	101.62 S	2285.86 W	2288.12	1.44
8605.00	92.22	266.73	6647.04	107.74 S	2380.61 W	2383.04	1.08
8699.00	90.40	266.55	6644.89	113.25 S	2474.42 W	2477.00	1.94
8794.00	88.71	266.12	6645.63	119.33 S	2569.22 W	2571.97	1.84
8889.00	89.78	265.90	6646.89	125.94 S	2663.98 W	2666.93	1.16
8984.00	88.76	266.37	6648.09	132.35 S	2758.75 W	2761.89	1.18
9079.00	89.07	265.64	6649.88	138.97 S	2853.50 W	2856.84	0.83
9174.00	88.99	264.87	6651.49	146.83 S	2948.16 W	2951.75	0.81
9268.00	90.65	267.54	6651.79	153.05 S	3041.95 W	3045.72	3.34
9363.00	90.34	266.62	6650.97	157.89 S	3136.82 W	3140.71	1.01
9458.00	90.03	267.24	6650.67	162.97 S	3231.68 W	3235.70	0.72
9553.00	91.39	270.91	6649.49	164.51 S	3326.64 W	3330.64	4.12
9648.00	89.78	270.58	6648.52	163.27 S	3421.63 W	3425.48	1.72
9743.00	88.98	269.30	6649.54	163.37 S	3516.62 W	3520.39	1.60

9838.00	89.35	268.83	6650.93	164.92 S	3611.60 W	3615.35	0.62
9932.00	90.31	268.64	6651.20	166.99 S	3705.57 W	3709.32	1.04
10027.00	88.86	267.87	6651.90	169.88 S	3800.52 W	3804.31	1.73
10121.00	89.66	268.03	6653.11	173.23 S	3894.45 W	3898.30	0.87
10216.00	89.91	267.89	6653.47	176.61 S	3989.39 W	3993.30	0.30
10311.00	90.49	266.79	6653.14	181.03 S	4084.29 W	4088.29	1.32
10406.00	88.74	267.29	6653.77	185.93 S	4179.15 W	4183.28	1.92
10501.00	88.92	267.29	6655.71	190.42 S	4274.03 W	4278.26	0.19
10596.00	89.23	266.73	6657.25	195.37 S	4368.89 W	4373.25	0.68
10690.00	88.89	266.12	6658.79	201.24 S	4462.69 W	4467.22	0.74
10785.00	88.33	265.14	6661.09	208.47 S	4557.38 W	4562.13	1.18
10879.00	89.08	266.64	6663.22	215.21 S	4651.11 W	4656.07	1.78
10974.00	89.45	267.68	6664.44	219.91 S	4745.99 W	4751.06	1.16
11014.00	89.82	267.92	6664.70	221.45 S	4785.96 W	4791.06	1.10

CALCULATION BASED ON MINIMUM CURVATURE METHOD

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

**VERTICAL SECTION RELATIVE TO WELL HEAD
VERTICAL SECTION IS COMPUTED ALONG A DIRECTION OF 267.53 DEGREES (GRID)
A TOTAL CORRECTION OF 7.70 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11014.00 FEET
IS 4791.08 FEET ALONG 267.35 DEGREES (GRID)**