

## Pressure Cased Gamma (PCGK)

1:240

Country : USA									
Field : Wattenberg									
Location : Lat: 40° 9' 8.03" North Long: 104° 32' 7.22" West									
Well : Oscar Y10-74HN									
Company : Noble Energy									
Rig : H&P 315									
LOCATION									
Latitude : 40° 9' 8.03" North Longitude : 104° 32' 7.22" West					UTM Easting = 3,269,644.380 ft UTM Northing = 1,299,767.410 ft				
Other Services Battery Powered Surveys									

Permanent Datum : Ground Level		Elevation : 4923.00 ft		Elev. KB N/A	
Log Measured From : Drill Floor		24.00 ft Above Permanent Datum		DF 4947.00 ft	
Drilling Measured From : Drill Floor		TV DLOG		GL 4923.00 ft	
				WD N/A	

Depth Logged : 1,194.98 ft To 6,842.89 ft				Unit No. : 11610113				Job No. : CA-XX-0901675820			
Date Logged : 06-Nov-14 To 13-Nov-14				Plot Type : Final							
Total Depth MD : 12,678.00 ft TVD: 6,842.89 ft				Plot Date : 11-Jan-17							
Spud Date : 06-Nov-14											

Run No.	Boresole Record (TVD)			Run No.	Boresole Record (TVD)		
	Size	From	To		Size	From	To
2	8,750 in	1,194.98 ft	6842.89 ft				

## WELL INFORMATION

MWD Run Number	100				
Date run completed	09-Nov-14				
Rig Bit Number	2				
Bit Size (in)	8.750				
Tool Nominal OD (in)	6.750				
Log Start Depth (TVD, ft)	1,194.98				
Log End Depth (TVD, ft)	6,836.91				
Drill or Wipe	Drill				
Drill/Wipe Start Date and Time	07-Nov-14 18:20				
Drill/Wipe End Date and Time	09-Nov-14 08:20				
Min Inc (deg) @ Depth (TVD, ft)	0.20 @ 5,885.31				
Max Inc (deg) @ Depth (TVD, ft)	83.55 @ 6,836.91				
Bit TFA(in2) / Bit Type	0.91 /				
Flow Rate (gpm)	618.27				
Max AV (fpm) / CV (fpm) @ MWD	N/A				
Fluid Type	Polymer				
Density (ppg) / Viscosity (spqt)	9.75 / 40.00				
Filtrate CL (ppm)	1,400.00				
pH / API Filtrate (mpm)	8.90 / 9				
PV (cP) / YP (lbf2)	10 / 8.00				
% Solids / % Sand	10.7 / 0.50				
% Oil / Oil:Water Ratio	N/A				
Rm @ Measured Temp (degF)	N/A @ N/A				
Rmf @ Measured Temp (degF)	N/A @ N/A				
Rmc @ Measured Temp (degF)	N/A @ N/A				
Max Filter Cake Thickness	1.75 @ 6,836.91				

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

## SENSOR INFORMATION

### Downhole Processor Information

Tool Type	PCM				
Software Version	5.93				
Sub Serial Number	11404298				
Insert Serial Number	11680742				
Date and Time Initialized	07-Nov-14 06:11				
Date and Time Read	09-Nov-14 15:18				
ECMB SW Version	N/A				

### Directional Sensor Information

Tool Type	PCDC				
Distance From Bit (ft)	56.29				
Software Version	6.21				
Sub Serial Number	11404298				
Sonde Serial Number	11297515				
Sensor ID Number	N/A				
Toolface Offset (deg)	234.83				

### Gamma Ray Sensor Information

Tool Type	PCG				
Distance From Bit (ft)	51.19				
Recorded Sample Period (sec)	10				
Software Version	8.15				
Sub Serial Number	11404298				
Insert/Sonde Serial Number	11579787				

## REMARKS

1. All depths are true vertical 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

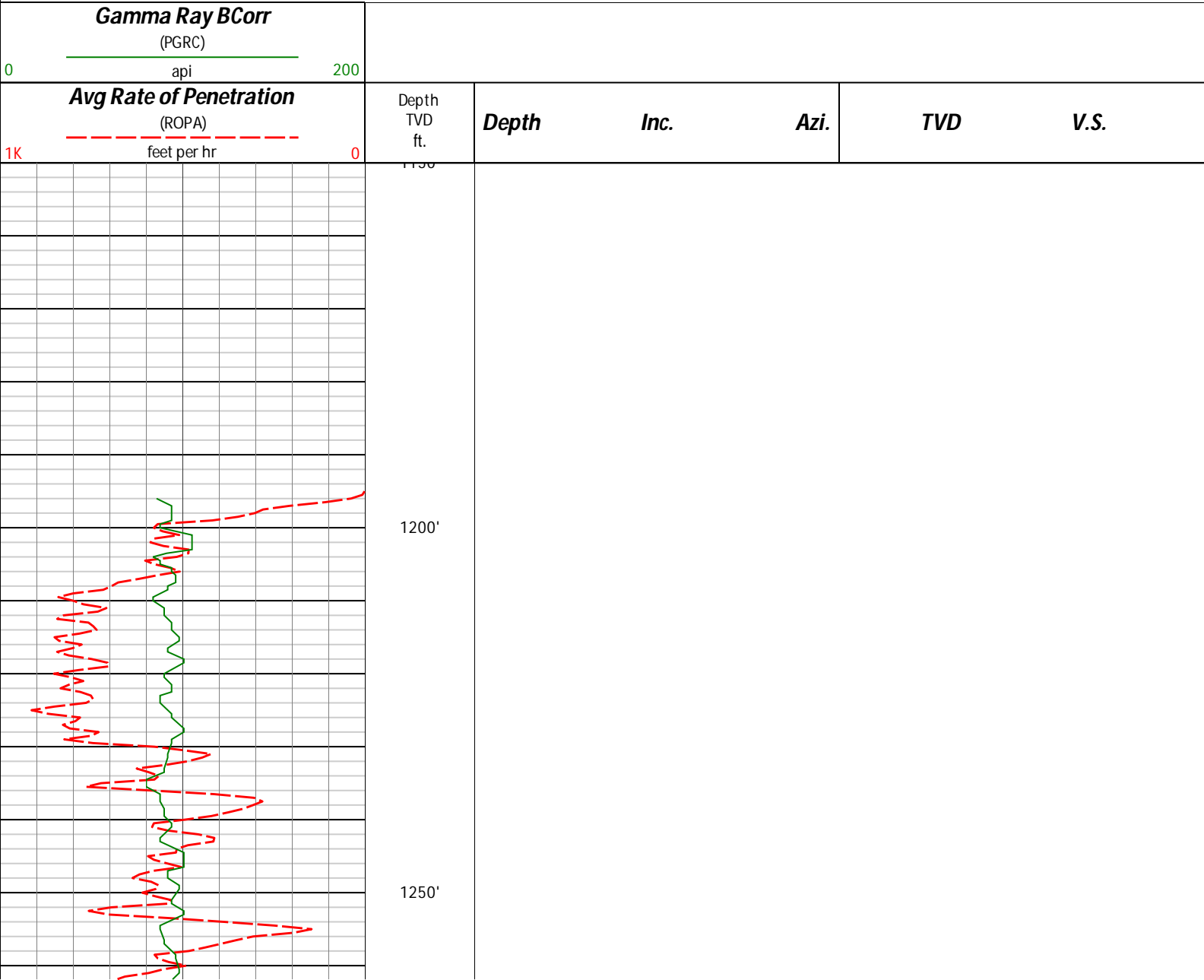
5. INSITE version 8.4.10-MLWD

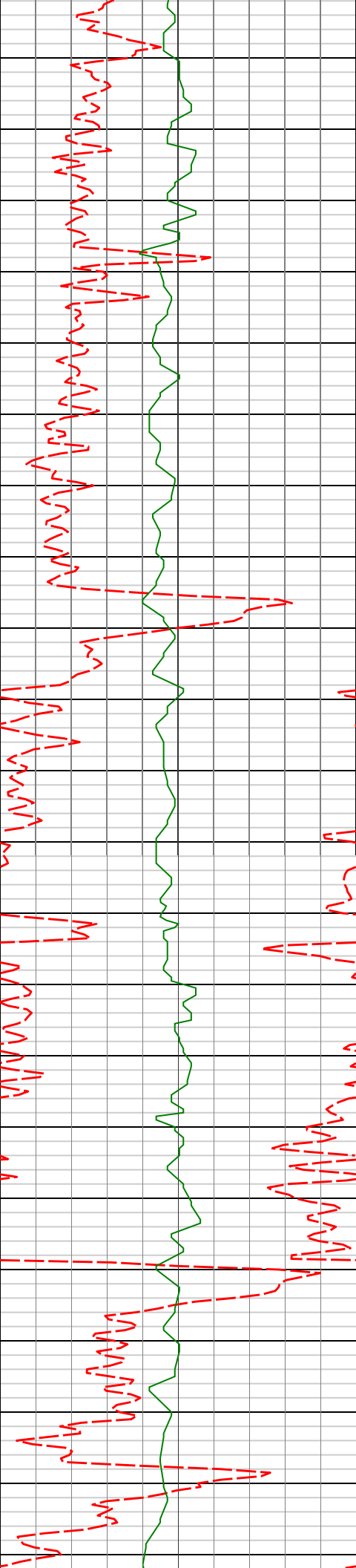
WARRANTY

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

Sperry Drilling Services

TVD Detail Log 1:240





1293'

0.81°

179.70°

1292.97'

-6.15'

1300'

1350'

1386'

0.81°

174.42°

1385.96'

-7.46'

1400'

1450'

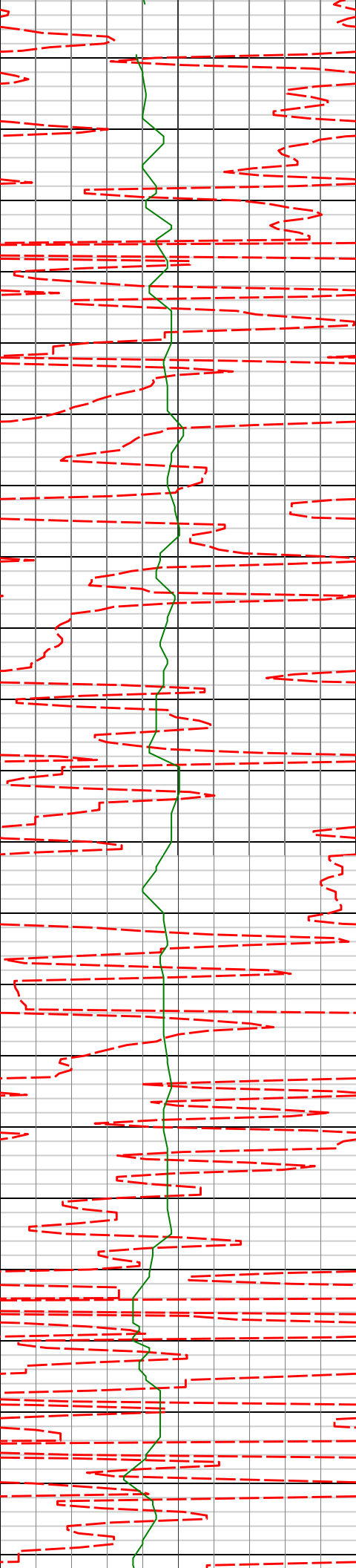
1478'

0.81°

174.09°

1477.95'

-8.76'



1500'

1550'

1570'

0.90°

170.35°

1569.94'

-10.12'

1600'

1650'

1663'

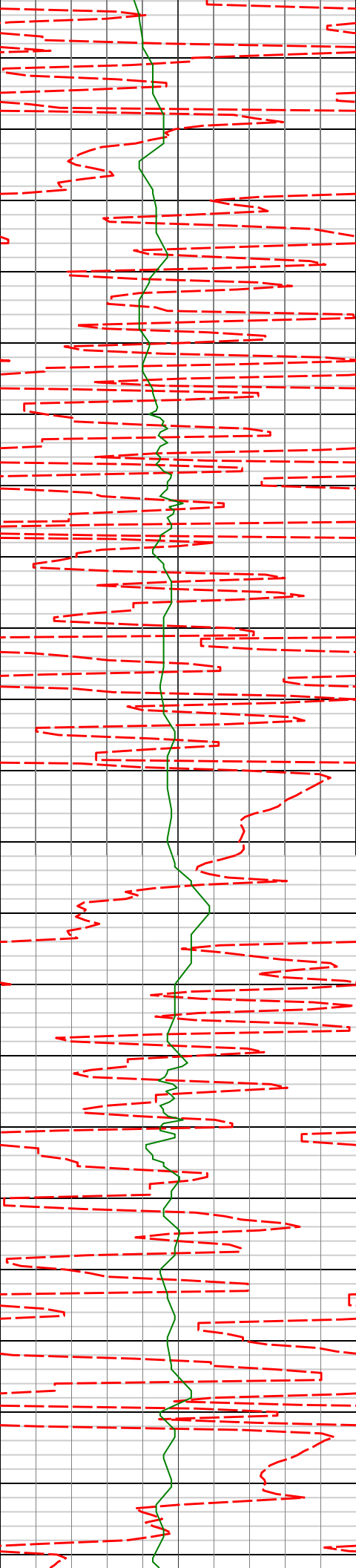
1.07°

162.38°

1662.93'

-11.67'

1700'



1750'

1800'

1850'

1900'

1755'

1.10°

163.81°

1754.91'

-13.34'

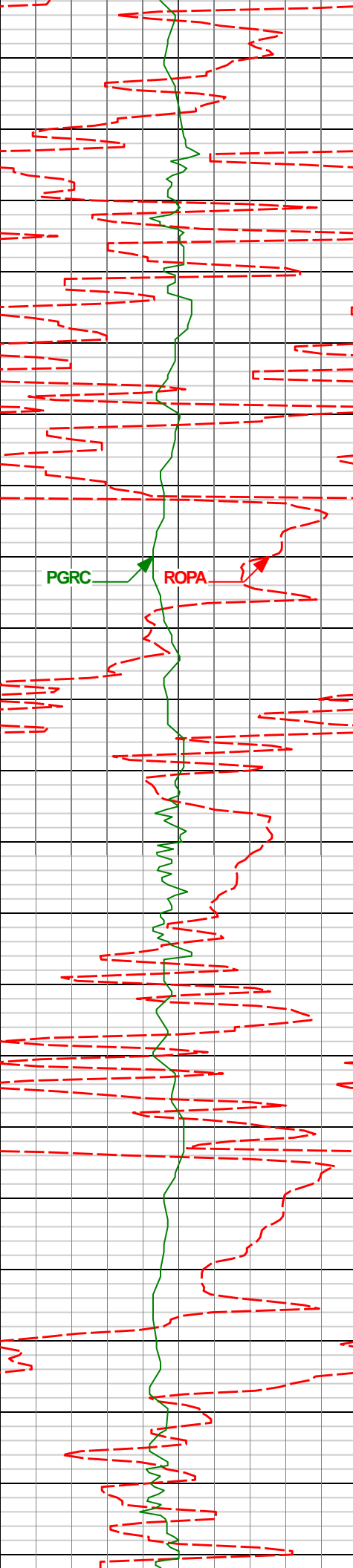
1847'

2.22°

89.32°

1846.88'

-14.19'



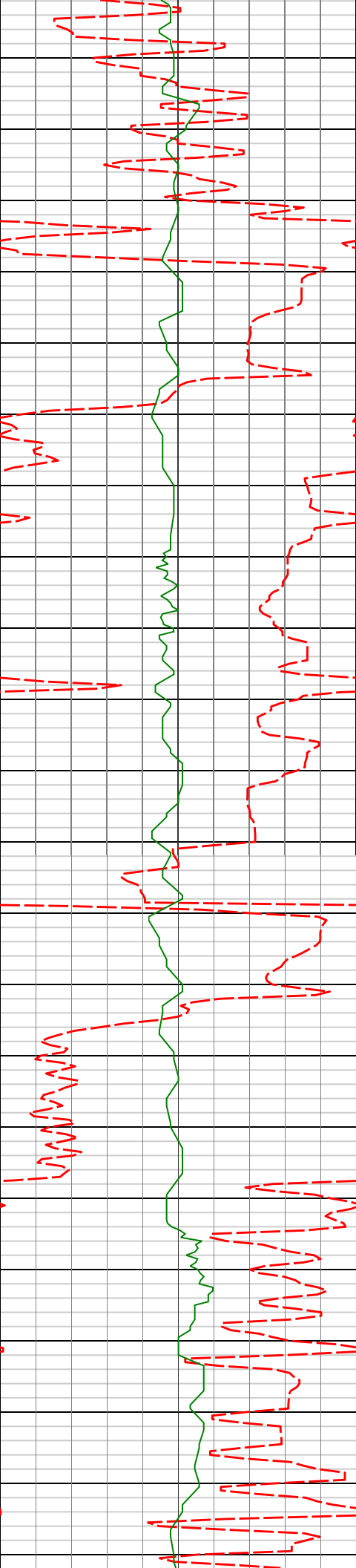
1950'

2000'

2050'

2100'

1938'	3.06°	55.90°	1937.79'	-12.84'
2031'	4.06°	36.23°	2030.61'	-8.82'
2123'	6.11°	12.63°	2122.25'	-1.44'



2150'

2200'

2250'

2300'

2350'

2216'

7.89°

8.81°

2214.55'

9.68'

2309'

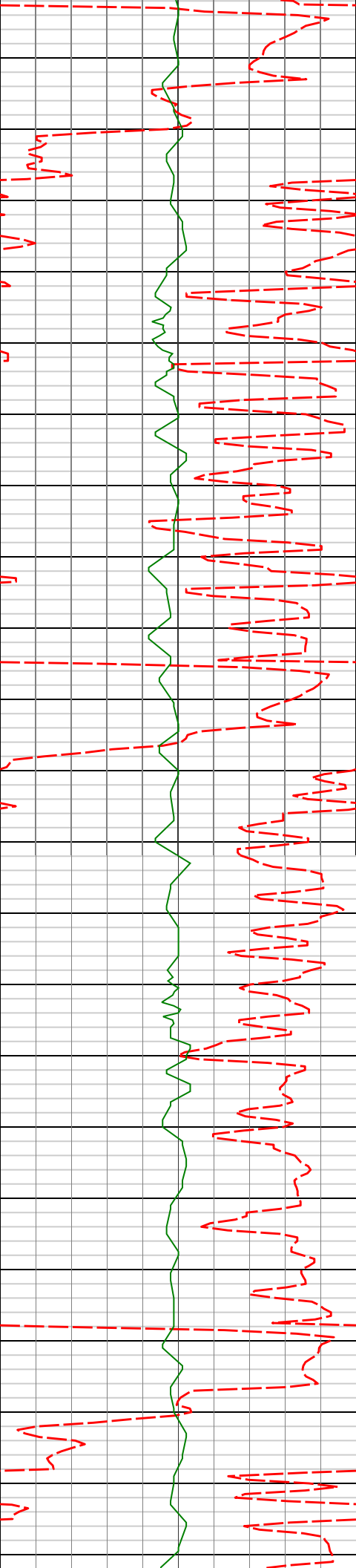
8.39°

1.76°

2306.62'

22.76'





2400'

2450'

2500'

2550'

2402'

2495'

8.87°

9.10°

2.24°

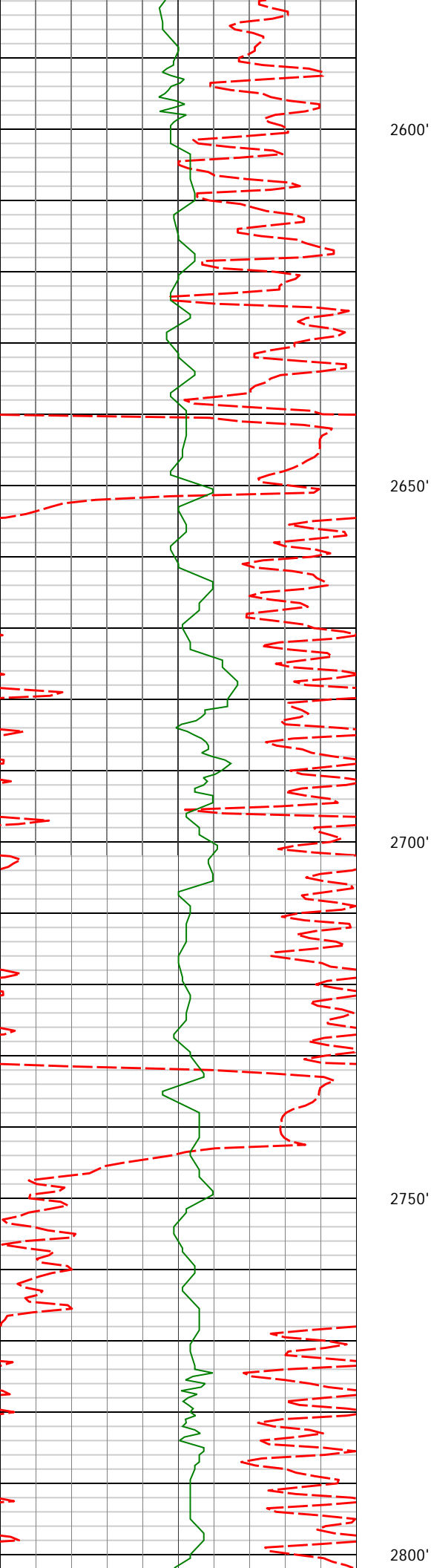
5.42°

2398.57'

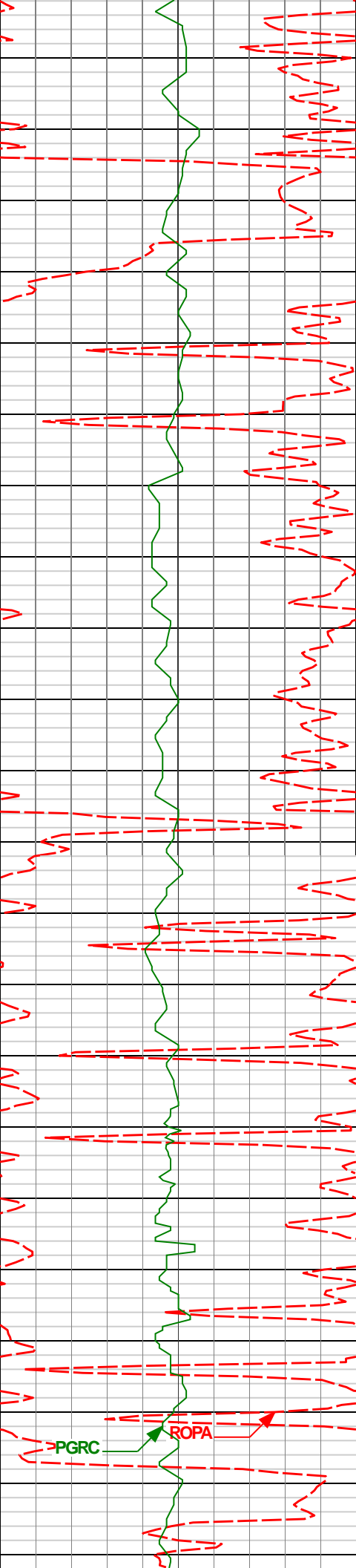
2490.43'

36.70'

51.17'



2589'	8.78°	355.76°	2583.29'	65.73'
2681'	8.75°	356.50°	2674.21'	79.72'
2773'	8.40°	1.27°	2765.19'	93.43'



2850'

2865'

9.20°

359.46°

2856.10'

107.50'

2900'

2950'

2960'

9.39°

357.34°

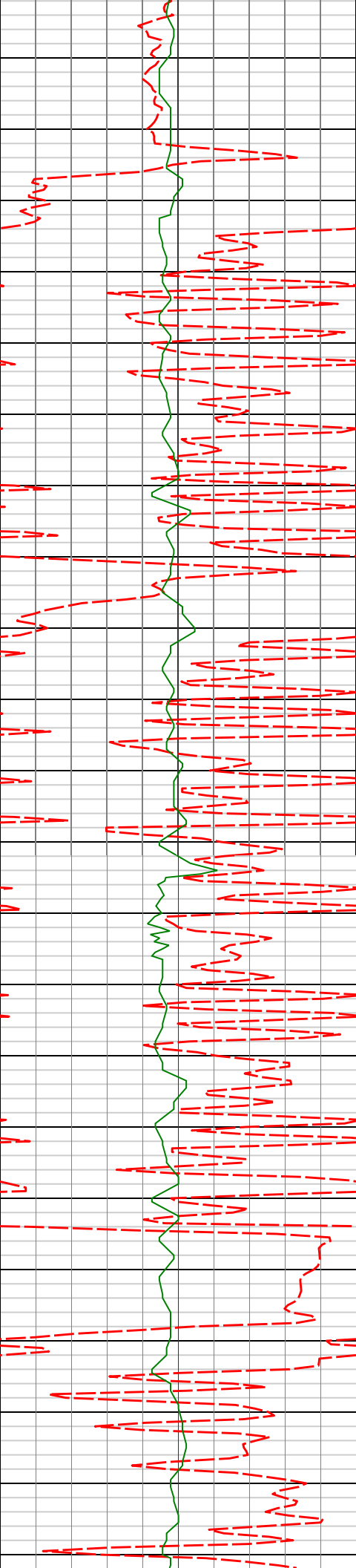
2949.86'

122.84'

3000'

PGRC

ROPA



3055'

9.26°

1.86°

3043.60'

138.22'

3050'

3100'

3150'

8.57°

358.56°

3137.45'

152.93'

3150'

3200'

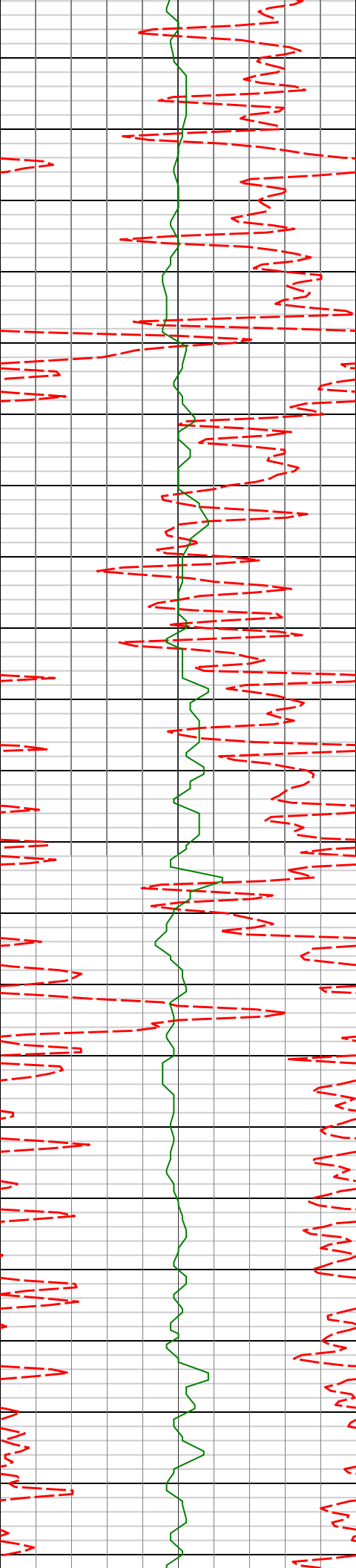
3245'

8.59°

5.91°

3231.39'

167.06'



3250'

3300'

3340'

7.28°

3.50°

3325.48'

180.12'

3350'

3400'

3435'

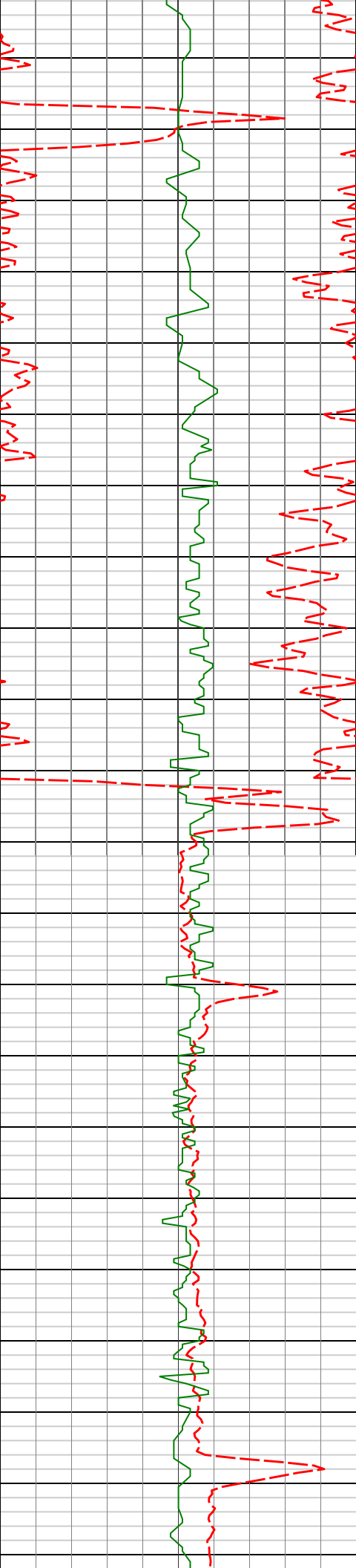
6.38°

359.91°

3419.81'

191.40'

3450'



3500'

3550'

3600'

3650'

3530'

5.33°

352.04°

3514.31'

201.05'

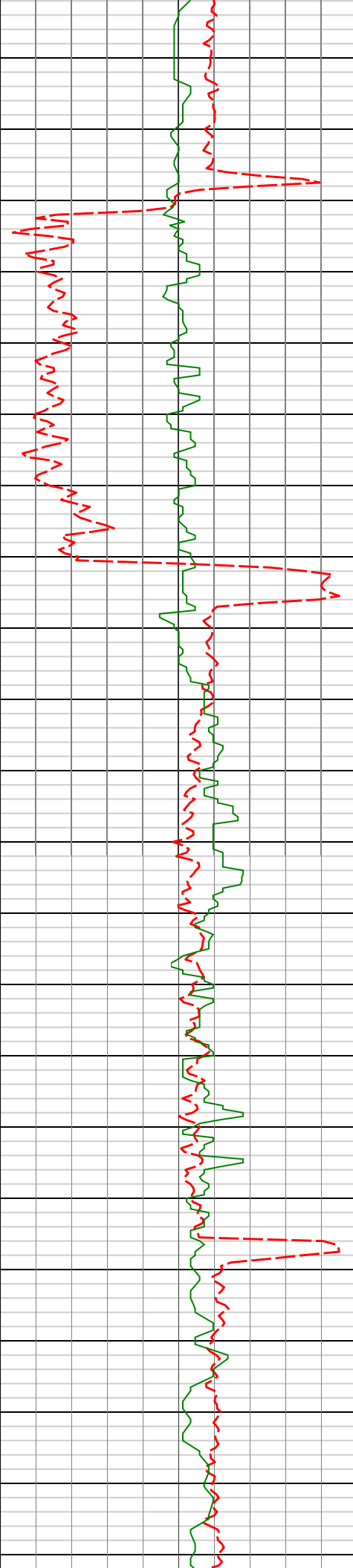
3624'

4.52°

344.44°

3607.97'

208.96'



3700'

3719'

3.46°

347.82°

3702.73'

215.38'

3750'

3800'

3814'

2.44°

339.98°

3797.61'

220.09'

3850'

3909'

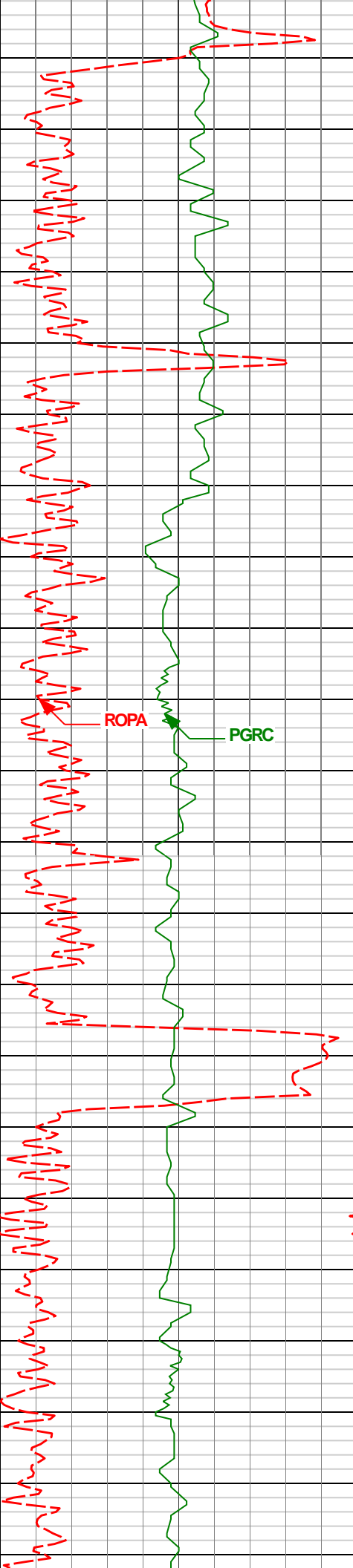
1.94°

329.32°

3892.54'

223.39'

3900'



3950'

4000'

4050'

4100'

ROPA

PGRC

4004'

1.60°

298.75°

3987.49'

225.43'

4099'

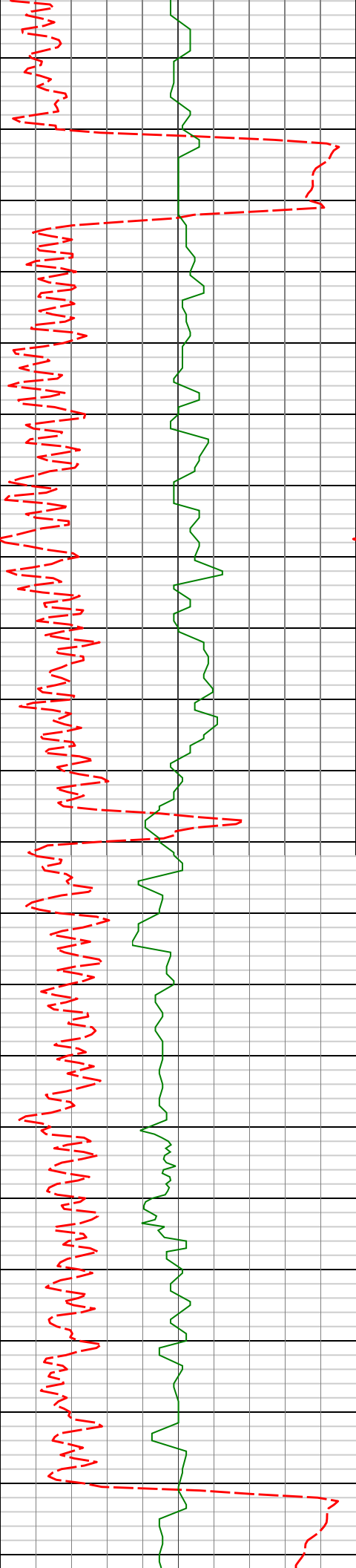
1.46°

320.55°

4082.46'

227.02'





4150'

4200'

4250'

4300'

4194'

0.52°

347.25°

4177.45'

228.38'

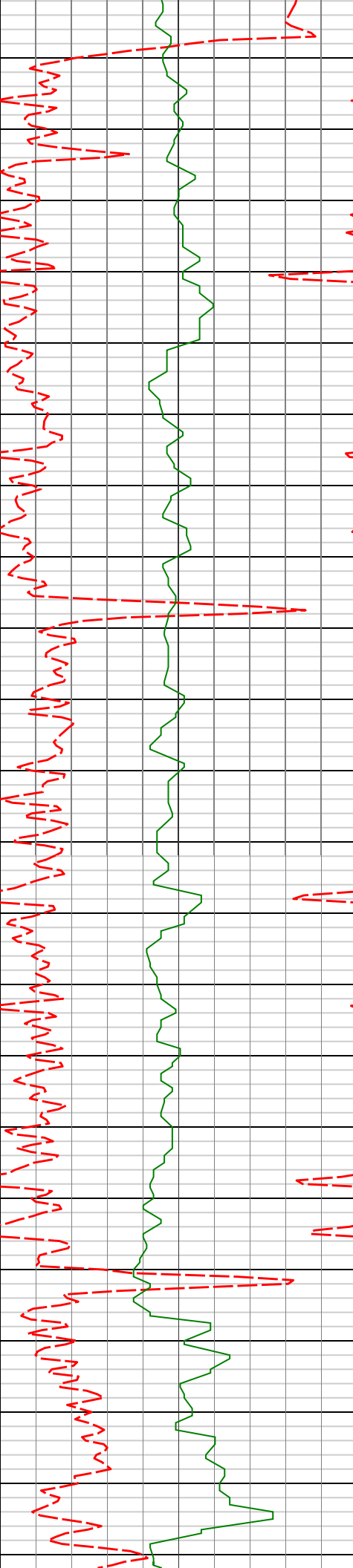
4289'

0.95°

259.97°

4272.44'

228.67'



4350'

4383'

0.99°

113.01°

4366.44'

228.22'

4400'

4450'

4478'

0.92°

132.89°

4461.42'

227.37'

4500'

4550'

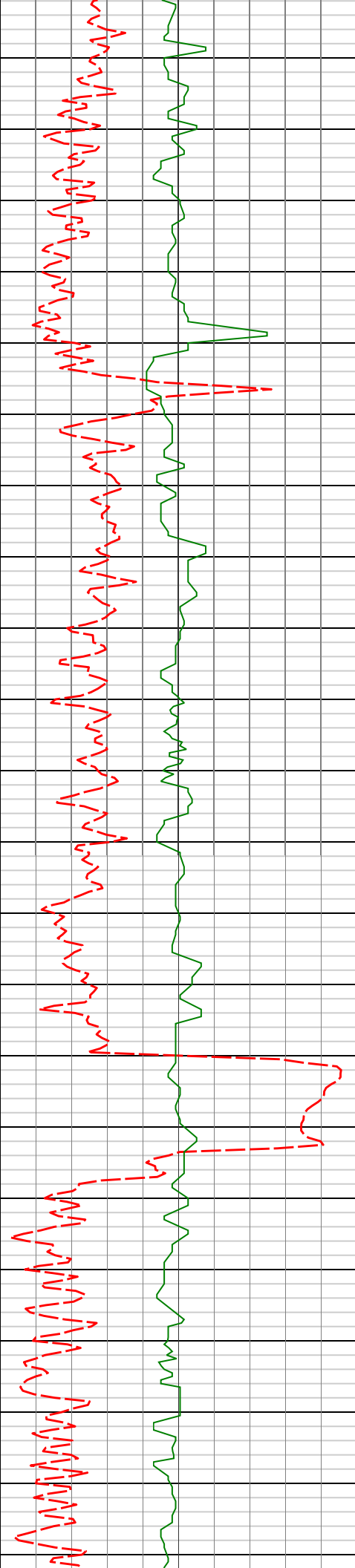
4573'

0.50°

162.08°

4556.42'

226.45'



4600'

4650'

4700'

4750'

4668'

0.88°

179.25°

4651.41'

225.32'

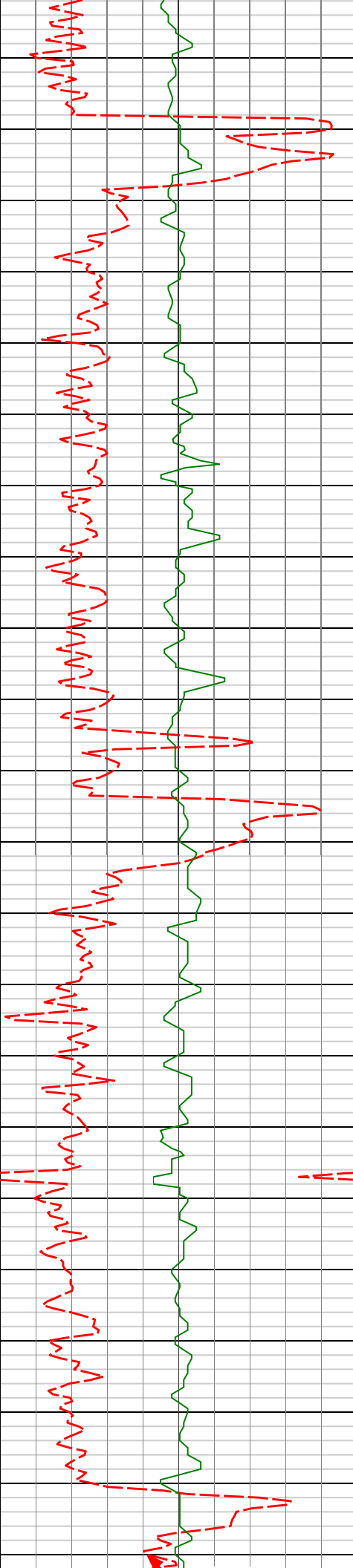
4763'

0.34°

139.69°

4746.40'

224.38'



4800'

4858'

0.31°

188.49°

4841.40'

223.91'

4850'

4900'

4953'

0.72°

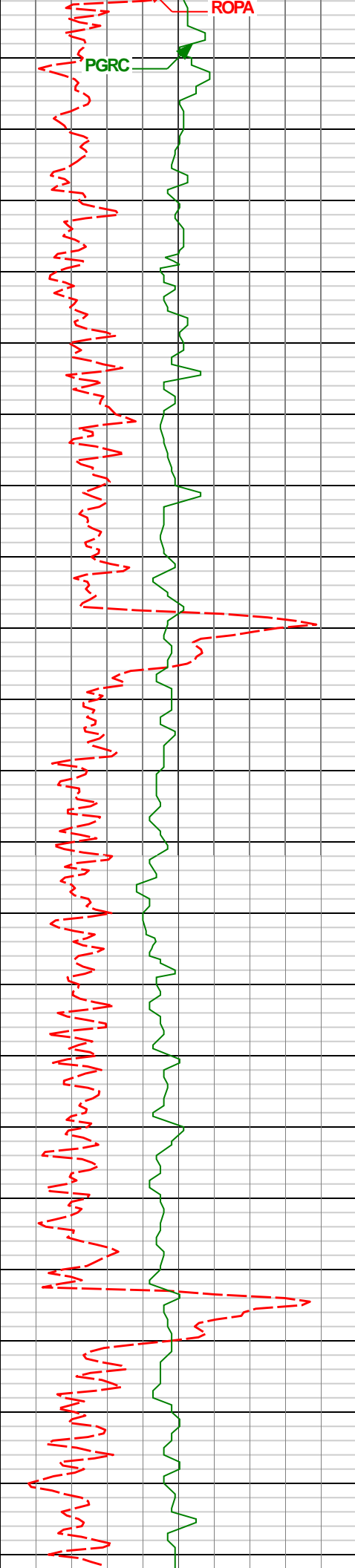
190.54°

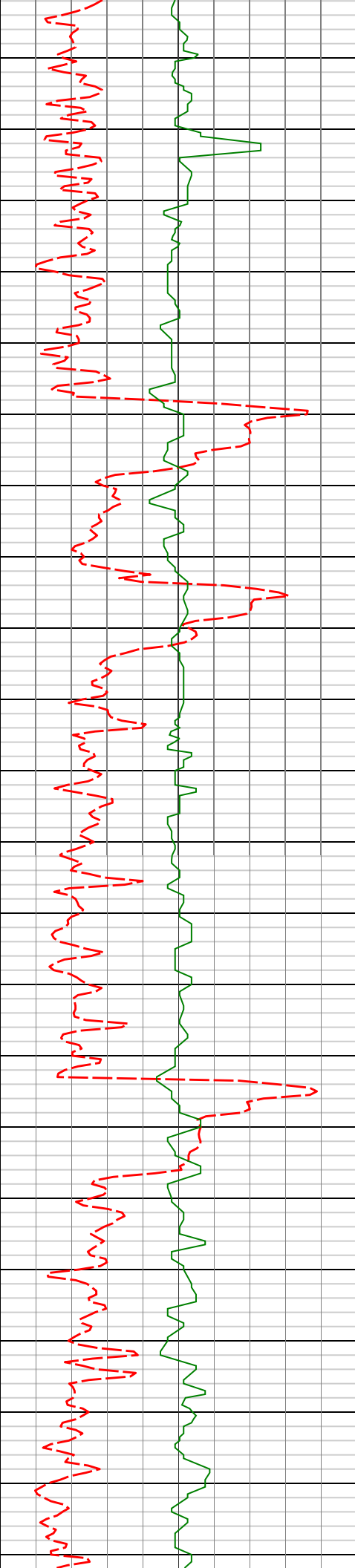
4936.40'

223.07'

4950'

5000'





5250'

5300'

5350'

5400'

5333'

0.74°

95.65°

5316.36'

218.79'

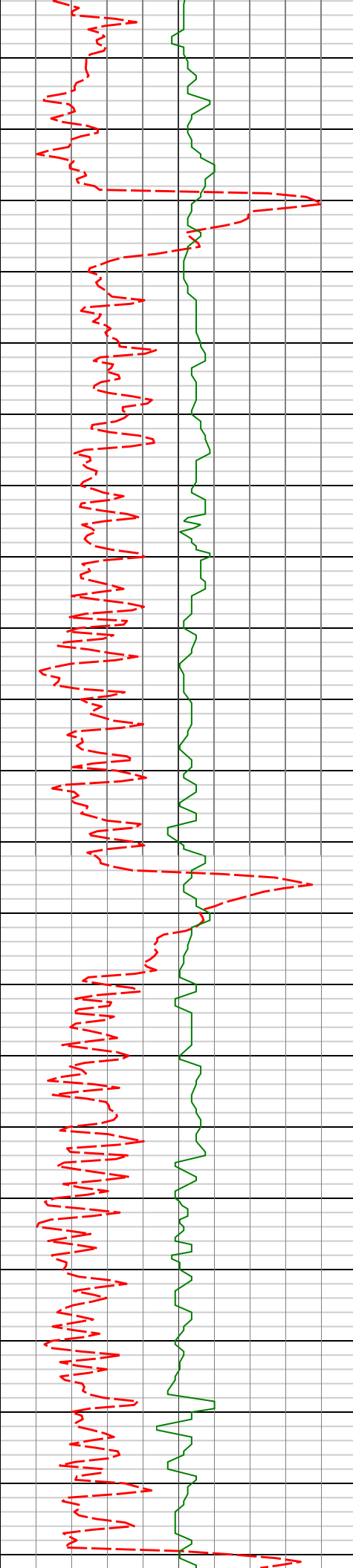
5428'

0.98°

96.54°

5411.35'

218.62'



5450'

5500'

5550'

5600'

5650'

5522'

0.98°

103.79°

5505.34'

218.32'

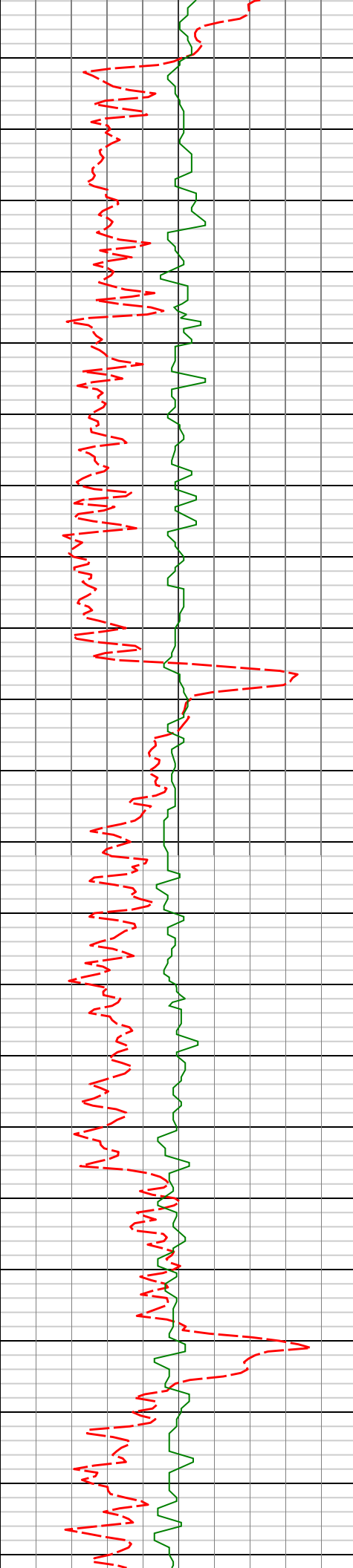
5617'

0.83°

95.38°

5600.33'

218.05'



5700'

5750'

5800'

5850'

5712'

0.85°

85.36°

5695.32'

218.03'

5807'

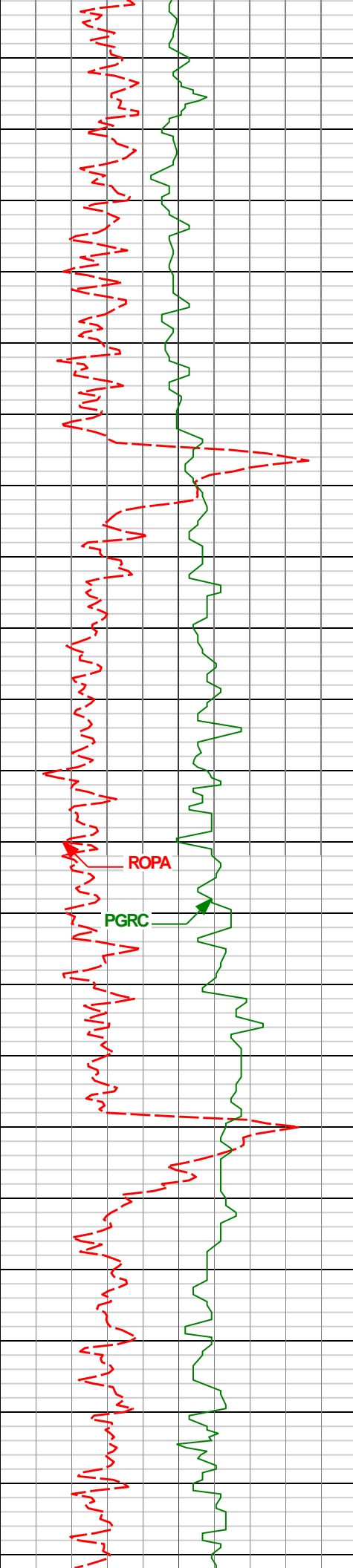
0.37°

46.44°

5790.31'

218.29'





5900'

5950'

6000'

6050'

6100'

ROPA

PGRC

5902'

0.20°

11.82°

5885.31'

218.67'

5997'

0.36°

351.81°

5980.31'

219.12'

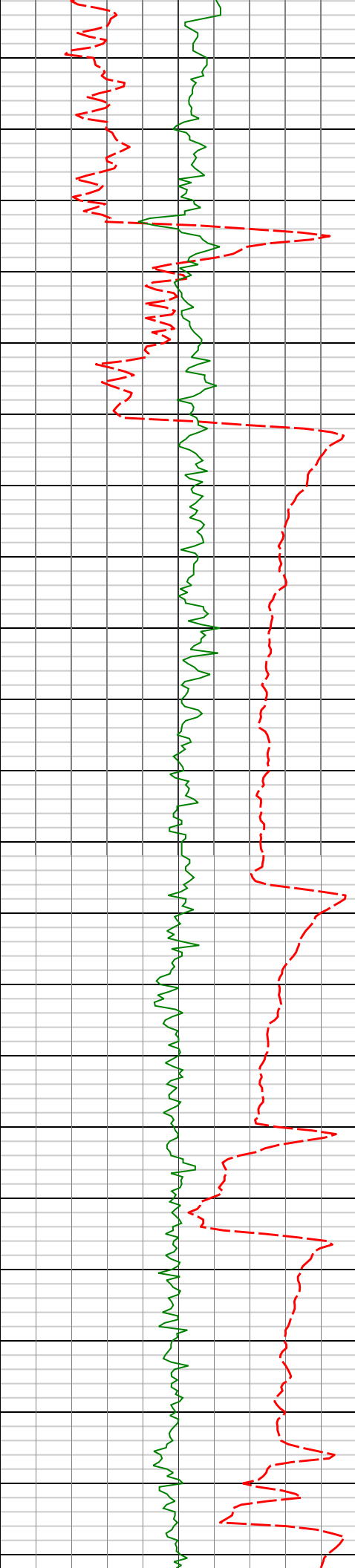
6091'

0.47°

317.90°

6074.31'

219.70'



6150'

6200'

6250'

6300'

6234'

7.76°

355.06°

6216.85'

229.78'

6281'

12.19°

1.78°

6263.13'

237.91'

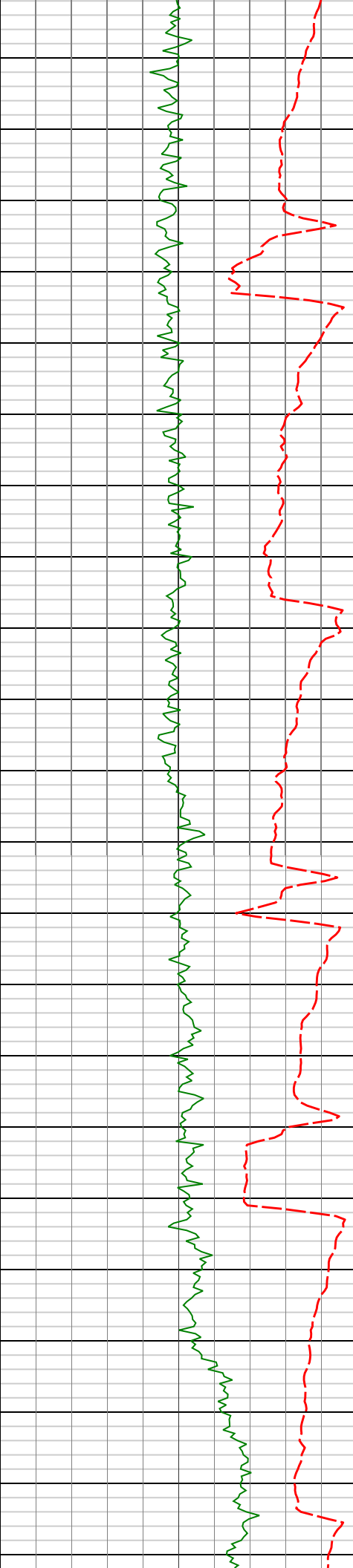
6329'

14.95°

8.92°

6309.79'

249.08'



6350'

6376'

18.01°

7.19°

6354.85'

262.27'

6400'

6424'

22.24°

8.90°

6399.91'

278.59'

6450'

6471'

26.62°

10.53°

6442.69'

297.71'

6500'

6519'

27.87°

5.29°

6485.37'

319.43'

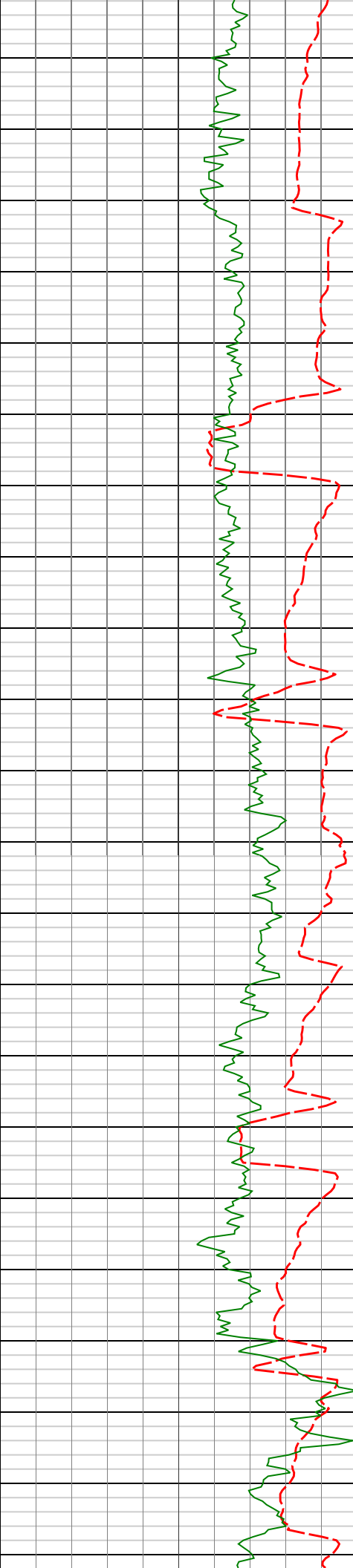
6566'

32.02°

2.20°

6526.09'

342.82'



6550'

6600'

6650'

6700'

6750'

6661'

40.68°

357.22°

6602.55'

399.03'

6709'

44.81°

356.72°

6637.79'

431.57'

6756'

48.01°

358.04°

6670.19'

465.59'

6804'

51.58°

359.22°

6701.18'

502.23'

6850'

56.42°

358.90°

6728.21'

539.44'

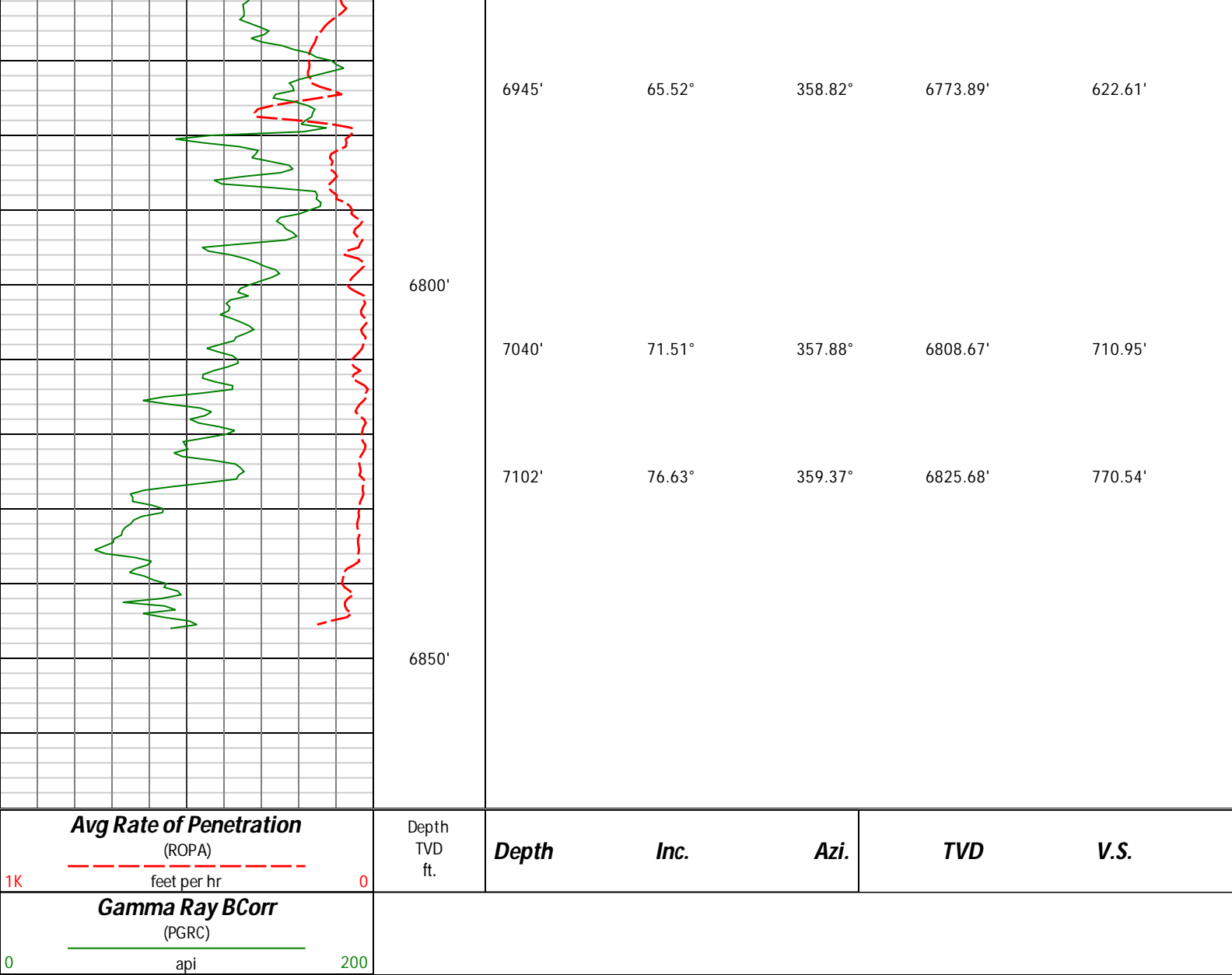
6898'

61.52°

358.62°

6752.94'

580.55'



## HALLIBURTON

### DIRECTIONAL SURVEY REPORT

Noble Energy  
Oscar Y10-74 HN  
Wattenberg  
Weld Colorado  
USA  
CA-XX-0901675820

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
733.00	0.60	215.20	732.99	1.39 S	2.26 W	-1.37	0.21
984.00	0.40	141.01	983.98	3.14 S	2.47 W	-3.12	0.25
1293.00	0.81	179.70	1292.97	6.17 S	1.78 W	-6.15	0.18
1386.00	0.81	174.42	1385.96	7.48 S	1.71 W	-7.46	0.08
1478.00	0.81	174.09	1477.95	8.77 S	1.58 W	-8.76	0.01
1570.00	0.90	170.35	1569.94	10.13 S	1.39 W	-10.12	0.12
1663.00	1.07	162.38	1662.93	11.68 S	1.01 W	-11.67	0.23
1755.00	1.10	163.81	1754.91	13.35 S	0.50 W	-13.34	0.04
1847.00	2.22	89.32	1846.88	14.17 S	1.53 E	-14.19	2.39
1938.00	3.06	55.90	1937.79	12.79 S	5.30 E	-12.84	1.89
2031.00	4.06	36.23	2030.61	8.74 S	9.30 E	-8.82	1.68

2123.00	6.11	12.63	2122.25	1.34 S	12.30 E	-1.44	3.14
2216.00	7.89	8.81	2214.55	9.80 N	14.36 E	9.68	1.98
2309.00	8.39	1.76	2306.62	22.89 N	15.54 E	22.76	1.20
2402.00	8.87	2.24	2398.57	36.84 N	16.03 E	36.70	0.52
2495.00	9.10	5.42	2490.43	51.32 N	17.01 E	51.17	0.59
2589.00	8.78	355.76	2583.29	65.88 N	17.18 E	65.73	1.63
2681.00	8.75	356.50	2674.21	79.87 N	16.23 E	79.72	0.13
2773.00	8.40	1.27	2765.19	93.57 N	15.96 E	93.43	0.86
2865.00	9.20	359.46	2856.10	107.64 N	16.04 E	107.50	0.92
2960.00	9.39	357.34	2949.86	122.98 N	15.60 E	122.84	0.41
3055.00	9.26	1.86	3043.60	138.36 N	15.49 E	138.22	0.78
3150.00	8.57	358.56	3137.45	153.07 N	15.56 E	152.93	0.90
3245.00	8.59	5.91	3231.39	167.21 N	16.12 E	167.06	1.15
3340.00	7.28	3.50	3325.48	180.27 N	17.21 E	180.12	1.42
3435.00	6.38	359.91	3419.81	191.56 N	17.57 E	191.40	1.05
3530.00	5.33	352.04	3514.31	201.21 N	16.95 E	201.05	1.39
3624.00	4.52	344.44	3607.97	209.10 N	15.35 E	208.96	1.10
3719.00	3.46	347.82	3702.73	215.51 N	13.75 E	215.38	1.14
3814.00	2.44	339.98	3797.61	220.21 N	12.45 E	220.09	1.15
3909.00	1.94	329.32	3892.54	223.49 N	10.94 E	223.39	0.68
4004.00	1.60	298.75	3987.49	225.52 N	8.95 E	225.43	1.04
4099.00	1.46	320.55	4082.46	227.09 N	7.02 E	227.02	0.63
4194.00	0.52	347.25	4177.45	228.44 N	6.16 E	228.38	1.08
4289.00	0.95	259.97	4272.44	228.73 N	5.29 E	228.67	1.12
4383.00	0.99	113.01	4366.44	228.27 N	5.27 E	228.22	1.98
4478.00	0.92	132.89	4461.42	227.43 N	6.58 E	227.37	0.35
4573.00	0.50	162.08	4556.42	226.52 N	7.27 E	226.45	0.57
4668.00	0.88	179.25	4651.41	225.40 N	7.40 E	225.32	0.45
4763.00	0.34	139.69	4746.40	224.45 N	7.60 E	224.38	0.69
4858.00	0.31	188.49	4841.40	223.98 N	7.74 E	223.91	0.28
4953.00	0.72	190.54	4936.40	223.14 N	7.59 E	223.07	0.43
5048.00	0.91	172.35	5031.39	221.81 N	7.58 E	221.73	0.34
5143.00	0.84	159.49	5126.38	220.41 N	7.93 E	220.33	0.22
5238.00	0.61	143.92	5221.37	219.35 N	8.47 E	219.26	0.32
5333.00	0.74	95.65	5316.36	218.88 N	9.38 E	218.79	0.59
5428.00	0.98	96.54	5411.35	218.72 N	10.80 E	218.62	0.25
5522.00	0.98	103.79	5505.34	218.44 N	12.38 E	218.32	0.13
5617.00	0.83	95.38	5600.33	218.18 N	13.85 E	218.05	0.21
5712.00	0.85	85.36	5695.32	218.18 N	15.24 E	218.03	0.16
5807.00	0.37	46.44	5790.31	218.44 N	16.16 E	218.29	0.64
5902.00	0.20	11.82	5885.31	218.82 N	16.42 E	218.67	0.25
5997.00	0.36	351.81	5980.31	219.27 N	16.41 E	219.12	0.19
6091.00	0.47	317.90	6074.31	219.85 N	16.11 E	219.70	0.28
6234.00	7.76	355.06	6216.85	229.92 N	14.88 E	229.78	5.17
6281.00	12.19	1.78	6263.13	238.05 N	14.76 E	237.91	9.73
6329.00	14.95	8.92	6309.79	249.23 N	15.88 E	249.08	6.72
6376.00	18.01	7.19	6354.85	262.43 N	17.73 E	262.27	6.59
6424.00	22.24	8.90	6399.91	278.78 N	20.07 E	278.59	8.90
6471.00	26.62	10.53	6442.69	297.93 N	23.37 E	297.71	9.43
6519.00	27.87	5.29	6485.37	319.67 N	26.37 E	319.43	5.63
6566.00	32.02	2.20	6526.09	343.07 N	27.86 E	342.82	9.42
6661.00	40.68	357.22	6602.55	399.29 N	27.32 E	399.03	9.62
6709.00	44.81	356.72	6637.79	431.81 N	25.60 E	431.57	8.63
6756.00	48.01	358.04	6670.19	465.81 N	24.05 E	465.59	7.11
6804.00	51.58	359.22	6701.18	502.46 N	23.18 E	502.23	7.67
6850.00	56.42	358.90	6728.21	539.65 N	22.57 E	539.44	10.54
6898.00	61.52	358.62	6752.94	580.76 N	21.68 E	580.55	10.64
6945.00	65.52	358.82	6773.89	622.81 N	20.74 E	622.61	8.52
7040.00	71.51	357.88	6808.67	711.13 N	18.18 E	710.95	6.37
7102.00	76.63	359.37	6825.68	770.71 N	16.76 E	770.54	8.58
7232.00	86.55	3.18	6844.68	899.10 N	19.67 E	898.89	8.16
7353.00	91.85	1.43	6846.37	1019.94 N	24.54 E	1019.69	4.61
7448.00	92.43	1.67	6842.82	1114.84 N	27.10 E	1114.56	0.66
7543.00	89.91	359.86	6840.88	1209.80 N	28.37 E	1209.50	3.27
7638.00	90.12	0.03	6840.86	1304.80 N	28.28 E	1304.50	0.28
7733.00	90.03	358.60	6840.73	1399.79 N	27.14 E	1399.50	1.51
7826.00	89.57	357.39	6841.06	1492.73 N	23.89 E	1492.46	1.39
7920.00	89.75	357.84	6841.62	1586.64 N	19.98 E	1586.41	0.52
8013.00	90.34	358.26	6841.54	1679.59 N	16.81 E	1679.38	0.78
8106.00	90.40	358.58	6840.94	1772.55 N	14.25 E	1772.36	0.35
8198.00	89.97	357.98	6840.65	1864.51 N	11.49 E	1864.34	0.80
8291.00	90.40	357.59	6840.35	1957.44 N	7.89 E	1957.30	0.62

8384.00	90.28	357.72	6839.79	2050.36 N	4.09 E	2050.25	0.19
8476.00	90.65	357.23	6839.05	2142.27 N	0.04 E	2142.19	0.67
8567.00	89.97	357.95	6838.55	2233.18 N	3.79 W	2233.13	1.09
8659.00	90.15	358.32	6838.46	2325.14 N	6.79 W	2325.11	0.45
8751.00	89.82	357.48	6838.48	2417.07 N	10.16 W	2417.07	0.98
8844.00	89.20	358.10	6839.28	2510.00 N	13.74 W	2510.02	0.94
8936.00	89.91	357.31	6839.99	2601.92 N	17.43 W	2601.97	1.15
9030.00	89.32	359.10	6840.62	2695.87 N	20.37 W	2695.94	2.00
9123.00	89.29	359.20	6841.75	2788.85 N	21.75 W	2788.94	0.11
9216.00	89.45	359.03	6842.77	2881.84 N	23.19 W	2881.93	0.25
9309.00	89.41	358.74	6843.70	2974.81 N	25.00 W	2974.92	0.31
9401.00	89.45	358.53	6844.62	3066.78 N	27.19 W	3066.90	0.23
9493.00	90.25	359.33	6844.86	3158.76 N	28.91 W	3158.90	1.23
9585.00	90.43	359.56	6844.31	3250.76 N	29.80 W	3250.89	0.32
9680.00	91.08	0.00	6843.06	3345.75 N	30.16 W	3345.88	0.83
9775.00	89.44	359.75	6842.63	3440.74 N	30.37 W	3440.88	1.75
9870.00	88.49	359.44	6844.34	3535.73 N	31.04 W	3535.86	1.05
9965.00	88.98	358.99	6846.44	3630.69 N	32.34 W	3630.84	0.70
10059.00	90.28	359.21	6847.05	3724.68 N	33.82 W	3724.83	1.40
10154.00	93.11	359.66	6844.24	3819.62 N	34.76 W	3819.78	3.02
10249.00	93.21	0.13	6839.00	3914.48 N	34.93 W	3914.63	0.51
10344.00	91.91	359.91	6834.76	4009.38 N	34.90 W	4009.53	1.39
10439.00	90.49	0.70	6832.77	4104.35 N	34.39 W	4104.50	1.71
10534.00	89.23	0.88	6833.00	4199.34 N	33.08 W	4199.47	1.34
10628.00	90.22	0.85	6833.45	4293.33 N	31.66 W	4293.44	1.05
10724.00	90.34	0.56	6832.98	4389.32 N	30.48 W	4389.42	0.33
10818.00	89.81	0.12	6832.86	4483.32 N	29.92 W	4483.41	0.73
10913.00	89.14	359.88	6833.73	4578.31 N	29.92 W	4578.40	0.75
11008.00	89.04	359.65	6835.24	4673.30 N	30.31 W	4673.39	0.26
11103.00	88.74	359.04	6837.08	4768.28 N	31.40 W	4768.37	0.72
11198.00	90.31	358.42	6837.87	4863.25 N	33.50 W	4863.35	1.78
11293.00	89.51	358.15	6838.02	4958.20 N	36.35 W	4958.33	0.89
11388.00	88.58	358.97	6839.60	5053.16 N	38.73 W	5053.30	1.31
11483.00	88.55	357.99	6841.98	5148.09 N	41.25 W	5148.26	1.03
11577.00	89.01	358.71	6843.98	5242.03 N	43.96 W	5242.22	0.91
11672.00	90.89	359.09	6844.06	5337.01 N	45.78 W	5337.21	2.02
11767.00	90.96	359.68	6842.53	5431.99 N	46.80 W	5432.19	0.63
11862.00	89.66	0.04	6842.02	5526.99 N	47.04 W	5527.19	1.42
11957.00	90.18	358.63	6842.15	5621.98 N	48.14 W	5622.19	1.58
12052.00	90.62	359.35	6841.48	5716.96 N	49.81 W	5717.18	0.89
12147.00	91.45	0.16	6839.77	5811.94 N	50.22 W	5812.16	1.22
12242.00	90.37	0.66	6838.26	5906.93 N	49.54 W	5907.13	1.25
12337.00	90.06	359.75	6837.90	6001.92 N	49.20 W	6002.13	1.01
12431.00	89.69	359.70	6838.11	6095.92 N	49.65 W	6096.12	0.40
12526.00	89.04	357.09	6839.16	6190.87 N	52.31 W	6191.09	2.83
12621.00	88.39	357.00	6841.29	6285.72 N	57.21 W	6285.98	0.69
12678.00	88.39	357.00	6842.89	6342.62 N	60.19 W	6342.90	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 359.50 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 12678.00 FEET**  
**IS 6342.91 FEET ALONG 359.46 DEGREES (GRID)**