



WELL INFORMATION					
MWD Run Number	100	200	300		
Date run completed	19-Mar-15	20-Mar-15	24-Mar-15		
Rig Bit Number	2	3	4		
Bit Size (in)	8.750	8.750	6.125		
Tool Nominal OD (in)	6.790	6.790	4.780		
Log Start Depth (MD, ft)	934.00	6,137.00	7,019.00		
Log End Depth (MD, ft)	6,137.00	7,019.00	16,228.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	18-Mar-15 17:58	20-Mar-15 01:06	21-Mar-15 17:24		
Drill/Wipe End Date and Time	19-Mar-15 17:14	20-Mar-15 13:11	24-Mar-15 09:46		
Min Inc (deg) @ Depth (MD, ft)	0.17 @ 957.00	15.64 @ 6,177.00	87.84 @ 11,998.00		
Max Inc (deg) @ Depth (MD, ft)	10.35 @ 3,810.00	83.05 @ 6,965.00	91.85 @ 13,232.00		
Bit TFA(in2) / Bit Type	1.37 / PDC	1.37 / PDC	0.98 / PDC		
Flow Rate (gpm)	586.74	550.10	315.00		
Max AV (fpm) / CV (fpm) @ MWD	349.4 / N/A	358.8 / N/A	515.8 / N/A		
Fluid Type	Native/Spud Mud	Native/Spud Mud	Native/Spud Mud		
Density (ppg) / Viscosity (spqt)	9.10 / 37.00	10.50 / 42.00	9.20 / 35.00		
Filtrate CL (ppm)	1,600.00	1,800.00	1,600.00		
pH / Fluid Loss (mptm)	9.30 / 8	9.80 / 7	8.20 / 8		
PV (cP) / YP (lhf2)	10 / 8.00	14 / 14.00	6 / 12.00		
% Solids / % Sand	4.20 / 0.25	11.20 / 0.20	5.60 / 0.15		
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A	N/A / N/A		
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Max Tool Temp (degF) / S	145.00 / PDM	127.00 / PDM	210.00 / PDM		

Max Tool Temp (degF) / Source	145.90 / PCM	167.00 / PCM	242.90 / PCM		
Rm @ Max Tool Temp (degF)	N/A @ 145.90	N/A @ 167.00	N/A @ 242.90		
Lead MWD Engineer	Robert Barnes	Robert Barnes	Robert Barnes		
Customer Representative	Jeremy Stolz	Jim Turner	Jim Turner		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.93	5.93	5.93		
Sub Serial Number	11342274	11342274	11342274		
Insert Serial Number	11680766	11680766	11680771		
Date and Time Initialized	18-Mar-15 01:37	01-Jan-70 00:00	20-Mar-15 22:22		
Date and Time Read	20-Mar-15 20:14	01-Jan-70 00:00	24-Mar-15 23:42		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	55.00	54.00	67.00		
Software Version	6.21	6.21	6.21		
Sub Serial Number	11342274	11342274	12334786		
Sonde Serial Number	11478053	11478053	11062073		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	211.57	140.38	218.88		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	47.64	46.81	69.75		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	11342274	11342274	12334786		
Insert/Sonde Serial Number	11293345	11293345	11681081		

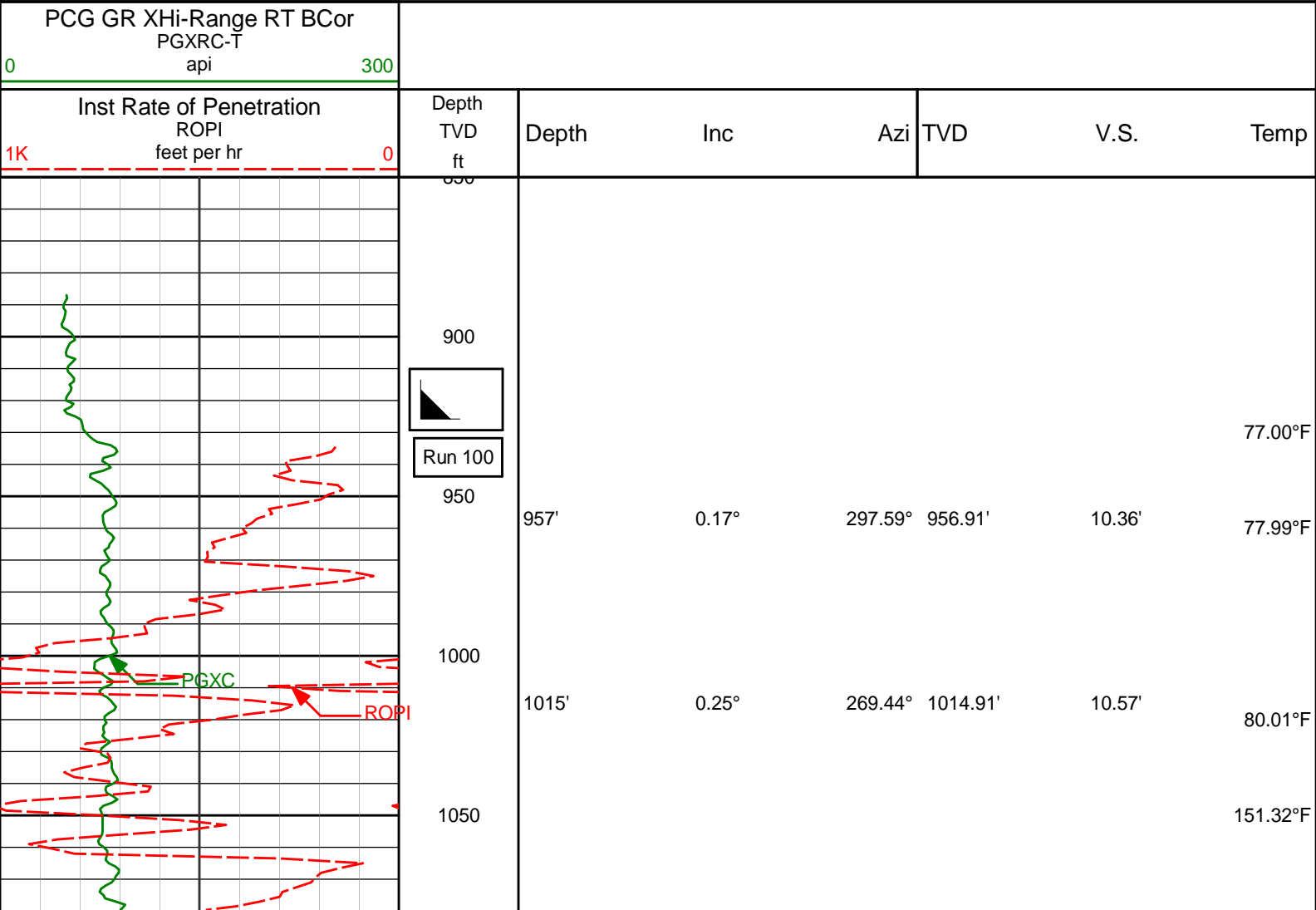
REMARKS

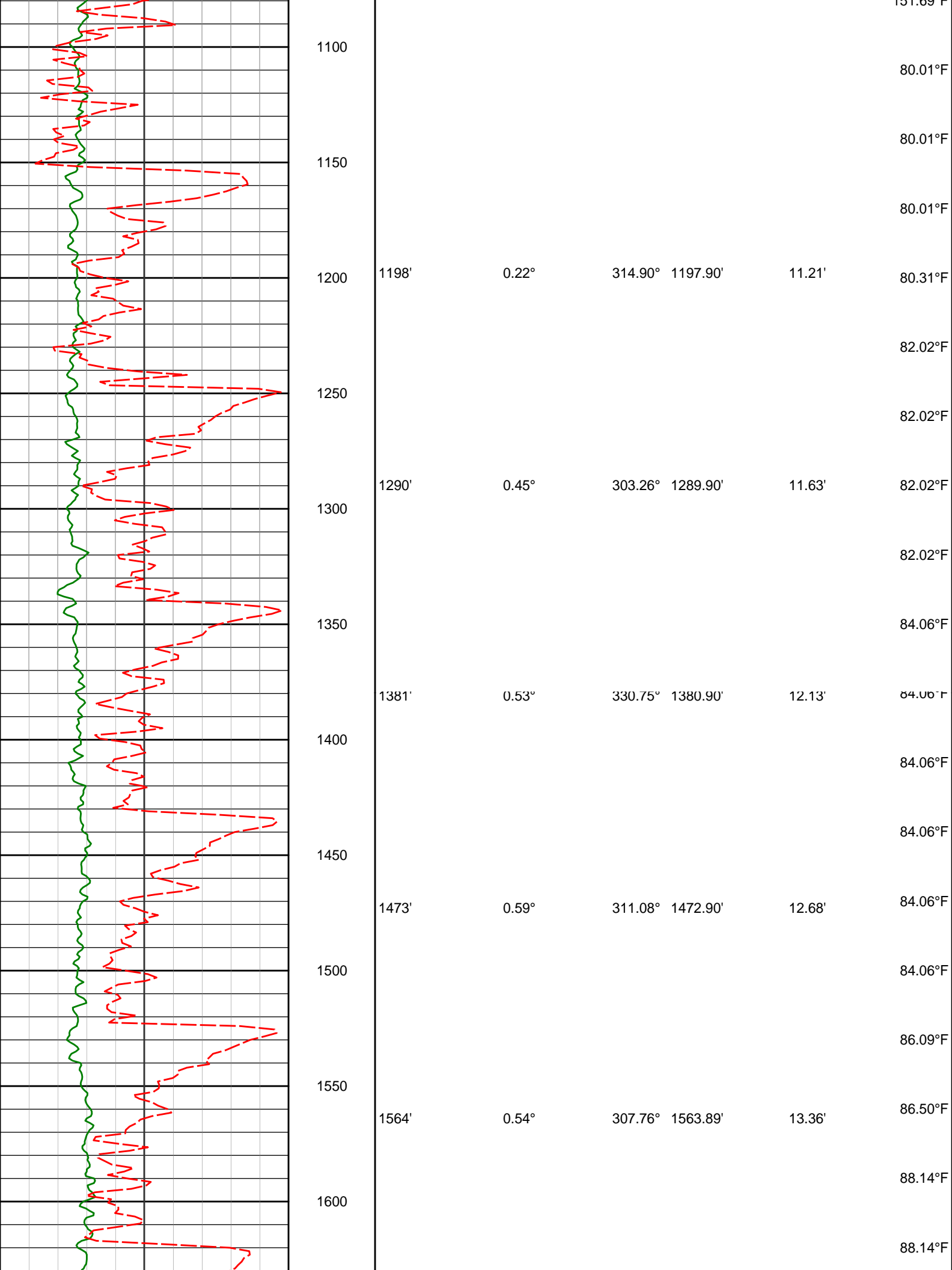
1. All depths are calibrated to driller's pipe tally and are measured depth from the Drill Floor.
2. No depth corrections have been made for pipe stretch or compression.
3. Critical annular velocities are calculated using the "Power Law" model for water based fluids and the "Brigham Plastic" model for oil and synthetic based fluids.
4. All data presented is recorded data unless otherwise specified.
5. The following smoothing parameters have been applied to the data:
1: 600 Log
PGRC (Gamma CG) and ROPA (Average Rate of Penetration)
Interval Resolution: 1.0 ft
Interval Distance: 3.0 ft
1: 240 Log
PGRC (Gamma CG):
Interval Resolution: 0.5 ft
Interval Distance: 0.6 ft
ROPA (Average Rate Of Penetration):
Interval Resolution: 0.5 ft
Interval Resolution: 0.5 ft
Interval Distance: 1.2 ft

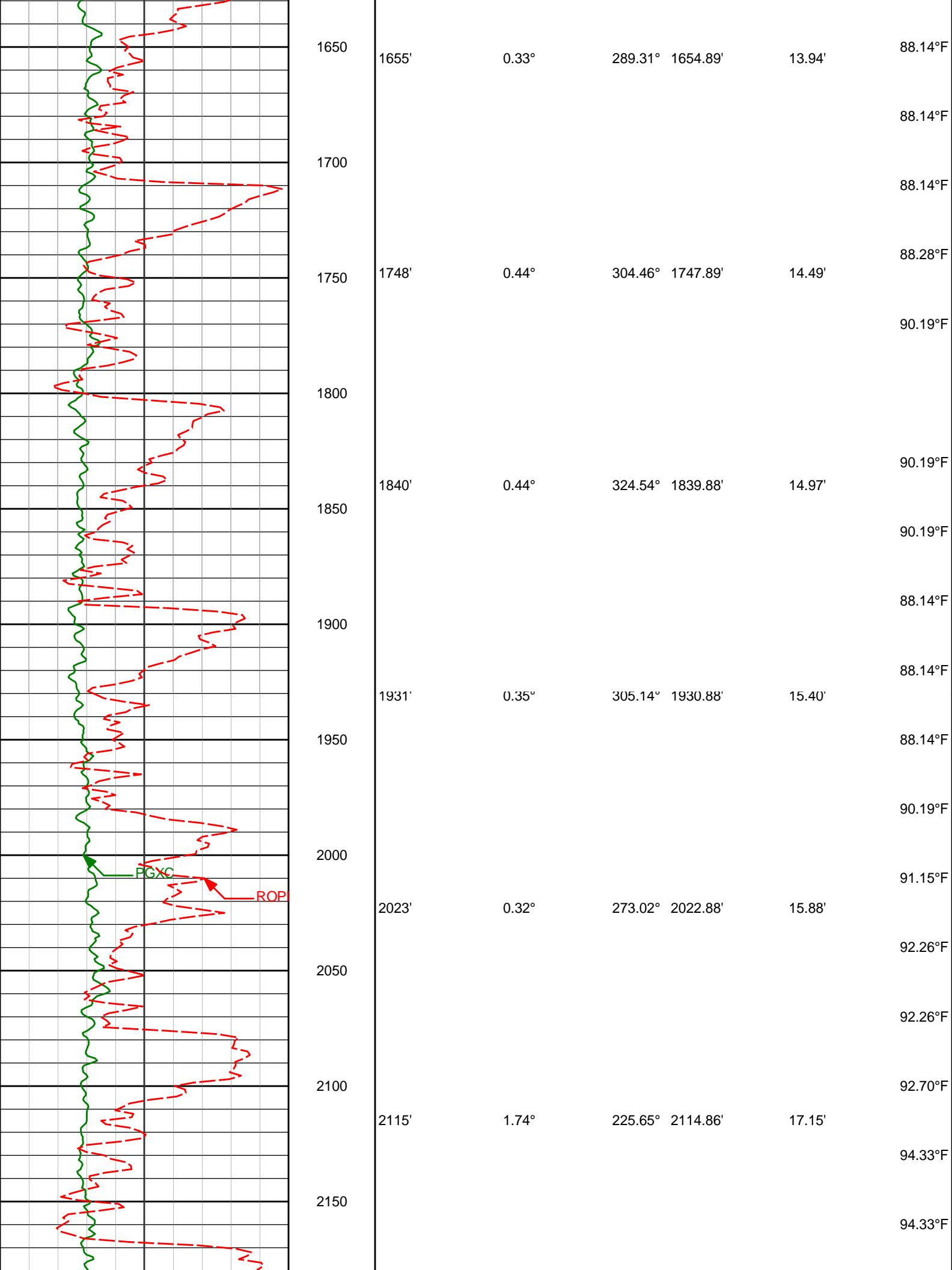
WARRANTY

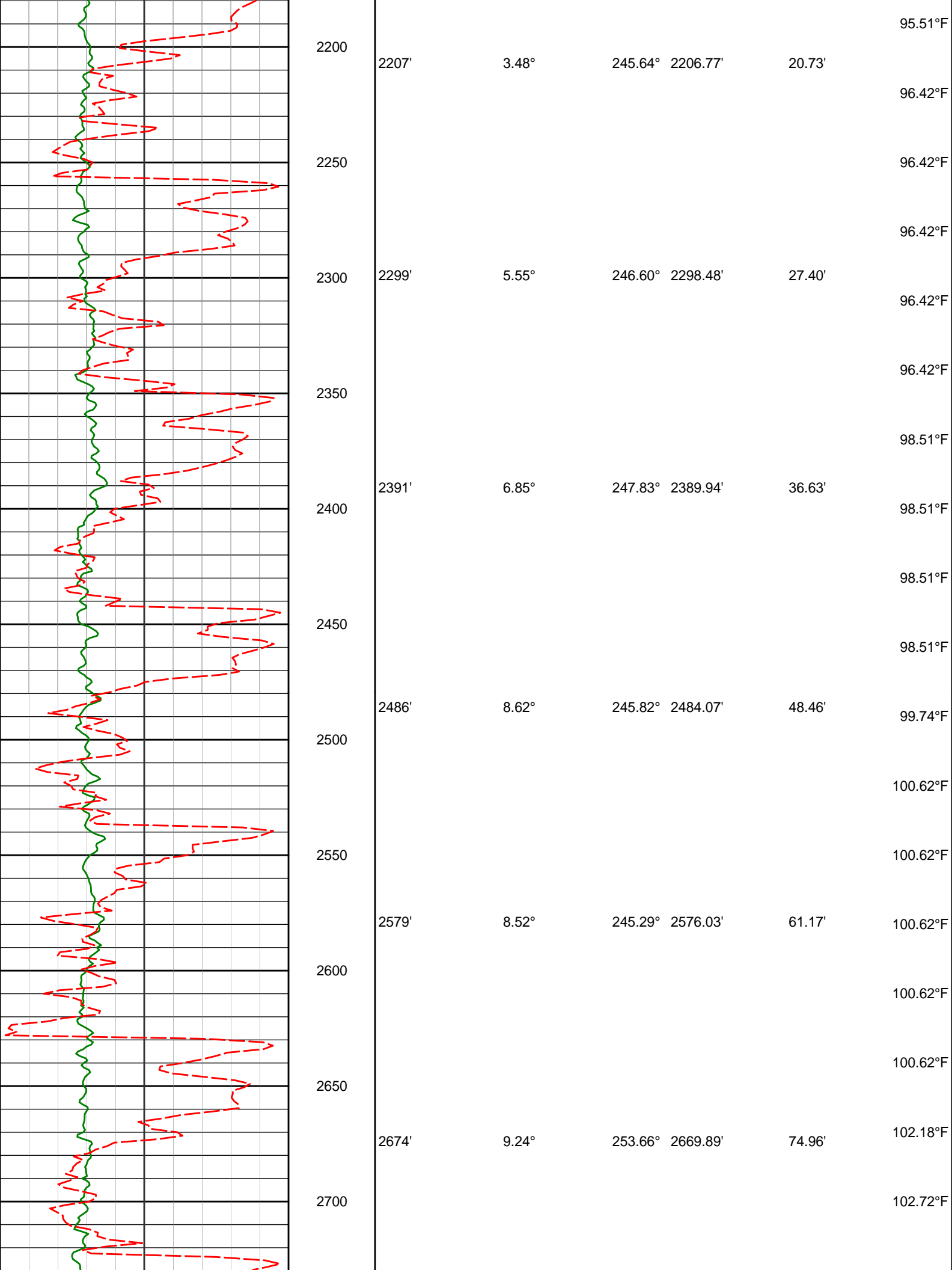
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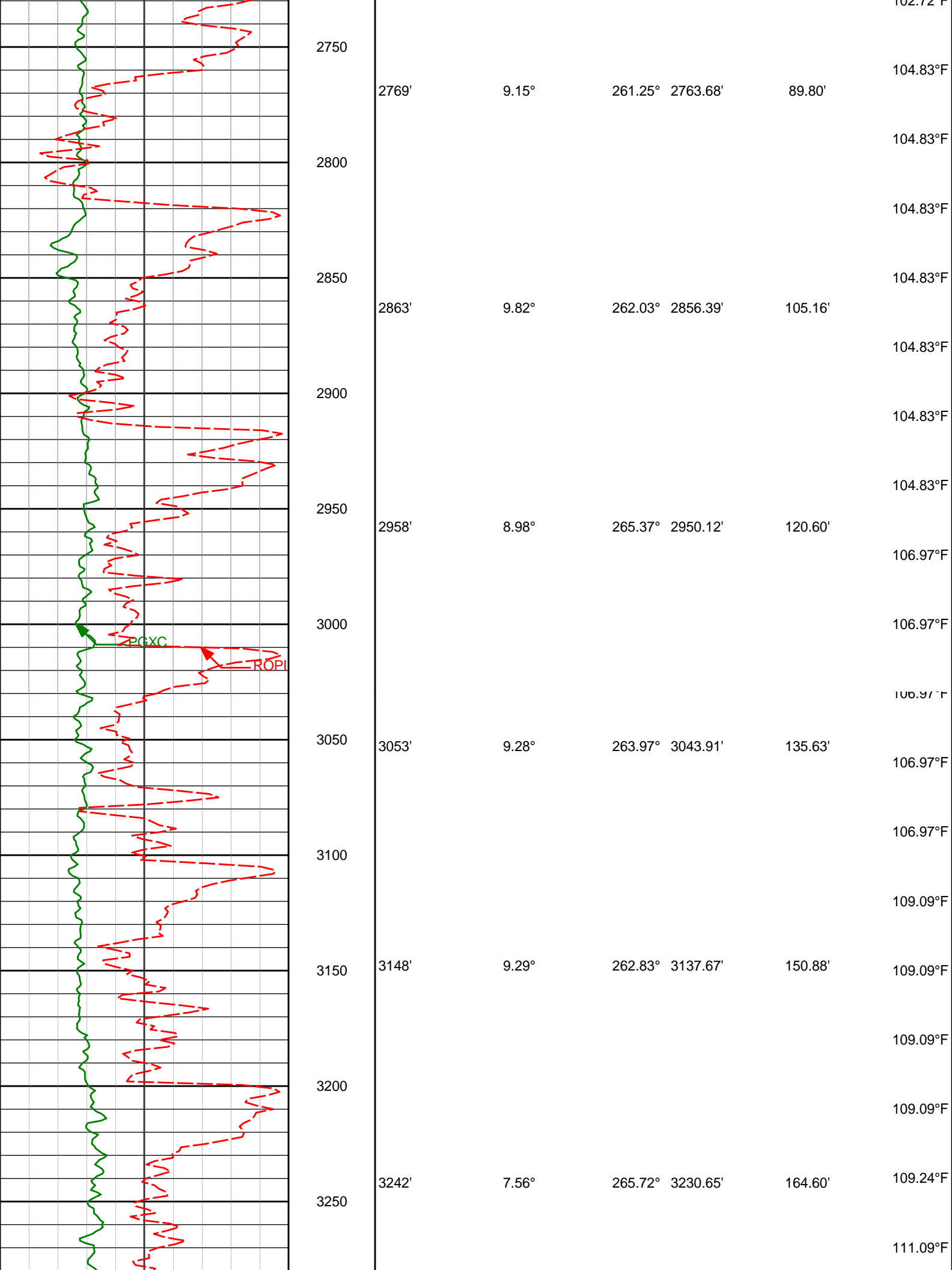
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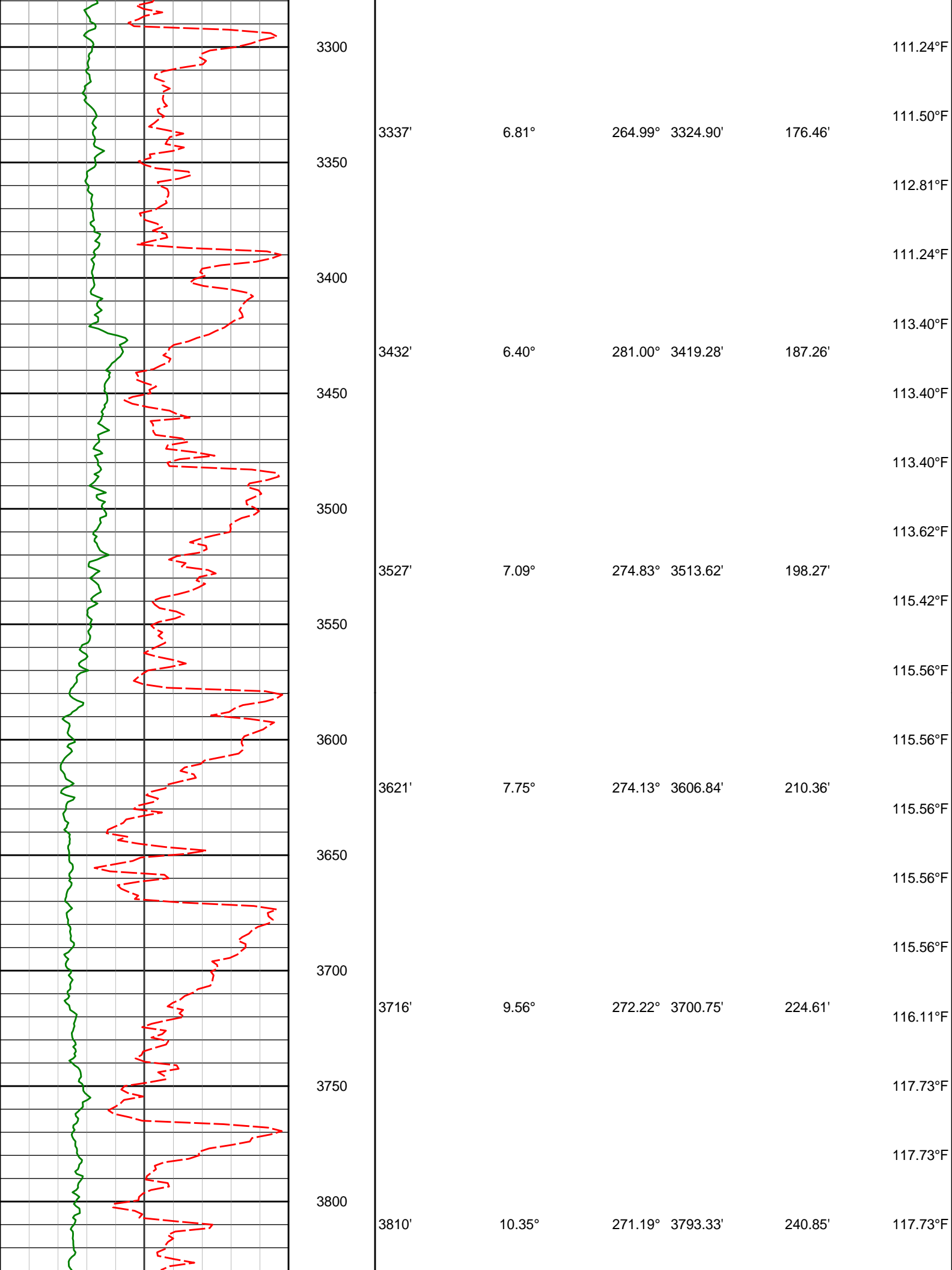


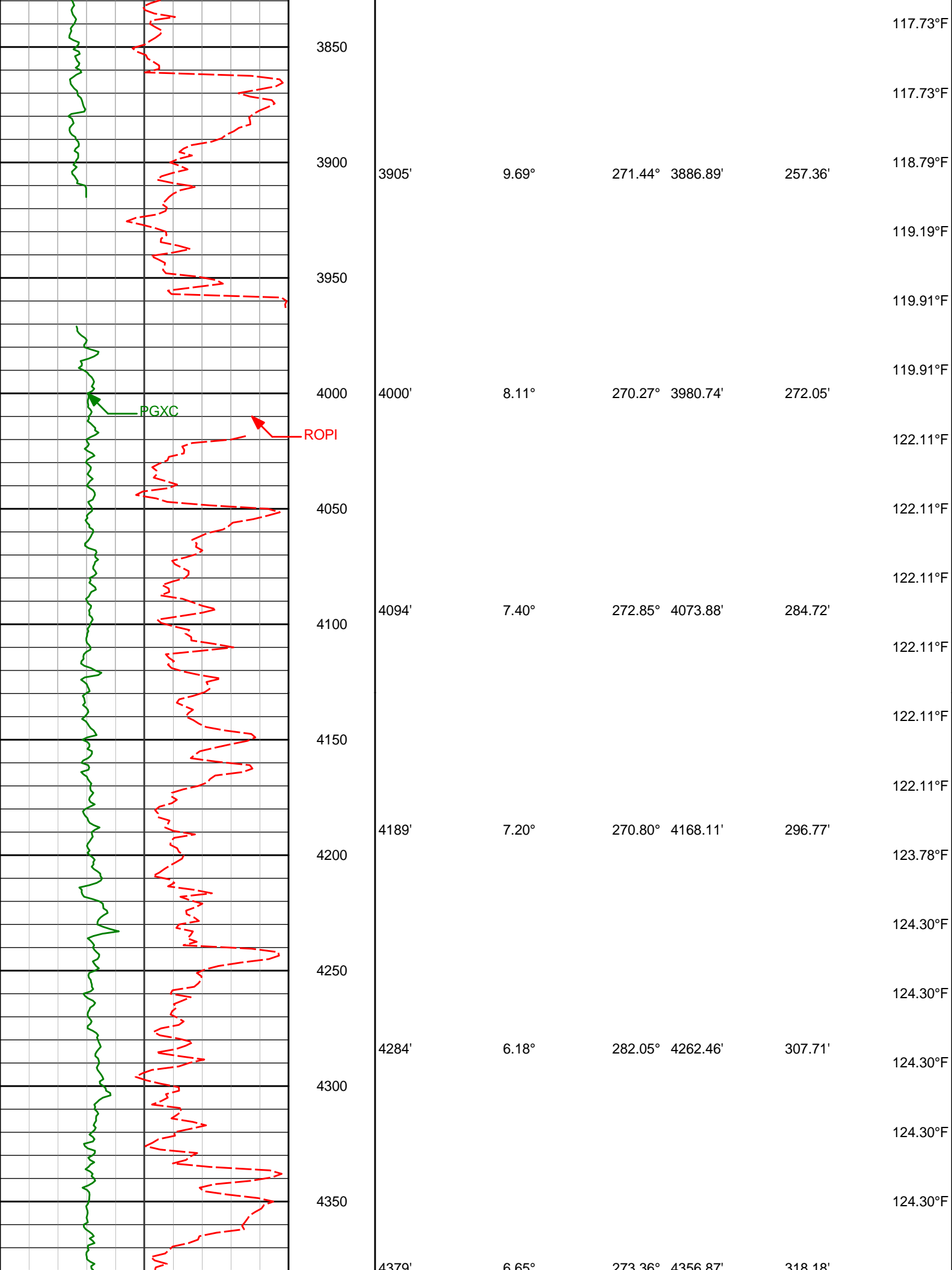


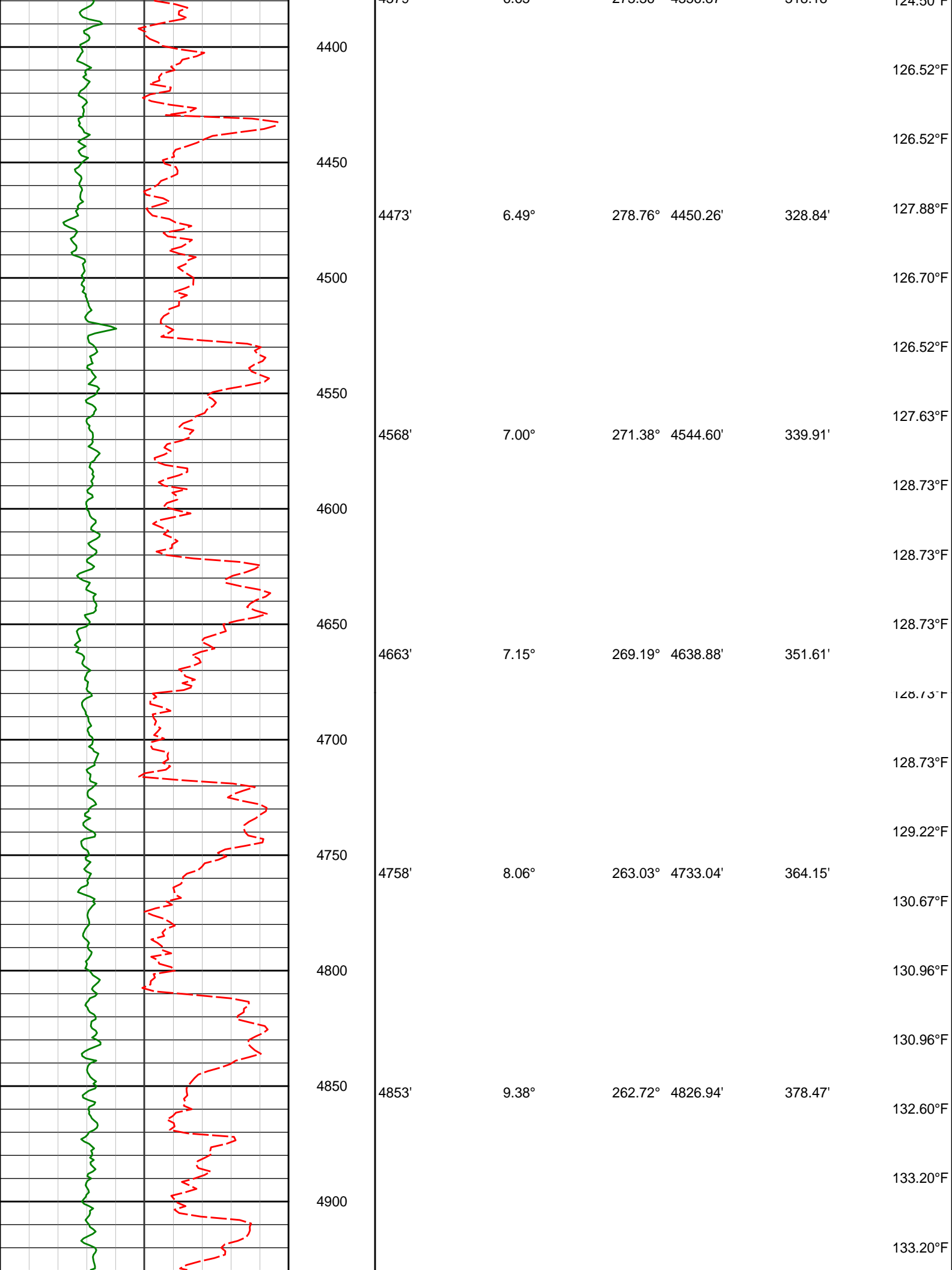


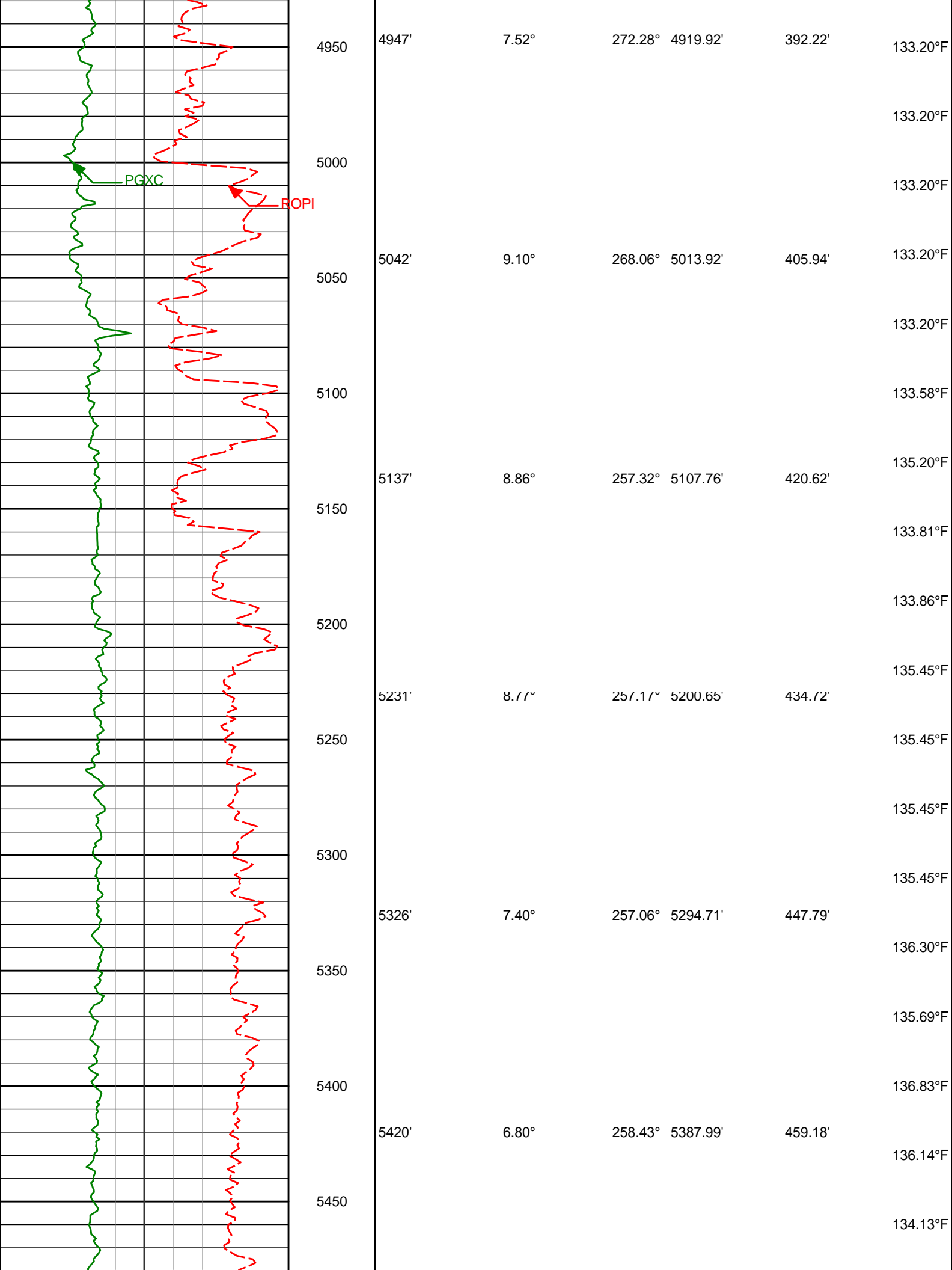


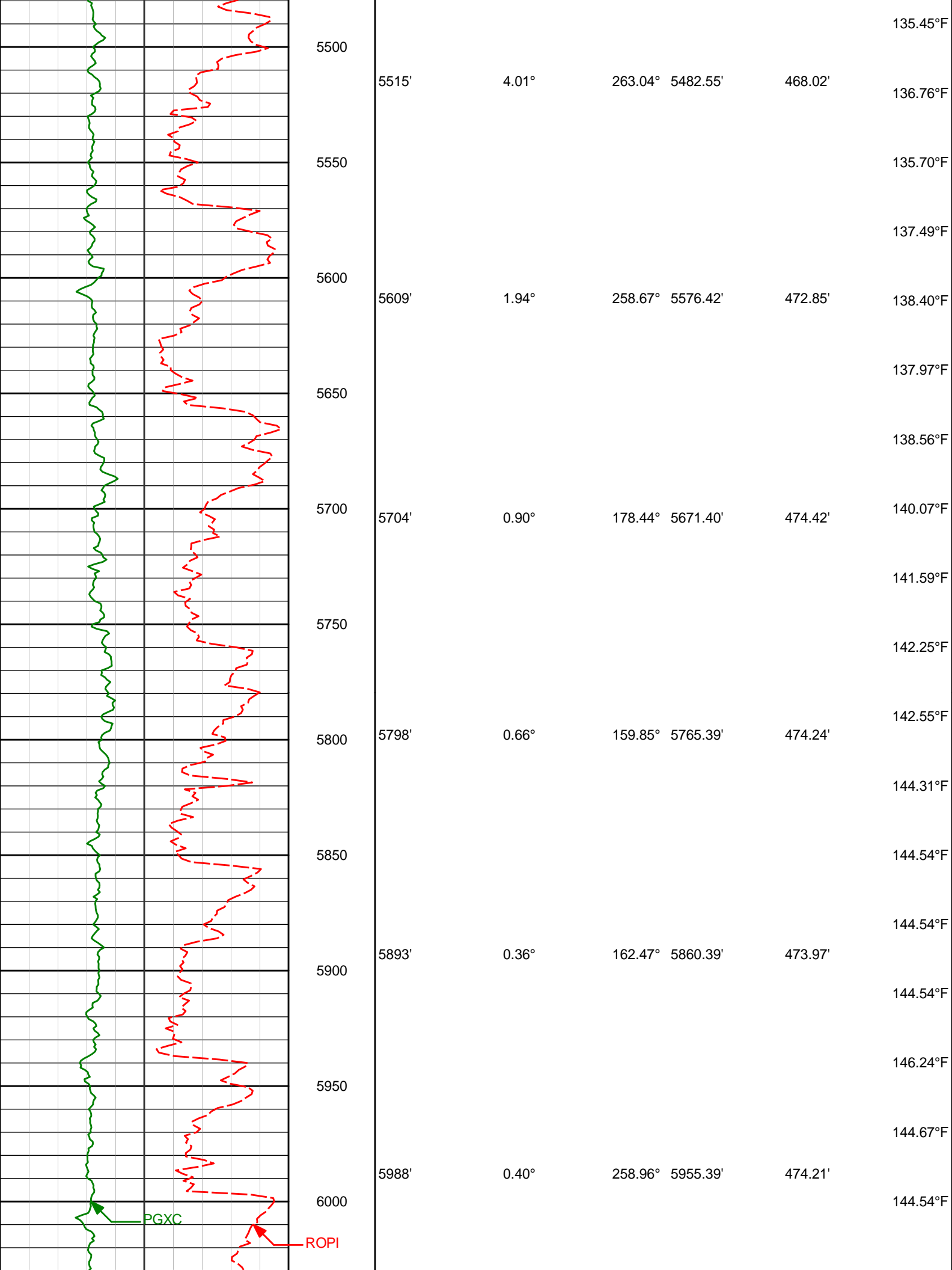


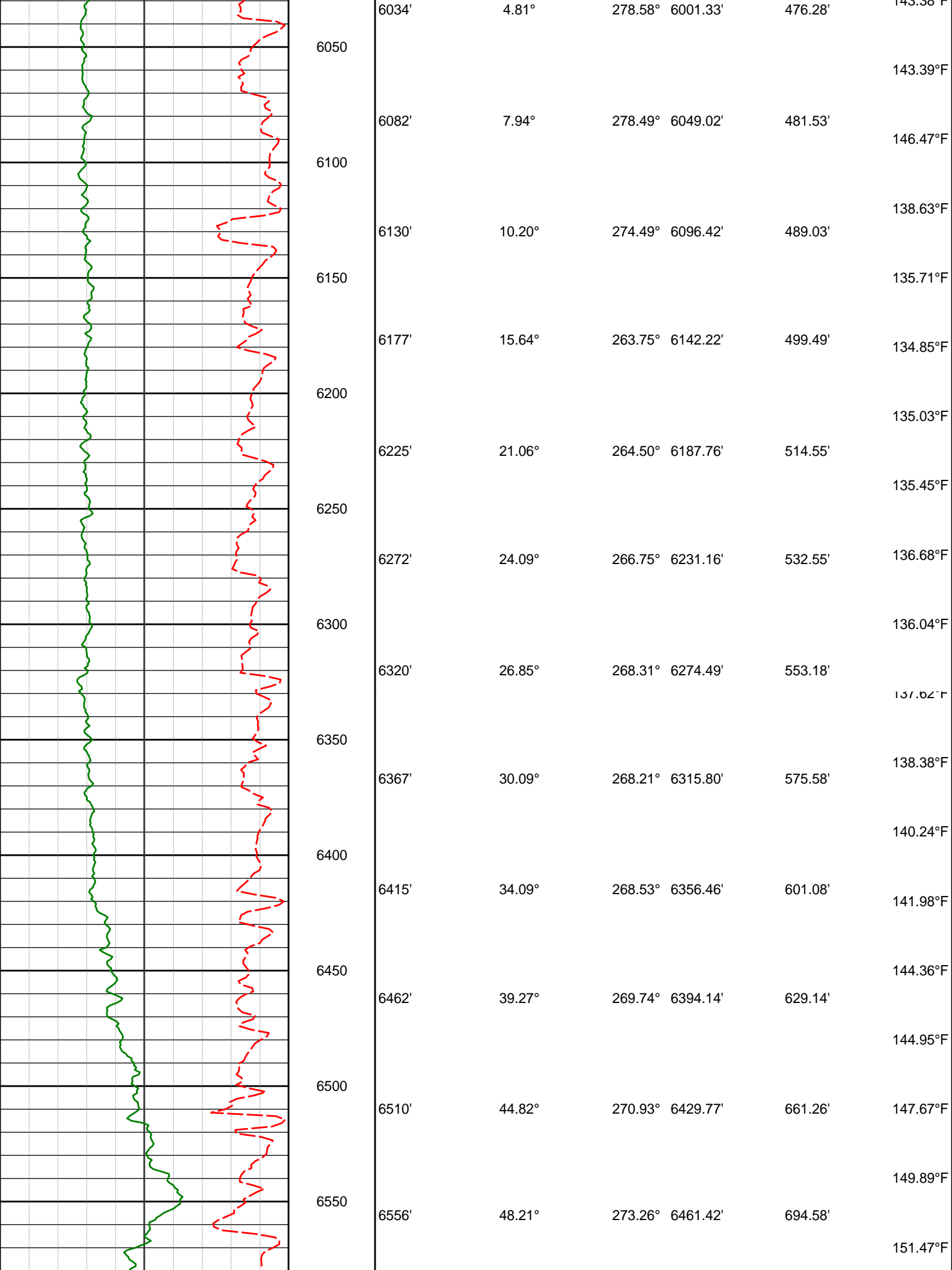


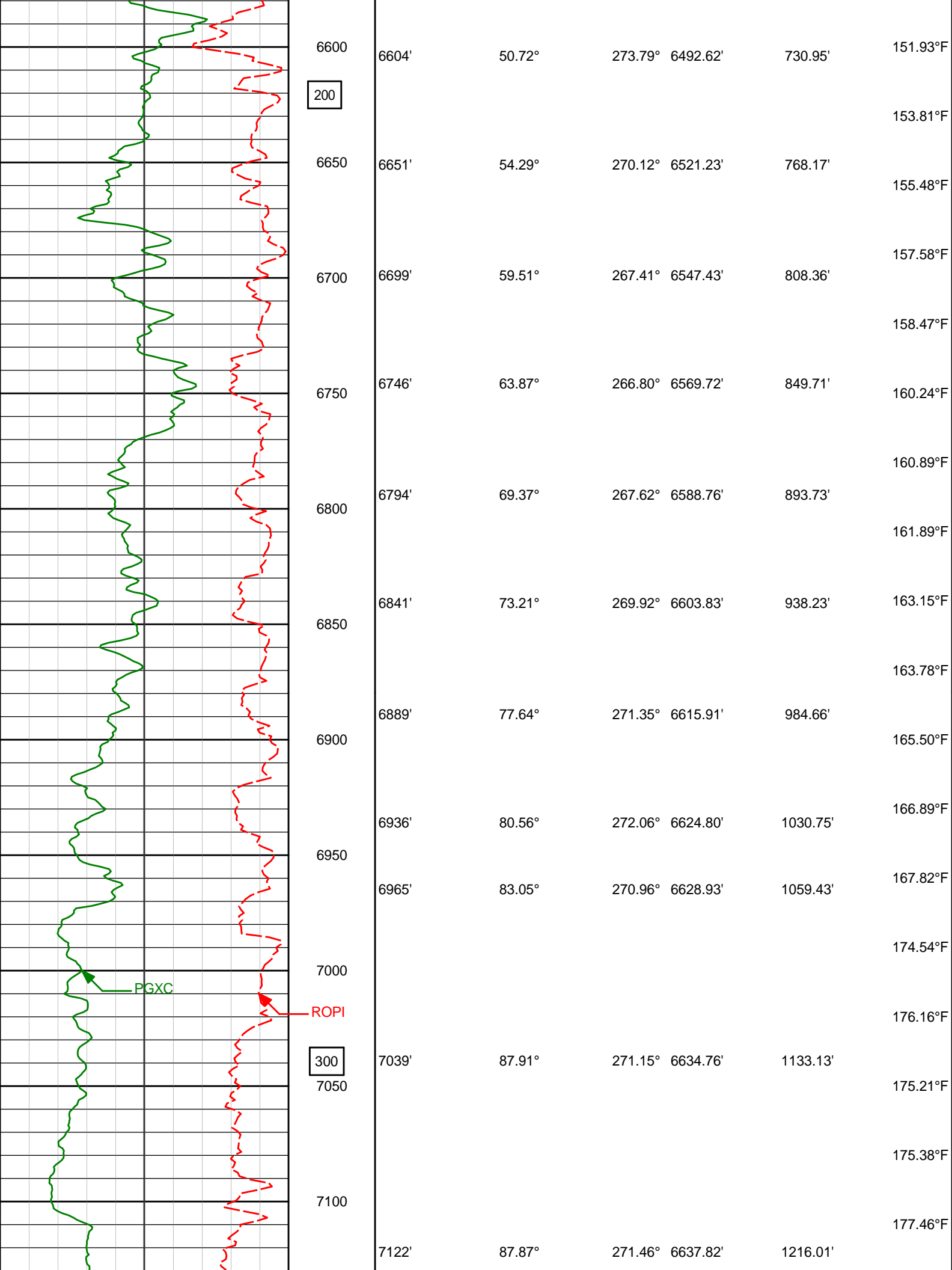


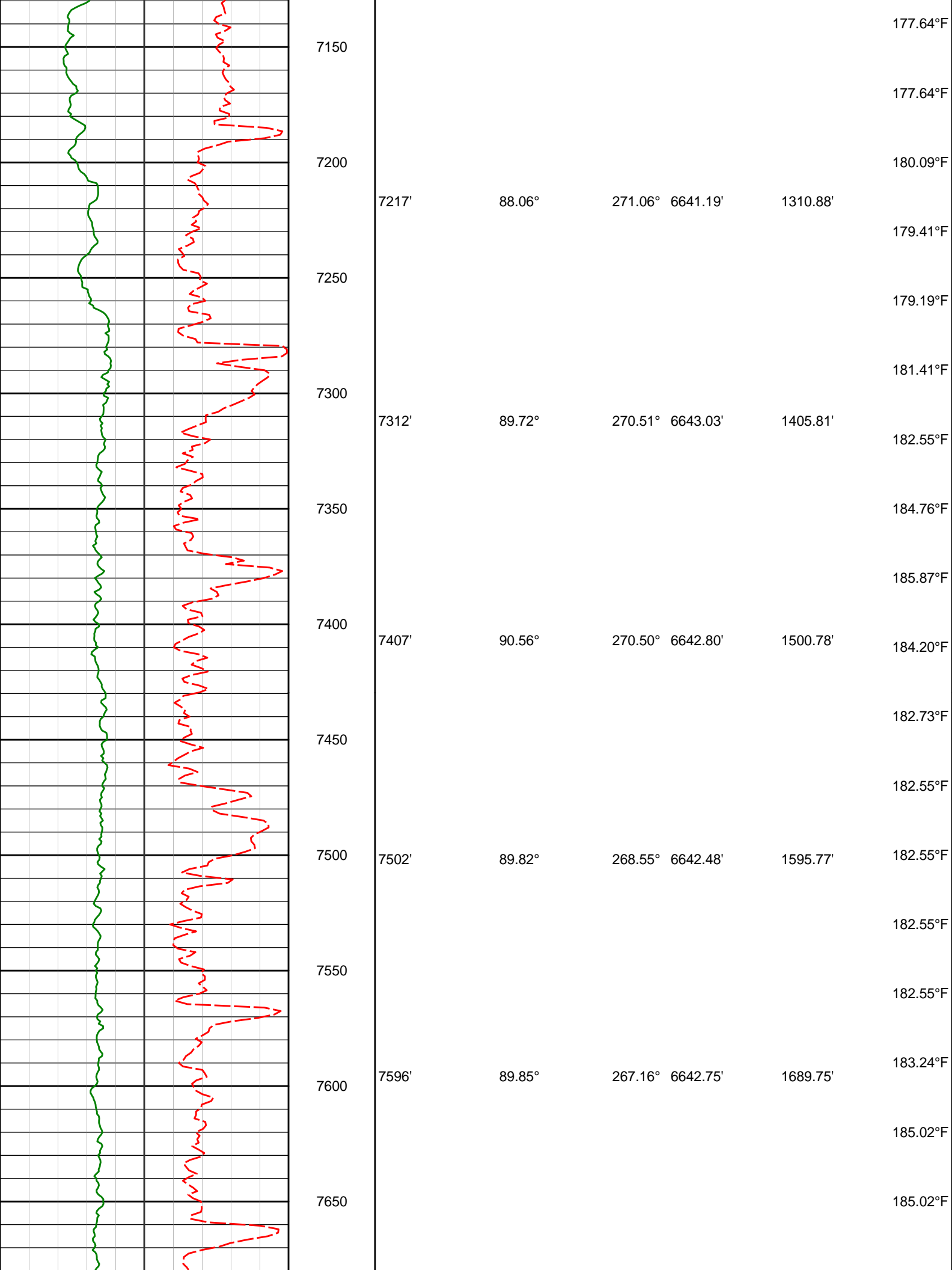


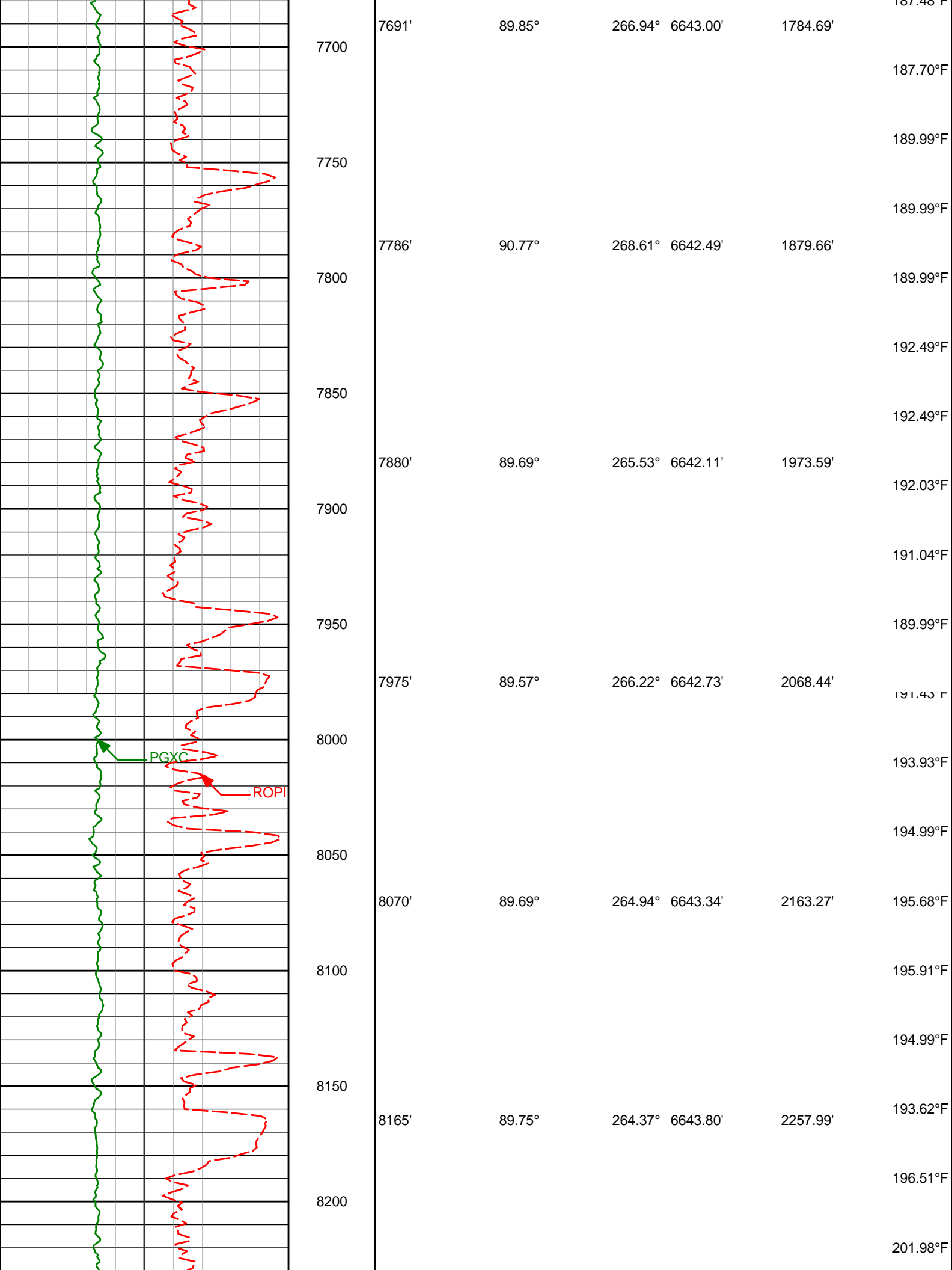


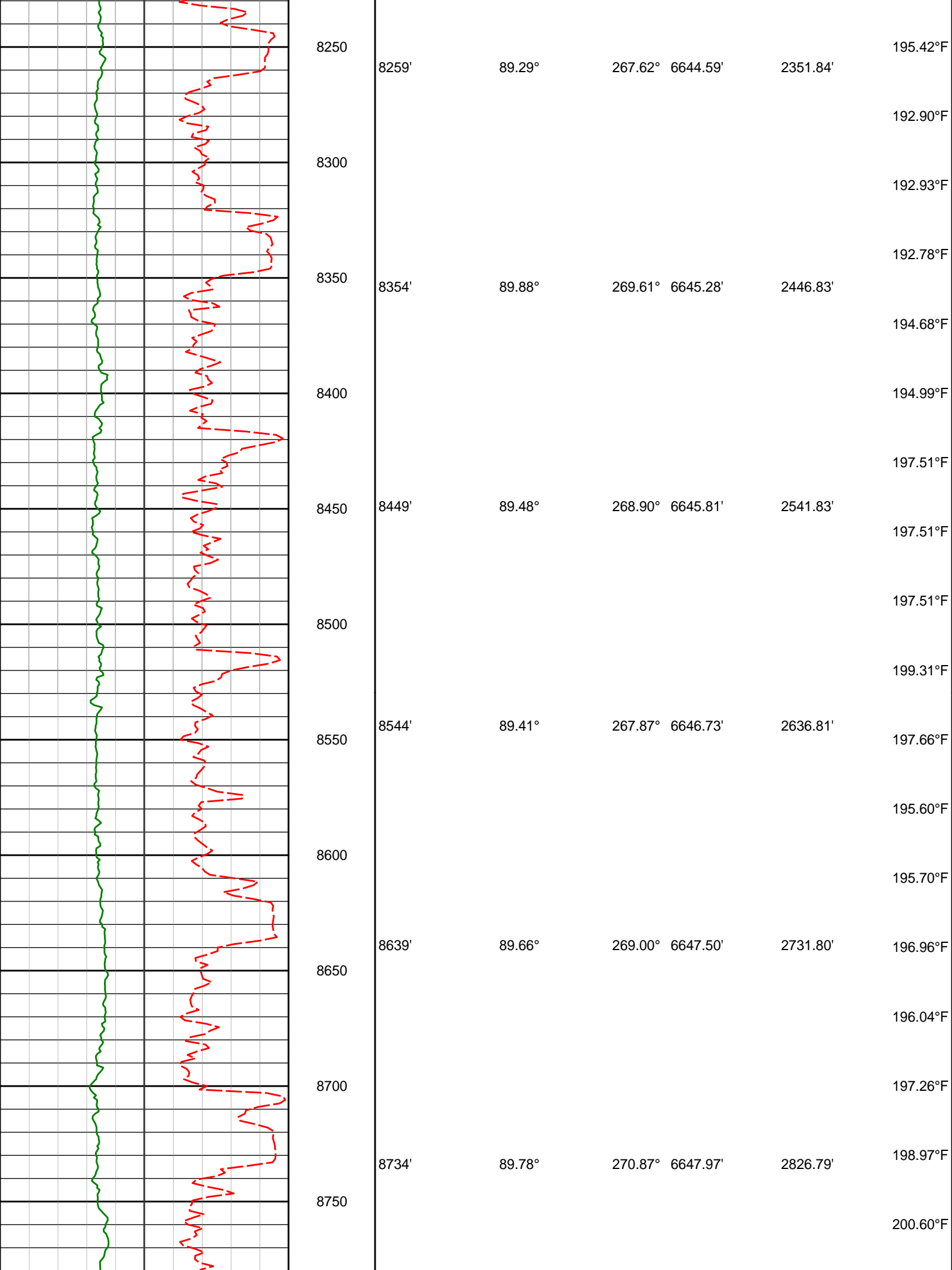


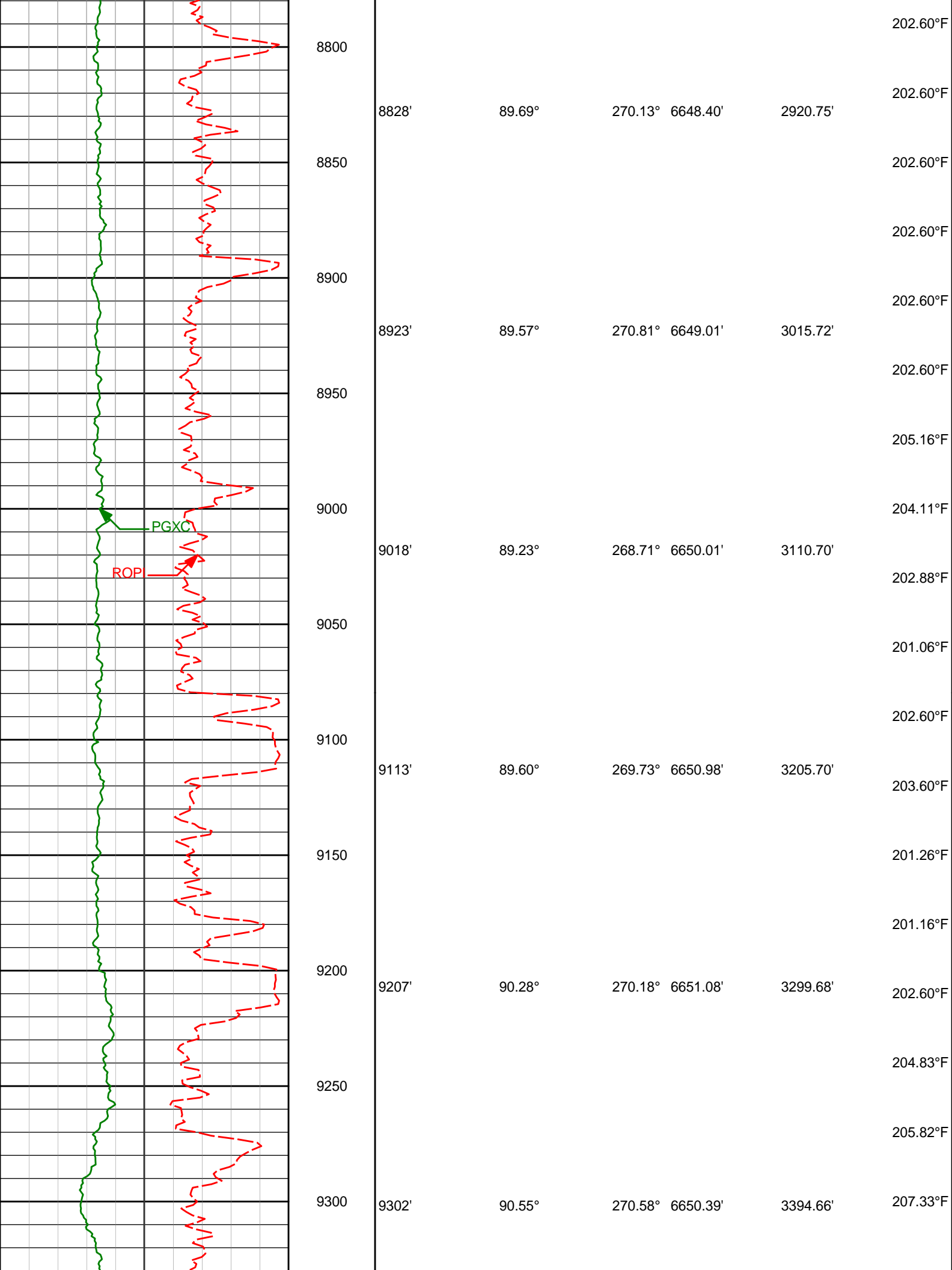


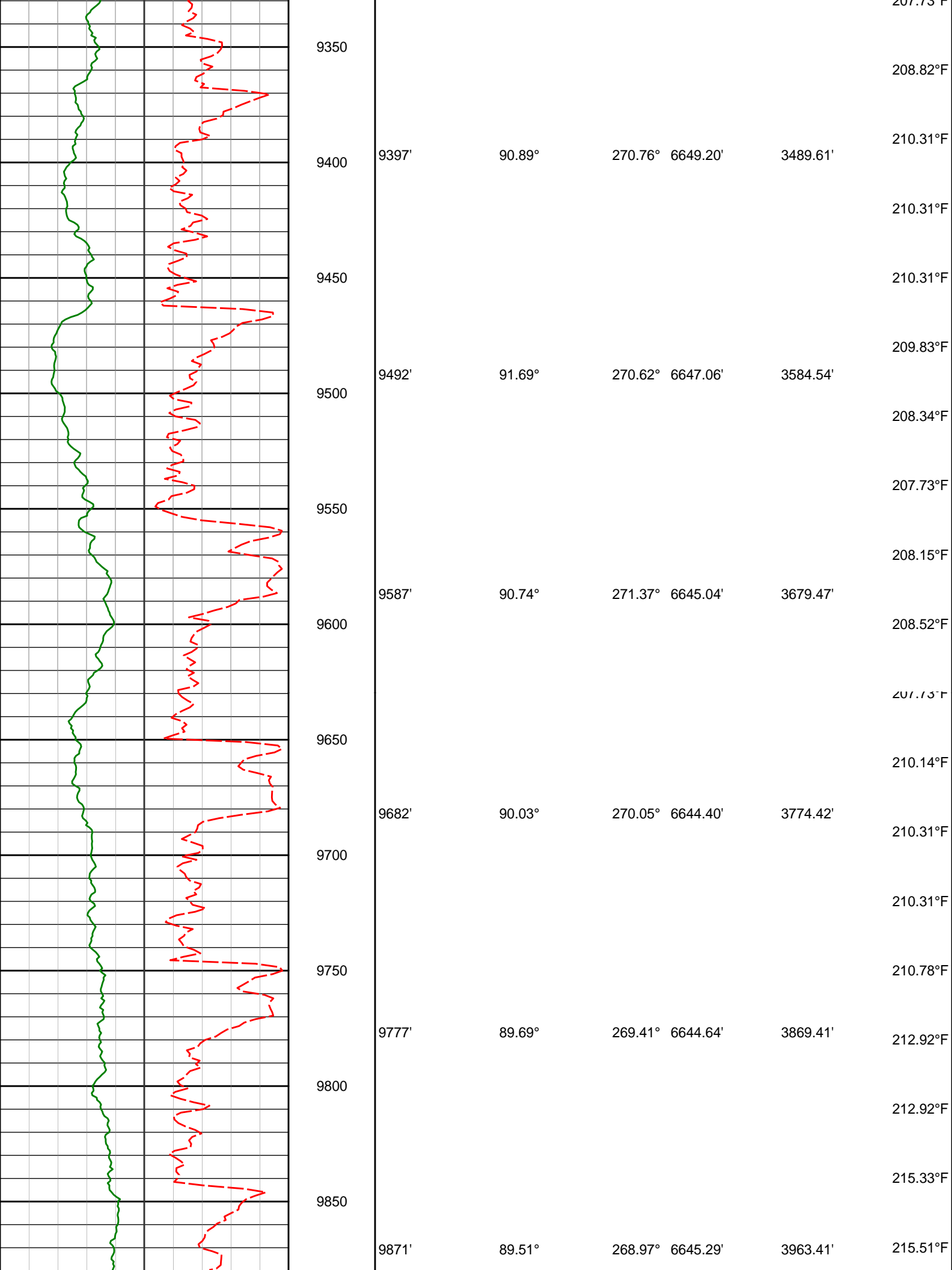


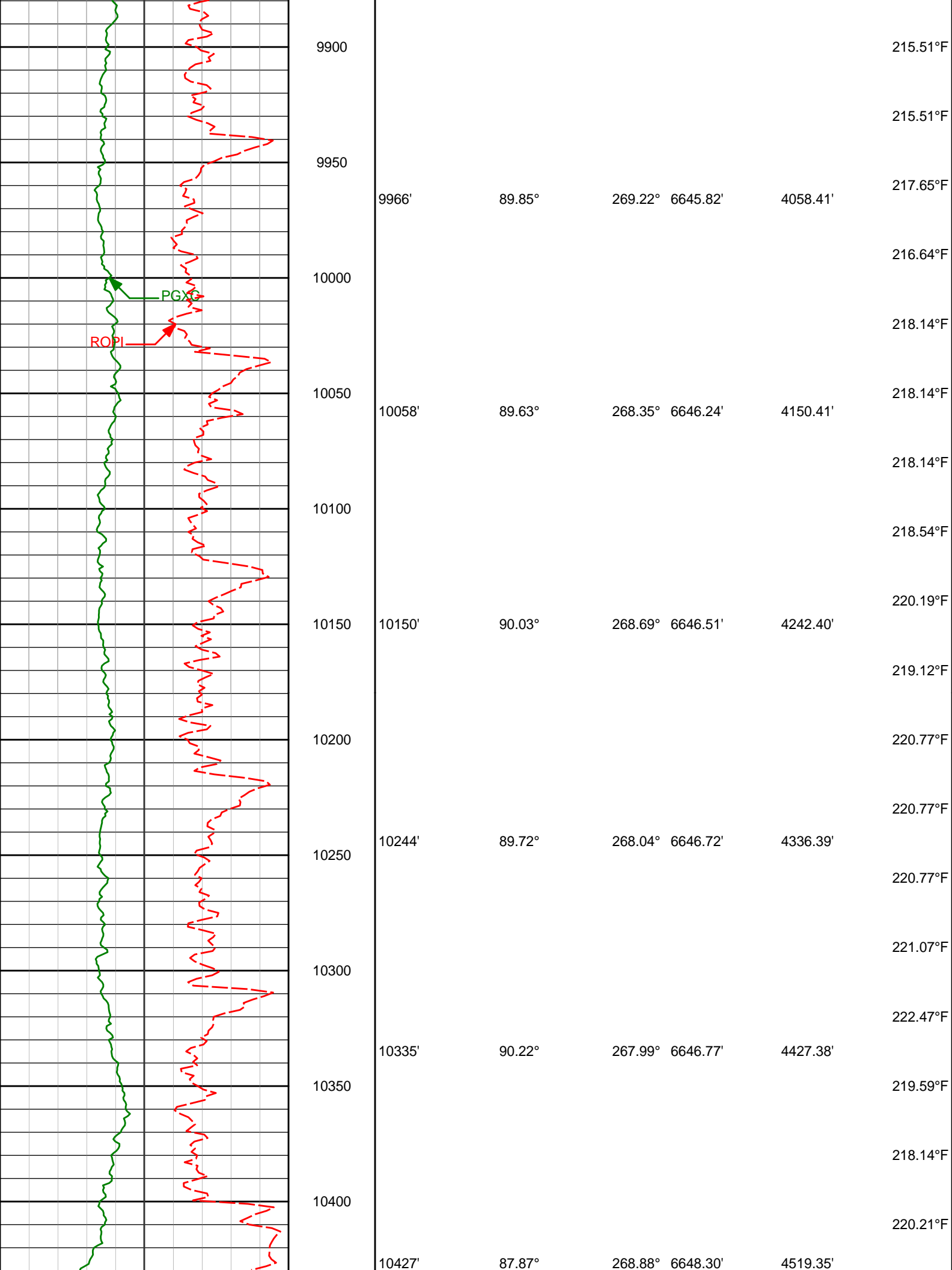


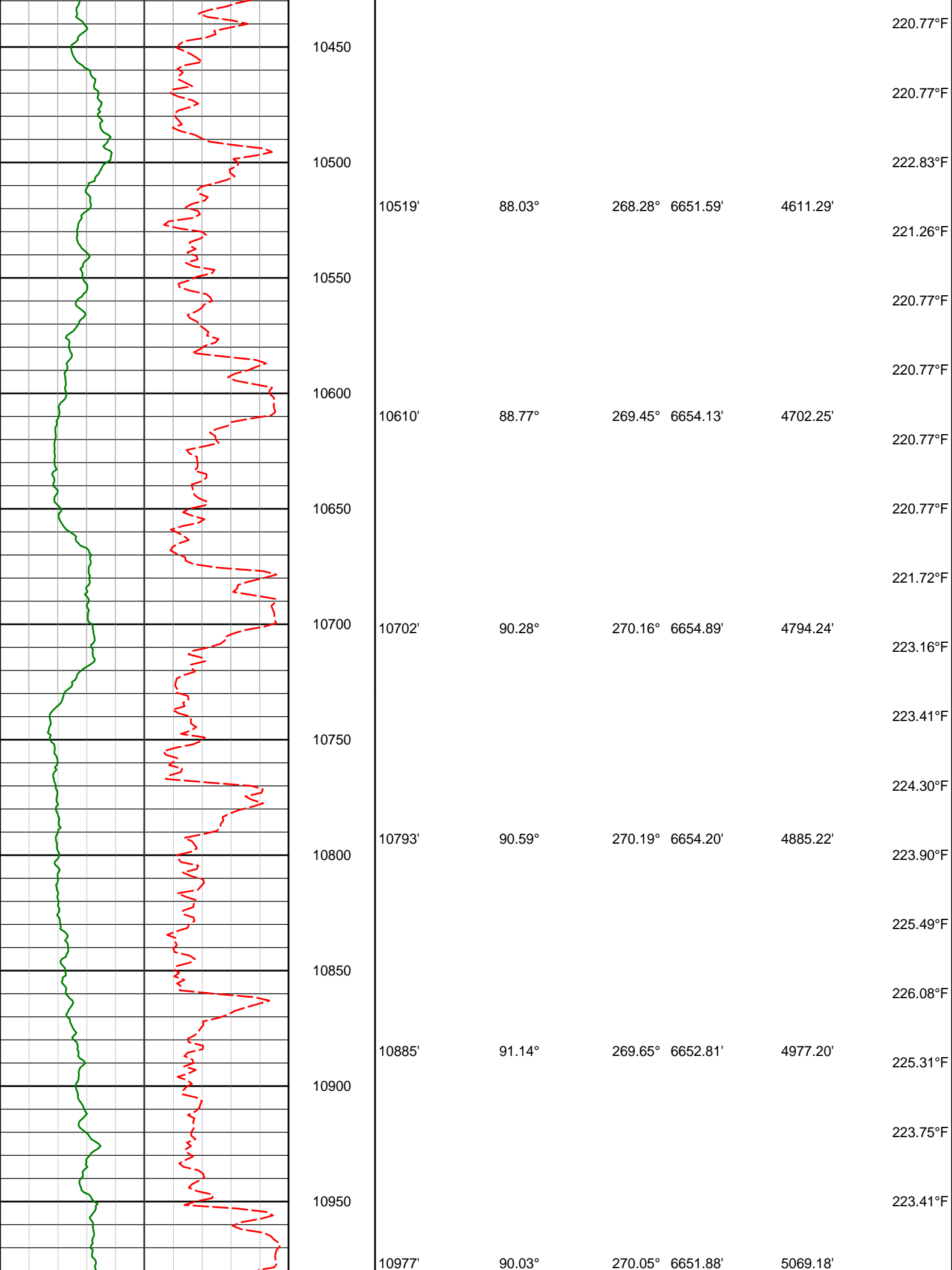


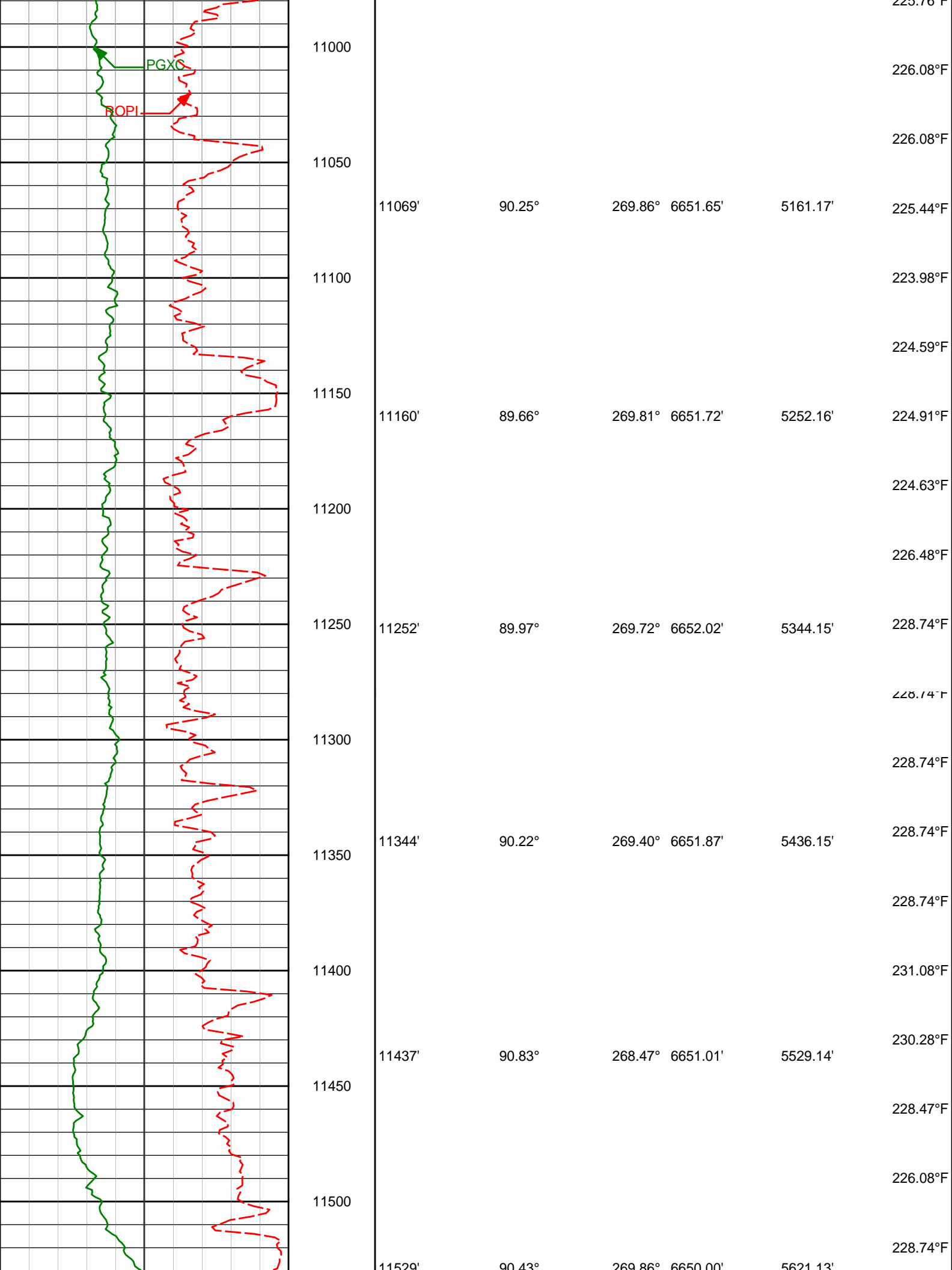


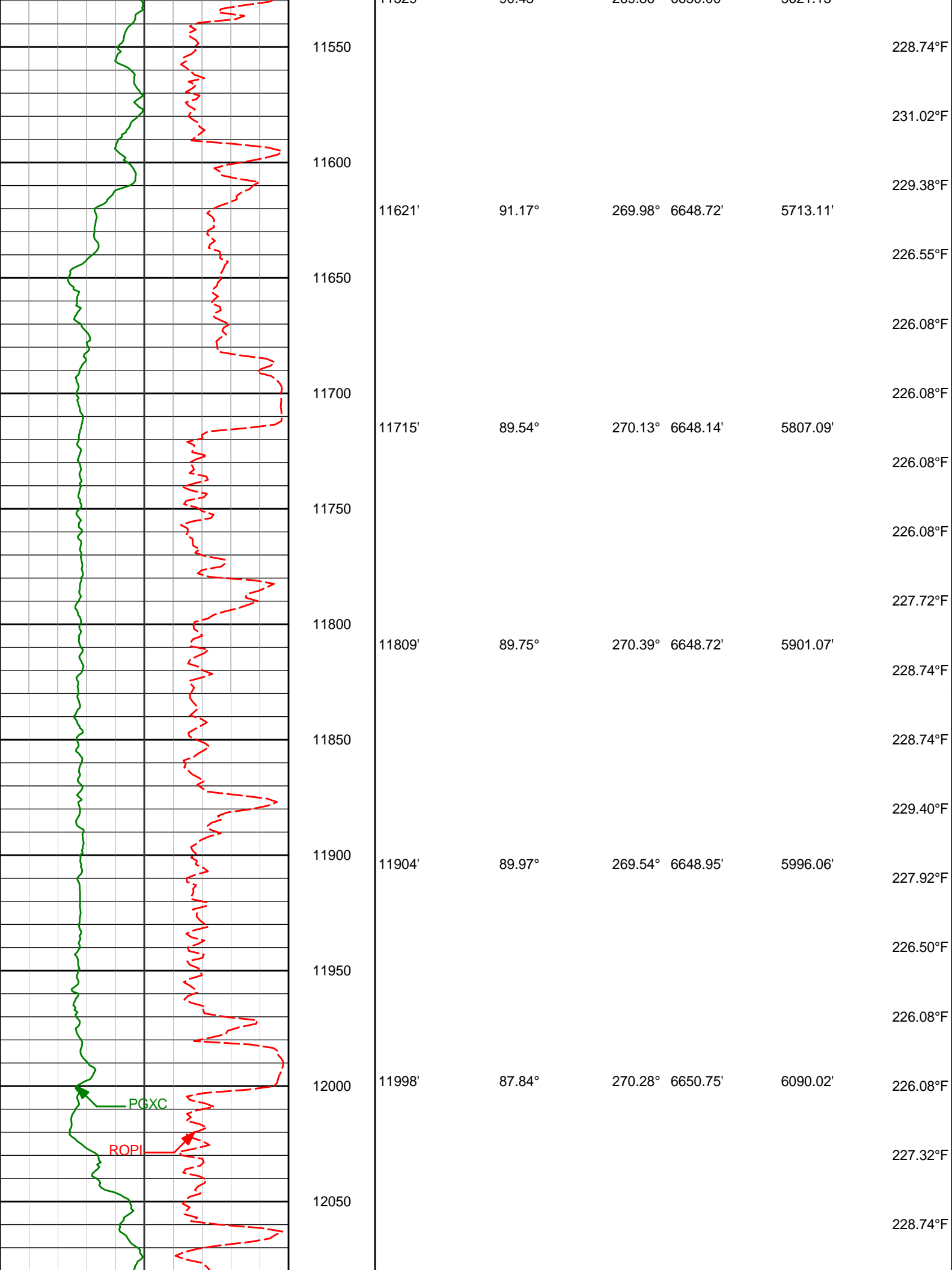


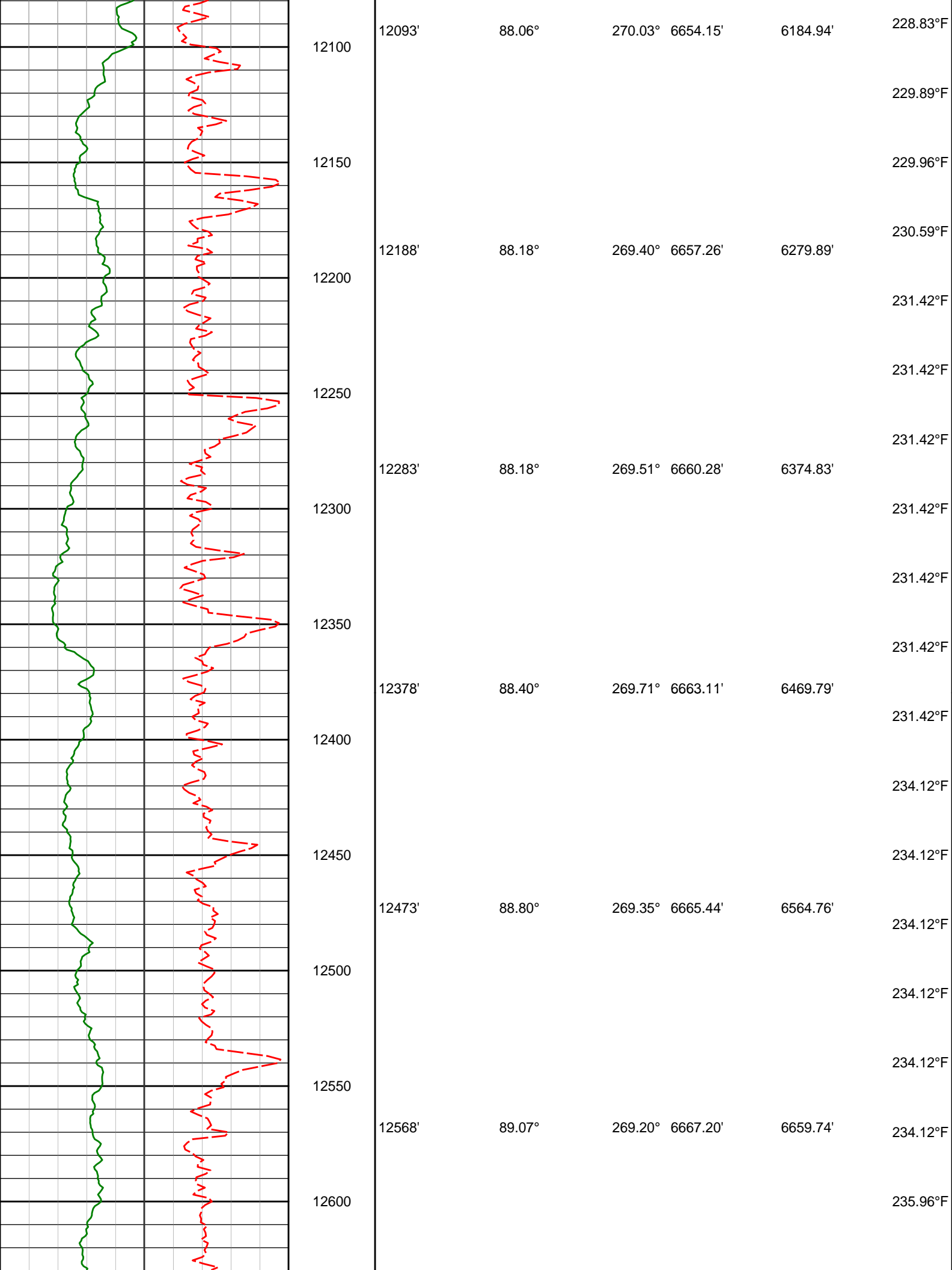


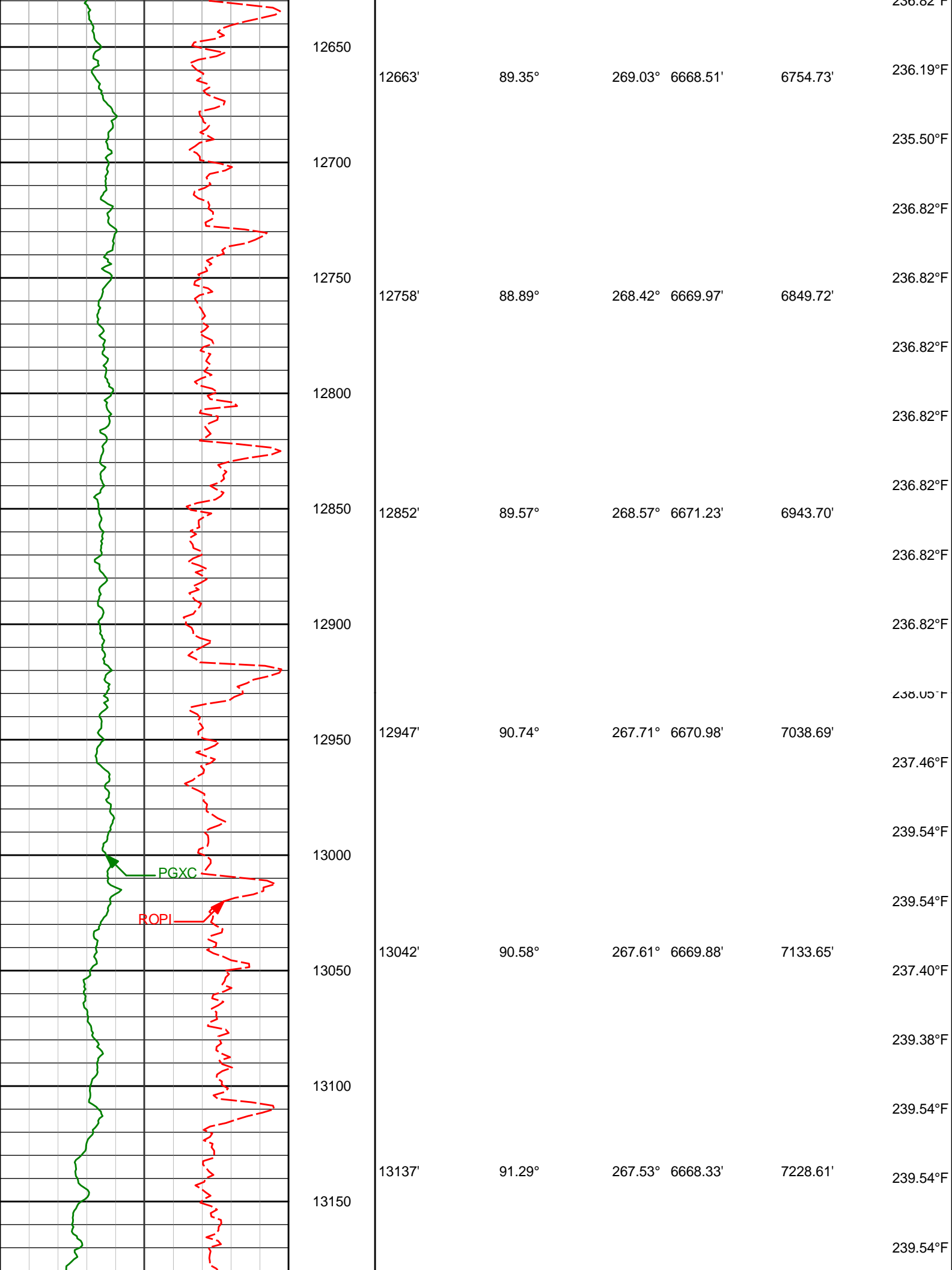


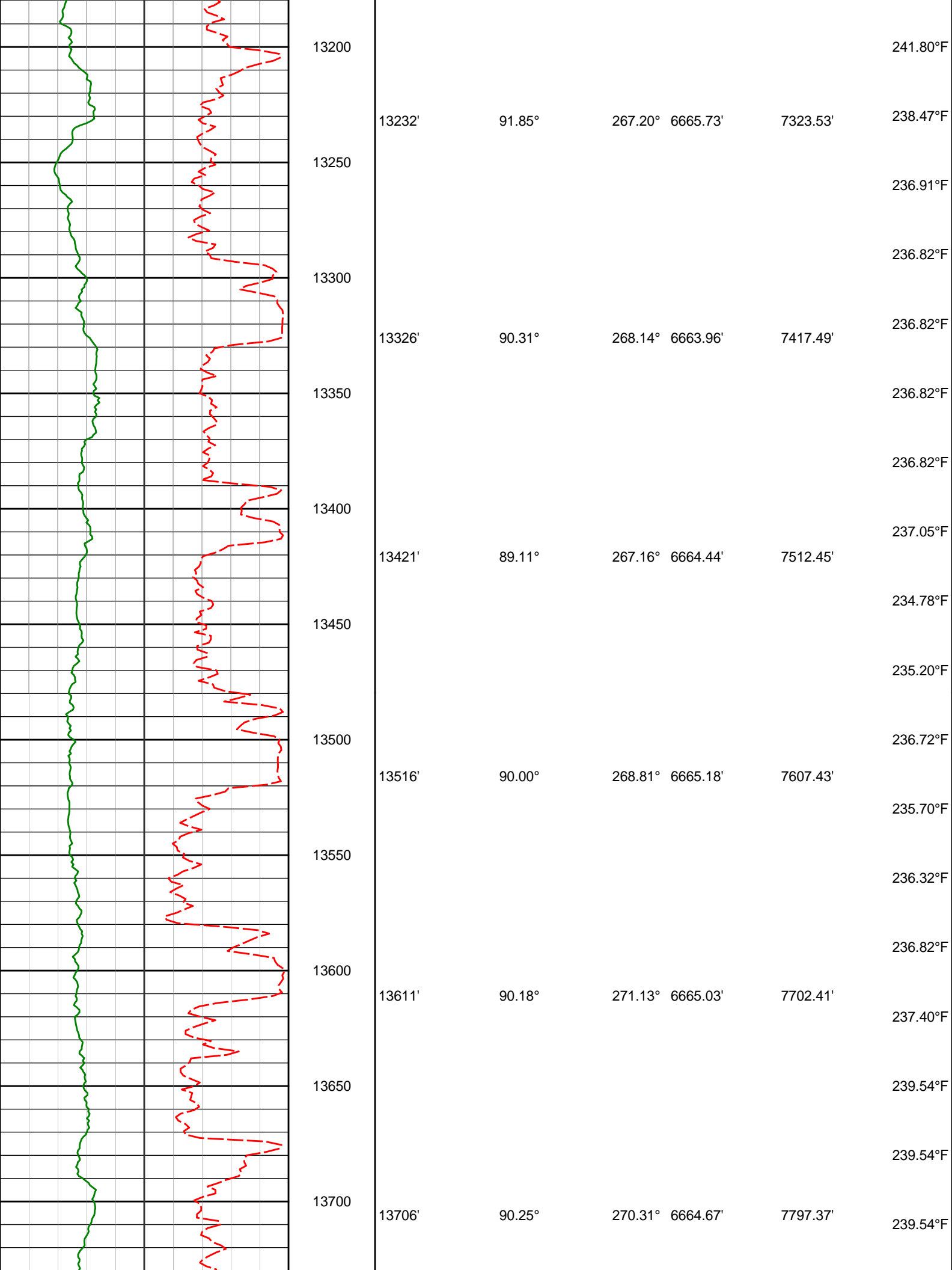


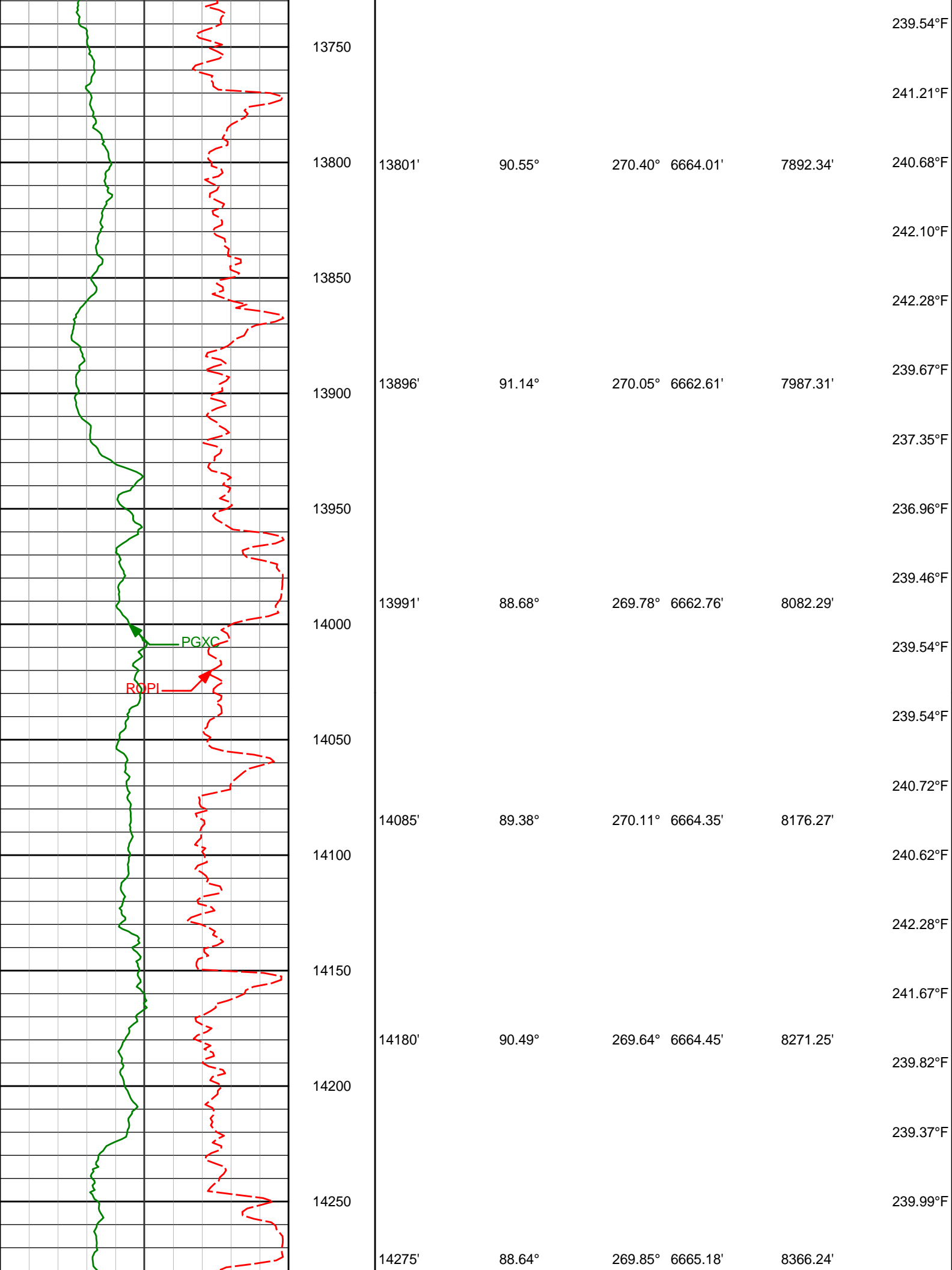


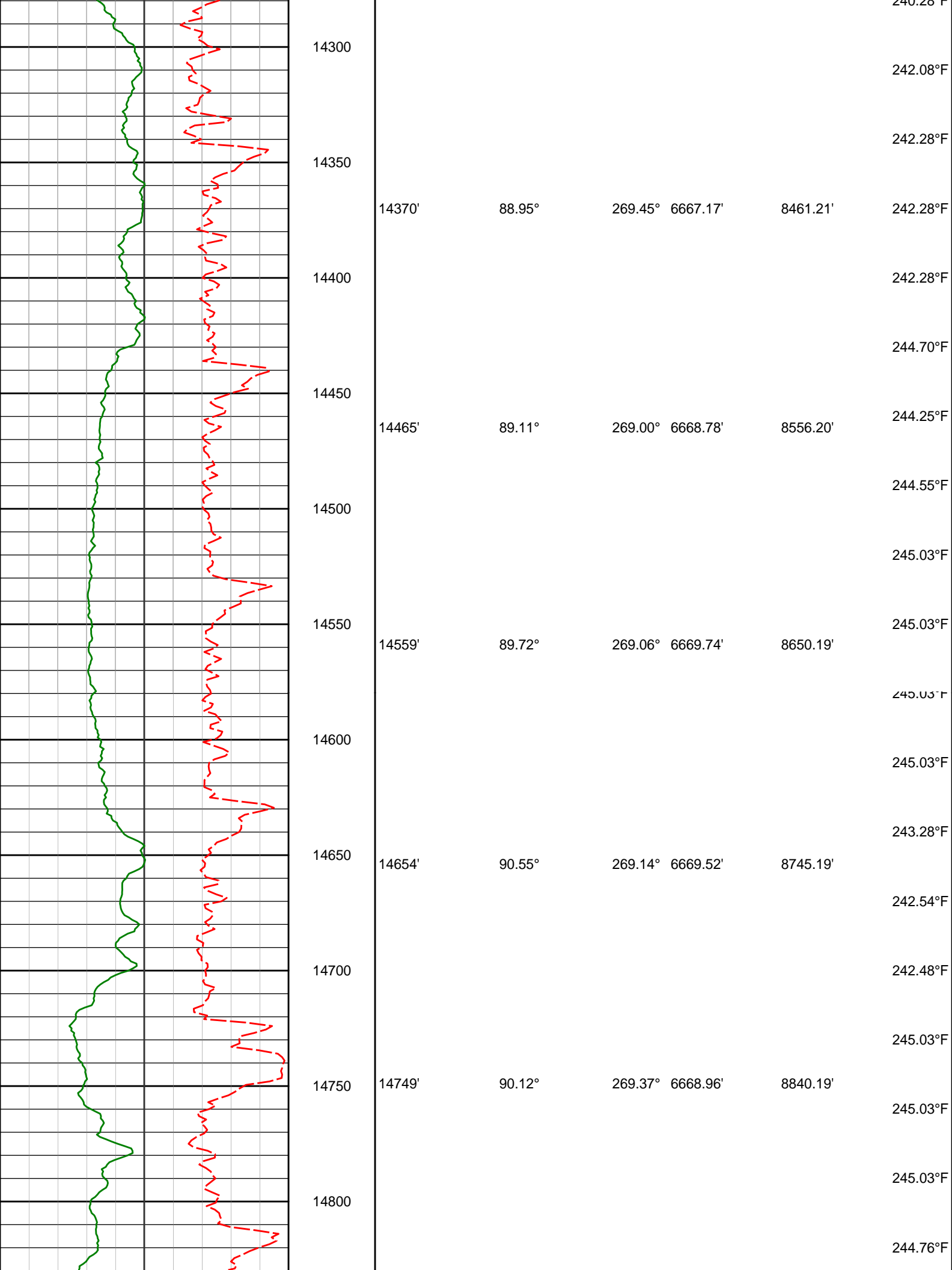


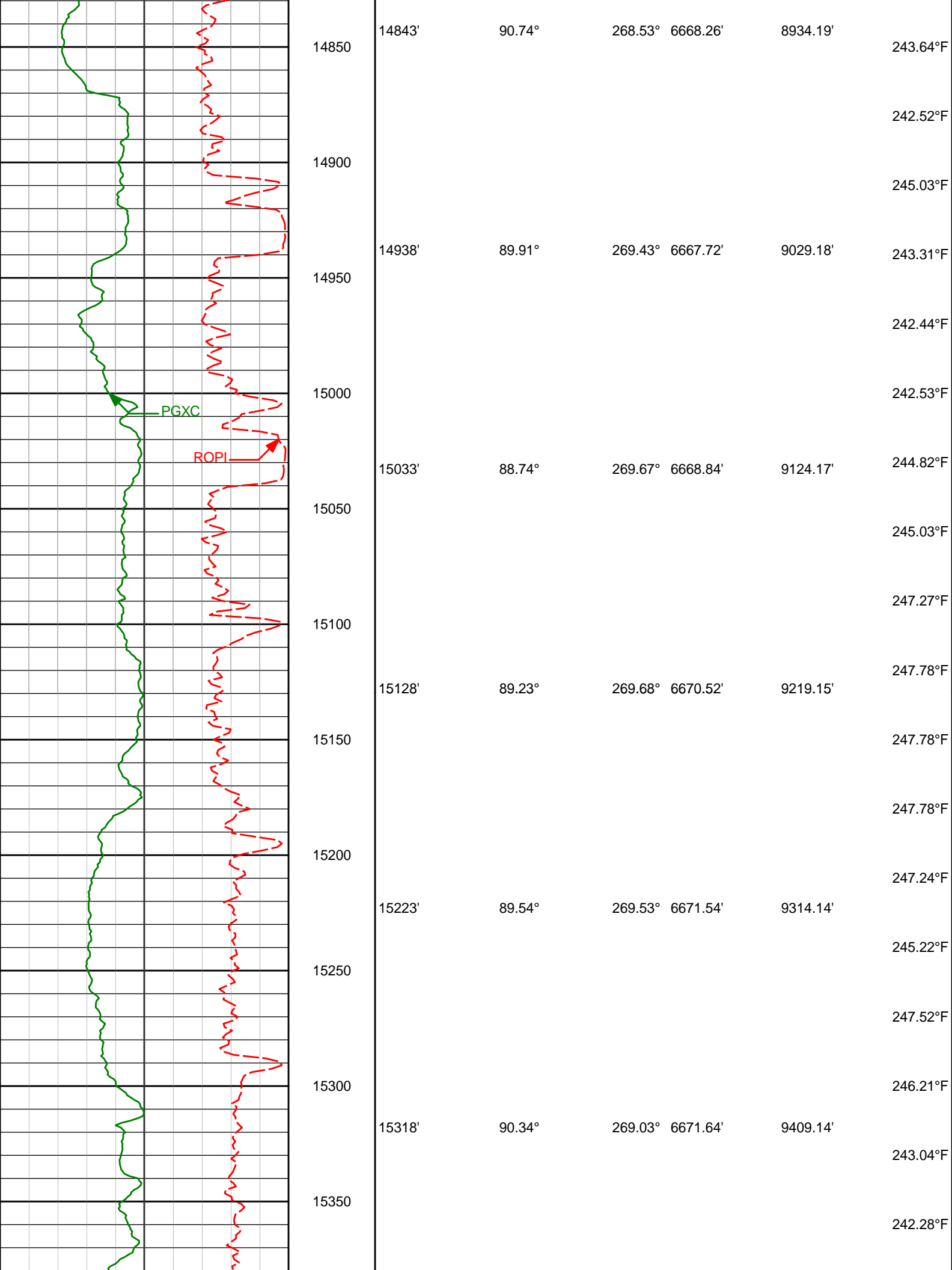


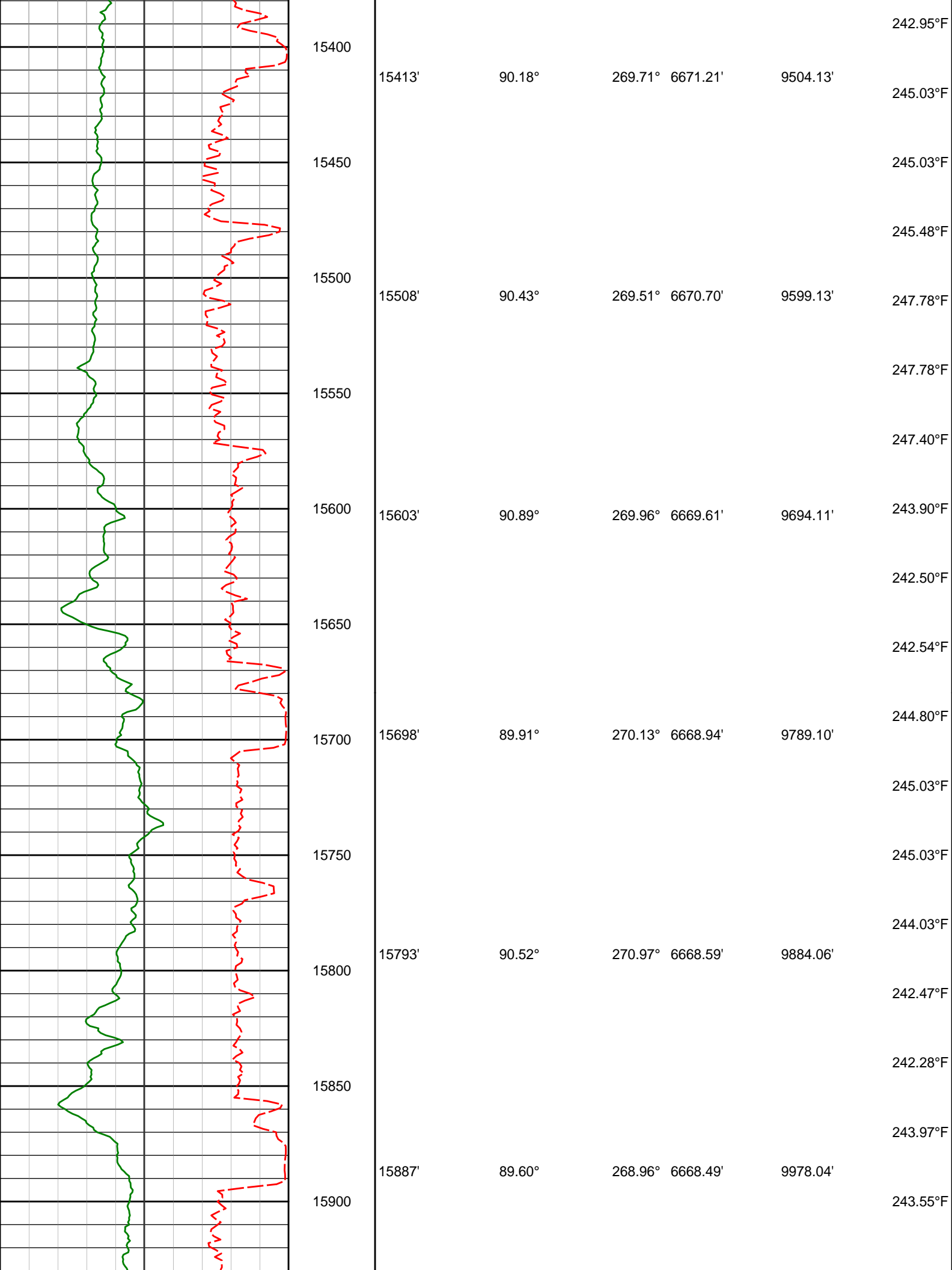


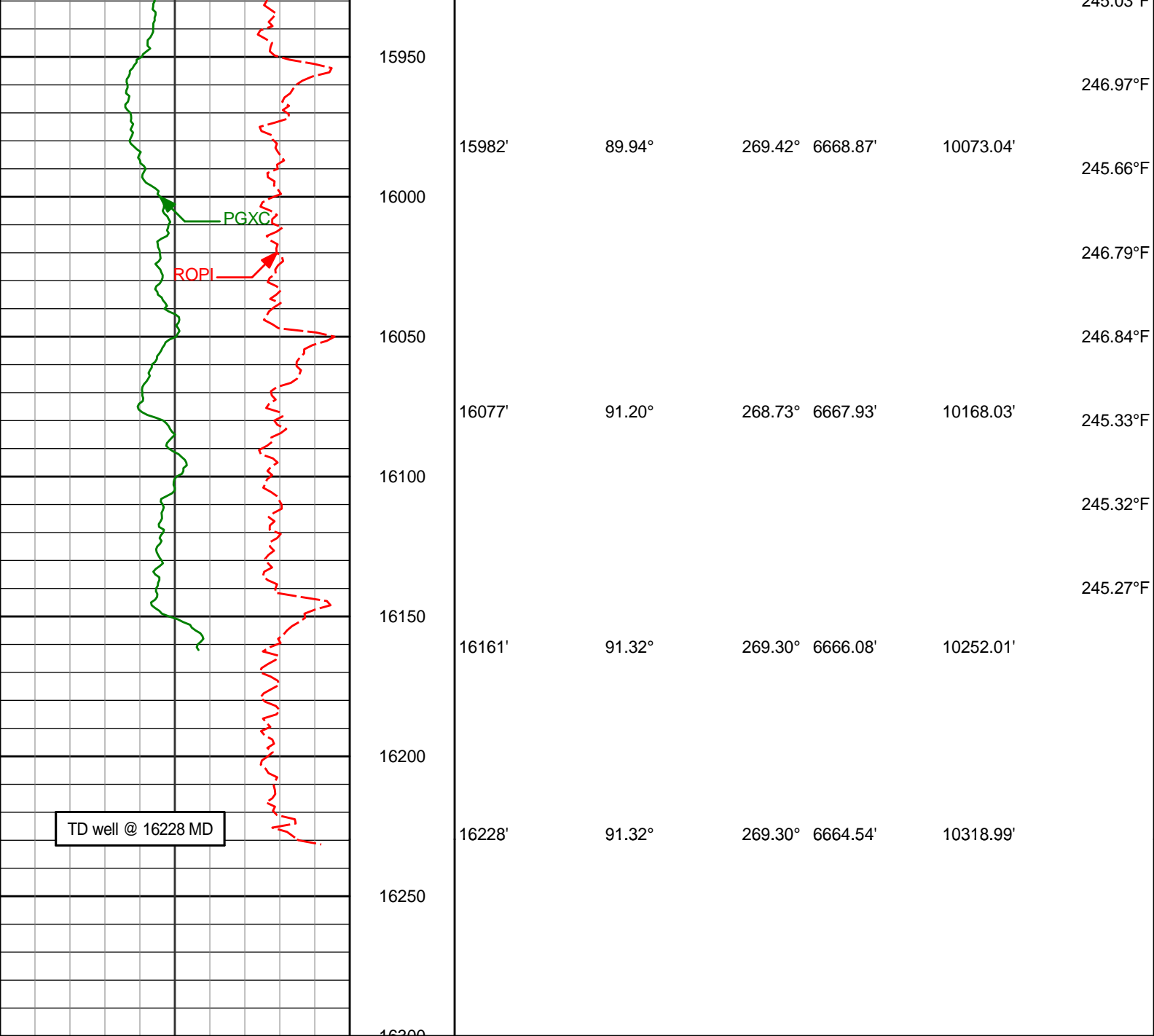








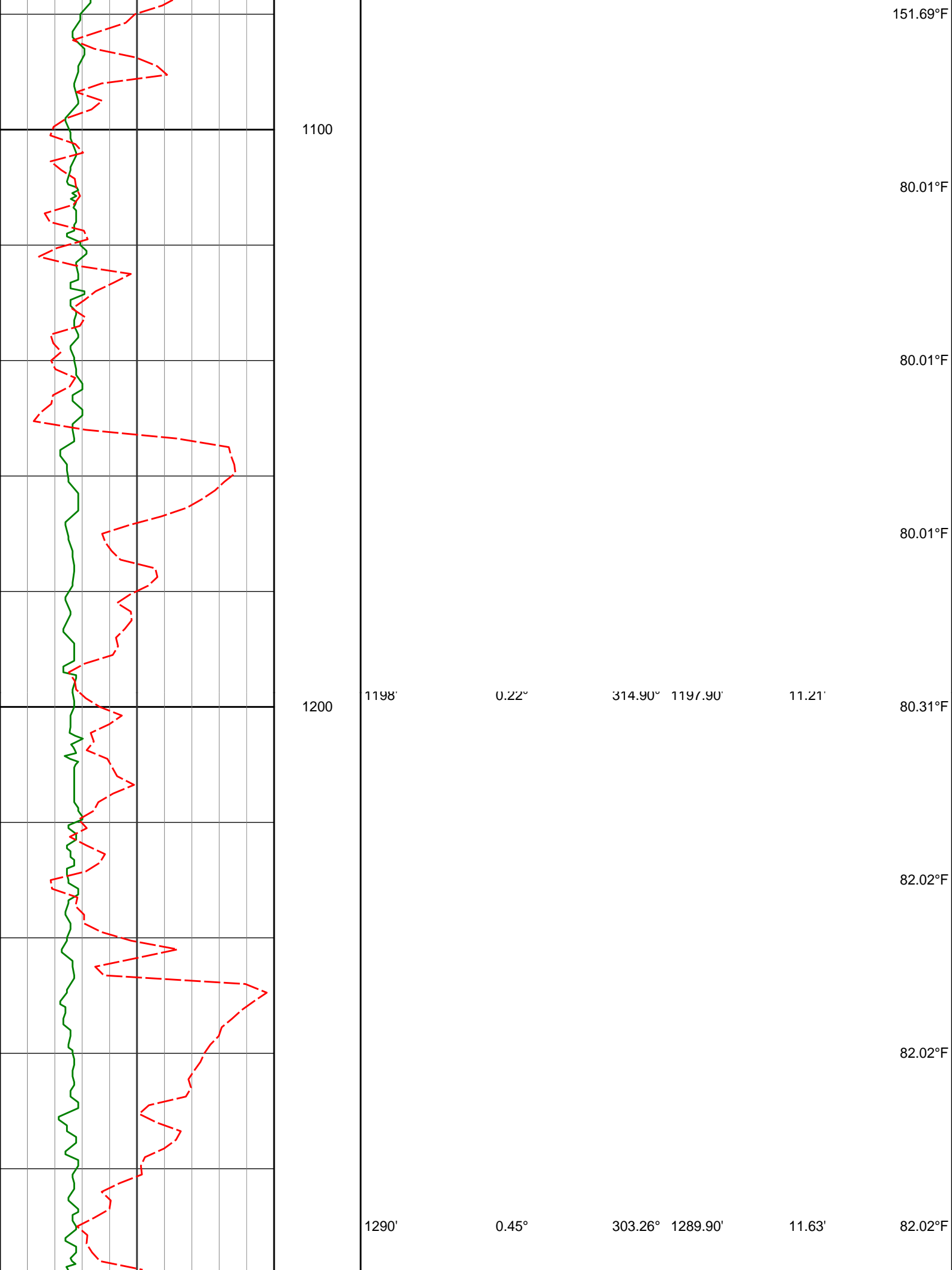


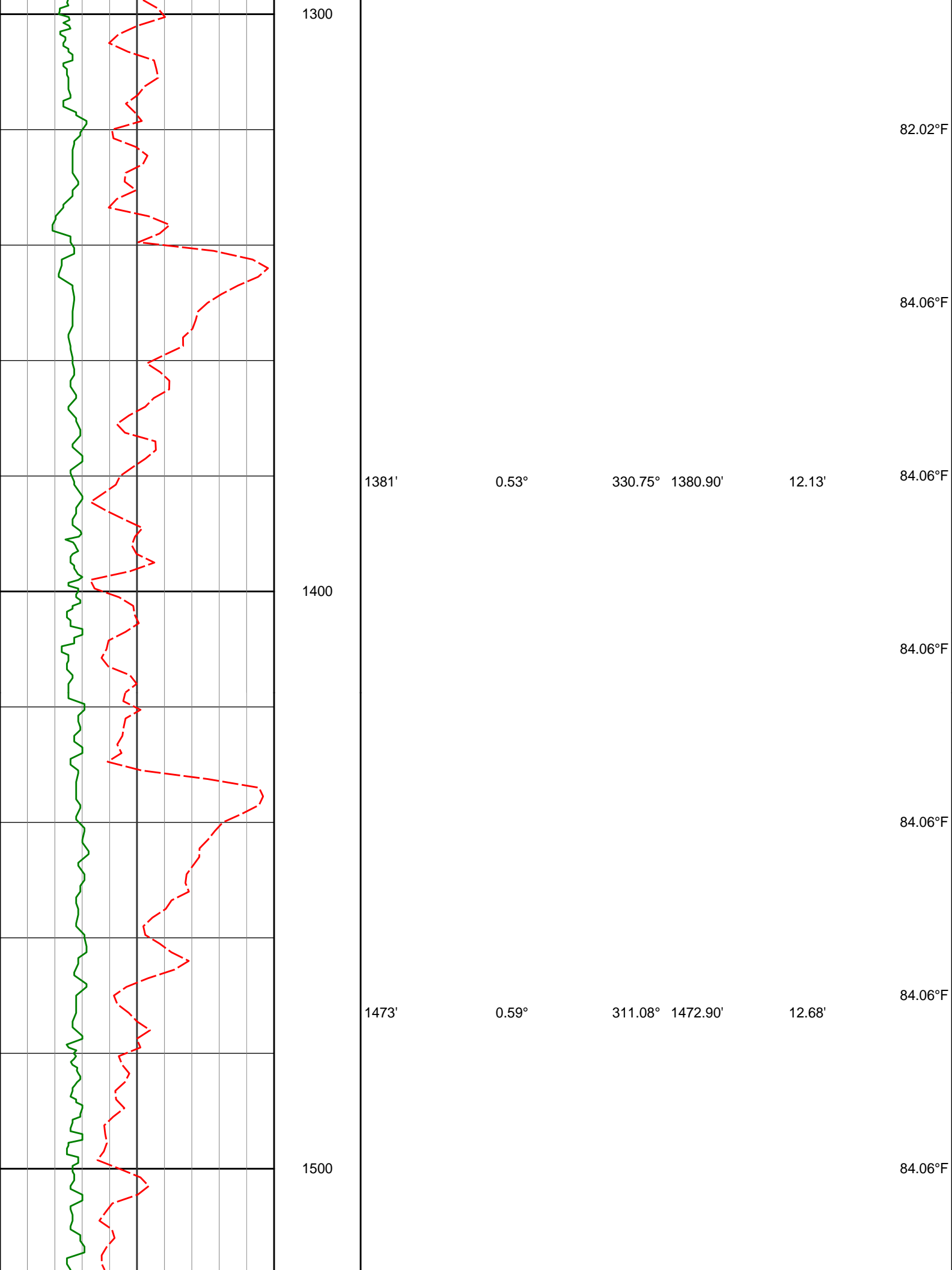


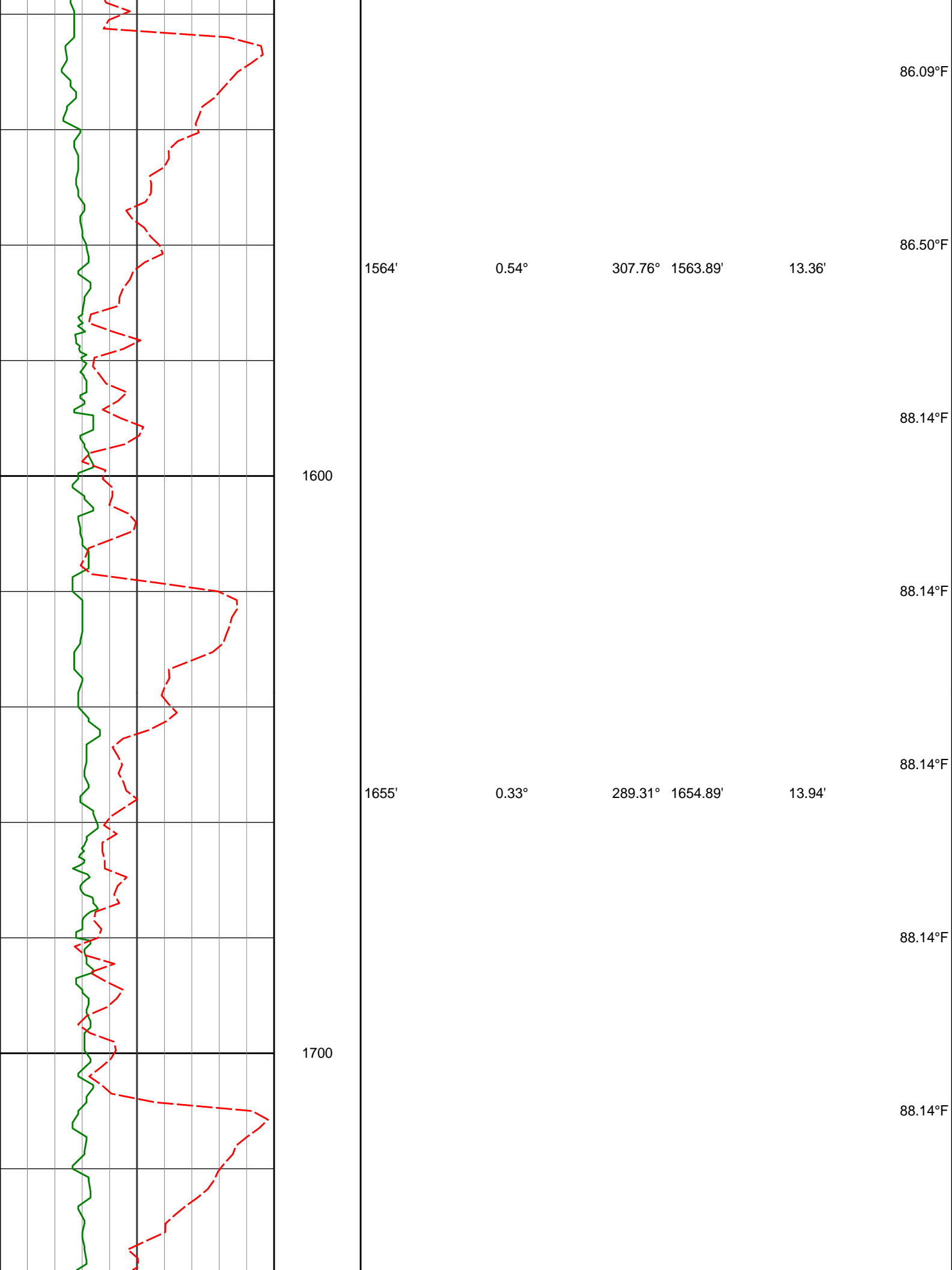
Inst Rate of Penetration ROPI feet per hr		Depth TVD ft	Depth	Inc	Azi	TVD	V.S.	Temp
PCG GR XHi-Range RT BCor PGXRC-T api								

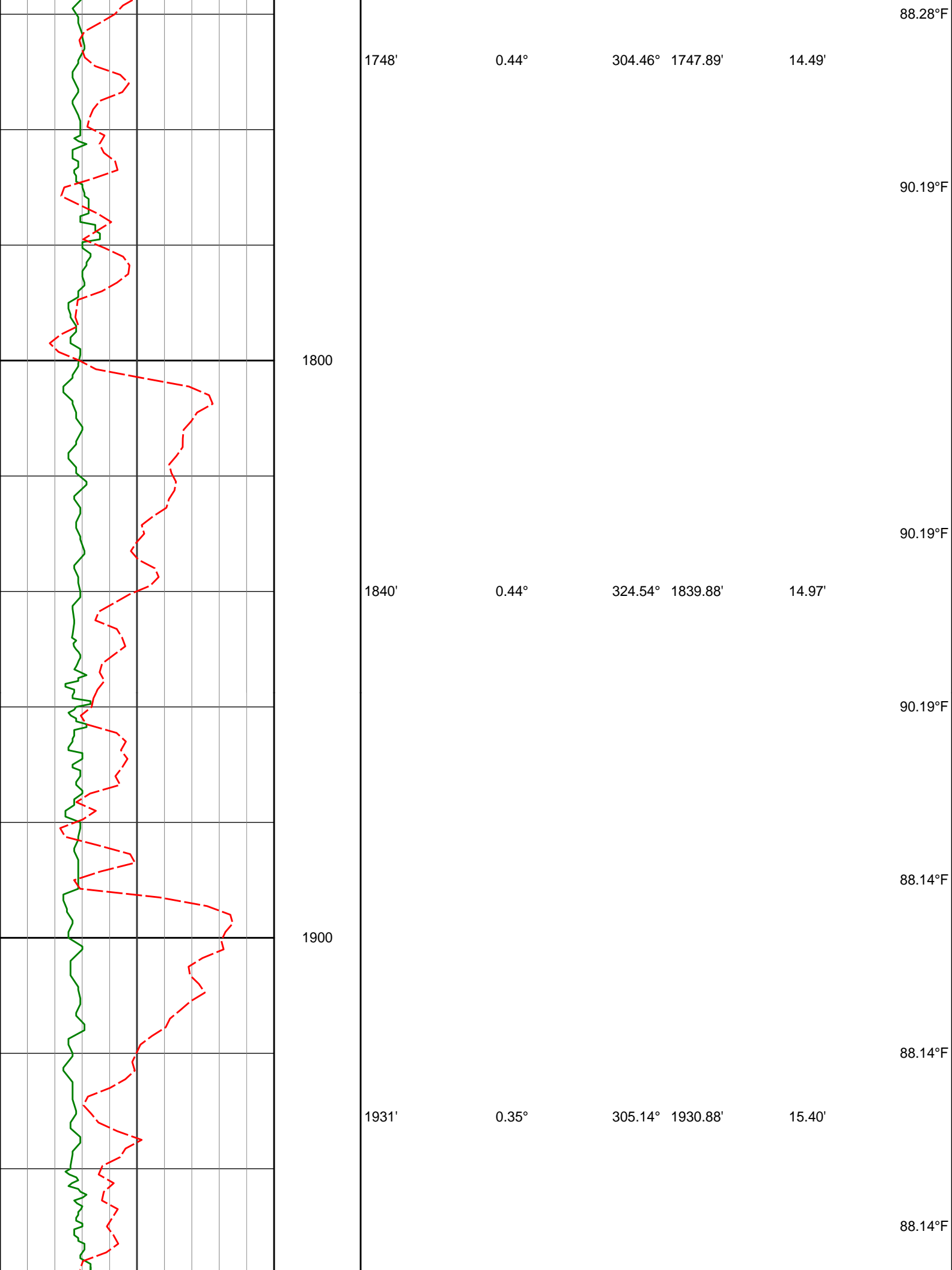
MD Detail 1:240 Scale

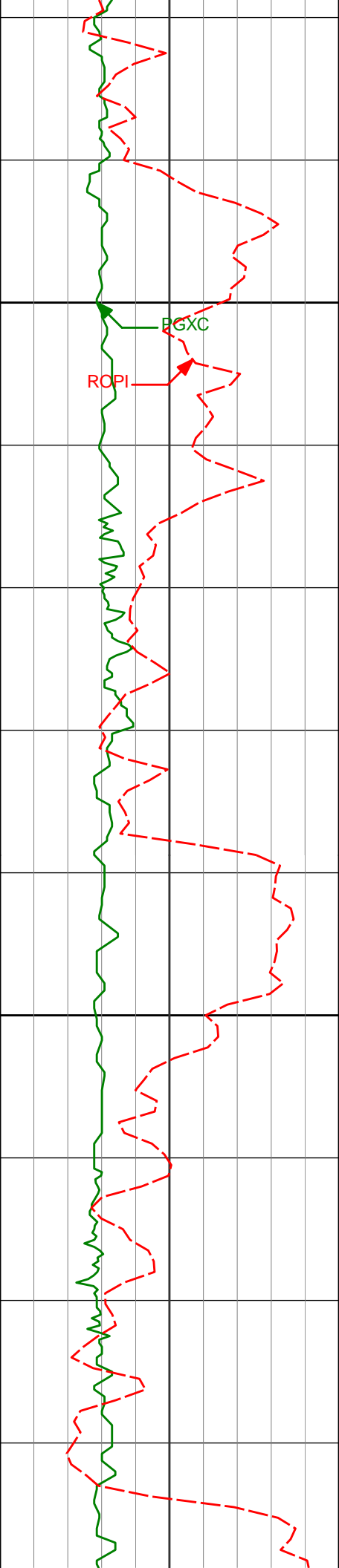
PCG GR XHi-Range RT BCor PGXRC-T api		
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2000

2100

2023'

2115'

0.32°

1.74°

273.02°

225.65°

2022.88'

2114.86'

15.88'

17.15'

90.19°F

91.15°F

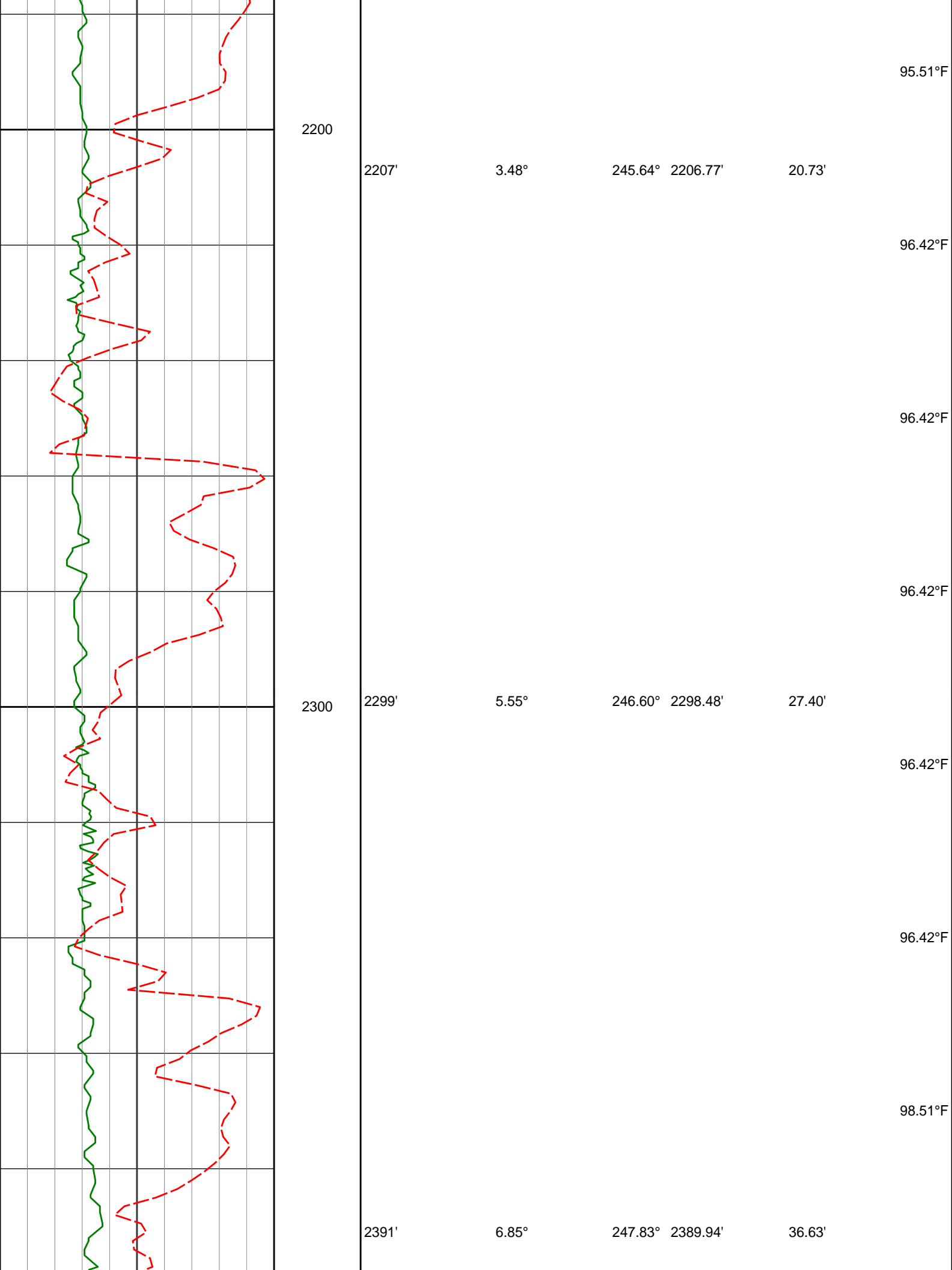
92.26°F

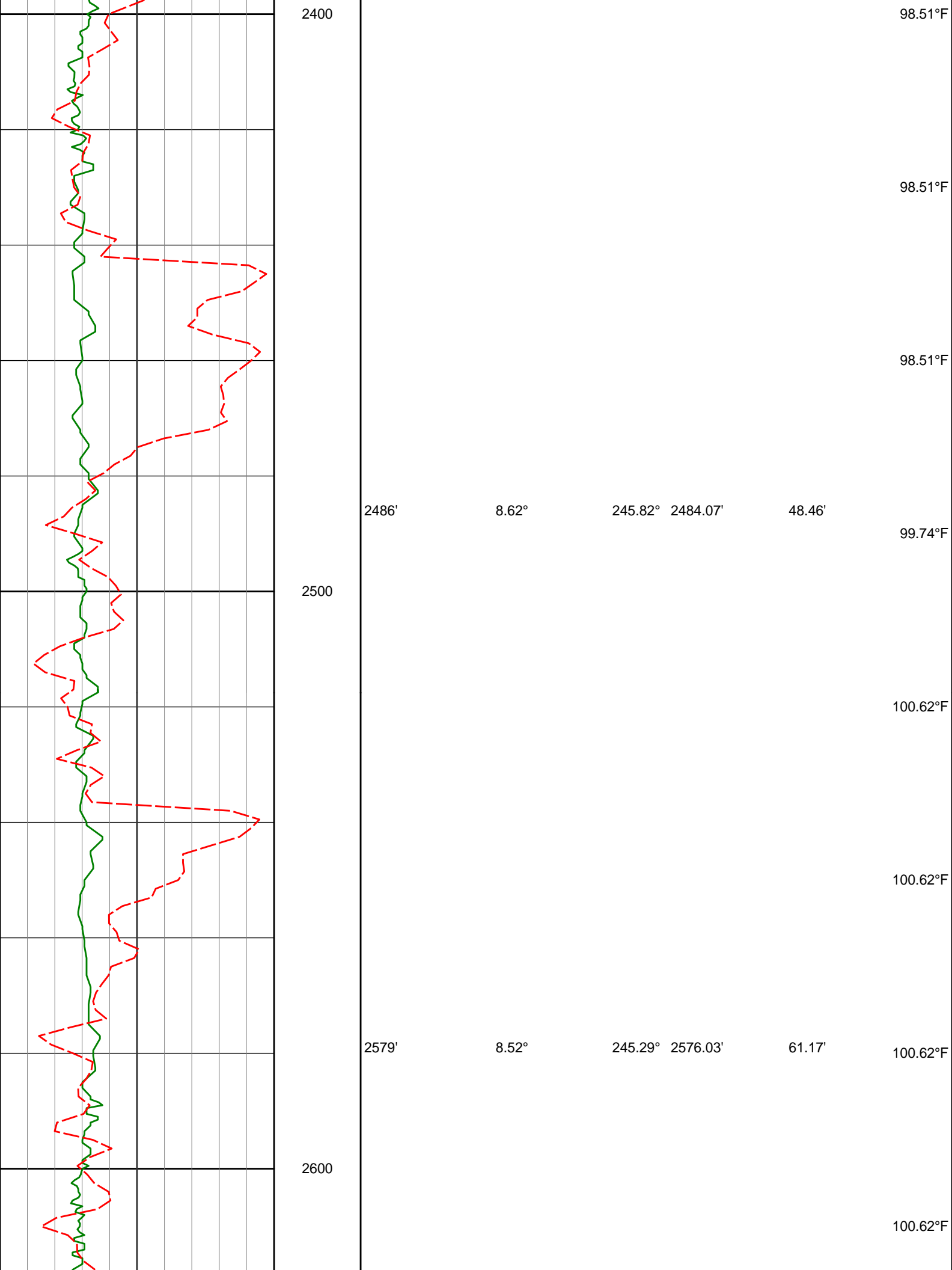
92.26°F

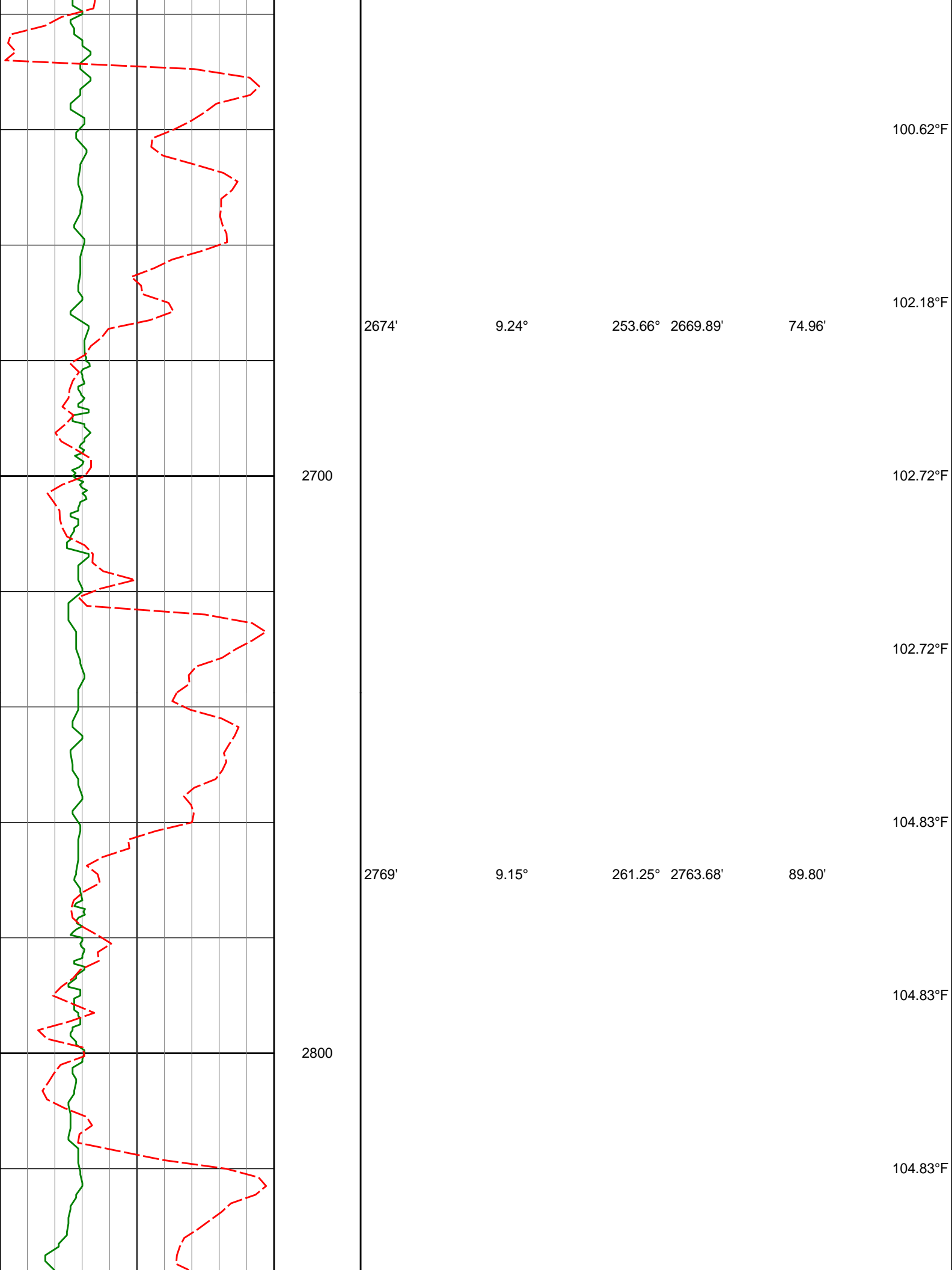
92.70°F

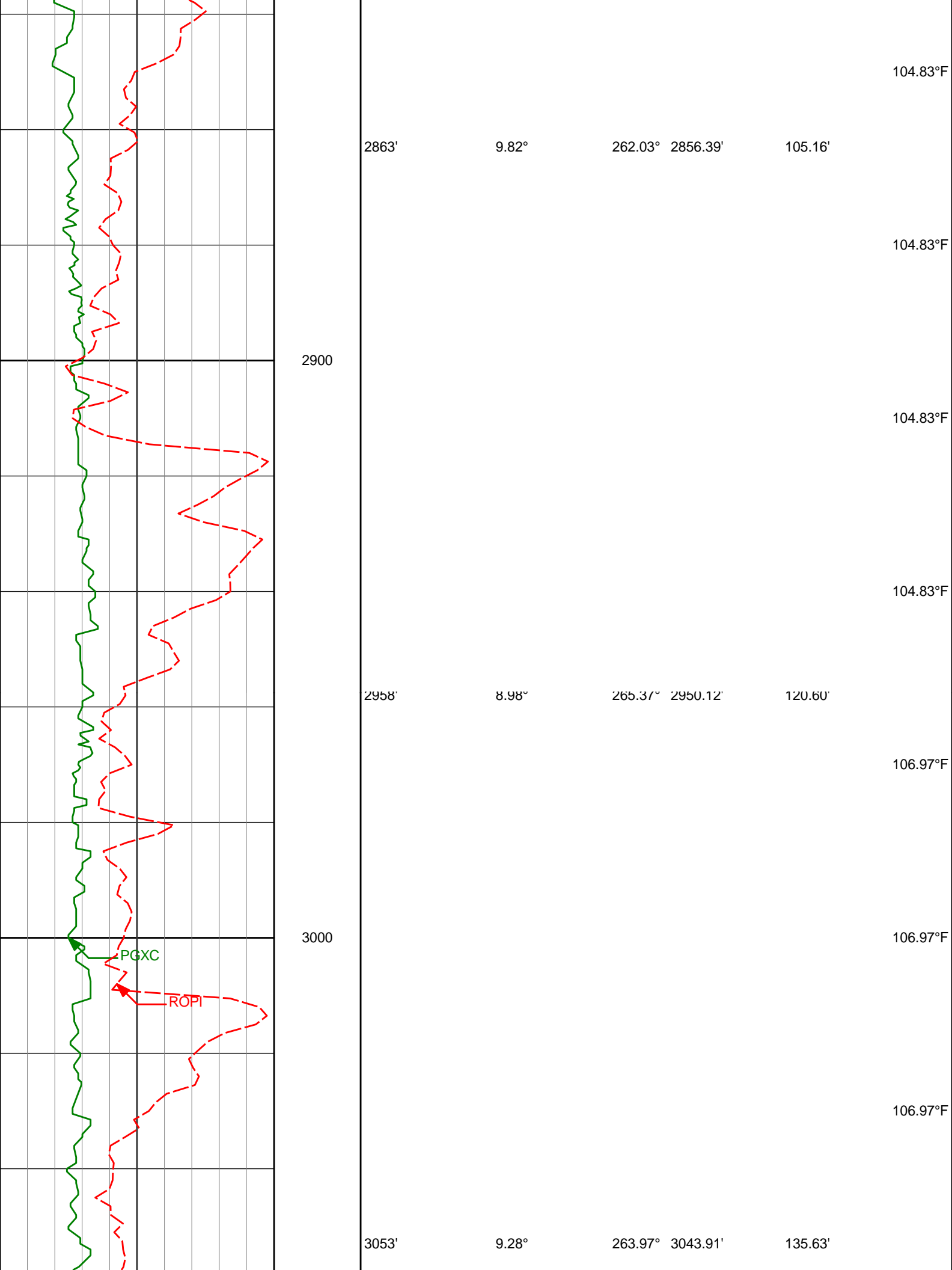
94.33°F

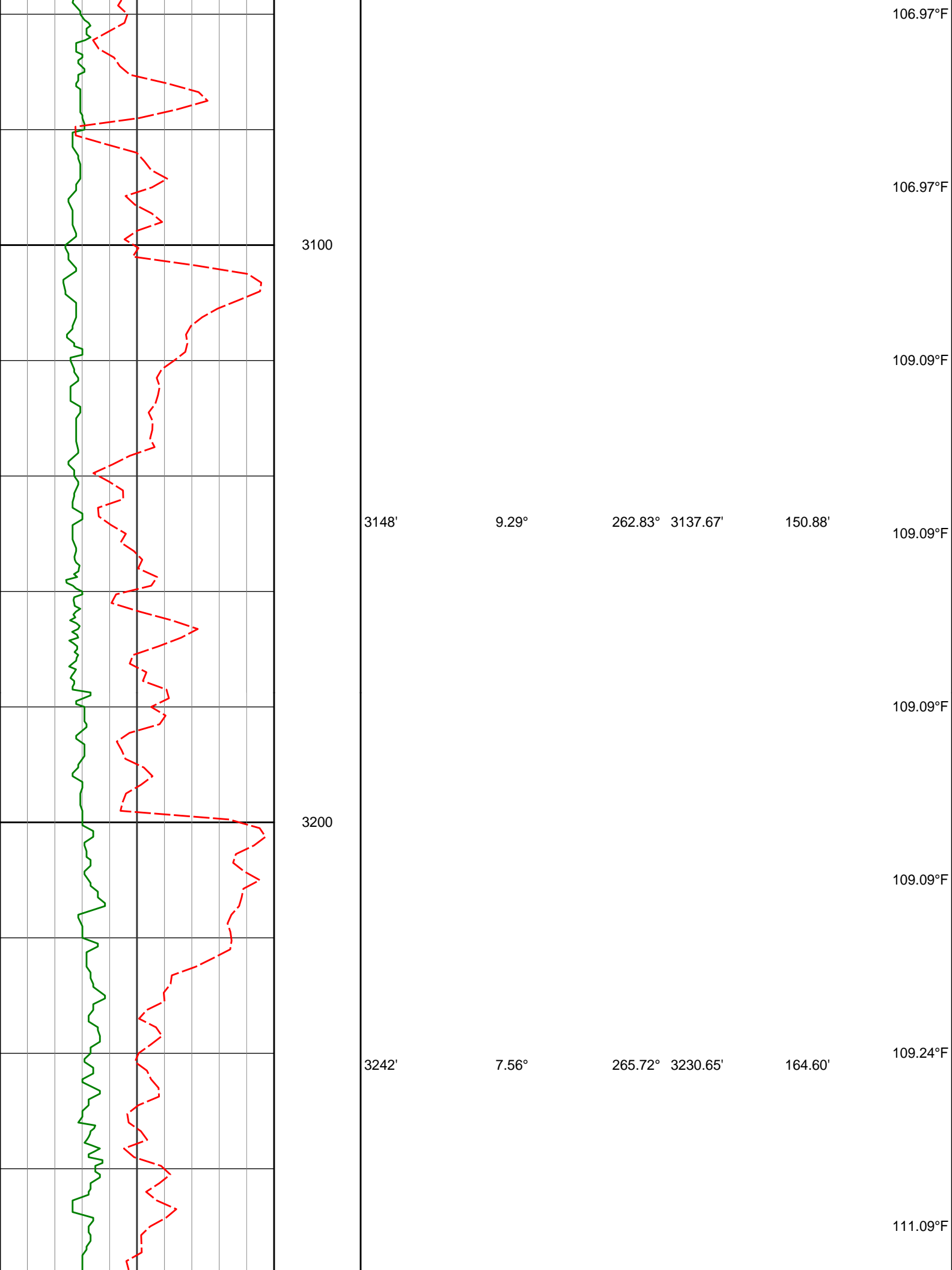
94.33°F

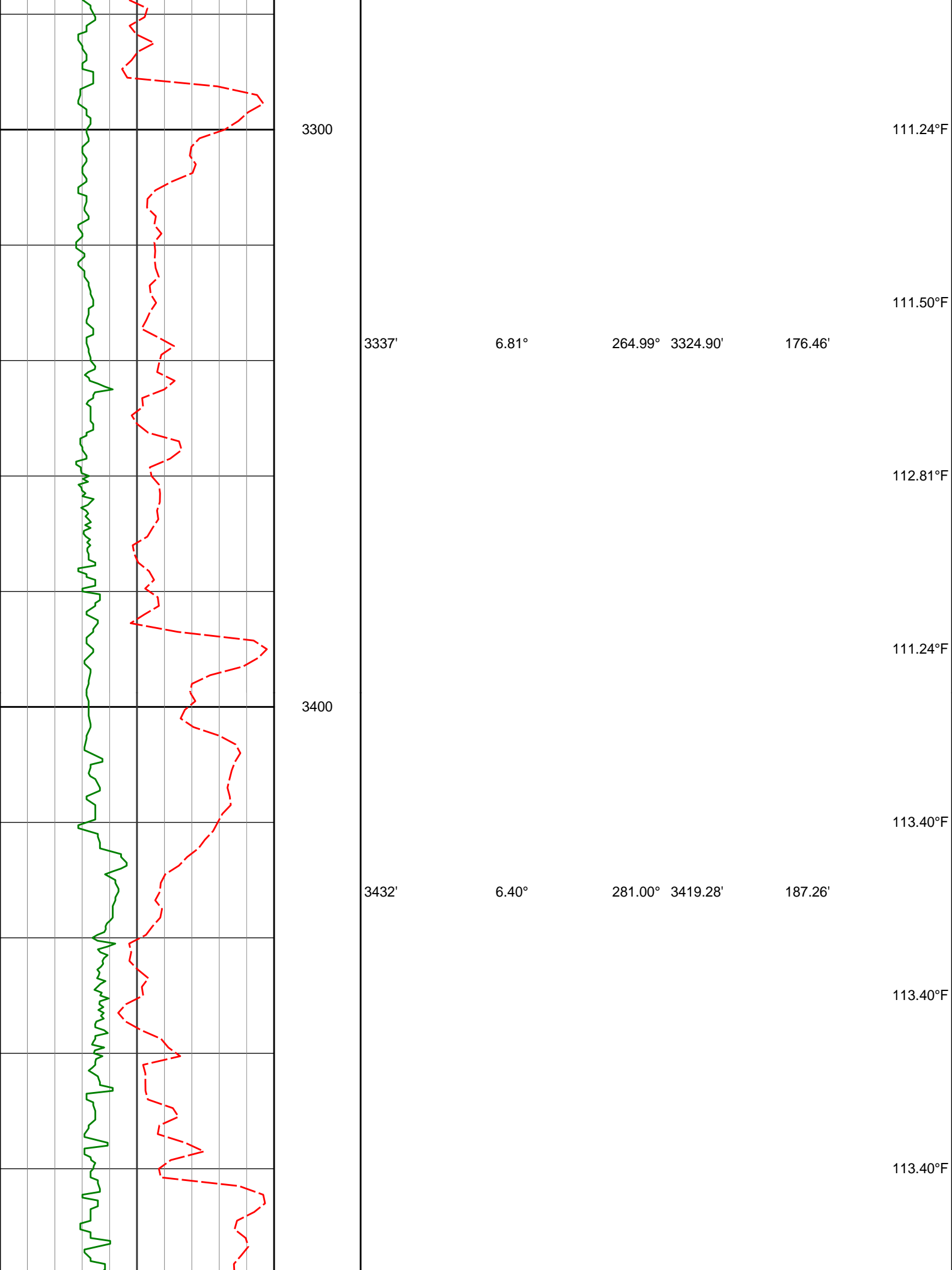


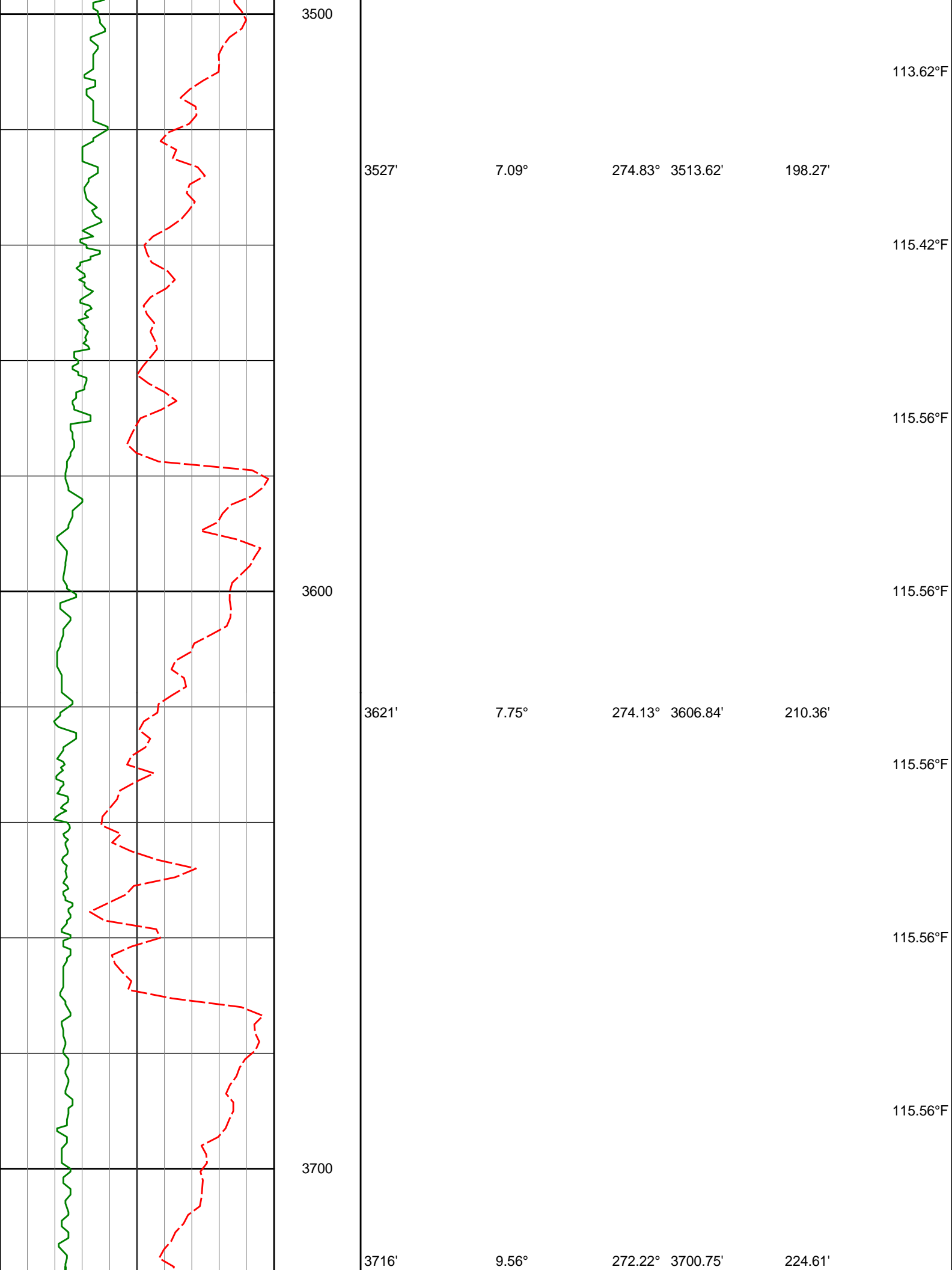


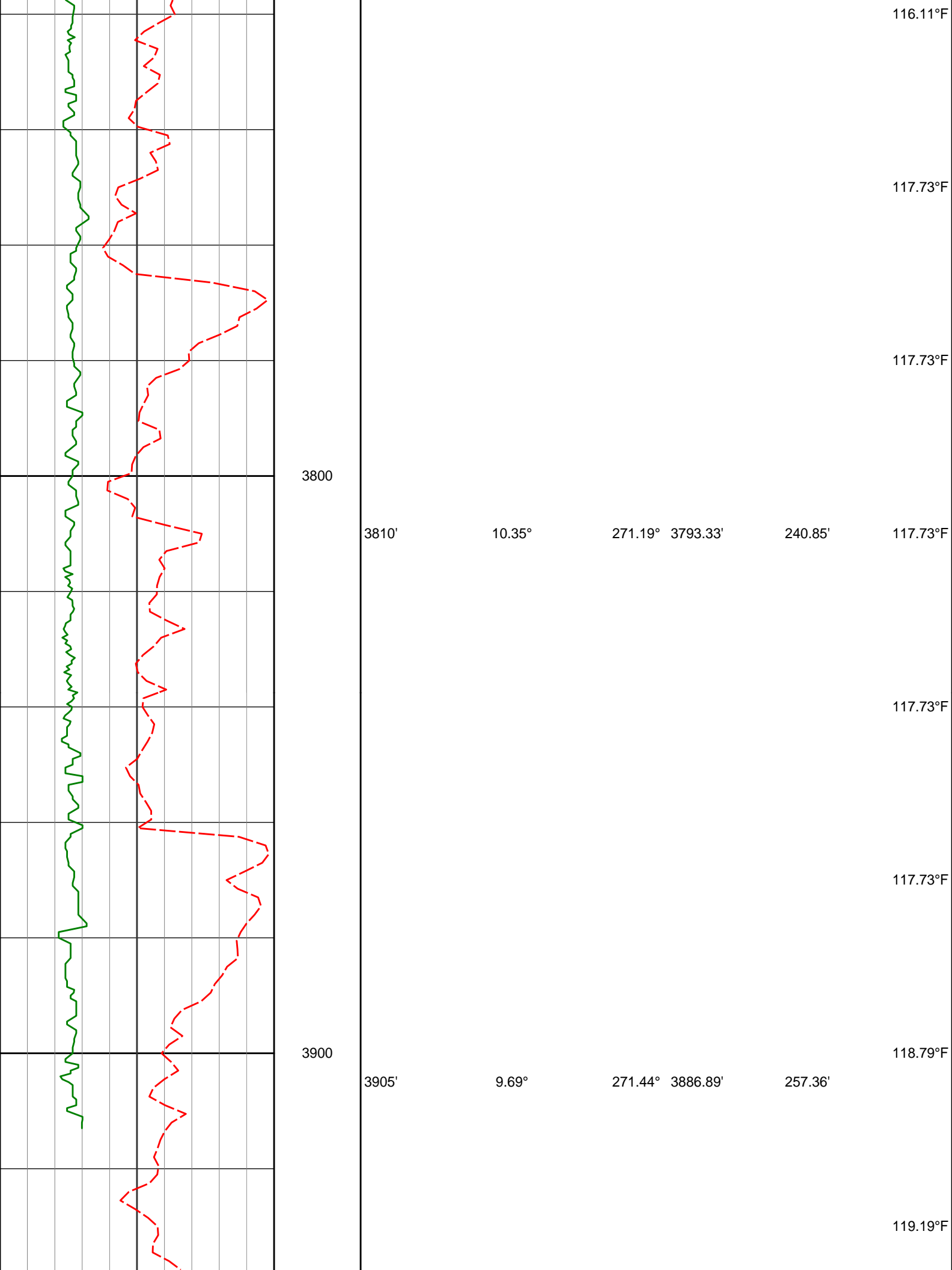


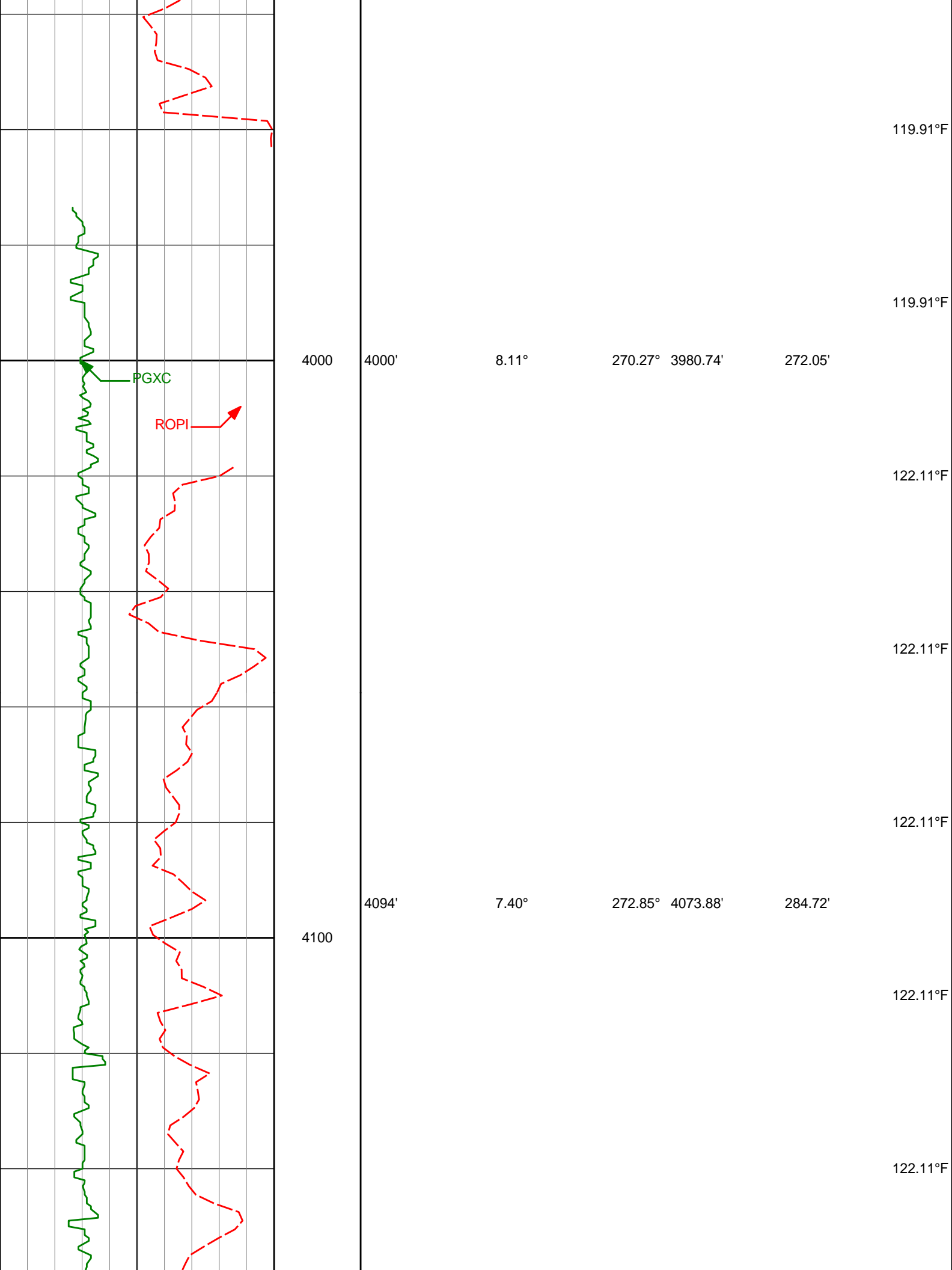


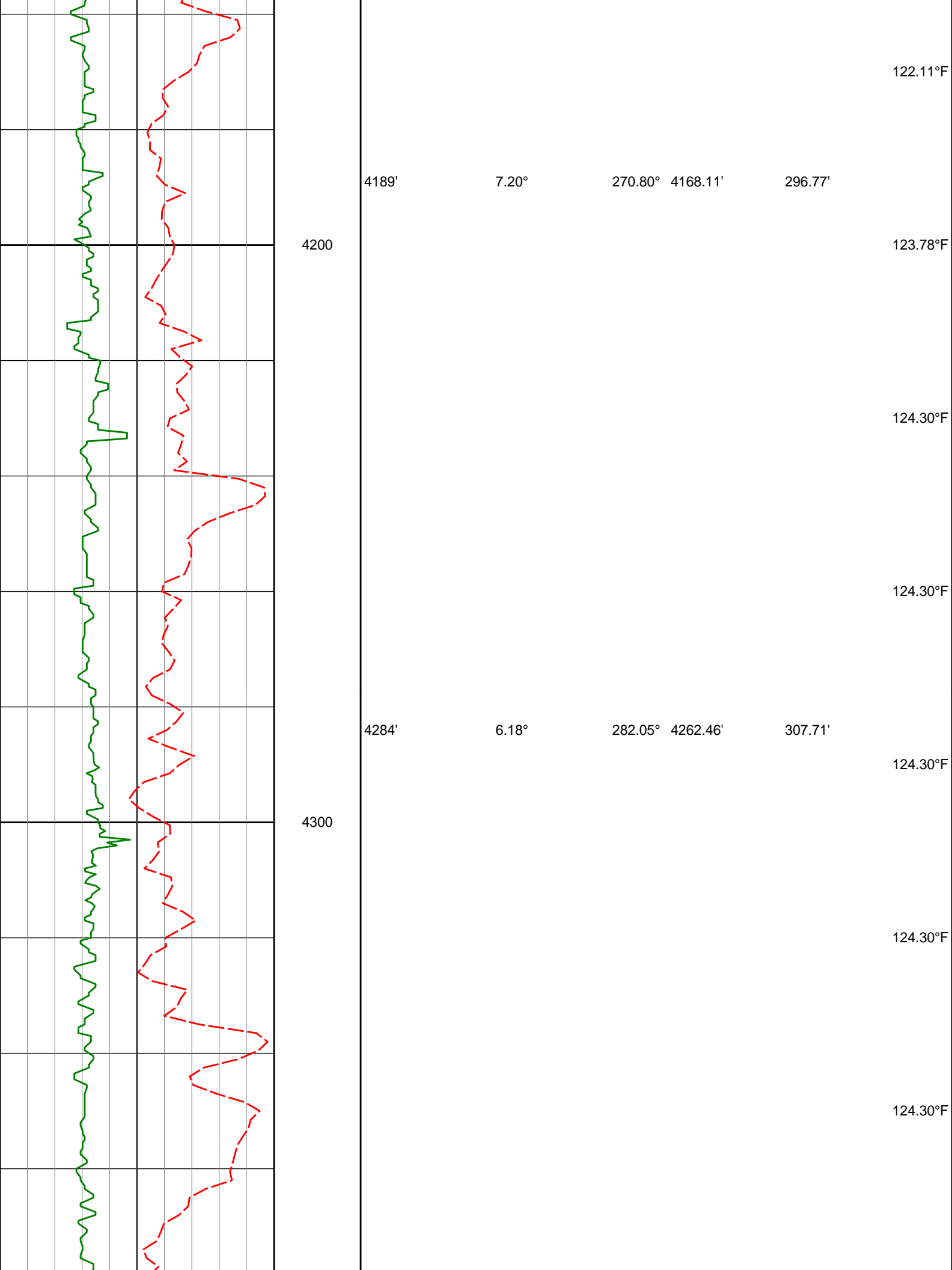


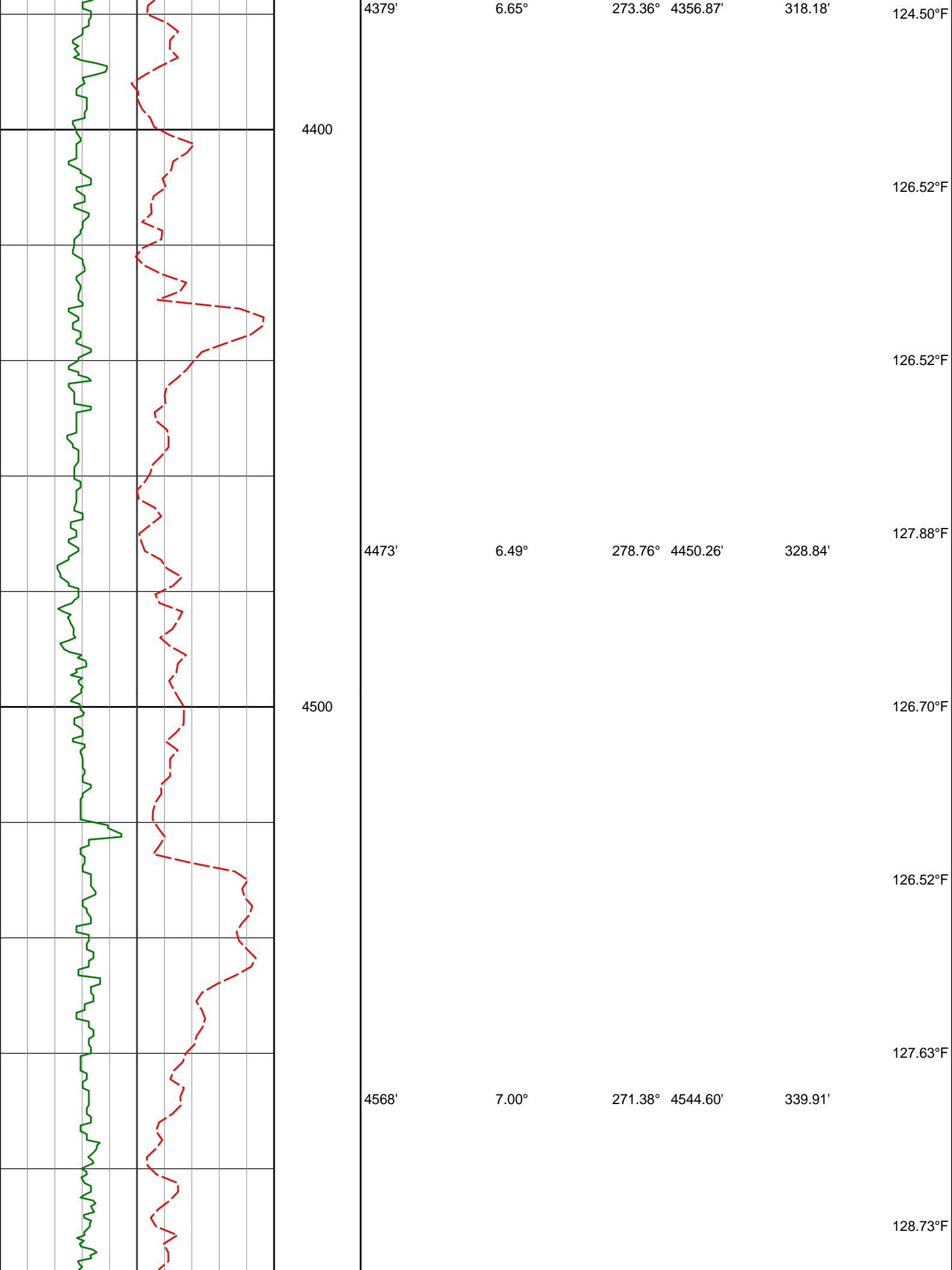


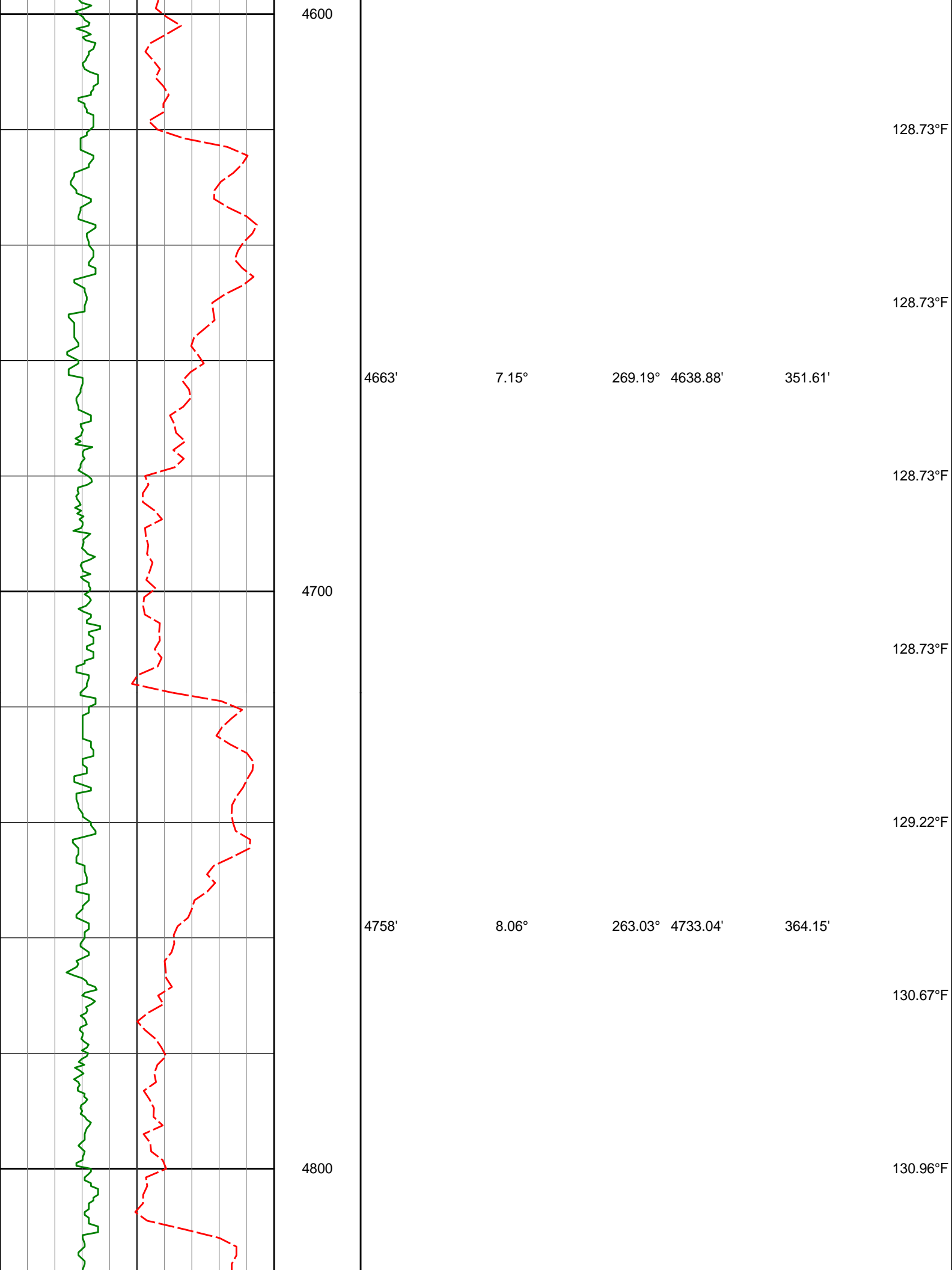


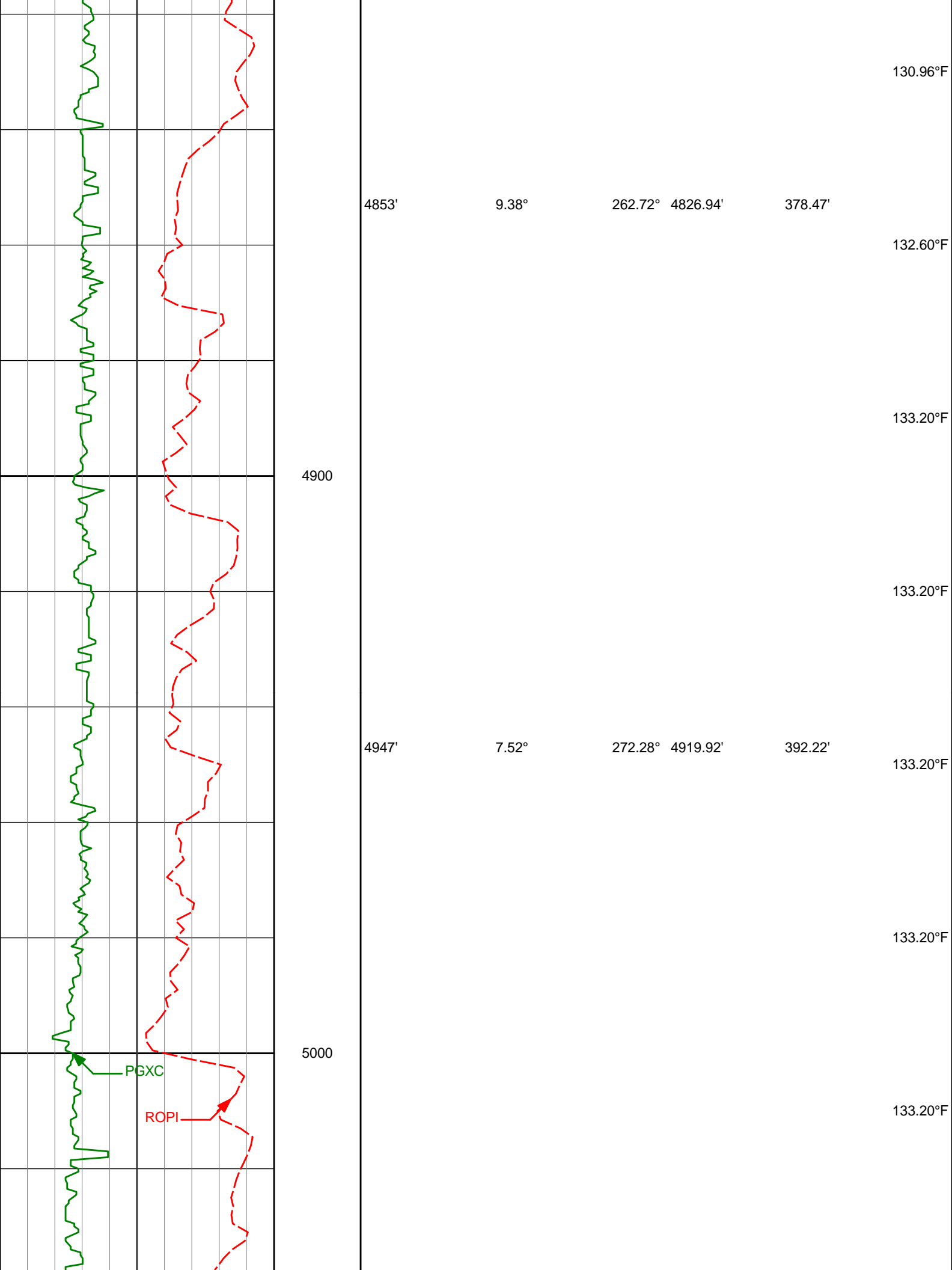


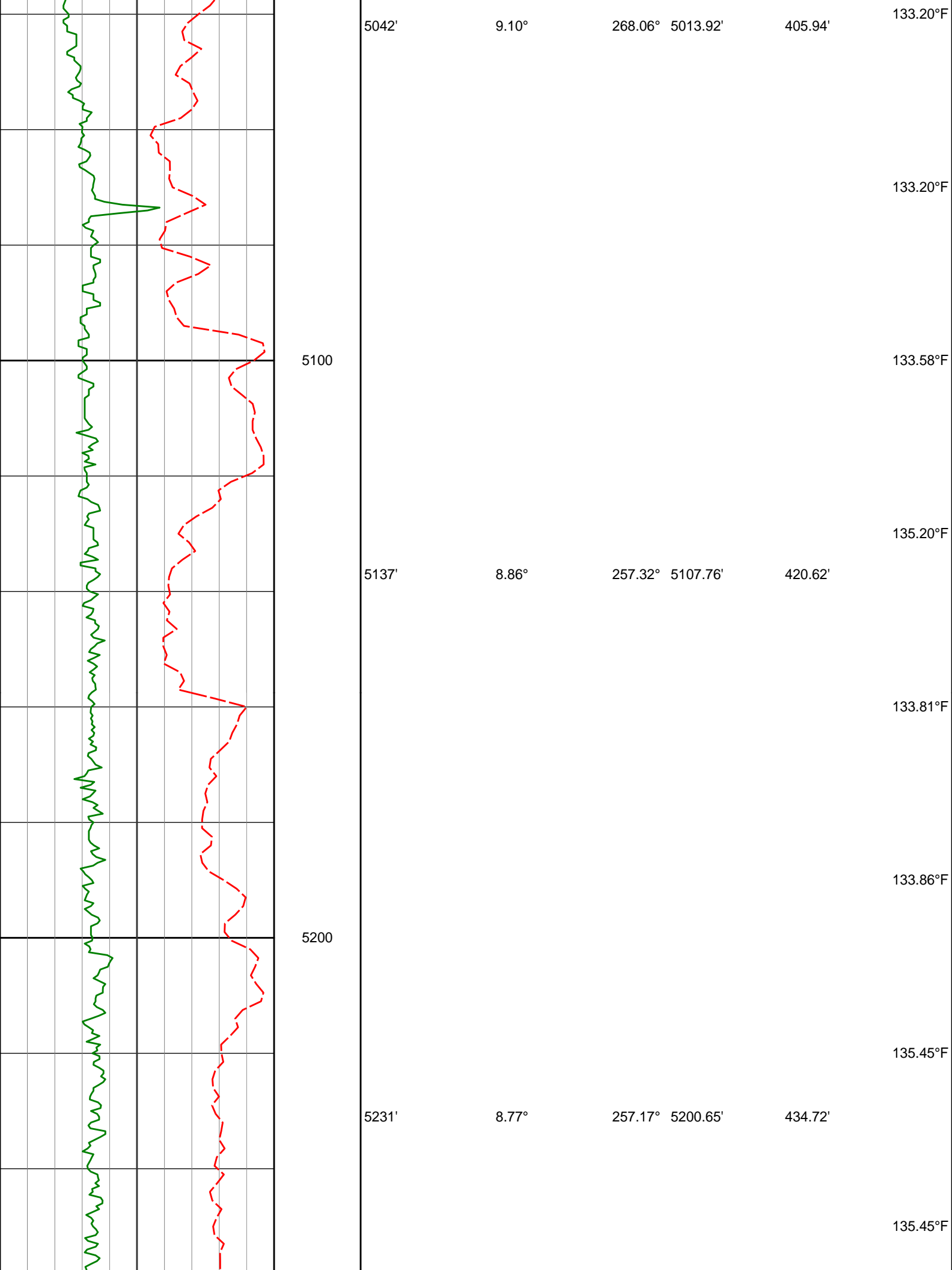


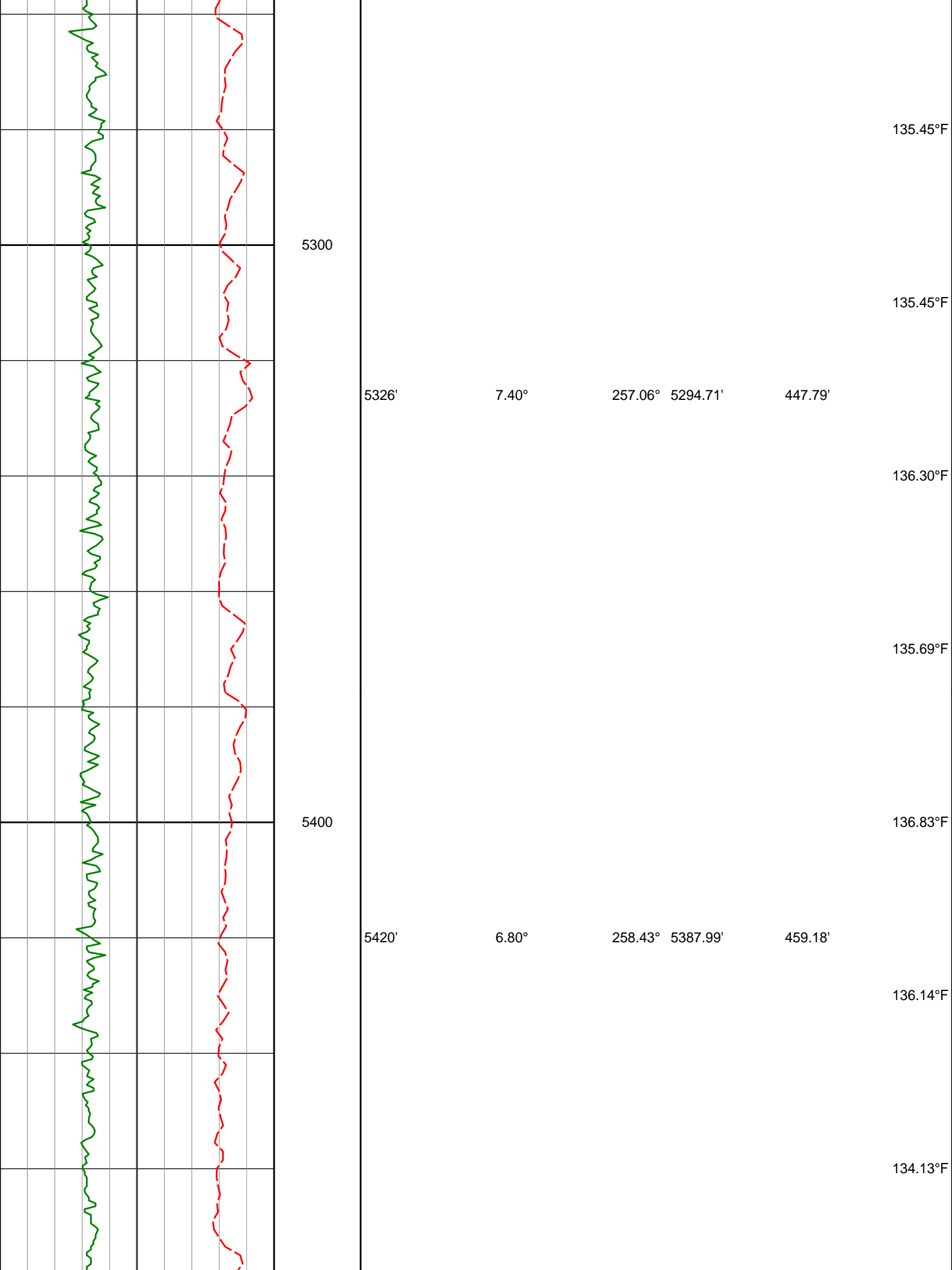


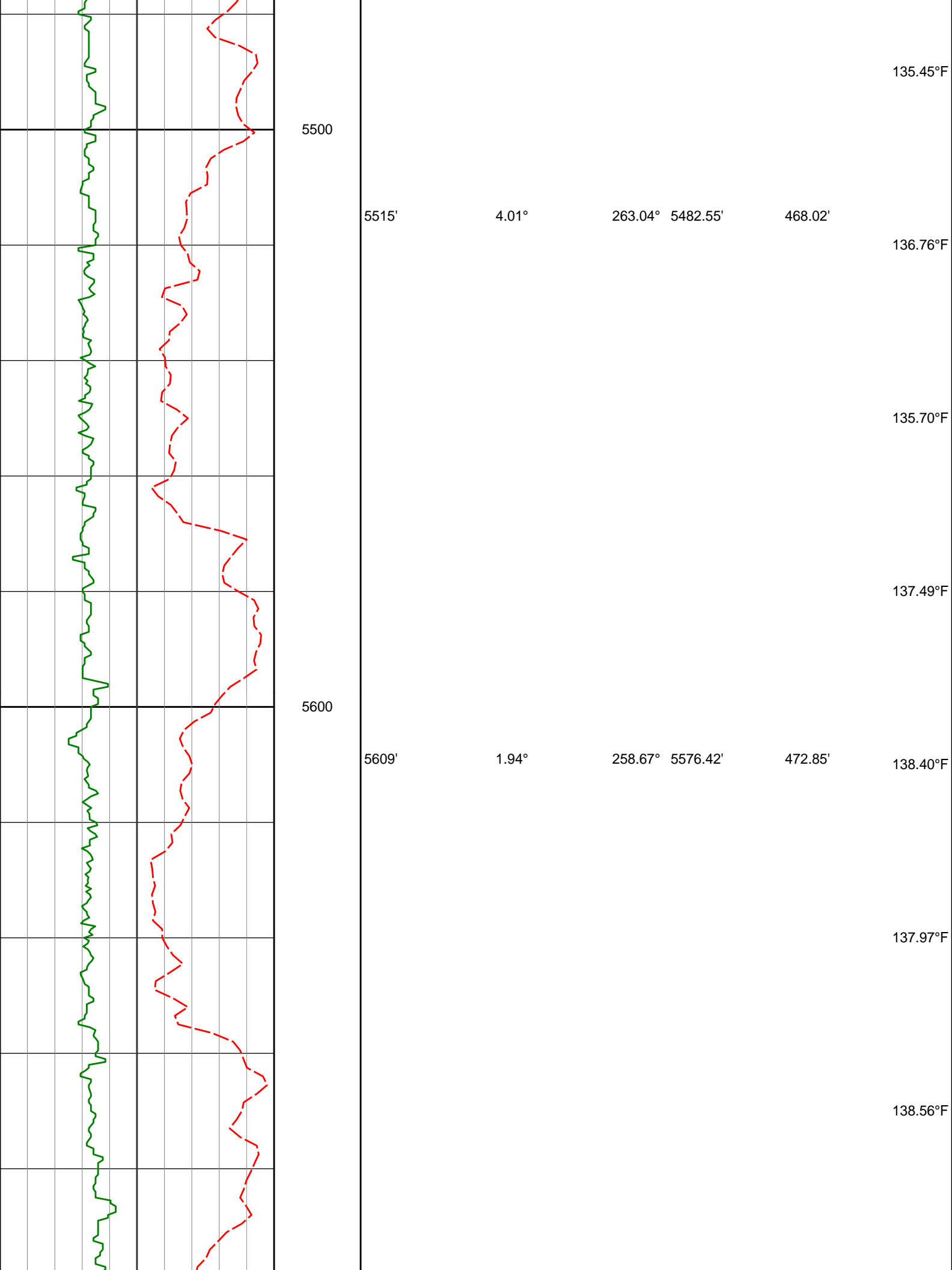


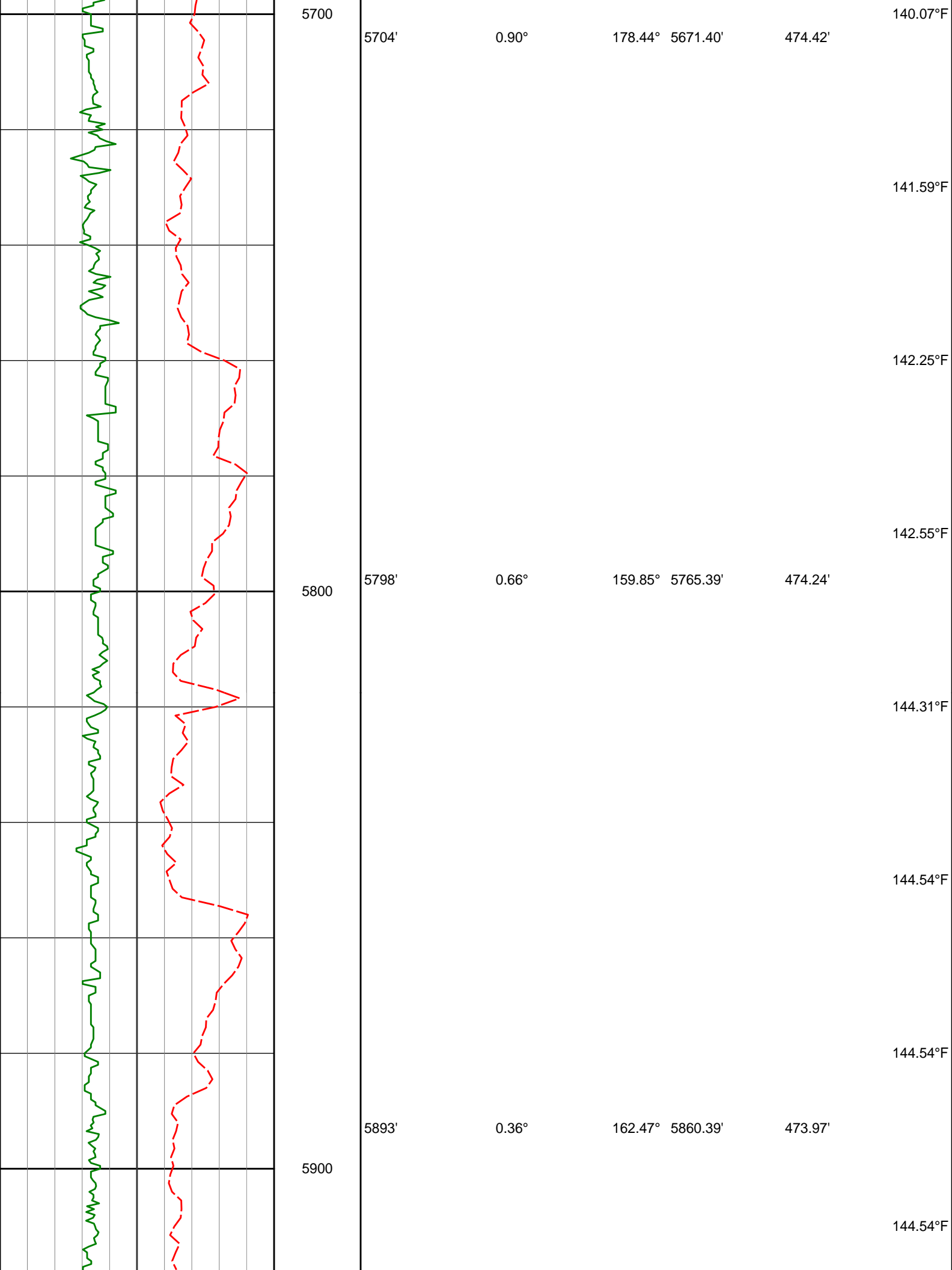


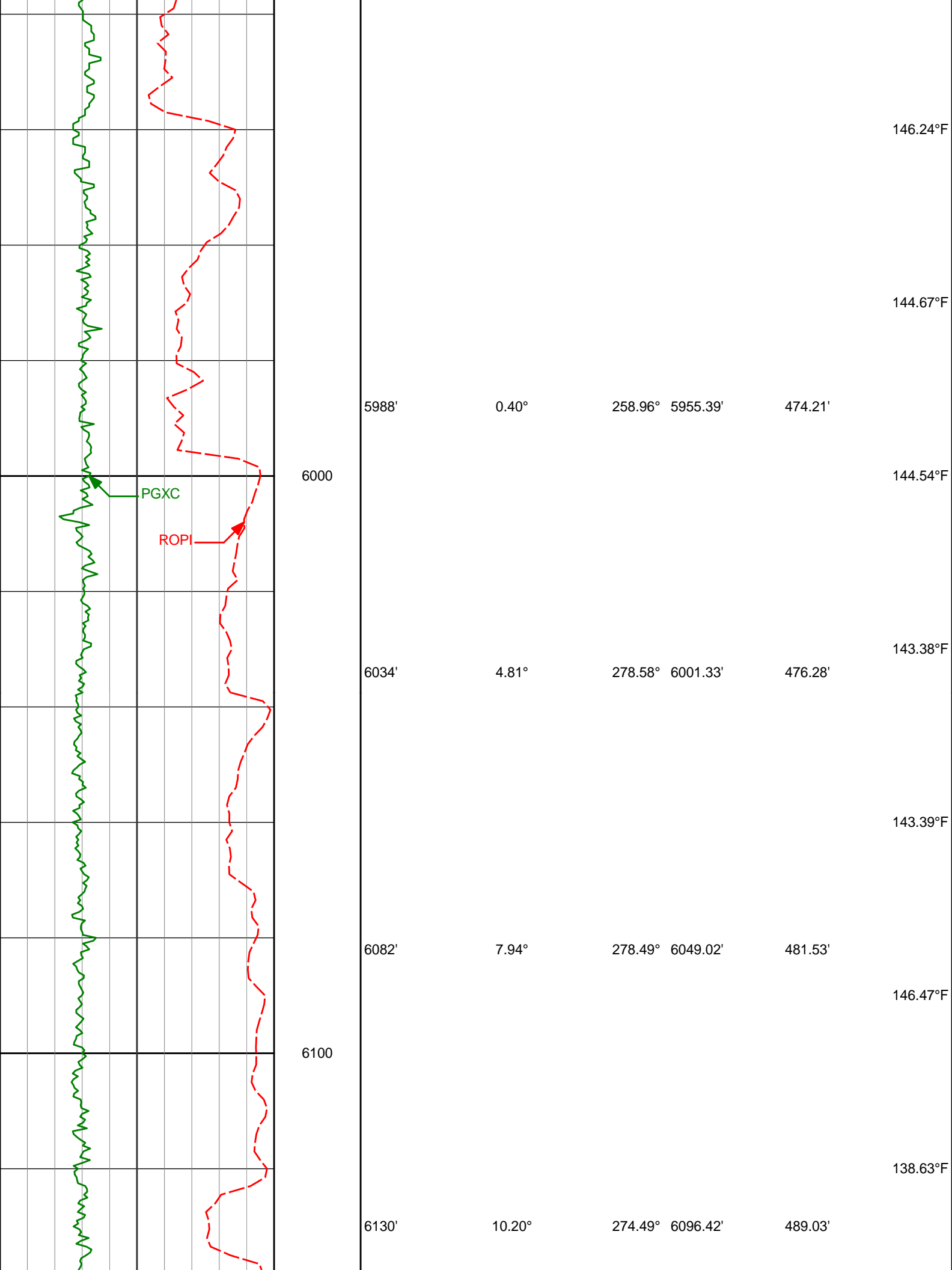


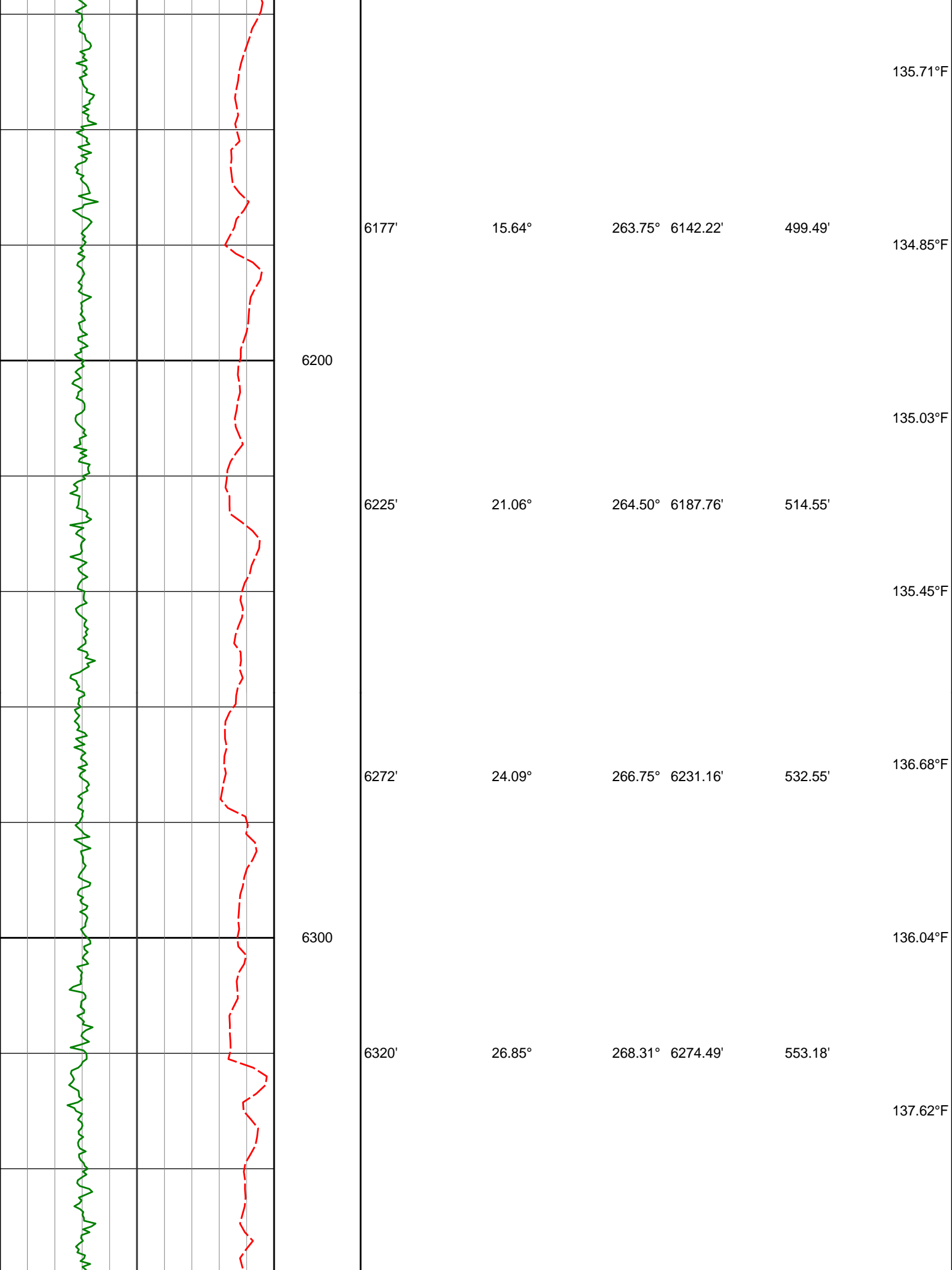


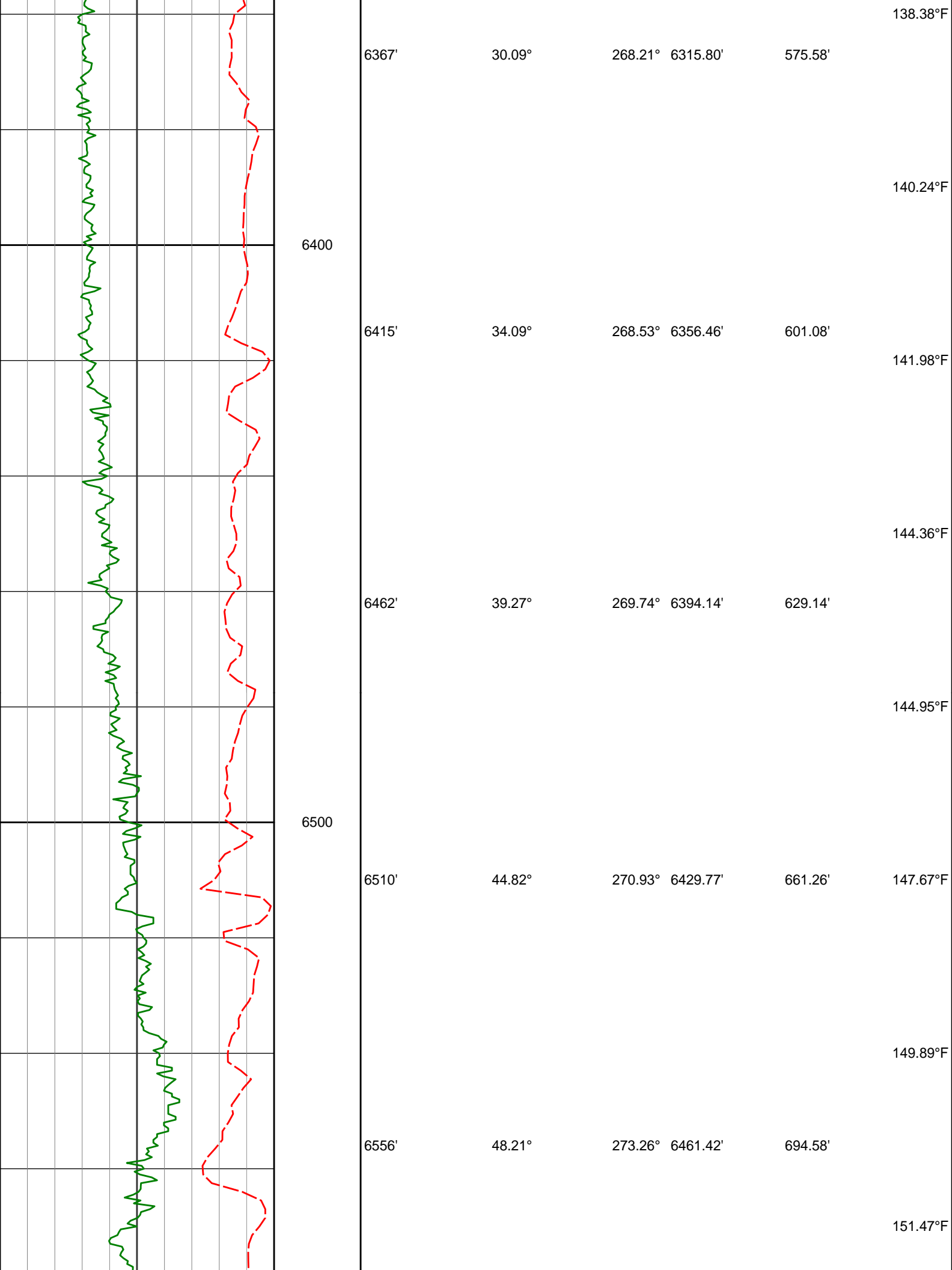


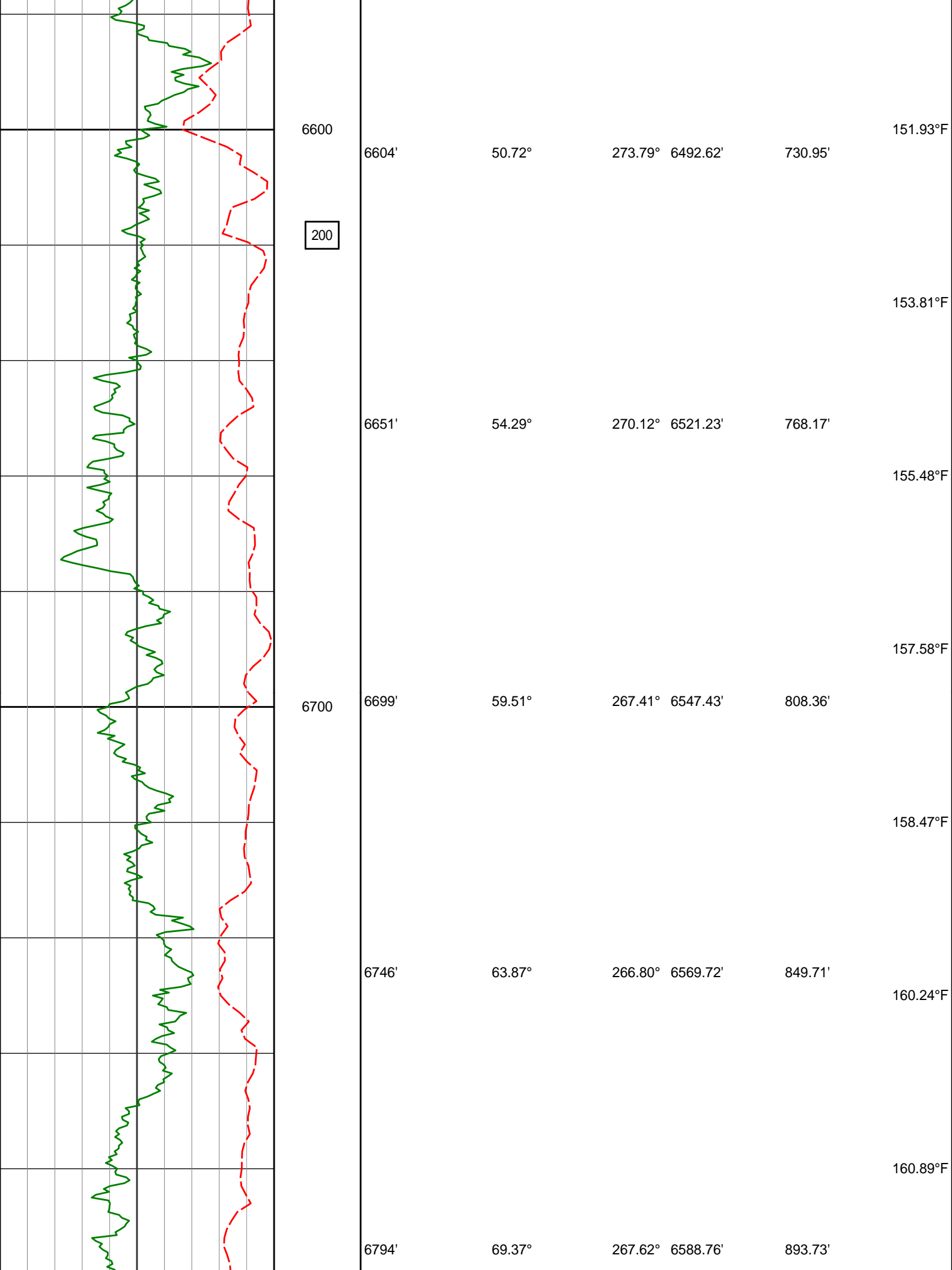


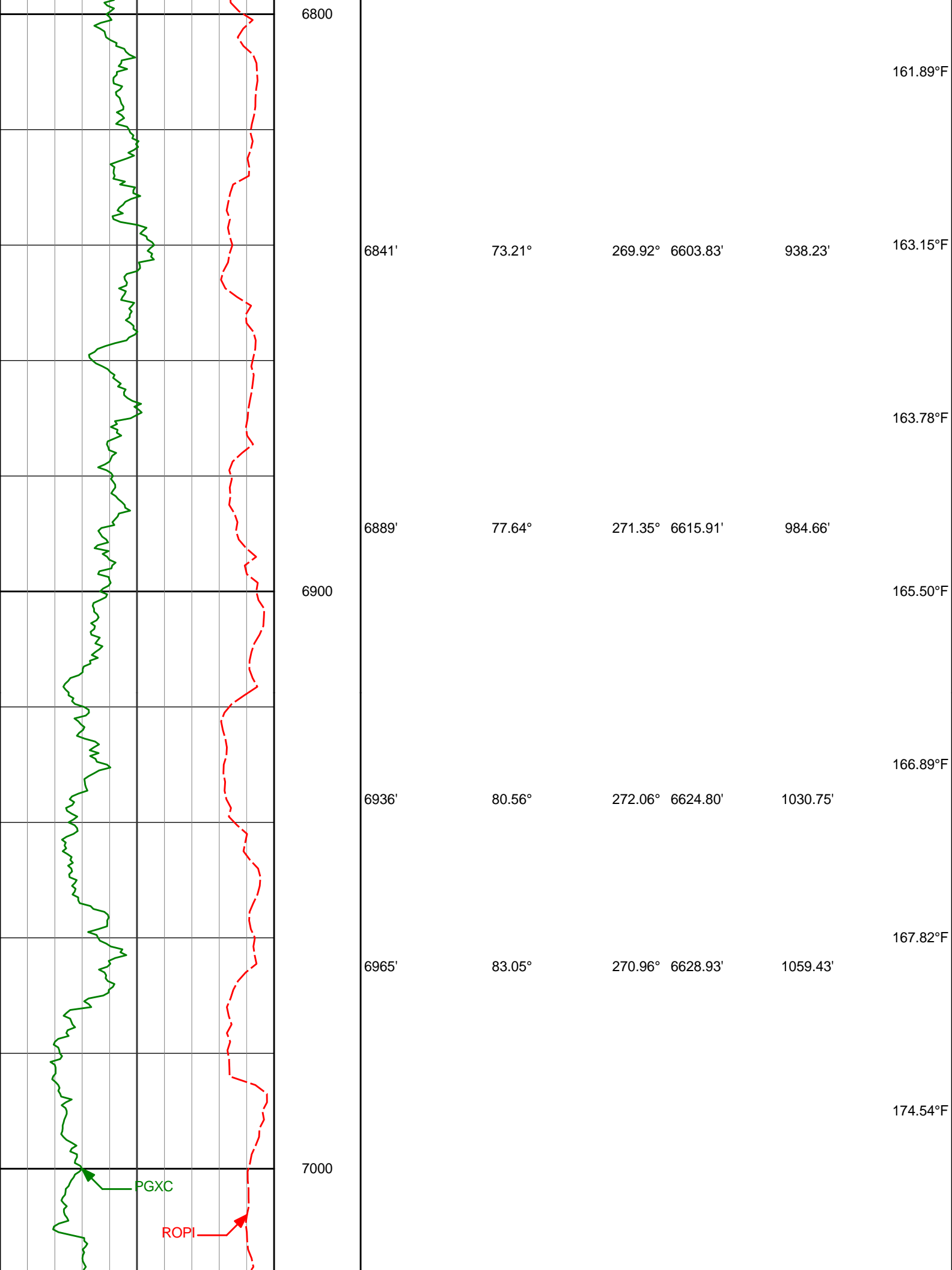


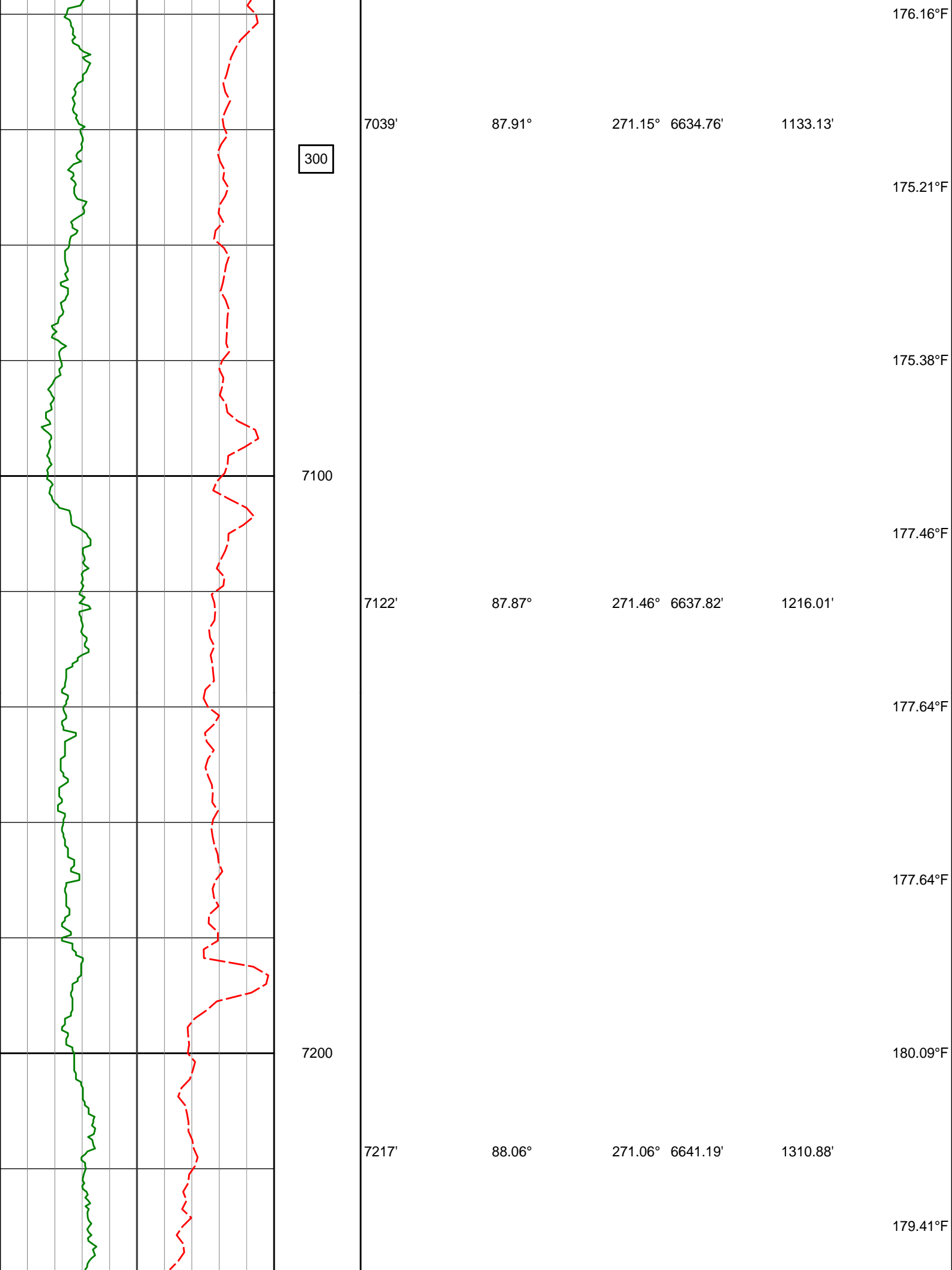












300

7039'

87.91°

271.15° 6634.76'

1133.13'

176.16°F

175.21°F

175.38°F

7100

177.46°F

7122'

87.87°

271.46° 6637.82'

1216.01'

177.64°F

177.64°F

7200

180.09°F

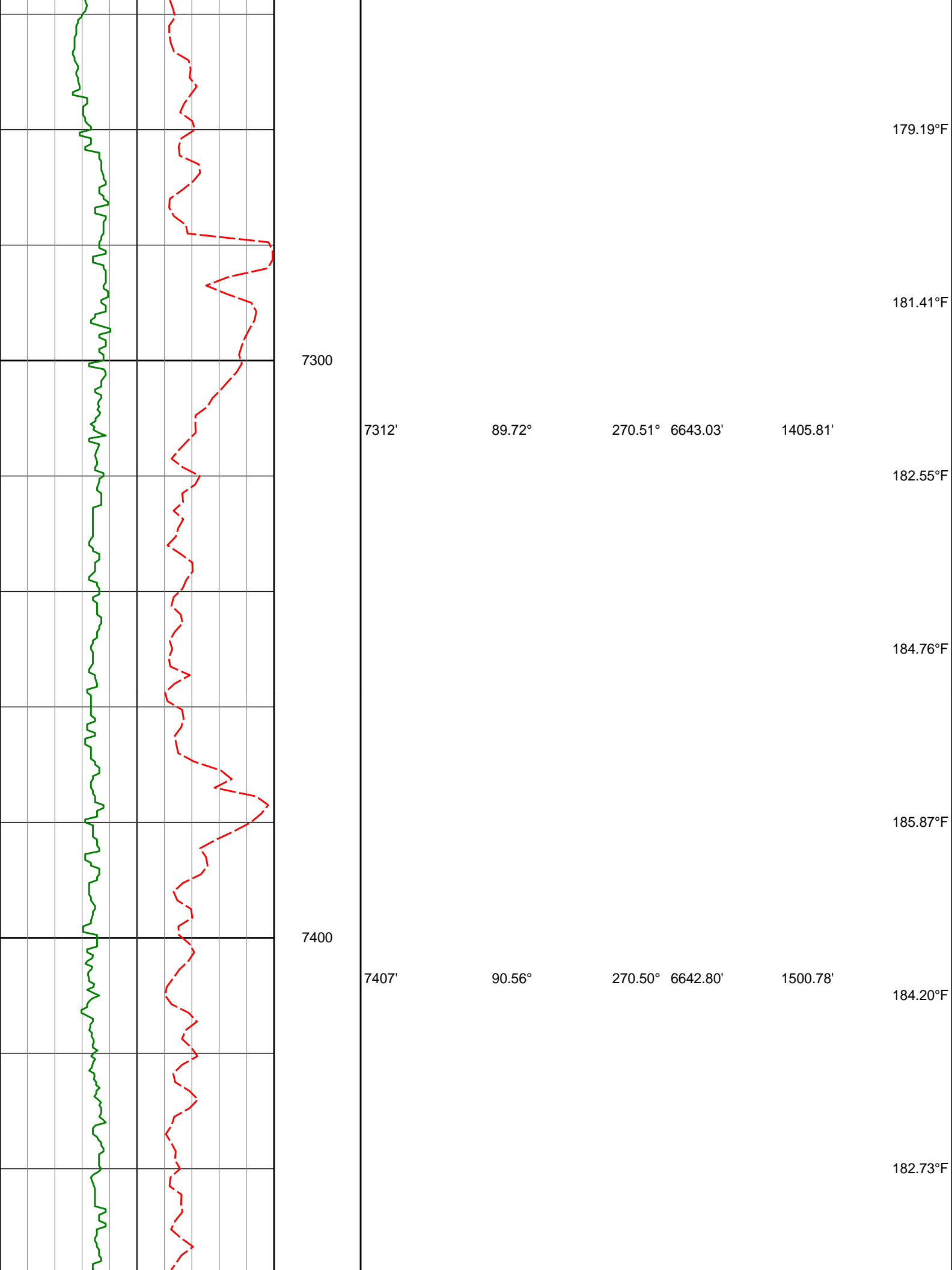
7217'

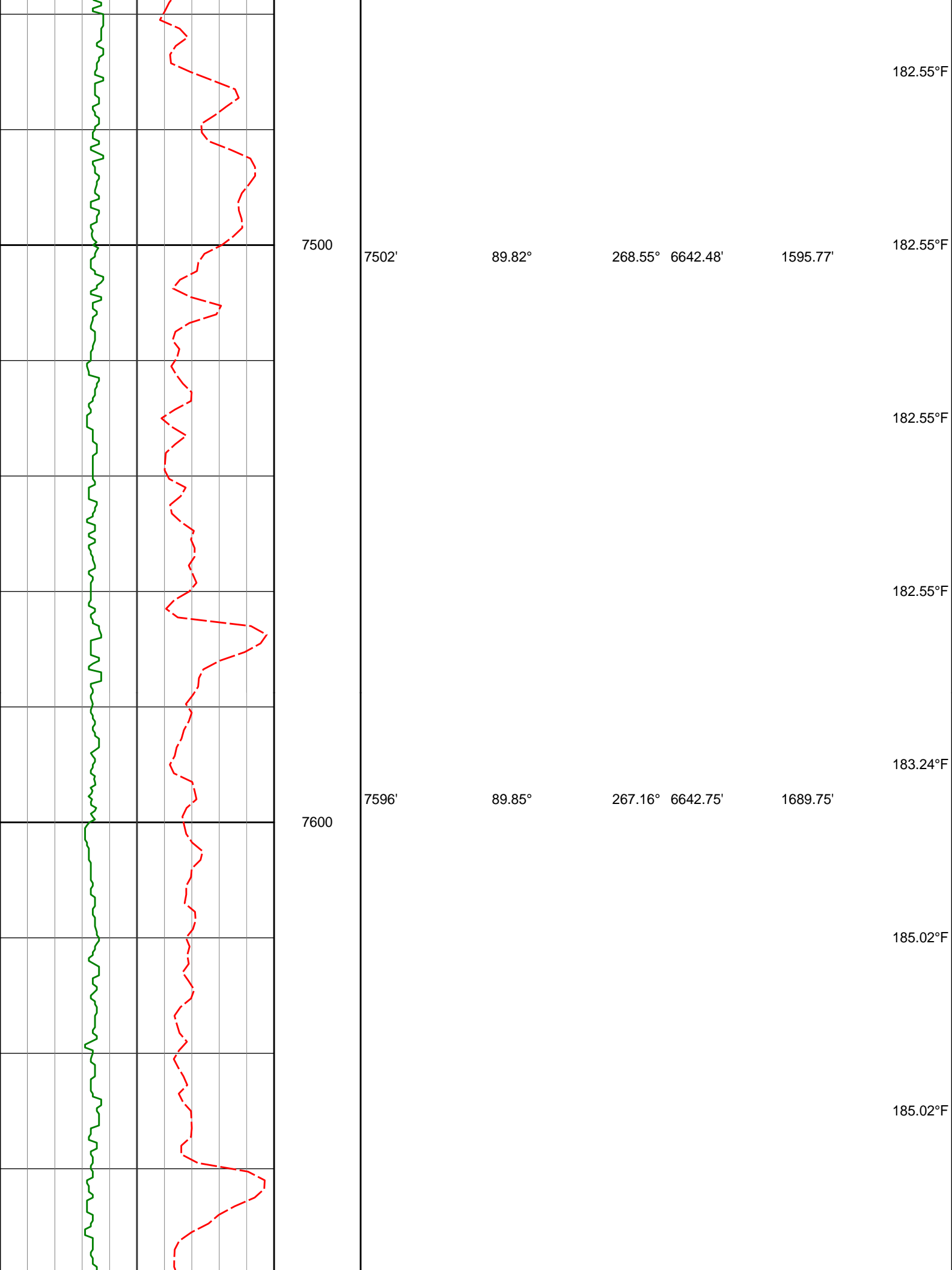
88.06°

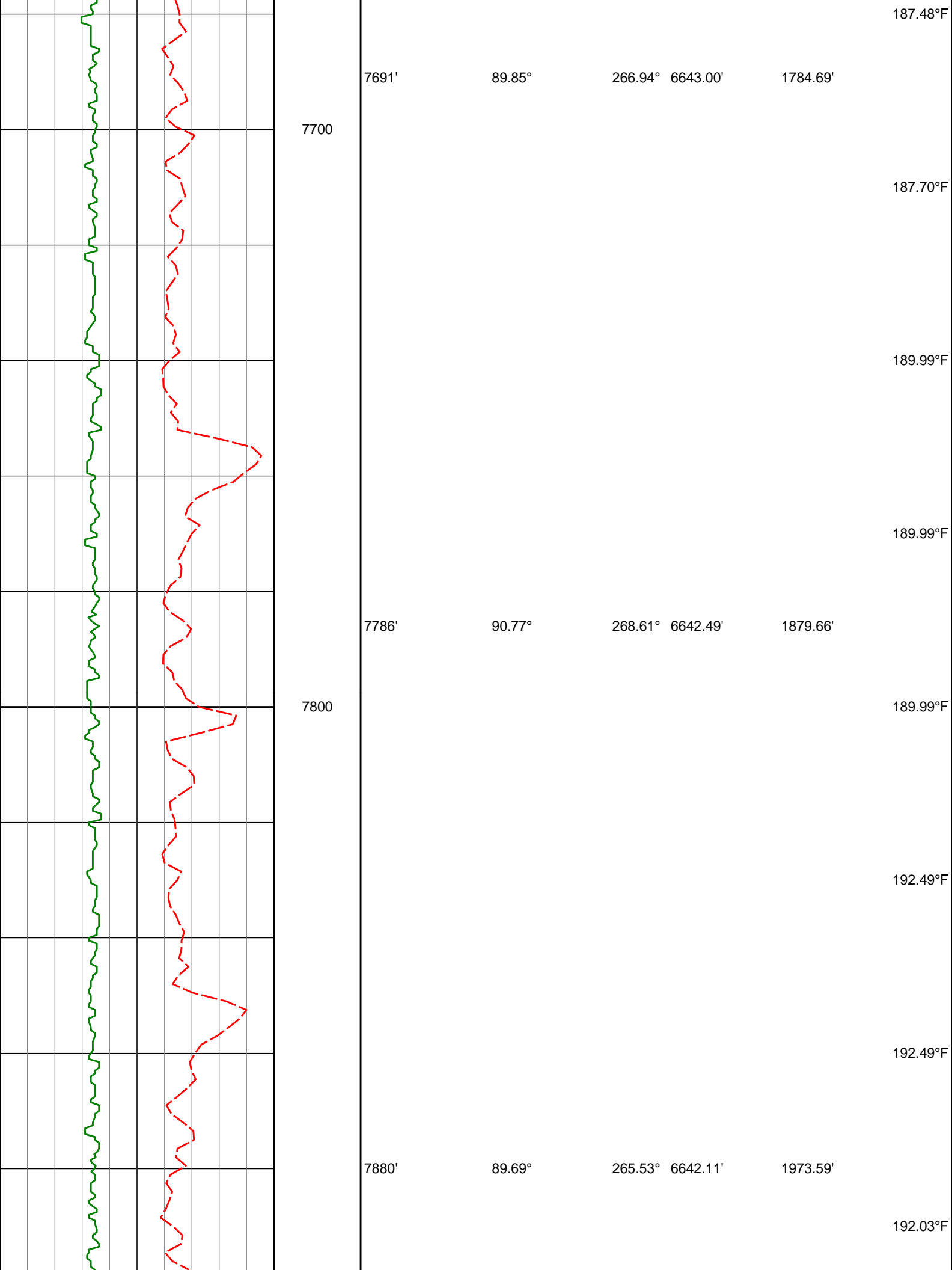
271.06° 6641.19'

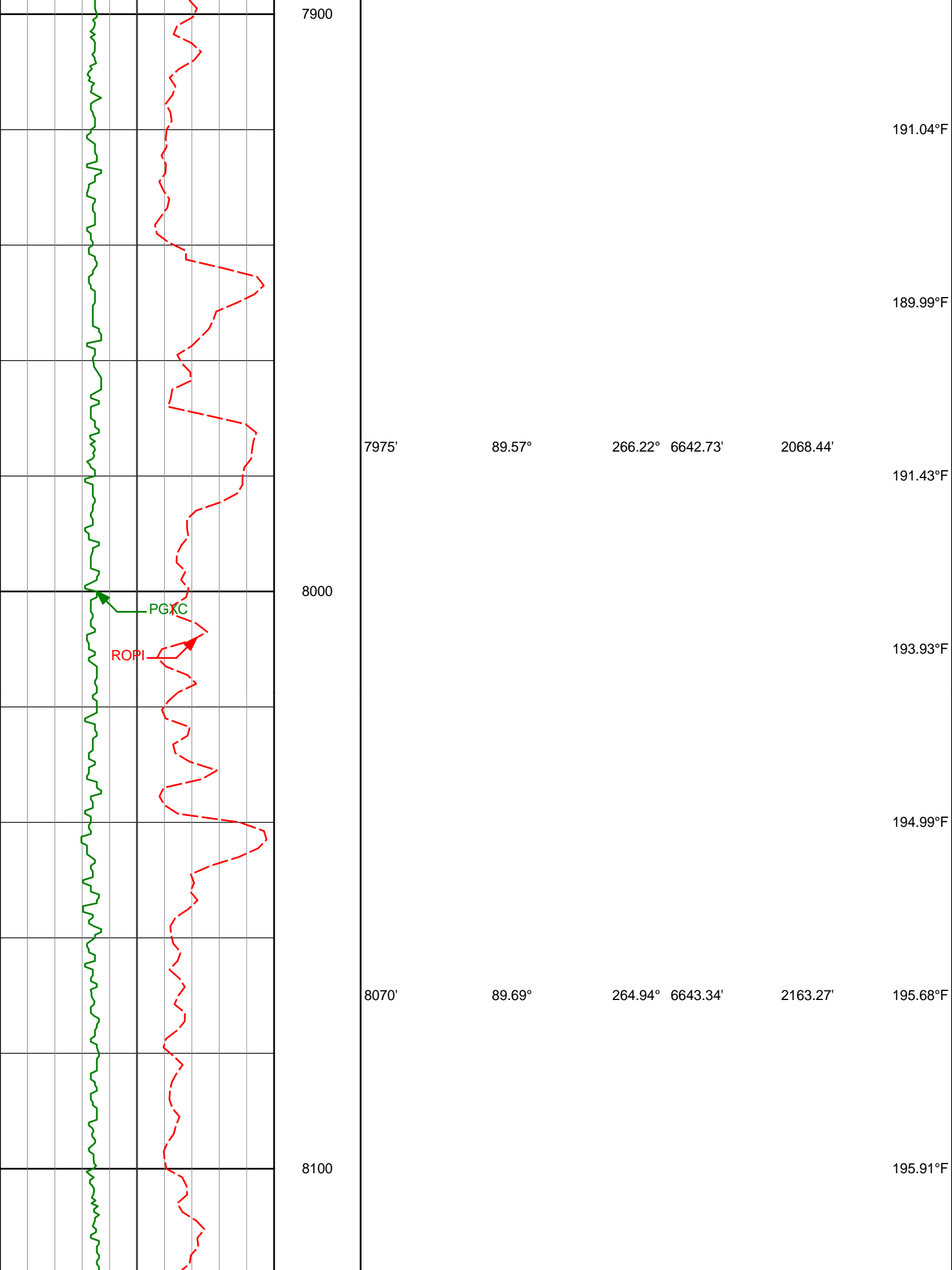
1310.88'

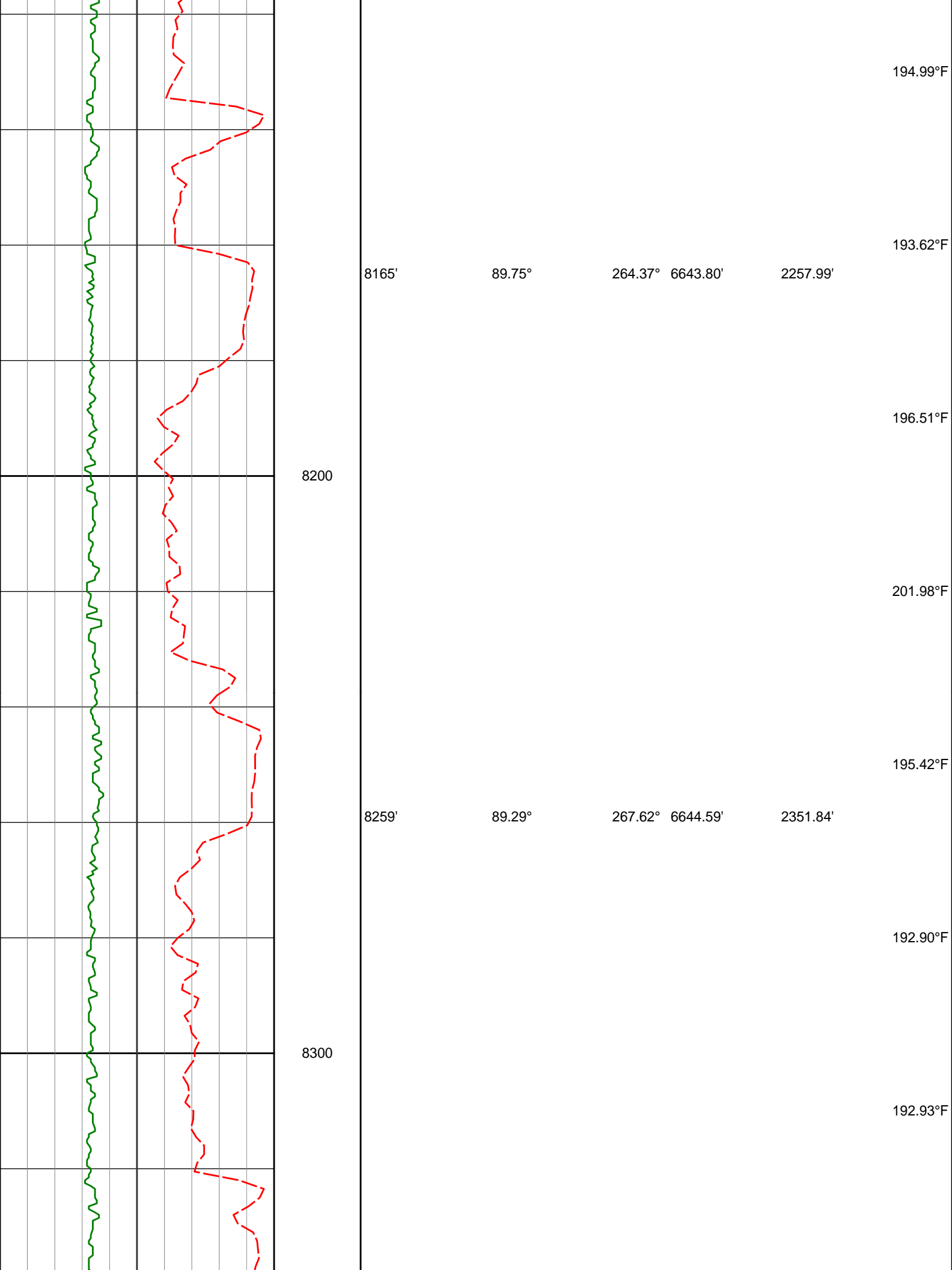
179.41°F

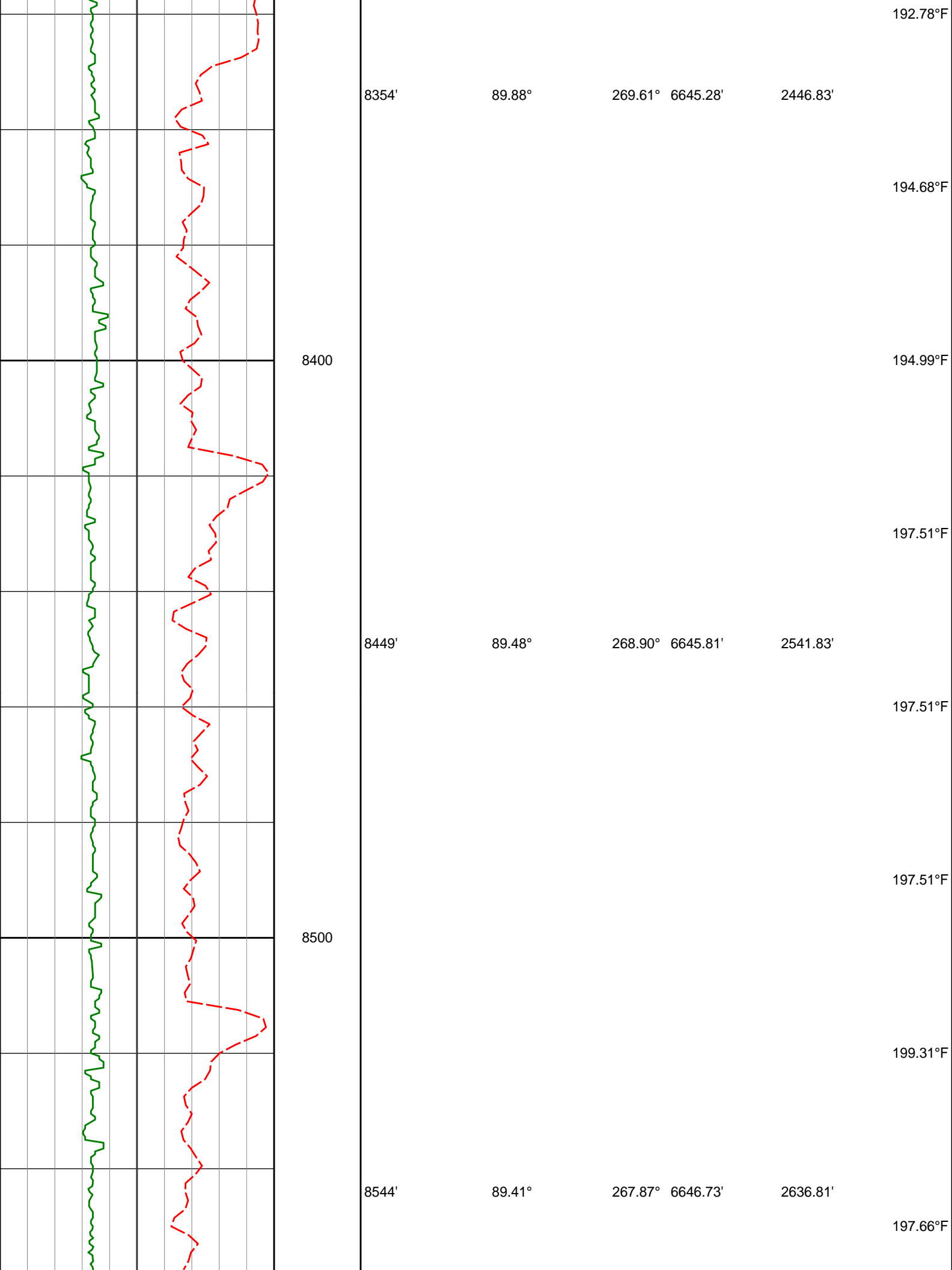


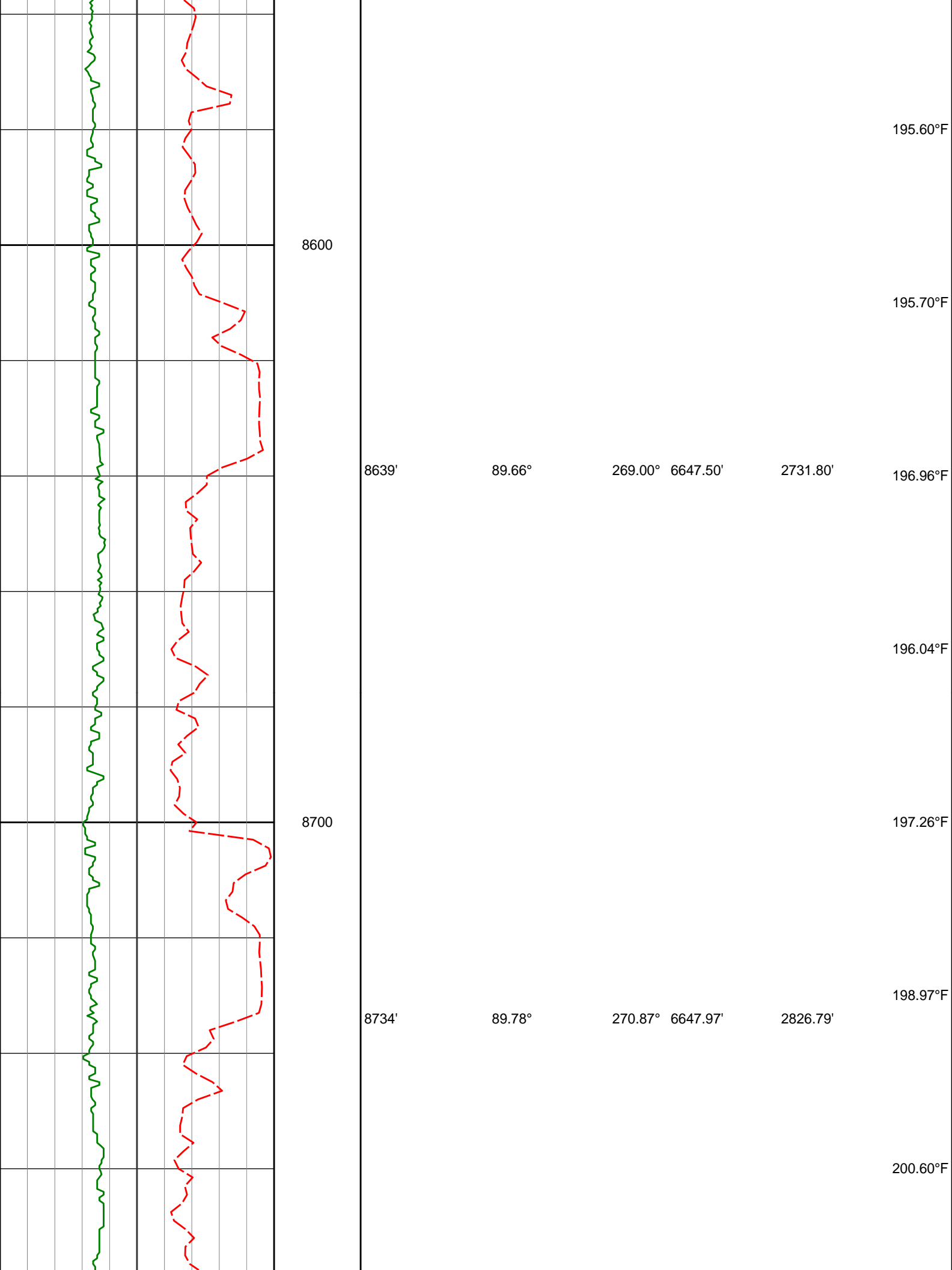


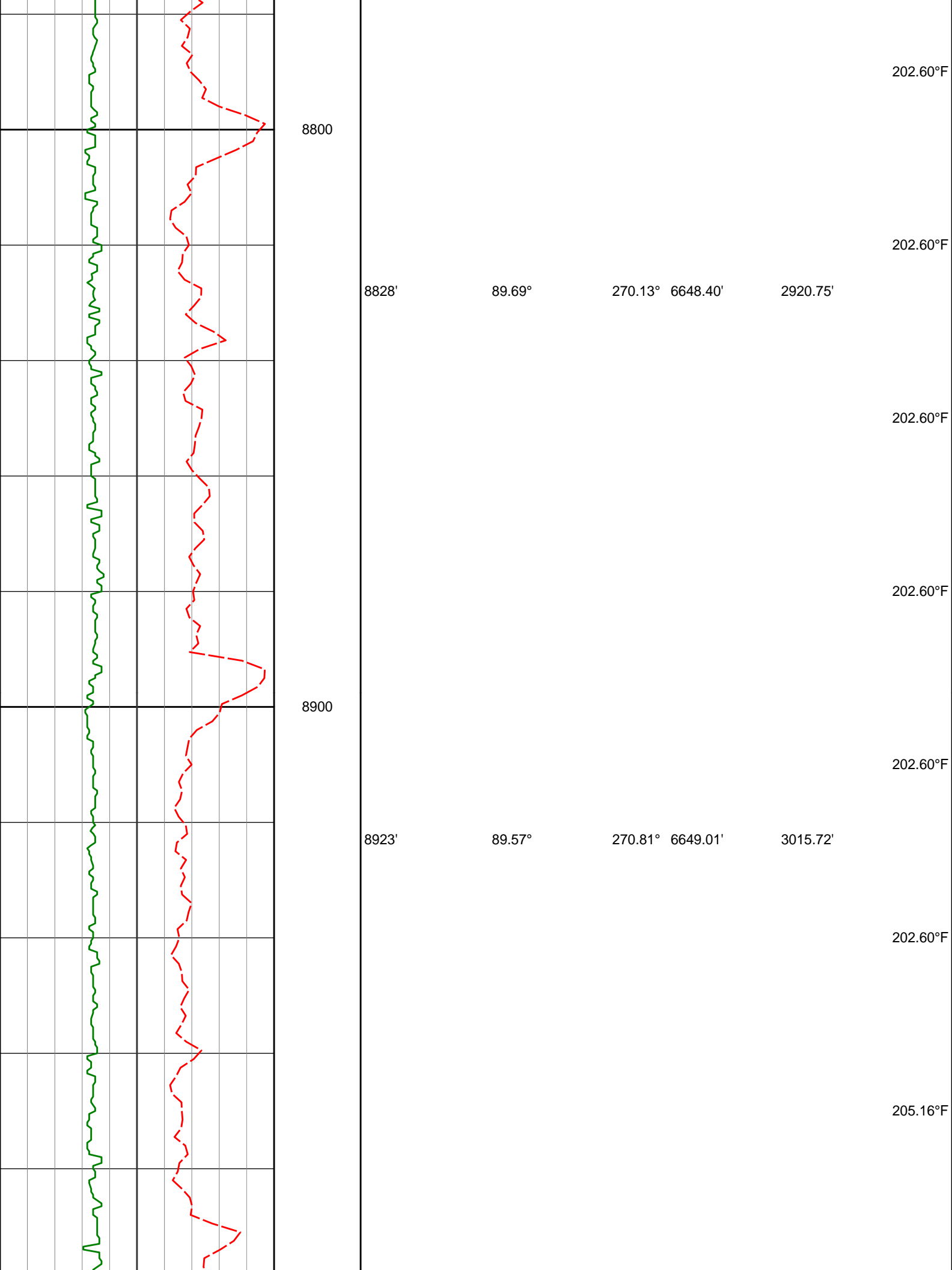


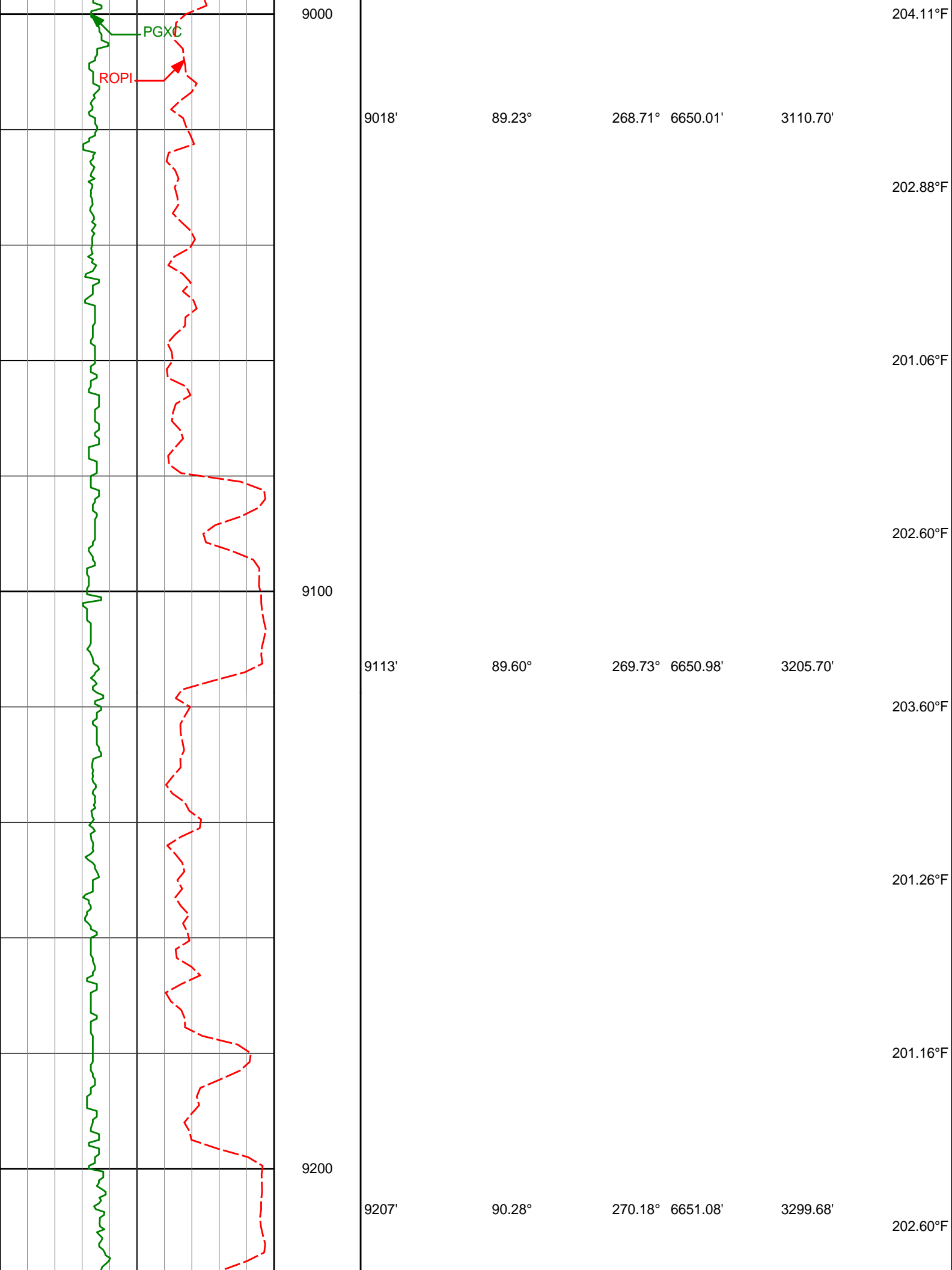


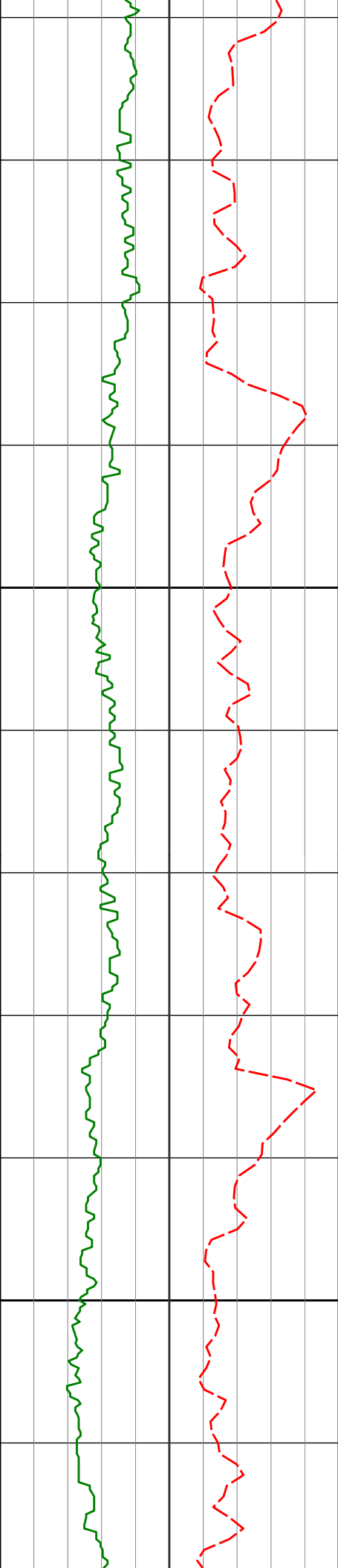












9300

9302'

90.55°

270.58° 6650.39'

3394.66'

207.33°F

207.73°F

208.82°F

210.31°F

9400

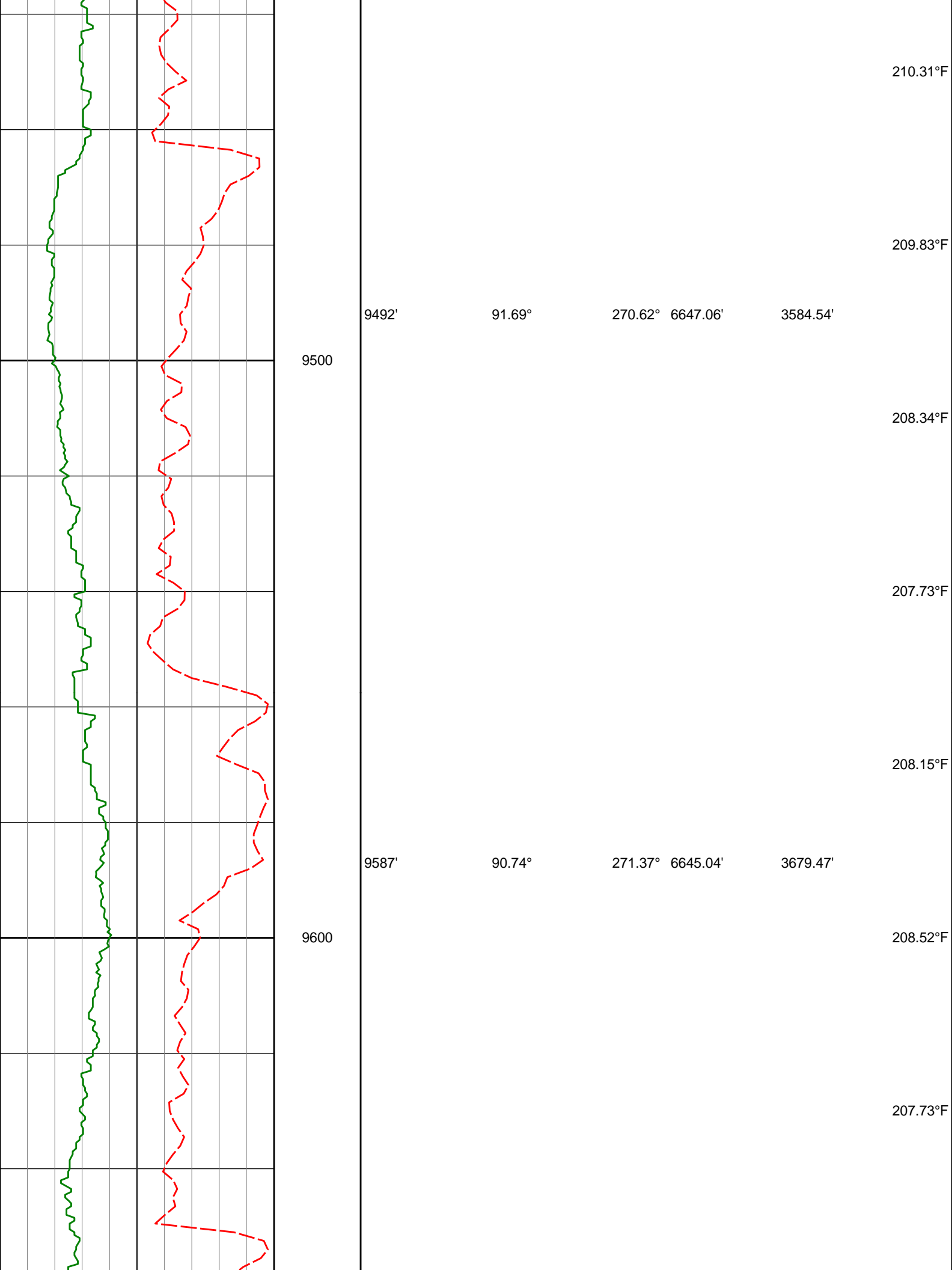
9397'

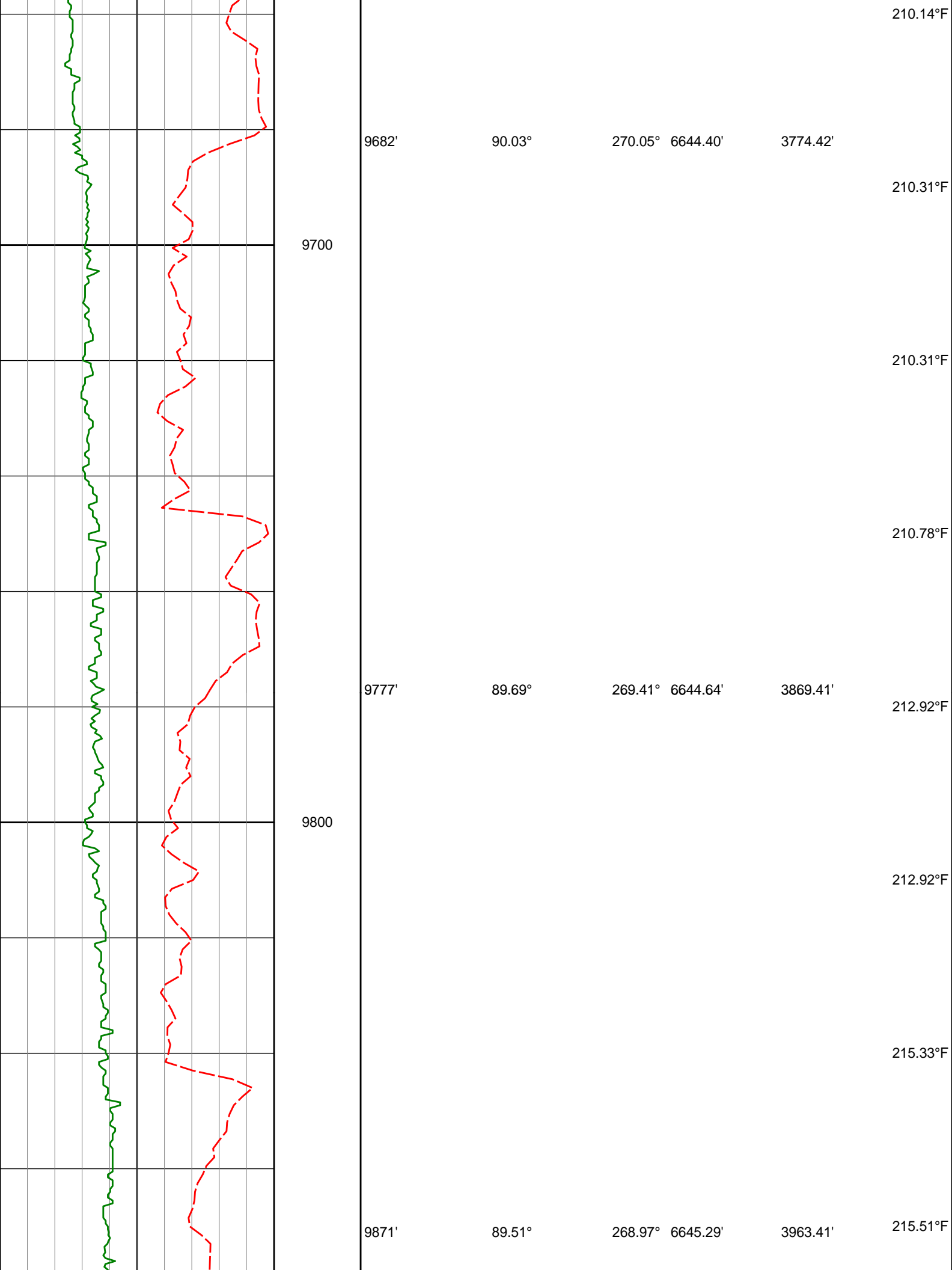
90.89°

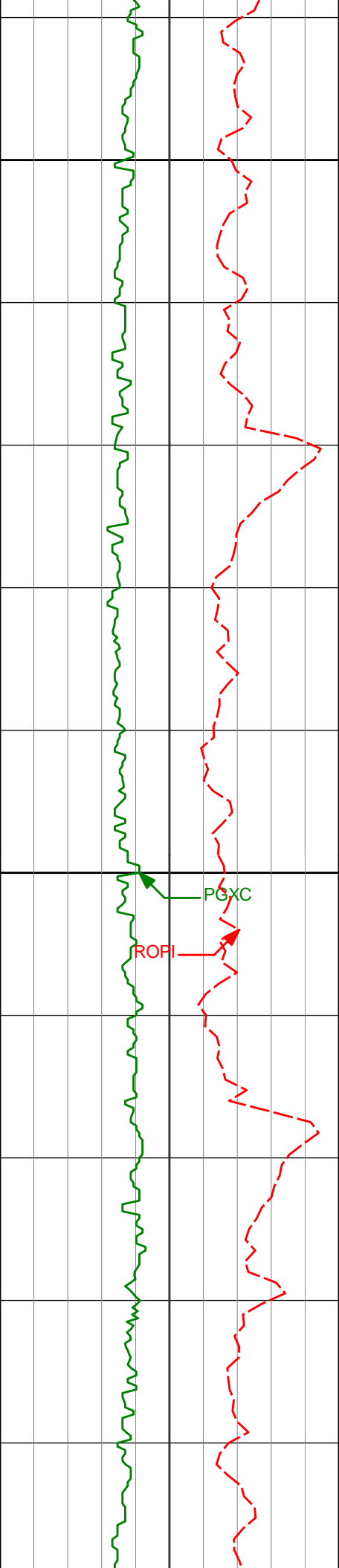
270.76° 6649.20'

3489.61'

210.31°F







9900

215.51°F

215.51°F

217.65°F

9966'

89.85°

269.22° 6645.82'

4058.41'

216.64°F

10000

PGXC

ROFI

218.14°F

218.14°F

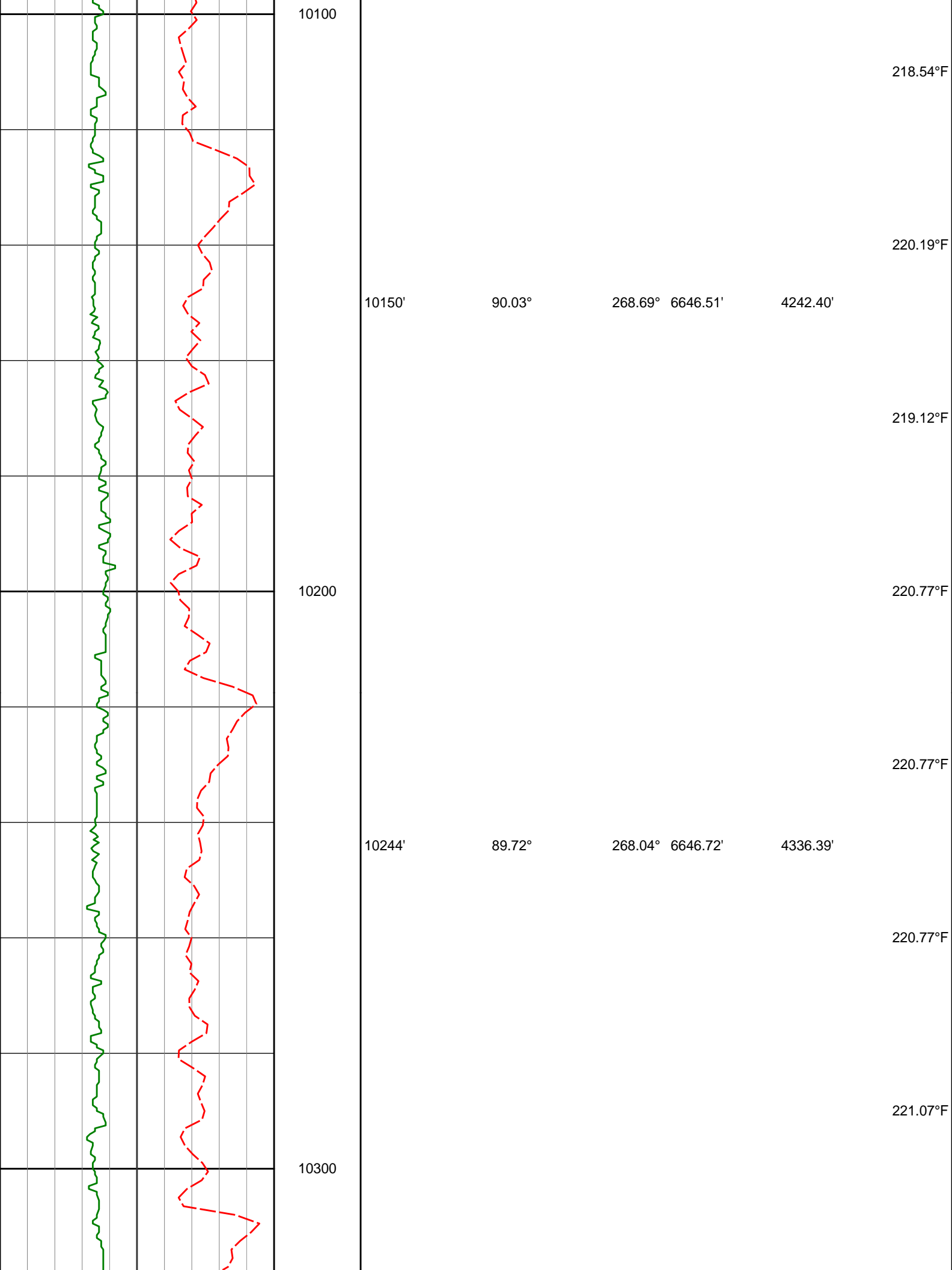
10058'

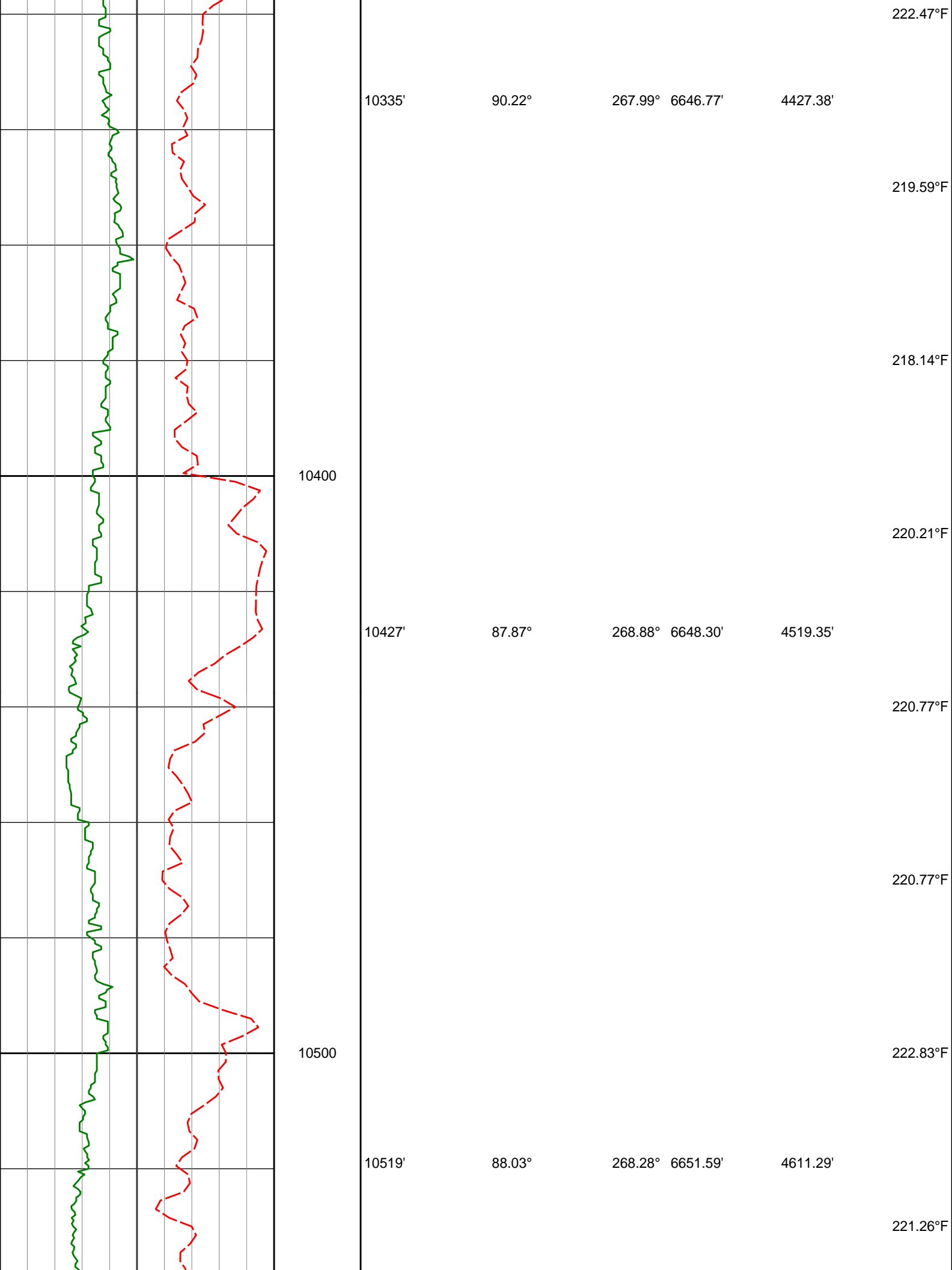
89.63°

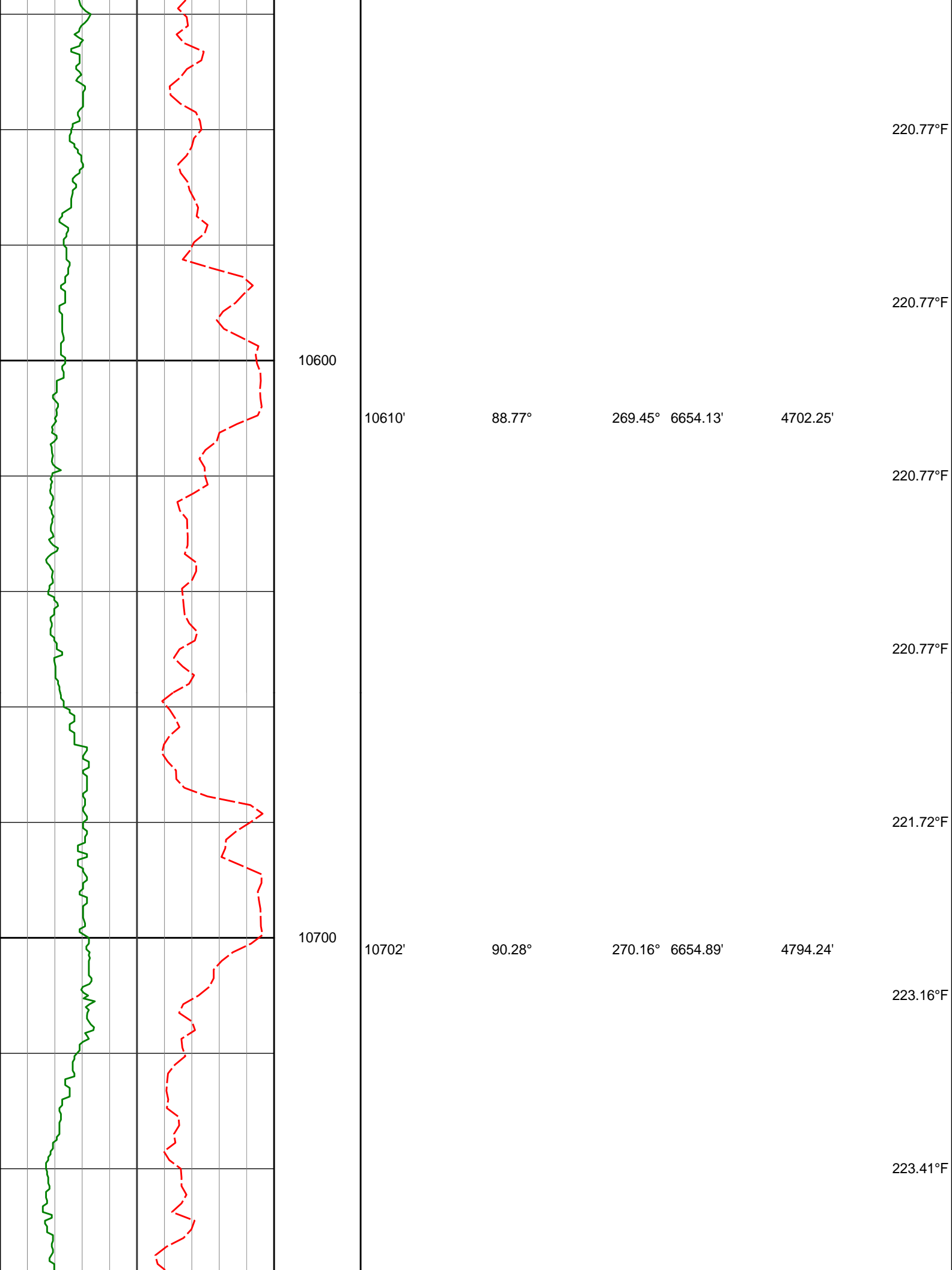
268.35° 6646.24'

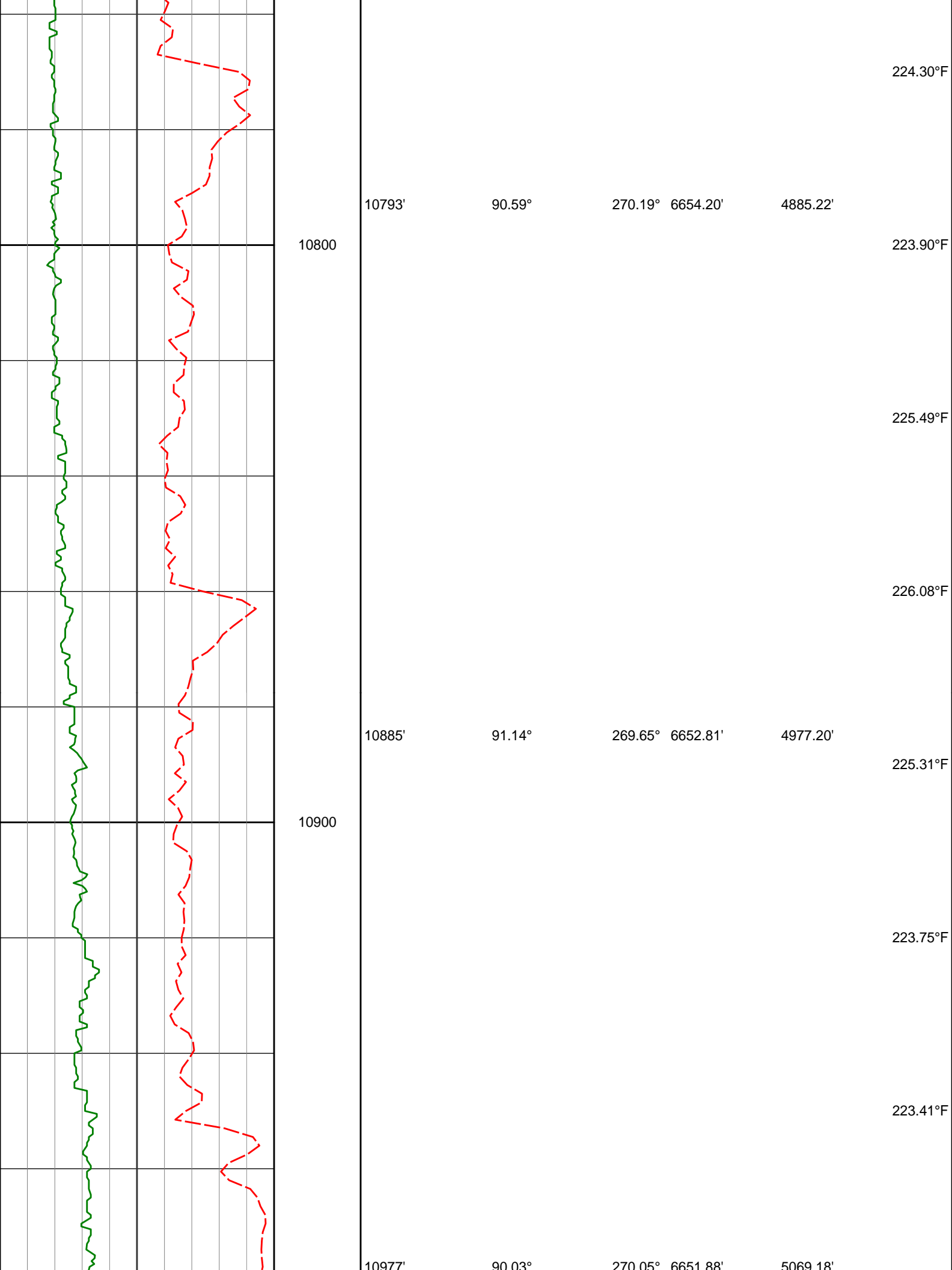
4150.41'

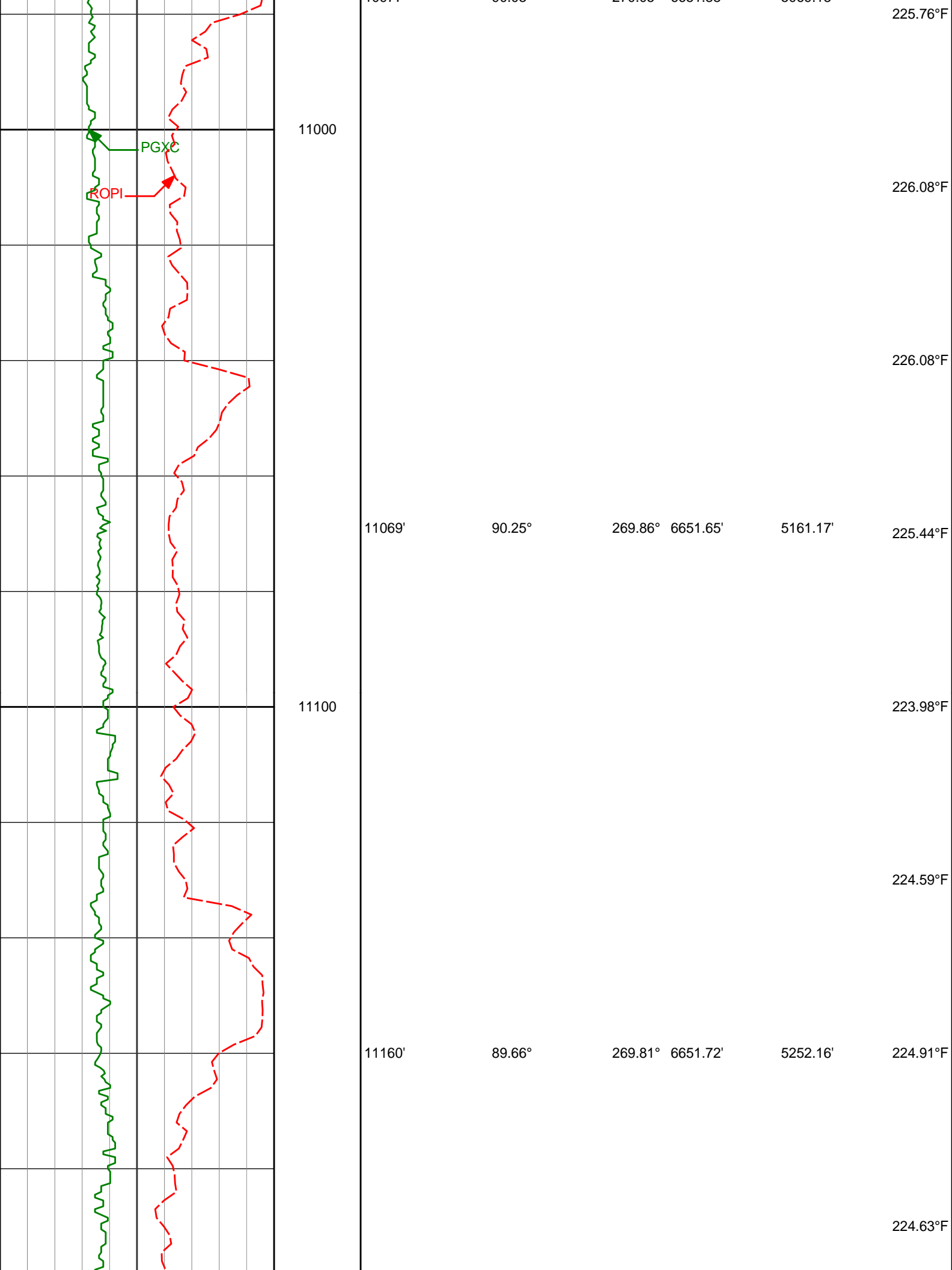
218.14°F

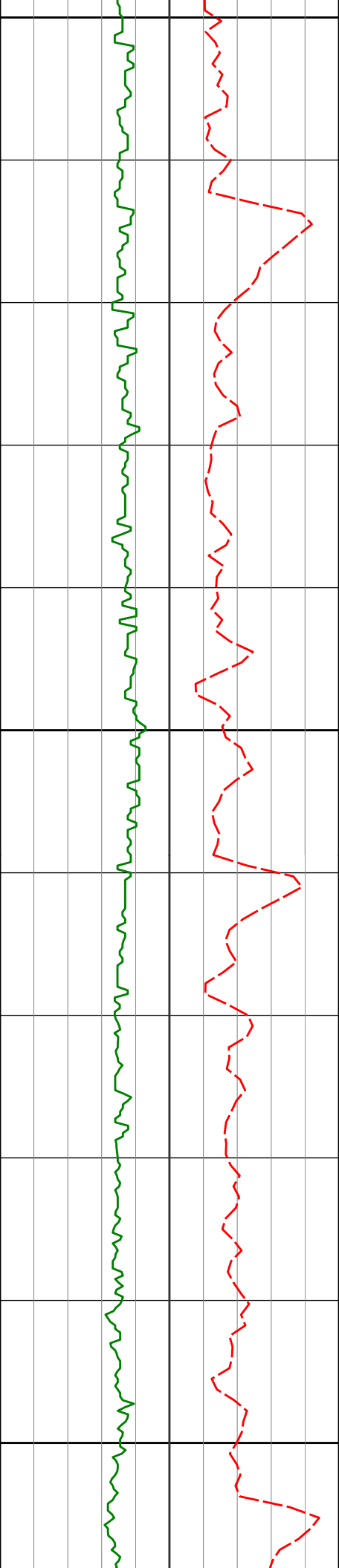












11200

226.48°F

11252'

89.97°

269.72° 6652.02'

5344.15'

228.74°F

228.74°F

11300

228.74°F

11344'

90.22°

269.40° 6651.87'

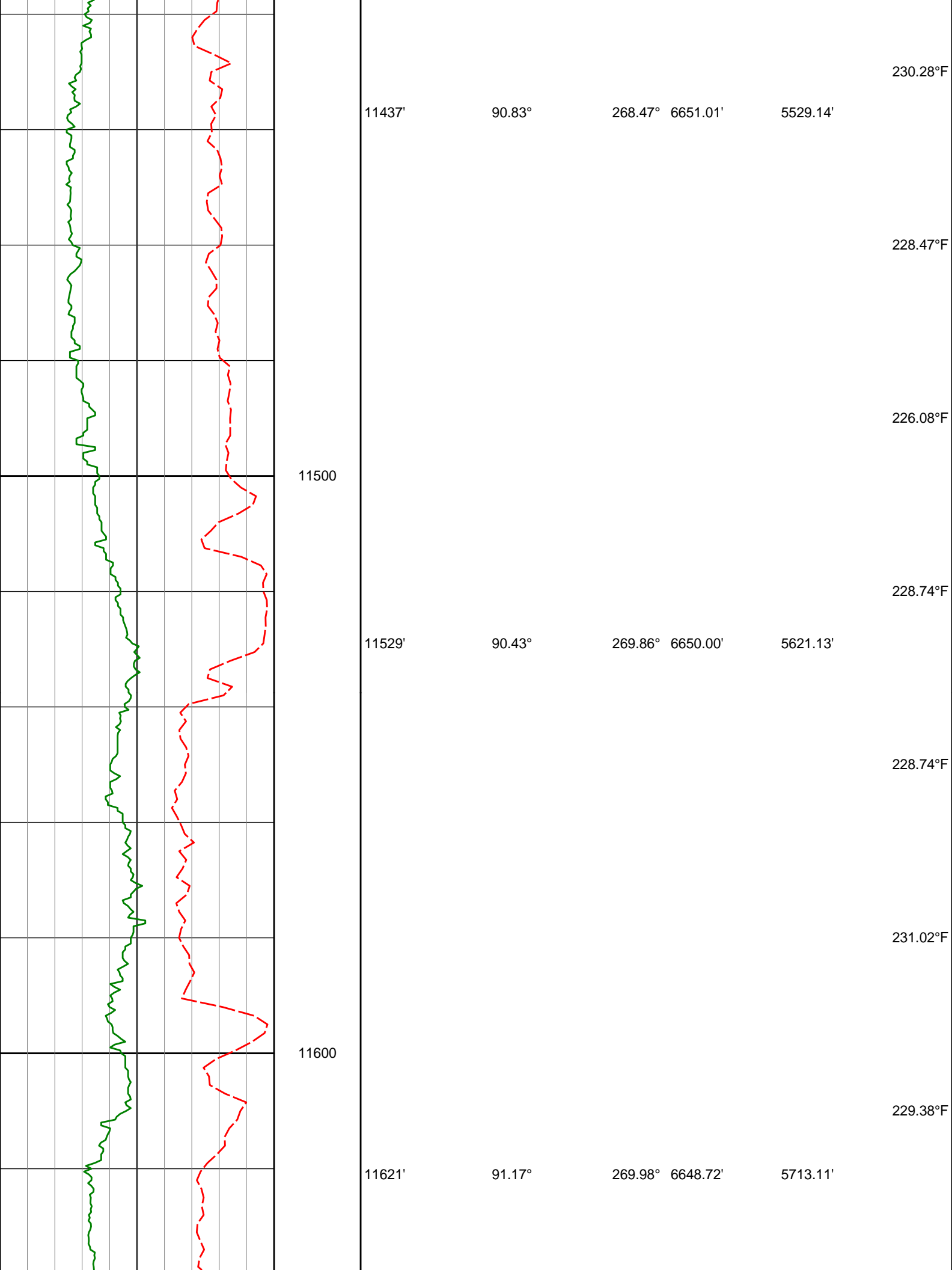
5436.15'

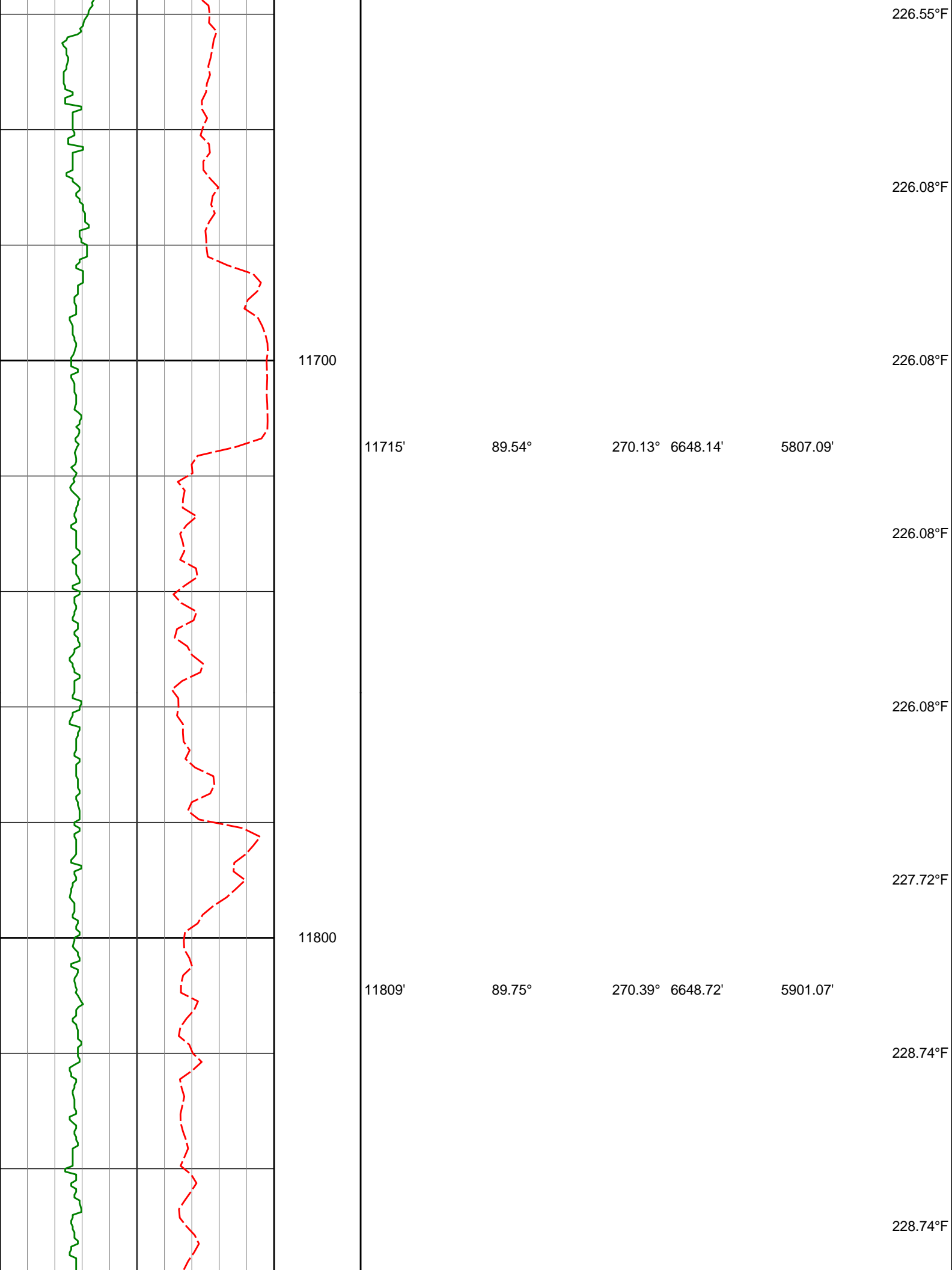
228.74°F

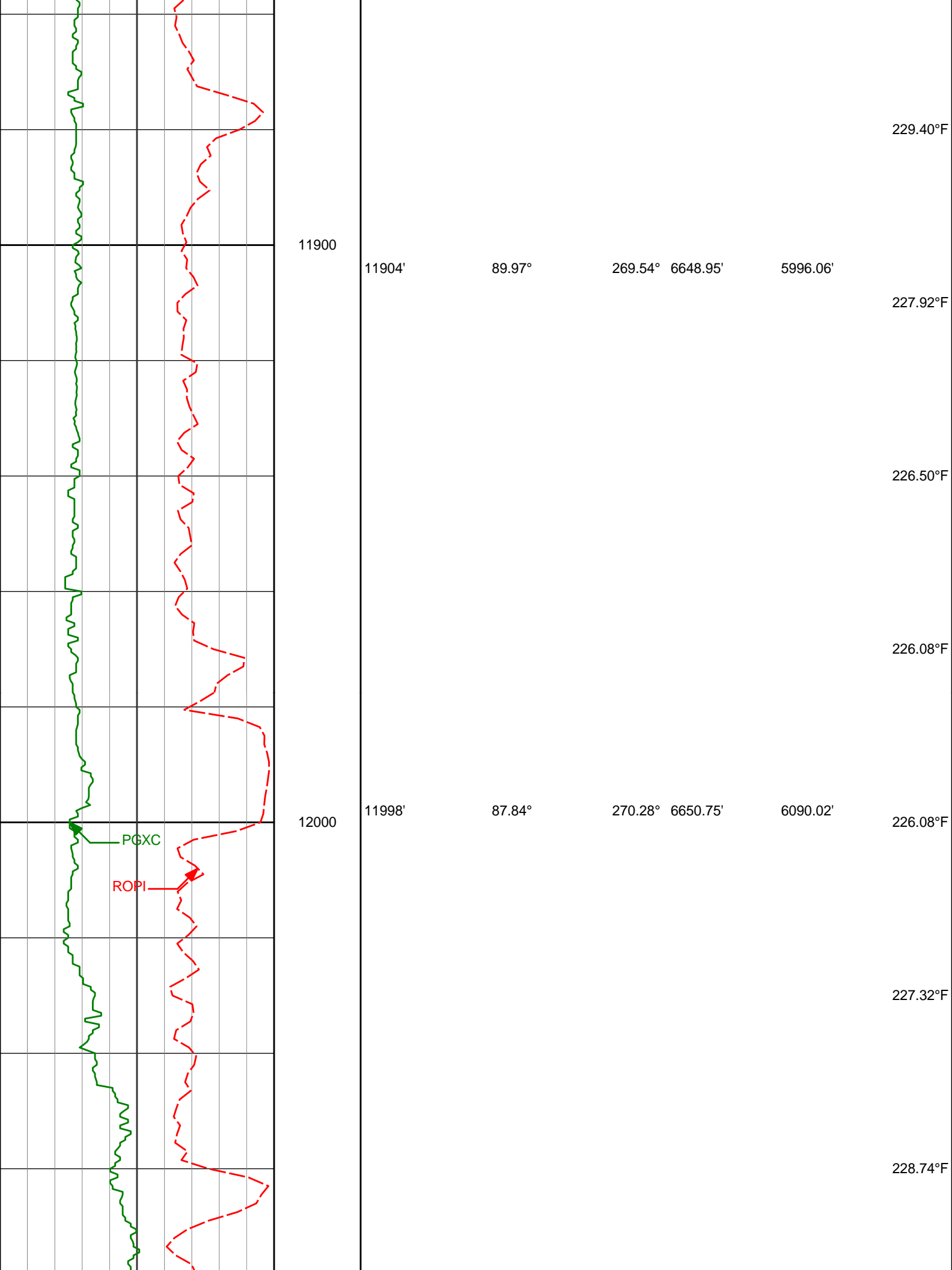
228.74°F

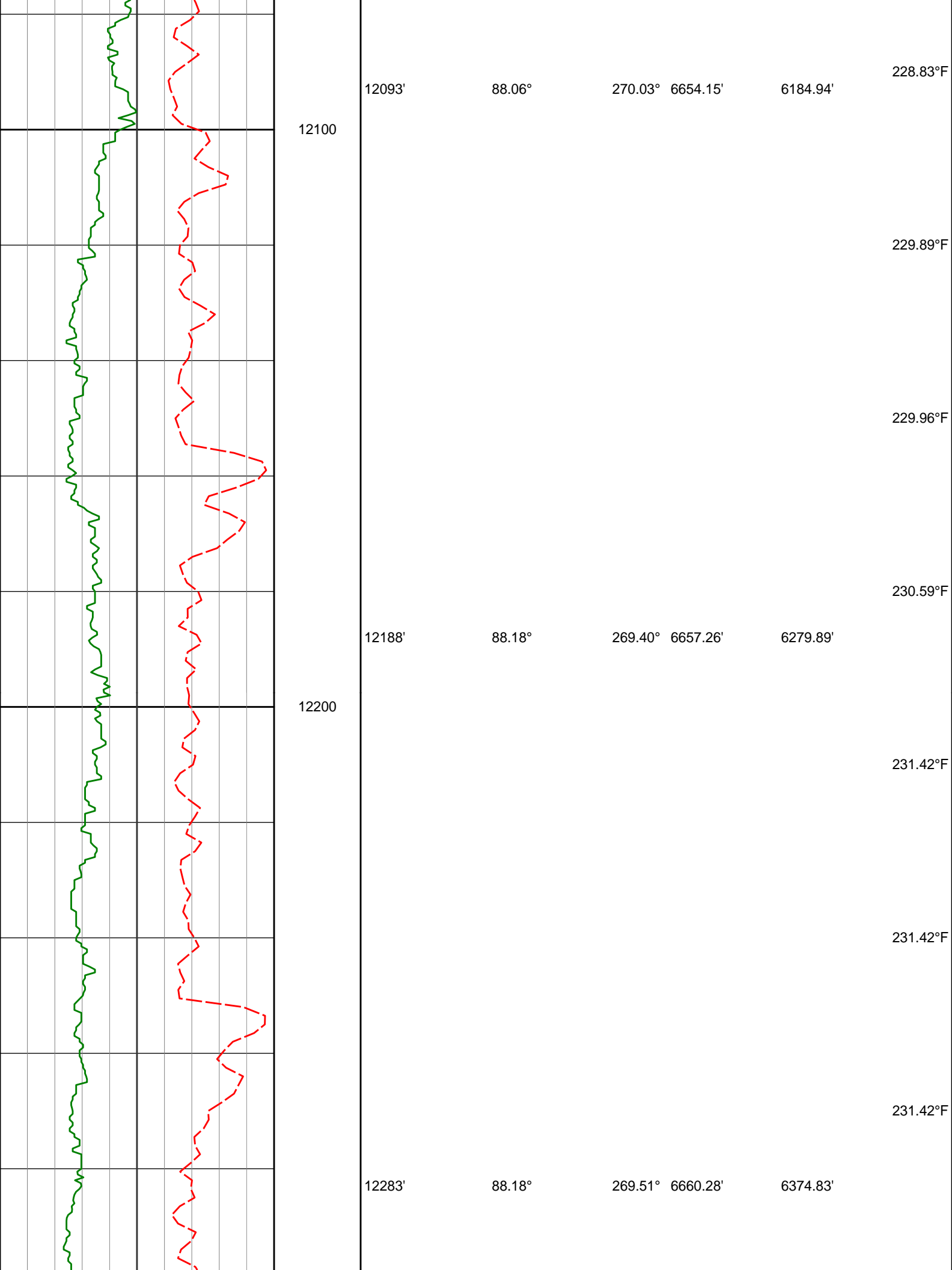
11400

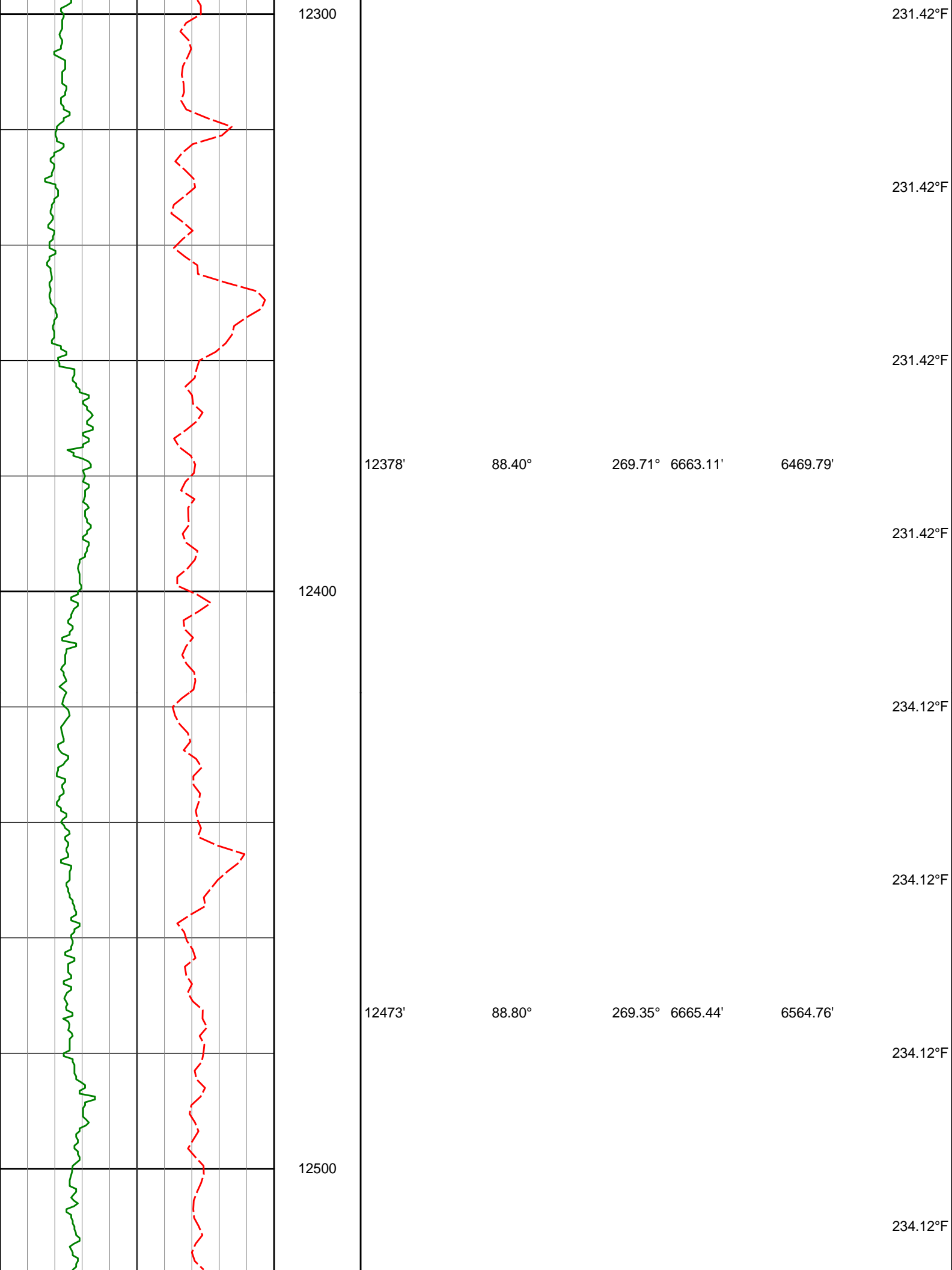
231.08°F

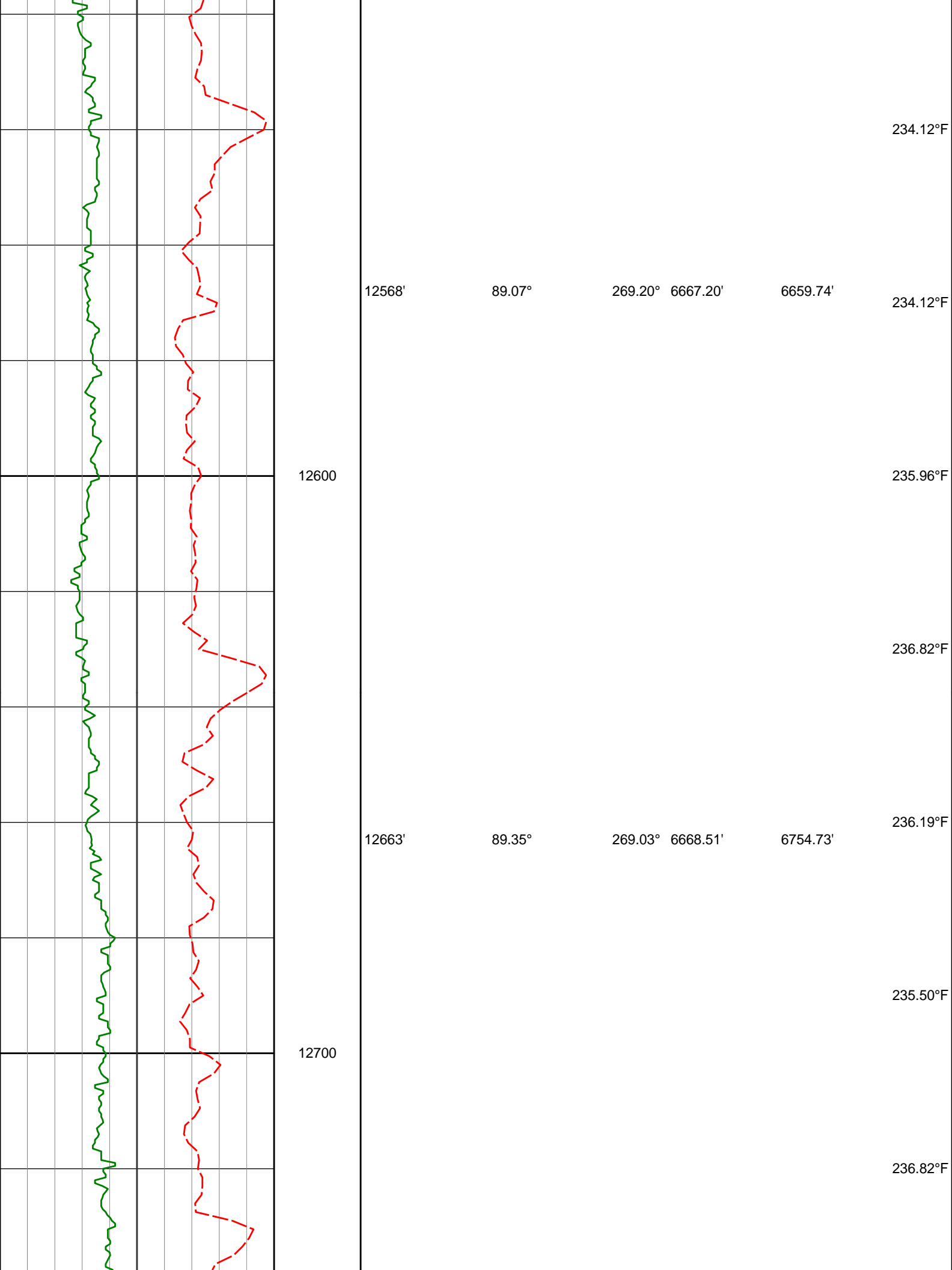


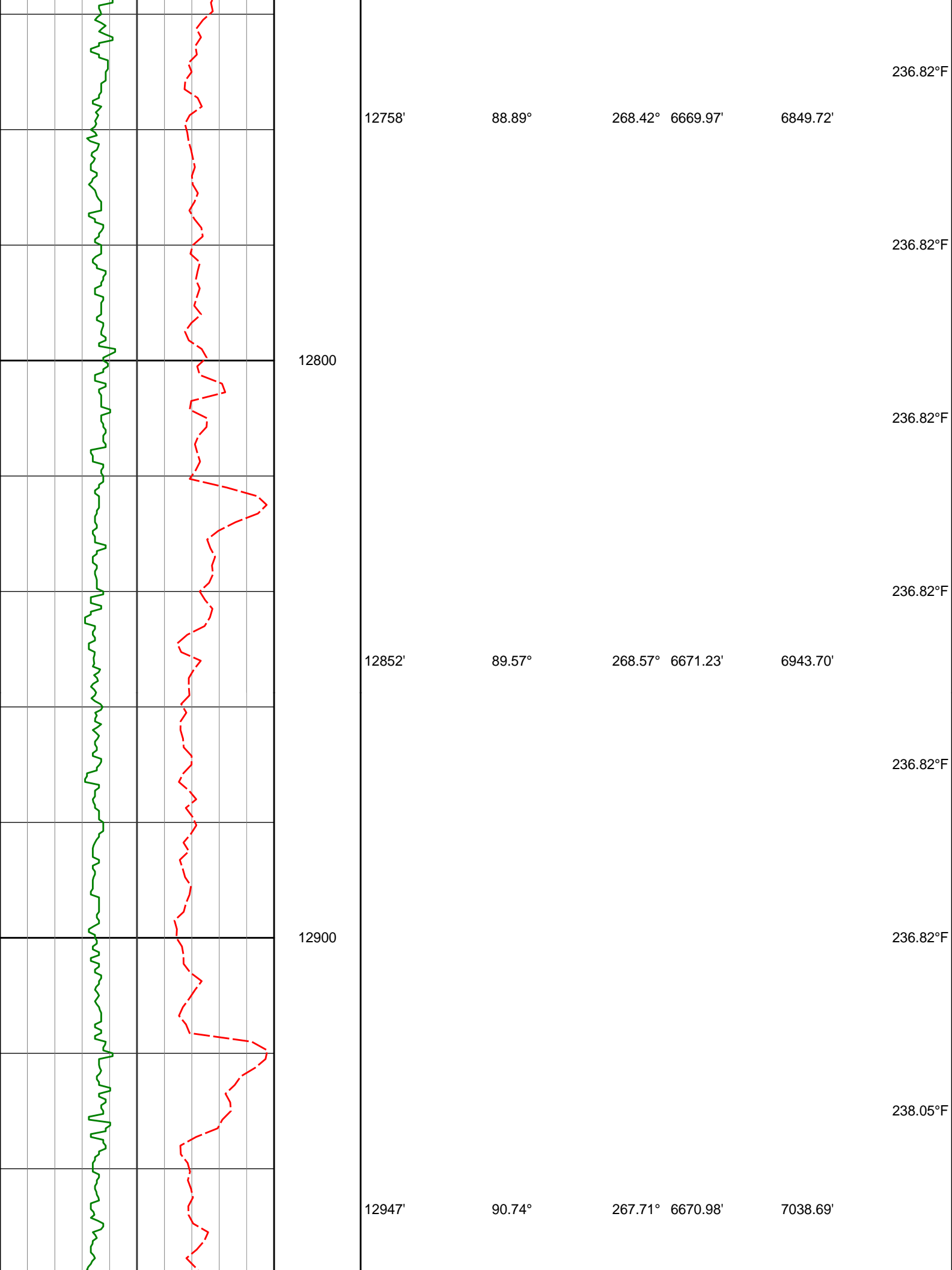


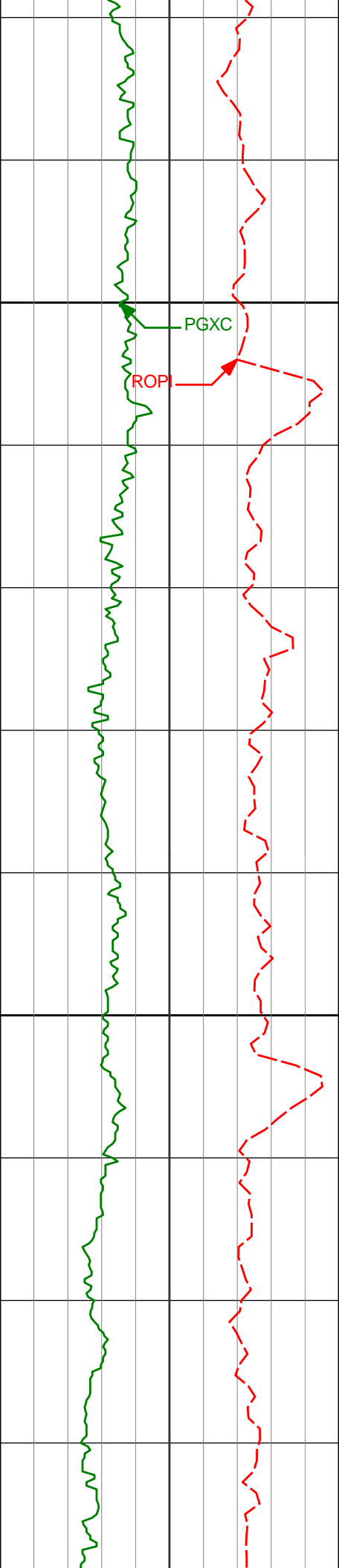












13000

13042'

90.58°

267.61° 6669.88'

7133.65'

13100

13137'

91.29°

267.53° 6668.33'

7228.61'

237.46°F

239.54°F

239.54°F

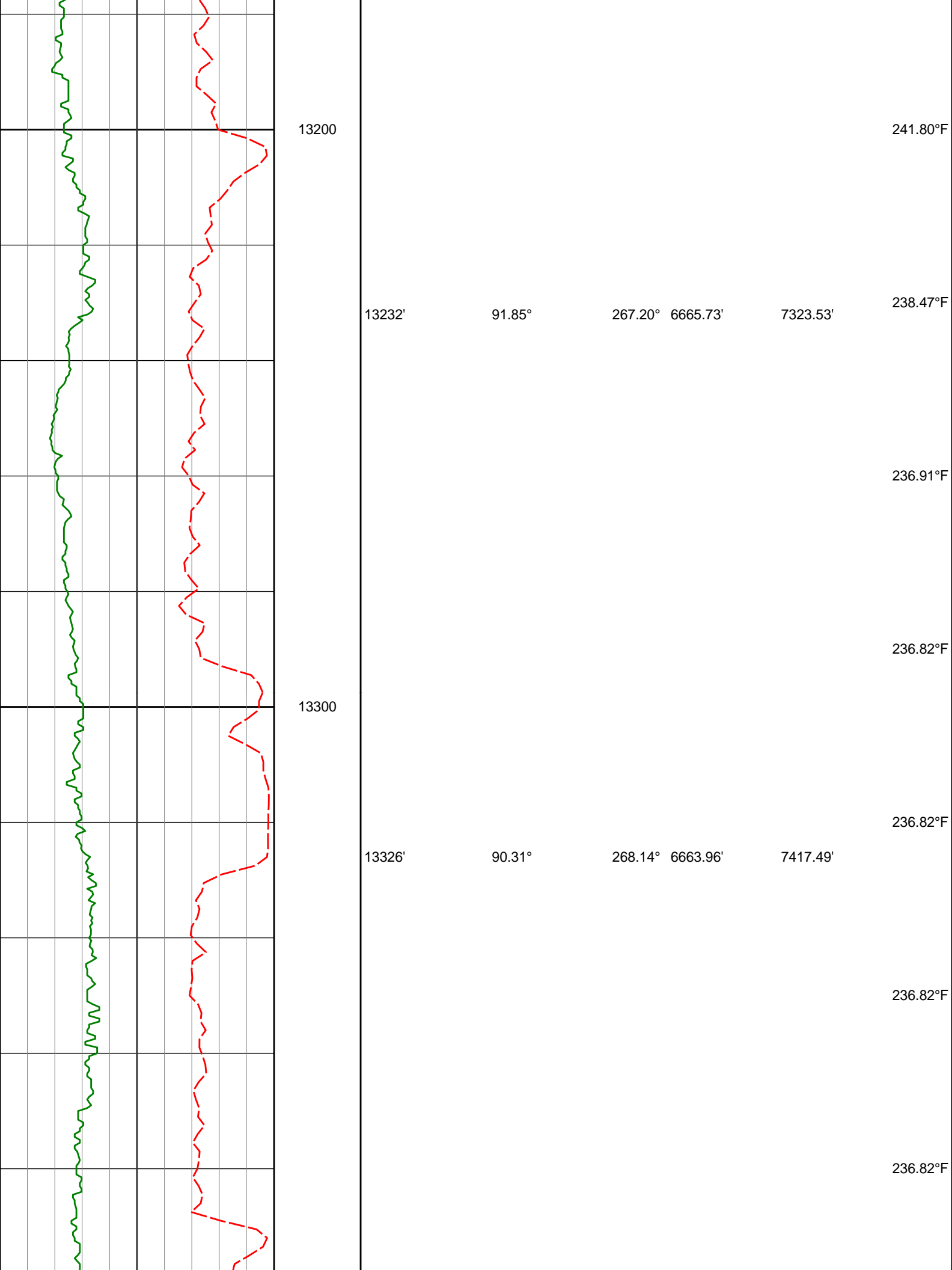
237.40°F

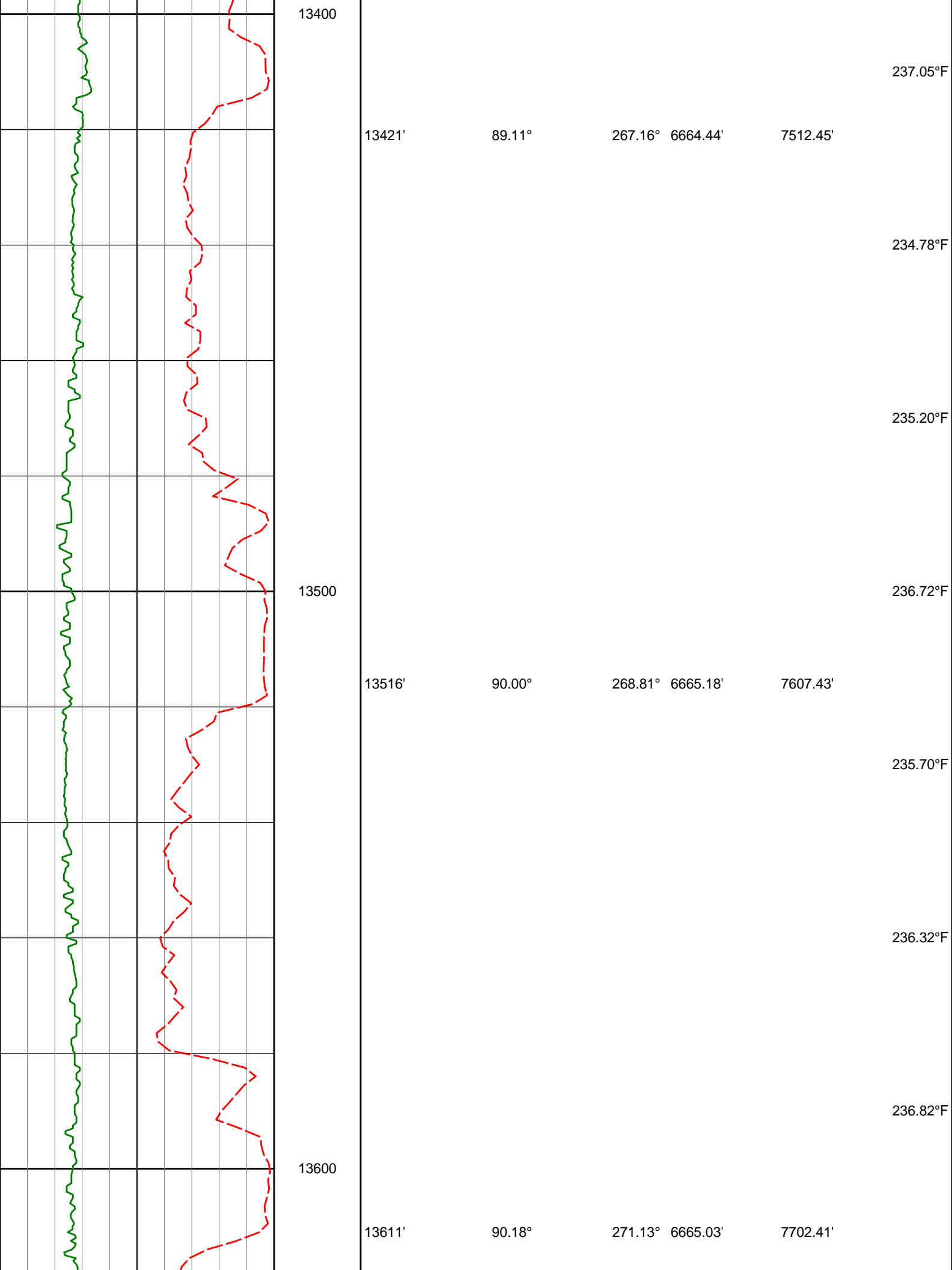
239.38°F

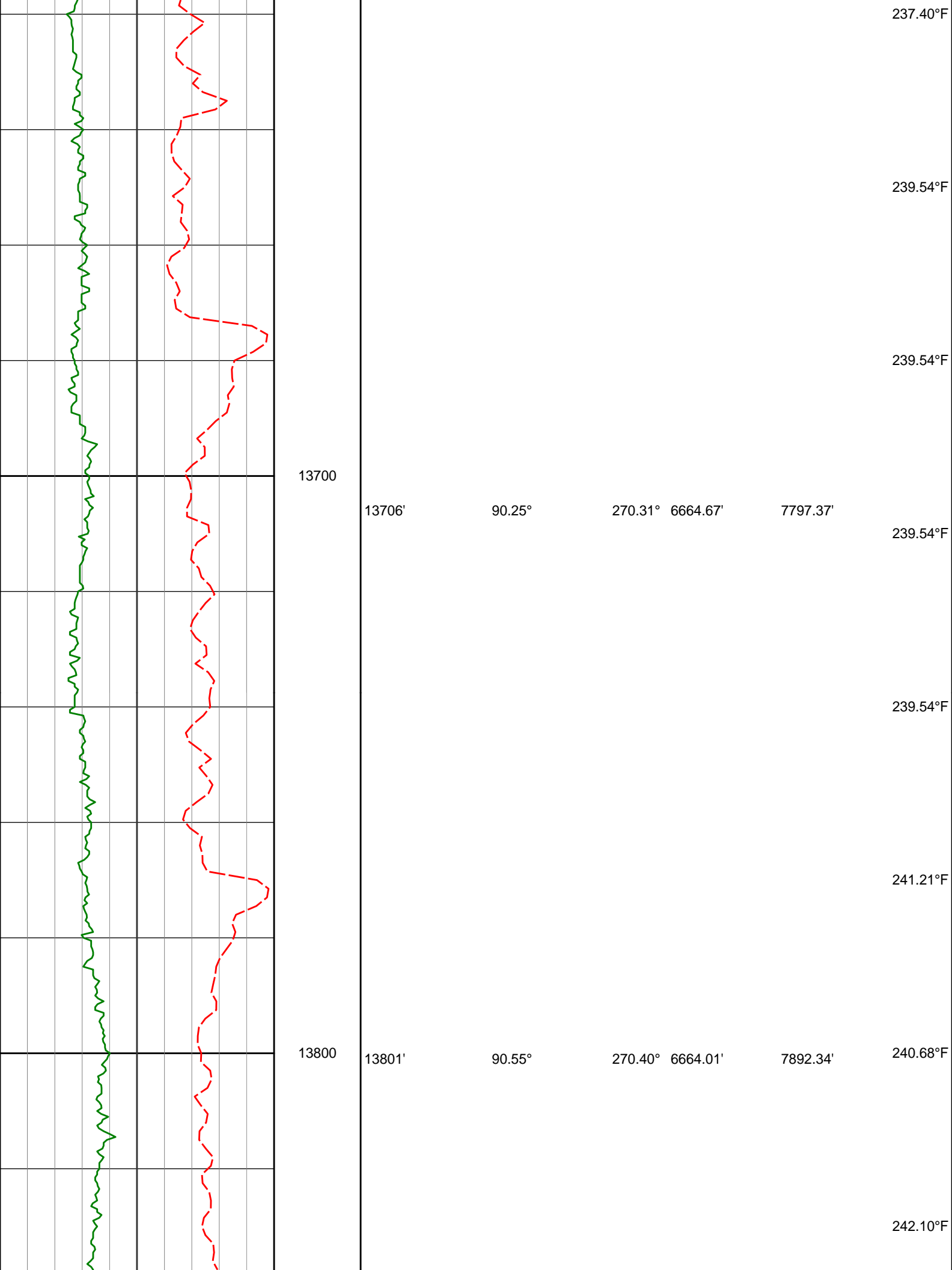
239.54°F

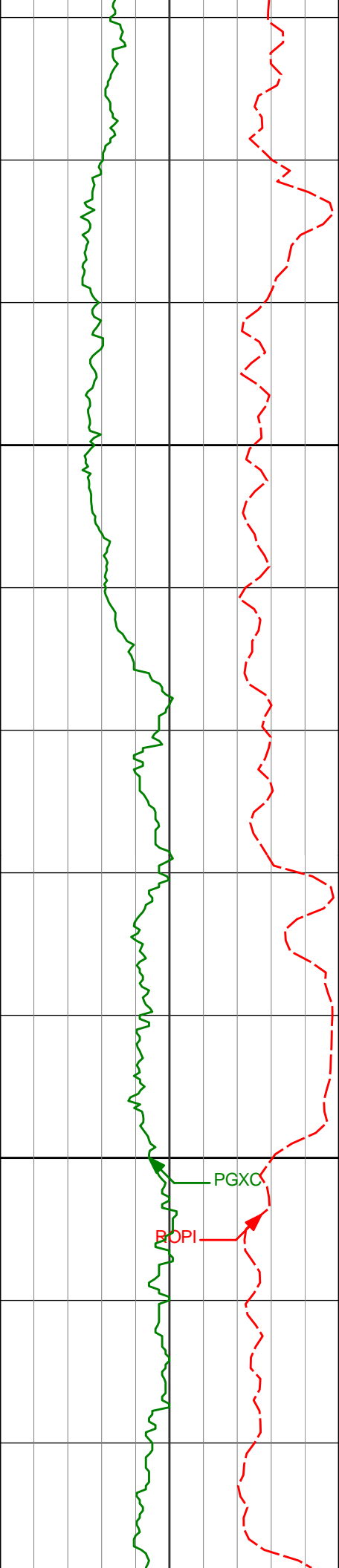
239.54°F

239.54°F









13900

13896'

91.14°

270.05° 6662.61'

7987.31'

242.28°F

239.67°F

237.35°F

236.96°F

239.46°F

14000

13991'

88.68°

269.78° 6662.76'

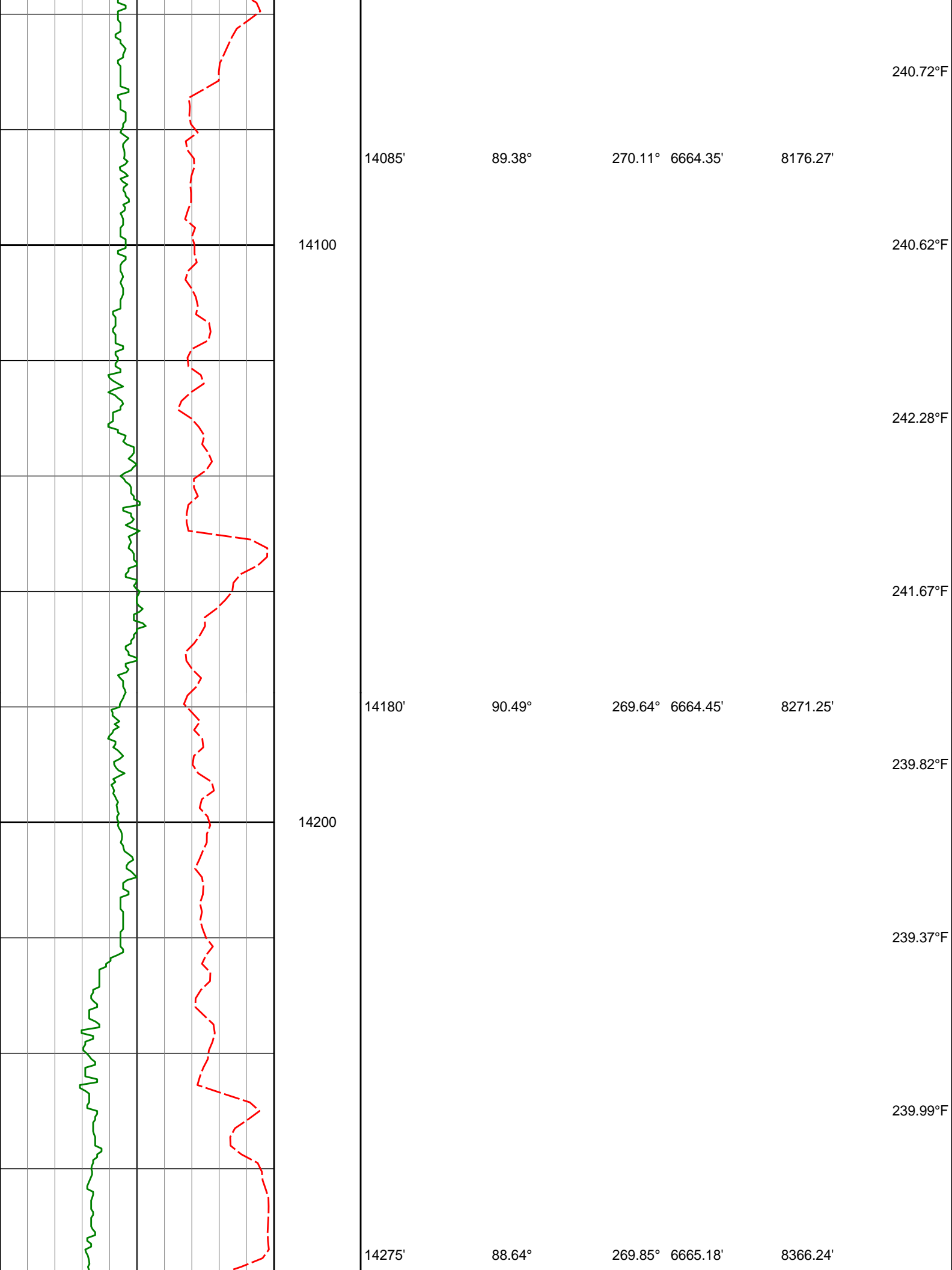
8082.29'

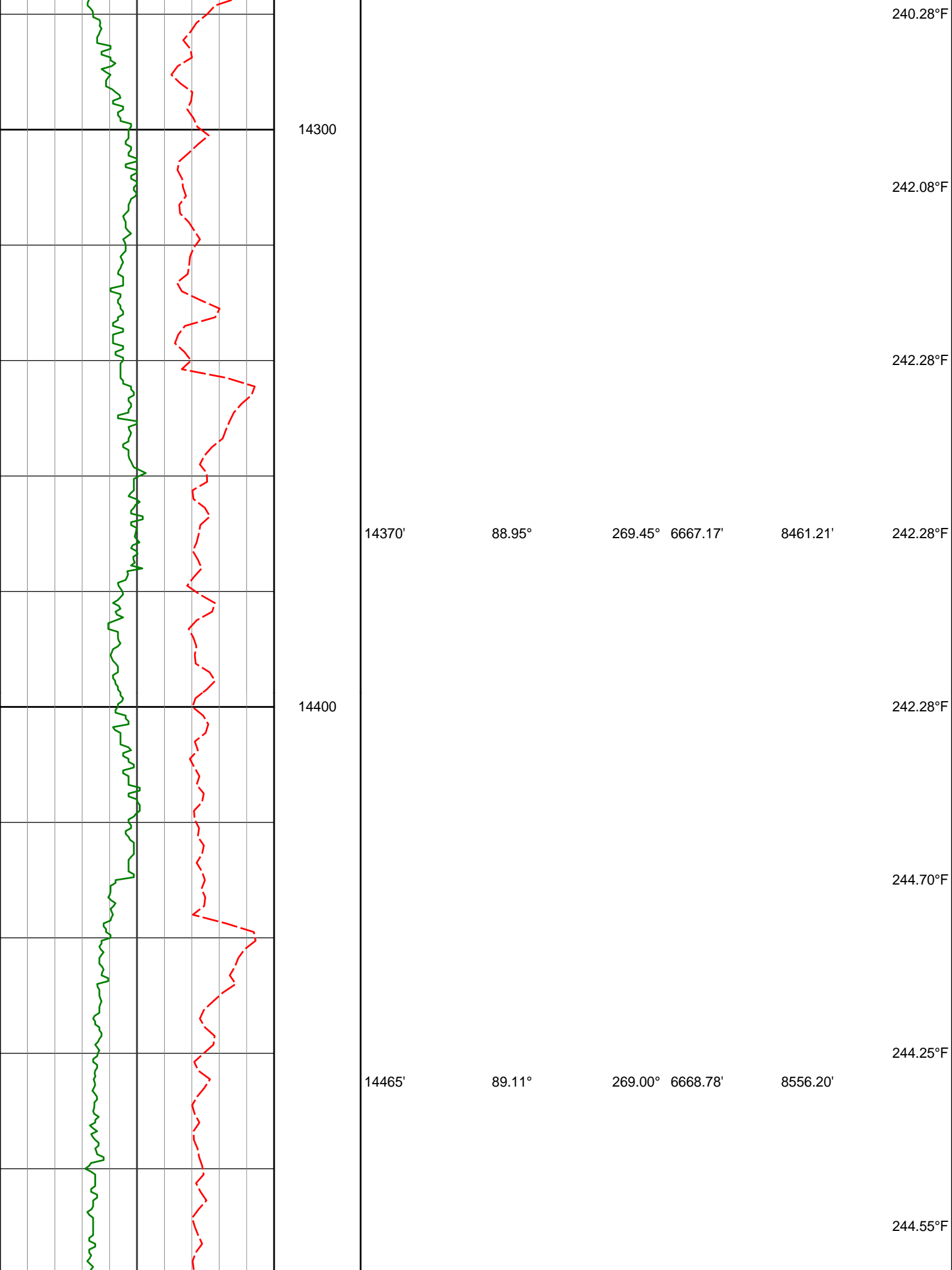
239.54°F

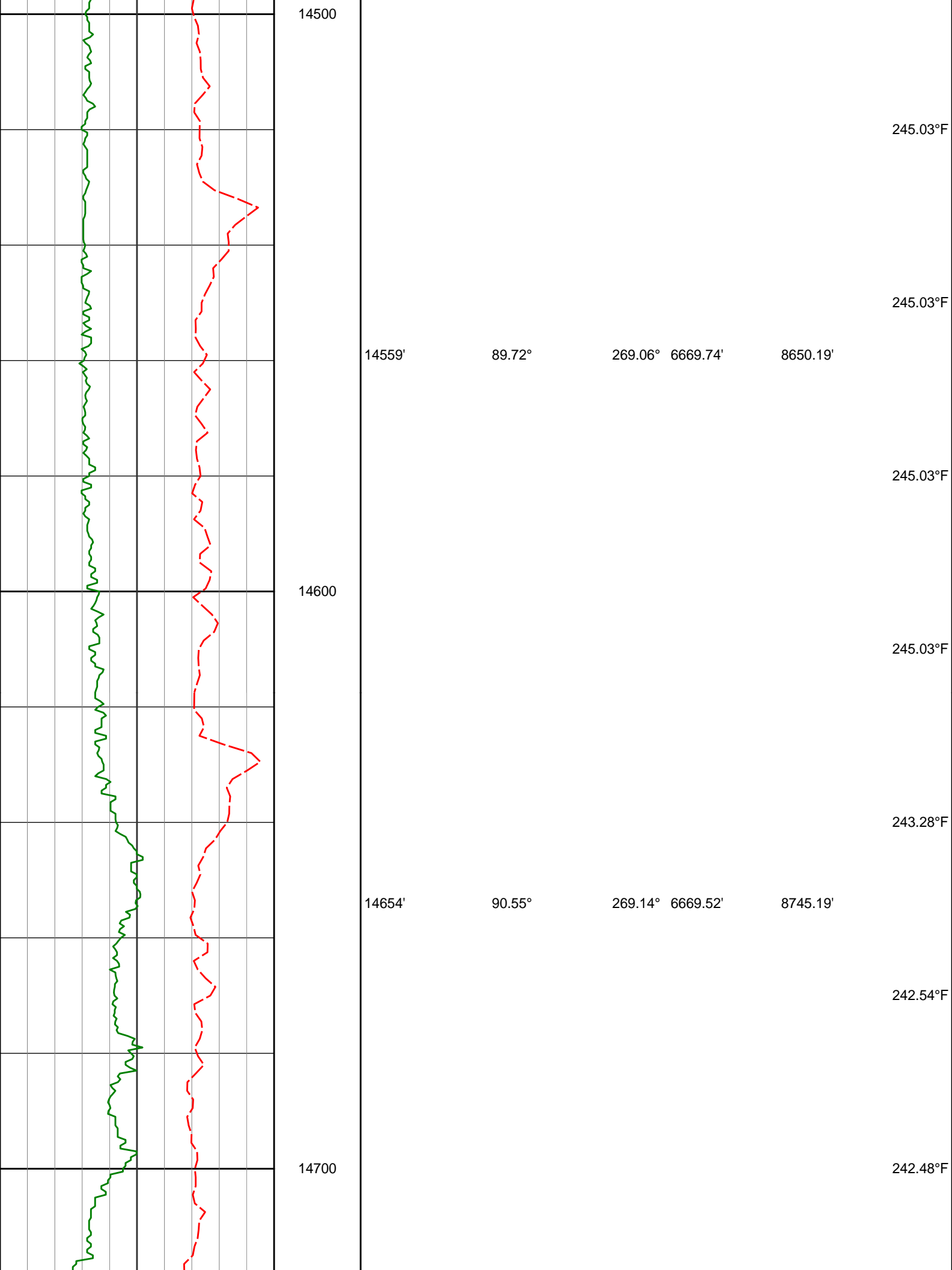
239.54°F

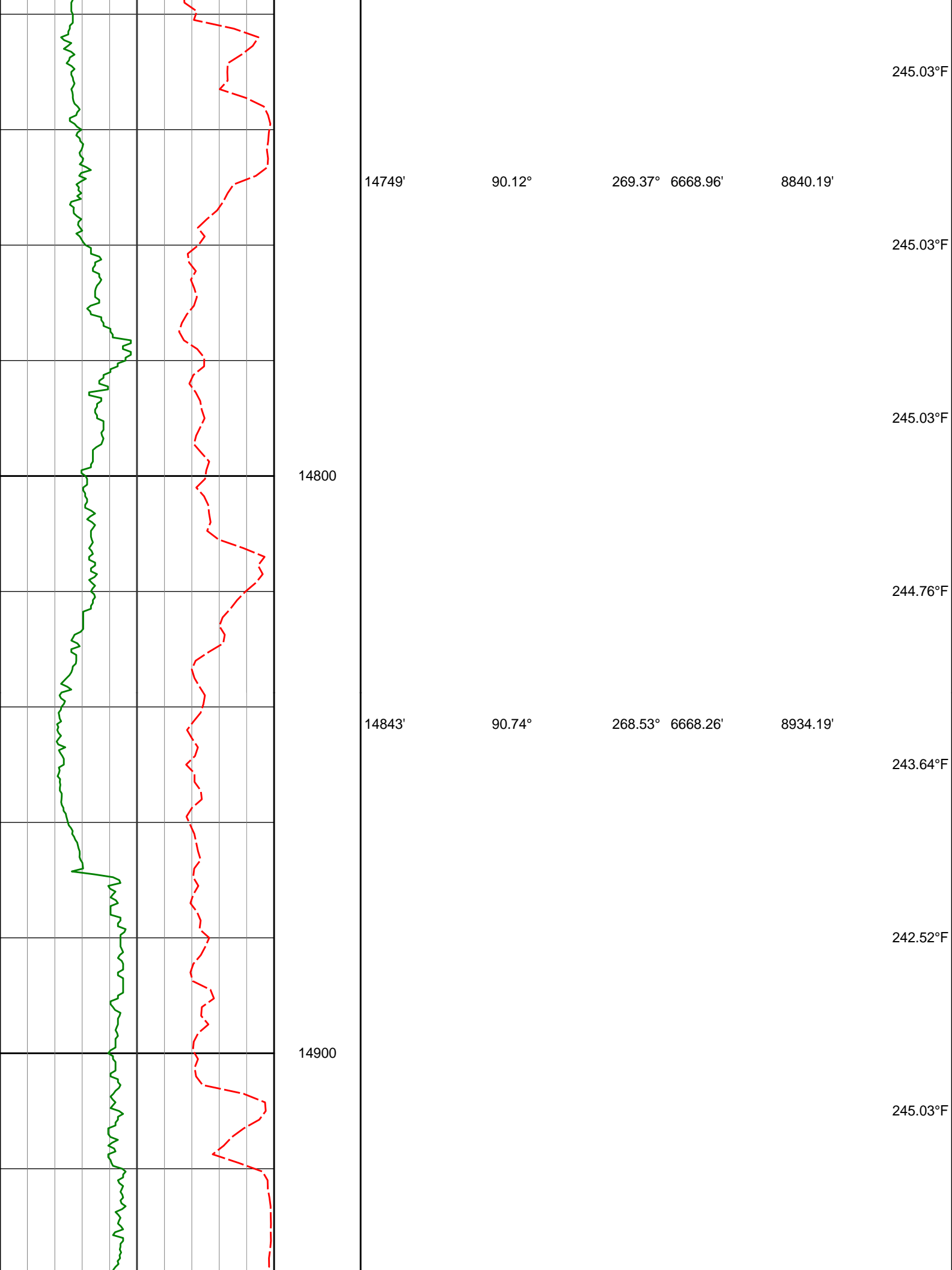
PGXC

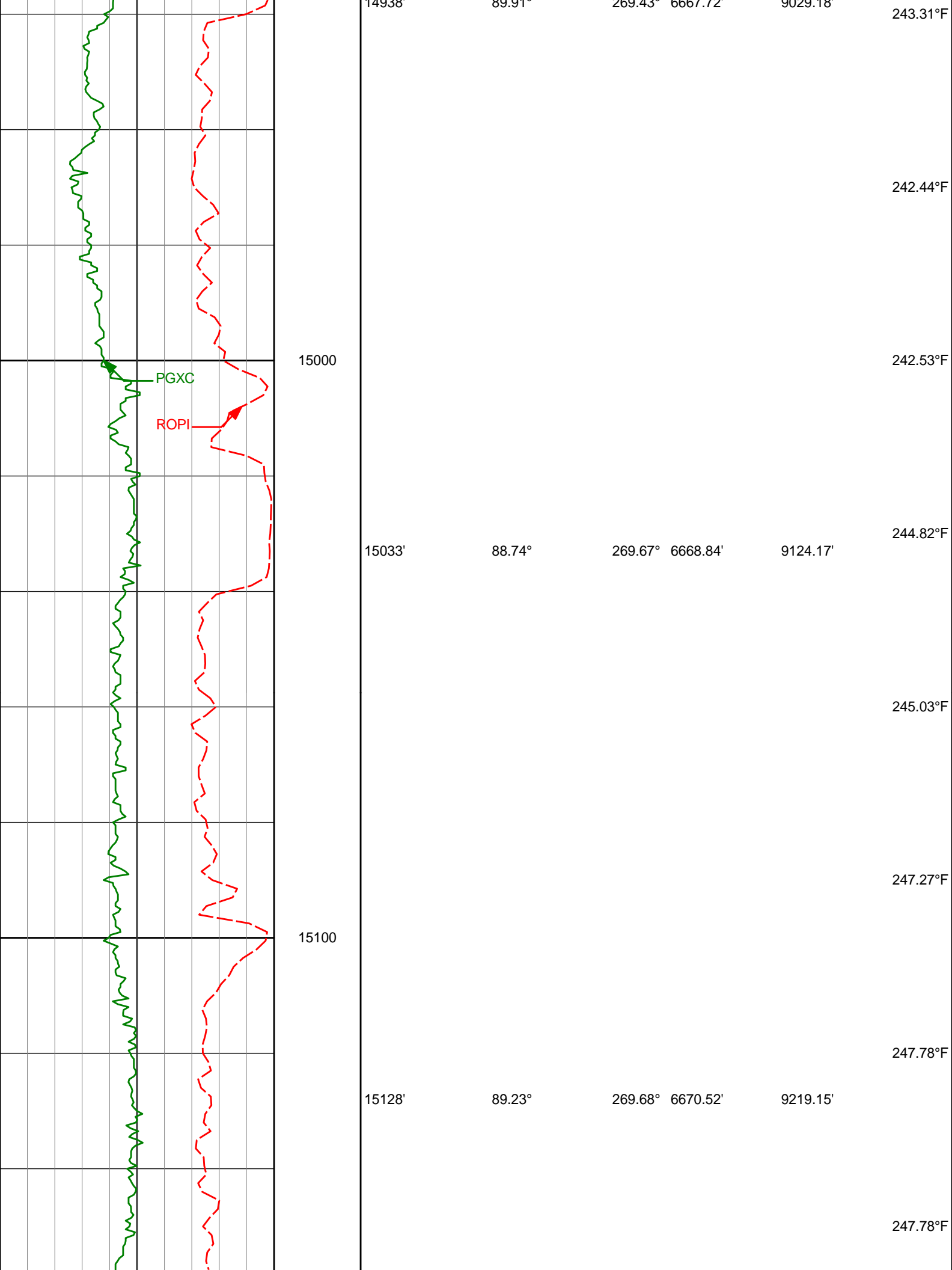
ROPI

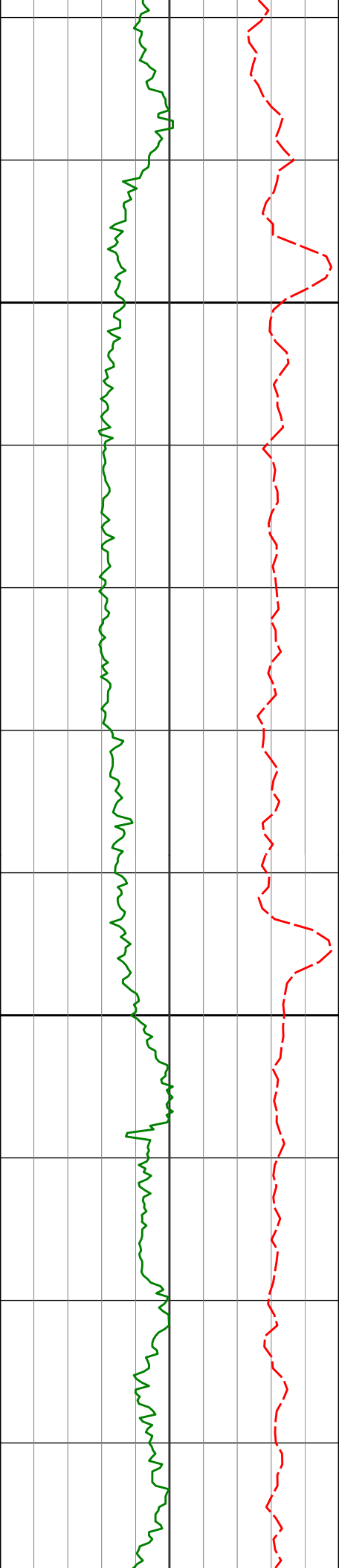












15200

15300

15223'

15318'

89.54°

90.34°

269.53° 6671.54'

269.03° 6671.64'

9314.14'

9409.14'

247.78°F

247.24°F

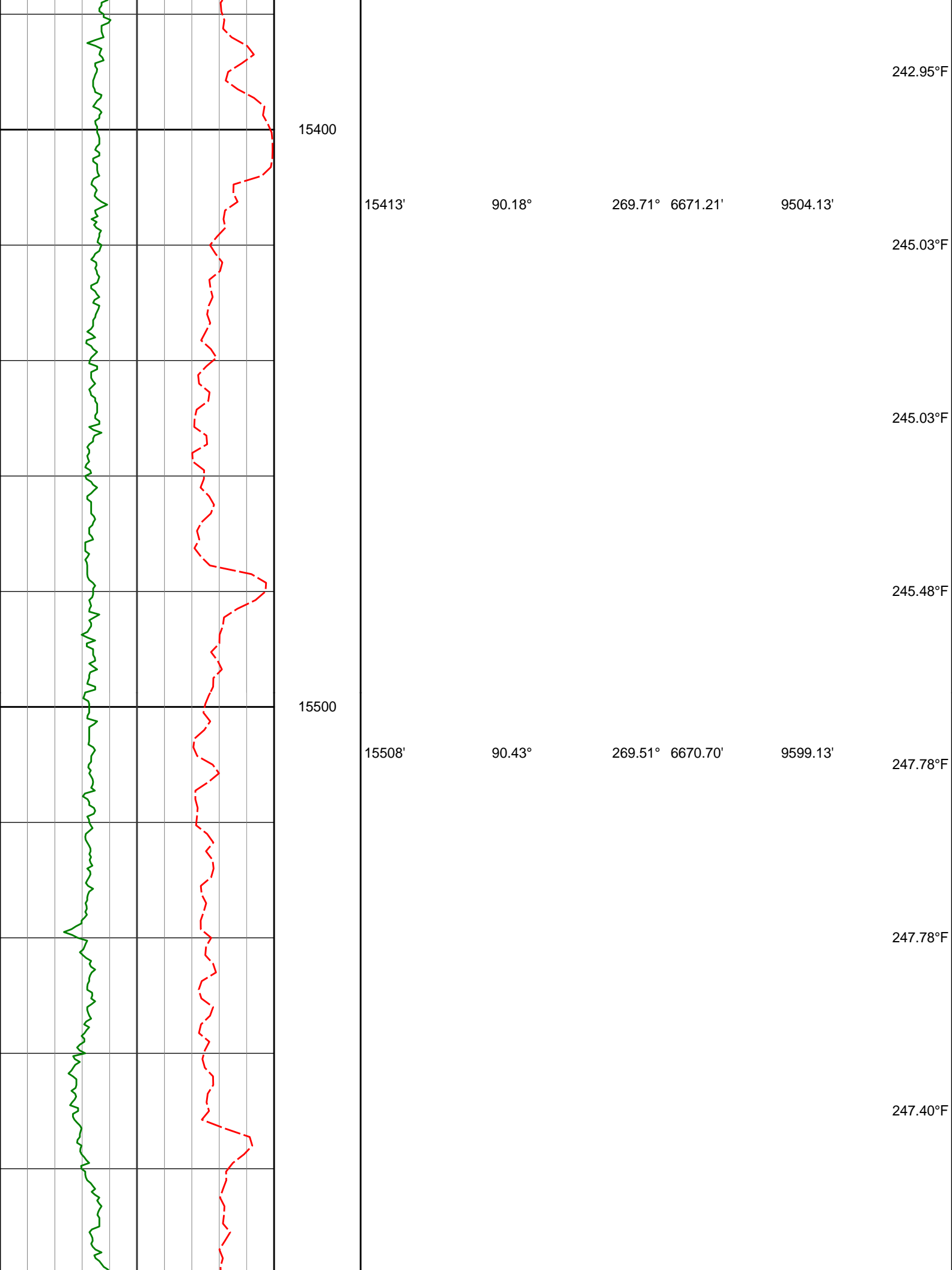
245.22°F

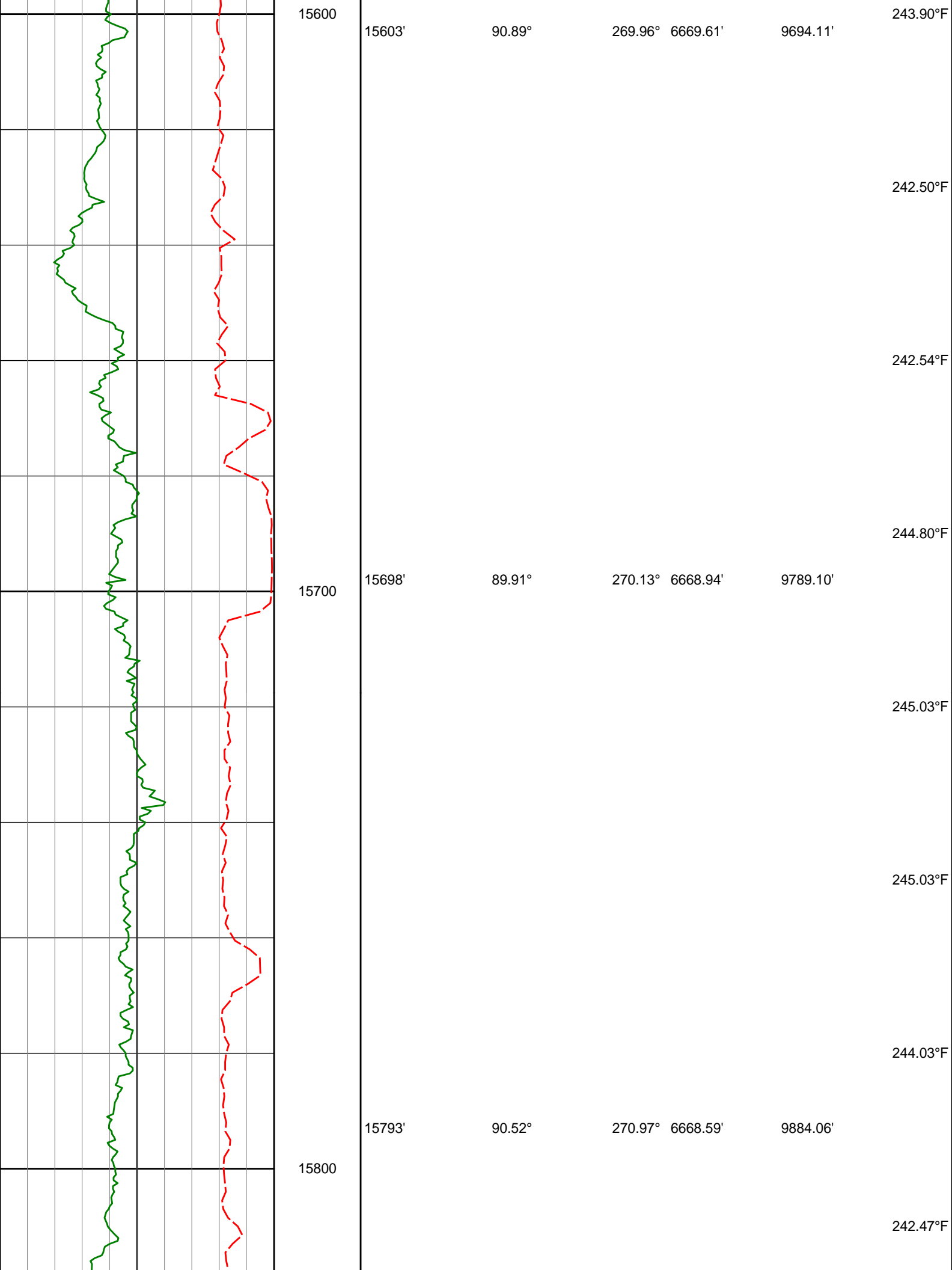
247.52°F

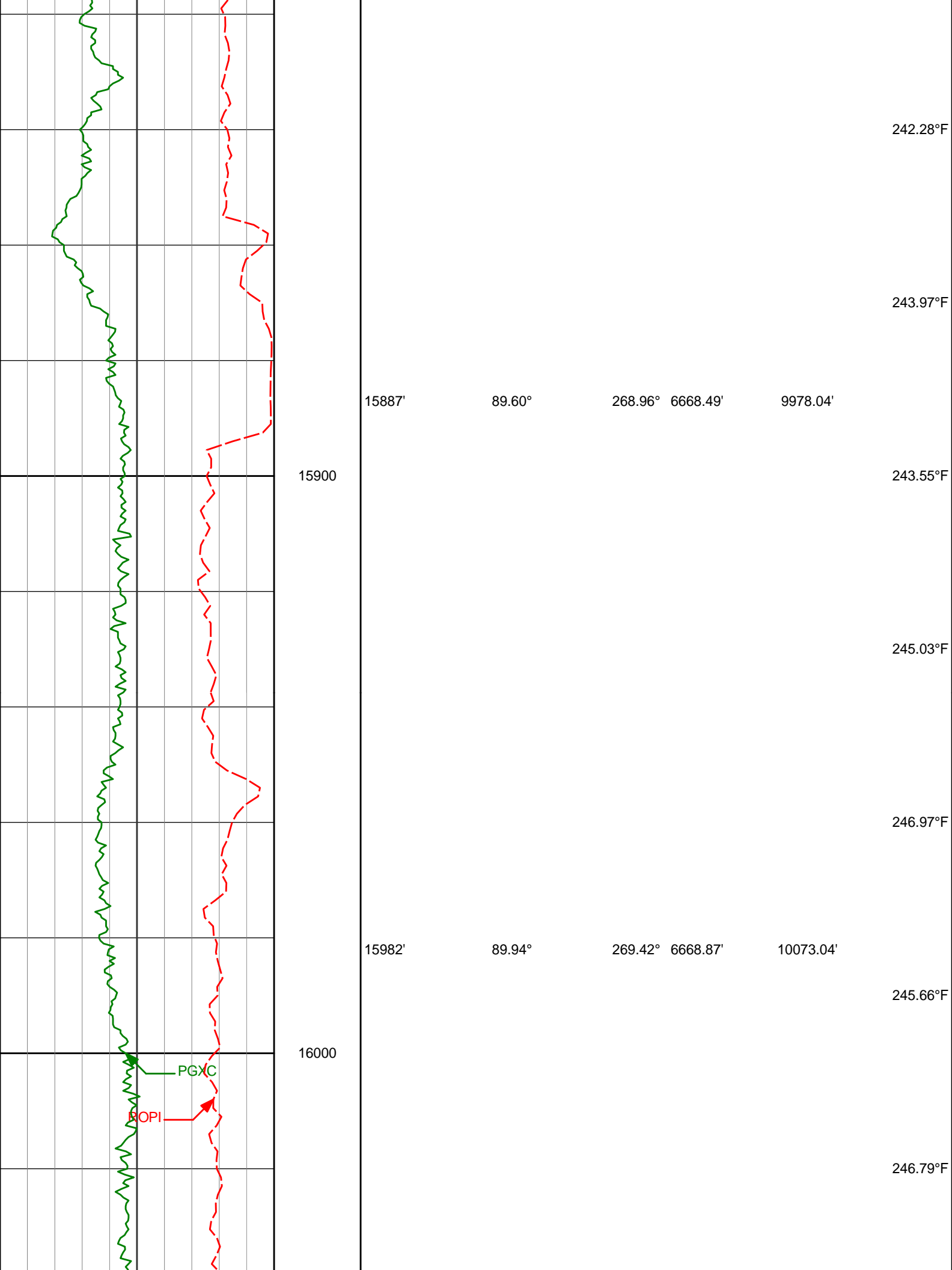
246.21°F

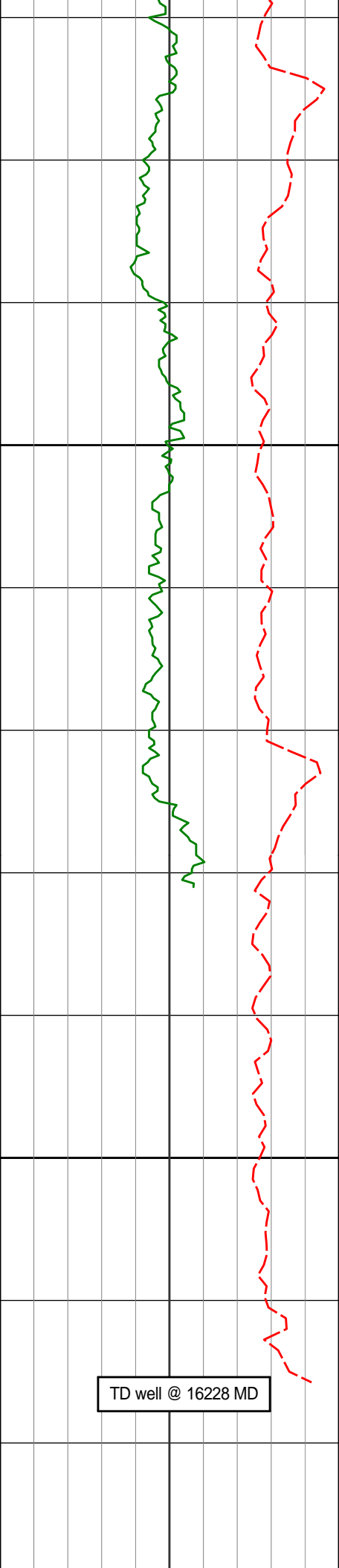
243.04°F

242.28°F









16100

16200

16077'

16161'

16228'

91.20°

91.32°

91.32°

268.73° 6667.93'

269.30° 6666.08'

269.30° 6664.54'

10168.03'

10252.01'

10318.99'

246.84°F

245.33°F

245.32°F

245.27°F

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

HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Colt A13-648
Wattenberg
Weld Colorado
USA
CA-XX-0902175901
Tied in @ Surface
First Two Survey's from 3rd party source (Muulti Shot EMS)

Final survey projected to bit.

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
306.00	1.20	294.32	305.98	1.32 N	2.92 W	2.90	0.39
708.00	0.80	311.82	707.92	4.92 N	8.85 W	8.76	0.12
957.00	0.17	297.59	956.91	6.25 N	10.47 W	10.36	0.26
1015.00	0.25	269.44	1014.91	6.29 N	10.67 W	10.57	0.22
1198.00	0.22	314.90	1197.90	6.54 N	11.32 W	11.21	0.10
1290.00	0.45	303.26	1289.90	6.86 N	11.75 W	11.63	0.26
1381.00	0.53	330.75	1380.90	7.42 N	12.25 W	12.13	0.27
1473.00	0.59	311.08	1472.90	8.11 N	12.82 W	12.68	0.22
1564.00	0.54	307.76	1563.89	8.68 N	13.51 W	13.36	0.07
1655.00	0.33	289.31	1654.89	9.03 N	14.10 W	13.94	0.27
1748.00	0.44	304.46	1747.89	9.32 N	14.64 W	14.49	0.16
1840.00	0.44	324.54	1839.88	9.80 N	15.14 W	14.97	0.17
1931.00	0.35	305.14	1930.88	10.25 N	15.57 W	15.40	0.18
2023.00	0.32	273.02	2022.88	10.42 N	16.06 W	15.88	0.20
2115.00	1.74	225.65	2114.86	9.46 N	17.31 W	17.15	1.68
2207.00	3.48	245.64	2206.77	7.33 N	20.85 W	20.73	2.11
2299.00	5.55	246.60	2298.48	4.41 N	27.48 W	27.40	2.25
2391.00	6.85	247.83	2389.94	0.58 N	36.65 W	36.63	1.42
2486.00	8.62	245.82	2484.07	4.48 S	48.39 W	48.46	1.88
2579.00	8.52	245.29	2576.03	10.21 S	61.00 W	61.17	0.14
2674.00	9.24	253.66	2669.89	15.30 S	74.72 W	74.96	1.55
2769.00	9.15	261.25	2763.68	18.60 S	89.50 W	89.80	1.28
2863.00	9.82	262.03	2856.39	20.84 S	104.83 W	105.16	0.73
2958.00	8.98	265.37	2950.12	22.57 S	120.24 W	120.60	1.05
3053.00	9.28	263.97	3043.91	23.97 S	135.25 W	135.63	0.39
3148.00	9.29	262.83	3137.67	25.73 S	150.47 W	150.88	0.19
3242.00	7.56	265.72	3230.65	27.14 S	164.17 W	164.60	1.89
3337.00	6.81	264.99	3324.90	28.10 S	176.01 W	176.46	0.80
3432.00	6.40	281.00	3419.28	27.58 S	186.82 W	187.26	1.98
3527.00	7.09	274.83	3513.62	26.08 S	197.86 W	198.27	1.05
3621.00	7.75	274.13	3606.84	25.13 S	209.96 W	210.36	0.71
3716.00	9.56	272.22	3700.75	24.36 S	224.24 W	224.61	1.93
3810.00	10.35	271.19	3793.33	23.89 S	240.48 W	240.85	0.86
3905.00	9.69	271.44	3886.89	23.51 S	257.00 W	257.36	0.70
4000.00	8.11	270.27	3980.74	23.27 S	271.70 W	272.05	1.67
4094.00	7.40	272.85	4073.88	22.94 S	284.37 W	284.72	0.84
4189.00	7.20	270.80	4168.11	22.56 S	296.44 W	296.77	0.35
4284.00	6.18	282.05	4262.46	21.40 S	307.39 W	307.71	1.74
4379.00	6.65	273.36	4356.87	20.01 S	317.88 W	318.18	1.13
4473.00	6.49	278.76	4450.26	18.89 S	328.57 W	328.84	0.68
4568.00	7.00	271.38	4544.60	17.93 S	339.66 W	339.91	1.06
4663.00	7.15	269.19	4638.88	17.87 S	351.36 W	351.61	0.32

4758.00	8.06	263.03	4733.04	18.77 S	363.88 W	364.15	1.28
4853.00	9.38	262.72	4826.94	20.55 S	378.17 W	378.47	1.39
4947.00	7.52	272.28	4919.92	21.28 S	391.92 W	392.22	2.47
5042.00	9.10	268.06	5013.92	21.29 S	405.64 W	405.94	1.78
5137.00	8.86	257.32	5107.76	23.15 S	420.29 W	420.62	1.78
5231.00	8.77	257.17	5200.65	26.33 S	434.34 W	434.72	0.10
5326.00	7.40	257.06	5294.71	29.31 S	447.36 W	447.79	1.44
5420.00	6.80	258.43	5387.99	31.78 S	458.71 W	459.18	0.66
5515.00	4.01	263.04	5482.55	33.31 S	467.52 W	468.02	2.97
5609.00	1.94	258.67	5576.42	34.02 S	472.35 W	472.85	2.21
5704.00	0.90	178.44	5671.40	35.08 S	473.90 W	474.42	2.10
5798.00	0.66	159.85	5765.39	36.33 S	473.70 W	474.24	0.37
5893.00	0.36	162.47	5860.39	37.13 S	473.42 W	473.97	0.32
5988.00	0.40	258.96	5955.39	37.47 S	473.65 W	474.21	0.60
6034.00	4.81	278.58	6001.33	37.22 S	475.72 W	476.28	9.64
6082.00	7.94	278.49	6049.02	36.43 S	480.99 W	481.53	6.52
6130.00	10.20	274.49	6096.42	35.61 S	488.51 W	489.03	4.89
6177.00	15.64	263.75	6142.22	35.97 S	498.96 W	499.49	12.60
6225.00	21.06	264.50	6187.76	37.50 S	513.99 W	514.55	11.30
6272.00	24.09	266.75	6231.16	38.86 S	531.98 W	532.55	6.70
6320.00	26.85	268.31	6274.49	39.73 S	552.60 W	553.18	5.92
6367.00	30.09	268.21	6315.80	40.41 S	574.99 W	575.58	6.89
6415.00	34.09	268.53	6356.46	41.13 S	600.47 W	601.08	8.34
6462.00	39.27	269.74	6394.14	41.54 S	628.53 W	629.14	11.13
6510.00	44.82	270.93	6429.77	41.33 S	660.67 W	661.26	11.68
6556.00	48.21	273.26	6461.42	40.09 S	694.01 W	694.58	8.23
6604.00	50.72	273.79	6492.62	37.85 S	730.42 W	730.95	5.30
6651.00	54.29	270.12	6521.23	36.61 S	767.67 W	768.17	9.80
6699.00	59.51	267.41	6547.43	37.50 S	807.85 W	808.36	11.86
6746.00	63.87	266.80	6569.72	39.59 S	849.16 W	849.71	9.35
6794.00	69.37	267.62	6588.76	41.73 S	893.15 W	893.73	11.57
6841.00	73.21	269.92	6603.83	42.68 S	937.65 W	938.23	9.39
6889.00	77.64	271.35	6615.91	42.16 S	984.09 W	984.66	9.67
6936.00	80.56	272.06	6624.80	40.78 S	1030.21 W	1030.75	6.39
6965.00	83.05	270.96	6628.93	40.03 S	1058.91 W	1059.43	9.37
7039.00	87.91	271.15	6634.76	38.67 S	1132.64 W	1133.13	6.57
7122.00	87.87	271.46	6637.82	36.78 S	1215.56 W	1216.01	0.38
7217.00	88.06	271.06	6641.19	34.69 S	1310.48 W	1310.88	0.47
7312.00	89.72	270.51	6643.03	33.39 S	1405.45 W	1405.81	1.84
7407.00	90.56	270.50	6642.80	32.55 S	1500.44 W	1500.78	0.88
7502.00	89.82	268.55	6642.48	33.34 S	1595.44 W	1595.77	2.20
7596.00	89.85	267.16	6642.75	36.86 S	1689.37 W	1689.75	1.48
7691.00	89.85	266.94	6643.00	41.75 S	1784.24 W	1784.69	0.23
7786.00	90.77	268.61	6642.49	45.44 S	1879.16 W	1879.66	2.01
7880.00	89.69	265.53	6642.11	50.24 S	1973.03 W	1973.59	3.47
7975.00	89.57	266.22	6642.73	57.07 S	2067.78 W	2068.44	0.74
8070.00	89.69	264.94	6643.34	64.40 S	2162.49 W	2163.27	1.35
8165.00	89.75	264.37	6643.80	73.24 S	2257.08 W	2257.99	0.60
8259.00	89.29	267.62	6644.59	79.81 S	2350.83 W	2351.84	3.49
8354.00	89.88	269.61	6645.28	82.10 S	2445.80 W	2446.83	2.18
8449.00	89.48	268.90	6645.81	83.34 S	2540.79 W	2541.83	0.86
8544.00	89.41	267.87	6646.73	86.02 S	2635.74 W	2636.81	1.09
8639.00	89.66	269.00	6647.50	88.61 S	2730.70 W	2731.80	1.22
8734.00	89.78	270.87	6647.97	88.72 S	2825.70 W	2826.79	1.97
8828.00	89.69	270.13	6648.40	87.90 S	2919.69 W	2920.75	0.79
8923.00	89.57	270.81	6649.01	87.12 S	3014.69 W	3015.72	0.73
9018.00	89.23	268.71	6650.01	87.52 S	3109.67 W	3110.70	2.24
9113.00	89.60	269.73	6650.98	88.81 S	3204.66 W	3205.70	1.14
9207.00	90.28	270.18	6651.08	88.89 S	3298.66 W	3299.68	0.87
9302.00	90.55	270.58	6650.39	88.26 S	3393.65 W	3394.66	0.51
9397.00	90.89	270.76	6649.20	87.14 S	3488.64 W	3489.61	0.40
9492.00	91.69	270.62	6647.06	86.00 S	3583.61 W	3584.54	0.85
9587.00	90.74	271.37	6645.04	84.35 S	3678.57 W	3679.47	1.27
9682.00	90.03	270.05	6644.40	83.17 S	3773.56 W	3774.42	1.58
9777.00	89.69	269.41	6644.64	83.62 S	3868.56 W	3869.41	0.76
9871.00	89.51	268.97	6645.29	84.95 S	3962.54 W	3963.41	0.51
9966.00	89.85	269.22	6645.82	86.45 S	4057.53 W	4058.41	0.44
10058.00	89.63	268.35	6646.24	88.40 S	4149.51 W	4150.41	0.98
10150.00	90.03	268.69	6646.51	90.78 S	4241.48 W	4242.40	0.57
10244.00	89.72	268.04	6646.72	93.46 S	4335.44 W	4336.39	0.77
10335.00	90.22	267.99	6646.77	96.61 S	4426.38 W	4427.38	0.55
10427.00	87.87	268.88	6648.30	99.13 S	4518.33 W	4519.35	2.73
10519.00	88.03	268.28	6651.59	101.40 S	4610.24 W	4611.29	0.67
10610.00	88.77	269.45	6654.13	103.21 S	4701.18 W	4702.25	1.52
10702.00	89.28	270.16	6654.89	103.53 S	4792.18 W	4793.24	1.84

10702.00	90.28	270.16	6654.89	103.32 S	4793.16 W	4794.24	1.81
10793.00	90.59	270.19	6654.20	103.24 S	4884.17 W	4885.22	0.34
10885.00	91.14	269.65	6652.81	103.37 S	4976.16 W	4977.20	0.84
10977.00	90.03	270.05	6651.88	103.61 S	5068.16 W	5069.18	1.28
11069.00	90.25	269.86	6651.65	103.68 S	5160.16 W	5161.17	0.32
11160.00	89.66	269.81	6651.72	103.94 S	5251.16 W	5252.16	0.65
11252.00	89.97	269.72	6652.02	104.32 S	5343.15 W	5344.15	0.35
11344.00	90.22	269.40	6651.87	105.03 S	5435.15 W	5436.15	0.44
11437.00	90.83	268.47	6651.01	106.76 S	5528.13 W	5529.14	1.20
11529.00	90.43	269.86	6650.00	108.10 S	5620.11 W	5621.13	1.57
11621.00	91.17	269.98	6648.72	108.23 S	5712.10 W	5713.11	0.81
11715.00	89.54	270.13	6648.14	108.14 S	5806.10 W	5807.09	1.74
11809.00	89.75	270.39	6648.72	107.71 S	5900.09 W	5901.07	0.36
11904.00	89.97	269.54	6648.95	107.77 S	5995.09 W	5996.06	0.92
11998.00	87.84	270.28	6650.75	107.92 S	6089.07 W	6090.02	2.40
12093.00	88.06	270.03	6654.15	107.66 S	6184.01 W	6184.94	0.35
12188.00	88.18	269.40	6657.26	108.13 S	6278.96 W	6279.89	0.67
12283.00	88.18	269.51	6660.28	109.03 S	6373.90 W	6374.83	0.12
12378.00	88.40	269.71	6663.11	109.68 S	6468.86 W	6469.79	0.31
12473.00	88.80	269.35	6665.44	110.46 S	6563.83 W	6564.76	0.57
12568.00	89.07	269.20	6667.20	111.66 S	6658.80 W	6659.74	0.33
12663.00	89.35	269.03	6668.51	113.13 S	6753.78 W	6754.73	0.34
12758.00	88.89	268.42	6669.97	115.24 S	6848.75 W	6849.72	0.80
12852.00	89.57	268.57	6671.23	117.71 S	6942.70 W	6943.70	0.74
12947.00	90.74	267.71	6670.98	120.79 S	7037.65 W	7038.69	1.53
13042.00	90.58	267.61	6669.88	124.67 S	7132.57 W	7133.65	0.20
13137.00	91.29	267.53	6668.33	128.70 S	7227.47 W	7228.61	0.75
13232.00	91.85	267.20	6665.73	133.07 S	7322.33 W	7323.53	0.68
13326.00	90.31	268.14	6663.96	136.89 S	7416.23 W	7417.49	1.92
13421.00	89.11	267.16	6664.44	140.78 S	7511.15 W	7512.45	1.63
13516.00	90.00	268.81	6665.18	144.12 S	7606.08 W	7607.43	1.97
13611.00	90.18	271.13	6665.03	144.17 S	7701.08 W	7702.41	2.45
13706.00	90.25	270.31	6664.67	142.98 S	7796.07 W	7797.37	0.87
13801.00	90.55	270.40	6664.01	142.39 S	7891.06 W	7892.34	0.33
13896.00	91.14	270.05	6662.61	142.02 S	7986.05 W	7987.31	0.72
13991.00	88.68	269.78	6662.76	142.16 S	8081.04 W	8082.29	2.61
14085.00	89.38	270.11	6664.35	142.25 S	8175.03 W	8176.27	0.82
14180.00	90.49	269.64	6664.45	142.46 S	8270.03 W	8271.25	1.27
14275.00	88.64	269.85	6665.18	142.88 S	8365.02 W	8366.24	1.96
14370.00	88.95	269.45	6667.17	143.46 S	8460.00 W	8461.21	0.53
14465.00	89.11	269.00	6668.78	144.74 S	8554.97 W	8556.20	0.50
14559.00	89.72	269.06	6669.74	146.33 S	8648.96 W	8650.19	0.65
14654.00	90.55	269.14	6669.52	147.83 S	8743.94 W	8745.19	0.88
14749.00	90.12	269.37	6668.96	149.06 S	8838.93 W	8840.19	0.51
14843.00	90.74	268.53	6668.26	150.78 S	8932.91 W	8934.19	1.11
14938.00	89.91	269.43	6667.72	152.48 S	9027.89 W	9029.18	1.29
15033.00	88.74	269.67	6668.84	153.22 S	9122.88 W	9124.17	1.26
15128.00	89.23	269.68	6670.52	153.76 S	9217.87 W	9219.15	0.52
15223.00	89.54	269.53	6671.54	154.42 S	9312.86 W	9314.14	0.36
15318.00	90.34	269.03	6671.64	155.61 S	9407.85 W	9409.14	0.99
15413.00	90.18	269.71	6671.21	156.65 S	9502.84 W	9504.13	0.74
15508.00	90.43	269.51	6670.70	157.30 S	9597.84 W	9599.13	0.34
15603.00	90.89	269.96	6669.61	157.74 S	9692.83 W	9694.11	0.68
15698.00	89.91	270.13	6668.94	157.67 S	9787.83 W	9789.10	1.05
15793.00	90.52	270.97	6668.59	156.75 S	9882.82 W	9884.06	1.09
15887.00	89.60	268.96	6668.49	156.81 S	9976.82 W	9978.04	2.35
15982.00	89.94	269.42	6668.87	158.15 S	10071.80 W	10073.04	0.60
16077.00	91.20	268.73	6667.93	159.69 S	10166.79 W	10168.03	1.51
16161.00	91.32	269.30	6666.08	161.13 S	10250.75 W	10252.01	0.69
16228.00	91.32	269.30	6664.54	161.95 S	10317.73 W	10318.99	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 269.04 DEGREES (GRID)
A TOTAL CORRECTION OF 7.42 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 16228.00 FEET
IS 10319.00 FEET ALONG 269.10 DEGREES (GRID)