



WELL INFORMATION					
MWD Run Number	100	200	300		
Date run completed	13-Jun-13	14-Jun-13	17-Jun-13		
Rig Bit Number	2	3	4		
Bit Size (in)	8.750	8.750	6.125		
Tool Nominal OD (in)	6.750	6.750	4.75		
Log Start Depth (MD, ft)	663.00	5,919.00	7,007.00		
Log End Depth (MD, ft)	5,919.00	7,007.00	10,962.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	12-Jun-13 13:00	13-Jun-13 22:45	16-Jun-13 07:15		
Drill/Wipe End Date and Time	13-Jun-13 10:30	14-Jun-13 16:00	17-Jun-13 10:30		
Min Inc (deg) @ Depth (MD, ft)	.45 @ 717.00	2.09 @ 5,922.00	82.76 @ 7,060.00		
Max Inc (deg) @ Depth (MD, ft)	17.68 @ 3,930.00	78.01 @ 6,951.00	92.00 @ 7,534.00		
Bit TFA(in2) / Bit Type	.86 / PDC	.86 / PDC	.46 / PDC		
Flow Rate (gpm)	597.20	555.65	270.00		
Max AV (fpm) / CV (fpm) @ MWD	414.4 / NA	385.7 / NA	401.0 / NA		
Fluid Type	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel		
Density (ppg) / Viscosity (spqt)	8.70 / 27.00	11.00 / 34.00	9.40 / 31.00		
Filtrate CL (ppm)	2,300.00	2,300.00	1,800.00		
pH / Fluid Loss (mptm)	8.30 / NA	9.80 / NA	10.20 / NA		
PV (cP) / YP (lbf2)	3 / 2.00	11 / 13.00	6 / 6.00		
% Solids / % Sand	1.9 / 0.30	12.70 / 0.25	4.7 / 0.10		
% Oil / Oil:Water Ratio	0 / 0:95	0 / 0:95	0 / 0:95		
Rm @ Measured Temp (degF)	NA @ NA	NA @ NA	NA @ NA		
Rmf @ Measured Temp (degF)	NA @ NA	NA @ NA	NA @ NA		
Rmc @ Measured Temp (degF)	NA @ NA	NA @ NA	NA @ NA		
Max Tool Temp (in F) / S	454.00 / PDM	470.70 / PDM	334.00 / PDM		

Max Tool Temp (degF) / Source	154.30 / PCM	172.78 / PCM	221.80 / PCM		
Rm @ Max Tool Temp (degF)	NA @ NA	NA @ NA	NA @ NA		
Lead MWD Engineer	Gary Eifert	Gary Eifert	Gary Eifert		
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	11342299	11342299	12145499		
Insert Serial Number	11620299	11620299	11055831		
Date and Time Initialized	11-Jun-13 18:55	11-Jun-13 18:55	14-Jun-13 19:56		
Date and Time Read	15-Jun-13 02:17	15-Jun-13 02:23	17-Jun-13 21:54		
ECMB SW Version	N/A	N/A	N/A		

### Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	58.00	56.00	64.00		
Software Version	6.21	6.21	6.21		
Sub Serial Number	11342299	11342299	12145499		
Sonde Serial Number	11297588	11297588	11833235		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	247.57	234.64	280.59		

### Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	51.40	49.09	57.33		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	11342299	11342299	12145499		
Insert/Sonde Serial Number	11293433	11293433	11681007		

## 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 7.4.2

# WARRANTY

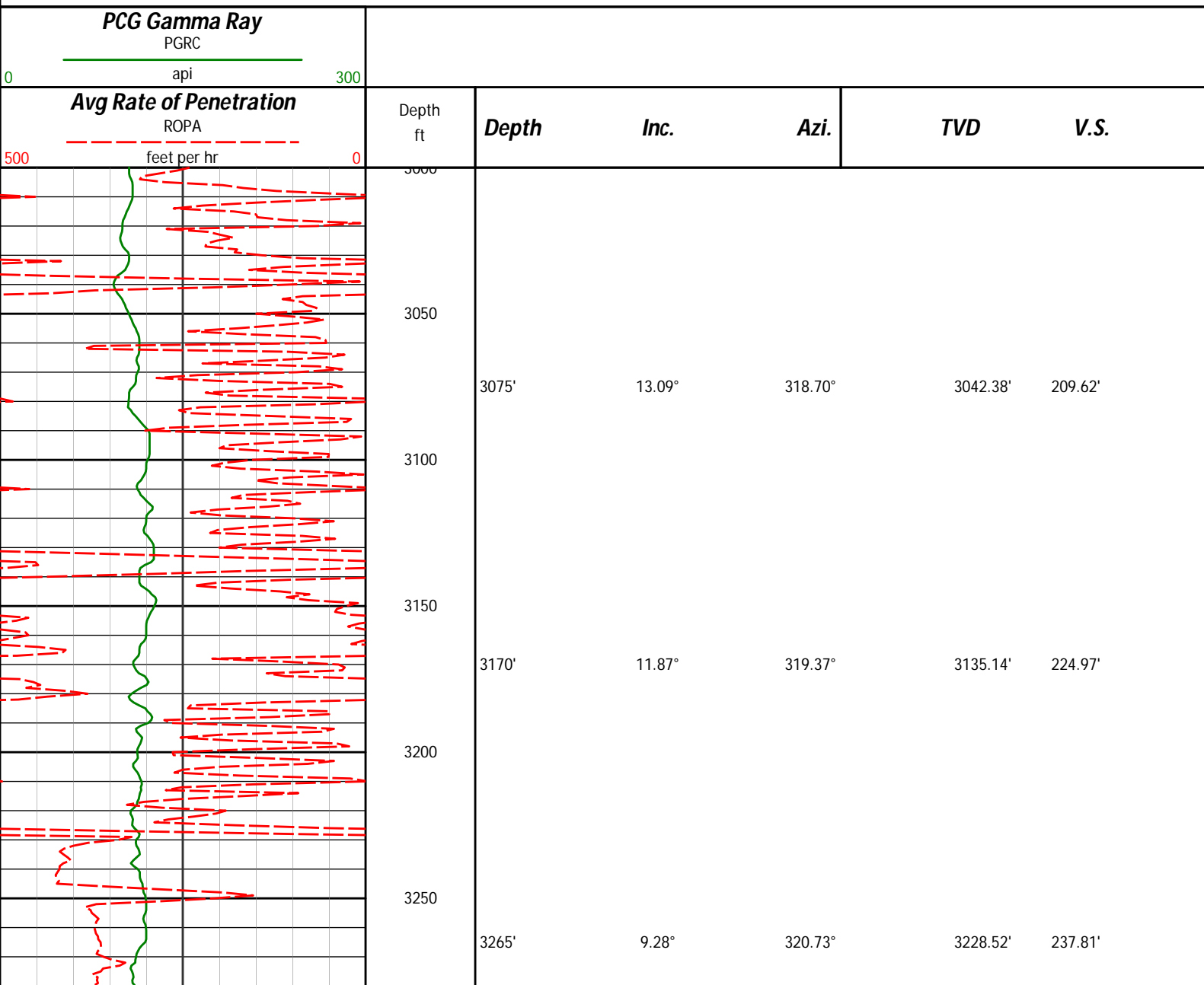
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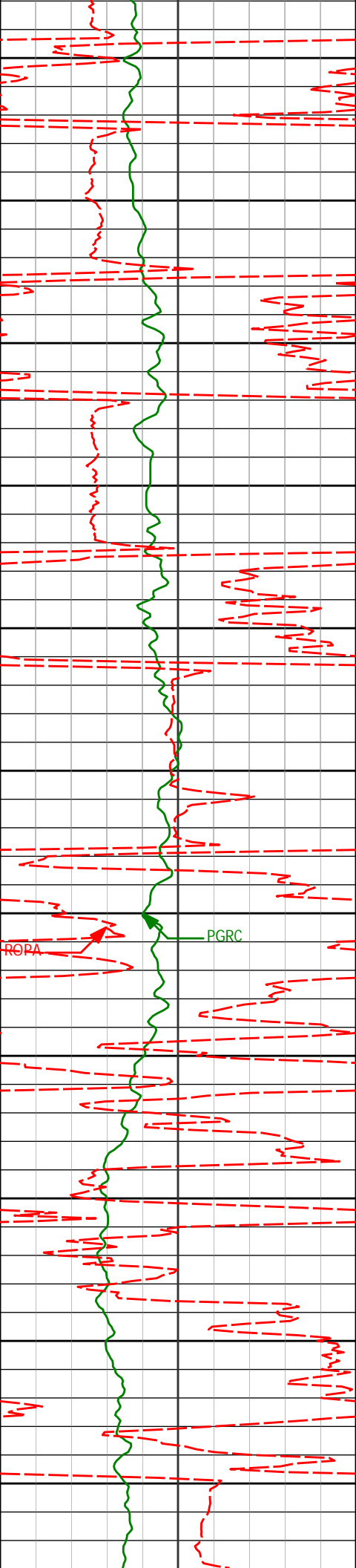
## HALLIBURTON

Sperry Drilling Services

### MD Main Log 1:600

Noble Energy  
Wells Ranch PC USX AA23-69-1HN  
H&P 343  
T6N-R63W





3300

3350

3400

3450

3500

3550

3600

3650

3700

3750

3800

3360'

11.45°

321.02°

3321.96'

250.21'

3455'

11.71°

328.31°

3415.03'

263.12'

3550'

14.12°

329.49°

3507.62'

276.33'

3645'

14.82°

328.50°

3599.61'

291.08'

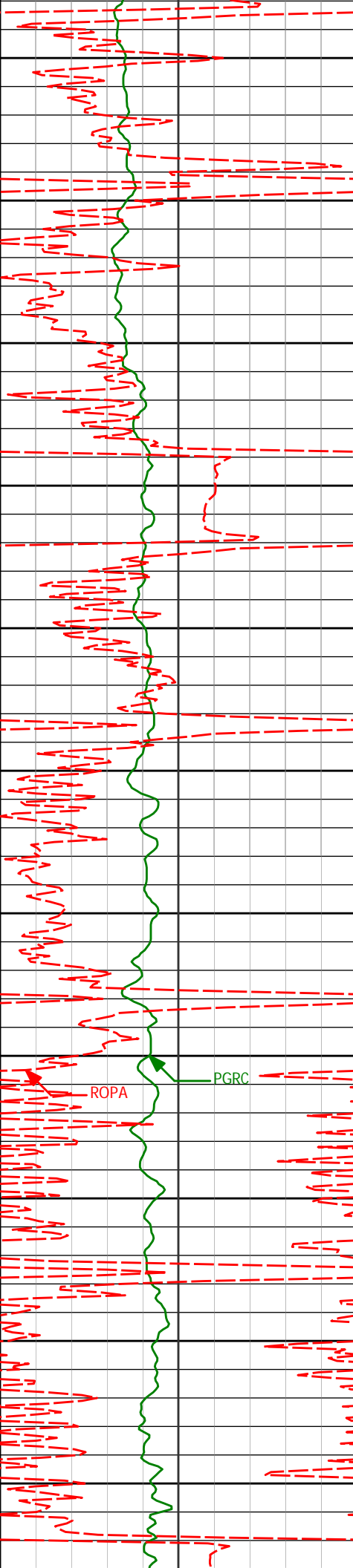
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14.21°

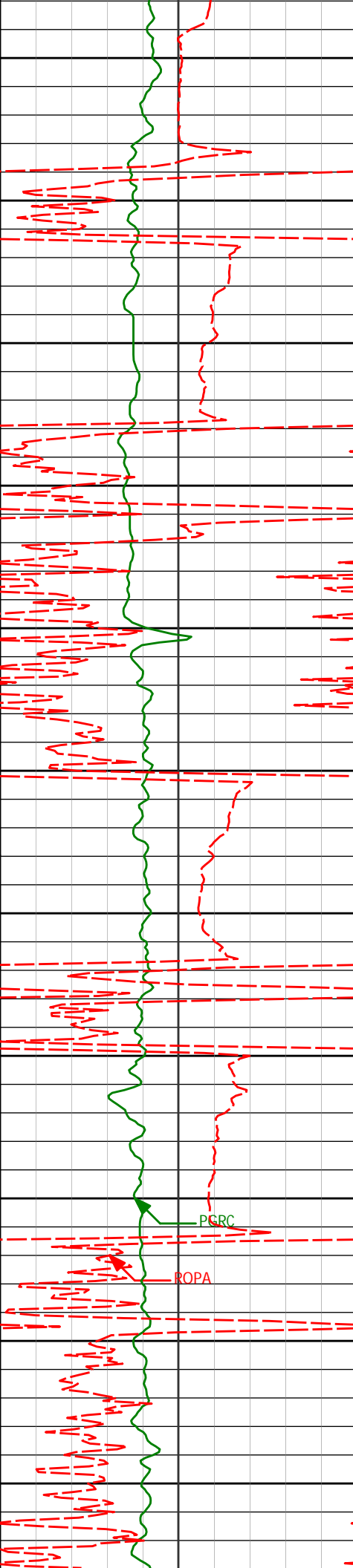
330.89°

3691.57'

305.66'



3835'	15.36°	322.88°	3783.44'	321.43'
3850				
3900				
3930'	17.68°	320.62°	3874.51'	340.77'
3950				
4000				
4025'	15.74°	320.38°	3965.49'	360.72'
4050				
4100				
4120'	15.00°	318.38°	4057.09'	379.44'
4150				
4200				
4215'	12.51°	317.03°	4149.36'	396.65'
4250				
4300				
4310'	9.44°	317.95°	4242.61'	410.50'
4350				



4400

4405'

9.91°

322.32°

4336.26'

422.22'

4450

4500

4500'

13.33°

322.28°

4429.30'

435.77'

4550

4600

4595'

12.12°

320.07°

4521.97'

450.87'

4650

4700

4690'

11.88°

320.93°

4614.89'

465.30'

4750

4800

4785'

14.15°

320.92°

4707.44'

480.81'

PGRC

ROPA

4850

4900

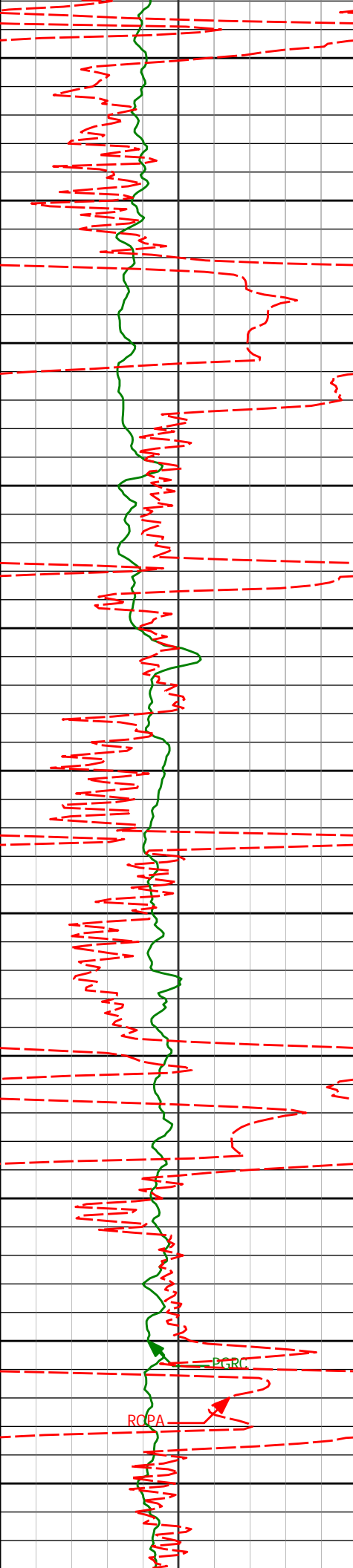
4880'

11.75°

317.18°

4800.02'

496.68'



4950

4975'

8.60°

313.82°

4893.52'

509.83'

5000

5050

5070'

7.90°

323.78°

4987.54'

520.06'

5100

5150

5165'

6.31°

328.96°

5081.81'

527.81'

5200

5250

5260'

4.00°

337.06°

5176.42'

532.74'

5300

5350

5355'

2.71°

335.69°

5271.25'

535.60'

5400

5450

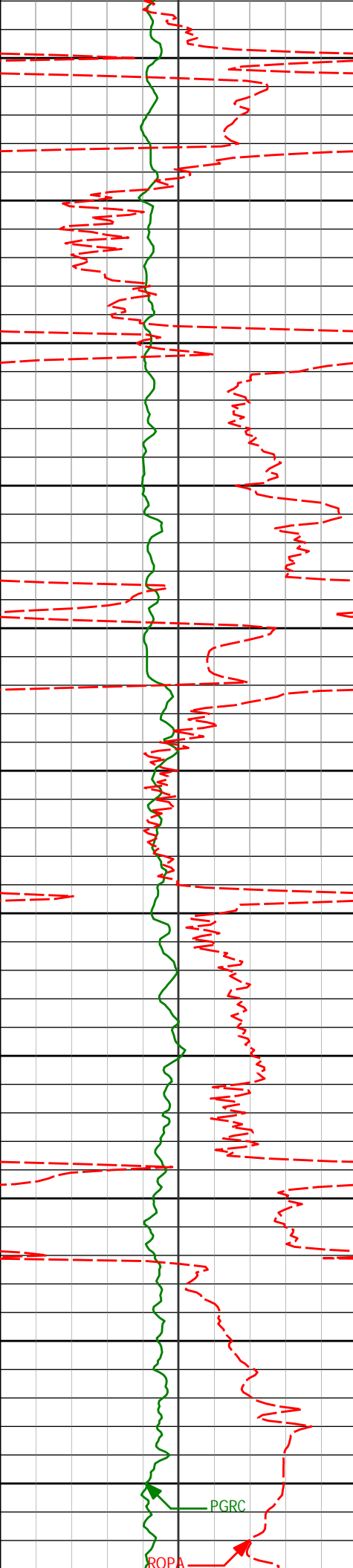
5450'

1.08°

356.88°

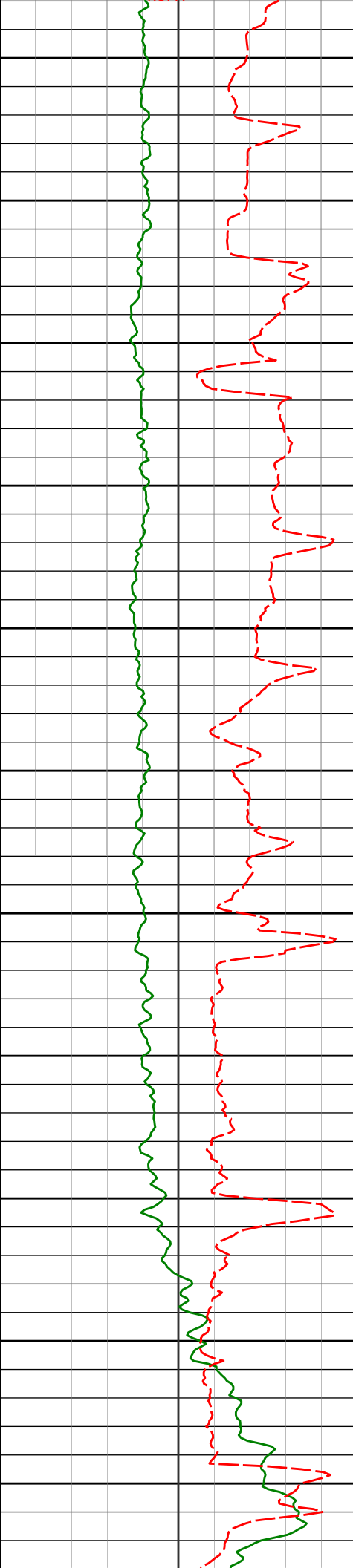
5366.20'

536.94'



5500				
5550	5545'	1.16°	48.40°	5461.18' 536.47'
5600				
5650	5640'	1.72°	67.03°	5556.15' 534.62'
5700				
5750	5735'	0.79°	169.71°	5651.14' 533.19'
5800				
5850				
5900				
<Run 200>	5922'	2.09°	122.51°	5838.07' 529.16'
5950				
6000				
	6017'	2.73°	249.81°	5933.03' 529.60'





6050

6065'

8.06°

259.55°

5980.80'

533.82'

6100

6112'

11.09°

258.21°

6027.14'

541.22'

6150

6160'

14.03°

264.63°

6073.99'

551.26'

6200

6207'

17.01°

271.33°

6119.27'

563.65'

6250

6300

6301'

22.73°

279.07°

6207.65'

595.51'

6350

6400

6396'

28.59°

280.54°

6293.25'

636.60'

6450

6500

6491'

39.77°

275.17°

6371.73'

689.84'

6550

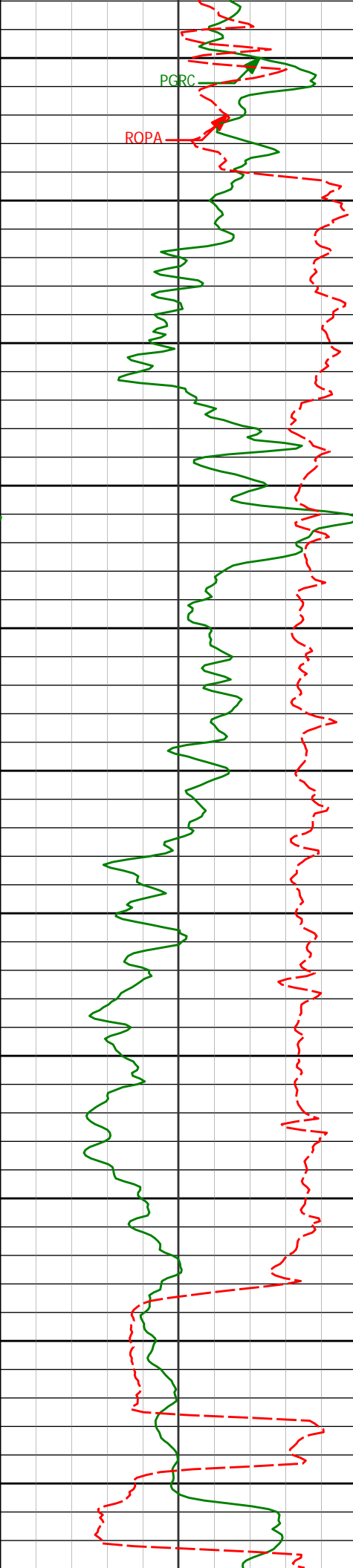
6539'

47.20°

272.31°

6406.53'

722.77'



6586'	50.06°	274.97°	6437.60'	757.96'
6600				
6681'	53.54°	276.17°	6496.34'	832.56'
6700				
6729'	58.20°	277.33°	6523.27'	872.28'
6750				
6776'	63.65°	276.57°	6546.10'	913.34'
6800				
6824'	67.84°	273.84°	6565.82'	957.05'
6850				
6871'	71.50°	272.30°	6582.14'	1000.98'
6900				
6919'	75.13°	270.31°	6595.92'	1046.69'
6950				
6951'	78.01°	268.75°	6603.36'	1077.52'
7000				
<div><div></div>Casing Set @ 6,997' MD</div> <div>&lt;Run 300&gt;</div>				
7050				
7060'	82.76°	268.97°	6621.57'	1183.76'
7100				



7150

7154'

85.96°

269.18°

6630.80'

1276.30'

7200

PGRC

ROPA

7250

7249'

87.26°

270.00°

6636.42'

1370.24'

7300

7350

7344'

88.64°

269.75°

6639.82'

1464.36'

7400

7450

7439'

91.60°

268.42°

6639.62'

1558.34'

7500

7550

7534'

92.00°

268.66°

6636.63'

1652.16'

7600

7650

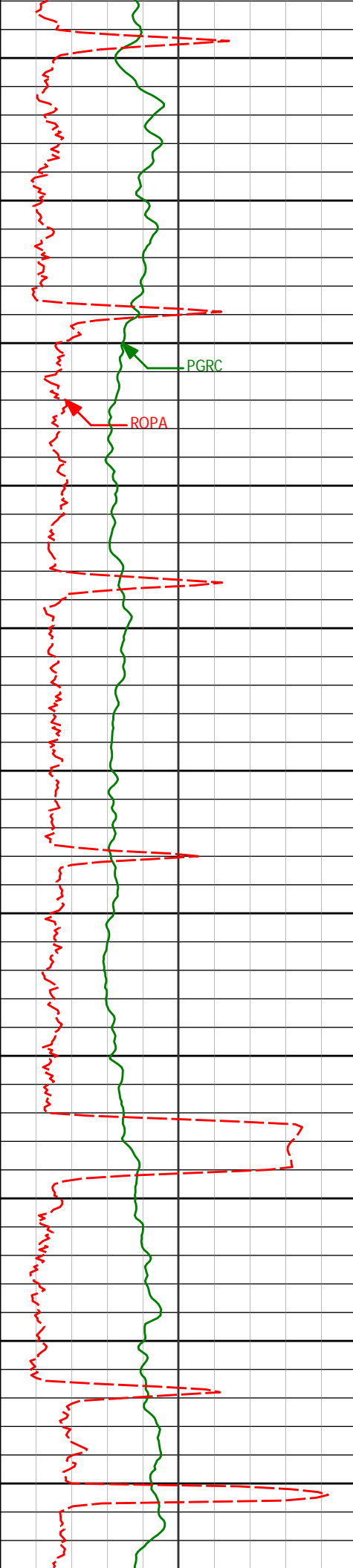
7629'

90.68°

268.54°

6634.40'

1746.01'



7700

7724'

90.46°

268.27°

6633.46'

1839.83'

7750

7800

7819'

90.46°

268.37°

6632.69'

1933.63'

7850

7900

7913'

90.22°

268.14°

6632.14'

2026.43'

7950

8000

8008'

90.83°

267.98°

6631.27'

2120.16'

8050

8100

8103'

89.88°

269.33°

6630.68'

2214.05'

8150

8200

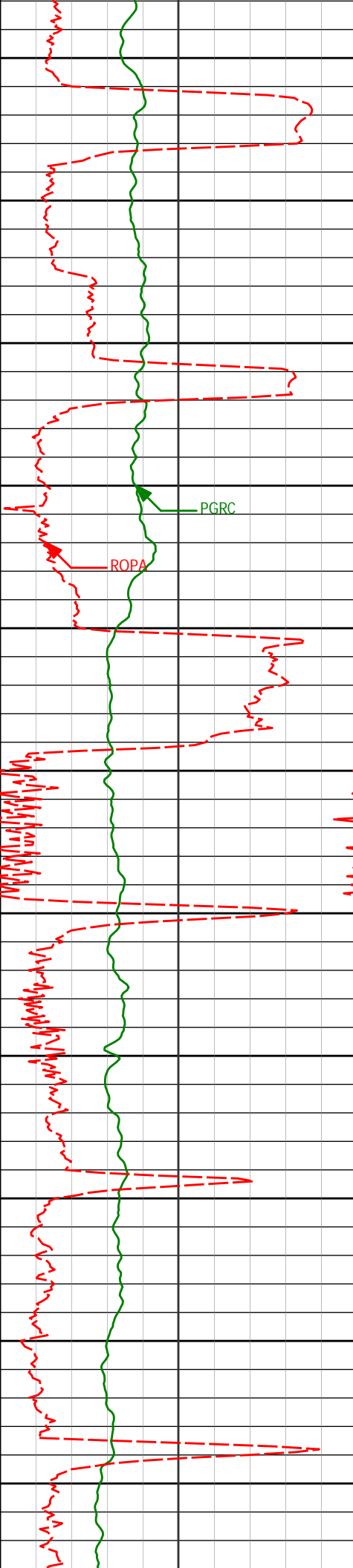
8198'

90.55°

269.68°

6630.32'

2308.14'



8250

8300

8350

8400

8450

8500

8550

8600

8650

8700

8750

8293' 89.63° 270.81° 6630.17' 2402.39'

8387' 90.86° 272.47° 6629.76' 2495.91'

8482' 88.74° 269.76° 6630.09' 2590.32'

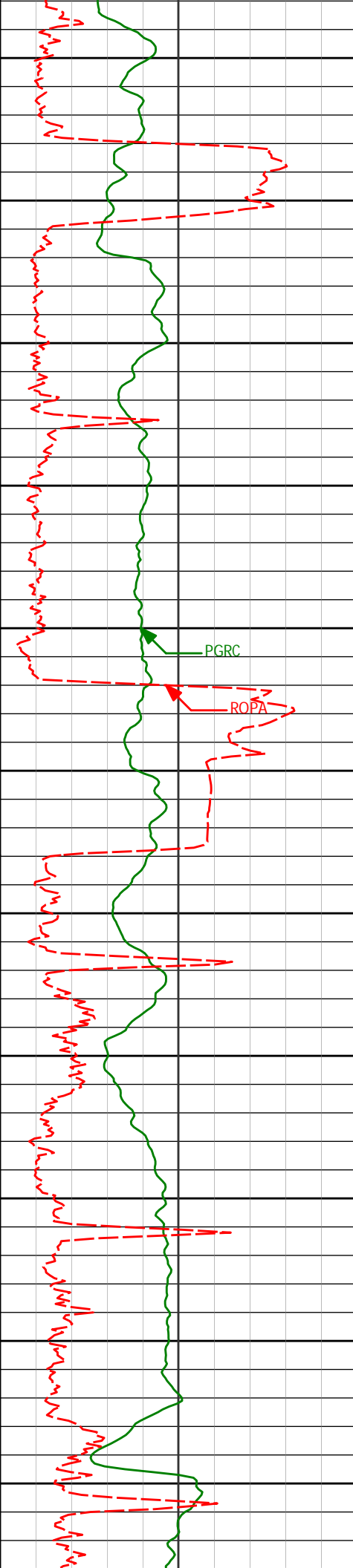
8577' 88.80° 269.31° 6632.14' 2684.40'

8672' 89.14° 269.16° 6633.85' 2778.42'

8767' 89.72° 269.22° 6634.79' 2872.43'

PGRC

ROPA



8800

8850

8900

8950

9000

9050

9100

9150

9200

9250

9300

8862'

88.92°

270.70°

6635.92'

2966.62'

8957'

89.45°

270.61°

6637.27'

3060.95'

9052'

87.93°

272.42°

6639.44'

3155.41'

9147'

87.62°

272.39°

6643.13'

3249.98'

9242'

88.52°

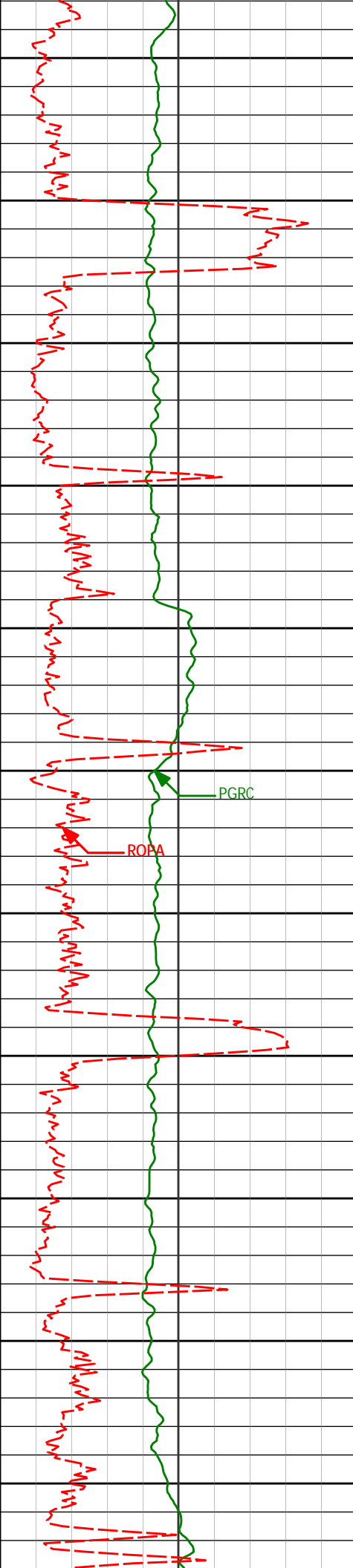
273.78°

6646.32'

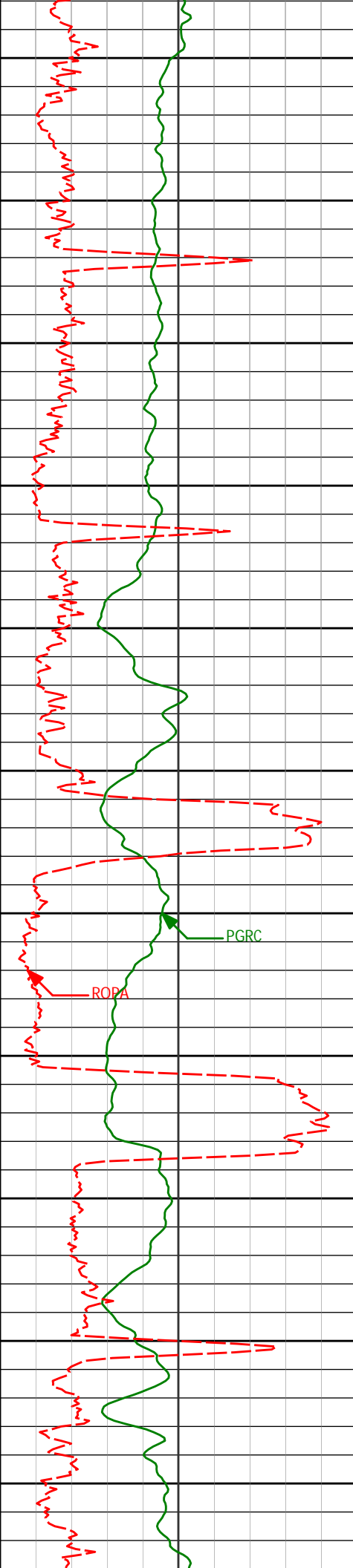
3344.65'

PGRC

ROPA

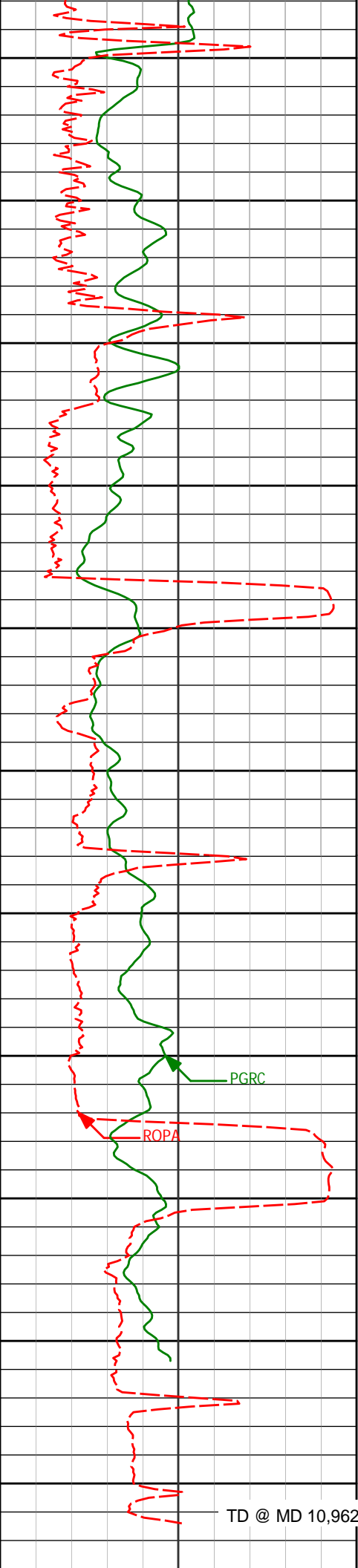


9337'	88.34°	273.65°	6648.93'	3439.42'
9350				
9400				
9432'	89.35°	271.64°	6650.85'	3534.06'
9450				
9500				
9527'	89.20°	271.22°	6652.05'	3628.53'
9550				
9600				
9621'	89.26°	271.51°	6653.31'	3722.00'
9650				
9700				
9716'	90.06°	270.74°	6653.88'	3816.43'
9750				
9800				
9811'	90.22°	270.47°	6653.65'	3910.75'
9850				



9900	9906'	90.25°	270.64°	6653.26'	4005.07'
9950					
10000	10001'	90.06°	270.10°	6653.01'	4099.35'
10050					
10100	10096'	90.80°	269.64°	6652.29'	4193.53'
10150					
10200	10191'	90.59°	270.40°	6651.14'	4287.73'
10250					
10300	10286'	88.21°	270.17°	6652.14'	4381.98'
10350					
10400	10381'	88.27°	270.06°	6655.05'	4476.16'





10450

10476'

87.93°

269.88°

6658.20'

4570.31'

10500

10550

10571'

87.16°

270.07°

6662.26'

4664.42'

10600

10650

10666'

88.21°

270.31°

6666.10'

4758.59'

10700

10750

10761'

88.40°

269.70°

6668.91'

4852.75'

10800

10850

10856'

91.17°

270.61°

6669.27'

4946.98'

10900

10950

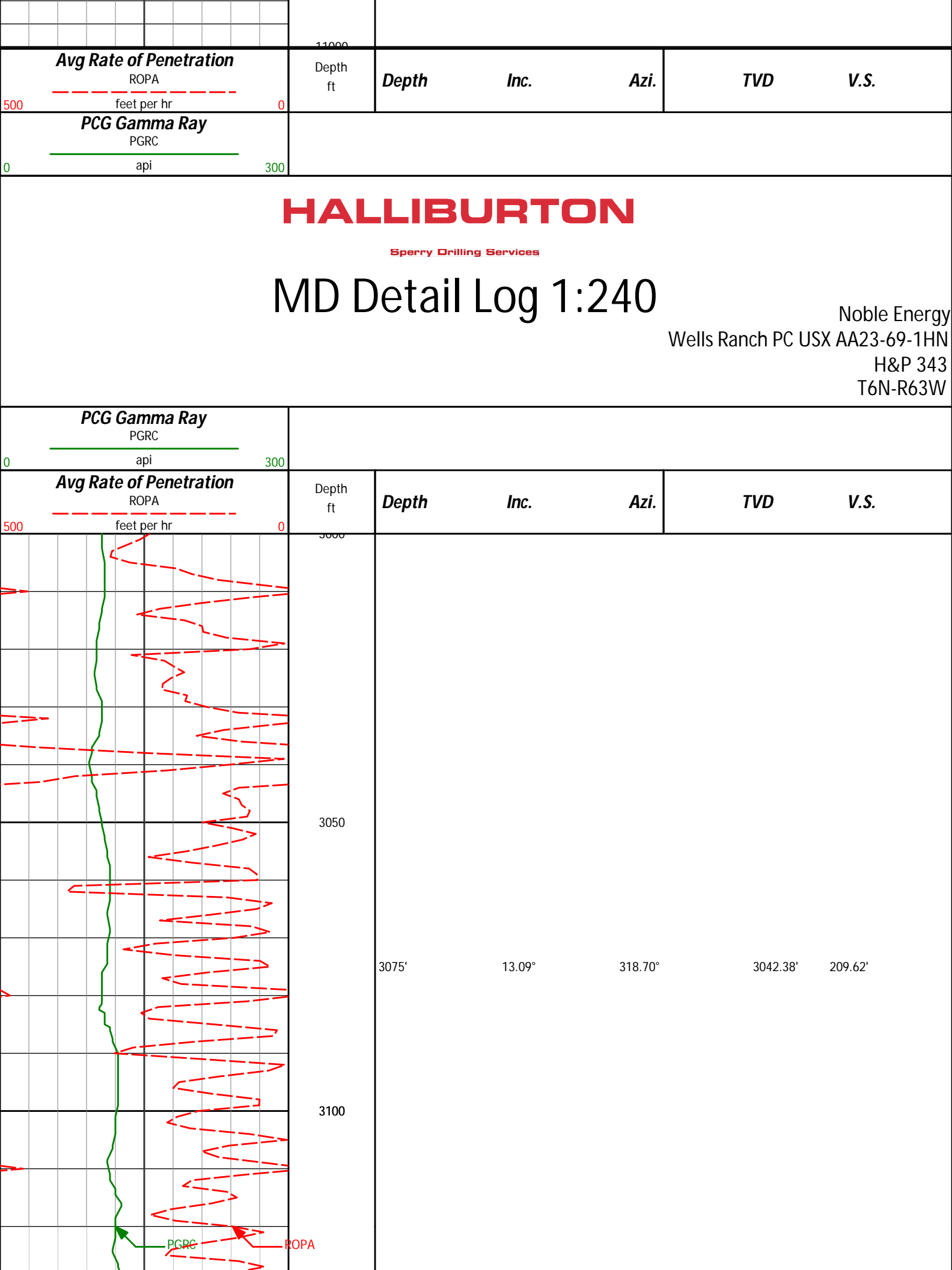
10962'

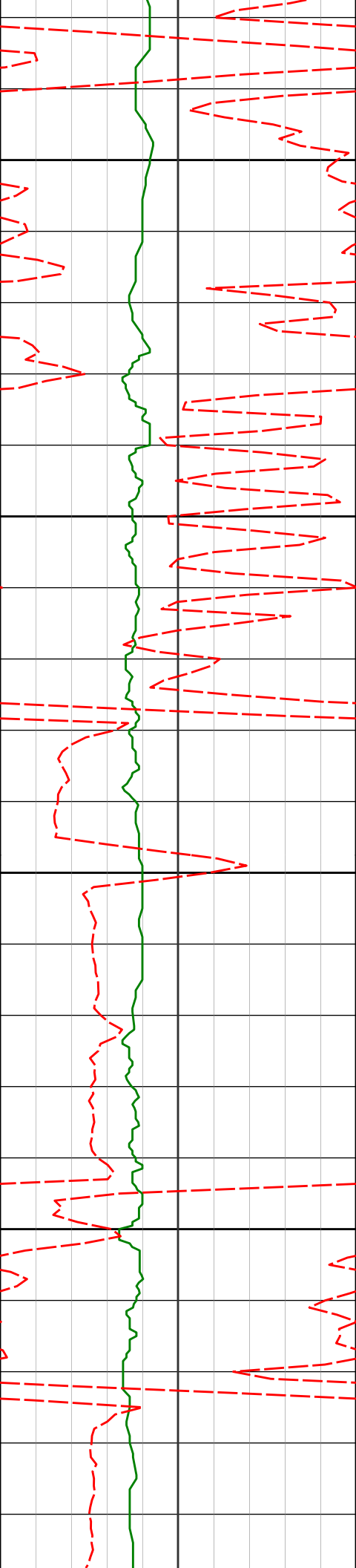
91.57°

271.04°

6666.51'

5052.27'





3150

3170'

11.87°

319.37°

3135.14'

224.97'

3200

3250

3265'

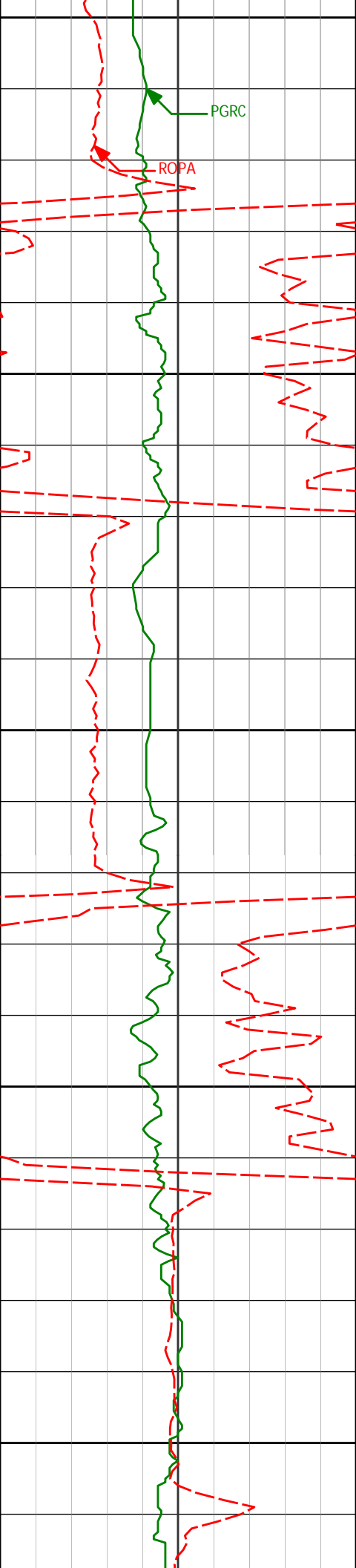
9.28°

320.73°

3228.52'

237.81'

3300



3350

3360'

11.45°

321.02°

3321.96'

250.21'

3400

3450

3455'

11.71°

328.31°

3415.03'

263.12'

3500

3550

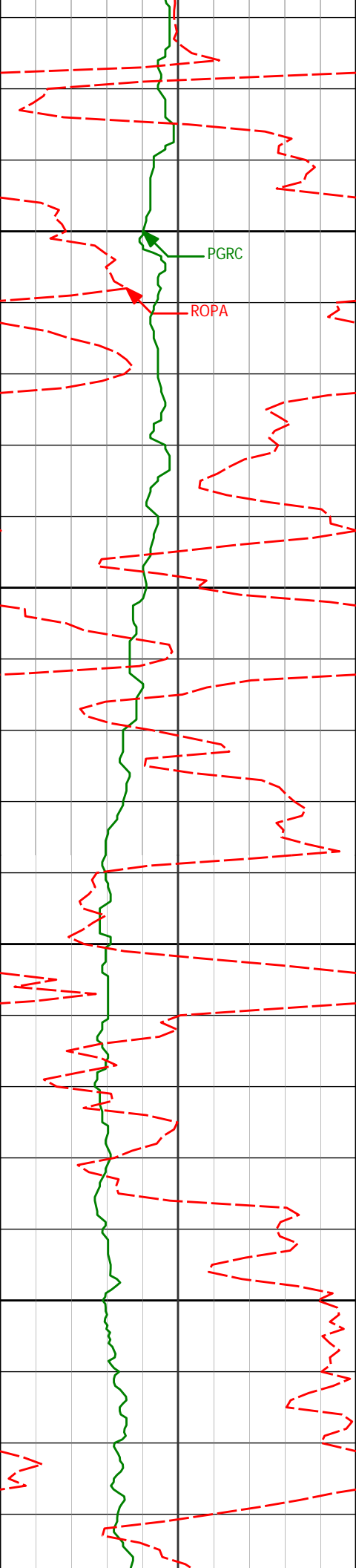
3550'

14.12°

329.49°

3507.62'

276.33'



3600

PGRC

ROPA

3650

3700

3750

3645'

14.82°

328.50°

3599.61'

291.08'

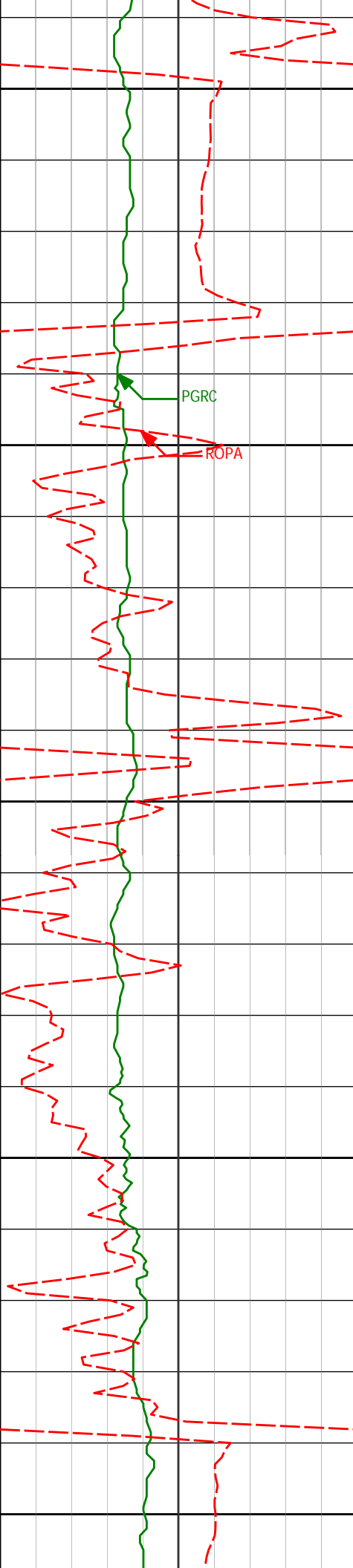
3740'

14.21°

330.89°

3691.57'

305.66'



3800

3835'

15.36°

322.88°

3783.44'

321.43'

3850

PGRC

ROPA

3900

3930'

17.68°

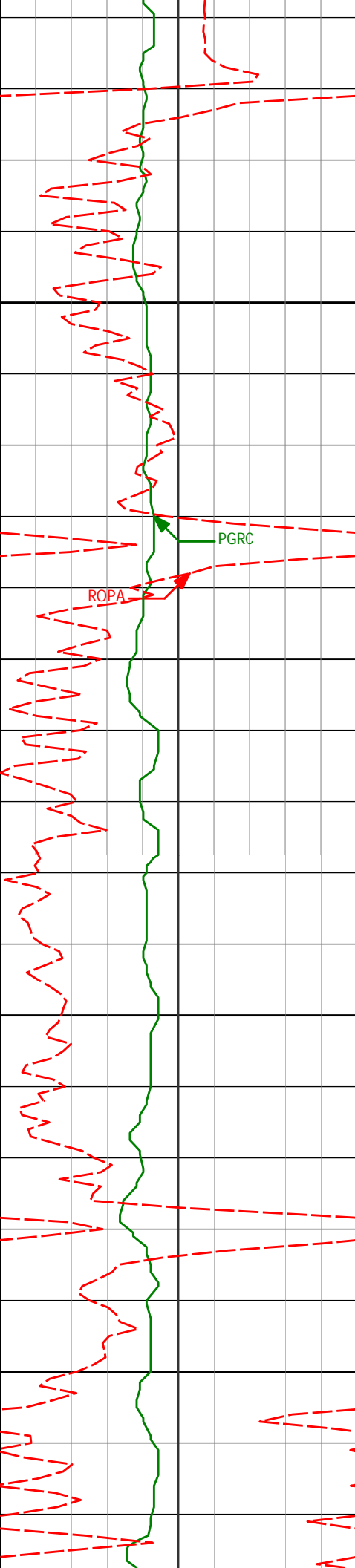
320.62°

3874.51'

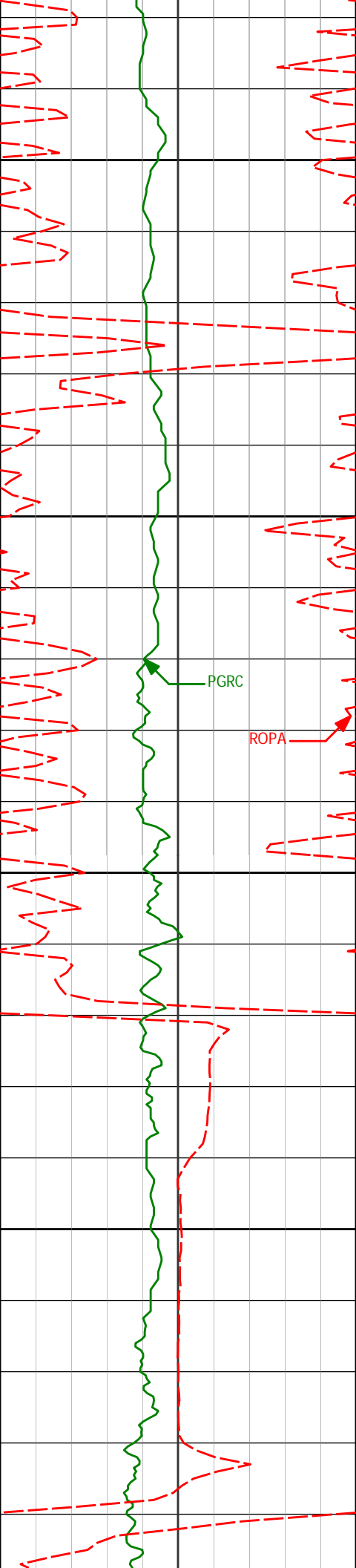
340.77'

3950

4000



4025'	15.74°	320.38°	3965.49'	360.72'
4050				
4100				
4120'	15.00°	318.38°	4057.09'	379.44'
4150				
4200				
4215'	12.51°	317.03°	4149.36'	396.65'



4250

4300

4350

4400

4310'

9.44°

317.95°

4242.61'

410.50'

PGRC

ROPA

4405'

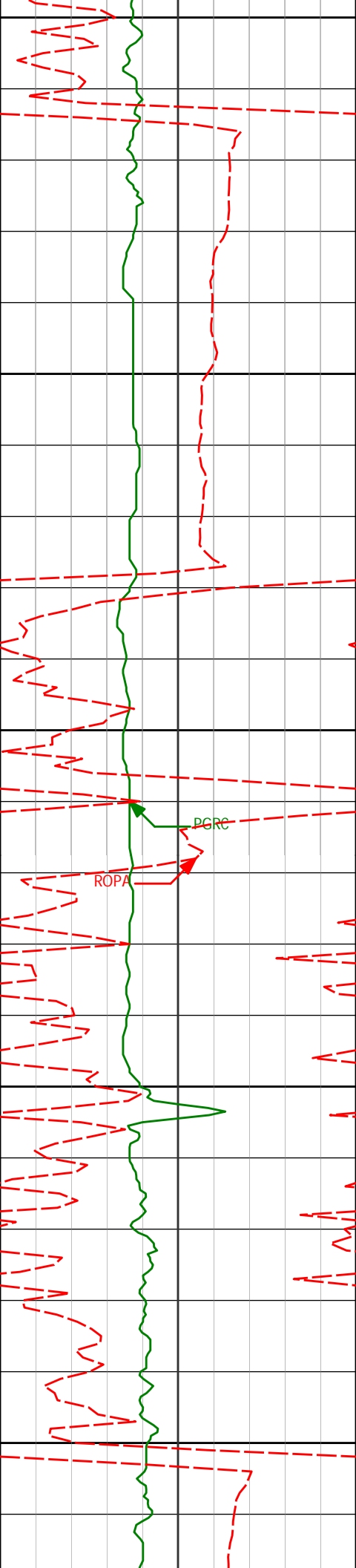
9.91°

322.32°

4336.26'

422.22'





4450

4500

4550

4600

4650

4500'

13.33°

322.28°

4429.30'

435.77'

4595'

12.12°

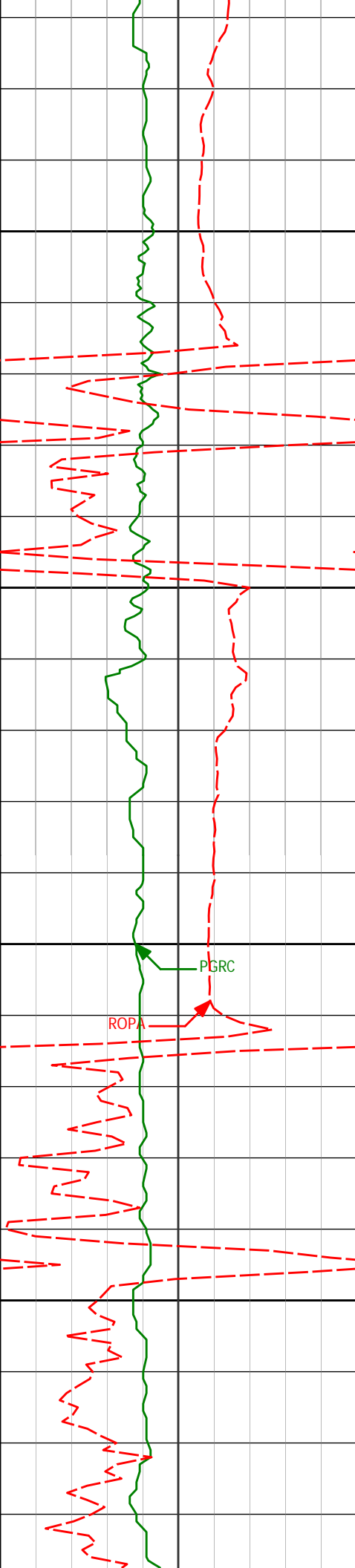
320.07°

4521.97'

450.87'

PGRC

ROPA



4690'

11.88°

320.93°

4614.89'

465.30'

4700

4750

4785'

14.15°

320.92°

4707.44'

480.81'

4800

4850

4880'

11.75°

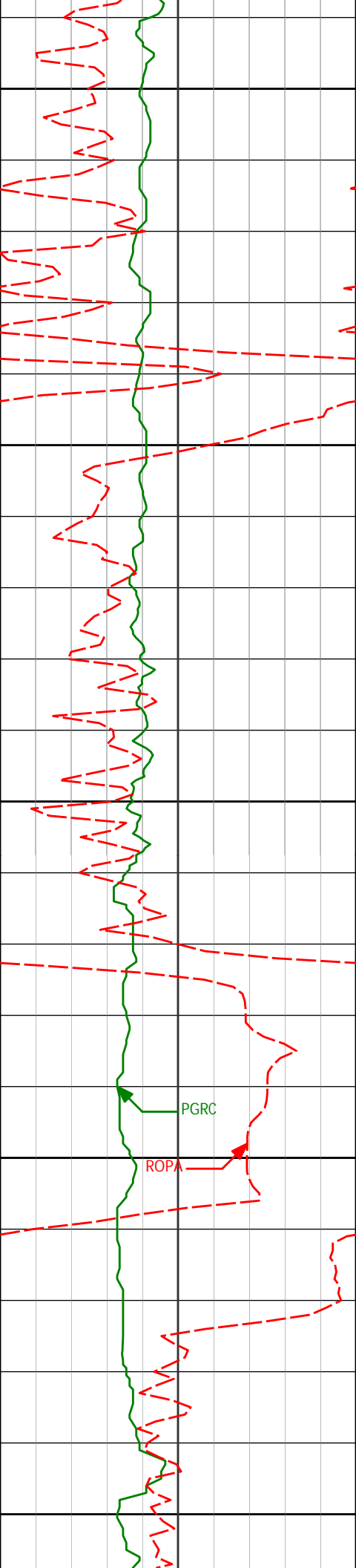
317.18°

4800.02'

496.68'

PGRC

ROPA



4900

4950

5000

5050

5100

4975'

8.60°

313.82°

4893.52'

509.83'

PGRC

ROPA

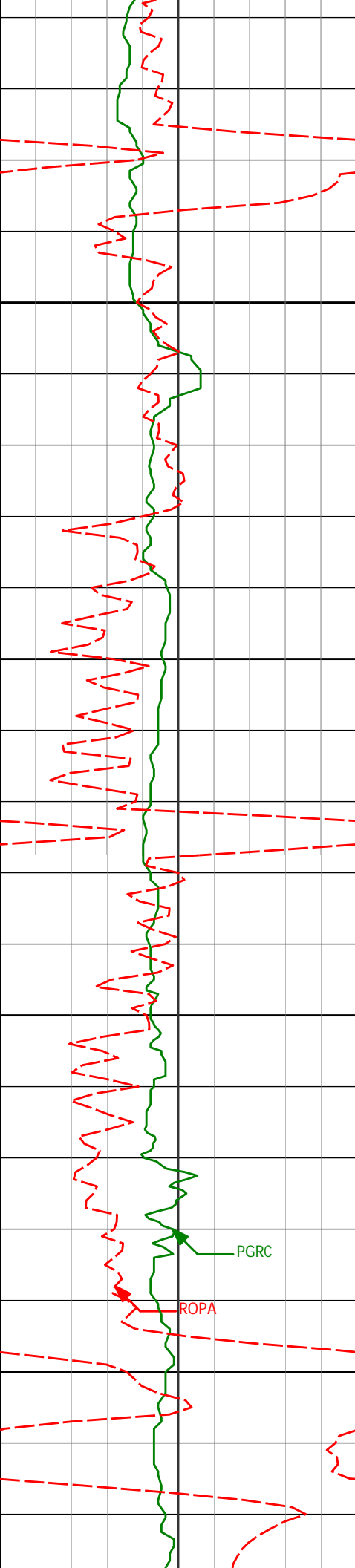
5070'

7.90°

323.78°

4987.54'

520.06'



5150

5200

5250

5300

5165'

6.31°

328.96°

5081.81'

527.81'

5260'

4.00°

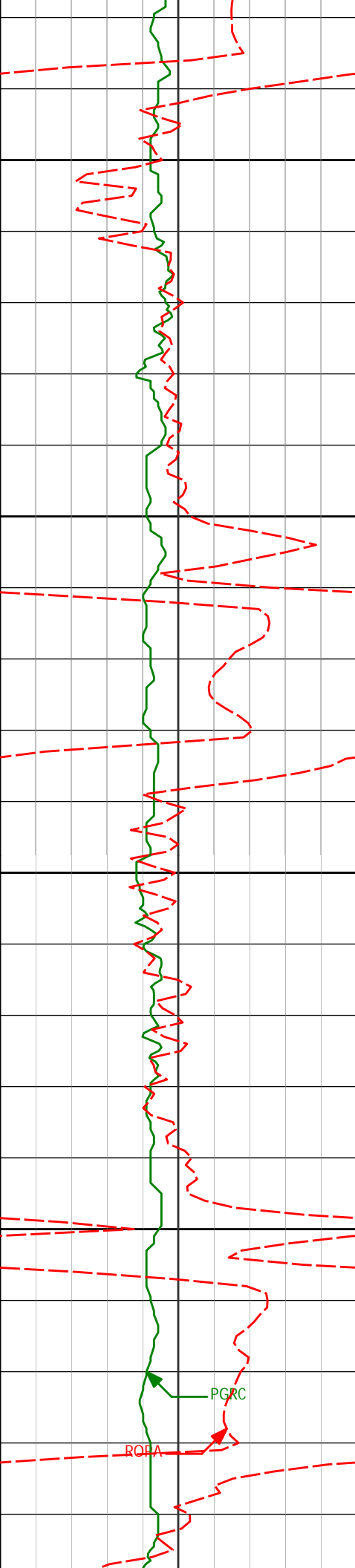
337.06°

5176.42'

532.74'

PGRC

ROPA



5350

5355'

2.71°

335.69°

5271.25'

535.60'

5400

5450

5450'

1.08°

356.88°

5366.20'

536.94'

5500

PGRC

RCPA

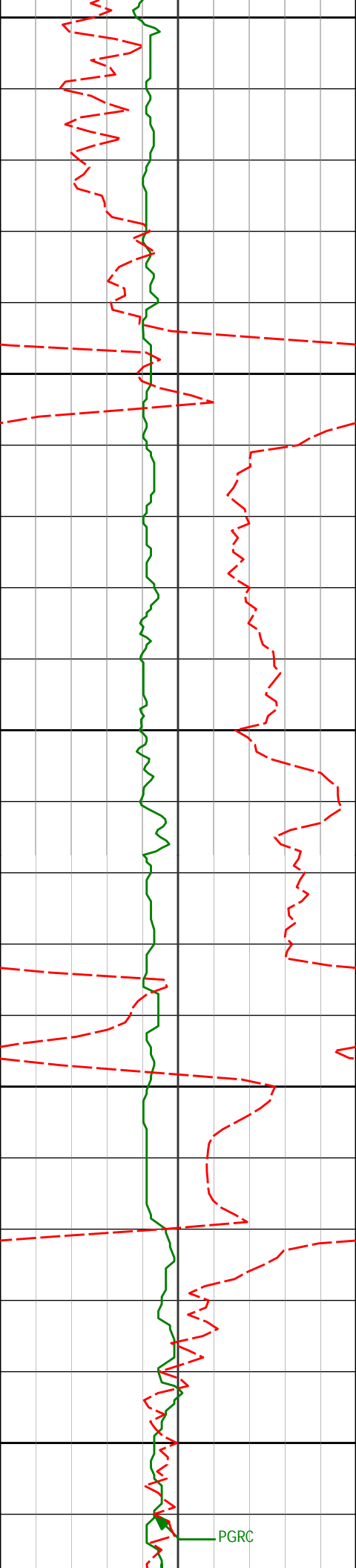
5545'

1.16°

48.40°

5461.18'

536.47'



5550

5600

5650

5700

5750

PGRC

5640'

1.72°

67.03°

5556.15'

534.62'

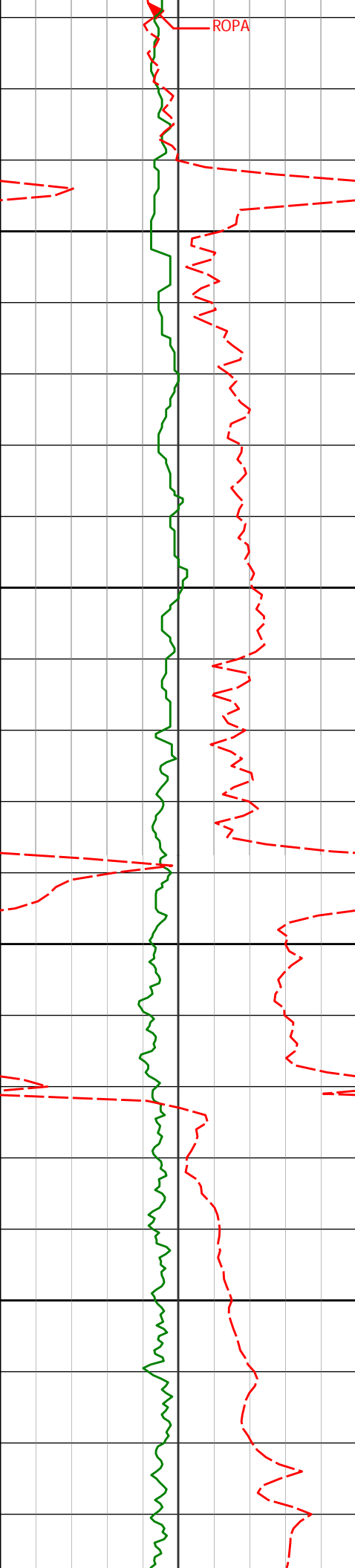
5735'

0.79°

169.71°

5651.14'

533.19'



5800

5850

5900

<Run 200>

5950

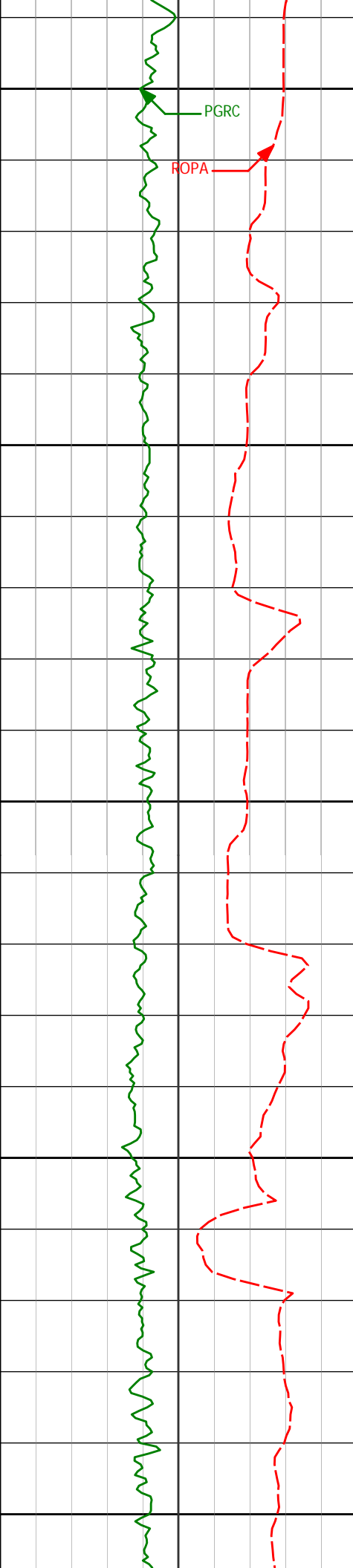
5922'

2.09°

122.51°

5838.07'

529.16'



6000

6017'

2.73°

249.81°

5933.03'

529.60'

6050

6065'

8.06°

259.55°

5980.80'

533.82'

6100

6112'

11.09°

258.21°

6027.14'

541.22'

6150

6160'

14.03°

264.63°

6073.99'

551.26'

6200

6207'

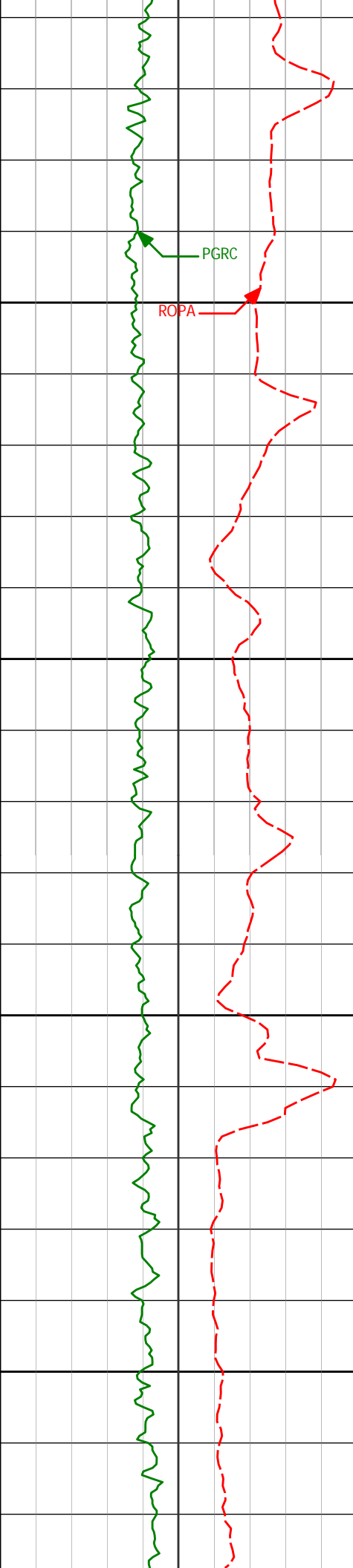
17.01°

271.33°

6119.27'

563.65'





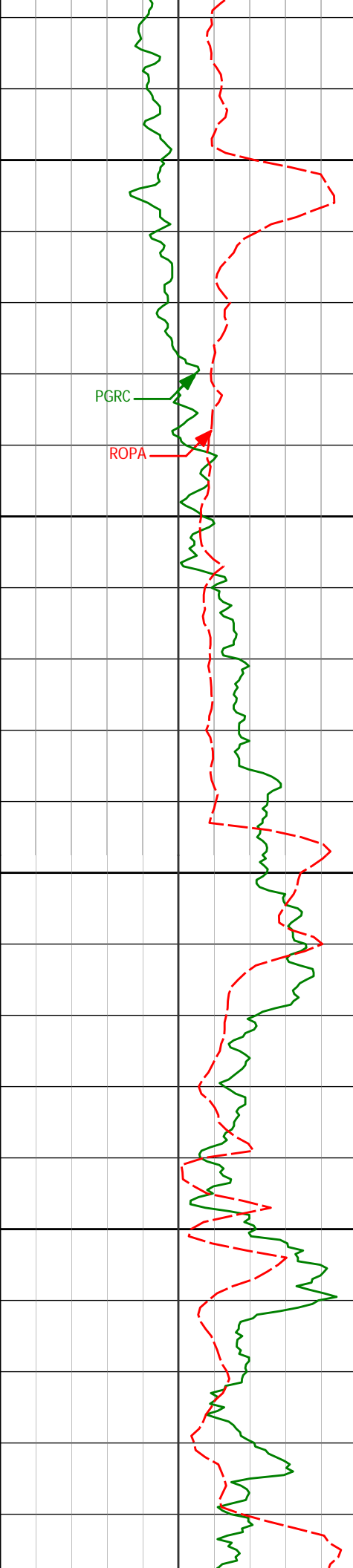
6250

6300

6350

6400

6251'	22.73°	279.07°	6207.65'	595.51'
6301'	22.73°	279.07°	6207.65'	595.51'
6396'	28.59°	280.54°	6293.25'	636.60'



6450

6500

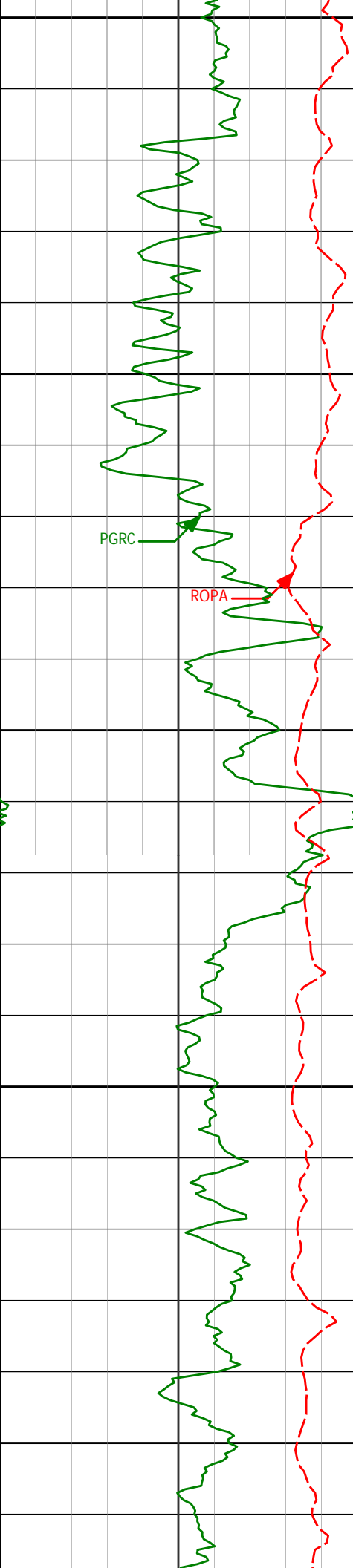
6550

6600

PGRC

ROPA

6491'	39.77°	275.17°	6371.73'	689.84'
6539'	47.20°	272.31°	6406.53'	722.77'
6586'	50.06°	274.97°	6437.60'	757.96'



6650

6681'

53.54°

276.17°

6496.34'

832.56'

6700

6729'

58.20°

277.33°

6523.27'

872.28'

6750

6776'

63.65°

276.57°

6546.10'

913.34'

6800

6824'

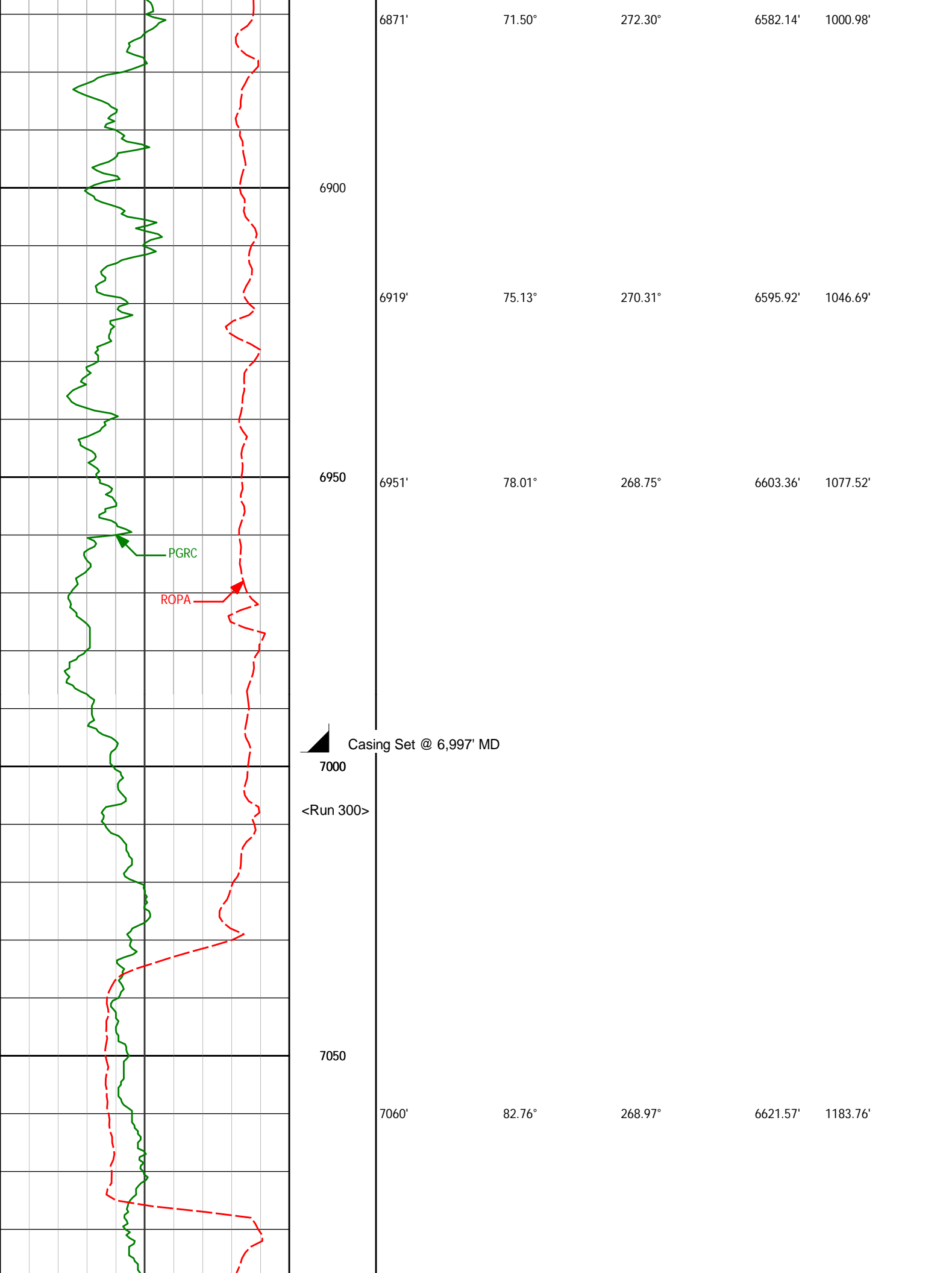
67.84°

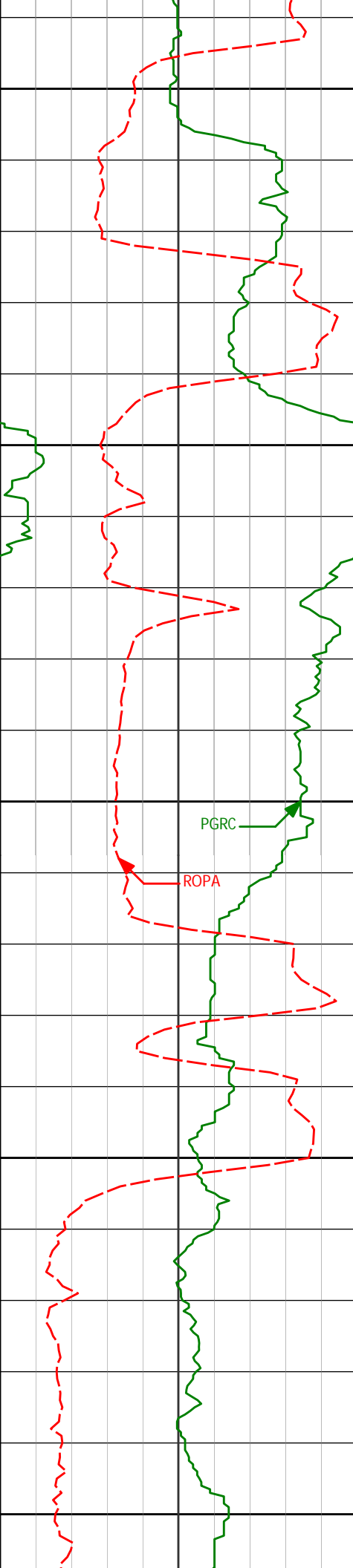
273.84°

6565.82'

957.05'

6850





7100

7150

7200

7250

7300

7154'

85.96°

269.18°

6630.80'

1276.30'

PGRC

ROPA

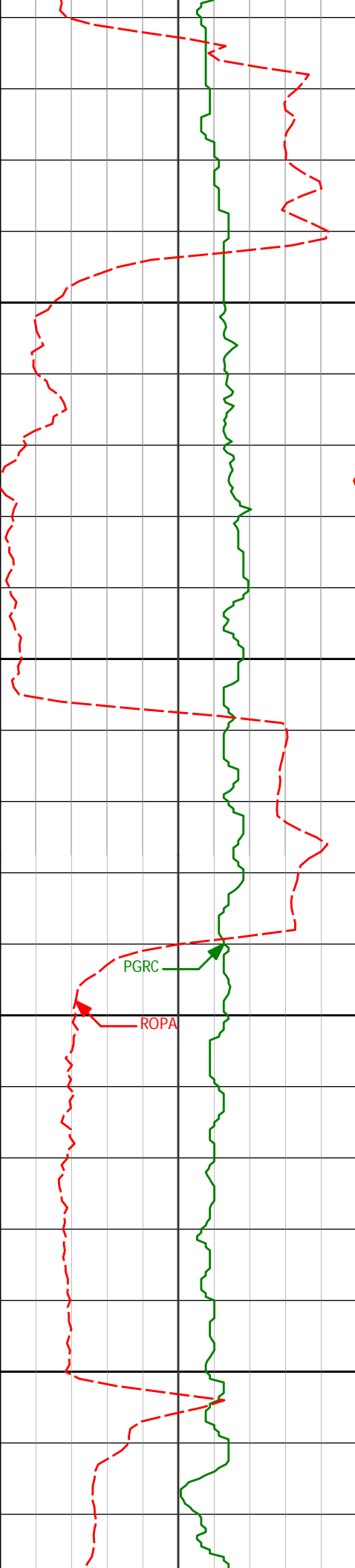
7249'

87.26°

270.00°

6636.42'

1370.24'



7344'

88.64°

269.75°

6639.82'

1464.36'

7350

7400

7439'

91.60°

268.42°

6639.62'

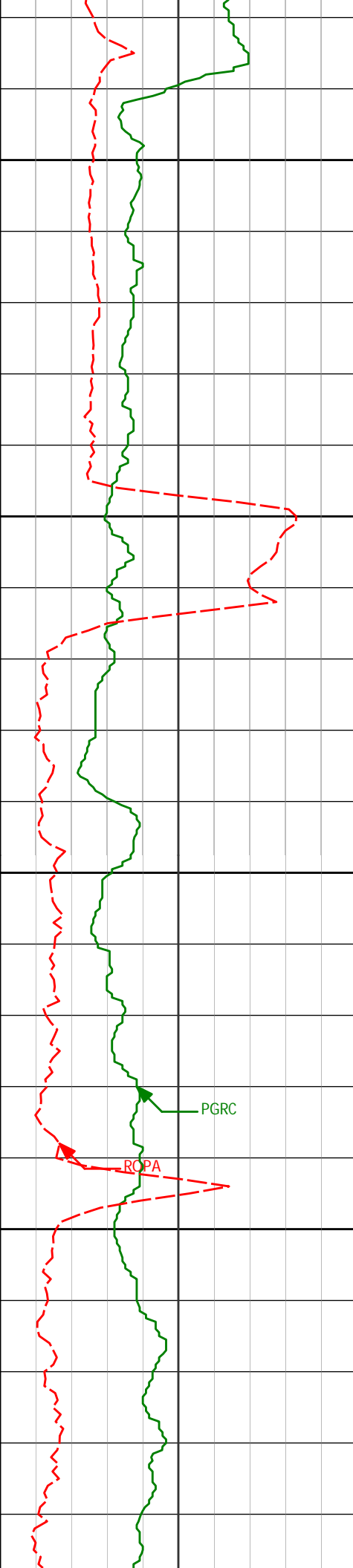
1558.34'

7450

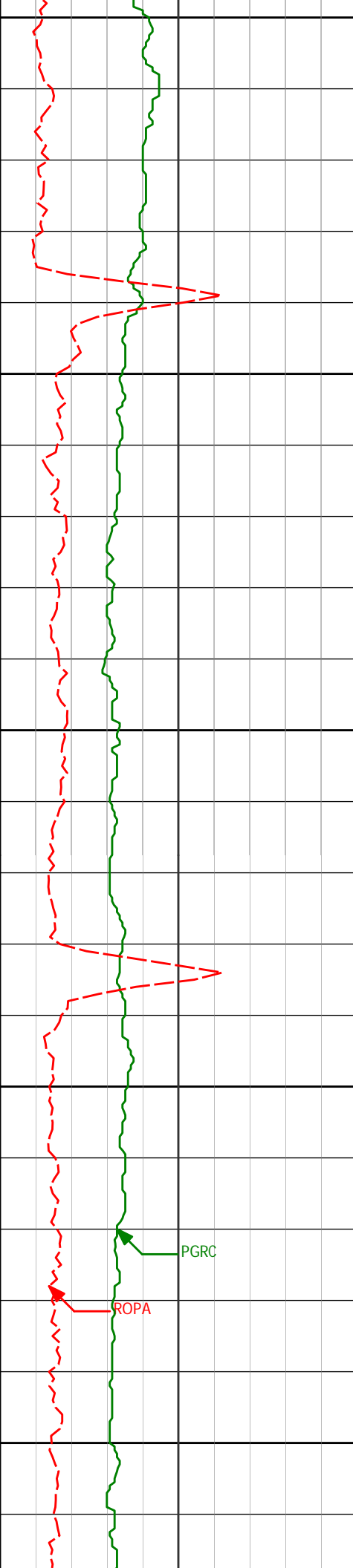
7500

PGR

ROPA



7534'	92.00°	268.66°	6636.63'	1652.16'
7629'	90.68°	268.54°	6634.40'	1746.01'
7724'	90.46°	268.27°	6633.46'	1839.83'



7750

7800

7850

7900

7950

7819'

90.46°

268.37°

6632.69'

1933.63'

7913'

90.22°

268.14°

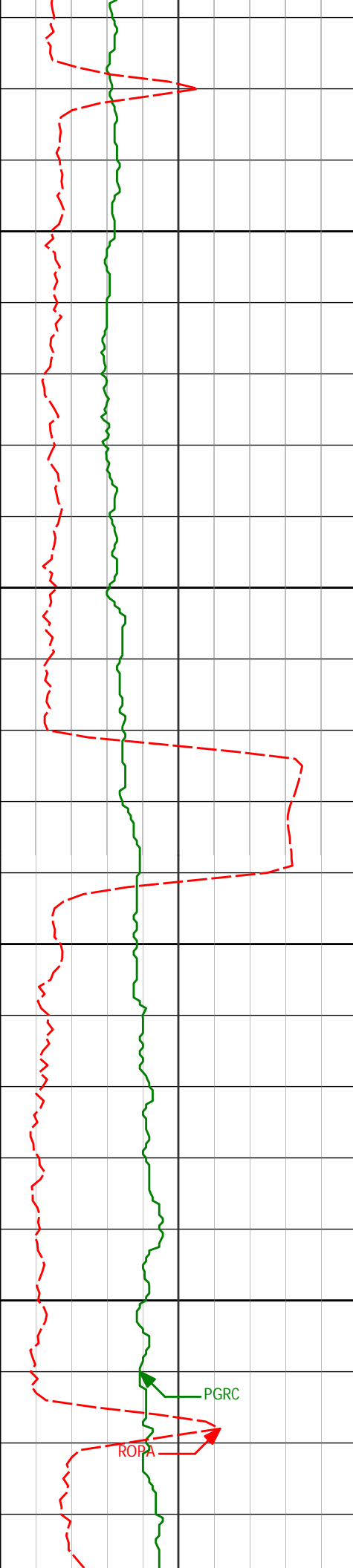
6632.14'

2026.43'

PGRC

ROPA





8000

8008'

90.83°

267.98°

6631.27'

2120.16'

8050

8100

8103'

89.88°

269.33°

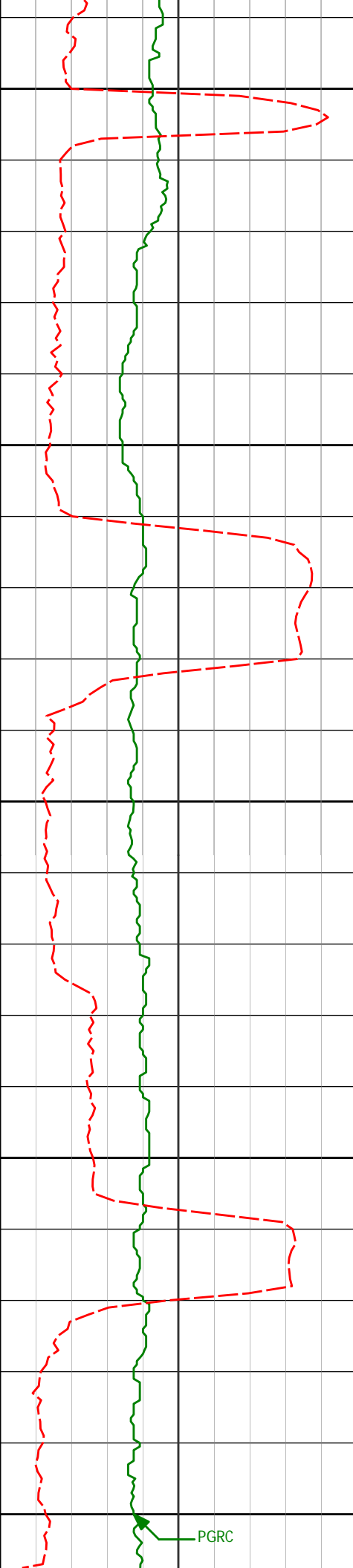
6630.68'

2214.05'

8150

PGRC

ROPA



8200

8250

8300

8350

8400

8198'

90.55°

269.68°

6630.32'

2308.14'

8293'

89.63°

270.81°

6630.17'

2402.39'

8387'

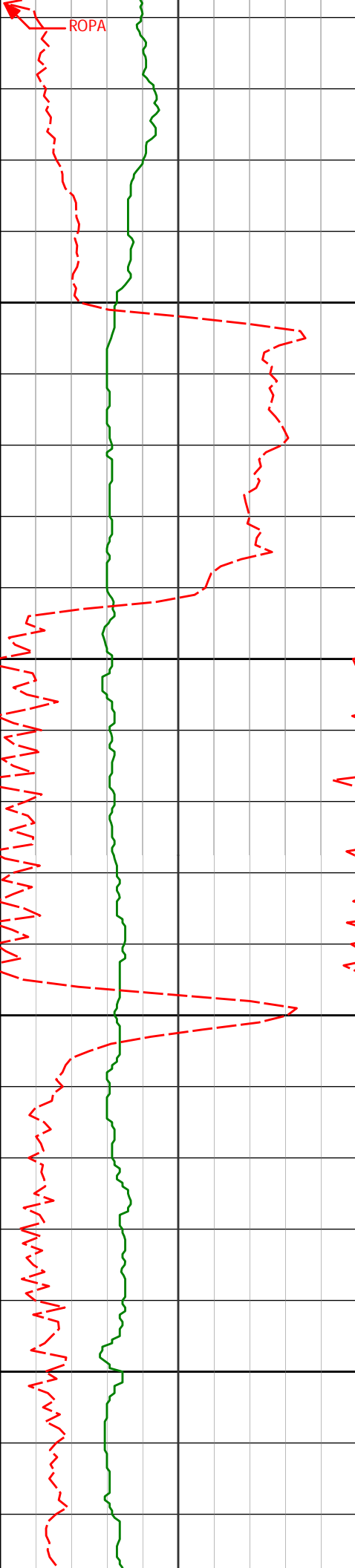
90.86°

272.47°

6629.76'

2495.91'

PGRC



ROPA

8450

8482'

88.74°

269.76°

6630.09'

2590.32'

8500

8550

8577'

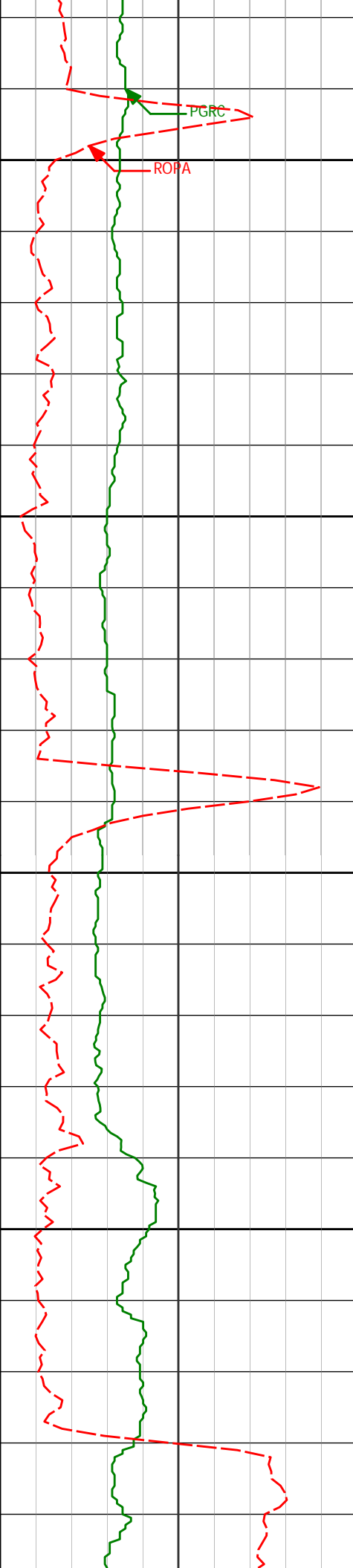
88.80°

269.31°

6632.14'

2684.40'

8600



8650

8672'

89.14°

269.16°

6633.85'

2778.42'

8700

8750

8767'

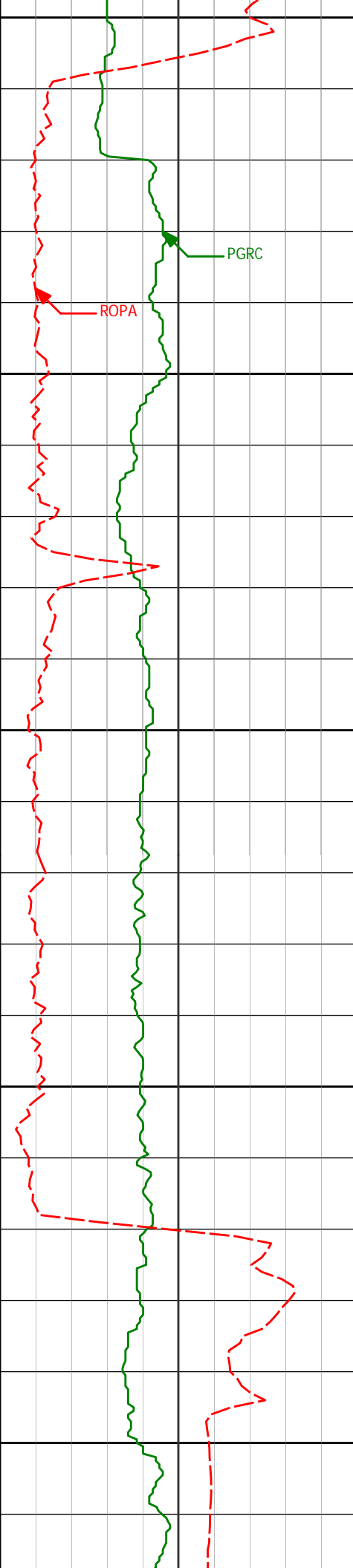
89.72°

269.22°

6634.79'

2872.43'

8800



8850

8862'

88.92°

270.70°

6635.92'

2966.62'

PGRC

ROPA

8900

8950

8957'

89.45°

270.61°

6637.27'

3060.95'

9000

9050

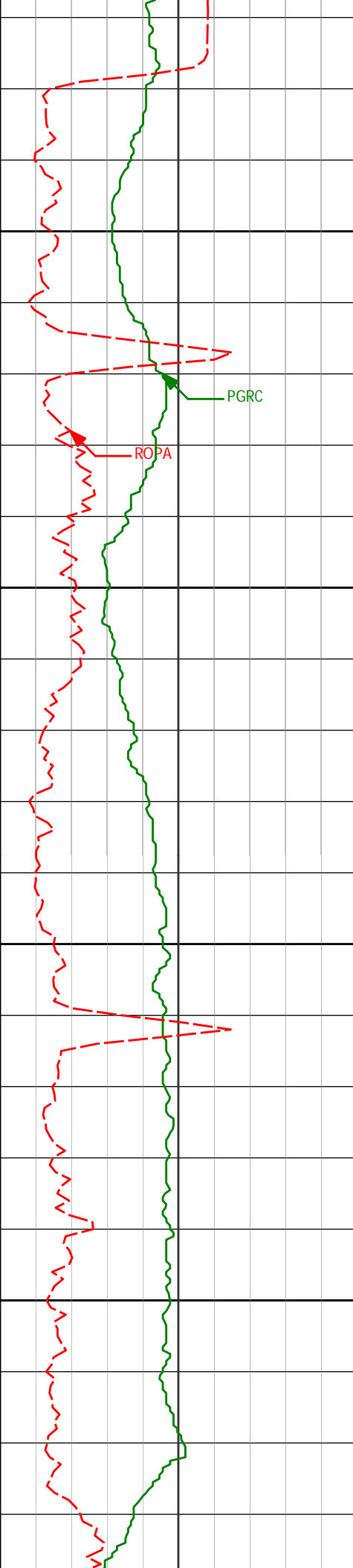
9052'

87.93°

272.42°

6639.44'

3155.41'



9100

9150

9200

9250

PGRC

ROPA

9147'

87.62°

272.39°

6643.13'

3249.98'

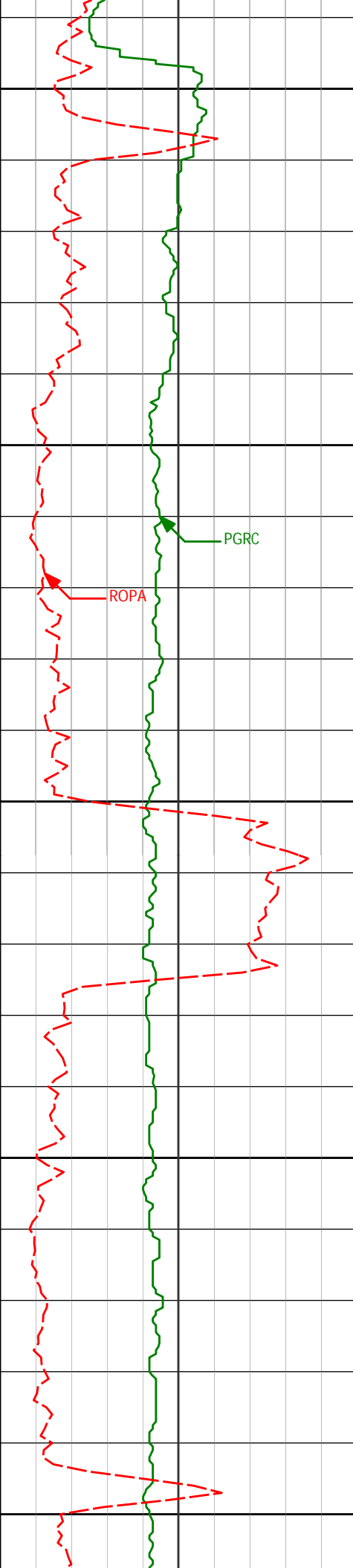
9242'

88.52°

273.78°

6646.32'

3344.65'



9300

9337'

88.34°

273.65°

6648.93'

3439.42'

9350

PGRC

ROP

9400

9432'

89.35°

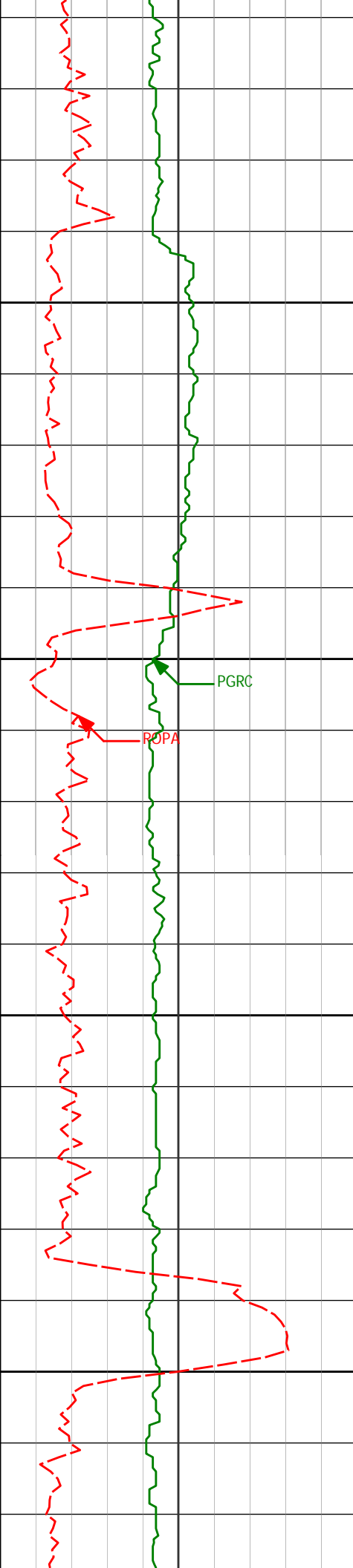
271.64°

6650.85'

3534.06'

9450

9500



9527'	89.20°	271.22°	6652.05'	3628.53'
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9550

9600

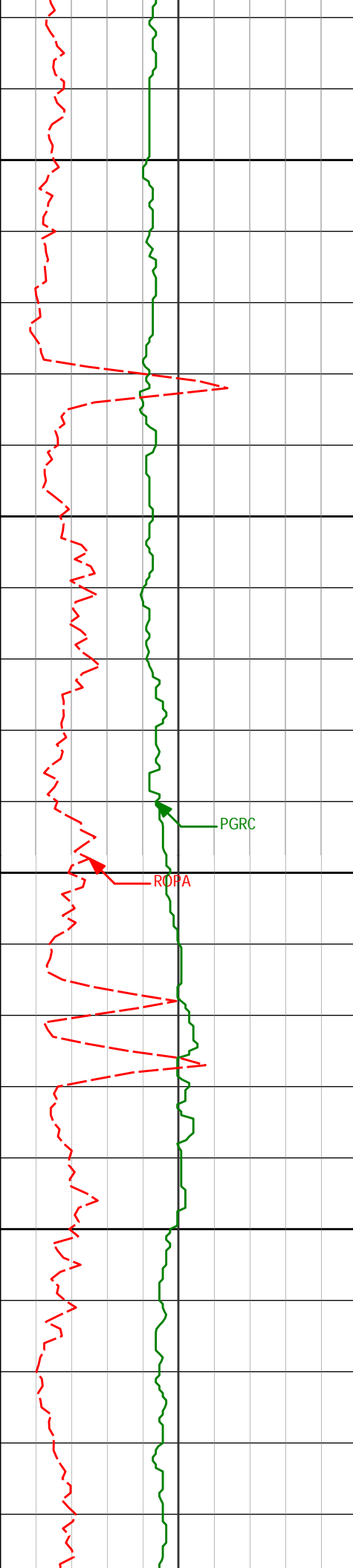
9621'	89.26°	271.51°	6653.31'	3722.00'
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9650

9700

9716'	90.06°	270.74°	6653.88'	3816.43'
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9750

9800

9850

9900

9811'

90.22°

270.47°

6653.65'

3910.75'

PGRC

ROPA

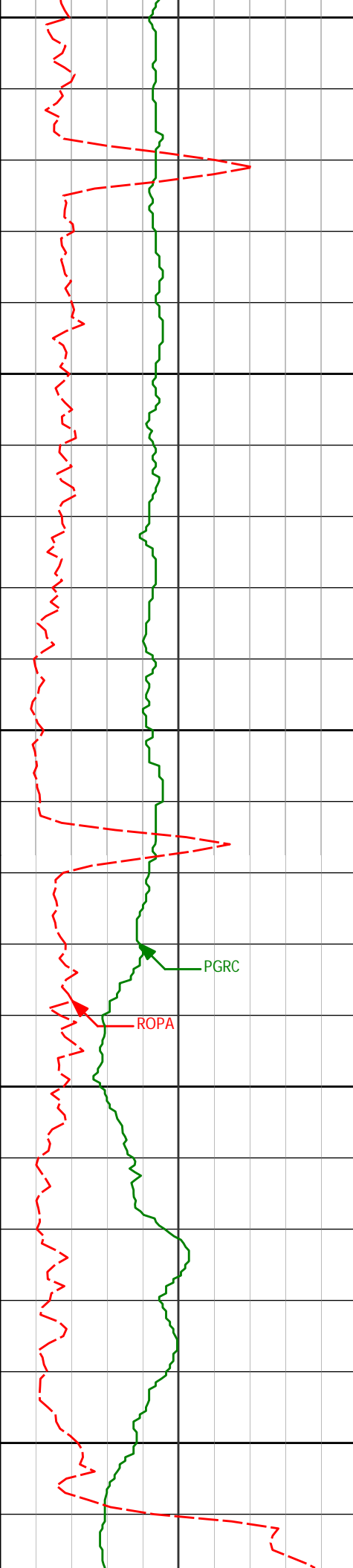
9906'

90.25°

270.64°

6653.26'

4005.07'



9950

10000

10050

10100

10150

10001'

90.06°

270.10°

6653.01'

4099.35'

10096'

90.80°

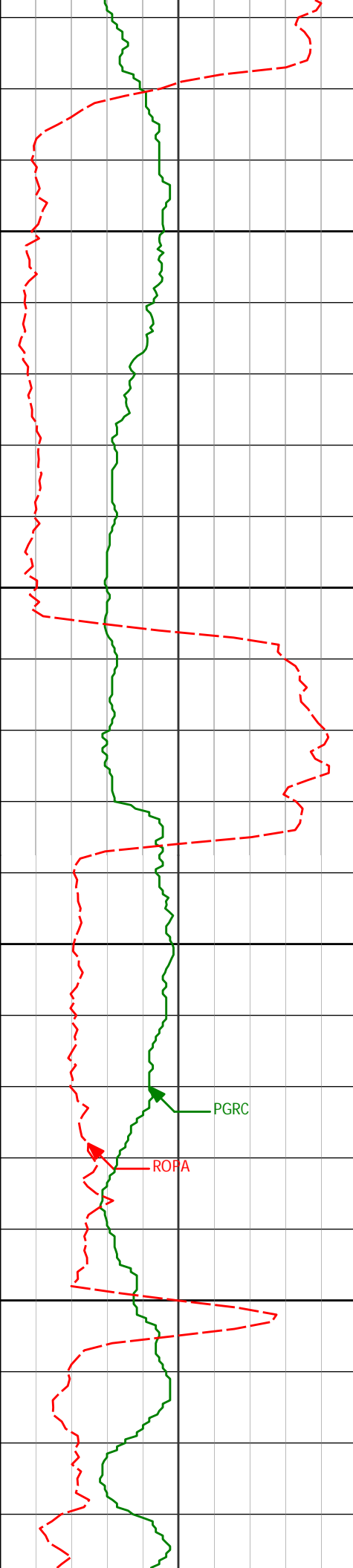
269.64°

6652.29'

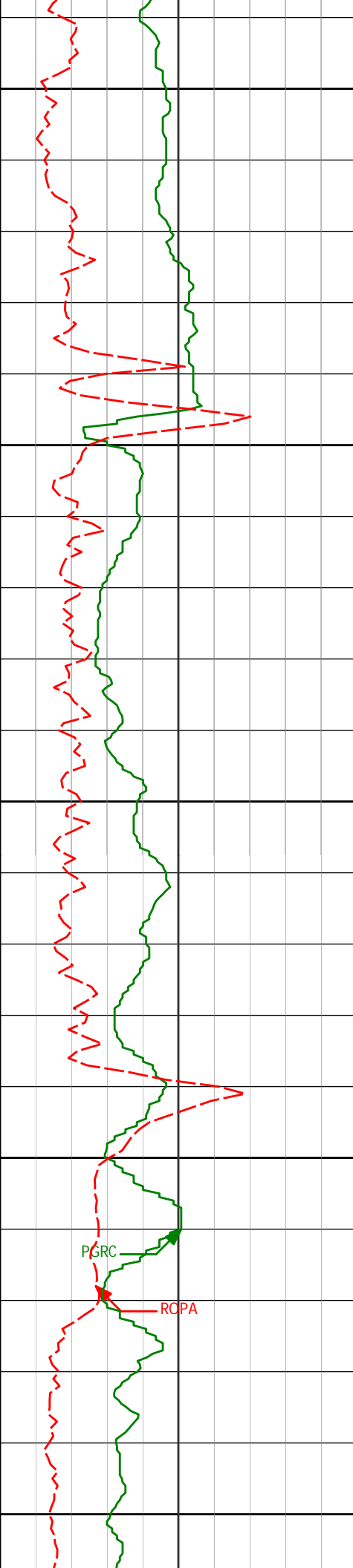
4193.53'

PGRC

ROPA



10191'	90.59°	270.40°	6651.14'	4287.73'
10200				
10250				
10286'	88.21°	270.17°	6652.14'	4381.98'
10300				
10350				
10381'	88.27°	270.06°	6655.05'	4476.16'



10400

10450

10500

10550

10600

10476'

87.93°

269.88°

6658.20'

4570.31'

10571'

87.16°

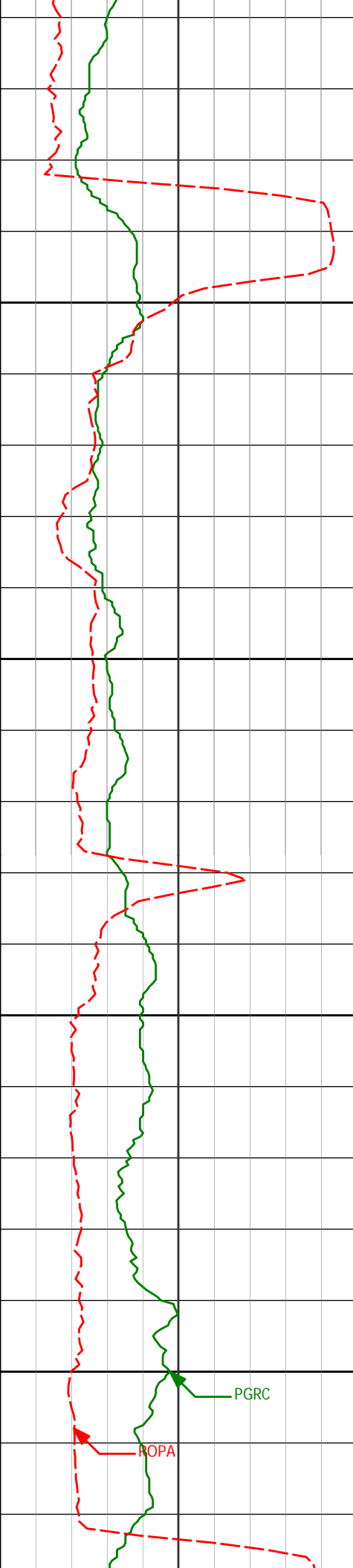
270.07°

6662.26'

4664.42'

PGRC

RCPA



10650

10700

10750

10800

10666'

88.21°

270.31°

6666.10'

4758.59'

10761'

88.40°

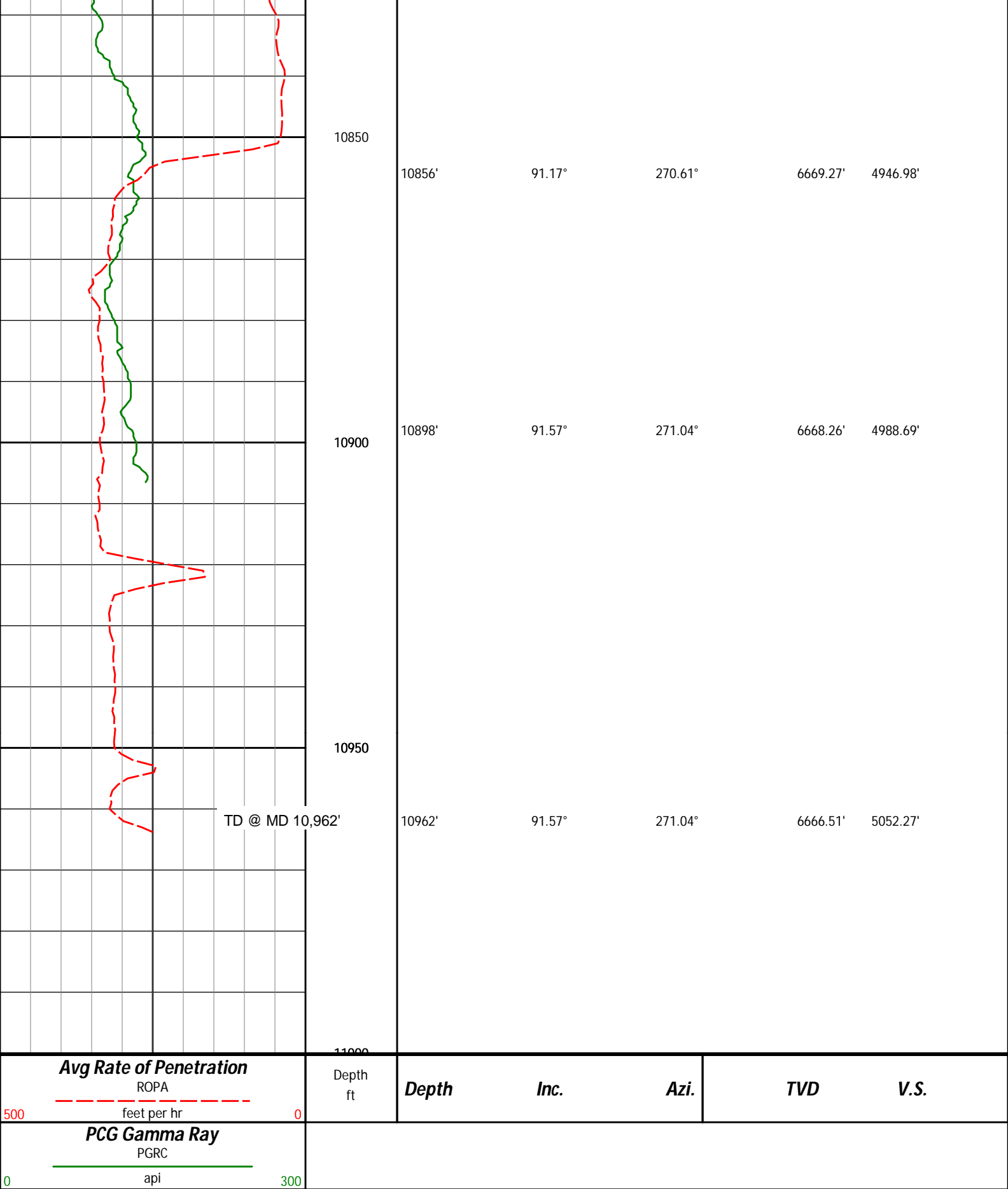
269.70°

6668.91'

4852.75'

ROPA

PGRC



HALLIBURTON

DIRECTIONAL SURVEY REPORT



6396.00	28.59	280.54	6293.25	604.92 N	563.19 W	636.60	6.21
6491.00	39.77	275.17	6371.73	611.84 N	615.98 W	689.84	12.18
6539.00	47.20	272.31	6406.53	613.94 N	648.92 W	722.77	16.00
6586.00	50.06	274.97	6437.60	616.20 N	684.11 W	757.96	7.42
6681.00	53.54	276.17	6496.34	623.46 N	758.39 W	832.56	3.79
6729.00	58.20	277.33	6523.27	628.14 N	797.84 W	872.28	9.92
6776.00	63.65	276.57	6546.10	633.10 N	838.60 W	913.34	11.67
6824.00	67.84	273.84	6565.82	637.05 N	882.17 W	957.05	10.16
6871.00	71.50	272.30	6582.14	639.40 N	926.17 W	1000.98	8.37
6919.00	75.13	270.31	6595.92	640.44 N	972.12 W	1046.69	8.53
6951.00	78.01	268.75	6603.36	640.18 N	1003.24 W	1077.52	10.18
7060.00	82.76	268.97	6621.57	638.04 N	1110.66 W	1183.76	4.36
7154.00	85.96	269.18	6630.80	636.53 N	1204.18 W	1276.30	3.42
7249.00	87.26	270.00	6636.42	635.85 N	1299.01 W	1370.24	1.61
7344.00	88.64	269.75	6639.82	635.65 N	1393.94 W	1464.36	1.48
7439.00	91.60	268.42	6639.62	634.14 N	1488.92 W	1558.34	3.42
7534.00	92.00	268.66	6636.63	631.72 N	1583.84 W	1652.16	0.49
7629.00	90.68	268.54	6634.40	629.40 N	1678.78 W	1746.01	1.40
7724.00	90.46	268.27	6633.46	626.76 N	1773.74 W	1839.83	0.36
7819.00	90.46	268.37	6632.69	623.97 N	1868.70 W	1933.63	0.11
7913.00	90.22	268.14	6632.14	621.11 N	1962.65 W	2026.43	0.36
8008.00	90.83	267.98	6631.27	617.89 N	2057.59 W	2120.16	0.67
8103.00	89.88	269.33	6630.68	615.67 N	2152.56 W	2214.05	1.74
8198.00	90.55	269.68	6630.32	614.84 N	2247.56 W	2308.14	0.80
8293.00	89.63	270.81	6630.17	615.25 N	2342.55 W	2402.39	1.54
8387.00	90.86	272.47	6629.76	617.94 N	2436.51 W	2495.91	2.20
8482.00	88.74	269.76	6630.09	619.79 N	2531.48 W	2590.32	3.63
8577.00	88.80	269.31	6632.14	619.02 N	2626.45 W	2684.40	0.48
8672.00	89.14	269.16	6633.85	617.75 N	2721.43 W	2778.42	0.39
8767.00	89.72	269.22	6634.79	616.41 N	2816.41 W	2872.43	0.62
8862.00	88.92	270.70	6635.92	616.35 N	2911.40 W	2966.62	1.77
8957.00	89.45	270.61	6637.27	617.44 N	3006.39 W	3060.95	0.56
9052.00	87.93	272.42	6639.44	619.95 N	3101.32 W	3155.41	2.48
9147.00	87.62	272.39	6643.13	623.93 N	3196.17 W	3249.98	0.33
9242.00	88.52	273.78	6646.32	629.04 N	3290.97 W	3344.65	1.74
9337.00	88.34	273.65	6648.93	635.19 N	3385.74 W	3439.42	0.24
9432.00	89.35	271.64	6650.85	639.58 N	3480.61 W	3534.06	2.37
9527.00	89.20	271.22	6652.05	641.95 N	3575.57 W	3628.53	0.47
9621.00	89.26	271.51	6653.31	644.19 N	3669.54 W	3722.00	0.31
9716.00	90.06	270.74	6653.88	646.06 N	3764.52 W	3816.43	1.17
9811.00	90.22	270.47	6653.65	647.07 N	3859.51 W	3910.75	0.33
9906.00	90.25	270.64	6653.26	647.99 N	3954.50 W	4005.07	0.17
10001.00	90.06	270.10	6653.01	648.60 N	4049.50 W	4099.35	0.60
10096.00	90.80	269.64	6652.29	648.38 N	4144.50 W	4193.53	0.91
10191.00	90.59	270.40	6651.14	648.42 N	4239.49 W	4287.73	0.83
10286.00	88.21	270.17	6652.14	648.89 N	4334.48 W	4381.98	2.51
10381.00	88.27	270.06	6655.05	649.08 N	4429.43 W	4476.16	0.14
10476.00	87.93	269.88	6658.20	649.03 N	4524.38 W	4570.31	0.40
10571.00	87.16	270.07	6662.26	648.99 N	4619.29 W	4664.42	0.84
10666.00	88.21	270.31	6666.10	649.30 N	4714.21 W	4758.59	1.14
10761.00	88.40	269.70	6668.91	649.30 N	4809.17 W	4852.75	0.66
10856.00	91.17	270.61	6669.27	649.56 N	4904.16 W	4946.98	3.07
10898.00	91.57	271.04	6668.26	650.16 N	4946.14 W	4988.69	1.40
10962.00	91.57	271.04	6666.51	651.32 N	5010.11 W	5052.27	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 277.42 DEGREES (GRID)  
A TOTAL CORRECTION OF 7.71 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.  
HORIZONTAL DISPLACEMENT(CLOSURE) AT 10962.00 FEET  
IS 5052.27 FEET ALONG 277.41 DEGREES (GRID)**