



1 : 600 / 1 : 240

WELL INFORMATION					
MWD Run Number	100	200			
Date run completed	31-Mar-15	04-Apr-15			
Rig Bit Number	2	3			
Bit Size (in)	8.750	6.125			
Tool Nominal OD (in)	6.750	4.750			
Log Start Depth (MD, ft)	948.00	7,002.00			
Log End Depth (MD, ft)	7,002.00	16,240.00			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	30-Mar-15 11:05	01-Apr-15 21:15			
Drill/Wipe End Date and Time	31-Mar-15 17:00	04-Apr-15 07:15			
Min Inc (deg) @ Depth (MD, ft)	0.55 @ 5,799.00	86.40 @ 7,063.00			
Max Inc (deg) @ Depth (MD, ft)	78.49 @ 6,951.00	92.31 @ 9,716.00			
Bit TFA(in2) / Bit Type	0.91 / PDC	0.75 / PDC			
Flow Rate (gpm)	583.28	296.10			
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)	10.20 / 26.00	9.87 / 43.00			
Filtrate CL (ppm)	1,200.00	1,200.00			
pH / Fluid Loss (mptm)	10.00 / 59	7.70 / 10			
PV (cP) / YP (lhf2)	1 / 4.00	10 / 13.00			
% Solids / % Sand	5.1 / 0.30	8.70 / 0.30			
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A			
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			

Max Tool Temp (degF) / Source	175.40 / PCM	242.90 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A			
Lead MWD Engineer	Ryan Skaarvold	Paul Kock			
Customer Representative	Dave Neilson	Dave Neilson			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.93	5.93			
Sub Serial Number	246473	12134679			
Insert Serial Number	11400937	11400937			
Date and Time Initialized	29-Mar-15 21:54	01-Apr-15 12:38			
Date and Time Read	31-Mar-15 23:33	04-Apr-15 22:49			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	49.14	66.10			
Software Version	6.21	6.21			
Sub Serial Number	246473	12134679			
Sonde Serial Number	11638605	11638605			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	51.00	221.83			

Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	39.02	61.37			
Recorded Sample Period (sec)	10	15			
Software Version	8.15	8.15			
Sub Serial Number	246473	12134679			
Insert/Sonde Serial Number	11293417	11293417			

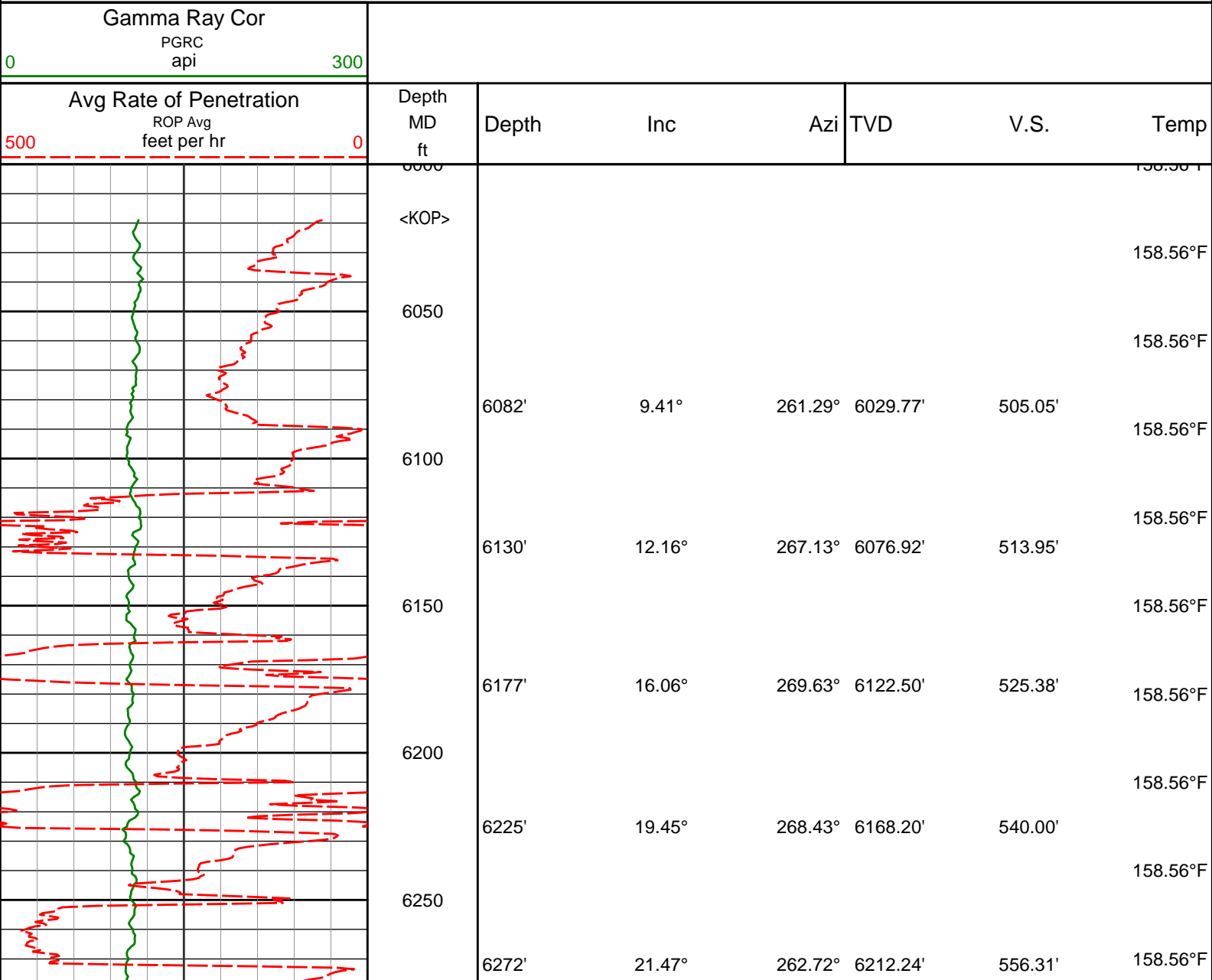
REMARKS

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 8.1.10
6. Gamma presented inside casing/cement from 6963 ft. MD to 7002 ft. MD.
7. Pason down from 10071 ft. MD to 10194 ft. MD. Ok to miss data per Co Man and Geologist.

WARRANTY

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MD Detail 1:600 Scale





6300

158.56°F

158.56°F

6350

6366'

27.71°

265.54°

6297.68'

595.07'

6400

6450

6461'

35.09°

269.17°

6378.72'

644.39'

6500

6550

6556'

47.07°

274.13°

6450.21'

706.66'

6600

6650

6651'

58.72°

277.07°

6507.44'

782.09'

6700

6750

6745'

62.74°

276.55°

6553.38'

863.75'

6800

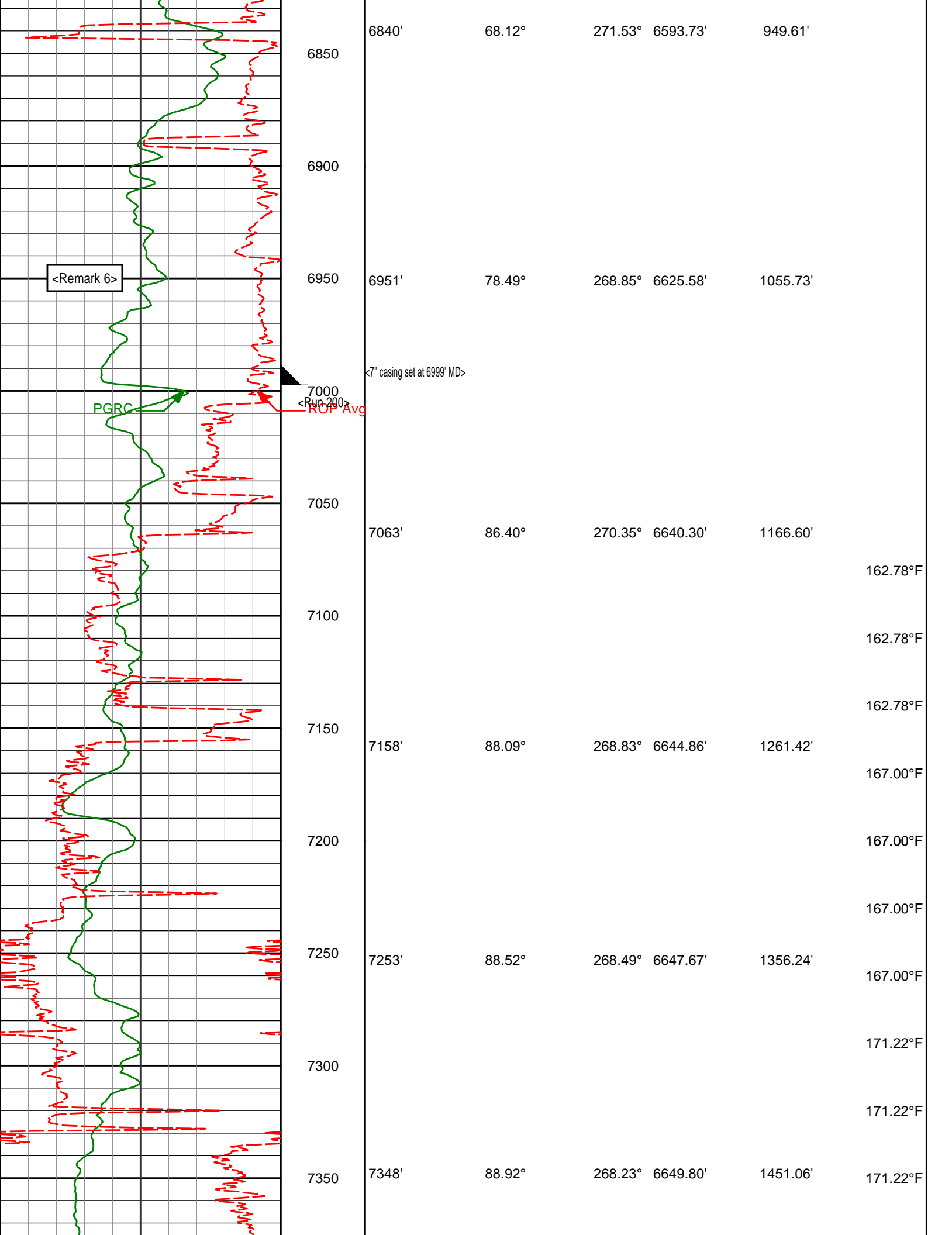
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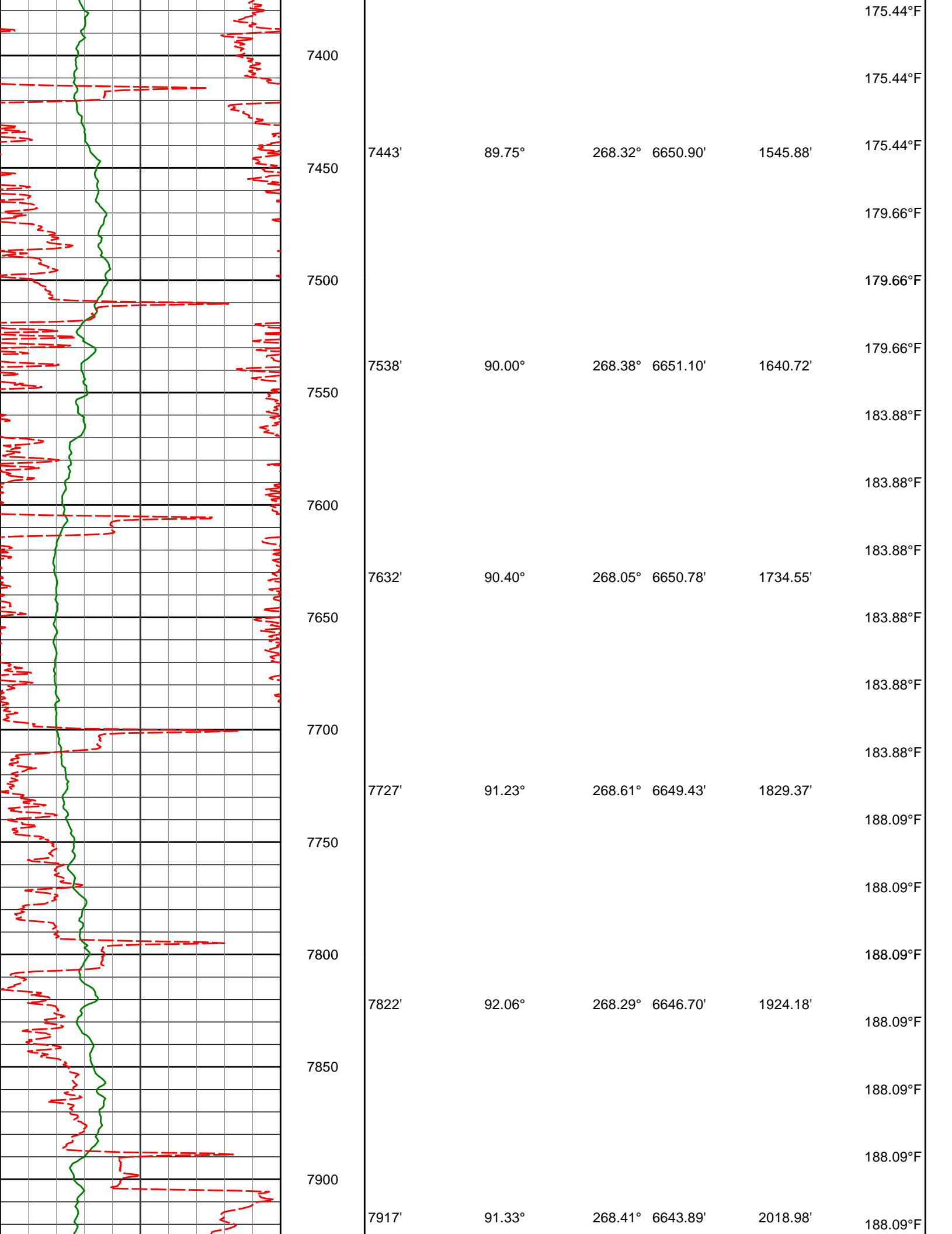
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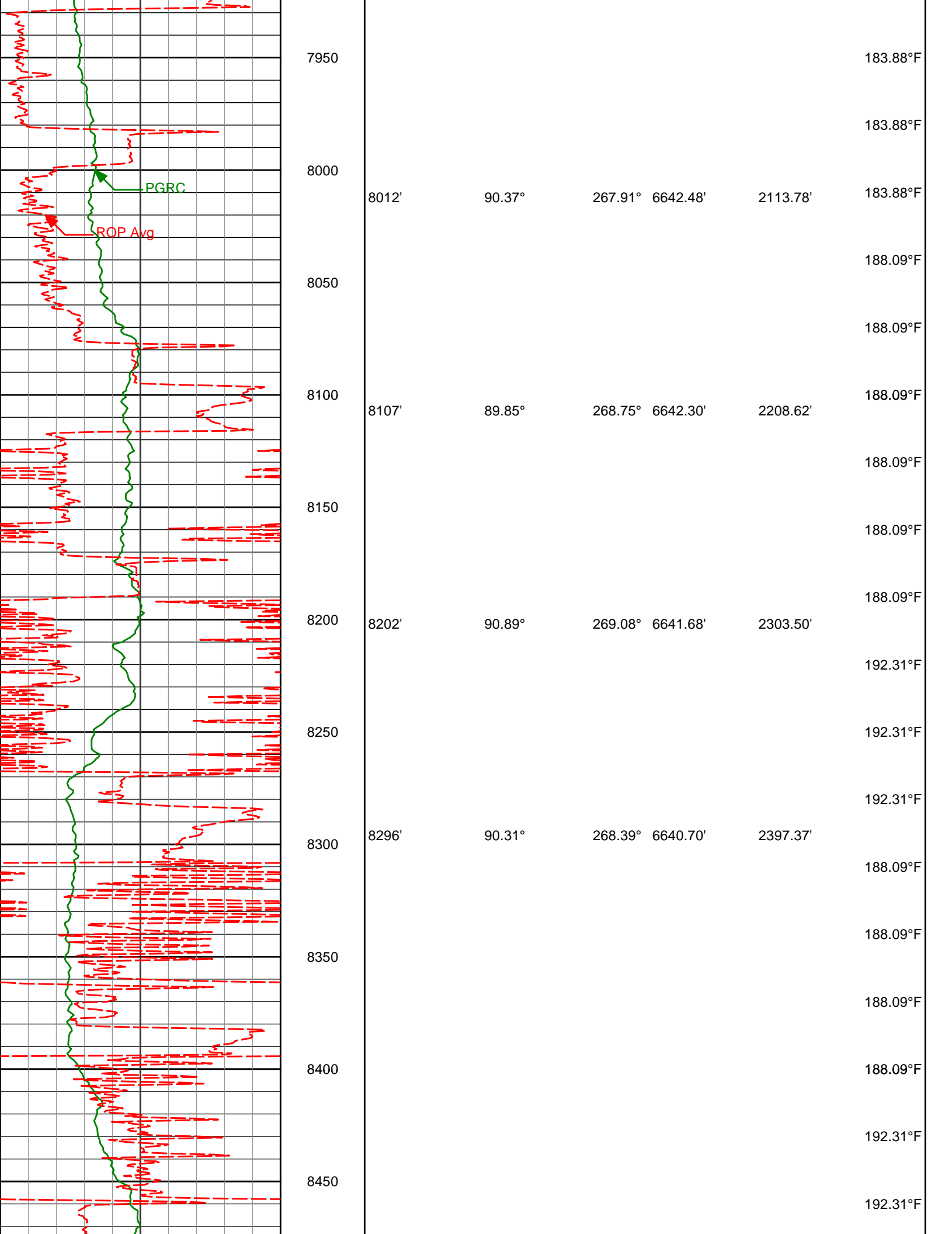
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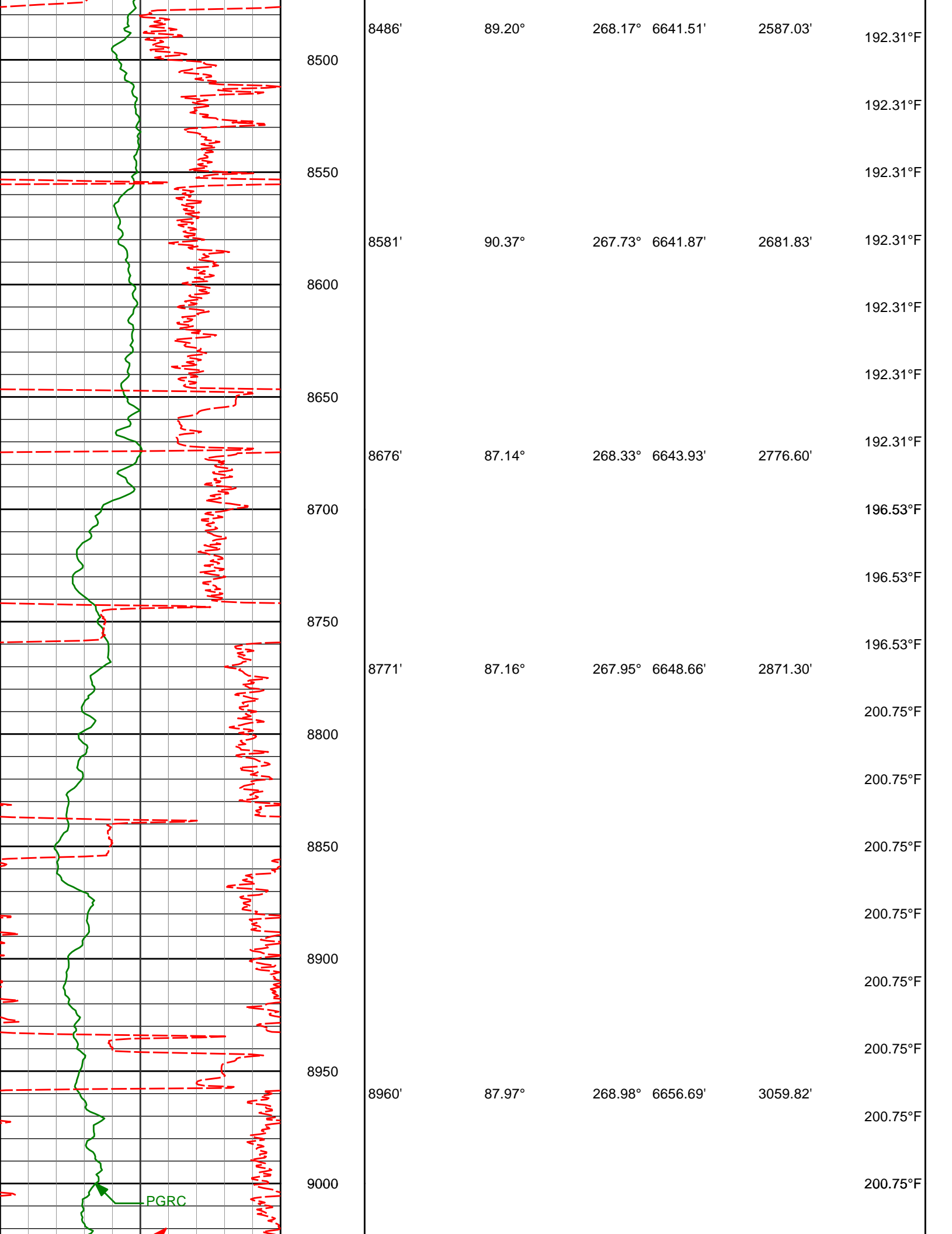
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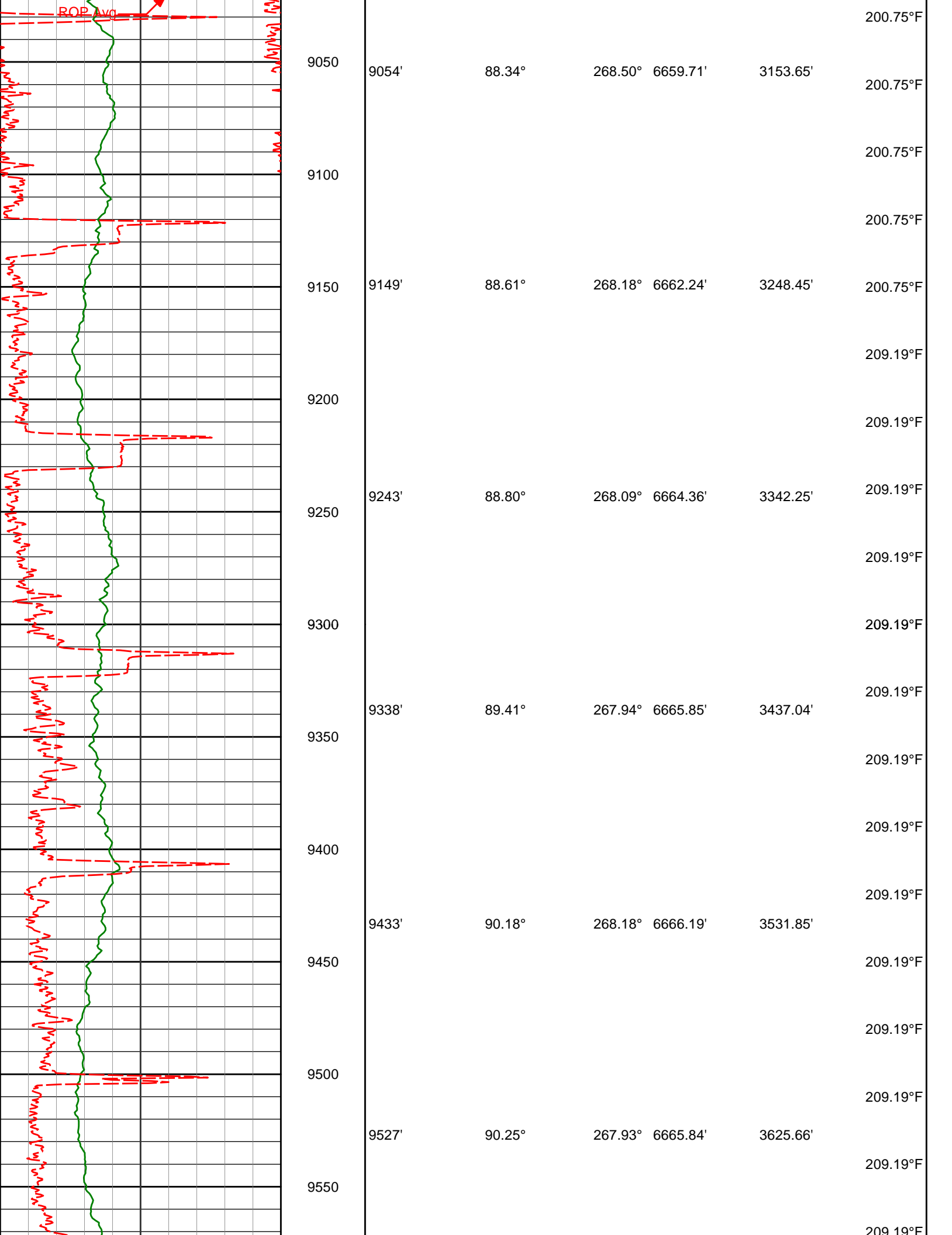
906.62'

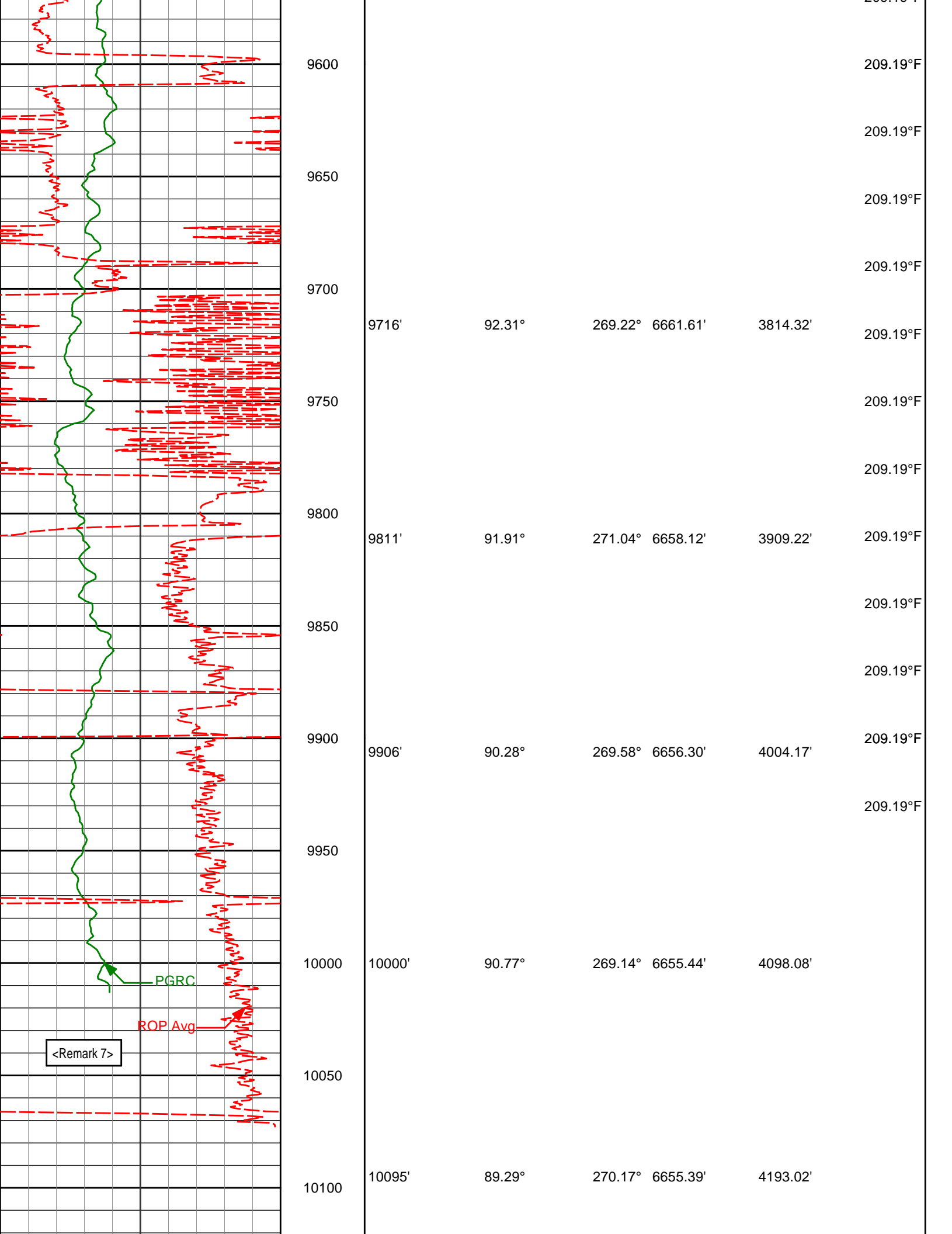


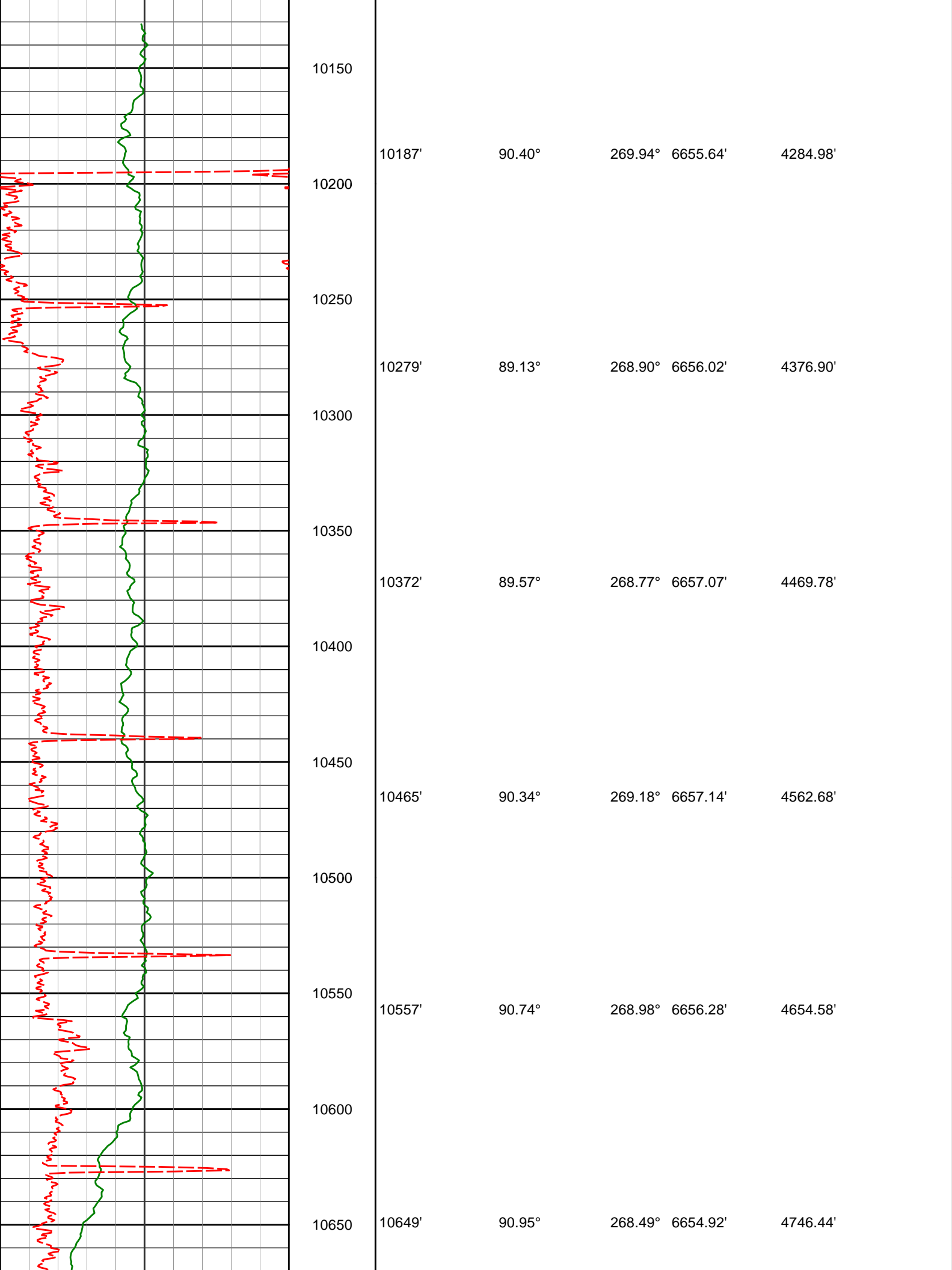


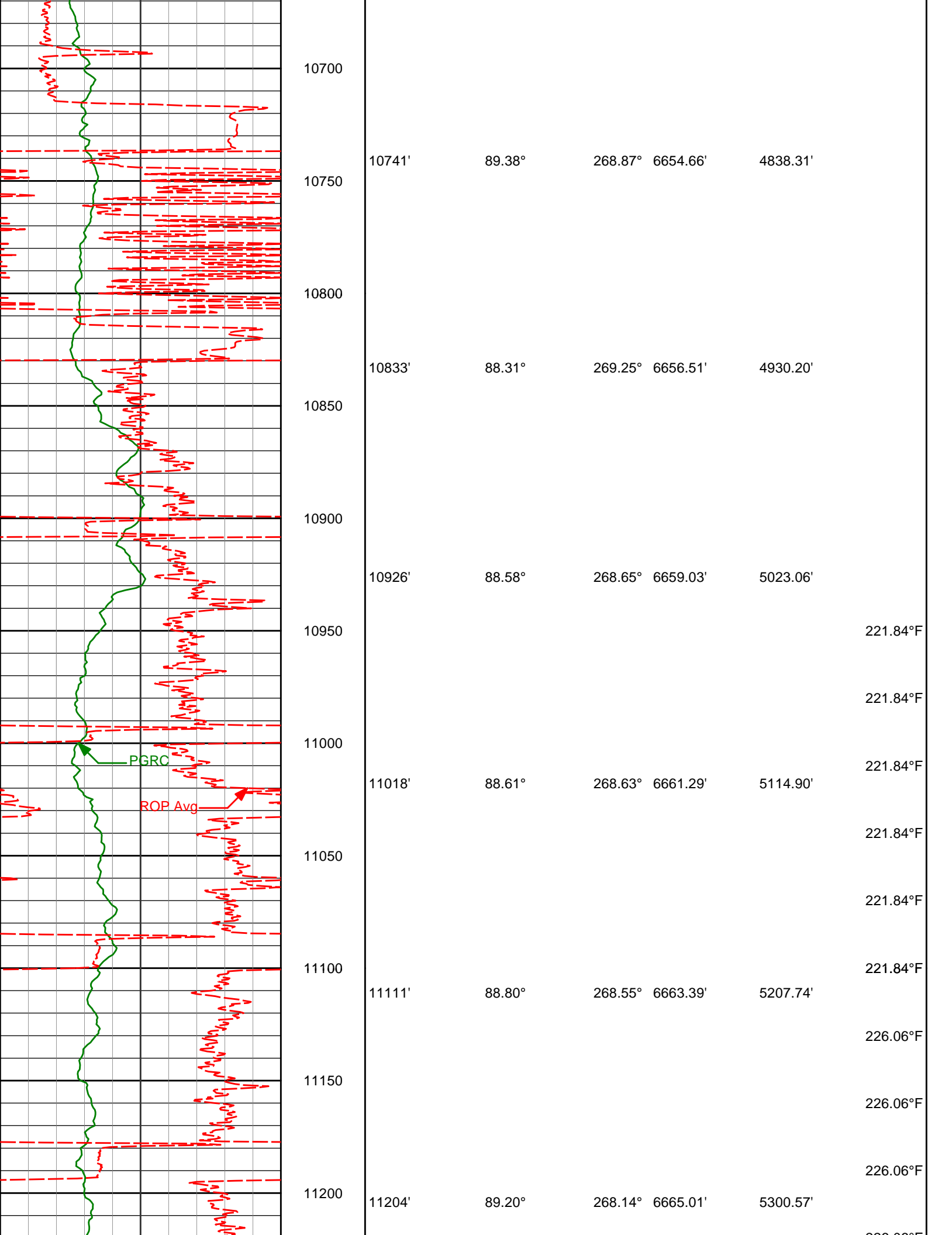


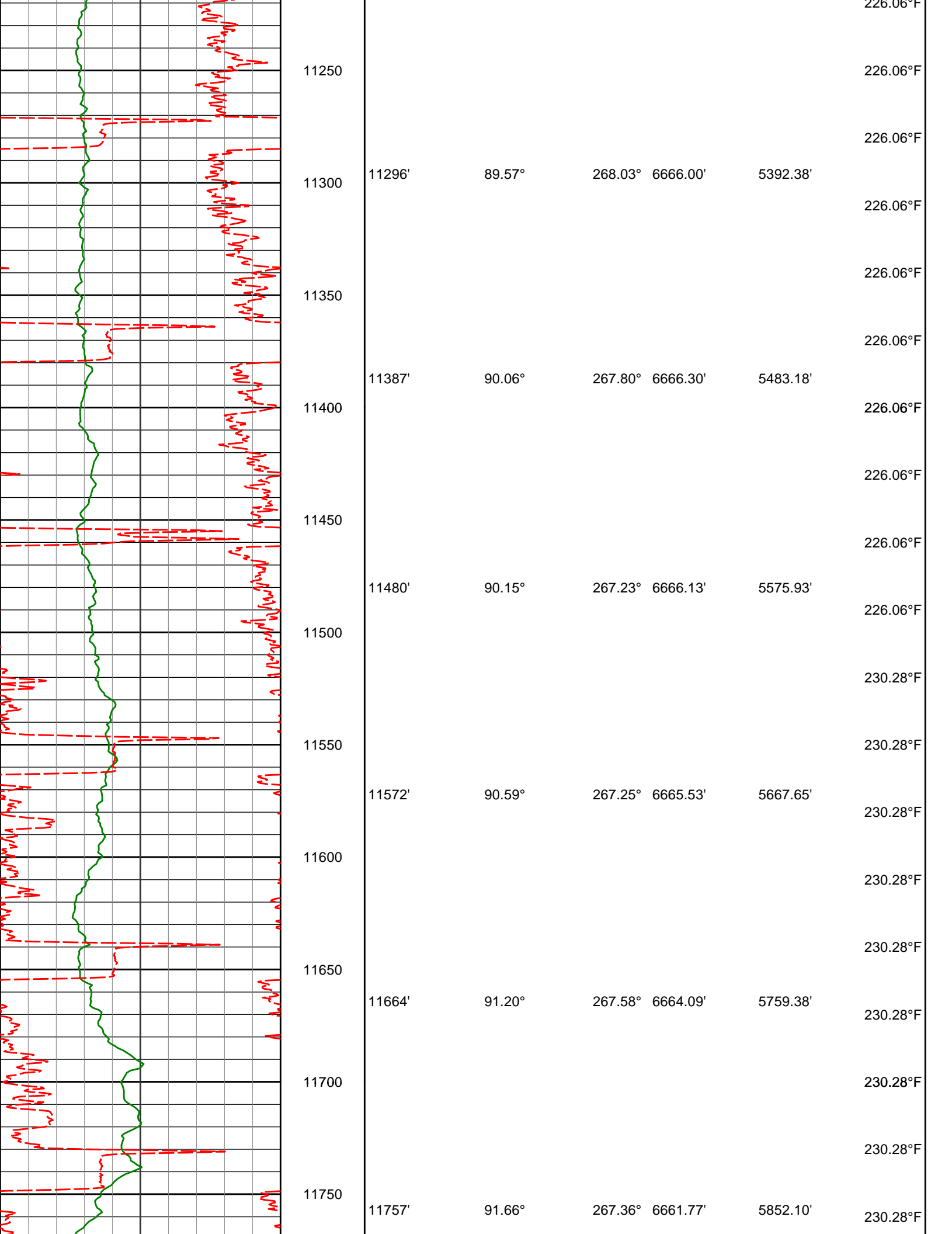


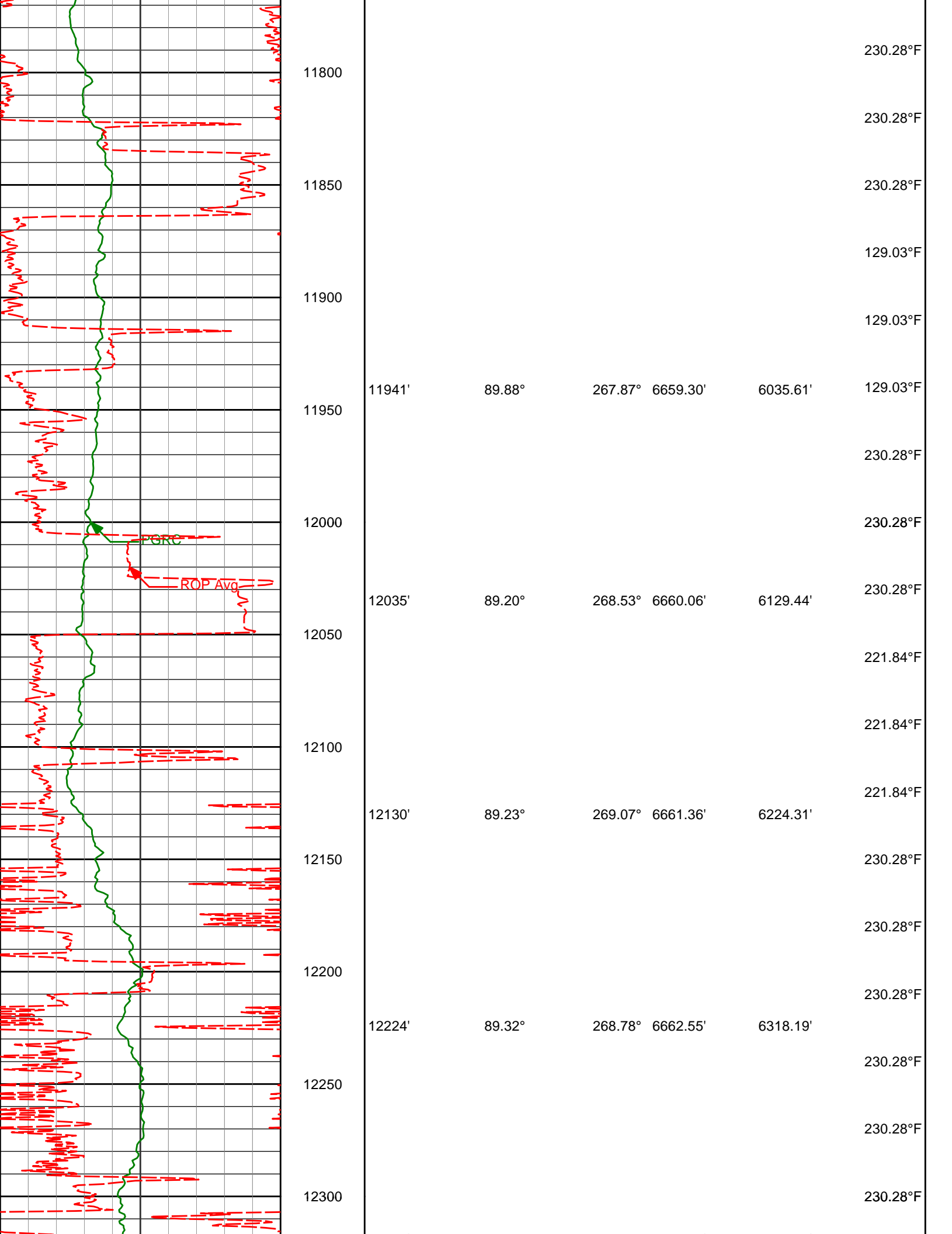


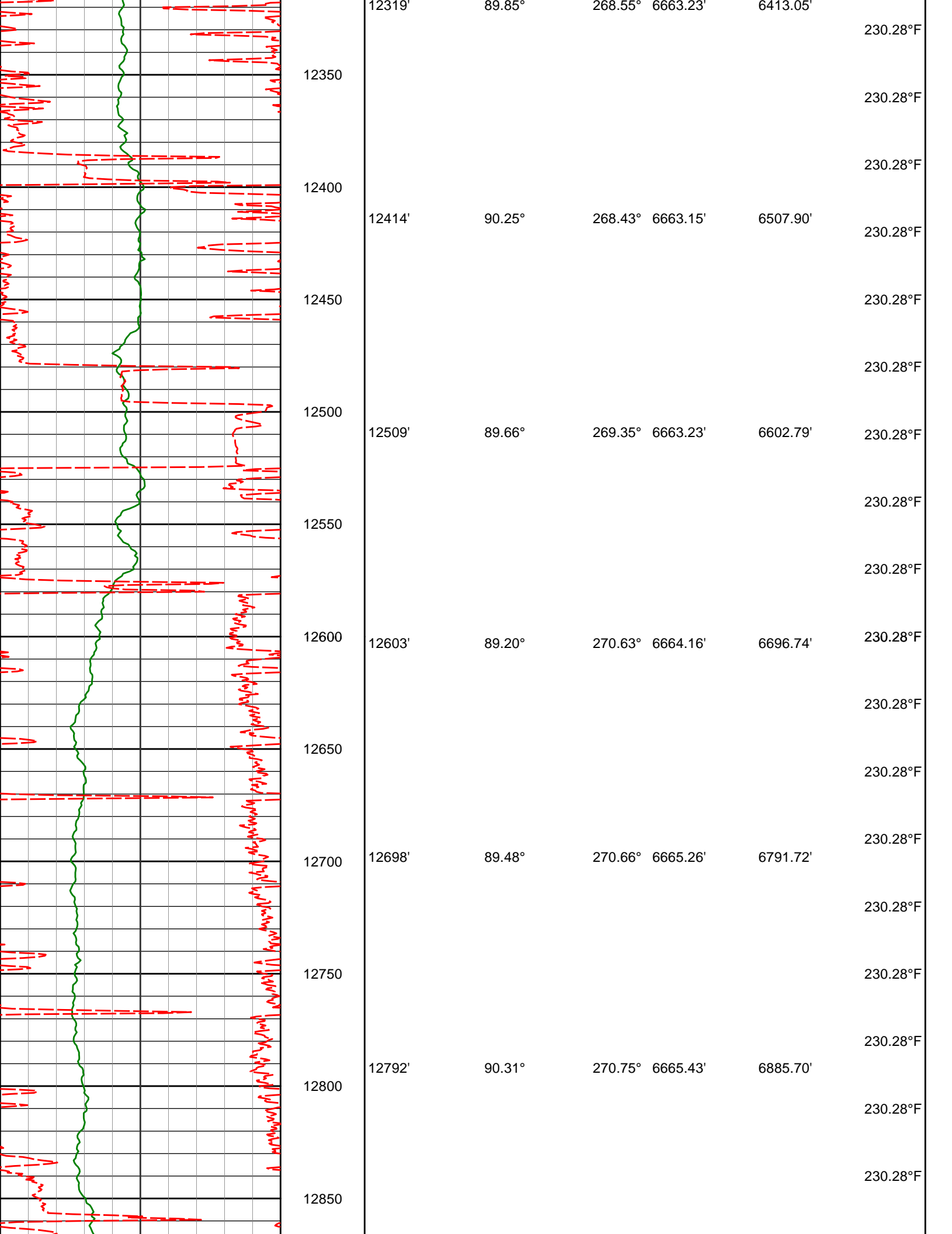


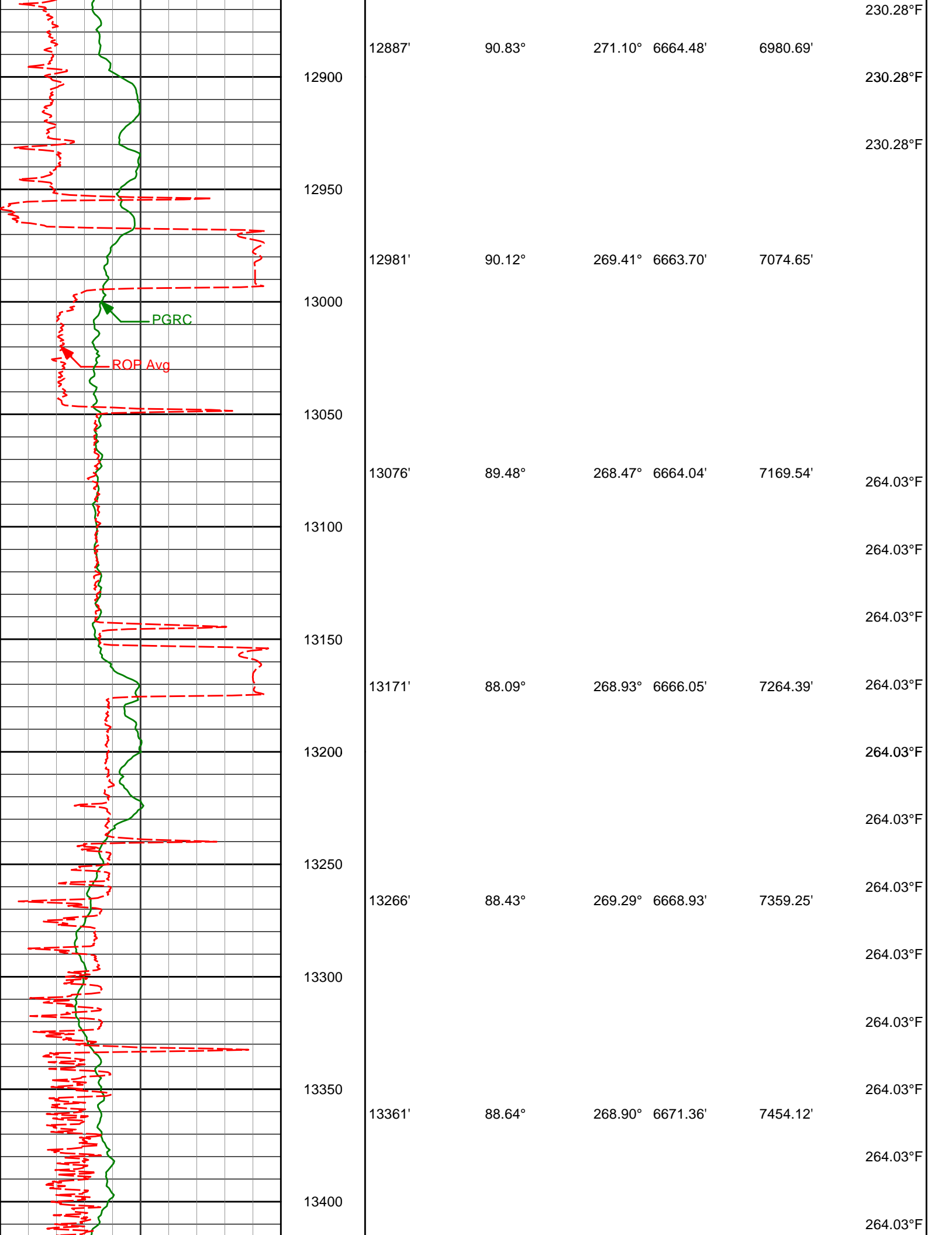


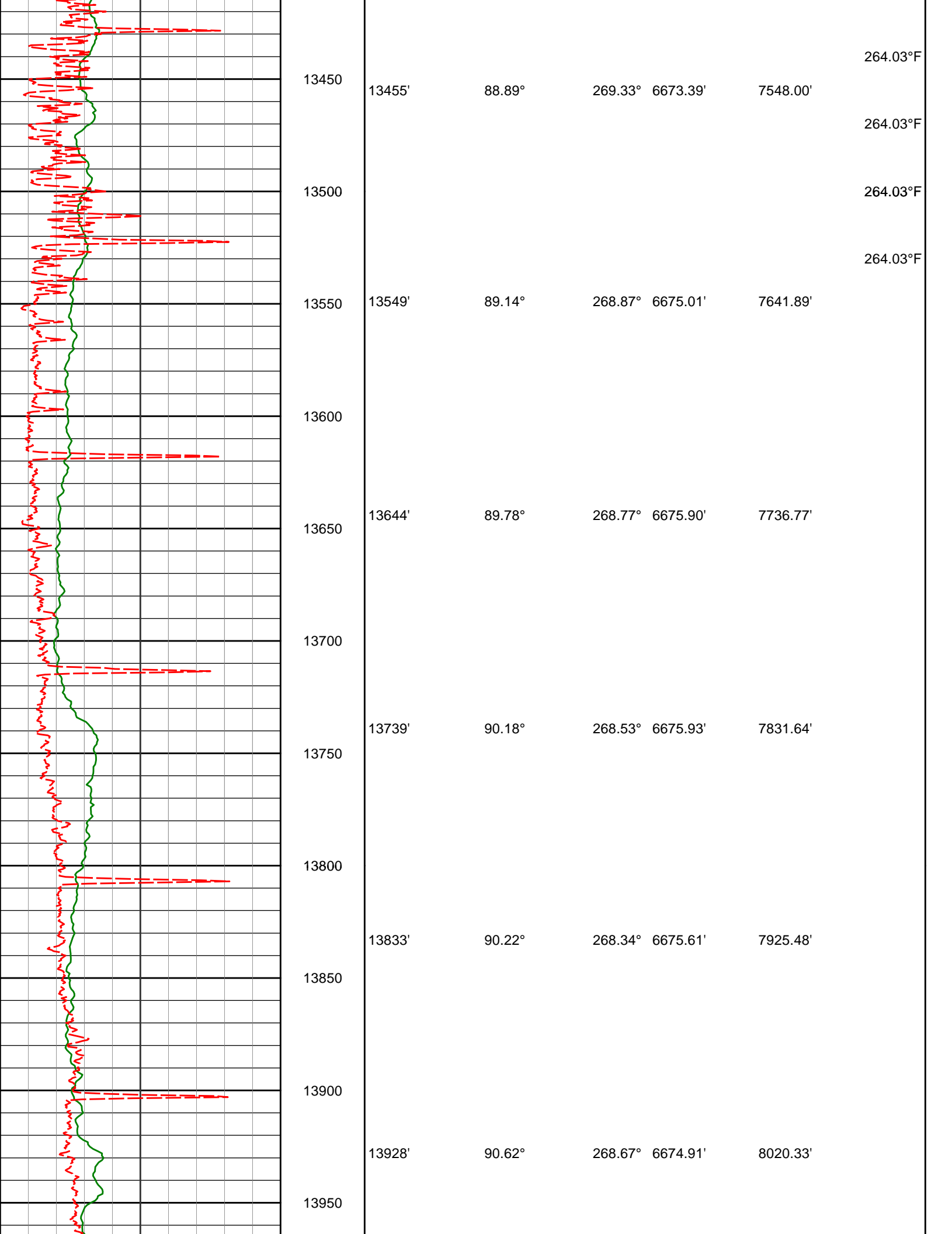


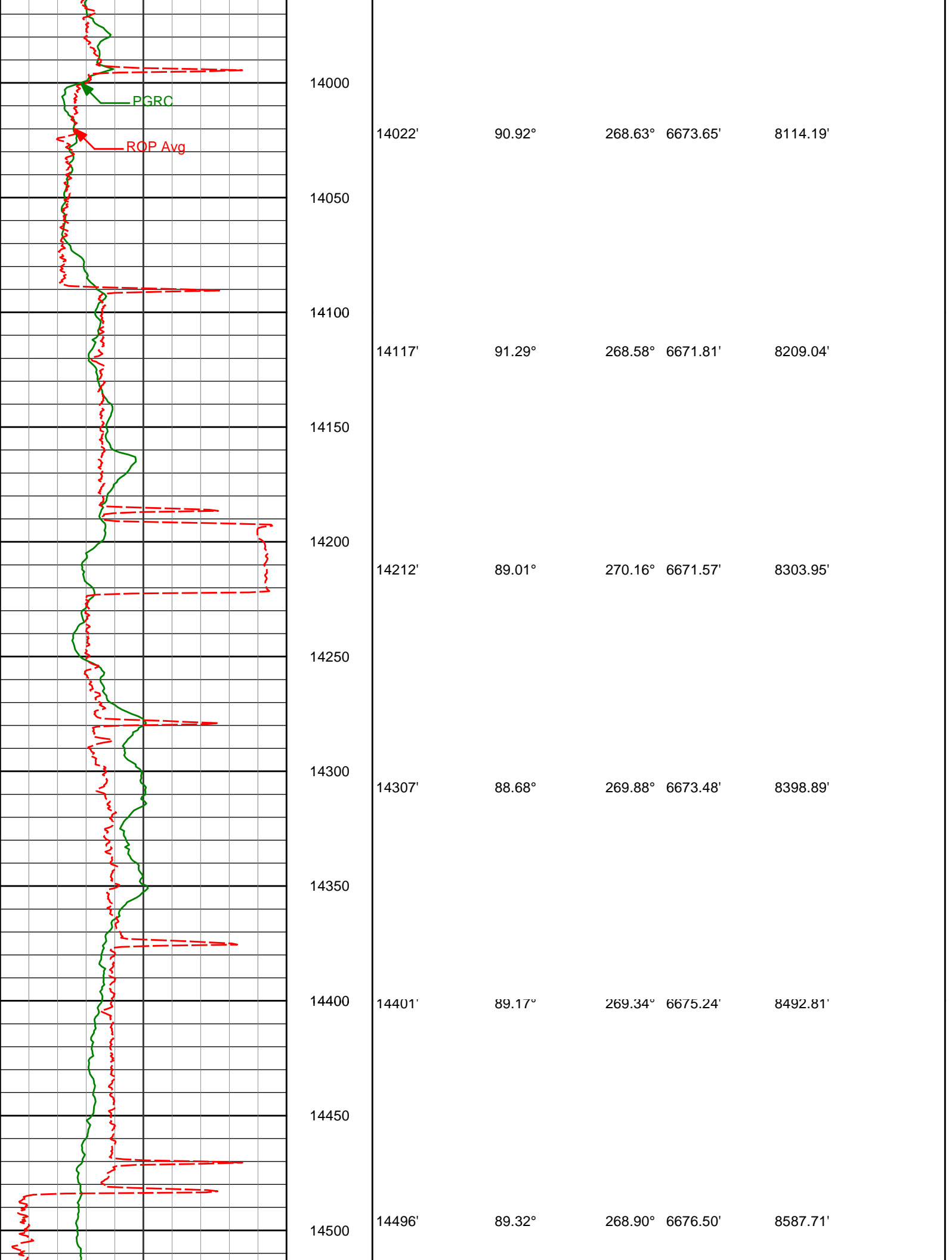


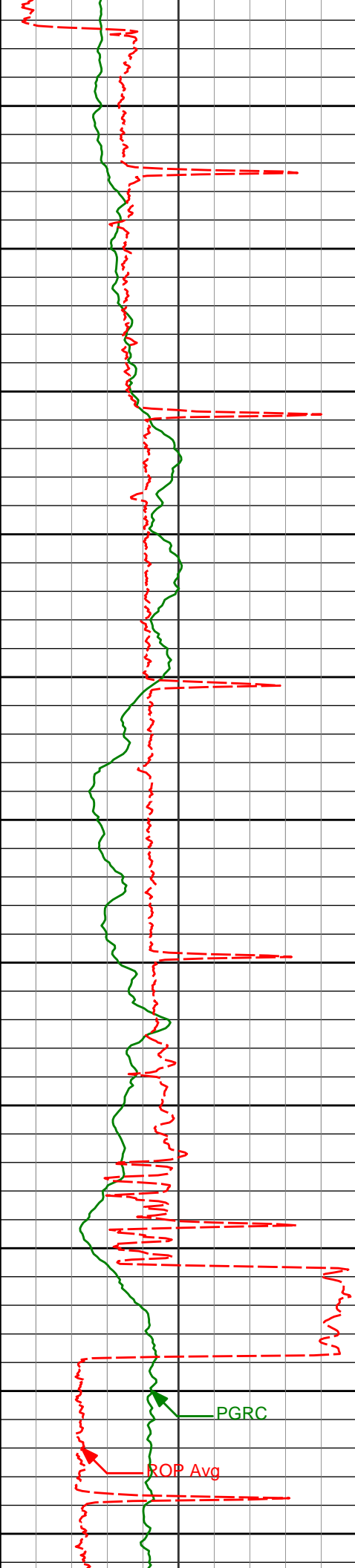












14550

14591'

90.00°

269.01°

6677.06'

8682.60'

14600

14650

14685'

90.74°

268.82°

6676.45'

8776.48'

14700

14750

14780'

91.11°

268.69°

6674.92'

8871.35'

14800

14850

14875'

91.79°

268.92°

6672.52'

8966.19'

14900

14950

14970'

90.83°

269.56°

6670.34'

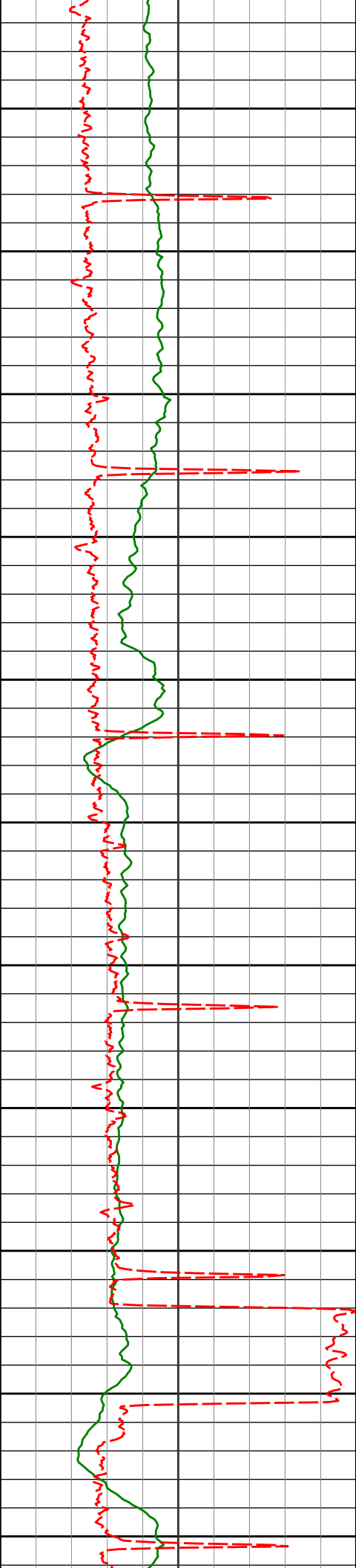
9061.08'

15000

PGRC

ROP Avg

15050



15100

15150

15200

15250

15300

15350

15400

15450

15500

15550

15600

15064'

89.57°

268.90° 6670.02'

9154.99'

15158'

89.14°

267.54° 6671.07'

9248.81'

15253'

89.08°

267.40° 6672.55'

9343.54'

15347'

88.92°

266.50° 6674.19'

9437.21'

15442'

88.74°

266.29° 6676.13'

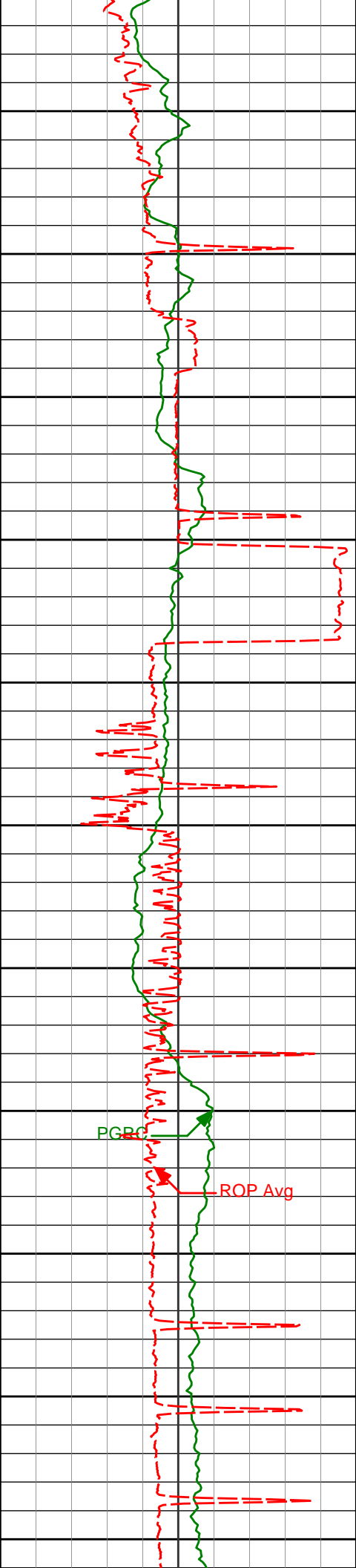
9531.78'

15536'

90.15°

267.17° 6677.04'

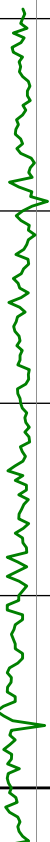
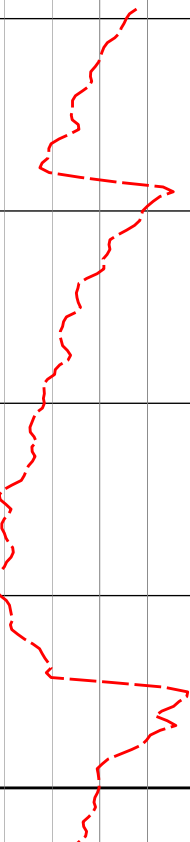
9625.42'

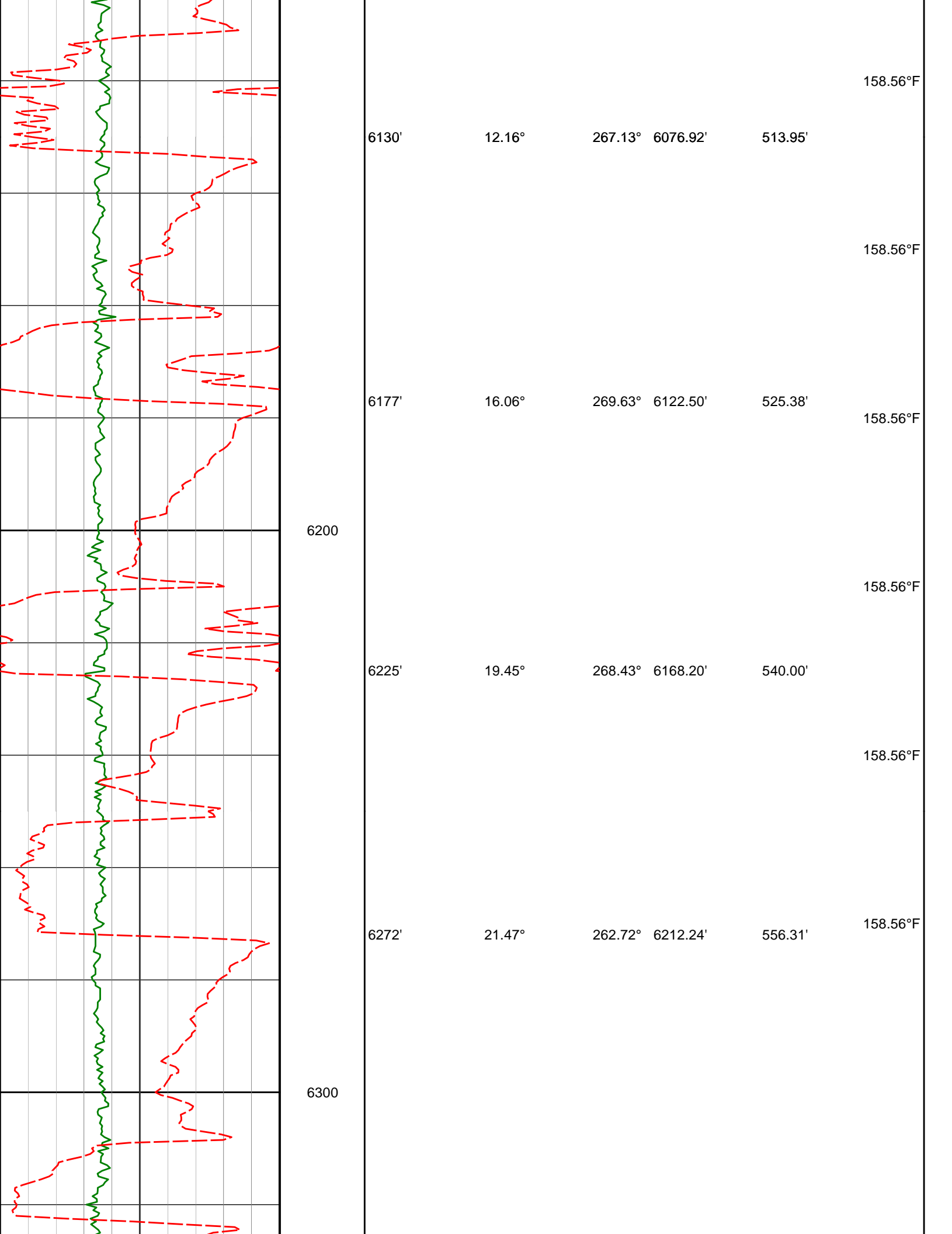


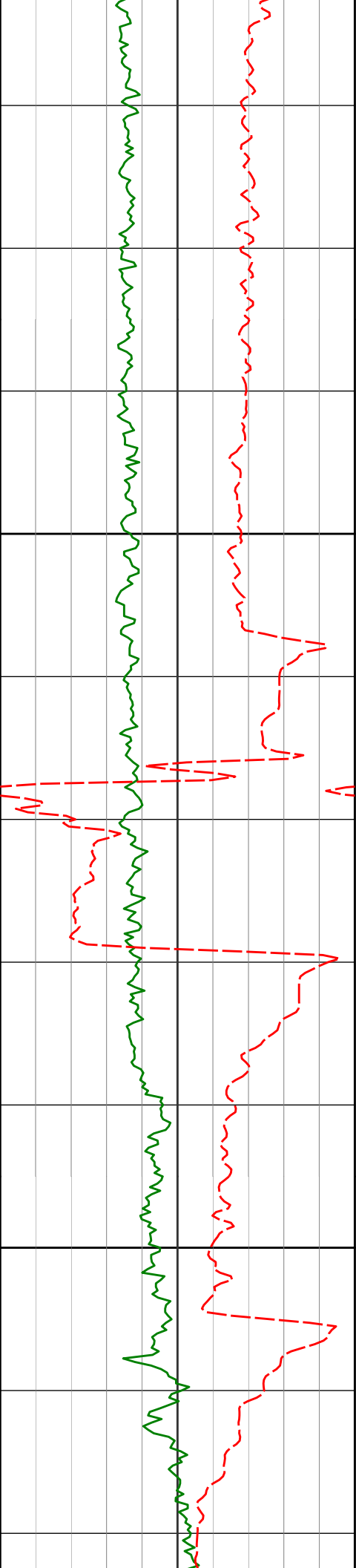
15630'	91.26°	268.20°	6675.88'	9719.18'	
15650					
15700					
15725'	92.19°	268.41°	6673.02'	9813.97'	
15750					167.00°F
					167.00°F
15800					167.00°F
15819'	90.77°	269.15°	6670.60'	9907.82'	
					167.00°F
15850					167.00°F
					167.00°F
15900					167.00°F
15914'	90.25°	269.16°	6669.75'	10002.72'	
					167.00°F
15950					167.00°F
					167.00°F
16000					167.00°F
16008'	90.65°	269.12°	6669.01'	10096.62'	
					167.00°F
16050					242.94°F
					242.94°F
16100	16100'	90.37°	269.27°	6668.19'	10188.53'
					242.94°F
					242.94°F
16150					

	16172'	90.37°	269.19°	6667.73'	10260.46'	
	16200					
	16250					
<TD Well @ 16240' MD>						
Avg Rate of Penetration ROP Avg feet per hr		Depth MD ft	Depth	Inc	Azi	TVD
500						
0						
Gamma Ray Cor PGRC api						
0						
300						

MD Detail 1:240 Scale

Gamma Ray Cor PGRC api										
0300										
Avg Rate of Penetration ROP Avg feet per hr				Depth MD ft	Depth	Inc	Azi	TVD	V.S.	Temp
5000										
				<KOP>	<div>158.56°F</div> <div>158.56°F</div> <div>6082'9.41°261.29°6029.77'505.05'</div> <div>158.56°F</div>					
										
				6100						





6400

6500

6366'

27.71°

265.54°

6297.68'

595.07'

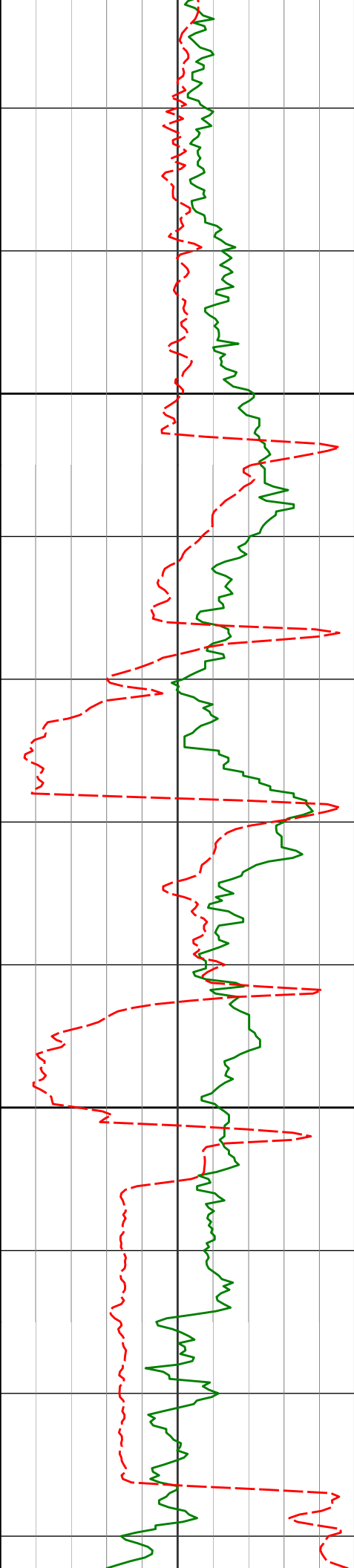
6461'

35.09°

269.17°

6378.72'

644.39'



6600

6700

6556'

47.07°

274.13°

6450.21'

706.66'

6651'

58.72°

277.07°

6507.44'

782.09'

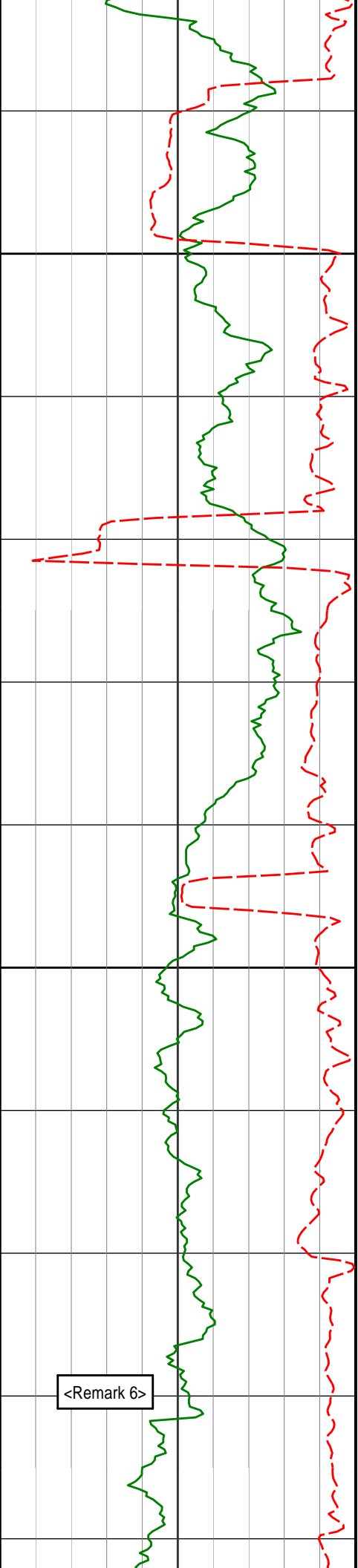
6745'

62.74°

276.55°

6553.38'

863.75'



6800

6793'

64.32°

274.27°

6574.78'

906.62'

6840'

68.12°

271.53°

6593.73'

949.61'

6900

6951'

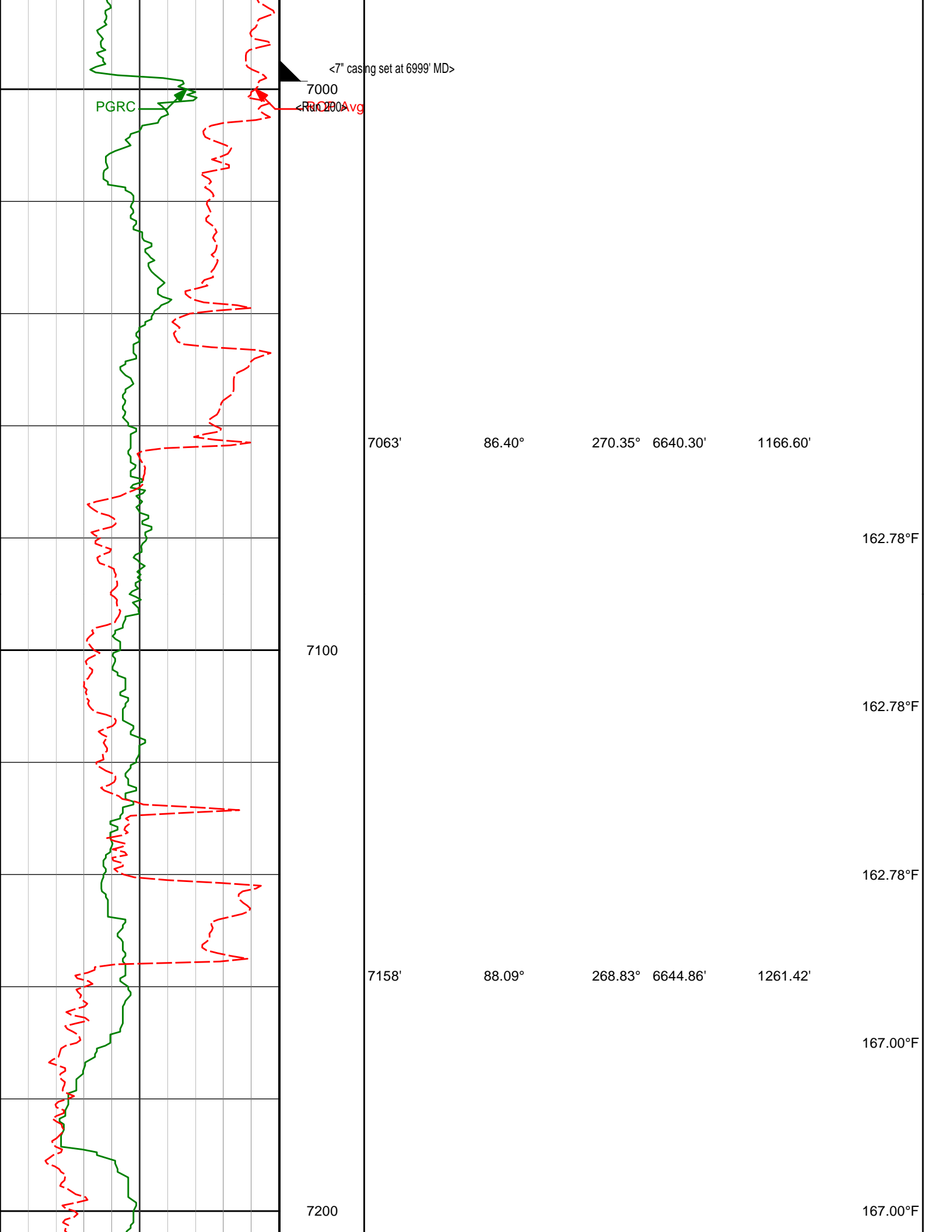
78.49°

268.85°

6625.58'

1055.73'

<Remark 6>



<7" casing set at 6999' MD>

7000

PGRC

RAO Avg

7063'

86.40°

270.35°

6640.30'

1166.60'

7100

7158'

88.09°

268.83°

6644.86'

1261.42'

7200

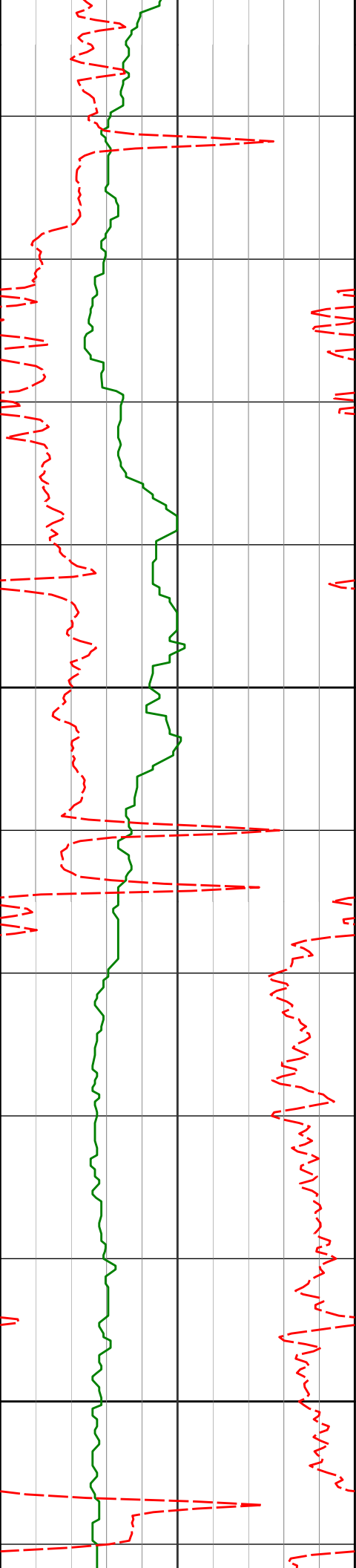
162.78°F

162.78°F

162.78°F

167.00°F

167.00°F



7300

7400

7253'

88.52°

268.49°

6647.67'

1356.24'

7348'

88.92°

268.23°

6649.80'

1451.06'

167.00°F

167.00°F

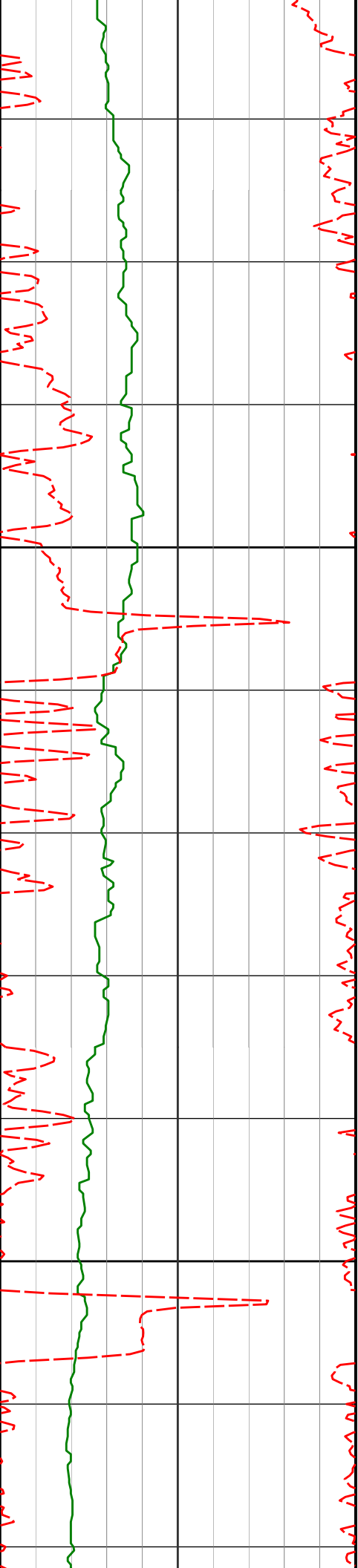
171.22°F

171.22°F

171.22°F

175.44°F

175.44°F



7500

7600

7443'

89.75°

268.32° 6650.90'

1545.88'

175.44°F

179.66°F

179.66°F

179.66°F

7538'

90.00°

268.38° 6651.10'

1640.72'

183.88°F

183.88°F

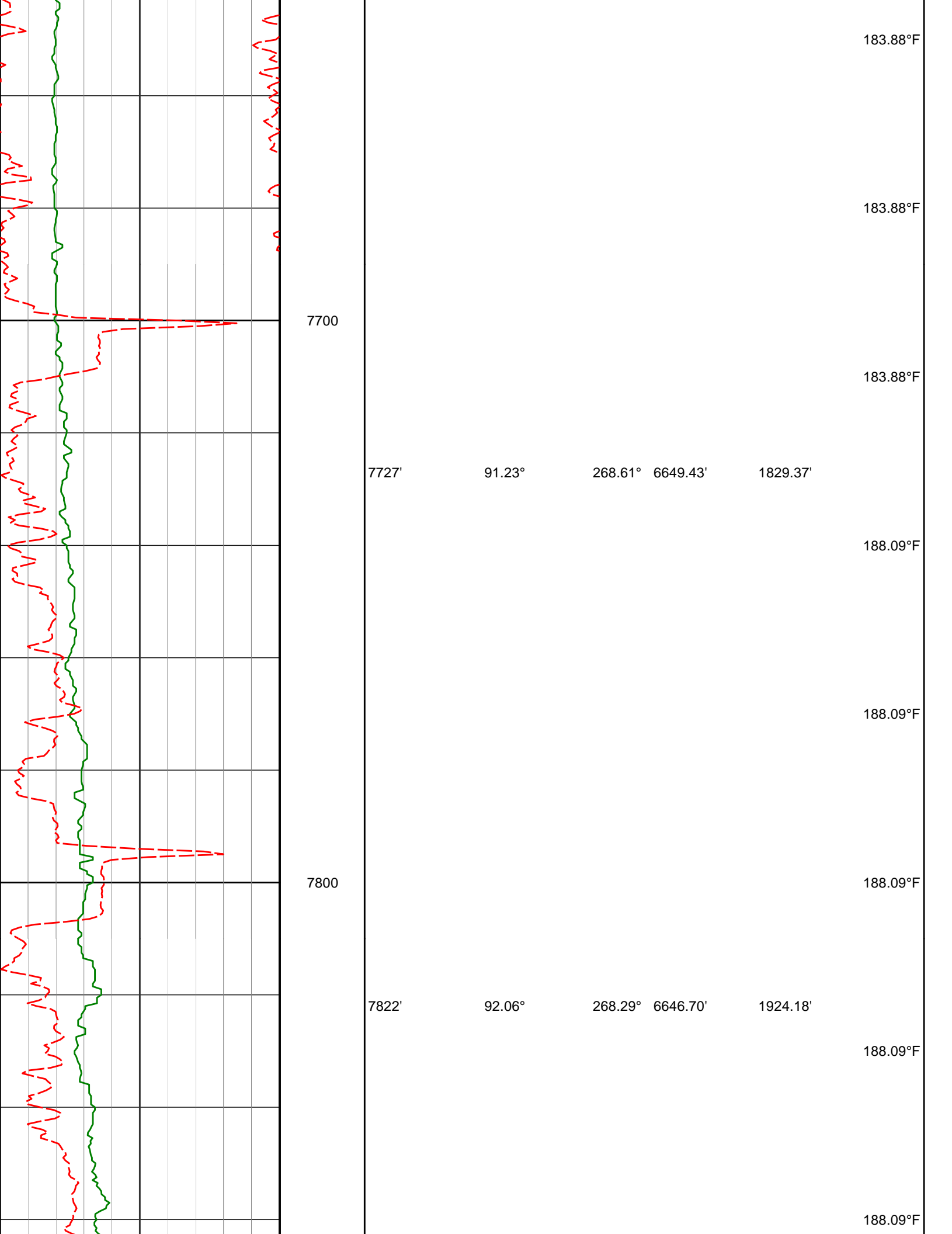
183.88°F

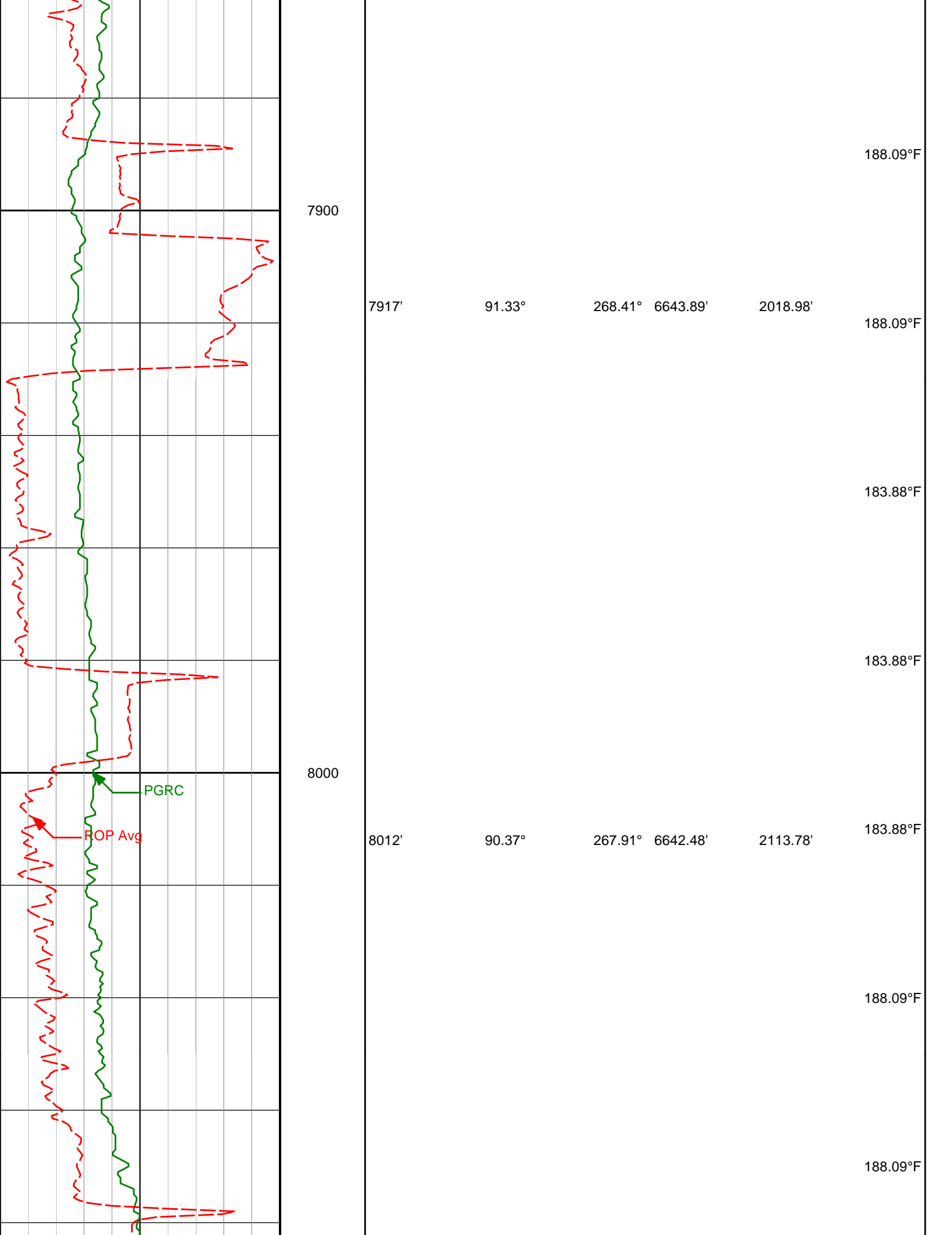
7632'

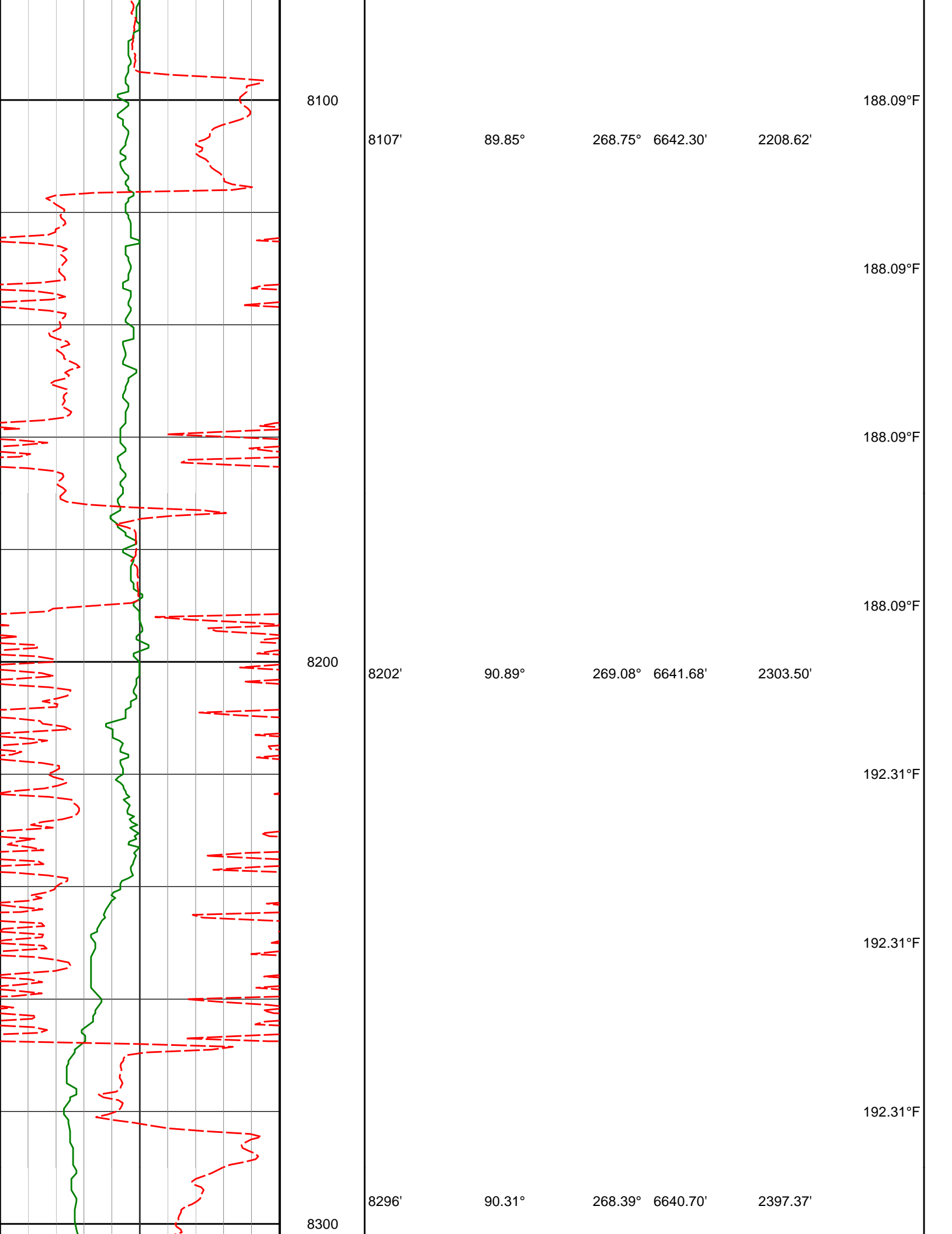
90.40°

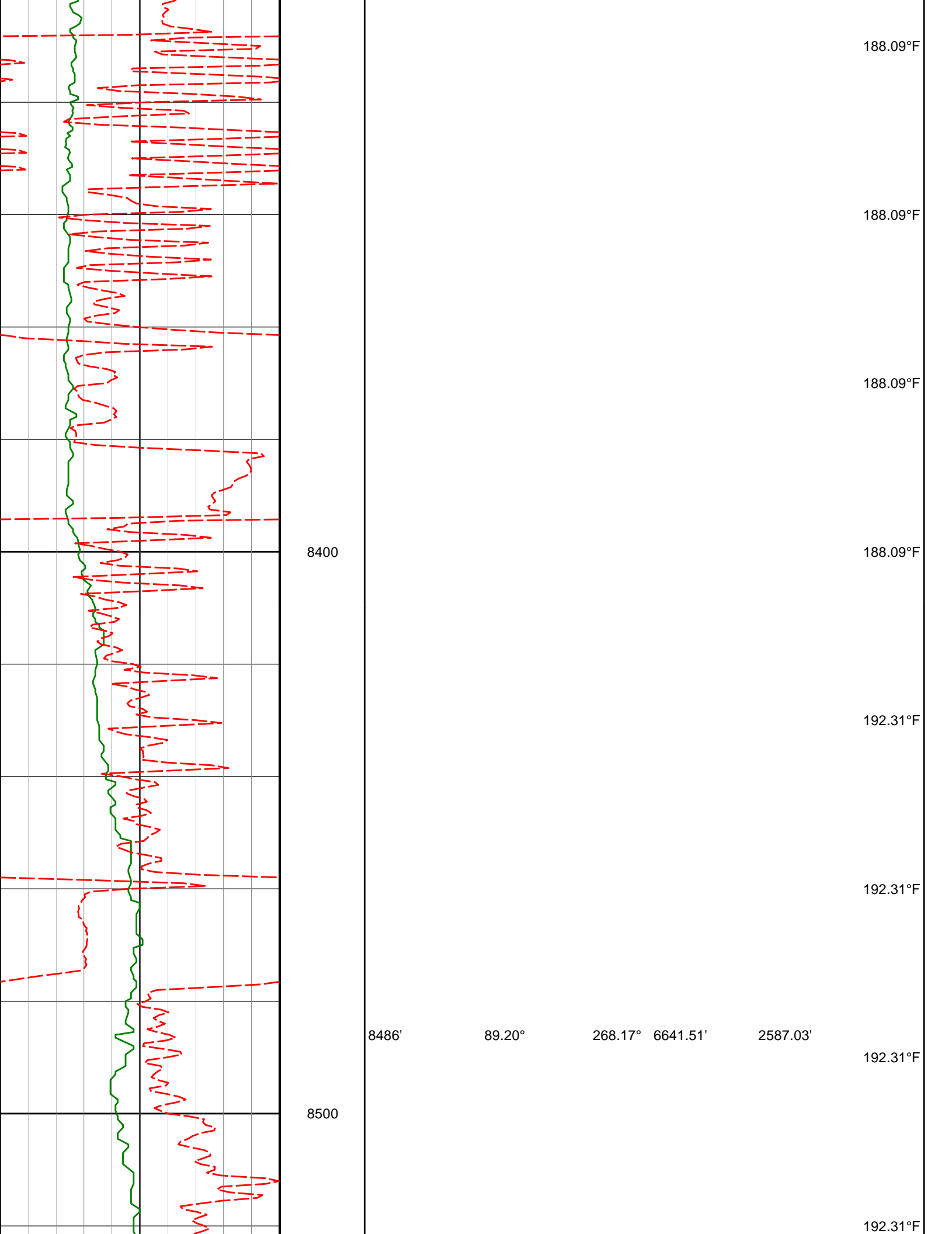
268.05° 6650.78'

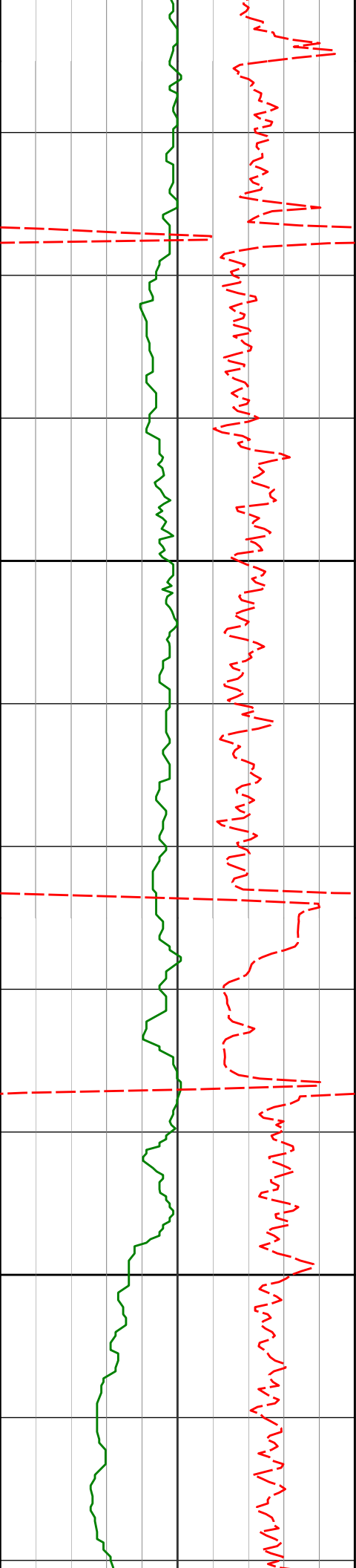
1734.55'











8600

8700

8581'

8676'

90.37°

87.14°

267.73°

268.33°

6641.87'

6643.93'

2681.83'

2776.60'

192.31°F

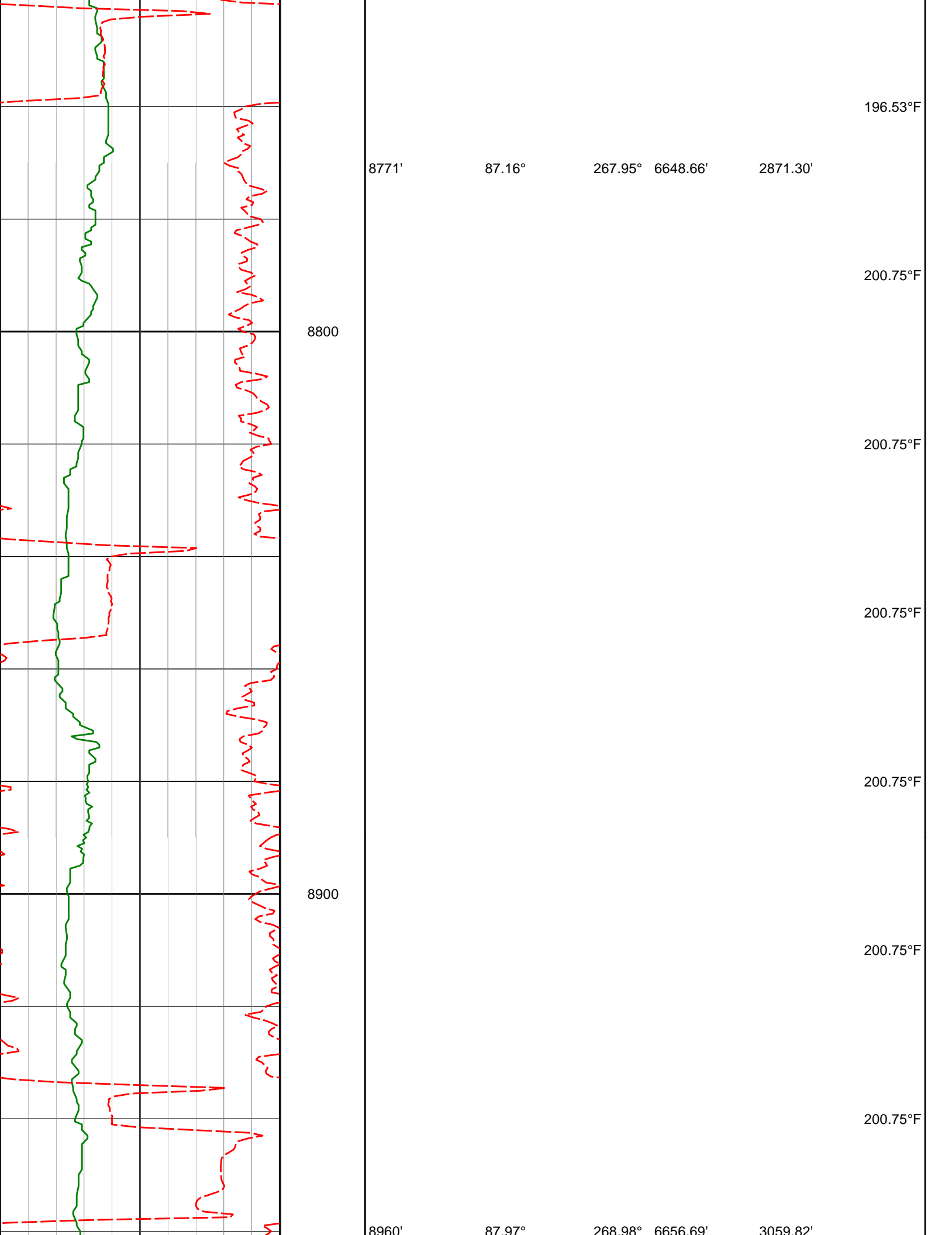
192.31°F

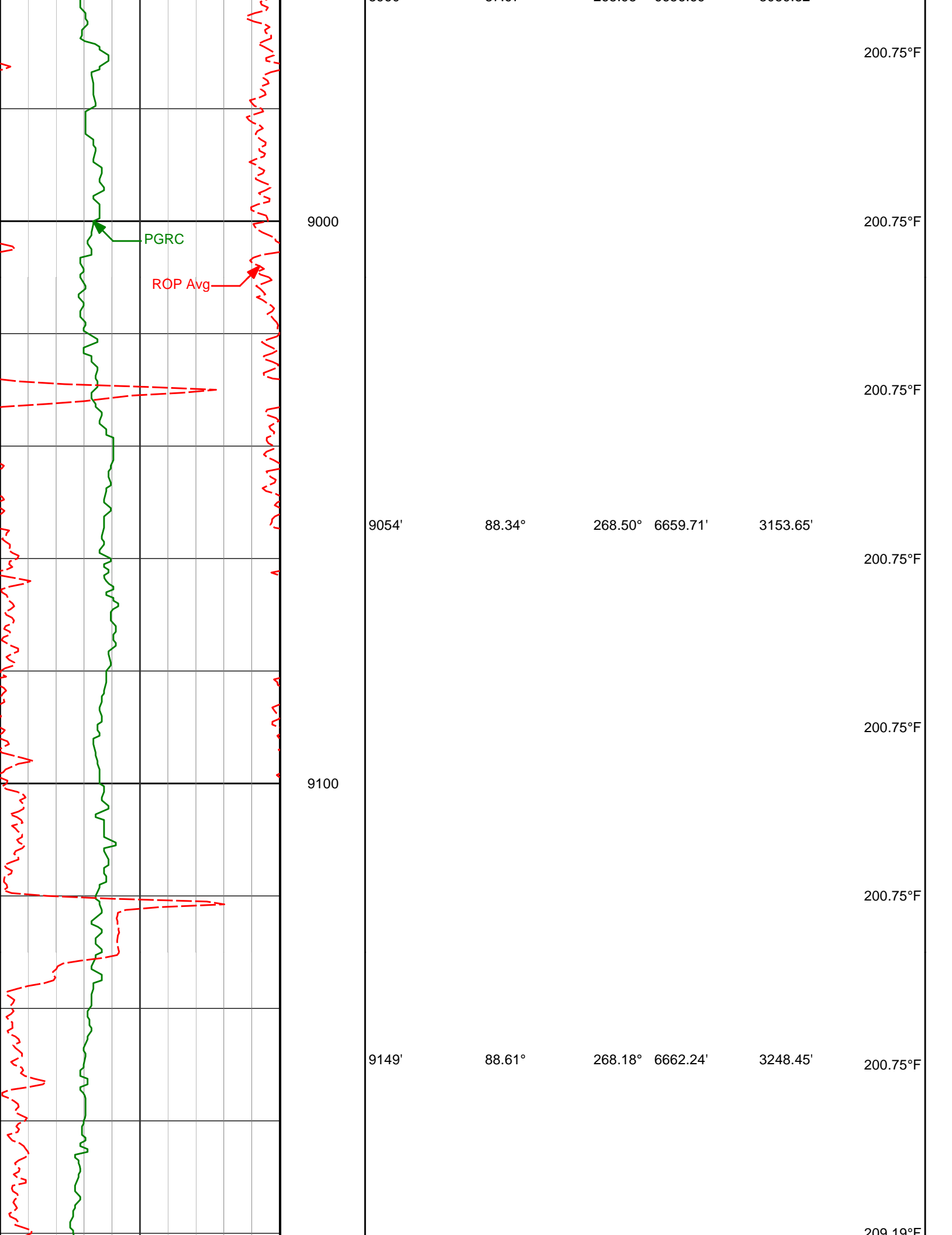
192.31°F

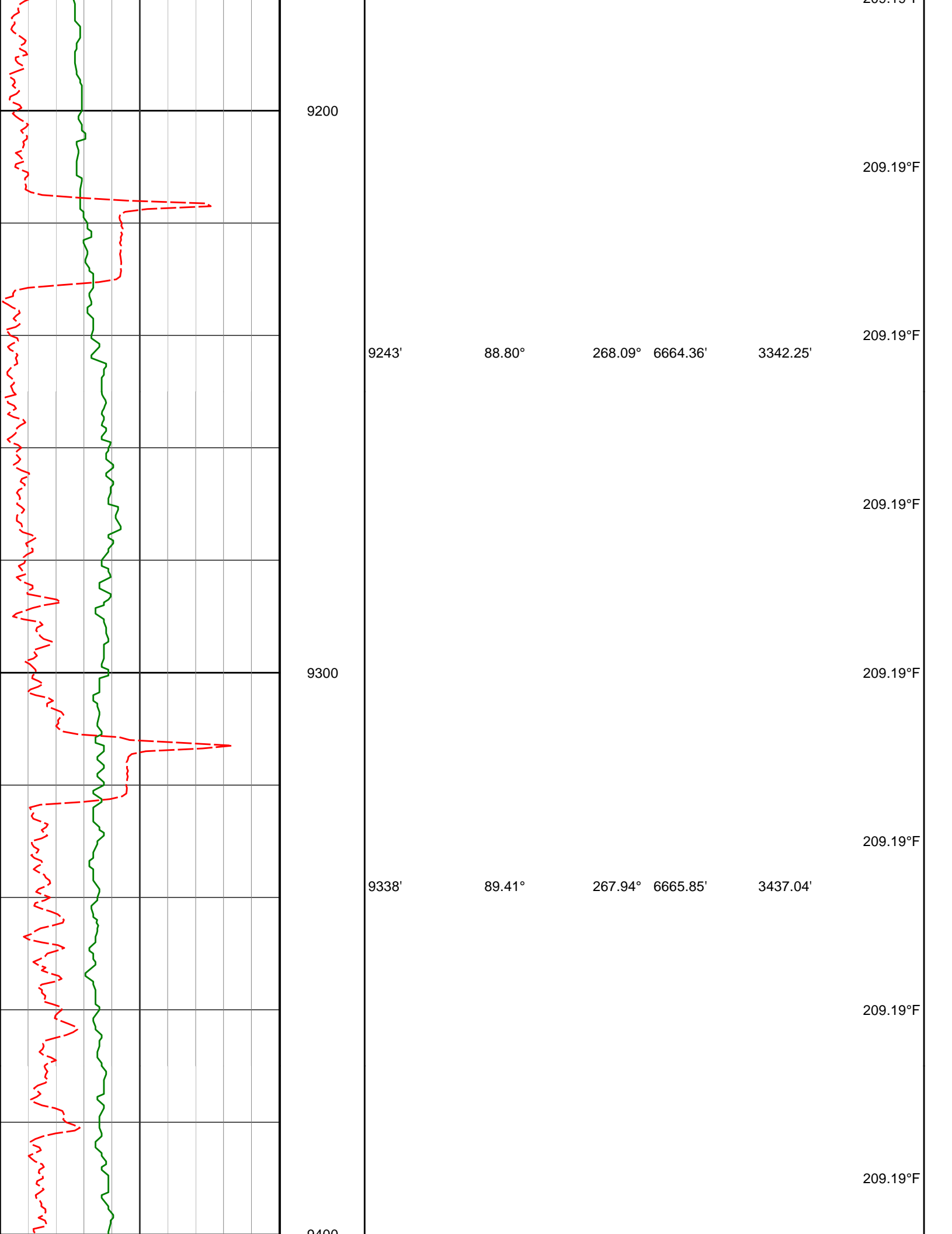
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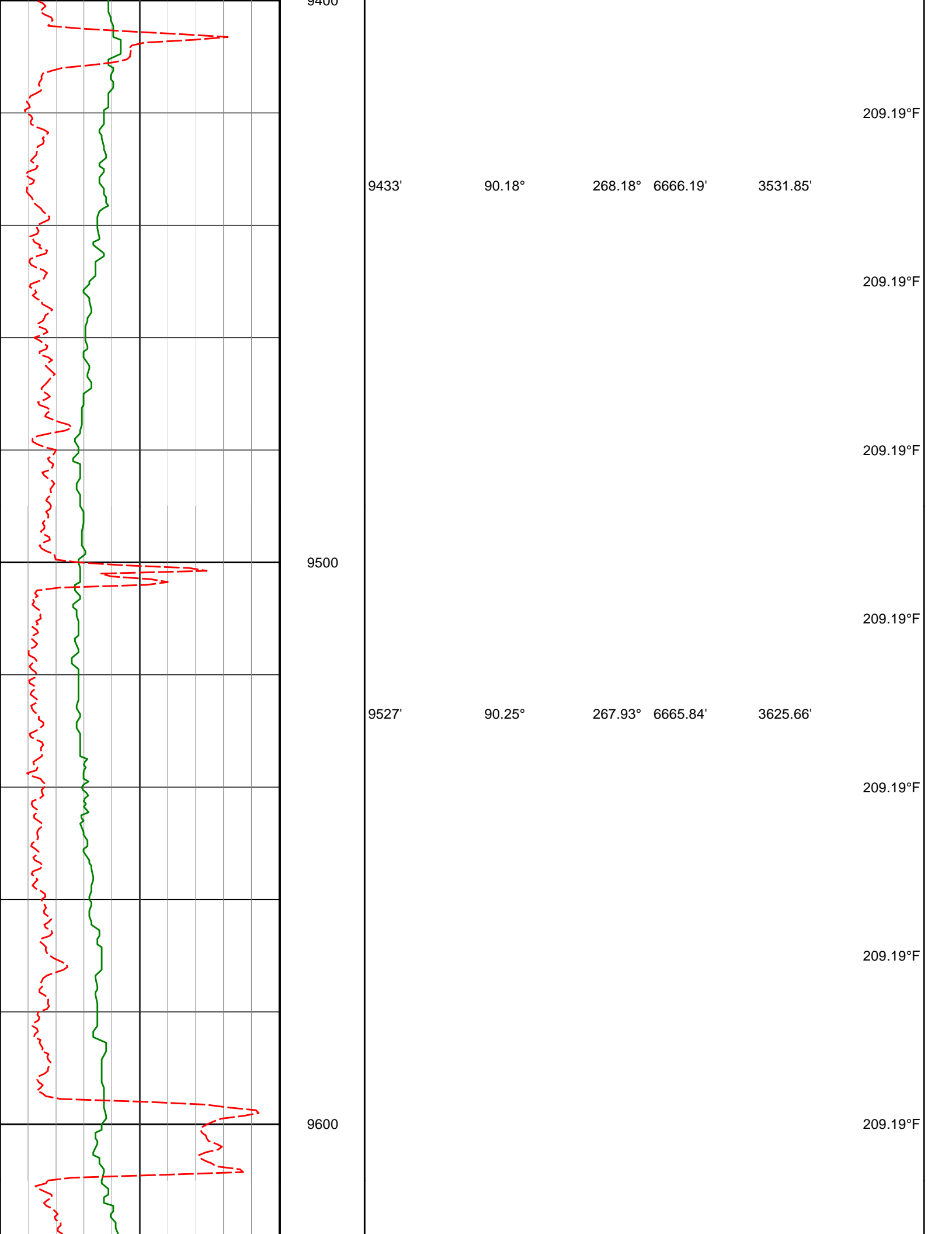
196.53°F

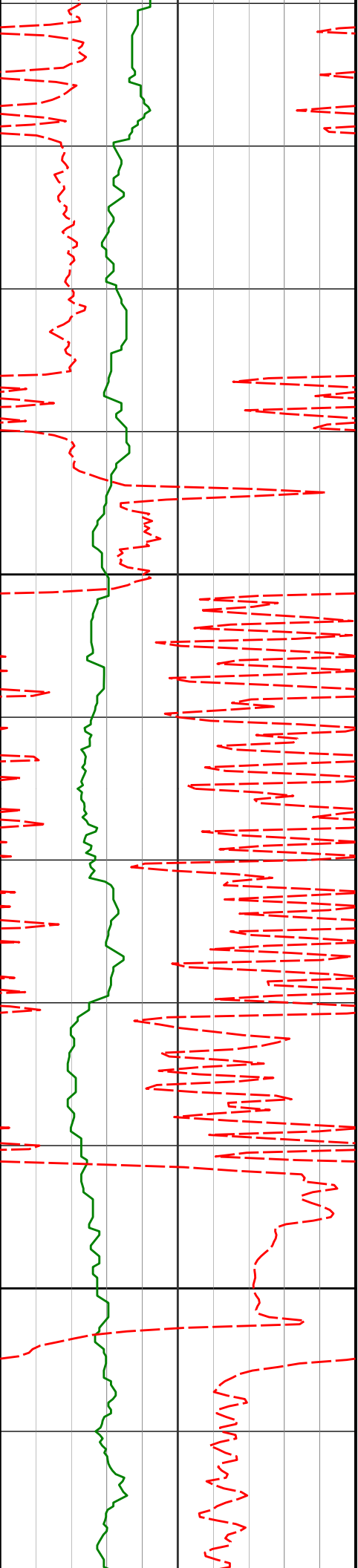
196.53°F











9700

9800

9716'

9811'

92.31°

91.91°

269.22°

271.04°

6661.61'

6658.12'

3814.32'

3909.22'

209.19°F

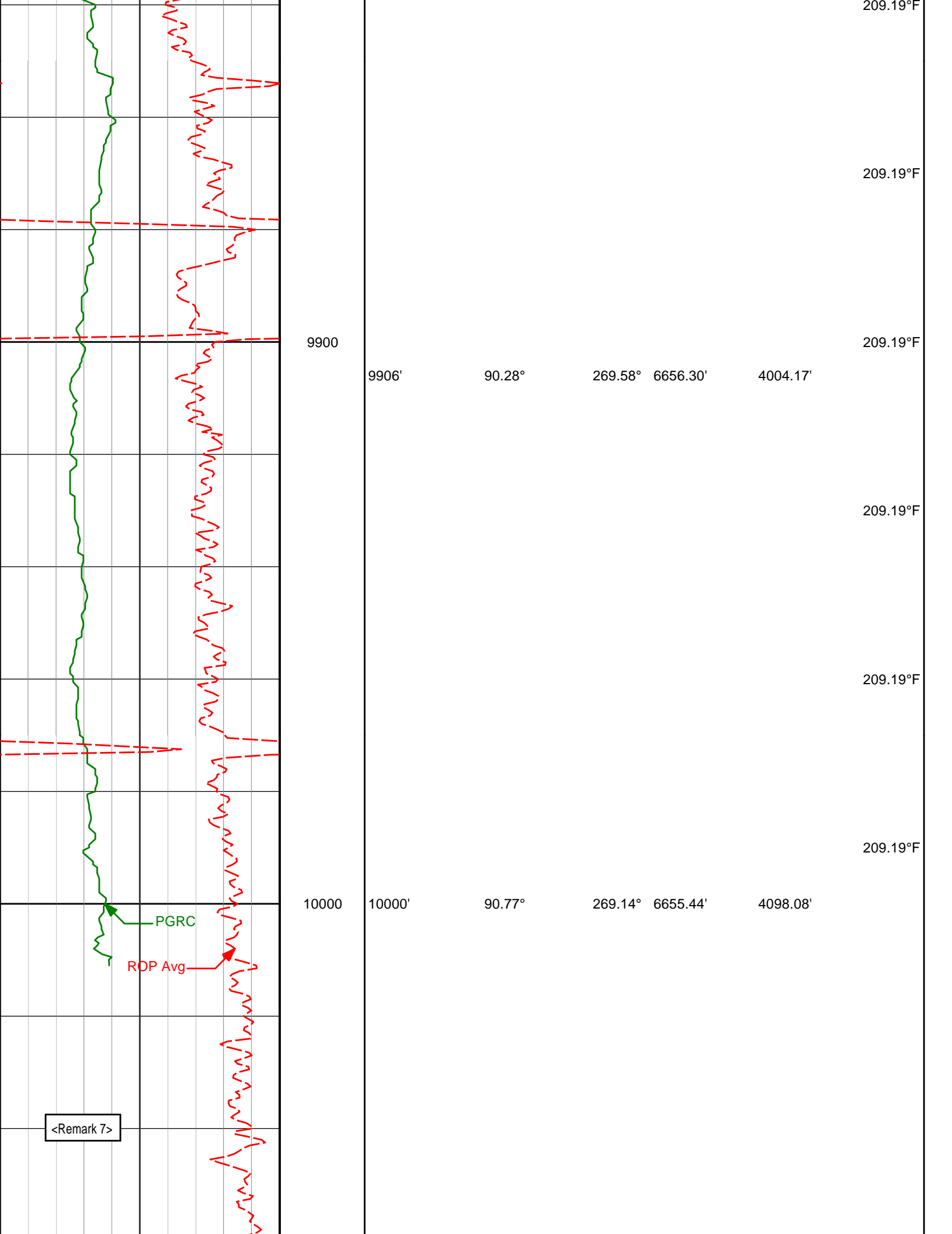
209.19°F

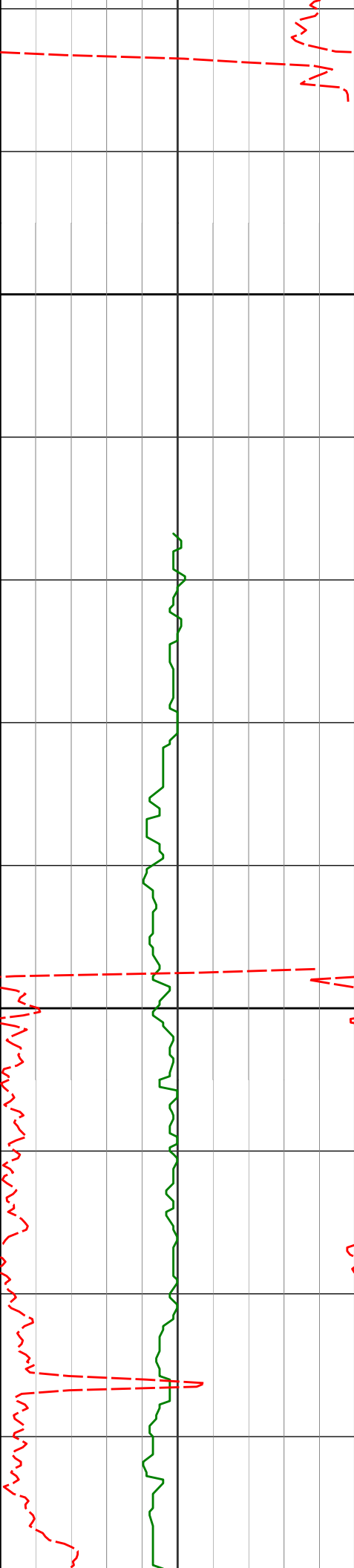
209.19°F

209.19°F

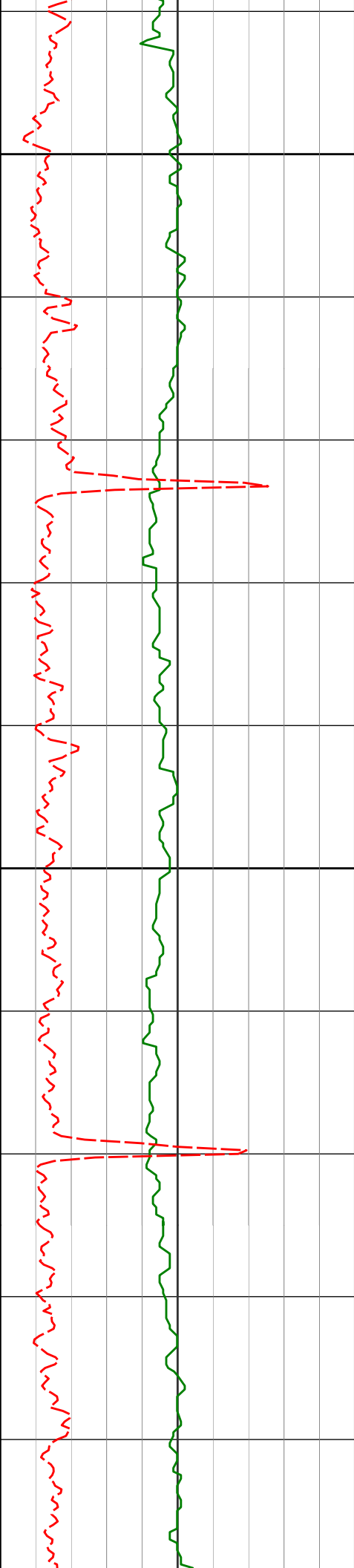
209.19°F

209.19°F





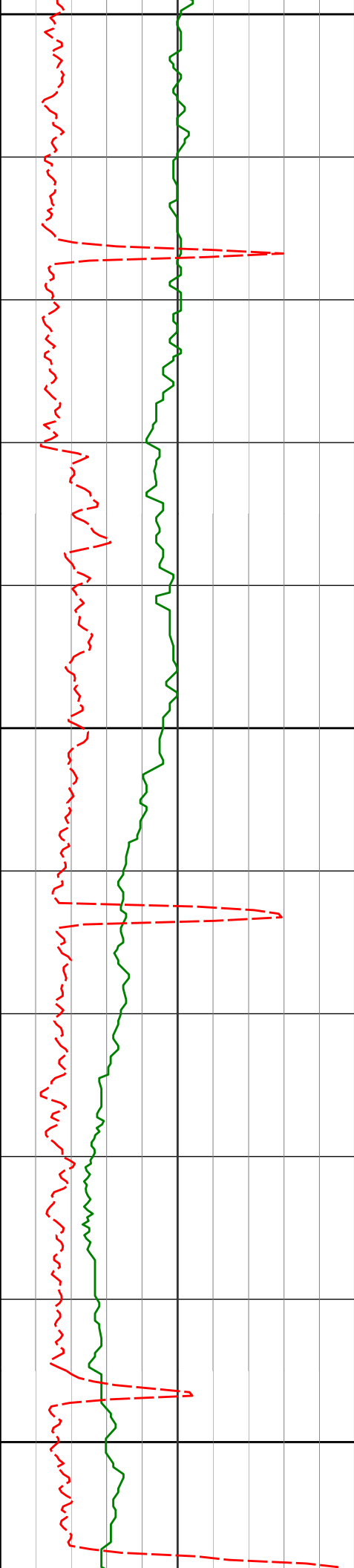
10095'	89.29°	270.17°	6655.39'	4193.02'
10100				
10187'	90.40°	269.94°	6655.64'	4284.98'
10200				
10270'	90.40°	269.94°	6655.64'	4284.98'



10300

10400

10279'	89.13°	268.90°	6656.02'	4376.90'
10372'	89.57°	268.77°	6657.07'	4469.78'
10465'	90.34°	269.18°	6657.14'	4562.68'



10500

10557'

90.74°

268.98° 6656.28'

4654.58'

10600

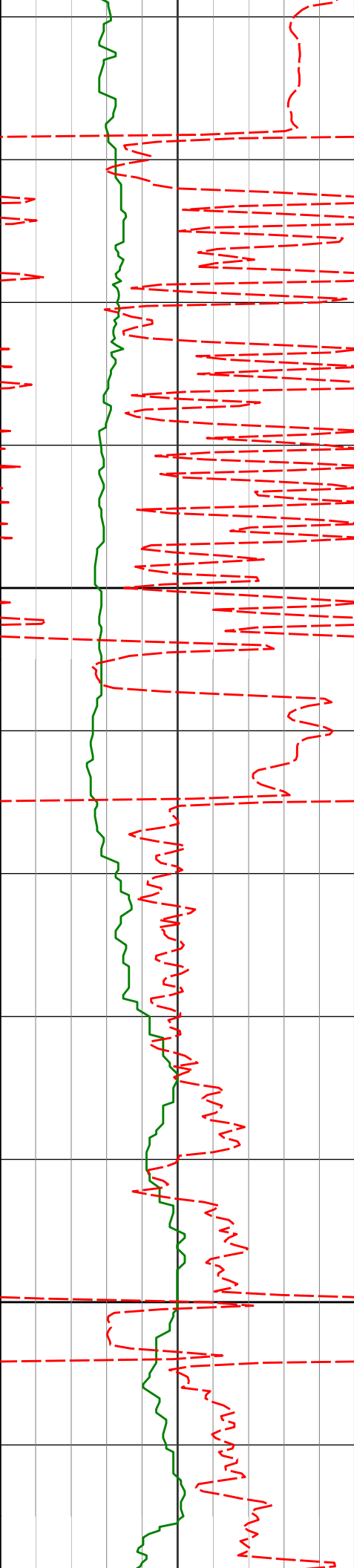
10649'

90.95°

268.49° 6654.92'

4746.44'

10700



10800

10900

10741'

89.38°

268.87° 6654.66'

4838.31'

10833'

88.31°

269.25° 6656.51'

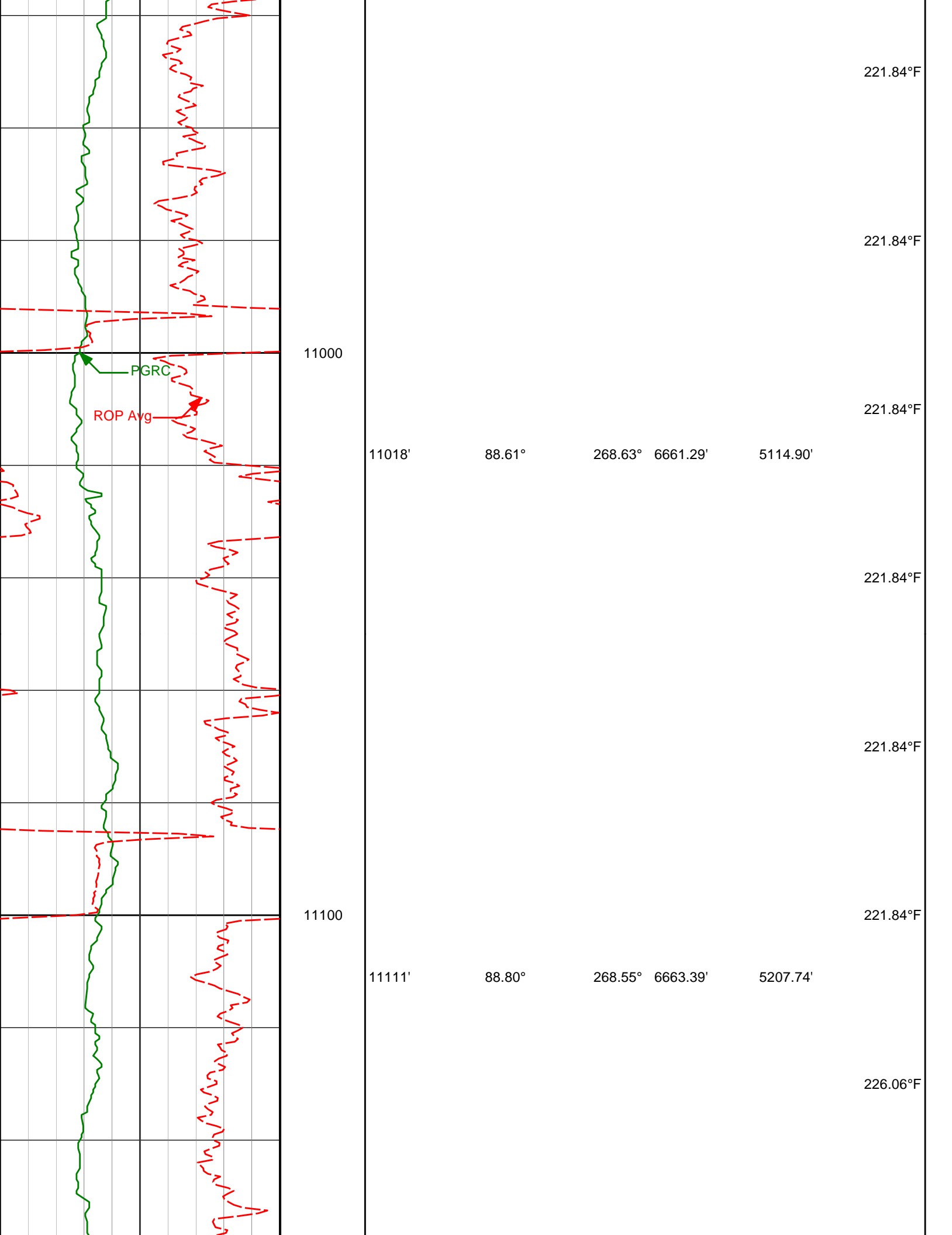
4930.20'

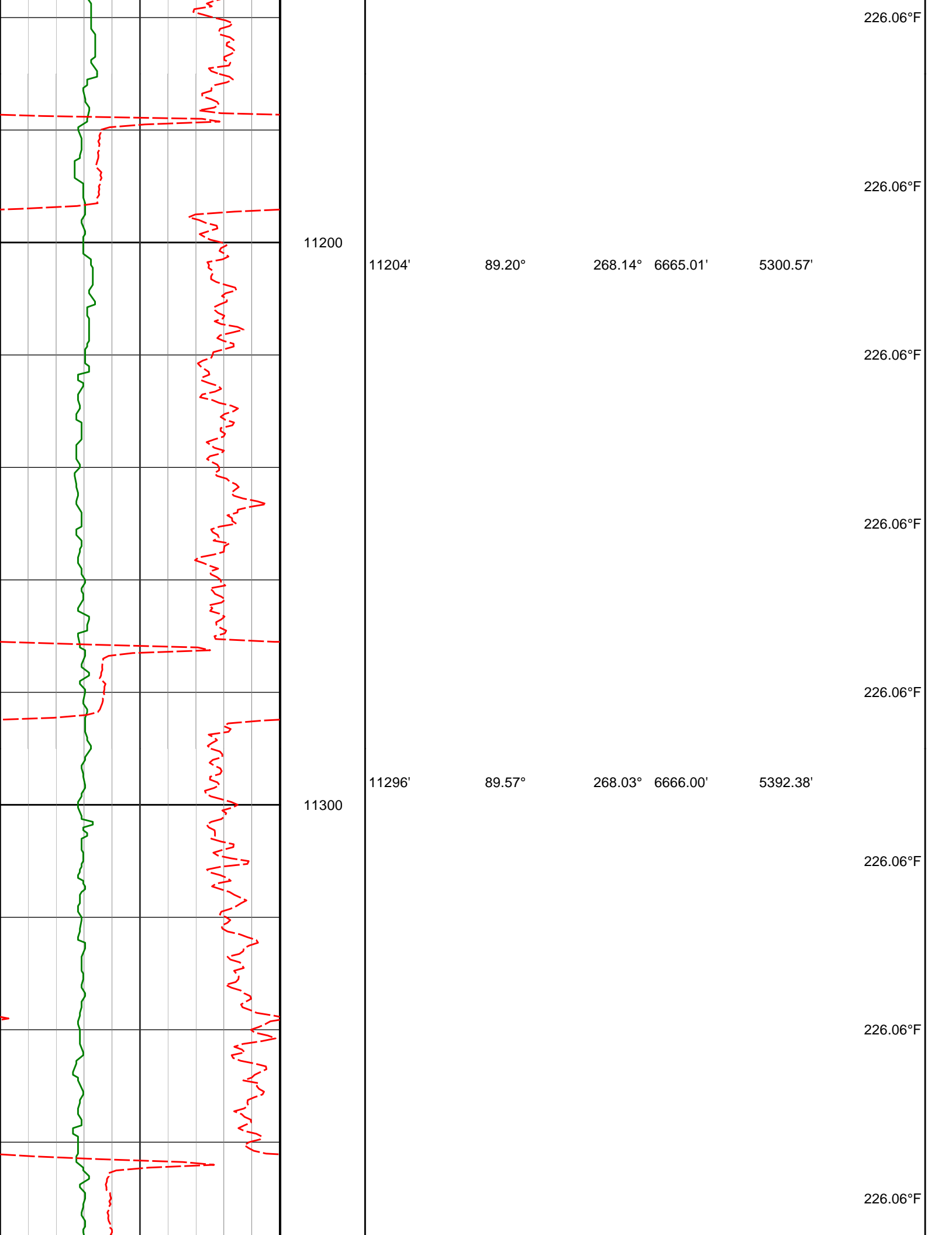
10926'

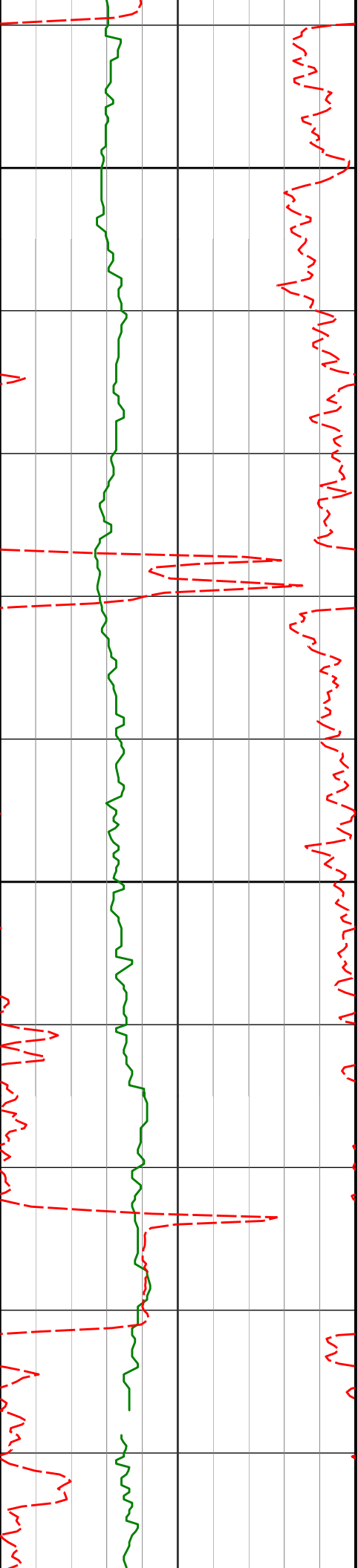
88.58°

268.65° 6659.03'

5023.06'







11400

11500

11387'

90.06°

267.80° 6666.30'

5483.18'

11480'

90.15°

267.23° 6666.13'

5575.93'

11572'

90.59°

267.25° 6665.53'

5667.65'

226.06°F

226.06°F

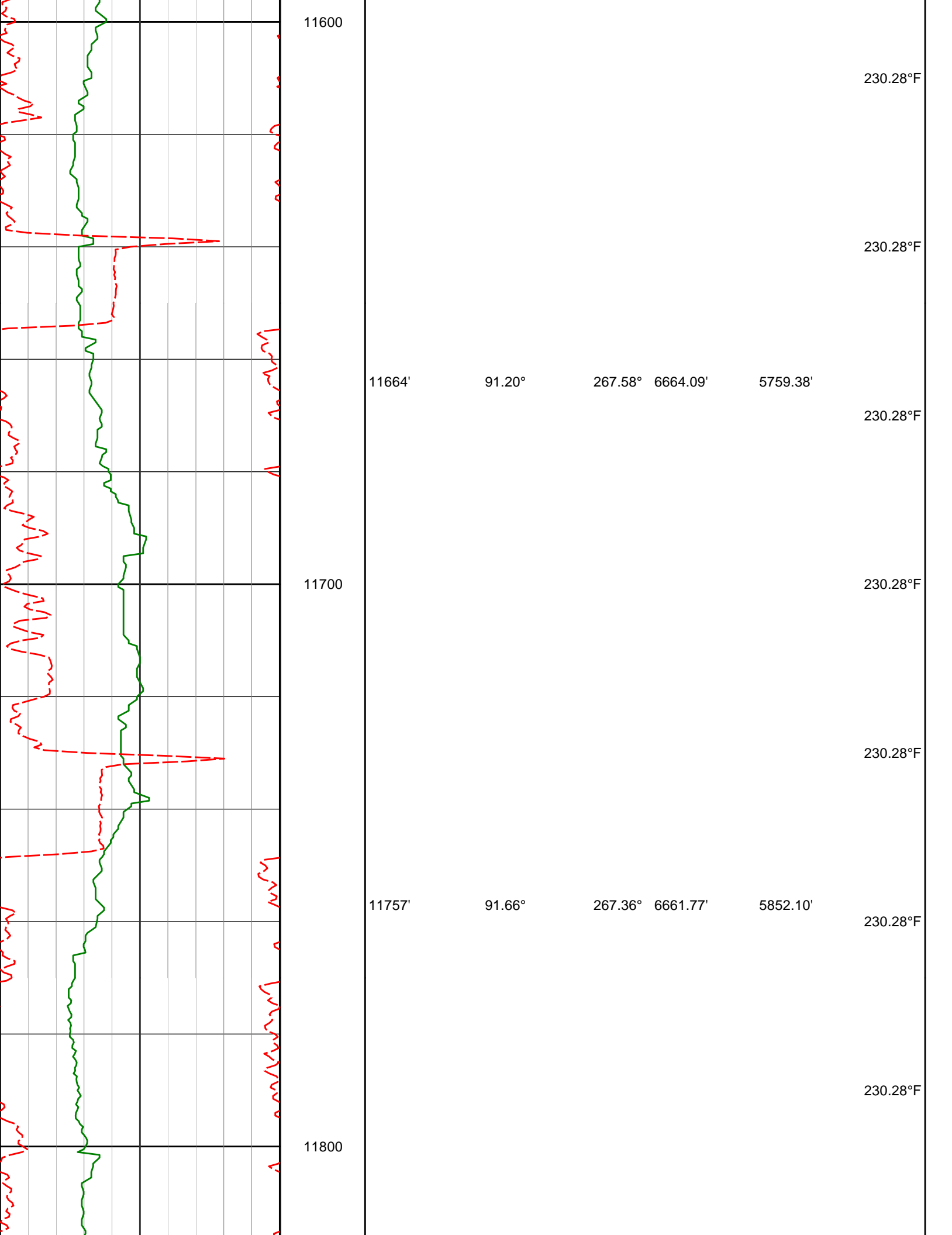
226.06°F

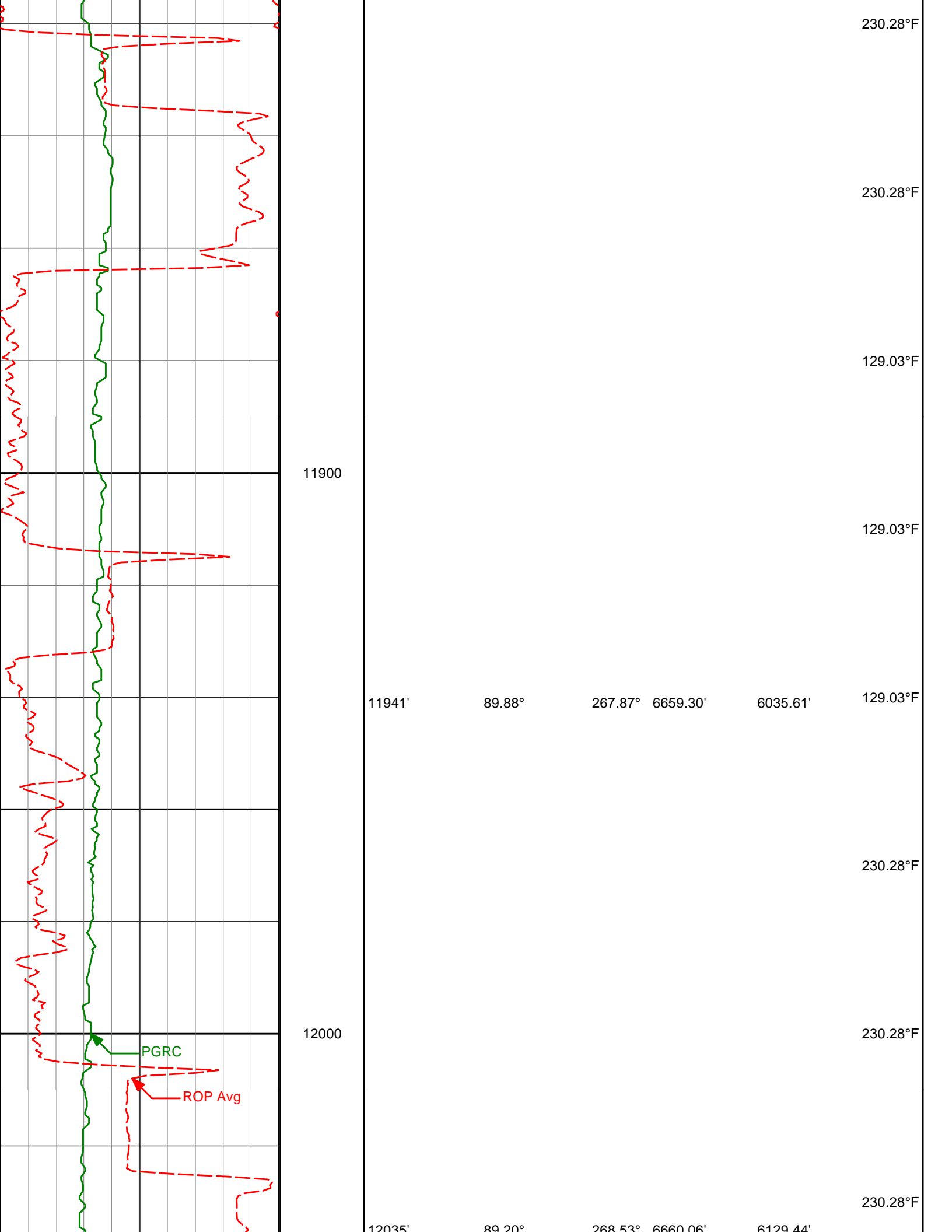
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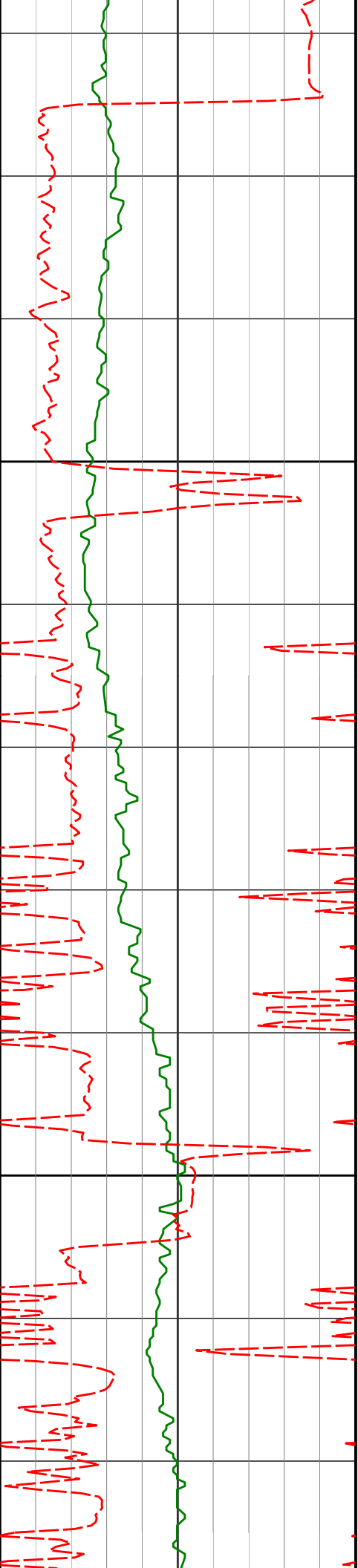
230.28°F

230.28°F

230.28°F







12100

12130'

89.23°

269.07°

6661.36'

6224.31'

12200

12224'

89.32°

268.78°

6662.55'

6318.19'

221.84°F

221.84°F

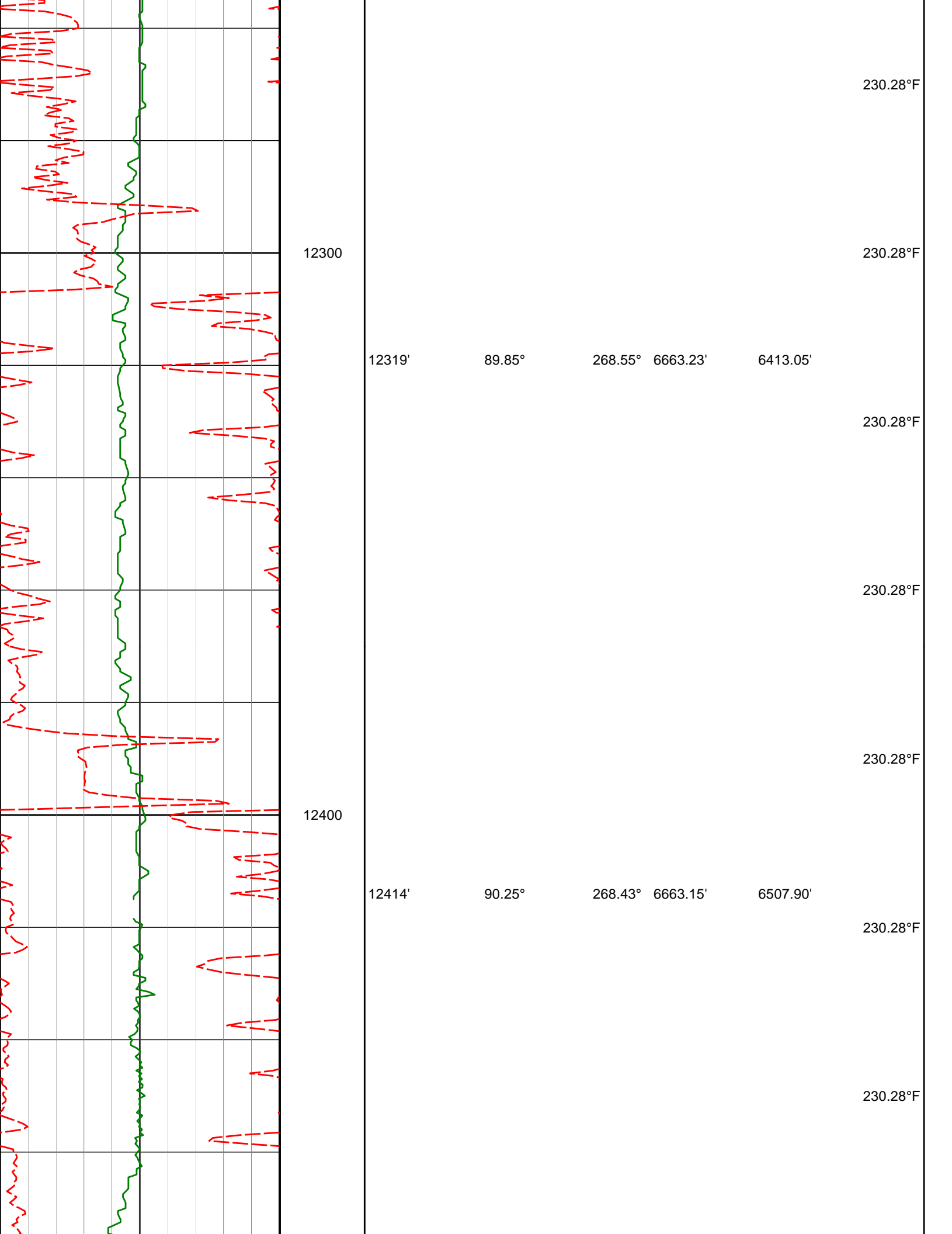
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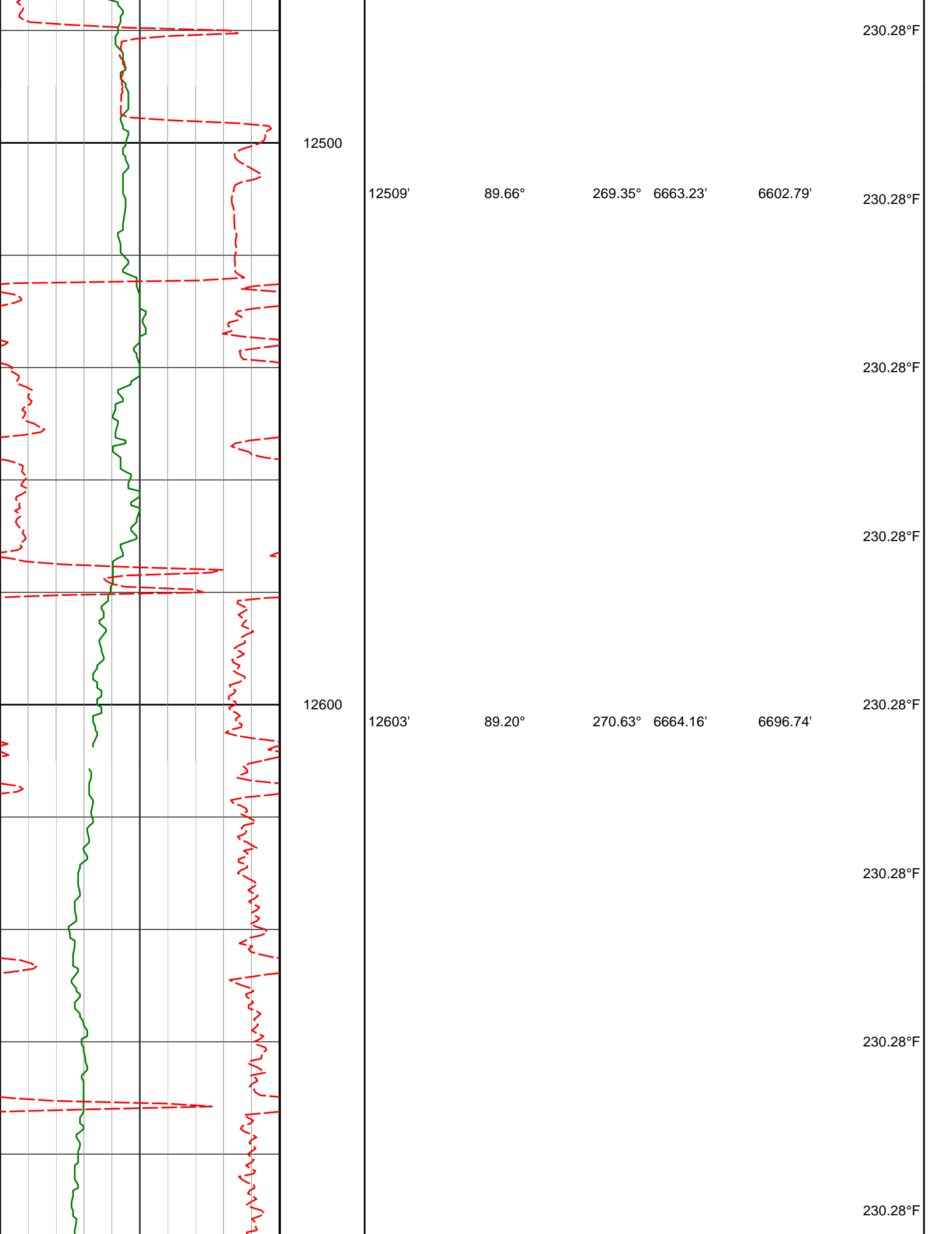
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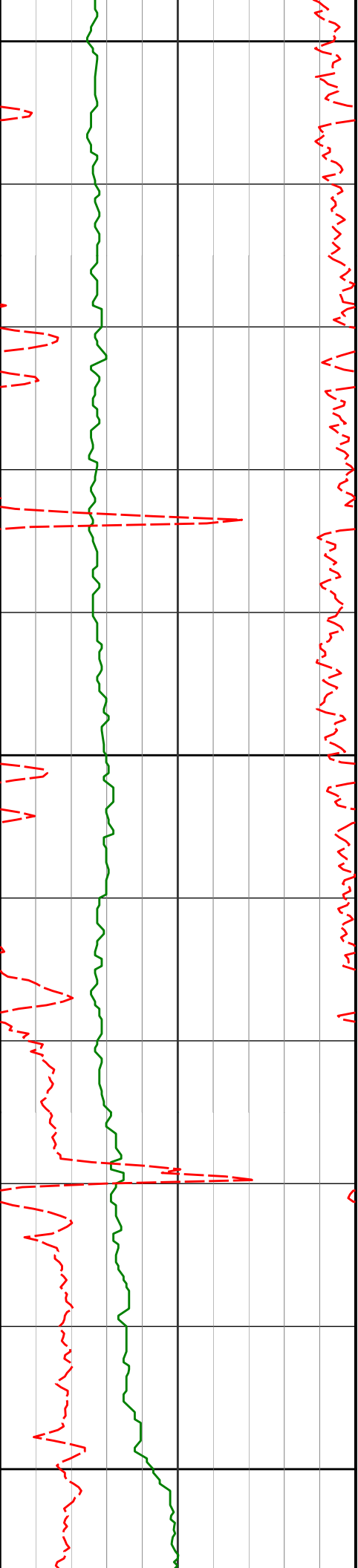
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230.28°F

230.28°F







12700

12698'

89.48°

270.66°

6665.26'

6791.72'

230.28°F

230.28°F

12800

12792'

90.31°

270.75°

6665.43'

6885.70'

12900

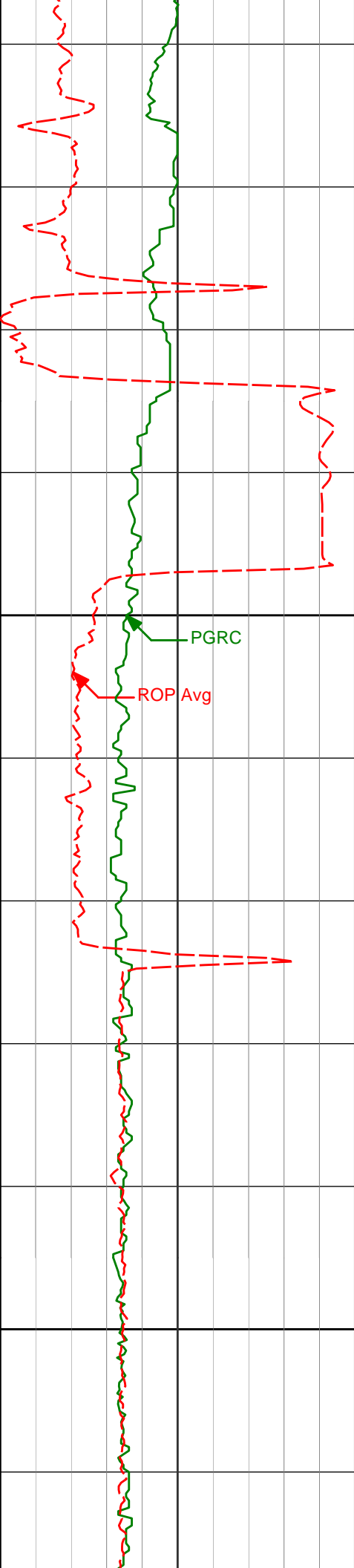
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90.83°

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13000

13100

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90.12°

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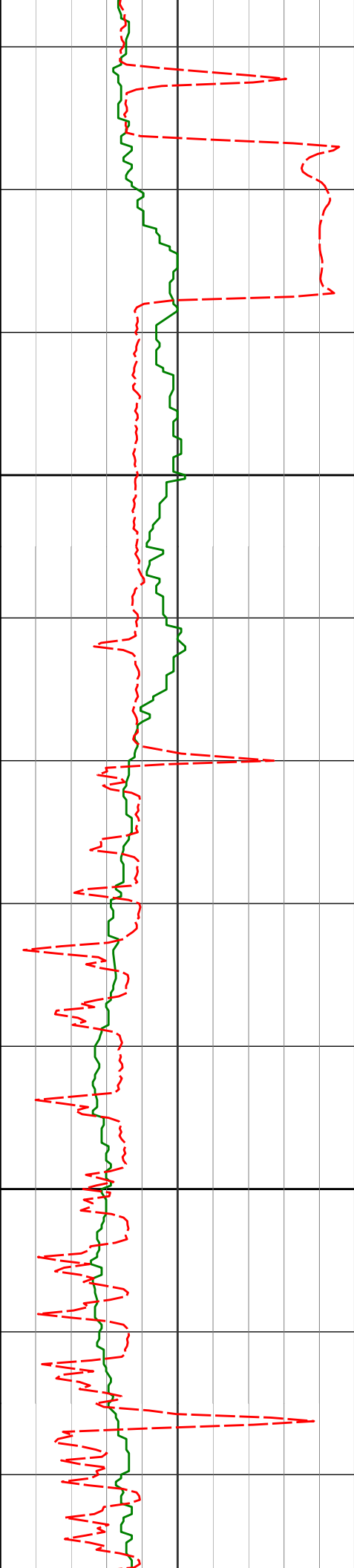
89.48°

268.47° 6664.04'

7169.54'

264.03°F

264.03°F



13200

13300

13171'

13266'

88.09°

88.43°

268.93°

269.29°

6666.05'

6668.93'

7264.39'

7359.25'

264.03°F

264.03°F

264.03°F

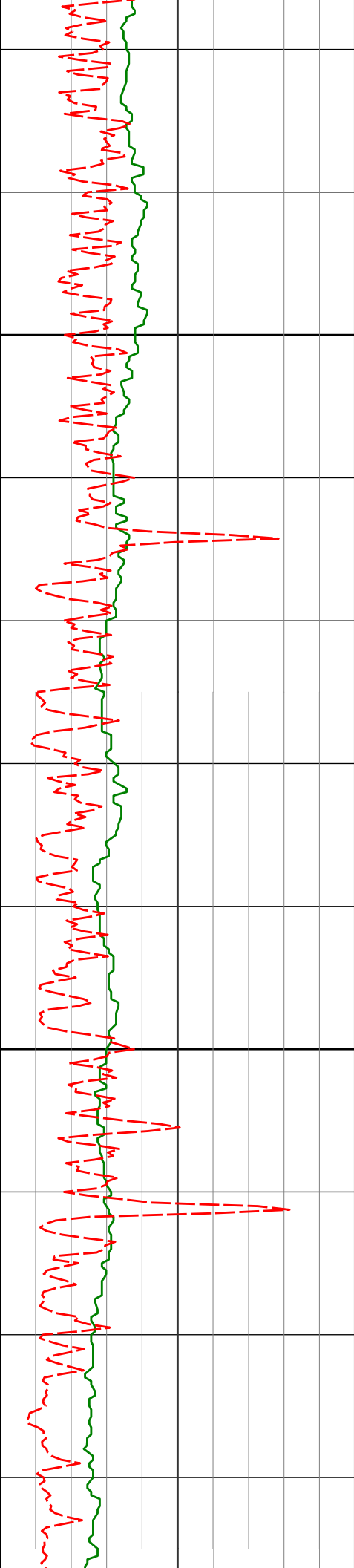
264.03°F

264.03°F

264.03°F

264.03°F

264.03°F



13400

13500

13361'

88.64°

268.90° 6671.36'

7454.12'

13455'

88.89°

269.33° 6673.39'

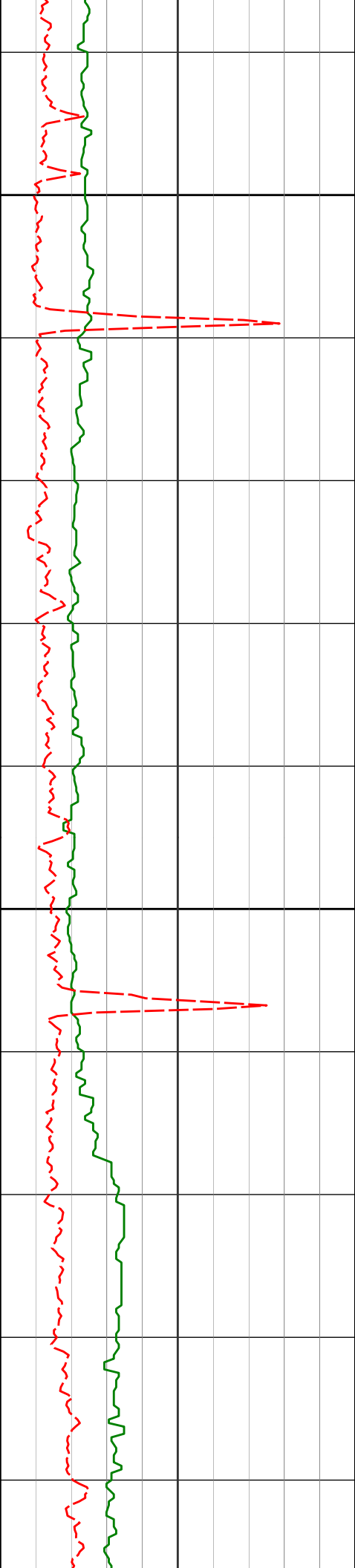
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89.14°

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13600

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89.78°

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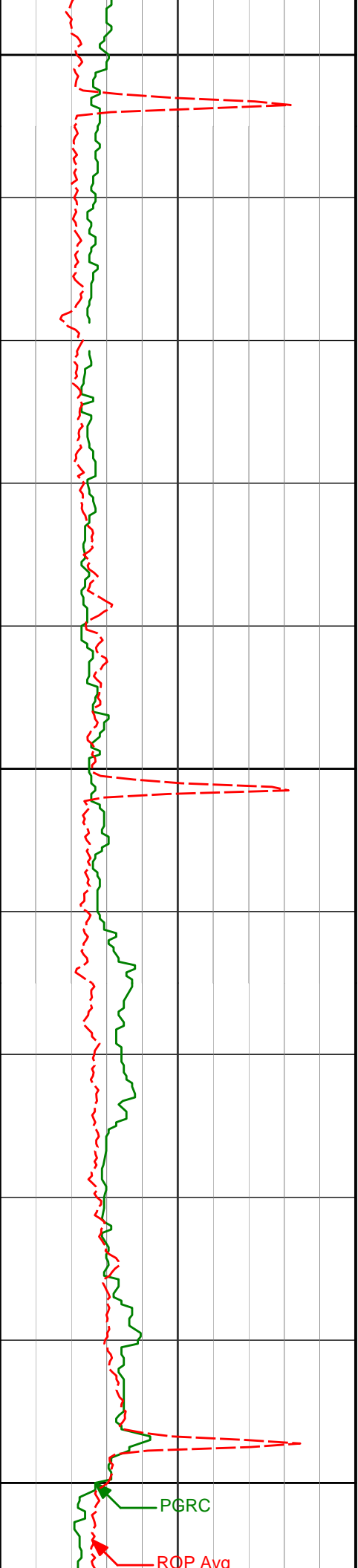
13700

13739'

90.18°

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13800

13833'

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13900

13928'

90.62°

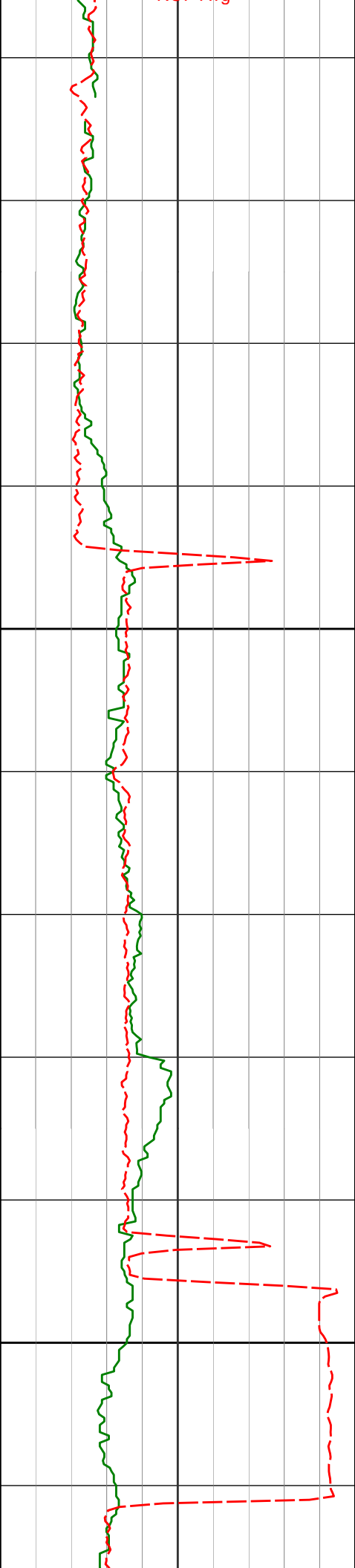
268.67° 6674.91'

8020.33'

14000

PGRC

ROP Avg



14100

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90.92°

268.63° 6673.65'

8114.19'

14117'

91.29°

268.58° 6671.81'

8209.04'

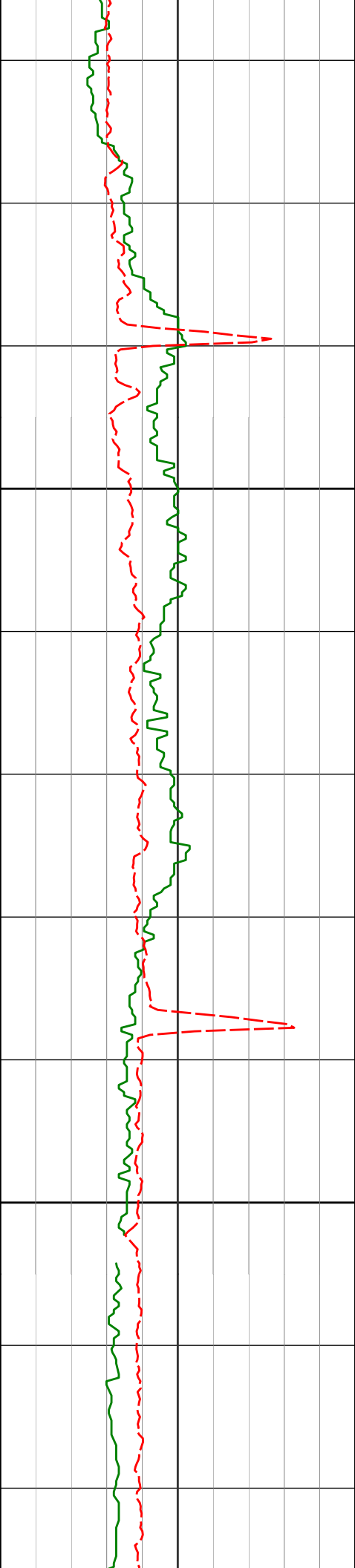
14200

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89.01°

270.16° 6671.57'

8303.95'



14300

14307'

88.68°

269.88° 6673.48'

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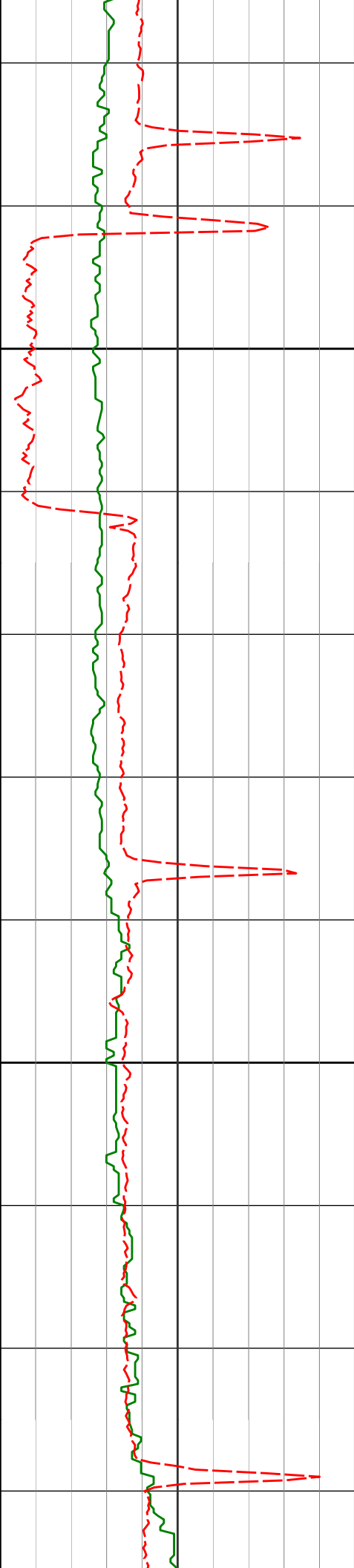
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8492.81'



14500

14496'

89.32°

268.90° 6676.50'

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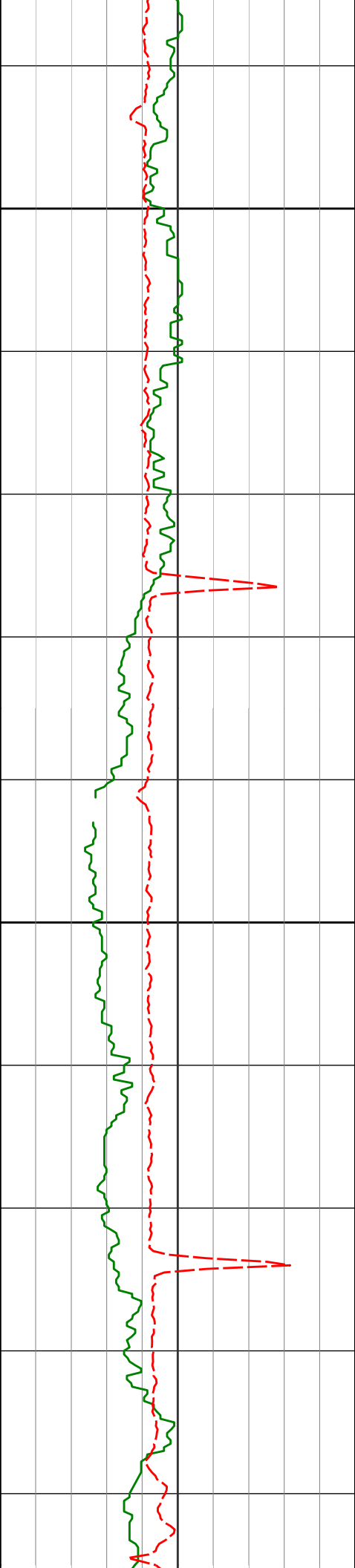
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14700

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8776.48'

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91.11°

268.69° 6674.92'

8871.35'

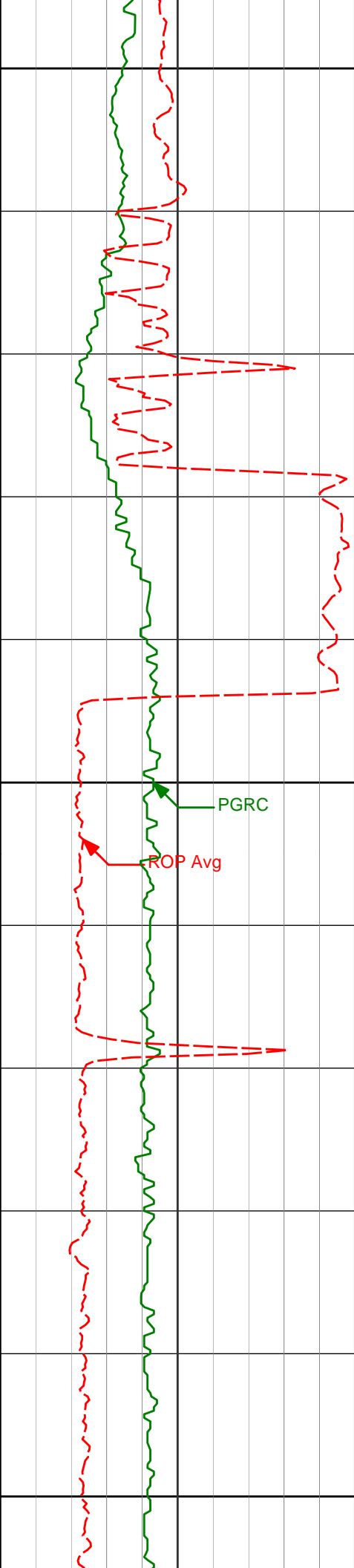
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91.79°

268.92° 6672.52'

8966.19'



14900

14970'

90.83°

269.56° 6670.34'

9061.08'

15000

PGRC

ROP Avg

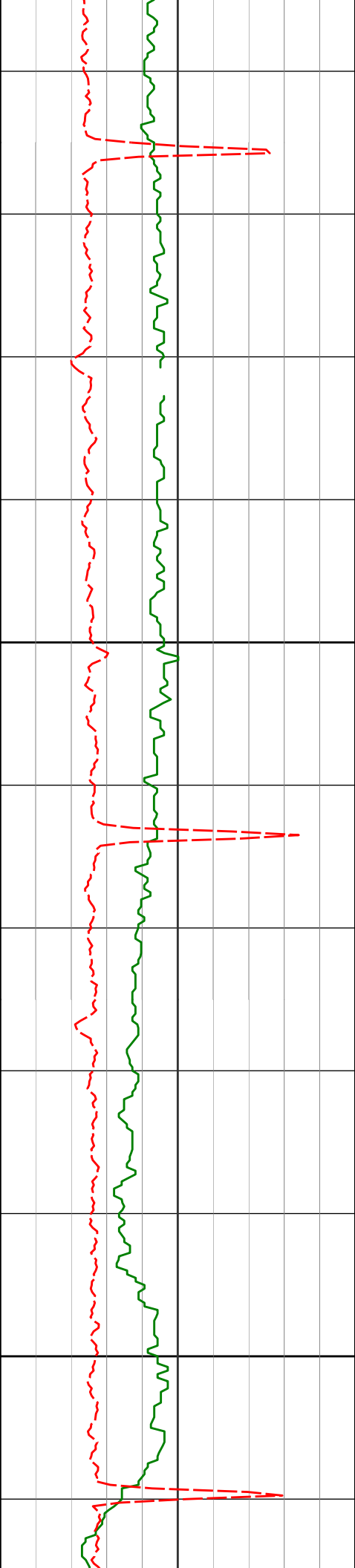
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268.90° 6670.02'

9154.99'

15100



15200

15300

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15253'

89.14°

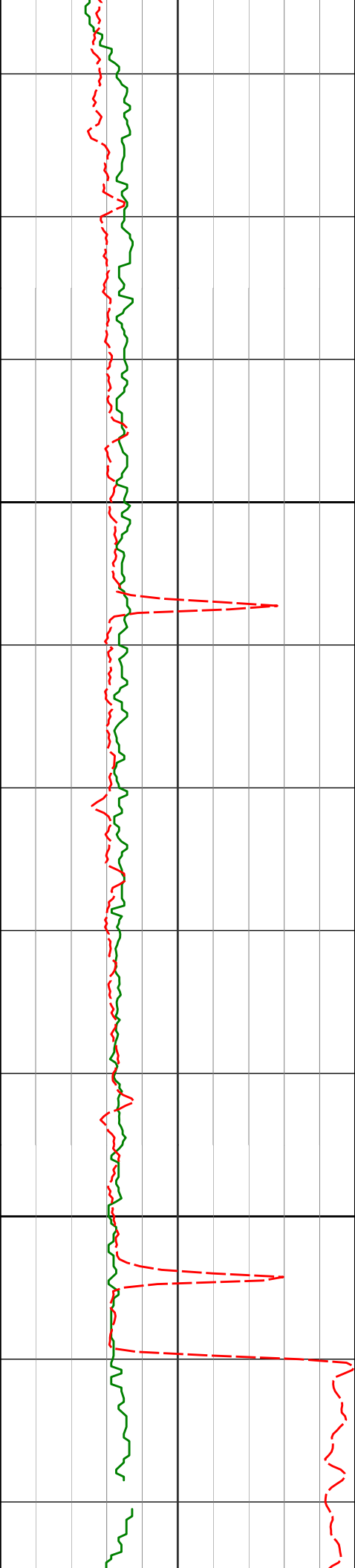
89.08°

267.54° 6671.07'

267.40° 6672.55'

9248.81'

9343.54'



15400

15500

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88.92°

266.50° 6674.19'

9437.21'

15442'

88.74°

266.29° 6676.13'

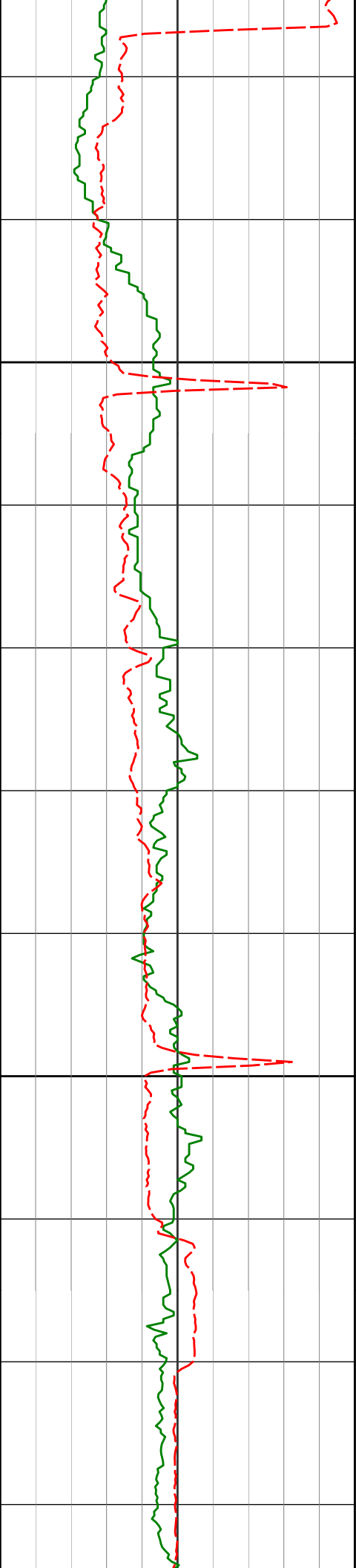
9531.78'

15536'

90.15°

267.17° 6677.04'

9625.42'



15600

15630'

91.26°

268.20° 6675.88'

9719.18'

15700

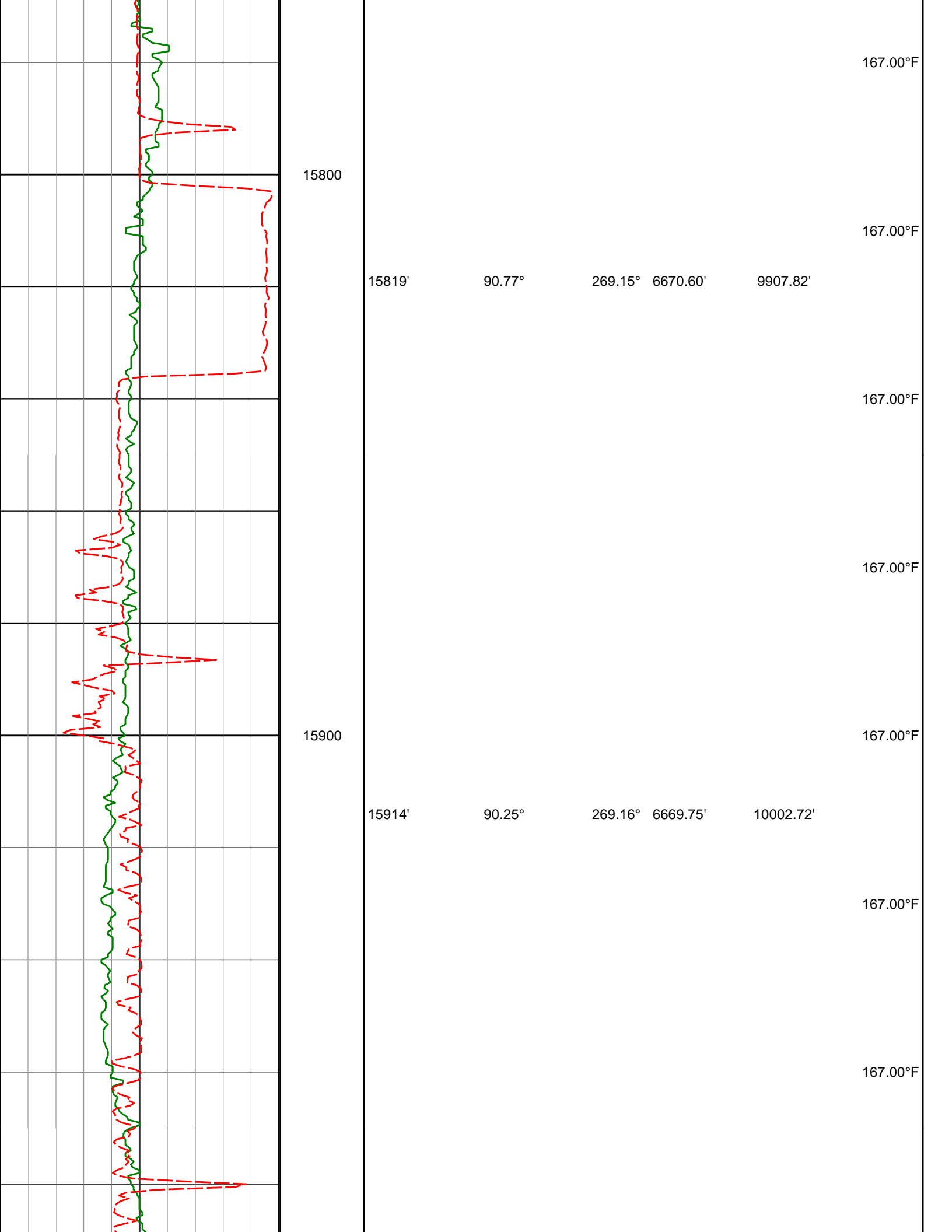
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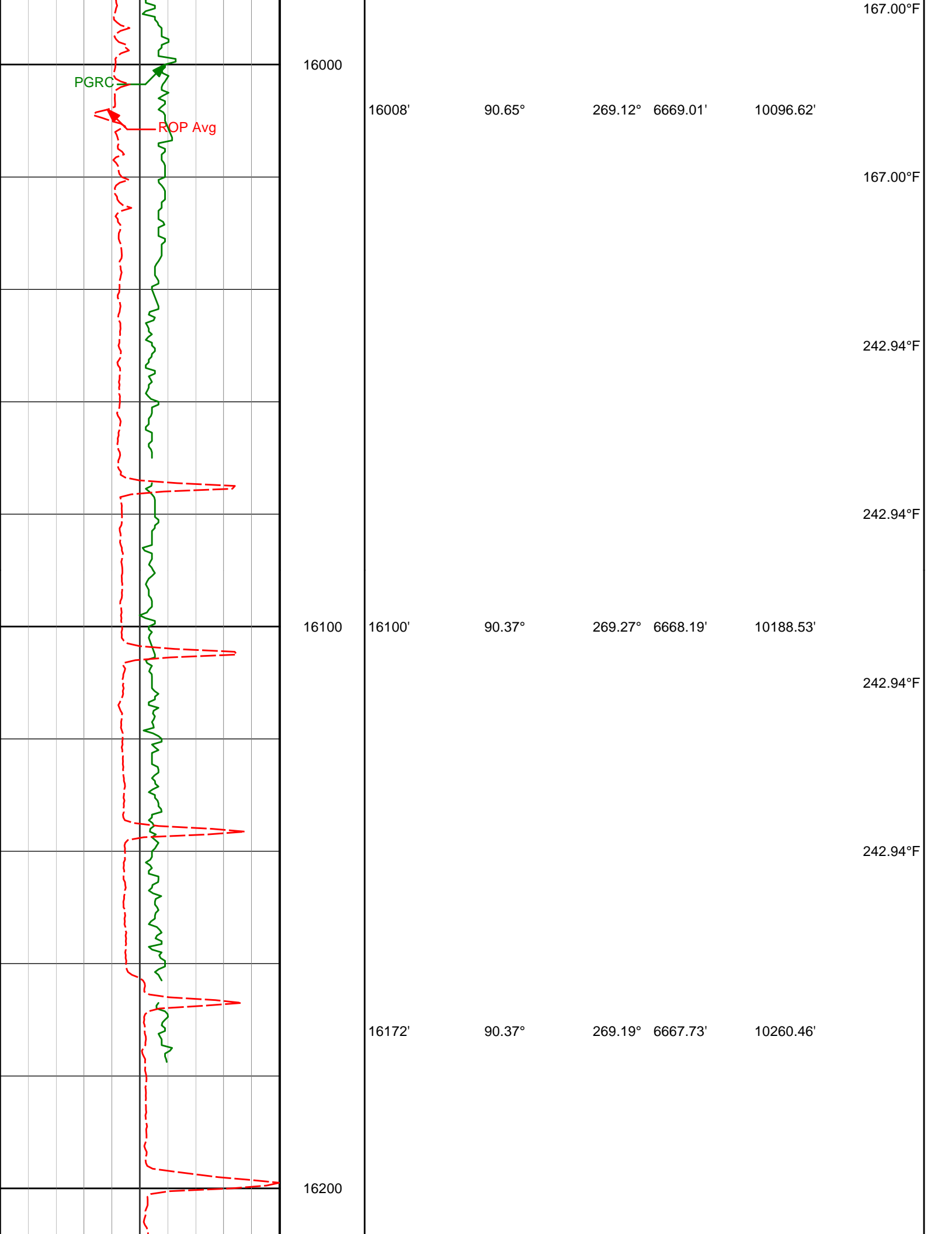
92.19°

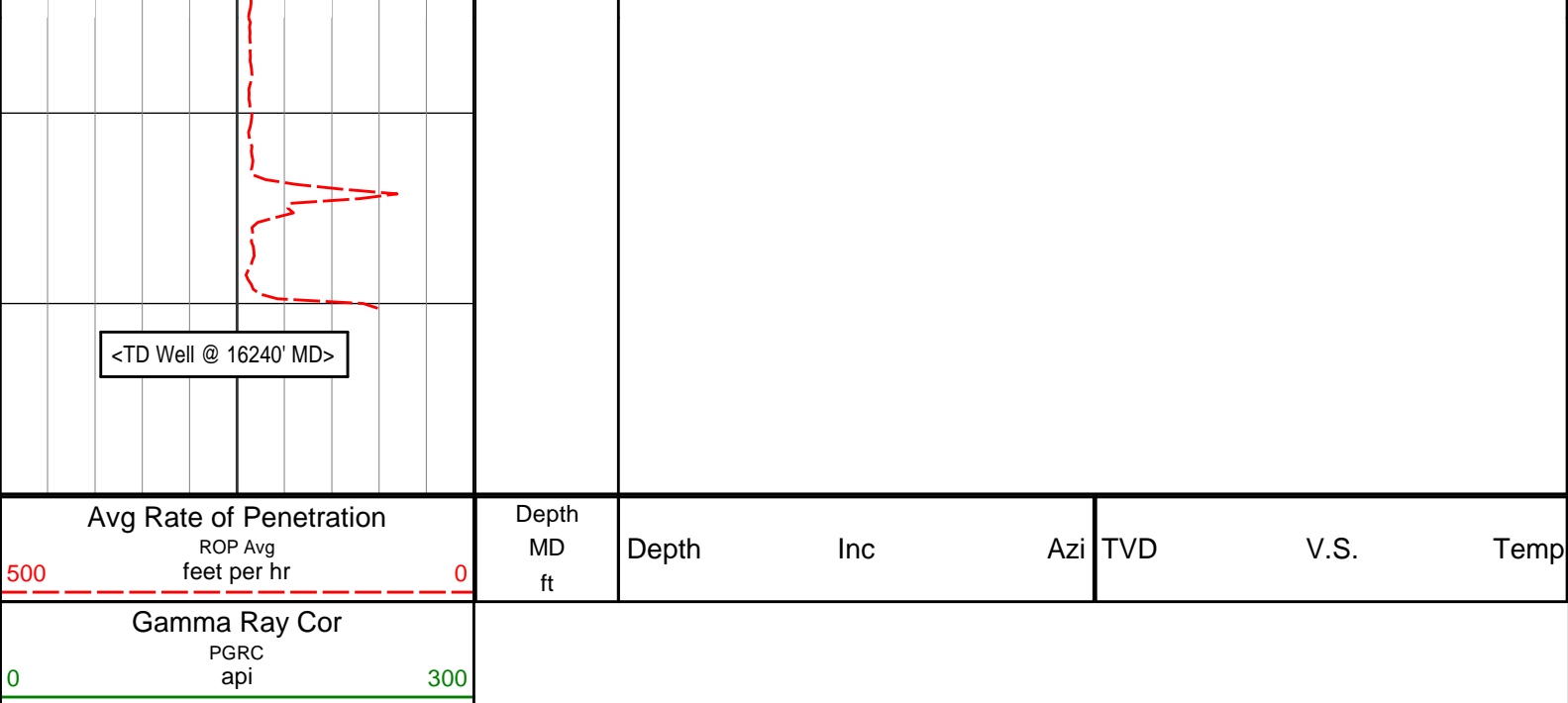
268.41° 6673.02'

9813.97'

167.00°F







HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Colt A13-635
Wattenberg
Weld Colorado
USA
CA-XX-0902119900

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
268.00	0.80	172.43	267.99	1.85 S	0.25 E	-0.30	0.30
640.00	1.20	237.43	639.94	6.53 S	2.69 W	2.50	0.30
915.00	1.40	263.93	914.88	8.43 S	8.46 W	8.21	0.23
1015.00	1.66	31.78	1014.86	7.33 S	8.91 W	8.69	2.75
1110.00	5.27	0.82	1109.68	1.79 S	8.13 W	8.07	4.15
1202.00	6.99	341.63	1201.16	7.74 N	9.83 W	10.05	2.88
1294.00	8.09	318.16	1292.38	17.88 N	15.91 W	16.43	3.52
1480.00	7.82	317.17	1476.59	36.91 N	33.25 W	34.32	0.16
1664.00	6.58	300.23	1659.16	51.40 N	50.87 W	52.36	1.33
1756.00	7.81	291.12	1750.43	56.31 N	61.25 W	62.89	1.82
1848.00	9.54	303.20	1841.39	62.74 N	73.47 W	75.28	2.72
2033.00	9.24	309.66	2023.91	80.61 N	97.73 W	100.06	0.59
2126.00	8.60	322.28	2115.79	90.88 N	107.73 W	110.37	2.21
2219.00	8.54	318.32	2207.76	101.54 N	116.58 W	119.52	0.64
2311.00	8.33	310.95	2298.76	111.01 N	126.15 W	129.37	1.20
2402.00	7.92	324.70	2388.86	120.44 N	134.76 W	138.25	2.18
2495.00	7.54	317.87	2481.02	130.20 N	142.55 W	146.33	1.07
2587.00	8.65	322.84	2572.10	140.19 N	150.78 W	154.85	1.43
2679.00	8.22	321.09	2663.10	150.82 N	159.09 W	163.47	0.54
2772.00	7.89	318.36	2755.19	160.76 N	167.51 W	172.18	0.54
2863.00	9.87	319.66	2845.09	171.38 N	176.71 W	181.69	2.19
3051.00	9.66	314.62	3030.37	194.74 N	198.37 W	204.02	0.47
3145.00	9.56	312.52	3123.05	205.55 N	209.73 W	215.70	0.39
3240.00	10.06	321.71	3216.67	217.40 N	220.69 W	227.00	1.73
3334.00	10.06	317.28	3309.23	229.87 N	231.35 W	238.02	0.82
3429.00	9.46	312.51	3402.85	241.25 N	242.73 W	249.74	1.06
3524.00	8.58	310.33	3496.68	251.11 N	253.89 W	261.18	0.99
3619.00	8.82	310.64	3590.58	260.44 N	264.82 W	272.38	0.26
3714.00	10.48	317.97	3684.24	271.60 N	276.13 W	284.02	2.17

3809.00	10.62	319.02	3777.63	284.63 N	287.65 W	295.92	0.25
3905.00	11.32	317.56	3871.88	298.26 N	299.81 W	308.48	0.78
3999.00	11.19	317.37	3964.07	311.78 N	312.22 W	321.28	0.14
4094.00	10.70	316.43	4057.34	324.95 N	324.54 W	333.98	0.55
4188.00	10.24	316.55	4149.78	337.34 N	336.30 W	346.10	0.49
4283.00	9.63	316.57	4243.35	349.24 N	347.57 W	357.72	0.64
4378.00	9.02	315.02	4337.10	360.28 N	358.30 W	368.77	0.69
4473.00	8.87	314.55	4430.94	370.68 N	368.78 W	379.55	0.18
4568.00	8.50	314.82	4524.85	380.77 N	378.98 W	390.04	0.39
4663.00	7.97	315.00	4618.87	390.38 N	388.62 W	399.96	0.56
4758.00	7.54	314.44	4713.00	399.40 N	397.72 W	409.33	0.46
4853.00	6.90	312.84	4807.25	407.64 N	406.36 W	418.20	0.71
4947.00	6.48	314.70	4900.61	415.21 N	414.27 W	426.33	0.50
5042.00	8.75	316.90	4994.76	424.26 N	423.02 W	435.35	2.41
5137.00	8.24	314.77	5088.72	434.33 N	432.79 W	445.41	0.63
5232.00	7.52	317.62	5182.82	443.72 N	441.81 W	454.71	0.86
5326.00	6.48	314.42	5276.12	451.97 N	449.75 W	462.88	1.18
5420.00	5.79	319.97	5369.59	459.32 N	456.58 W	469.93	0.97
5515.00	5.28	318.13	5464.14	466.24 N	462.58 W	476.13	0.57
5610.00	3.91	303.52	5558.84	471.28 N	468.20 W	481.90	1.89
5704.00	2.11	292.76	5652.70	473.72 N	472.47 W	486.24	2.00
5799.00	0.55	326.42	5747.68	474.78 N	474.34 W	488.13	1.77
5893.00	0.74	310.46	5841.67	475.55 N	475.05 W	488.86	0.28
6082.00	9.41	261.29	6029.77	474.00 N	491.28 W	505.05	4.73
6130.00	12.16	267.13	6076.92	473.15 N	500.21 W	513.95	6.16
6177.00	16.06	269.63	6122.50	472.86 N	511.66 W	525.38	8.40
6225.00	19.45	268.43	6168.20	472.60 N	526.29 W	540.00	7.10
6272.00	21.47	262.72	6212.24	471.29 N	542.65 W	556.31	6.04
6366.00	27.71	265.54	6297.68	467.41 N	581.54 W	595.07	6.75
6461.00	35.09	269.17	6378.72	465.30 N	630.94 W	644.39	8.02
6556.00	47.07	274.13	6450.21	467.41 N	693.17 W	706.66	13.06
6651.00	58.72	277.07	6507.44	474.94 N	768.42 W	782.09	12.51
6745.00	62.74	276.55	6553.38	484.65 N	849.82 W	863.75	4.30
6793.00	64.32	274.27	6574.78	488.70 N	892.59 W	906.62	5.38
6840.00	68.12	271.53	6593.73	490.86 N	935.54 W	949.61	9.69
6951.00	78.49	268.85	6625.58	491.14 N	1041.70 W	1055.73	9.62
7063.00	86.40	270.35	6640.30	490.38 N	1152.63 W	1166.60	7.19
7158.00	88.09	268.83	6644.86	489.70 N	1247.52 W	1261.42	2.39
7253.00	88.52	268.49	6647.67	487.48 N	1342.45 W	1356.24	0.58
7348.00	88.92	268.23	6649.80	484.76 N	1437.39 W	1451.06	0.50
7443.00	89.75	268.32	6650.90	481.90 N	1532.34 W	1545.88	0.88
7538.00	90.00	268.38	6651.10	479.17 N	1627.30 W	1640.72	0.27
7632.00	90.40	268.05	6650.78	476.24 N	1721.25 W	1734.55	0.55
7727.00	91.23	268.61	6649.43	473.47 N	1816.20 W	1829.37	1.05
7822.00	92.06	268.29	6646.70	470.90 N	1911.12 W	1924.18	0.94
7917.00	91.33	268.41	6643.89	468.17 N	2006.04 W	2018.98	0.78
8012.00	90.37	267.91	6642.48	465.12 N	2100.98 W	2113.78	1.14
8107.00	89.85	268.75	6642.30	462.35 N	2195.94 W	2208.62	1.04
8202.00	90.89	269.08	6641.68	460.55 N	2290.92 W	2303.50	1.15
8296.00	90.31	268.39	6640.70	458.48 N	2384.89 W	2397.37	0.96
8486.00	89.20	268.17	6641.51	452.77 N	2574.80 W	2587.03	0.60
8581.00	90.37	267.73	6641.87	449.38 N	2669.74 W	2681.83	1.32
8676.00	87.14	268.33	6643.93	446.11 N	2764.64 W	2776.60	3.46
8771.00	87.16	267.95	6648.66	443.03 N	2859.48 W	2871.30	0.40
8960.00	87.97	268.98	6656.69	437.97 N	3048.23 W	3059.82	0.69
9054.00	88.34	268.50	6659.71	435.91 N	3142.16 W	3153.65	0.64
9149.00	88.61	268.18	6662.24	433.16 N	3237.09 W	3248.45	0.44
9243.00	88.80	268.09	6664.36	430.10 N	3331.01 W	3342.25	0.22
9338.00	89.41	267.94	6665.85	426.81 N	3425.95 W	3437.04	0.66
9433.00	90.18	268.18	6666.19	423.59 N	3520.89 W	3531.85	0.85
9527.00	90.25	267.93	6665.84	420.40 N	3614.83 W	3625.66	0.28
9716.00	92.31	269.22	6661.61	415.70 N	3803.71 W	3814.32	1.29
9811.00	91.91	271.04	6658.12	415.92 N	3898.65 W	3909.22	1.96
9906.00	90.28	269.58	6656.30	416.43 N	3993.62 W	4004.17	2.30
10000.00	90.77	269.14	6655.44	415.38 N	4087.61 W	4098.08	0.70
10095.00	89.29	270.17	6655.39	414.81 N	4182.61 W	4193.02	1.90
10187.00	90.40	269.94	6655.64	414.90 N	4274.60 W	4284.98	1.23
10279.00	89.13	268.90	6656.02	413.97 N	4366.59 W	4376.90	1.78
10372.00	89.57	268.77	6657.07	412.07 N	4459.57 W	4469.78	0.49
10465.00	90.34	269.18	6657.14	410.41 N	4552.55 W	4562.68	0.94
10557.00	89.74	268.82	6658.82	412.82 N	4644.54 W	4654.52	2.42

10557.00	90.74	268.98	6656.28	408.93 N	4644.54 W	4654.58	0.49
10649.00	90.95	268.49	6654.92	406.90 N	4736.50 W	4746.44	0.58
10741.00	89.38	268.87	6654.66	404.78 N	4828.48 W	4838.31	1.76
10833.00	88.31	269.25	6656.51	403.27 N	4920.44 W	4930.20	1.23
10926.00	88.58	268.65	6659.03	401.57 N	5013.39 W	5023.06	0.71
11018.00	88.61	268.63	6661.29	399.39 N	5105.34 W	5114.90	0.04
11111.00	88.80	268.55	6663.39	397.10 N	5198.29 W	5207.74	0.22
11204.00	89.20	268.14	6665.01	394.41 N	5291.23 W	5300.57	0.62
11296.00	89.57	268.03	6666.00	391.34 N	5383.18 W	5392.38	0.42
11387.00	90.06	267.80	6666.30	388.03 N	5474.12 W	5483.18	0.59
11480.00	90.15	267.23	6666.13	384.00 N	5567.03 W	5575.93	0.62
11572.00	90.59	267.25	6665.53	379.57 N	5658.92 W	5667.65	0.48
11664.00	91.20	267.58	6664.09	375.42 N	5750.81 W	5759.38	0.75
11757.00	91.66	267.36	6661.77	371.31 N	5843.69 W	5852.10	0.55
11941.00	89.88	267.87	6659.30	363.66 N	6027.51 W	6035.61	1.01
12035.00	89.20	268.53	6660.06	360.71 N	6121.46 W	6129.44	1.01
12130.00	89.23	269.07	6661.36	358.72 N	6216.43 W	6224.31	0.57
12224.00	89.32	268.78	6662.55	356.95 N	6310.41 W	6318.19	0.32
12319.00	89.85	268.55	6663.23	354.74 N	6405.38 W	6413.05	0.61
12414.00	90.25	268.43	6663.15	352.24 N	6500.34 W	6507.90	0.44
12509.00	89.66	269.35	6663.23	350.40 N	6595.32 W	6602.79	1.15
12603.00	89.20	270.63	6664.16	350.38 N	6689.32 W	6696.74	1.45
12698.00	89.48	270.66	6665.26	351.45 N	6784.31 W	6791.72	0.30
12792.00	90.31	270.75	6665.43	352.61 N	6878.30 W	6885.70	0.89
12887.00	90.83	271.10	6664.48	354.14 N	6973.28 W	6980.69	0.66
12981.00	90.12	269.41	6663.70	354.56 N	7067.27 W	7074.65	1.95
13076.00	89.48	268.47	6664.04	352.80 N	7162.25 W	7169.54	1.20
13171.00	88.09	268.93	6666.05	350.64 N	7257.21 W	7264.39	1.54
13266.00	88.43	269.29	6668.93	349.17 N	7352.15 W	7359.25	0.52
13361.00	88.64	268.90	6671.36	347.67 N	7447.11 W	7454.12	0.47
13455.00	88.89	269.33	6673.39	346.22 N	7541.07 W	7548.00	0.53
13549.00	89.14	268.87	6675.01	344.74 N	7635.05 W	7641.89	0.56
13644.00	89.78	268.77	6675.90	342.79 N	7730.02 W	7736.77	0.68
13739.00	90.18	268.53	6675.93	340.55 N	7825.00 W	7831.64	0.49
13833.00	90.22	268.34	6675.61	337.98 N	7918.96 W	7925.48	0.21
13928.00	90.62	268.67	6674.91	335.50 N	8013.92 W	8020.33	0.55
14022.00	90.92	268.63	6673.65	333.29 N	8107.89 W	8114.19	0.32
14117.00	91.29	268.58	6671.81	330.97 N	8202.84 W	8209.04	0.39
14212.00	89.01	270.16	6671.57	329.93 N	8297.83 W	8303.95	2.92
14307.00	88.68	269.88	6673.48	329.96 N	8392.81 W	8398.89	0.46
14401.00	89.17	269.34	6675.24	329.32 N	8486.79 W	8492.81	0.78
14496.00	89.32	268.90	6676.50	327.86 N	8581.77 W	8587.71	0.49
14591.00	90.00	269.01	6677.06	326.13 N	8676.75 W	8682.60	0.73
14685.00	90.74	268.82	6676.45	324.35 N	8770.73 W	8776.48	0.81
14780.00	91.11	268.69	6674.92	322.29 N	8865.70 W	8871.35	0.41
14875.00	91.79	268.92	6672.52	320.31 N	8960.65 W	8966.19	0.76
14970.00	90.83	269.56	6670.34	319.05 N	9055.61 W	9061.08	1.21
15064.00	89.57	268.90	6670.02	317.78 N	9149.60 W	9154.99	1.51
15158.00	89.14	267.54	6671.07	314.86 N	9243.55 W	9248.81	1.52
15253.00	89.08	267.40	6672.55	310.67 N	9338.44 W	9343.54	0.16
15347.00	88.92	266.50	6674.19	305.67 N	9432.29 W	9437.21	0.97
15442.00	88.74	266.29	6676.13	299.70 N	9527.09 W	9531.78	0.29
15536.00	90.15	267.17	6677.04	294.34 N	9620.92 W	9625.42	1.77
15630.00	91.26	268.20	6675.88	290.54 N	9714.84 W	9719.18	1.61
15725.00	92.19	268.41	6673.02	287.73 N	9809.75 W	9813.97	1.00
15819.00	90.77	269.15	6670.60	285.73 N	9903.70 W	9907.82	1.70
15914.00	90.25	269.16	6669.75	284.33 N	9998.68 W	10002.72	0.55
16008.00	90.65	269.12	6669.01	282.92 N	10092.67 W	10096.62	0.43
16100.00	90.37	269.27	6668.19	281.63 N	10184.66 W	10188.53	0.35
16172.00	90.37	269.19	6667.73	280.66 N	10256.65 W	10260.46	0.11
16240.00	90.37	269.19	6667.29	279.70 N	10324.64 W	10328.40	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 271.69 DEGREES (GRID)

A TOTAL CORRECTION OF 7.43 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 16240.00 FEET
IS 10328.43 FEET ALONG 271.55 DEGREES (GRID)

Surface surveys at 268 ft, 640 ft and 915 ft have had azimuths corrected to grid north, but were not taken by Halliburton.

Last survey is a projection from 16172 ft MD to TD at 16240 ft MD.

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