

DC - Pressure Case Directional  
PCGK - Pressure Case Gamma



1 : 240

[illegible]

## WELL INFORMATION

<b>MWD Run Number</b>	100	200			
<b>Date run completed</b>	04-Oct-17	08-Oct-17			
<b>Rig Bit Number</b>	2	3			
<b>Bit Size (in)</b>	8.500	6.125			
<b>Tool Nominal OD (in)</b>	6.750	4.750			
<b>Log Start Depth (MD, ft)</b>	1,881.00	5,961.00			
<b>Log End Depth (MD, ft)</b>	5,961.00	14,674.00			
<b>Drill or Wipe</b>	Drill	Drill			
<b>Drill/Wipe Start Date and Time</b>	03-Oct-17 10:30	05-Oct-17 10:30			
<b>Drill/Wipe End Date and Time</b>	04-Oct-17 06:00	07-Oct-17 19:50			
<b>Min Inc (deg) @ Depth (MD, ft)</b>	0.26 @ 4,882.00	0.76 @ 6,807.00			
<b>Max Inc (deg) @ Depth (MD, ft)</b>	20.26 @ 2,817.00	93.82 @ 8,459.00			
<b>Bit TFA(in2) / Bit Type</b>	0.75 / PDC	0.75 / PDC			
<b>Flow Rate (gpm)</b>	580.00	286.26			
<b>Max AV (fpm) / CV (fpm) @ MWD</b>	384.0 / 430.7	384.0 / 361.0			
<b>Fluid Type</b>	Diesel Mud Base	Diesel Mud Base			
<b>Density (ppg) / Viscosity (spqt)</b>	8.90 / 59.00	9.30 / 59.00			
<b>Filtrate CL (ppm)</b>	38,000.00	51,000.00			
<b>pH / API Filtrate (mptm)</b>	N/A / 0	N/A / 0			
<b>PV (cP) / YP (lbf2)</b>	14 / 9.00	16 / 10.00			
<b>% Solids / % Sand</b>	8.00 / 0	10.00 / 0			
<b>% Oil / Oil:Water Ratio</b>	70.00 / 76:24	77.00 / 77:23			
<b>Rm @ Measured Temp (degF)</b>	N/A @ N/A	N/A @ N/A			
<b>Rmf @ Measured Temp (degF)</b>	N/A @ N/A	N/A @ N/A			
<b>Rmc @ Measured Temp (degF)</b>	N/A @ N/A	N/A @ N/A			
<b>Max Tool Temp (deg F) / C</b>	125.50 / 52.00	217.22 / 92.35			

Max Tool Temp (degF) / Source	165.58 / PCM	247.20 / 247.2			
Rm @ Max Tool Temp (degF)	N/A @ 165.58	N/A @ 247.20			
Lead MWD Engineer	Max Trainoff	Max Trainoff			
Customer Representative	Jackie McKinley	Jackie McKinley			

## SENSOR INFORMATION

### Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.93	5.93			
Sub Serial Number	12004211	12334774			
Insert Serial Number	11227417	11227490			
Date and Time Initialized	03-Oct-17 00:31	05-Oct-17 02:35			
Date and Time Read	04-Oct-17 12:58	08-Oct-17 11:49			
ECMB SW Version	N/A	N/A			

### Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	46.00	46.00			
Software Version	6.33	6.33			
Sub Serial Number	12004211	12334774			
Sonde Serial Number	11902220	12174344			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	187.70	76.80			

### Gamma Ray Sensor Information

Tool Type	PCG-K	PCG-K			
Distance From Bit (ft)	49.04	39.49			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	12004211	12334774			
Insert/Sonde Serial Number	11293437	11680954			

## REMARKS

1. All depths are measured 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 (Gamma Ray Corrected):

Interval Resolution: 0.5ft

Interval Distance: 0.6ft

Gap Fill: 3.0ft

ROPA (Average Rate of Penetration):

Interval Resolution: 0.5ft

Interval Distance: 1.2ft

Gap Fill: 3.0ft

5. Surveys from 1919'MD to 14628'MD ft are corrected by Alaska Survey Management.

6. Gaps in gamma due to high ROP at connection.

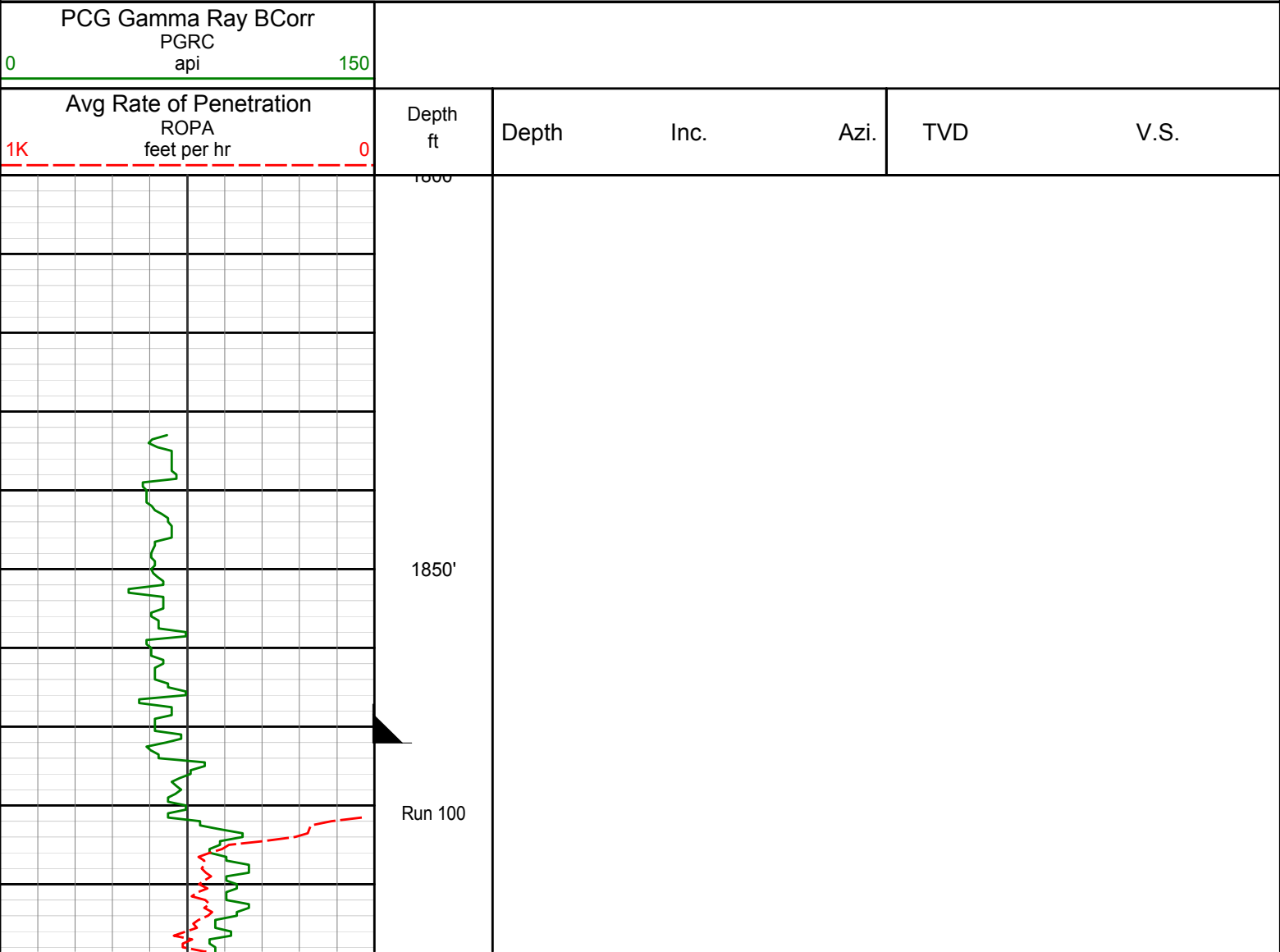
INSITE Version 8.5.2 -MLWD

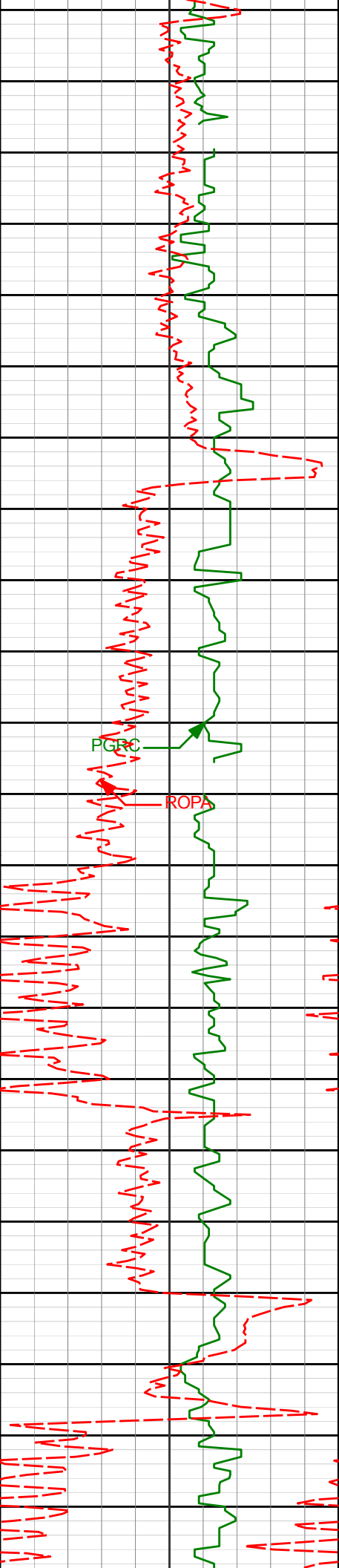
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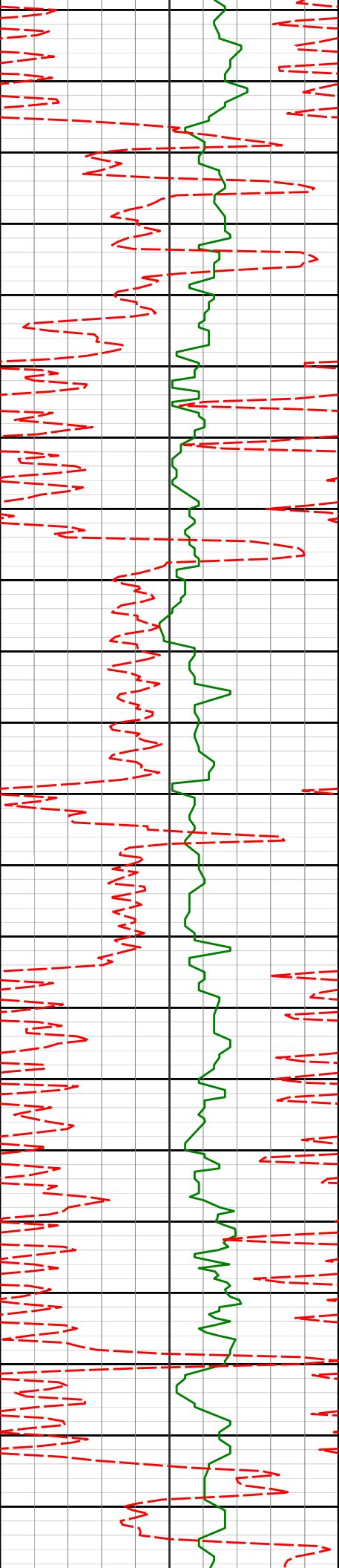


Detail Log 1:240





1900'				
1919'	17.37°	126.26°	1866.57'	-211.38'
1950'				
2000'				
See Remark #6				
2009'	16.77°	124.41°	1952.60'	-226.65'
2050'				
2100'				
2099'	18.11°	129.90°	2038.47'	-242.96'



2150'

2188'

17.95°

128.94°

2123.09'

-260.44'

2200'

2250'

2278'

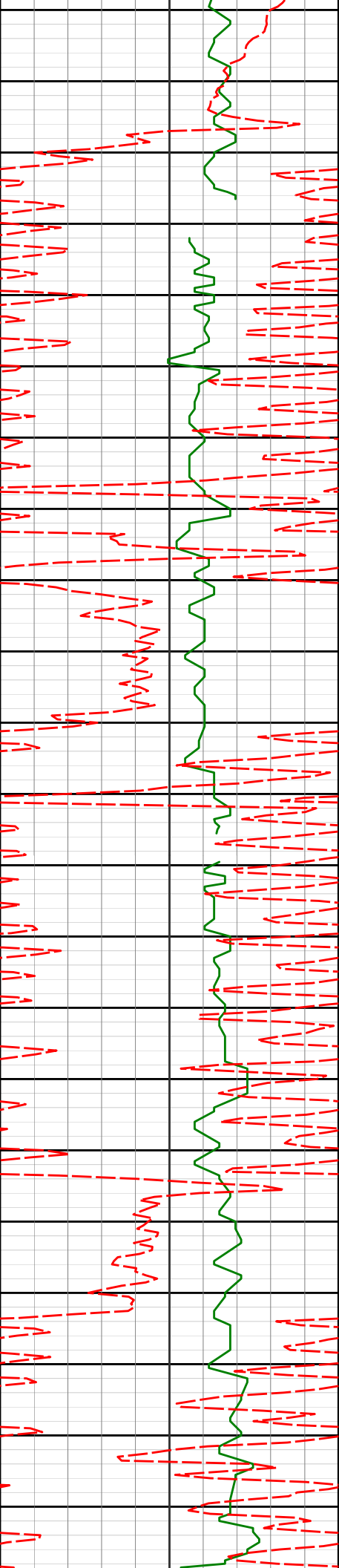
17.46°

126.67°

2208.83'

-277.21'

2300'



2350'

See Remark #6

2400'

2450'

See Remark #6

2500'

2550'

2368'

18.54°

137.23°

2294.45'

-295.77'

2458'

17.02°

135.45°

2380.15'

-315.66'

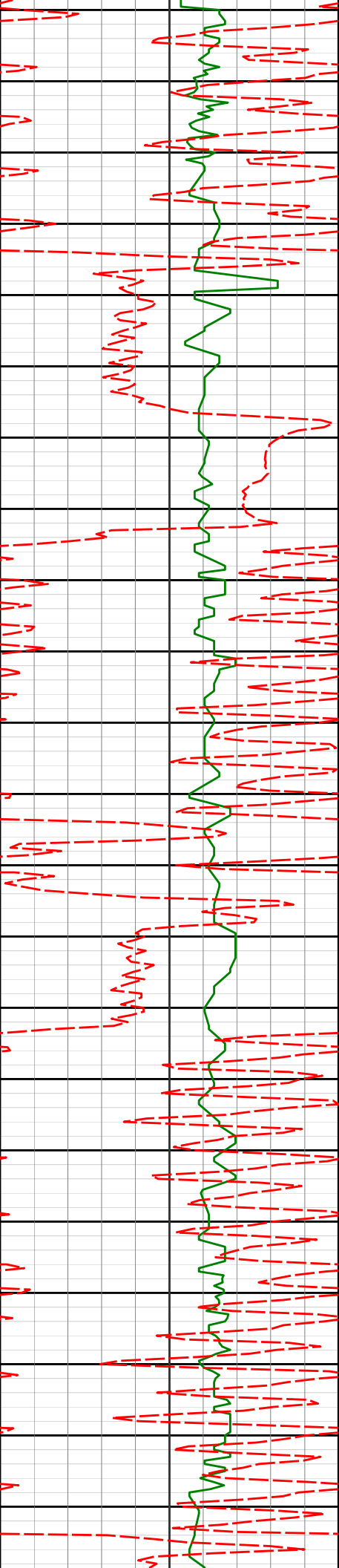
2548'

15.75°

130.24°

2466.49'

-332.92'



2600'

2637'

16.95°

128.62°

2551.90'

-348.81'

2650'

2700'

2727'

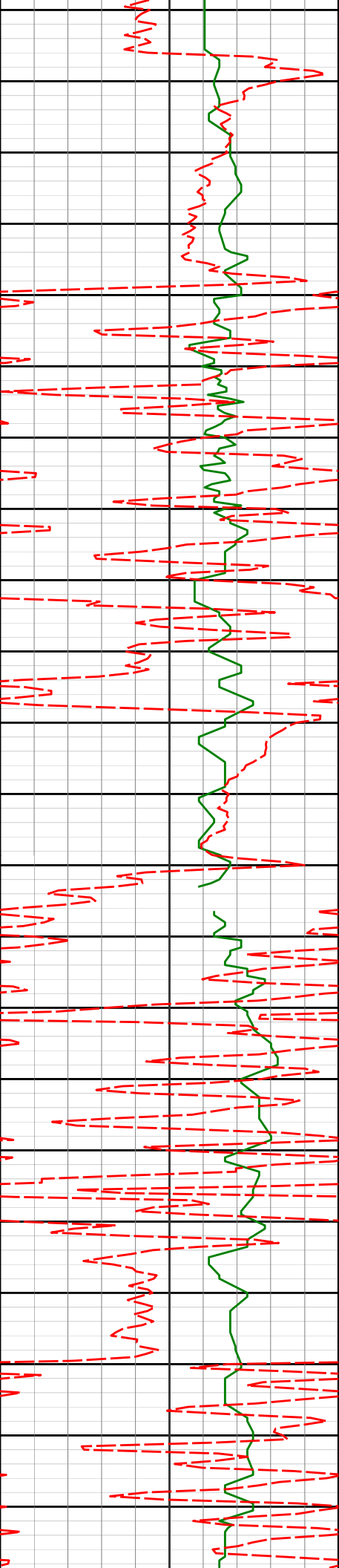
16.23°

125.77°

2638.15'

-364.34'

2750'



2800'

2817'

20.26°

128.54°

2723.61'

-381.39'

2850'

2900'

See Remark #6

2907'

20.01°

138.75°

2808.14'

-402.68'

2950'

2996'

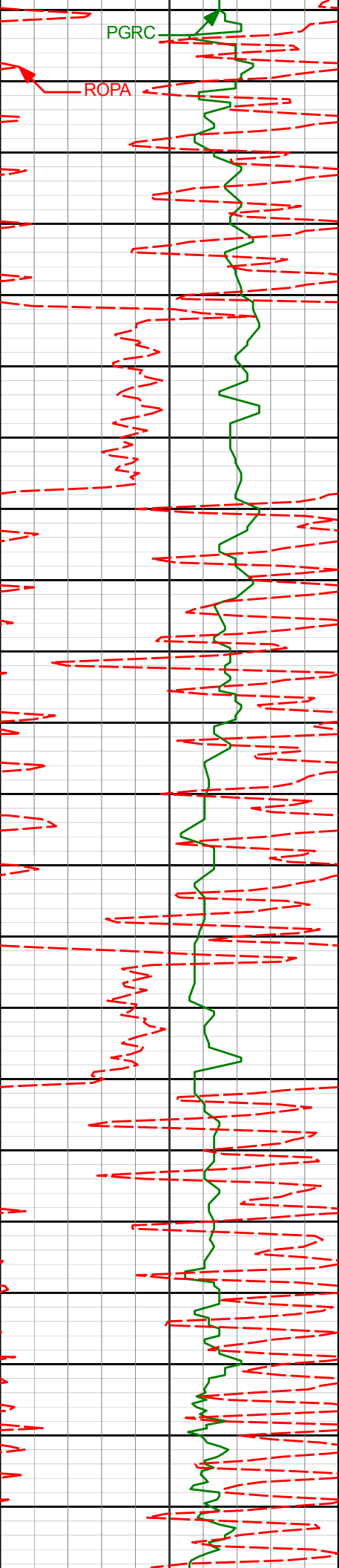
18.51°

135.81°

2892.16'

-424.25'





3000'

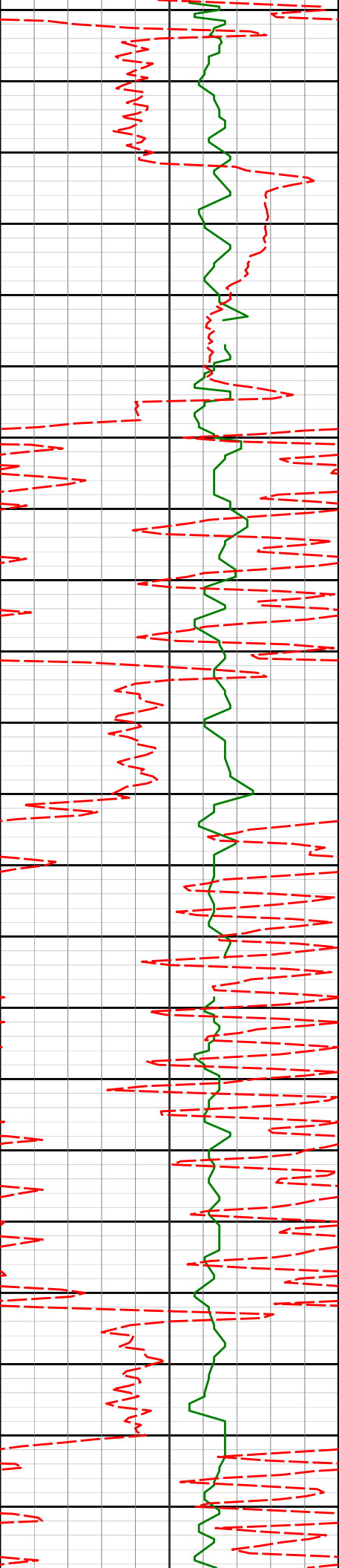
3050'

3100'

3150'

3200'

3086'	17.04°	133.26°	2977.86'	-443.52'
3176'	15.95°	129.94°	3064.15'	-460.48'



See Remark #6

3250'

3300'

See Remark #6

3400'

3266'

17.95°

132.18°

3150.24'

-477.73'

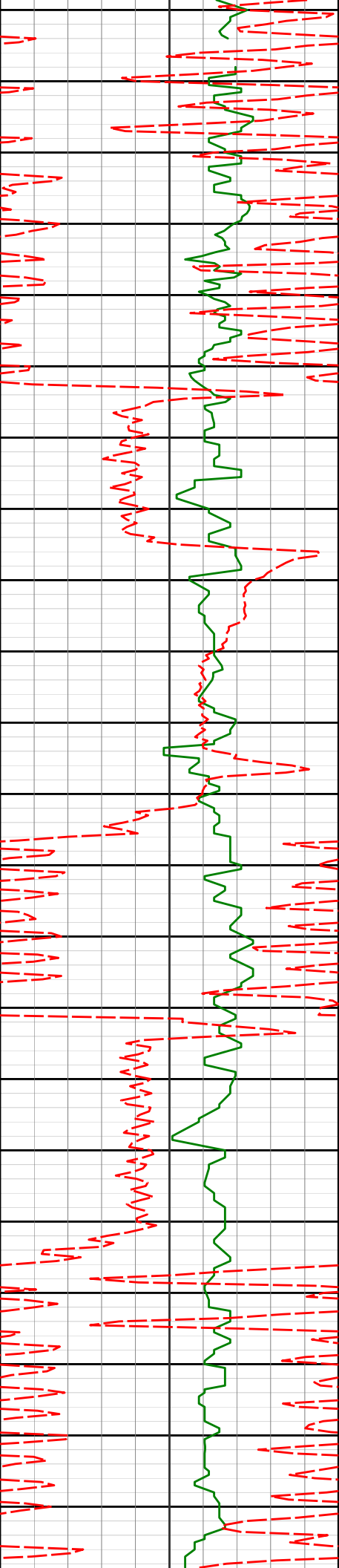
3356'

17.11°

130.65°

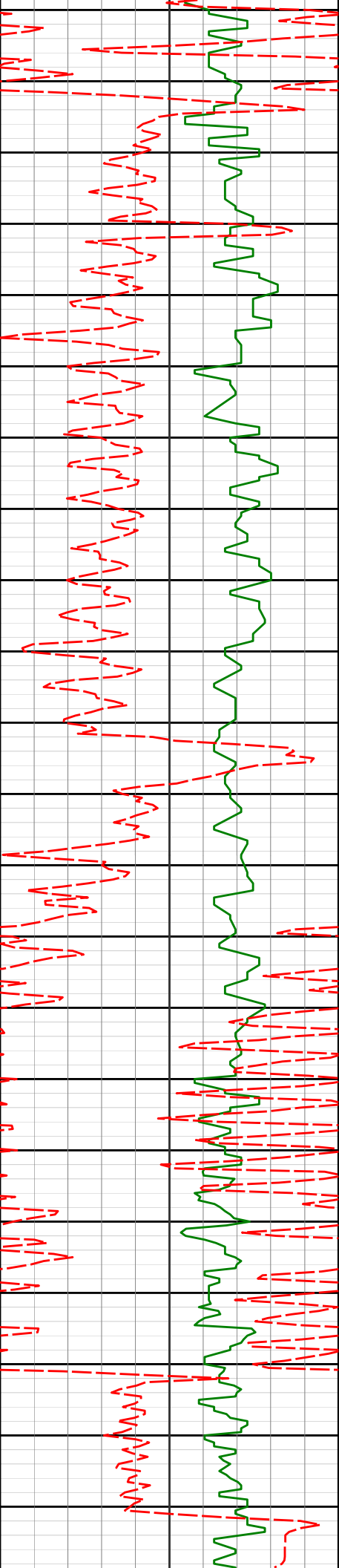
3236.06'

-495.65'



See Remark #6

3445'	15.59°	127.99°	3321.46'	-511.53'
3450'				
3500'				
3535'	18.11°	131.54°	3407.59'	-528.25'
3550'				
3600'				
3625'	17.08°	131.77°	3493.38'	-546.32'
3650'				



3700'

3715'

15.33°

128.50°

3579.81'

-562.51'

3750'

3800'

3804'

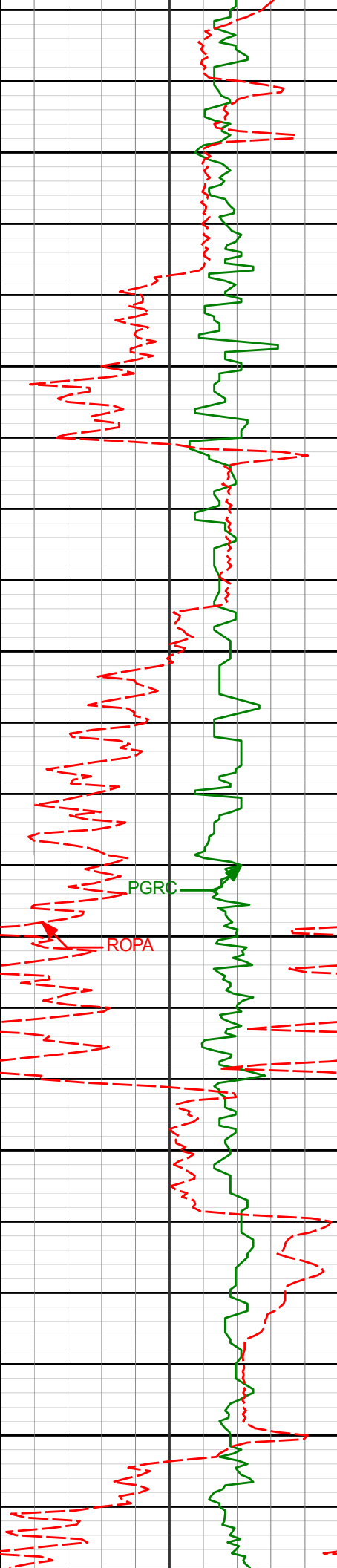
13.33°

126.71°

3666.03'

-575.96'

3850'



3894'

11.36°

140.38°

3753.97'

-588.98'

3900'

3950'

3984'

10.14°

146.00°

3842.39'

-602.38'

4000'

PGRC

ROPA

4050'

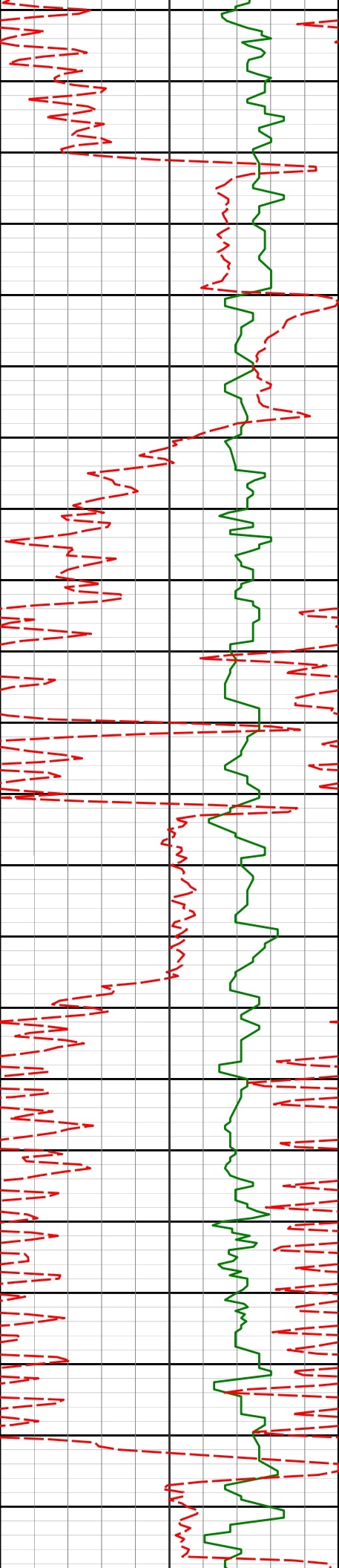
4074'

4.73°

154.31°

3931.60'

-612.30'



4100'

4150'

4164'

3.78°

201.50°

4021.38'

-618.40'

4200'

4250'

4253'

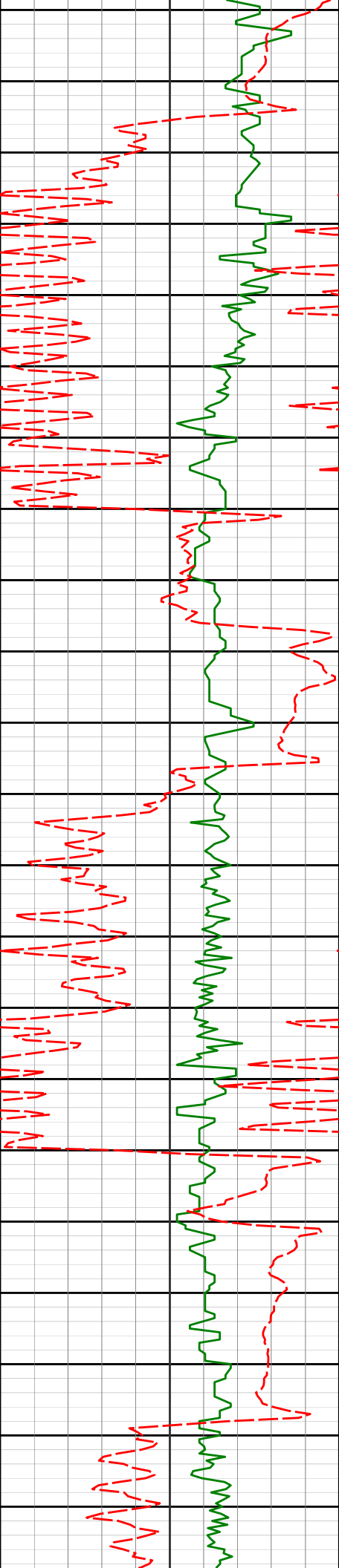
3.40°

204.42°

4110.20'

-623.53'

4300'



4343'

4.87°

239.07°

4199.98'

-627.93'

4350'

4400'

4433'

6.55°

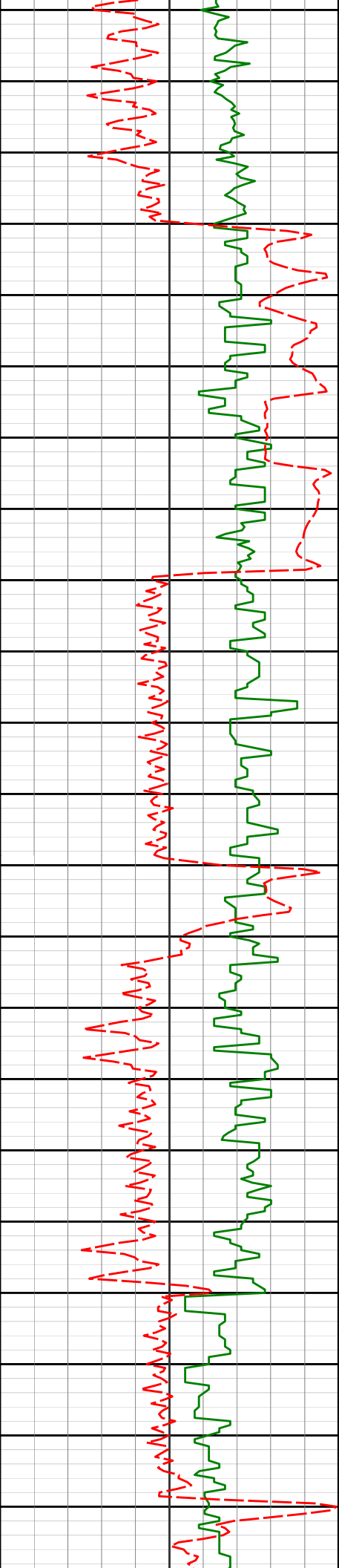
249.52°

4289.53'

-631.69'

4450'

4500'



4550'

4600'

4650'

4700'

4750'

4612'

4702'

1.00°

0.67°

165.08°

73.76°

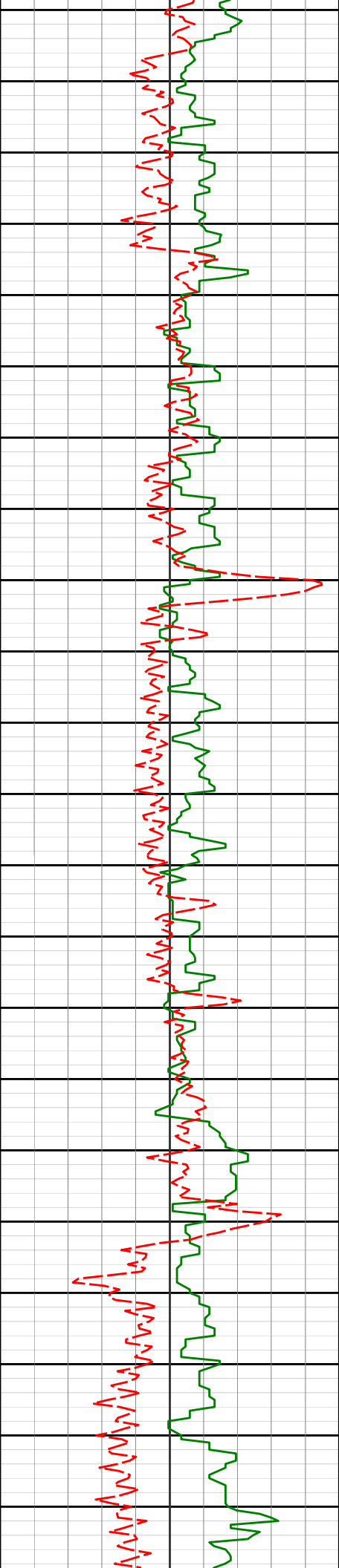
4468.13'

4558.12'

-636.78'

-637.39'





4792'	0.28°	68.77°	4648.12'	-637.16'
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4800'

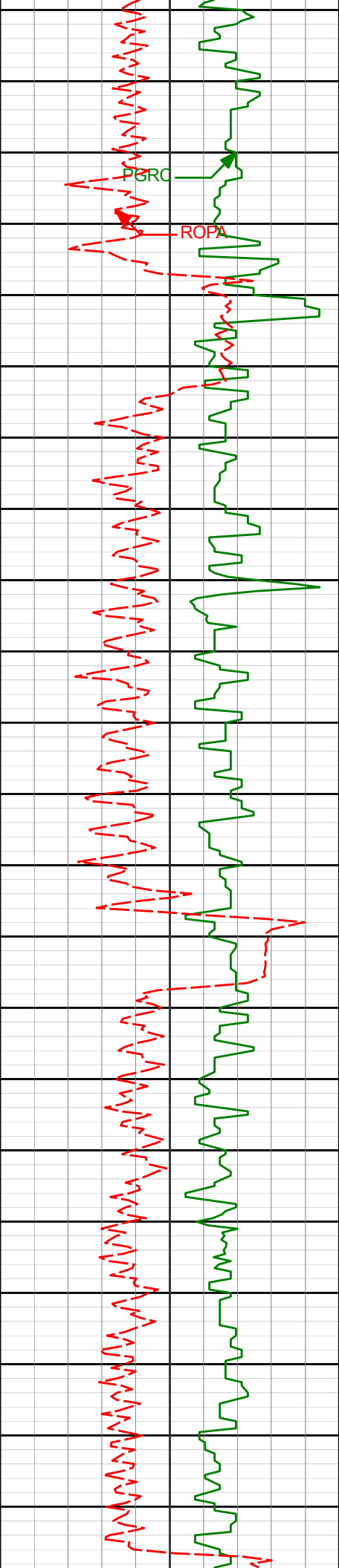
4850'

4882'	0.26°	31.53°	4738.12'	-636.90'
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4900'

4950'

4971'	0.42°	333.64°	4827.11'	-636.44'
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5000'

PGR

ROP

5050'

5061'

0.71°

338.51°

4917.11'

-635.63'

5100'

5150'

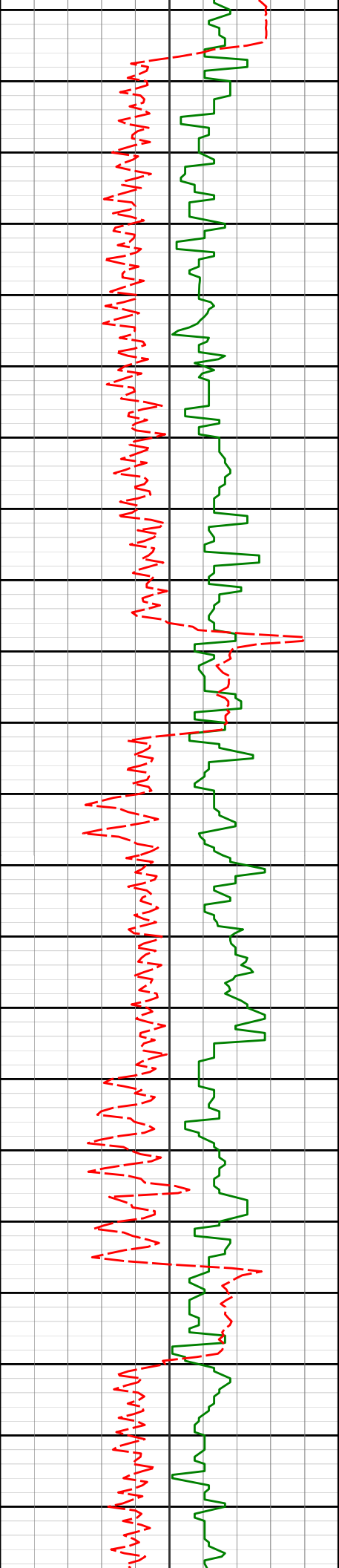
5151'

0.80°

330.09°

5007.10'

-634.56'



5200'

5241'

0.36°

1.20°

5097.10'

-633.74'

5250'

5300'

5330'

0.59°

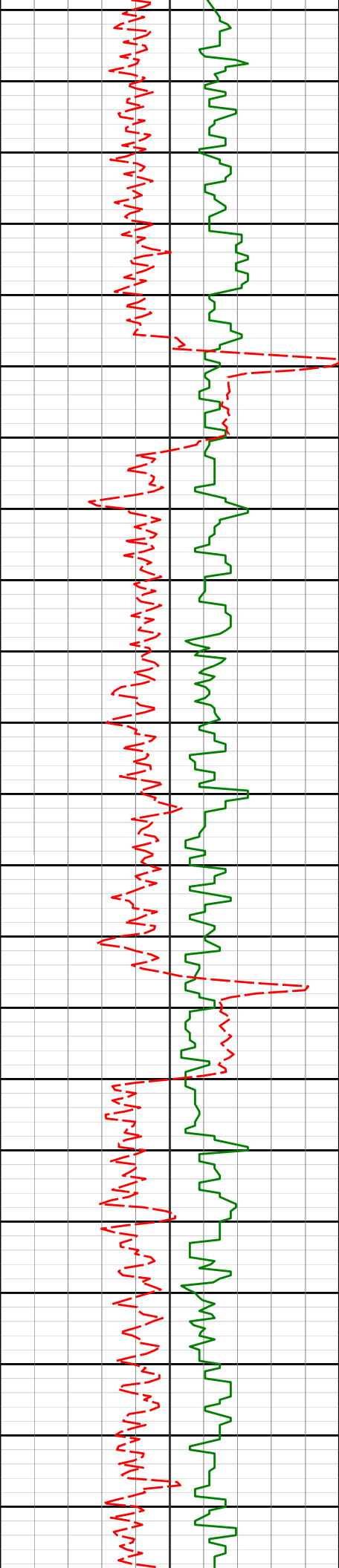
13.77°

5186.09'

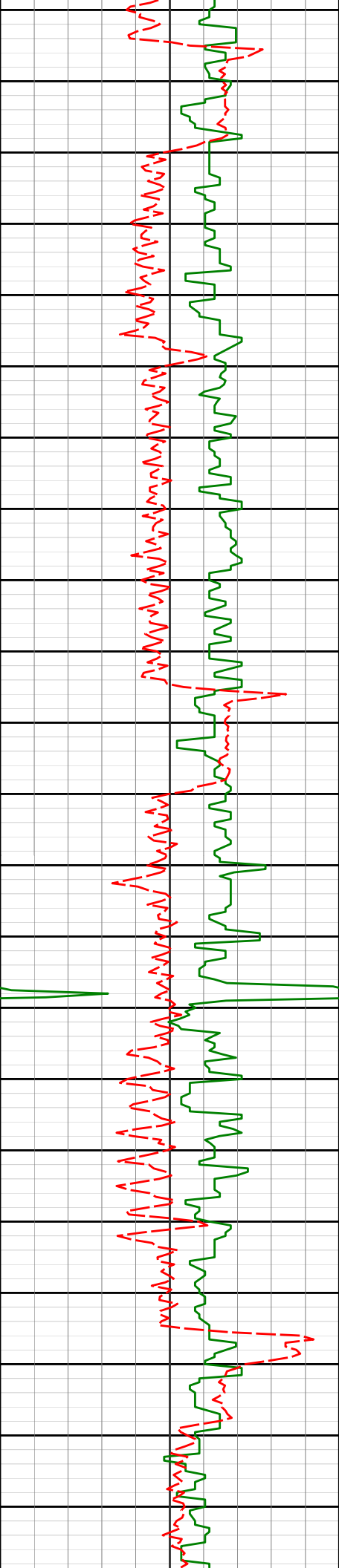
-633.01'

5350'

5400'



5420'	0.39°	359.60°	5276.09'	-632.25'



5650'

5689'

0.30°

3.40°

5545.09'

-630.78'

5700'

5750'

5779'

0.58°

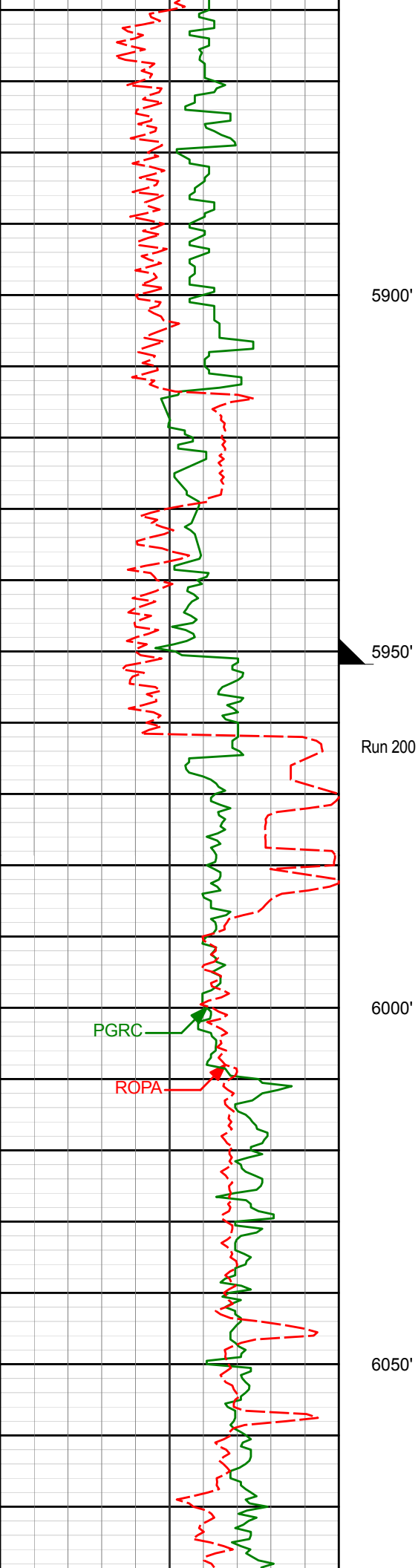
34.44°

5635.08'

-630.16'

5800'

5850'



5868'

0.65°

1.85°

5724.08'

-629.28'

5900'

5950'

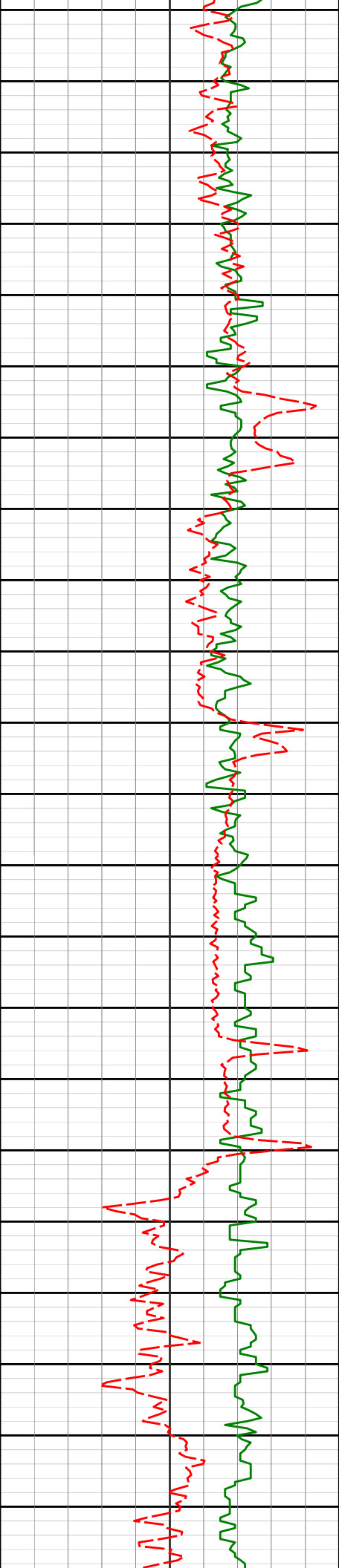
Run 200

6000'

PGRC

ROPA

6050'



6100'

6150'

6178'

6200'

6250'

6268'

1.11°

357.06°

6034.03'

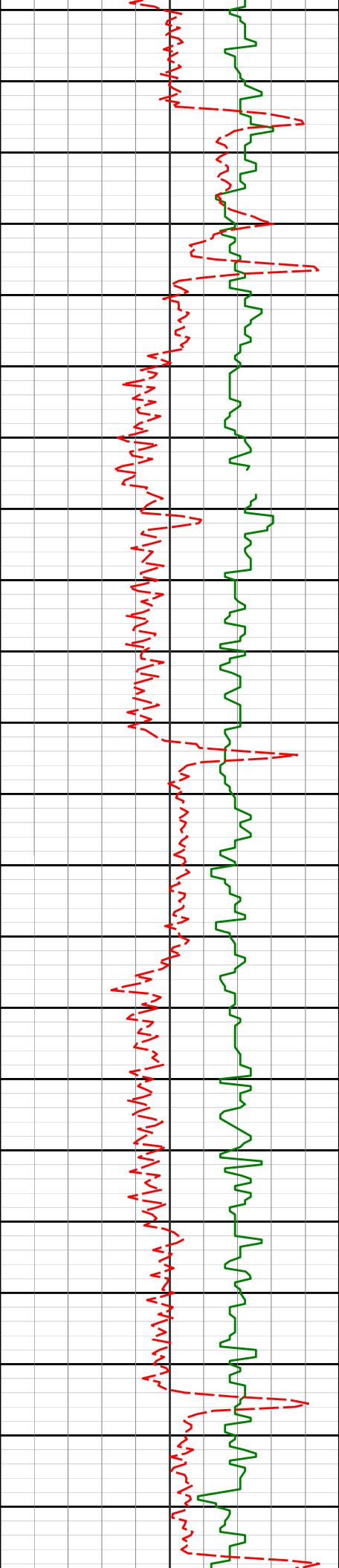
-623.64'

1.24°

3.65°

6124.01'

-621.80'



See Remark #6

6300'

6350'

6400'

6450'

6500'

6358'

1.47°

7.14°

6213.98'

-619.68'

6448'

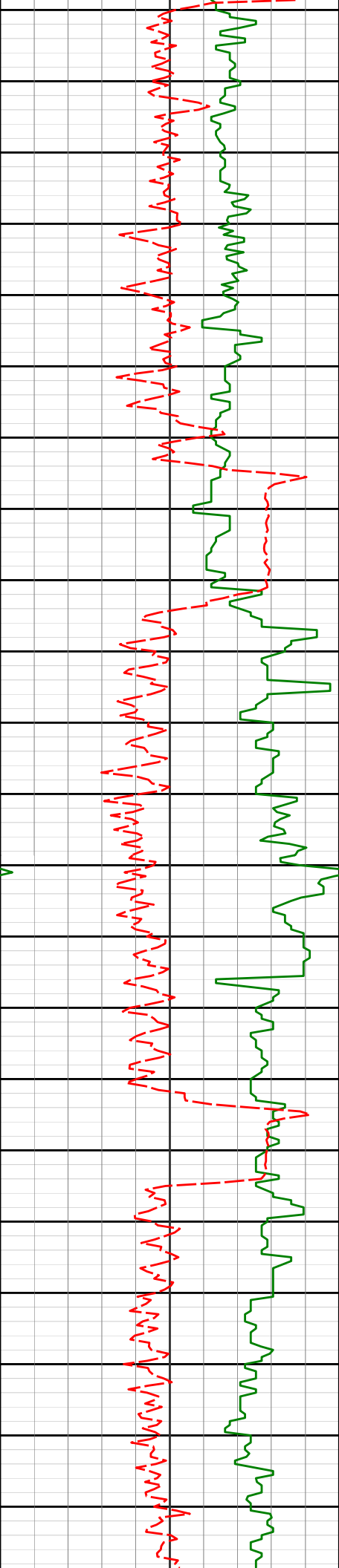
1.57°

3.56°

6303.95'

-617.30'





6538'

1.23°

358.40°

6393.92'

-615.11'

6550'

6600'

6627'

1.16°

354.83°

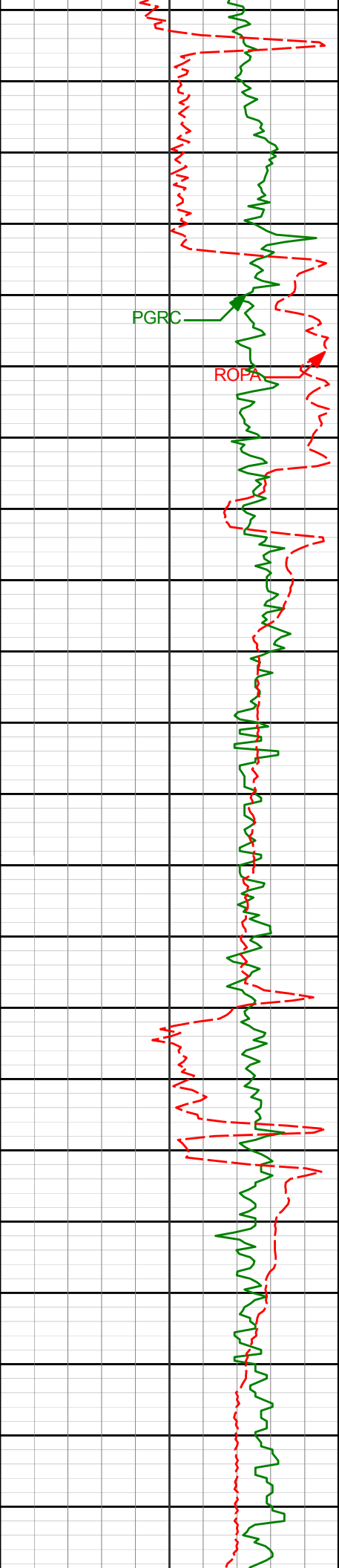
6482.91'

-613.26'

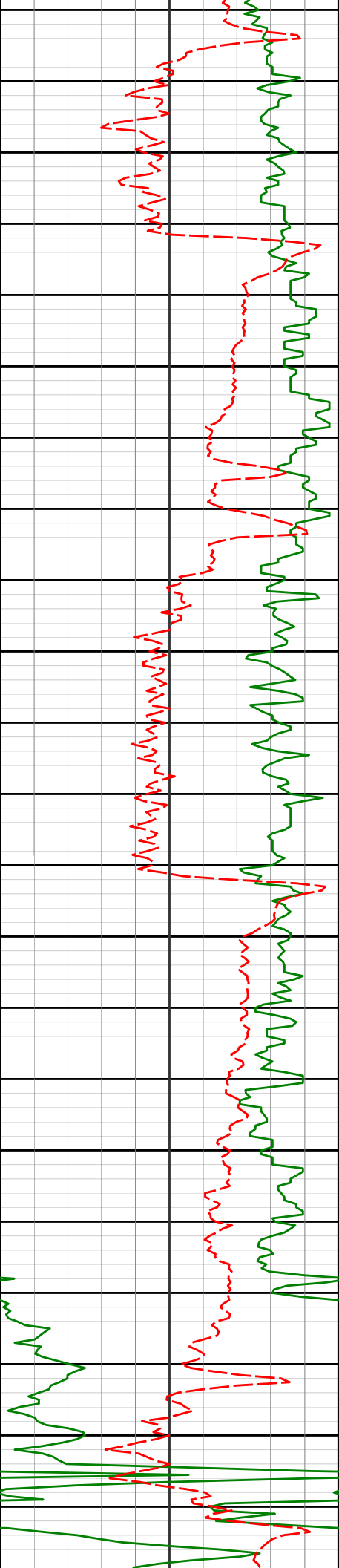
6650'

6700'





6986'	8.14°	6.18°	6841.31'	-598.04'
7000'				
7050'				
7076'	14.33°	2.36°	6929.55'	-580.57'
7100'				
7150'				
7166'	22.24°	0.38°	7014.93'	-552.36'



7200'

7250'

7300'

7350'

7256'

26.49°

4.48°

7096.90'

-515.30'

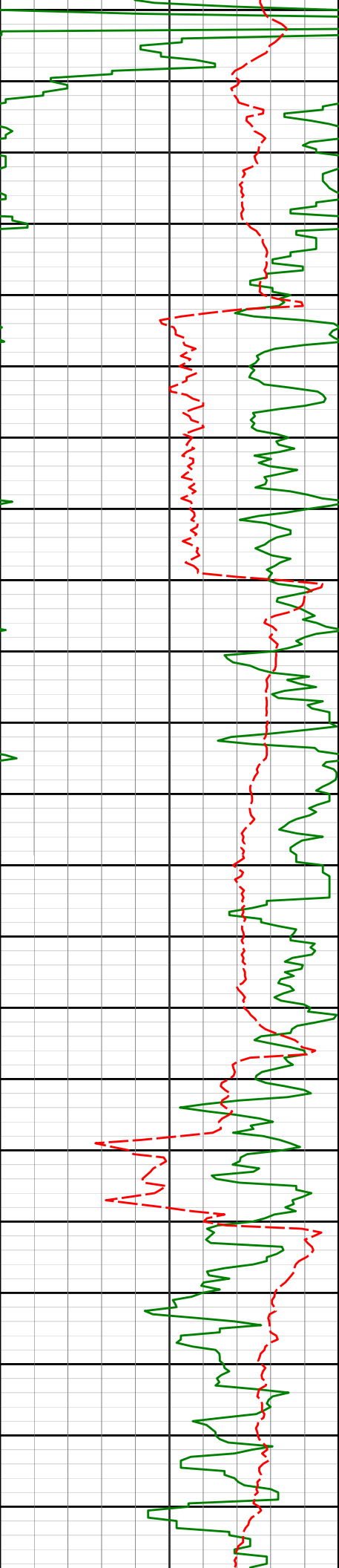
7345'

31.16°

358.36°

7174.87'

-472.46'



7400'

7435'

37.55°

356.49°

7249.13'

-421.76'

7450'

7500'

7525'

42.56°

355.22°

7318.00'

-364.02'

7550'

7600'

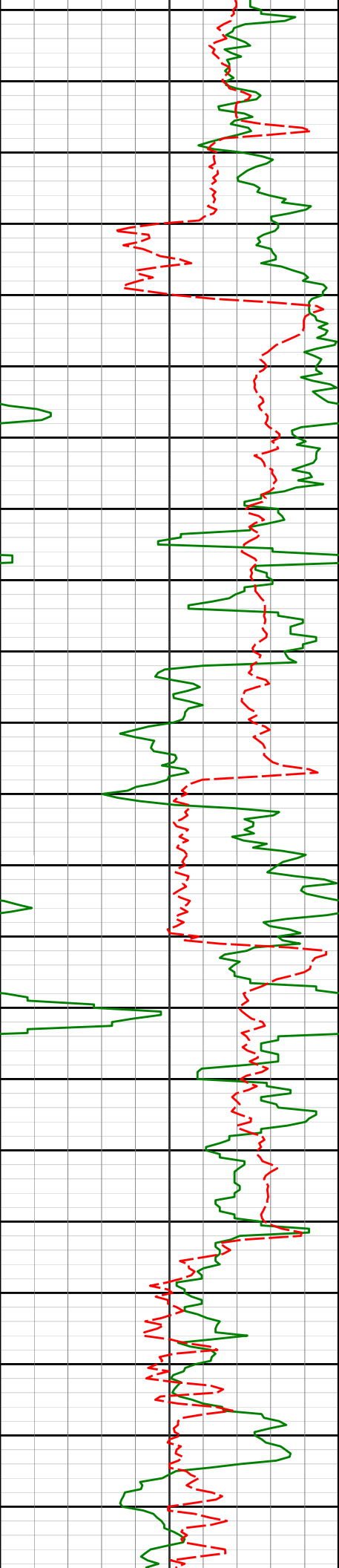
7615'

49.06°

356.42°

7380.71'

-299.69'



7650'

7700'

7750'

7800'

7705'

7799'

57.56°

64.24°

358.26°

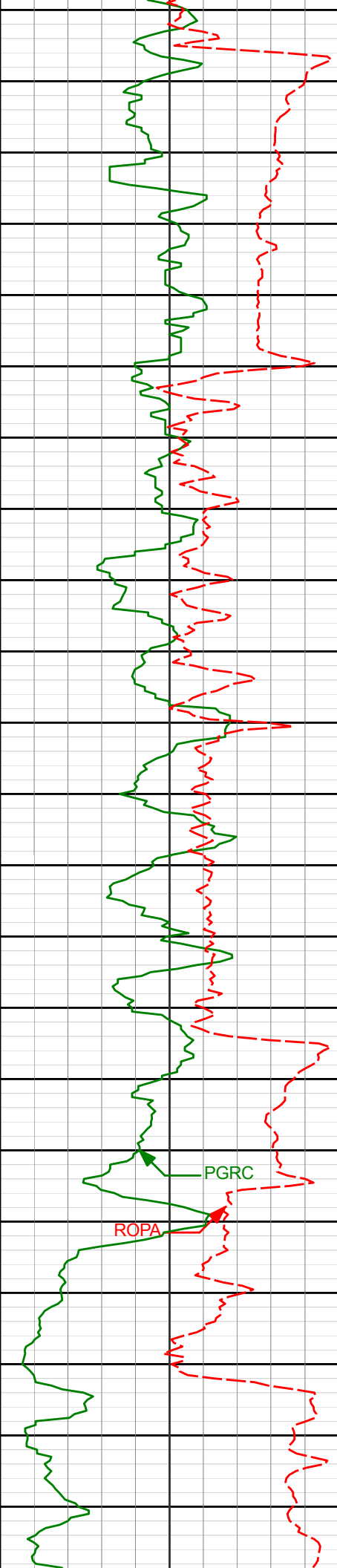
0.58°

7434.44'

7480.13'

-227.68'

-145.60'



7850'

7893'

71.85°

359.53°

7515.25'

-58.48'

7900'

7950'

7987'

71.99°

358.02°

7544.42'

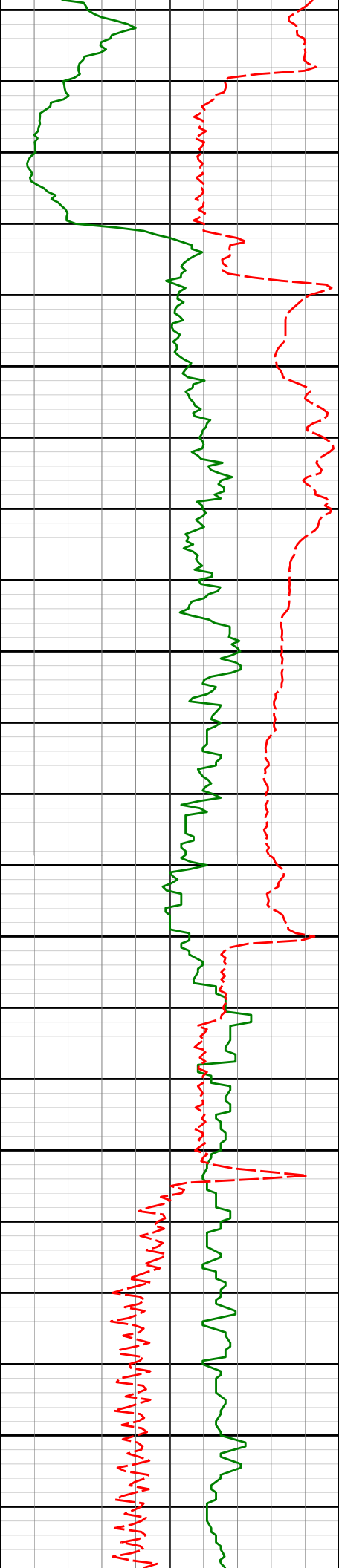
30.85'

8000'

PGRC

ROPA

8050'



8082'

76.71°

0.44°

7570.04'

122.29'

8100'

8150'

8176'

88.89°

359.14°

7581.80'

215.37'

8200'

8250'

8270'

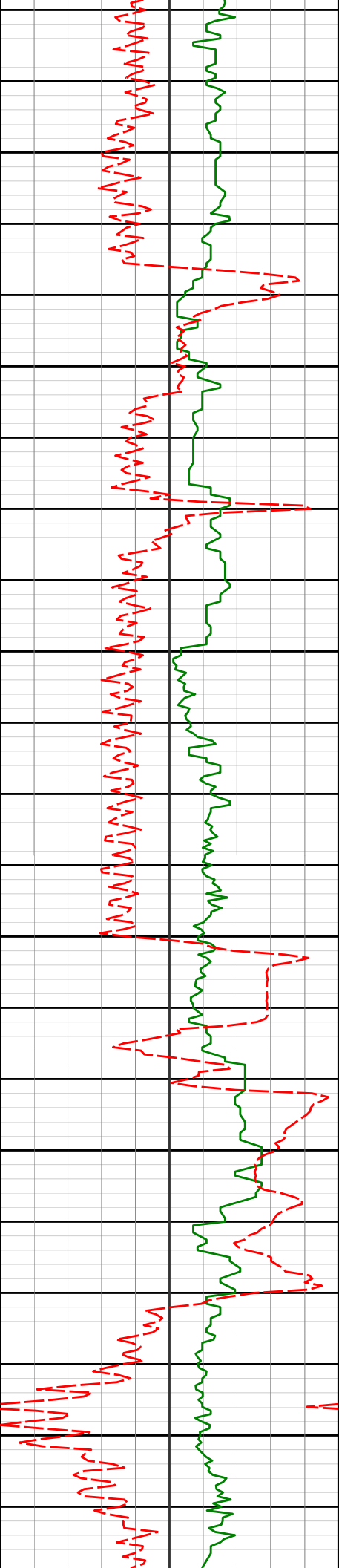
91.08°

359.43°

7581.83'

309.36'





8300'

8350'

8400'

8450'

8364'

90.83°

358.59°

7580.26'

403.33'

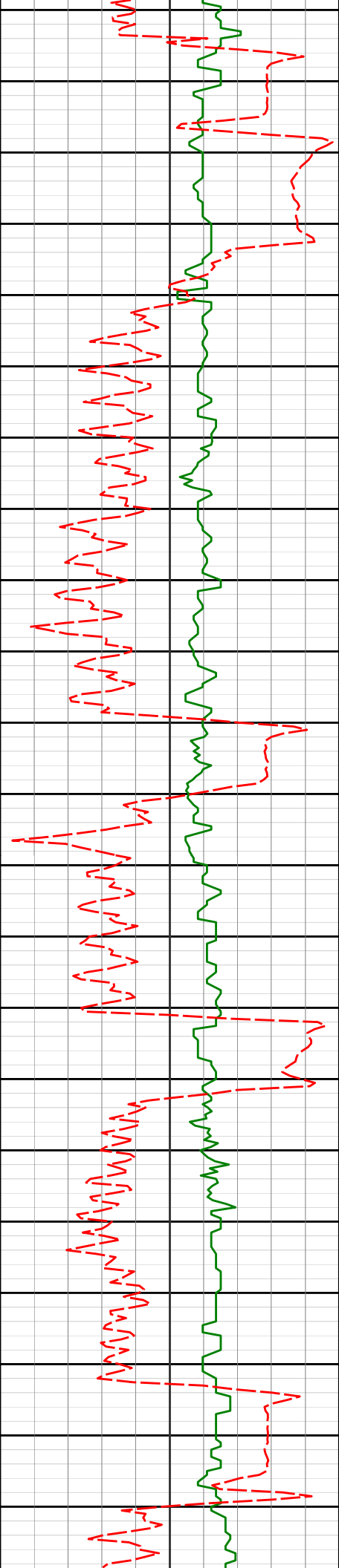
8459'

93.82°

1.81°

7576.40'

498.23'



8500'

8550'

8600'

8650'

8700'

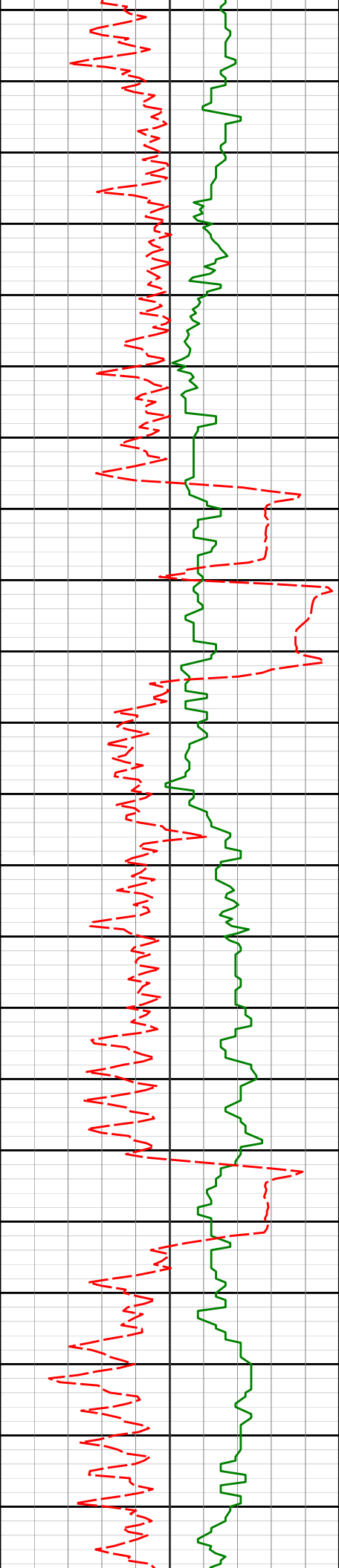
8553'

90.83°

0.64°

7572.59'

592.12'



8741'

89.11°

2.23°

7572.68'

780.05'

8750'

8800'

8835'

91.02°

2.61°

7572.58'

873.96'

8850'

8900'

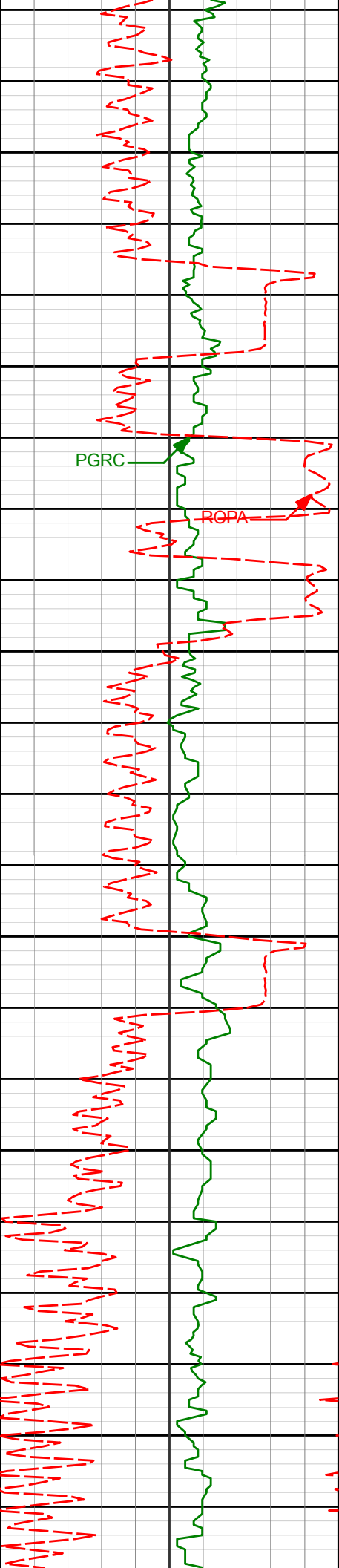
8930'

91.51°

2.24°

7570.49'

968.85'



8950'

9000'

9050'

9100'

9150'

PGRC

ROPA

9024'

90.89°

1.42°

7568.51'

1062.78'

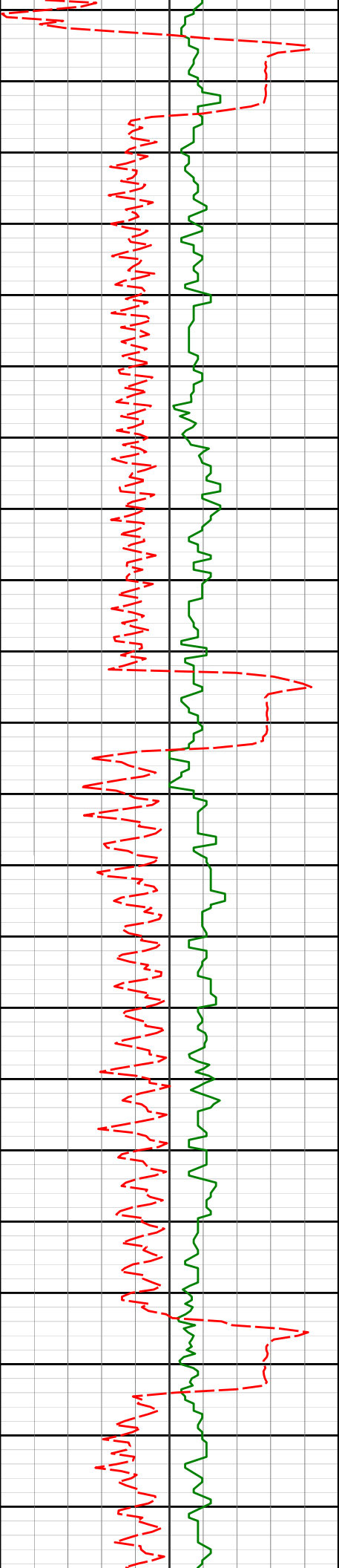
9118'

90.18°

359.89°

7567.63'

1156.77'



9200'

9208'

90.31°

0.34°

7567.24'

1246.77'

9250'

9300'

9298'

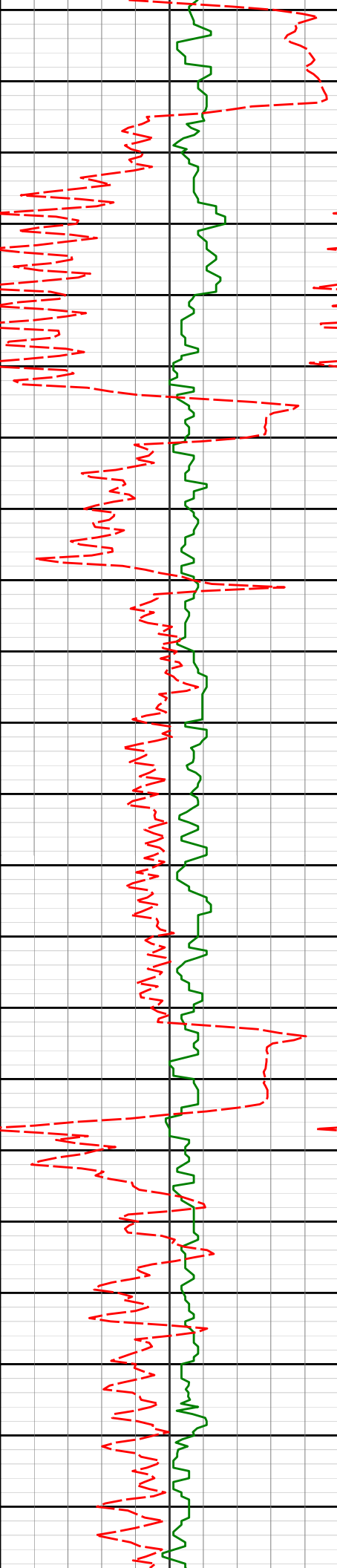
89.41°

359.15°

7567.46'

1336.77'

9350'



9400'

9450'

9477'

9500'

9550'

9567'

90.74°

359.67°

7567.22'

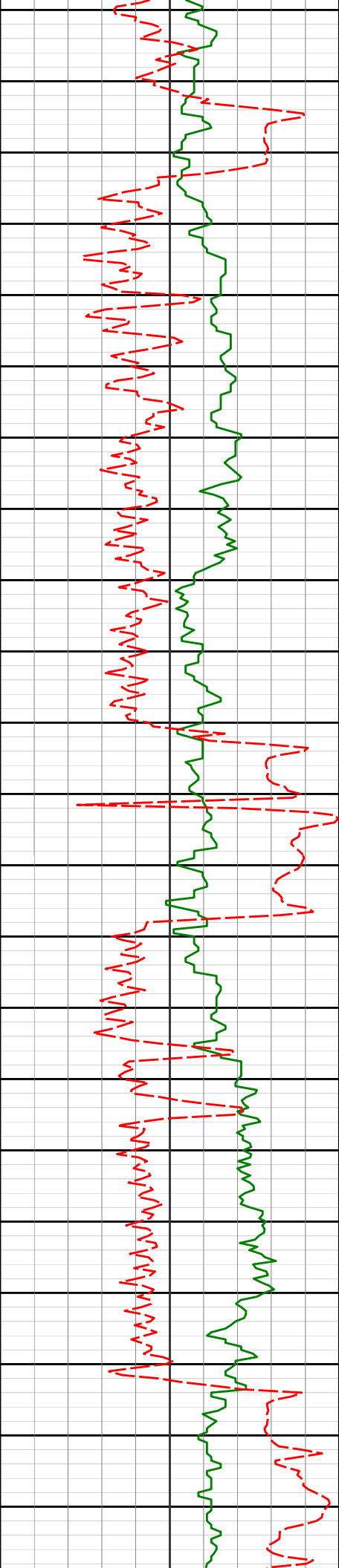
1515.75'

90.83°

359.10°

7565.98'

1605.74'



9600'

9650'

9700'

9750'

9800'

9657'

90.95°

359.08°

7564.58'

1695.71'

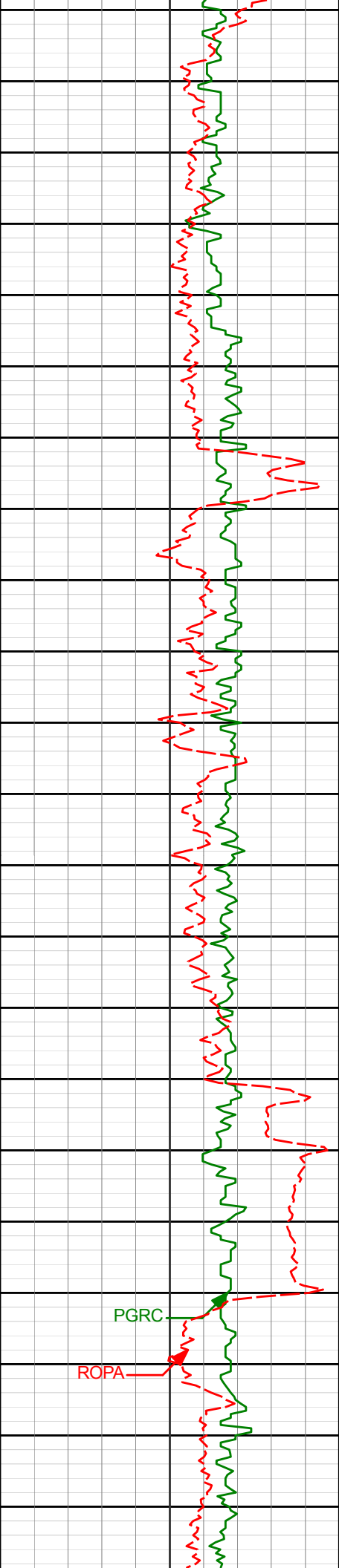
9746'

88.89°

358.71°

7564.70'

1784.69'



9836'

89.66°

359.79°

7565.84'

1874.67'

9850'

9900'

9926'

89.45°

359.47°

7566.54'

1964.67'

9950'

10000'

10016'

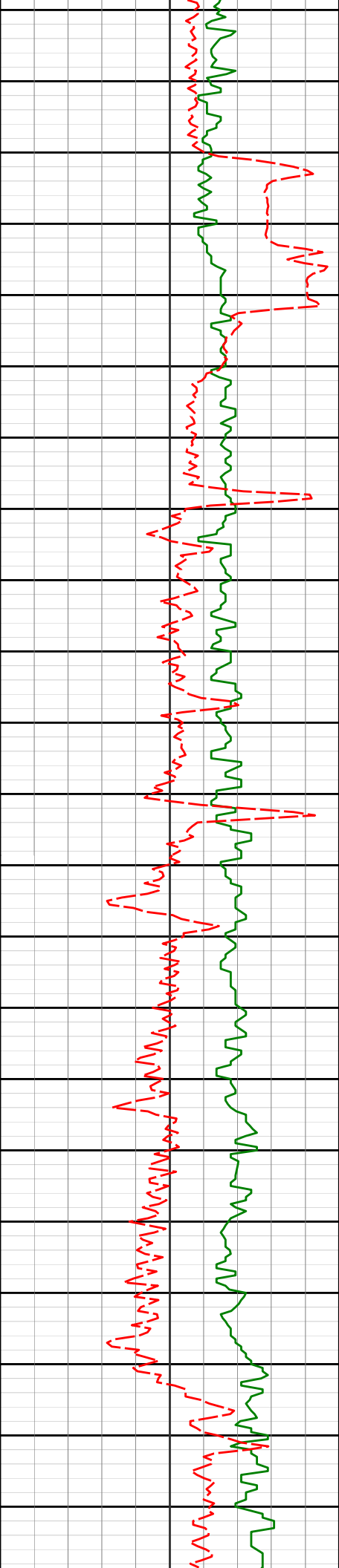
92.13°

2.05°

7565.30'

2054.64'





10050'

10100'

10150'

10200'

10250'

10105'

10195'

90.40°

90.15°

1.61°

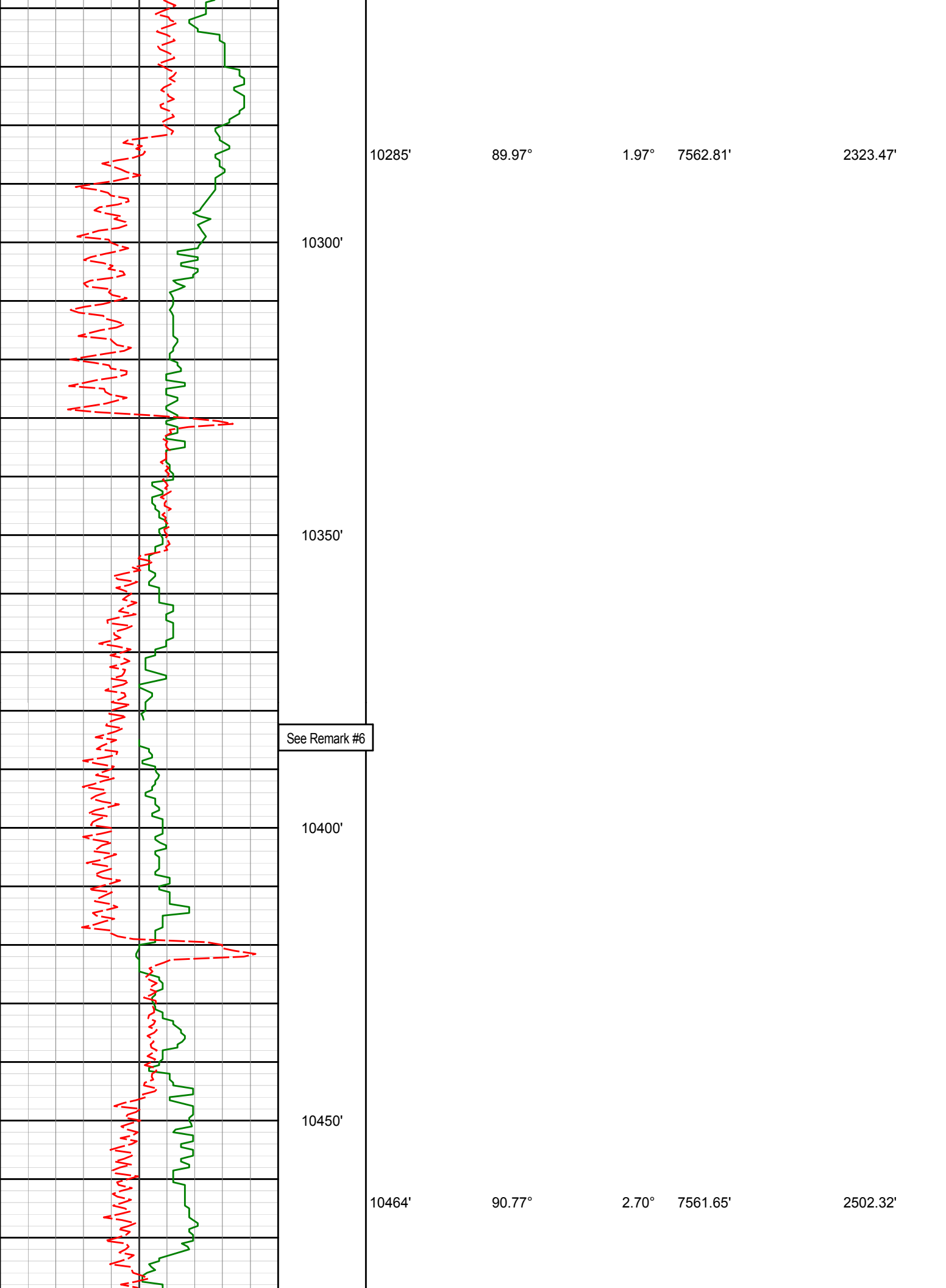
1.99°

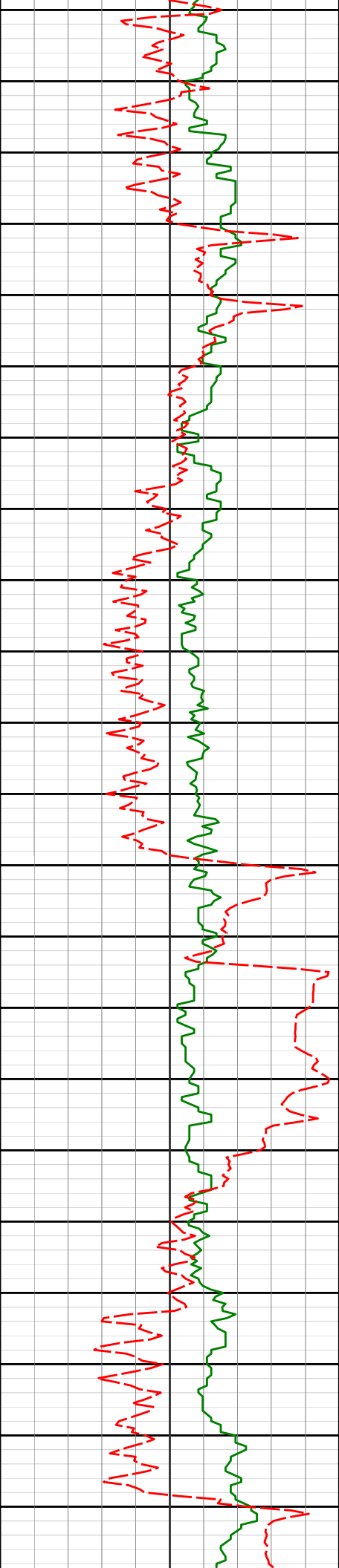
7563.34'

7562.90'

2143.57'

2233.52'





10500'

10550'

10600'

10650'

10554'

91.30°

3.28°

7560.03'

2592.18'

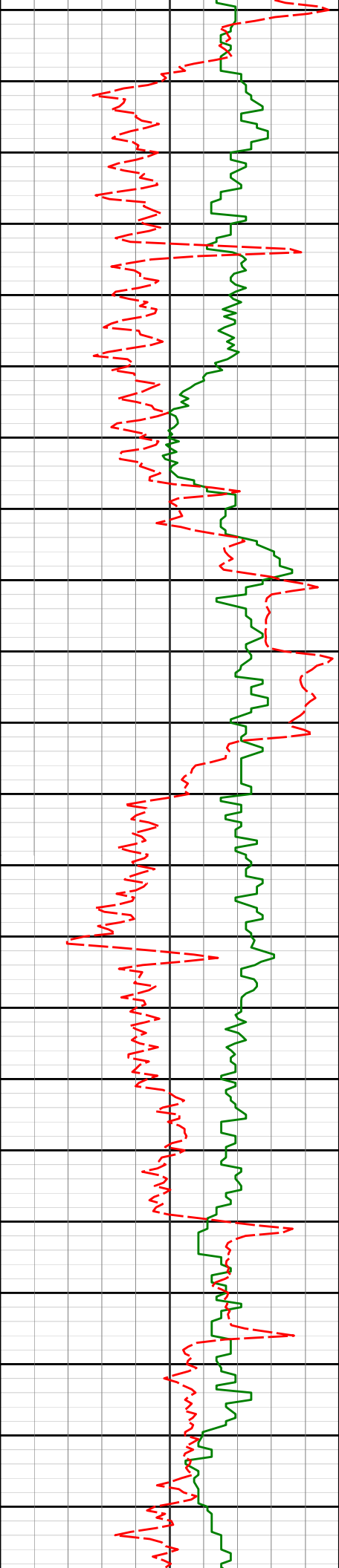
10644'

88.77°

1.46°

7559.98'

2682.10'



10734'

88.58°

1.06°

7562.06'

2772.05'

10750'

10800'

10823'

89.45°

359.33°

7563.60'

2861.03'

10850'

10900'

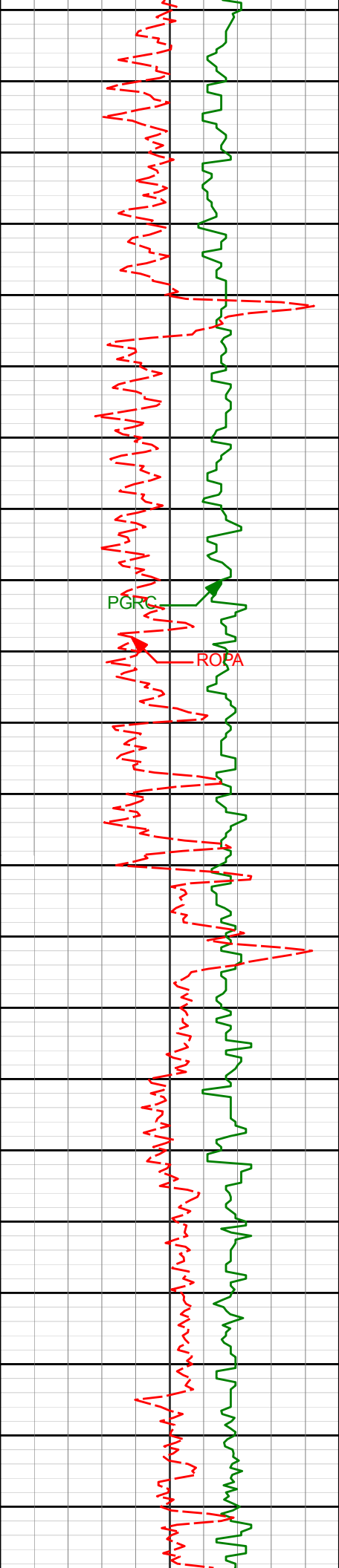
10913'

89.48°

358.85°

7564.44'

2951.02'



10950'

11000'

11050'

11100'

11003'

89.75°

359.04°

7565.05'

3041.00'

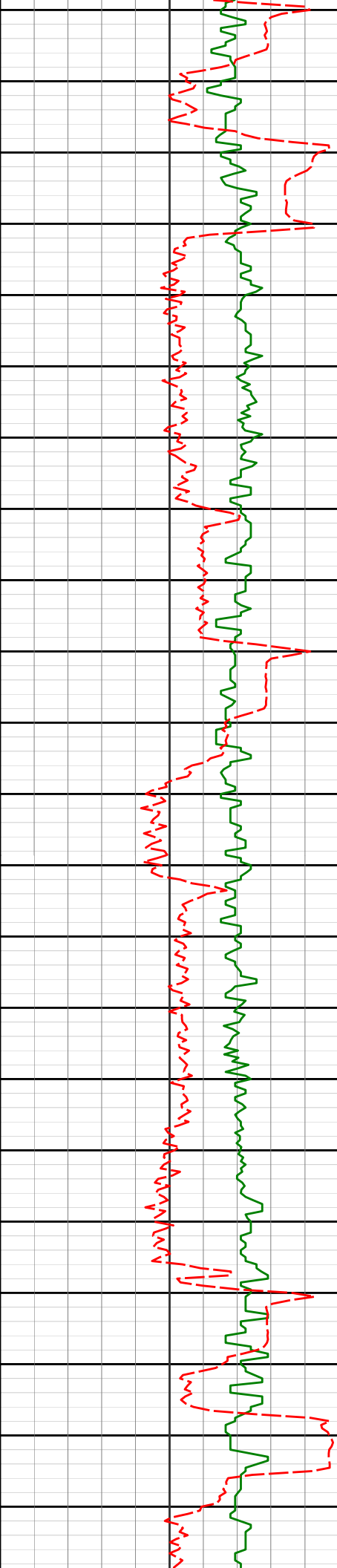
11093'

89.41°

358.92°

7565.70'

3130.98'



11150'

11183'

90.99°

0.06°

7565.39'

3220.97'

11200'

11250'

11272'

91.73°

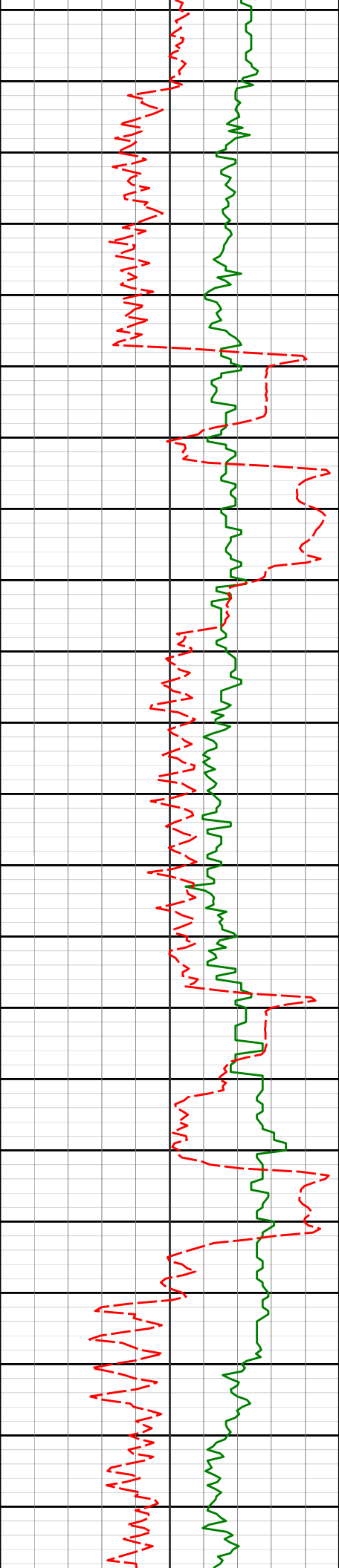
1.02°

7563.28'

3309.94'

11300'

11350'



11362'

92.22°

1.37°

7560.18'

3399.87'

11400'

11450'

11452'

91.20°

359.51°

7557.49'

3489.82'

11500'

11550'

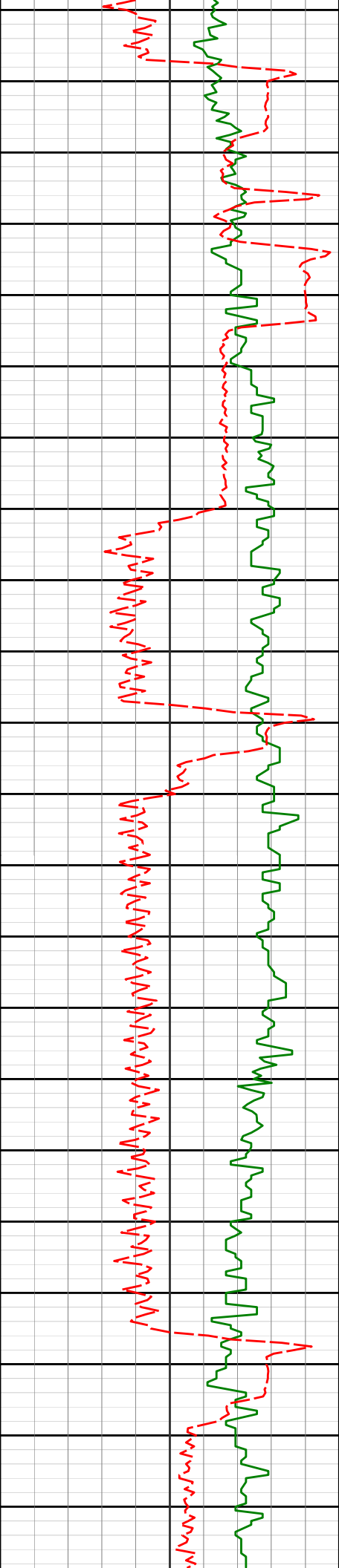
11541'

90.40°

358.92°

7556.25'

3578.80'



11600'

11631'

88.98°

358.51°

7556.73'

3668.78'

11650'

11700'

11721'

88.92°

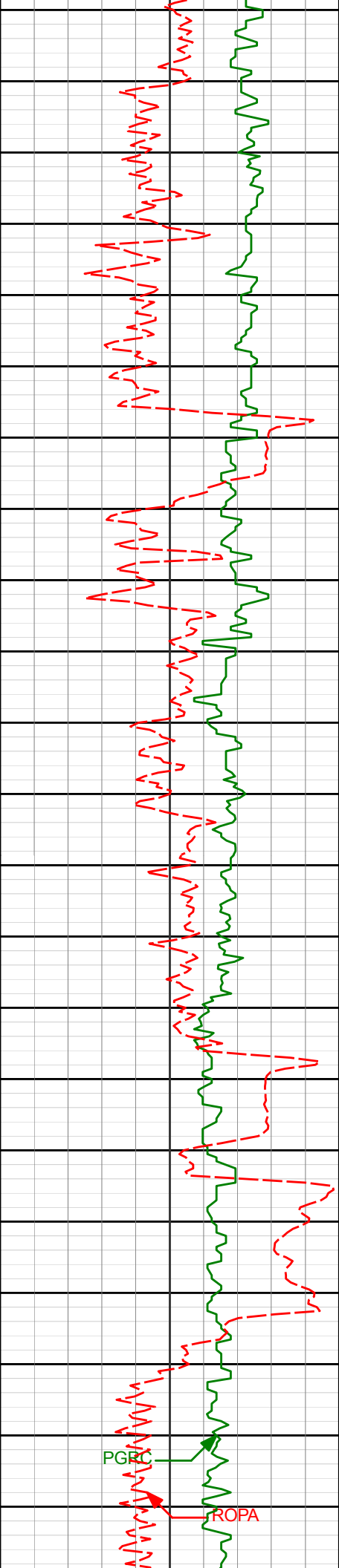
357.32°

7558.37'

3758.70'

11750'





11800'

11811'

88.61°

357.13°

7560.31'

3848.57'

11850'

11900'

11901'

88.62°

357.30°

7562.48'

3938.44'

11950'

11990'

89.69°

359.41°

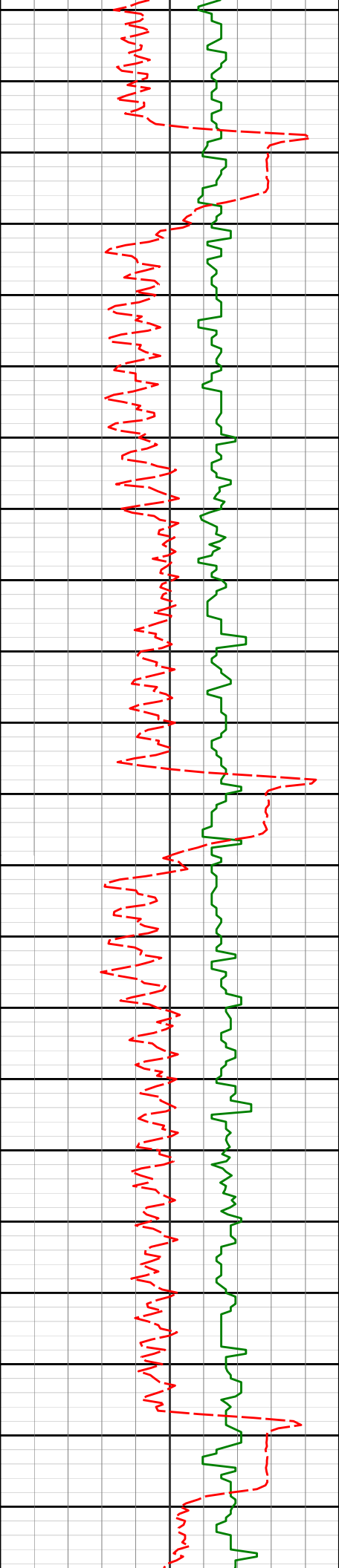
7563.80'

4027.38'

12000'

PGRC

ROPA



12050'

12080'

12100'

12150'

12170'

12200'

89.60°

358.94°

7564.36'

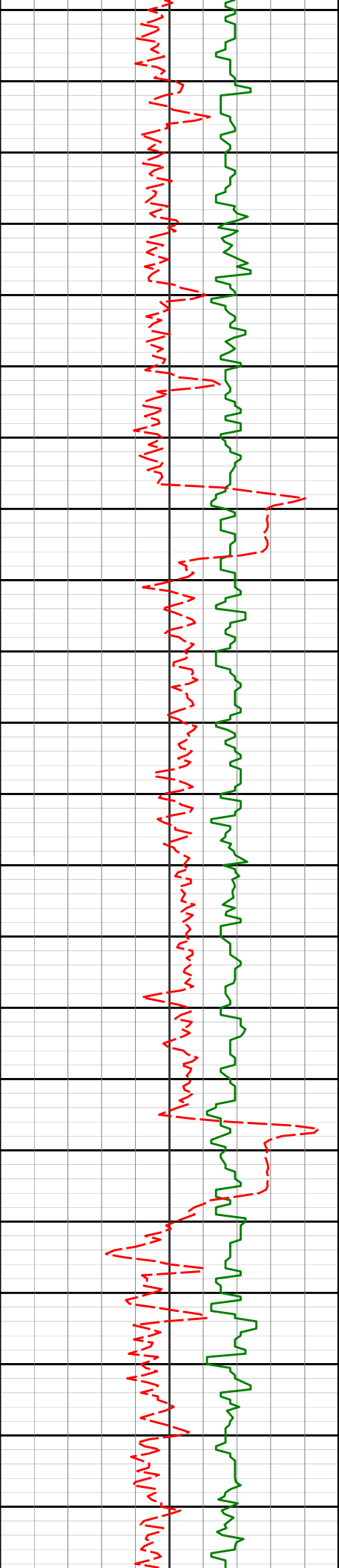
4117.37'

89.54°

358.81°

7565.03'

4207.35'



12250'

12260'

89.85°

358.50°

7565.52'

4297.32'

12300'

12350'

12349'

90.25°

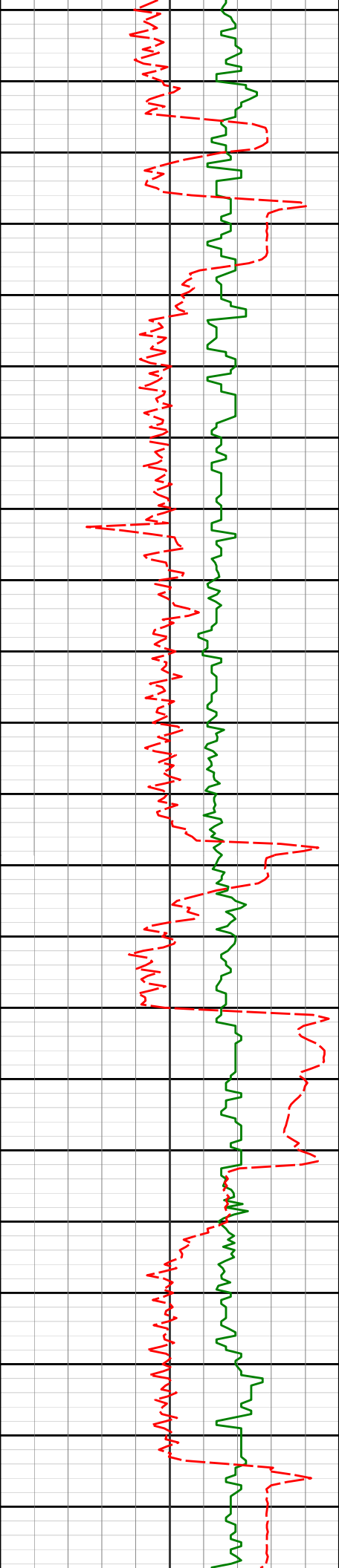
358.30°

7565.45'

4386.29'

12400'

12450'



12500'

12529'

90.62°

358.04°

7564.09'

4566.19'

12550'

12600'

12619'

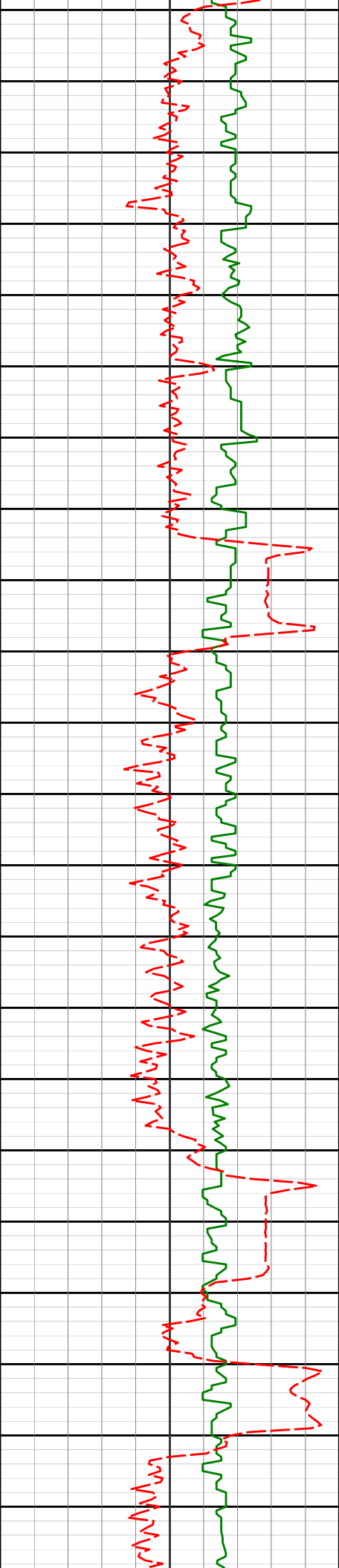
89.66°

0.45°

7563.88'

4656.17'

12650'



12700'

12708'

89.45°

0.87°

7564.57'

4745.16'

12750'

12800'

12798'

89.23°

359.80°

7565.61'

4835.15'

12850'

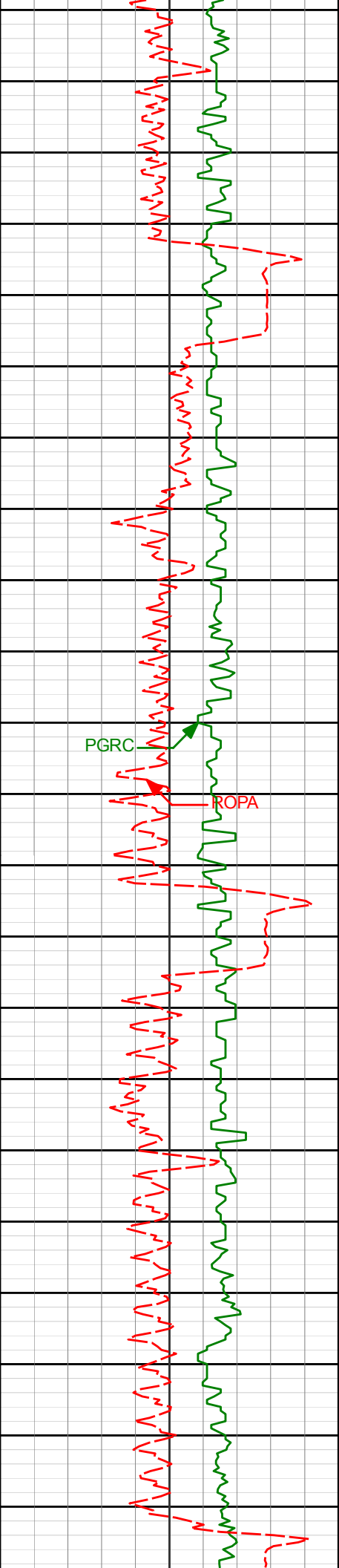
12888'

90.34°

359.83°

7565.95'

4925.15'



12900'

12950'

12978'

90.22°

359.26°

7565.51'

5015.14'

13000'

PGRC

ROPA

13050'

13067'

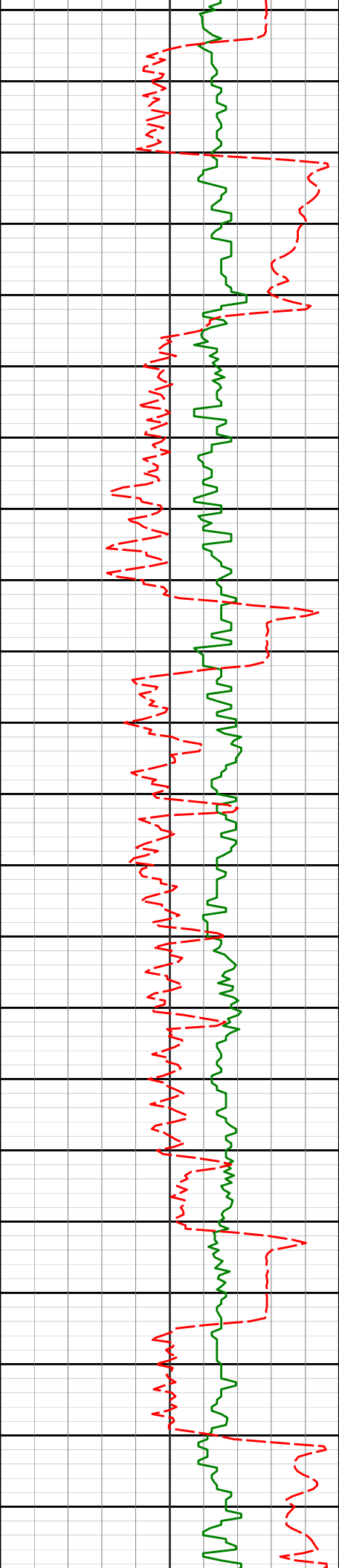
89.69°

358.89°

7565.58'

5104.13'

13100'



13150'

13157'

90.00°

1.05°

7565.83'

5194.13'

13200'

13250'

13247'

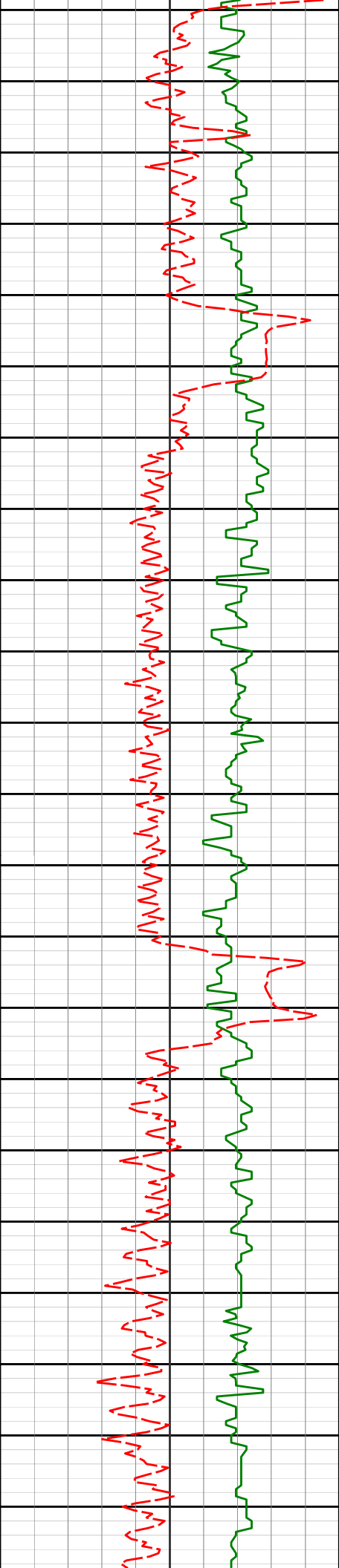
89.51°

0.39°

7566.21'

5284.12'

13300'



13350'

13400'

13426'

90.43°

1.37°

7566.31'

5463.09'

13450'

13500'

13516'

90.49°

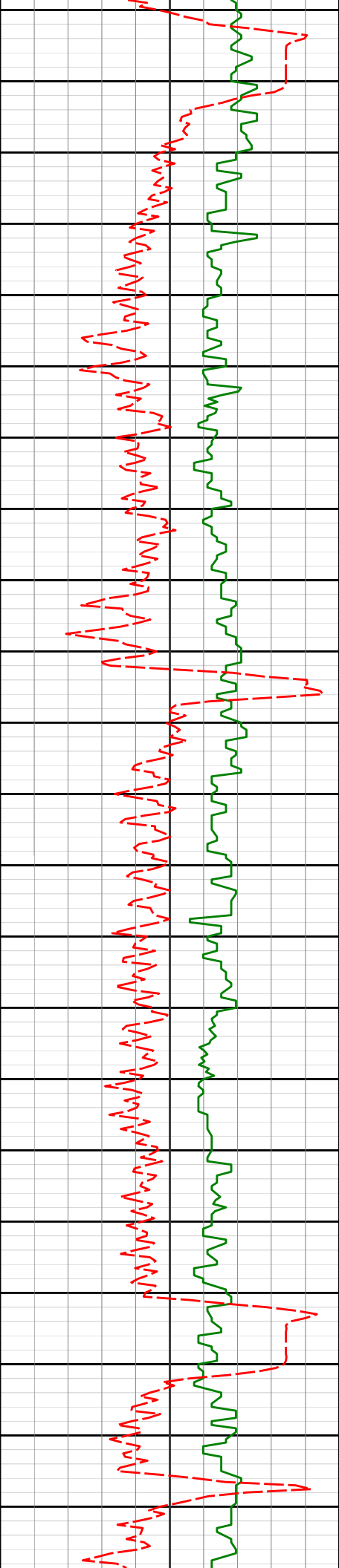
0.78°

7565.58'

5553.08'

13550'





13600'

13606'

90.00°

0.71°

7565.19'

5643.07'

13650'

13700'

13696'

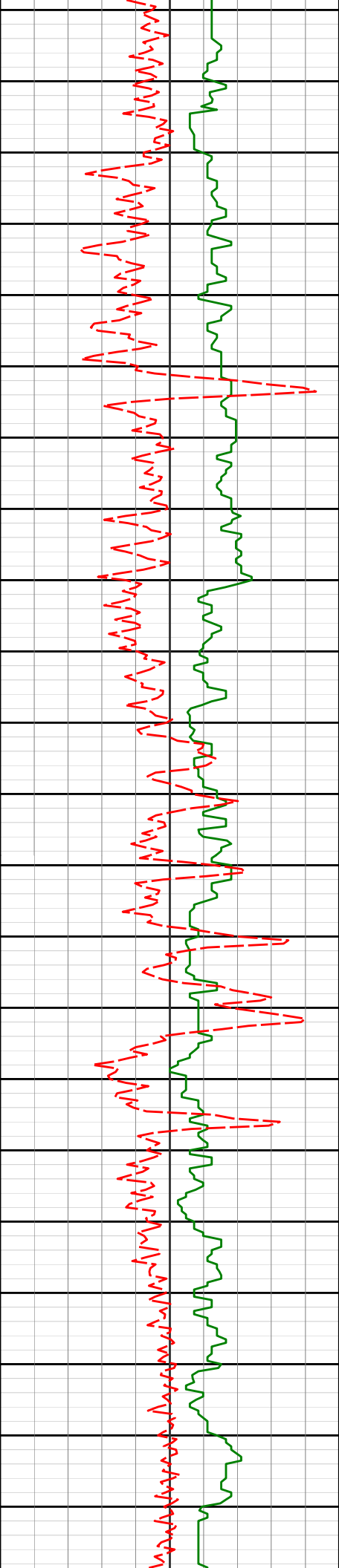
90.06°

1.44°

7565.14'

5733.05'

13750'



13785'

90.40°

1.13°

7564.78'

5822.03'

13800'

13850'

13875'

90.74°

1.38°

7563.89'

5912.00'

13900'

13950'

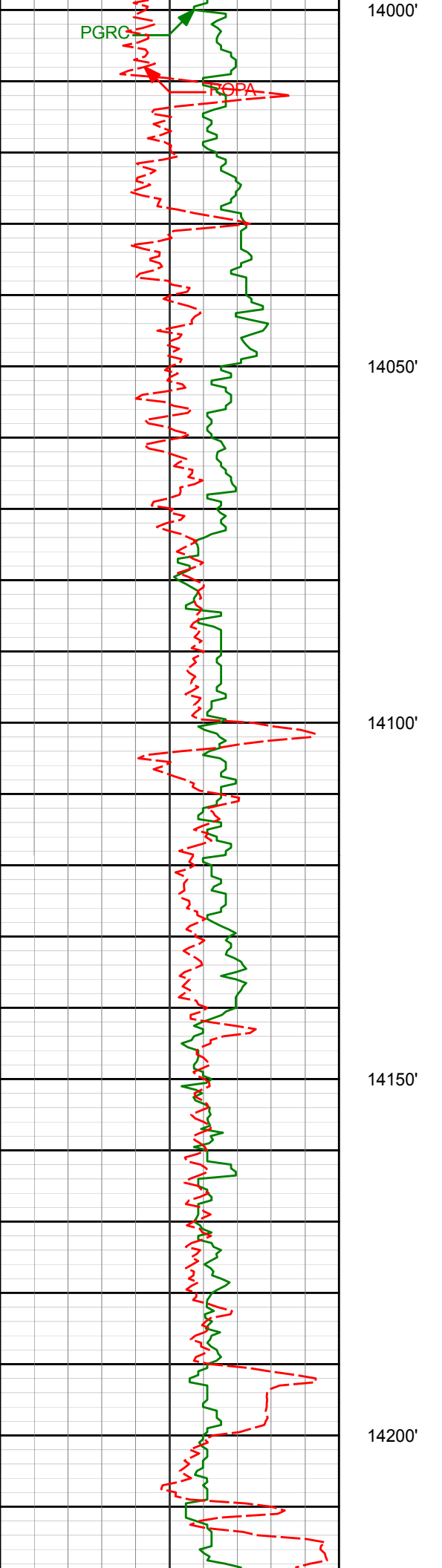
13965'

90.22°

0.86°

7563.14'

6001.98'



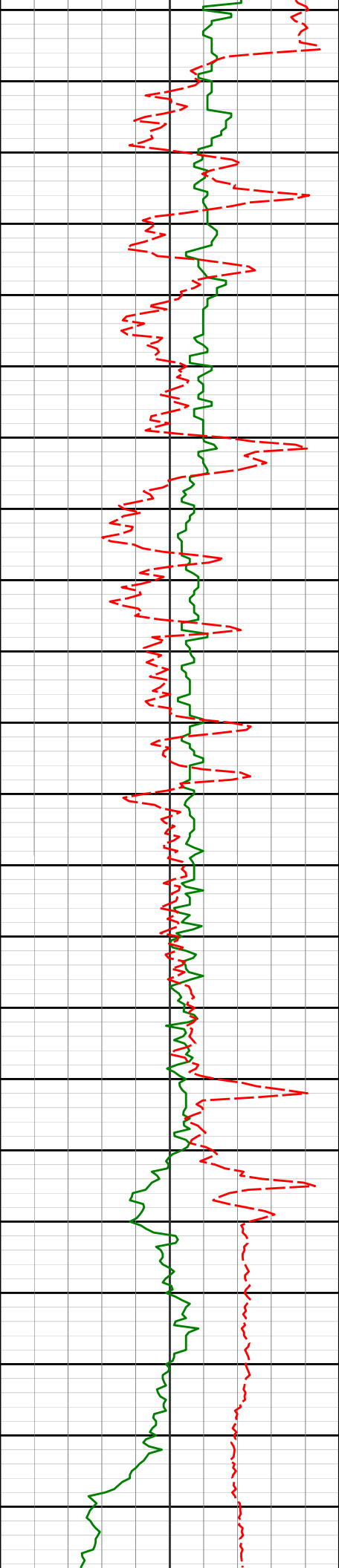
14055'

90.09°

0.30°

7562.90'

6091.98'



14234'

91.05°

359.18°

7561.11'

6270.96'

14250'

14300'

14324'

91.17°

358.51°

7559.37'

6360.93'

14350'

14400'

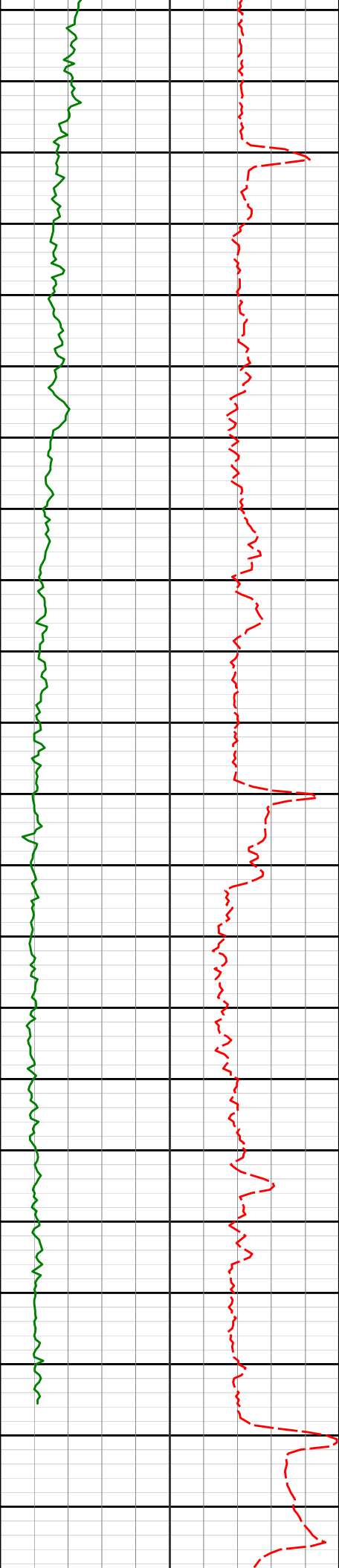
14414'

90.59°

357.29°

7557.99'

6450.85'



14450'

14500'

14550'

14600'

14650'

14504'

89.69°

357.08°

7557.77'

6540.74'

14593'

89.20°

357.87°

7558.63'

6629.65'

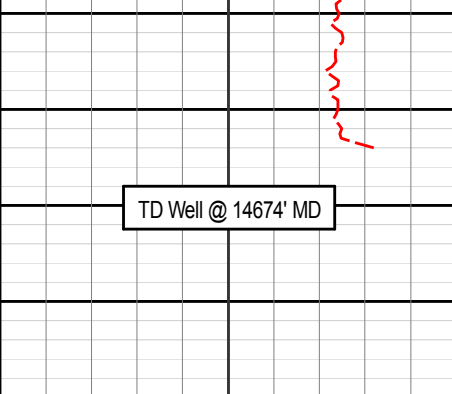
14628'

88.98°

358.30°

7559.19'

6664.62'

			14674'					88.98°		358.30°		7560.01'		6710.59'	
TD Well @ 14674' MD															

## HALLIBURTON

### DIRECTIONAL SURVEY REPORT

Anadarko Petroleum Corp  
 Wagner 26C-10HZ  
 Wattenberg  
 Weld Colorado  
 USA

CA-XX-0904337671

Surveys from 133' to 1831' provided by third party

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
133.00	1.01	11.56	132.99	1.15 N	0.23 E	1.15	0.76
165.00	0.88	45.84	164.99	1.60 N	0.47 E	1.60	1.78
197.00	0.92	60.78	196.99	1.89 N	0.87 E	1.89	0.74
229.00	1.05	83.28	228.98	2.05 N	1.38 E	2.05	1.27
260.00	1.27	98.22	259.97	2.04 N	2.01 E	2.04	1.20
292.00	1.45	125.47	291.97	1.75 N	2.69 E	1.75	2.08
324.00	1.67	132.67	323.95	1.20 N	3.36 E	1.20	0.92
355.00	1.93	137.33	354.94	0.51 N	4.04 E	0.51	0.96
387.00	2.42	136.54	386.92	0.38 S	4.87 E	-0.37	1.53
419.00	2.90	135.93	418.88	1.45 S	5.90 E	-1.45	1.50
451.00	3.52	128.28	450.83	2.64 S	7.24 E	-2.64	2.35
483.00	4.44	130.04	482.75	4.04 S	8.96 E	-4.04	2.90
514.00	5.27	125.82	513.64	5.65 S	11.03 E	-5.64	2.91
546.00	6.20	125.03	545.48	7.50 S	13.64 E	-7.49	2.92
577.00	6.72	125.91	576.28	9.53 S	16.48 E	-9.52	1.71
609.00	7.34	125.91	608.04	11.82 S	19.65 E	-11.81	1.94
640.00	7.73	124.68	638.78	14.17 S	22.97 E	-14.16	1.36
672.00	8.35	123.01	670.46	16.66 S	26.68 E	-16.65	2.07
704.00	8.88	122.39	702.10	19.25 S	30.72 E	-19.23	1.68
736.00	9.58	124.06	733.69	22.06 S	35.01 E	-22.05	2.34
767.00	10.72	124.32	764.20	25.14 S	39.53 E	-25.11	3.68
799.00	11.25	124.76	795.61	28.59 S	44.55 E	-28.57	1.68
830.00	11.73	124.41	825.99	32.10 S	49.64 E	-32.07	1.56
862.00	12.17	123.97	857.30	35.82 S	55.12 E	-35.79	1.40
894.00	12.74	123.18	888.55	39.64 S	60.87 E	-39.60	1.86
925.00	12.92	122.92	918.77	43.39 S	66.64 E	-43.36	0.61
957.00	13.45	122.74	949.93	47.35 S	72.77 E	-47.31	1.66
988.00	13.84	121.95	980.05	51.26 S	78.95 E	-51.22	1.39
1020.00	14.46	121.77	1011.08	55.39 S	85.59 E	-55.34	1.94

Wagner 26C-10HZ

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
1050.00	15.16	123.71	1040.08	59.54 S	92.04 E	-59.49	2.86
1115.00	15.82	123.27	1102.72	69.11 S	106.52 E	-69.06	1.03
1147.00	16.52	123.44	1133.46	74.01 S	113.96 E	-73.96	2.19
1178.00	17.18	125.20	1163.13	79.08 S	121.38 E	-79.02	2.69
1210.00	17.97	124.32	1193.63	84.59 S	129.32 E	-84.52	2.60
1242.00	18.63	124.59	1224.01	90.28 S	137.60 E	-90.20	2.08
1274.00	18.41	123.27	1254.36	95.95 S	146.04 E	-95.87	1.48
1305.00	17.62	121.16	1283.84	101.06 S	154.15 E	-100.98	3.30
1337.00	17.27	120.10	1314.37	105.95 S	162.40 E	-105.87	1.48
1368.00	17.62	120.10	1343.94	110.61 S	170.44 E	-110.52	1.13
1400.00	17.49	122.57	1374.45	115.63 S	178.68 E	-115.54	2.36
1432.00	17.62	121.69	1404.96	120.76 S	186.86 E	-120.66	0.92
1463.00	17.53	122.30	1434.51	125.72 S	194.79 E	-125.62	0.66
1495.00	17.75	125.29	1465.01	131.11 S	202.85 E	-131.01	2.91
1527.00	18.33	126.61	1495.44	136.93 S	210.87 E	-136.82	2.22
1558.00	18.63	127.05	1524.84	142.82 S	218.74 E	-142.71	1.07
1590.00	18.94	126.35	1555.13	148.98 S	227.00 E	-148.86	1.20
1622.00	19.51	126.08	1585.35	155.21 S	235.50 E	-155.08	1.80
1652.00	19.12	126.08	1613.66	161.05 S	243.52 E	-160.92	1.30
1684.00	19.16	126.43	1643.89	167.26 S	251.98 E	-167.12	0.38
1716.00	19.73	126.08	1674.06	173.55 S	260.57 E	-173.42	1.82
1780.00	19.64	126.96	1734.32	186.38 S	277.89 E	-186.24	0.48
1811.00	18.24	126.08	1763.65	192.37 S	285.98 E	-192.22	4.61
1831.00	17.75	125.47	1782.67	195.99 S	290.99 E	-195.83	2.62
1919.00	17.37	126.26	1866.57	211.54 S	312.51 E	-211.38	0.51
2009.00	16.77	124.41	1952.60	226.83 S	334.06 E	-226.65	0.90
2099.00	18.11	129.90	2038.47	243.14 S	355.51 E	-242.96	2.36
2188.00	17.95	128.94	2123.09	260.64 S	376.79 E	-260.44	0.38
2278.00	17.46	126.67	2208.83	277.42 S	398.41 E	-277.21	0.94
2368.00	18.54	137.23	2294.45	295.99 S	418.96 E	-295.77	3.81
2458.00	17.02	135.45	2380.15	315.88 S	437.92 E	-315.66	1.80
2548.00	15.75	130.24	2466.49	333.16 S	456.48 E	-332.92	2.16
2637.00	16.95	128.62	2551.90	349.06 S	475.84 E	-348.81	1.44
2727.00	16.23	125.77	2638.15	364.60 S	496.29 E	-364.34	1.21
2817.00	20.26	128.54	2723.61	381.67 S	518.69 E	-381.39	4.58
2907.00	20.01	138.75	2808.14	402.96 S	541.04 E	-402.68	3.91
2996.00	18.51	135.81	2892.16	424.54 S	560.93 E	-424.25	2.01
3086.00	17.04	133.26	2977.86	443.82 S	580.49 E	-443.52	1.84
3176.00	15.95	129.94	3064.15	460.80 S	599.58 E	-460.48	1.60
3266.00	17.95	132.18	3150.24	478.05 S	619.34 E	-477.73	2.34
3356.00	17.11	130.65	3236.06	495.99 S	639.66 E	-495.65	1.06
3445.00	15.59	127.99	3321.46	511.88 S	659.02 E	-511.53	1.90
3535.00	18.11	131.54	3407.59	528.60 S	679.02 E	-528.25	3.02
3625.00	17.08	131.77	3493.38	546.68 S	699.35 E	-546.32	1.15
3715.00	15.33	128.50	3579.81	562.89 S	718.52 E	-562.51	2.19
3804.00	13.33	126.71	3666.03	576.34 S	735.95 E	-575.96	2.30
3894.00	11.36	140.38	3753.97	589.38 S	749.92 E	-588.98	3.90
3984.00	10.14	146.00	3842.39	602.78 S	760.01 E	-602.38	1.79
4074.00	4.73	154.31	3931.60	612.70 S	766.05 E	-612.30	6.12
4164.00	3.78	201.50	4021.38	618.81 S	766.58 E	-618.40	3.90
4253.00	3.40	204.42	4110.20	623.93 S	764.41 E	-623.53	0.47
4343.00	4.87	239.07	4199.98	628.33 S	760.03 E	-627.93	3.15
4433.00	6.55	249.52	4289.53	632.09 S	751.94 E	-631.69	2.19
4612.00	1.00	165.08	4468.13	637.17 S	742.77 E	-636.78	3.65
4702.00	0.67	73.76	4558.12	637.78 S	743.47 E	-637.39	1.34
4792.00	0.28	68.77	4648.12	637.55 S	744.18 E	-637.16	0.43
4882.00	0.26	31.53	4738.12	637.29 S	744.49 E	-636.90	0.20
4971.00	0.42	333.64	4827.11	636.83 S	744.46 E	-636.44	0.40
5061.00	0.71	338.51	4917.11	636.01 S	744.11 E	-635.63	0.33
5151.00	0.80	330.09	5007.10	634.95 S	743.59 E	-634.56	0.16

Wagner 26C-10HZ

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
5241.00	0.36	1.20	5097.10	634.12 S	743.28 E	-633.74	0.58
5330.00	0.59	13.77	5186.09	633.40 S	743.40 E	-633.01	0.29
5420.00	0.39	359.60	5276.09	632.64 S	743.51 E	-632.25	0.26
5599.00	0.28	11.63	5455.09	631.62 S	743.59 E	-631.23	0.07
5689.00	0.30	3.40	5545.09	631.17 S	743.65 E	-630.78	0.06
5779.00	0.58	34.44	5635.08	630.55 S	743.92 E	-630.16	0.40
5868.00	0.65	1.85	5724.08	629.67 S	744.19 E	-629.28	0.39
5999.00	1.17	359.32	5855.06	627.59 S	744.20 E	-627.20	0.40
6178.00	1.11	357.06	6034.03	624.03 S	744.09 E	-623.64	0.04
6268.00	1.24	3.65	6124.01	622.18 S	744.11 E	-621.80	0.21
6358.00	1.47	7.14	6213.98	620.07 S	744.31 E	-619.68	0.27
6448.00	1.57	3.56	6303.95	617.69 S	744.53 E	-617.30	0.15
6538.00	1.23	358.40	6393.92	615.50 S	744.58 E	-615.11	0.40
6627.00	1.16	354.83	6482.91	613.65 S	744.47 E	-613.26	0.11
6807.00	0.76	26.97	6662.88	610.78 S	744.85 E	-610.39	0.36
6897.00	3.67	14.83	6752.80	607.46 S	745.86 E	-607.07	3.26
6986.00	8.14	6.18	6841.31	598.44 S	747.27 E	-598.04	5.10
7076.00	14.33	2.36	6929.55	580.96 S	748.41 E	-580.57	6.92
7166.00	22.24	0.38	7014.93	552.76 S	748.98 E	-552.36	8.82
7256.00	26.49	4.48	7096.90	515.69 S	750.66 E	-515.30	5.08
7345.00	31.16	358.36	7174.87	472.85 S	751.56 E	-472.46	6.19
7435.00	37.55	356.49	7249.13	422.15 S	749.21 E	-421.76	7.20
7525.00	42.56	355.22	7318.00	364.41 S	744.99 E	-364.02	5.63
7615.00	49.06	356.42	7380.71	300.08 S	740.33 E	-299.69	7.28
7705.00	57.56	358.26	7434.44	228.06 S	737.05 E	-227.68	9.59
7799.00	64.24	0.58	7480.13	145.99 S	736.27 E	-145.60	7.43
7893.00	71.85	359.53	7515.25	58.87 S	736.34 E	-58.48	8.16
7987.00	71.99	358.02	7544.42	30.47 N	734.43 E	30.85	1.54
8082.00	76.71	0.44	7570.04	121.91 N	733.22 E	122.29	5.54
8176.00	88.89	359.14	7581.80	214.99 N	732.86 E	215.37	13.03
8270.00	91.08	359.43	7581.83	308.97 N	731.68 E	309.36	2.35
8364.00	90.83	358.59	7580.26	402.95 N	730.05 E	403.33	0.93
8459.00	93.82	1.81	7576.40	497.84 N	730.37 E	498.23	4.62
8553.00	90.83	0.64	7572.59	591.73 N	732.38 E	592.12	3.41
8741.00	89.11	2.23	7572.68	779.66 N	737.10 E	780.05	1.25
8835.00	91.02	2.61	7572.58	873.57 N	741.07 E	873.96	2.07
8930.00	91.51	2.24	7570.49	968.46 N	745.09 E	968.85	0.65
9024.00	90.89	1.42	7568.51	1062.39 N	748.09 E	1062.78	1.09
9118.00	90.18	359.89	7567.63	1156.38 N	749.16 E	1156.77	1.79
9208.00	90.31	0.34	7567.24	1246.38 N	749.34 E	1246.77	0.52
9298.00	89.41	359.15	7567.46	1336.37 N	748.93 E	1336.77	1.65
9477.00	90.74	359.67	7567.22	1515.36 N	747.09 E	1515.75	0.80
9567.00	90.83	359.10	7565.98	1605.35 N	746.12 E	1605.74	0.65
9657.00	90.95	359.08	7564.58	1695.32 N	744.70 E	1695.71	0.14
9746.00	88.89	358.71	7564.70	1784.30 N	742.98 E	1784.69	2.36
9836.00	89.66	359.79	7565.84	1874.28 N	741.80 E	1874.67	1.47
9926.00	89.45	359.47	7566.54	1964.28 N	741.21 E	1964.67	0.43
10016.00	92.13	2.05	7565.30	2054.25 N	742.40 E	2054.64	4.14
10105.00	90.40	1.61	7563.34	2143.18 N	745.25 E	2143.57	2.00
10195.00	90.15	1.99	7562.90	2233.13 N	748.08 E	2233.52	0.50
10285.00	89.97	1.97	7562.81	2323.08 N	751.19 E	2323.47	0.21
10464.00	90.77	2.70	7561.65	2501.92 N	758.48 E	2502.32	0.61
10554.00	91.30	3.28	7560.03	2591.78 N	763.17 E	2592.18	0.86
10644.00	88.77	1.46	7559.98	2681.70 N	766.89 E	2682.10	3.46
10734.00	88.58	1.06	7562.06	2771.65 N	768.87 E	2772.05	0.49
10823.00	89.45	359.33	7563.60	2860.63 N	769.17 E	2861.03	2.18
10913.00	89.48	358.85	7564.44	2950.62 N	767.74 E	2951.02	0.53
11003.00	89.75	359.04	7565.05	3040.60 N	766.09 E	3041.00	0.37
11093.00	89.41	358.92	7565.70	3130.58 N	764.49 E	3130.98	0.40
11183.00	90.99	0.06	7565.39	3220.57 N	763.68 E	3220.97	2.16



Wagner 26C-10HZ

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
11272.00	91.73	1.02	7563.28	3309.54 N	764.52 E	3309.94	1.36
11362.00	92.22	1.37	7560.18	3399.47 N	766.39 E	3399.87	0.67
11452.00	91.20	359.51	7557.49	3489.42 N	767.07 E	3489.82	2.35
11541.00	90.40	358.92	7556.25	3578.40 N	765.85 E	3578.80	1.12
11631.00	88.98	358.51	7556.73	3668.38 N	763.84 E	3668.78	1.64
11721.00	88.92	357.32	7558.37	3758.30 N	760.57 E	3758.70	1.32
11811.00	88.61	357.13	7560.31	3848.18 N	756.22 E	3848.57	0.40
11901.00	88.62	357.30	7562.48	3938.04 N	751.85 E	3938.44	0.18
11990.00	89.69	359.41	7563.80	4026.99 N	749.29 E	4027.38	2.66
12080.00	89.60	358.94	7564.36	4116.98 N	747.99 E	4117.37	0.53
12170.00	89.54	358.81	7565.03	4206.96 N	746.22 E	4207.35	0.16
12260.00	89.85	358.50	7565.52	4296.93 N	744.10 E	4297.32	0.48
12349.00	90.25	358.30	7565.45	4385.90 N	741.62 E	4386.29	0.50
12529.00	90.62	358.04	7564.09	4565.80 N	735.87 E	4566.19	0.25
12619.00	89.66	0.45	7563.88	4655.78 N	734.69 E	4656.17	2.88
12708.00	89.45	0.87	7564.57	4744.78 N	735.71 E	4745.16	0.52
12798.00	89.23	359.80	7565.61	4834.77 N	736.24 E	4835.15	1.20
12888.00	90.34	359.83	7565.95	4924.76 N	735.95 E	4925.15	1.23
12978.00	90.22	359.26	7565.51	5014.76 N	735.24 E	5015.14	0.65
13067.00	89.69	358.89	7565.58	5103.75 N	733.80 E	5104.13	0.72
13157.00	90.00	1.05	7565.83	5193.74 N	733.76 E	5194.13	2.42
13247.00	89.51	0.39	7566.21	5283.73 N	734.88 E	5284.12	0.92
13426.00	90.43	1.37	7566.31	5462.71 N	737.62 E	5463.09	0.75
13516.00	90.49	0.78	7565.58	5552.69 N	739.31 E	5553.08	0.65
13606.00	90.00	0.71	7565.19	5642.68 N	740.48 E	5643.07	0.55
13696.00	90.06	1.44	7565.14	5732.66 N	742.17 E	5733.05	0.82
13785.00	90.40	1.13	7564.78	5821.64 N	744.17 E	5822.03	0.51
13875.00	90.74	1.38	7563.89	5911.61 N	746.15 E	5912.00	0.46
13965.00	90.22	0.86	7563.14	6001.59 N	747.90 E	6001.98	0.82
14055.00	90.09	0.30	7562.90	6091.59 N	748.81 E	6091.98	0.64
14234.00	91.05	359.18	7561.11	6270.57 N	748.00 E	6270.96	0.82
14324.00	91.17	358.51	7559.37	6360.54 N	746.19 E	6360.93	0.76
14414.00	90.59	357.29	7557.99	6450.46 N	742.89 E	6450.85	1.50
14504.00	89.69	357.08	7557.77	6540.35 N	738.48 E	6540.74	1.02
14593.00	89.20	357.87	7558.63	6629.26 N	734.56 E	6629.65	1.04
14628.00	88.98	358.30	7559.19	6664.24 N	733.39 E	6664.62	1.39
14674.00	88.98	358.30	7560.01	6710.21 N	732.03 E	6710.59	0.01

## 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 0.03 DEGREES (TRUE)  
A TOTAL CORRECTION OF 8.15 DEG FROM MAGNETIC NORTH TO TRUE NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.  
HORIZONTAL DISPLACEMENT(CLOSURE) AT 14674.00 FEET  
IS 6750.02 FEET ALONG 6.23 DEGREES (TRUE)

First Sperry survey at 1919'.  
Last survey is a projection to bit at TD.  
Surveys from 1919 to 14628 are corrected by Alaska Survey management.