



WELL INFORMATION					
MWD Run Number	100	200	300		
Date run completed	15-Feb-15	16-Feb-15	19-Feb-15		
Rig Bit Number	2	3	4		
Bit Size (in)	8.750	8.750	6.125		
Tool Nominal OD (in)	6.870	6.870	4.810		
Log Start Depth (MD, ft)	842.00	6,571.00	7,285.00		
Log End Depth (MD, ft)	6,571.00	7,285.00	11,402.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	14-Feb-15 20:29	16-Feb-15 03:30	18-Feb-15 02:22		
Drill/Wipe End Date and Time	15-Feb-15 20:18	16-Feb-15 16:17	19-Feb-15 11:46		
Min Inc (deg) @ Depth (MD, ft)	0.06 @ 5,711.00	14.86 @ 6,563.00	86.86 @ 11,147.00		
Max Inc (deg) @ Depth (MD, ft)	13.34 @ 2,489.00	88.98 @ 7,285.00	92.74 @ 7,738.00		
Bit TFA(in2) / Bit Type	1.37 / PDC	1.84 / PDC	0.65 / PDC		
Flow Rate (gpm)	592.84	583.37	310.81		
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A	N/A / N/A	N/A / N/A		
Fluid Type	Native/Spud Mud	Native/Spud Mud	Native/Spud Mud		
Density (ppg) / Viscosity (spqt)	9.20 / 33.00	10.80 / 37.00	9.35 / 35.00		
Filtrate CL (ppm)	1,900.00	2,000.00	2,000.00		
pH / Fluid Loss (mptm)	9.50 / 9	9.20 / 9	11.00 / 9		
PV (cP) / YP (lbf2)	5 / 3.00	9 / 10.00	7 / 9.00		
% Solids / % Sand	5.30 / 0.20	11.70 / 0.20	5.40 / 0.25		
% 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 (degF) / Max Temp (degF)	150.10 / 200.00	150.10 / 200.00	200.00 / 200.00		

Max Tool Temp (degF) / Source	150.10 / PCM	150.10 / PCM	230.30 / PCM		
Rm @ Max Tool Temp (degF)	N/A @ 150.10	N/A @ 150.10	N/A @ 230.30		
Lead MWD Engineer	Robert Barnes	Robert Barnes	Robert Barnes		
Customer Representative	Jeremy Stolz	Jeremy Stolz	Jim Turner		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.93	5.93	5.93		
Sub Serial Number	11404302	11404302	11768602		
Insert Serial Number	11680766	11680766	11680738		
Date and Time Initialized	14-Feb-15 11:47	01-Jan-70 00:00	16-Feb-15 18:49		
Date and Time Read	16-Feb-15 20:59	16-Feb-15 21:05	19-Feb-15 20:38		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	54.00	55.00	65.00		
Software Version	6.33	6.33	6.21		
Sub Serial Number	11404302	11404302	11768602		
Sonde Serial Number	11145674	11145674	11478053		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	120.18	292.47	156.00		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	47.39	47.57	67.90		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	11404302	11404302	11768602		
Insert/Sonde Serial Number	11293410	11293410	11681051		

REMARKS

1. All depths are calibrated to driller's pipe tally and are measured depth's from the Drill Floor.
2. No depth corrections have been made for pipe stretch or compression.
3. Critical annular velocities are calculated using the "Power Law" model for water based fluids and the "Brigham Plastic" model for oil and synthetic based fluids.
4. All data presented is recorded data unless otherwise specified.
5. The following smoothing parameters have been applied to the data:
 - 1:600 Log
PGRC (Gamma CG) and ROPA (Average Rate of Penetration)
Interval Resolution: 1.0 ft
Interval Distance: 3.0 ft
 - 1:240 Log
PGRC (Gamma CG):
Interval Resolution: 0.5 ft
Interval Distance: 0.6 ft
 - ROPA (Average Rate Of Penetration):
Interval Resolution: 0.5 ft

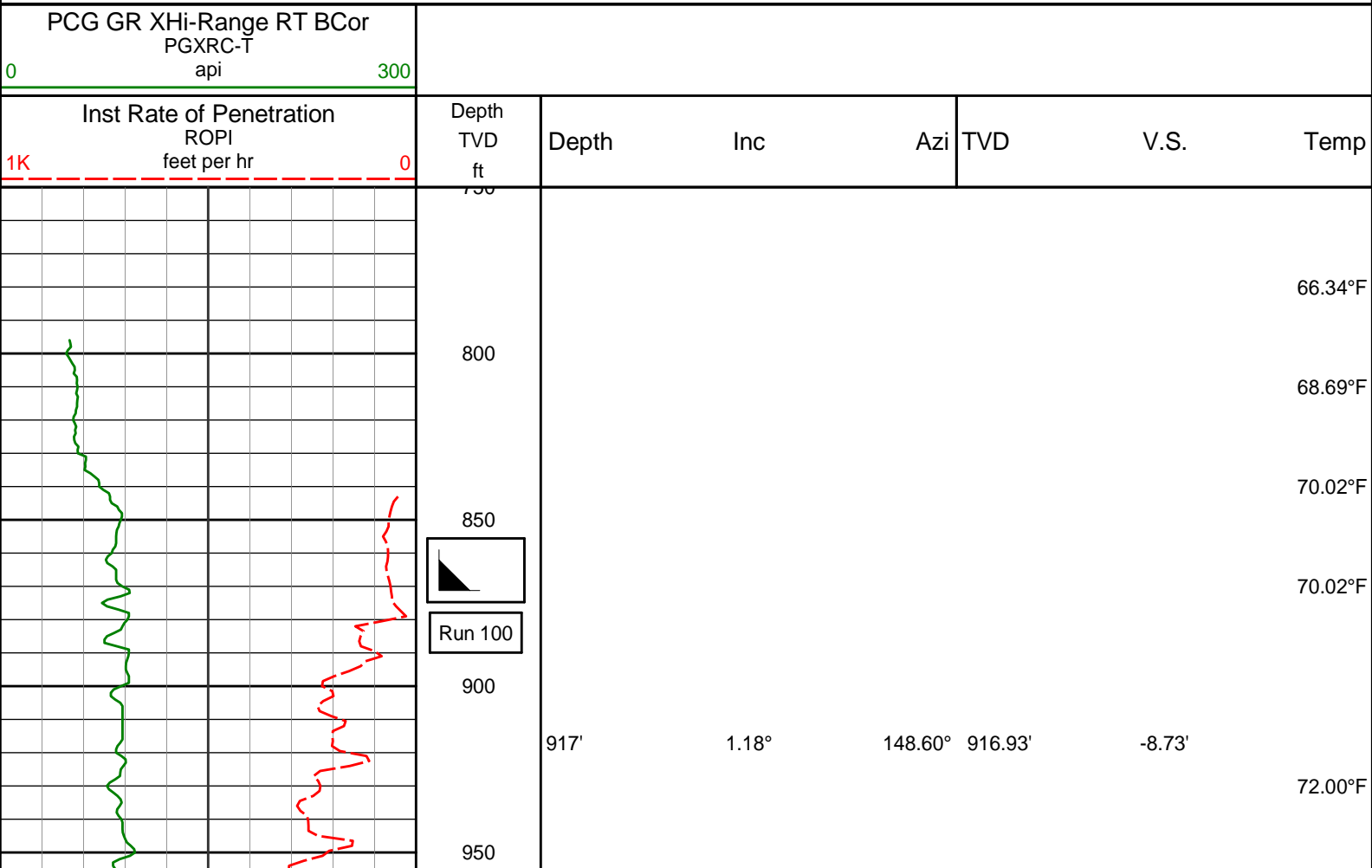
Interval Resolution: 0.5 ft
Interval Distance: 1.2 ft

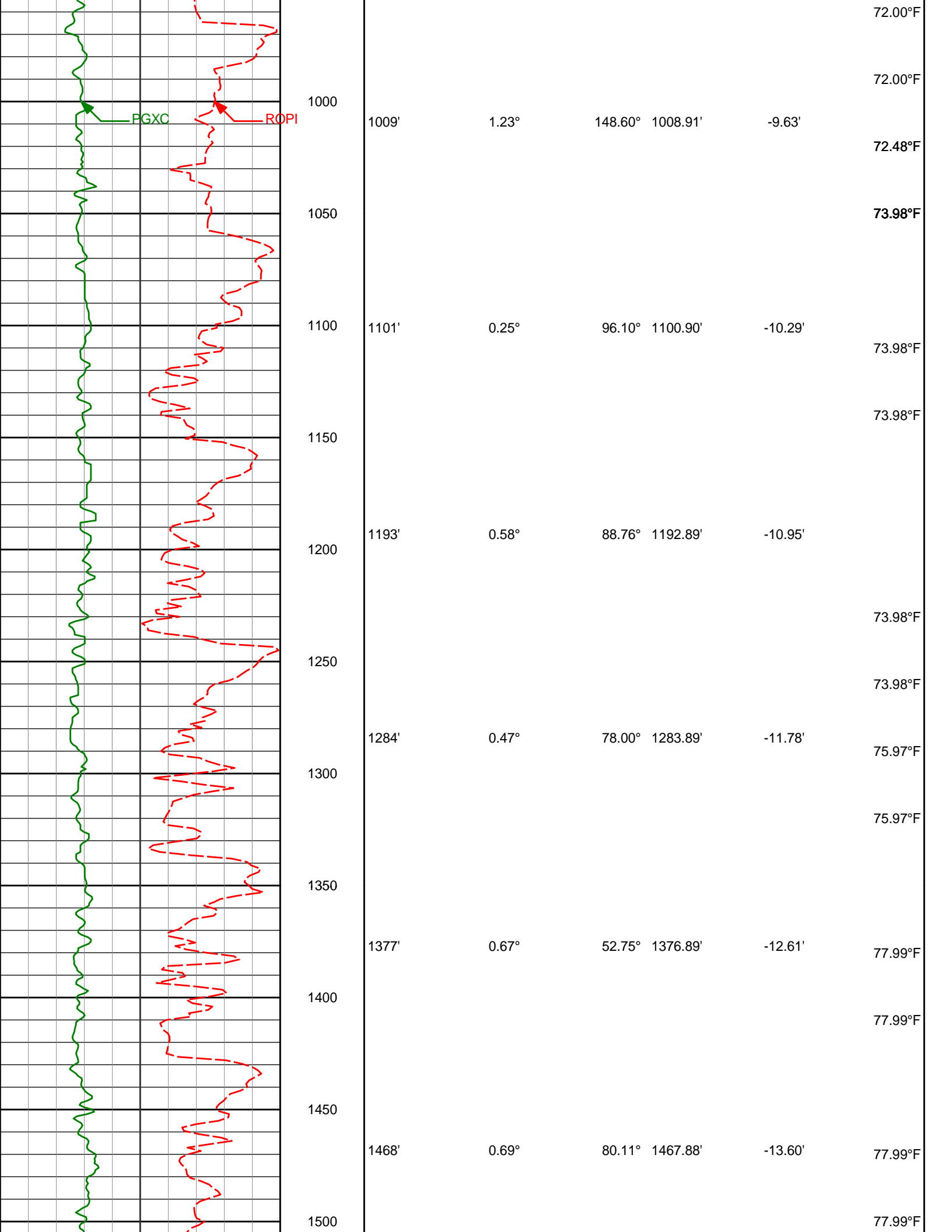
6. Insite Version v8.1.10

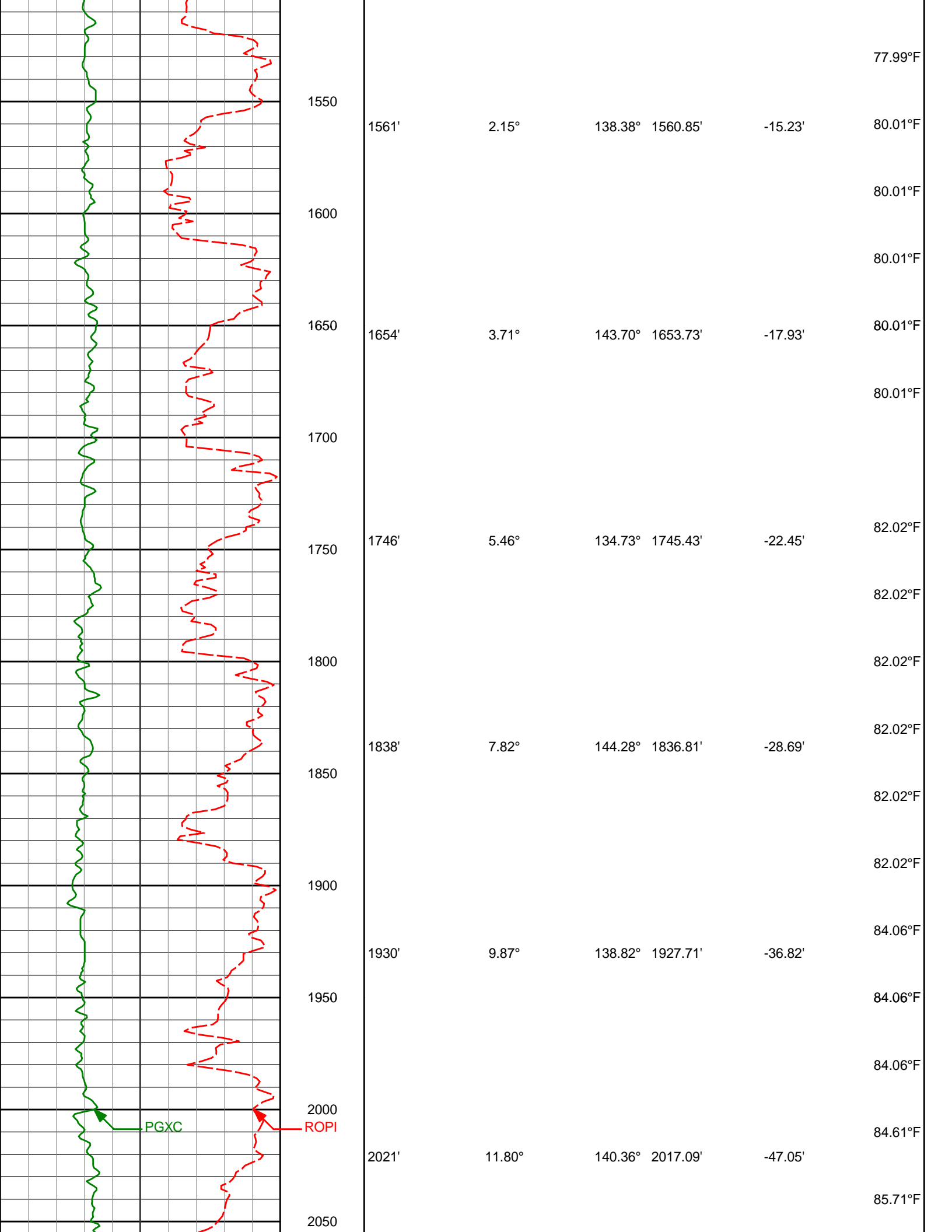
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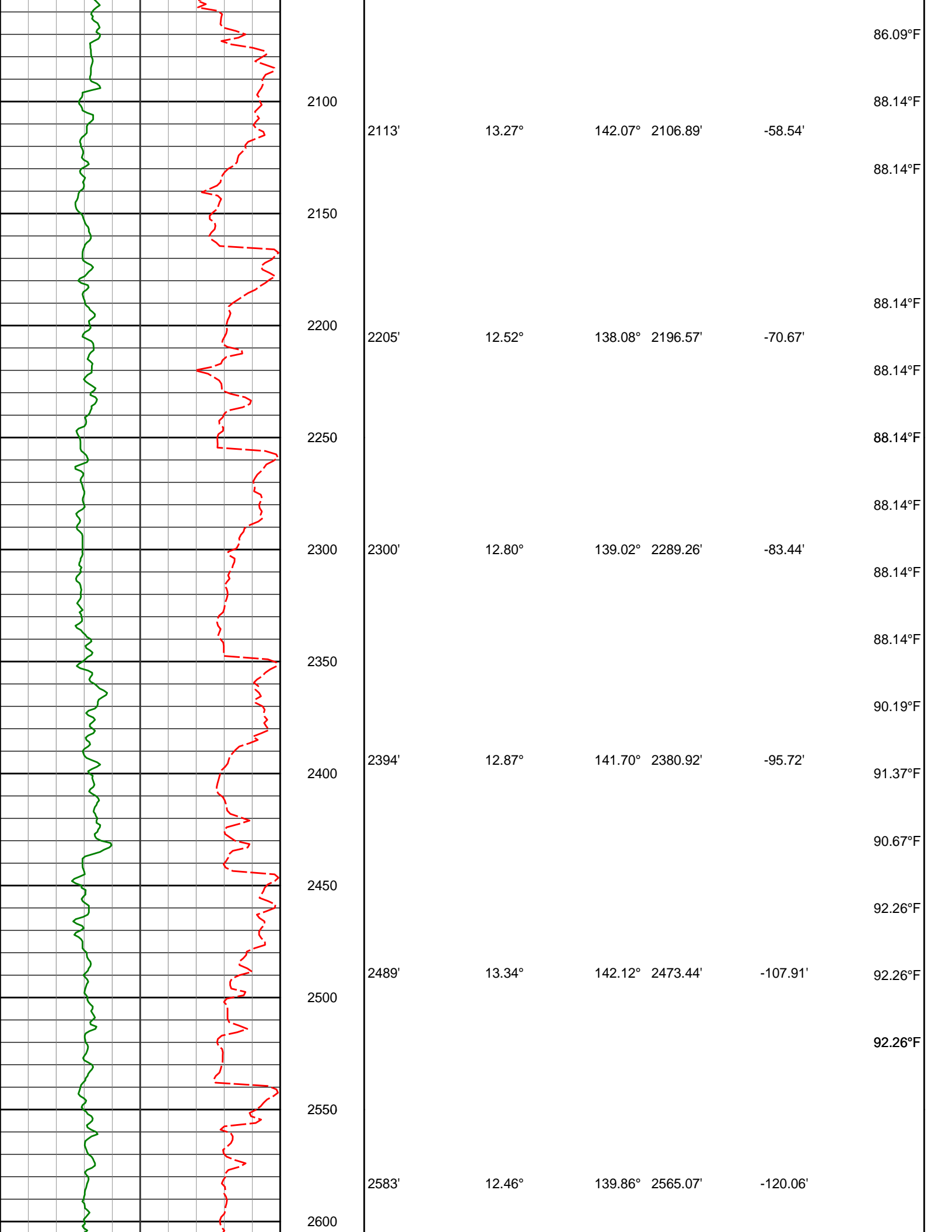
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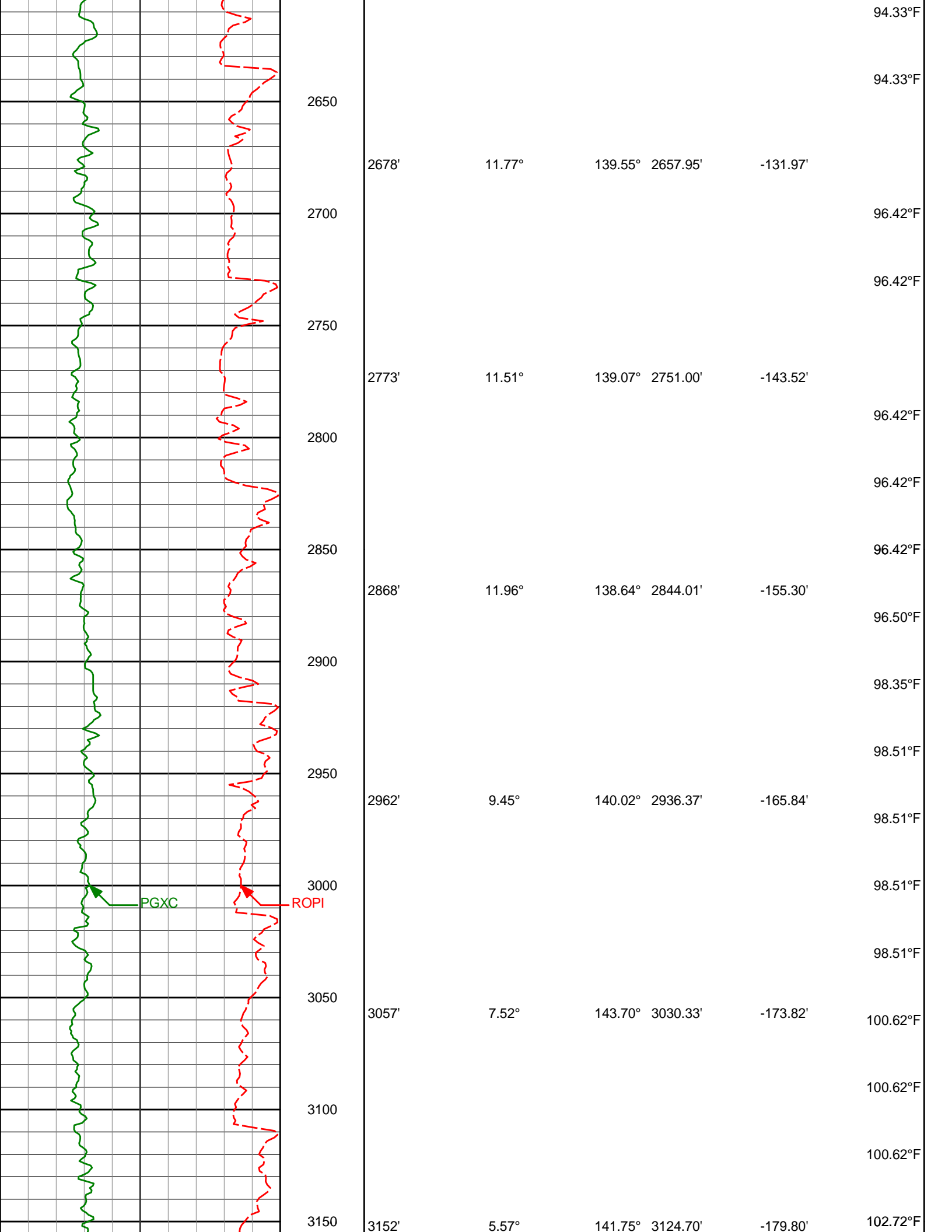
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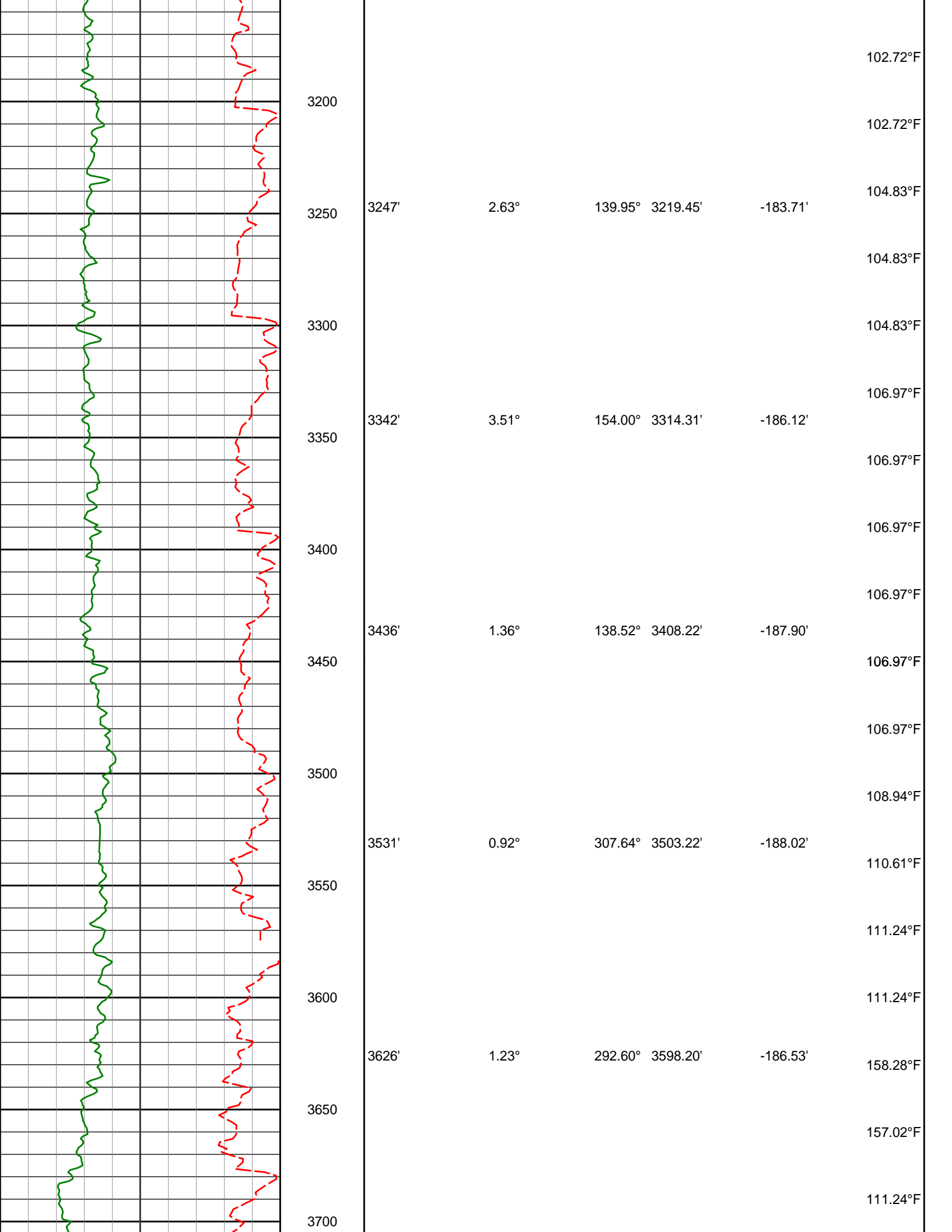


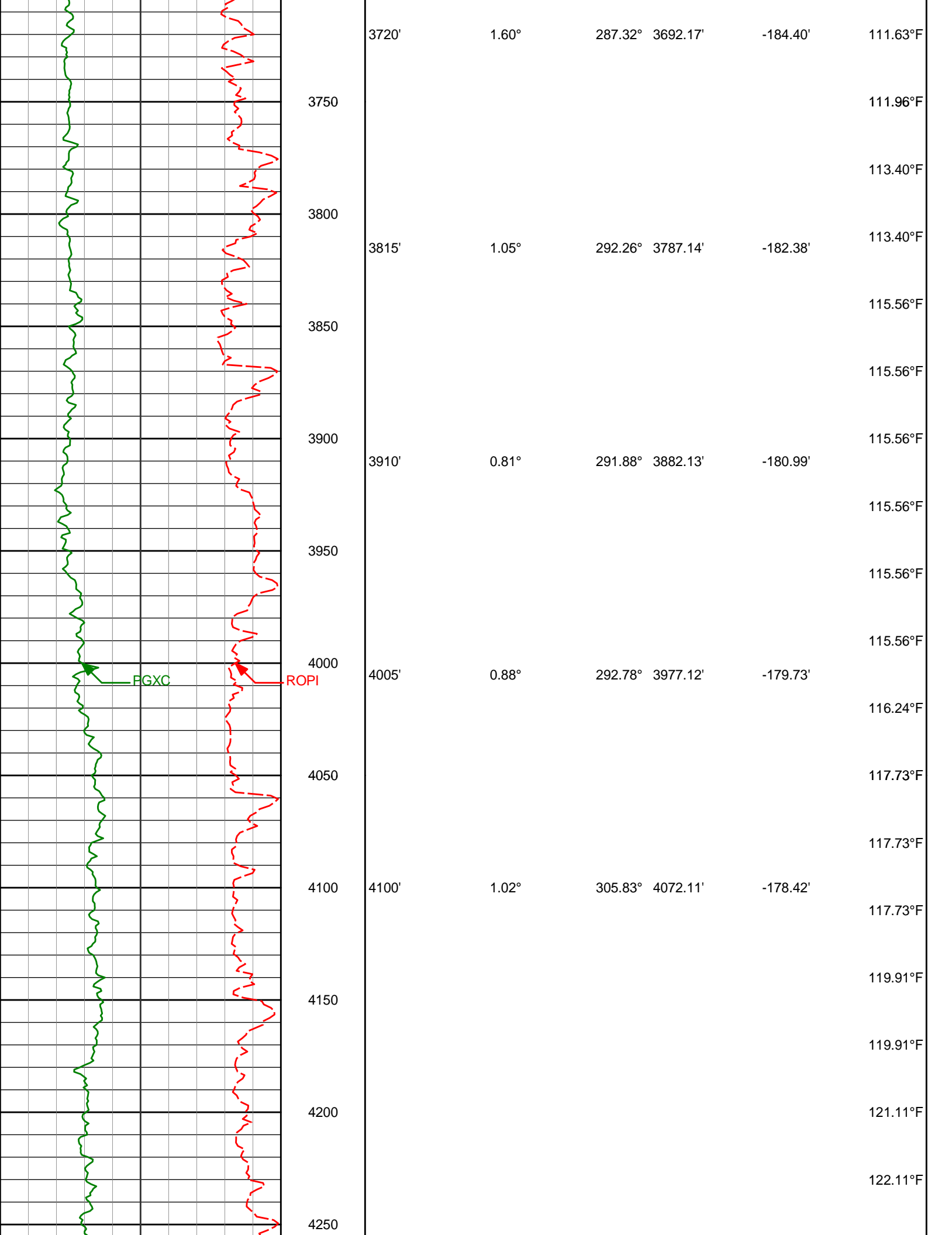


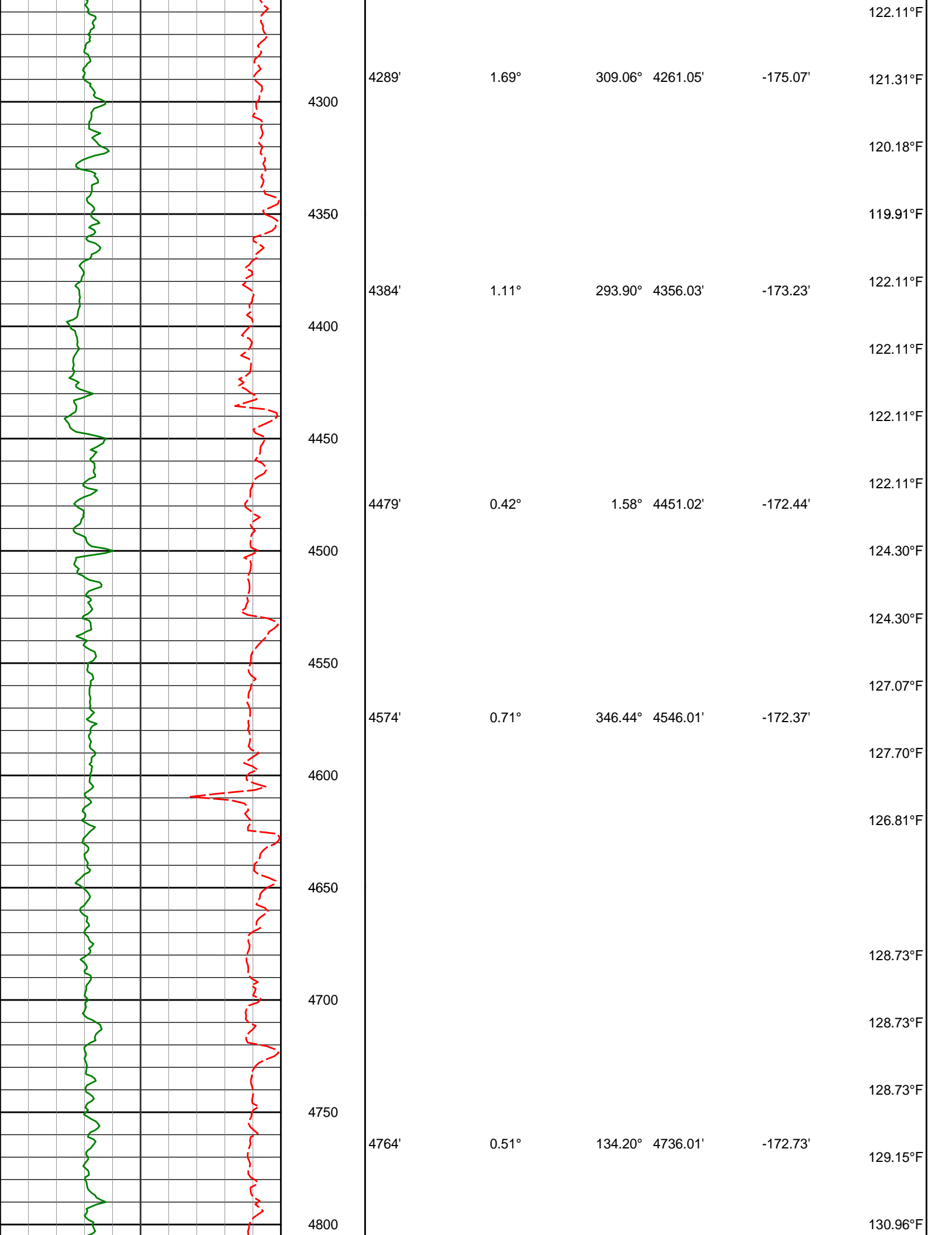


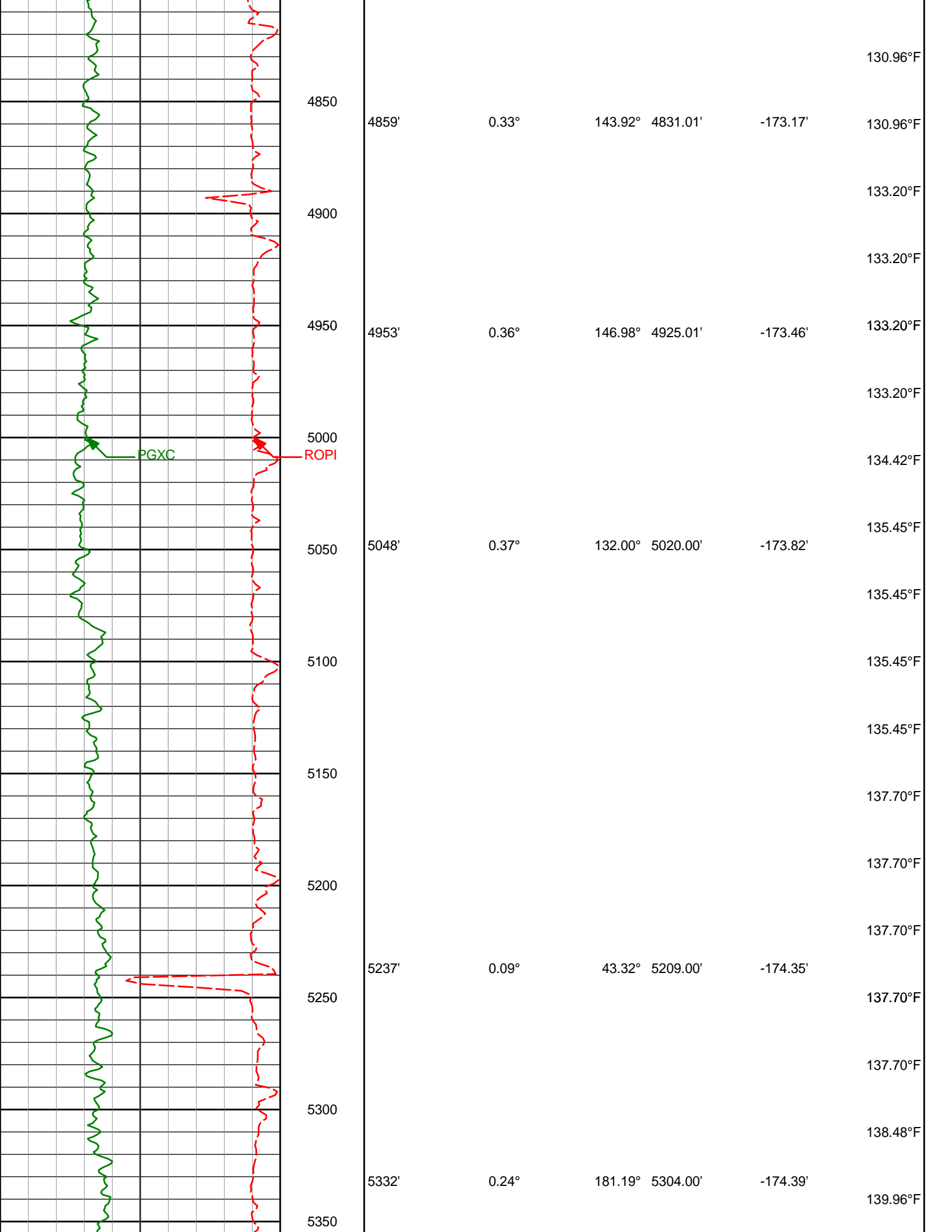


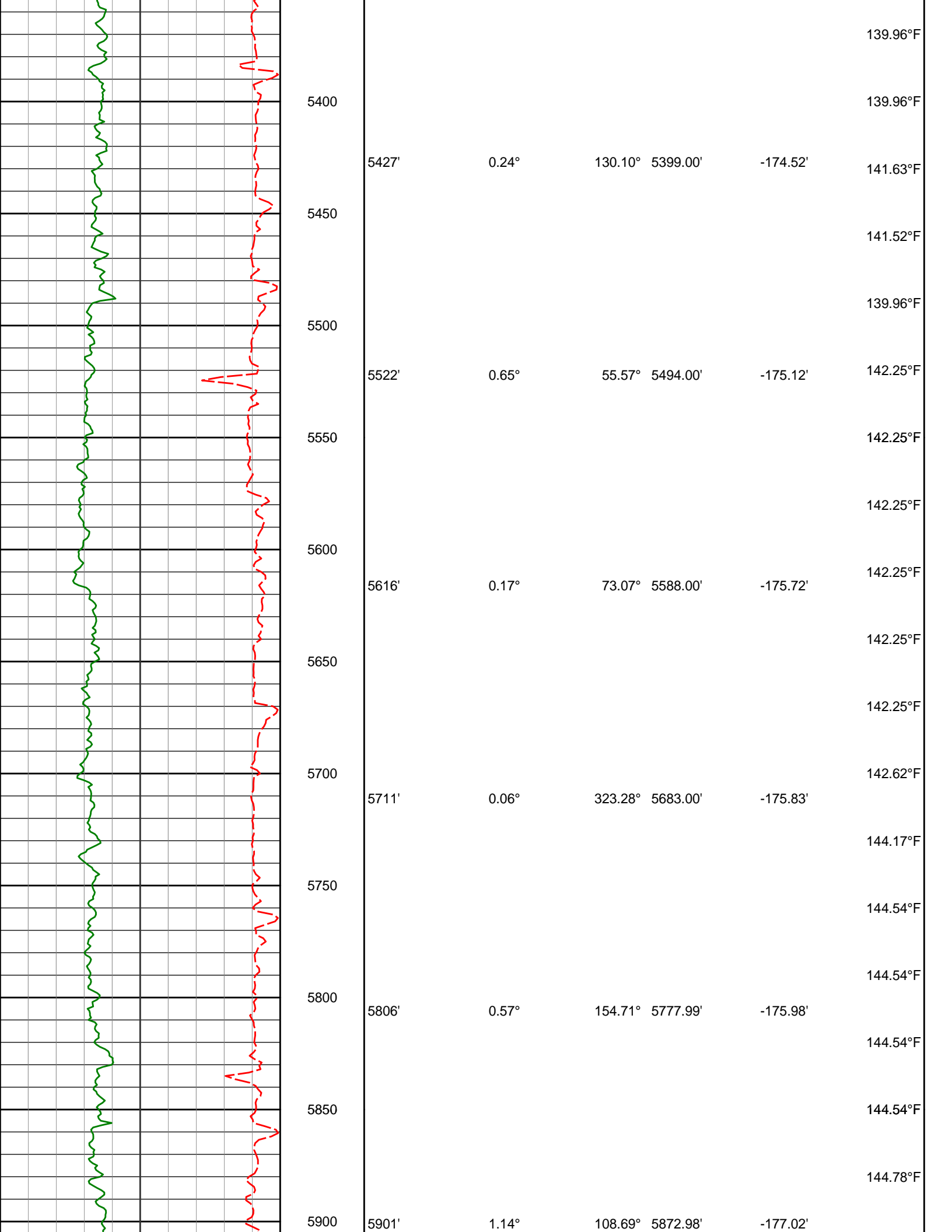


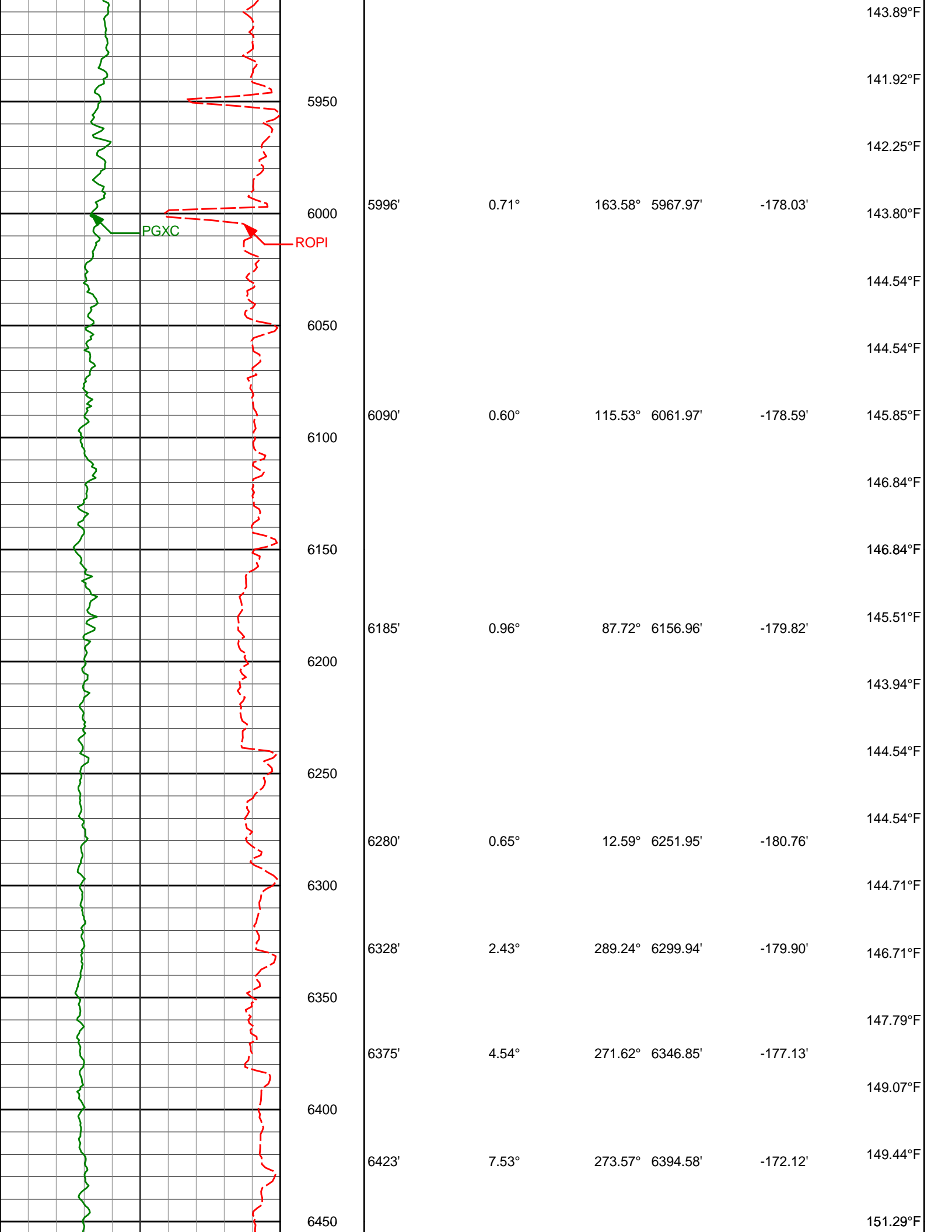


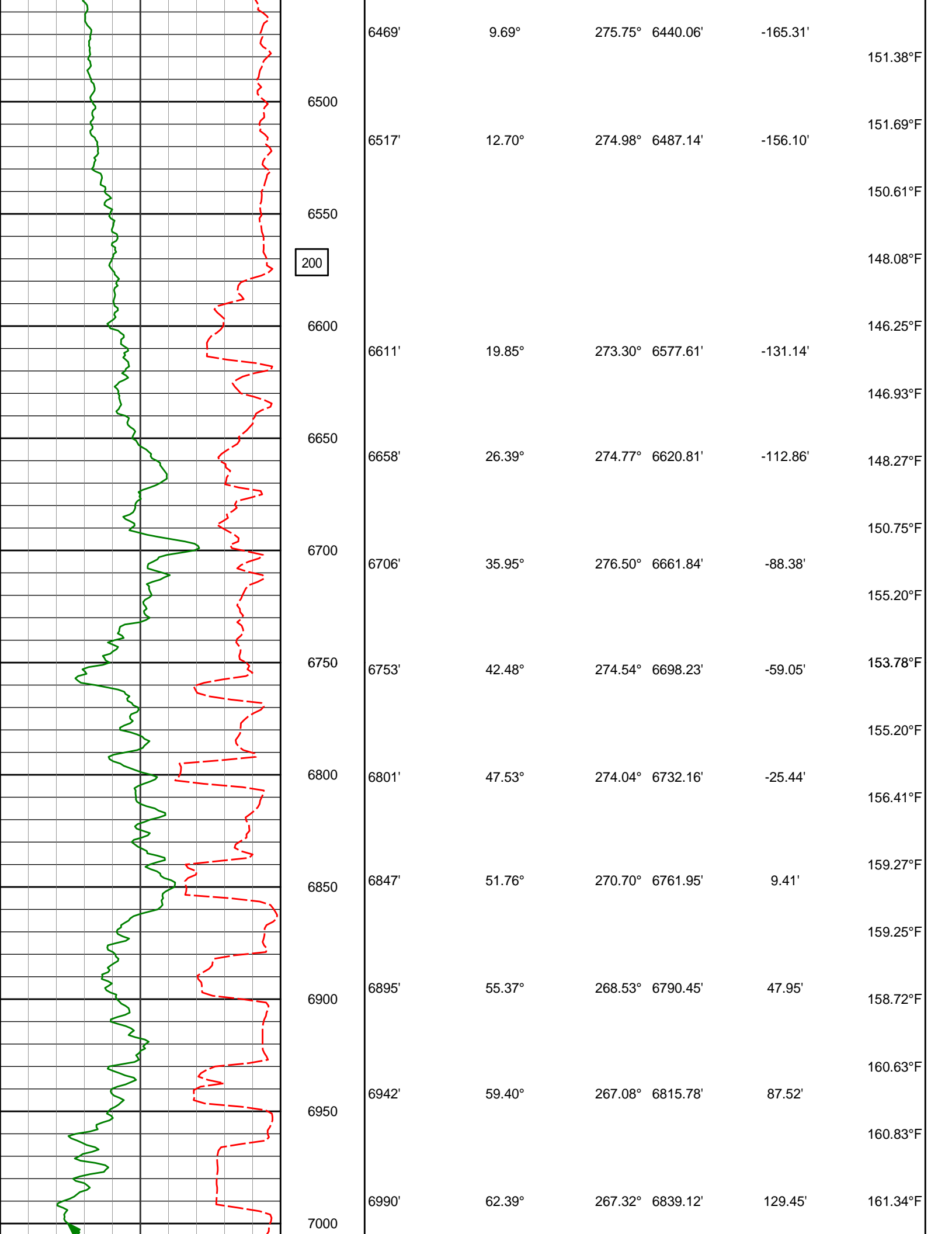


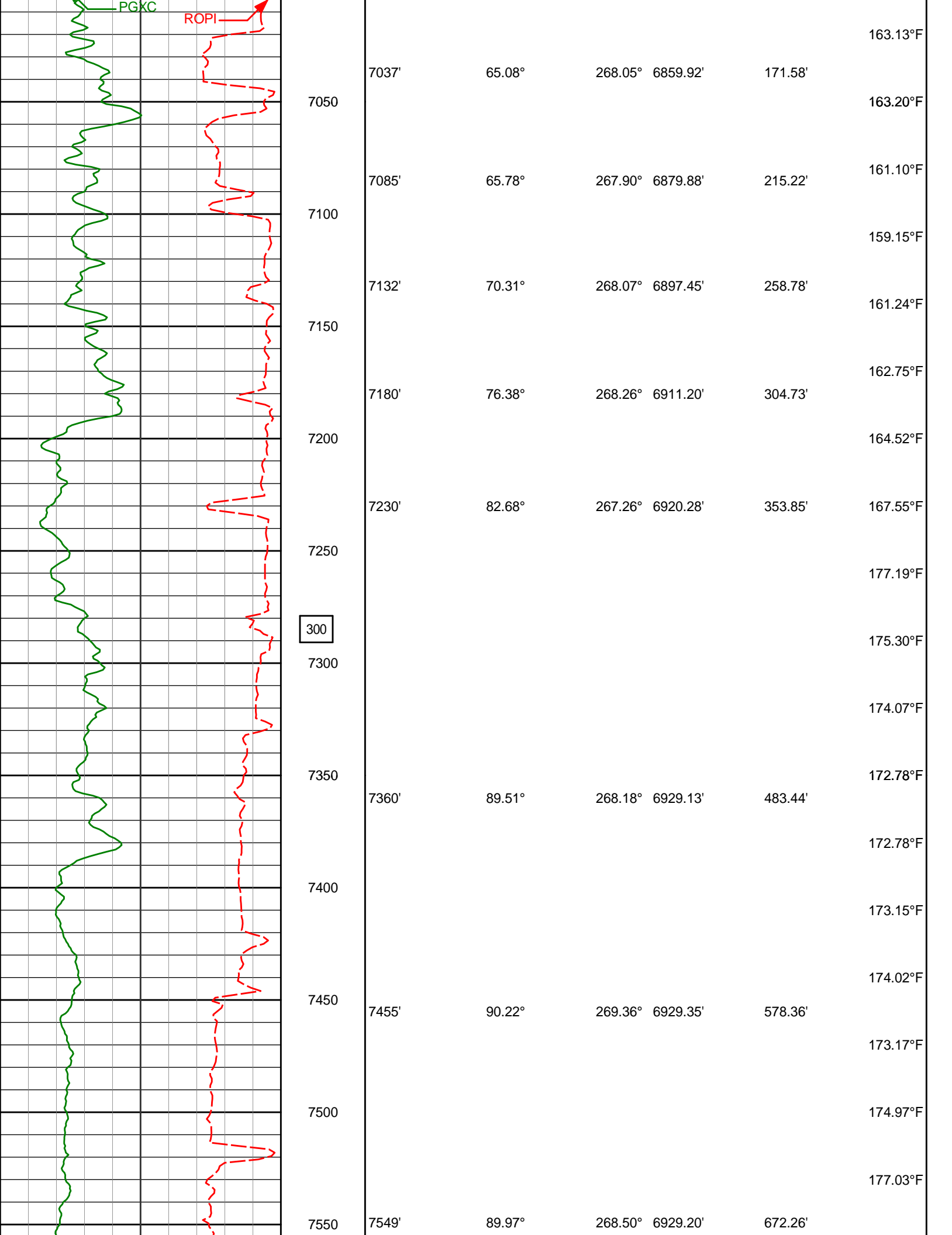


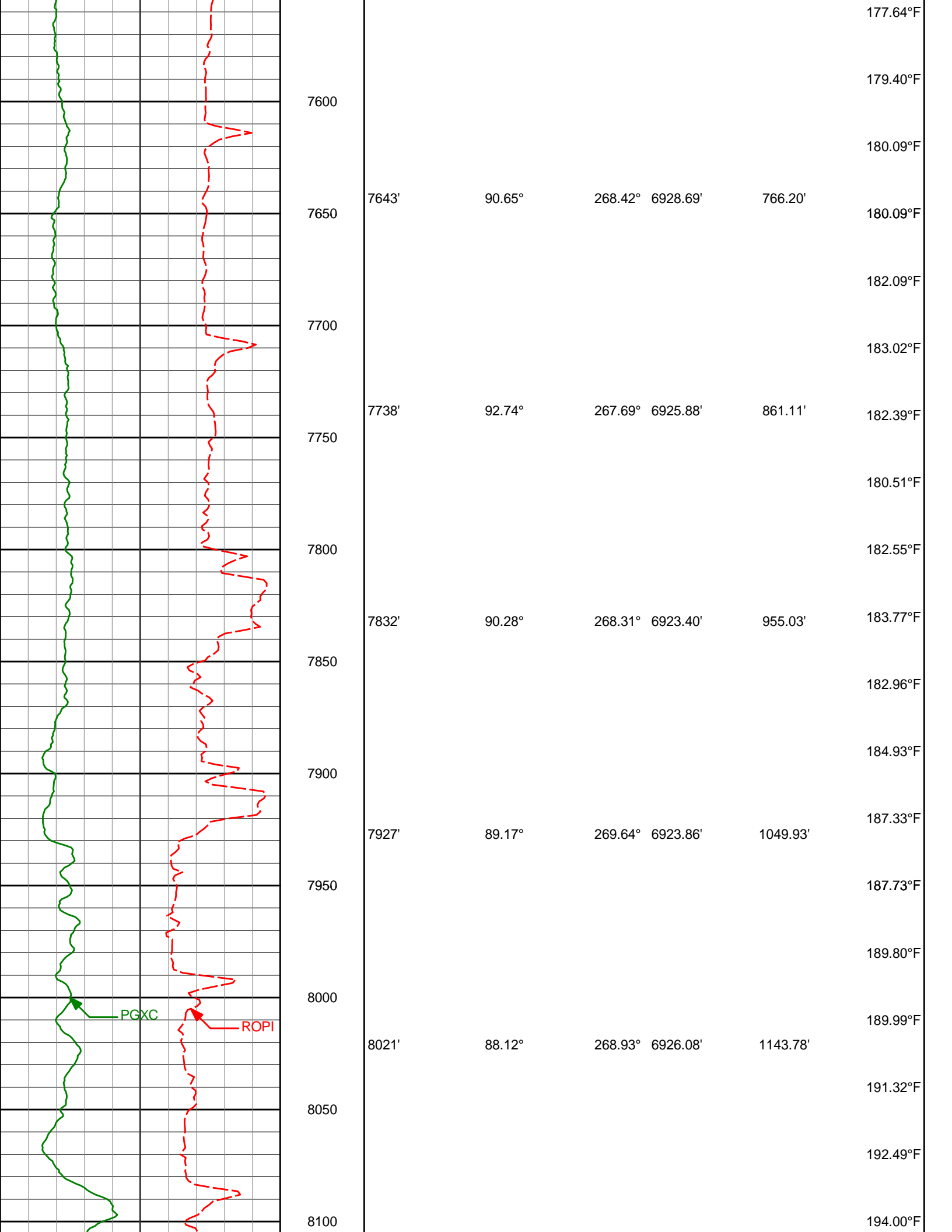


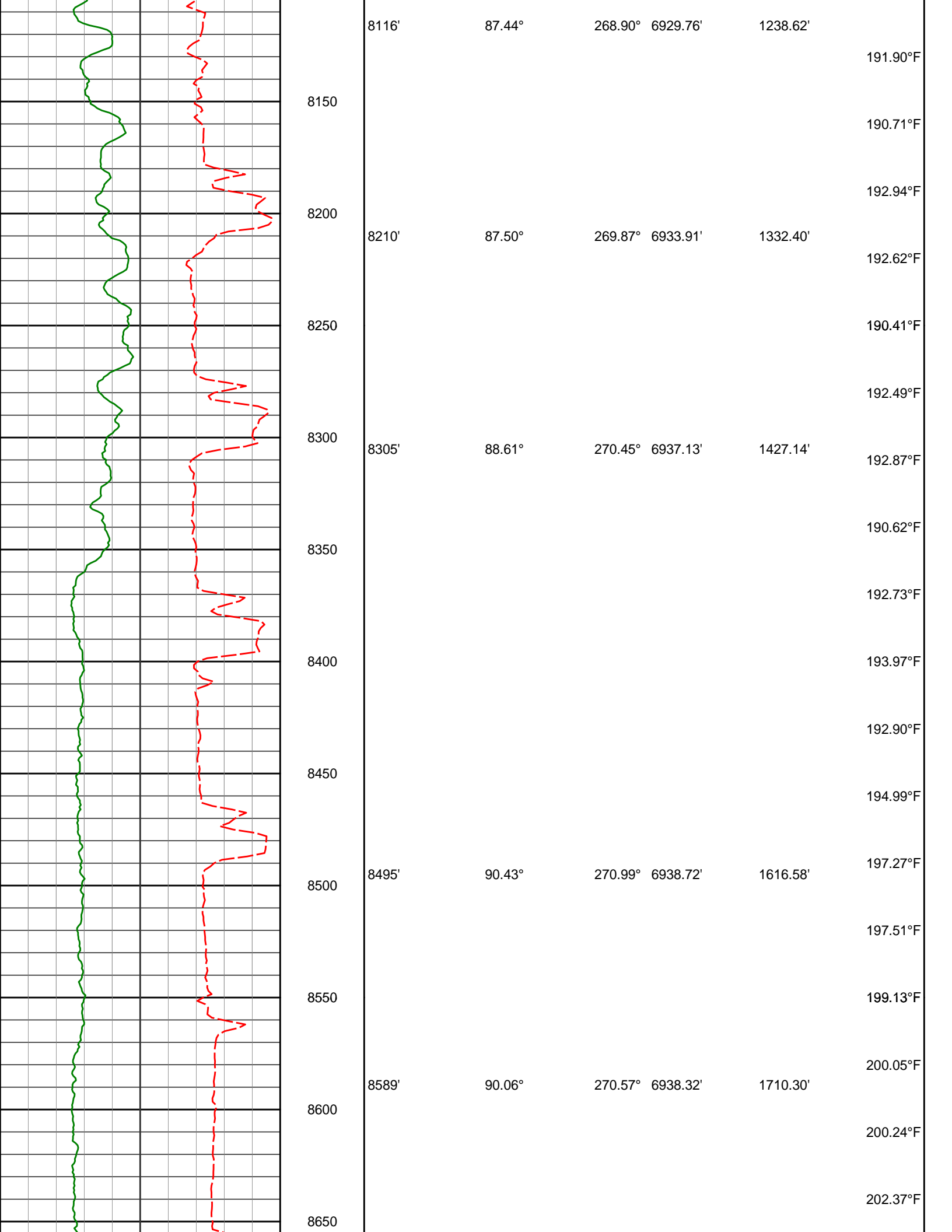


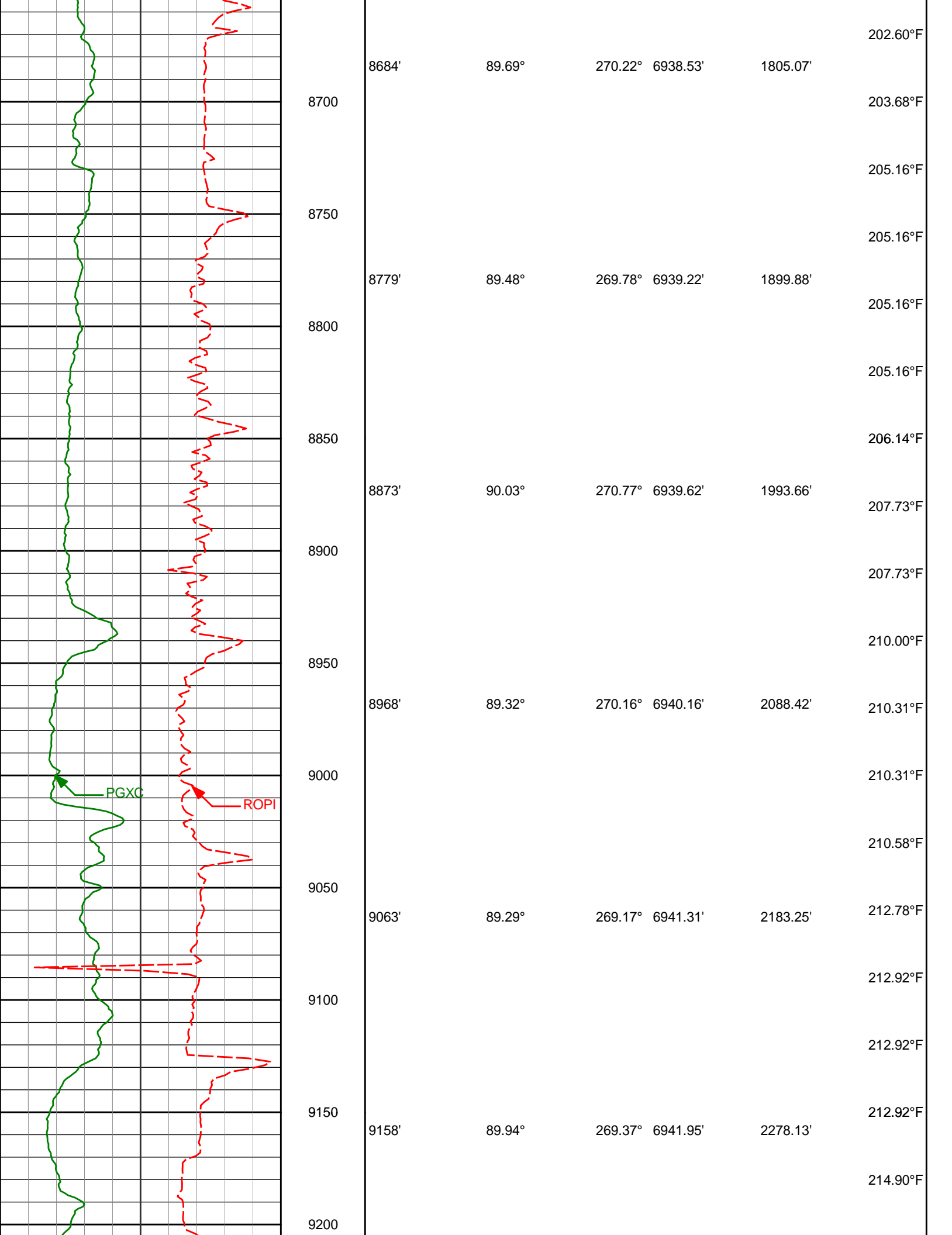


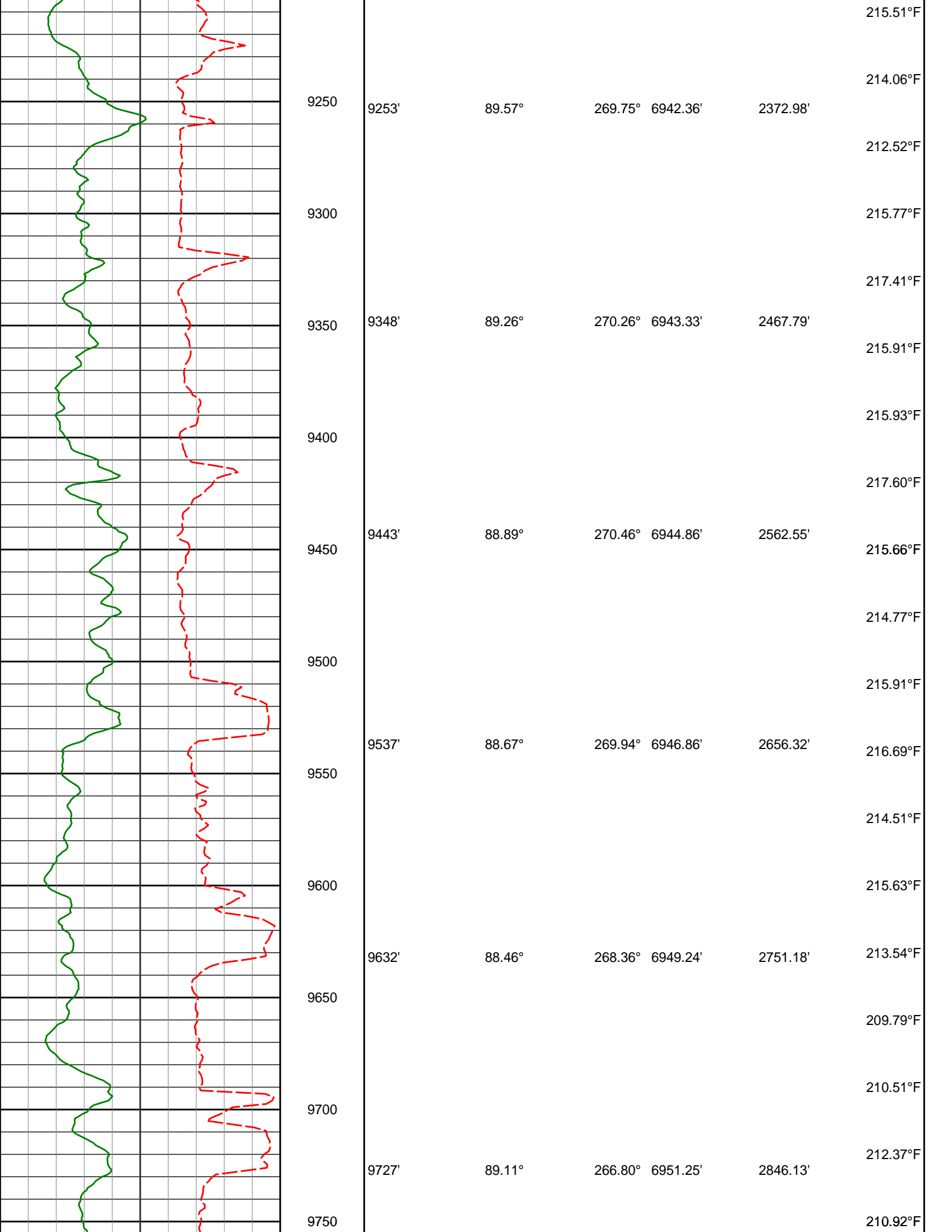


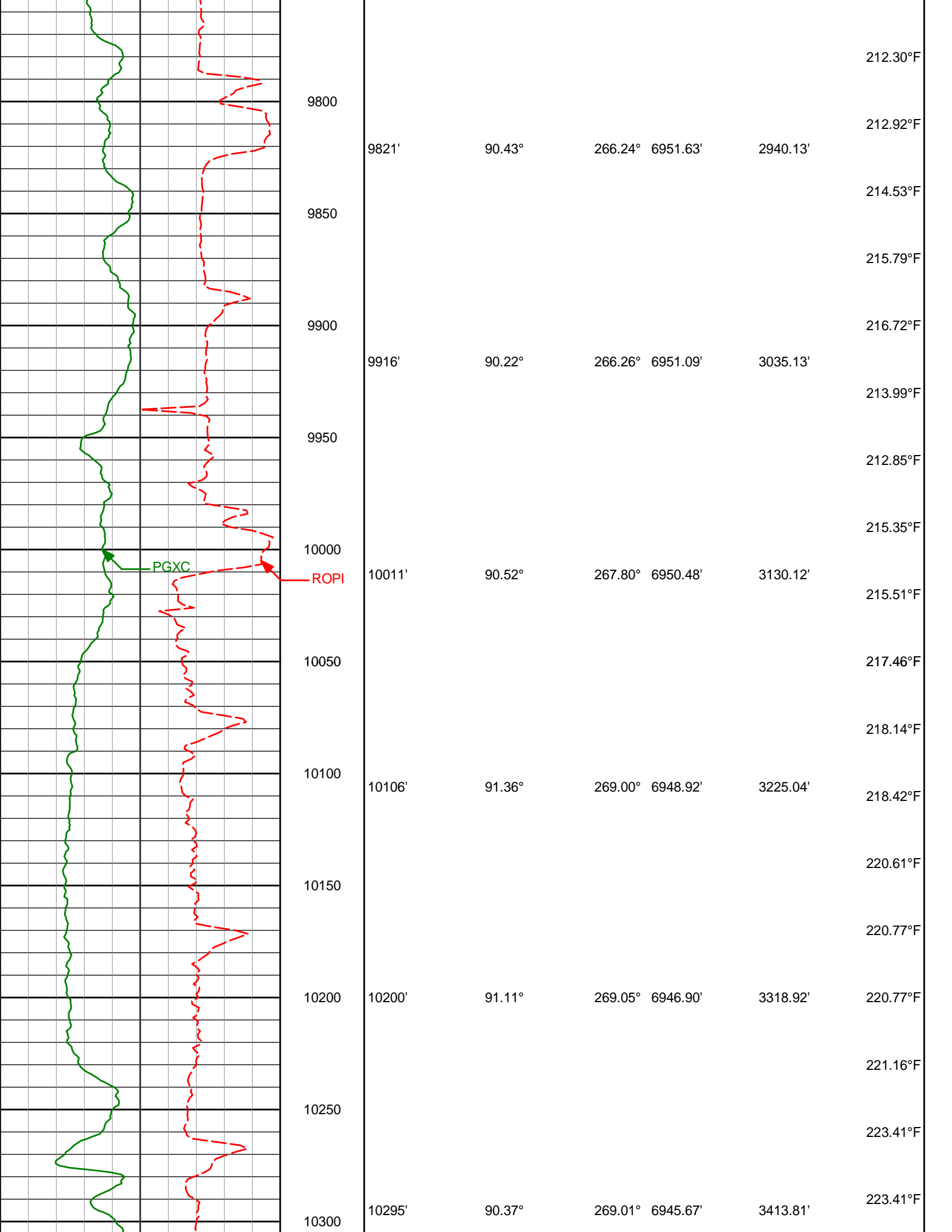


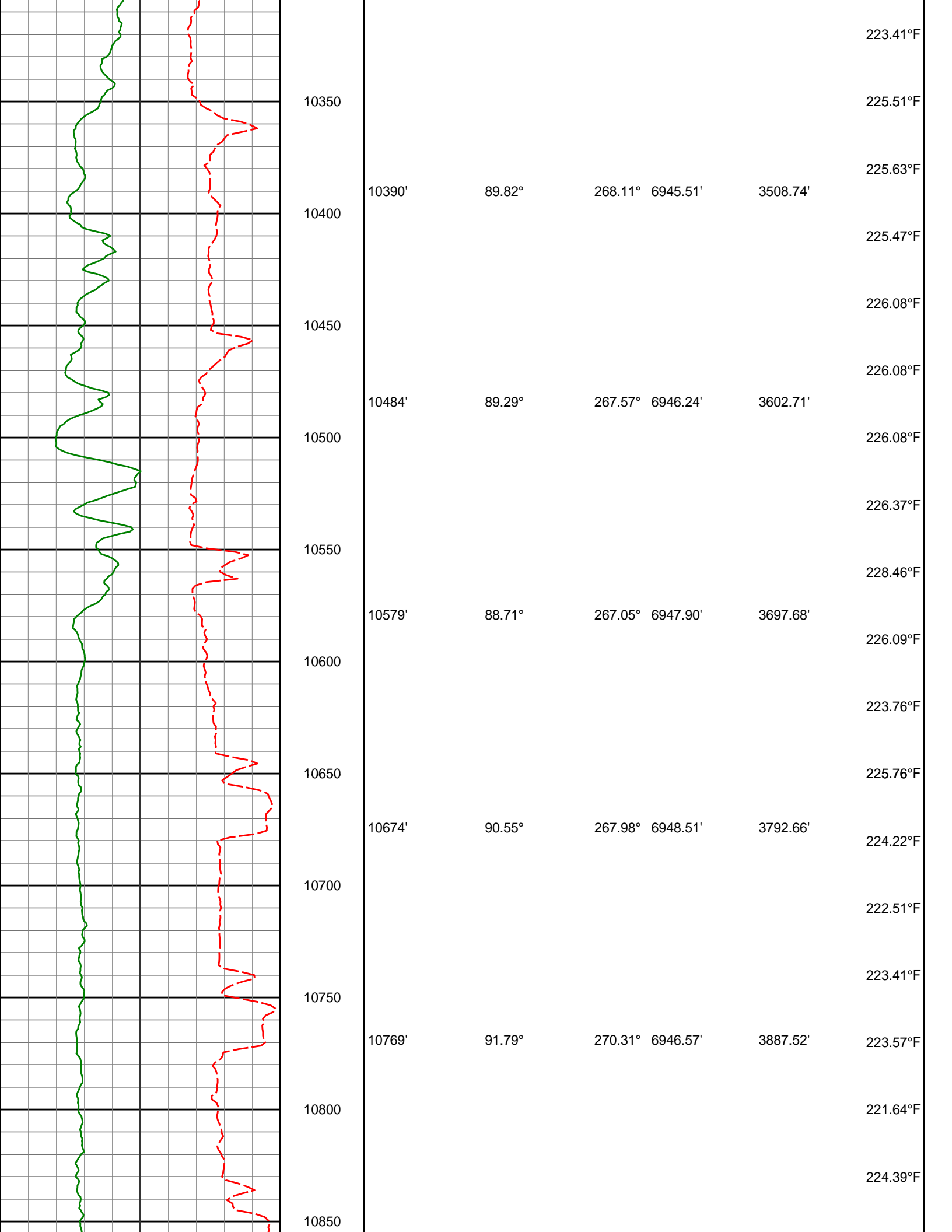


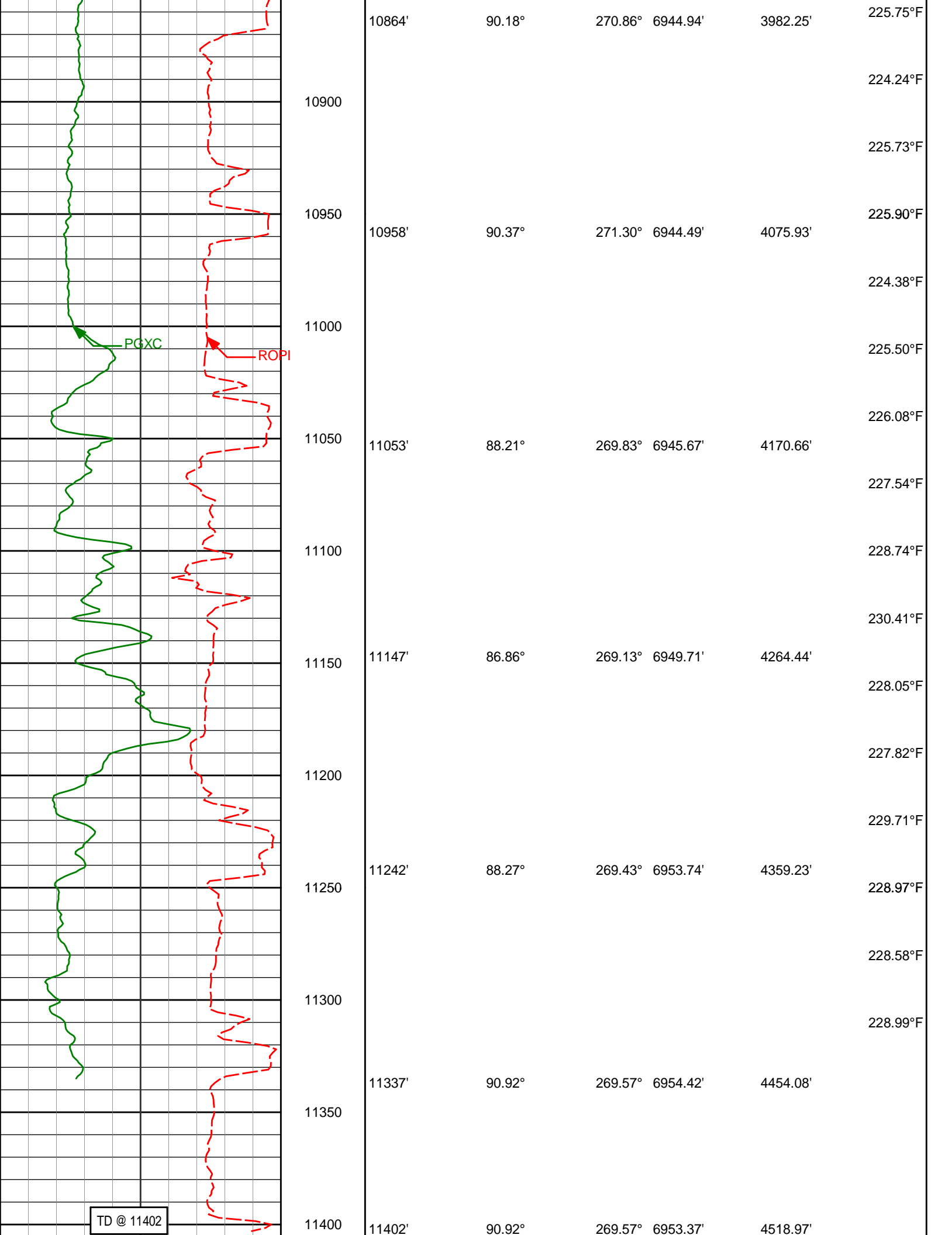


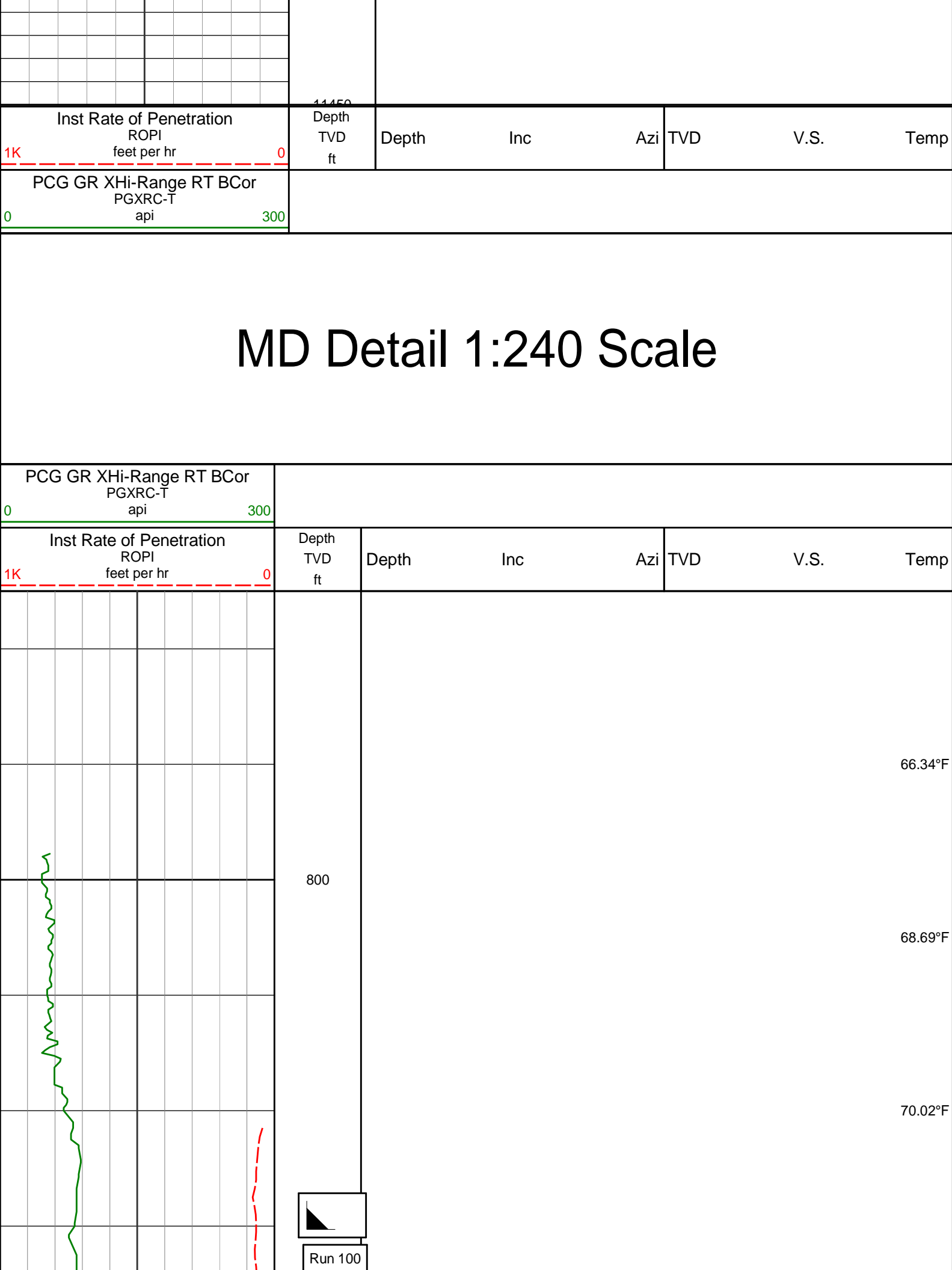


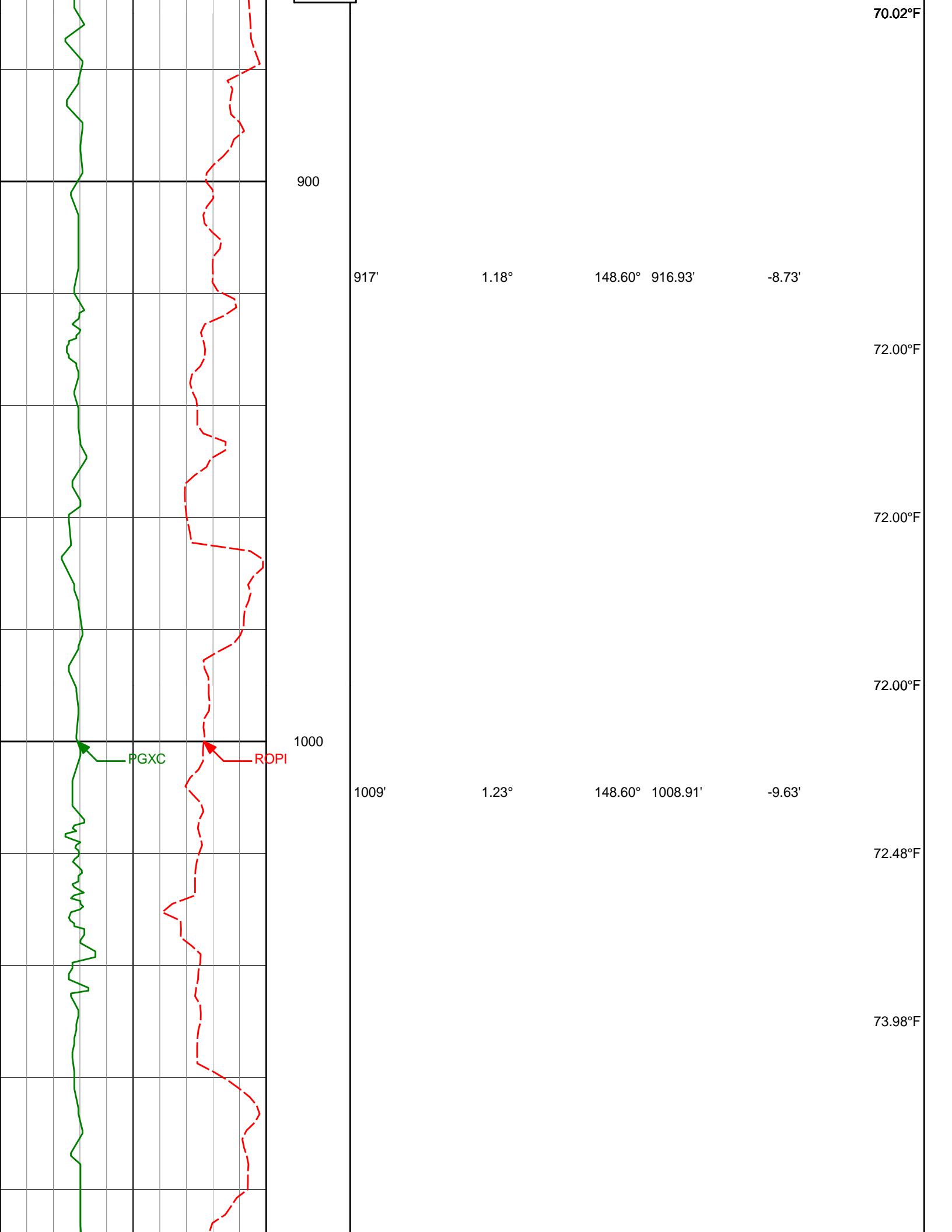


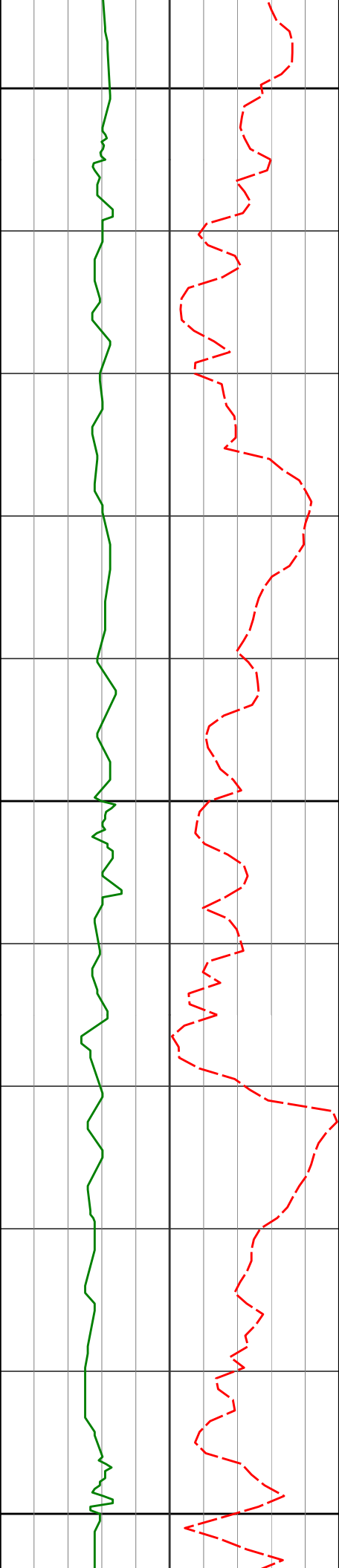












1100

1101'

0.25°

96.10°

1100.90'

-10.29'

73.98°F

73.98°F

1200

1193'

0.58°

88.76°

1192.89'

-10.95'

73.98°F

73.98°F

1284'

0.47°

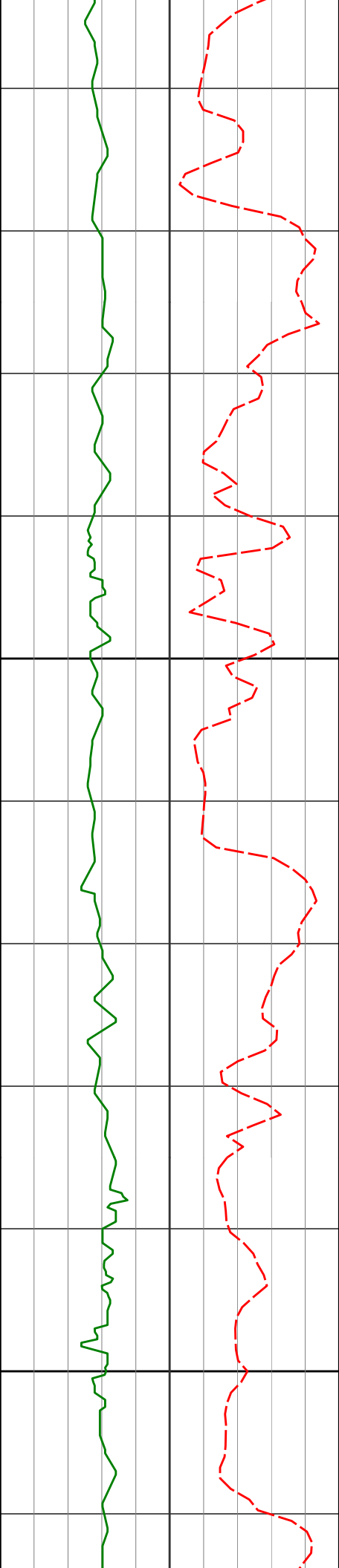
78.00°

1283.89'

-11.78'

75.97°F

1300



1400

1500

1377'

1468'

0.67°

0.69°

52.75° 1376.89'

80.11° 1467.88'

-12.61'

-13.60'

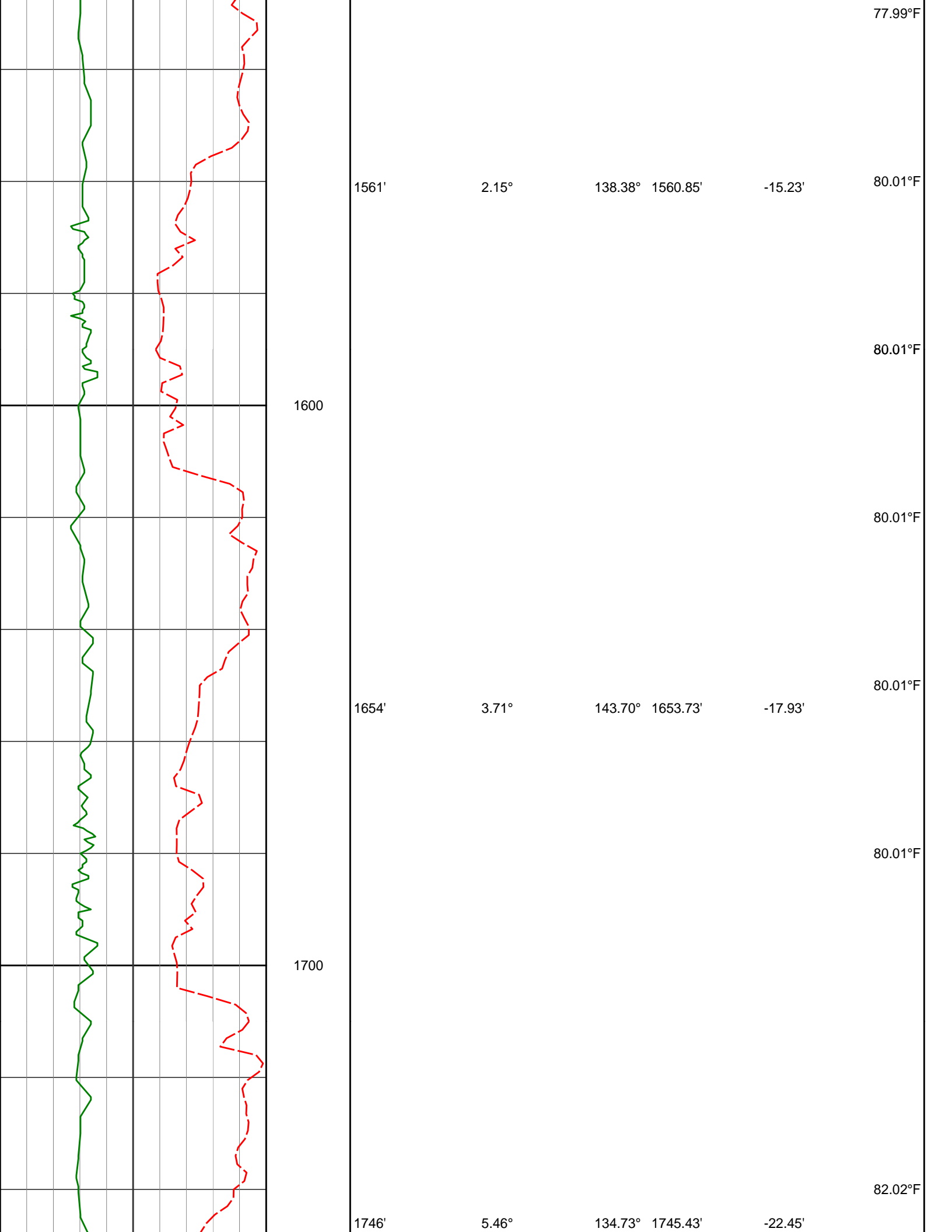
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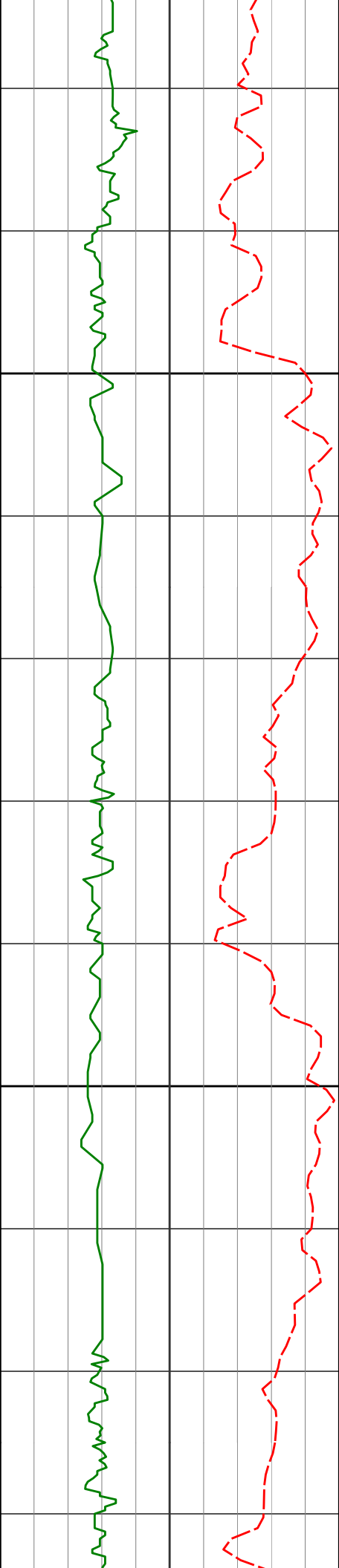
77.99°F

77.99°F

77.99°F

77.99°F





1800

1838'

7.82°

144.28°

1836.81'

-28.69'

1900

1930'

9.87°

138.82°

1927.71'

-36.82'

82.02°F

82.02°F

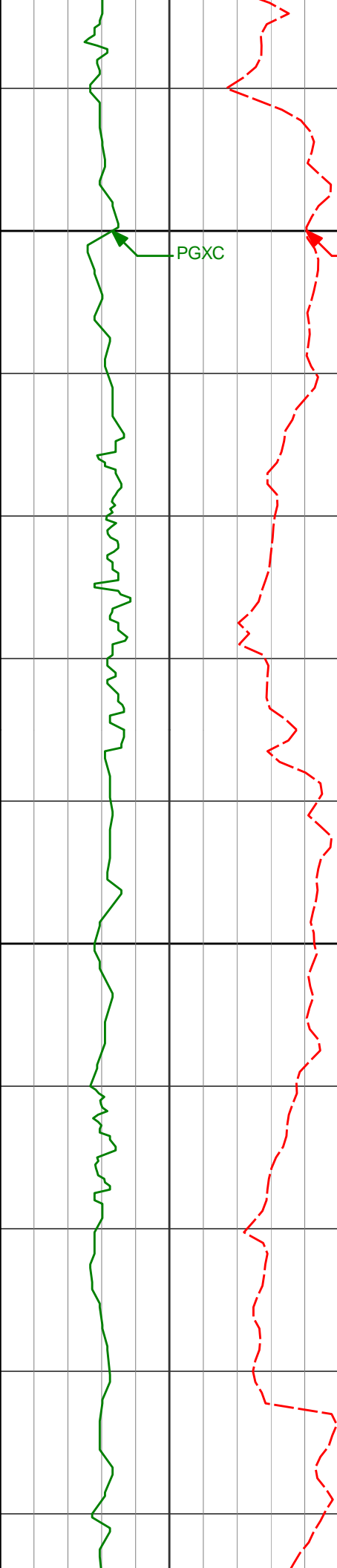
82.02°F

82.02°F

82.02°F

84.06°F

84.06°F



2000
ROPI

PGXC

2021'

11.80°

140.36°

2017.09'

-47.05'

84.06°F

84.61°F

85.71°F

86.09°F

2100

88.14°F

2113'

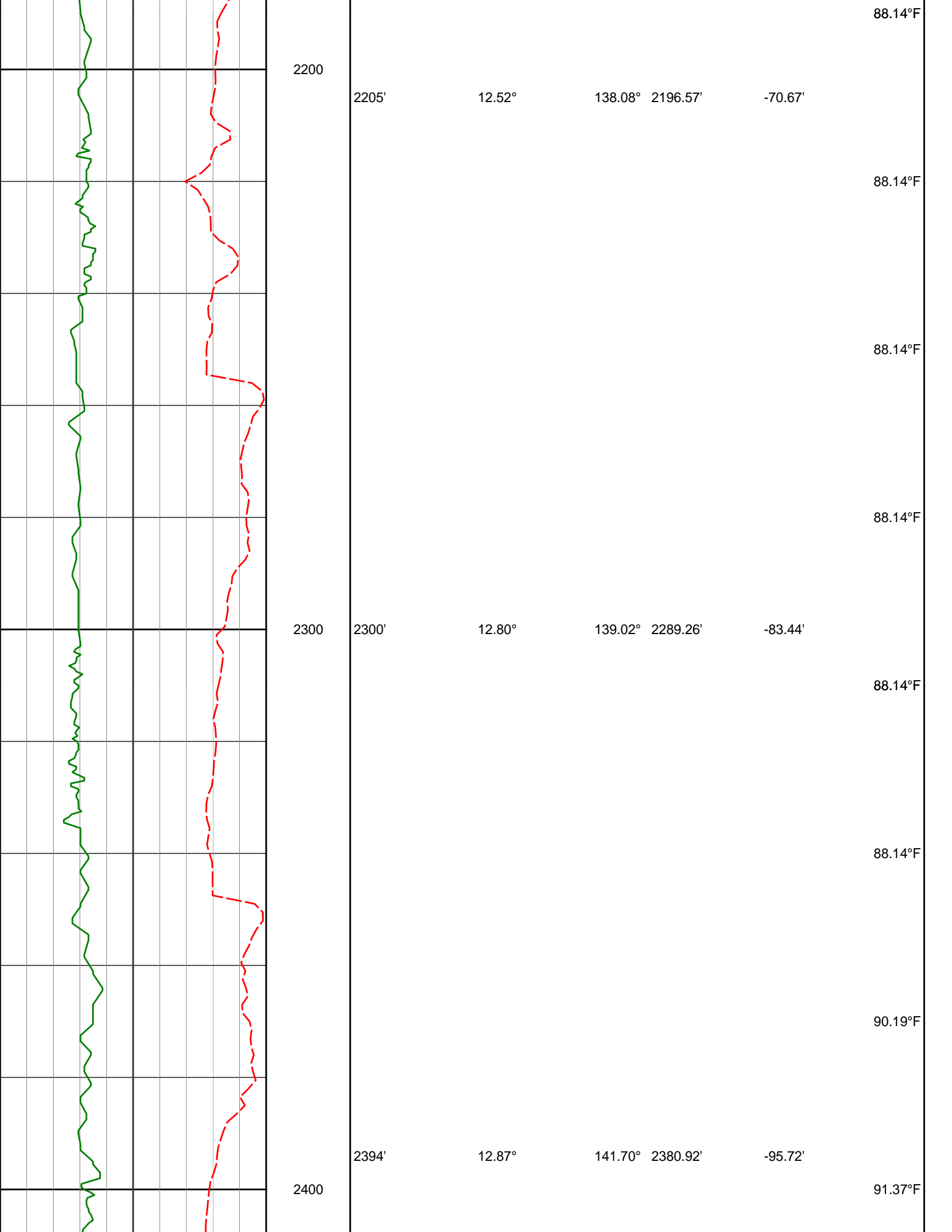
13.27°

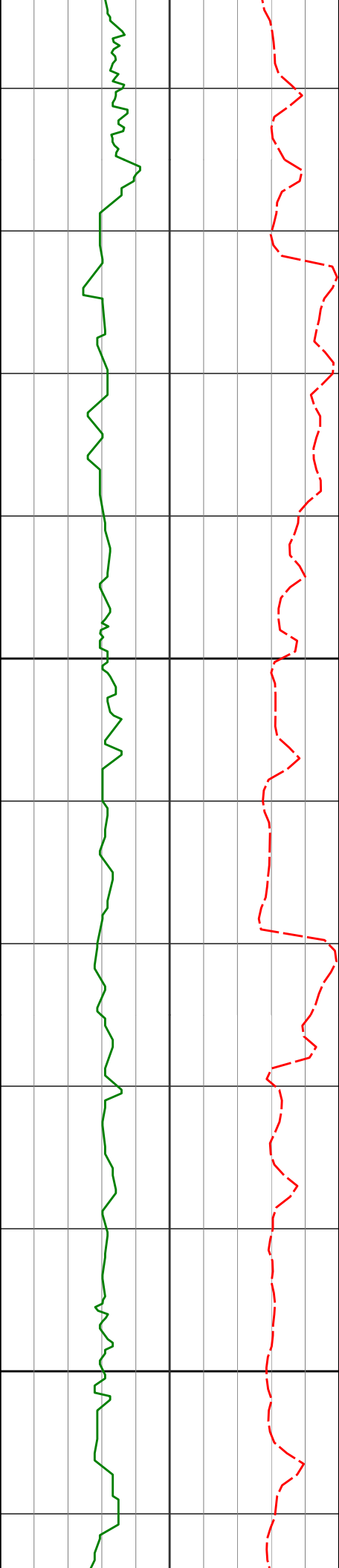
142.07°

2106.89'

-58.54'

88.14°F





2500

2600

2489'

13.34°

142.12°

2473.44'

-107.91'

2583'

12.46°

139.86°

2565.07'

-120.06'

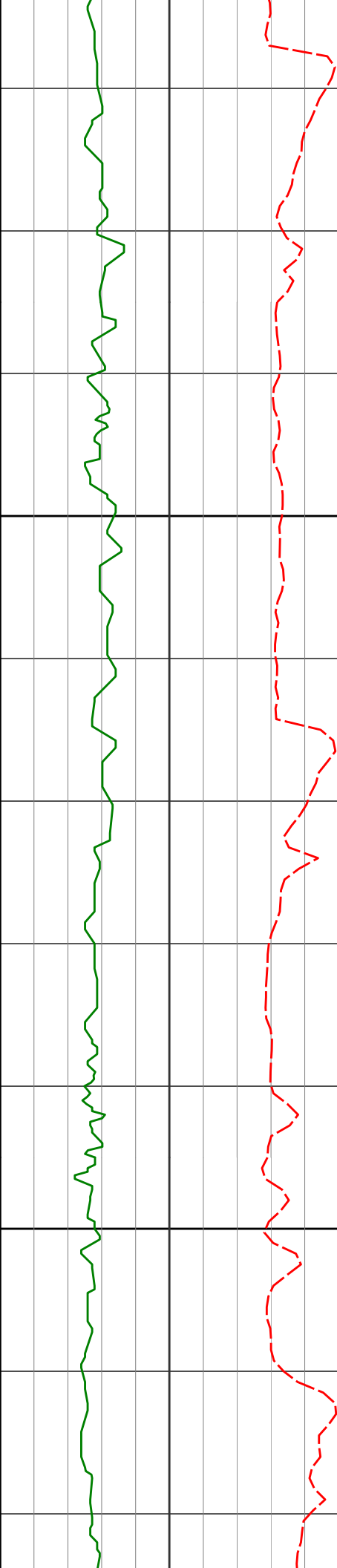
90.67°F

92.26°F

92.26°F

92.26°F

94.33°F



2700

2800

2678'

11.77°

139.55°

2657.95'

-131.97'

94.33°F

96.42°F

96.42°F

2773'

11.51°

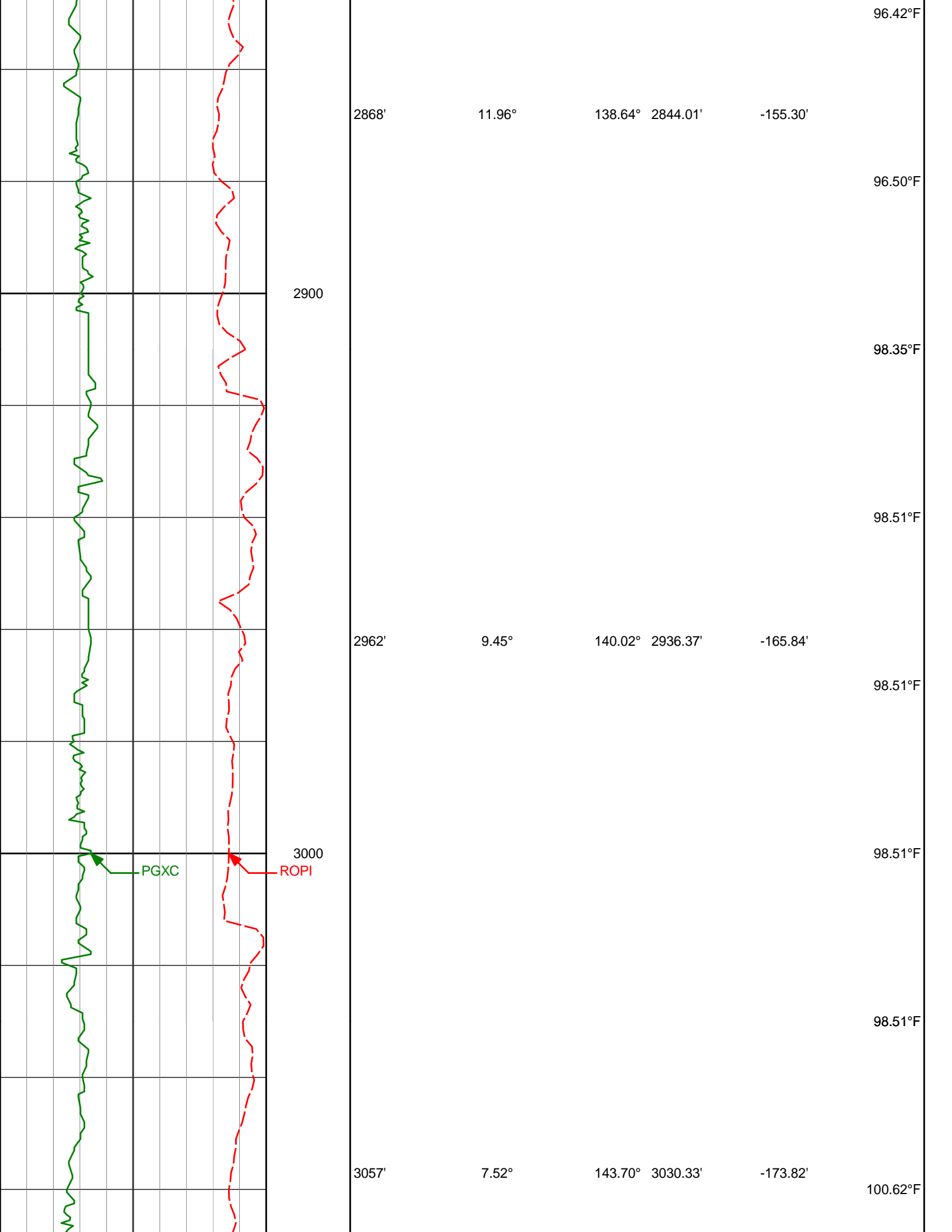
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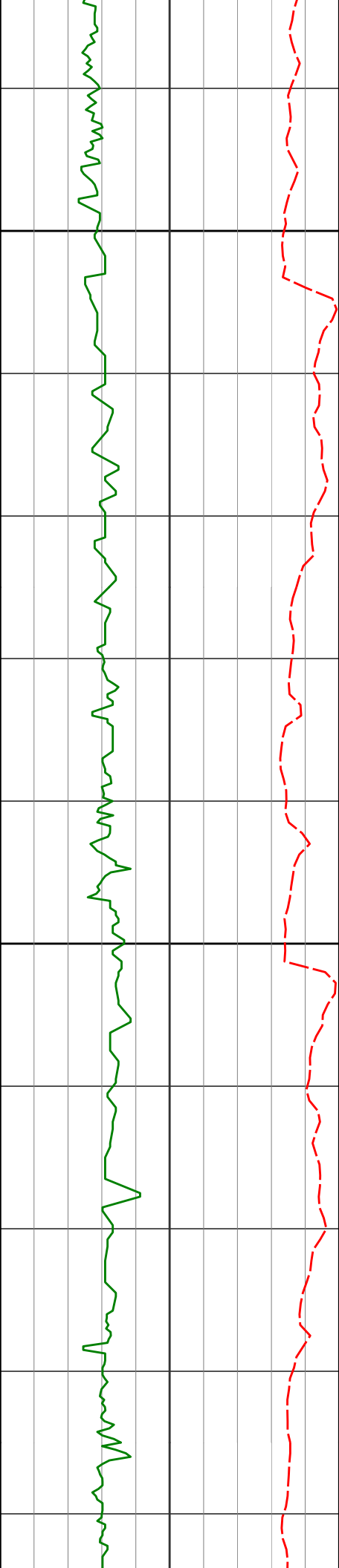
2751.00'

-143.52'

96.42°F

96.42°F





3100

3200

3152'

3247'

5.57°

2.63°

141.75°

139.95°

3124.70'

3219.45'

-179.80'

-183.71'

100.62°F

100.62°F

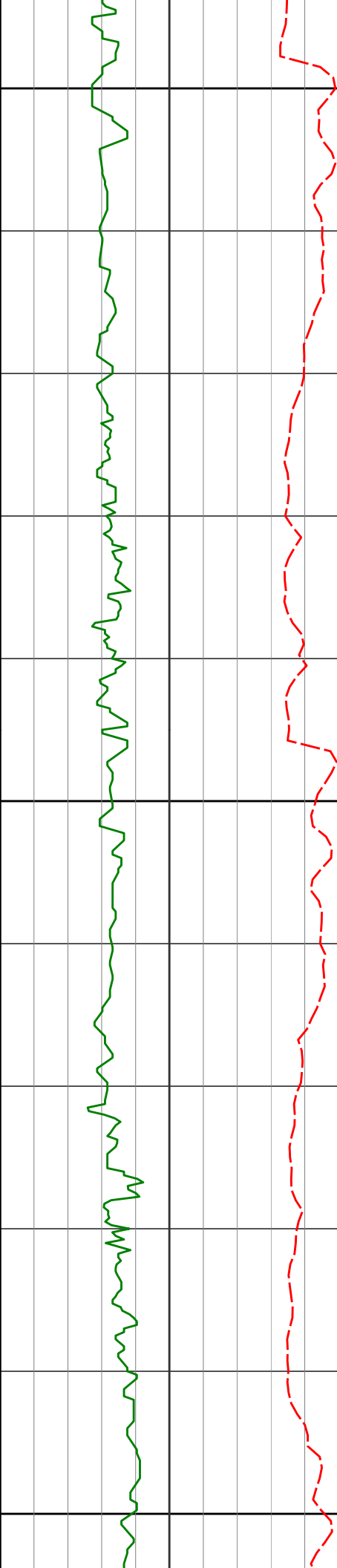
102.72°F

102.72°F

102.72°F

104.83°F

104.83°F



3300

104.83°F

106.97°F

3342'

3.51°

154.00°

3314.31'

-186.12'

106.97°F

106.97°F

3400

106.97°F

3436'

1.36°

138.52°

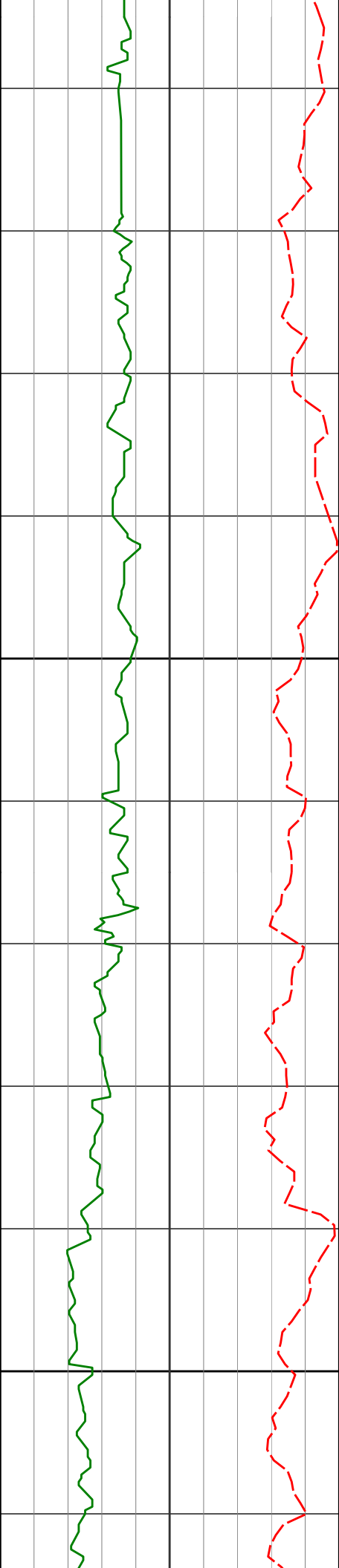
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-187.90'

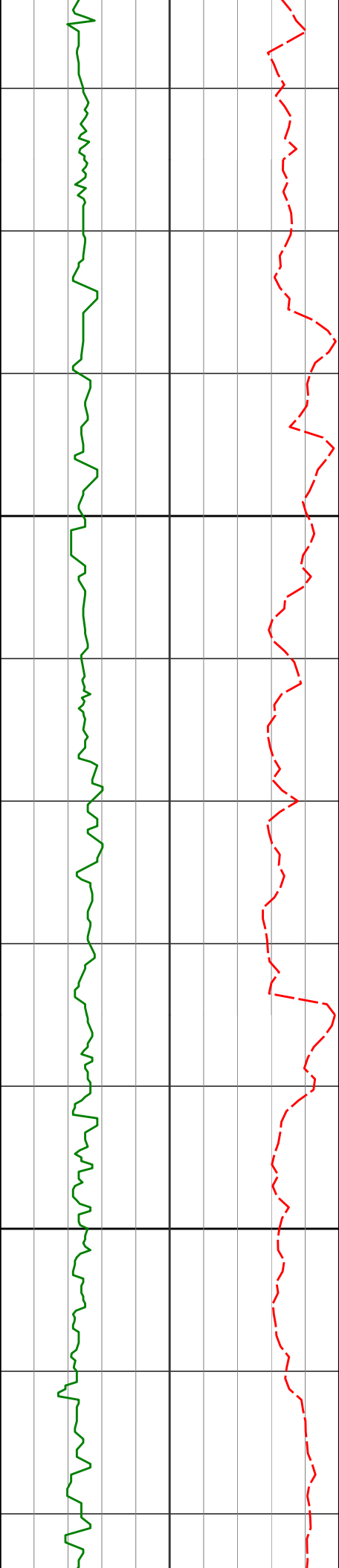
106.97°F

106.97°F

3500



					108.94°F
3531'	0.92°	307.64°	3503.22'	-188.02'	
					110.61°F
					111.24°F
3600					111.24°F
3626'	1.23°	292.60°	3598.20'	-186.53'	158.28°F
					157.02°F
					111.24°F
3700					
3720'	1.60°	287.32°	3692.17'	-184.40'	111.63°F



3800

3815'

1.05°

292.26°

3787.14'

-182.38'

3900

3910'

0.81°

291.88°

3882.13'

-180.99'

111.96°F

113.40°F

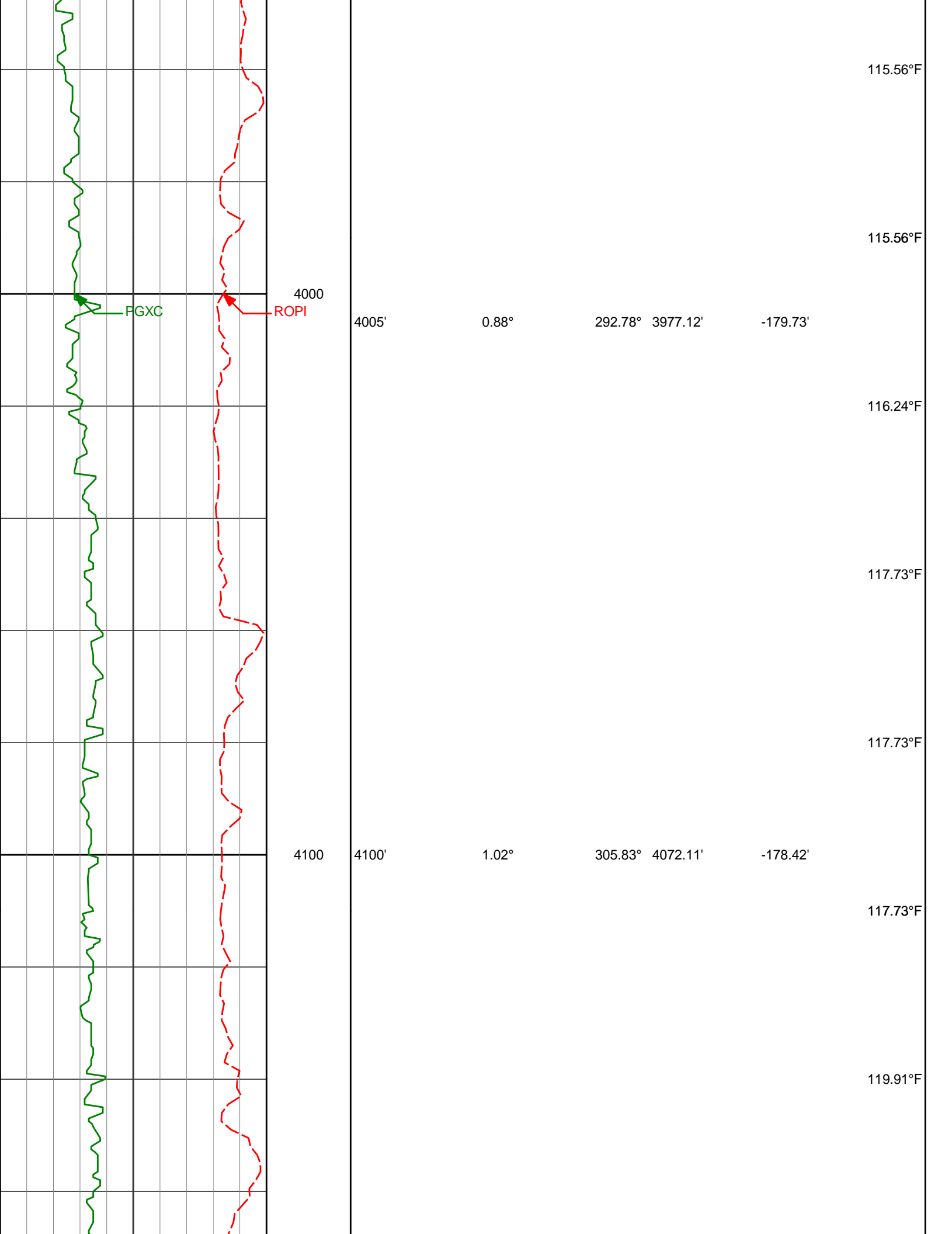
113.40°F

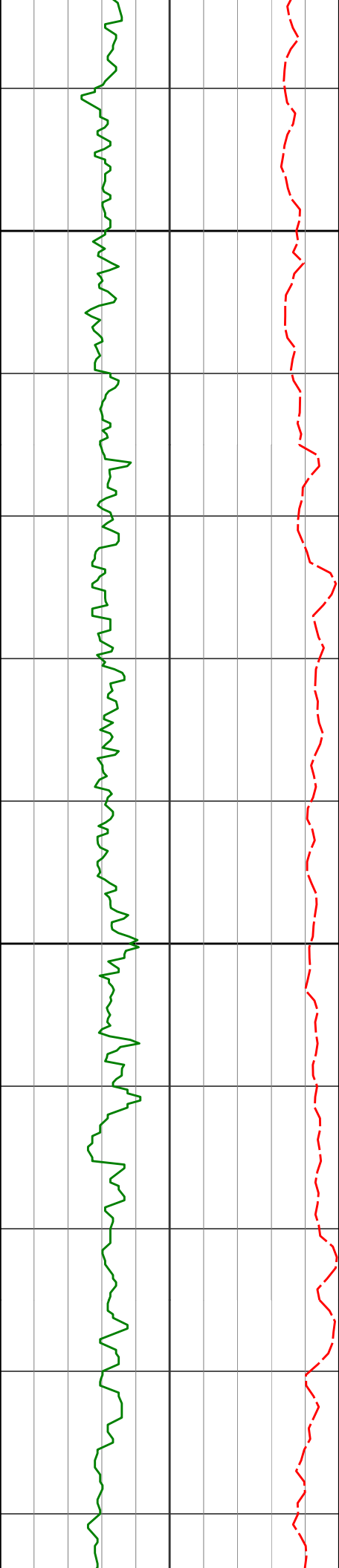
115.56°F

115.56°F

115.56°F

115.56°F





4200

4300

4289'

1.69°

309.06°

4261.05'

-175.07'

4384'

1.11°

293.90°

4356.03'

-173.23'

119.91°F

121.11°F

122.11°F

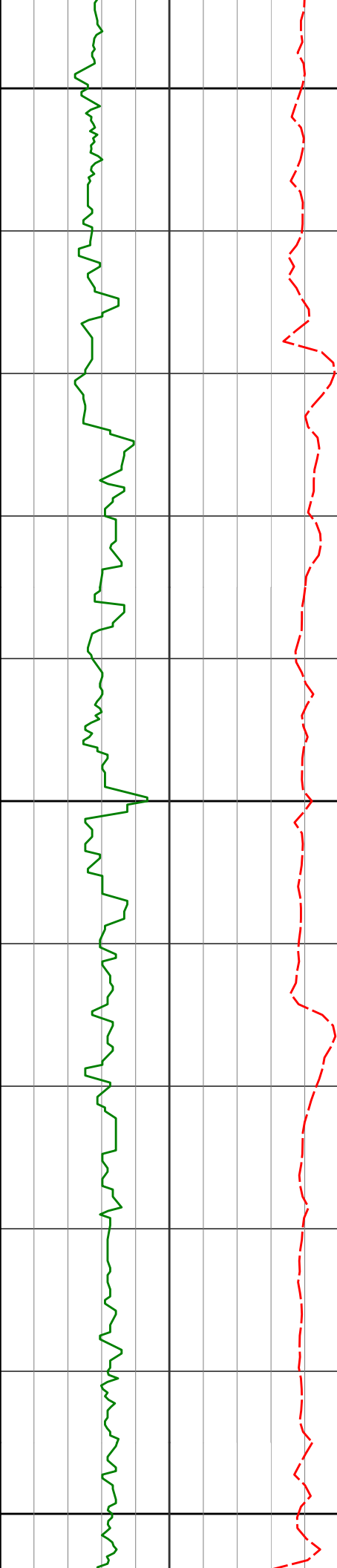
122.11°F

121.31°F

120.18°F

119.91°F

122.11°F



4400

122.11°F

122.11°F

122.11°F

4479'

0.42°

1.58°

4451.02'

-172.44'

4500

124.30°F

124.30°F

127.07°F

4574'

0.71°

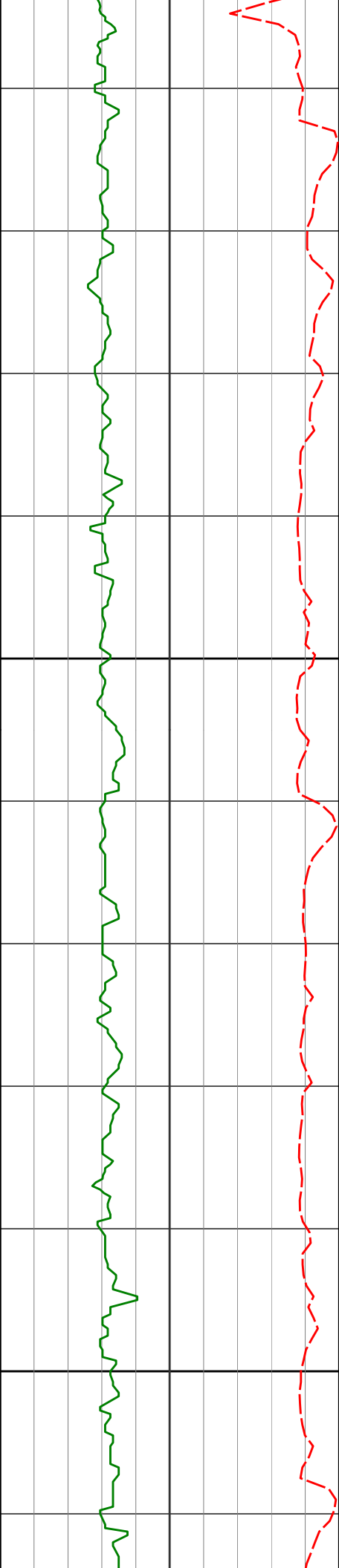
346.44°

4546.01'

-172.37'

127.70°F

4600



4700

4764'

4800

0.51°

134.20°

4736.01'

-172.73'

126.81°F

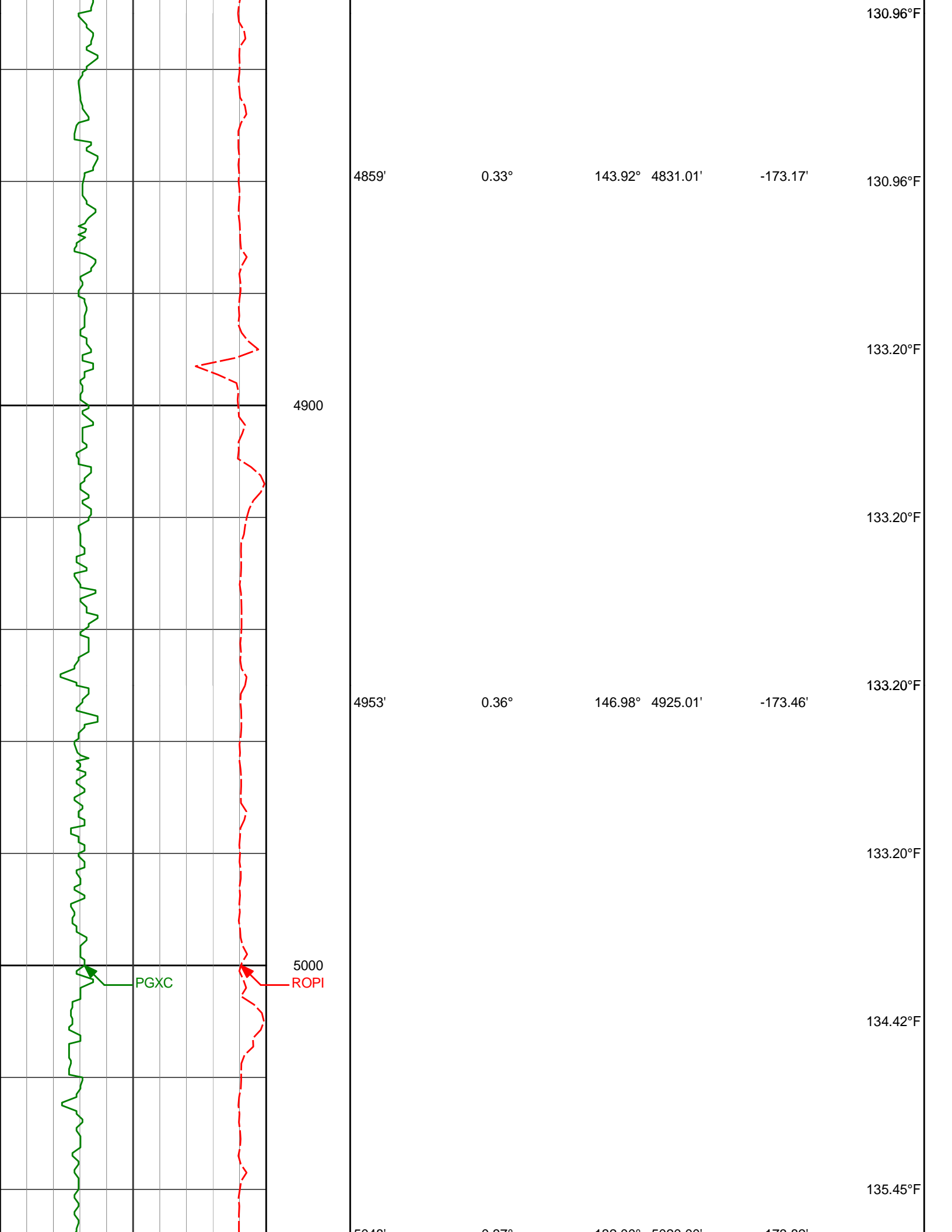
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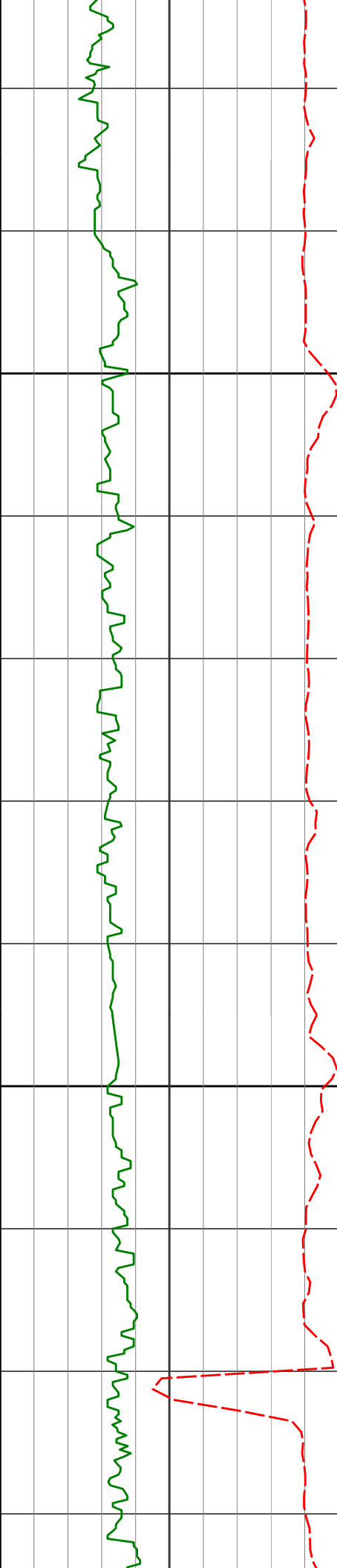
128.73°F

128.73°F

129.15°F

130.96°F





5100

5200

5237'

0.09°

43.32° 5209.00'

-174.35'

135.45°F

135.45°F

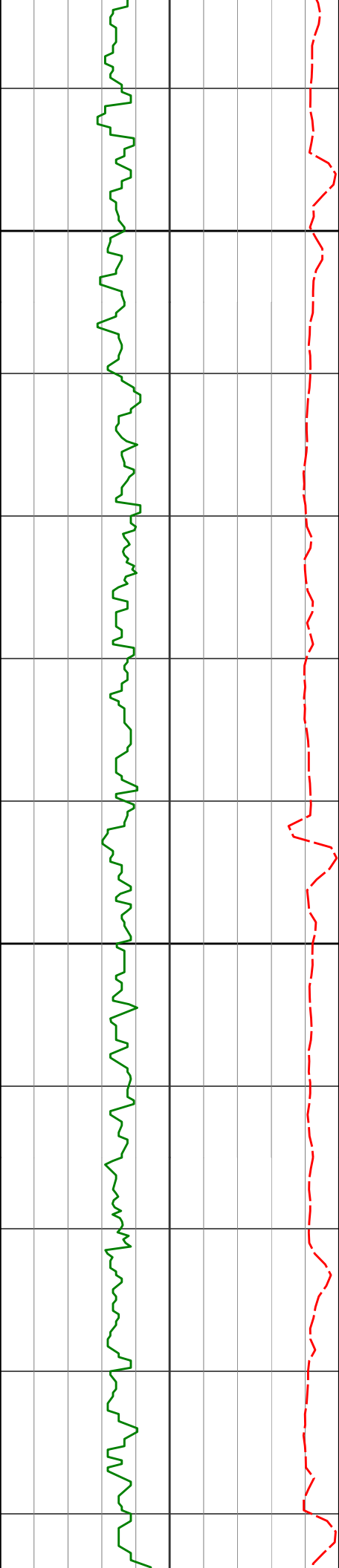
135.45°F

137.70°F

137.70°F

137.70°F

137.70°F



5300

5332'

0.24°

181.19°

5304.00'

-174.39'

5400

5427'

0.24°

130.10°

5399.00'

-174.52'

137.70°F

138.48°F

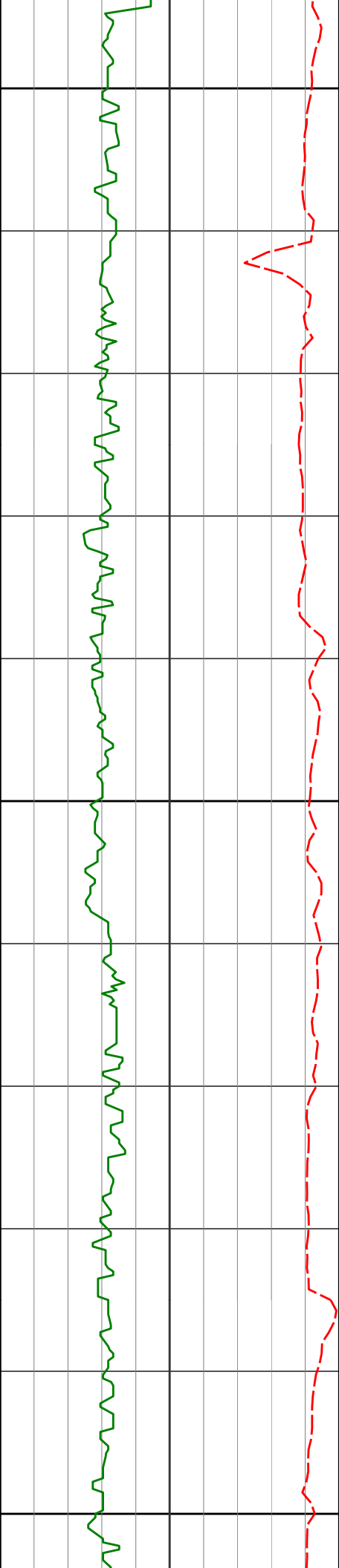
139.96°F

139.96°F

139.96°F

141.63°F

141.52°F



5500

5522'

0.65°

55.57° 5494.00'

-175.12'

142.25°F

142.25°F

142.25°F

5600

5616'

0.17°

73.07° 5588.00'

-175.72'

142.25°F

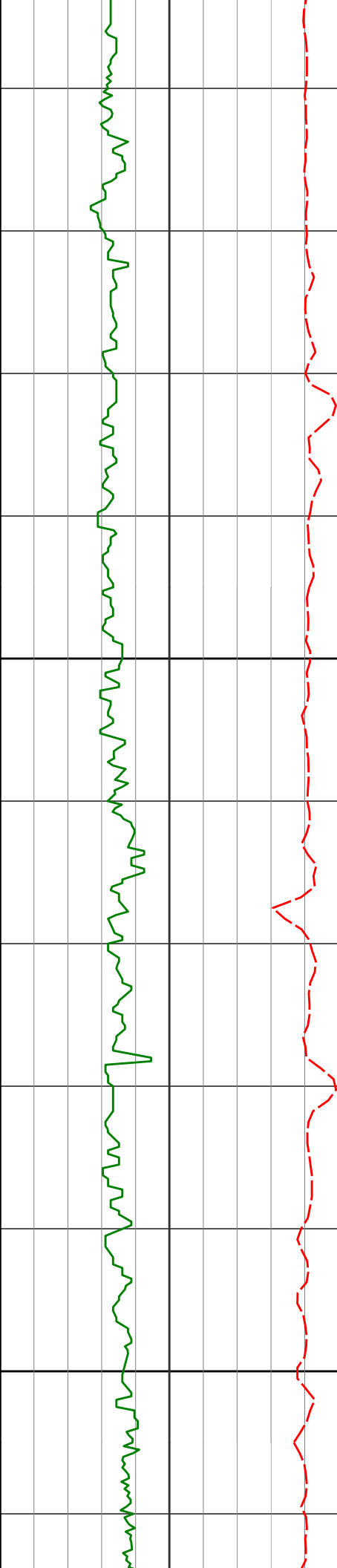
142.25°F

142.25°F

5700

142.62°F

139.96°F



5800

5900

5711'

0.06°

323.28° 5683.00'

-175.83'

144.17°F

144.54°F

144.54°F

5806'

0.57°

154.71° 5777.99'

-175.98'

144.54°F

144.54°F

144.78°F

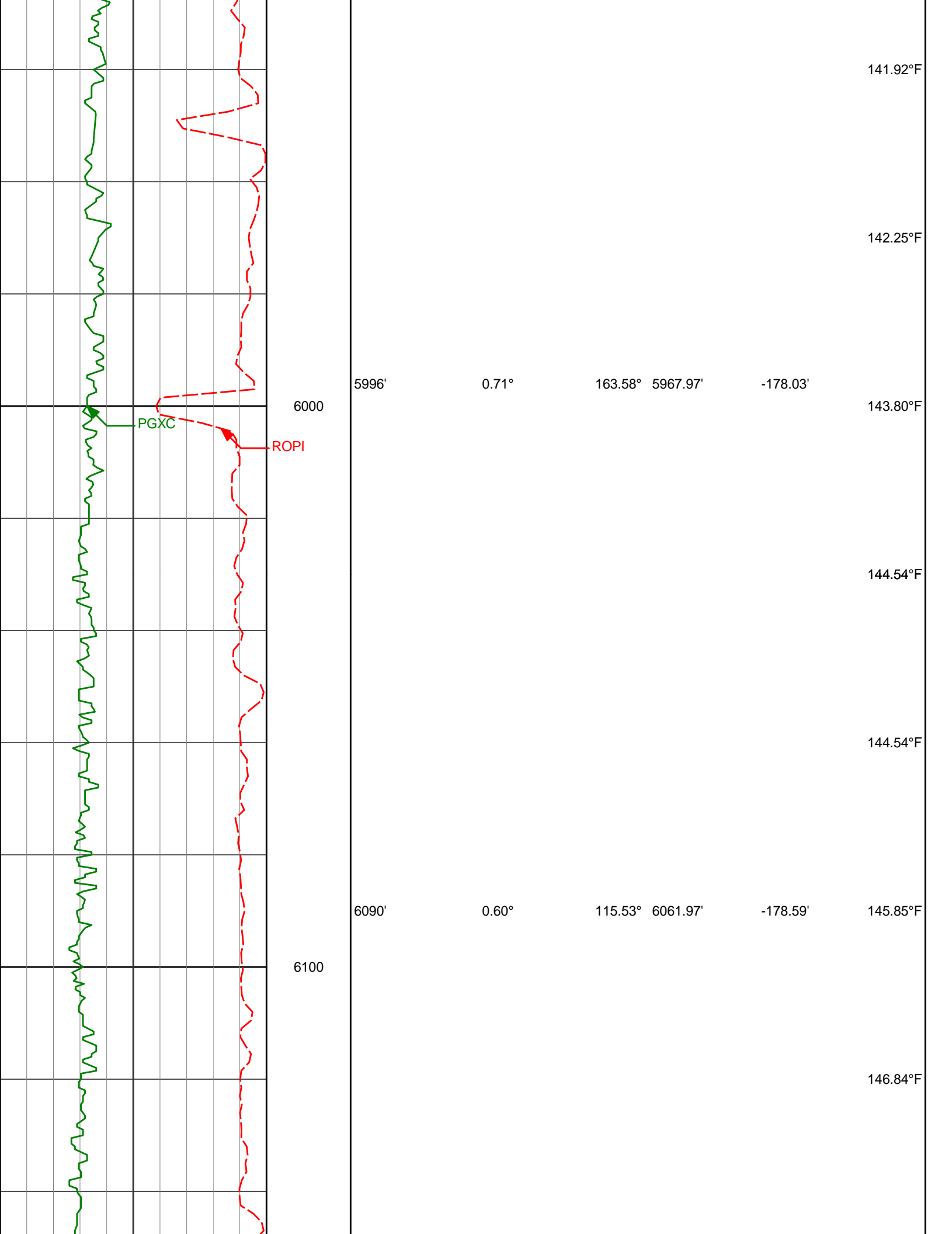
5901'

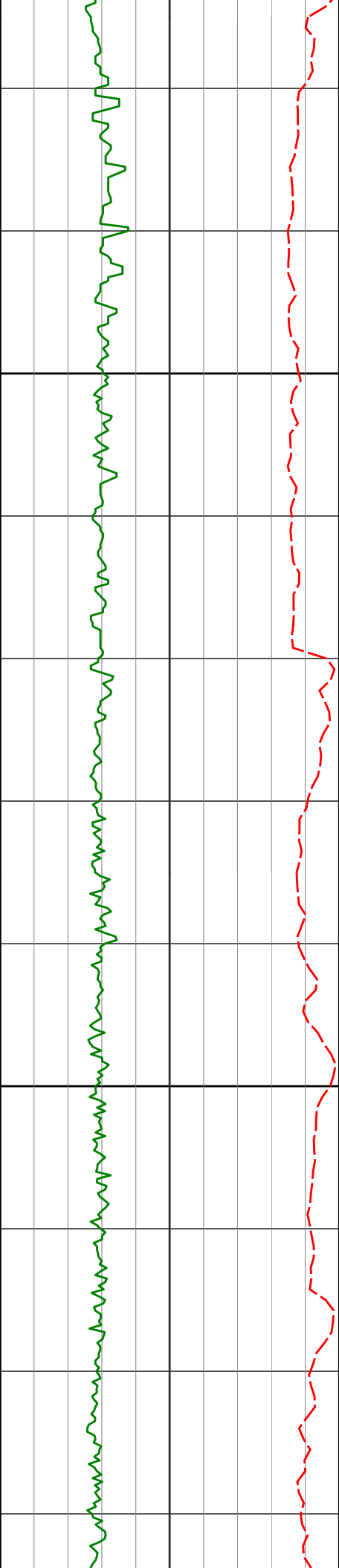
1.14°

108.69° 5872.98'

-177.02'

143.89°F





6200

6300

6185'

0.96°

87.72°

6156.96'

-179.82'

6280'

0.65°

12.59°

6251.95'

-180.76'

6328'

2.43°

289.24°

6299.94'

-179.90'

146.84°F

145.51°F

143.94°F

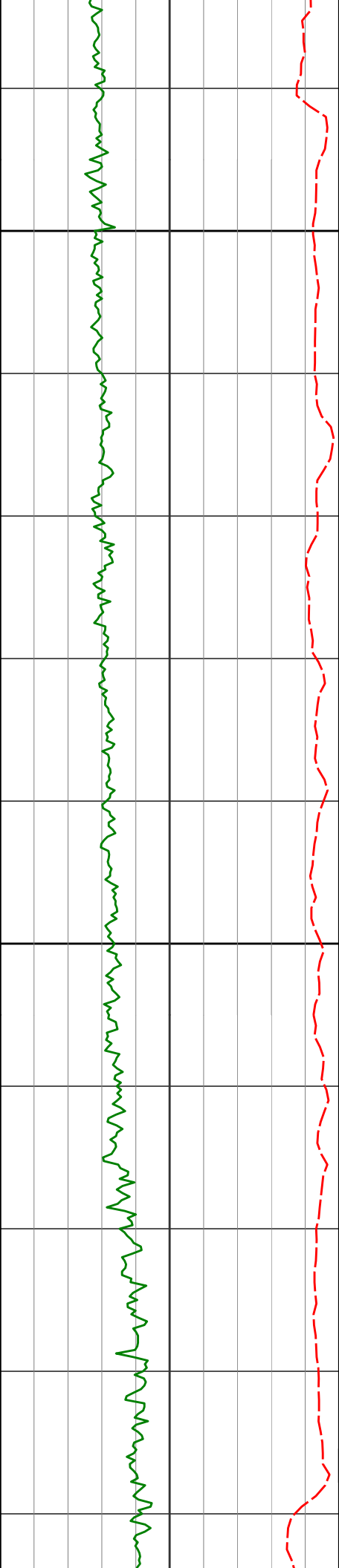
144.54°F

144.54°F

144.71°F

146.71°F

147.79°F



200

6375'

4.54°

271.62°

6346.85'

-177.13'

6400

149.07°F

6423'

7.53°

273.57°

6394.58'

-172.12'

149.44°F

151.29°F

6469'

9.69°

275.75°

6440.06'

-165.31'

151.38°F

6500

151.69°F

6517'

12.70°

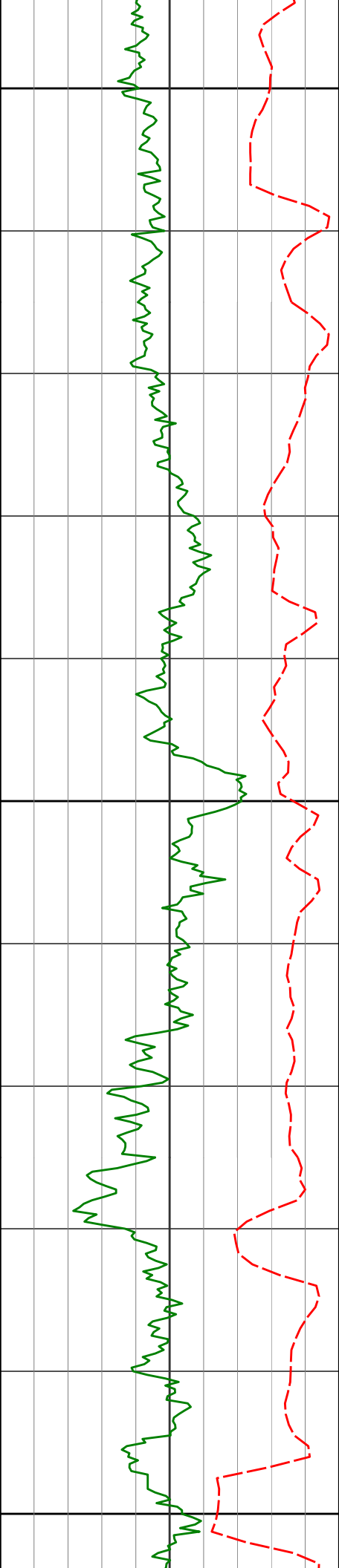
274.98°

6487.14'

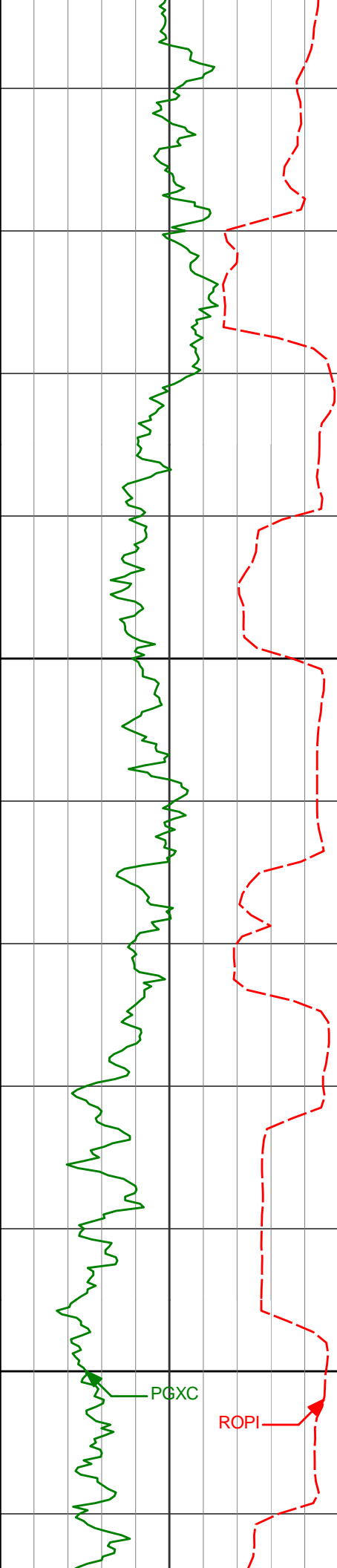
-156.10'

150.61°F

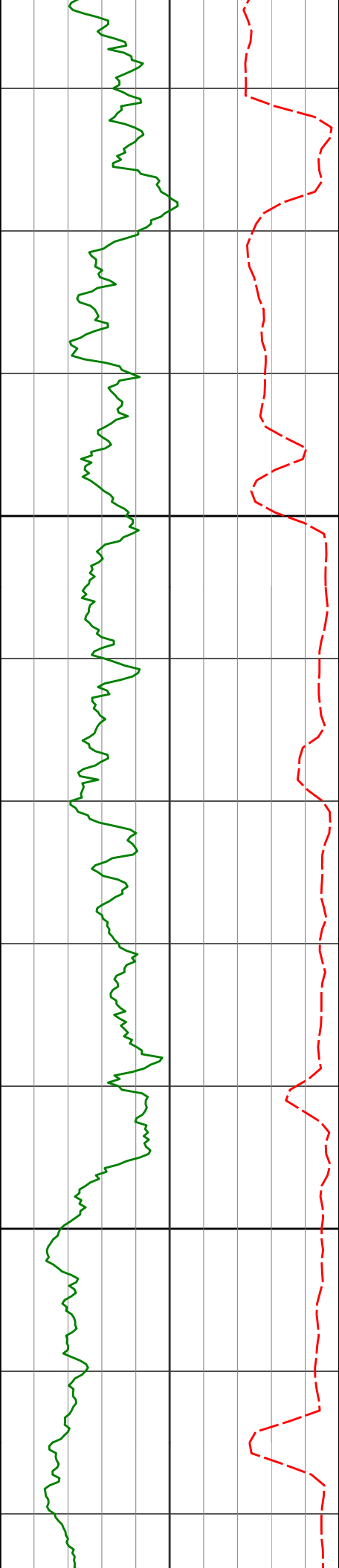
148.08°F



6600					146.25°F
6611'	19.85°	273.30°	6577.61'	-131.14'	
					146.93°F
6658'	26.39°	274.77°	6620.81'	-112.86'	148.27°F
					150.75°F
6700					
6706'	35.95°	276.50°	6661.84'	-88.38'	155.20°F
					153.78°F
6753'	42.48°	274.54°	6698.23'	-59.05'	
					155.20°F
6800					
6801'	47.53°	274.04°	6732.16'	-25.44'	



					156.41°F
					159.27°F
6847'	51.76°	270.70°	6761.95'	9.41'	
					159.25°F
6895'	55.37°	268.53°	6790.45'	47.95'	158.72°F
					160.63°F
6942'	59.40°	267.08°	6815.78'	87.52'	
					160.83°F
6990'	62.39°	267.32°	6839.12'	129.45'	161.34°F
					163.13°F



7100

7200

7037'

65.08°

268.05°

6859.92'

171.58'

163.20°F

7085'

65.78°

267.90°

6879.88'

215.22'

161.10°F

7132'

70.31°

268.07°

6897.45'

258.78'

161.24°F

7180'

76.38°

268.26°

6911.20'

304.73'

162.75°F

7230'

82.68°

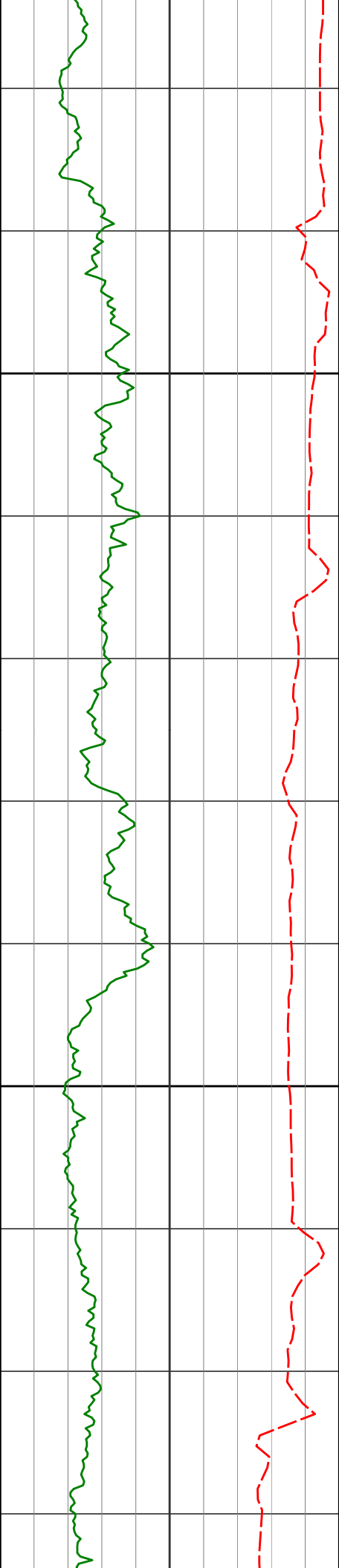
267.26°

6920.28'

353.85'

164.52°F

167.55°F



300

7300

7400

7360'

89.51°

268.18° 6929.13'

483.44'

7455'

90.22°

269.36° 6929.35'

578.36'

177.19°F

175.30°F

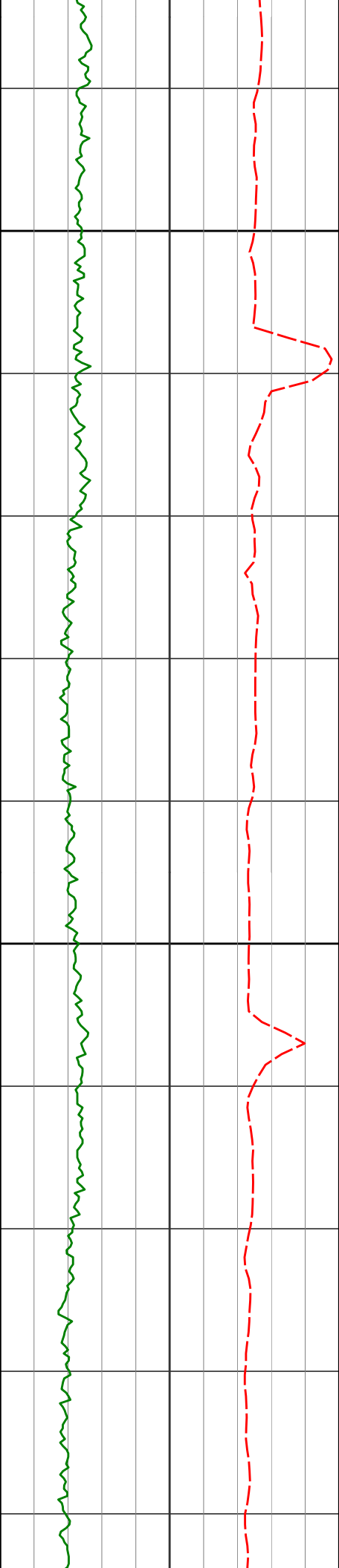
174.07°F

172.78°F

172.78°F

173.15°F

174.02°F



7500

7549'

89.97°

268.50°

6929.20'

672.26'

7600

7643'

90.65°

268.42°

6928.69'

766.20'

173.17°F

174.97°F

177.03°F

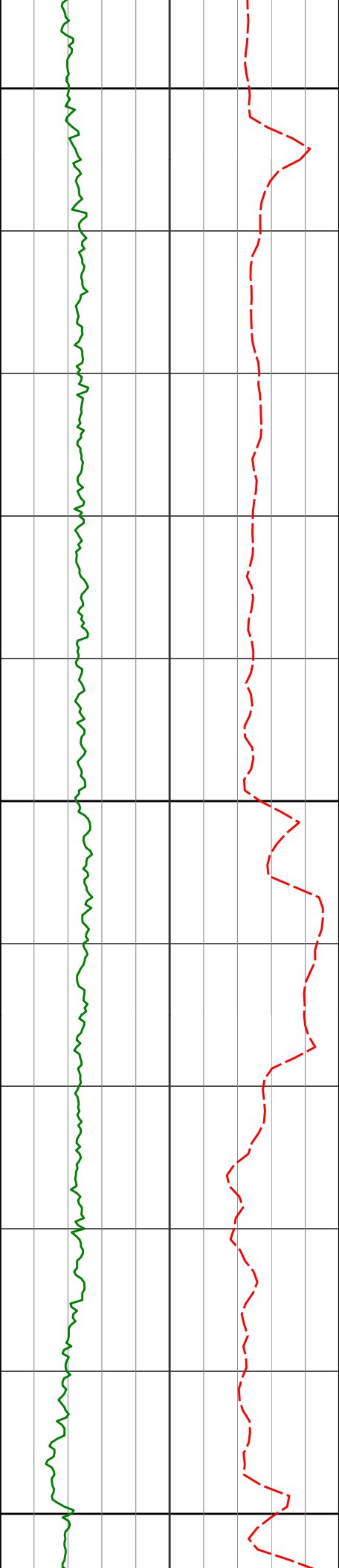
177.64°F

179.40°F

180.09°F

180.09°F

182.09°F



7700

7738'

92.74°

267.69°

6925.88'

861.11'

183.02°F

182.39°F

180.51°F

7800

7832'

90.28°

268.31°

6923.40'

955.03'

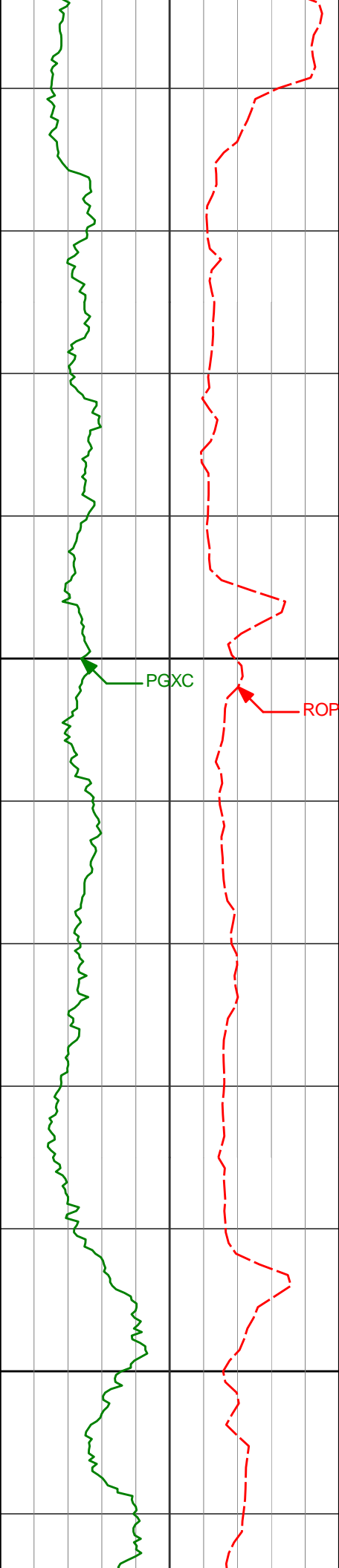
182.55°F

183.77°F

182.96°F

7900

184.93°F



8000

8100

7927'

89.17°

269.64° 6923.86'

1049.93'

8021'

88.12°

268.93° 6926.08'

1143.78'

8116'

87.44°

268.90° 6929.76'

1238.62'

187.33°F

187.73°F

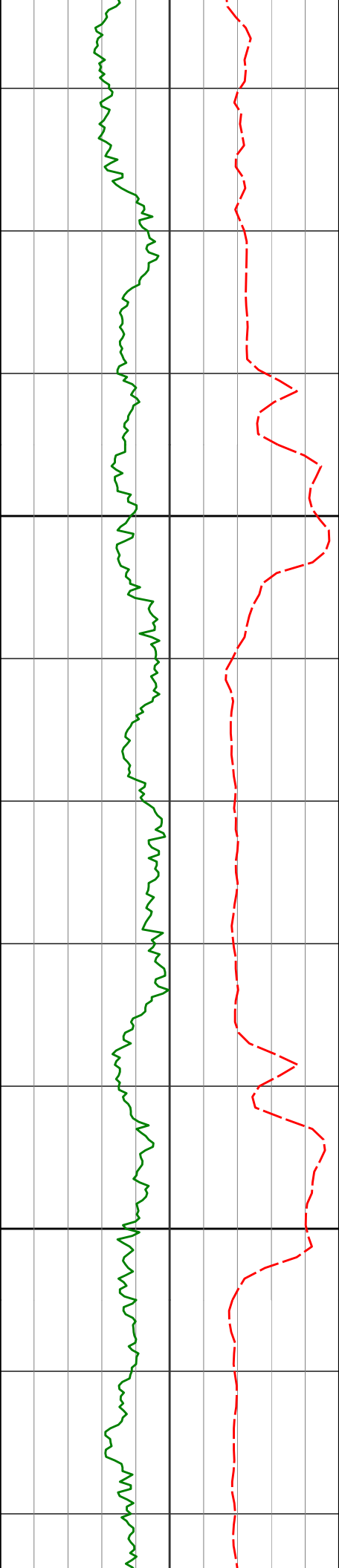
189.80°F

189.99°F

191.32°F

192.49°F

194.00°F



8200

8210'

87.50°

269.87° 6933.91'

1332.40'

191.90°F

190.71°F

192.94°F

192.62°F

190.41°F

192.49°F

8300

8305'

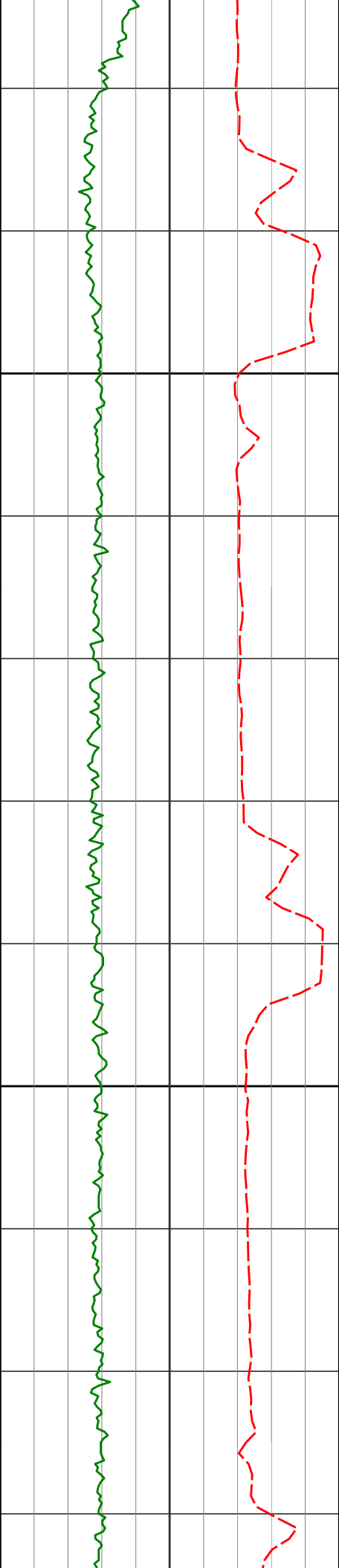
88.61°

270.45° 6937.13'

1427.14'

192.87°F

190.62°F



8400

8500

8495'

90.43°

270.99° 6938.72'

1616.58'

192.73°F

193.97°F

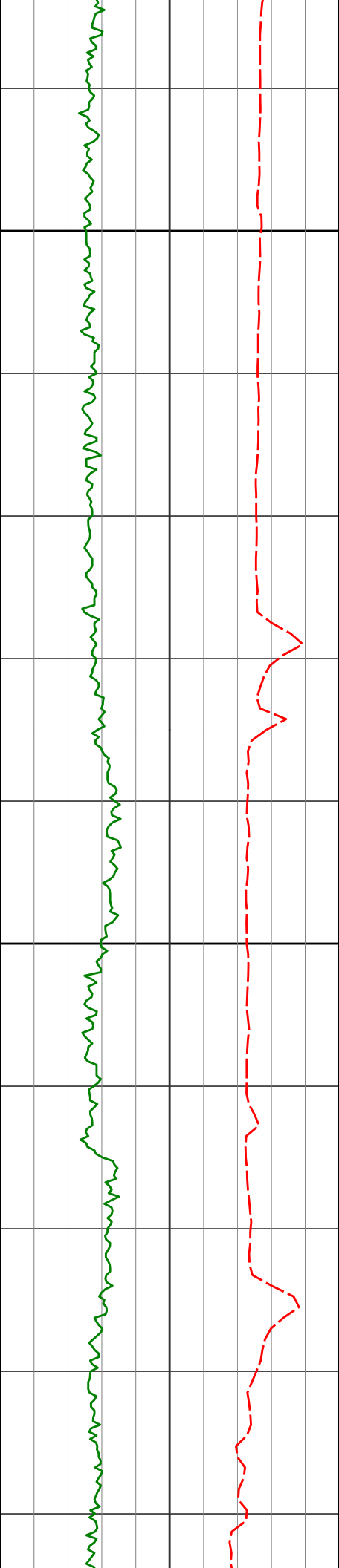
192.90°F

194.99°F

197.27°F

197.51°F

199.13°F



8600

8700

8589'

90.06°

270.57°

6938.32'

1710.30'

8684'

89.69°

270.22°

6938.53'

1805.07'

8779'

89.48°

269.78°

6939.22'

1899.88'

200.05°F

200.24°F

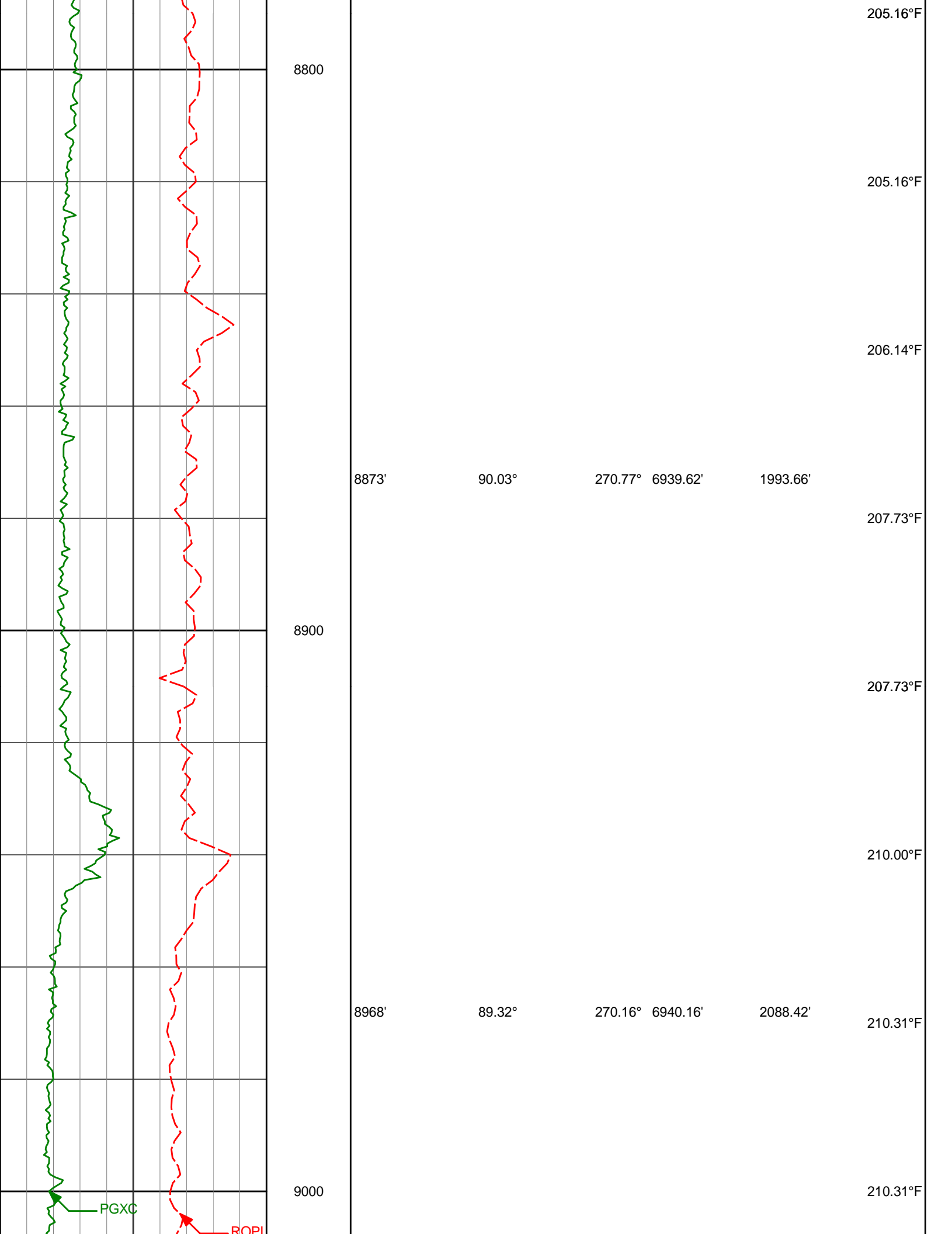
202.37°F

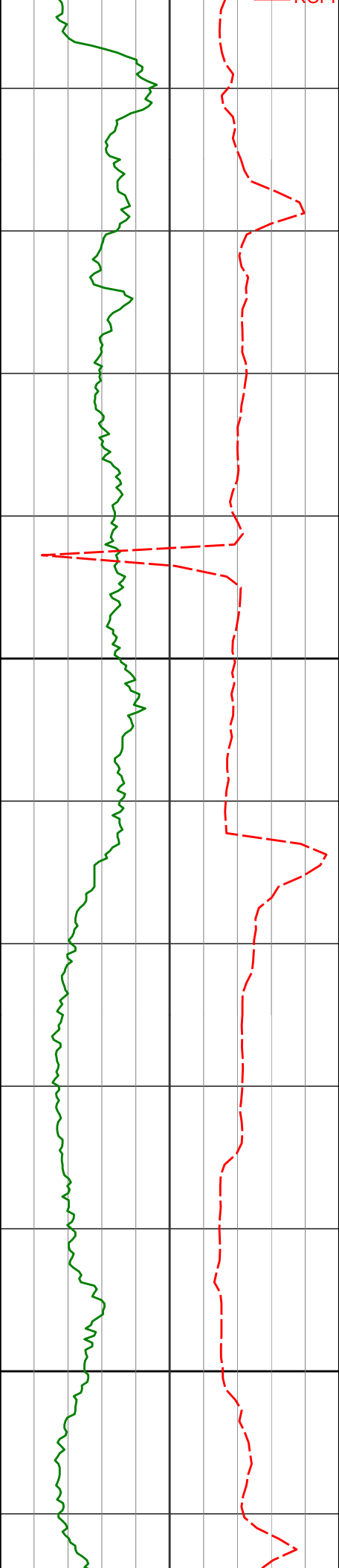
202.60°F

203.68°F

205.16°F

205.16°F





9100

9200

9063'

89.29°

269.17°

6941.31'

2183.25'

9158'

89.94°

269.37°

6941.95'

2278.13'

210.58°F

212.78°F

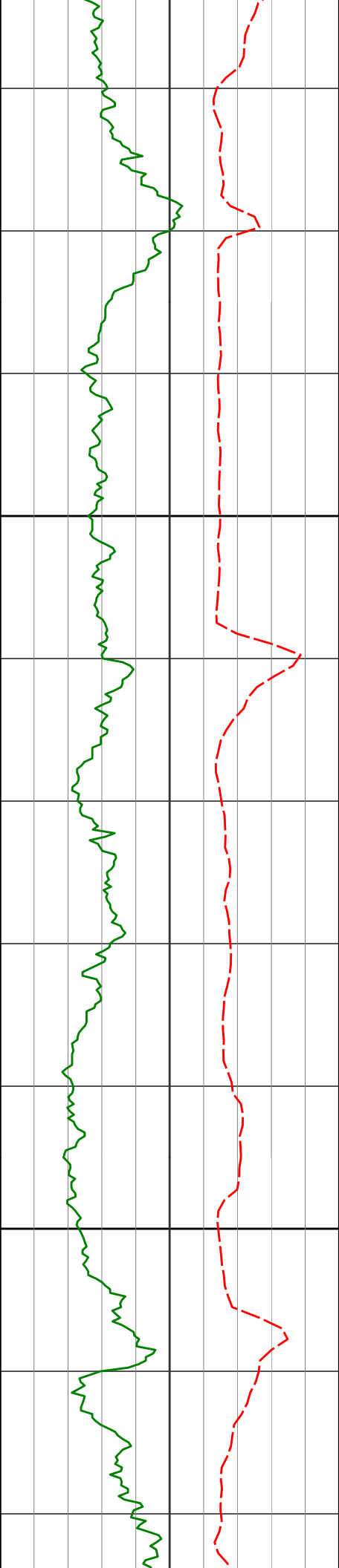
212.92°F

212.92°F

212.92°F

214.90°F

215.51°F



9300

9400

9253'

9348'

9443'

89.57°

89.26°

88.89°

269.75°

270.26°

270.46°

6942.36'

6943.33'

6944.86'

2372.98'

2467.79'

2562.55'

214.06°F

212.52°F

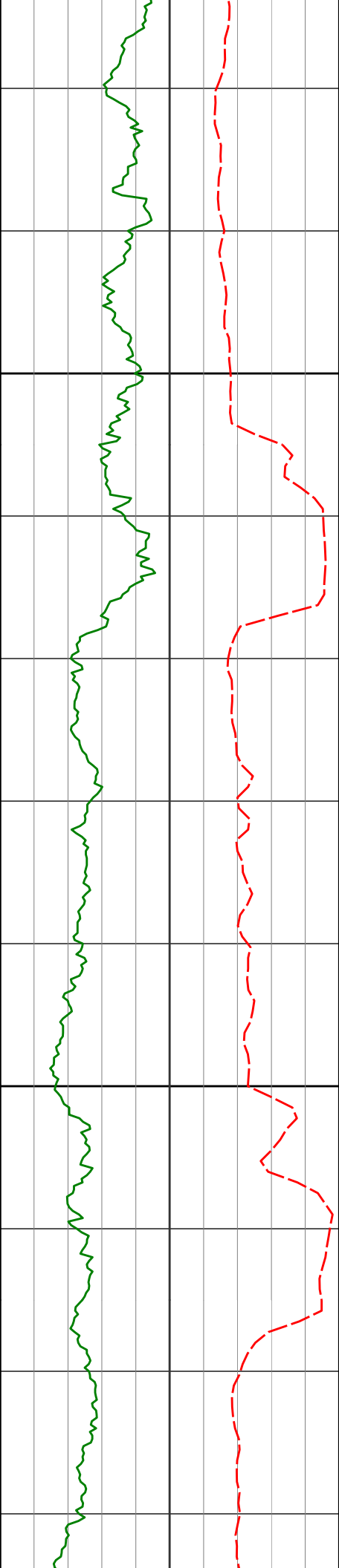
215.77°F

217.41°F

215.91°F

215.93°F

217.60°F



9500

9537'

9600

9632'

88.67°

88.46°

269.94°

268.36°

6946.86'

6949.24'

2656.32'

2751.18'

215.66°F

214.77°F

215.91°F

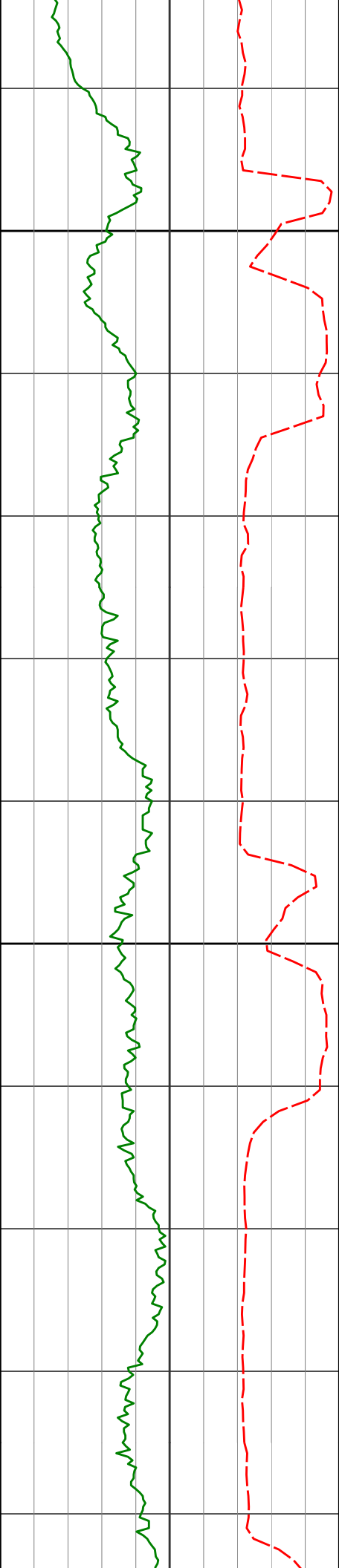
216.69°F

214.51°F

215.63°F

213.54°F

209.79°F



9700

9727'

89.11°

266.80°

6951.25'

2846.13'

9800

9821'

90.43°

266.24°

6951.63'

2940.13'

210.51°F

212.37°F

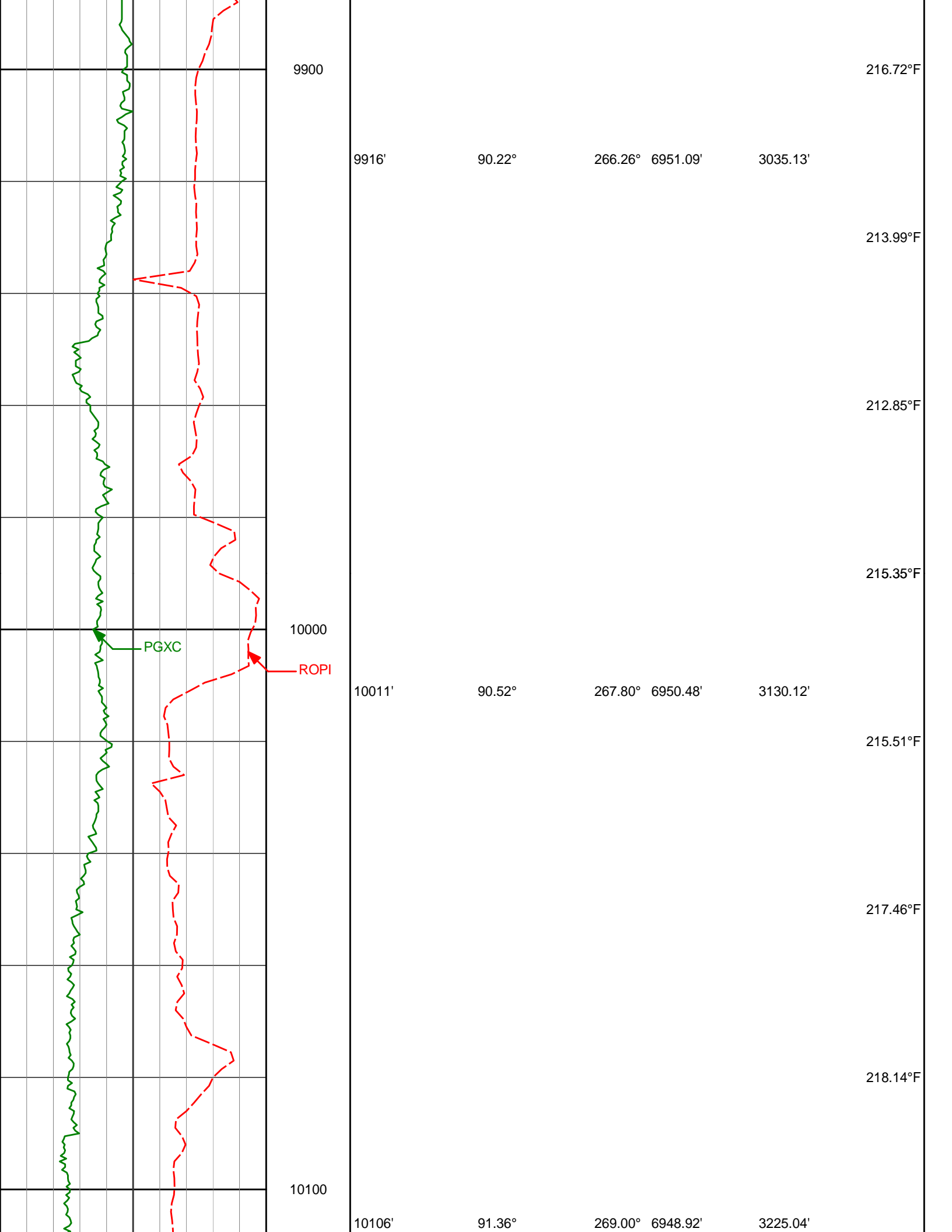
210.92°F

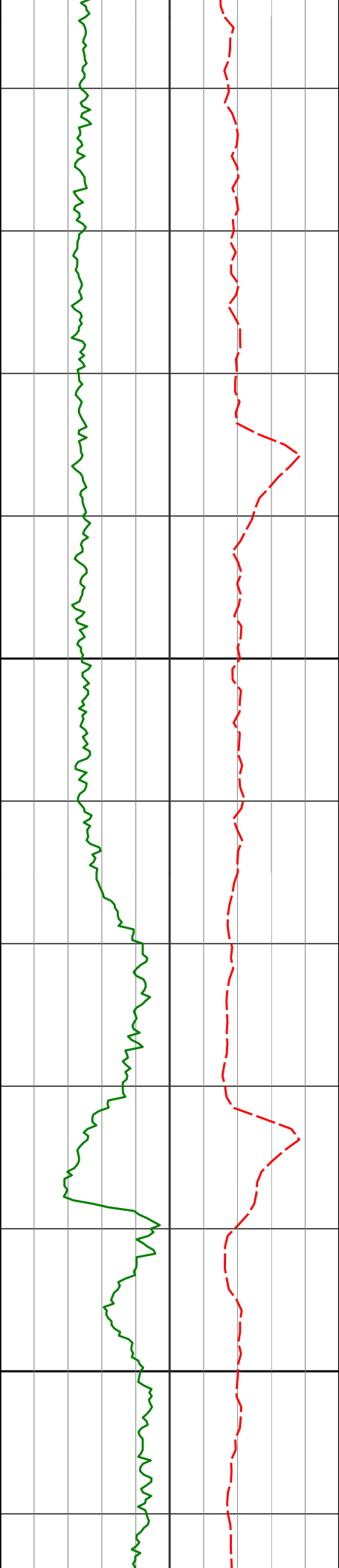
212.30°F

212.92°F

214.53°F

215.79°F





10200

10200'

91.11°

269.05° 6946.90'

3318.92'

220.77°F

221.16°F

223.41°F

10300

10295'

90.37°

269.01° 6945.67'

3413.81'

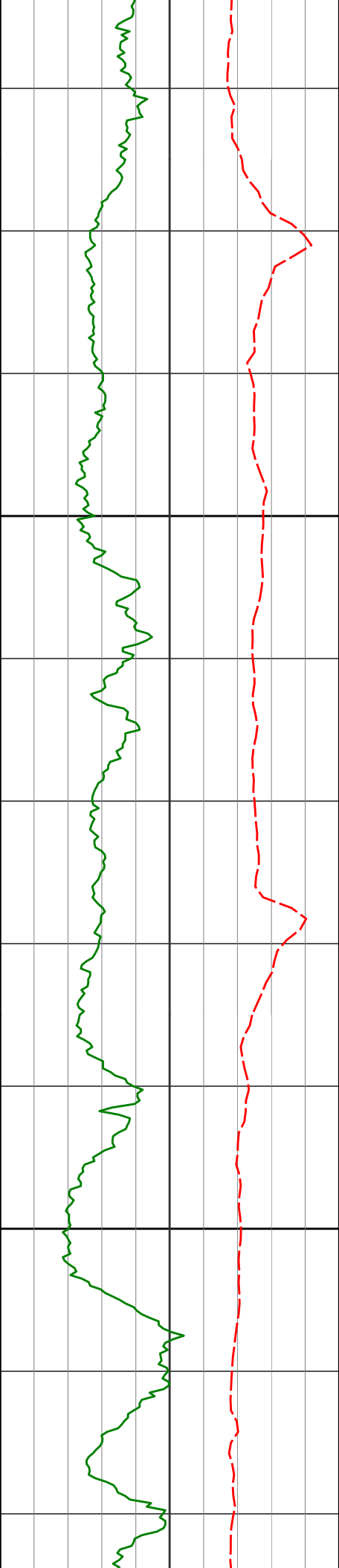
223.41°F

223.41°F

218.42°F

220.61°F

220.77°F



10400

10390'

89.82°

268.11° 6945.51'

3508.74'

10500

10484'

89.29°

267.57° 6946.24'

3602.71'

225.51°F

225.63°F

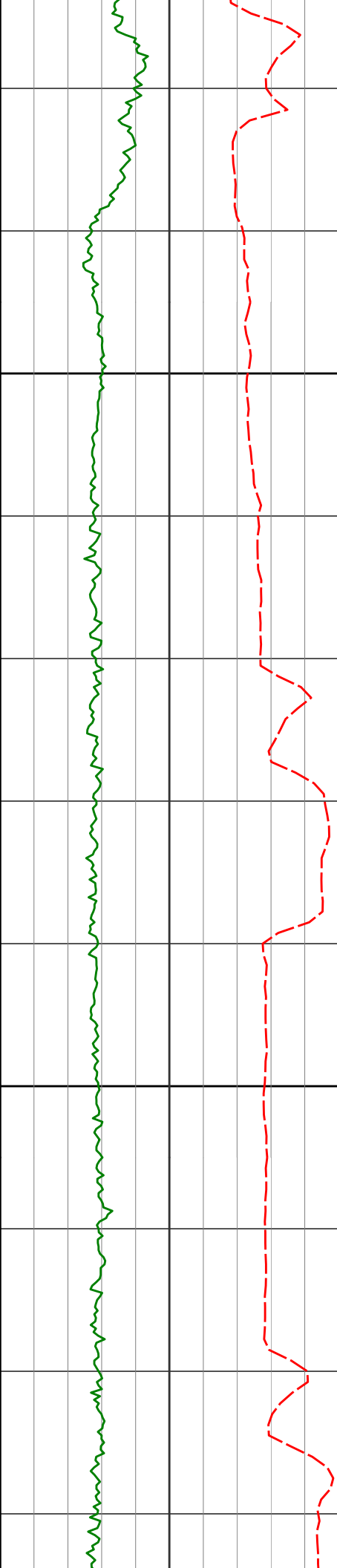
225.47°F

226.08°F

226.08°F

226.08°F

226.37°F



10579'

88.71°

267.05°

6947.90'

3697.68'

10600

10674'

90.55°

267.98°

6948.51'

3792.66'

10700

228.46°F

226.09°F

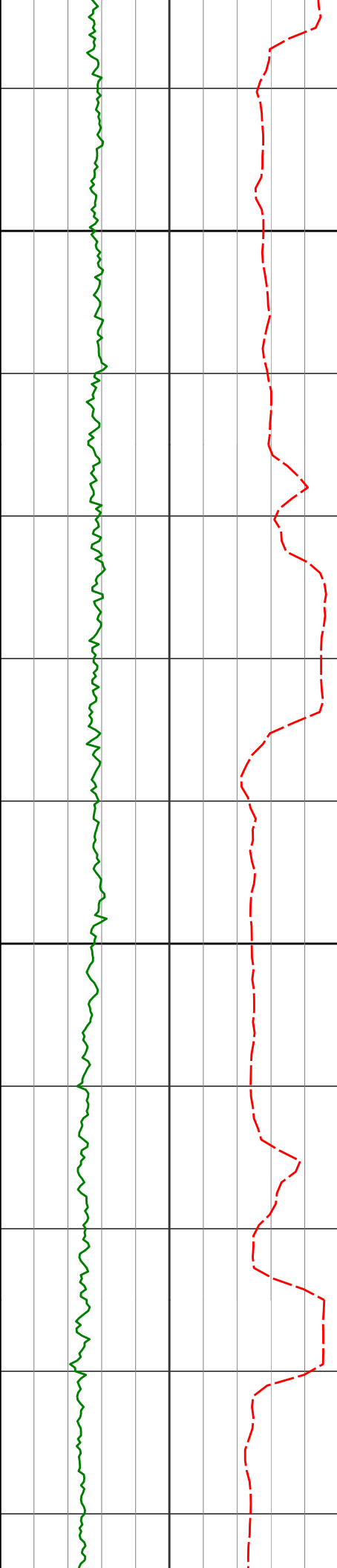
223.76°F

225.76°F

224.22°F

222.51°F

223.41°F



10800

10900

10769'	91.79°	270.31°	6946.57'	3887.52'	223.57°F
10864'	90.18°	270.86°	6944.94'	3982.25'	225.75°F
10958'	90.37°	271.30°	6944.49'	4075.93'	225.90°F

221.64°F

224.39°F

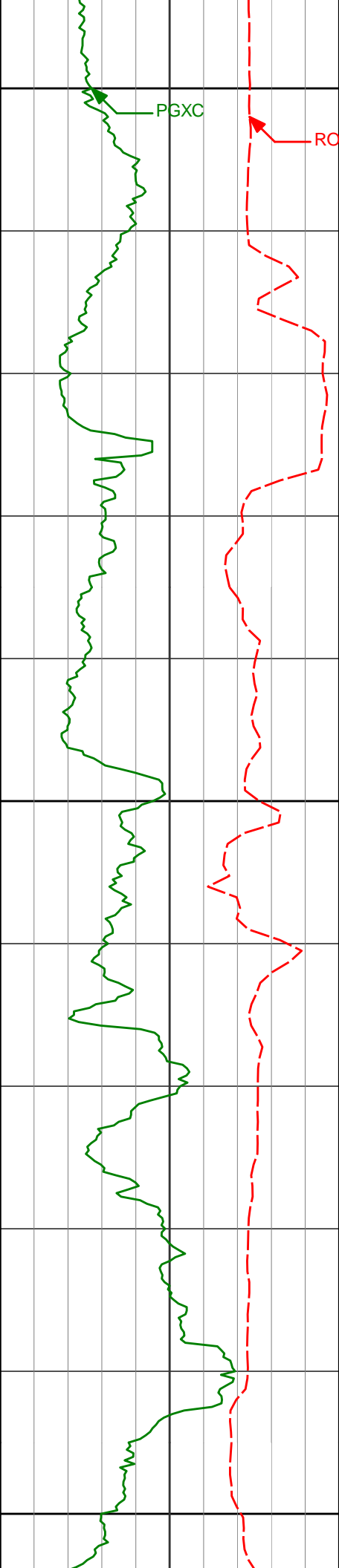
225.75°F

224.24°F

225.73°F

225.90°F

224.38°F



11000

PGXC

ROPI

225.50°F

226.08°F

11053'

88.21°

269.83° 6945.67'

4170.66'

227.54°F

11100

228.74°F

230.41°F

11147'

86.86°

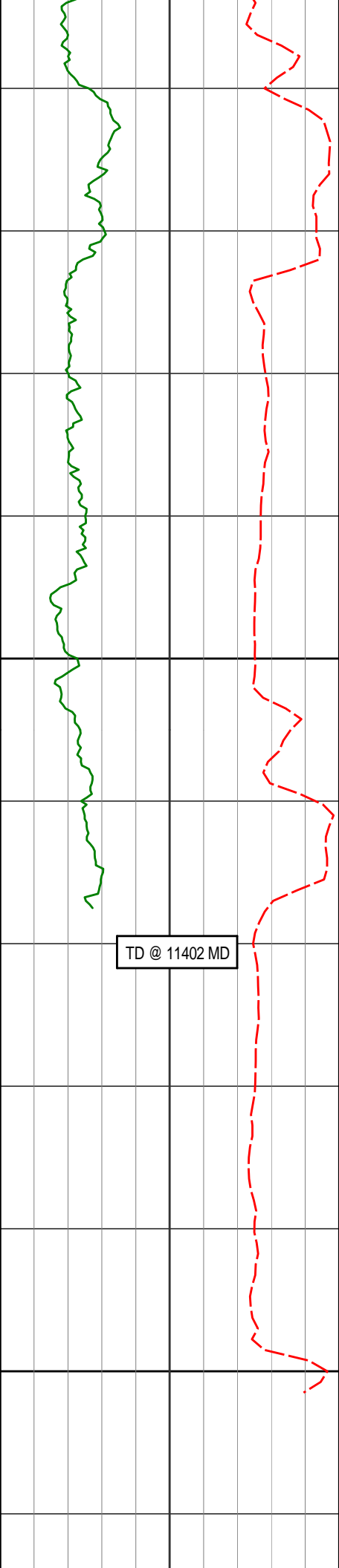
269.13° 6949.71'

4264.44'

228.05°F

227.82°F

11200



11300

11400

11242'

11337'

11402'

88.27°

90.92°

90.92°

269.43°

269.57°

269.57°

6953.74'

6954.42'

6953.37'

4359.23'

4454.08'

4518.97'

229.71°F

228.97°F

228.58°F

228.99°F

[illegible]**HALLIBURTON**

DIRECTIONAL SURVEY REPORT

**Noble
Reliance E23-63-1HNC
Wattenberg
Weld
USA
CA-XX-09021 39045
Tied in @ Surface
First two Survey's from 3rd party source (Multi Shot EMS)
Final survey projected to bit.**

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
286.00	1.20	93.90	285.98	0.20 S	2.99 E	-2.97	0.42
592.00	0.20	108.10	591.95	0.59 S	6.69 E	-6.64	0.33
917.00	1.18	148.60	916.93	3.62 S	8.98 E	-8.73	0.32
1009.00	1.23	148.60	1008.91	5.27 S	9.98 E	-9.63	0.05
1101.00	0.25	96.10	1100.90	6.14 S	10.70 E	-10.29	1.19
1193.00	0.58	88.76	1192.89	6.15 S	11.36 E	-10.95	0.36
1284.00	0.47	78.00	1283.89	6.06 S	12.19 E	-11.78	0.16
1377.00	0.67	52.75	1376.89	5.65 S	12.99 E	-12.61	0.34
1468.00	0.69	80.11	1467.88	5.23 S	13.96 E	-13.60	0.35
1561.00	2.15	138.38	1560.85	6.44 S	15.67 E	-15.23	2.02
1654.00	3.71	143.70	1653.73	10.17 S	18.61 E	-17.93	1.70
1746.00	5.46	134.73	1745.43	15.65 S	23.48 E	-22.45	2.05
1838.00	7.82	144.28	1836.81	23.82 S	30.24 E	-28.69	2.82
1930.00	9.87	138.82	1927.71	34.83 S	39.09 E	-36.82	2.41
2021.00	11.80	140.36	2017.09	47.87 S	50.16 E	-47.05	2.14
2113.00	13.27	142.07	2106.89	63.44 S	62.66 E	-58.54	1.65
2205.00	12.52	138.08	2196.57	79.19 S	75.81 E	-70.67	1.26
2300.00	12.80	139.02	2289.26	94.80 S	89.59 E	-83.44	0.37
2394.00	12.87	141.70	2380.92	110.87 S	102.91 E	-95.72	0.64
2489.00	13.34	142.12	2473.44	127.83 S	116.19 E	-107.91	0.50
2583.00	12.46	139.86	2565.07	144.14 S	129.39 E	-120.06	1.08
2678.00	11.77	139.55	2657.95	159.35 S	142.28 E	-131.97	0.73
2773.00	11.51	139.07	2751.00	173.88 S	154.78 E	-143.52	0.29
2868.00	11.96	138.64	2844.01	188.43 S	167.49 E	-155.30	0.48
2962.00	9.45	140.02	2936.37	201.66 S	178.89 E	-165.84	2.68
3057.00	7.52	143.70	3030.33	212.64 S	187.58 E	-173.82	2.11
3152.00	5.57	141.75	3124.70	221.28 S	194.12 E	-179.80	2.07
3247.00	2.63	139.95	3219.45	226.57 S	198.37 E	-183.71	3.10
3342.00	3.51	154.00	3314.31	230.85 S	201.05 E	-186.12	1.21
3436.00	1.36	138.52	3408.22	234.27 S	203.05 E	-187.90	2.37
3531.00	0.92	307.64	3503.22	234.65 S	203.19 E	-188.02	2.39
3626.00	1.23	292.60	3598.20	233.79 S	201.65 E	-186.53	0.44
3720.00	1.60	287.32	3692.17	233.01 S	199.46 E	-184.40	0.42
3815.00	1.05	292.26	3787.14	232.29 S	197.39 E	-182.38	0.59
3910.00	0.81	291.88	3882.13	231.71 S	195.96 E	-180.99	0.25

4005.00	0.88	292.78	3977.12	231.18 S	194.67 E	-179.73	0.07
4100.00	1.02	305.83	4072.11	230.40 S	193.31 E	-178.42	0.27
4289.00	1.69	309.06	4261.05	227.66 S	189.78 E	-175.07	0.36
4384.00	1.11	293.90	4356.03	226.40 S	187.85 E	-173.23	0.72
4479.00	0.42	1.58	4451.02	225.68 S	187.02 E	-172.44	1.08
4574.00	0.71	346.44	4546.01	224.76 S	186.89 E	-172.37	0.34
4764.00	0.51	134.20	4736.01	224.21 S	187.22 E	-172.73	0.62
4859.00	0.33	143.92	4831.01	224.72 S	187.69 E	-173.17	0.20
4953.00	0.36	146.98	4925.01	225.19 S	188.01 E	-173.46	0.04
5048.00	0.37	132.00	5020.00	225.64 S	188.40 E	-173.82	0.10
5237.00	0.09	43.32	5209.00	225.94 S	188.95 E	-174.35	0.20
5332.00	0.24	181.19	5304.00	226.09 S	189.00 E	-174.39	0.33
5427.00	0.24	130.10	5399.00	226.42 S	189.15 E	-174.52	0.22
5522.00	0.65	55.57	5494.00	226.24 S	189.75 E	-175.12	0.66
5616.00	0.17	73.07	5588.00	225.90 S	190.32 E	-175.72	0.52
5711.00	0.06	323.28	5683.00	225.82 S	190.42 E	-175.83	0.21
5806.00	0.57	154.71	5777.99	226.20 S	190.60 E	-175.98	0.66
5901.00	1.14	108.69	5872.98	226.93 S	191.69 E	-177.02	0.89
5996.00	0.71	163.58	5967.97	227.80 S	192.75 E	-178.03	0.98
6090.00	0.60	115.53	6061.97	228.57 S	193.36 E	-178.59	0.58
6185.00	0.96	87.72	6156.96	228.75 S	194.61 E	-179.82	0.54
6280.00	0.65	12.59	6251.95	228.20 S	195.52 E	-180.76	1.07
6328.00	2.43	289.24	6299.94	227.60 S	194.62 E	-179.90	5.09
6375.00	4.54	271.62	6346.85	227.22 S	191.82 E	-177.13	4.98
6423.00	7.53	273.57	6394.58	226.97 S	186.78 E	-172.12	6.24
6469.00	9.69	275.75	6440.06	226.39 S	179.92 E	-165.31	4.75
6517.00	12.70	274.98	6487.14	225.53 S	170.64 E	-156.10	6.28
6563.00	14.86	276.55	6531.81	224.42 S	159.74 E	-145.29	4.77
6611.00	19.85	273.30	6577.61	223.24 S	145.48 E	-131.14	10.59
6658.00	26.39	274.77	6620.81	221.91 S	127.09 E	-112.86	13.97
6706.00	35.95	276.50	6661.84	219.43 S	102.40 E	-88.38	20.00
6753.00	42.48	274.54	6698.23	216.60 S	72.84 E	-59.05	14.14
6801.00	47.53	274.04	6732.16	214.07 S	39.00 E	-25.44	10.55
6847.00	51.76	270.70	6761.95	212.66 S	3.99 E	9.41	10.73
6895.00	55.37	268.53	6790.45	212.93 S	34.62 W	47.95	8.35
6942.00	59.40	267.08	6815.78	214.46 S	74.17 W	87.52	8.96
6990.00	62.39	267.32	6839.12	216.51 S	116.05 W	129.45	6.24
7037.00	65.08	268.05	6859.92	218.21 S	158.16 W	171.58	5.89
7085.00	65.78	267.90	6879.88	219.75 S	201.78 W	215.22	1.49
7132.00	70.31	268.07	6897.45	221.28 S	245.34 W	258.78	9.64
7180.00	76.38	268.26	6911.20	222.75 S	291.28 W	304.73	12.65
7230.00	82.68	267.26	6920.28	224.68 S	340.38 W	353.85	12.75
7360.00	89.51	268.18	6929.13	229.83 S	469.90 W	483.44	5.30
7455.00	90.22	269.36	6929.35	231.87 S	564.88 W	578.36	1.45
7549.00	89.97	268.50	6929.20	233.62 S	658.86 W	672.26	0.95
7643.00	90.65	268.42	6928.69	236.15 S	752.82 W	766.20	0.73
7738.00	92.74	267.69	6925.88	239.37 S	847.72 W	861.11	2.33
7832.00	90.28	268.31	6923.40	242.65 S	941.62 W	955.03	2.70
7927.00	89.17	269.64	6923.86	244.35 S	1036.60 W	1049.93	1.82
8021.00	88.12	268.93	6926.08	245.52 S	1130.57 W	1143.78	1.35
8116.00	87.44	268.90	6929.76	247.32 S	1225.48 W	1238.62	0.72
8210.00	87.50	269.87	6933.91	248.33 S	1319.38 W	1332.40	1.03
8305.00	88.61	270.45	6937.13	248.06 S	1414.32 W	1427.14	1.32
8495.00	90.43	270.99	6938.72	245.68 S	1604.29 W	1616.58	1.00
8589.00	90.06	270.57	6938.32	244.40 S	1698.28 W	1710.30	0.60
8684.00	89.69	270.22	6938.53	243.74 S	1793.28 W	1805.07	0.54
8779.00	89.48	269.78	6939.22	243.74 S	1888.28 W	1899.88	0.51
8873.00	90.03	270.77	6939.62	243.29 S	1982.27 W	1993.66	1.20
8968.00	89.32	270.16	6940.16	242.52 S	2077.27 W	2088.42	0.99
9063.00	89.29	269.17	6941.31	243.07 S	2172.26 W	2183.25	1.04
9158.00	89.94	269.37	6941.95	244.29 S	2267.25 W	2278.13	0.72
9253.00	89.57	269.75	6942.36	245.01 S	2362.24 W	2372.98	0.56
9348.00	89.26	270.26	6943.33	245.01 S	2457.24 W	2467.79	0.63
9443.00	88.89	270.46	6944.86	244.41 S	2552.22 W	2562.55	0.44
9537.00	88.67	269.94	6946.86	244.08 S	2646.20 W	2656.32	0.60
9632.00	88.46	268.36	6949.24	245.49 S	2741.16 W	2751.18	1.68
9727.00	89.11	266.80	6951.25	249.50 S	2836.05 W	2846.13	1.78
9821.00	90.43	266.24	6951.63	255.21 S	2929.87 W	2940.13	1.53
9916.00	90.22	266.26	6951.09	261.42 S	3024.67 W	3035.13	0.22
10011.00	90.52	267.80	6950.48	266.34 S	3119.54 W	3130.12	1.65
10106.00	91.36	269.00	6948.92	268.99 S	3214.48 W	3225.04	1.54
10200.00	91.11	269.05	6946.90	270.59 S	3308.45 W	3318.92	0.27
10295.00	90.37	269.01	6945.67	272.20 S	3403.43 W	3413.81	0.78
10390.00	89.82	268.11	6945.51	274.59 S	3498.39 W	3508.74	1.11
10484.00	89.88	267.57	6943.84	273.19 S	3588.38 W	3688.74	0.22

10484.00	89.29	267.57	6946.24	278.13 S	3592.32 W	3602.71	0.80
10579.00	88.71	267.05	6947.90	282.59 S	3687.20 W	3697.68	0.82
10674.00	90.55	267.98	6948.51	286.71 S	3782.11 W	3792.66	2.17
10769.00	91.79	270.31	6946.57	288.13 S	3877.07 W	3887.52	2.78
10864.00	90.18	270.86	6944.94	287.16 S	3972.05 W	3982.25	1.79
10958.00	90.37	271.30	6944.49	285.38 S	4066.03 W	4075.93	0.51
11053.00	88.21	269.83	6945.67	284.45 S	4161.01 W	4170.66	2.75
11147.00	86.86	269.13	6949.71	285.30 S	4254.91 W	4264.44	1.62
11242.00	88.27	269.43	6953.74	286.49 S	4349.82 W	4359.23	1.52
11337.00	90.92	269.57	6954.42	287.32 S	4444.80 W	4454.08	2.79
11402.00	90.92	269.57	6953.37	287.81 S	4509.79 W	4518.97	0.00

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 266.39 DEGREES (GRID)
A TOTAL CORRECTION OF 7.60 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11402.00 FEET
IS 4518.97 FEET ALONG 266.35 DEGREES (GRID)**

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