

PCGK - Pressure Case Gamma



1 : 600 / 1 : 240

[illegible]

WELL INFORMATION

MWD Run Number	100	200			
Date run completed	16-Jan-15	19-Jan-15			
Rig Bit Number	2	3			
Bit Size (in)	8.750	6.125			
Tool Nominal OD (in)	6.810	4.750			
Log Start Depth (MD, ft)	1,237.00	6,046.00			
Log End Depth (MD, ft)	6,046.00	9,671.00			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	14-Jan-15 17:58	17-Jan-15 15:31			
Drill/Wipe End Date and Time	16-Jan-15 10:37	18-Jan-15 19:48			
Min Inc (deg) @ Depth (MD, ft)	0.09 @ 2,402.00	87.78 @ 6,198.00			
Max Inc (deg) @ Depth (MD, ft)	85.80 @ 5,990.00	92.47 @ 7,810.00			
Bit TFA(in2) / Bit Type	1.74 / PDC	0.65 / PDC			
Flow Rate (gpm)	463.44	313.74			
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A	N/A / N/A			
Fluid Type	Fresh Water Gel	Fresh Water Gel			
Density (ppg) / Viscosity (spqt)	10.05 / 42.00	10.00 / 38.00			
Filtrate CL (ppm)	2,100.00	1,800.00			
pH / Fluid Loss (mptm)	8.50 / 7	9.00 / 9			
PV (cP) / YP (lbf2)	10 / 10.00	8 / 8.00			
% Solids / % Sand	10.30 / 0.15	9.20 / 0.10			
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A			
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Max Tool Temp (deg F) @ 100 ft	145.00 / DDM	127.54 / DDM			

Max Tool Temp (degF) / Source	145.90 / PCM	197.51 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ 145.90	N/A @ 197.51			
Lead MWD Engineer	Robert Barnes	Robert Barnes			
Customer Representative	Jim Turner	Jim Turner			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.93	5.93			
Sub Serial Number	11341338	12334786			
Insert Serial Number	11680738	11620311			
Date and Time Initialized	14-Jan-15 10:00	16-Jan-15 14:04			
Date and Time Read	16-Jan-15 16:30	19-Jan-15 04:15			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	56.00	63.00			
Software Version	6.21	6.21			
Sub Serial Number	11341338	12334786			
Sonde Serial Number	11062056	11833222			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	357.32	49.50			

Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	49.08	66.32			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	11341338	12334786			
Insert/Sonde Serial Number	11293410	11120594			

REMARKS

1. All depths are calibrated to driller's pipe tally and are measured depth from the Drill Floor.
2. No depth corrections have been made for pipe stretch or compression.
3. Critical annular velocities are calculated using the "Power Law" model for water based fluids and the "Brigham 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:
 - 1:600 Log
PGRC (Gamma CG) and ROPA (Average Rate of Penetration)
Interval Resolution: 1.0 ft
Interval Distance: 3.0 ft
 - 1:240 Log
PGRC (Gamma CG):
Interval Resolution: 0.5 ft
Interval Distance: 0.6 ft
 - ROPA (Average Rate Of Penetration):
Interval Resolution: 0.5 ft

Interval Resolution: 1.2 ft

6. Insite Version v8.1.10

WARRANTY

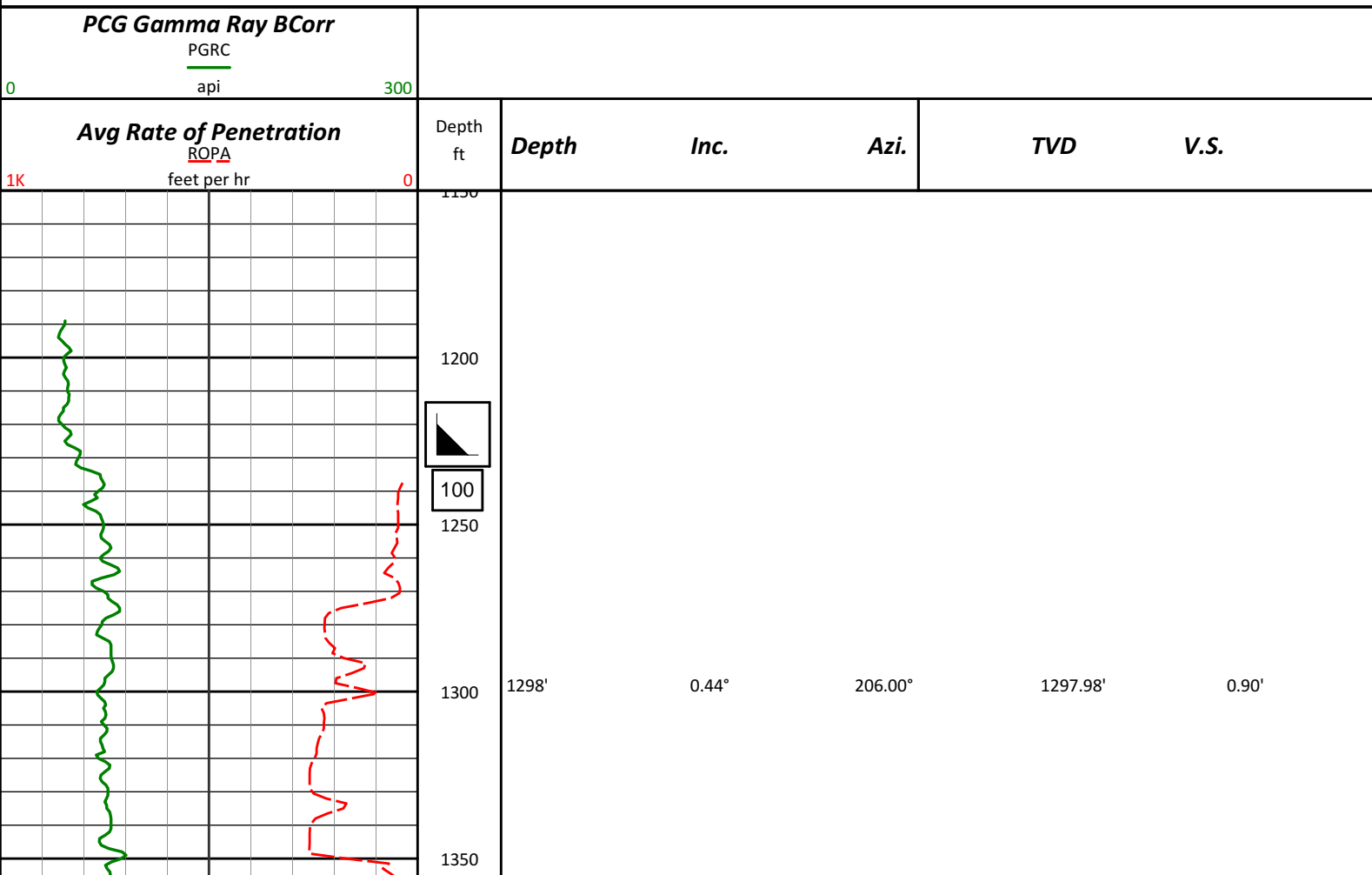
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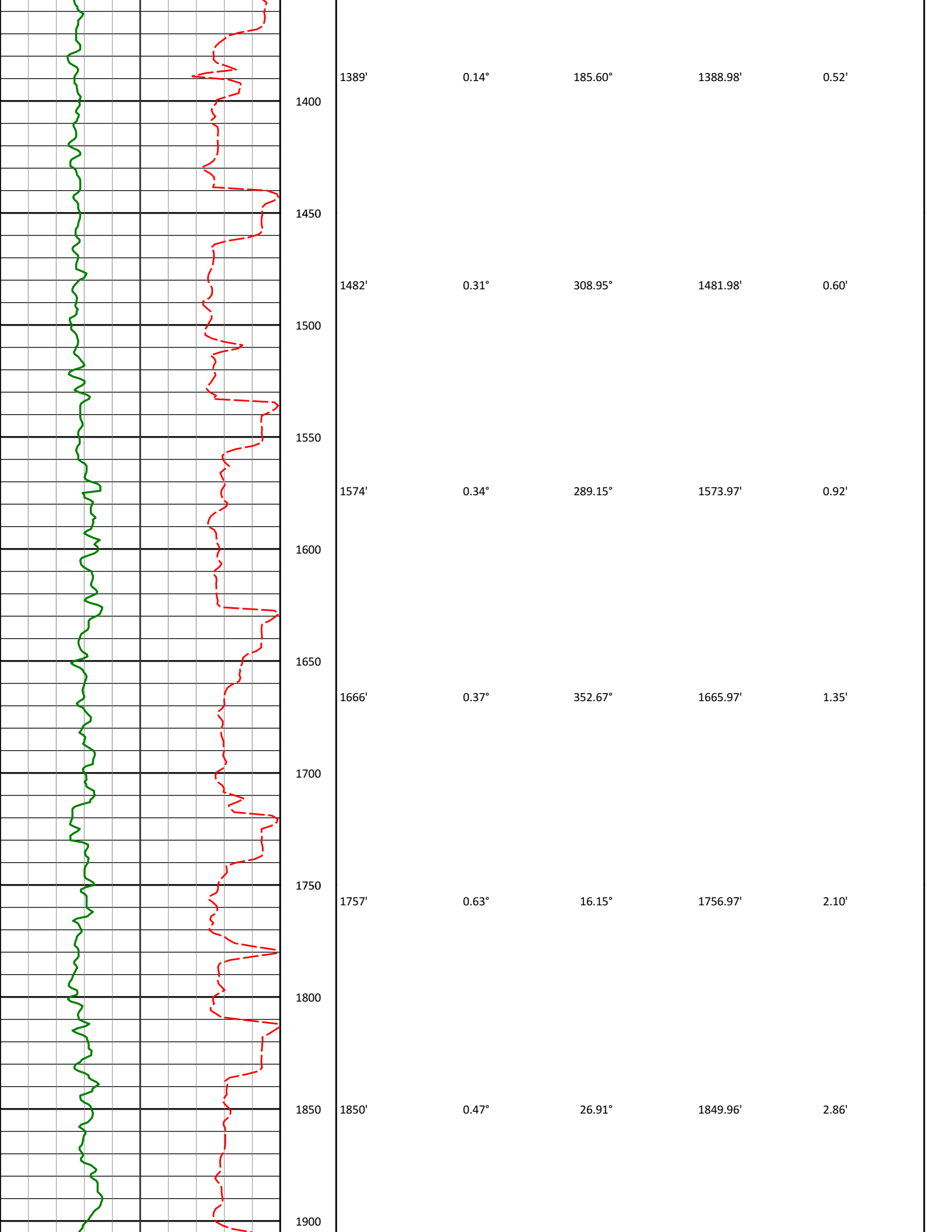
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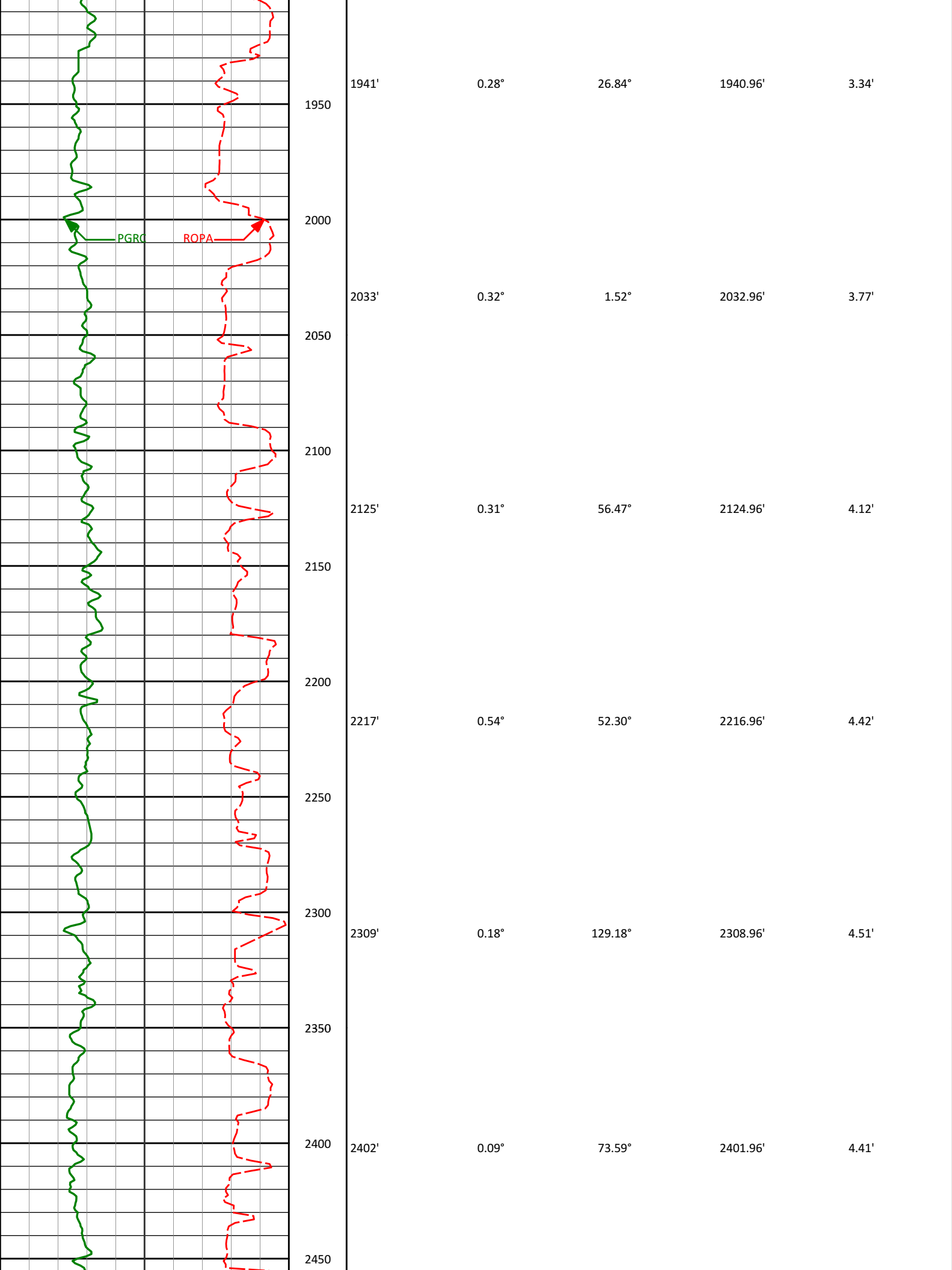
Sperry Drilling Services

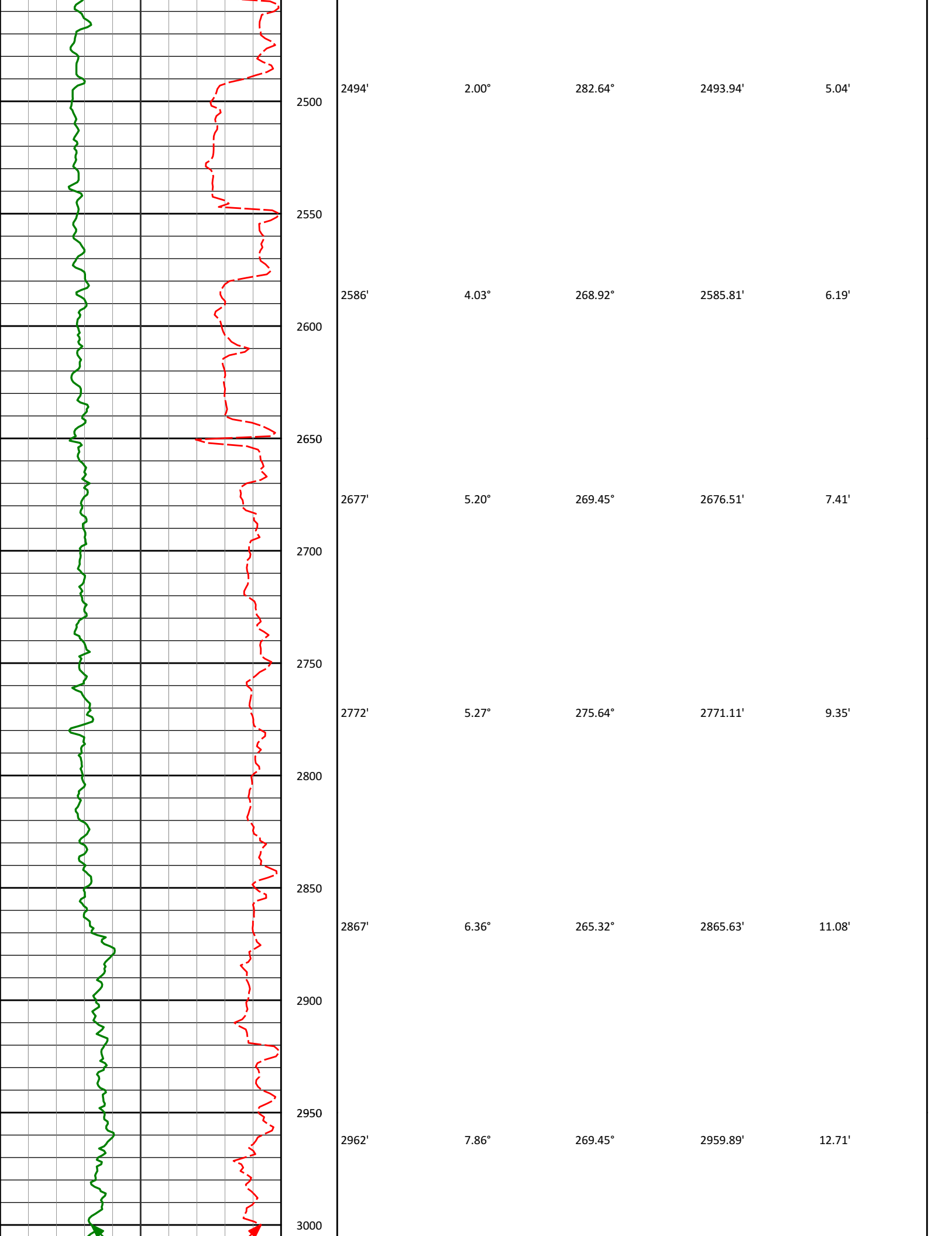
MD Correlation Log 1:600

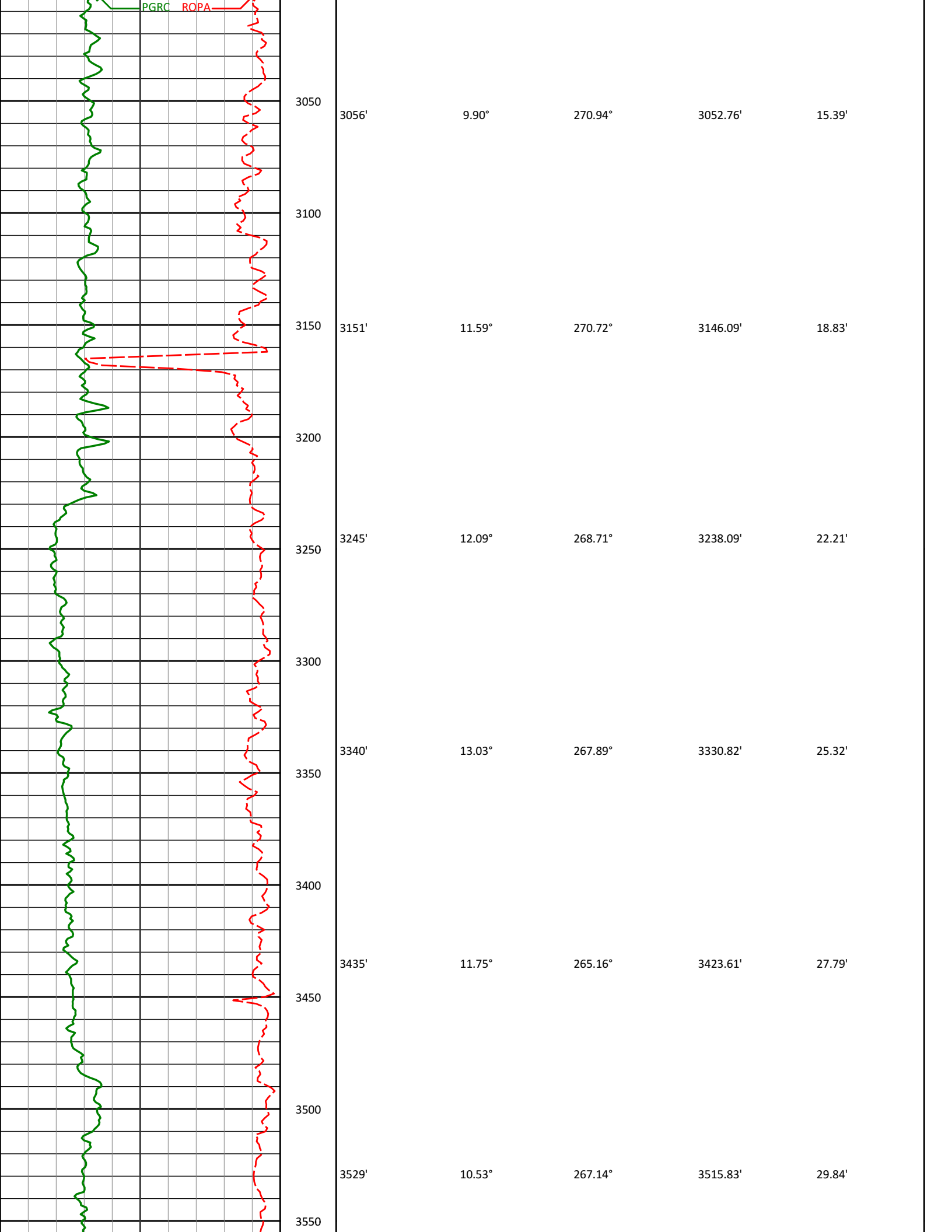
Noble Energy
Tripucka_State_LD02-75HN
H&P 321
Sec.2-T9N-R58W

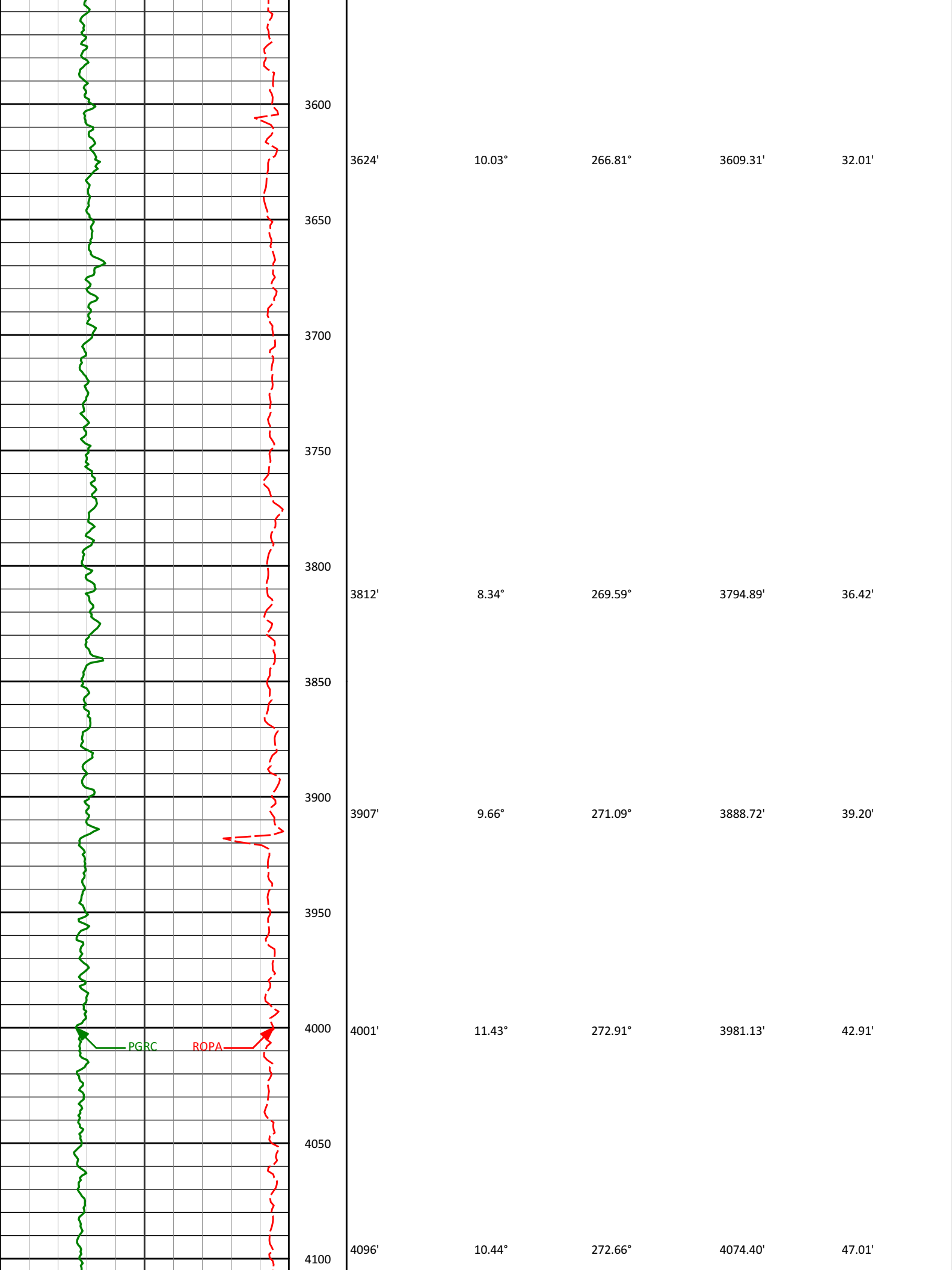


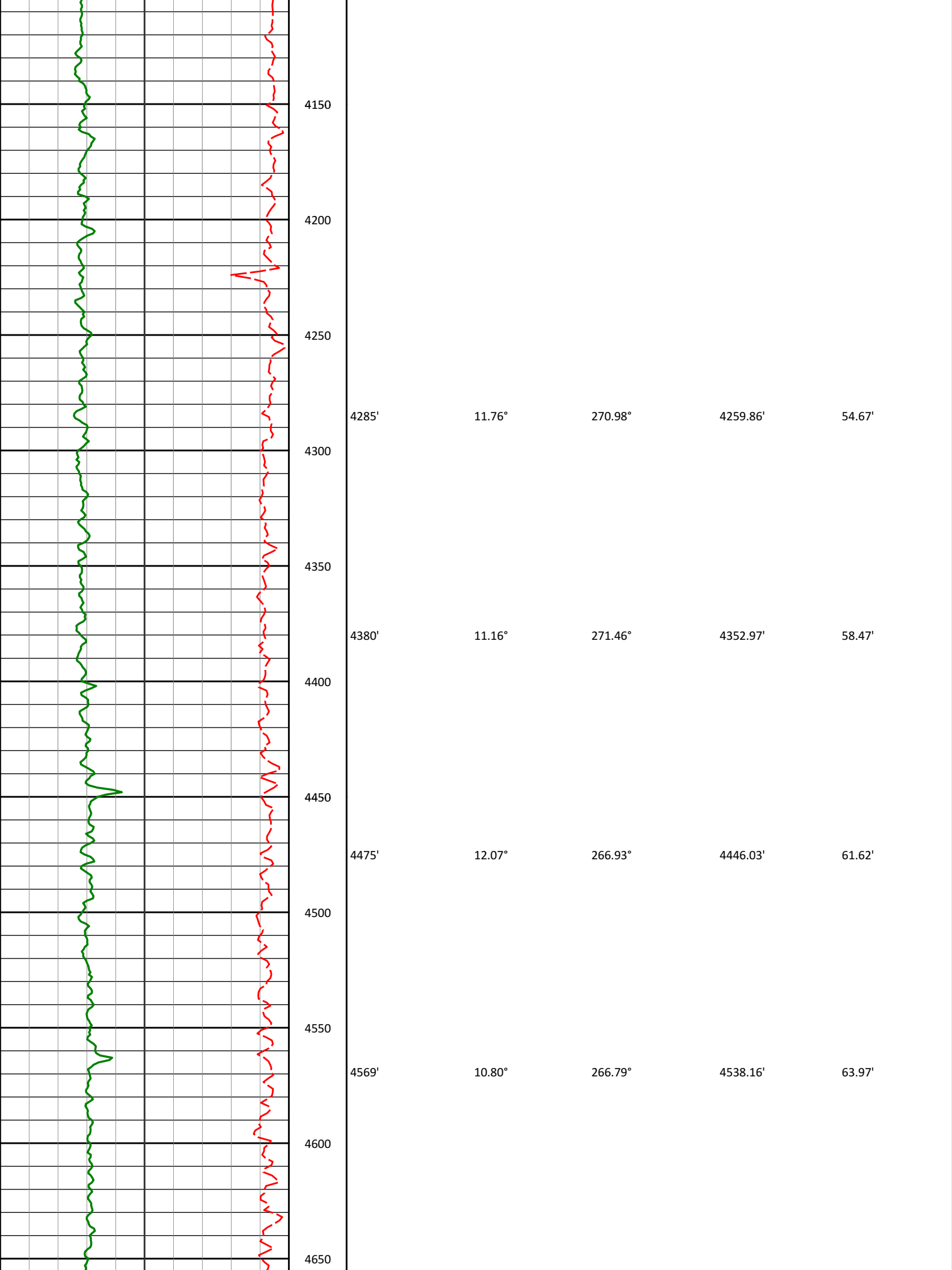


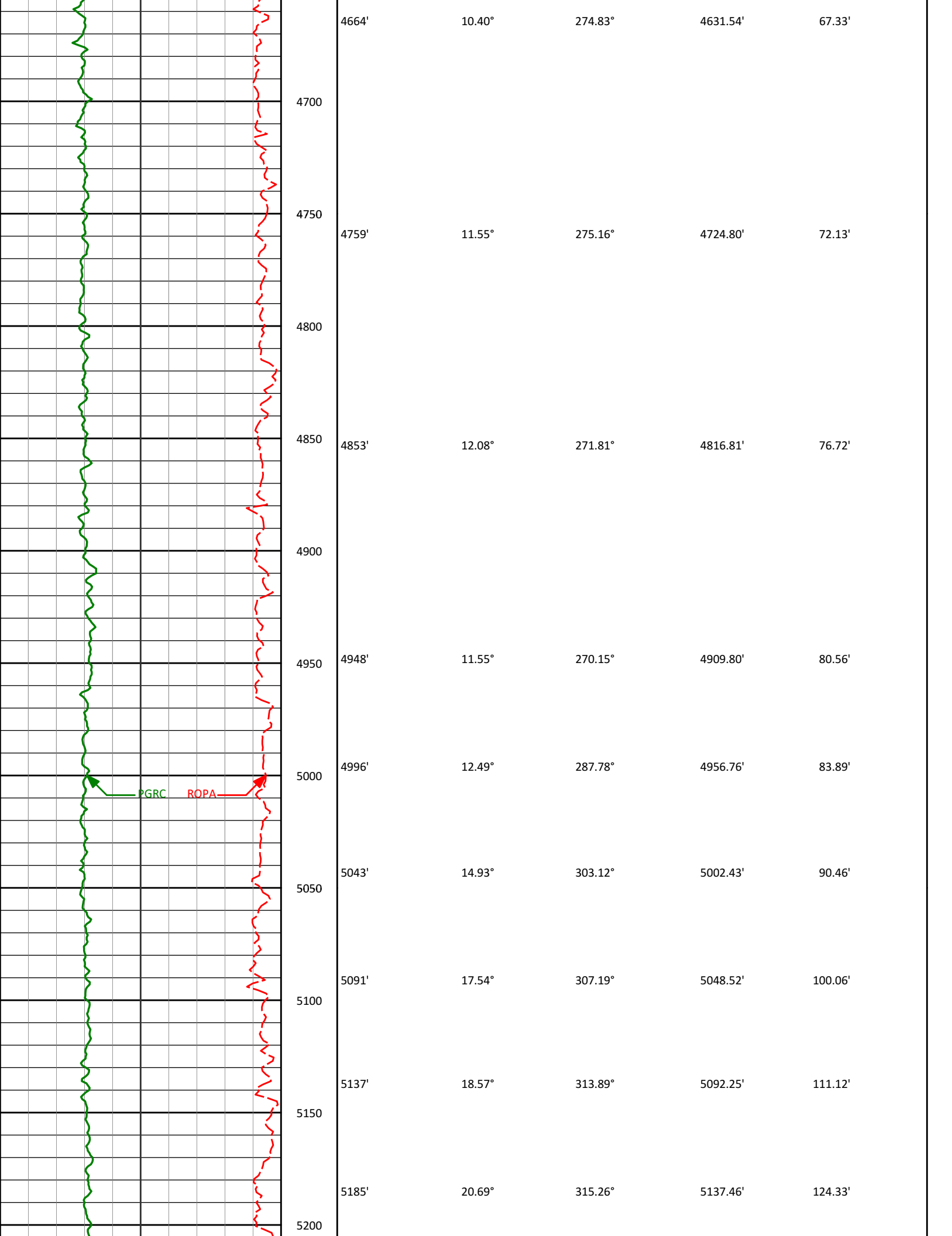


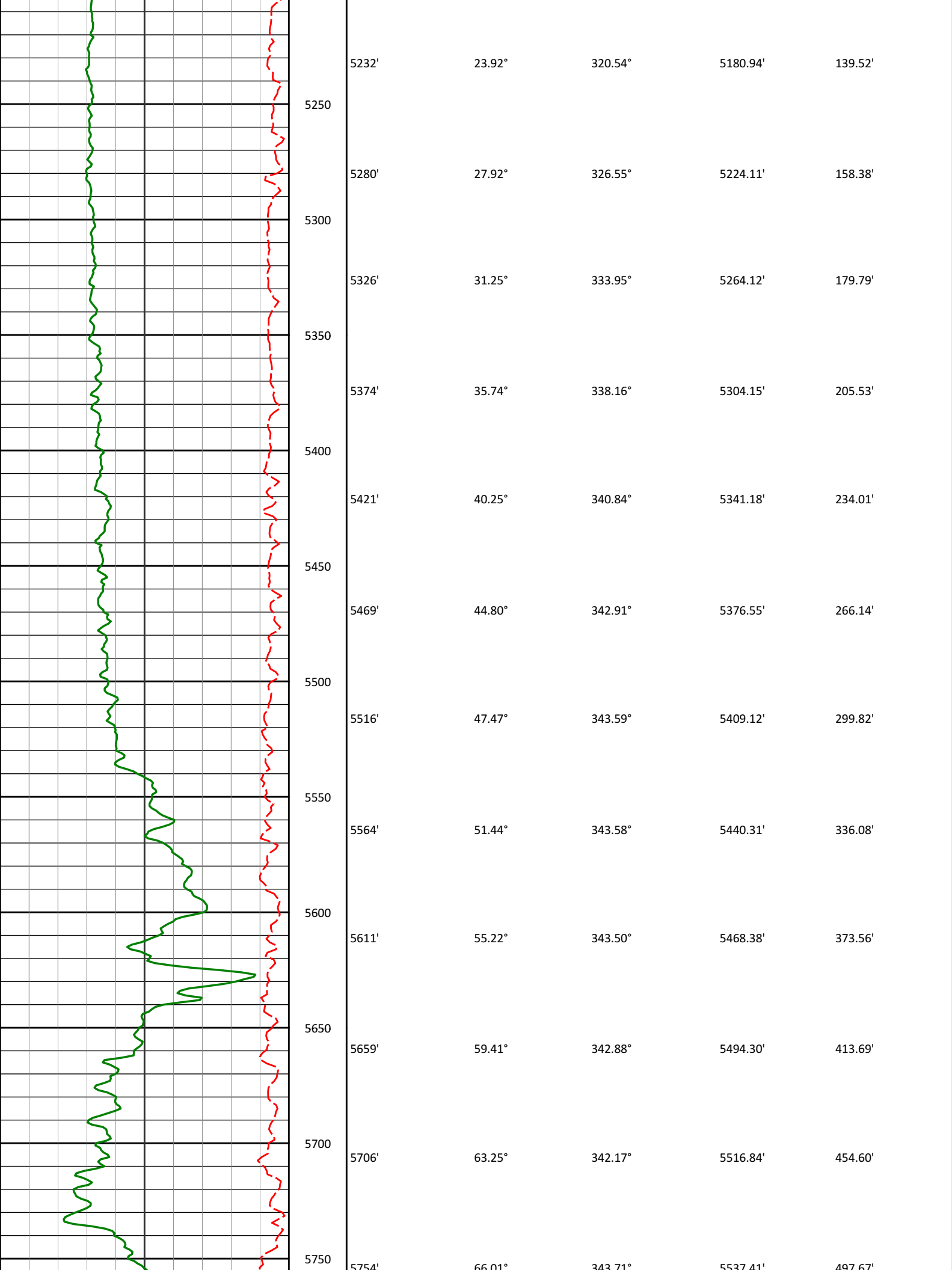


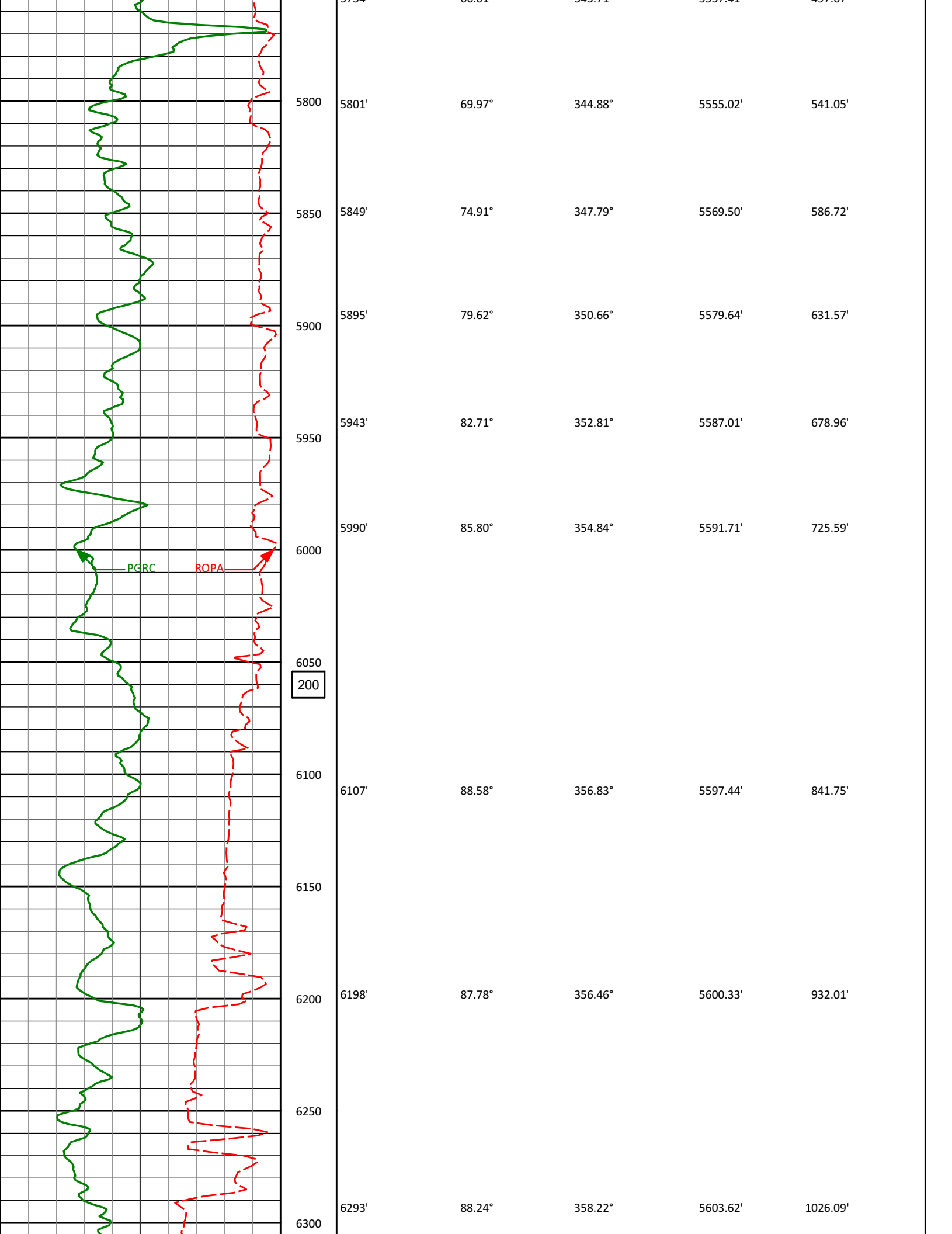


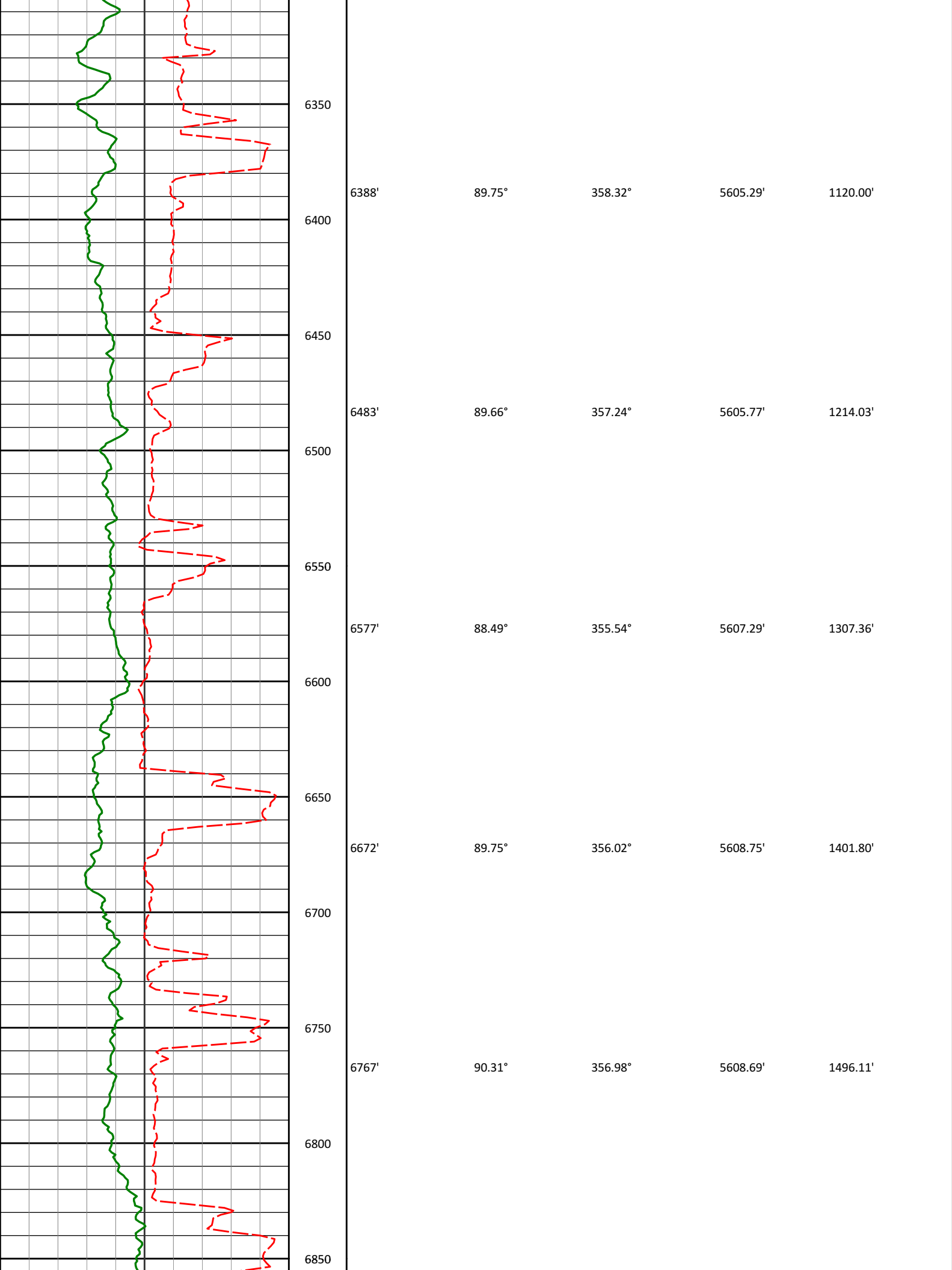


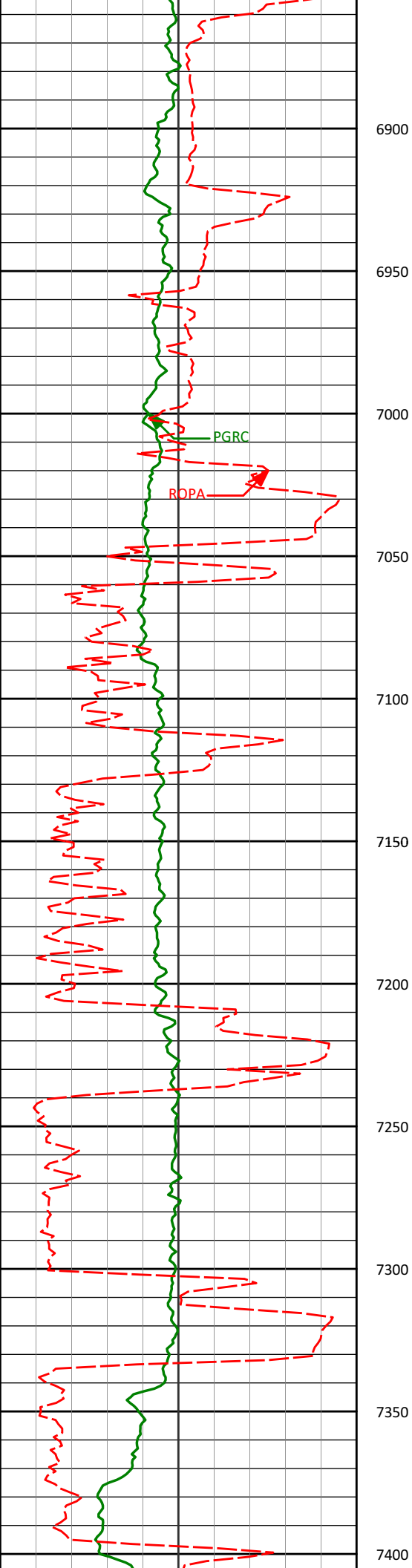




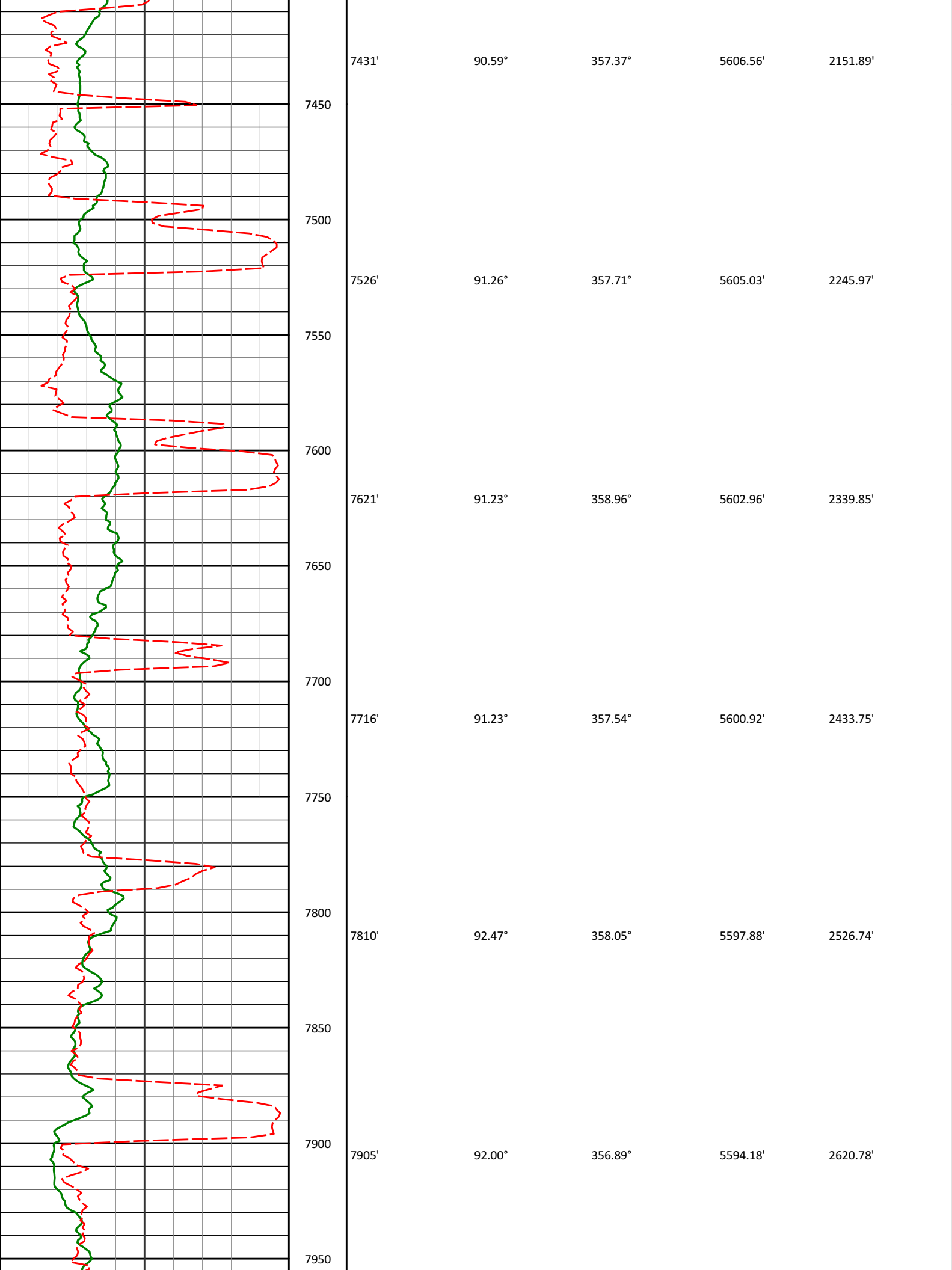


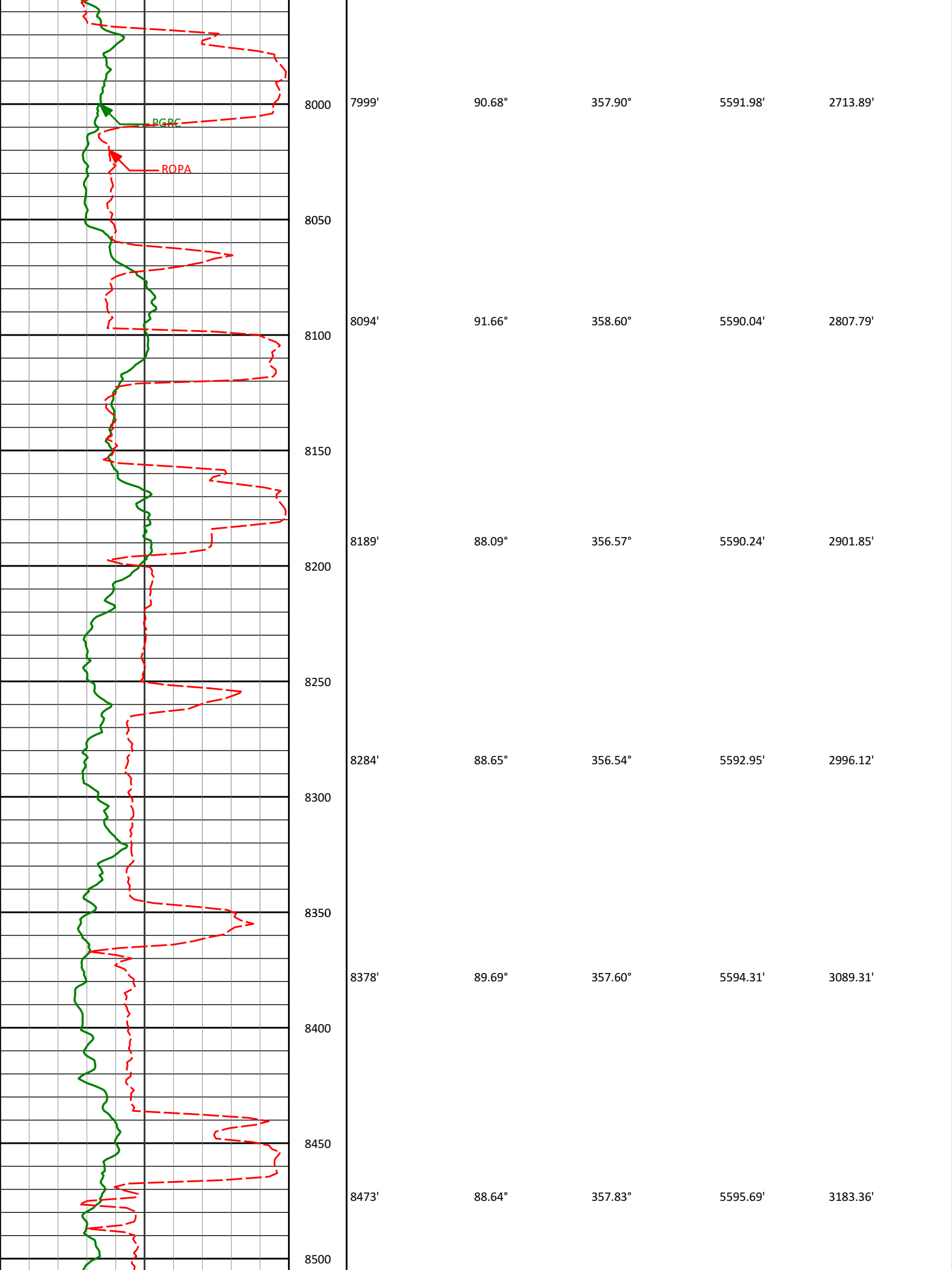


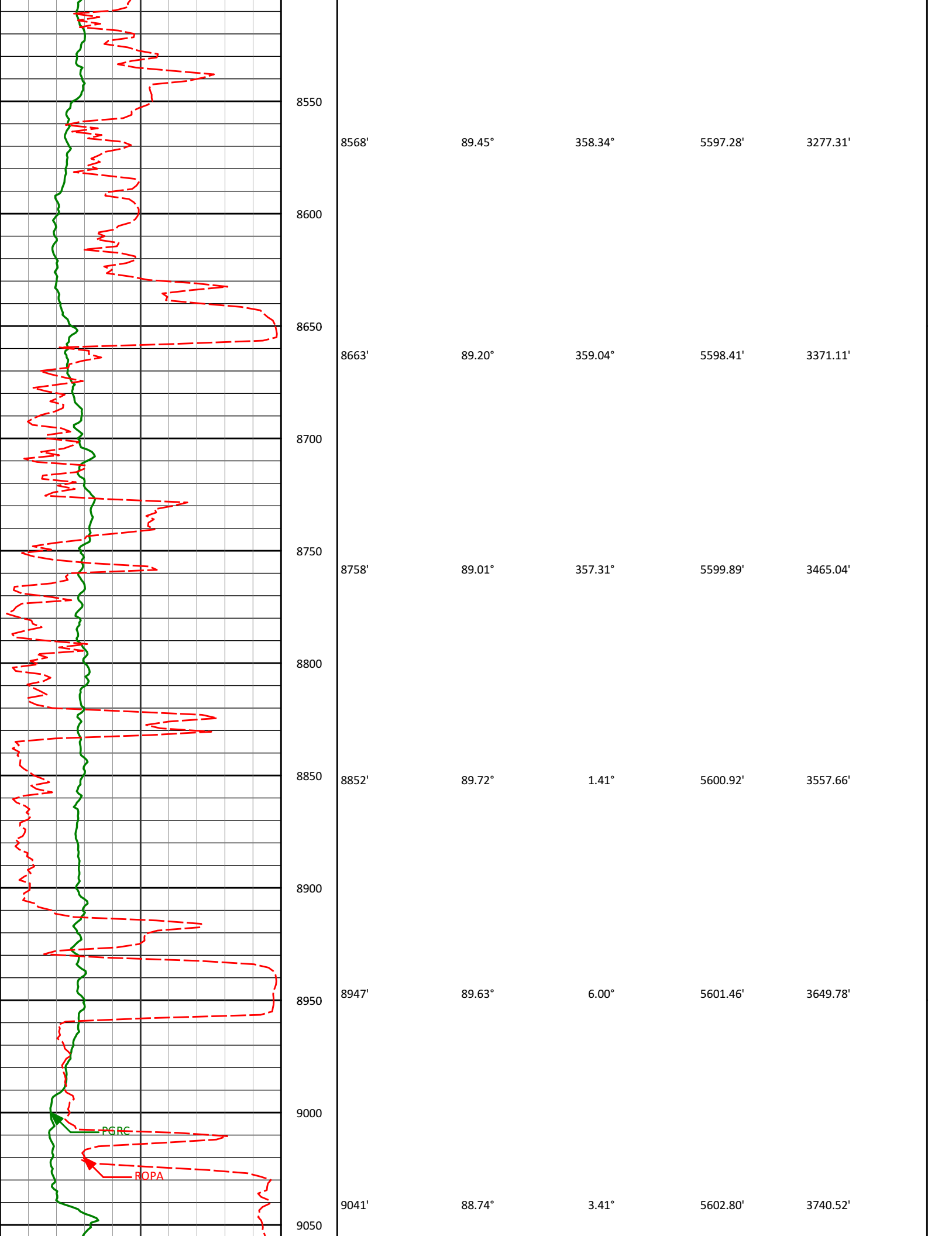


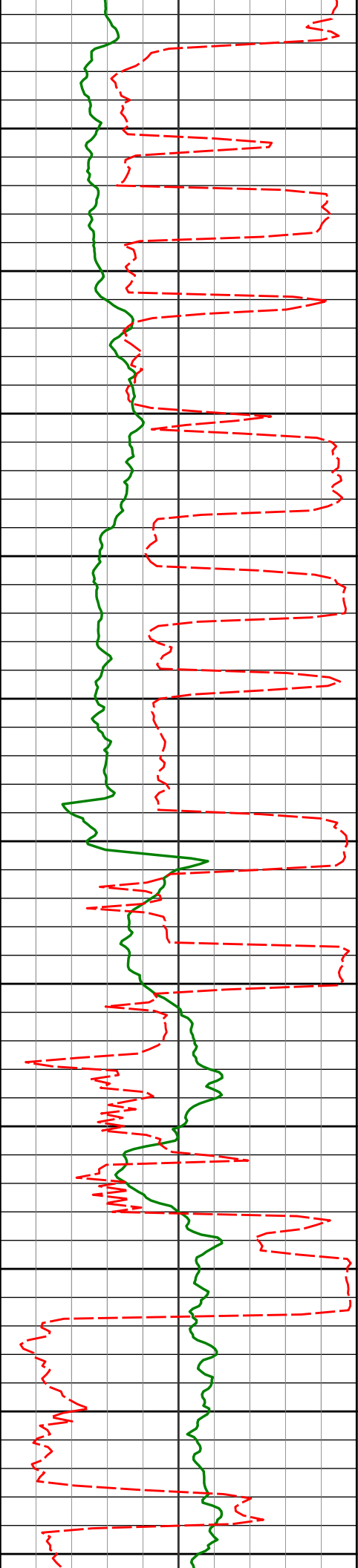


6862'	90.15°	358.26°	5608.31'	1590.18'
6900				
6950				
6957'	89.94°	357.84°	5608.23'	1684.16'
7000				
7050				
7052'	90.03°	359.80°	5608.26'	1777.93'
7100				
7150				
7147'	89.23°	358.51°	5608.87'	1871.61'
7200				
7241'	89.94°	359.51°	5609.55'	1964.35'
7250				
7300				
7336'	91.54°	359.12°	5608.33'	2057.98'
7350				
7400				









9100

9136'

88.06°

0.72°

5605.46'

3833.24'

9150

9200

9231'

88.80°

358.53°

5608.06'

3926.76'

9250

9300

9325'

90.18°

357.71°

5608.90'

4019.72'

9350

9400

9420'

91.14°

354.47°

5607.80'

4114.09'

9450

9500

9515'

90.43°

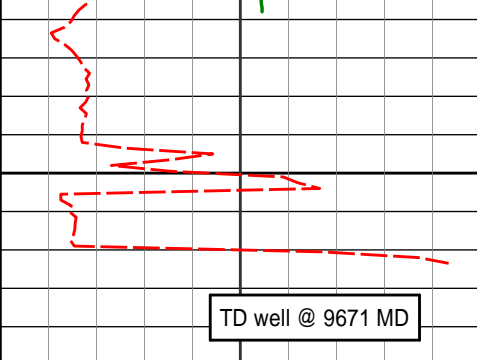
355.57°

5606.50'

4208.66'

9550

9600

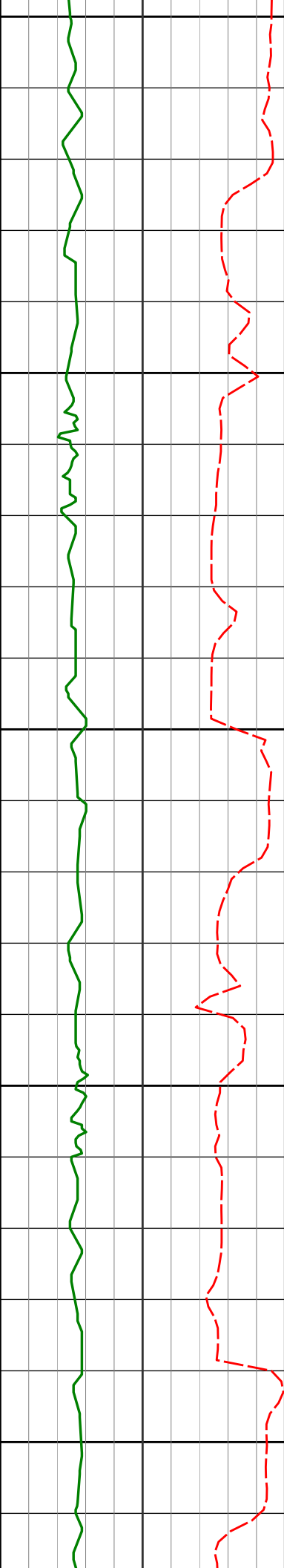


Avg Rate of Penetration ROPA 1K feet per hr 0		Depth ft	Depth	Inc.	Azi.	TVD	V.S.
PCG Gamma Ray BCorr PGRC 0 api 300							

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Sperry Drilling Services
MD Detail Log 1:240

Noble Energy
Tripucka_State_LD02-75HN
H&P 321
Sec. 2-T9N-R58W

PCG Gamma Ray BCorr PGRC <div style="border-bottom: 1px solid green; width: 100px; margin: 5px auto;"></div> <div style="display: flex; justify-content: space-between; width: 100px;"> 0 300 </div>																			
Avg Rate of Penetration <div style="border-bottom: 1px dashed red; width: 100px; margin: 5px auto;"></div> <div style="display: flex; justify-content: space-between; width: 100px;"> 1K 0 </div>										Depth ft <div style="display: flex; justify-content: space-between;"> <div> Depth Inc. Azi. </div> <div> TVD V.S. </div> </div>									
										<div style="display: flex; align-items: center;"> <div style="width: 100px; text-align: center;">1150</div> <div style="width: 100px; text-align: center;">1200</div> </div> <div style="border: 1px solid black; padding: 2px; margin-top: 10px; width: fit-content;">Run 100</div> <div style="border: 1px solid black; width: 40px; height: 40px; margin-top: 5px; position: relative;"> <div style="position: absolute; top: 0; right: 0; width: 50%; height: 50%; background: black;"></div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="width: 100px; text-align: center;">1250</div> <div style="width: 100px; text-align: center;">1300</div> </div>									



1250
1300
1350
1400
1450

1298'

0.44°

206.00°

1297.98'

0.90'

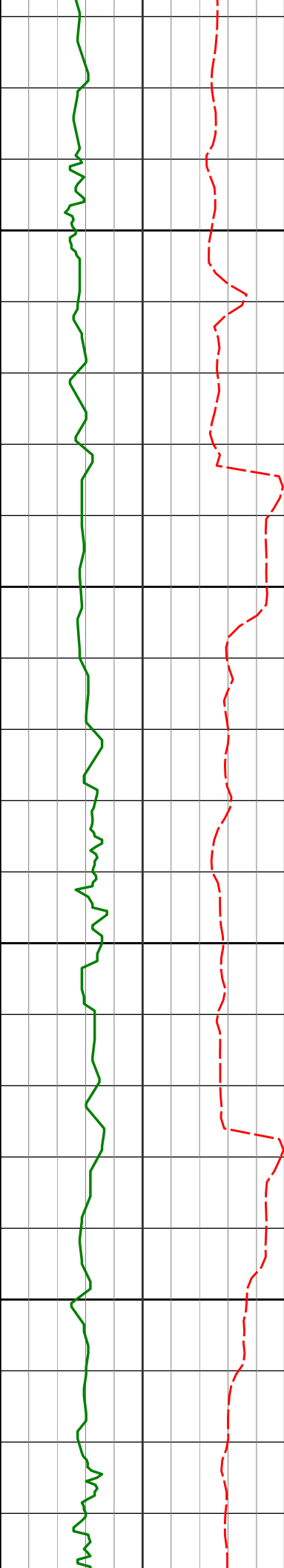
1389'

0.14°

185.60°

1388.98'

0.52'



1500

1550

1600

1650

1482'

0.31°

308.95°

1481.98'

0.60'

1574'

0.34°

289.15°

1573.97'

0.92'

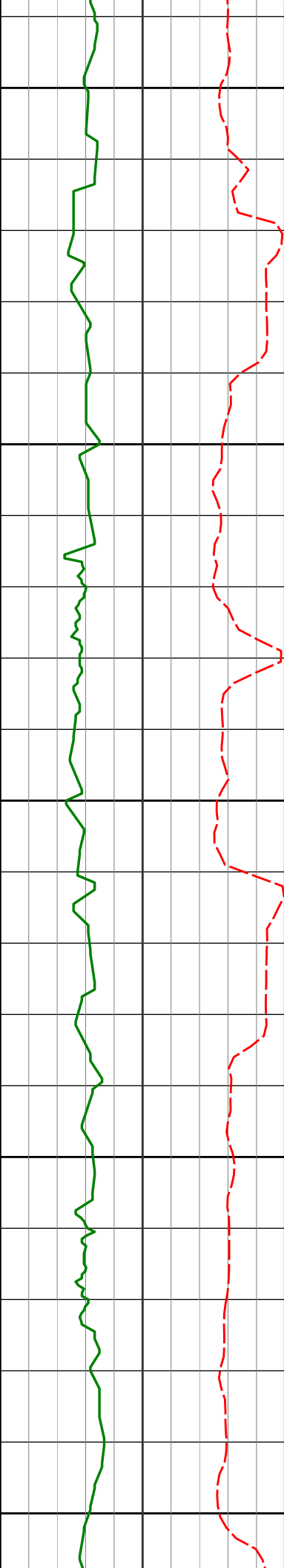
1666'

0.37°

352.67°

1665.97'

1.35'



1700

1750

1800

1850

1900

1757'

0.63°

16.15°

1756.97'

2.10'

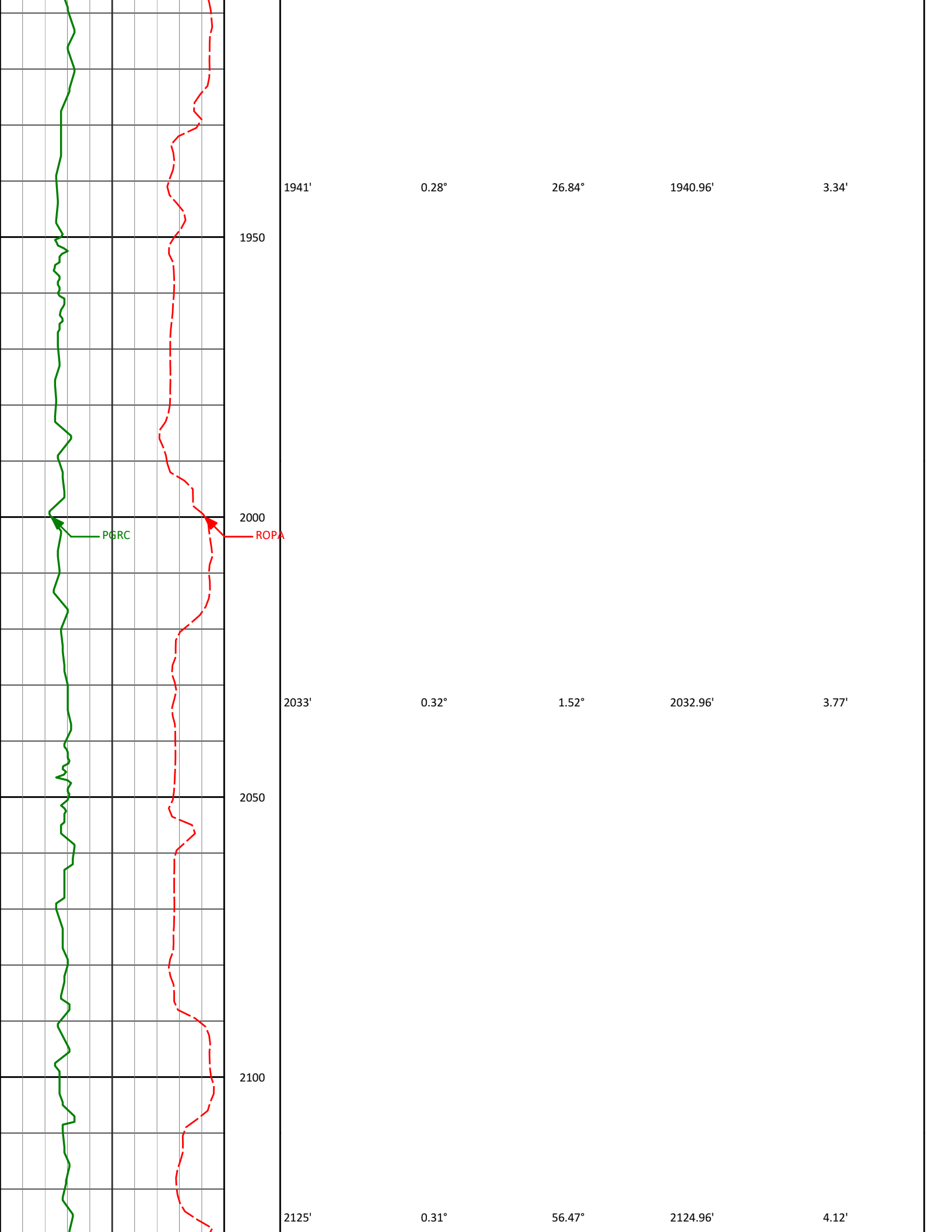
1850'

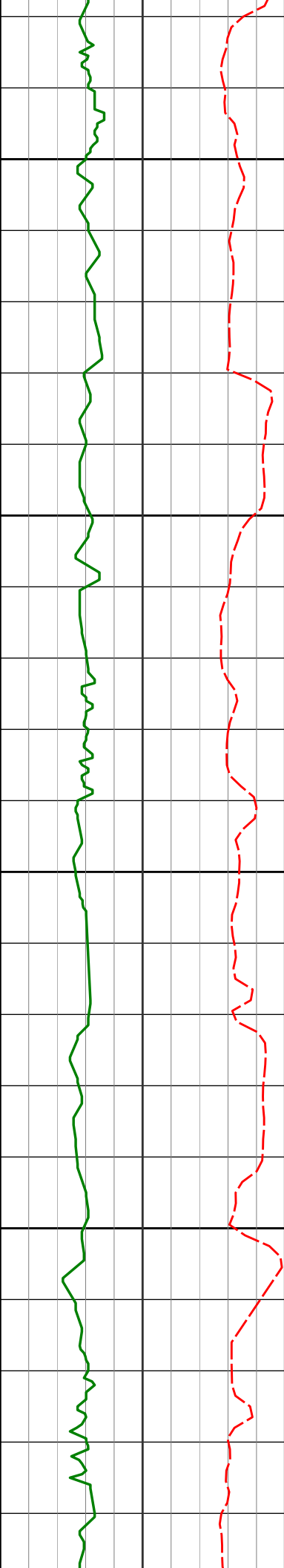
0.47°

26.91°

1849.96'

2.86'





2150

2200

2250

2300

2217'

0.54°

52.30°

2216.96'

4.42'

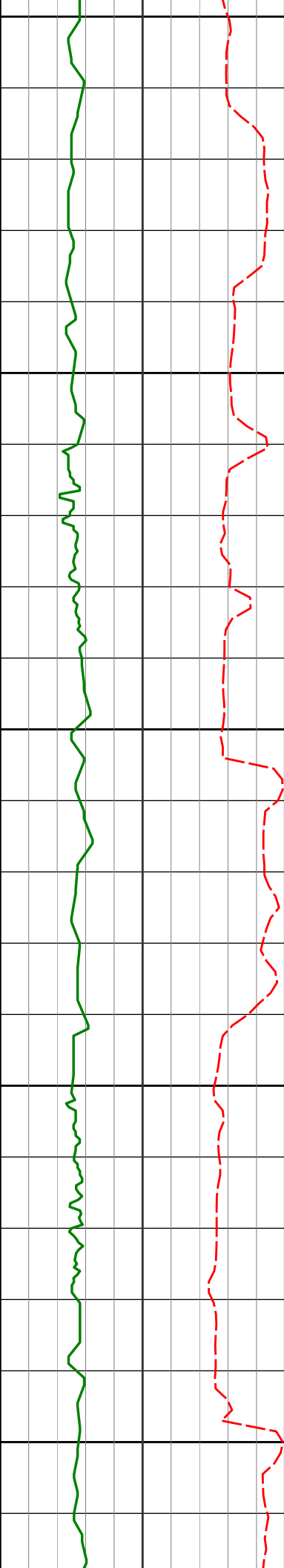
2309'

0.18°

129.18°

2308.96'

4.51'



2350

2400

2450

2500

2550

2402'

0.09°

73.59°

2401.96'

4.41'

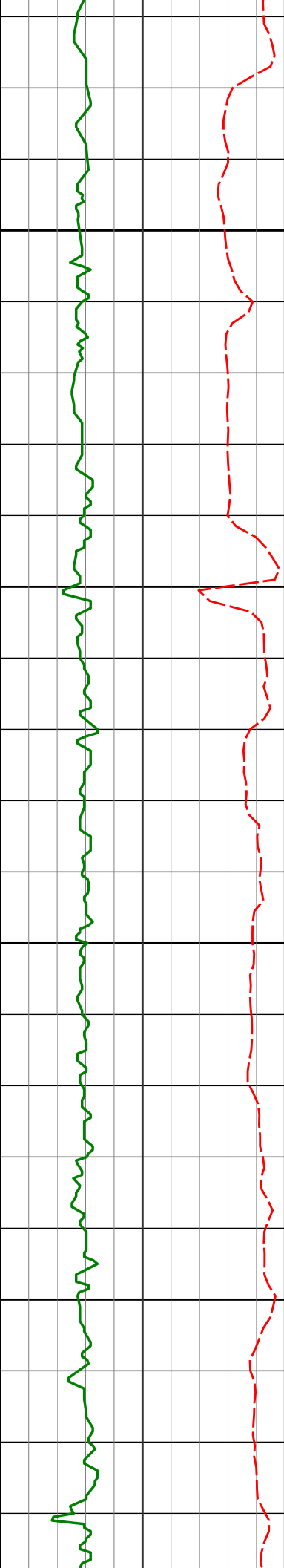
2494'

2.00°

282.64°

2493.94'

5.04'



2586'

4.03°

268.92°

2585.81'

6.19'

2600

2650

2677'

5.20°

269.45°

2676.51'

7.41'

2700

2750

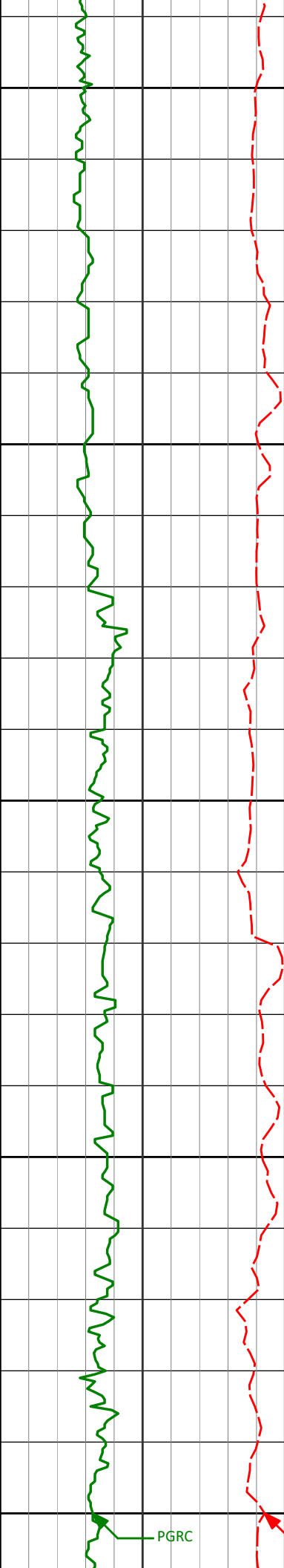
2772'

5.27°

275.64°

2771.11'

9.35'



2800

2850

2900

2950

3000

2867'

6.36°

265.32°

2865.63'

11.08'

2962'

7.86°

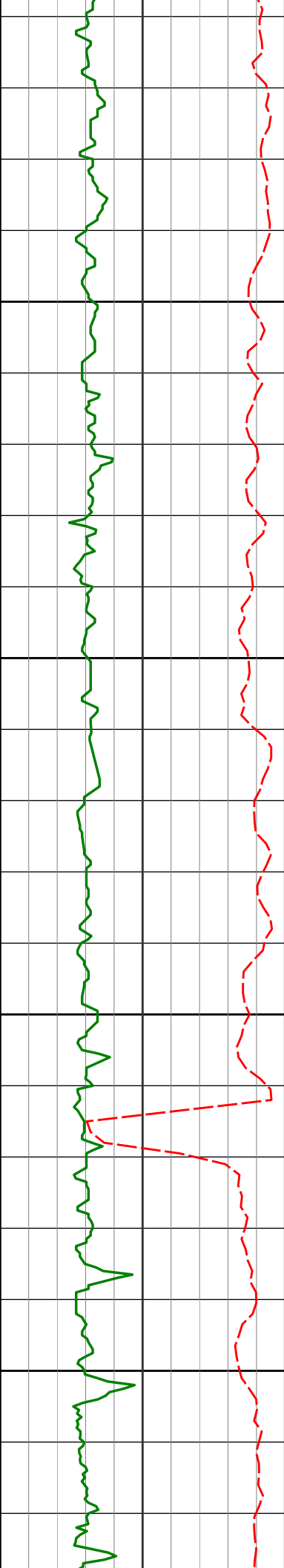
269.45°

2959.89'

12.71'

PGRC

ROPA



3050

3056'

9.90°

270.94°

3052.76'

15.39'

3100

3150

3151'

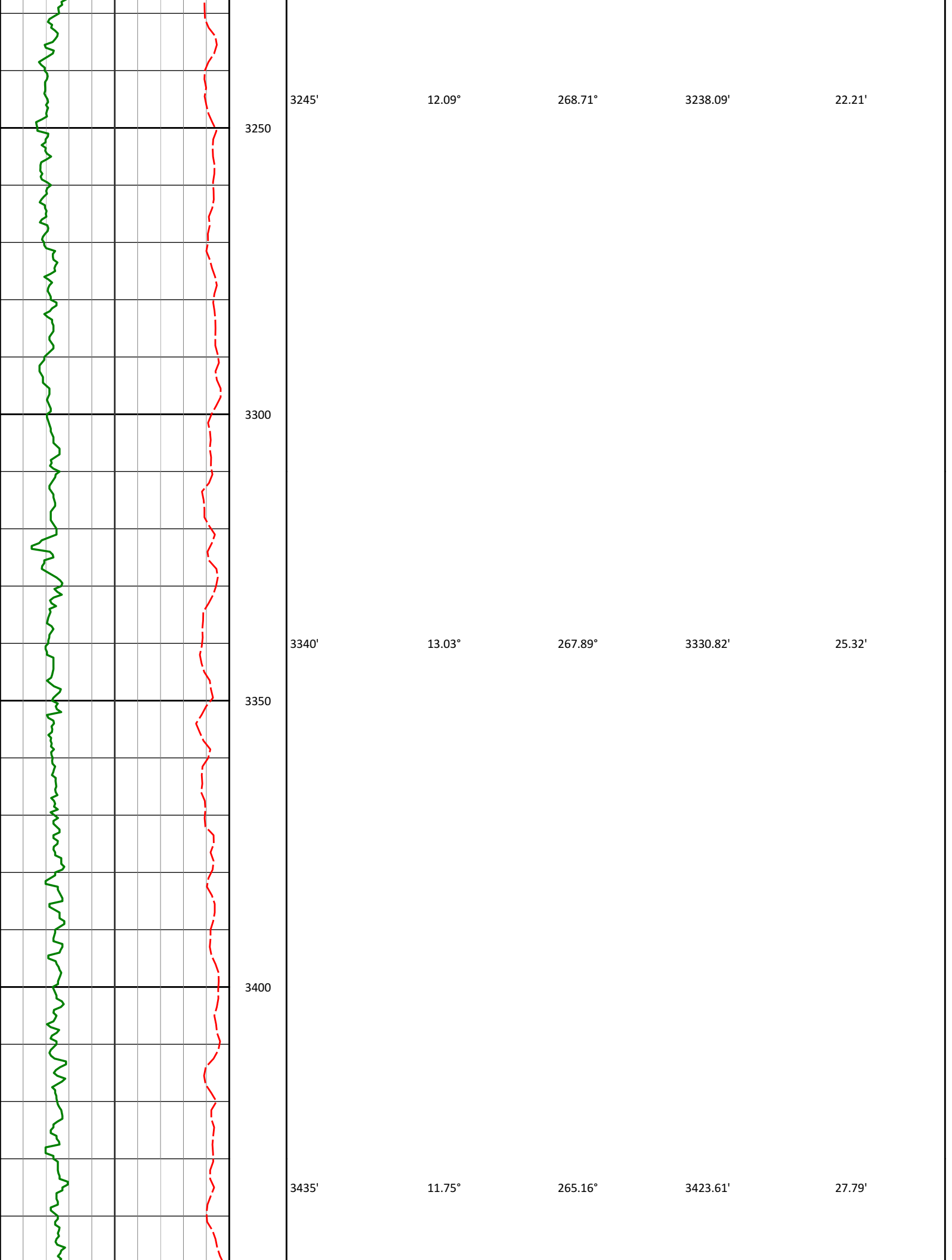
11.59°

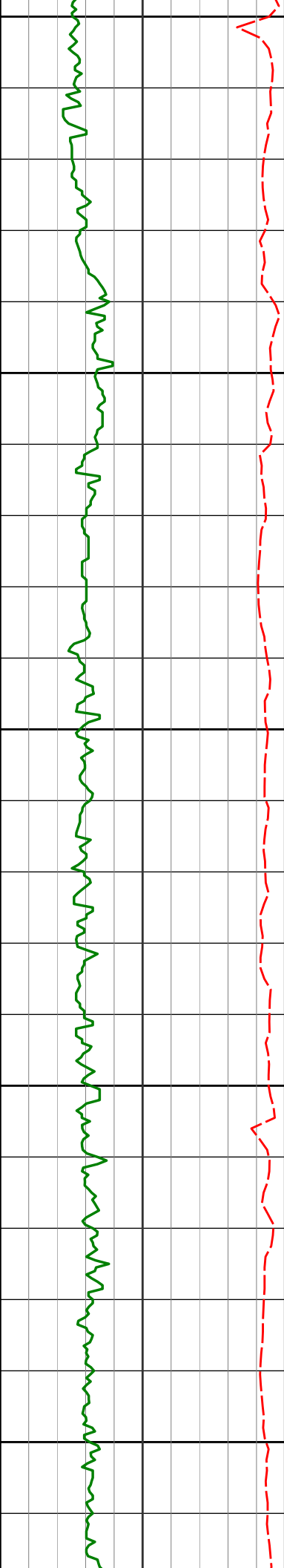
270.72°

3146.09'

18.83'

3200





3450
3500
3550
3600
3650

3529'

10.53°

267.14°

3515.83'

29.84'

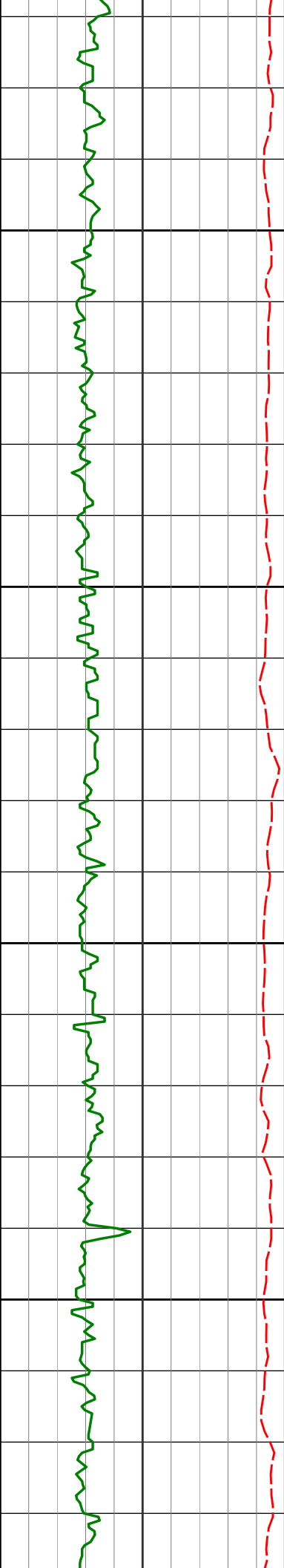
3624'

10.03°

266.81°

3609.31'

32.01'



3700

3750

3800

3812'

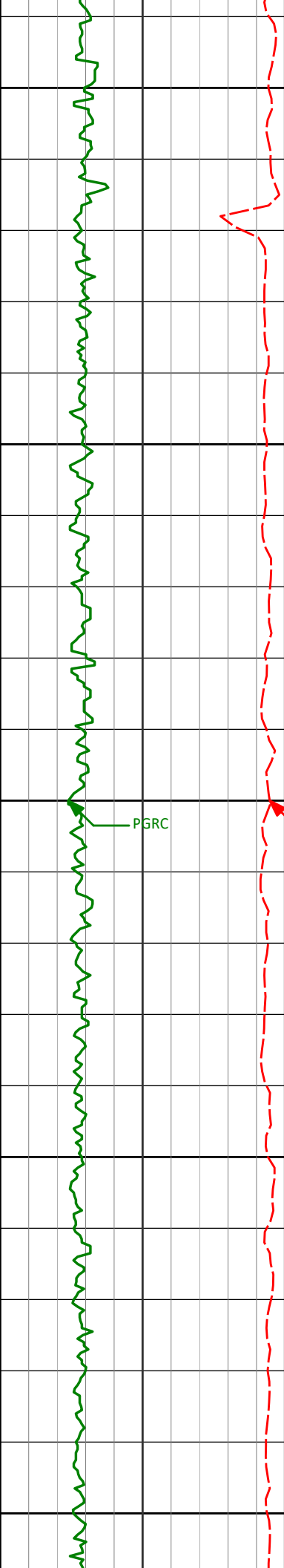
8.34°

269.59°

3794.89'

36.42'

3850



3900

3907'

9.66°

271.09°

3888.72'

39.20'

3950

4000

4001'

11.43°

272.91°

3981.13'

42.91'

4050

4100

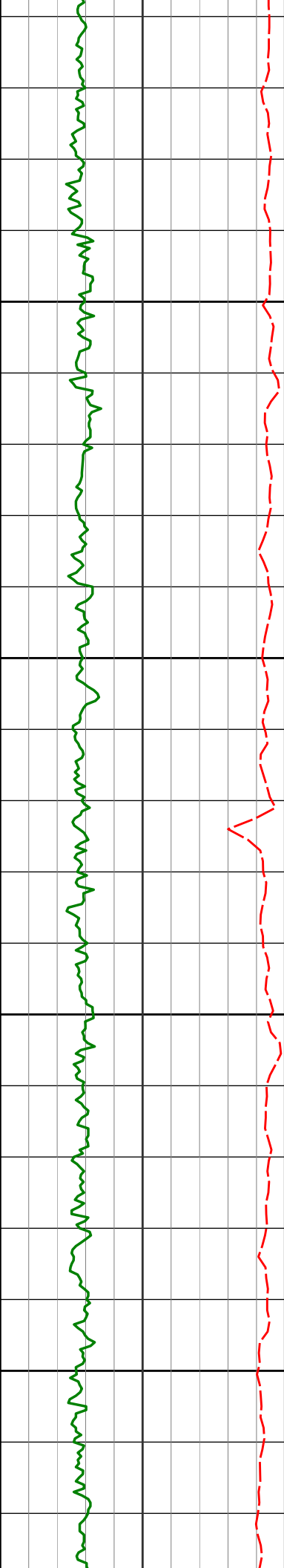
4096'

10.44°

272.66°

4074.40'

47.01'



4150

4200

4250

4285'

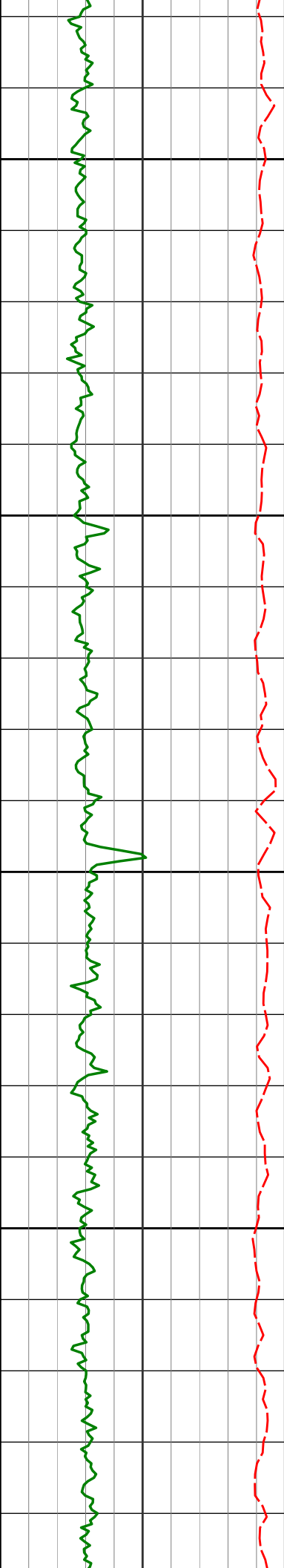
4300

11.76°

270.98°

4259.86'

54.67'



4350

4380'

11.16°

271.46°

4352.97'

58.47'

4400

4450

4475'

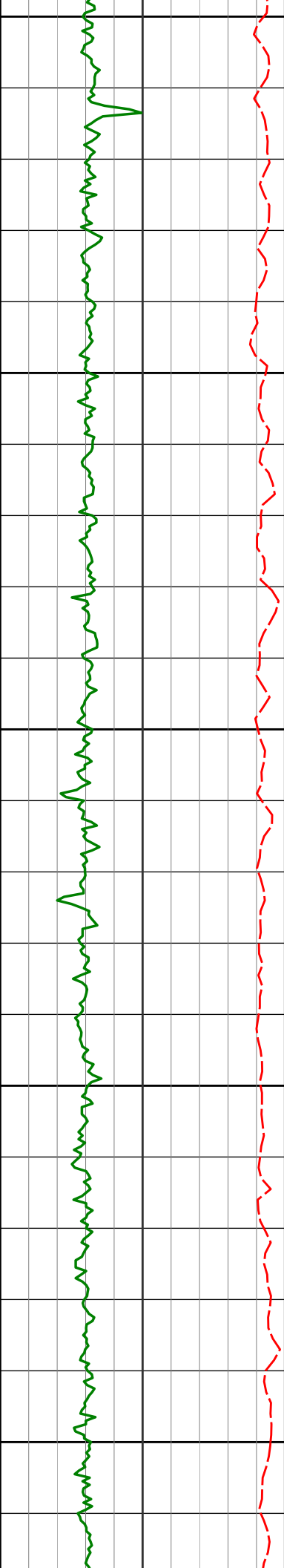
12.07°

266.93°

4446.03'

61.62'

4500



4550

4569'

10.80°

266.79°

4538.16'

63.97'

4600

4650

4664'

10.40°

274.83°

4631.54'

67.33'

4700

4750

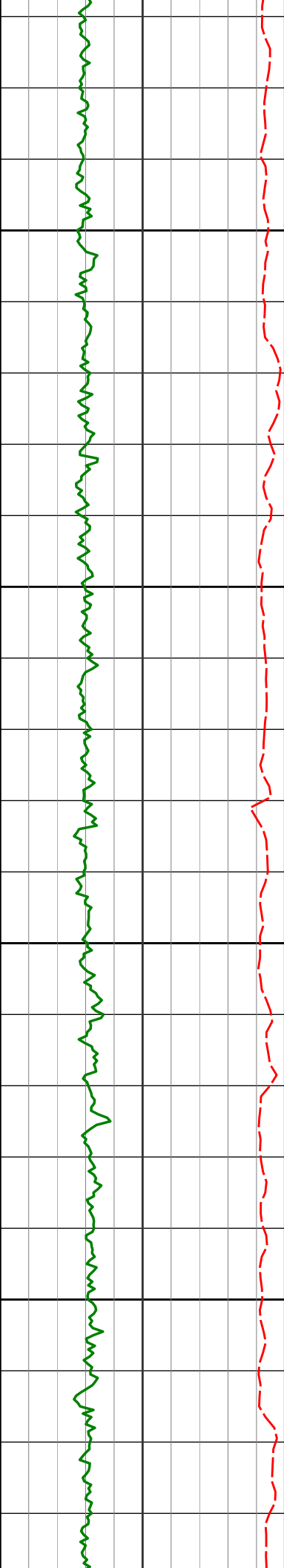
4759'

11.55°

275.16°

4724.80'

72.13'



4800

4850

4900

4950

4853'

4948'

12.08°

11.55°

271.81°

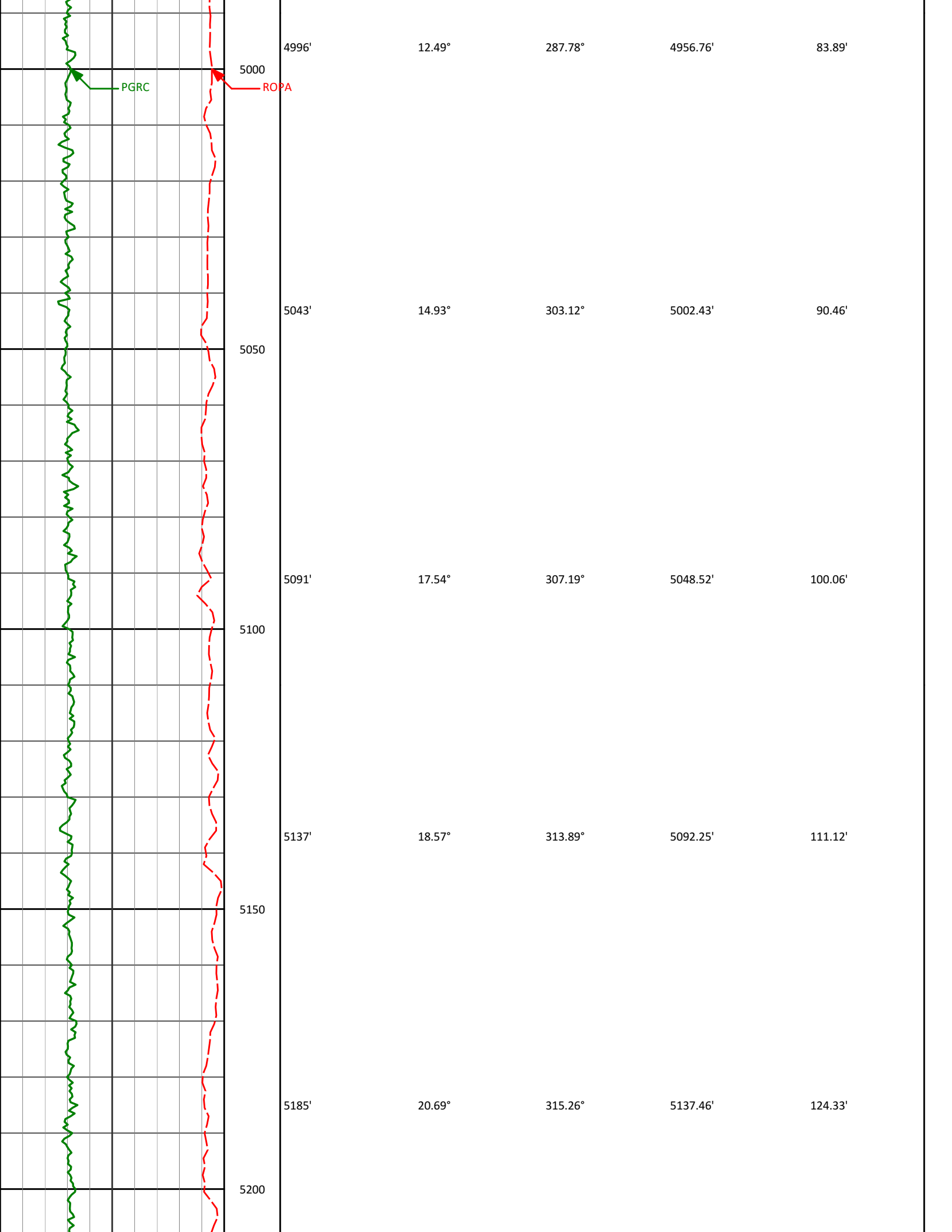
270.15°

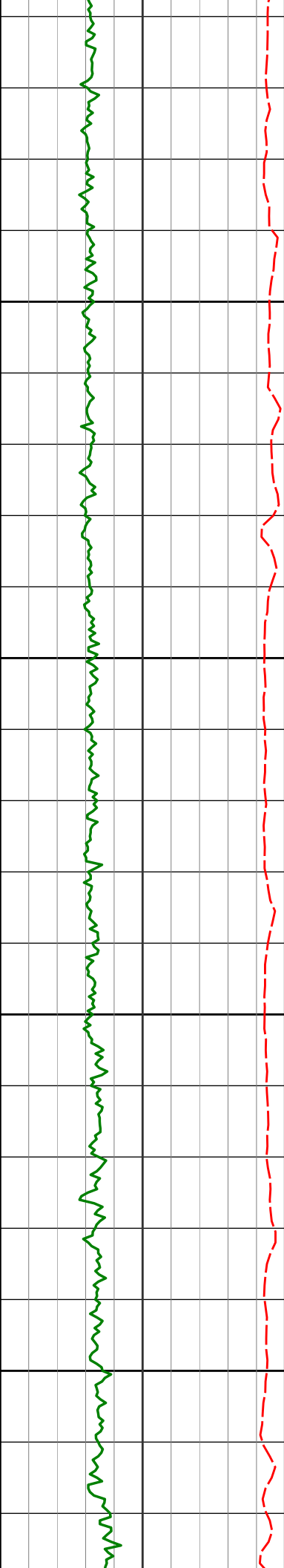
4816.81'

4909.80'

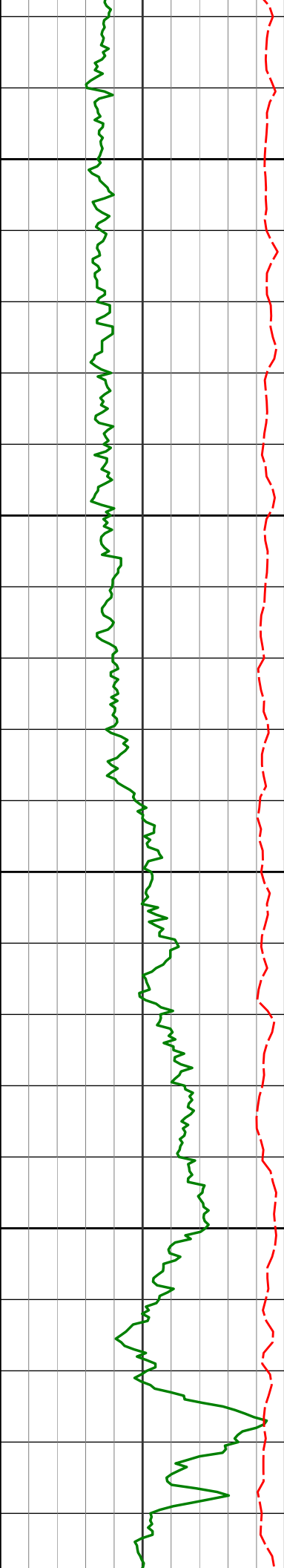
76.72'

80.56'





5232'	23.92°	320.54°	5180.94'	139.52'
5250				
5280'	27.92°	326.55°	5224.11'	158.38'
5300				
5326'	31.25°	333.95°	5264.12'	179.79'
5350				
5374'	35.74°	338.16°	5304.15'	205.53'
5400				
5421'	40.25°	340.84°	5341.18'	234.01'



5450

5469'

44.80°

342.91°

5376.55'

266.14'

5500

5516'

47.47°

343.59°

5409.12'

299.82'

5550

5564'

51.44°

343.58°

5440.31'

336.08'

5600

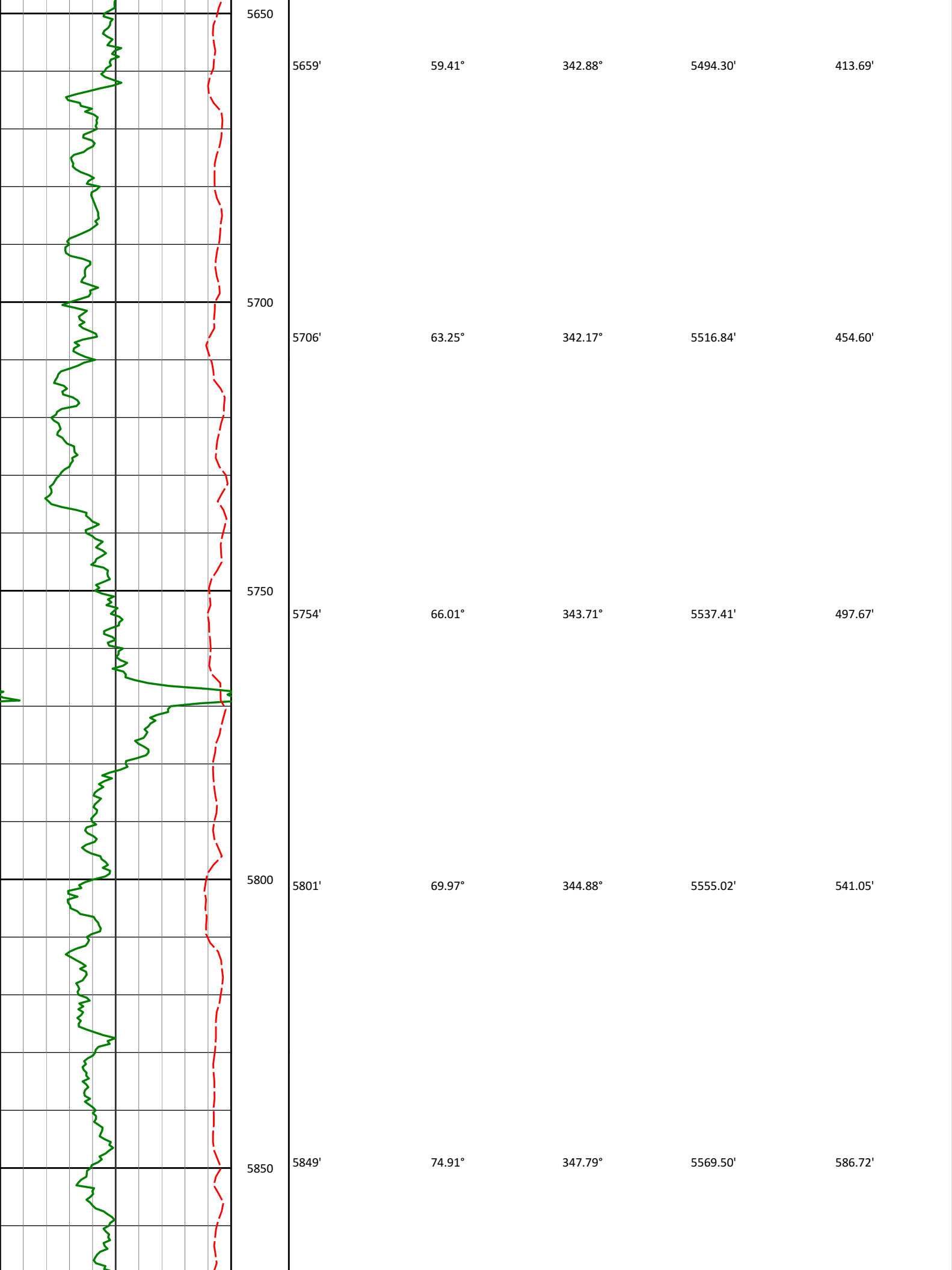
5611'

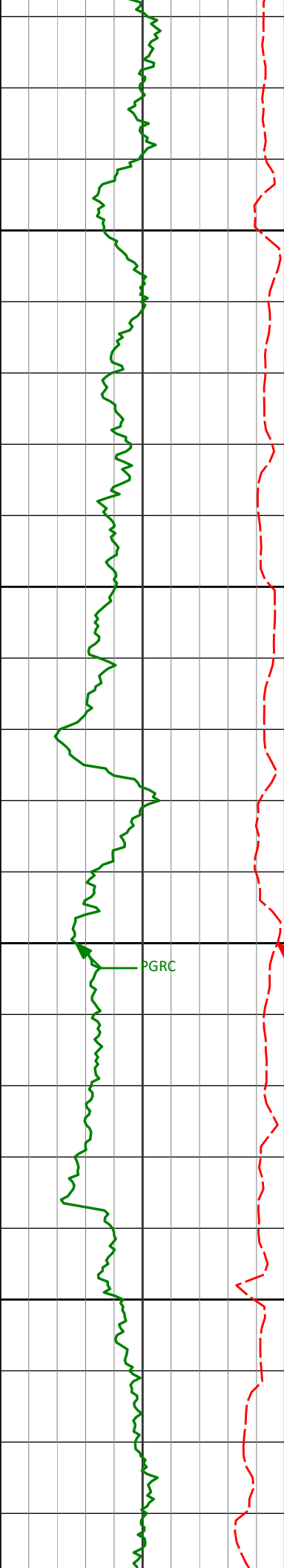
55.22°

343.50°

5468.38'

373.56'



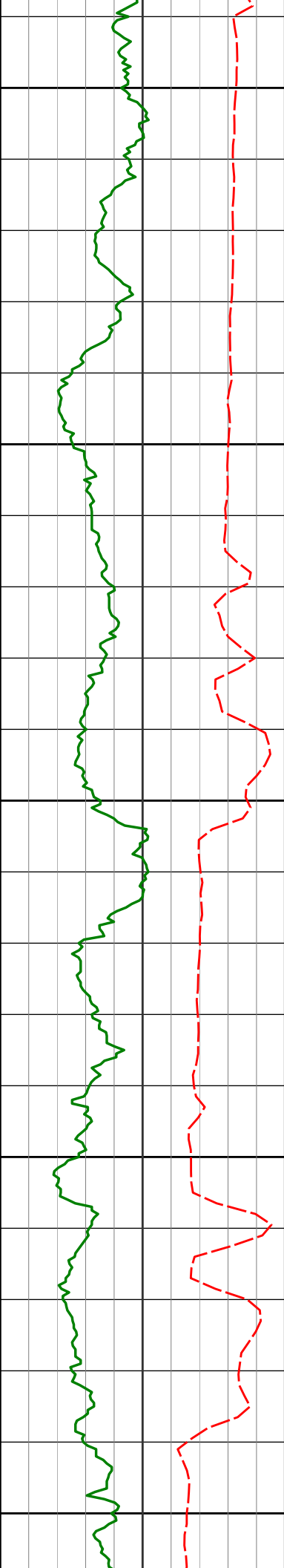


5895'	79.62°	350.66°	5579.64'	631.57'
5900				
5943'	82.71°	352.81°	5587.01'	678.96'
5950				
5990'	85.80°	354.84°	5591.71'	725.59'
6000				
6050				

PGRC

RPPA

200



6100

6107'

88.58°

356.83°

5597.44'

841.75'

6150

6200

6198'

87.78°

356.46°

5600.33'

932.01'

6250

6300

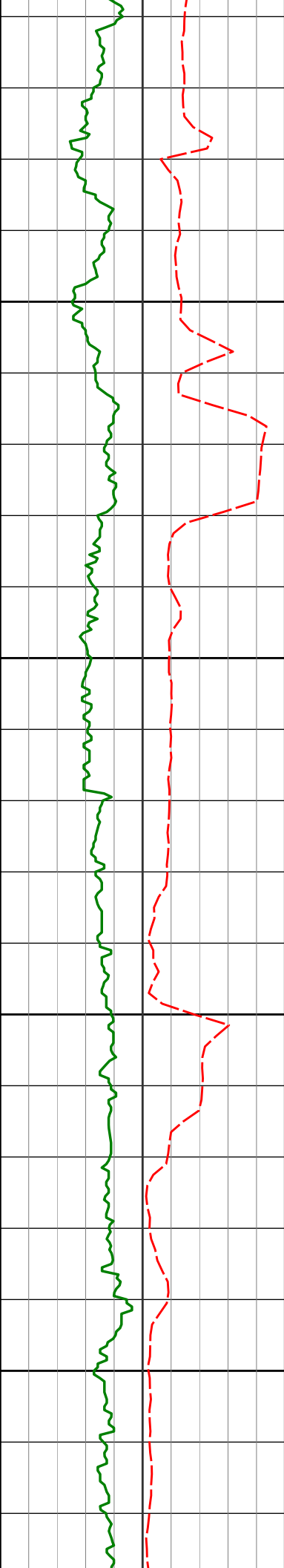
6293'

88.24°

358.22°

5603.62'

1026.09'



6350

6388'

89.75°

358.32°

5605.29'

1120.00'

6400

6450

6483'

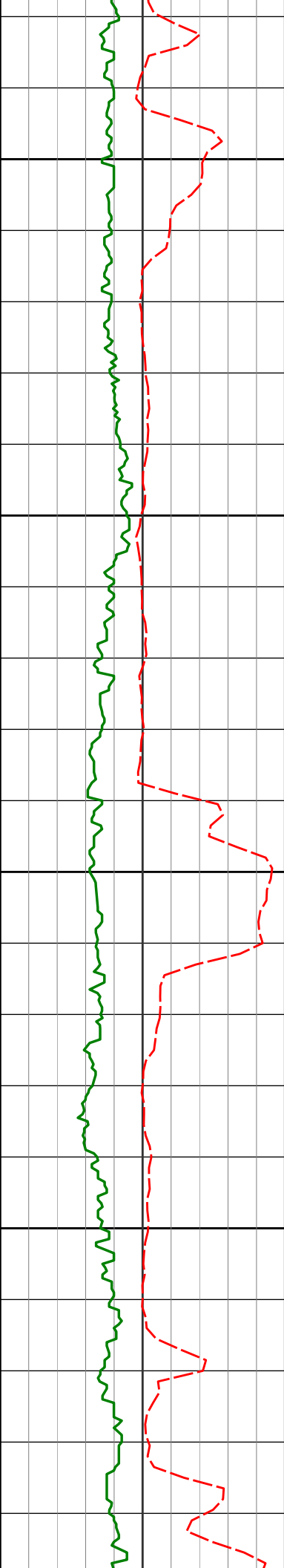
89.66°

357.24°

5605.77'

1214.03'

6500



6550

6577'

88.49°

355.54°

5607.29'

1307.36'

6600

6650

6672'

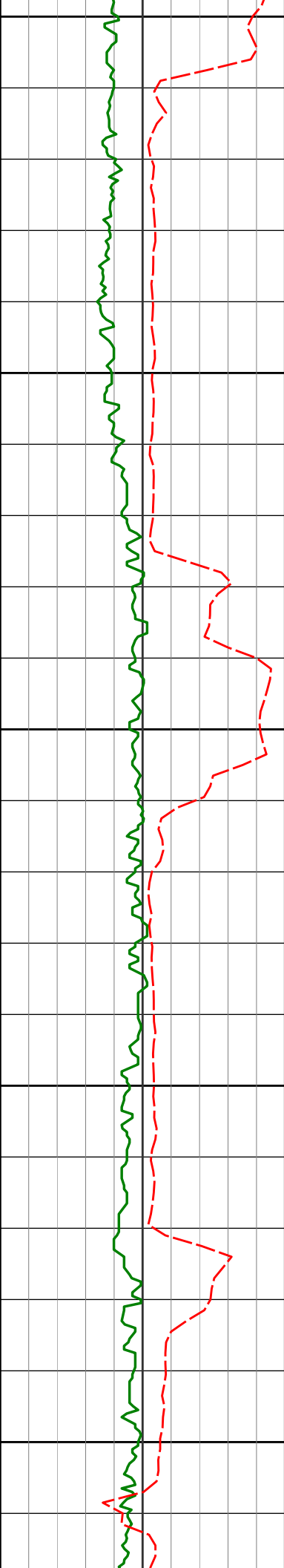
89.75°

356.02°

5608.75'

1401.80'

6700



6750

6800

6850

6900

6950

6767'

90.31°

356.98°

5608.69'

1496.11'

6862'

90.15°

358.26°

5608.31'

1590.18'

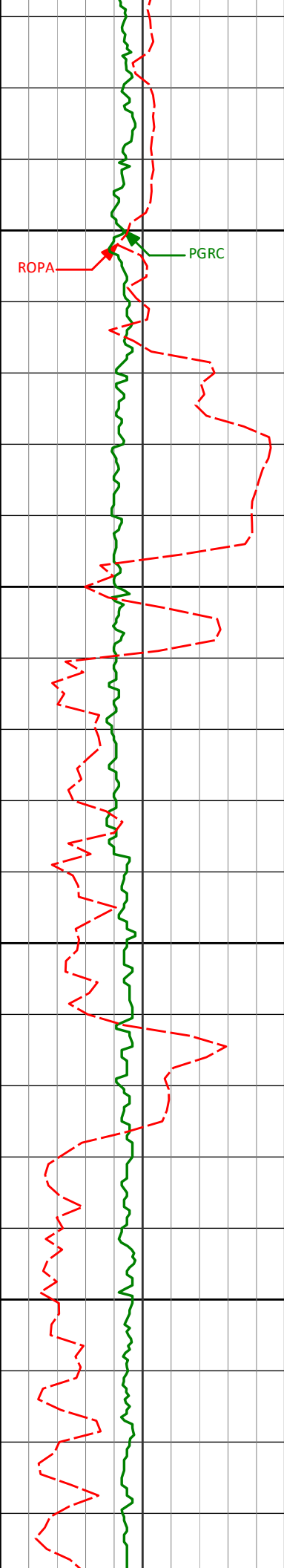
6957'

89.94°

357.84°

5608.23'

1684.16'



7000

7050

7100

7150

7052'

7147'

90.03°

89.23°

359.80°

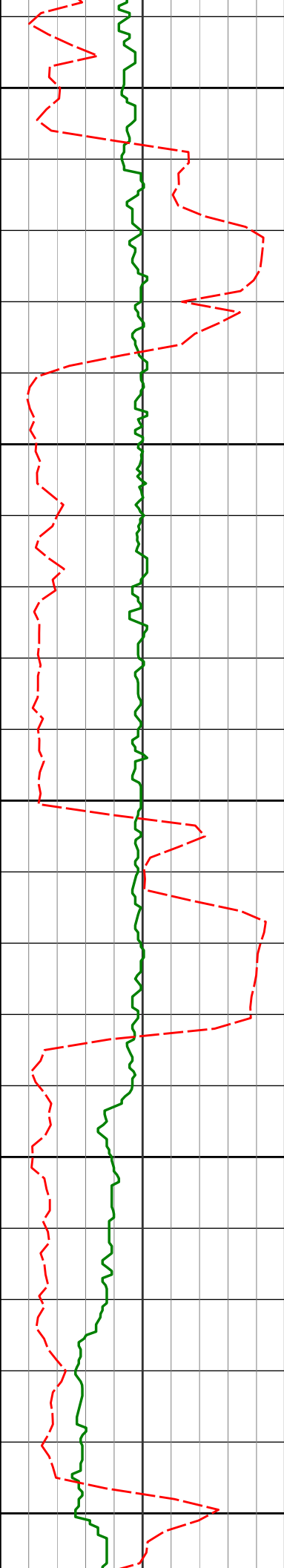
358.51°

5608.26'

5608.87'

1777.93'

1871.61'



7200

7241'

89.94°

359.51°

5609.55'

1964.35'

7250

7300

7336'

91.54°

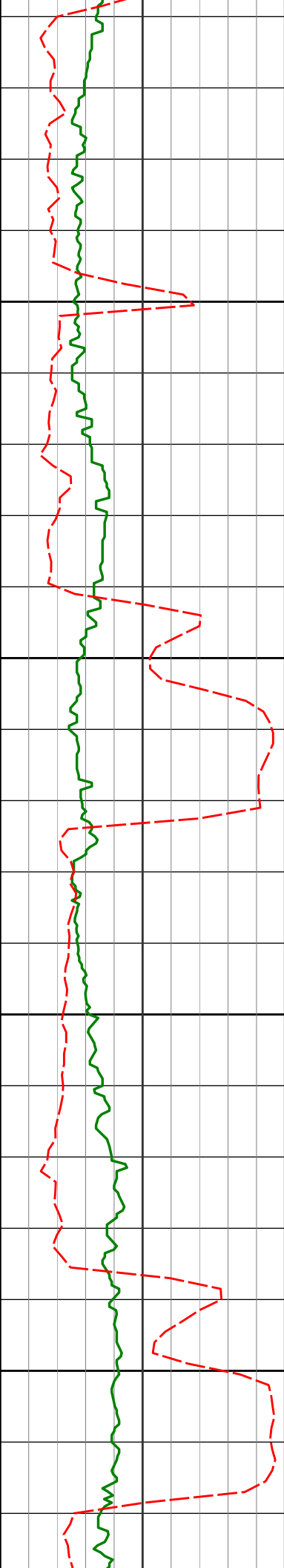
359.12°

5608.33'

2057.98'

7350

7400



7431'

90.59°

357.37°

5606.56'

2151.89'

7450

7500

7526'

91.26°

357.71°

5605.03'

2245.97'

7550

7600

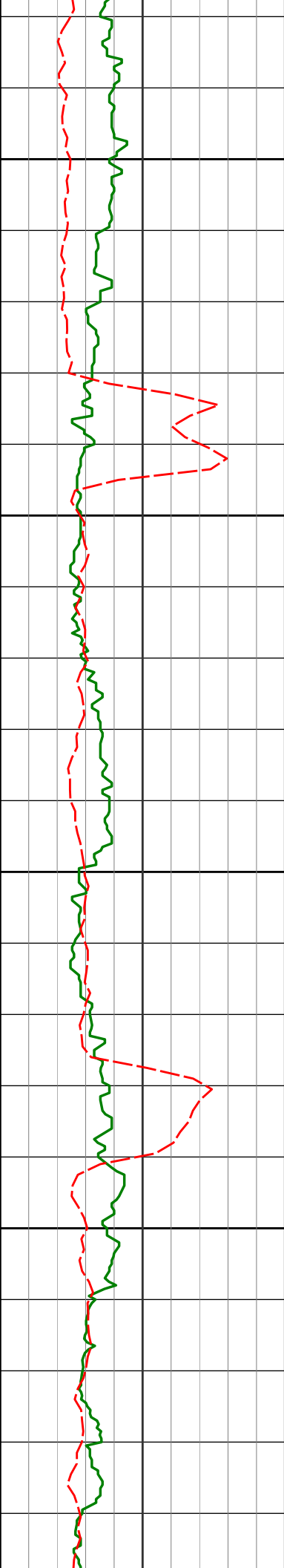
7621'

91.23°

358.96°

5602.96'

2339.85'



7650

7700

7750

7800

7716'

91.23°

357.54°

5600.92'

2433.75'

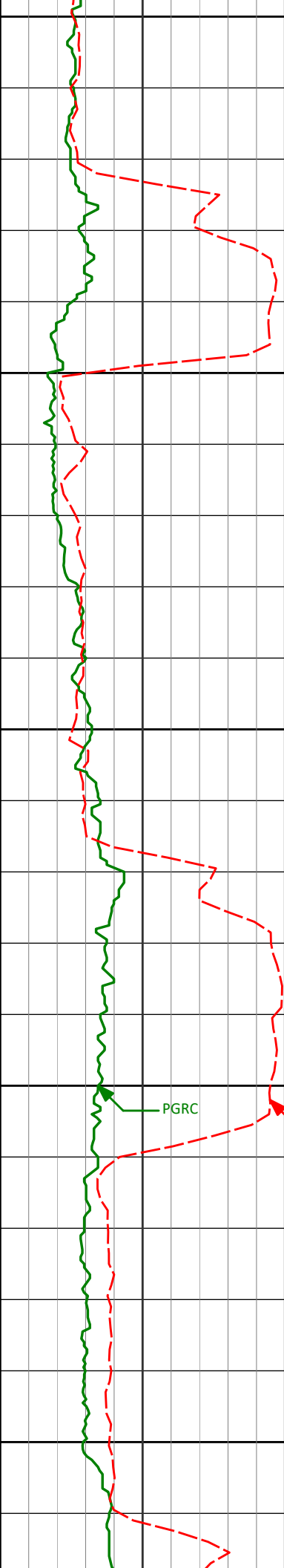
7810'

92.47°

358.05°

5597.88'

2526.74'



7850

7900

7950

8000

8050

7905'

7999'

92.00°

90.68°

356.89°

357.90°

5594.18'

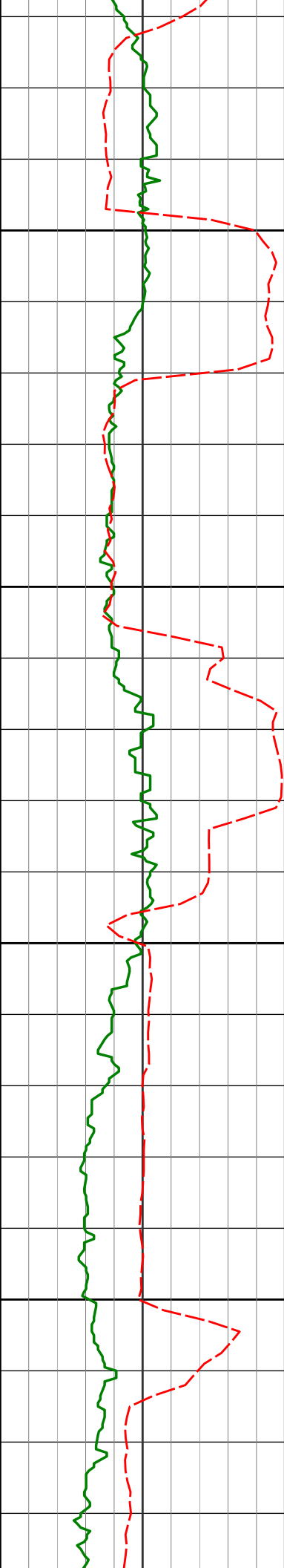
5591.98'

2620.78'

2713.89'

PGRC

ROPA



8094'

91.66°

358.60°

5590.04'

2807.79'

8100

8150

8189'

88.09°

356.57°

5590.24'

2901.85'

8200

8250

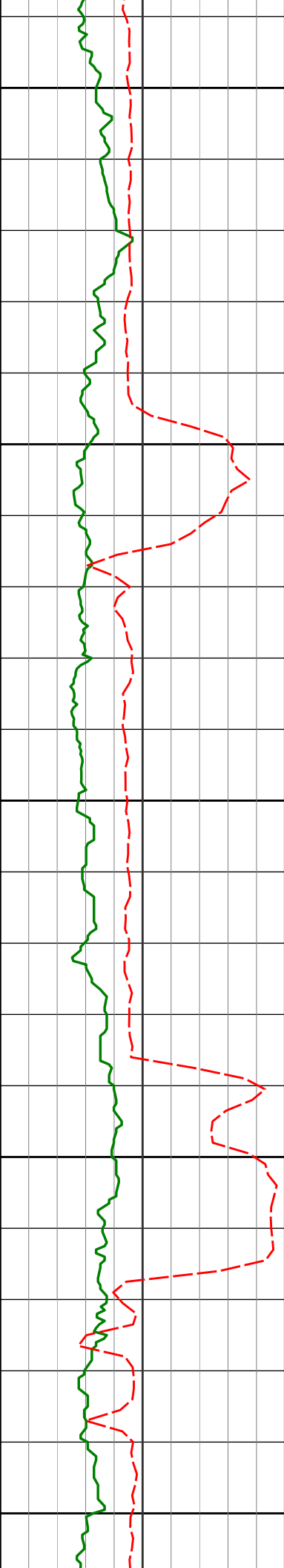
8284'

88.65°

356.54°

5592.95'

2996.12'



8300

8350

8378'

89.69°

357.60°

5594.31'

3089.31'

8400

8450

8473'

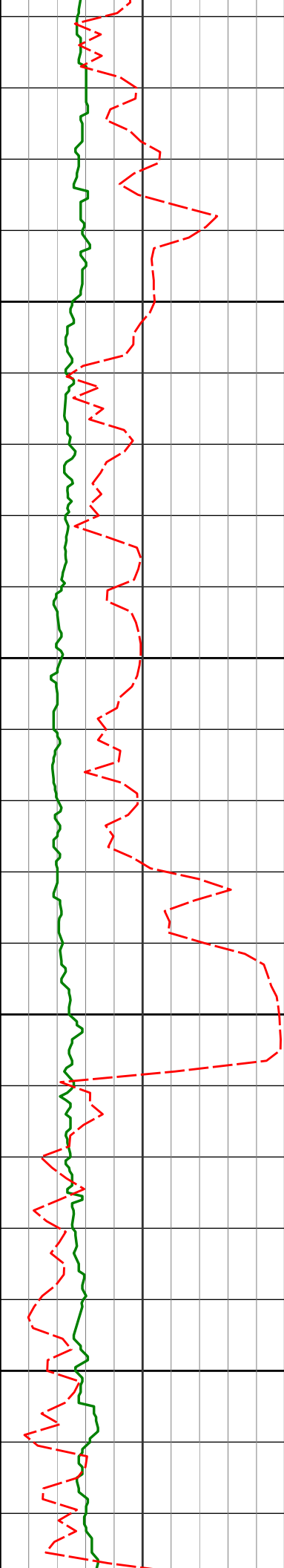
88.64°

357.83°

5595.69'

3183.36'

8500



8550

8568'

89.45°

358.34°

5597.28'

3277.31'

8600

8650

8663'

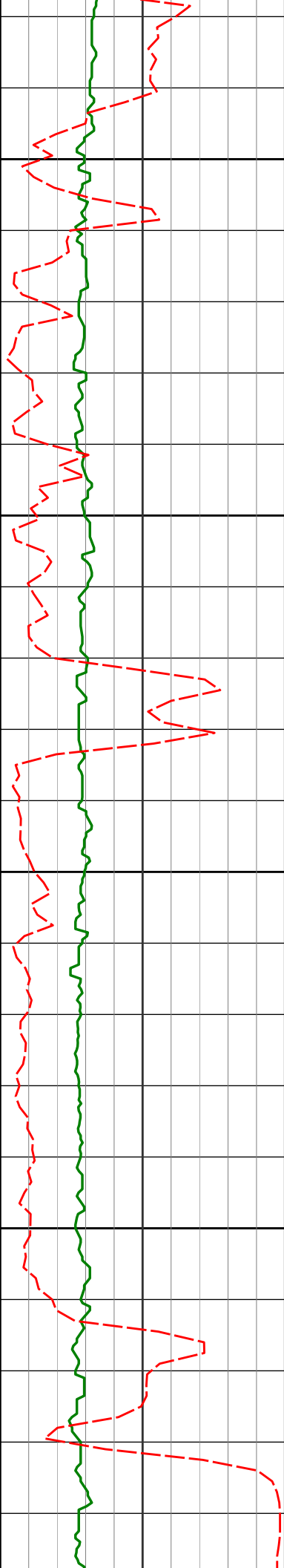
89.20°

359.04°

5598.41'

3371.11'

8700



8750

8758'

89.01°

357.31°

5599.89'

3465.04'

8800

8850

8852'

89.72°

1.41°

5600.92'

3557.66'

8900

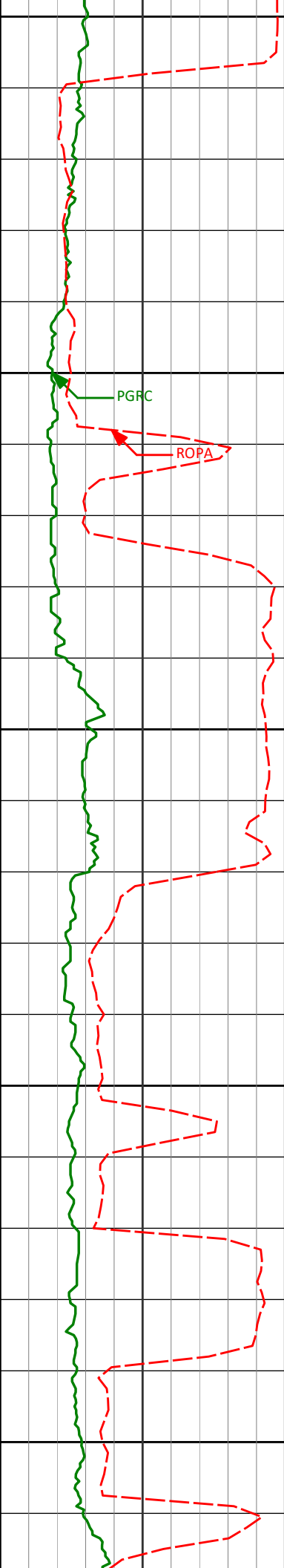
8947'

89.63°

6.00°

5601.46'

3649.78'



8950

9000

9041'

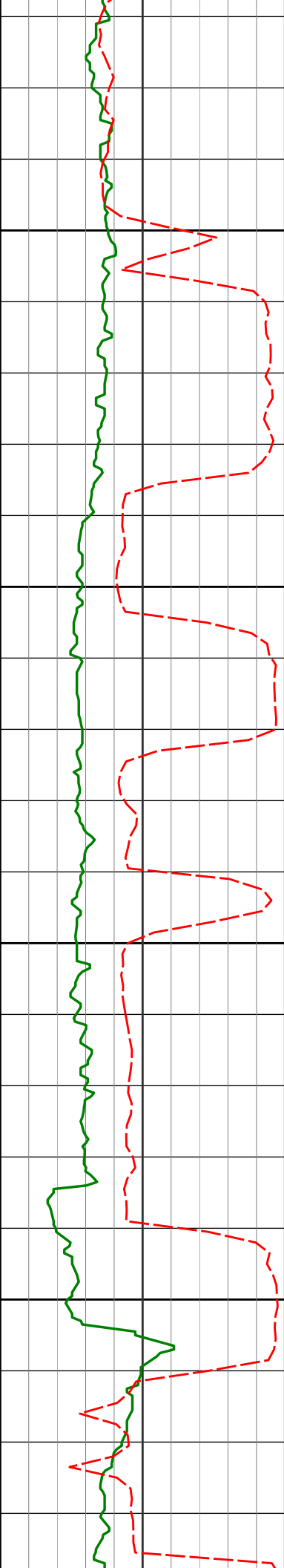
9050

9100

9136'

9150

9041'	88.74°	3.41°	5602.80'	3740.52'
9136'	88.06°	0.72°	5605.46'	3833.24'



9200

9231'

88.80°

358.53°

5608.06'

3926.76'

9250

9300

9325'

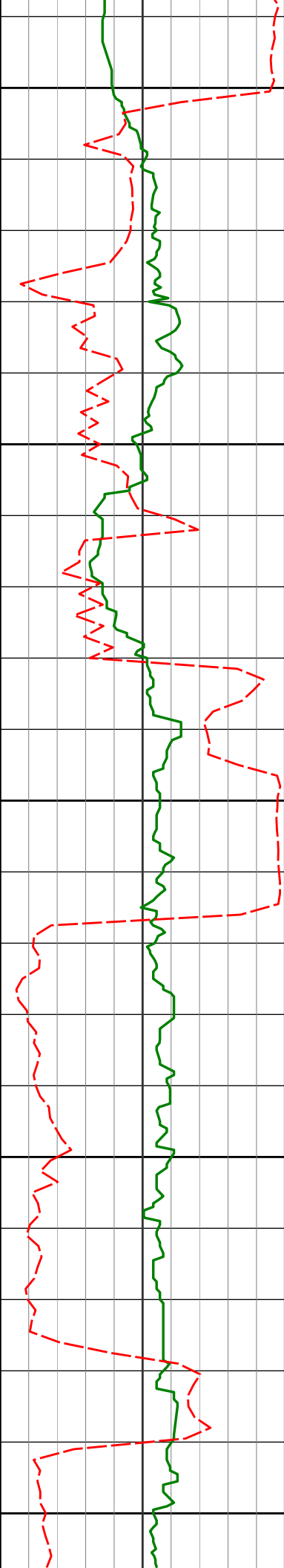
90.18°

357.71°

5608.90'

4019.72'

9350



9400

9420'

91.14°

354.47°

5607.80'

4114.09'

9450

9500

9515'

90.43°

355.57°

5606.50'

4208.66'

9550

9600

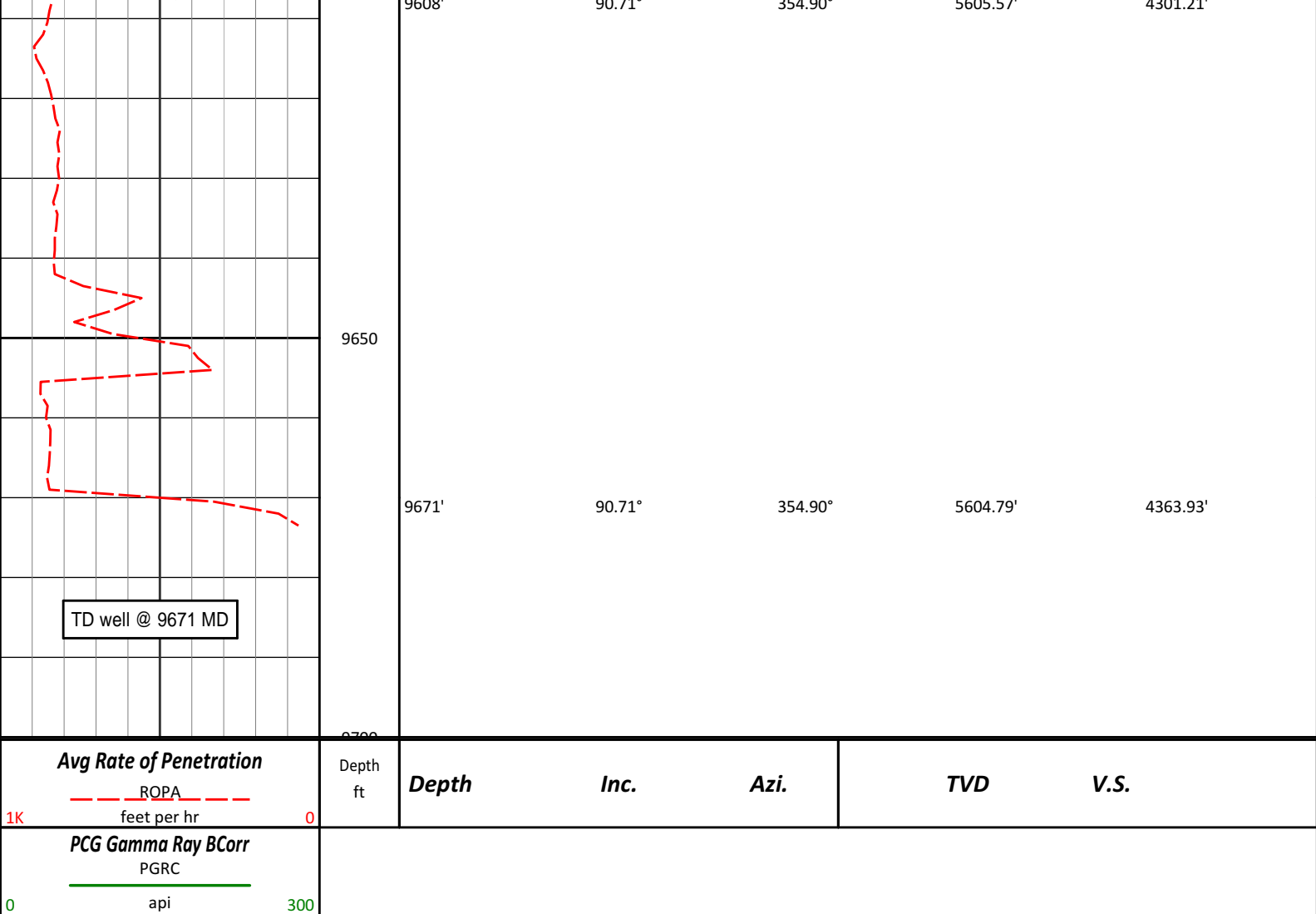
9620'

90.71°

354.88°

5605.57'

4201.81'



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble
Tripucka State LD02-75HN
Wildcat
Weld Colorado
USA
CA-XX-0901942015

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
301.00	0.50	51.91	301.00	0.81 N	1.03 E	0.61	0.17
608.00	0.50	127.31	607.99	0.82 N	3.15 E	0.24	0.20
914.00	0.50	329.61	913.98	1.17 N	3.54 E	0.51	0.32
1298.00	0.44	206.00	1297.98	1.29 N	2.05 E	0.90	0.22
1389.00	0.14	185.60	1388.98	0.87 N	1.89 E	0.52	0.34
1482.00	0.31	308.95	1481.98	0.92 N	1.68 E	0.60	0.43
1574.00	0.34	289.15	1573.97	1.16 N	1.23 E	0.92	0.13
1666.00	0.37	352.67	1665.97	1.55 N	0.93 E	1.35	0.41
1757.00	0.63	16.15	1756.97	2.32 N	1.04 E	2.10	0.36
1850.00	0.47	26.91	1849.96	3.15 N	1.35 E	2.86	0.21
1941.00	0.28	26.84	1940.96	3.69 N	1.62 E	3.34	0.20
2033.00	0.32	1.52	2032.96	4.15 N	1.73 E	3.77	0.15
2125.00	0.31	56.47	2124.96	4.55 N	1.95 E	4.12	0.32
2217.00	0.54	52.30	2216.96	4.95 N	2.50 E	4.42	0.26
2309.00	0.18	129.18	2308.96	5.13 N	2.96 E	4.51	0.58
2402.00	0.63	73.53	2401.96	5.05 N	3.11 E	4.44	0.43

2402.00	0.09	73.59	2401.96	5.05 N	3.14 E	4.41	0.16
2494.00	2.00	282.64	2493.94	5.43 N	1.64 E	5.04	2.26
2586.00	4.03	268.92	2585.81	5.72 N	3.16 W	6.19	2.33
2677.00	5.20	269.45	2676.51	5.62 N	10.49 W	7.41	1.29
2772.00	5.27	275.64	2771.11	6.00 N	19.14 W	9.35	0.60
2867.00	6.36	265.32	2865.63	6.00 N	28.72 W	11.08	1.58
2962.00	7.86	269.45	2959.89	5.51 N	40.46 W	12.71	1.67
3056.00	9.90	270.94	3052.76	5.58 N	54.97 W	15.39	2.17
3151.00	11.59	270.72	3146.09	5.84 N	72.68 W	18.83	1.78
3245.00	12.09	268.71	3238.09	5.73 N	91.96 W	22.21	0.69
3340.00	13.03	267.89	3330.82	5.11 N	112.60 W	25.32	1.00
3435.00	11.75	265.16	3423.61	3.90 N	132.94 W	27.79	1.47
3529.00	10.53	267.14	3515.83	2.67 N	151.06 W	29.84	1.36
3624.00	10.03	266.81	3609.31	1.77 N	167.99 W	32.01	0.53
3812.00	8.34	269.59	3794.89	0.76 N	197.98 W	36.42	0.93
3907.00	9.66	271.09	3888.72	0.86 N	212.83 W	39.20	1.41
4001.00	11.43	272.91	3981.13	1.49 N	230.03 W	42.91	1.92
4096.00	10.44	272.66	4074.40	2.36 N	248.03 W	47.01	1.05
4285.00	11.76	270.98	4259.86	3.49 N	284.39 W	54.67	0.72
4380.00	11.16	271.46	4352.97	3.89 N	303.26 W	58.47	0.65
4475.00	12.07	266.93	4446.03	3.59 N	322.37 W	61.62	1.36
4569.00	10.80	266.79	4538.16	2.57 N	340.98 W	63.97	1.35
4664.00	10.40	274.83	4631.54	2.80 N	358.41 W	67.33	1.61
4759.00	11.55	275.16	4724.80	4.37 N	376.43 W	72.13	1.21
4853.00	12.08	271.81	4816.81	5.53 N	395.63 W	76.72	0.93
4948.00	11.55	270.15	4909.80	5.87 N	415.08 W	80.56	0.66
4996.00	12.49	287.78	4956.76	7.47 N	424.84 W	83.89	7.86
5043.00	14.93	303.12	5002.43	12.33 N	434.76 W	90.46	9.27
5091.00	17.54	307.19	5048.52	20.08 N	445.70 W	100.06	5.92
5137.00	18.57	313.89	5092.25	29.35 N	456.50 W	111.12	5.04
5185.00	20.69	315.26	5137.46	40.68 N	467.98 W	124.33	4.53
5232.00	23.92	320.54	5180.94	53.94 N	479.88 W	139.52	8.08
5280.00	27.92	326.55	5224.11	70.84 N	492.27 W	158.38	9.96
5326.00	31.25	333.95	5264.12	90.56 N	503.46 W	179.79	10.74
5374.00	35.74	338.16	5304.15	114.77 N	514.14 W	205.53	10.52
5421.00	40.25	340.84	5341.18	141.87 N	524.24 W	234.01	10.21
5469.00	44.80	342.91	5376.55	172.70 N	534.30 W	266.14	9.92
5516.00	47.47	343.59	5409.12	205.14 N	544.07 W	299.82	5.77
5564.00	51.44	343.58	5440.31	240.12 N	554.37 W	336.08	8.27
5611.00	55.22	343.50	5468.38	276.27 N	565.05 W	373.56	8.05
5659.00	59.41	342.88	5494.30	314.93 N	576.74 W	413.69	8.79
5706.00	63.25	342.17	5516.84	354.25 N	589.13 W	454.60	8.28
5754.00	66.01	343.71	5537.41	395.71 N	601.84 W	497.67	6.45
5801.00	69.97	344.88	5555.02	437.65 N	613.63 W	541.05	8.73
5849.00	74.91	347.79	5569.50	482.10 N	624.42 W	586.72	11.80
5895.00	79.62	350.66	5579.64	526.17 N	632.80 W	631.57	11.92
5943.00	82.71	352.81	5587.01	573.10 N	639.61 W	678.96	7.81
5990.00	85.80	354.84	5591.71	619.58 N	644.64 W	725.59	7.86
6107.00	88.58	356.83	5597.44	736.12 N	653.12 W	841.75	2.92
6198.00	87.78	356.46	5600.33	826.91 N	658.43 W	932.01	0.97
6293.00	88.24	358.22	5603.62	921.75 N	662.84 W	1026.09	1.91
6388.00	89.75	358.32	5605.29	1016.69 N	665.71 W	1120.00	1.59
6483.00	89.66	357.24	5605.77	1111.62 N	669.39 W	1214.03	1.13
6577.00	88.49	355.54	5607.29	1205.41 N	675.30 W	1307.36	2.20
6672.00	89.75	356.02	5608.75	1300.14 N	682.30 W	1401.80	1.43
6767.00	90.31	356.98	5608.69	1394.96 N	688.10 W	1496.11	1.17
6862.00	90.15	358.26	5608.31	1489.88 N	692.04 W	1590.18	1.35
6957.00	89.94	357.84	5608.23	1584.82 N	695.28 W	1684.16	0.50
7052.00	90.03	359.80	5608.26	1679.80 N	697.24 W	1777.93	2.07
7147.00	89.23	358.51	5608.87	1774.78 N	698.64 W	1871.61	1.60
7241.00	89.94	359.51	5609.55	1868.76 N	700.26 W	1964.35	1.30
7336.00	91.54	359.12	5608.33	1963.75 N	701.40 W	2057.98	1.74
7431.00	90.59	357.37	5606.56	2058.68 N	704.31 W	2151.89	2.10
7526.00	91.26	357.71	5605.03	2153.58 N	708.39 W	2245.97	0.79
7621.00	91.23	358.96	5602.96	2248.51 N	711.15 W	2339.85	1.32
7716.00	91.23	357.54	5600.92	2343.45 N	714.06 W	2433.75	1.50
7810.00	92.47	358.05	5597.88	2437.32 N	717.68 W	2526.74	1.42
7905.00	92.00	356.89	5594.18	2532.16 N	721.87 W	2620.78	1.31
7999.00	90.68	357.90	5591.98	2626.03 N	726.13 W	2713.89	1.77
8094.00	91.66	358.60	5590.04	2720.97 N	729.03 W	2807.79	1.27
8189.00	88.09	356.57	5590.24	2815.86 N	733.03 W	2901.85	4.33
8284.00	88.65	356.54	5592.95	2910.65 N	738.74 W	2996.12	0.58

8204.00	88.63	355.84	5592.18	3019.53 N	743.77 W	3089.12	1.59
8378.00	89.69	357.60	5594.31	3004.51 N	743.55 W	3089.31	1.59
8473.00	88.64	357.83	5595.69	3099.43 N	747.34 W	3183.36	1.13
8568.00	89.45	358.34	5597.28	3194.36 N	750.51 W	3277.31	1.00
8663.00	89.20	359.04	5598.41	3289.33 N	752.67 W	3371.11	0.78
8758.00	89.01	357.31	5599.89	3384.27 N	755.70 W	3465.04	1.83
8852.00	89.72	1.41	5600.92	3478.23 N	756.75 W	3557.66	4.42
8947.00	89.63	6.00	5601.46	3573.01 N	750.62 W	3649.78	4.83
9041.00	88.74	3.41	5602.80	3666.67 N	742.91 W	3740.52	2.91
9136.00	88.06	0.72	5605.46	3761.57 N	739.49 W	3833.24	2.91
9231.00	88.80	358.53	5608.06	3856.52 N	740.11 W	3926.76	2.44
9325.00	90.18	357.71	5608.90	3950.46 N	743.19 W	4019.72	1.71
9420.00	91.14	354.47	5607.80	4045.22 N	749.66 W	4114.09	3.56
9515.00	90.43	355.57	5606.50	4139.85 N	757.90 W	4208.66	1.38
9608.00	90.71	354.90	5605.57	4232.53 N	765.62 W	4301.21	0.78
9671.00	90.71	354.90	5604.79	4295.27 N	771.22 W	4363.93	0.00

CALCULATION BASED ON MINIMUM CURVATURE METHOD

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

**VERTICAL SECTION RELATIVE TO WELL HEAD
VERTICAL SECTION IS COMPUTED ALONG A DIRECTION OF 349.62 DEGREES (GRID)
A TOTAL CORRECTION OF 6.91 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 9671.00 FEET
IS 4363.96 FEET ALONG 349.82 DEGREES (GRID)**

**Tied in @ Surface
First three Survey's from 3rd party source (Muulti Shot EMS)**

Final survey projected to bit.