



WELL INFORMATION					
MWD Run Number	100	200			
Date run completed	07-Apr-12	13-Apr-12			
Rig Bit Number	2	3			
Bit Size (in)	8.750	6.125			
Tool Nominal OD (in)	6.830	4.850			
Log Start Depth (MD, ft)	584.00	6,782.00			
Log End Depth (MD, ft)	6,782.00	15,725.00			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	05-Apr-12 17:45	09-Apr-12 01:45			
Drill/Wipe End Date and Time	07-Apr-12 12:30	13-Apr-12 08:15			
Min Inc (deg) @ Depth (MD, ft)	.29 @ 5,174.00	85.65 @ 6,779.00			
Max Inc (deg) @ Depth (MD, ft)	82.79 @ 6,726.00	93.71 @ 15,665.00			
Bit TFA(in2) / Bit Type	.75 / PDC	.46 / PDC			
Flow Rate (gpm)	586.00	271.20			
Max AV (fpm) / CV (fpm) @ MWD	376.0 / NA	401.4 / NA			
Fluid Type	Fresh Water Gel	Fresh Water Gel			
Density (ppg) / Viscosity (spqt)	8.80 / 27.00	9.36 / 31.78			
Filtrate CL (ppm)	2,800.00	2,733.00			
pH / Fluid Loss (mptm)	9.70 / NA	9.17 / NA			
PV (cP) / YP (lbf2)	1 / 4.00	7 / 7.00			
% Solids / % Sand	3.70 / 0.40	6.20 / 0.44			
% Oil / Oil:Water Ratio	0 / 0:95	0 / 1:96			
Rm @ Measured Temp (degF)	NA @ NA	NA @ NA			
Rmf @ Measured Temp (degF)	NA @ NA	NA @ NA			
Rmc @ Measured Temp (degF)	NA @ NA	NA @ NA			
Max Tool Temp (deg F) / S	168.68 / PDM	200.51 / PDM			

Max Tool Temp (degF) / Source	163.20 / PCM	239.54 / PCM			
Rm @ Max Tool Temp (degF)	NA @ 165.58	NA @ 239.54			
Lead MWD Engineer	Gary Eifert	Gary Eifert			
Customer Representative	Matt Settles	Johnny Sanchez			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.76	5.76			
Sub Serial Number	11341347	11297891			
Insert Serial Number	11400855	11055884			
Date and Time Initialized	23-Mar-12 20:04	07-Apr-12 19:05			
Date and Time Read	07-Apr-12 20:26	13-Apr-12 21:09			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	56.00	60.00			
Software Version	6.21	6.21			
Sub Serial Number	11341347	11297891			
Sonde Serial Number	11833220	11638536			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	315.00	319.10			

Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	49.12	53.15			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	11341347	11297891			
Insert/Sonde Serial Number	11292594	11293266			

REMARKS

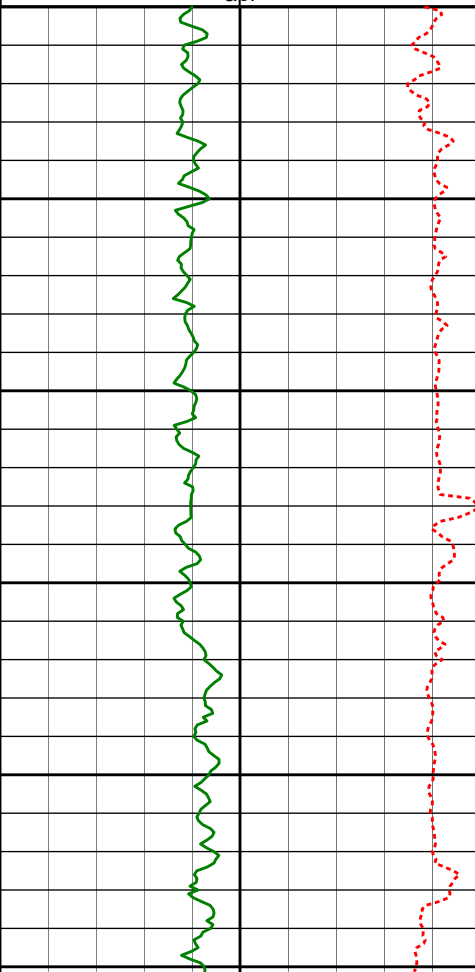
1. All depths are measured bit depths, referenced to the Driller's pipe tally and are measured from the Drill Floor, unless otherwise specified.
2. No depth corrections have been made for pipe stretch or compression.
3. Critical annual velocities are calculated using the "Power Law" model for water based 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 7.3.40

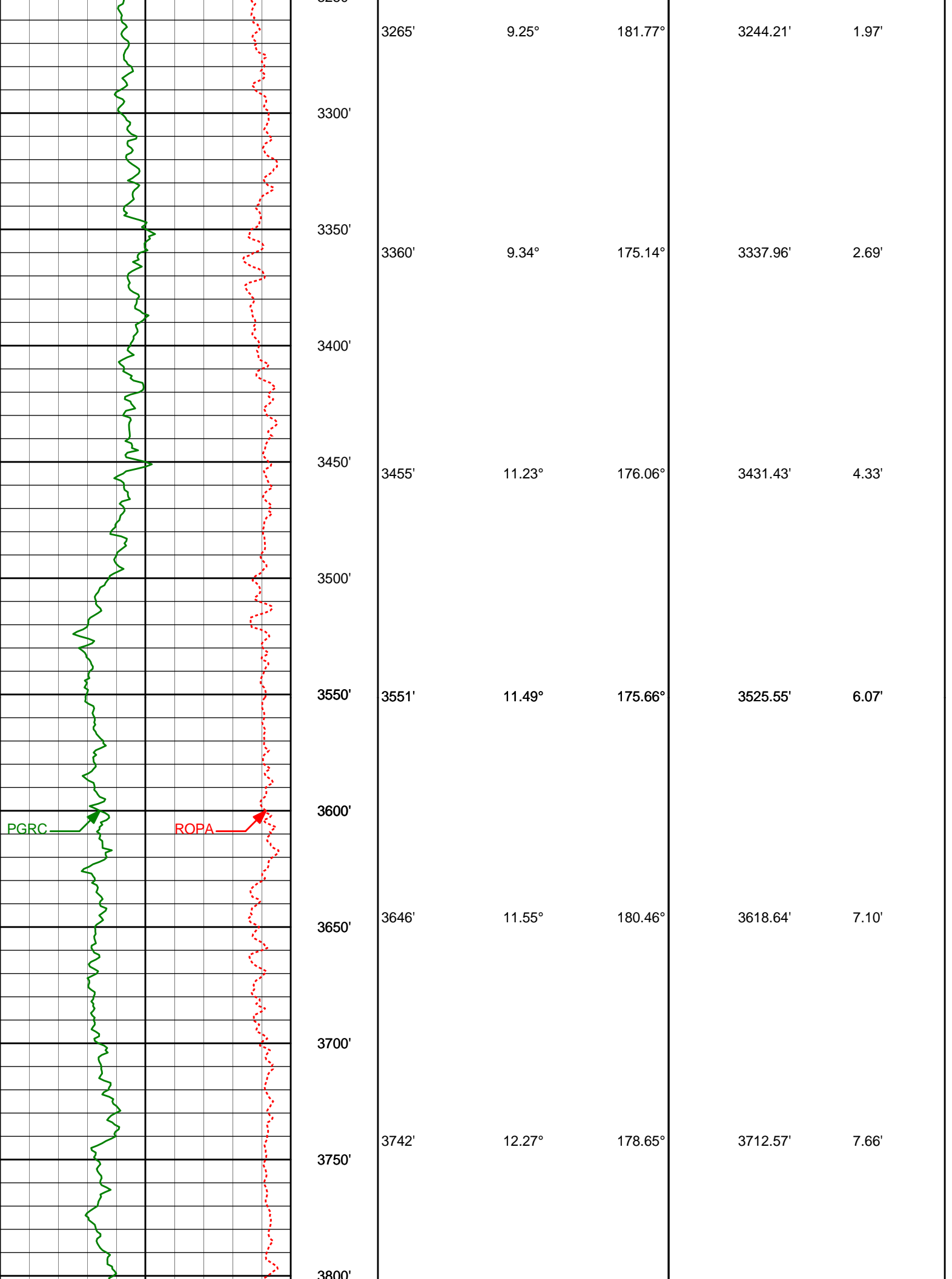
WARRANTY

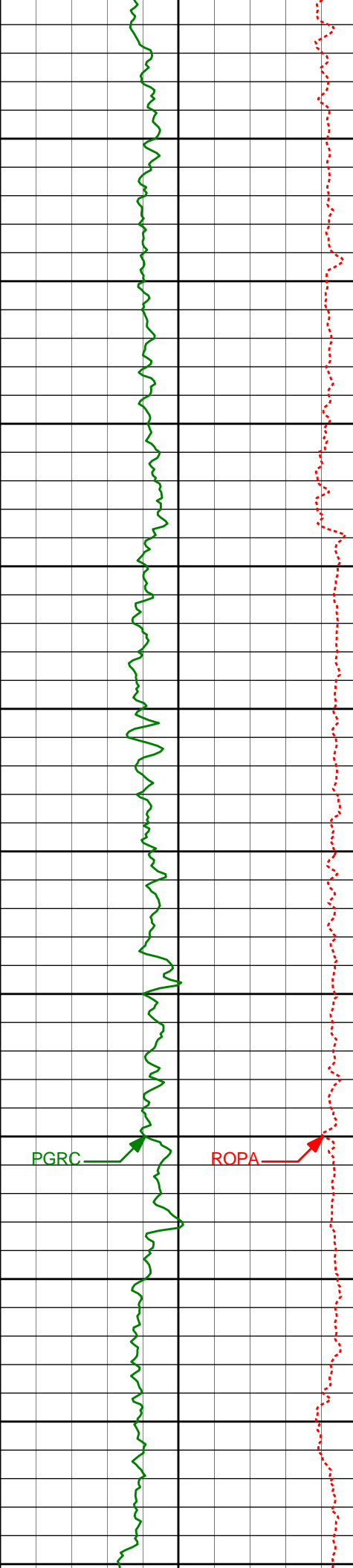
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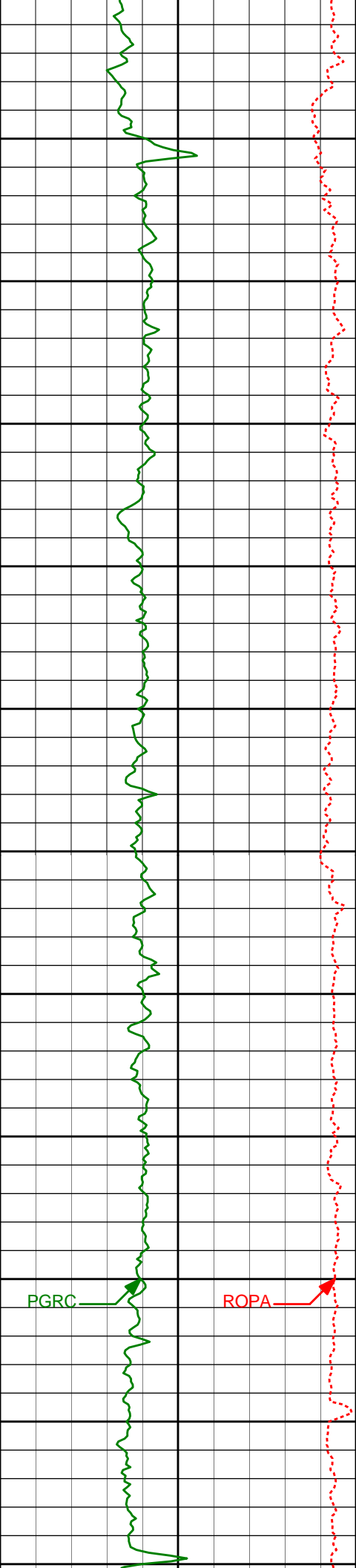
MD Main Log 1:600

Average Rate of Penetration ROPA						
1K0						
feet per hr						
Gamma Ray PGRC		Measured Depth (ft)	Depth	Inc	Azi.	TVD
0200		1:600				V.S.
api						
		3000'				
		3050'				
		3074'	9.54°	181.61°	3055.86'	2.52'
		3100'				
		3150'				
		3169'	9.71°	182.63°	3149.52'	2.26'
		3200'				
		3250'				

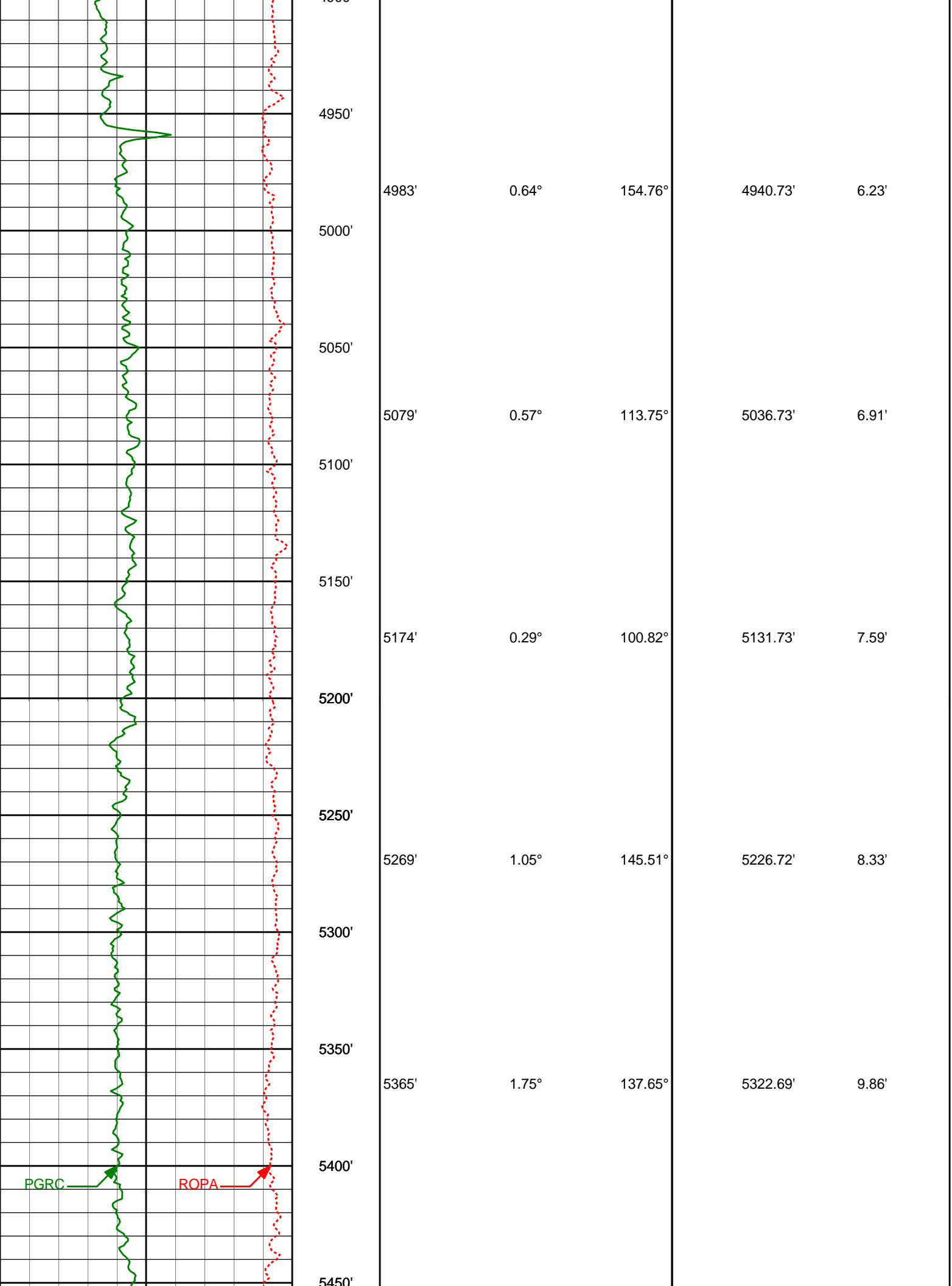


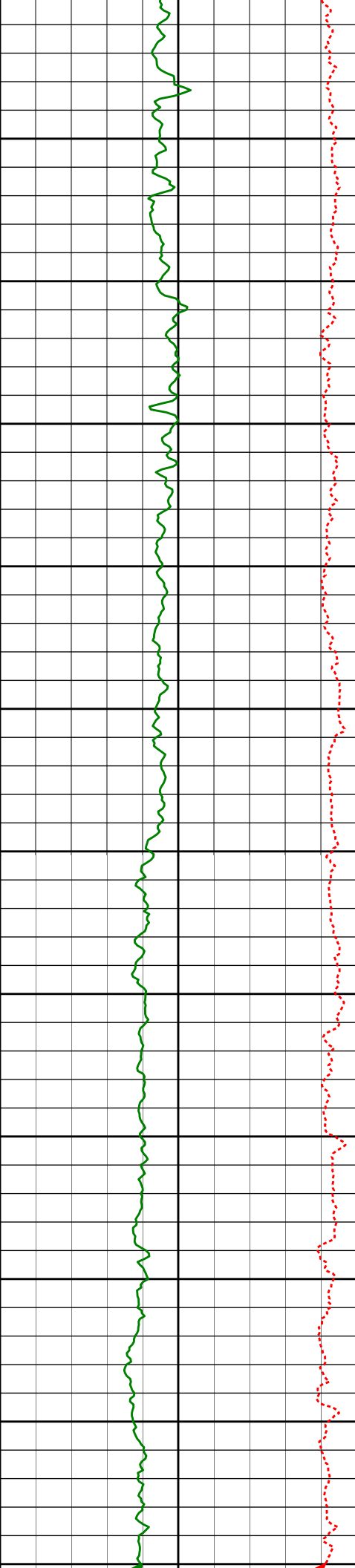


3837'	10.53°	181.96°	3805.70'	7.98'
3850'				
3900'				
3933'	10.40°	185.01°	3900.10'	7.28'
3950'				
4000'				
4028'	9.12°	185.13°	3993.73'	6.18'
4050'				
4100'				
4124'	9.55°	180.08°	4088.46'	5.81'
4150'				
4200'				
4219'	8.73°	176.60°	4182.25'	6.53'
4250'				
4300'				
4314'	10.02°	183.12°	4275.98'	6.82'
4350'				

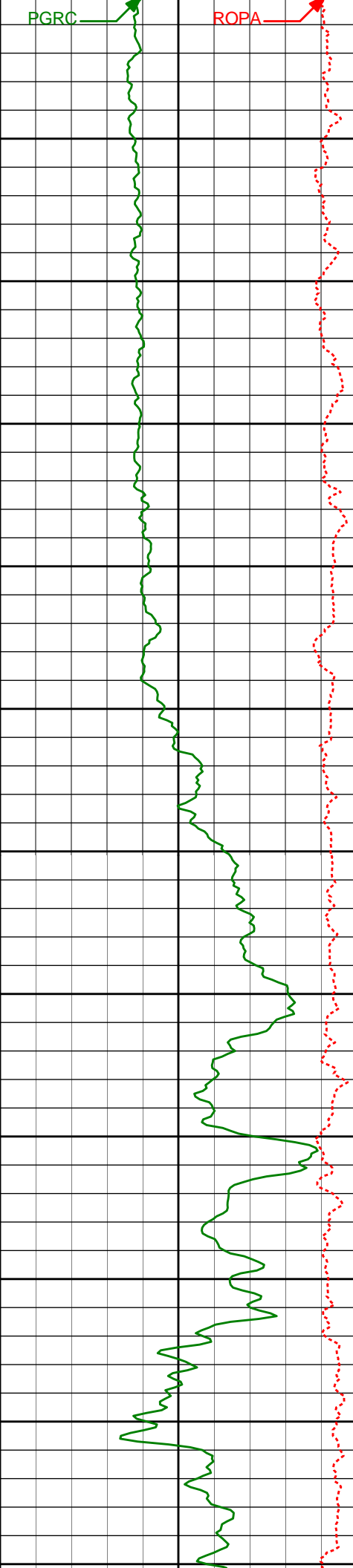


4350'					
4400'	4410'	9.68°	183.70°	4370.56'	6.17'
4450'					
4500'	4506'	8.91°	182.52°	4465.30'	5.64'
4550'					
4600'	4601'	6.38°	184.47°	4559.45'	5.16'
4650'					
4700'	4696'	4.58°	193.86°	4654.01'	4.02'
4750'					
4800'	4792'	3.15°	162.99°	4749.80'	4.00'
4850'					
4900'	4887'	0.86°	125.54°	4844.74'	5.40'

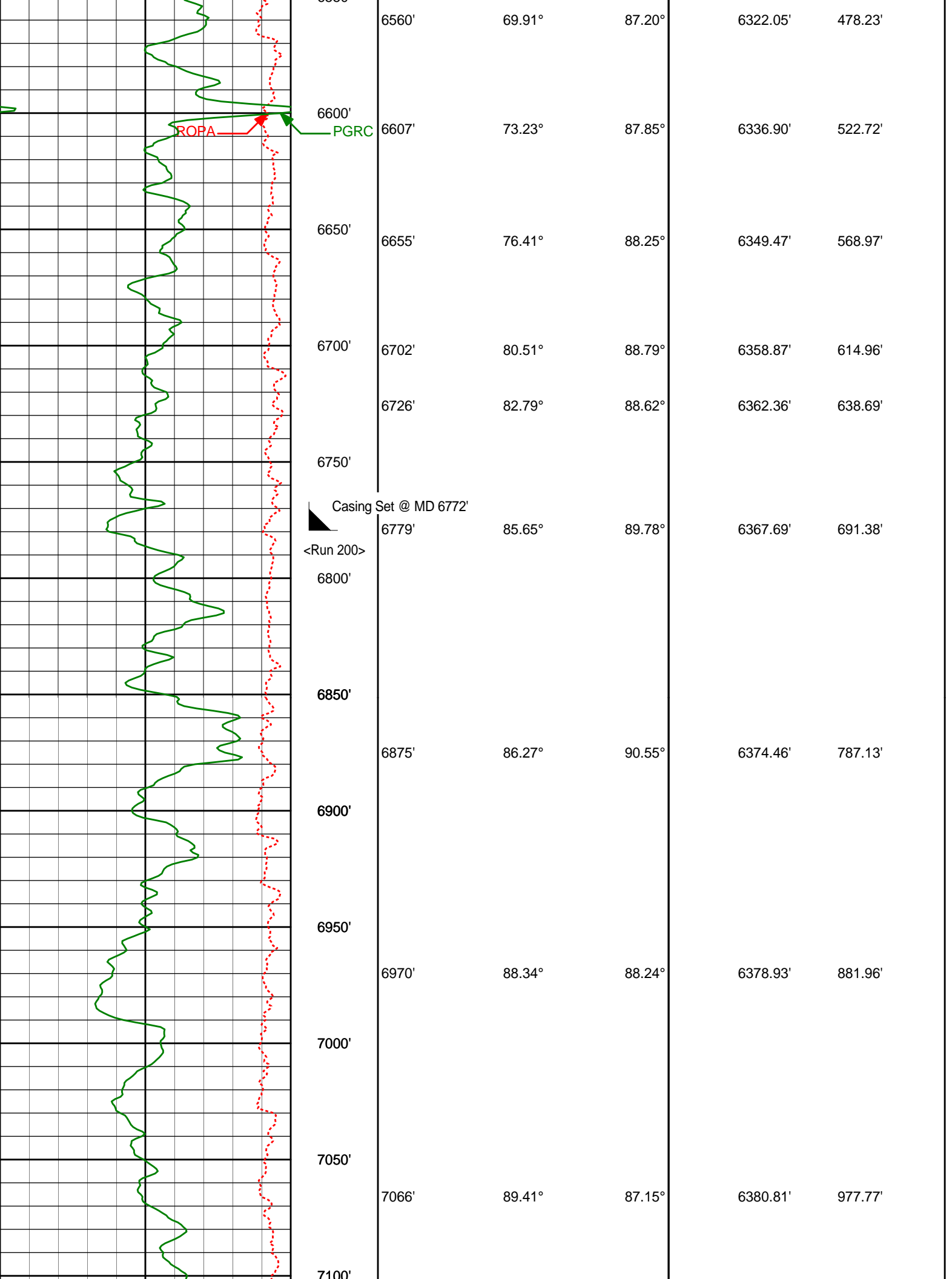


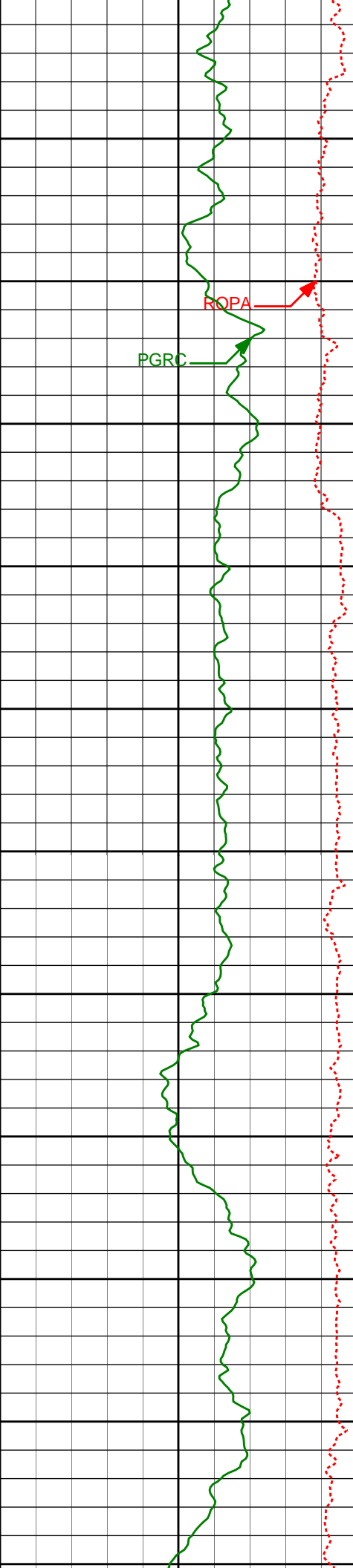


	5460'	1.20°	358.02°	5417.68'	10.80'
5500'					
5550'	5556'	1.13°	34.21°	5513.66'	11.27'
5600'					
5650'	5651'	1.18°	12.29°	5608.64'	11.97'
5700'	5699'	2.17°	71.11°	5656.62'	12.92'
5750'	5746'	8.00°	80.95°	5703.42'	16.97'
5800'	5794'	11.29°	89.60°	5750.73'	24.96'
5850'	5842'	10.86°	90.30°	5797.84'	34.18'
5900'	5890'	14.52°	91.54°	5844.66'	44.72'
5950'	5937'	19.11°	87.21°	5889.64'	58.30'
6000'	5985'	23.43°	83.20°	5934.36'	75.60'

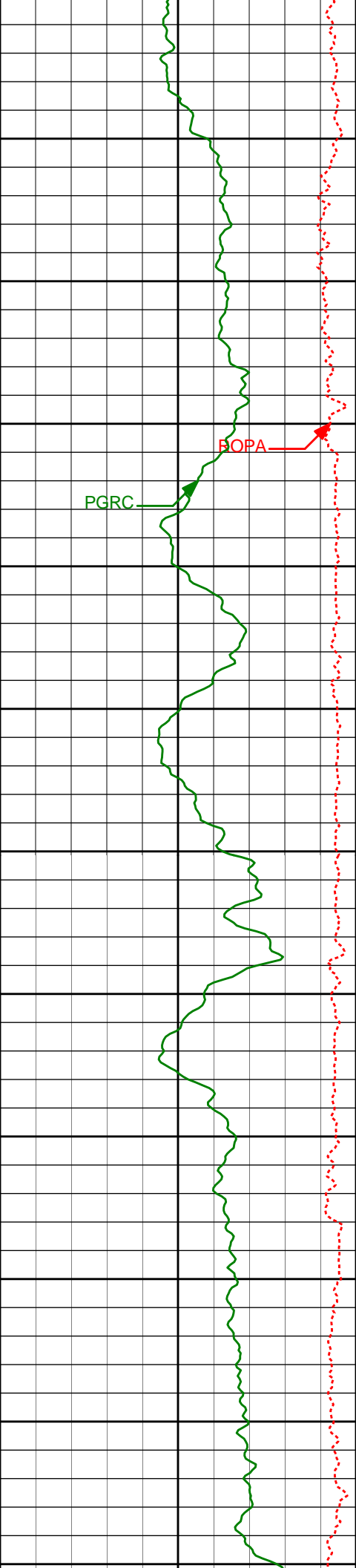


6030'				
6033'	26.71°	82.72°	5977.83'	95.73'
6050'				
6081'	30.41°	86.92°	6019.99'	118.52'
6100'				
6129'	34.15°	90.52°	6060.57'	144.12'
6150'				
6177'	38.82°	89.40°	6099.15'	172.65'
6200'				
6225'	42.97°	89.74°	6135.42'	204.05'
6250'				
6273'	46.43°	89.55°	6169.53'	237.80'
6300'				
6320'	50.08°	88.94°	6200.82'	272.84'
6350'				
6368'	53.54°	88.79°	6230.49'	310.54'
6400'				
6416'	56.71°	89.85°	6257.93'	349.89'
6450'				
6464'	61.16°	88.20°	6282.70'	390.97'
6500'				
6512'	66.02°	86.94°	6304.04'	433.86'
6550'				

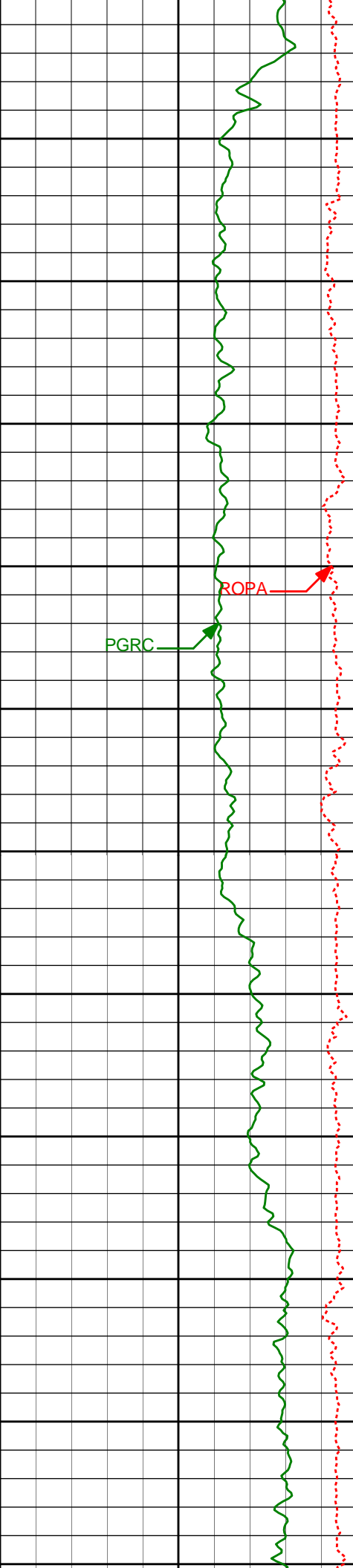




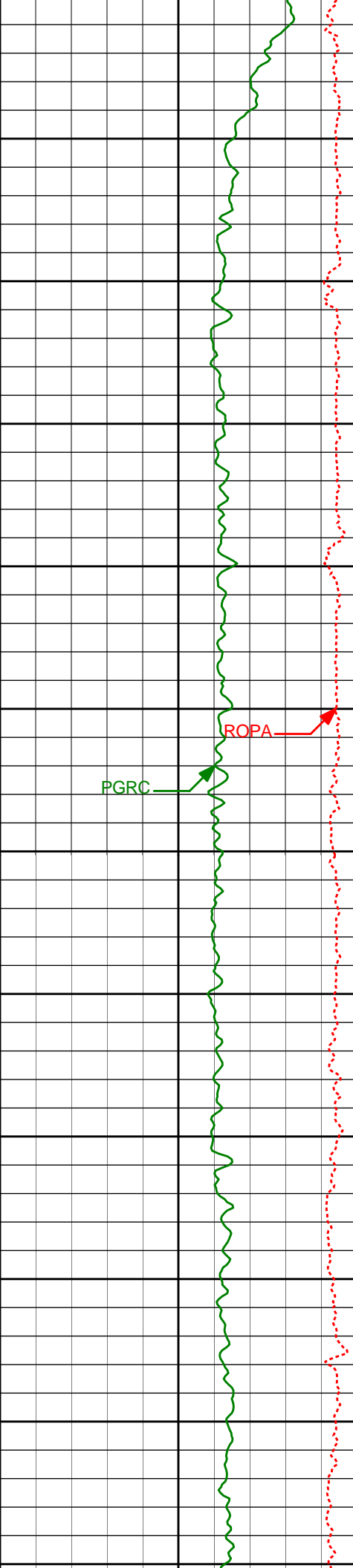
7100'					
7150'	7161'	89.91°	87.13°	6381.38'	1072.53'
7200'					
7250'	7256'	90.28°	87.76°	6381.22'	1167.33'
7300'					
7350'	7351'	90.62°	87.79°	6380.48'	1262.16'
7400'					
7450'	7447'	89.38°	85.83°	6380.48'	1357.88'
7500'					
7550'	7542'	89.44°	86.22°	6381.45'	1452.49'
7600'					
7650'	7638'	91.51°	87.25°	6380.65'	1548.20'



7650'				
7700'				
7733'	90.49°	87.69°	6378.99'	1642.98'
7750'				
7800'				
7829'	88.37°	88.45°	6379.94'	1738.83'
7850'				
7900'				
7924'	89.26°	88.02°	6381.91'	1833.69'
7950'				
8000'				
8019'	89.04°	88.48°	6383.32'	1928.55'
8050'				
8100'				
8115'	90.49°	89.12°	6383.70'	2024.47'
8150'				
8200'				

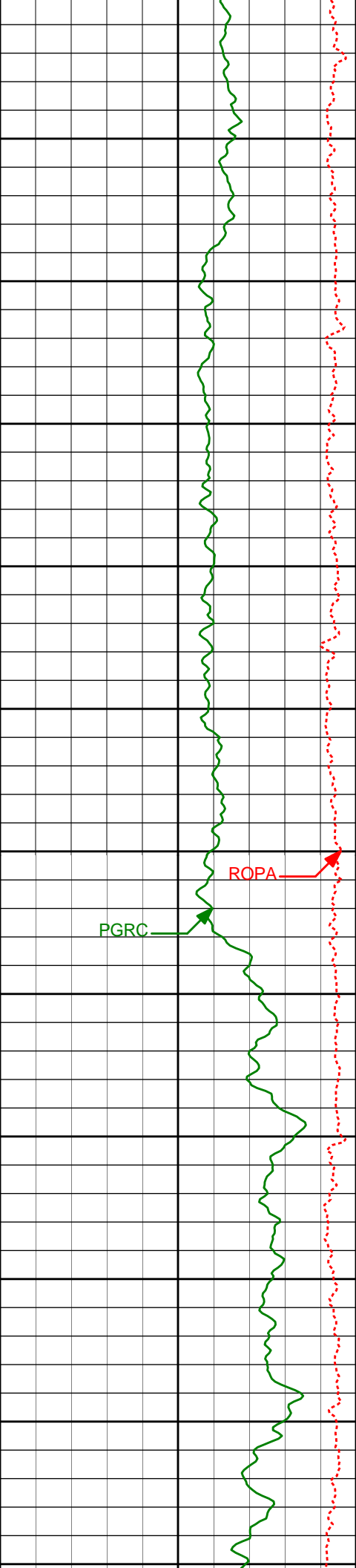


	8211'	88.71°	88.98°	6384.37'	2120.40'
8250'					
8300'	8306'	89.85°	89.44°	6385.58'	2215.33'
8350'					
8400'	8401'	90.89°	89.85°	6384.96'	2310.29'
8450'					
8500'	8497'	91.57°	87.82°	6382.90'	2406.19'
8550'					
8600'	8592'	90.62°	86.47°	6381.09'	2500.93'
8650'					
8700'	8688'	90.71°	88.13°	6379.98'	2596.71'
8750'					

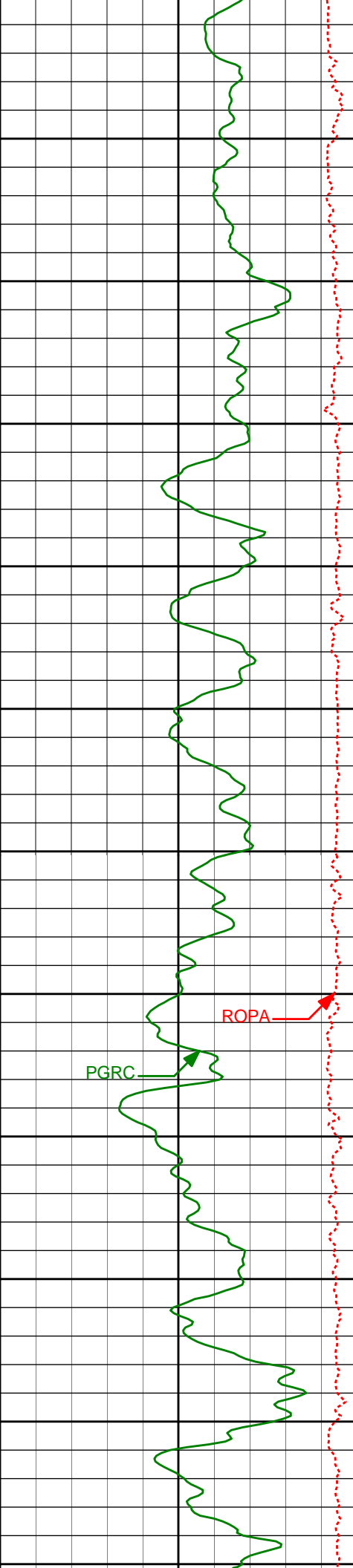


8783'
8800'
8850'
8879'
8900'
8950'
8974'
9000'
9050'
9070'
9100'
9150'
9200'
9250'
9300'

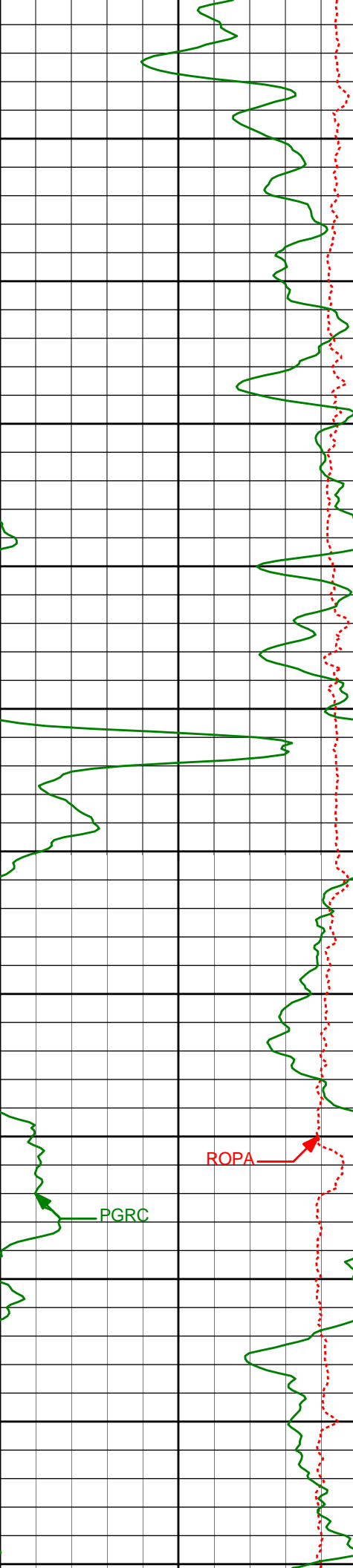
8783'	89.60°	89.21°	6379.72'	2691.61'
8879'	89.91°	88.66°	6380.13'	2787.54'
8974'	90.86°	88.22°	6379.49'	2882.43'
9070'	90.22°	87.51°	6378.59'	2978.26'
9165'	89.14°	88.57°	6379.13'	3073.12'
9261'	90.15°	88.94°	6379.72'	3169.03'



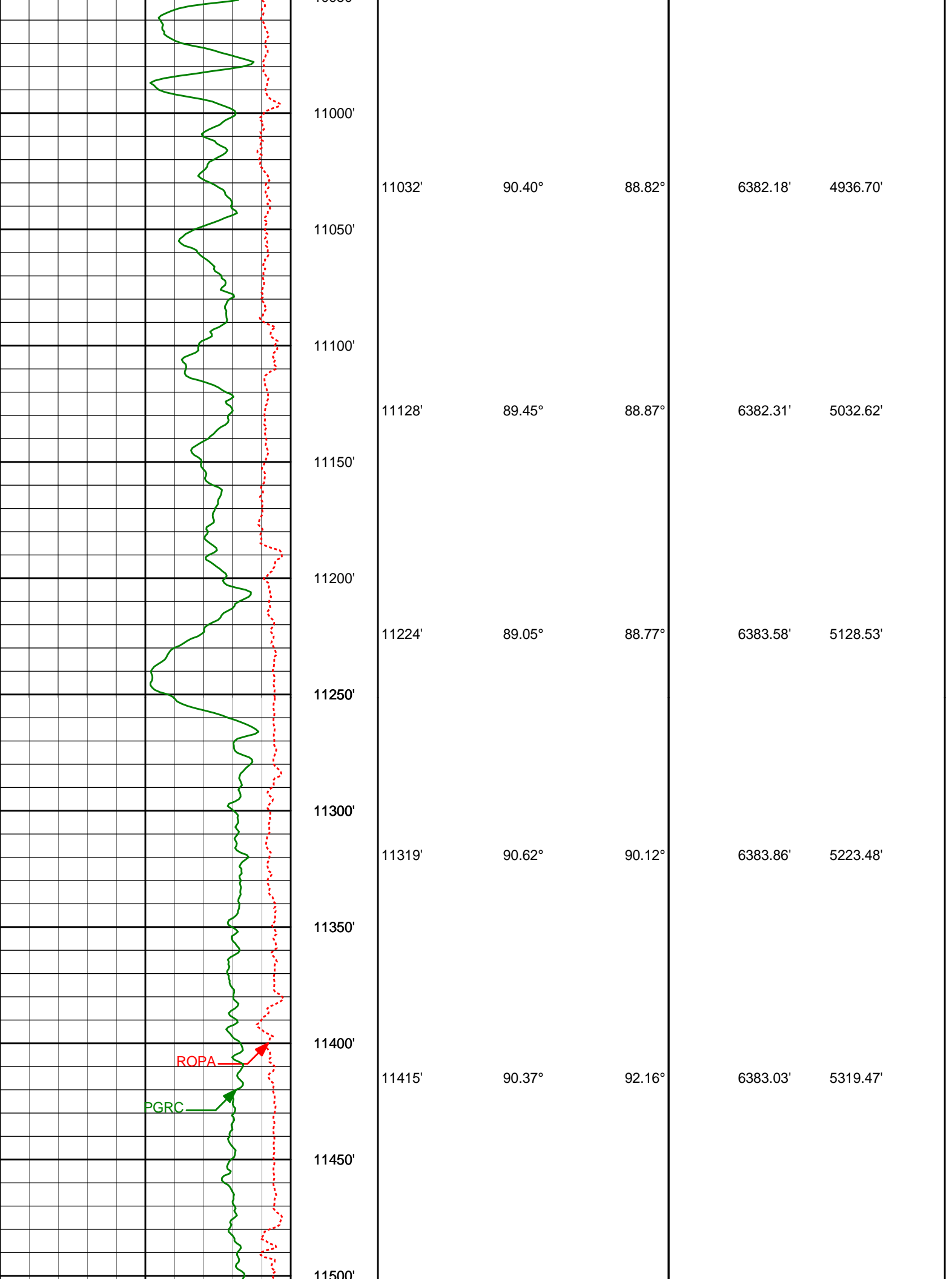
9350'	9356'	89.07°	87.14°	6380.36'	3263.88'
9400'					
9450'	9452'	90.06°	87.46°	6381.08'	3359.66'
9500'					
9550'	9547'	90.15°	87.70°	6380.90'	3454.48'
9600'					
9650'	9642'	87.78°	87.59°	6382.61'	3549.28'
9700'					
9750'	9733'	89.23°	88.19°	6384.99'	3640.09'
9800'					
9850'	9825'	90.55°	88.75°	6385.16'	3731.99'

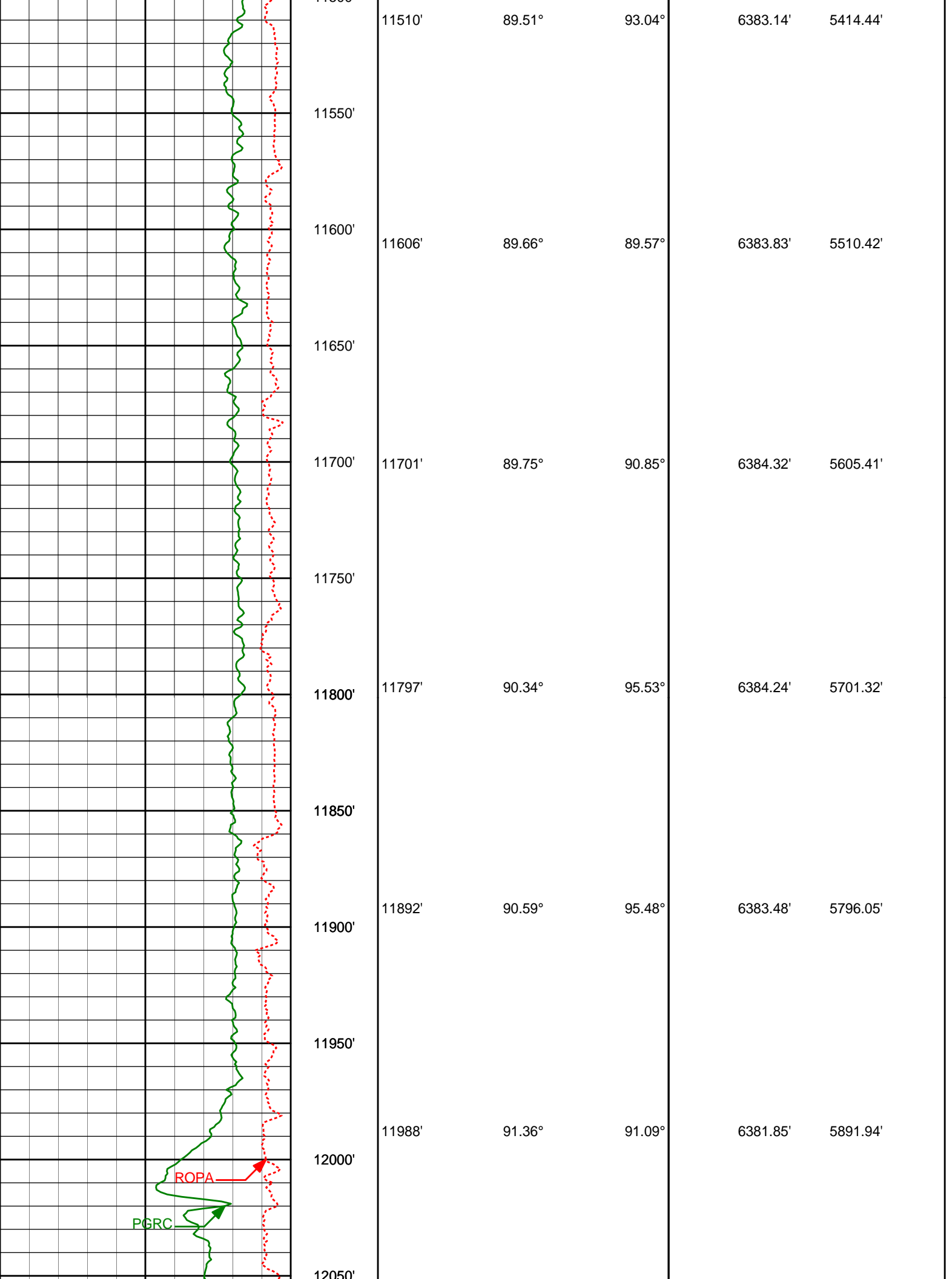


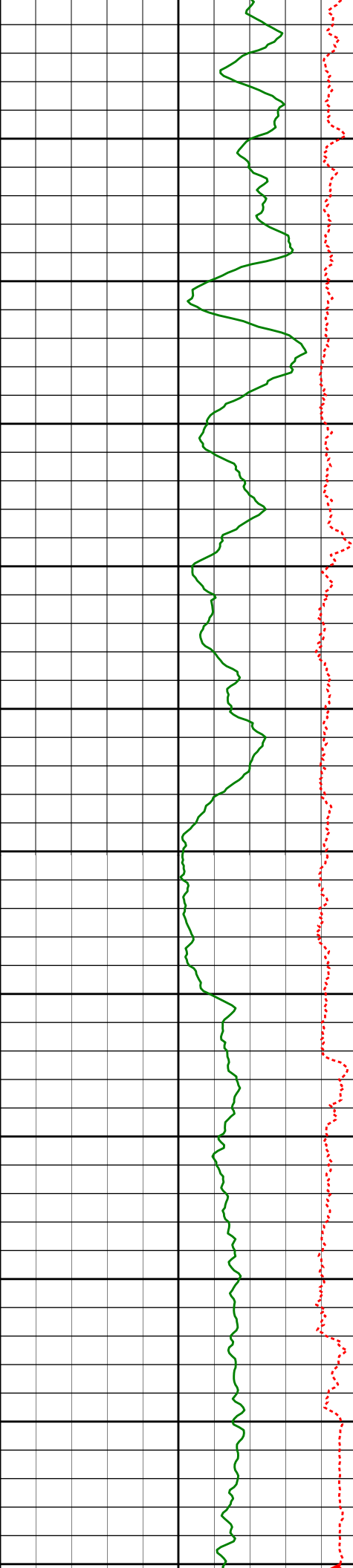
9900'				
9916'	91.29°	87.74°	6383.69'	3822.86'
9950'				
10000'	10007'	90.99°	86.57°	6381.88'
10050'				
10100'	10099'	90.46°	86.15°	6380.72'
10150'				
10190'	90.12°	86.57°	6380.26'	4095.96'
10200'				
10250'				
10282'	89.94°	87.84°	6380.21'	4187.74'
10300'				
10350'				
10374'	89.45°	89.18°	6380.70'	4279.64'
10400'				



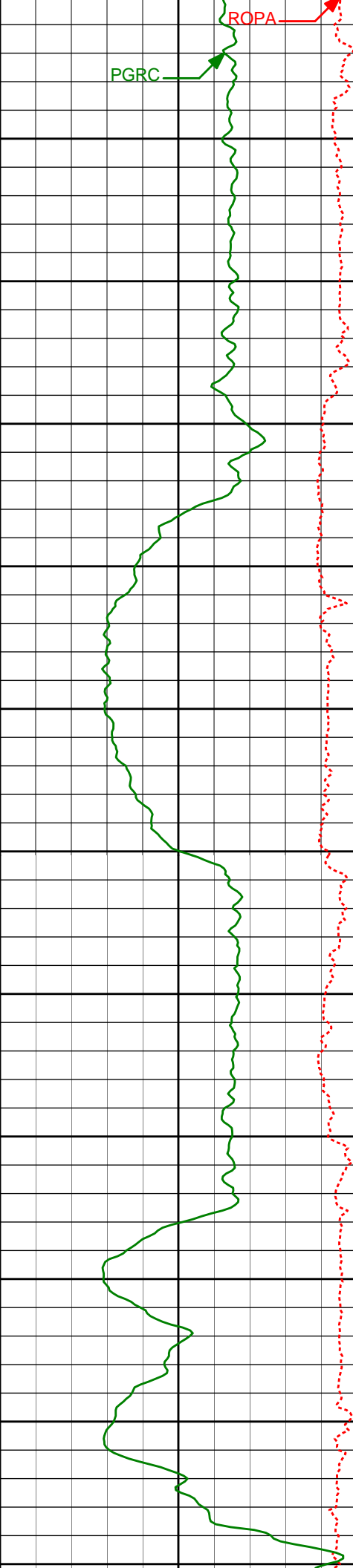
10400'				
10450'				
10466'	90.31°	88.05°	6380.90'	4371.55'
10500'				
10550'				
10558'	90.59°	86.93°	6380.18'	4463.35'
10600'				
10650'				
10650'	90.80°	87.94°	6379.07'	4555.15'
10700'				
10750'				
10745'	89.29°	88.45°	6378.99'	4650.02'
10800'				
10841'	88.64°	88.43°	6380.72'	4745.90'
10850'				
10900'				
10936'	89.60°	88.66°	6382.18'	4840.79'
10950'				



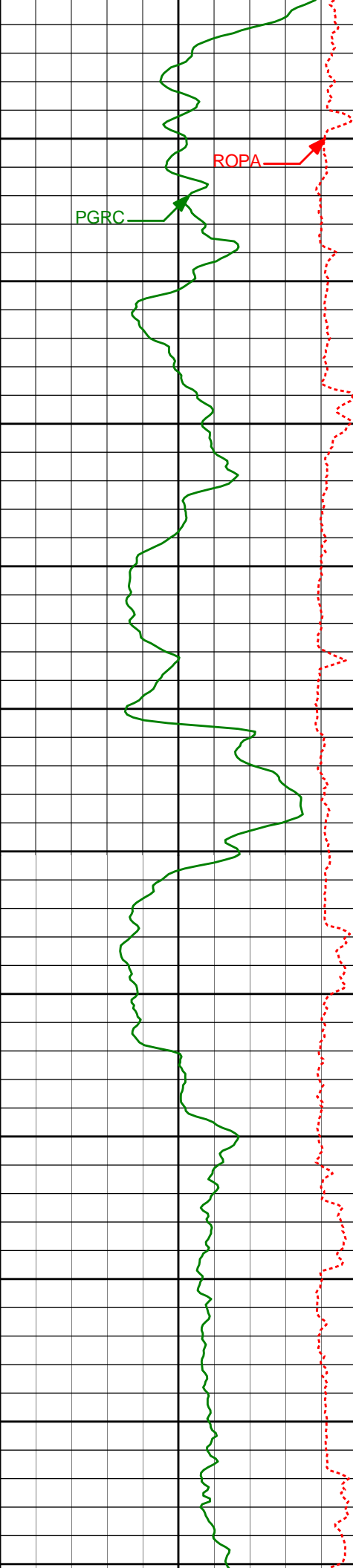




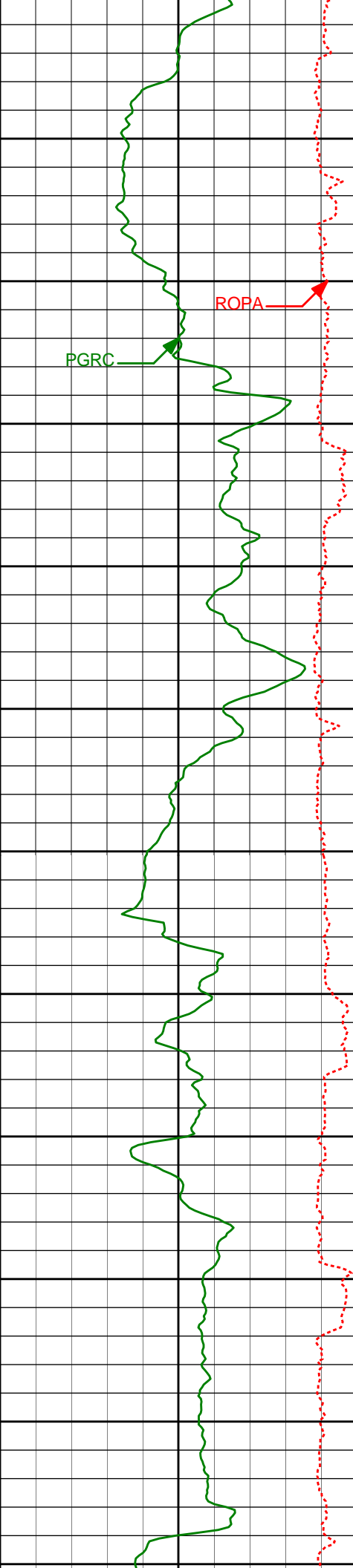
12000'				
12083'	88.74°	88.43°	6381.77'	5986.90'
12100'				
12150'				
12179'	87.62°	88.14°	6384.82'	6082.73'
12200'				
12250'				
12274'	88.68°	86.94°	6387.88'	6177.48'
12300'				
12350'				
12369'	89.54°	87.19°	6389.37'	6272.23'
12400'				
12450'				
12465'	89.97°	86.05°	6389.78'	6367.92'
12500'				
12550'				
12560'	90.49°	84.30°	6389.40'	6462.40'
12600'				



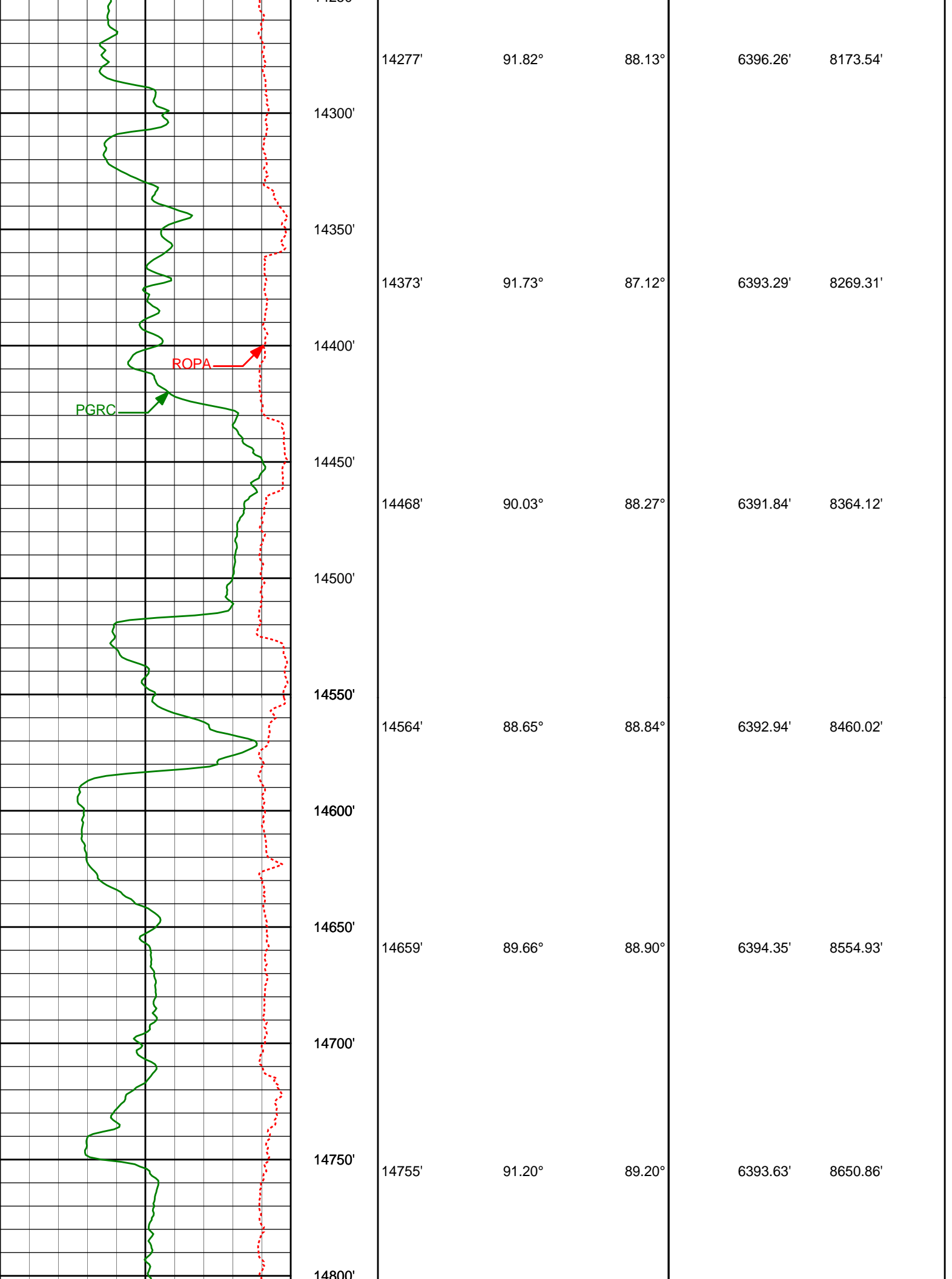
12650'	12656'	90.52°	84.94°	6388.54'	6557.77'
12700'					
12750'	12751'	89.07°	85.99°	6388.88'	6652.30'
12800'					
12850'	12846'	91.11°	86.26°	6388.72'	6746.93'
12900'					
12950'	12942'	90.37°	87.32°	6387.48'	6842.64'
13000'					
13050'	13037'	88.49°	86.65°	6388.43'	6937.38'
13100'					
13150'	13132'	87.75°	87.36°	6391.54'	7032.08'

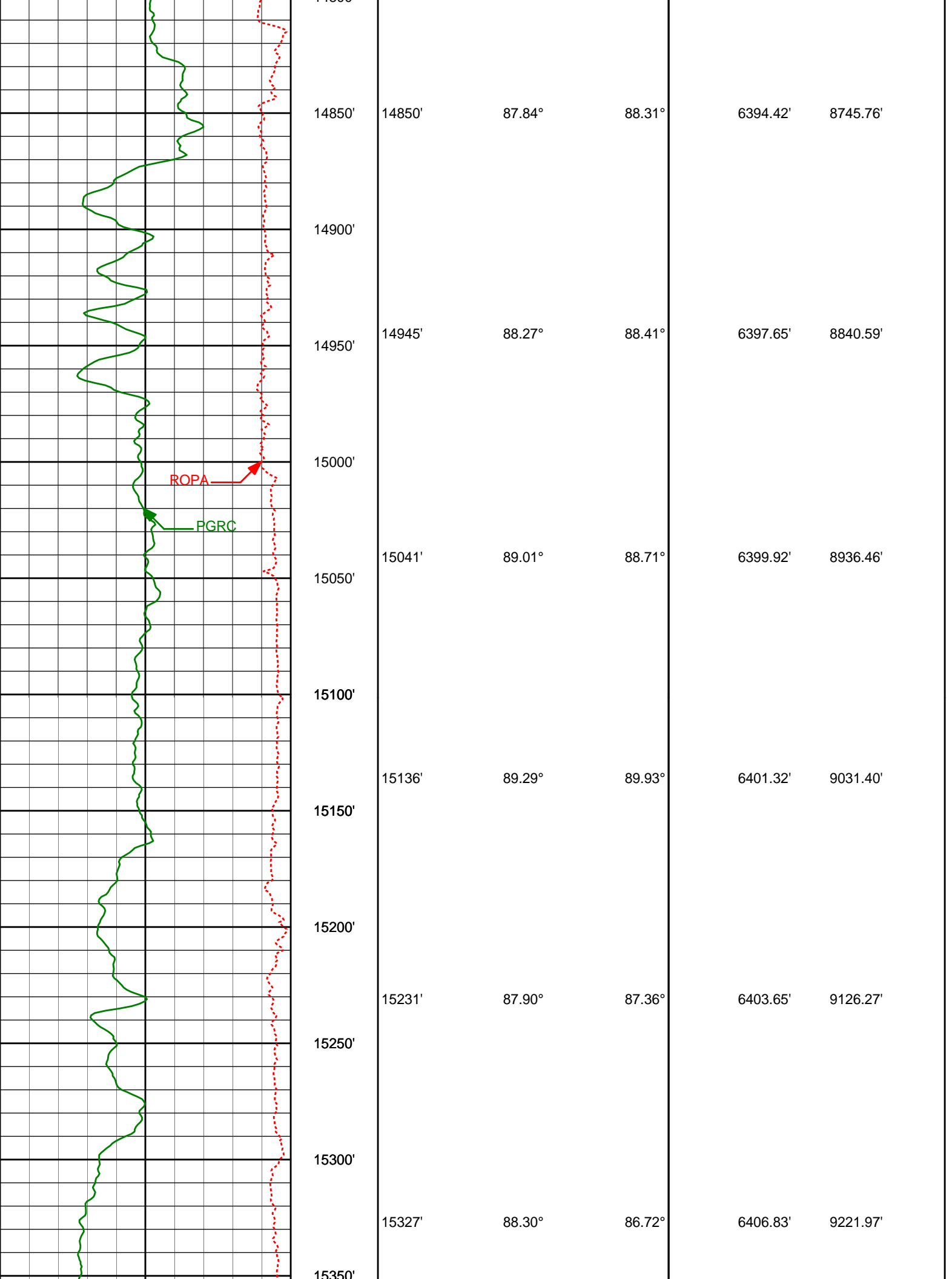


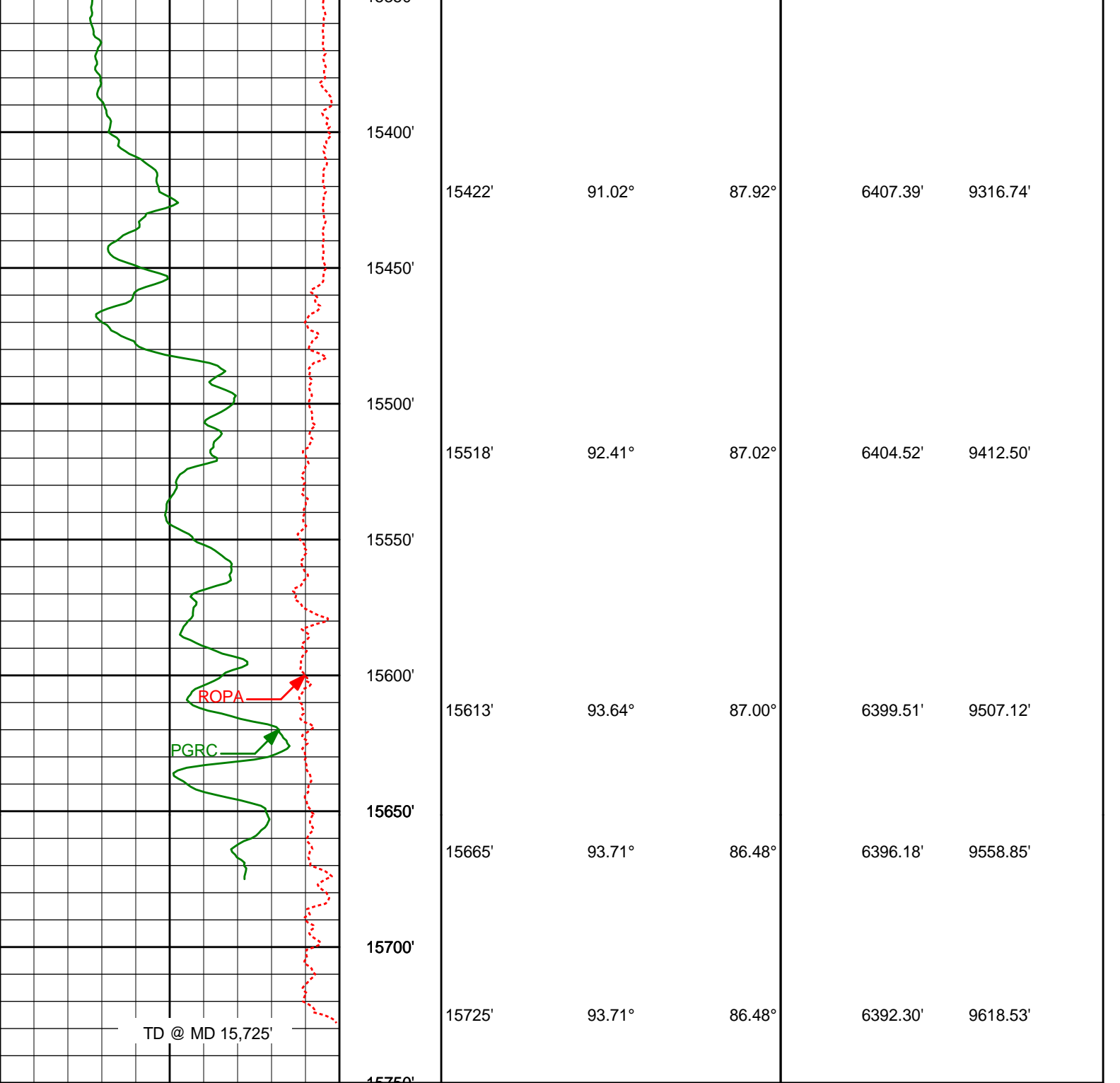
13228'	88.30°	88.10°	6394.84'	7127.85'
13250'				
13300'				
13323'	88.24°	86.22°	6397.71'	7222.57'
13350'				
13400'				
13418'	90.83°	87.03°	6398.48'	7317.26'
13450'				
13500'				
13514'	90.80°	86.45°	6397.11'	7412.96'
13550'				
13600'				
13609'	90.74°	85.82°	6395.83'	7507.59'
13650'				
13700'				



13700'	13705'	88.12°	86.05°	6396.78'	7603.18'
13750'					
13800'	13800'	90.34°	86.47°	6398.06'	7697.81'
13850'					
13900'	13896'	89.75°	86.85°	6397.98'	7793.52'
13950'					
14000'	13991'	90.86°	86.80°	6397.47'	7888.24'
14050'					
14100'	14087'	89.91°	87.21°	6396.82'	7983.99'
14150'					
14200'	14182'	89.48°	86.97°	6397.33'	8078.75'
14250'					



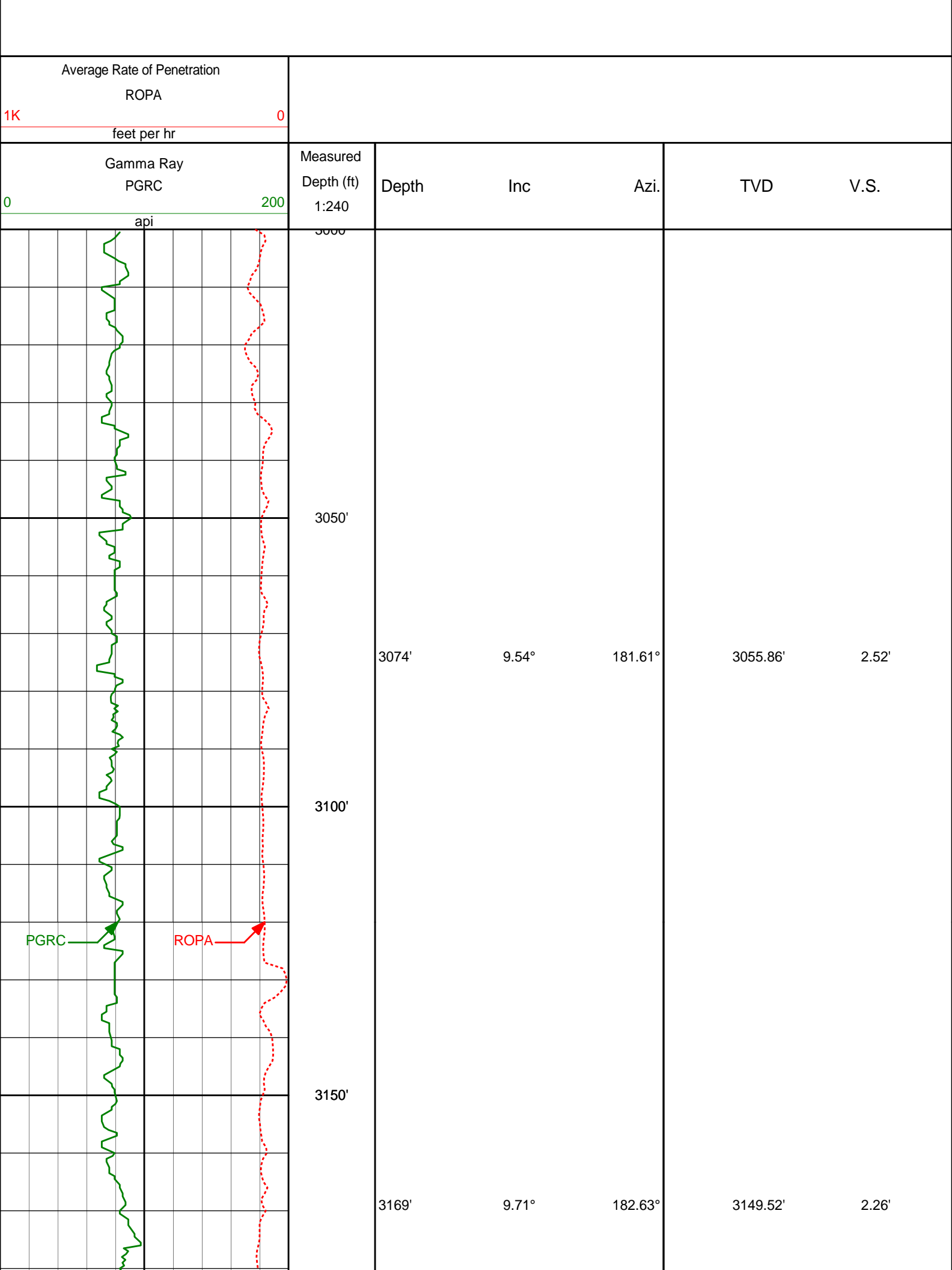


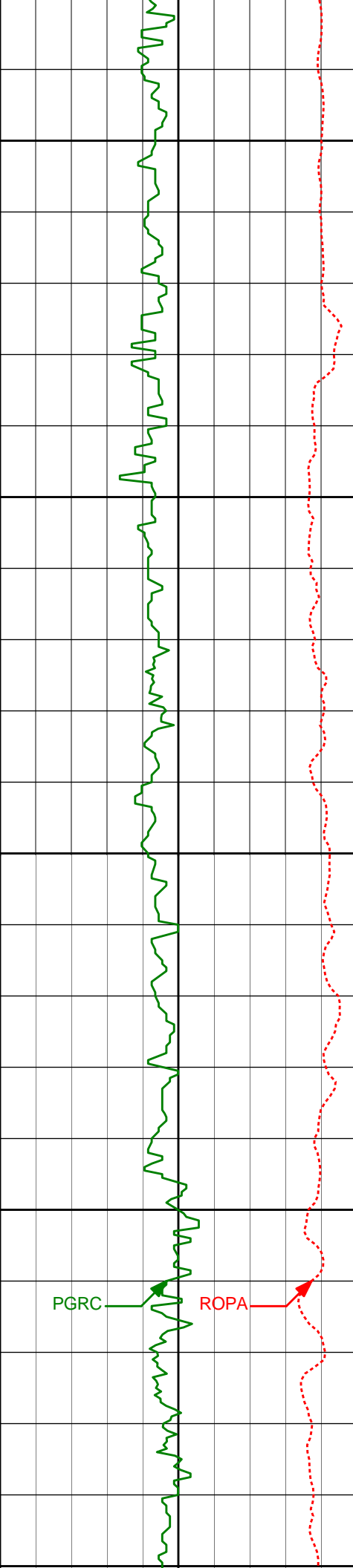


Gamma Ray PGRC		Measured Depth (ft) 1:600	Depth		Inc	Azi.	TVD	V.S.
0 200 api								
Average Rate of Penetration ROPA								
1K 0 feet per hr								

HALLIBURTON

MD Main Log 1:240





3200'

3250'

3300'

3350'

3400'

3265'

9.25°

181.77°

3244.21'

1.97'

3360'

9.34°

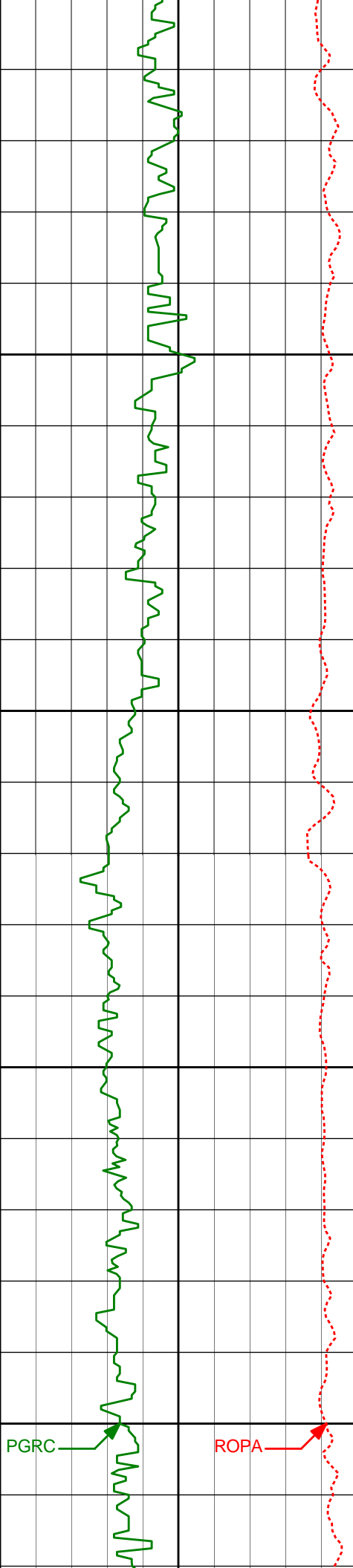
175.14°

3337.96'

2.69'

PGRC

ROPA



3400'

3450'

3500'

3550'

3600'

3455'

11.23°

176.06°

3431.43'

4.33'

3551'

11.49°

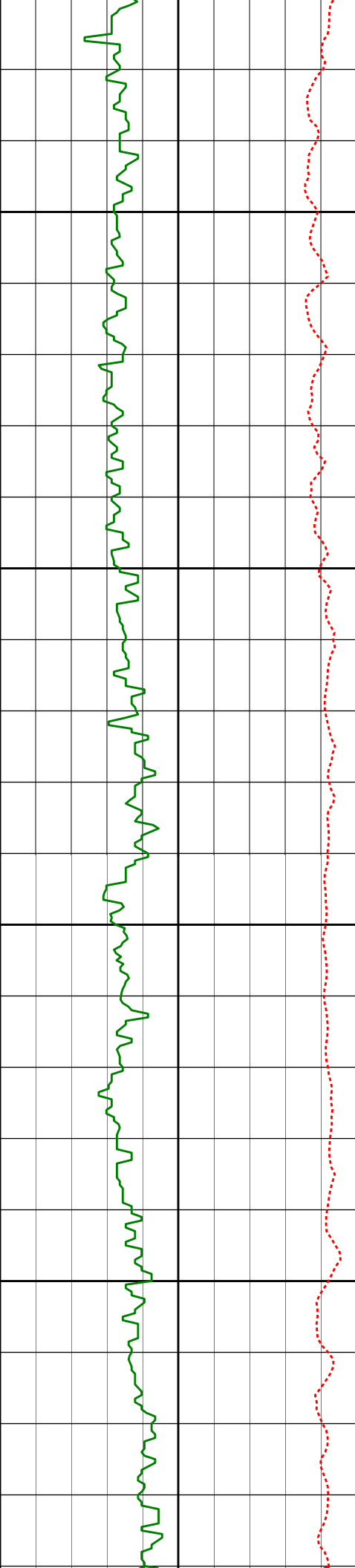
175.66°

3525.55'

6.07'

PGRC

ROPA



3650'

3700'

3750'

3800'

3646'

11.55°

180.46°

3618.64'

7.10'

3742'

12.27°

178.65°

3712.57'

7.66'

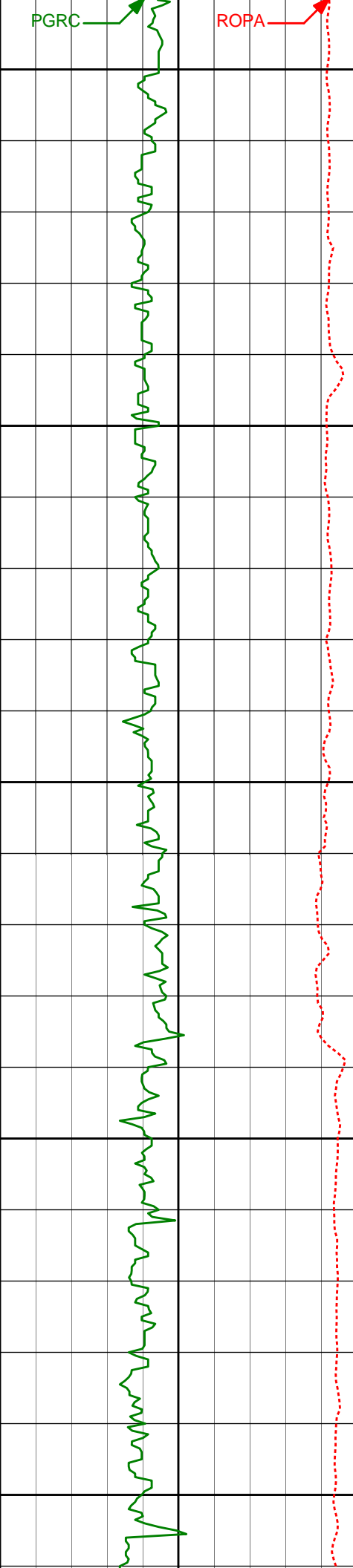
3837'

10.53°

181.96°

3805.70'

7.98'



3933'

10.40°

185.01°

3900.10'

7.28'

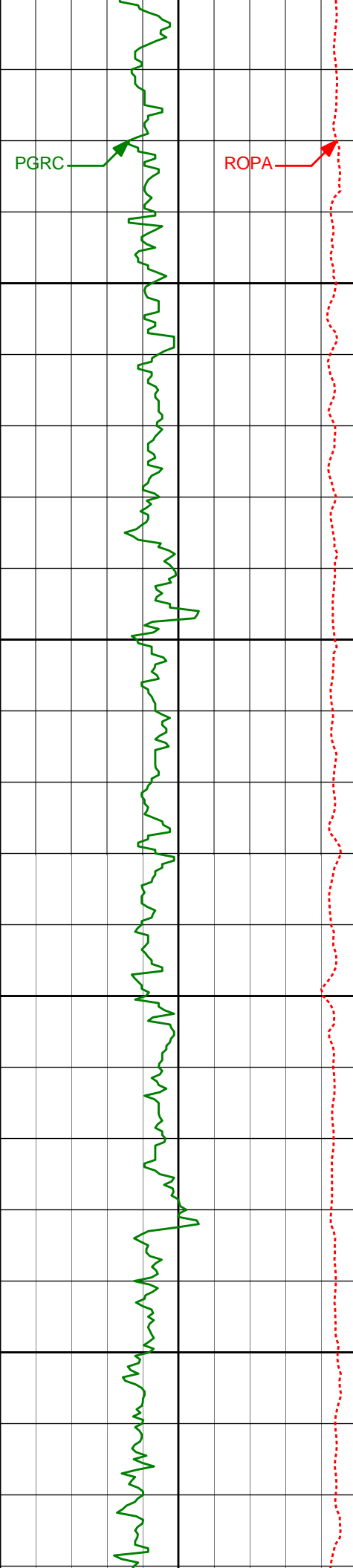
4028'

9.12°

185.13°

3993.73'

6.18'



PGRC

ROPA

4100'

4150'

4200'

4250'

4124'

9.55°

180.08°

4088.46'

5.81'

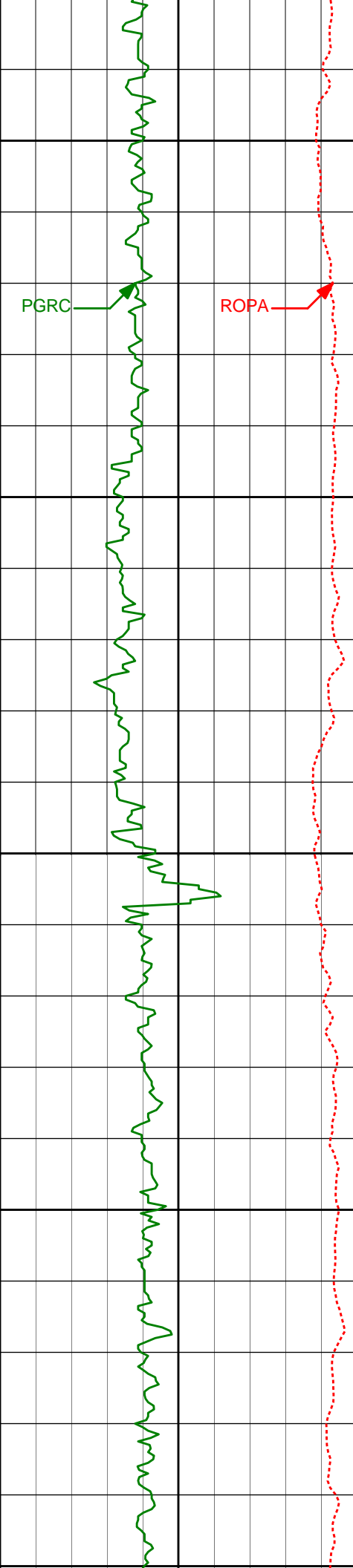
4219'

8.73°

176.60°

4182.25'

6.53'



4300'

4314'

10.02°

183.12°

4275.98'

6.82'

4350'

4400'

4410'

9.68°

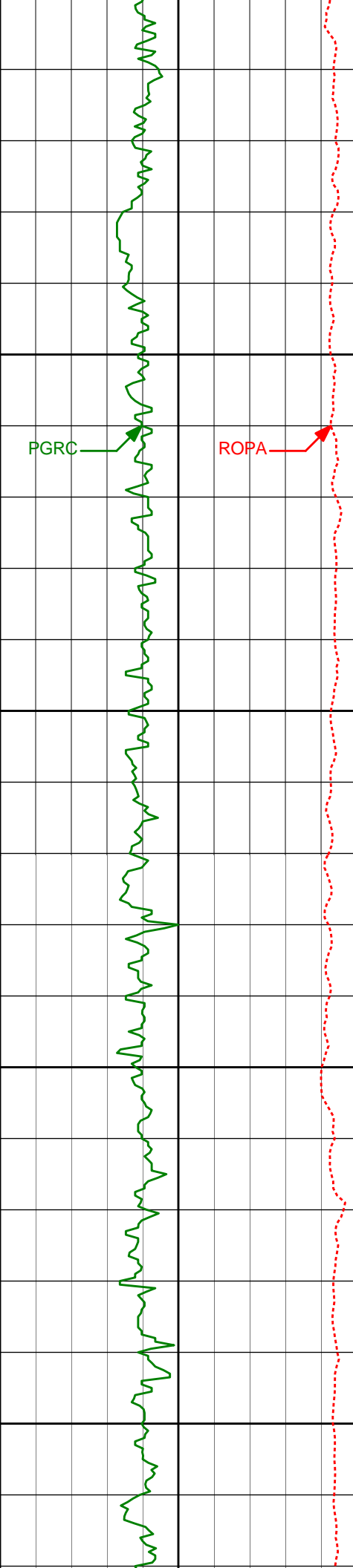
183.70°

4370.56'

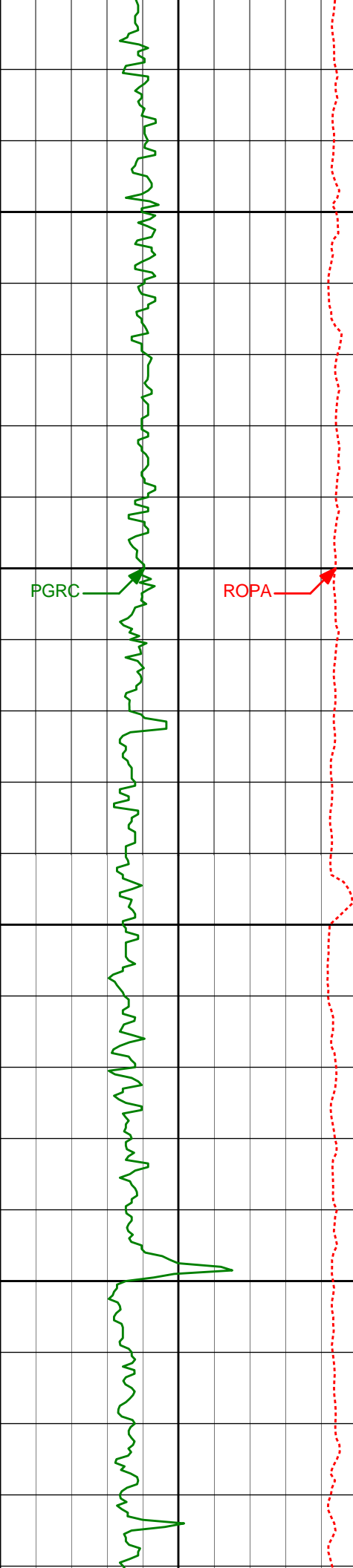
6.17'

4450'

4500'



4500'	4506'	8.91°	182.52°	4465.30'	5.64'
4550'					
4600'	4601'	6.38°	184.47°	4559.45'	5.16'
4650'					
4700'	4696'	4.58°	193.86°	4654.01'	4.02'



4750'

4792'

3.15°

162.99°

4749.80'

4.00'

4800'

PGRC

ROPA

4850'

4887'

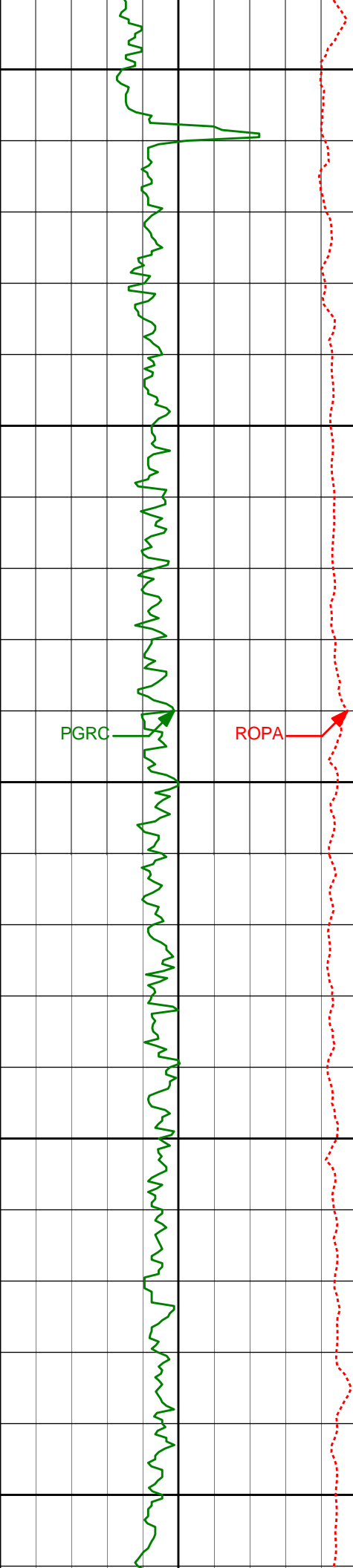
0.86°

125.54°

4844.74'

5.40'

4900'



4950'

4983'

0.64°

154.76°

4940.73'

6.23'

5000'

5050'

5079'

0.57°

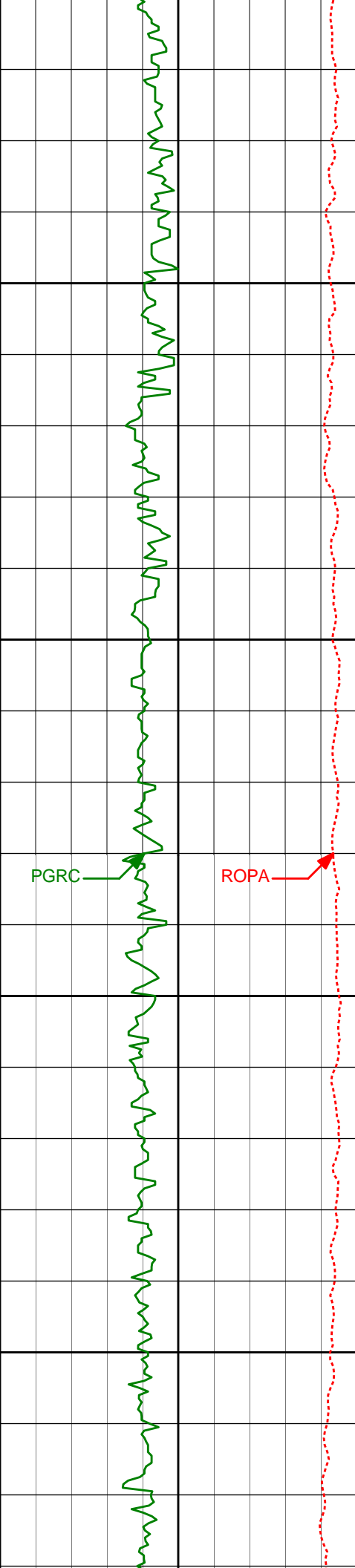
113.75°

5036.73'

6.91'

5100'

5150'



5200'

5250'

5300'

5350'

5174'

0.29°

100.82°

5131.73'

7.59'

5269'

1.05°

145.51°

5226.72'

8.33'

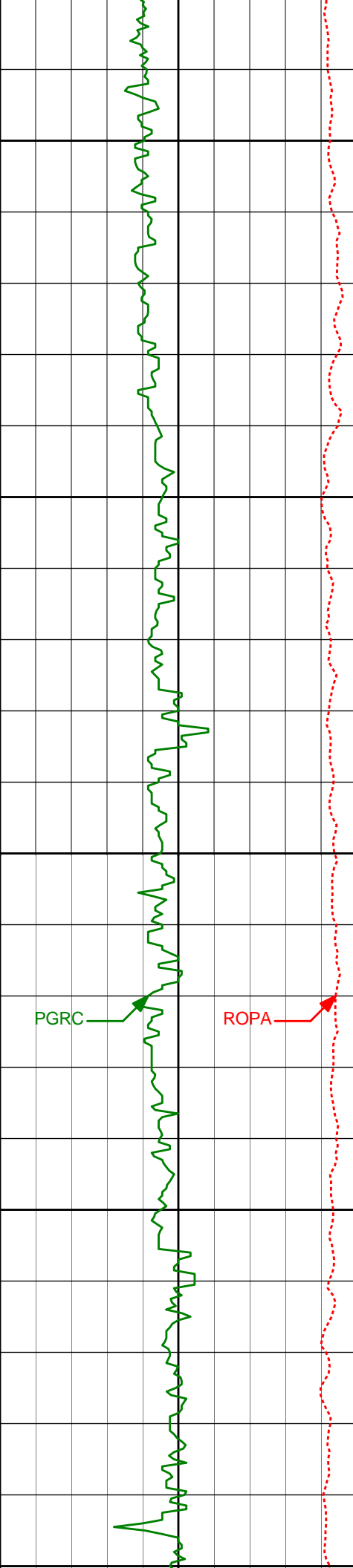
5365'

1.75°

137.65°

5322.69'

9.86'



5400'

5450'

5500'

5550'

5600'

5460'

1.20°

358.02°

5417.68'

10.80'

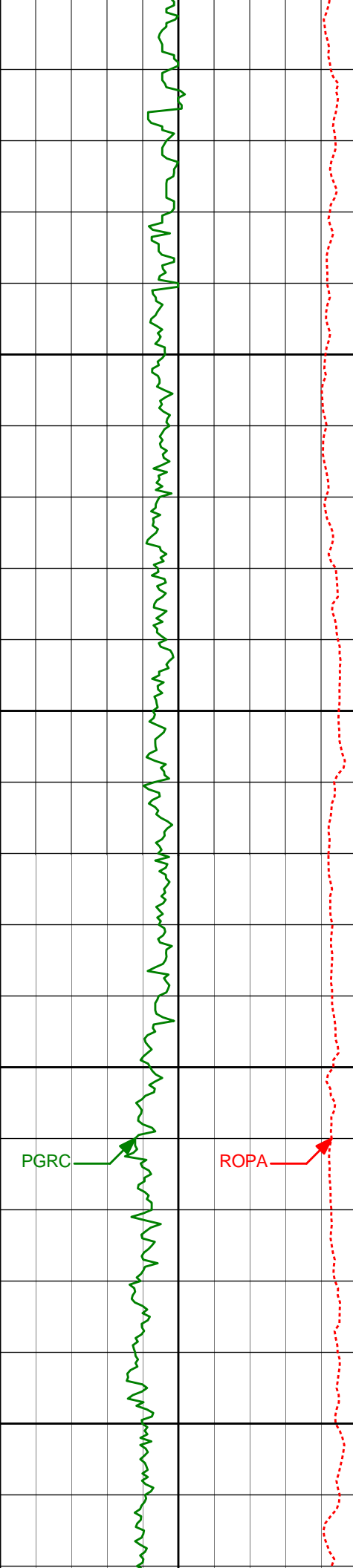
5556'

1.13°

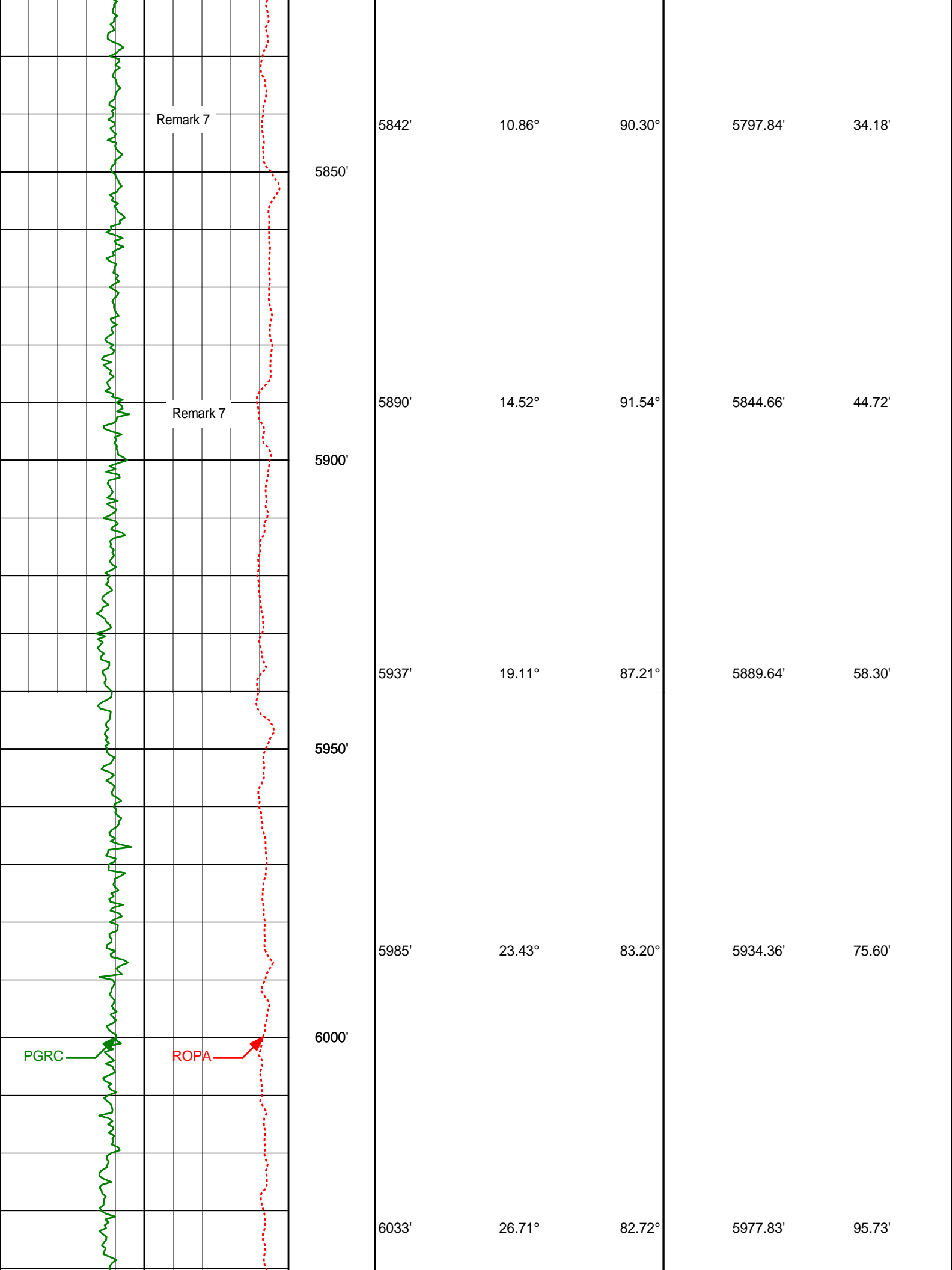
34.21°

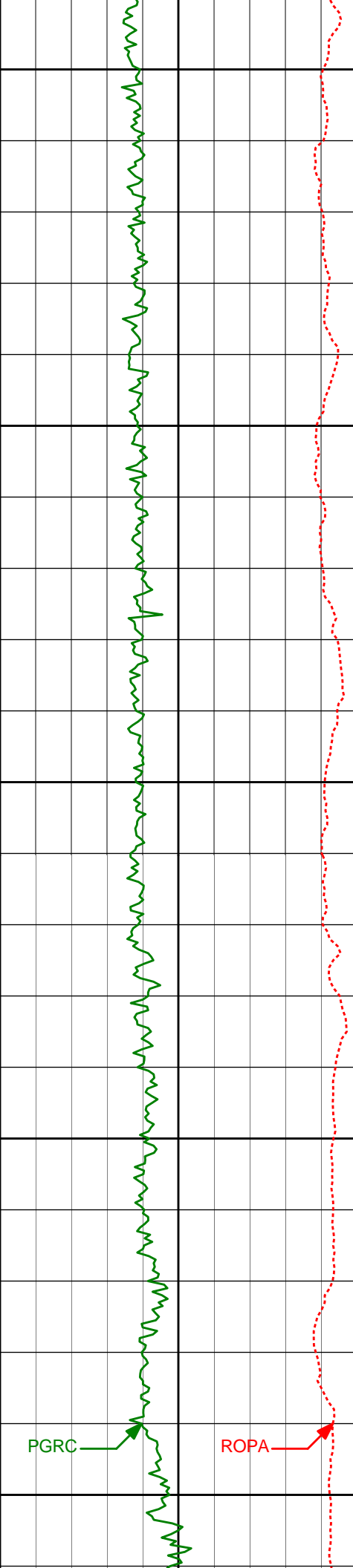
5513.66'

11.27'



5650'	5651'	1.18°	12.29°	5608.64'	11.97'
5700'	5699'	2.17°	71.11°	5656.62'	12.92'
5750'	5746'	8.00°	80.95°	5703.42'	16.97'
5800'	5794'	11.29°	89.60°	5750.73'	24.96'





6050'

6081'

30.41°

86.92°

6019.99'

118.52'

6100'

6129'

34.15°

90.52°

6060.57'

144.12'

6150'

6177'

38.82°

89.40°

6099.15'

172.65'

6200'

6225'

42.97°

89.74°

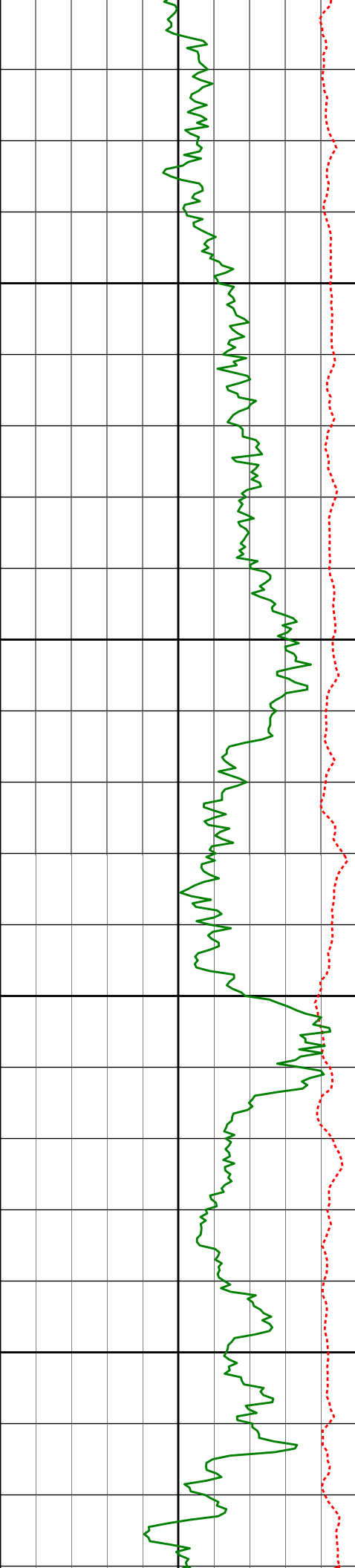
6135.42'

204.05'

PGRC

ROPA

6250'



6300'

6350'

6400'

6450'

6273'

46.43°

89.55°

6169.53'

237.80'

6320'

50.08°

88.94°

6200.82'

272.84'

6368'

53.54°

88.79°

6230.49'

310.54'

6416'

56.71°

89.85°

6257.93'

349.89'

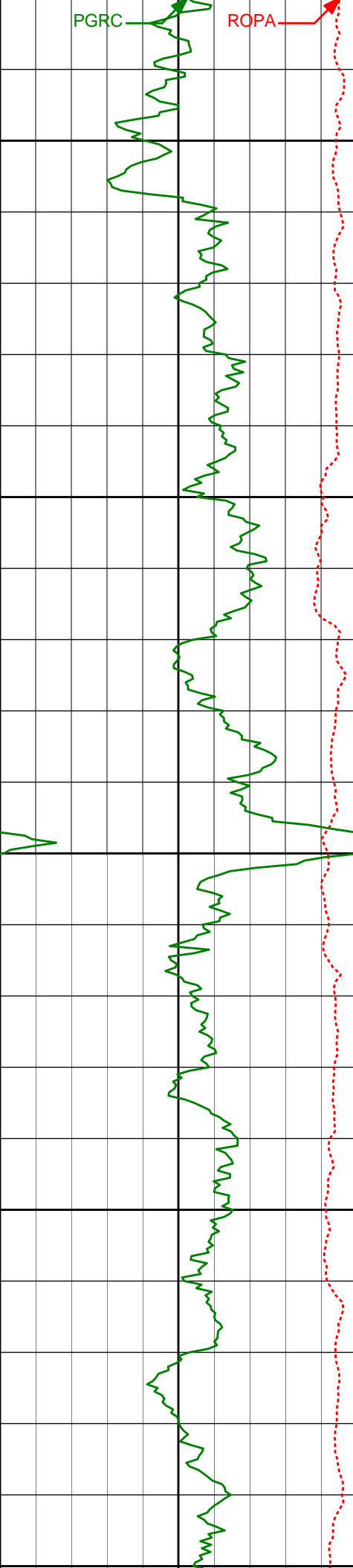
6464'

61.16°

88.20°

6282.70'

390.97'



6500'

6512'

66.02°

86.94°

6304.04'

433.86'

6550'

6560'

69.91°

87.20°

6322.05'

478.23'

6600'

6607'

73.23°

87.85°

6336.90'

522.72'

6650'

6655'

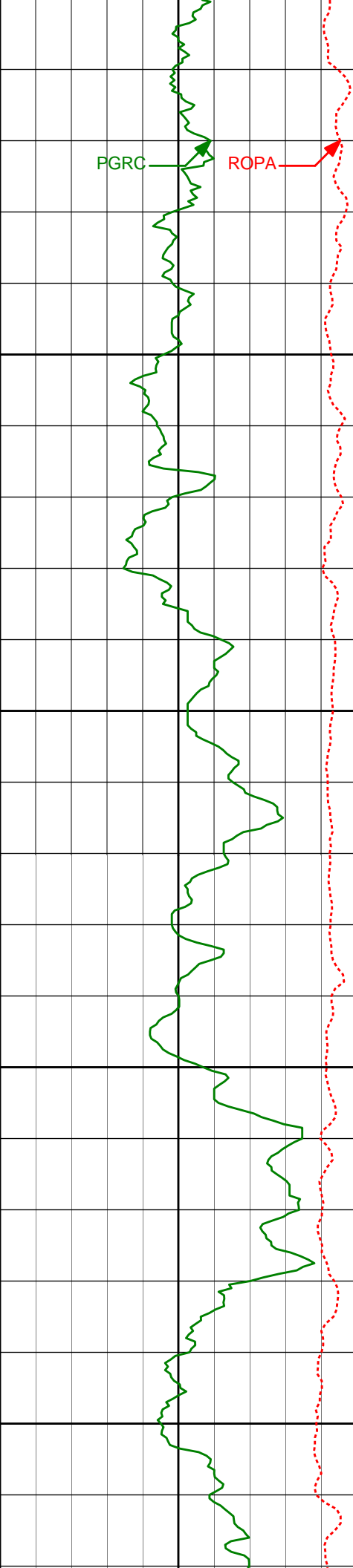
76.41°

88.25°

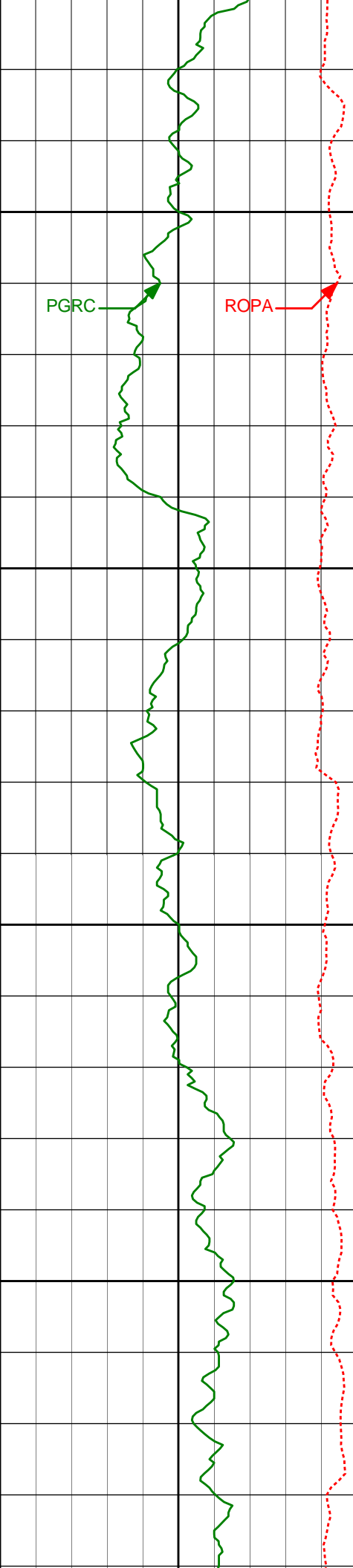
6349.47'

568.97'

6700'



6700'	6702'	80.51°	88.79°	6358.87'	614.96'
	6726'	82.79°	88.62°	6362.36'	638.69'
6750'					
	Casing Set @ 6772'				
	6779'	85.65°	89.78°	6367.69'	691.38'
	<Run 200>				
6800'					
6850'					
	6875'	86.27°	90.55°	6374.46'	787.13'
6900'					



6950'

7000'

7050'

7100'

6970'

7066'

88.34°

89.41°

88.24°

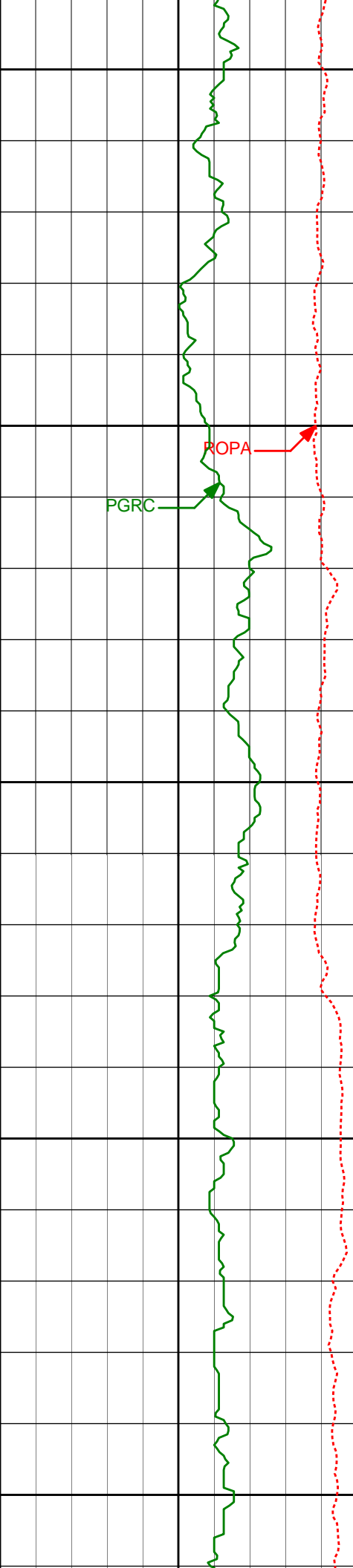
87.15°

6378.93'

6380.81'

881.96'

977.77'



7150'

7161'

89.91°

87.13°

6381.38'

1072.53'

7200'

ROPA

PGRC

7250'

7256'

90.28°

87.76°

6381.22'

1167.33'

7300'

7350'

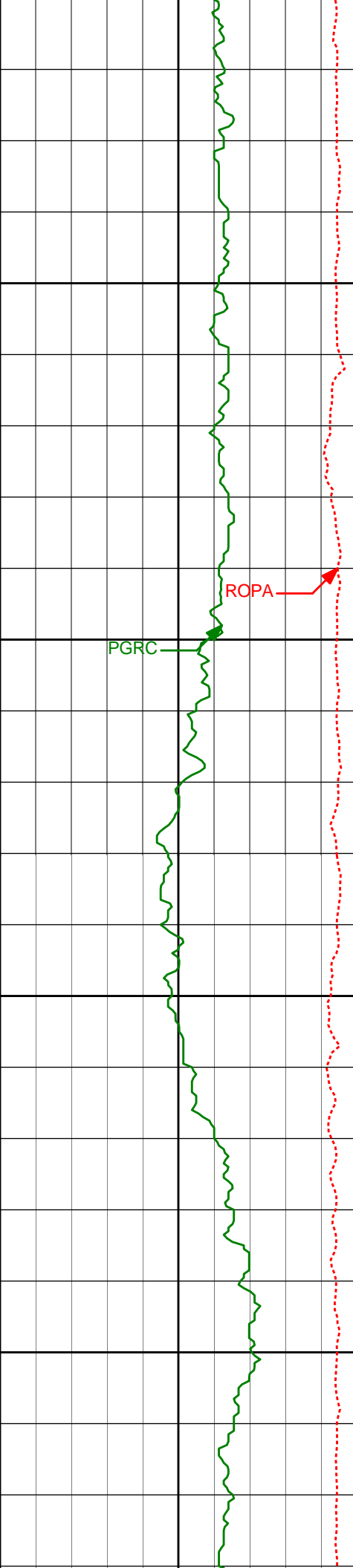
7351'

90.62°

87.79°

6380.48'

1262.16'



7400'

7450'

7500'

7550'

ROPA

PGRC

7447'

89.38°

85.83°

6380.48'

1357.88'

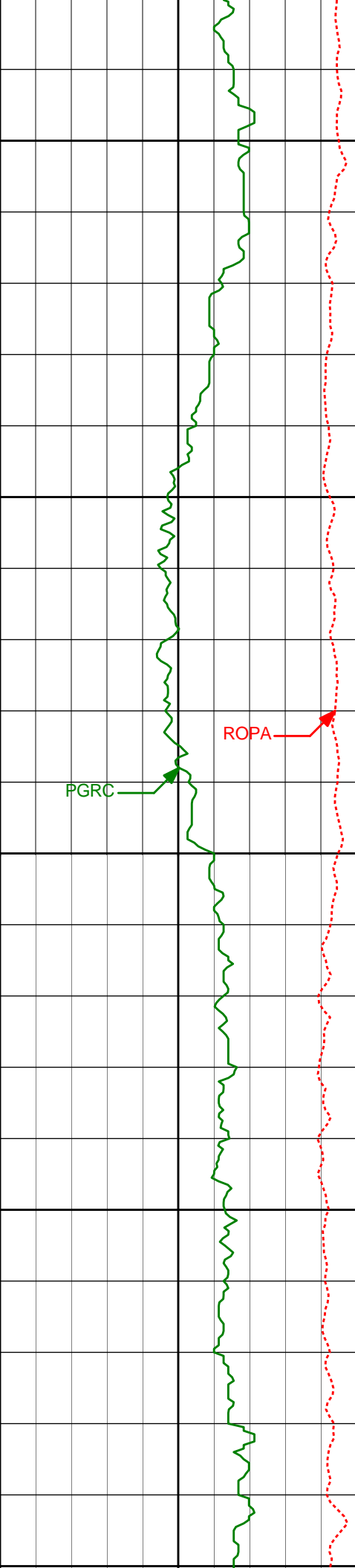
7542'

89.44°

86.22°

6381.45'

1452.49'



7600'

7638'

91.51°

87.25°

6380.65'

1548.20'

7650'

7700'

7733'

90.49°

87.69°

6378.99'

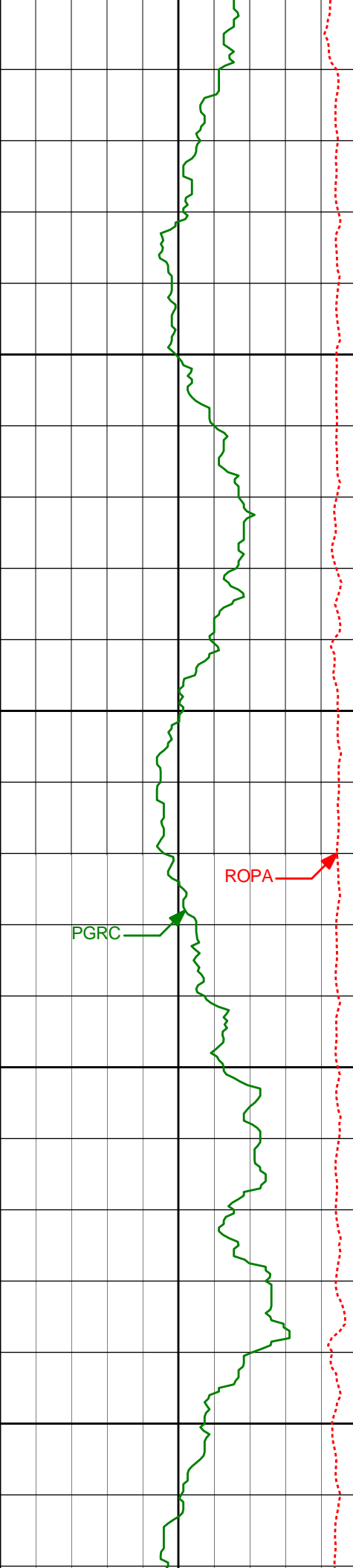
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7750'

7800'

PGRC

ROPA



7800'

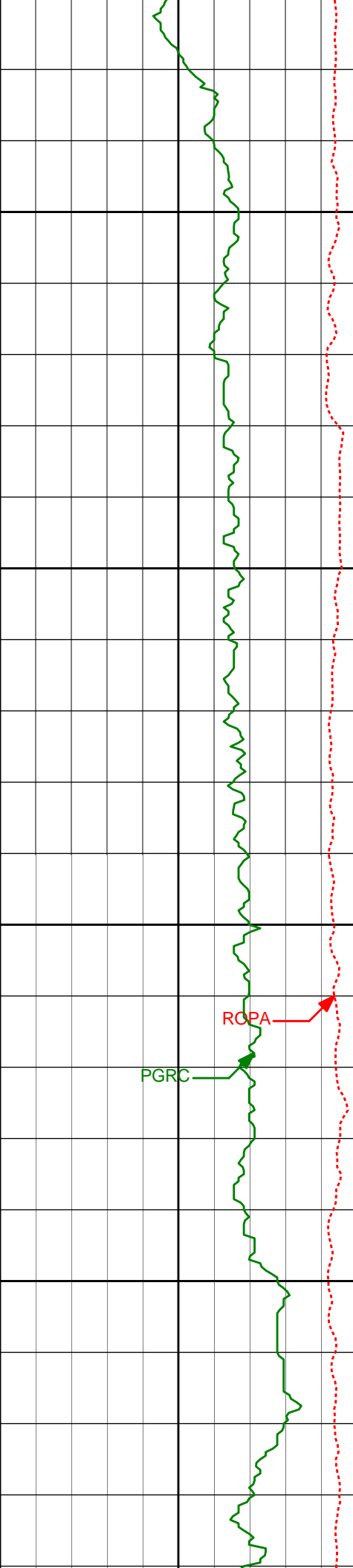
7850'

7900'

7950'

8000'

7829'	88.37°	88.45°	6379.94'	1738.83'
7924'	89.26°	88.02°	6381.91'	1833.69'
8019'	89.04°	88.48°	6383.32'	1928.55'



8050'

8100'

8150'

8200'

PGRC

ROPA

8115'

90.49°

89.12°

6383.70'

2024.47'

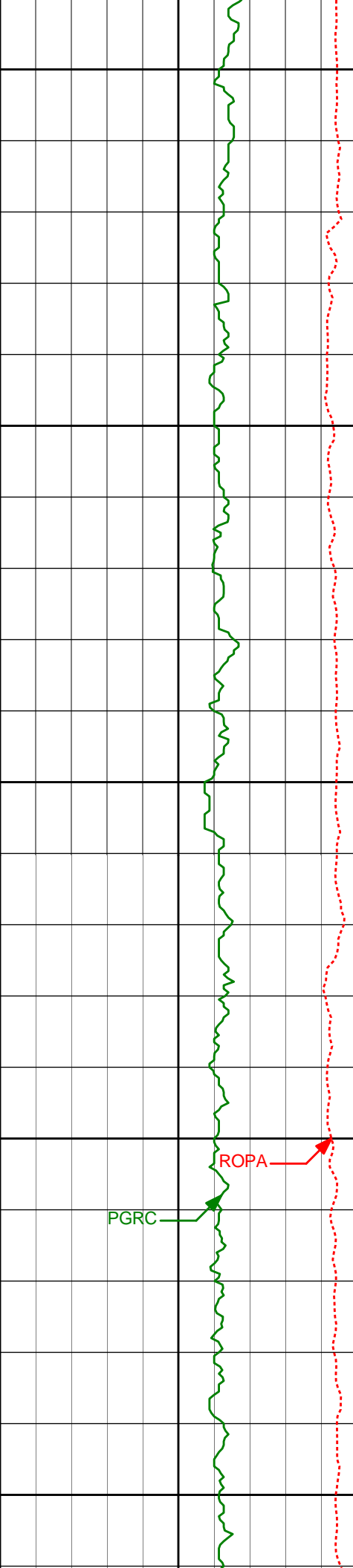
8211'

88.71°

88.98°

6384.37'

2120.40'



8250'

8300'

8350'

8400'

8450'

8306'

89.85°

89.44°

6385.58'

2215.33'

8401'

90.89°

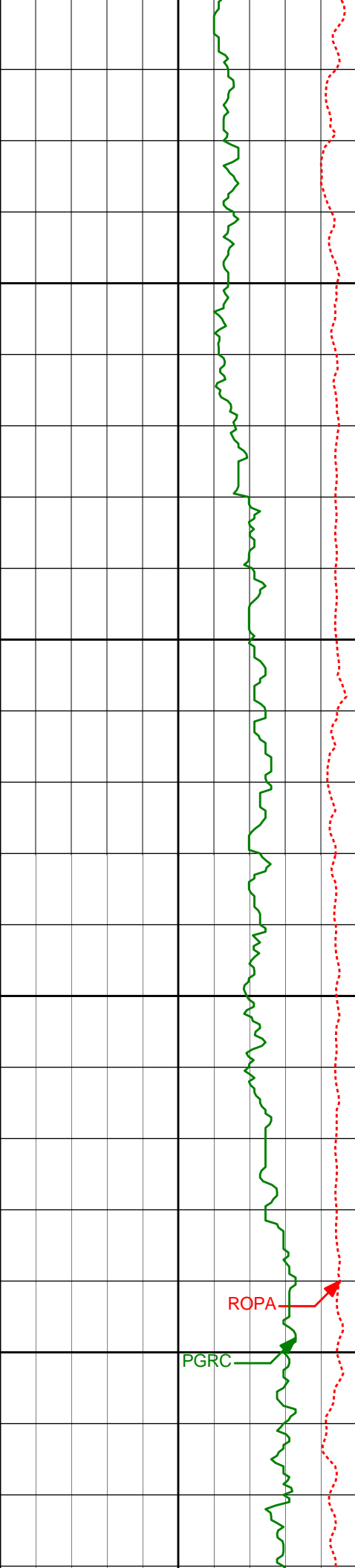
89.85°

6384.96'

2310.29'

PGRC

ROPA



8500'

8550'

8600'

8650'

8497'

91.57°

87.82°

6382.90'

2406.19'

8592'

90.62°

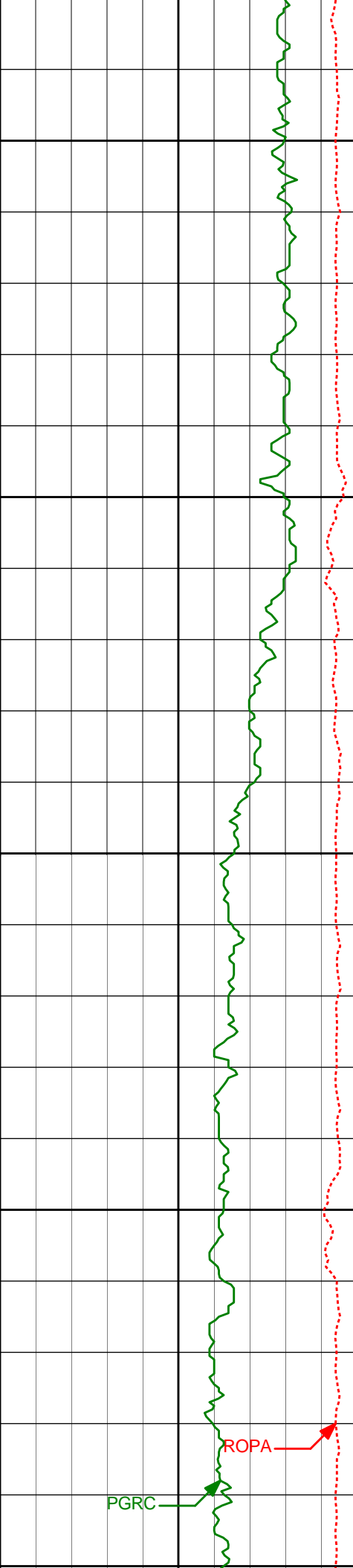
86.47°

6381.09'

2500.93'

ROPA

PGRC



8700'

8750'

8800'

8850'

8900'

8688'

90.71°

88.13°

6379.98'

2596.71'

8783'

89.60°

89.21°

6379.72'

2691.61'

8879'

89.91°

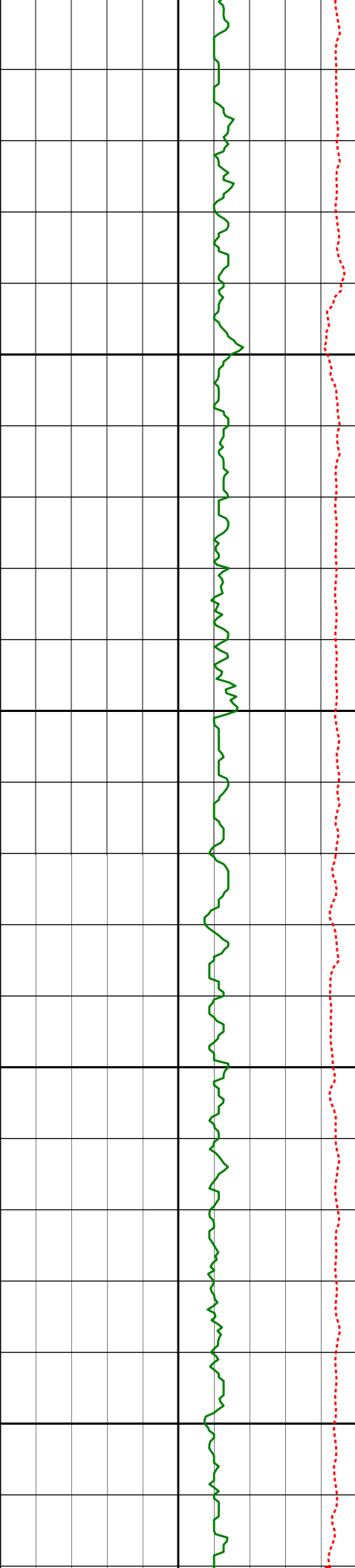
88.66°

6380.13'

2787.54'

PGRC

ROPA



8950'

9000'

9050'

9100'

8974'

90.86°

88.22°

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2882.43'

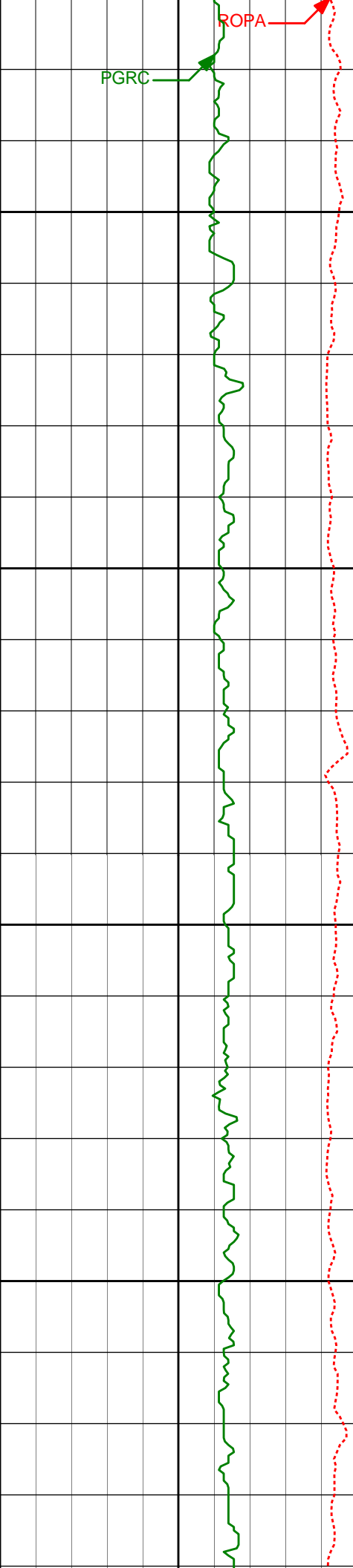
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90.22°

87.51°

6378.59'

2978.26'



9150'

9165'

89.14°

88.57°

6379.13'

3073.12'

9200'

9250'

9261'

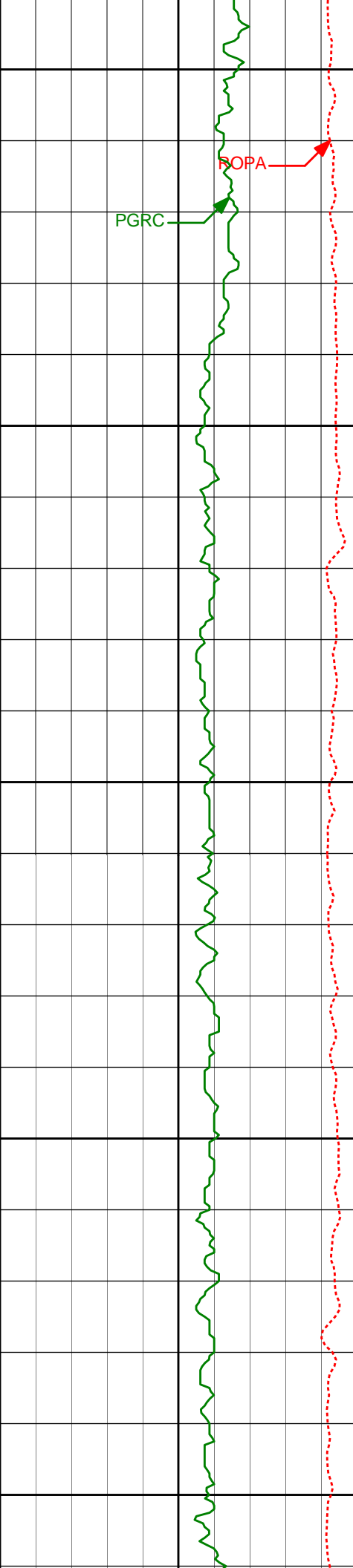
90.15°

88.94°

6379.72'

3169.03'

9300'



9350'

9356'

89.07°

87.14°

6380.36'

3263.88'

ROPA

PGRC

9400'

9450'

9452'

90.06°

87.46°

6381.08'

3359.66'

9500'

9550'

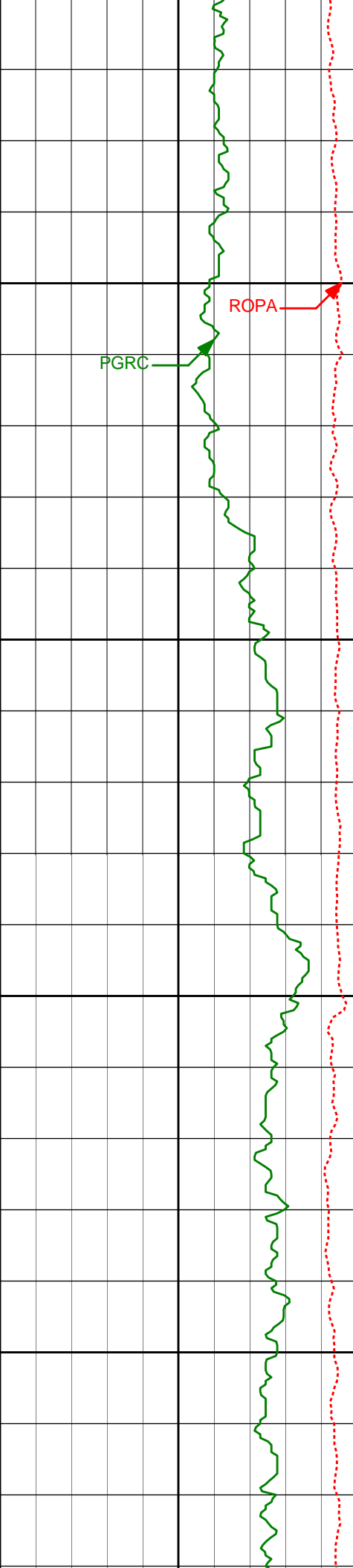
9547'

90.15°

87.70°

6380.90'

3454.48'



9600'

ROPA

PGRC

9650'

9700'

9750'

9642'

87.78°

87.59°

6382.61'

3549.28'

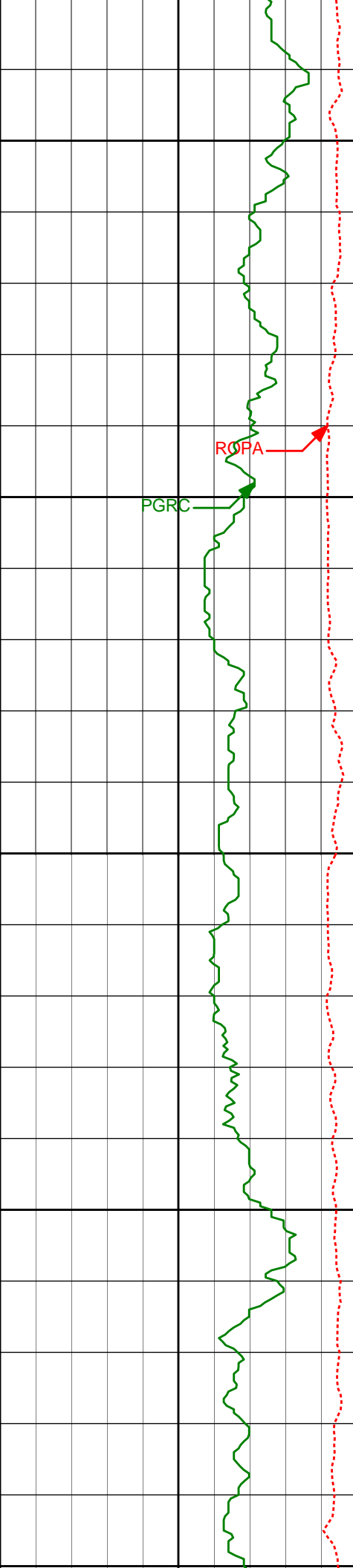
9733'

89.23°

88.19°

6384.99'

3640.09'



9800'

9825'

90.55°

88.75°

6385.16'

3731.99'

9850'

PGRC

ROPA

9900'

9916'

91.29°

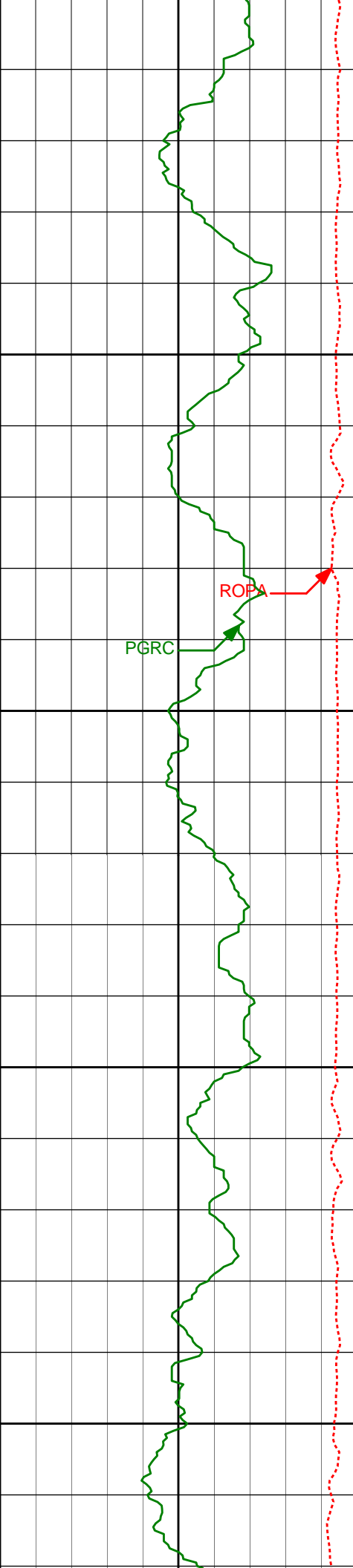
87.74°

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3822.86'

9950'

10000'



10000
10050
10100
10150
10200

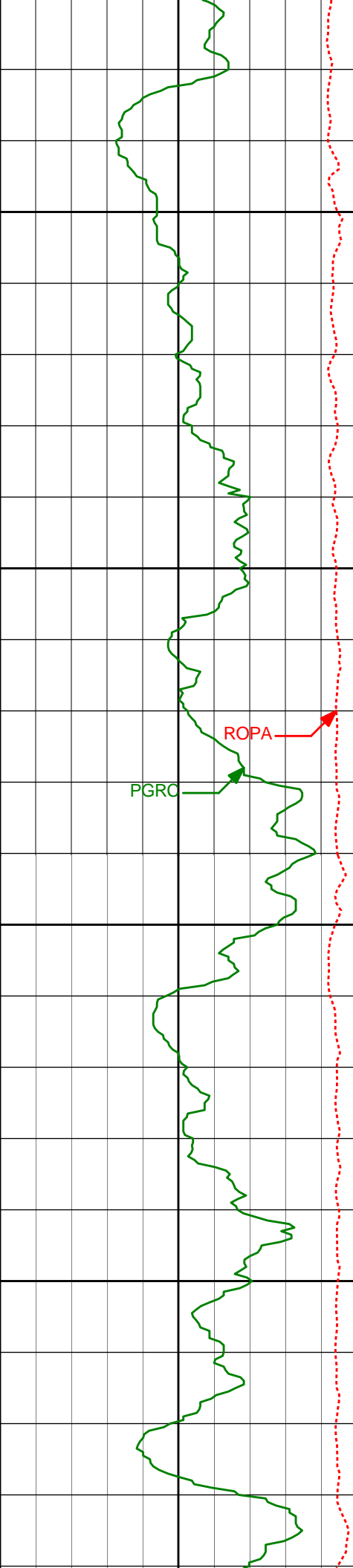
10007'
10099'
10190'

90.99°
90.46°
90.12°

86.57°
86.15°
86.57°

6381.88'
6380.72'
6380.26'

3913.62'
4005.29'
4095.96'



10250'

10300'

10350'

10400'

10282'

89.94°

87.84°

6380.21'

4187.74'

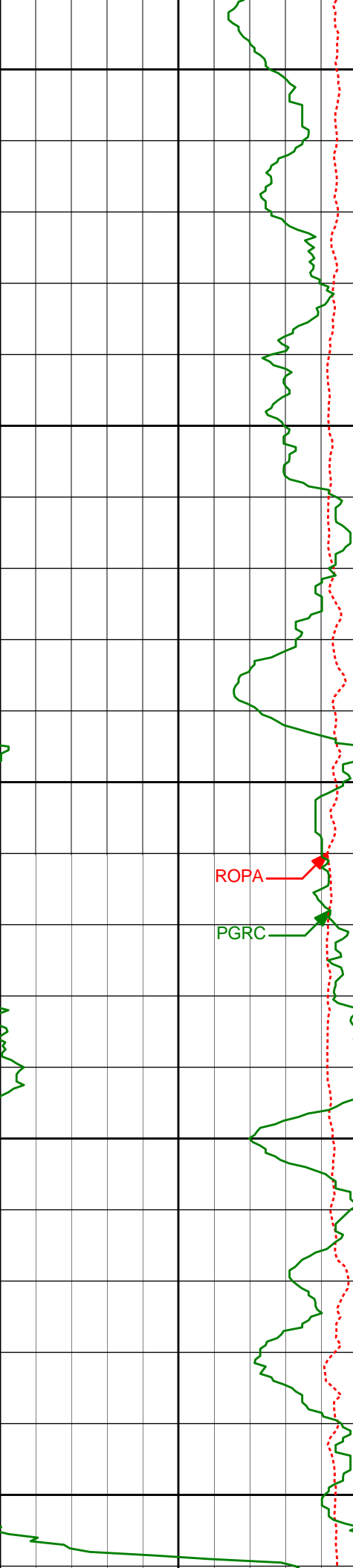
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89.45°

89.18°

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4279.64'



10450'

10466'

90.31°

88.05°

6380.90'

4371.55'

10500'

10550'

10558'

90.59°

86.93°

6380.18'

4463.35'

10600'

10650'

10650'

90.80°

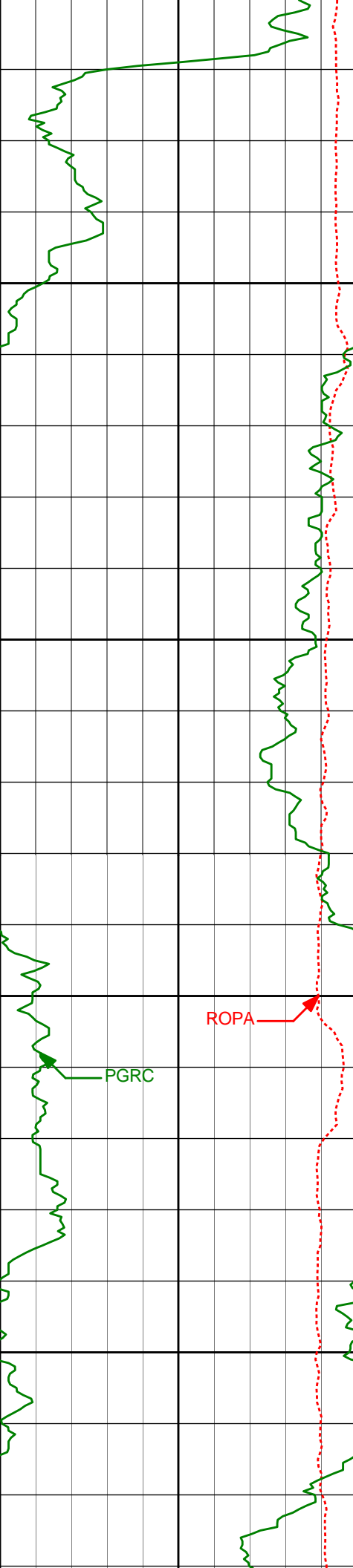
87.94°

6379.07'

4555.15'

ROPA

PGRC



10700'

10750'

10800'

10850'

10745'

89.29°

88.45°

6378.99'

4650.02'

ROPA

PGRC

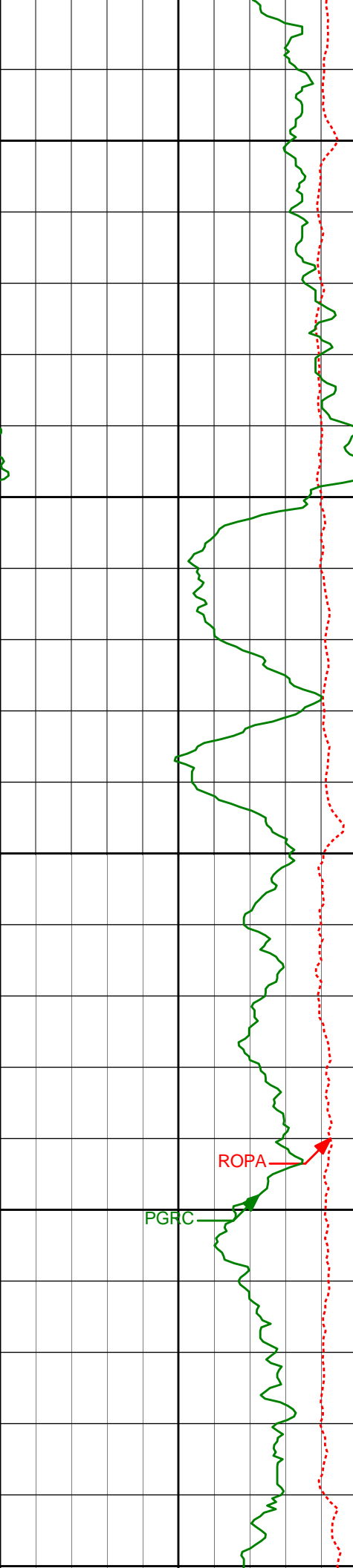
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10900'

10936'

89.60°

88.66°

6382.18'

4840.79'

10950'

11000'

11032'

90.40°

88.82°

6382.18'

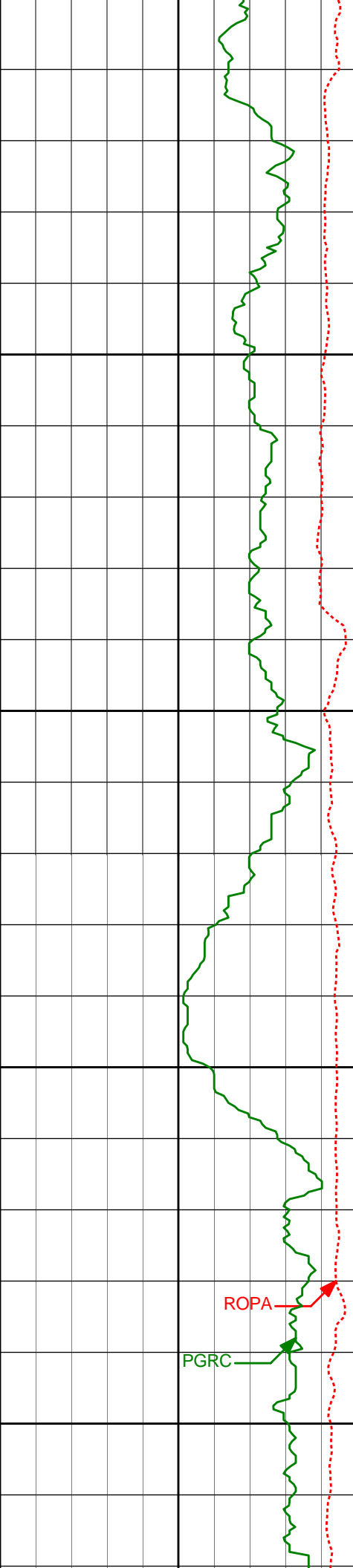
4936.70'

11050'

11100'

ROPA

PGRC



11100'

11150'

11200'

11250'

11300'

11128'

89.45°

88.87°

6382.31'

5032.62'

11224'

89.05°

88.77°

6383.58'

5128.53'

ROP A

PGRC

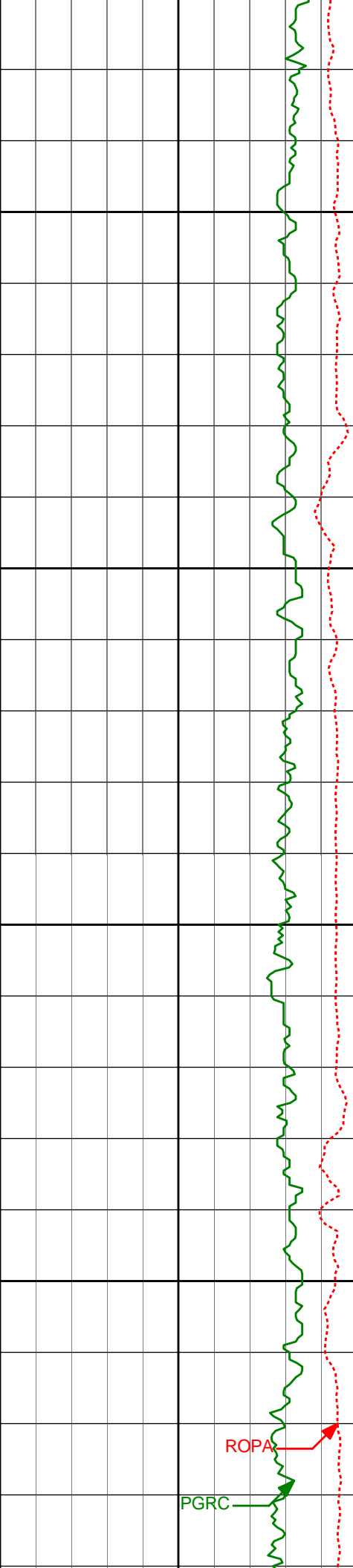
11319'

90.62°

90.12°

6383.86'

5223.48'



11350'

11400'

11450'

11500'

11415'

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92.16°

6383.03'

5319.47'

11510'

89.51°

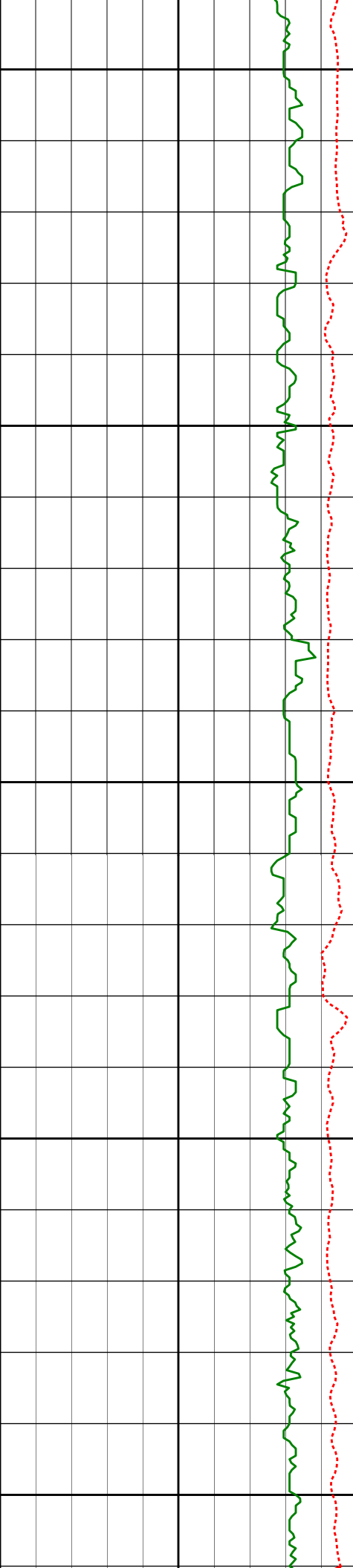
93.04°

6383.14'

5414.44'

ROPA

PGRC



11550'

11600'

11650'

11700'

11750'

11606'

89.66°

89.57°

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5510.42'

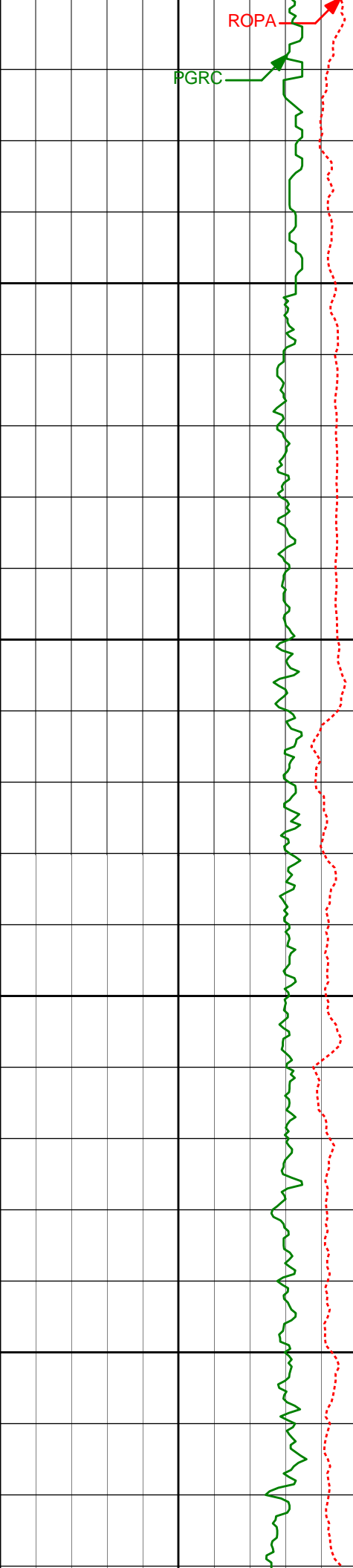
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90.85°

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5605.41'



PGRC

ROPA

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11900'

11950'

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90.34°

95.53°

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5701.32'

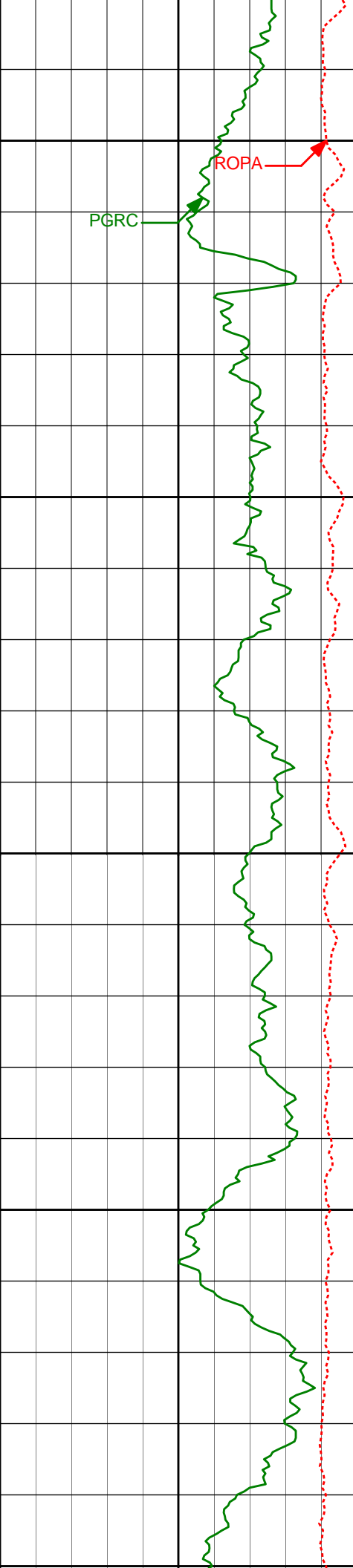
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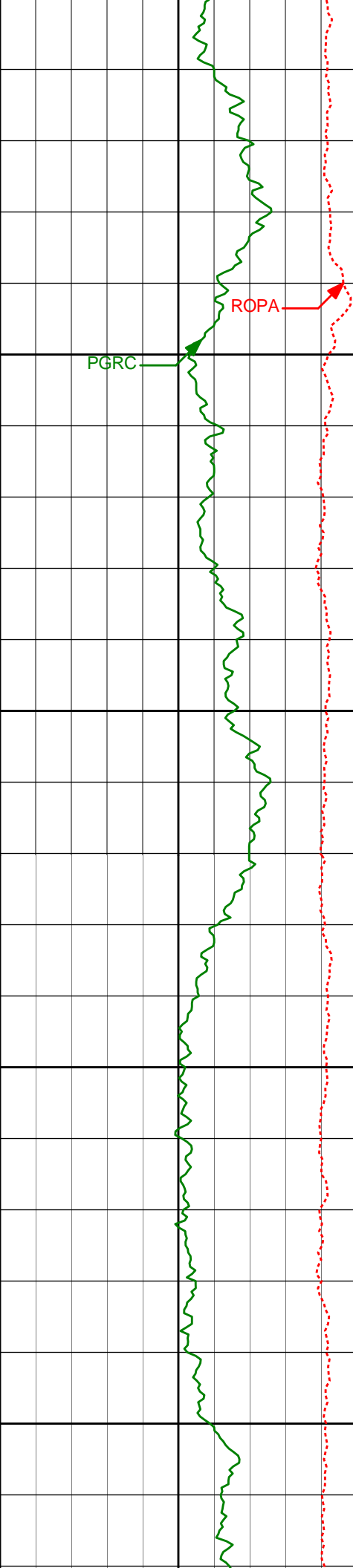
95.48°

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5796.05'



11988'	91.36°	91.09°	6381.85'	5891.94'
12000'				
12050'				
12083'	88.74°	88.43°	6381.77'	5986.90'
12100'				
12150'				
12179'	87.62°	88.14°	6384.82'	6082.73'
12200'				



12200'

12250'

12300'

12350'

12400'

12274'

88.68°

86.94°

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6177.48'

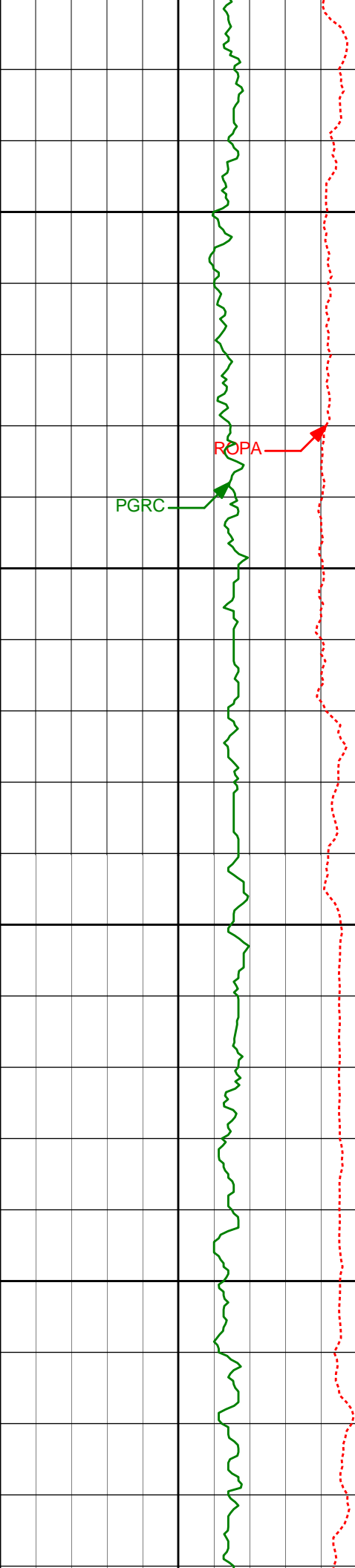
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87.19°

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12450'

12465'

89.97°

86.05°

6389.78'

6367.92'

ROPA

PGRC

12500'

12550'

12560'

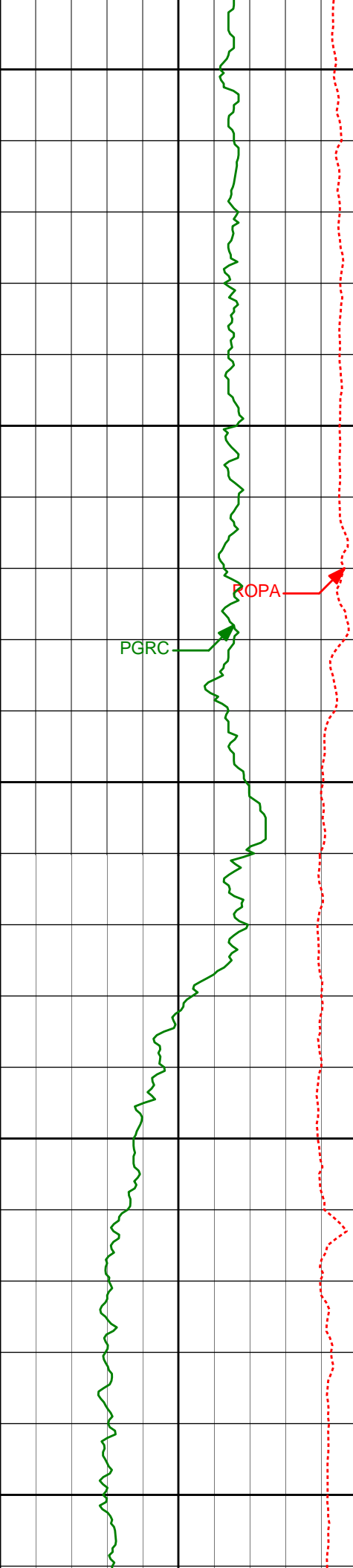
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84.30°

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6462.40'

12600'



12650'

12656'

90.52°

84.94°

6388.54'

6557.77'

12700'

ROPA

PGRC

12750'

12751'

89.07°

85.99°

6388.88'

6652.30'

12800'

12850'

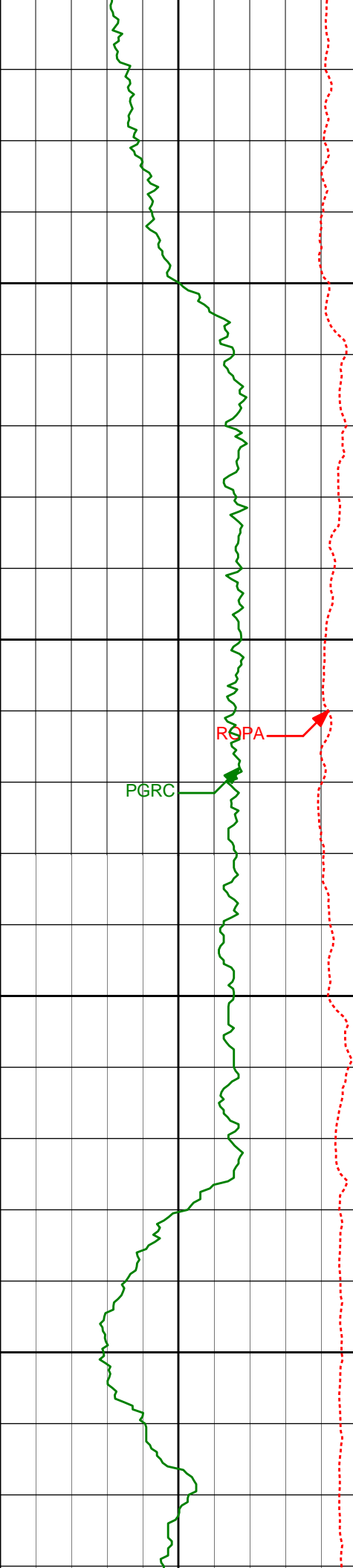
12846'

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86.26°

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6746.93'



12900'

12950'

13000'

13050'

12942'

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87.32°

6387.48'

6842.64'

13037'

88.49°

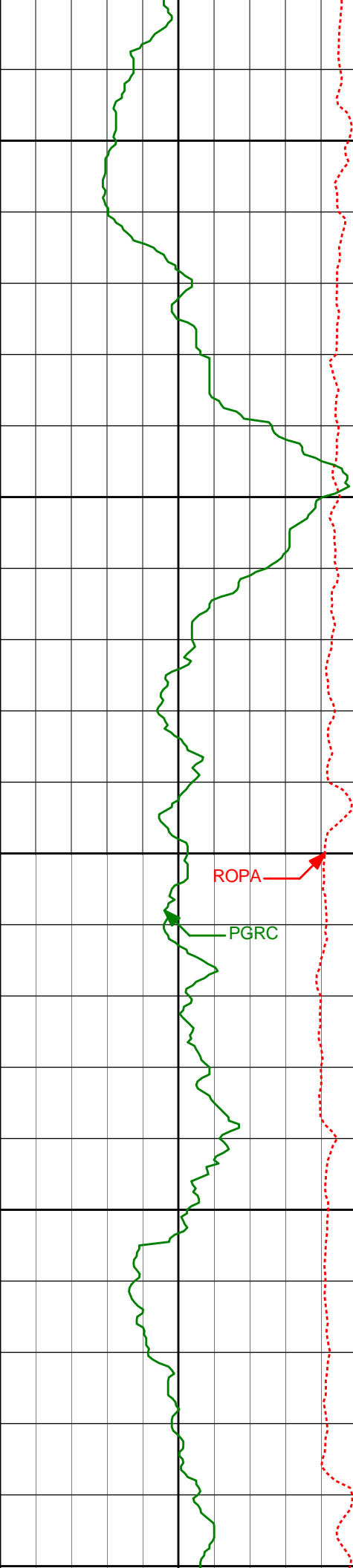
86.65°

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6937.38'

PGRC

ROPA



13100'

13132'

87.75°

87.36°

6391.54'

7032.08'

13150'

13200'

ROPA

PGRC

13228'

88.30°

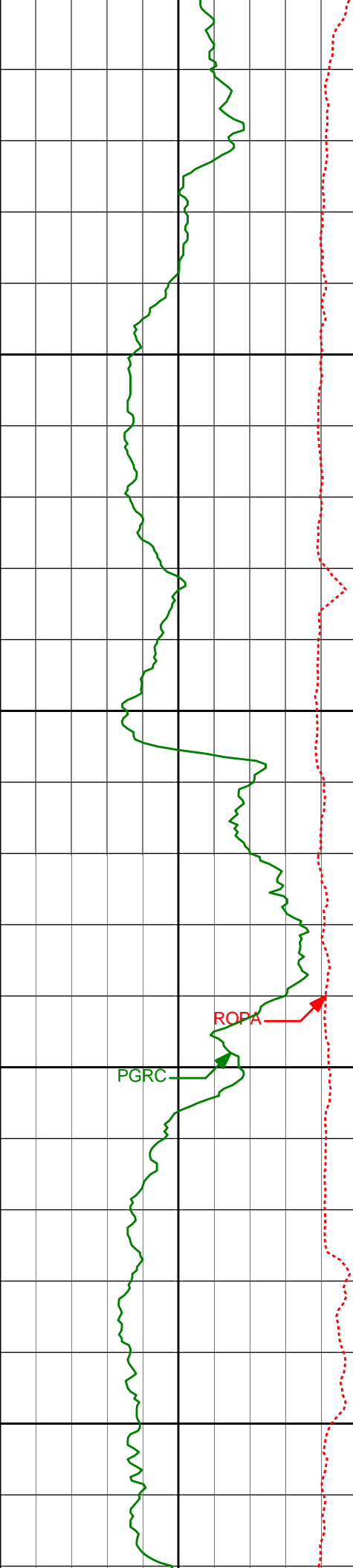
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7127.85'

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13300'



13300'

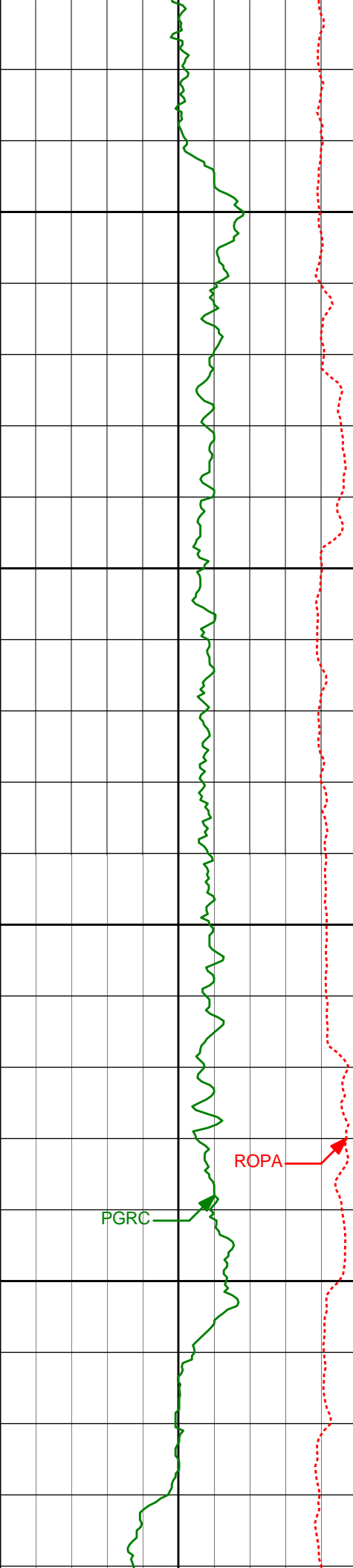
13350'

13400'

13450'

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13323'	88.24°	86.22°	6397.71'	7222.57'
13418'	90.83°	87.03°	6398.48'	7317.26'
13514'	90.80°	86.45°	6397.11'	7412.96'



13550'

13600'

13650'

13700'

PGRC

ROPA

13609'

90.74°

85.82°

6395.83'

7507.59'

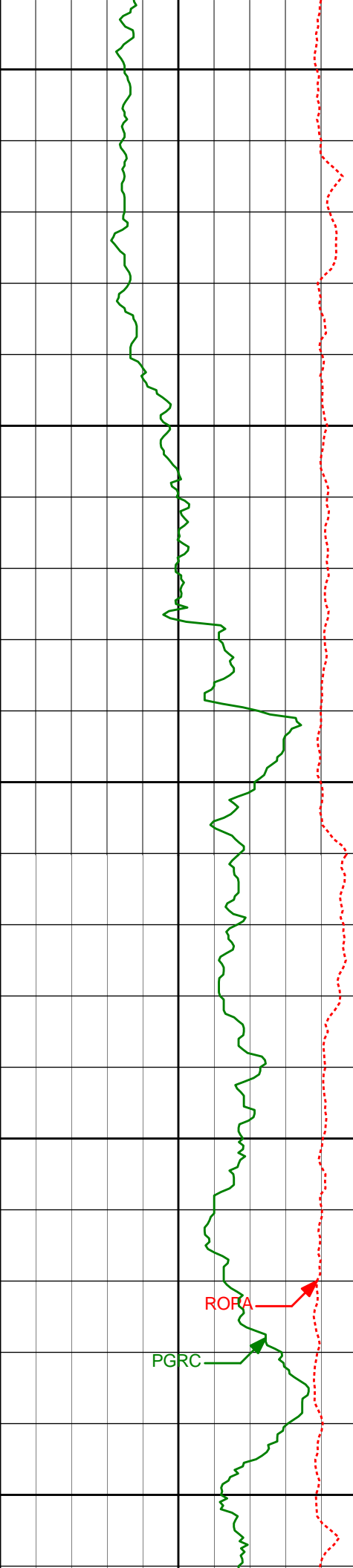
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88.12°

86.05°

6396.78'

7603.18'



13750'

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13850'

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13800'

13896'

90.34°

89.75°

86.47°

86.85°

6398.06'

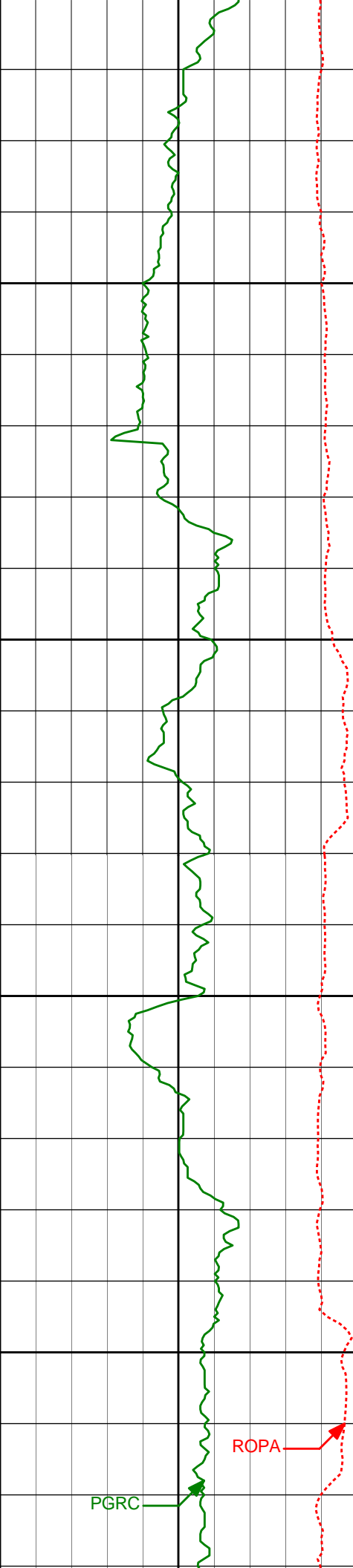
6397.98'

7697.81'

7793.52'

RORA

PGRC



13991'

90.86°

86.80°

6397.47'

7888.24'

14000'

14050'

14087'

89.91°

87.21°

6396.82'

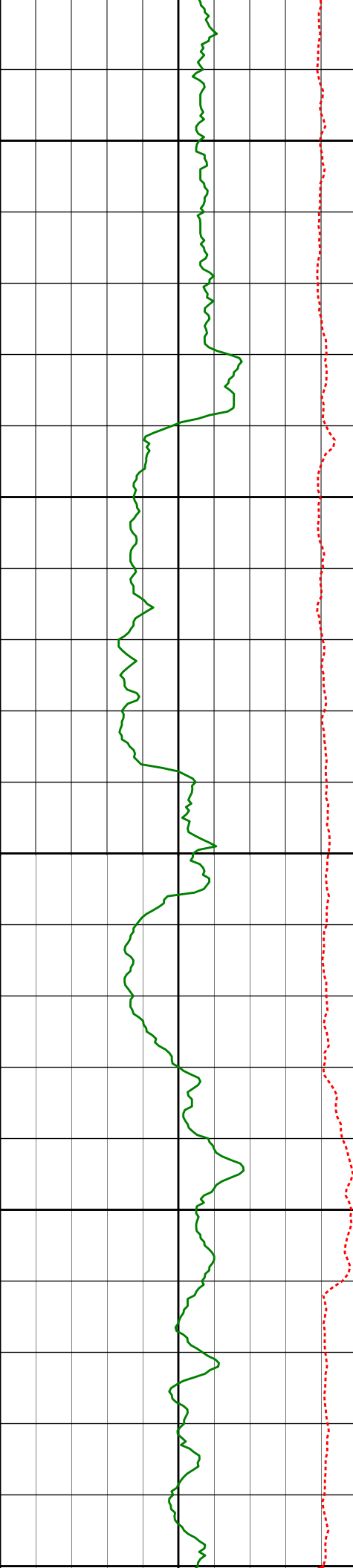
7983.99'

14100'

14150'

ROPA

PGRC



14200'

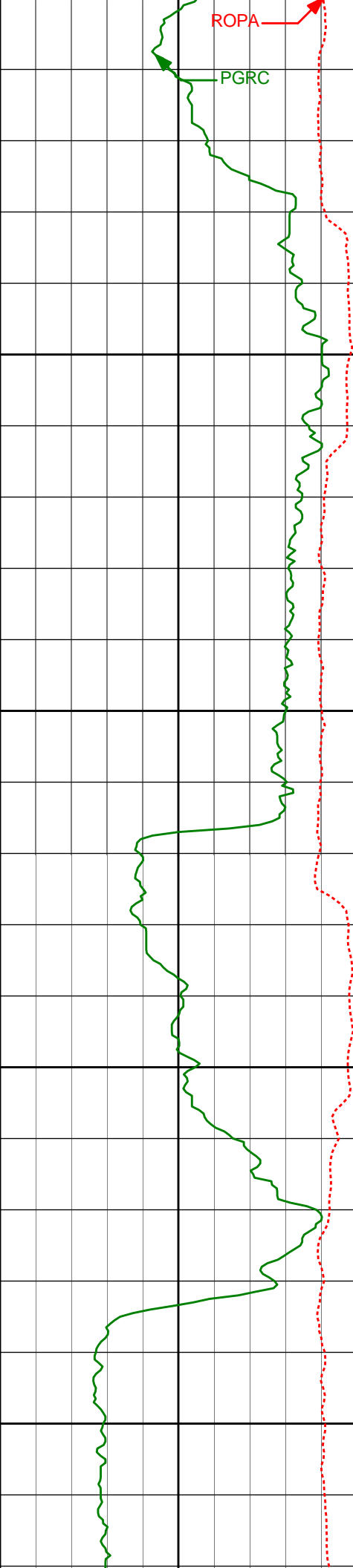
14250'

14300'

14350'

14400'

14182'	89.48°	86.97°	6397.33'	8078.75'
14277'	91.82°	88.13°	6396.26'	8173.54'
14373'	91.73°	87.12°	6393.29'	8269.31'



ROPA

PGRC

14400'

14450'

14500'

14550'

14600'

14468'

90.03°

88.27°

6391.84'

8364.12'

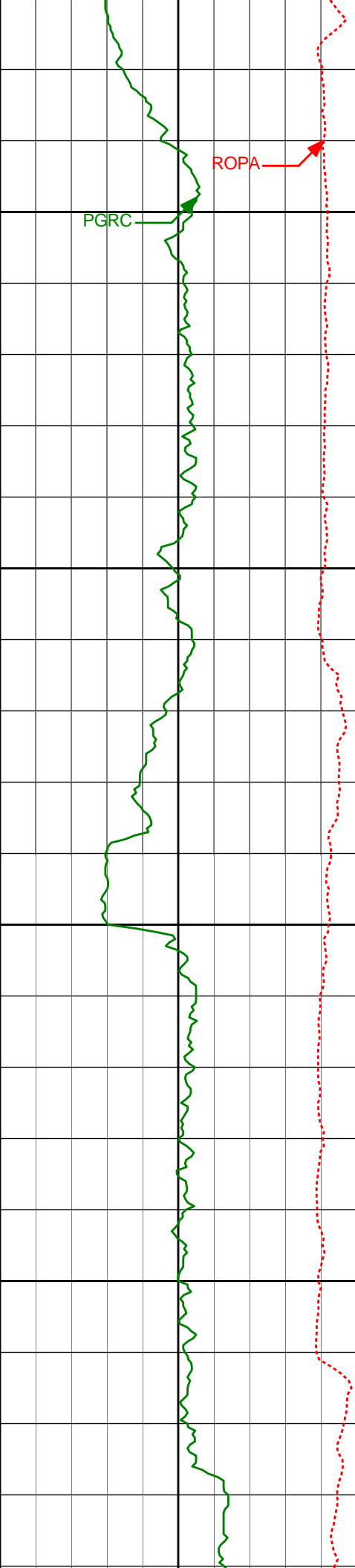
14564'

88.65°

88.84°

6392.94'

8460.02'



14650'

14659'

89.66°

88.90°

6394.35'

8554.93'

14700'

14750'

14755'

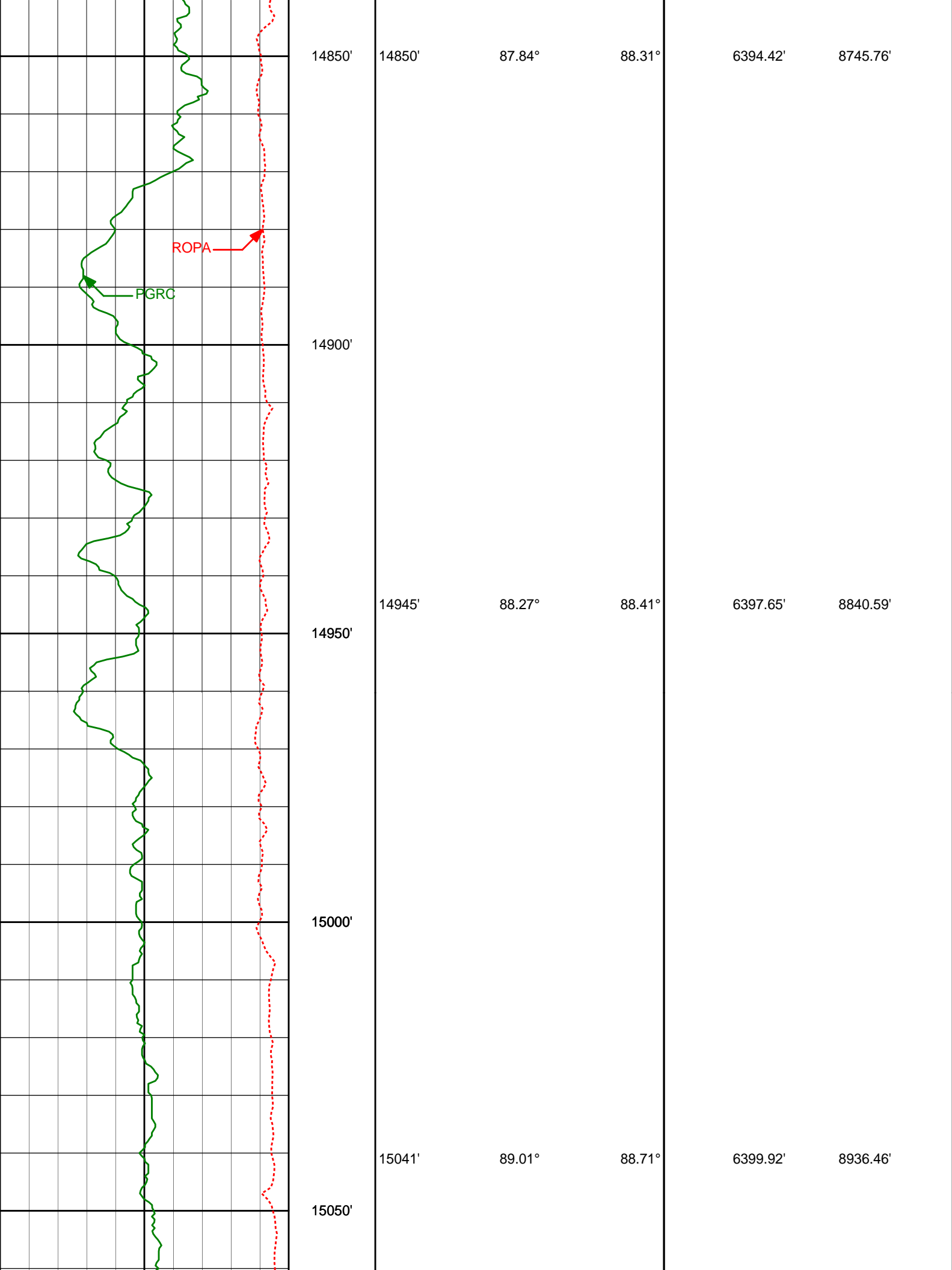
91.20°

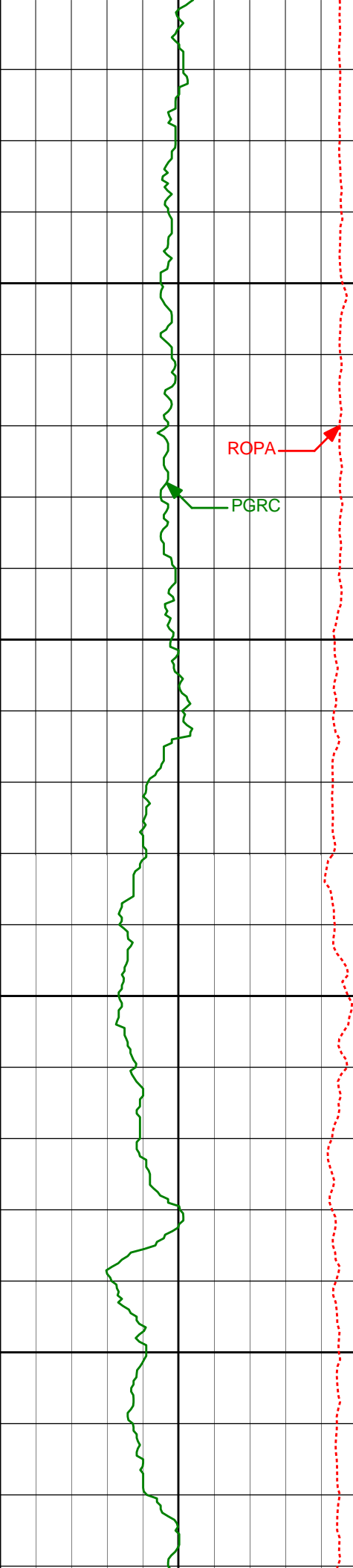
89.20°

6393.63'

8650.86'

14800'





15100'

ROPA

PGRC

15136'

89.29°

89.93°

6401.32'

9031.40'

15150'

15200'

15231'

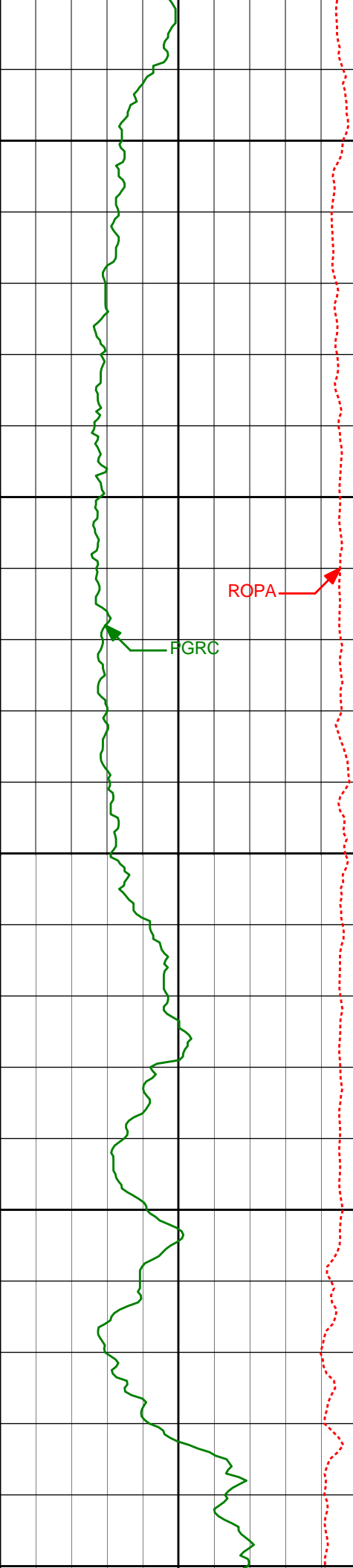
87.90°

87.36°

6403.65'

9126.27'

15250'



15300'

15327'

88.30°

86.72°

6406.83'

9221.97'

15350'

ROPA

FGRC

15400'

15422'

91.02°

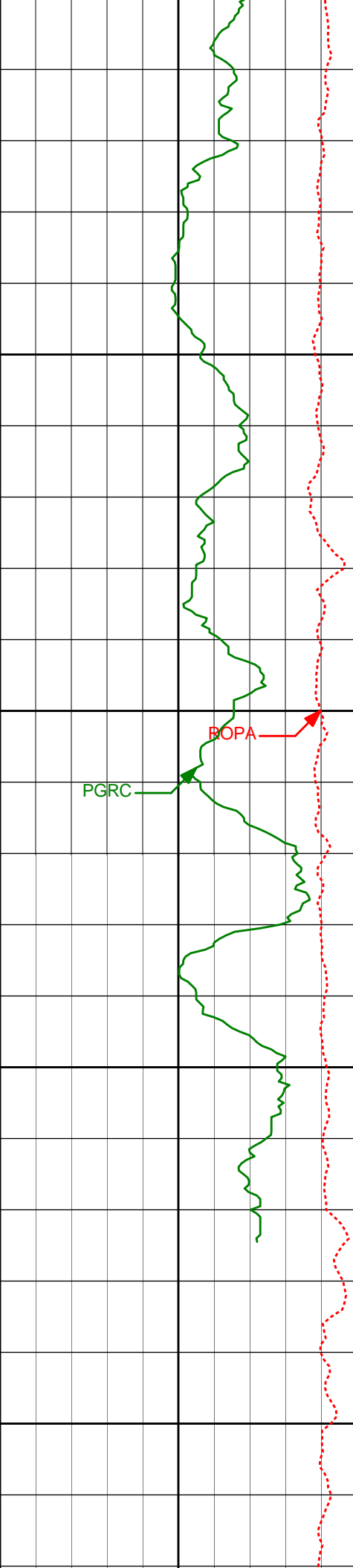
87.92°

6407.39'

9316.74'

15450'

15500'



15500

15550'

15600'

15650'

15700'

15518'

92.41°

87.02°

6404.52'

9412.50'

15613'

93.64°

87.00°

6399.51'

9507.12'

15665'

93.71°

86.48°

6396.18'

9558.85'

										15725'	93.71°	86.48°	6392.30'	9618.53'	
										TD @ MD 15,725'					
										15725'					
Gamma Ray PGRC										Measured Depth (ft) 1:240	Depth	Inc	Azi.	TVD	V.S.
api															
Average Rate of Penetration ROPA															
feet per hr															



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Wells Ranch AF08-69-1HN
Wattenberg
Weld Colorado
USA
CA-XX-0009394995

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
584.00	0.00	0.00	584.00	0.00 N	0.00 E	0.00	0.00
629.00	0.31	173.74	629.00	0.12 S	0.01 E	0.02	0.69
819.00	0.61	174.54	818.99	1.63 S	0.16 E	0.20	0.16
914.00	0.76	185.08	913.99	2.76 S	0.16 E	0.21	0.21
1008.00	0.58	186.60	1007.98	3.85 S	0.05 E	0.12	0.20
1103.00	0.61	177.76	1102.98	4.83 S	0.01 E	0.11	0.10
1195.00	0.74	191.80	1194.97	5.91 S	0.09 W	0.03	0.23
1287.00	0.81	188.14	1286.96	7.13 S	0.30 W	-0.16	0.09
1380.00	0.75	189.30	1379.95	8.38 S	0.50 W	-0.33	0.07
1472.00	0.91	193.19	1471.94	9.68 S	0.76 W	-0.56	0.19
1656.00	0.68	189.92	1655.92	12.18 S	1.28 W	-1.03	0.13
1748.00	3.58	185.11	1747.85	15.57 S	1.63 W	-1.31	3.15
1840.00	5.54	181.75	1839.56	22.87 S	2.02 W	-1.56	2.15
1932.00	7.45	183.35	1930.96	33.27 S	2.51 W	-1.83	2.08
2025.00	9.69	174.64	2022.92	47.08 S	2.13 W	-1.17	2.78
2117.00	10.53	175.95	2113.49	63.18 S	0.81 W	0.47	0.95
2216.00	9.84	179.42	2210.93	80.66 S	0.08 W	1.55	0.93
2312.00	8.80	177.99	2305.66	96.20 S	0.26 E	2.20	1.11
2406.00	10.14	182.77	2398.38	111.65 S	0.11 E	2.37	1.65
2501.00	10.00	183.58	2491.92	128.24 S	0.81 W	1.79	0.21
2597.00	10.43	179.21	2586.40	145.25 S	1.21 W	1.73	0.92
2692.00	9.22	175.55	2680.00	161.43 S	0.50 W	2.77	1.43
2787.00	10.83	180.81	2773.55	177.95 S	0.04 W	3.56	1.95
2883.00	10.87	179.85	2867.84	196.02 S	0.14 W	3.83	0.19
2978.00	10.06	186.13	2961.26	213.22 S	1.00 W	3.31	1.47
3074.00	9.54	181.61	3055.86	229.51 S	2.12 W	2.52	0.96
3169.00	9.71	182.63	3149.52	245.39 S	2.71 W	2.26	0.25
3265.00	9.25	181.77	3244.21	261.19 S	3.32 W	1.97	0.50
3360.00	9.34	175.14	3337.96	276.51 S	2.90 W	2.69	1.13
3455.00	11.23	176.06	3431.43	293.42 S	1.61 W	4.33	1.99
3551.00	11.49	175.66	3525.55	312.28 S	0.25 W	6.07	0.28
3646.00	11.55	180.46	3618.64	331.22 S	0.39 E	7.10	1.01
3742.00	12.27	178.65	3712.57	351.03 S	0.55 E	7.66	0.85
3837.00	10.53	181.96	3805.70	369.80 S	0.49 E	7.98	1.96

3933.00	10.40	185.01	3900.10	387.20 S	0.56 W	7.28	0.59
4028.00	9.12	185.13	3993.73	403.23 S	1.98 W	6.18	1.35
4124.00	9.55	180.08	4088.46	418.77 S	2.67 W	5.81	0.97
4219.00	8.73	176.60	4182.25	433.86 S	2.26 W	6.53	1.04
4314.00	10.02	183.12	4275.98	449.31 S	2.28 W	6.82	1.76
4410.00	9.68	183.70	4370.56	465.71 S	3.26 W	6.17	0.37
4506.00	8.91	182.52	4465.30	481.18 S	4.10 W	5.64	0.83
4601.00	6.38	184.47	4559.45	493.80 S	4.84 W	5.16	2.67
4696.00	4.58	193.86	4654.01	502.75 S	6.16 W	4.02	2.11
4792.00	3.15	162.99	4749.80	509.00 S	6.31 W	4.00	2.58
4887.00	0.86	125.54	4844.74	511.91 S	4.97 W	5.40	2.66
4983.00	0.64	154.76	4940.73	512.81 S	4.15 W	6.23	0.45
5079.00	0.57	113.75	5036.73	513.48 S	3.49 W	6.91	0.45
5174.00	0.29	100.82	5131.73	513.72 S	2.81 W	7.59	0.31
5269.00	1.05	145.51	5226.72	514.48 S	2.08 W	8.33	0.91
5365.00	1.75	137.65	5322.69	516.29 S	0.59 W	9.86	0.76
5460.00	1.20	358.02	5417.68	516.37 S	0.35 E	10.80	2.93
5556.00	1.13	34.21	5513.66	514.58 S	0.85 E	11.27	0.76
5651.00	1.18	12.29	5608.64	512.84 S	1.59 E	11.97	0.47
5699.00	2.17	71.11	5656.62	512.07 S	2.55 E	12.92	3.87
5746.00	8.00	80.95	5703.42	511.26 S	6.63 E	16.97	12.50
5794.00	11.29	89.60	5750.73	510.70 S	14.63 E	24.96	7.47
5842.00	10.86	90.30	5797.84	510.70 S	23.85 E	34.18	0.95
5890.00	14.52	91.54	5844.66	510.88 S	34.39 E	44.72	7.65
5937.00	19.11	87.21	5889.64	510.66 S	47.97 E	58.30	10.11
5985.00	23.43	83.20	5934.36	509.15 S	65.30 E	75.60	9.50
6033.00	26.71	82.72	5977.83	506.65 S	85.49 E	95.73	6.85
6081.00	30.41	86.92	6019.99	504.63 S	108.33 E	118.52	8.76
6129.00	34.15	90.52	6060.57	504.10 S	133.94 E	144.12	8.75
6177.00	38.82	89.40	6099.15	504.07 S	162.48 E	172.65	9.83
6225.00	42.97	89.74	6135.42	503.84 S	193.89 E	204.05	8.66
6273.00	46.43	89.55	6169.53	503.63 S	227.65 E	237.80	7.21
6320.00	50.08	88.94	6200.82	503.16 S	262.71 E	272.84	7.84
6368.00	53.54	88.79	6230.49	502.41 S	300.43 E	310.54	7.21
6416.00	56.71	89.85	6257.93	501.95 S	339.80 E	349.89	6.85
6464.00	61.16	88.20	6282.70	501.24 S	380.90 E	390.97	9.73
6512.00	66.02	86.94	6304.04	499.41 S	423.83 E	433.86	10.39
6560.00	69.91	87.20	6322.05	497.14 S	468.26 E	478.23	8.13
6607.00	73.23	87.85	6336.90	495.22 S	512.80 E	522.72	7.19
6655.00	76.41	88.25	6349.47	493.64 S	559.09 E	568.97	6.68
6702.00	80.51	88.79	6358.87	492.45 S	605.12 E	614.96	8.78
6726.00	82.79	88.62	6362.36	491.92 S	628.86 E	638.69	9.54
6779.00	85.65	89.78	6367.69	491.19 S	681.58 E	691.38	5.82
6875.00	86.27	90.55	6374.46	491.47 S	777.34 E	787.13	1.03
6970.00	88.34	88.24	6378.93	490.47 S	872.21 E	881.96	3.26
7066.00	89.41	87.15	6380.81	486.60 S	968.11 E	977.77	1.60
7161.00	89.91	87.13	6381.38	481.86 S	1062.99 E	1072.53	0.52
7256.00	90.28	87.76	6381.22	477.62 S	1157.90 E	1167.33	0.77
7351.00	90.62	87.79	6380.48	473.93 S	1252.82 E	1262.16	0.36
7447.00	89.38	85.83	6380.48	468.59 S	1348.67 E	1357.88	2.41
7542.00	89.44	86.22	6381.45	462.00 S	1443.43 E	1452.49	0.41
7638.00	91.51	87.25	6380.65	456.53 S	1539.27 E	1548.20	2.41
7733.00	90.49	87.69	6378.99	452.34 S	1634.16 E	1642.98	1.17
7829.00	88.37	88.45	6379.94	449.10 S	1730.09 E	1738.83	2.35
7924.00	89.26	88.02	6381.91	446.17 S	1825.03 E	1833.69	1.04
8019.00	89.04	88.48	6383.32	443.26 S	1919.97 E	1928.55	0.53
8115.00	90.49	89.12	6383.70	441.24 S	2015.95 E	2024.47	1.65
8211.00	88.71	88.98	6384.37	439.65 S	2111.93 E	2120.40	1.87
8306.00	89.85	89.44	6385.58	438.34 S	2206.91 E	2215.33	1.29
8401.00	90.89	89.85	6384.96	437.75 S	2301.90 E	2310.29	1.18
8497.00	91.57	87.82	6382.90	435.80 S	2397.86 E	2406.19	2.23
8592.00	90.62	86.47	6381.09	431.06 S	2492.72 E	2500.93	1.74
8688.00	90.71	88.13	6379.98	426.53 S	2588.60 E	2596.71	1.73
8783.00	89.60	89.21	6379.72	424.32 S	2683.57 E	2691.61	1.63
8879.00	89.91	88.66	6380.13	422.53 S	2779.55 E	2787.54	0.66
8974.00	90.86	88.22	6379.49	419.95 S	2874.52 E	2882.43	1.10
9070.00	90.22	87.51	6378.59	416.38 S	2970.44 E	2978.26	1.00
9165.00	89.14	88.57	6379.13	413.13 S	3065.38 E	3073.12	1.59
9261.00	90.15	88.94	6379.72	411.04 S	3161.36 E	3169.03	1.13
9356.00	89.07	87.14	6380.36	407.80 S	3256.29 E	3263.88	2.21
9452.00	90.06	87.46	6381.08	403.29 S	3352.18 E	3359.66	1.08
9547.00	90.15	87.70	6380.90	399.28 S	3447.10 E	3454.48	0.27
9642.00	87.78	87.59	6382.61	395.37 S	3542.00 E	3549.28	2.50
9733.00	89.23	88.19	6384.99	392.02 S	3632.90 E	3640.09	1.72
9825.00	90.55	88.75	6385.16	389.56 S	3724.87 E	3731.99	1.56

9916.00	91.29	87.74	6383.69	386.77 S	3815.81 E	3822.86	1.38
10007.00	90.99	86.57	6381.88	382.25 S	3906.68 E	3913.62	1.32
10099.00	90.46	86.15	6380.72	376.41 S	3998.48 E	4005.29	0.73
10190.00	90.12	86.57	6380.26	370.63 S	4089.30 E	4095.96	0.60
10282.00	89.94	87.84	6380.21	366.14 S	4181.19 E	4187.74	1.39
10374.00	89.45	89.18	6380.70	363.75 S	4273.15 E	4279.64	1.56
10466.00	90.31	88.05	6380.90	361.53 S	4365.12 E	4371.55	1.54
10558.00	90.59	86.93	6380.18	357.50 S	4457.03 E	4463.35	1.26
10650.00	90.80	87.94	6379.07	353.38 S	4548.93 E	4555.15	1.12
10745.00	89.29	88.45	6378.99	350.38 S	4643.88 E	4650.02	1.68
10841.00	88.64	88.43	6380.72	347.77 S	4739.83 E	4745.90	0.68
10936.00	89.60	88.66	6382.18	345.35 S	4834.79 E	4840.79	1.04
11032.00	90.40	88.82	6382.18	343.24 S	4930.76 E	4936.70	0.85
11128.00	89.45	88.87	6382.31	341.31 S	5026.74 E	5032.62	1.00
11224.00	89.05	88.77	6383.58	339.33 S	5122.71 E	5128.53	0.43
11319.00	90.62	90.12	6383.86	338.41 S	5217.70 E	5223.48	2.18
11415.00	90.37	92.16	6383.03	340.32 S	5313.67 E	5319.47	2.13
11510.00	89.51	93.04	6383.14	344.62 S	5408.57 E	5414.44	1.30
11606.00	89.66	89.57	6383.83	346.81 S	5504.53 E	5510.42	3.61
11701.00	89.75	90.85	6384.32	347.17 S	5599.53 E	5605.41	1.35
11797.00	90.34	95.53	6384.24	352.51 S	5695.35 E	5701.32	4.91
11892.00	90.59	95.48	6383.48	361.62 S	5789.91 E	5796.05	0.26
11988.00	91.36	91.09	6381.85	367.12 S	5885.72 E	5891.94	4.64
12083.00	88.74	88.43	6381.77	366.72 S	5980.70 E	5986.90	3.93
12179.00	87.62	88.14	6384.82	363.85 S	6076.61 E	6082.73	1.20
12274.00	88.68	86.94	6387.88	359.77 S	6171.46 E	6177.48	1.68
12369.00	89.54	87.19	6389.37	354.90 S	6266.33 E	6272.23	0.94
12465.00	89.97	86.05	6389.78	349.24 S	6362.16 E	6367.92	1.27
12560.00	90.49	84.30	6389.40	341.24 S	6456.82 E	6462.40	1.92
12656.00	90.52	84.94	6388.54	332.24 S	6552.39 E	6557.77	0.67
12751.00	89.07	85.99	6388.88	324.73 S	6647.09 E	6652.30	1.88
12846.00	91.11	86.26	6388.72	318.32 S	6741.86 E	6746.93	2.16
12942.00	90.37	87.32	6387.48	312.95 S	6837.70 E	6842.64	1.35
13037.00	88.49	86.65	6388.43	307.95 S	6932.56 E	6937.38	2.10
13132.00	87.75	87.36	6391.54	302.99 S	7027.38 E	7032.08	1.08
13228.00	88.30	88.10	6394.84	299.20 S	7123.25 E	7127.85	0.96
13323.00	88.24	86.22	6397.71	294.50 S	7218.09 E	7222.57	1.98
13418.00	90.83	87.03	6398.48	288.92 S	7312.91 E	7317.26	2.86
13514.00	90.80	86.45	6397.11	283.46 S	7408.74 E	7412.96	0.61
13609.00	90.74	85.82	6395.83	277.06 S	7503.52 E	7507.59	0.66
13705.00	88.12	86.05	6396.78	270.25 S	7599.26 E	7603.18	2.74
13800.00	90.34	86.47	6398.06	264.05 S	7694.05 E	7697.81	2.38
13896.00	89.75	86.85	6397.98	258.46 S	7789.88 E	7793.52	0.73
13991.00	90.86	86.80	6397.47	253.19 S	7884.73 E	7888.24	1.17
14087.00	89.91	87.21	6396.82	248.18 S	7980.60 E	7983.99	1.08
14182.00	89.48	86.97	6397.33	243.36 S	8075.47 E	8078.75	0.52
14277.00	91.82	88.13	6396.26	239.29 S	8170.37 E	8173.54	2.75
14373.00	91.73	87.12	6393.29	235.32 S	8266.24 E	8269.31	1.06
14468.00	90.03	88.27	6391.84	231.50 S	8361.15 E	8364.12	2.16
14564.00	88.65	88.84	6392.94	229.09 S	8457.11 E	8460.02	1.56
14659.00	89.66	88.90	6394.35	227.21 S	8552.08 E	8554.93	1.07
14755.00	91.20	89.20	6393.63	225.63 S	8648.06 E	8650.86	1.63
14850.00	87.84	88.31	6394.42	223.57 S	8743.02 E	8745.76	3.66
14945.00	88.27	88.41	6397.65	220.85 S	8837.93 E	8840.59	0.47
15041.00	89.01	88.71	6399.92	218.45 S	8933.87 E	8936.46	0.83
15136.00	89.29	89.93	6401.32	217.33 S	9028.85 E	9031.40	1.31
15231.00	87.90	87.36	6403.65	215.08 S	9123.79 E	9126.27	3.08
15327.00	88.30	86.72	6406.83	210.12 S	9219.60 E	9221.97	0.79
15422.00	91.02	87.92	6407.39	205.67 S	9314.49 E	9316.74	3.12
15518.00	92.41	87.02	6404.52	201.43 S	9410.35 E	9412.50	1.73
15613.00	93.64	87.00	6399.51	196.48 S	9505.09 E	9507.12	1.30
15665.00	93.71	86.48	6396.18	193.53 S	9556.89 E	9558.85	1.01
15725.00	93.71	86.48	6392.30	189.86 S	9616.66 E	9618.53	0.01

CALCULATION BASED ON MINIMUM CURVATURE METHOD

SURVEY COORDINATES RELATIVE TO WELL SYSTEM REFERENCE POINT
TVD VALUES GIVEN RELATIVE TO DRILLING MEASUREMENT POINT

VERTICAL SECTION RELATIVE TO WELL HEAD
VERTICAL SECTION IS COMPUTED ALONG A DIRECTION OF 91.16 DEGREES (GRID)
A TOTAL CORRECTION OF 7.78 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 15725.00 FEET
IS 9618.53 FEET ALONG 91.13 DEGREES (GRID)

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