

Pressure Cased Gamma (PCGK)

1:240

[illegible]

WELL INFORMATION

MWD Run Number	100	200	300		
Date run completed	13-Oct-14	14-Oct-14	19-Oct-14		
Rig Bit Number	2	3	4		
Bit Size (in)	8.750	8.750	6.125		
Tool Nominal OD (in)	6.750	6.750	4.750		
Log Start Depth (MD, ft)	1,200.00	6,527.00	7,167.00		
Log End Depth (MD, ft)	6,527.00	7,167.00	14,440.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	12-Oct-14 17:30	14-Oct-14 05:15	16-Oct-14 01:19		
Drill/Wipe End Date and Time	13-Oct-14 16:30	14-Oct-14 12:30	19-Oct-14 08:05		
Min Inc (deg) @ Depth (MD, ft)	0.04 @ 1,386.00	25.08 @ 6,566.00	85.77 @ 7,219.00		
Max Inc (deg) @ Depth (MD, ft)	17.60 @ 6,471.00	81.87 @ 7,113.00	93.52 @ 11,064.00		
Bit TFA(in2) / Bit Type	0.77 / PDC	0.86 / PDC	0.98 / PDC		
Flow Rate (gpm)	611.55	582.57	296.50		
Max AV (fpm) / CV (fpm) @ MWD	N/A	N/A	N/A		
Fluid Type	Native/Spud Mud	Native/Spud Mud	Native/Spud Mud		
Density (ppg) / Viscosity (spqt)	9.02 / 33.00	10.20 / 34.00	9.57 / 36.00		
Filtrate CL (ppm)	1,400.00	1,500.00	1,300.00		
pH / API Filtrate (mpm)	9.90 / 11	9.00 / 11	9.50 / 7		
PV (cP) / YP (lbf/ft ²)	7 / 5.00	8 / 7.00	11 / 13.00		
% Solids / % Sand	5.20 / 0.25	8.50 / 0.20	6.20 / 0.25		
% Oil / Oil:Water Ratio	0.00 / N/A	0.00 / N/A	0.00 / 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 Filter Cake Thickness (in)	1.75 @ 1,500.00	1.75 @ 1,500.00	0.75 @ 1,500.00		

Max Tool Temp (degF) / Source	177.64 / PCM	177.64 / PCM	242.28 / PCM		
Rm @ Max Tool Temp (degF)	N/A @ 177.64	N/A @ 177.64	N/A @ 242.28		
Lead MWD Engineer	Paul Sheets	Paul Sheets	Paul Sheets		
Customer Representative	Steve Record	Steve Record	Steve Record		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.93	5.93	5.93		
Sub Serial Number	11404298	11404298	11404298		
Insert Serial Number	11680742	11680742	11680742		
Date and Time Initialized	12-Oct-14 00:50	12-Oct-14 00:50	15-Oct-14 10:48		
Date and Time Read	14-Oct-14 18:32	14-Oct-14 18:39	19-Oct-14 23:30		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	56.50	52.12	55.65		
Software Version	6.21	6.21	6.21		
Sub Serial Number	11404298	11404298	12187589		
Sonde Serial Number	11297515	11297515	11297515		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	78.40	141.12	138.80		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	51.40	47.02	50.55		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	11404298	11404298	12187589		
Insert/Sonde Serial Number	11579787	11579787	11579787		

REMARKS

1. All depths are measured bit depths, referenced to the Driller's pipe tally and are measured from the Drill Floor, unless otherwise specified.

2. No depth corrections have been made for pipe stretch or compression.

3. All data presented is recorded data unless otherwise specified

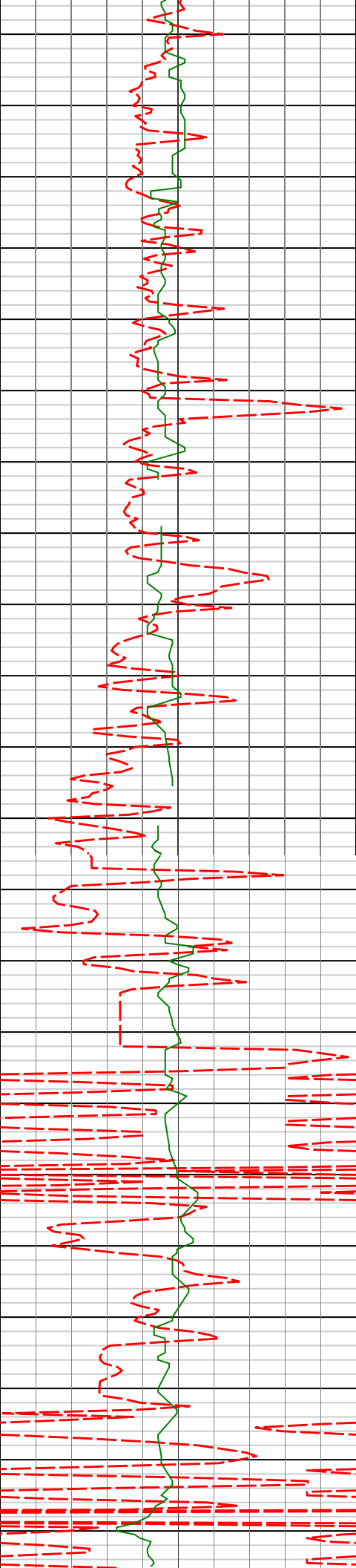
4. The following smoothing parameters have been applied to the data:

PGRC (Corrected Gamma Ray):
Interval Resolution: 0.5 ft
Interval Distance: 0.6 ft
Gap Fill: 3.0 ft

ROPA (Average Rate of Penetration):
Interval Resolution: 0.5 ft
Interval Distance: 1.2 ft
Gap Fill : 3.0 ft

5. INSITE version 8.4.10-MLWD

WARRANTY



1300'

1350'

1400'

1450'

1293'

0.12°

326.39°

1292.91'

-10.30'

1386'

0.04°

300.91°

1385.91'

-10.20'

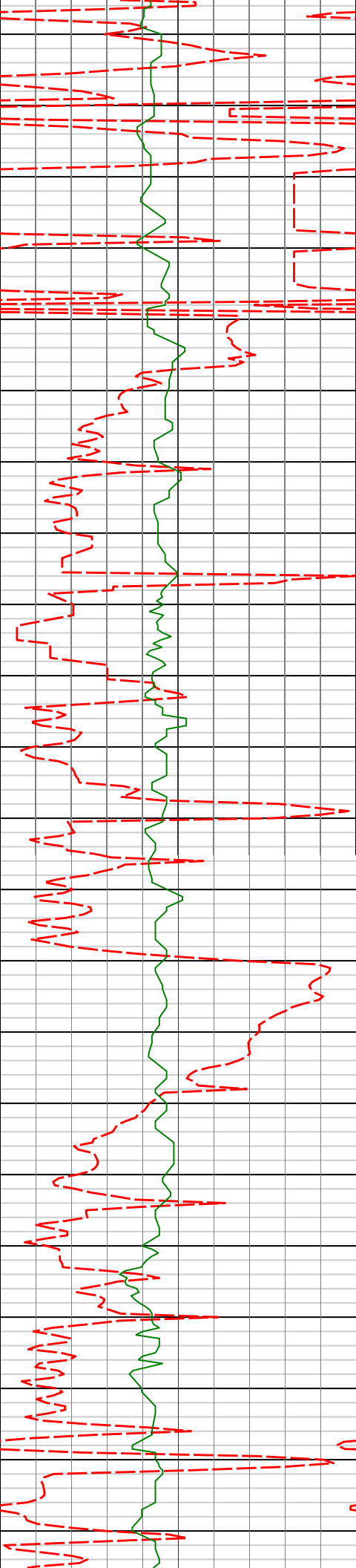
1478'

0.13°

148.21°

1477.91'

-10.27'



1500'

1550'

1570'

1600'

1650'

1663'

1700'

0.25°

46.47°

1569.91'

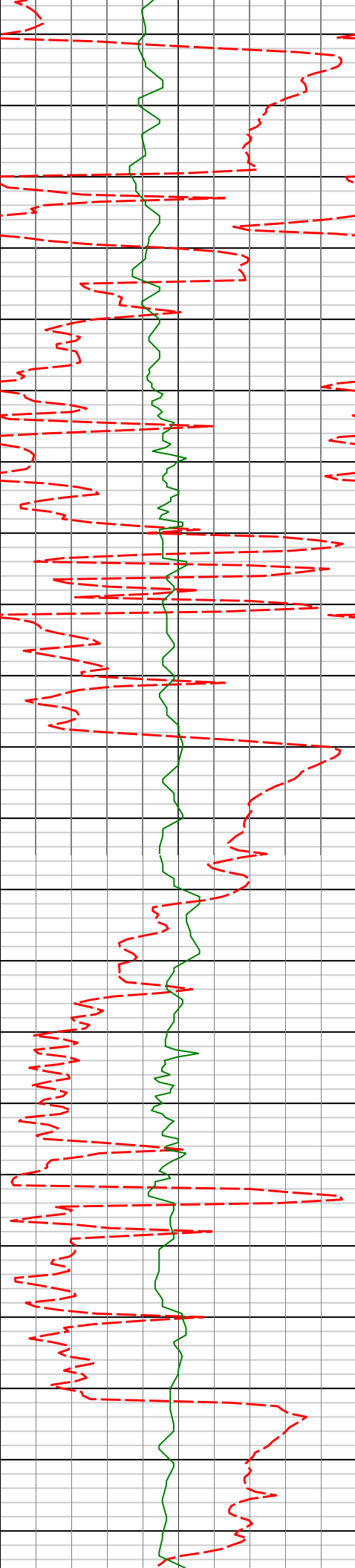
-10.23'

1.31°

358.18°

1662.90'

-9.04'



1750'

1755'

2.30°

307.02°

1754.86'

-6.79'

1800'

1850'

1847'

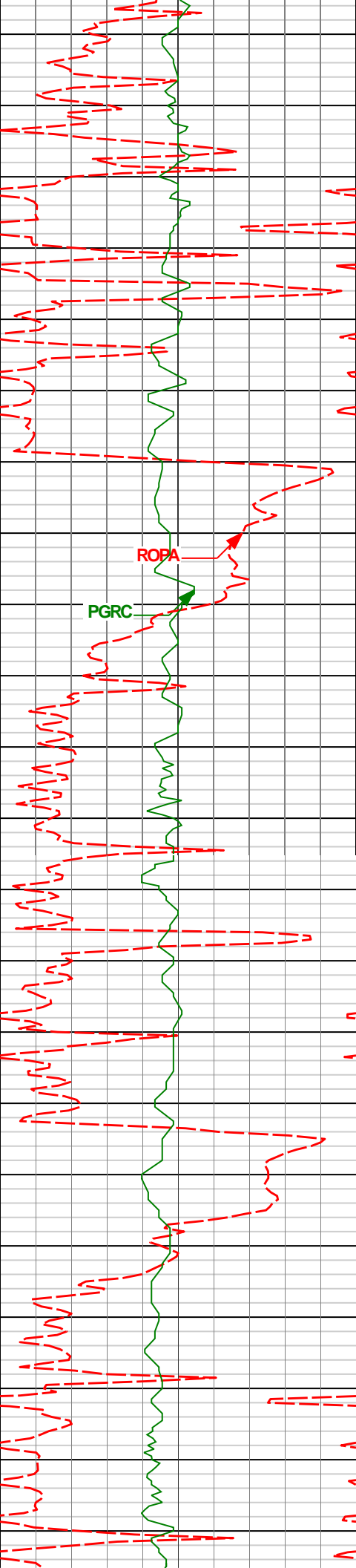
4.34°

307.40°

1846.70'

-3.31'

1900'



1950'

2000'

2050'

2100'

1938'

6.35°

306.37°

1937.30'

2.16'

2031'

8.12°

304.64°

2029.56'

9.51'

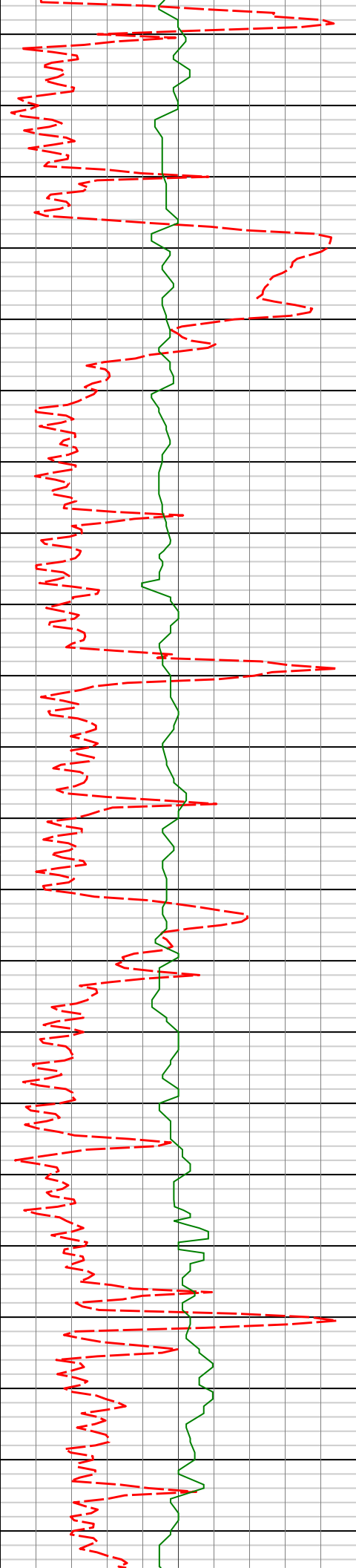
2124'

8.69°

299.81°

2121.56'

17.42'



2150'

2200'

2250'

2300'

2350'

2216'

9.38°

296.81°

2212.42'

25.02'

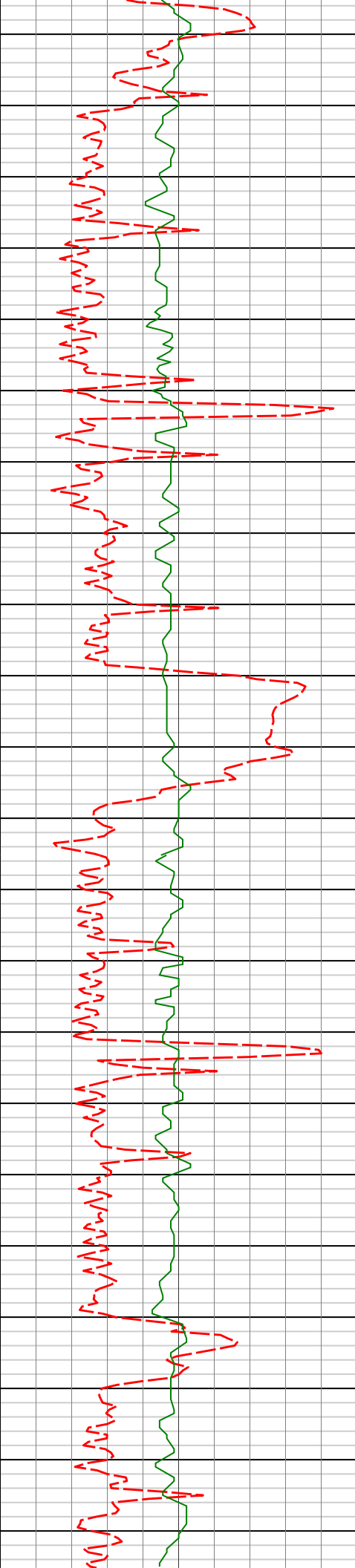
2309'

8.72°

293.15°

2304.26'

32.00'



2400'

2450'

2500'

2550'

2402'

7.82°

292.50°

2396.29'

37.93'

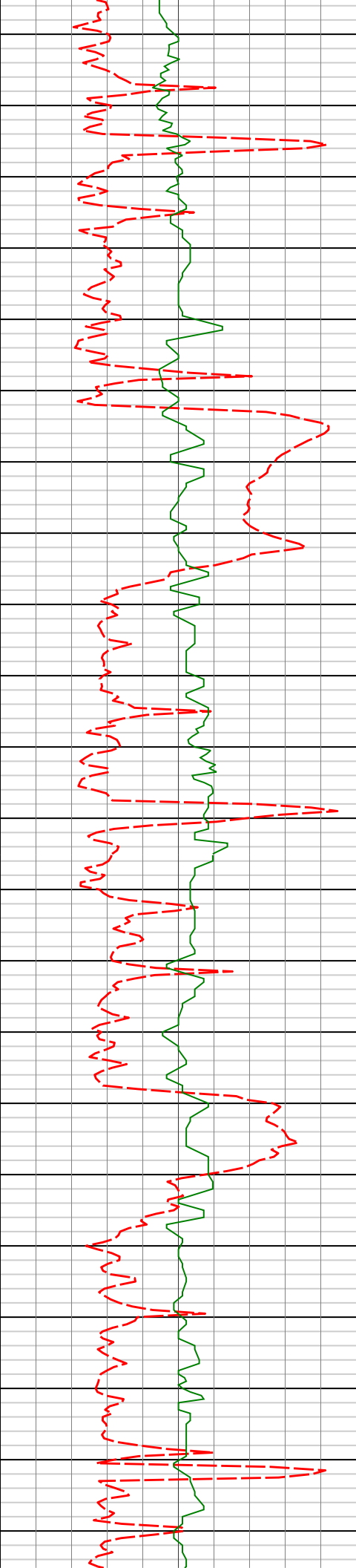
2495'

8.63°

297.50°

2488.33'

44.29'



2600'

2650'

2700'

2750'

2800'

2589'

7.73°

296.66°

2581.38'

51.09'

2681'

8.34°

307.03°

2672.48'

58.53'

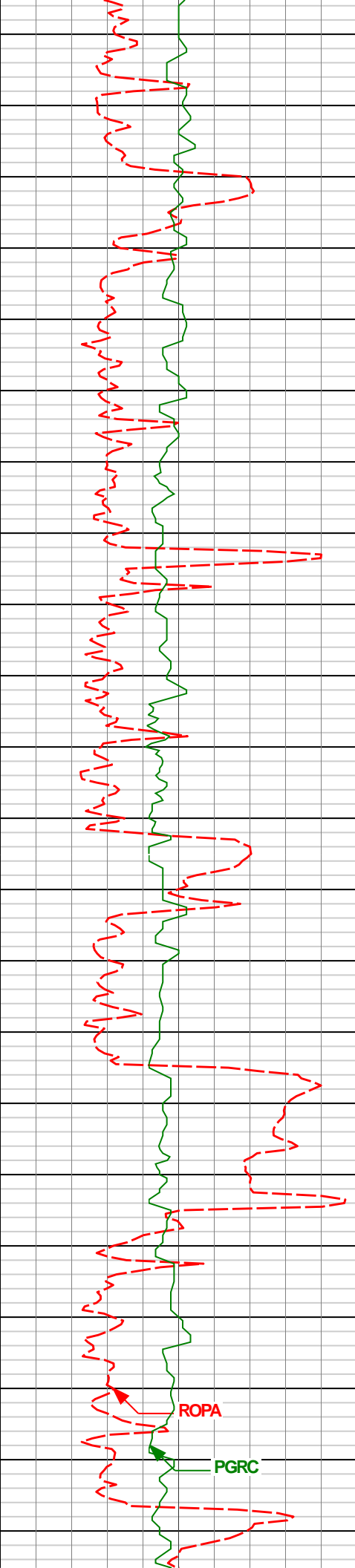
2774'

9.05°

307.87°

2764.41'

67.74'



2850'

2866'

8.23°

306.40°

2855.36'

76.74'

2900'

2950'

2960'

8.97°

305.92°

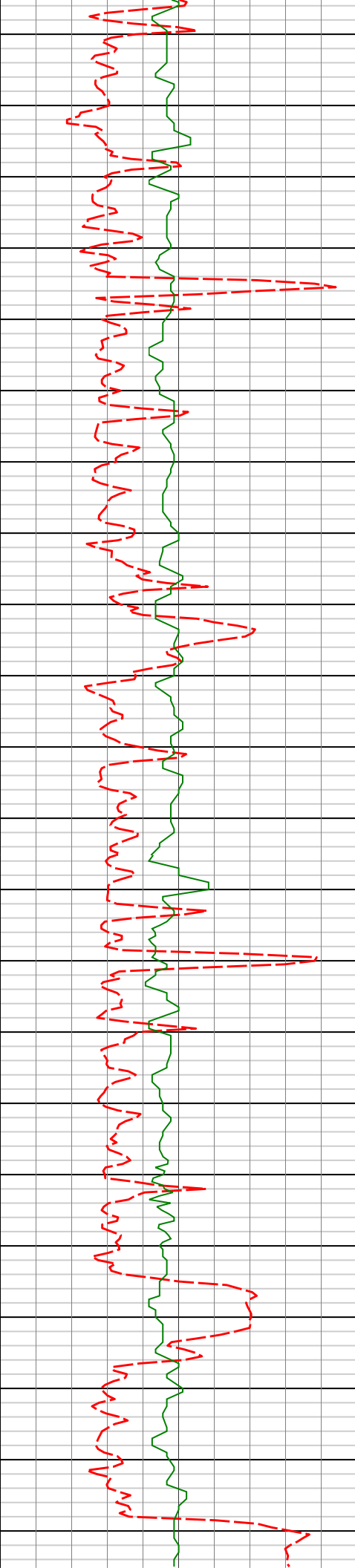
2948.31'

85.70'

3000'

ROPA

PGRC



3050'

3055'

9.02°

303.16°

3042.14'

94.85'

3100'

3150'

3150'

8.33°

302.08°

3136.05'

103.29'

3200'

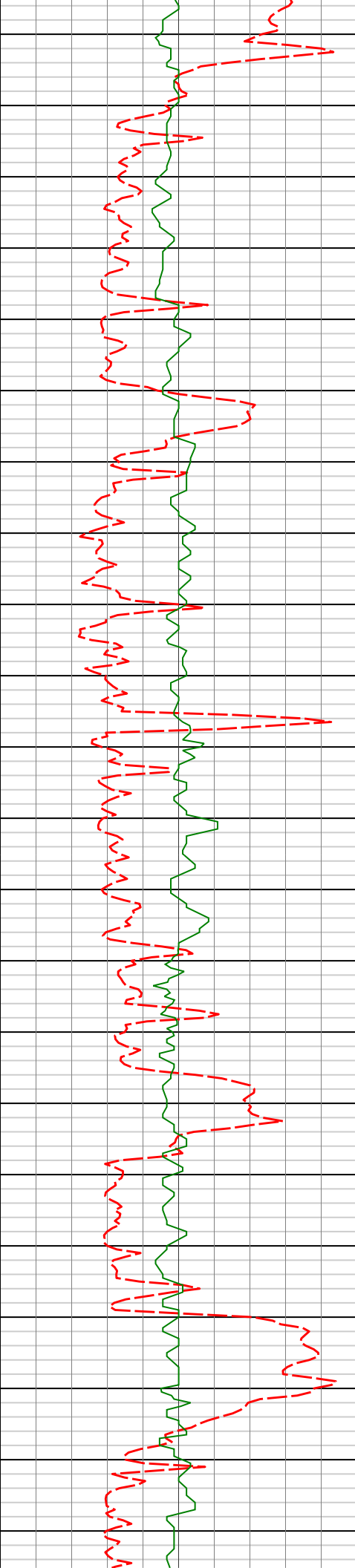
3245'

8.21°

298.25°

3230.06'

110.86'



3250'

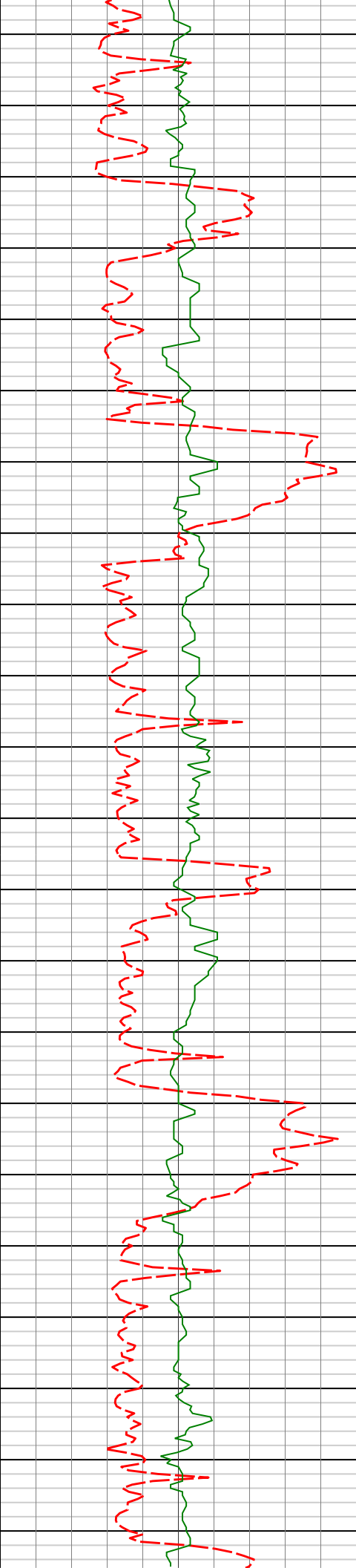
3300'

3350'

3400'

3450'

3245'	8.21°	298.23°	3250.00'	110.80'
3340'	8.09°	295.44°	3324.11'	117.66'
3435'	7.82°	293.63°	3418.19'	123.83'



3500'

3550'

3600'

3650'

3530'

8.01°

290.24°

3512.29'

129.44'

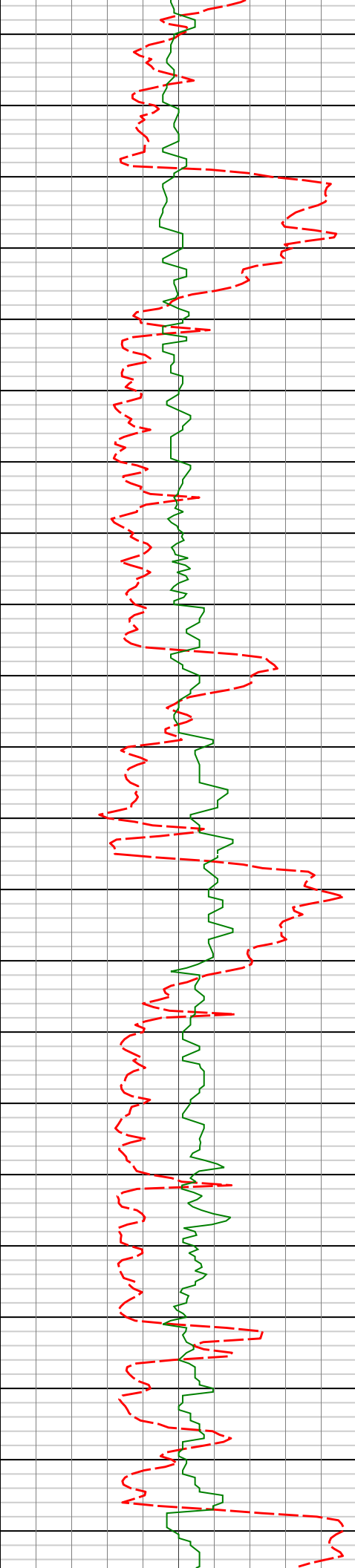
3625'

7.37°

293.33°

3606.43'

134.85'



3700'

3719'

8.23°

293.46°

3699.56'

140.61'

3750'

3800'

3814'

7.87°

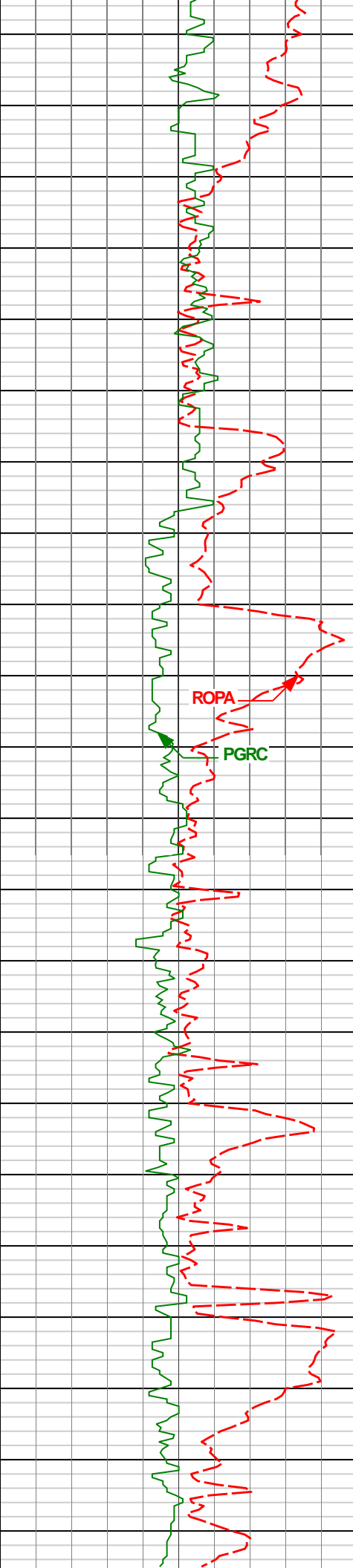
297.85°

3793.63'

147.07'

3850'

3900'



3950'

4000'

4050'

4100'

ROP A

PGRC

3909'

8.03°

301.72°

3887.71'

154.28'

4004'

8.12°

303.02°

3981.77'

162.09'

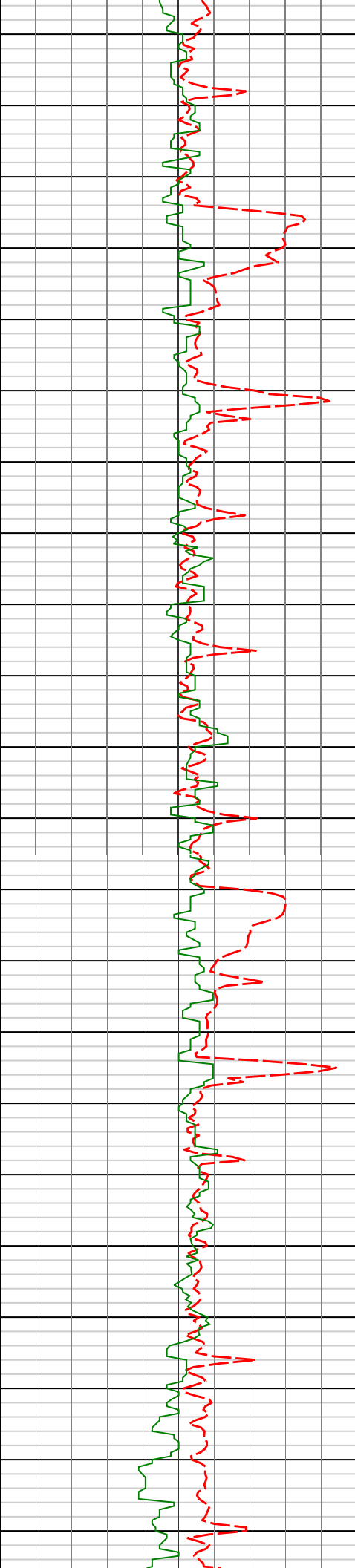
4099'

9.04°

306.73°

4075.71'

170.90'



4150'

4200'

4250'

4300'

4194'

8.93°

304.63°

4169.54'

180.27'

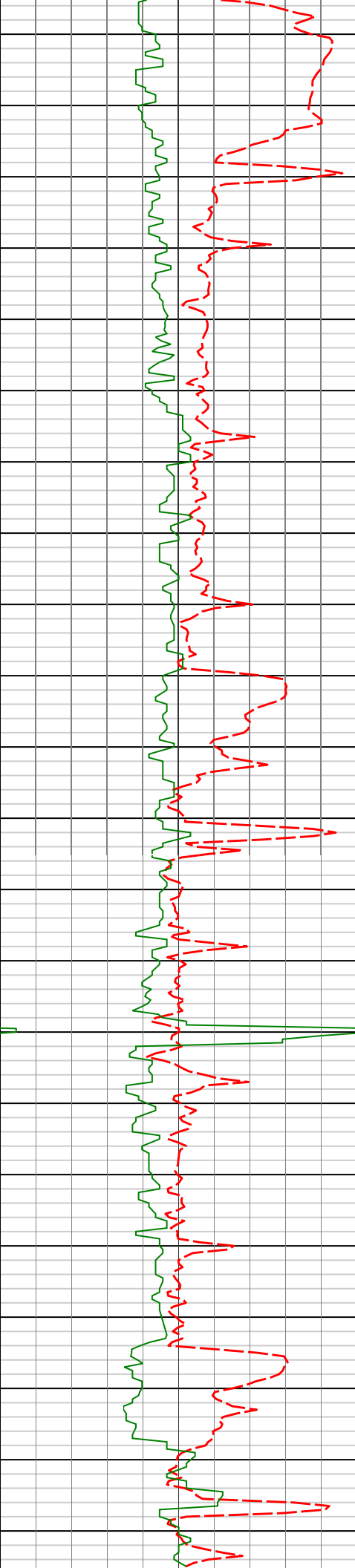
4289'

7.71°

300.87°

4263.54'

188.41'



4350'

4384'

8.94°

300.70°

4357.54'

196.15'

4400'

4450'

4478'

8.80°

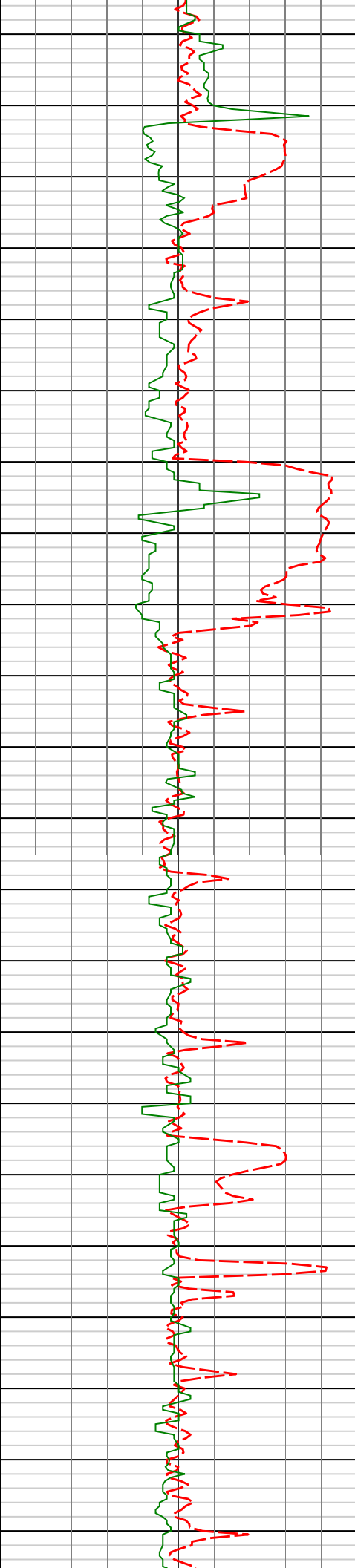
297.84°

4450.42'

203.99'

4500'

4550'



4573'

8.83°

297.51°

4544.29'

211.52'

4600'

4650'

4668'

9.22°

304.51°

4638.12'

219.96'

4700'

4750'

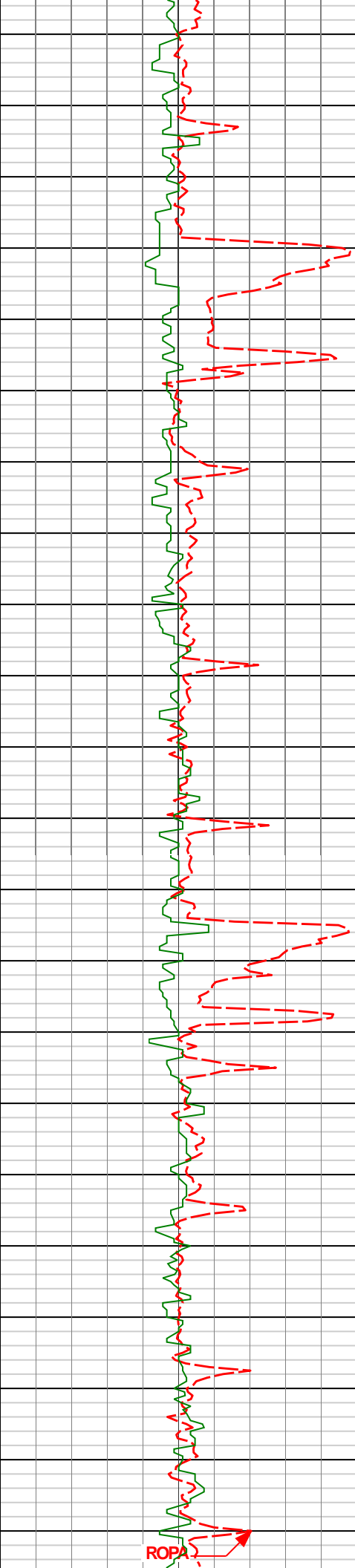
4763'

7.60°

302.19°

4732.10'

228.30'



4800'

4850'

4900'

4950'

5000'

4858'

6.83°

299.86°

4826.34'

235.07'

4953'

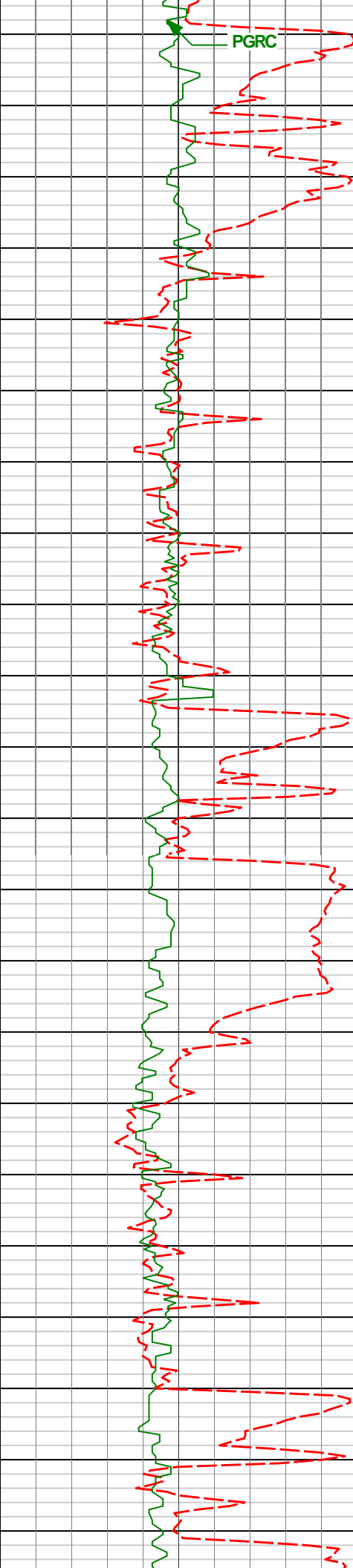
6.50°

294.87°

4920.70'

240.73'

ROPA



PGRC

5050'

5100'

5150'

5200'

5048'

5.50°

296.15°

5015.18'

245.53'

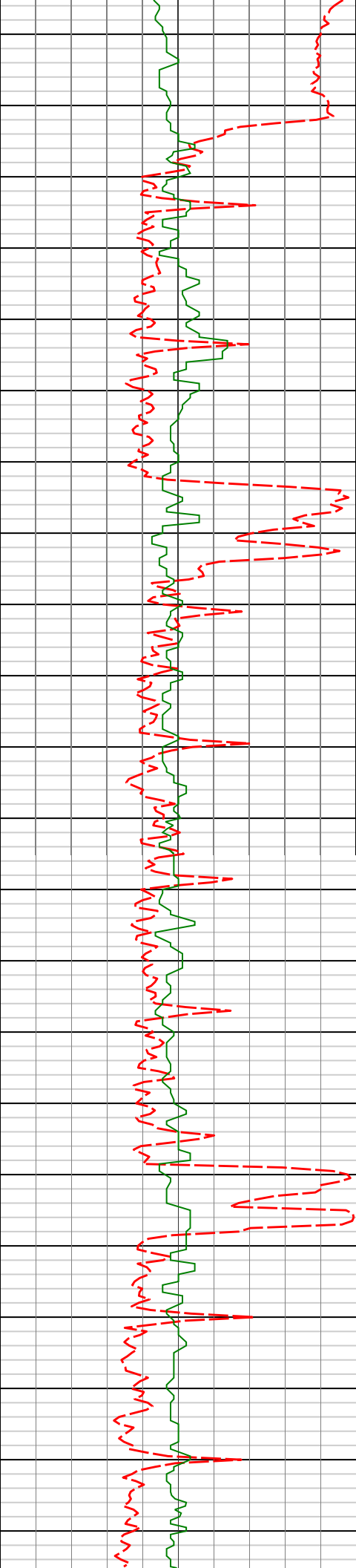
5143'

4.13°

292.15°

5109.84'

249.26'



5238'

2.02°

296.75°

5204.70'

251.58'

5250'

5300'

5333'

1.34°

291.13°

5299.66'

252.89'

5350'

5400'

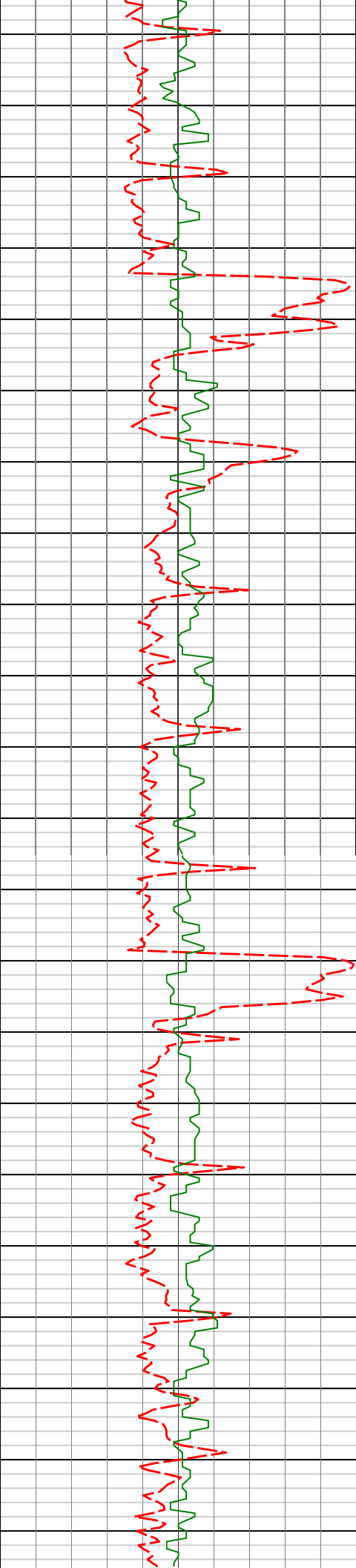
5428'

1.33°

283.78°

5394.63'

253.68'



5450'

5500'

5550'

5600'

5650'

5523'

0.79°

288.78°

5489.62'

254.25'

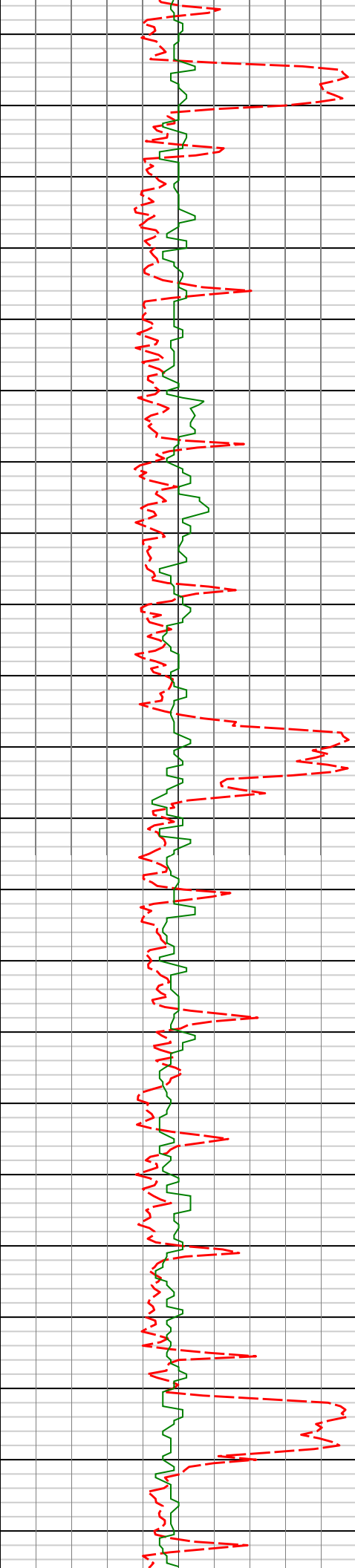
5617'

0.67°

306.21°

5583.61'

254.85'



5700'

5712'

0.23°

343.49°

5678.61'

255.39'

5750'

5800'

5807'

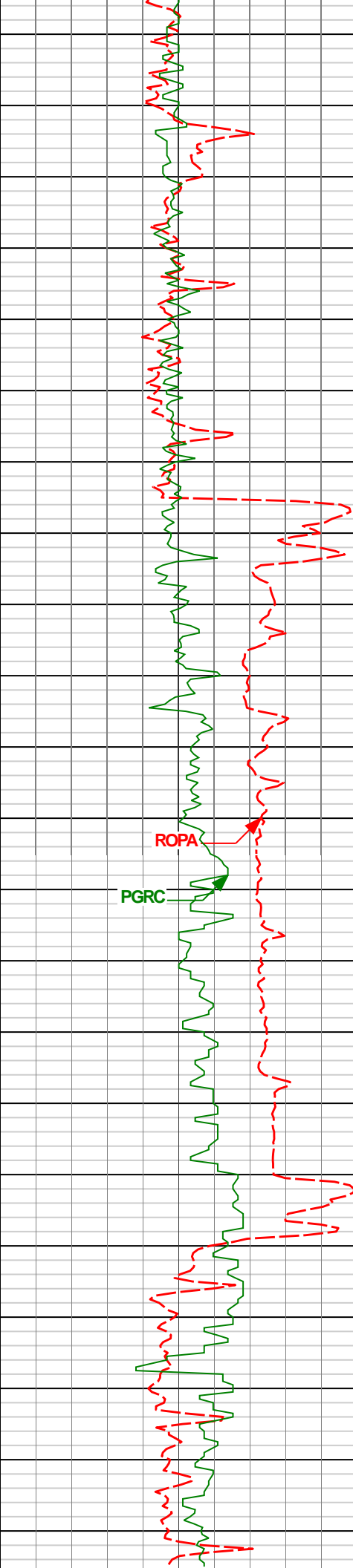
0.38°

22.62°

5773.61'

255.86'

5850'



5900'

5902'

0.57°

45.36°

5868.60'

256.45'

5950'

6000'

5997'

0.71°

35.72°

5963.60'

257.22'

6050'

6092'

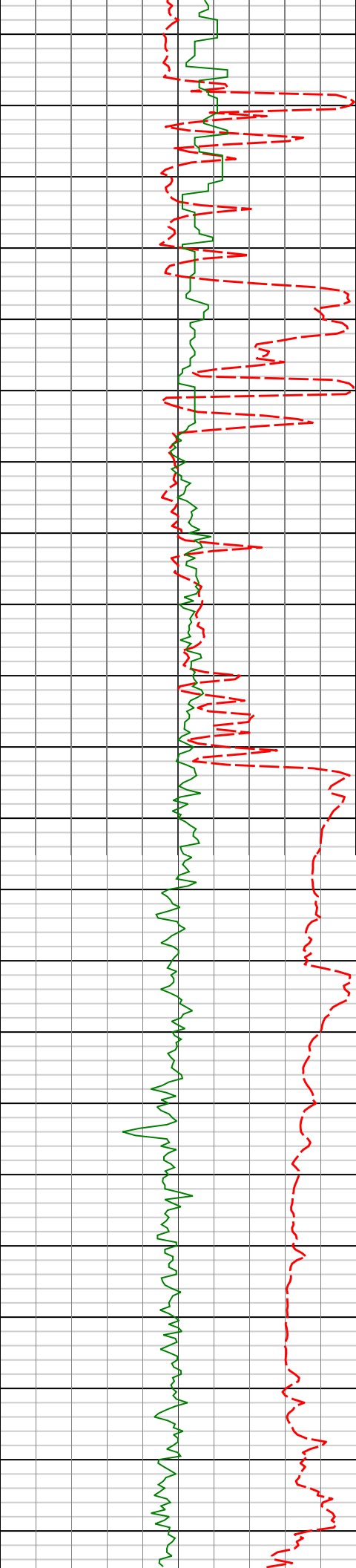
1.04°

12.20°

6058.59'

258.50'

6100'



6150'

6200'

6250'

6300'

6157'

1.23°

9.46°

6123.57'

259.75'

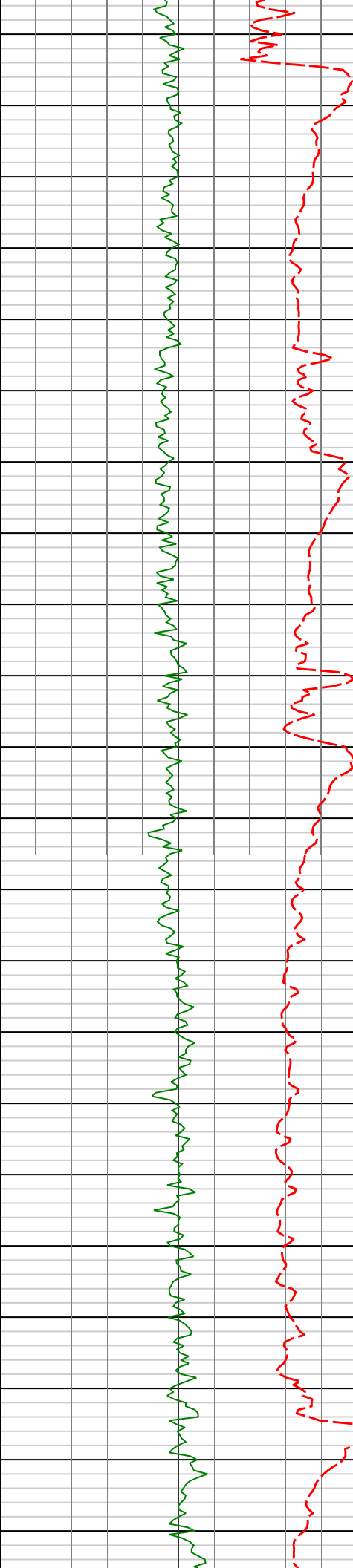
6281'

8.35°

353.91°

6247.06'

270.06'



6350'

6376'

12.47°

0.59°

6340.48'

287.19'

6400'

6450'

6471'

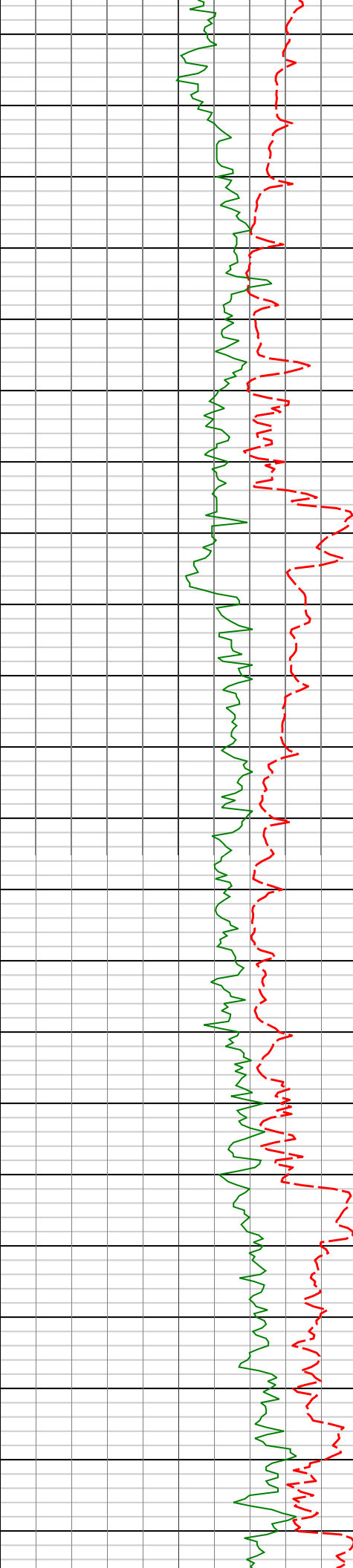
17.60°

7.07°

6432.21'

311.56'

6500'



6550'

6566'

25.08°

9.24°

6520.63'

345.37'

6600'

6650'

6661'

37.60°

7.15°

6601.61'

393.69'

6700'

6709'

46.62°

5.21°

6637.18'

425.39'

6750'

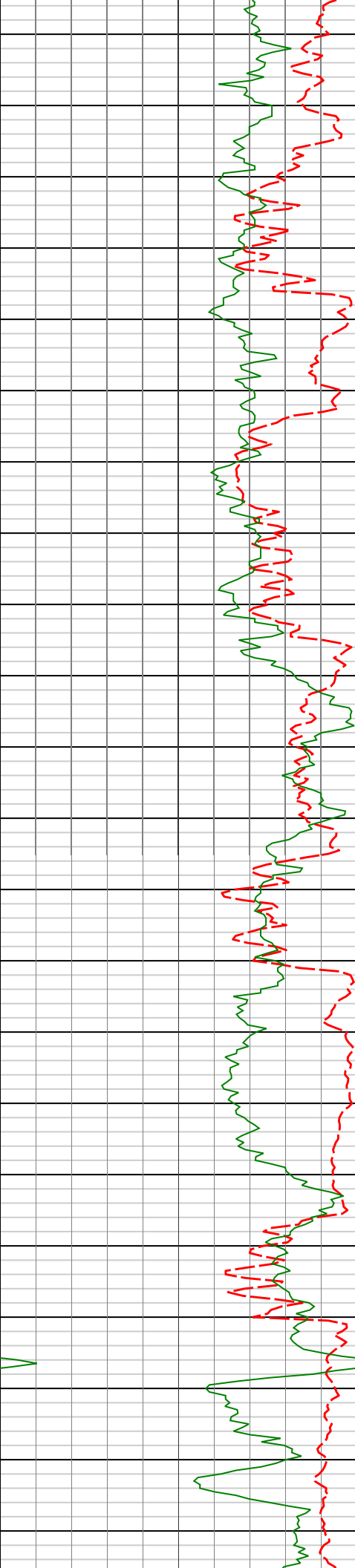
6755'

53.15°

3.92°

6666.81'

460.20'



6800'

6803'

56.28°

2.05°

6694.53'

499.13'

6850'

6850'

57.82°

2.75°

6720.10'

538.36'

6900'

6898'

60.47°

0.80°

6744.71'

579.39'

6950'

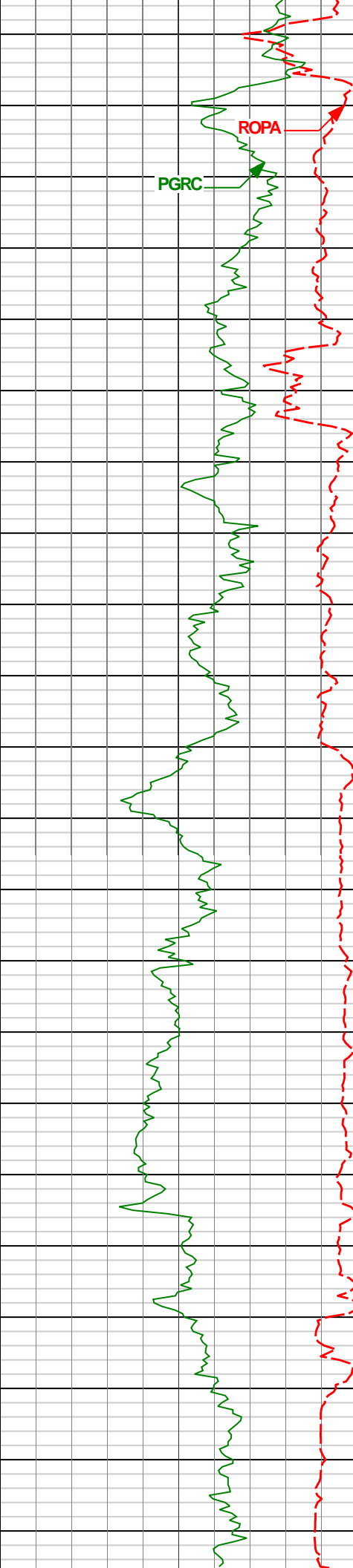
6945'

64.64°

0.75°

6766.37'

620.98'



6993'	69.66°	359.07°	6785.01'	665.12'
-------	--------	---------	----------	---------

7000'

7040'	74.79°	357.03°	6799.35'	709.84'
-------	--------	---------	----------	---------

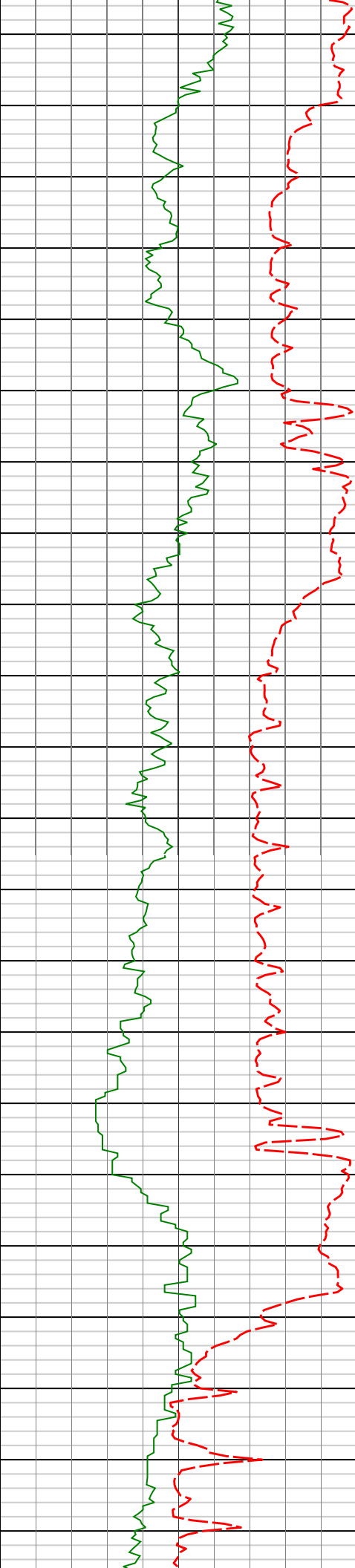
7050'

7100'

7113'	81.87°	354.92°	6814.11'	781.28'
-------	--------	---------	----------	---------

7150'

7200'



7250'

7300'

7350'

7400'

7219'

7314'

7408'

85.77°

87.04°

88.80°

356.86°

356.70°

357.52°

6825.52'

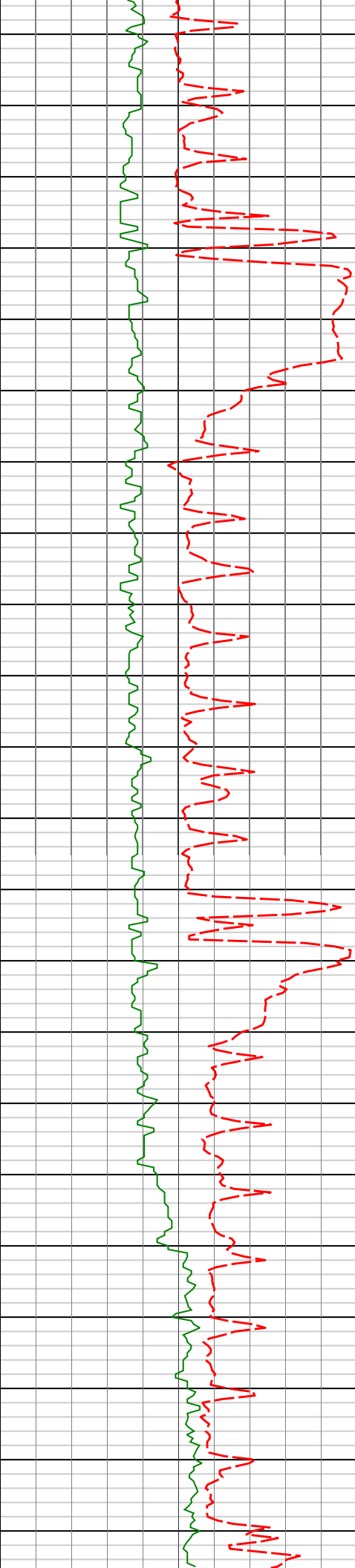
6831.48'

6834.89'

886.63'

981.44'

1075.37'



7450'

7500'

7550'

7600'

7503'

90.86°

358.59°

6835.17'

1170.33'

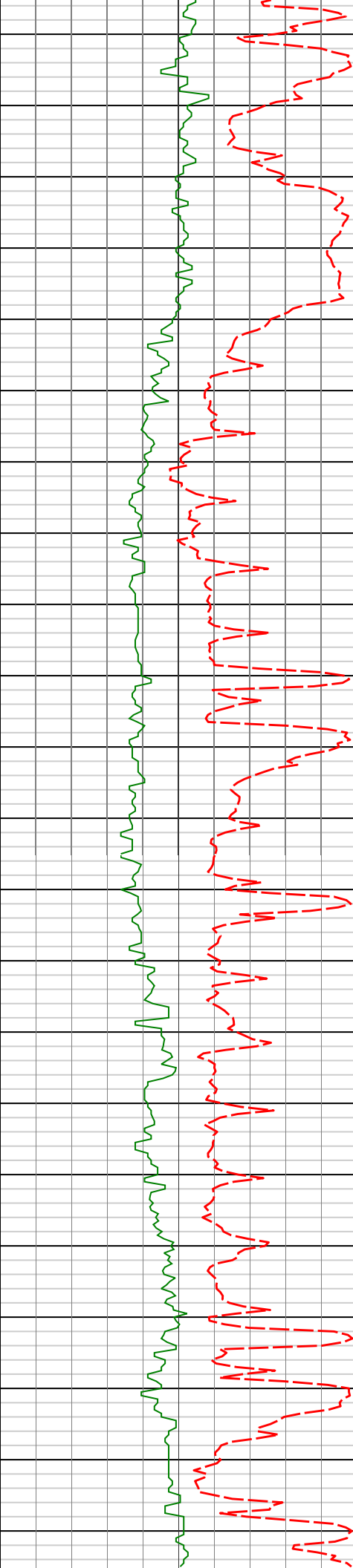
7598'

91.54°

358.41°

6833.18'

1265.25'



7650'

7693'

89.01°

358.02°

6832.72'

1360.20'

7700'

7750'

7786'

89.07°

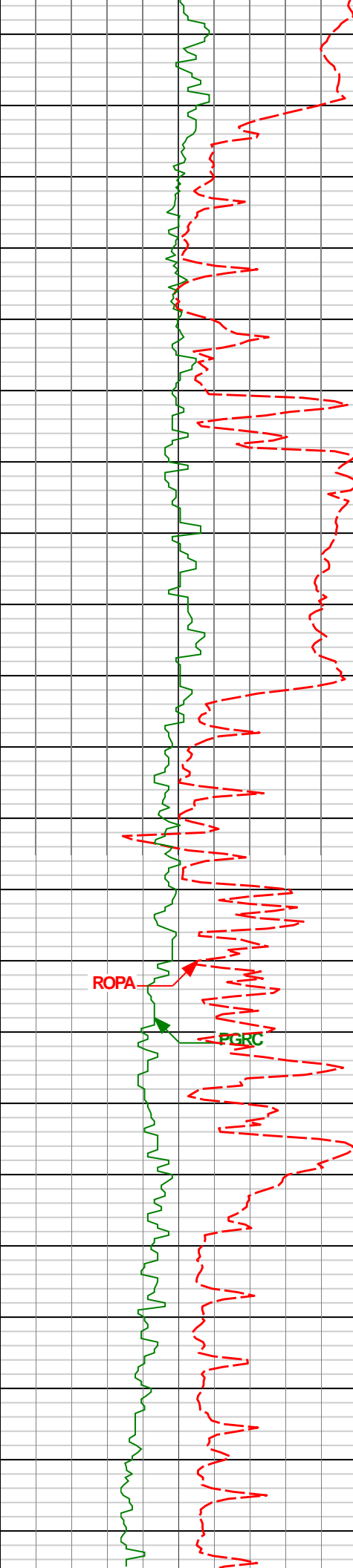
357.25°

6834.28'

1453.17'

7800'

7850'



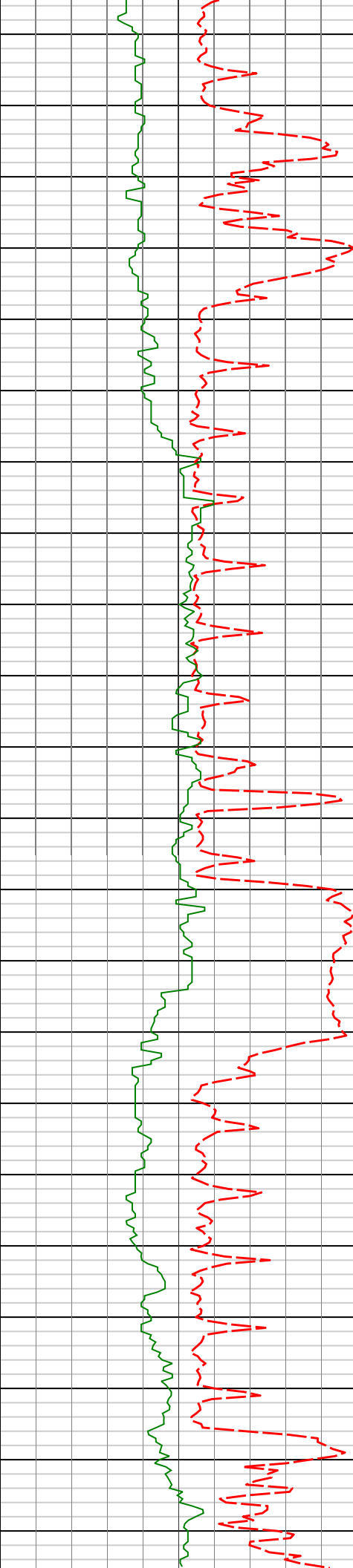
7900'

7950'

8000'

8050'

7880'	89.23°	357.39°	6835.68'	1547.15'
7974'	90.77°	358.94°	6835.68'	1641.11'
8066'	90.89°	359.25°	6834.34'	1733.01'



8100'

8150'

8200'

8250'

8300'

8158'

91.48°

359.46°

6832.44'

1824.87'

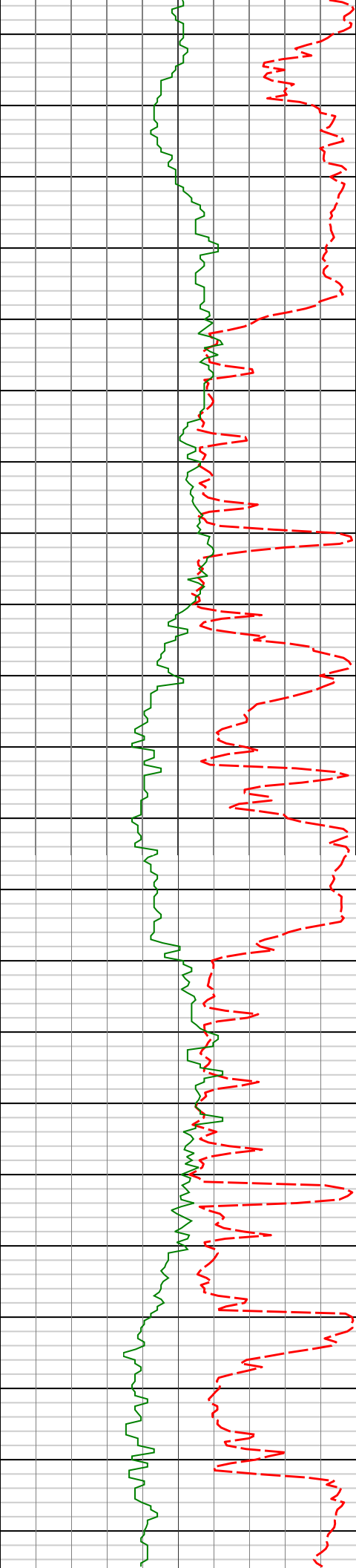
8251'

87.17°

359.05°

6833.54'

1917.74'



8344'

87.69°

358.66°

6837.71'

2010.57'

8350'

8400'

8436'

87.90°

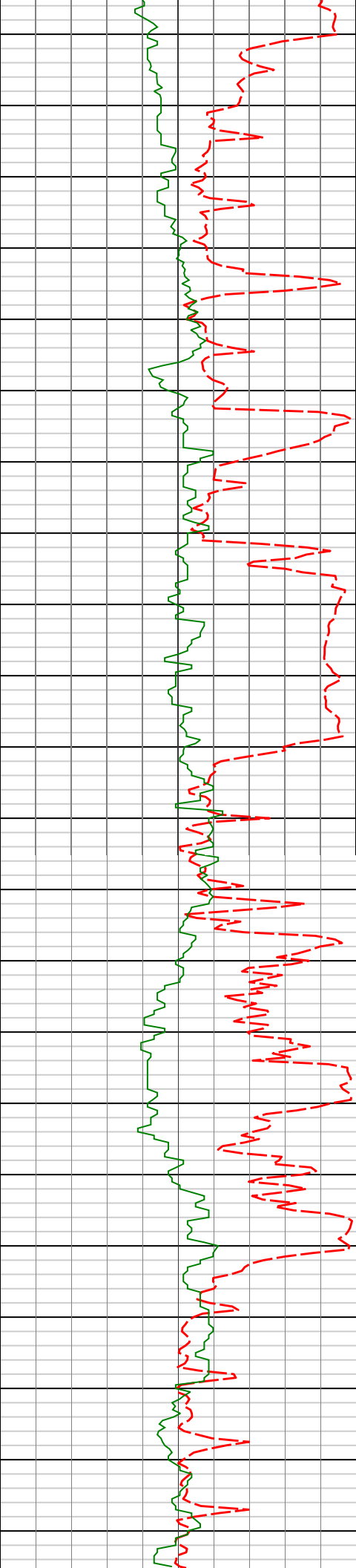
359.69°

6841.25'

2102.40'

8450'

8500'



8550'

8600'

8650'

8700'

8527'

88.83°

0.58°

6843.84'

2193.18'

8619'

90.83°

1.31°

6844.12'

2284.90'

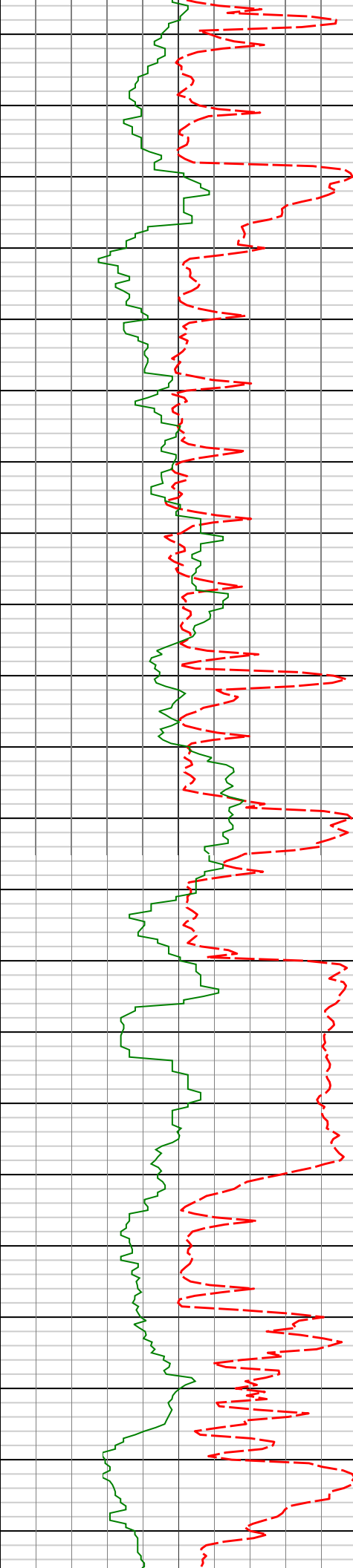
8712'

91.45°

0.77°

6842.27'

2377.60'



8750'

8800'

8850'

8900'

8950'

8804'

92.87°

0.68°

6838.80'

2469.28'

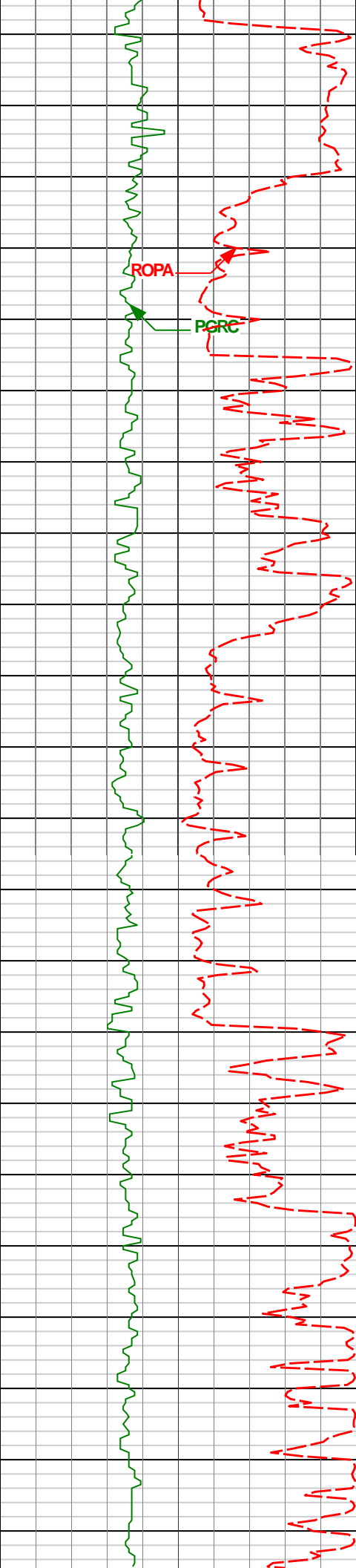
8897'

91.08°

359.88°

6835.59'

2562.02'



8990'	88.98°	0.26°	6835.54'	2654.84'
-------	--------	-------	----------	----------

9000'

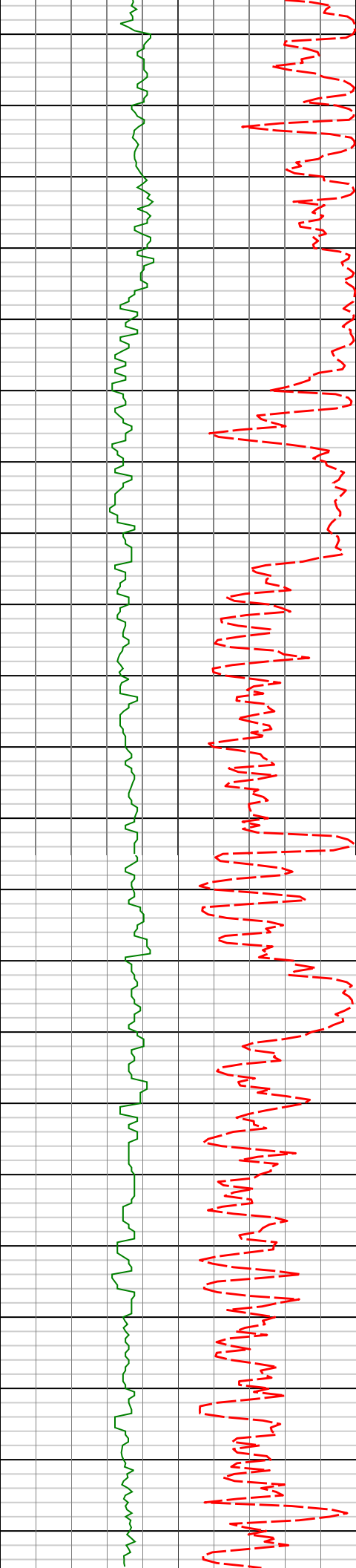
9050'

9083'	88.86°	359.18°	6837.30'	2747.68'
-------	--------	---------	----------	----------

9100'

9150'

9176'	88.43°	358.39°	6839.50'	2840.58'
-------	--------	---------	----------	----------



9200'

9250'

9300'

9350'

9400'

9269'

89.26°

359.16°

6841.37'

2933.49'

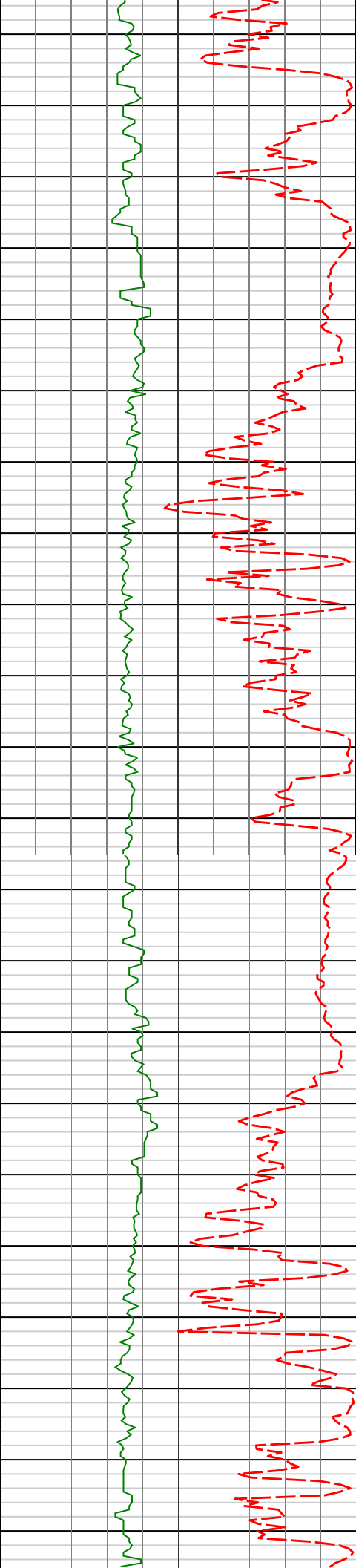
9362'

89.29°

356.86°

6842.55'

3026.44'



9450'

9454'

89.82°

355.53°

6843.26'

3118.44'

9500'

9550'

9546'

89.63°

357.76°

6843.70'

3210.43'

9600'



9641'

90.06°

358.97°

6843.96'

3305.38'

9650'

9700'

9750'

9800'

9736'

90.89°

358.48°

6843.17'

3400.31'

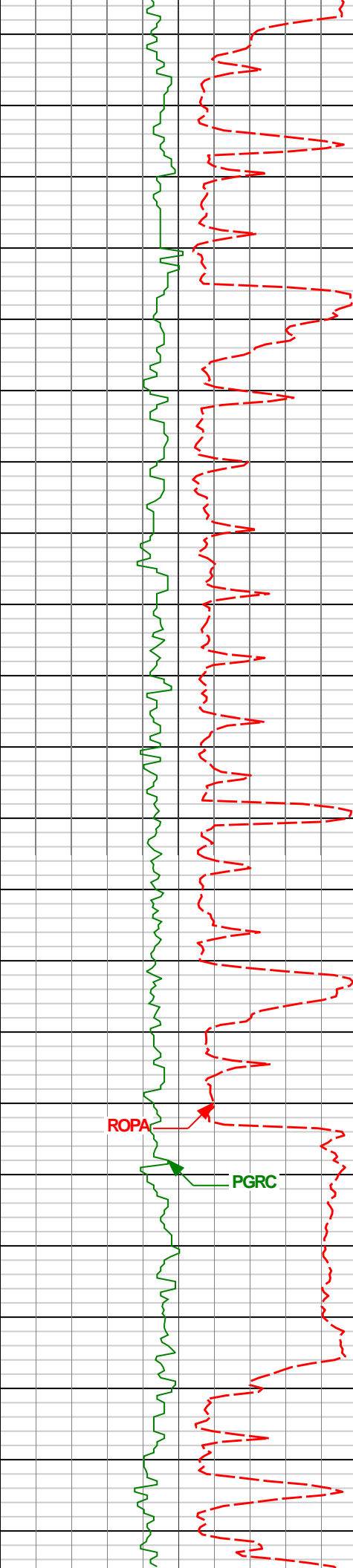
9831'

 90.40°

359.96°

6842.10'

3495.19'



9850'

9900'

9950'

10000'

10050'

9926'

89.88°

359.80°

6841.87'

3590.03'

ROPA

PGRC

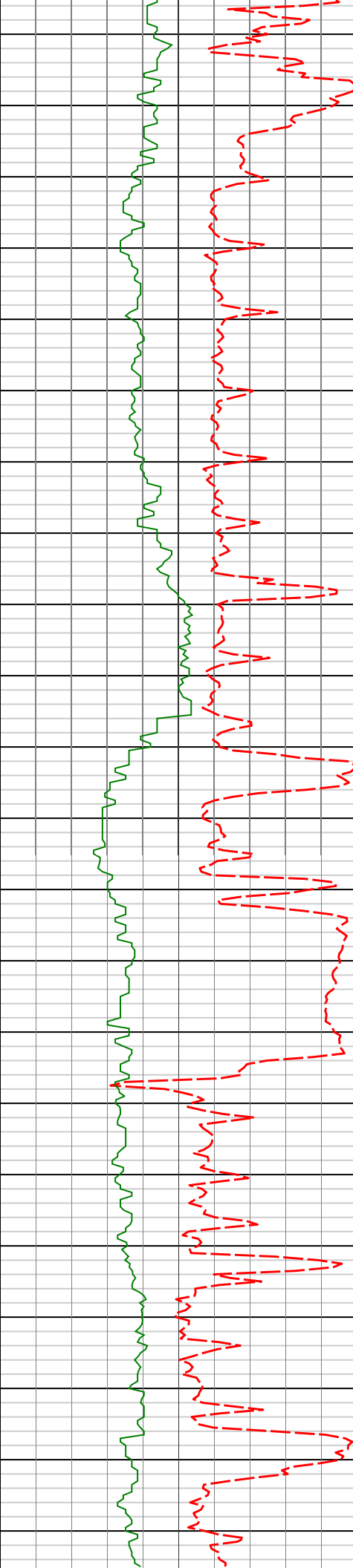
10020'

90.68°

1.44°

6841.41'

3683.78'



10100'

10150'

10200'

10250'

10115'

91.51°

1.62°

6839.60'

3778.40'

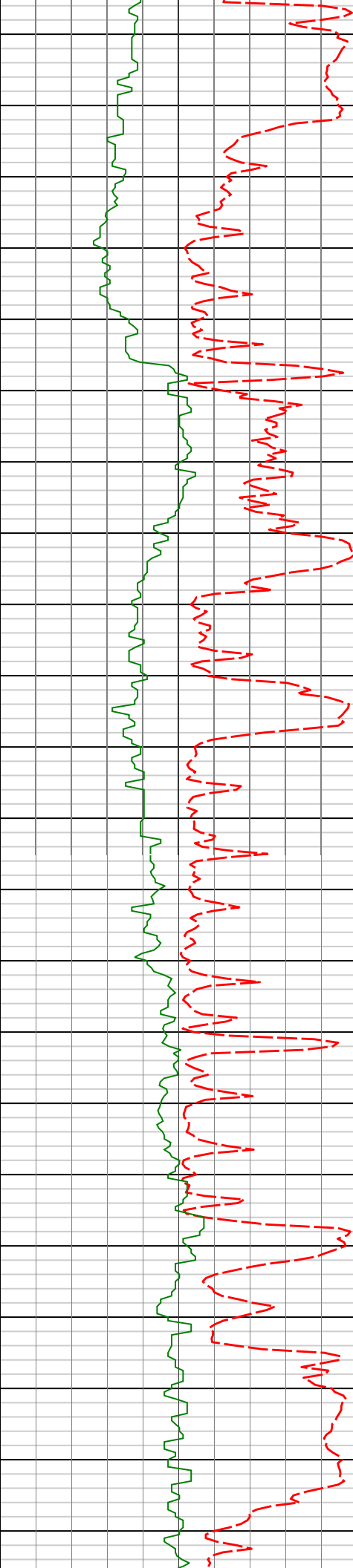
10210'

90.31°

2.80°

6838.09'

3872.92'



10300'

10305'

87.81°

2.40°

6839.65'

3967.37'

10350'

10400'

10400'

87.63°

1.86°

6843.43'

4061.84'

10450'

10494'

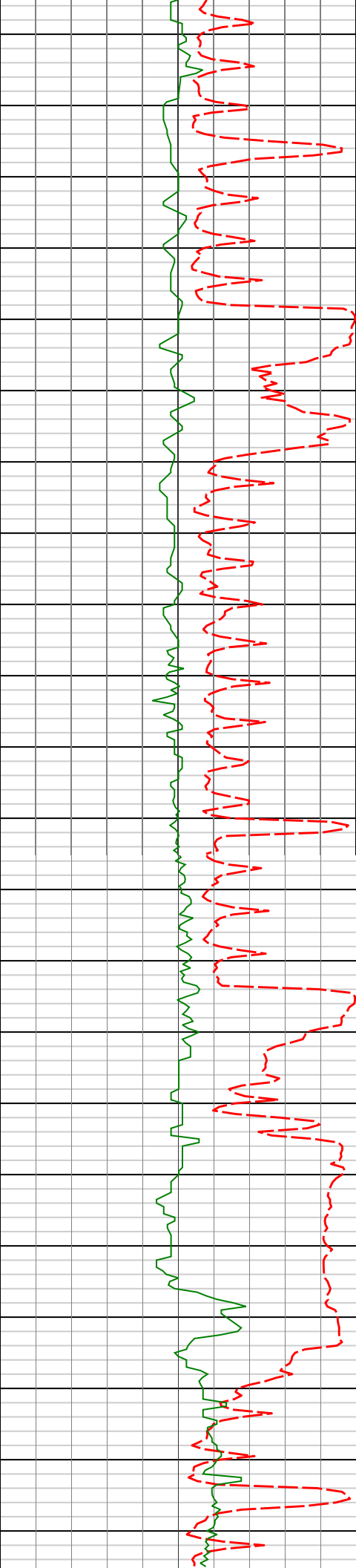
89.01°

1.58°

6846.18'

4155.41'

10500'



10550'

10600'

10650'

10700'

10589'

86.39°

0.64°

6849.99'

4250.02'

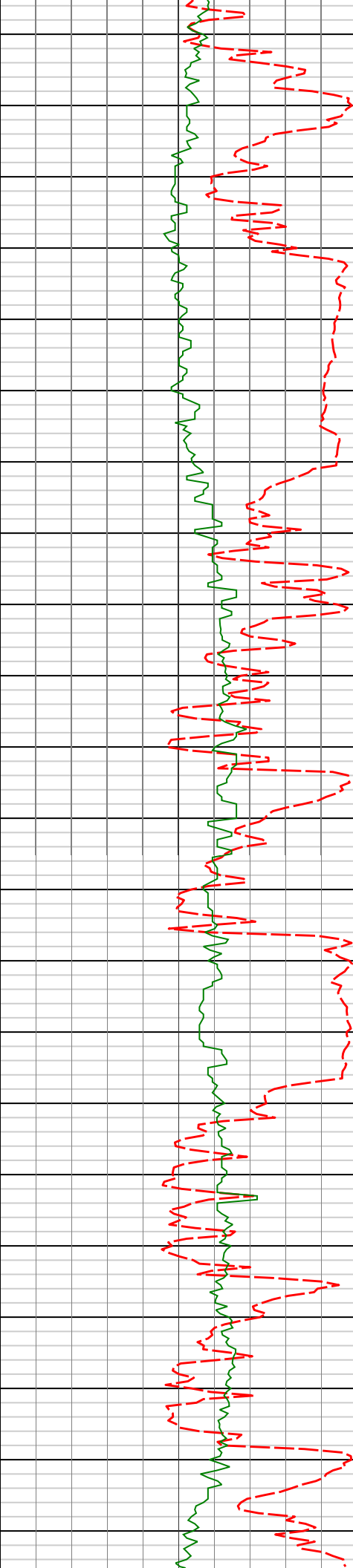
10684'

87.53°

359.86°

6855.03'

4344.69'



10750'

10779'

89.88°

0.61°

6857.18'

4439.46'

10800'

10850'

10874'

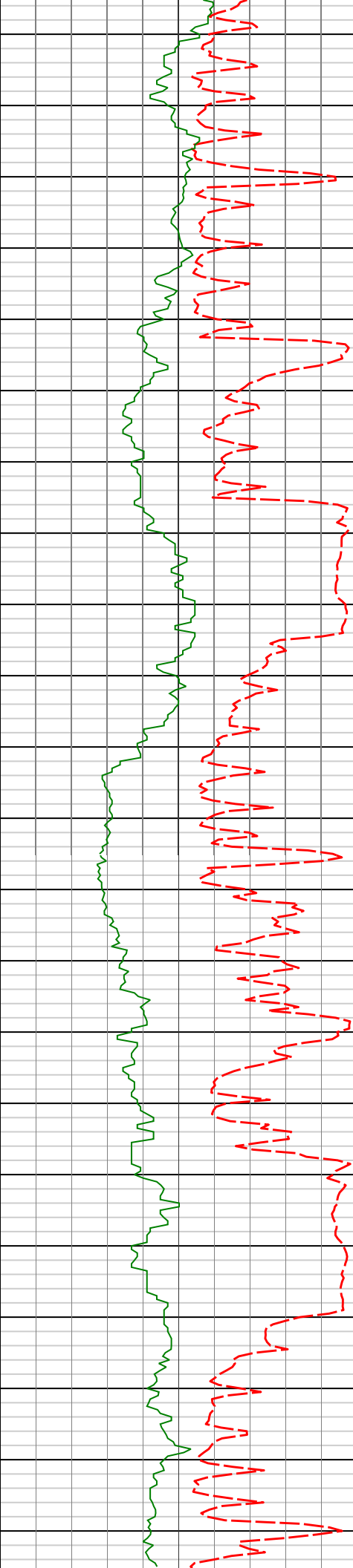
88.98°

358.30°

6858.13'

4534.32'

10900'



11200'

11250'

11300'

11350'

11254'

92.25°

357.28°

6847.69'

4913.91'

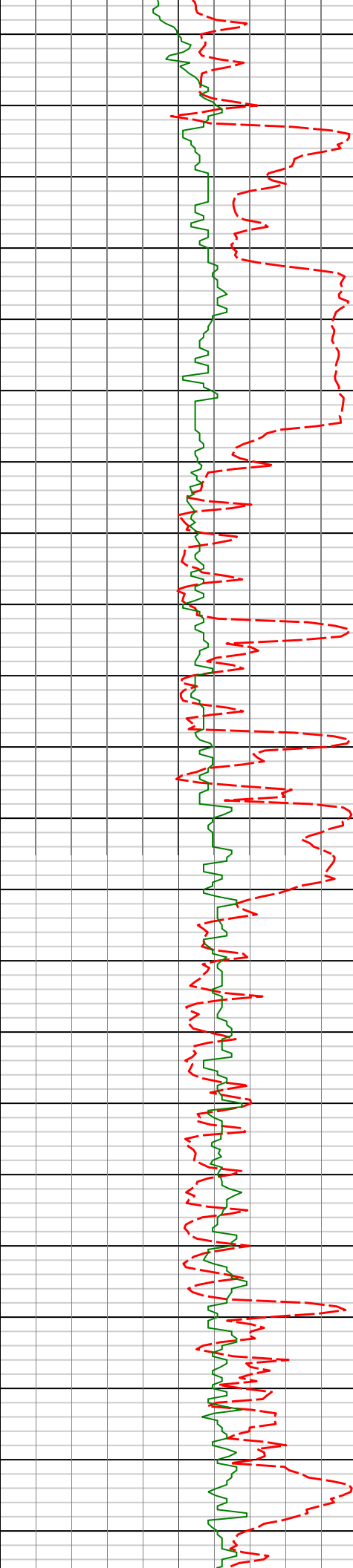
11349'

91.51°

358.77°

6844.58'

5008.82'



11400'

11443'

89.69°

358.91°

6843.59'

5102.73'

11450'

11500'

11538'

89.26°

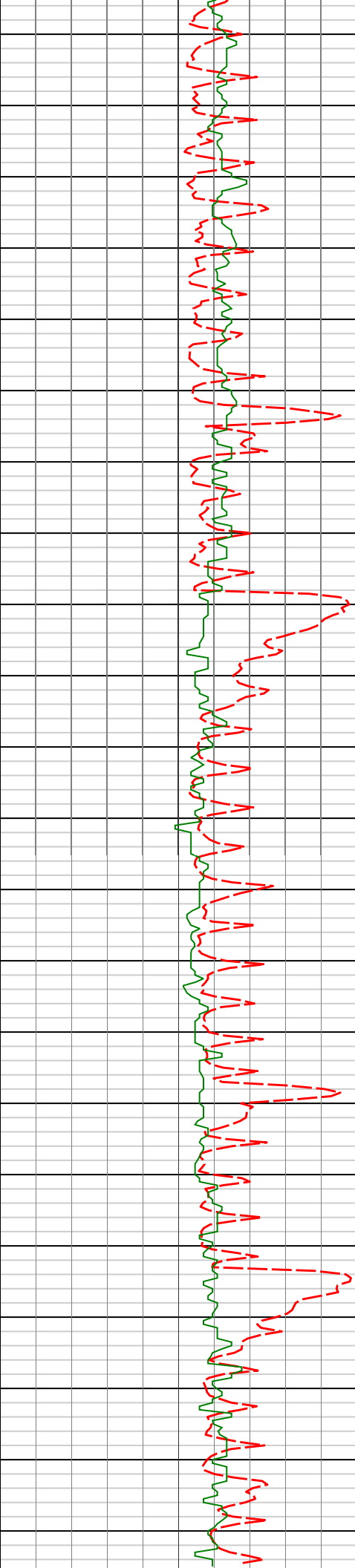
358.58°

6844.46'

5197.66'

11550'

11600'



11633'	89.35°	359.16°	6845.61'	5292.57'
--------	--------	---------	----------	----------

11650'

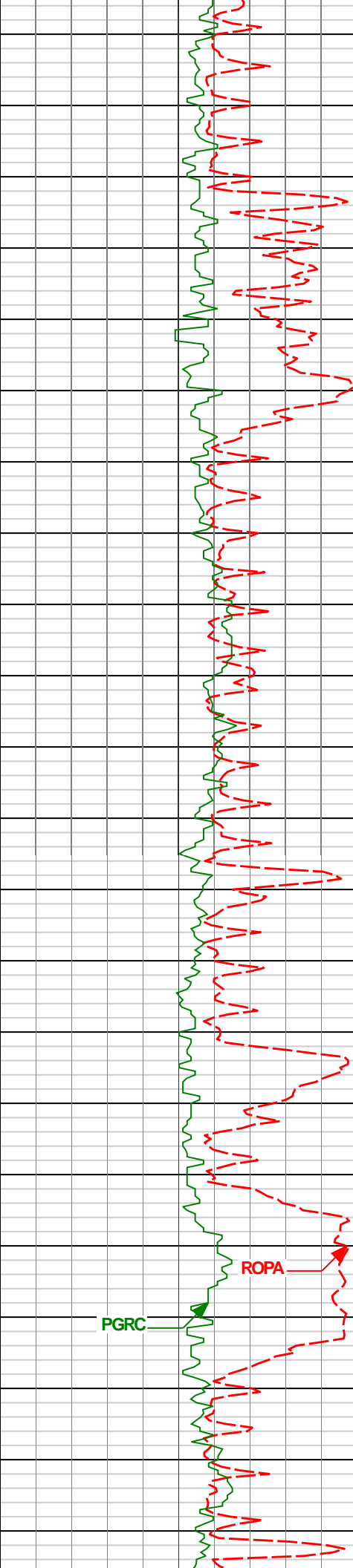
11700'

11728'	89.51°	359.78°	6846.56'	5387.44'
--------	--------	---------	----------	----------

11750'

11800'

11823'	89.20°	359.80°	6847.63'	5482.28'
--------	--------	---------	----------	----------



11850'

11900'

11918'

90.65°

359.76°

6847.75'

5577.13'

11950'

12000'

PGRC

ROPA

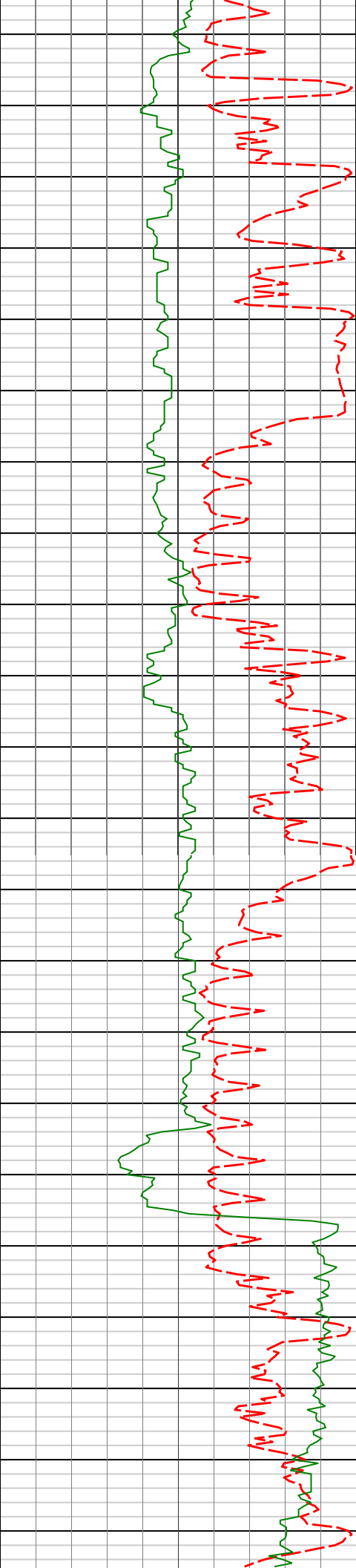
12013'

88.25°

359.46°

6848.67'

5671.98'



12050'

12100'

12150'

12200'

12250'

12108'

89.23°

359.69°

6850.75'

5766.82'

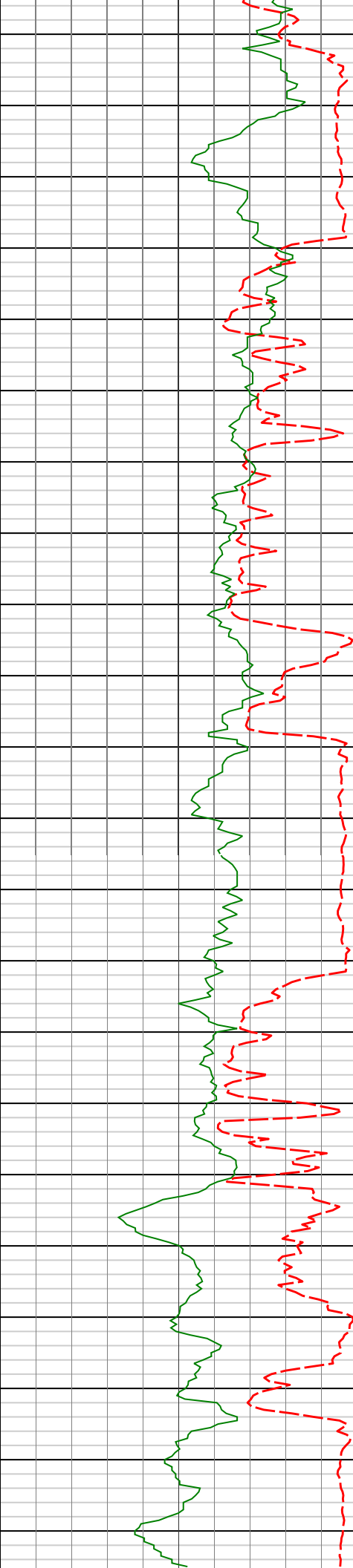
12203'

86.58°

357.72°

6854.23'

5861.67'



12300'

12350'

12400'

12450'

12297'

87.35°

358.23°

6859.20'

5955.51'

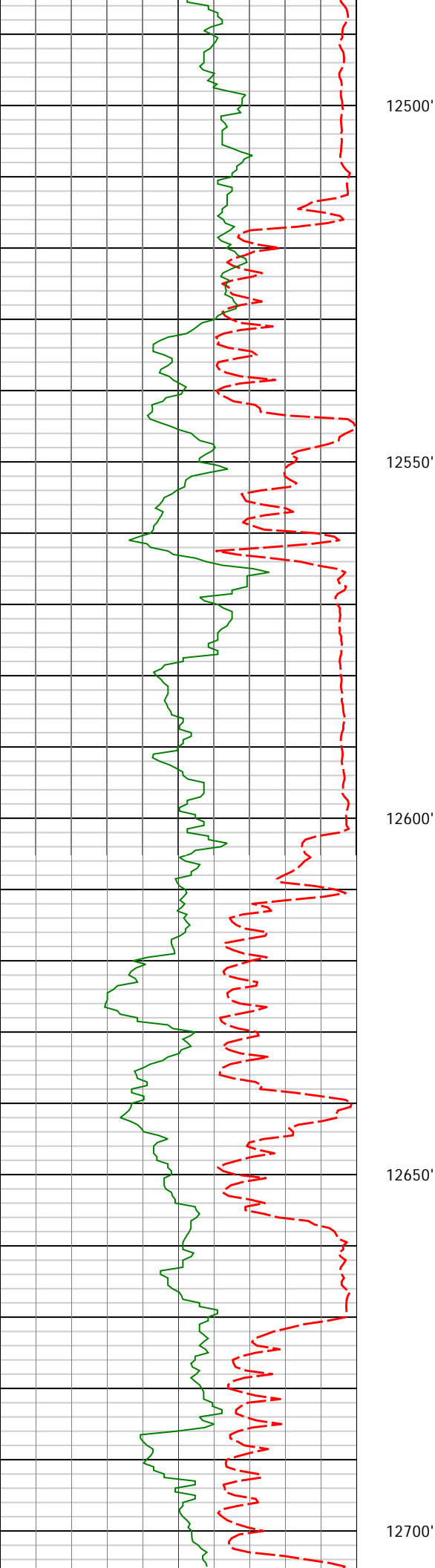
12392'

87.59°

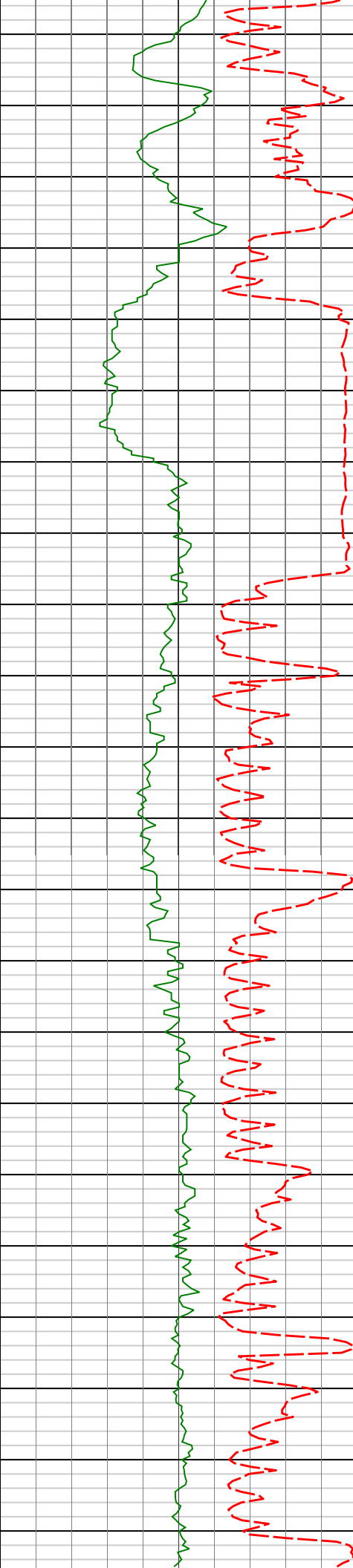
359.19°

6863.40'

6050.35'



12487'	88.15°	359.83°	6866.93'	6145.15'
12582'	90.22°	0.53°	6868.28'	6239.95'
12677'	90.09°	0.66°	6868.02'	6334.71'



12750'

12772'

92.34°

0.64°

6866.01'

6429.43'

12800'

12850'

12867'

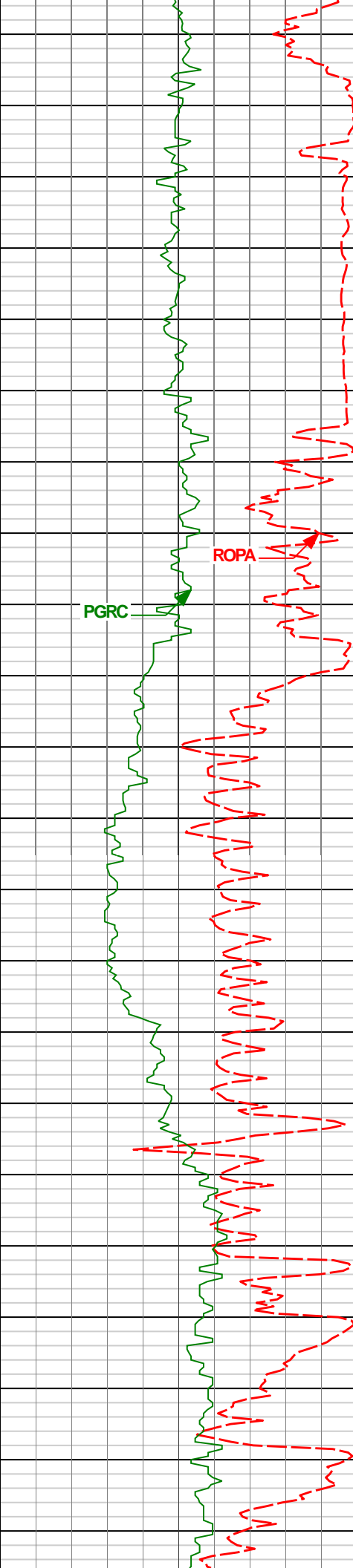
90.43°

358.15°

6863.71'

6524.28'

12900'



12950'

12961'

91.23°

358.49°

6862.35'

6618.22'

13000'

PGRC

ROPA

13050'

13056'

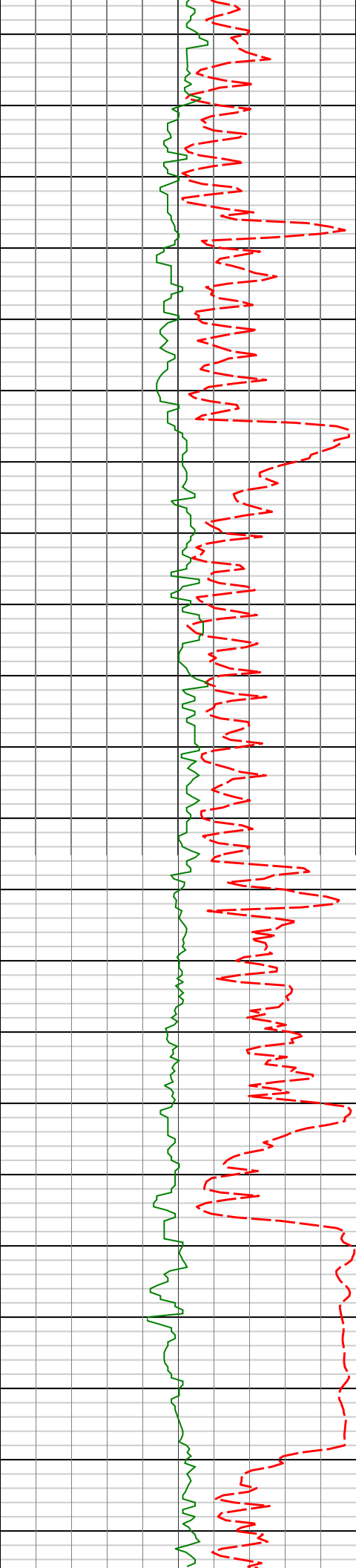
91.57°

358.69°

6860.03'

6713.13'

13100'



13150'

13151'

91.45°

358.13°

6857.53'

6808.05'

13200'

13250'

13245'

90.34°

357.29°

6856.06'

6902.01'

13300'

13340'

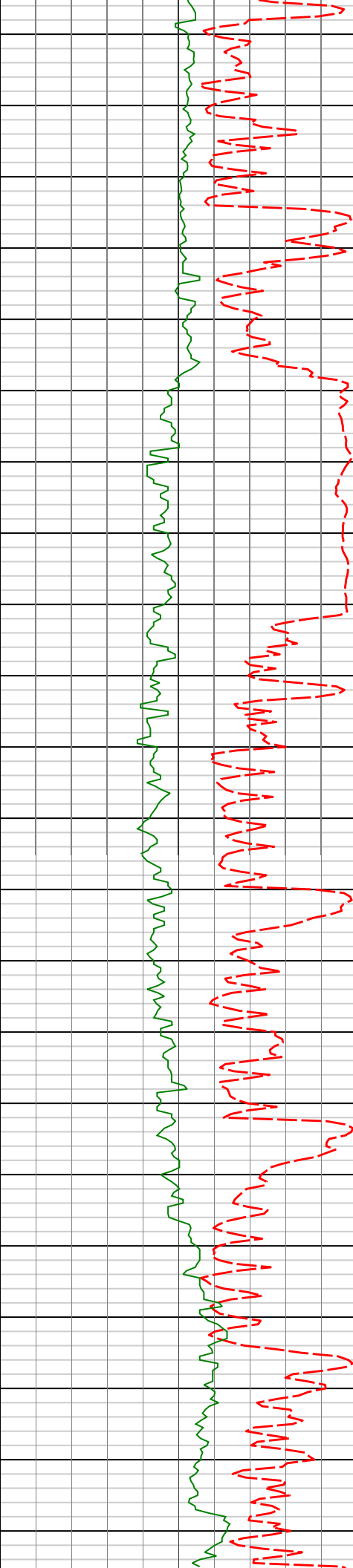
89.78°

357.40°

6855.96'

6997.00'

13350'



13400'

13435'

90.77°

2.56°

6855.50'

7091.79'

13450'

13500'

13530'

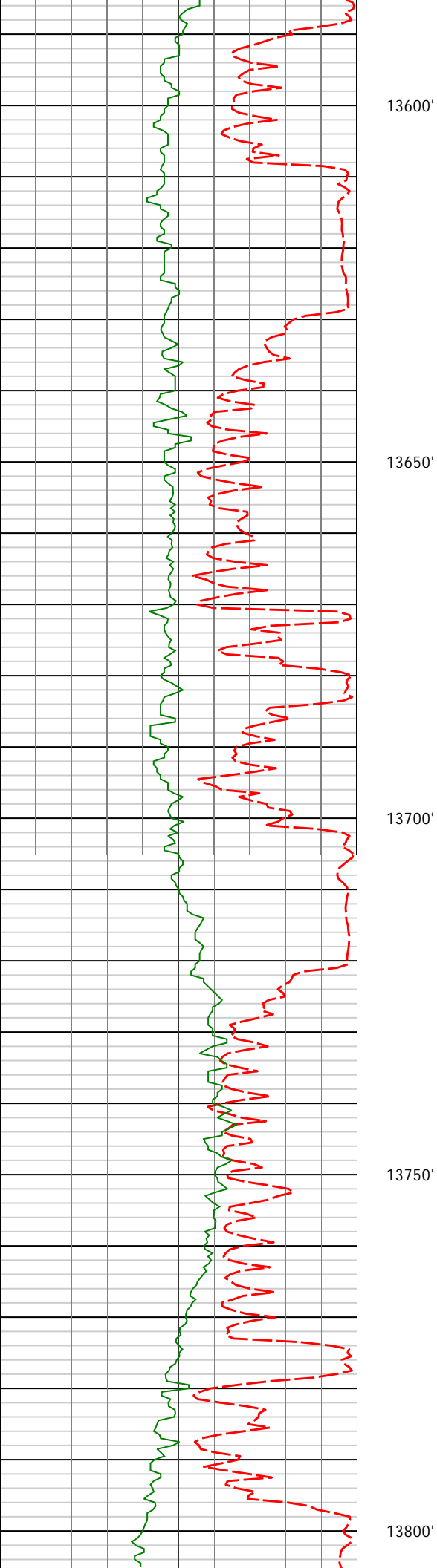
88.70°

2.26°

6855.94'

7186.29'

13550'



13625'

90.37°

2.75°

6856.71'

7280.77'

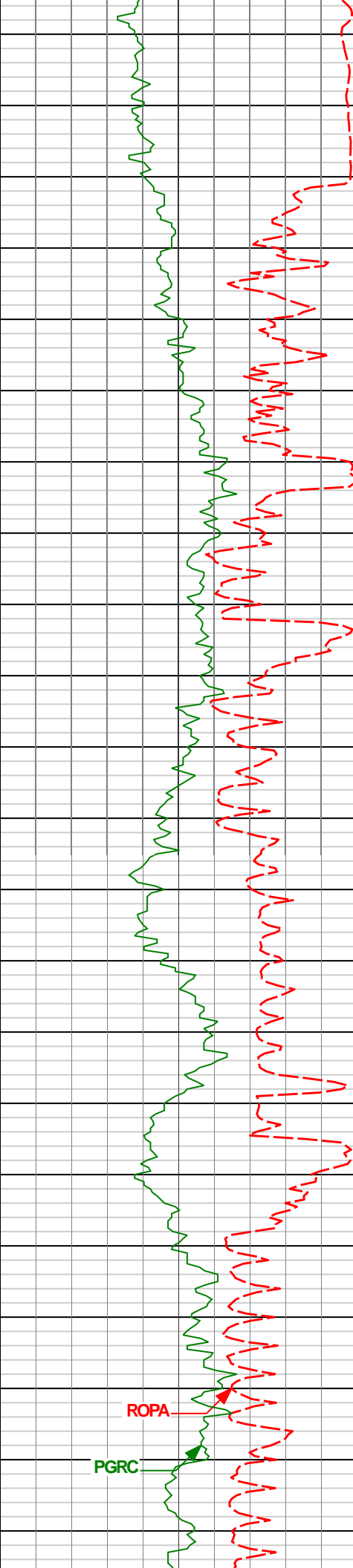
13719'

90.43°

2.95°

6856.06'

7374.19'



13850'

13900'

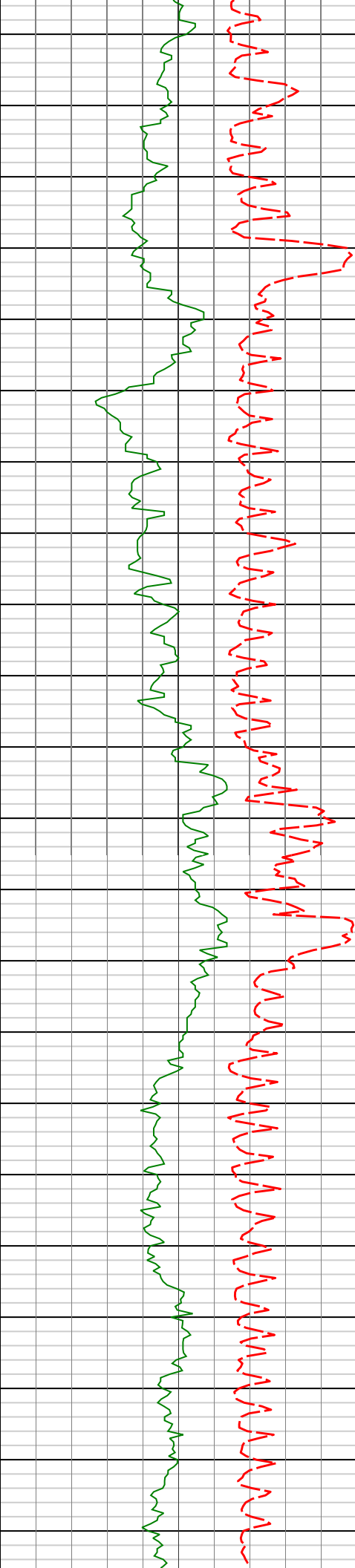
13950'

14000'

13815'	89.14°	359.49°	6856.42'	7469.85'
--------	--------	---------	----------	----------

13910'	89.85°	358.78°	6857.25'	7564.75'
--------	--------	---------	----------	----------

14005'	90.15°	358.42°	6857.25'	7659.69'
--------	--------	---------	----------	----------



14050'

14100'

14150'

14200'

14099'

91.48°

357.46°

6855.92'

7753.65'

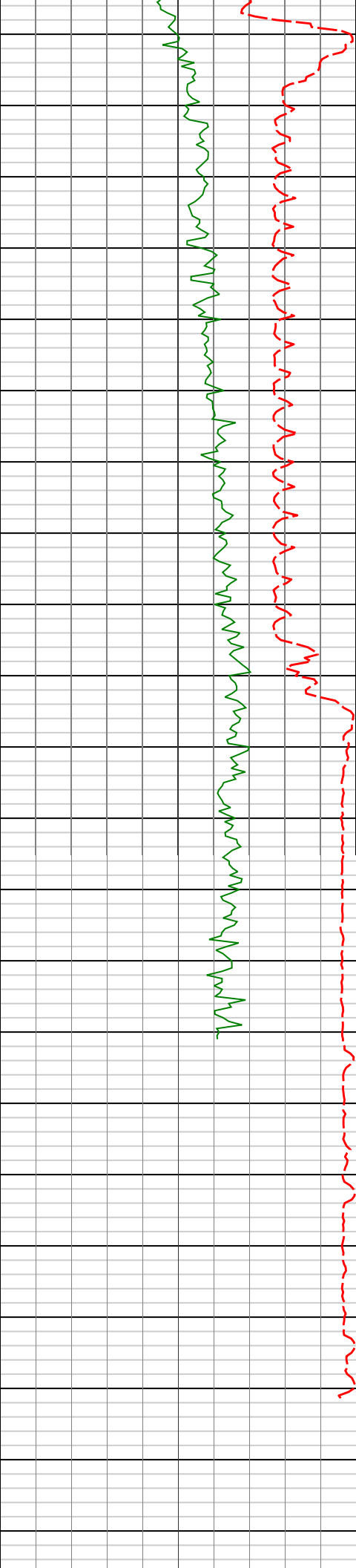
14194'

92.15°

357.35°

6852.91'

7848.59'



14250'

14289'

92.99°

357.23°

6848.65'

7943.48'

14300'

14350'

14382'

92.31°

356.17°

6844.35'

8036.38'

14400'

14450'

[illegible]

HALLIBURTON

DIRECTIONAL SURVEY REPORT

**Noble Energy
Oscar Y10-75-1HC
Wattenberg
Weld Colorado
USA
CA-XX-0901674789**

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
732.00	1.20	129.74	731.97	4.66 S	3.68 E	-4.87	0.36
997.00	0.80	140.14	996.92	7.85 S	7.00 E	-8.26	0.17
1150.00	0.60	143.94	1149.91	9.32 S	8.15 E	-9.80	0.13
1293.00	0.12	326.39	1292.91	9.80 S	8.51 E	-10.30	0.50
1386.00	0.04	300.91	1385.91	9.70 S	8.43 E	-10.20	0.09
1478.00	0.13	148.21	1477.91	9.78 S	8.46 E	-10.27	0.18
1570.00	0.25	46.47	1569.91	9.73 S	8.66 E	-10.23	0.33
1663.00	1.31	358.18	1662.90	8.53 S	8.77 E	-9.04	1.25
1755.00	2.30	307.02	1754.86	6.36 S	7.26 E	-6.79	1.95
1847.00	4.34	307.40	1846.70	3.14 S	3.02 E	-3.31	2.22
1938.00	6.35	306.37	1937.30	1.94 N	3.76 W	2.16	2.21
2031.00	8.12	304.64	2029.56	8.72 N	13.31 W	9.51	1.92
2124.00	8.69	299.81	2121.56	15.95 N	24.81 W	17.42	0.98
2216.00	9.38	296.81	2212.42	22.79 N	37.53 W	25.02	0.91
2309.00	8.72	293.15	2304.26	28.98 N	50.78 W	32.00	0.94
2402.00	7.82	292.50	2396.29	34.17 N	63.10 W	37.93	0.97
2495.00	8.63	297.50	2488.33	39.81 N	75.14 W	44.29	1.16
2589.00	7.73	296.66	2581.38	45.91 N	87.05 W	51.09	0.97
2681.00	8.34	307.03	2672.48	52.70 N	97.90 W	58.53	1.71
2774.00	9.05	307.87	2764.41	61.25 N	109.06 W	67.74	0.78
2866.00	8.23	306.40	2855.36	69.60 N	120.07 W	76.74	0.92
2960.00	8.97	305.92	2948.31	77.89 N	131.42 W	85.70	0.79
3055.00	9.02	303.16	3042.14	86.31 N	143.65 W	94.85	0.46
3150.00	8.33	302.08	3136.05	94.04 N	155.72 W	103.29	0.75
3245.00	8.21	298.25	3230.06	100.90 N	167.53 W	110.86	0.59
3340.00	8.09	295.44	3324.11	106.99 N	179.54 W	117.66	0.44
3435.00	7.82	293.63	3418.19	112.45 N	191.49 W	123.83	0.39
3530.00	8.01	290.24	3512.29	117.33 N	203.63 W	129.44	0.53
3625.00	7.37	293.33	3606.43	122.03 N	215.43 W	134.85	0.80
3719.00	8.23	293.46	3699.56	127.10 N	227.14 W	140.61	0.92
3814.00	7.87	297.85	3793.63	132.84 N	239.13 W	147.07	0.75
3909.00	8.03	301.72	3887.71	139.37 N	250.52 W	154.28	0.59
4004.00	8.12	303.02	3981.77	146.52 N	261.79 W	162.09	0.21
4099.00	9.04	306.73	4075.71	154.64 N	273.40 W	170.90	1.13
4194.00	8.93	304.63	4169.54	163.29 N	285.45 W	180.27	0.36
4289.00	7.71	300.87	4263.54	170.75 N	296.99 W	188.41	1.41
4384.00	8.94	300.70	4357.54	177.79 N	308.80 W	196.15	1.29
4478.00	8.80	297.84	4450.42	184.87 N	321.44 W	203.99	0.49
4573.00	8.83	297.51	4544.39	191.64 N	334.33 W	211.53	0.06

4573.00	8.83	297.31	4344.29	191.04 N	334.33 W	211.32	0.06
4668.00	9.22	304.51	4638.12	199.32 N	347.07 W	219.96	1.23
4763.00	7.60	302.19	4732.10	206.97 N	358.66 W	228.30	1.74
4858.00	6.83	299.86	4826.34	213.13 N	368.88 W	235.07	0.87
4953.00	6.50	294.87	4920.70	218.21 N	378.66 W	240.73	0.70
5048.00	5.50	296.15	5015.18	222.48 N	387.62 W	245.53	1.06
5143.00	4.13	292.15	5109.84	225.77 N	394.88 W	249.26	1.48
5238.00	2.02	296.75	5204.70	227.82 N	399.54 W	251.58	2.23
5333.00	1.34	291.13	5299.66	228.97 N	402.07 W	252.89	0.74
5428.00	1.33	283.78	5394.63	229.63 N	404.18 W	253.68	0.18
5523.00	0.79	288.78	5489.62	230.11 N	405.87 W	254.25	0.58
5617.00	0.67	306.21	5583.61	230.64 N	406.93 W	254.85	0.27
5712.00	0.23	343.49	5678.61	231.15 N	407.43 W	255.39	0.53
5807.00	0.38	22.62	5773.61	231.62 N	407.36 W	255.86	0.26
5902.00	0.57	45.36	5868.60	232.25 N	406.90 W	256.45	0.28
5997.00	0.71	35.72	5963.60	233.06 N	406.22 W	257.22	0.19
6092.00	1.04	12.20	6058.59	234.38 N	405.70 W	258.50	0.51
6157.00	1.23	9.46	6123.57	235.64 N	405.46 W	259.75	0.30
6281.00	8.35	353.91	6247.06	245.92 N	406.20 W	270.06	5.78
6376.00	12.47	0.59	6340.48	263.04 N	406.82 W	287.19	4.51
6471.00	17.60	7.07	6432.21	287.57 N	404.95 W	311.56	5.67
6566.00	25.08	9.24	6520.63	321.75 N	399.94 W	345.37	7.92
6661.00	37.60	7.15	6601.61	370.57 N	393.07 W	393.69	13.23
6709.00	46.62	5.21	6637.18	402.54 N	389.66 W	425.39	18.98
6755.00	53.15	3.92	6666.81	437.59 N	386.88 W	460.20	14.36
6803.00	56.28	2.05	6694.53	476.71 N	384.85 W	499.13	7.25
6850.00	57.82	2.75	6720.10	516.12 N	383.20 W	538.36	3.51
6898.00	60.47	0.80	6744.71	557.30 N	381.93 W	579.39	6.53
6945.00	64.64	0.75	6766.37	598.99 N	381.37 W	620.98	8.87
6993.00	69.66	359.07	6785.01	643.21 N	381.45 W	665.12	10.94
7040.00	74.79	357.03	6799.35	687.92 N	382.98 W	709.84	11.67
7113.00	81.87	354.92	6814.11	759.19 N	388.01 W	781.28	10.10
7219.00	85.77	356.86	6825.52	864.27 N	395.56 W	886.63	4.10
7314.00	87.04	356.70	6831.48	958.94 N	400.88 W	981.44	1.35
7408.00	88.80	357.52	6834.89	1052.75 N	405.62 W	1075.37	2.07
7503.00	90.86	358.59	6835.17	1147.69 N	408.84 W	1170.33	2.44
7598.00	91.54	358.41	6833.18	1242.63 N	411.33 W	1265.25	0.74
7693.00	89.01	358.02	6832.72	1337.58 N	414.29 W	1360.20	2.69
7786.00	89.07	357.25	6834.28	1430.49 N	418.13 W	1453.17	0.83
7880.00	89.23	357.39	6835.68	1524.37 N	422.52 W	1547.15	0.23
7974.00	90.77	358.94	6835.68	1618.32 N	425.53 W	1641.11	2.32
8066.00	90.89	359.25	6834.34	1710.30 N	426.99 W	1733.01	0.36
8158.00	91.48	359.46	6832.44	1802.27 N	428.02 W	1824.87	0.68
8251.00	87.17	359.05	6833.54	1895.23 N	429.23 W	1917.74	4.66
8344.00	87.69	358.66	6837.71	1988.12 N	431.09 W	2010.57	0.70
8436.00	87.90	359.69	6841.25	2080.04 N	432.41 W	2102.40	1.14
8527.00	88.83	0.58	6843.84	2171.00 N	432.20 W	2193.18	1.41
8619.00	90.83	1.31	6844.12	2262.99 N	430.68 W	2284.90	2.31
8712.00	91.45	0.77	6842.27	2355.95 N	428.99 W	2377.60	0.88
8804.00	92.87	0.68	6838.80	2447.88 N	427.83 W	2469.28	1.55
8897.00	91.08	359.88	6835.59	2540.82 N	427.37 W	2562.02	2.11
8990.00	88.98	0.26	6835.54	2633.81 N	427.26 W	2654.84	2.29
9083.00	88.86	359.18	6837.30	2726.79 N	427.71 W	2747.68	1.17
9176.00	88.43	358.39	6839.50	2819.74 N	429.69 W	2840.58	0.97
9269.00	89.26	359.16	6841.37	2912.70 N	431.67 W	2933.49	1.22
9362.00	89.29	356.86	6842.55	3005.63 N	434.90 W	3026.44	2.47
9454.00	89.82	355.53	6843.26	3097.42 N	441.01 W	3118.44	1.56
9546.00	89.63	357.76	6843.70	3189.26 N	446.39 W	3210.43	2.43
9641.00	90.06	358.97	6843.96	3284.22 N	449.10 W	3305.38	1.35
9736.00	90.89	358.48	6843.17	3379.19 N	451.22 W	3400.31	1.01
9831.00	90.40	359.96	6842.10	3474.17 N	452.51 W	3495.19	1.64
9926.00	89.88	359.80	6841.87	3569.17 N	452.71 W	3590.03	0.57
10020.00	90.68	1.44	6841.41	3663.16 N	451.69 W	3683.78	1.94
10115.00	91.51	1.62	6839.60	3758.11 N	449.15 W	3778.40	0.89
10210.00	90.31	2.80	6838.09	3853.02 N	445.49 W	3872.92	1.77
10305.00	87.81	2.40	6839.65	3947.90 N	441.18 W	3967.37	2.67
10400.00	87.63	1.86	6843.43	4042.76 N	437.65 W	4061.84	0.60
10494.00	89.01	1.58	6846.18	4136.68 N	434.83 W	4155.41	1.50
10589.00	86.39	0.64	6849.99	4231.57 N	433.00 W	4250.02	2.93
10684.00	87.53	359.86	6855.03	4326.44 N	432.58 W	4344.69	1.45
10779.00	89.88	0.61	6857.18	4421.41 N	432.19 W	4439.46	2.60
10874.00	88.88	359.38	6859.12	4516.38 N	432.10 W	4534.32	2.61

10874.00	88.98	358.30	6858.13	4516.39 N	433.10 W	4534.32	2.61
10969.00	89.35	358.33	6859.51	4611.34 N	435.89 W	4629.27	0.39
11064.00	93.52	357.68	6857.13	4706.23 N	439.19 W	4724.18	4.44
11159.00	92.81	357.85	6851.89	4801.01 N	442.89 W	4819.02	0.77
11254.00	92.25	357.28	6847.69	4895.83 N	446.93 W	4913.91	0.84
11349.00	91.51	358.77	6844.58	4990.72 N	450.20 W	5008.82	1.75
11443.00	89.69	358.91	6843.59	5084.69 N	452.10 W	5102.73	1.94
11538.00	89.26	358.58	6844.46	5179.67 N	454.18 W	5197.66	0.57
11633.00	89.35	359.16	6845.61	5274.64 N	456.05 W	5292.57	0.62
11728.00	89.51	359.78	6846.56	5369.63 N	456.93 W	5387.44	0.67
11823.00	89.20	359.80	6847.63	5464.62 N	457.28 W	5482.28	0.33
11918.00	90.65	359.76	6847.75	5559.62 N	457.65 W	5577.13	1.53
12013.00	88.25	359.46	6848.67	5654.61 N	458.29 W	5671.98	2.55
12108.00	89.23	359.69	6850.75	5749.58 N	459.00 W	5766.82	1.06
12203.00	86.58	357.72	6854.23	5844.48 N	461.14 W	5861.67	3.47
12297.00	87.35	358.23	6859.20	5938.29 N	464.46 W	5955.51	0.98
12392.00	87.59	359.19	6863.40	6033.17 N	466.59 W	6050.35	1.04
12487.00	88.15	359.83	6866.93	6128.10 N	467.41 W	6145.15	0.89
12582.00	90.22	0.53	6868.28	6223.08 N	467.11 W	6239.95	2.30
12677.00	90.09	0.66	6868.02	6318.08 N	466.12 W	6334.71	0.19
12772.00	92.34	0.64	6866.01	6413.04 N	465.04 W	6429.43	2.37
12867.00	90.43	358.15	6863.71	6508.00 N	466.05 W	6524.28	3.30
12961.00	91.23	358.49	6862.35	6601.95 N	468.80 W	6618.22	0.92
13056.00	91.57	358.69	6860.03	6696.89 N	471.14 W	6713.13	0.42
13151.00	91.45	358.13	6857.53	6791.82 N	473.78 W	6808.05	0.60
13245.00	90.34	357.29	6856.06	6885.73 N	477.53 W	6902.01	1.48
13340.00	89.78	357.40	6855.96	6980.63 N	481.93 W	6997.00	0.60
13435.00	90.77	2.56	6855.50	7075.60 N	481.97 W	7091.79	5.53
13530.00	88.70	2.26	6855.94	7170.51 N	477.97 W	7186.29	2.20
13625.00	90.37	2.75	6856.71	7265.41 N	473.82 W	7280.77	1.83
13719.00	90.43	2.95	6856.06	7359.29 N	469.15 W	7374.19	0.22
13815.00	89.14	359.49	6856.42	7455.25 N	467.10 W	7469.85	3.85
13910.00	89.85	358.78	6857.25	7550.23 N	468.54 W	7564.75	1.06
14005.00	90.15	358.42	6857.25	7645.21 N	470.86 W	7659.69	0.49
14099.00	91.48	357.46	6855.92	7739.13 N	474.24 W	7753.65	1.74
14194.00	92.15	357.35	6852.91	7833.99 N	478.53 W	7848.59	0.71
14289.00	92.99	357.23	6848.65	7928.78 N	483.02 W	7943.48	0.89
14382.00	92.31	356.17	6844.35	8021.53 N	488.37 W	8036.38	1.35
14440.00	92.31	356.17	6842.01	8079.35 N	492.24 W	8094.33	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 356.53 DEGREES (GRID)
A TOTAL CORRECTION OF 7.72 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 14440.00 FEET
IS 8094.33 FEET ALONG 356.51 DEGREES (GRID)