



1 : 600 / 1 : 240

WELL INFORMATION					
MWD Run Number	100	200			
Date run completed	24-Apr-15	25-Apr-15			
Rig Bit Number	0100	0100			
Bit Size (in)	8.750	8.750			
Tool Nominal OD (in)	6.750	6.750			
Log Start Depth (TVD, ft)	626.00	5,627.60			
Log End Depth (TVD, ft)	5,627.60	6,025.56			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	23-Apr-15 21:00	24-Apr-15 22:30			
Drill/Wipe End Date and Time	24-Apr-15 14:30	25-Apr-15 04:30			
Min Inc (deg) @ Depth (TVD, ft)	0.10 @ 367.00	20.79 @ 5,652.92			
Max Inc (deg) @ Depth (TVD, ft)	17.99 @ 5,562.29	82.27 @ 6,020.10			
Bit TFA(in2) / Bit Type	PDC / 1.208	PDC / 1.208			
Flow Rate (gpm)	631.60	550.00			
Max AV (fpm) / CV (fpm) @ MWD	395.0 / N/A	395.0 / N/A			
Fluid Type	Native/Spud Mud	Native/Spud Mud			
Density (ppg) / Viscosity (spqt)	9.50 / 38.00	9.50 / 38.00			
Filtrate CL (ppm)	1,700.00	1,700.00			
pH / Fluid Loss (mptm)	10.10 / 29	10.10 / 26			
PV (cP) / YP (lbf2)	12 / 12.00	12 / 12.00			
% Solids / % Sand	11.5 / .15	11.5 / .15			
% 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 (in F) / S	122.00 / 12.00	122.00 / 12.00			

Max Tool Temp (degF) / Source	162.80 / PCM	160.83 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ 162.80	N/A @ 160.83			
Lead MWD Engineer	Brian Neu	Brian Neu			
Customer Representative	Cliff Kester	Cliff Kester			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.93	5.93			
Sub Serial Number	246470	246470			
Insert Serial Number	11680738	11680738			
Date and Time Initialized	23-Apr-15 15:41	23-Apr-15 15:41			
Date and Time Read	25-Apr-15 08:26	25-Apr-15 08:31			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	58.00	53.00			
Software Version	6.33	6.33			
Sub Serial Number	246470	246470			
Sonde Serial Number	11638628	11638628			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	72.30	338.67			

Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	51.14	46.64			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	246470	246470			
Insert/Sonde Serial Number	12037421	12037421			

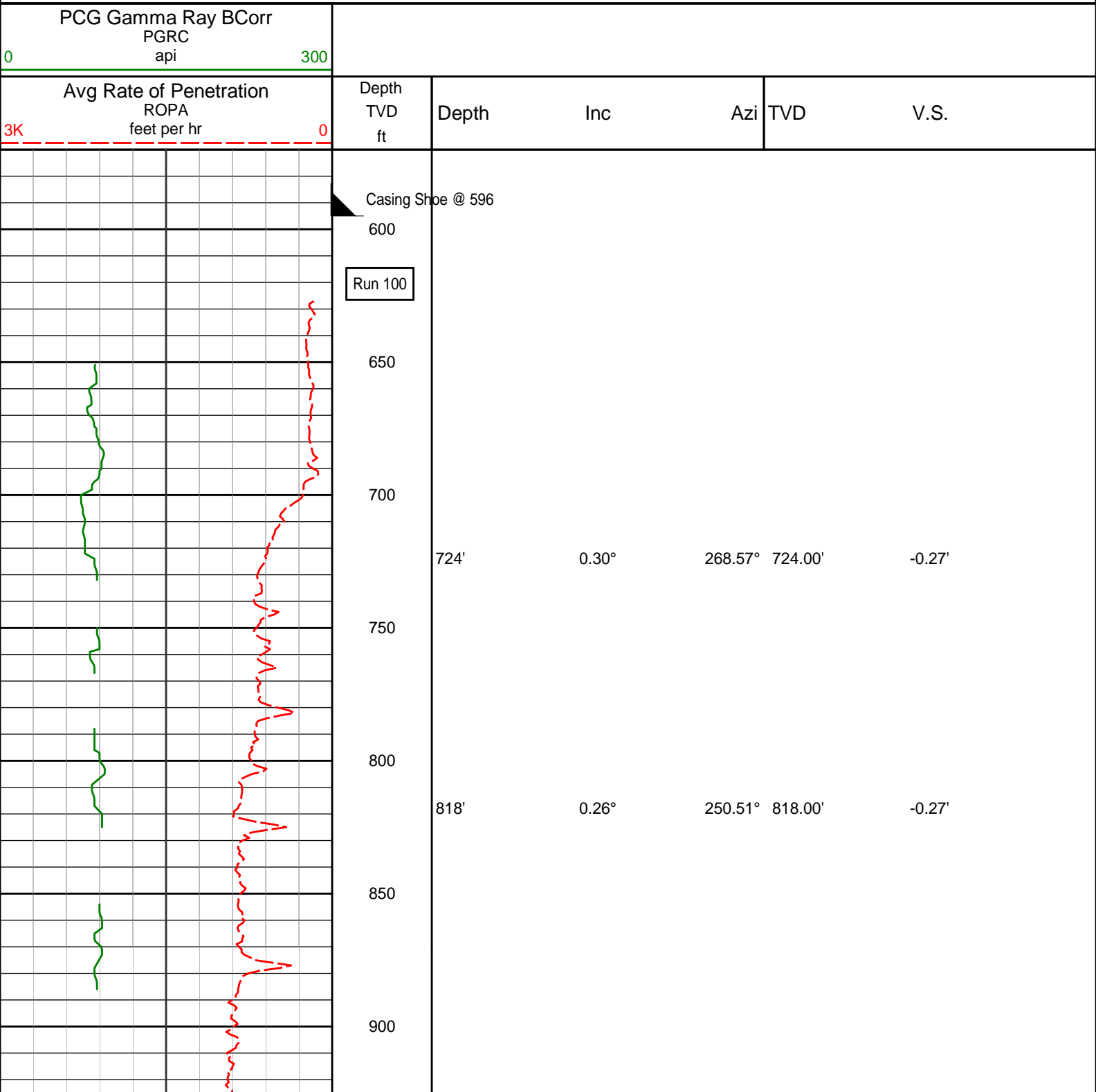
REMARKS

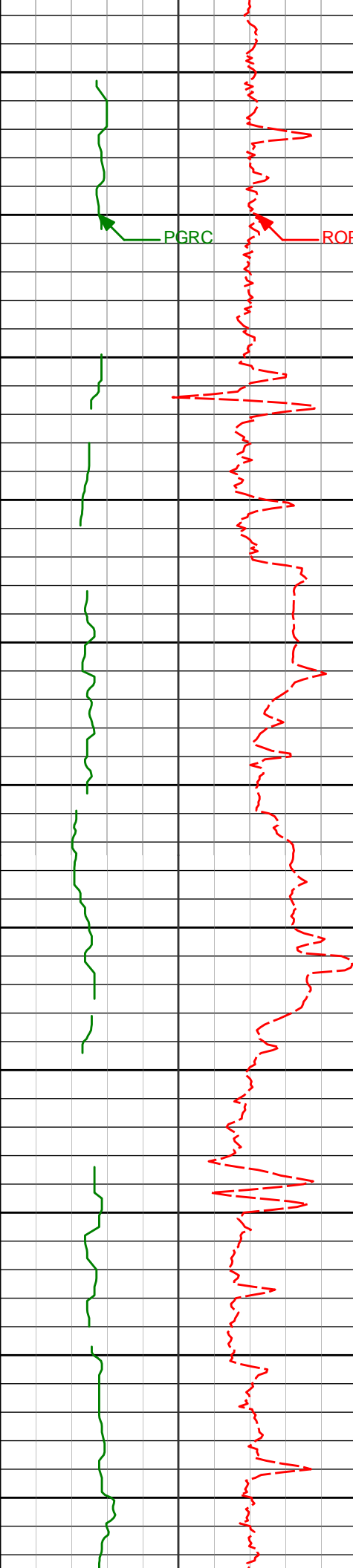
1. All depths are calibrated to driller's pipe tally and are total vertical depth from the drill floor.
2. No depth corrections have been made for pipe stretch or compression.
3. All data presented is recorded (memory data) unless otherwise stated.
4. Environmental parameters used in gamma and resistance processing:
Hole Size: 8.75"
Mud Density: 9.9-11.0
5. The following smoothing parameters have been applied to the data:
Interval: 0.5 ft
Coercion Distance: 1.2 ft (ROPA)
Interval: 0.5 ft
Coercion Distance: 0.6 ft (Gamma Ray)

WARRANTY

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TVD Detail 1:600 Scale





950

1000

1050

1100

1150

1200

1250

1300

1350

1400

1450

PGRC

ROFA

1008'

0.44°

273.38° 1007.99'

-0.18'

1194'

0.56°

265.15° 1193.99'

0.05'

1286'

0.42°

267.77° 1285.98'

0.13'

1380'

0.40°

260.01° 1379.98'

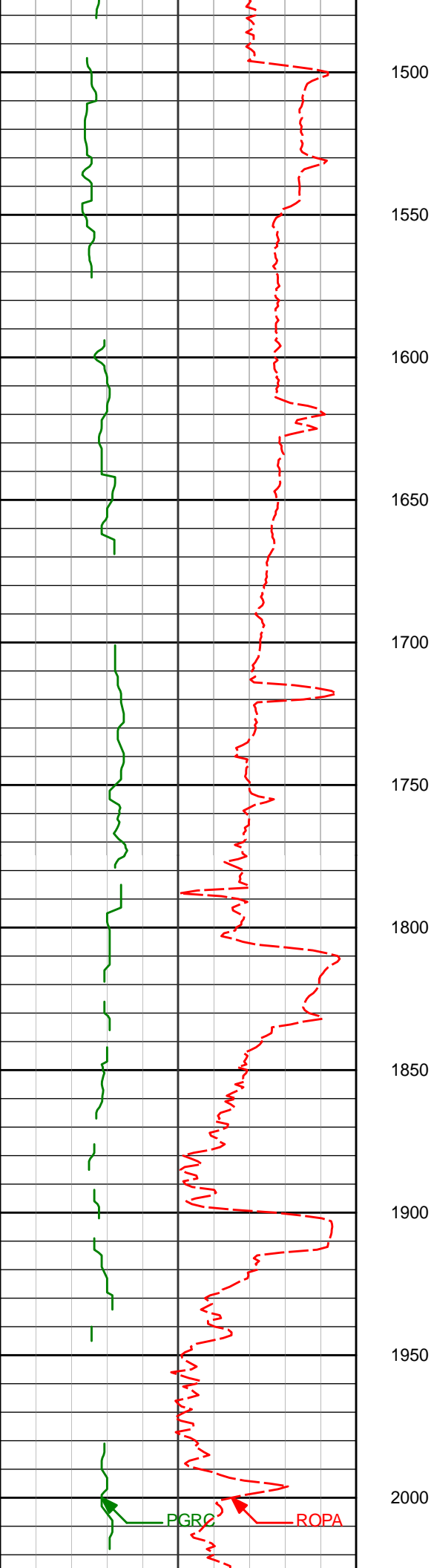
0.17'

1472'

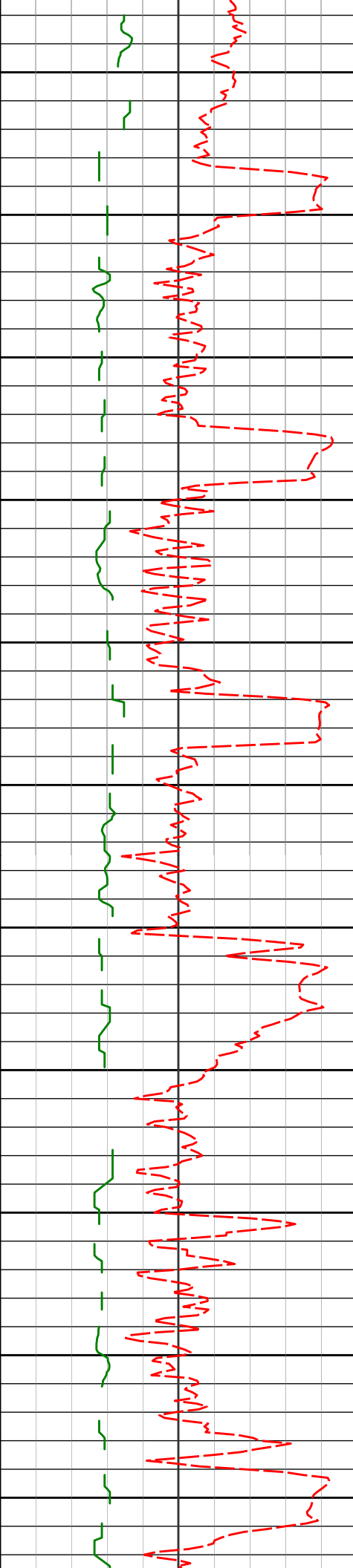
0.37°

258.44° 1471.98'

0.15'



1565'	0.41°	250.41°	1564.98'	0.08'
1657'	0.28°	258.20°	1656.97'	0.02'
1750'	0.17°	275.05°	1749.97'	0.04'
1843'	3.42°	271.78°	1842.92'	0.61'
1934'	4.81°	266.11°	1933.68'	1.51'



2050

2100

2150

2200

2250

2300

2350

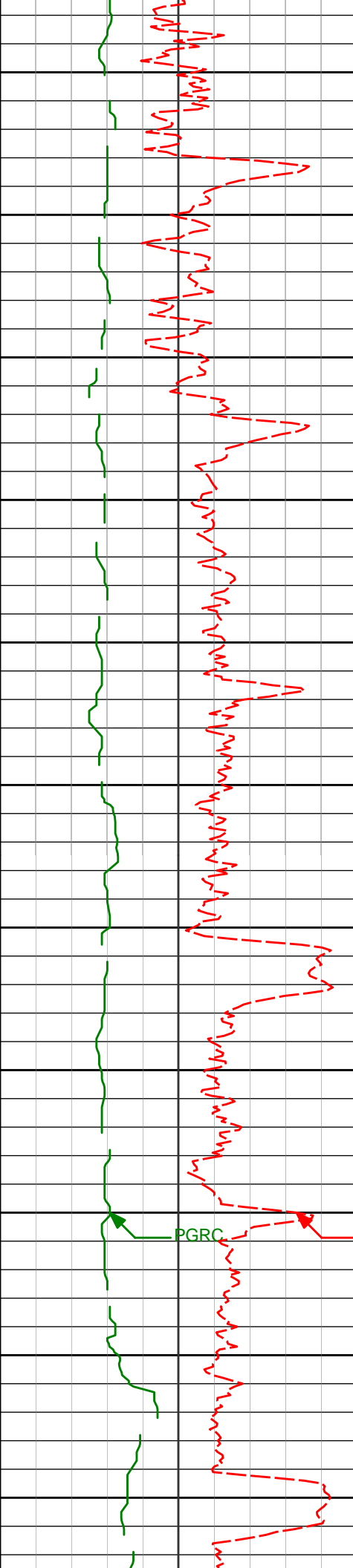
2400

2450

2500

2550

2027'	4.81°	257.47°	2026.35'	1.68'
2120'	5.01°	283.84°	2119.02'	3.08'
2212'	7.46°	283.49°	2210.47'	7.00'
2305'	8.78°	275.73°	2302.54'	11.22'
2397'	9.79°	264.14°	2393.34'	13.55'
2490'	9.49°	261.60°	2485.03'	14.19'



2600

2650

2700

2750

2800

2850

2900

2950

3000

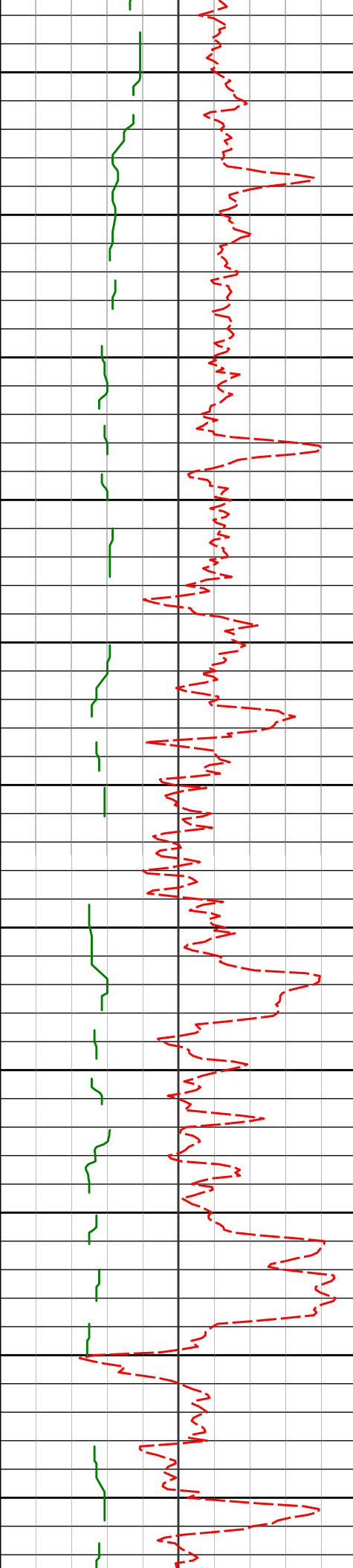
3050

3100

PGRC

ROPA

2583'	10.81°	271.90°	2576.58'	16.05'
2676'	11.21°	271.19°	2667.87'	19.43'
2766'	11.11°	270.11°	2756.17'	22.49'
2956'	11.68°	272.46°	2942.42'	29.51'
3051'	10.62°	268.69°	3035.63'	32.74'



3150

3200

3250

3300

3350

3400

3450

3500

3550

3600

3650

3146'

9.98°

268.74° 3129.10'

35.15'

3241'

9.71°

268.26° 3222.70'

37.40'

3336'

10.20°

268.17° 3316.27'

39.60'

3431'

10.76°

268.59° 3409.68'

41.95'

3526'

10.84°

269.56° 3503.00'

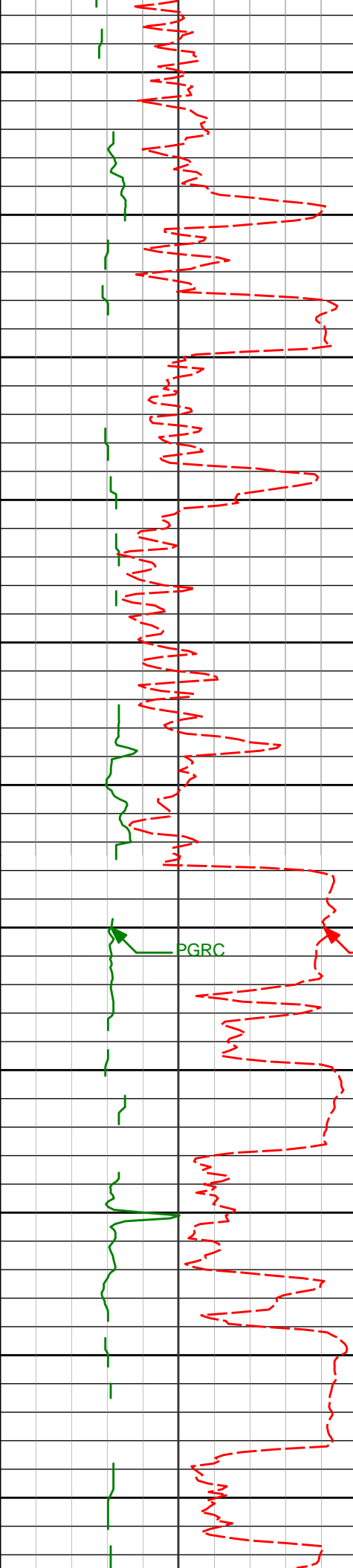
44.60'

3621'

10.85°

271.15° 3596.30'

47.65'



3700

3750

3800

3850

3900

3950

4000

4050

4100

4150

4200

3716'

10.80°

270.62° 3689.61'

50.85'

3811'

10.76°

270.39° 3782.94'

53.92'

3906'

9.97°

269.11° 3876.38'

56.67'

4001'

7.58°

268.86° 3970.26'

58.80'

4096'

4.05°

285.28° 4064.77'

61.11'

4190'

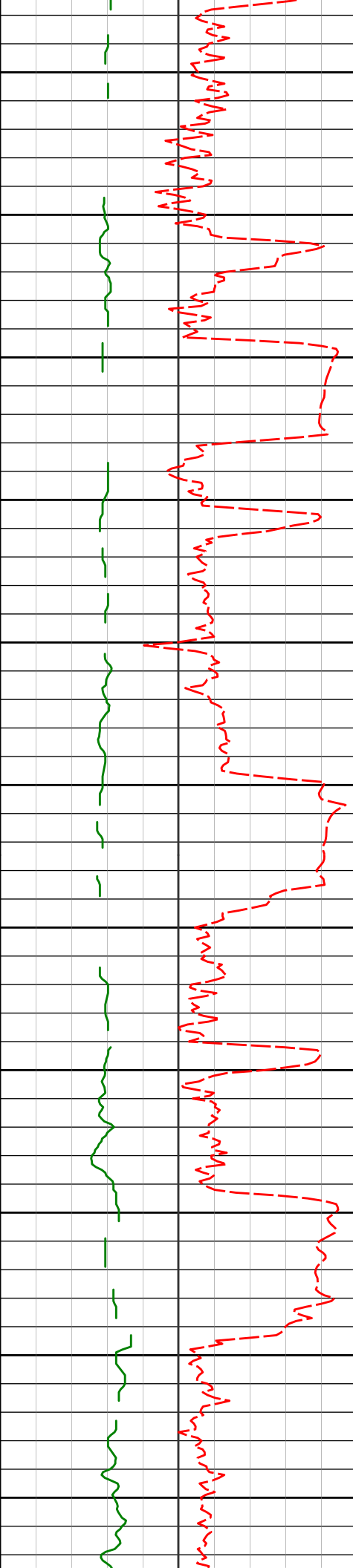
4.81°

285.97° 4158.48'

64.19'

PGRC

ROPA



4250

4285'

5.94°

280.88° 4253.07'

67.61'

4300

4350

4380'

6.33°

280.99° 4347.52'

71.15'

4400

4450

4475'

7.69°

274.62° 4441.81'

74.53'

4500

4550

4570'

8.90°

273.58° 4535.81'

77.73'

4600

4650

4665'

7.23°

278.48° 4629.87'

81.23'

4700

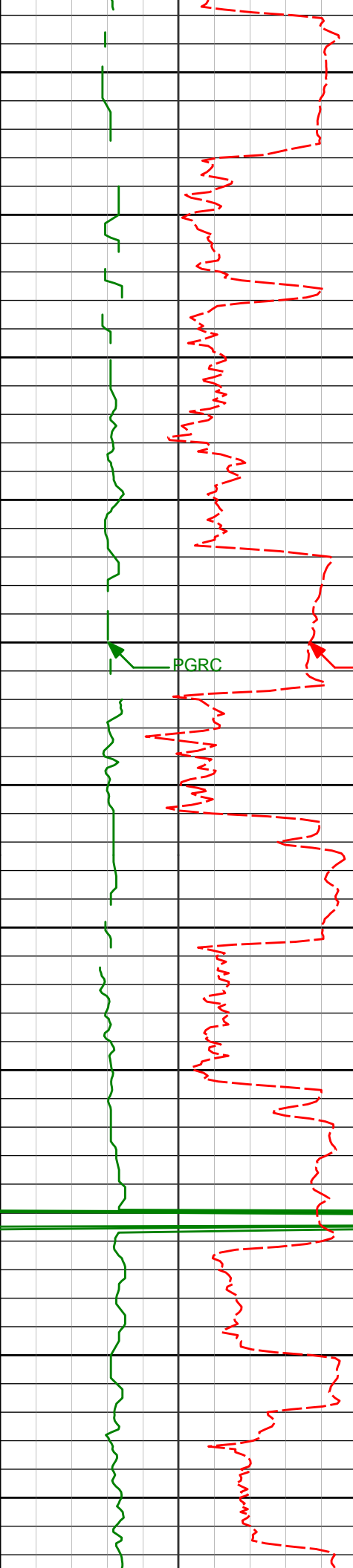
4750

4760'

8.50°

286.65° 4723.98'

86.16'



4800

4855' 9.60° 274.97° 4817.80' 91.23'

4850

4900

4950' 7.44° 275.07° 4911.75' 94.74'

4950

5000

5045' 9.09° 290.08° 5005.77' 99.99'

5050

5100

5140' 9.69° 276.33° 5099.51' 105.87'

5150

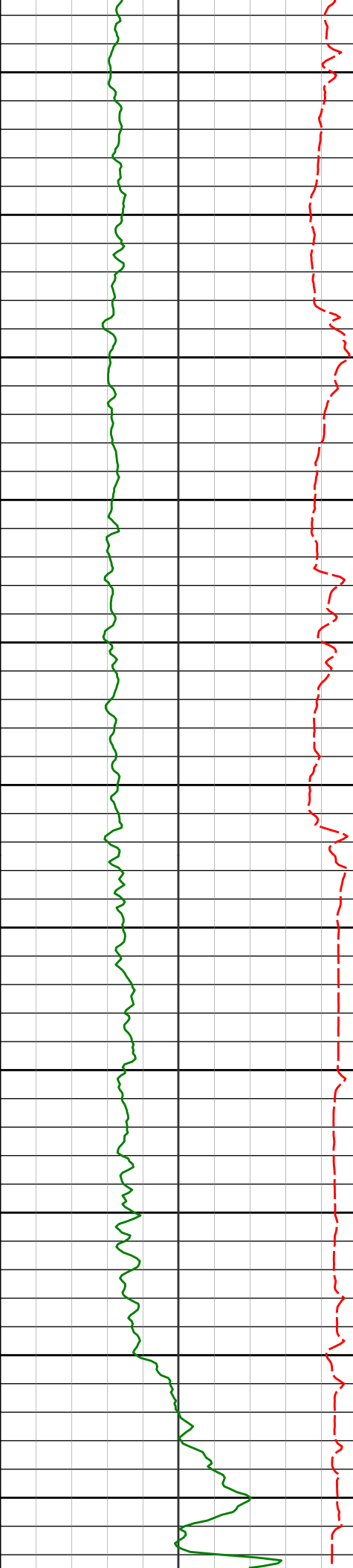
5200

5235' 9.78° 267.67° 5193.15' 109.04'

5250

5300

5330' 10.28° 268.28° 5286.69' 111.19'



Run 200

5350

5425'	11.67°	269.07°	5379.95'	113.75'
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5400

5450

5519'	15.49°	275.66°	5471.32'	118.44'
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5500

5550

5614'	17.99°	281.73°	5562.29'	127.05'
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5600

5650

5710'	20.79°	300.09°	5652.92'	143.28'
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5700

5805'	35.12°	317.59°	5736.75'	177.17'
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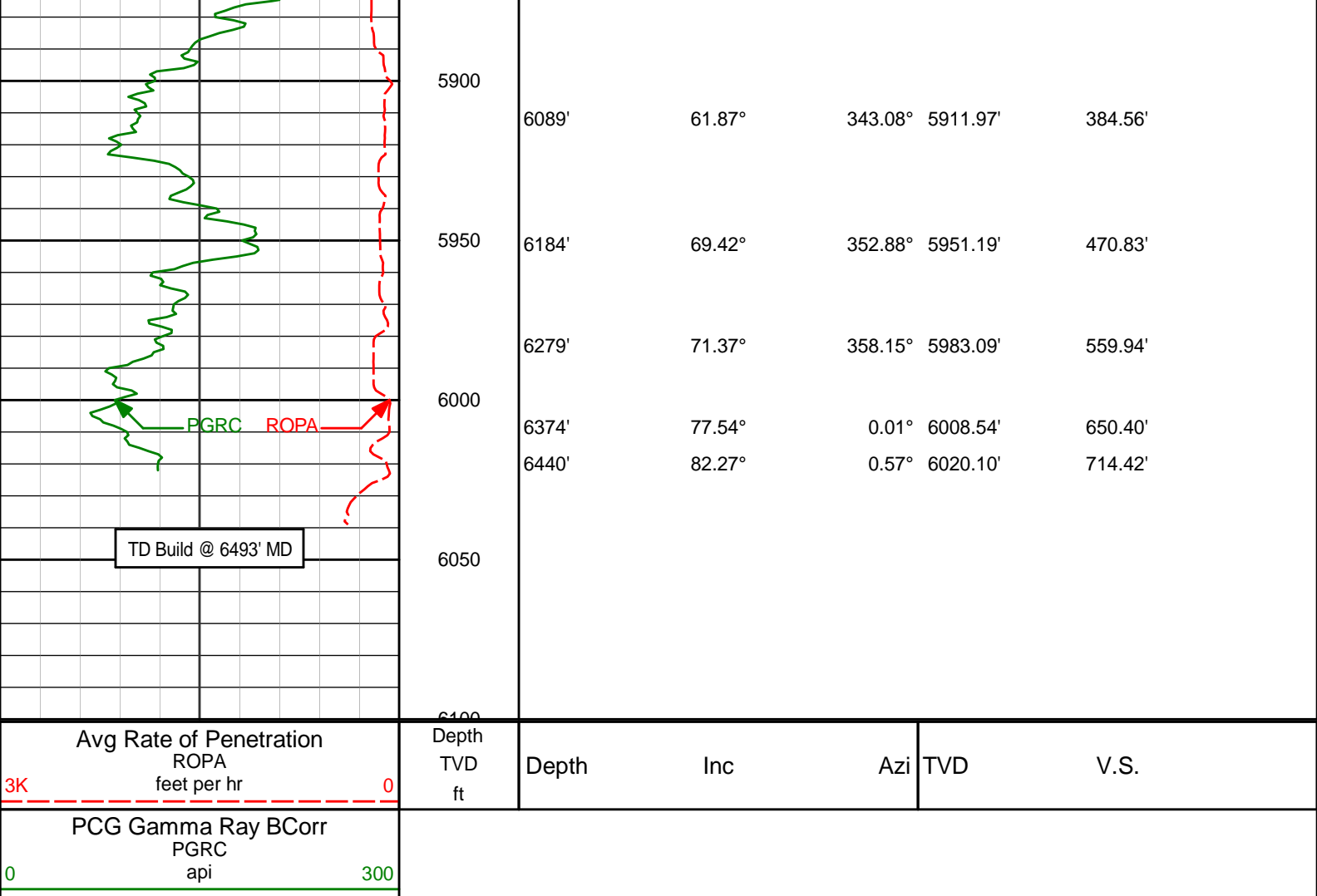
5750

5800

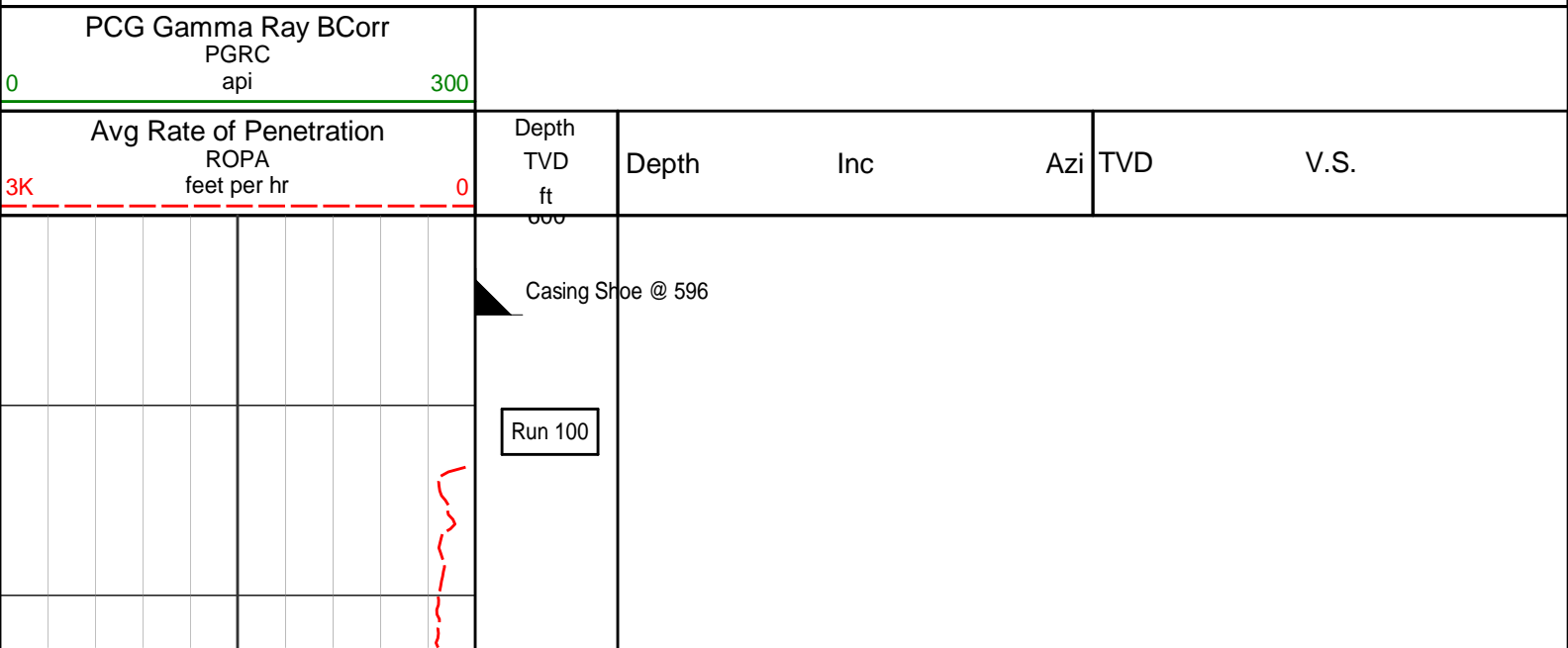
5899'	49.02°	326.18°	5806.42'	232.50'
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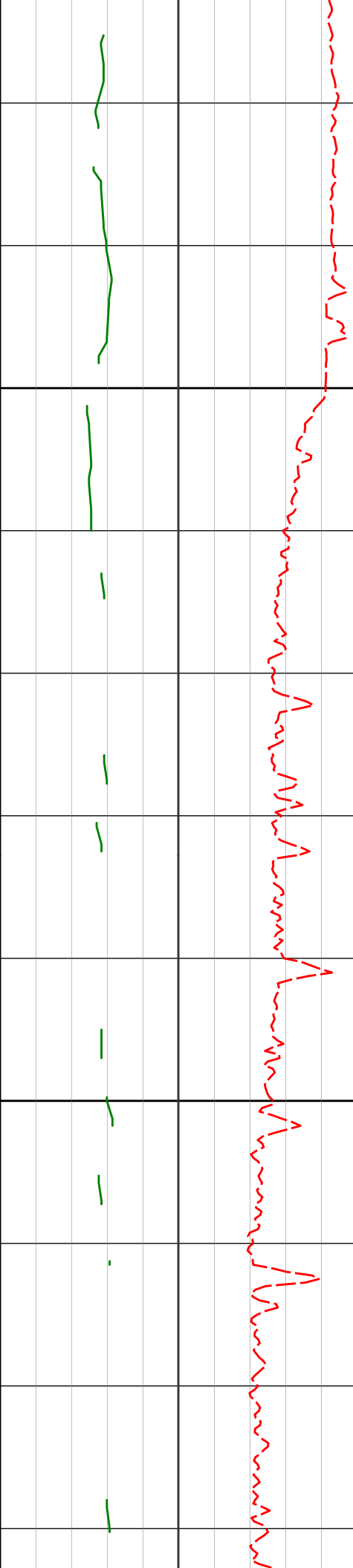
5850

5994'	57.00°	337.13°	5863.64'	304.18'
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TVD Detail 1:240 Scale





700

724'

0.30°

268.57° 724.00'

-0.27'

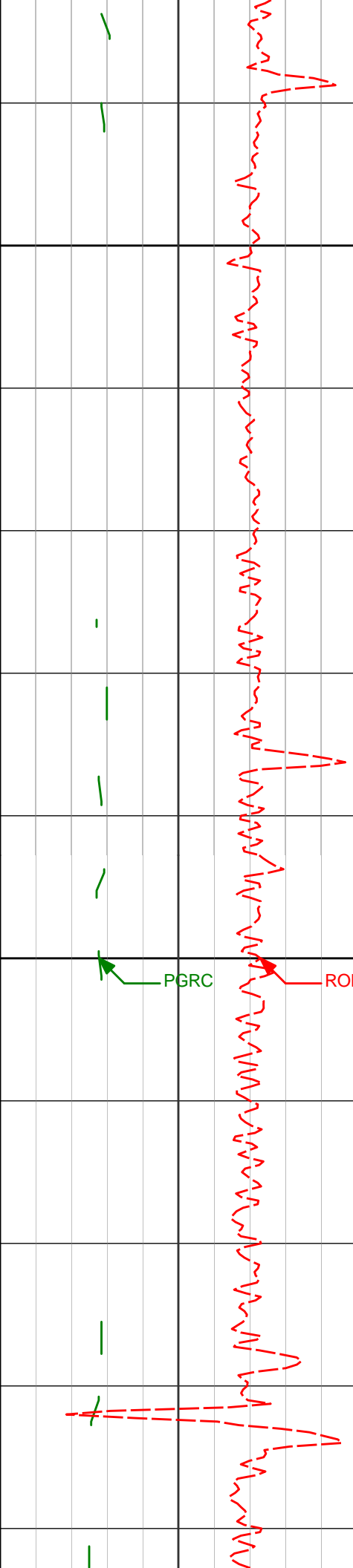
800

818'

0.26°

250.51° 818.00'

-0.27'



900

1000

PGRC

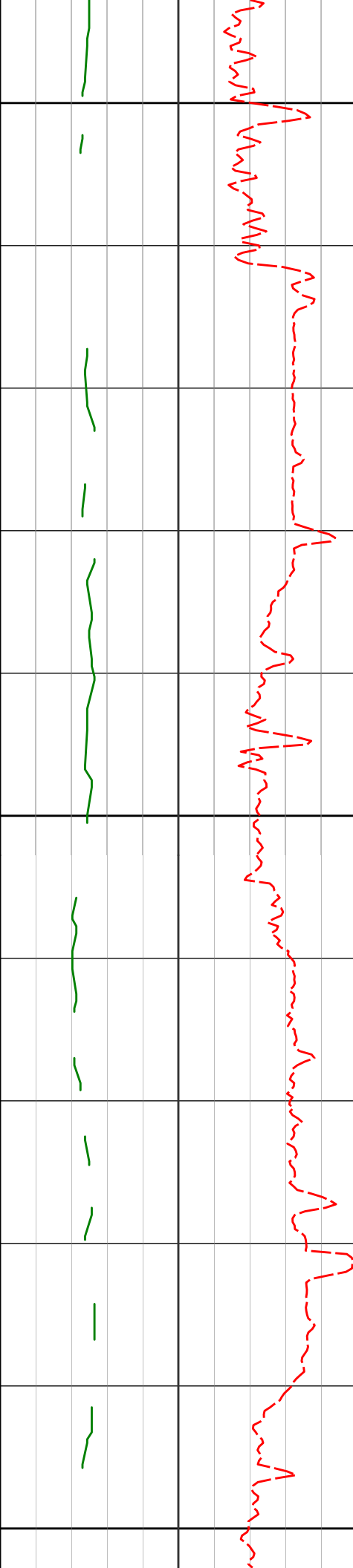
ROPA

1008'

0.44°

273.38° 1007.99'

-0.18'



1100

1200

1300

1194'

0.56°

265.15° 1193.99'

0.05'

1286'

0.42°

267.77° 1285.98'

0.13'



1380'

0.40°

260.01° 1379.98'

0.17'

1400

1472'

 0.37°

258.44° 1471.98'

0.15'

1500



1600

1700

1565'

0.41°

250.41° 1564.98'

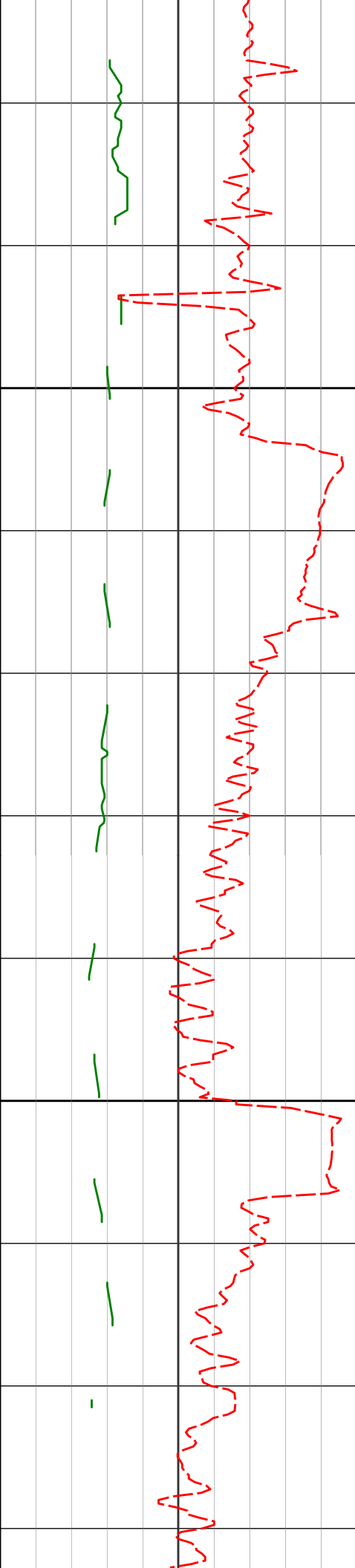
0.08'

1657'

0.28°

258.20° 1656.97'

0.02'



1800

1900

1750'

1843'

1934'

0.17°

3.42°

4.81°

275.05° 1749.97'

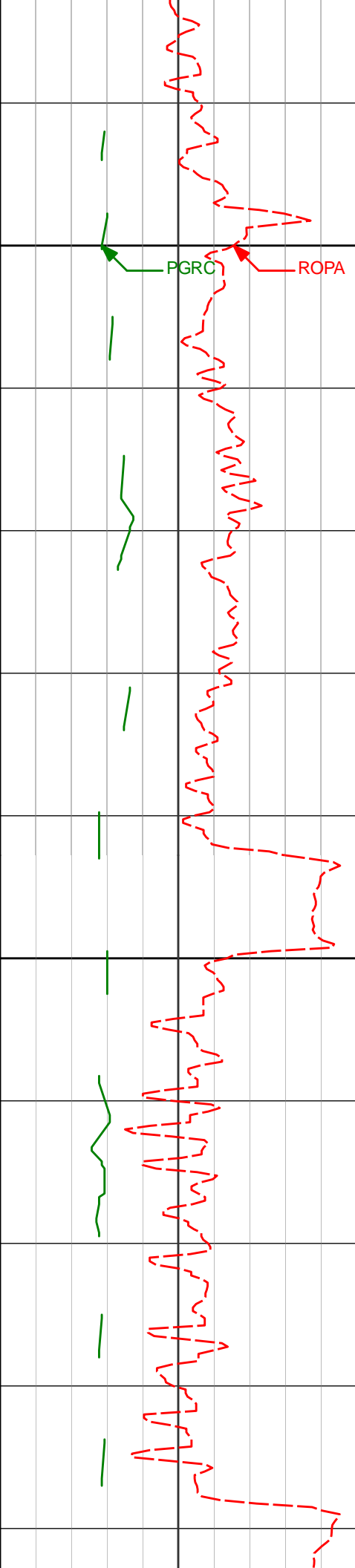
271.78° 1842.92'

266.11° 1933.68'

0.04'

0.61'

1.51'



2000

2027'

4.81°

257.47° 2026.35'

1.68'

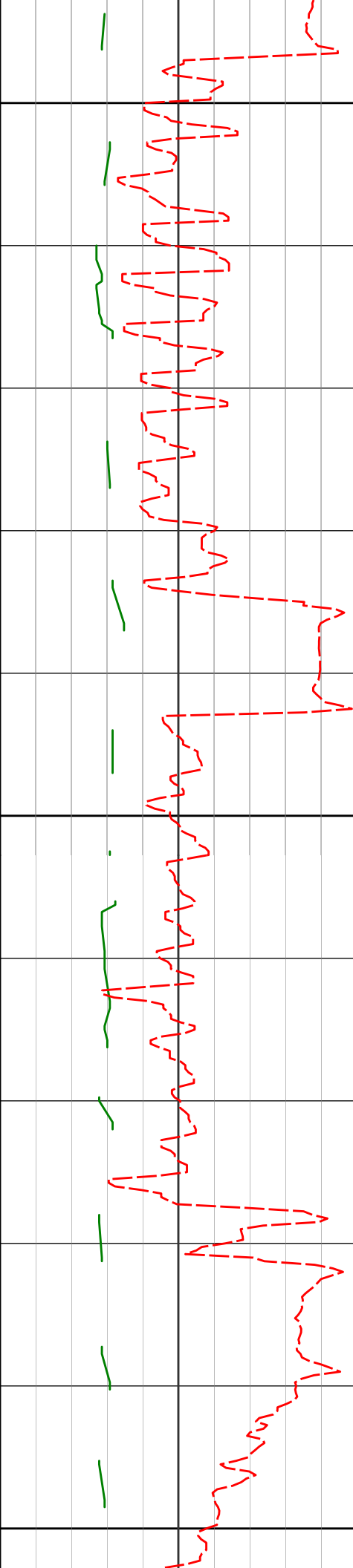
2100

2120'

5.01°

283.84° 2119.02'

3.08'



2200

2212'

7.46°

283.49° 2210.47'

7.00'

2300

2305'

8.78°

275.73° 2302.54'

11.22'

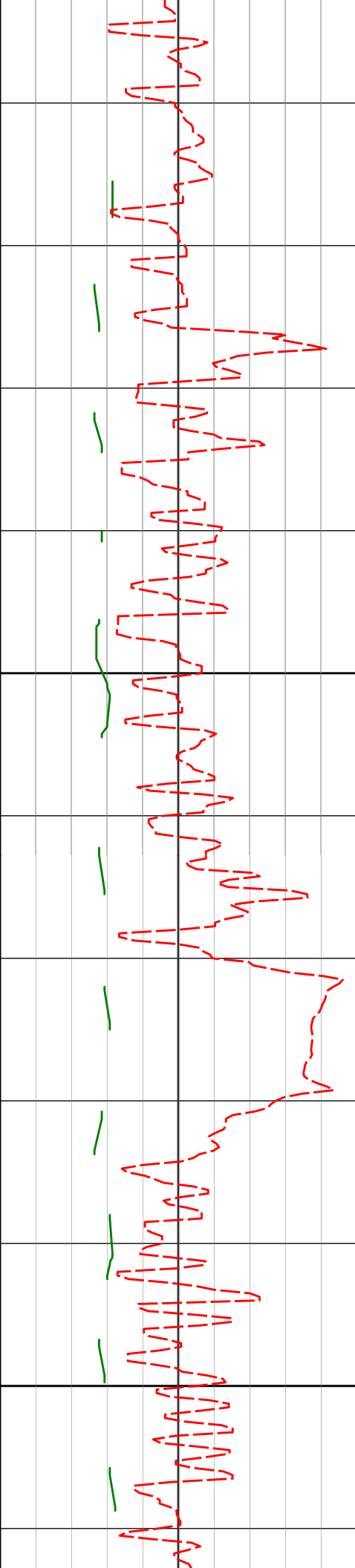
2400

2397'

9.79°

264.14° 2393.34'

13.55'



2500

2600

2490'

9.49°

261.60° 2485.03'

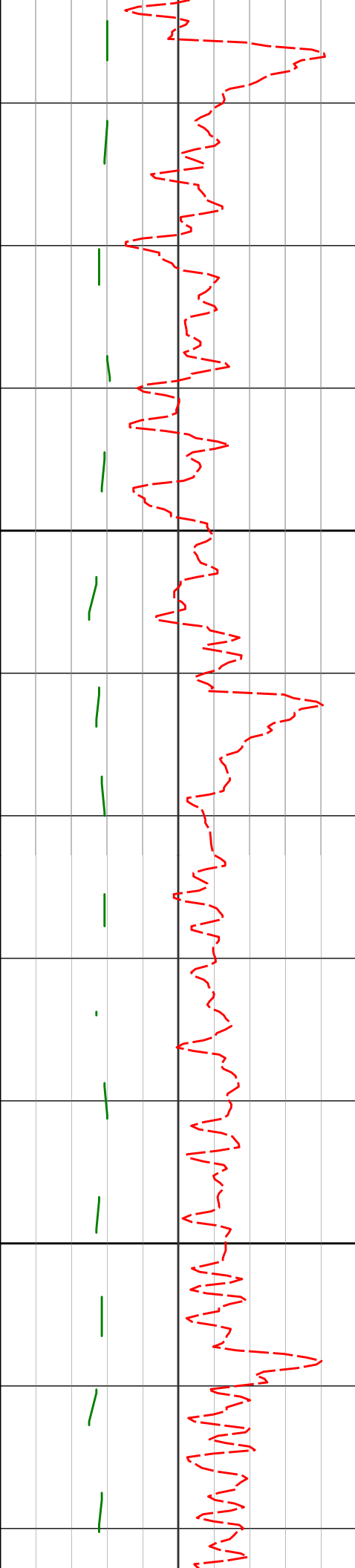
14.19'

2583'

10.81°

271.90° 2576.58'

16.05'



2700

2800

2676'

11.21°

271.19° 2667.87'

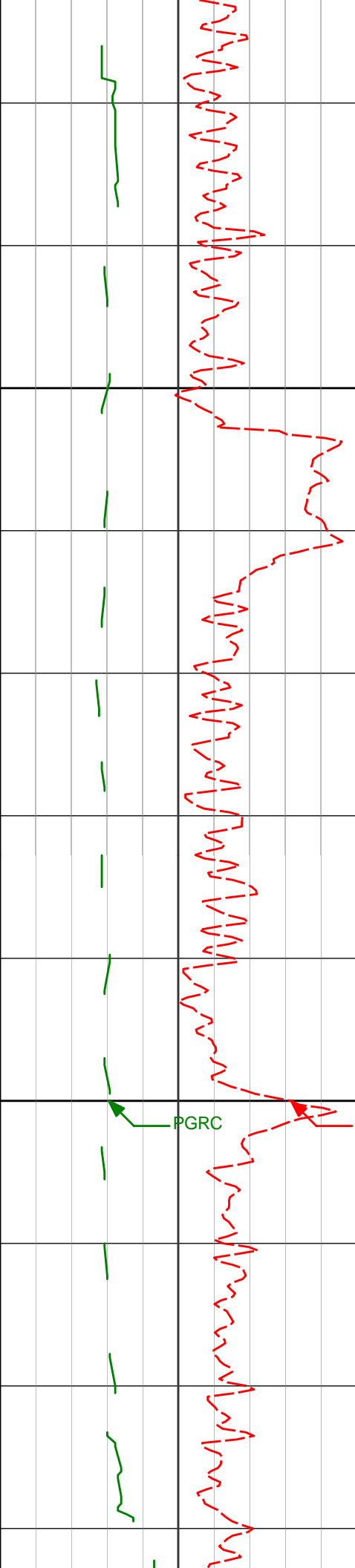
19.43'

2766'

11.11°

270.11° 2756.17'

22.49'



2900

2956'

11.68°

272.46° 2942.42'

29.51'

3000

PGRC

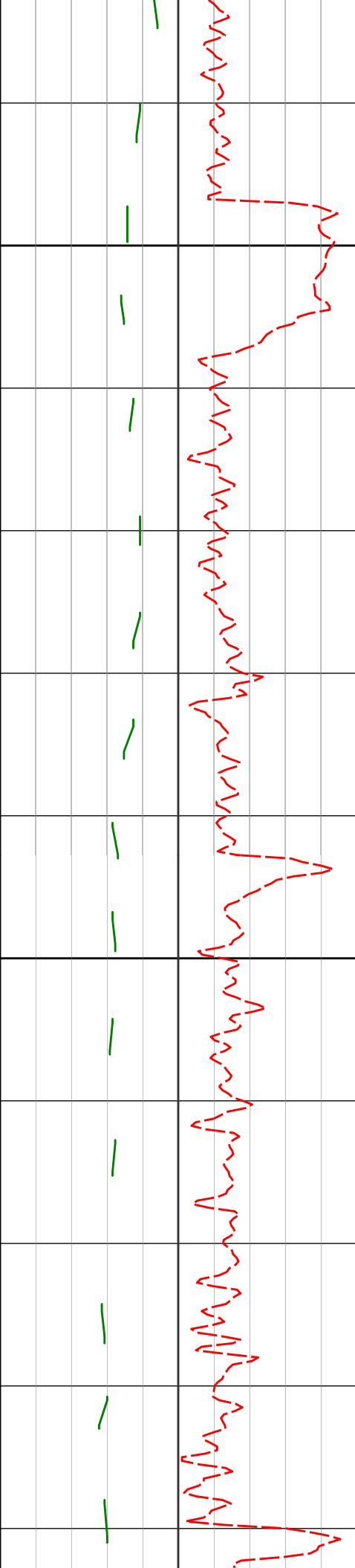
ROPA

3051'

10.62°

268.69° 3035.63'

32.74'



3100

3146'

9.98°

268.74° 3129.10'

35.15'

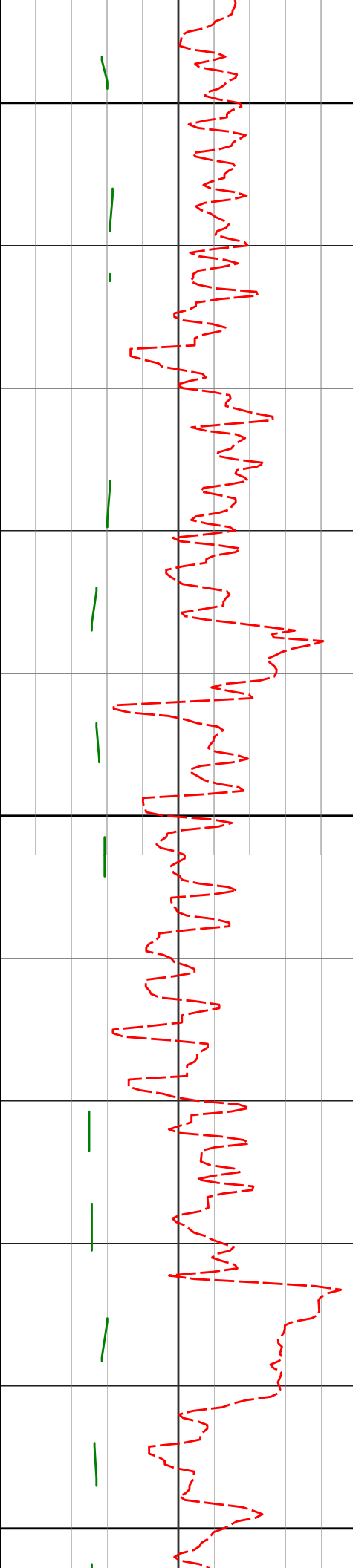
3200

3241'

9.71°

268.26° 3222.70'

37.40'



3300

3336'

10.20°

268.17° 3316.27'

39.60'

3400

3431'

10.76°

268.59° 3409.68'

41.95'

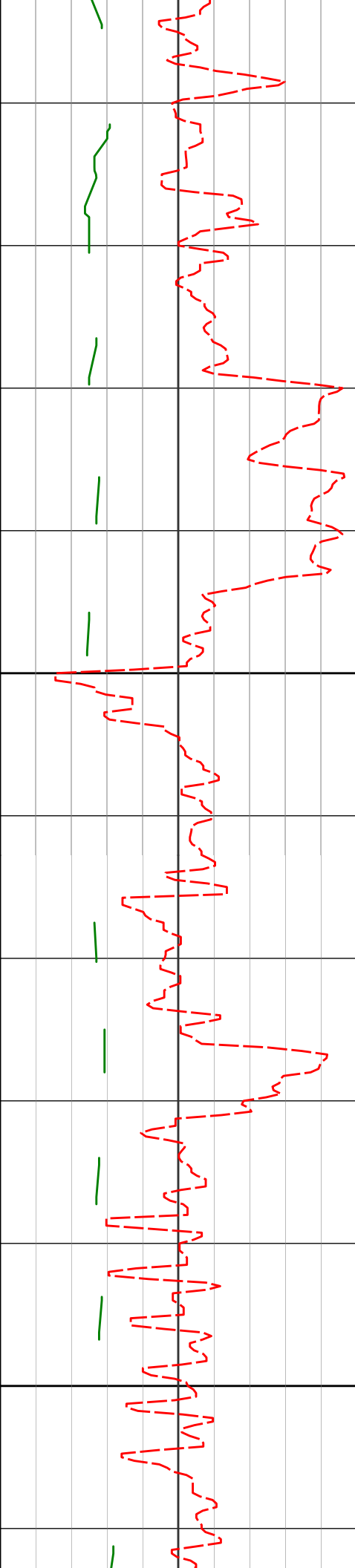
3500

3526'

10.84°

269.56° 3503.00'

44.60'



3600

3700

3621'

10.85°

271.15° 3596.30'

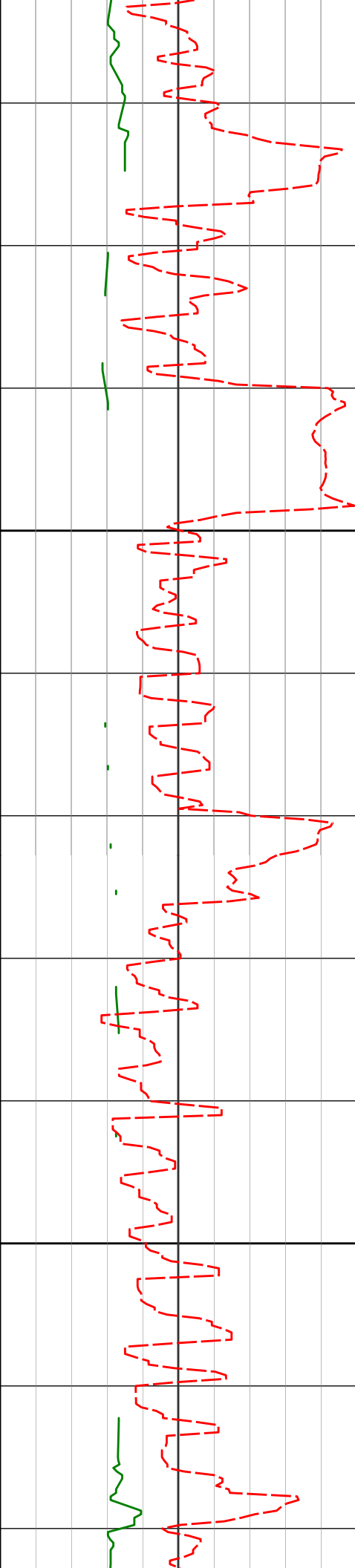
47.65'

3716'

10.80°

270.62° 3689.61'

50.85'



3800

3900

3811'

10.76°

270.39° 3782.94'

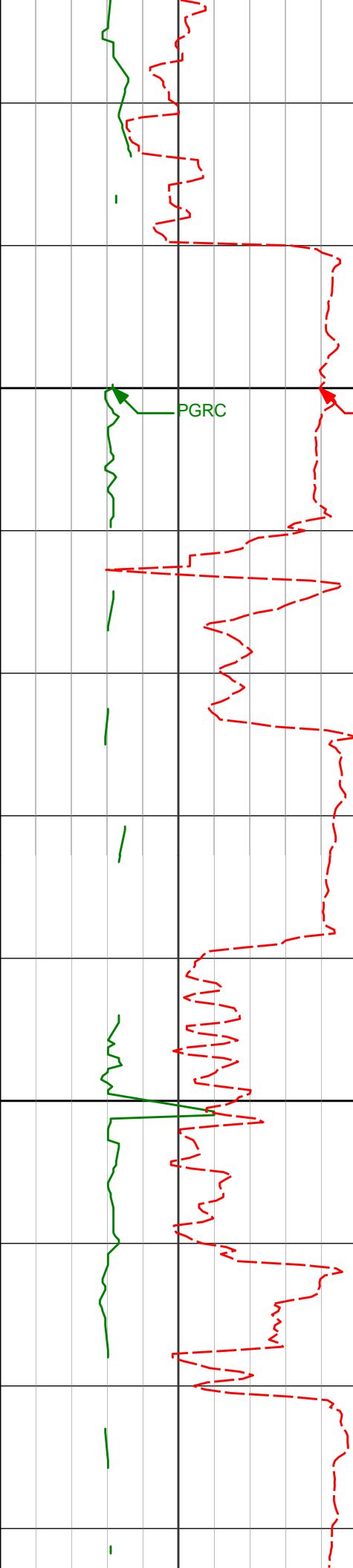
53.92'

3906'

9.97°

269.11° 3876.38'

56.67'



4001' 7.58° 268.86° 3970.26' 58.80'

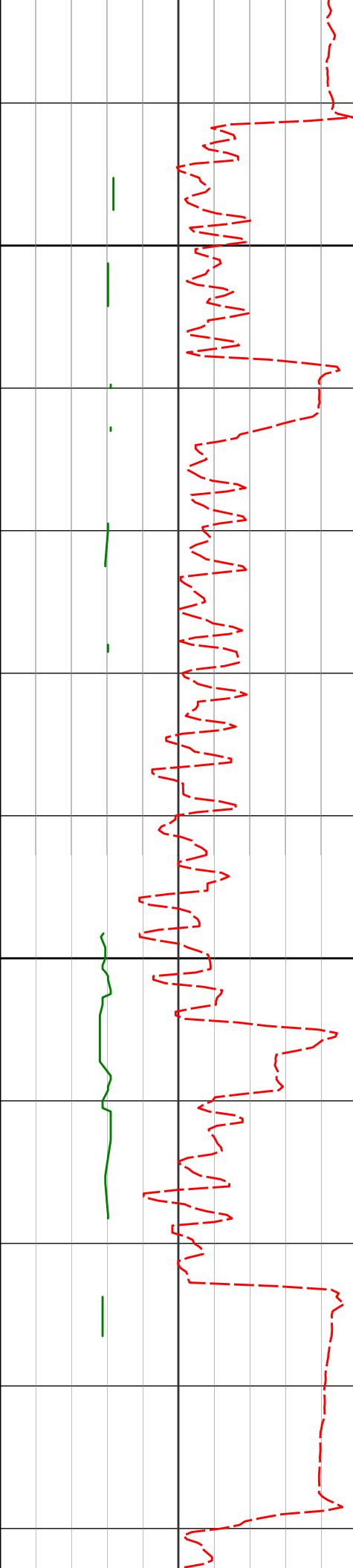
4000
ROPA

PGRC

4096' 4.05° 285.28° 4064.77' 61.11'

4100

4190' 4.81° 285.97° 4158.48' 64.19'



4200

4285'

 5.94°

280.88° 4253.07'

67.61'

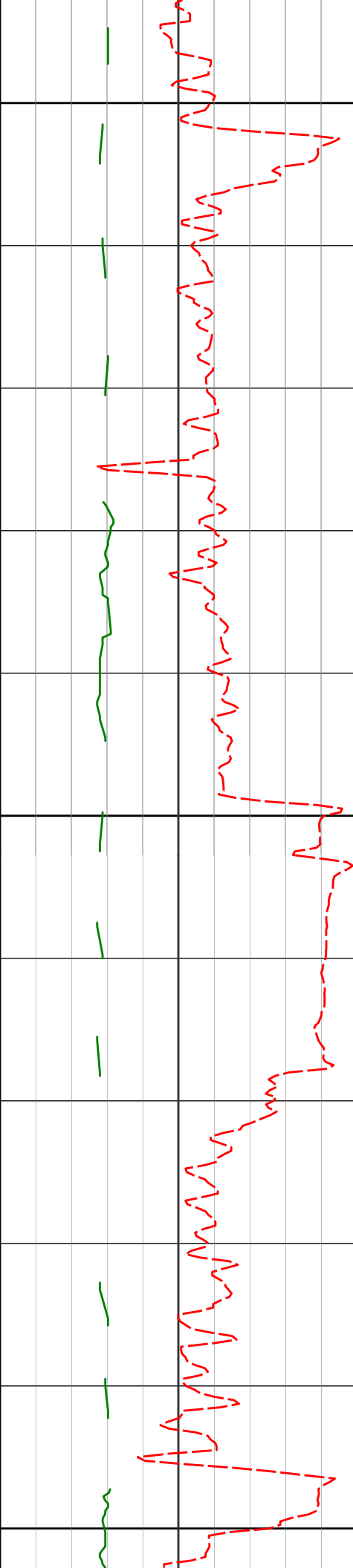
4300

4380'

 6.33°

280.99° 4347.52'

71.15'



4400

4475'

7.69°

274.62° 4441.81'

74.53'

4500

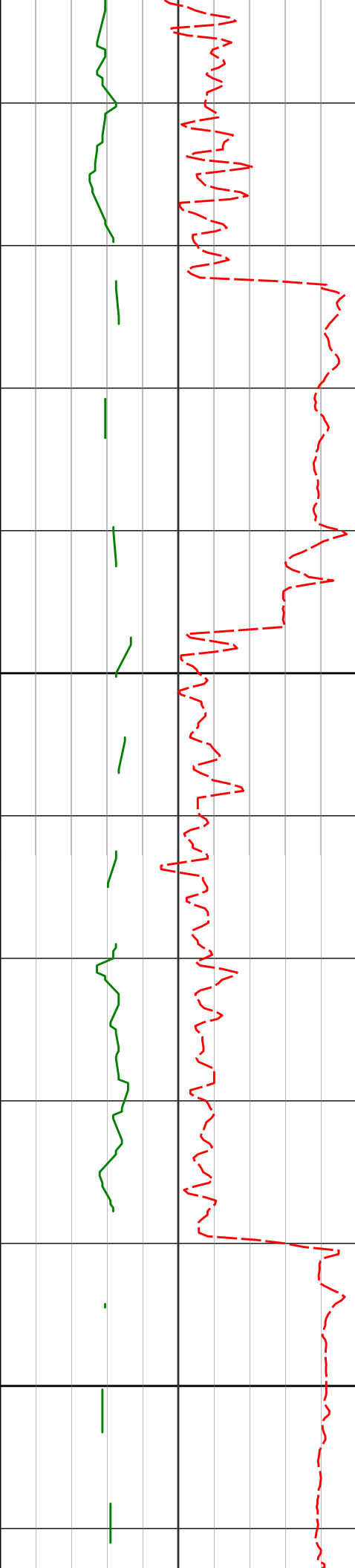
4570'

8.90°

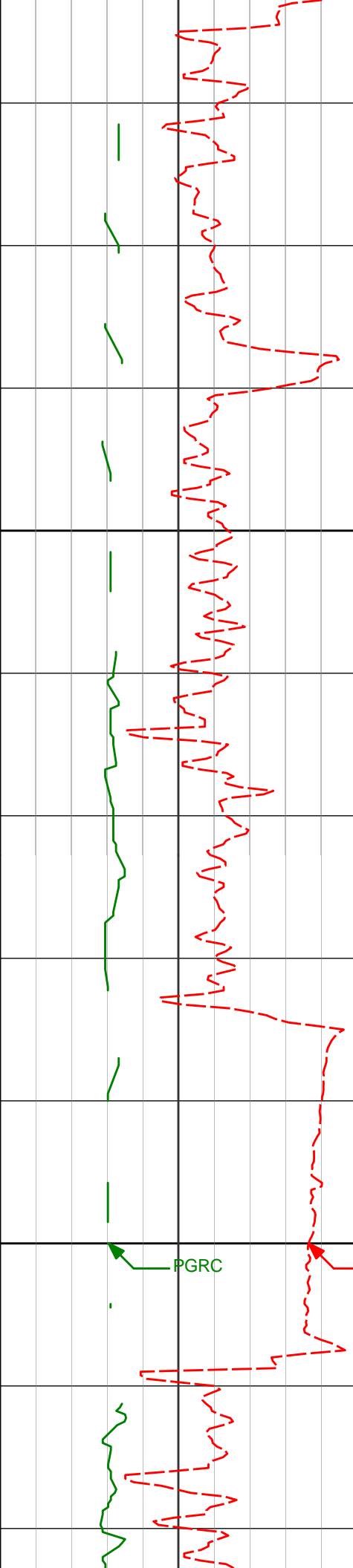
273.58° 4535.81'

77.73'

4600



4665'	7.23°	278.48°	4629.87'	81.23'
4700				
4760'	8.50°	286.65°	4723.98'	86.16'
4800				
4855'	9.60°	274.97°	4817.80'	91.23'



4900

4950'

7.44°

275.07° 4911.75'

94.74'

5000

5045'

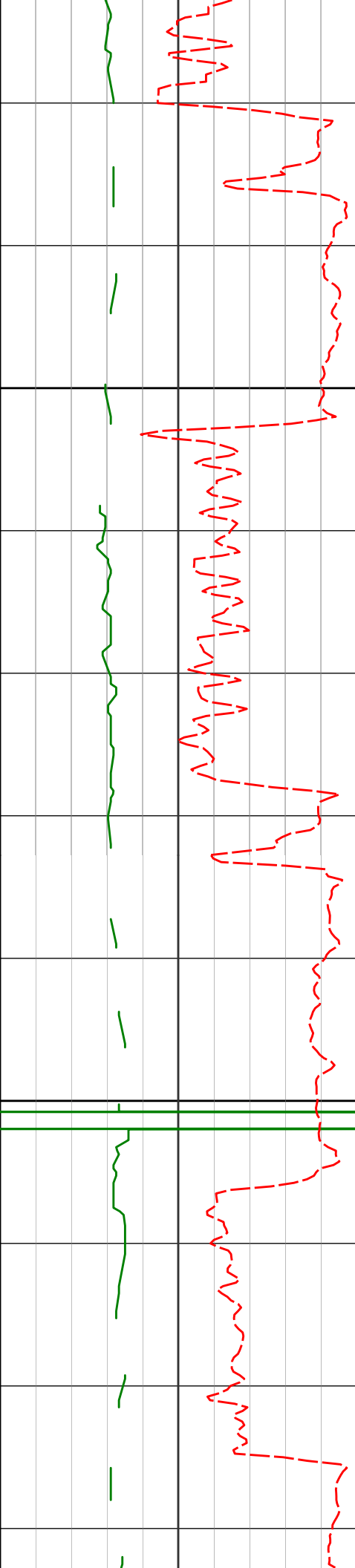
9.09°

290.08° 5005.77'

99.99'

PGRC

ROPA



5100

5140'

9.69°

276.33° 5099.51'

105.87'

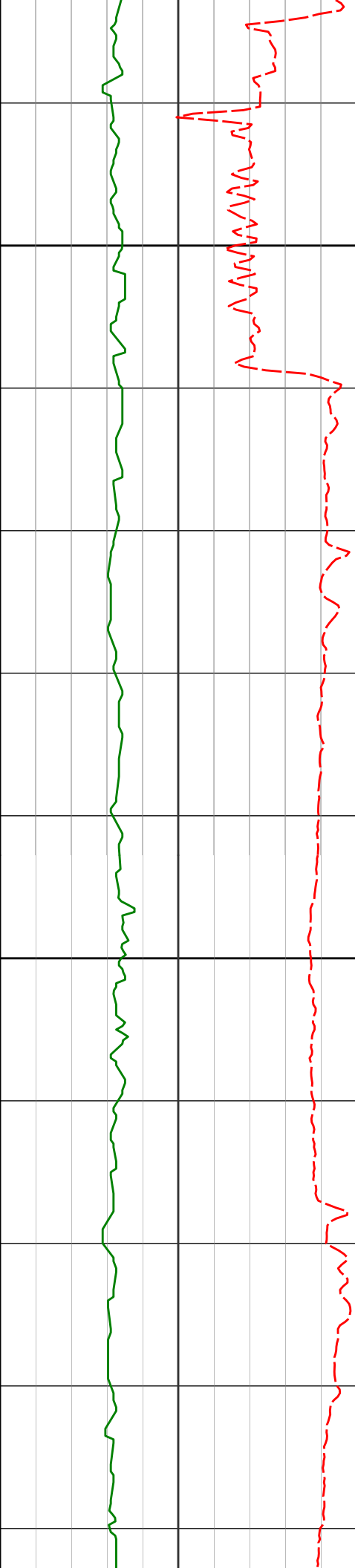
5200

5235'

9.78°

267.67° 5193.15'

109.04'



5300

5330'

10.28°

268.28° 5286.69'

111.19'

5400

5425'

11.67°

269.07° 5379.95'

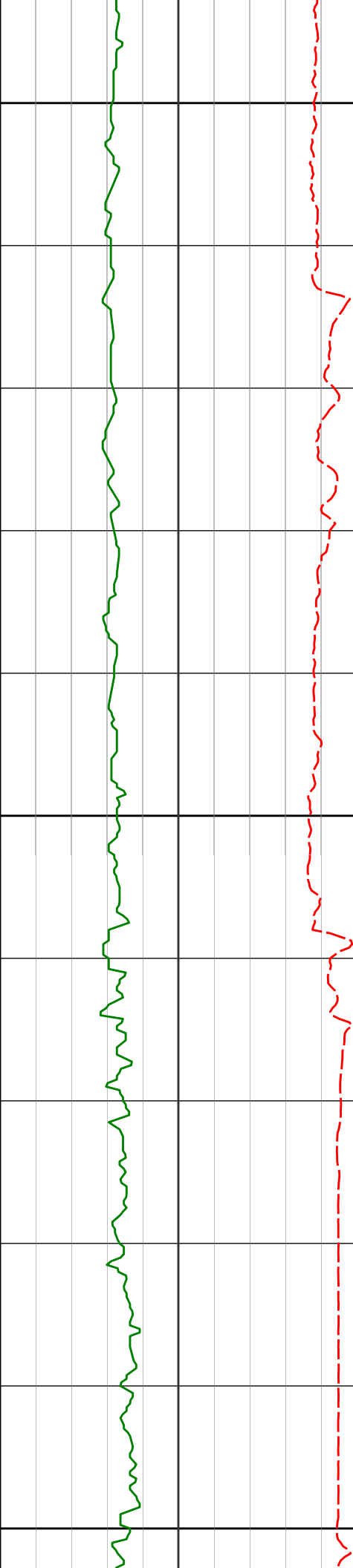
113.75'

5519'

15.49°

275.66° 5471.32'

118.44'



5500

5614'

17.99°

281.73° 5562.29'

127.05'

5600

5710'

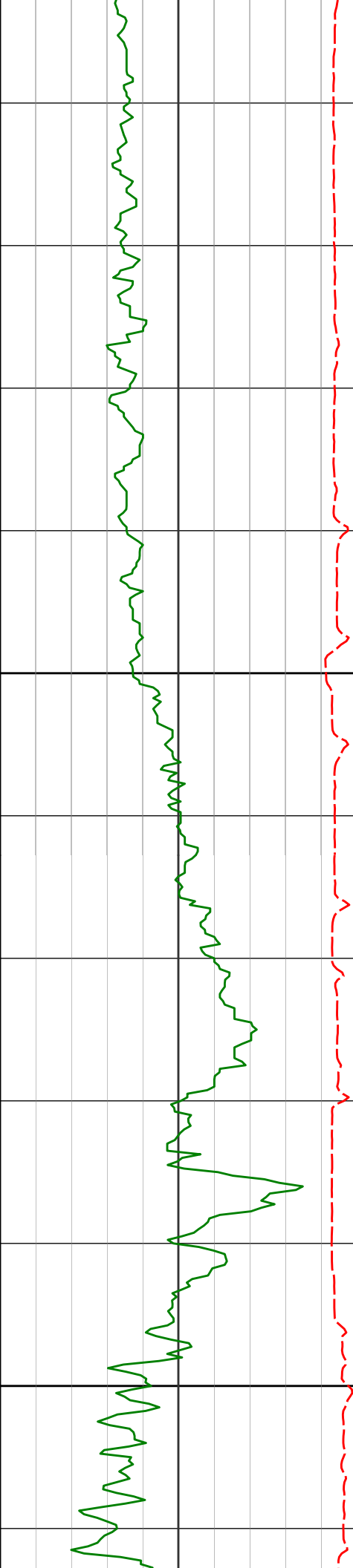
20.79°

300.09° 5652.92'

143.28'

Run 200

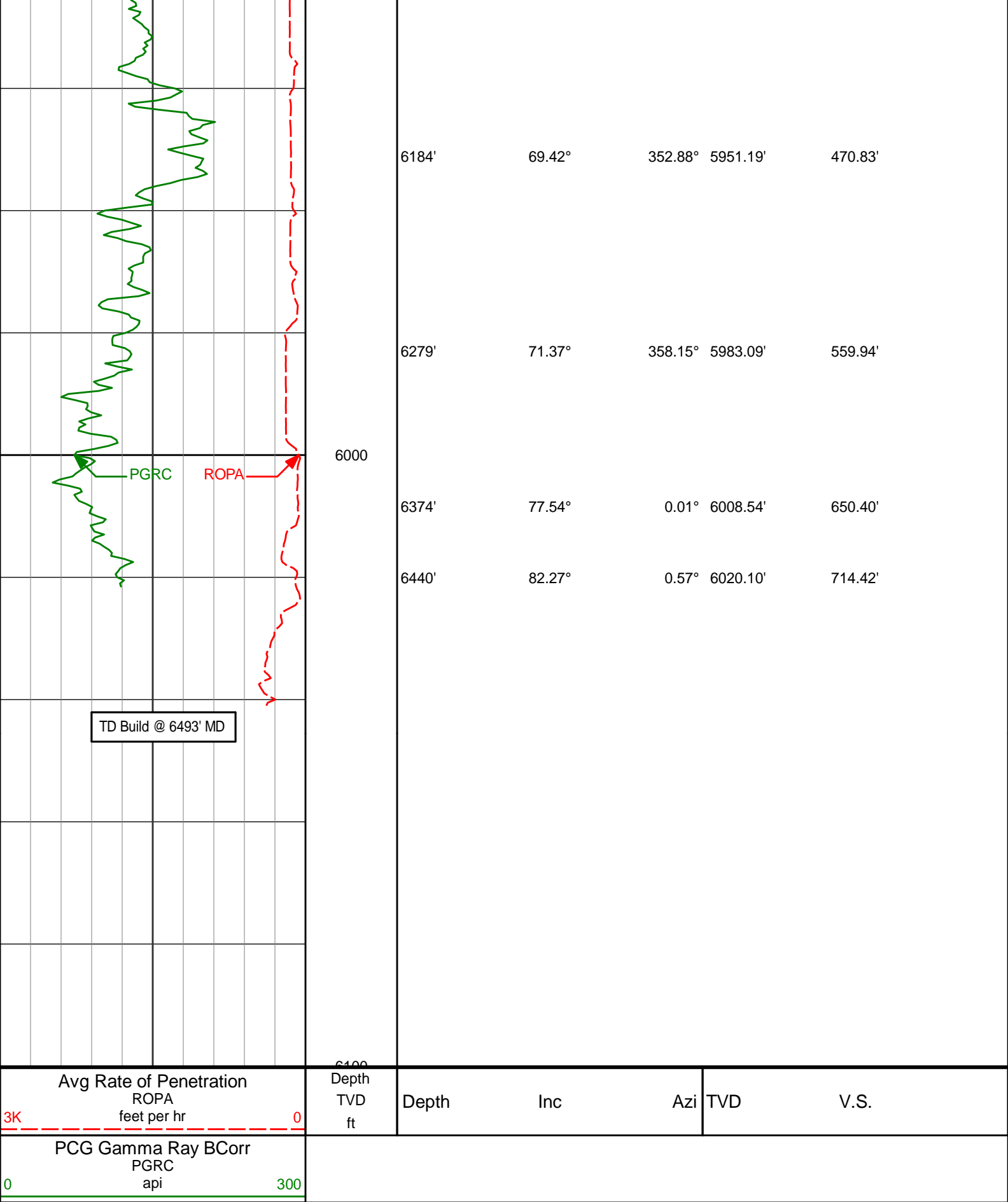
5700



5800

5900

5805'	35.12°	317.59°	5736.75'	177.17'
5899'	49.02°	326.18°	5806.42'	232.50'
5994'	57.00°	337.13°	5863.64'	304.18'
6089'	61.87°	343.08°	5911.97'	384.56'



HALLIBURTON

0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
367.00	0.10	221.50	367.00	0.24 S	0.21 W	-0.20	0.03
724.00	0.30	268.57	724.00	0.50 S	1.36 W	-0.27	0.07
818.00	0.26	250.51	818.00	0.57 S	1.82 W	-0.27	0.10
1008.00	0.44	273.38	1007.99	0.68 S	2.96 W	-0.18	0.12
1194.00	0.56	265.15	1193.99	0.71 S	4.57 W	0.05	0.07
1286.00	0.42	267.77	1285.98	0.76 S	5.35 W	0.13	0.15
1380.00	0.40	260.01	1379.98	0.83 S	6.01 W	0.17	0.06
1472.00	0.37	258.44	1471.98	0.95 S	6.63 W	0.15	0.03
1565.00	0.41	250.41	1564.98	1.12 S	7.24 W	0.08	0.07
1657.00	0.28	258.20	1656.97	1.28 S	7.77 W	0.02	0.15
1750.00	0.17	275.05	1749.97	1.31 S	8.13 W	0.04	0.14
1843.00	3.42	271.78	1842.92	1.22 S	11.03 W	0.61	3.50
1934.00	4.81	266.11	1933.68	1.39 S	17.55 W	1.51	1.59
2027.00	4.81	257.47	2026.35	2.50 S	25.24 W	1.68	0.78
2120.00	5.01	283.84	2119.02	2.37 S	32.99 W	3.08	2.42
2212.00	7.46	283.49	2210.47	0.02 S	42.70 W	7.00	2.66
2305.00	8.78	275.73	2302.54	2.10 N	55.64 W	11.22	1.84
2397.00	9.79	264.14	2393.34	2.00 N	70.41 W	13.55	2.30
2490.00	9.49	261.60	2485.03	0.08 N	85.85 W	14.19	0.56
2583.00	10.81	271.90	2576.58	0.75 S	102.15 W	16.05	2.41
2676.00	11.21	271.19	2667.87	0.28 S	119.91 W	19.43	0.45
2766.00	11.11	270.11	2756.17	0.08 S	137.33 W	22.49	0.26
2956.00	11.68	272.46	2942.42	0.78 N	174.86 W	29.51	0.39
3051.00	10.62	268.69	3035.63	0.99 N	193.22 W	32.74	1.36
3146.00	9.98	268.74	3129.10	0.61 N	210.19 W	35.15	0.67
3241.00	9.71	268.26	3222.70	0.19 N	226.42 W	37.40	0.29
3336.00	10.20	268.17	3316.27	0.32 S	242.84 W	39.60	0.52
3431.00	10.76	268.59	3409.68	0.81 S	260.12 W	41.95	0.59
3526.00	10.84	269.56	3503.00	1.10 S	277.92 W	44.60	0.21
3621.00	10.85	271.15	3596.30	0.98 S	295.79 W	47.65	0.31
3716.00	10.80	270.62	3689.61	0.71 S	313.63 W	50.85	0.12
3811.00	10.76	270.39	3782.94	0.55 S	331.40 W	53.92	0.06
3906.00	9.97	269.11	3876.38	0.62 S	348.49 W	56.67	0.86
4001.00	7.58	268.86	3970.26	0.87 S	362.99 W	58.80	2.52
4096.00	4.05	285.28	4064.77	0.11 S	372.49 W	61.11	4.07
4190.00	4.81	285.97	4158.48	1.85 N	379.48 W	64.19	0.81
4285.00	5.94	280.88	4253.07	3.87 N	388.14 W	67.61	1.30
4380.00	6.33	280.99	4347.52	5.79 N	398.10 W	71.15	0.41
4475.00	7.69	274.62	4441.81	7.31 N	409.58 W	74.53	1.65
4570.00	8.90	273.58	4535.81	8.28 N	423.26 W	77.73	1.27
4665.00	7.23	278.48	4629.87	9.62 N	436.50 W	81.23	1.90
4760.00	8.50	286.65	4723.98	12.51 N	449.14 W	86.16	1.78
4855.00	9.60	274.97	4817.80	15.21 N	463.76 W	91.23	2.25
4950.00	7.44	275.07	4911.75	16.44 N	477.78 W	94.74	2.28
5045.00	9.09	290.08	5005.77	19.56 N	490.95 W	99.99	2.85
5140.00	9.69	276.33	5099.51	23.02 N	505.96 W	105.87	2.44
5235.00	9.78	267.67	5193.15	23.57 N	521.97 W	109.04	1.54
5330.00	10.28	268.28	5286.69	22.99 N	538.50 W	111.19	0.54
5425.00	11.67	269.07	5379.95	22.58 N	556.59 W	113.75	1.47
5519.00	15.49	275.66	5471.32	23.66 N	578.59 W	118.44	4.38
5614.00	17.99	281.73	5562.29	27.90 N	605.58 W	127.05	3.21
5710.00	20.79	300.09	5652.92	39.47 N	634.87 W	143.28	6.95
5805.00	35.12	317.59	5736.75	68.29 N	668.11 W	177.17	17.23
5899.00	49.02	326.18	5806.42	118.02 N	706.32 W	232.50	15.98
5994.00	57.00	337.13	5863.64	184.75 N	741.89 W	304.18	12.44
6089.00	61.87	343.08	5911.97	261.63 N	769.59 W	384.56	7.44
6184.00	69.42	352.88	5951.19	346.13 N	787.36 W	470.83	12.30
6279.00	71.37	358.15	5983.09	435.31 N	794.33 W	559.94	5.61
6374.00	77.54	0.01	6008.54	526.77 N	795.78 W	650.40	6.76
6440.00	82.27	0.57	6020.10	591.73 N	795.45 W	714.42	7.22

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 350.54 DEGREES (GRID)
A TOTAL CORRECTION OF 7.04 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 6440.00 FEET
IS 991.40 FEET ALONG 306.65 DEGREES (GRID)**

Final survey is a straight line projection to TD.