



1 : 600 / 1 : 240

WELL INFORMATION					
MWD Run Number	100	200			
Date run completed	09-May-15	11-May-15			
Rig Bit Number	2	3			
Bit Size (in)	8.750	6.125			
Tool Nominal OD (in)	6.750	4.750			
Log Start Depth (MD, ft)	642.00	6,342.00			
Log End Depth (MD, ft)	6,342.00	11,352.00			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	08-May-15 00:45	10-May-15 08:30			
Drill/Wipe End Date and Time	09-May-15 03:55	11-May-15 14:00			
Min Inc (deg) @ Depth (MD, ft)	0.24 @ 1,491.00	87.53 @ 9,611.00			
Max Inc (deg) @ Depth (MD, ft)	79.56 @ 6,288.00	93.05 @ 9,233.00			
Bit TFA(in2) / Bit Type	0.98 / PDC	0.65 / PDC			
Flow Rate (gpm)	599.17	300.00			
Max AV (fpm) / CV (fpm) @ MWD	414.0 / N/A	444.6 / 400.0			
Fluid Type	Native/Spud Mud	Fresh Water Gel			
Density (ppg) / Viscosity (spqt)	10.20 / 46.00	9.65 / 32.00			
Filtrate CL (ppm)	2,500.00	25.00			
pH / Fluid Loss (mptm)	9.30 / 0	11.20 / 8			
PV (cP) / YP (lbf2)	15 / 15.00	10 / 7.00			
% Solids / % Sand	10.7 / 0.15	7.70 / 0.15			
% Oil / Oil:Water Ratio	N/A / N/A	0 / 0:95			
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 (in) @ Depth (MD, ft)	100.00 / 0.00	200.00 / 0.00			

Max Tool Temp (degF) / Source	160.83 / PCM	221.80 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ 160.83	N/A @ 221.80			
Lead MWD Engineer	Cody Wurdeman	Brian Neu			
Customer Representative	Johnny Sanchez	Johnny Sanchez			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.93	5.93			
Sub Serial Number	246470	12463933			
Insert Serial Number	11680708	11680771			
Date and Time Initialized	07-May-15 08:49	09-May-15 11:54			
Date and Time Read	09-May-15 08:13	11-May-15 21:43			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	54.00	68.00			
Software Version	6.21	6.21			
Sub Serial Number	246470	12463933			
Sonde Serial Number	11833212	10993273			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	7.70	156.20			

Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	47.43	61.12			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	246470	12463933			
Insert/Sonde Serial Number	11579761	11681055			

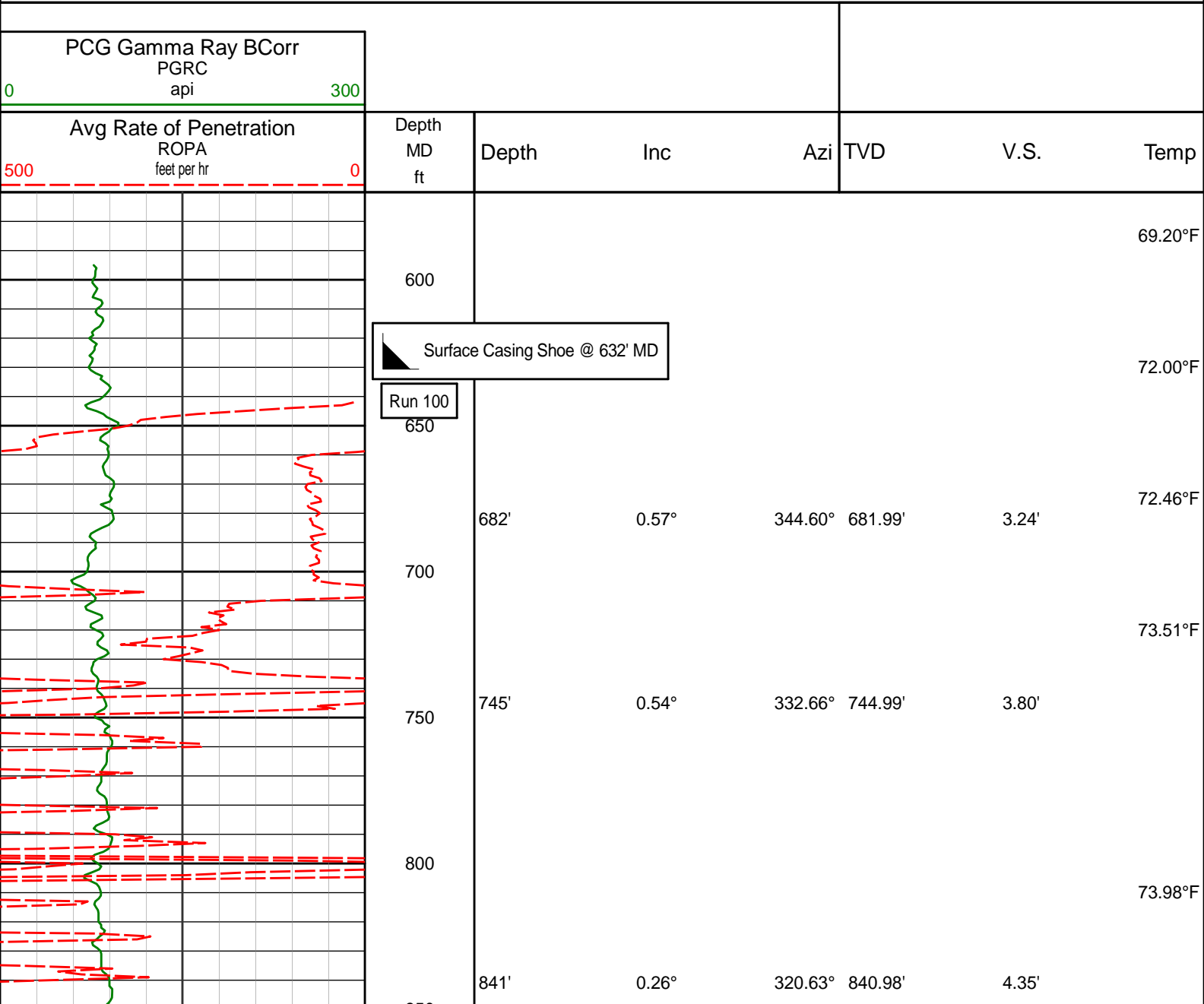
REMARKS

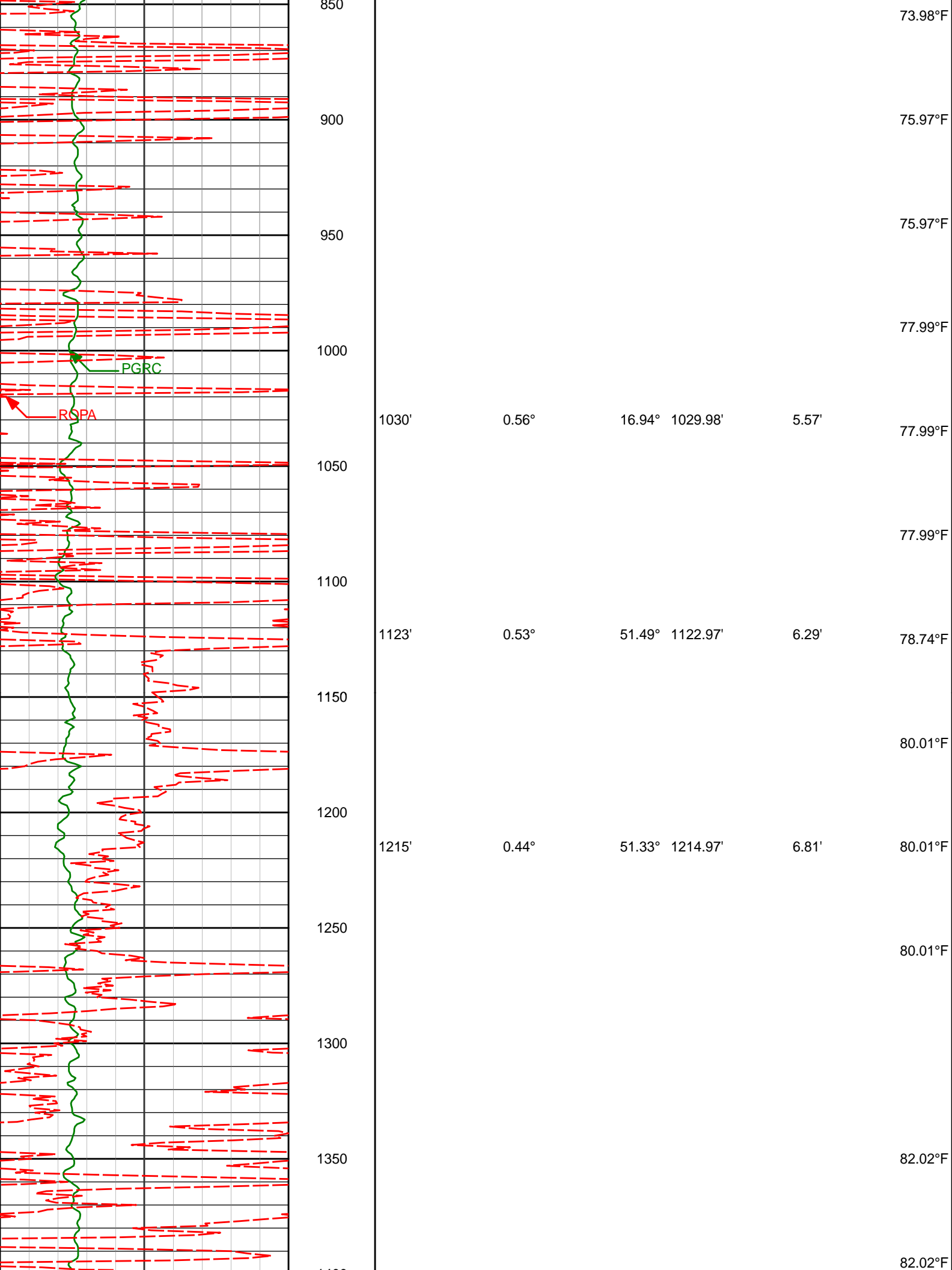
1. All depths are true vertical bit depths. Referenced to the Driller's pipe tally and are measured from the Drill Floor, unless otherwise specified.
2. No depth corrections have been made for pipe stretch or compression.
3. Critical annular velocities are calculated using the "Power Law" model for water based fluids.
4. All data presented is recorded data unless otherwise specified.
5. The following smoothing parameters have been applied to the data:
PGRC (Corrected Gamma Ray):
Interval Resolution: 0.5 ft
Interval Distance: 0.6 ft
Gap Fill: 3.0 ft
ROPA (Average Rate of Penetration):
Interval Resolution: 0.5 ft
Interval Distance: 1.2 ft
Gap Fill: 3.0 ft
Insite version: V8.1.10

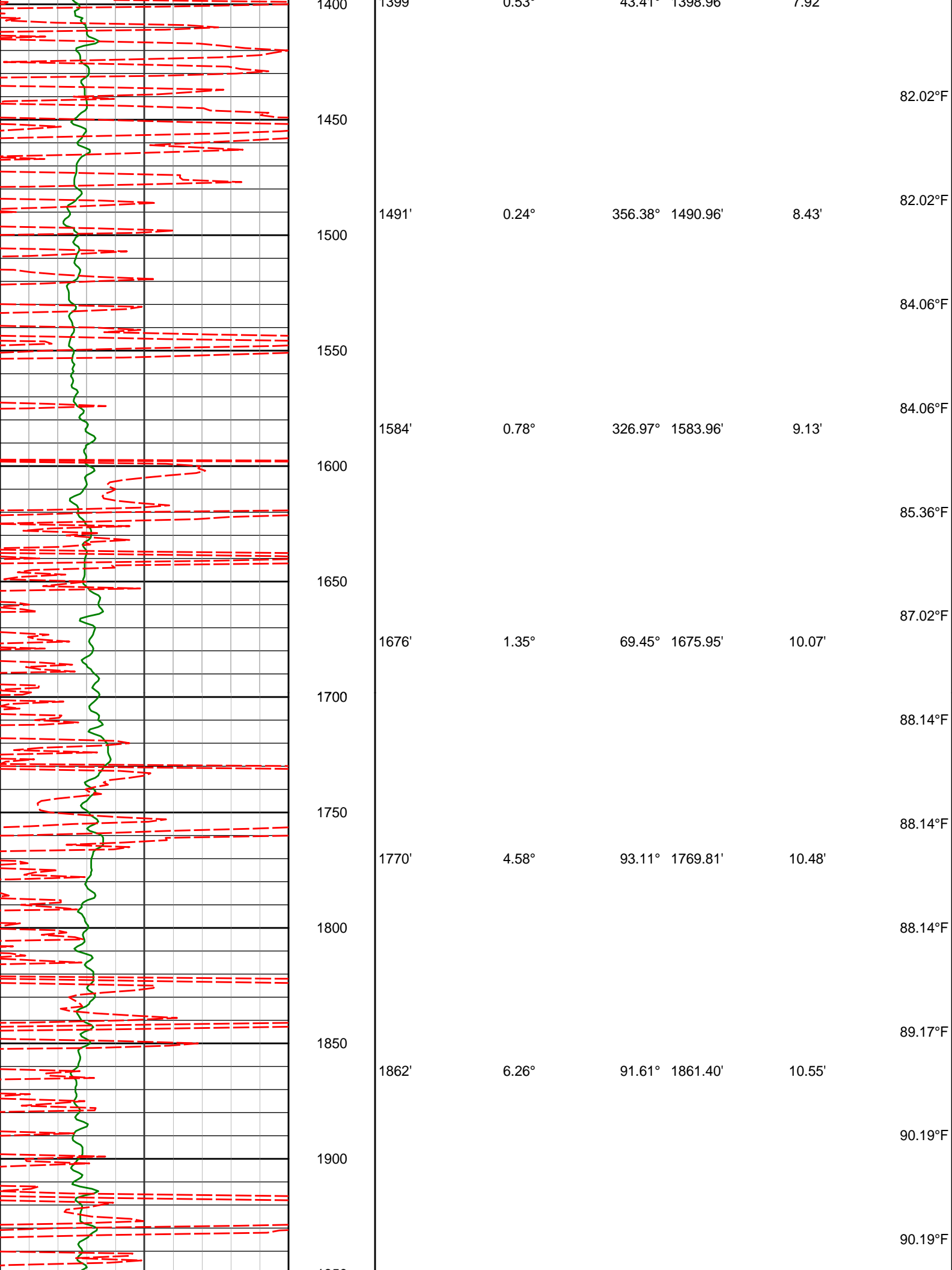
WARRANTY

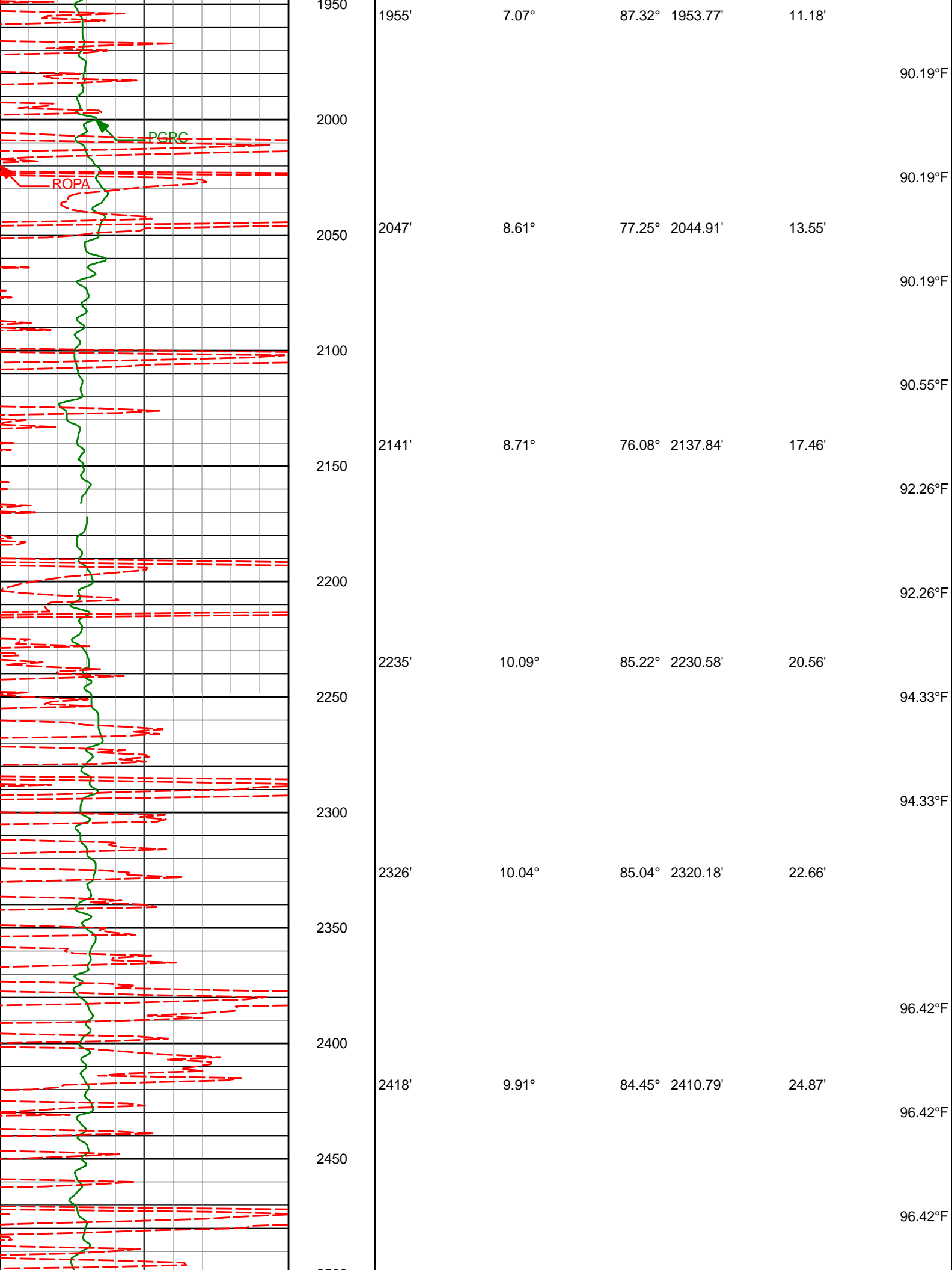
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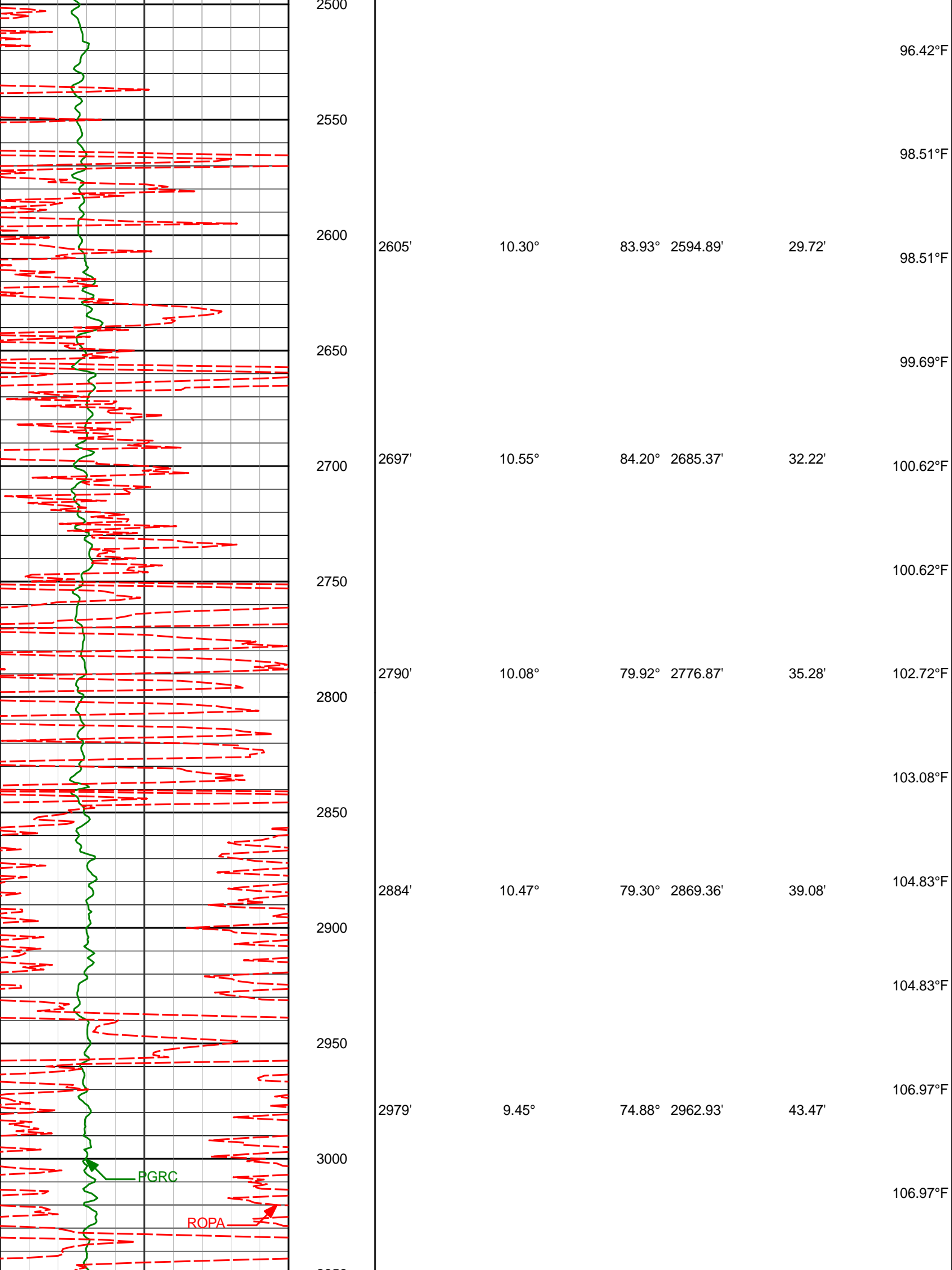
MD Detail 1:600 Scale

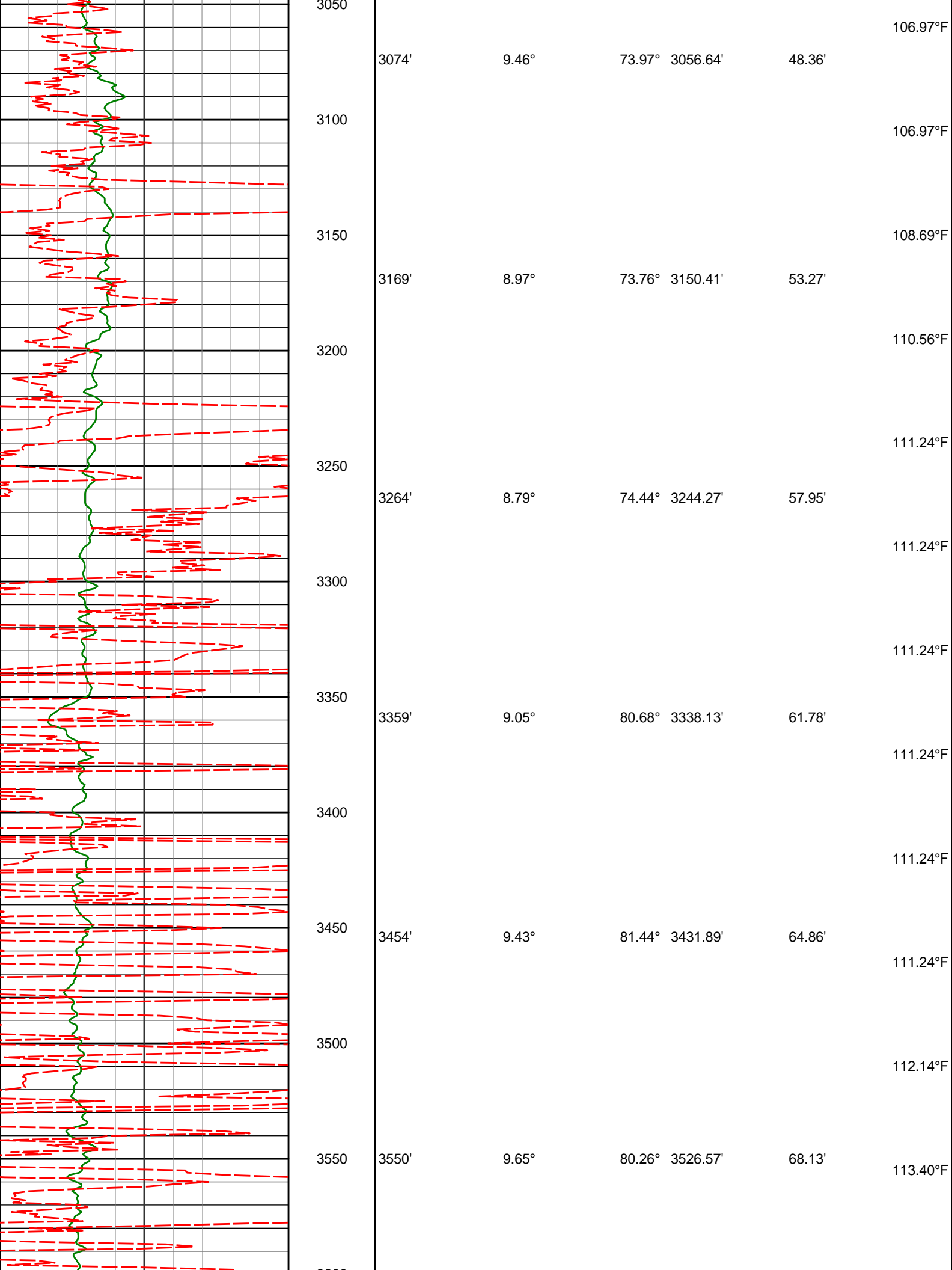


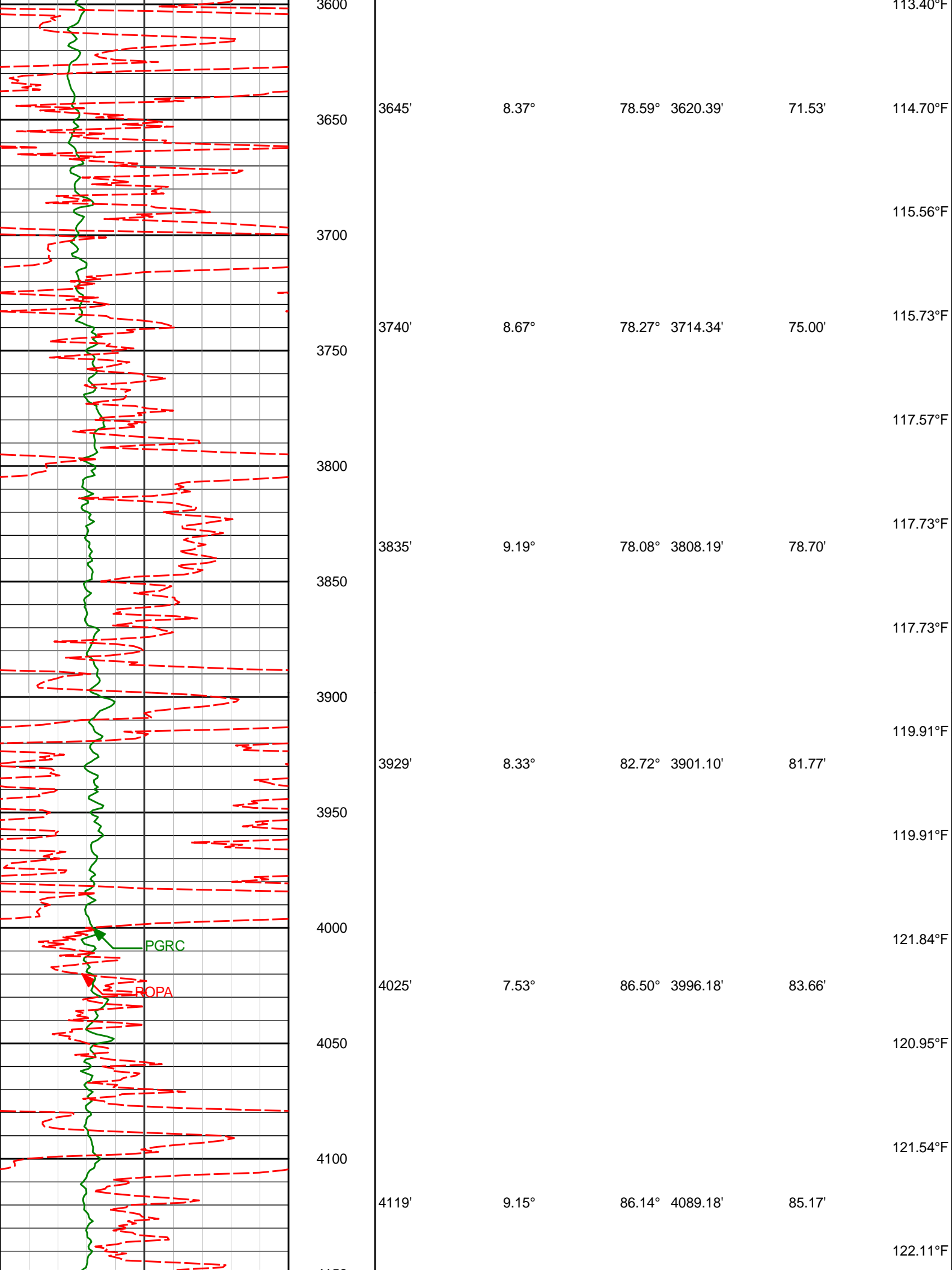


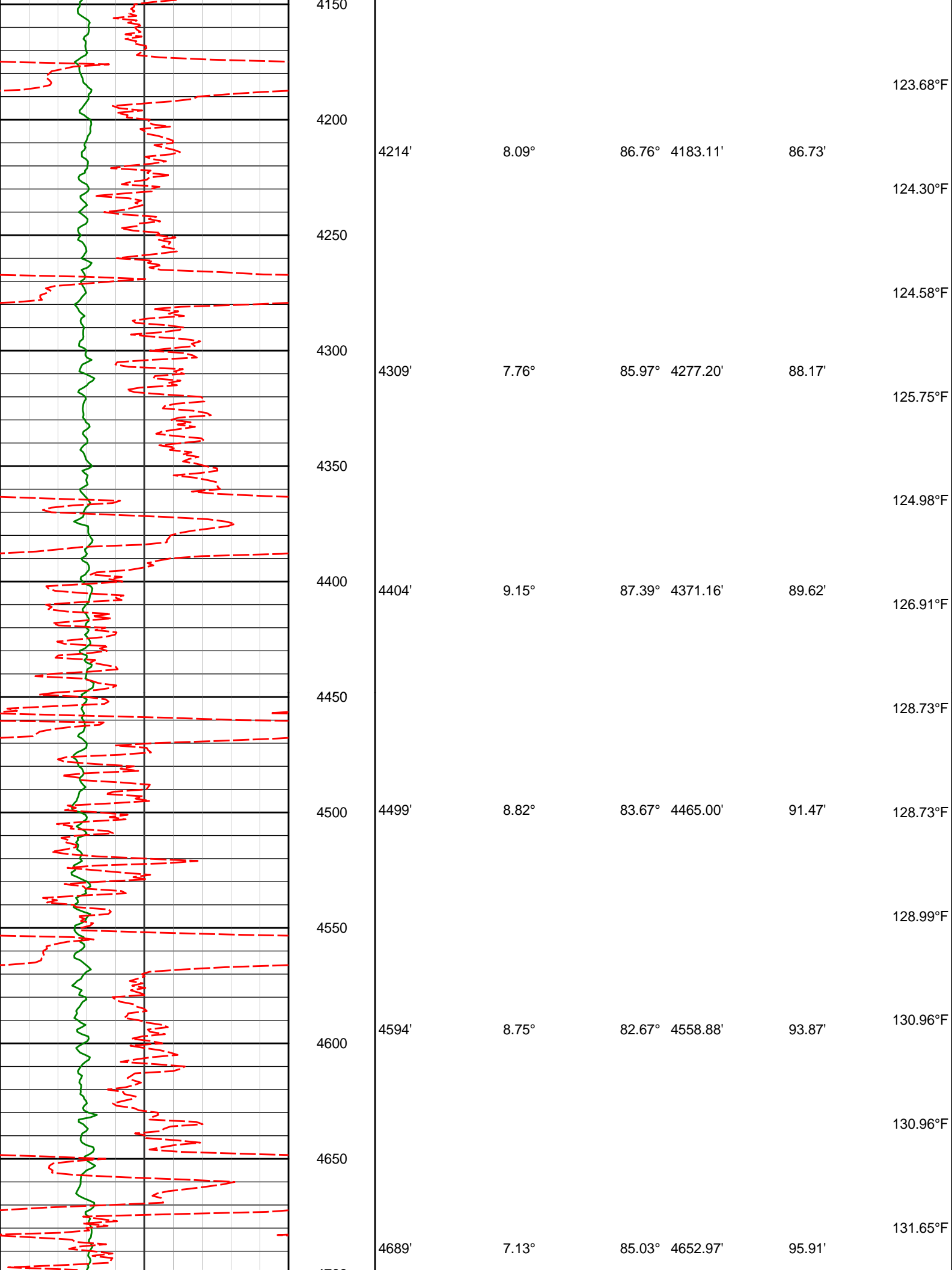


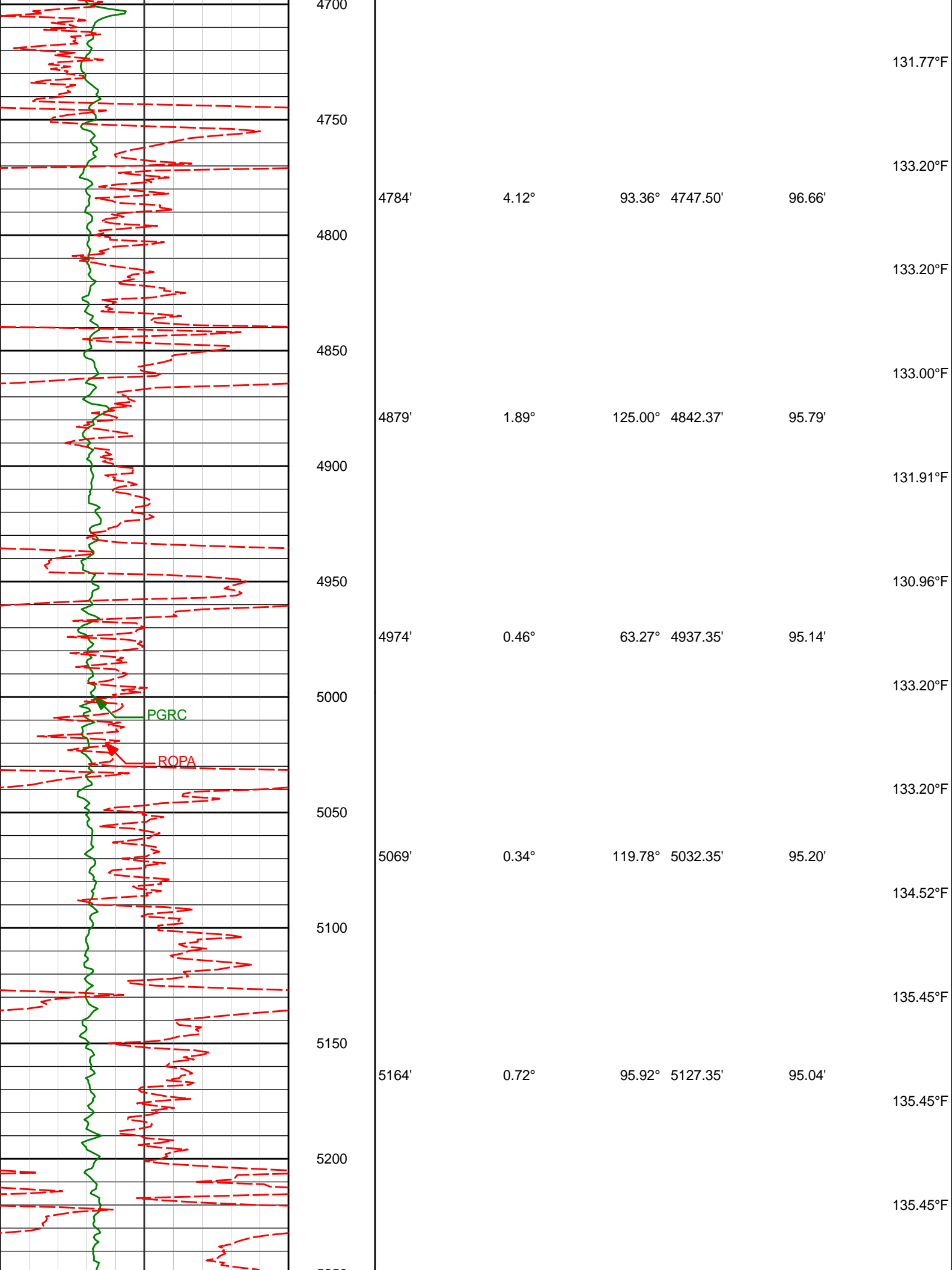


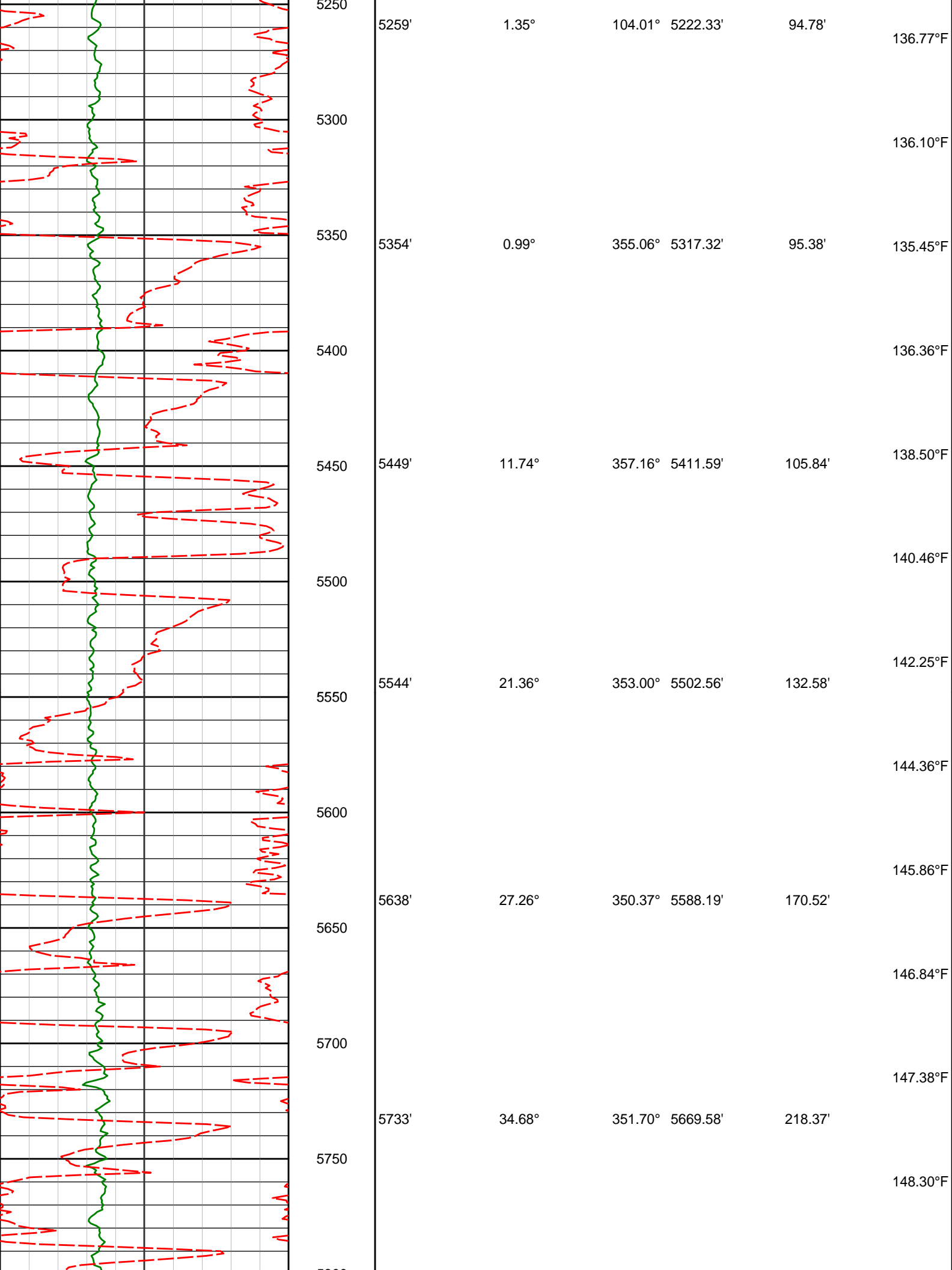


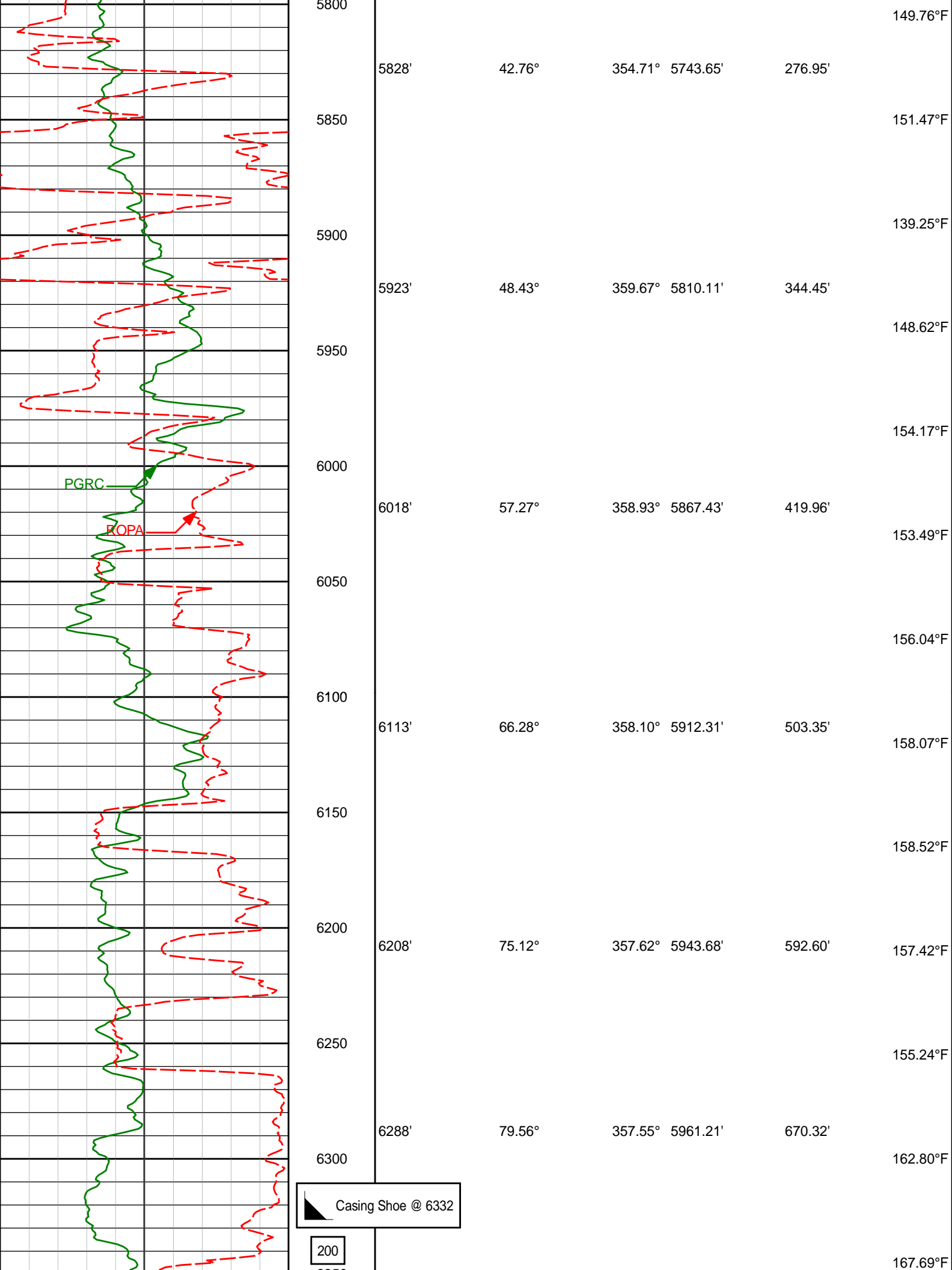


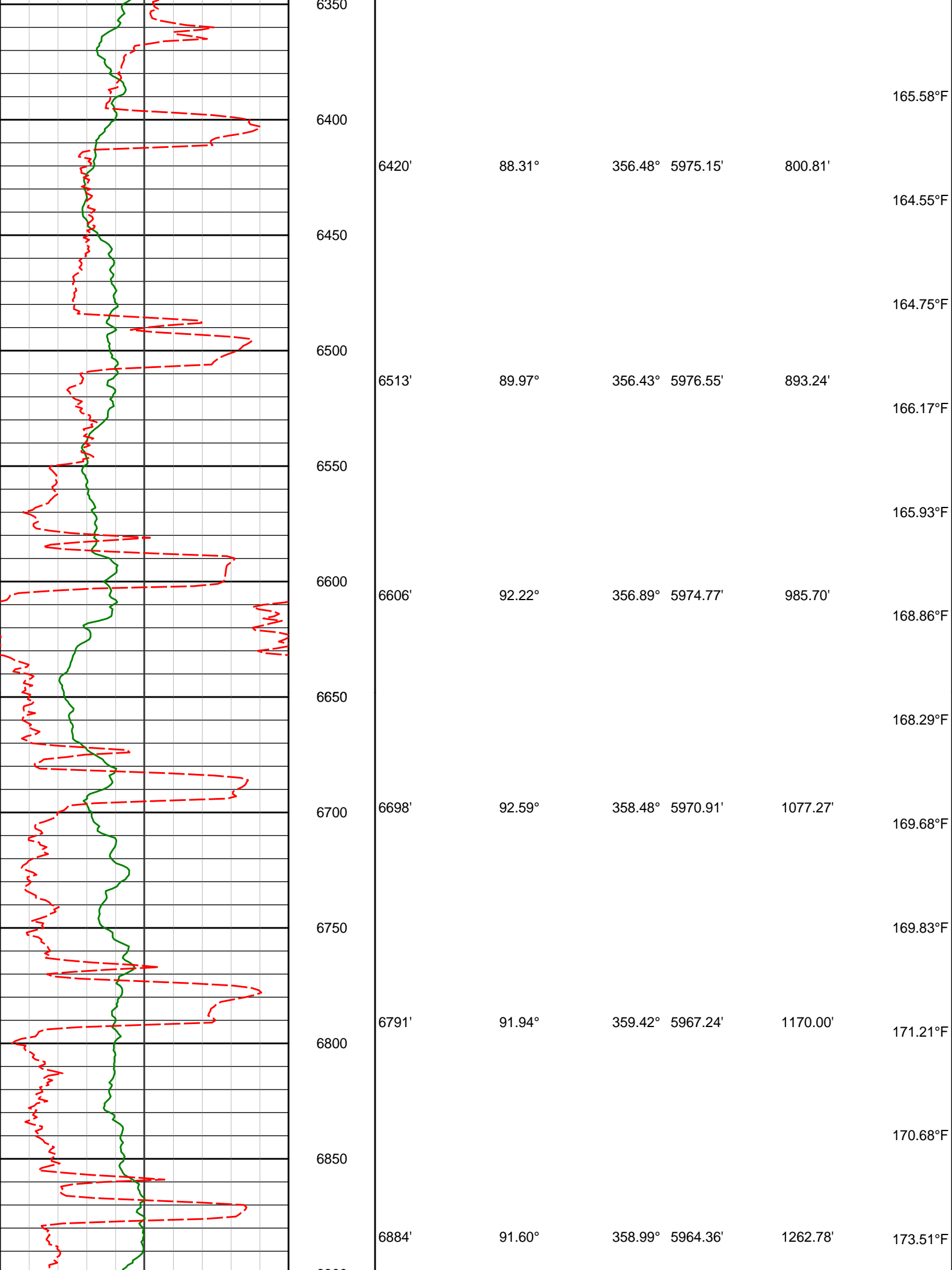


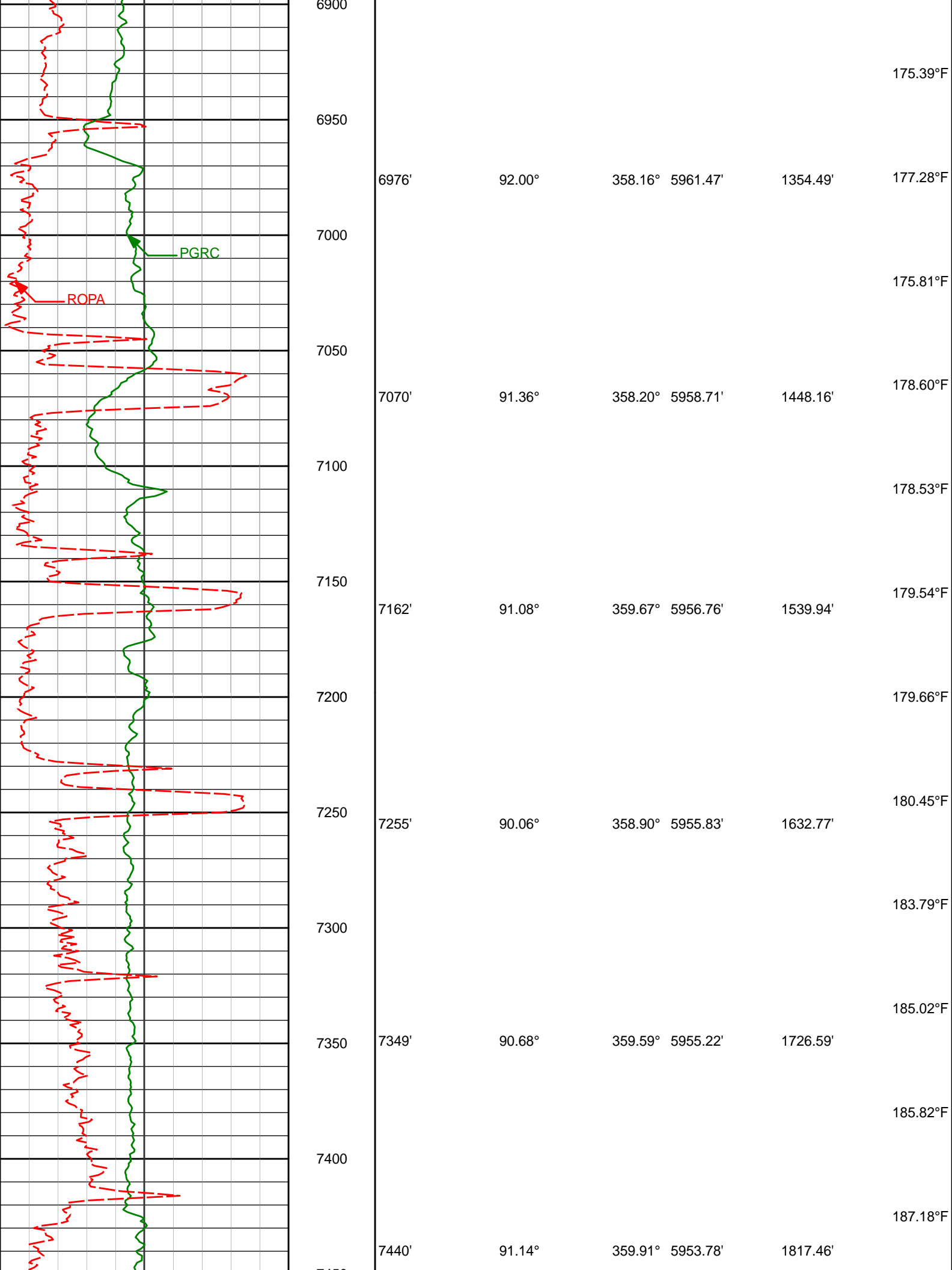


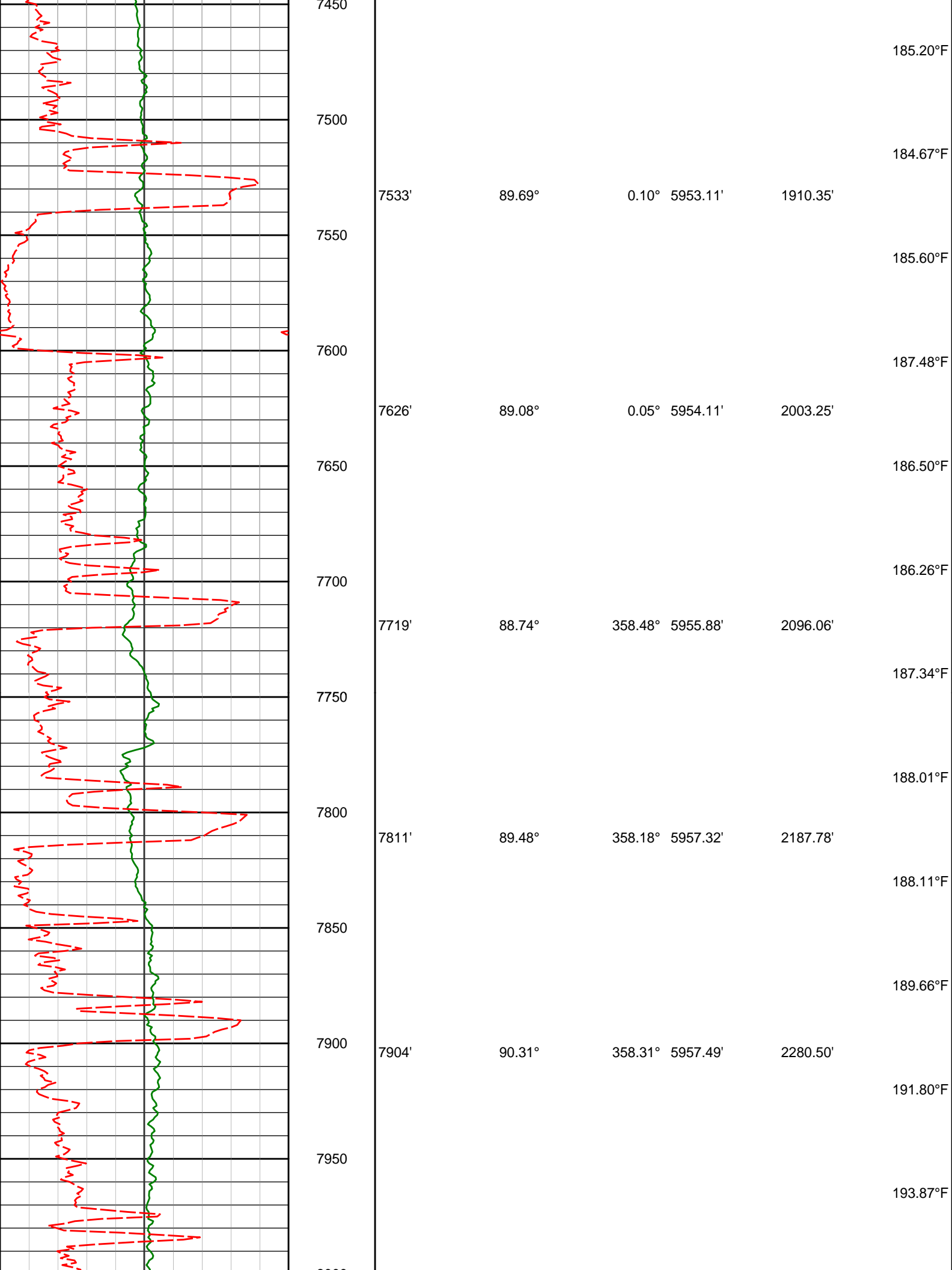


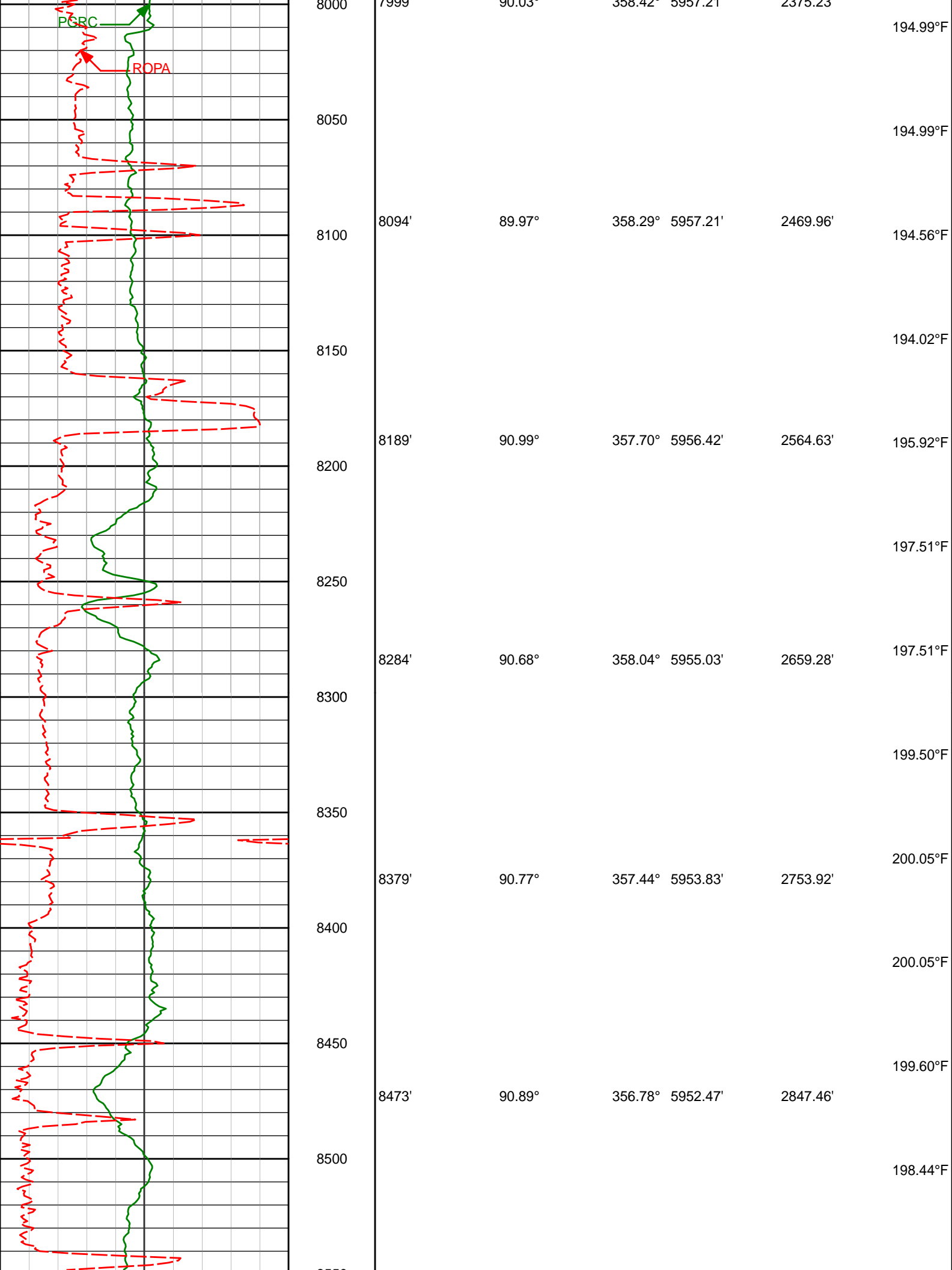


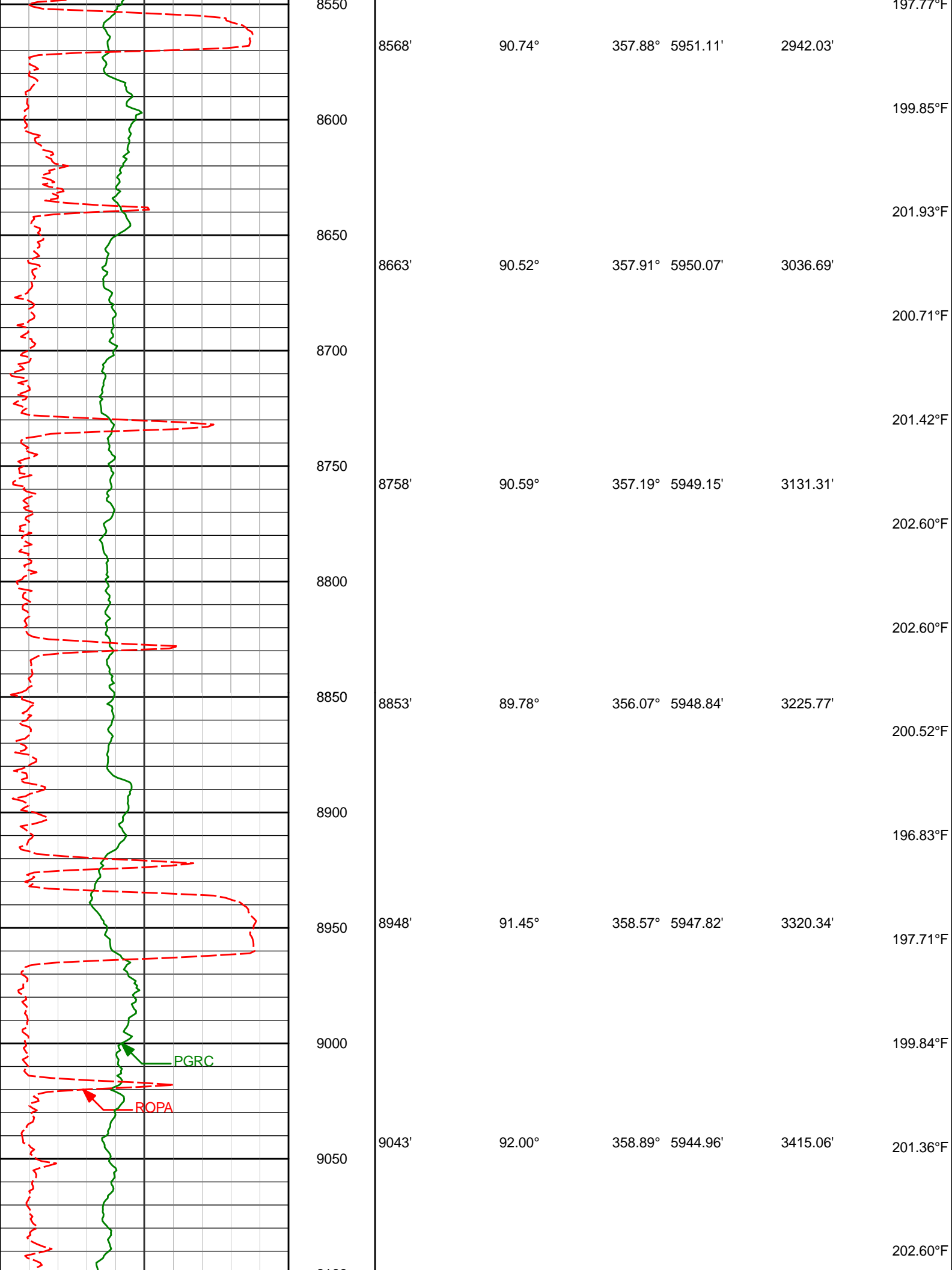


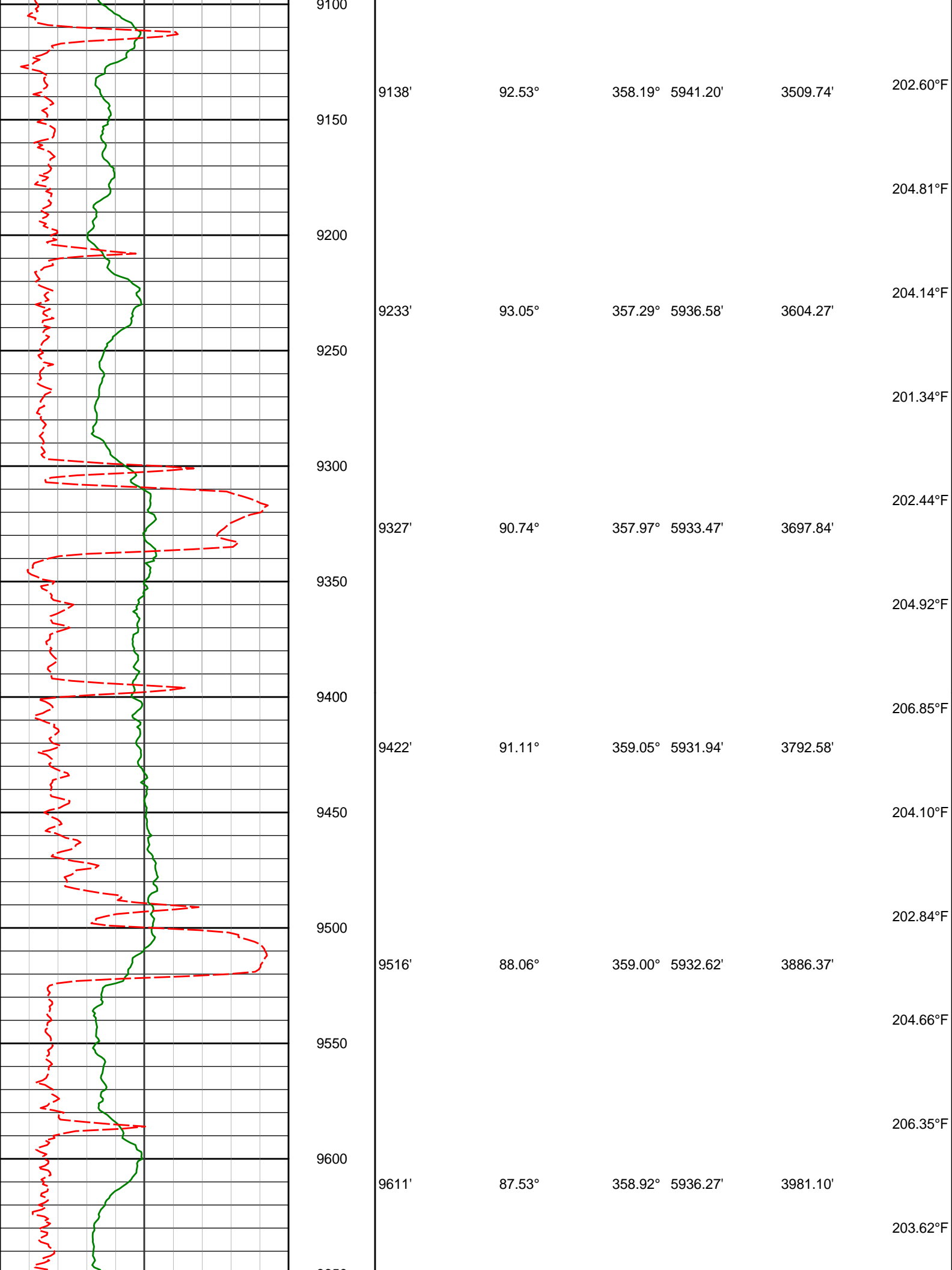


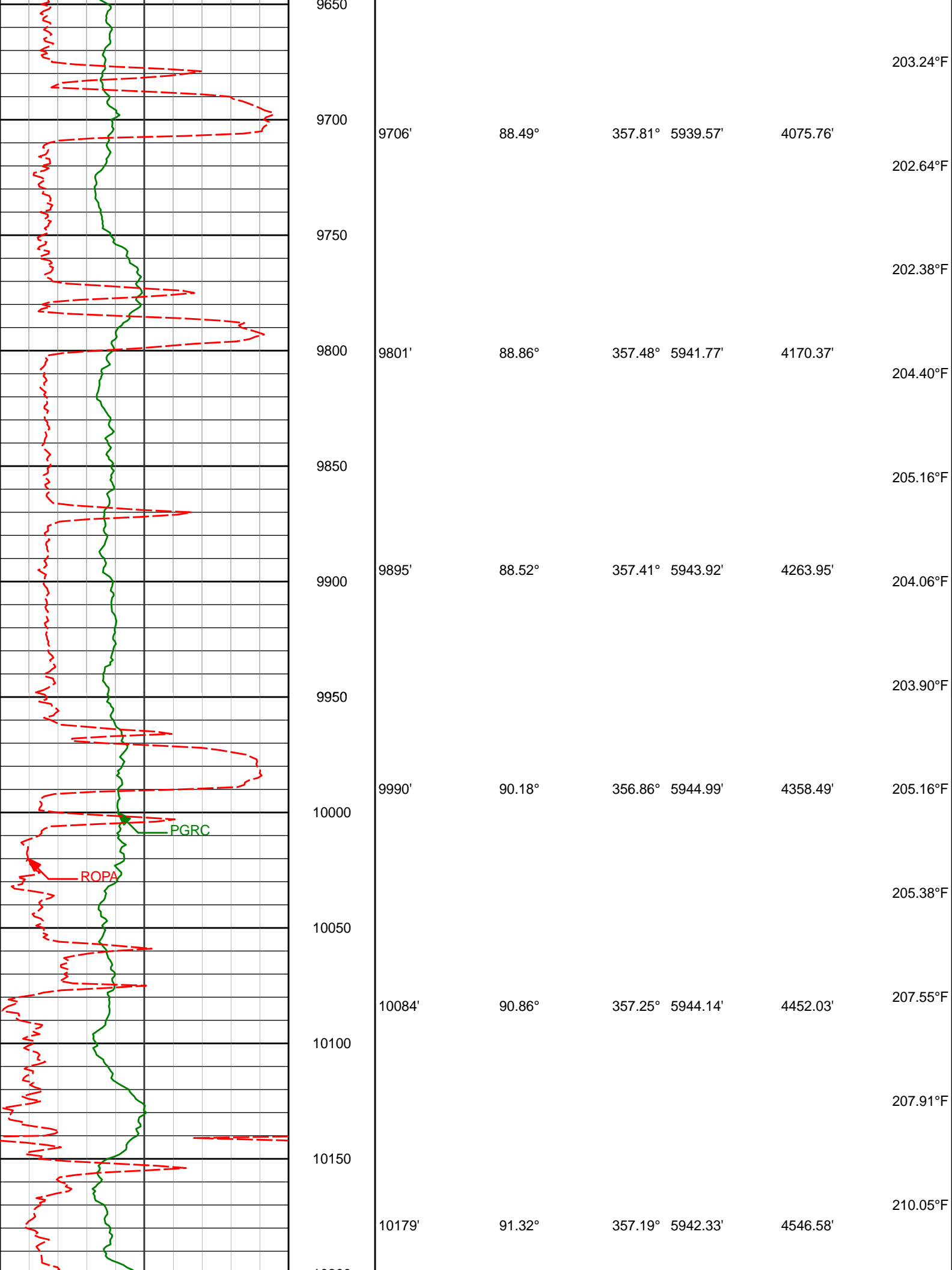


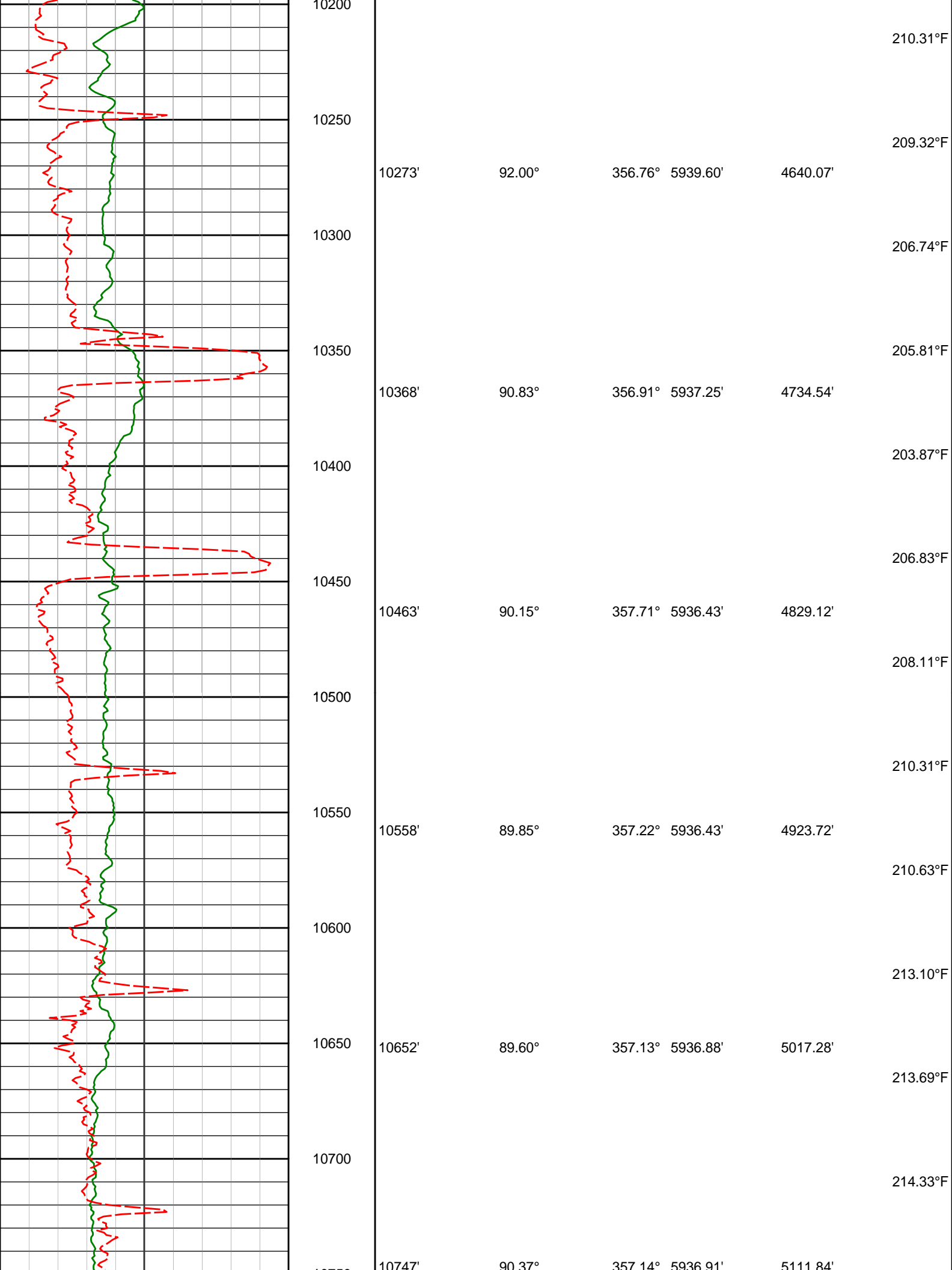


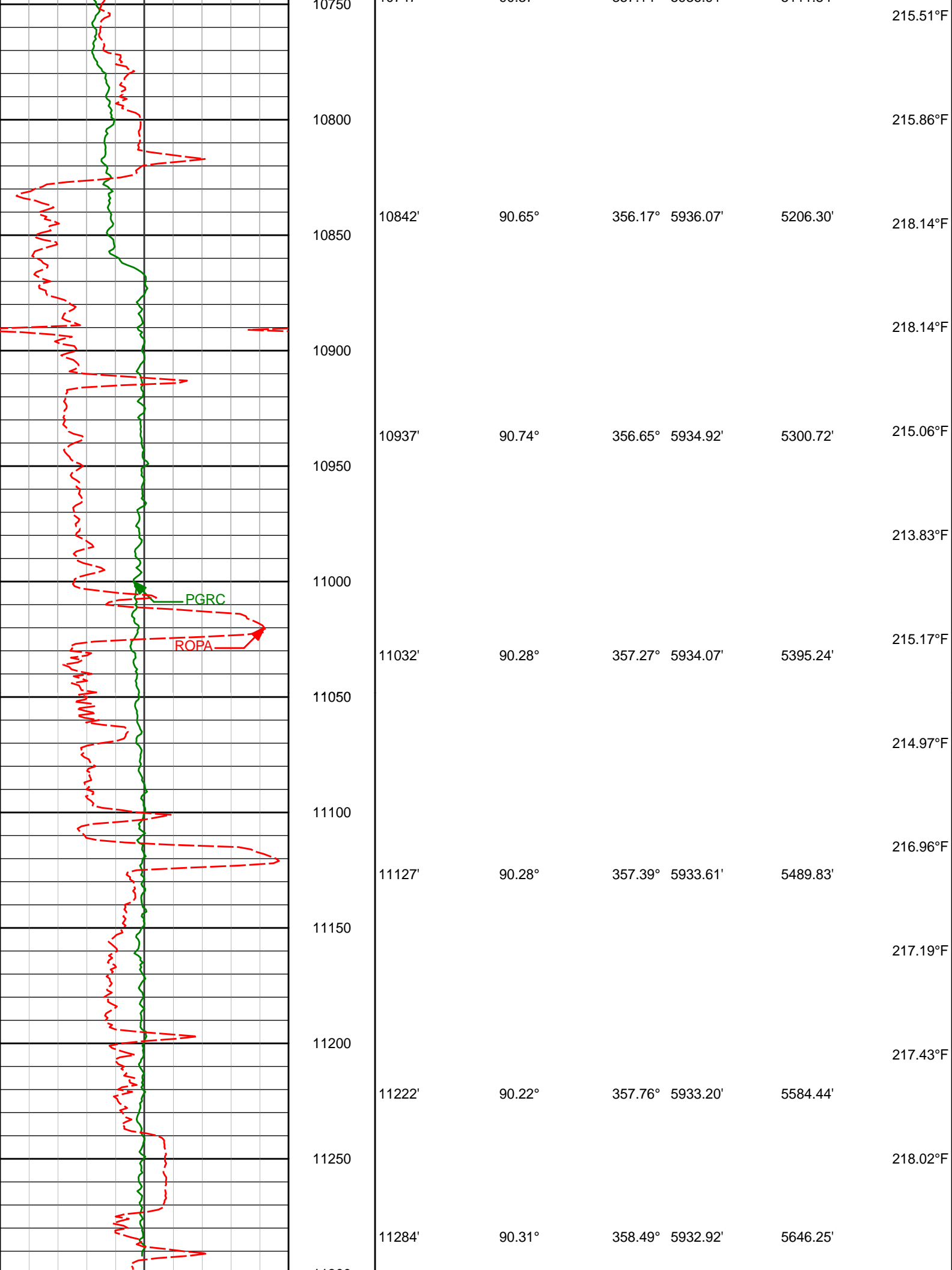


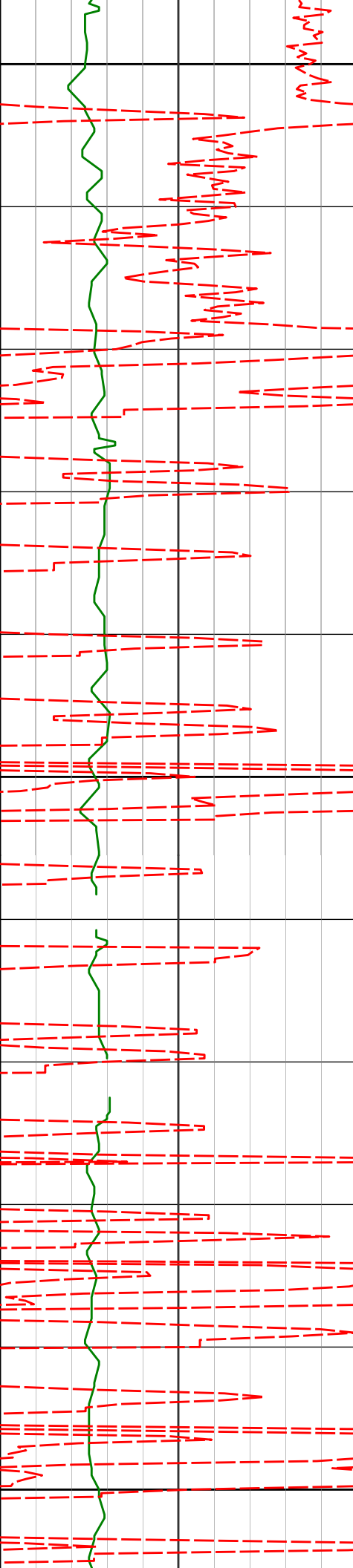












700

73.51°F

745'

0.54°

332.66° 744.99'

3.80'

800

73.98°F

841'

0.26°

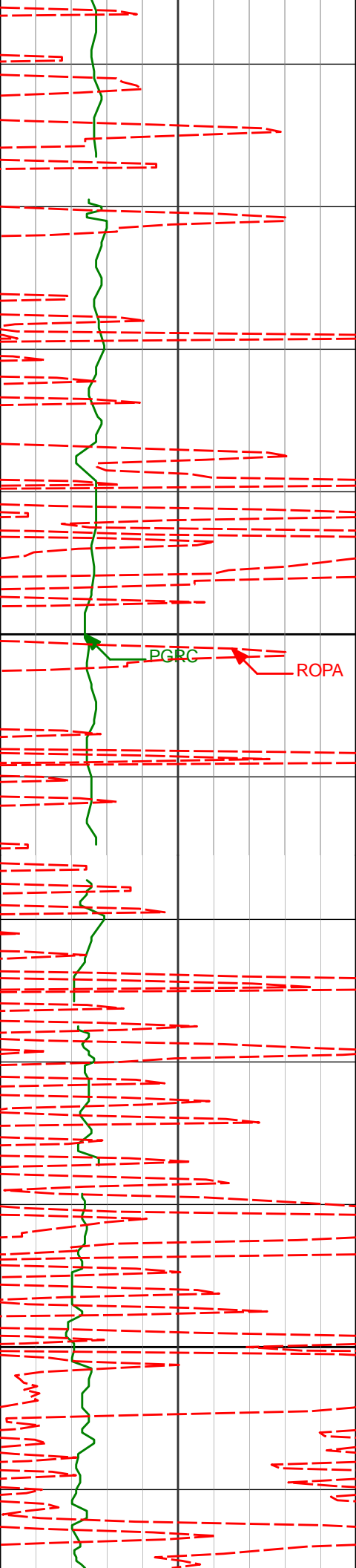
320.63° 840.98'

4.35'

73.98°F

900

75.97°F



1000

1030'

0.56°

16.94° 1029.98'

5.57'

1100

1123'

0.53°

51.49° 1122.97'

6.29'

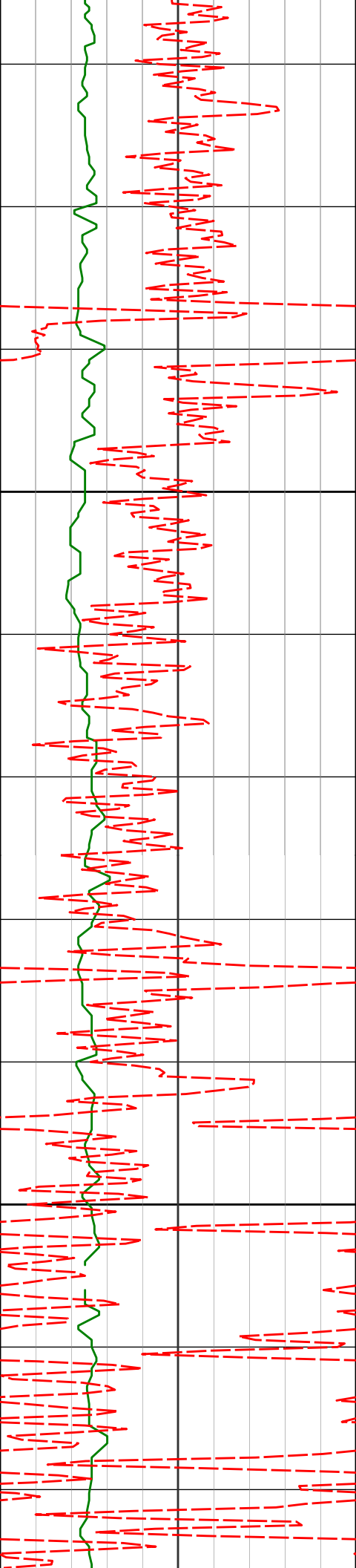
75.97°F

77.99°F

77.99°F

77.99°F

78.74°F



1200

1300

1215'

0.44°

51.33° 1214.97'

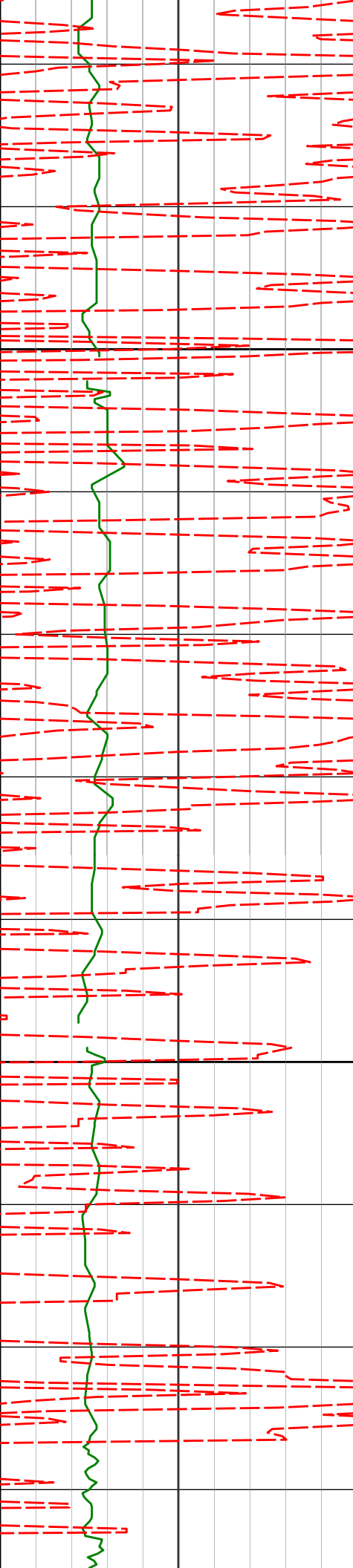
6.81'

80.01°F

80.01°F

80.01°F

82.02°F



1400

1399'

0.53°

43.41°

1398.96'

7.92'

82.02°F

82.02°F

82.02°F

1500

1491'

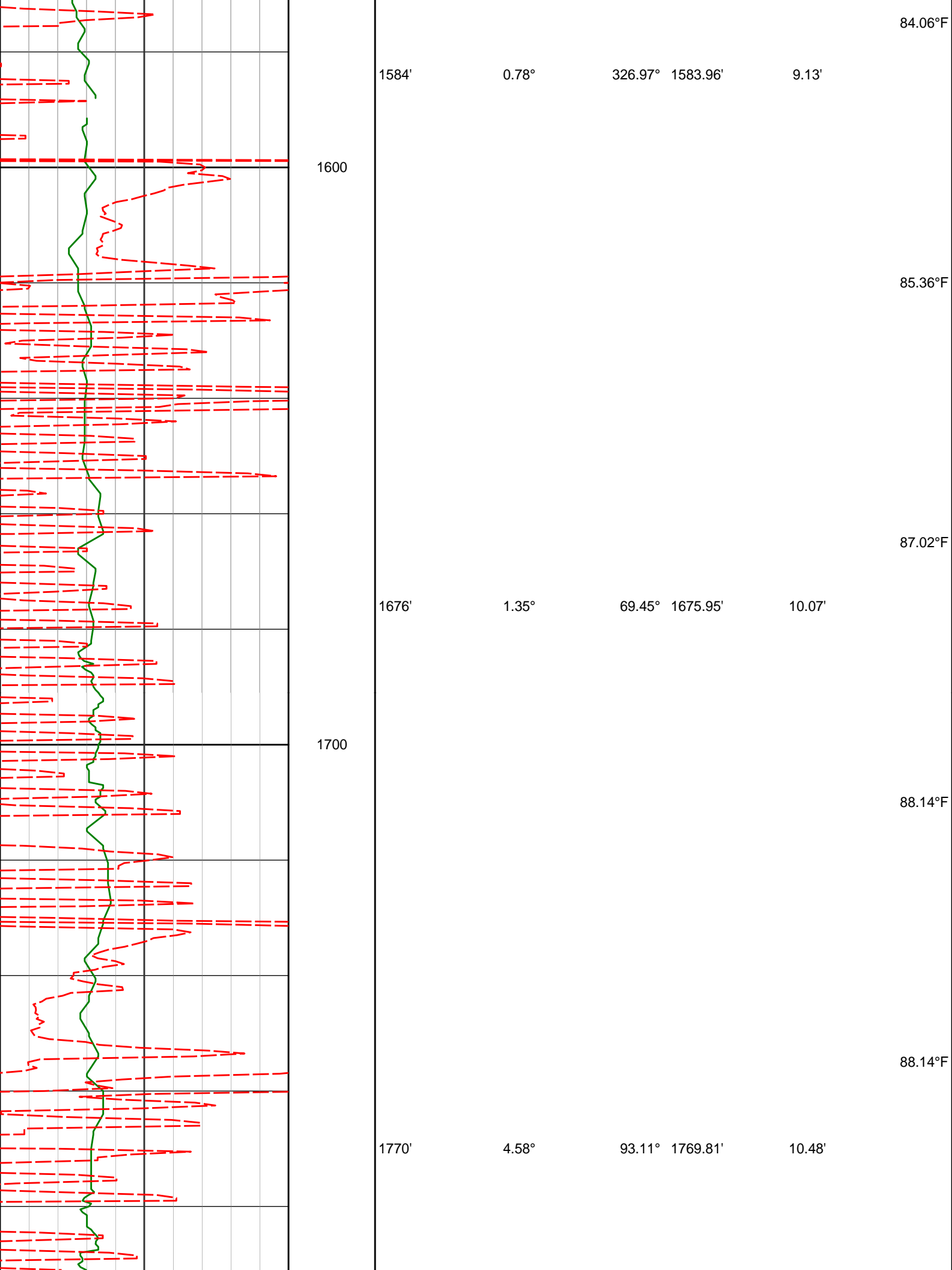
0.24°

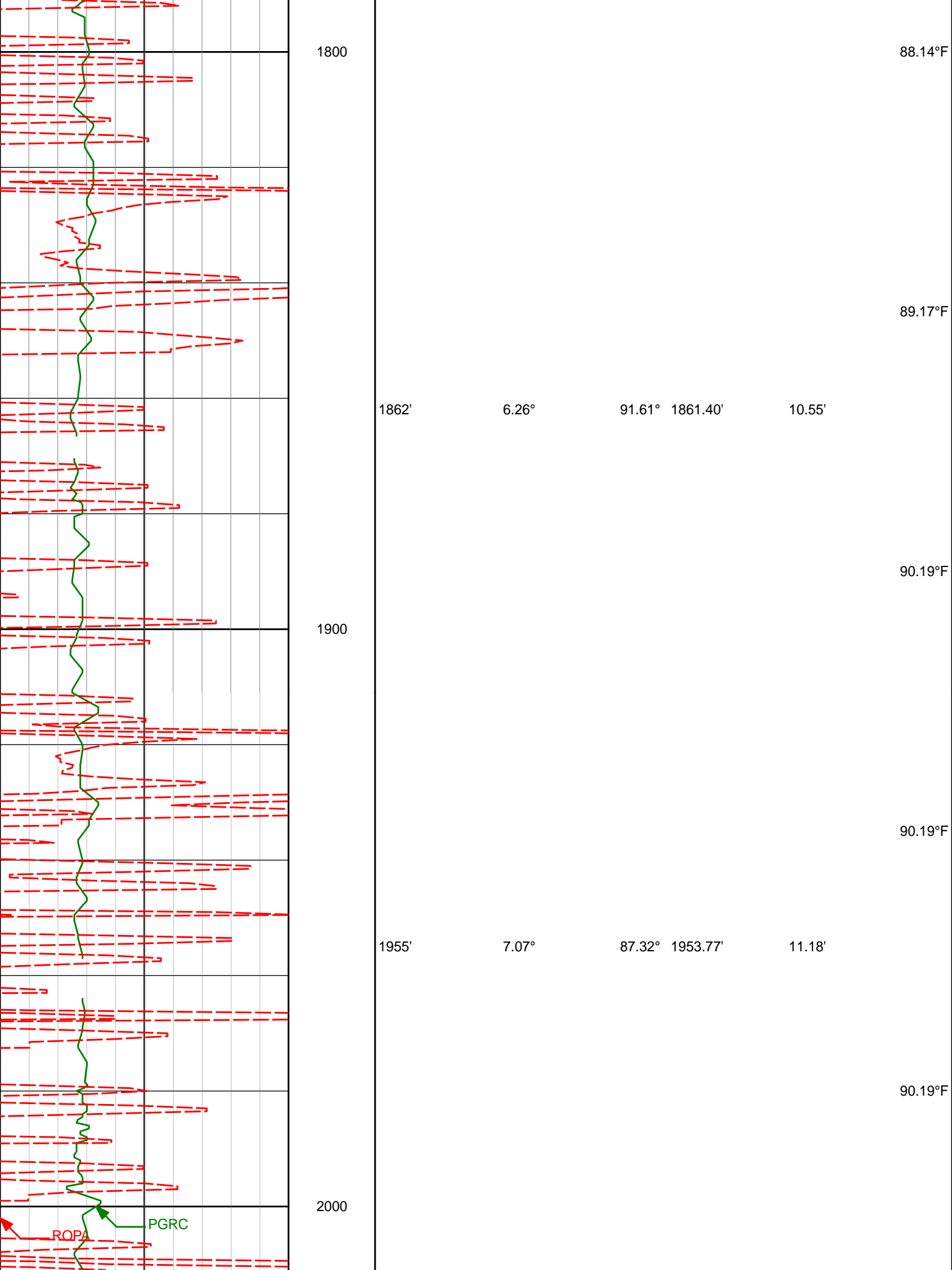
356.38°

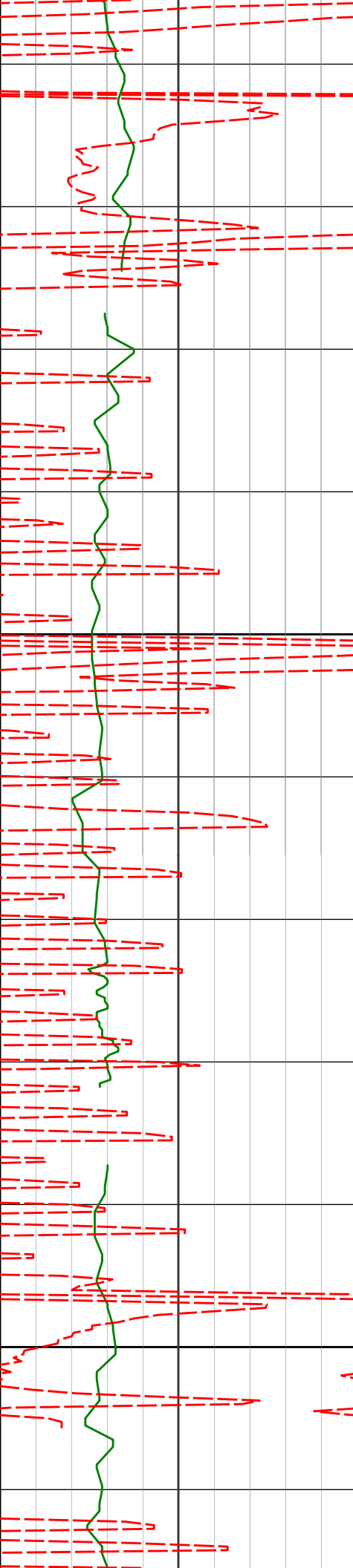
1490.96'

8.43'

84.06°F







2100

2200

2047'

2141'

8.61°

8.71°

77.25°

76.08°

2044.91'

2137.84'

13.55'

17.46'

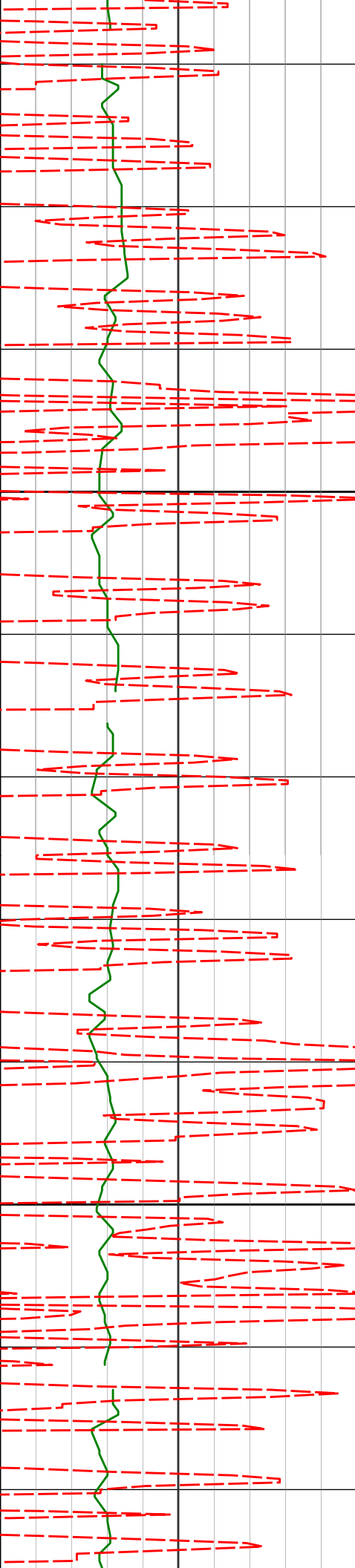
90.19°F

90.19°F

90.55°F

92.26°F

92.26°F



2235'

10.09°

85.22° 2230.58'

20.56'

94.33°F

2300

94.33°F

2326'

10.04°

85.04° 2320.18'

22.66'

96.42°F

2400

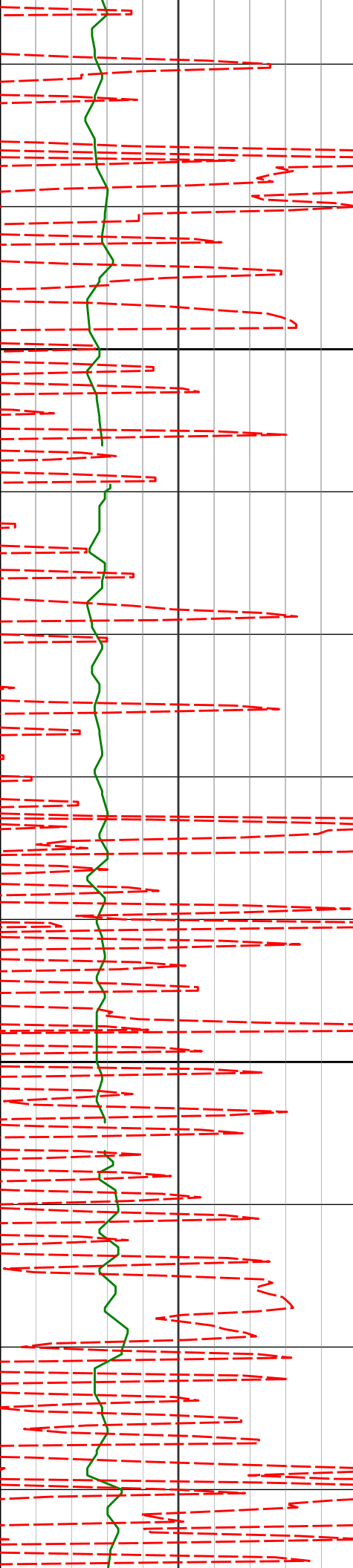
2418'

9.91°

84.45° 2410.79'

24.87'

96.42°F



2500

2600

2605'

10.30°

83.93° 2594.89'

29.72'

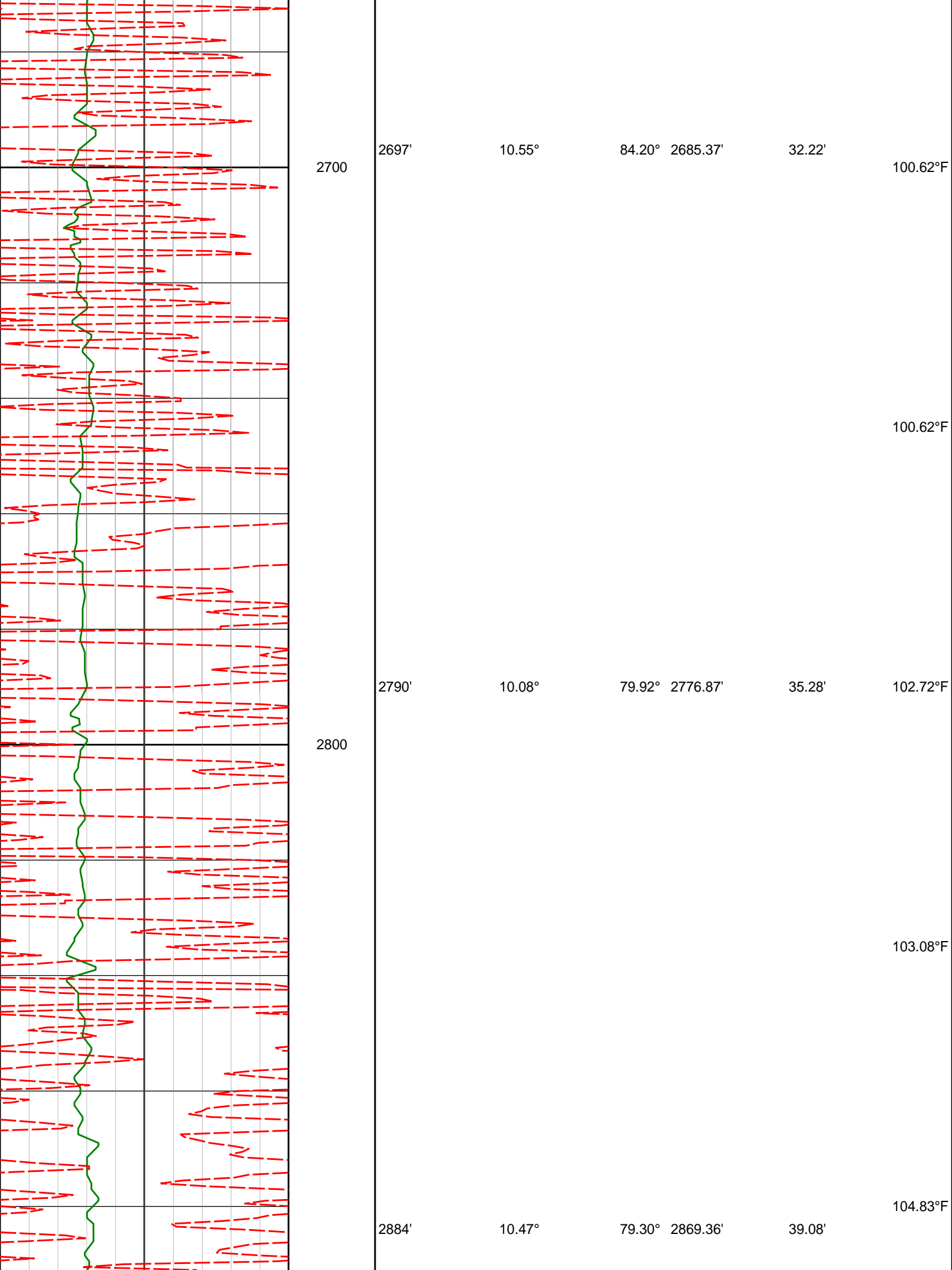
96.42°F

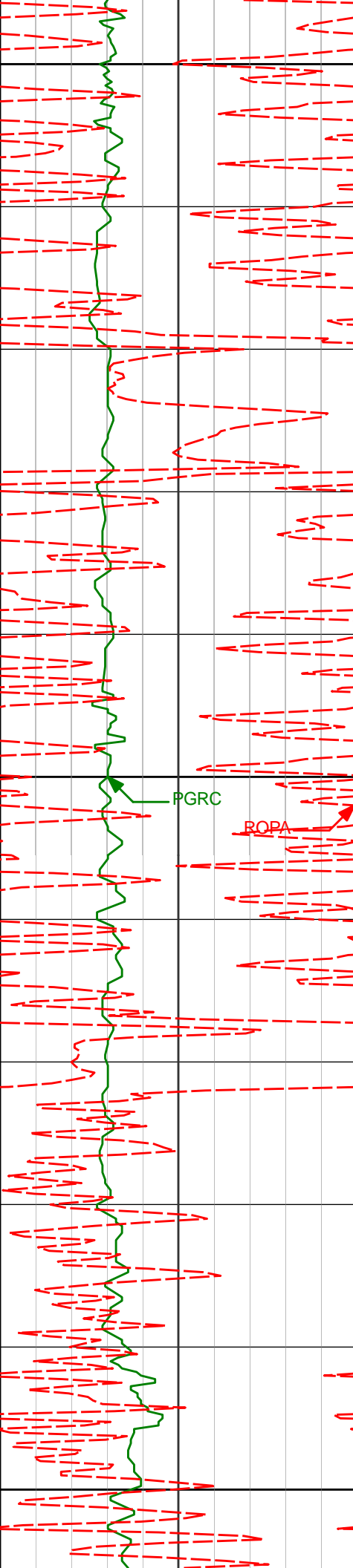
96.42°F

98.51°F

98.51°F

99.69°F





2900

104.83°F

106.97°F

2979'

9.45°

74.88°

2962.93'

43.47'

3000

PGRC

ROPA

106.97°F

106.97°F

3074'

9.46°

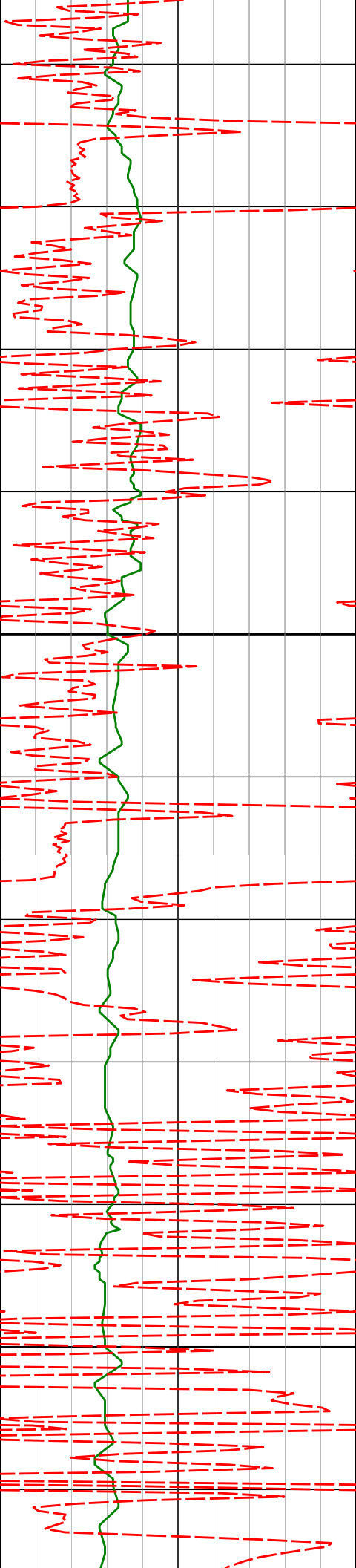
73.97°

3056.64'

48.36'

3100

106.97°F



3200

3300

3169'

3264'

8.97°

8.79°

73.76°

74.44°

3150.41'

3244.27'

53.27'

57.95'

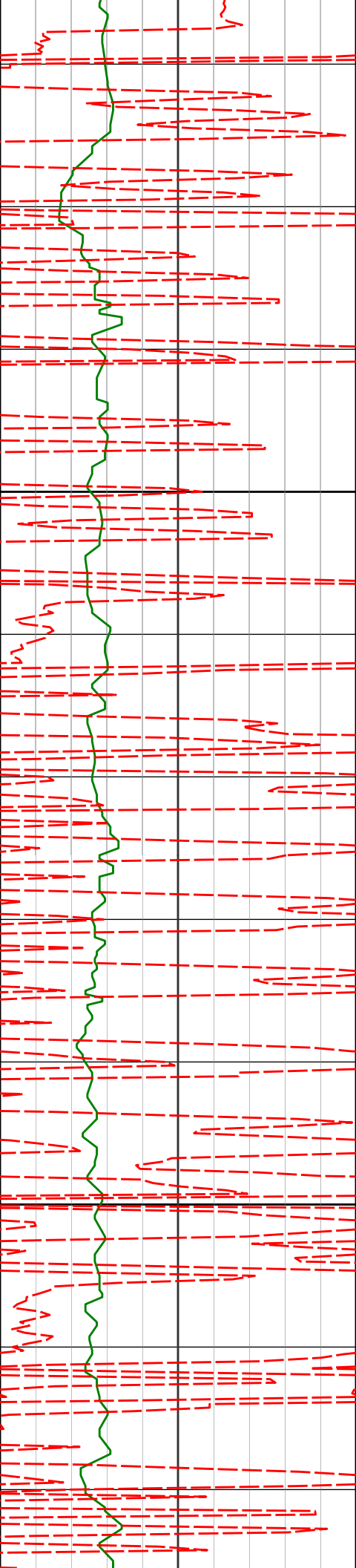
108.69°F

110.56°F

111.24°F

111.24°F

111.24°F



3359'

9.05°

80.68° 3338.13'

61.78'

3400

3454'

9.43°

81.44° 3431.89'

64.86'

3500

3550'

9.65°

80.26° 3526.57'

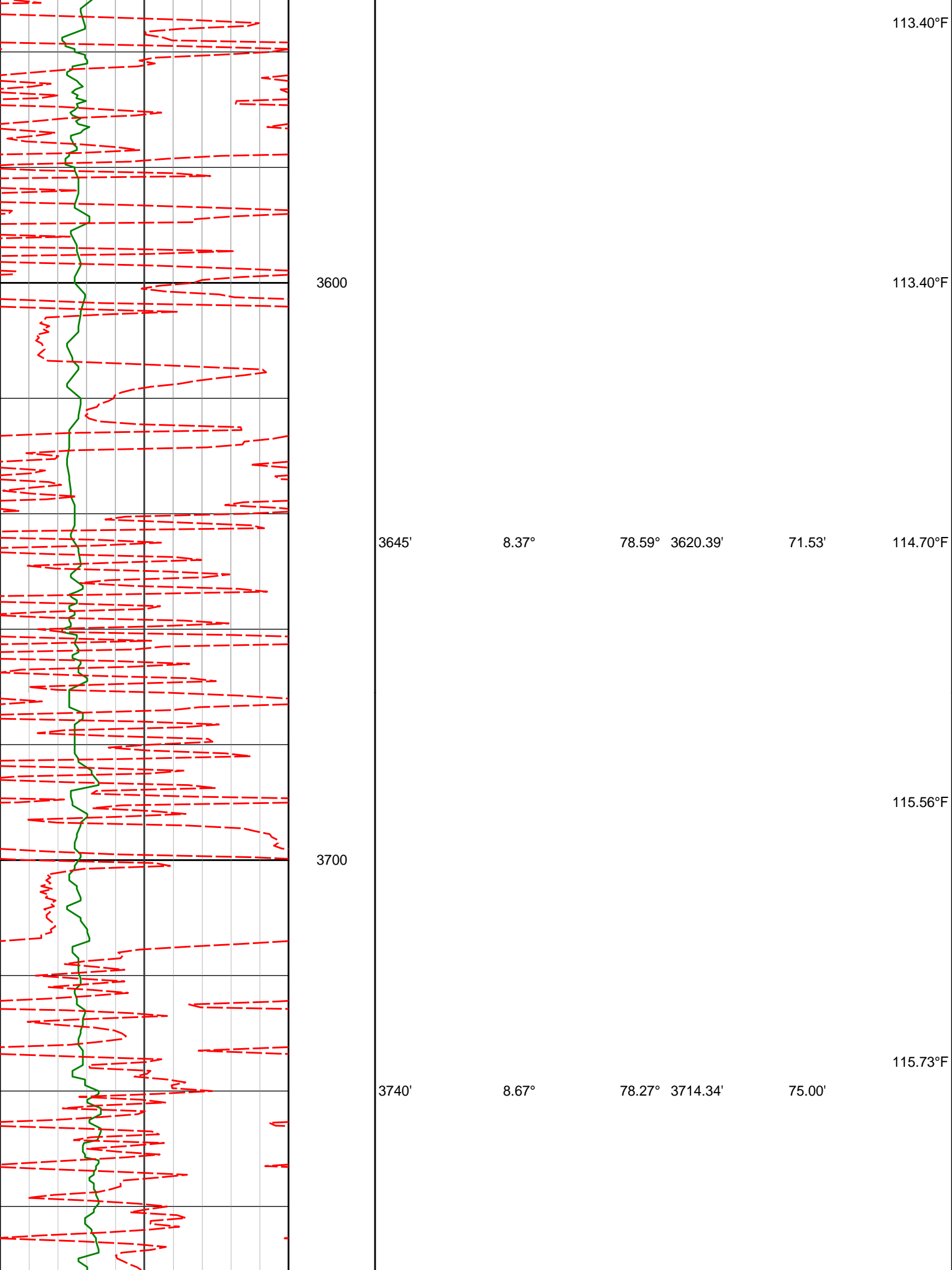
68.13'

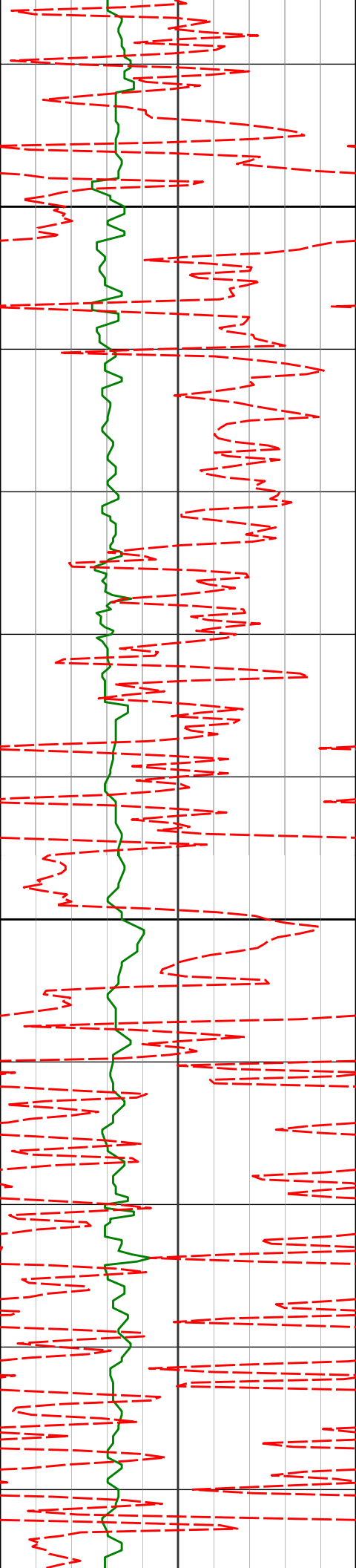
111.24°F

111.24°F

111.24°F

112.14°F





3800

3900

3835'

3929'

9.19°

8.33°

78.08°

82.72°

3808.19'

3901.10'

78.70'

81.77'

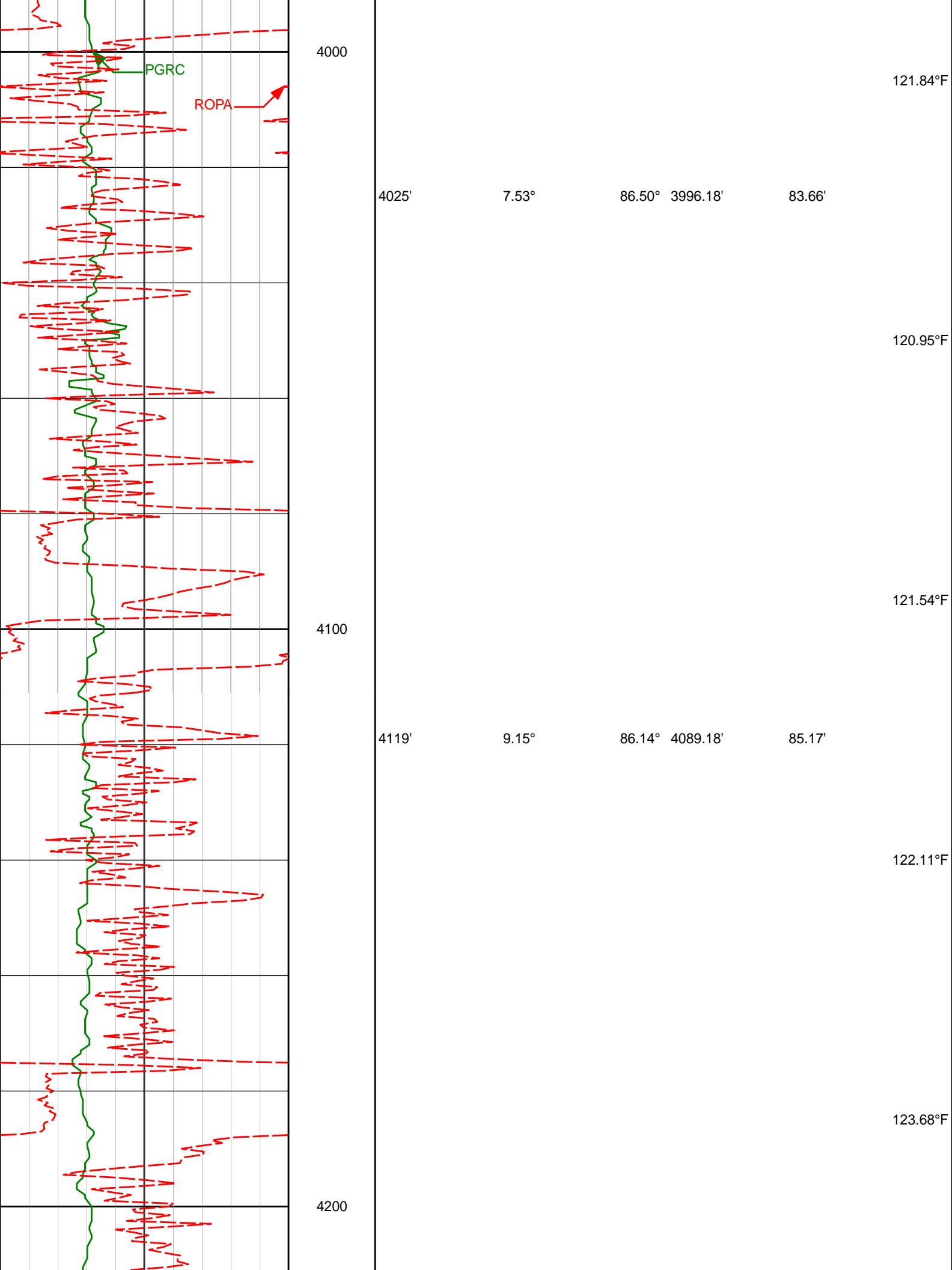
117.57°F

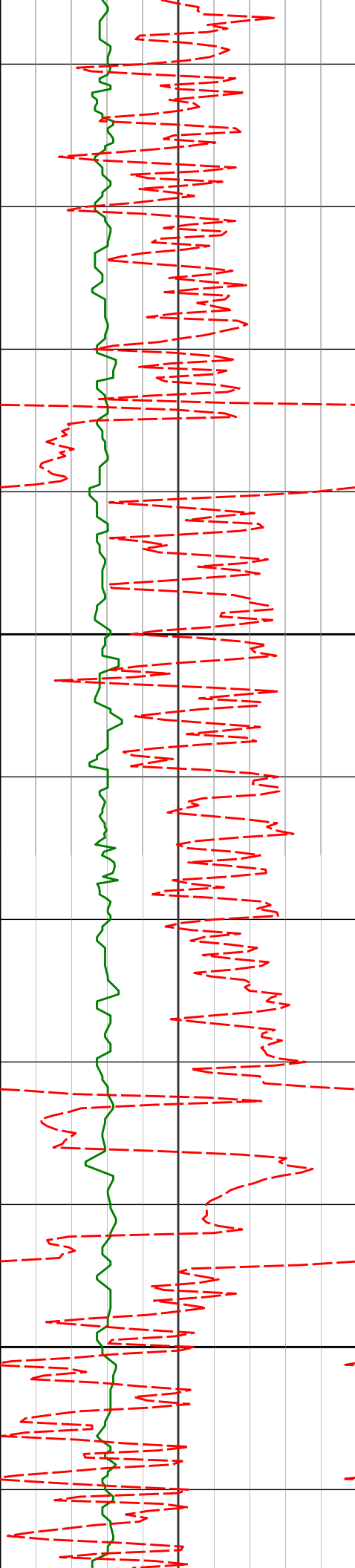
117.73°F

117.73°F

119.91°F

119.91°F

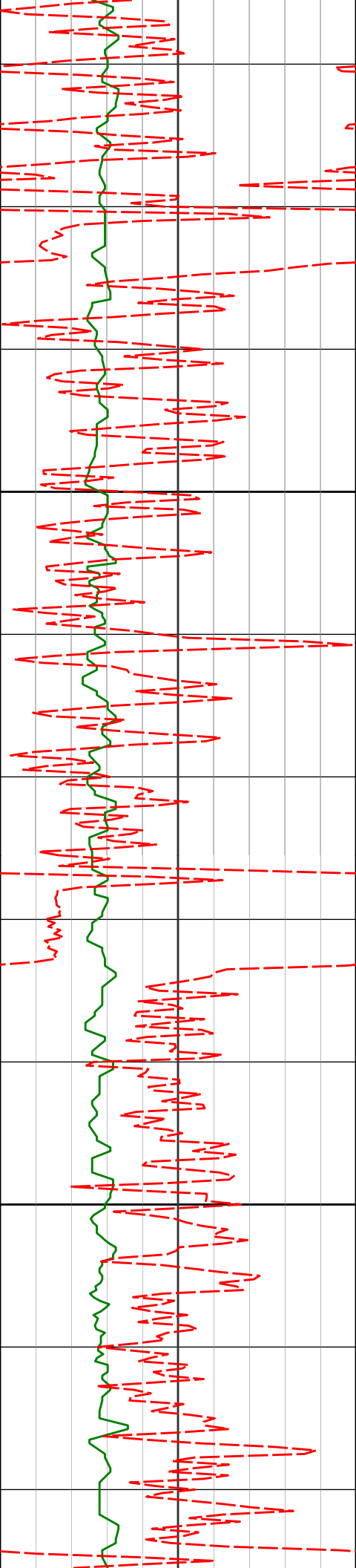




4300

4400

4214'	8.09°	86.76°	4183.11'	86.73'	
					124.30°F
					124.58°F
4309'	7.76°	85.97°	4277.20'	88.17'	
					125.75°F
					124.98°F
4404'	9.15°	87.39°	4371.16'	89.62'	
					126.91°F



4500

4499'

8.82°

83.67°

4465.00'

91.47'

128.73°F

128.73°F

128.99°F

130.96°F

4600

4594'

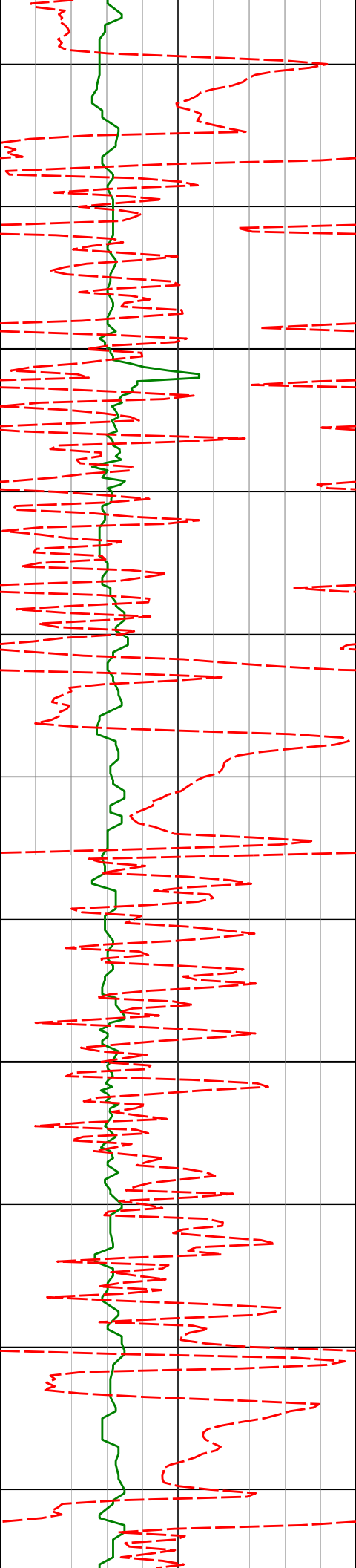
8.75°

82.67°

4558.88'

93.87'

130.96°F



4700

4800

4689'

7.13°

85.03° 4652.97'

95.91'

4784'

4.12°

93.36° 4747.50'

96.66'

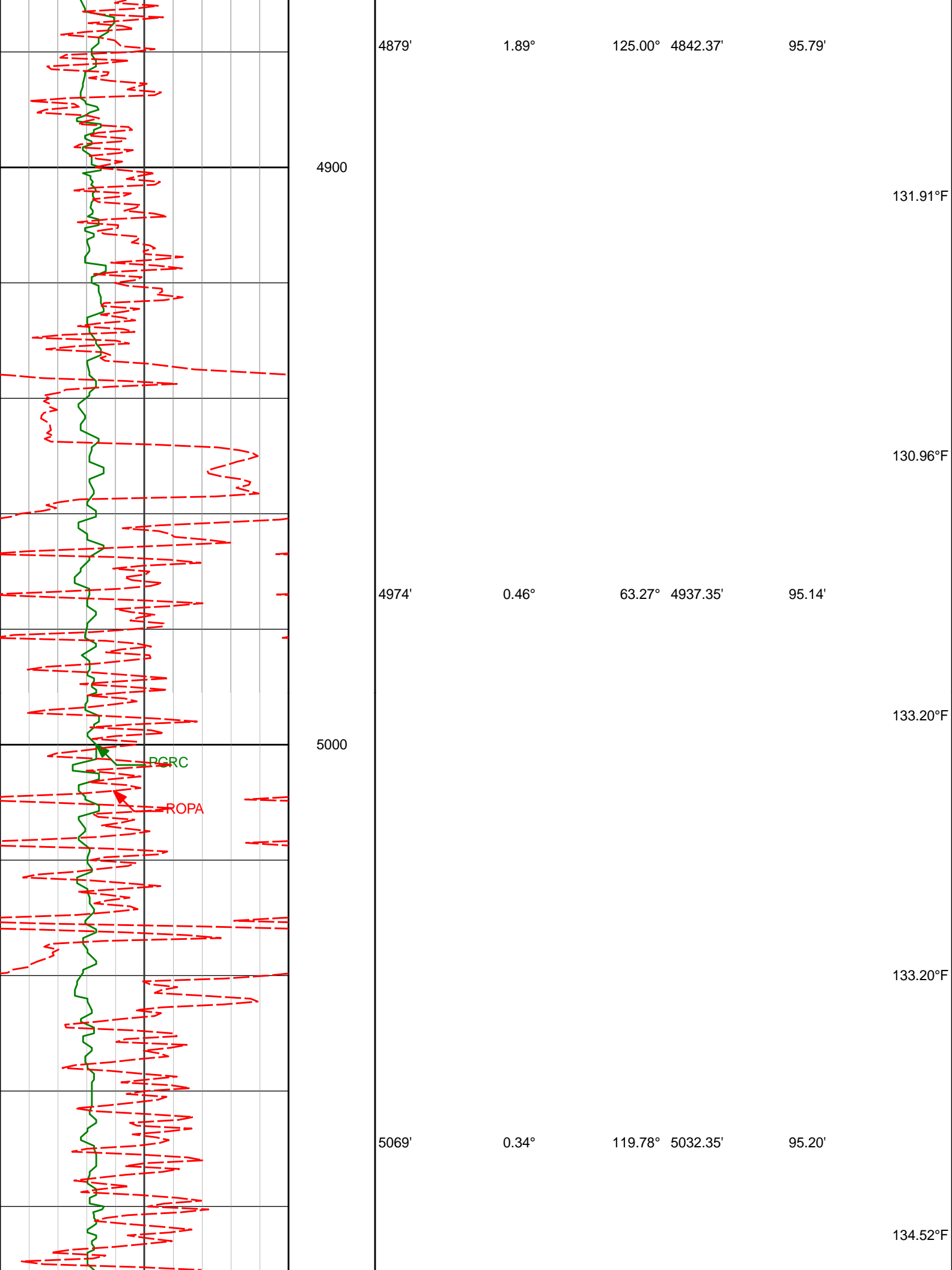
131.65°F

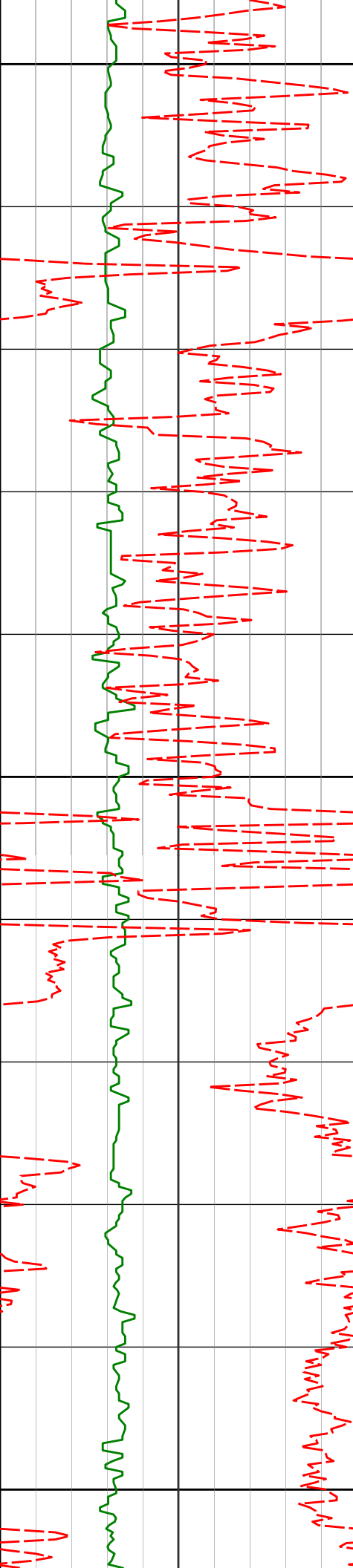
131.77°F

133.20°F

133.20°F

133.00°F





5100

135.45°F

5164'

0.72°

95.92°

5127.35'

95.04'

135.45°F

5200

135.45°F

5259'

1.35°

104.01°

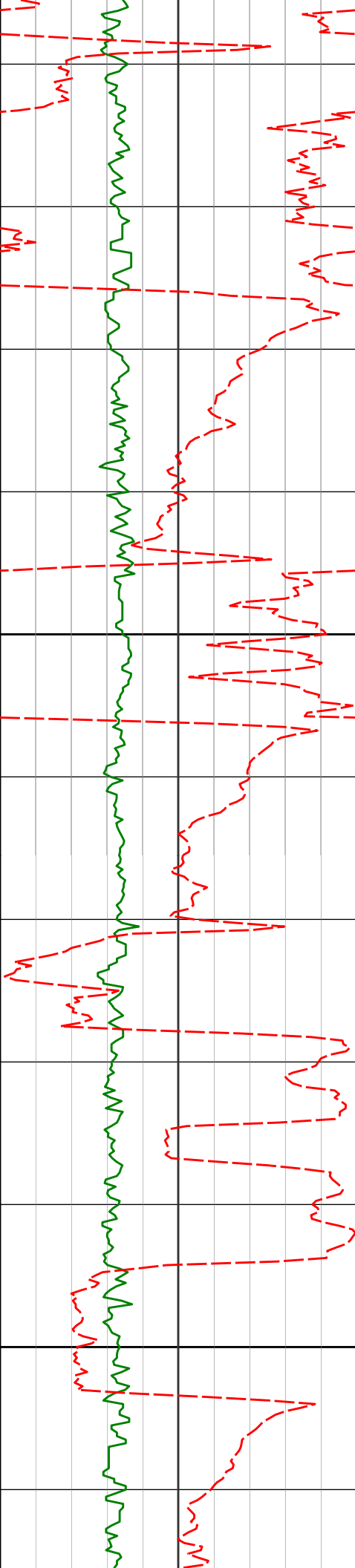
5222.33'

94.78'

136.77°F

5300

136.10°F



5354'

0.99°

355.06° 5317.32'

95.38'

135.45°F

5400

136.36°F

5449'

11.74°

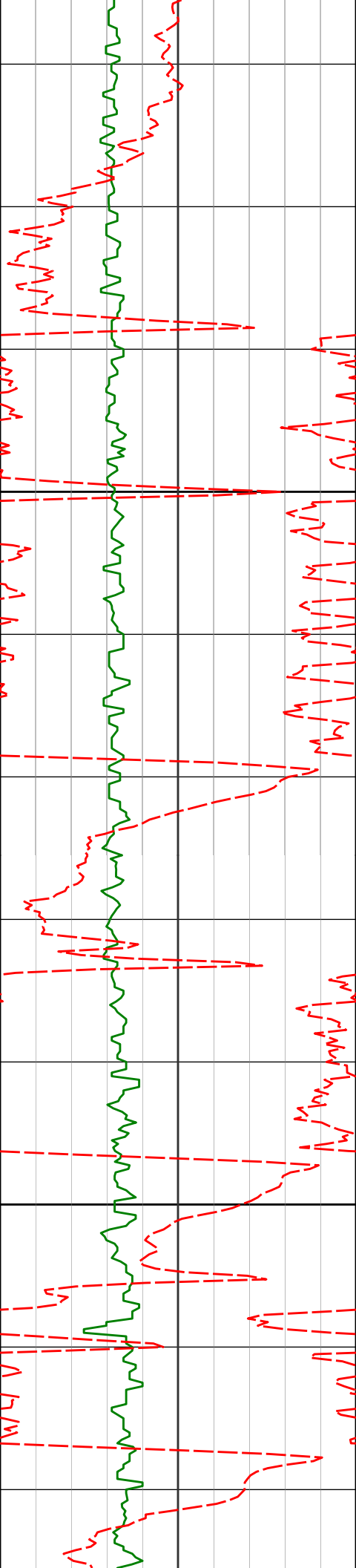
357.16° 5411.59'

105.84'

138.50°F

5500

140.46°F



5600

5700

5544'

21.36°

353.00° 5502.56'

132.58'

5638'

27.26°

350.37° 5588.19'

170.52'

5733'

34.68°

351.70° 5669.58'

218.37'

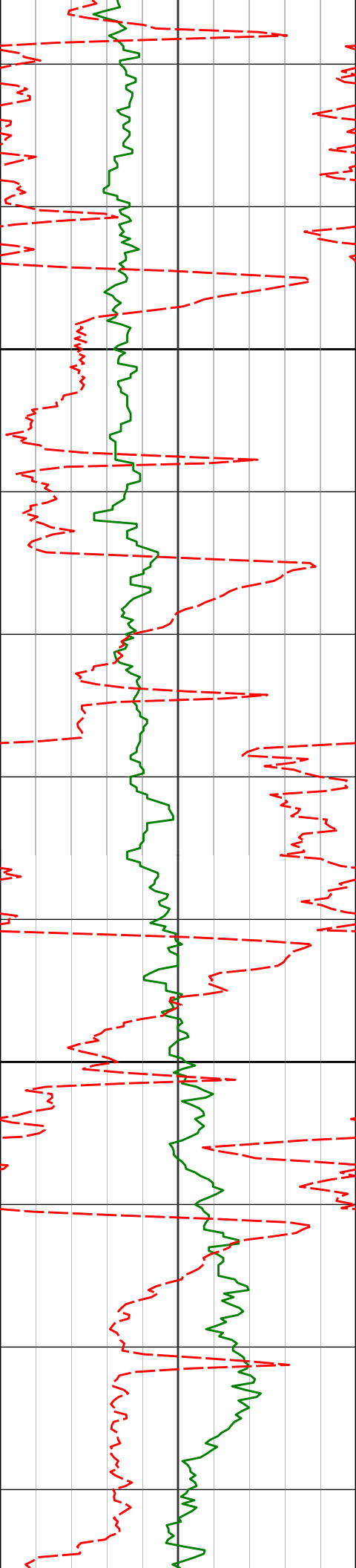
142.25°F

144.36°F

145.86°F

146.84°F

147.38°F



5800

5828'

42.76°

354.71° 5743.65'

276.95'

5900

5923'

48.43°

359.67° 5810.11'

344.45'

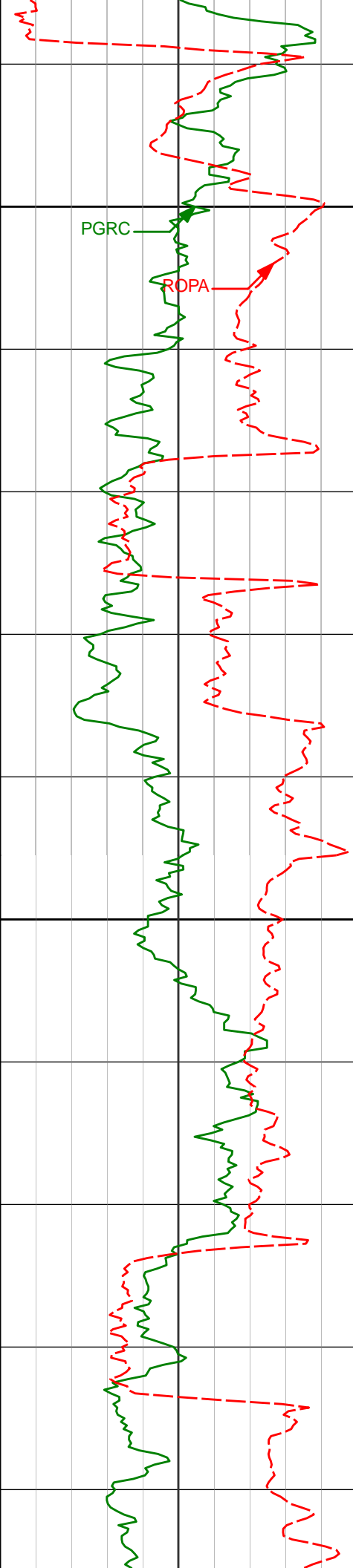
148.30°F

149.76°F

151.47°F

139.25°F

148.62°F



6000

6018'

57.27°

358.93° 5867.43'

419.96'

154.17°F

153.49°F

156.04°F

6100

6113'

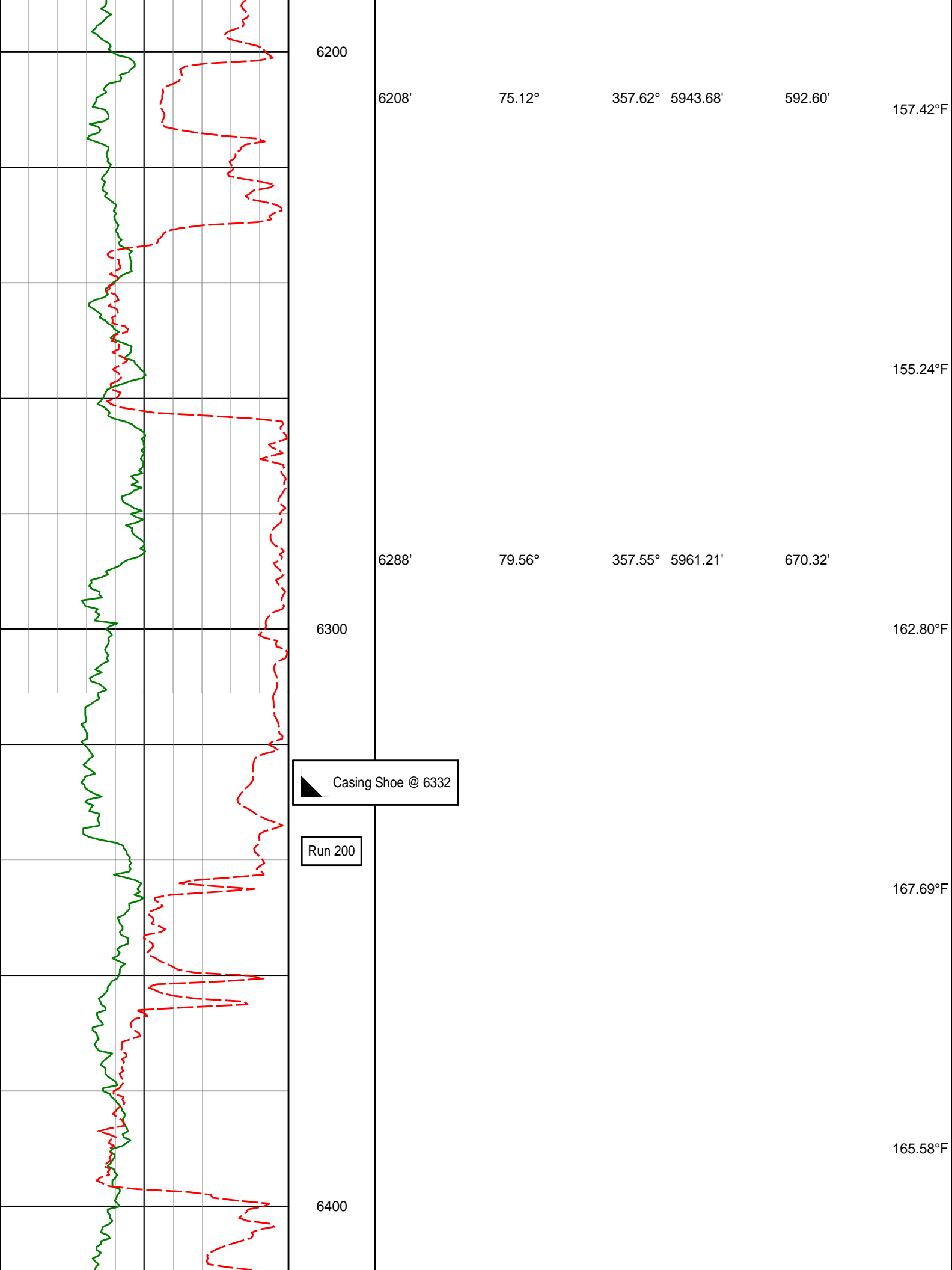
66.28°

358.10° 5912.31'

503.35'

158.07°F

158.52°F



6200

6208'

75.12°

357.62° 5943.68'

592.60'

157.42°F

155.24°F

6288'

79.56°

357.55° 5961.21'

670.32'

6300

162.80°F

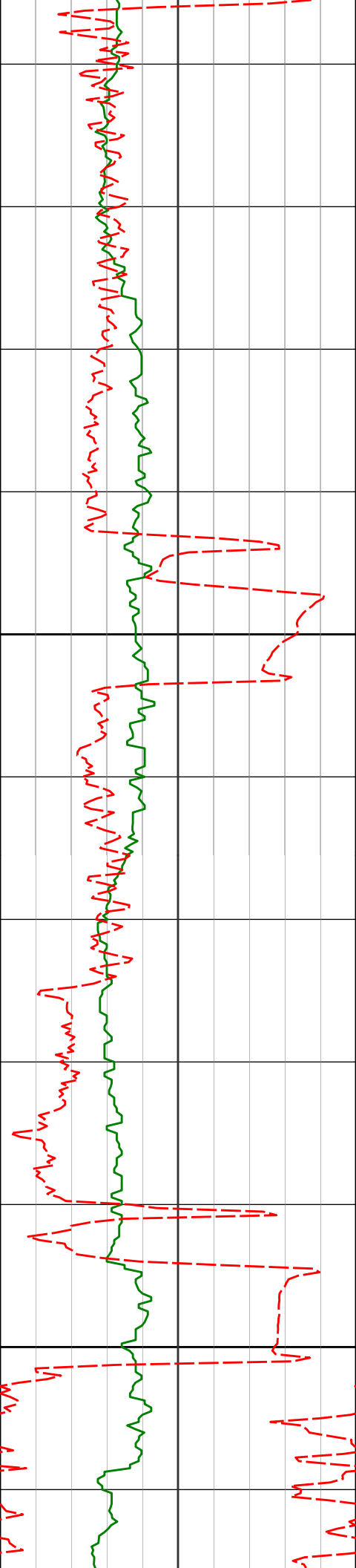
Casing Shoe @ 6332

Run 200

167.69°F

6400

165.58°F



6500

6600

6420'

88.31°

356.48° 5975.15'

800.81'

164.55°F

164.75°F

6513'

89.97°

356.43° 5976.55'

893.24'

166.17°F

165.93°F

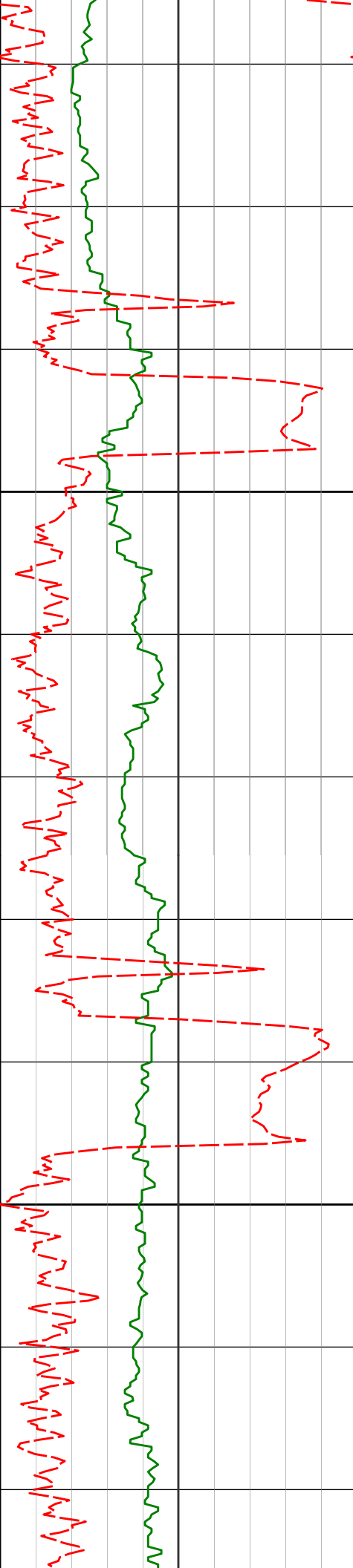
6606'

92.22°

356.89° 5974.77'

985.70'

168.86°F



6700

6698'

92.59°

358.48° 5970.91'

1077.27'

168.29°F

169.68°F

169.83°F

6800

6791'

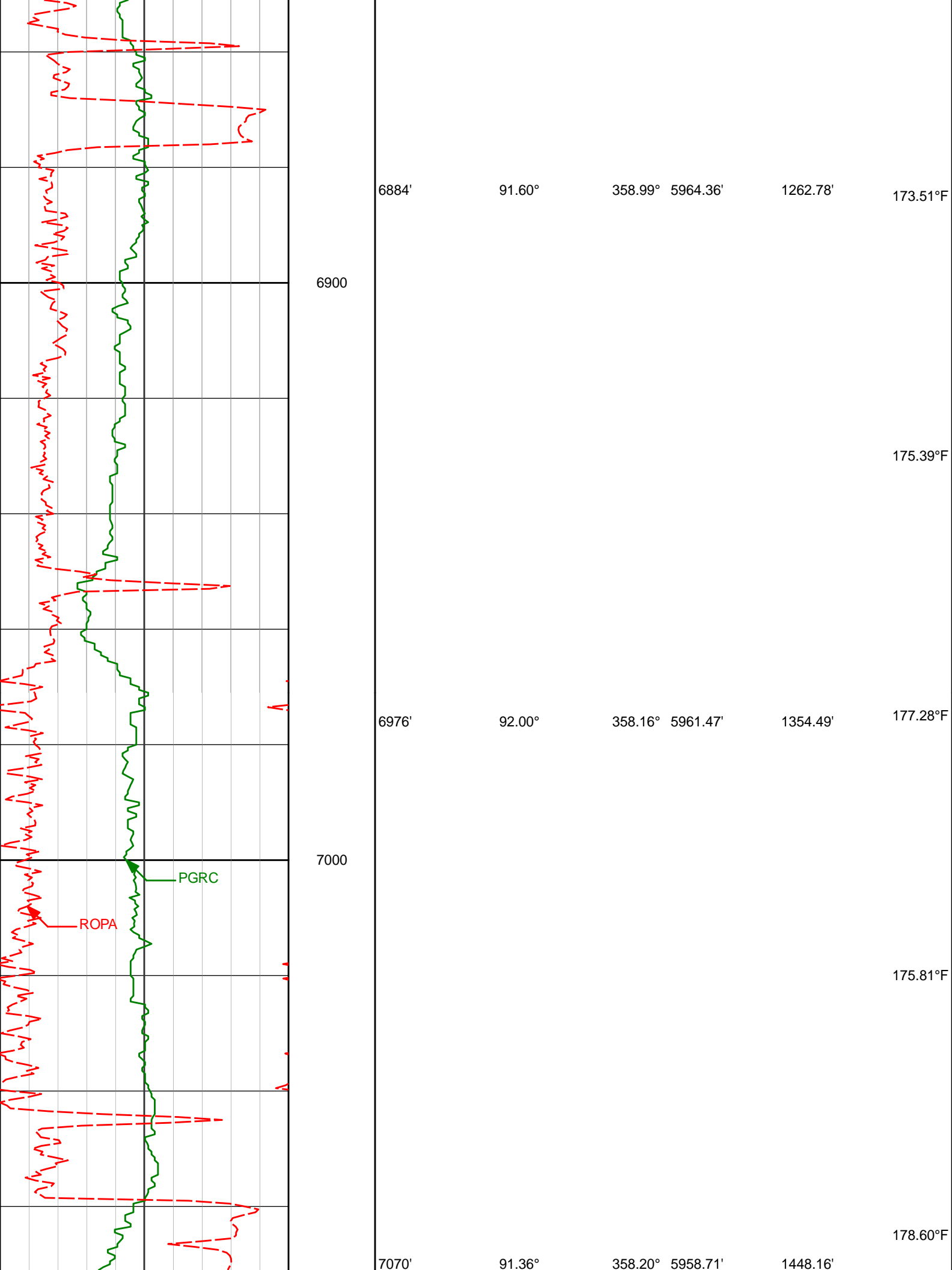
91.94°

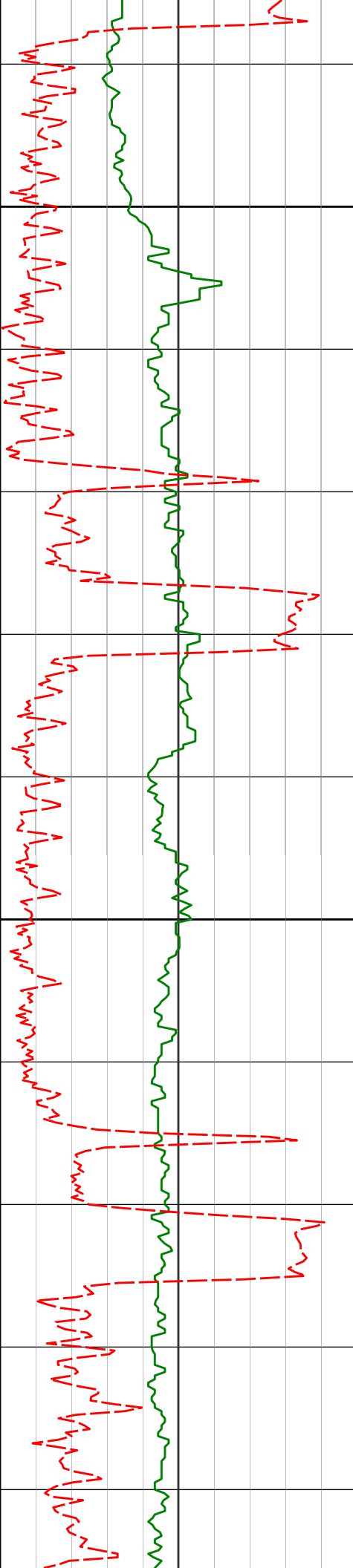
359.42° 5967.24'

1170.00'

171.21°F

170.68°F





7100

7200

7162'

7255'

91.08°

90.06°

359.67° 5956.76'

358.90° 5955.83'

1539.94'

1632.77'

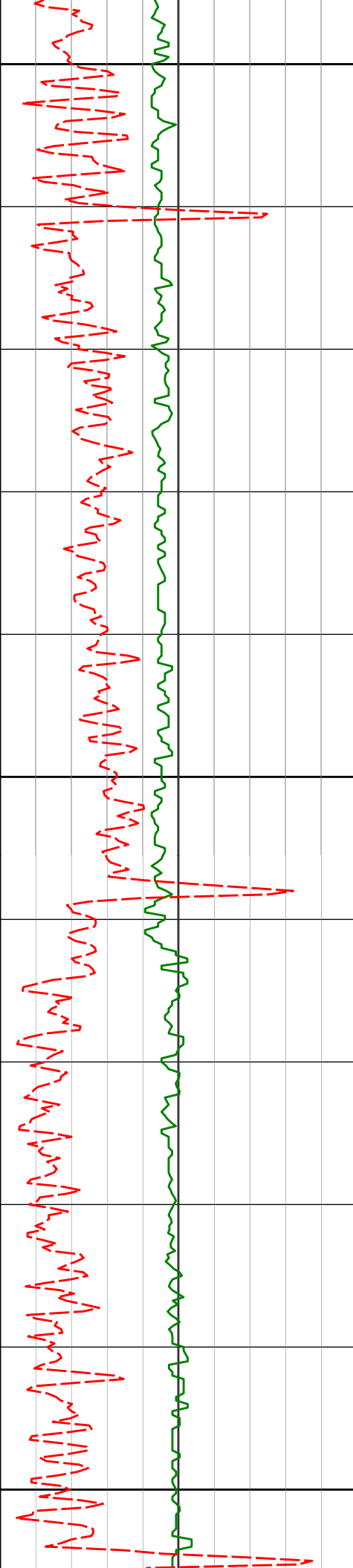
178.53°F

179.54°F

179.66°F

180.45°F

183.79°F



7300

7349'

90.68°

359.59° 5955.22'

1726.59'

185.02°F

7400

7440'

91.14°

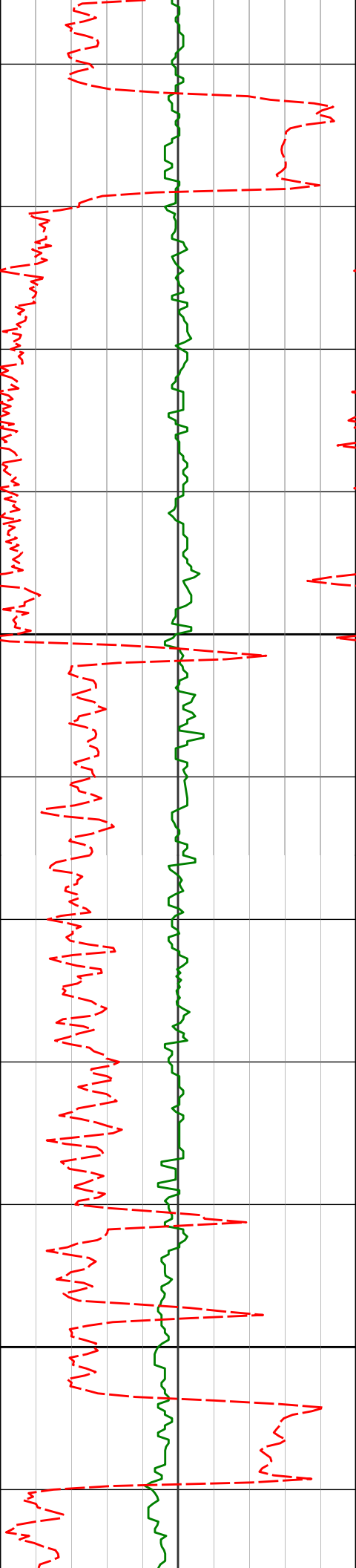
359.91° 5953.78'

1817.46'

187.18°F

7500

185.20°F



7600

7700

7533'

7626'

7719'

89.69°

89.08°

88.74°

0.10° 5953.11'

0.05° 5954.11'

358.48° 5955.88'

1910.35'

2003.25'

2096.06'

184.67°F

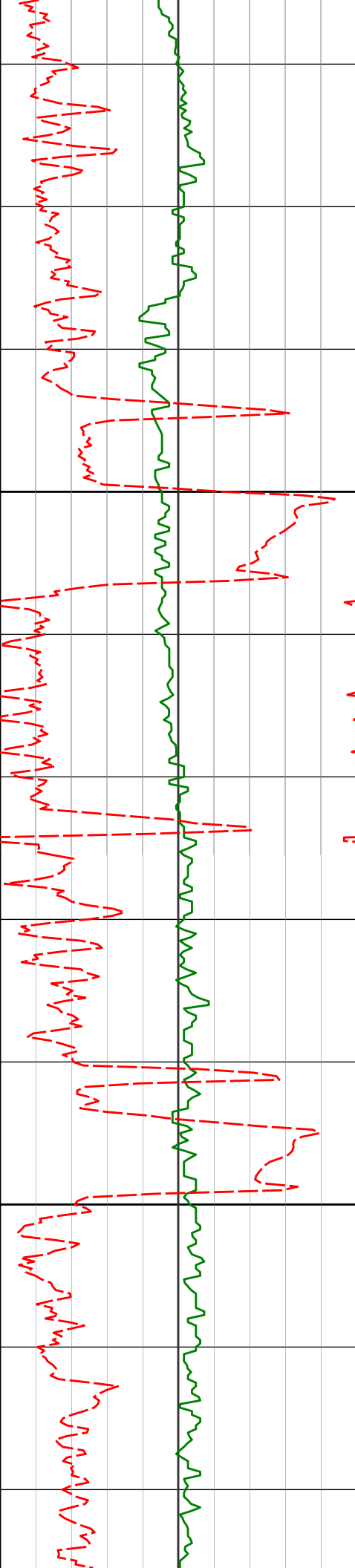
185.60°F

187.48°F

186.50°F

186.26°F

184.67°F



7800

7811'

89.48°

358.18° 5957.32'

2187.78'

7900

7904'

90.31°

358.31° 5957.49'

2280.50'

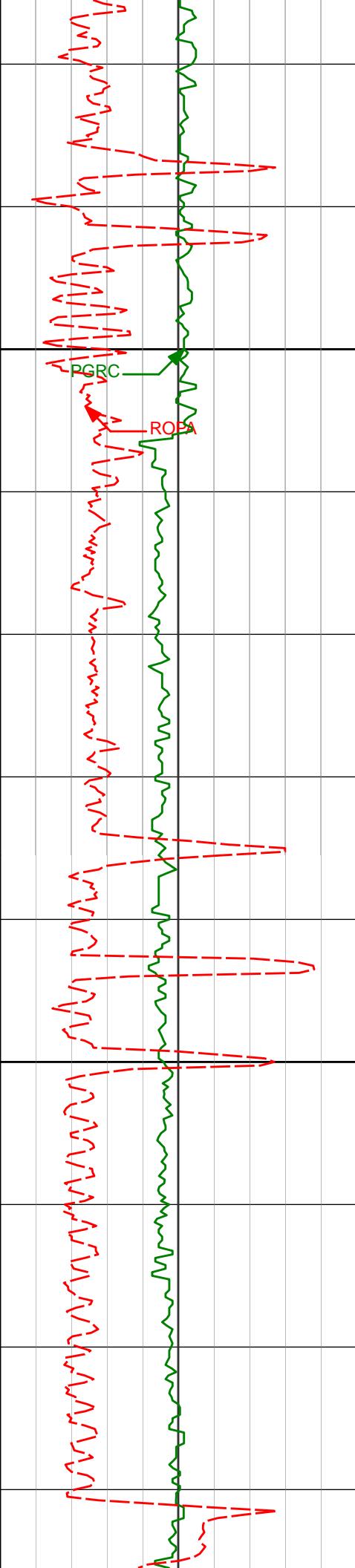
187.34°F

188.01°F

188.11°F

189.66°F

191.80°F



8000

7999'

90.03°

358.42° 5957.21'

2375.23'

193.87°F

194.99°F

194.99°F

8100

8094'

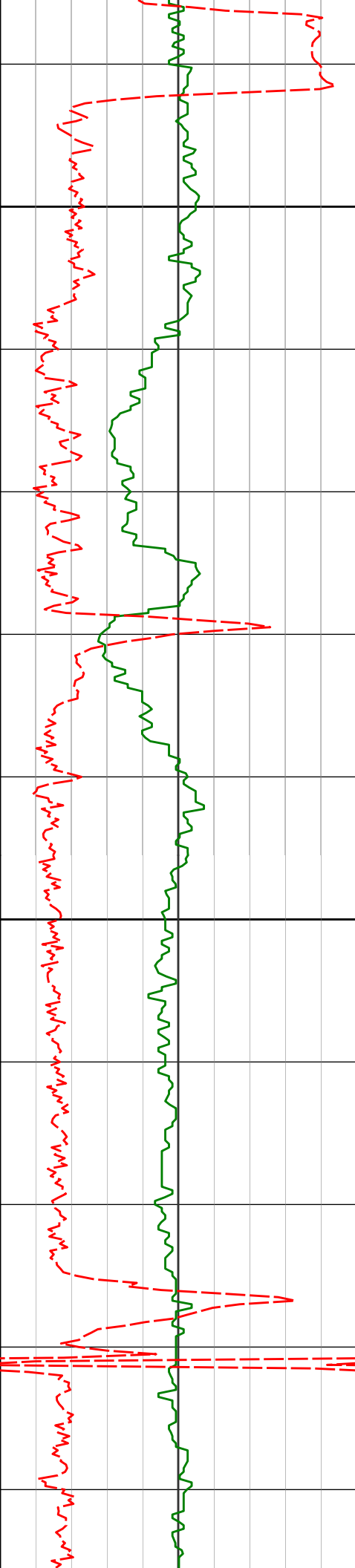
89.97°

358.29° 5957.21'

2469.96'

194.56°F

194.02°F



8200

8300

8189'

90.99°

357.70° 5956.42'

2564.63'

195.92°F

8284'

90.68°

358.04° 5955.03'

2659.28'

197.51°F

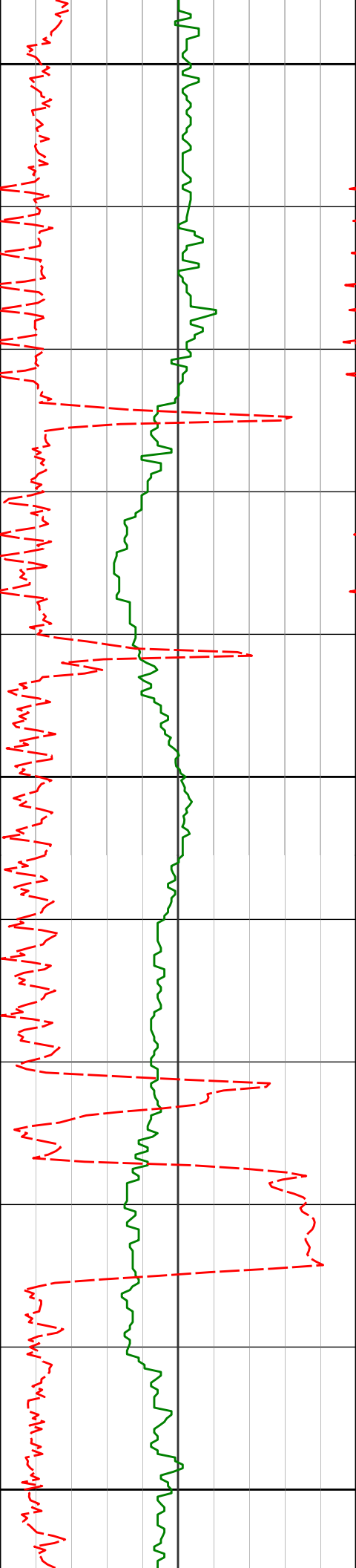
8379'

90.77°

357.44° 5953.83'

2753.92'

200.05°F



8400

200.05°F

199.60°F

8473'

90.89°

356.78° 5952.47'

2847.46'

8500

198.44°F

197.77°F

8568'

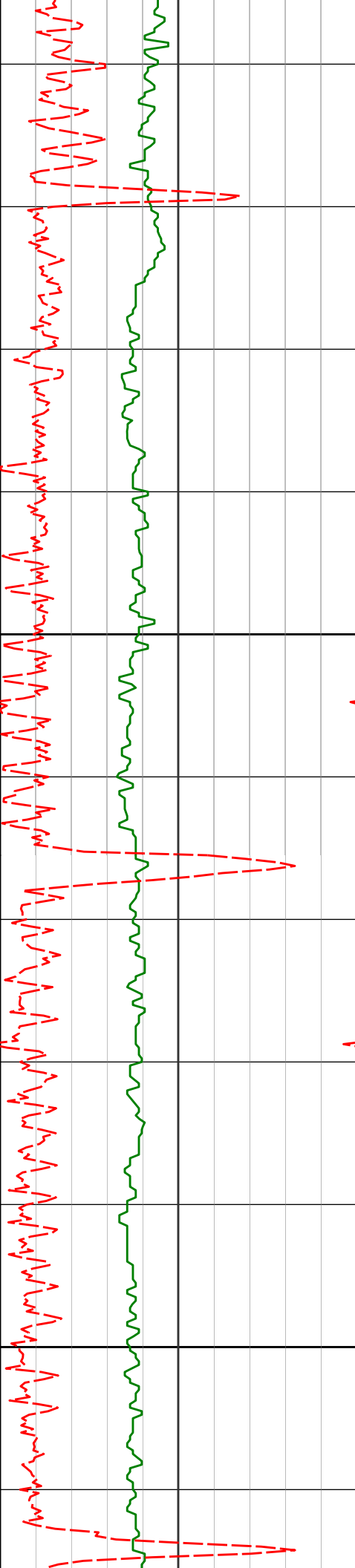
90.74°

357.88° 5951.11'

2942.03'

8600

199.85°F



8700

8800

8663'

90.52°

357.91° 5950.07'

3036.69'

8758'

90.59°

357.19° 5949.15'

3131.31'

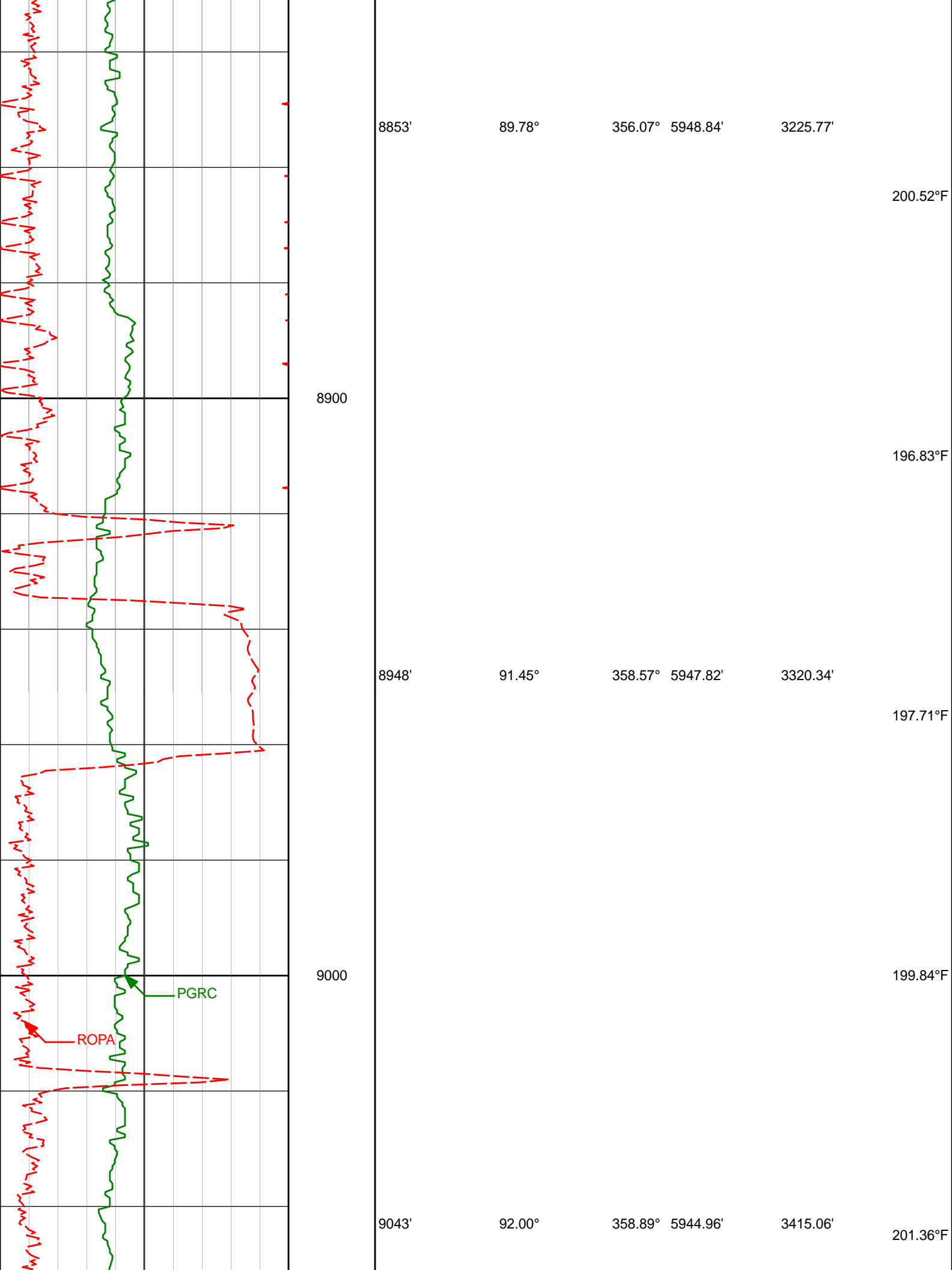
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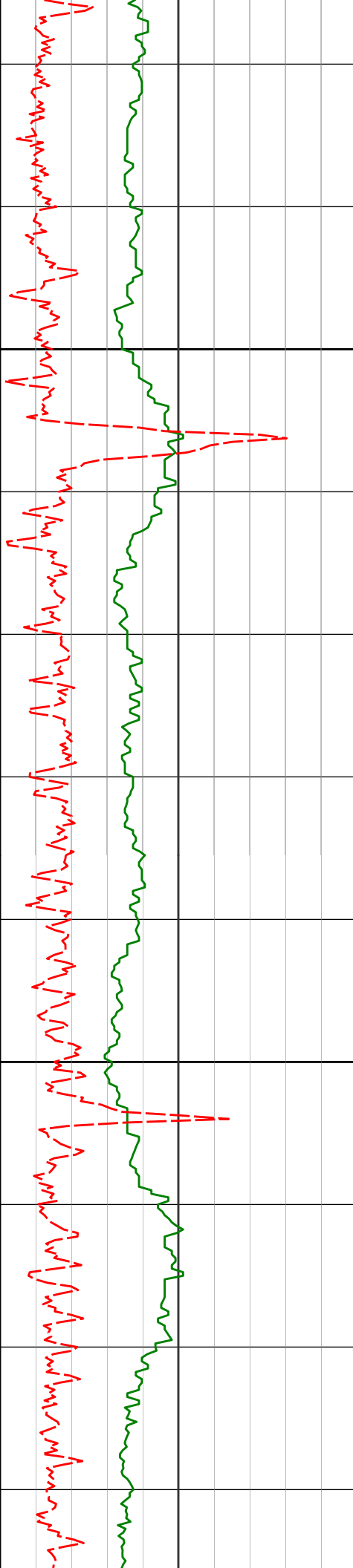
200.71°F

201.42°F

202.60°F

202.60°F





9100

9200

9138'

92.53°

358.19° 5941.20'

3509.74'

202.60°F

202.60°F

204.81°F

204.14°F

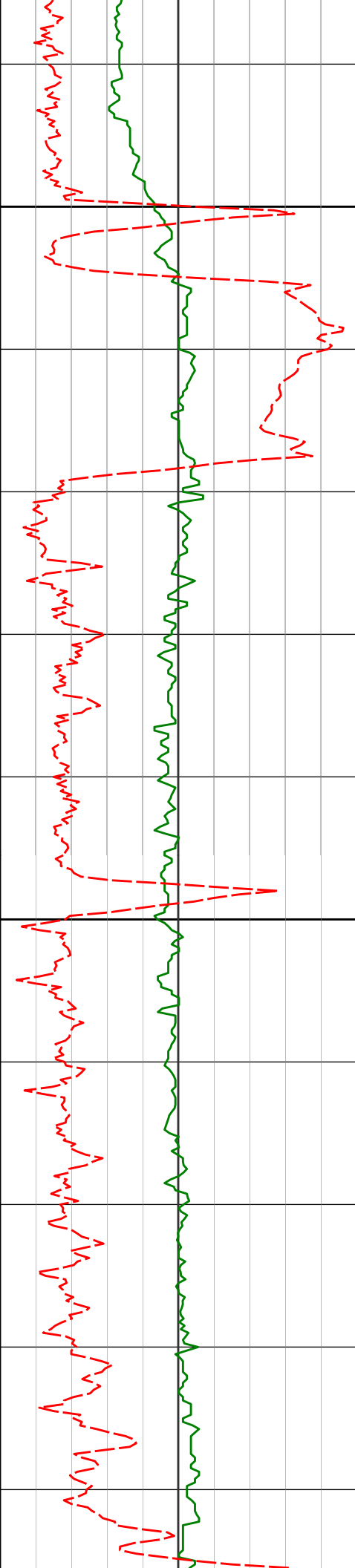
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93.05°

357.29° 5936.58'

3604.27'

201.34°F



9300

9327'

90.74°

357.97° 5933.47'

3697.84'

202.44°F

204.92°F

9400

9422'

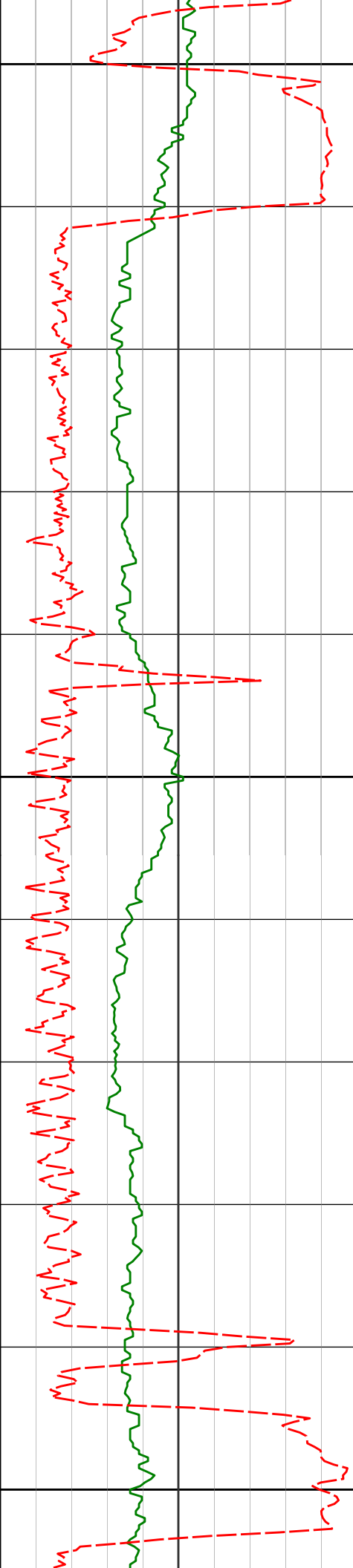
91.11°

359.05° 5931.94'

3792.58'

206.85°F

204.10°F



9500

9516'

88.06°

359.00° 5932.62'

3886.37'

9600

9611'

87.53°

358.92° 5936.27'

3981.10'

9700

9706'

88.49°

357.81° 5939.57'

4075.76'

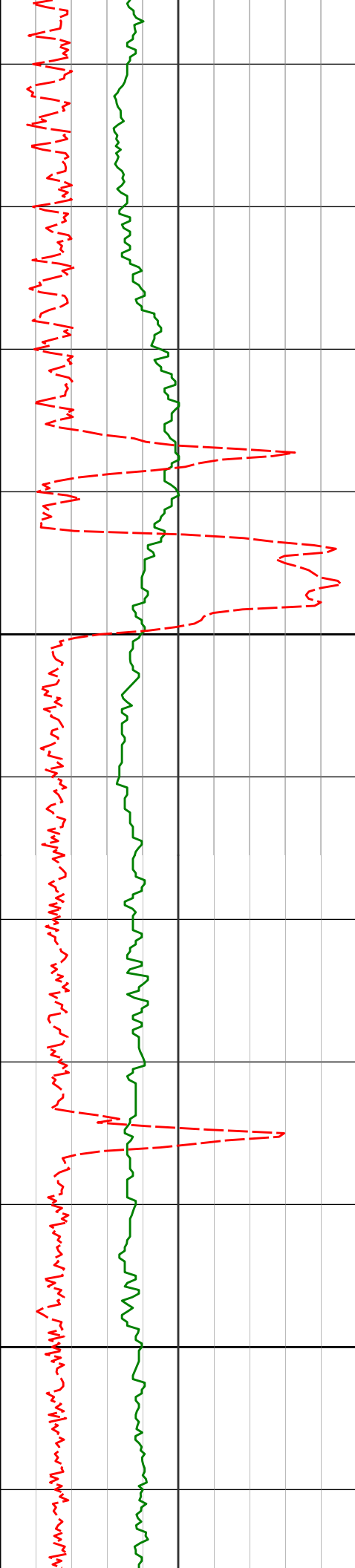
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204.66°F

206.35°F

203.62°F

203.24°F



9800

9801'

88.86°

357.48° 5941.77'

4170.37'

9900

9895'

88.52°

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4263.95'

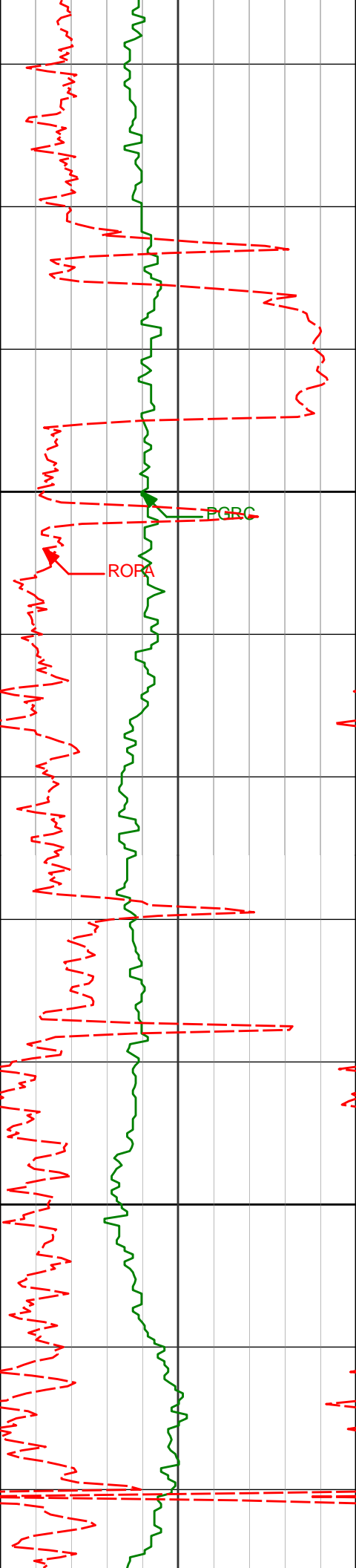
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202.38°F

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204.06°F



10000

10100

9990'

10084'

90.18°

90.86°

356.86° 5944.99'

357.25° 5944.14'

4358.49'

4452.03'

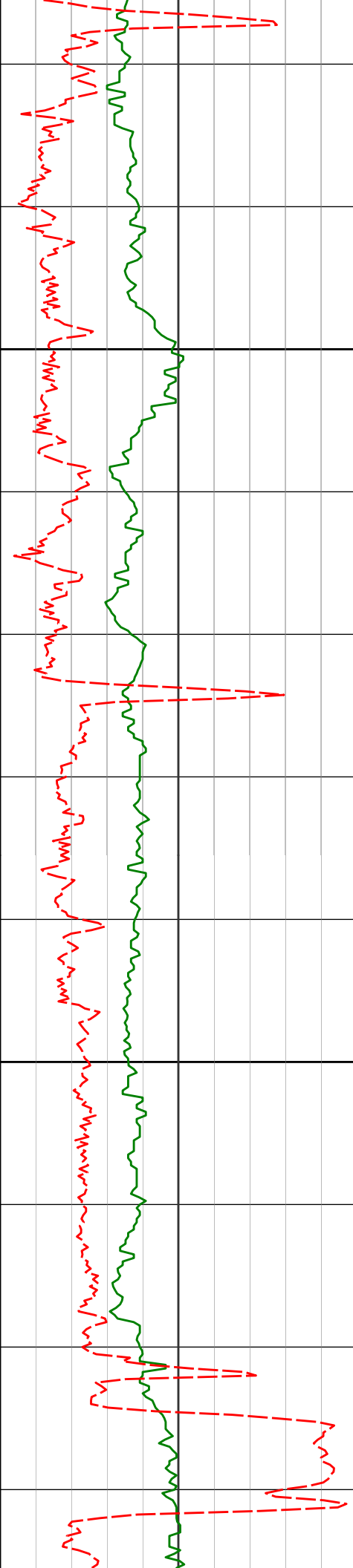
203.90°F

205.16°F

205.38°F

207.55°F

207.91°F



10200

10300

10179'

91.32°

357.19° 5942.33'

4546.58'

10273'

92.00°

356.76° 5939.60'

4640.07'

10368'

90.83°

356.91° 5937.25'

4734.54'

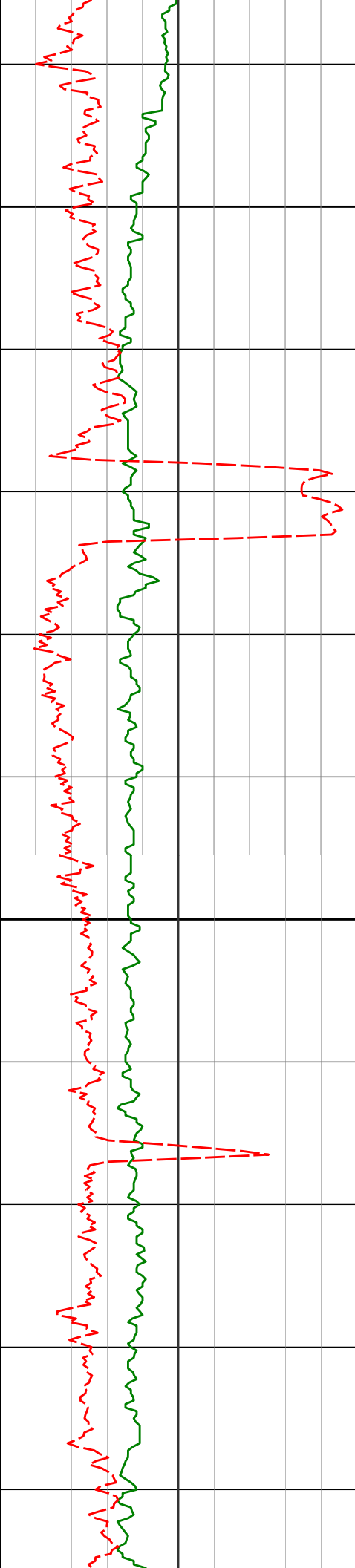
210.05°F

210.31°F

209.32°F

206.74°F

205.81°F



10400

10500

10463'

90.15°

357.71° 5936.43'

4829.12'

10558'

89.85°

357.22° 5936.43'

4923.72'

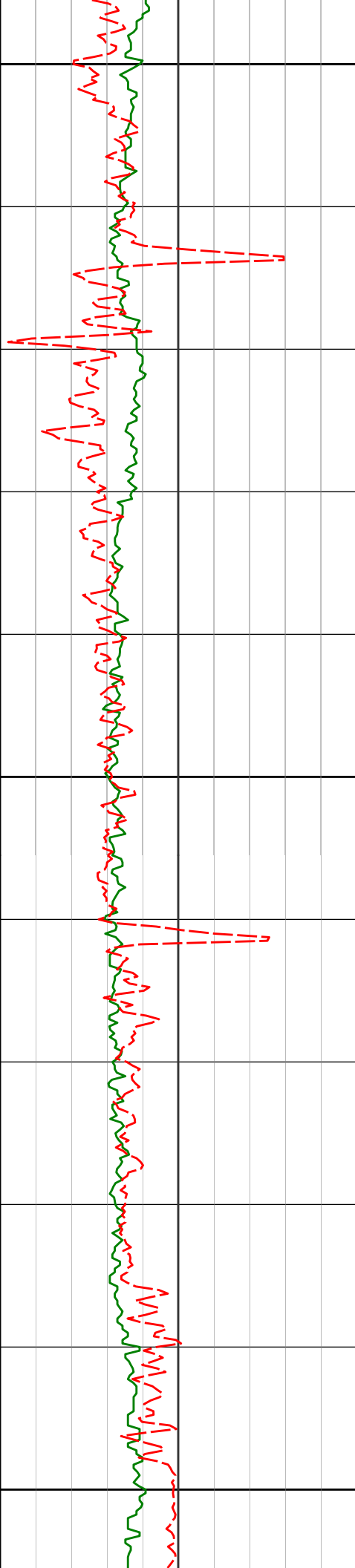
203.87°F

206.83°F

208.11°F

210.31°F

210.63°F



10600

213.10°F

10652'

89.60°

357.13° 5936.88'

5017.28'

213.69°F

10700

214.33°F

10747'

90.37°

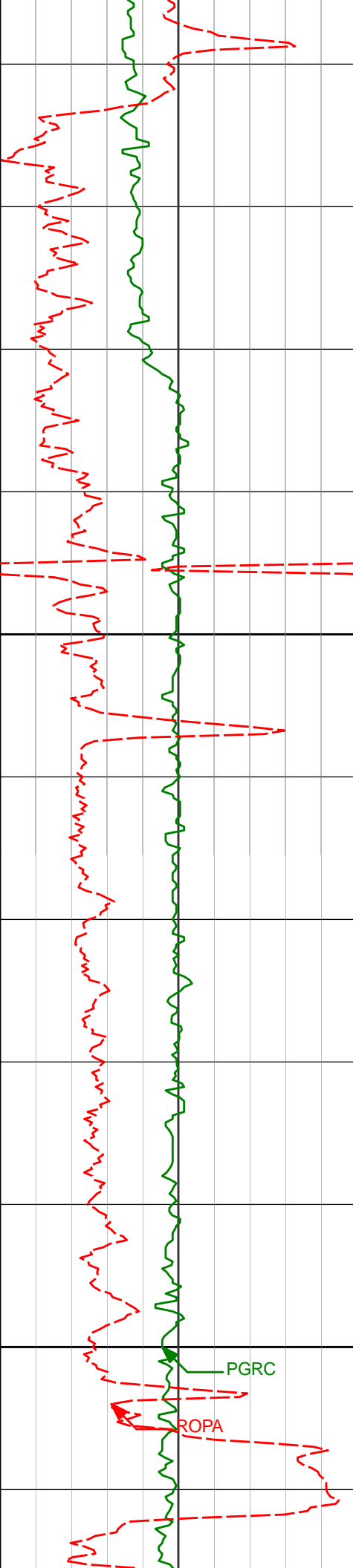
357.14° 5936.91'

5111.84'

215.51°F

10800

215.86°F



10900

11000

PGRC

ROPA

10842'

90.65°

356.17° 5936.07'

5206.30'

218.14°F

218.14°F

10937'

90.74°

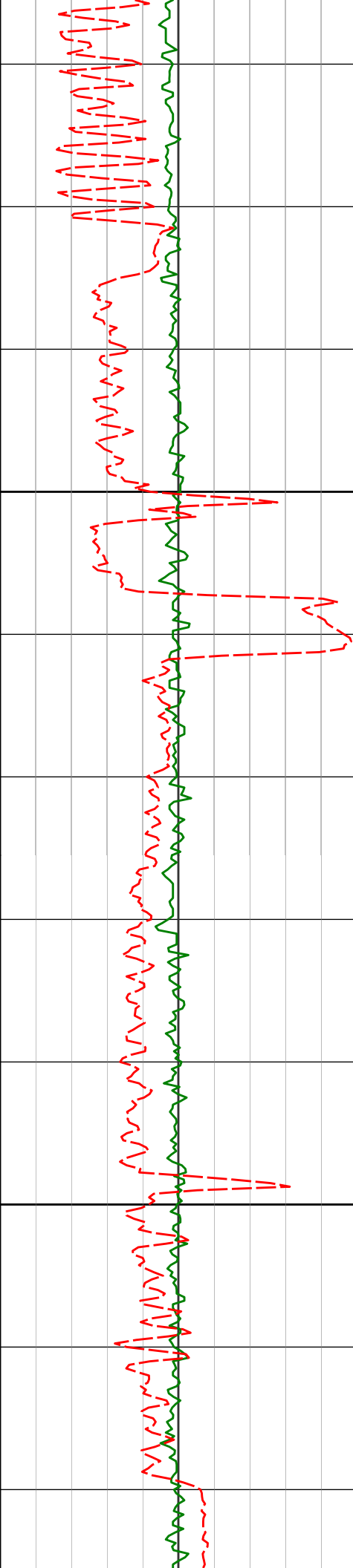
356.65° 5934.92'

5300.72'

215.06°F

213.83°F

215.17°F



11032'

90.28°

357.27°

5934.07'

5395.24'

214.97°F

11100

216.96°F

11127'

90.28°

357.39°

5933.61'

5489.83'

217.19°F

11200

217.43°F

11222'

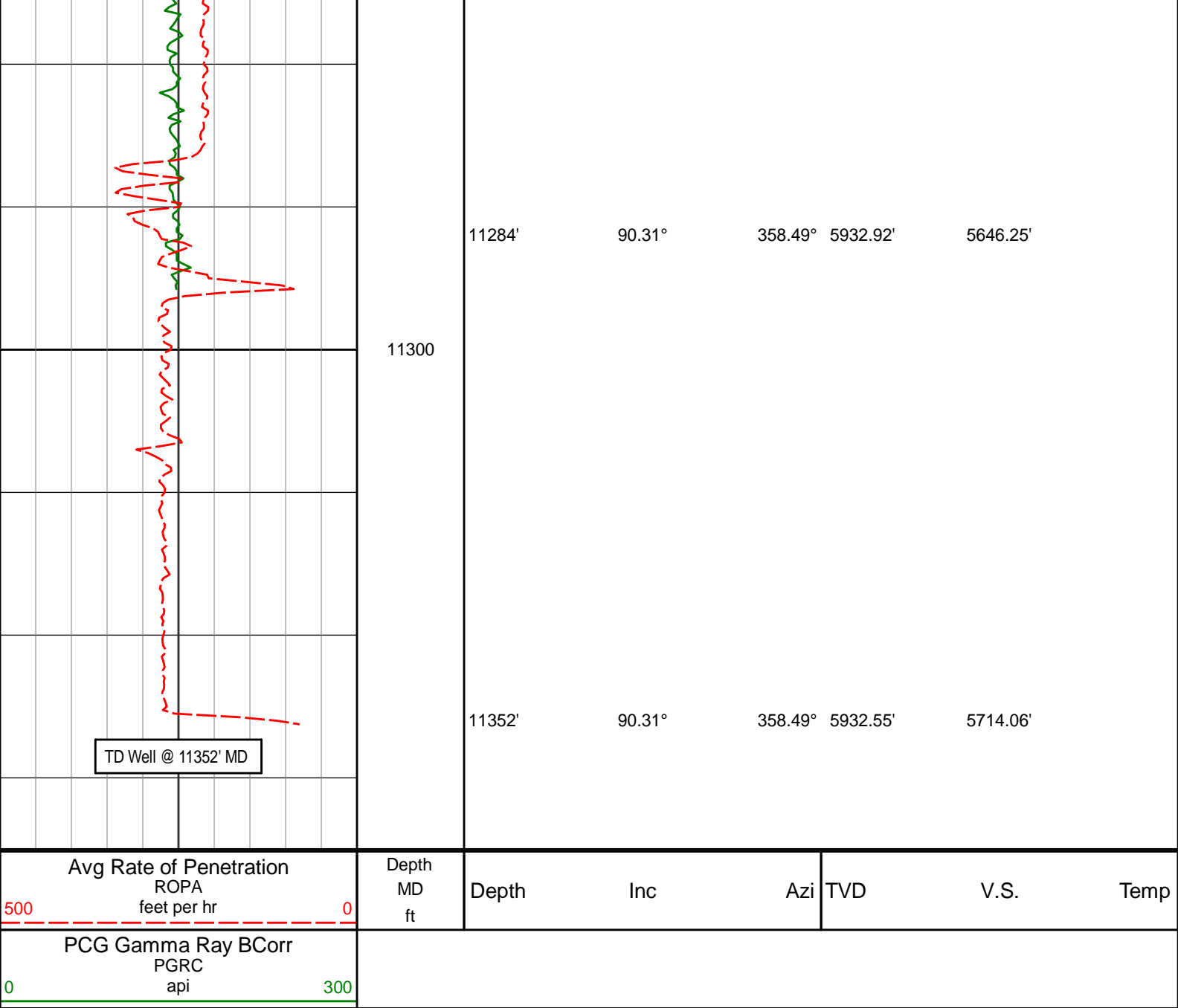
90.22°

357.76°

5933.20'

5584.44'

218.02°F



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Haley LC27-715
Wattenburg
Weld Colorado
USA
CA-XX-0902279448

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
682.00	0.57	344.60	681.99	3.29 N	0.91 W	3.24	0.08
745.00	0.54	332.66	744.99	3.85 N	1.13 W	3.80	0.19
841.00	0.26	320.63	840.98	4.43 N	1.47 W	4.35	0.30
1030.00	0.56	16.94	1029.98	5.64 N	1.48 W	5.57	0.25
1123.00	0.53	51.49	1122.97	6.35 N	1.01 W	6.29	0.35
1215.00	0.44	51.33	1214.97	6.83 N	0.40 W	6.81	0.10
1399.00	0.53	43.41	1398.96	7.89 N	0.73 E	7.92	0.06
1494.00	0.34	350.33	1493.96	8.33 N	1.04 E	8.12	0.14

1491.00	0.24	336.38	1490.96	8.39 N	1.01 E	8.43	0.44
1584.00	0.78	326.97	1583.96	9.11 N	0.65 E	9.13	0.63
1676.00	1.35	69.45	1675.95	10.02 N	1.32 E	10.07	1.84
1770.00	4.58	93.11	1769.81	10.20 N	6.10 E	10.48	3.61
1862.00	6.26	91.61	1861.40	9.86 N	14.78 E	10.55	1.83
1955.00	7.07	87.32	1953.77	9.99 N	25.56 E	11.18	1.02
2047.00	8.61	77.25	2044.91	11.77 N	37.94 E	13.55	2.24
2141.00	8.71	76.08	2137.84	15.04 N	51.71 E	17.46	0.21
2235.00	10.09	85.22	2230.58	17.43 N	66.82 E	20.56	2.17
2326.00	10.04	85.04	2320.18	18.78 N	82.68 E	22.66	0.07
2418.00	9.91	84.45	2410.79	20.25 N	98.55 E	24.87	0.18
2605.00	10.30	83.93	2594.89	23.57 N	131.18 E	29.72	0.21
2697.00	10.55	84.20	2685.37	25.29 N	147.74 E	32.22	0.28
2790.00	10.08	79.92	2776.87	27.58 N	164.22 E	35.28	0.97
2884.00	10.47	79.30	2869.36	30.60 N	180.71 E	39.08	0.44
2979.00	9.45	74.88	2962.93	34.24 N	196.73 E	43.47	1.34
3074.00	9.46	73.97	3056.64	38.43 N	211.76 E	48.36	0.16
3169.00	8.97	73.76	3150.41	42.66 N	226.37 E	53.27	0.52
3264.00	8.79	74.44	3244.27	46.67 N	240.47 E	57.95	0.22
3359.00	9.05	80.68	3338.13	49.83 N	254.84 E	61.78	1.05
3454.00	9.43	81.44	3431.89	52.20 N	269.91 E	64.86	0.42
3550.00	9.65	80.26	3526.57	54.73 N	285.62 E	68.13	0.30
3645.00	8.37	78.59	3620.39	57.45 N	300.25 E	71.53	1.38
3740.00	8.67	78.27	3714.34	60.27 N	314.04 E	75.00	0.32
3835.00	9.19	78.08	3808.19	63.30 N	328.47 E	78.70	0.55
3929.00	8.33	82.72	3901.10	65.71 N	342.57 E	81.77	1.19
4025.00	7.53	86.50	3996.18	66.97 N	355.74 E	83.66	0.99
4119.00	9.15	86.14	4089.18	67.85 N	369.34 E	85.17	1.73
4214.00	8.09	86.76	4183.11	68.74 N	383.55 E	86.73	1.12
4309.00	7.76	85.97	4277.20	69.57 N	396.63 E	88.17	0.36
4404.00	9.15	87.39	4371.16	70.36 N	410.58 E	89.62	1.47
4499.00	8.82	83.67	4465.00	71.51 N	425.36 E	91.47	0.71
4594.00	8.75	82.67	4558.88	73.23 N	439.76 E	93.87	0.18
4689.00	7.13	85.03	4652.97	74.67 N	452.81 E	95.91	1.73
4784.00	4.12	93.36	4747.50	74.98 N	462.09 E	96.66	3.28
4879.00	1.89	125.00	4842.37	73.88 N	466.78 E	95.79	2.84
4974.00	0.46	63.27	4937.35	73.16 N	468.40 E	95.14	1.81
5069.00	0.34	119.78	5032.35	73.19 N	468.99 E	95.20	0.42
5164.00	0.72	95.92	5127.35	72.98 N	469.83 E	95.04	0.45
5259.00	1.35	104.01	5222.33	72.65 N	471.51 E	94.78	0.69
5354.00	0.99	355.06	5317.32	73.20 N	472.53 E	95.38	2.02
5449.00	11.74	357.16	5411.59	83.70 N	471.98 E	105.84	11.31
5544.00	21.36	353.00	5502.56	110.59 N	469.39 E	132.58	10.20
5638.00	27.26	350.37	5588.19	148.84 N	463.70 E	170.52	6.38
5733.00	34.68	351.70	5669.58	197.10 N	456.15 E	218.37	7.85
5828.00	42.76	354.71	5743.65	256.07 N	449.26 E	276.95	8.73
5923.00	48.43	359.67	5810.11	323.79 N	446.08 E	344.45	7.03
6018.00	57.27	358.93	5867.43	399.43 N	445.13 E	419.96	9.32
6113.00	66.28	358.10	5912.31	483.02 N	442.94 E	503.35	9.52
6208.00	75.12	357.62	5943.68	572.53 N	439.59 E	592.60	9.31
6288.00	79.56	357.55	5961.21	650.49 N	436.30 E	670.32	5.56
6420.00	88.31	356.48	5975.15	781.45 N	429.46 E	800.81	6.67
6513.00	89.97	356.43	5976.55	874.26 N	423.71 E	893.24	1.79
6606.00	92.22	356.89	5974.77	967.07 N	418.30 E	985.70	2.47
6698.00	92.59	358.48	5970.91	1058.92 N	414.59 E	1077.27	1.78
6791.00	91.94	359.42	5967.24	1151.83 N	412.88 E	1170.00	1.22
6884.00	91.60	358.99	5964.36	1244.77 N	411.59 E	1262.78	0.59
6976.00	92.00	358.16	5961.47	1336.70 N	409.31 E	1354.49	1.00
7070.00	91.36	358.20	5958.71	1430.61 N	406.32 E	1448.16	0.69
7162.00	91.08	359.67	5956.76	1522.57 N	404.61 E	1539.94	1.63
7255.00	90.06	358.90	5955.83	1615.56 N	403.45 E	1632.77	1.38
7349.00	90.68	359.59	5955.22	1709.54 N	402.21 E	1726.59	0.99
7440.00	91.14	359.91	5953.78	1800.53 N	401.81 E	1817.46	0.62
7533.00	89.69	0.10	5953.11	1893.53 N	401.82 E	1910.35	1.57
7626.00	89.08	0.05	5954.11	1986.52 N	401.94 E	2003.25	0.66
7719.00	88.74	358.48	5955.88	2079.49 N	400.75 E	2096.06	1.73
7811.00	89.48	358.18	5957.32	2171.44 N	398.07 E	2187.78	0.87
7904.00	90.31	358.31	5957.49	2264.40 N	395.22 E	2280.50	0.90
7999.00	90.03	358.42	5957.21	2359.36 N	392.51 E	2375.23	0.31
8094.00	89.97	358.29	5957.21	2454.32 N	389.78 E	2469.96	0.15
8189.00	90.99	357.70	5956.42	2549.26 N	386.46 E	2564.63	1.24
8284.00	90.68	358.04	5955.03	2644.18 N	382.93 E	2659.28	0.49
8379.00	90.77	357.44	5953.83	2739.10 N	379.18 E	2753.92	0.64
8473.00	90.89	356.78	5952.47	2832.97 N	374.44 E	2847.46	0.71
8568.00	90.74	357.88	5951.11	2927.85 N	370.02 E	2942.03	1.16

8663.00	90.52	357.91	5950.07	3022.78 N	366.53 E	3036.69	0.23
8758.00	90.59	357.19	5949.15	3117.69 N	362.47 E	3131.31	0.76
8853.00	89.78	356.07	5948.84	3212.52 N	356.89 E	3225.77	1.45
8948.00	91.45	358.57	5947.82	3307.40 N	352.44 E	3320.34	3.16
9043.00	92.00	358.89	5944.96	3402.34 N	350.34 E	3415.06	0.67
9138.00	92.53	358.19	5941.20	3497.23 N	347.92 E	3509.74	0.92
9233.00	93.05	357.29	5936.58	3592.04 N	344.18 E	3604.27	1.10
9327.00	90.74	357.97	5933.47	3685.91 N	340.29 E	3697.84	2.57
9422.00	91.11	359.05	5931.94	3780.86 N	337.82 E	3792.58	1.19
9516.00	88.06	359.00	5932.62	3874.83 N	336.22 E	3886.37	3.25
9611.00	87.53	358.92	5936.27	3969.75 N	334.50 E	3981.10	0.56
9706.00	88.49	357.81	5939.57	4064.65 N	331.79 E	4075.76	1.54
9801.00	88.86	357.48	5941.77	4159.54 N	327.88 E	4170.37	0.52
9895.00	88.52	357.41	5943.92	4253.42 N	323.69 E	4263.95	0.37
9990.00	90.18	356.86	5944.99	4348.29 N	318.94 E	4358.49	1.84
10084.00	90.86	357.25	5944.14	4442.17 N	314.11 E	4452.03	0.84
10179.00	91.32	357.19	5942.33	4537.04 N	309.50 E	4546.58	0.49
10273.00	92.00	356.76	5939.60	4630.86 N	304.55 E	4640.07	0.85
10368.00	90.83	356.91	5937.25	4725.69 N	299.31 E	4734.54	1.24
10463.00	90.15	357.71	5936.43	4820.58 N	294.85 E	4829.12	1.10
10558.00	89.85	357.22	5936.43	4915.49 N	290.65 E	4923.72	0.60
10652.00	89.60	357.13	5936.88	5009.37 N	286.02 E	5017.28	0.28
10747.00	90.37	357.14	5936.91	5104.25 N	281.28 E	5111.84	0.81
10842.00	90.65	356.17	5936.07	5199.09 N	275.74 E	5206.30	1.06
10937.00	90.74	356.65	5934.92	5293.89 N	269.79 E	5300.72	0.51
11032.00	90.28	357.27	5934.07	5388.75 N	264.75 E	5395.24	0.81
11127.00	90.28	357.39	5933.61	5483.65 N	260.33 E	5489.83	0.13
11222.00	90.22	357.76	5933.20	5578.56 N	256.31 E	5584.44	0.39
11284.00	90.31	358.49	5932.92	5640.53 N	254.28 E	5646.25	1.18
11352.00	90.31	358.49	5932.55	5708.50 N	252.48 E	5714.06	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 2.70 DEGREES (GRID)
A TOTAL CORRECTION OF 7.11 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11352.00 FEET
IS 5714.09 FEET ALONG 2.53 DEGREES (GRID)**

Final survey is a straight line projection to TD.