



1 : 600 / 1 : 240

WELL INFORMATION					
MWD Run Number	100	200			
Date run completed	20-Dec-15	22-Dec-15			
Rig Bit Number	0100	0200			
Bit Size (in)	8.750	6.125			
Tool Nominal OD (in)	4.750	4.750			
Log Start Depth (MD, ft)	641.00	6,284.00			
Log End Depth (MD, ft)	6,284.00	10,315.00			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	18-Dec-15 15:30	21-Dec-15 05:30			
Drill/Wipe End Date and Time	20-Dec-15 04:45	22-Dec-15 00:30			
Min Inc (deg) @ Depth (MD, ft)	0.06 @ 1,682.00	88.30 @ 7,947.00			
Max Inc (deg) @ Depth (MD, ft)	90.00 @ 6,284.00	92.96 @ 7,003.00			
Bit TFA(in2) / Bit Type	0.98 / PDC	0.98 / PDC			
Flow Rate (gpm)	578.37	320.54			
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A	N/A / N/A			
Fluid Type	Native/Spud Mud	Native/Spud Mud			
Density (ppg) / Viscosity (spqt)	9.80 / 42.00	10.35 / 37.00			
Filtrate CL (ppm)	1,400.00	1,400.00			
pH / Fluid Loss (mptm)	9.10 / 6	9.60 / 7			
PV (cP) / YP (lhf2)	13 / 13.00	13 / 10.00			
% Solids / % Sand	5.7 / 0.15	9.70 / 0.15			
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A			
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Max Tool Temp (degF) @ Depth (MD, ft)	458.45 / PDCM	320.54 / PDCM			

Max Tool Temp (degF) / Source	158.47 / PCM	220.77 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A			
Lead MWD Engineer	Brian Neu	Brian Neu			
Customer Representative	Cliff Kessler	Cliff Kessler			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.93	5.93			
Sub Serial Number	11404299	12310753			
Insert Serial Number	11145577	11400950			
Date and Time Initialized	18-Dec-15 01:52	20-Dec-15 18:05			
Date and Time Read	20-Dec-15 09:44	22-Dec-15 06:52			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	56.00	67.00			
Software Version	6.33	6.33			
Sub Serial Number	11404299	12310753			
Sonde Serial Number	11902176	12174582			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	238.40	285.30			

Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	49.13	60.19			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	11404299	12310753			
Insert/Sonde Serial Number	11681003	11579843			

REMARKS

1. All depths are calibrated to driller's pipe tally and are measured depths 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 stated.

4. Environmental parameters used in gamma and resistance processing:

Hole Size:

8.750" 644ft -6452ft
6.125" 6452ft-10680ft

Mud Density:

8.7-10.6ppg

5. The following smoothing parameters have been applied to the data:

1:600 (2"):

Interval: 1.0 ft

Coercion Distance: 3.0 ft (ROPA)

Interval: 1.0 ft

Coercion Distance: 3.0 ft (Gamma Ray)

1:240 (5")

Interval: 0.5 ft

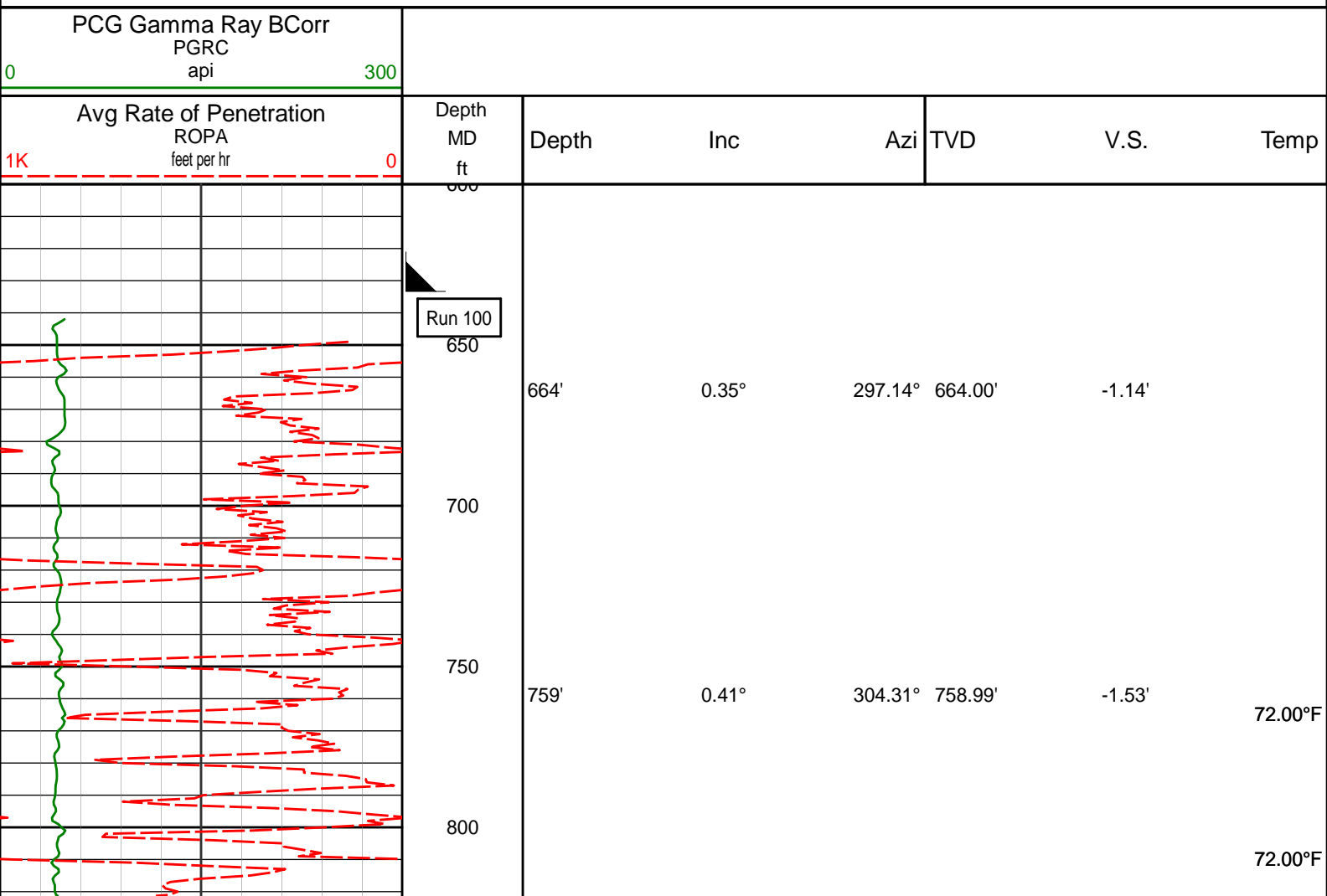
Coercion Distance: 1.2 ft (ROPA)

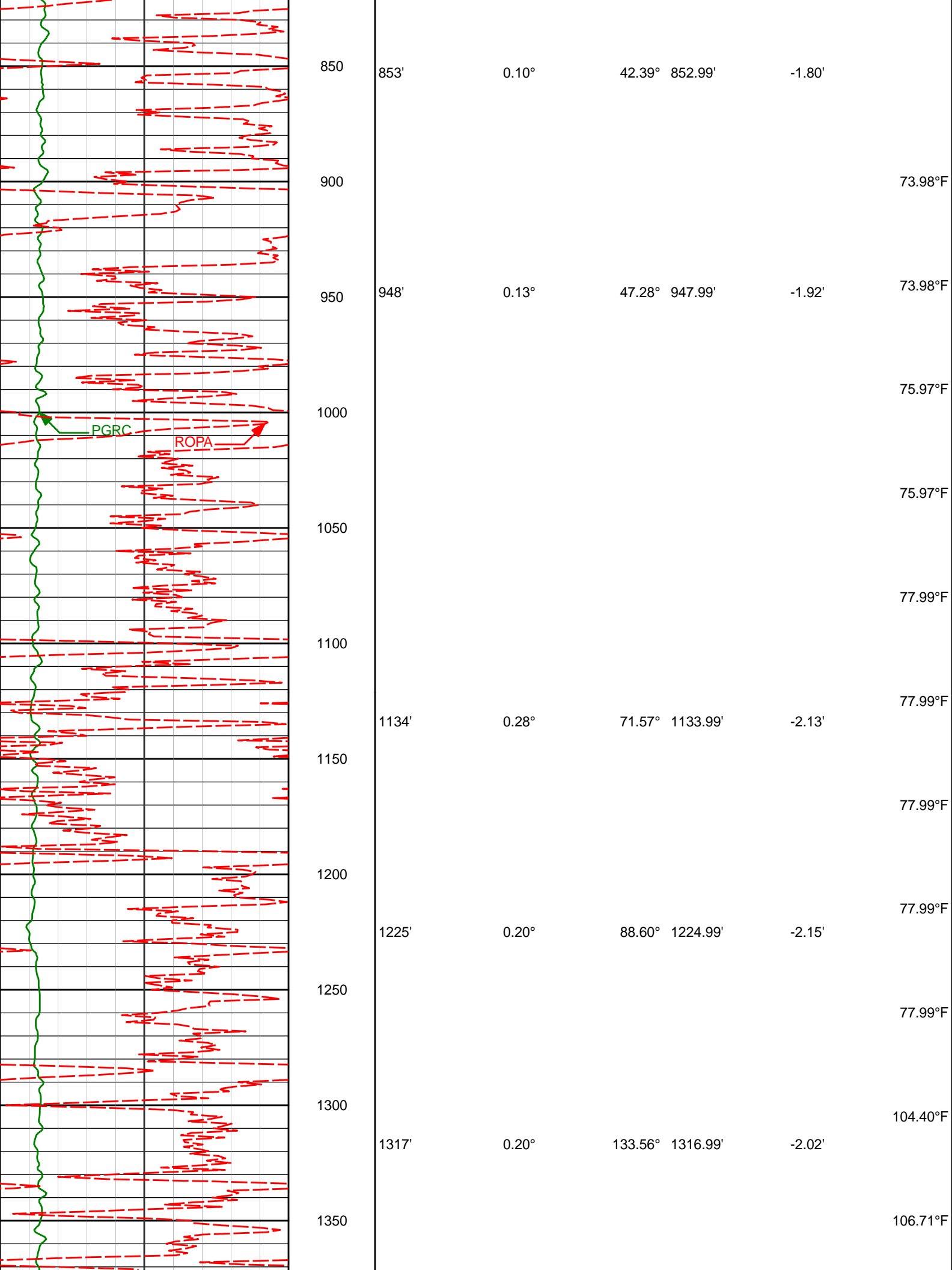
Coercion Distance: 1.2 ft (ROPA)
Interval: 0.5 ft
Coercion Distance: 0.6 ft (Gamma Ray)

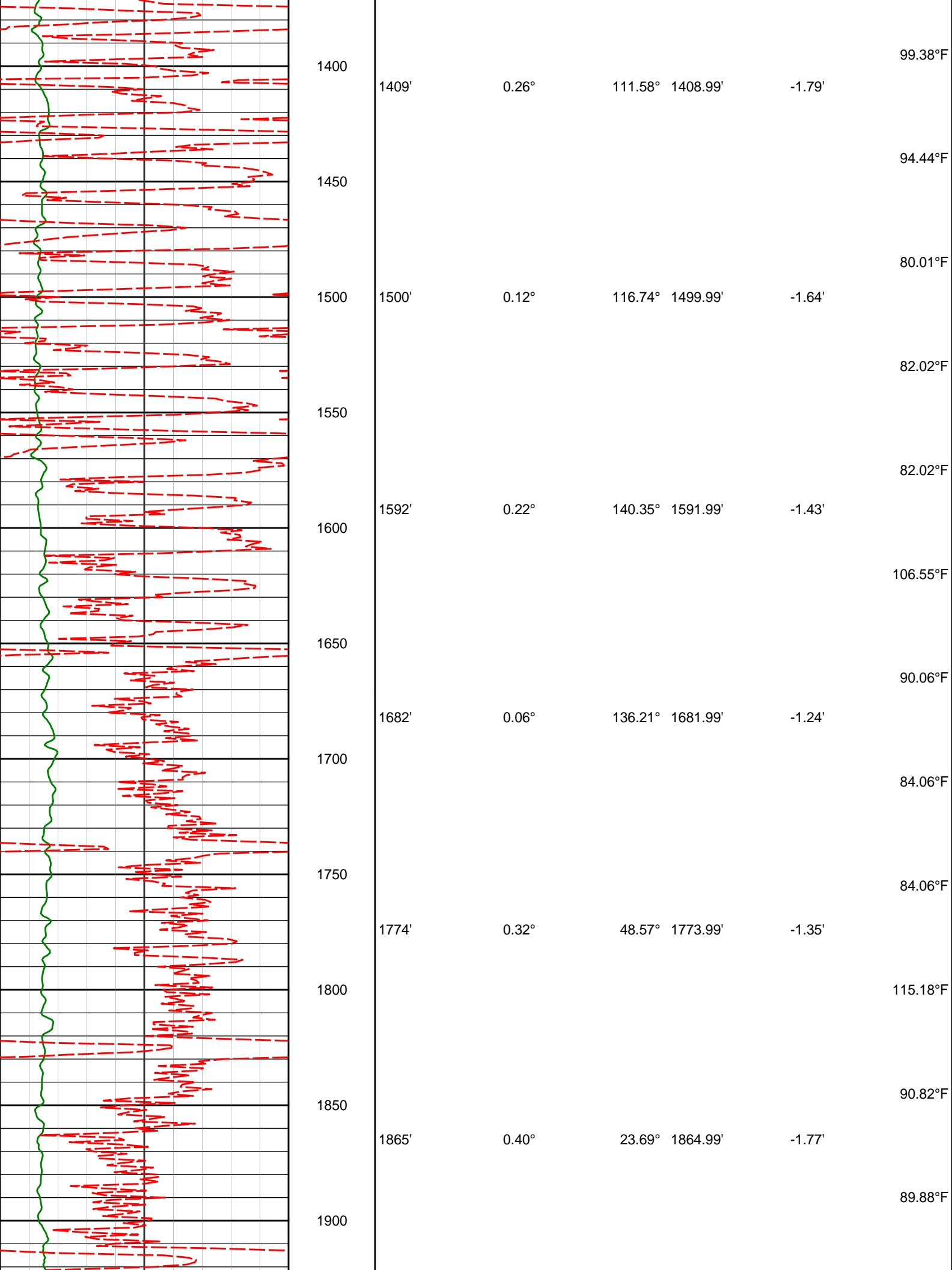
WARRANTY

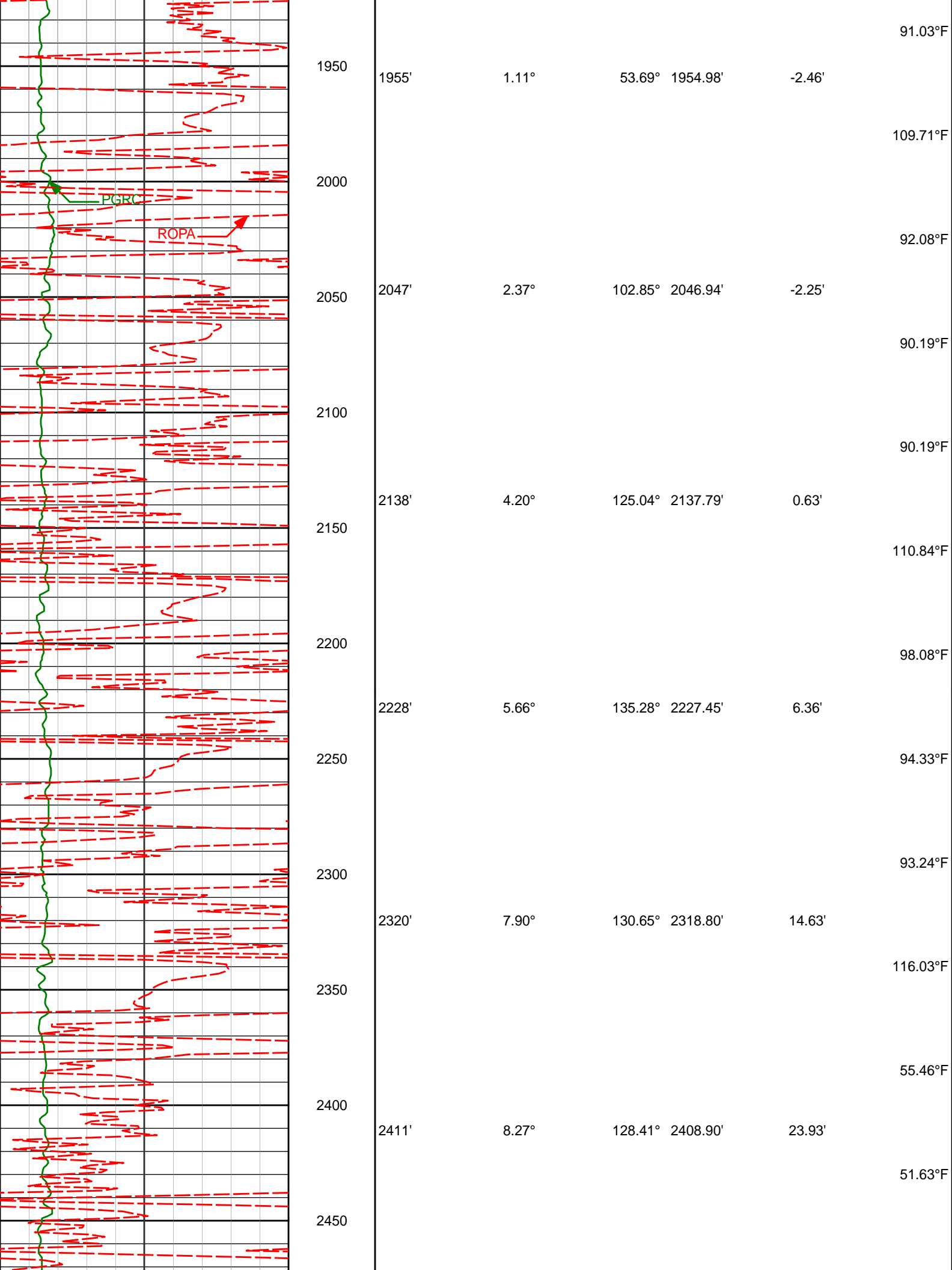
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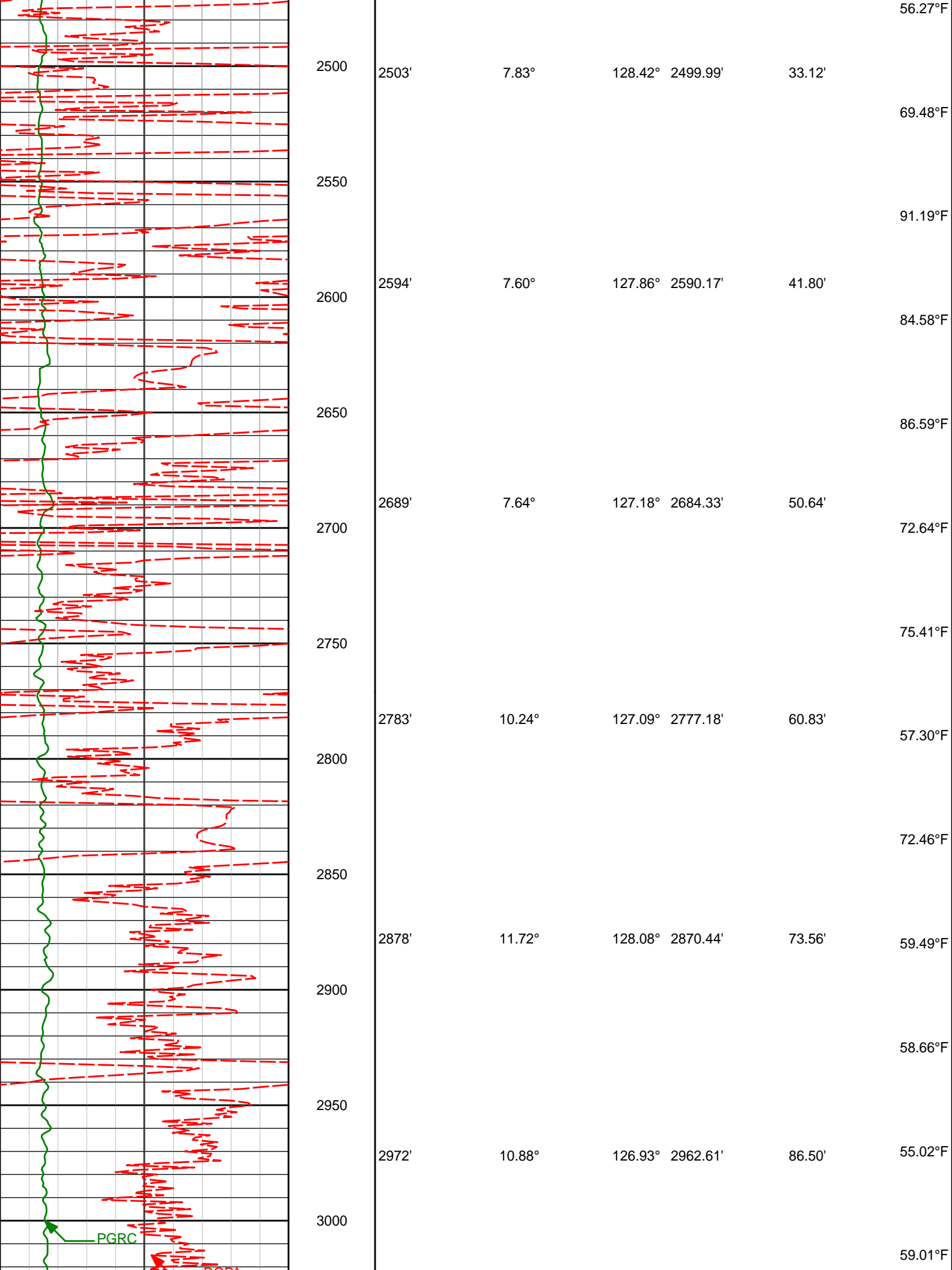
MD Detail 1:600 Scale

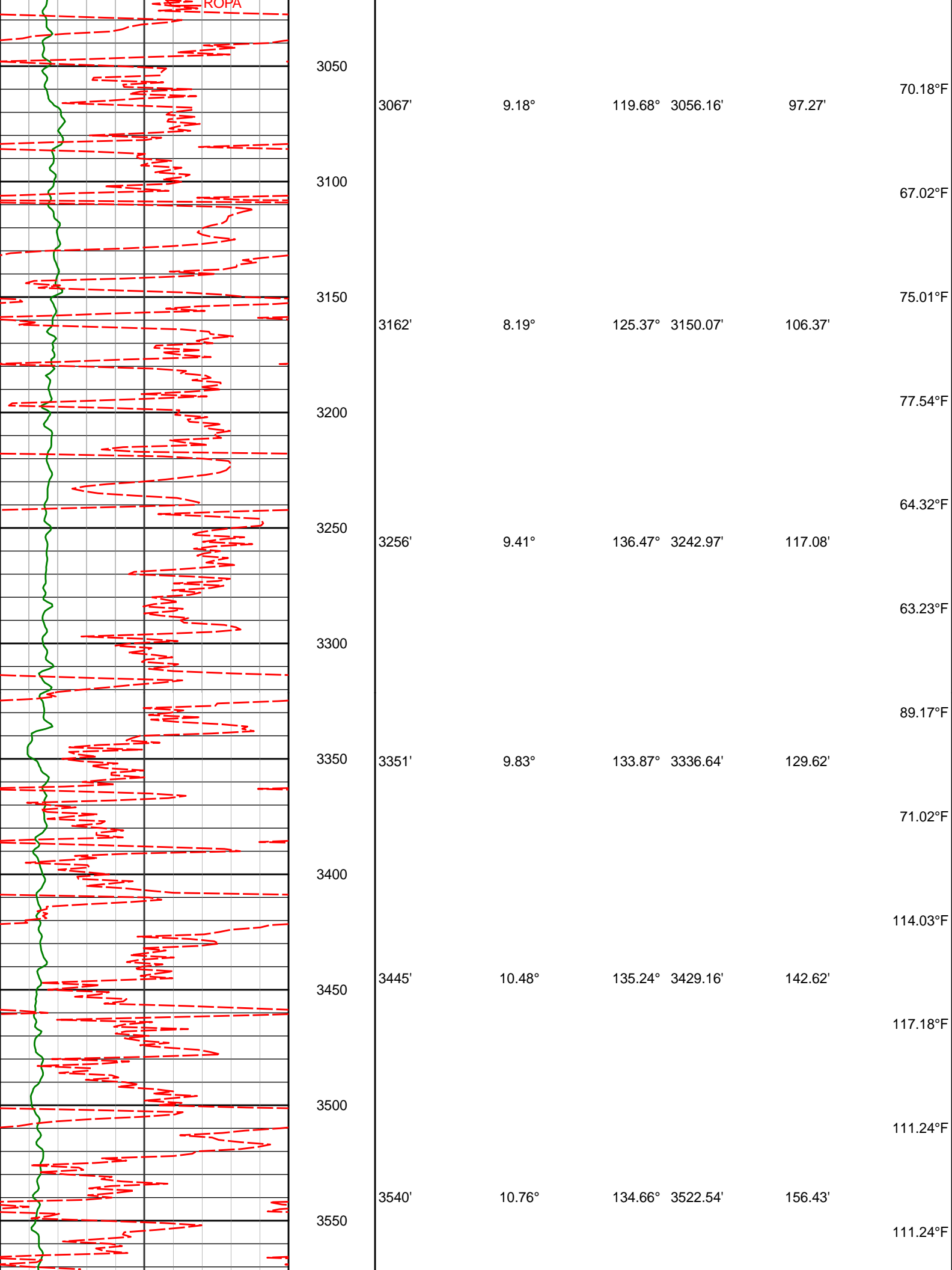


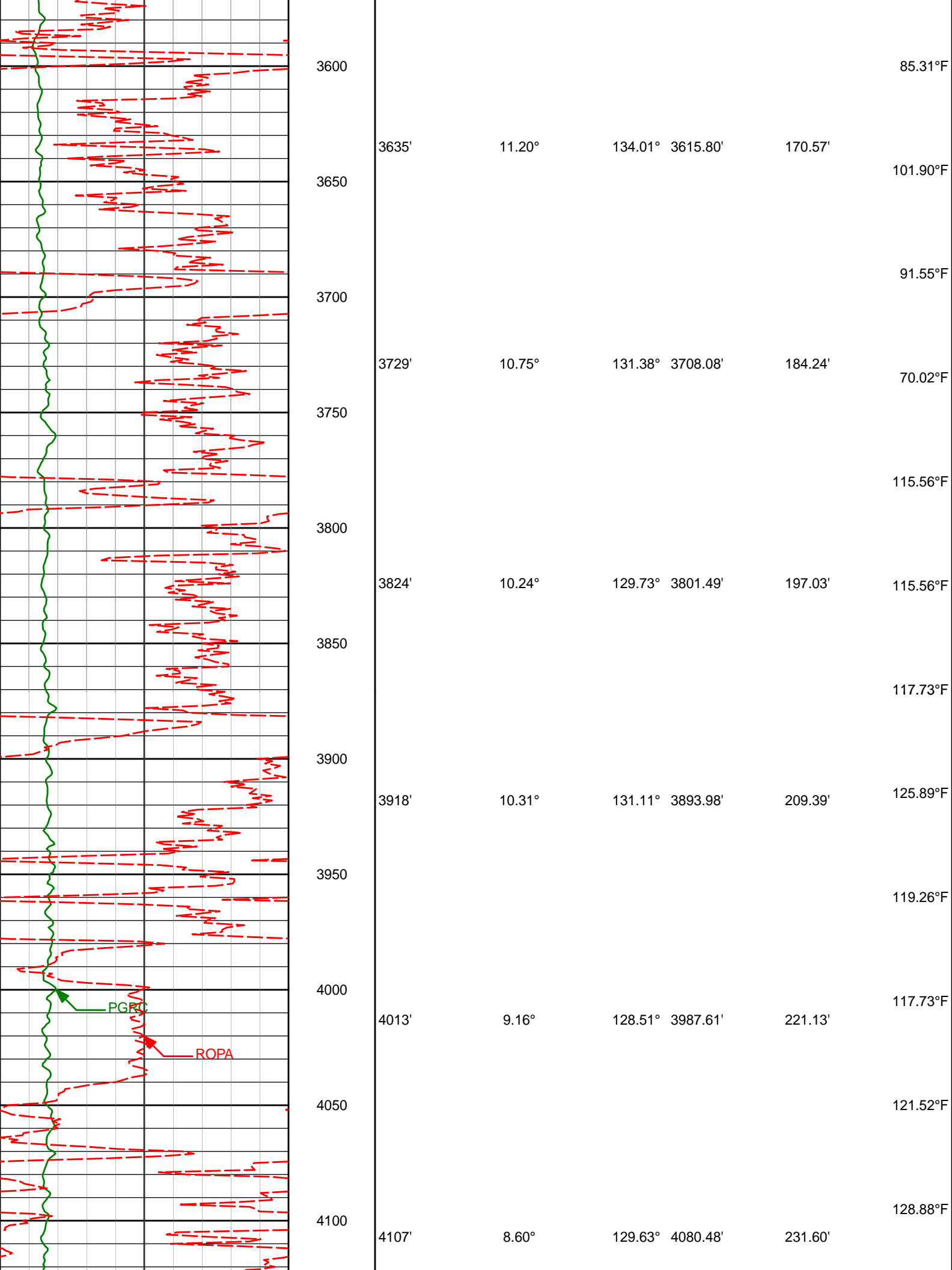


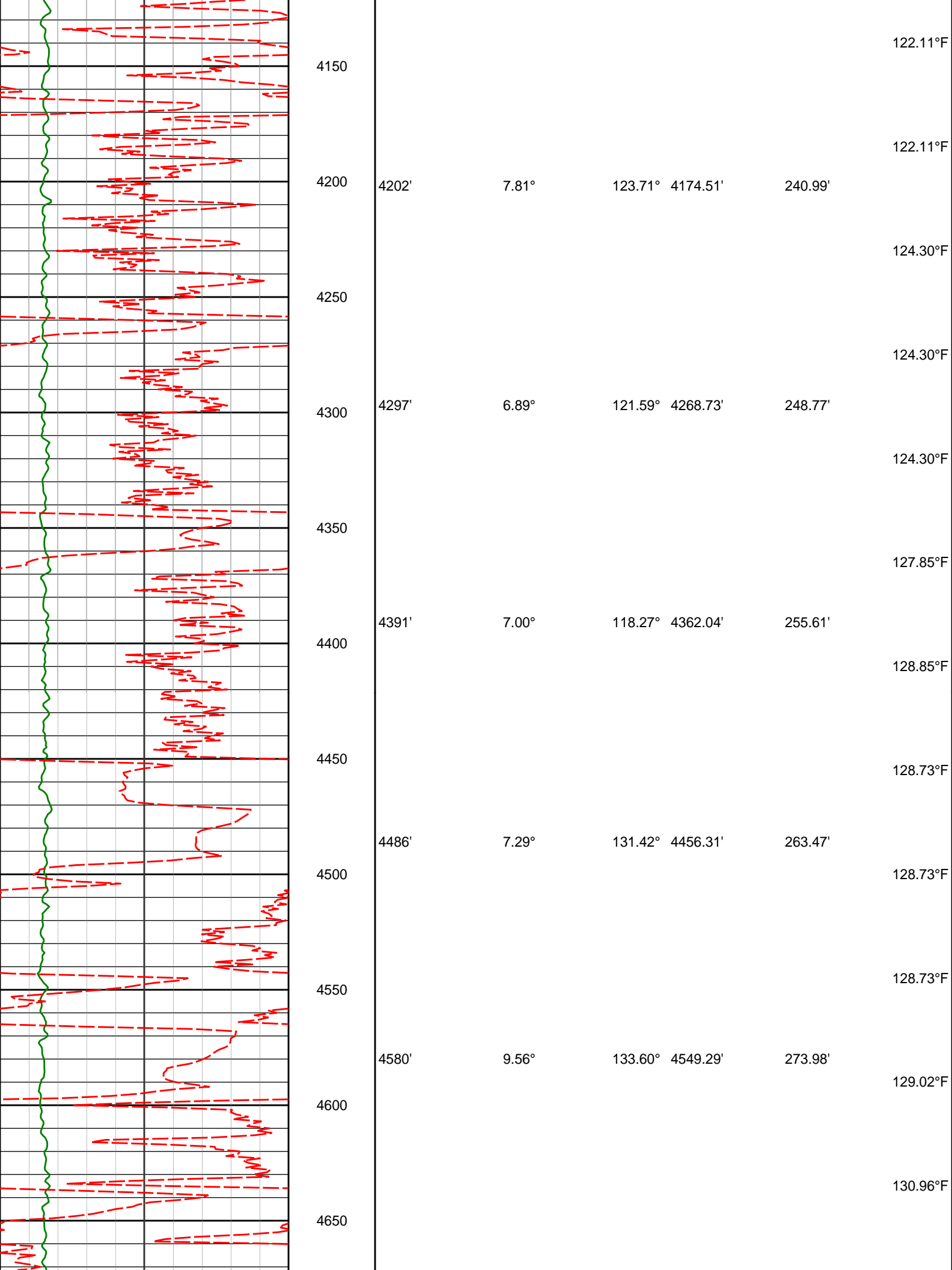


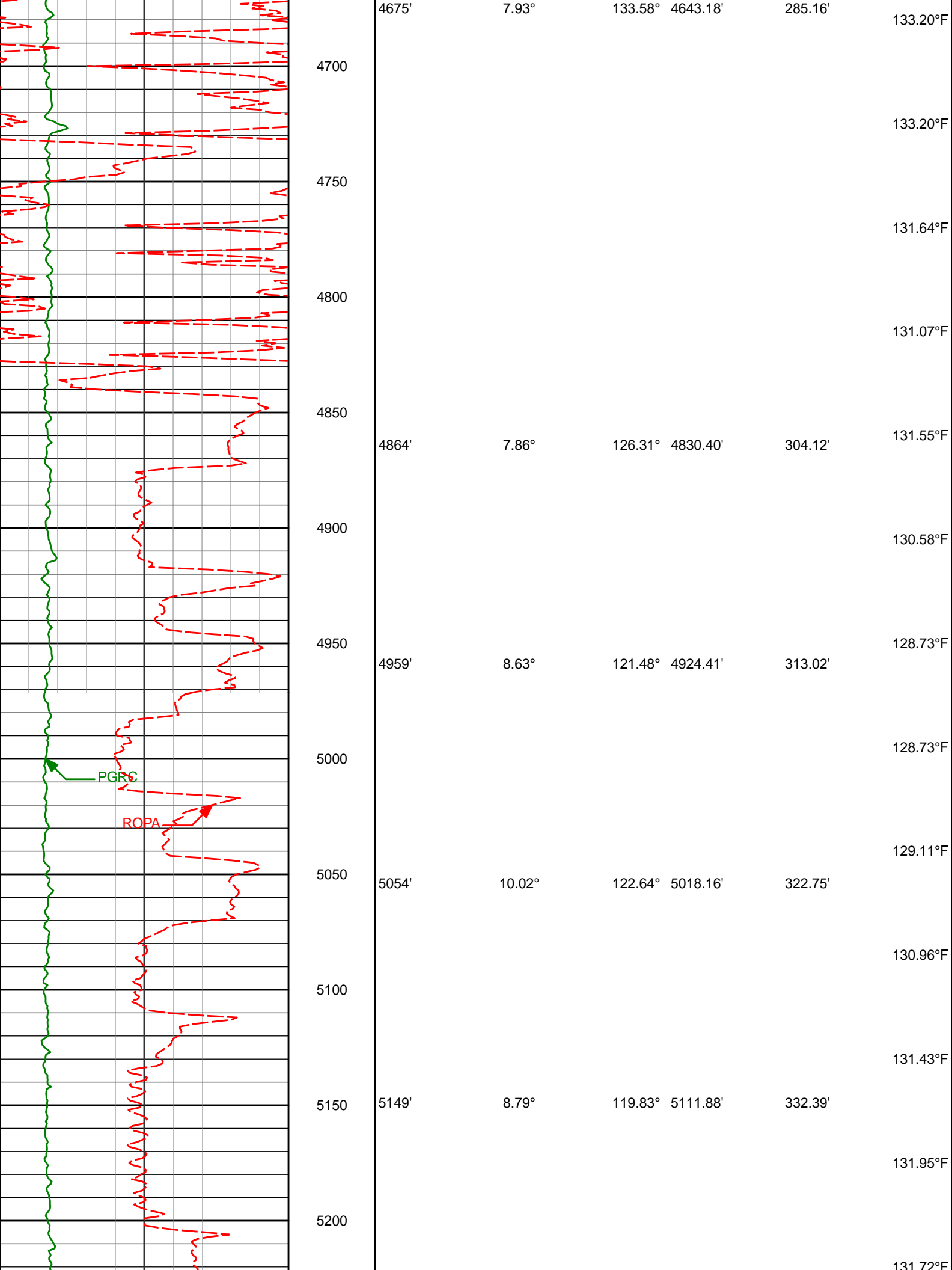


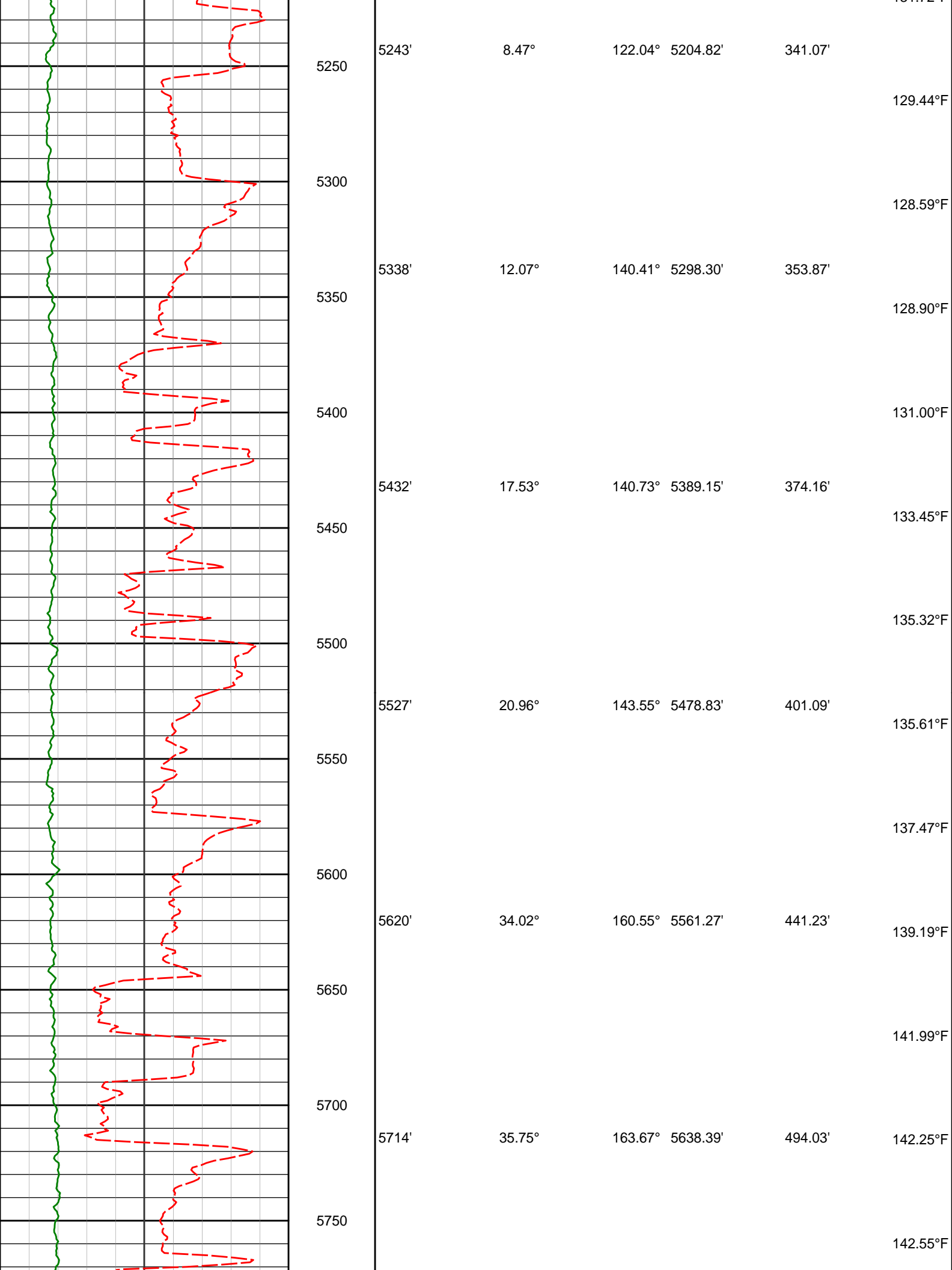


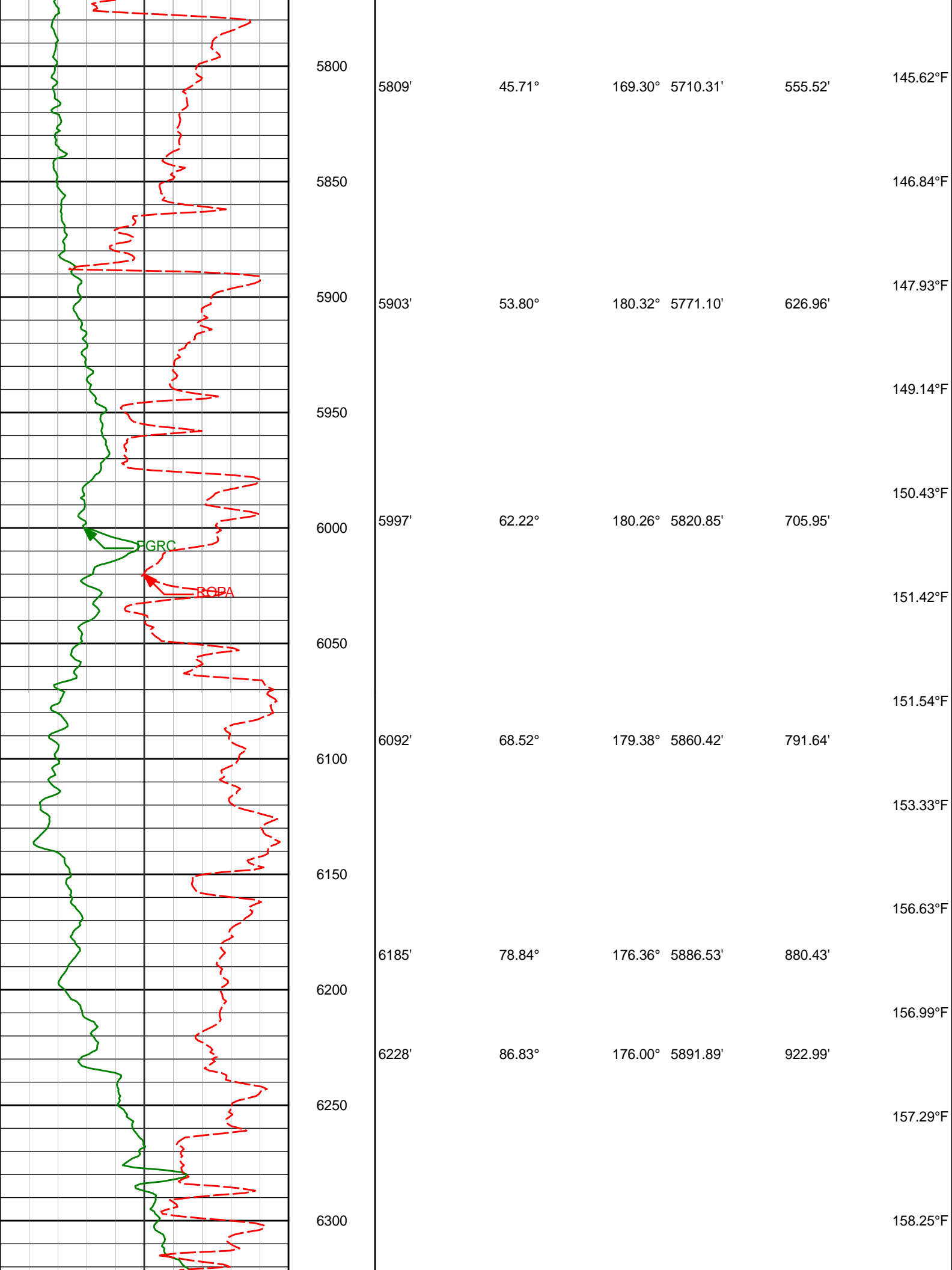


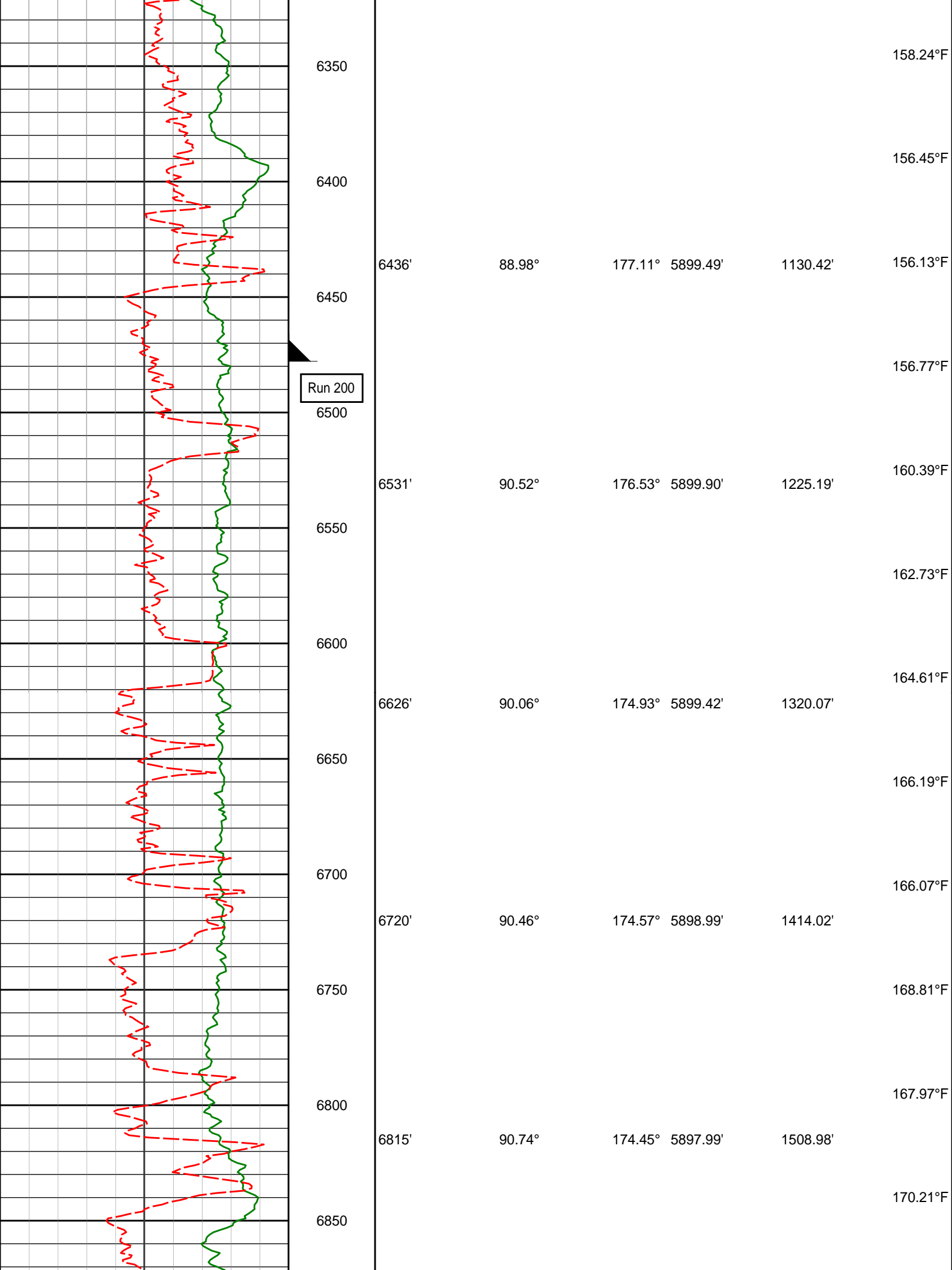


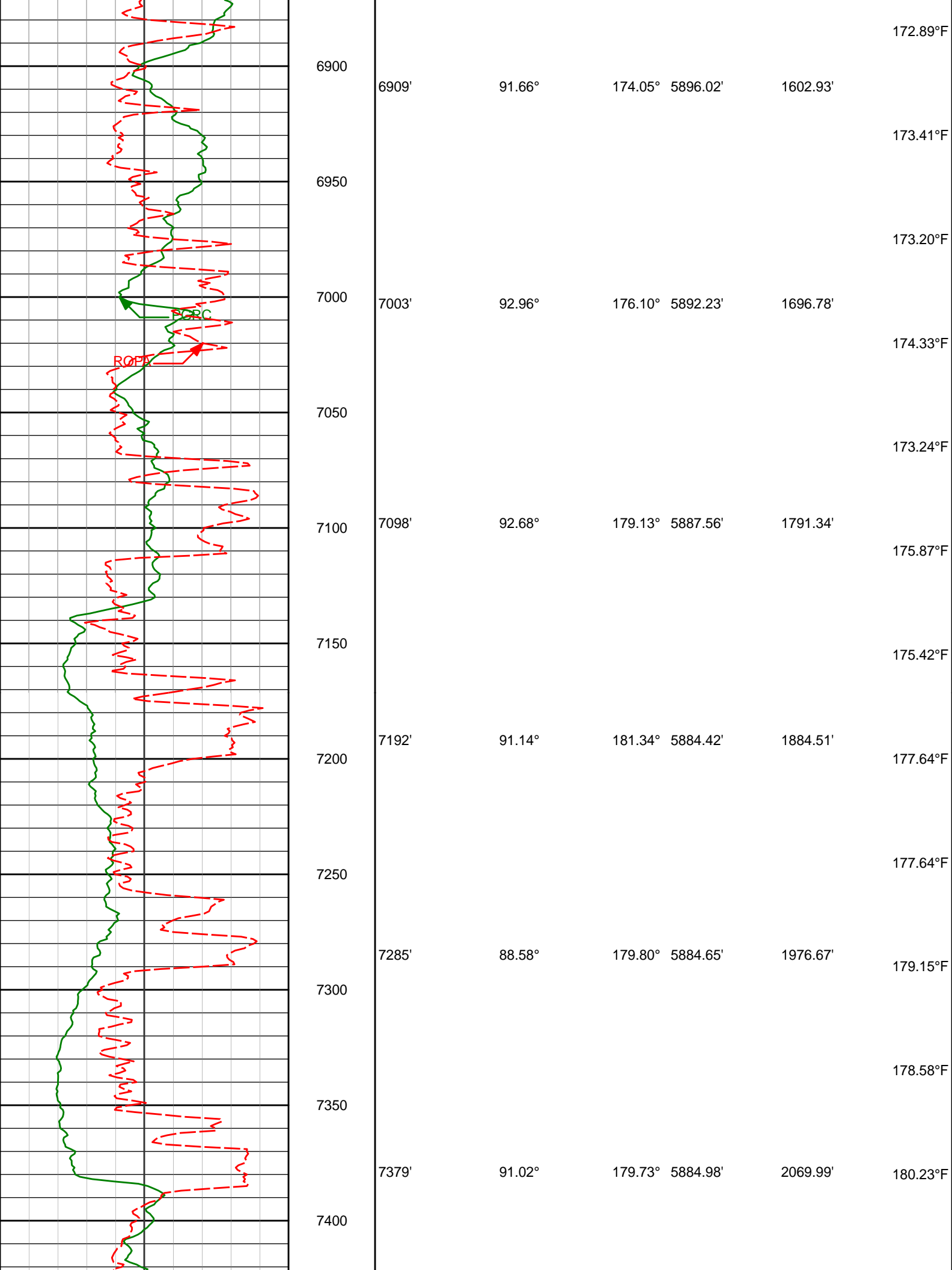


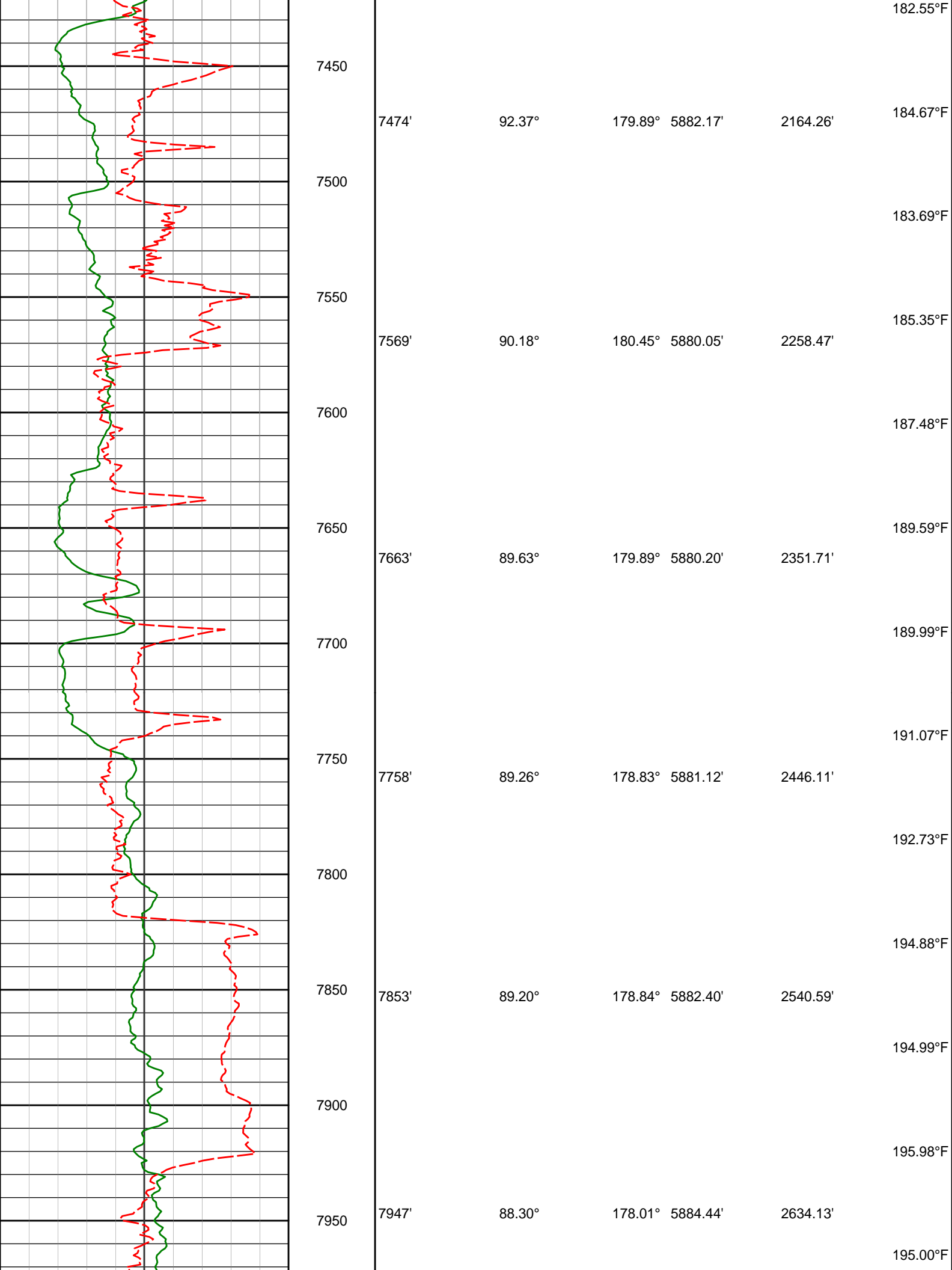


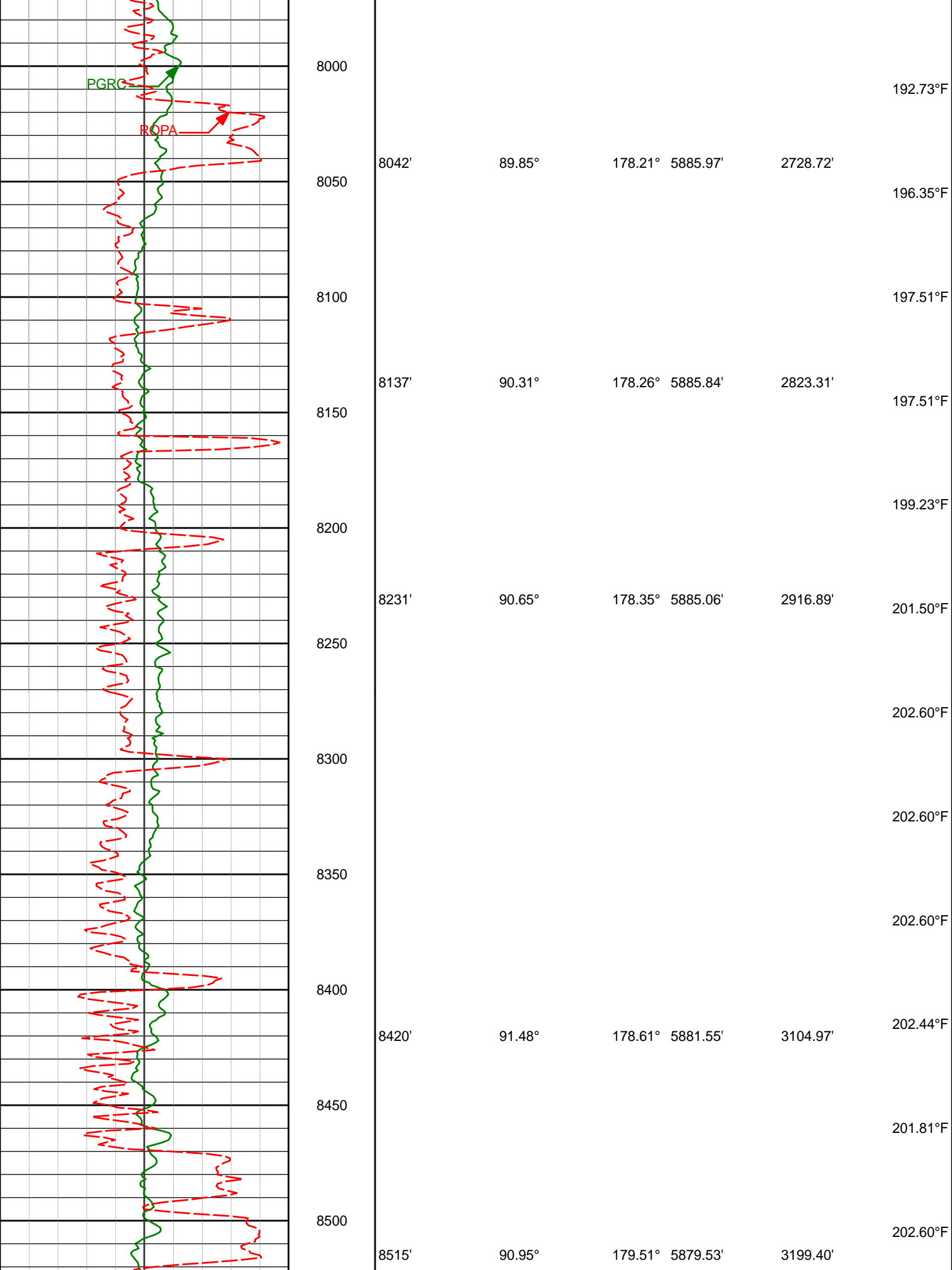


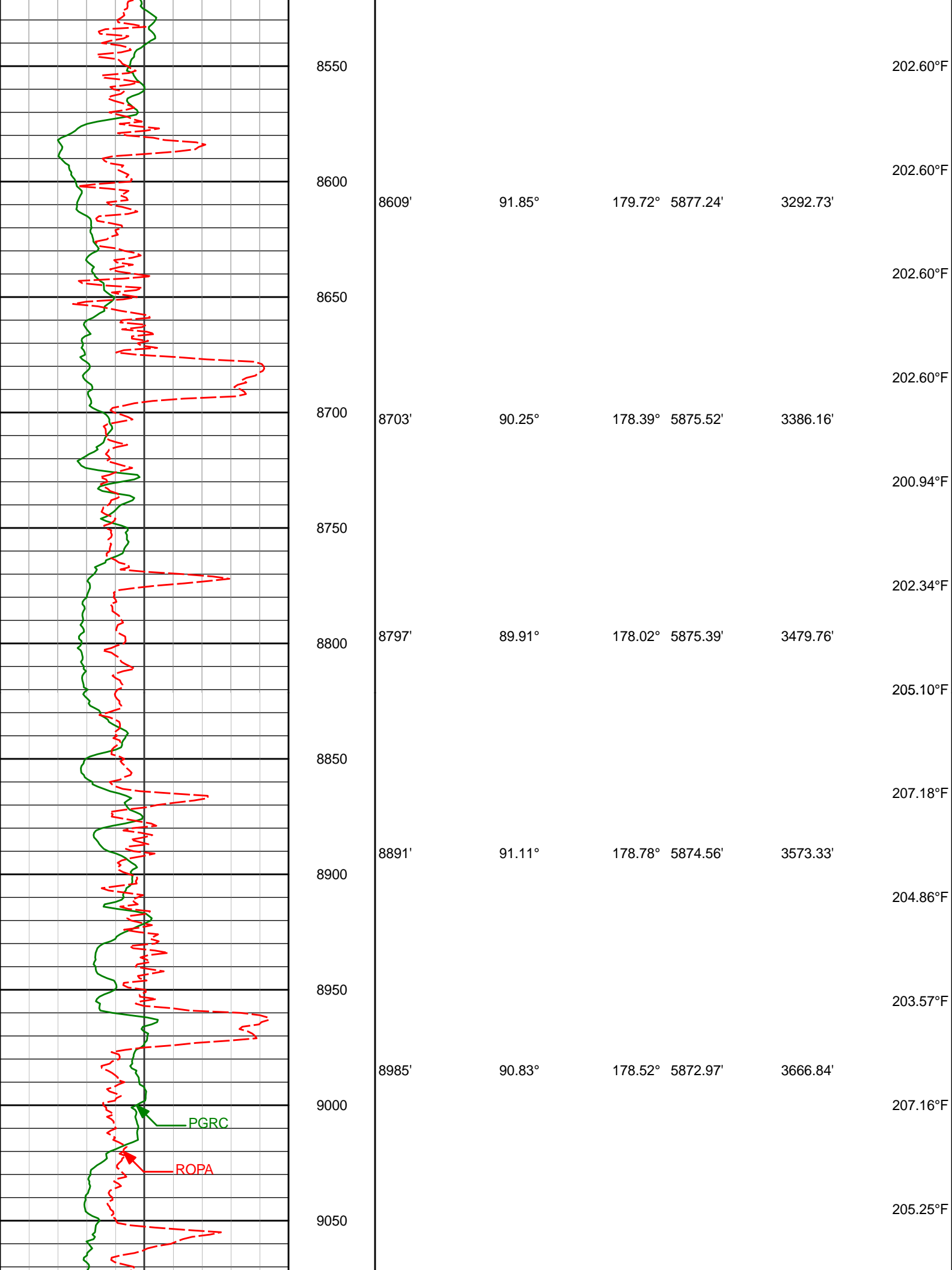


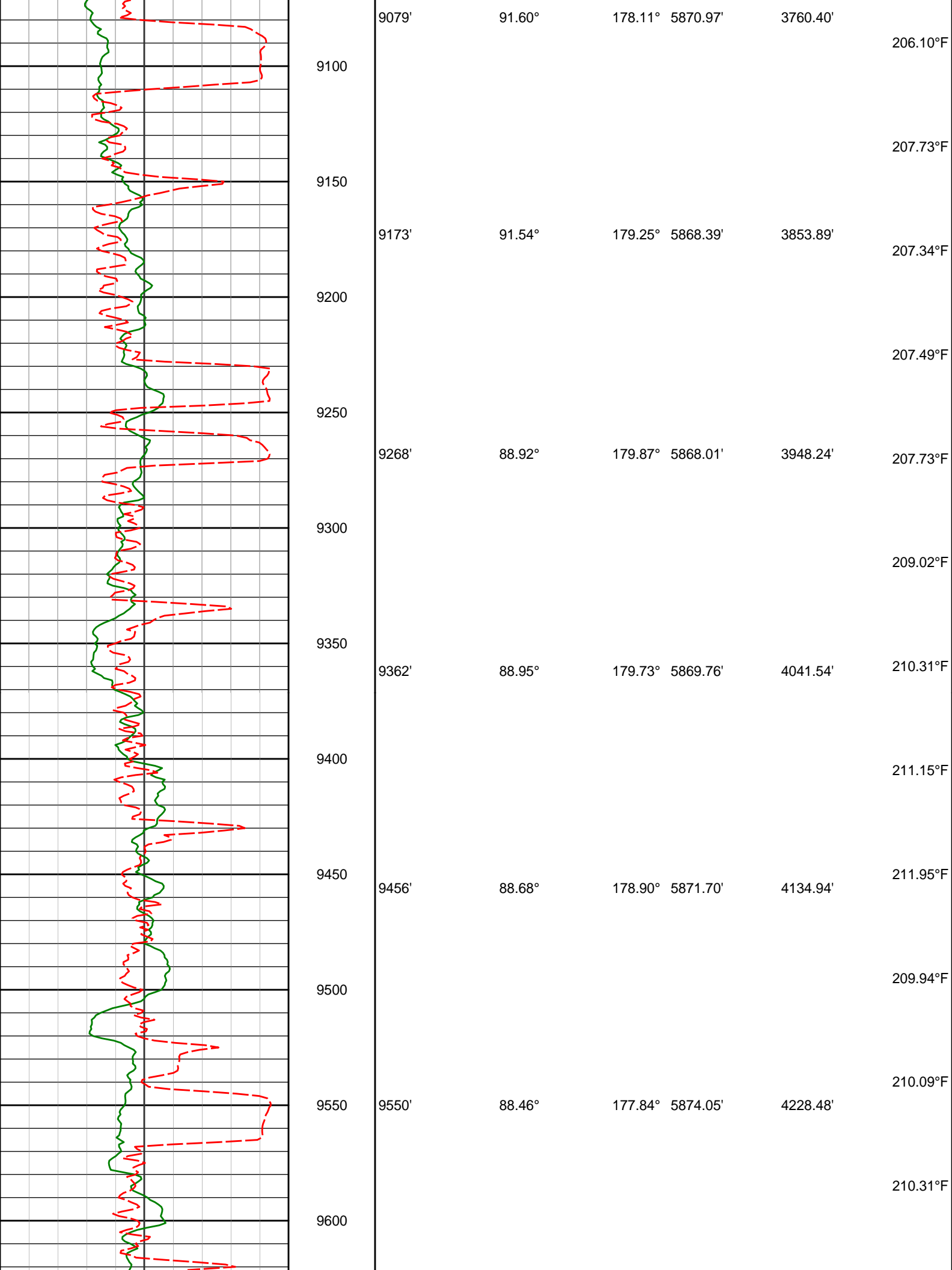


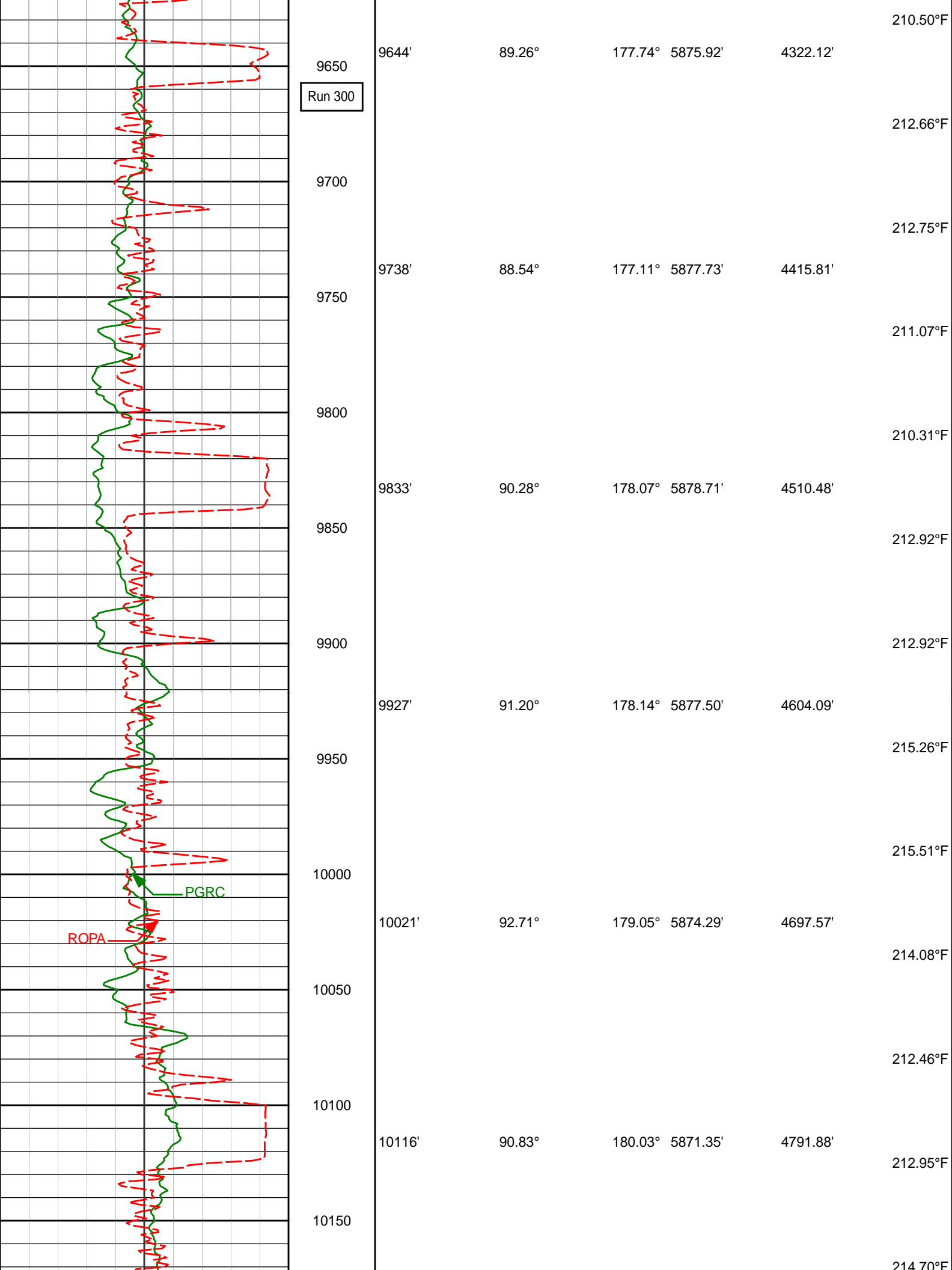


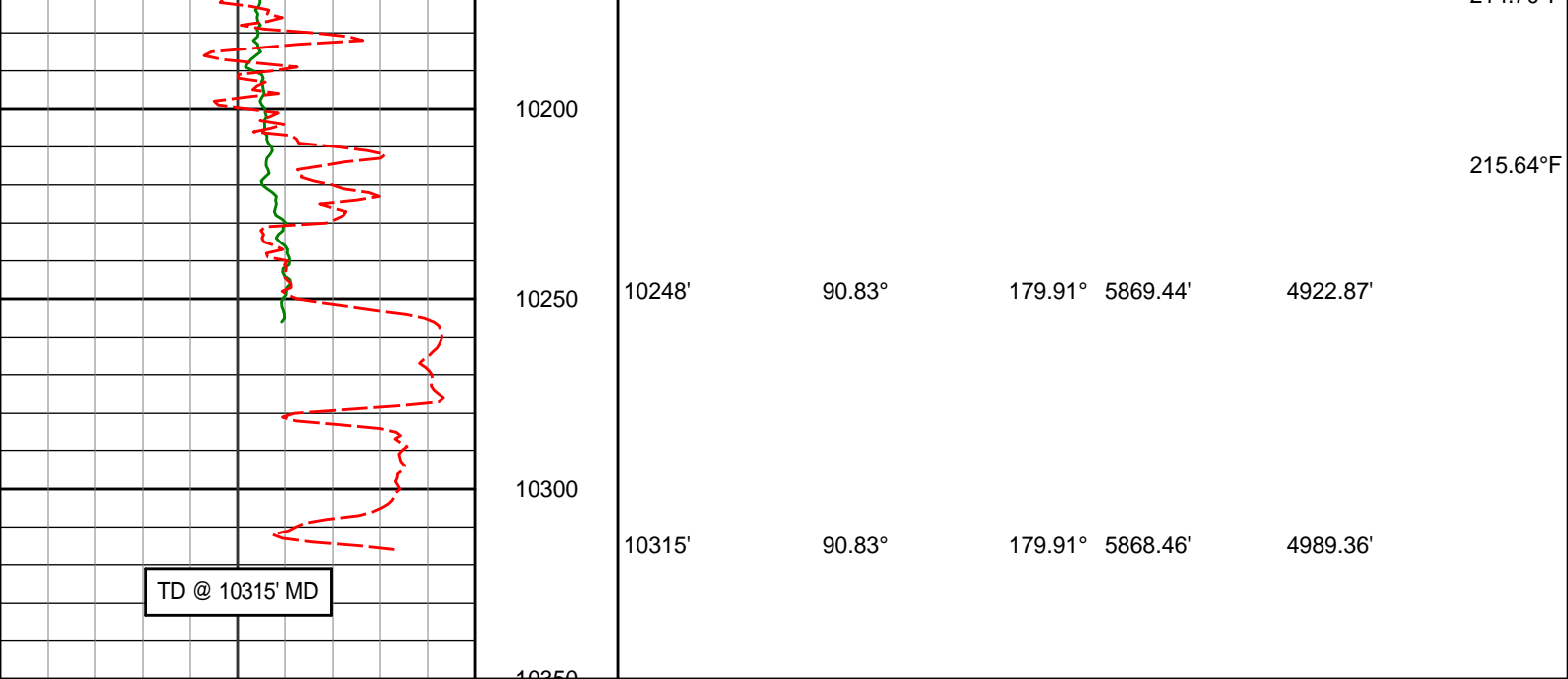




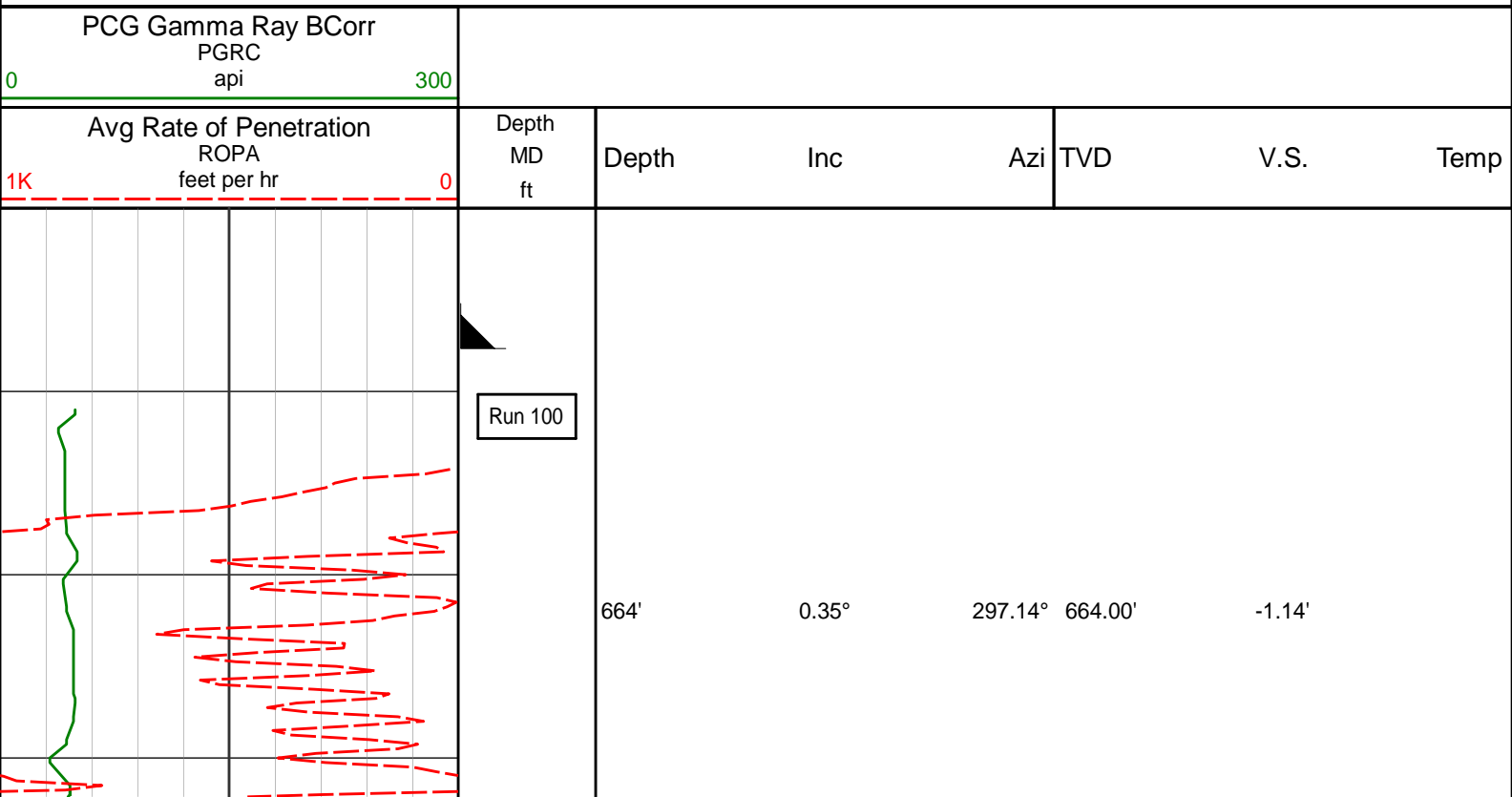


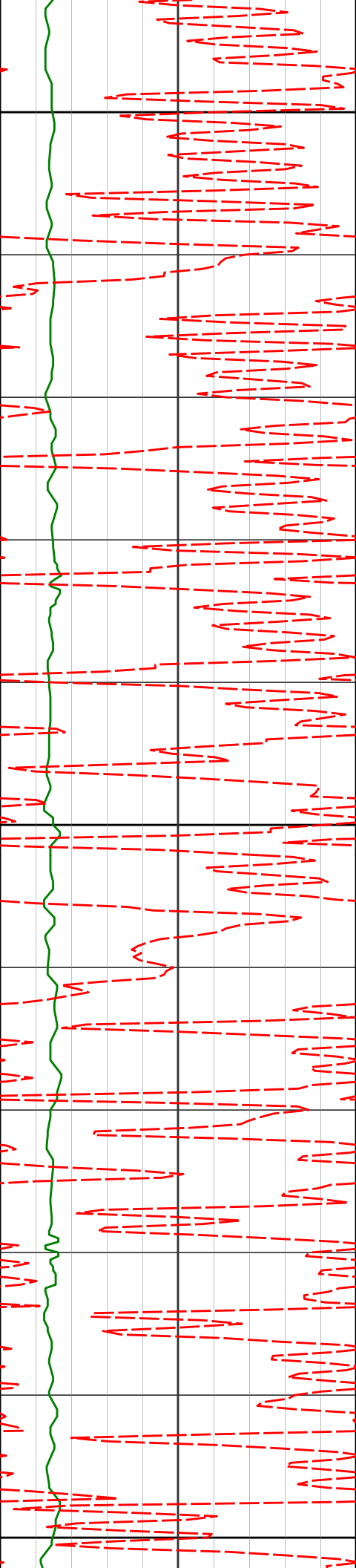






MD Detail 1:240 Scale





700

759'

0.41°

304.31° 758.99'

-1.53'

72.00°F

800

72.00°F

853'

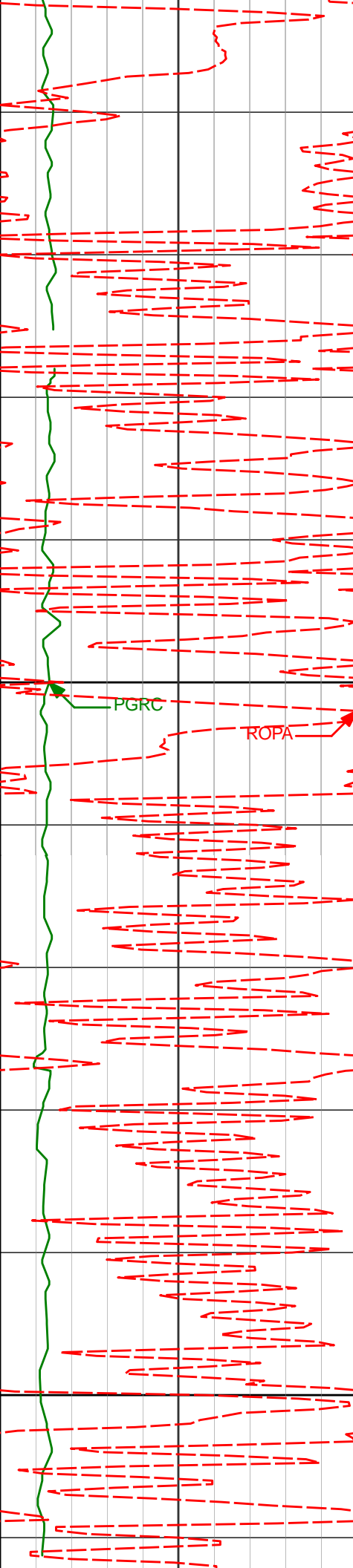
0.10°

42.39° 852.99'

-1.80'

900

73.98°F



948'

0.13°

47.28° 947.99'

-1.92'

73.98°F

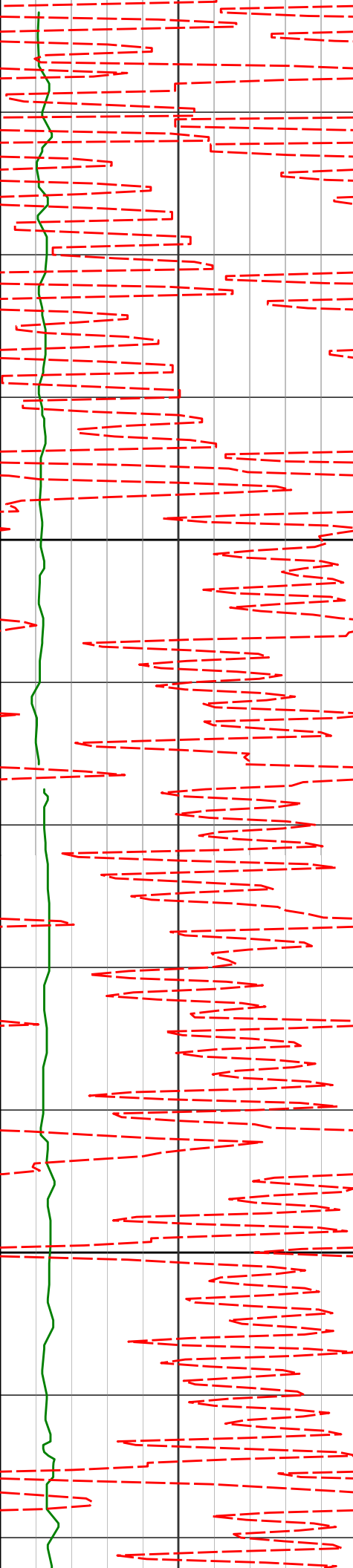
1000

75.97°F

75.97°F

77.99°F

1100



1134'

0.28°

71.57° 1133.99'

-2.13'

77.99°F

77.99°F

1200

77.99°F

1225'

0.20°

88.60° 1224.99'

-2.15'

77.99°F

1300

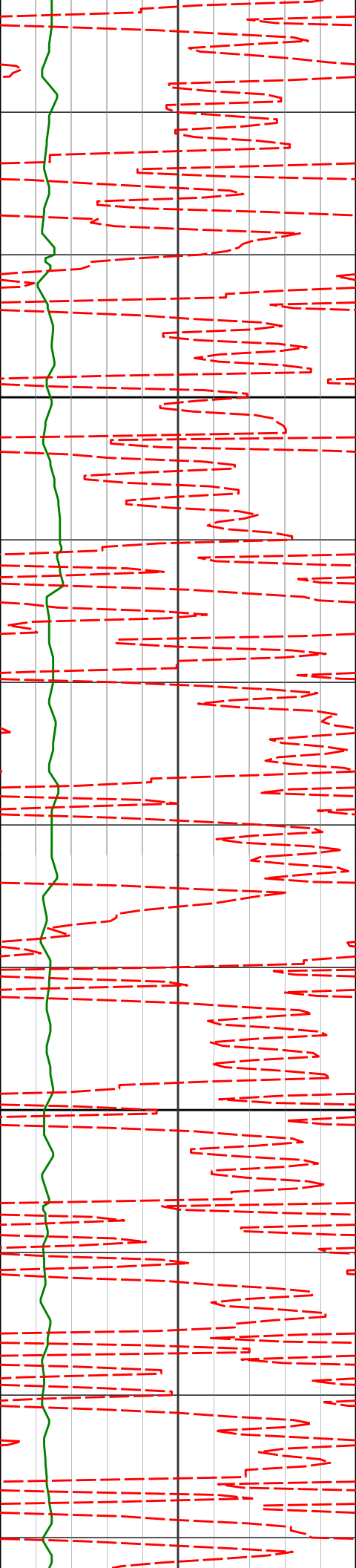
104.40°F

1317'

0.20°

133.56° 1316.99'

-2.02'



1400

1409'

0.26°

111.58°

1408.99'

-1.79'

106.71°F

99.38°F

94.44°F

80.01°F

1500

1500'

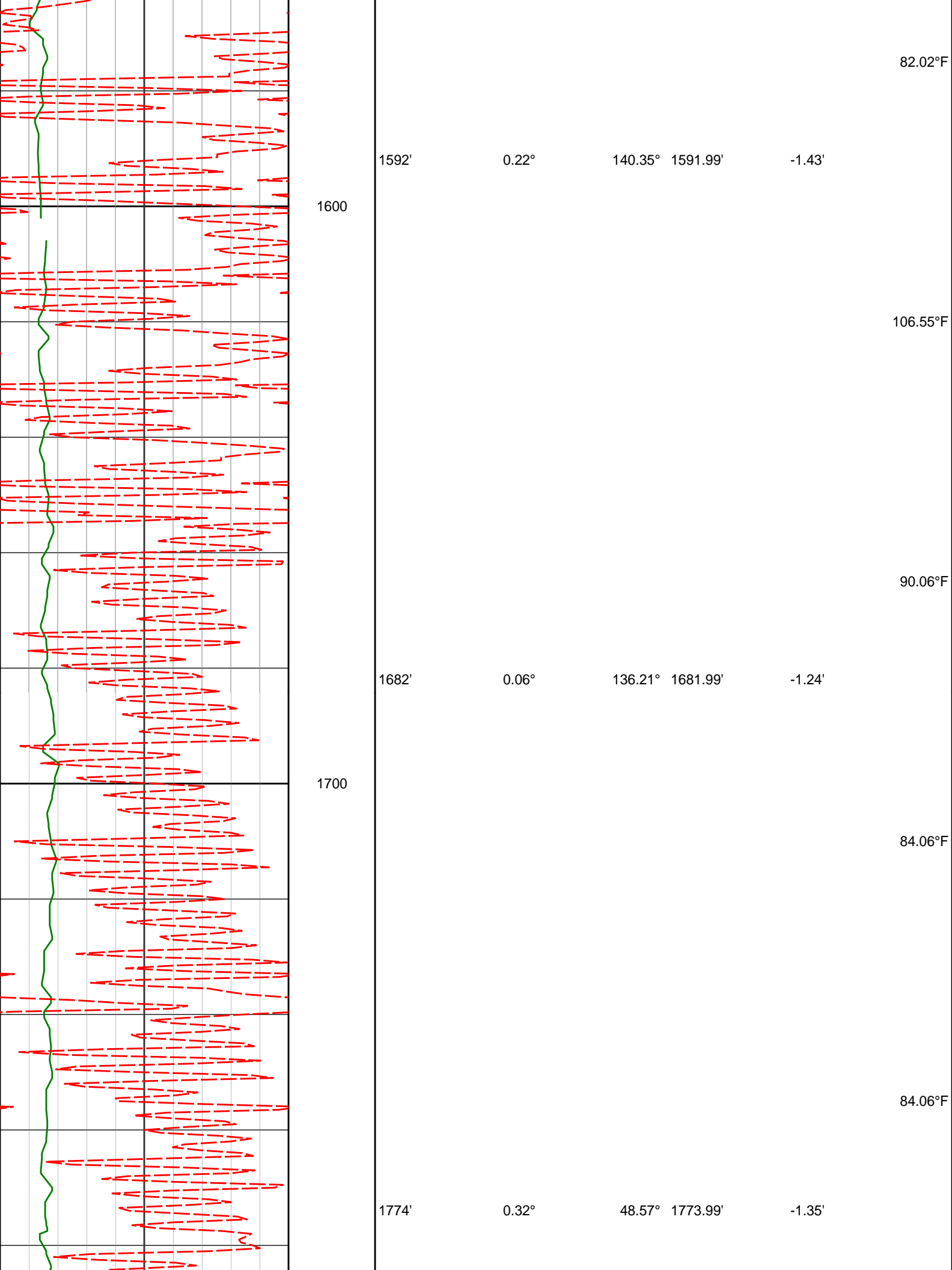
0.12°

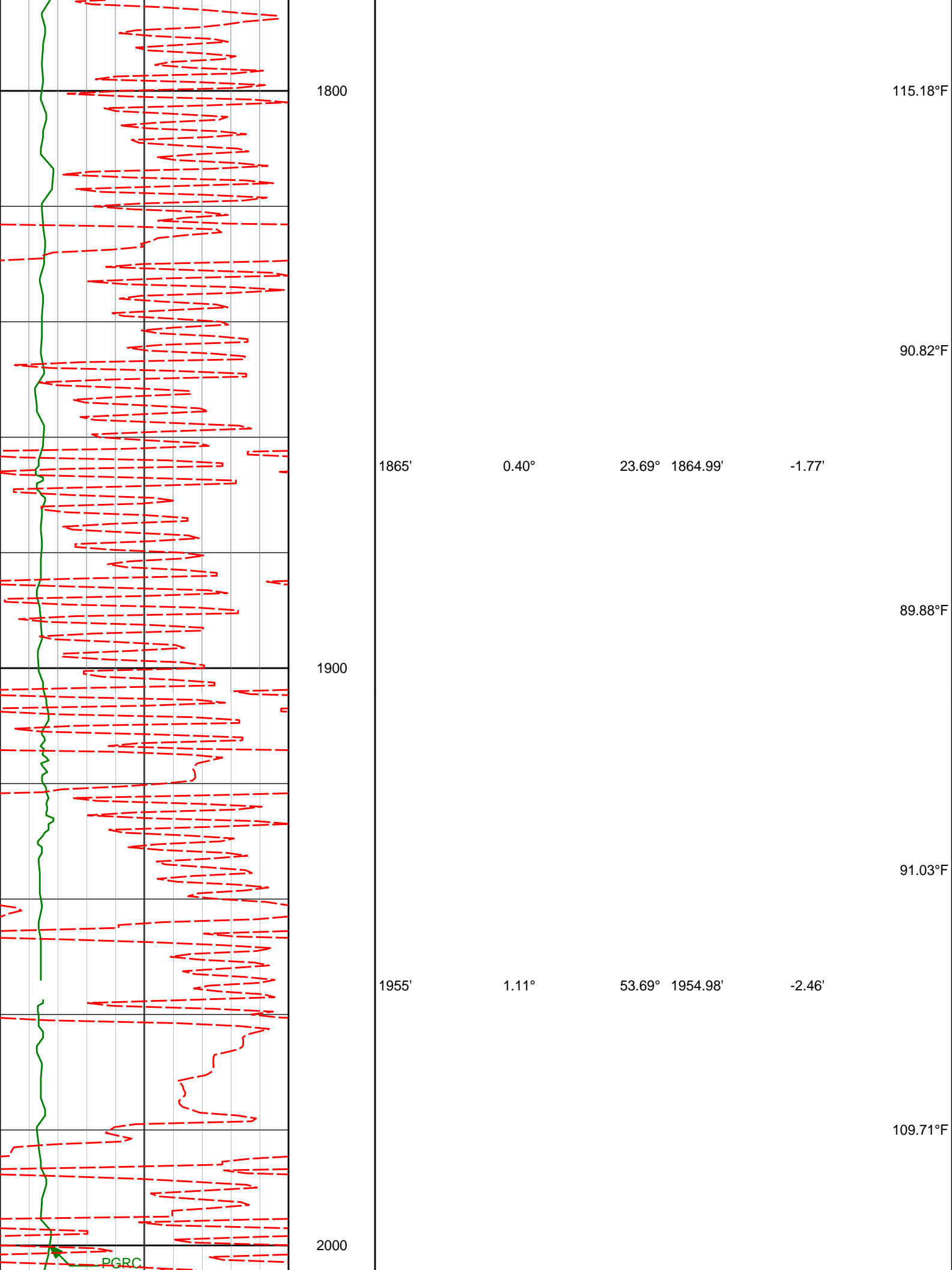
116.74°

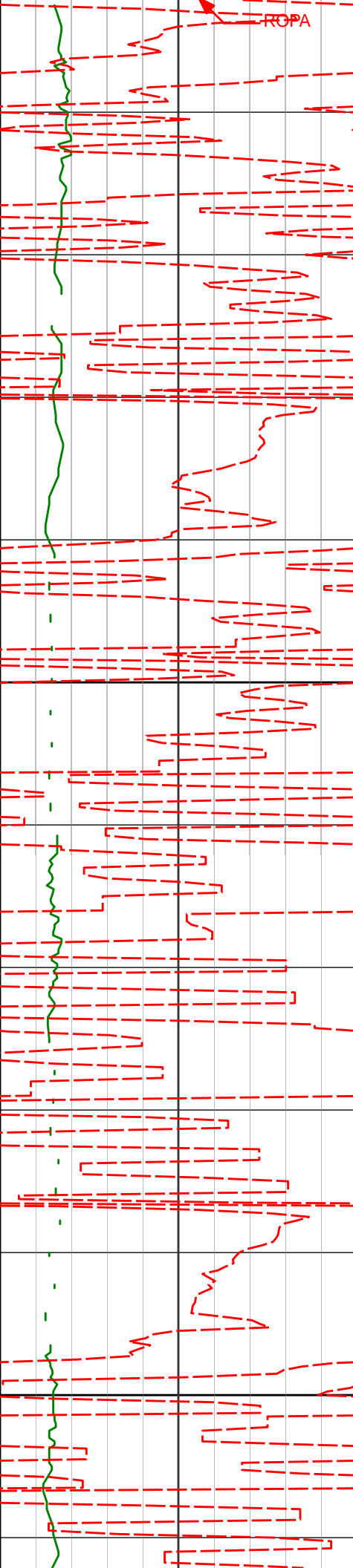
1499.99'

-1.64'

82.02°F







2100

2200

2047'

2.37°

102.85° 2046.94'

-2.25'

2138'

4.20°

125.04° 2137.79'

0.63'

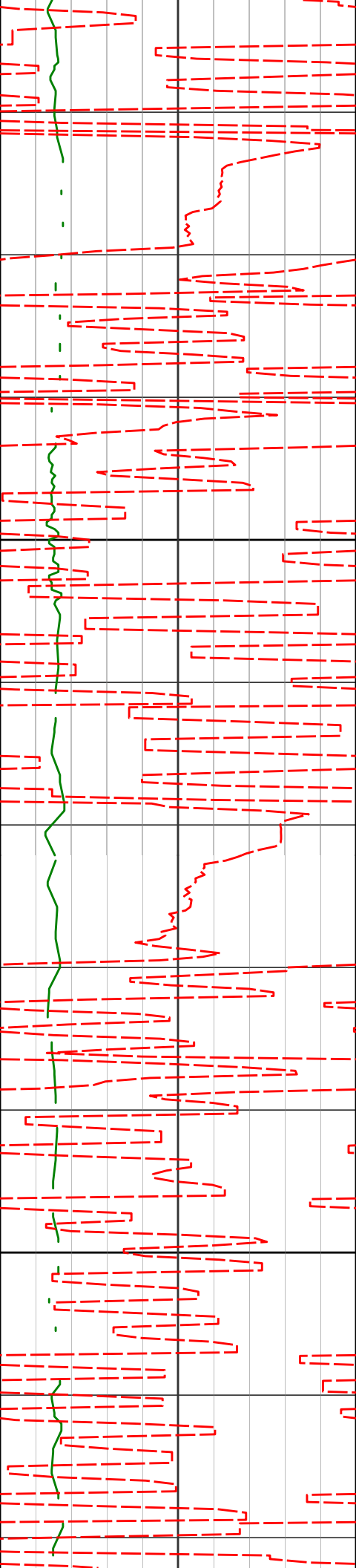
92.08°F

90.19°F

90.19°F

110.84°F

98.08°F



2300

2400

2228'

5.66°

135.28° 2227.45'

6.36'

94.33°F

93.24°F

2320'

7.90°

130.65° 2318.80'

14.63'

116.03°F

55.46°F

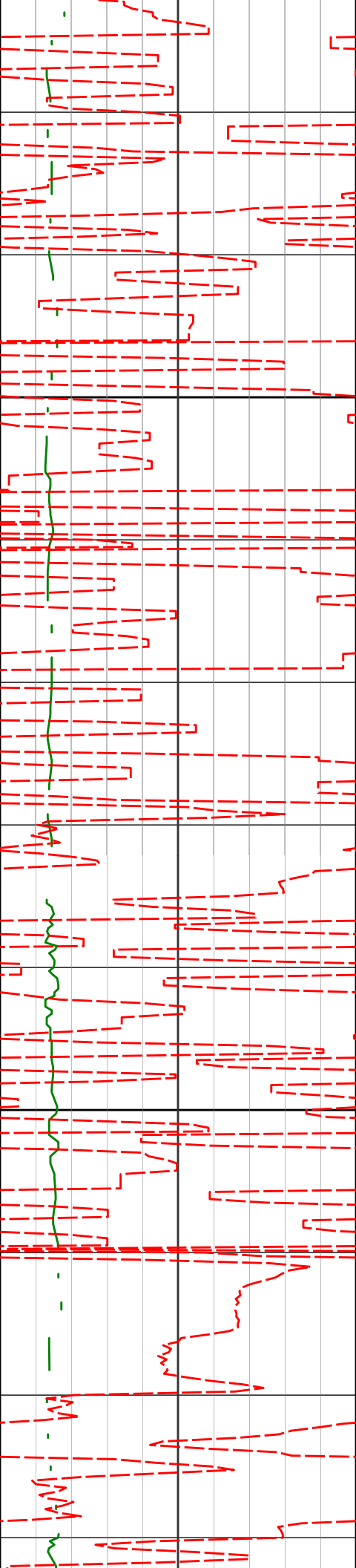
2411'

8.27°

128.41° 2408.90'

23.93'

51.63°F



2500

2600

2503'

2594'

7.83°

7.60°

128.42° 2499.99'

127.86° 2590.17'

33.12'

41.80'

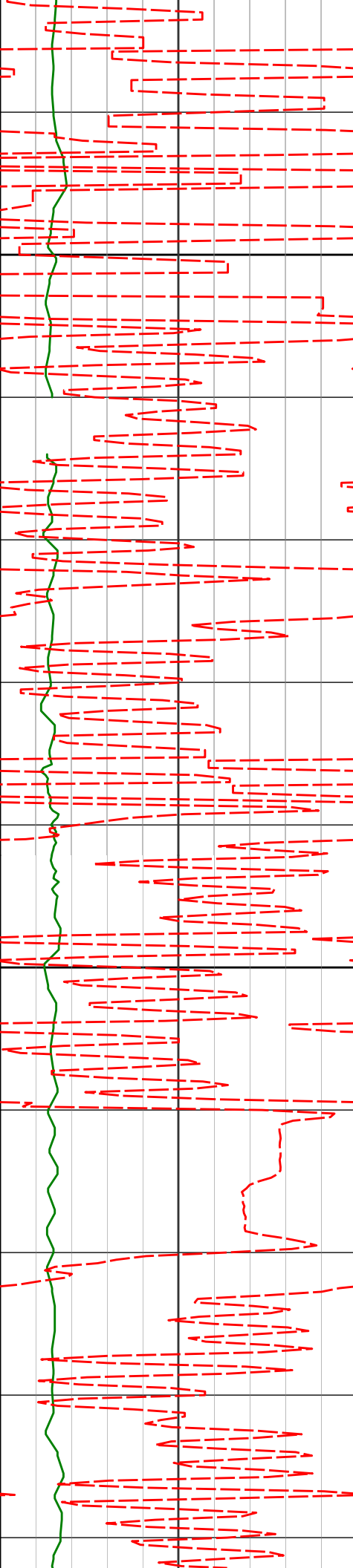
56.27°F

69.48°F

91.19°F

84.58°F

86.59°F



2689'

7.64°

127.18°

2684.33'

50.64'

2700

72.64°F

2783'

10.24°

127.09°

2777.18'

60.83'

2800

57.30°F

2878'

11.72°

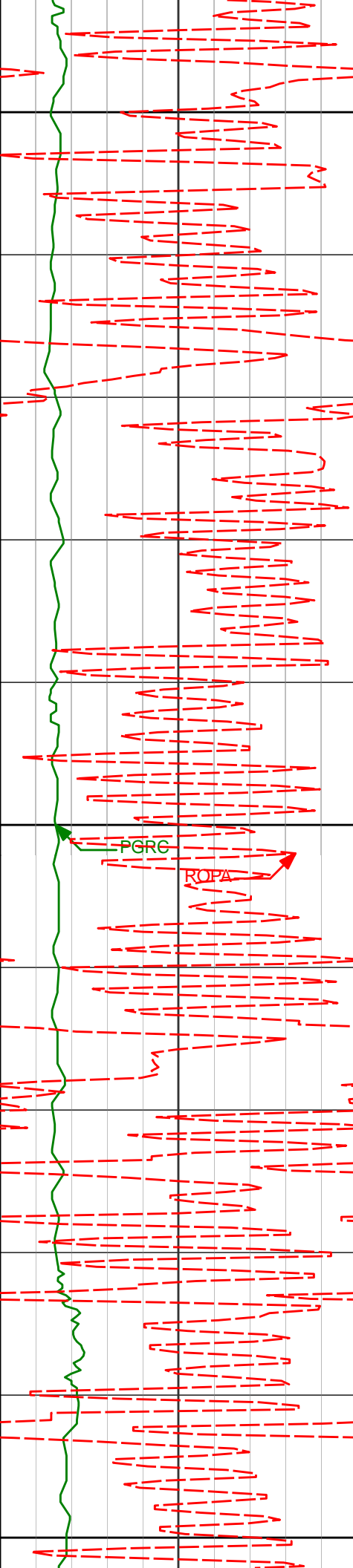
128.08°

2870.44'

73.56'

72.46°F

59.49°F



2900

58.66°F

2972'

10.88°

126.93° 2962.61'

86.50'

55.02°F

3000

59.01°F

70.18°F

3067'

9.18°

119.68° 3056.16'

97.27'

3100

PGRC

ROPA



3200

3300

3162'

3256'

8.19°

9.41°

125.37°

136.47°

3150.07'

3242.97'

106.37'

117.08'

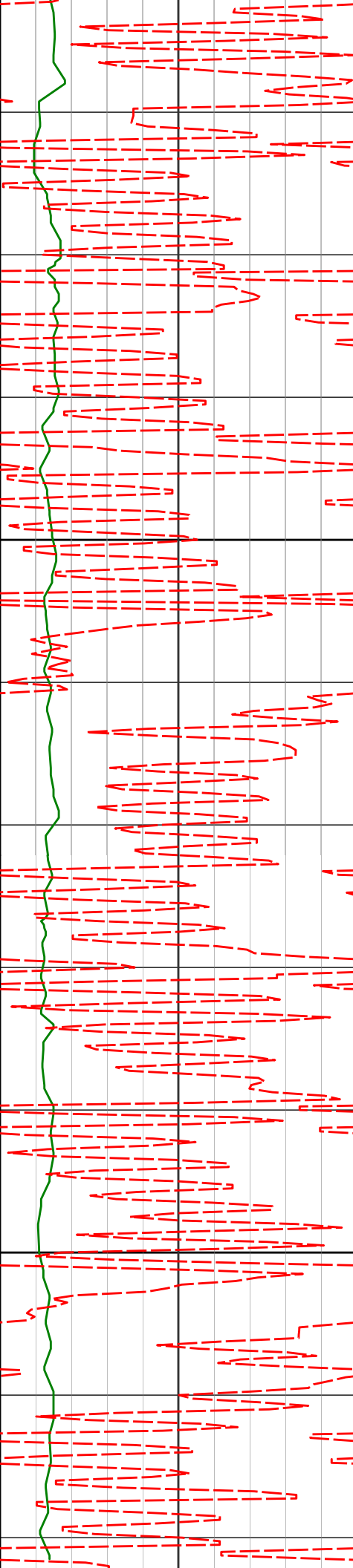
75.01°F

77.54°F

64.32°F

63.23°F

67.02°F



3400

3500

3351'

3445'

3540'

9.83°

10.48°

10.76°

133.87°

135.24°

134.66°

3336.64'

3429.16'

3522.54'

129.62'

142.62'

156.43'

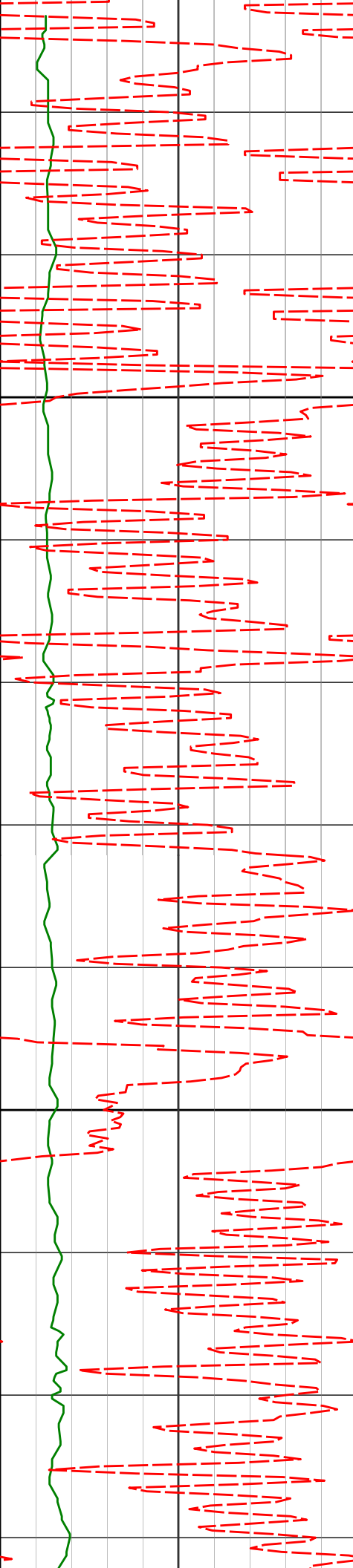
89.17°F

71.02°F

114.03°F

117.18°F

111.24°F



3600

3635'

11.20°

134.01°

3615.80'

170.57'

3700

3729'

10.75°

131.38°

3708.08'

184.24'

111.24°F

85.31°F

101.90°F

91.55°F

70.02°F



3800

3900

3824'

10.24°

129.73°

3801.49'

197.03'

115.56°F

115.56°F

117.73°F

125.89°F

119.26°F

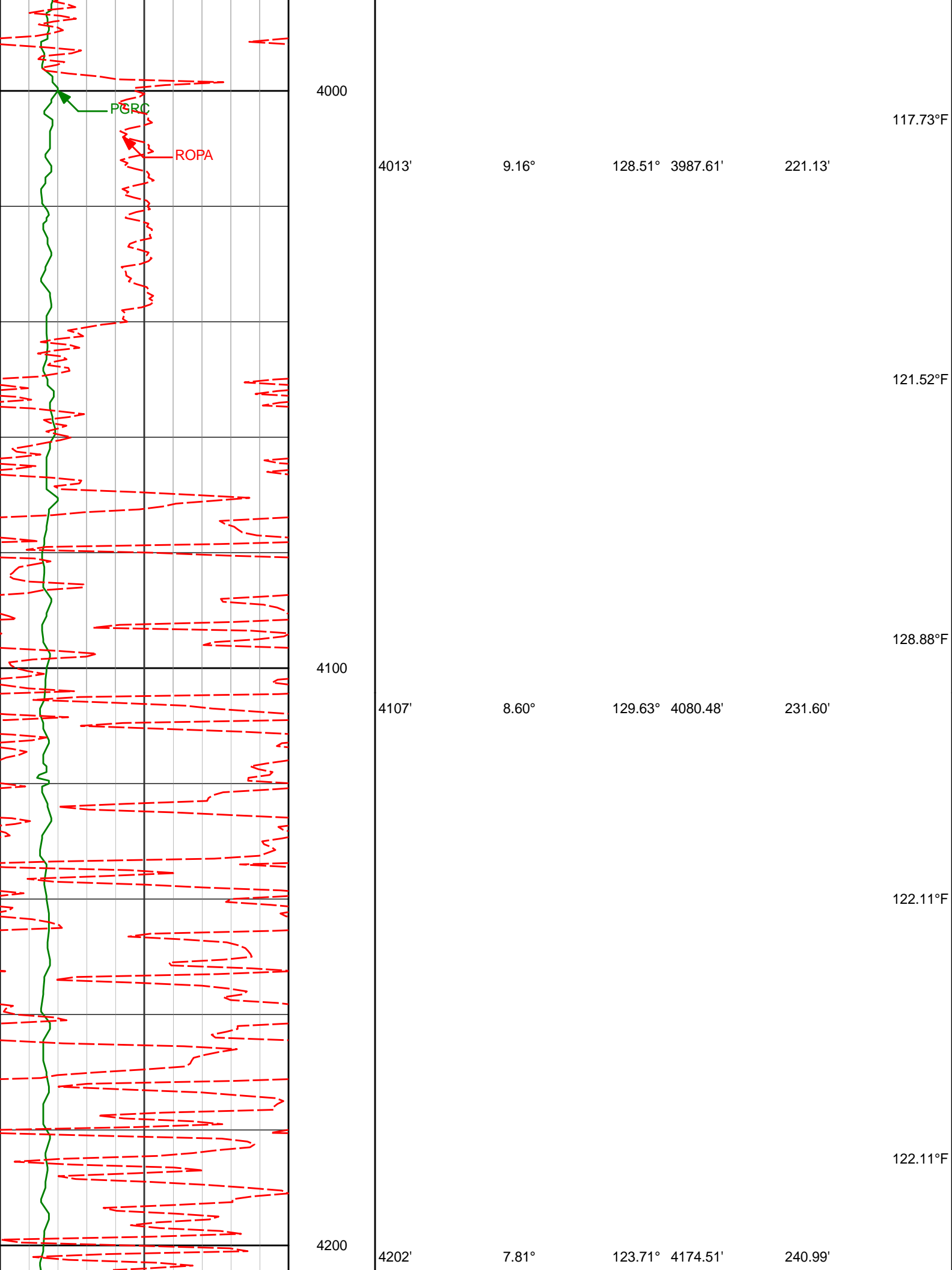
3918'

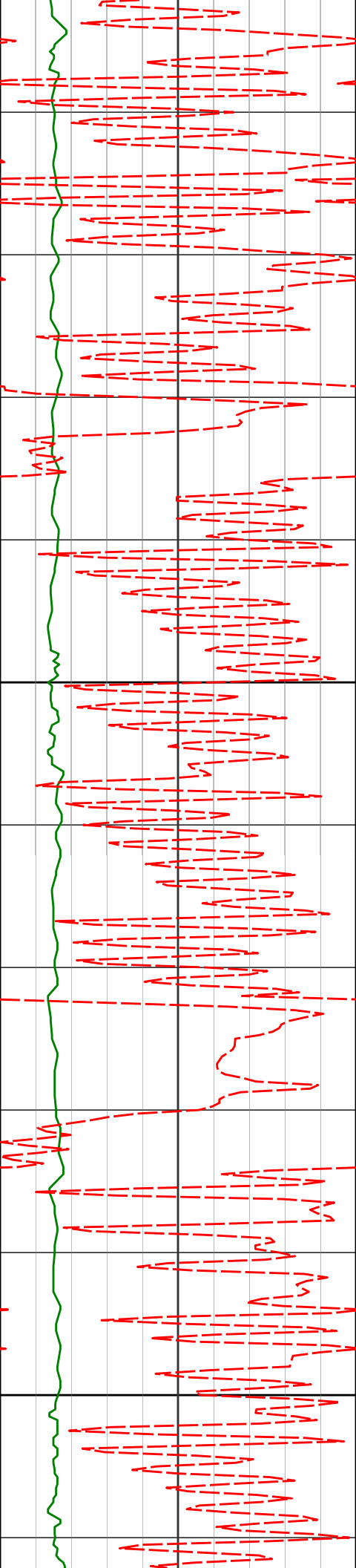
10.31°

131.11°

3893.98'

209.39'





4300

4400

4297'

4391'

6.89°

7.00°

121.59° 4268.73'

118.27° 4362.04'

248.77'

255.61'

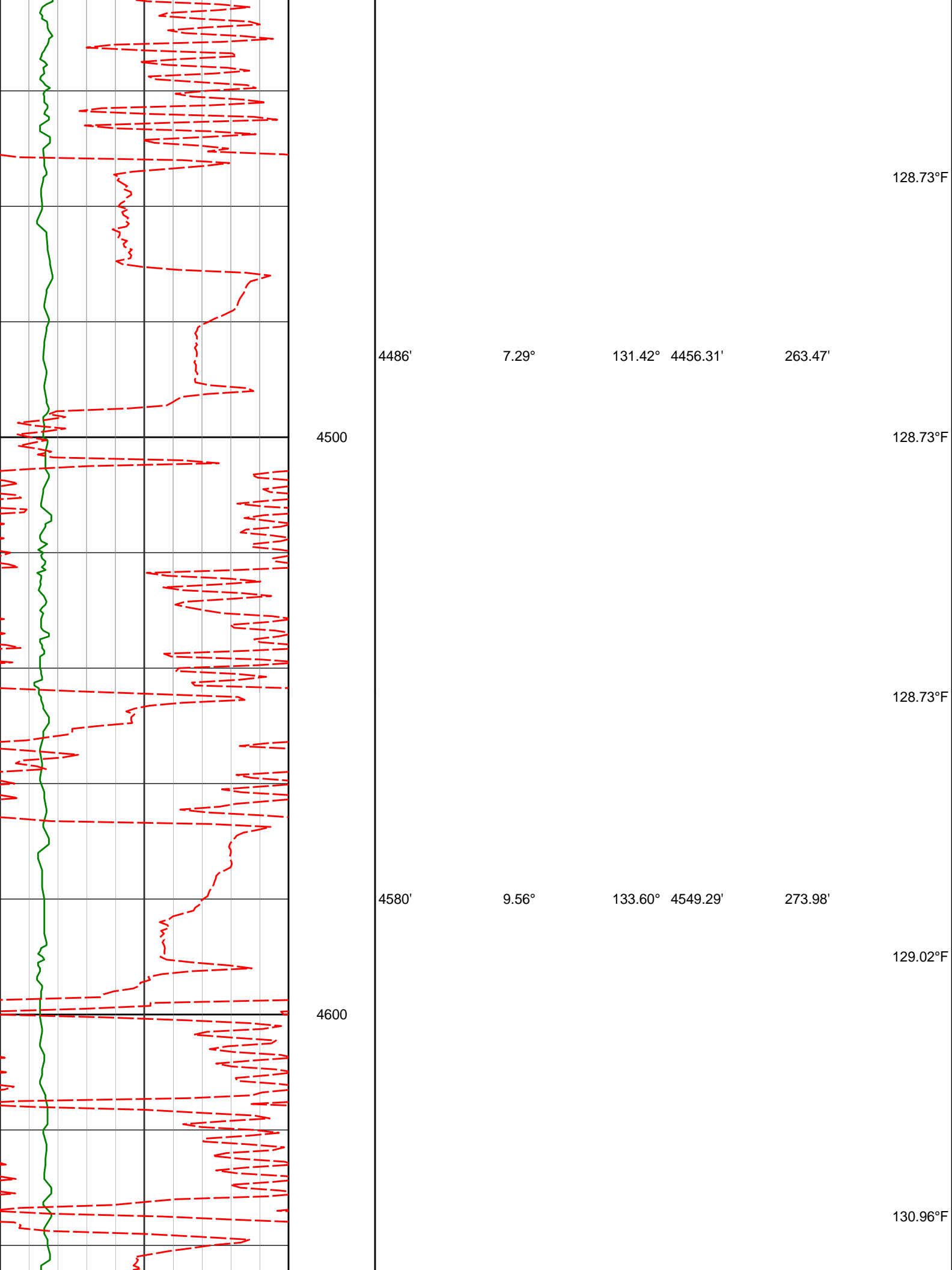
124.30°F

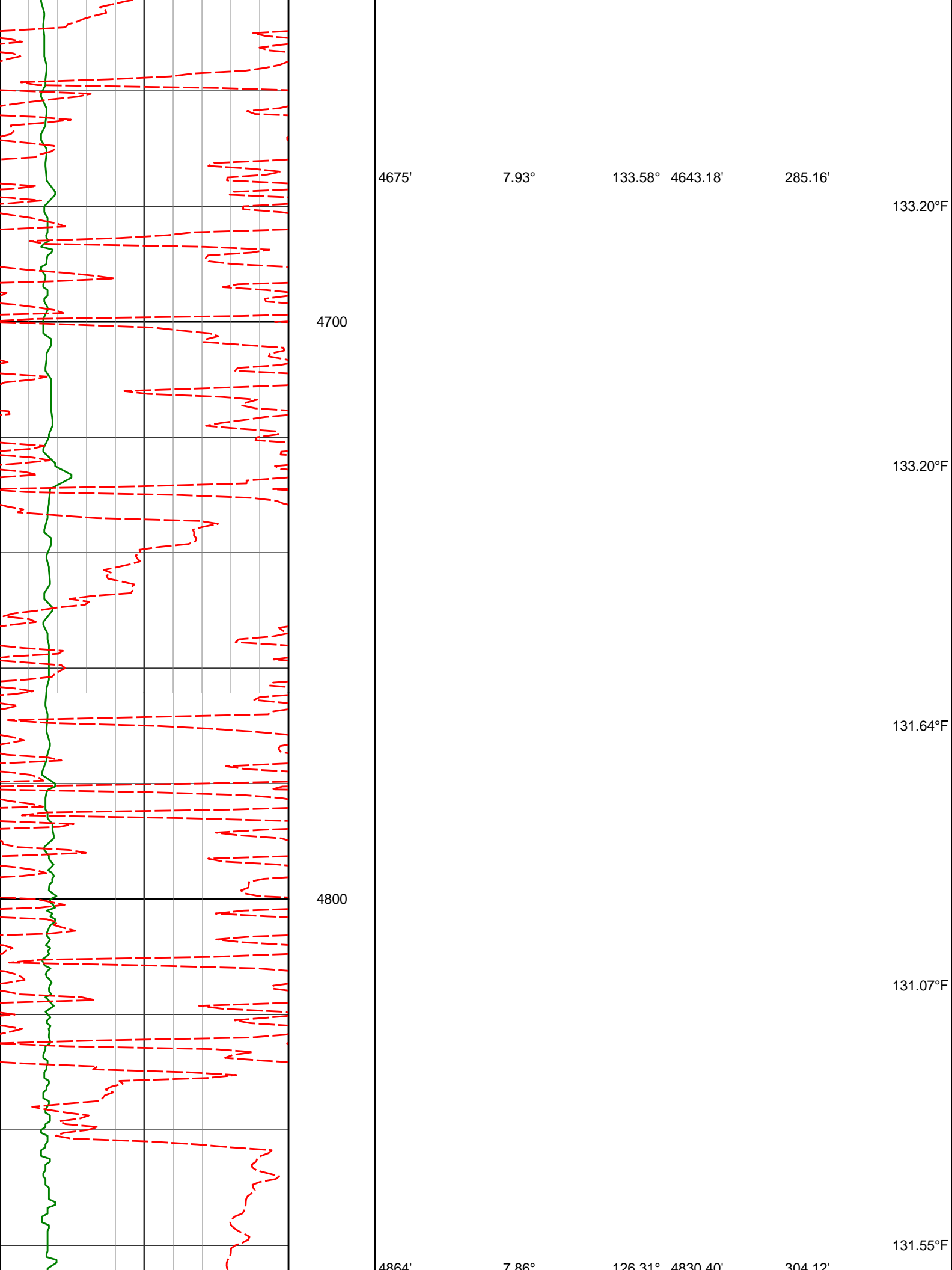
124.30°F

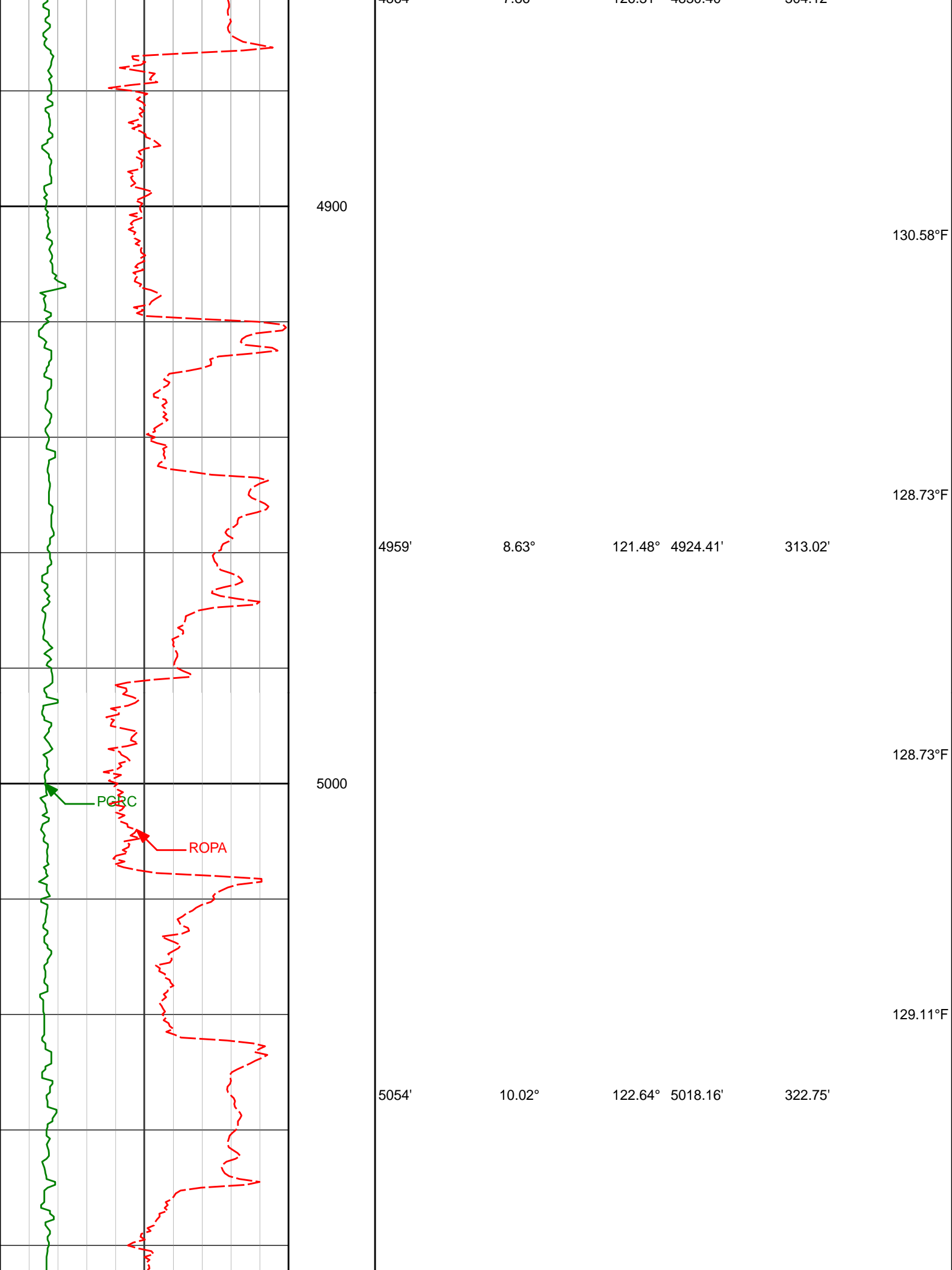
124.30°F

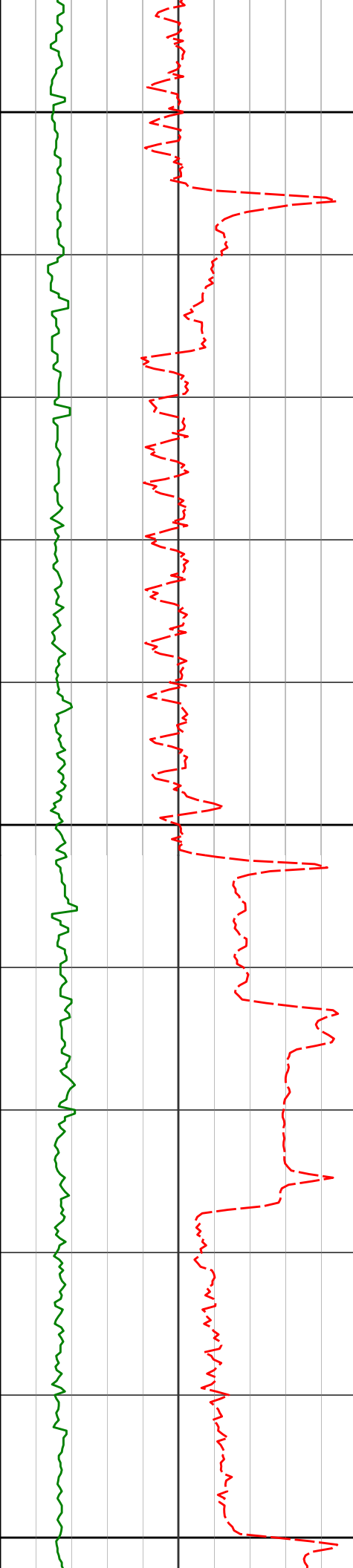
127.85°F

128.85°F









5100

5149'

8.79°

119.83°

5111.88'

332.39'

5200

5243'

8.47°

122.04°

5204.82'

341.07'

5300

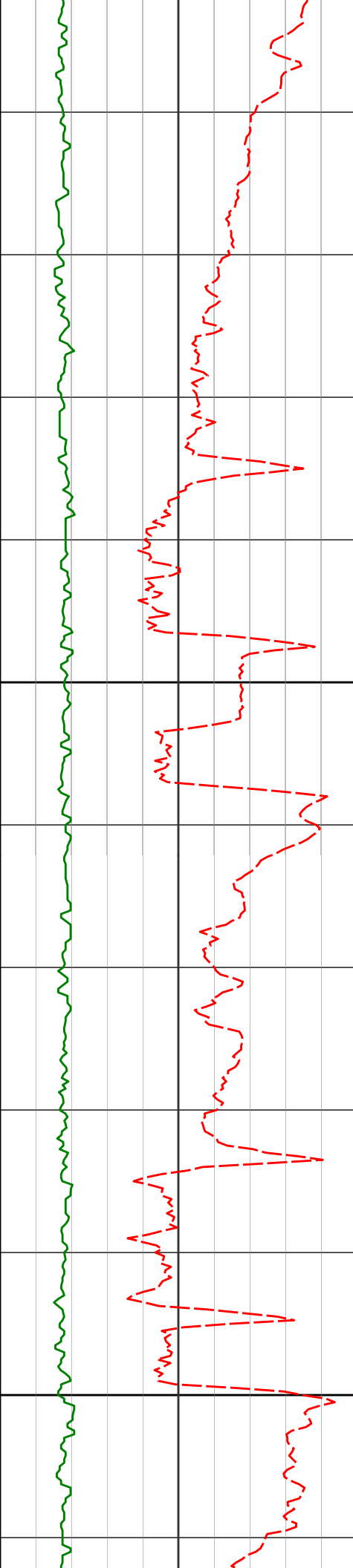
130.96°F

131.43°F

131.95°F

131.72°F

129.44°F



5400

5500

5338'

5432'

12.07°

17.53°

140.41° 5298.30'

140.73° 5389.15'

353.87'

374.16'

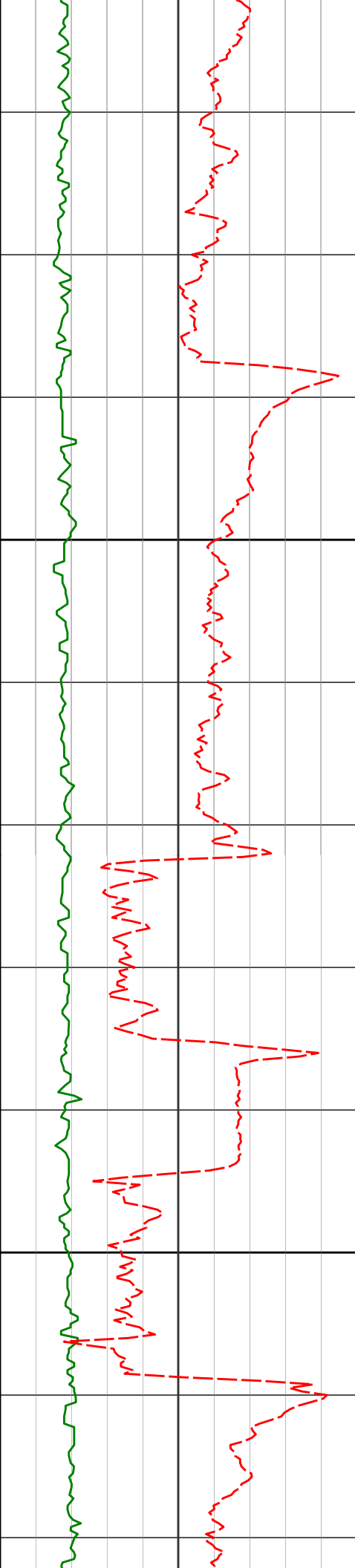
128.59°F

128.90°F

131.00°F

133.45°F

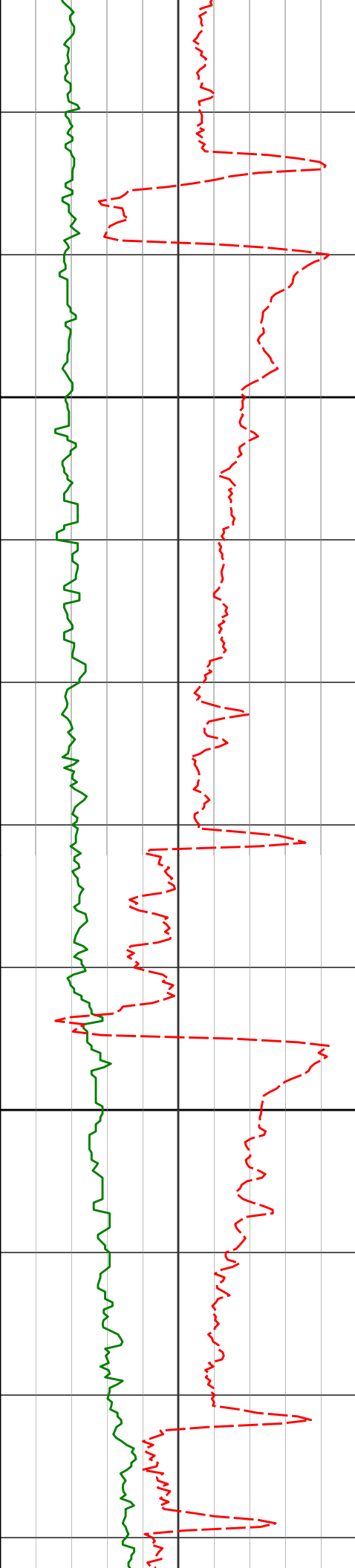
135.32°F



5600

5700

5527'	20.96°	143.55°	5478.83'	401.09'	
					135.61°F
					137.47°F
5620'	34.02°	160.55°	5561.27'	441.23'	
					139.19°F
					141.99°F
5714'	35.75°	163.67°	5638.39'	494.03'	
					142.25°F



5800

5809'

45.71°

169.30° 5710.31'

555.52'

142.55°F

145.62°F

146.84°F

147.93°F

5900

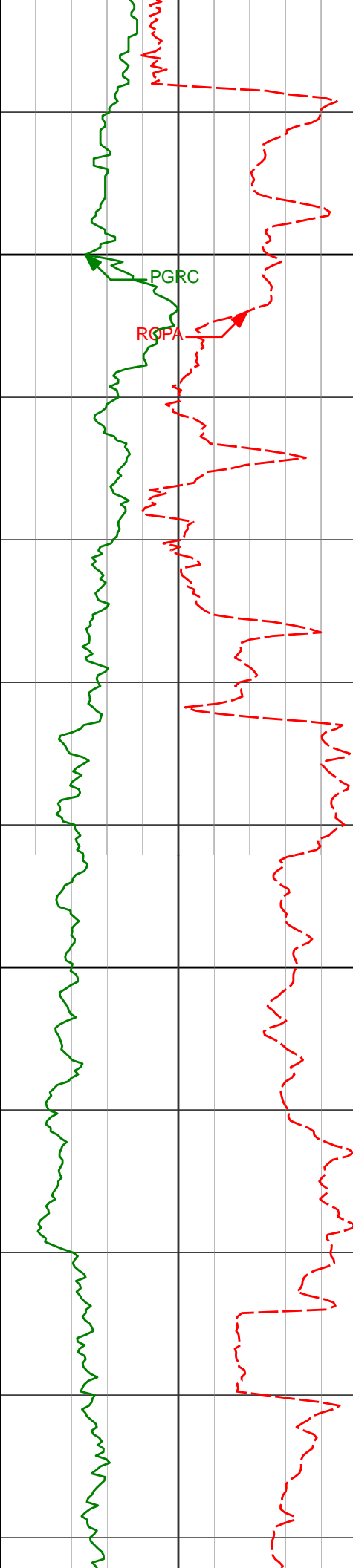
5903'

53.80°

180.32° 5771.10'

626.96'

149.14°F



6000

6100

5997'

62.22°

180.26° 5820.85'

705.95'

150.43°F

151.42°F

151.54°F

6092'

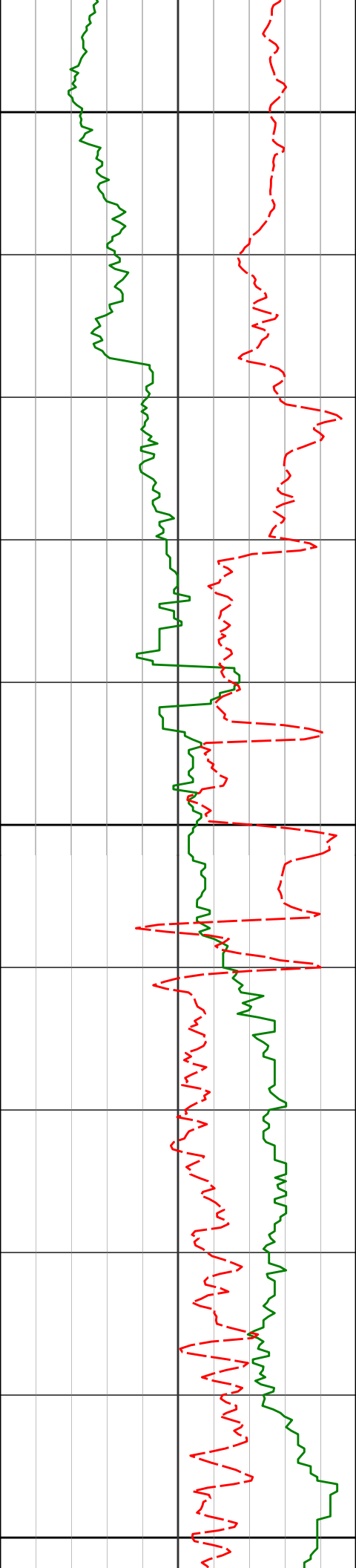
68.52°

179.38° 5860.42'

791.64'

153.33°F

156.63°F

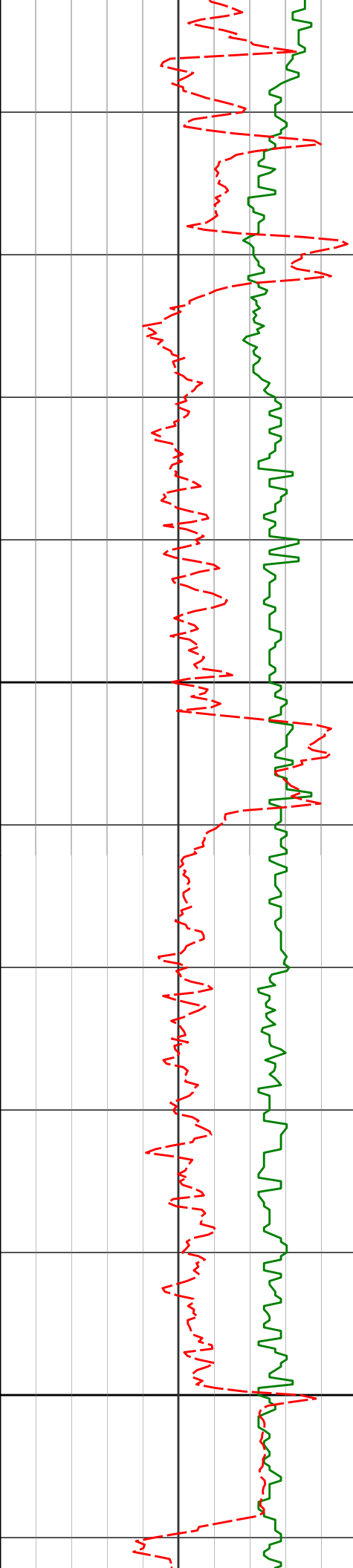


6200

6300

6400

6185'	78.84°	176.36°	5886.53'	880.43'	156.99°F
6228'	86.83°	176.00°	5891.89'	922.99'	157.29°F
					158.25°F
					158.24°F
					156.45°F



Run 200

6436'

88.98°

177.11° 5899.49'

1130.42'

156.13°F

6500

156.77°F

6531'

90.52°

176.53° 5899.90'

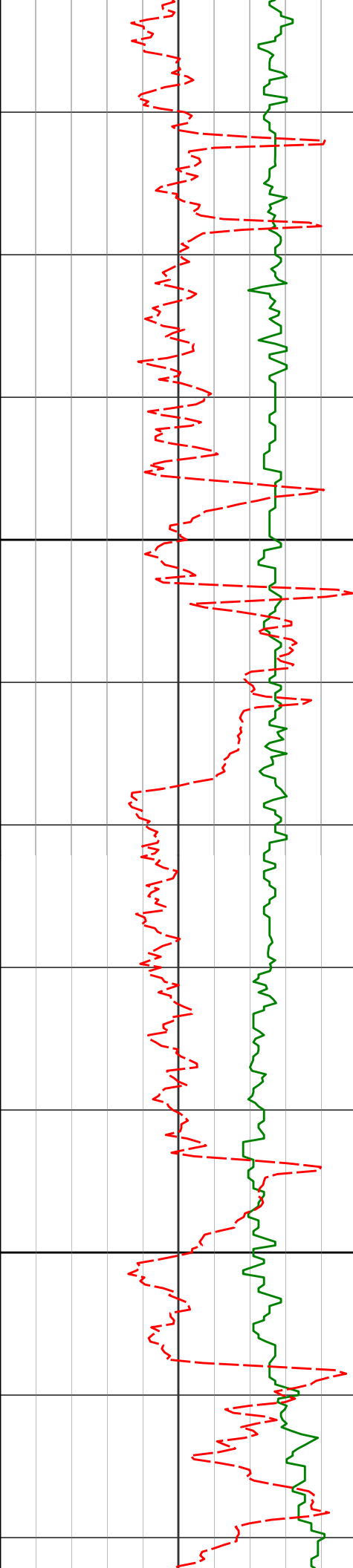
1225.19'

160.39°F

6600

162.73°F

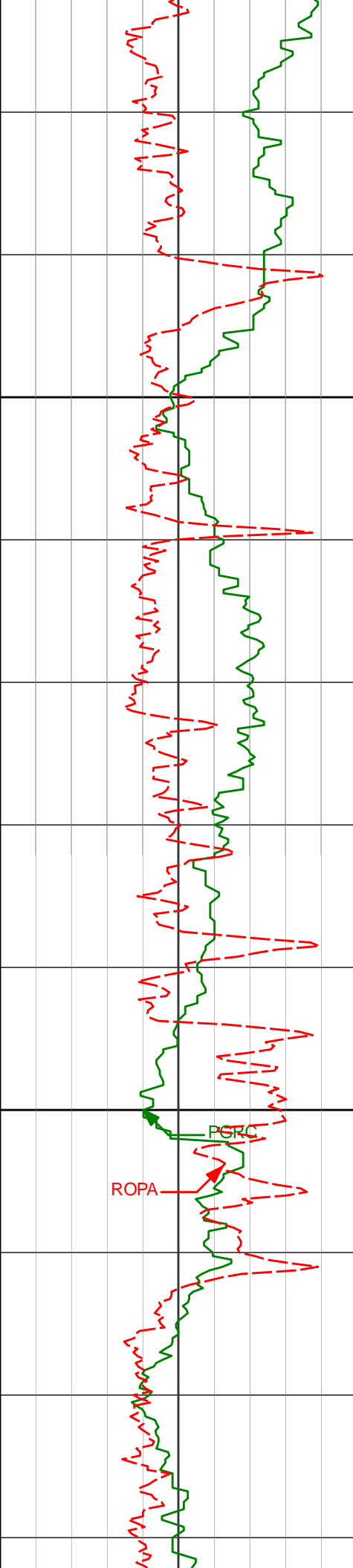
164.61°F



6700

6800

6626'	90.06°	174.93°	5899.42'	1320.07'	
					166.19°F
					166.07°F
6720'	90.46°	174.57°	5898.99'	1414.02'	
					168.81°F
					167.97°F
6815'	90.74°	174.45°	5897.99'	1508.98'	
					170.21°F



6900

6909'

91.66°

174.05° 5896.02'

1602.93'

172.89°F

173.41°F

173.20°F

7000

7003'

92.96°

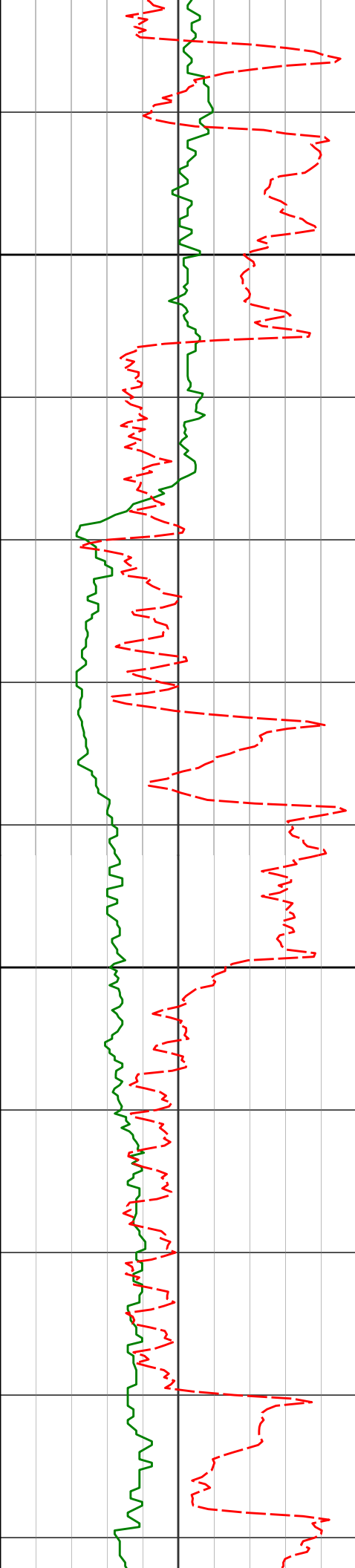
176.10° 5892.23'

1696.78'

174.33°F

ROPA

PSRC



7100

7098'

92.68°

179.13° 5887.56'

1791.34'

173.24°
175.87°F

175.42°F

7200

7192'

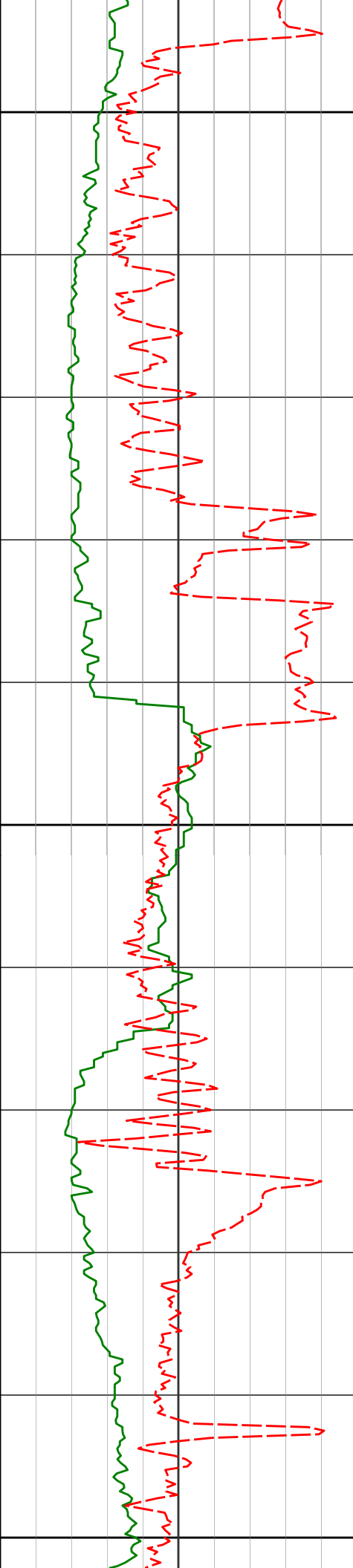
91.14°

181.34° 5884.42'

1884.51'

177.64°F

177.64°F

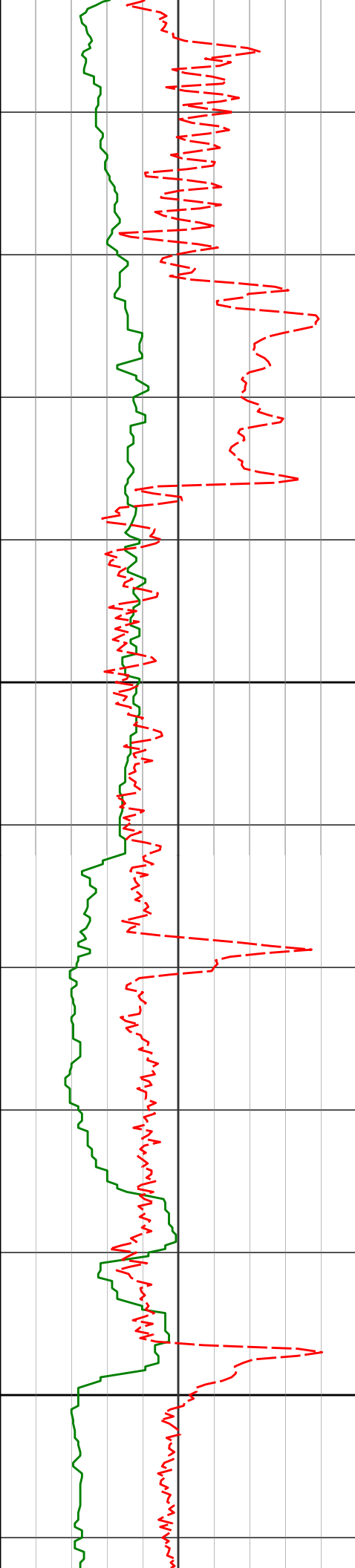


7300

7400

7500

7285'	88.58°	179.80°	5884.65'	1976.67'	179.15°F
7379'	91.02°	179.73°	5884.98'	2069.99'	180.23°F
7474'	92.37°	179.89°	5882.17'	2164.26'	184.67°F



7600

7700

7569'

7663'

90.18°

89.63°

180.45°

179.89°

5880.05'

5880.20'

2258.47'

2351.71'

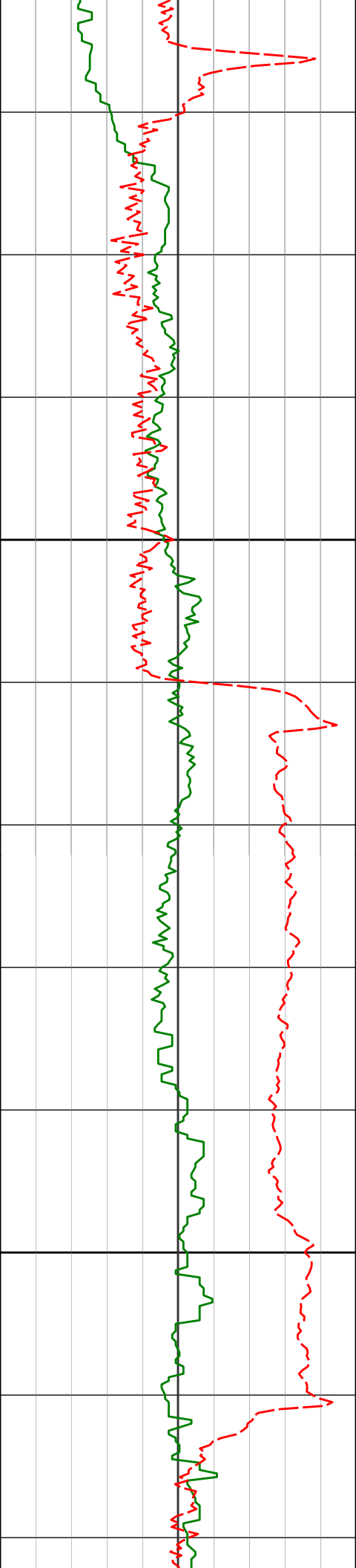
183.69°F

185.35°F

187.48°F

189.59°F

189.99°F



7800

7900

7758'

89.26°

178.83° 5881.12'

2446.11'

7853'

89.20°

178.84° 5882.40'

2540.59'

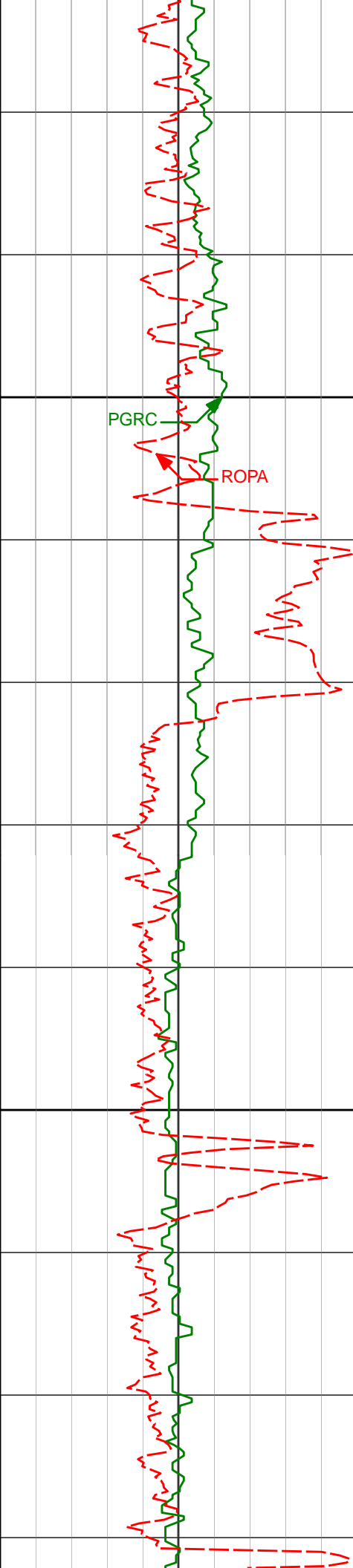
191.07°F

192.73°F

194.88°F

194.99°F

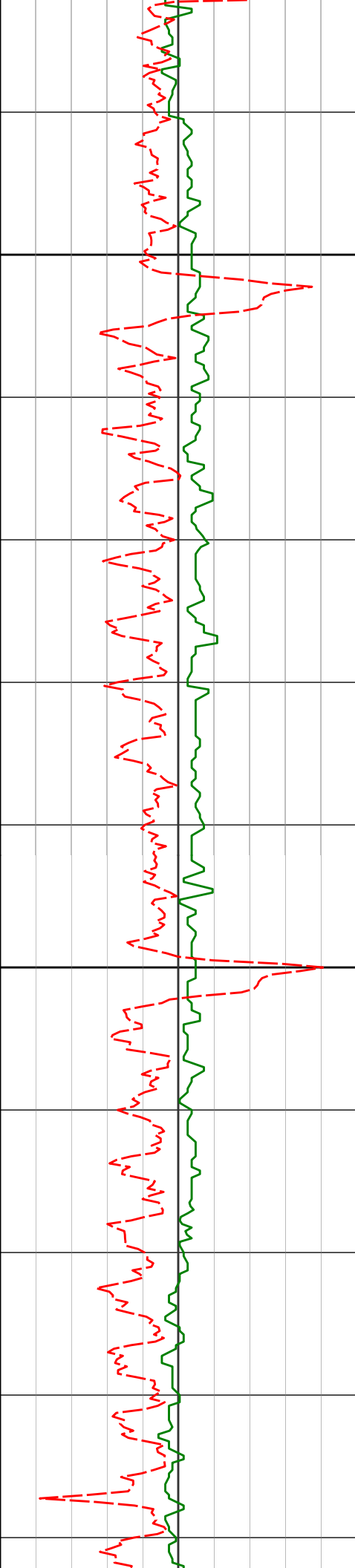
195.98°F



8000

8100

7947'	88.30°	178.01°	5884.44'	2634.13'	
					195.00°F
					192.73°F
8042'	89.85°	178.21°	5885.97'	2728.72'	
					196.35°F
					197.51°F
8137'	90.31°	178.26°	5885.84'	2823.31'	
					197.51°F



8200

8300

8231'

90.65°

178.35° 5885.06'

2916.89'

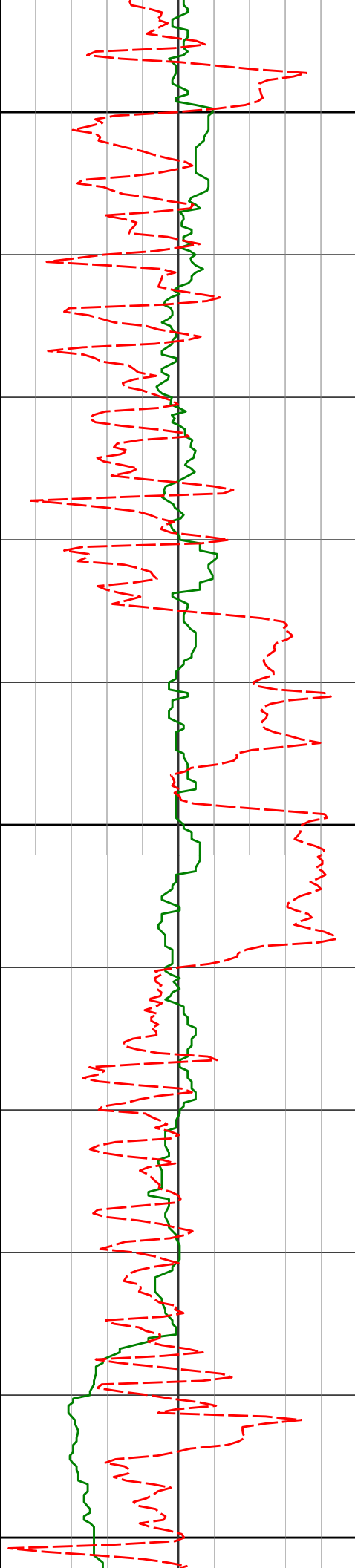
199.23°F

201.50°F

202.60°F

202.60°F

202.60°F



8400

8420'

91.48°

178.61° 5881.55'

3104.97'

202.44°F

8500

8515'

90.95°

179.51° 5879.53'

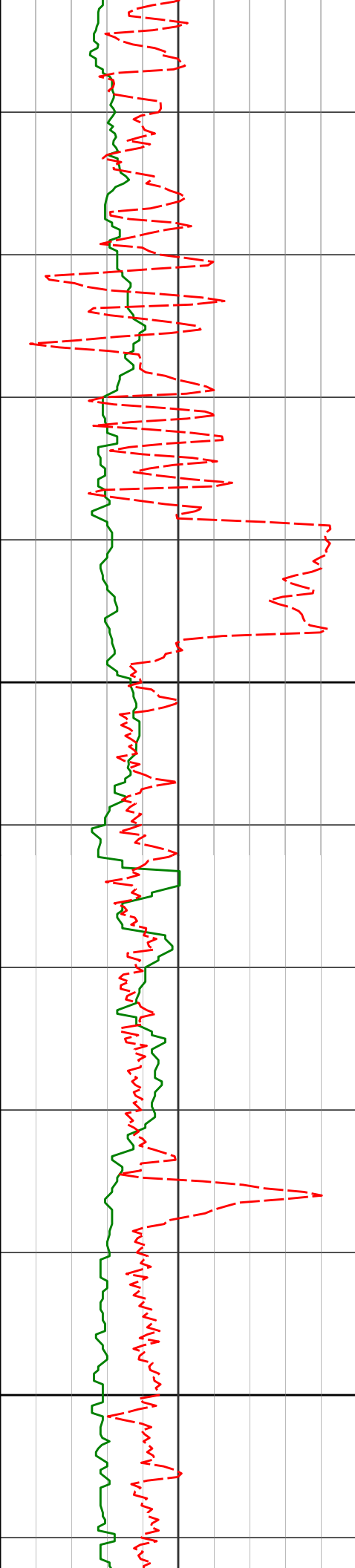
3199.40'

202.60°F

202.60°F

8600

202.60°F



8609'

91.85°

179.72° 5877.24'

3292.73'

202.60°F

202.60°F

8700

8703'

90.25°

178.39° 5875.52'

3386.16'

200.94°F

202.34°F

8800

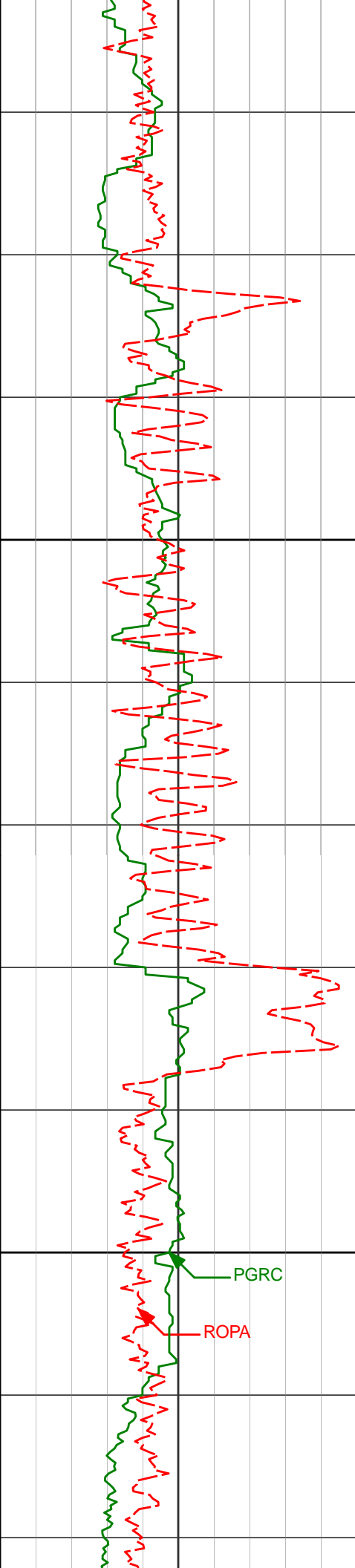
8797'

89.91°

178.02° 5875.39'

3479.76'

205.10°F



8900

9000

PGRC

ROPA

8891'

91.11°

178.78° 5874.56'

3573.33'

8985'

90.83°

178.52° 5872.97'

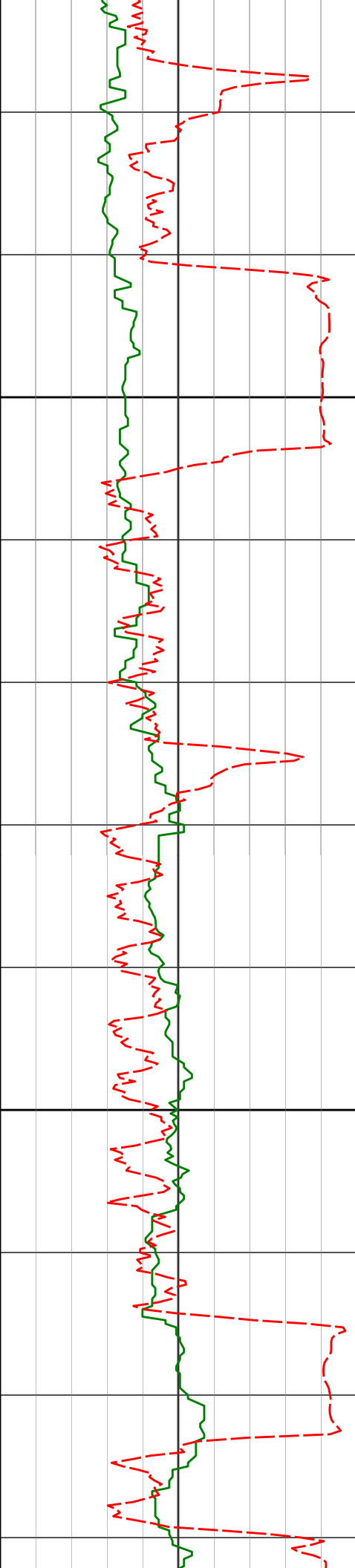
3666.84'

207.18°F

204.86°F

203.57°F

207.16°F



9079'

91.60°

178.11° 5870.97'

3760.40'

9100

9173'

91.54°

179.25° 5868.39'

3853.89'

9200

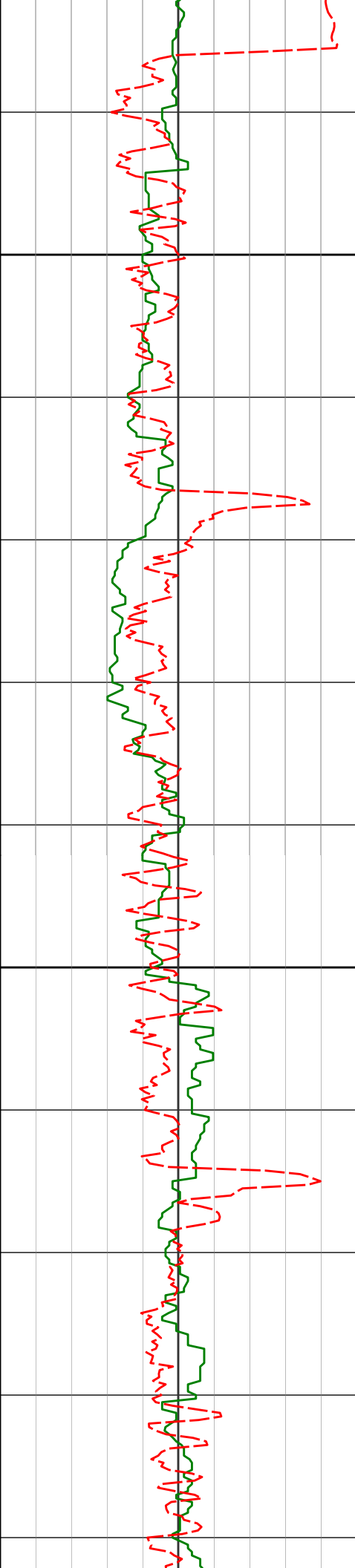
205.25°F

206.10°F

207.73°F

207.34°F

207.49°F



9300

9400

9268'

88.92°

179.87° 5868.01'

3948.24'

207.73°F

209.02°F

9362'

88.95°

179.73° 5869.76'

4041.54'

210.31°F

211.15°F

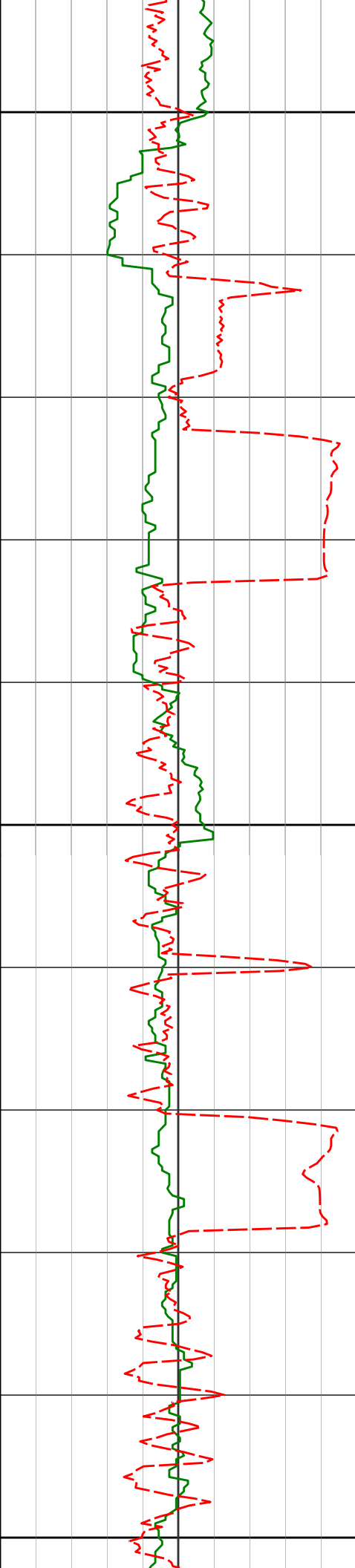
9456'

88.68°

178.90° 5871.70'

4134.94'

211.95°F



9500

9600

9700

209.94°F

210.09°F

210.31°F

210.50°F

212.66°F

9550'

88.46°

177.84° 5874.05'

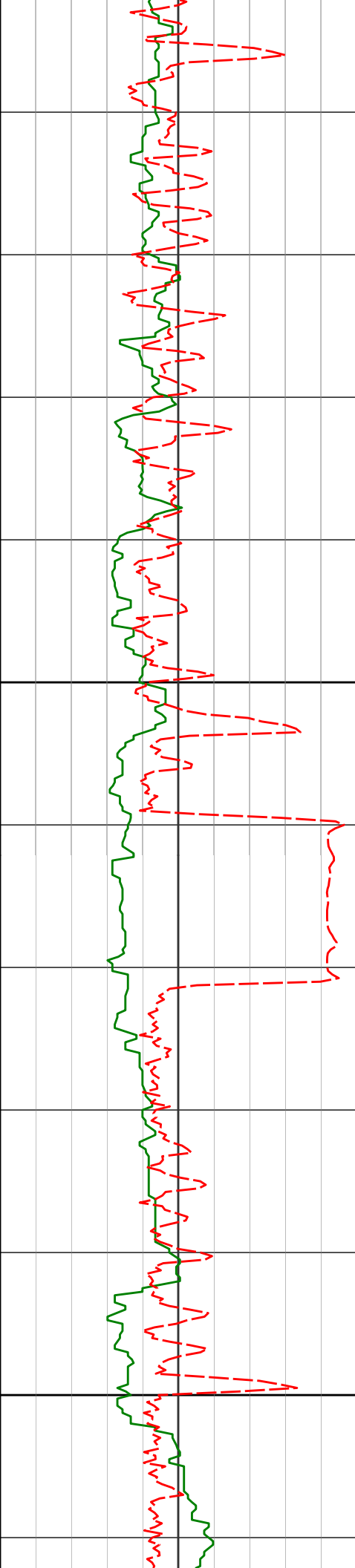
4228.48'

9644'

89.26°

177.74° 5875.92'

4322.12'



9800

9900

9738'

9833'

88.54°

90.28°

177.11° 5877.73'

178.07° 5878.71'

4415.81'

4510.48'

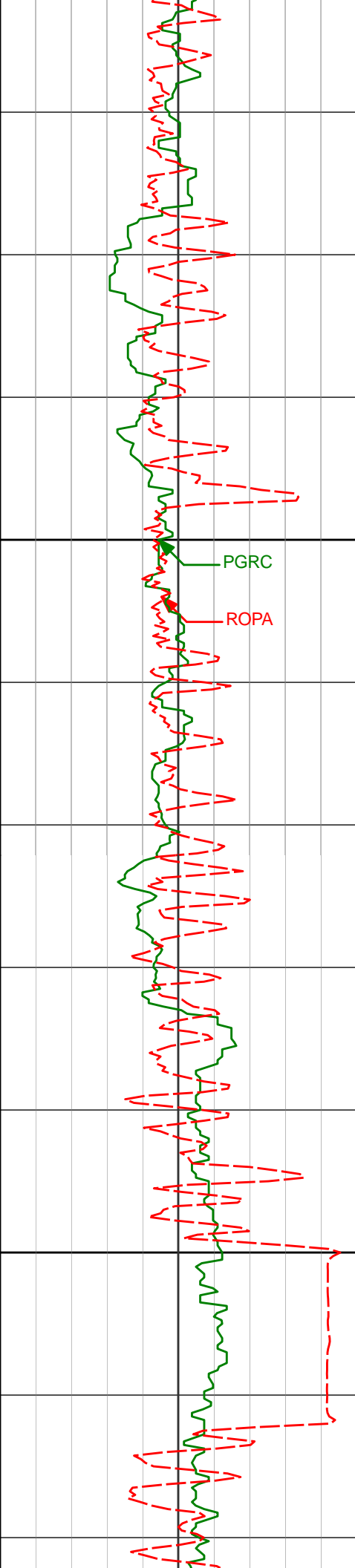
212.75°F

211.07°F

210.31°F

212.92°F

212.92°F



10000

10100

9927'

91.20°

178.14° 5877.50'

4604.09'

215.26°F

10021'

92.71°

179.05° 5874.29'

4697.57'

214.08°F

10116'

90.83°

180.03° 5871.35'

4791.88'

212.95°F

215.51°F

212.46°F

HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Douglas LC35-770
Wattenberg
Weld Colorado
USA
CA-XX-0902973203

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
664.00	0.35	297.14	664.00	0.92 N	1.80 W	-1.14	0.05
759.00	0.41	304.31	758.99	1.25 N	2.34 W	-1.53	0.09
853.00	0.10	42.39	852.99	1.50 N	2.56 W	-1.80	0.47
948.00	0.13	47.28	947.99	1.63 N	2.43 W	-1.92	0.03
1134.00	0.28	71.57	1133.99	1.91 N	1.85 W	-2.13	0.09
1225.00	0.20	88.60	1224.99	1.99 N	1.48 W	-2.15	0.12
1317.00	0.20	133.56	1316.99	1.88 N	1.21 W	-2.02	0.16
1409.00	0.26	111.58	1408.99	1.69 N	0.90 W	-1.79	0.12
1500.00	0.12	116.74	1499.99	1.57 N	0.61 W	-1.64	0.16
1592.00	0.22	140.35	1591.99	1.39 N	0.41 W	-1.43	0.13
1682.00	0.06	136.21	1681.99	1.22 N	0.27 W	-1.24	0.18
1774.00	0.32	48.57	1773.99	1.35 N	0.04 W	-1.35	0.35
1865.00	0.40	23.69	1864.99	1.81 N	0.28 E	-1.77	0.19
1955.00	1.11	53.69	1954.98	2.62 N	1.11 E	-2.46	0.88
2047.00	2.37	102.85	2046.94	2.73 N	3.69 E	-2.25	2.00
2138.00	4.20	125.04	2137.79	0.39 N	8.25 E	0.63	2.42
2228.00	5.66	135.28	2227.45	4.66 S	14.08 E	6.36	1.89
2320.00	7.90	130.65	2318.80	12.00 S	22.07 E	14.63	2.50
2411.00	8.27	128.41	2408.90	20.14 S	31.94 E	23.93	0.53
2503.00	7.83	128.42	2499.99	28.15 S	42.04 E	33.12	0.48
2594.00	7.60	127.86	2590.17	35.69 S	51.65 E	41.80	0.26
2689.00	7.64	127.18	2684.33	43.37 S	61.64 E	50.64	0.10
2783.00	10.24	127.09	2777.18	52.18 S	73.28 E	60.83	2.77
2878.00	11.72	128.08	2870.44	63.23 S	87.62 E	73.56	1.57
2972.00	10.88	126.93	2962.61	74.45 S	102.23 E	86.50	0.93
3067.00	9.18	119.68	3056.16	83.59 S	115.98 E	97.27	2.23
3162.00	8.19	125.37	3150.07	91.26 S	128.08 E	106.37	1.37
3256.00	9.41	136.47	3242.97	100.71 S	138.83 E	117.08	2.22
3351.00	9.83	133.87	3336.64	111.96 S	150.03 E	129.62	0.64
3445.00	10.48	135.24	3429.16	123.59 S	161.84 E	142.62	0.74
3540.00	10.76	134.66	3522.54	135.96 S	174.23 E	156.43	0.31
3635.00	11.20	134.01	3615.80	148.61 S	187.17 E	170.57	0.48
3729.00	10.75	131.38	3708.08	160.74 S	200.32 E	184.24	0.72
3824.00	10.24	129.73	3801.49	171.99 S	213.46 E	197.03	0.62
3918.00	10.31	131.11	3893.98	182.86 S	226.22 E	209.39	0.27
4013.00	9.16	128.51	3987.61	193.16 S	238.54 E	221.13	1.29
4107.00	8.60	129.63	4080.48	202.31 S	249.82 E	231.60	0.62
4202.00	7.81	123.71	4174.51	210.42 S	260.66 E	240.99	1.22
4297.00	6.89	121.59	4268.73	216.99 S	270.89 E	248.77	1.01
4391.00	7.00	118.27	4362.04	222.66 S	280.74 E	255.61	0.44
4486.00	7.29	131.42	4456.31	229.39 S	290.35 E	263.47	1.74
4580.00	9.56	133.60	4549.29	238.72 S	300.48 E	273.98	2.44
4675.00	7.93	133.58	4643.18	248.68 S	310.94 E	285.16	1.71
4864.00	7.86	126.31	4830.40	265.32 S	330.80 E	304.12	0.53
4959.00	8.63	121.48	4924.41	272.89 S	342.11 E	313.02	1.09
5054.00	10.02	122.64	5018.16	281.06 S	355.14 E	322.75	1.47
5149.00	8.79	119.83	5111.88	289.13 S	368.39 E	332.39	1.38
5243.00	8.47	122.04	5204.82	296.37 S	380.49 E	341.07	0.48
5338.00	12.07	140.41	5298.30	307.75 S	392.76 E	353.87	5.08
5432.00	17.53	140.73	5389.15	326.30 S	408.00 E	374.16	5.81
5527.00	20.96	143.55	5478.83	351.05 S	427.15 E	401.09	3.74
5620.00	34.02	160.55	5561.27	389.18 S	445.81 E	441.23	16.25
5714.00	35.75	163.67	5638.39	440.33 S	462.29 E	494.03	2.64

5714.00	55.75	165.07	5638.99	440.33 S	402.29 E	454.03	2.04
5809.00	45.71	169.30	5710.31	500.54 S	476.45 E	555.52	11.17
5903.00	53.80	180.32	5771.10	571.77 S	482.50 E	626.96	12.40
5997.00	62.22	180.26	5820.85	651.43 S	482.09 E	705.95	8.96
6092.00	68.52	179.38	5860.42	737.74 S	482.38 E	791.64	6.68
6185.00	78.84	176.36	5886.53	826.80 S	485.76 E	880.43	11.53
6228.00	86.83	176.00	5891.89	869.33 S	488.60 E	922.99	18.59
6436.00	88.98	177.11	5899.49	1076.80 S	501.10 E	1130.42	1.17
6531.00	90.52	176.53	5899.90	1171.65 S	506.38 E	1225.19	1.73
6626.00	90.06	174.93	5899.42	1266.38 S	513.45 E	1320.07	1.74
6720.00	90.46	174.57	5898.99	1359.99 S	522.05 E	1414.02	0.58
6815.00	90.74	174.45	5897.99	1454.55 S	531.13 E	1508.98	0.32
6909.00	91.66	174.05	5896.02	1548.05 S	540.55 E	1602.93	1.07
7003.00	92.96	176.10	5892.23	1641.62 S	548.61 E	1696.78	2.57
7098.00	92.68	179.13	5887.56	1736.41 S	552.57 E	1791.34	3.20
7192.00	91.14	181.34	5884.42	1830.35 S	552.19 E	1884.51	2.87
7285.00	88.58	179.80	5884.65	1923.34 S	551.26 E	1976.67	3.21
7379.00	91.02	179.73	5884.98	2017.33 S	551.64 E	2069.99	2.59
7474.00	92.37	179.89	5882.17	2112.28 S	551.96 E	2164.26	1.44
7569.00	90.18	180.45	5880.05	2207.25 S	551.68 E	2258.47	2.38
7663.00	89.63	179.89	5880.20	2301.25 S	551.40 E	2351.71	0.84
7758.00	89.26	178.83	5881.12	2396.24 S	552.46 E	2446.11	1.18
7853.00	89.20	178.84	5882.40	2491.21 S	554.39 E	2540.59	0.07
7947.00	88.30	178.01	5884.44	2585.15 S	556.97 E	2634.13	1.30
8042.00	89.85	178.21	5885.97	2680.08 S	560.11 E	2728.72	1.64
8137.00	90.31	178.26	5885.84	2775.04 S	563.04 E	2823.31	0.49
8231.00	90.65	178.35	5885.06	2868.99 S	565.81 E	2916.89	0.37
8420.00	91.48	178.61	5881.55	3057.89 S	570.82 E	3104.97	0.46
8515.00	90.95	179.51	5879.53	3152.86 S	572.38 E	3199.40	1.10
8609.00	91.85	179.72	5877.24	3246.83 S	573.01 E	3292.73	0.98
8703.00	90.25	178.39	5875.52	3340.79 S	574.56 E	3386.16	2.22
8797.00	89.91	178.02	5875.39	3434.75 S	577.51 E	3479.76	0.53
8891.00	91.11	178.78	5874.56	3528.70 S	580.12 E	3573.33	1.51
8985.00	90.83	178.52	5872.97	3622.66 S	582.34 E	3666.84	0.41
9079.00	91.60	178.11	5870.97	3716.60 S	585.10 E	3760.40	0.93
9173.00	91.54	179.25	5868.39	3810.54 S	587.26 E	3853.89	1.22
9268.00	88.92	179.87	5868.01	3905.53 S	587.99 E	3948.24	2.83
9362.00	88.95	179.73	5869.76	3999.51 S	588.32 E	4041.54	0.15
9456.00	88.68	178.90	5871.70	4093.48 S	589.44 E	4134.94	0.93
9550.00	88.46	177.84	5874.05	4187.41 S	592.11 E	4228.48	1.15
9644.00	89.26	177.74	5875.92	4281.32 S	595.73 E	4322.12	0.86
9738.00	88.54	177.11	5877.73	4375.21 S	599.95 E	4415.81	1.02
9833.00	90.28	178.07	5878.71	4470.12 S	603.94 E	4510.48	2.09
9927.00	91.20	178.14	5877.50	4564.06 S	607.06 E	4604.09	0.99
10021.00	92.71	179.05	5874.29	4657.97 S	609.37 E	4697.57	1.87
10116.00	90.83	180.03	5871.35	4752.92 S	610.13 E	4791.88	2.23
10248.00	90.83	179.91	5869.44	4844.90 S	610.21 E	4922.87	0.09
10315.00	90.83	179.91	5868.46	4951.90 S	610.31 E	4989.36	0.01

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 172.91 DEGREES (GRID)
A TOTAL CORRECTION OF 7.04 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 10315.00 FEET
IS 4989.36 FEET ALONG 172.97 DEGREES (GRID)**

Final survey is a straight line projection to TD.