



WELL INFORMATION					
MWD Run Number	100	200			
Date run completed	20-Jul-12	23-Jul-12			
Rig Bit Number	2	3			
Bit Size (in)	8.750	6.125			
Tool Nominal OD (in)	6.750	4.750			
Log Start Depth (MD, ft)	702.00	7,275.00			
Log End Depth (MD, ft)	7,275.00	11,200.00			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	17-Jul-12 13:45	21-Jul-12 01:00			
Drill/Wipe End Date and Time	20-Jul-12 00:45	23-Jul-12 06:30			
Min Inc (deg) @ Depth (MD, ft)	.22 @ 5,918.00	87.13 @ 10,324.00			
Max Inc (deg) @ Depth (MD, ft)	85.93 @ 7,221.00	92.87 @ 10,229.00			
Bit TFA(in2) / Bit Type	.86 / PDC	.46 / PDC			
Flow Rate (gpm)	550.00	260.00			
Max AV (fpm) / CV (fpm) @ MWD	396.0 / NA	401.0 / NA			
Fluid Type	Fresh Water Gel	Fresh Water Gel			
Density (ppg) / Viscosity (spqt)	10.00 / 38.00	9.45 / 32.00			
Filtrate CL (ppm)	2,400.00	2,300.00			
pH / Fluid Loss (mptm)	9.40 / 74	9.60 / 98			
PV (cP) / YP (Ihf2)	12 / 16.00	8 / 6.00			
% Solids / % Sand	8.90 / 0.30	4.90 / 0.35			
% Oil / Oil:Water Ratio	0 / 0:95	0 / 0:95			
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	107.07 / PDM	220.44 / PDM			

Max Tool Temp (degF) / Source	167.97 / PCM	223.41 / PCM			
Rm @ Max Tool Temp (degF)	NA @ NA	NA @ NA			
Lead MWD Engineer	Brett Vandergon	Gary Eifert			
Customer Representative	Matt Settles	Matt Settles			

## SENSOR INFORMATION

### Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.76	5.76			
Sub Serial Number	11254819	11768597			
Insert Serial Number	10997265	11227552			
Date and Time Initialized	16-Jul-12 17:13	20-Jul-12 02:32			
Date and Time Read	20-Jul-12 09:34	23-Jul-12 15:48			
ECMB SW Version	N/A	N/A			

### Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	54.00	60.00			
Software Version	6.21	6.21			
Sub Serial Number	11254819	11768597			
Sonde Serial Number	11062113	11478013			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	236.25	48.40			

### Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	46.51	52.62			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	11254819	11768597			
Insert/Sonde Serial Number	11121362	11681023			

## REMARKS

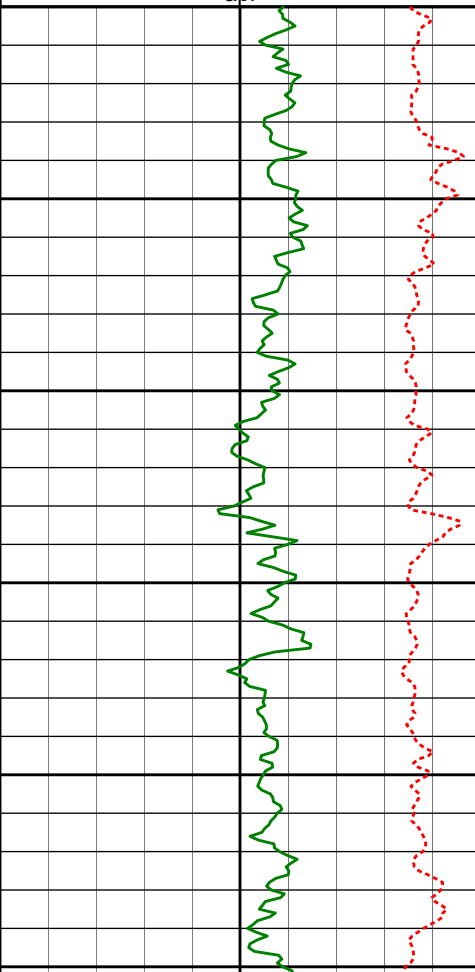
1. All depths are measured bit depths, referenced to the Driller's pipe tally and are measured from the Drill Floor, unless otherwise specified.
2. No depth corrections have been made for pipe stretch or compression.
3. Critical annual velocities are calculated using the "Power Law" model for water based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

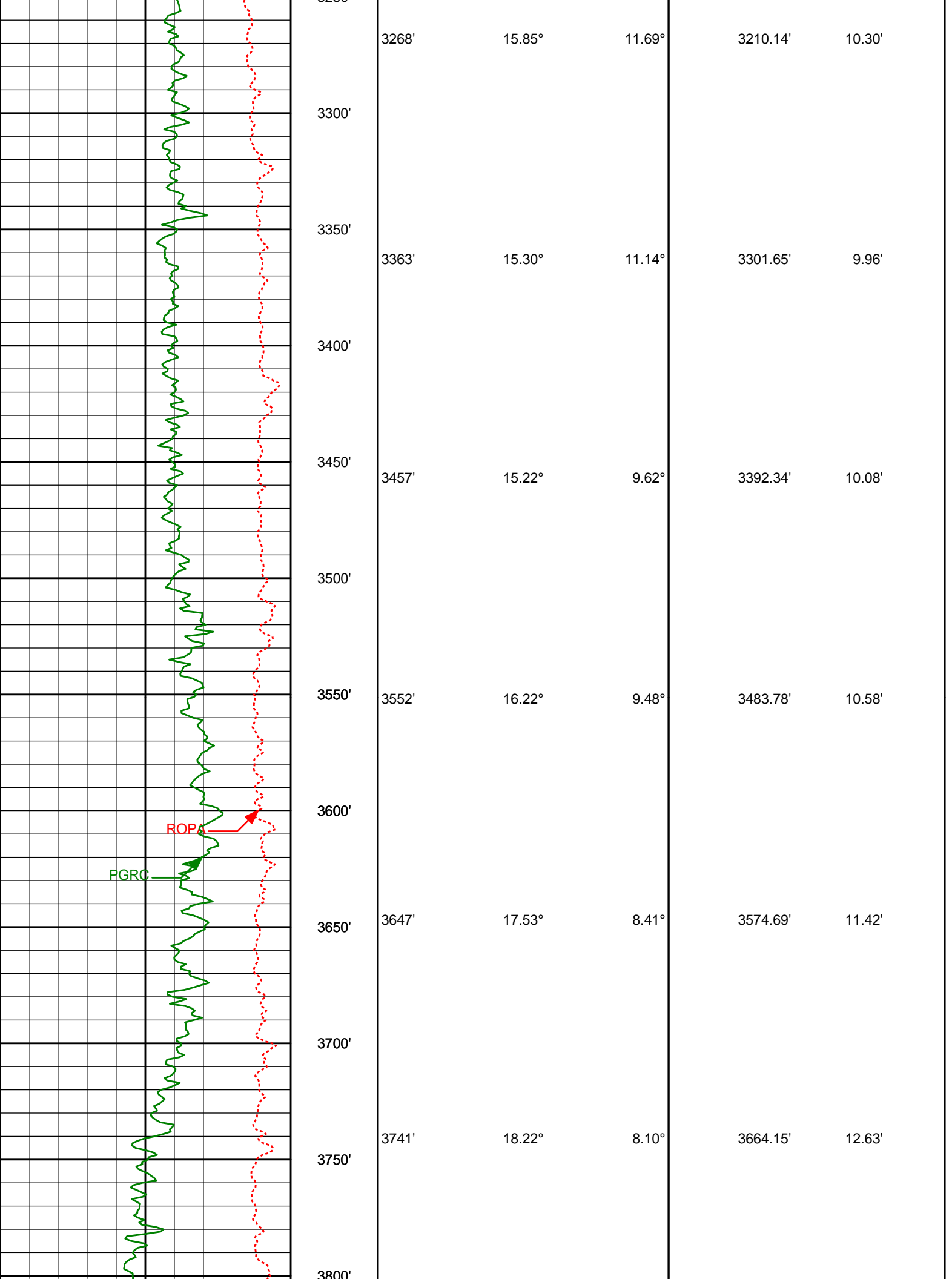
WARRANTY

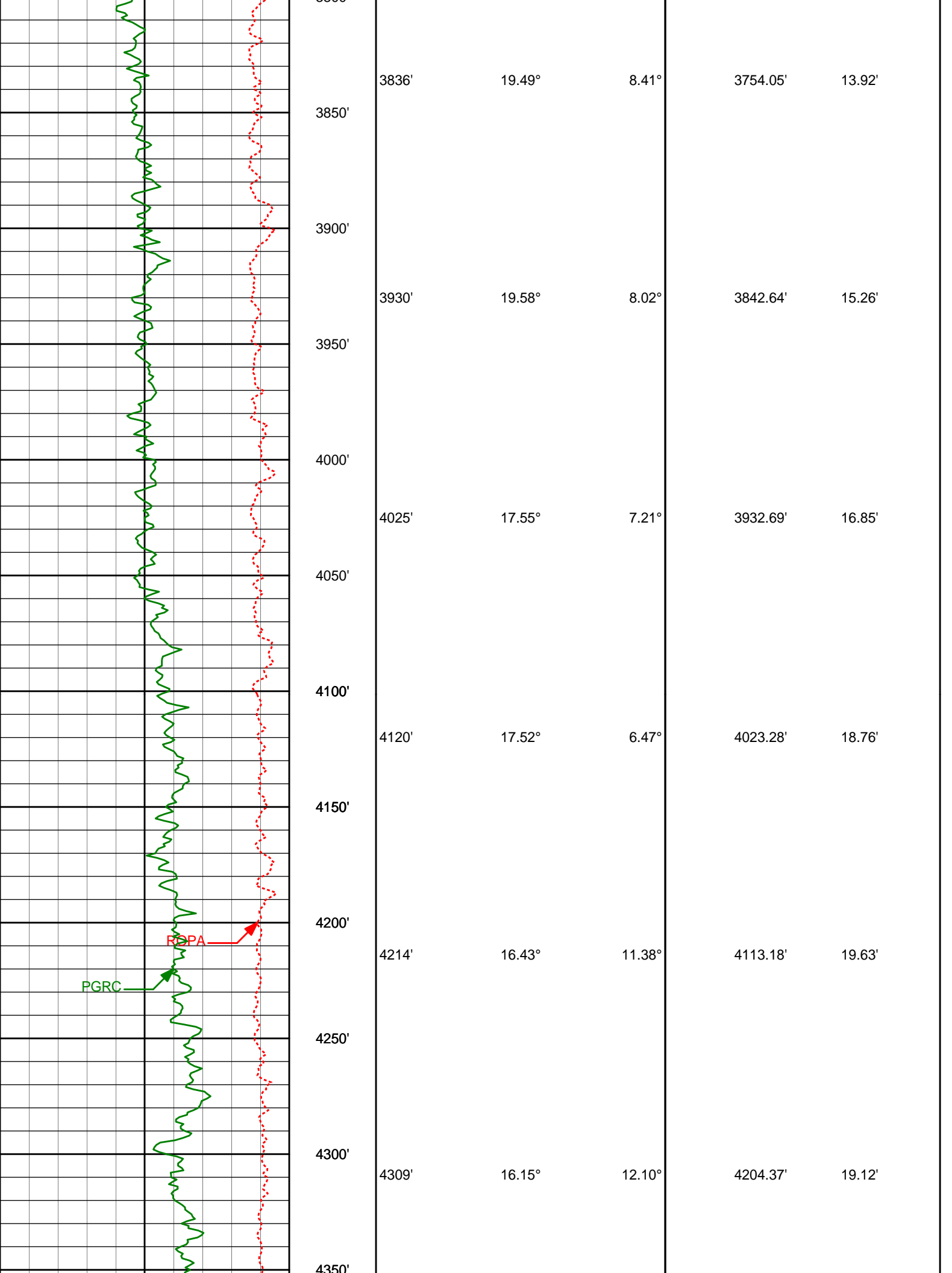
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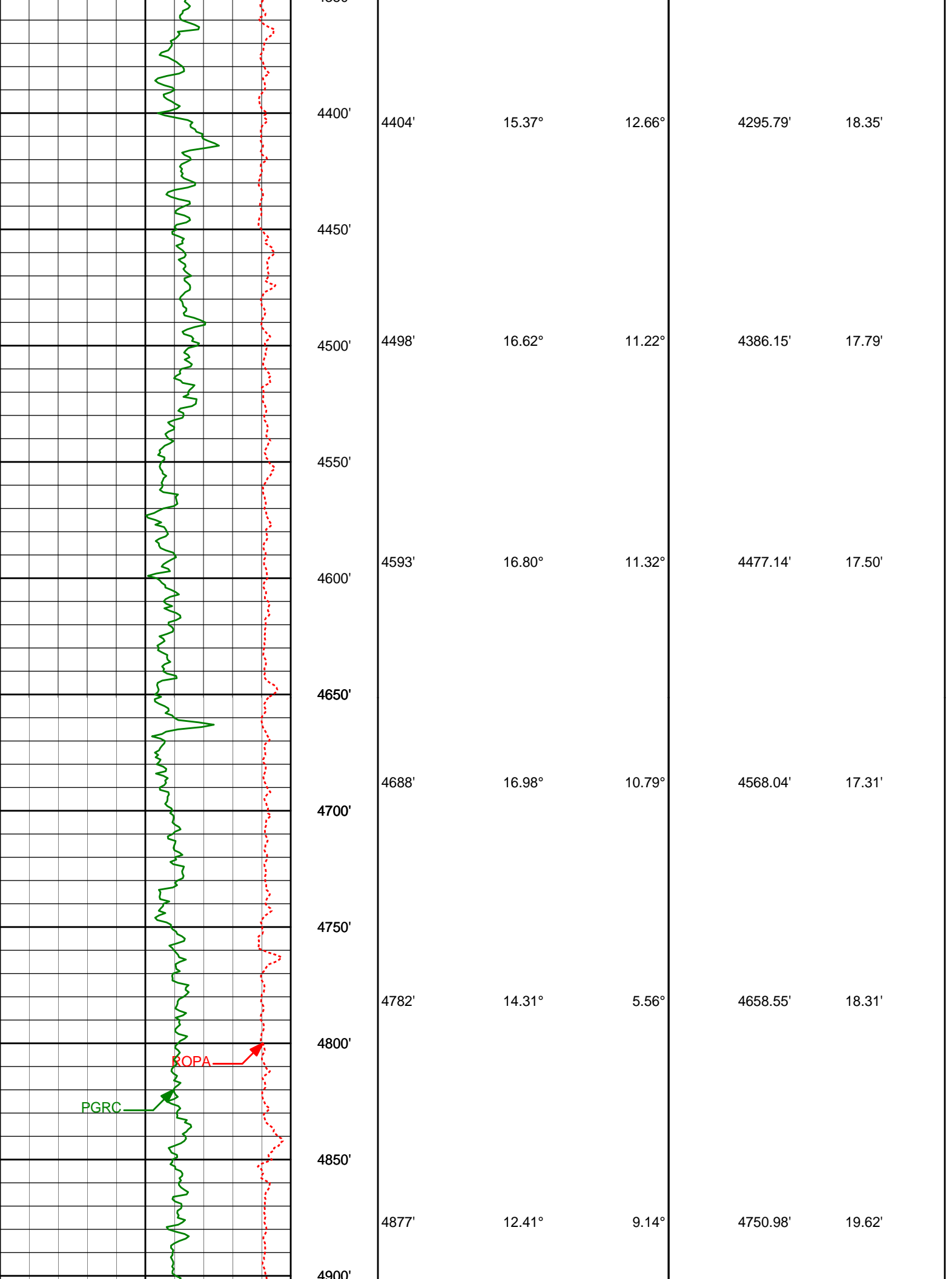
HALLIBURTON

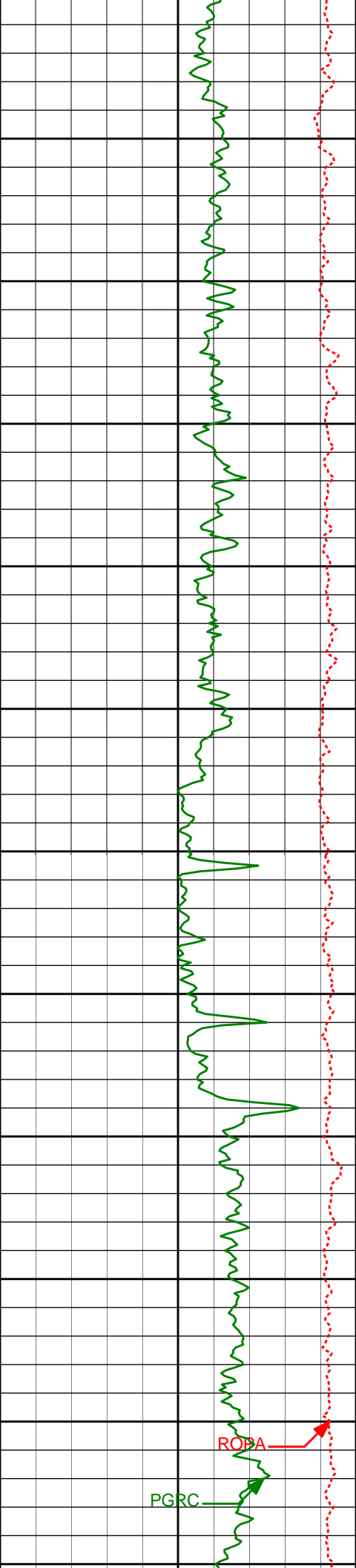
MD Main Log 1:600

Average Rate of Penetration ROPA 1K0 feet per hr						
Gamma Ray PGRC 0200 api		Measured Depth (ft) 1:600	Depth	Inc	Azi.	TVDV.S.
		3000'				
		3050'				
		3079'	16.66°	12.35°	3029.13'	12.20'
		3100'				
		3150'				
		3174'	17.18°	13.27°	3120.02'	11.17'
		3200'				
		3250'				





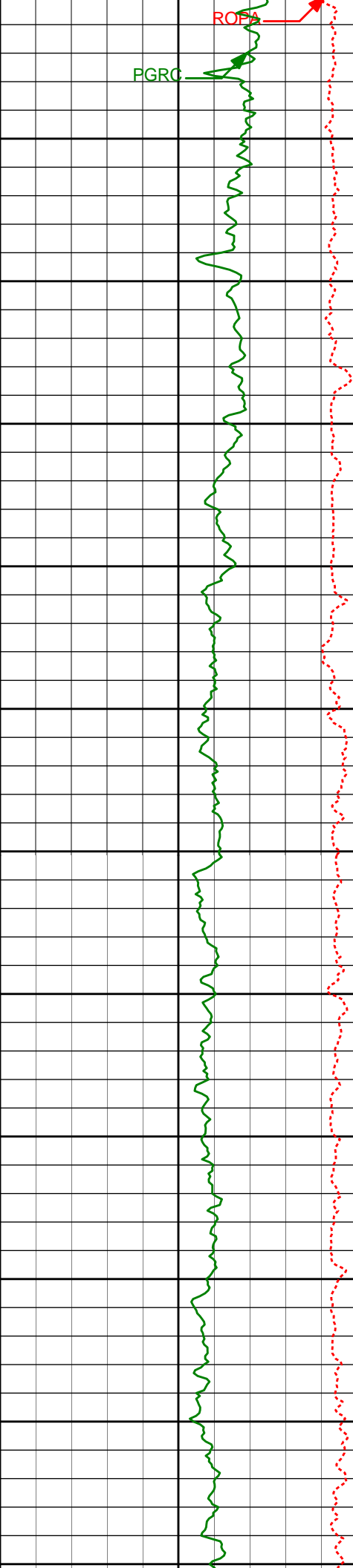




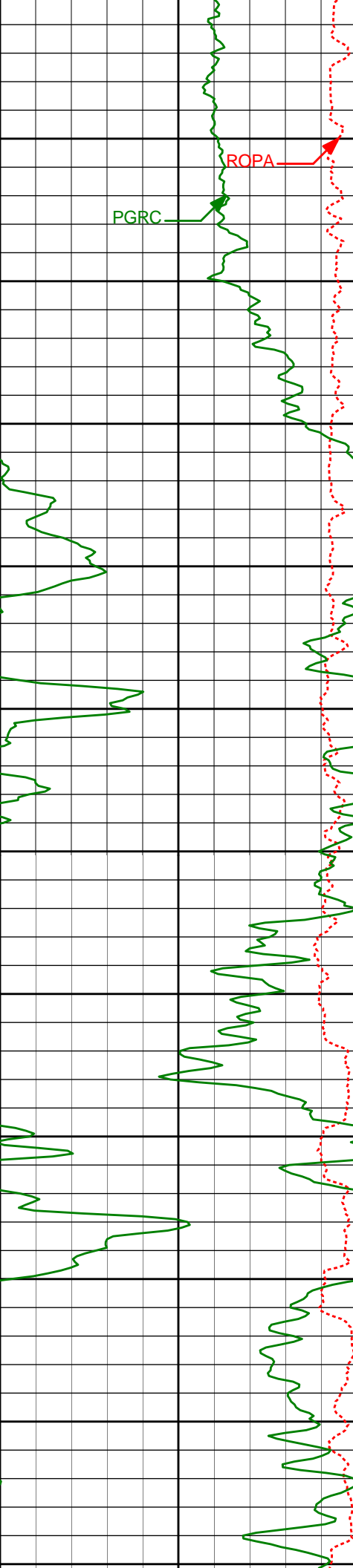
4950'				
4972'	8.09°	7.23°	4844.44'	20.29'
5000'				
5050'				
5067'	7.13°	4.69°	4938.60'	21.31'
5100'				
5150'				
5162'	6.85°	6.86°	5032.90'	22.30'
5200'				
5250'	4.32°	9.78°	5126.44'	22.72'
5300'				
5350'	2.17°	2.86°	5220.29'	23.02'
5400'				
5445'	1.08°	55.09°	5315.25'	22.64'



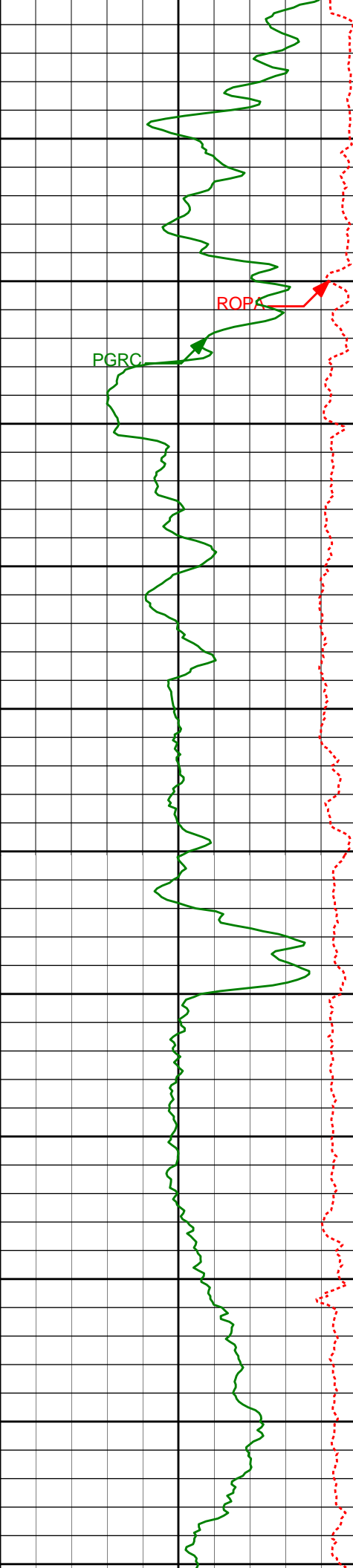




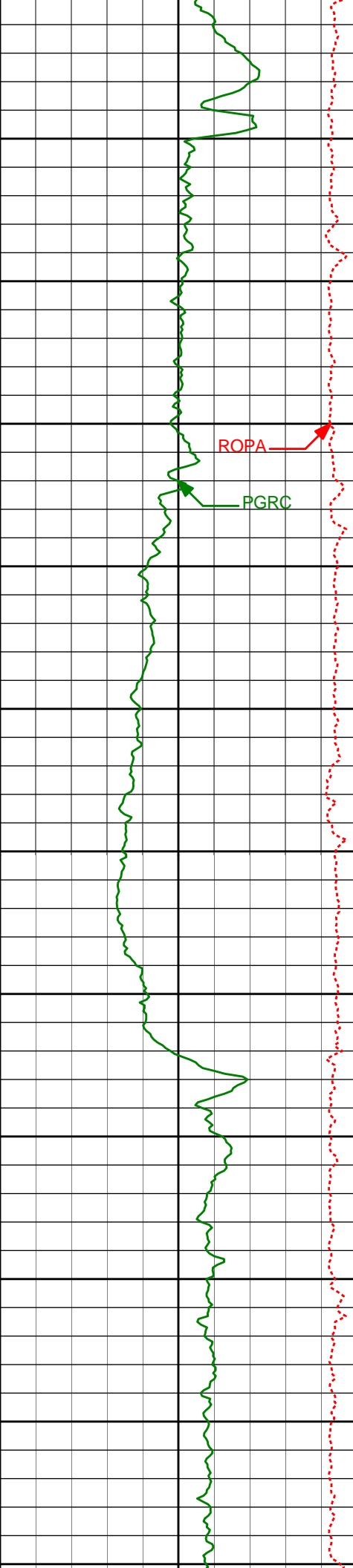
	6013'	0.31°	75.53°	5883.22'	18.84'
6050'					
6100'	6108'	0.37°	10.93°	5978.22'	18.61'
6150'	6156'	2.97°	274.62°	6026.20'	19.84'
6200'	6203'	8.62°	272.37°	6072.94'	24.54'
6250'	6251'	12.24°	269.94°	6120.14'	33.10'
6300'	6298'	13.36°	268.53°	6165.97'	43.30'
6350'	6346'	16.32°	266.58°	6212.36'	55.27'
6400'	6392'	19.78°	264.17°	6256.10'	69.00'
6450'	6440'	24.61°	265.06°	6300.53'	86.42'
6500'	6487'	28.11°	265.49°	6342.63'	106.54'
6550'	6535'	30.56°	264.66°	6384.47'	129.19'



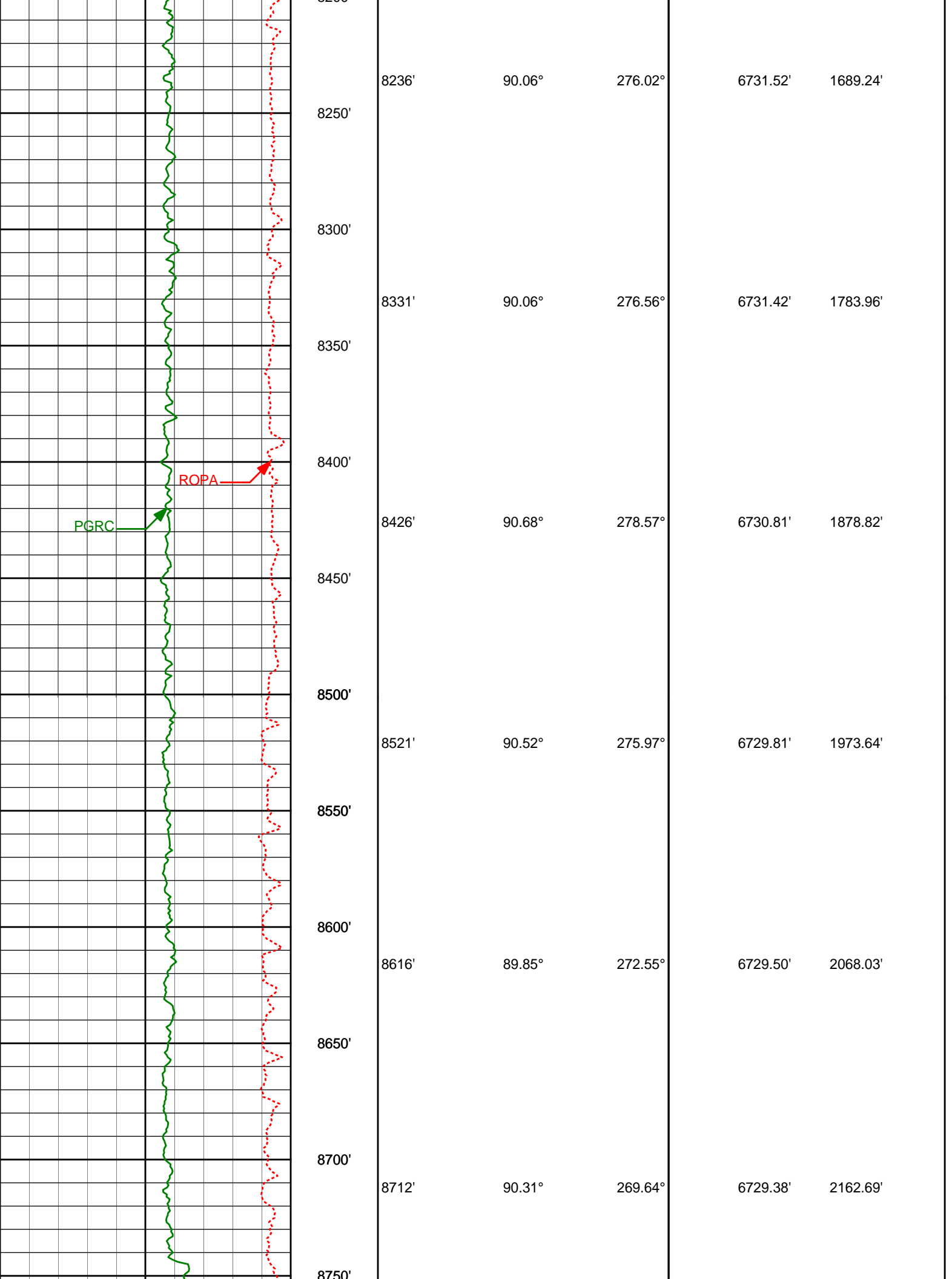
6582'	35.45°	266.37°	6423.88'	153.90'
6600'				
6630'	39.06°	267.33°	6462.08'	182.12'
6650'				
6676'	42.96°	265.35°	6496.78'	211.35'
6700'				
6724'	49.17°	267.26°	6530.07'	244.82'
6750'				
6771'	56.10°	268.14°	6558.58'	281.21'
6800'				
6819'	61.52°	269.59°	6583.43'	321.39'
6850'				
6865'	62.87°	268.71°	6604.89'	361.25'
6900'				
6913'	63.67°	268.41°	6626.49'	403.17'
6950'				
6960'	65.49°	268.92°	6646.66'	444.69'
7000'				
7008'	68.19°	269.15°	6665.54'	487.91'
7050'				
7055'	71.52°	268.96°	6681.72'	531.13'
7100'				

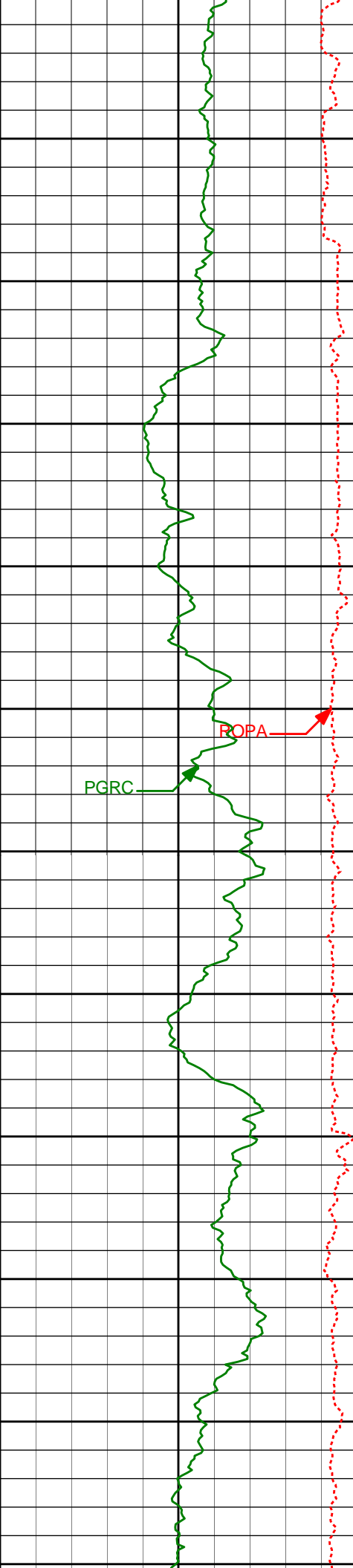


7100'	7103'	74.24°	269.10°	6695.85'	576.06'
7150'	7149'	78.58°	268.79°	6706.66'	619.83'
7200'	7197'	83.82°	268.82°	6714.00'	666.23'
	7221'	85.93°	268.47°	6716.15'	689.61'
7250'	<div><div></div>Casing Set @ MD 7265'</div> <Run 200>				
7300'					
	7335'	88.80°	268.08°	6721.39'	800.83'
7350'					
	7382'	89.04°	267.49°	6722.28'	846.64'
7400'					
7450'					
	7477'	87.56°	267.97°	6725.09'	939.19'
7500'					
7550'					
	7572'	87.66°	267.73°	6729.05'	1031.74'
7600'					
7650'					

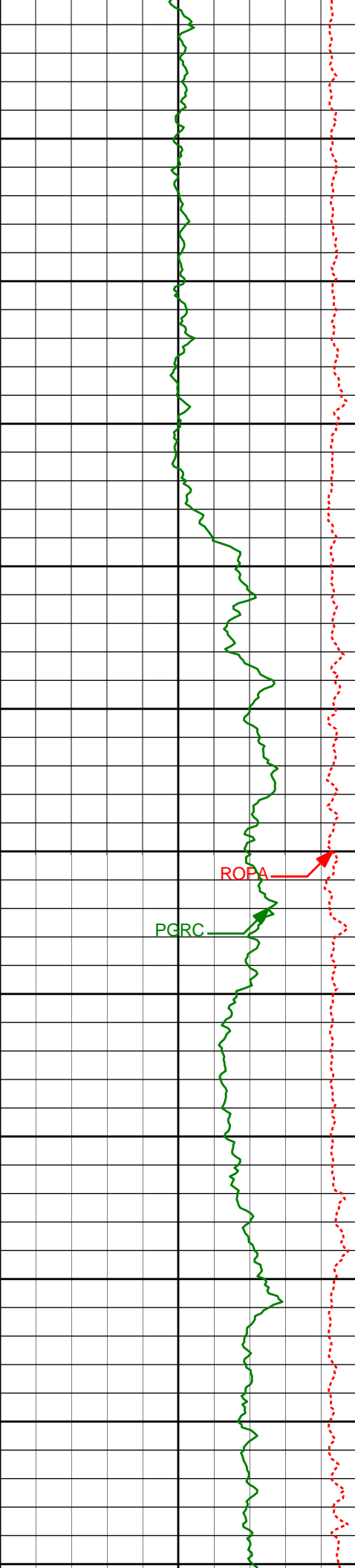


7667'	90.43°	269.41°	6730.63'	1124.61'
7700'				
7750'				
7762'	90.56°	272.85°	6729.81'	1218.28'
7800'				
7856'	91.29°	276.74°	6728.30'	1311.76'
7900'				
7951'	88.86°	273.78°	6728.17'	1406.32'
8000'				
8046'	88.64°	272.35°	6730.24'	1500.46'
8100'				
8141'	89.88°	274.35°	6731.47'	1594.68'
8150'				
8200'				

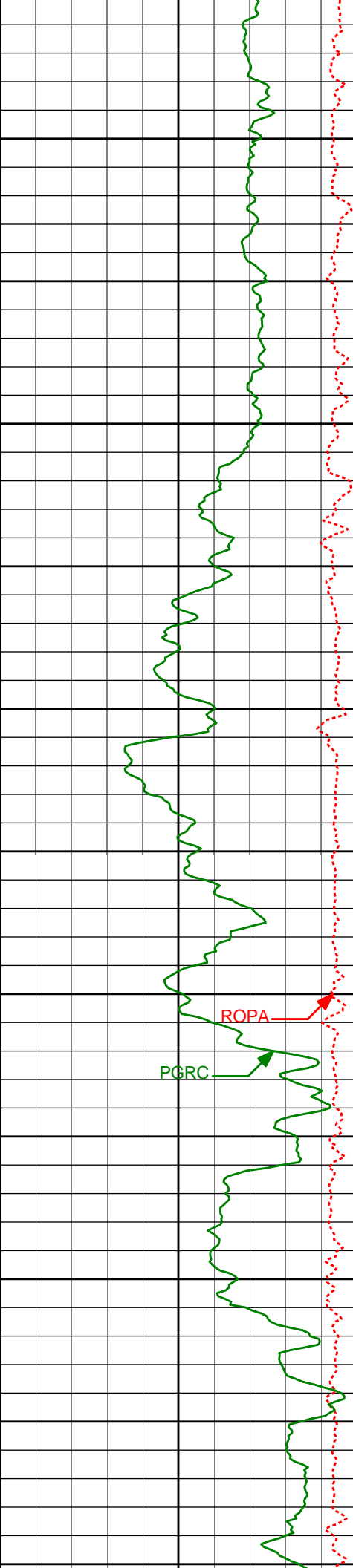




8800'	8807'	90.28°	267.97°	6728.89'	2255.65'
8850'					
8900'	8902'	88.67°	267.44°	6729.76'	2348.23'
8950'					
9000'	8997'	87.69°	266.49°	6732.77'	2440.48'
9050'					
9100'	9090'	87.68°	266.65°	6736.52'	2530.61'
9150'					
9200'	9185'	90.00°	267.18°	6738.44'	2622.86'
9250'					
9300'	9280'	89.63°	266.45°	6738.75'	2715.10'

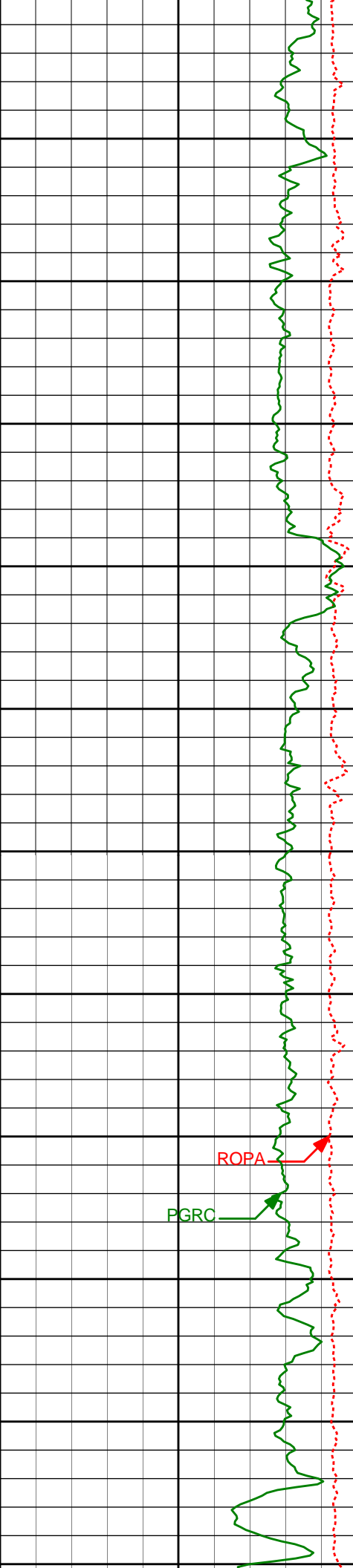


9350'				
9375'	89.44°	265.12°	6739.52'	2806.91'
9400'				
9450'				
9470'	90.52°	264.00°	6739.55'	2898.18'
9500'				
9550'				
9565'	90.03°	263.14°	6739.09'	2988.99'
9600'				
9650'				
9660'	88.83°	262.12°	6740.03'	3079.32'
9700'				
9750'				
9755'	89.54°	261.33°	6741.39'	3169.16'
9800'				
9850'	89.05°	262.51°	6742.56'	3259.12'

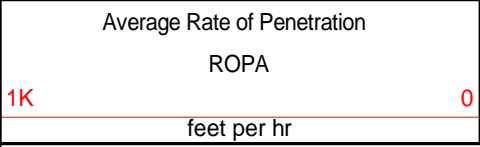
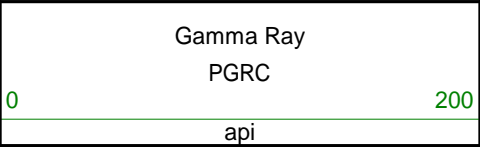
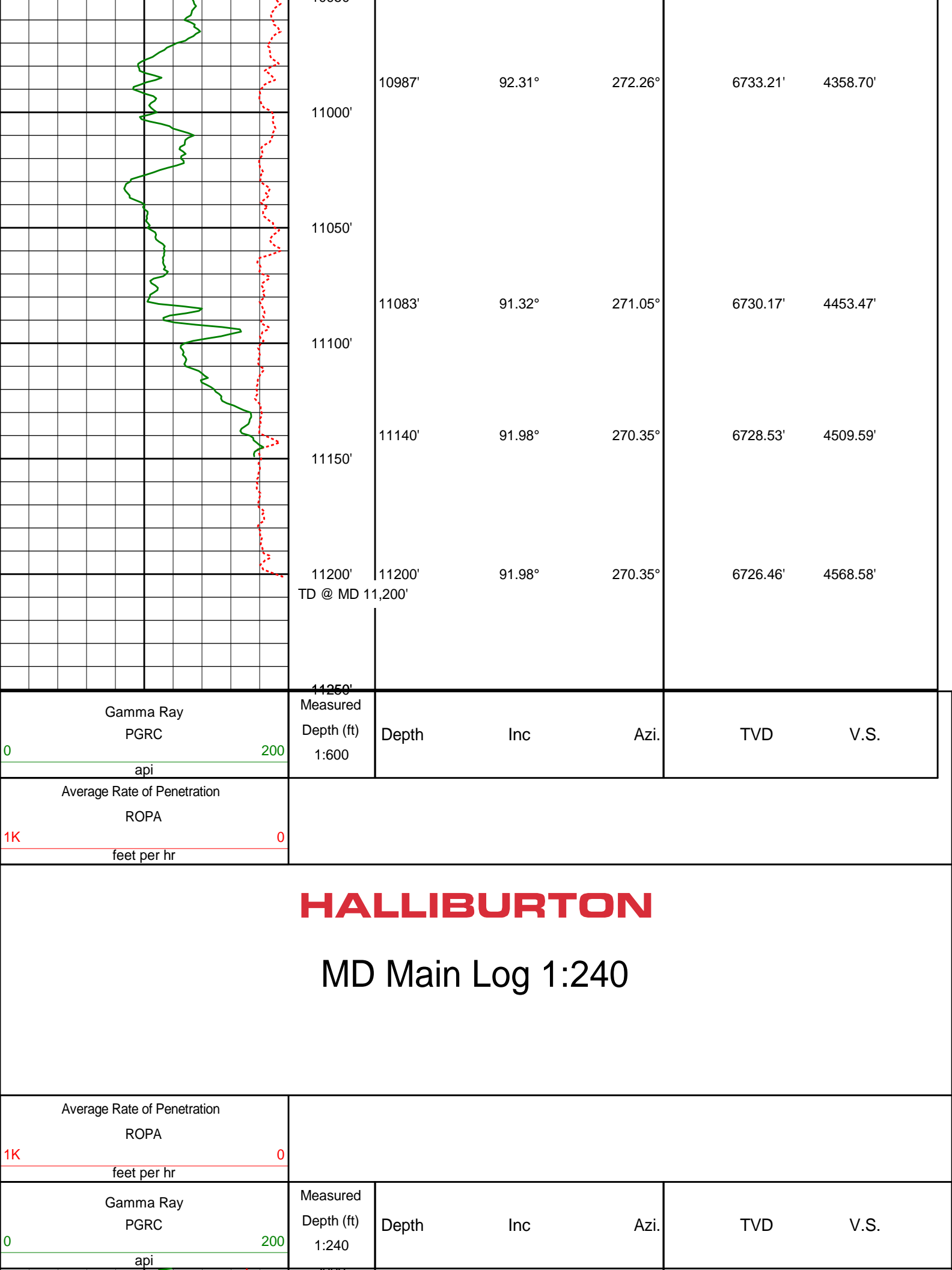


9900'					
9950'	9945'	88.77°	264.30°	6744.37'	3349.82'
10000'					
10050'	10039'	91.76°	266.84°	6743.95'	3440.56'
10100'					
10150'	10134'	92.81°	266.16°	6740.16'	3532.60'
10200'					
10250'	10229'	92.87°	265.91°	6735.46'	3624.41'
10300'					
10350'	10324'	87.13°	265.68°	6735.46'	3716.20'
10400'					

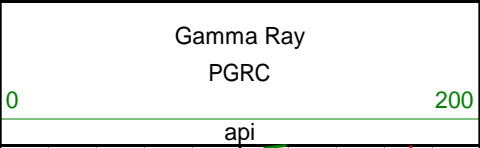
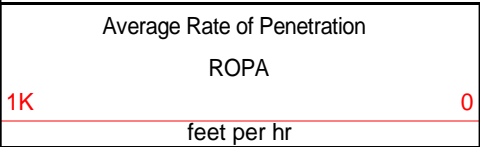




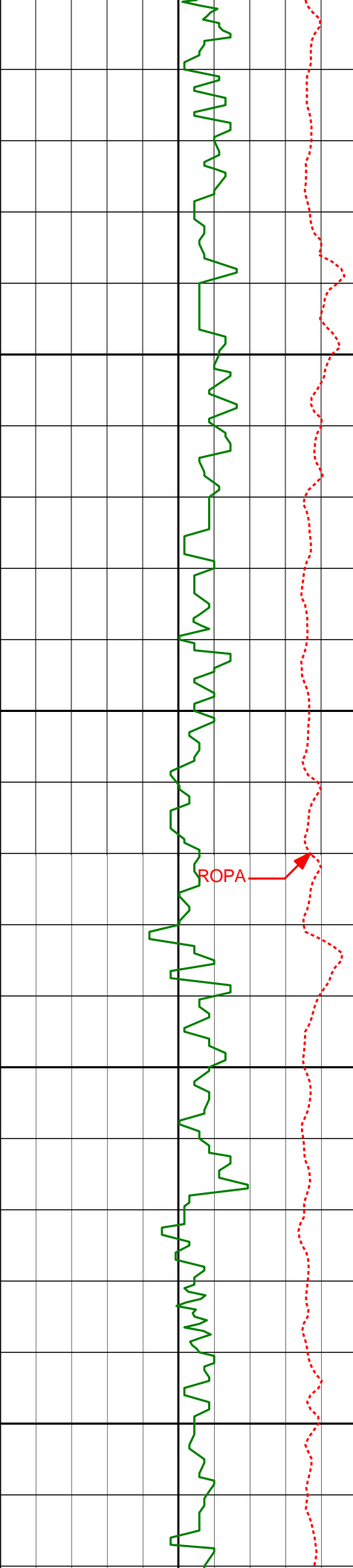
10419'	88.24°	265.05°	6739.30'	3807.75'	
10450'					
10500'					
10514'	88.83°	263.59°	6741.73'	3898.88'	
10550'					
10600'	10608'	91.48°	263.21°	6741.47'	3988.64'
10650'					
10700'	10703'	89.81°	264.12°	6740.40'	4079.49'
10750'					
10800'	10798'	90.62°	270.05°	6740.04'	4171.79'
10850'					
10893'	92.68°	273.80°	6737.31'	4265.63'	
10900'					
10950'					



Measured Depth (ft) 1:600	Depth	Inc	Azi.	TVD	V.S.
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Measured Depth (ft) 1:240	Depth	Inc	Azi.	TVD	V.S.
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3000'

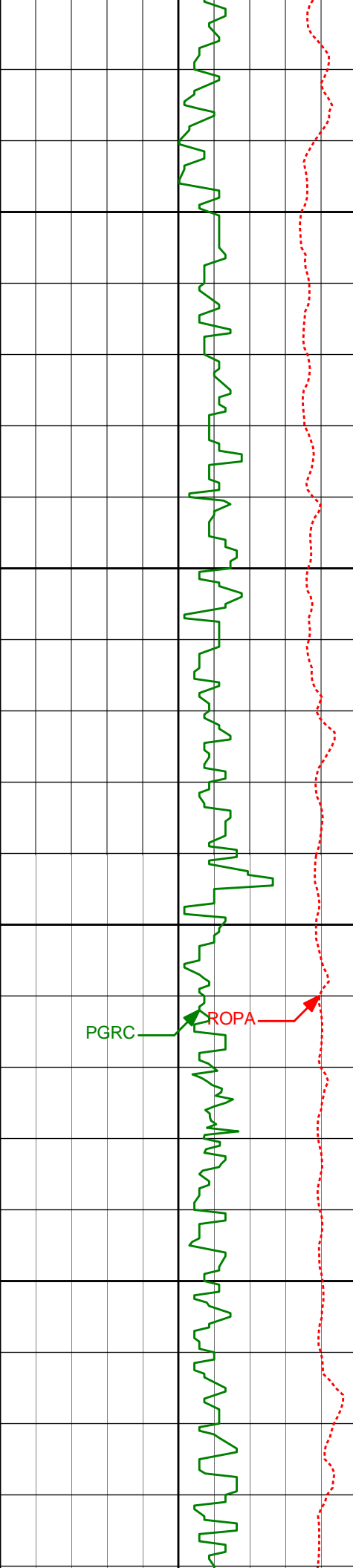
3050'

3100'

3150'

3200'

3079'	16.66°	12.35°	3029.13'	12.20'
3174'	17.18°	13.27°	3120.02'	11.17'



3250'

3268'

15.85°

11.69°

3210.14'

10.30'

3300'

3350'

3363'

15.30°

11.14°

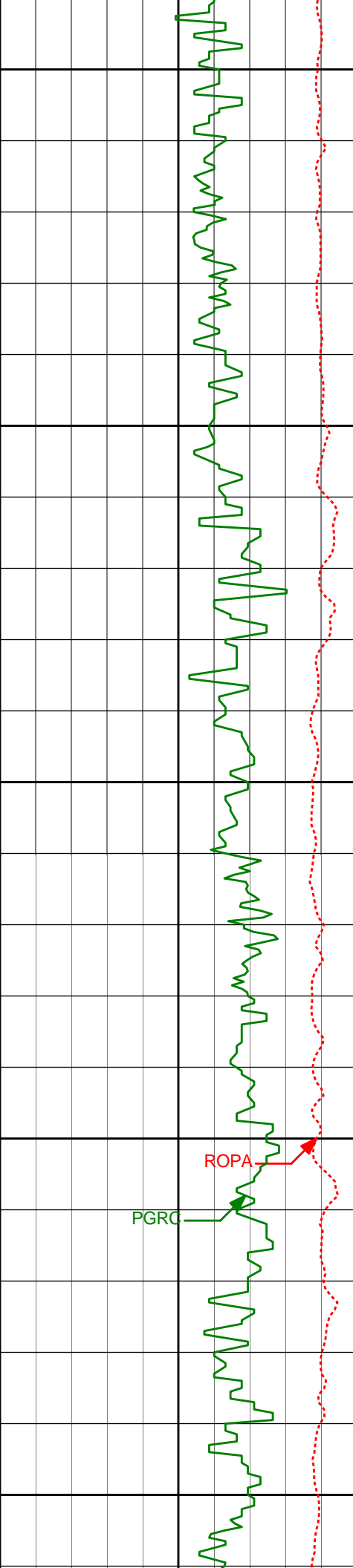
3301.65'

9.96'

3400'

PGRC

ROPA



3450'

3457'

15.22°

9.62°

3392.34'

10.08'

3500'

3550'

3552'

16.22°

9.48°

3483.78'

10.58'

3600'

PGRC

ROPA

3650'

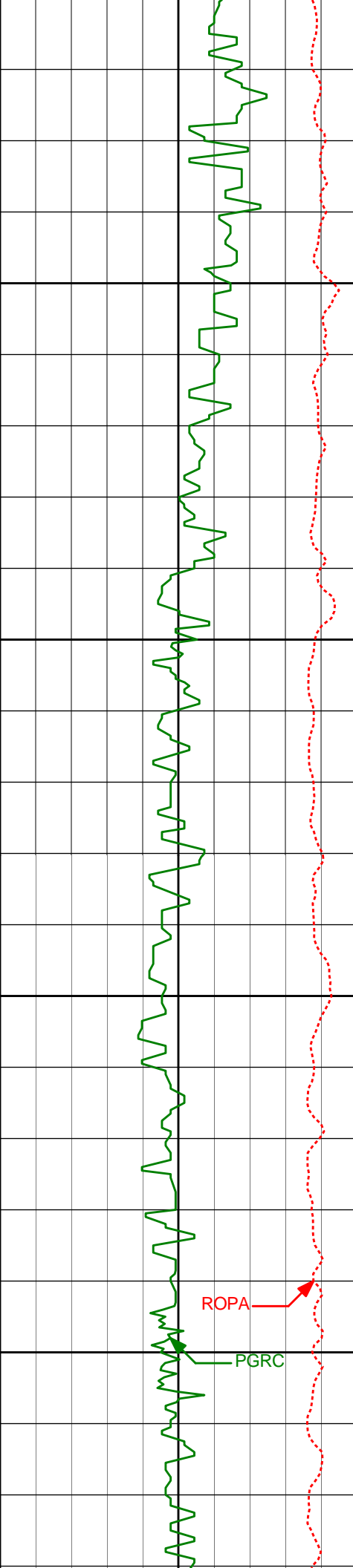
3647'

17.53°

8.41°

3574.69'

11.42'



3700'

3750'

3800'

3850'

3741'

18.22°

8.10°

3664.15'

12.63'

3836'

19.49°

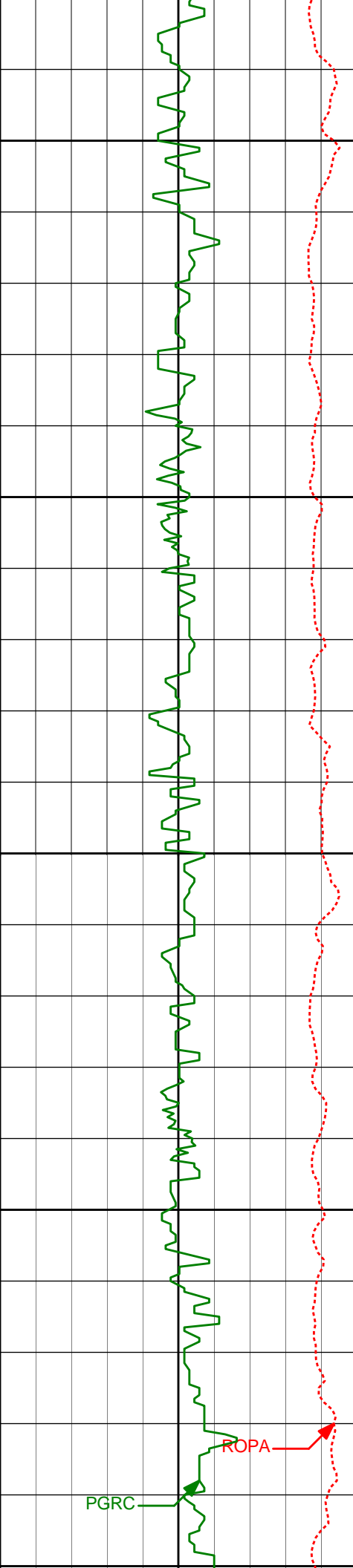
8.41°

3754.05'

13.92'

ROPA

PGRC



3900'

3930'

19.58°

8.02°

3842.64'

15.26'

3950'

4000'

4025'

17.55°

7.21°

3932.69'

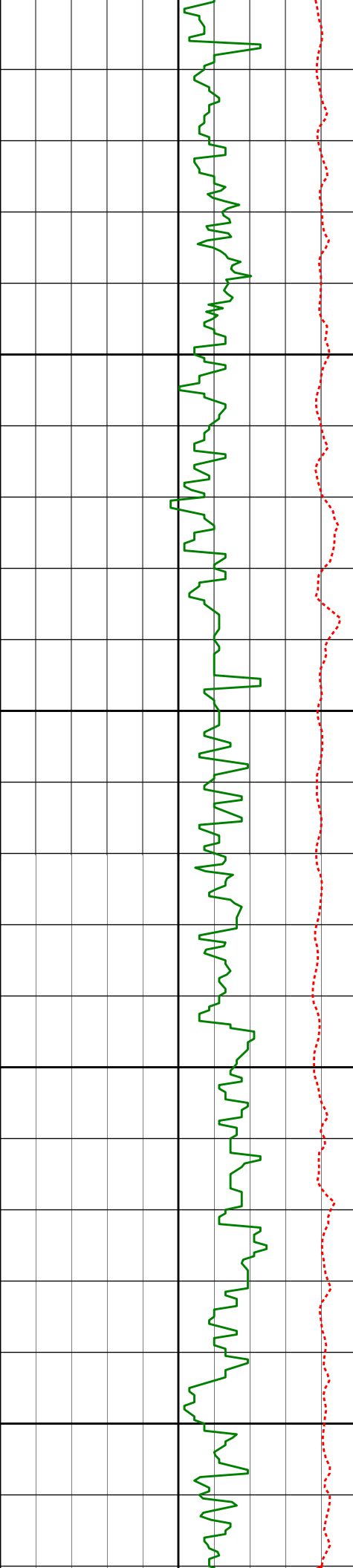
16.85'

4050'

ROPA

PGRC

4100'



4100'

4150'

4200'

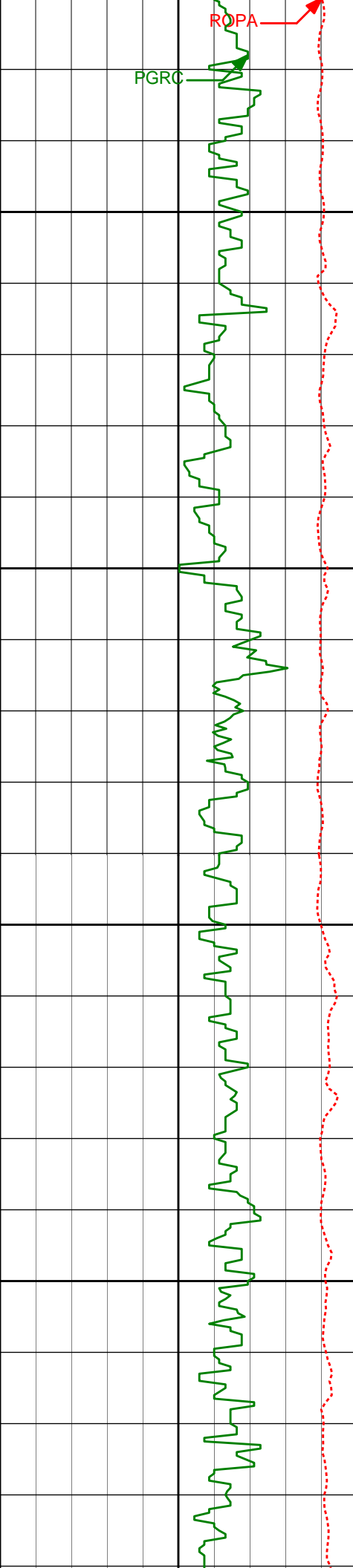
4250'

4300'

4120'	17.52°	6.47°
4214'	16.43°	11.38°
4309'	16.15°	12.10°

4023.28'	18.76'
4113.18'	19.63'
4204.37'	19.12'





4350'

4400'

4450'

4500'

4404'

15.37°

12.66°

4295.79'

18.35'

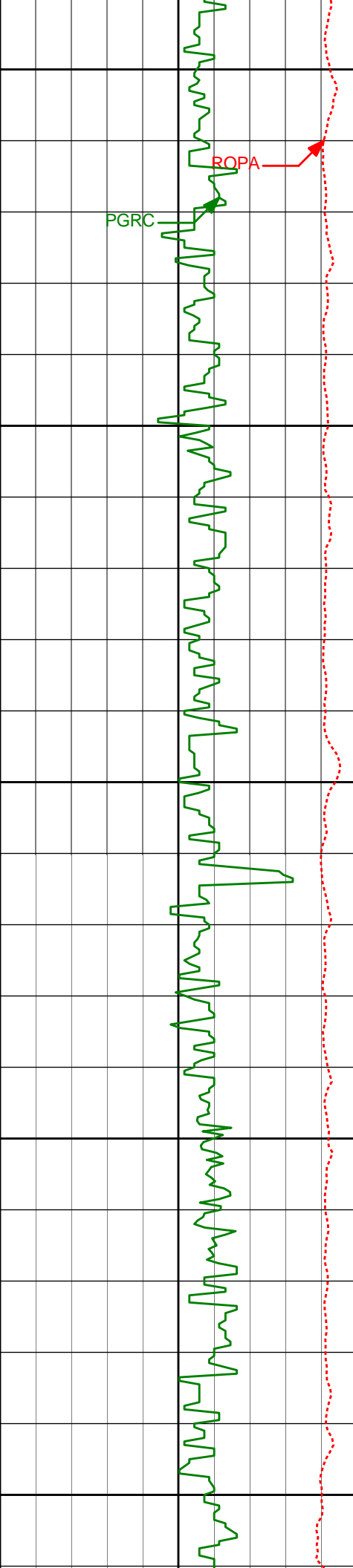
4498'

16.62°

11.22°

4386.15'

17.79'



4550'

ROPA

PGRC

4600'

4650'

4700'

4750'

4593'

16.80°

11.32°

4477.14'

17.50'

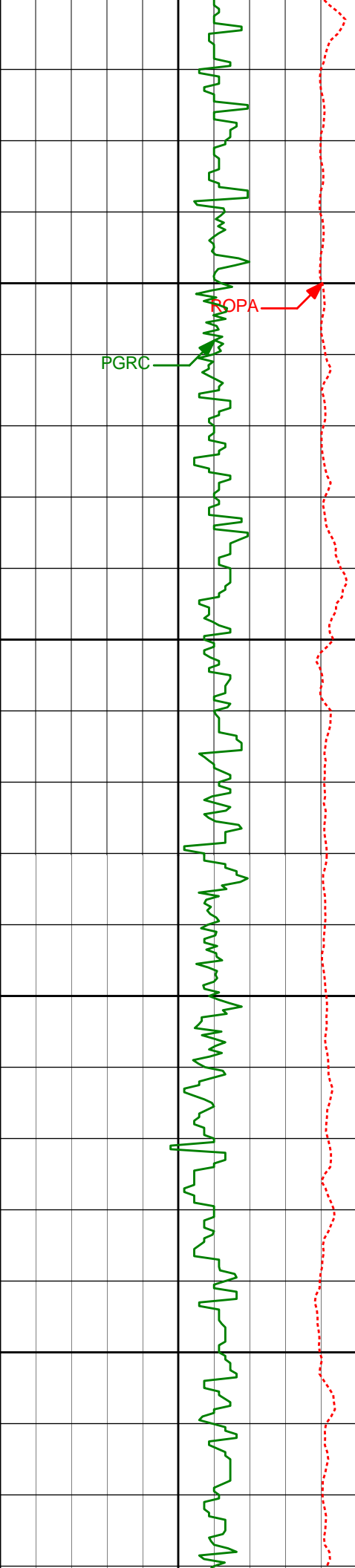
4688'

16.98°

10.79°

4568.04'

17.31'



4800'

4850'

4900'

4950'

4782'

14.31°

5.56°

4658.55'

18.31'

4877'

12.41°

9.14°

4750.98'

19.62'

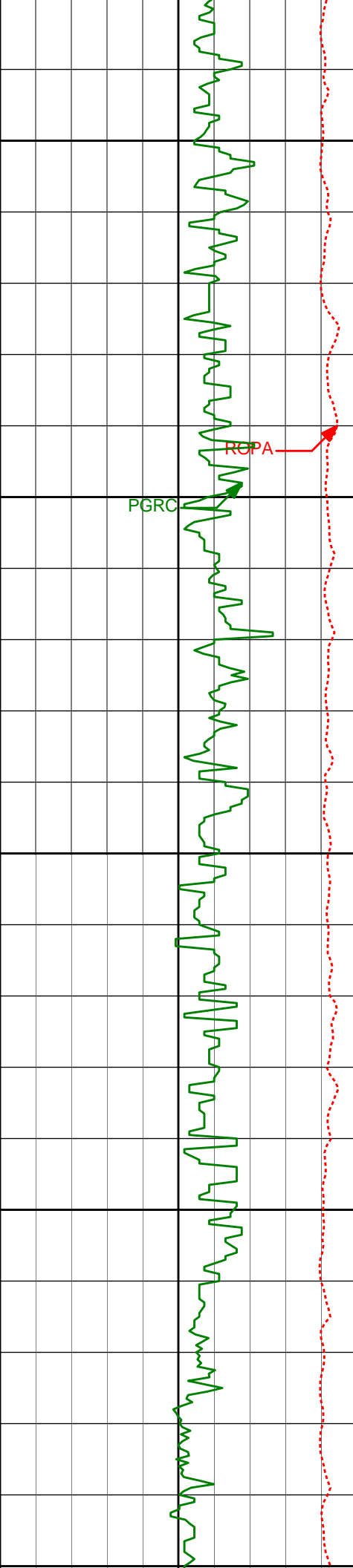
4972'

8.09°

7.23°

4844.44'

20.29'



5000'

5050'

5100'

5150'

5200'

5067'

7.13°

4.69°

4938.60'

21.31'

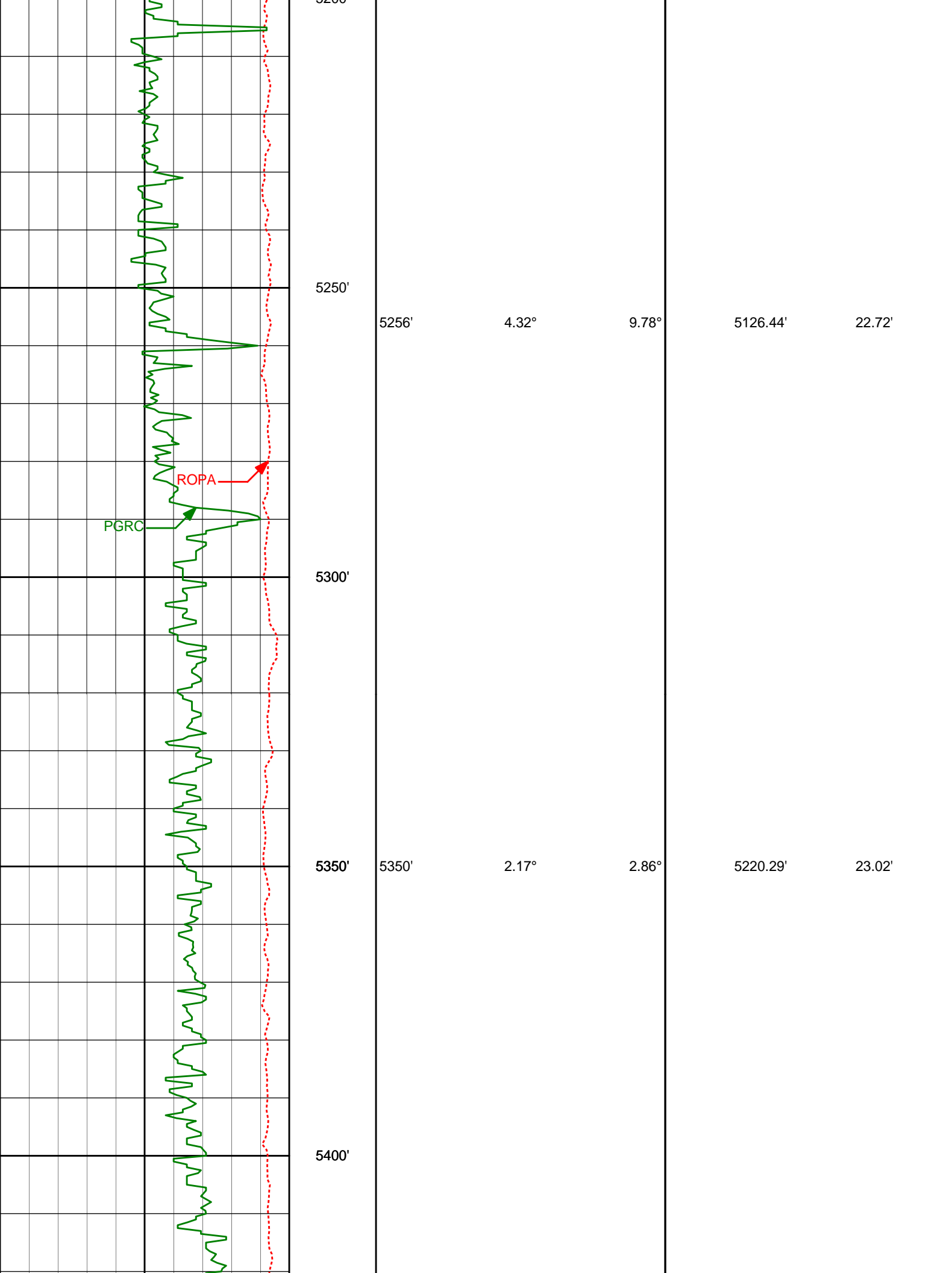
5162'

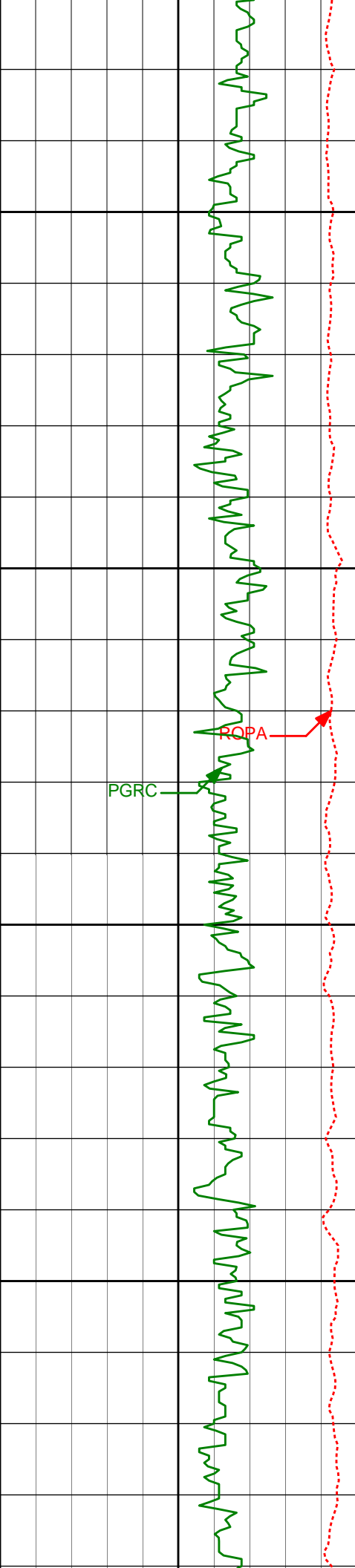
6.85°

6.86°

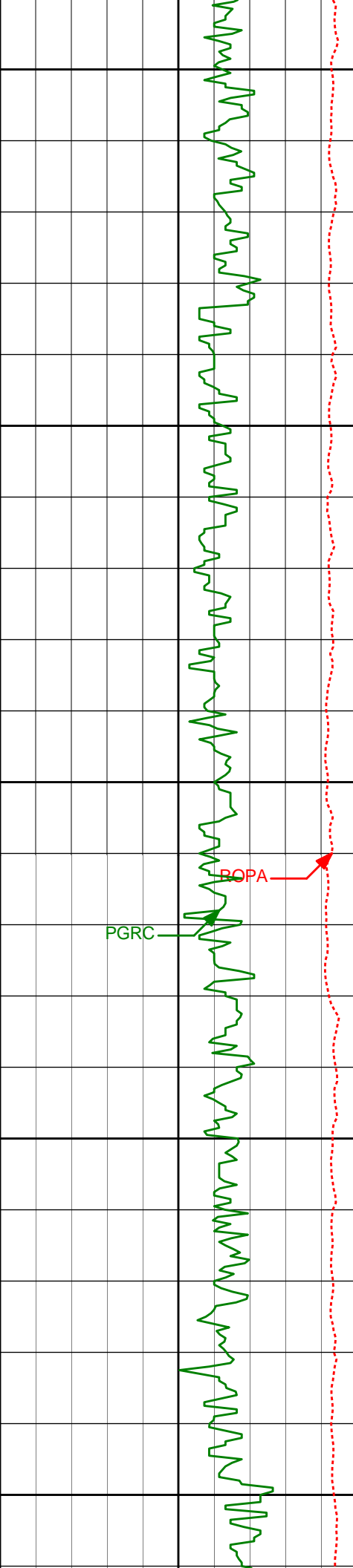
5032.90'

22.30'





5445'	1.08°	55.09°	5315.25'	22.64'
5450'				
5500'				
5540'	0.43°	14.79°	5410.24'	21.99'
5550'				
5600'				
5634'	0.66°	66.90°	5504.24'	21.51'



5650'

5700'

5750'

5800'

5850'

PGRC

BOPA

5729'

0.64°

50.98°

5599.23'

20.71'

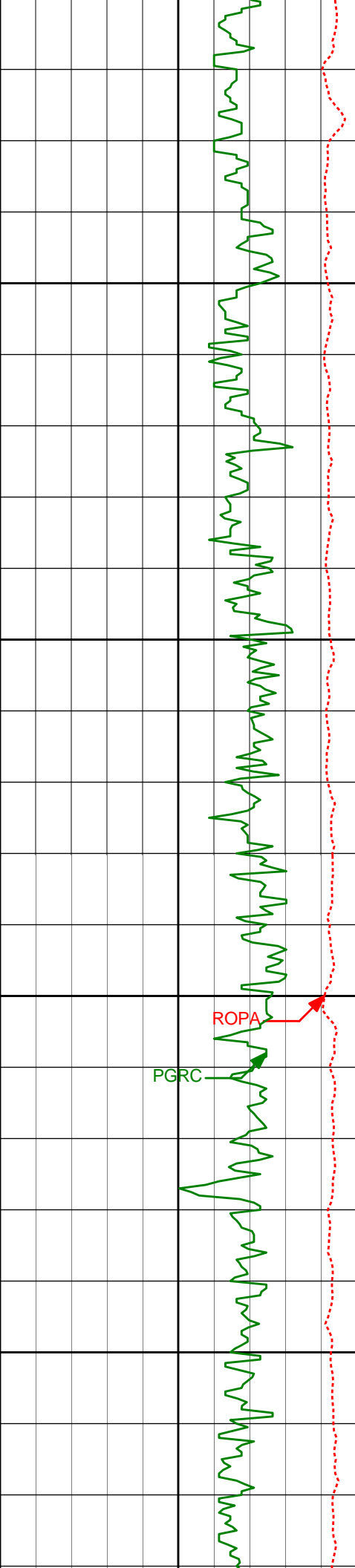
5824'

0.84°

68.87°

5694.23'

19.78'



5900'

5918'

0.22°

31.21°

5788.22'

19.13'

5950'

6000'

PGRC

ROPA

6013'

0.31°

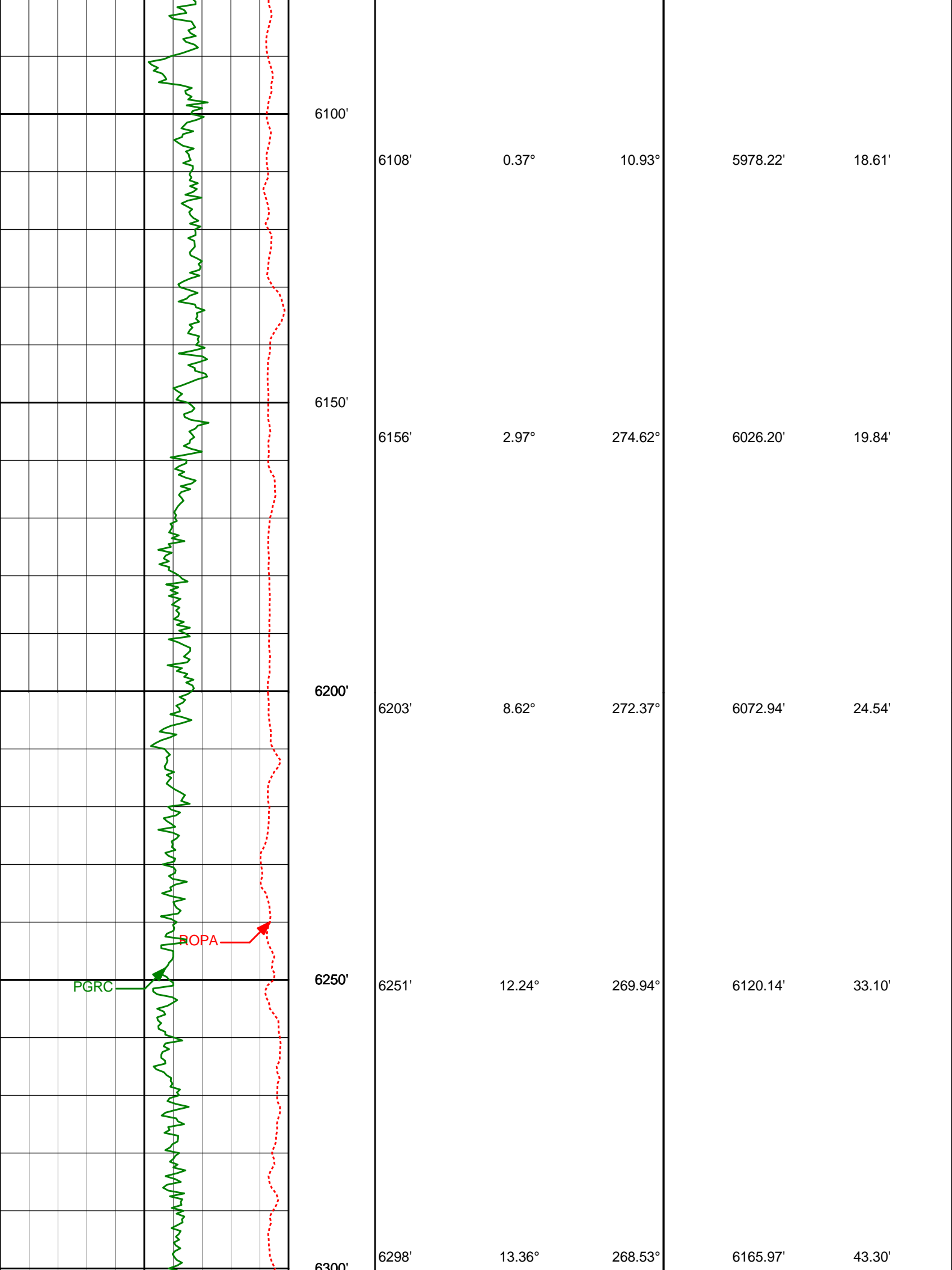
75.53°

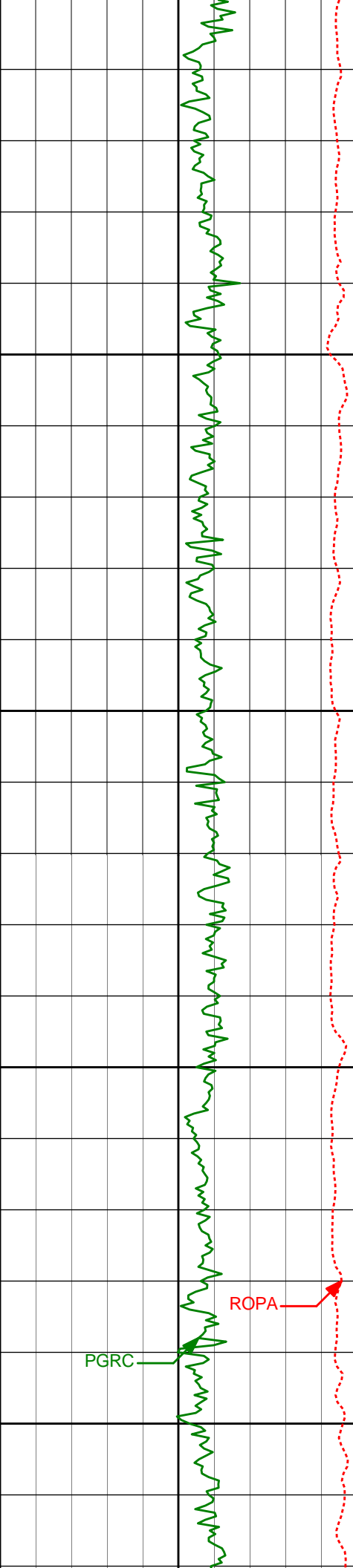
5883.22'

18.84'

6050'







6350'

6400'

6450'

6500'

6346'

16.32°

266.58°

6212.36'

55.27'

6392'

19.78°

264.17°

6256.10'

69.00'

6440'

24.61°

265.06°

6300.53'

86.42'

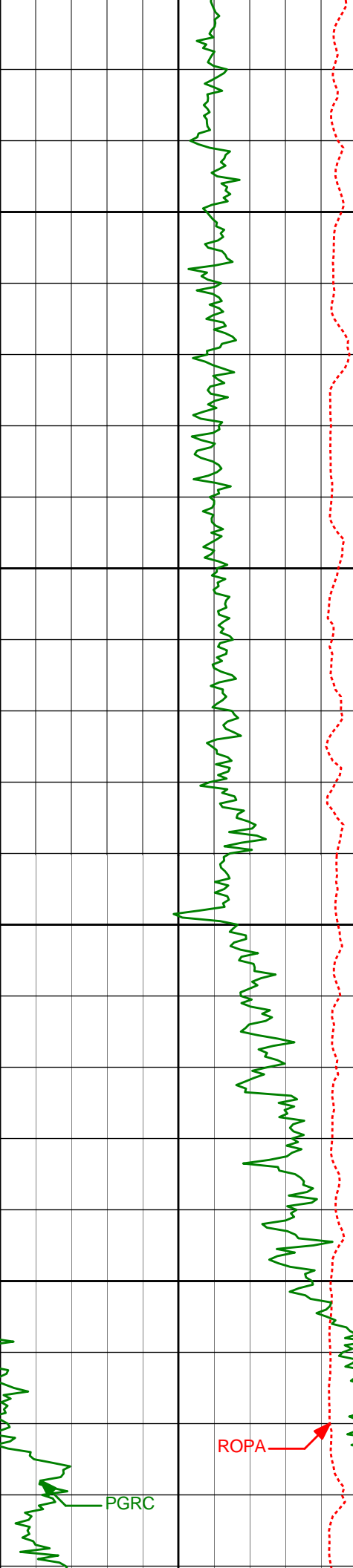
6487'

28.11°

265.49°

6342.63'

106.54'



6550'

6600'

6650'

6700'

6535'

30.56°

264.66°

6384.47'

129.19'

6582'

35.45°

266.37°

6423.88'

153.90'

6630'

39.06°

267.33°

6462.08'

182.12'

6676'

42.96°

265.35°

6496.78'

211.35'

6724'

49.17°

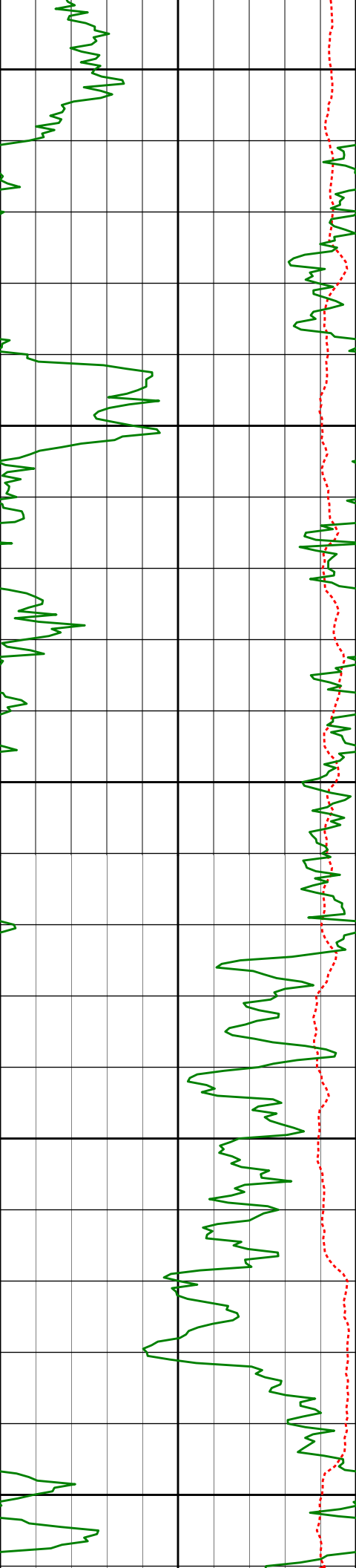
267.26°

6530.07'

244.82'

ROPA

PGRC



6750'

6771'

56.10°

268.14°

6558.58'

281.21'

6800'

6819'

61.52°

269.59°

6583.43'

321.39'

6850'

6865'

62.87°

268.71°

6604.89'

361.25'

6900'

6913'

63.67°

268.41°

6626.49'

403.17'

6950'

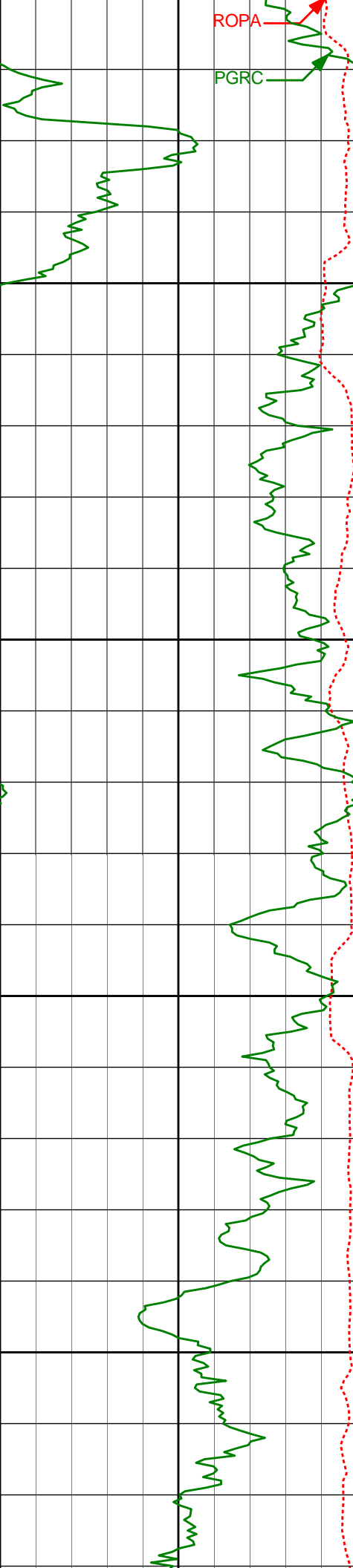
6960'

65.49°

268.92°

6646.66'

444.69'



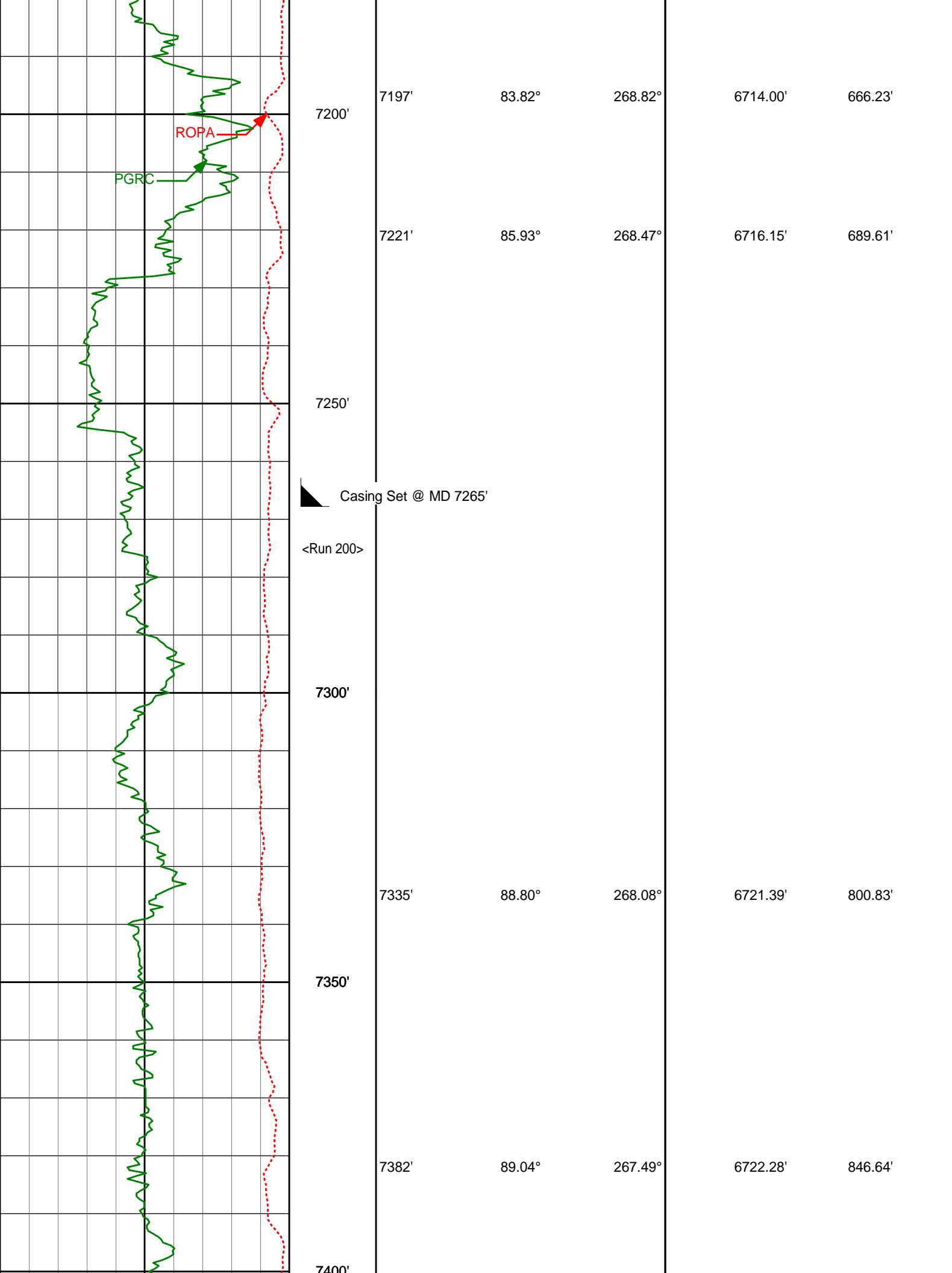
7000'

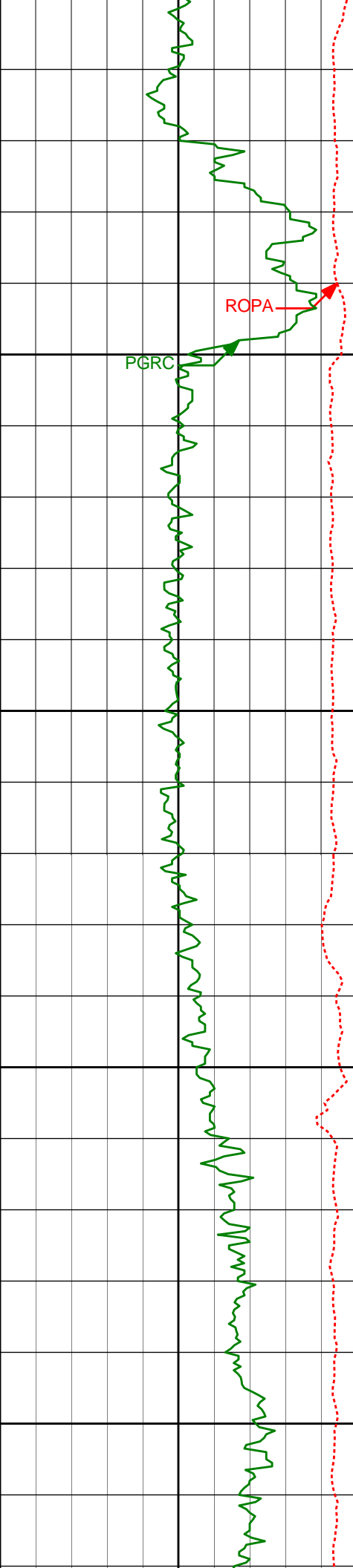
7050'

7100'

7150'

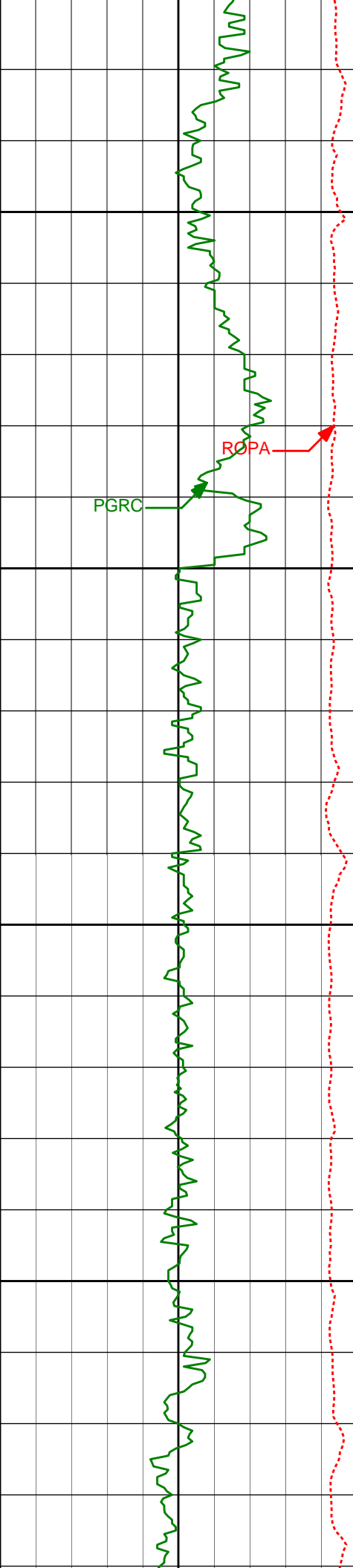
6999'	68.43°	269.92°	6640.66'	444.03'
7008'	68.19°	269.15°	6665.54'	487.91'
7055'	71.52°	268.96°	6681.72'	531.13'
7103'	74.24°	269.10°	6695.85'	576.06'
7149'	78.58°	268.79°	6706.66'	619.83'





7400  
7450'  
7500'  
7550'  
7600'

7477'	87.56°	267.97°	6725.09'	939.19'
7572'	87.66°	267.73°	6729.05'	1031.74'



7650'

7667'

90.43°

269.41°

6730.63'

1124.61'

ROPA

PGRC

7700'

7750'

7762'

90.56°

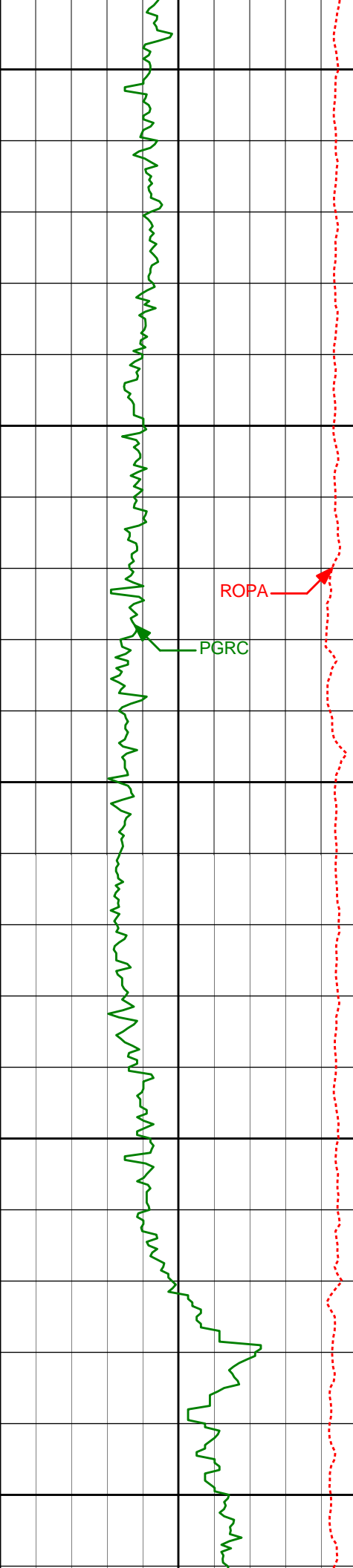
272.85°

6729.81'

1218.28'

7800'





7850'

7856'

91.29°

276.74°

6728.30'

1311.76'

7900'

ROPA

PGRC

7950'

7951'

88.86°

273.78°

6728.17'

1406.32'

8000'

8050'

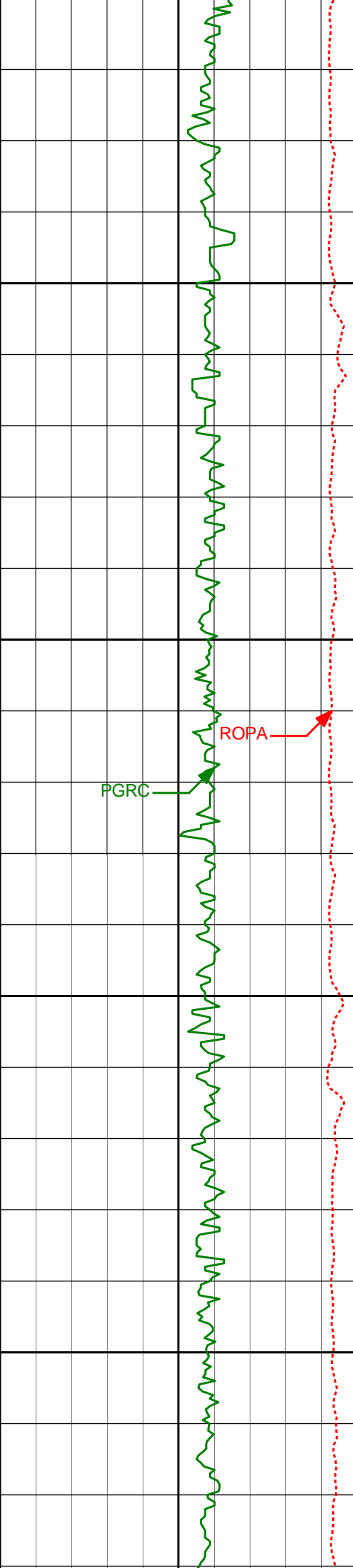
8046'

88.64°

272.35°

6730.24'

1500.46'



8100'

8150'

8200'

8250'

8141'

89.88°

274.35°

6731.47'

1594.68'

8236'

90.06°

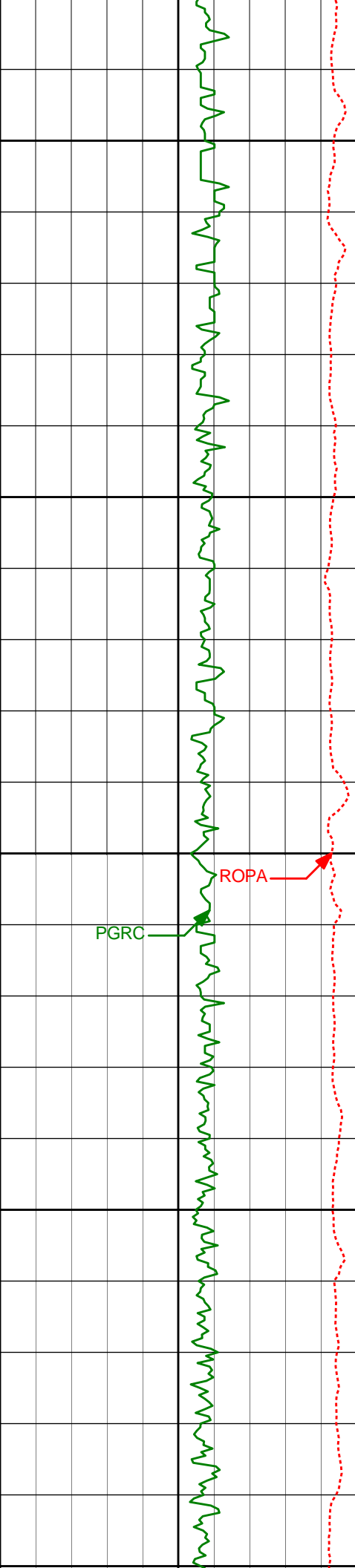
276.02°

6731.52'

1689.24'

PGRC

ROPA



8300'

8331'

90.06°

276.56°

6731.42'

1783.96'

8350'

8400'

ROPA

PGRC

8426'

90.68°

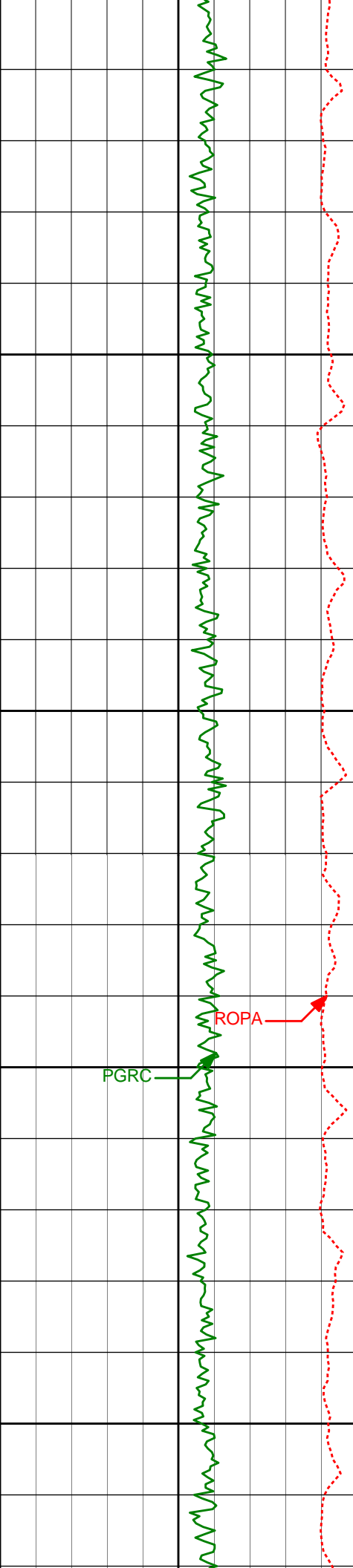
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1878.82'

8450'

8500'



8550'

8521'

90.52°

275.97°

6729.81'

1973.64'

8550'

8600'

8616'

89.85°

272.55°

6729.50'

2068.03'

8650'

8700'

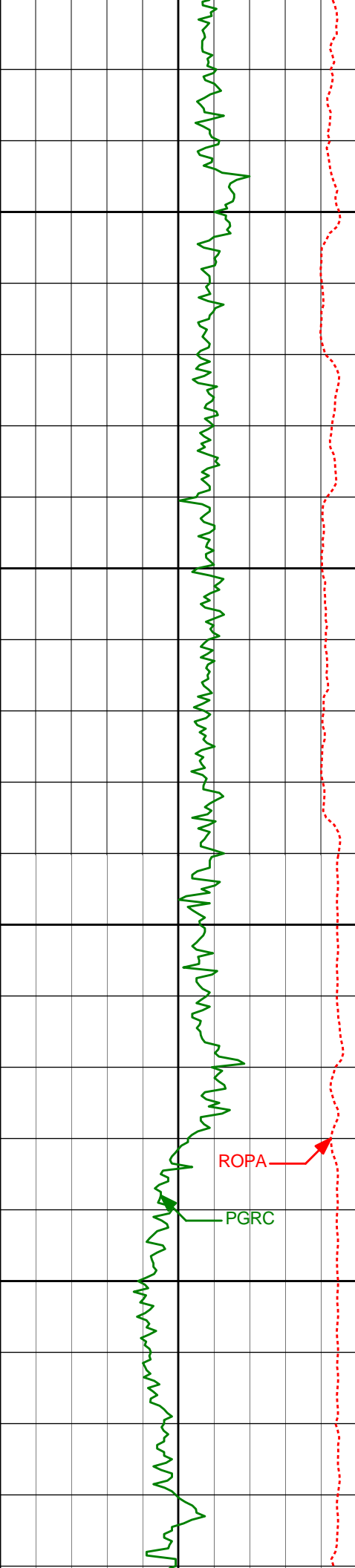
8712'

90.31°

269.64°

6729.38'

2162.69'



8750'

8800'

8850'

8900'

8807'

90.28°

267.97°

6728.89'

2255.65'

ROPA

PGRC

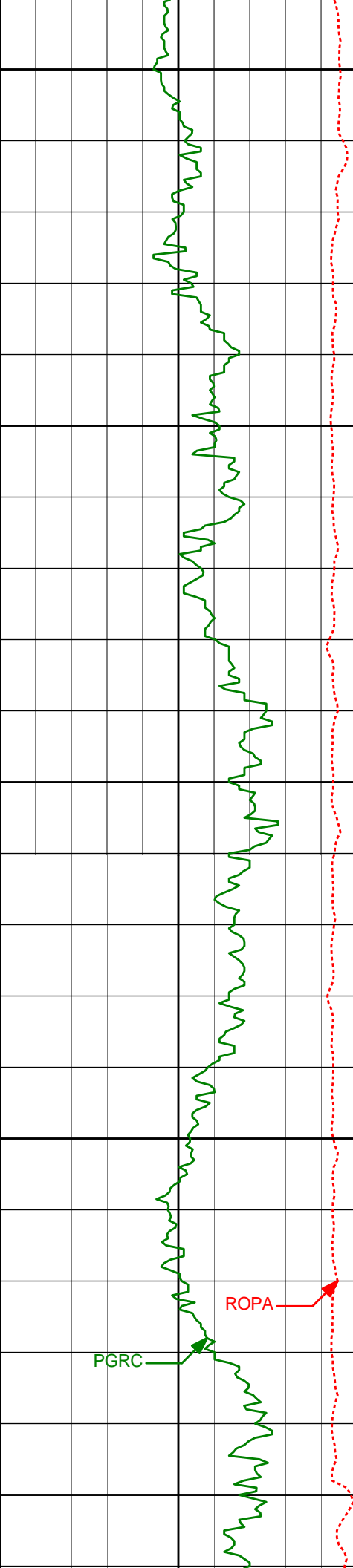
8902'

88.67°

267.44°

6729.76'

2348.23'



8950'

9000'

9050'

9100'

9150'

8997'

87.69°

266.49°

6732.77'

2440.48'

9090'

87.68°

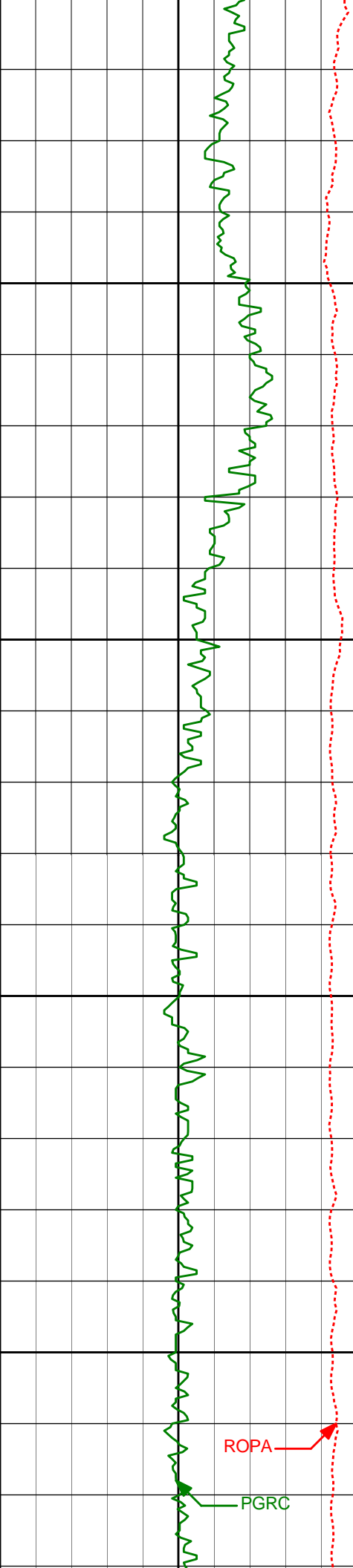
266.65°

6736.52'

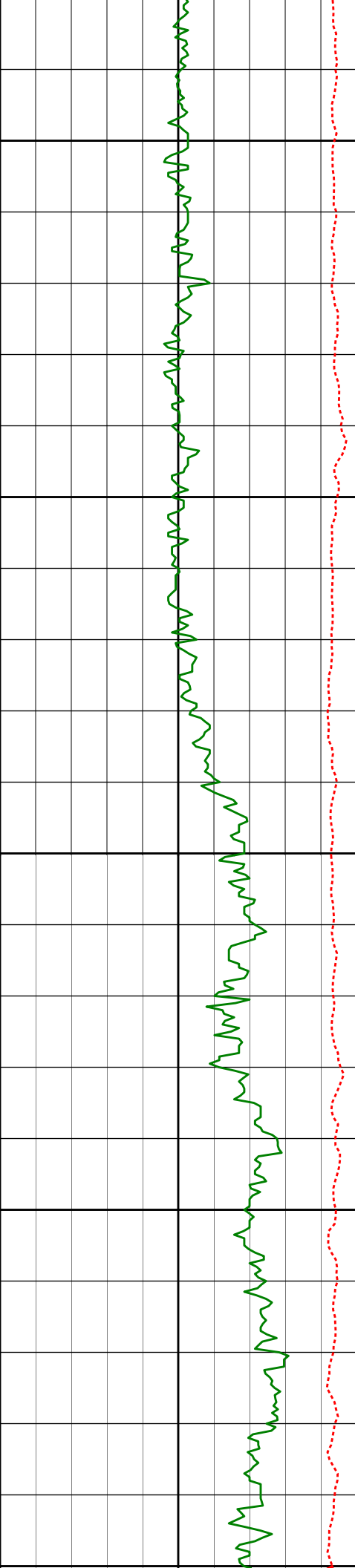
2530.61'

PGRC

ROPA



9185'	90.00°	267.18°	6738.44'	2622.86'
9200'				
9250'				
9280'	89.63°	266.45°	6738.75'	2715.10'
9300'				
9350'				
9375'	89.44°	265.12°	6739.52'	2806.91'



9400'

9450'

9470'

90.52°

264.00°

6739.55'

2898.18'

9500'

9550'

9565'

90.03°

263.14°

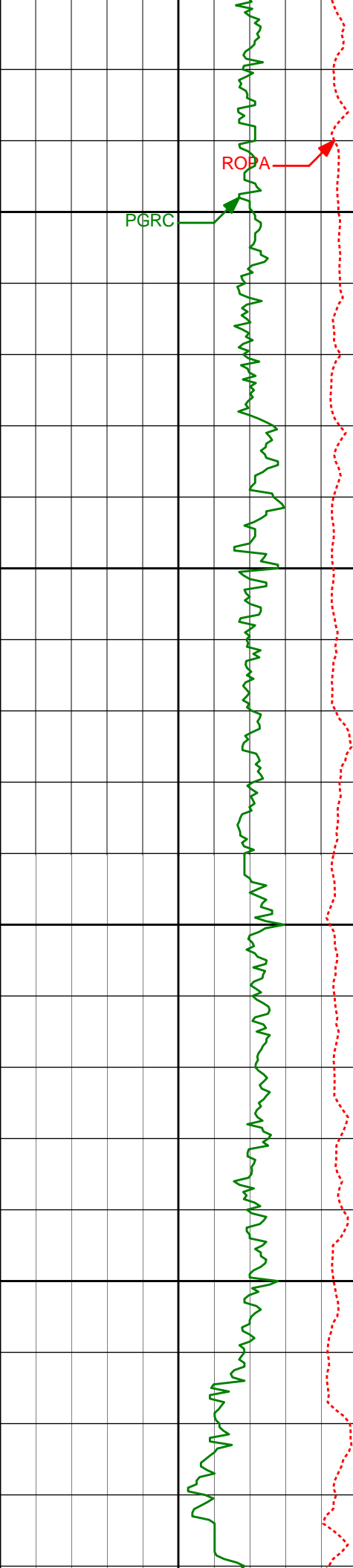
6739.09'

2988.99'

9600'







9850'

9900'

9950'

10000'

9850'

9945'

10039'

89.05°

88.77°

91.76°

262.51°

264.30°

266.84°

6742.56'

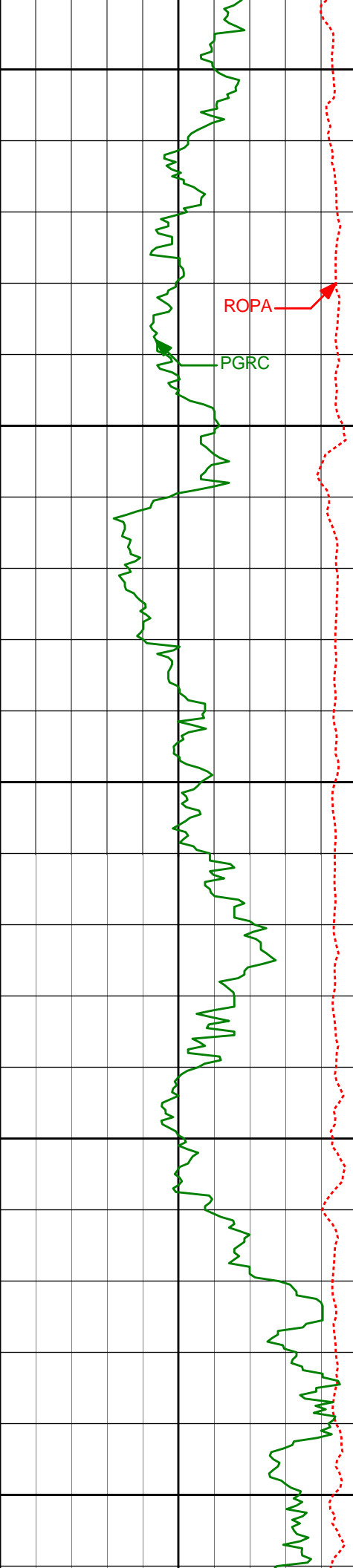
6744.37'

6743.95'

3259.12'

3349.82'

3440.56'



10050'

ROPA

PGRC

10100'

10134'

92.81°

266.16°

6740.16'

3532.60'

10150'

10200'

10229'

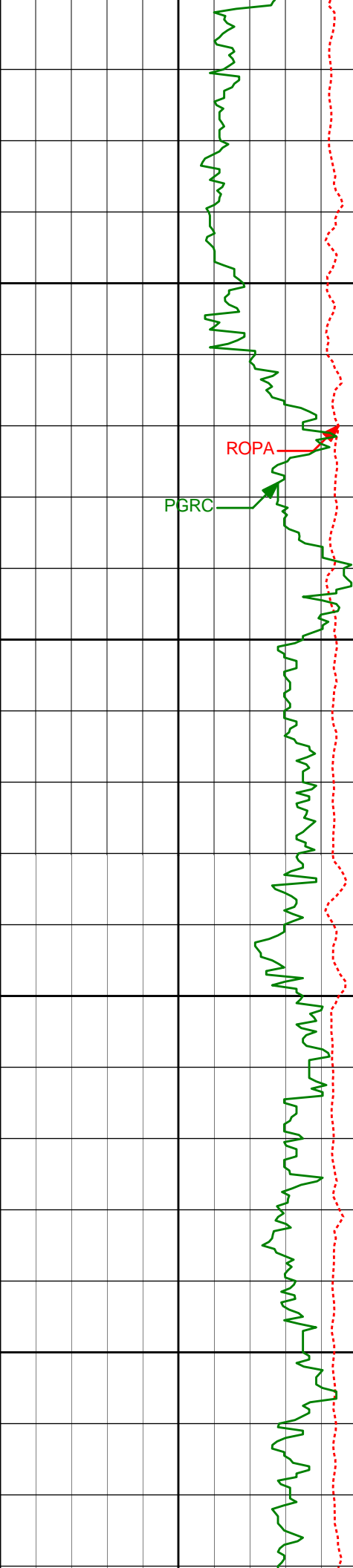
92.87°

265.91°

6735.46'

3624.41'

10250'



10300'

10324'

87.13°

265.68°

6735.46'

3716.20'

10350'

10400'

10419'

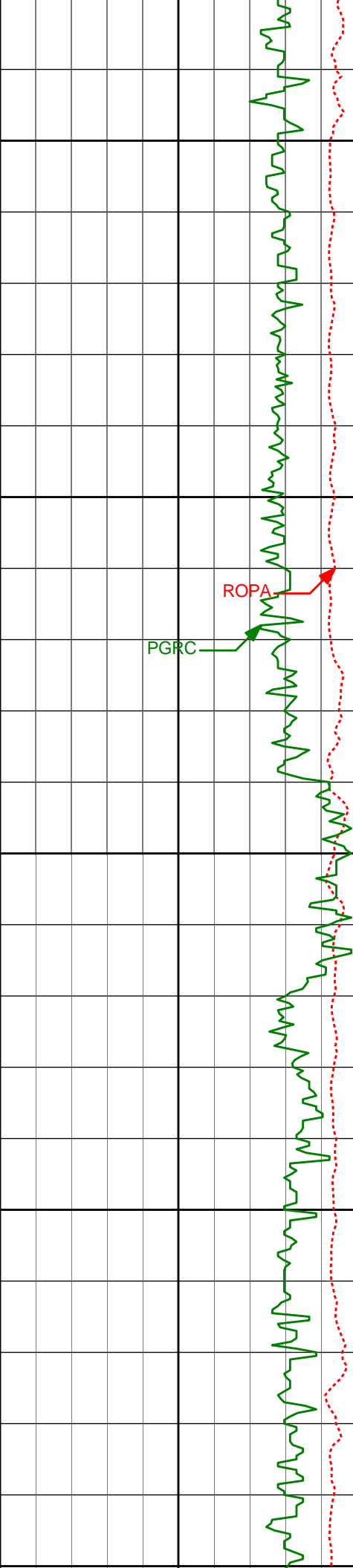
88.24°

265.05°

6739.30'

3807.75'

10450'



10500'

10514'

88.83°

263.59°

6741.73'

3898.88'

10550'

ROPA

PGRC

10600'

10608'

91.48°

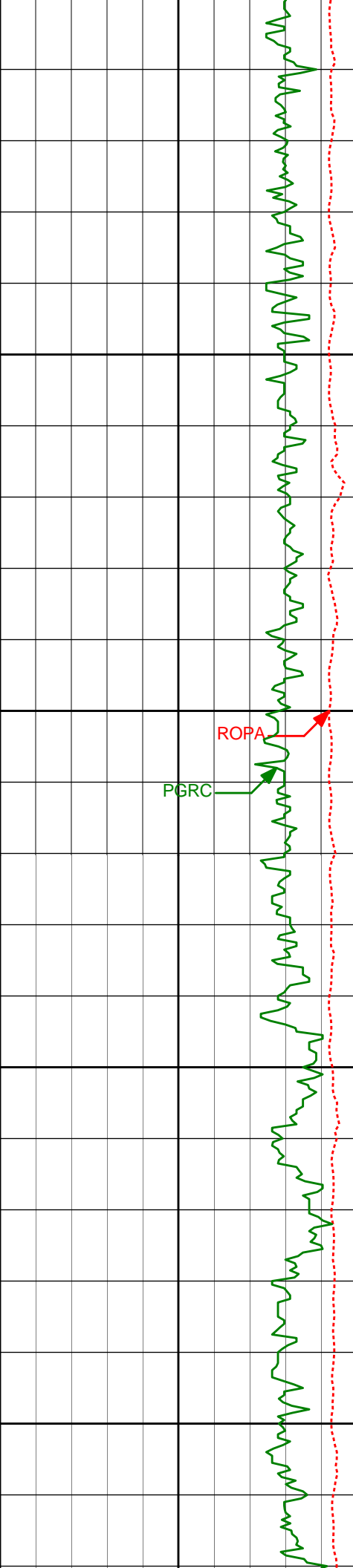
263.21°

6741.47'

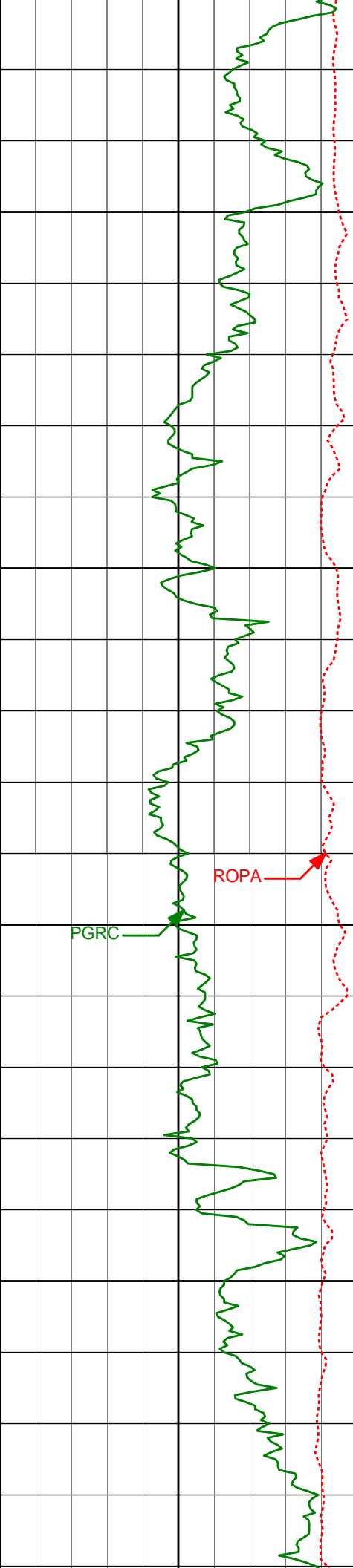
3988.64'

10650'

10700'



10700	10703'	89.81°	264.12°	6740.40'	4079.49'
10750					
10800	10798'	90.62°	270.05°	6740.04'	4171.79'
10850					
10900	10893'	92.68°	273.80°	6737.31'	4265.63'



10950'

10987'      92.31°      272.26°      6733.21'      4358.70'

11000'

ROPA

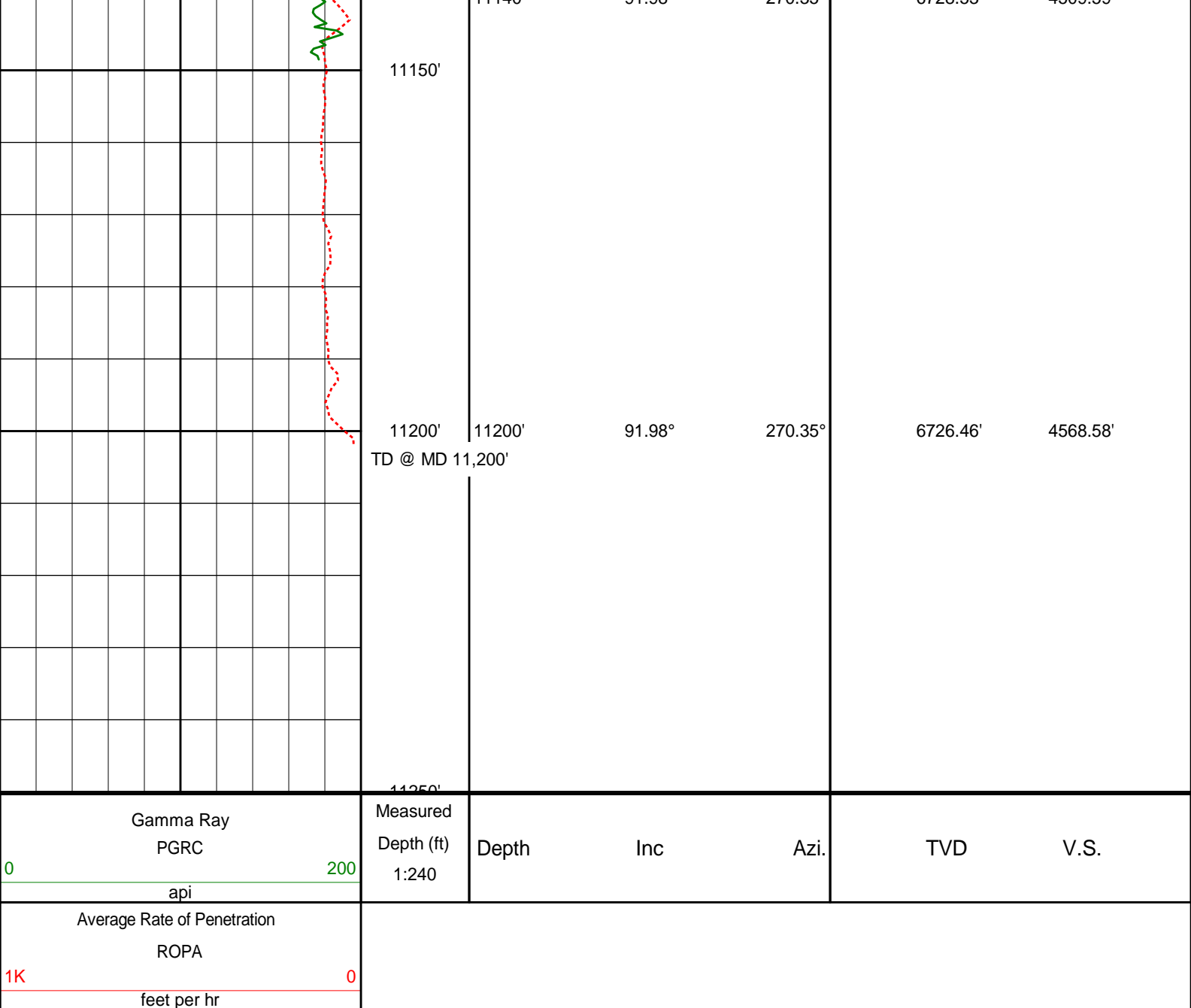
PGRC

11050'

11083'      91.32°      271.05°      6730.17'      4453.47'

11100'

11140'      91.98°      270.35°      6728.53'      4509.59'



**HALLIBURTON**

## DIRECTIONAL SURVEY REPORT

Noble Energy  
Wells Ranch AE06-69-1HN  
Wattenburg  
Weld Colorado  
U.S.A.  
CA-XX-0009518814

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
692.00	0.00	0.00	692.00	0.00 N	0.00 E	0.00	0.00
733.00	1.12	329.34	733.00	0.34 N	0.20 W	0.26	2.72
828.00	0.62	3.78	827.99	1.65 N	0.64 W	0.94	0.74
923.00	1.43	320.99	922.97	3.09 N	1.35 W	1.90	1.11
1112.00	1.34	312.27	1111.92	6.40 N	4.46 W	5.57	0.12
1205.00	1.69	325.88	1204.88	8.26 N	6.04 W	7.46	0.54
1297.00	1.96	334.30	1296.84	10.81 N	7.48 W	9.35	0.42
1482.00	2.43	12.82	1481.71	17.49 N	7.98 W	11.08	0.82



1666.00	3.61	19.12	1665.45	26.78 N	5.22 W	10.08	0.67
1758.00	5.00	12.28	1757.19	33.43 N	3.42 W	9.54	1.61
1850.00	6.33	12.98	1848.74	42.30 N	1.42 W	9.22	1.45
1942.00	7.16	14.28	1940.10	52.80 N	1.13 E	8.66	0.91
2034.00	8.75	13.47	2031.21	65.16 N	4.17 E	7.95	1.73
2133.00	11.39	6.94	2128.68	82.19 N	7.11 E	8.22	2.91
2228.00	14.98	9.12	2221.16	103.63 N	10.19 E	9.16	3.81
2322.00	18.12	8.96	2311.26	130.07 N	14.39 E	9.91	3.34
2416.00	19.04	8.44	2400.36	159.68 N	18.92 E	10.94	0.99
2511.00	19.27	6.94	2490.10	190.56 N	23.09 E	12.56	0.57
2606.00	18.87	8.20	2579.89	221.33 N	27.18 E	14.23	0.60
2701.00	18.89	12.56	2669.78	251.55 N	32.71 E	14.38	1.48
2795.00	19.10	12.42	2758.66	281.43 N	39.33 E	13.41	0.23
2890.00	17.49	11.18	2848.85	310.62 N	45.44 E	12.80	1.74
2984.00	17.87	10.79	2938.41	338.64 N	50.88 E	12.64	0.42
3079.00	16.66	12.35	3029.13	366.26 N	56.52 E	12.20	1.37
3174.00	17.18	13.27	3120.02	393.22 N	62.65 E	11.17	0.62
3268.00	15.85	11.69	3210.14	419.30 N	68.44 E	10.30	1.50
3363.00	15.30	11.14	3301.65	444.30 N	73.49 E	9.96	0.60
3457.00	15.22	9.62	3392.34	468.63 N	77.95 E	10.08	0.43
3552.00	16.22	9.48	3483.78	494.02 N	82.22 E	10.58	1.05
3647.00	17.53	8.41	3574.69	521.26 N	86.50 E	11.42	1.41
3741.00	18.22	8.10	3664.15	549.82 N	90.64 E	12.63	0.74
3836.00	19.49	8.41	3754.05	580.21 N	95.05 E	13.92	1.34
3930.00	19.58	8.02	3842.64	611.32 N	99.54 E	15.26	0.17
4025.00	17.55	7.21	3932.69	641.29 N	103.56 E	16.85	2.16
4120.00	17.52	6.47	4023.28	669.71 N	106.97 E	18.76	0.23
4214.00	16.43	11.38	4113.18	696.81 N	111.19 E	19.63	1.91
4309.00	16.15	12.10	4204.37	722.90 N	116.61 E	19.12	0.36
4404.00	15.37	12.66	4295.79	748.11 N	122.14 E	18.35	0.84
4498.00	16.62	11.22	4386.15	773.46 N	127.49 E	17.79	1.40
4593.00	16.80	11.32	4477.14	800.25 N	132.83 E	17.50	0.19
4688.00	16.98	10.79	4568.04	827.35 N	138.12 E	17.31	0.25
4782.00	14.31	5.56	4658.55	852.40 N	141.82 E	18.31	3.21
4877.00	12.41	9.14	4750.98	874.17 N	144.58 E	19.62	2.18
4972.00	8.09	7.23	4844.44	890.89 N	147.04 E	20.29	4.56
5067.00	7.13	4.69	4938.60	903.40 N	148.36 E	21.31	1.07
5162.00	6.85	6.86	5032.90	914.90 N	149.52 E	22.30	0.41
5256.00	4.32	9.78	5126.44	923.95 N	150.79 E	22.72	2.70
5350.00	2.17	2.86	5220.29	929.22 N	151.48 E	23.02	2.32
5445.00	1.08	55.09	5315.25	931.53 N	152.30 E	22.64	1.83
5540.00	0.43	14.79	5410.24	932.38 N	153.13 E	21.99	0.84
5634.00	0.66	66.90	5504.24	932.94 N	153.72 E	21.51	0.56
5729.00	0.64	50.98	5599.23	933.49 N	154.63 E	20.71	0.19
5824.00	0.84	68.87	5694.23	934.07 N	155.69 E	19.78	0.32
5918.00	0.22	31.21	5788.22	934.47 N	156.43 E	19.13	0.72
6013.00	0.31	75.53	5883.22	934.69 N	156.77 E	18.84	0.22
6108.00	0.37	10.93	5978.22	935.06 N	157.07 E	18.61	0.38
6156.00	2.97	274.62	6026.20	935.31 N	155.86 E	19.84	6.31
6203.00	8.62	272.37	6072.94	935.56 N	151.13 E	24.54	12.03
6251.00	12.24	269.94	6120.14	935.70 N	142.44 E	33.10	7.59
6298.00	13.36	268.53	6165.97	935.56 N	132.04 E	43.30	2.48
6346.00	16.32	266.58	6212.36	935.01 N	119.76 E	55.27	6.26
6392.00	19.78	264.17	6256.10	933.83 N	105.56 E	69.00	7.69
6440.00	24.61	265.06	6300.53	932.15 N	87.51 E	86.42	10.09
6487.00	28.11	265.49	6342.63	930.43 N	66.72 E	106.54	7.47
6535.00	30.56	264.66	6384.47	928.41 N	43.29 E	129.19	5.16
6582.00	35.45	266.37	6423.88	926.43 N	17.78 E	153.90	10.60
6630.00	39.06	267.33	6462.08	924.85 N	11.23 W	182.12	7.62
6676.00	42.96	265.35	6496.78	922.90 N	41.35 W	211.35	8.94
6724.00	49.17	267.26	6530.07	920.70 N	75.82 W	244.82	13.24
6771.00	56.10	268.14	6558.58	919.21 N	113.12 W	281.21	14.82
6819.00	61.52	269.59	6583.43	918.42 N	154.16 W	321.39	11.58
6865.00	62.87	268.71	6604.89	917.81 N	194.84 W	361.25	3.38
6913.00	63.67	268.41	6626.49	916.73 N	237.69 W	403.17	1.77
6960.00	65.49	268.92	6646.66	915.75 N	280.13 W	444.69	4.00
7008.00	68.19	269.15	6665.54	915.01 N	324.25 W	487.91	5.63
7055.00	71.52	268.96	6681.72	914.28 N	368.36 W	531.13	7.10
7103.00	74.24	269.10	6695.85	913.50 N	414.23 W	576.06	5.67
7149.00	78.58	268.79	6706.66	912.68 N	458.92 W	619.83	9.46
7197.00	83.82	268.82	6714.00	911.70 N	506.33 W	666.23	10.92
7221.00	85.93	268.47	6716.15	911.13 N	530.22 W	689.61	8.92
7335.00	88.80	268.08	6721.39	907.71 N	644.04 W	800.83	2.54
7382.00	89.04	267.49	6722.28	905.90 N	690.99 W	846.64	1.36
7437.00	87.53	267.27	6725.22	903.40 N	785.22 W	882.43	1.22

7477.00	87.56	267.97	6725.09	902.13 N	785.88 W	939.19	1.64
7572.00	87.66	267.73	6729.05	898.57 N	880.73 W	1031.74	0.27
7667.00	90.43	269.41	6730.63	896.20 N	975.67 W	1124.61	3.42
7762.00	90.56	272.85	6729.81	898.07 N	1070.63 W	1218.28	3.62
7856.00	91.29	276.74	6728.30	905.93 N	1164.27 W	1311.76	4.22
7951.00	88.86	273.78	6728.17	914.64 N	1258.86 W	1406.32	4.04
8046.00	88.64	272.35	6730.24	919.72 N	1353.70 W	1500.46	1.53
8141.00	89.88	274.35	6731.47	925.26 N	1448.52 W	1594.68	2.48
8236.00	90.06	276.02	6731.52	933.85 N	1543.13 W	1689.24	1.77
8331.00	90.06	276.56	6731.42	944.25 N	1637.55 W	1783.96	0.57
8426.00	90.68	278.57	6730.81	956.76 N	1731.72 W	1878.82	2.22
8521.00	90.52	275.97	6729.81	968.79 N	1825.94 W	1973.64	2.74
8616.00	89.85	272.55	6729.50	975.85 N	1920.66 W	2068.03	3.67
8712.00	90.31	269.64	6729.38	977.68 N	2016.64 W	2162.69	3.07
8807.00	90.28	267.97	6728.89	975.70 N	2111.61 W	2255.65	1.76
8902.00	88.67	267.44	6729.76	971.89 N	2206.53 W	2348.23	1.78
8997.00	87.69	266.49	6732.77	966.86 N	2301.34 W	2440.48	1.44
9090.00	87.68	266.65	6736.52	961.30 N	2394.10 W	2530.61	0.18
9185.00	90.00	267.18	6738.44	956.19 N	2488.94 W	2622.86	2.50
9280.00	89.63	266.45	6738.75	950.92 N	2583.79 W	2715.10	0.86
9375.00	89.44	265.12	6739.52	943.94 N	2678.53 W	2806.91	1.41
9470.00	90.52	264.00	6739.55	934.94 N	2773.10 W	2898.18	1.64
9565.00	90.03	263.14	6739.09	924.30 N	2867.50 W	2988.99	1.04
9660.00	88.83	262.12	6740.03	912.12 N	2961.71 W	3079.32	1.66
9755.00	89.54	261.33	6741.39	898.44 N	3055.70 W	3169.16	1.12
9850.00	89.05	262.51	6742.56	885.09 N	3149.75 W	3259.12	1.35
9945.00	88.77	264.30	6744.37	874.18 N	3244.10 W	3349.82	1.91
10039.00	91.76	266.84	6743.95	866.93 N	3337.80 W	3440.56	4.17
10134.00	92.81	266.16	6740.16	861.13 N	3432.55 W	3532.60	1.32
10229.00	92.87	265.91	6735.46	854.57 N	3527.20 W	3624.41	0.27
10324.00	87.13	265.68	6735.46	847.61 N	3621.91 W	3716.20	6.04
10419.00	88.24	265.05	6739.30	839.94 N	3716.52 W	3807.75	1.35
10514.00	88.83	263.59	6741.73	830.54 N	3811.02 W	3898.88	1.65
10608.00	91.48	263.21	6741.47	819.75 N	3904.39 W	3988.64	2.85
10703.00	89.81	264.12	6740.40	809.27 N	3998.80 W	4079.49	2.00
10798.00	90.62	270.05	6740.04	804.44 N	4093.63 W	4171.79	6.30
10893.00	92.68	273.80	6737.31	807.63 N	4188.52 W	4265.63	4.50
10987.00	92.31	272.26	6733.21	812.59 N	4282.29 W	4358.70	1.68
11083.00	91.32	271.05	6730.17	815.37 N	4378.20 W	4453.47	1.63
11140.00	91.98	270.35	6728.53	816.06 N	4435.17 W	4509.59	1.67
11200.00	91.98	270.35	6726.46	816.43 N	4495.14 W	4568.58	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 280.66 DEGREES (GRID)  
A TOTAL CORRECTION OF 7.76 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.  
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11200.00 FEET  
IS 4568.68 FEET ALONG 280.29 DEGREES (GRID)