

PCGK - Pressure Case Gamma



1 : 600 / 1 : 240

[illegible]

WELL INFORMATION

MWD Run Number	100				
Date run completed	16-Jan-15				
Rig Bit Number	2				
Bit Size (in)	8.750				
Tool Nominal OD (in)	6.810				
Log Start Depth (TVD, ft)	1,236.98				
Log End Depth (TVD, ft)	5,594.91				
Drill or Wipe	Drill				
Drill/Wipe Start Date and Time	14-Jan-15 17:58				
Drill/Wipe End Date and Time	16-Jan-15 10:37				
Min Inc (deg) @ Depth (TVD, ft)	0.09 @ 2,401.96				
Max Inc (deg) @ Depth (TVD, ft)	85.80 @ 5,591.71				
Bit TFA(in2) / Bit Type	1.74 / PDC				
Flow Rate (gpm)	463.44				
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A				
Fluid Type	Fresh Water Gel				
Density (ppg) / Viscosity (spqt)	10.05 / 42.00				
Filtrate CL (ppm)	2,100.00				
pH / Fluid Loss (mptm)	8.50 / 7				
PV (cP) / YP (lbf2)	10 / 10.00				
% Solids / % Sand	10.30 / 0.15				
% Oil / Oil:Water Ratio	N/A / N/A				
Rm @ Measured Temp (degF)	N/A @ N/A				
Rmf @ Measured Temp (degF)	N/A @ N/A				
Rmc @ Measured Temp (degF)	N/A @ N/A				
Mud Temp (degF) @ Depth (ft)	115.00 / 20M				

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

SENSOR INFORMATION

Downhole Processor Information

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

Directional Sensor Information

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

Gamma Ray Sensor Information

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

REMARKS

1. All depths are calibrated to driller's pipe tally and are true vertical 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

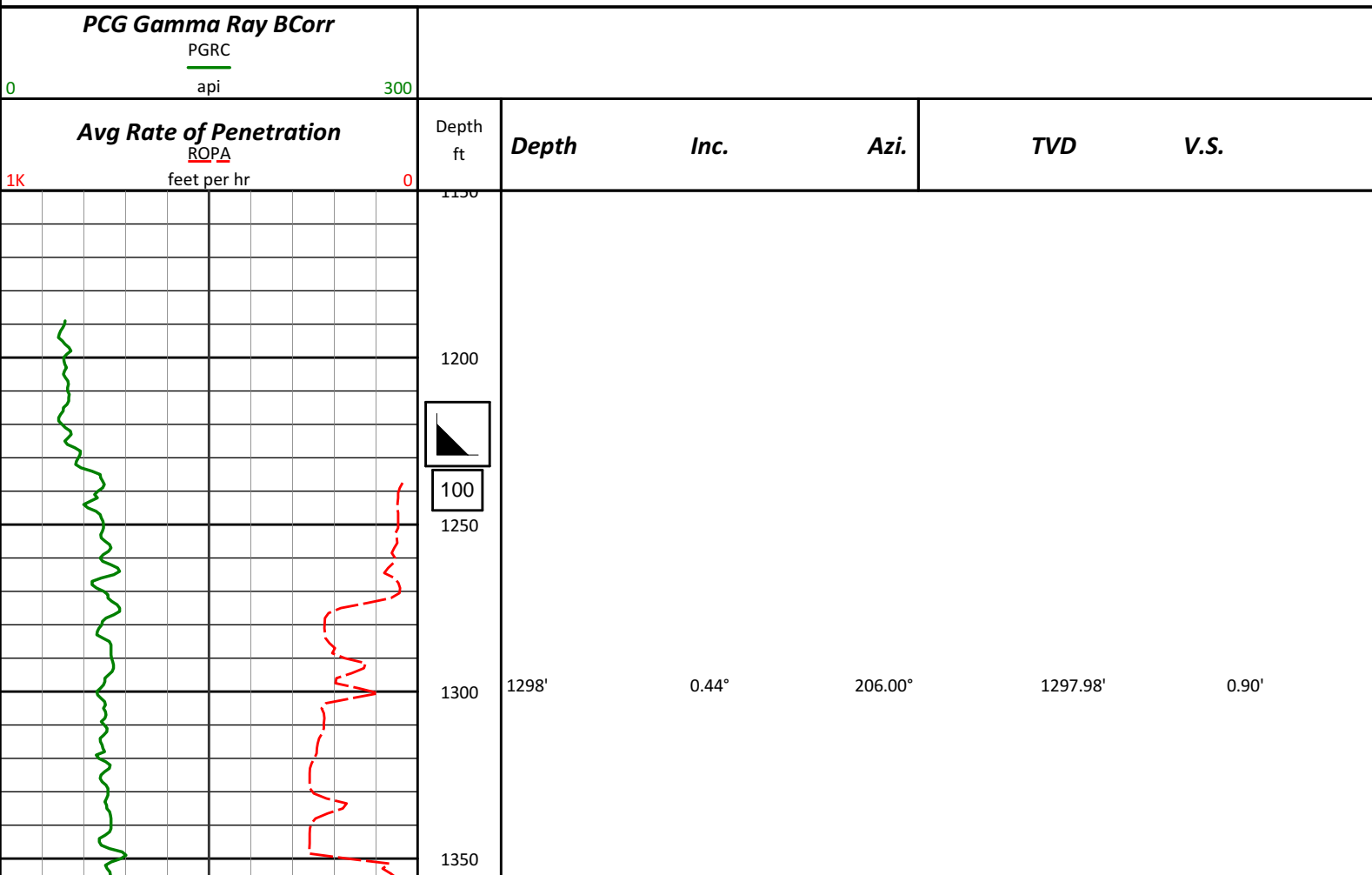
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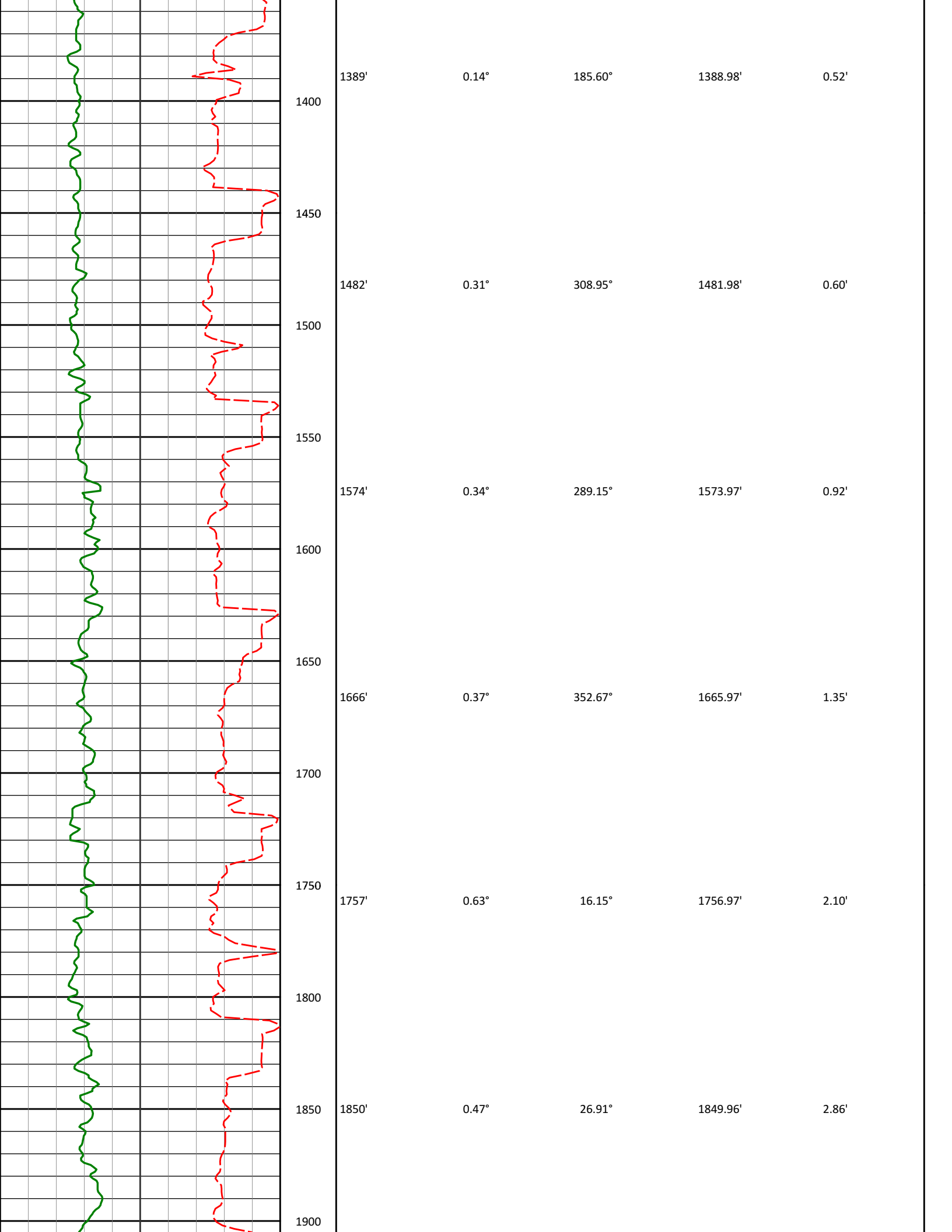
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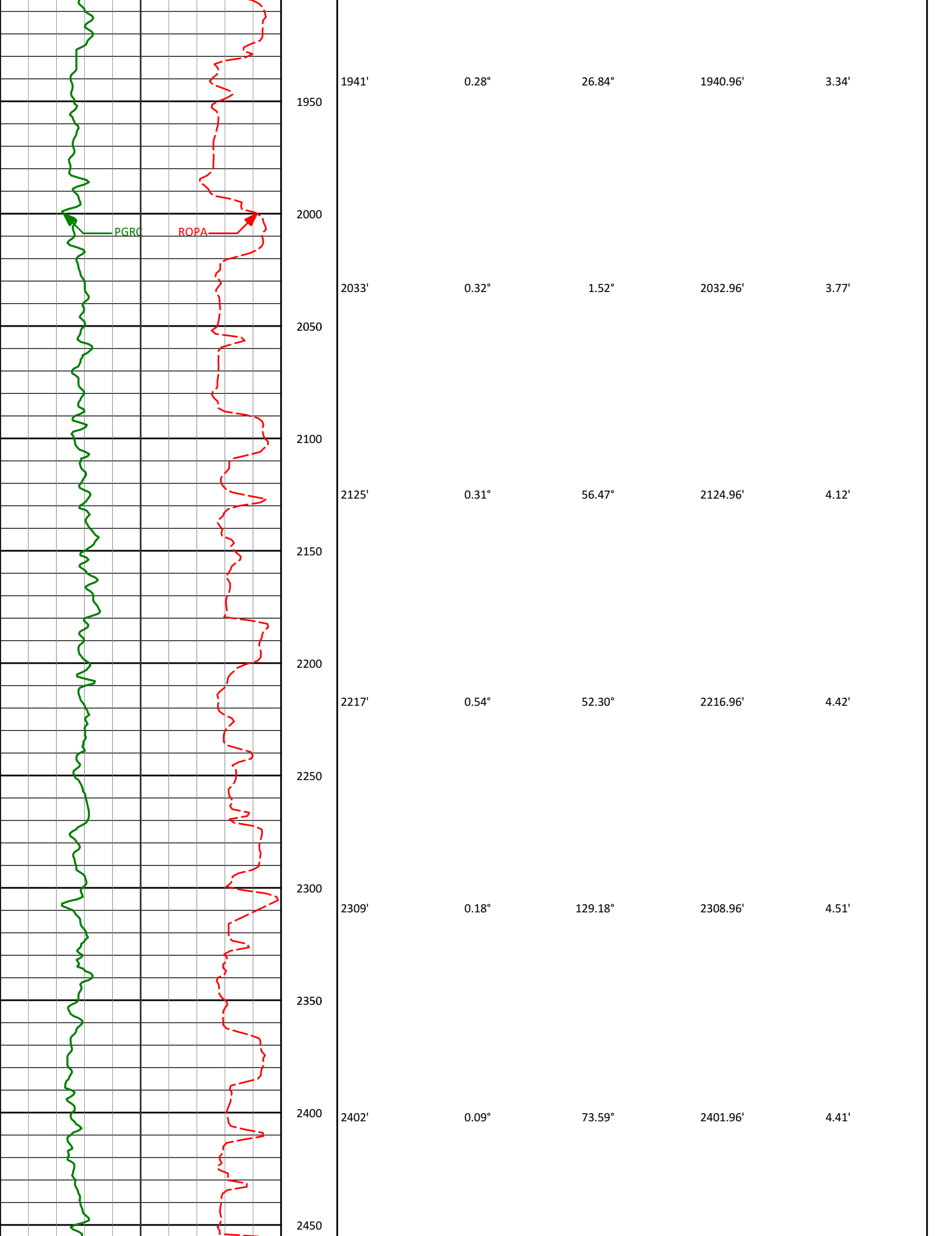
Sperry Drilling Services

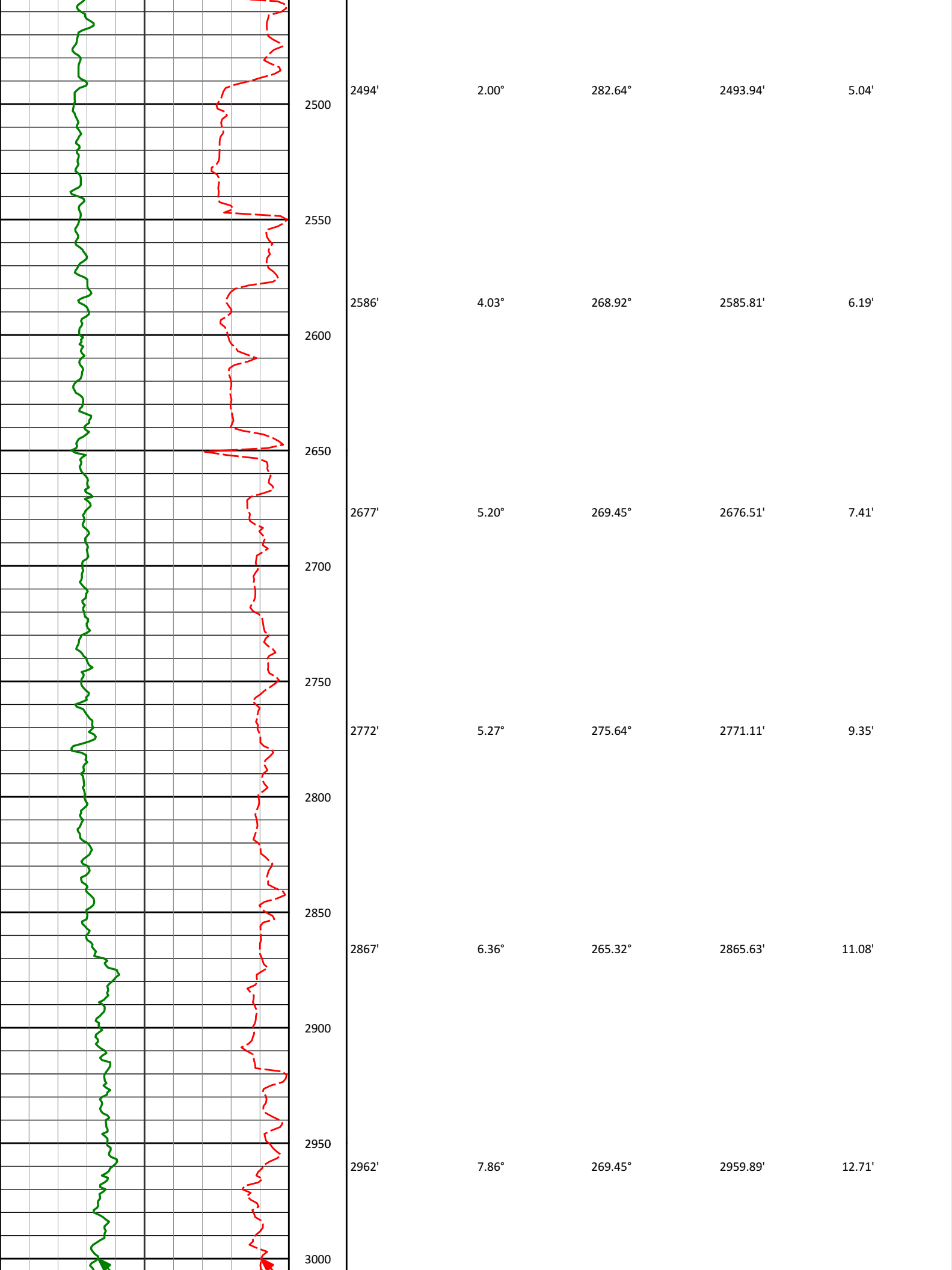
TVD Correlation Log 1:600

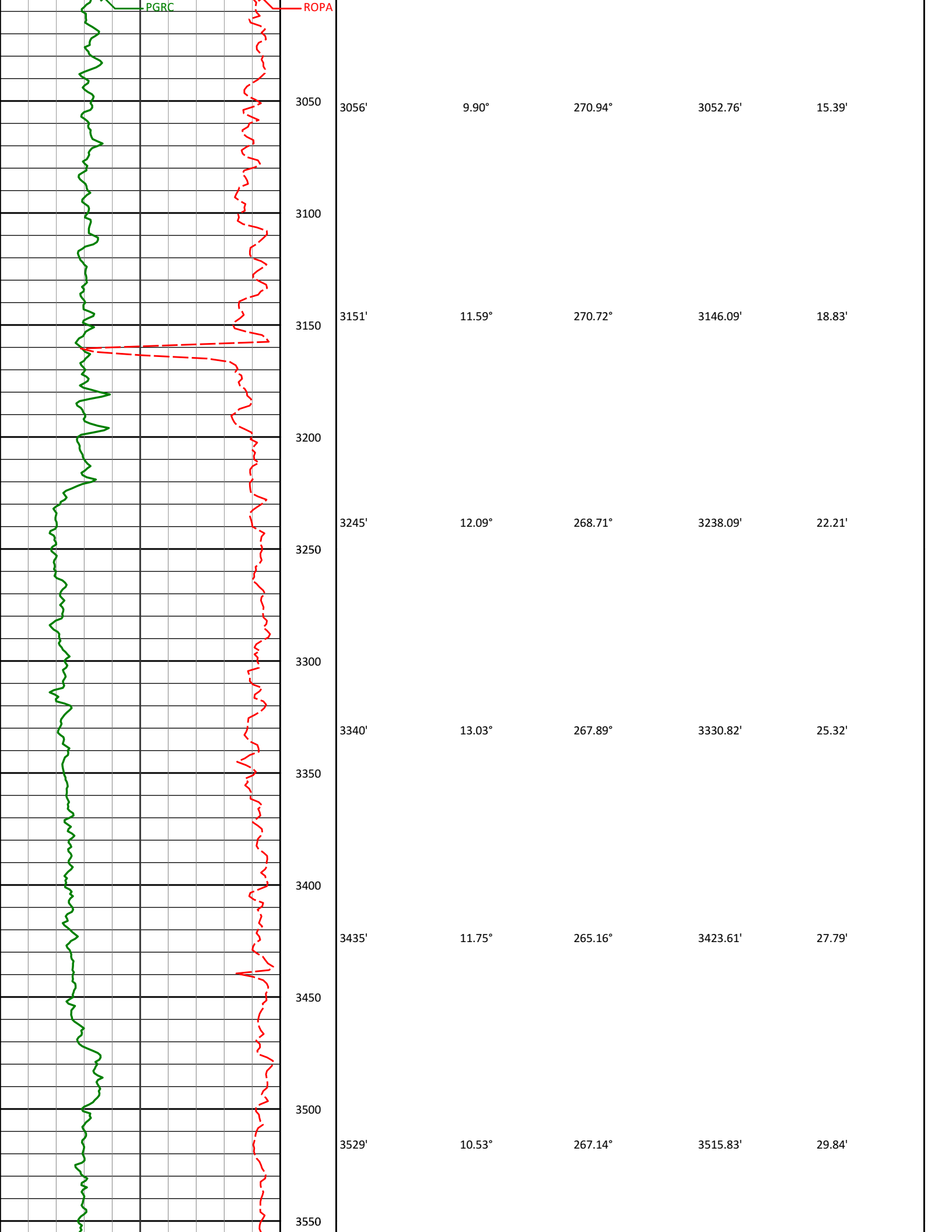
Noble Energy
Tripucka_State_LD02-75HN
H&P 321
Sec.2-T9N-R58W

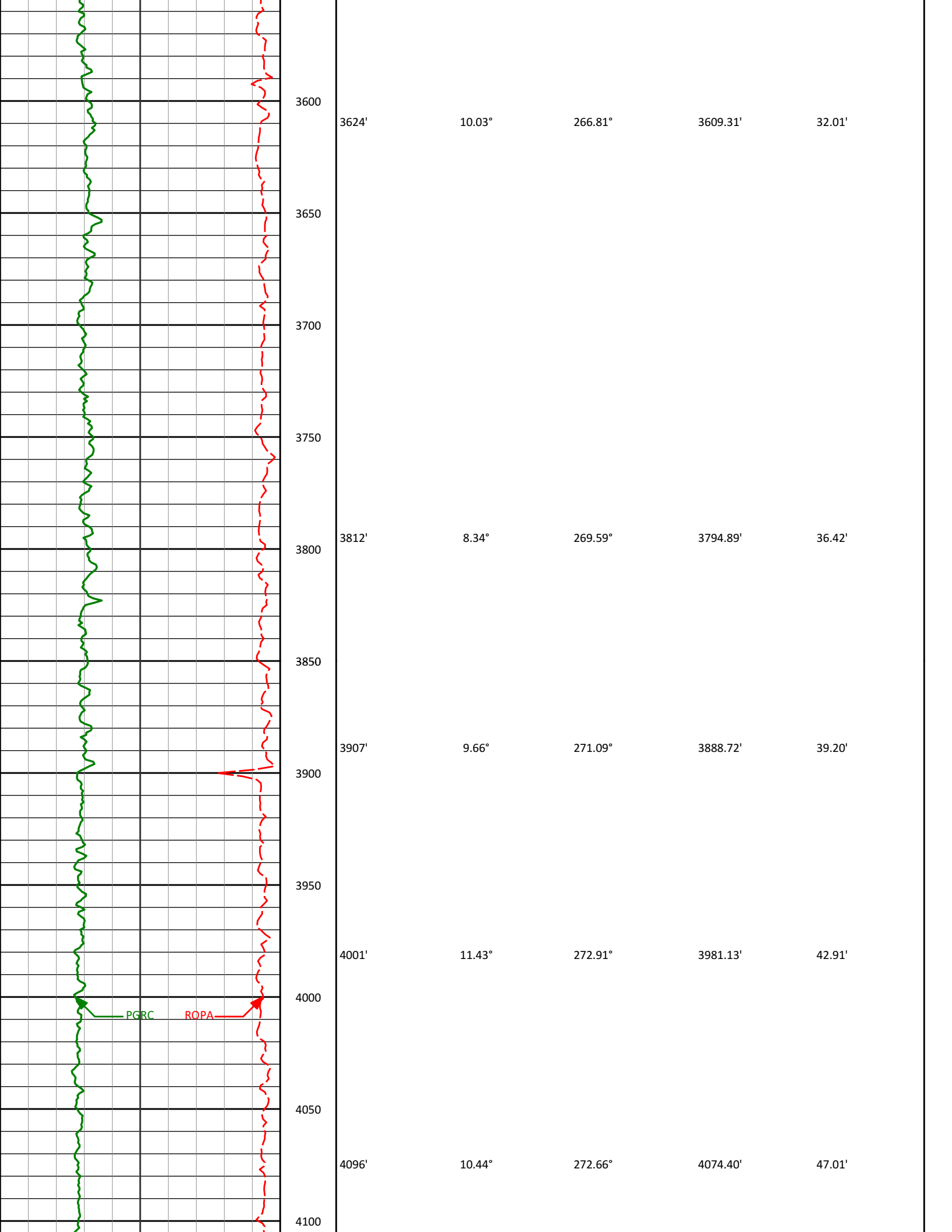


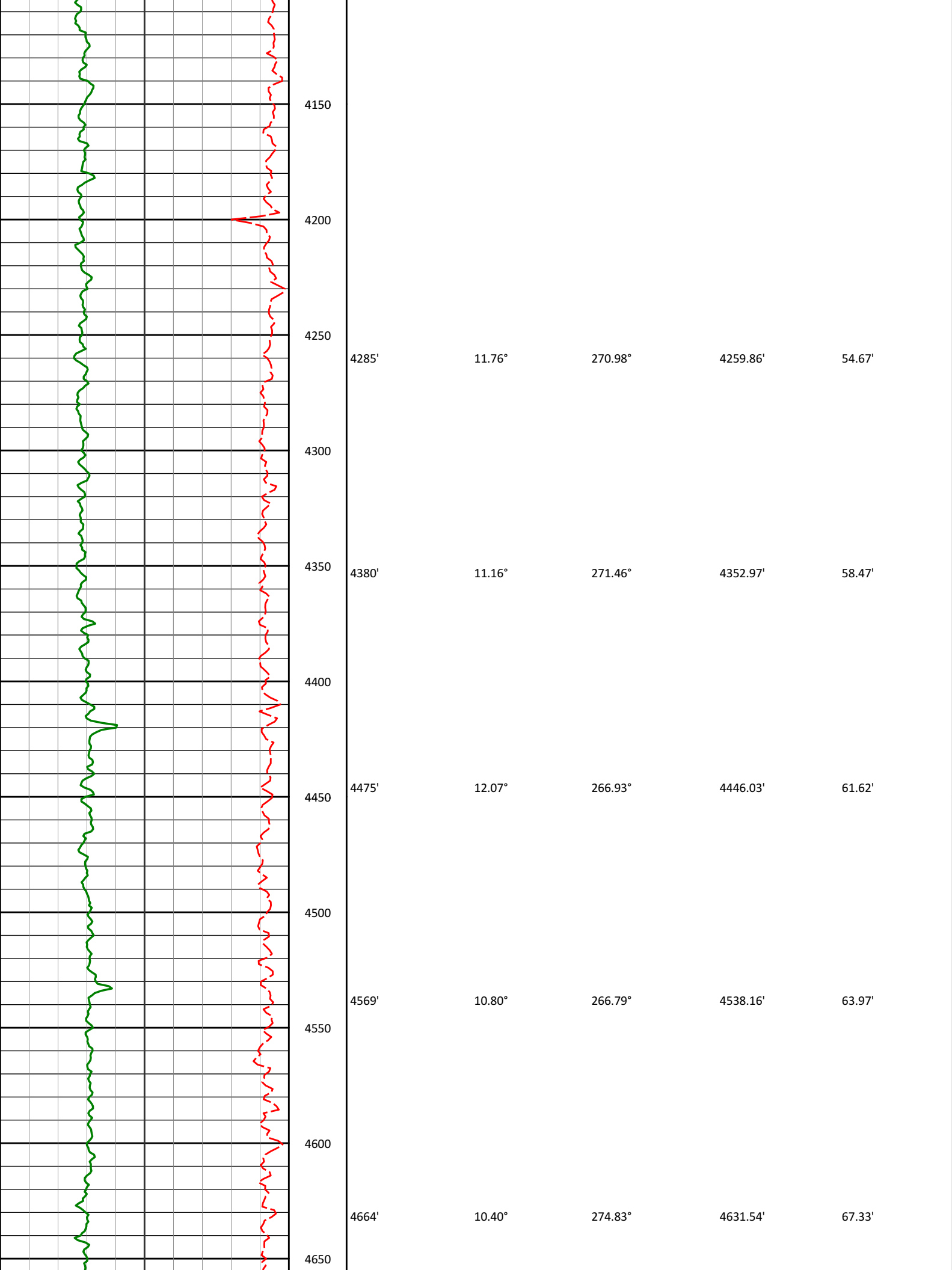


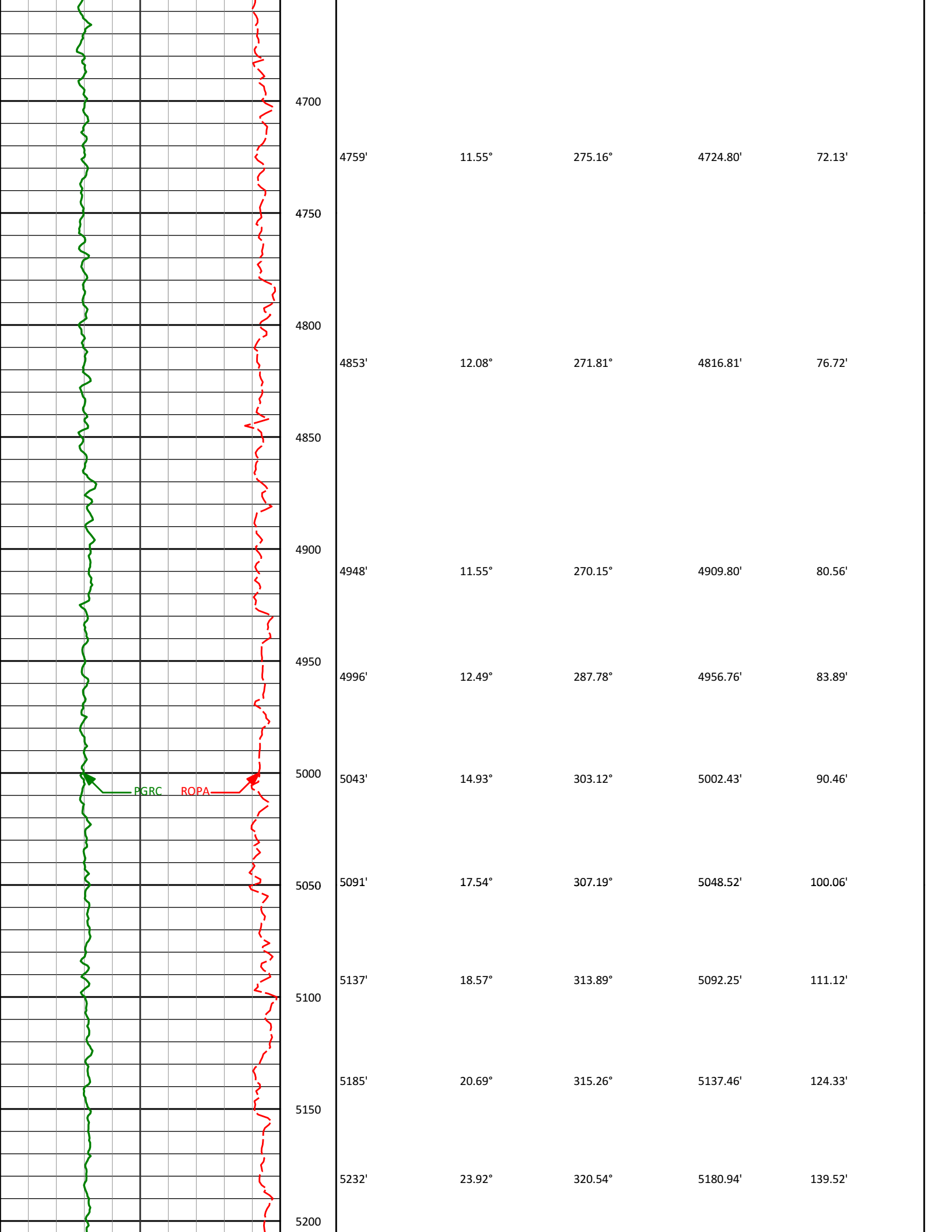


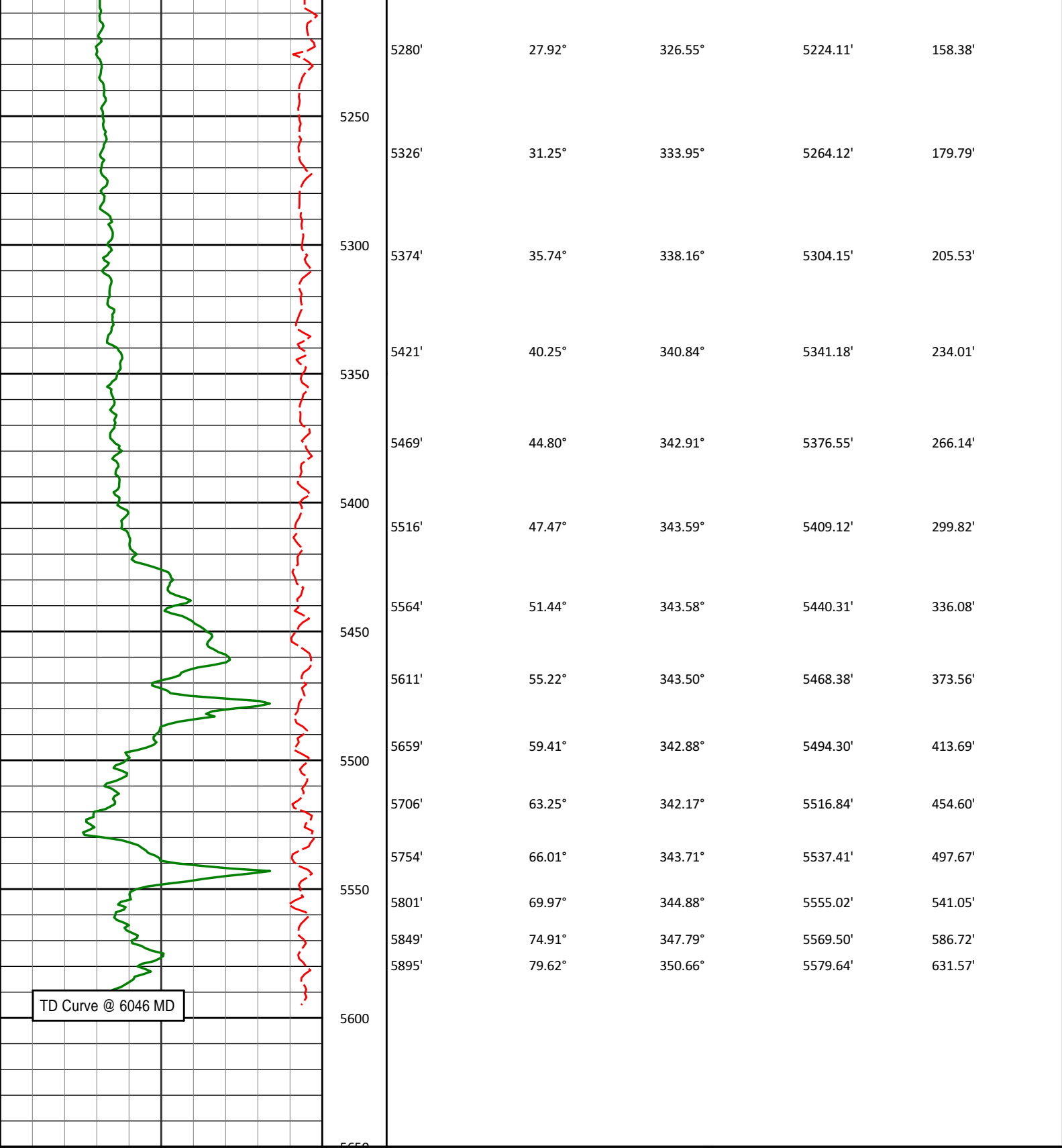












TD Curve @ 6046 MD

5280'	27.92°	326.55°	5224.11'	158.38'
5326'	31.25°	333.95°	5264.12'	179.79'
5374'	35.74°	338.16°	5304.15'	205.53'
5421'	40.25°	340.84°	5341.18'	234.01'
5469'	44.80°	342.91°	5376.55'	266.14'
5516'	47.47°	343.59°	5409.12'	299.82'
5564'	51.44°	343.58°	5440.31'	336.08'
5611'	55.22°	343.50°	5468.38'	373.56'
5659'	59.41°	342.88°	5494.30'	413.69'
5706'	63.25°	342.17°	5516.84'	454.60'
5754'	66.01°	343.71°	5537.41'	497.67'
5801'	69.97°	344.88°	5555.02'	541.05'
5849'	74.91°	347.79°	5569.50'	586.72'
5895'	79.62°	350.66°	5579.64'	631.57'

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

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Sperry Drilling Services

TVD Depth = 1,240'

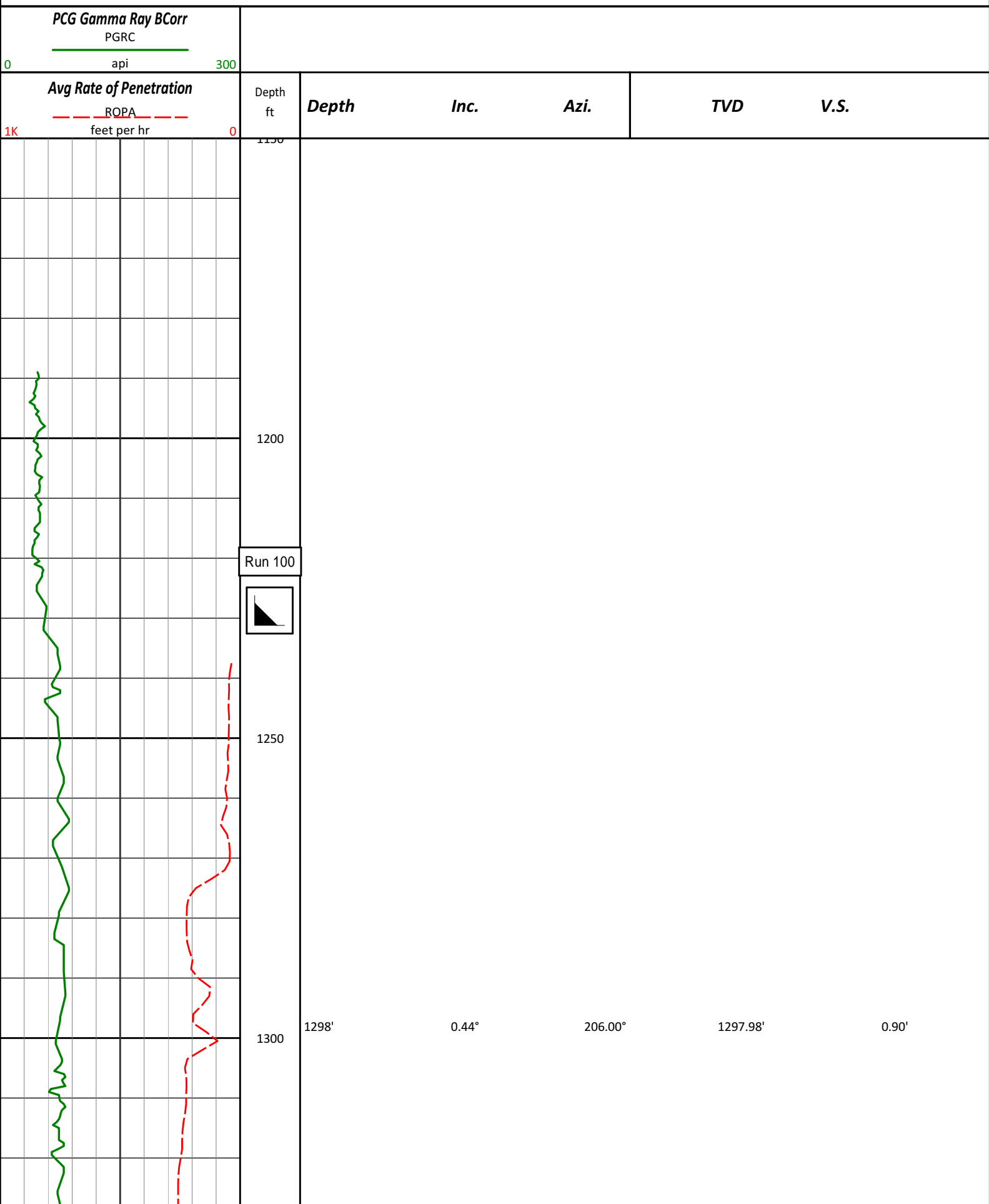
IVD Detail Log 1:240

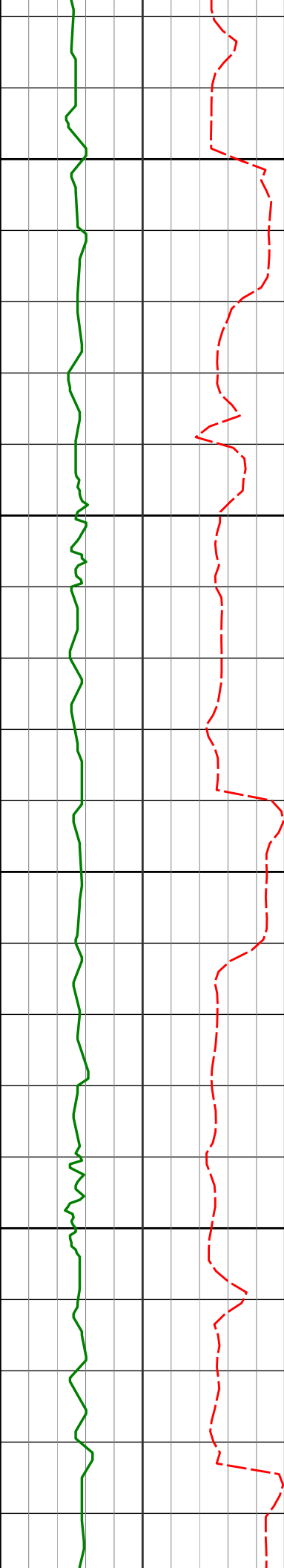
Noble Energy

Tripucka_State_LD02-75HN

H&P 321

Sec. 2-T9N-R58W





1350

1389'

0.14°

185.60°

1388.98'

0.52'

1400

1450

1482'

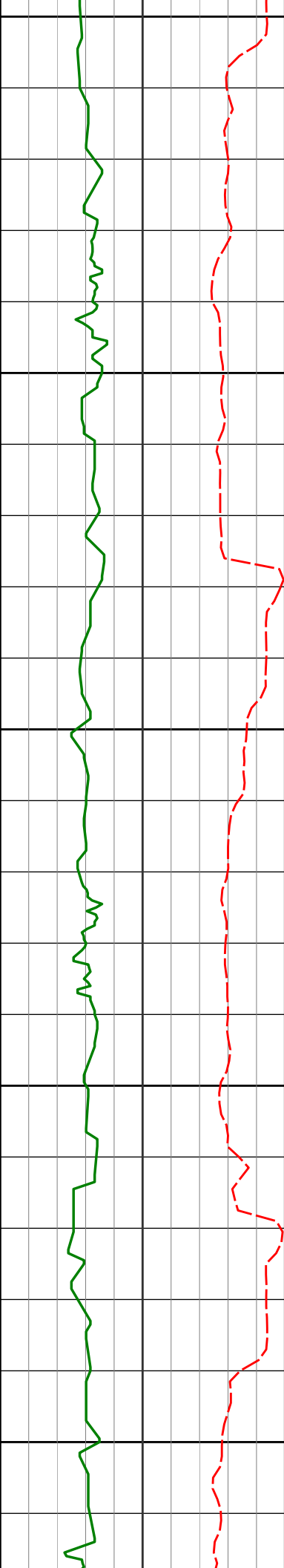
0.31°

308.95°

1481.98'

0.60'

1500



1550

1574'

0.34°

289.15°

1573.97'

0.92'

1600

1650

1666'

0.37°

352.67°

1665.97'

1.35'

1700

1750

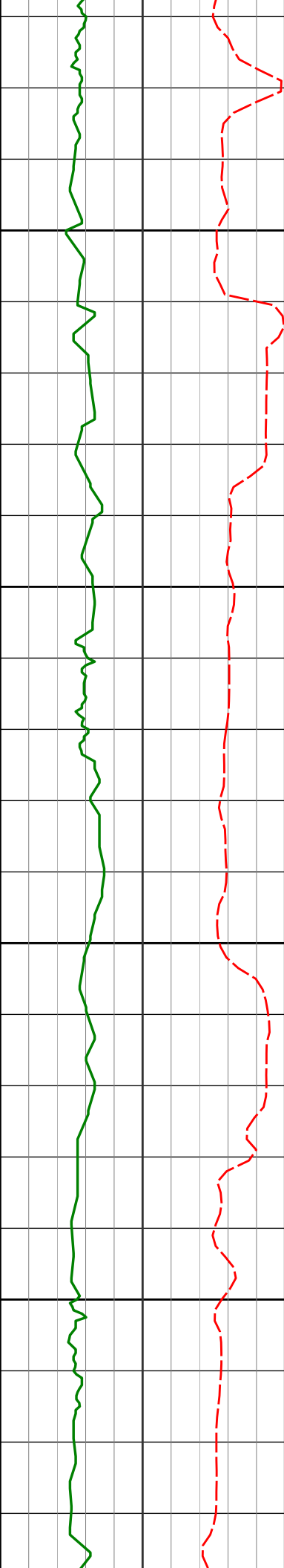
1757'

0.63°

16.15°

1756.97'

2.10'



1800

1850

1900

1950

1850'

1941'

0.47°

0.28°

26.91°

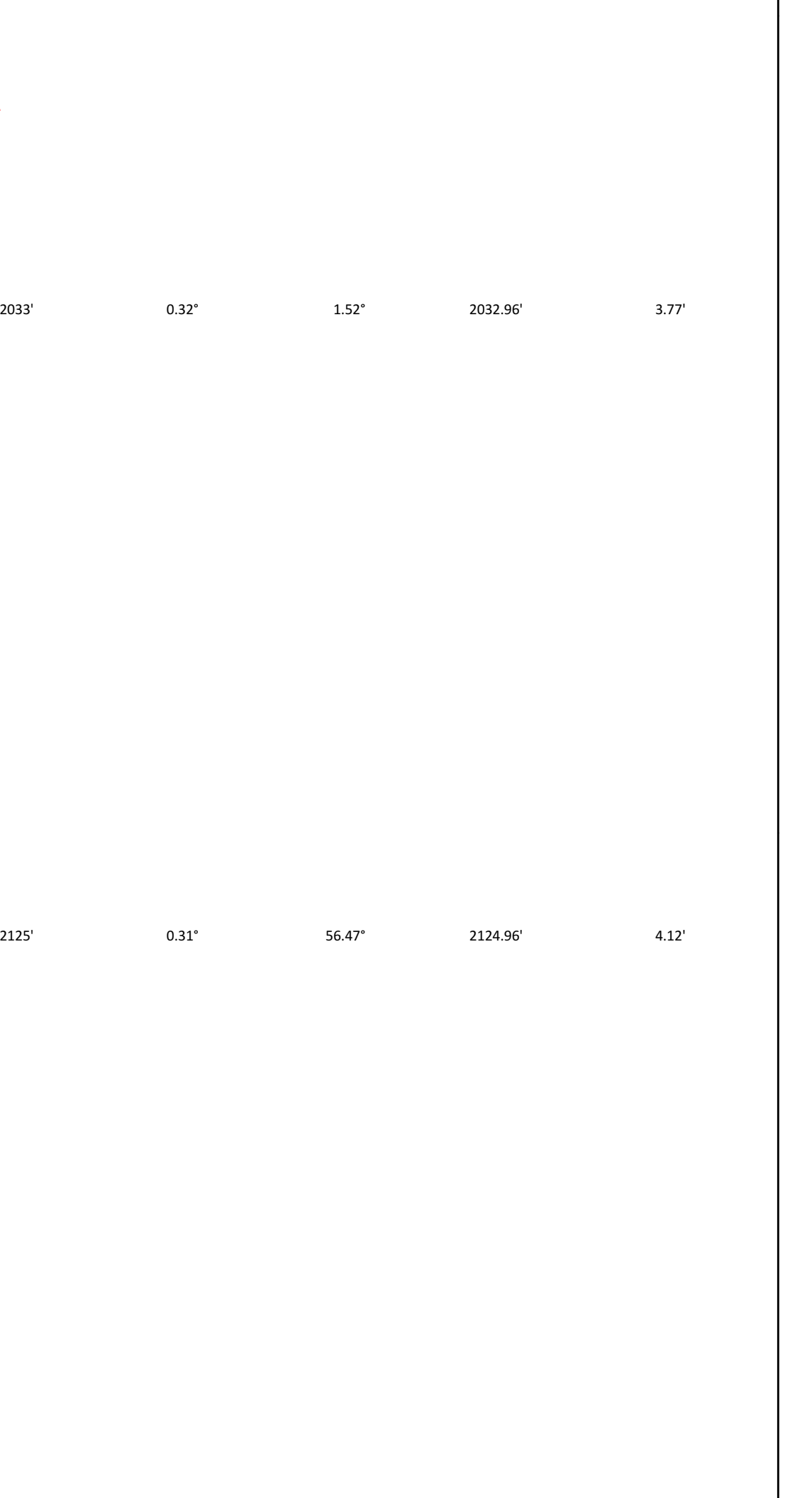
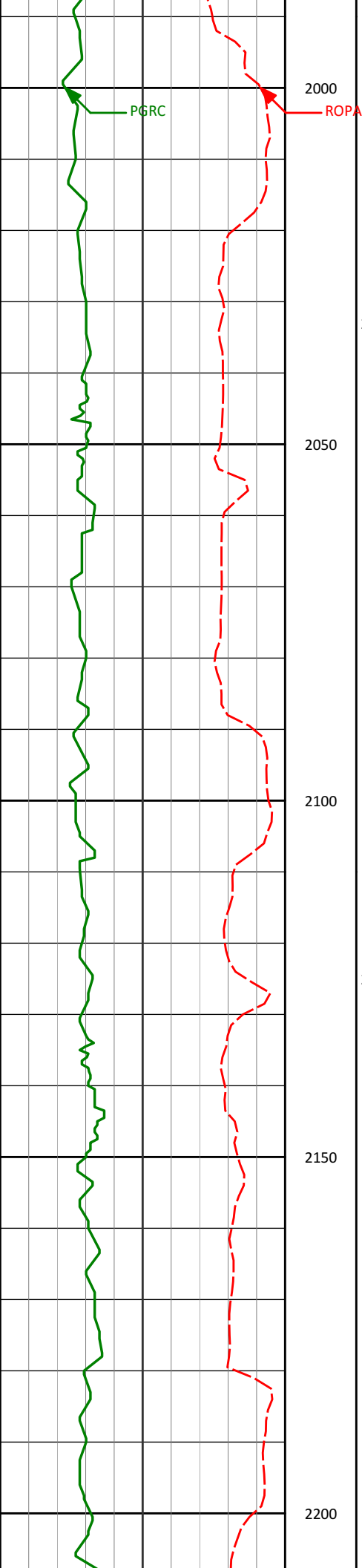
26.84°

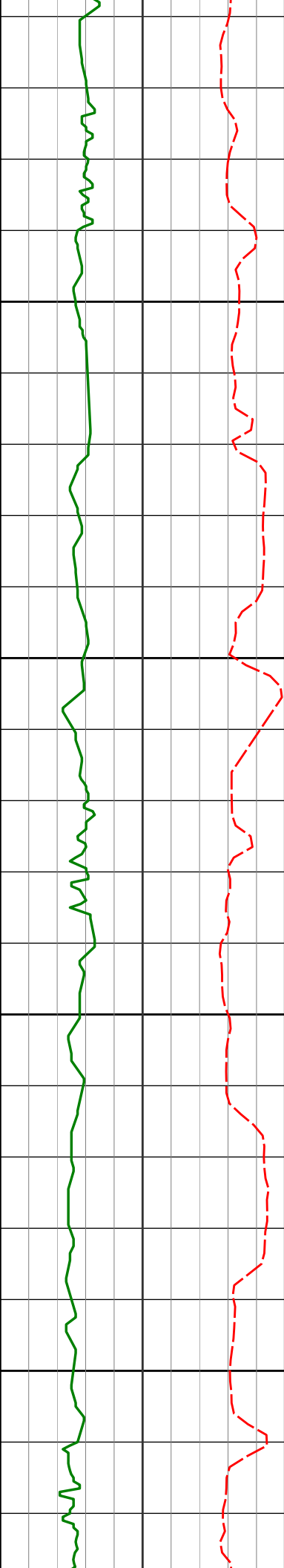
1849.96'

1940.96'

2.86'

3.34'





2217'

0.54°

52.30°

2216.96'

4.42'

2250

2300

2309'

0.18°

129.18°

2308.96'

4.51'

2350

2400

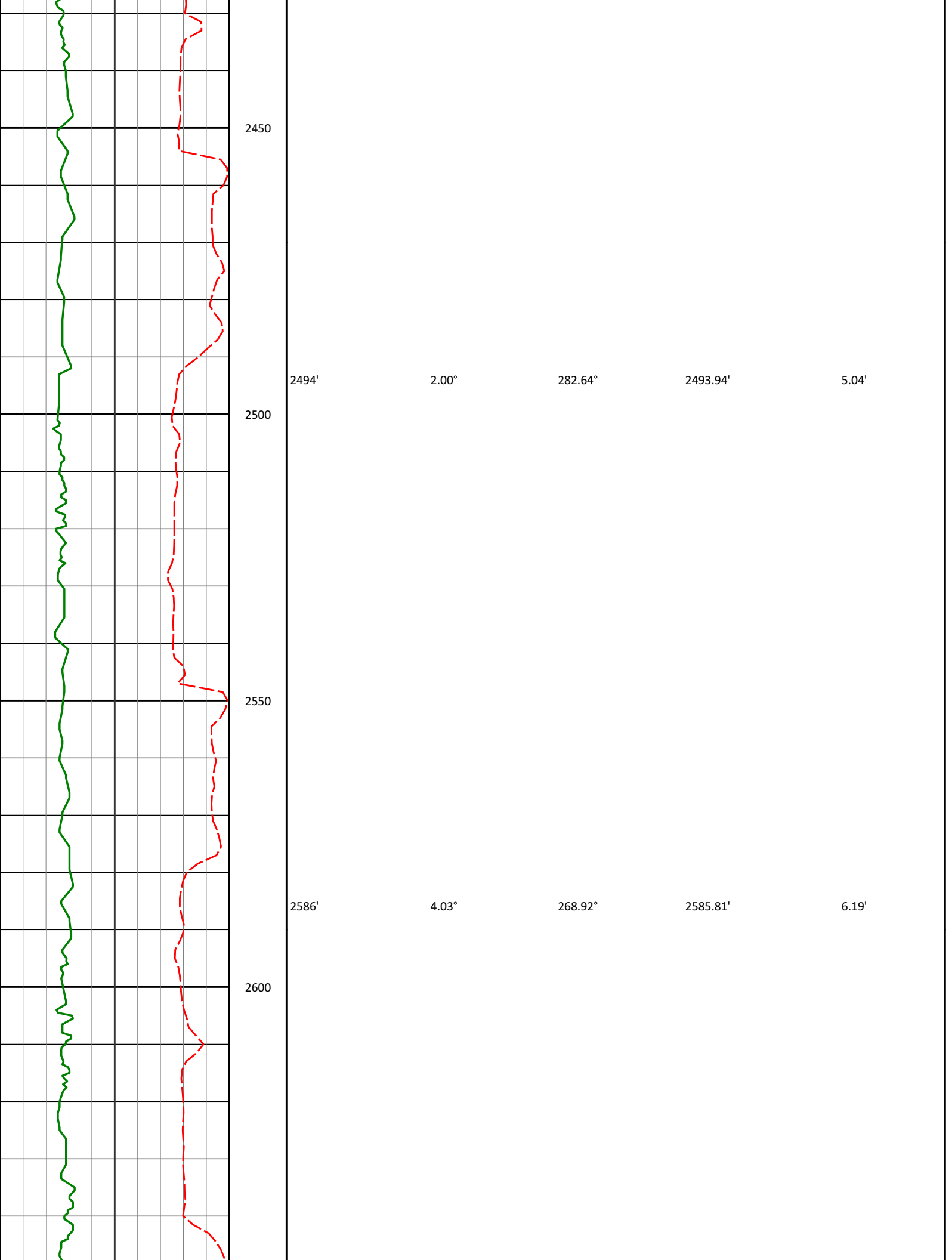
2402'

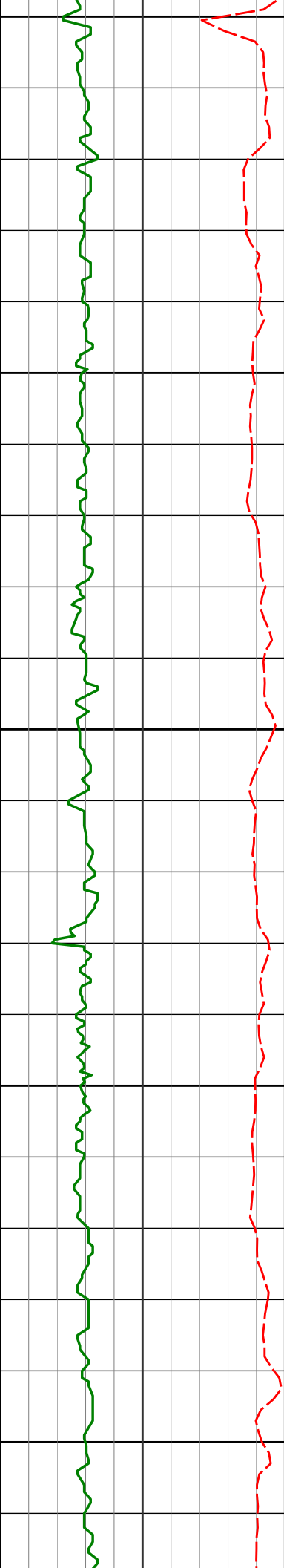
0.09°

73.59°

2401.96'

4.41'





2650

2677'

2700

2750

2772'

2800

2850

2867'

5.20°

269.45°

2676.51'

7.41'

5.27°

275.64°

2771.11'

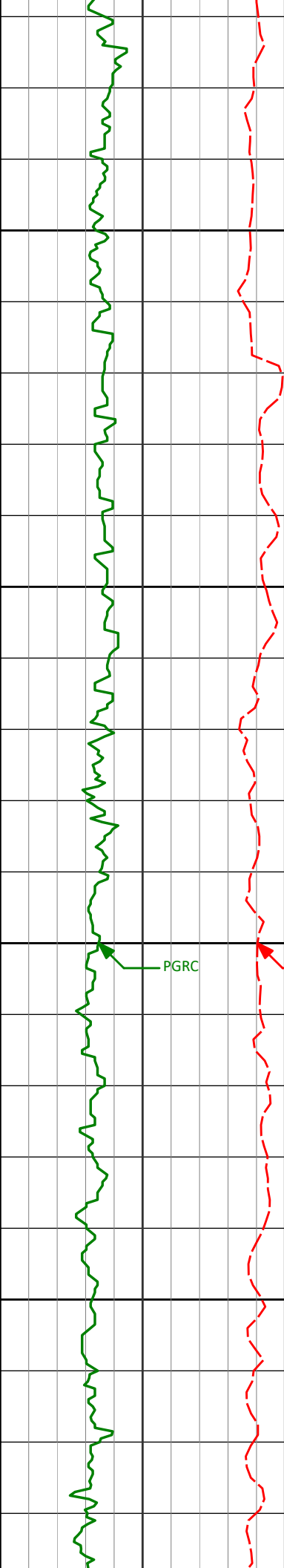
9.35'

6.36°

265.32°

2865.63'

11.08'



2900

2950

3000

3050

2962'

7.86°

269.45°

2959.89'

12.71'

PGRC

ROPA

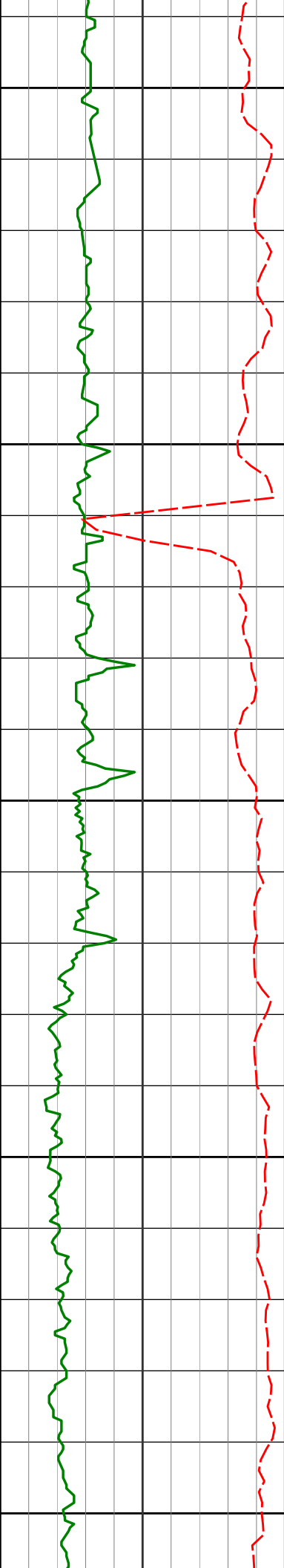
3056'

9.90°

270.94°

3052.76'

15.39'



3100

3151'

11.59°

270.72°

3146.09'

18.83'

3150

3200

3245'

12.09°

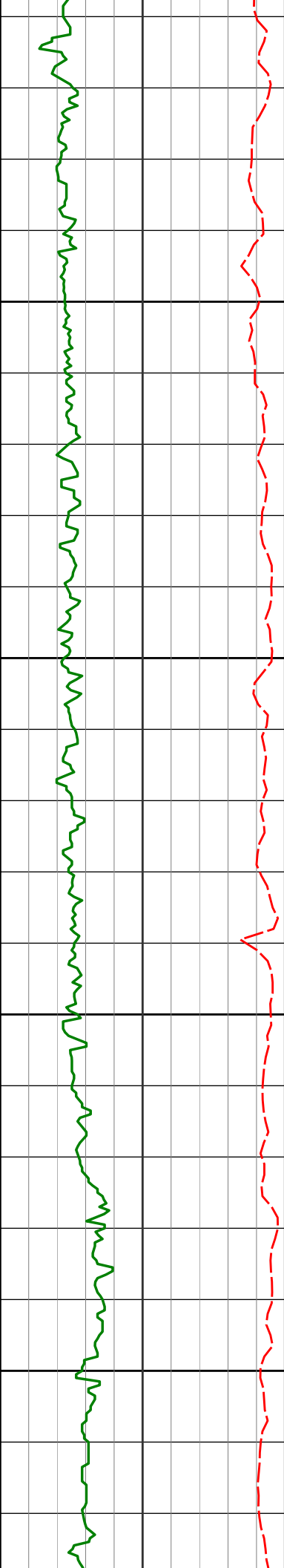
268.71°

3238.09'

22.21'

3250

3300



3340'

13.03°

267.89°

3330.82'

25.32'

3350

3400

3435'

11.75°

265.16°

3423.61'

27.79'

3450

3500

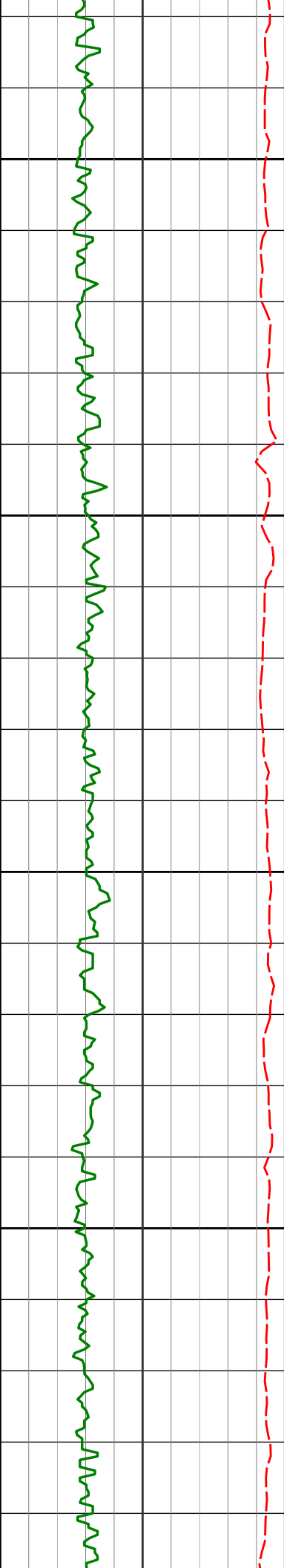
3529'

10.53°

267.14°

3515.83'

29.84'



3550

3600

3650

3700

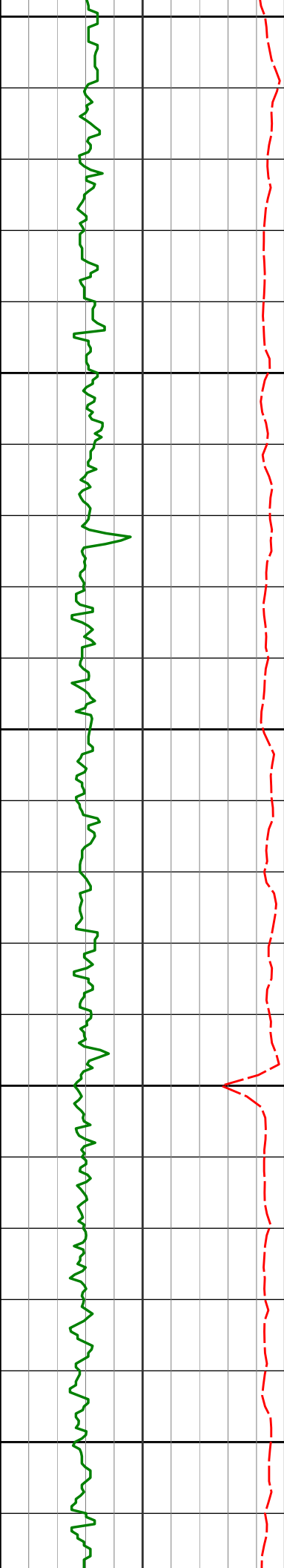
3624'

10.03°

266.81°

3609.31'

32.01'



3750

3812'

8.34°

269.59°

3794.89'

36.42'

3800

3850

3907'

9.66°

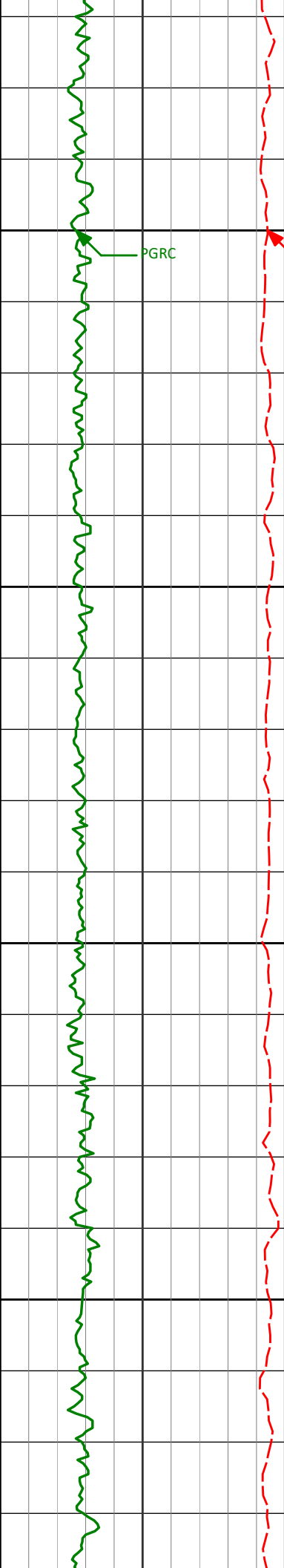
271.09°

3888.72'

39.20'

3900

3950



4001'

11.43°

272.91°

3981.13'

42.91'

4000

PGRC

ROPA

4050

4096'

10.44°

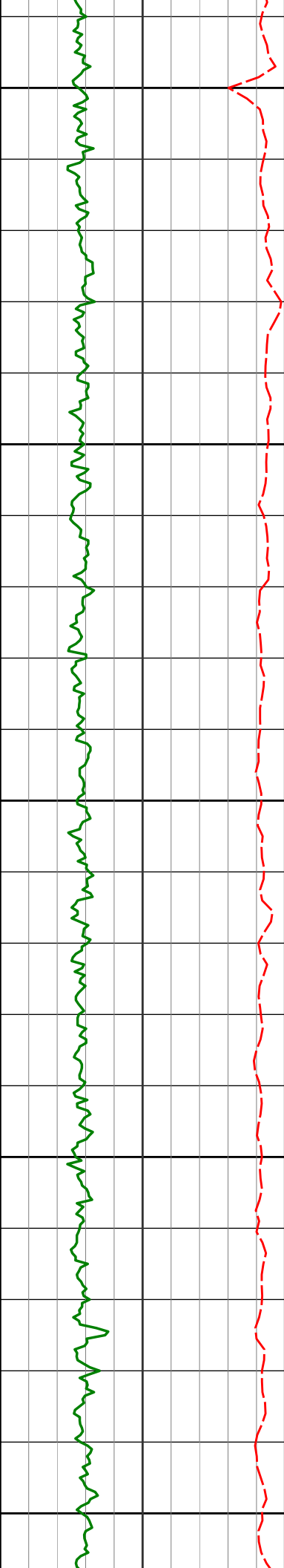
272.66°

4074.40'

47.01'

4100

4150



4200

4250

4300

4350

4400

4285'

11.76°

270.98°

4259.86'

54.67'

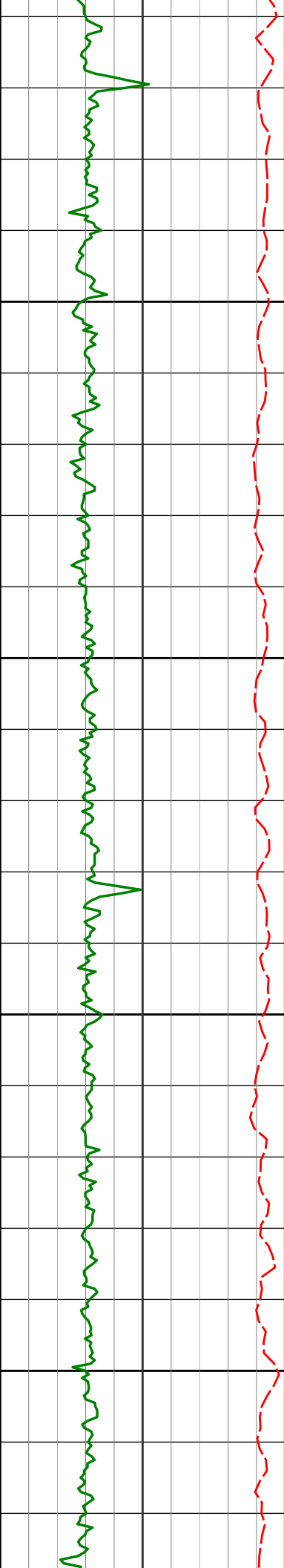
4380'

11.16°

271.46°

4352.97'

58.47'



4450

4500

4550

4600

4475'

4569'

12.07°

10.80°

266.93°

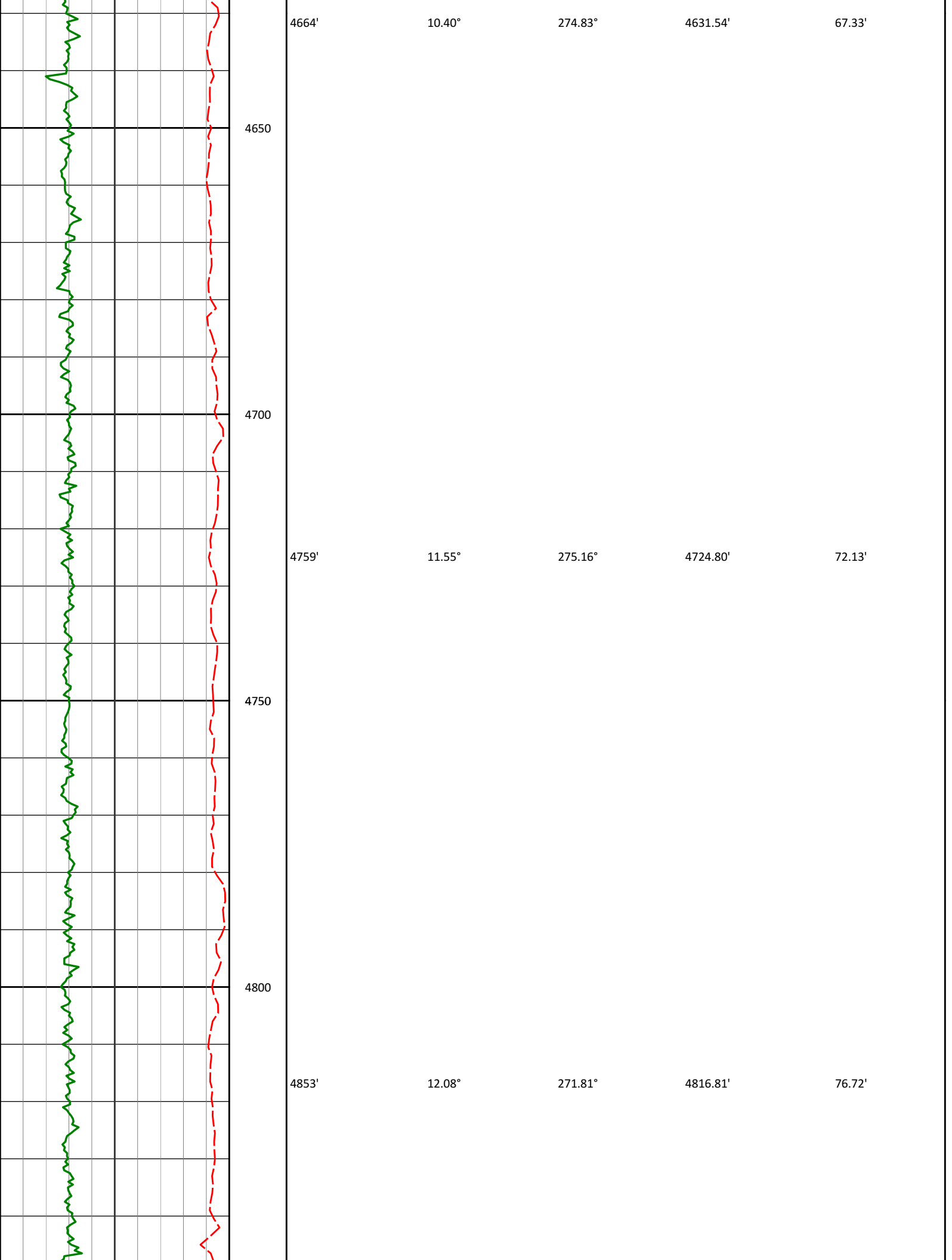
266.79°

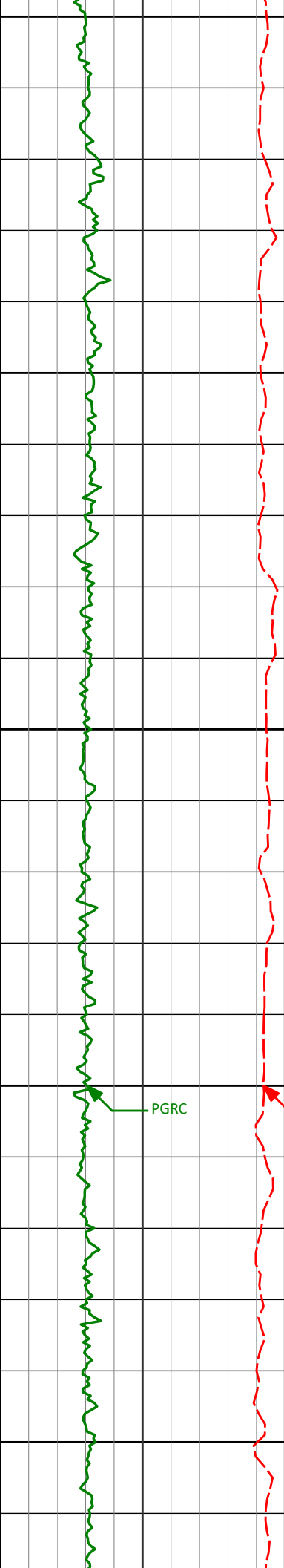
4446.03'

4538.16'

61.62'

63.97'





4850

4900

4950

5000

5050

4948'

4996'

5043'

5091'

11.55°

12.49°

14.93°

17.54°

270.15°

287.78°

303.12°

307.19°

4909.80'

4956.76'

5002.43'

5048.52'

80.56'

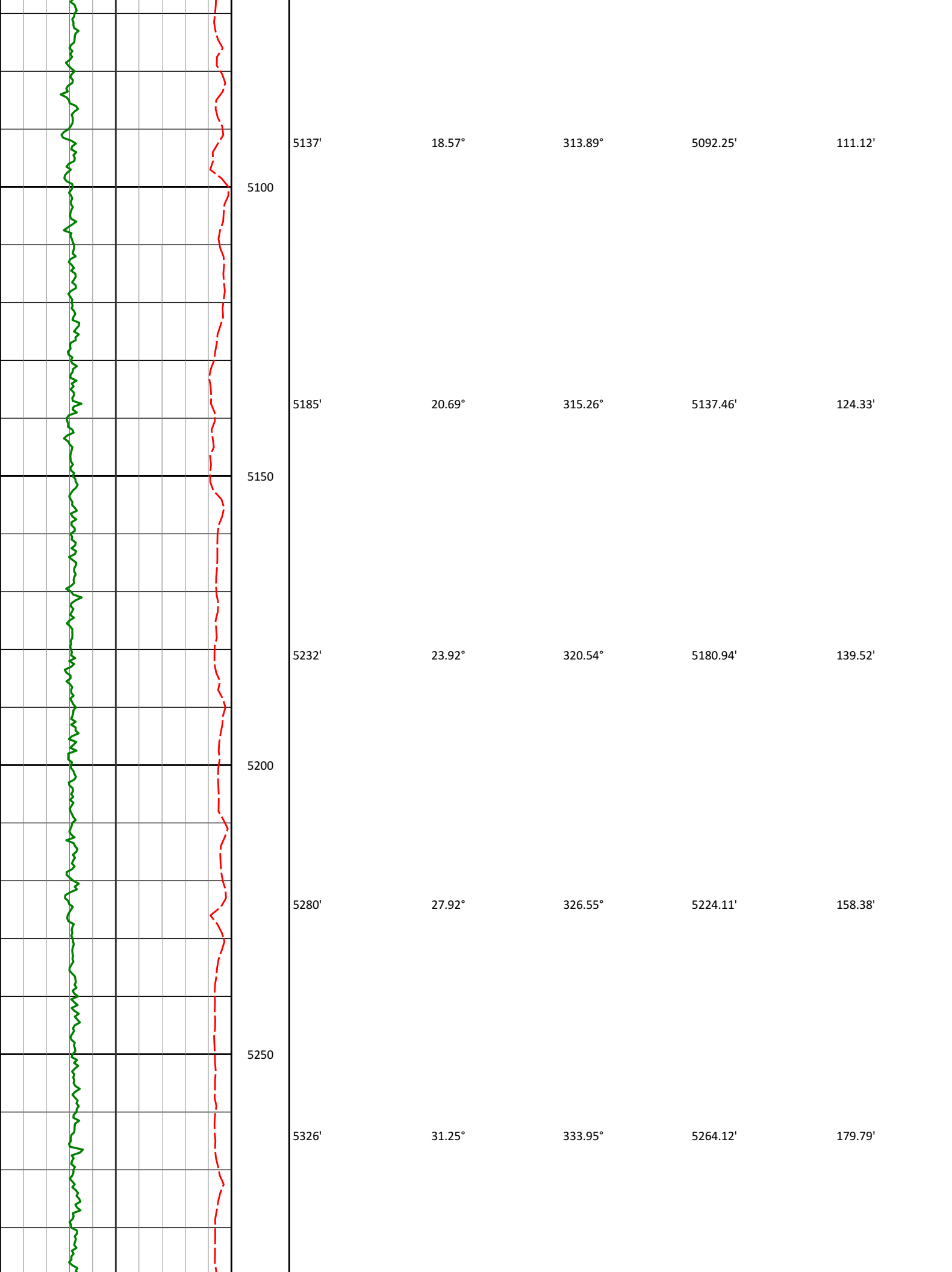
83.89'

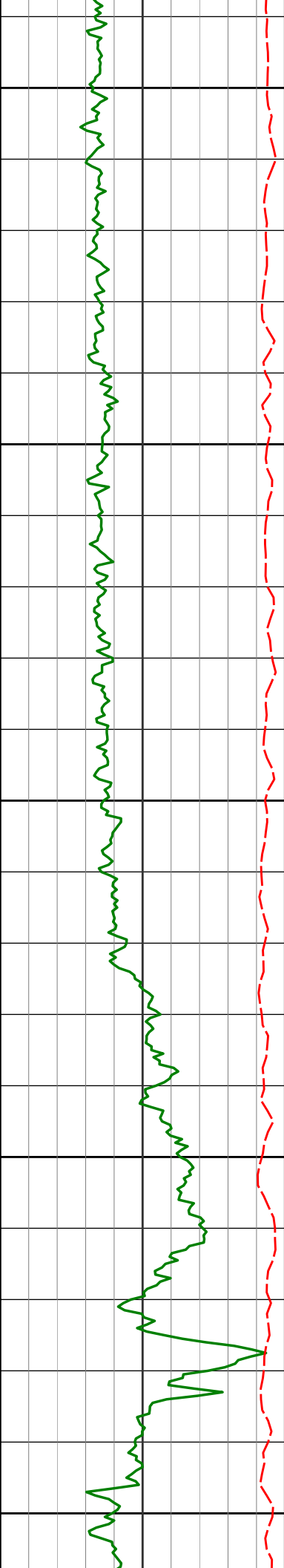
90.46'

100.06'

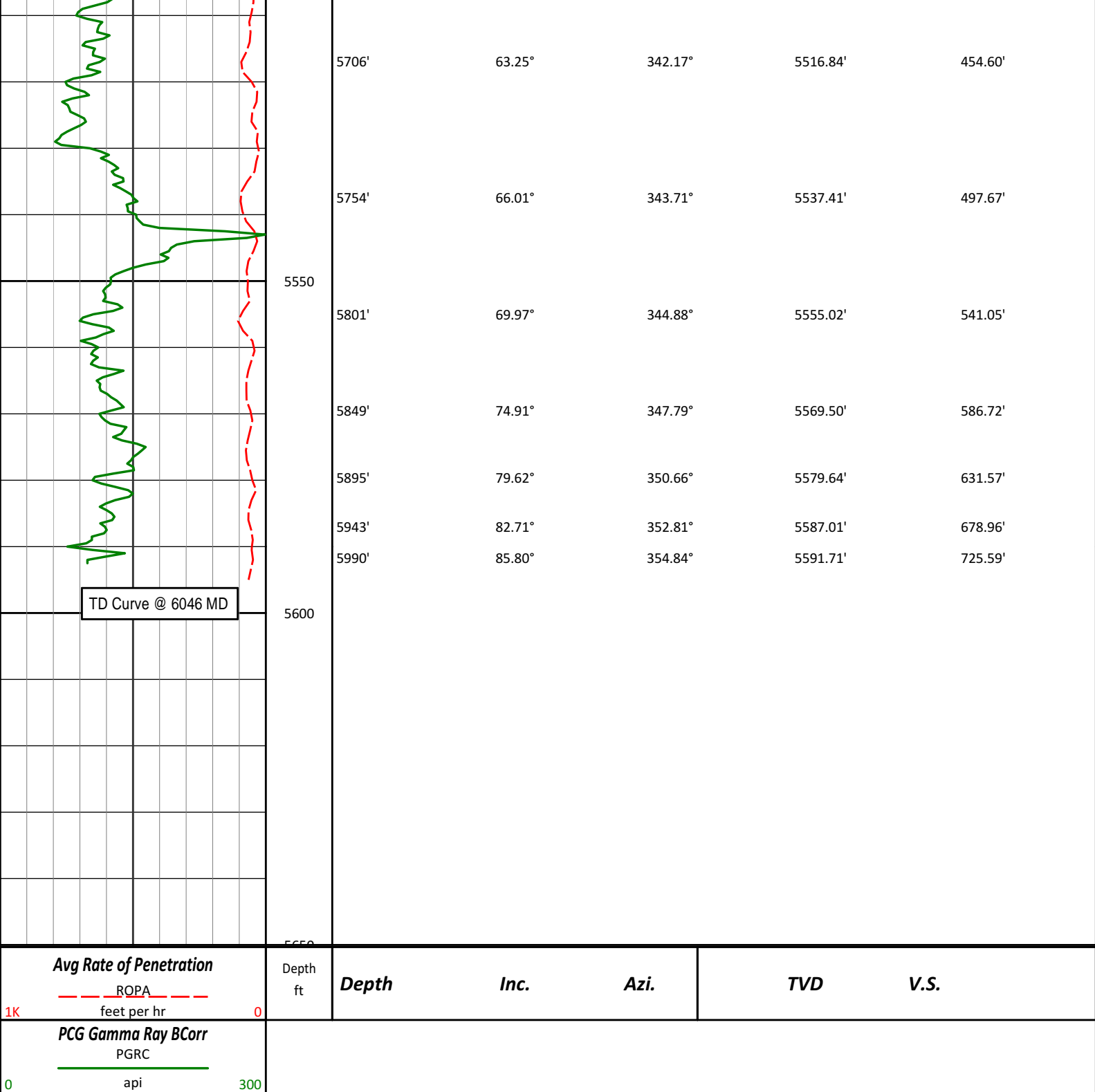
PGRC

ROPA





5300	5374'	35.74°	338.16°	5304.15'	205.53'
5350	5421'	40.25°	340.84°	5341.18'	234.01'
5400	5469'	44.80°	342.91°	5376.55'	266.14'
5450	5516'	47.47°	343.59°	5409.12'	299.82'
5500	5564'	51.44°	343.58°	5440.31'	336.08'
	5611'	55.22°	343.50°	5468.38'	373.56'
	5659'	59.41°	342.88°	5494.30'	413.69'



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)
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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	0.09	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
6046.00	87.66	358.07	5594.91	675.37 N	648.09 W	781.09	6.65

<div> CALCULATION BASED ON MINIMUM CURVATURE METHOD </div> <div> SURVEY COORDINATES RELATIVE TO WELL SYSTEM REFERENCE POINT TVD VALUES GIVEN RELATIVE TO DRILLING MEASUREMENT POINT </div> <div> VERTICAL SECTION RELATIVE TO WELL HEAD </div>

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 6046.00 FEET
IS 936.03 FEET ALONG 316.18 DEGREES (GRID)

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

Final survey projected to bit.

Date Printed:16 January 2015