

Pressure Cased Gamma (PCGK)

1:240

[illegible]

WELL INFORMATION

MWD Run Number	100	200			
Date run completed	03-Dec-14	08-Dec-14			
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)	1,184.00	7,220.00			
Log End Depth (MD, ft)	7,220.00	14,377.00			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	01-Dec-14 14:55	03-Dec-14 19:22			
Drill/Wipe End Date and Time	03-Dec-14 00:30	07-Dec-14 22:54			
Min Inc (deg) @ Depth (MD, ft)	0.13 @ 6,091.00	85.63 @ 7,258.00			
Max Inc (deg) @ Depth (MD, ft)	85.50 @ 7,220.00	91.63 @ 8,193.00			
Bit TFA(in2) / Bit Type	0.91 / PDC	0.65 / PDC			
Flow Rate (gpm)	578.98	298.29			
Max AV (fpm) / CV (fpm) @ MWD	N/A	N/A			
Fluid Type	Native/Spud Mud	Native/Spud Mud			
Density (ppg) / Viscosity (spqt)	9.25 / 44.00	9.73 / 40.00			
Filtrate CL (ppm)	2,400.00	2,100.00			
pH / API Filtrate (mpm)	9.00 / 9	9.00 / 7			
PV (cP) / YP (lbf2)	12 / 13.00	13 / 13.00			
% Solids / % Sand	9.90 / 0.50	8.00 / 1.00			
% Oil / Oil:Water Ratio	0.00 / N/A	0.00 / 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 Fretting (in) / Fretting	1.00 / 0.5 / PDC	0.15 / 0.5 / PDC			

Max Tool Temp (degF) / Source	170.37 / PCM	245.03 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ 170.37	N/A @ 245.03			
Lead MWD Engineer	Paul Sheets	Paul Sheets			
Customer Representative	Martin Suarez	Steve Record			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.93	5.93			
Sub Serial Number	11404298	11404298			
Insert Serial Number	11680745	11680745			
Date and Time Initialized	01-Dec-14 07:47	03-Dec-14 19:53			
Date and Time Read	03-Dec-14 07:06	08-Dec-14 14:05			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	56.27	58.24			
Software Version	6.21	6.21			
Sub Serial Number	11404298	11404298			
Sonde Serial Number	11638623	11638623			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	42.86	135.00			

Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	51.17	53.14			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	11404298	11404298			
Insert/Sonde Serial Number	12037422	12037422			

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

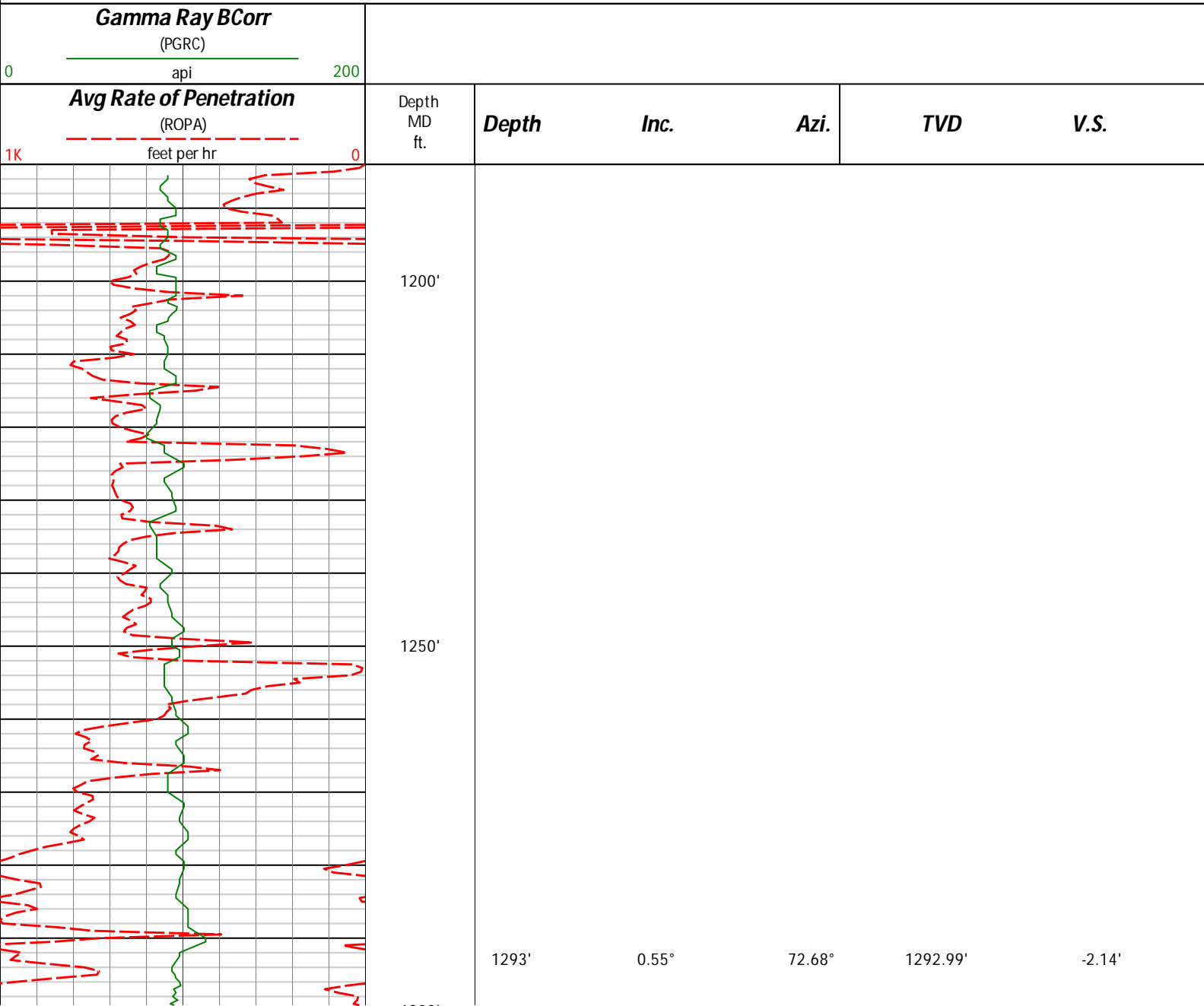
5. INSITE version 8.4.10-MLWD

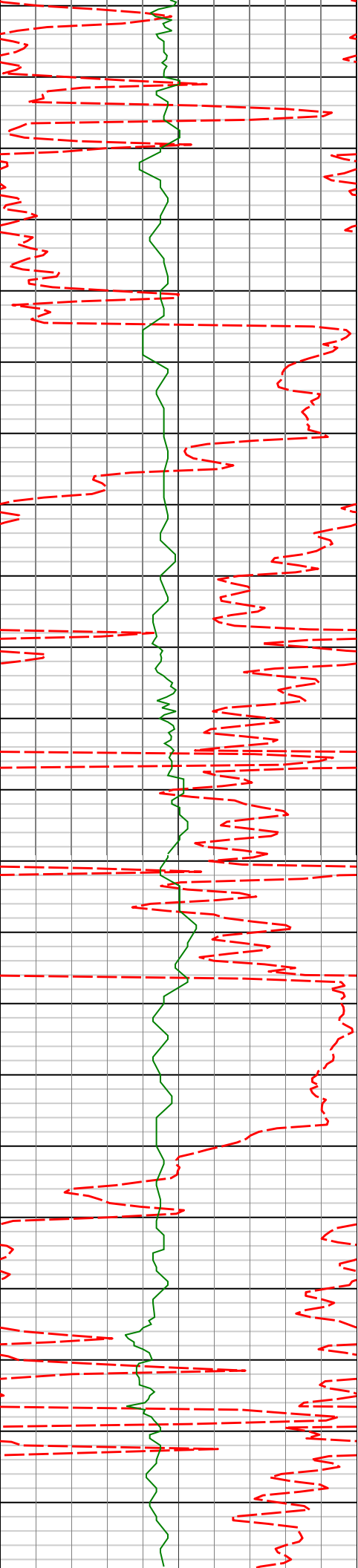
WARRANTY

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Sperry Drilling Services

MD Detail Log 1:240





1300'

1350'

1400'

1450'

1500'

1386'

1.73°

62.34°

1385.97'

-1.31'

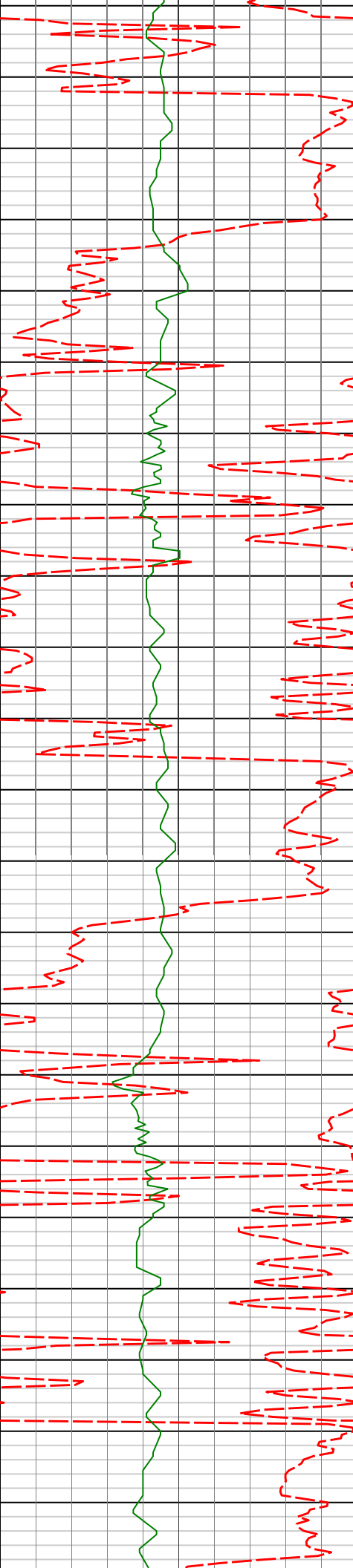
1478'

2.96°

56.60°

1477.89'

0.71'



1550'

1570'

4.32°

61.77°

1569.70'

3.77'

1600'

1650'

1663'

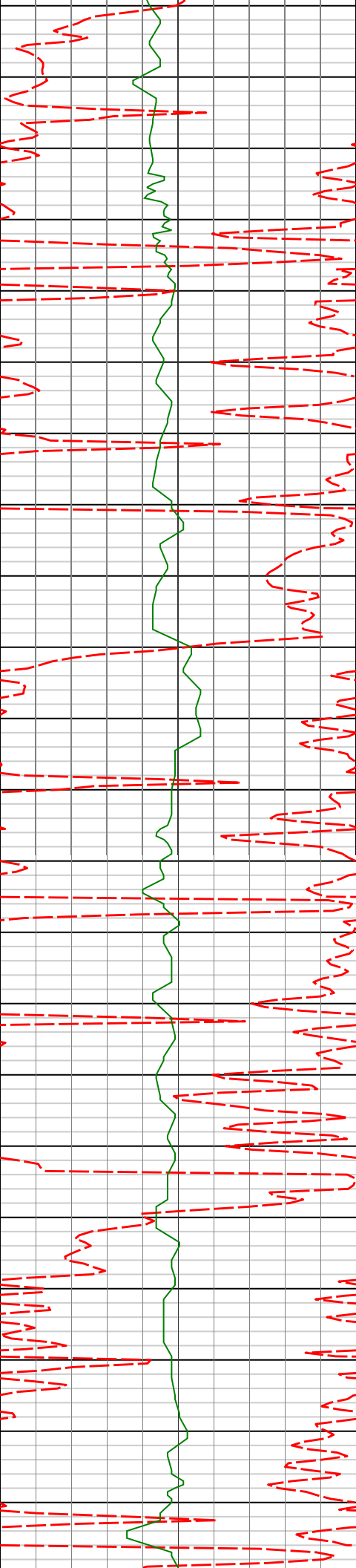
5.74°

53.35°

1662.35'

8.36'

1700'



1750'

1755'

7.23°

49.09°

1753.76'

15.08'

1800'

1850'

1847'

8.64°

43.14°

1844.87'

24.12'

1900'

1938'

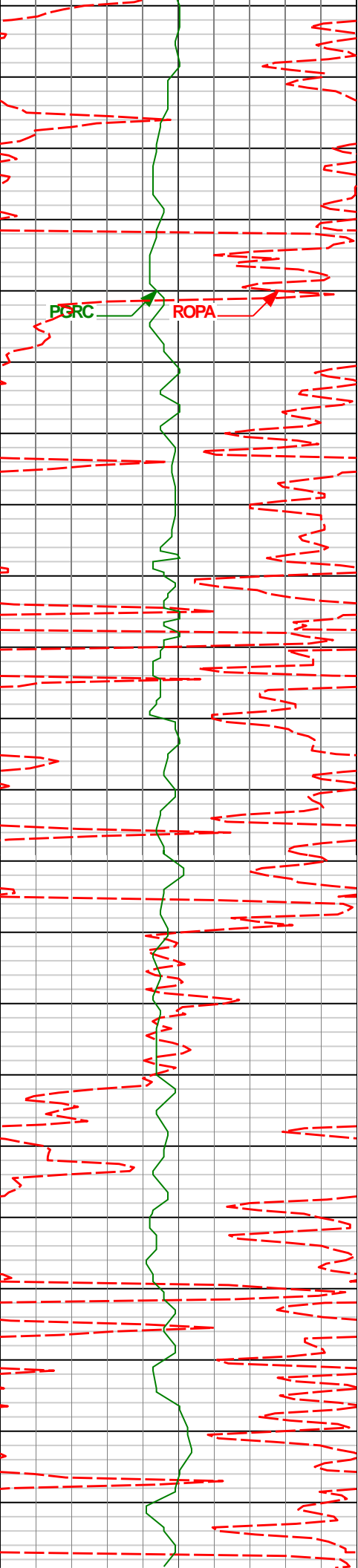
8.33°

38.54°

1934.88'

34.46'

1950'



2000'

2050'

2100'

2150'

2031'

8.27°

36.09°

2026.90'

45.31'

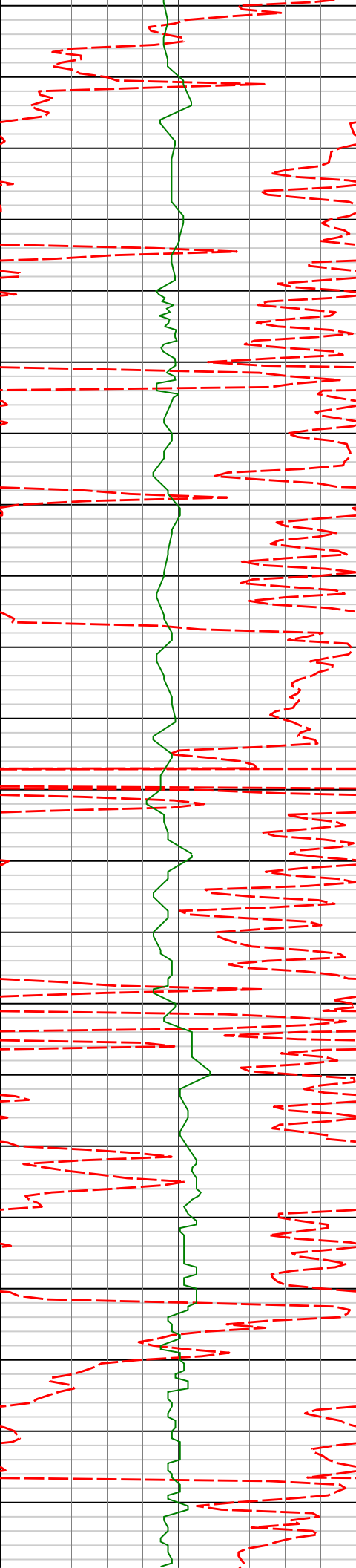
2123'

7.93°

32.85°

2117.99'

56.15'



2200'

2216'

7.33°

28.52°

2210.16'

66.90'

2250'

2300'

2309'

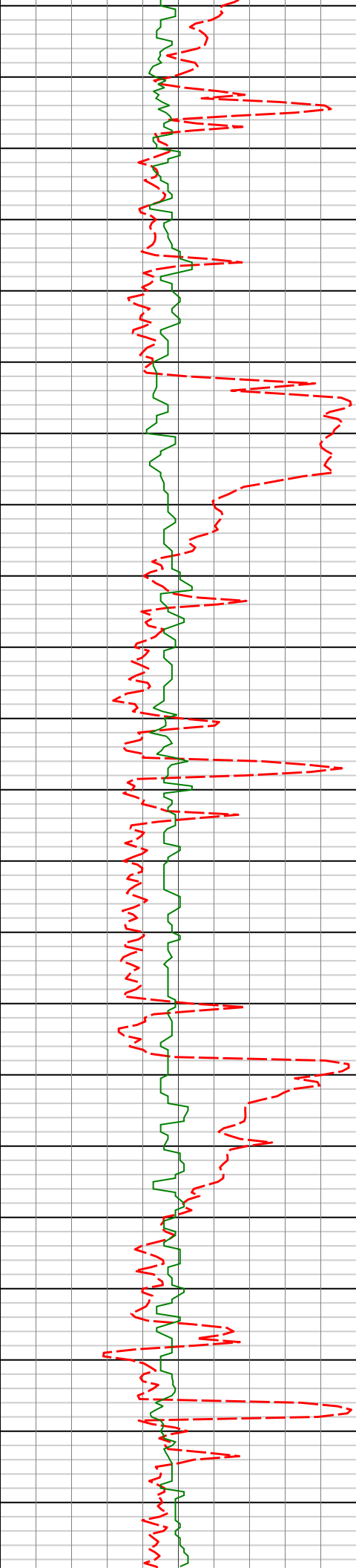
8.02°

38.67°

2302.33'

77.33'

2350'



2400'

2450'

2500'

2550'

2600'

2402'

2495'

2589'

7.83°

8.44°

7.87°

35.39°

36.24°

36.40°

2394.45'

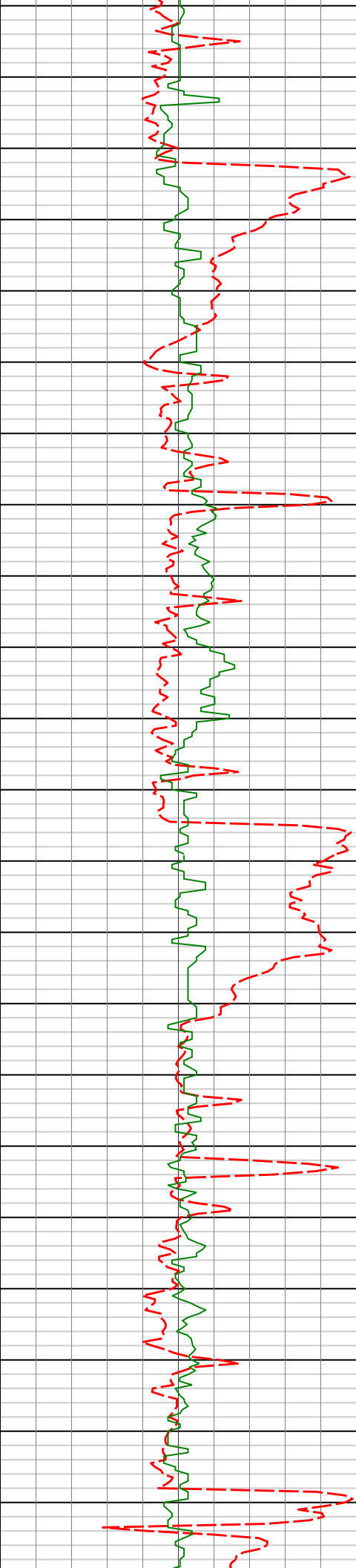
2486.51'

2579.56'

87.73'

98.57'

109.49'



2650'

2700'

2750'

2800'

2681'

6.85°

34.43°

2670.80'

119.24'

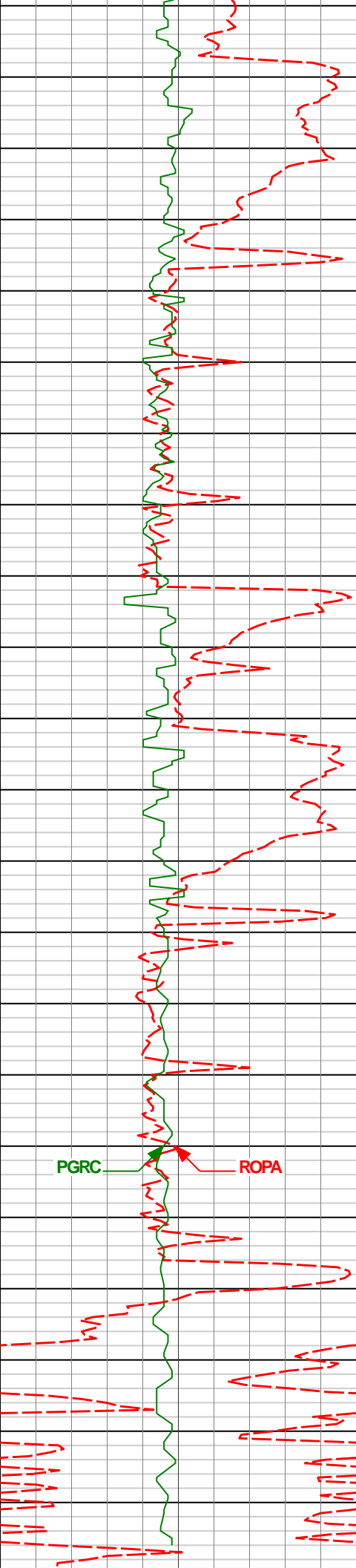
2773'

7.49°

41.87°

2762.08'

128.39'



2850'

2865'

7.87°

44.75°

2853.26'

137.52'

2900'

2950'

2960'

8.93°

48.04°

2947.24'

147.29'

3000'

PGRC

ROPA

3050'

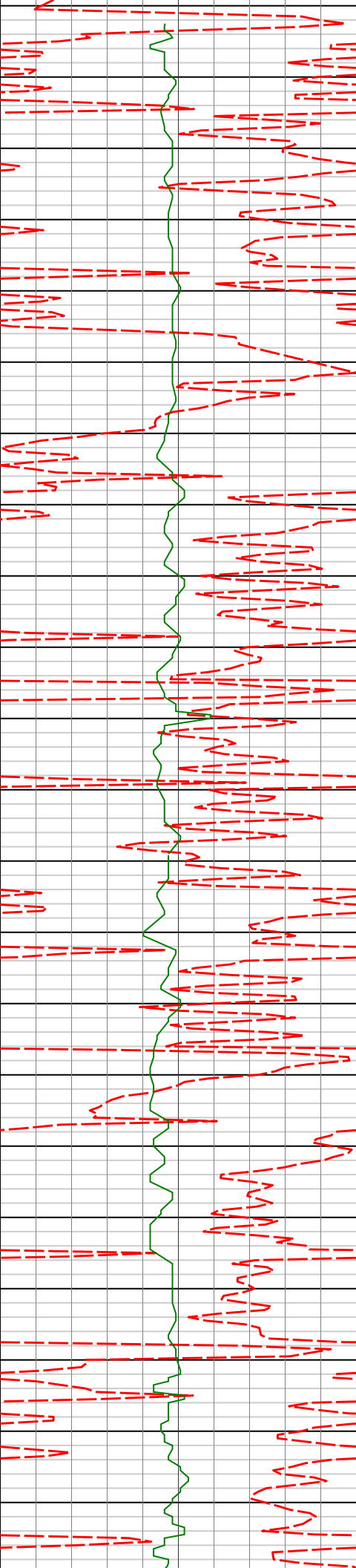
3055'

8.76°

48.71°

3041.11'

157.24'



3100'

3150'

3200'

3250'

3150'

8.33°

47.61°

3135.05'

166.89'

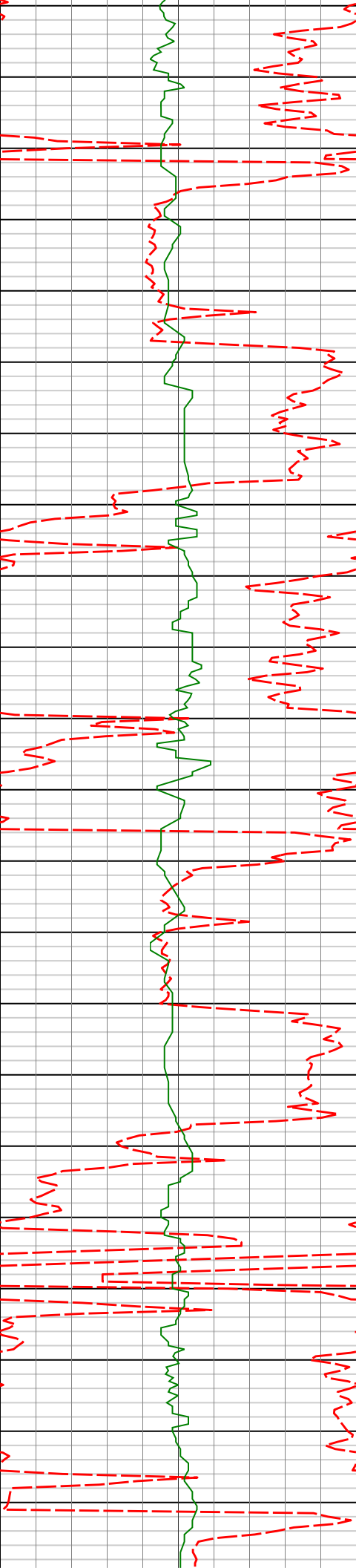
3245'

7.61°

46.32°

3229.14'

176.09'



3300'

3340'

8.91°

47.96°

3323.15'

185.59'

3350'

3400'

3435'

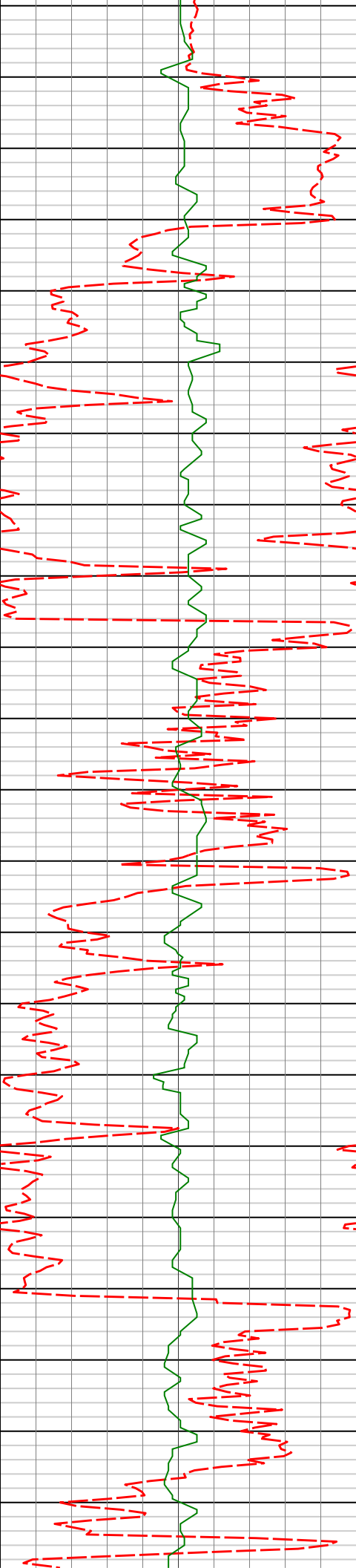
9.52°

42.24°

3416.92'

196.57'

3450'



3500'

3530'

8.53°

33.94°

3510.75'

208.44'

3550'

3600'

3624'

7.62°

29.41°

3603.82'

219.81'

3650'

3700'

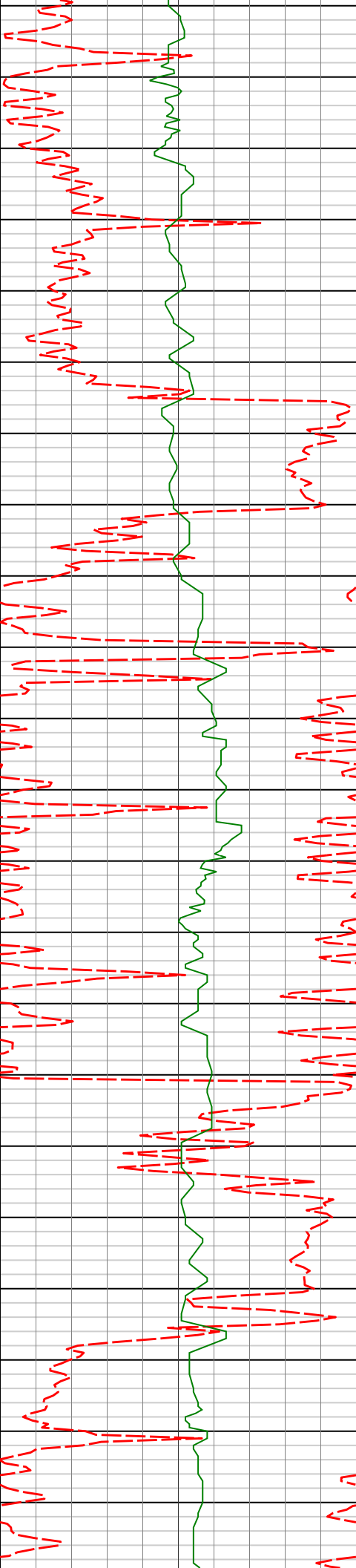
3710'

6.83°

28.18°

3608.06'

230.40'



3750'

3800'

3850'

3900'

3814'

7.11°

37.99°

3792.36'

240.16'

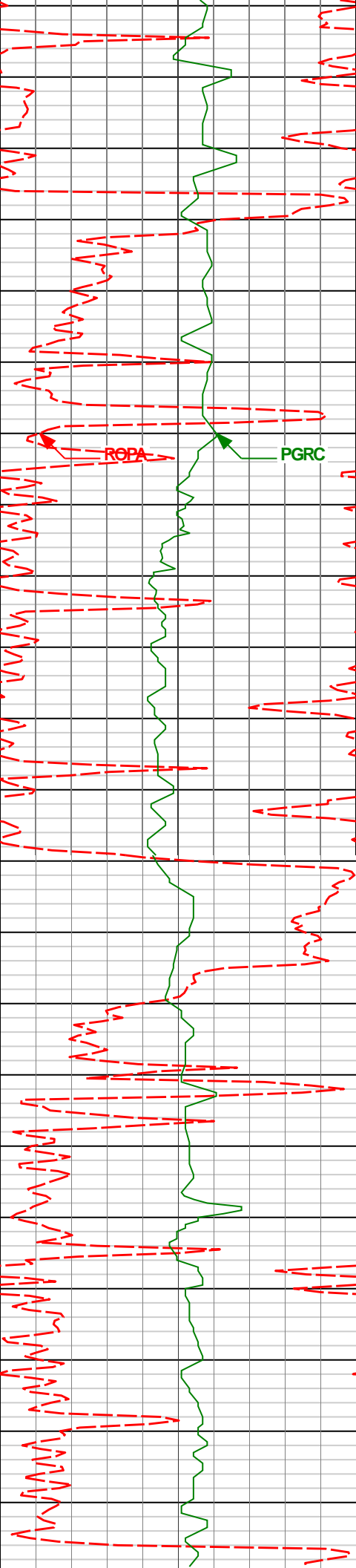
3909'

8.26°

31.81°

3886.51'

250.75'



3950'

4000'

4050'

4100'

4150'

4004'

7.51°

32.16°

3980.61'

261.96'

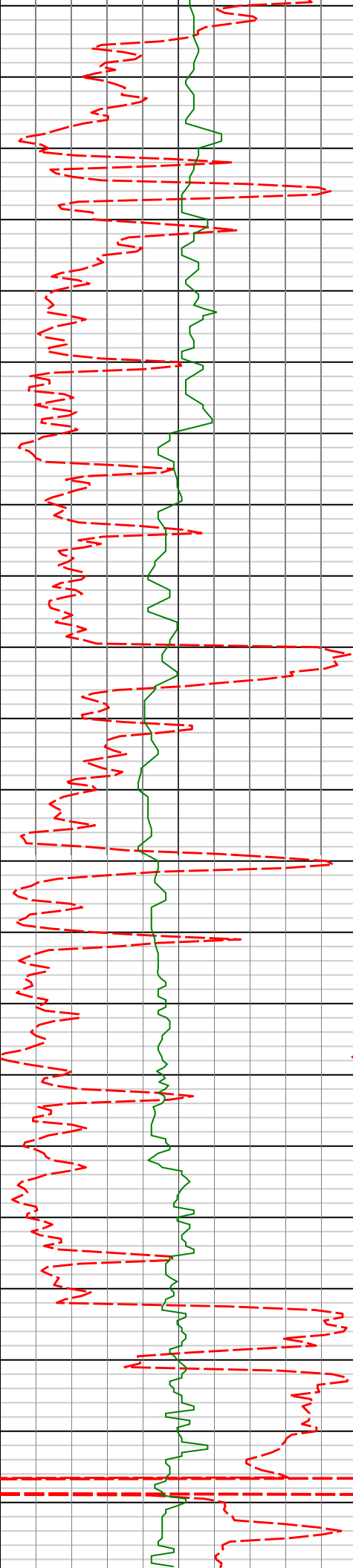
4099'

9.13°

33.55°

4074.61'

273.66'



4200'

4250'

4300'

4350'

4194'

8.15°

33.64°

4168.53'

285.73'

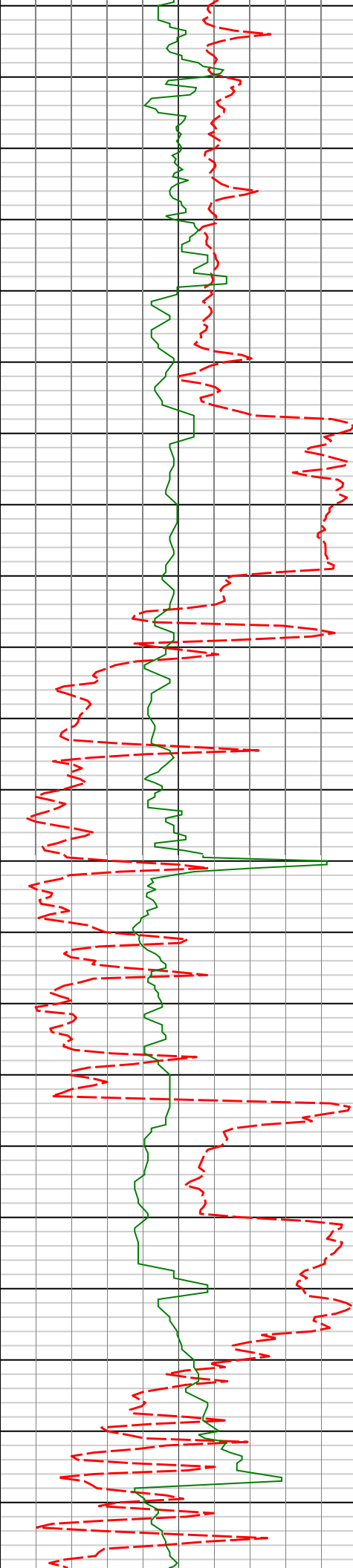
4288'

8.06°

32.95°

4261.59'

296.97'



4400'

4450'

4500'

4550'

4383'

7.87°

30.04°

4355.67'

308.34'

4478'

6.33°

24.71°

4449.94'

318.85'

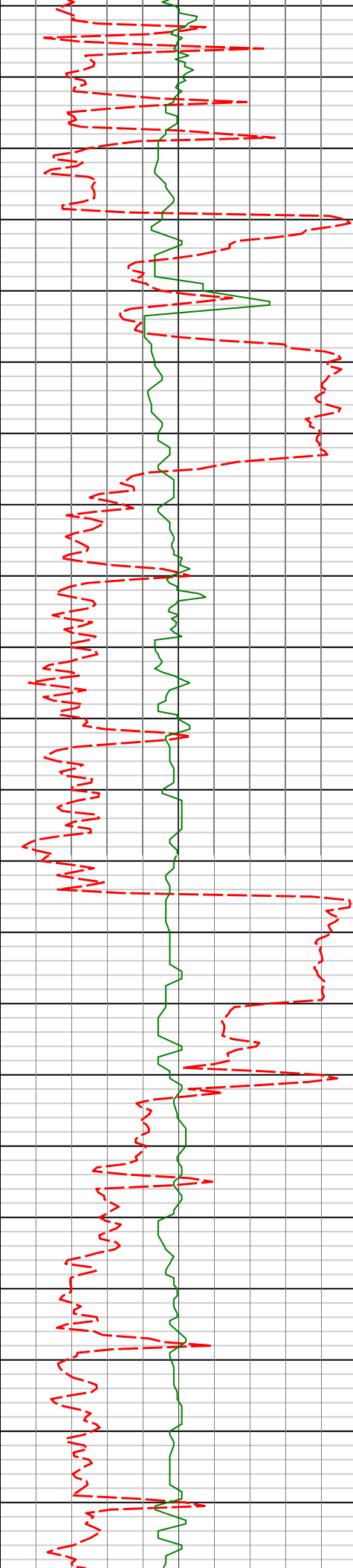
4573'

4.73°

29.71°

4544.50'

327.10'



4600'

4650'

4700'

4750'

4800'

4668'

2.64°

26.11°

4639.30'

332.53'

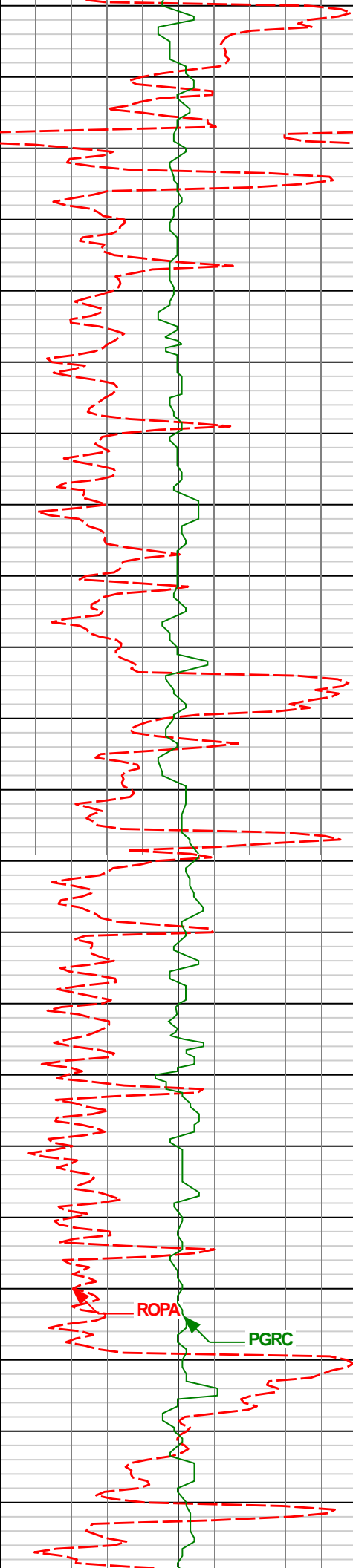
4763'

0.53°

81.39°

4734.26'

334.59'



4850'

4900'

4950'

5000'

4858'

0.22°

89.81°

4829.26'

334.67'

4953'

0.28°

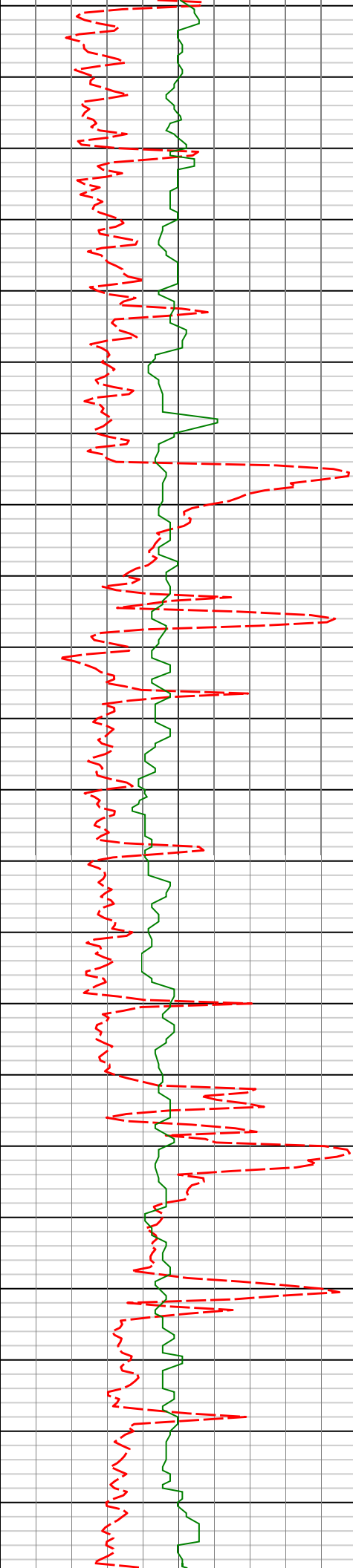
157.66°

4924.26'

334.47'

ROPA

PGRC



5050'

5100'

5150'

5200'

5250'

5048'

5143'

5238'

0.52°

0.43°

0.34°

181.49°

189.34°

191.97°

5019.25'

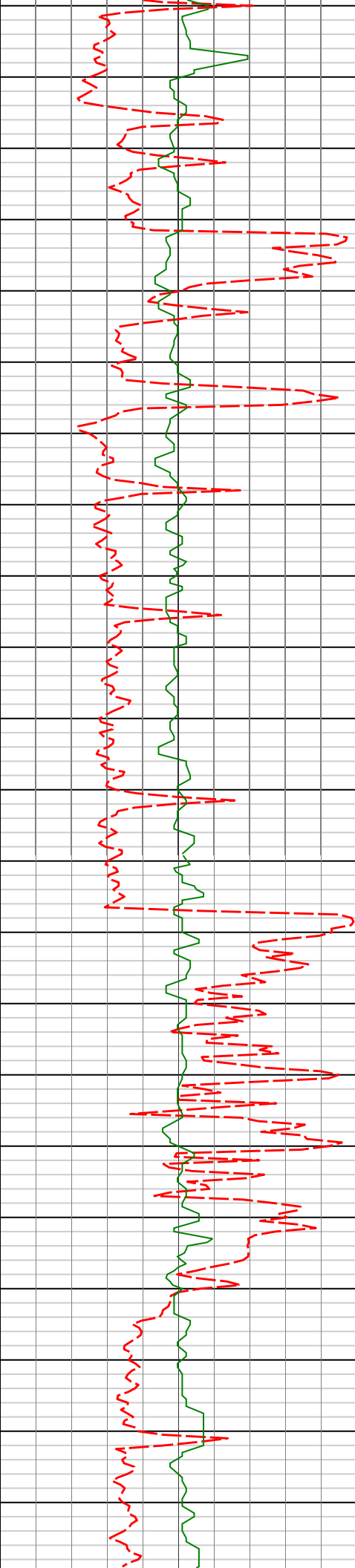
5114.25'

5209.25'

333.82'

333.04'

332.41'



5300'

5350'

5400'

5450'

5333'

0.15°

235.06°

5304.25'

332.06'

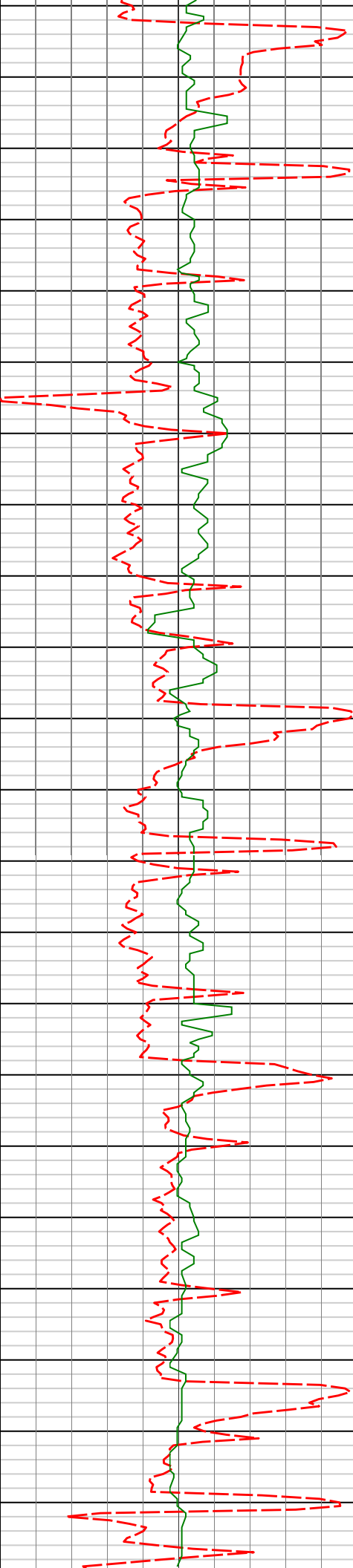
5427'

0.15°

241.99°

5398.25'

331.92'



5500'

5550'

5600'

5650'

5522'

0.23°

293.42°

5493.25'

331.94'

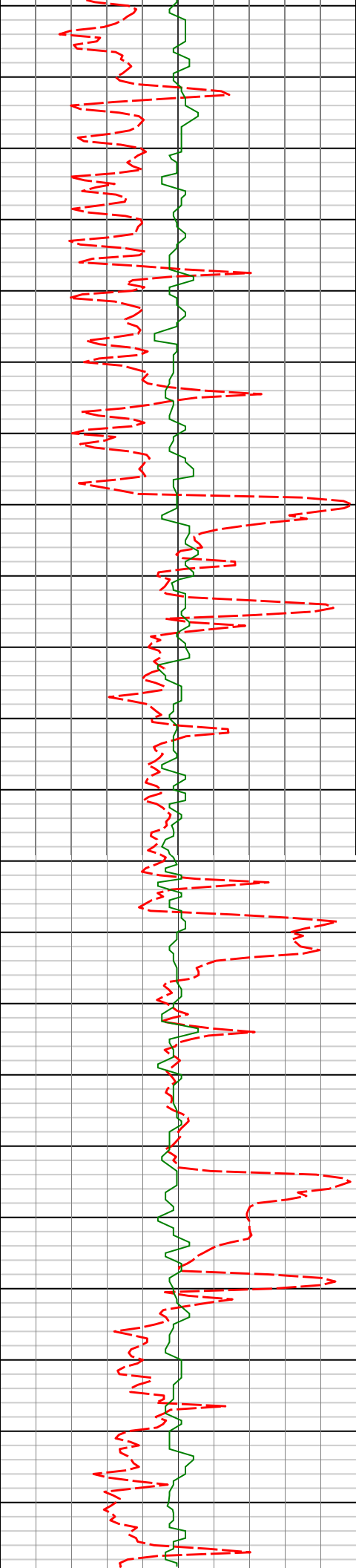
5617'

0.16°

238.86°

5588.25'

331.94'



5700'

5712'

0.46°

148.21°

5683.25'

331.55'

5750'

5800'

5807'

0.43°

178.56°

5778.24'

330.87'

5850'

5900'

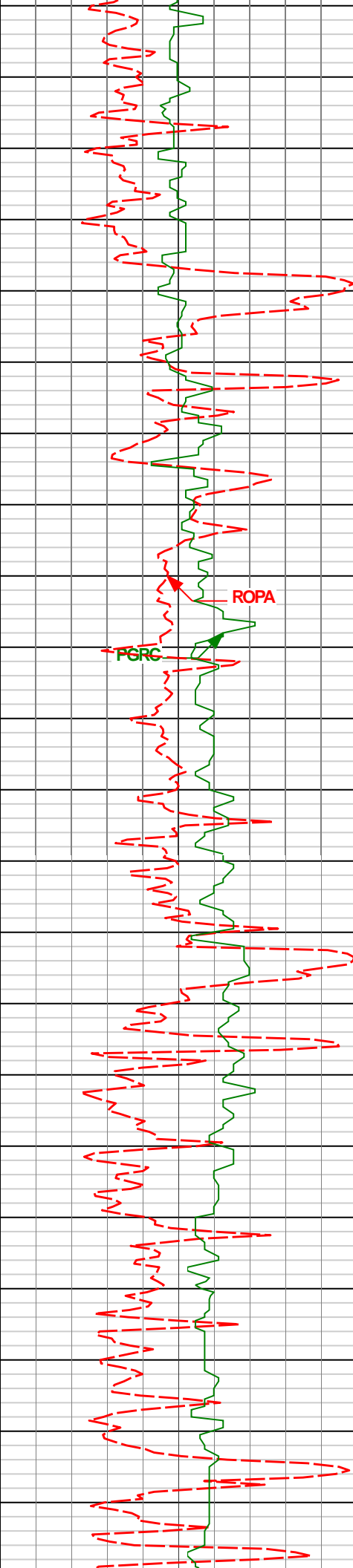
5902'

0.43°

186.00°

5873.24'

330.16'



5950'

6000'

6050'

6100'

5996'

0.33°

170.42°

5967.24'

329.54'

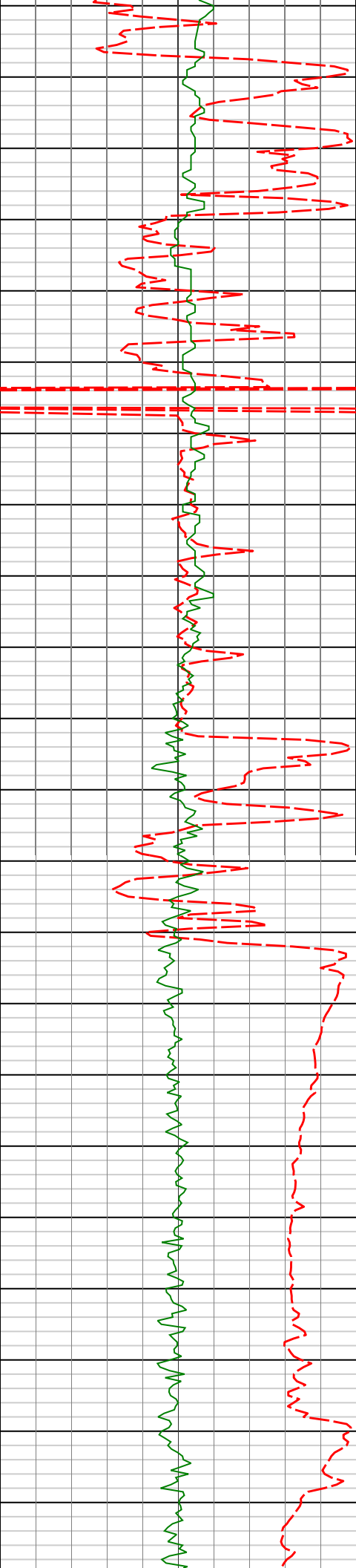
6091'

0.13°

250.14°

6062.24'

329.23'



6150'

6200'

6250'

6300'

6350'

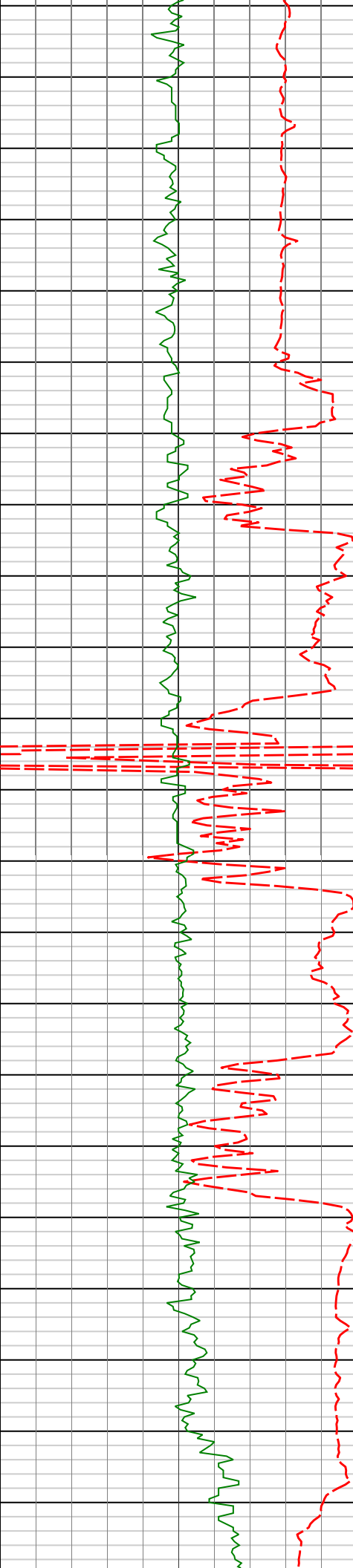
6186'

0.25°

290.72°

6157.24'

329.26'



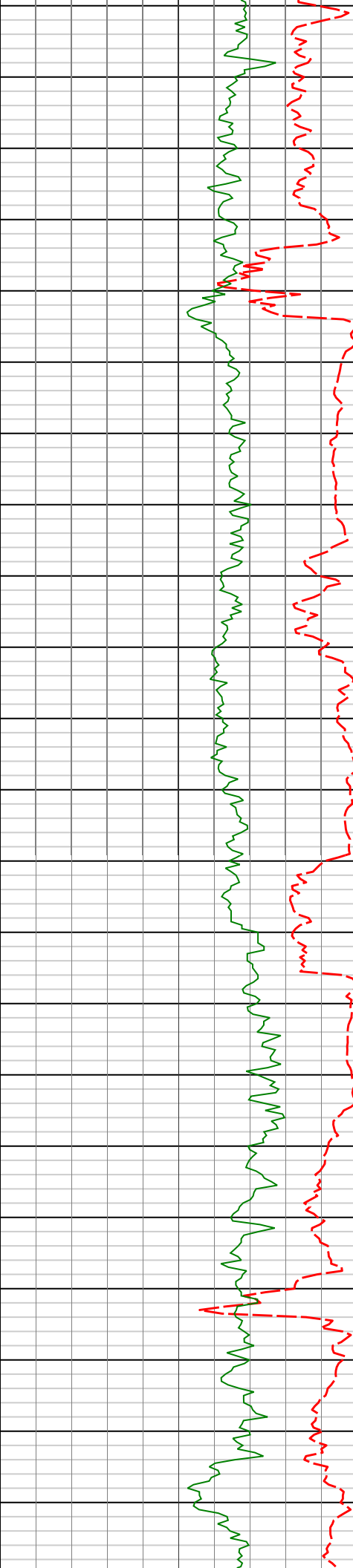
6400'

6450'

6500'

6550'

6376'	15.43°	3.00°	6344.94'	354.82'
6424'	20.43°	8.84°	6390.59'	369.52'
6471'	21.78°	10.08°	6434.44'	386.27'
6566'	26.27°	2.77°	6521.21'	424.73'



6600'

6614'

31.70°

357.56°

6563.19'

447.95'

6650'

6661'

34.68°

356.67°

6602.52'

473.61'

6700'

6709'

36.73°

358.87°

6641.49'

501.57'

6750'

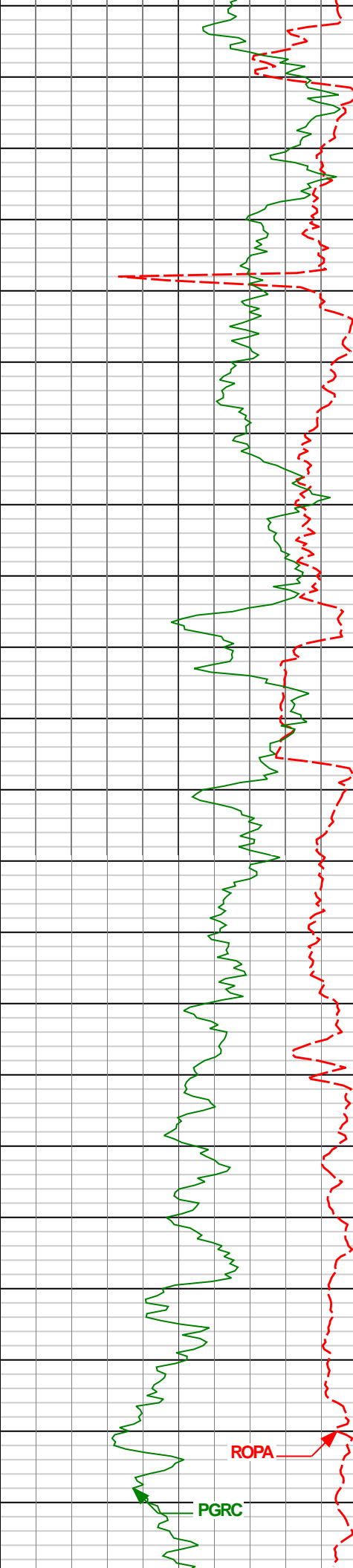
6756'

40.86°

359.52°

6678.12'

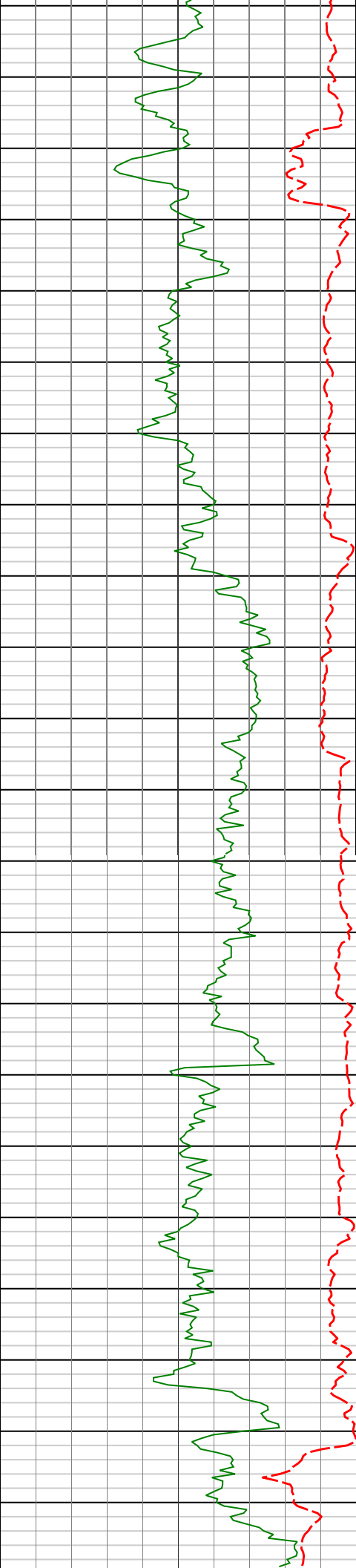
530.99'



6800'					
6850'	6850'	50.47°	0.21°	6743.73'	598.12'
6900'	6898'	54.43°	1.10°	6772.98'	636.17'
6950'	6945'	59.29°	1.57°	6798.67'	675.51'
7000'	6993'	64.16°	359.89°	6821.40'	717.77'

ROPA

PGRC



7040'

68.32°

358.03°

6840.33'

760.73'

7050'

7104'

75.59°

358.35°

6860.14'

821.46'

7150'

7162'

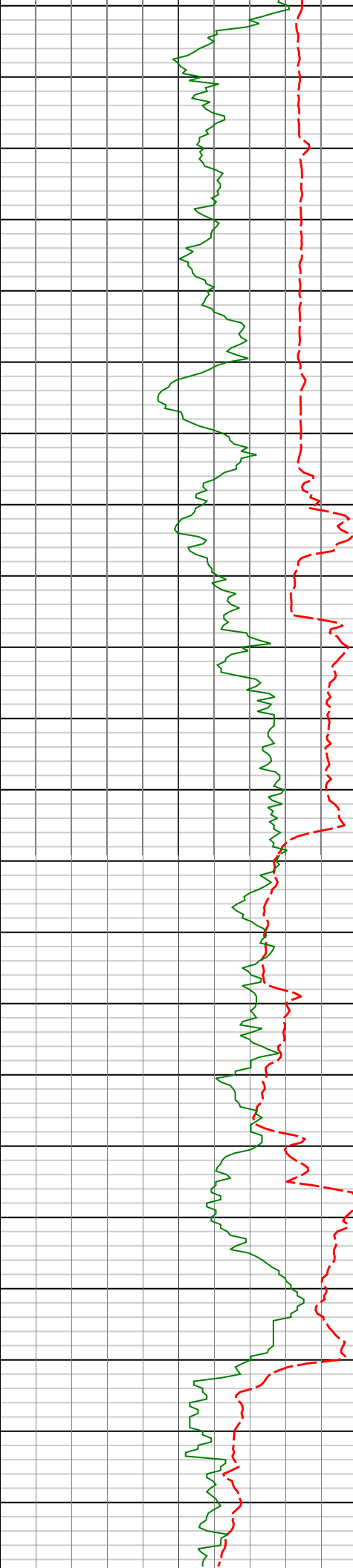
82.80°

359.72°

6871.01'

878.34'

7200'



7250'

7258'

85.63°

0.26°

6880.69'

973.82'

7300'

7350'

7353'

87.10°

358.44°

6886.71'

1068.57'

7400'

7450'

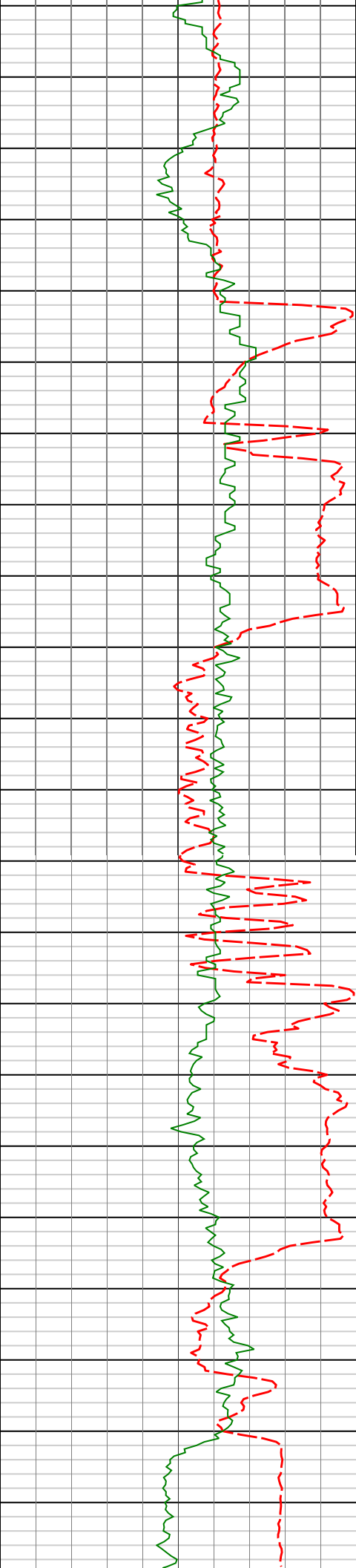
7448'

89.14°

358.21°

6889.83'

1163.38'



7500'

7550'

7600'

7650'

7543'

88.92°

358.83°

6891.43'

1258.26'

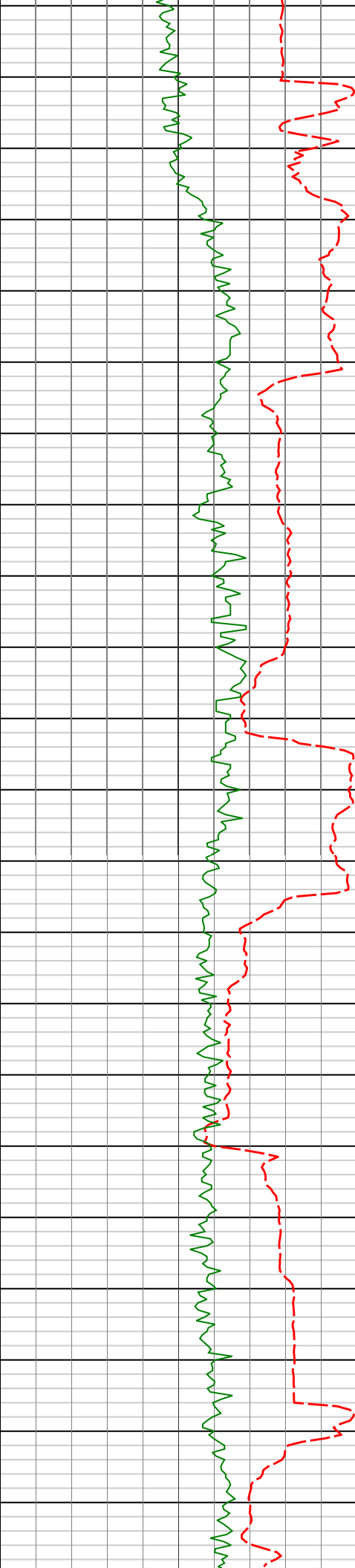
7635'

90.68°

357.58°

6891.76'

1350.12'



7700'

7730'

91.14°

358.92°

6890.25'

1444.97'

7750'

7800'

7823'

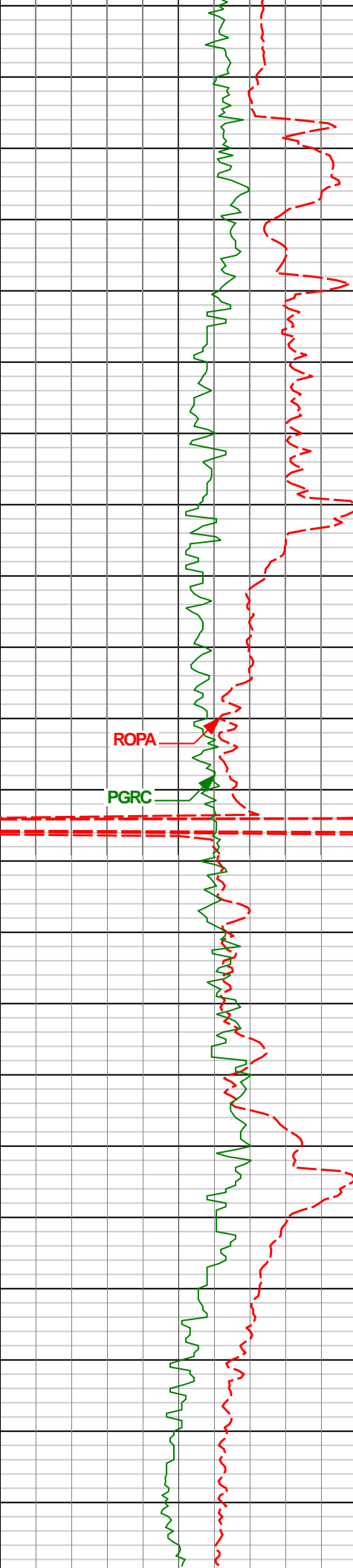
90.99°

0.43°

6888.52'

1537.91'

7850'



7900'

7916'

91.26°

359.79°

6886.69'

1630.87'

7950'

8000'

ROPA

PGRC

8008'

91.26°

359.18°

6884.67'

1722.80'

8050'

8100'

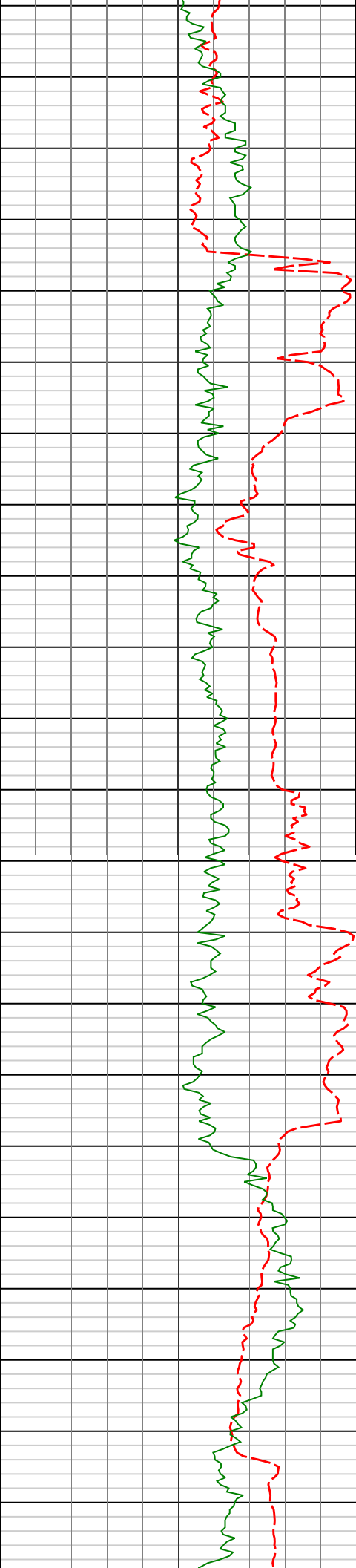
8100'

91.35°

358.63°

6882.57'

1814.70'



8150'

8193'

91.63°

0.34°

6880.16'

1907.62'

8200'

8250'

8285'

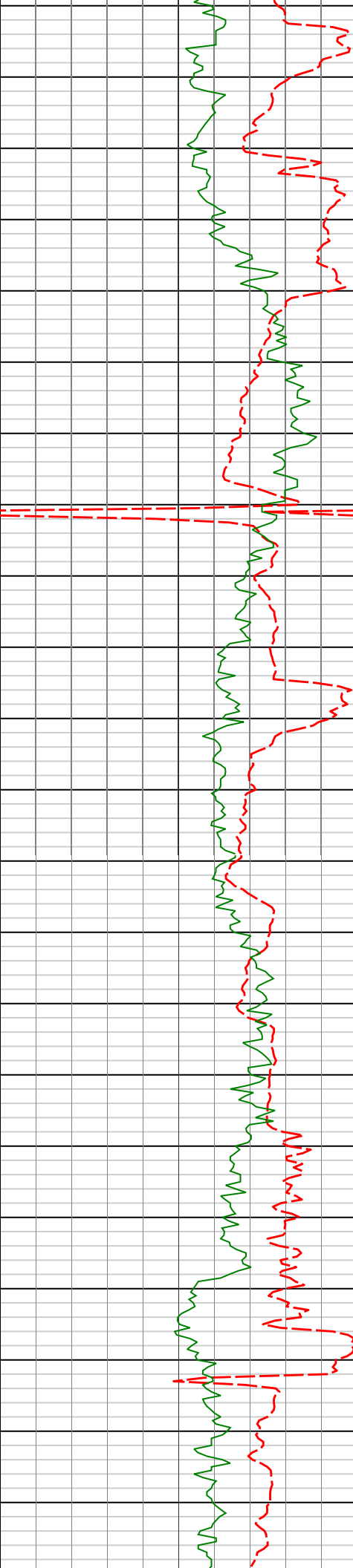
91.42°

1.27°

6877.71'

1999.58'

8300'



8350'

8377'

89.60°

0.76°

6876.89'

2091.57'

8400'

8450'

8468'

89.41°

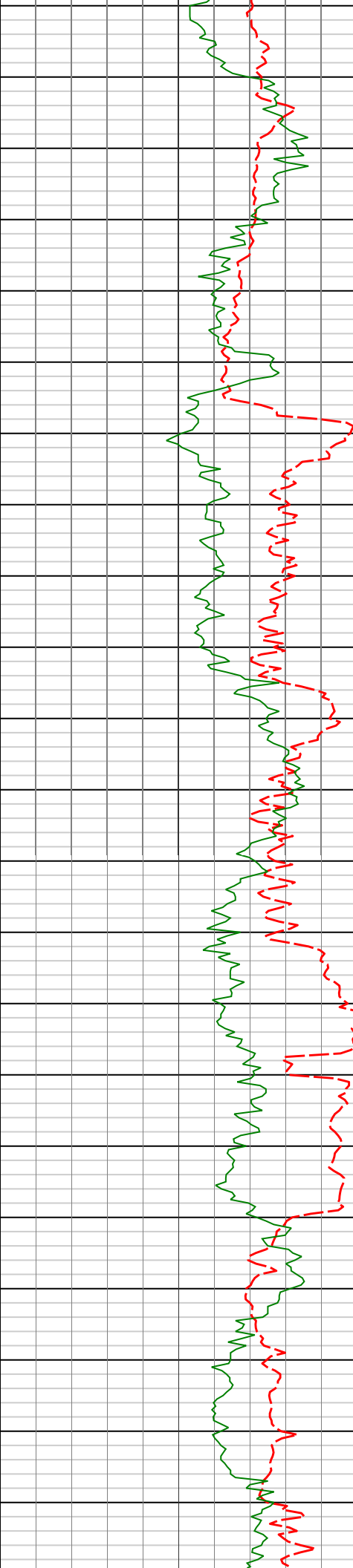
0.68°

6877.67'

2182.56'

8500'

8550'



8600'

8650'

8700'

8750'

8561'

89.57°

0.01°

6878.50'

2275.55'

8654'

89.75°

359.25°

6879.05'

2368.51'

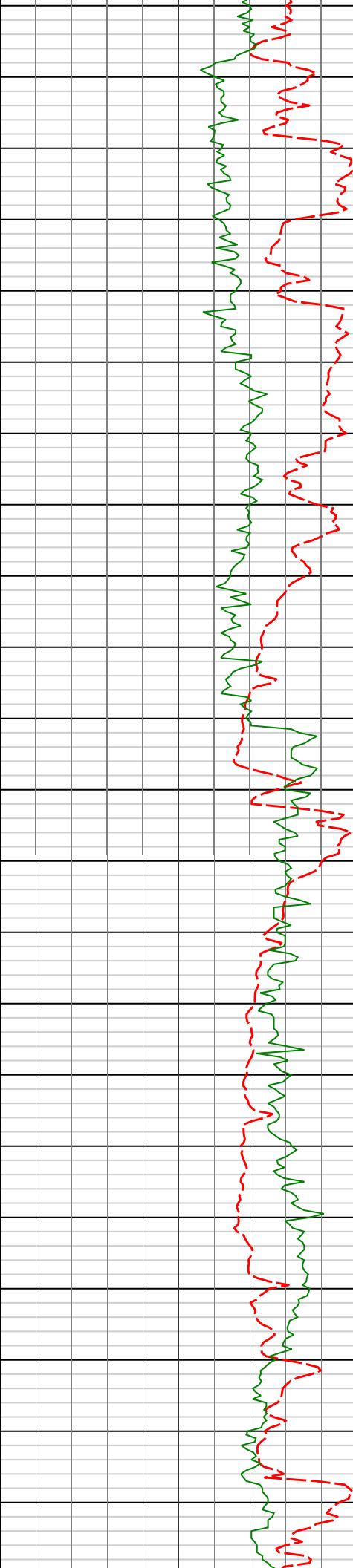
8746'

89.97°

359.23°

6879.28'

2460.45'



8800'

8840'

90.22°

0.66°

6879.12'

2554.42'

8850'

8900'

8932'

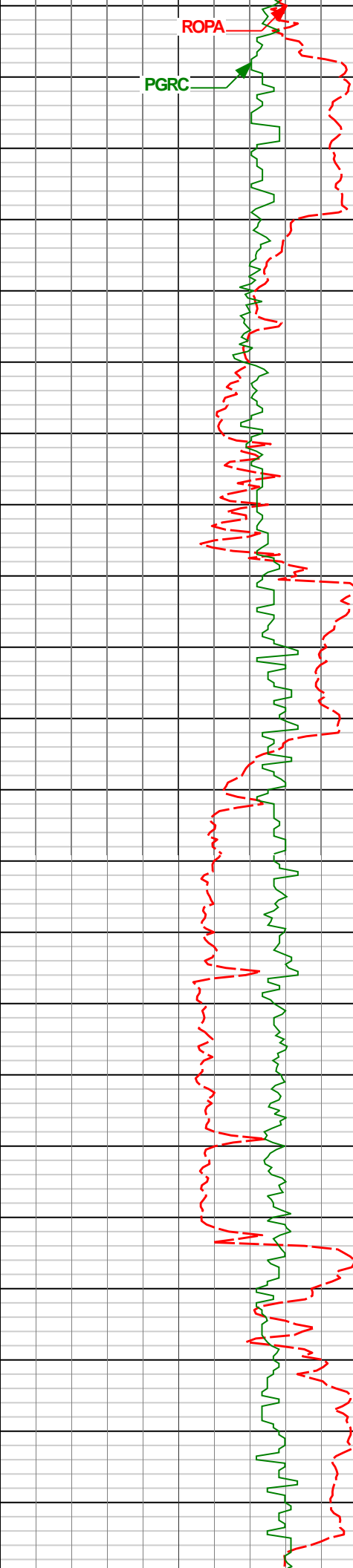
88.40°

359.59°

6880.23'

2646.39'

8950'



9000'

9050'

9100'

9150'

9200'

9025'

88.80°

358.66°

6882.50'

2739.29'

9119'

90.06°

359.27°

6883.44'

2833.20'

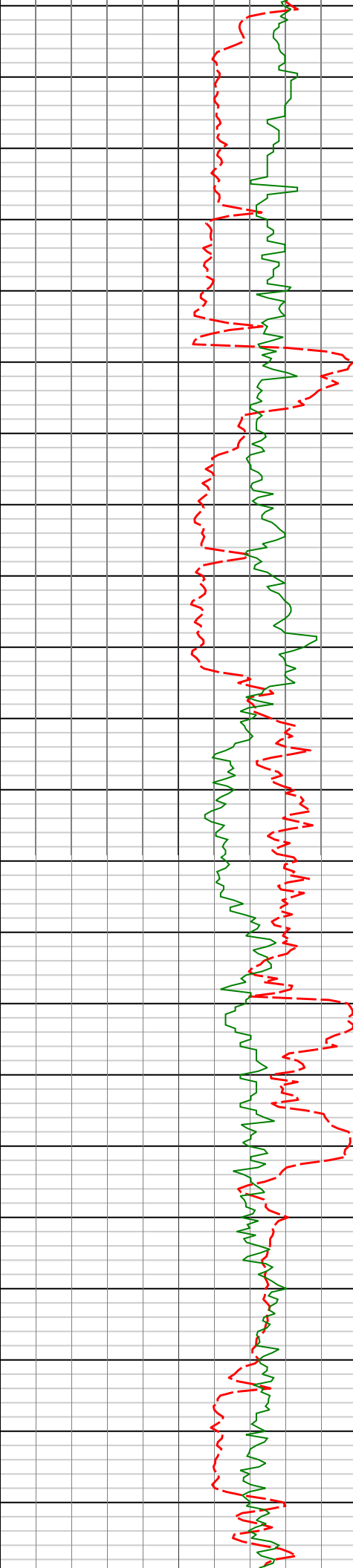
9211'

91.02°

359.24°

6882.57'

2925.14'



9250'

9300'

9350'

9400'

9304'

90.92°

359.64°

6881.00'

3018.08'

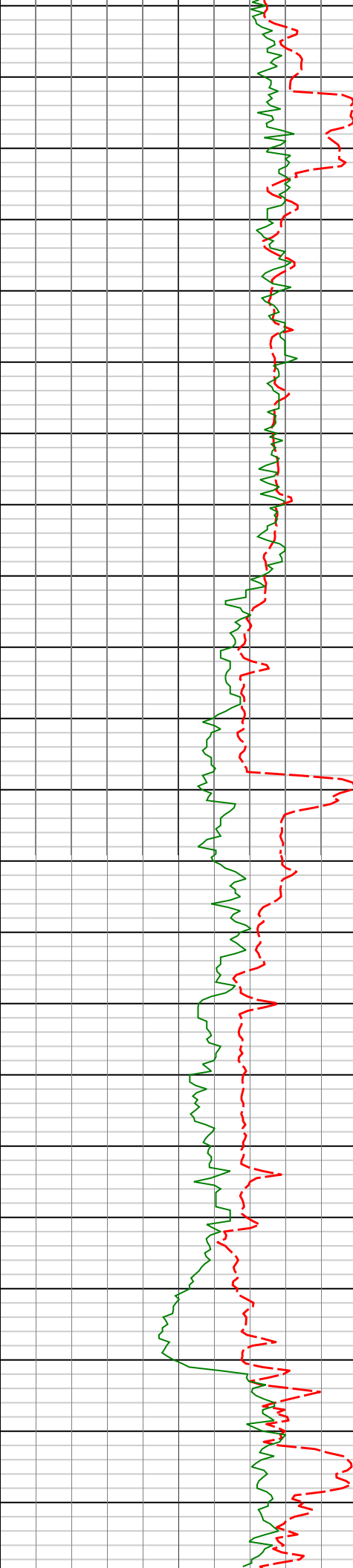
9396'

90.80°

359.64°

6879.62'

3110.03'



9450'

9491'

91.17°

359.44°

6877.98'

3204.97'

9500'

9550'

9585'

91.48°

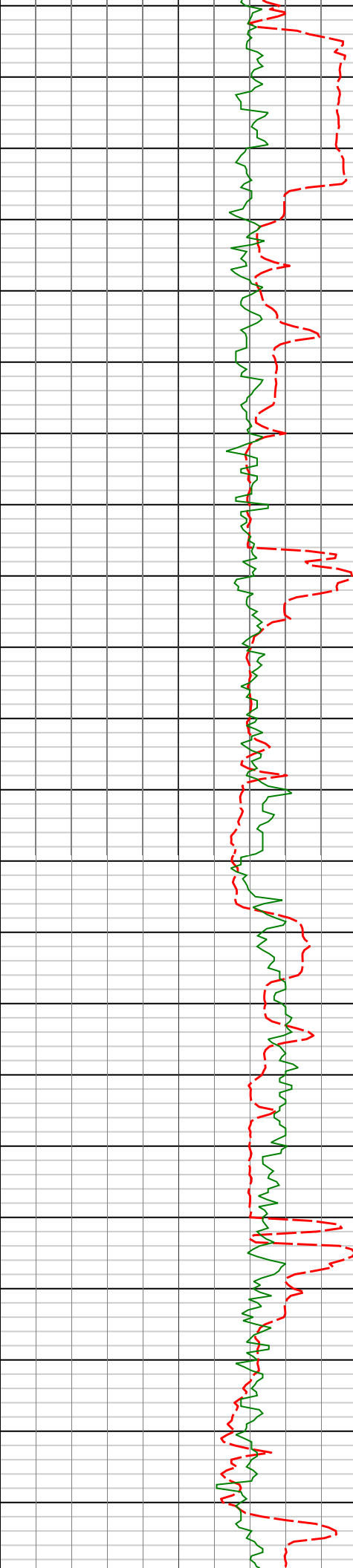
358.79°

6875.81'

3298.88'

9600'

9650'



9700'

9750'

9800'

9850'

9680'

90.71°

0.18°

6873.99'

3393.81'

9775'

90.58°

0.11°

6872.92'

3488.78'

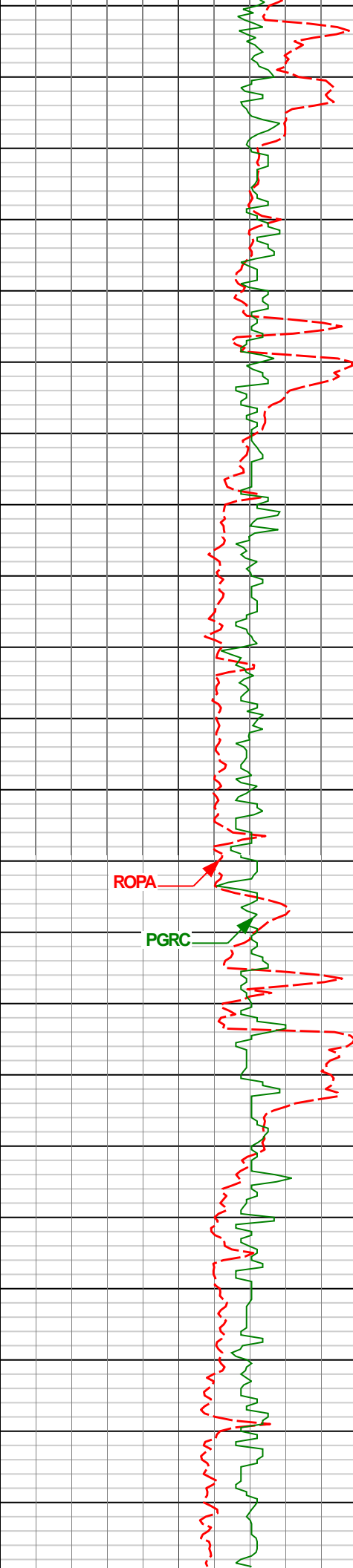
9870'

90.49°

0.09°

6872.04'

3583.76'



9900'

9950'

10000'

10050'

ROPA

PGRC

9965'

90.06°

0.38°

6871.58'

3678.74'

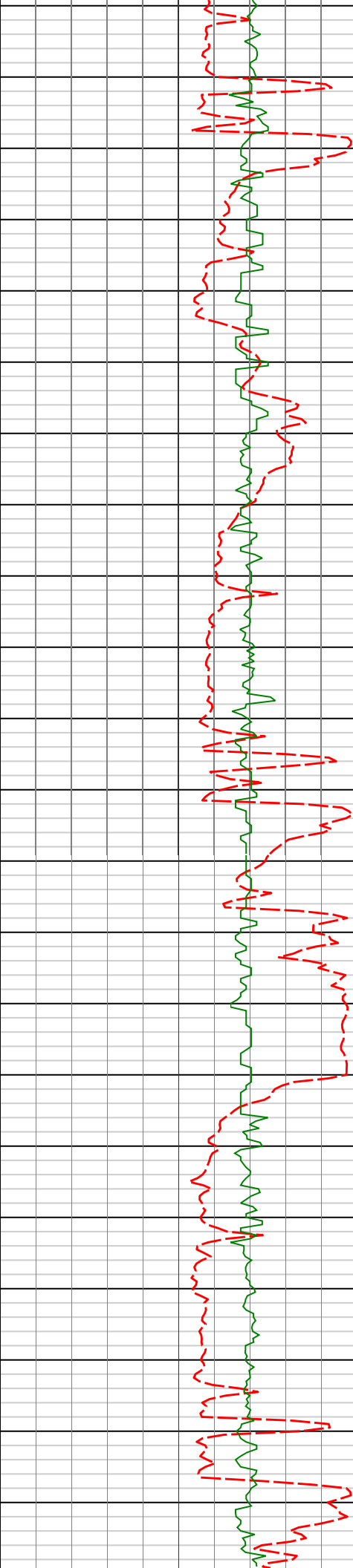
10060'

90.00°

0.81°

6871.53'

3773.73'



10100'

10150'

10200'

10250'

10300'

10154'

89.97°

2.46°

6871.56'

3867.73'

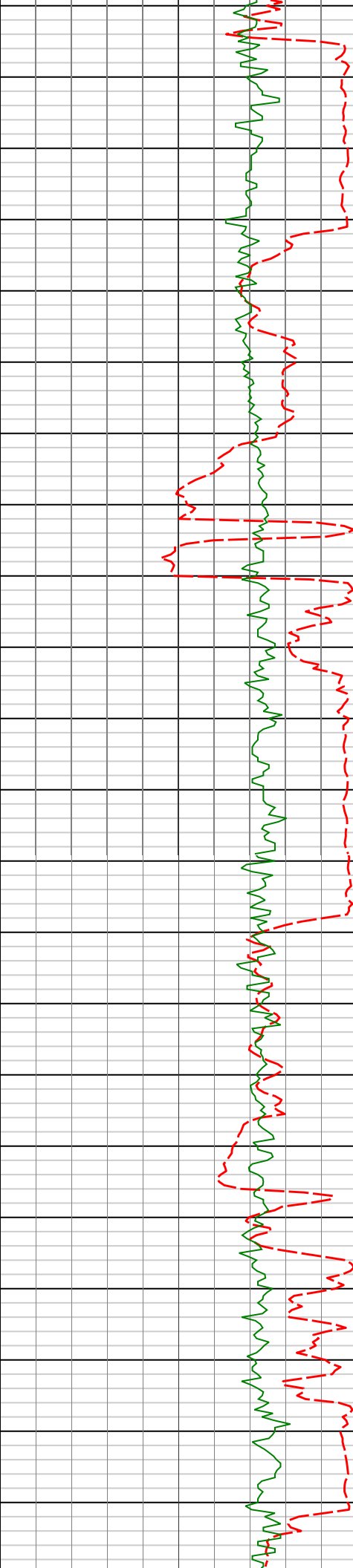
10249'

89.97°

2.87°

6871.61'

3962.70'



10344'

89.45°

1.71°

6872.09'

4057.68'

10350'

10400'

10439'

89.32°

359.78°

6873.11'

4152.67'

10450'

10500'

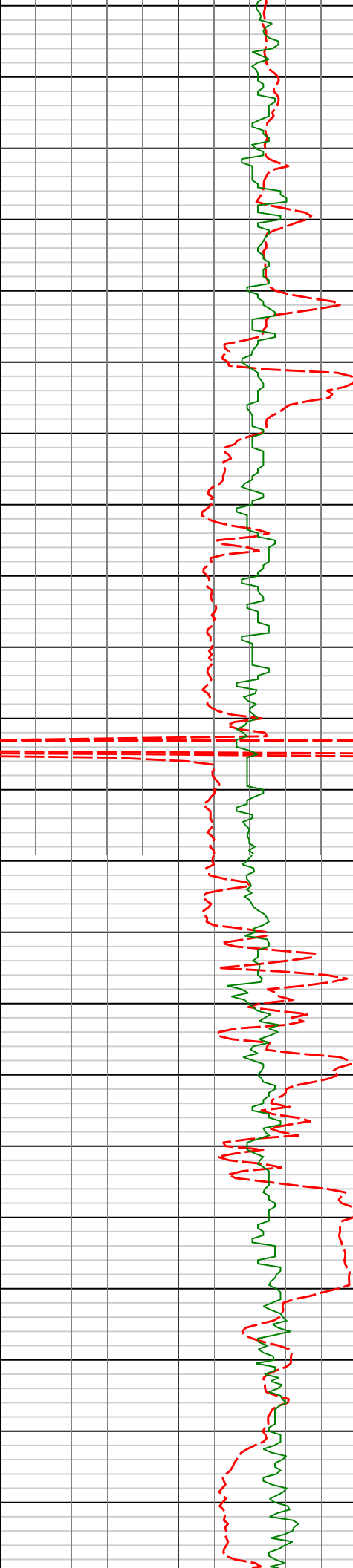
10534'

90.00°

358.90°

6873.67'

4247.61'



10550'

10600'

10650'

10700'

10750'

10629'

89.63°

358.24°

6873.98'

4342.50'

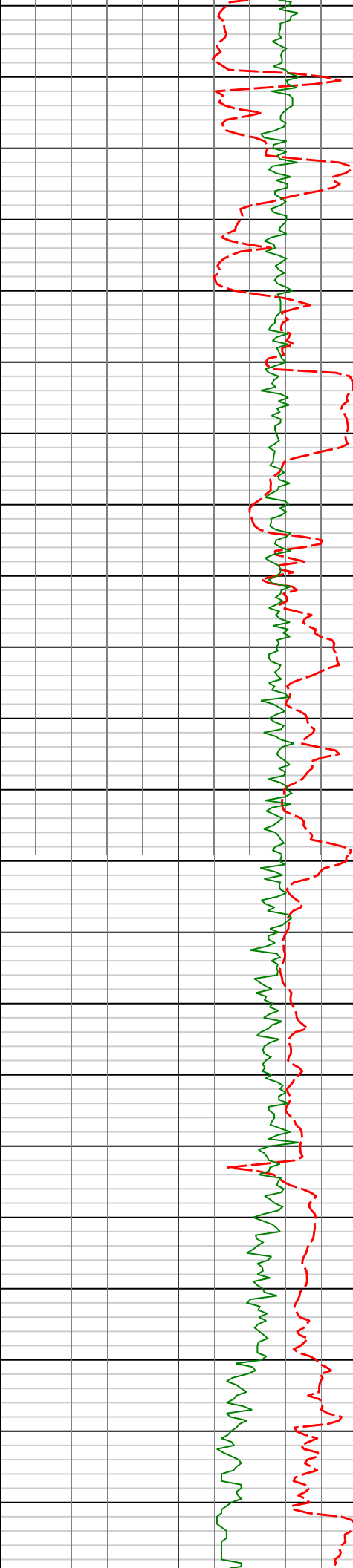
10724'

90.43°

359.40°

6873.93'

4437.41'



10800'

10850'

10900'

10950'

10818'

90.22°

358.65°

6873.40'

4531.33'

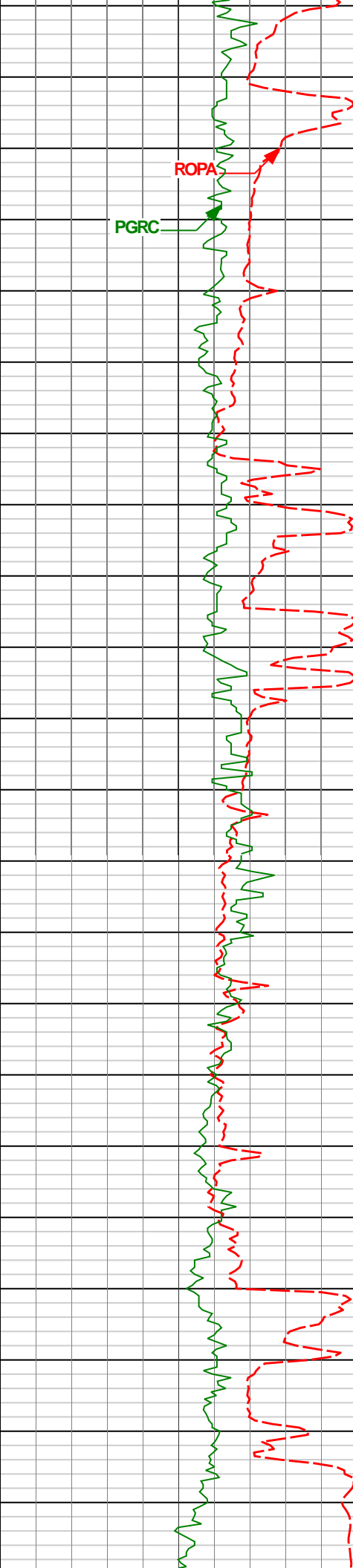
10913'

90.99°

358.96°

6872.39'

4626.24'



11000'

11050'

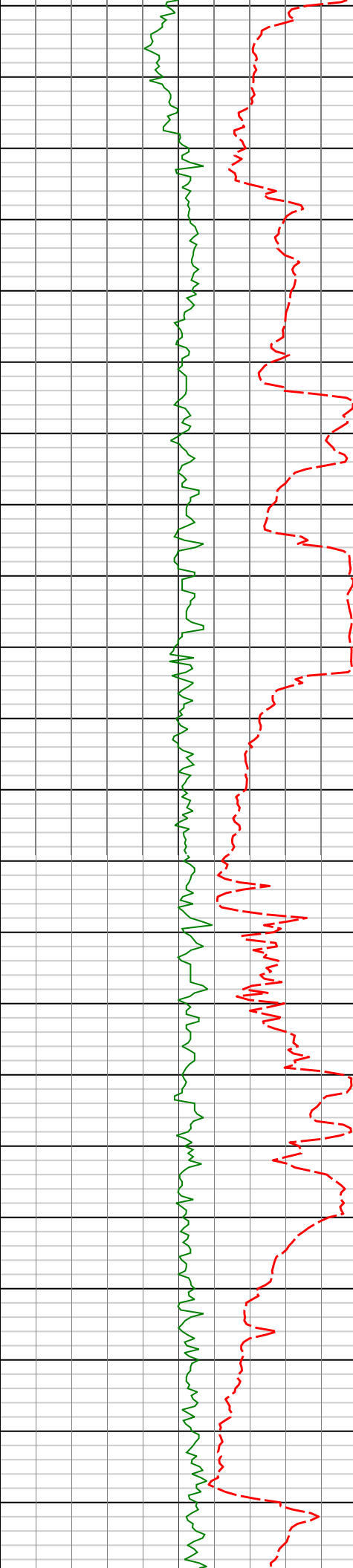
11100'

11150'

11008'	90.80°	358.37°	6870.91'	4721.12'
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11103'	90.96°	358.14°	6869.45'	4815.98'
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11198'	90.49°	359.13°	6868.25'	4910.87'
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11200'

11250'

11300'

11350'

11400'

11293'

89.14°

358.74°

6868.55'

5005.78'

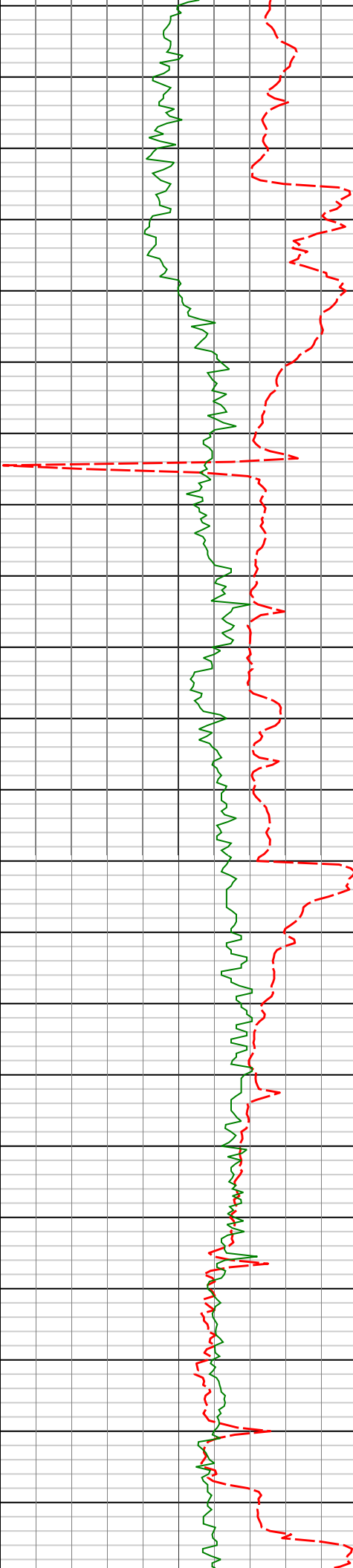
11389'

88.77°

358.19°

6870.30'

5101.65'



11450'

11500'

11550'

11600'

11483'

88.49°

358.29°

6872.55'

5195.49'

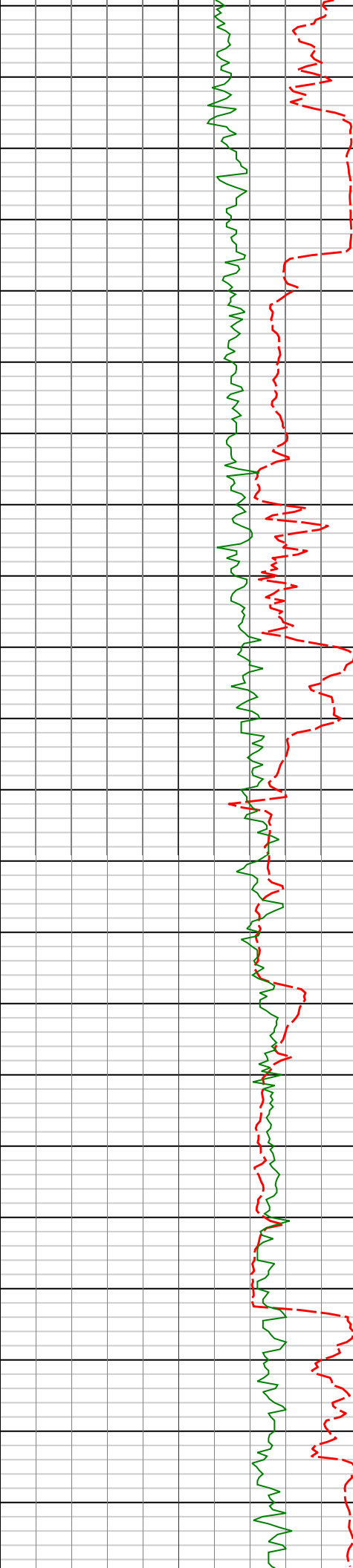
11577'

87.90°

358.17°

6875.51'

5289.31'



11650'

11672'

89.14°

358.09°

6877.97'

5384.13'

11700'

11750'

11767'

88.86°

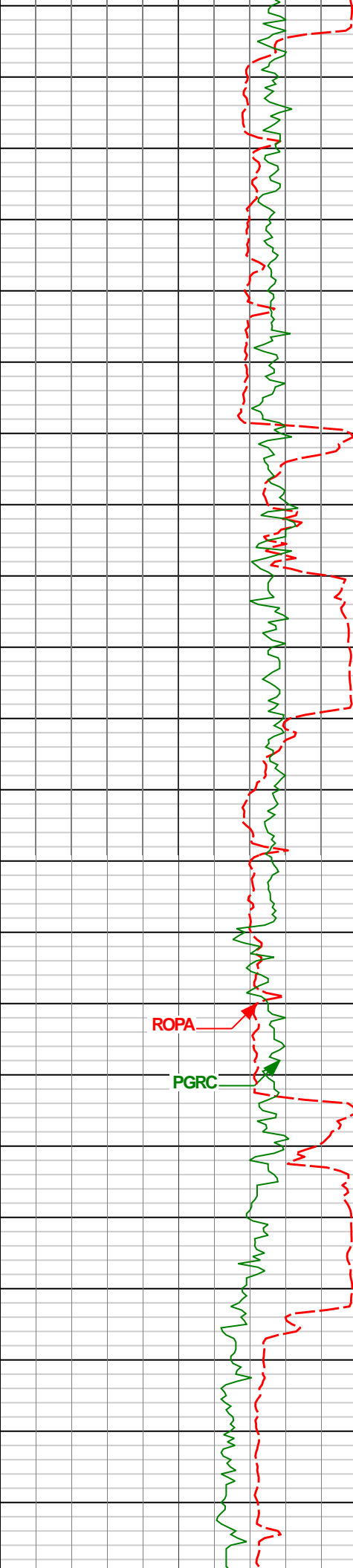
357.28°

6879.62'

5478.92'

11800'

11850'



11900'

11950'

12000'

12050'

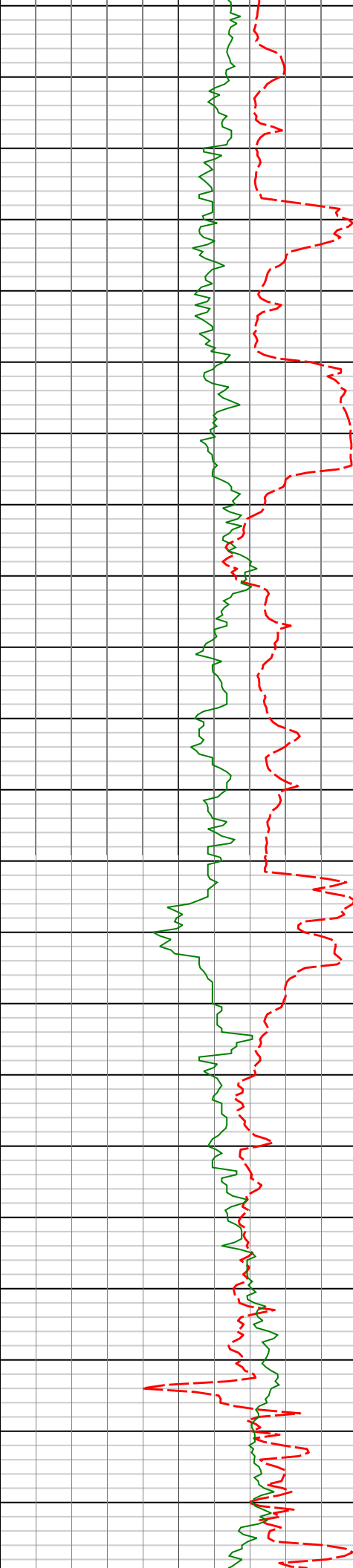
ROPA

PGRC

11862'	89.57°	357.40°	6880.93'	5573.69'
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11957'	90.31°	357.99°	6881.03'	5668.50'
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12052'	90.28°	358.75°	6880.54'	5763.37'
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12100'

12150'

12200'

12250'

12147'

90.83°

358.61°

6879.62'

5858.27'

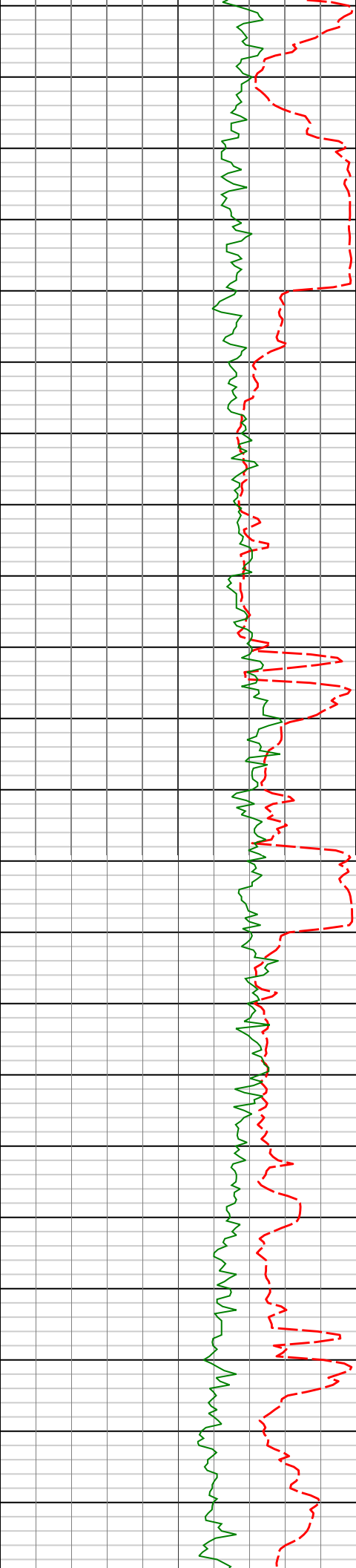
12242'

90.68°

358.32°

6878.36'

5953.14'



12300'

12337'

91.29°

0.06°

6876.73'

6048.06'

12350'

12400'

12432'

90.06°

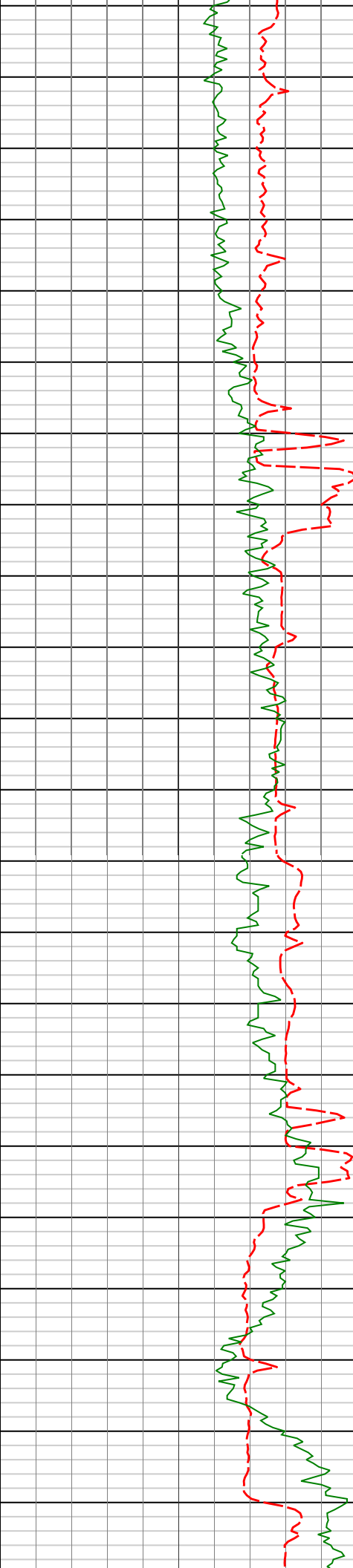
0.50°

6875.61'

6143.04'

12450'

12500'



12550'

12600'

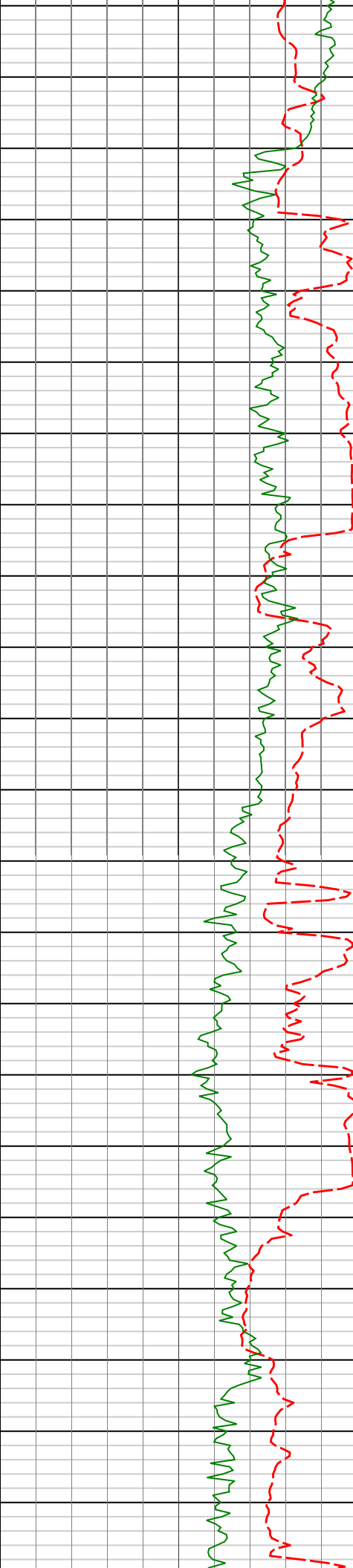
12650'

12700'

12527'	89.97°	359.68°	6875.59'	6238.01'
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12621'	90.52°	359.62°	6875.19'	6331.97'
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12716'	91.23°	358.81°	6873.73'	6426.90'
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12750'

12800'

12850'

12900'

12950'

12811'

90.09°

359.45°

6872.64'

6521.82'

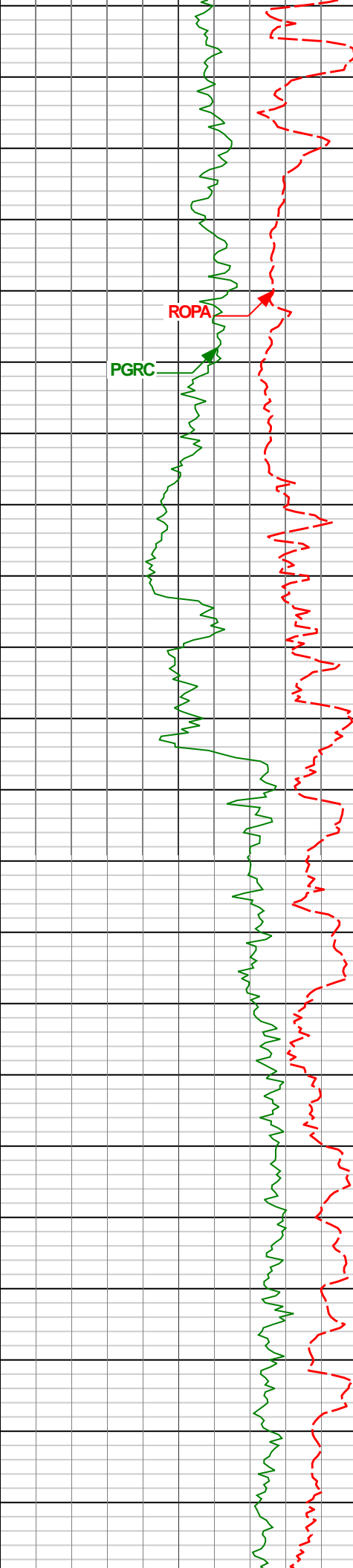
12906'

89.14°

359.18°

6873.28'

6616.76'



13000'

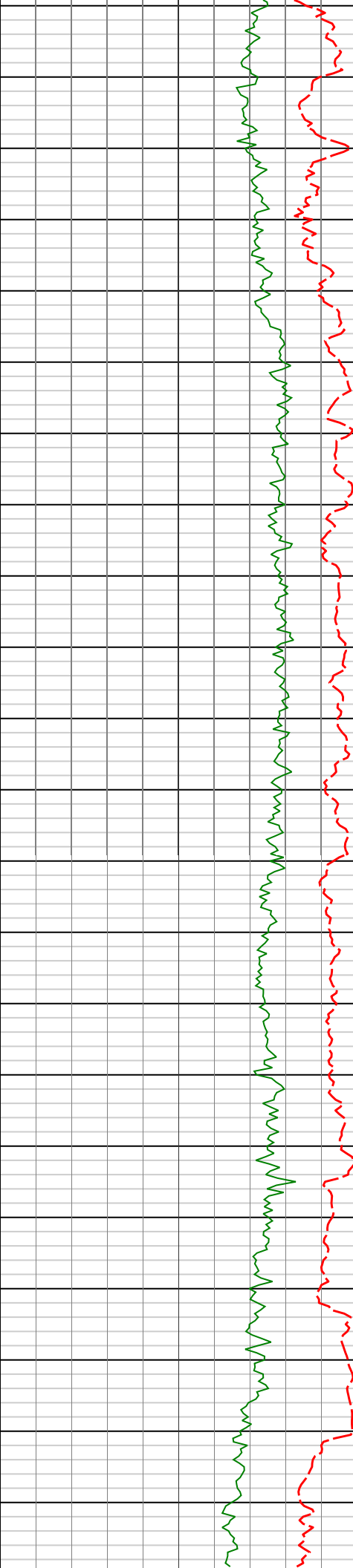
13050'

13100'

13150'

13001'	89.29°	359.25°	6874.58'	6711.69'
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13096'	89.57°	358.34°	6875.53'	6806.59'
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13200'

13250'

13300'

13350'

13190'

89.32°

358.23°

6876.44'

6900.46'

13285'

89.57°

357.94°

6877.36'

6995.31'

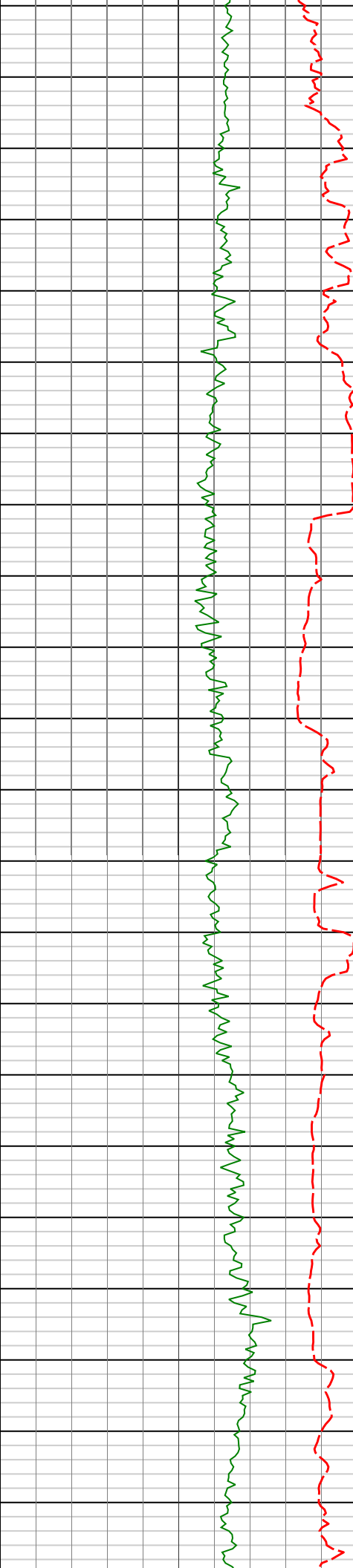
13380'

90.15°

358.36°

6877.59'

7090.16'



13400'

13450'

13500'

13550'

13600'

13474'

90.71°

359.66°

6876.88'

7184.08'

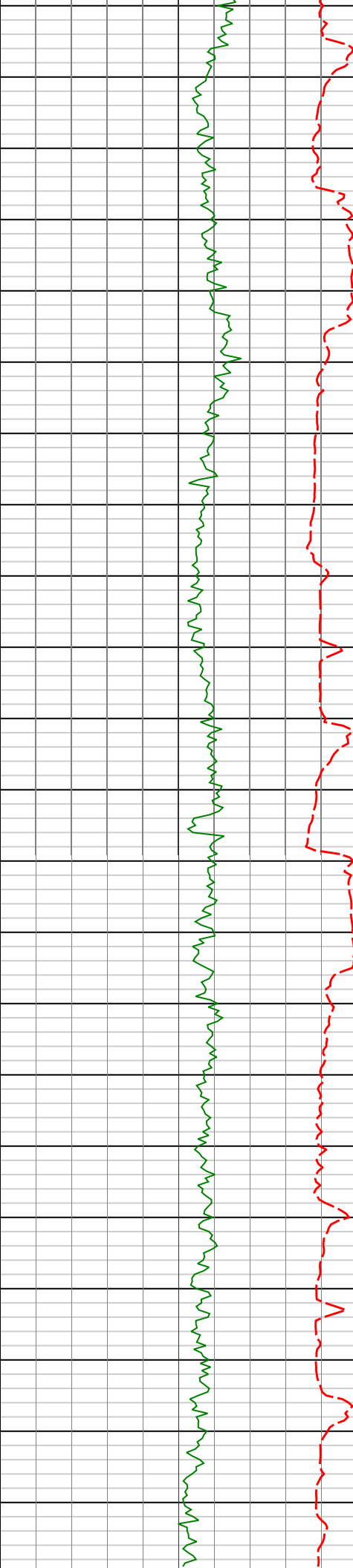
13569'

90.89°

358.90°

6875.56'

7279.01'



13650'

13664'

90.18°

358.19°

6874.67'

7373.90'

13700'

13750'

13759'

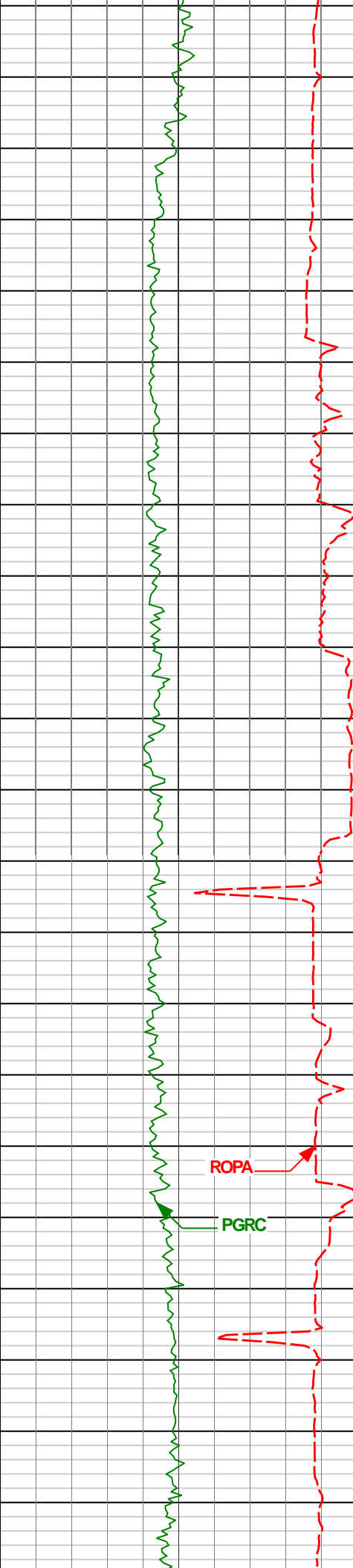
90.15°

359.95°

6874.40'

7468.82'

13800'



13850'

13854'

90.03°

358.12°

6874.25'

7563.74'

13900'

13950'

13949'

89.82°

358.44°

6874.37'

7658.61'

14000'

ROPA

PGRC

14044'

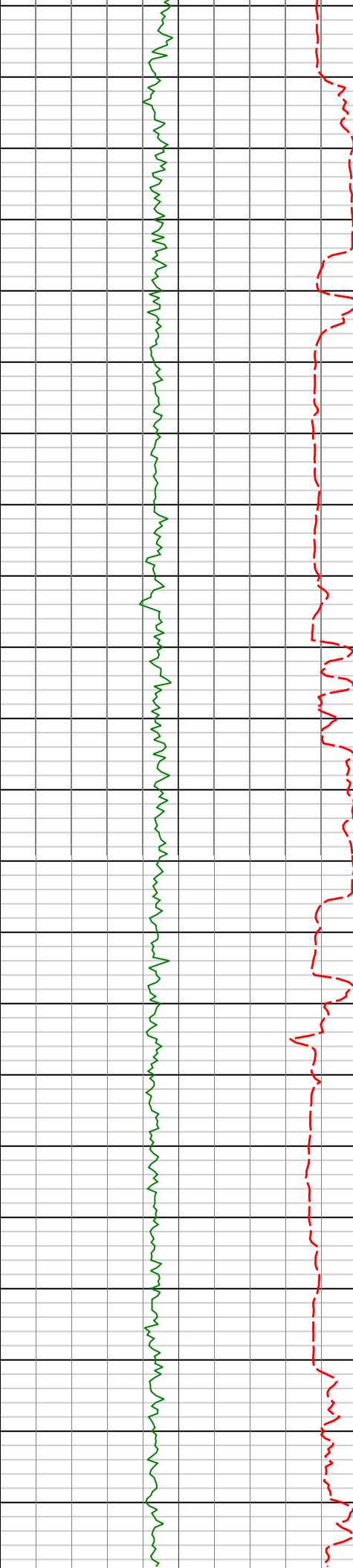
89.97°

358.17°

6874.54'

7753.48'

14050'



14100'

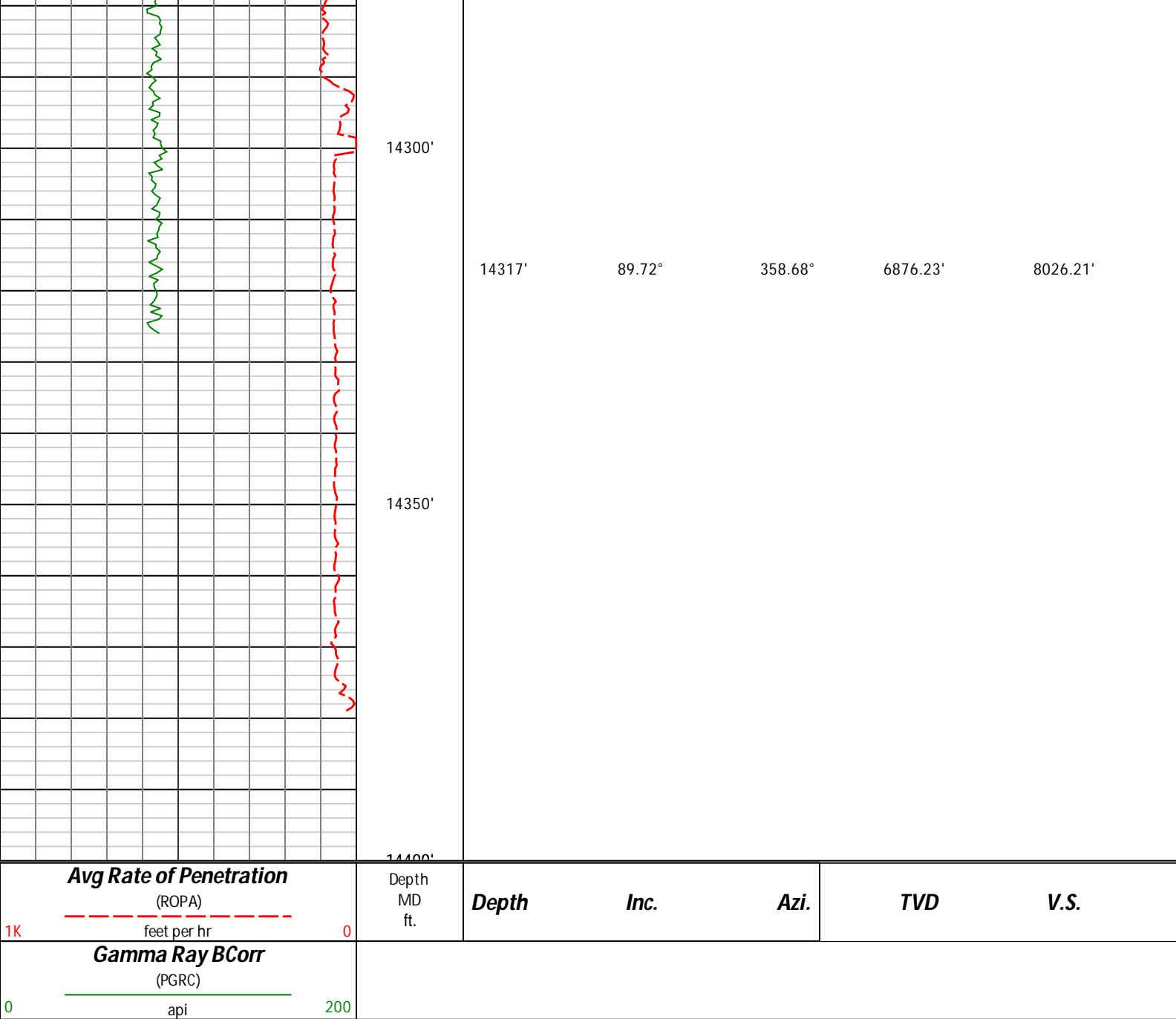
14139'	89.41°	358.72°	6875.06'	7848.36'
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14150'

14200'

14234'	89.69°	359.30°	6875.81'	7943.28'
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14250'



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Oscar Y10-74-1HN
Wattenberg
Weld Colorado
USA
CA-XX-0901673943

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
520.00	0.10	248.80	520.00	0.85 S	0.72 W	-0.86	0.05
742.00	0.30	224.20	742.00	1.34 S	1.30 W	-1.36	0.10
1020.00	0.20	228.30	1019.99	2.18 S	2.17 W	-2.23	0.04
1293.00	0.55	72.68	1292.99	2.11 S	1.28 W	-2.14	0.27
1386.00	1.73	62.34	1385.97	1.32 S	0.39 E	-1.31	1.28
1478.00	2.96	56.60	1477.89	0.63 N	3.61 E	0.71	1.36
1570.00	4.32	61.77	1569.70	3.58 N	8.64 E	3.77	1.52

1663.00	5.74	53.35	1662.35	8.01 N	15.46 E	8.36	1.72
1755.00	7.23	49.09	1753.76	14.55 N	23.53 E	15.08	1.70
1847.00	8.64	43.14	1844.87	23.38 N	32.63 E	24.12	1.77
1938.00	8.33	38.54	1934.88	33.53 N	41.41 E	34.46	0.82
2031.00	8.27	36.09	2026.90	44.20 N	49.55 E	45.31	0.39
2123.00	7.93	32.85	2117.99	54.88 N	56.89 E	56.15	0.62
2216.00	7.33	28.52	2210.16	65.48 N	63.20 E	66.90	0.89
2309.00	8.02	38.67	2302.33	75.76 N	70.09 E	77.33	1.63
2402.00	7.83	35.39	2394.45	85.99 N	77.81 E	87.73	0.53
2495.00	8.44	36.24	2486.51	96.66 N	85.51 E	98.57	0.67
2589.00	7.87	36.40	2579.56	107.40 N	93.41 E	109.49	0.61
2681.00	6.85	34.43	2670.80	117.00 N	100.25 E	119.24	1.14
2773.00	7.49	41.87	2762.08	125.99 N	107.35 E	128.39	1.22
2865.00	7.87	44.75	2853.26	134.93 N	115.79 E	137.52	0.59
2960.00	8.93	48.04	2947.24	144.48 N	125.85 E	147.29	1.22
3055.00	8.76	48.71	3041.11	154.18 N	136.77 E	157.24	0.21
3150.00	8.33	47.61	3135.05	163.59 N	147.29 E	166.89	0.48
3245.00	7.61	46.32	3229.14	172.58 N	156.92 E	176.09	0.78
3340.00	8.91	47.96	3323.15	181.85 N	166.93 E	185.59	1.39
3435.00	9.52	42.24	3416.92	192.59 N	177.68 E	196.57	1.16
3530.00	8.53	33.94	3510.75	204.25 N	186.89 E	208.44	1.72
3624.00	7.62	29.41	3603.82	215.47 N	193.85 E	219.81	1.18
3719.00	6.83	28.18	3698.06	225.93 N	199.61 E	230.40	0.85
3814.00	7.11	37.99	3792.36	235.54 N	205.89 E	240.16	1.29
3909.00	8.26	31.81	3886.51	245.98 N	213.11 E	250.75	1.49
4004.00	7.51	32.16	3980.61	257.03 N	220.01 E	261.96	0.79
4099.00	9.13	33.55	4074.61	268.57 N	227.48 E	273.66	1.72
4194.00	8.15	33.64	4168.53	280.46 N	235.38 E	285.73	1.03
4288.00	8.06	32.95	4261.59	291.54 N	242.65 E	296.97	0.14
4383.00	7.87	30.04	4355.67	302.75 N	249.53 E	308.34	0.47
4478.00	6.33	24.71	4449.94	313.14 N	254.98 E	318.85	1.76
4573.00	4.73	29.71	4544.50	321.30 N	259.11 E	327.10	1.76
4668.00	2.64	26.11	4639.30	326.67 N	262.01 E	332.53	2.21
4763.00	0.53	81.39	4734.26	328.70 N	263.41 E	334.59	2.50
4858.00	0.22	89.81	4829.26	328.77 N	264.03 E	334.67	0.33
4953.00	0.28	157.66	4924.26	328.55 N	264.30 E	334.47	0.30
5048.00	0.52	181.49	5019.25	327.91 N	264.38 E	333.82	0.30
5143.00	0.43	189.34	5114.25	327.13 N	264.31 E	333.04	0.12
5238.00	0.34	191.97	5209.25	326.50 N	264.19 E	332.41	0.10
5333.00	0.15	235.06	5304.25	326.15 N	264.03 E	332.06	0.27
5427.00	0.15	241.99	5398.25	326.02 N	263.82 E	331.92	0.02
5522.00	0.23	293.42	5493.25	326.04 N	263.54 E	331.94	0.19
5617.00	0.16	238.86	5588.25	326.05 N	263.25 E	331.94	0.20
5712.00	0.46	148.21	5683.25	325.65 N	263.33 E	331.55	0.51
5807.00	0.43	178.56	5778.24	324.97 N	263.54 E	330.87	0.25
5902.00	0.43	186.00	5873.24	324.26 N	263.52 E	330.16	0.06
5996.00	0.33	170.42	5967.24	323.65 N	263.52 E	329.54	0.15
6091.00	0.13	250.14	6062.24	323.34 N	263.47 E	329.23	0.35
6186.00	0.25	290.72	6157.24	323.38 N	263.17 E	329.26	0.18
6376.00	15.43	3.00	6344.94	348.92 N	264.11 E	354.82	8.08
6424.00	20.43	8.84	6390.59	363.58 N	265.74 E	369.52	11.06
6471.00	21.78	10.08	6434.44	380.27 N	268.52 E	386.27	3.03
6566.00	26.27	2.77	6521.21	418.65 N	272.63 E	424.73	5.66
6614.00	31.70	357.56	6563.19	441.88 N	272.60 E	447.95	12.47
6661.00	34.68	356.67	6602.52	467.58 N	271.30 E	473.61	6.42
6709.00	36.73	358.87	6641.49	495.56 N	270.22 E	501.57	5.04
6756.00	40.86	359.52	6678.12	525.00 N	269.82 E	530.99	8.83
6850.00	50.47	0.21	6743.73	592.16 N	269.69 E	598.12	10.24
6898.00	54.43	1.10	6772.98	630.20 N	270.14 E	636.17	8.38
6945.00	59.29	1.57	6798.67	669.53 N	271.06 E	675.51	10.37
6993.00	64.16	359.89	6821.40	711.79 N	271.58 E	717.77	10.60
7040.00	68.32	358.03	6840.33	754.78 N	270.79 E	760.73	9.56
7104.00	75.59	358.35	6860.14	815.57 N	268.87 E	821.46	11.37
7162.00	82.80	359.72	6871.01	872.49 N	267.92 E	878.34	12.65
7258.00	85.63	0.26	6880.69	967.99 N	267.91 E	973.82	3.00
7353.00	87.10	358.44	6886.71	1062.79 N	266.83 E	1068.57	2.46
7448.00	89.14	358.21	6889.83	1157.69 N	264.05 E	1163.38	2.16
7543.00	88.92	358.83	6891.43	1252.64 N	261.60 E	1258.26	0.69
7635.00	90.68	357.58	6891.76	1344.59 N	258.72 E	1350.12	2.35
7730.00	91.14	358.92	6890.25	1439.54 N	255.82 E	1444.97	1.49
7823.00	90.99	0.43	6888.52	1532.51 N	255.29 E	1537.91	1.63
7916.00	91.26	359.79	6886.69	1625.50 N	255.47 E	1630.87	0.75

	8008.00	91.26	359.18	6884.67	1717.47 N	254.64 E	1722.80	0.66
	8100.00	91.35	358.63	6882.57	1809.43 N	252.88 E	1814.70	0.61
	8193.00	91.63	0.34	6880.16	1902.39 N	252.05 E	1907.62	1.86
	8285.00	91.42	1.27	6877.71	1994.35 N	253.34 E	1999.58	1.04
	8377.00	89.60	0.76	6876.89	2086.32 N	254.97 E	2091.57	2.05
	8468.00	89.41	0.68	6877.67	2177.31 N	256.11 E	2182.56	0.23
	8561.00	89.57	0.01	6878.50	2270.31 N	256.67 E	2275.55	0.74
	8654.00	89.75	359.25	6879.05	2363.30 N	256.07 E	2368.51	0.84
	8746.00	89.97	359.23	6879.28	2455.30 N	254.85 E	2460.45	0.24
	8840.00	90.22	0.66	6879.12	2549.29 N	254.76 E	2554.42	1.54
	8932.00	88.40	359.59	6880.23	2641.28 N	254.96 E	2646.39	2.29
	9025.00	88.80	358.66	6882.50	2734.24 N	253.54 E	2739.29	1.09
	9119.00	90.06	359.27	6883.44	2828.22 N	251.85 E	2833.20	1.49
	9211.00	91.02	359.24	6882.57	2920.21 N	250.65 E	2925.14	1.04
	9304.00	90.92	359.64	6881.00	3013.19 N	249.74 E	3018.08	0.44
	9396.00	90.80	359.64	6879.62	3105.18 N	249.16 E	3110.03	0.13
	9491.00	91.17	359.44	6877.98	3200.16 N	248.40 E	3204.97	0.44
	9585.00	91.48	358.79	6875.81	3294.12 N	246.95 E	3298.88	0.77
	9680.00	90.71	0.18	6873.99	3389.10 N	246.09 E	3393.81	1.67
	9775.00	90.58	0.11	6872.92	3484.09 N	246.33 E	3488.78	0.16
	9870.00	90.49	0.09	6872.04	3579.09 N	246.50 E	3583.76	0.10
	9965.00	90.06	0.38	6871.58	3674.08 N	246.89 E	3678.74	0.55
	10060.00	90.00	0.81	6871.53	3769.08 N	247.88 E	3773.73	0.46
	10154.00	89.97	2.46	6871.56	3863.04 N	250.56 E	3867.73	1.76
	10249.00	89.97	2.87	6871.61	3957.93 N	254.98 E	3962.70	0.43
	10344.00	89.45	1.71	6872.09	4052.86 N	258.77 E	4057.68	1.34
	10439.00	89.32	359.78	6873.11	4147.84 N	260.01 E	4152.67	2.04
	10534.00	90.00	358.90	6873.67	4242.83 N	258.91 E	4247.61	1.17
	10629.00	89.63	358.24	6873.98	4337.80 N	256.54 E	4342.50	0.80
	10724.00	90.43	359.40	6873.93	4432.77 N	254.58 E	4437.41	1.48
	10818.00	90.22	358.65	6873.40	4526.76 N	252.99 E	4531.33	0.83
	10913.00	90.99	358.96	6872.39	4621.73 N	251.00 E	4626.24	0.87
	11008.00	90.80	358.37	6870.91	4716.69 N	248.79 E	4721.12	0.65
	11103.00	90.96	358.14	6869.45	4811.64 N	245.90 E	4815.98	0.29
	11198.00	90.49	359.13	6868.25	4906.60 N	243.64 E	4910.87	1.15
	11293.00	89.14	358.74	6868.55	5001.58 N	241.87 E	5005.78	1.48
	11389.00	88.77	358.19	6870.30	5097.53 N	239.30 E	5101.65	0.69
	11483.00	88.49	358.29	6872.55	5191.46 N	236.41 E	5195.49	0.32
	11577.00	87.90	358.17	6875.51	5285.37 N	233.51 E	5289.31	0.64
	11672.00	89.14	358.09	6877.97	5380.29 N	230.41 E	5384.13	1.31
	11767.00	88.86	357.28	6879.62	5475.19 N	226.57 E	5478.92	0.90
	11862.00	89.57	357.40	6880.93	5570.08 N	222.17 E	5573.69	0.76
	11957.00	90.31	357.99	6881.03	5665.00 N	218.35 E	5668.50	1.00
	12052.00	90.28	358.75	6880.54	5759.96 N	215.64 E	5763.37	0.80
	12147.00	90.83	358.61	6879.62	5854.93 N	213.45 E	5858.27	0.60
	12242.00	90.68	358.32	6878.36	5949.89 N	210.91 E	5953.14	0.34
	12337.00	91.29	0.06	6876.73	6044.86 N	209.57 E	6048.06	1.94
	12432.00	90.06	0.50	6875.61	6139.85 N	210.03 E	6143.04	1.38
	12527.00	89.97	359.68	6875.59	6234.85 N	210.18 E	6238.01	0.87
	12621.00	90.52	359.62	6875.19	6328.85 N	209.61 E	6331.97	0.59
	12716.00	91.23	358.81	6873.73	6423.83 N	208.30 E	6426.90	1.13
	12811.00	90.09	359.45	6872.64	6518.81 N	206.86 E	6521.82	1.38
	12906.00	89.14	359.18	6873.28	6613.80 N	205.73 E	6616.76	1.04
	13001.00	89.29	359.25	6874.58	6708.78 N	204.42 E	6711.69	0.17
	13096.00	89.57	358.34	6875.53	6803.75 N	202.43 E	6806.59	1.00
	13190.00	89.32	358.23	6876.44	6897.71 N	199.61 E	6900.46	0.29
	13285.00	89.57	357.94	6877.36	6992.65 N	196.44 E	6995.31	0.40
	13380.00	90.15	358.36	6877.59	7087.60 N	193.37 E	7090.16	0.75
	13474.00	90.71	359.66	6876.88	7181.58 N	191.75 E	7184.08	1.51
	13569.00	90.89	358.90	6875.56	7276.56 N	190.55 E	7279.01	0.82
	13664.00	90.18	358.19	6874.67	7371.53 N	188.14 E	7373.90	1.06
	13759.00	90.15	359.95	6874.40	7466.51 N	186.60 E	7468.82	1.85
	13854.00	90.03	358.12	6874.25	7561.49 N	185.00 E	7563.74	1.93
	13949.00	89.82	358.44	6874.37	7656.45 N	182.15 E	7658.61	0.40
	14044.00	89.97	358.17	6874.54	7751.41 N	179.34 E	7753.48	0.33
	14139.00	89.41	358.72	6875.06	7846.37 N	176.76 E	7848.36	0.83
	14234.00	89.69	359.30	6875.81	7941.35 N	175.12 E	7943.28	0.68
	14317.00	89.72	358.68	6876.23	8024.34 N	173.66 E	8026.21	0.75
	14377.00	89.72	358.68	6876.53	8084.32 N	172.27 E	8086.15	0.00

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 1.30 DEGREES (GRID)
A TOTAL CORRECTION OF 7.71 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 14377.00 FEET
IS 8086.16 FEET ALONG 1.22 DEGREES (GRID)

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