



1 : 600 / 1 : 240

WELL INFORMATION					
MWD Run Number	100	200	300		
Date run completed	13-Aug-15	14-Aug-15	17-Aug-15		
Rig Bit Number	0100	0200	0300		
Bit Size (in)	8.750	6.125	6.125		
Tool Nominal OD (in)	6.750	4.750	4.750		
Log Start Depth (MD, ft)	1,135.00	6,278.00	6,813.00		
Log End Depth (MD, ft)	6,278.00	6,813.00	10,576.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	11-Aug-15 23:30	14-Aug-15 05:30	14-Aug-15 20:45		
Drill/Wipe End Date and Time	12-Aug-15 19:50	14-Aug-15 10:30	15-Aug-15 21:15		
Min Inc (deg) @ Depth (MD, ft)	0.38 @ 1,202.00	89.91 @ 6,655.00	87.38 @ 9,482.00		
Max Inc (deg) @ Depth (MD, ft)	87.04 @ 6,213.00	90.12 @ 6,748.00	91.91 @ 10,333.00		
Bit TFA(in2) / Bit Type	0.98 / PDC	.64 / PDC	0.98 / PDC		
Flow Rate (gpm)	592.65	308.21	320.00		
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)	8.85 / 27.00	10.30 / 40.00	10.30 / 39.00		
Filtrate CL (ppm)	16.00	2,100.00	2,100.00		
pH / Fluid Loss (mptm)	9.30 / 88	/ 0	9.90 /		
PV (cP) / YP (lbf2)	2 / 2.00	12 / 15.00	12 / 15.00		
% Solids / % Sand	3.20 / 0.30	8.9 / 0.15	9.9 / 0.20		
% Oil / Oil:Water Ratio	2.00 / 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		
Max Tool Temp (degF)	178.78 / PDC	N/A / N/A	N/A / N/A		

Max Tool Temp (degF) / Source	172.78 / PCM	N/A / N/A	N/A / N/A		
Rm @ Max Tool Temp (degF)	N/A @ 172.78	N/A @ 185.02	N/A @ 210.31		
Lead MWD Engineer	Brian Neu	Cody Wurdeman	Cody Wurdeman		
Customer Representative	Johnny Sanchez	Johnny Sanchez	Johnny Sanchez		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.93	5.93	5.93		
Sub Serial Number	11303511	12361803	12361803		
Insert Serial Number	11400870	11619985	11400870		
Date and Time Initialized	11-Aug-15 09:37	13-Aug-15 11:58	14-Aug-15 12:05		
Date and Time Read	13-Aug-15 00:18	14-Aug-15 16:49	17-Aug-15 04:35		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	65.00	65.00	62.00		
Software Version	6.21	6.33	6.21		
Sub Serial Number	11303511	12361803	12361803		
Sonde Serial Number	11478016	10859920	11478016		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	6.40	21.30	81.60		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	57.90	58.65	55.48		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	11303511	12361803	12361803		
Insert/Sonde Serial Number	12037418	11680918	12037418		

REMARKS

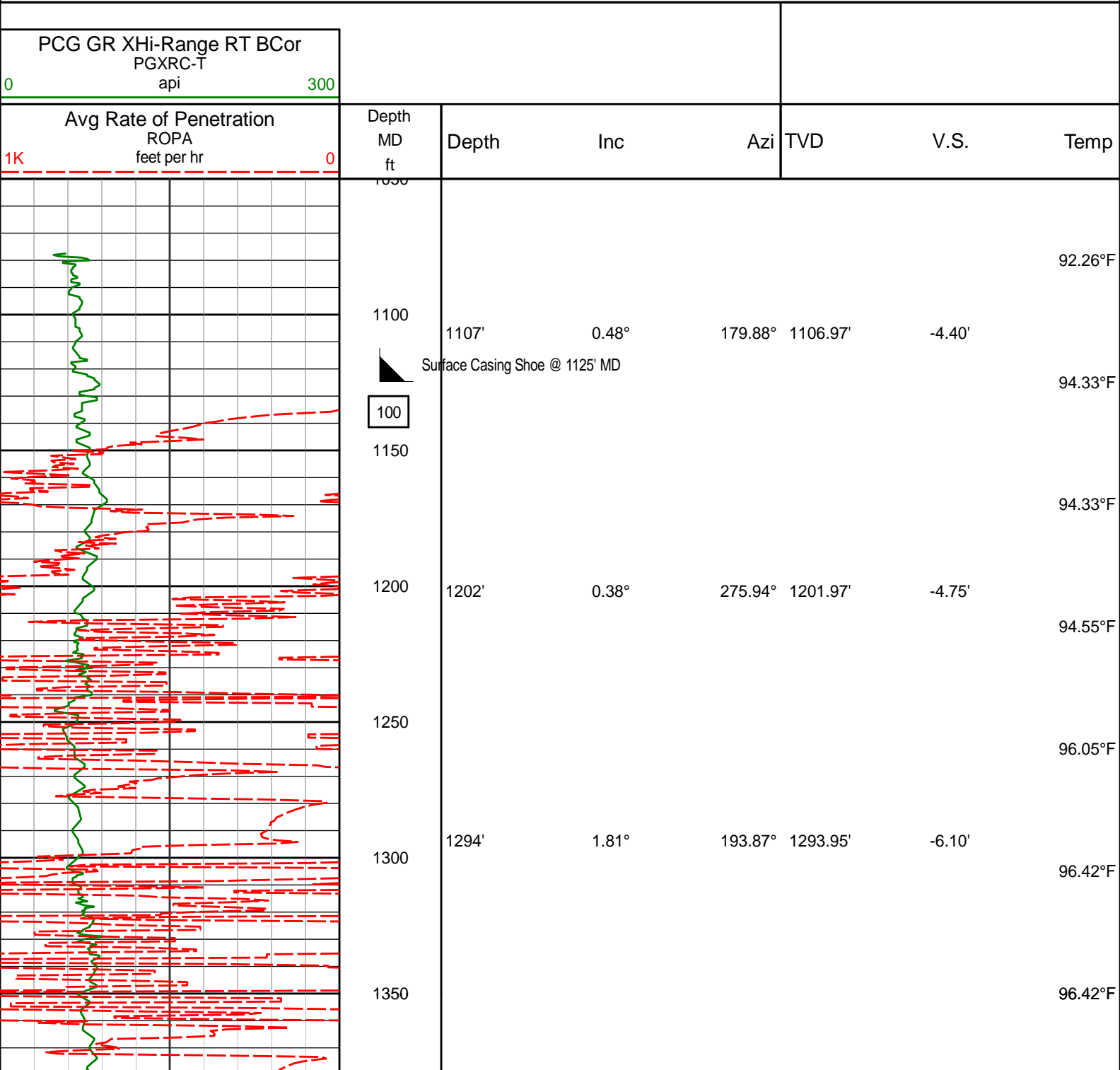
1. All depths are calibrated to driller's pipe tally and are total vertical depth from the drill floor.
2. No depth corrections have been made for pipe stretch or compression.
3. All data presented is recorded (memory data) unless otherwise stated.
4. Any gaps in gamma are due to high ROP.
5. Environmental parameters used in gamma and resistance processing:
Hole Size: 6.125"
Mud Density: 9.9-10.3
6. The following smoothing parameters have been applied to the data:
Interval: 0.5 ft
Coercion Distance: 1.2 ft (ROPA)
Interval: 0.5 ft
Coercion Distance: 0.6 ft (Gamma Ray)

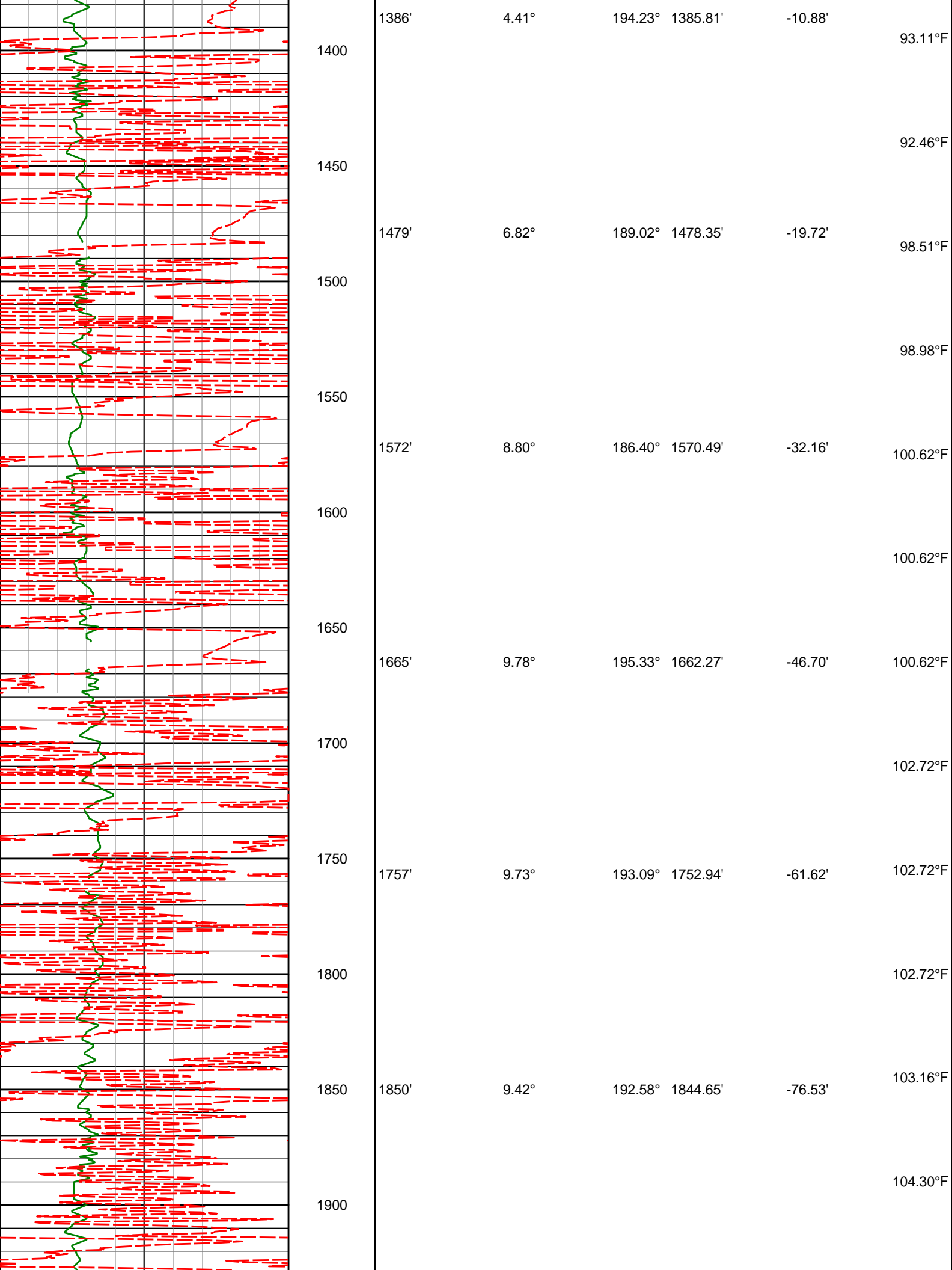
WARRANTY

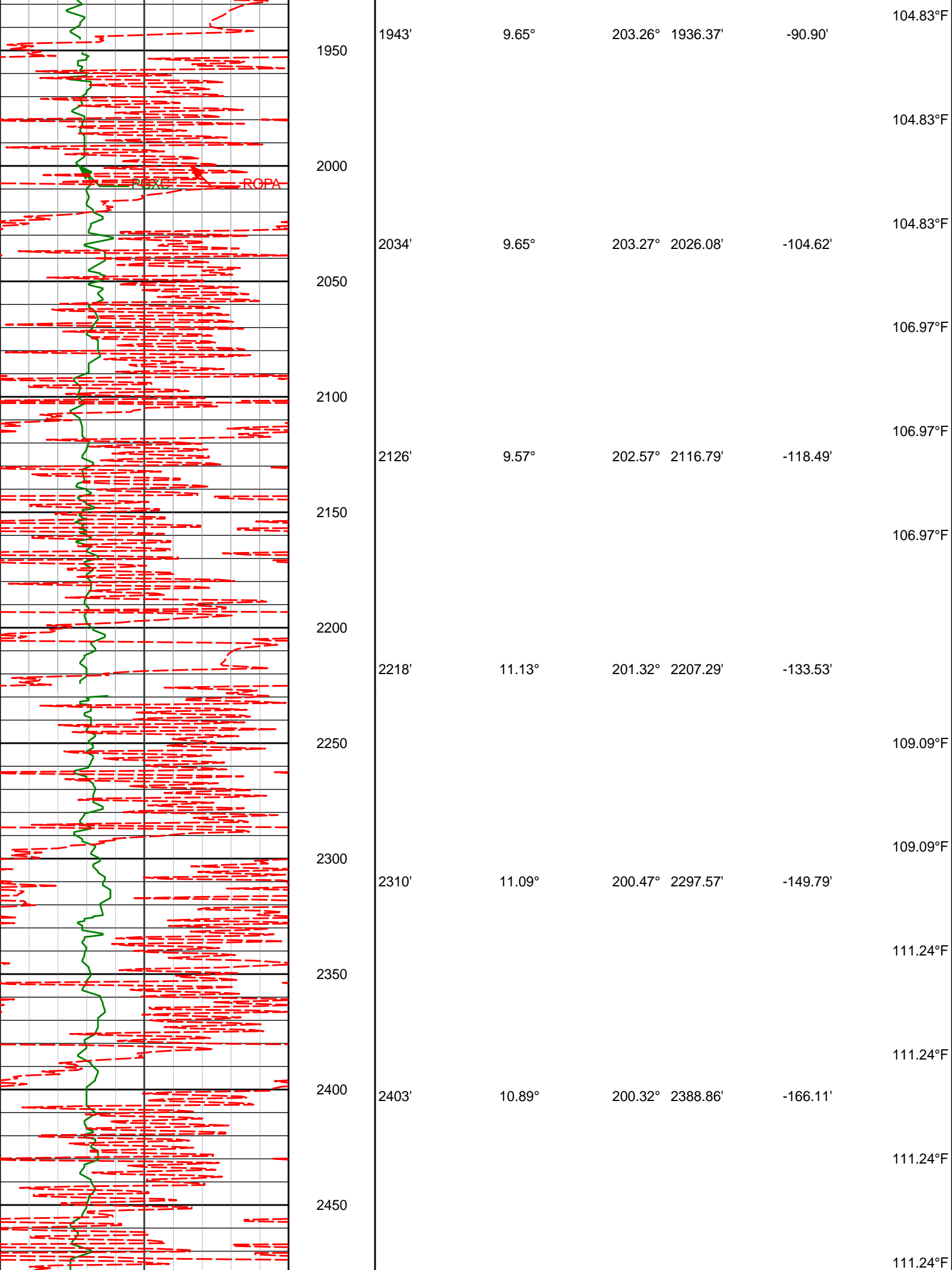
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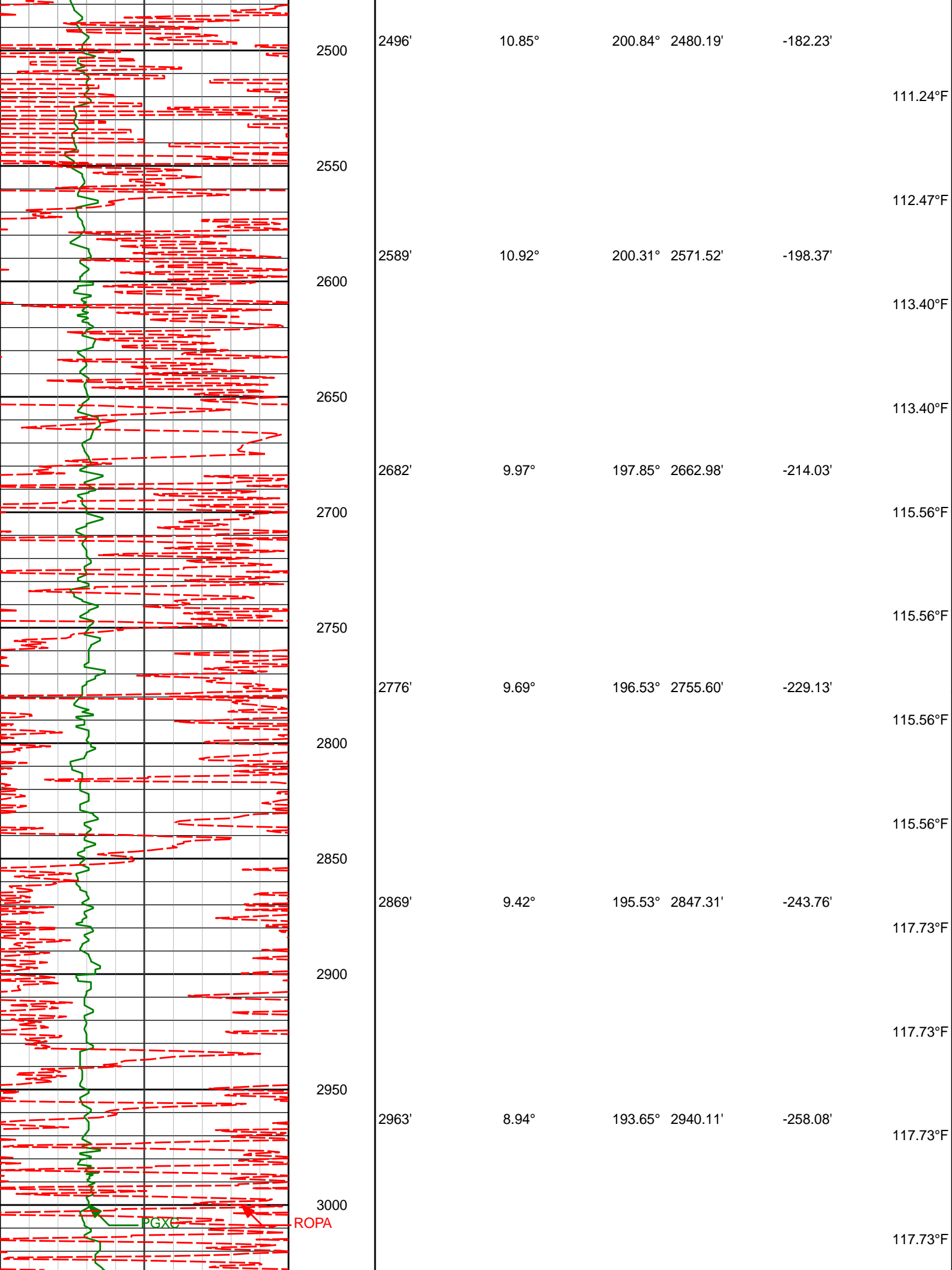
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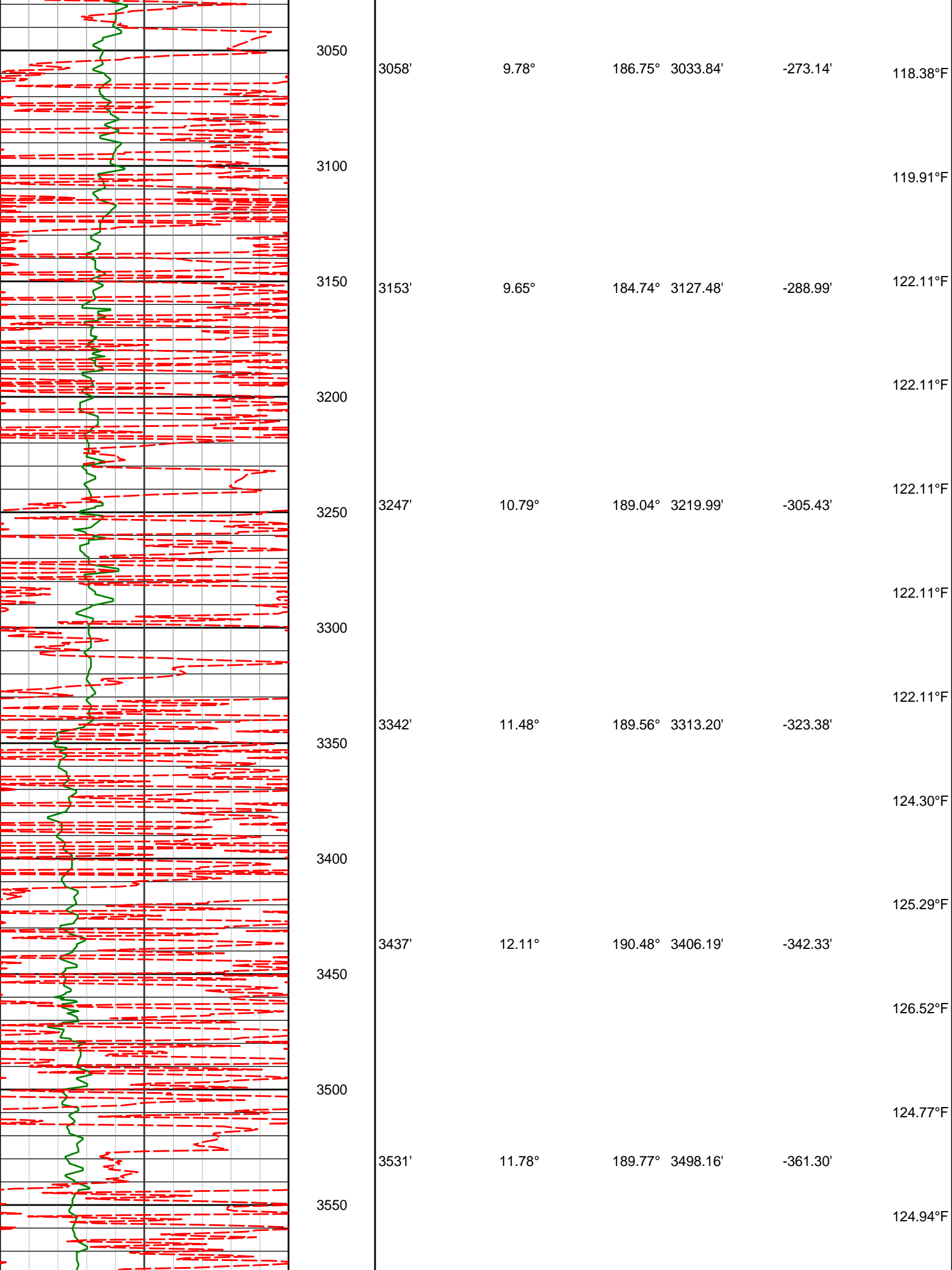
MD Detail 1:600 Scale

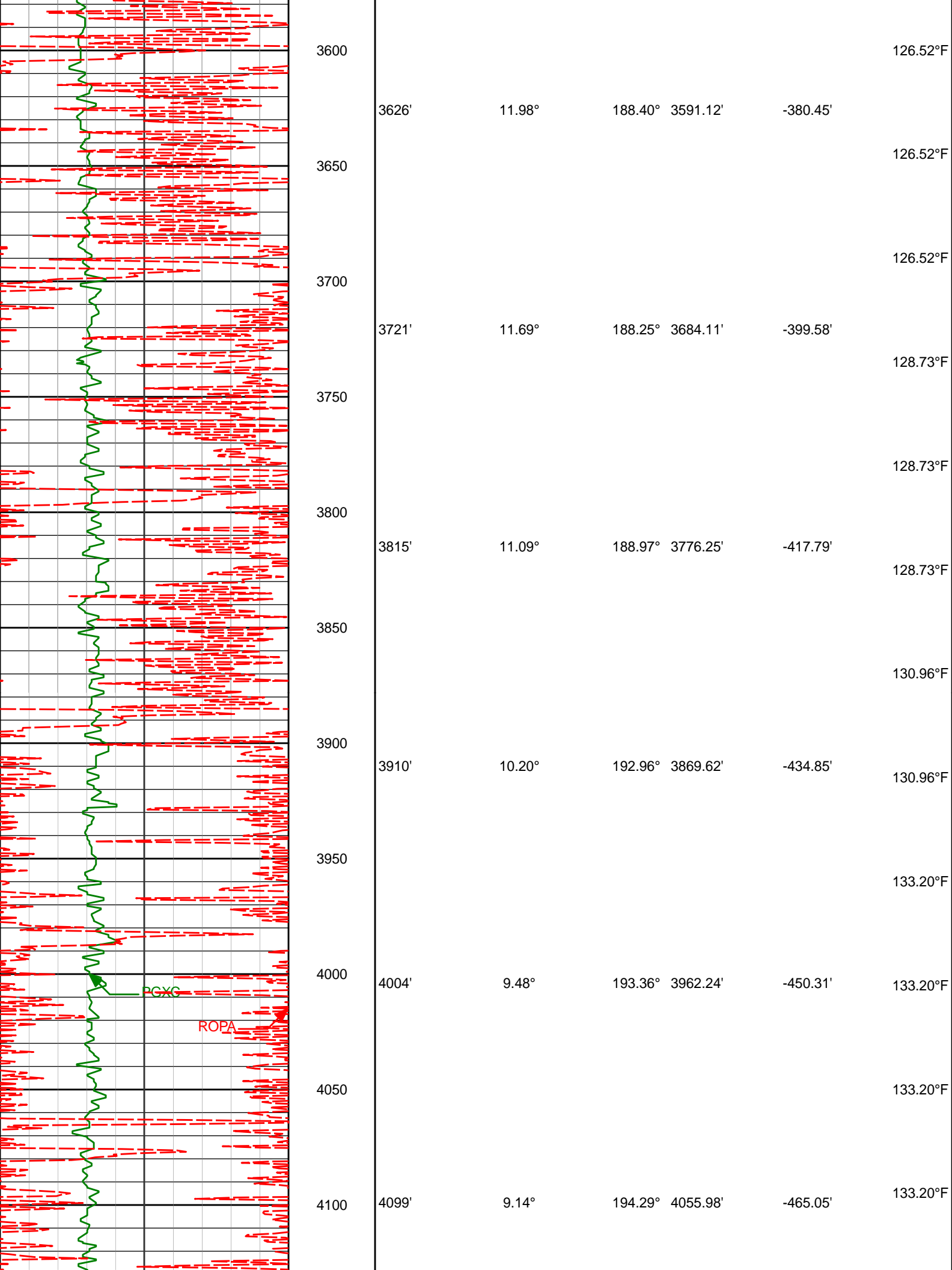


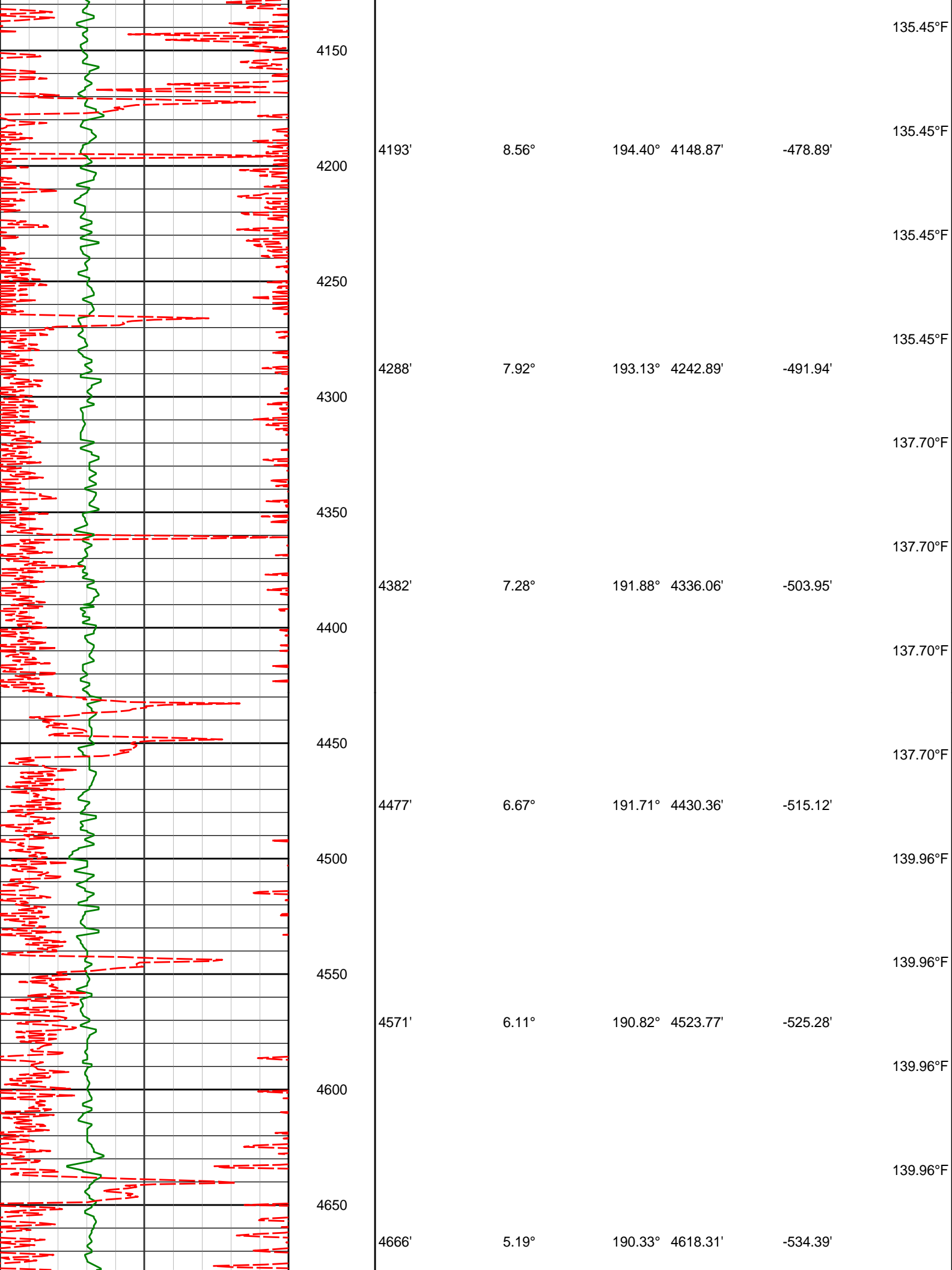


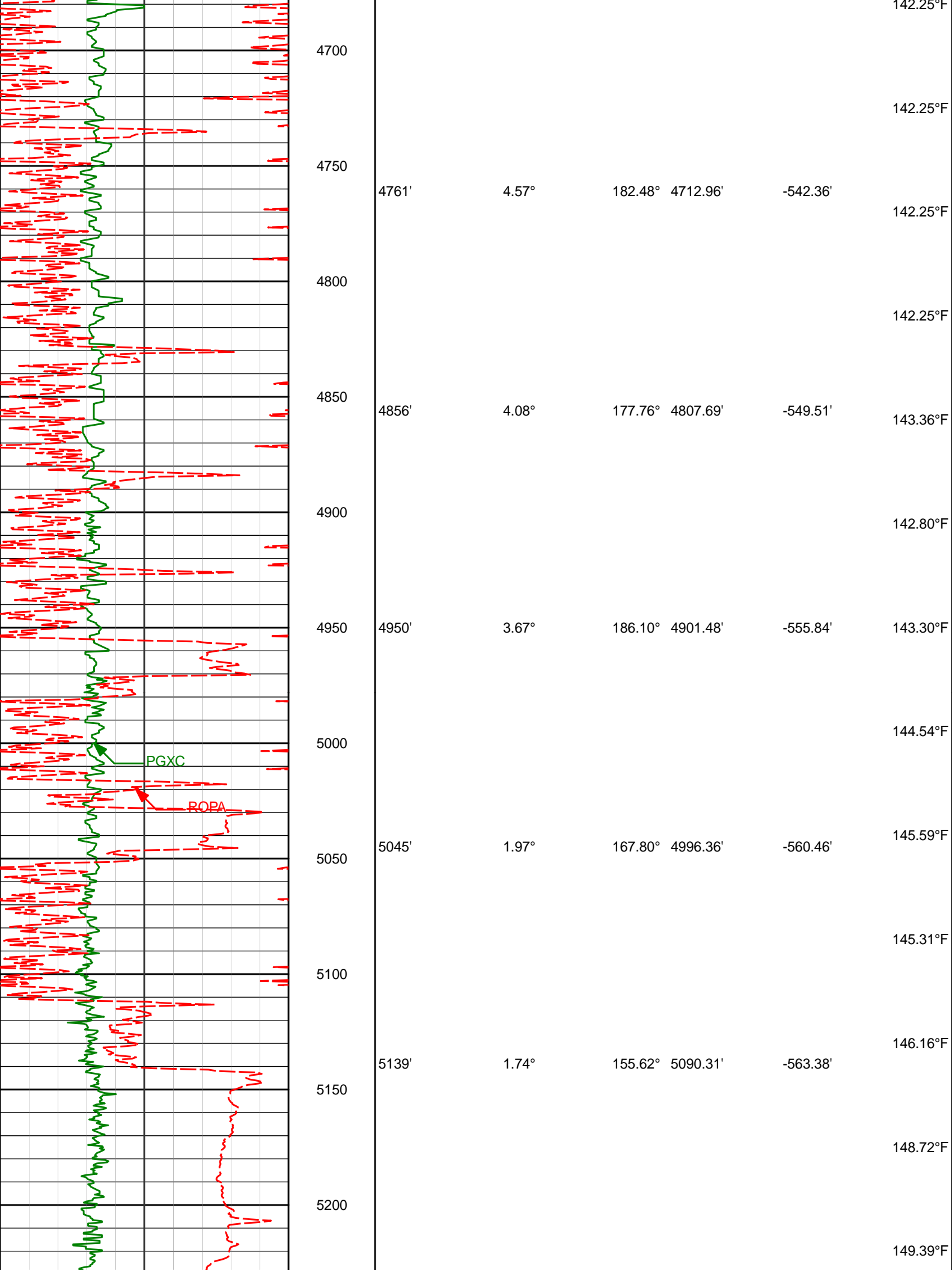


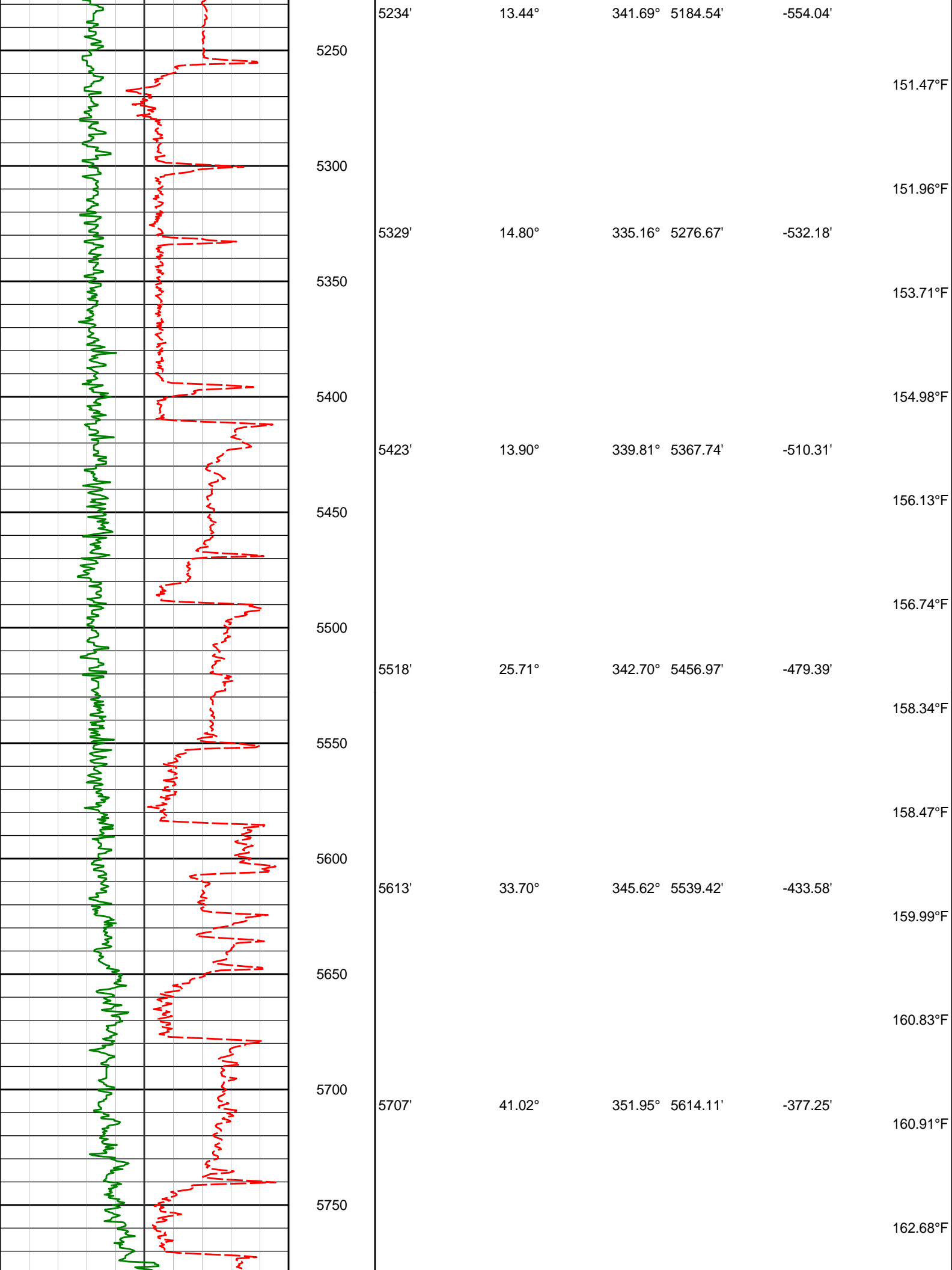


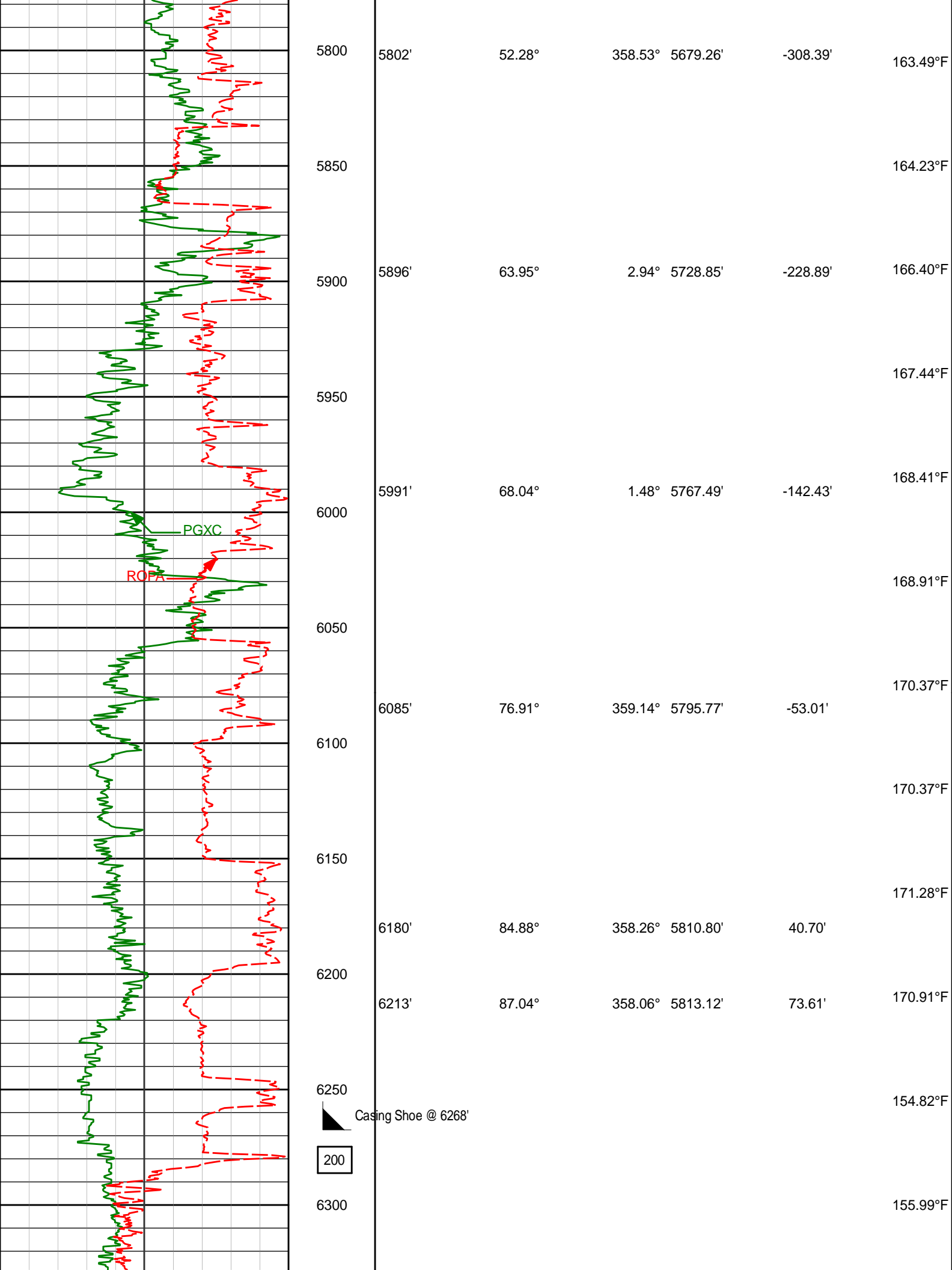


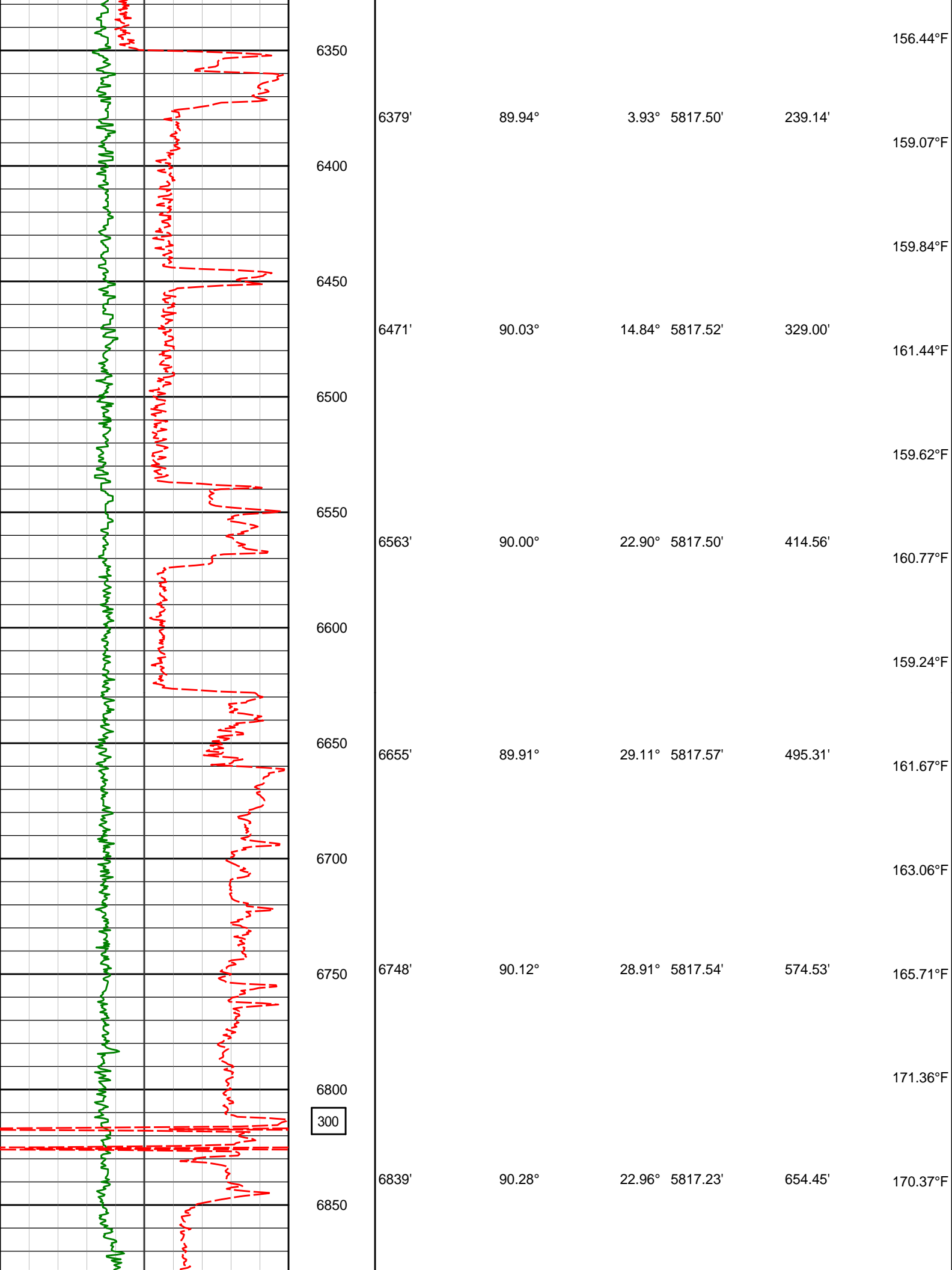


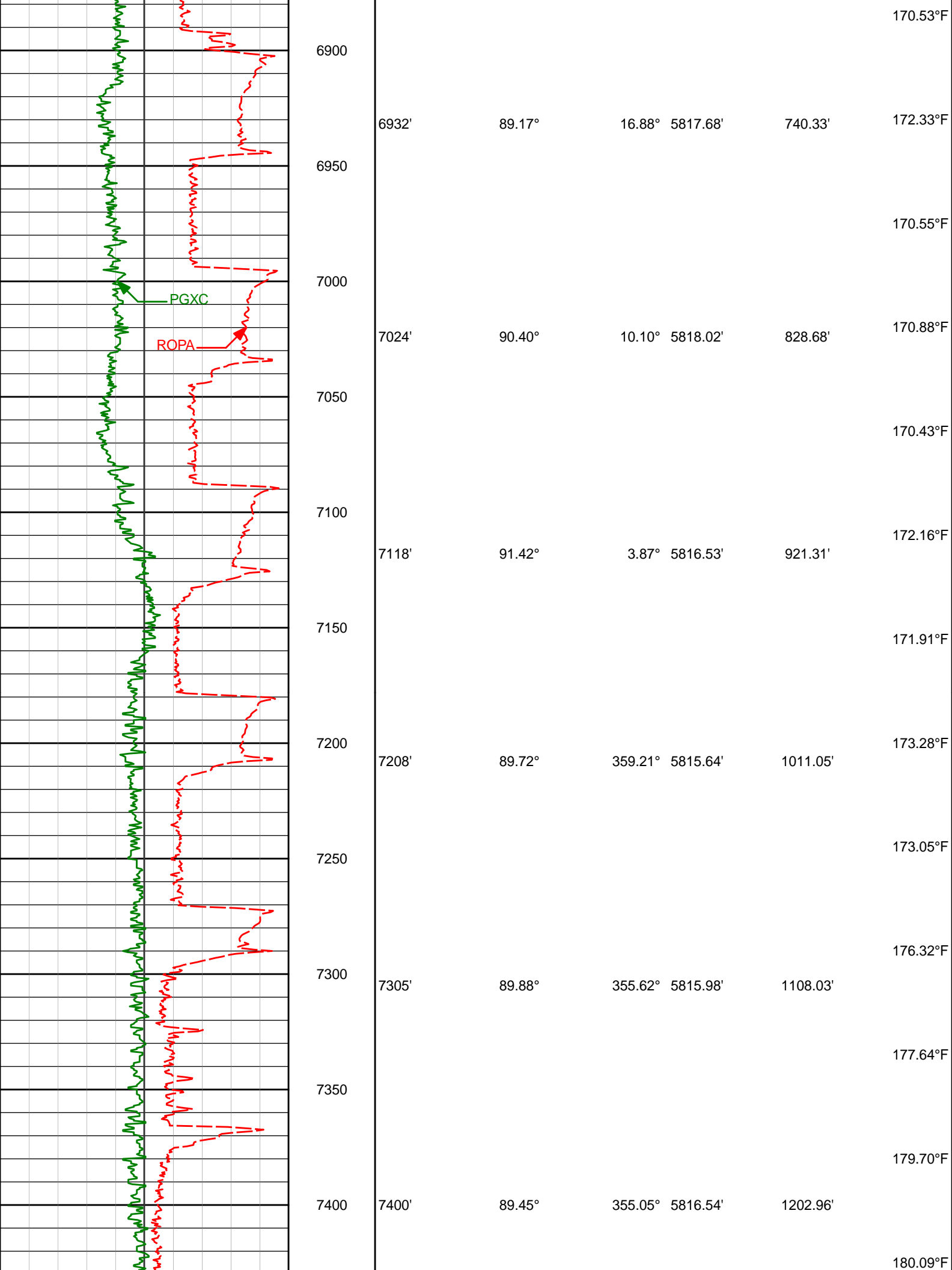


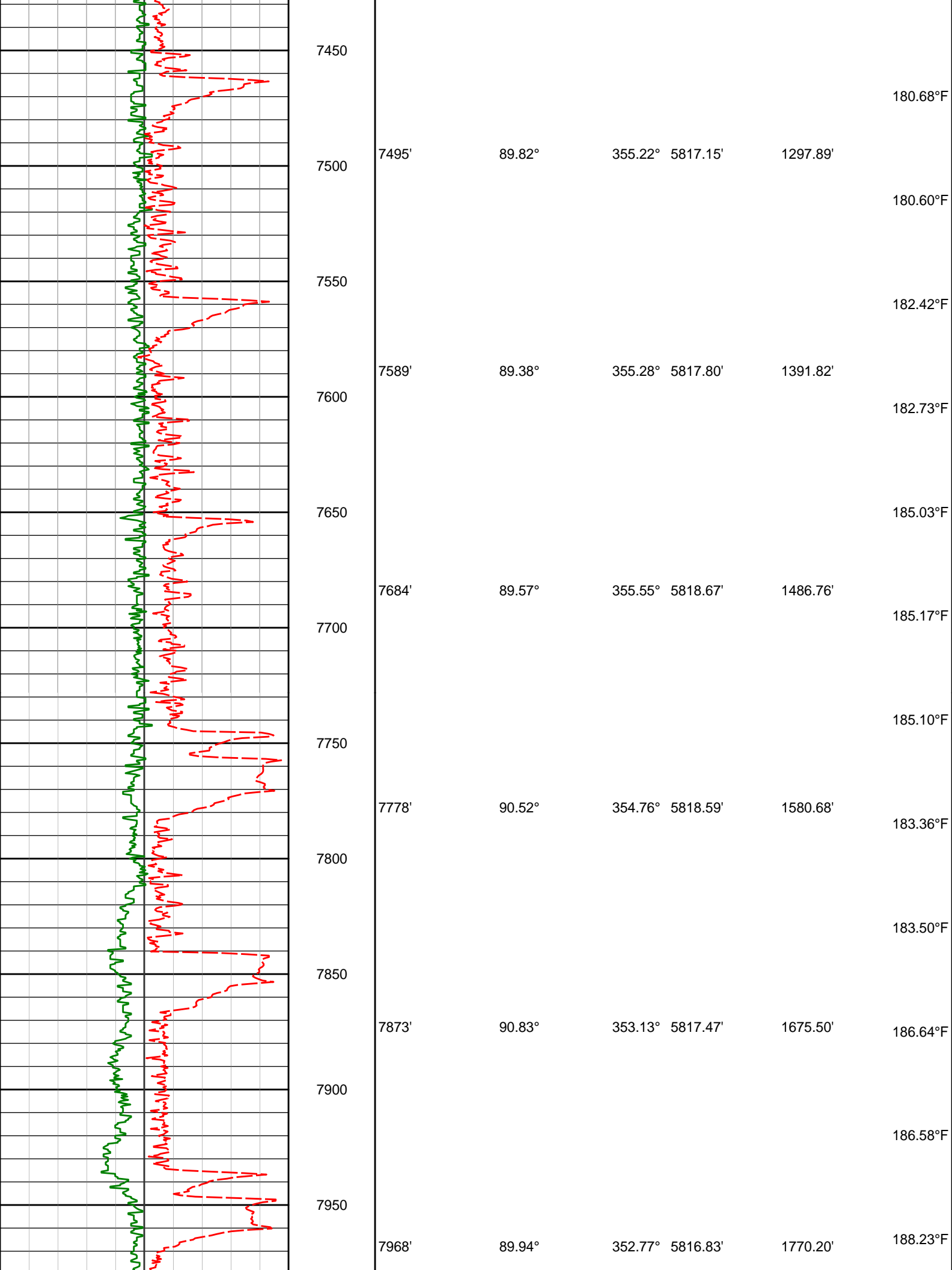


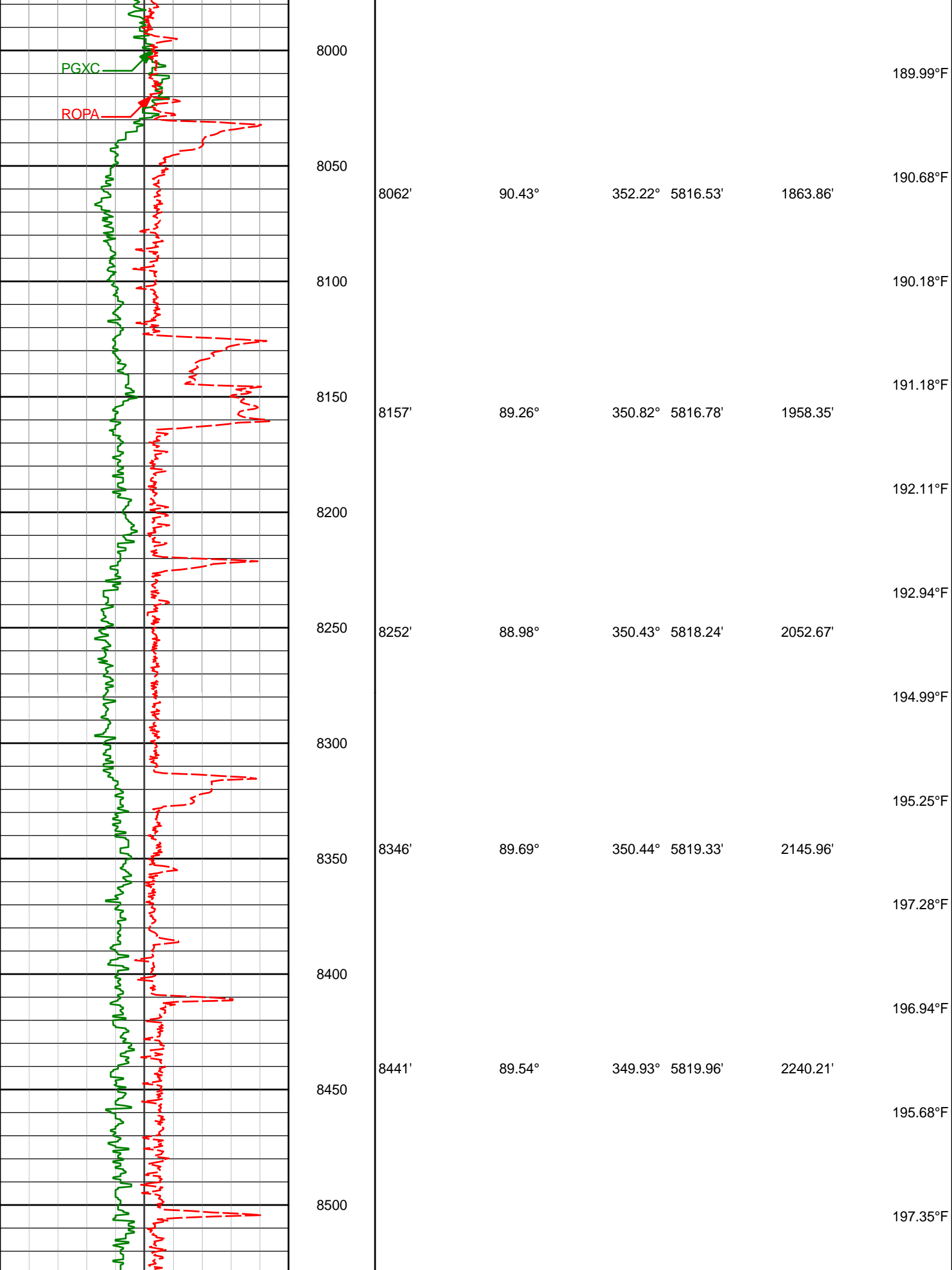


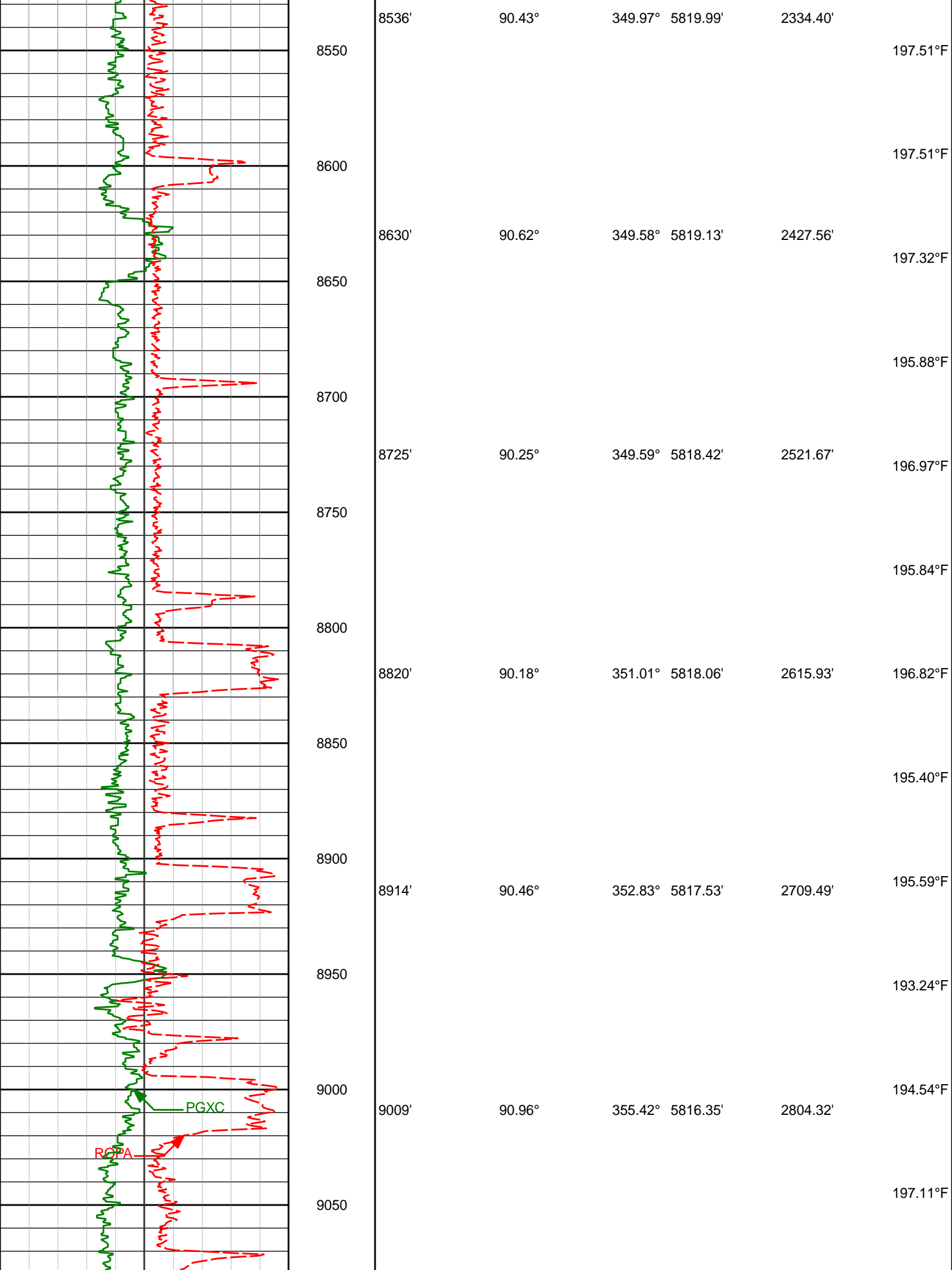


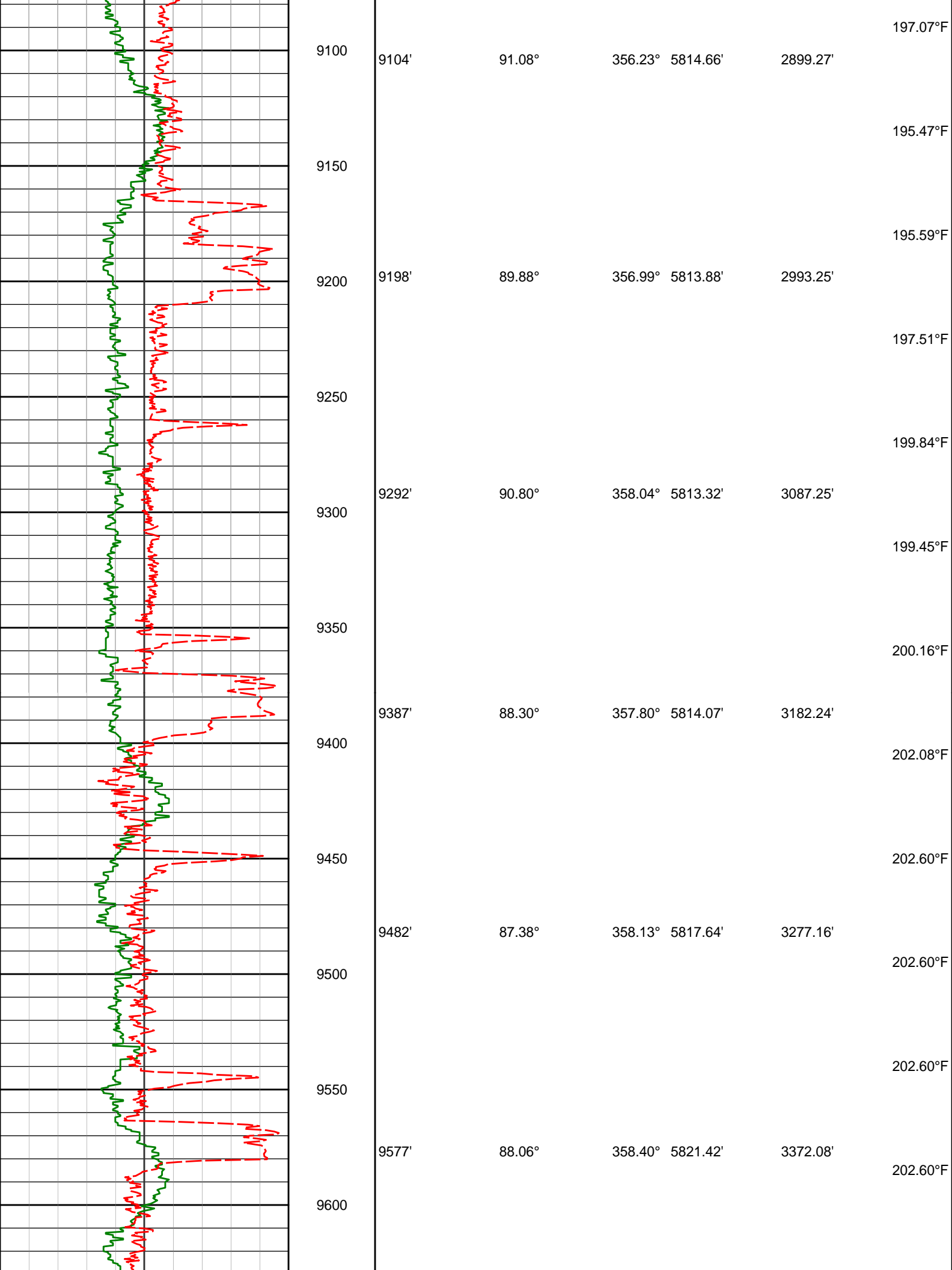


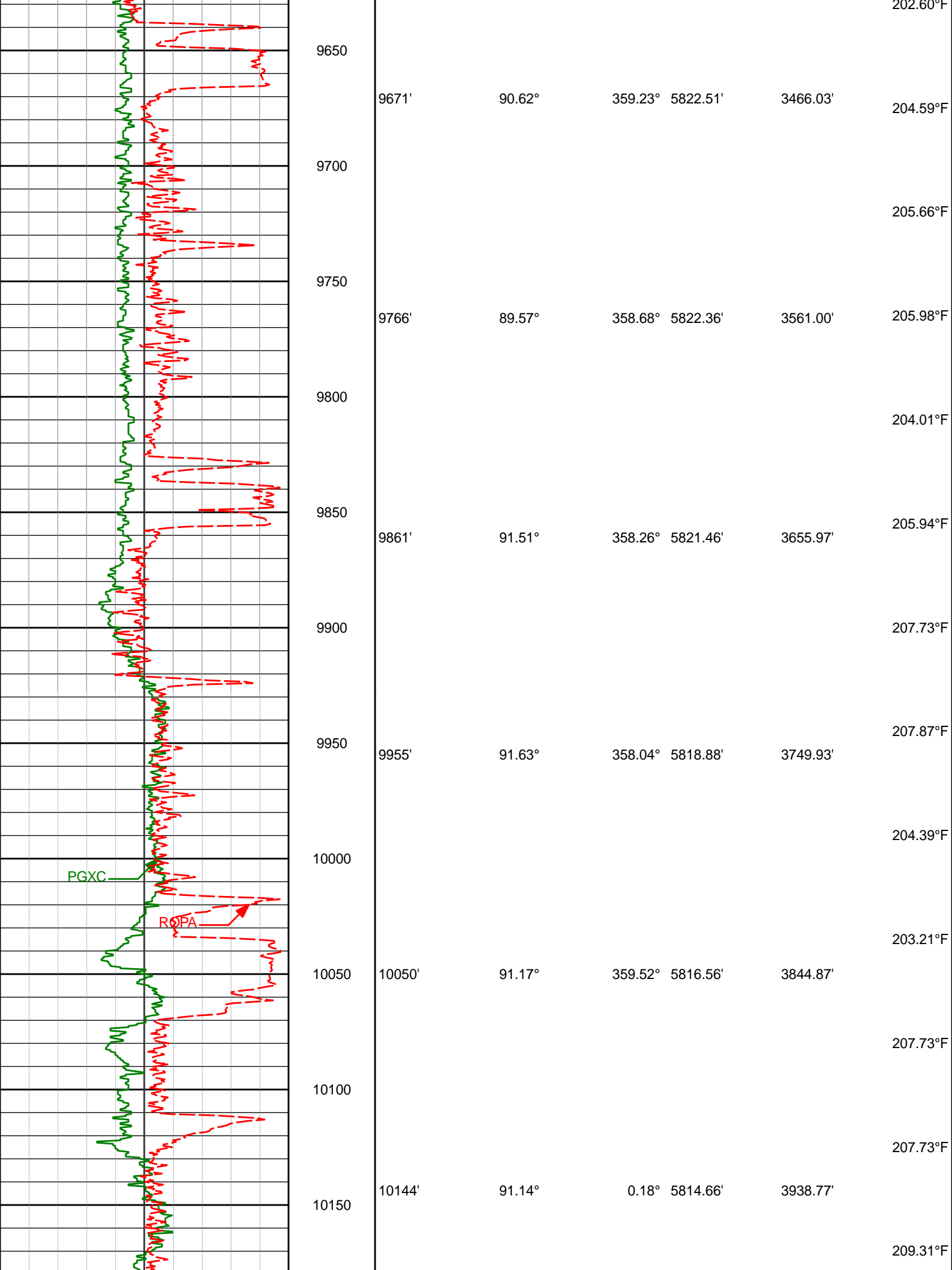


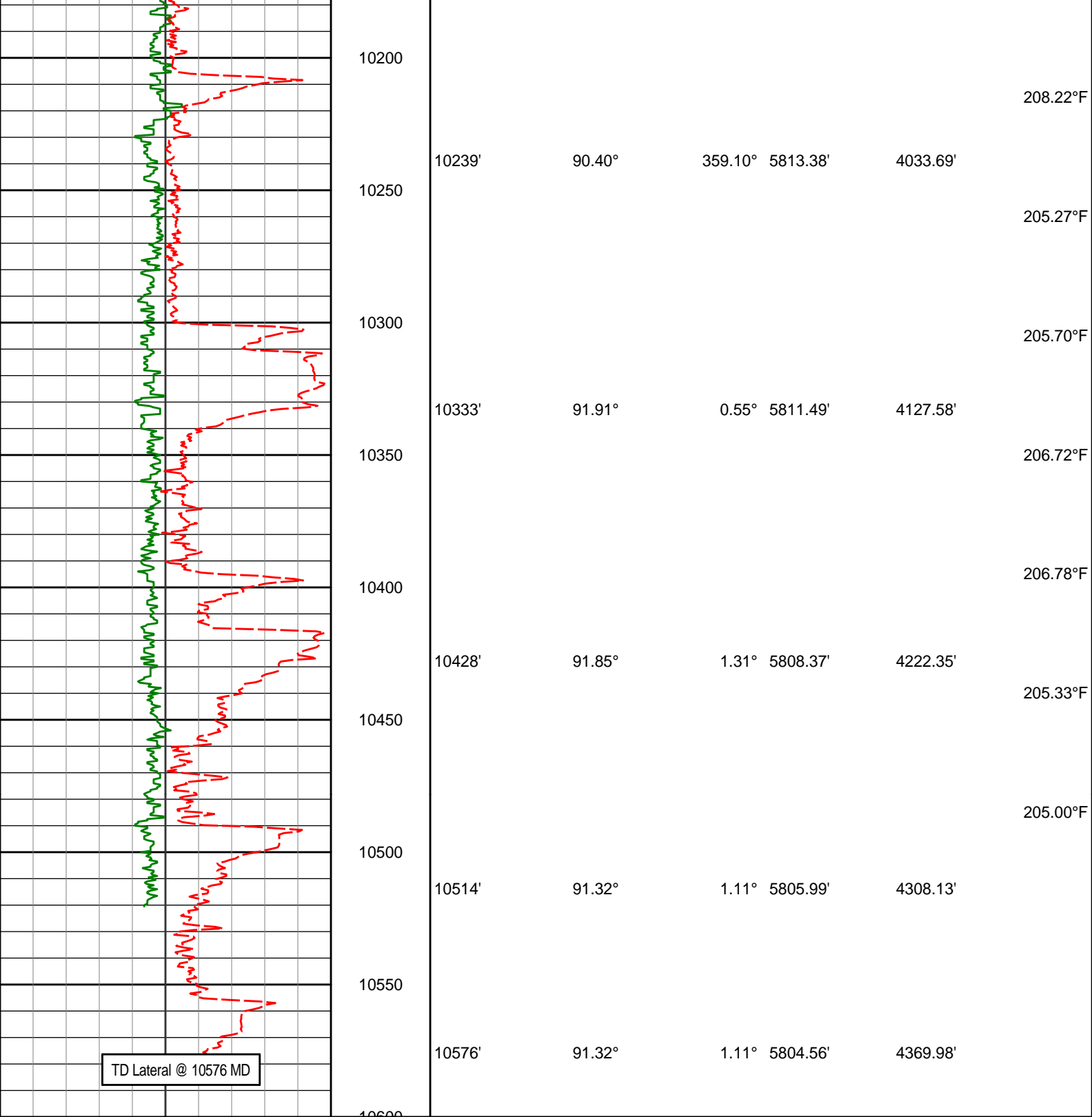






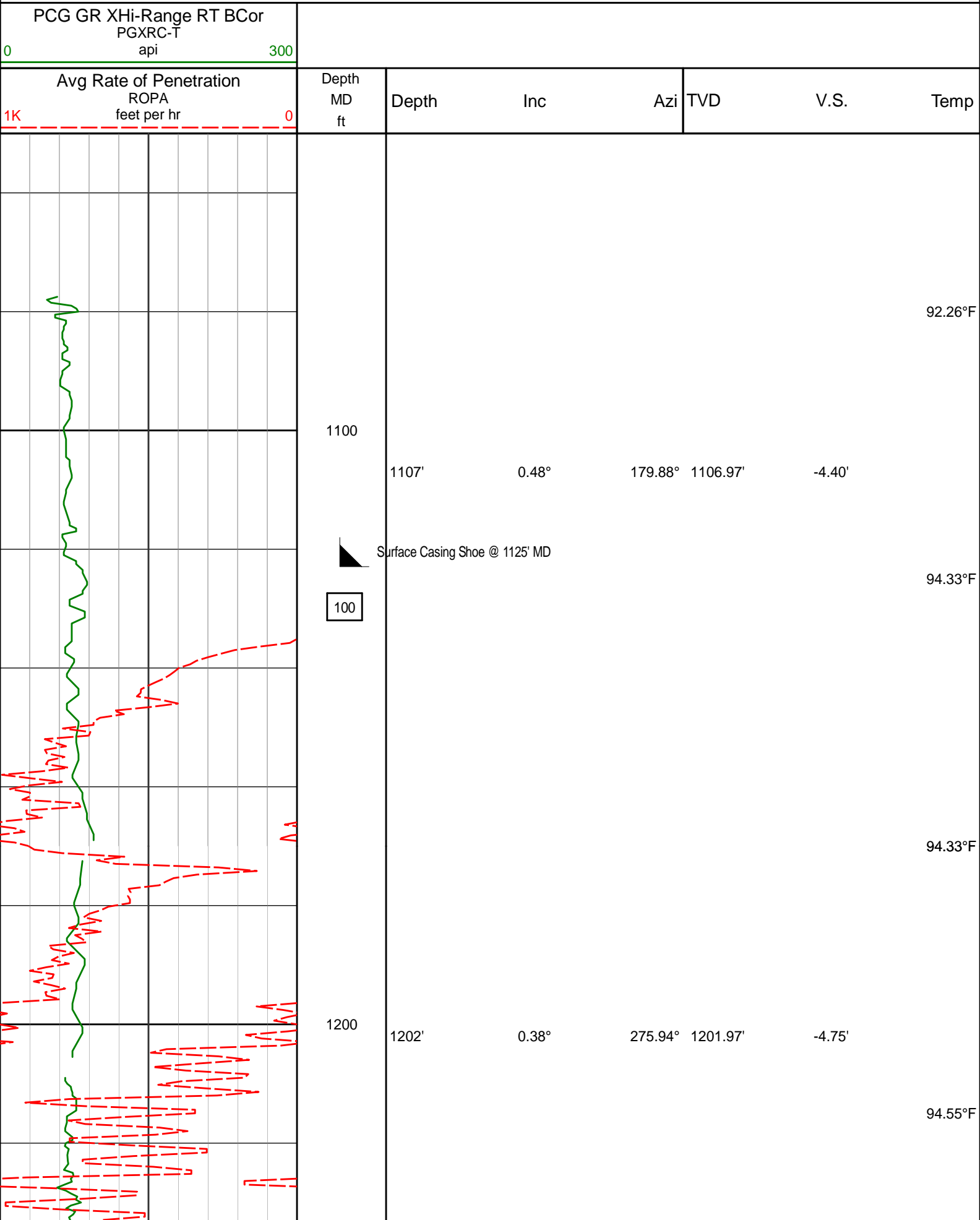






Avg Rate of Penetration ROPA feet per hr		Depth MD ft	Depth	Inc	Azi	TVD	V.S.	Temp
1K	0							
PCG GR XHi-Range RT BCor PGXRC-T api								
0	300							

MD Detail 1:240 Scale





1300

1400

1294'

1.81°

193.87° 1293.95'

-6.10'

1386'

4.41°

194.23° 1385.81'

-10.88'

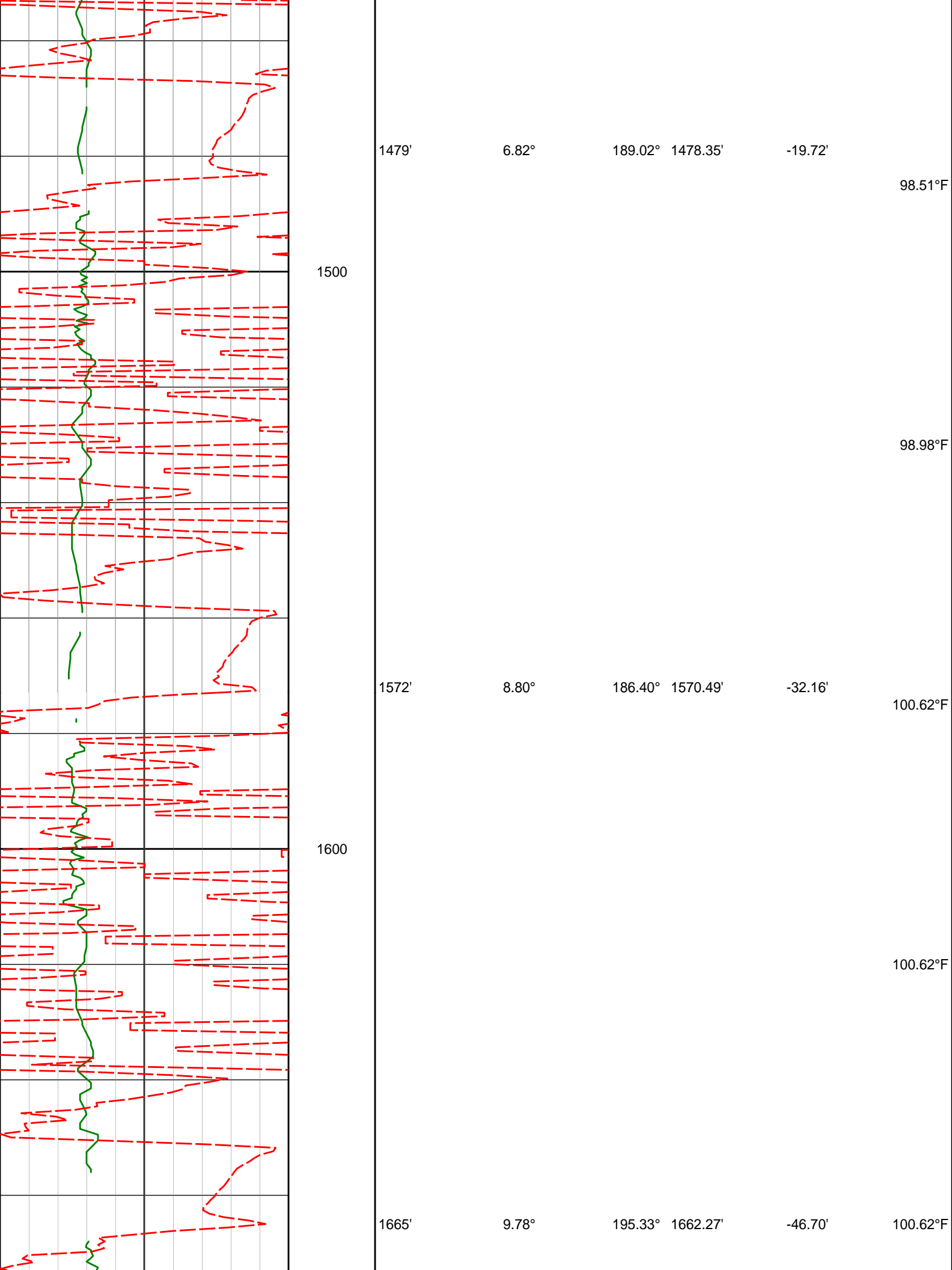
96.05°F

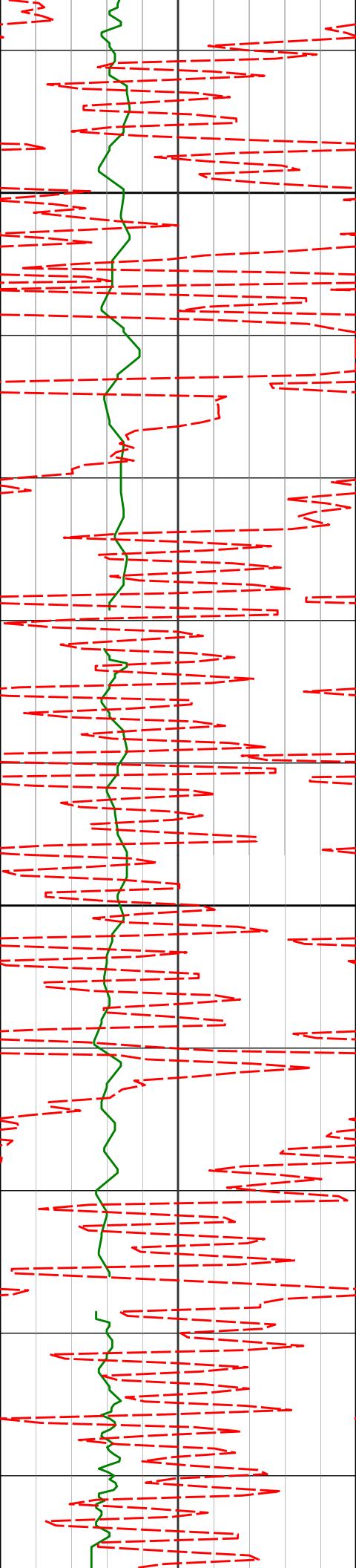
96.42°F

96.42°F

93.11°F

92.46°F





1700

102.72°F

1757'

9.73°

193.09°

1752.94'

-61.62'

102.72°F

1800

102.72°F

1850'

9.42°

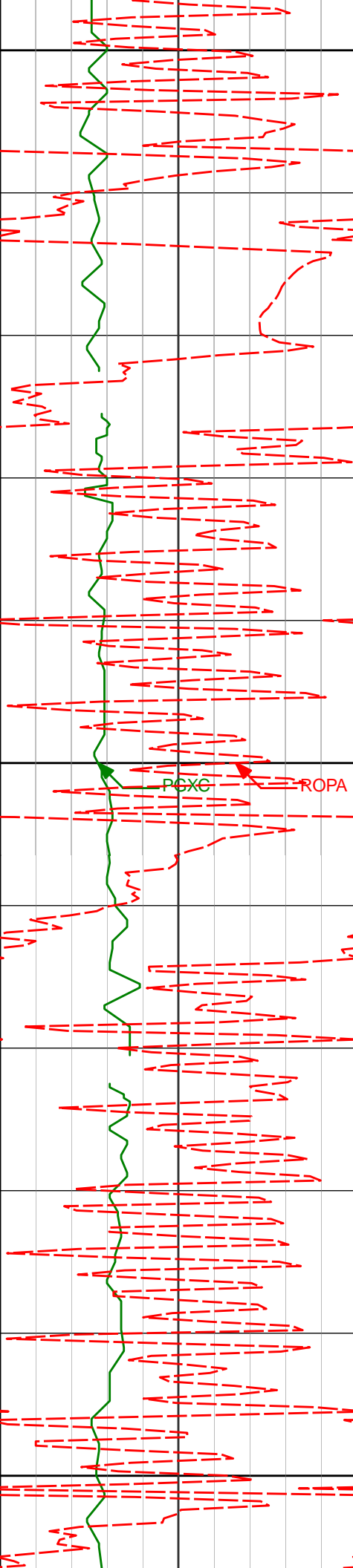
192.58°

1844.65'

-76.53'

103.16°F

104.30°F



1900

104.83°F

1943'

9.65°

203.26°

1936.37'

-90.90'

104.83°F

2000

PCXC

ROPA

104.83°F

2034'

9.65°

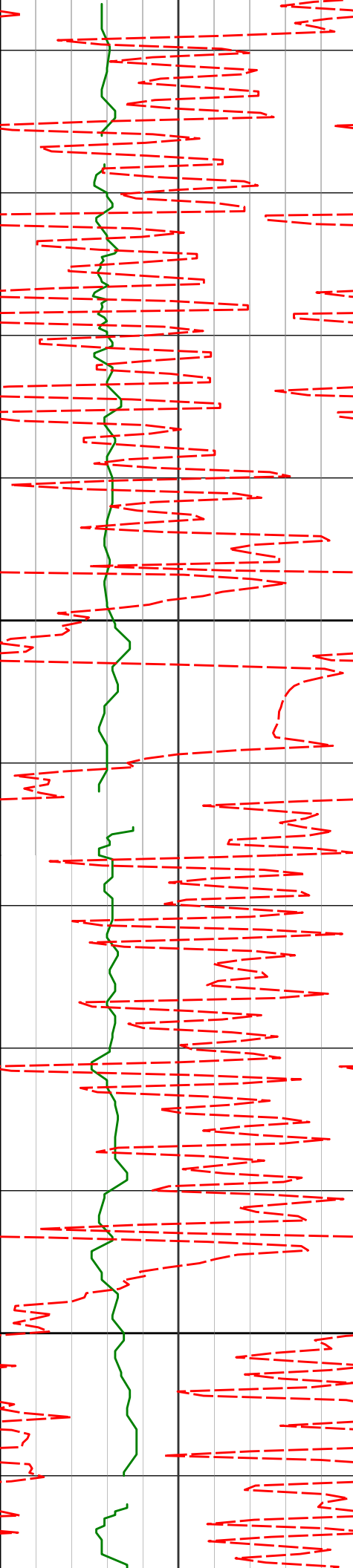
203.27°

2026.08'

-104.62'

106.97°F

2100



2200

2300

2126'

2218'

2310'

9.57°

11.13°

11.09°

202.57°

201.32°

200.47°

2116.79'

2207.29'

2297.57'

-118.49'

-133.53'

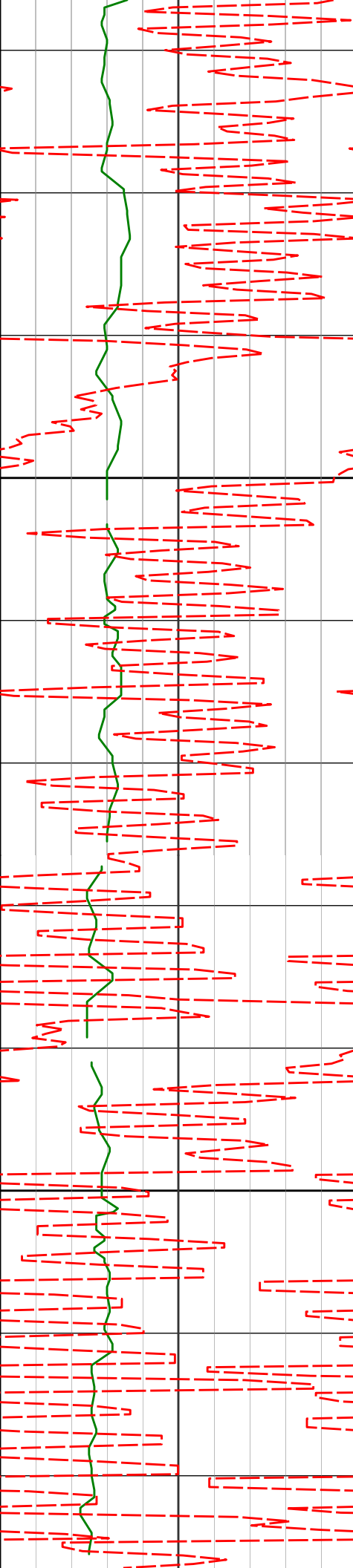
-149.79'

106.97°F

106.97°F

109.09°F

109.09°F



2400

2403'

10.89°

200.32° 2388.86'

-166.11'

2500

2496'

10.85°

200.84° 2480.19'

-182.23'

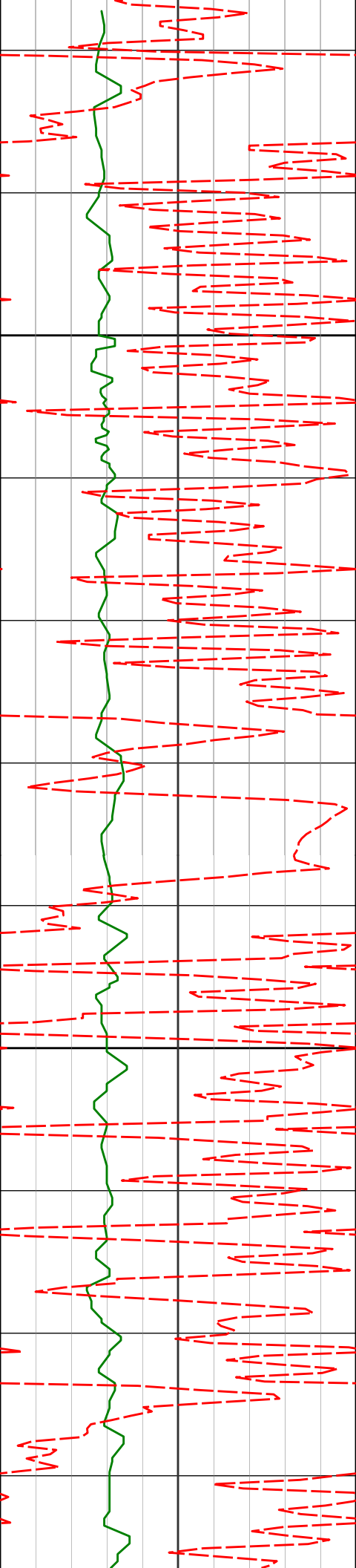
111.24°F

111.24°F

111.24°F

111.24°F

111.24°F



2600

2700

2589'

10.92°

200.31° 2571.52'

-198.37'

2682'

9.97°

197.85° 2662.98'

-214.03'

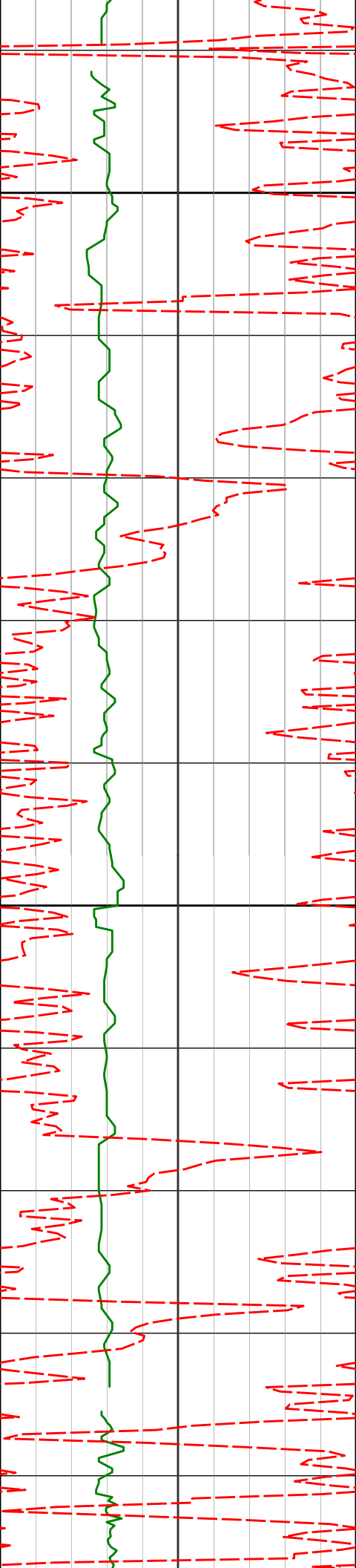
112.47°F

113.40°F

113.40°F

115.56°F

115.56°F



2776'

9.69°

196.53° 2755.60'

-229.13'

115.56°F

115.56°F

2869'

9.42°

195.53° 2847.31'

-243.76'

117.73°F

2900

117.73°F

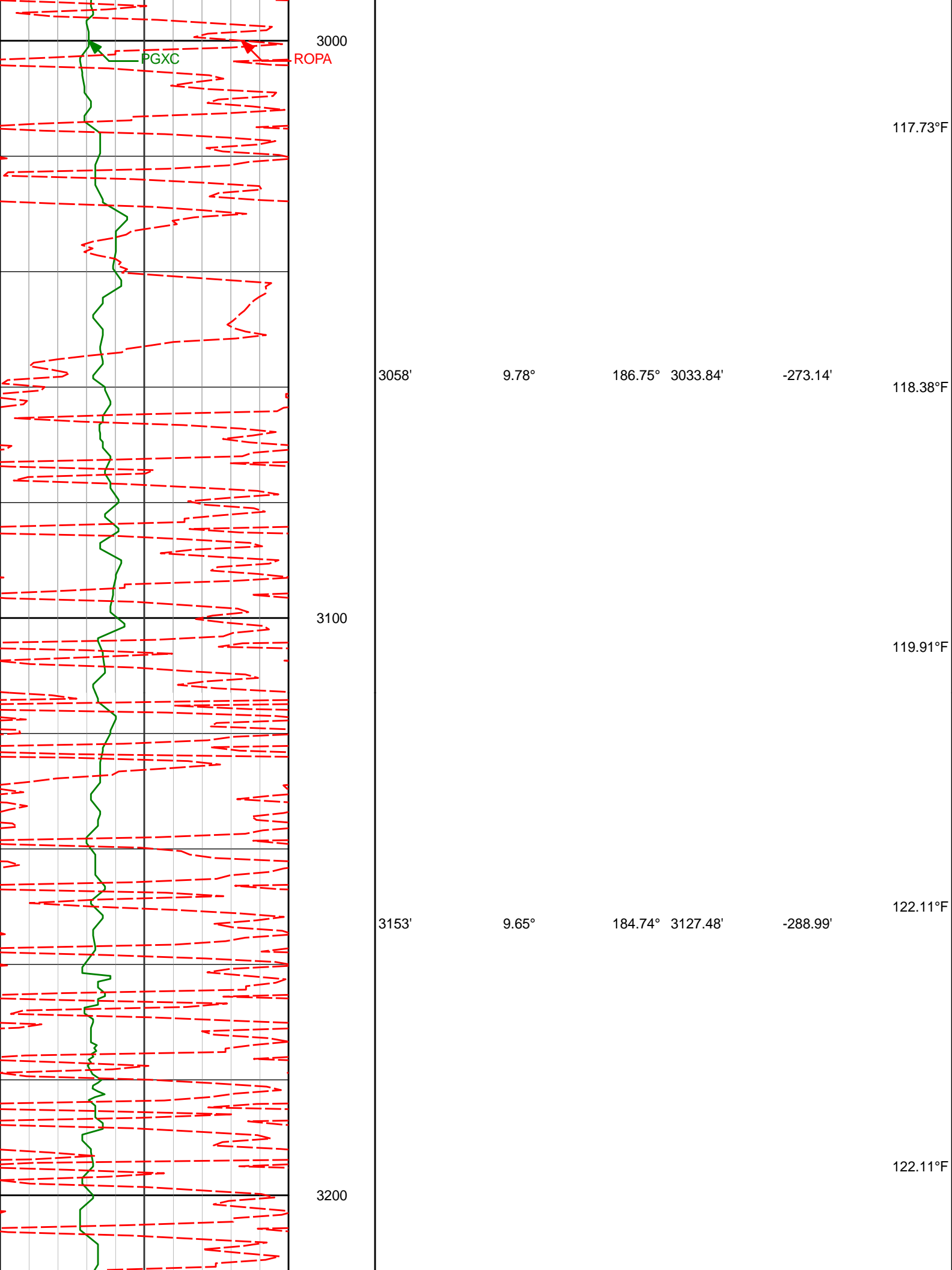
2963'

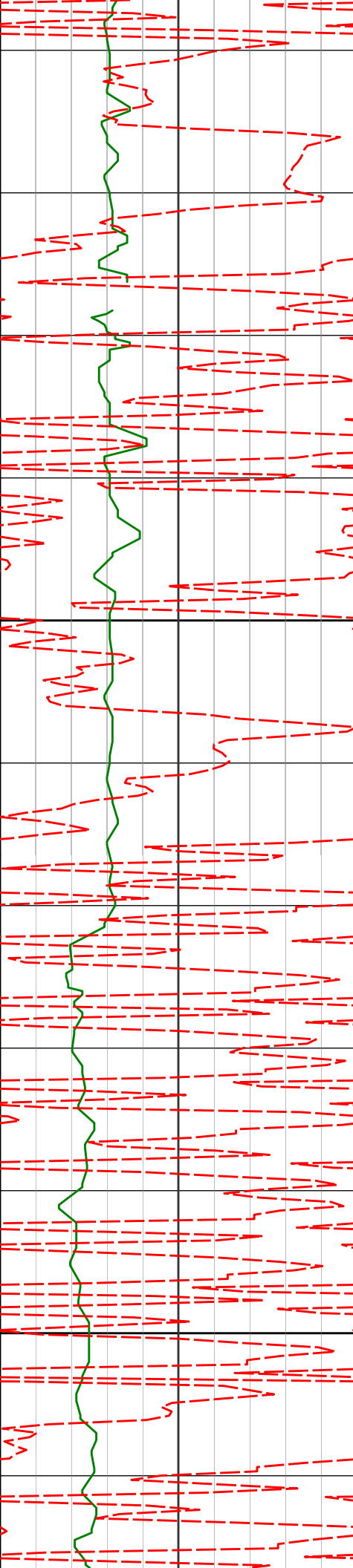
8.94°

193.65° 2940.11'

-258.08'

117.73°F





122.11°F

3247'

10.79°

189.04° 3219.99'

-305.43'

122.11°F

3300

122.11°F

122.11°F

3342'

11.48°

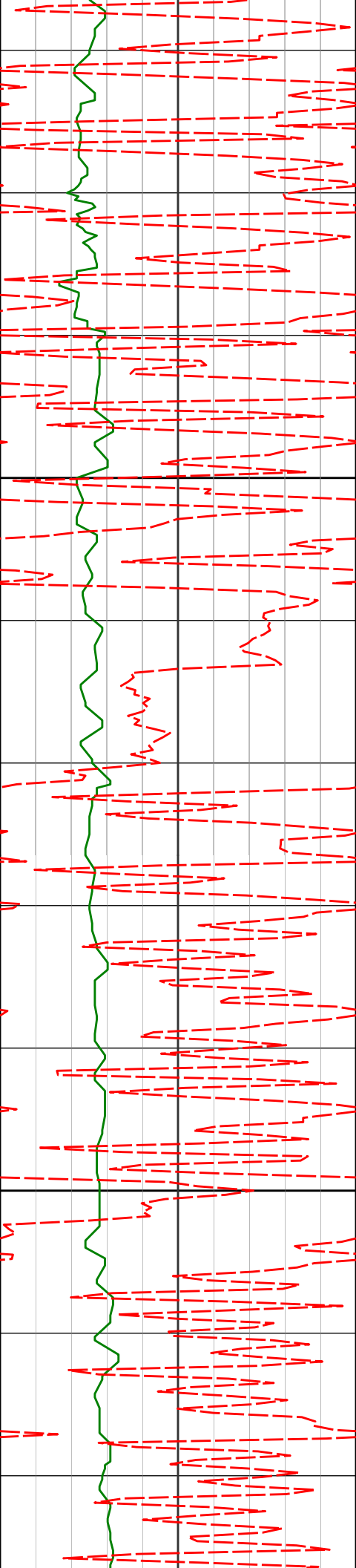
189.56° 3313.20'

-323.38'

124.30°F

3400

125.29°F



3437'

12.11°

190.48° 3406.19'

-342.33'

126.52°F

3500

124.77°F

3531'

11.78°

189.77° 3498.16'

-361.30'

124.94°F

3600

126.52°F

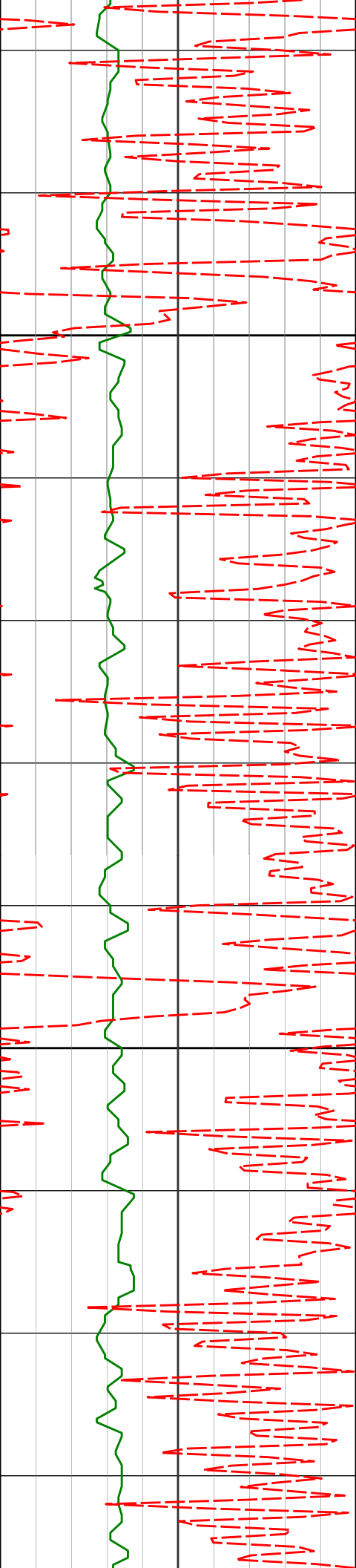
3626'

11.98°

188.40° 3591.12'

-380.45'

126.52°F



3700

3721'

11.69°

188.25° 3684.11'

-399.58'

3800

3815'

11.09°

188.97° 3776.25'

-417.79'

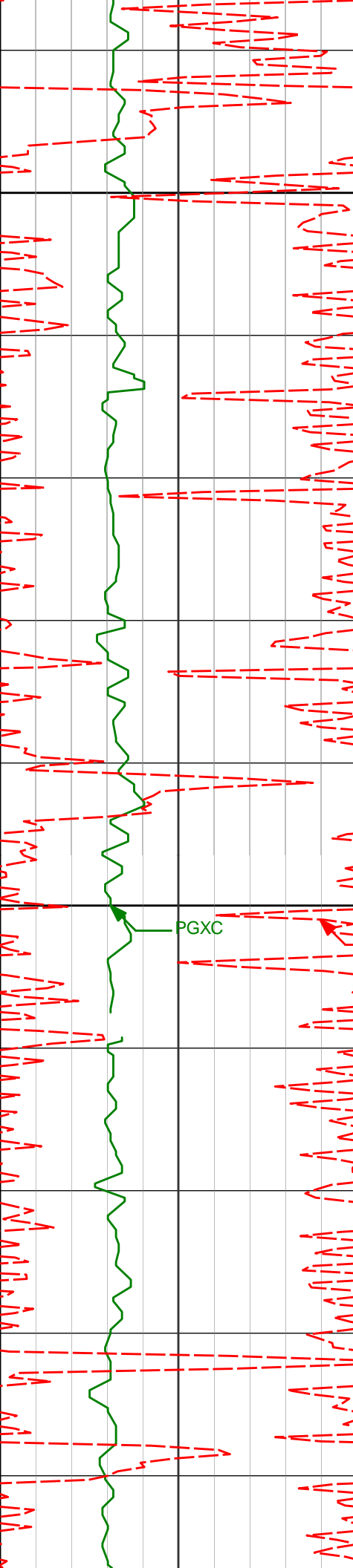
126.52°F

128.73°F

128.73°F

128.73°F

130.96°F



3900

3910'

10.20°

192.96° 3869.62'

-434.85'

130.96°F

133.20°F

4000

4004'

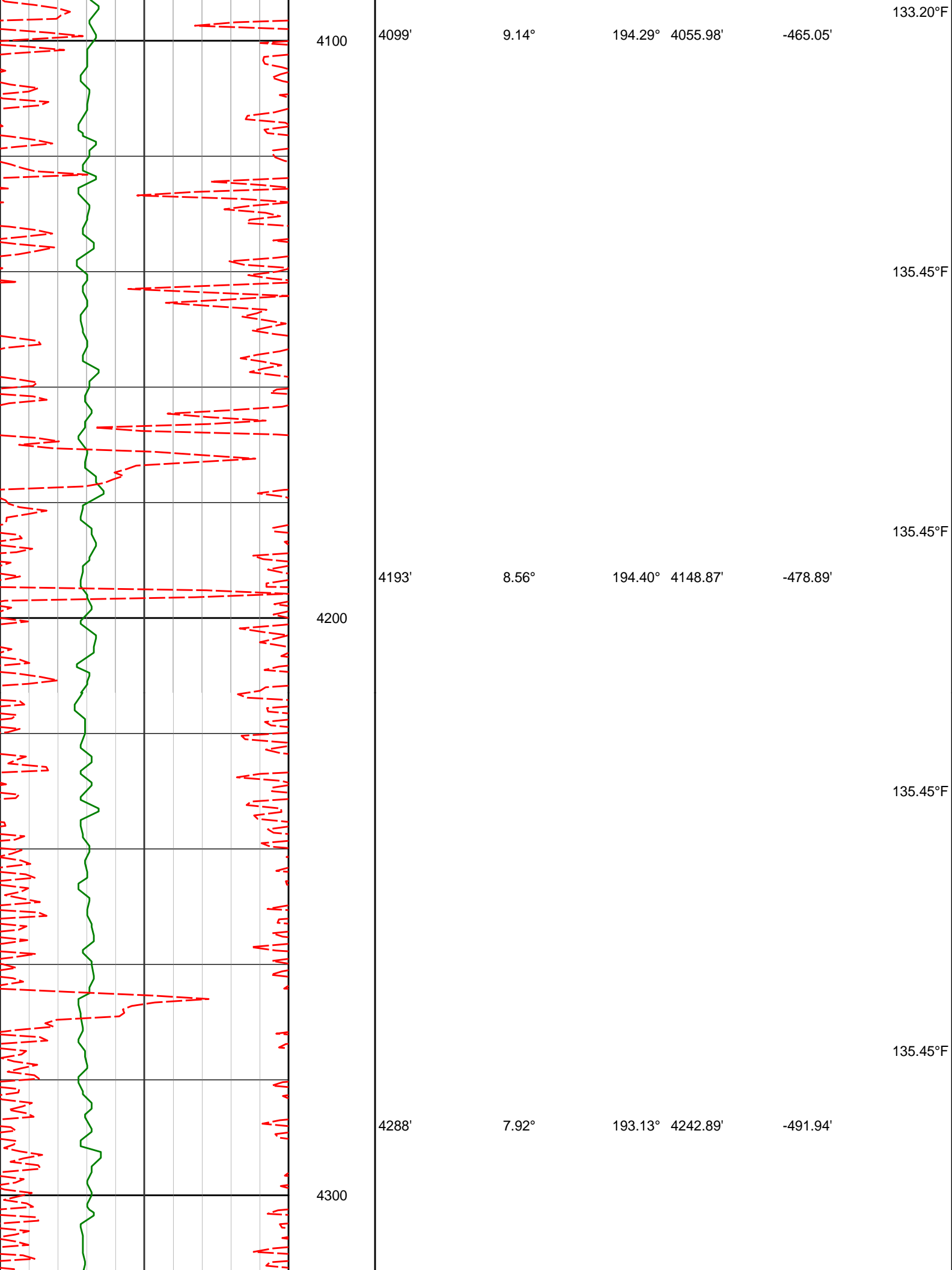
9.48°

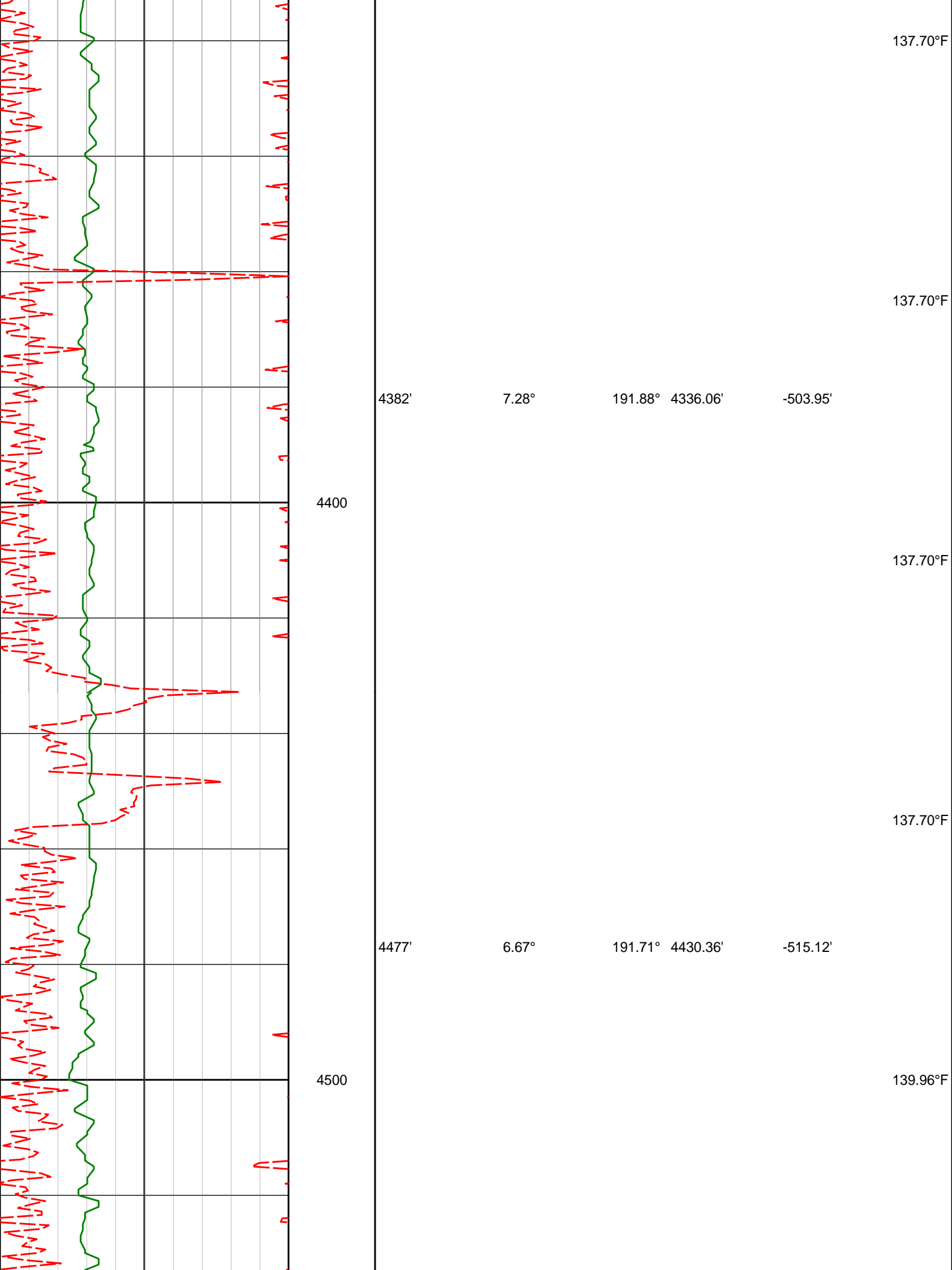
193.36° 3962.24'

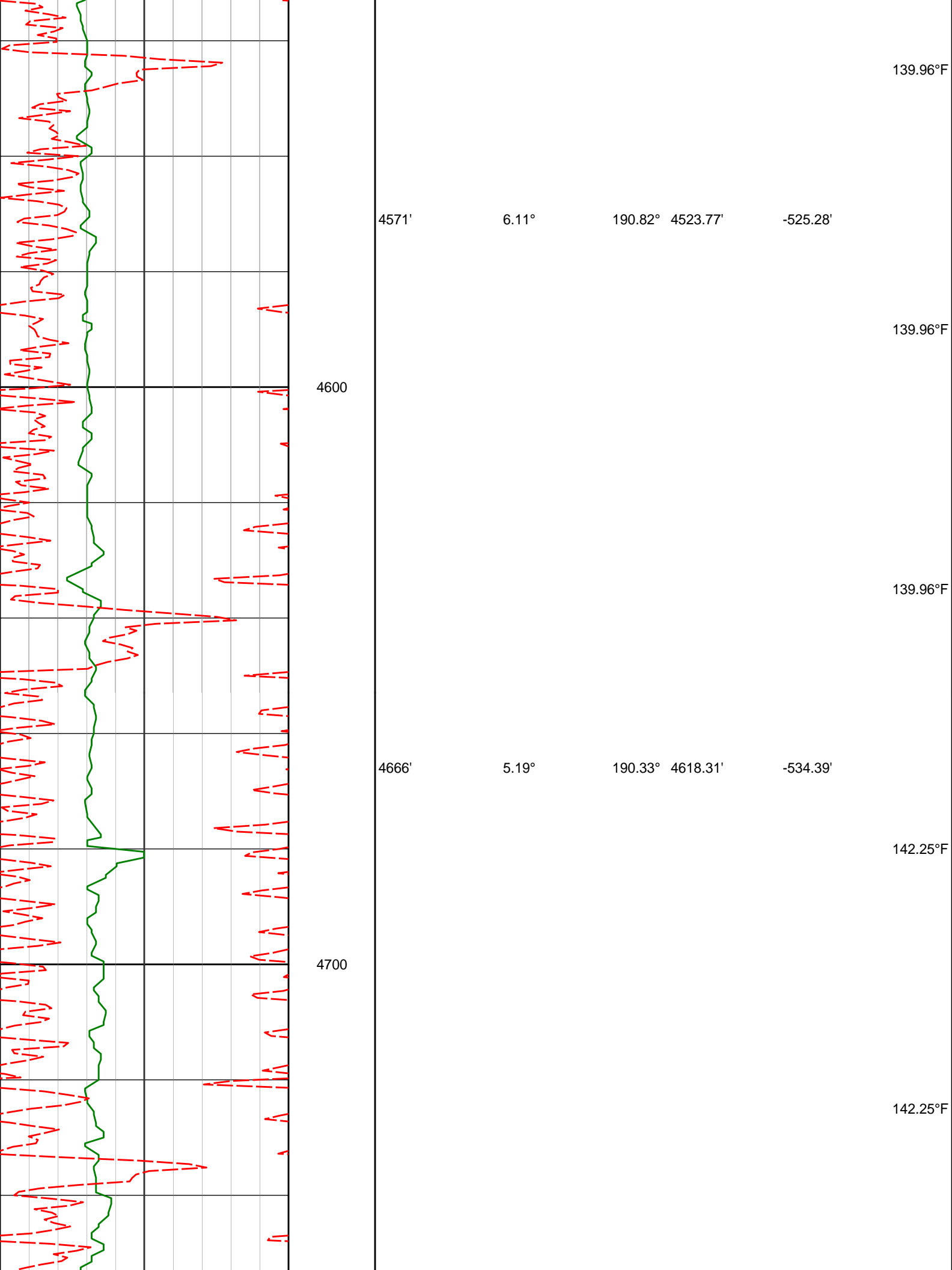
-450.31'

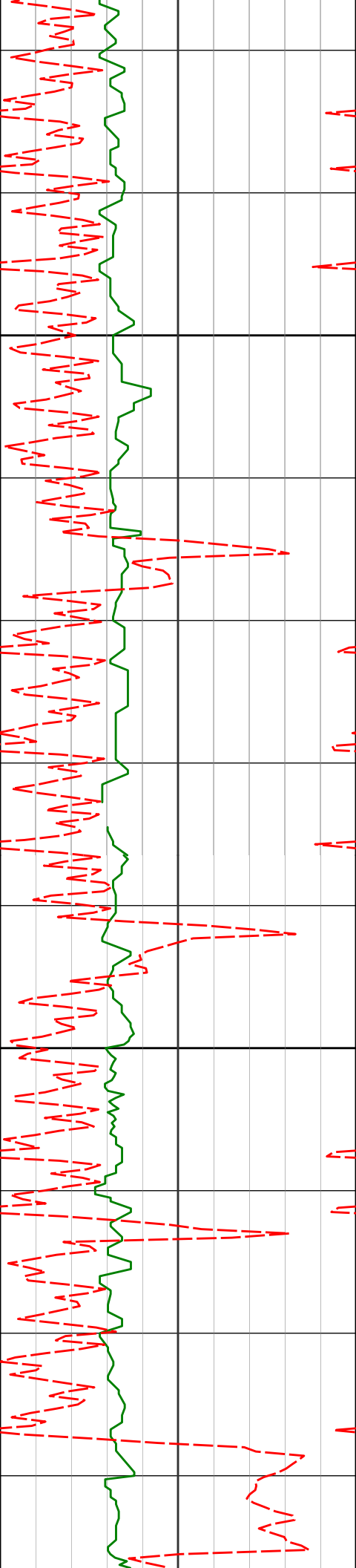
133.20°F

133.20°F









4761'

4.57°

182.48° 4712.96'

-542.36'

142.25°F

4800

142.25°F

4856'

4.08°

177.76° 4807.69'

-549.51'

143.36°F

4900

142.80°F

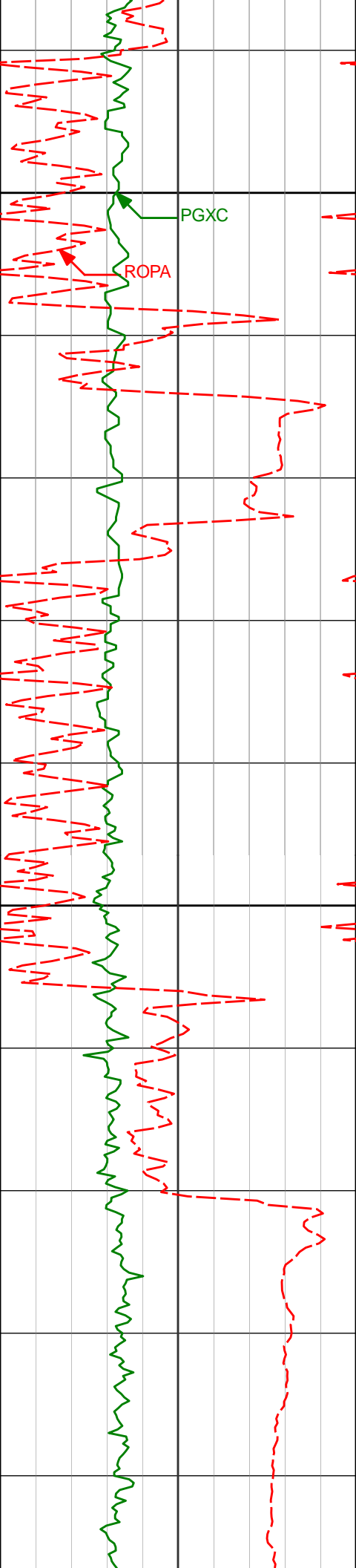
4950'

3.67°

186.10° 4901.48'

-555.84'

143.30°F



5000

PGXC

ROPA

5100

5045'

1.97°

167.80° 4996.36'

-560.46'

5139'

1.74°

155.62° 5090.31'

-563.38'

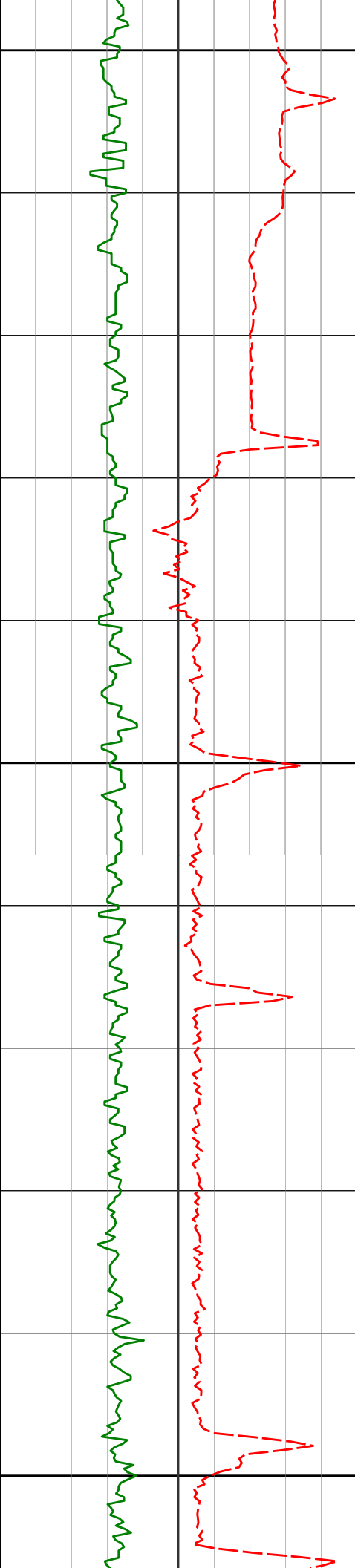
144.54°F

145.59°F

145.31°F

146.16°F

148.72°F



5200

5234'

13.44°

341.69° 5184.54'

-554.04'

149.39°F

5300

5329'

14.80°

335.16° 5276.67'

-532.18'

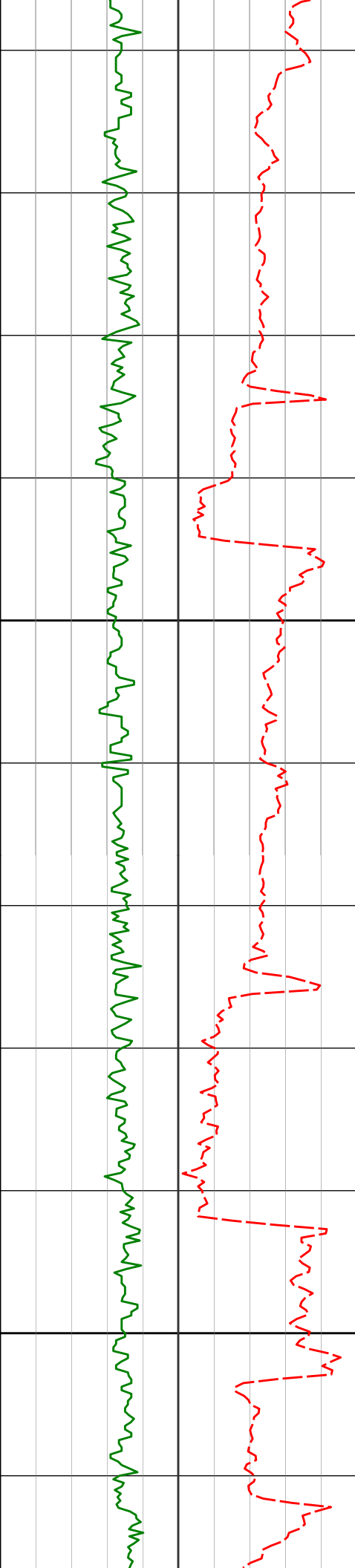
151.47°F

151.96°F

153.71°F

5400

154.98°F



5423'

13.90°

339.81° 5367.74'

-510.31'

156.13°F

5500

5518'

25.71°

342.70° 5456.97'

-479.39'

158.34°F

5600

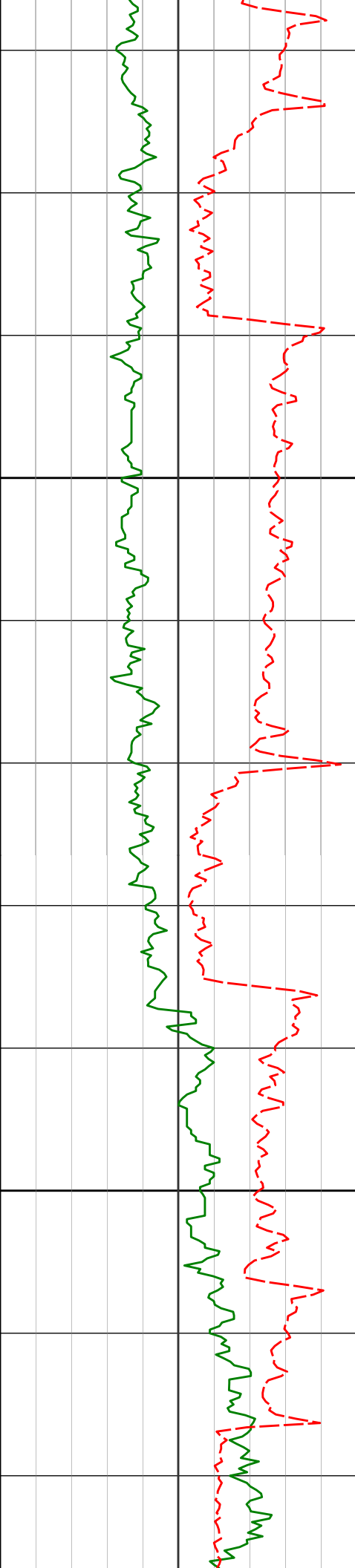
5613'

33.70°

345.62° 5539.42'

-433.58'

159.99°F



5700

5707'

41.02°

351.95° 5614.11'

-377.25'

160.83°F

160.91°F

162.68°F

5800

5802'

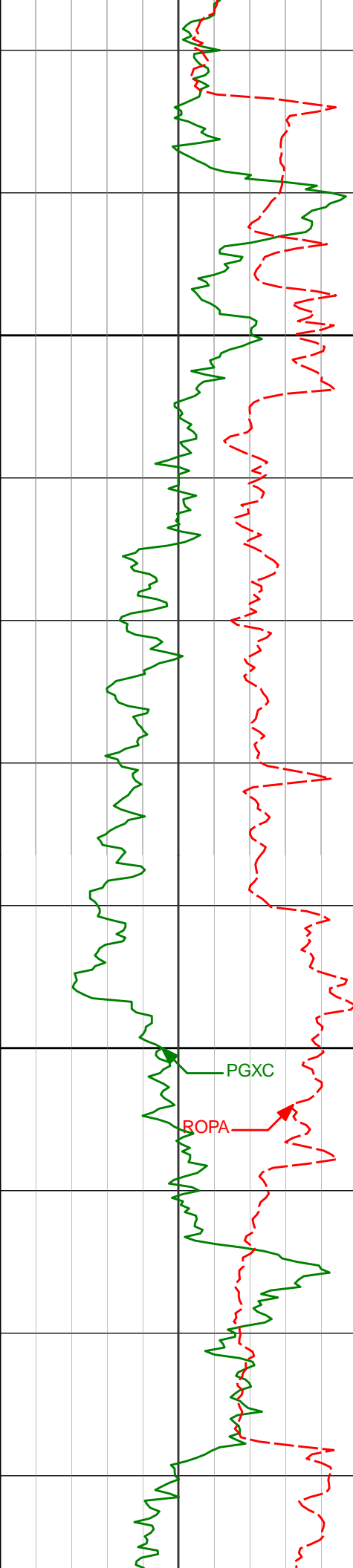
52.28°

358.53° 5679.26'

-308.39'

163.49°F

164.23°F



5900

6000

5896'

63.95°

2.94° 5728.85'

-228.89'

166.40°F

167.44°F

5991'

68.04°

1.48° 5767.49'

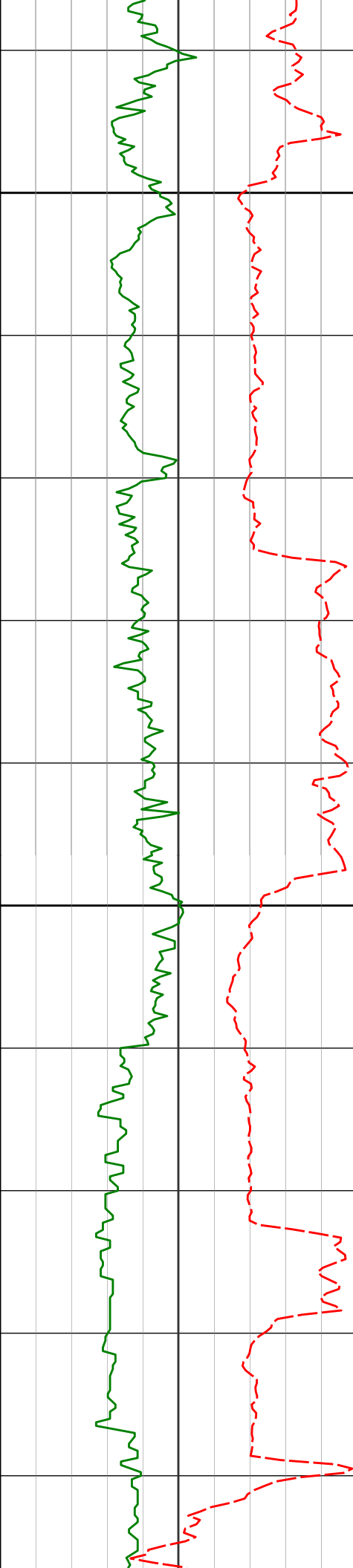
-142.43'

168.41°F

168.91°F

PGXC

ROPA



6100

6200

200



Casing Shoe @ 6268'

6085'

76.91°

359.14° 5795.77'

-53.01'

6180'

84.88°

358.26° 5810.80'

40.70'

6213'

87.04°

358.06° 5813.12'

73.61'

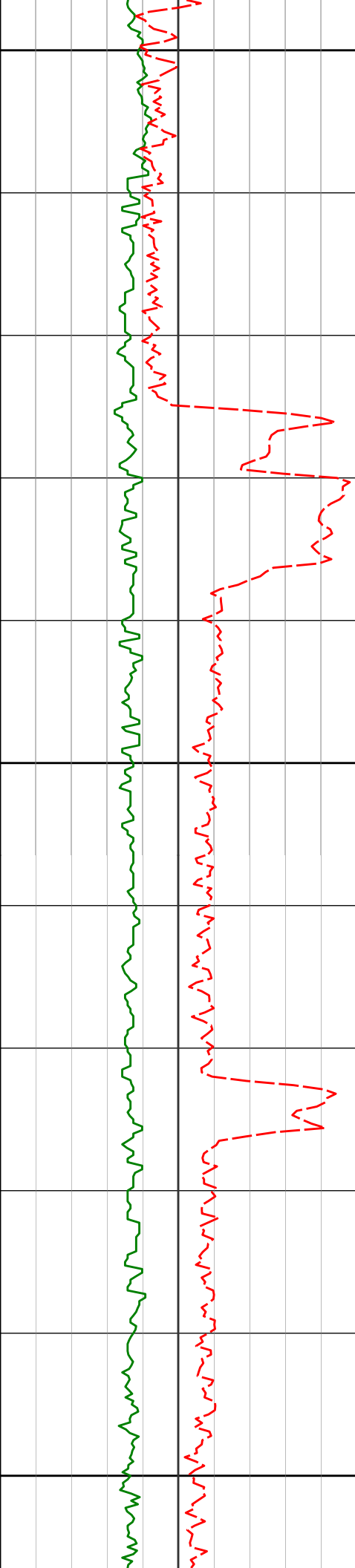
170.37°F

170.37°F

171.28°F

170.91°F

154.82°F



6300

155.99°F

156.44°F

6379'

89.94°

3.93° 5817.50'

239.14'

159.07°F

6400

159.84°F

6471'

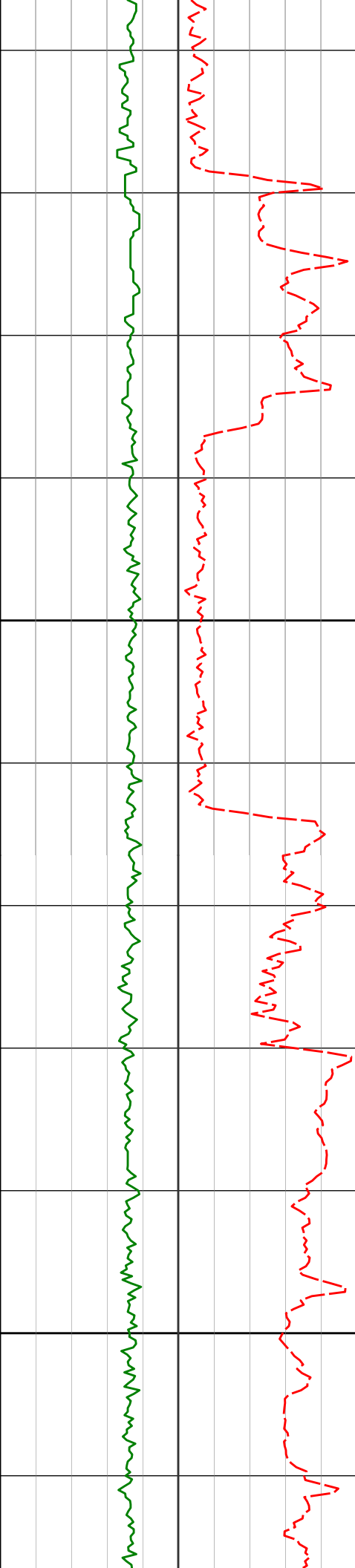
90.03°

14.84° 5817.52'

329.00'

161.44°F

6500



6600

6700

6563'

6655'

90.00°

89.91°

22.90° 5817.50'

29.11° 5817.57'

414.56'

495.31'

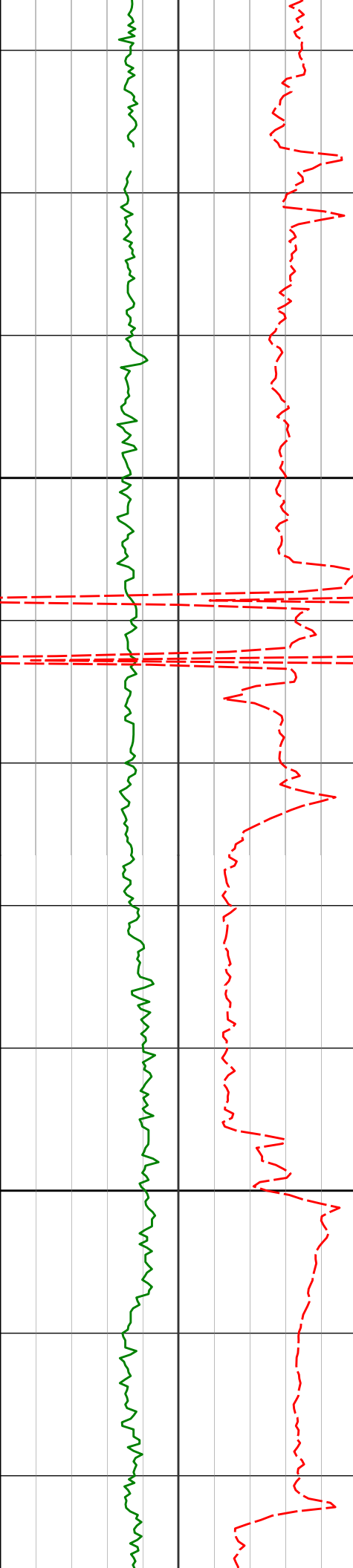
159.62°F

160.77°F

159.24°F

161.67°F

163.06°F



300

6800

6900

6748'

90.12°

28.91° 5817.54'

574.53'

165.71°F

6839'

90.28°

22.96° 5817.23'

654.45'

170.37°F

6932'

89.17°

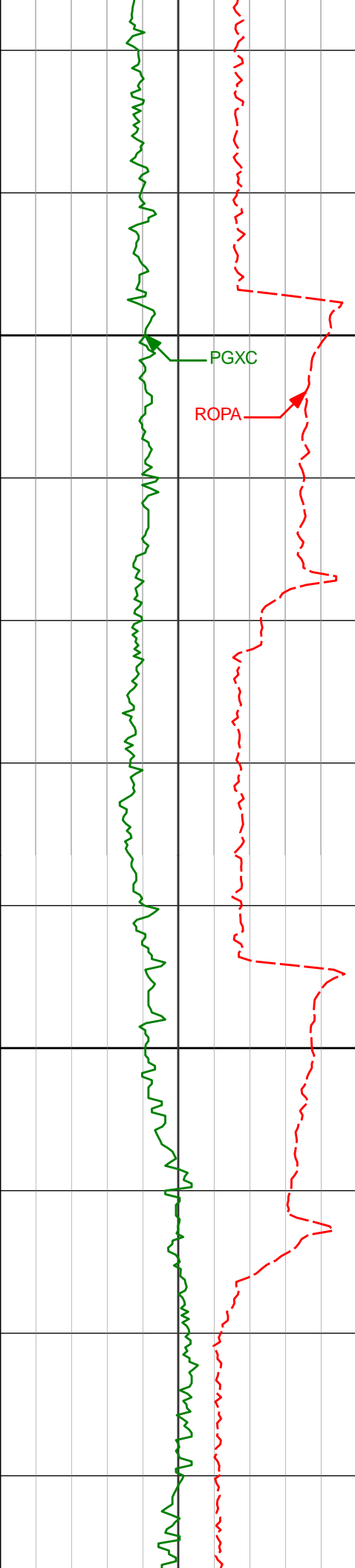
16.88° 5817.68'

740.33'

172.33°F

171.36°F

170.53°F



7000

7100

7024'

7118'

90.40°

91.42°

10.10° 5818.02'

3.87° 5816.53'

828.68'

921.31'

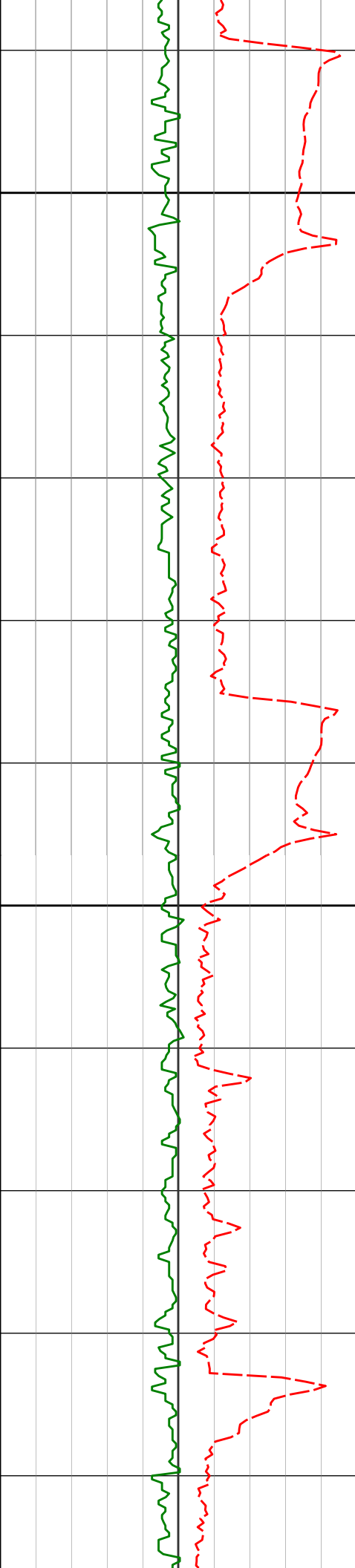
170.55°F

170.88°F

170.43°F

172.16°F

171.91°F



7200

7208'

89.72°

359.21° 5815.64'

1011.05'

173.28°F

173.05°F

176.32°F

7300

7305'

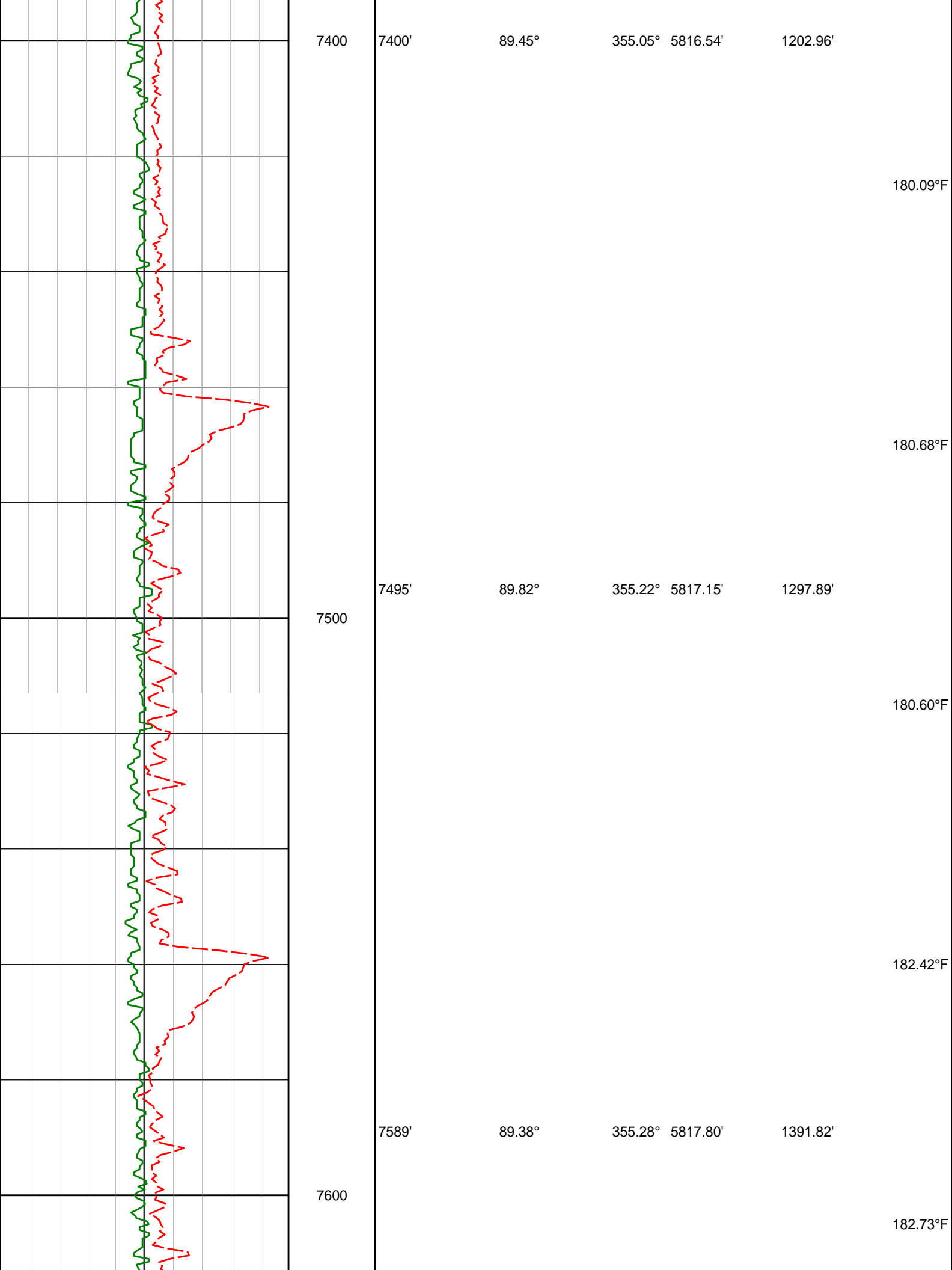
89.88°

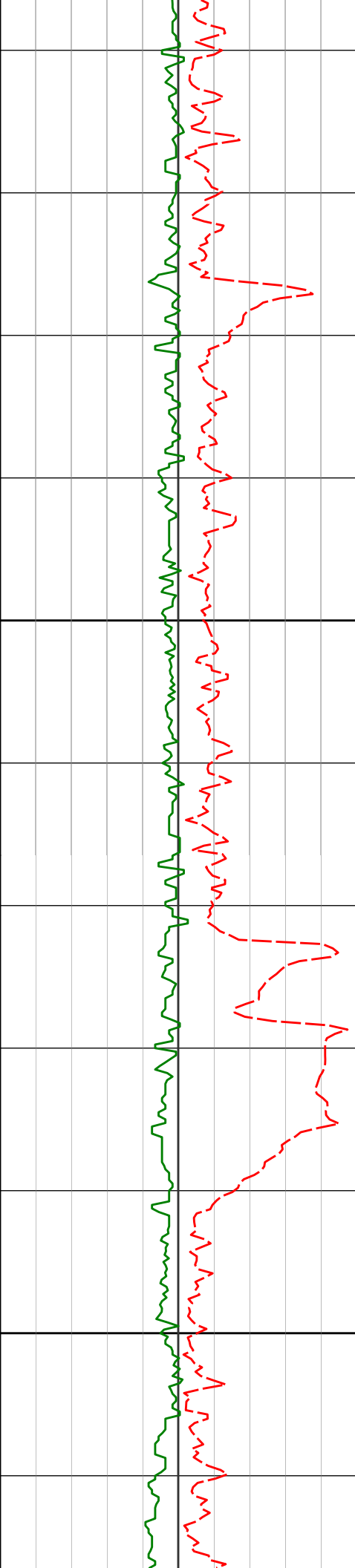
355.62° 5815.98'

1108.03'

177.64°F

179.70°F





7700

7684'

89.57°

355.55° 5818.67'

1486.76'

185.03°F

185.17°F

185.10°F

7778'

90.52°

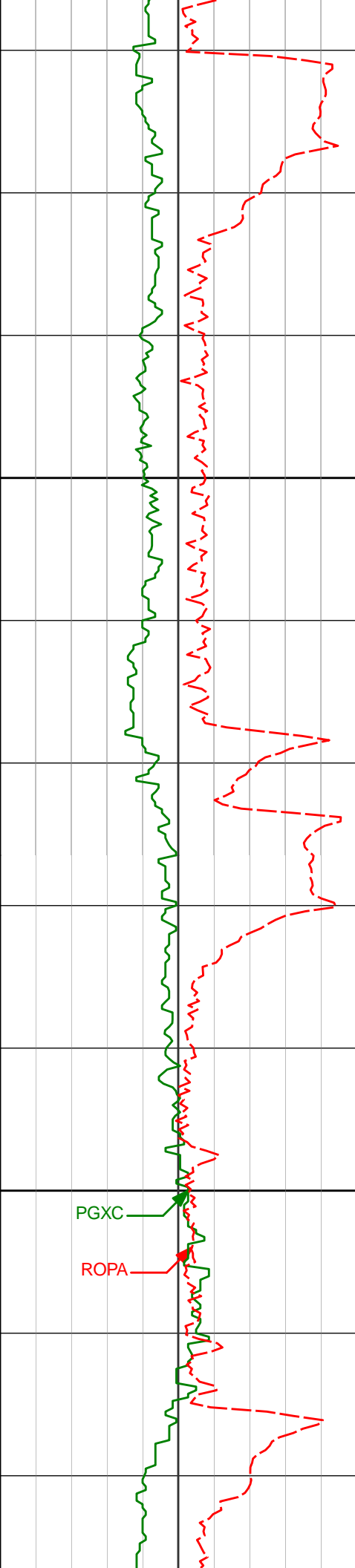
354.76° 5818.59'

1580.68'

183.36°F

7800

183.50°F



7900

8000

7873'

90.83°

353.13° 5817.47'

1675.50'

186.64°F

186.58°F

7968'

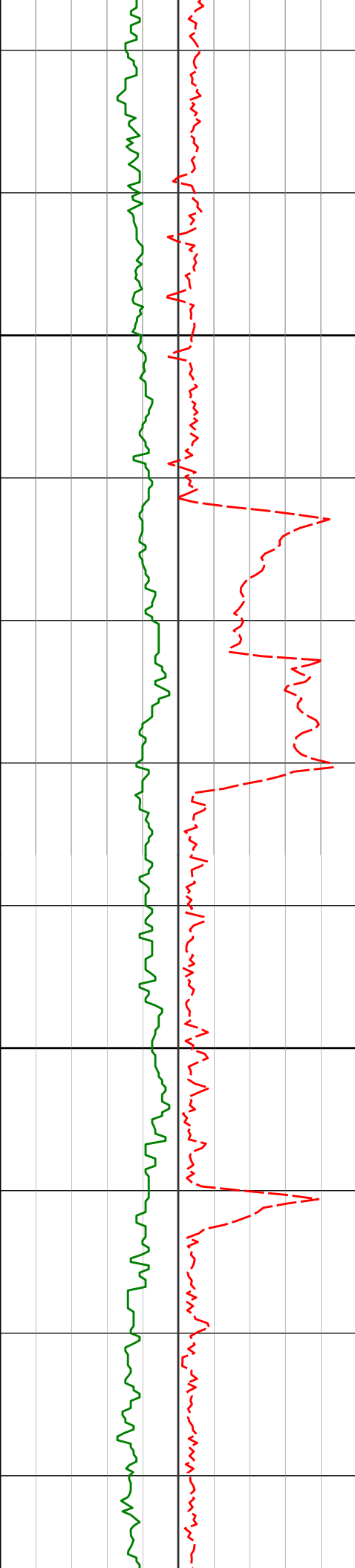
89.94°

352.77° 5816.83'

1770.20'

188.23°F

189.99°F



8100

8200

8062'

90.43°

352.22° 5816.53'

1863.86'

190.68°F

190.18°F

191.18°F

8157'

89.26°

350.82° 5816.78'

1958.35'

192.11°F

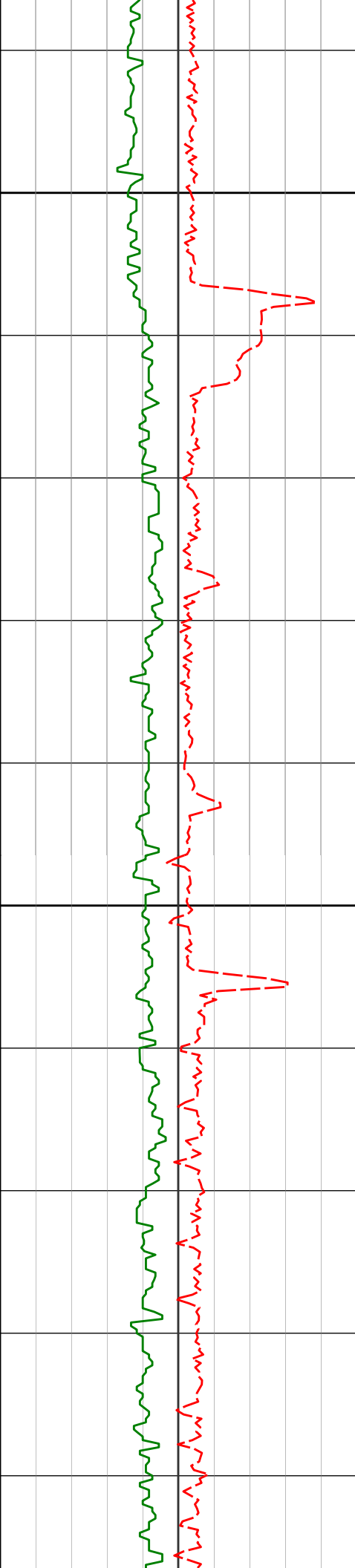
192.94°F

8252'

88.98°

350.43° 5818.24'

2052.67'



8300

8346'

89.69°

350.44° 5819.33'

2145.96'

194.99°F

195.25°F

197.28°F

8400

8441'

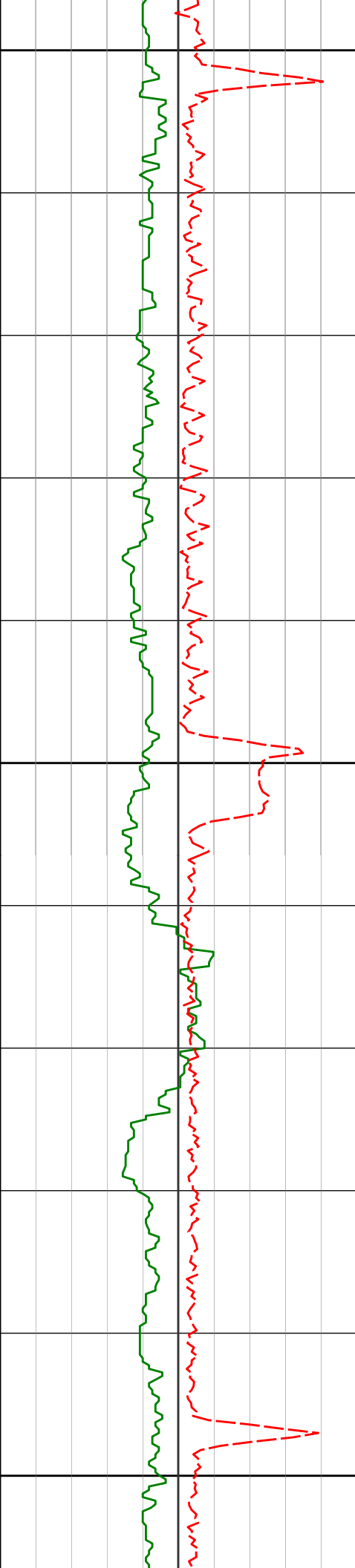
89.54°

349.93° 5819.96'

2240.21'

196.94°F

195.68°F



8500

197.35°F

8536'

90.43°

349.97° 5819.99'

2334.40'

197.51°F

8600

197.51°F

8630'

90.62°

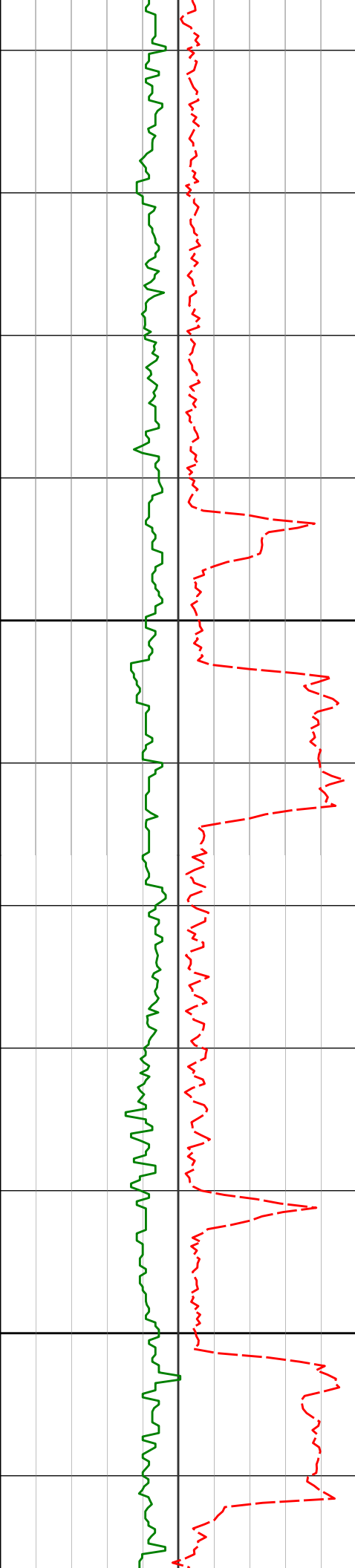
349.58° 5819.13'

2427.56'

197.32°F

8700

195.88°F



8800

8900

8725'

90.25°

349.59° 5818.42'

2521.67'

196.97°F

195.84°F

8820'

90.18°

351.01° 5818.06'

2615.93'

196.82°F

195.40°F

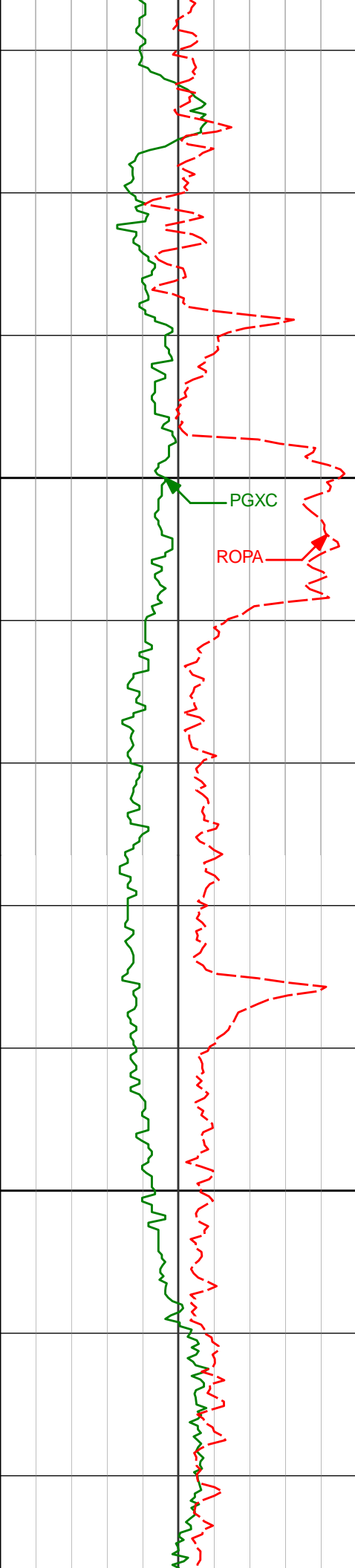
8914'

90.46°

352.83° 5817.53'

2709.49'

195.59°F



9000

9009'

90.96°

355.42° 5816.35'

2804.32'

193.24°F

194.54°F

197.11°F

197.07°F

9100

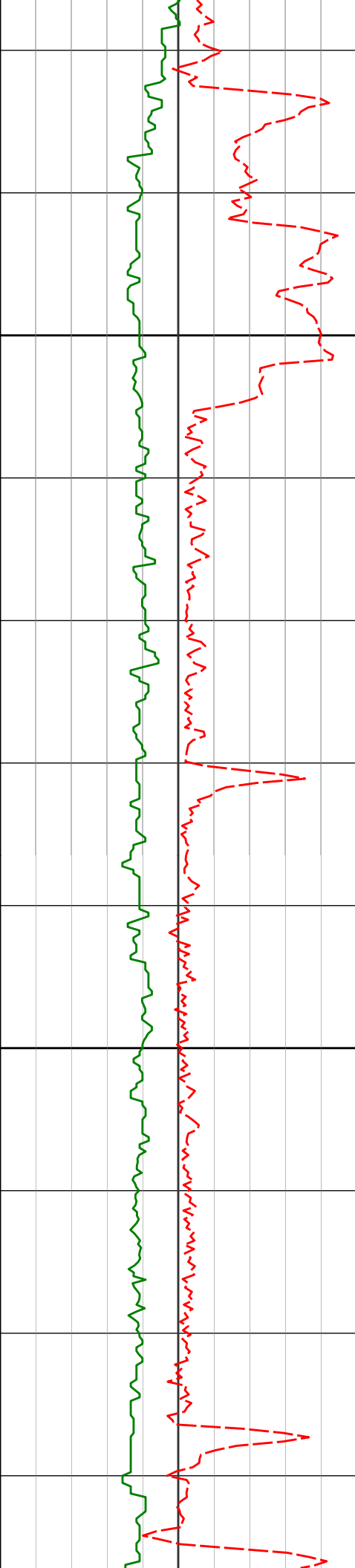
9104'

91.08°

356.23° 5814.66'

2899.27'

195.47°F



9200

9300

9198'

9292'

89.88°

90.80°

356.99° 5813.88'

358.04° 5813.32'

2993.25'

3087.25'

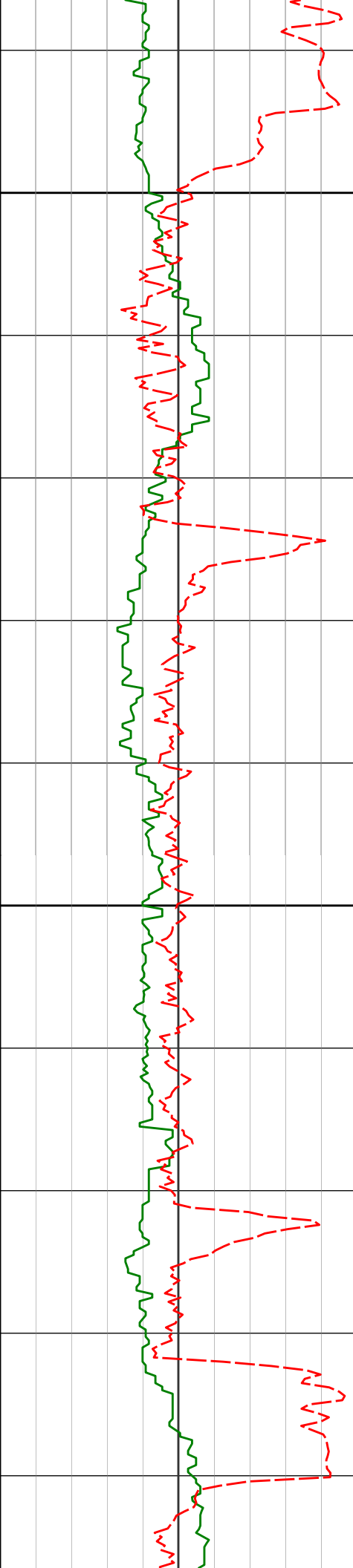
195.59°F

197.51°F

199.84°F

199.45°F

200.16°F



9400

9500

9387'

88.30°

357.80° 5814.07'

3182.24'

9482'

87.38°

358.13° 5817.64'

3277.16'

9577'

88.06°

358.40° 5821.42'

3372.08'

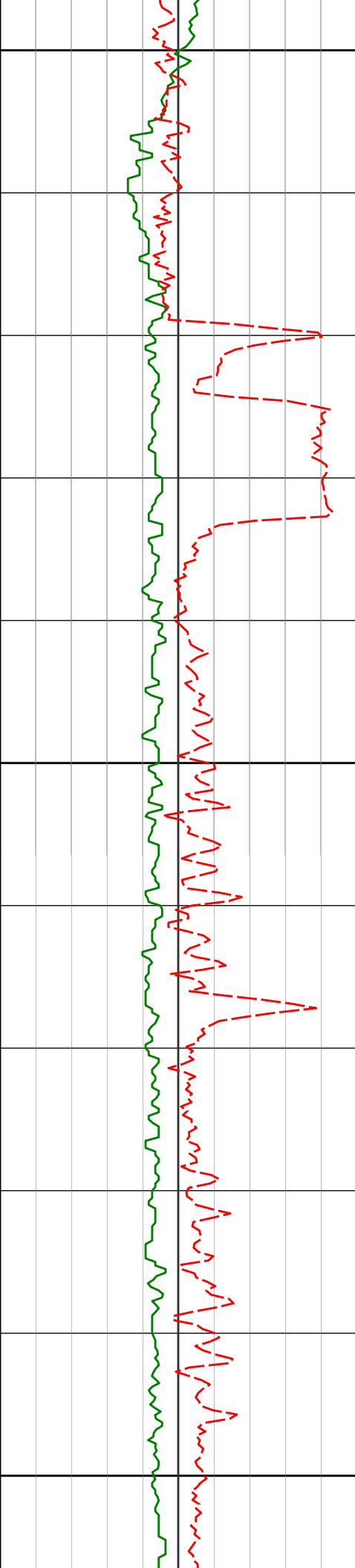
202.08°F

202.60°F

202.60°F

202.60°F

202.60°F



9600

202.60°F

9671'

90.62°

359.23° 5822.51'

3466.03'

204.59°F

9700

205.66°F

9766'

89.57°

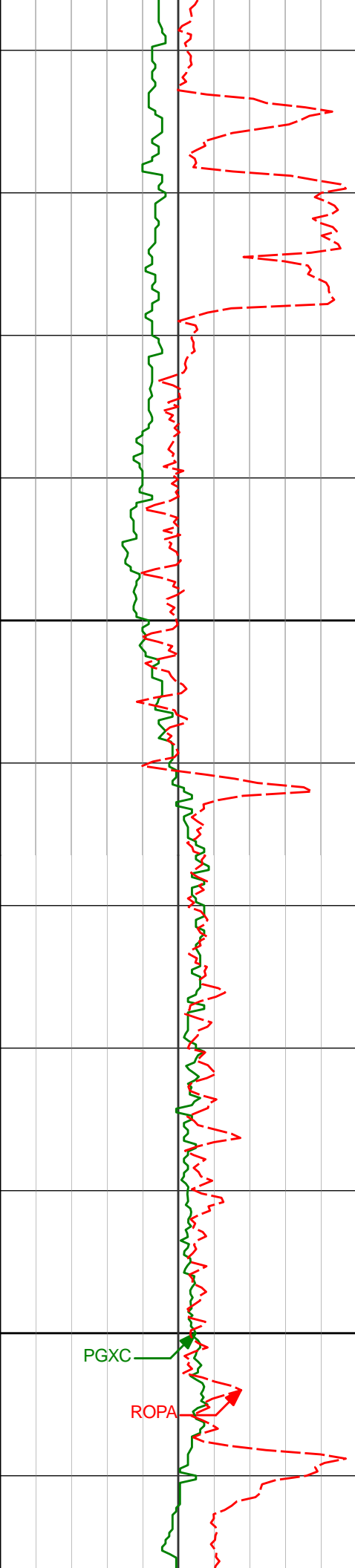
358.68° 5822.36'

3561.00'

205.98°F

9800

204.01°F



9900

10000

9861'

91.51°

358.26° 5821.46'

3655.97'

205.94°F

207.73°F

207.87°F

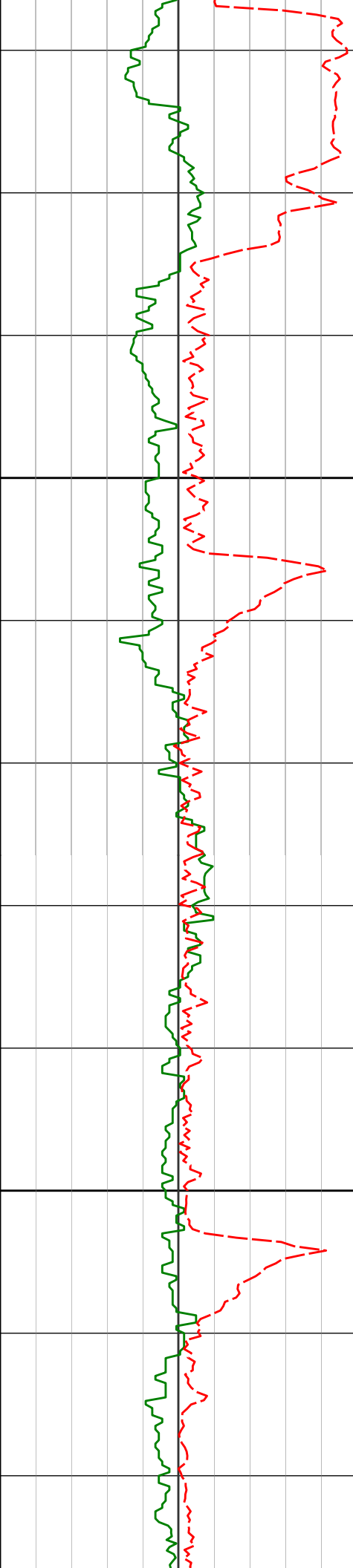
9955'

91.63°

358.04° 5818.88'

3749.93'

204.39°F



10050'

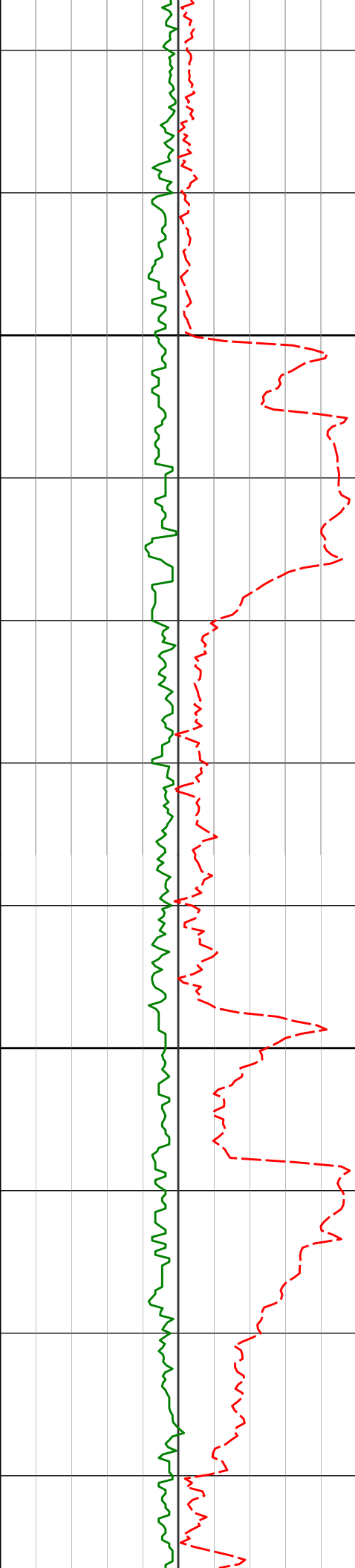
10100

10144'

10200

10239'

10050'	91.17°	359.52°	5816.56'	3844.87'	203.21°F
					207.73°F
					207.73°F
10144'	91.14°	0.18°	5814.66'	3938.77'	209.31°F
					208.22°F
10239'	90.40°	359.10°	5813.38'	4033.69'	



10300

10333'

91.91°

0.55° 5811.49'

4127.58'

10400

10428'

91.85°

1.31° 5808.37'

4222.35'

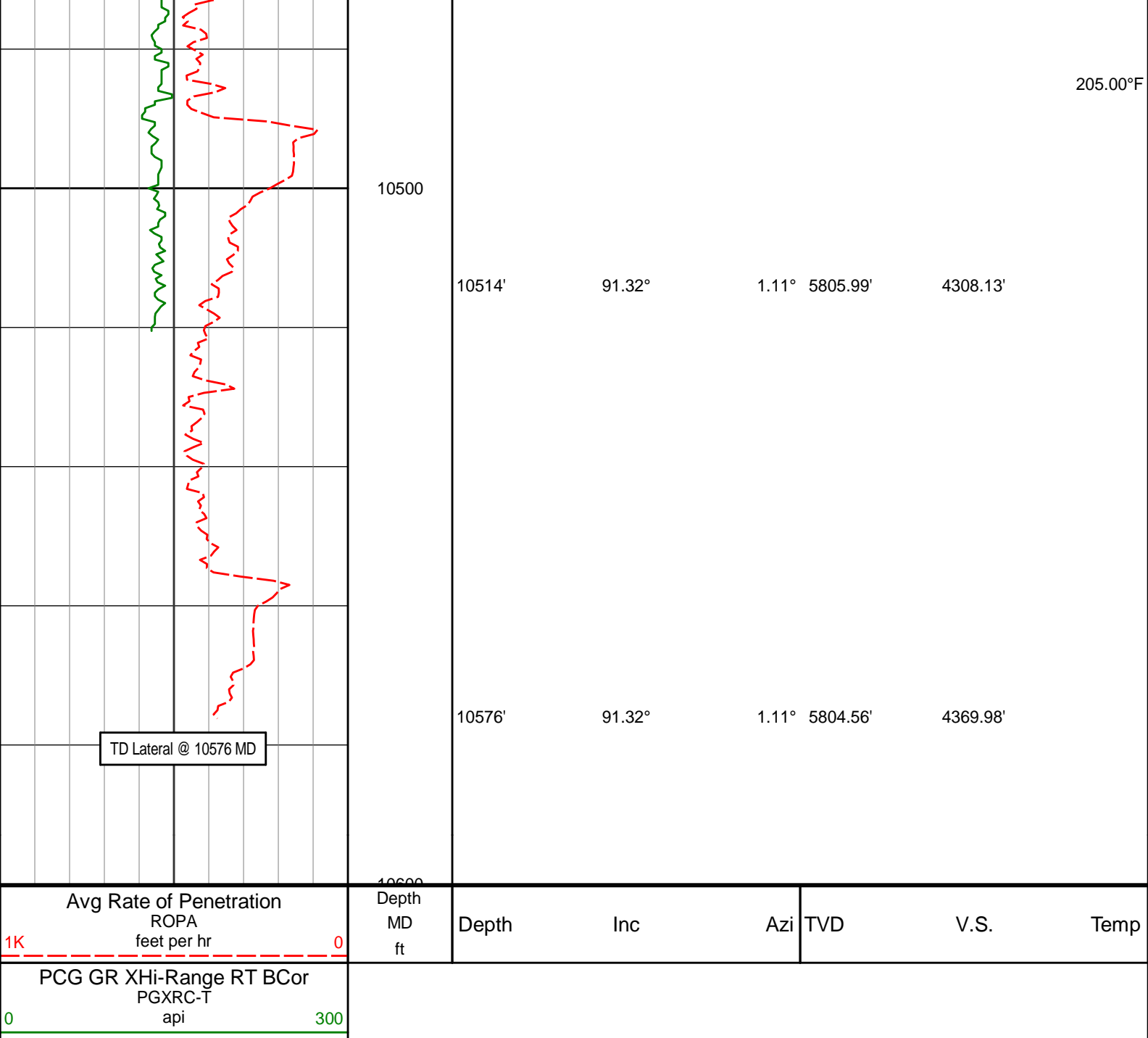
205.27°F

205.70°F

206.72°F

206.78°F

205.33°F



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Greyson LD28-767
Wattenburg
Weld Colorado
USA
CA-XX-0902594949

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
11.76	0.22	168.49	11.76	0.02 S	0.00 E	-0.02	1.87
103.03	0.60	185.44	103.03	0.67 S	0.01 W	-0.67	0.43
194.30	0.43	212.41	194.29	1.44 S	0.24 W	-1.43	0.32
285.57	0.57	211.05	285.56	2.12 S	0.65 W	-2.08	0.15

376.84	0.50	160.37	376.83	2.87 S	0.75 W	-2.84	0.50
468.11	0.09	318.27	468.10	3.20 S	0.67 W	-3.16	0.64
559.38	0.81	322.76	559.36	2.63 S	1.11 W	-2.58	0.79
650.65	0.37	247.11	650.63	2.23 S	1.76 W	-2.15	0.88
741.92	0.34	250.99	741.90	2.43 S	2.29 W	-2.32	0.04
833.19	0.26	160.71	833.17	2.72 S	2.47 W	-2.60	0.47
924.46	0.55	180.33	924.43	3.35 S	2.41 W	-3.24	0.35
1015.73	0.28	136.12	1015.70	3.95 S	2.26 W	-3.85	0.44
1107.00	0.48	179.88	1106.97	4.50 S	2.10 W	-4.40	0.38
1202.00	0.38	275.94	1201.97	4.86 S	2.42 W	-4.75	0.68
1294.00	1.81	193.87	1293.95	6.24 S	3.07 W	-6.10	1.95
1386.00	4.41	194.23	1385.81	11.08 S	4.29 W	-10.88	2.83
1479.00	6.82	189.02	1478.35	20.01 S	6.03 W	-19.72	2.65
1572.00	8.80	186.40	1570.49	32.54 S	7.69 W	-32.16	2.16
1665.00	9.78	195.33	1662.27	47.23 S	10.58 W	-46.70	1.87
1757.00	9.73	193.09	1752.94	62.33 S	14.40 W	-61.62	0.42
1850.00	9.42	192.58	1844.65	77.41 S	17.84 W	-76.53	0.34
1943.00	9.65	203.26	1936.37	92.01 S	22.58 W	-90.90	1.92
2034.00	9.65	203.27	2026.08	106.02 S	28.60 W	-104.62	0.00
2126.00	9.57	202.57	2116.79	120.17 S	34.59 W	-118.49	0.15
2218.00	11.13	201.32	2207.29	135.50 S	40.75 W	-133.53	1.70
2310.00	11.09	200.47	2297.57	152.06 S	47.07 W	-149.79	0.18
2403.00	10.89	200.32	2388.86	168.67 S	53.25 W	-166.11	0.21
2496.00	10.85	200.84	2480.19	185.09 S	59.41 W	-182.23	0.12
2589.00	10.92	200.31	2571.52	201.53 S	65.58 W	-198.37	0.13
2682.00	9.97	197.85	2662.98	217.45 S	71.10 W	-214.03	1.13
2776.00	9.69	196.53	2755.60	232.78 S	75.85 W	-229.13	0.38
2869.00	9.42	195.53	2847.31	247.61 S	80.11 W	-243.76	0.34
2963.00	8.94	193.65	2940.11	262.13 S	83.90 W	-258.08	0.60
3058.00	9.78	186.75	3033.84	277.31 S	86.59 W	-273.14	1.47
3153.00	9.65	184.74	3127.48	293.26 S	88.19 W	-288.99	0.38
3247.00	10.79	189.04	3219.99	309.80 S	90.23 W	-305.43	1.46
3342.00	11.48	189.56	3313.20	327.91 S	93.20 W	-323.38	0.73
3437.00	12.11	190.48	3406.19	347.02 S	96.58 W	-342.33	0.69
3531.00	11.78	189.77	3498.16	366.17 S	100.00 W	-361.30	0.38
3626.00	11.98	188.40	3591.12	385.49 S	103.09 W	-380.45	0.36
3721.00	11.69	188.25	3684.11	404.76 S	105.91 W	-399.58	0.31
3815.00	11.09	188.97	3776.25	423.12 S	108.69 W	-417.79	0.65
3910.00	10.20	192.96	3869.62	440.34 S	112.00 W	-434.85	1.22
4004.00	9.48	193.36	3962.24	455.98 S	115.65 W	-450.31	0.77
4099.00	9.14	194.29	4055.98	470.90 S	119.32 W	-465.05	0.39
4193.00	8.56	194.40	4148.87	484.91 S	122.91 W	-478.89	0.62
4288.00	7.92	193.13	4242.89	498.13 S	126.15 W	-491.94	0.70
4382.00	7.28	191.88	4336.06	510.26 S	128.85 W	-503.95	0.70
4477.00	6.67	191.71	4430.36	521.56 S	131.21 W	-515.12	0.65
4571.00	6.11	190.82	4523.77	531.82 S	133.26 W	-525.28	0.60
4666.00	5.19	190.33	4618.31	541.02 S	134.98 W	-534.39	0.97
4761.00	4.57	182.48	4712.96	549.03 S	135.91 W	-542.36	0.96
4856.00	4.08	177.76	4807.69	556.20 S	135.94 W	-549.51	0.64
4950.00	3.67	186.10	4901.48	562.53 S	136.13 W	-555.84	0.74
5045.00	1.97	167.80	4996.36	567.16 S	136.11 W	-560.46	2.00
5139.00	1.74	155.62	5090.31	570.04 S	135.18 W	-563.38	0.49
5234.00	13.44	341.69	5184.54	560.82 S	138.07 W	-554.04	15.97
5329.00	14.80	335.16	5276.67	539.33 S	146.64 W	-532.18	2.21
5423.00	13.90	339.81	5367.74	517.83 S	155.58 W	-510.31	1.56
5518.00	25.71	342.70	5456.97	487.34 S	165.68 W	-479.39	12.48
5613.00	33.70	345.62	5539.42	442.06 S	178.38 W	-433.58	8.54
5707.00	41.02	351.95	5614.11	386.16 S	189.19 W	-377.25	8.78
5802.00	52.28	358.53	5679.26	317.47 S	194.54 W	-308.39	12.87
5896.00	63.95	2.94	5728.85	237.84 S	193.33 W	-228.89	13.04
5991.00	68.04	1.48	5767.49	151.14 S	190.00 W	-142.43	4.53
6085.00	76.91	359.14	5795.77	61.60 S	189.57 W	-53.01	9.73
6180.00	84.88	358.26	5810.80	32.10 N	191.70 W	40.70	8.44
6213.00	87.04	358.06	5813.12	65.00 N	192.75 W	73.61	6.58
6379.00	89.94	3.93	5817.50	230.83 N	189.87 W	239.14	3.94
6471.00	90.03	14.84	5817.52	321.46 N	174.89 W	329.00	11.86
6563.00	90.00	22.90	5817.50	408.44 N	145.16 W	414.56	8.76
6655.00	89.91	29.11	5817.57	491.09 N	104.84 W	495.31	6.75
6748.00	90.12	28.91	5817.54	572.42 N	59.74 W	574.53	0.31
6839.00	90.28	22.96	5817.23	654.21 N	19.96 W	654.45	6.54
6932.00	89.17	16.88	5817.68	741.61 N	11.72 E	740.33	6.65
7024.00	90.40	10.10	5818.02	831.01 N	33.17 E	828.68	7.49
7118.00	91.42	3.87	5816.53	924.26 N	44.59 E	921.31	6.72
7208.00	89.72	359.21	5815.64	1014.19 N	47.01 E	1011.05	5.51
7305.00	89.88	355.62	5815.98	1111.08 N	42.63 E	1108.03	3.71

7400.00	89.45	355.05	5816.54	1205.76 N	34.91 E	1202.96	0.75
7495.00	89.82	355.22	5817.15	1300.41 N	26.85 E	1297.89	0.43
7589.00	89.38	355.28	5817.80	1394.09 N	19.07 E	1391.82	0.47
7684.00	89.57	355.55	5818.67	1488.78 N	11.48 E	1486.76	0.34
7778.00	90.52	354.76	5818.59	1582.44 N	3.54 E	1580.68	1.32
7873.00	90.83	353.13	5817.47	1676.90 N	6.48 W	1675.50	1.74
7968.00	89.94	352.77	5816.83	1771.18 N	18.13 W	1770.20	1.02
8062.00	90.43	352.22	5816.53	1864.38 N	30.41 W	1863.86	0.79
8157.00	89.26	350.82	5816.78	1958.33 N	44.42 W	1958.35	1.91
8252.00	88.98	350.43	5818.24	2052.05 N	59.89 W	2052.67	0.51
8346.00	89.69	350.44	5819.33	2144.74 N	75.51 W	2145.96	0.75
8441.00	89.54	349.93	5819.96	2238.35 N	91.70 W	2240.21	0.56
8536.00	90.43	349.97	5819.99	2331.89 N	108.28 W	2334.40	0.94
8630.00	90.62	349.58	5819.13	2424.39 N	124.97 W	2427.56	0.45
8725.00	90.25	349.59	5818.42	2517.82 N	142.14 W	2521.67	0.39
8820.00	90.18	351.01	5818.06	2611.46 N	158.15 W	2615.93	1.49
8914.00	90.46	352.83	5817.53	2704.52 N	171.37 W	2709.49	1.96
9009.00	90.96	355.42	5816.35	2799.01 N	181.09 W	2804.32	2.78
9104.00	91.08	356.23	5814.66	2893.74 N	188.01 W	2899.27	0.86
9198.00	89.88	356.99	5813.88	2987.57 N	193.57 W	2993.25	1.52
9292.00	90.80	358.04	5813.32	3081.48 N	197.64 W	3087.25	1.49
9387.00	88.30	357.80	5814.07	3176.40 N	201.09 W	3182.24	2.64
9482.00	87.38	358.13	5817.64	3271.27 N	204.47 W	3277.16	1.03
9577.00	88.06	358.40	5821.42	3366.16 N	207.34 W	3372.08	0.77
9671.00	90.62	359.23	5822.51	3460.12 N	209.29 W	3466.03	2.86
9766.00	89.57	358.68	5822.36	3555.10 N	211.03 W	3561.00	1.24
9861.00	91.51	358.26	5821.46	3650.06 N	213.56 W	3655.97	2.09
9955.00	91.63	358.04	5818.88	3743.98 N	216.60 W	3749.93	0.27
10050.00	91.17	359.52	5816.56	3838.92 N	218.62 W	3844.87	1.63
10144.00	91.14	0.18	5814.66	3932.90 N	218.86 W	3938.77	0.70
10239.00	90.40	359.10	5813.38	4027.89 N	219.46 W	4033.69	1.38
10333.00	91.91	0.55	5811.49	4121.87 N	219.74 W	4127.58	2.23
10428.00	91.85	1.31	5808.37	4216.80 N	218.20 W	4222.35	0.80
10514.00	91.32	1.11	5805.99	4302.75 N	216.39 W	4308.13	0.65
10576.00	91.32	1.11	5804.56	4364.72 N	215.19 W	4369.98	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 357.42 DEGREES (GRID)
A TOTAL CORRECTION OF 6.97 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 10576.00 FEET
IS 4370.02 FEET ALONG 357.18 DEGREES (GRID)**

Surveys to 1107 are flexi-shot surveys. Final survey is straight line projection to TD