



1 : 600 / 1 : 240

WELL INFORMATION					
MWD Run Number	100	200			
Date run completed	16-Mar-15	18-Mar-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)	925.00	7,041.00			
Log End Depth (MD, ft)	7,041.00	12,737.00			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	15-Mar-15 00:10	17-Mar-15 00:20			
Drill/Wipe End Date and Time	16-Mar-15 00:00	18-Mar-15 10:18			
Min Inc (deg) @ Depth (MD, ft)	0.18 @ 5,327.00	85.06 @ 7,139.00			
Max Inc (deg) @ Depth (MD, ft)	77.20 @ 6,990.00	92.77 @ 8,246.00			
Bit TFA(in2) / Bit Type	1.21 / PDC	0.86 / PDC			
Flow Rate (gpm)	586.43	299.67			
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)	8.40 / 28.00	9.50 / 36.00			
Filtrate CL (ppm)	1,200.00	1,500.00			
pH / Fluid Loss (mptm)	10.90 / 0	8.00 / 0			
PV (cP) / YP (lhf2)	1 / 1.00	8 / 8.00			
% Solids / % Sand	0.40 / 0.10	7.5 / .3			
% 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	238.70 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A			
Lead MWD Engineer	Paul Kock	Paul Kock			
Customer Representative	Justin Fields	Justin Fields			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.93	5.93			
Sub Serial Number	246473	12134679			
Insert Serial Number	11620280	11400937			
Date and Time Initialized	14-Mar-15 21:45	16-Mar-15 16:12			
Date and Time Read	16-Mar-15 06:26	18-Mar-15 20:39			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	49.46	63.37			
Software Version	6.21	6.21			
Sub Serial Number	246473	12134679			
Sonde Serial Number	11638576	11297516			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	90.93	318.32			

Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	39.34	58.64			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	246473	12134679			
Insert/Sonde Serial Number	11681014	11293417			

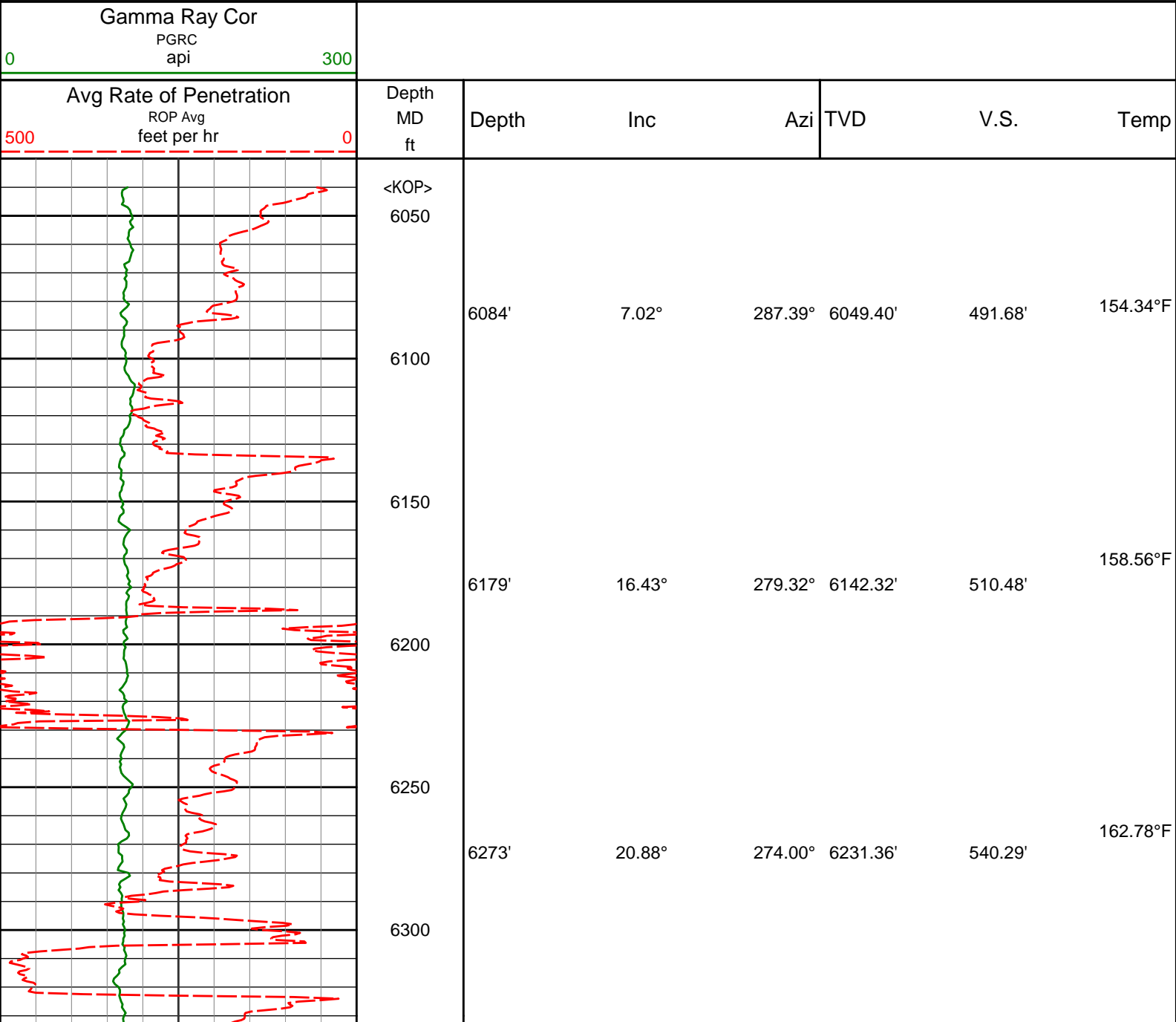
REMARKS

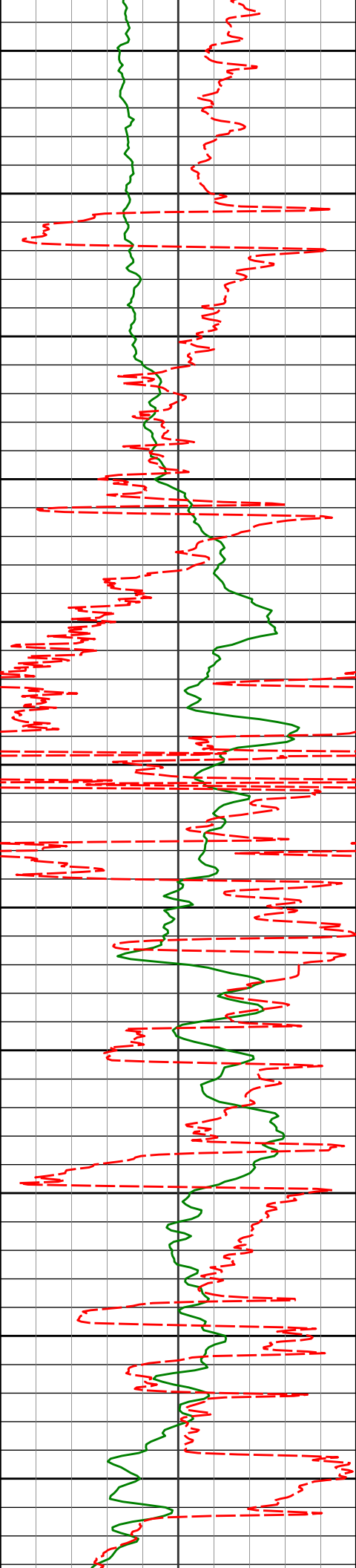
1. All depths are calibrated to the driller's pipe tally and are measured from the rig drill floor.
2. No depth corrections have been made for pipe stretch or compression.
3. All data presented is recorded (memory data) unless otherwise stated.
 - ROPA: Average Rate of Penetration is real time data.
 - 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 7002 ft. MD to 7041 ft. MD.

WARRANTY

HALLIBURTON WILL USE ITS BEST EFFORTS TO FURNISH CUSTOMERS WITH ACCURATE INFORMATION AND INTERPRETATIONS THAT ARE PART OF, AND INCIDENT TO, THE SERVICES PROVIDED. HOWEVER, HALLIBURTON CANNOT AND DOES NOT WARRANT THE ACCURACY OR CORRECTNESS OF SUCH INFORMATION AND INTERPRETATIONS. UNDER NO CIRCUMSTANCES SHOULD ANY SUCH INFORMATION OR INTERPRETATION BE RELIED UPON AS THE SOLE BASIS FOR ANY DRILLING, COMPLETION, PRODUCTION, OR FINANCIAL DECISION OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING VENTURE, DRILLING RIG OR ITS CREW OR ANY OTHER THIRD PARTY. THE CUSTOMER HAS FULL RESPONSIBILITY FOR ALL DRILLING, COMPLETION AND PRODUCTION OPERATION. HALLIBURTON MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE SERVICES RENDERED. IN NO EVENT WILL HALLIBURTON BE LIABLE FOR FAILURE TO OBTAIN ANY PARTICULAR RESULTS OR FOR ANY DAMAGES, INCLUDING, BUT NOT LIMITED TO, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, RESULTING FROM THE USE OF ANY INFORMATION OR INTERPRETATION PROVIDED BY HALLIBURTON.

MD Detail 1:600 Scale





6350

6368'

25.84°

271.11°

6318.55'

577.88'

162.78°F

6400

6450

6463'

33.92°

270.88°

6400.85'

625.15'

162.78°F

6500

6550

6558'

45.68°

271.38°

6473.71'

685.83'

167.00°F

6600

6650

6652'

52.78°

271.38°

6535.06'

756.93'

162.78°F

6700

6750

6747'

60.60°

267.82°

6587.20'

836.24'

167.00°F

167.00°F

167.00°F

167.00°F

6800

6850

6842'

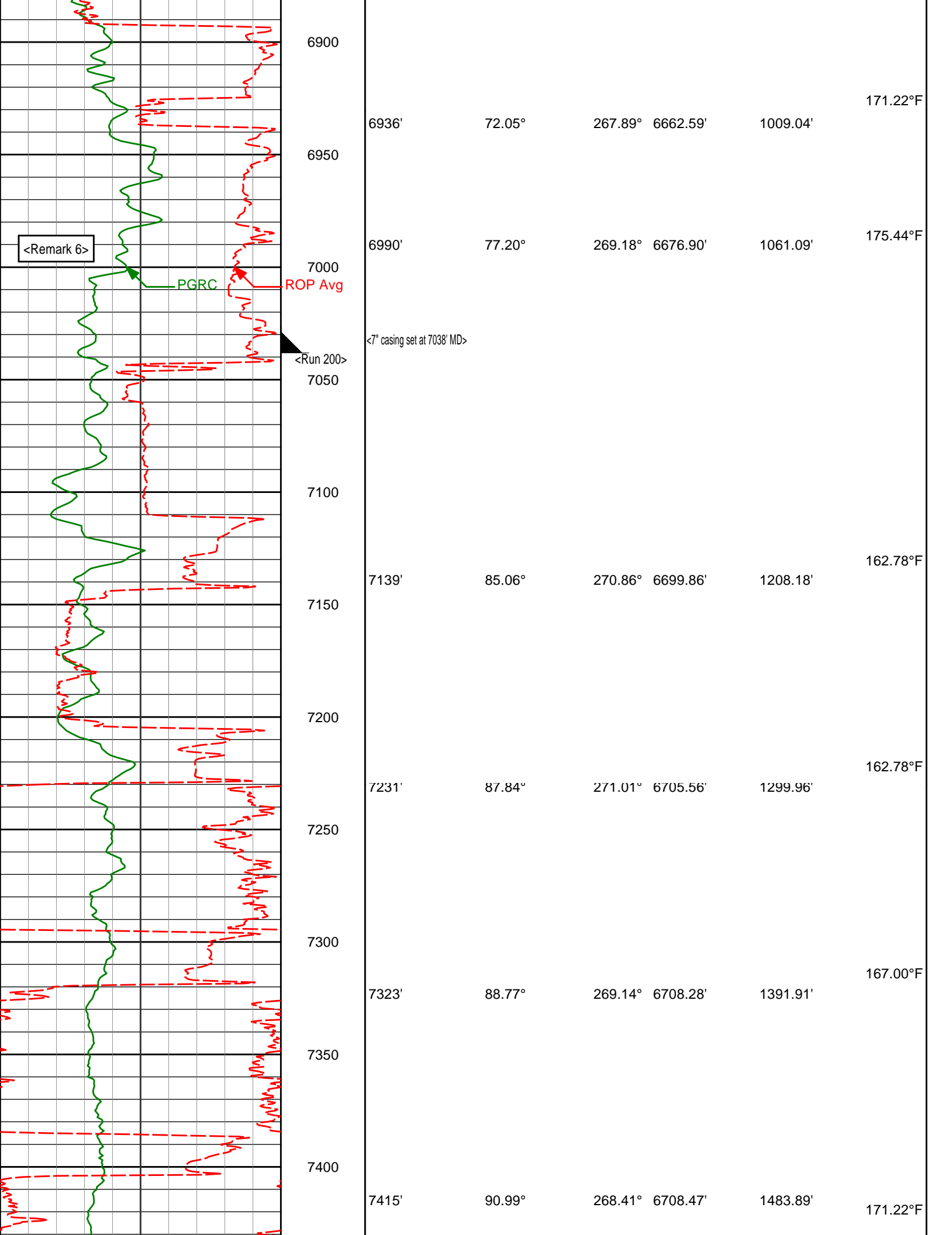
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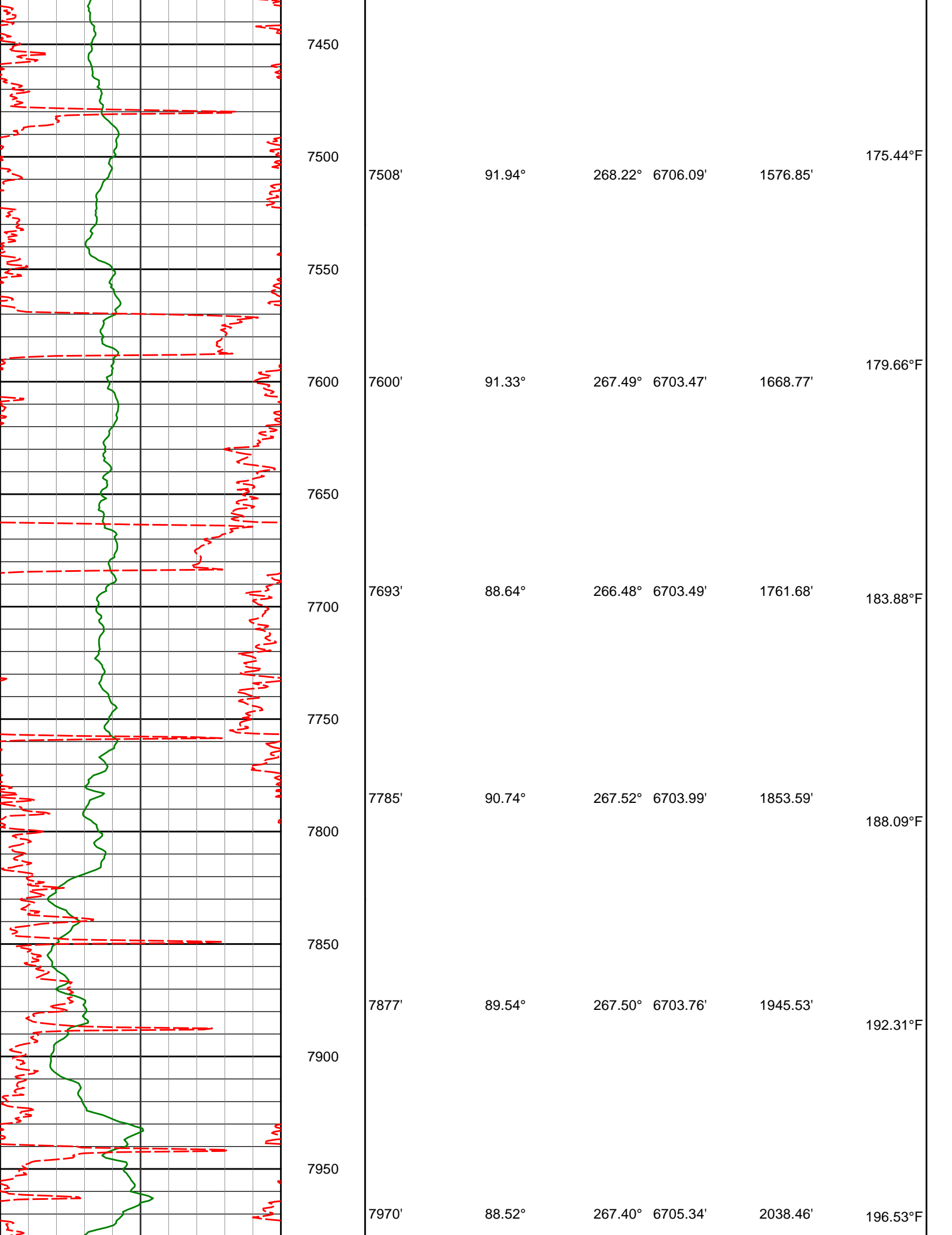
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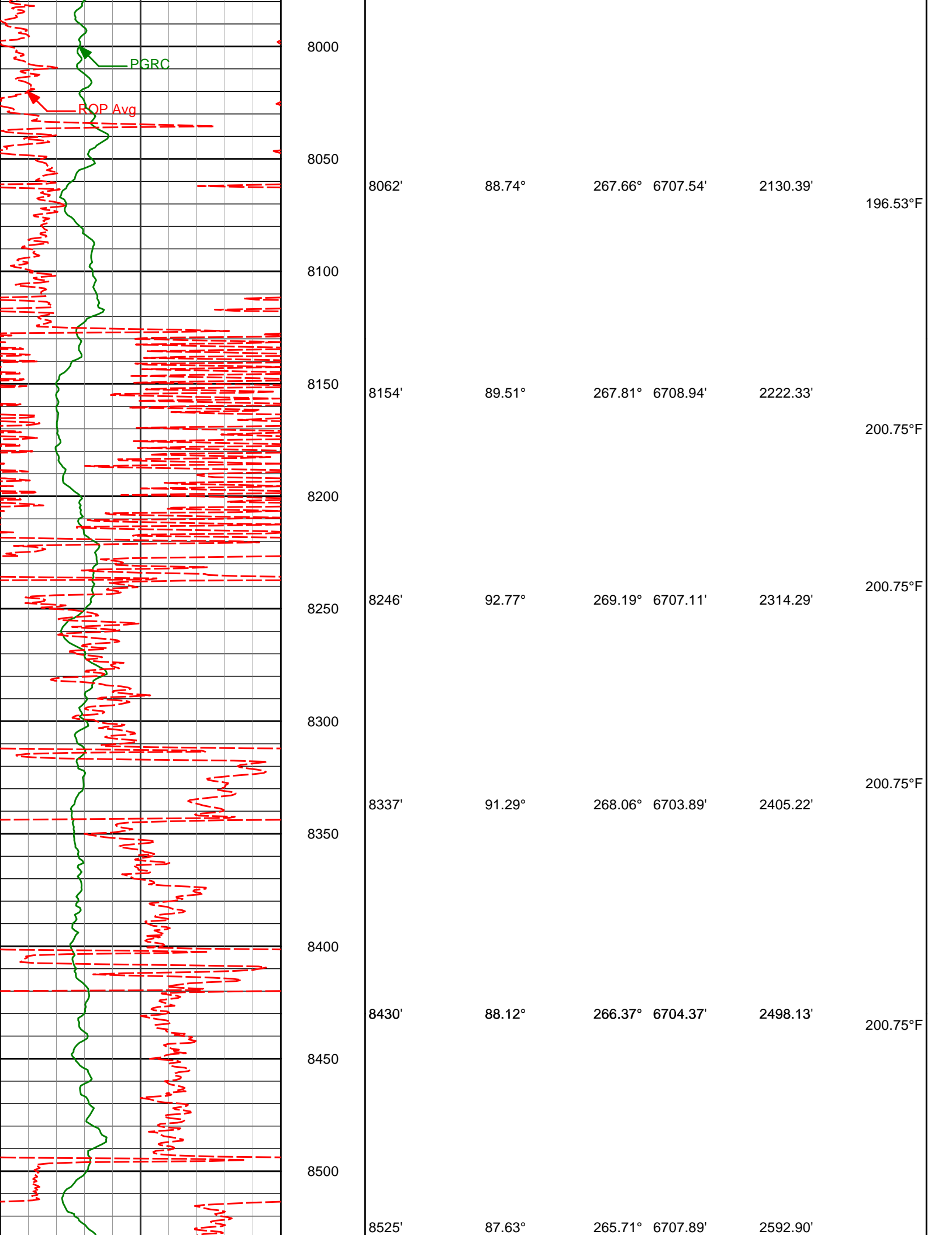
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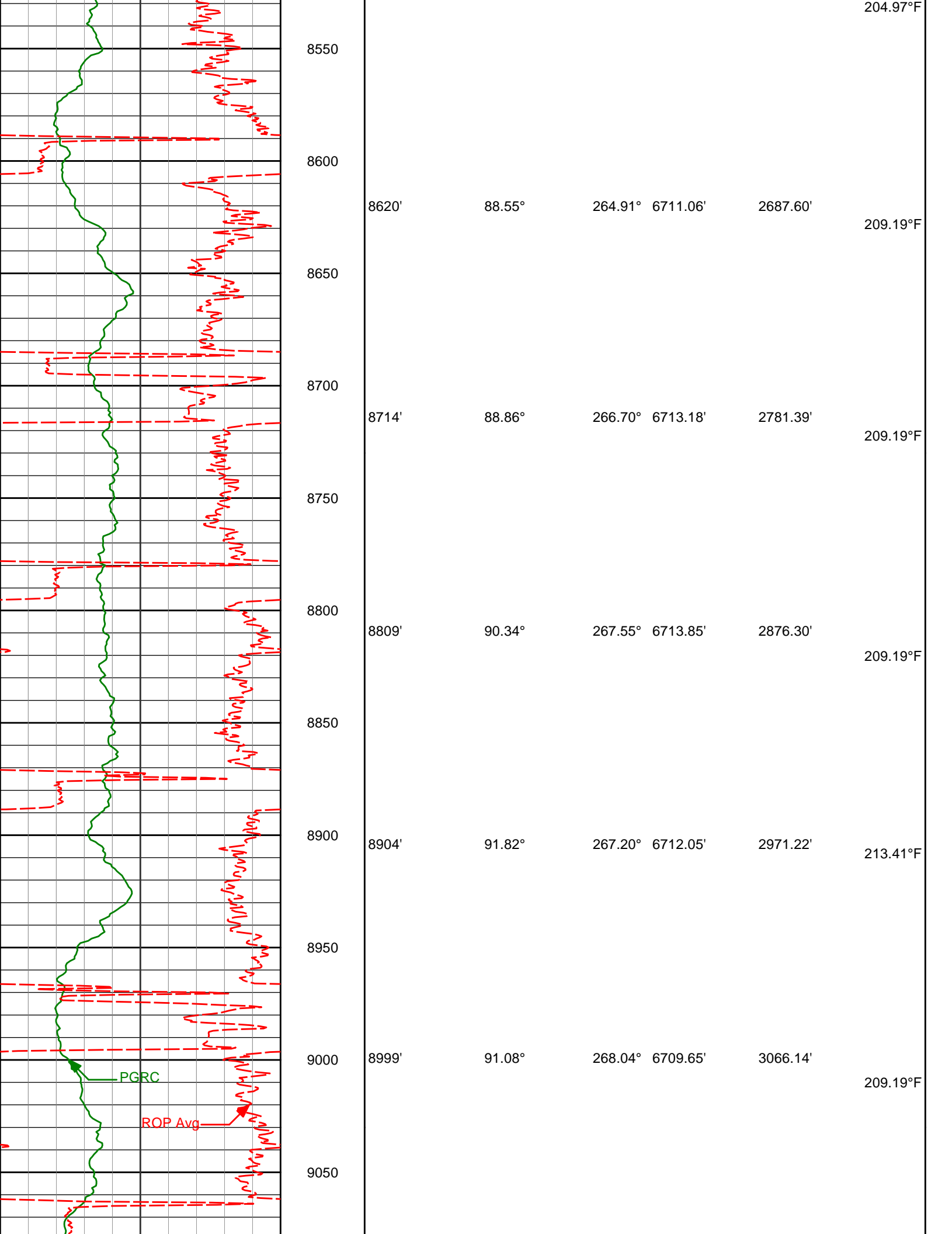
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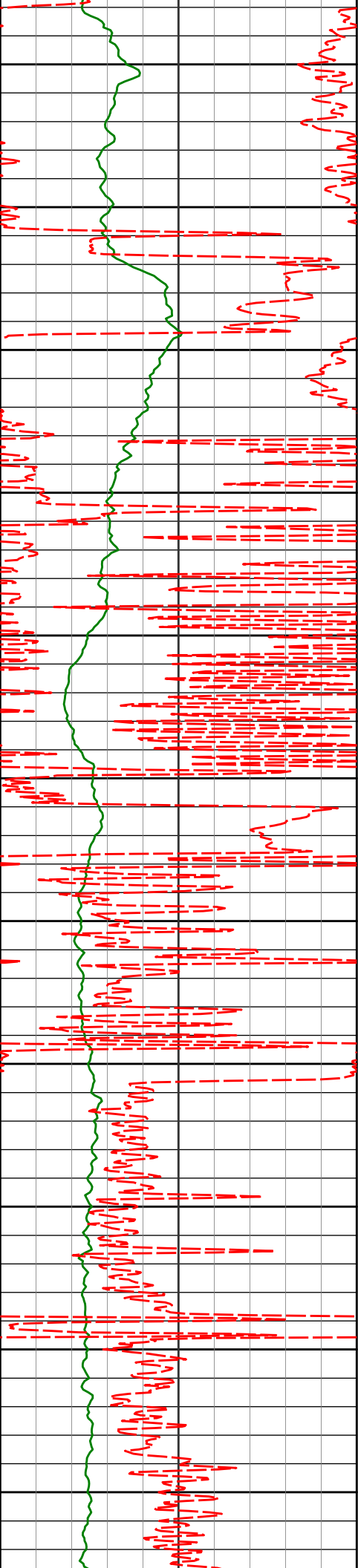
167.00°F











9100

9150

9200

9250

9300

9350

9400

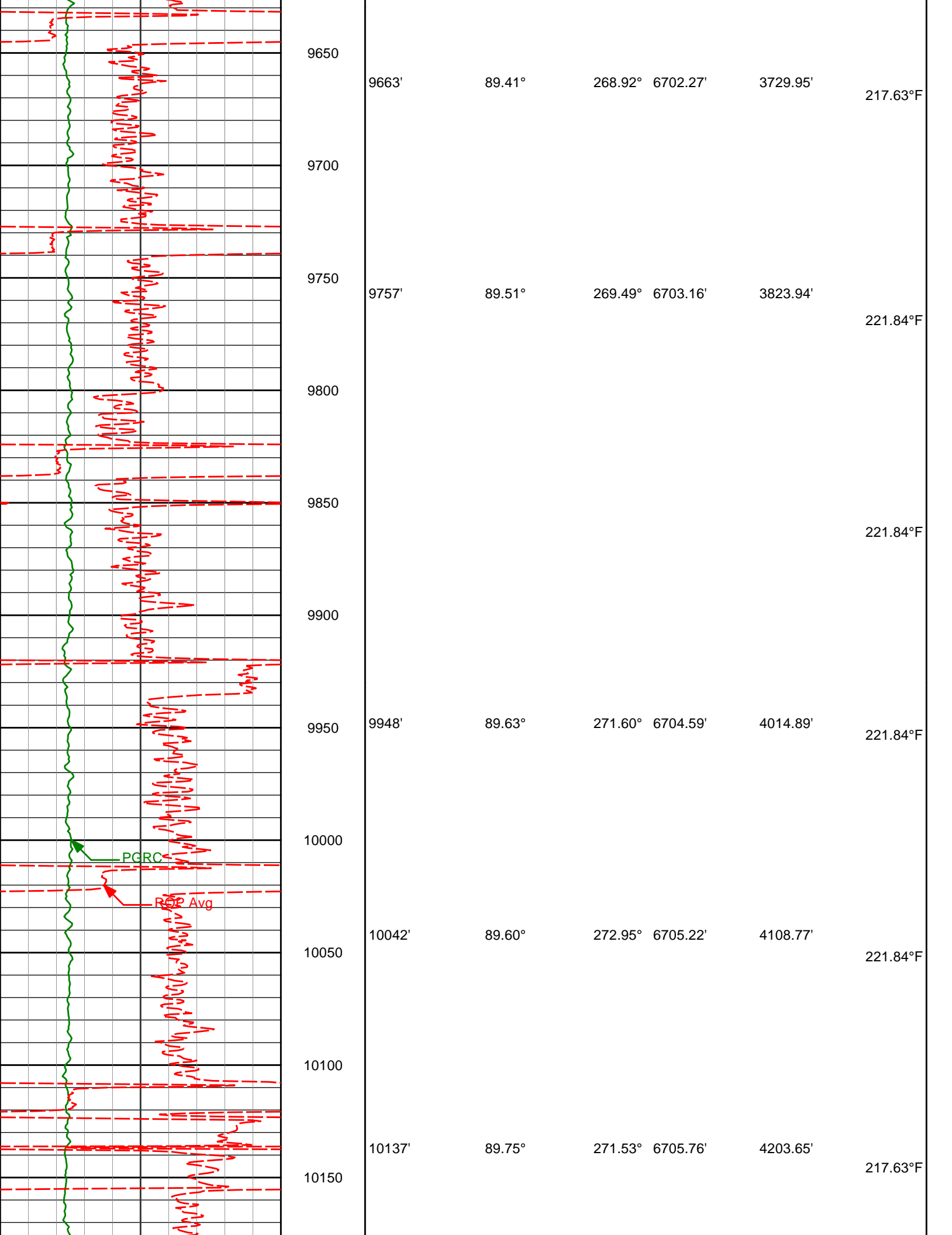
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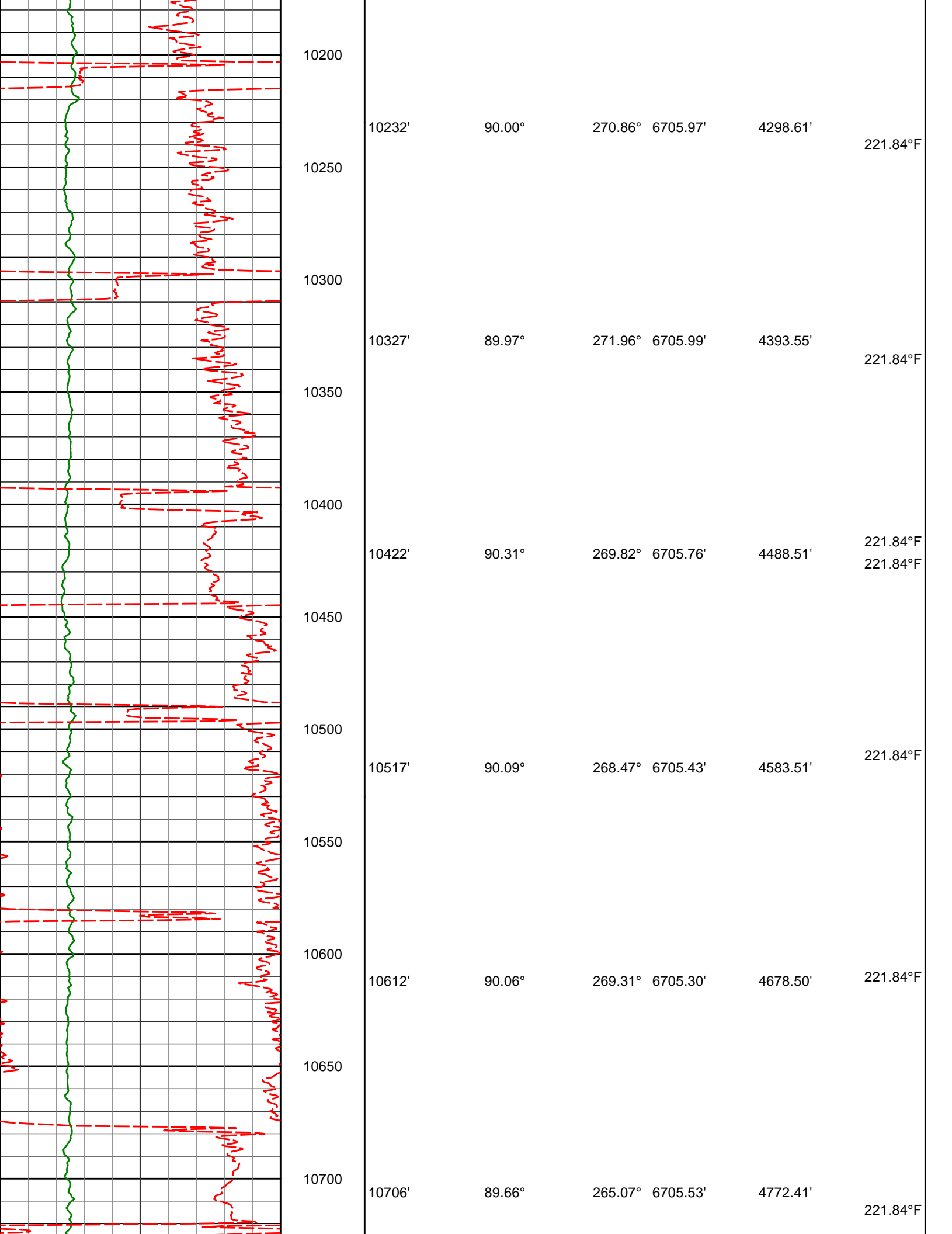
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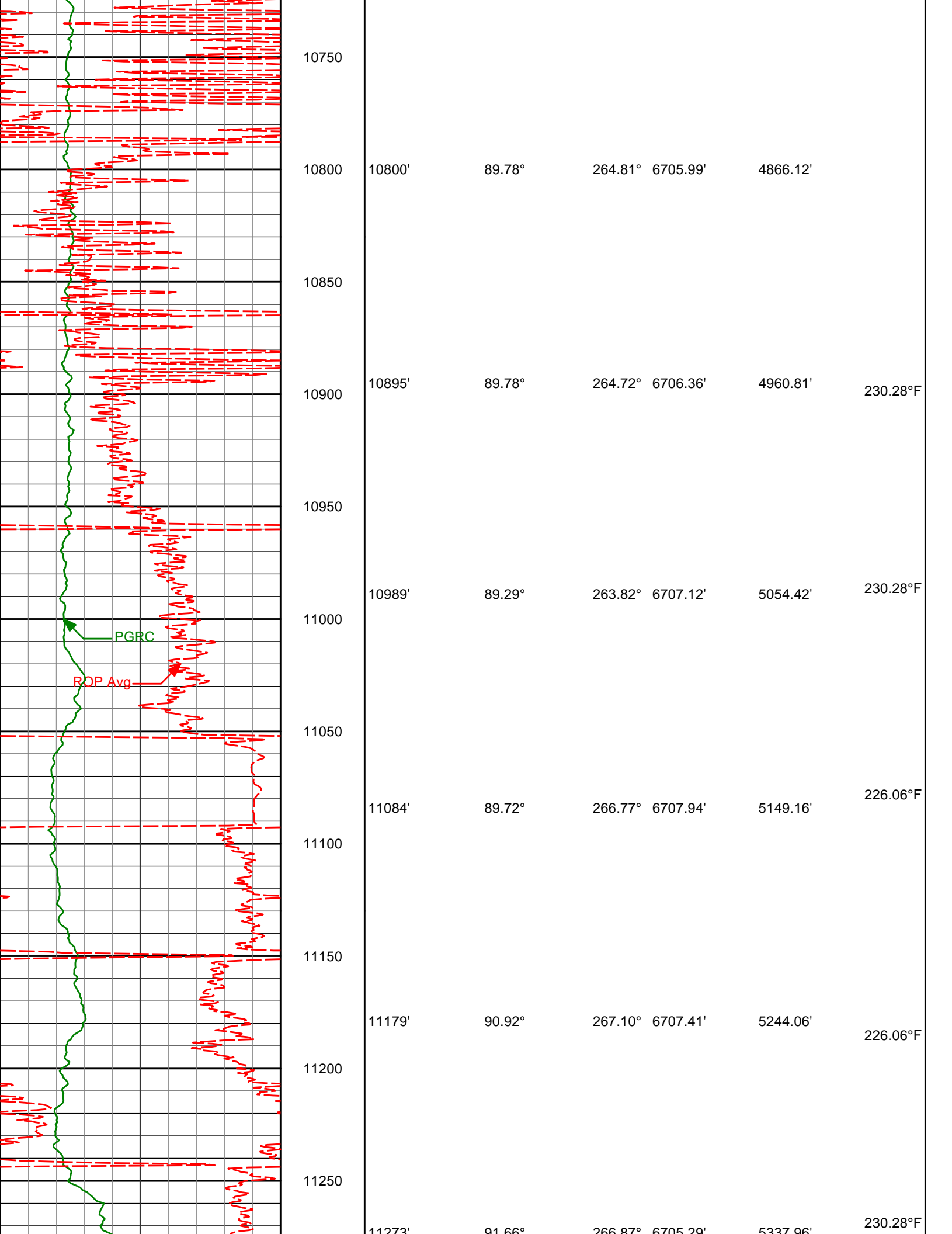
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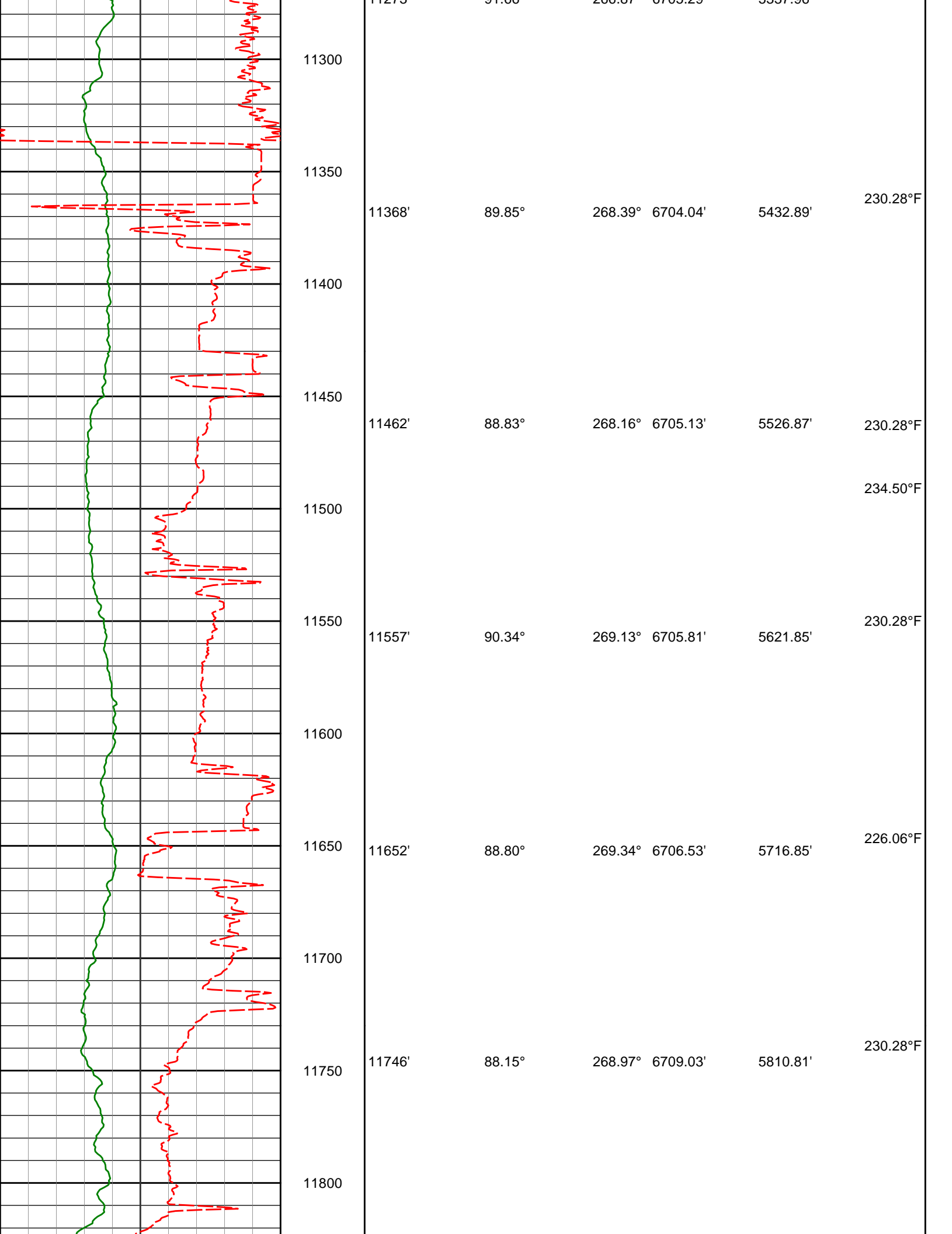
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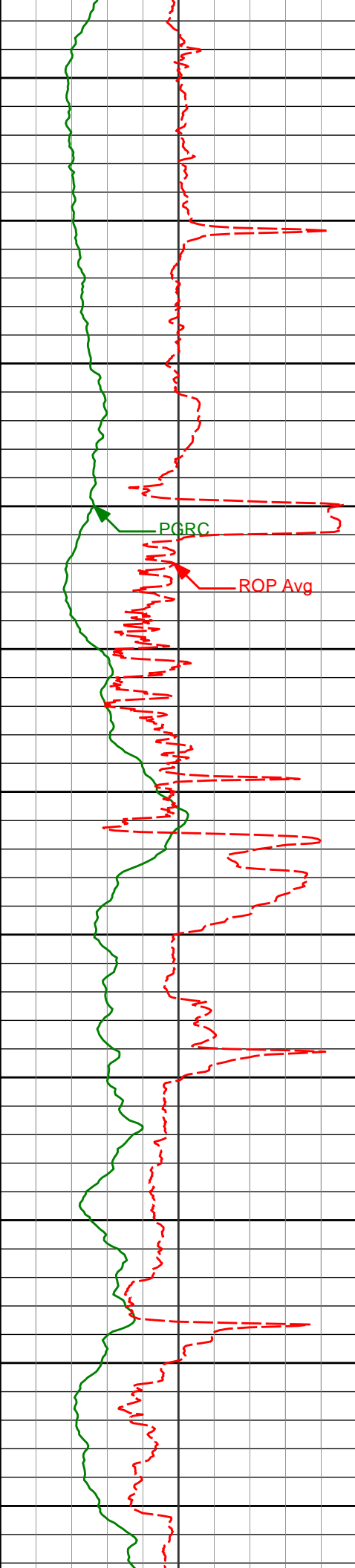
9093'	92.28°	267.87°	6706.90'	3160.07'	213.41°F
9188'	91.29°	268.95°	6703.94'	3255.01'	213.41°F
9284'	91.11°	268.29°	6701.93'	3350.97'	213.41°F
9378'	90.28°	269.25°	6700.79'	3444.96'	226.06°F 213.41°F
9473'	89.66°	269.12°	6700.83'	3539.96'	213.41°F
9568'	89.60°	269.27°	6701.45'	3634.96'	217.63°F



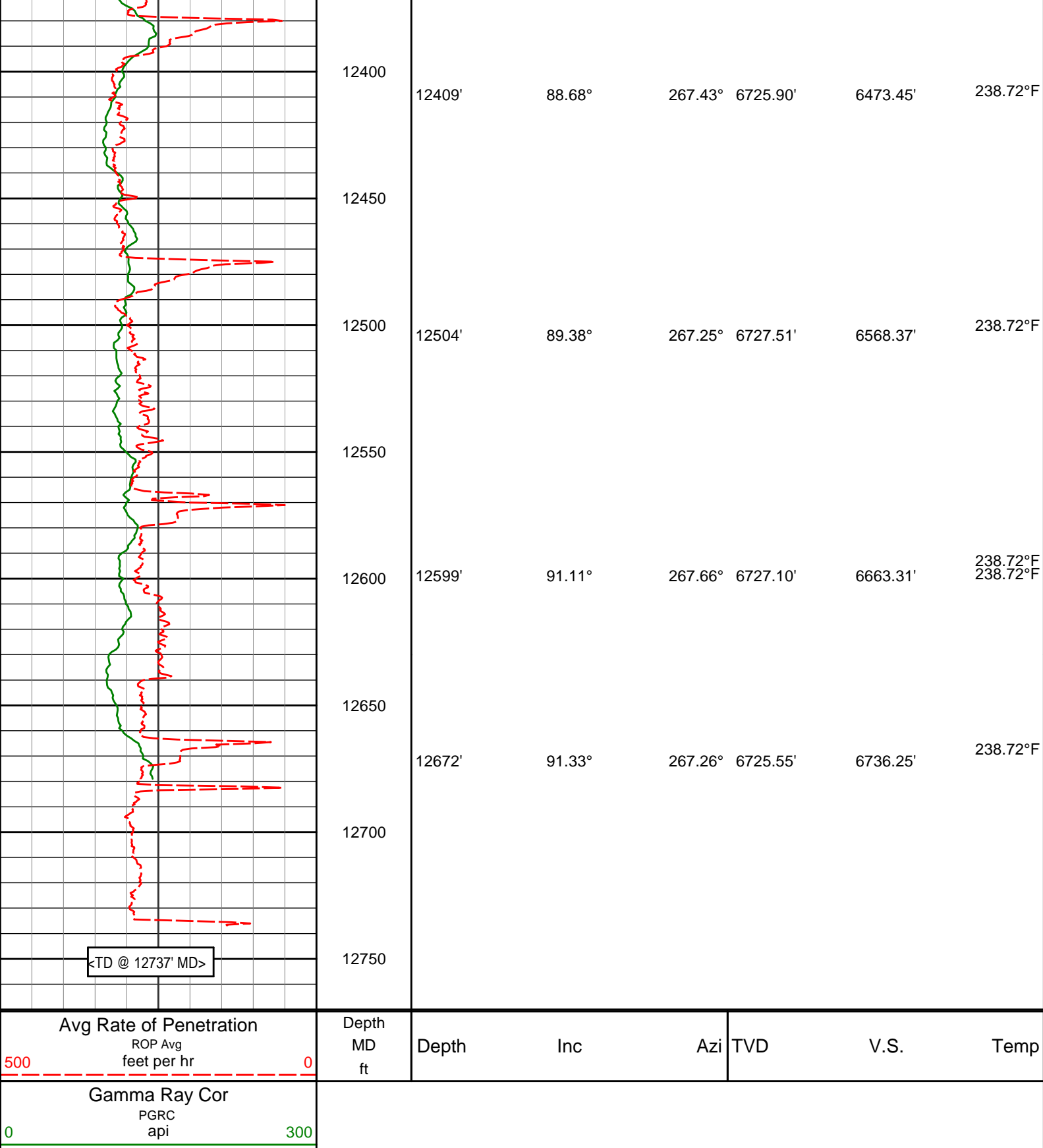






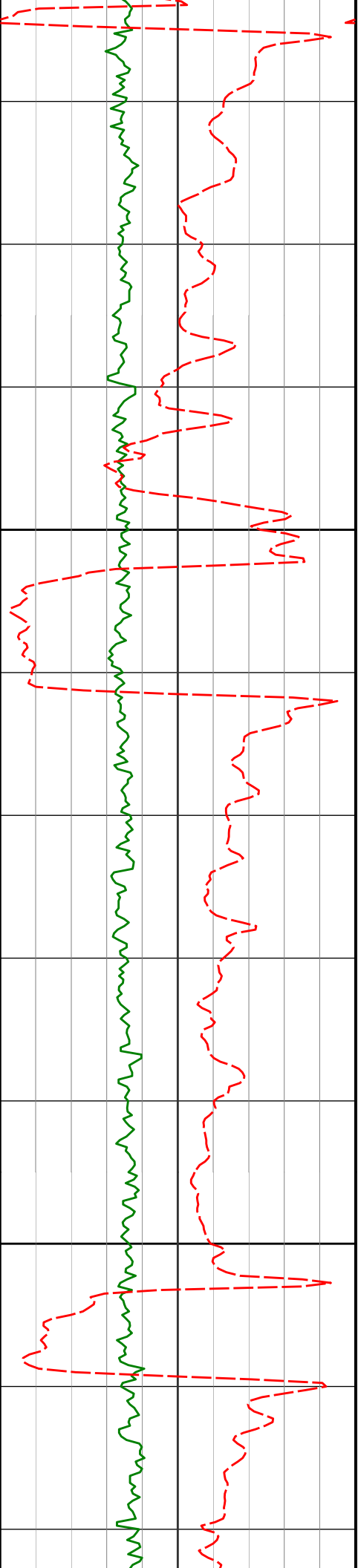


11850	11841'	88.52°	268.79°	6711.79'	5905.77'	230.28°F
11900						
11950	11936'	89.48°	268.55°	6713.45'	6000.74'	234.50°F
12000						
12030'	12030'	88.37°	268.52°	6715.21'	6094.71'	234.50°F
12050						
12100						
12125'	12125'	88.09°	268.19°	6718.14'	6189.65'	238.72°F
12150						
12200						
12220'	12220'	88.12°	268.25°	6721.29'	6284.58'	238.72°F
12250						
12300						
12314'	12314'	88.80°	267.91°	6723.81'	6378.52'	238.72°F
12350						



MD Detail 1:240 Scale

Gamma Ray Cor					TVD	V.S.	Temp
PGRC api		Depth MD ft	Inc	Azi			
<div> <div>0</div> <div>300</div> </div>							
<div> <div>Avg Rate of Penetration</div> <div>ROP Avg</div> <div>feet per hr</div> <div>500</div> <div>0</div> </div>							
		<div> <div><KOP></div> <div>6084' 7.02° 287.39° 6049.40' 491.68' 154.34°F</div> <div>6100</div> <div>6179' 16.43° 279.32° 6142.32' 510.48' 158.56°F</div> <div>6200</div> </div>					



6300

6400

6273'

20.88°

274.00°

6231.36'

540.29'

162.78°F

6368'

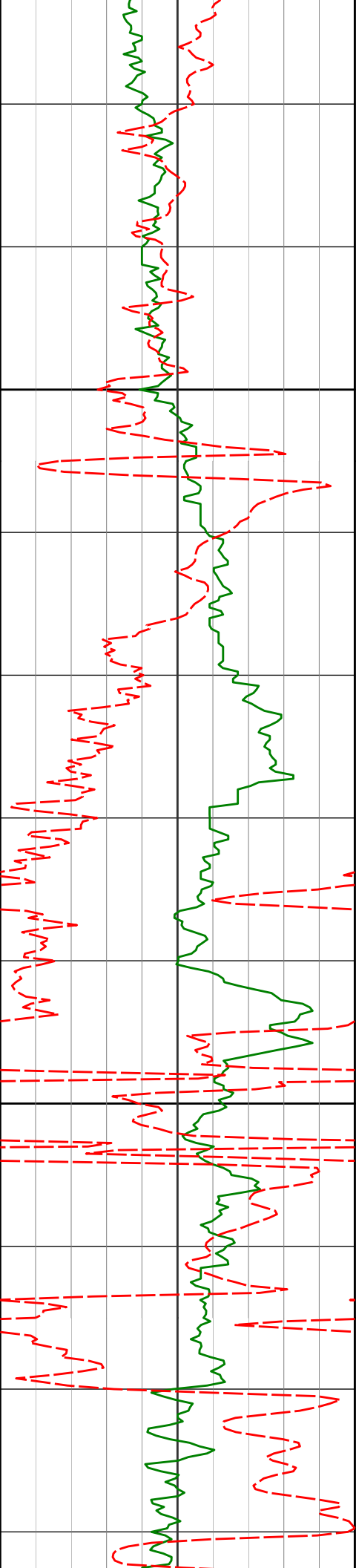
25.84°

271.11°

6318.55'

577.88'

162.78°F



6500

6600

6463'

33.92°

270.88° 6400.85'

625.15'

6558'

45.68°

271.38° 6473.71'

685.83'

6652'

52.78°

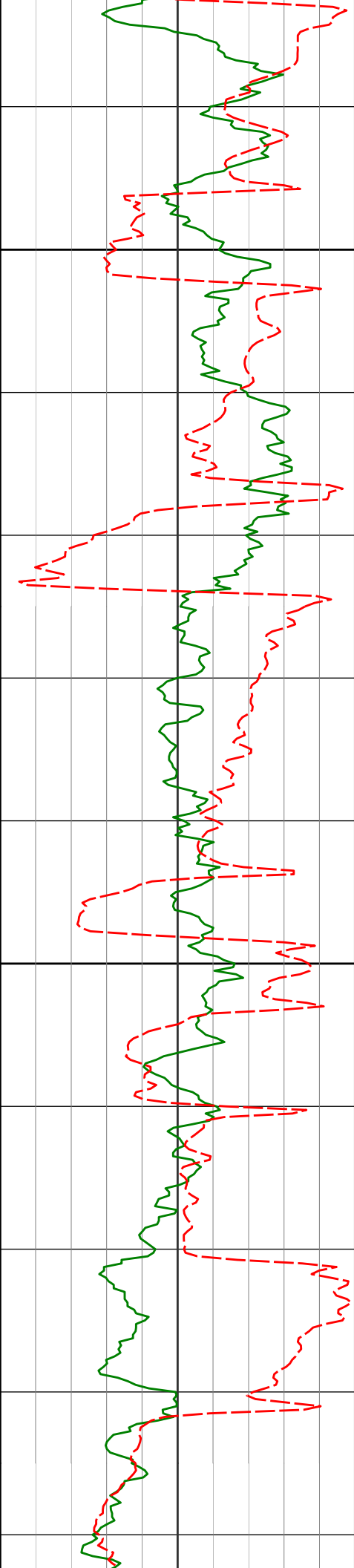
271.38° 6535.06'

756.93'

162.78°F

167.00°F

162.78°F



6700

6800

6747'

6842'

60.60°

66.61°

267.82°

266.04°

6587.20'

6629.42'

836.24'

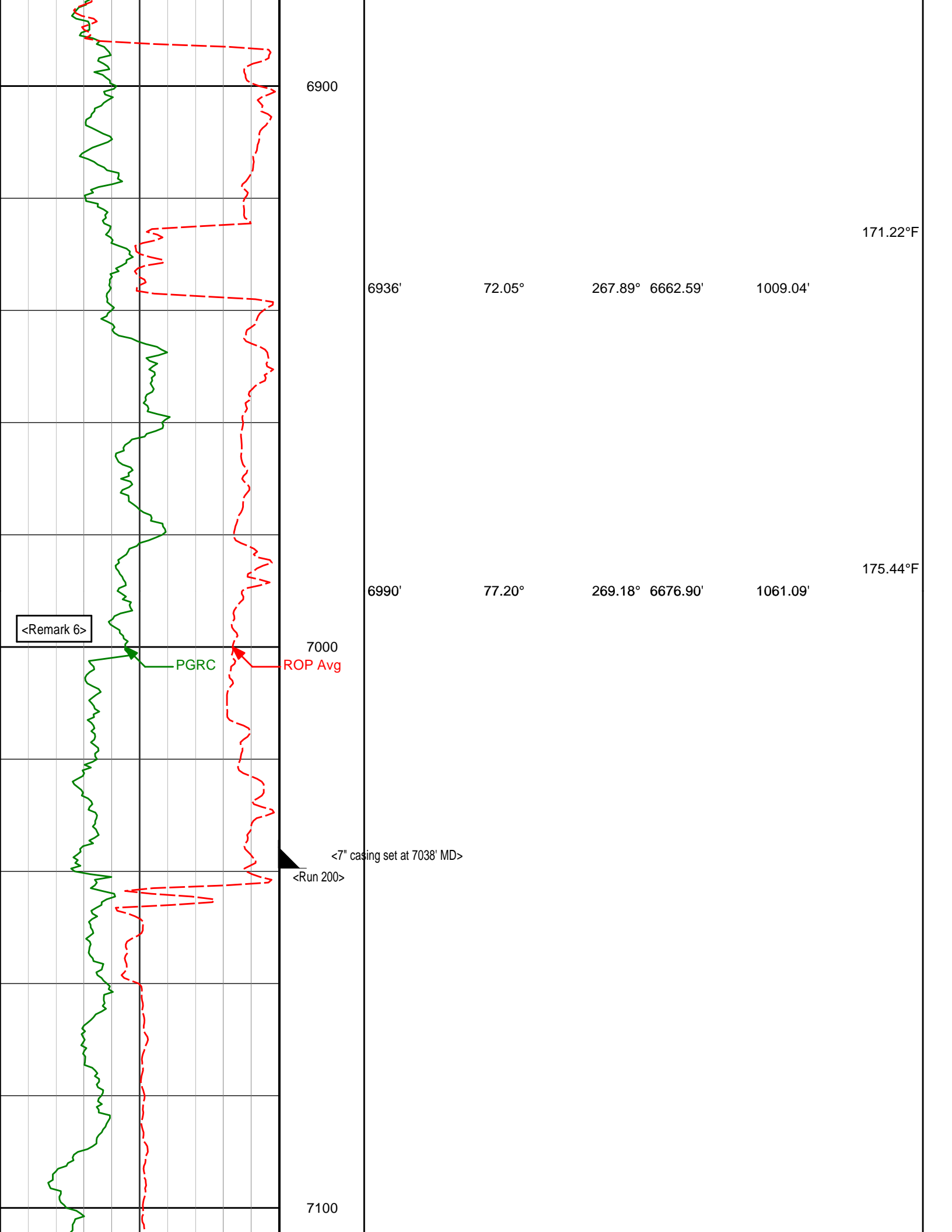
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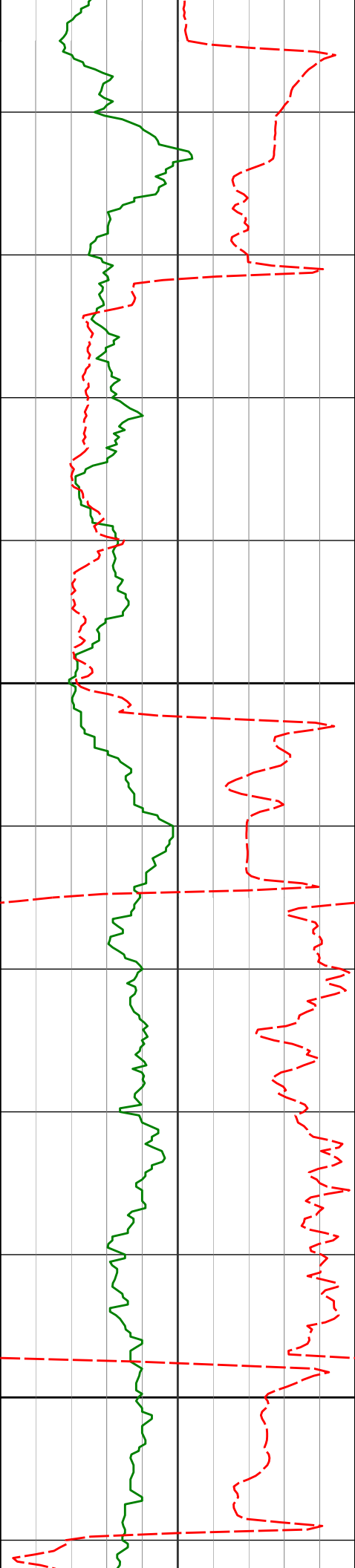
167.00°F

167.00°F

167.00°F
167.00°F
167.00°F

167.00°F





7200

7300

7139'

7231'

7323'

85.06°

87.84°

88.77°

270.86°

271.01°

269.14°

6699.86'

6705.56'

6708.28'

1208.18'

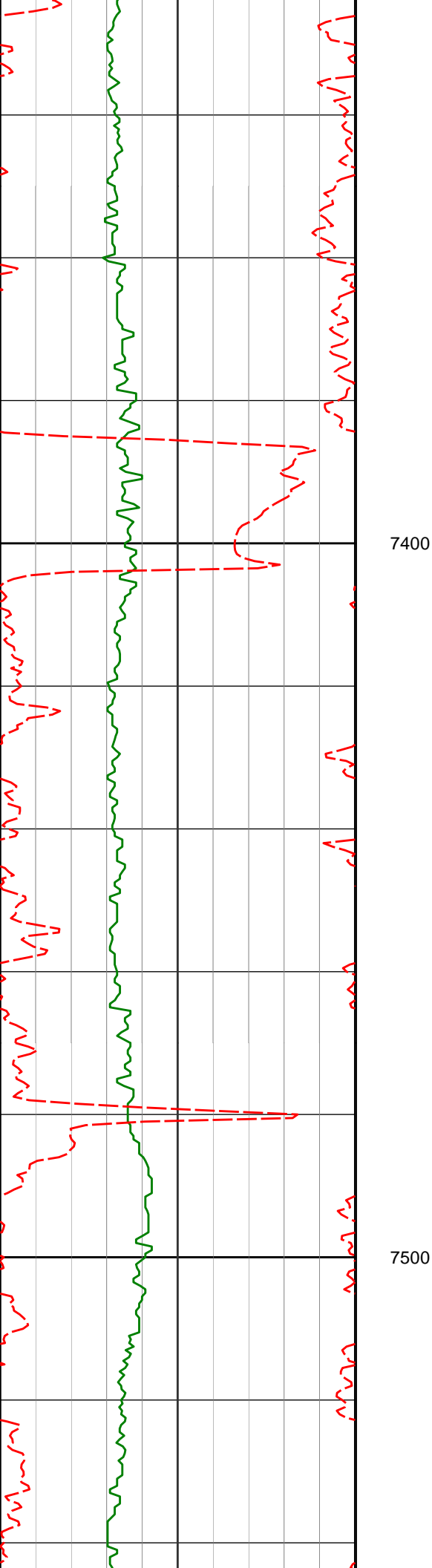
1299.96'

1391.91'

162.78°F

162.78°F

167.00°F



7415'

90.99°

268.41° 6708.47'

1483.89'

171.22°F

7400

7500

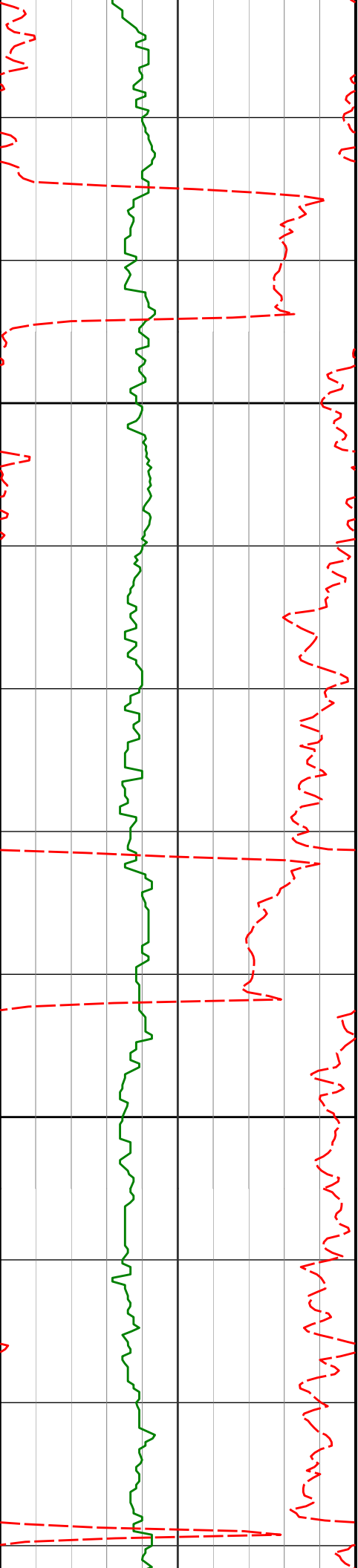
7508'

91.94°

268.22° 6706.09'

1576.85'

175.44°F



7600

7600'

91.33°

267.49° 6703.47'

1668.77'

179.66°F

7700

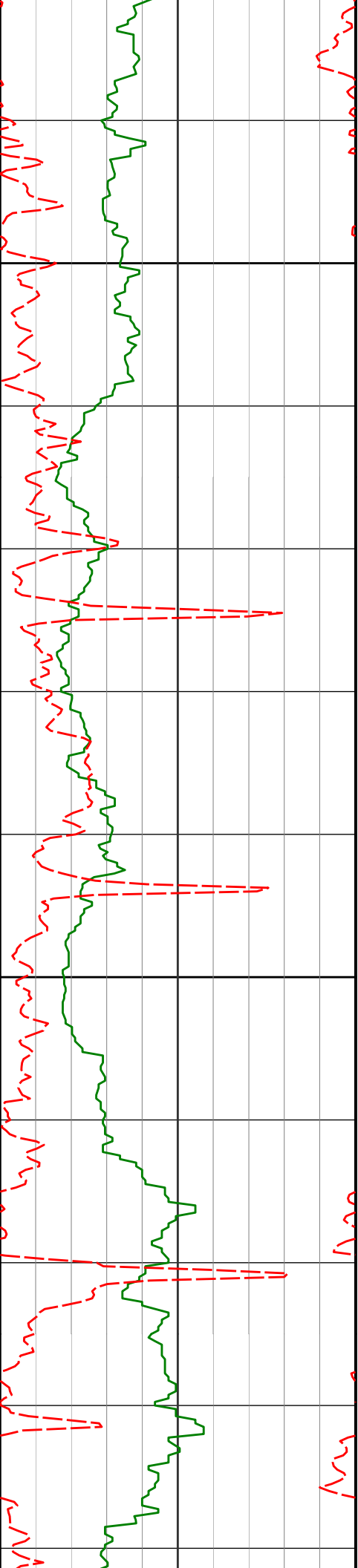
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88.64°

266.48° 6703.49'

1761.68'

183.88°F



7800

7785'

90.74°

267.52°

6703.99'

1853.59'

188.09°F

7877'

89.54°

267.50°

6703.76'

1945.53'

192.31°F

7900

7970'

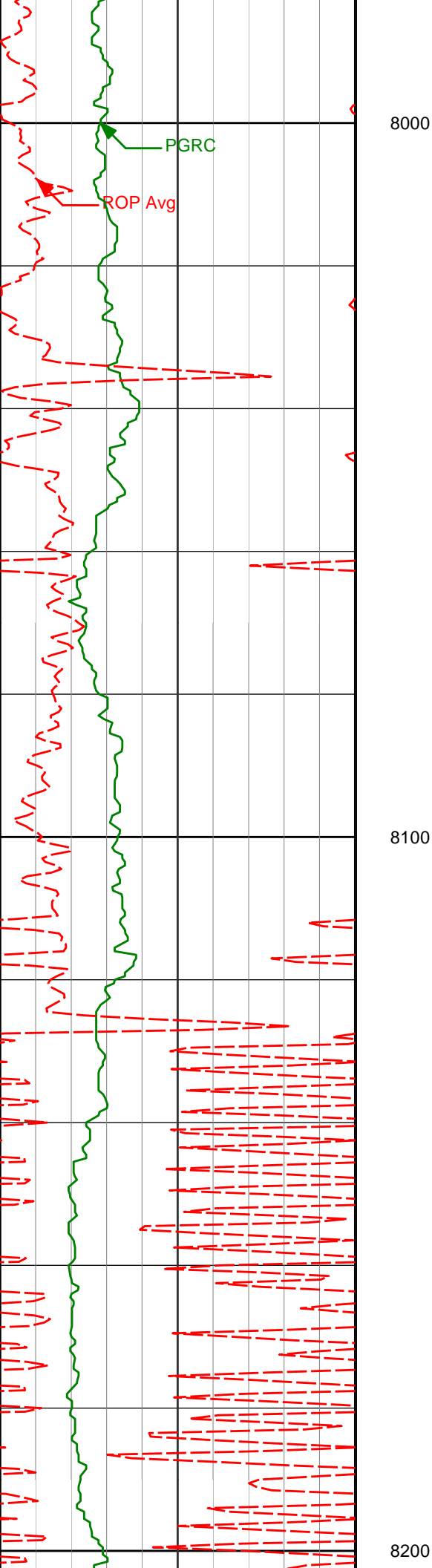
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267.40°

6705.34'

2038.46'

196.53°F



8062'

88.74°

267.66° 6707.54'

2130.39'

196.53°F

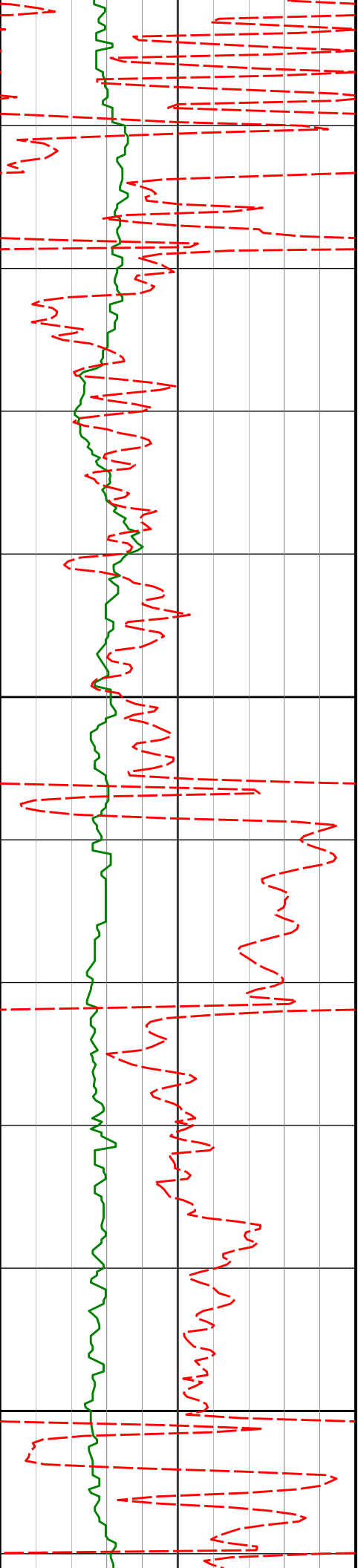
8154'

89.51°

267.81° 6708.94'

2222.33'

200.75°F



8300

8400

8246'

92.77°

269.19° 6707.11'

2314.29'

8337'

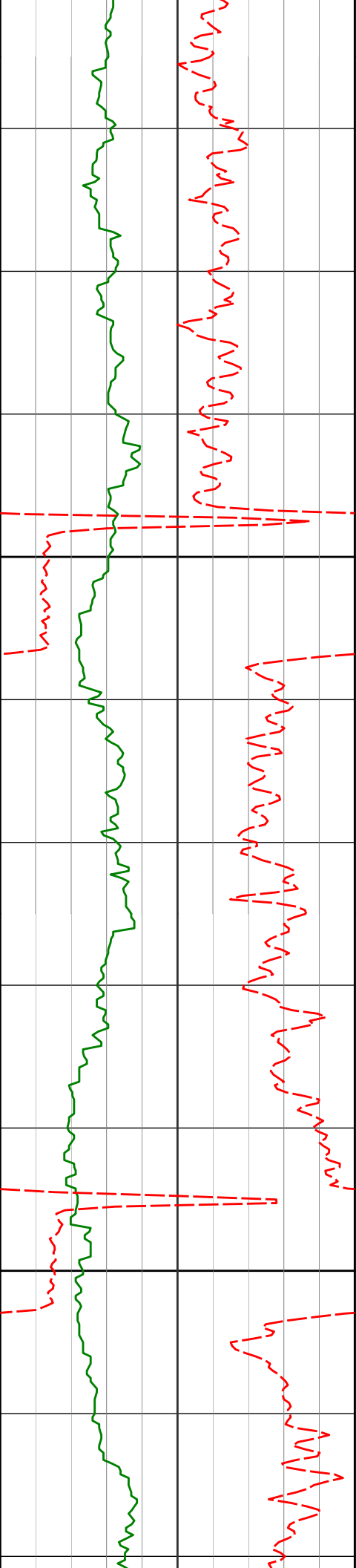
91.29°

268.06° 6703.89'

2405.22'

200.75°F

200.75°F



8500

8600

8430'

88.12°

266.37° 6704.37'

2498.13'

200.75°F

8525'

87.63°

265.71° 6707.89'

2592.90'

204.97°F

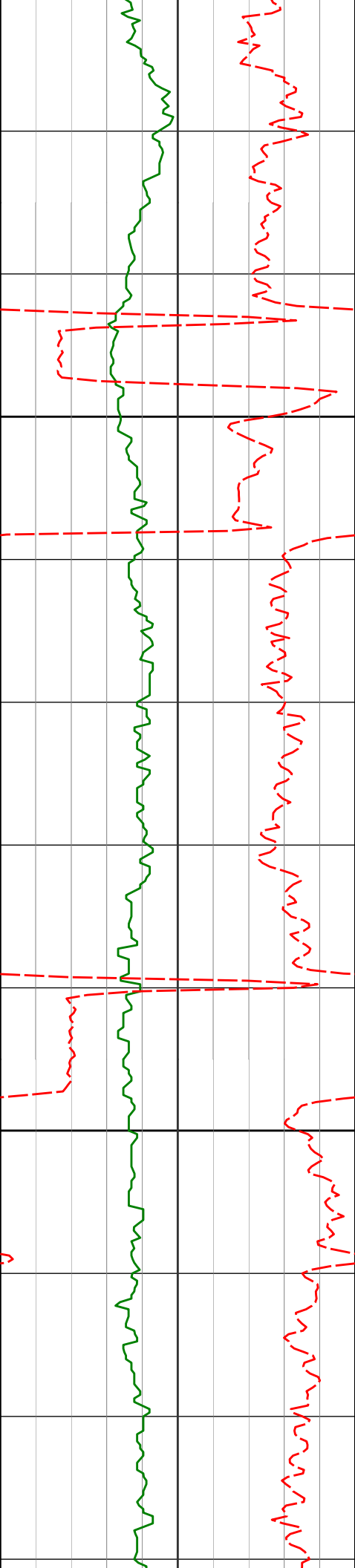
8620'

88.55°

264.91° 6711.06'

2687.60'

209.19°F



8700

8714'

88.86°

266.70° 6713.18'

2781.39'

209.19°F

8800

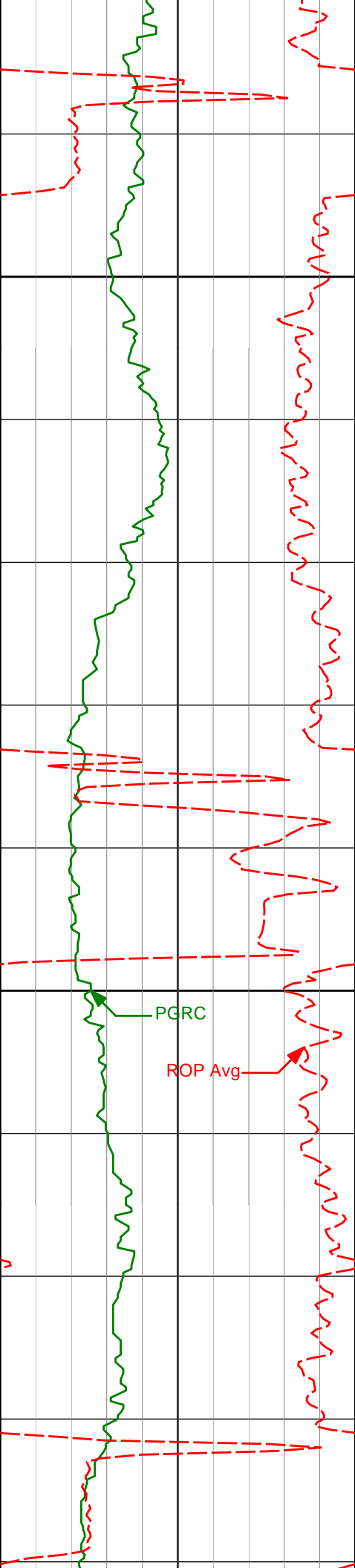
8809'

90.34°

267.55° 6713.85'

2876.30'

209.19°F



8900

8904'

91.82°

267.20° 6712.05'

2971.22'

213.41°F

9000

8999'

91.08°

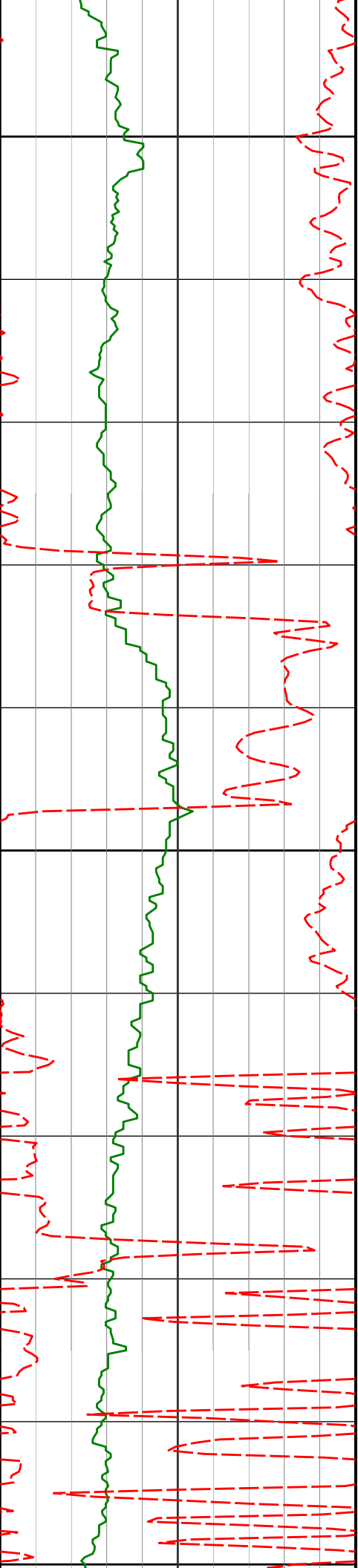
268.04° 6709.65'

3066.14'

209.19°F

PGRC

ROP Avg



9100

9093'

92.28°

267.87°

6706.90'

3160.07'

213.41°F

9200

9188'

91.29°

268.95°

6703.94'

3255.01'

213.41°F

9300

9284'

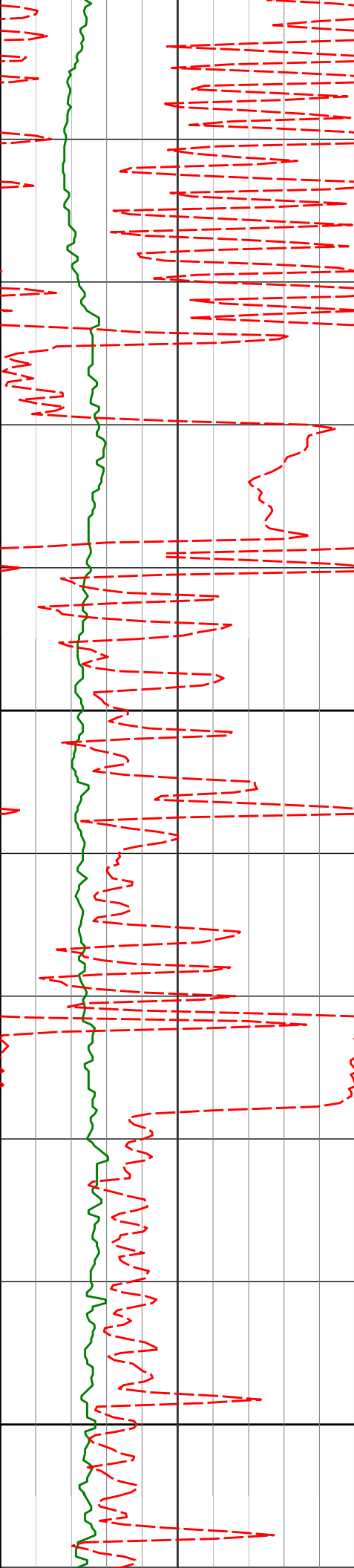
91.11°

268.29°

6701.93'

3350.97'

213.41°F



9300

9400

9500

9378'

90.28°

269.25° 6700.79'

3444.96'

226.06°F

213.41°F

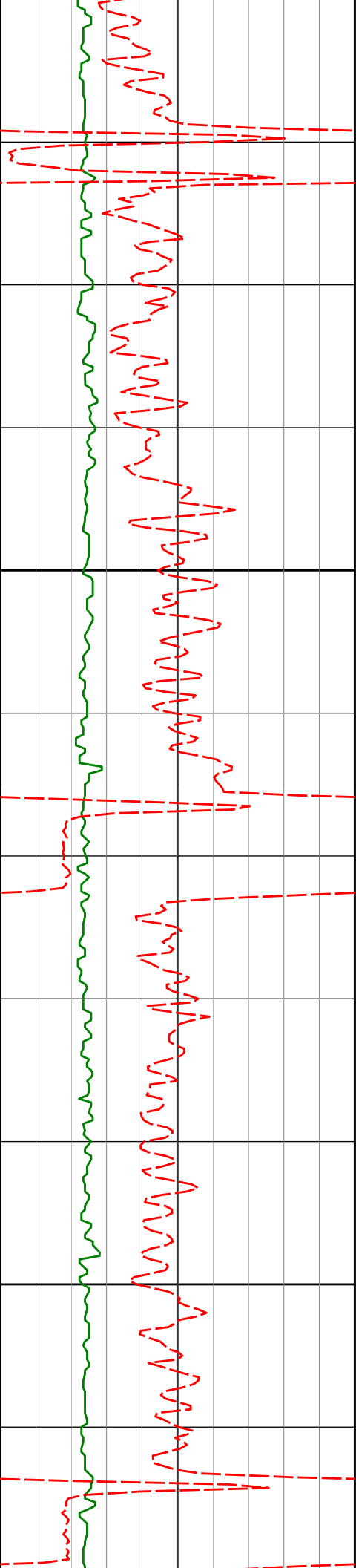
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269.12° 6700.83'

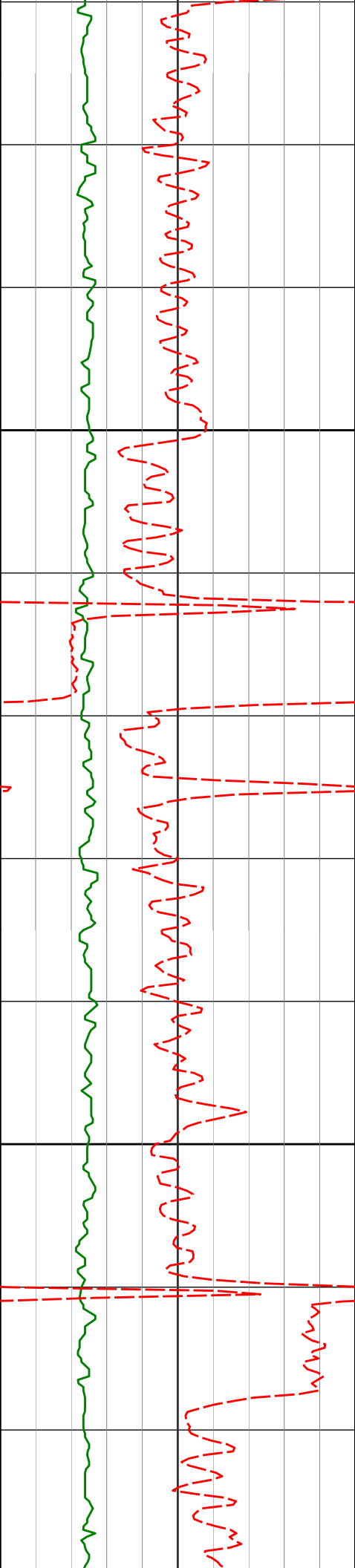
3539.96'

213.41°F



9600

9700



9800

9900

9757'

89.51°

269.49° 6703.16'

3823.94'

221.84°F

221.84°F

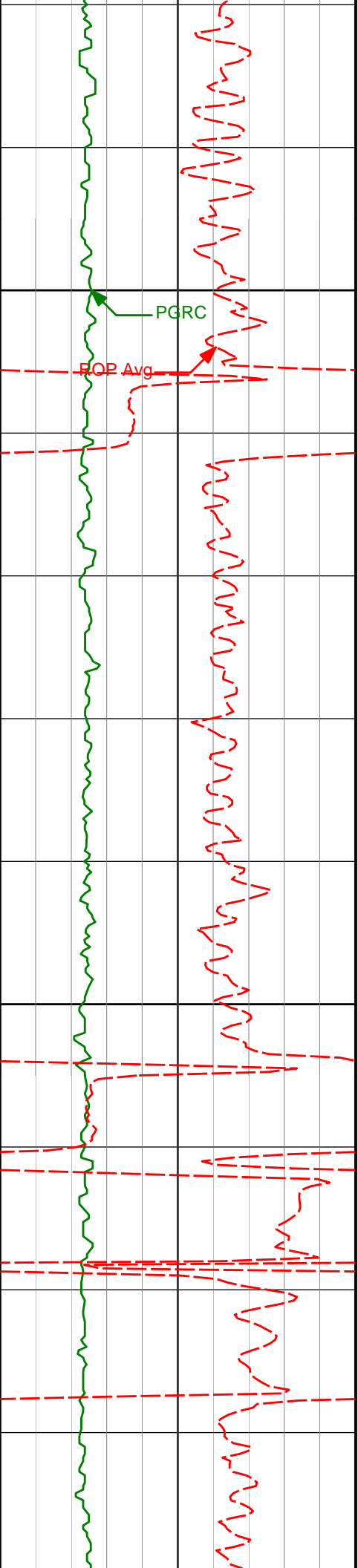
9948'

89.63°

271.60° 6704.59'

4014.89'

221.84°F



10000

10042'

89.60°

272.95° 6705.22'

4108.77'

221.84°F

10100

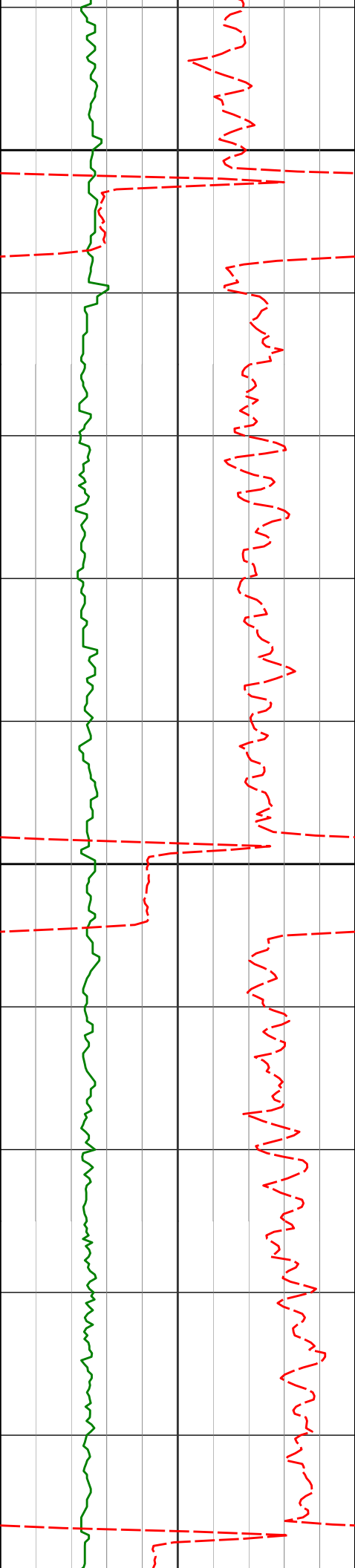
10137'

89.75°

271.53° 6705.76'

4203.65'

217.63°F



10200

10232'

90.00°

270.86° 6705.97'

4298.61'

221.84°F

10300

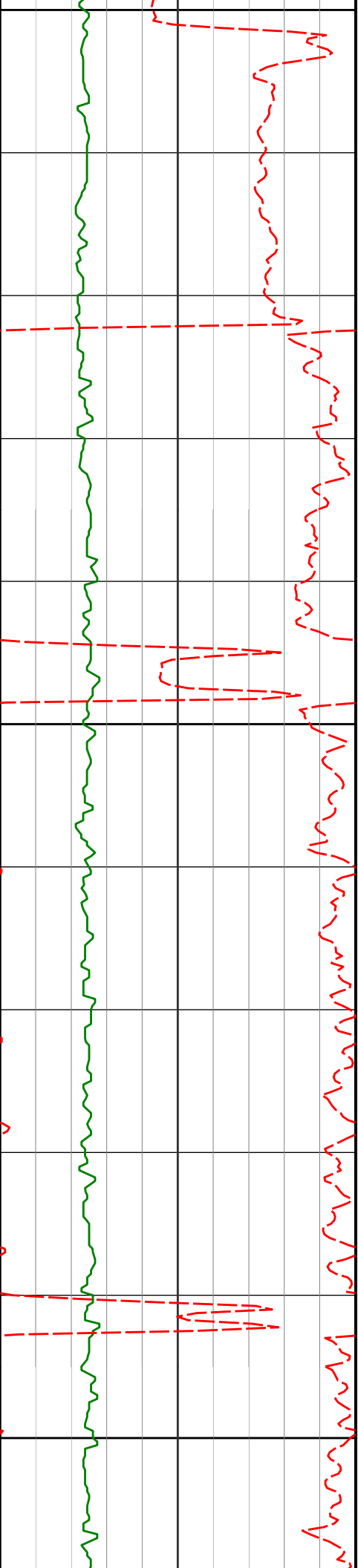
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89.97°

271.96° 6705.99'

4393.55'

221.84°F



10400

10422'

90.31°

269.82° 6705.76'

4488.51'

221.84°F

221.84°F

10500

10517'

90.09°

268.47° 6705.43'

4583.51'

221.84°F

10600

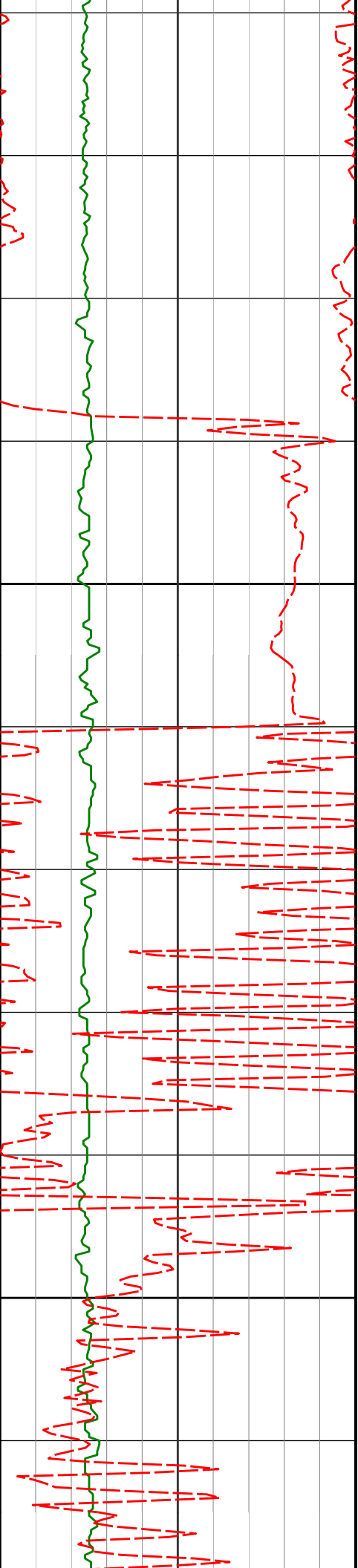
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269.31° 6705.30'

4678.50'

221.84°F



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265.07° 6705.53'

4772.41'

221.84°F

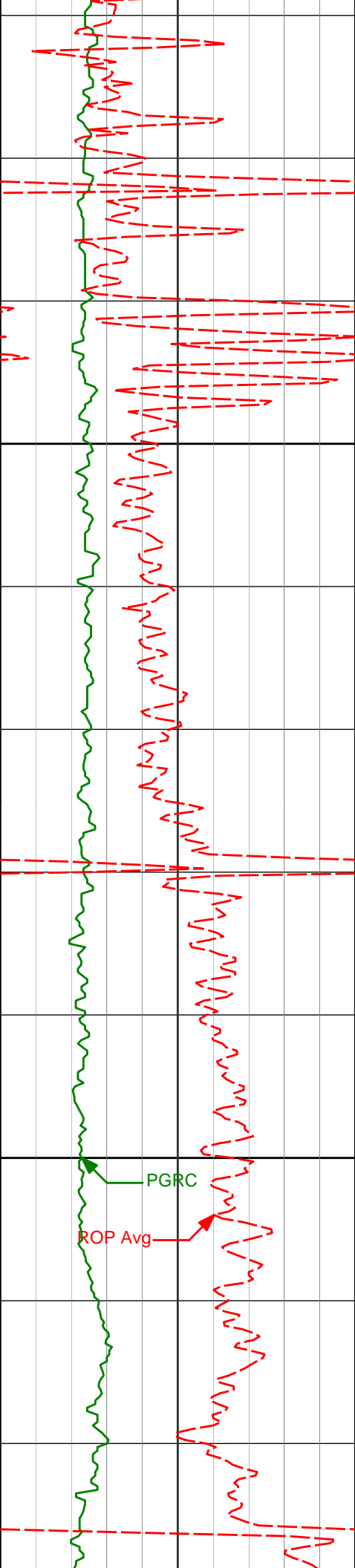
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10800'

89.78°

264.81° 6705.99'

4866.12'



10900

10895'

89.78°

264.72° 6706.36'

4960.81'

230.28°F

11000

10989'

89.29°

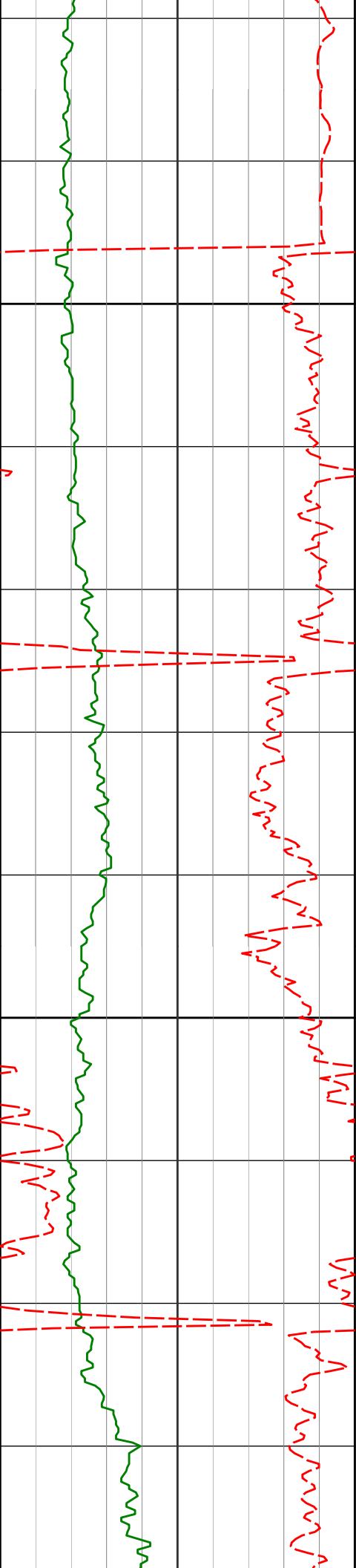
263.82° 6707.12'

5054.42'

230.28°F

PGRC

ROP Avg



11100

11200

11084'

89.72°

266.77° 6707.94'

5149.16'

11179'

90.92°

267.10° 6707.41'

5244.06'

11273'

91.66°

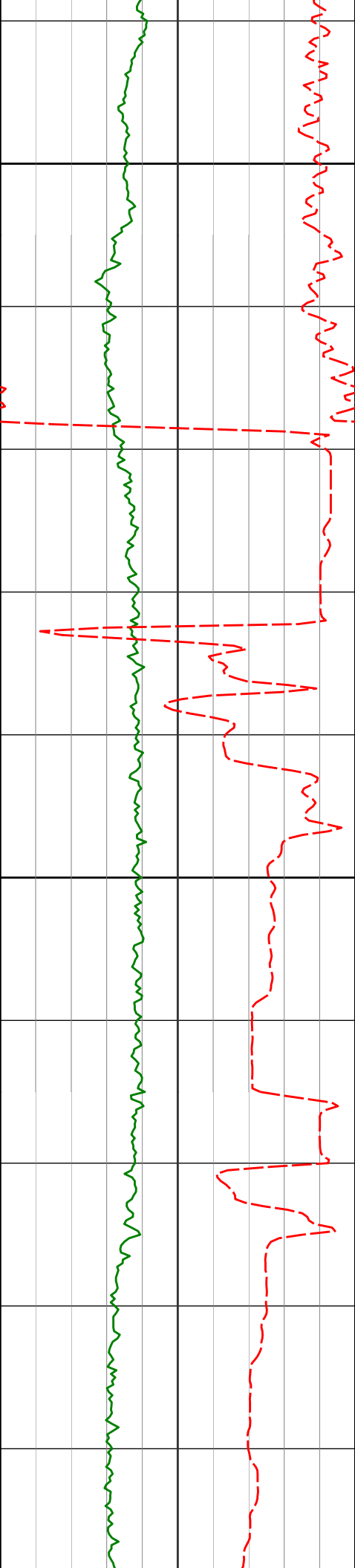
266.87° 6705.29'

5337.96'

226.06°F

226.06°F

230.28°F



11300

11400

11368'

11462'

89.85°

88.83°

268.39° 6704.04'

268.16° 6705.13'

5432.89'

5526.87'

230.28°F

230.28°F

234.50°F



11500

11600

11700

11557'

90.34°

269.13° 6705.81'

5621.85'

11652'

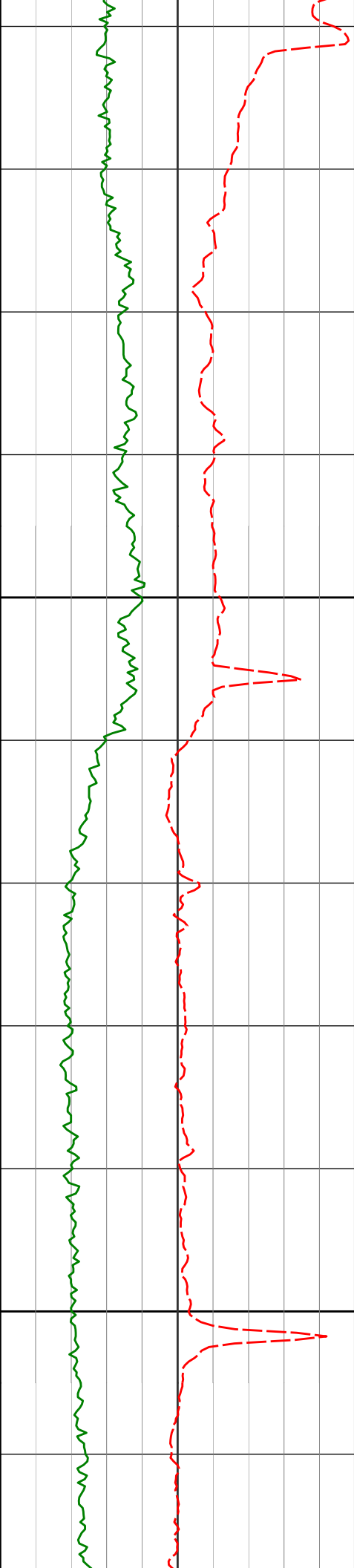
88.80°

269.34° 6706.53'

5716.85'

230.20 °

226.06°F



11800

11900

11746'

88.15°

268.97° 6709.03'

5810.81'

230.28°F

11841'

88.52°

268.79° 6711.79'

5905.77'

230.28°F

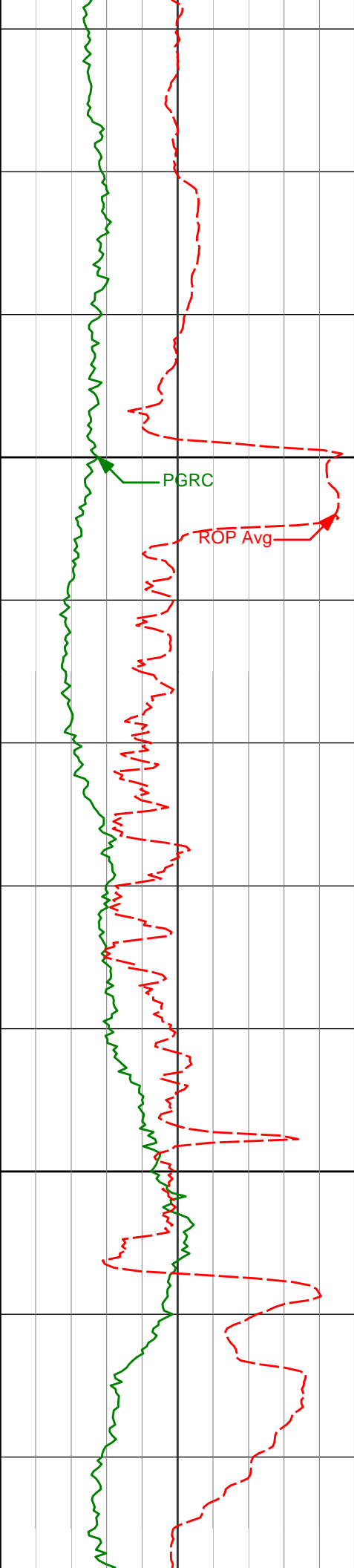
11936'

89.48°

268.55° 6713.45'

6000.74'

234.50°F



12000

PGRC

ROP Avg

12100

12030'

88.37°

268.52° 6715.21'

6094.71'

234.50°F

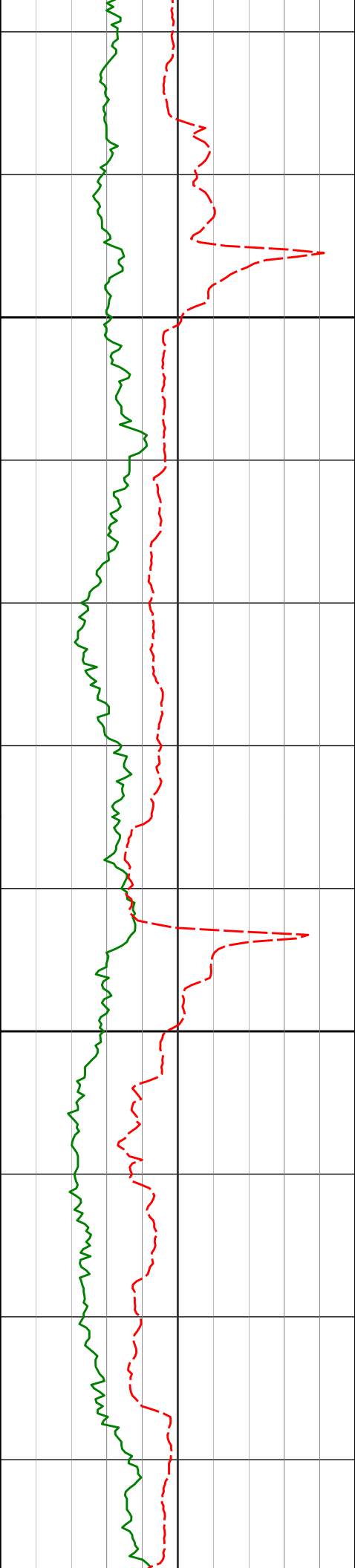
12125'

88.09°

268.19° 6718.14'

6189.65'

238.72°F



12200

12300

12220'

12314'

88.12°

88.80°

268.25° 6721.29'

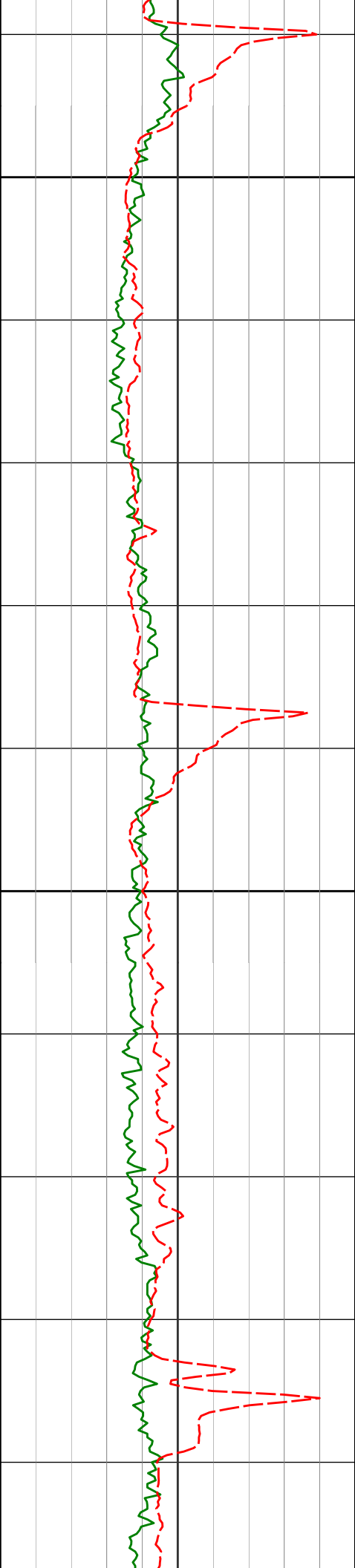
267.91° 6723.81'

6284.58'

6378.52'

238.72°F

238.72°F



12400

12409'

88.68°

267.43° 6725.90'

6473.45'

238.72°F

12500

12504'

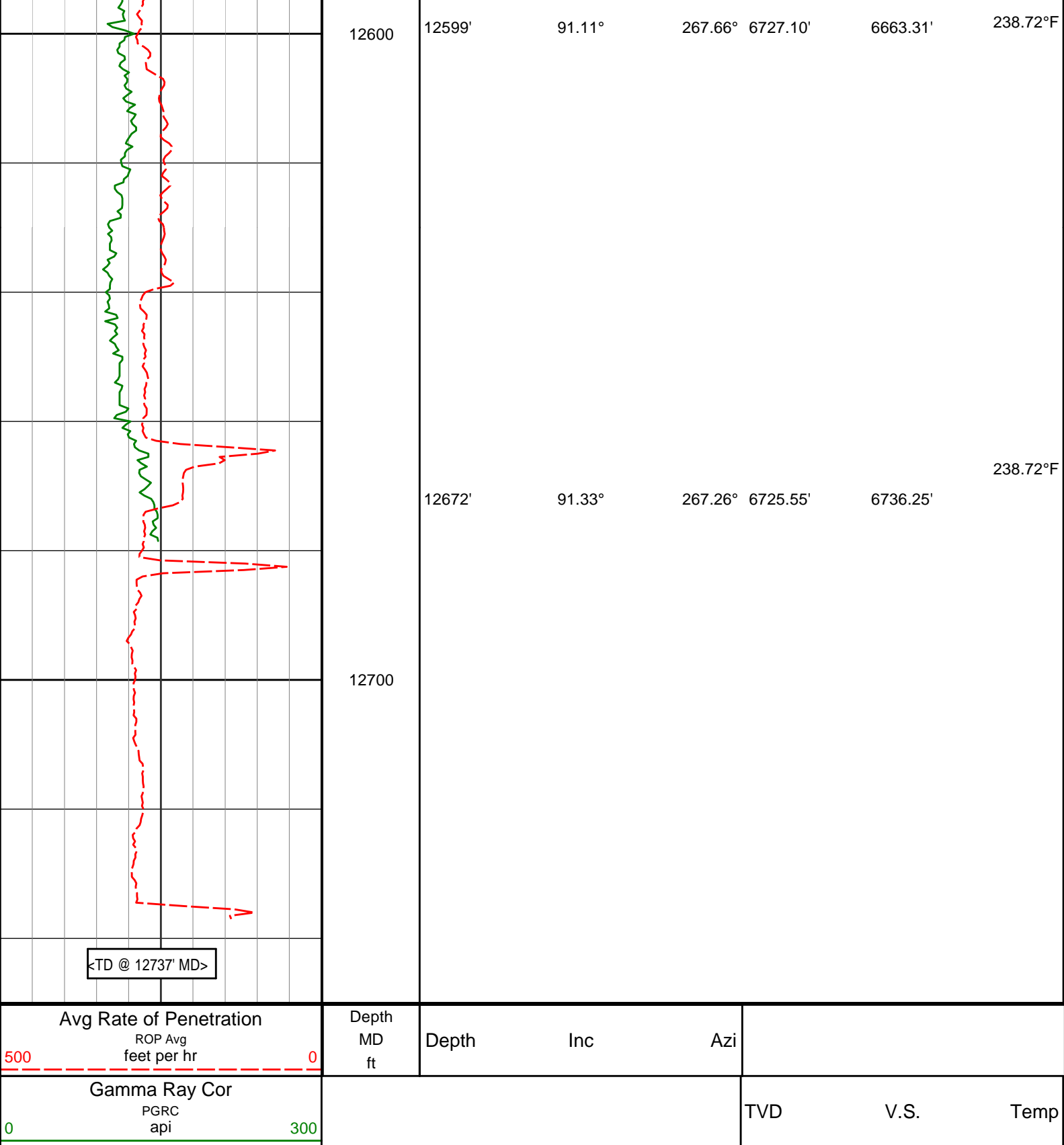
89.38°

267.25° 6727.51'

6568.37'

238.72°F

238.72°F



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Colt A13-628
Wattenberg
Weld Colorado
USA
CA-XX-0902118376

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
380.00	0.40	288.93	380.00	0.43 N	1.25 W	1.25	0.11
650.00	0.20	202.53	649.99	0.30 N	2.33 W	2.32	0.16
925.00	0.60	236.83	924.99	0.93 S	3.72 W	3.73	0.16
1202.00	0.44	29.43	1201.98	0.80 S	4.41 W	4.42	0.37
1295.00	3.47	294.49	1294.93	0.68 N	6.79 W	6.79	3.80
1387.00	5.28	282.73	1386.66	2.77 N	13.46 W	13.43	2.19
1572.00	6.83	273.87	1570.62	5.39 N	32.74 W	32.68	0.98
1665.00	8.46	278.68	1662.79	6.79 N	45.02 W	44.95	1.88
1849.00	9.10	279.25	1844.64	11.17 N	72.76 W	72.65	0.35
1941.00	8.48	278.87	1935.55	13.39 N	86.64 W	86.51	0.68
2219.00	6.90	272.95	2211.05	17.41 N	123.58 W	123.40	0.64
2311.00	9.57	274.88	2302.09	18.34 N	136.72 W	136.53	2.92
2403.00	10.36	286.16	2392.71	21.30 N	152.28 W	152.06	2.28
2496.00	9.94	283.06	2484.26	25.44 N	168.13 W	167.87	0.74
2588.00	9.50	279.44	2574.94	28.48 N	183.36 W	183.07	0.82
2680.00	8.94	277.51	2665.75	30.66 N	197.94 W	197.62	0.70
2772.00	8.51	277.35	2756.69	32.46 N	211.77 W	211.44	0.47
2863.00	9.87	284.09	2846.52	35.22 N	226.02 W	225.66	1.90
2956.00	9.23	282.81	2938.23	38.82 N	241.02 W	240.62	0.73
3051.00	8.85	282.21	3032.05	42.05 N	255.59 W	255.16	0.41
3240.00	7.00	277.62	3219.24	46.65 N	281.22 W	280.74	1.03
3335.00	8.12	280.21	3313.41	48.61 N	293.56 W	293.06	1.23
3430.00	7.00	274.14	3407.58	50.22 N	305.94 W	305.42	1.45
3525.00	8.74	276.98	3501.69	51.51 N	318.88 W	318.35	1.88
3620.00	8.88	276.45	3595.57	53.22 N	333.33 W	332.78	0.17
3810.00	9.14	285.70	3783.23	58.95 N	362.43 W	361.82	0.77
3905.00	9.56	285.51	3876.97	63.10 N	377.29 W	376.65	0.44
3999.00	8.81	283.26	3969.76	66.84 N	391.82 W	391.14	0.88
4094.00	8.28	281.37	4063.71	69.85 N	405.61 W	404.90	0.63
4190.00	7.67	278.86	4158.78	72.20 N	418.72 W	417.98	0.73
4284.00	6.54	279.44	4252.06	74.05 N	430.20 W	429.44	1.20
4379.00	5.84	278.10	4346.50	75.62 N	440.32 W	439.54	0.75
4474.00	5.54	293.78	4441.04	78.15 N	449.30 W	448.50	1.66
4569.00	4.94	292.70	4535.64	81.57 N	457.27 W	456.44	0.64
4664.00	4.00	300.98	4630.35	84.86 N	463.88 W	463.02	1.20
4759.00	3.93	300.48	4725.13	88.21 N	469.53 W	468.63	0.08
4854.00	4.04	298.24	4819.90	91.45 N	475.28 W	474.35	0.20
4949.00	1.55	231.76	4914.79	92.24 N	479.24 W	478.30	3.90
5044.00	0.22	227.00	5009.78	91.32 N	480.39 W	479.45	1.40
5233.00	0.65	243.29	5198.77	90.59 N	481.61 W	480.68	0.23
5327.00	0.18	253.15	5292.77	90.31 N	482.23 W	481.30	0.50
5516.00	0.81	319.94	5481.76	91.24 N	483.37 W	482.44	0.40
5610.00	0.82	339.01	5575.75	92.38 N	484.04 W	483.10	0.29
5705.00	0.83	324.66	5670.75	93.57 N	484.68 W	483.73	0.22
5800.00	0.87	343.00	5765.73	94.83 N	485.29 W	484.32	0.29
5894.00	0.93	334.31	5859.72	96.20 N	485.83 W	484.85	0.16
5989.00	1.94	341.83	5954.69	98.42 N	486.66 W	485.66	1.08
6084.00	7.02	287.39	6049.40	101.68 N	492.71 W	491.68	6.42
6179.00	16.43	279.32	6142.32	105.60 N	511.55 W	510.48	10.03
6273.00	20.88	274.00	6231.36	108.93 N	541.40 W	540.29	5.06
6368.00	25.84	271.11	6318.55	110.51 N	579.01 W	577.88	5.36
6463.00	33.92	270.88	6400.85	111.32 N	626.29 W	625.15	8.51
6558.00	45.68	271.38	6473.71	112.55 N	686.98 W	685.83	12.38
6652.00	52.78	271.38	6535.06	114.26 N	758.11 W	756.93	7.55
6747.00	60.60	267.82	6587.20	113.60 N	837.41 W	836.24	8.81
6842.00	66.61	266.04	6629.42	109.01 N	922.34 W	921.21	6.54
6936.00	72.05	267.89	6662.59	104.38 N	1010.13 W	1009.04	6.07
6990.00	77.20	269.18	6676.90	103.06 N	1062.16 W	1061.09	9.81
7139.00	85.06	270.86	6699.86	103.13 N	1209.26 W	1208.18	5.39
7231.00	87.84	271.01	6705.56	104.63 N	1301.06 W	1299.96	3.03
7323.00	88.77	269.14	6708.28	104.75 N	1393.02 W	1391.91	2.27
7415.00	90.99	268.41	6708.47	102.78 N	1484.99 W	1483.89	2.54
7508.00	91.94	268.22	6706.09	100.05 N	1577.92 W	1576.85	1.04
7600.00	91.33	267.49	6703.47	96.61 N	1669.82 W	1668.77	1.03
7693.00	88.64	266.48	6703.49	91.72 N	1762.68 W	1761.68	3.09
7785.00	90.74	267.52	6703.99	86.90 N	1854.54 W	1853.59	2.55

7877.00	89.54	267.50	6703.76	82.90 N	1946.45 W	1945.53	1.30
7970.00	88.52	267.40	6705.34	78.77 N	2039.35 W	2038.46	1.10
8062.00	88.74	267.66	6707.54	74.80 N	2131.24 W	2130.39	0.37
8154.00	89.51	267.81	6708.94	71.17 N	2223.15 W	2222.33	0.85
8246.00	92.77	269.19	6707.11	68.76 N	2315.09 W	2314.29	3.85
8337.00	91.29	268.06	6703.89	66.58 N	2406.00 W	2405.22	2.05
8430.00	88.12	266.37	6704.37	62.06 N	2498.87 W	2498.13	3.86
8525.00	87.63	265.71	6707.89	55.50 N	2593.58 W	2592.90	0.86
8620.00	88.55	264.91	6711.06	47.74 N	2688.21 W	2687.60	1.28
8714.00	88.86	266.70	6713.18	40.87 N	2781.93 W	2781.39	1.93
8809.00	90.34	267.55	6713.85	36.10 N	2876.80 W	2876.30	1.80
8904.00	91.82	267.20	6712.05	31.75 N	2971.69 W	2971.22	1.60
8999.00	91.08	268.04	6709.65	27.81 N	3066.57 W	3066.14	1.18
9093.00	92.28	267.87	6706.90	24.45 N	3160.47 W	3160.07	1.29
9188.00	91.29	268.95	6703.94	21.82 N	3255.38 W	3255.01	1.54
9284.00	91.11	268.29	6701.93	19.51 N	3351.33 W	3350.97	0.71
9378.00	90.28	269.25	6700.79	17.49 N	3445.30 W	3444.96	1.35
9473.00	89.66	269.12	6700.83	16.14 N	3540.29 W	3539.96	0.67
9568.00	89.60	269.27	6701.45	14.80 N	3635.28 W	3634.96	0.17
9663.00	89.41	268.92	6702.27	13.30 N	3730.27 W	3729.95	0.42
9757.00	89.51	269.49	6703.16	12.00 N	3824.25 W	3823.94	0.62
9948.00	89.63	271.60	6704.59	13.82 N	4015.23 W	4014.89	1.11
10042.00	89.60	272.95	6705.22	17.55 N	4109.15 W	4108.77	1.44
10137.00	89.75	271.53	6705.76	21.26 N	4204.07 W	4203.65	1.50
10232.00	90.00	270.86	6705.97	23.24 N	4299.05 W	4298.61	0.75
10327.00	89.97	271.96	6705.99	25.58 N	4394.02 W	4393.55	1.16
10422.00	90.31	269.82	6705.76	27.05 N	4489.00 W	4488.51	2.28
10517.00	90.09	268.47	6705.43	25.64 N	4583.99 W	4583.51	1.44
10612.00	90.06	269.31	6705.30	23.80 N	4678.97 W	4678.50	0.88
10706.00	89.66	265.07	6705.53	19.19 N	4772.84 W	4772.41	4.53
10800.00	89.78	264.81	6705.99	10.90 N	4866.47 W	4866.12	0.30
10895.00	89.78	264.72	6706.36	2.23 N	4961.07 W	4960.81	0.09
10989.00	89.29	263.82	6707.12	7.15 S	5054.60 W	5054.42	1.09
11084.00	89.72	266.77	6707.94	14.94 S	5149.26 W	5149.16	3.14
11179.00	90.92	267.10	6707.41	20.02 S	5244.13 W	5244.06	1.31
11273.00	91.66	266.87	6705.29	24.97 S	5337.97 W	5337.96	0.82
11368.00	89.85	268.39	6704.04	28.89 S	5432.87 W	5432.89	2.49
11462.00	88.83	268.16	6705.13	31.72 S	5526.82 W	5526.87	1.11
11557.00	90.34	269.13	6705.81	33.97 S	5621.79 W	5621.85	1.89
11652.00	88.80	269.34	6706.53	35.24 S	5716.78 W	5716.85	1.64
11746.00	88.15	268.97	6709.03	36.62 S	5810.73 W	5810.81	0.80
11841.00	88.52	268.79	6711.79	38.48 S	5905.67 W	5905.77	0.43
11936.00	89.48	268.55	6713.45	40.69 S	6000.63 W	6000.74	1.04
12030.00	88.37	268.52	6715.21	43.09 S	6094.58 W	6094.71	1.18
12125.00	88.09	268.19	6718.14	45.81 S	6189.50 W	6189.65	0.46
12220.00	88.12	268.25	6721.29	48.76 S	6284.40 W	6284.58	0.07
12314.00	88.80	267.91	6723.81	51.91 S	6378.31 W	6378.52	0.81
12409.00	88.68	267.43	6725.90	55.77 S	6473.21 W	6473.45	0.52
12504.00	89.38	267.25	6727.51	60.18 S	6568.10 W	6568.37	0.76
12599.00	91.11	267.66	6727.10	64.40 S	6663.00 W	6663.31	1.87
12672.00	91.33	267.26	6725.55	67.63 S	6735.91 W	6736.25	0.63
12737.00	91.33	267.26	6724.04	70.74 S	6800.82 W	6801.19	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 269.43 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 12737.00 FEET
IS 6801.19 FEET ALONG 269.40 DEGREES (GRID)**

Surface surveys at 380 ft, 650 ft and 925 ft have had azimuths corrected to grid north, but were not taken by Halliburton.

Last survey is a projection from 12672 ft MD to TD at 12737 ft MD.