



**1 : 600 / 1 : 240**

WELL INFORMATION					
MWD Run Number	100	200			
Date run completed	11-Sep-15	15-Sep-15			
Rig Bit Number	2	200			
Bit Size (in)	8.750	6.125			
Tool Nominal OD (in)	6.750	4.750			
Log Start Depth (MD, ft)	637.00	6,840.00			
Log End Depth (MD, ft)	6,840.00	15,962.00			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	10-Sep-15 05:00	12-Sep-15 19:26			
Drill/Wipe End Date and Time	11-Sep-15 07:20	15-Sep-15 08:26			
Min Inc (deg) @ Depth (MD, ft)	0.76 @ 722.00	87.07 @ 6,950.00			
Max Inc (deg) @ Depth (MD, ft)	84.26 @ 6,779.00	93.15 @ 13,987.00			
Bit TFA(in2) / Bit Type	0.98 / PDC	0.65 / PDC			
Flow Rate (gpm)	589.31	317.74			
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A	N/A / N/A			
Fluid Type	Fresh Water Gel	Fresh Water Gel			
Density (ppg) / Viscosity (spqt)	10.60 / 37.00	10.05 / 34.00			
Filtrate CL (ppm)	2,700.00	2,000.00			
pH / Fluid Loss (mptm)	8.40 / 12	8.40 / 11			
PV (cP) / YP (lhf2)	7 / 15.00	7 / 8.00			
% Solids / % Sand	2.20 / 0.10	3.20 / 0.10			
% 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 (in F) / S	171.00 / PCM	210.00 / PCM			

Max Tool Temp (degF) / Source	171.20 / PCM	242.90 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A			
Lead MWD Engineer	Paul Kock	Paul Kock			
Customer Representative	Dave Neilsen	Charles Colvile			

## SENSOR INFORMATION

### Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.93	5.93			
Sub Serial Number	11619287	12463930			
Insert Serial Number	11680799	11680799			
Date and Time Initialized	10-Sep-15 01:47	11-Sep-15 19:55			
Date and Time Read	11-Sep-15 13:24	01-Jan-70 00:00			
ECMB SW Version	N/A	N/A			

### Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	61.00	68.00			
Software Version	6.21	6.21			
Sub Serial Number	11619287	12463930			
Sonde Serial Number	11145703	11145703			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	85.20	9.50			

### Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	53.92	61.12			
Recorded Sample Period (sec)	10	15			
Software Version	8.15	8.15			
Sub Serial Number	11619287	12463930			
Insert/Sonde Serial Number	11680952	11680952			

## REMARKS

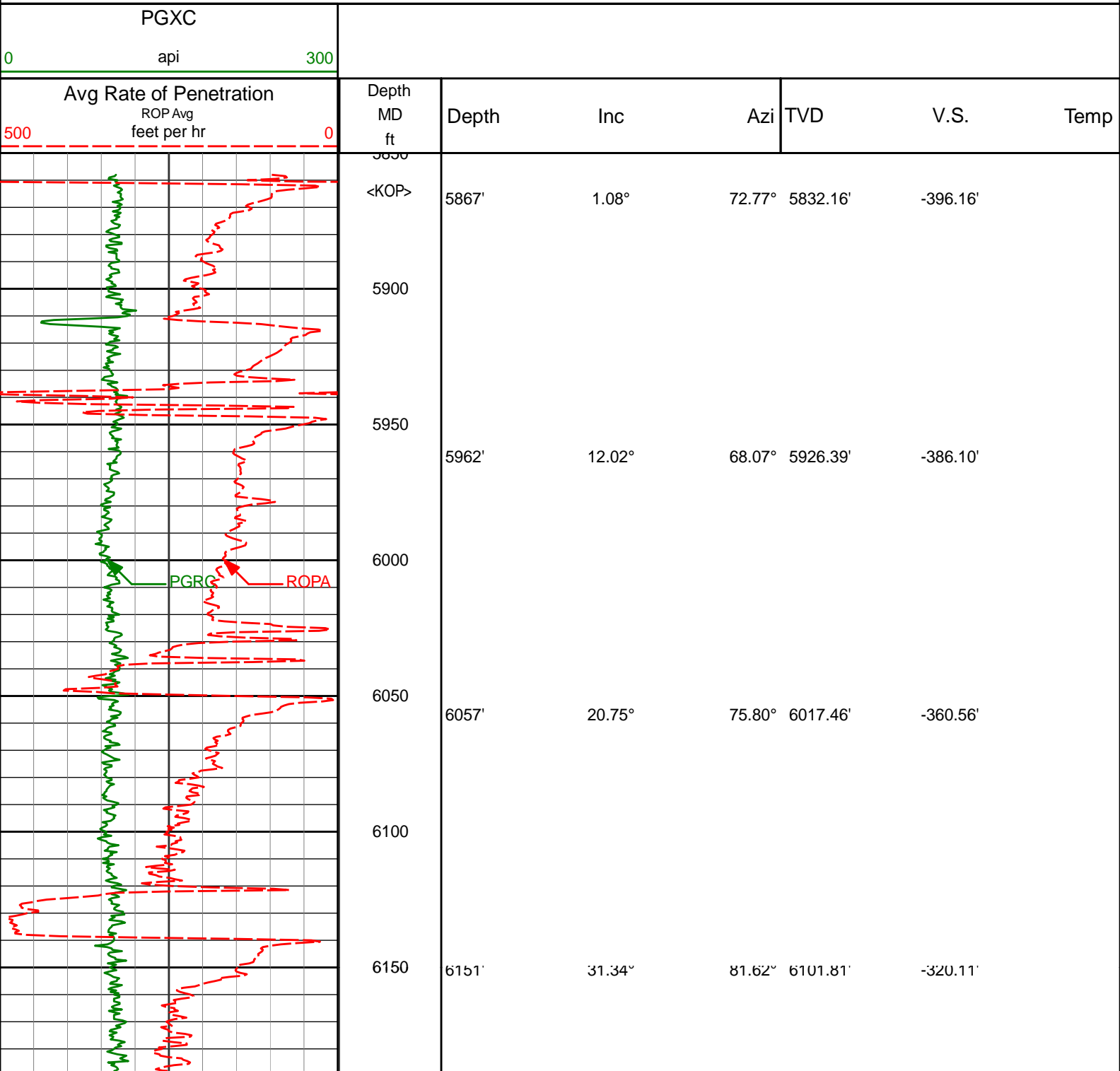
1. All depths are calibrated to the driller's pipe tally and are measured from the rig drill floor.
2. No depth corrections have been made for pipe stretch or compression.
3. All data presented is recorded (memory data) unless otherwise stated.
  - ROPA: Average Rate of Penetration is real time data.
  - PGRC: Smooth Pressure Case Gamma Ray Borehole corrected is recorded data.
4. The following smoothing parameters have been applied to the data:
  - All ROP in logs - 0.5 ft interval, 1.2 ft coercion distance.
  - Gamma in 2" (1:600) logs - 1 ft interval, 3 ft coercion distance.
  - Gamma in 5" (1:240) logs - 0.5 ft interval, 0.6 ft coercion distance.
5. INSITE version 8.3.0
6. Gamma data from 6833' -15962' is Realtime

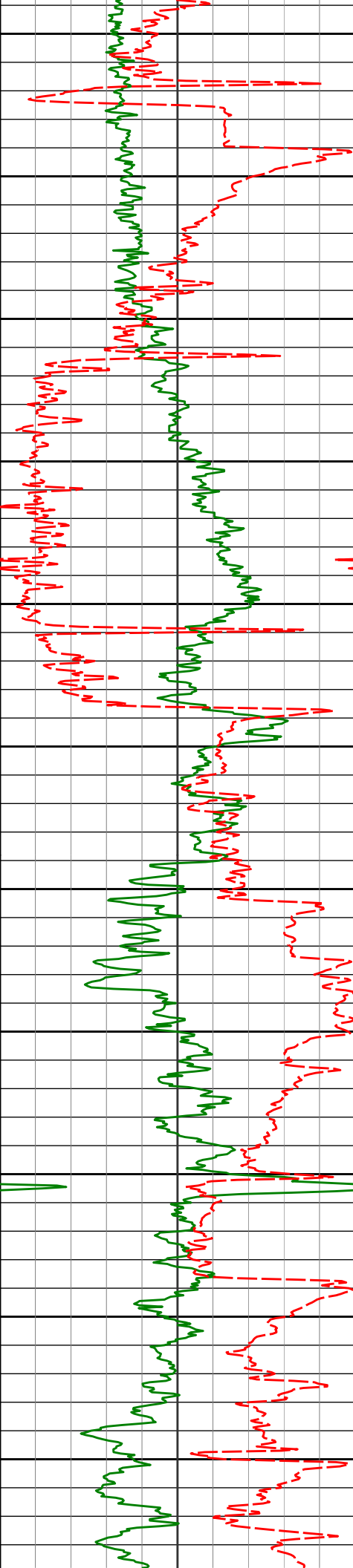
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# MD Detail 1:600 Scale





6200

6250

6300

6350

6400

6450

6500

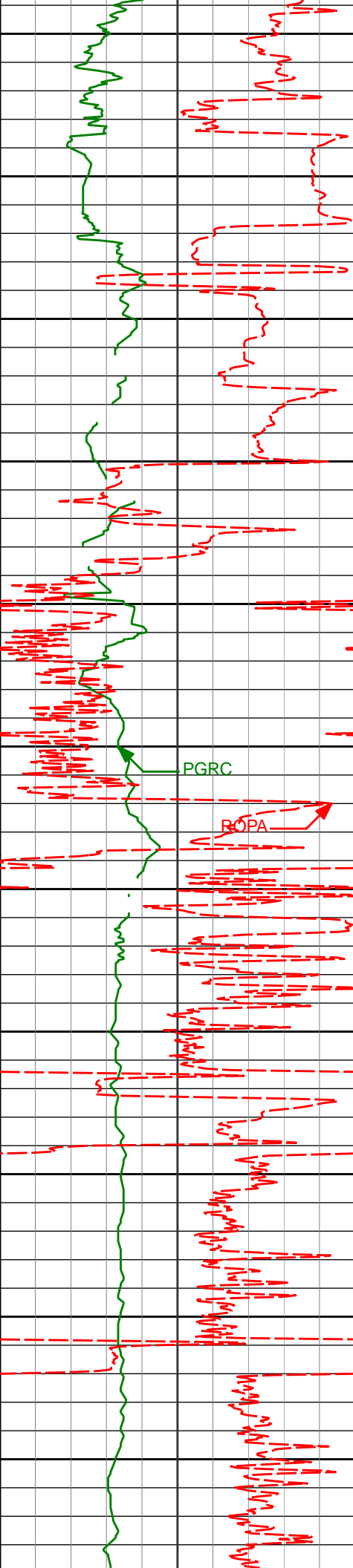
6550

6600

6650

6700

6246'	40.29°	87.80°	6178.79'	-264.84'
6341'	48.99°	91.05°	6246.33'	-198.17'
6436'	49.41°	89.73°	6308.41'	-126.26'
6530'	58.66°	88.48°	6363.55'	-50.28'
6625'	65.56°	87.37°	6407.96'	33.58'
6720'	77.29°	84.74°	6438.18'	123.25'



6750

6800

<Run 200>

6850

6900

6950

7000

7050

7100

7150

7200

7250

<7" casing set at 6833' MD>

PGRC

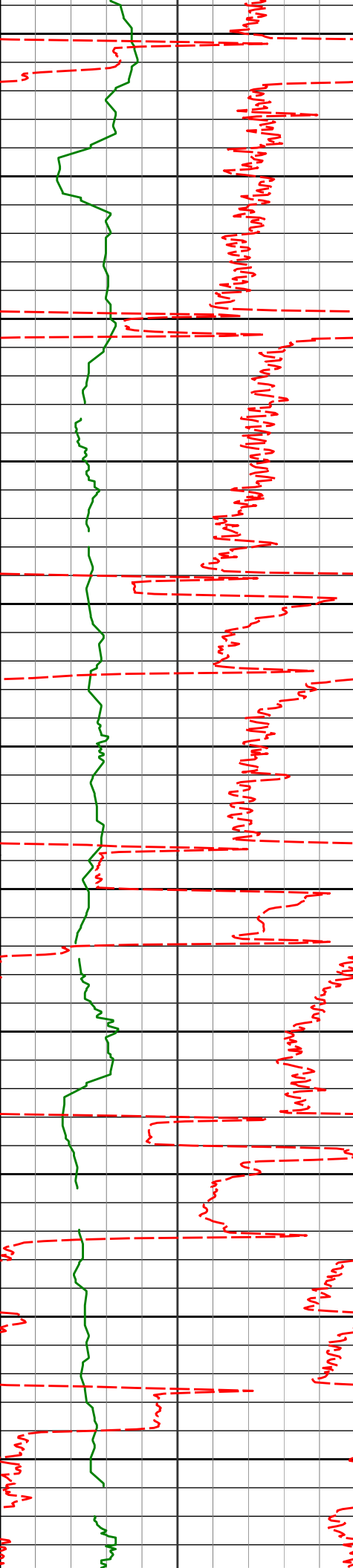
ROPA

6950'	87.07°	91.06°	6460.57'	351.37'
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7044'	88.15°	91.82°	6464.49'	445.25'
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7139'	89.38°	90.76°	6466.54'	540.20'
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7234'	89.57°	91.50°	6467.41'	635.18'
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7300

7350

7400

7450

7500

7550

7600

7650

7700

7750

7800

7328'

90.40°

90.39° 6467.44'

729.17'

7423'

92.28°

91.94° 6465.21'

824.12'

7518'

91.14°

90.25° 6462.38'

919.05'

7612'

92.37°

89.54° 6459.50'

1013.00'

7707'

91.17°

88.18° 6456.57'

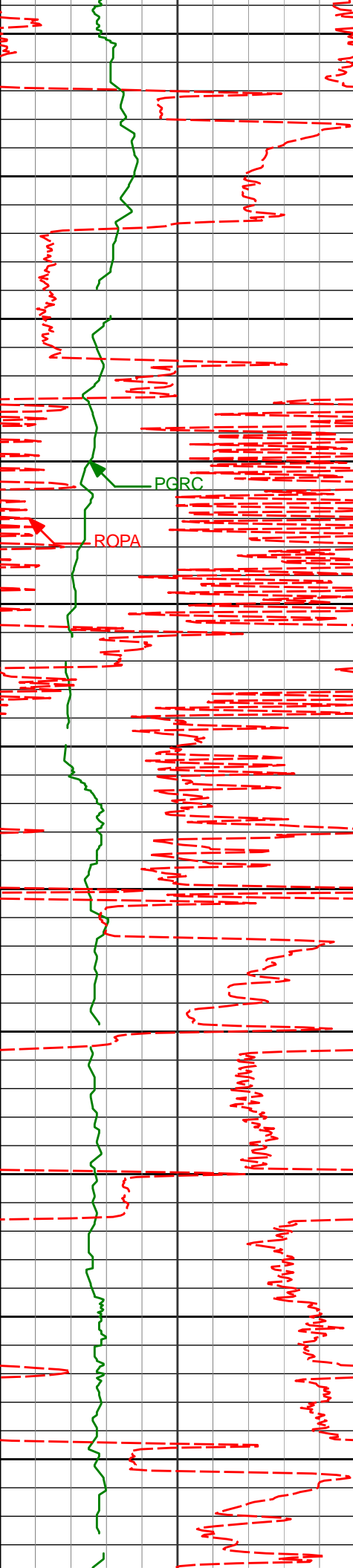
1107.94'

7801'

92.40°

87.20° 6453.64'

1201.81'



7850

7900

7950

8000

8050

8100

8150

8200

8250

8300

8350

7896'

90.55°

87.14° 6451.19'

1296.66'

7991'

89.85°

87.82° 6450.86'

1391.56'

8086'

91.36°

87.65° 6449.86'

1486.48'

8180'

91.26°

88.40° 6447.71'

1580.39'

8275'

91.97°

91.34° 6445.03'

1675.34'

8369'

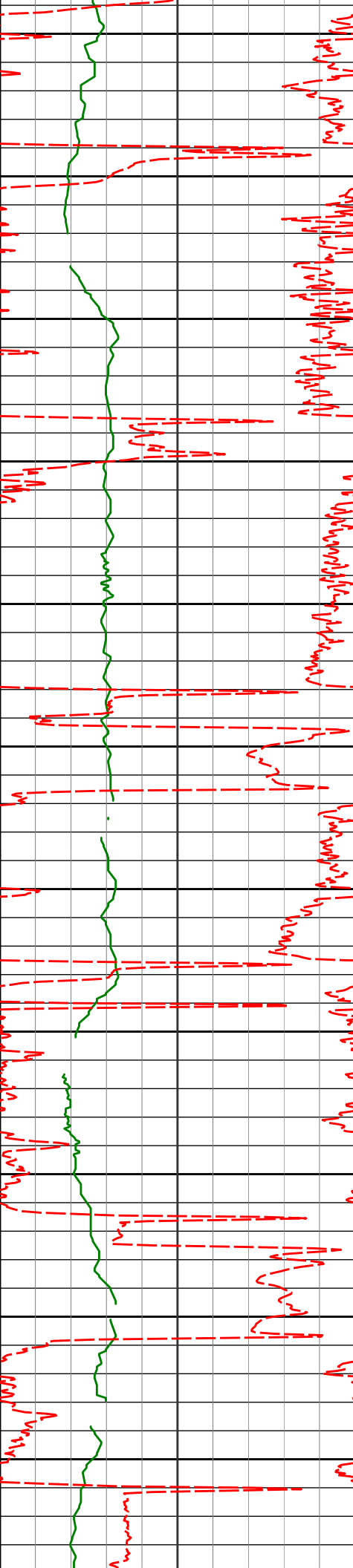
89.41°

90.33° 6443.90'

1769.32'

PGRC

ROPA



8400

8450

8464'

89.72°

89.05° 6444.70'

1864.31'

8500

8550

8558'

91.39°

89.40° 6443.88'

1958.30'

8600

8650

8652'

90.40°

87.59° 6442.41'

2052.25'

8700

8750

8747'

91.88°

88.38° 6440.52'

2147.16'

8800

8850

8841'

90.92°

86.61° 6438.22'

2241.04'

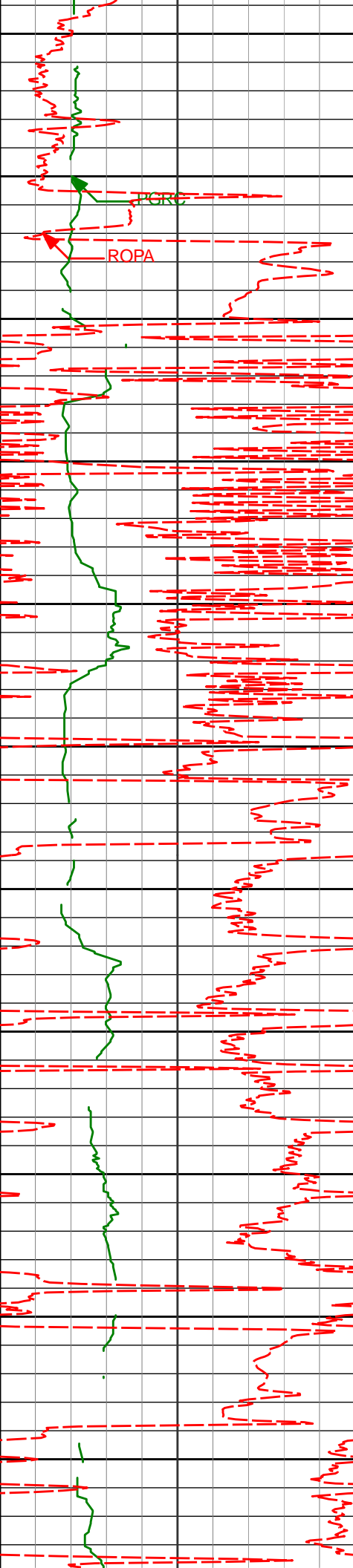
8900

8936'

90.40°

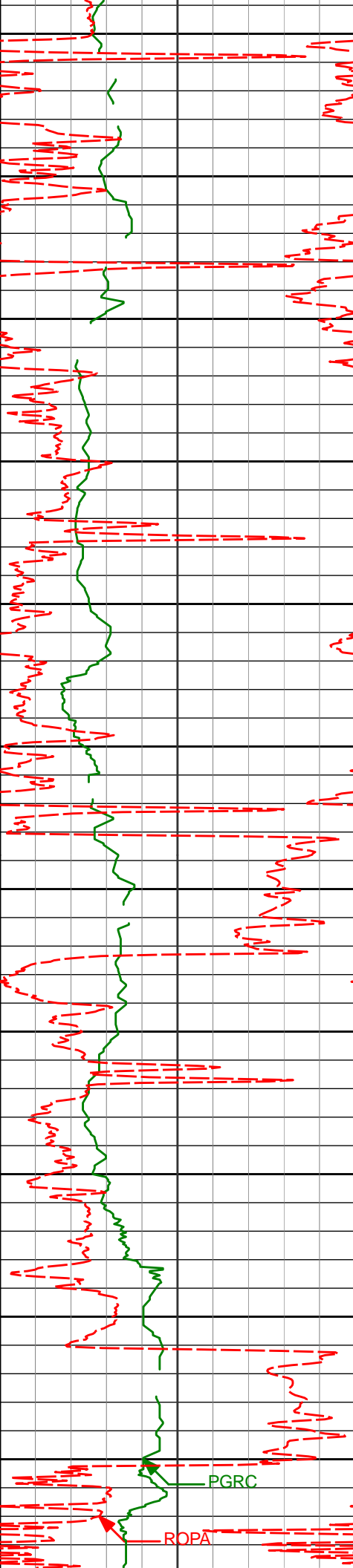
86.32° 6437.13'

2335.85'



8950  
9000  
9050  
9100  
9150  
9200  
9250  
9300  
9350  
9400  
9450

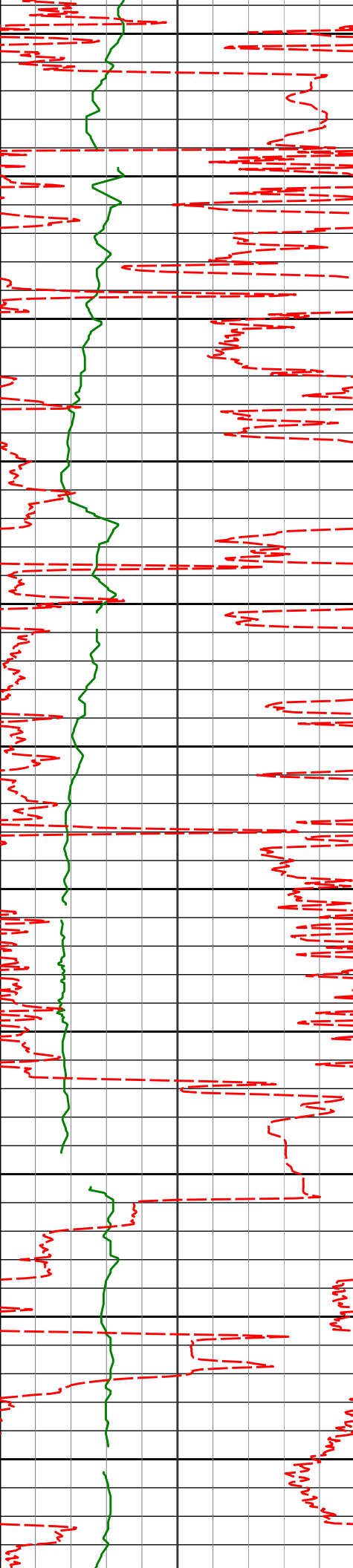
9030'	90.31°	85.63°	6436.54'	2429.61'
9125'	90.25°	85.67°	6436.08'	2524.33'
9219'	89.78°	85.52°	6436.05'	2618.05'
9313'	90.93°	86.14°	6435.47'	2711.80'
9408'	89.32°	86.29°	6435.26'	2806.58'



9500	9502'	89.11°	86.19°	6436.55'	2900.37'
9550					
9600	9597'	90.06°	85.93°	6437.24'	2995.14'
9650					
9700	9691'	91.91°	85.78°	6435.63'	3088.87'
9750					
9800	9786'	91.94°	86.97°	6432.43'	3183.62'
9850					
9900	9880'	91.91°	88.41°	6429.28'	3277.49'
9950					
10000	9977'	91.02°	87.74°	6426.81'	3374.87'

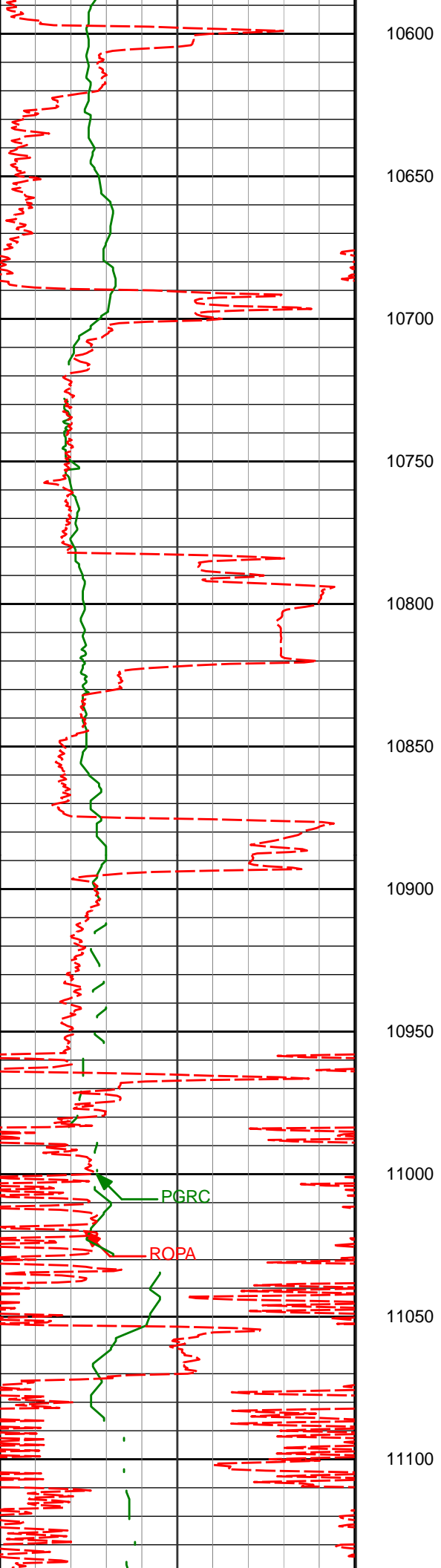
PGRC

ROPA

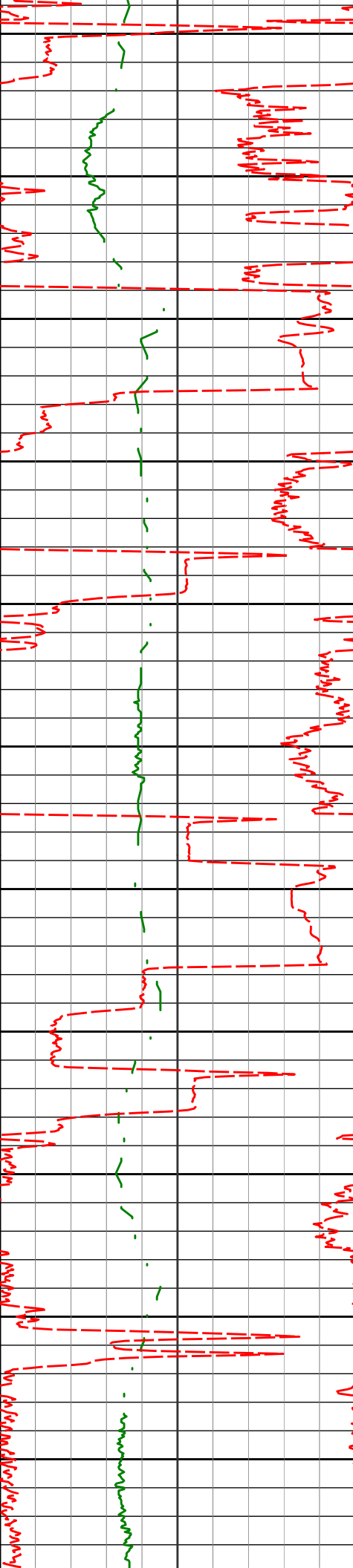


10050  
10100  
10150  
10200  
10250  
10300  
10350  
10400  
10450  
10500  
10550

10069'	89.01°	88.49°	6426.82'	3466.34'
10164'	88.80°	88.82°	6428.64'	3561.30'
10256'	89.01°	88.65°	6430.40'	3653.26'
10347'	90.25°	88.87°	6430.98'	3744.23'
10438'	89.51°	87.59°	6431.17'	3835.19'

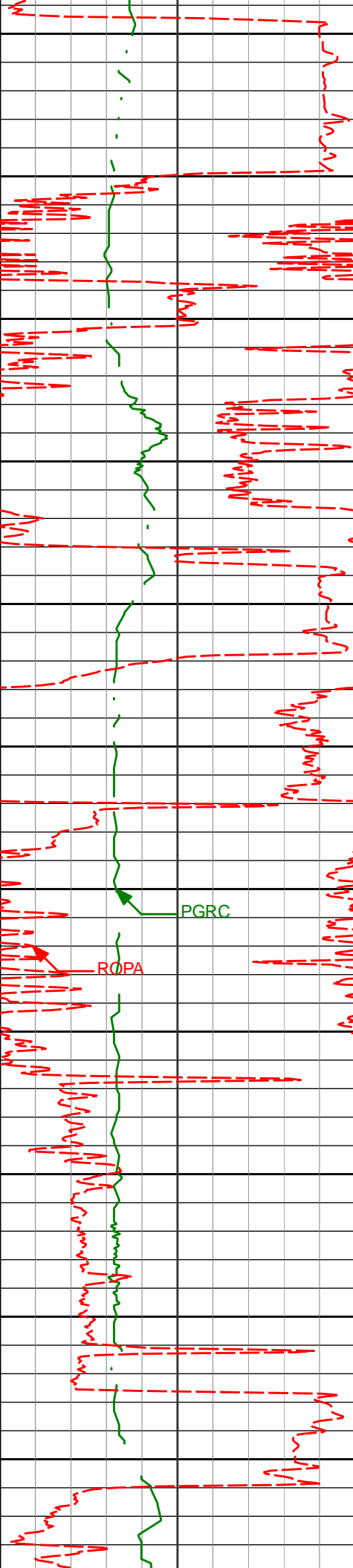


10622'	90.86°	88.48°	6430.58'	4019.07'
10713'	92.25°	87.57°	6428.11'	4109.98'
10804'	91.64°	87.40°	6425.02'	4200.84'
10895'	90.15°	88.53°	6423.60'	4291.76'
10987'	90.03°	87.91°	6423.46'	4383.72'
11079'	90.15°	87.01°	6423.31'	4475.62'



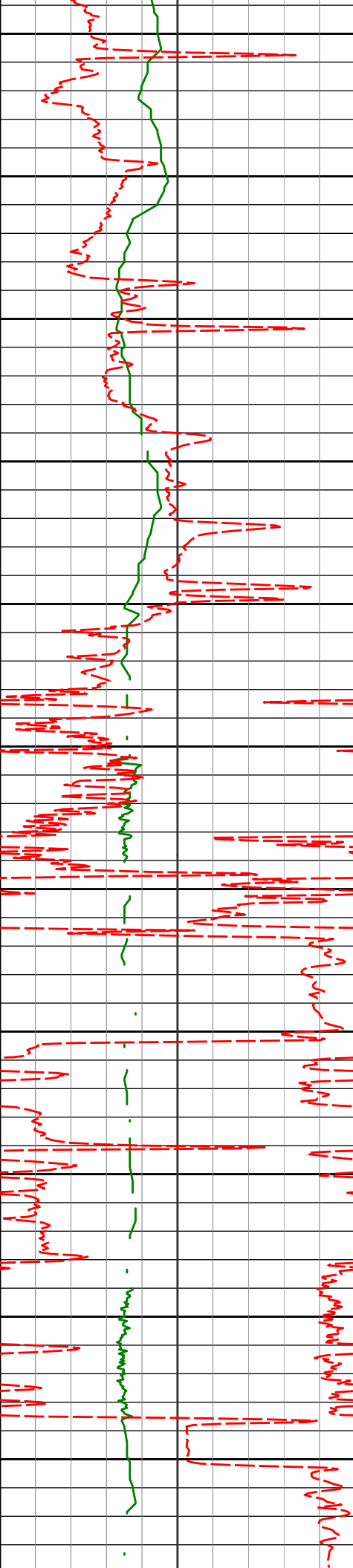
11150  
11170'  
11200  
11250  
11300  
11350  
11400  
11450  
11500  
11550  
11600  
11650

11170'	91.94°	87.49°	6421.65'	4566.50'
11261'	90.77°	87.33°	6419.50'	4657.38'
11353'	90.37°	85.74°	6418.59'	4749.20'
11445'	90.06°	85.61°	6418.24'	4840.93'
11536'	90.80°	87.01°	6417.56'	4931.74'
11627'	90.34°	85.78°	6416.65'	5022.55'



11700  
11750  
11800  
11850  
11900  
11950  
12000  
12050  
12100  
12150  
12200

11719'	90.12°	87.65°	6416.28'	5114.39'
11811'	92.13°	89.69°	6414.48'	5206.34'
11903'	91.54°	90.12°	6411.53'	5298.29'
11998'	90.86°	89.31°	6409.54'	5393.26'
12092'	90.83°	87.62°	6408.15'	5487.22'
12187'	90.09°	87.88°	6407.39'	5582.14'



12250

12282'	90.09°	88.15°	6407.24'	5677.08'
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12300

12350

12376'	90.83°	88.66°	6406.49'	5771.04'
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12400

12450

12471'	90.40°	86.51°	6405.47'	5865.94'
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12500

12550

12566'	90.31°	86.40°	6404.88'	5960.75'
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12600

12650

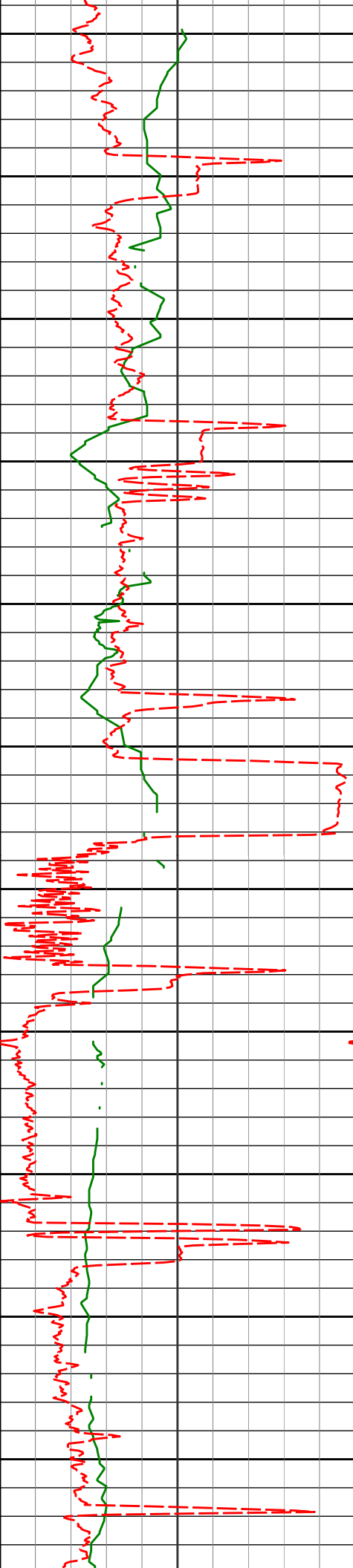
12660'	90.34°	86.58°	6404.35'	6054.57'
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12700

12750

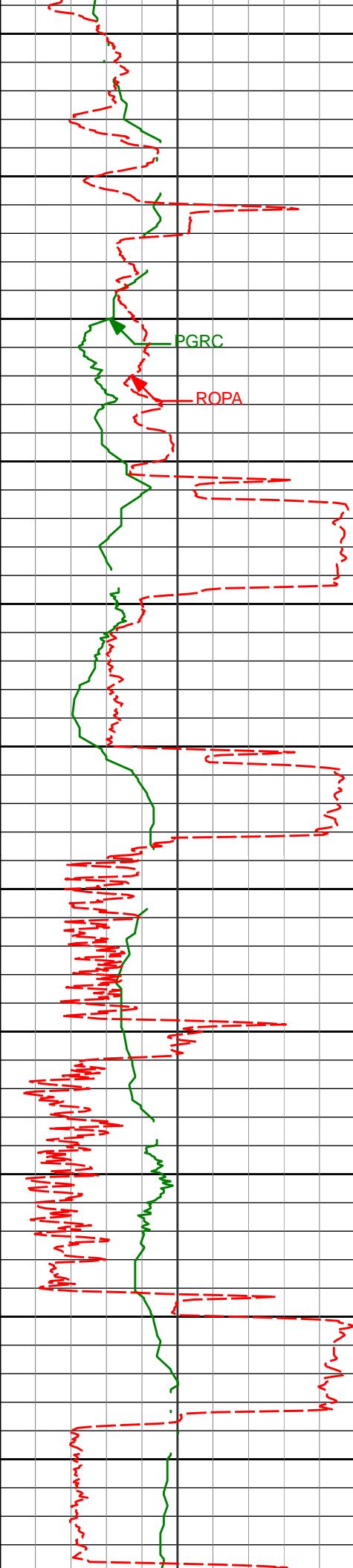
12755'	90.96°	87.05°	6403.27'	6149.42'
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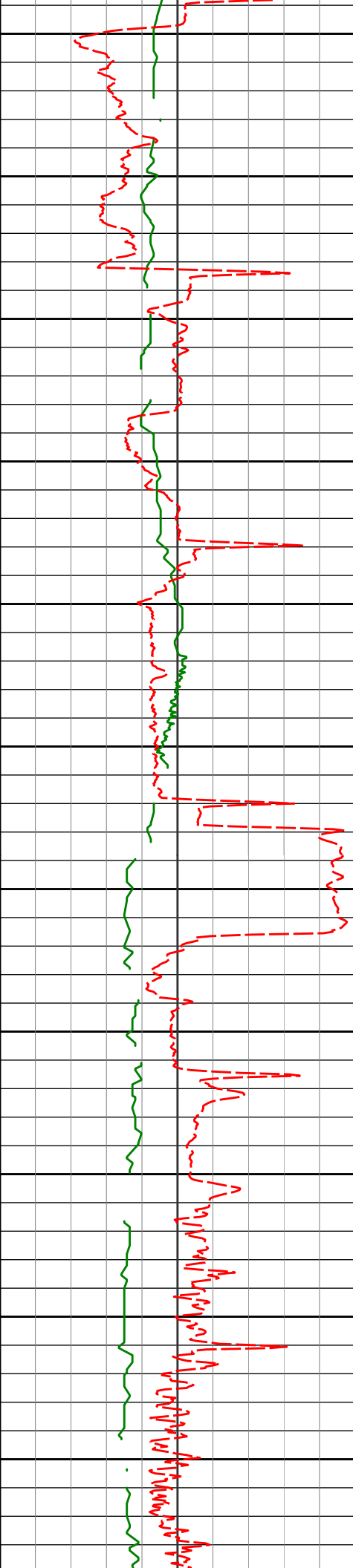


13350  
13400  
13450  
13500  
13550  
13600  
13650  
13700  
13750  
13800  
13850

13418'	88.09°	90.54°	6394.78'	6812.08'
13513'	87.78°	89.76°	6398.21'	6907.02'
13608'	88.67°	89.48°	6401.15'	7001.97'
13702'	90.80°	89.52°	6401.58'	7095.96'
13797'	91.11°	89.03°	6400.00'	7190.93'

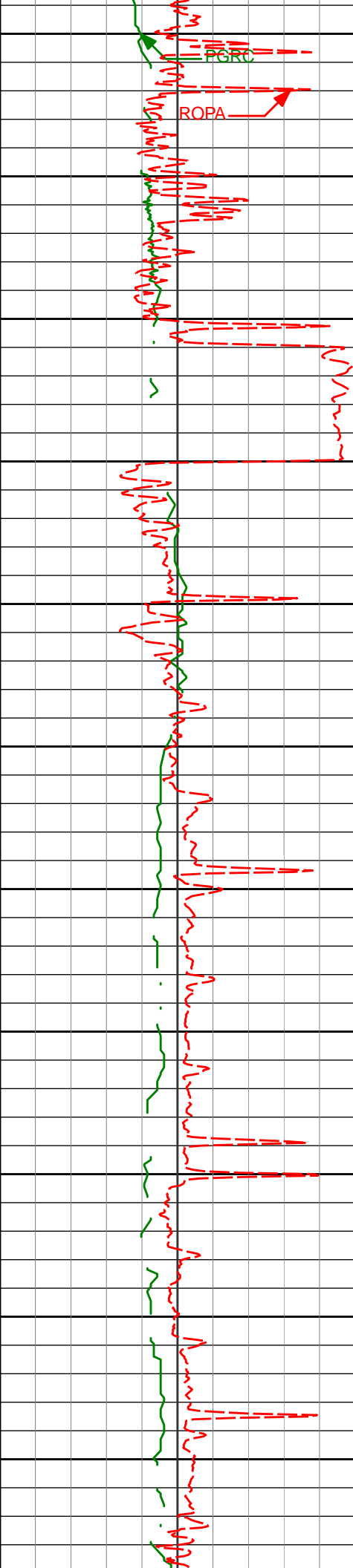


13900	13892'	91.82°	88.24°	6397.57'	7285.87'
13950					
14000	13987'	93.15°	88.51°	6393.45'	7380.74'
14050					
14100	14081'	92.62°	88.22°	6388.72'	7474.58'
14150					
14200					
14250					
14300					
14350	14365'	91.45°	87.52°	6379.25'	7758.24'
14400					



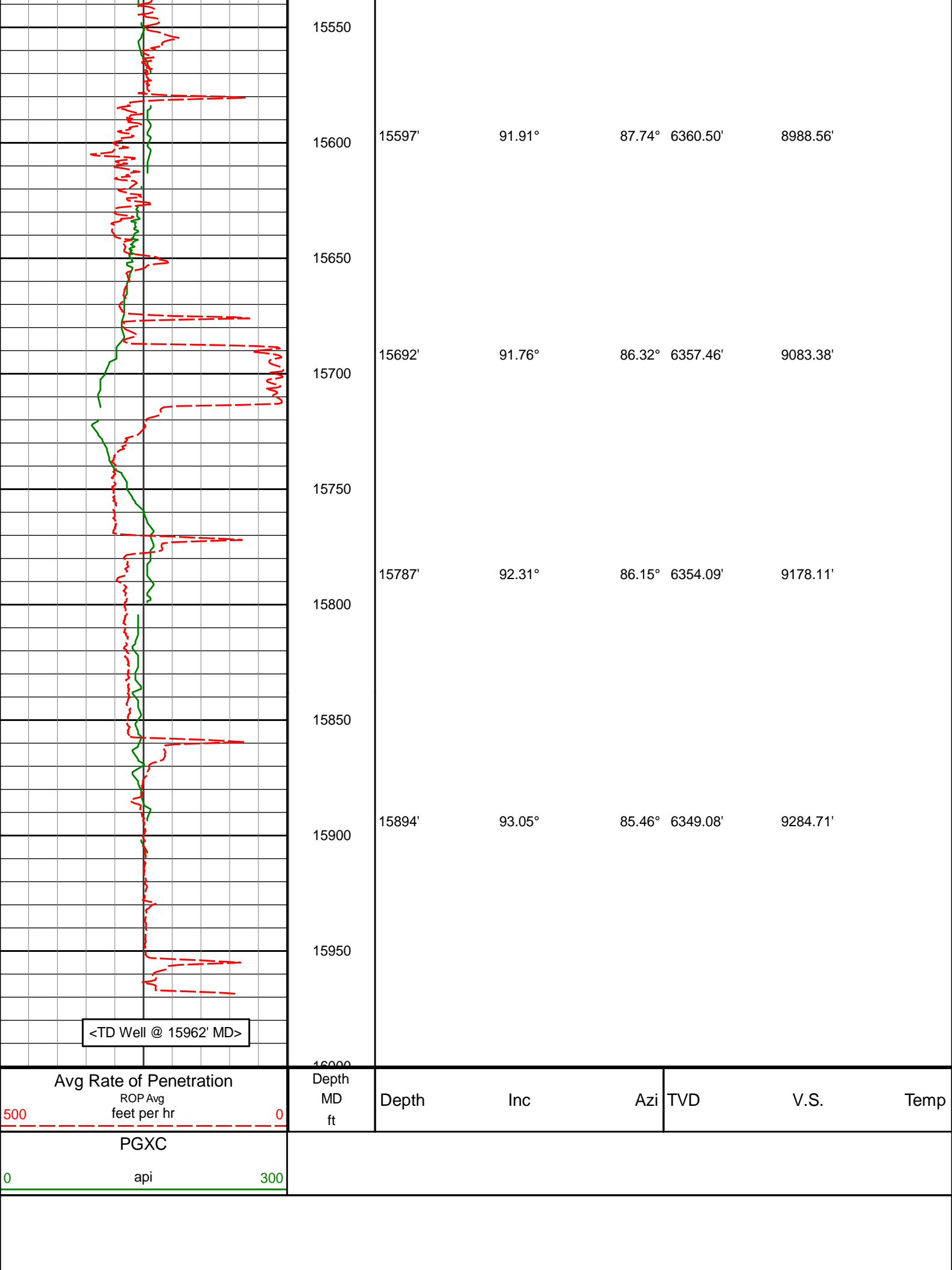
14450  
14500  
14550  
14600  
14650  
14700  
14750  
14800  
14850  
14900  
14950

14460'	90.96°	87.35°	6377.25'	7853.12'
14650'	92.44°	87.13°	6371.93'	8042.85'
14745'	90.80°	87.26°	6369.24'	8137.69'
14839'	90.83°	87.46°	6367.90'	8231.58'
14934'	90.34°	86.76°	6366.93'	8326.45'

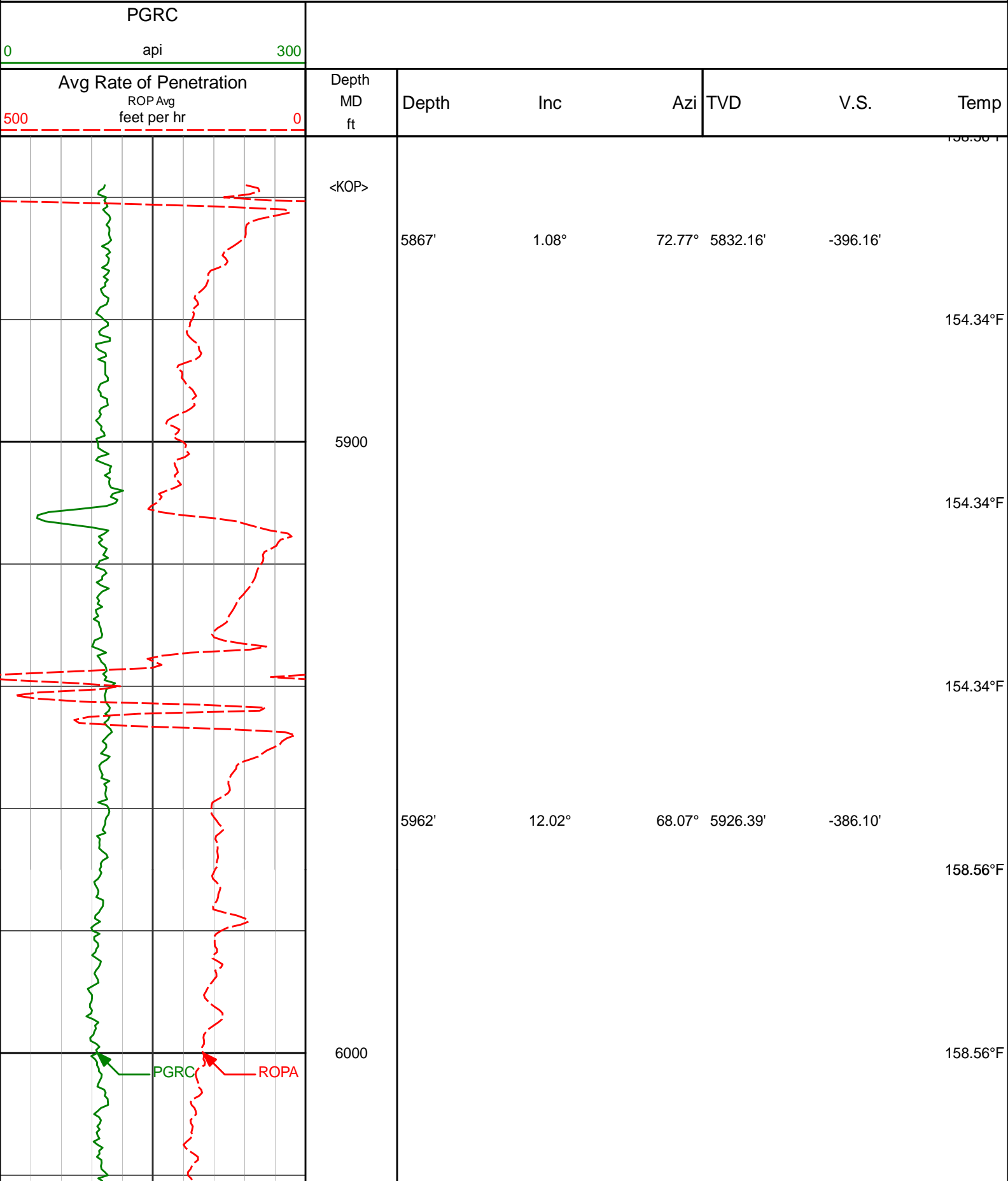


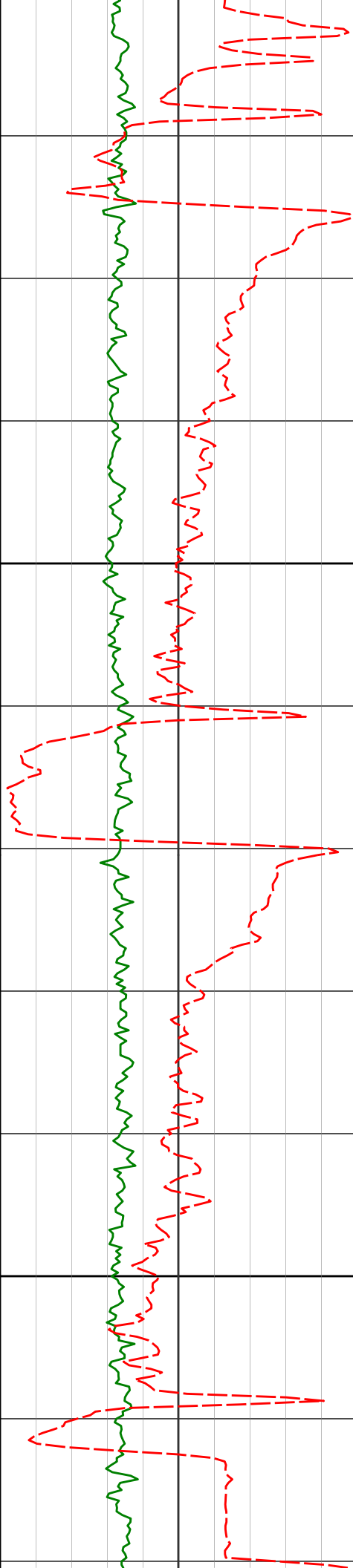
15000  
15050  
15100  
15150  
15200  
15250  
15300  
15350  
15400  
15450  
15500

15029'	90.59°	85.70°	6366.16'	8421.24'
15124'	89.78°	87.29°	6365.86'	8516.05'
15218'	89.78°	87.54°	6366.22'	8609.96'
15313'	90.34°	87.58°	6366.12'	8704.87'
15408'	90.80°	87.56°	6365.17'	8799.78'
15503'	91.48°	87.79°	6363.28'	8894.68'



# MD Detail 1:240 Scale





6100

6200

6057'

20.75°

75.80°

6017.46'

-360.56'

6151'

31.34°

81.62°

6101.81'

-320.11'

158.56°F

158.56°F

162.78°F

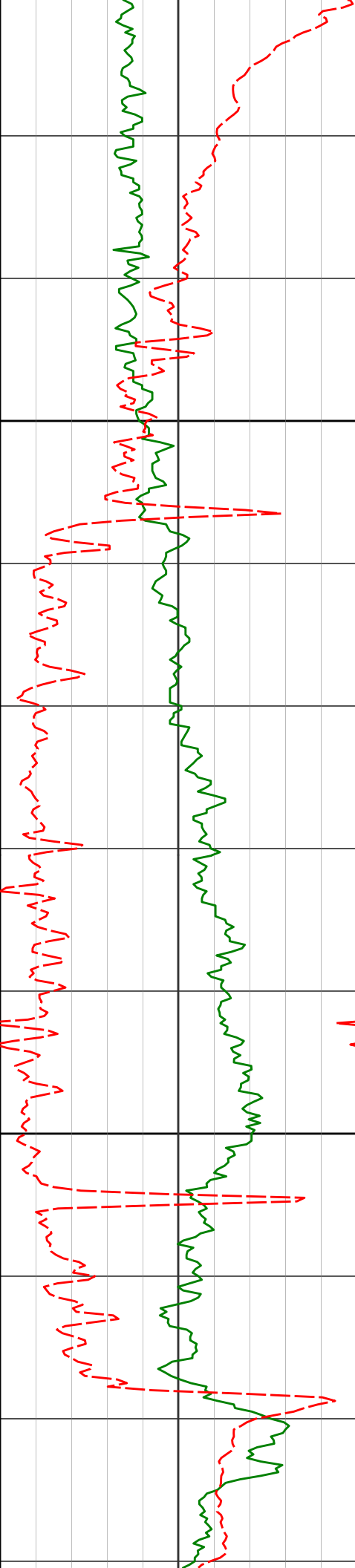
162.78°F

162.78°F

230.28°F

230.28°F

230.28°F



6246'

40.29°

87.80° 6178.79'

-264.84'

6300

162.78°F

162.78°F

162.78°F

6341'

48.99°

91.05° 6246.33'

-198.17'

167.00°F

167.00°F

6400

167.00°F

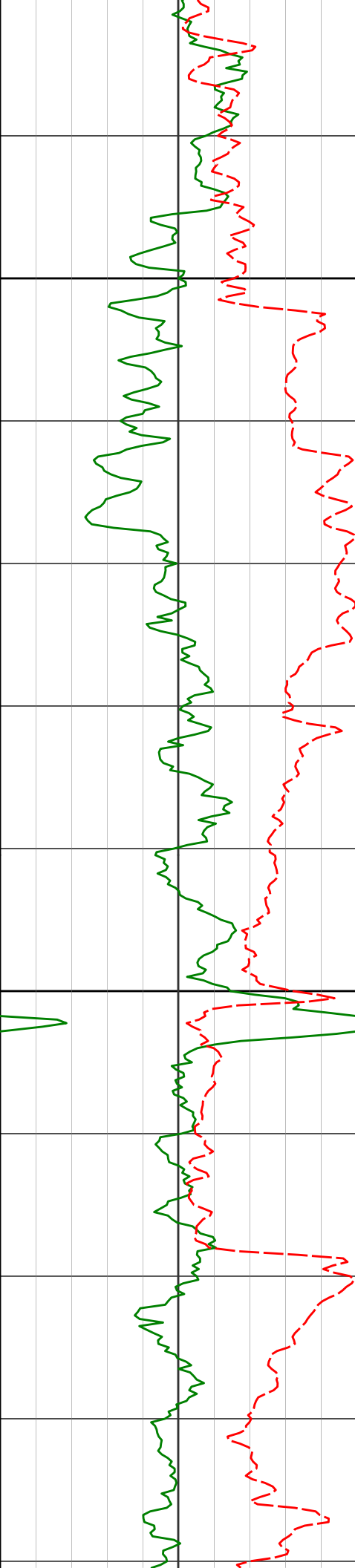
6436'

49.41°

89.73° 6308.41'

-126.26'

167.00°F



6500

6600

6530'

6625'

58.66°

65.56°

88.48°

87.37°

6363.55'

6407.96'

-50.28'

33.58'

158.56°F

158.56°F

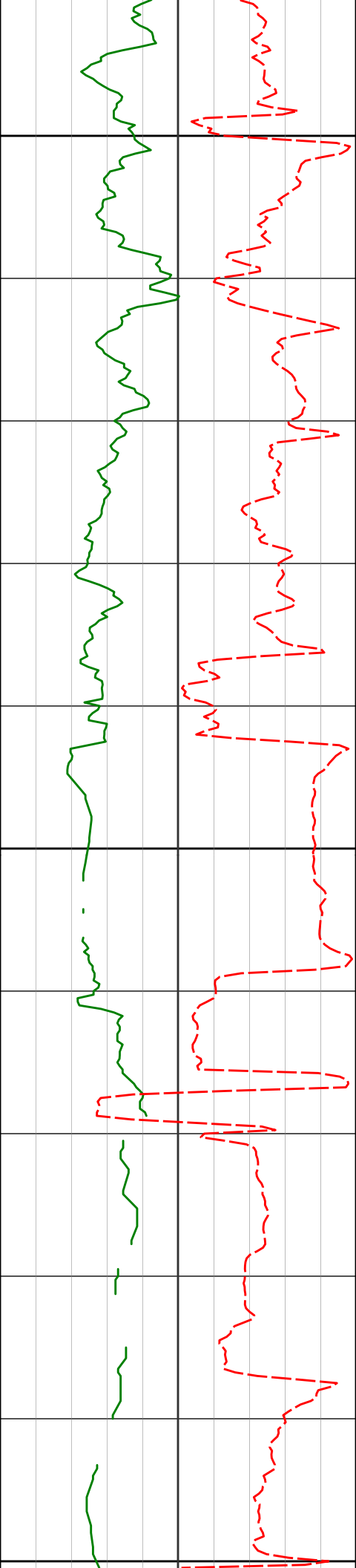
162.78°F

162.78°F

162.78°F

167.00°F

167.00°F



6700

6720'

77.29°

84.74° 6438.18'

123.25'

6800

<Run 200>

6900



<7" casing set at 6833' MD>

167.00°F

171.22°F

99.50°F

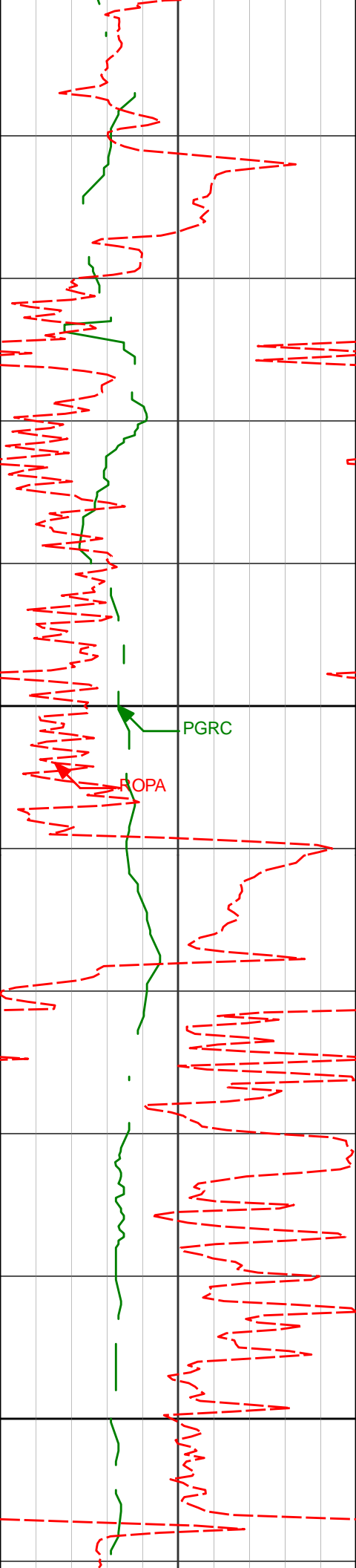
171.22°F

171.22°F

171.22°F

171.22°F

171.22°F



7000

7100

6950'

7044'

87.07°

88.15°

91.06° 6460.57'

91.82° 6464.49'

351.37'

445.25'

171.22°F

171.22°F

171.22°F

171.22°F

175.44°F

175.44°F

175.44°F



7200

7300

7139'

89.38°

90.76° 6466.54'

540.20'

175.44°F

179.66°F

179.66°F

7234'

89.57°

91.50° 6467.41'

635.18'

179.66°F

183.88°F

183.88°F

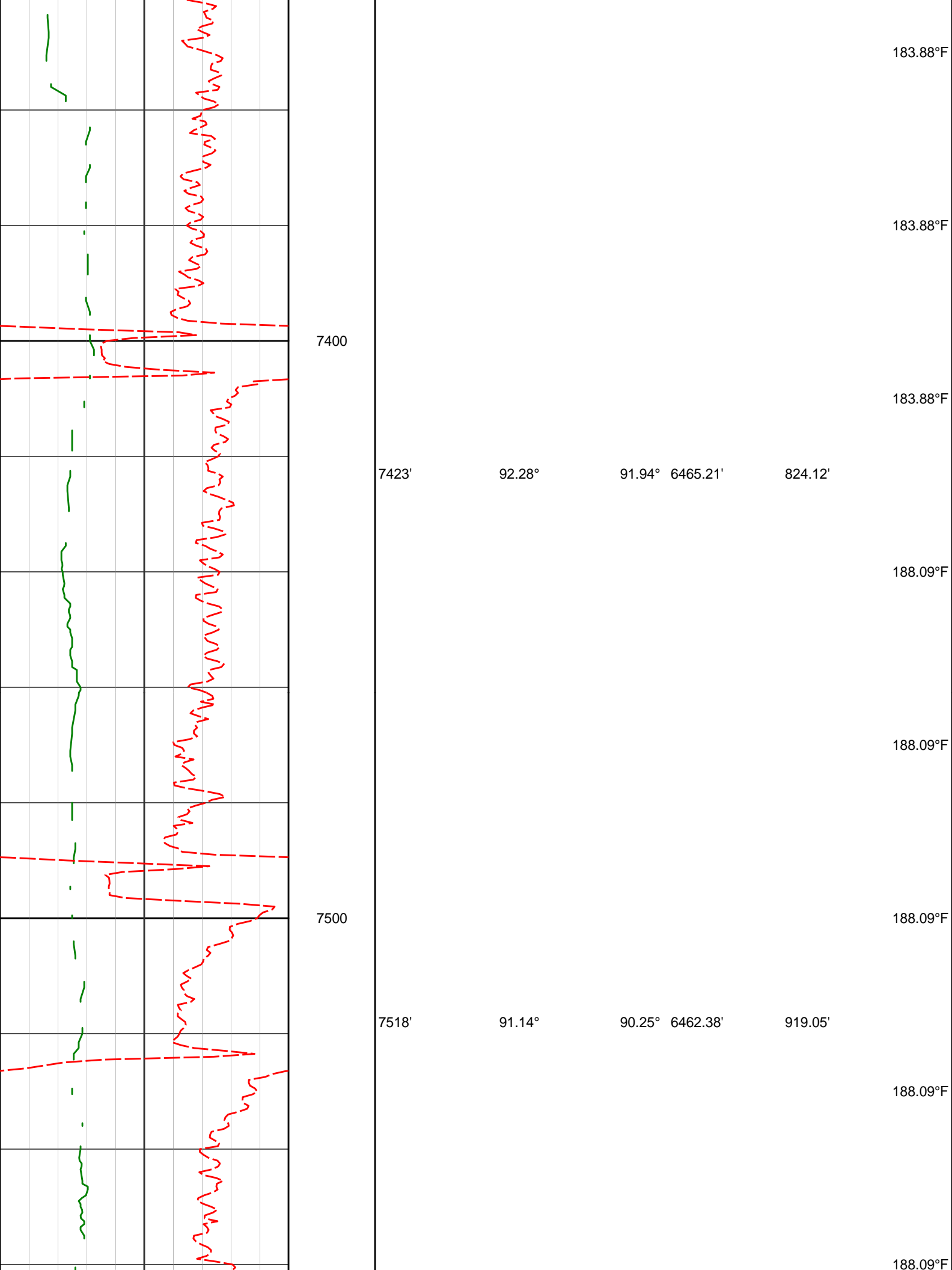
183.88°F

7328'

90.40°

90.39° 6467.44'

729.17'





7600

7700

7612'

7707'

92.37°

91.17°

89.54° 6459.50'

88.18° 6456.57'

1013.00'

1107.94'

188.09°F

188.09°F

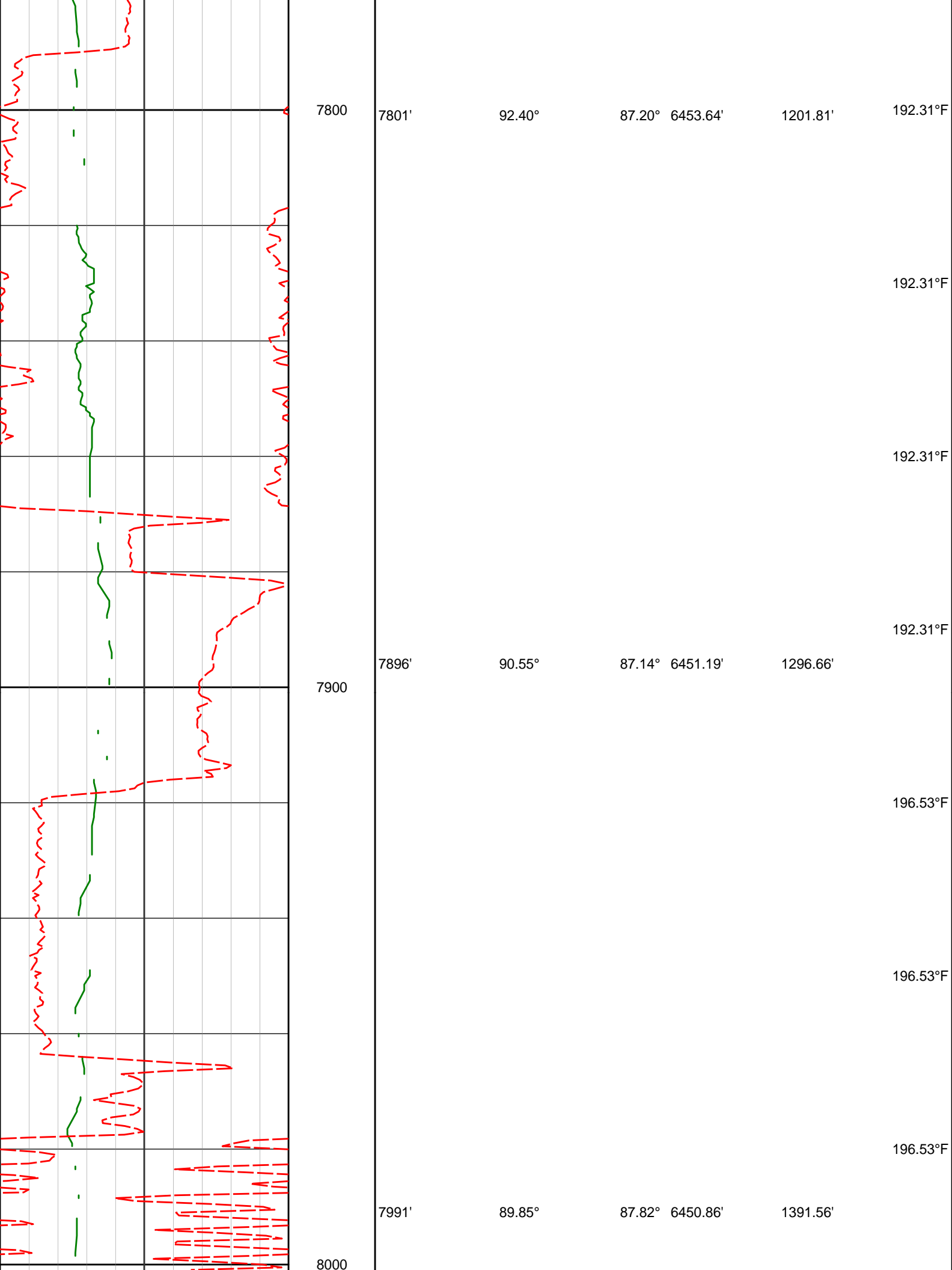
188.09°F

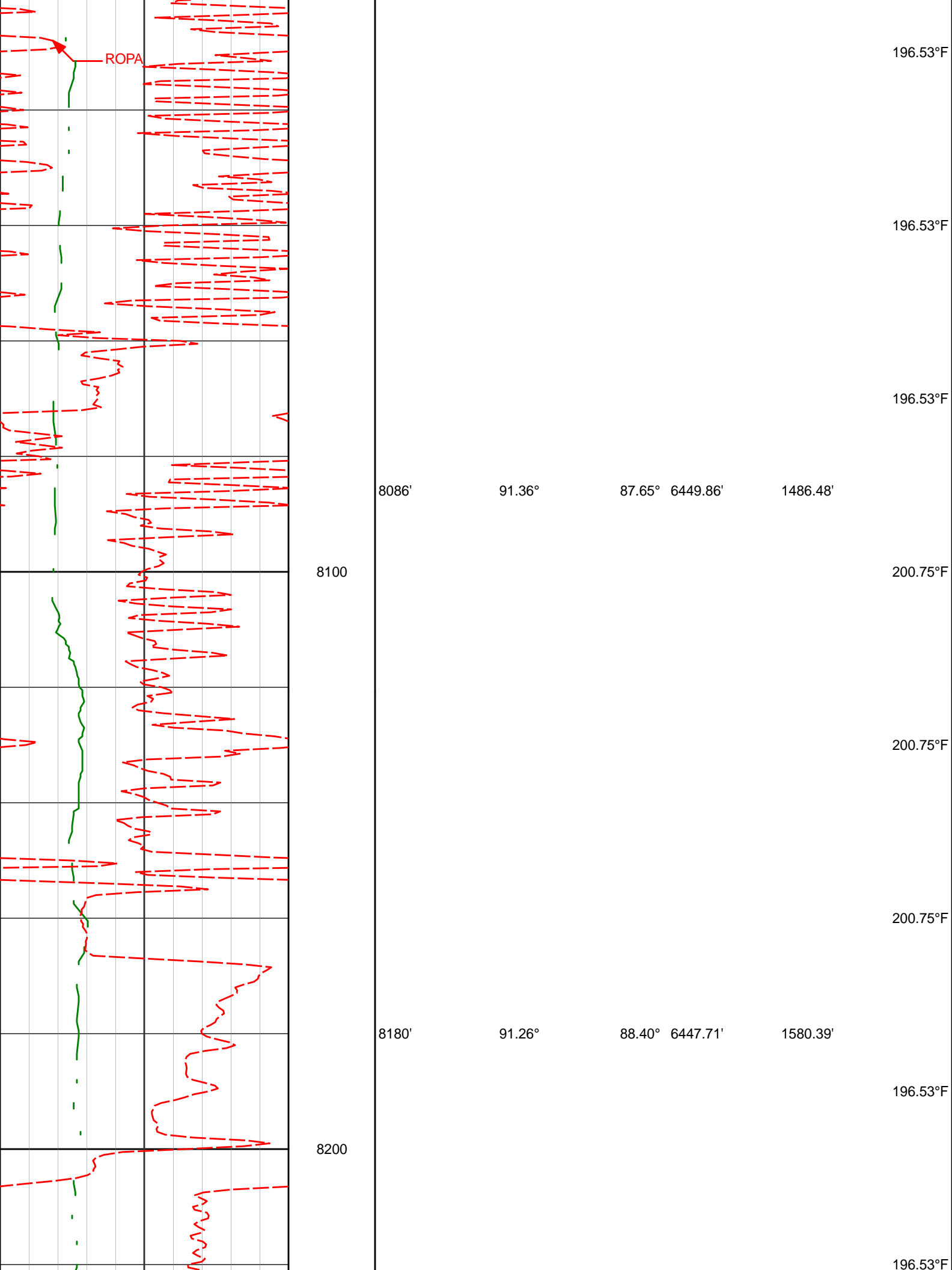
188.09°F

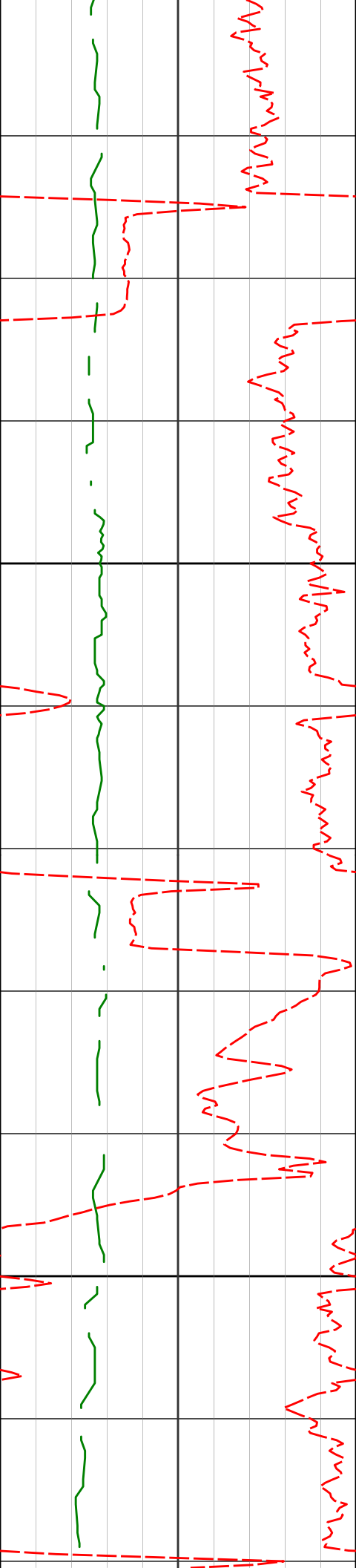
188.09°F

192.31°F

192.31°F







8300

8400

8275'

91.97°

91.34° 6445.03'

1675.34'

8369'

89.41°

90.33° 6443.90'

1769.32'

196.53°F

200.75°F

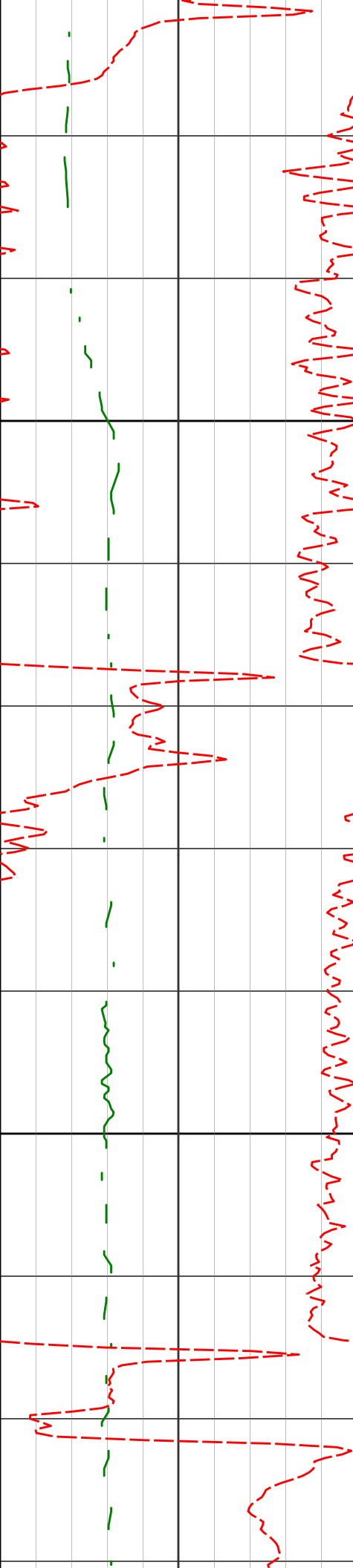
200.75°F

200.75°F

200.75°F

200.75°F

200.75°F



8500

8600

8464'

89.72°

89.05°

6444.70'

1864.31'

200.75°F

200.75°F

200.75°F

200.75°F

8558'

91.39°

89.40°

6443.88'

1958.30'

204.97°F

204.97°F

204.97°F

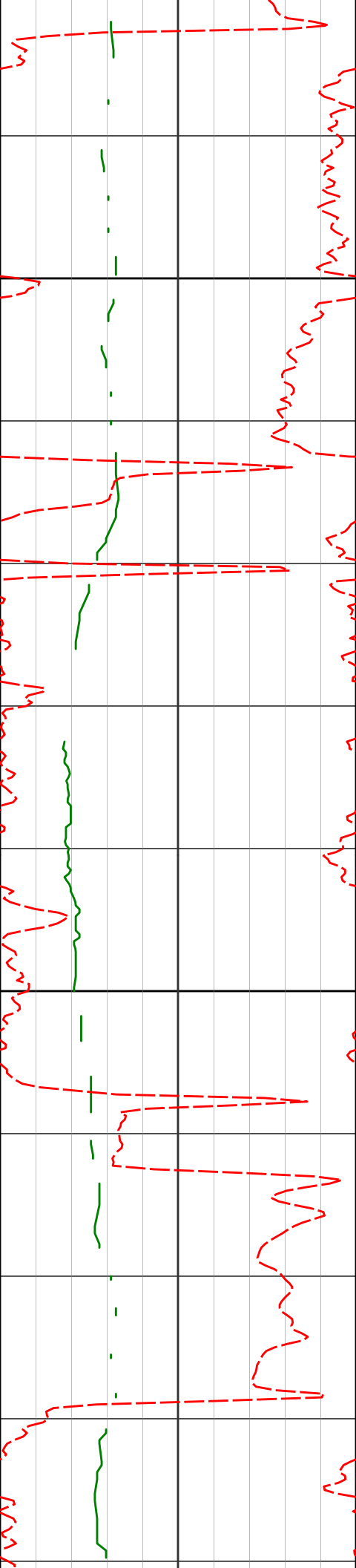
8652'

90.40°

87.59°

6442.41'

2052.25'



8700

8747'

8800

8841'

91.88°

90.92°

88.38° 6440.52'

86.61° 6438.22'

2147.16'

2241.04'

204.97°F

204.97°F

204.97°F

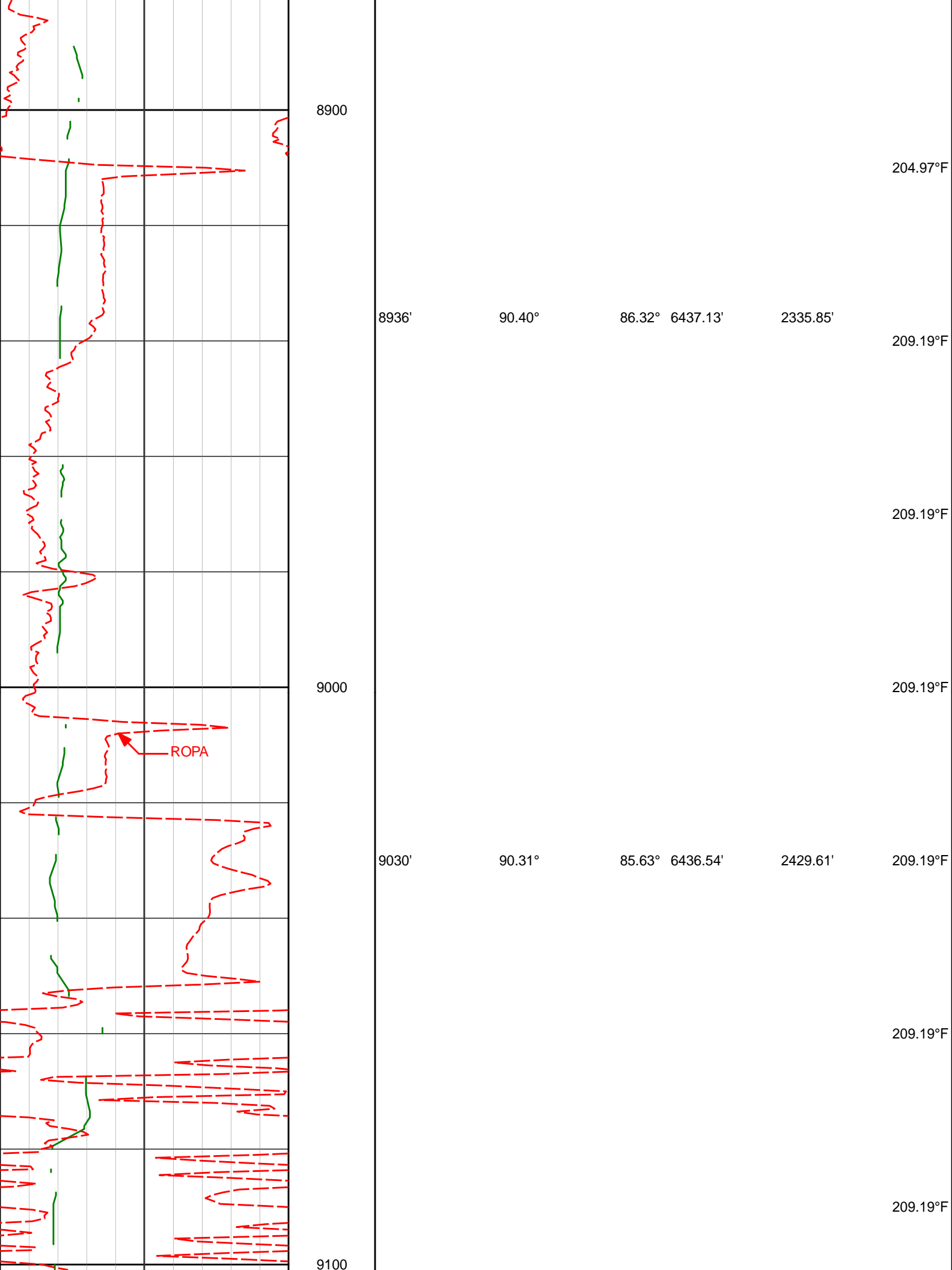
204.97°F

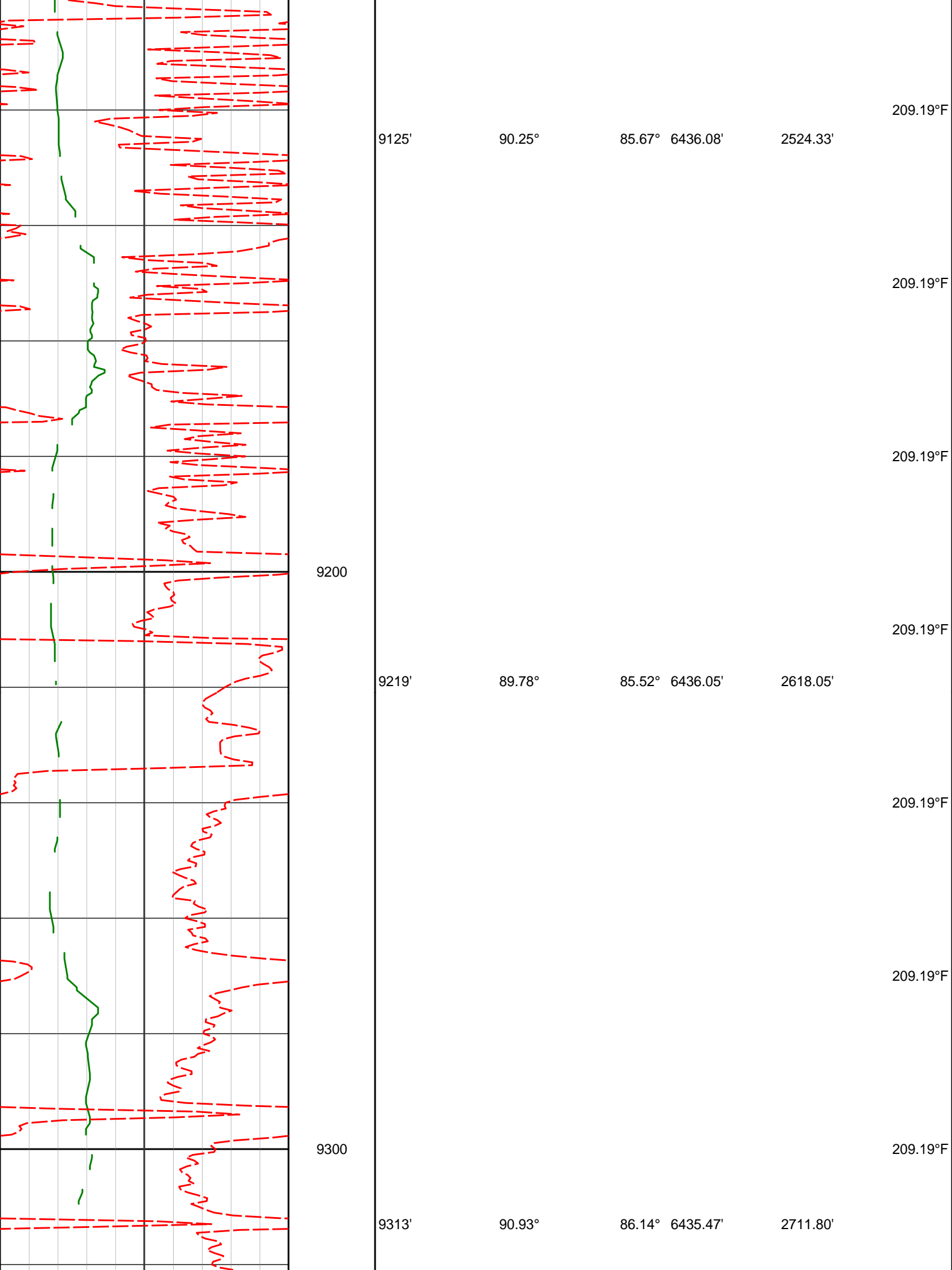
200.75°F

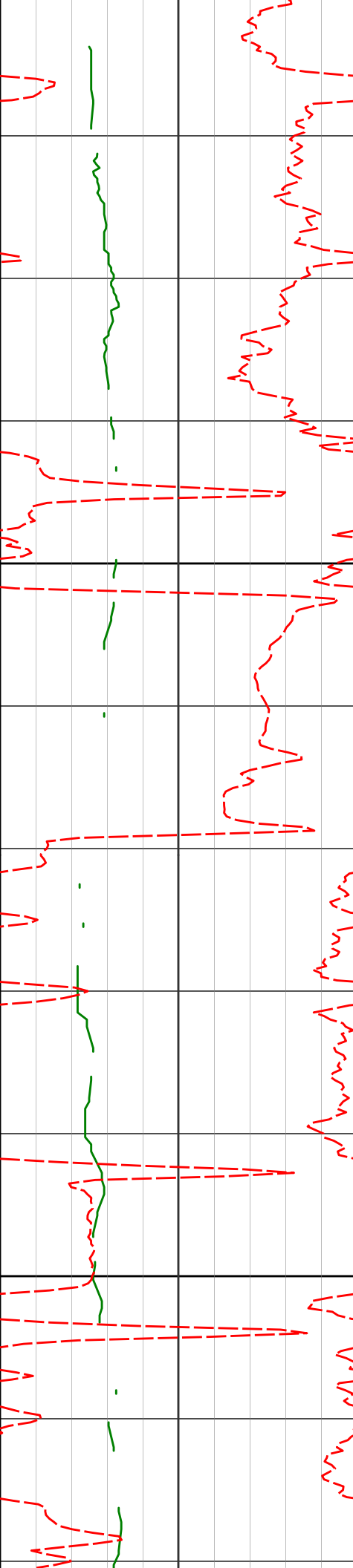
200.75°F

204.97°F

204.97°F







9400

9500

9408'

9502'

89.32°

89.11°

86.29° 6435.26'

86.19° 6436.55'

2806.58'

2900.37'

209.19°F

209.19°F

209.19°F

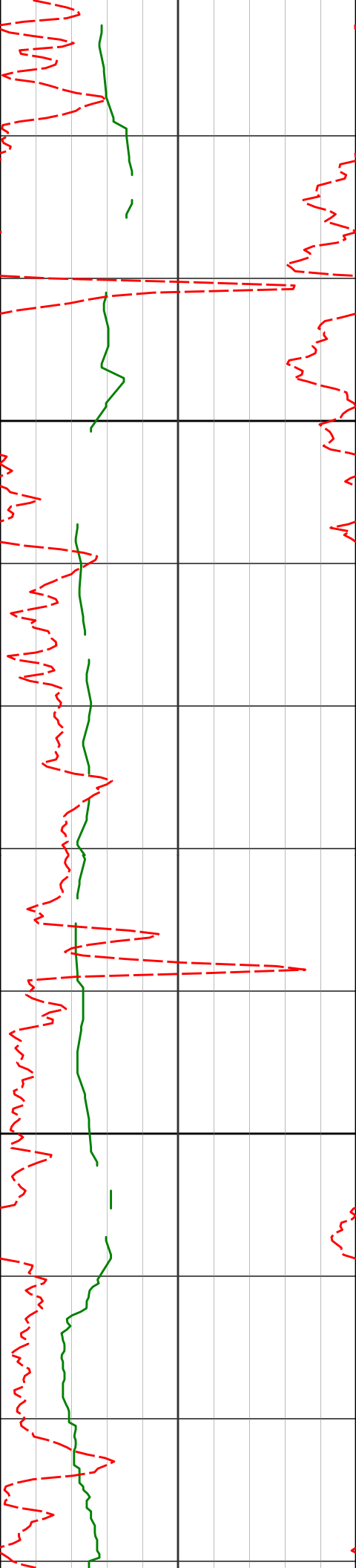
209.19°F

209.19°F

209.19°F

213.41°F

213.41°F



9600

9700

9597'

9691'

90.06°

91.91°

85.93° 6437.24'

85.78° 6435.63'

2995.14'

3088.87'

213.41°F

213.41°F

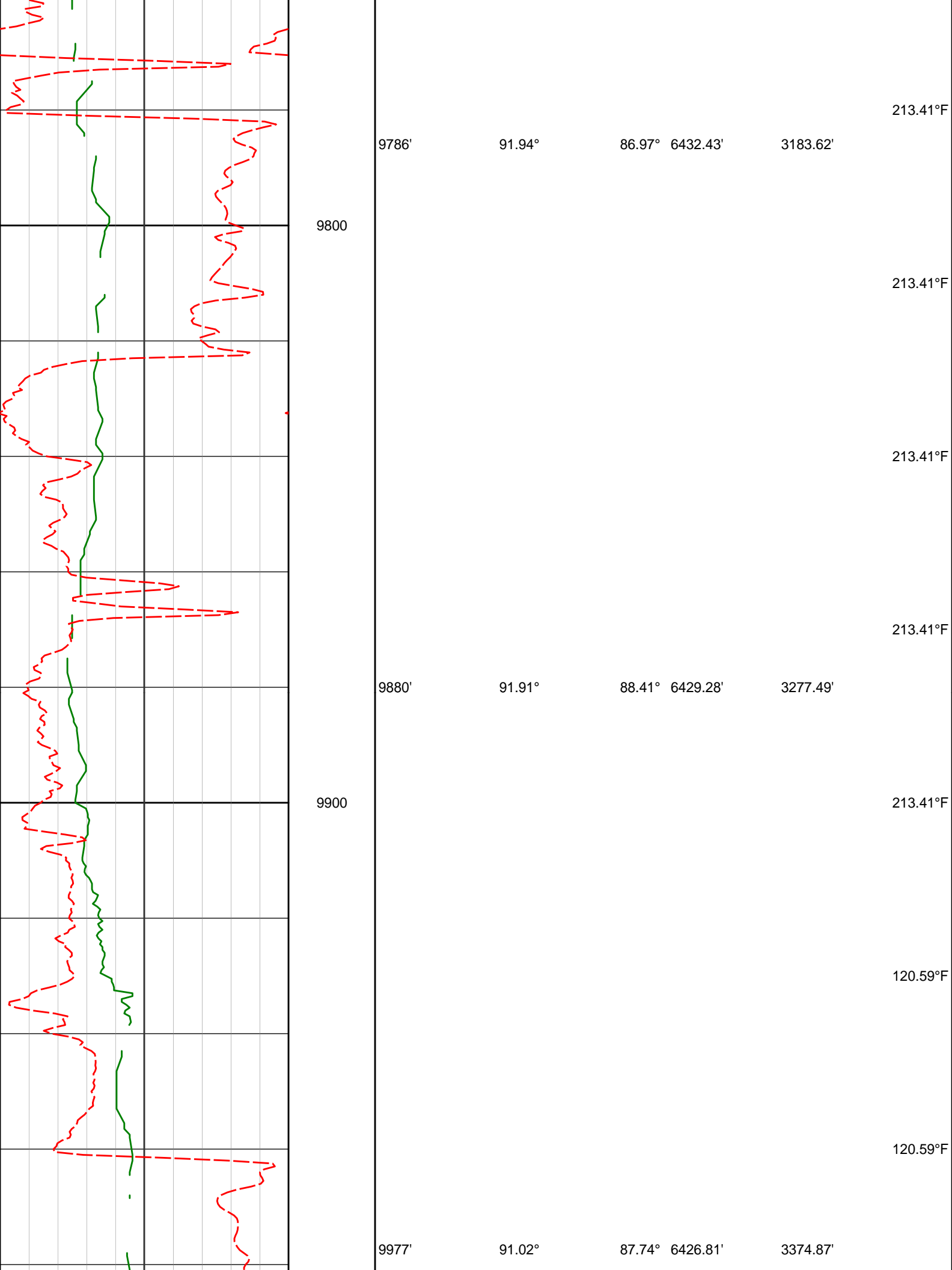
213.41°F

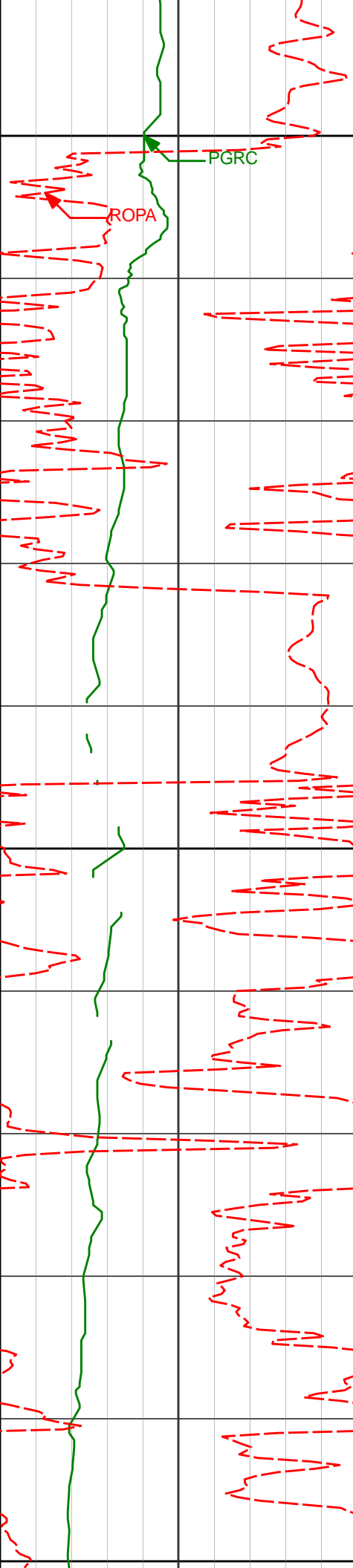
213.41°F

213.41°F

213.41°F

213.41°F





10000

10100

10200

10069'

10164'

89.01°

88.80°

88.49°

88.82°

6426.82'

6428.64'

3466.34'

3561.30'

209.19°F

209.19°F

209.19°F

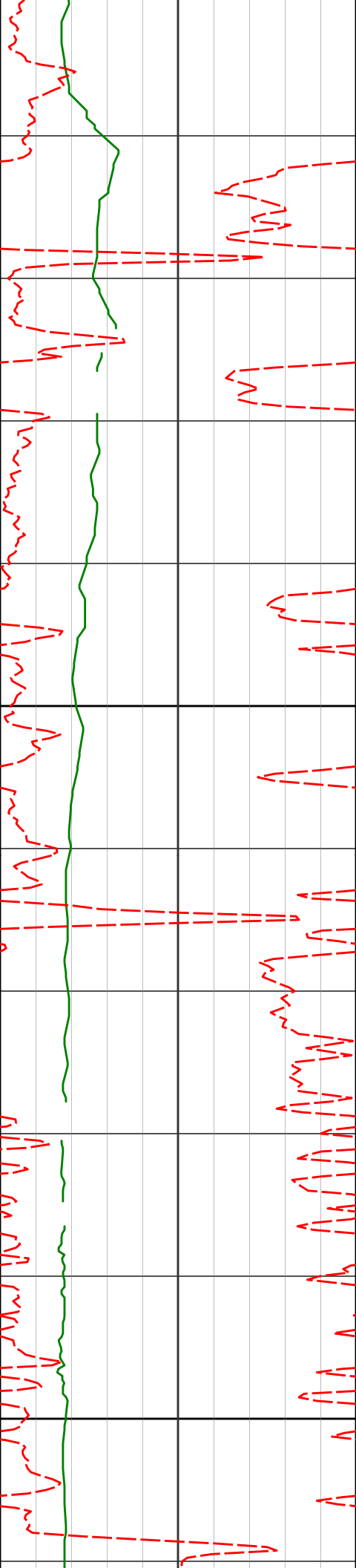
213.41°F

213.41°F

213.41°F

217.63°F

217.63°F



10256'

89.01°

88.65°

6430.40'

3653.26'

217.63°F

217.63°F

217.63°F

10300

217.63°F

10347'

90.25°

88.87°

6430.98'

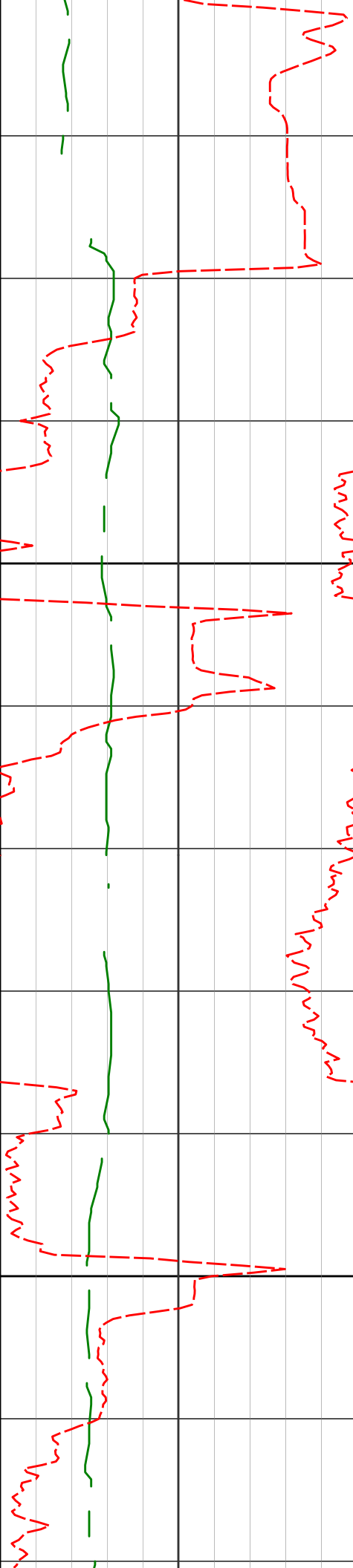
3744.23'

217.63°F

217.63°F

10400

217.63°F



10500

10600

10438'

89.51°

87.59° 6431.17'

3835.19'

217.63°F

221.84°F

221.84°F

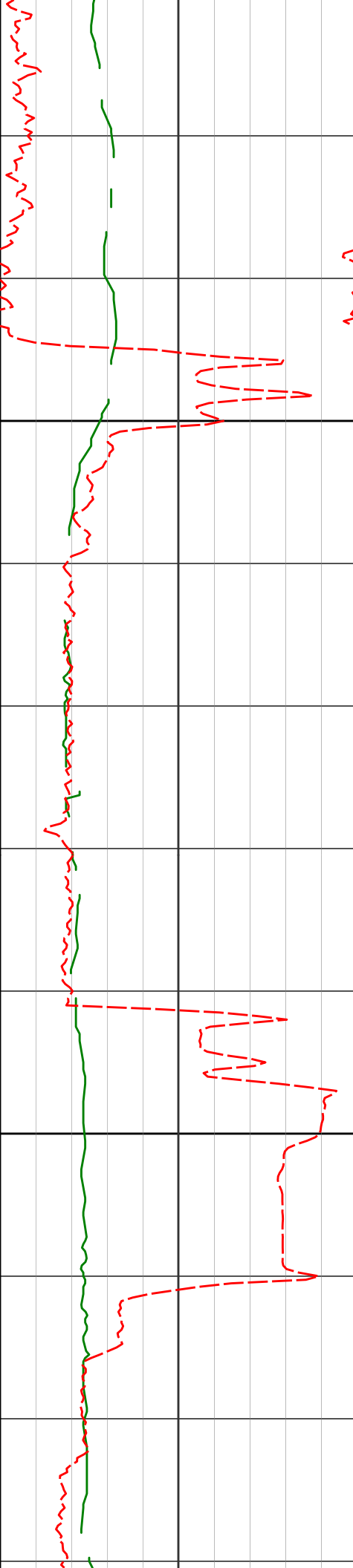
10622'

90.86°

88.48° 6430.58'

4019.07'

221.84°F



10700

10800

10713'

10804'

92.25°

91.64°

87.57° 6428.11'

87.40° 6425.02'

4109.98'

4200.84'

221.84°F

221.84°F

221.84°F

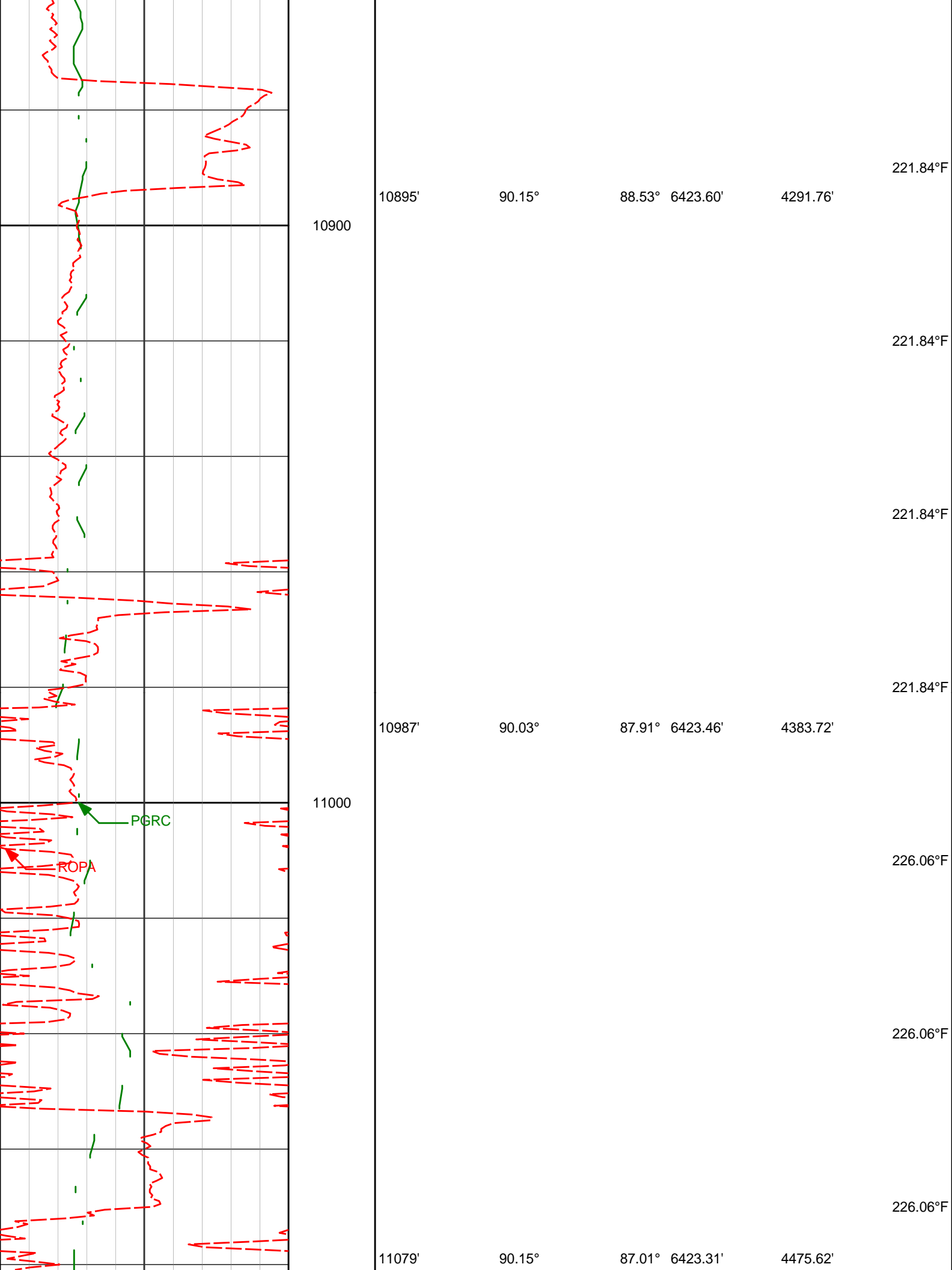
221.84°F

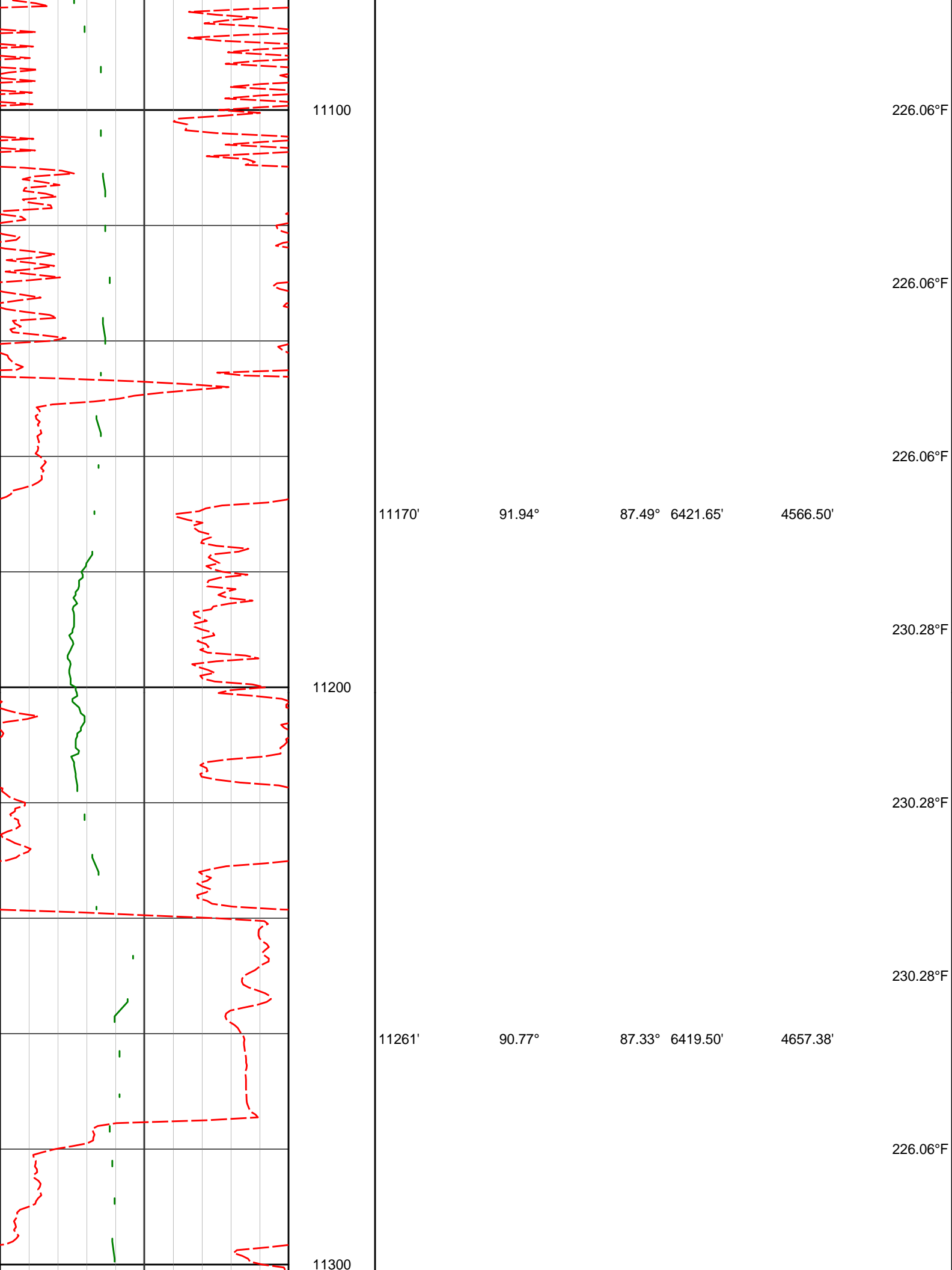
221.84°F

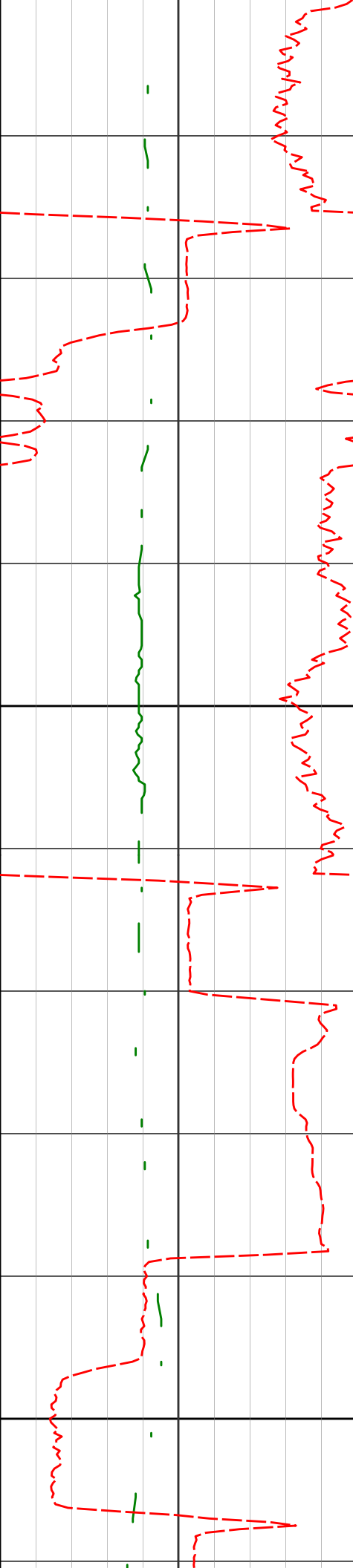
221.84°F

221.84°F

221.84°F







11400

11500

11353'

11445'

90.37°

90.06°

85.74° 6418.59'

85.61° 6418.24'

4749.20'

4840.93'

226.06°F

226.06°F

230.28°F

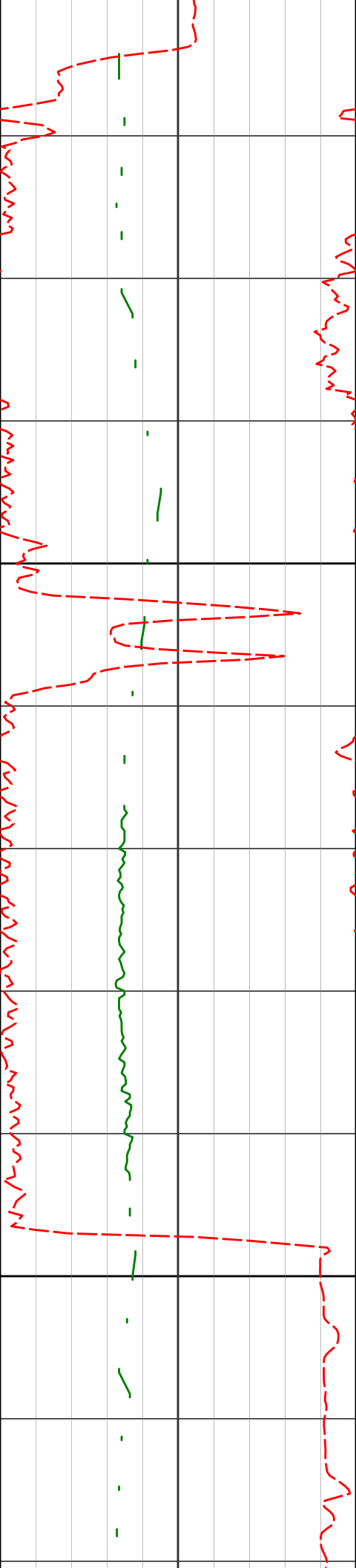
230.28°F

230.28°F

226.06°F

226.06°F

226.06°F



11600

11700

11536'

90.80°

87.01° 6417.56'

4931.74'

11627'

90.34°

85.78° 6416.65'

5022.55'

11719'

90.12°

87.65° 6416.28'

5114.39'

230.28°F

230.28°F

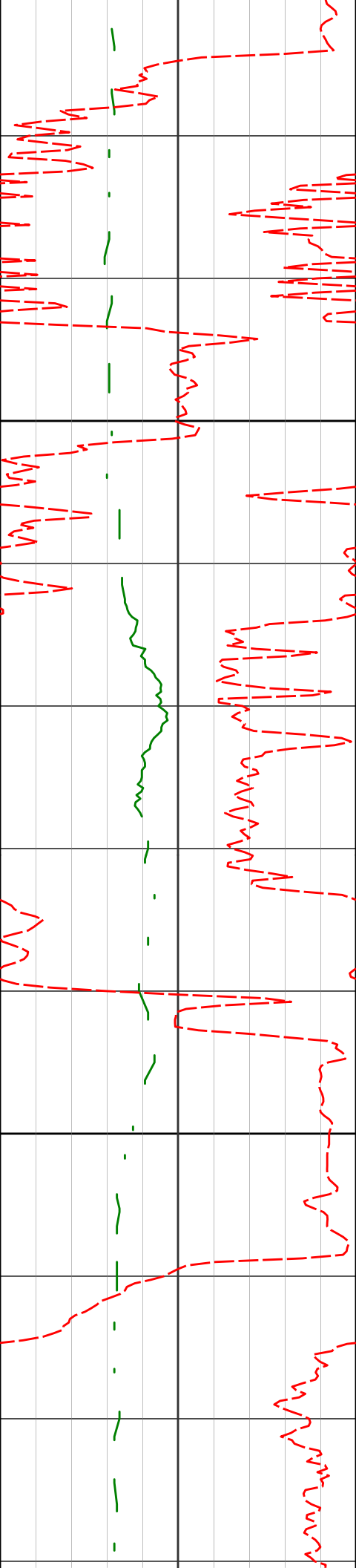
230.28°F

230.28°F

230.28°F

230.28°F

226.06°F



11800

11900

11811'

11903'

92.13°

91.54°

89.69° 6414.48'

90.12° 6411.53'

5206.34'

5298.29'

226.06°F

226.06°F

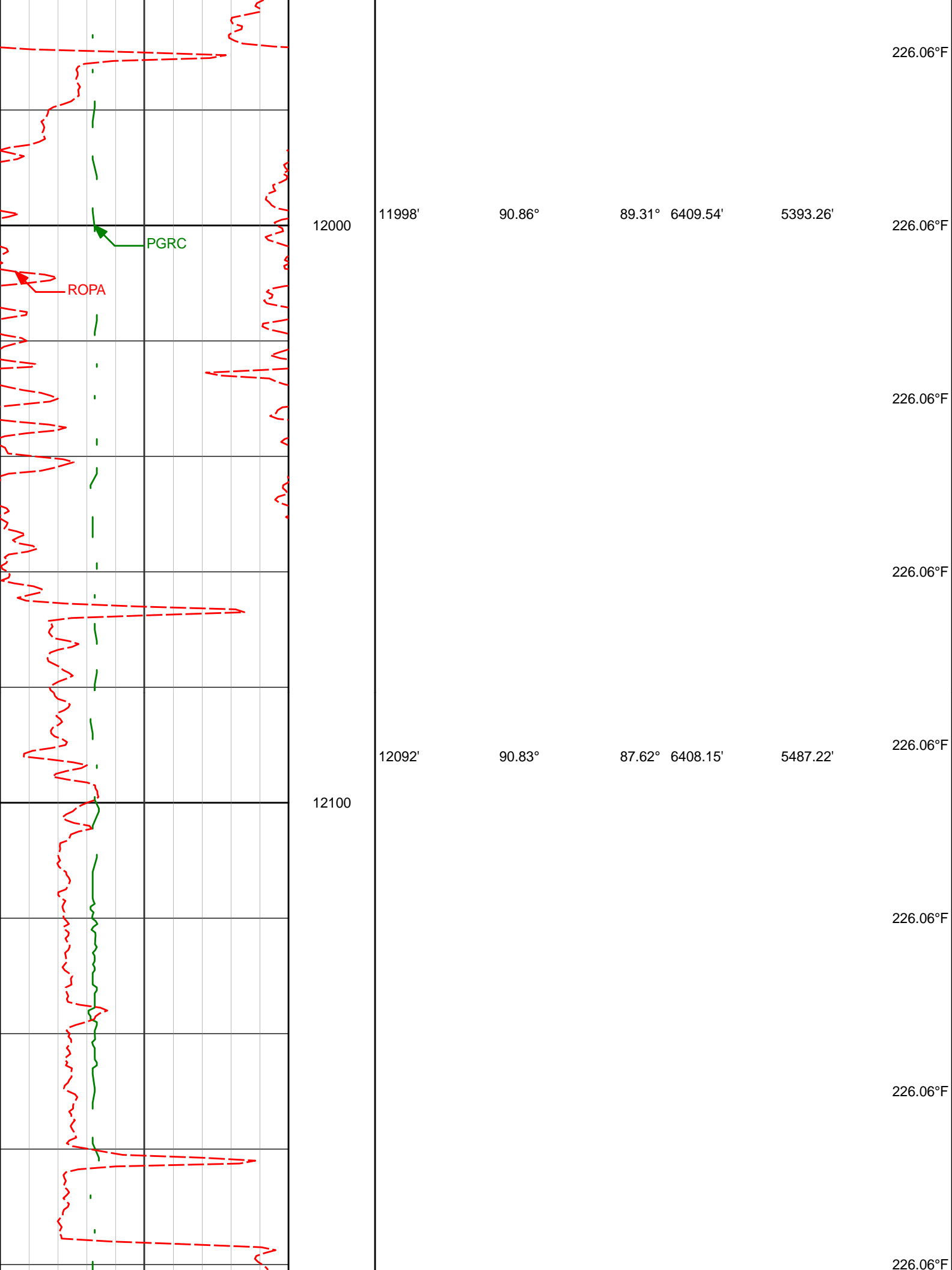
230.28°F

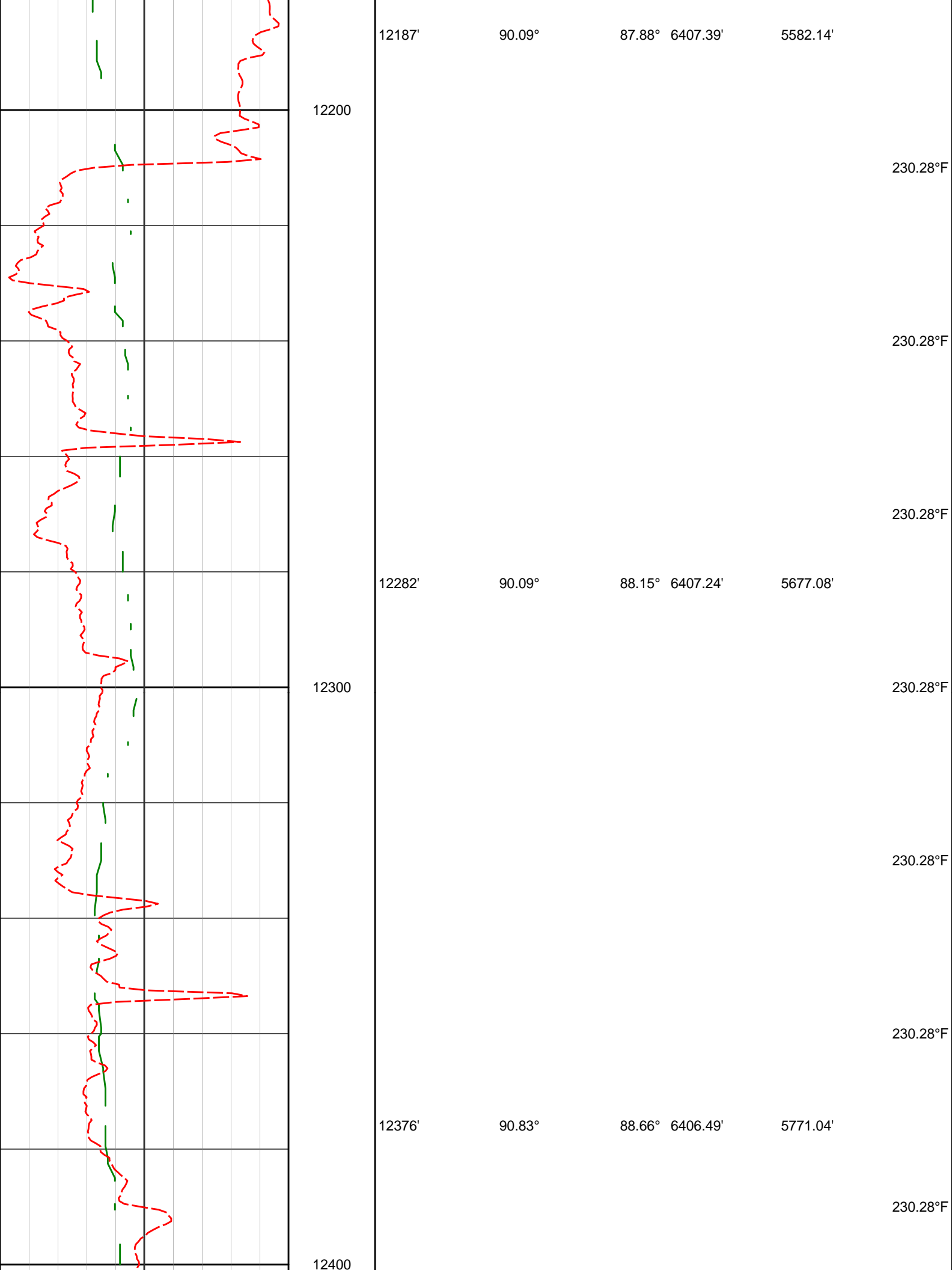
230.28°F

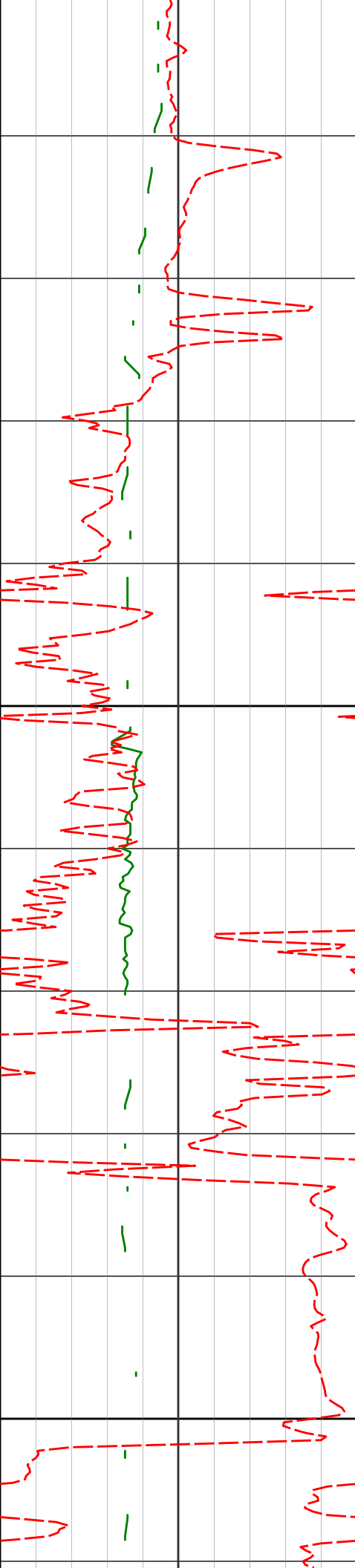
230.28°F

226.06°F

226.06°F







12500

12600

12471'

90.40°

86.51° 6405.47'

5865.94'

12566'

90.31°

86.40° 6404.88'

5960.75'

230.28°F

230.28°F

230.28°F

230.28°F

230.28°F

230.28°F

230.28°F



12700

12800

12660'

12755'

90.34°

90.96°

86.58° 6404.35'

87.05° 6403.27'

6054.57'

6149.42'

230.28°F

230.28°F

230.28°F

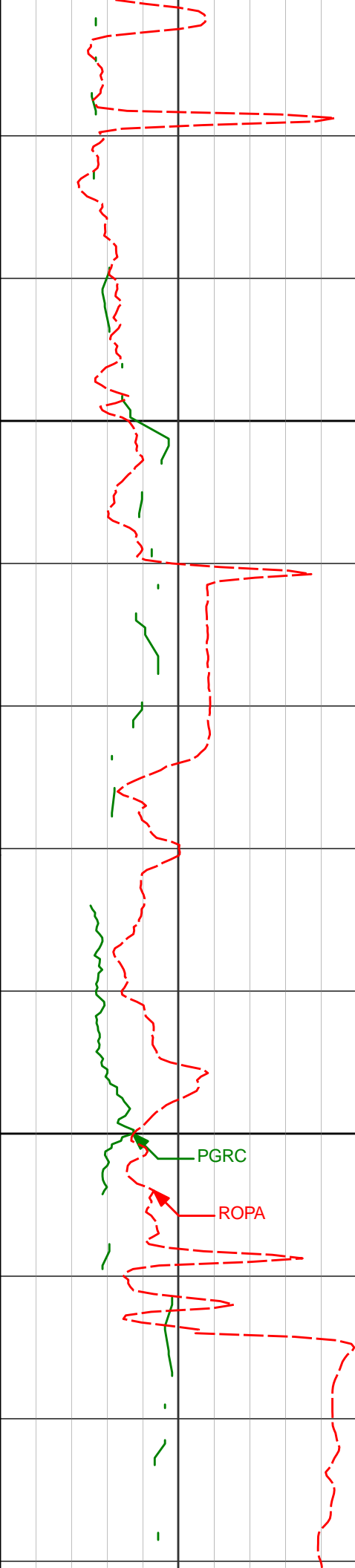
230.28°F

230.28°F

230.28°F

230.28°F

230.28°F



12900

13000

12850'

91.45°

89.60° 6401.27'

6244.35'

12945'

92.78°

89.21° 6397.76'

6339.27'

13039'

92.00°

89.83° 6393.84'

6433.19'

230.28°F

230.28°F

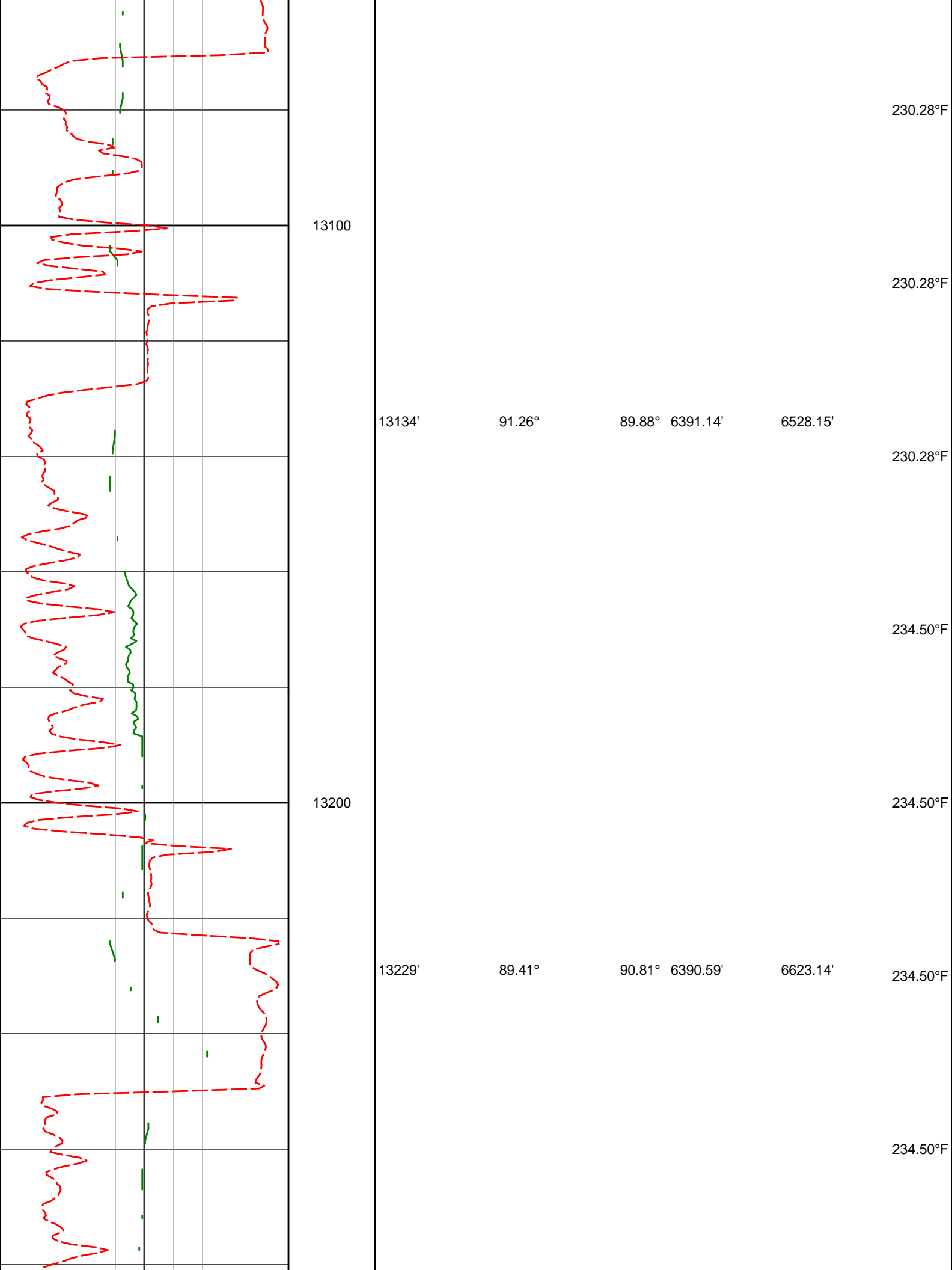
120.59°F

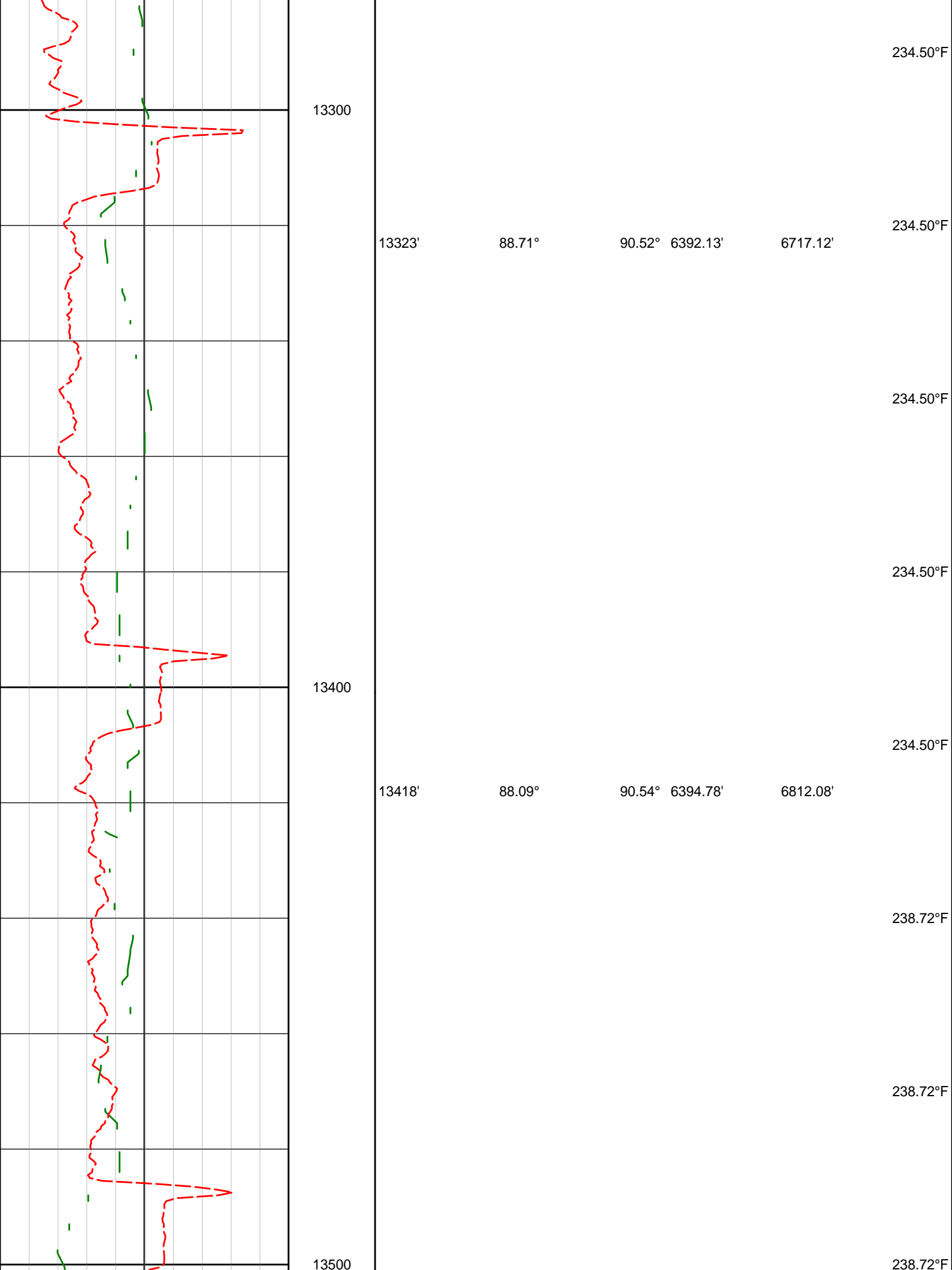
234.50°F

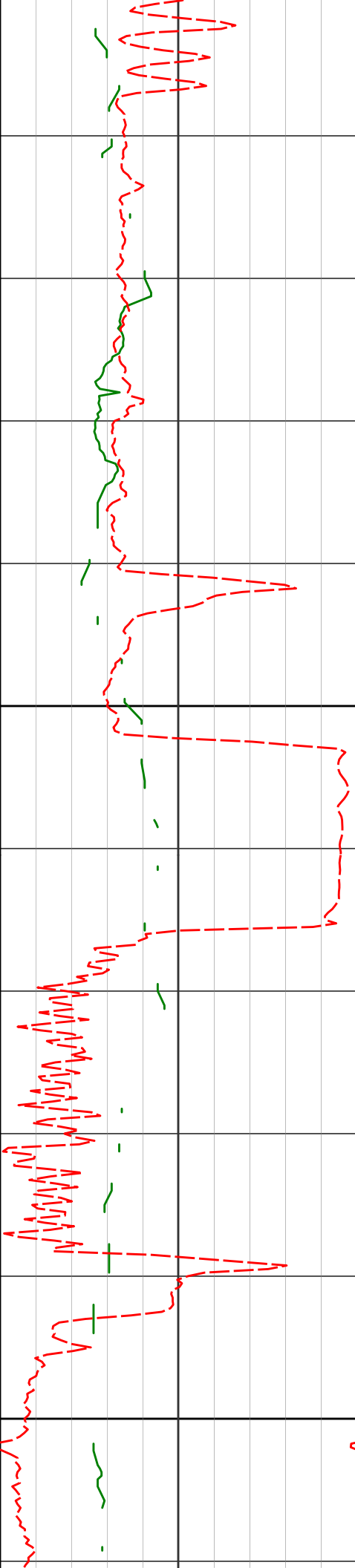
234.50°F

234.50°F

234.50°F







13513'

87.78°

89.76° 6398.21'

6907.02'

238.72°F

238.72°F

238.72°F

13600

13608'

88.67°

89.48° 6401.15'

7001.97'

238.72°F

234.50°F

234.50°F

13700

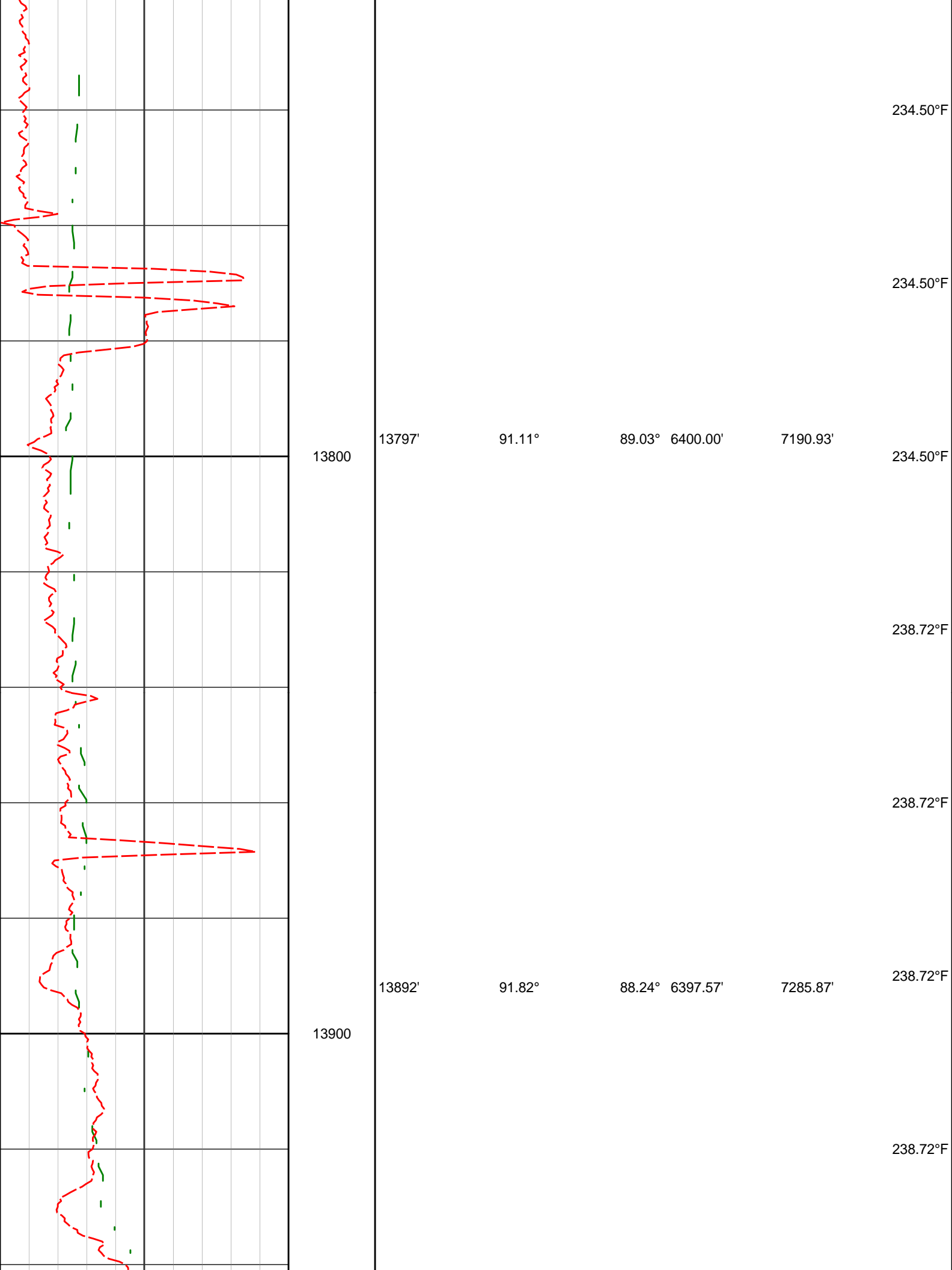
13702'

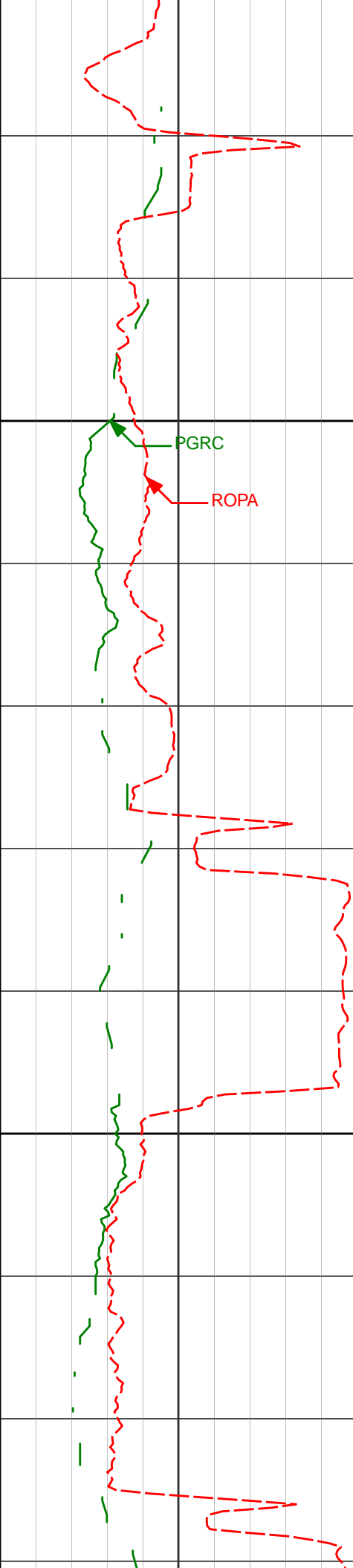
90.80°

89.52° 6401.58'

7095.96'

234.50°F





14000

14100

PGRC

ROPA

13987'

93.15°

88.51° 6393.45'

7380.74'

14081'

92.62°

88.22° 6388.72'

7474.58'

238.72°F

238.72°F

238.72°F

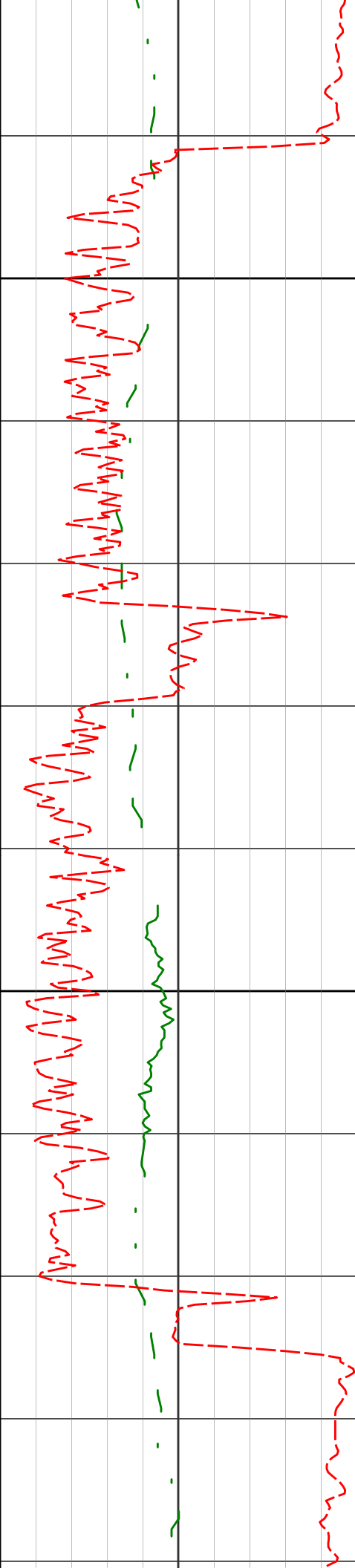
238.72°F

238.72°F

238.72°F

238.72°F

238.72°F



14200

14300

14365'

91.45°

87.52° 6379.25'

7758.24'

40.44°F

40.44°F

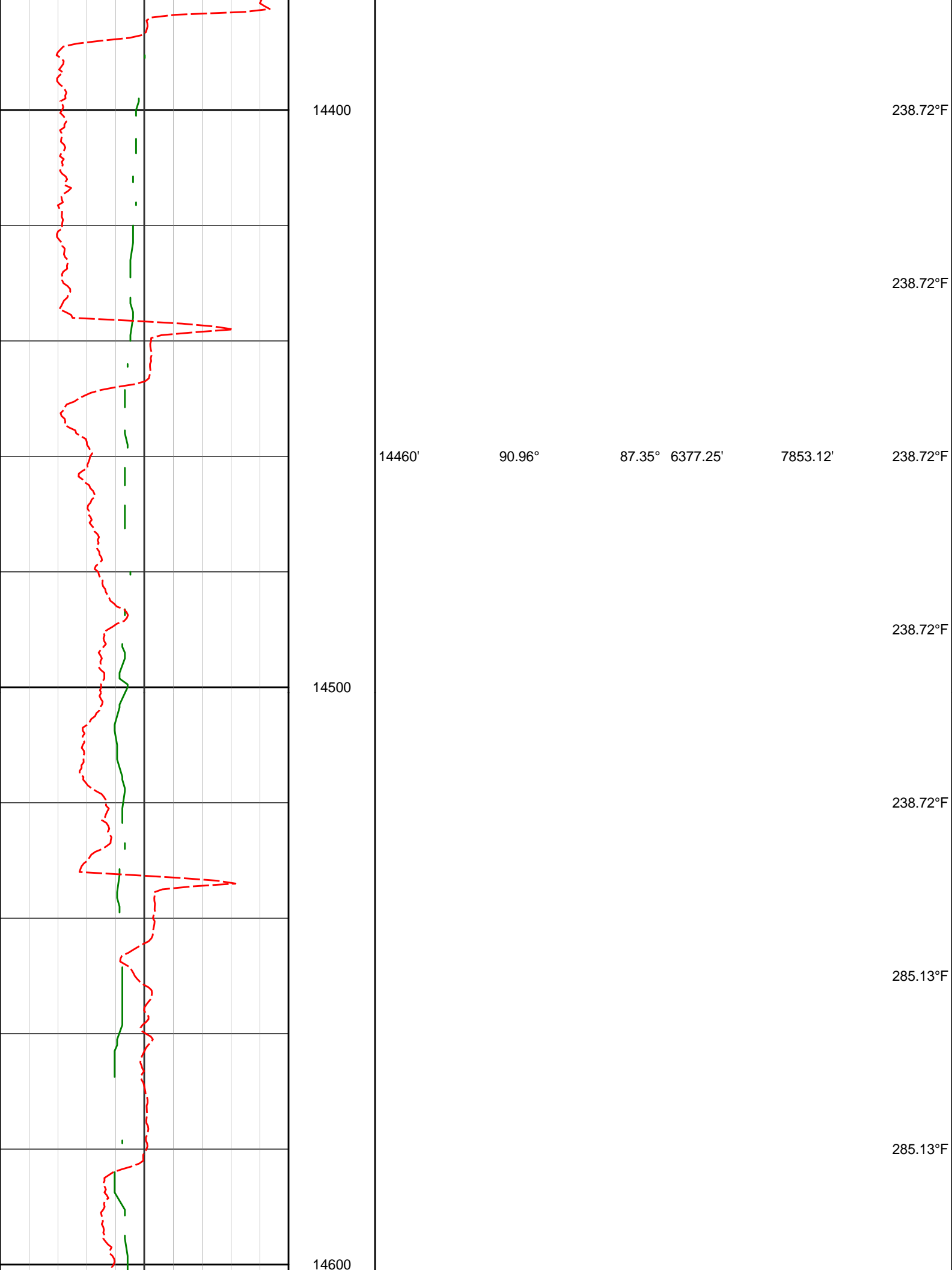
40.44°F

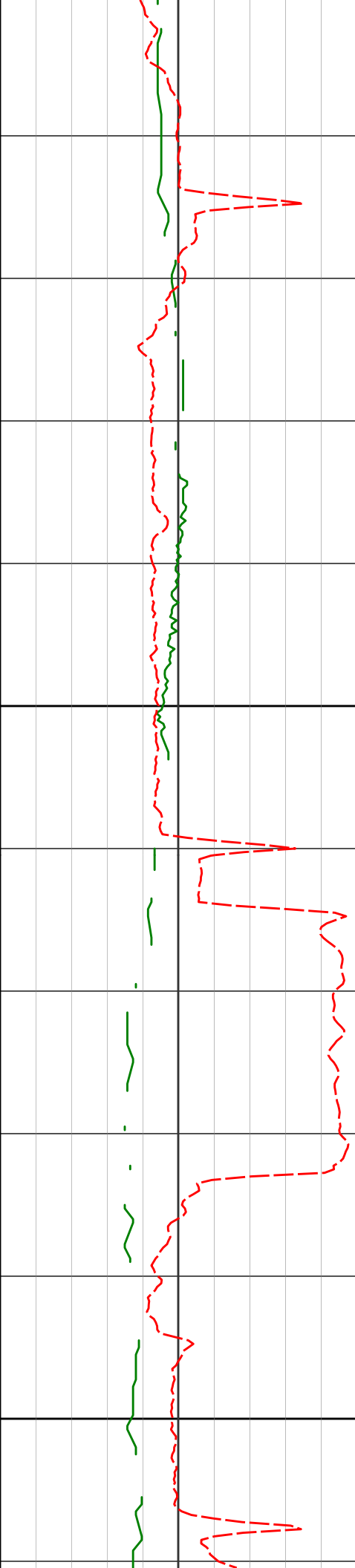
183.88°F

158.56°F

158.56°F

158.56°F





14700

14800

14650'

92.44°

87.13° 6371.93'

8042.85'

14745'

90.80°

87.26° 6369.24'

8137.69'

285.13°F

285.13°F

242.94°F

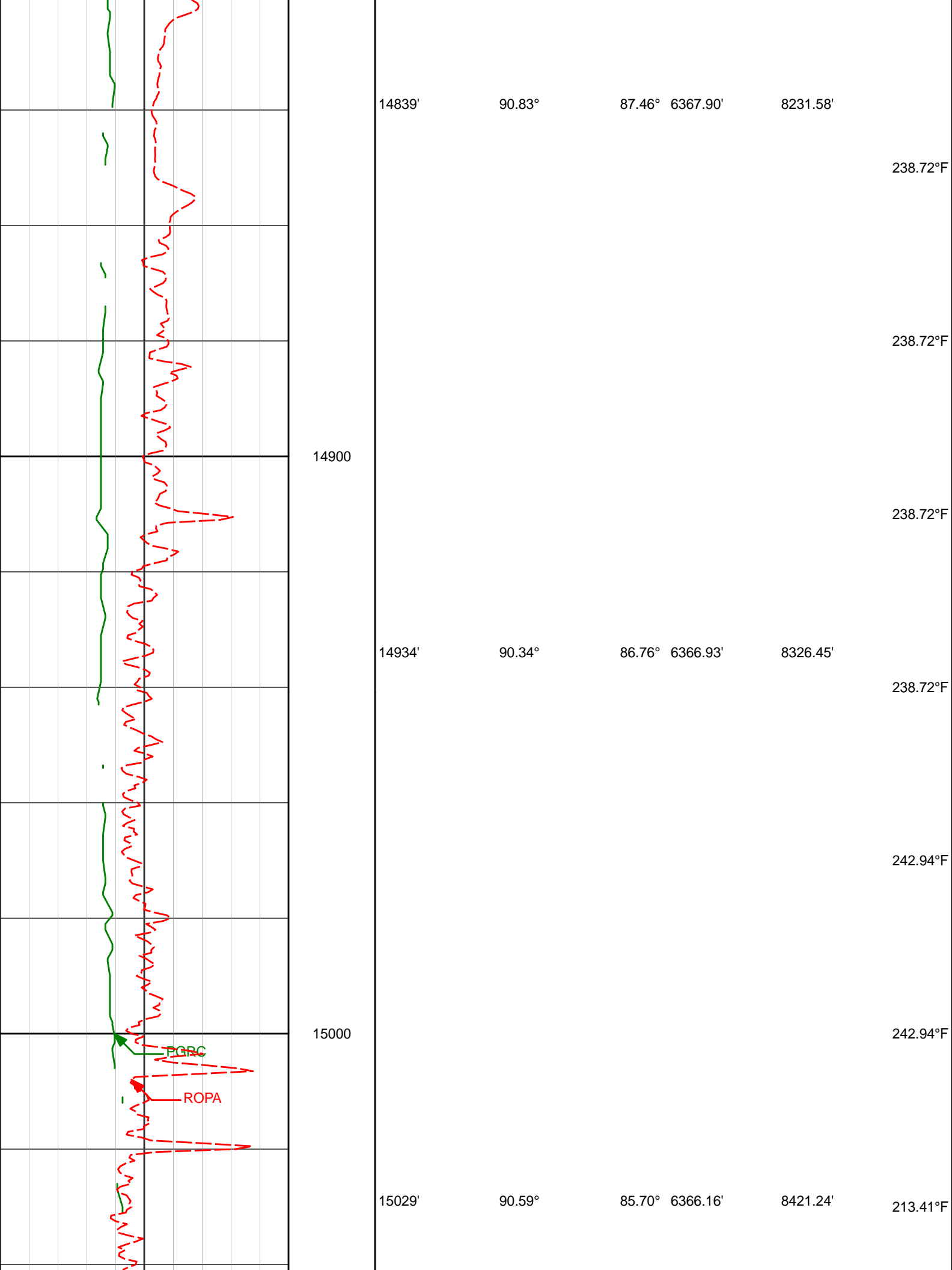
242.94°F

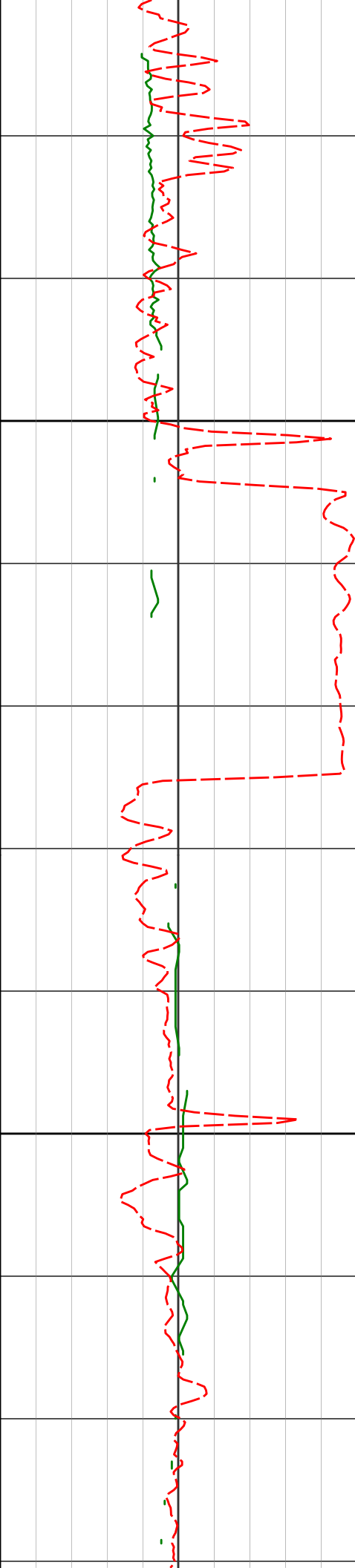
242.94°F

238.72°F

238.72°F

238.72°F





15100

15200

15124'

15218'

89.78°

89.78°

87.29°

87.54°

6365.86'

6366.22'

8516.05'

8609.96'

36.22°F

36.22°F

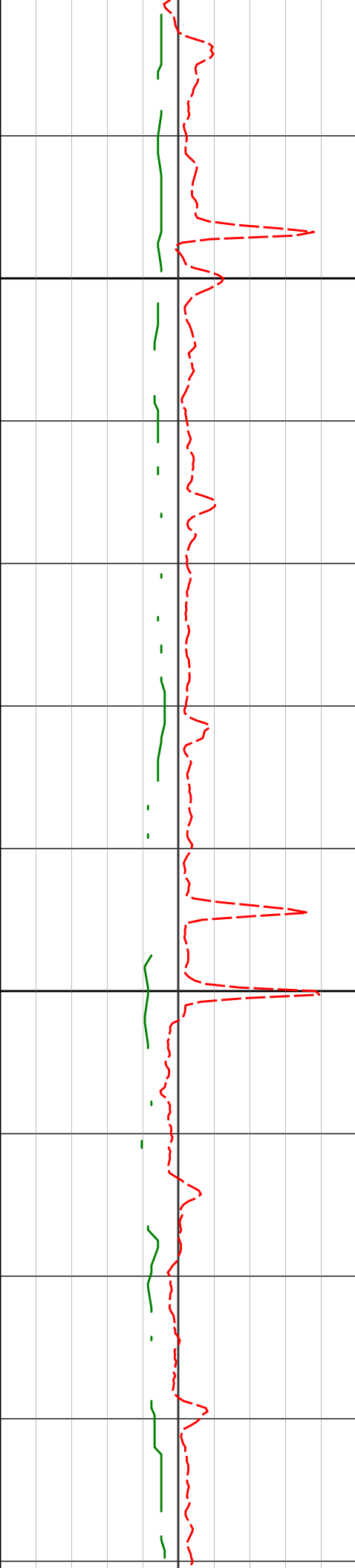
36.22°F

36.22°F

36.22°F

36.22°F

242.94°F



15300

15400

15313'

15408'

90.34°

90.80°

87.58° 6366.12'

87.56° 6365.17'

8704.87'

8799.78'

242.94°F

242.94°F

242.94°F

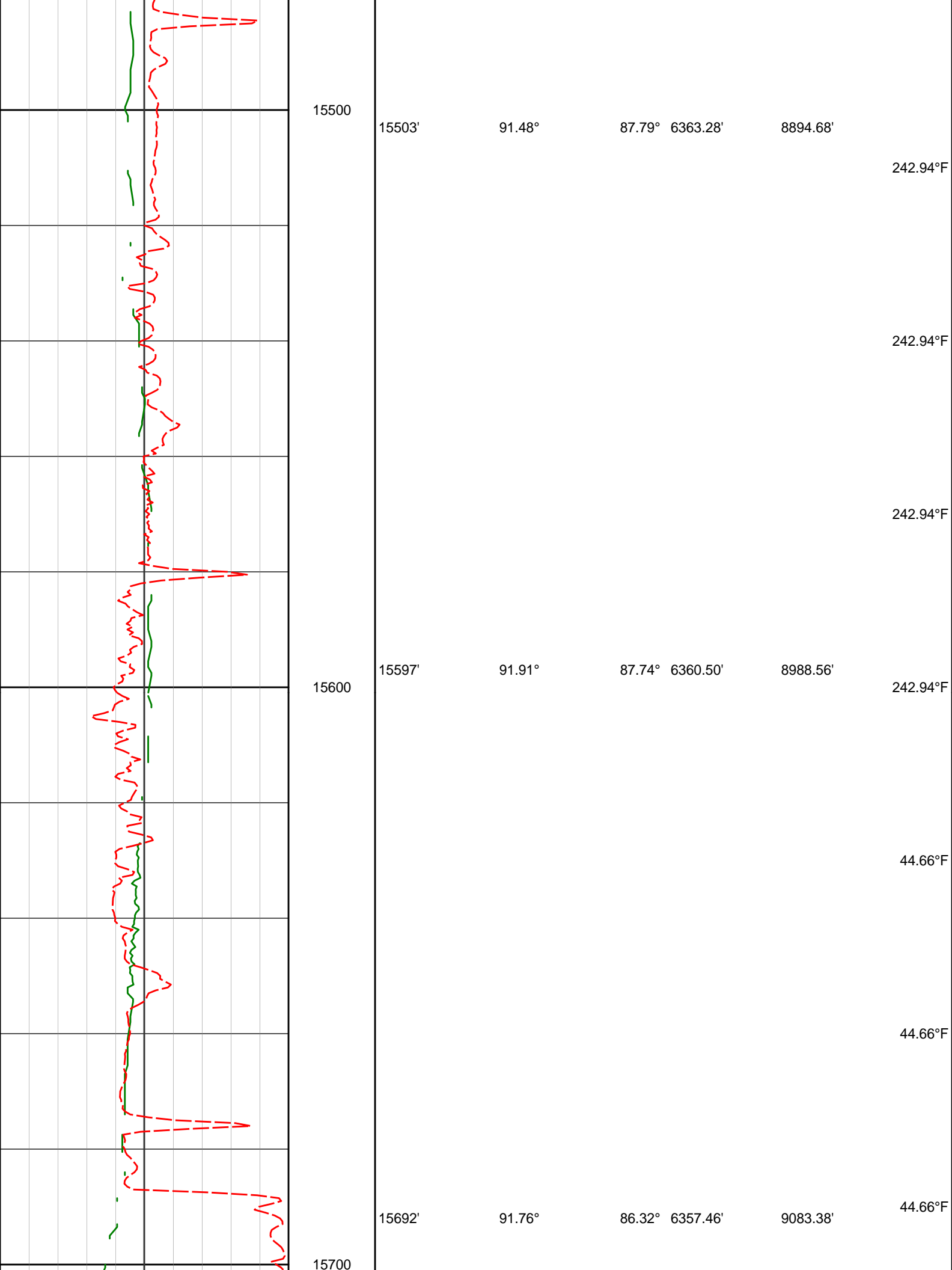
242.94°F

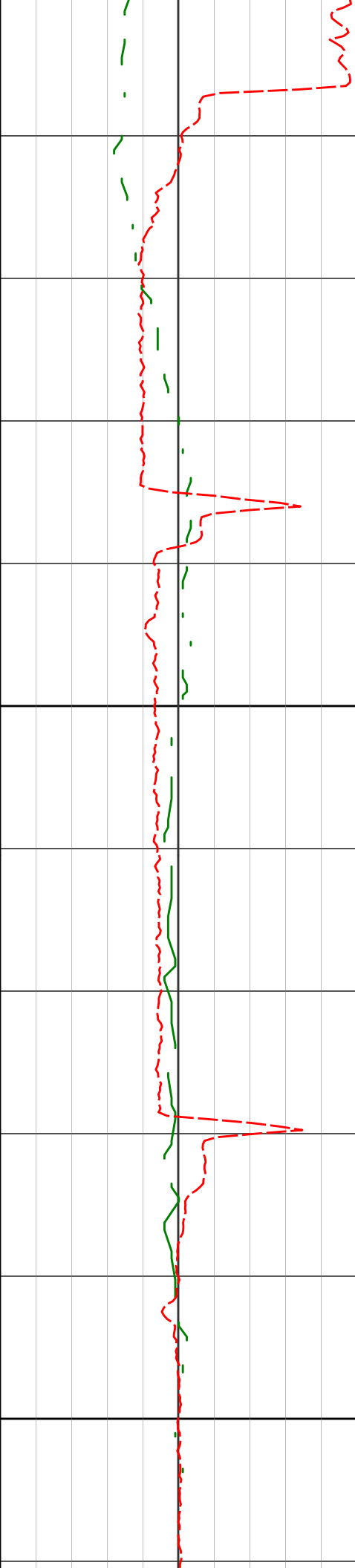
242.94°F

242.94°F

242.94°F

242.94°F





15800

15900

15787'

92.31°

86.15° 6354.09'

9178.11'

15894'

93.05°

85.46° 6349.08'

9284.71'

238.72°F

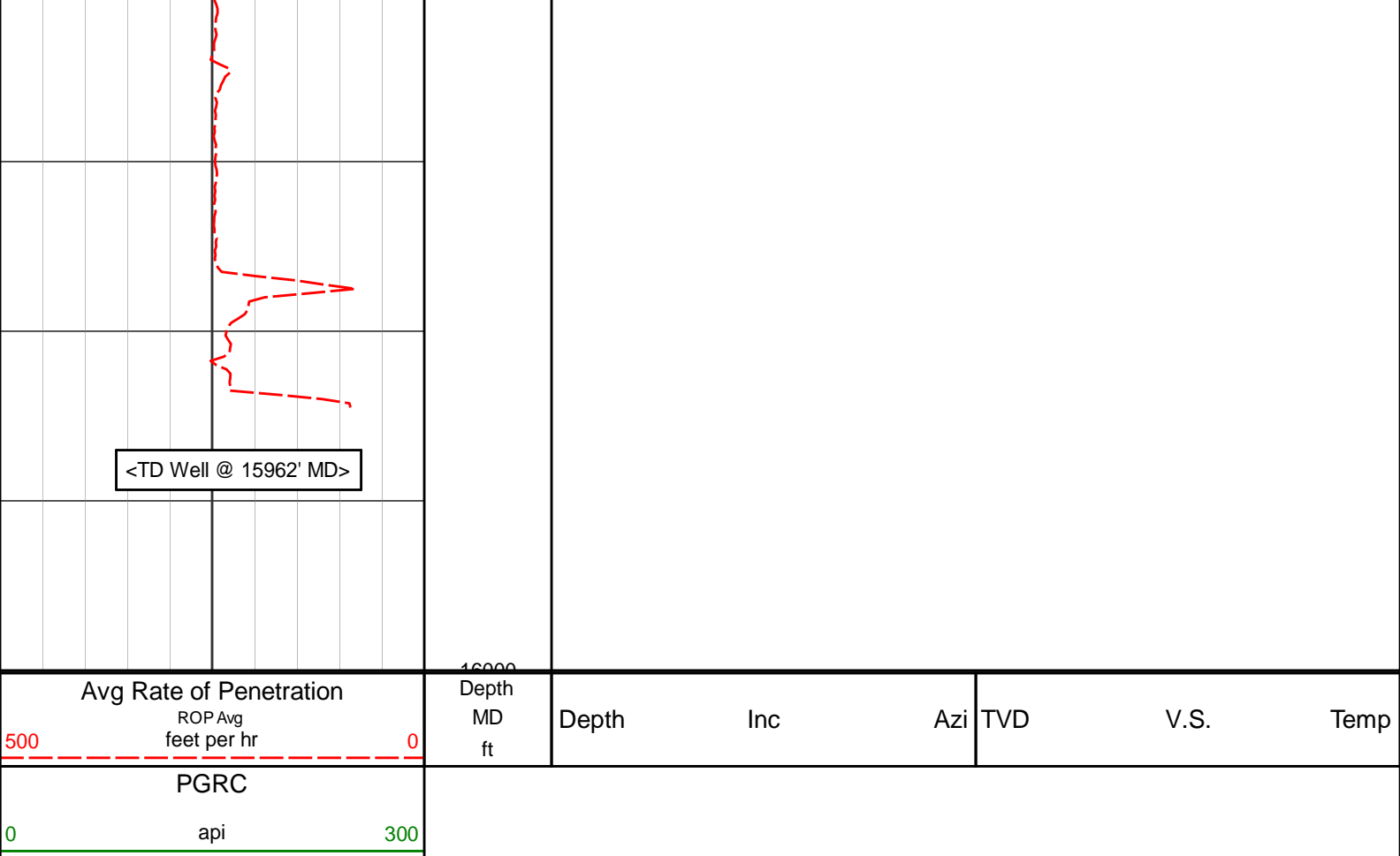
238.72°F

238.72°F

242.94°F

242.94°F

242.94°F



# DIRECTIONAL SURVEY REPORT

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
300.00	0.32	266.48	300.00	0.05 S	0.84 W	-0.84	0.11
637.00	0.67	266.48	636.99	0.23 S	3.74 W	-3.74	0.10
722.00	0.76	266.48	721.98	0.30 S	4.80 W	-4.80	0.11
815.00	0.75	267.27	814.97	0.36 S	6.03 W	-6.03	0.02
909.00	0.75	264.58	908.96	0.45 S	7.26 W	-7.26	0.04
1003.00	0.73	261.97	1002.95	0.59 S	8.46 W	-8.46	0.04
1097.00	0.76	264.88	1096.95	0.73 S	9.68 W	-9.68	0.05
1189.00	0.79	268.76	1188.94	0.80 S	10.91 W	-10.91	0.07
1280.00	0.71	273.09	1279.93	0.78 S	12.10 W	-12.10	0.10
1463.00	0.74	266.42	1462.92	0.79 S	14.41 W	-14.41	0.05
1555.00	3.36	230.32	1554.85	2.55 S	17.07 W	-17.07	3.04
1646.00	5.10	223.33	1645.60	7.20 S	21.90 W	-21.91	1.99
1737.00	5.00	223.64	1736.25	13.02 S	27.42 W	-27.42	0.12
1828.00	6.81	227.61	1826.76	19.52 S	34.14 W	-34.15	2.03
1920.00	6.84	225.69	1918.11	27.03 S	42.09 W	-42.10	0.25
2012.00	6.52	224.40	2009.48	34.58 S	49.66 W	-49.67	0.39
2103.00	8.15	231.41	2099.74	42.30 S	58.32 W	-58.32	2.04
2194.00	8.11	231.01	2189.82	50.36 S	68.35 W	-68.36	0.07
2286.00	7.80	230.08	2280.94	58.45 S	78.18 W	-78.19	0.37
2378.00	7.28	227.03	2372.14	66.43 S	87.23 W	-87.25	0.71
2469.00	8.95	225.25	2462.23	75.35 S	96.48 W	-96.50	1.86
2560.00	8.34	222.70	2552.19	85.18 S	105.99 W	-106.01	0.79
2652.00	8.09	221.98	2643.25	94.90 S	114.85 W	-114.86	0.30
2744.00	7.84	219.42	2734.36	104.56 S	123.16 W	-123.18	0.47

2836.00	9.08	225.33	2825.36	114.51 S	132.31 W	-132.33	1.65
2931.00	9.10	224.59	2919.17	125.14 S	142.92 W	-142.94	0.12
3025.00	9.15	226.62	3011.98	135.57 S	153.57 W	-153.59	0.35
3120.00	9.09	229.03	3105.78	145.68 S	164.73 W	-164.76	0.41
3215.00	8.25	226.77	3199.69	155.27 S	175.37 W	-175.39	0.95
3309.00	7.55	223.60	3292.80	164.36 S	184.54 W	-184.57	0.88
3404.00	7.06	223.47	3387.03	173.11 S	192.86 W	-192.89	0.51
3499.00	8.47	232.34	3481.16	181.62 S	202.41 W	-202.44	1.95
3593.00	8.89	232.86	3574.08	190.24 S	213.68 W	-213.71	0.45
3783.00	9.27	233.97	3761.70	208.10 S	237.76 W	-237.79	0.22
3878.00	8.95	234.46	3855.50	216.90 S	249.96 W	-249.99	0.35
3972.00	8.82	232.68	3948.37	225.51 S	261.63 W	-261.67	0.32
4067.00	8.43	230.93	4042.30	234.32 S	272.83 W	-272.87	0.49
4162.00	7.96	228.99	4136.33	243.03 S	283.20 W	-283.25	0.57
4256.00	7.33	223.80	4229.49	251.62 S	292.27 W	-292.31	1.00
4351.00	8.51	231.19	4323.59	260.40 S	301.94 W	-301.98	1.65
4446.00	8.99	234.64	4417.48	269.10 S	313.47 W	-313.52	0.74
4541.00	8.20	230.68	4511.42	277.69 S	324.76 W	-324.81	1.04
4635.00	7.73	230.03	4604.51	286.00 S	334.80 W	-334.85	0.50
4730.00	7.65	227.42	4698.65	294.39 S	344.36 W	-344.41	0.38
4825.00	7.35	224.49	4792.84	303.01 S	353.27 W	-353.33	0.51
4920.00	7.16	223.42	4887.08	311.64 S	361.60 W	-361.66	0.25
5014.00	6.64	223.13	4980.40	319.86 S	369.34 W	-369.40	0.56
5109.00	6.10	219.68	5074.81	327.75 S	376.32 W	-376.38	0.69
5204.00	4.05	235.11	5169.44	333.56 S	382.30 W	-382.36	2.57
5298.00	2.00	233.33	5263.30	336.44 S	386.34 W	-386.40	2.18
5393.00	1.42	314.59	5358.27	336.60 S	388.51 W	-388.57	2.39
5488.00	1.42	308.68	5453.24	335.04 S	390.27 W	-390.33	0.15
5583.00	1.40	299.56	5548.21	333.74 S	392.19 W	-392.25	0.24
5678.00	1.27	293.83	5643.19	332.74 S	394.16 W	-394.22	0.19
5772.00	1.29	300.16	5737.17	331.79 S	396.03 W	-396.09	0.15
5867.00	1.08	72.77	5832.16	330.99 S	396.10 W	-396.16	2.28
5962.00	12.02	68.07	5926.39	327.02 S	386.04 W	-386.10	11.52
6057.00	20.75	75.80	6017.46	319.18 S	360.50 W	-360.56	9.46
6151.00	31.34	81.62	6101.81	311.51 S	320.05 W	-320.11	11.58
6246.00	40.29	87.80	6178.79	306.72 S	264.78 W	-264.84	10.16
6341.00	48.99	91.05	6246.33	306.20 S	198.12 W	-198.17	9.46
6436.00	49.41	89.73	6308.41	306.69 S	126.21 W	-126.26	1.14
6530.00	58.66	88.48	6363.55	305.46 S	50.22 W	-50.28	9.91
6625.00	65.56	87.37	6407.96	302.40 S	33.64 E	33.58	7.33
6720.00	77.29	84.74	6438.18	296.14 S	123.30 E	123.25	12.62
6779.00	84.26	83.78	6447.63	290.31 S	181.21 E	181.16	11.93
6950.00	87.07	91.02	6460.57	282.61 S	351.41 E	351.37	4.53
7044.00	88.15	91.79	6464.49	284.91 S	445.30 E	445.25	1.41
7139.00	89.38	90.73	6466.54	287.00 S	540.25 E	540.20	1.71
7234.00	89.57	91.47	6467.41	288.82 S	635.23 E	635.18	0.80
7328.00	90.40	90.36	6467.44	290.32 S	729.22 E	729.17	1.47
7423.00	92.28	91.90	6465.21	292.19 S	824.17 E	824.12	2.56
7518.00	91.14	90.22	6462.38	293.95 S	919.10 E	919.05	2.14
7612.00	92.37	89.51	6459.50	293.73 S	1013.06 E	1013.00	1.51
7707.00	91.17	88.15	6456.57	291.79 S	1107.99 E	1107.94	1.91
7801.00	92.40	87.16	6453.64	287.95 S	1201.86 E	1201.81	1.68
7896.00	90.55	87.10	6451.19	283.19 S	1296.71 E	1296.66	1.95
7991.00	89.85	87.79	6450.86	278.96 S	1391.61 E	1391.56	1.03
8086.00	91.36	87.62	6449.86	275.15 S	1486.52 E	1486.48	1.60
8180.00	91.26	88.36	6447.71	271.86 S	1580.44 E	1580.39	0.79
8275.00	91.97	91.31	6445.03	271.58 S	1675.39 E	1675.34	3.19
8369.00	89.41	90.30	6443.90	272.90 S	1769.37 E	1769.32	2.93
8464.00	89.62	89.02	6444.70	272.34 S	1864.36 E	1864.31	1.37
8558.00	91.39	89.36	6443.88	271.01 S	1958.34 E	1958.30	1.92
8652.00	90.40	87.55	6442.41	268.48 S	2052.29 E	2052.25	2.19
8747.00	91.88	88.34	6440.52	265.07 S	2147.21 E	2147.16	1.77
8841.00	90.92	86.58	6438.22	260.91 S	2241.08 E	2241.04	2.13
8936.00	90.40	86.29	6437.13	255.00 S	2335.89 E	2335.85	0.63
9030.00	90.31	85.59	6436.54	248.34 S	2429.66 E	2429.61	0.75
9125.00	90.25	85.64	6436.08	241.08 S	2524.38 E	2524.33	0.08
9219.00	89.78	85.49	6436.05	233.81 S	2618.09 E	2618.05	0.52
9313.00	90.93	86.10	6435.47	226.92 S	2711.84 E	2711.80	1.38
9408.00	89.32	86.25	6435.26	220.58 S	2806.62 E	2806.58	1.70
9502.00	89.11	86.16	6436.55	214.36 S	2900.41 E	2900.37	0.24
9597.00	90.06	85.90	6437.24	207.78 S	2995.18 E	2995.14	1.04
9691.00	91.91	85.74	6435.63	200.93 S	3088.91 E	3088.87	1.98
9786.00	91.94	86.93	6432.43	194.86 S	3183.66 E	3183.62	1.25
9880.00	91.91	88.38	6429.28	191.02 S	3277.52 E	3277.49	1.54
9975.00	91.02	87.70	6426.85	187.77 S	3372.44 E	3372.40	1.18

10069.00	89.01	88.45	6426.82	184.61 S	3466.38 E	3466.34	2.28
10164.00	88.80	88.79	6428.64	182.33 S	3561.33 E	3561.30	0.42
10256.00	89.01	88.62	6430.40	180.25 S	3653.29 E	3653.26	0.29
10347.00	90.25	88.84	6430.98	178.23 S	3744.27 E	3744.23	1.38
10438.00	89.51	87.56	6431.17	175.37 S	3835.22 E	3835.19	1.62
10622.00	90.86	88.45	6430.58	168.97 S	4019.10 E	4019.07	0.88
10713.00	92.25	87.55	6428.11	165.79 S	4110.01 E	4109.98	1.82
10804.00	91.64	87.37	6425.02	161.76 S	4200.87 E	4200.84	0.70
10895.00	90.15	88.50	6423.60	158.48 S	4291.79 E	4291.76	2.05
10987.00	90.03	87.87	6423.46	155.57 S	4383.74 E	4383.72	0.70
11079.00	90.15	86.98	6423.31	151.44 S	4475.65 E	4475.62	0.98
11170.00	91.94	87.46	6421.65	147.03 S	4566.52 E	4566.50	2.04
11261.00	90.77	87.29	6419.50	142.86 S	4657.40 E	4657.38	1.30
11353.00	90.37	85.71	6418.59	137.24 S	4749.22 E	4749.20	1.77
11445.00	90.06	85.57	6418.24	130.25 S	4840.96 E	4840.93	0.37
11536.00	90.80	86.98	6417.56	124.34 S	4931.76 E	4931.74	1.75
11627.00	90.34	85.74	6416.65	118.56 S	5022.57 E	5022.55	1.45
11719.00	90.12	87.62	6416.28	113.23 S	5114.41 E	5114.39	2.06
11811.00	92.13	89.65	6414.48	111.04 S	5206.35 E	5206.34	3.10
11903.00	91.54	90.08	6411.53	110.82 S	5298.31 E	5298.29	0.79
11998.00	90.86	89.28	6409.54	110.29 S	5393.28 E	5393.26	1.11
12092.00	90.83	87.59	6408.15	107.73 S	5487.23 E	5487.22	1.80
12187.00	90.09	87.85	6407.39	103.95 S	5582.16 E	5582.14	0.83
12282.00	90.09	88.12	6407.24	100.61 S	5677.10 E	5677.08	0.28
12376.00	90.83	88.63	6406.49	97.94 S	5771.05 E	5771.04	0.96
12471.00	90.40	86.47	6405.47	93.88 S	5865.96 E	5865.94	2.32
12566.00	90.31	86.36	6404.88	87.94 S	5960.77 E	5960.75	0.15
12660.00	90.34	86.54	6404.35	82.12 S	6054.59 E	6054.57	0.19
12755.00	90.96	87.01	6403.27	76.78 S	6149.43 E	6149.42	0.82
12850.00	91.45	89.57	6401.27	73.94 S	6244.36 E	6244.35	2.74
12945.00	92.78	89.18	6397.76	72.91 S	6339.29 E	6339.27	1.46
13039.00	92.00	89.79	6393.84	72.06 S	6433.20 E	6433.19	1.05
13134.00	91.26	89.84	6391.14	71.76 S	6528.16 E	6528.15	0.78
13229.00	89.41	90.77	6390.59	72.26 S	6623.15 E	6623.14	2.18
13323.00	88.71	90.48	6392.13	73.29 S	6717.13 E	6717.12	0.81
13418.00	88.09	90.51	6394.78	74.11 S	6812.09 E	6812.08	0.65
13513.00	87.78	89.72	6398.21	74.30 S	6907.03 E	6907.02	0.89
13608.00	88.67	89.44	6401.15	73.60 S	7001.98 E	7001.97	0.98
13702.00	90.80	89.49	6401.58	72.72 S	7095.97 E	7095.96	2.27
13797.00	91.11	88.99	6400.00	71.46 S	7190.95 E	7190.93	0.62
13892.00	91.82	88.21	6397.57	69.14 S	7285.89 E	7285.87	1.11
13987.00	93.15	88.47	6393.45	66.39 S	7380.75 E	7380.74	1.43
14081.00	92.62	88.19	6388.72	63.66 S	7474.59 E	7474.58	0.64
14176.00	91.51	87.97	6385.30	60.48 S	7569.48 E	7569.47	1.19
14271.00	92.19	87.94	6382.23	57.09 S	7664.37 E	7664.36	0.72
14365.00	91.45	87.49	6379.25	53.34 S	7758.24 E	7758.24	0.92
14460.00	90.96	87.32	6377.25	49.04 S	7853.13 E	7853.12	0.55
14555.00	91.51	87.69	6375.20	44.91 S	7948.01 E	7948.01	0.70
14650.00	92.44	87.09	6371.93	40.58 S	8042.86 E	8042.85	1.16
14745.00	90.80	87.22	6369.24	35.87 S	8137.70 E	8137.69	1.73
14839.00	90.83	87.42	6367.90	31.48 S	8231.59 E	8231.58	0.22
14934.00	90.34	86.72	6366.93	26.62 S	8326.46 E	8326.45	0.90
15029.00	90.59	85.67	6366.16	20.32 S	8421.24 E	8421.24	1.14
15124.00	89.78	87.25	6365.86	14.45 S	8516.06 E	8516.05	1.87
15218.00	89.78	87.51	6366.22	10.15 S	8609.96 E	8609.96	0.28
15313.00	90.34	87.55	6366.12	6.06 S	8704.87 E	8704.87	0.59
15408.00	90.80	87.53	6365.17	1.98 S	8799.78 E	8799.78	0.48
15503.00	91.48	87.76	6363.28	1.92 N	8894.68 E	8894.68	0.76
15597.00	91.91	87.70	6360.50	5.64 N	8988.56 E	8988.56	0.46
15692.00	91.76	86.28	6357.46	10.63 N	9083.38 E	9083.38	1.50
15787.00	92.31	86.12	6354.09	16.92 N	9178.11 E	9178.11	0.60
15894.00	93.05	85.43	6349.08	24.79 N	9284.70 E	9284.71	0.95
15962.00	93.05	85.43	6345.46	30.20 N	9352.39 E	9352.39	0.00

CALCULATION BASED ON MINIMUM CURVATURE METHOD

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

VERTICAL SECTION RELATIVE TO WELL HEAD  
VERTICAL SECTION IS COMPUTED ALONG A DIRECTION OF 89.99 DEGREES (GRID)  
A TOTAL CORRECTION OF 7.32 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.  
HORIZONTAL DISPLACEMENT(CLOSURE) AT 15962.00 FEET  
IS 9352.44 FEET ALONG 89.81 DEGREES (GRID)

Surveys at 300 ft and 637 ft are interpolated between surface and first survey at 722 ft.

Run 200 Gamma Data presented is in Realtime

Last survey is a projection to TD

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