

PCG Pressure Case Gamma PCD Pressure Case Directional

[illegible]

WELL INFORMATION

MWD Run Number	100	200	300		
Date run completed	14-May-14	15-May-14	21-May-14		
Rig Bit Number	2	3	4		
Bit Size (in)	8.750	8.750	6.125		
Tool Nominal OD (in)	6.750	6.750	4.750		
Log Start Depth (MD, ft)	638.00	5,745.00	6,761.00		
Log End Depth (MD, ft)	5,745.00	6,761.00	16,219.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	13-May-14 20:30	15-May-14 02:45	16-May-14 00:00		
Drill/Wipe End Date and Time	14-May-14 17:30	16-May-14 14:30	21-May-14 12:30		
Min Inc (deg) @ Depth (MD, ft)	0.28 @ 5,435.00	2.50 @ 5,813.00	84.29 @ 6,843.00		
Max Inc (deg) @ Depth (MD, ft)	8.86 @ 2,306.00	79.01 @ 6,706.00	91.69 @ 8,169.00		
Bit TFA(in2) / Bit Type	1.20 / PDC	1.20 / PDC	1.20 / PDC		
Flow Rate (gpm)	597.95	595.00	293.33		
Max AV (fpm) / CV (fpm) @ MWD	413.0 / NA	417.4 / NA	414.8 / NA		
Fluid Type	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel		
Density (ppg) / Viscosity (spqt)	8.70 / 26.00	10.60 / 38.00	9.93 / 34.00		
Filtrate CL (ppm)	1,400.00	2,700.00	2,900.00		
pH / Fluid Loss (mptm)	8.90 / 9	9.60 / 8	9.60 / 8		
PV (cP) / YP (lbf2)	1 / 2.00	12 / 12.00	8 / 9.00		
% Solids / % Sand	2.0 / 0.25	10.9 / 0.10	7.2 / 0.10		
% Oil / Oil:Water Ratio	N/A / N/A	NA / NA	NA / NA		
Rm @ Measured Temp (degF)	N/A @ N/A	NA @ NA	NA @ NA		
Rmf @ Measured Temp (degF)	N/A @ N/A	NA @ NA	NA @ NA		
Rmc @ Measured Temp (degF)	N/A @ N/A	NA @ NA	NA @ NA		
Max Tool Temp (in F) / S	450.00 / PCM	420.00 / PCM	330.00 / PCM		

Max Tool Temp (degF) / Source	150.10 / PCM	160.83 / PCM	236.82 / PCM		
Rm @ Max Tool Temp (degF)	N/A @ N/A	NA @ NA	NA @ NA		
Lead MWD Engineer	Brett Vandergon	Brett Vandergon	Brett Vandergon		
Customer Representative	Johnny Sanchez	Johnny Sanchez	Johnny Sanchez		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.84	5.84	5.84		
Sub Serial Number	11341327	11341327	12310807		
Insert Serial Number	11227573	11227573	11227512		
Date and Time Initialized	12-May-14 16:44	01-Jan-70 00:00	16-May-14 00:31		
Date and Time Read	15-May-14 23:26	15-May-14 23:54	21-May-14 22:16		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	57.00	55.00	65.00		
Software Version	6.21	6.21	6.21		
Sub Serial Number	11341327	11341327	12310807		
Sonde Serial Number	11638605	11638605	11478007		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	338.91	302.93	211.45		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	49.85	49.85	57.61		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	11341327	11341327	12310807		
Insert/Sonde Serial Number	11579834	11579834	11120591		

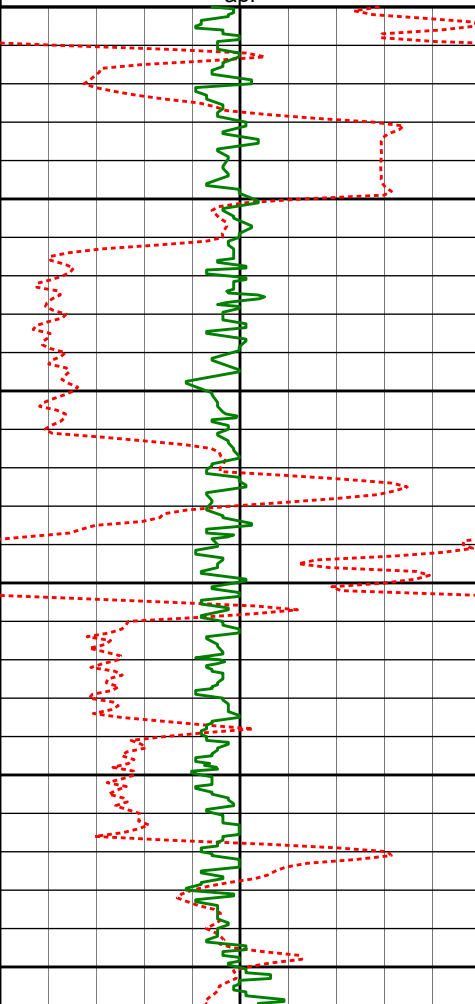
REMARKS

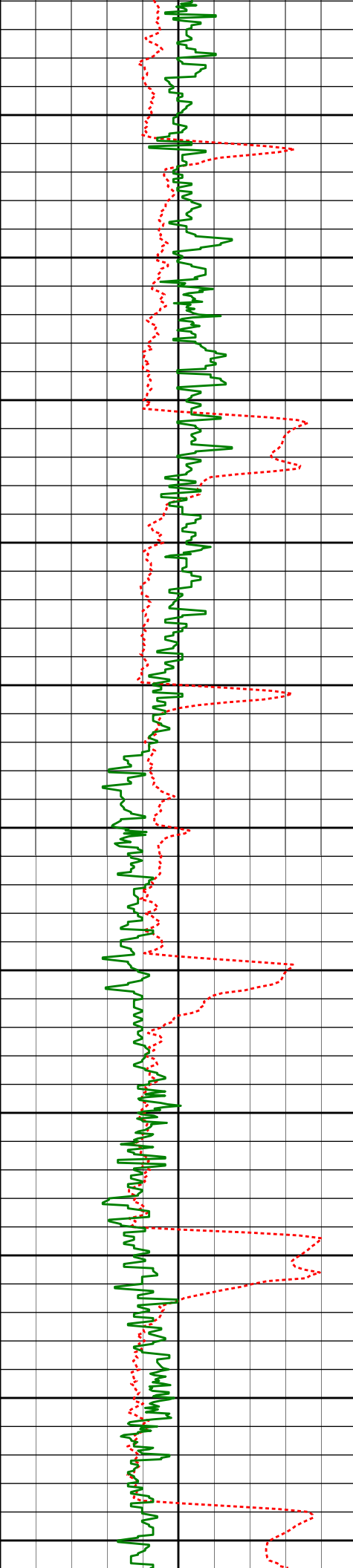
1. All depths are measured bit depths, referenced to the Driller's pipe tally and are measured from the Drill Floor, unless otherwise specified.
2. No depth corrections have been made for pipe stretch or compression.
3. Critical annual velocities are calculated using the "Power Law" model for water based fluids and the "Bingham Plastic" model for oil and synthetic based fluids.
4. All data presented is recorded data unless otherwise specified.
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
6. INSITE version 8.0

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HALLIBURTON

MD Main Log 1:600

Average Rate of Penetration ROPA						
1K0						
feet per hr						
PCG Gamma Ray BCorr PGRC		Measured Depth (ft) 1:600	Depth	Inc	Azi.	TVDV.S.
0200						
api						
		3000'				
		3050'				
		3066'	6.93°	341.15°	3056.41'	46.10'
		3100'				
		3150'				
		3160'	6.85°	344.61°	3149.73'	49.42'
		3200'				
		3250'				
		3255'	6.87°	339.91°	3244.06'	52.87'



3300'

3350'

3400'

3450'

3500'

3550'

3600'

3650'

3700'

3750'

3800'

3350'

5.89°

334.00°

3338.47'

56.96'

3445'

6.58°

340.91°

3432.91'

60.88'

3540'

6.52°

343.82°

3527.29'

64.17'

3634'

7.05°

344.17°

3620.63'

67.23'

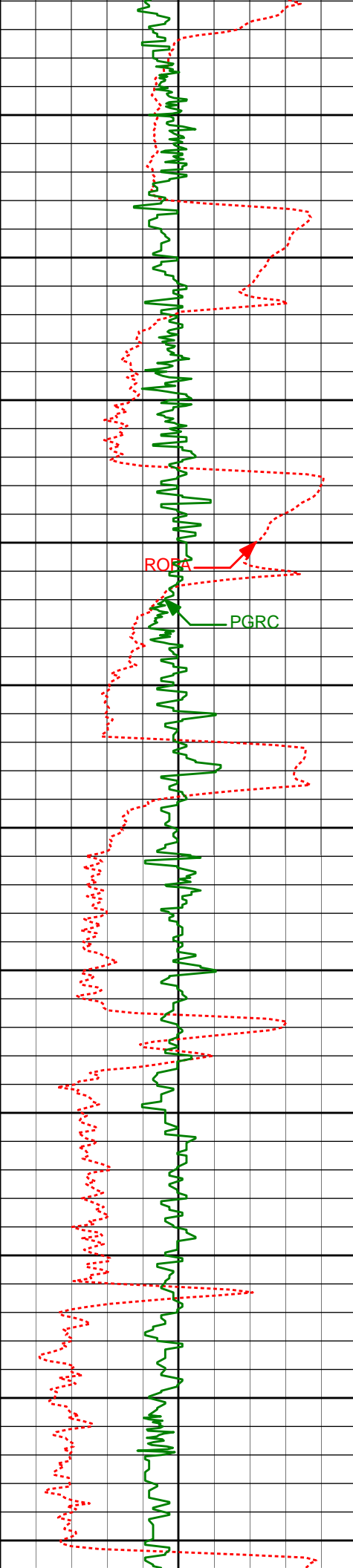
3729'

6.41°

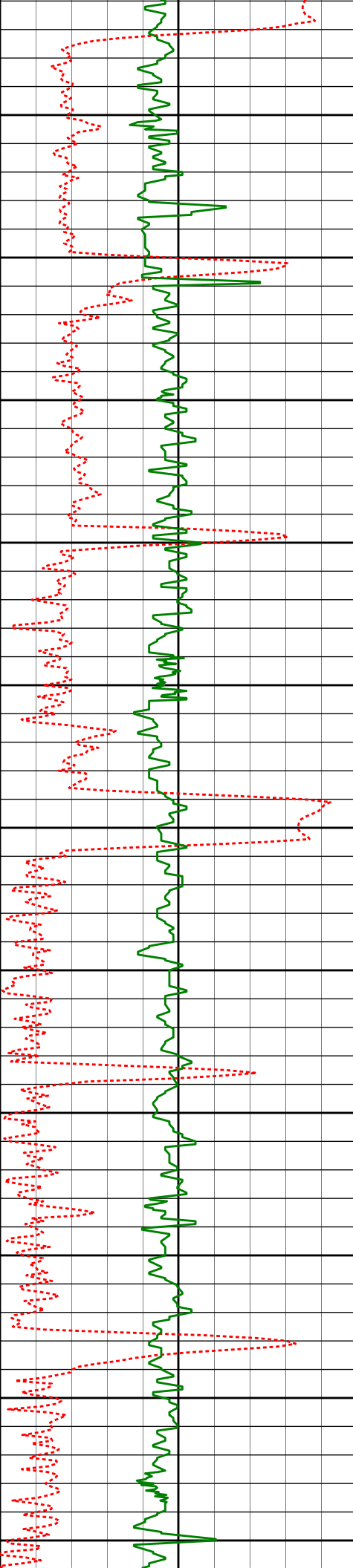
342.21°

3714.97'

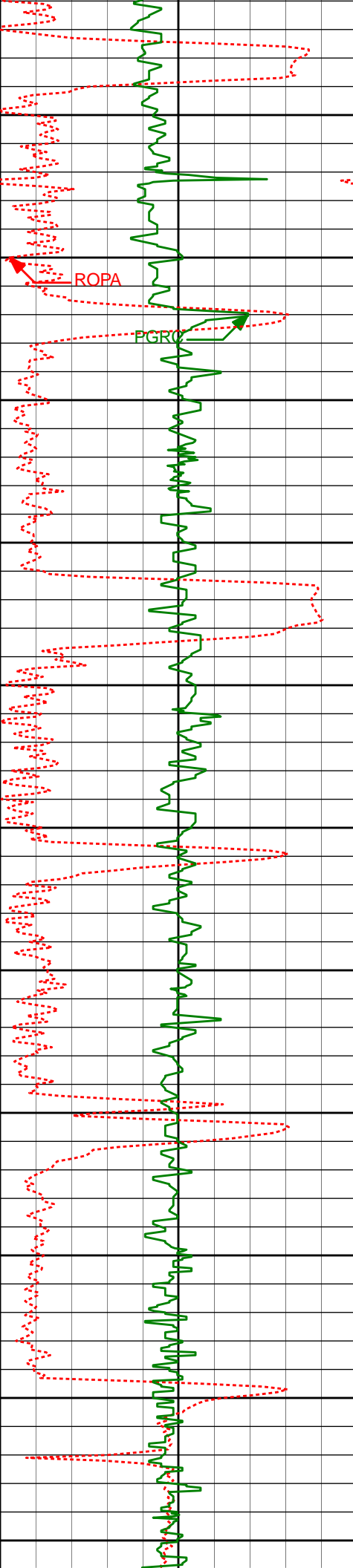
70.44'



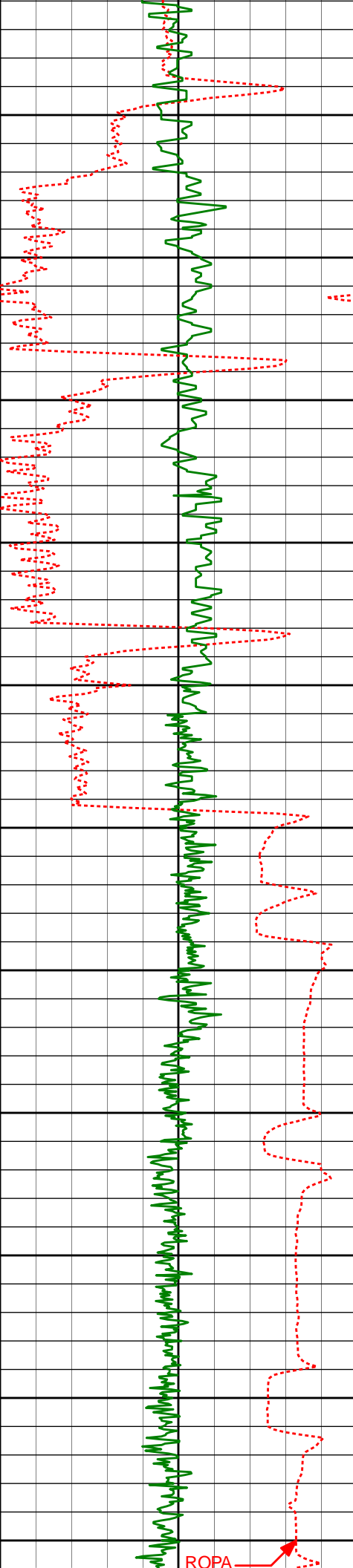
3824'	5.59°	335.50°	3809.45'	73.98'
3850'				
3900'				
3919'	3.49°	317.26°	3904.15'	77.87'
3950'				
4000'				
4014'	0.99°	287.28°	3999.08'	80.61'
4050'				
4100'				
4109'	0.96°	247.65°	4094.06'	82.13'
4150'				
4200'				
4203'	0.93°	212.61°	4188.05'	83.27'
4250'				
4300'				
4298'	0.91°	203.13°	4283.04'	83.98'
4350'				



4400'	4393'	0.59°	263.50°	4378.03'	84.77'
4450'					
4500'	4488'	0.62°	269.72°	4473.03'	85.77'
4550'					
4600'	4582'	0.50°	260.29°	4567.02'	86.68'
4650'					
4700'	4677'	0.50°	205.19°	4662.02'	87.26'
4750'					
4800'	4772'	0.72°	213.07°	4757.01'	87.77'
4850'					
4900'	4866'	0.68°	205.70°	4851.01'	88.33'



4950'	4961'	0.69°	226.81°	4946.00'	88.99'
5000'					
5050'	5055'	0.47°	251.75°	5039.99'	89.77'
5100'					
5150'	5150'	0.34°	46.57°	5134.99'	89.94'
5200'					
5250'	5245'	0.57°	33.28°	5229.99'	89.47'
5300'					
5350'	5340'	0.36°	70.95°	5324.99'	88.93'
5400'					
5450'	5435'	0.28°	145.59°	5419.99'	88.52'



Run200

5500'

5550'

5600'

5650'

5700'

5800'

5850'

5900'

5950'

6000'

5530'

0.47°

142.70°

5514.98'

88.15'

5625'

0.69°

171.33°

5609.98'

87.83'

5688'

0.75°

165.48°

5672.98'

87.67'

5718'

0.73°

169.39°

5702.97'

87.58'

5813'

2.50°

250.28°

5797.94'

89.42'

5908'

13.92°

267.42°

5891.82'

102.83'

6002'

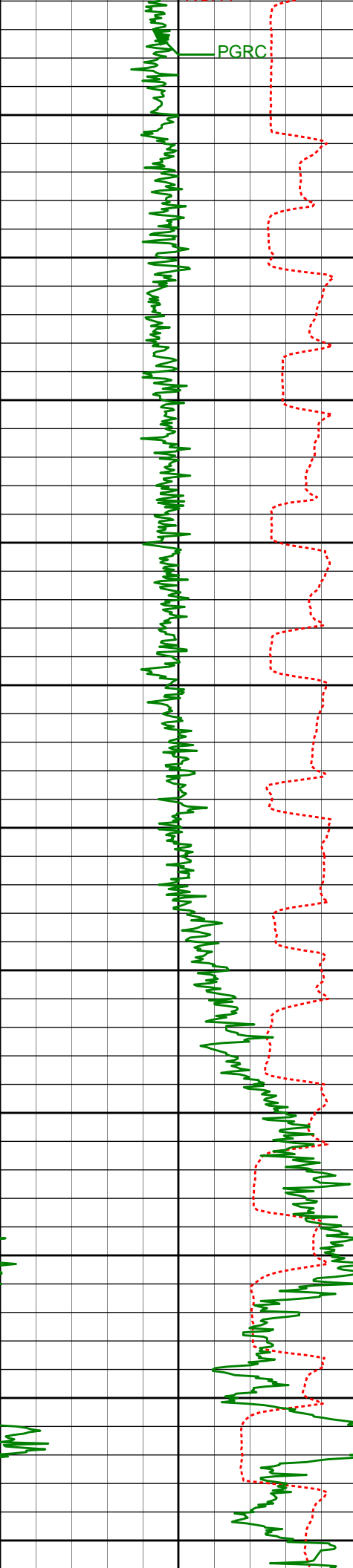
22.96°

265.50°

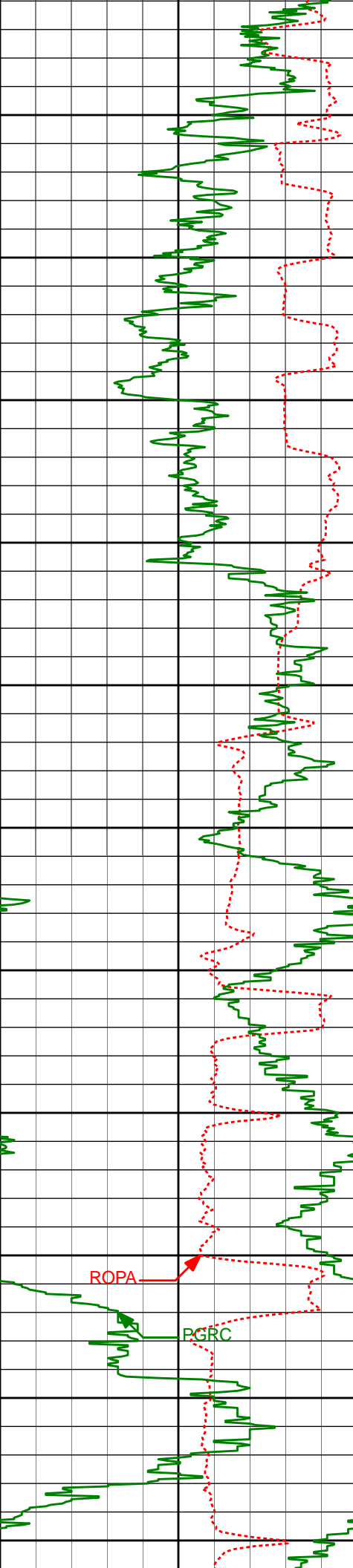
5980.90'

132.47'

ROPA



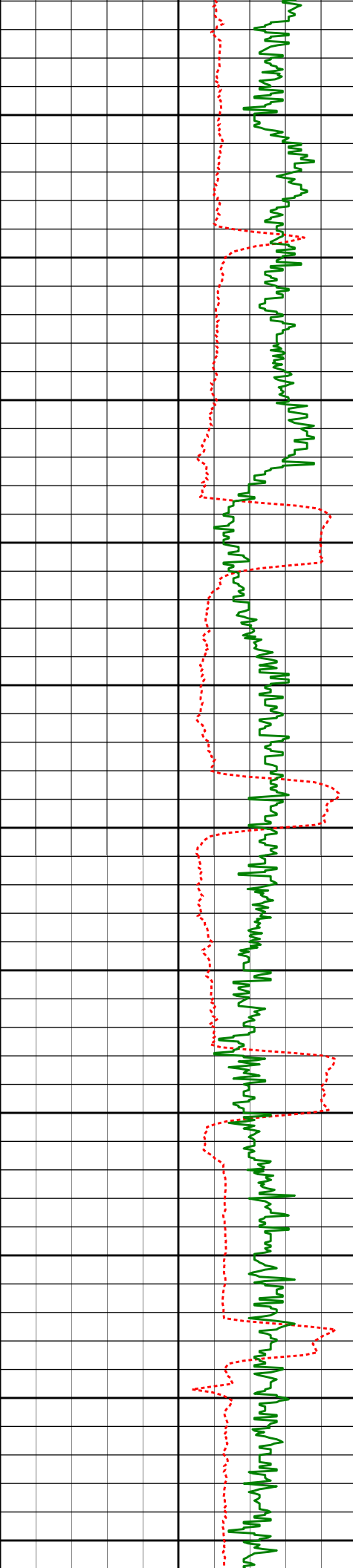
6050'	6050'	23.58°	264.20°	6024.99'	151.35'
6100'	6097'	26.55°	265.61°	6067.56'	171.18'
6150'	6145'	30.14°	266.20°	6109.80'	193.91'
6200'	6192'	34.29°	267.08°	6149.56'	218.92'
6250'	6240'	38.80°	267.54°	6188.11'	247.46'
6300'	6287'	44.81°	267.78°	6223.13'	278.75'
6350'	6335'	49.92°	269.53°	6255.63'	314.04'
6400'	6381'	53.86°	269.07°	6284.02'	350.22'
6450'	6429'	57.48°	268.43°	6311.08'	389.84'
6500'	6476'	60.16°	268.14°	6335.41'	430.03'
6550'	6524'	63.02°	268.24°	6358.25'	472.23'



6750'
Run 300

Casing Shoe @ 6751'

6571'	68.87°	270.08°	6377.40'	515.12'
6600'				
6619'	72.62°	270.40°	6393.22'	560.42'
6650'				
6666'	76.80°	270.71°	6405.62'	605.75'
6700'				
6706'	79.01°	270.97°	6414.00'	644.85'
6800'				
6843'	84.29°	270.52°	6433.89'	780.34'
6900'				
6937'	85.28°	270.37°	6442.43'	873.95'
7000'				
7032'	87.13°	268.99°	6448.72'	968.73'
7050'				
7100'				



7150'

7200'

7250'

7300'

7350'

7400'

7450'

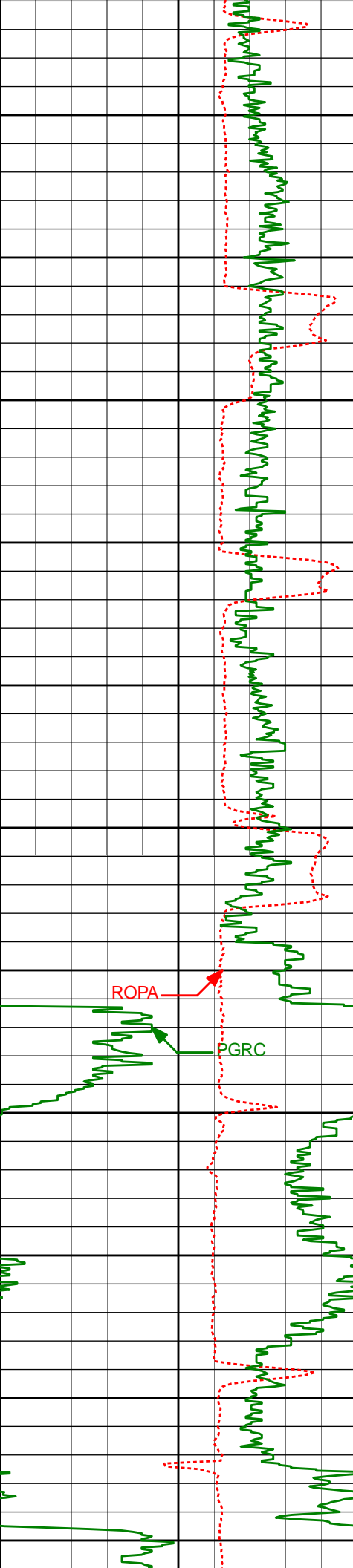
7500'

7550'

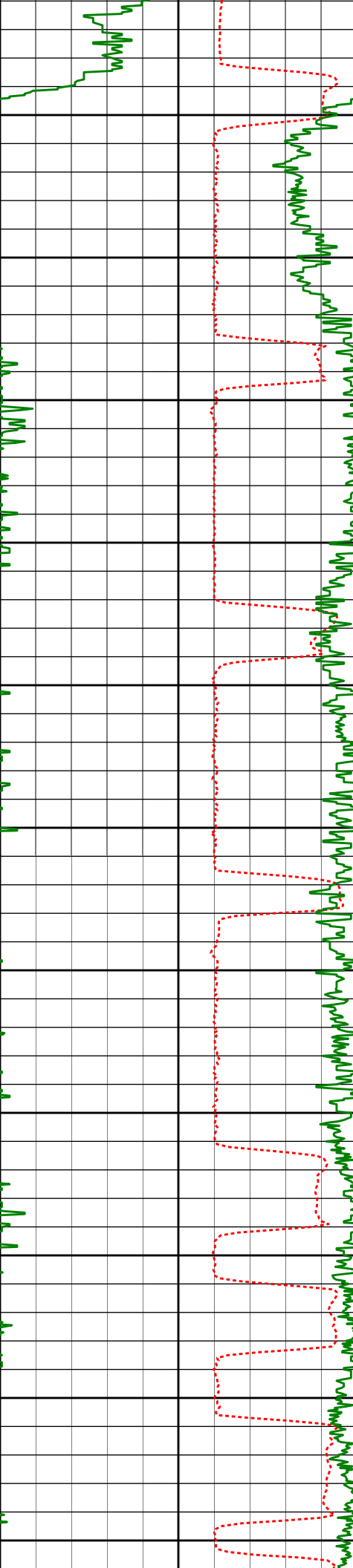
7600'

7650'

7127'	87.13°	268.31°	6453.47'	1063.59'
7222'	87.07°	267.57°	6458.28'	1158.40'
7317'	89.14°	267.71°	6461.42'	1253.26'
7412'	90.83°	267.86°	6461.45'	1348.19'
7506'	89.20°	268.43°	6461.42'	1442.14'
7601'	90.46°	269.77°	6461.70'	1537.12'



7700'	7696'	89.11°	267.49°	6462.06'	1632.08'
7750'					
7800'	7791'	90.18°	268.93°	6462.65'	1727.03'
7850'					
7900'	7886'	89.07°	267.91°	6463.27'	1821.99'
7950'					
8000'	7980'	91.02°	270.04°	6463.20'	1915.96'
8050'					
8100'	8075'	91.39°	269.56°	6461.20'	2010.94'
8150'					
8200'	8169'	91.69°	268.47°	6458.67'	2104.89'



8250'

8264'

91.08°

269.72°

6456.38'

2199.85'

8300'

8350'

8359'

90.68°

269.47°

6454.92'

2294.84'

8400'

8450'

8454'

89.51°

270.08°

6454.76'

2389.83'

8500'

8550'

8548'

89.63°

273.70°

6455.47'

2483.76'

8600'

8650'

8643'

89.97°

276.90°

6455.80'

2578.35'

8700'

8750'

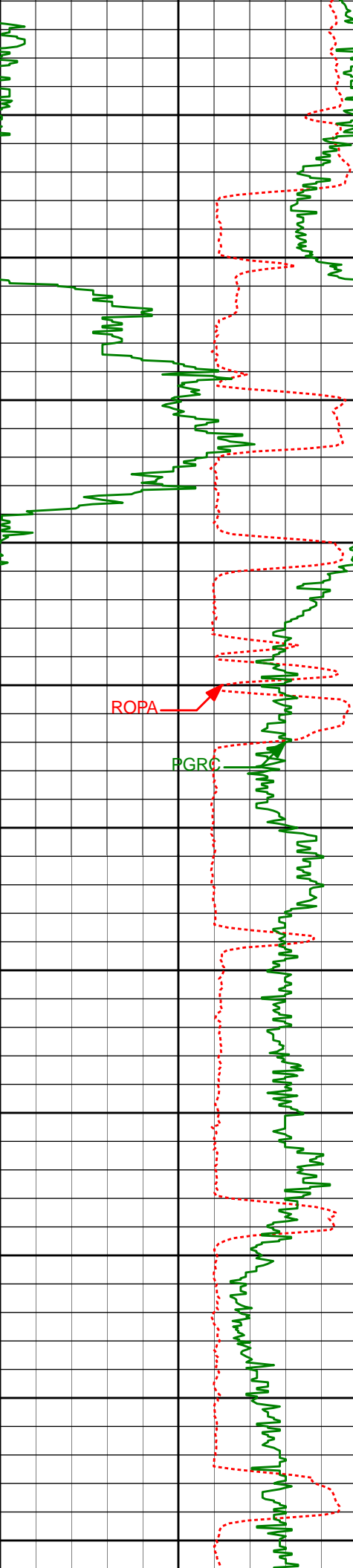
8738'

89.85°

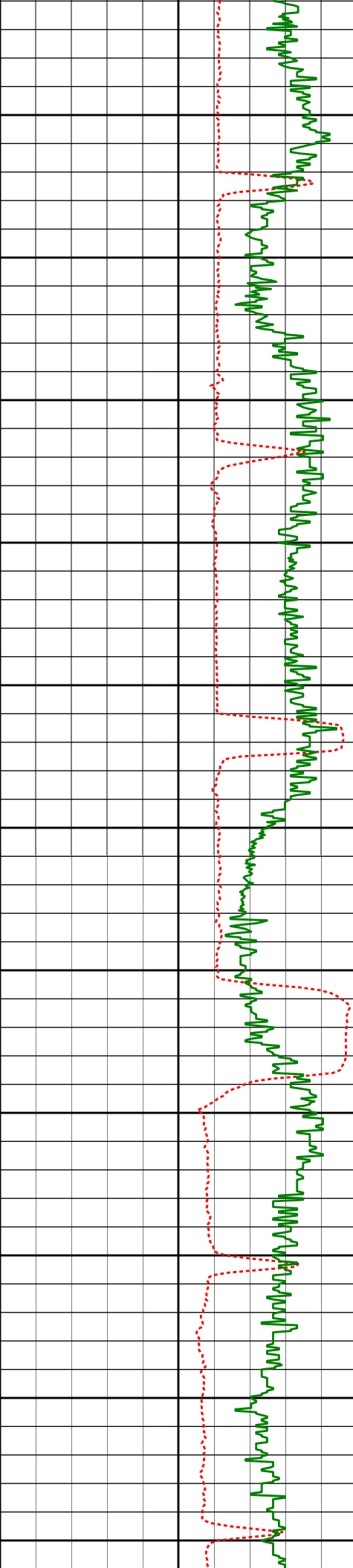
275.27°

6455.95'

2672.81'



8800'				
8833'	86.14°	270.24°	6459.27'	2767.59'
8850'				
8900'				
8927'	87.41°	269.75°	6464.56'	2861.44'
8950'				
9000'				
9022'	87.66°	267.87°	6468.65'	2956.33'
9050'				
9100'				
9117'	87.44°	267.36°	6472.71'	3051.16'
9150'				
9200'				
9212'	88.09°	266.59°	6476.41'	3145.95'
9250'				
9300'				
9307'	89.41°	267.80°	6478.48'	3240.81'



9350'

9400'

9450'

9500'

9550'

9600'

9650'

9700'

9750'

9800'

9850'

9402'

90.00°

267.82°

6478.97'

3335.74'

9496'

90.49°

267.49°

6478.57'

3429.66'

9590'

88.31°

265.01°

6479.56'

3523.44'

9685'

90.93°

268.18°

6480.19'

3618.25'

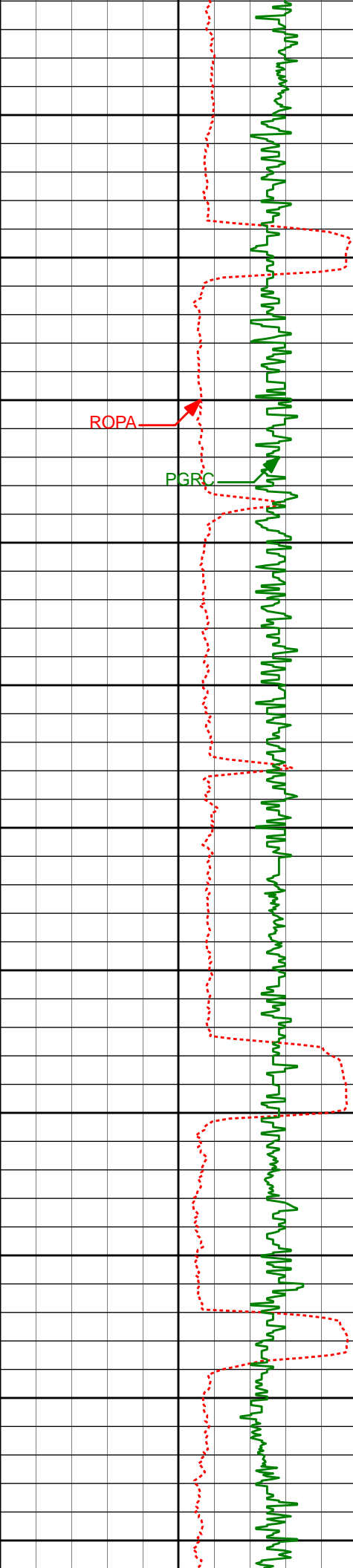
9779'

90.62°

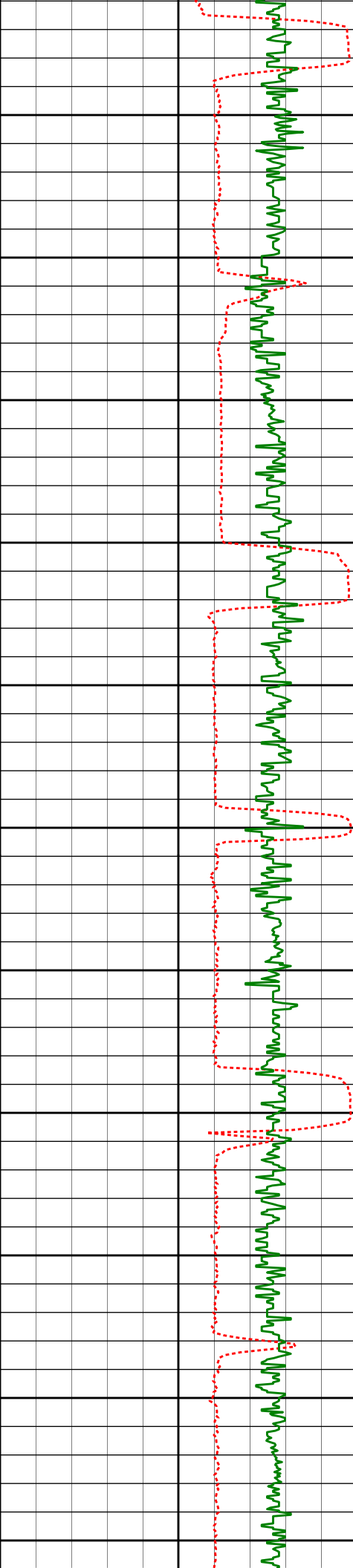
267.69°

6478.92'

3712.18'



9873'	90.25°	266.78°	6478.20'	3806.06'
9900'				
9950'				
9968'	89.44°	267.26°	6478.46'	3900.93'
10000'				
10050'				
10062'	89.91°	267.55°	6478.99'	3994.83'
10100'				
10150'				
10162'	89.48°	266.34°	6479.52'	4094.69'
10200'				
10250'				
10257'	89.69°	268.01°	6480.21'	4189.57'
10300'				
10350'				
10352'	89.75°	267.60°	6480.68'	4284.49'
10400'				



10450'

10500'

10550'

10600'

10650'

10700'

10750'

10800'

10850'

10900'

10950'

10445'

10538'

10629'

10721'

10814'

10906'

89.82°

89.38°

90.03°

89.48°

90.28°

89.14°

269.17°

267.46°

269.30°

268.65°

270.05°

268.10°

6481.03'

6481.67'

6482.14'

6482.54'

6482.73'

6483.20'

4377.45'

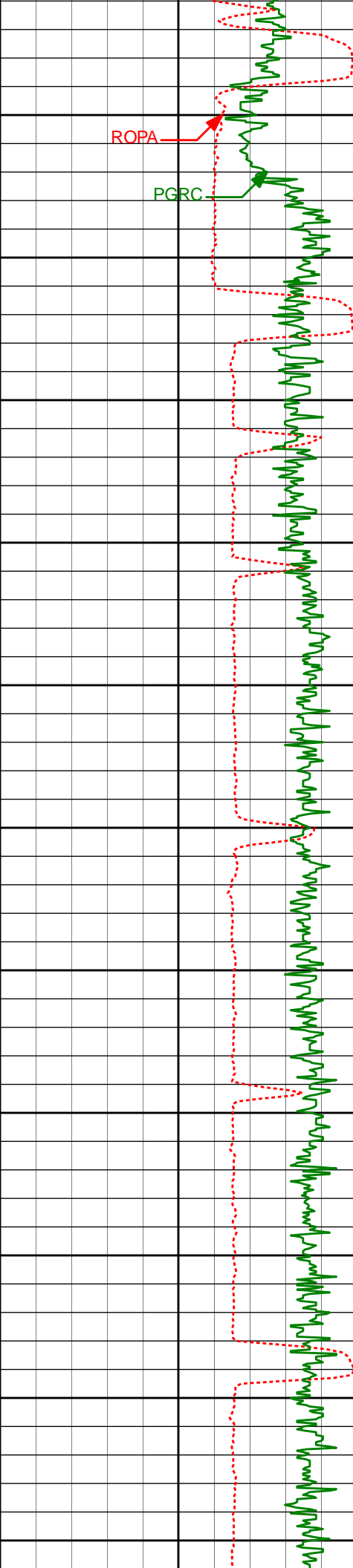
4470.41'

4561.36'

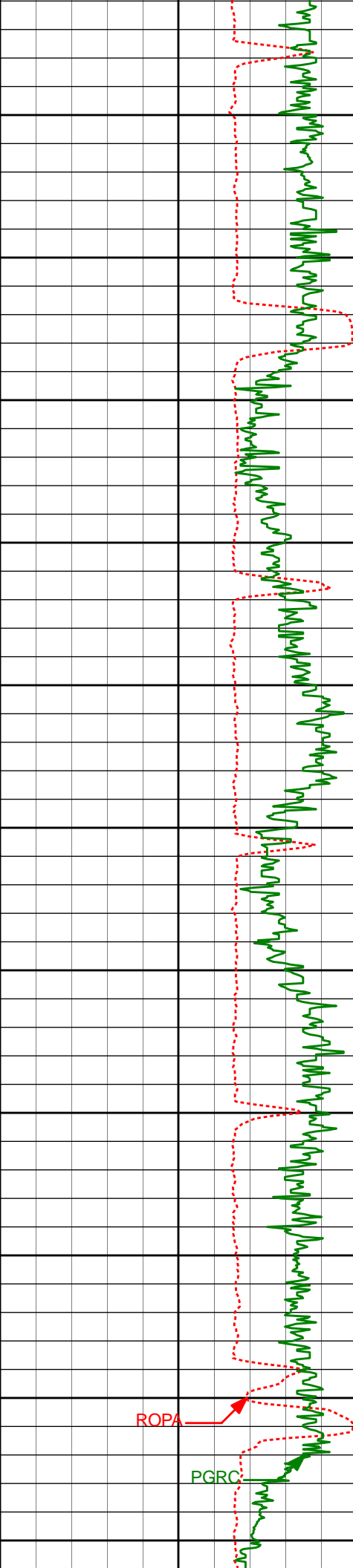
4653.35'

4746.34'

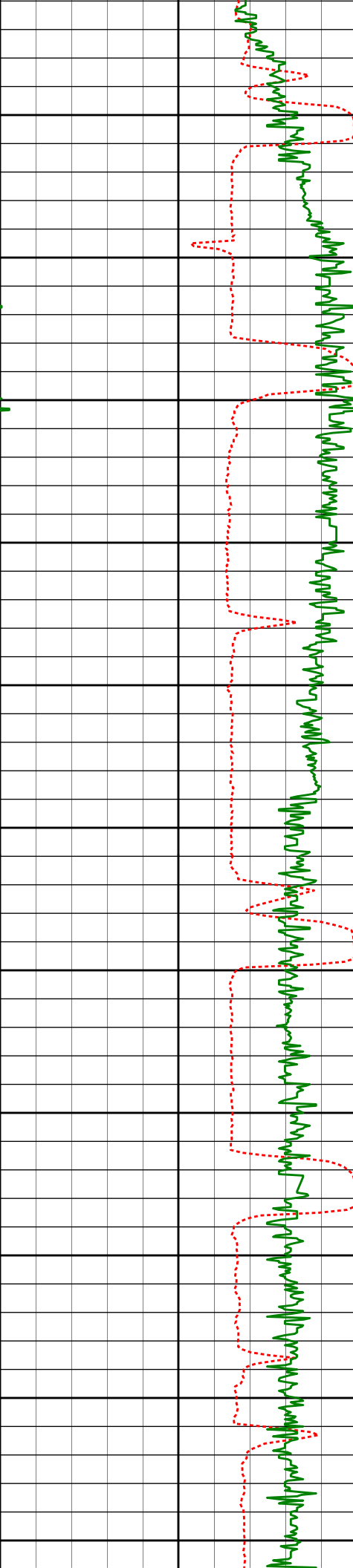
4838.32'



11000'	10999'	91.36°	270.47°	6482.79'	4931.30'
11050'					
11100'	11092'	90.15°	270.49°	6481.57'	5024.28'
11150'					
11200'	11184'	89.48°	269.02°	6481.86'	5116.28'
11250'					
11300'	11276'	90.15°	268.94°	6482.16'	5208.26'
11350'					
11400'	11369'	89.75°	267.81°	6482.24'	5301.22'
11450'					
11500'	11461'	90.22°	269.56°	6482.27'	5393.20'



11550'	11554'	90.40°	270.05°	6481.76'	5486.19'
11600'					
11650'	11647'	89.01°	269.70°	6482.24'	5579.19'
11700'					
11750'	11741'	89.08°	268.89°	6483.81'	5673.17'
11800'					
11850'	11834'	90.28°	268.78°	6484.33'	5766.15'
11900'					
11950'	11927'	90.49°	268.02°	6483.70'	5859.11'
12000'					
12050'	12022'	87.93°	266.13°	6485.01'	5953.96'



12100'

12150'

12200'

12250'

12300'

12350'

12400'

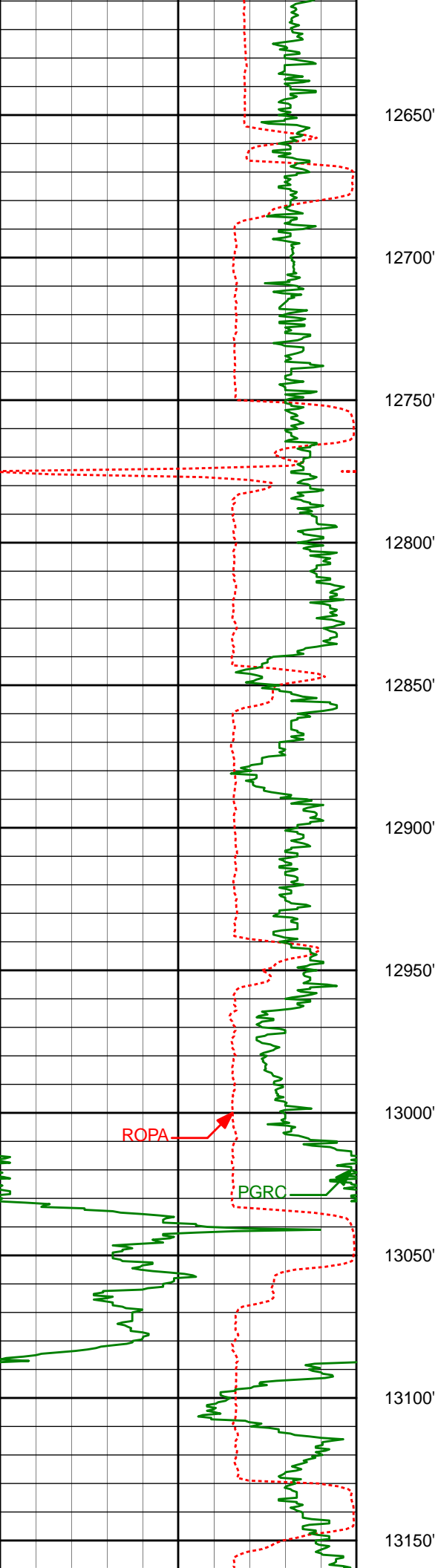
12450'

12500'

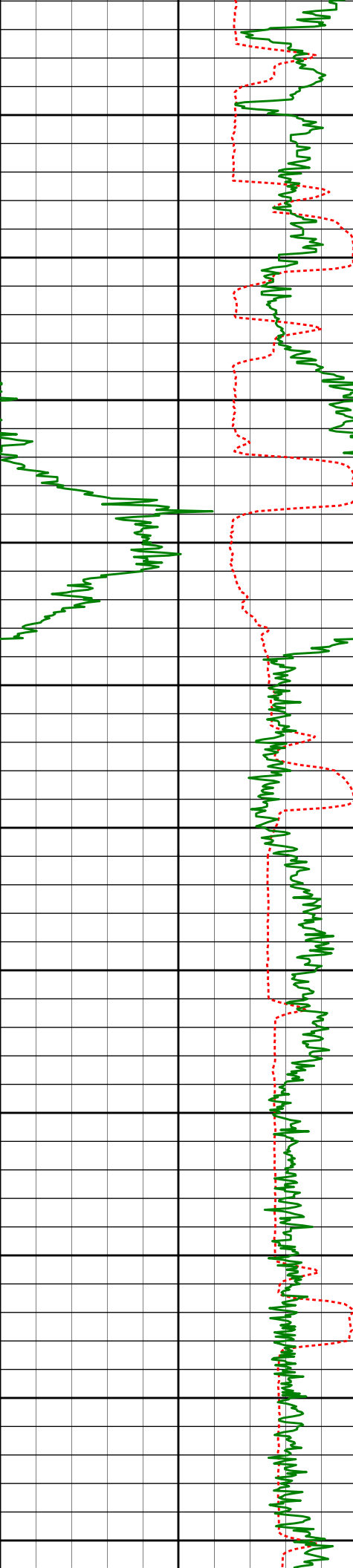
12550'

12600'

12117'	89.04°	267.01°	6487.52'	6048.75'
12212'	88.61°	268.04°	6489.47'	6143.64'
12307'	88.58°	267.06°	6491.80'	6238.53'
12402'	88.77°	267.83°	6494.00'	6333.40'
12497'	90.12°	269.94°	6494.92'	6428.37'
12592'	89.01°	268.56°	6495.64'	6523.36'



12650'				
12687'	89.81°	268.77°	6496.62'	6618.33'
12700'				
12750'				
12781'	90.18°	269.56°	6496.63'	6712.32'
12800'				
12850'				
12876'	90.46°	268.94°	6496.10'	6807.31'
12900'				
12950'				
12971'	90.74°	267.22°	6495.10'	6902.24'
13000'				
13066'	91.67°	269.12°	6493.10'	6997.17'
13100'				
13150'				



13200'

13250'

13300'

13350'

13400'

13450'

13500'

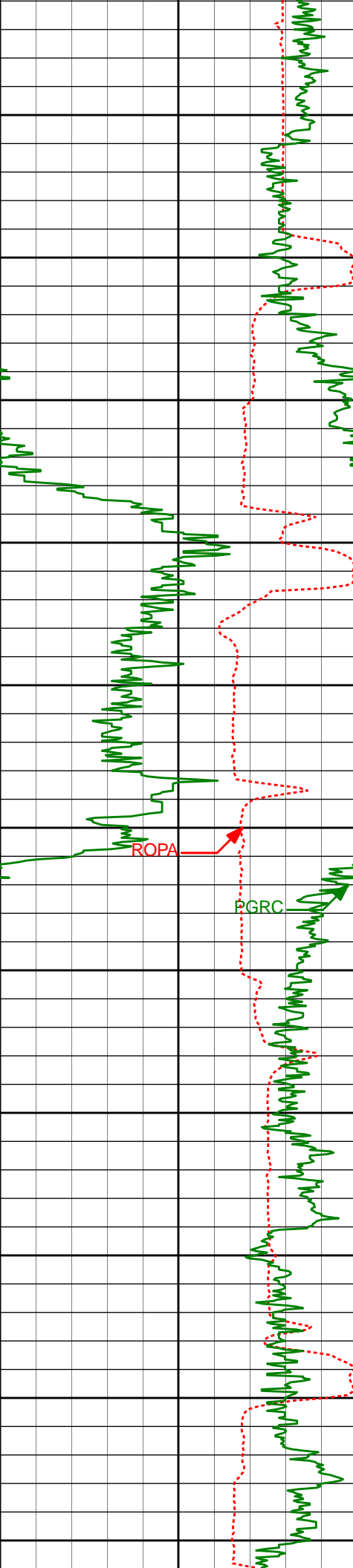
13550'

13600'

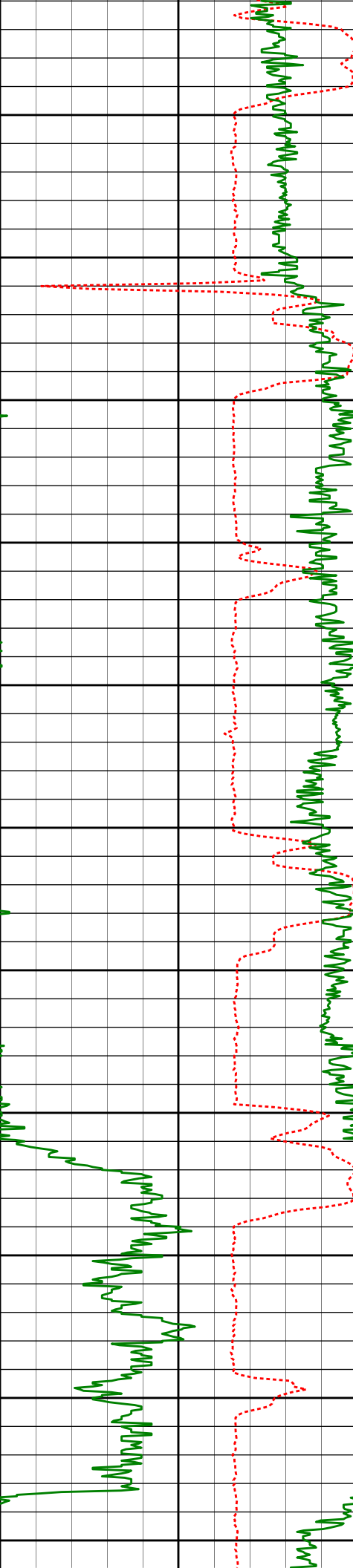
13650'

13700'

13161'	91.29°	269.08°	6490.65'	7092.12'
13256'	90.56°	269.19°	6489.12'	7187.10'
13351'	89.75°	268.97°	6488.86'	7282.09'
13446'	89.14°	270.00°	6489.78'	7377.08'
13540'	89.17°	269.28°	6491.17'	7471.06'
13635'	89.97°	269.49°	6491.88'	7566.05'



13730'	90.83°	269.58°	6491.22'	7661.05'
13750'				
13800'				
13825'	89.69°	269.37°	6490.78'	7756.04'
13850'				
13900'				
13919'	88.49°	269.46°	6492.28'	7850.02'
13950'				
14000'				
14014'	88.52°	268.26°	6494.76'	7944.97'
14050'				
14100'				
14109'	88.34°	267.17°	6497.36'	8039.86'
14150'				
14200'				
14204'	89.29°	267.35°	6499.32'	8134.72'
14250'				



14300'

14299'

89.54°

268.71°

6500.29'

8229.66'

14350'

14400'

14394'

89.97°

270.38°

6500.70'

8324.65'

14450'

14500'

14489'

88.95°

268.21°

6501.60'

8419.63'

14550'

14600'

14584'

88.86°

268.21°

6503.41'

8514.57'

14650'

14700'

14678'

90.03°

268.91°

6504.32'

8608.53'

14750'

14800'

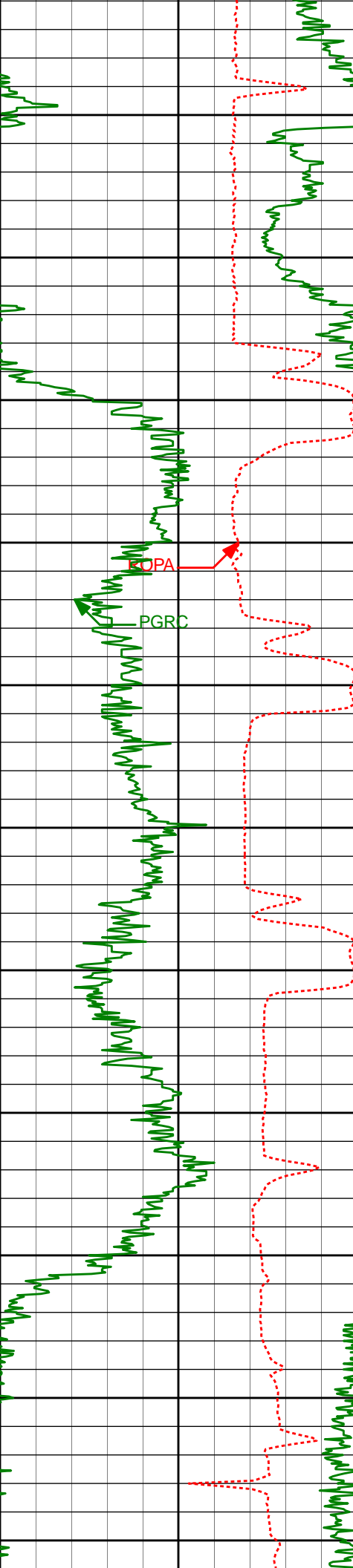
14773'

90.31°

269.01°

6504.04'

8703.52'



14850'

14868'

90.37°

267.93°

6503.48'

8798.48'

14900'

14963'

91.11°

268.29°

6502.25'

8893.42'

15000'

15058'

90.31°

269.06°

6501.07'

8988.38'

15100'

15153'

88.40°

268.80°

6502.14'

9083.36'

15200'

15248'

88.46°

268.27°

6504.74'

9178.29'

15300'

15343'

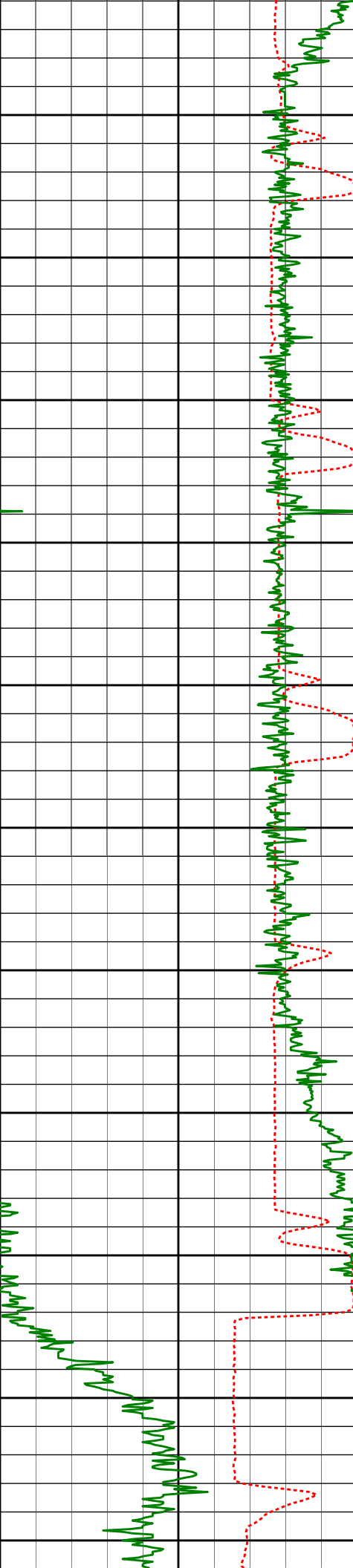
88.43°

267.68°

6507.32'

9273.19'

15350'



15400'

15450'

15500'

15550'

15600'

15650'

15700'

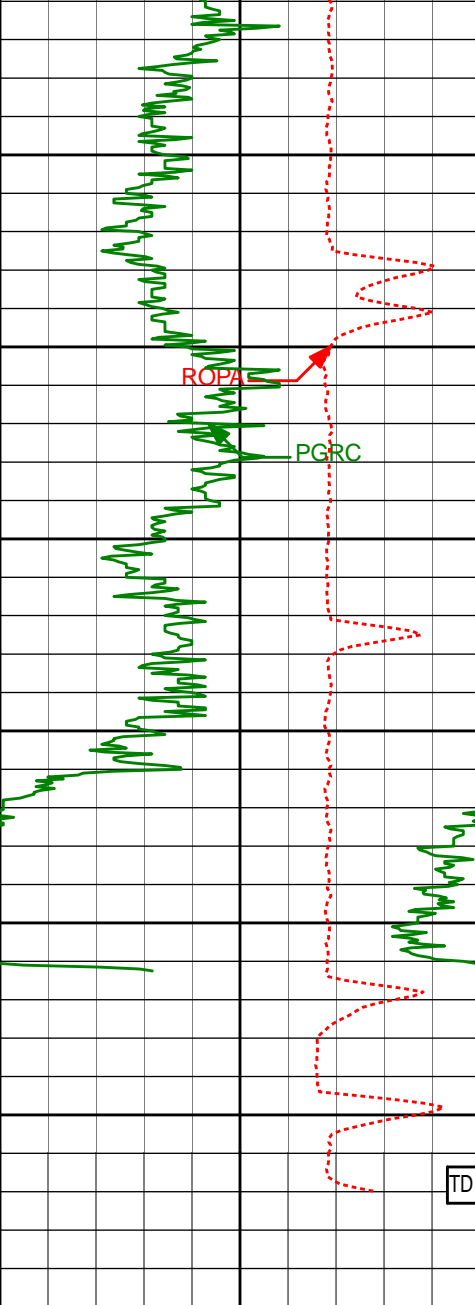
15750'

15800'

15850'

15900'

15437'	88.89°	268.02°	6509.52'	9367.10'
15532'	89.48°	268.20°	6510.87'	9462.04'
15627'	90.00°	270.25°	6511.30'	9557.02'
15722'	90.93°	268.39°	6510.53'	9652.01'
15817'	90.59°	269.10°	6509.27'	9746.98'



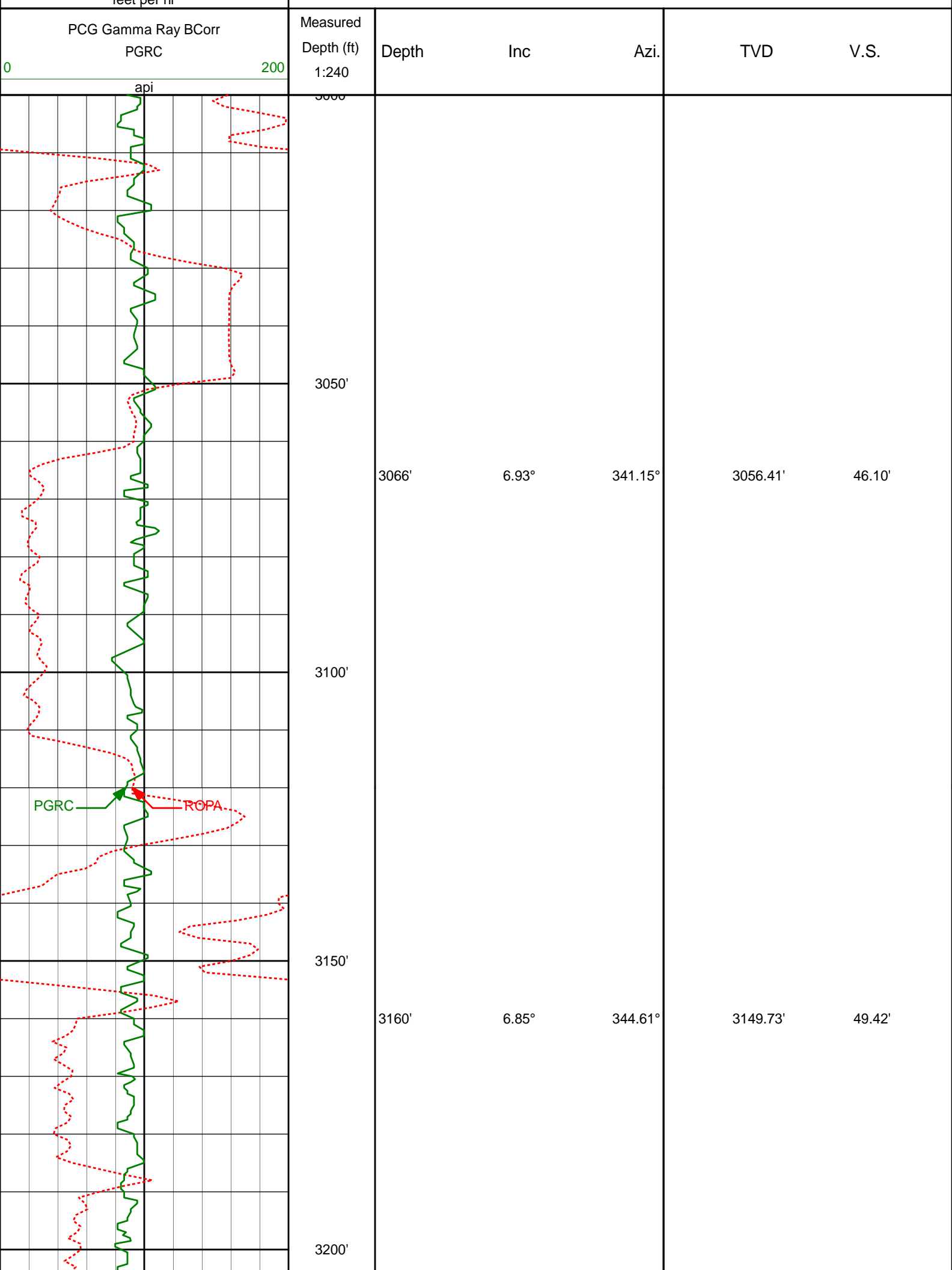
15950'	15912'	90.28°	268.35°	6508.55'	9841.95'
16000'	16007'	90.65°	267.56°	6507.78'	9936.88'
16050'					
16100'	16101'	90.86°	266.84°	6506.54'	10030.76'
16150'	16154'	90.74°	265.64°	6505.80'	10083.64'
16200'	16219'	90.74°	265.64°	6504.96'	10148.45'
16250'					

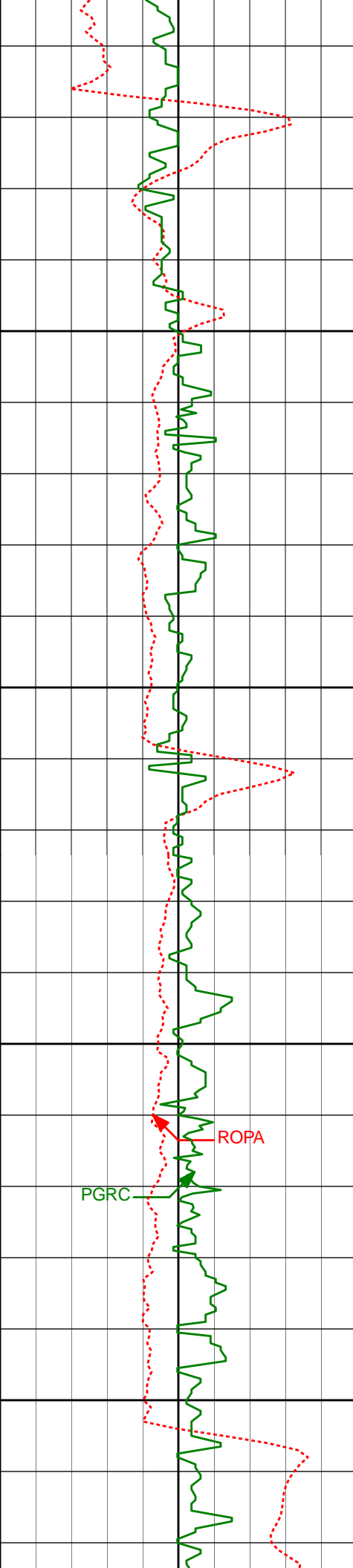
PCG Gamma Ray BCorr PGRC 0 200 api	Measured Depth (ft) 1:600	Depth	Inc	Azi.	TVD	V.S.
Average Rate of Penetration ROPA 1K 0 feet per hr						

HALLIBURTON

MD Main Log 1:240

Average Rate of Penetration ROPA 1K 0 feet per hr					
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3250'

3255'

6.87°

339.91°

3244.06'

52.87'

3300'

3350'

3350'

5.89°

334.00°

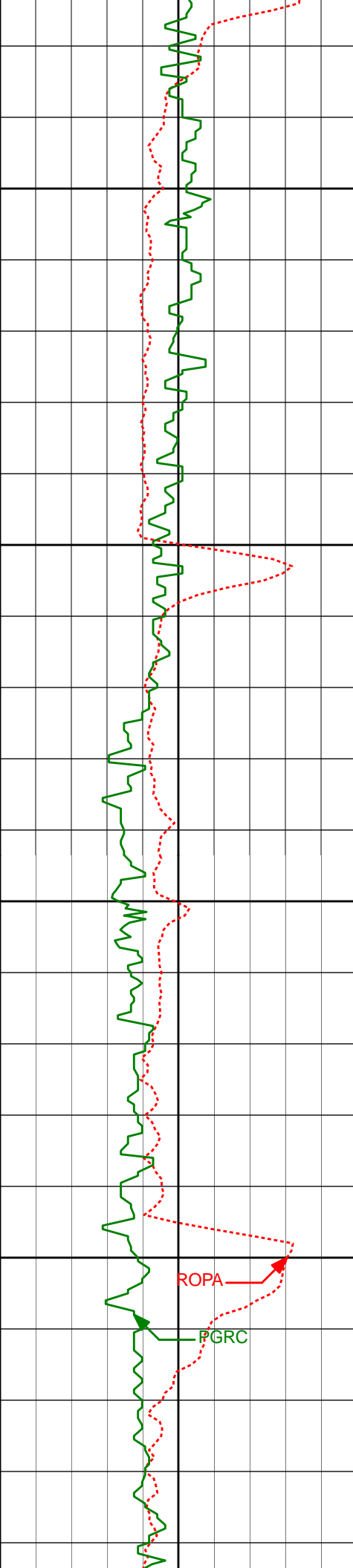
3338.47'

56.96'

3400'

PGRC

ROPA



3450'

3500'

3550'

3600'

3445'

6.58°

340.91°

3432.91'

60.88'

3540'

6.52°

343.82°

3527.29'

64.17'

3634'

7.05°

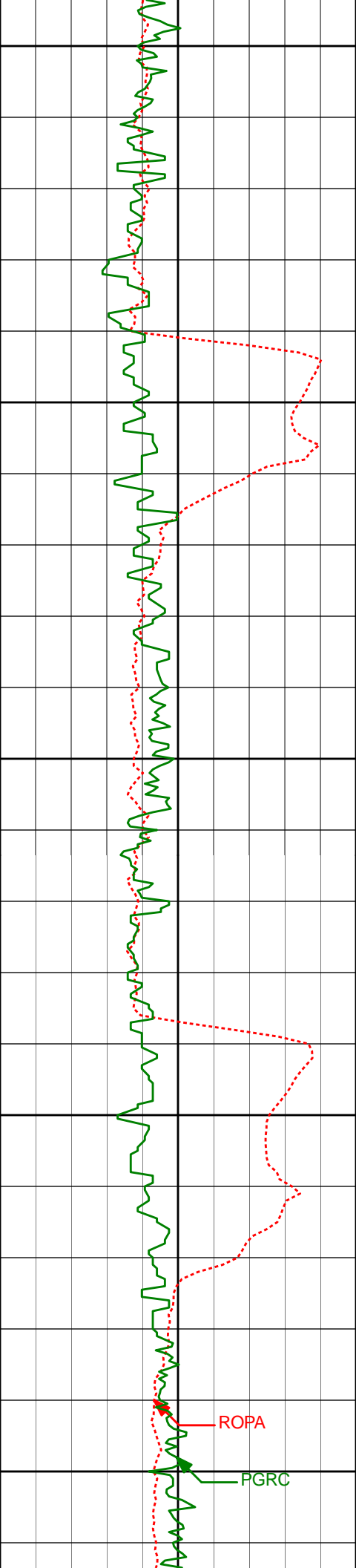
344.17°

3620.63'

67.23'

ROP

PGRC



3650'

3700'

3750'

3800'

3850'

3729'

6.41°

342.21°

3714.97'

70.44'

3824'

5.59°

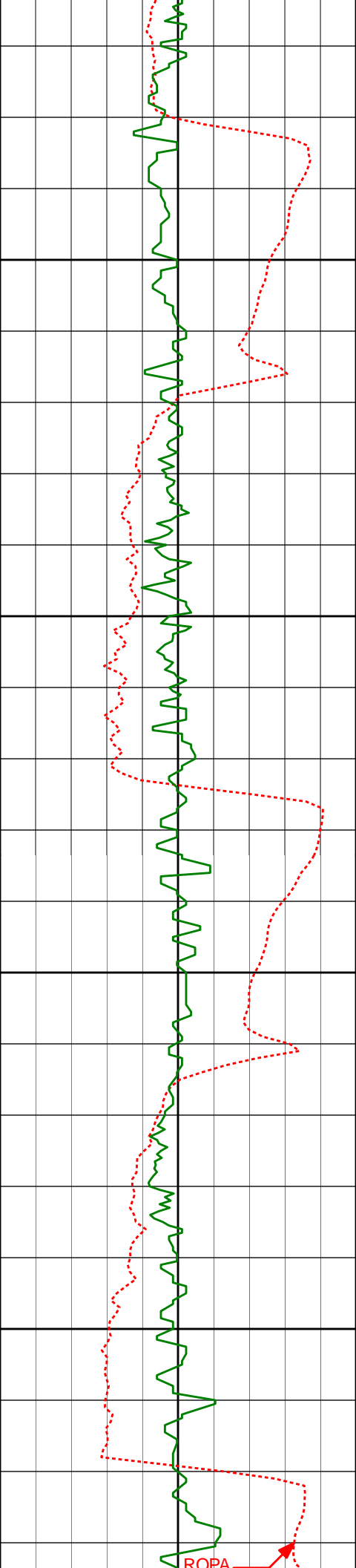
335.50°

3809.45'

73.98'

ROPA

PGRC



3900'

3919'

3.49°

317.26°

3904.15'

77.87'

3950'

4000'

4014'

0.99°

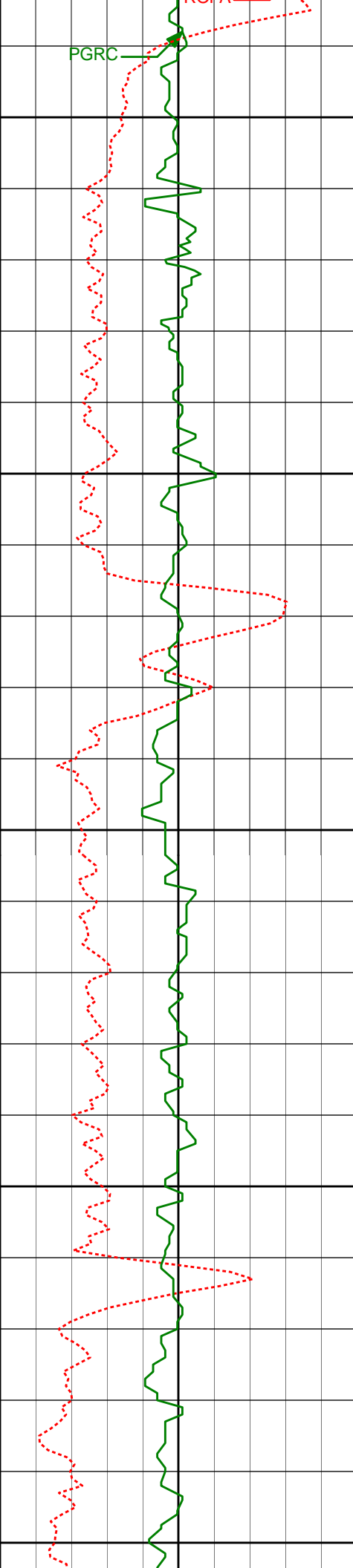
287.28°

3999.08'

80.61'

4050'

ROPA



4100'

4109'

0.96°

247.65°

4094.06'

82.13'

4150'

4200'

4203'

0.93°

212.61°

4188.05'

83.27'

4250'

4300'

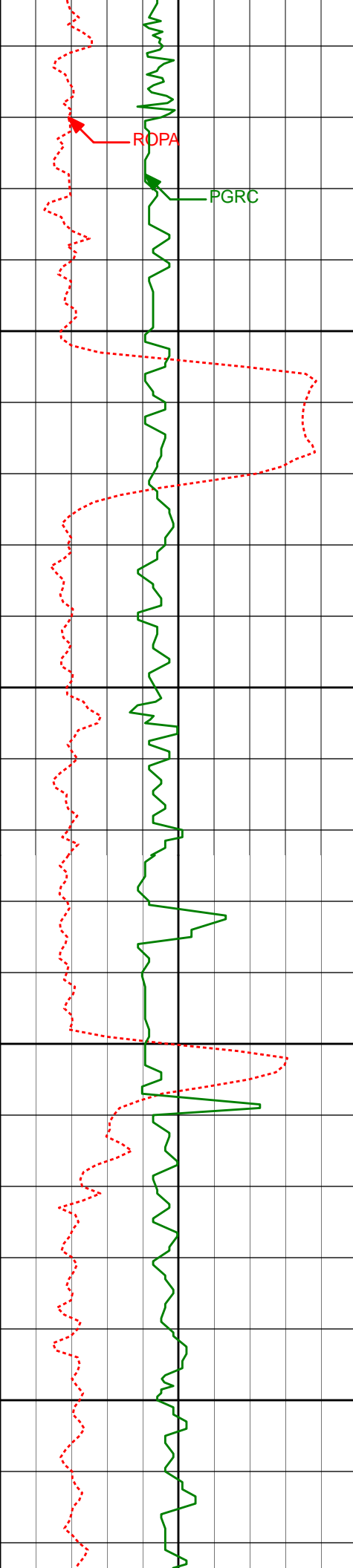
4298'

0.91°

203.13°

4283.04'

83.98'



ROPA

PGRC

4350'

4393'

4400'

4450'

4488'

4500'

0.59°

263.50°

4378.03'

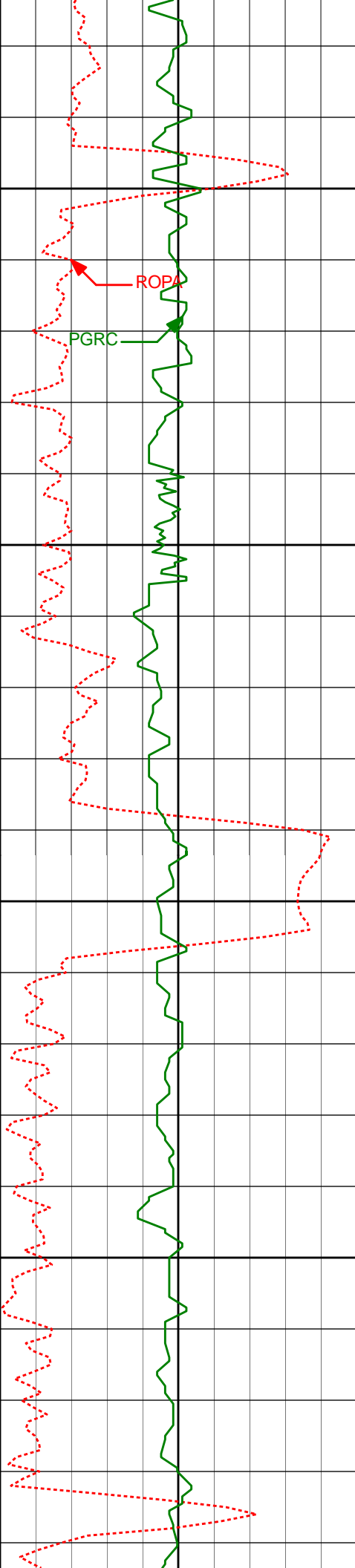
84.77'

0.62°

269.72°

4473.03'

85.77'



4550'

4582'

0.50°

260.29°

4567.02'

86.68'

4600'

4650'

4677'

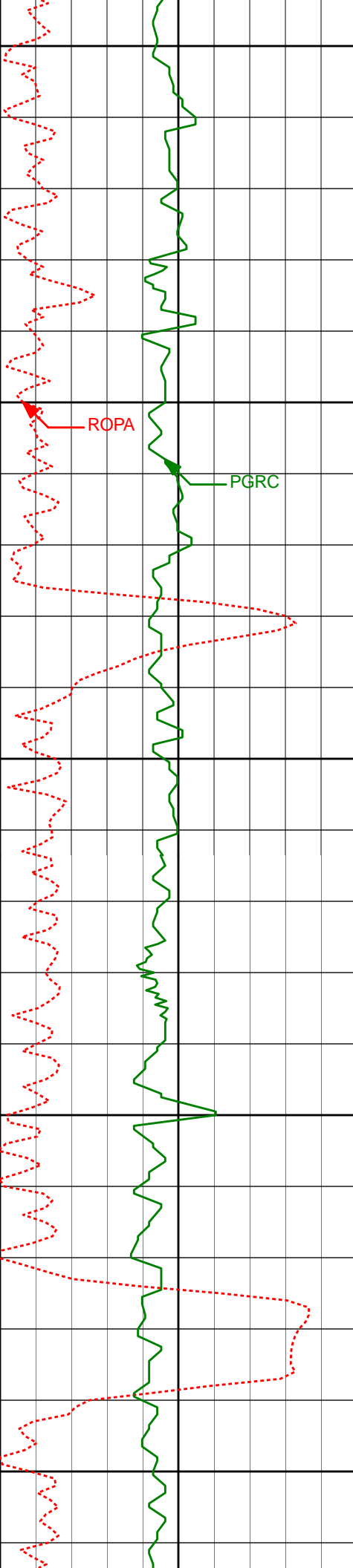
0.50°

205.19°

4662.02'

87.26'

4700'



4750'

4772'

0.72°

213.07°

4757.01'

87.77'

4800'

ROPA

PGRC

4850'

4866'

0.68°

205.70°

4851.01'

88.33'

4900'

4950'

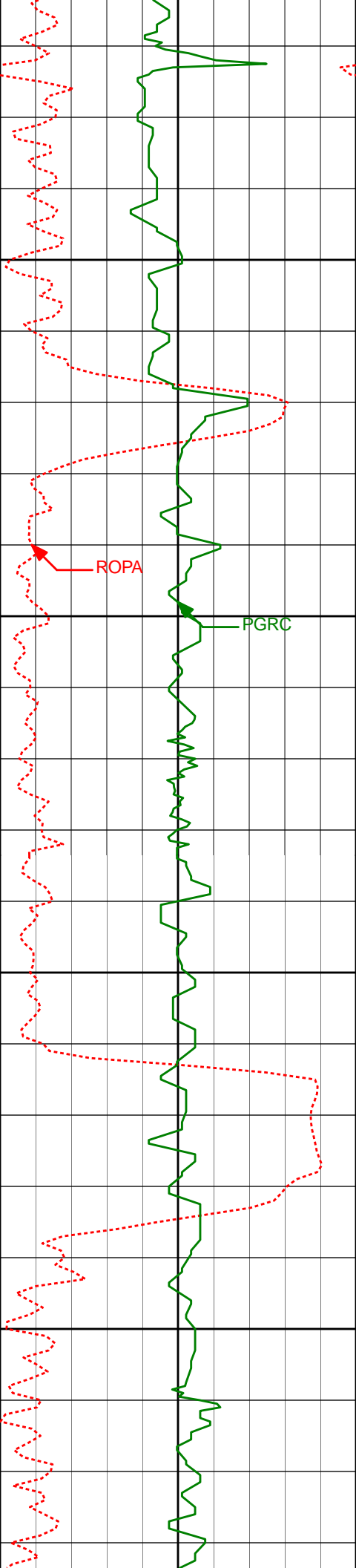
4961'

0.69°

226.81°

4946.00'

88.99'



5000'

5050'

5100'

5150'

5055'

0.47°

251.75°

5039.99'

89.77'

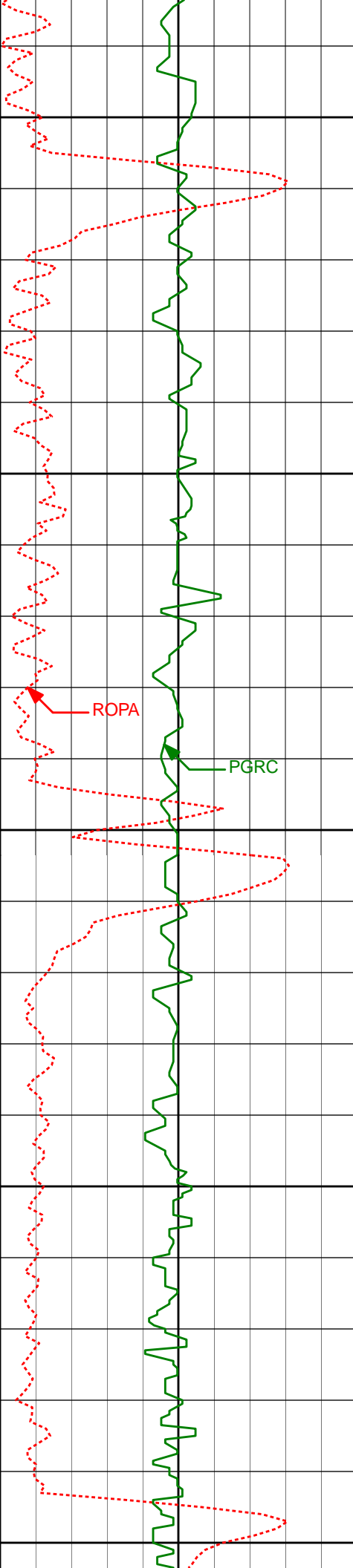
5150'

0.34°

46.57°

5134.99'

89.94'



5200'

5250'

5300'

5350'

5400'

5245'

0.57°

33.28°

5229.99'

89.47'

5340'

0.36°

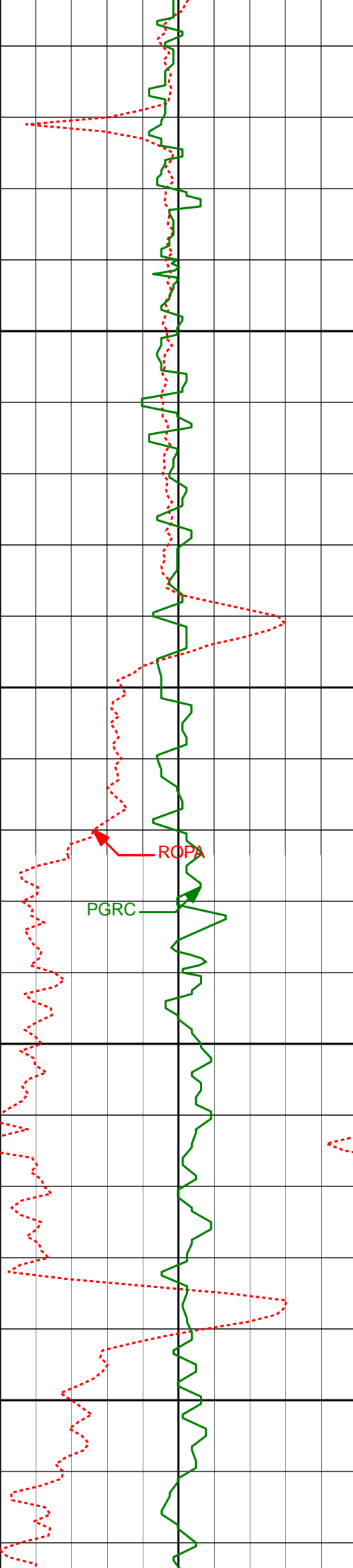
70.95°

5324.99'

88.93'

ROPA

PGRC



5450'

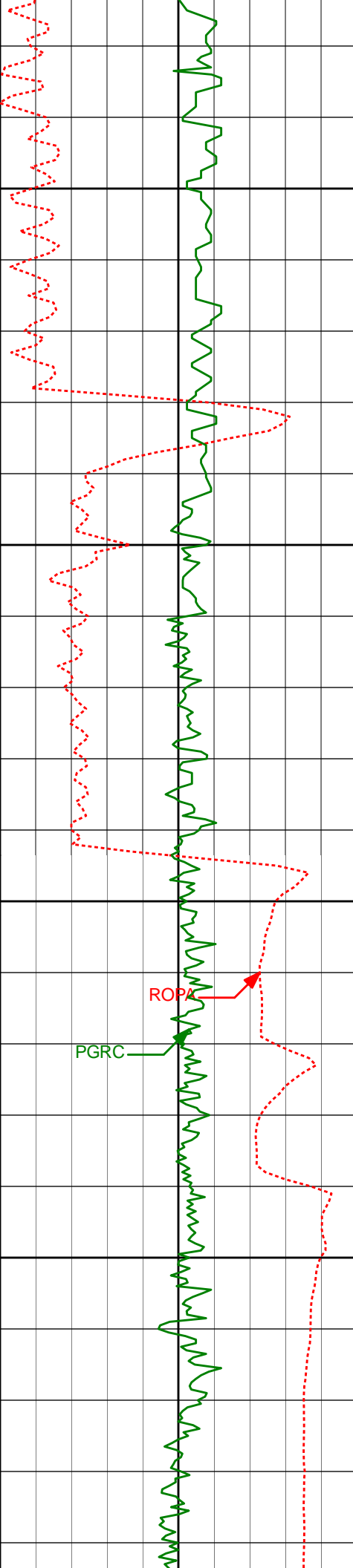
5500'

5550'

5600'

5435'	0.28°	145.59°	5419.99'	88.52'
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5530'	0.47°	142.70°	5514.98'	88.15'
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Run200

5650'

5700'

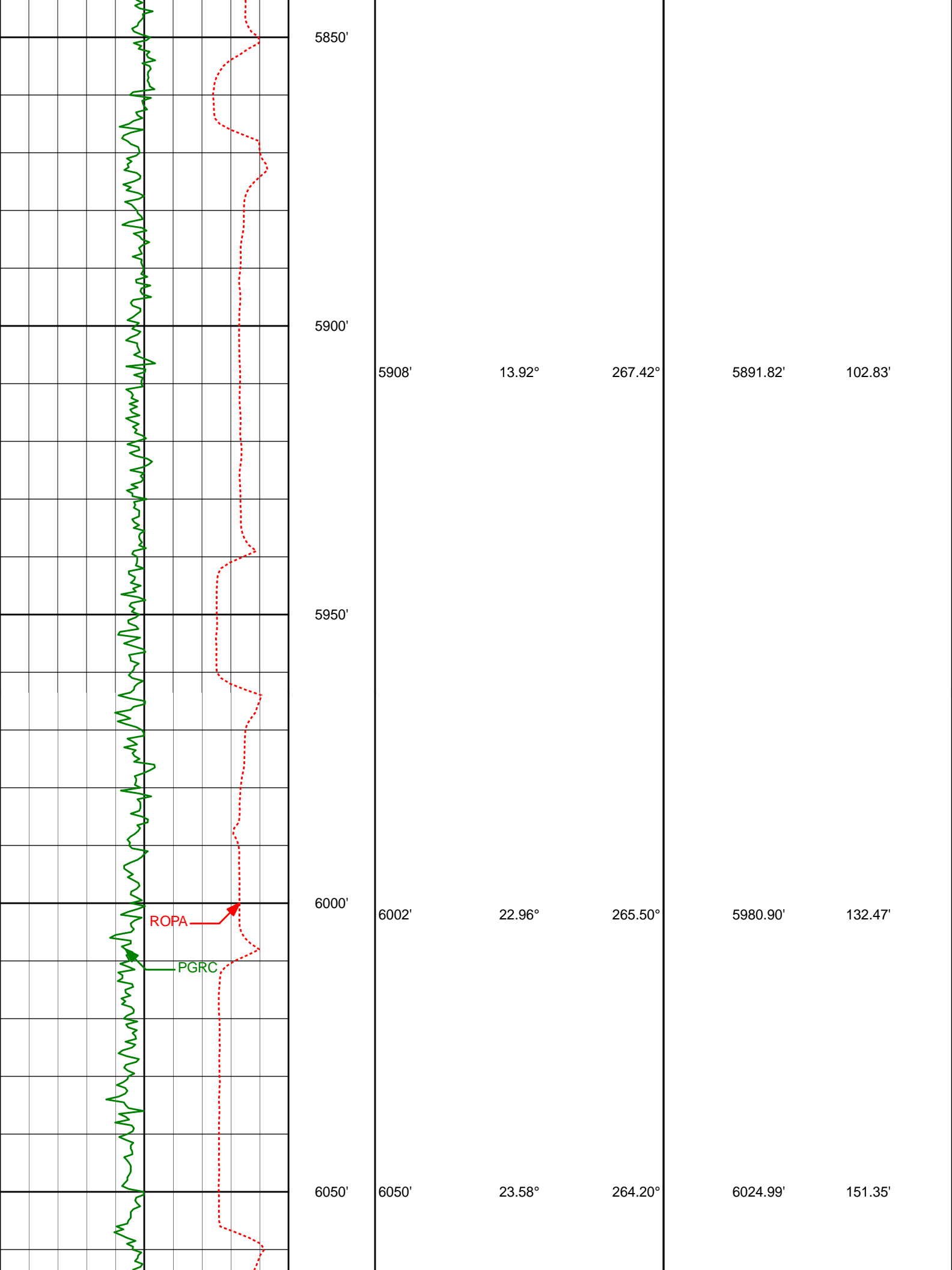
5750'

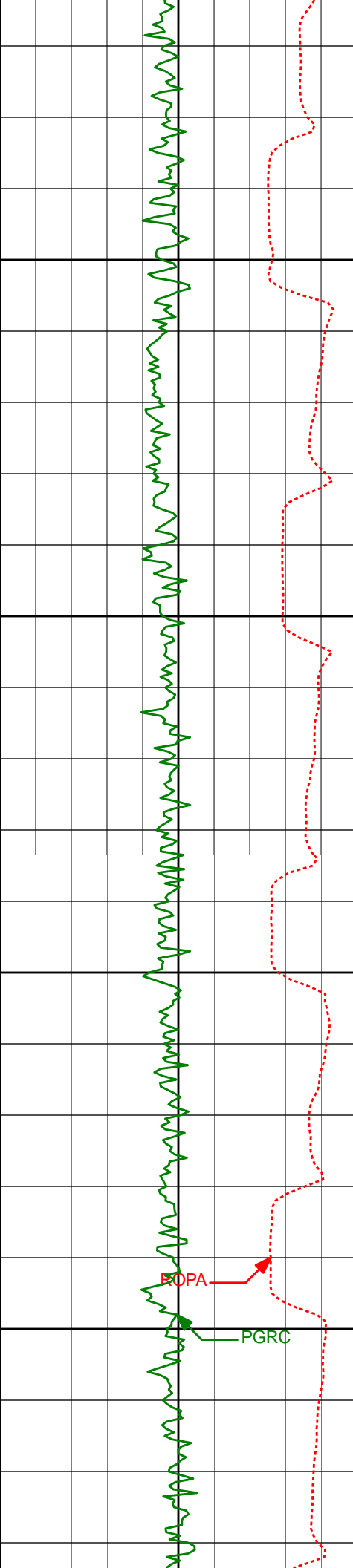
5800'

ROPA

PGRC

5625'	0.69°	171.33°	5609.98'	87.83'
5688'	0.75°	165.48°	5672.98'	87.67'
5718'	0.73°	169.39°	5702.97'	87.58'
5813'	2.50°	250.28°	5797.94'	89.42'





6100'

6150'

6200'

6250'

6097'

6145'

6192'

6240'

26.55°

30.14°

34.29°

38.80°

265.61°

266.20°

267.08°

267.54°

6067.56'

6109.80'

6149.56'

6188.11'

171.18'

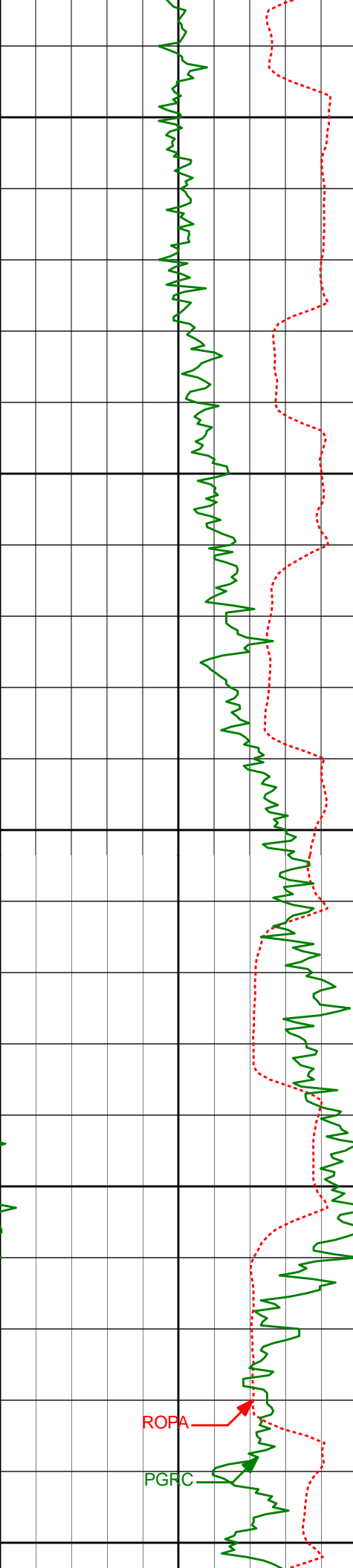
193.91'

218.92'

247.46'

ROPA

PGRC



6300'

6350'

6400'

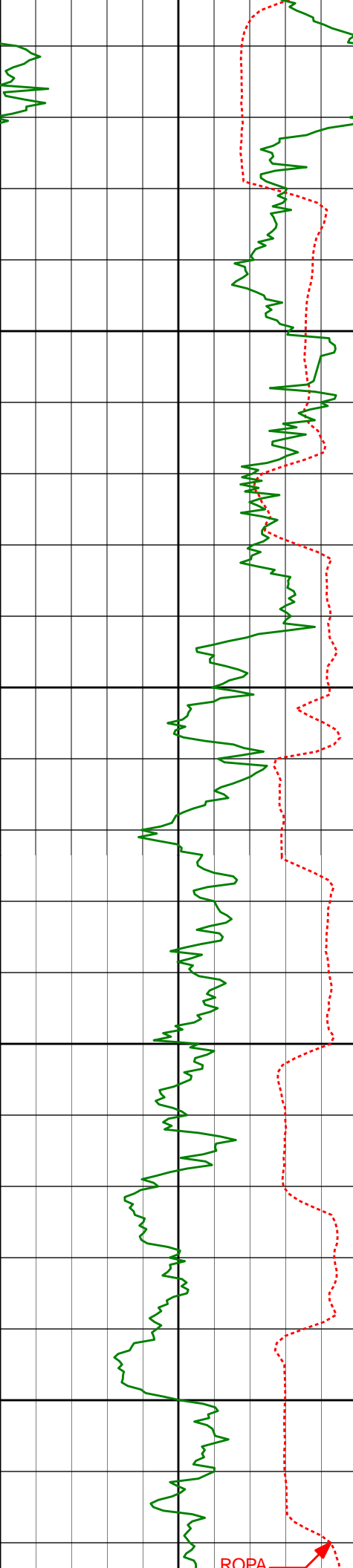
6450'

6500'

6287'	44.81°	267.78°	6223.13'	278.75'
6335'	49.92°	269.53°	6255.63'	314.04'
6381'	53.86°	269.07°	6284.02'	350.22'
6429'	57.48°	268.43°	6311.08'	389.84'
6476'	60.16°	268.14°	6335.41'	430.03'

ROPA

PGRC



6550'

6600'

6650'

6700'

6524'

63.02°

268.24°

6358.25'

472.23'

6571'

68.87°

270.08°

6377.40'

515.12'

6619'

72.62°

270.40°

6393.22'

560.42'

6666'

76.80°

270.71°

6405.62'

605.75'

6706'

79.01°

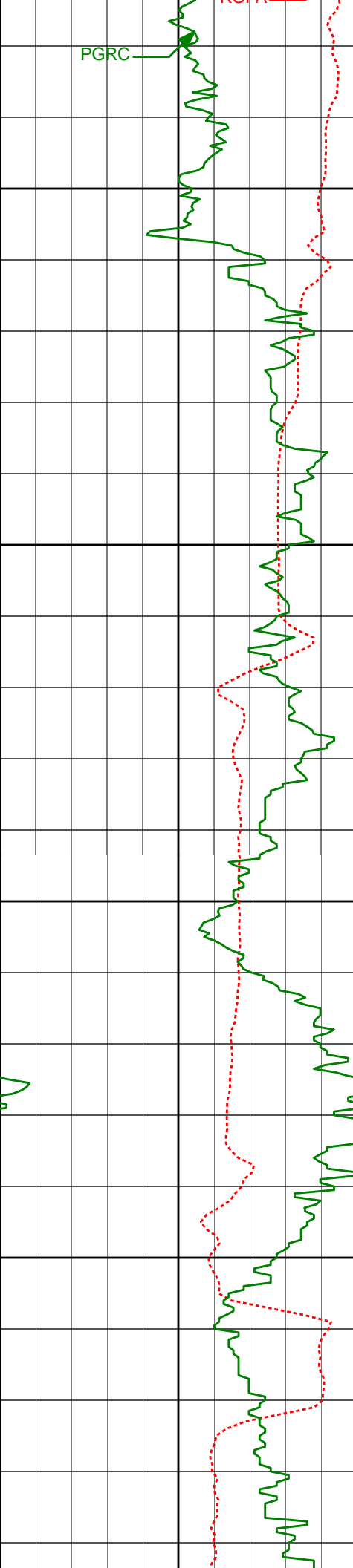
270.97°

6414.00'

644.85'

ROPA





PGRC

RGA

6750'

Casing Shoe @ 6751'

Run 300

6800'

6850'

6900'

6843'

84.29°

270.52°

6433.89'

780.34'

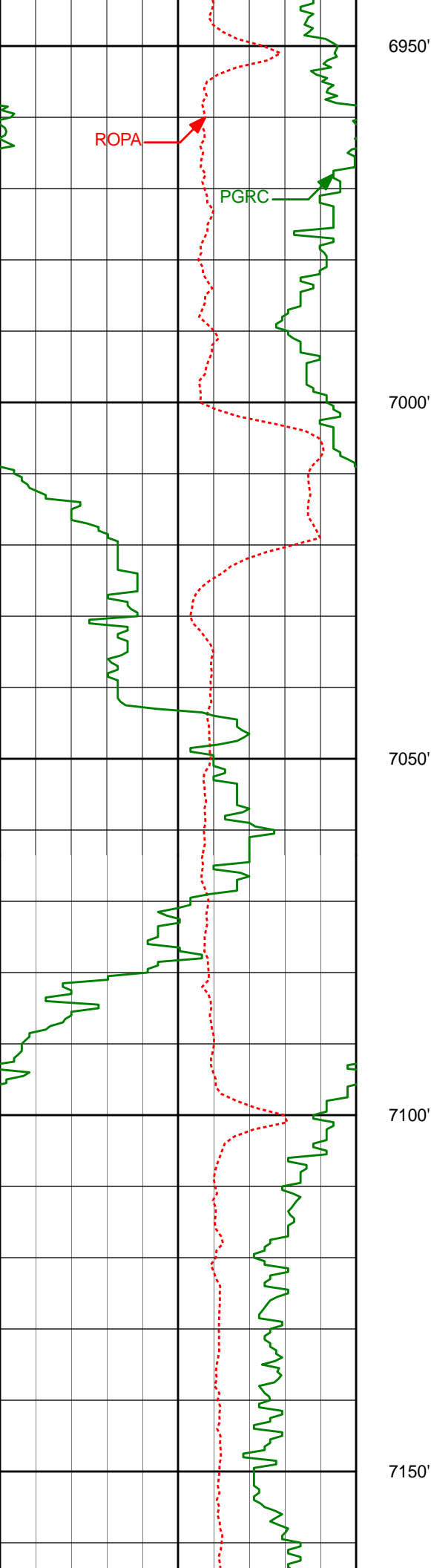
6937'

85.28°

270.37°

6442.43'

873.95'



7032'

87.13°

268.99°

6448.72'

968.73'

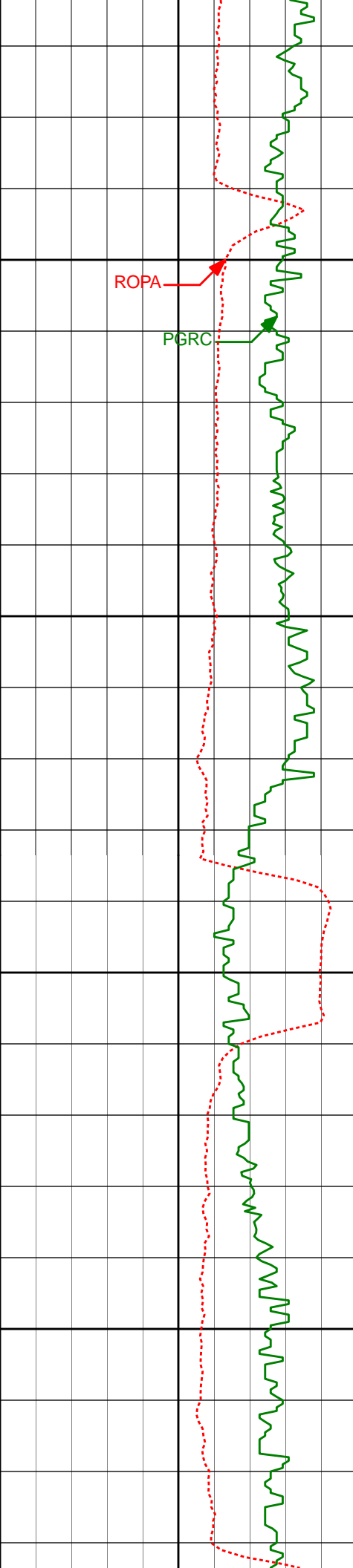
7127'

87.13°

268.31°

6453.47'

1063.59'



7200'

7250'

7300'

7350'

7222'

87.07°

267.57°

6458.28'

1158.40'

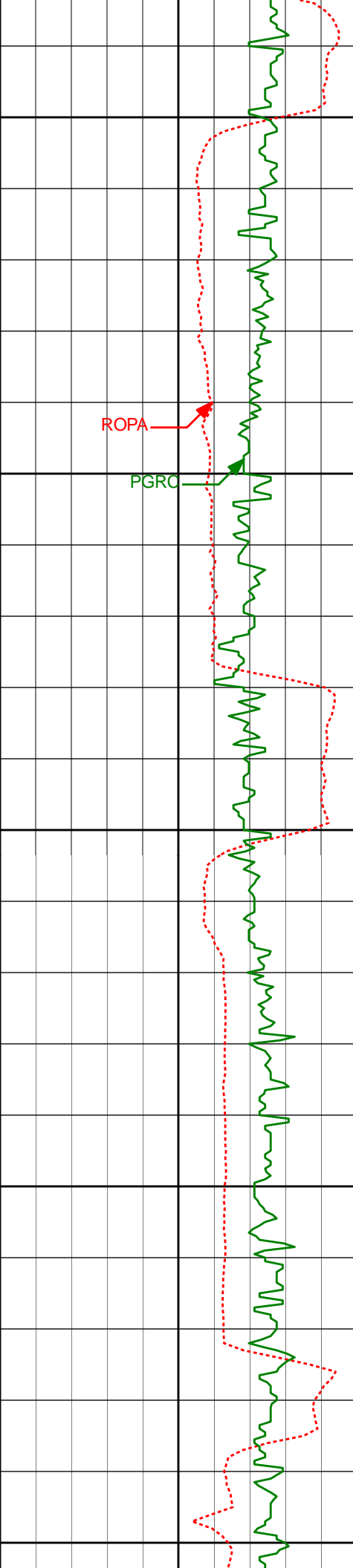
7317'

89.14°

267.71°

6461.42'

1253.26'



7400'

7412'

90.83°

267.86°

6461.45'

1348.19'

7450'

ROPA

PGRC

7500'

7506'

89.20°

268.43°

6461.42'

1442.14'

7550'

7600'

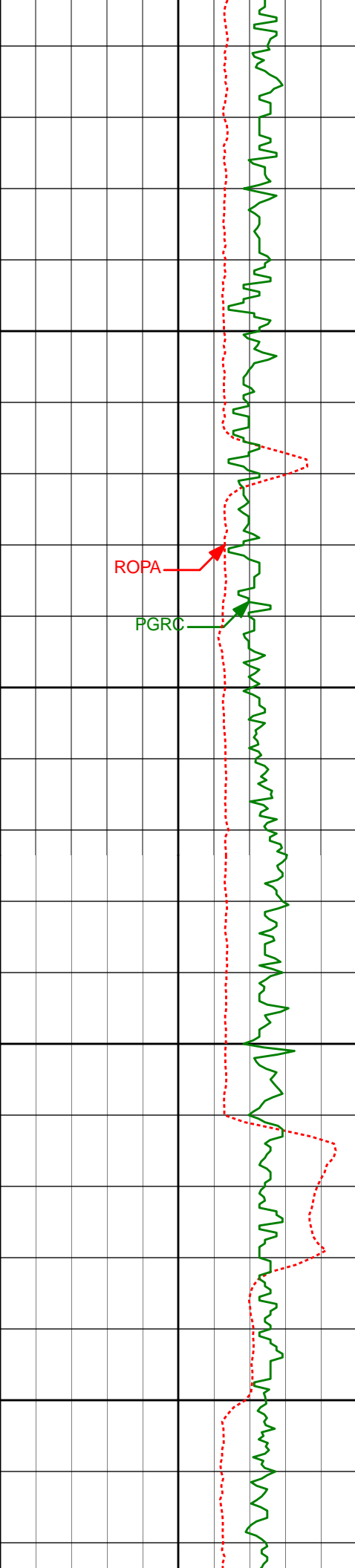
7601'

90.46°

269.77°

6461.70'

1537.12'



7650'

7700'

7750'

7800'

ROPA

PGRC

7696'

89.11°

267.49°

6462.06'

1632.08'

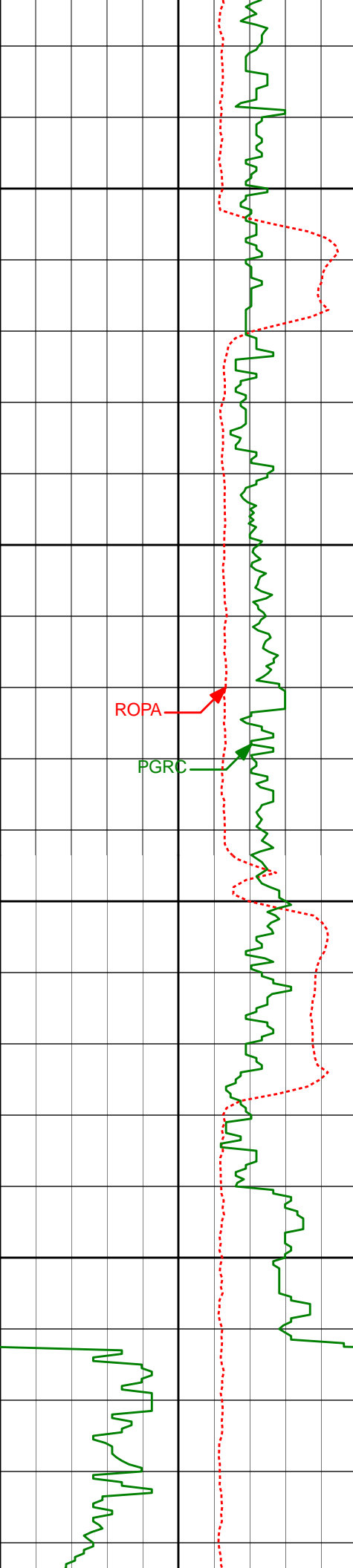
7791'

90.18°

268.93°

6462.65'

1727.03'



7850'

7886'

89.07°

267.91°

6463.27'

1821.99'

7900'

ROPA

PGRC

7950'

7980'

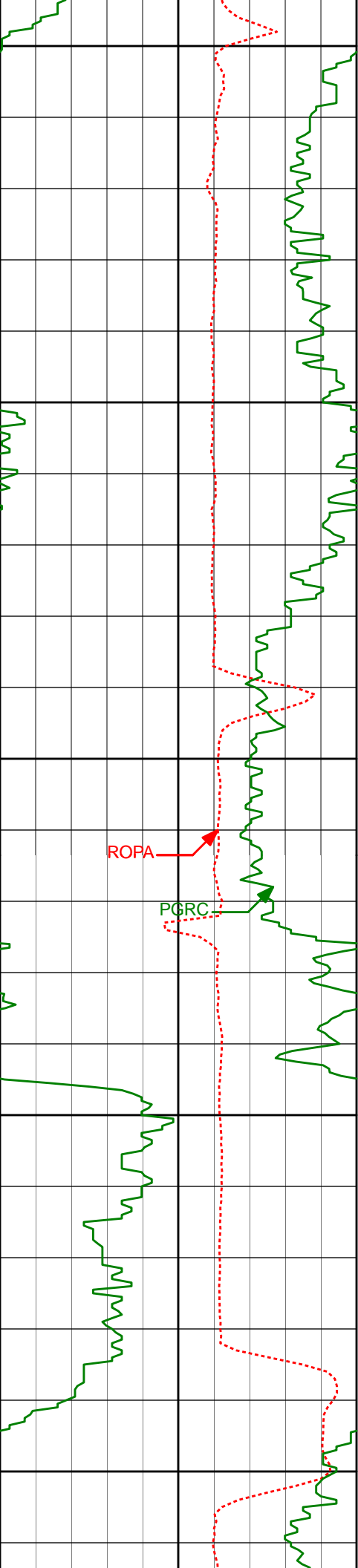
91.02°

270.04°

6463.20'

1915.96'

8000'



8050'

8075'

91.39°

269.56°

6461.20'

2010.94'

8100'

8150'

8169'

91.69°

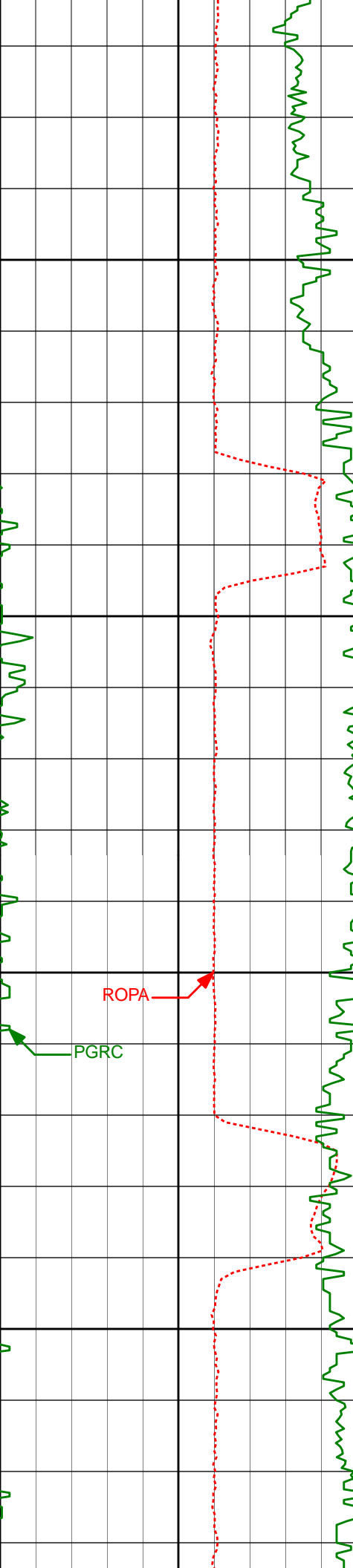
268.47°

6458.67'

2104.89'

8200'

8250'



8300'

8350'

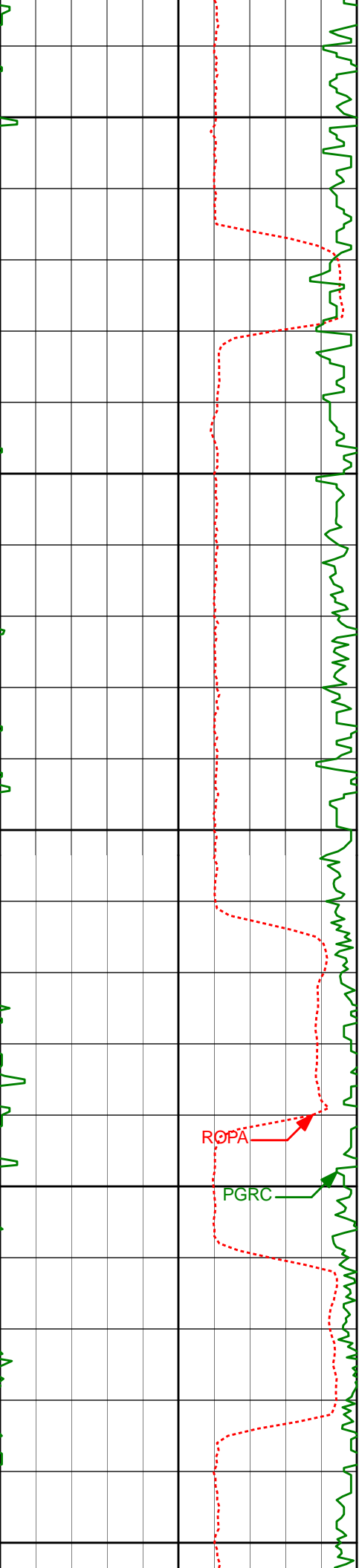
8400'

8450'

ROPA

PGRC

8264'	91.08°	269.72°	6456.38'	2199.85'
8359'	90.68°	269.47°	6454.92'	2294.84'
8454'	89.51°	270.08°	6454.76'	2389.83'



8500'

8550'

8600'

8650'

8700'

8548'

89.63°

273.70°

6455.47'

2483.76'

8643'

89.97°

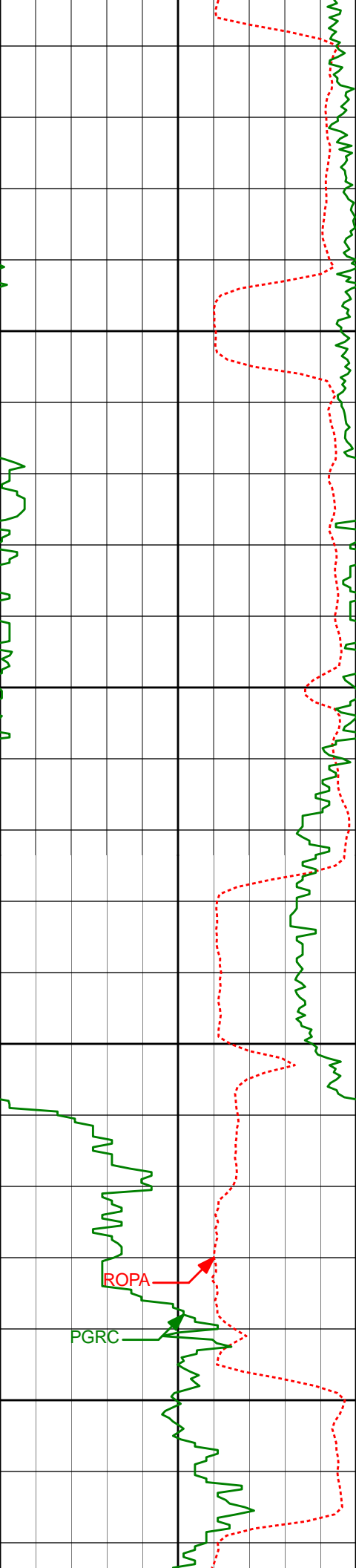
276.90°

6455.80'

2578.35'

ROPÄ

PGRC



8738'

89.85°

275.27°

6455.95'

2672.81'

8750'

8800'

8833'

86.14°

270.24°

6459.27'

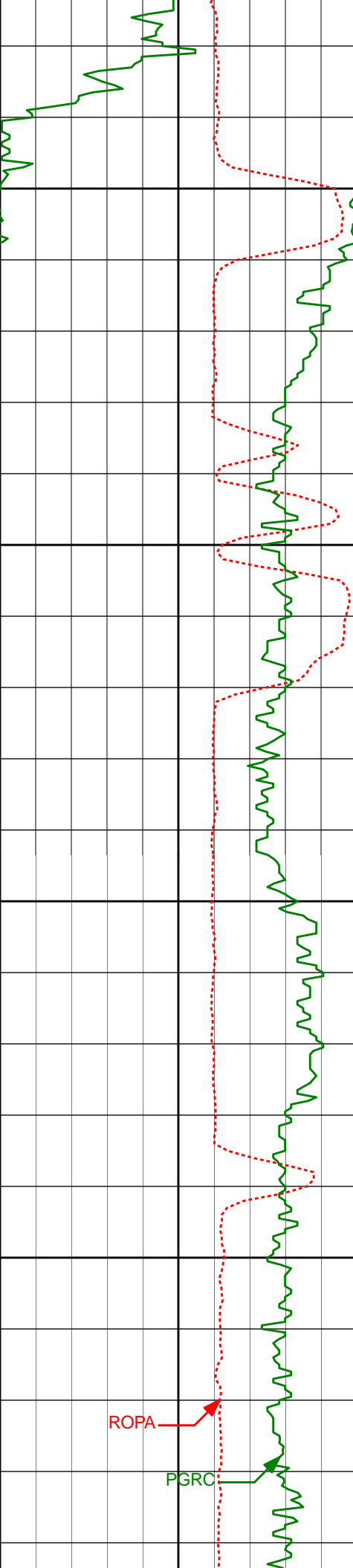
2767.59'

8850'

8900'

ROPA

PGRC



8950'

9000'

9050'

9100'

ROPA

PGRC

8927'

87.41°

269.75°

6464.56'

2861.44'

9022'

87.66°

267.87°

6468.65'

2956.33'

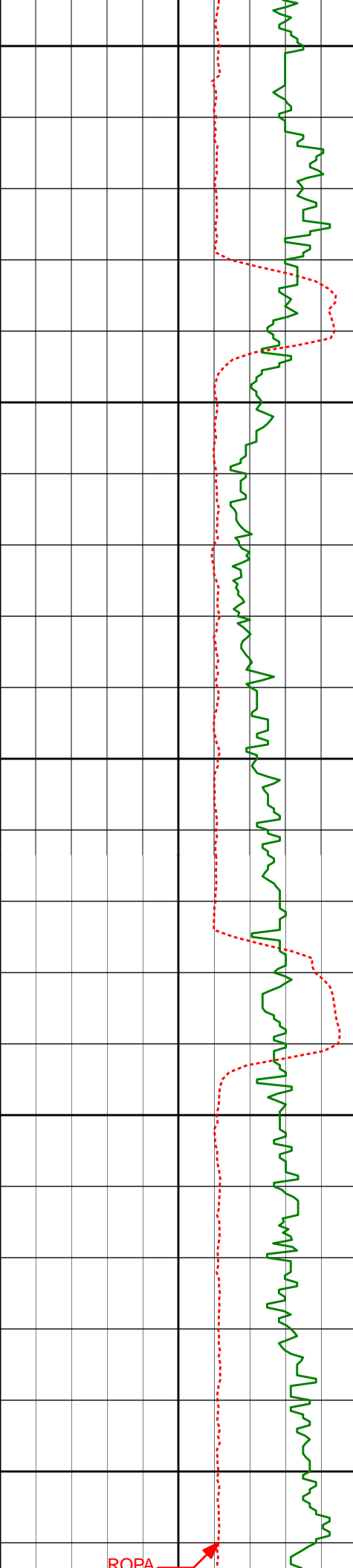
9117'

87.44°

267.36°

6472.71'

3051.16'



9150'

9200'

9250'

9300'

9350'

9212'

88.09°

266.59°

6476.41'

3145.95'

9307'

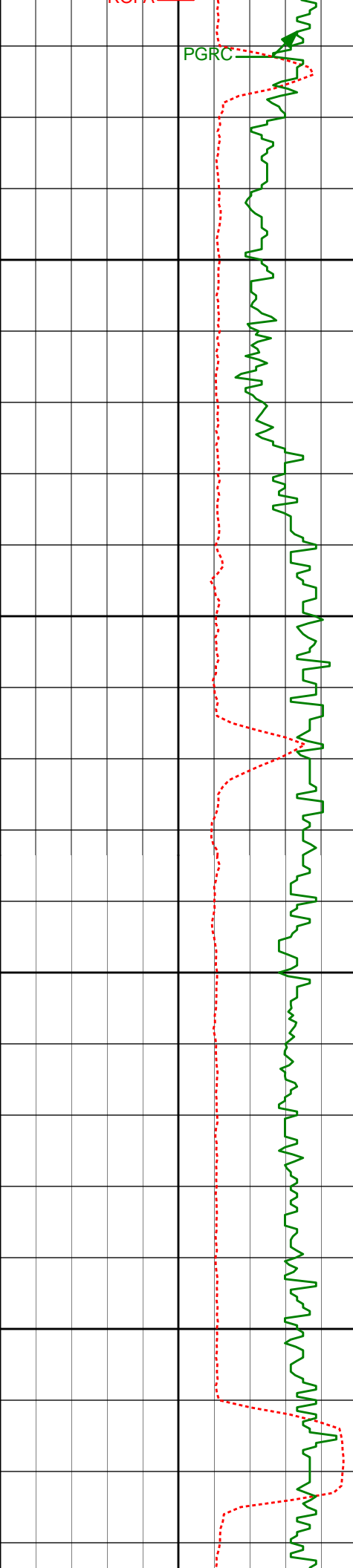
89.41°

267.80°

6478.48'

3240.81'

ROPA



PGRC

9400'

9450'

9500'

9550'

9402'

9496'

90.00°

90.49°

267.82°

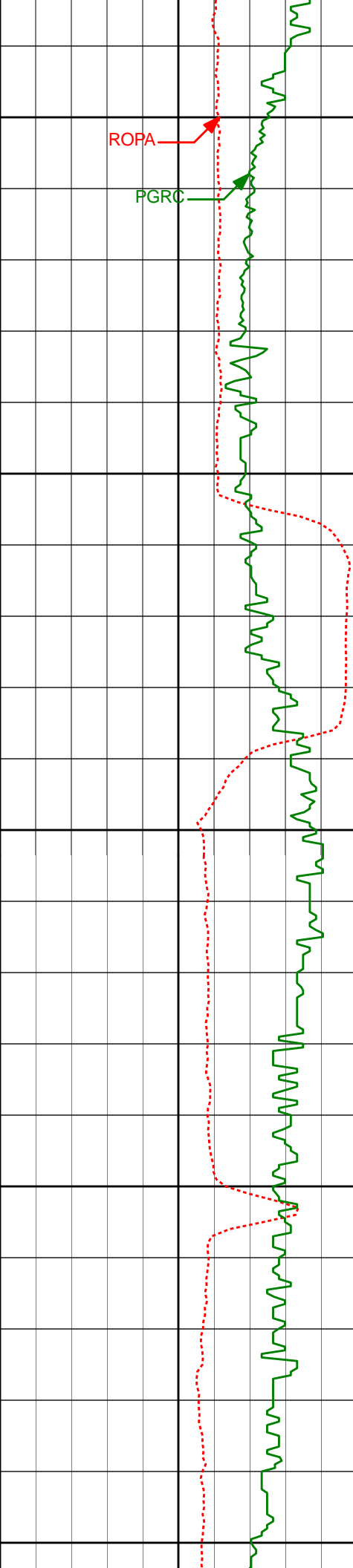
267.49°

6478.97'

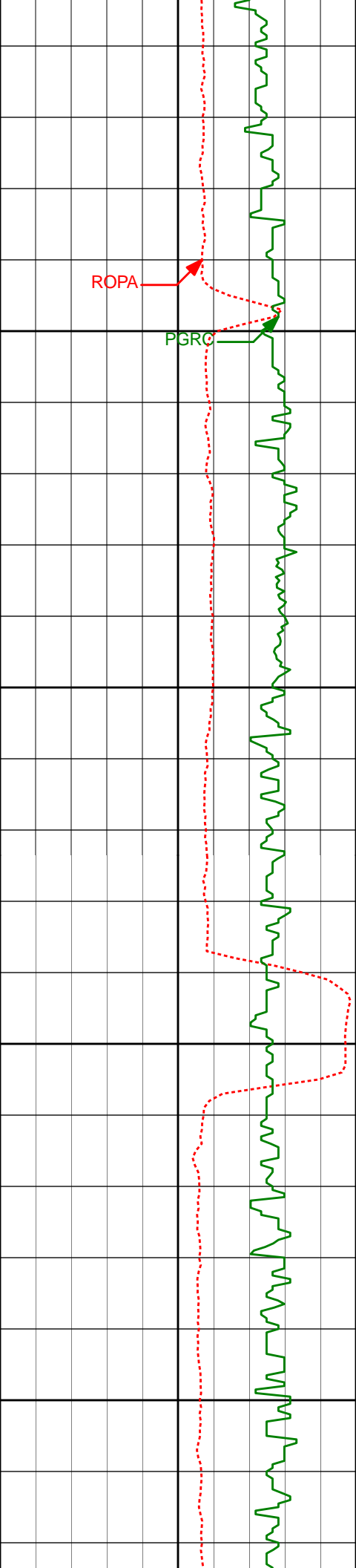
6478.57'

3335.74'

3429.66'



9590'	88.31°	265.01°	6479.56'	3523.44'
9600'				
9650'				
9685'	90.93°	268.18°	6480.19'	3618.25'
9700'				
9750'				
9779'	90.62°	267.69°	6478.92'	3712.18'
9800'				



9850'

9873'

90.25°

266.78°

6478.20'

3806.06'

9900'

9950'

9968'

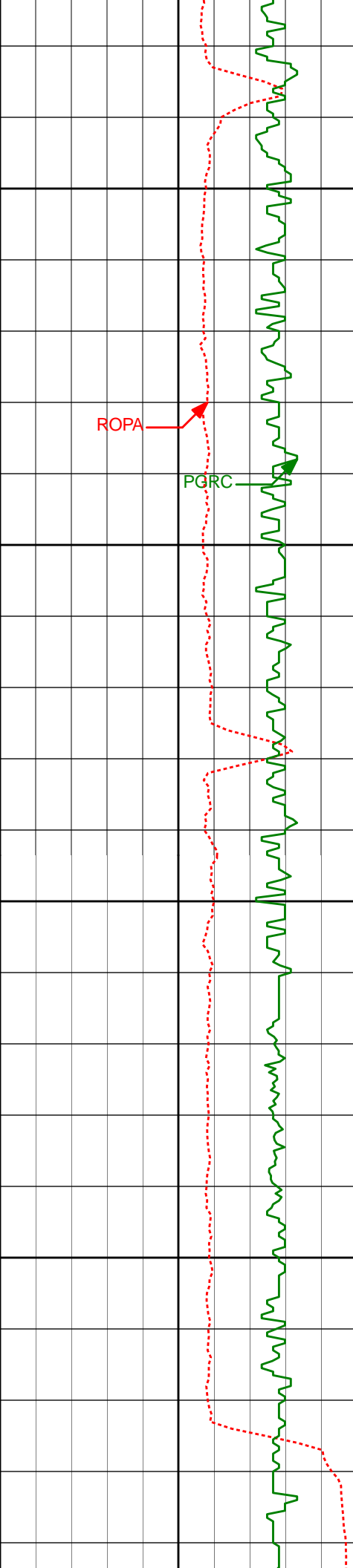
89.44°

267.26°

6478.46'

3900.93'

10000'



10050'

10062'

89.91°

267.55°

6478.99'

3994.83'

10100'

10150'

10162'

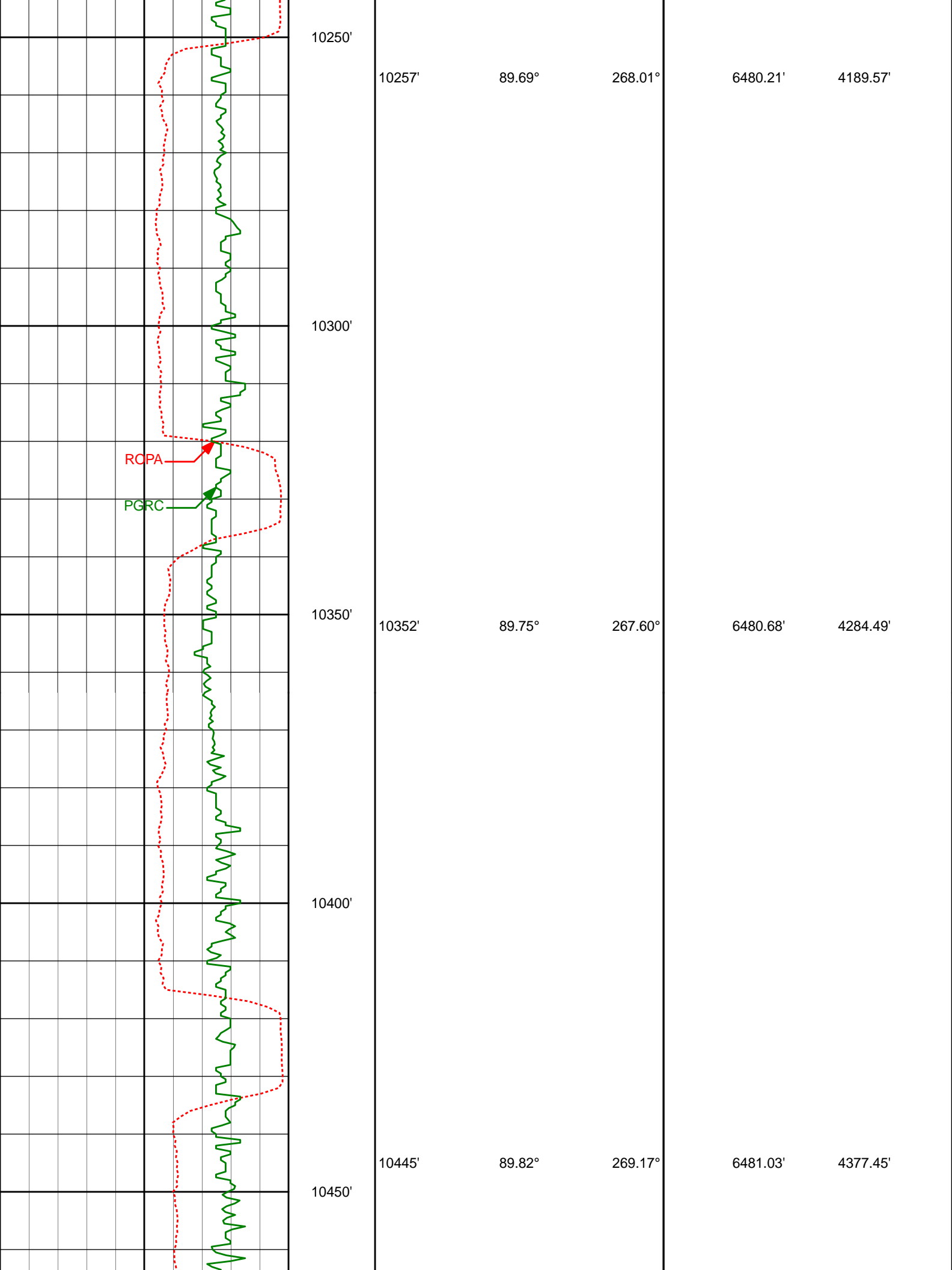
89.48°

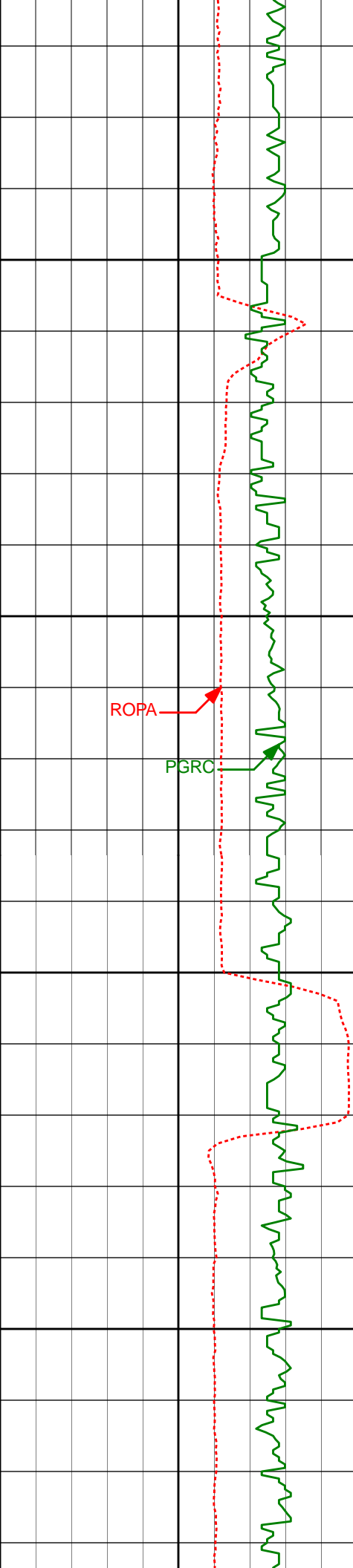
266.34°

6479.52'

4094.69'

10200'





10500'

10550'

10600'

10650'

10538'

89.38°

267.46°

6481.67'

4470.41'

10629'

90.03°

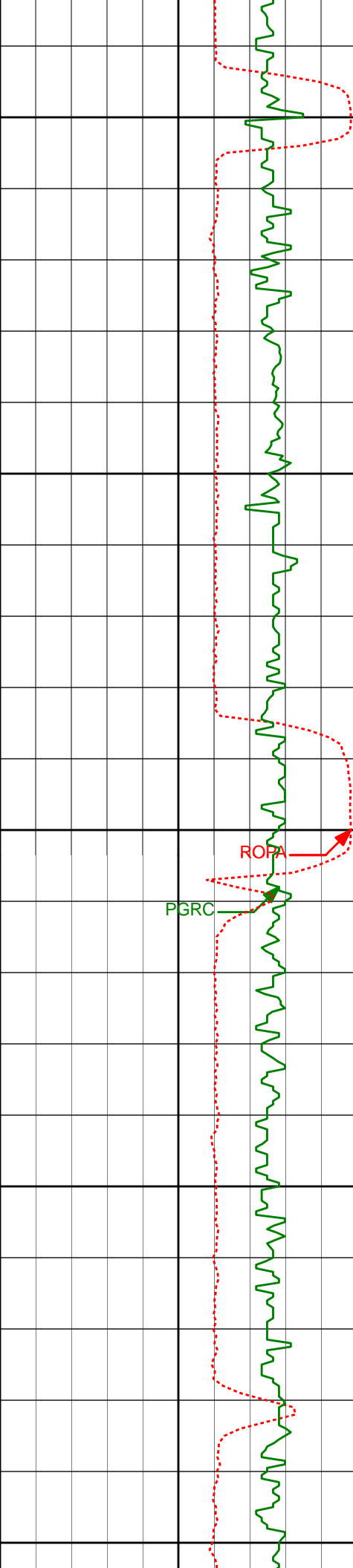
269.30°

6482.14'

4561.36'

ROPA

PGRC



10700'

10721'

89.48°

268.65°

6482.54'

4653.35'

10750'

10800'

PGRC

ROPA

10814'

90.28°

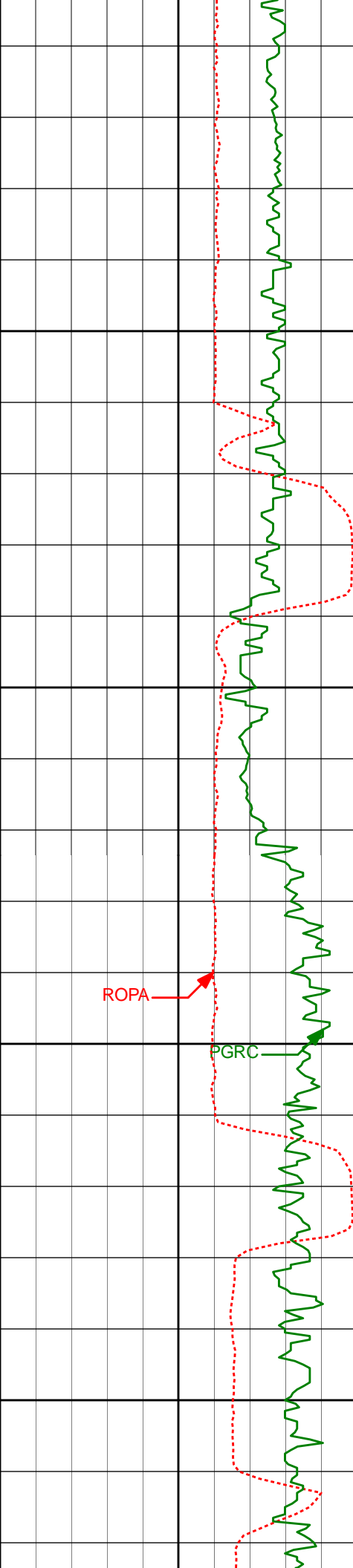
270.05°

6482.73'

4746.34'

10850'

10900'



10950'

11000'

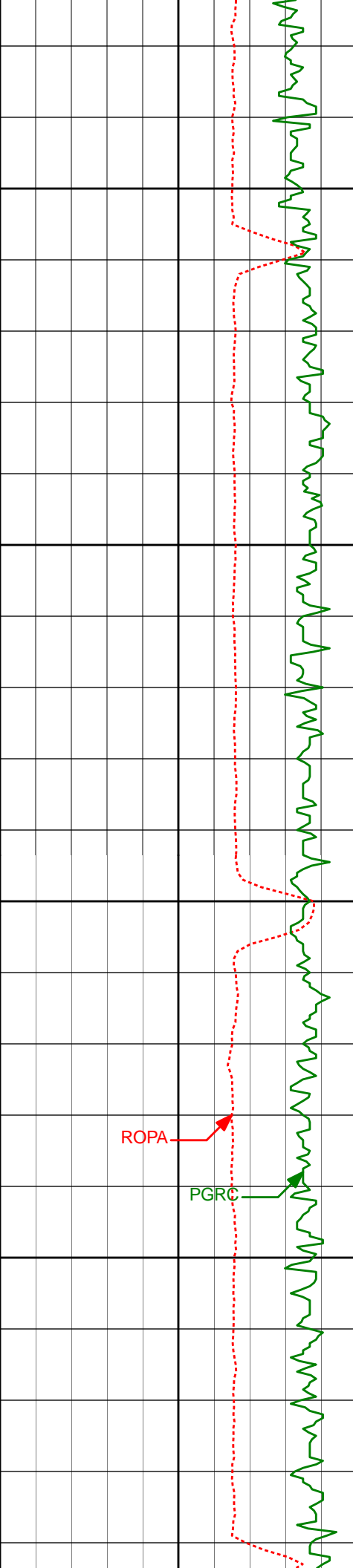
11050'

11100'

ROPA

PGRC

10906'	89.14°	268.10°	6483.20'	4838.32'
10999'	91.36°	270.47°	6482.79'	4931.30'
11092'	90.15°	270.49°	6481.57'	5024.28'



11150'

11184'

89.48°

269.02°

6481.86'

5116.28'

11200'

11250'

11276'

90.15°

268.94°

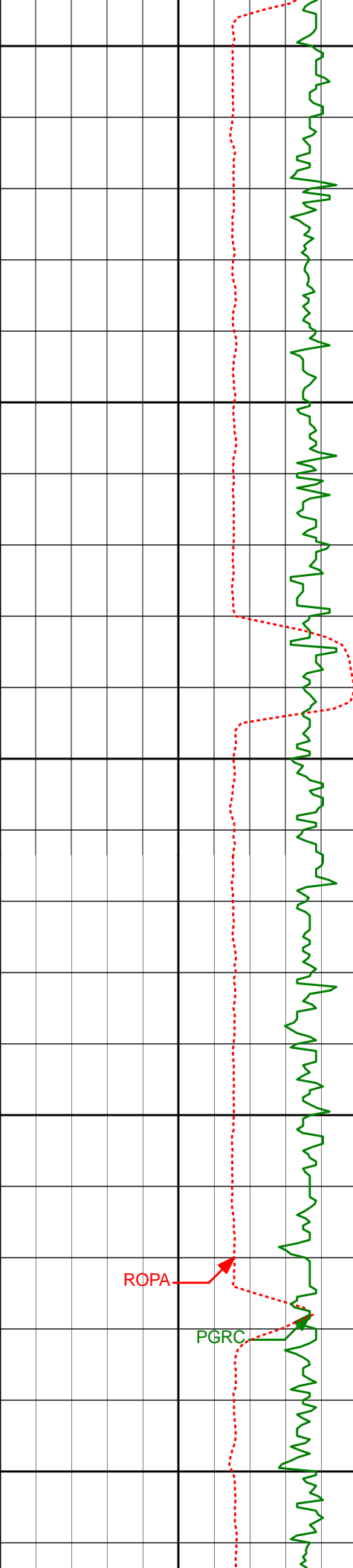
6482.16'

5208.26'

11300'

ROPA

PGRC



11350'

11369'

89.75°

267.81°

6482.24'

5301.22'

11400'

11450'

11461'

90.22°

269.56°

6482.27'

5393.20'

11500'

ROPA

PGRC

11550'

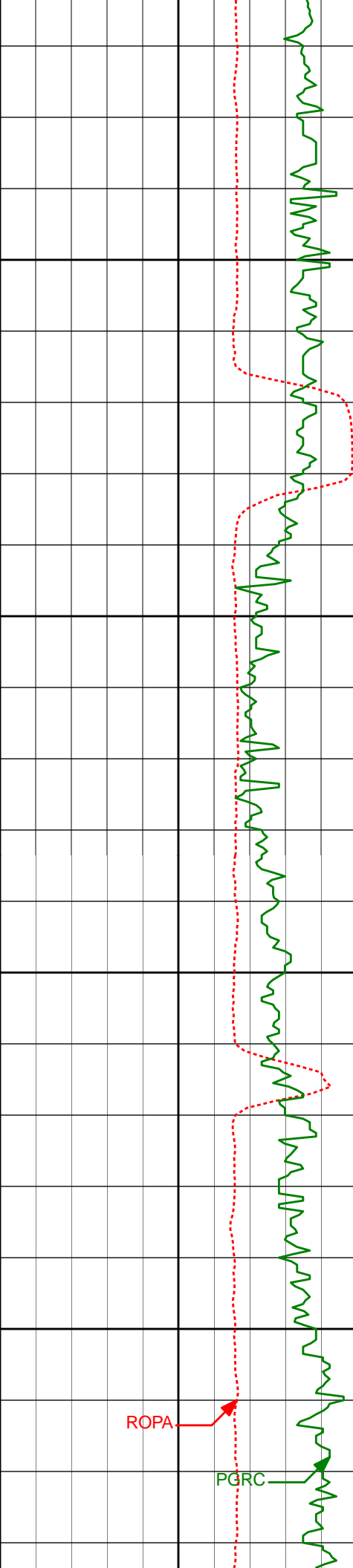
11554'

90.40°

270.05°

6481.76'

5486.19'



11600'

11650'

11700'

11750'

11647'

89.01°

269.70°

6482.24'

5579.19'

11741'

89.08°

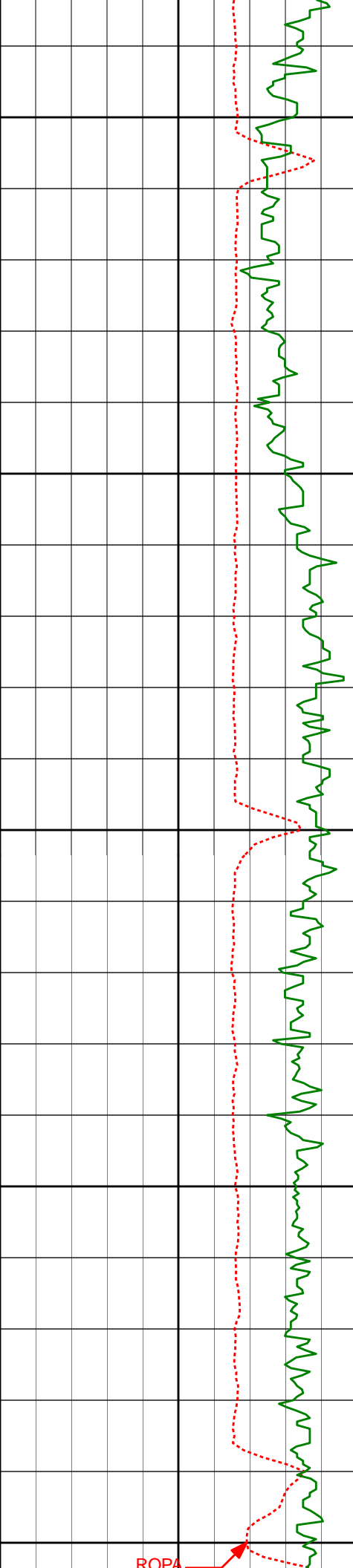
268.89°

6483.81'

5673.17'

ROPA

PGRC



11800'

11834'

90.28°

268.78°

6484.33'

5766.15'

11850'

11900'

11927'

90.49°

268.02°

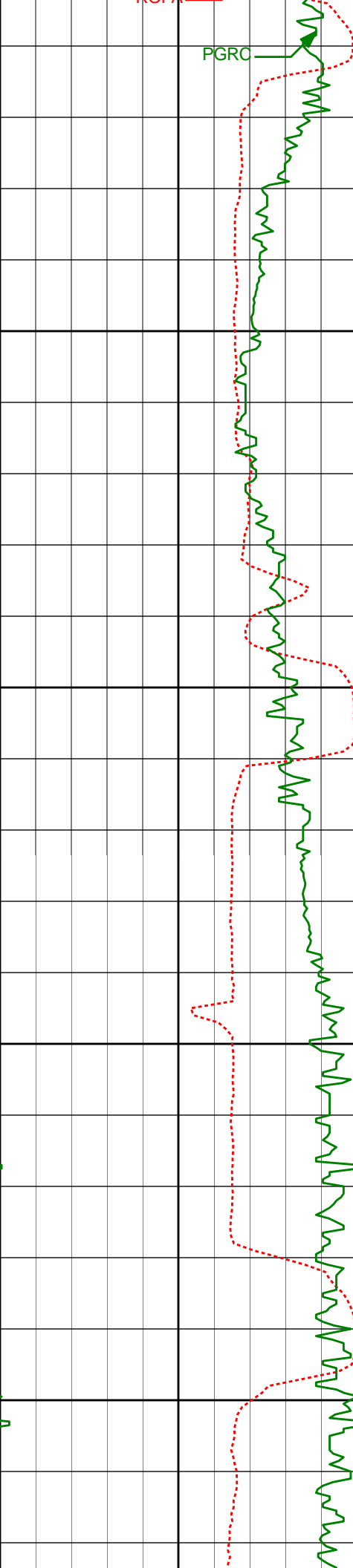
6483.70'

5859.11'

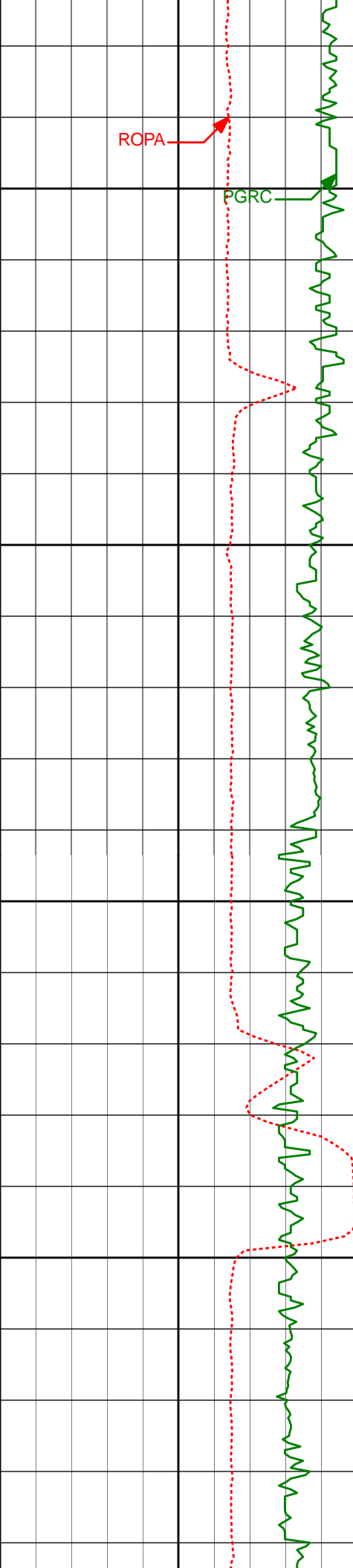
11950'

12000'

ROPA



12022'	87.93°	266.13°	6485.01'	5953.96'
12050'				
12100'				
12117'	89.04°	267.01°	6487.52'	6048.75'
12150'				
12200'				
12212'	88.61°	268.04°	6489.47'	6143.64'



12250'

12300'

12350'

12400'

12307'

12402'

88.58°

88.77°

267.06°

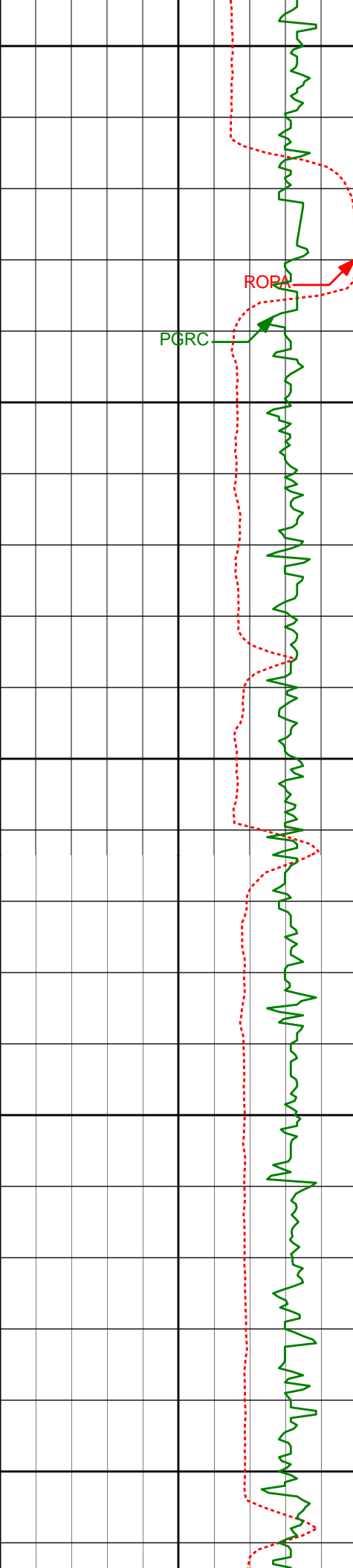
267.83°

6491.80'

6494.00'

6238.53'

6333.40'



12450'

12500'

12550'

12600'

12650'

PGRC

ROPA

12497'

90.12°

269.94°

6494.92'

6428.37'

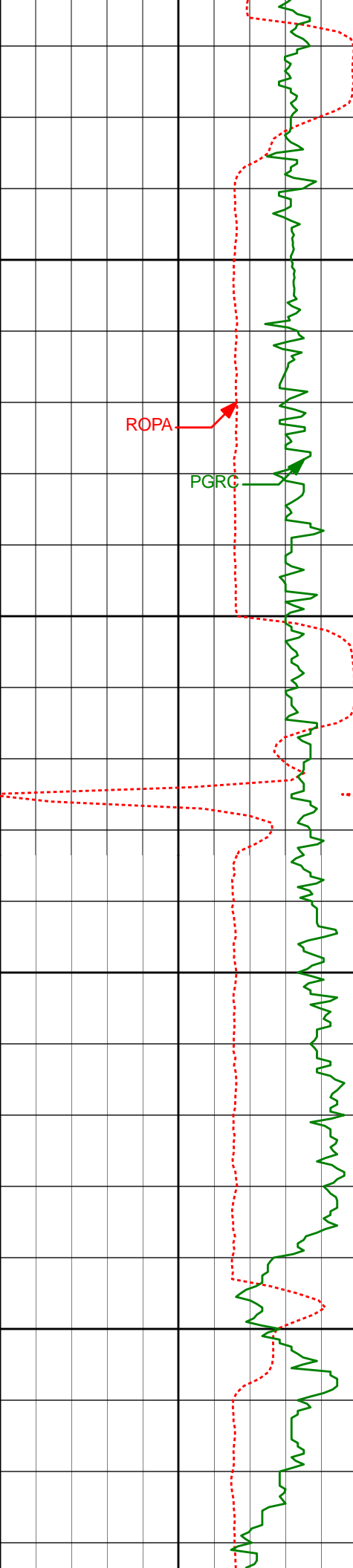
12592'

89.01°

268.56°

6495.64'

6523.36'



12700'

12750'

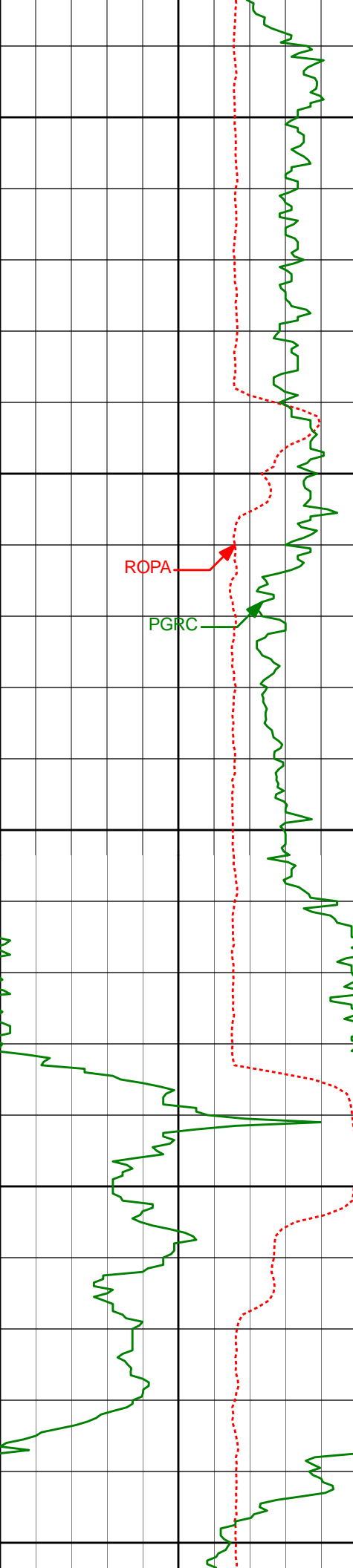
12800'

12850'

12687'	89.81°	268.77°	6496.62'	6618.33'
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12781'	90.18°	269.56°	6496.63'	6712.32'
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12876'	90.46°	268.94°	6496.10'	6807.31'
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12900'

12950'

13000'

13050'

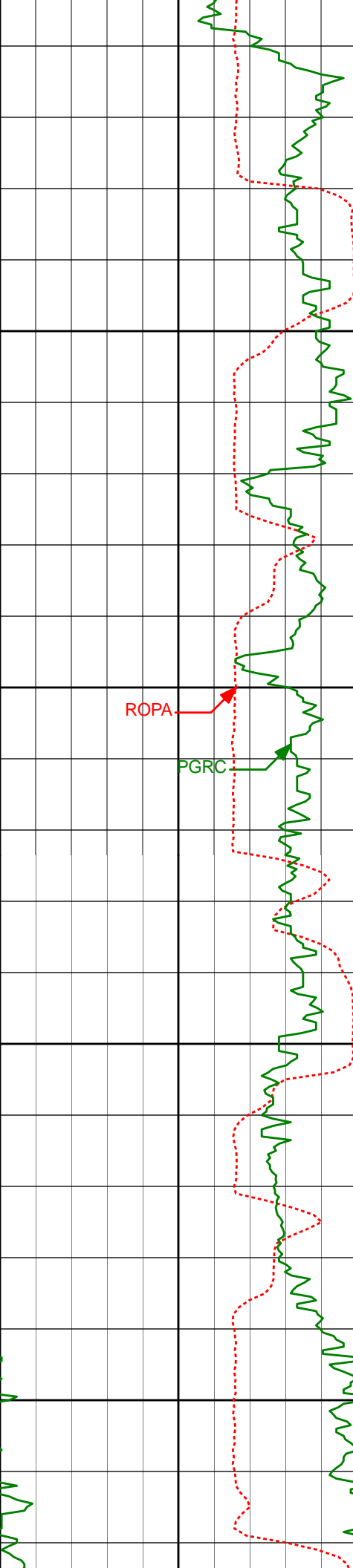
13100'

ROPA

PGRC

12971'	90.74°	267.22°	6495.10'	6902.24'
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13066'	91.67°	269.12°	6493.10'	6997.17'
--------	--------	---------	----------	----------



13150'

13200'

13250'

13300'

ROPA

PGRC

13161'

91.29°

269.08°

6490.65'

7092.12'

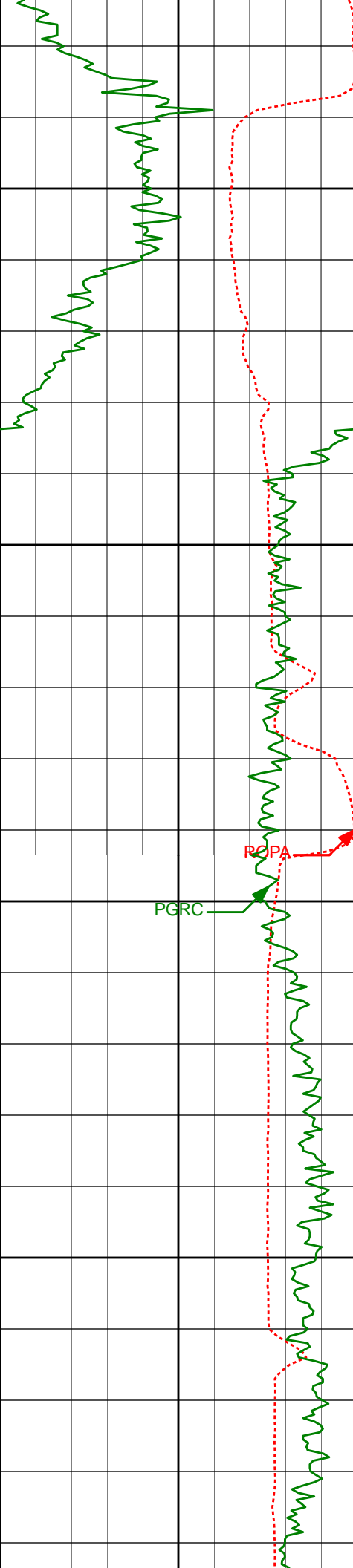
13256'

90.56°

269.19°

6489.12'

7187.10'



13350'

13351'

89.75°

268.97°

6488.86'

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13400'

13450'

13446'

89.14°

270.00°

6489.78'

7377.08'

13500'

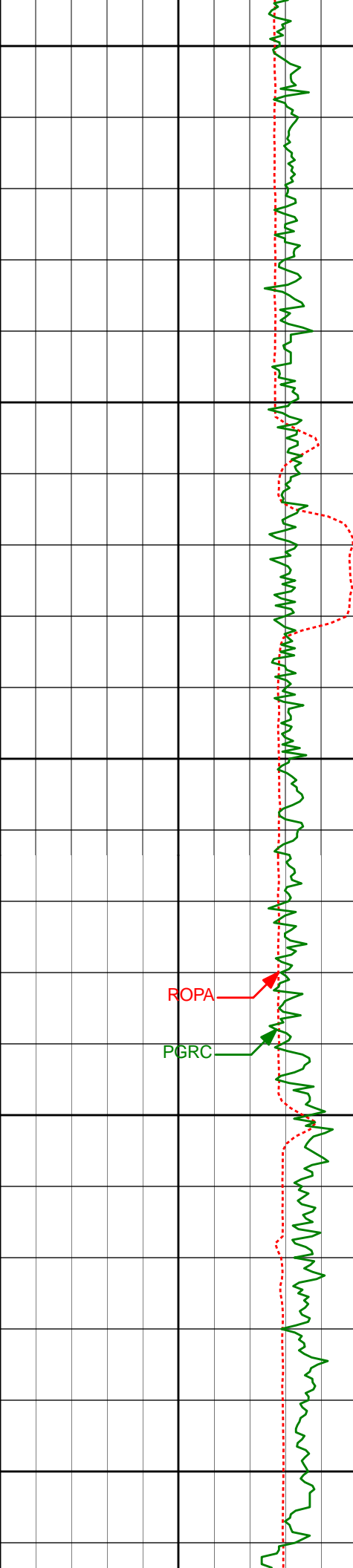
13540'

89.17°

269.28°

6491.17'

7471.06'



13550'

13600'

13635'

89.97°

269.49°

6491.88'

7566.05'

13650'

ROPA

PGRC

13700'

13730'

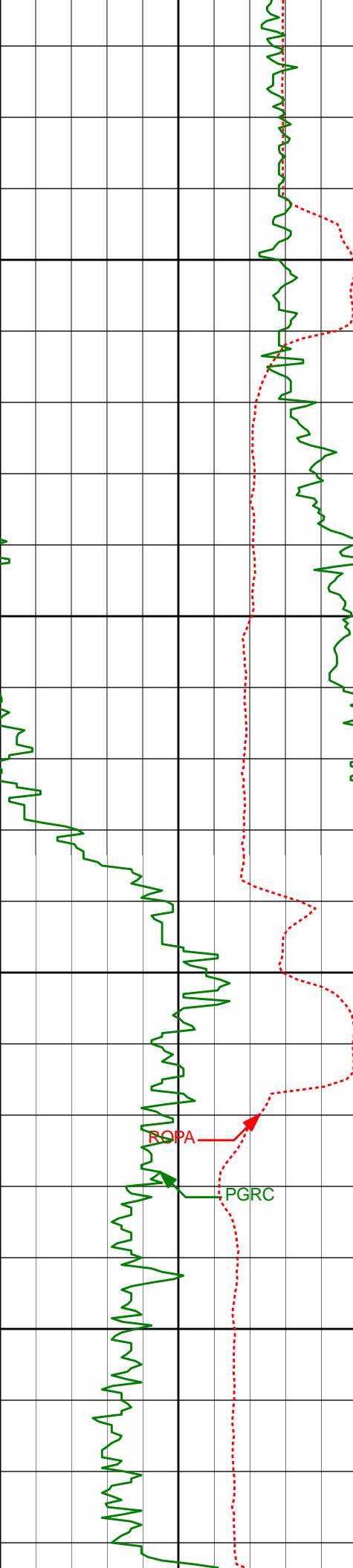
90.83°

269.58°

6491.22'

7661.05'

13750'



13800'

13850'

13900'

13950'

13825'

89.69°

269.37°

6490.78'

7756.04'

13919'

88.49°

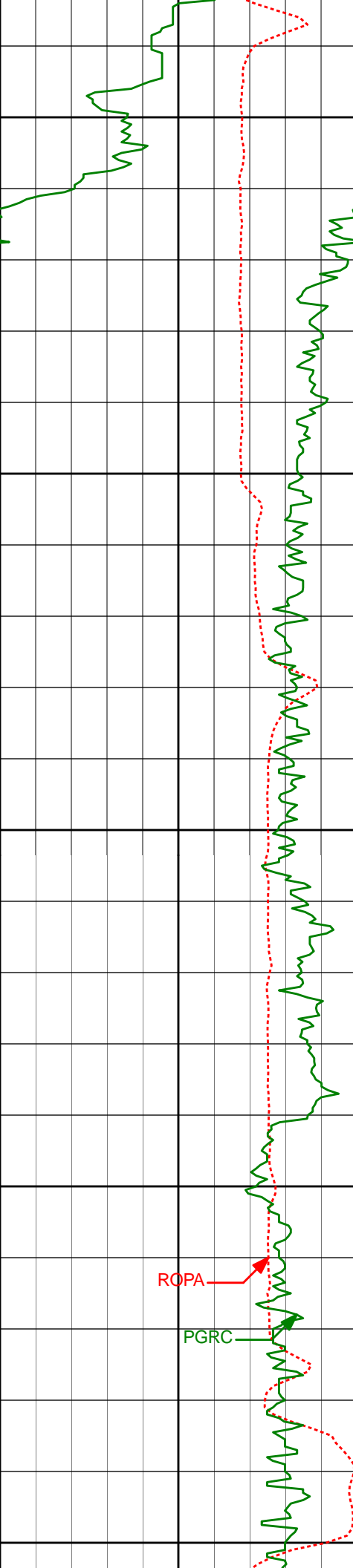
269.46°

6492.28'

7850.02'

RQPA

PGRC



14000'

14014'

88.52°

268.26°

6494.76'

7944.97'

14050'

14100'

14109'

88.34°

267.17°

6497.36'

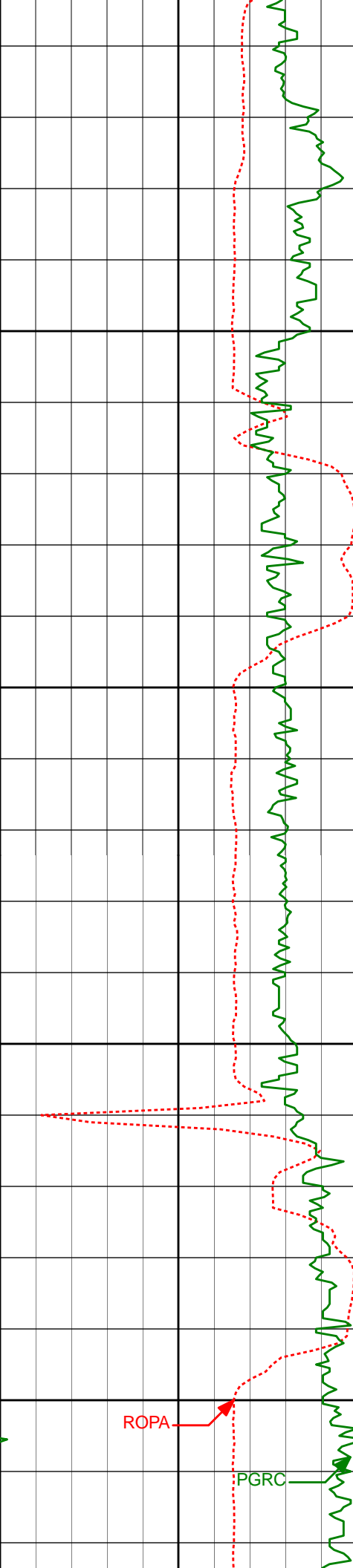
8039.86'

14150'

ROPA

PGRC

14200'



14250'

14300'

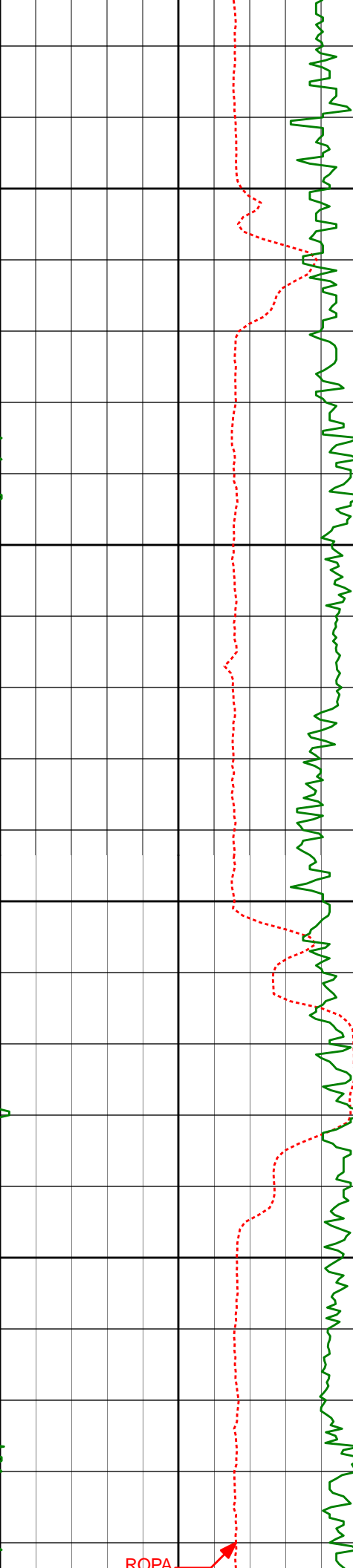
14350'

14400'

ROPA

PGRC

14204	89.29°	267.35°	6499.32	8134.72
14299'	89.54°	268.71°	6500.29'	8229.66'
14394'	89.97°	270.38°	6500.70'	8324.65'



14450'

14489'

88.95°

268.21°

6501.60'

8419.63'

14500'

14550'

14584'

88.86°

268.21°

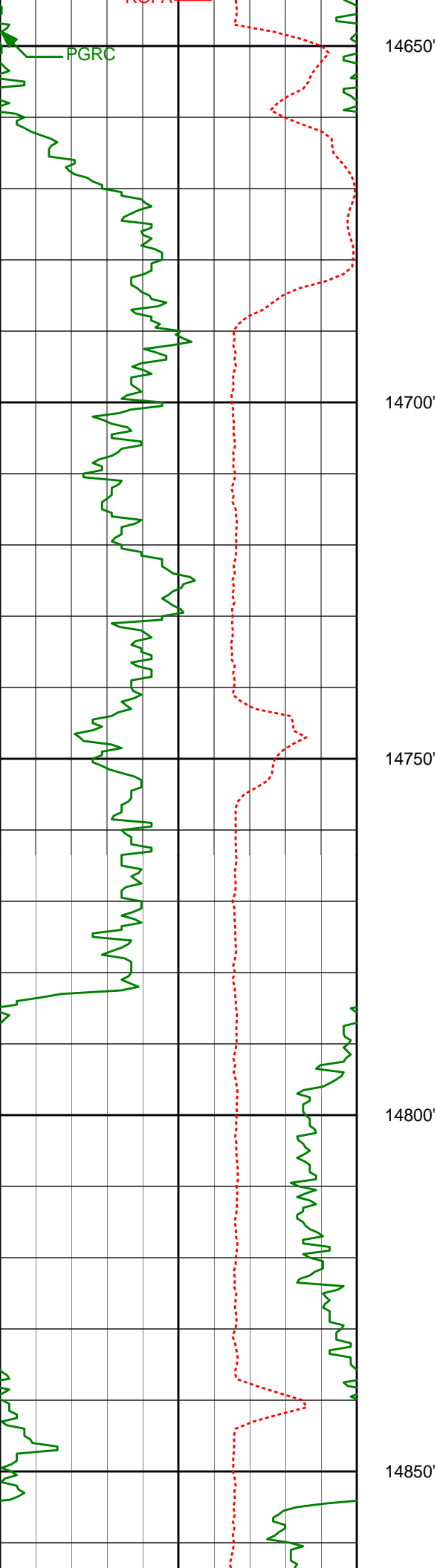
6503.41'

8514.57'

14600'

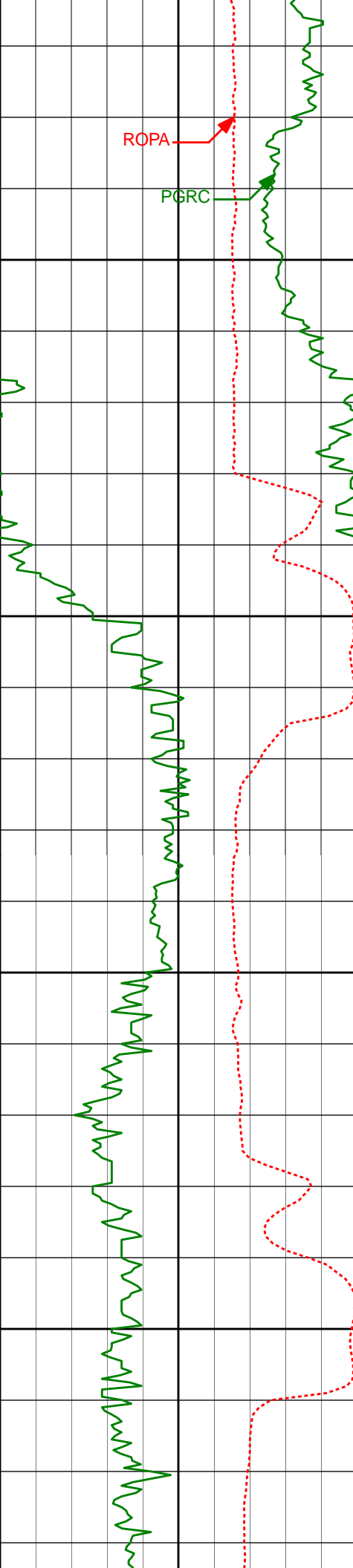
ROPA





14678' 90.03° 268.91° 6504.32' 8608.53'

14773' 90.31° 269.01° 6504.04' 8703.52'



14868'

90.37°

267.93°

6503.48'

8798.48'

14963'

91.11°

268.29°

6502.25'

8893.42'

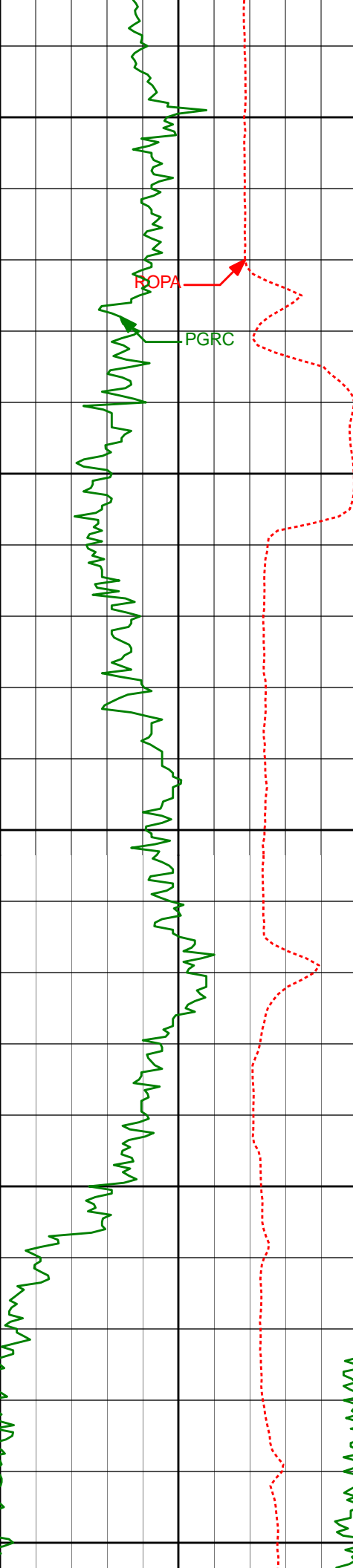
15058'

90.31°

269.06°

6501.07'

8988.38'



15100'

15150'

15200'

15250'

15300'

15153'

88.40°

268.80°

6502.14'

9083.36'

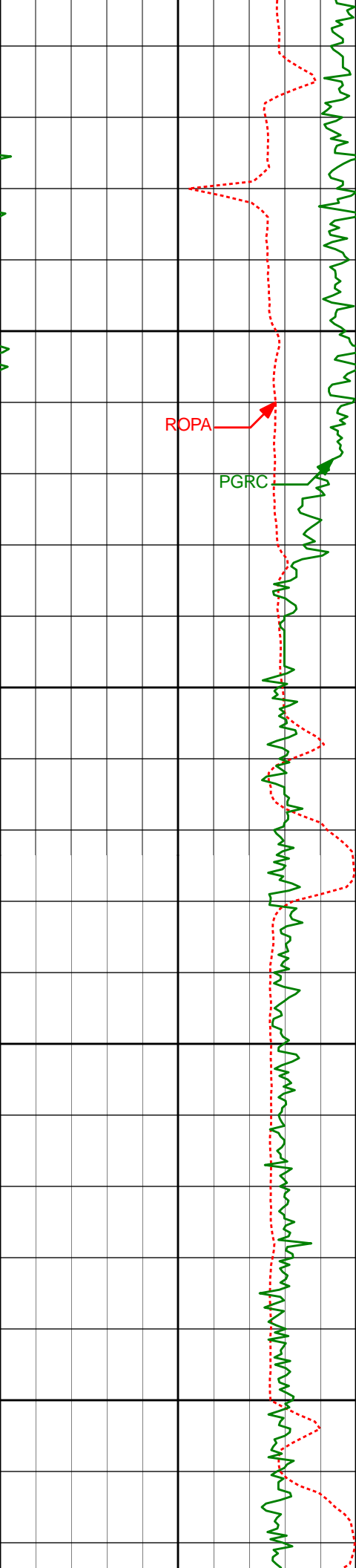
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88.46°

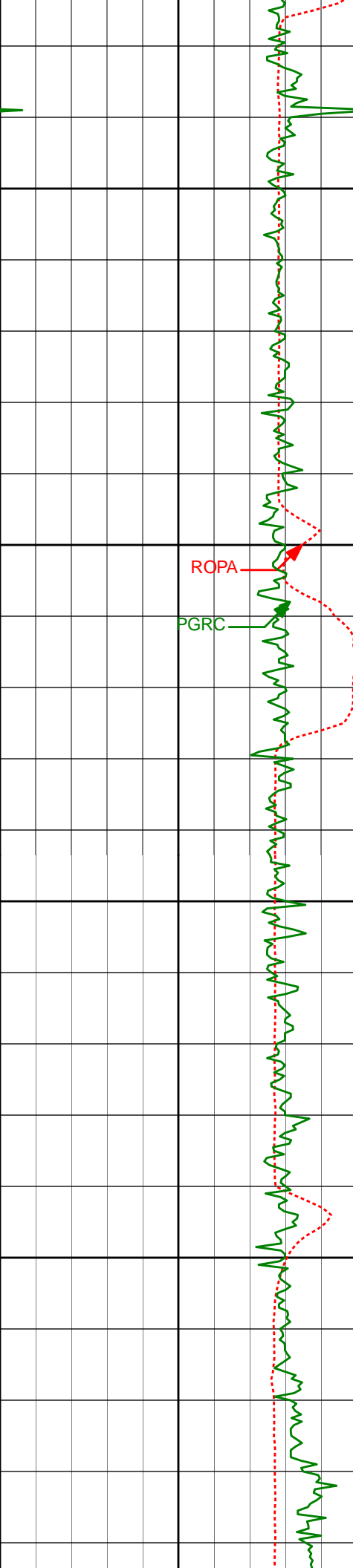
268.27°

6504.74'

9178.29'



15343'	88.43°	267.68°	6507.32'	9273.19'
15350'				
15400'				
15437'	88.89°	268.02°	6509.52'	9367.10'
15450'				
15500'				



15550'

15600'

15650'

15700'

15532'

89.48°

268.20°

6510.87'

9462.04'

15627'

90.00°

270.25°

6511.30'

9557.02'

15722'

90.93°

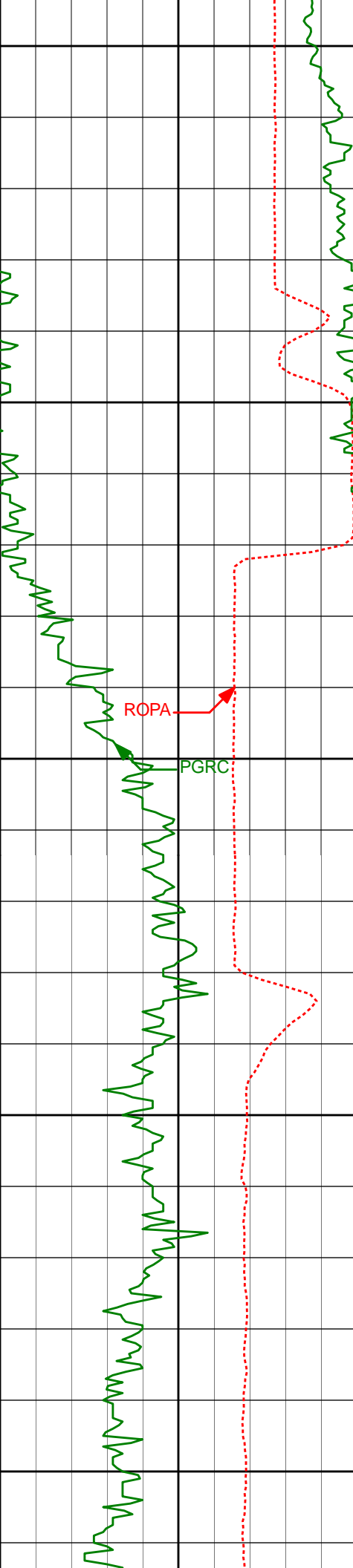
268.39°

6510.53'

9652.01'

ROPA

PGRC



15750'

15800'

15850'

15900'

15950'

ROP

PGRC

15817'

90.59°

269.10°

6509.27'

9746.98'

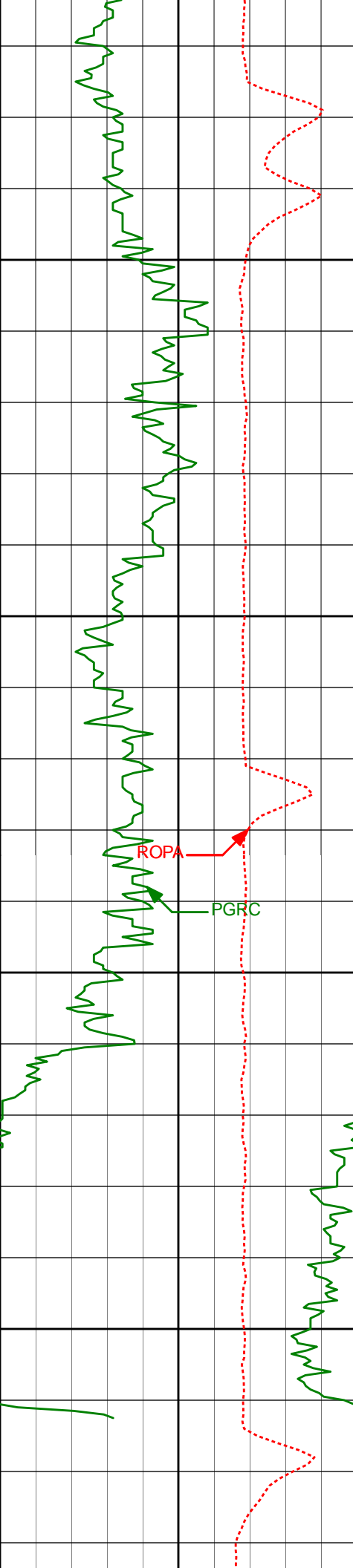
15912'

90.28°

268.35°

6508.55'

9841.95'



16000'

16050'

16100'

16150'

16007'

90.65°

267.56°

6507.78'

9936.88'

16101'

90.86°

266.84°

6506.54'

10030.76'

16154'

90.74°

265.64°

6505.80'

10083.64'

ROP

PGRC

2876.00	8.64	332.66	2868.23	115.35 N	33.96 W	33.98	0.56
2971.00	8.07	328.43	2962.22	127.37 N	40.73 W	40.75	0.88
3066.00	6.93	341.15	3056.41	138.48 N	46.07 W	46.10	2.11
3160.00	6.85	344.61	3149.73	149.25 N	49.39 W	49.42	0.45
3255.00	6.87	339.91	3244.06	160.05 N	52.85 W	52.87	0.59
3350.00	5.89	334.00	3338.47	169.76 N	56.94 W	56.96	1.24
3445.00	6.58	340.91	3432.91	179.29 N	60.85 W	60.88	1.07
3540.00	6.52	343.82	3527.29	189.61 N	64.14 W	64.17	0.36
3634.00	7.05	344.17	3620.63	200.29 N	67.20 W	67.23	0.57
3729.00	6.41	342.21	3714.97	210.95 N	70.41 W	70.44	0.72
3824.00	5.59	335.50	3809.45	220.21 N	73.95 W	73.98	1.13
3919.00	3.49	317.26	3904.15	226.54 N	77.83 W	77.87	2.66
4014.00	0.99	287.28	3999.08	228.91 N	80.57 W	80.61	2.82
4109.00	0.96	247.65	4094.06	228.85 N	82.09 W	82.13	0.70
4203.00	0.93	212.61	4188.05	227.91 N	83.23 W	83.27	0.61
4298.00	0.91	203.13	4283.04	226.57 N	83.95 W	83.98	0.16
4393.00	0.59	263.50	4378.03	225.82 N	84.73 W	84.77	0.85
4488.00	0.62	269.72	4473.03	225.76 N	85.73 W	85.77	0.08
4582.00	0.50	260.29	4567.02	225.69 N	86.64 W	86.68	0.16
4677.00	0.50	205.19	4662.02	225.24 N	87.23 W	87.26	0.49
4772.00	0.72	213.07	4757.01	224.37 N	87.73 W	87.77	0.25
4866.00	0.68	205.70	4851.01	223.37 N	88.29 W	88.33	0.10
4961.00	0.69	226.81	4946.00	222.47 N	88.95 W	88.99	0.26
5055.00	0.47	251.75	5039.99	221.96 N	89.73 W	89.77	0.35
5150.00	0.34	46.57	5134.99	222.03 N	89.90 W	89.94	0.83
5245.00	0.57	33.28	5229.99	222.62 N	89.43 W	89.47	0.26
5340.00	0.36	70.95	5324.99	223.12 N	88.89 W	88.93	0.38
5435.00	0.28	145.59	5419.99	223.02 N	88.48 W	88.52	0.41
5530.00	0.47	142.70	5514.98	222.52 N	88.11 W	88.15	0.20
5625.00	0.69	171.33	5609.98	221.64 N	87.79 W	87.83	0.38
5688.00	0.75	165.48	5672.98	220.87 N	87.63 W	87.67	0.15
5718.00	0.73	169.39	5702.97	220.49 N	87.54 W	87.58	0.18
5813.00	2.50	250.28	5797.94	219.20 N	89.38 W	89.42	2.62
5908.00	13.92	267.42	5891.82	217.98 N	102.79 W	102.83	12.16
6002.00	22.96	265.50	5980.90	216.03 N	132.43 W	132.47	9.64
6050.00	23.58	264.20	6024.99	214.32 N	151.31 W	151.35	1.68
6097.00	26.55	265.61	6067.56	212.57 N	171.14 W	171.18	6.45
6145.00	30.14	266.20	6109.80	210.95 N	193.87 W	193.91	7.50
6192.00	34.29	267.08	6149.56	209.49 N	218.88 W	218.92	8.89
6240.00	38.80	267.54	6188.11	208.16 N	247.42 W	247.46	9.41
6287.00	44.81	267.78	6223.13	206.88 N	278.71 W	278.75	12.79
6335.00	49.92	269.53	6255.63	206.08 N	314.00 W	314.04	10.98
6381.00	53.86	269.07	6284.02	205.63 N	350.19 W	350.22	8.60
6429.00	57.48	268.43	6311.08	204.76 N	389.81 W	389.84	7.62
6476.00	60.16	268.14	6335.41	203.56 N	430.00 W	430.03	5.73
6524.00	63.02	268.24	6358.25	202.22 N	472.19 W	472.23	5.96
6571.00	68.87	270.08	6377.40	201.61 N	515.08 W	515.12	12.95
6619.00	72.62	270.40	6393.22	201.80 N	560.39 W	560.42	7.84
6666.00	76.80	270.71	6405.62	202.24 N	605.71 W	605.75	8.92
6706.00	79.01	270.97	6414.00	202.81 N	644.82 W	644.85	5.56
6843.00	84.29	270.52	6433.89	204.57 N	780.31 W	780.34	3.87
6937.00	85.28	270.37	6442.43	205.30 N	873.91 W	873.95	1.07
7032.00	87.13	268.99	6448.72	204.77 N	968.70 W	968.73	2.43
7127.00	87.13	268.31	6453.47	202.53 N	1063.55 W	1063.59	0.71
7222.00	87.07	267.57	6458.28	199.12 N	1158.37 W	1158.40	0.78
7317.00	89.14	267.71	6461.42	195.21 N	1253.23 W	1253.26	2.18
7412.00	90.83	267.86	6461.45	191.54 N	1348.16 W	1348.19	1.79
7506.00	89.20	268.43	6461.42	188.50 N	1442.10 W	1442.14	1.84
7601.00	90.46	269.77	6461.70	187.01 N	1537.09 W	1537.12	1.94
7696.00	89.11	267.49	6462.06	184.74 N	1632.05 W	1632.08	2.79
7791.00	90.18	268.93	6462.65	181.77 N	1727.00 W	1727.03	1.89
7886.00	89.07	267.91	6463.27	179.15 N	1821.96 W	1821.99	1.59
7980.00	91.02	270.04	6463.20	177.47 N	1915.93 W	1915.96	3.07
8075.00	91.39	269.56	6461.20	177.14 N	2010.91 W	2010.94	0.64
8169.00	91.69	268.47	6458.67	175.52 N	2104.86 W	2104.89	1.20
8264.00	91.08	269.72	6456.38	174.02 N	2199.82 W	2199.85	1.46
8359.00	90.68	269.47	6454.92	173.35 N	2294.81 W	2294.84	0.50
8454.00	89.51	270.08	6454.76	172.98 N	2389.80 W	2389.83	1.39
8548.00	89.63	273.70	6455.47	176.08 N	2483.73 W	2483.76	3.85
8643.00	89.97	276.90	6455.80	184.85 N	2578.31 W	2578.35	3.39
8738.00	89.85	275.27	6455.95	194.92 N	2672.77 W	2672.81	1.72
8833.00	86.14	270.24	6459.27	199.49 N	2767.56 W	2767.59	6.58
8927.00	87.41	269.75	6464.56	199.48 N	2861.41 W	2861.44	1.45
9022.00	87.66	267.87	6468.65	197.51 N	2956.30 W	2956.33	1.99
9117.00	87.44	267.36	6472.71	193.56 N	3051.13 W	3051.16	0.58

9212.00	88.09	266.59	6476.41	188.55 N	3145.92 W	3145.95	1.06
9307.00	89.41	267.80	6478.48	183.90 N	3240.78 W	3240.81	1.88
9402.00	90.00	267.82	6478.97	180.27 N	3335.71 W	3335.74	0.62
9496.00	90.49	267.49	6478.57	176.42 N	3429.63 W	3429.66	0.63
9590.00	88.31	265.01	6479.56	170.28 N	3523.41 W	3523.44	3.51
9685.00	90.93	268.18	6480.19	164.64 N	3618.22 W	3618.25	4.33
9779.00	90.62	267.69	6478.92	161.25 N	3712.15 W	3712.18	0.62
9873.00	90.25	266.78	6478.20	156.71 N	3806.04 W	3806.06	1.05
9968.00	89.44	267.26	6478.46	151.78 N	3900.91 W	3900.93	0.99
10062.00	89.91	267.55	6478.99	147.52 N	3994.81 W	3994.83	0.59
10162.00	89.48	266.34	6479.52	142.19 N	4094.66 W	4094.69	1.28
10257.00	89.69	268.01	6480.21	137.51 N	4189.54 W	4189.57	1.77
10352.00	89.75	267.60	6480.68	133.87 N	4284.47 W	4284.49	0.44
10445.00	89.82	269.17	6481.03	131.25 N	4377.43 W	4377.45	1.69
10538.00	89.38	267.46	6481.67	128.51 N	4470.38 W	4470.41	1.90
10629.00	90.03	269.30	6482.14	125.94 N	4561.34 W	4561.36	2.14
10721.00	89.48	268.65	6482.54	124.30 N	4653.33 W	4653.35	0.93
10814.00	90.28	270.05	6482.73	123.24 N	4746.32 W	4746.34	1.73
10906.00	89.14	268.10	6483.20	121.76 N	4838.30 W	4838.32	2.46
10999.00	91.36	270.47	6482.79	120.60 N	4931.28 W	4931.30	3.49
11092.00	90.15	270.49	6481.57	121.37 N	5024.26 W	5024.28	1.30
11184.00	89.48	269.02	6481.86	120.98 N	5116.26 W	5116.28	1.76
11276.00	90.15	268.94	6482.16	119.34 N	5208.24 W	5208.26	0.73
11369.00	89.75	267.81	6482.24	116.71 N	5301.20 W	5301.22	1.29
11461.00	90.22	269.56	6482.27	114.59 N	5393.18 W	5393.20	1.97
11554.00	90.40	270.05	6481.76	114.28 N	5486.17 W	5486.19	0.56
11647.00	89.01	269.70	6482.24	114.07 N	5579.17 W	5579.19	1.54
11741.00	89.08	268.89	6483.81	112.92 N	5673.15 W	5673.17	0.86
11834.00	90.28	268.78	6484.33	111.03 N	5766.13 W	5766.15	1.30
11927.00	90.49	268.02	6483.70	108.43 N	5859.09 W	5859.11	0.85
12022.00	87.93	266.13	6485.01	103.58 N	5953.94 W	5953.96	3.35
12117.00	89.04	267.01	6487.52	97.90 N	6048.74 W	6048.75	1.49
12212.00	88.61	268.04	6489.47	93.80 N	6143.63 W	6143.64	1.17
12307.00	88.58	267.06	6491.80	89.74 N	6238.51 W	6238.53	1.03
12402.00	88.77	267.83	6494.00	85.51 N	6333.39 W	6333.40	0.83
12497.00	90.12	269.94	6494.92	83.66 N	6428.36 W	6428.37	2.64
12592.00	89.01	268.56	6495.64	82.42 N	6523.35 W	6523.36	1.86
12687.00	89.81	268.77	6496.62	80.20 N	6618.31 W	6618.33	0.87
12781.00	90.18	269.56	6496.63	78.83 N	6712.30 W	6712.32	0.93
12876.00	90.46	268.94	6496.10	77.59 N	6807.29 W	6807.31	0.72
12971.00	90.74	267.22	6495.10	74.41 N	6902.23 W	6902.24	1.83
13066.00	91.67	269.12	6493.10	71.37 N	6997.16 W	6997.17	2.23
13161.00	91.29	269.08	6490.65	69.88 N	7092.11 W	7092.12	0.40
13256.00	90.56	269.19	6489.12	68.45 N	7187.09 W	7187.10	0.78
13351.00	89.75	268.97	6488.86	66.92 N	7282.07 W	7282.09	0.88
13446.00	89.14	270.00	6489.78	66.07 N	7377.06 W	7377.08	1.26
13540.00	89.17	269.28	6491.17	65.48 N	7471.05 W	7471.06	0.77
13635.00	89.97	269.49	6491.88	64.46 N	7566.04 W	7566.05	0.87
13730.00	90.83	269.58	6491.22	63.69 N	7661.04 W	7661.05	0.91
13825.00	89.69	269.37	6490.78	62.82 N	7756.03 W	7756.04	1.22
13919.00	88.49	269.46	6492.28	61.86 N	7850.01 W	7850.02	1.28
14014.00	88.52	268.26	6494.76	59.97 N	7944.96 W	7944.97	1.26
14109.00	88.34	267.17	6497.36	56.18 N	8039.85 W	8039.86	1.16
14204.00	89.29	267.35	6499.32	51.64 N	8134.72 W	8134.72	1.02
14299.00	89.54	268.71	6500.29	48.38 N	8229.65 W	8229.66	1.46
14394.00	89.97	270.38	6500.70	47.62 N	8324.64 W	8324.65	1.82
14489.00	88.95	268.21	6501.60	46.45 N	8419.63 W	8419.63	2.52
14584.00	88.86	268.21	6503.41	43.49 N	8514.56 W	8514.57	0.09
14678.00	90.03	268.91	6504.32	41.12 N	8608.53 W	8608.53	1.45
14773.00	90.31	269.01	6504.04	39.40 N	8703.51 W	8703.52	0.31
14868.00	90.37	267.93	6503.48	36.86 N	8798.47 W	8798.48	1.14
14963.00	91.11	268.29	6502.25	33.73 N	8893.41 W	8893.42	0.87
15058.00	90.31	269.06	6501.07	31.53 N	8988.38 W	8988.38	1.17
15153.00	88.40	268.80	6502.14	29.76 N	9083.35 W	9083.36	2.03
15248.00	88.46	268.27	6504.74	27.33 N	9178.28 W	9178.29	0.56
15343.00	88.43	267.68	6507.32	23.98 N	9273.19 W	9273.19	0.62
15437.00	88.89	268.02	6509.52	20.45 N	9367.10 W	9367.10	0.61
15532.00	89.48	268.20	6510.87	17.32 N	9462.04 W	9462.04	0.65
15627.00	90.00	270.25	6511.30	16.03 N	9557.02 W	9557.02	2.23
15722.00	90.93	268.39	6510.53	14.90 N	9652.01 W	9652.01	2.19
15817.00	90.59	269.10	6509.27	12.82 N	9746.97 W	9746.98	0.83
15912.00	90.28	268.35	6508.55	10.71 N	9841.95 W	9841.95	0.85
16007.00	90.65	267.56	6507.78	7.32 N	9936.88 W	9936.88	0.92
16101.00	90.86	266.84	6506.54	2.73 N	10030.76 W	10030.76	0.80

16154.00	90.74	265.64	6505.80	0.75 S	10083.64 W	10083.64	2.28
16219.00	90.74	265.64	6504.96	5.69 S	10148.45 W	10148.45	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 270.01 DEGREES (GRID)
A TOTAL CORRECTION OF 7.43 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 16219.00 FEET
IS 10148.45 FEET ALONG 269.97 DEGREES (GRID)**

Final survey is a straight line projection to TD.

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