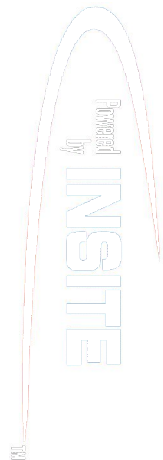


PCGK - Pressure Case Gamma
PCDC - Pressure Case Directional

1 : 240

Country		: USA			
Field		: Wattenberg			
Location		: Lat: 40° 5' 22.68" North Long: 104° 40' 45.80" West			
Well		: Dreiling 27N-32HZ			
Company		: Anadarko Petroleum Corporation			
Rig		: Ensign 132			
LOCATION		Latitude : 40° 5' 22.68" North Longitude : 104° 40' 45.80" West		Other Services	
		UTM Easting = 3,229,591.713 ft UTM Northing = 1,276,560.413 ft		Directional Drilling	
Permanent Datum		: Ground Level		Elev.	
Log Measured From		: Kelly Bushing		KB 4937.00 ft DF 4937.00 ft GL 4924.00 ft WD N/A	
Drilling Measured From		: Kelly Bushing		MD LOG	
Depth Logged		: 1,056.00 ft To 11,817.00 ft		Unit No. : 11210429	
Date Logged		: 12-Jan-14 To 19-Jan-14		Job No. :CA-XX-0900901381	
Total Depth MD		: 11,817.00 ft TVD: 7,132.67 ft		Plot Type : Final	
Spud Date		: 13-Jan-14		Plot Date : 19-Jan-14	
Run No.		Borehole Record (MD)		Borehole Record (MD)	
		Size	From	To	Run No.
0100		8.750 in	1,056.00 ft	7,655.00 ft	
0200		6.125 in	7,655.00 ft	11,817.00 ft	

MD LOG
WELL INFORMATION

MWD Run Number	100	200		
Date run completed	15-Jan-14	19-Jan-14		
Rig Bit Number	0100	0200		
Bit Size (in)	8.750	6.125		
Tool Nominal OD (in)	6.750	4.750		
Log Start Depth (MD, ft)	1,056.00	7,655.00		
Log End Depth (MD, ft)	7,655.00	11,817.00		
Drill or Wipe	Drill	Drill		
Drill/Wipe Start Date and Time	13-Jan-14 05:36	17-Jan-14 10:00		
Drill/Wipe End Date and Time	15-Jan-14 08:48	18-Jan-14 16:30		
Min Inc (deg) @ Depth (MD, ft)	0.40 @ 1,191.00	88.83 @ 11,579.00		
Max Inc (deg) @ Depth (MD, ft)	90.52 @ 7,655.00	91.08 @ 11,008.00		
Bit TFA(in2) / Bit Type	1.18 / PDC	0.98 / PDC		
Flow Rate (gpm)	578.04	282.42		
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A	N/A / N/A		
Fluid Type	Native/Spud Mud	Native/Spud Mud		
Density (ppg) / Viscosity (spqt)	8.83 / 41.00	9.50 / 41.00		
Filtrate CL (ppm)	1,300.00	1,500.00		
pH / Fluid Loss (mptm)	9.50 / 5	9.50 / 6		
PV (cP) / YP (Ihf2)	14 / 11.00	10 / 14.00		
% Solids / % Sand	8.7 / 1.00	6 / 1.00		
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A		
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A		
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A		
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A		

Max Tool Temp (degF) / Source	170.37 / PCM	226.08 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A			
Lead MWD Engineer	Matt Busche	Matt Busche			
Customer Representative	Sam Taylor	Terry Bradshaw			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.84	5.84			
Sub Serial Number	11341320	12334775			
Insert Serial Number	11680724	11227549			
Date and Time Initialized	12-Jan-14 14:50	16-Jan-14 16:37			
Date and Time Read	15-Jan-14 18:35	19-Jan-14 08:24			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	44.54	44.59			
Software Version	6.21	6.21			
Sub Serial Number	11341320	12334775			
Sonde Serial Number	11062085	11833232			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	122.31	197.14			

Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	49.49	49.54			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	11341320	12334775			
Insert/Sonde Serial Number	11681026	11579787			

REMARKS

1. All depths are measured depths, referenced to the Driller's pipe tally and are measured from the Kelly Bushing, 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 final survey is a straight line projection to the bit.
5. 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

Insite version: 8.0

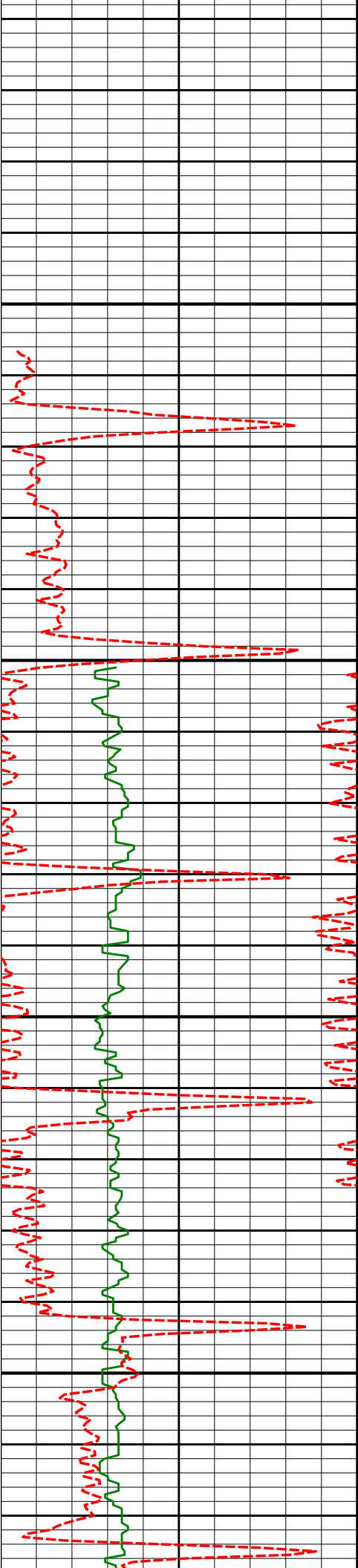
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HALLIBURTON

TVD Main Log 1:240

PCG Gamma Ray BCorr (PGRC) api																															
0300																															
Average Rate of Penetration (ROPA) feet per hr										Depth																					
5000												Depth				Inc				Azi				TVD				V/S			
										1050 Run 100																					
										1100		1096'				0.49°				219.19°				1095.98'				0.62'			



1150

1191'

0.40°

279.62°

1190.98'

0.36'

1200

1250

1286'

0.41°

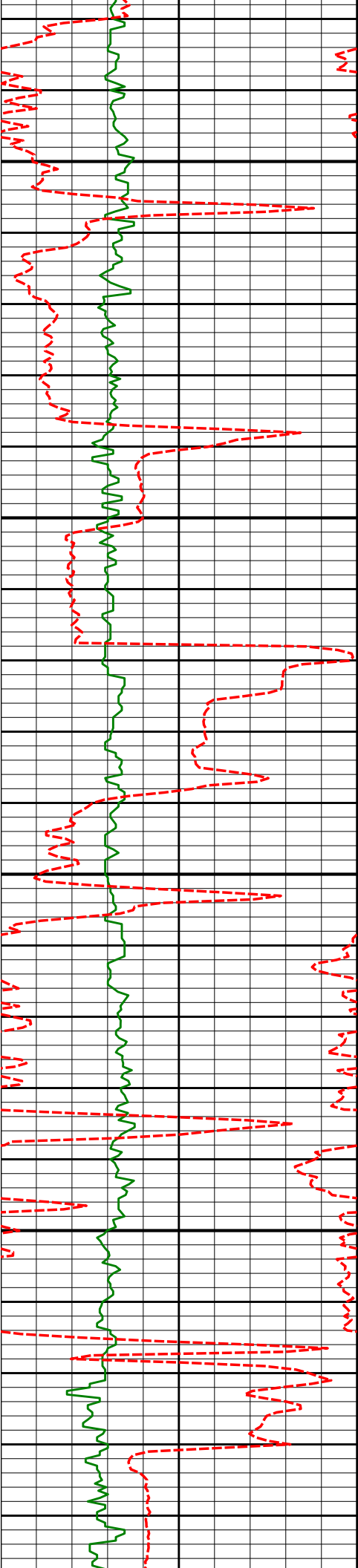
284.06°

1285.98'

0.49'

1300

9.625" Casing Shoe @ 1236' MD / 1235.98' TVD



1350

1400

1450

1500

1380'

0.53°

282.19°

1379.98'

0.67'

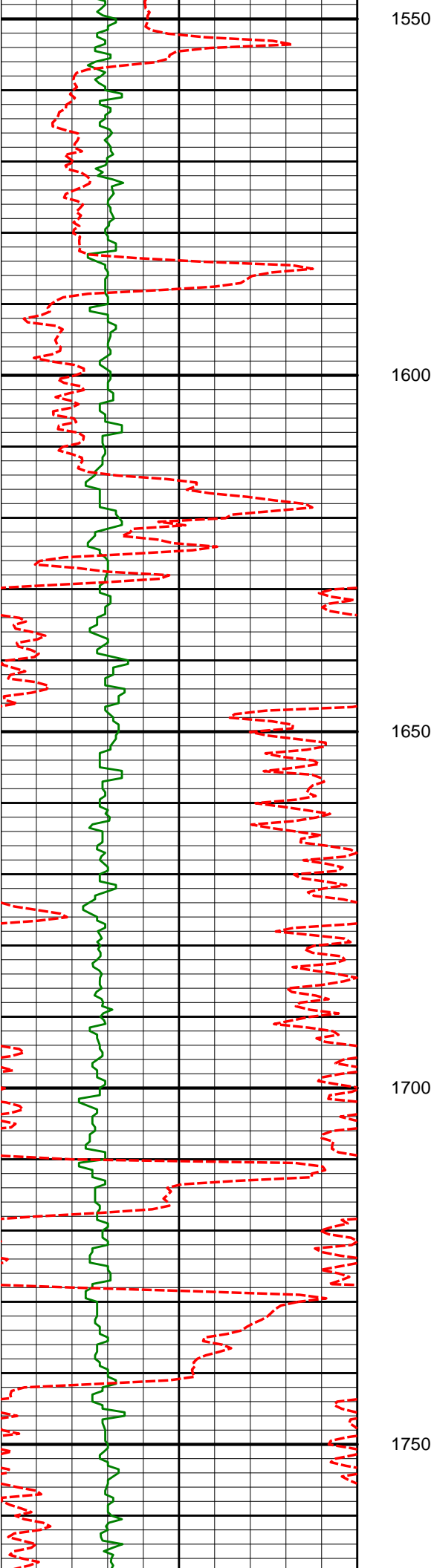
1475'

3.20°

246.86°

1474.92'

-0.28'



1571'

4.47°

243.17°

1570.70'

-3.02'

1666'

5.98°

248.05°

1665.30'

-6.54'

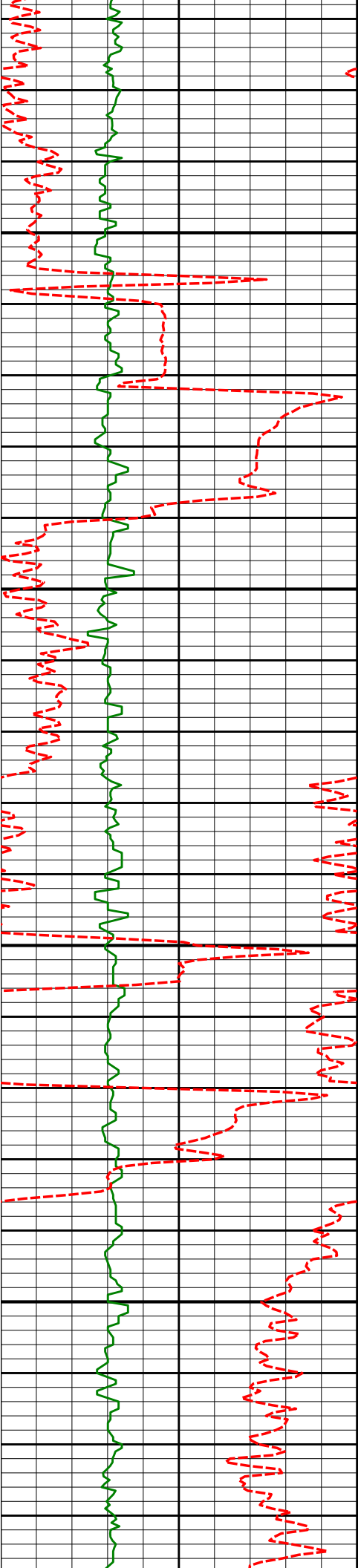
1760'

6.88°

244.42°

1758.71'

-10.81'



1800

1850

1900

1950

1854'

9.66°

243.37°

1851.73'

-16.77'

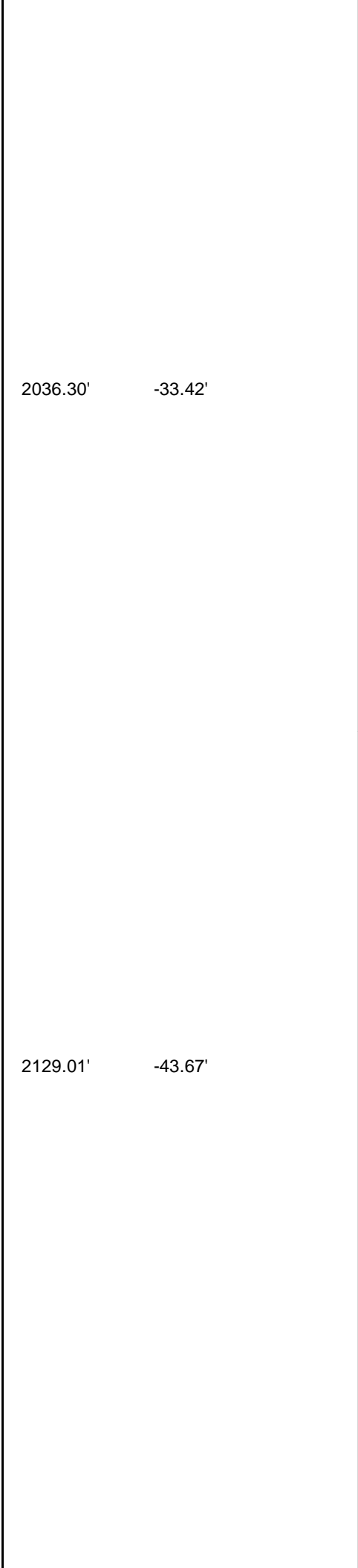
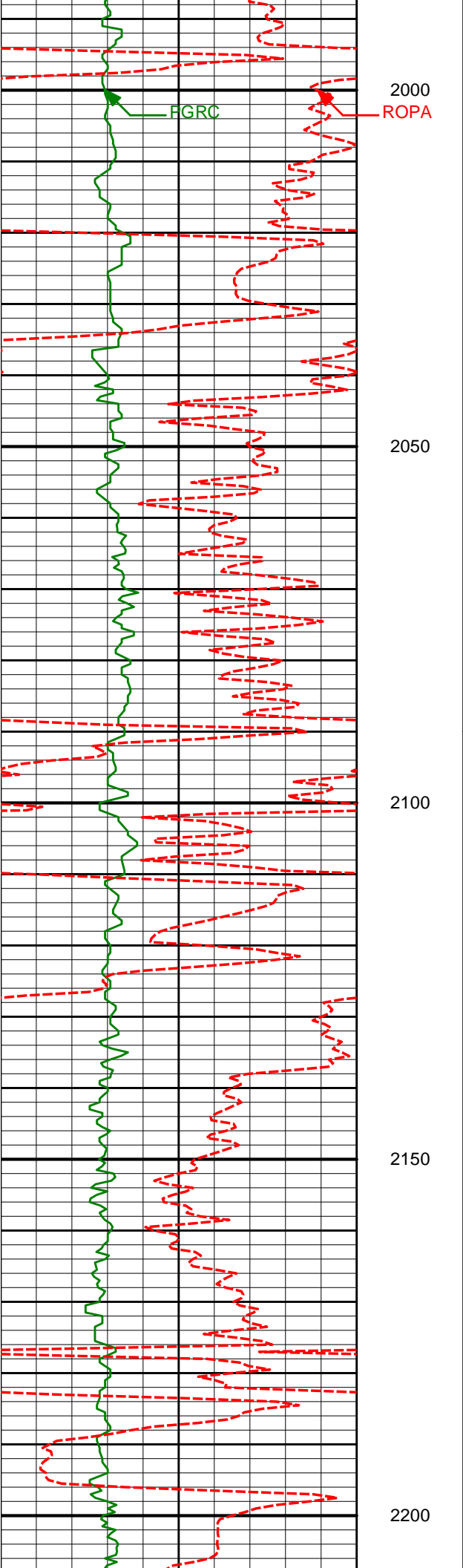
1948'

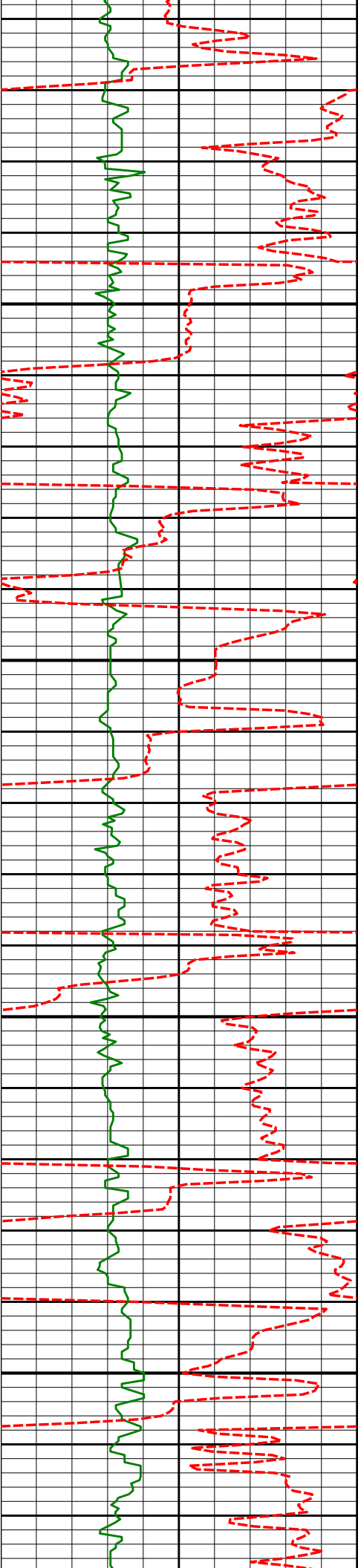
10.94°

243.39°

1944.21'

-24.30'





2230'

15.23°

240.14°

2219.19'

-54.71'

2250

2300

2324'

17.49°

239.87°

2309.38'

-67.95'

2350

2400

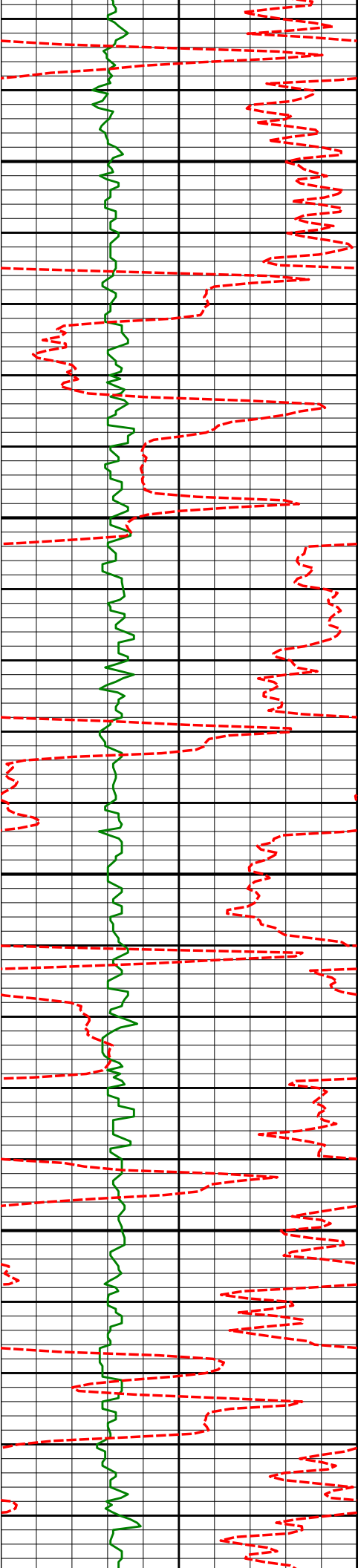
2418'

18.02°

242.14°

2398.91'

-81.84'



2450

2500

2550

2600

2512'

20.10°

242.94°

2487.75'

-95.98'

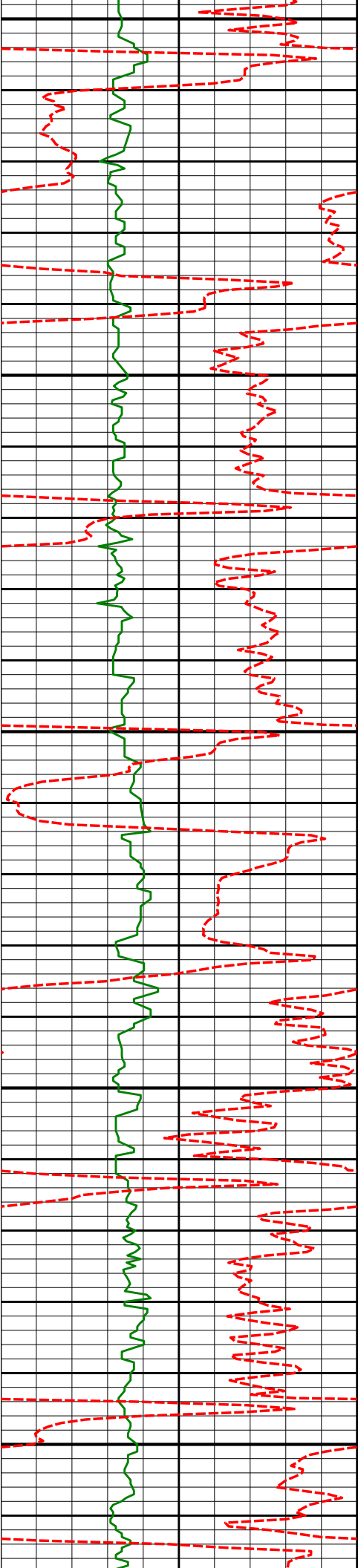
2607'

19.23°

238.21°

2577.21'

-111.65'



2650

2700

2750

2800

2850

2701'

18.66°

235.18°

2666.12'

-128.39'

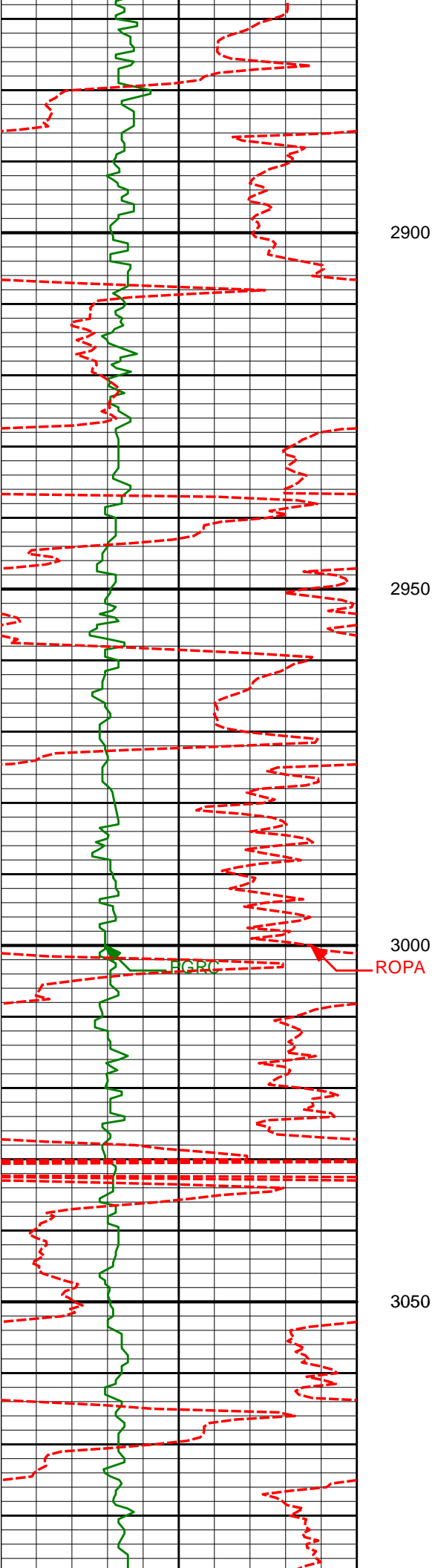
2795'

17.36°

241.91°

2755.52'

-143.59'



2890'

17.92°

243.88°

2846.06'

-156.69'

2984'

19.47°

247.03°

2935.10'

-169.18'

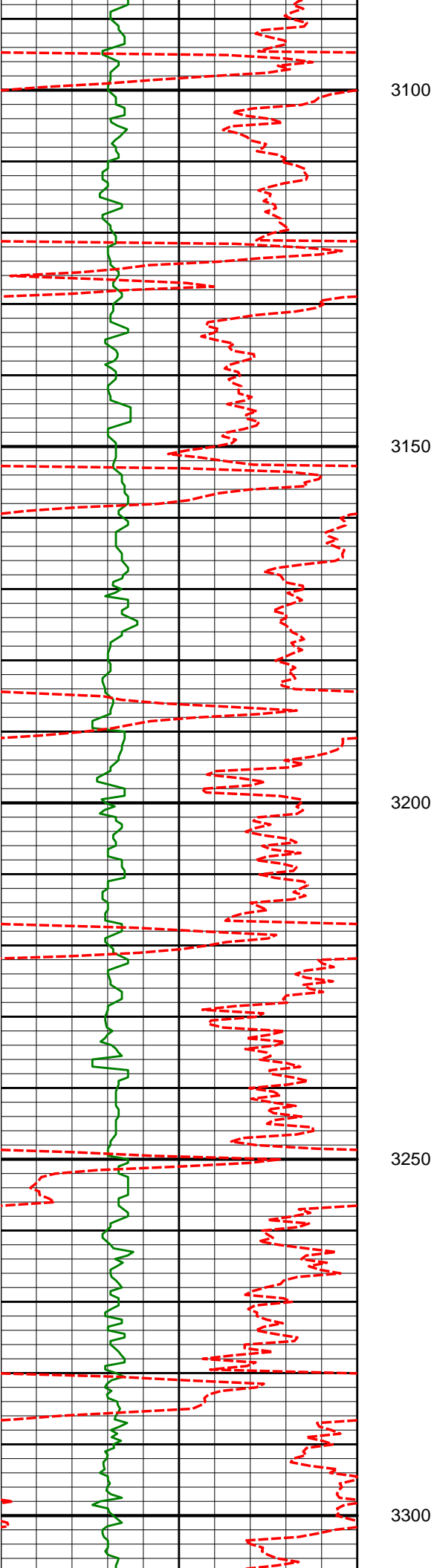
3078'

19.28°

247.90°

3023.77'

-181.13'



3173'

18.82°

247.40°

3113.57'

-192.92'

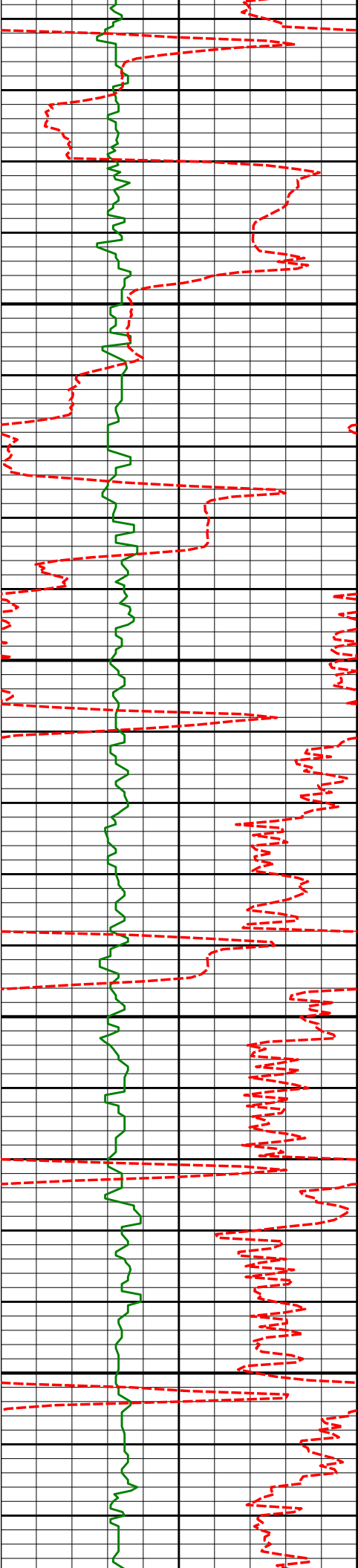
3267'

17.59°

246.99°

3202.86'

-204.30'



3350

3361'

19.19°

246.34°

3292.06'

-216.05'

3400

3450

3456'

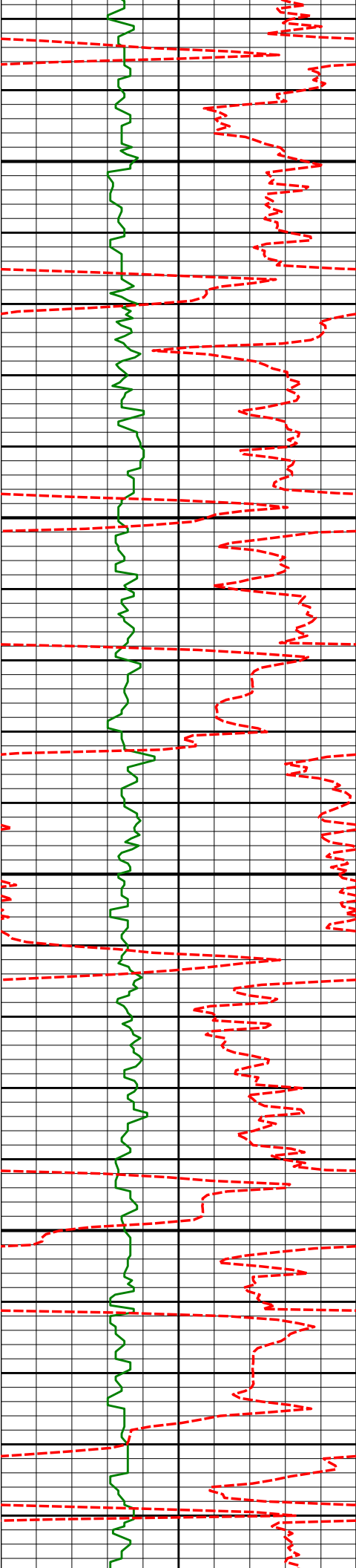
18.63°

247.59°

3381.93'

-228.10'

3500



3550

3552'

16.90°

248.59°

3473.35'

-239.04'

3600

3650

3647'

16.73°

245.05°

3564.29'

-249.85'

3700

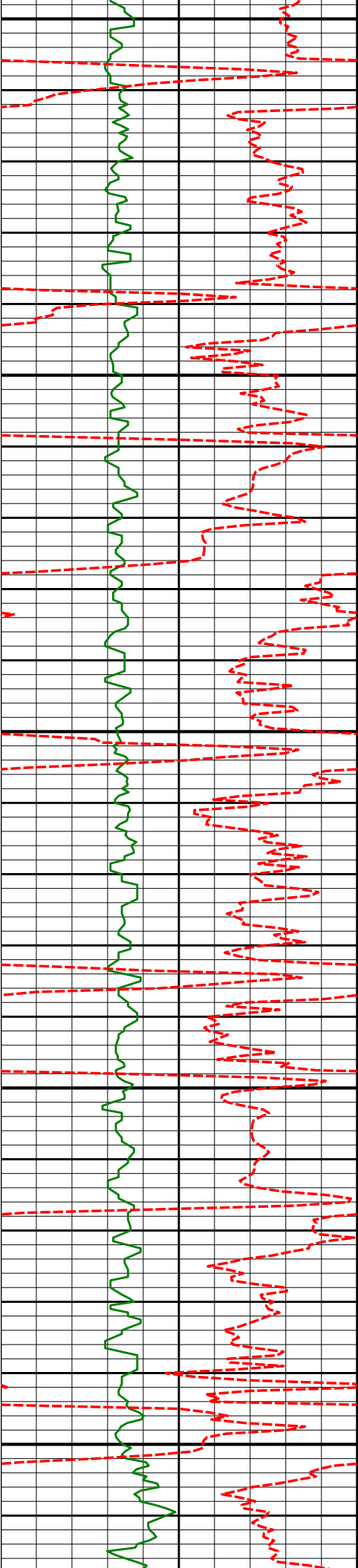
3742'

16.96°

240.18°

3655.22'

-262.51'



3750

3800

3850

3900

3950

3837'

16.87°

240.74°

3746.11'

-276.14'

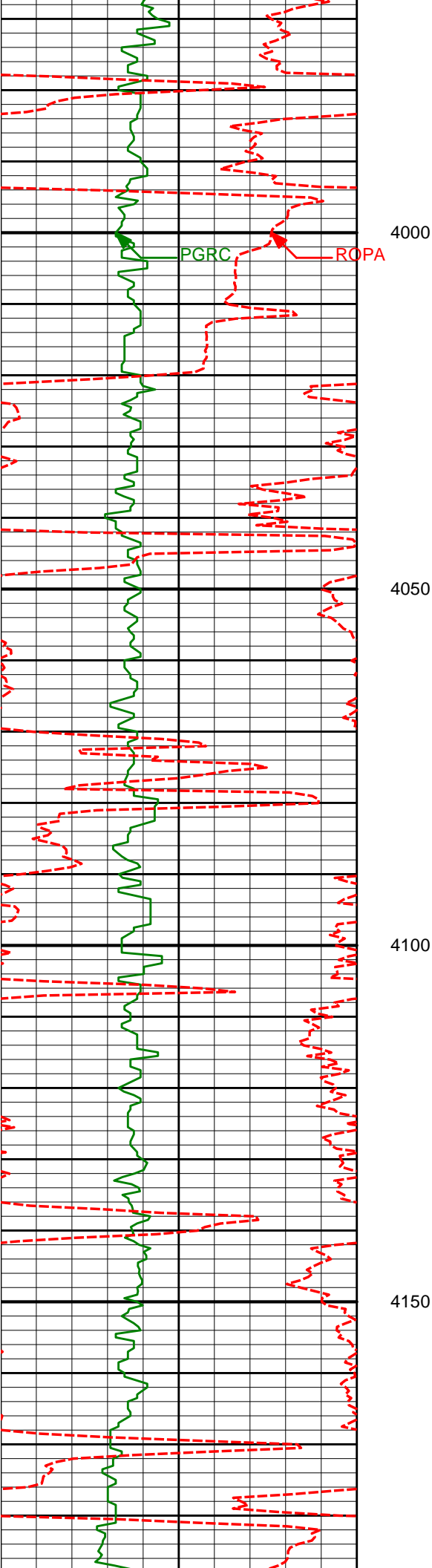
3932'

17.05°

238.67°

3836.98'

-290.11'



4027'

17.80°

238.52°

3927.62'

-304.94'

4050

4100

4122'

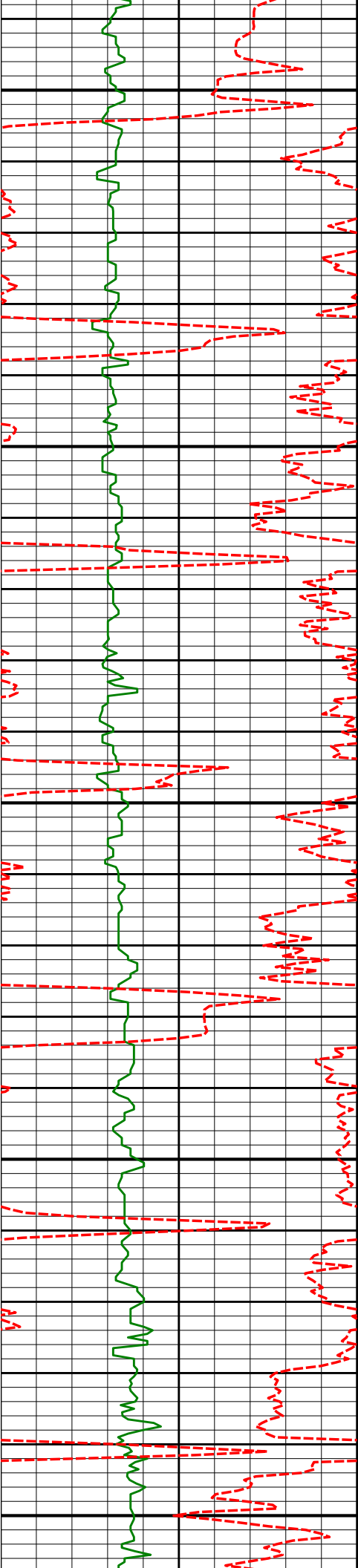
16.46°

238.35°

4018.41'

-319.58'

4150



4200

4218'

18.37°

239.48°

4110.00'

-334.40'

4250

4300

4313'

17.86°

239.54°

4200.29'

-349.39'

4350

4400

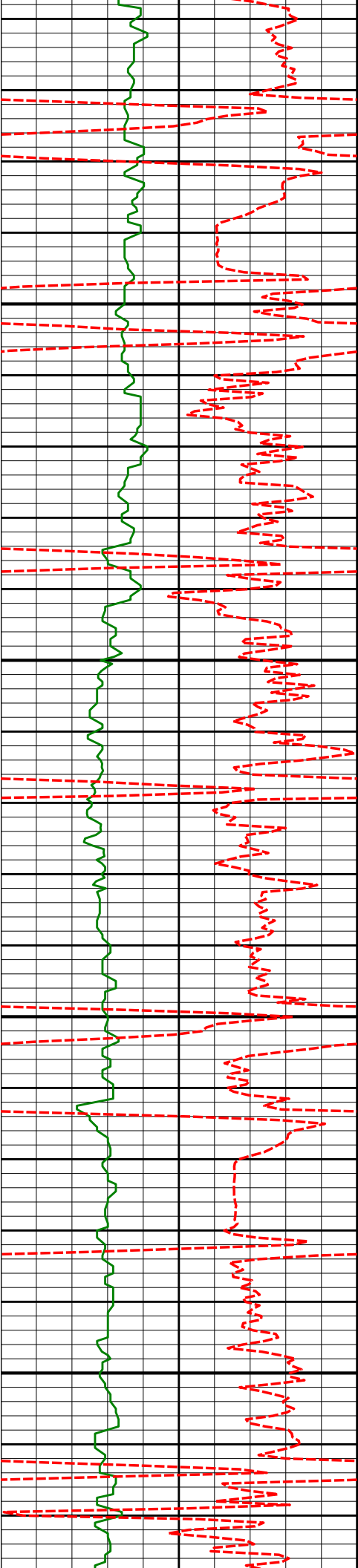
4420'

18.42°

239.72°

4224.40'

-332.24'



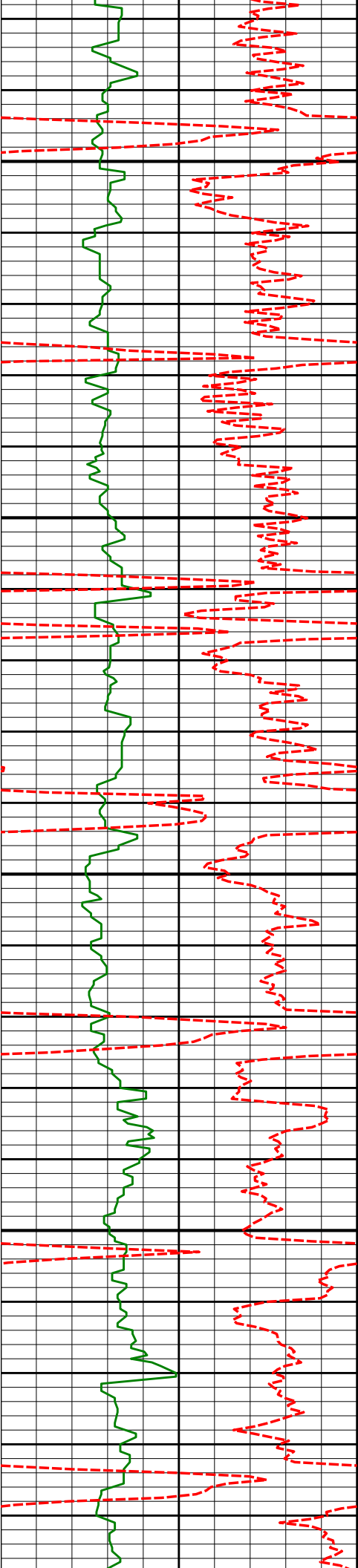
4450

4500

4550

4600

4408'	16.18°	238.76°	4291.13'	-363.64'
4503'	17.50°	241.87°	4382.05'	-377.24'
4598'	20.34°	245.73°	4471.92'	-390.77'



4650

4700

4750

4800

4693'

19.04°

243.96°

4561.36'

-404.36'

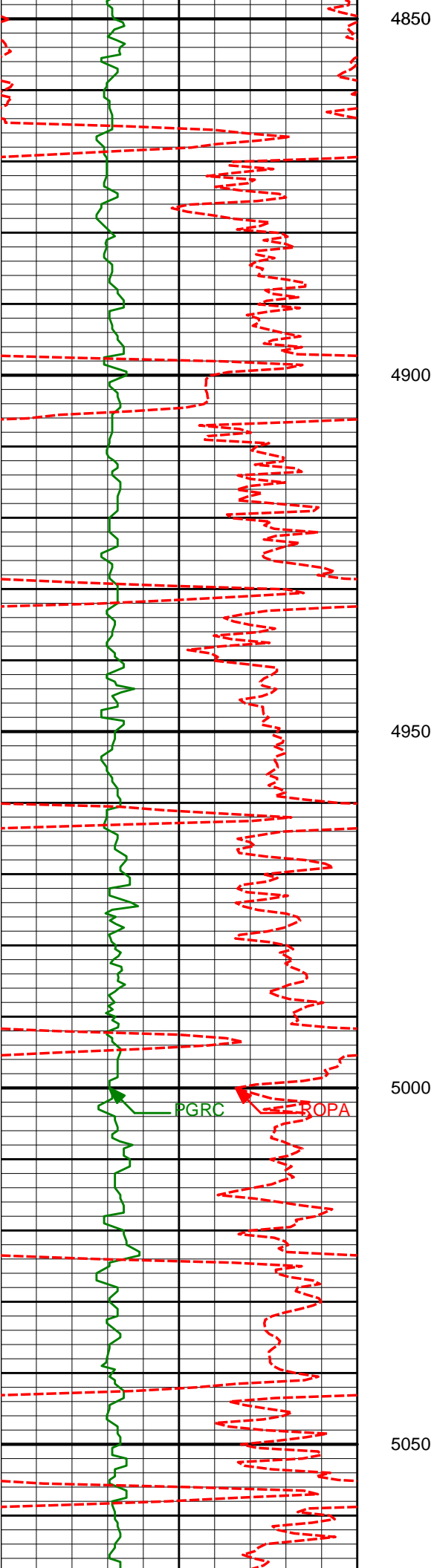
4788'

18.08°

242.99°

4651.42'

-417.85'



4883'

18.13°

242.64°

4741.71'

-431.34'

4900

4950

4979'

17.07°

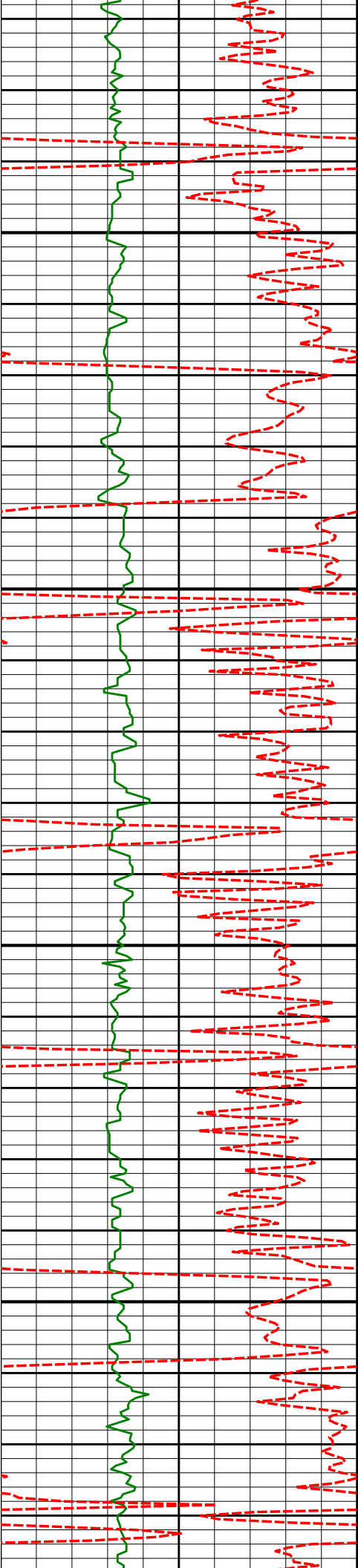
242.03°

4833.22'

-444.82'

5000

5050



5100

5150

5200

5250

5074'

16.91°

243.32°

4924.07'

-457.56'

5169'

18.14°

242.65°

5014.66'

-470.56'

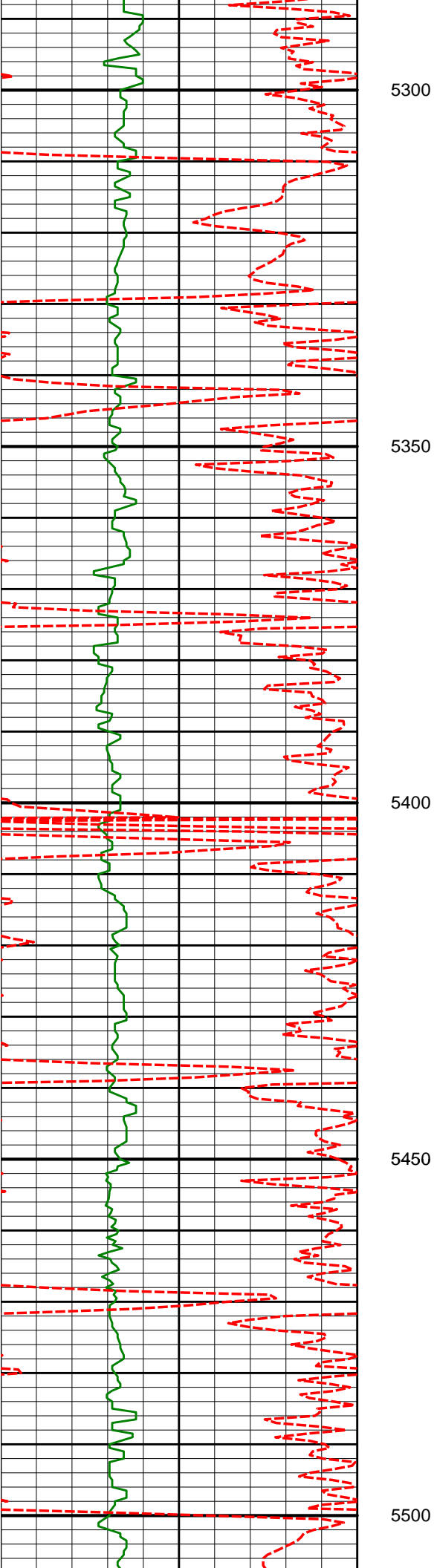
5264'

16.61°

242.94°

5105.33'

-483.53'



5300

5350

5400

5450

5500

5359'

18.14°

244.99°

5195.99'

-495.96'

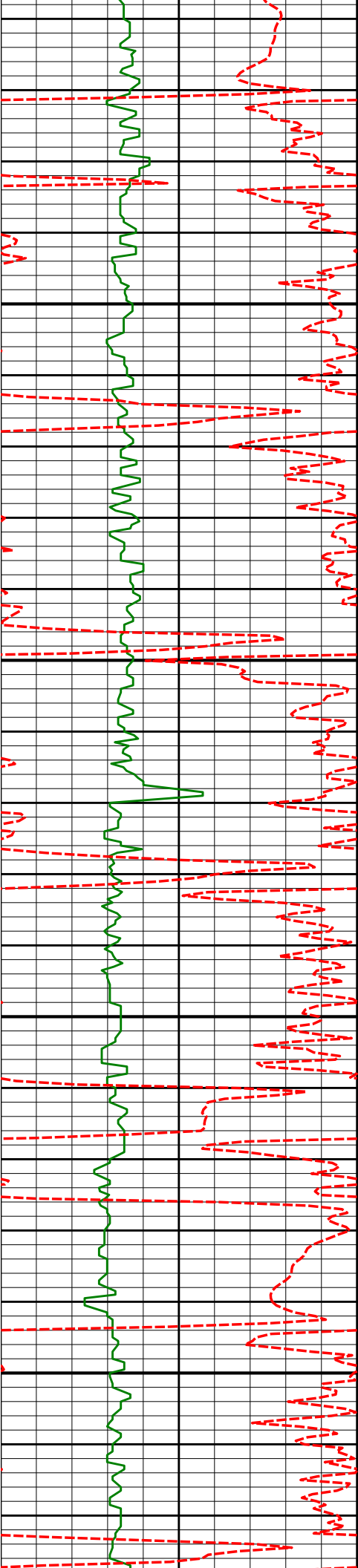
5455'

17.00°

245.34°

5287.51'

-508.13'



5550

5550'

18.55°

239.80°

5377.98'

-521.53'

5600

5650

5700

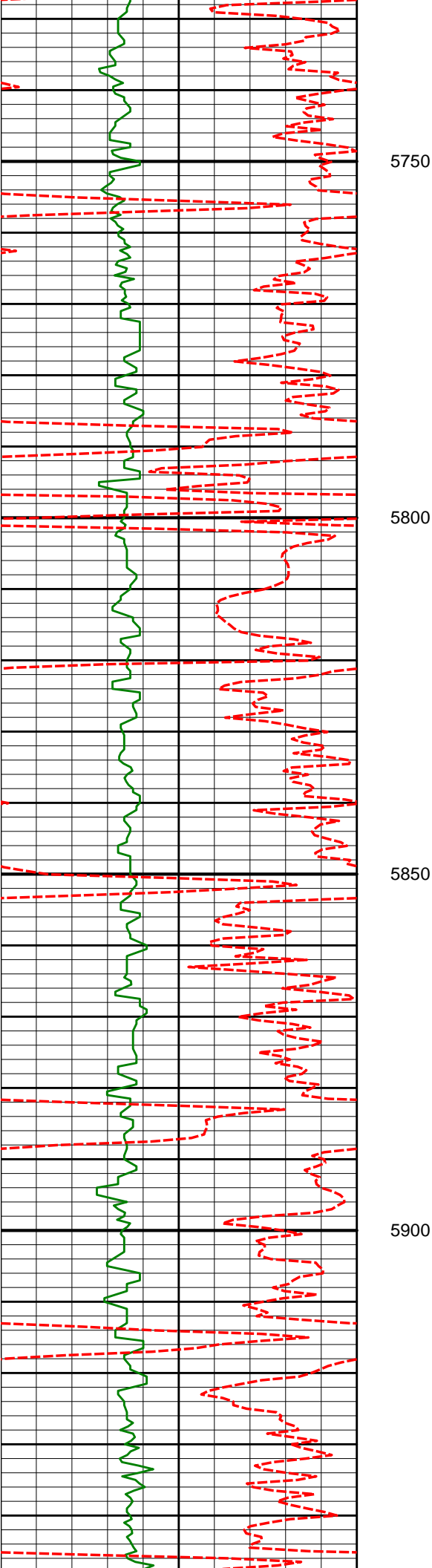
5708'

17.53°

237.82°

5528.21'

-546.85'



5835'

17.11°

235.33°

5649.45'

-567.66'

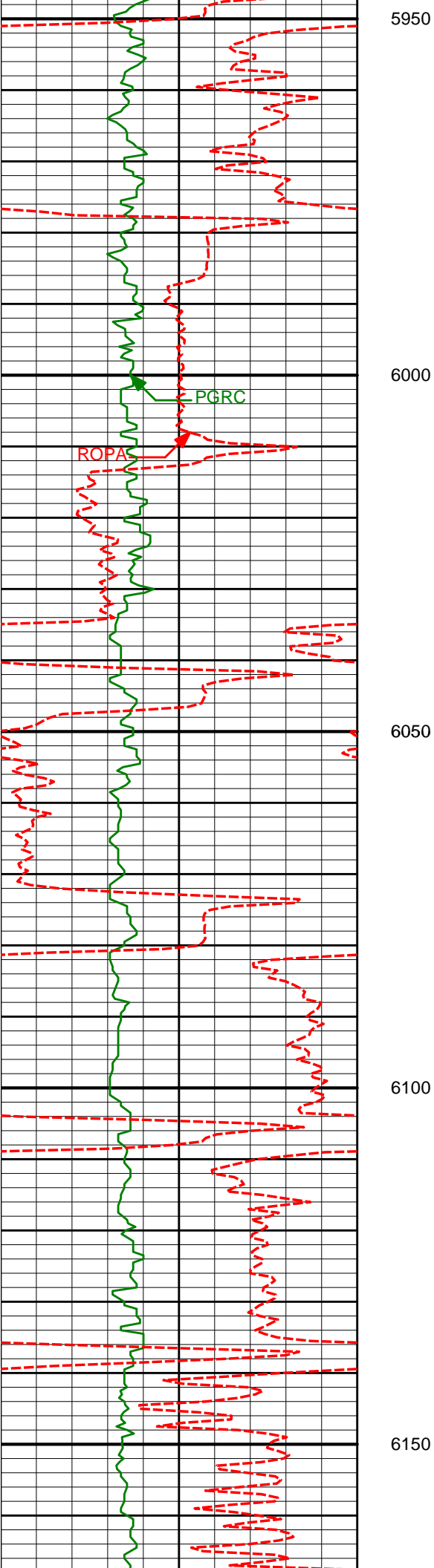
5930'

14.61°

234.12°

5740.83'

-582.63'



6026'

12.70°

231.46°

5834.11'

-596.31'

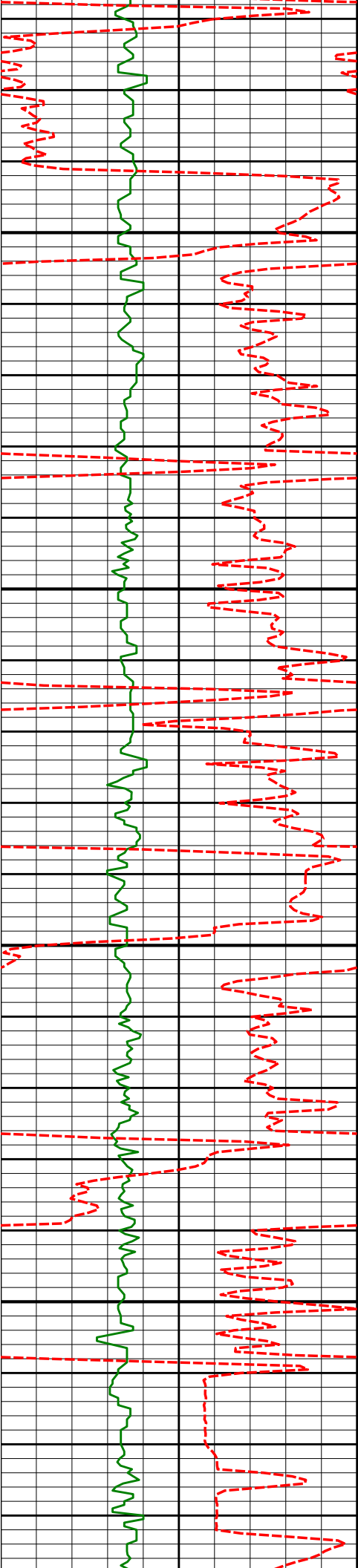
6121'

10.98°

230.07°

5927.09'

-608.62'



6200

6216'

9.21°

235.11°

6020.62'

-618.78'

6250

6300

6311'

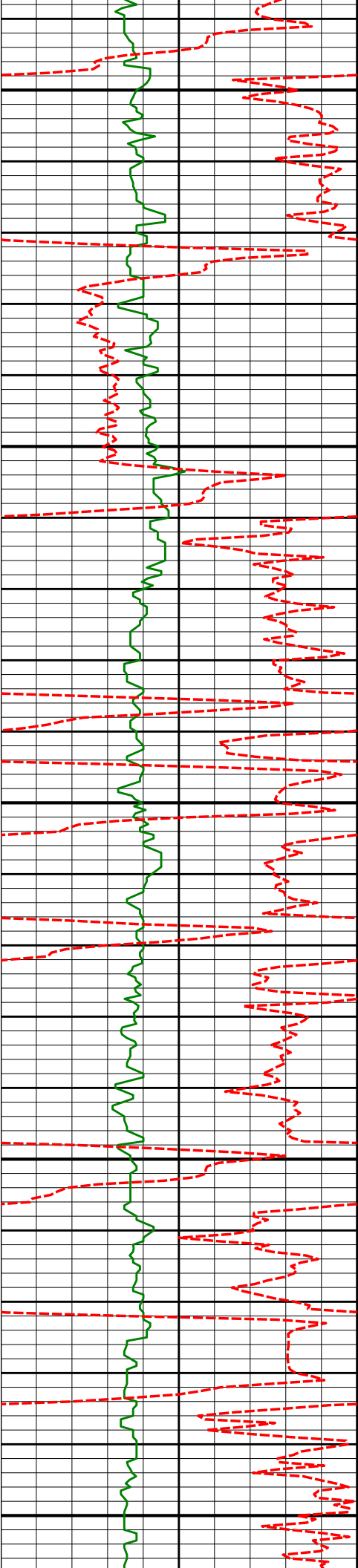
6.99°

240.95°

6114.66'

-625.93'

6350



6400

6406'

5.08°

248.36°

6209.13'

-630.29'

6450

6500

6501'

3.58°

250.40°

6303.86'

-632.84'

6550

6600

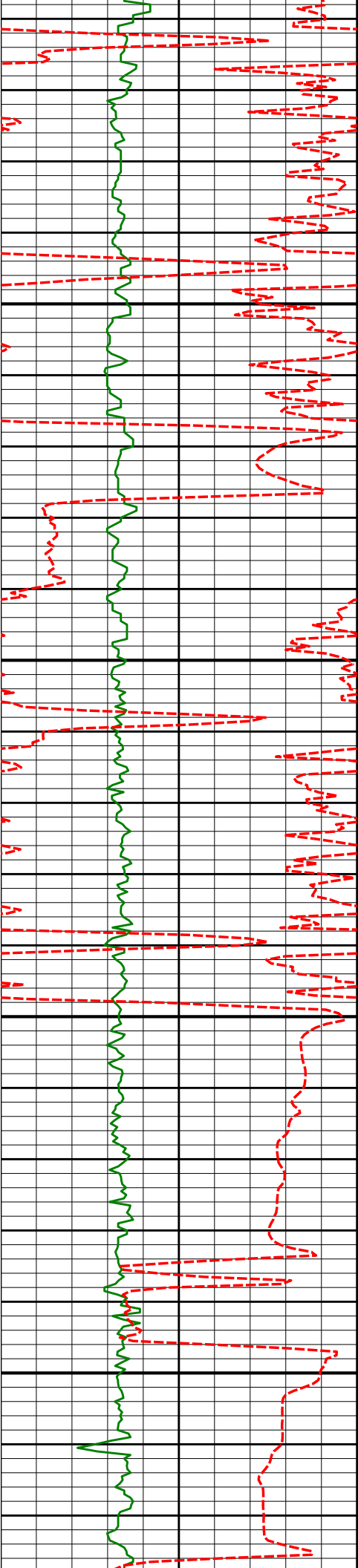
6596'

2.06°

264.93°

6398.74'

-633.98'



6650

6691'

1.84°

315.23°

6493.69'

-633.05'

6700

6739'

1.79°

330.68°

6541.67'

-631.85'

6750

6786'

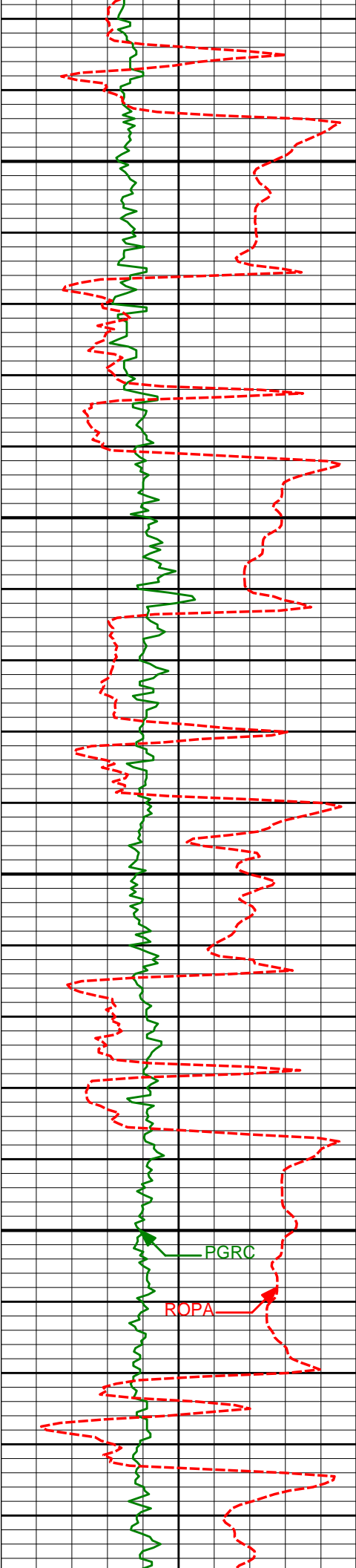
7.41°

351.59°

6588.50'

-628.21'

6800



6850

6900

6950

7000

6834'

11.76°

355.97°

6635.82'

-620.27'

6881'

15.27°

357.41°

6681.51'

-609.30'

6929'

18.03°

358.68°

6727.50'

-595.56'

6977'

20.67°

0.21°

6772.78'

-579.66'

7025'

25.81°

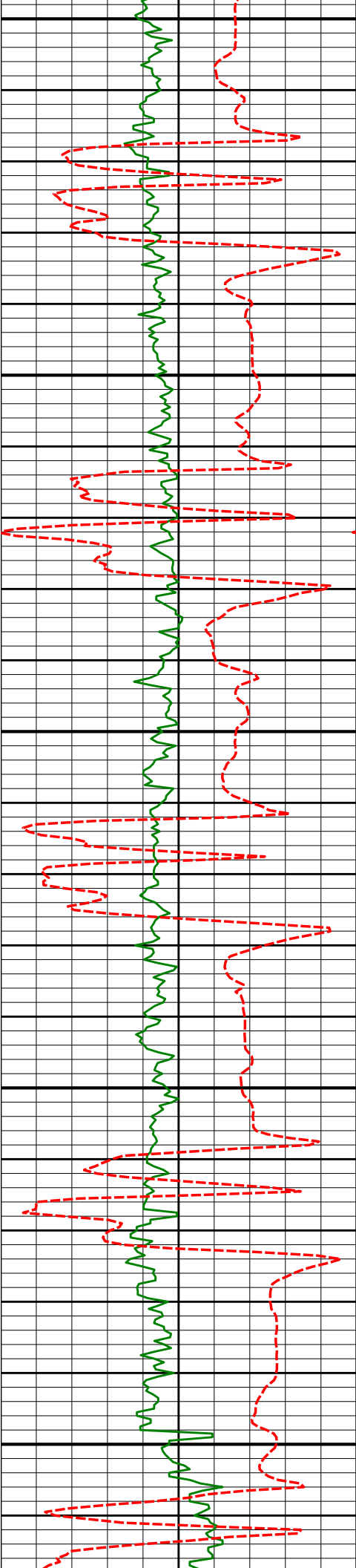
359.20°

6816.87'

-560.72'

PGRC

ROPA



7050

7072'

30.71°

358.55°

6858.26'

-538.48'

7100

7120'

35.61°

0.37°

6898.43'

-512.24'

7150

7167'

40.28°

358.94°

6935.48'

-483.35'

7200

7215'

45.88°

359.03°

6970.53'

-450.58'

7250

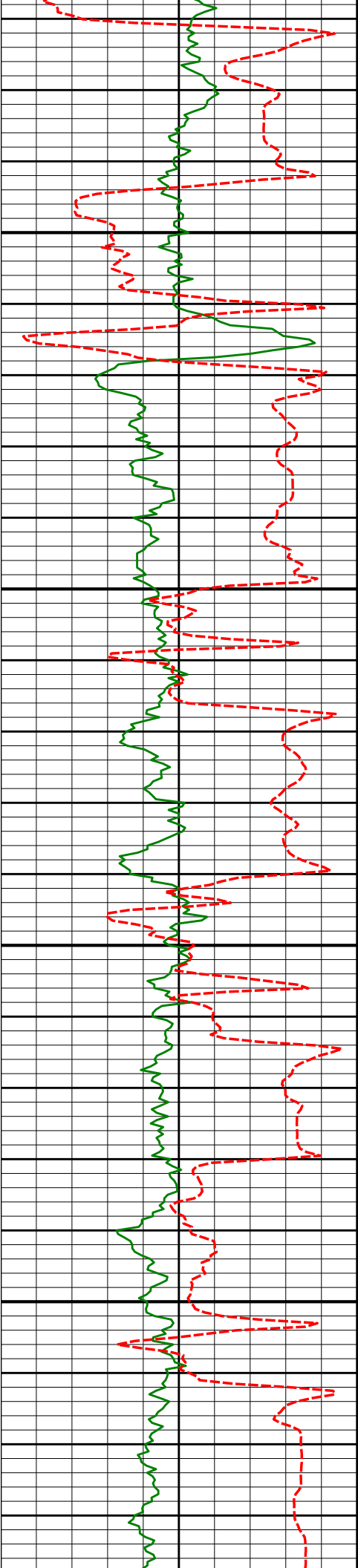
7262'

51.84°

0.46°

7001.44'

-415.20'



7300

7310'

55.21°

0.35°

7029.97'

-376.61'

7350

7357'

61.62°

0.55°

7054.57'

-336.60'

7400

7405'

66.15°

0.30°

7075.70'

-293.51'

7450

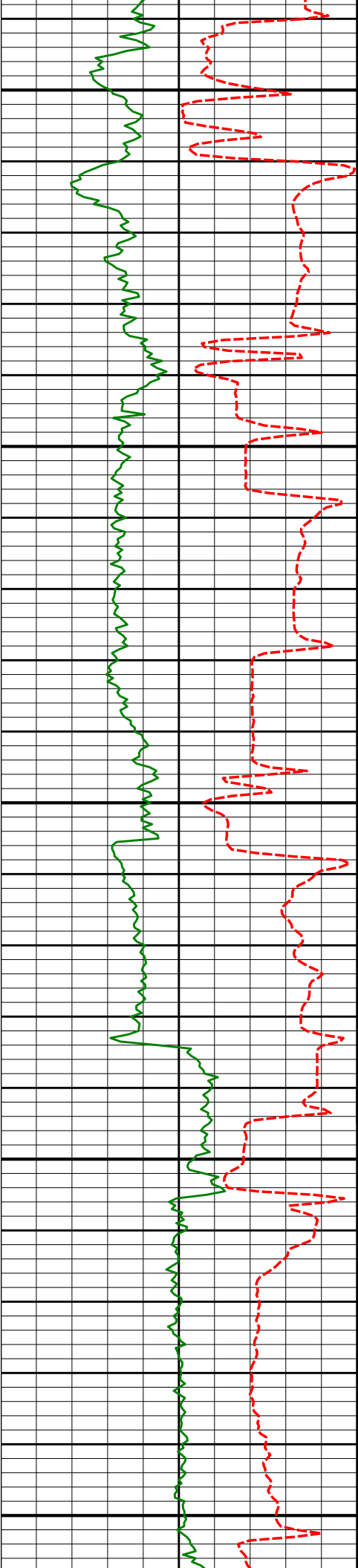
7452'

69.01°

0.63°

7093.62'

-250.07'



7500	7500'	74.40°	0.47°	7108.68'	-204.51'
7550	7548'	79.52°	0.52°	7119.51'	-157.77'
7600	7608'	85.22°	1.63°	7127.47'	-98.34'
Gamma sensor in casing from 7605' to 7645' MD					
7" Casing Shoe @ 7645' MD /7129.42 ' TVD					
7650					
Run 200					
	7678'	89.60°	0.80°	7130.63'	-28.44'
7700					



7750

7774'

89.07°

0.64°

7131.75'

67.54'

7800

7850

7869'

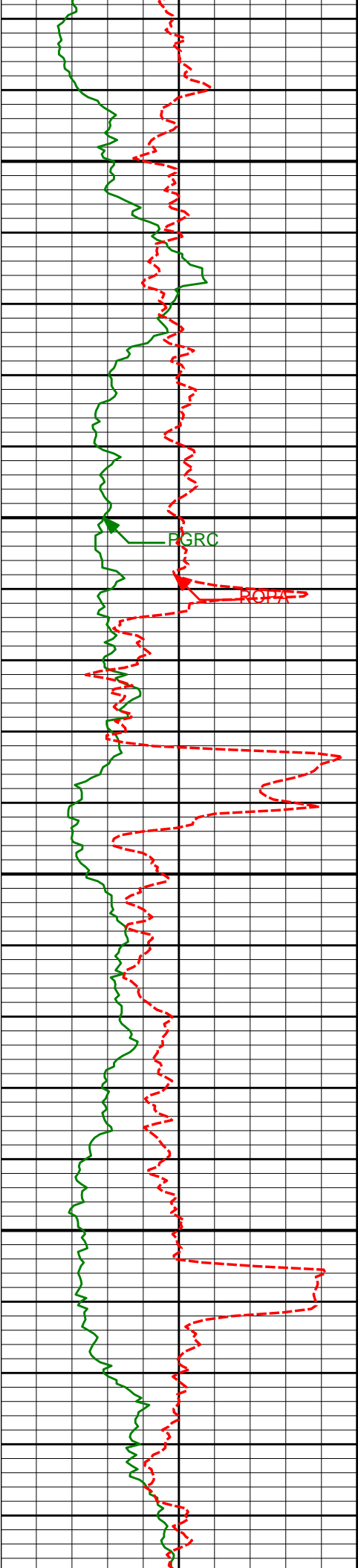
89.04°

0.36°

7133.31'

162.53'

7900



7950

7964'

88.89°

359.95°

7135.03'

257.51'

8000

PGRC

ROPA

8050

8059'

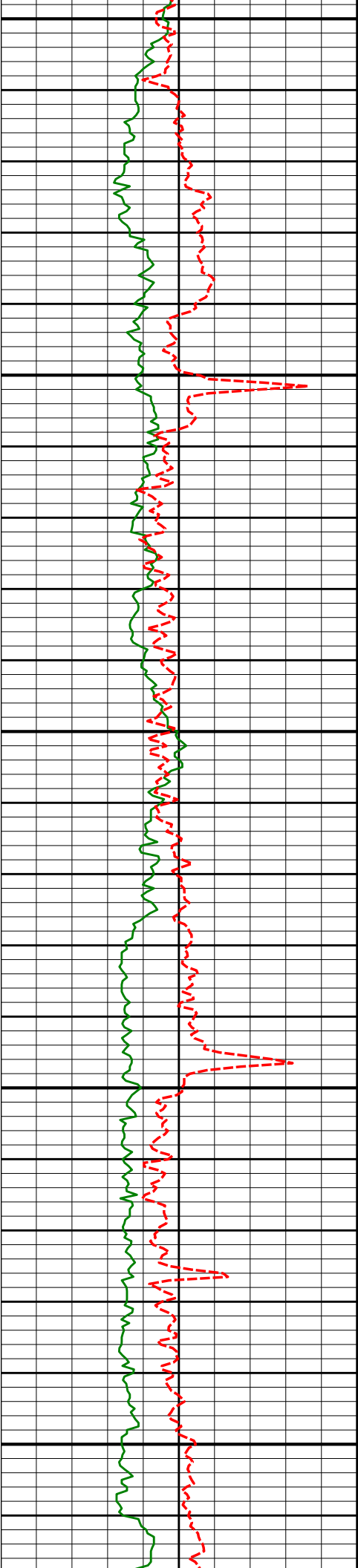
89.78°

0.11°

7136.13'

352.50'

8100



8150

8154'

90.15°

0.25°

7136.19'

447.50'

8200

8250

8249'

90.25°

359.99°

7135.86'

542.50'

8300

8350

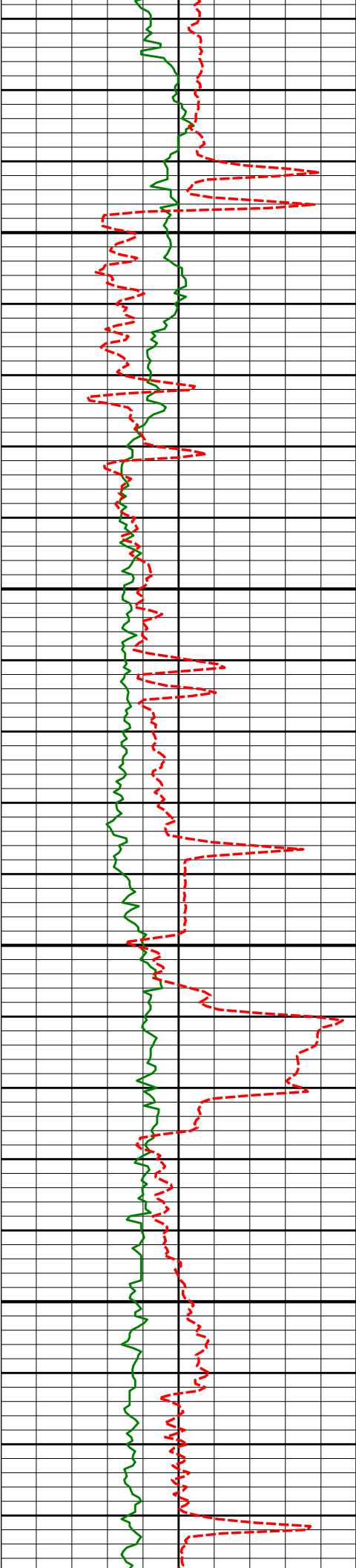
8345'

89.94°

359.41°

7135.70'

638.50'



8400

8450

8500

8550

8440'

90.03°

358.85°

7135.73'

733.49'

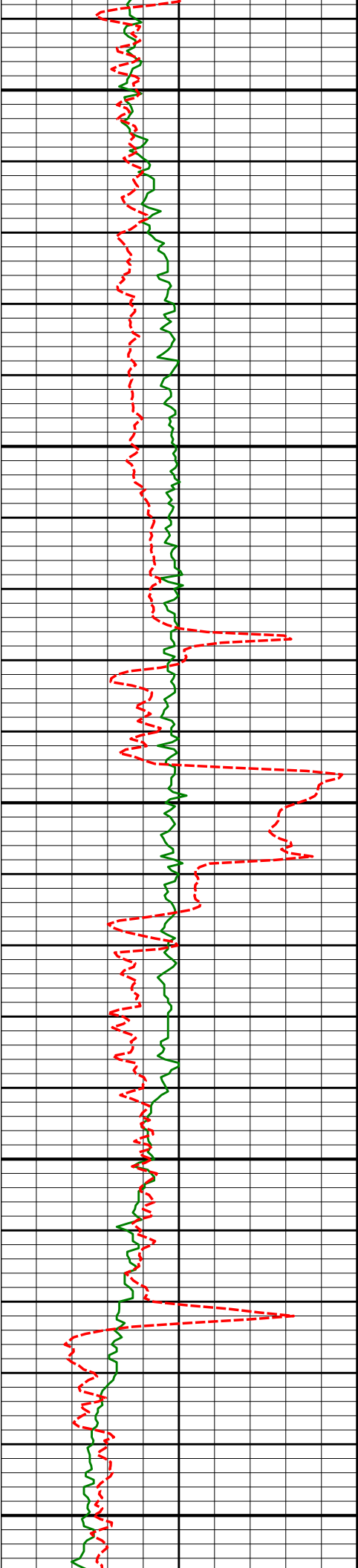
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89.97°

359.52°

7135.73'

828.48'



8600

8630'

90.15°

359.03°

7135.63'

923.47'

8650

8700

8725'

90.86°

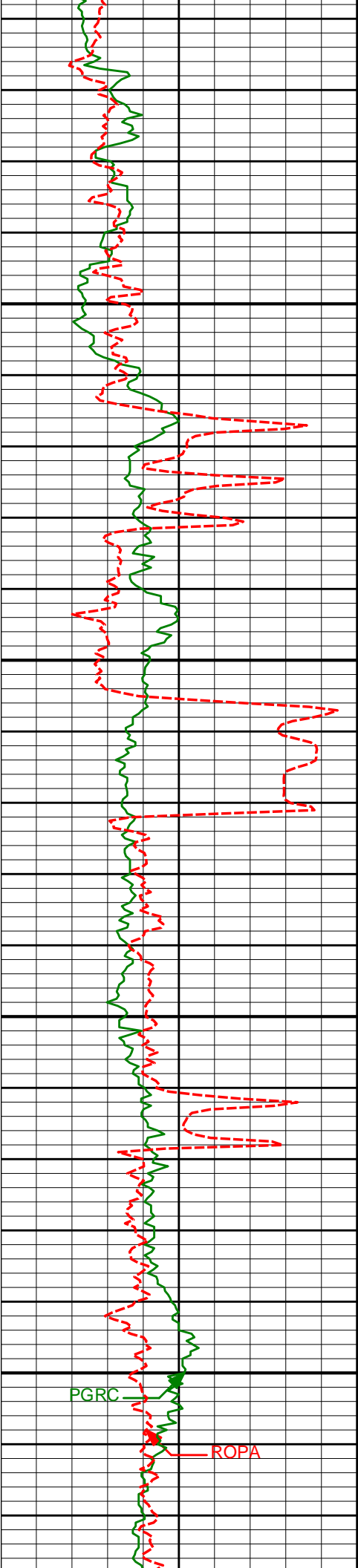
0.13°

7134.79'

1018.46'

8750

8800



8850

8859'

90.68°

359.40°

7132.99'

1152.45'

8900

8915'

90.15°

0.22°

7132.58'

1208.45'

8950

9000

PGRC

ROPA

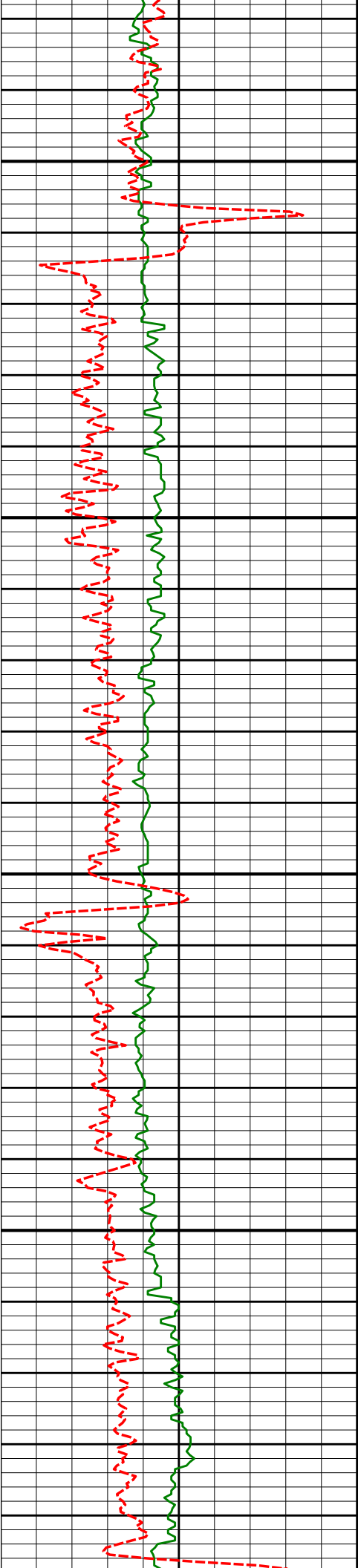
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0.71°

7131.99'

1303.44'



9050

9100

9150

9200

9106'

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0.29°

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1399.43'

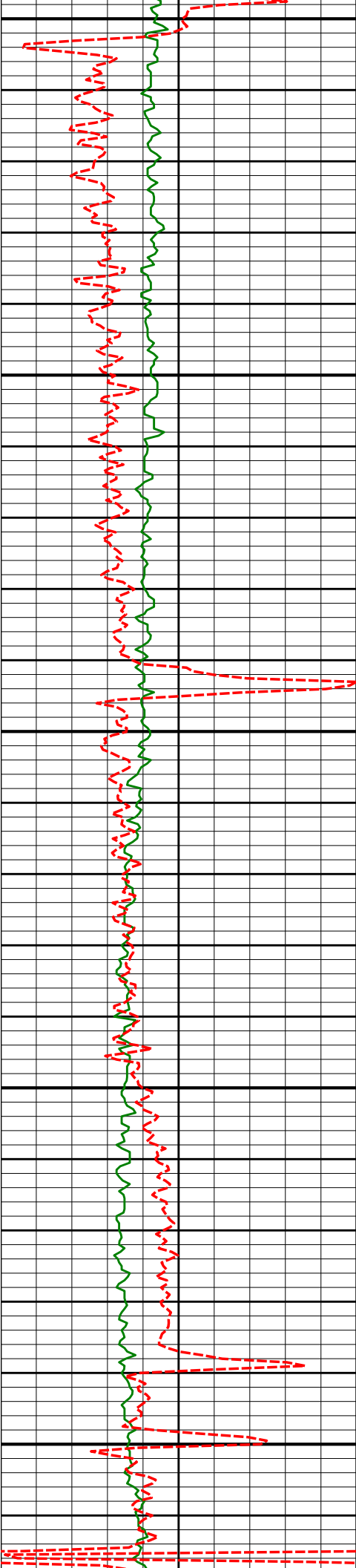
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0.15°

7130.55'

1494.43'



9250

9300

9350

9400

9450

9296'

90.09°

0.10°

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1589.43'

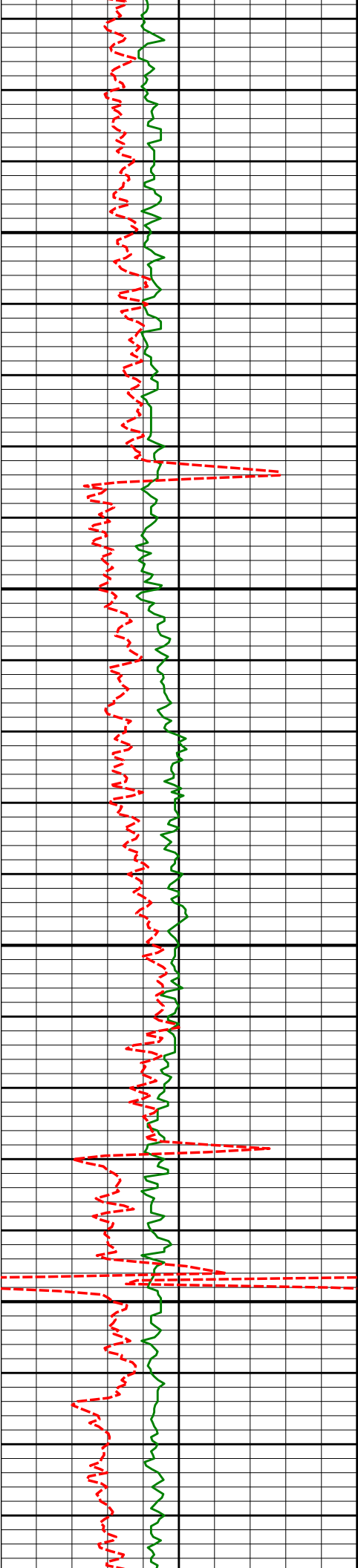
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359.77°

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1684.43'



9486'

90.37°

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9500

9550

9581'

90.28°

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7129.45'

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9600

9650

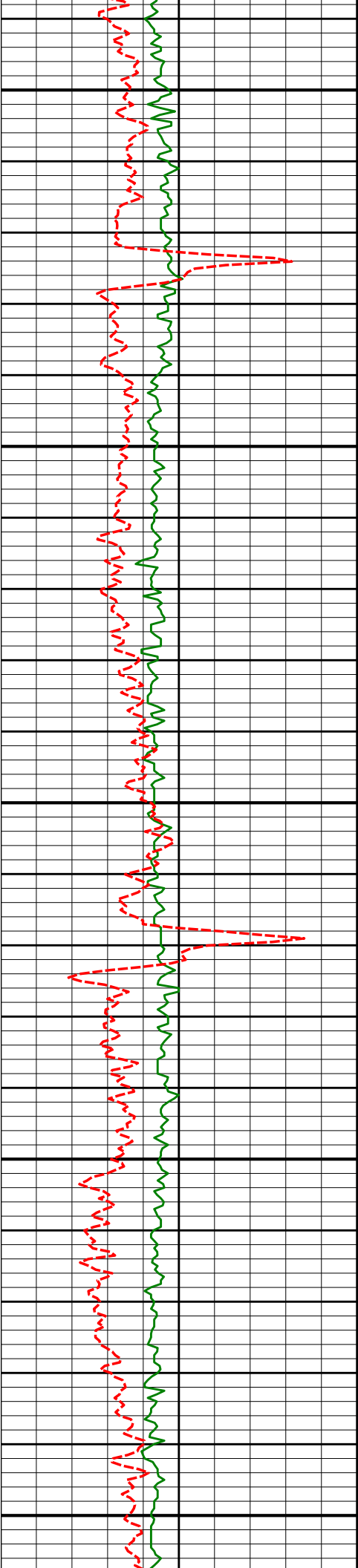
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90.40°

359.73°

7128.88'

1969.42'



9700

9750

9800

9850

9900

9772'

90.31°

359.32°

7128.29'

2065.42'

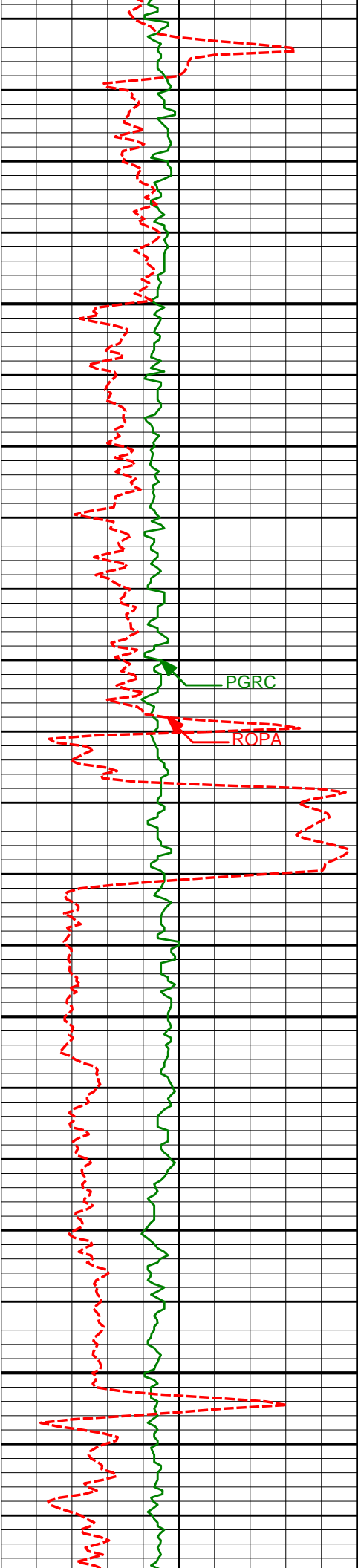
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2160.41'



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9962'

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2255.39'

10000

PGRC

ROPA

10050

10057'

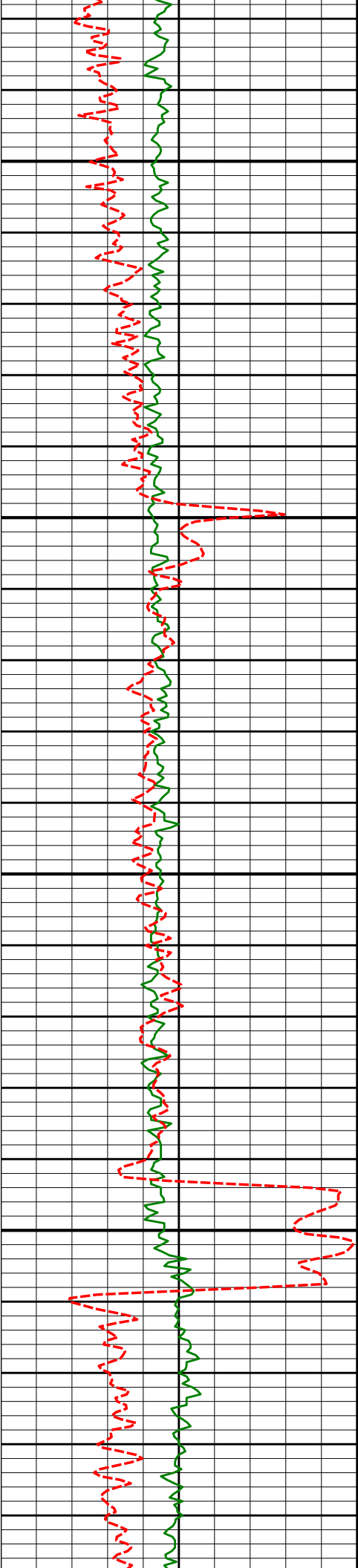
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2350.38'

10100



10150

10153'

90.43°

359.18°

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2446.37'

10200

10250

10248'

90.12°

358.70°

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2541.35'

10300

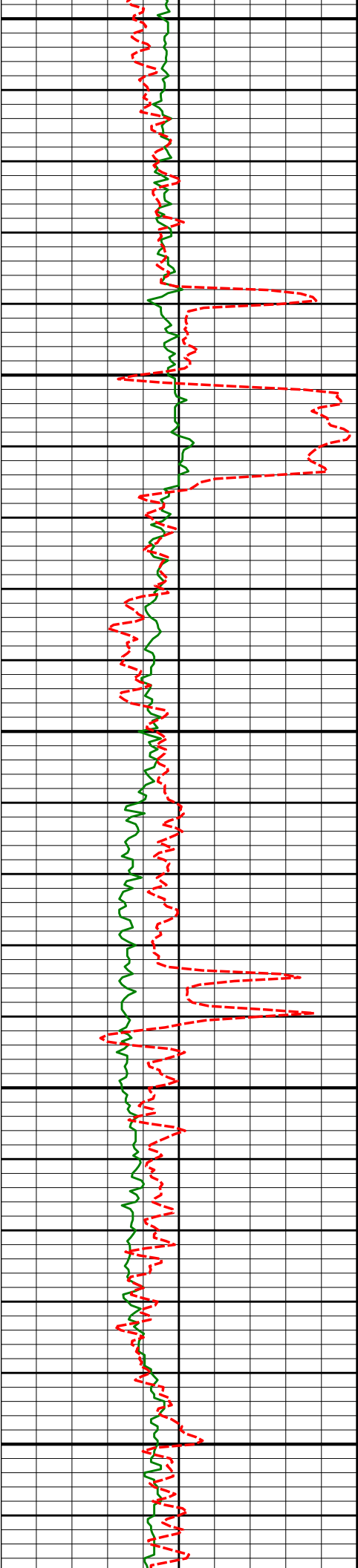
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359.66°

7126.12'

2636.34'



10350

10400

10450

10500

10550

10438'

89.51°

0.44°

7126.24'

2731.34'

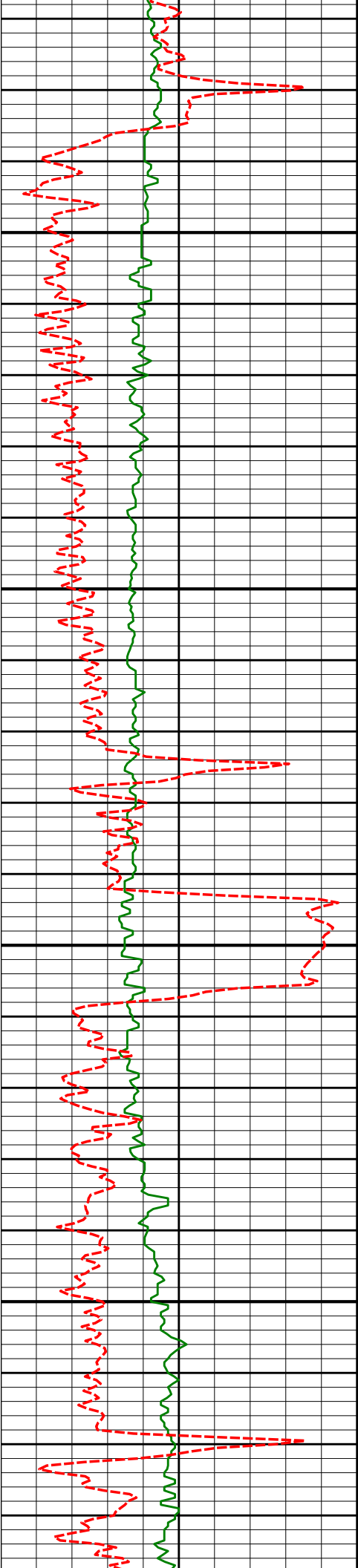
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359.91°

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10600

10650

10700

10750

10628'

89.75°

359.88°

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2921.33'

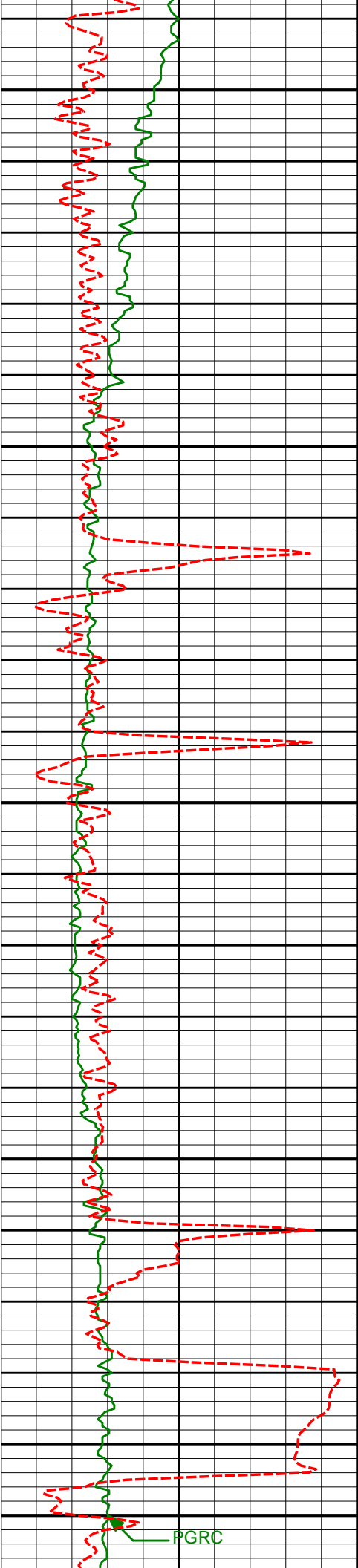
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1.05°

7128.81'

3016.32'



10800

10818'

88.98°

0.45°

7130.32'

3111.30'

10850

10900

10913'

88.89°

0.05°

7132.08'

3206.28'

10950

11000

PGRC

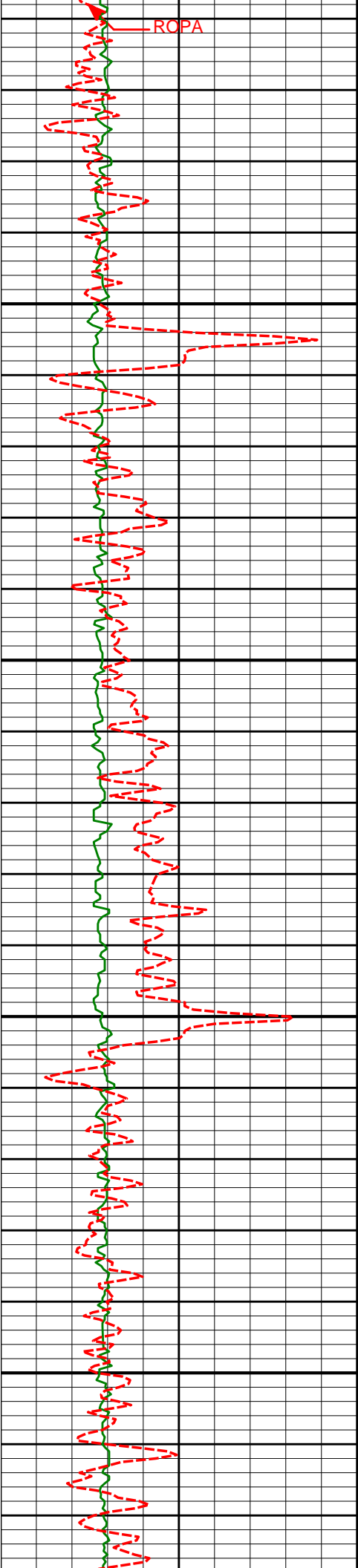
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0.00°

7132.40'

3224.22'



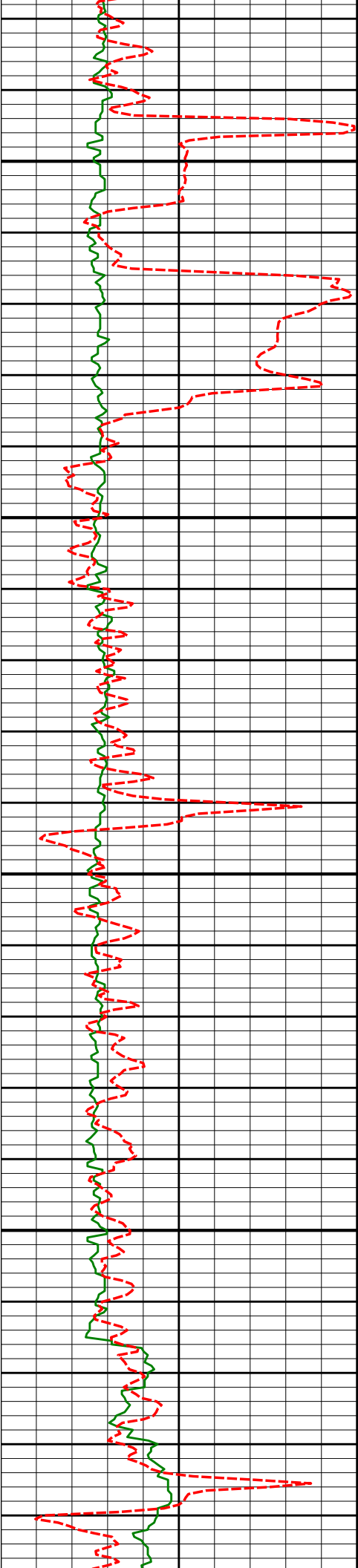
11050

11100

11150

11200

11008'	91.08°	0.36°	7132.10'	3301.28'
11103'	90.68°	359.47°	7130.64'	3396.26'
11199'	90.77°	359.80°	7129.43'	3492.25'



11250

11300

11350

11400

11294'

90.31°

0.94°

7128.53'

3587.25'

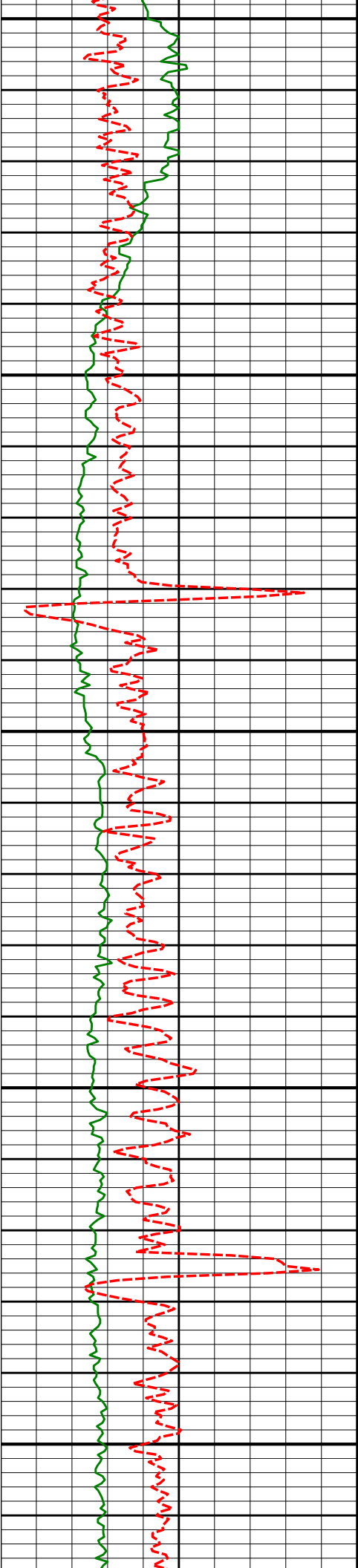
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89.69°

0.30°

7128.53'

3682.24'



11450

11484'

88.86°

359.50°

7129.73'

3777.23'

11500

11550

11579'

88.83°

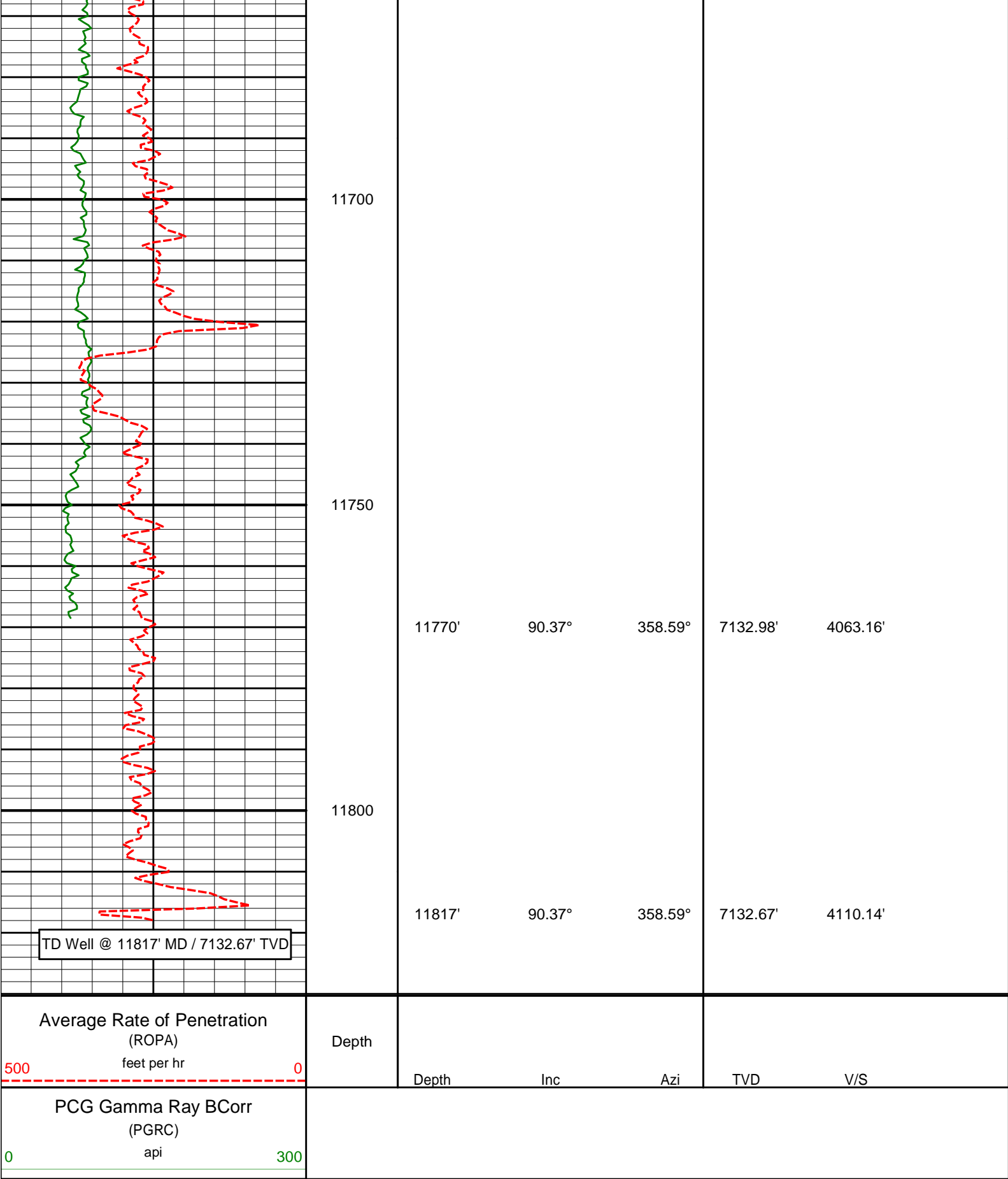
359.16°

7131.64'

3872.20'

11600

11650



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Anadarko Petroleum Corporation

Dreiling 27N-32HZ Wattenberg Weld Colorado USA CA-XX-0900901381							
Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
966.00	0.74	278.67	965.99	0.92 N	0.45 E	0.92	TIE-IN
1096.00	0.49	219.19	1095.98	0.62 N	0.73 W	0.62	
1191.00	0.40	279.62	1190.98	0.36 N	1.31 W	0.36	
1286.00	0.41	284.06	1285.98	0.49 N	1.97 W	0.49	
1380.00	0.53	282.19	1379.98	0.67 N	2.72 W	0.67	
1475.00	3.20	246.86	1474.92	0.28 S	5.59 W	-0.28	2.93
1571.00	4.47	243.17	1570.70	3.02 S	11.39 W	-3.02	1.35
1666.00	5.98	248.05	1665.30	6.54 S	19.29 W	-6.54	1.66
1760.00	6.88	244.42	1758.71	10.81 S	28.91 W	-10.81	1.05
1854.00	9.66	243.37	1851.73	16.77 S	41.04 W	-16.77	2.96
1948.00	10.94	243.39	1944.21	24.30 S	56.06 W	-24.30	1.36
2042.00	12.22	238.99	2036.30	33.42 S	72.57 W	-33.42	1.65
2137.00	12.99	241.67	2129.01	43.67 S	90.58 W	-43.67	1.02
2230.00	15.23	240.14	2219.19	54.71 S	110.38 W	-54.71	2.44
2324.00	17.49	239.87	2309.38	67.95 S	133.31 W	-67.95	2.41
2418.00	18.02	242.14	2398.91	81.84 S	158.38 W	-81.84	0.93
2512.00	20.10	242.94	2487.75	95.98 S	185.62 W	-95.98	2.23
2607.00	19.23	238.21	2577.21	111.65 S	213.46 W	-111.65	1.91
2701.00	18.66	235.18	2666.12	128.39 S	238.96 W	-128.39	1.21
2795.00	17.36	241.91	2755.52	143.59 S	263.68 W	-143.59	2.61
2890.00	17.92	243.88	2846.06	156.69 S	289.31 W	-156.69	0.86
2984.00	19.47	247.03	2935.10	169.18 S	316.72 W	-169.18	1.97
3078.00	19.28	247.90	3023.77	181.13 S	345.52 W	-181.13	0.37
3173.00	18.82	247.40	3113.57	192.92 S	374.20 W	-192.92	0.51
3267.00	17.59	246.99	3202.86	204.30 S	401.27 W	-204.30	1.32
3361.00	19.19	246.34	3292.06	216.05 S	428.49 W	-216.05	1.72
3456.00	18.63	247.59	3381.93	228.10 S	456.82 W	-228.10	0.73
3552.00	16.90	248.59	3473.35	239.04 S	483.99 W	-239.04	1.83
3647.00	16.73	245.05	3564.29	249.85 S	509.25 W	-249.85	1.09
3742.00	16.96	240.18	3655.22	262.51 S	533.67 W	-262.51	1.50
3837.00	16.87	240.74	3746.11	276.14 S	557.71 W	-276.14	0.20
3932.00	17.05	238.67	3836.98	290.11 S	581.64 W	-290.11	0.66
4027.00	17.80	238.52	3927.62	304.94 S	605.92 W	-304.94	0.79
4122.00	16.46	238.35	4018.41	319.58 S	629.76 W	-319.58	1.41
4218.00	18.37	239.48	4110.00	334.40 S	654.37 W	-334.40	2.02
4313.00	17.86	239.54	4200.29	349.39 S	679.82 W	-349.39	0.54
4408.00	16.18	238.76	4291.13	363.64 S	703.70 W	-363.64	1.78
4503.00	17.50	241.87	4382.05	377.24 S	727.61 W	-377.24	1.68
4598.00	20.34	245.73	4471.92	390.77 S	755.27 W	-390.77	3.27
4693.00	19.04	243.96	4561.36	404.36 S	784.24 W	-404.36	1.51
4788.00	18.08	242.99	4651.42	417.85 S	811.30 W	-417.85	1.06
4883.00	18.13	242.64	4741.71	431.34 S	837.56 W	-431.34	0.13
4979.00	17.07	242.03	4833.22	444.82 S	863.27 W	-444.82	1.12
5074.00	16.91	243.32	4924.07	457.56 S	887.93 W	-457.56	0.43
5169.00	18.14	242.65	5014.66	470.56 S	913.41 W	-470.56	1.31
5264.00	16.61	242.94	5105.33	483.53 S	938.64 W	-483.53	1.61
5359.00	18.14	244.99	5195.99	495.96 S	964.14 W	-495.96	1.73
5455.00	17.00	245.34	5287.51	508.13 S	990.44 W	-508.13	1.19
5550.00	18.55	239.80	5377.98	521.53 S	1016.12 W	-521.53	2.41
5708.00	17.53	237.82	5528.21	546.85 S	1057.98 W	-546.85	0.75
5835.00	17.11	235.33	5649.45	567.66 S	1089.54 W	-567.66	0.67
5930.00	14.61	234.12	5740.83	582.63 S	1110.74 W	-582.63	2.65
6026.00	12.70	231.46	5834.11	596.31 S	1128.81 W	-596.31	2.09
6121.00	10.98	230.07	5927.09	608.62 S	1143.91 W	-608.62	1.84
6216.00	9.21	235.11	6020.62	618.78 S	1157.09 W	-618.78	2.08
6311.00	6.99	240.95	6114.66	625.93 S	1168.38 W	-625.93	2.49
6406.00	5.08	248.36	6209.13	630.29 S	1177.34 W	-630.29	2.17
6501.00	3.58	250.40	6303.86	632.84 S	1184.05 W	-632.84	1.59
6596.00	2.06	264.93	6398.74	633.98 S	1188.54 W	-633.98	1.76
6691.00	1.84	315.23	6493.69	633.05 S	1191.32 W	-633.05	1.76
6739.00	1.79	330.68	6541.67	631.85 S	1192.23 W	-631.85	1.02
6786.00	7.41	351.59	6588.50	628.21 S	1193.03 W	-628.21	12.28
6834.00	14.72	355.87	6685.88	628.67 S	1193.88 W	-628.67	8.48

6834.00	11.76	355.97	6635.82	620.27 S	1193.83 W	-620.27	9.18
6881.00	15.27	357.41	6681.51	609.30 S	1194.44 W	-609.30	7.50
6929.00	18.03	358.68	6727.50	595.56 S	1194.90 W	-595.56	5.80
6977.00	20.67	0.21	6772.78	579.66 S	1195.04 W	-579.66	5.60
7025.00	25.81	359.20	6816.87	560.72 S	1195.16 W	-560.72	10.74
7072.00	30.71	358.55	6858.26	538.48 S	1195.60 W	-538.48	10.45
7120.00	35.61	0.37	6898.43	512.24 S	1195.82 W	-512.24	10.42
7167.00	40.28	358.94	6935.48	483.35 S	1196.02 W	-483.35	10.11
7215.00	45.88	359.03	6970.53	450.58 S	1196.60 W	-450.58	11.67
7262.00	51.84	0.46	7001.44	415.20 S	1196.73 W	-415.20	12.89
7310.00	55.21	0.35	7029.97	376.61 S	1196.46 W	-376.61	7.02
7357.00	61.62	0.55	7054.57	336.60 S	1196.14 W	-336.60	13.64
7405.00	66.15	0.30	7075.70	293.51 S	1195.83 W	-293.51	9.45
7452.00	69.01	0.63	7093.62	250.07 S	1195.47 W	-250.07	6.12
7500.00	74.40	0.47	7108.68	204.51 S	1195.04 W	-204.51	11.23
7548.00	79.52	0.52	7119.51	157.77 S	1194.63 W	-157.77	10.67
7608.00	85.22	1.63	7127.47	98.34 S	1193.51 W	-98.34	9.68
7678.00	89.60	0.80	7130.63	28.44 S	1192.03 W	-28.44	6.37
7774.00	89.07	0.64	7131.75	67.54 N	1190.83 W	67.54	0.58
7869.00	89.04	0.36	7133.31	162.53 N	1190.00 W	162.53	0.30
7964.00	88.89	359.95	7135.03	257.51 N	1189.74 W	257.51	0.46
8059.00	89.78	0.11	7136.13	352.50 N	1189.69 W	352.50	0.95
8154.00	90.15	0.25	7136.19	447.50 N	1189.39 W	447.50	0.42
8249.00	90.25	359.99	7135.86	542.50 N	1189.19 W	542.50	0.29
8345.00	89.94	359.41	7135.70	638.50 N	1189.70 W	638.50	0.69
8440.00	90.03	358.85	7135.73	733.49 N	1191.14 W	733.49	0.60
8535.00	89.97	359.52	7135.73	828.48 N	1192.49 W	828.48	0.71
8630.00	90.15	359.03	7135.63	923.47 N	1193.69 W	923.47	0.55
8725.00	90.86	0.13	7134.79	1018.46 N	1194.39 W	1018.46	1.38
8859.00	90.68	359.40	7132.99	1152.45 N	1194.94 W	1152.45	0.56
8915.00	90.15	0.22	7132.58	1208.45 N	1195.12 W	1208.45	1.74
9010.00	90.56	0.71	7131.99	1303.44 N	1194.35 W	1303.44	0.67
9106.00	90.43	0.29	7131.16	1399.43 N	1193.51 W	1399.43	0.46
9201.00	90.31	0.15	7130.55	1494.43 N	1193.15 W	1494.43	0.19
9296.00	90.09	0.10	7130.22	1589.43 N	1192.94 W	1589.43	0.24
9391.00	89.91	359.77	7130.22	1684.43 N	1193.05 W	1684.43	0.40
9486.00	90.37	359.79	7129.99	1779.43 N	1193.42 W	1779.43	0.48
9581.00	90.28	359.76	7129.45	1874.43 N	1193.79 W	1874.43	0.10
9676.00	90.40	359.73	7128.88	1969.42 N	1194.21 W	1969.42	0.13
9772.00	90.31	359.32	7128.29	2065.42 N	1195.01 W	2065.42	0.44
9867.00	90.09	359.01	7127.96	2160.41 N	1196.39 W	2160.41	0.40
9962.00	90.09	358.73	7127.81	2255.39 N	1198.26 W	2255.39	0.29
10057.00	90.25	359.60	7127.53	2350.38 N	1199.65 W	2350.38	0.93
10153.00	90.43	359.18	7126.96	2446.37 N	1200.67 W	2446.37	0.48
10248.00	90.12	358.70	7126.50	2541.35 N	1202.43 W	2541.35	0.60
10343.00	90.34	359.66	7126.12	2636.34 N	1203.79 W	2636.34	1.04
10438.00	89.51	0.44	7126.24	2731.34 N	1203.71 W	2731.34	1.20
10533.00	89.35	359.91	7127.19	2826.33 N	1203.42 W	2826.33	0.58
10628.00	89.75	359.88	7127.94	2921.33 N	1203.59 W	2921.33	0.42
10723.00	89.20	1.05	7128.81	3016.32 N	1202.82 W	3016.32	1.36
10818.00	88.98	0.45	7130.32	3111.30 N	1201.58 W	3111.30	0.67
10913.00	88.89	0.05	7132.08	3206.28 N	1201.16 W	3206.28	0.43
11008.00	91.08	0.36	7132.10	3301.28 N	1200.82 W	3301.28	2.33
11103.00	90.68	359.47	7130.64	3396.26 N	1200.96 W	3396.26	1.03
11199.00	90.77	359.80	7129.43	3492.25 N	1201.57 W	3492.25	0.36
11294.00	90.31	0.94	7128.53	3587.25 N	1200.96 W	3587.25	1.29
11389.00	89.69	0.30	7128.53	3682.24 N	1199.93 W	3682.24	0.94
11484.00	88.86	359.50	7129.73	3777.23 N	1200.10 W	3777.23	1.21
11579.00	88.83	359.16	7131.64	3872.20 N	1201.21 W	3872.20	0.36
11770.00	90.37	358.59	7132.98	4063.16 N	1204.96 W	4063.16	0.86
11817.00	90.37	358.59	7132.67	4110.14 N	1206.12 W	4110.14	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 0.00 DEGREES (TRUE)
A TOTAL CORRECTION OF 8.49 DEG FROM MAGNETIC NORTH TO TRUE NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11817.00 FEET
IS 4283.45 FEET ALONG 343.65 DEGREES (TRUE)

All directional surveys tied on to the last gyro survey at 966' MD. Final survey is a straight-line projection to the bit.

Date Printed:19 January 2014