

PCDC - Pressure Case Directional
PCGK - Pressure Case Gamma

1 : 600 / 1 : 240

Country		: USA			
Field		: Wattenberg			
Location		: Lat: 40° 31' 16.28" North Long: 104° 27' 3.10" West			
Well		: NCLP AA06-69HNC			
Company		: Noble			
Rig		: H&P 321			
LOCATION		Latitude : 40° 31' 16.28" North Longitude : 104° 27' 3.10" West		Other Services	
		UTM Easting = 3,291,667,200 ft UTM Northing = 1,434,435,560 ft		Directional Drilling	
Permanent Datum		: Ground Level		Elev.	
Log Measured From		: Drill Floor		30.00 ft	
Drilling Measured From		: Drill Floor		Above Permanent Datum	
		MD LOG			
Depth Logged		: 854.00 ft To 11,376.00 ft		Unit No. : 11210424	
Date Logged		: 03-Jul-14 To 08-Jul-14		Job No. : CA-XX-0901286146	
Total Depth MD		: 11,376.00 ft TVD: 6,773.19 ft		Plot Type : Final	
Spud Date		: 02-Jul-14		Plot Date : 08-Jul-14	
Run No.		Borehole Record (MD)		Borehole Record (MD)	
		Size From To		Run No. Size From To	
100	8,750 in	854.00 ft	6,118.00 ft		
200	8,750 in	6,118.00 ft	7,152.00 ft		
300	6,125 in	7,152.00 ft	11,376.00 ft		
				Casing Record (MD)	
				Size Weight From To	
				9,625 in	34.90 lbpf SURFACE
				7,000 in	26.00 lbpf SURFACE
	</				

Max Tool Temp (degF) / Source	154.30 / PCM	162.80 / PCM	226.10 / PCM		
Rm @ Max Tool Temp (degF)	N/A @ 154.30	N/A @ 162.80	N/A @ 226.10		
Lead MWD Engineer	Robert Barnes	Robert Barnes	Robert Barnes		
Customer Representative	Jim Turner	Jim Turner	Jim Turner		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.84	5.84	5.84		
Sub Serial Number	12365886	12365886	12365886		
Insert Serial Number	11145581	11145581	11145581		
Date and Time Initialized	03-Jul-14 11:43	01-Jan-70 00:00	05-Jul-14 15:03		
Date and Time Read	05-Jul-14 08:59	05-Jul-14 09:03	07-Jul-14 22:09		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	56.00	54.00	65.00		
Software Version	6.21	6.21	6.21		
Sub Serial Number	12365886	12365886	12365886		
Sonde Serial Number	11638573	11638573	11638573		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	84.64	282.13	33.75		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	49.03	47.12	68.23		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	12365886	12365886	12365886		
Insert/Sonde Serial Number	11120591	11120591	11120591		

REMARKS

1. All depths are calibrated to driller's pipe tally and are measured depth's 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 v8.0.10

WARRANTY

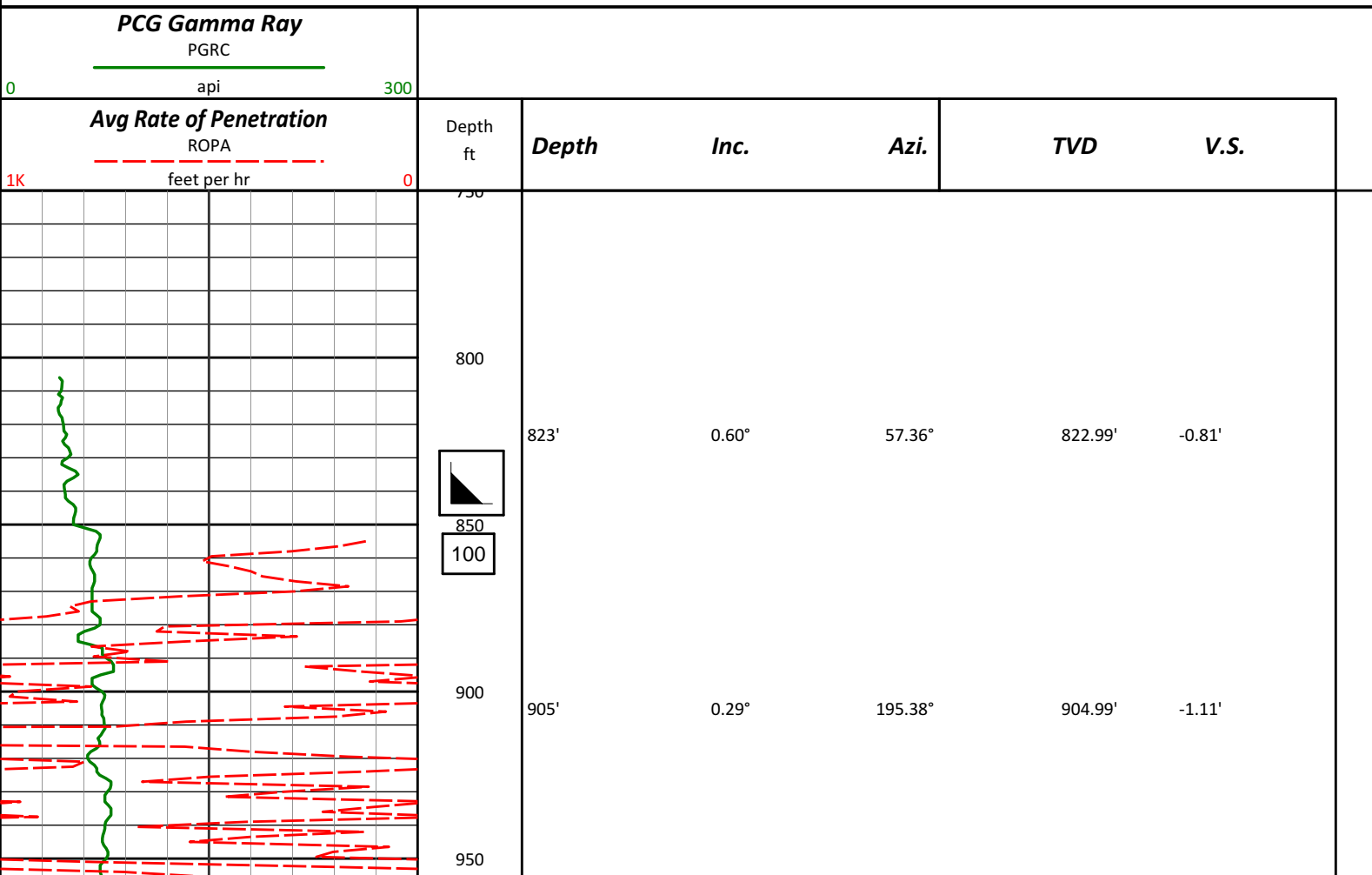
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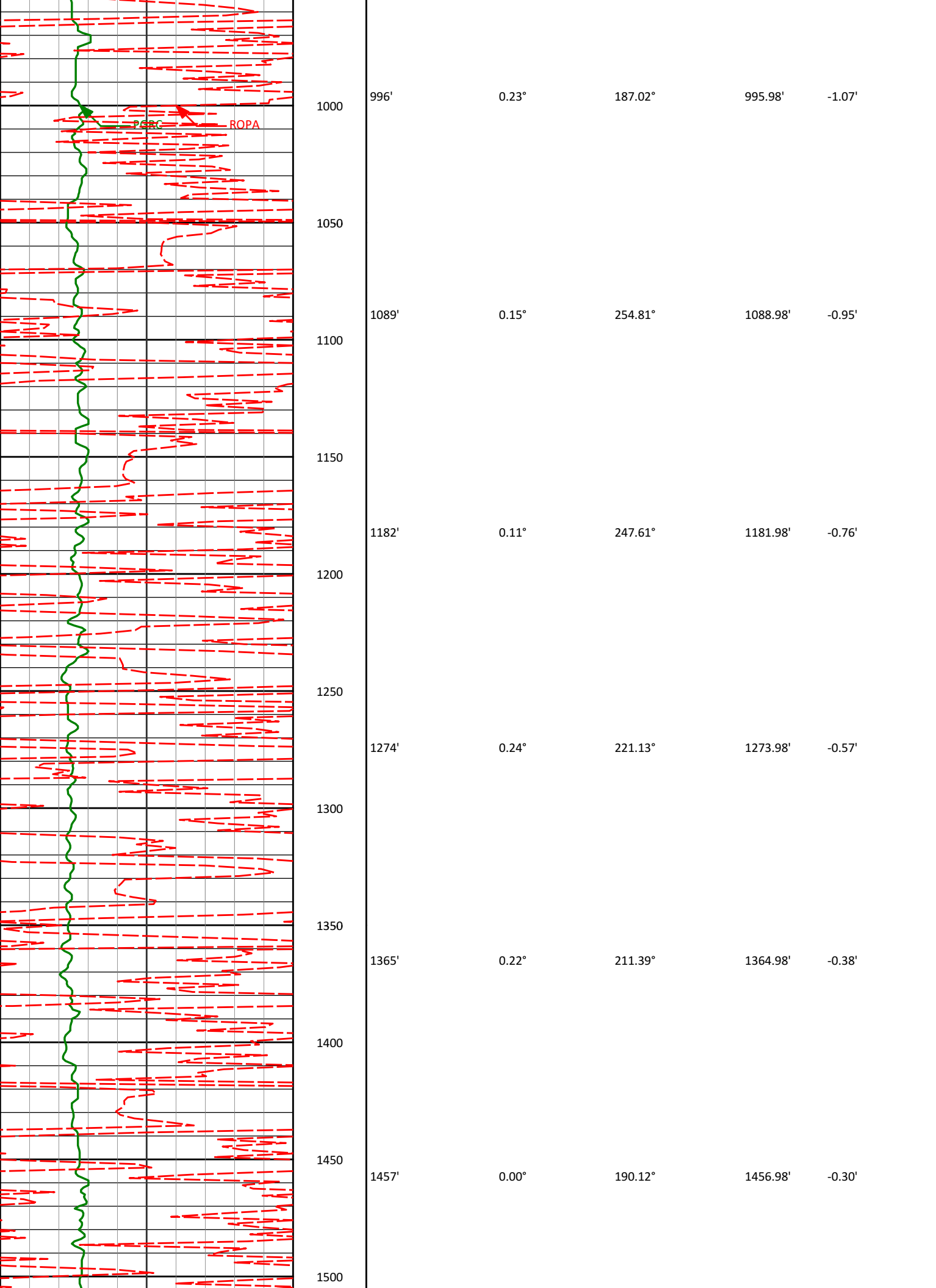
HALLIBURTON

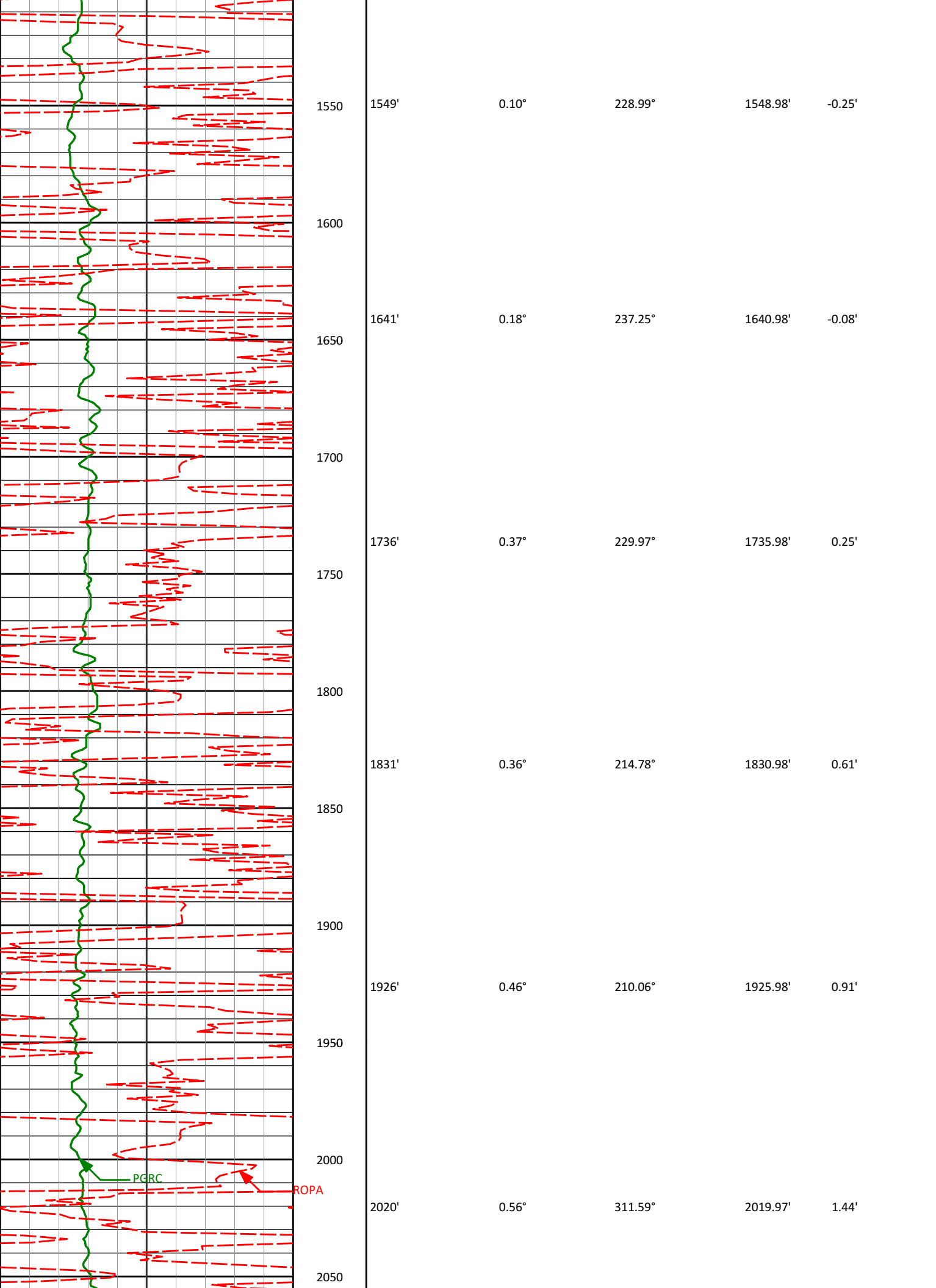
Sperry Drilling Services

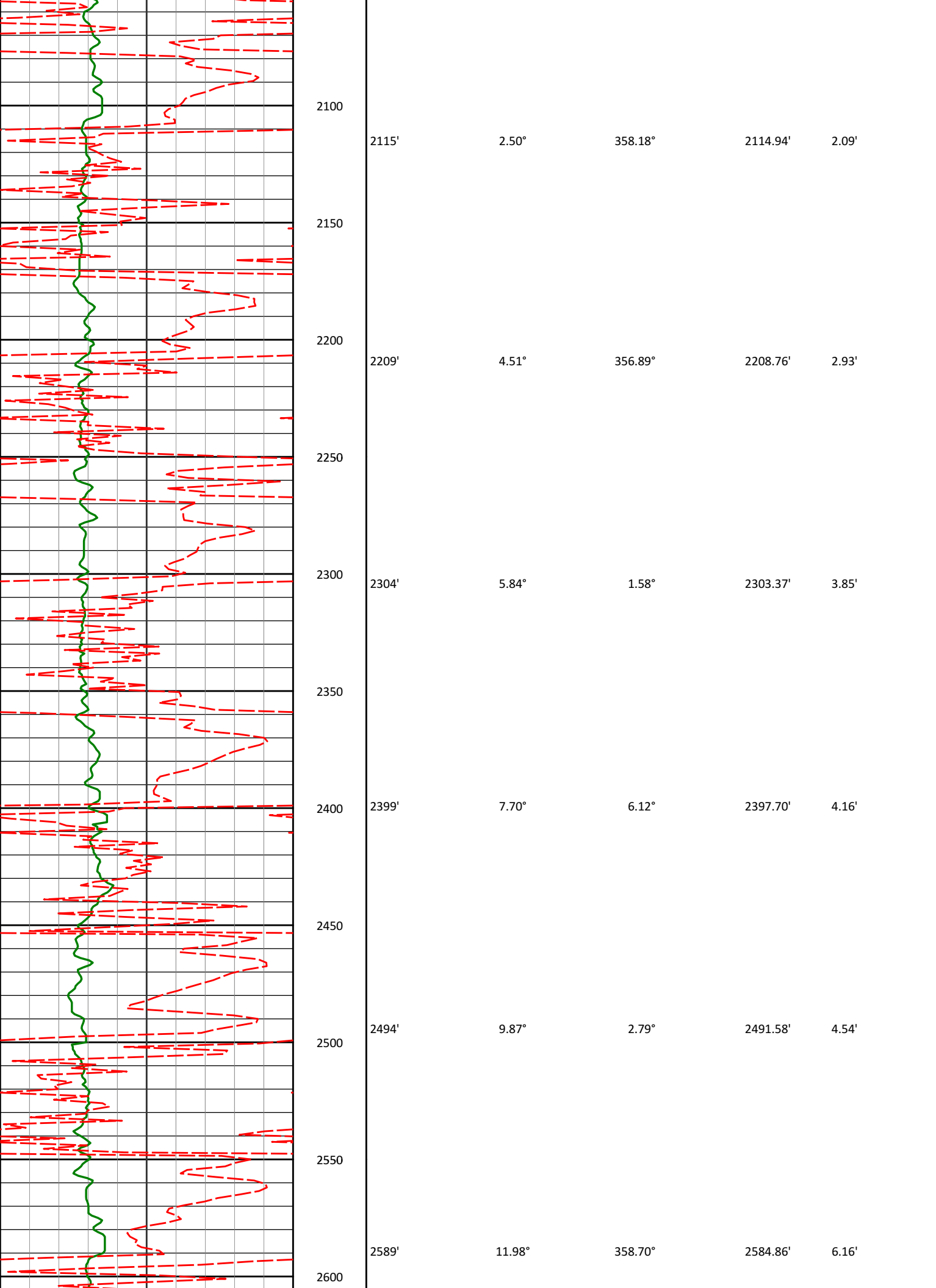
MD Correlation Log 1:600

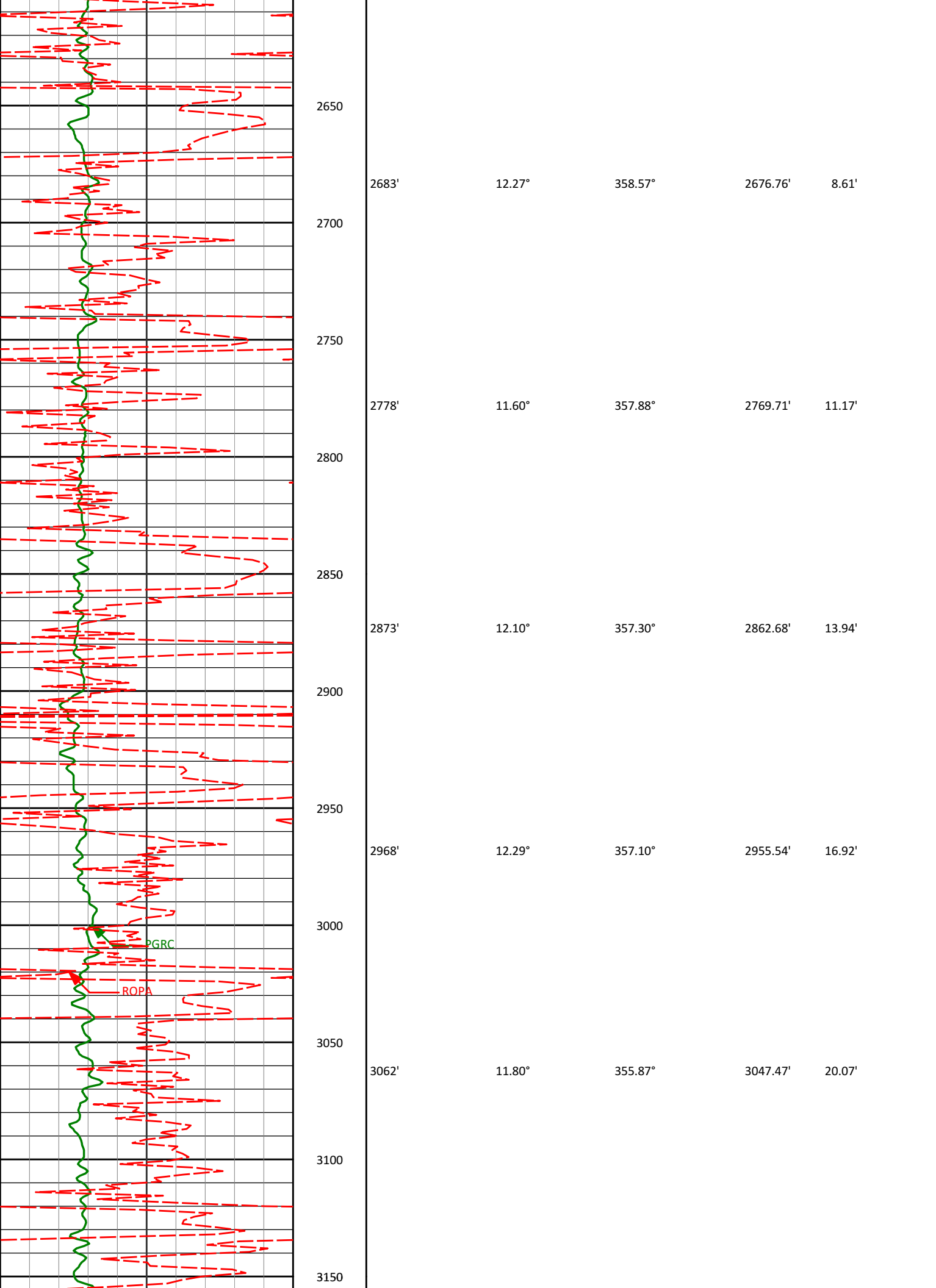
Noble Energy
NCLP AA06-69HNC
H&P 321
Sec. 4-T6N-R63W

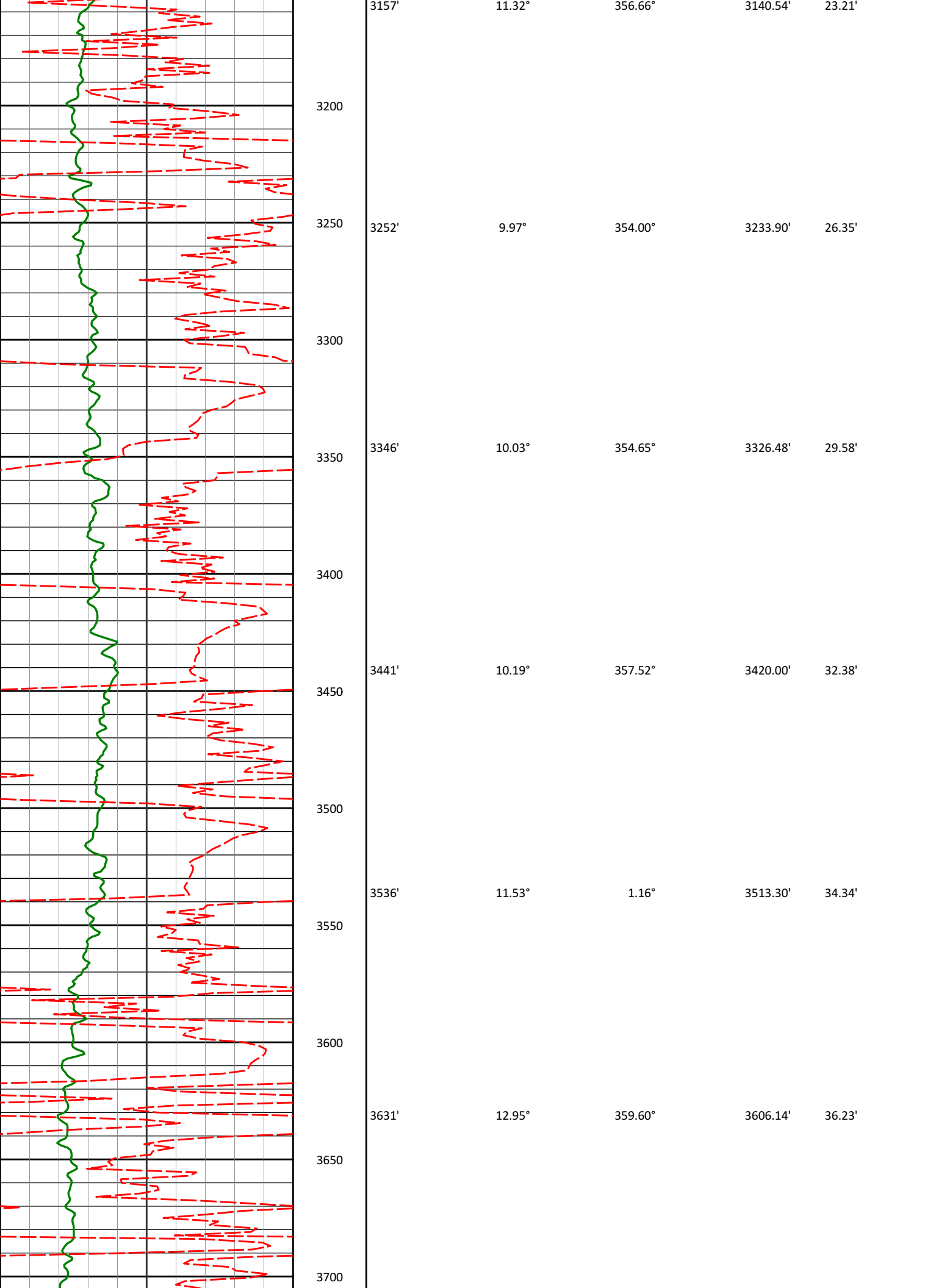


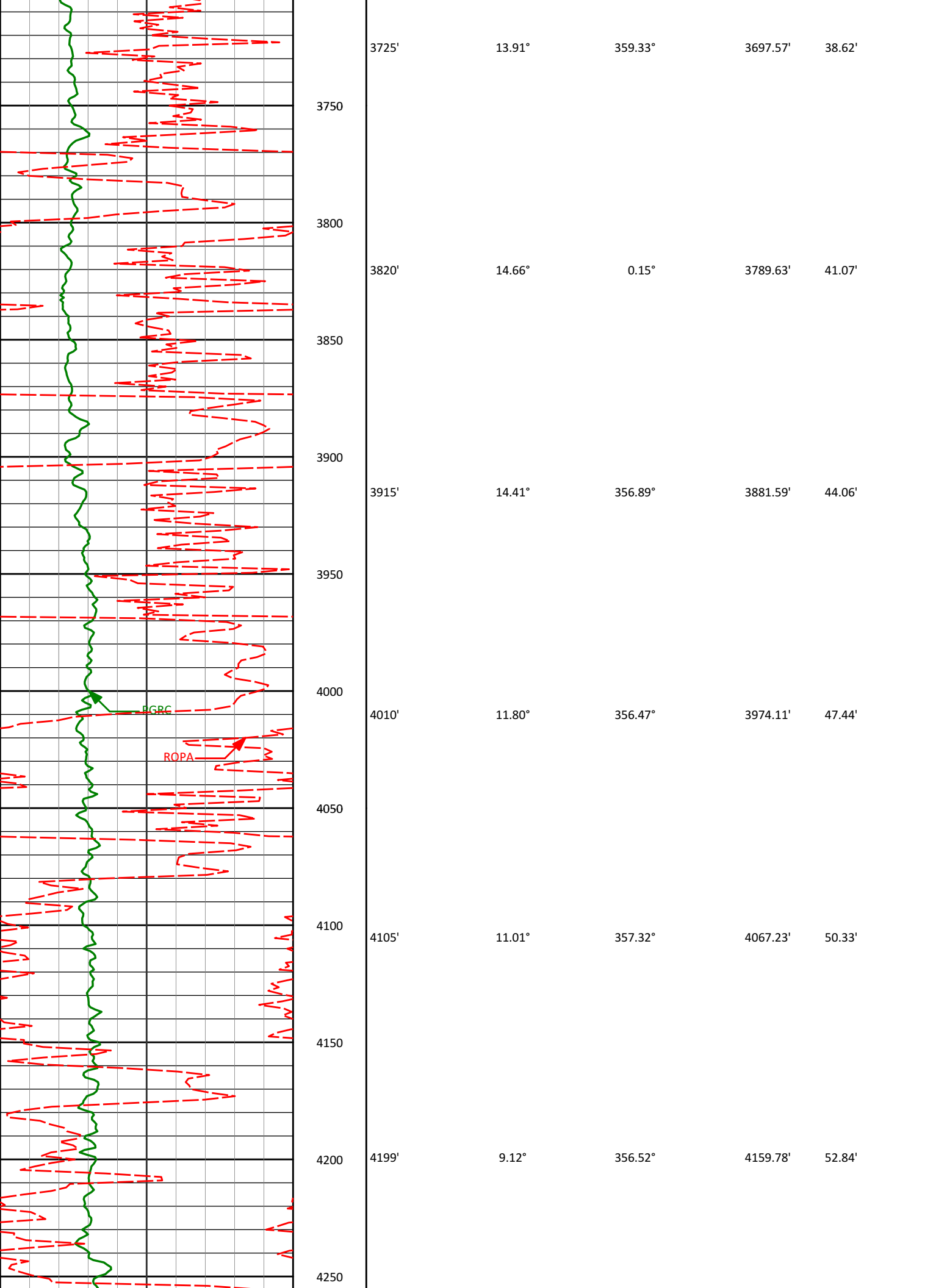


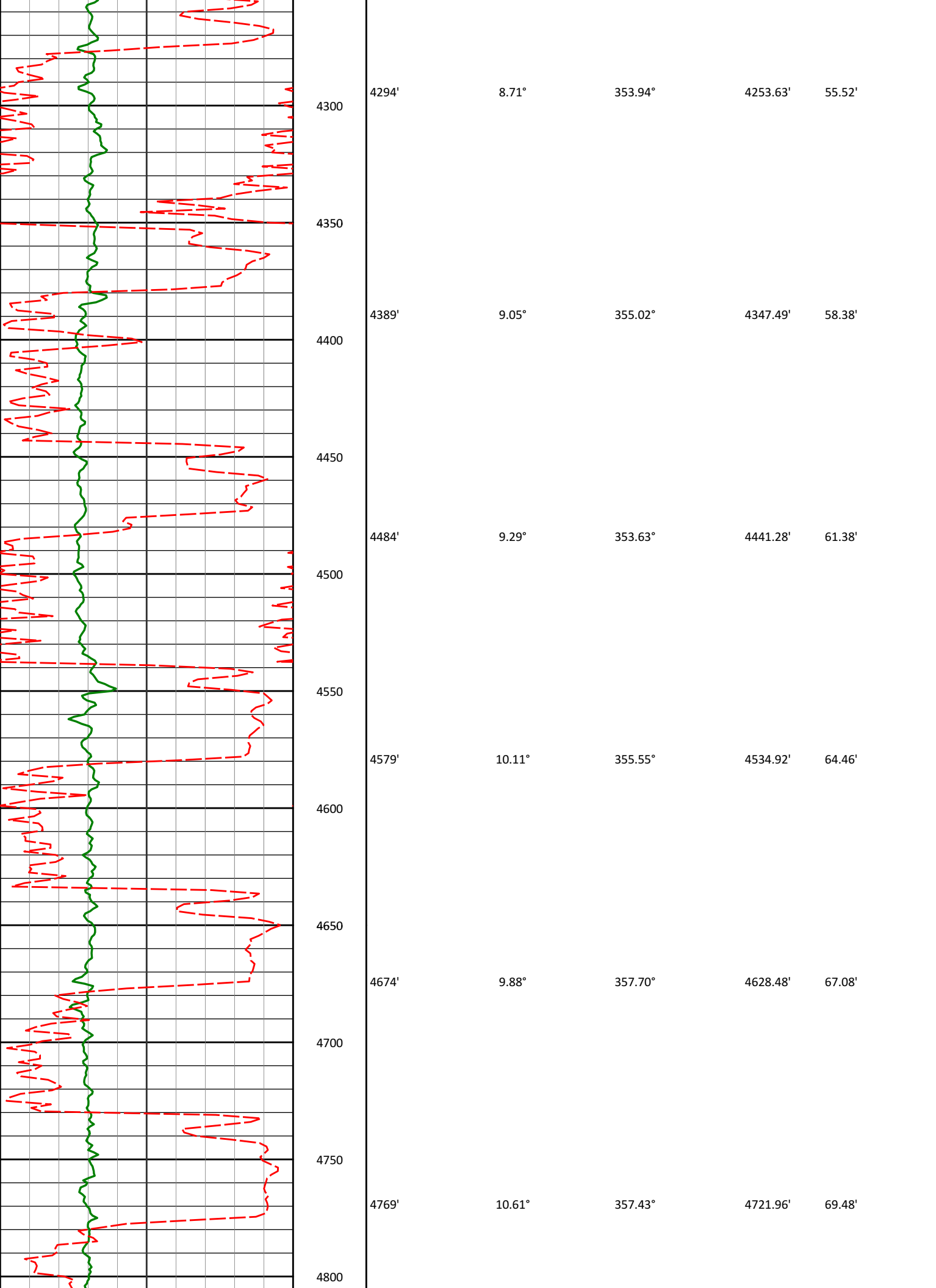


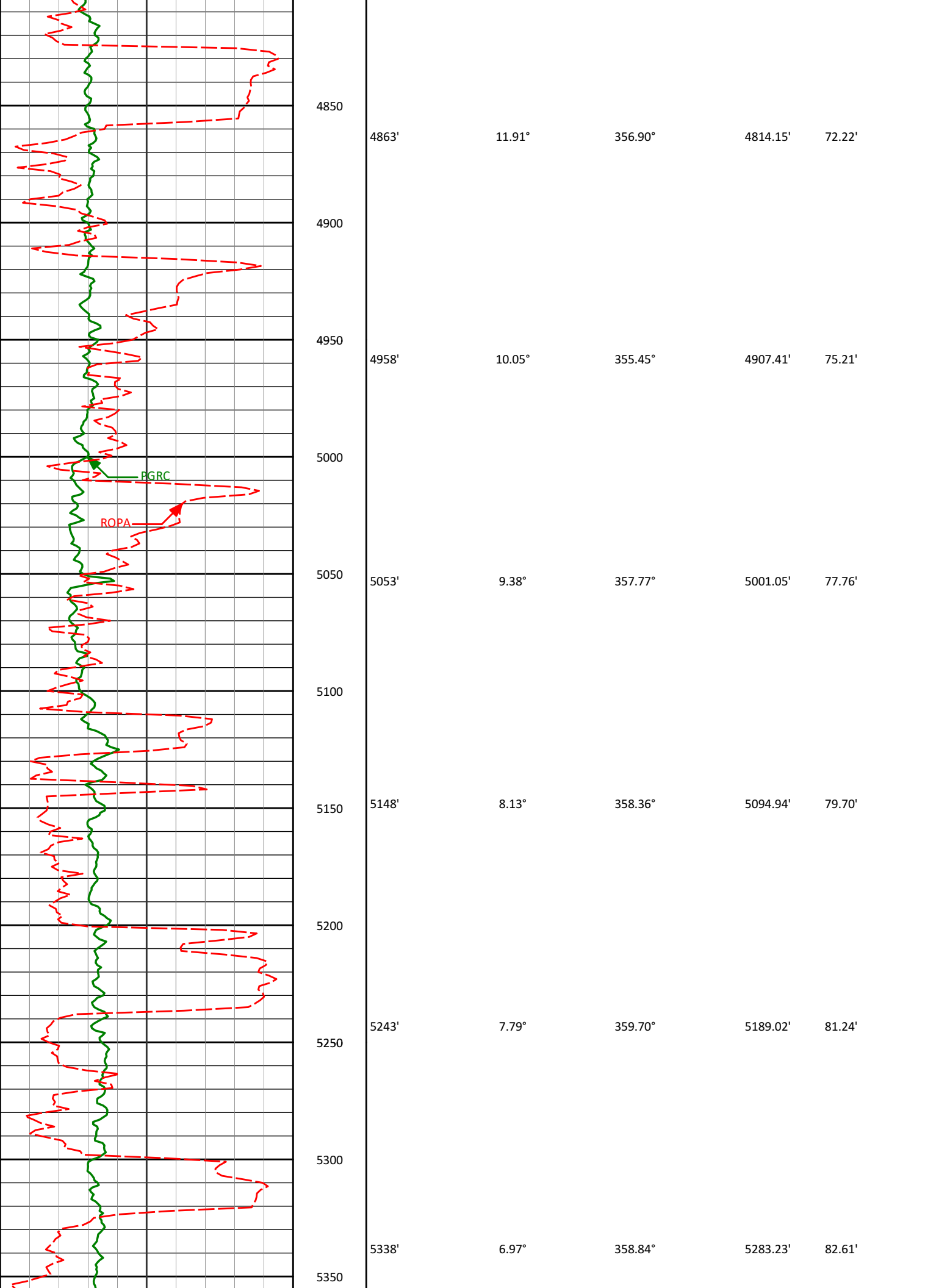


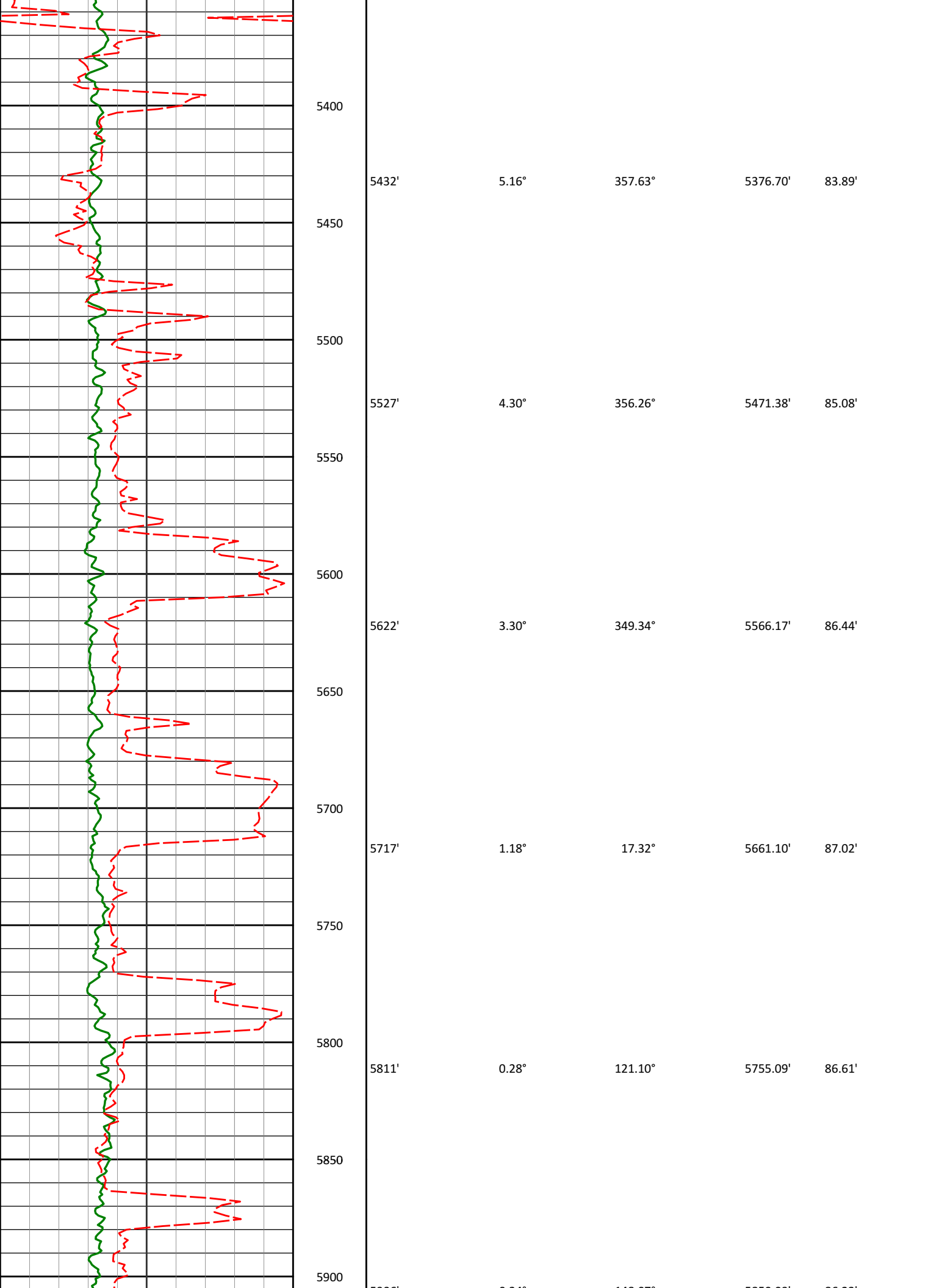


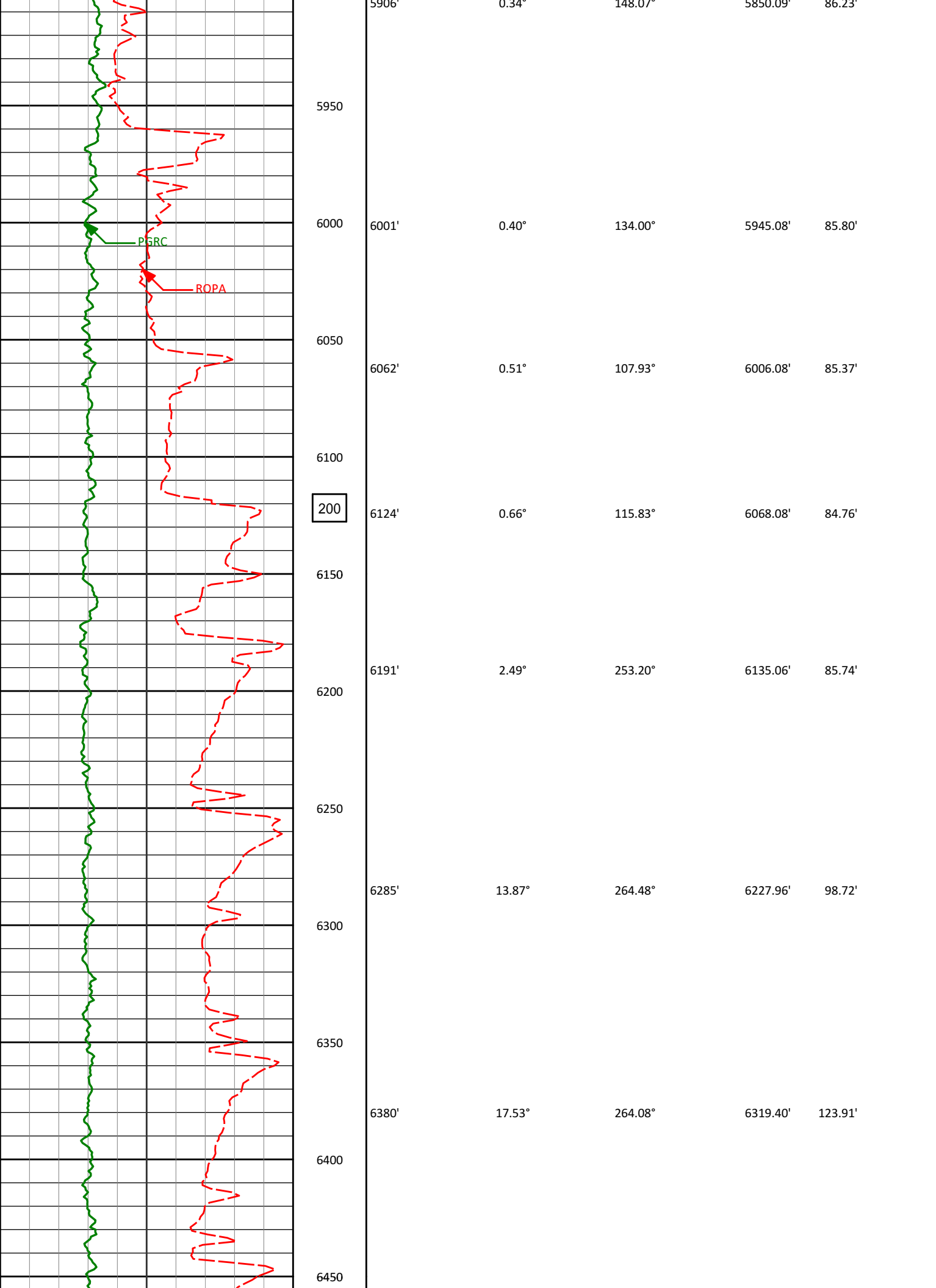


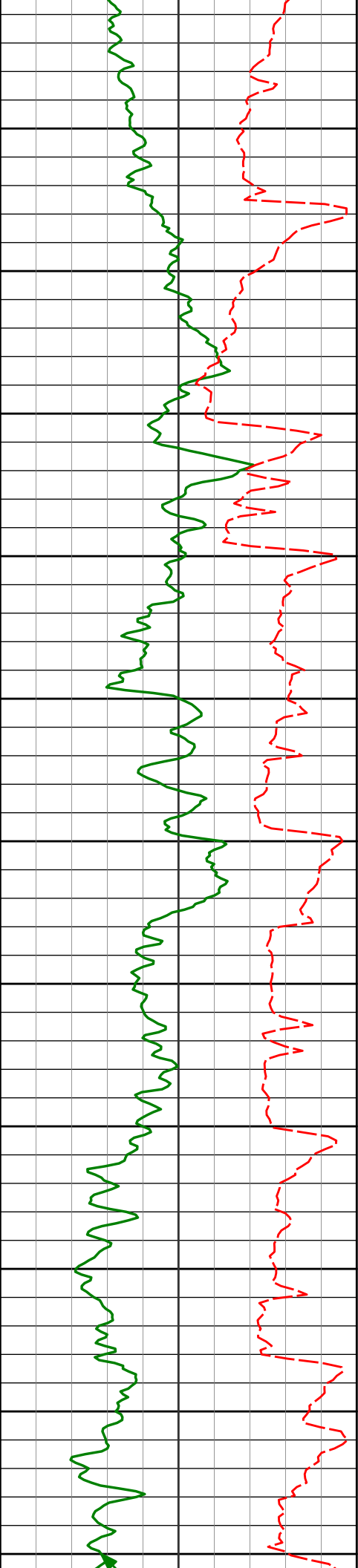




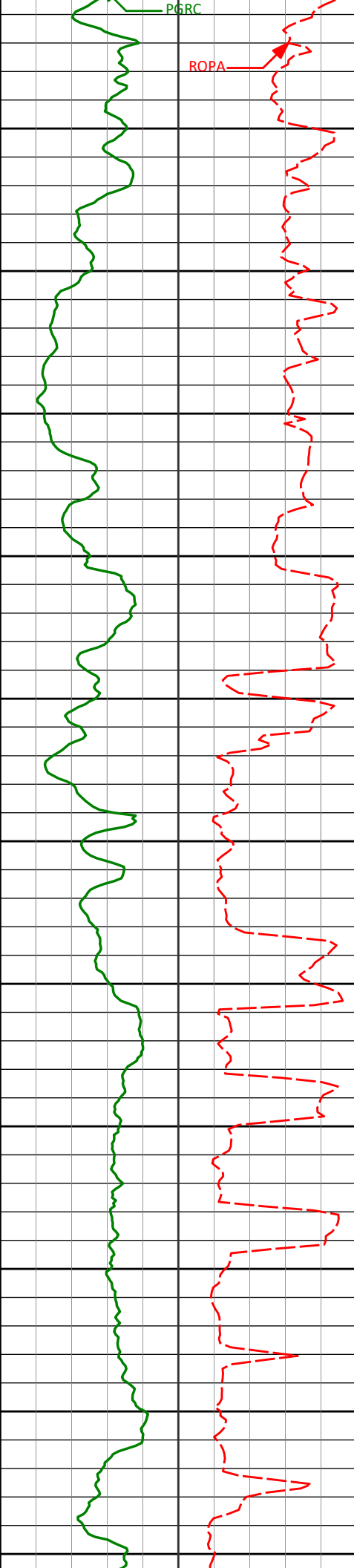




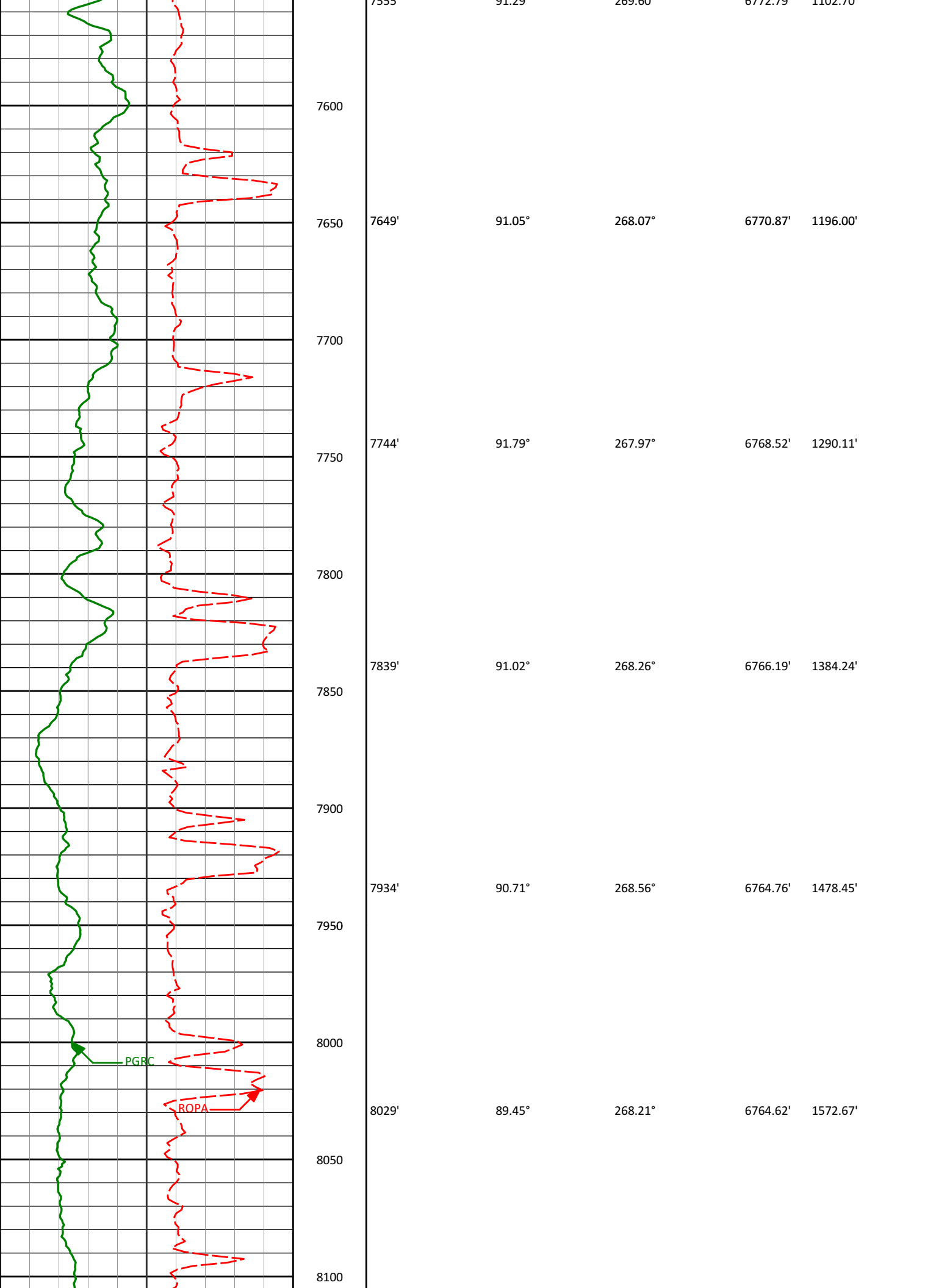


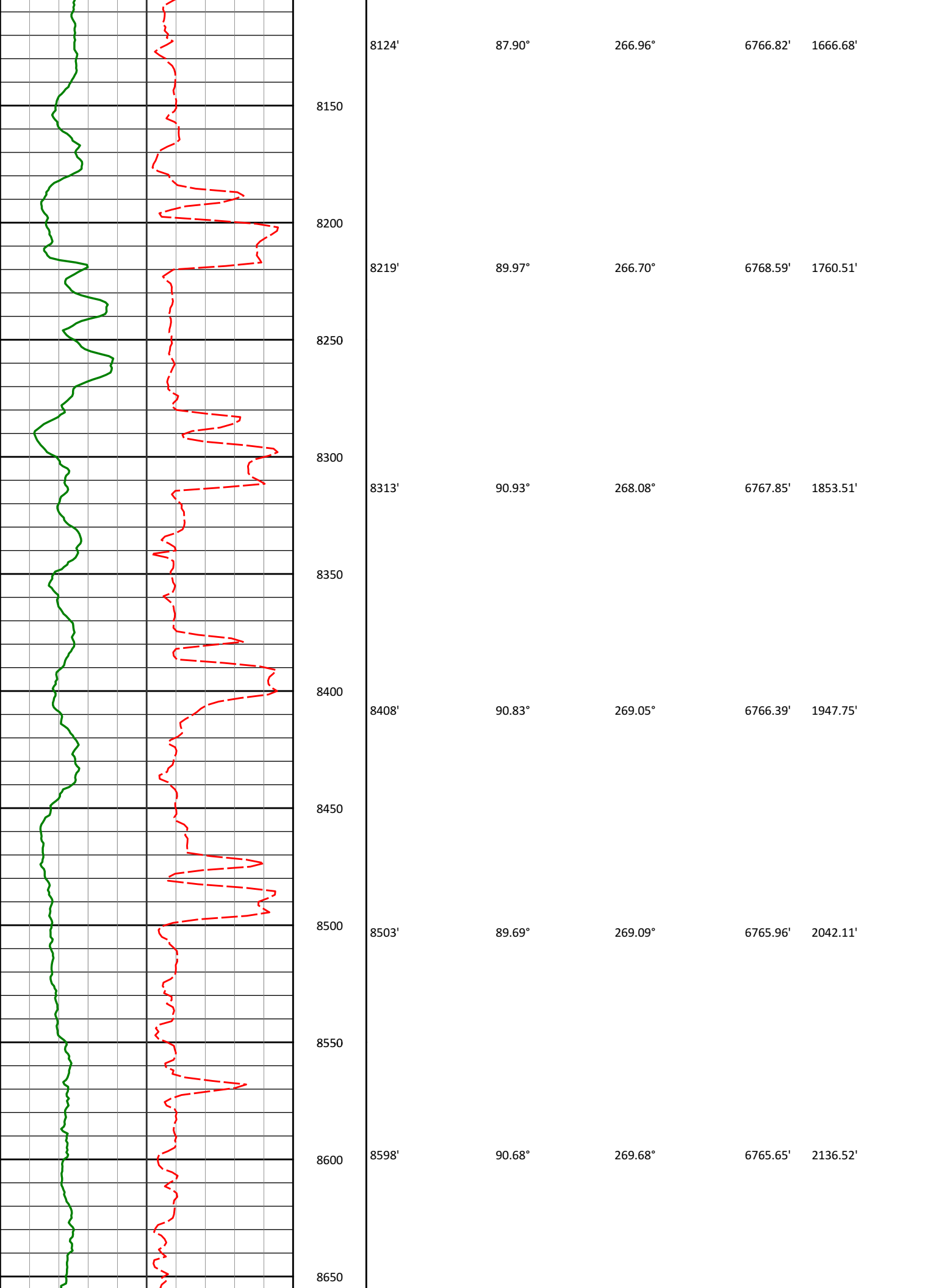


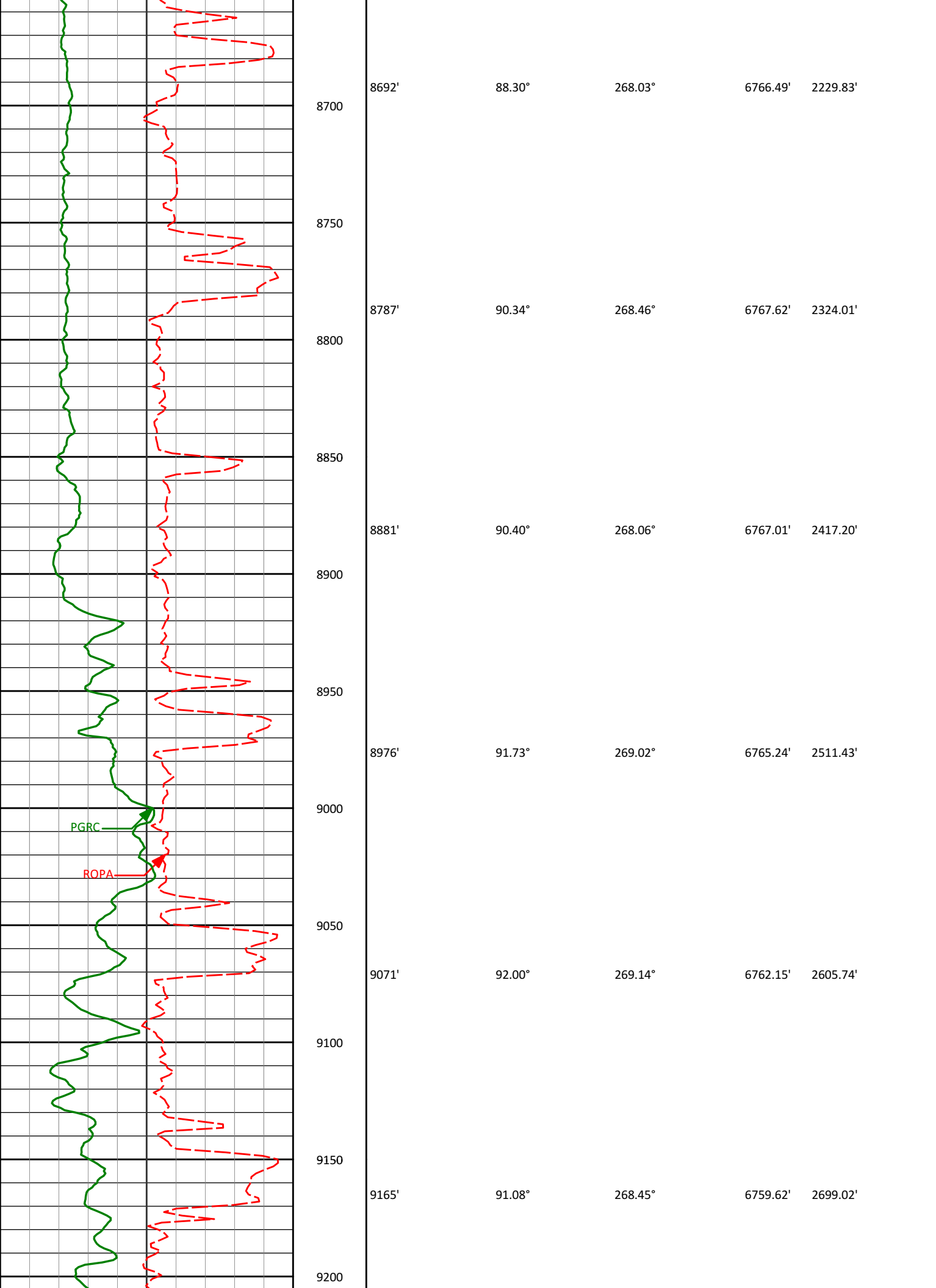
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6500				
6550				
6569'	37.89°	268.90°	6488.87'	204.22'
6600				
6650				
6664'	50.08°	269.76°	6557.10'	269.67'
6700				
6750				
6759'	55.53°	270.73°	6614.51'	344.97'
6800				
6850				
6854'	58.45°	270.76°	6666.25'	424.32'
6900				
6902'	61.51°	269.63°	6690.27'	465.68'
6950				
6948'	64.77°	268.17°	6711.05'	506.42'
7000				
6996'	73.58°	266.80°	6728.10'	550.77'

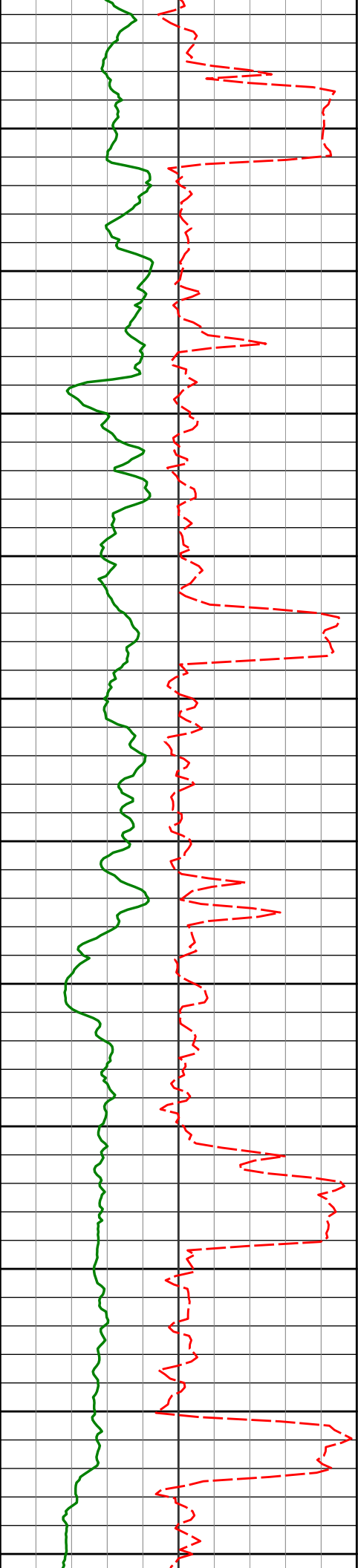


7043'	78.04°	267.16°	6739.62'	595.79'
7098'	81.80°	268.20°	6749.24'	649.40'
7175'	84.60°	270.00°	6758.36'	725.33'
7270'	85.56°	269.33°	6766.51'	819.45'
7365'	87.35°	270.08°	6772.38'	913.74'
7460'	90.43°	269.91°	6774.22'	1008.23'
7555'	91.20°	269.60°	6773.70'	1102.70'









9250

9260'

88.92°

269.10°

6759.62'

2793.31'

9300

9350

9355'

88.77°

267.73°

6761.54'

2887.51'

9400

9450

9450'

90.03°

269.43°

6762.53'

2981.76'

9500

9550

9545'

91.02°

268.72°

6761.66'

3076.12'

9600

9650

9640'

90.06°

270.27°

6760.77'

3170.54'

9700

9750

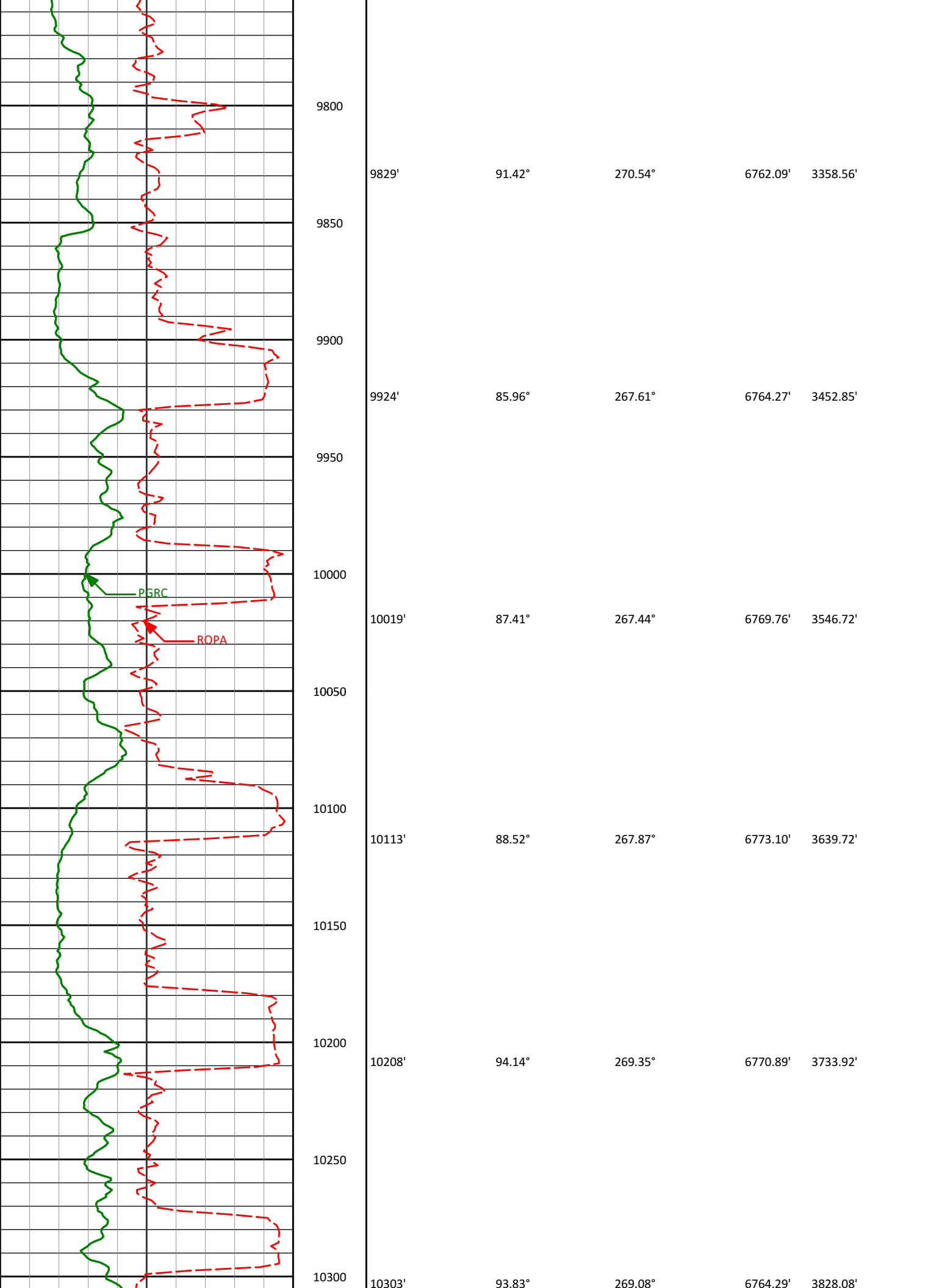
9735'

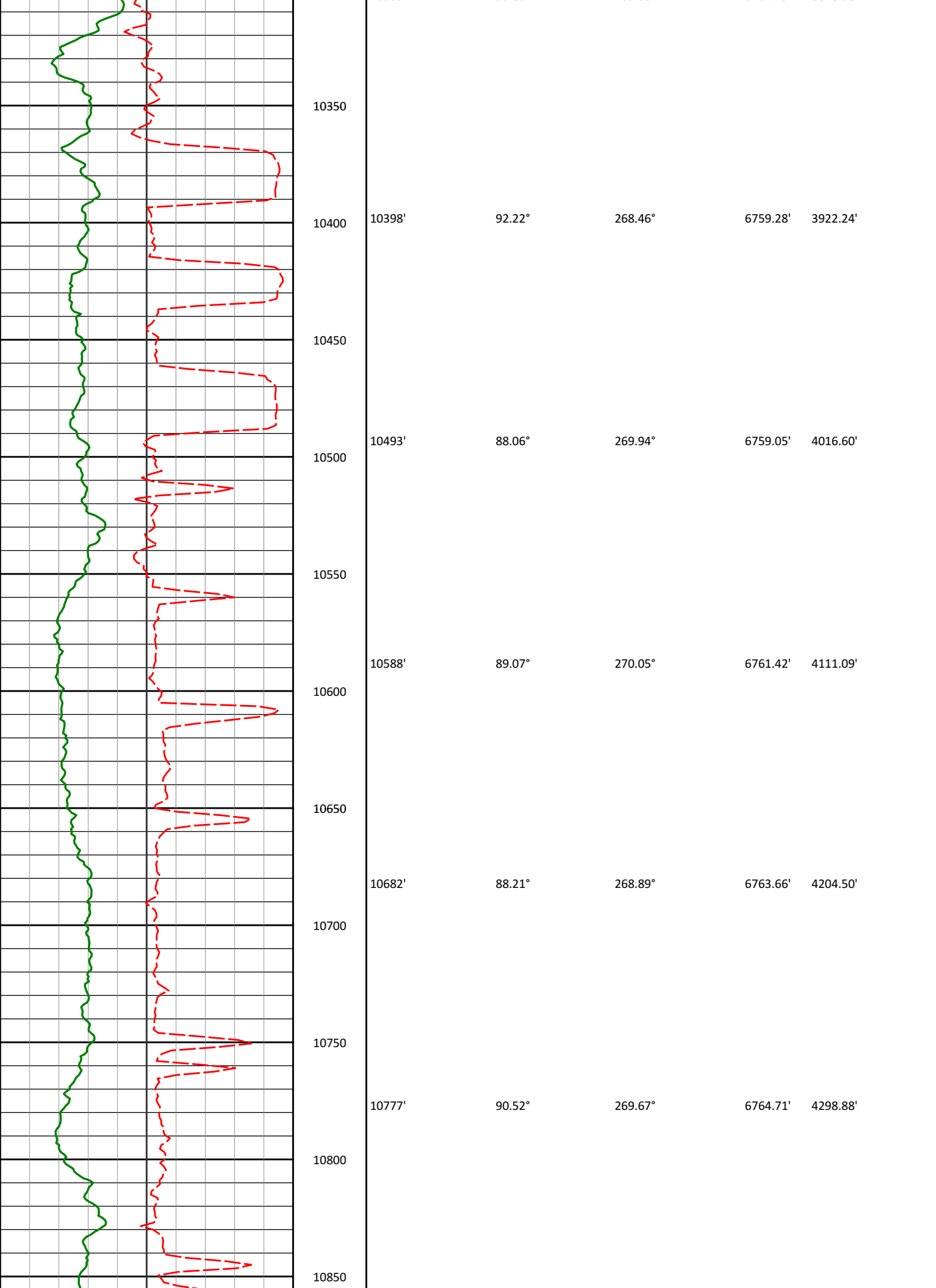
88.46°

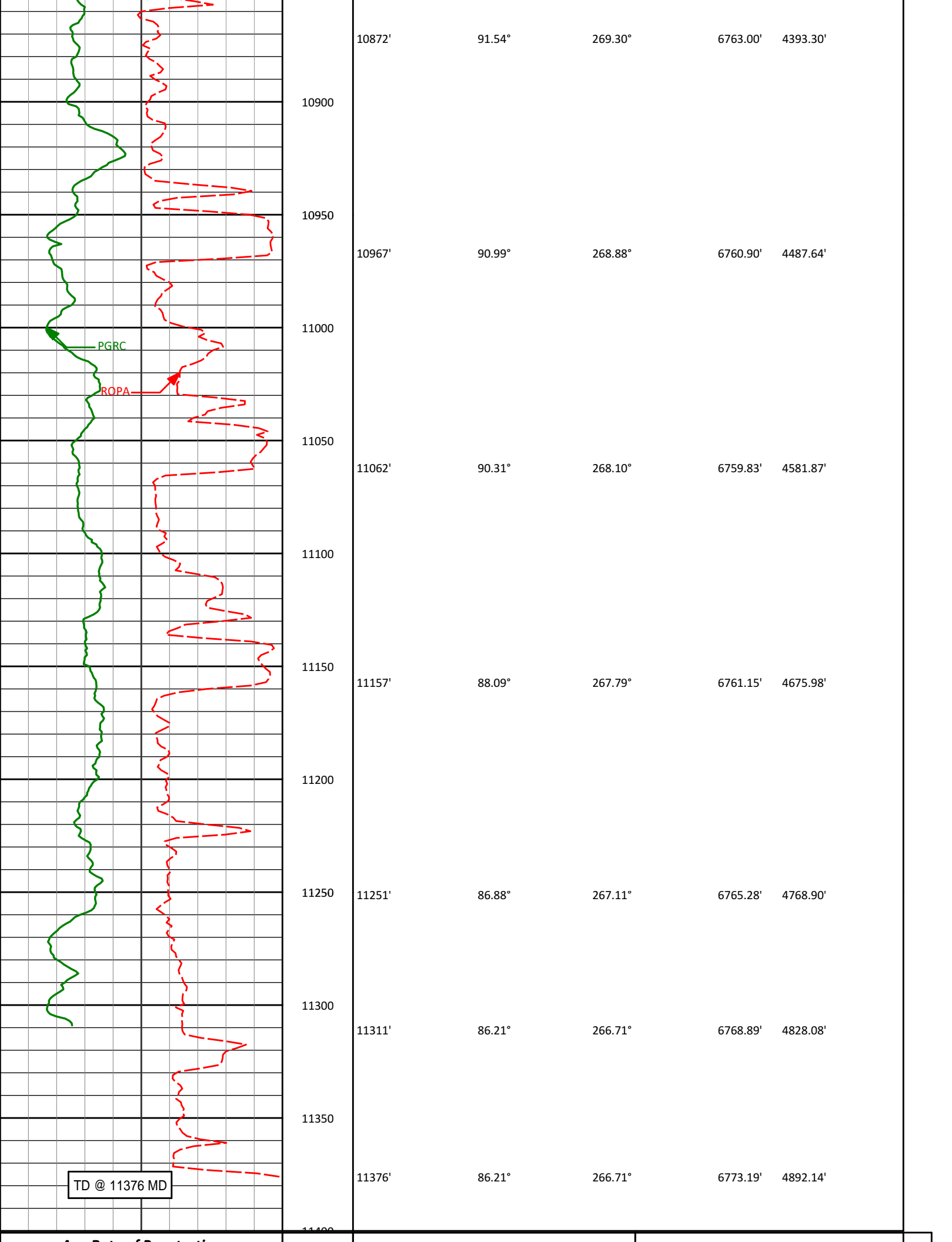
269.54°

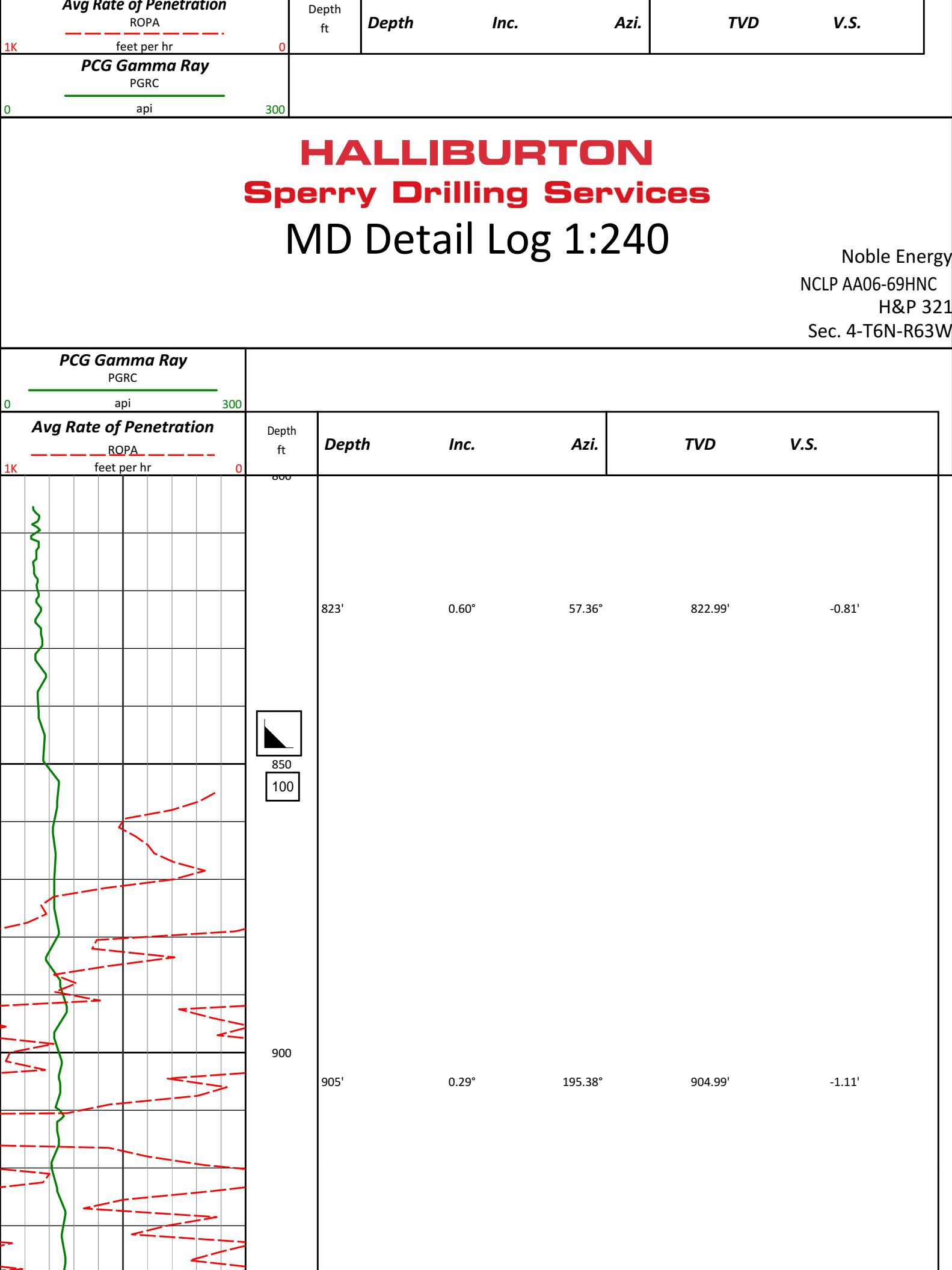
6762.00'

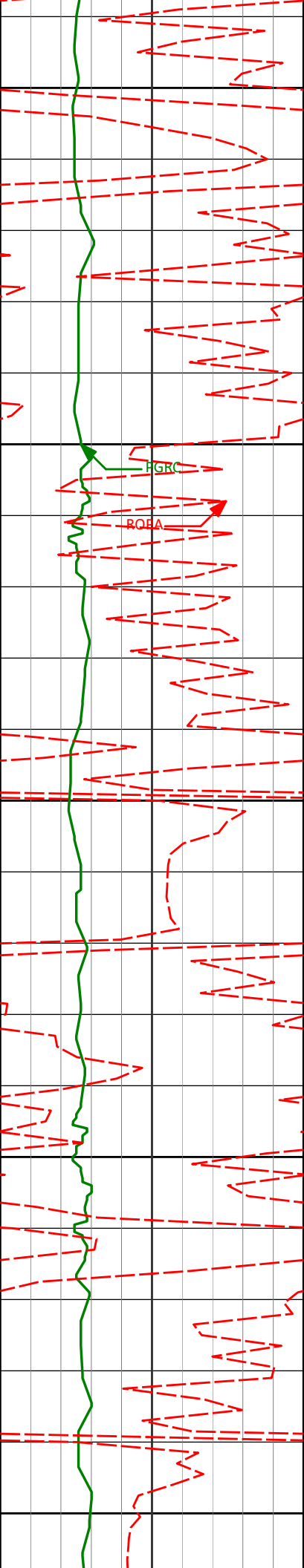
3265.04'











950

1000

1050

1100

1150

996'

0.23°

187.02°

995.98'

-1.07'

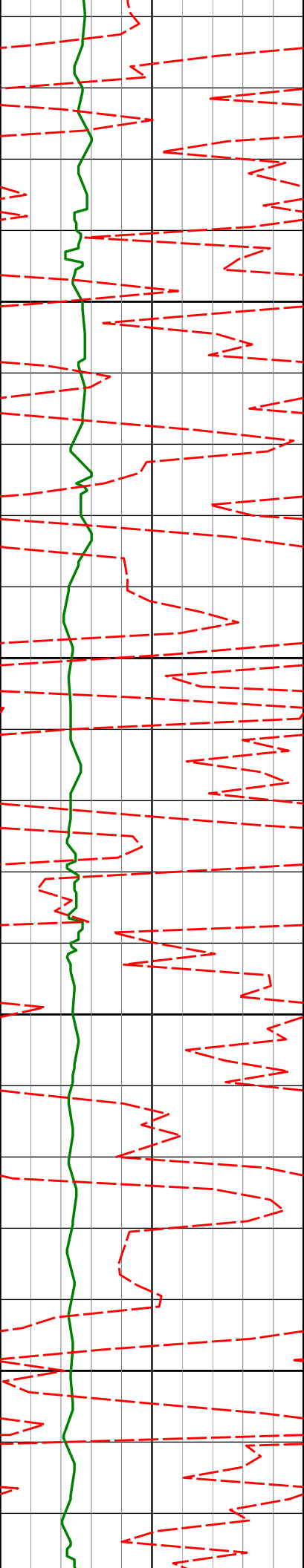
1089'

0.15°

254.81°

1088.98'

-0.95'



1200

1250

1300

1350

1182'

1274'

1365'

0.11°

0.24°

0.22°

247.61°

221.13°

211.39°

1181.98'

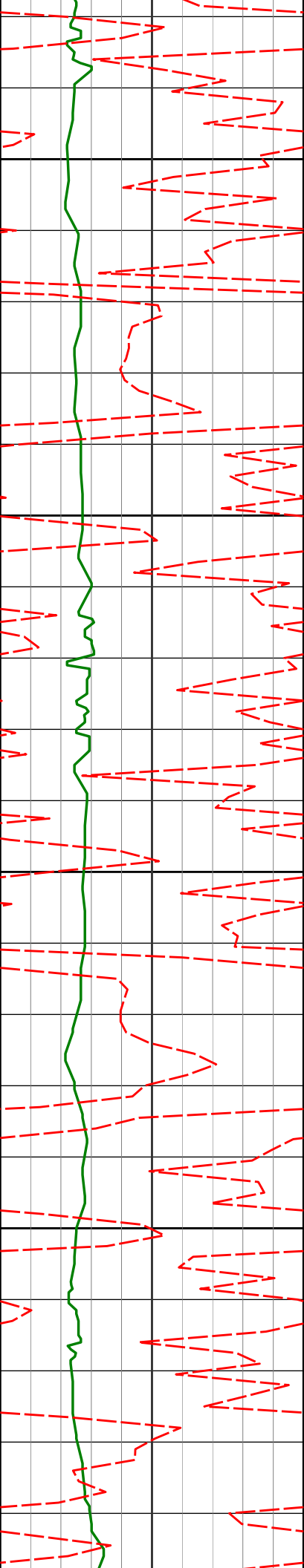
1273.98'

1364.98'

-0.76'

-0.57'

-0.38'



1400

1450

1500

1550

1457'

1549'

0.00°

0.10°

190.12°

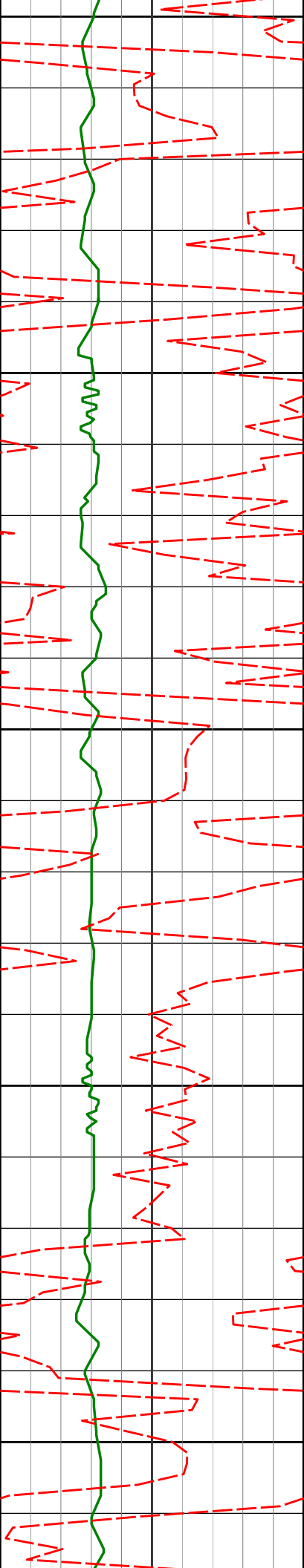
228.99°

1456.98'

1548.98'

-0.30'

-0.25'



1600

1641'

1650

1700

1736'

1750

1800

0.18°

237.25°

1640.98'

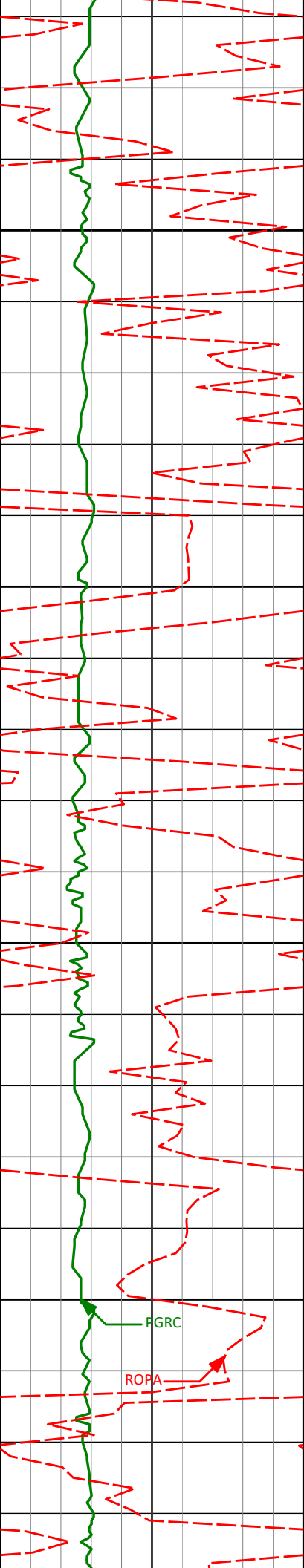
-0.08'

0.37°

229.97°

1735.98'

0.25'



1850

1900

1950

2000

1831'

0.36°

214.78°

1830.98'

0.61'

1926'

0.46°

210.06°

1925.98'

0.91'

2020'

0.56°

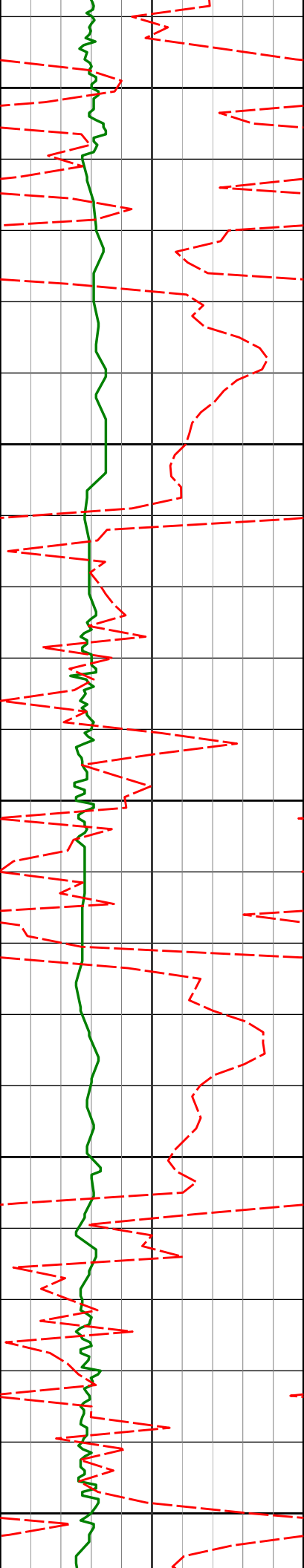
311.59°

2019.97'

1.44'

PGRC

ROPA



2050

2100

2150

2200

2250

2115'

2.50°

358.18°

2114.94'

2.09'

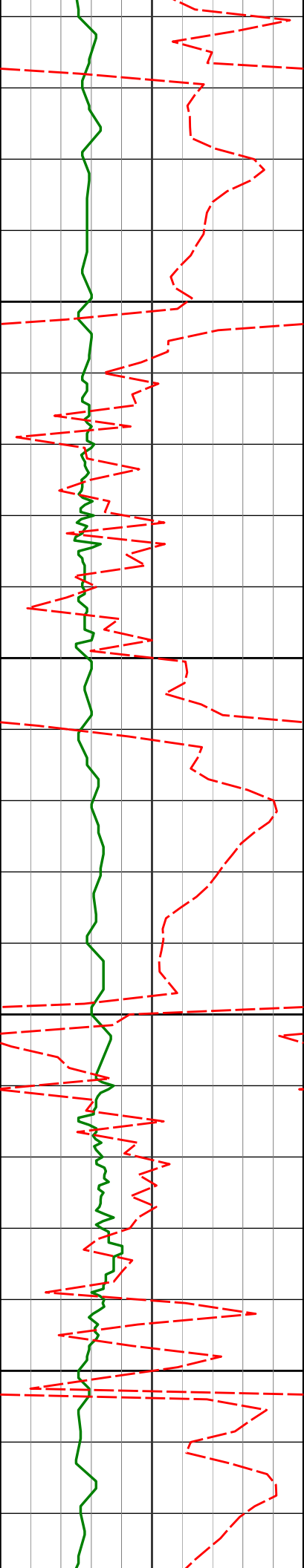
2209'

4.51°

356.89°

2208.76'

2.93'



2300

2304'

5.84°

1.58°

2303.37'

3.85'

2350

2400

2399'

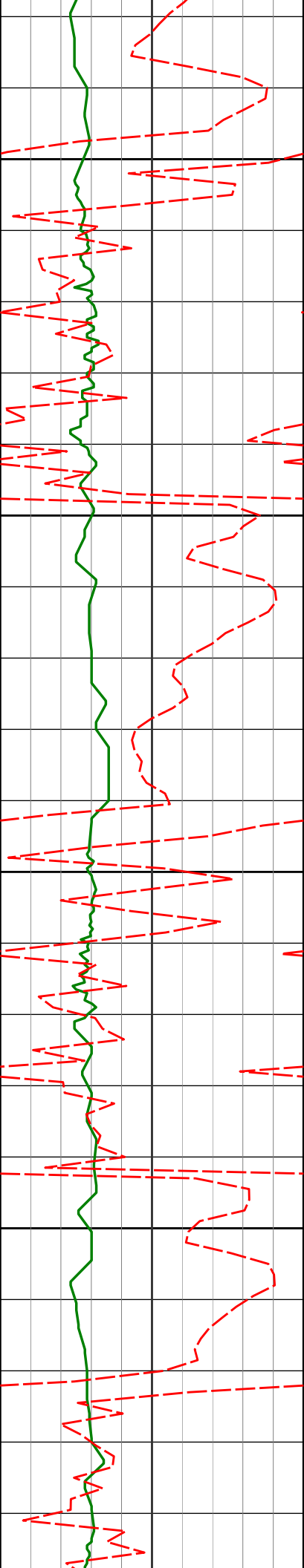
7.70°

6.12°

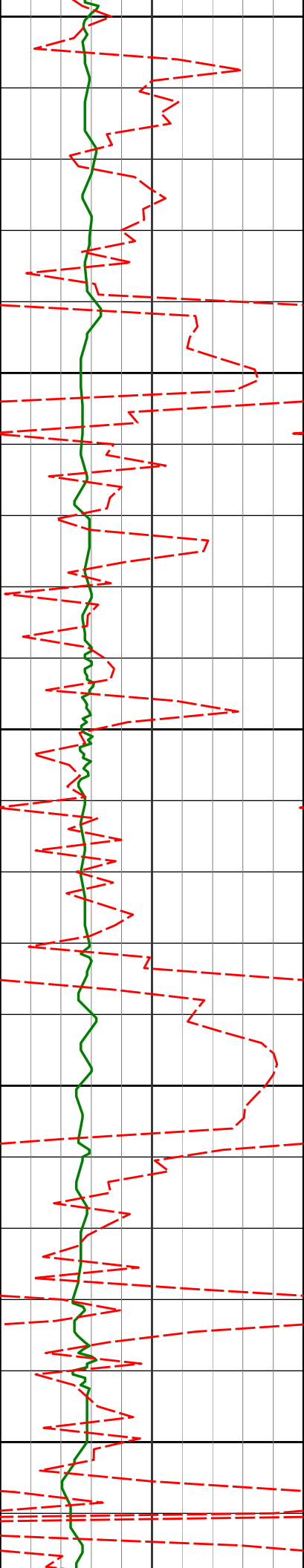
2397.70'

4.16'

2450



2494'	9.87°	2.79°	2491.58'	4.54'
2589'	11.98°	358.70°	2584.86'	6.16'
2683'	12.27°	358.57°	2676.76'	8.61'



2700

2750

2800

2850

2900

2778'

11.60°

357.88°

2769.71'

11.17'

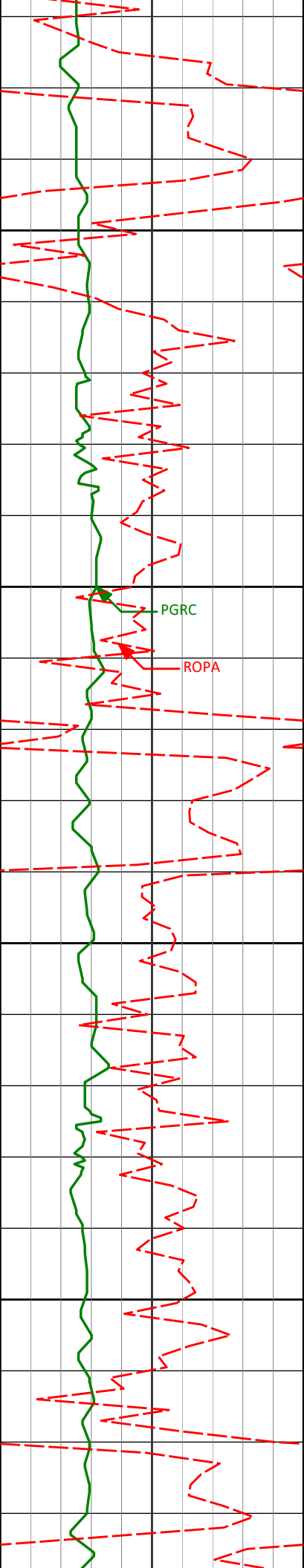
2873'

12.10°

357.30°

2862.68'

13.94'



2950

2968'

12.29°

357.10°

2955.54'

16.92'

3000

PGRC

ROPA

3050

3062'

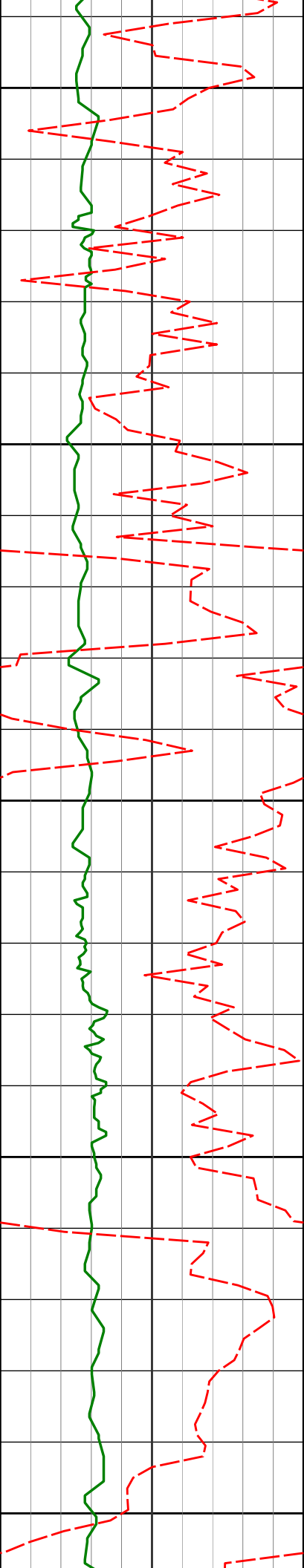
11.80°

355.87°

3047.47'

20.07'

3100



3150

3157'

11.32°

356.66°

3140.54'

23.21'

3200

3250

3252'

9.97°

354.00°

3233.90'

26.35'

3300

3350

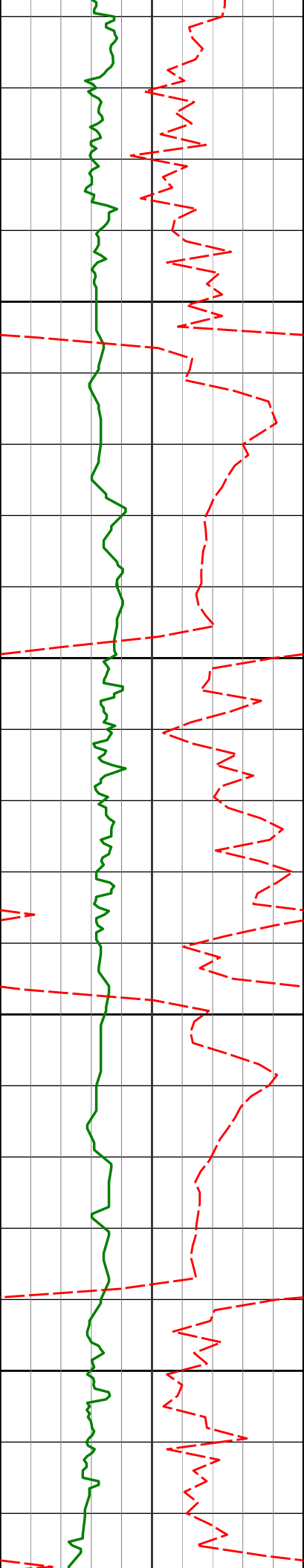
3346'

10.03°

354.65°

3326.48'

29.58'



3400

3441'

10.19°

357.52°

3420.00'

32.38'

3450

3500

3536'

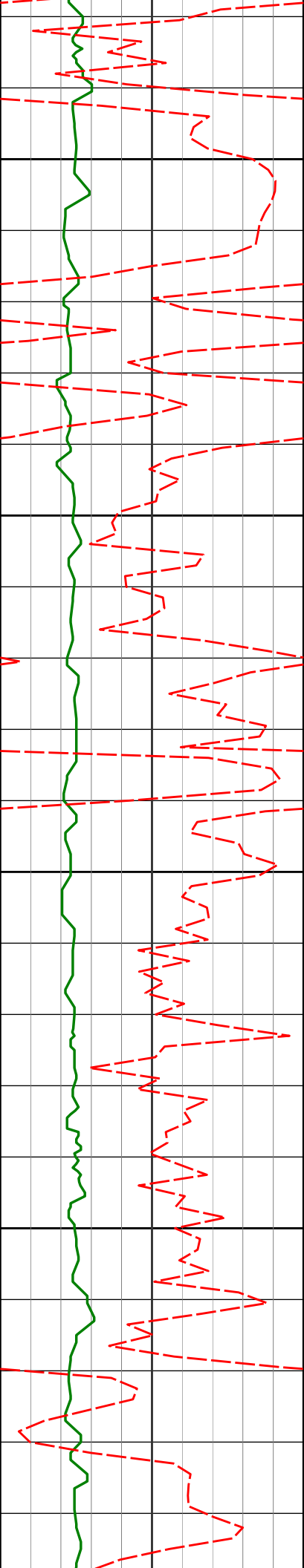
11.53°

1.16°

3513.30'

34.34'

3550



3600

3631'

12.95°

359.60°

3606.14'

36.23'

3650

3700

3725'

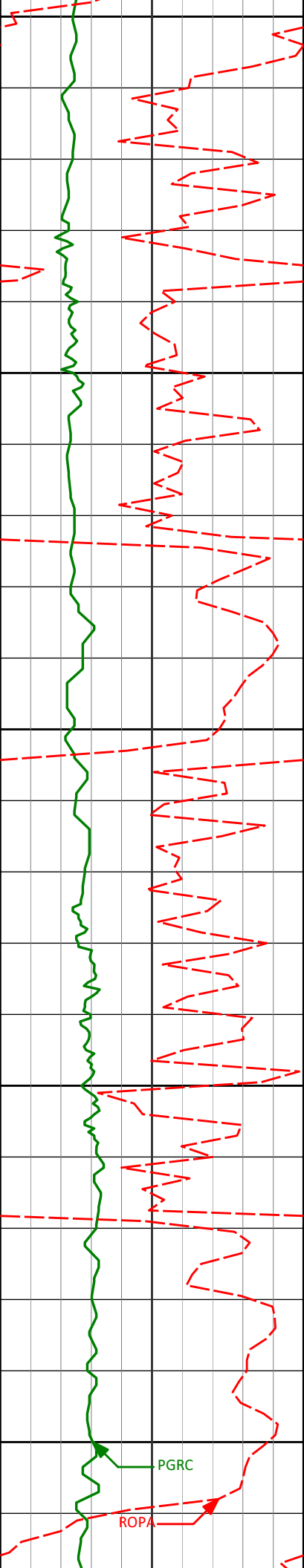
13.91°

359.33°

3697.57'

38.62'

3750



3800

3820'

14.66°

0.15°

3789.63'

41.07'

3850

3900

3915'

14.41°

356.89°

3881.59'

44.06'

3950

4000

4010'

11.80°

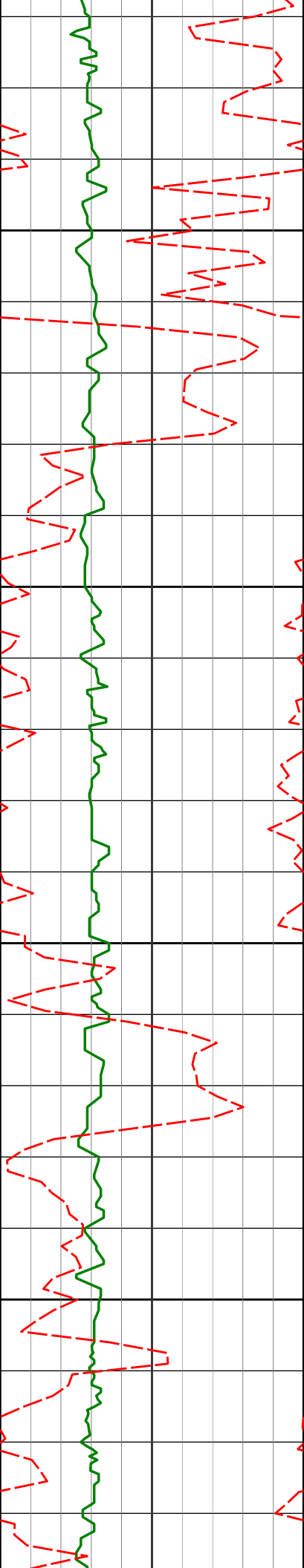
356.47°

3974.11'

47.44'

PGRC

ROPA



4050

4100

4150

4200

4105'

4199'

11.01°

9.12°

357.32°

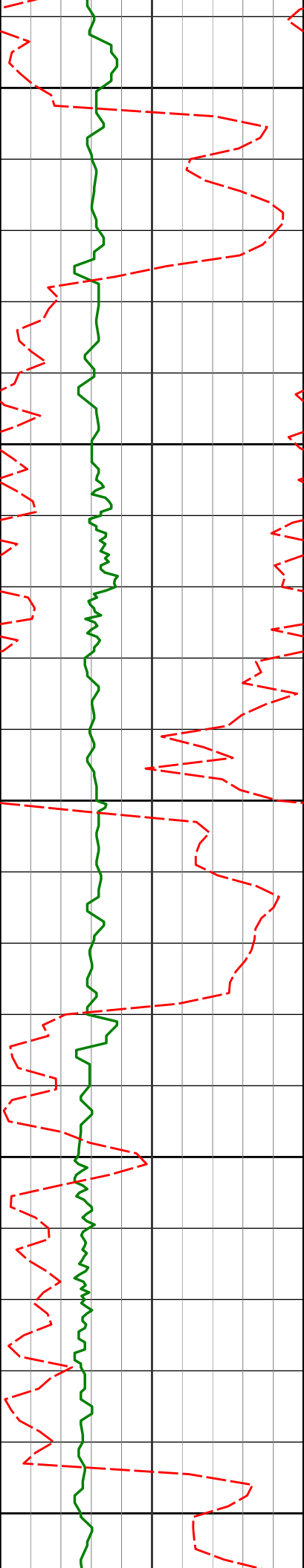
356.52°

4067.23'

4159.78'

50.33'

52.84'



4250

4294'

8.71°

353.94°

4253.63'

55.52'

4300

4350

4389'

9.05°

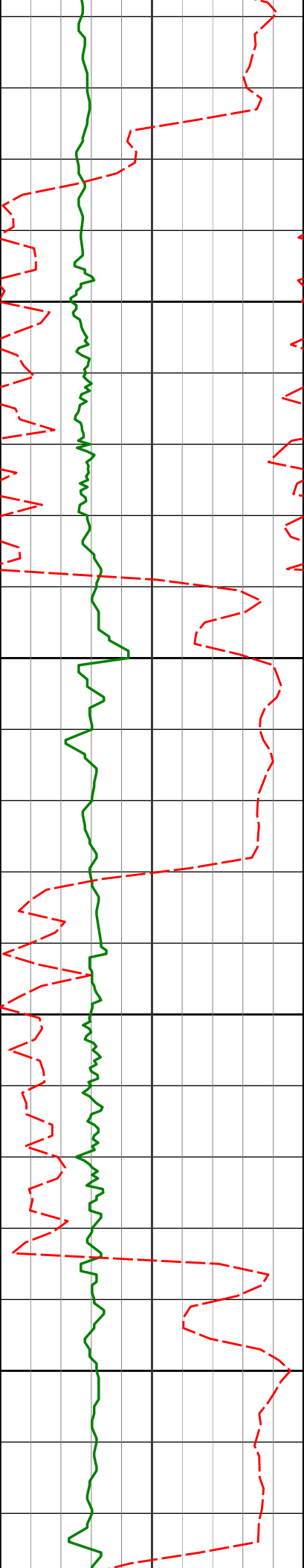
355.02°

4347.49'

58.38'

4400

4450



4484'

9.29°

353.63°

4441.28'

61.38'

4500

4550

4579'

10.11°

355.55°

4534.92'

64.46'

4600

4650

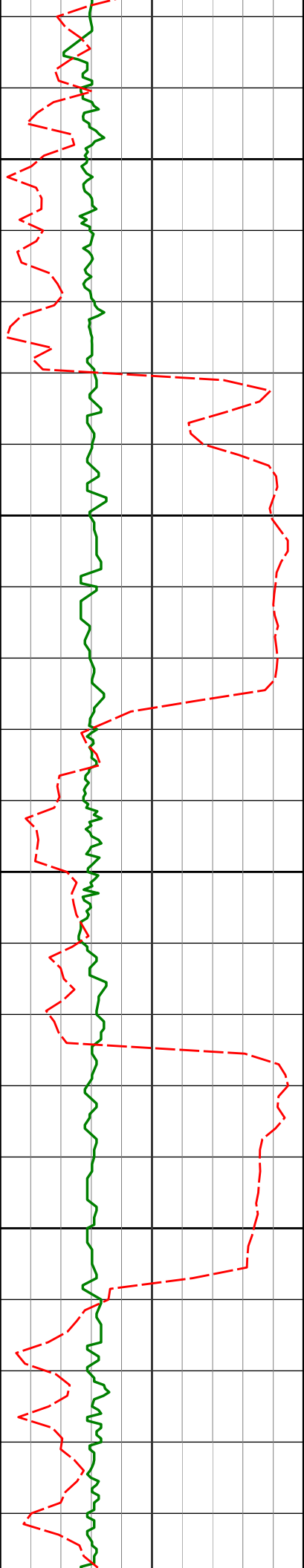
4674'

9.88°

357.70°

4628.48'

67.08'



4700

4750

4800

4850

4769'

10.61°

357.43°

4721.96'

69.48'

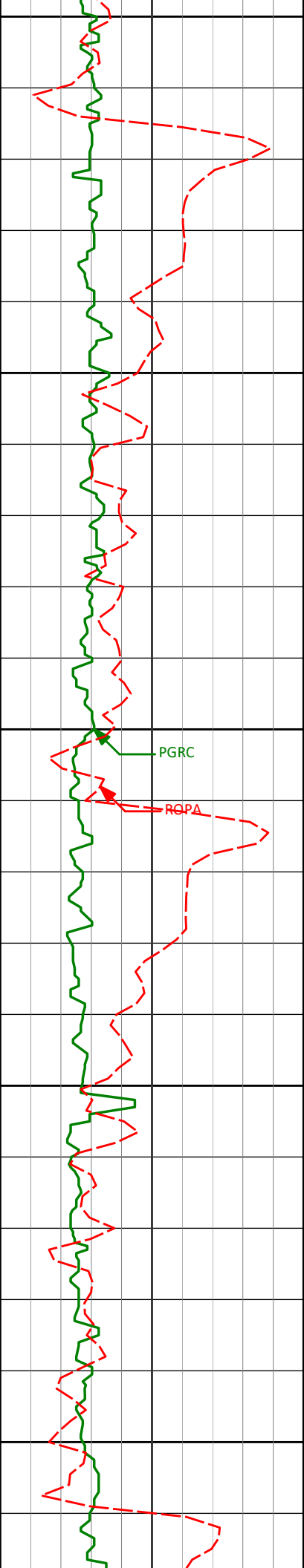
4863'

11.91°

356.90°

4814.15'

72.22'



4900

4950

5000

5050

5100

4958'

10.05°

355.45°

4907.41'

75.21'

PGRC

RQPA

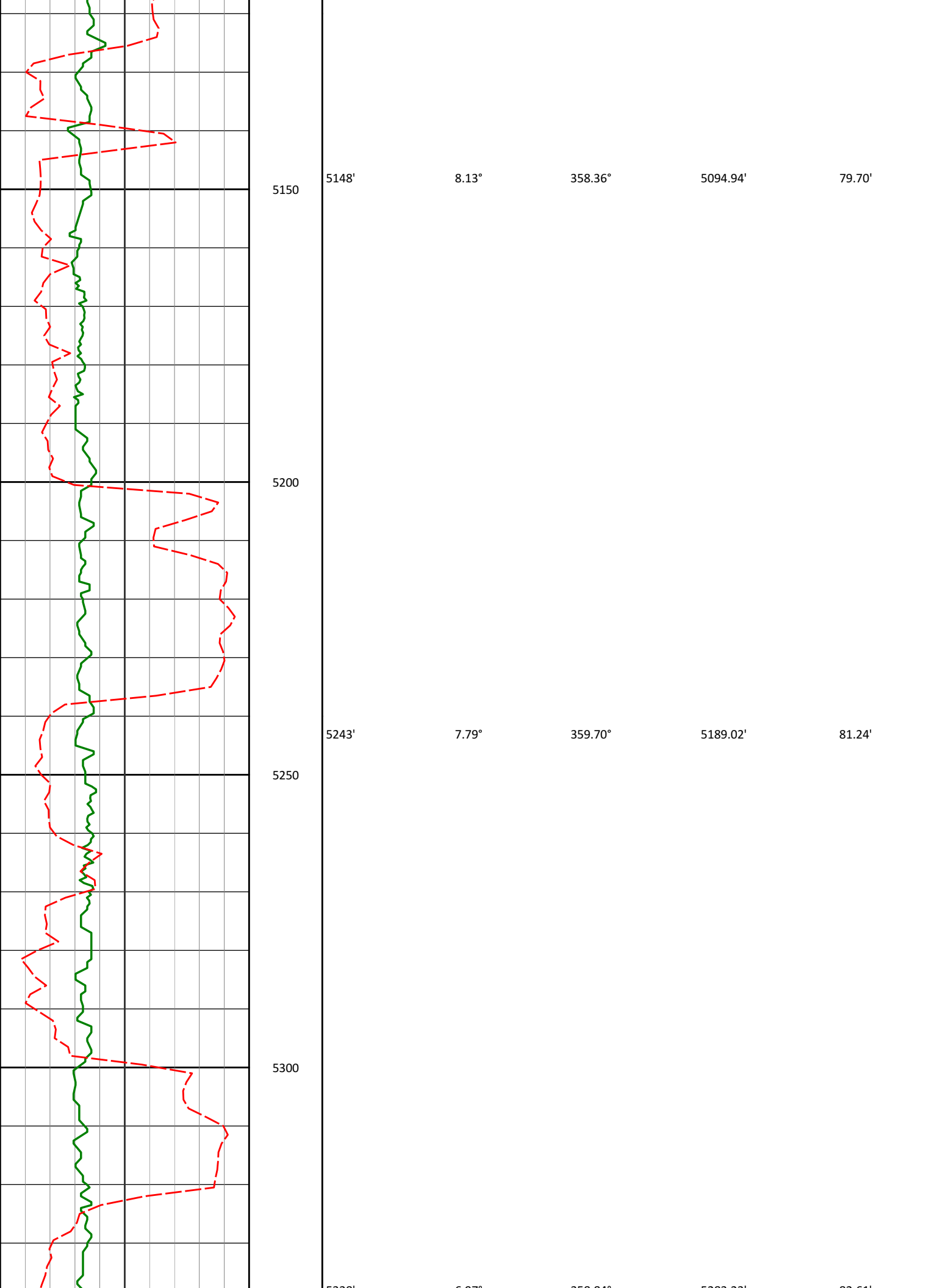
5053'

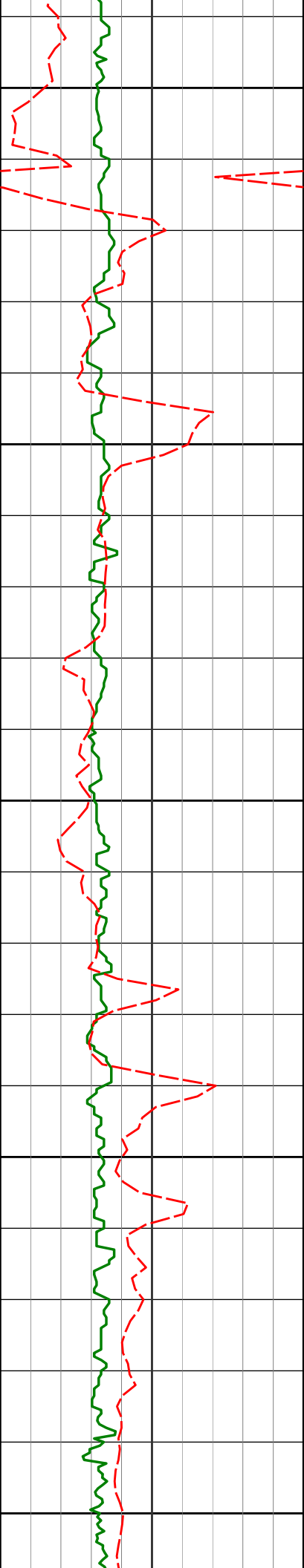
9.38°

357.77°

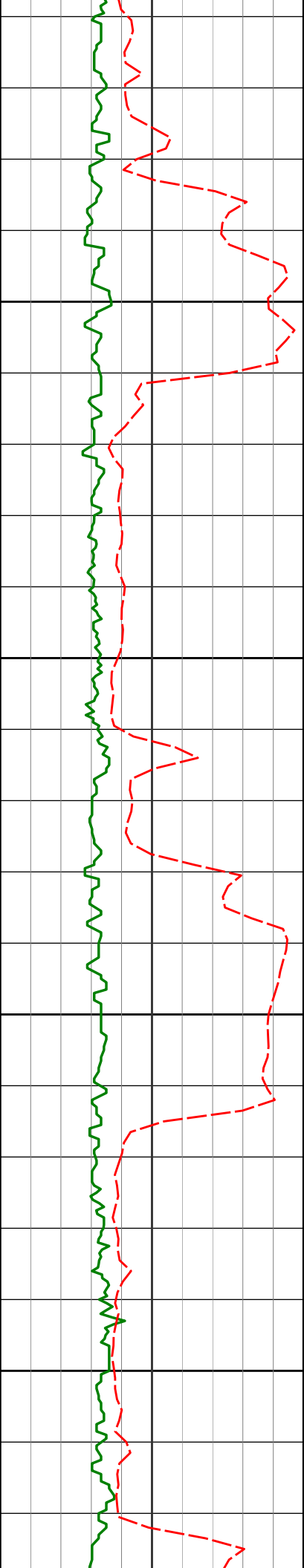
5001.05'

77.76'





5338'	6.97°	358.84°	5283.23'	82.61'
5350				
5400				
5432'	5.16°	357.63°	5376.70'	83.89'
5450				
5500				
5527'	4.30°	356.26°	5471.38'	85.08'
5550				



5600

5622'

3.30°

349.34°

5566.17'

86.44'

5650

5700

5717'

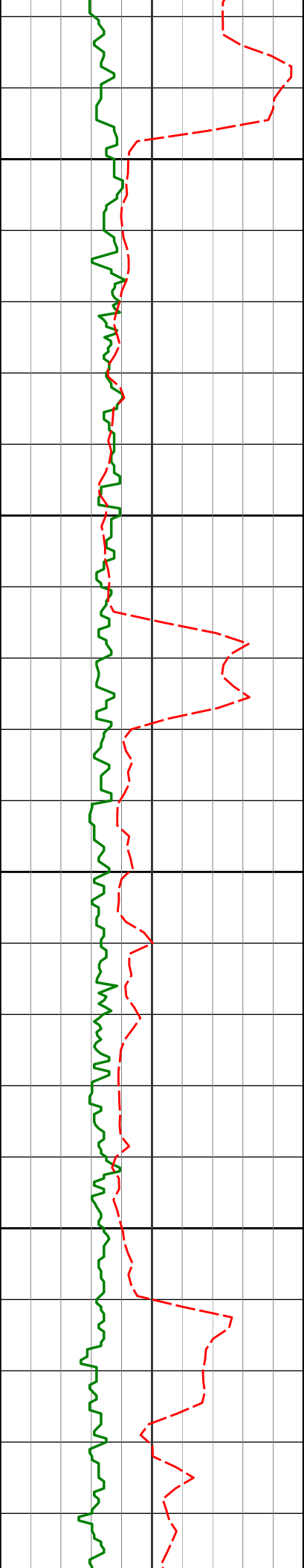
1.18°

17.32°

5661.10'

87.02'

5750



5800

5811'

0.28°

121.10°

5755.09'

86.61'

5850

5900

5906'

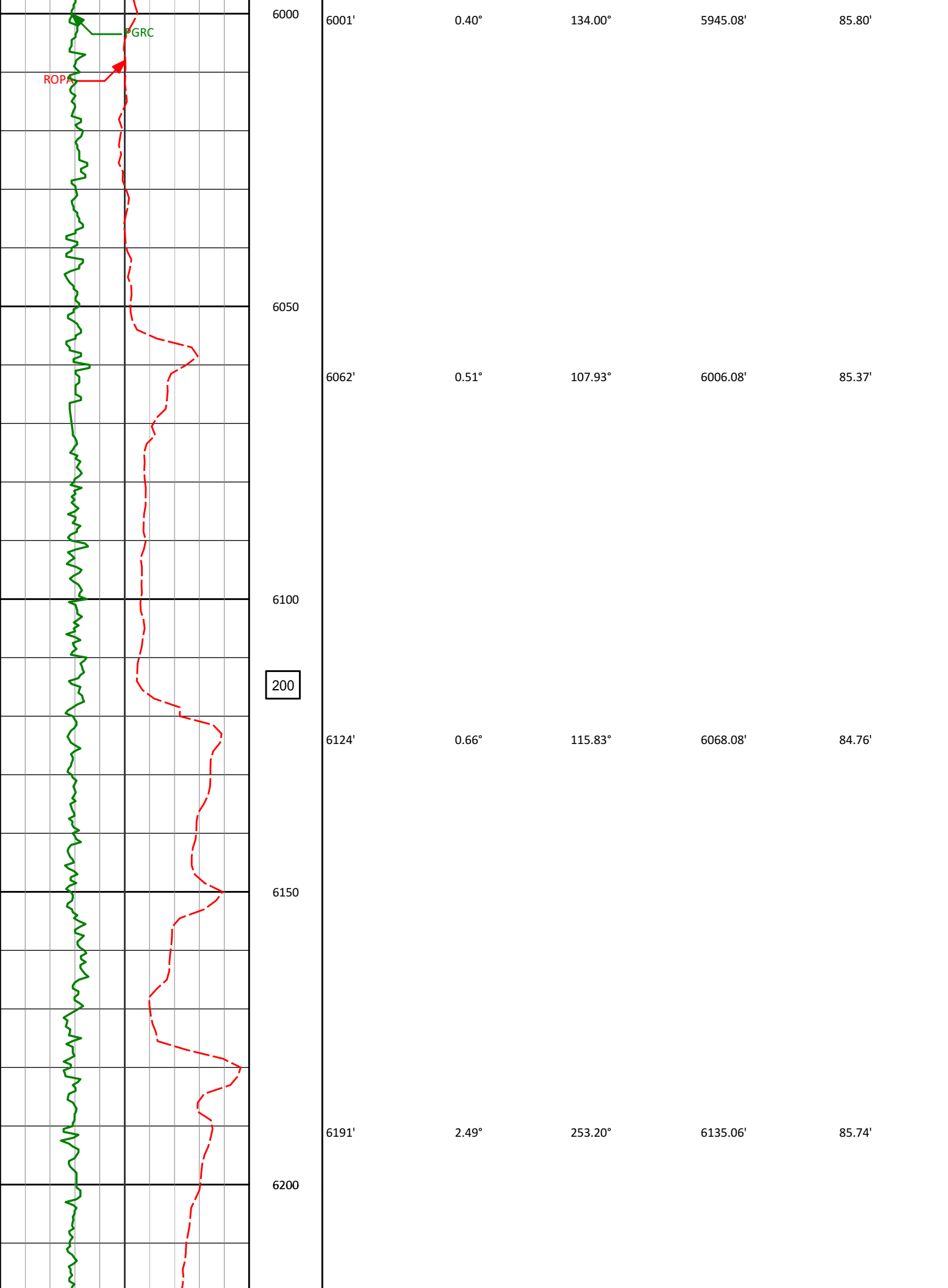
0.34°

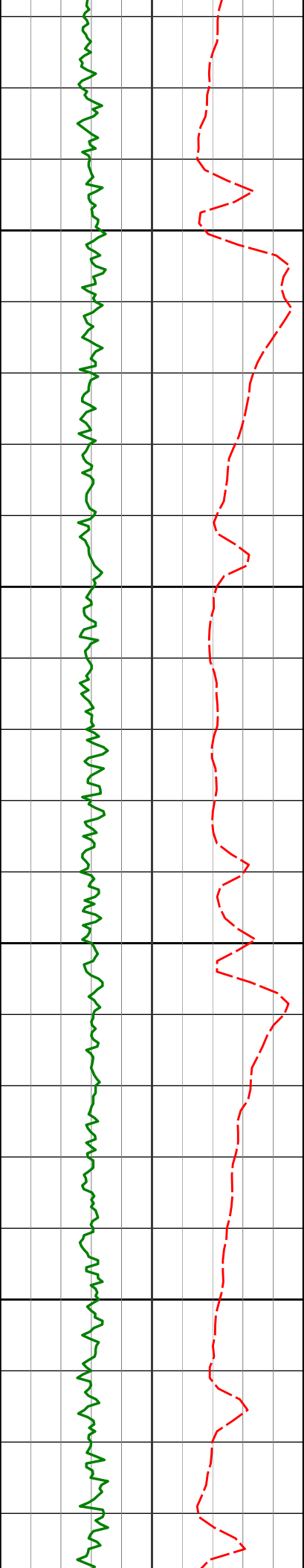
148.07°

5850.09'

86.23'

5950





6250

6285'

13.87°

264.48°

6227.96'

98.72'

6300

6350

6380'

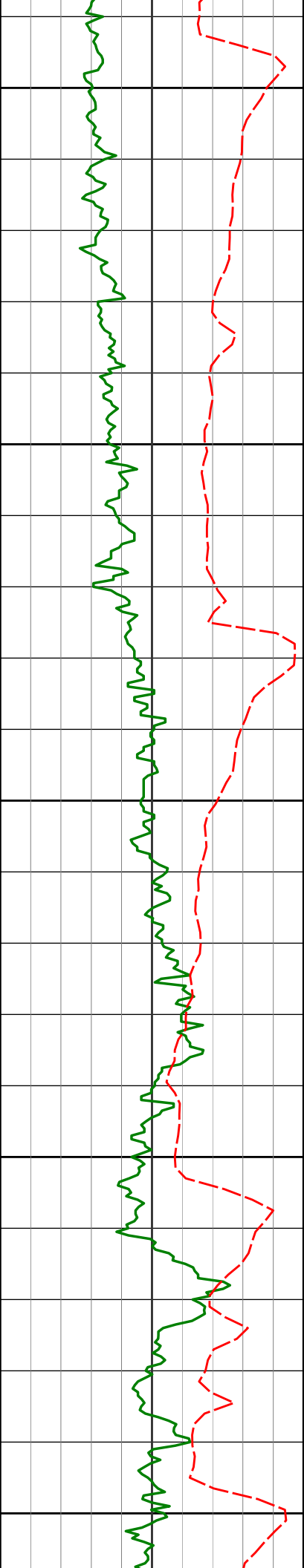
17.53°

264.08°

6319.40'

123.91'

6400



6450

6475'

23.62°

266.42°

6408.30'

156.73'

6500

6550

6569'

37.89°

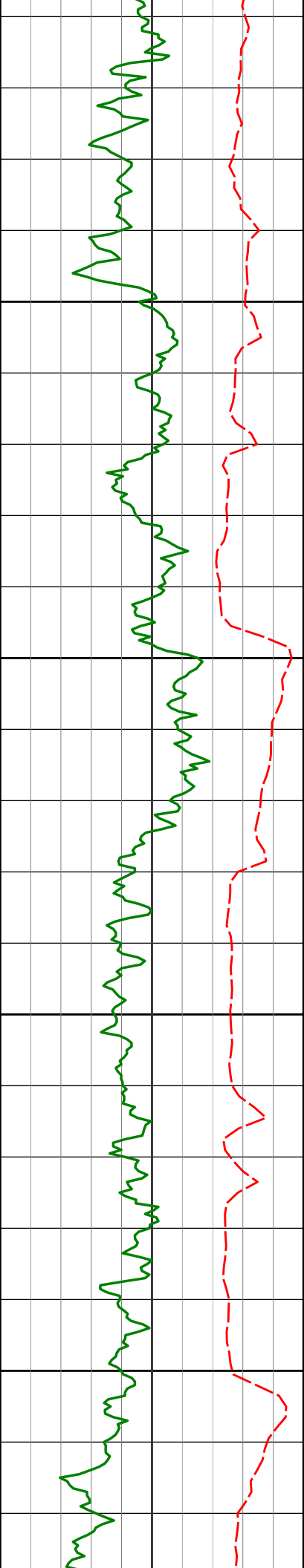
268.90°

6488.87'

204.22'

6600

6650



6700

6750

6800

6850

6664'

50.08°

269.76°

6557.10'

269.67'

6759'

55.53°

270.73°

6614.51'

344.97'

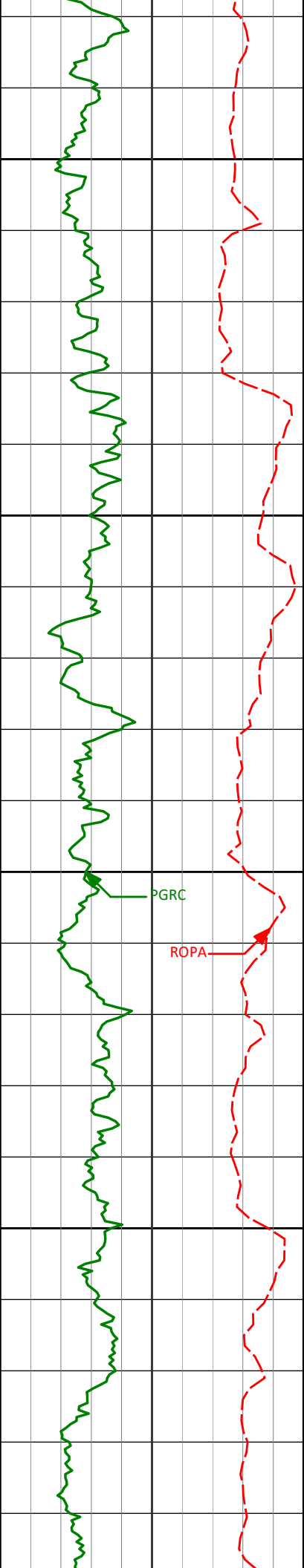
6854'

58.45°

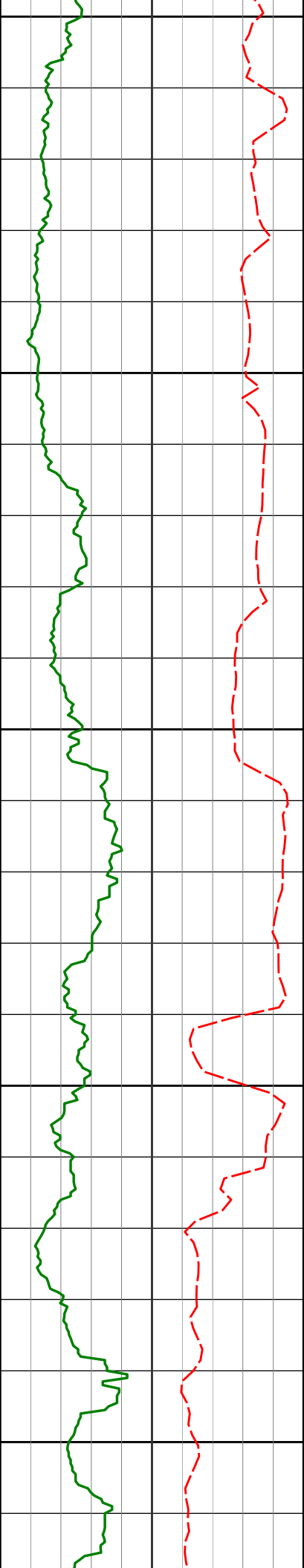
270.76°

6666.25'

424.32'



6900	6902'	61.51°	269.63°	6690.27'	465.68'
6950	6948'	64.77°	268.17°	6711.05'	506.42'
7000	6996'	73.58°	266.80°	6728.10'	550.77'
7050	7043'	78.04°	267.16°	6739.62'	595.79'
7100	7090'	82.50°	267.52°	6750.14'	640.81'
7150	7137'	86.96°	267.88°	6760.66'	685.83'
7200	7184'	91.42°	268.24°	6771.18'	730.85'
7250	7231'	95.88°	268.60°	6781.70'	775.87'
7300	7278'	100.34°	268.96°	6792.22'	820.89'
7350	7325'	104.80°	269.32°	6802.74'	865.91'
7400	7372'	109.26°	269.68°	6813.26'	910.93'
7450	7419'	113.72°	270.04°	6823.78'	955.95'
7500	7466'	118.18°	270.40°	6834.30'	1000.97'
7550	7513'	122.64°	270.76°	6844.82'	1045.99'
7600	7560'	127.10°	271.12°	6855.34'	1091.01'
7650	7607'	131.56°	271.48°	6865.86'	1136.03'
7700	7654'	136.02°	271.84°	6876.38'	1181.05'
7750	7701'	140.48°	272.20°	6886.90'	1226.07'
7800	7748'	144.94°	272.56°	6897.42'	1271.09'
7850	7795'	149.40°	272.92°	6907.94'	1316.11'
7900	7842'	153.86°	273.28°	6918.46'	1361.13'
7950	7889'	158.32°	273.64°	6928.98'	1406.15'
8000	7936'	162.78°	274.00°	6939.50'	1451.17'
8050	7983'	167.24°	274.36°	6950.02'	1496.19'
8100	8030'	171.70°	274.72°	6960.54'	1541.21'
8150	8077'	176.16°	275.08°	6971.06'	1586.23'
8200	8124'	180.62°	275.44°	6981.58'	1631.25'
8250	8171'	185.08°	275.80°	6992.10'	1676.27'
8300	8218'	189.54°	276.16°	7002.62'	1721.29'
8350	8265'	194.00°	276.52°	7013.14'	1766.31'
8400	8312'	198.46°	276.88°	7023.66'	1811.33'
8450	8359'	202.92°	277.24°	7034.18'	1856.35'
8500	8406'	207.38°	277.60°	7044.70'	1901.37'
8550	8453'	211.84°	277.96°	7055.22'	1946.39'
8600	8500'	216.30°	278.32°	7065.74'	1991.41'
8650	8547'	220.76°	278.68°	7076.26'	2036.43'
8700	8594'	225.22°	279.04°	7086.78'	2081.45'
8750	8641'	229.68°	279.40°	7097.30'	2126.47'
8800	8688'	234.14°	279.76°	7107.82'	2171.49'
8850	8735'	238.60°	280.12°	7118.34'	2216.51'
8900	8782'	243.06°	280.48°	7128.86'	2261.53'
8950	8829'	247.52°	280.84°	7139.38'	2306.55'
9000	8876'	251.98°	281.20°	7149.90'	2351.57'
9050	8923'	256.44°	281.56°	7160.42'	2396.59'
9100	8970'	260.90°	281.92°	7170.94'	2441.61'
9150	9017'	265.36°	282.28°	7181.46'	2486.63'
9200	9064'	269.82°	282.64°	7191.98'	2531.65'
9250	9111'	274.28°	283.00°	7202.50'	2576.67'
9300	9158'	278.74°	283.36°	7213.02'	2621.69'
9350	9205'	283.20°	283.72°	7223.54'	2666.71'
9400	9252'	287.66°	284.08°	7234.06'	2711.73'
9450	9299'	292.12°	284.44°	7244.58'	2756.75'
9500	9346'	296.58°	284.80°	7255.10'	2801.77'
9550	9393'	301.04°	285.16°	7265.62'	2846.79'
9600	9440'	305.50°	285.52°	7276.14'	2891.81'
9650	9487'	309.96°	285.88°	7286.66'	2936.83'
9700	9534'	314.42°	286.24°	7297.18'	2981.85'
9750	9581'	318.88°	286.60°	7307.70'	3026.87'
9800	9628'	323.34°	286.96°	7318.22'	3071.89'
9850	9675'	327.80°	287.32°	7328.74'	3116.91'
9900	9722'	332.26°	287.68°	7339.26'	3161.93'
9950	9769'	336.72°	288.04°	7349.78'	3206.95'
10000	9816'	341.18°	288.40°	7360.30'	3251.97'



7100

7150

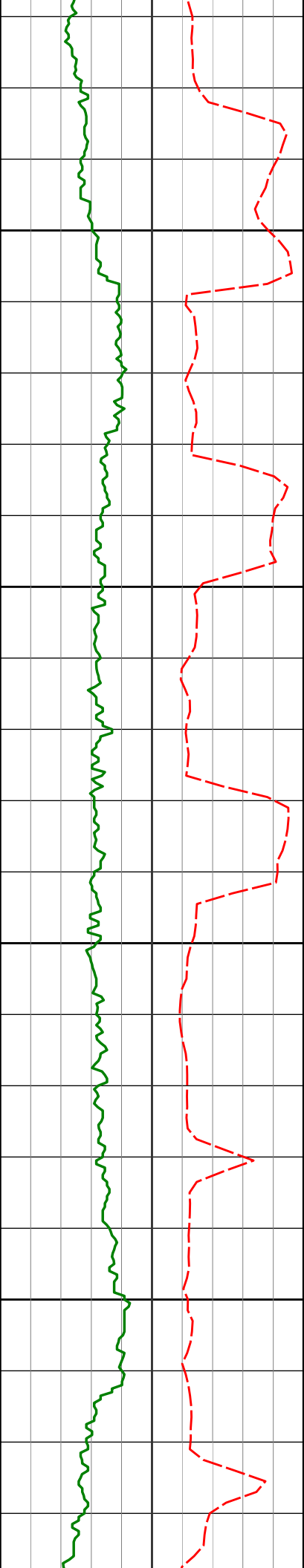
300

7200

7250

7300

7098'	81.80°	268.20°	6749.24'	649.40'
7175'	84.60°	270.00°	6758.36'	725.33'
7270'	85.56°	269.33°	6766.51'	819.45'



7350

7365'

87.35°

270.08°

6772.38'

913.74'

7400

7450

7460'

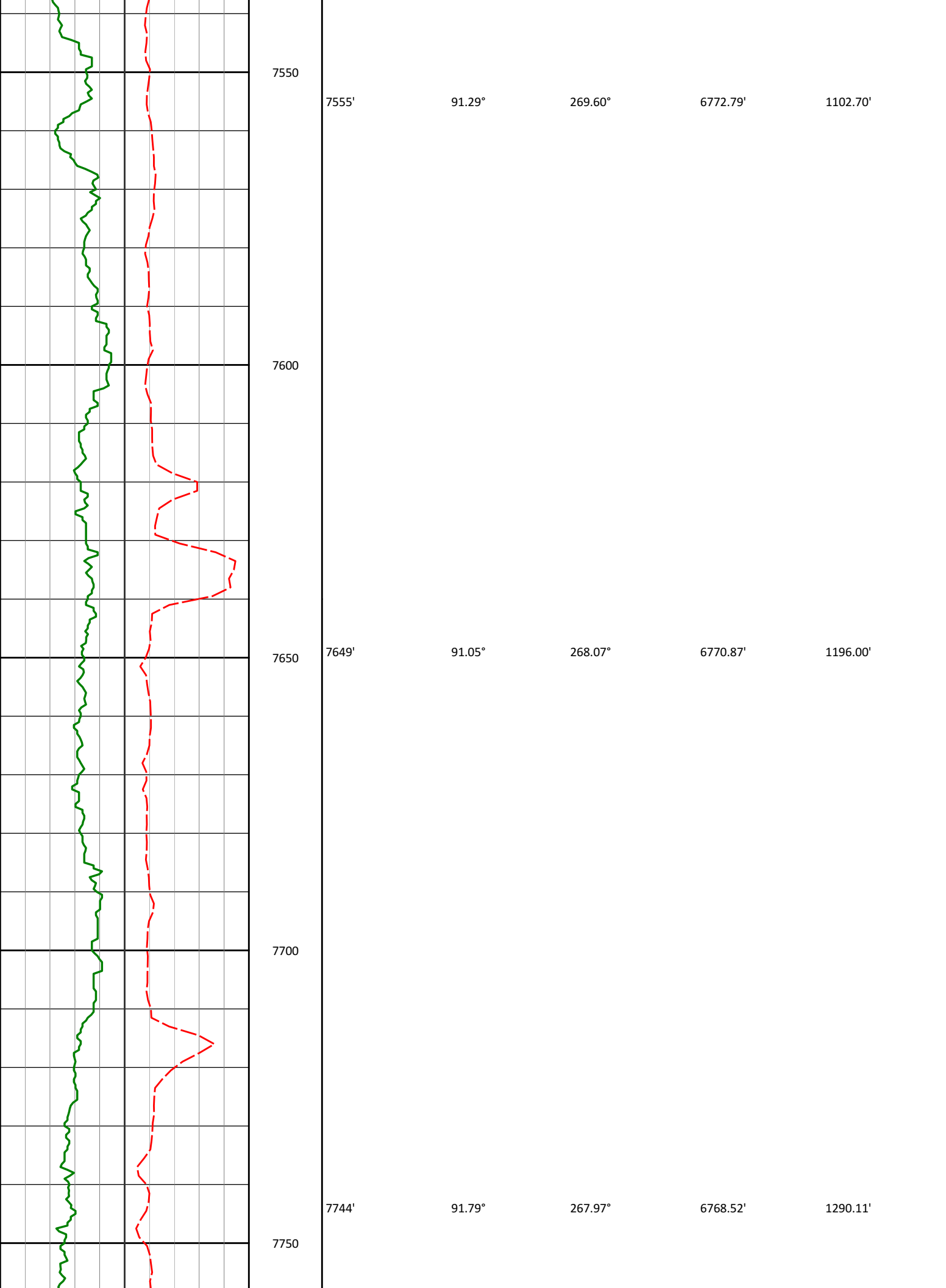
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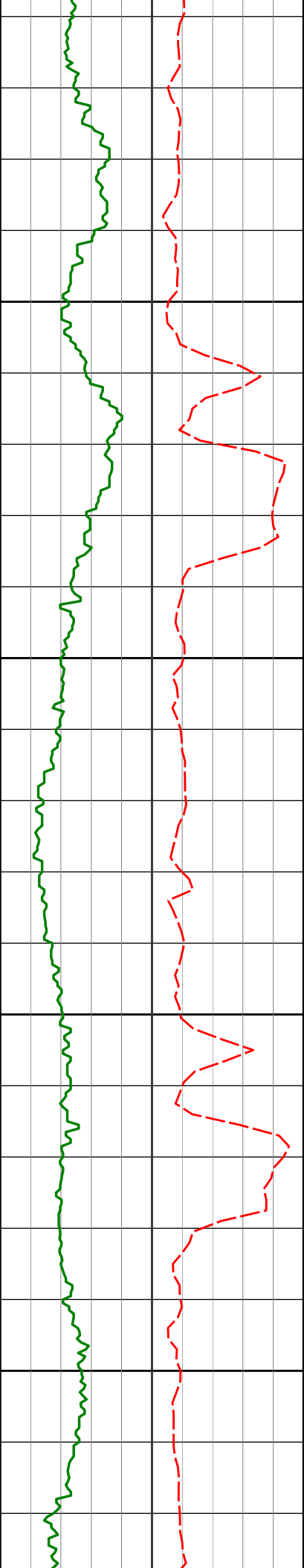
269.91°

6774.22'

1008.23'

7500





7800

7850

7900

7950

7839'

91.02°

268.26°

6766.19'

1384.24'

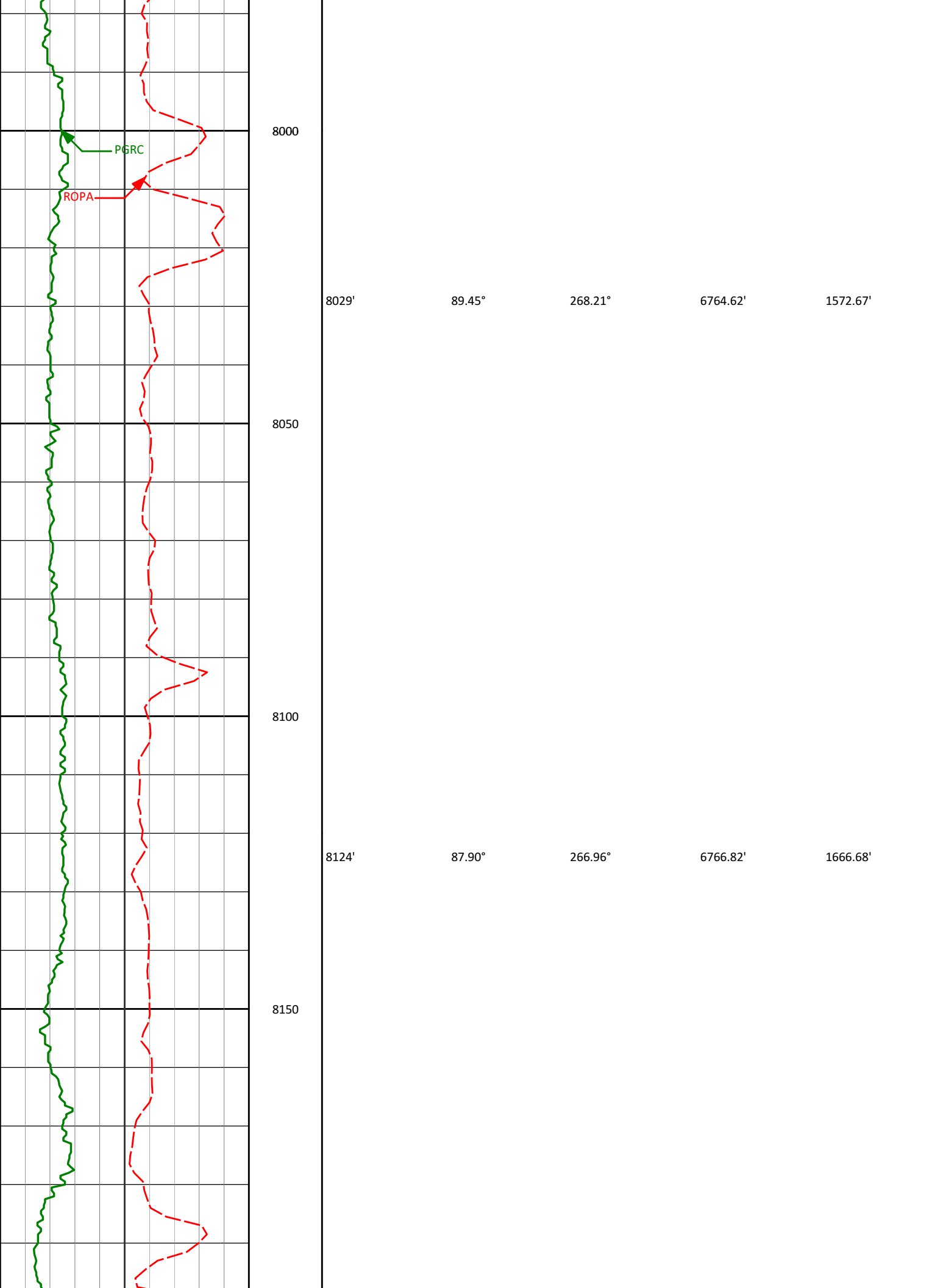
7934'

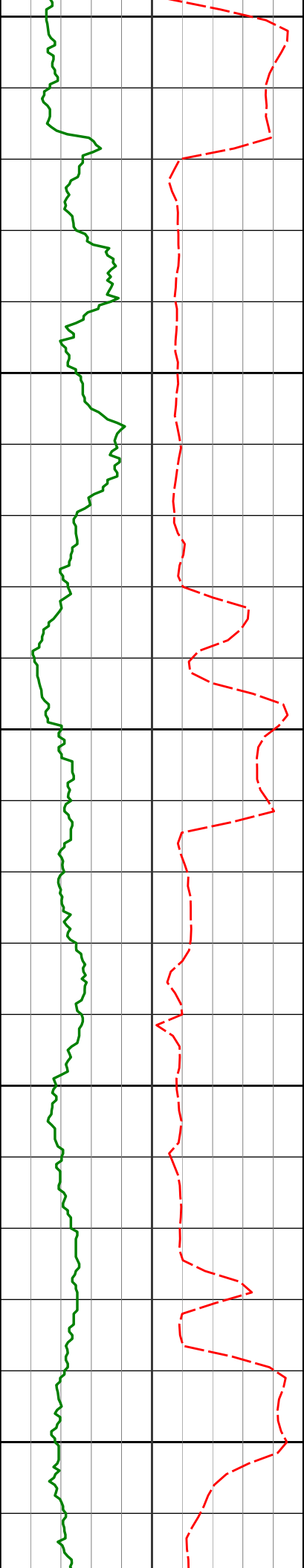
90.71°

268.56°

6764.76'

1478.45'





8200

8219'

89.97°

266.70°

6768.59'

1760.51'

8250

8300

8313'

90.93°

268.08°

6767.85'

1853.51'

8350

8400

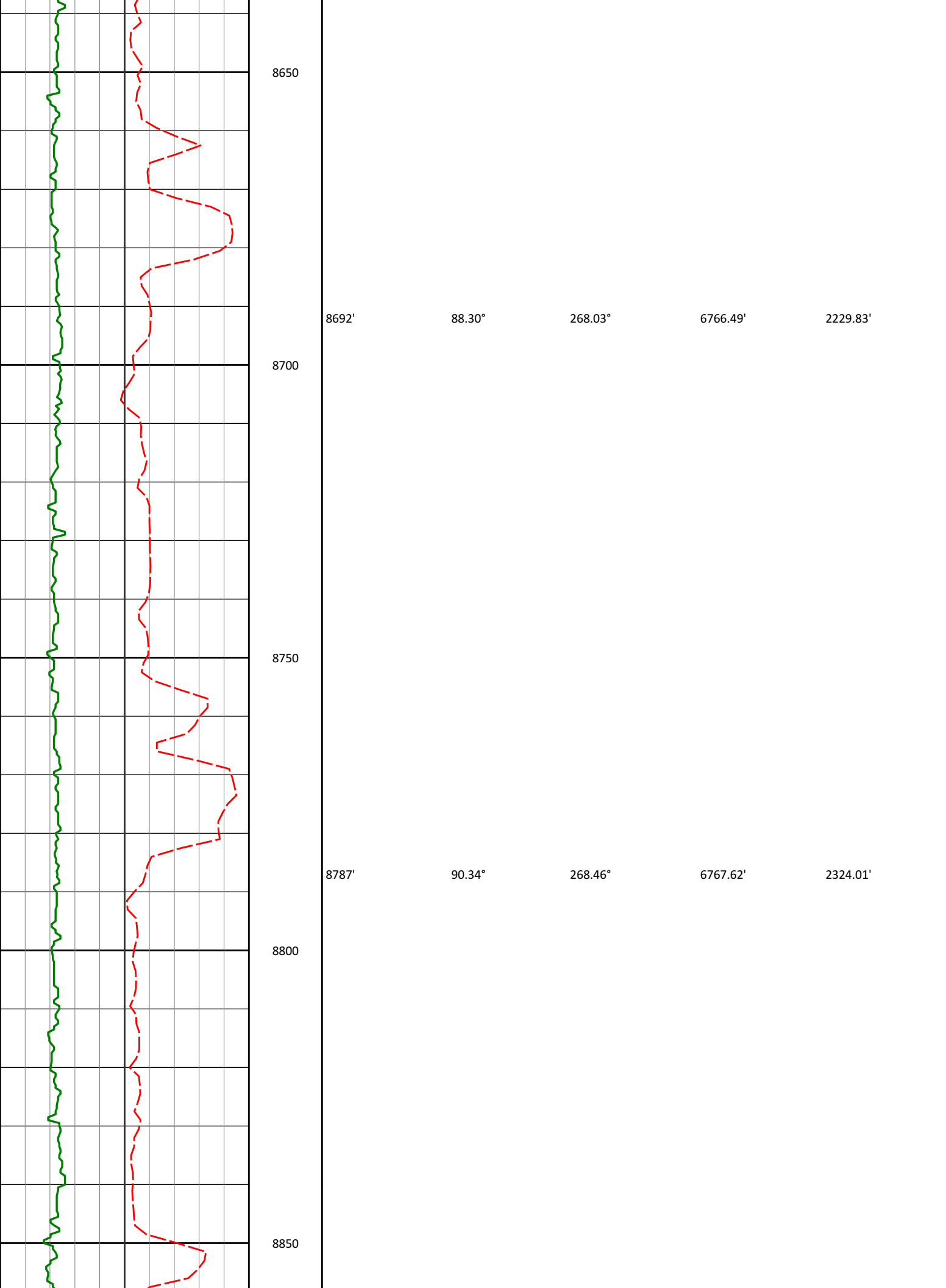
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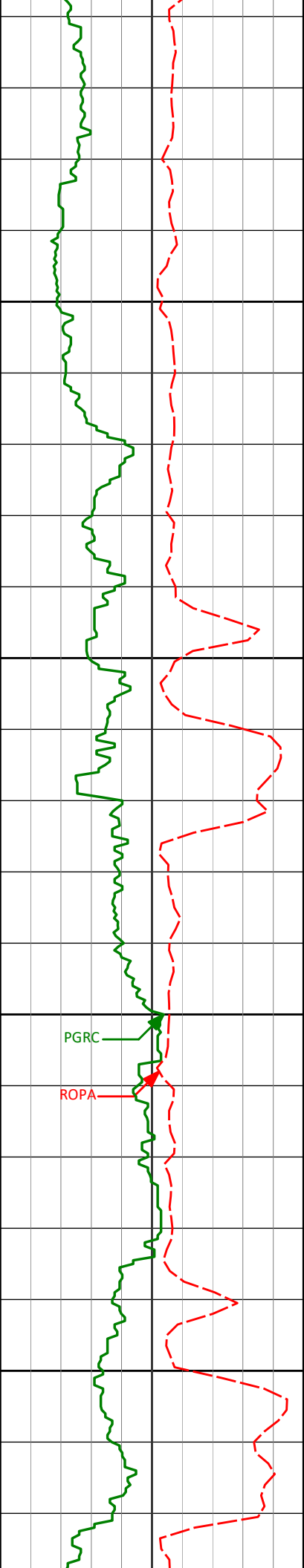
90.83°

269.05°

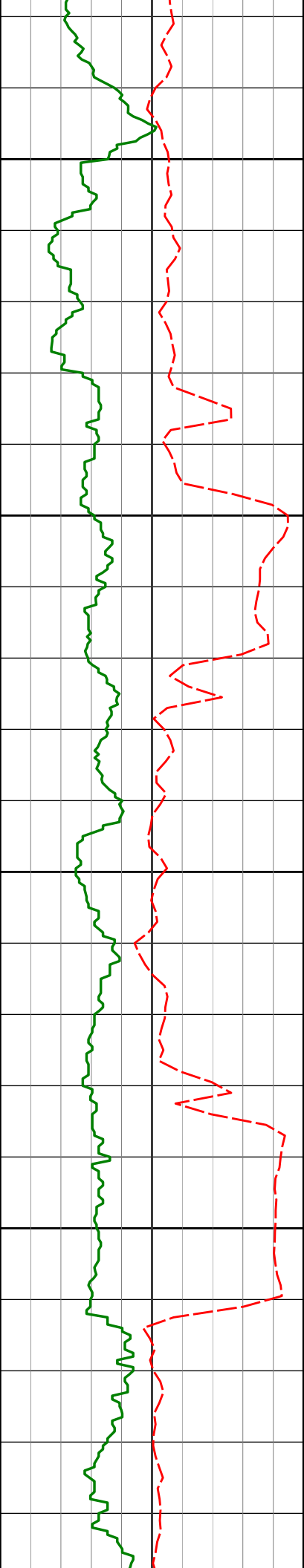
6766.39'

1947.75'





	8881'	90.40°	268.06°	6767.01'	2417.20'
8900					
8950					
8976'		91.73°	269.02°	6765.24'	2511.43'
9000					
9050					
9071'		92.00°	269.14°	6762.15'	2605.74'



9100

9150

9200

9250

9165'

91.08°

268.45°

6759.62'

2699.02'

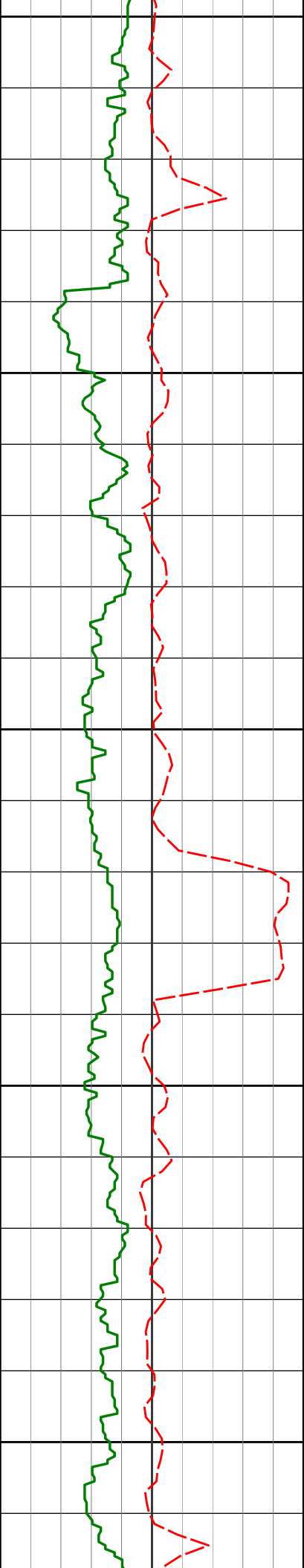
9260'

88.92°

269.10°

6759.62'

2793.31'



9300

9350

9400

9450

9500

9355'

88.77°

267.73°

6761.54'

2887.51'

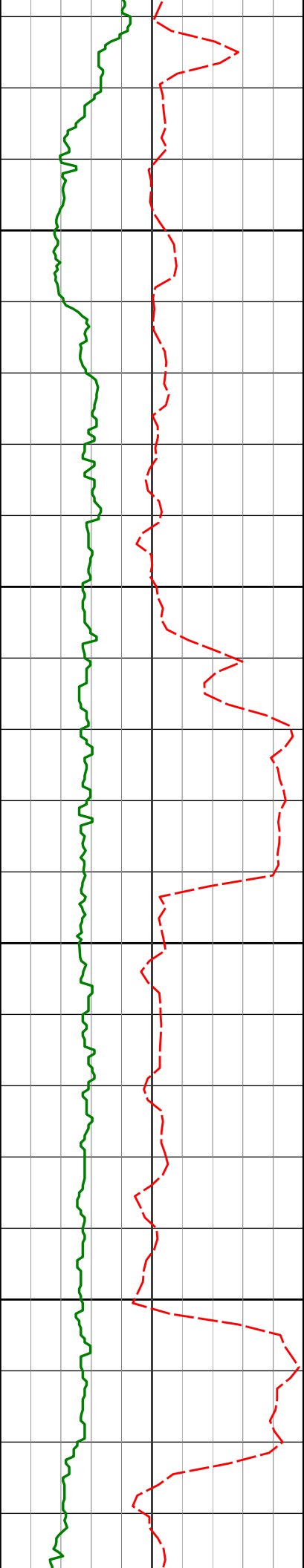
9450'

90.03°

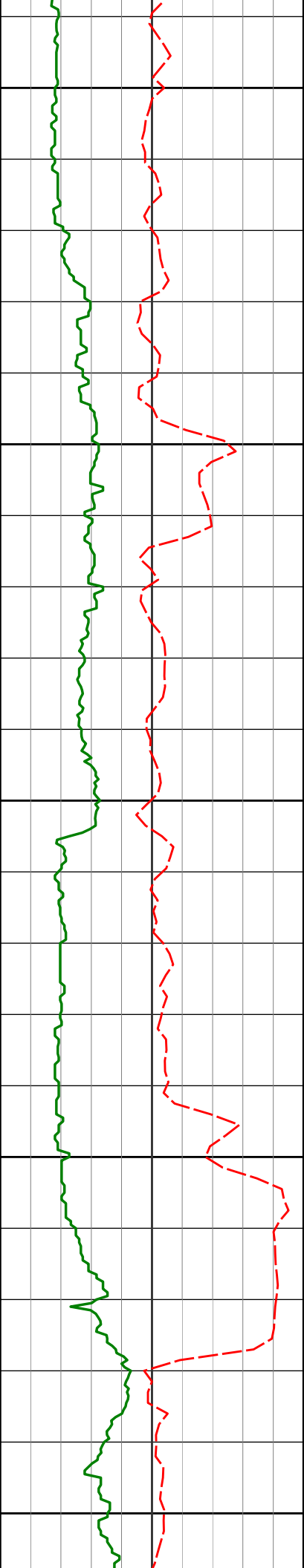
269.43°

6762.53'

2981.76'



9545'	91.02°	268.72°	6761.66'	3076.12'
9550				
9600				
9640'	90.06°	270.27°	6760.77'	3170.54'
9650				
9700				
9735'	88.46°	269.54°	6762.00'	3265.04'



9750

9800

9850

9900

9950

9829'

91.42°

270.54°

6762.09'

3358.56'

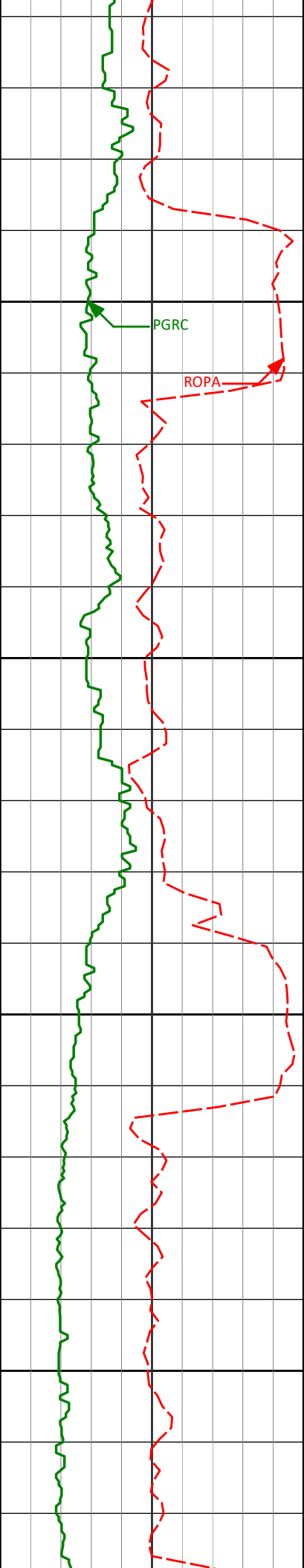
9924'

85.96°

267.61°

6764.27'

3452.85'



10000

10019'

87.41°

267.44°

6769.76'

3546.72'

10050

10100

10113'

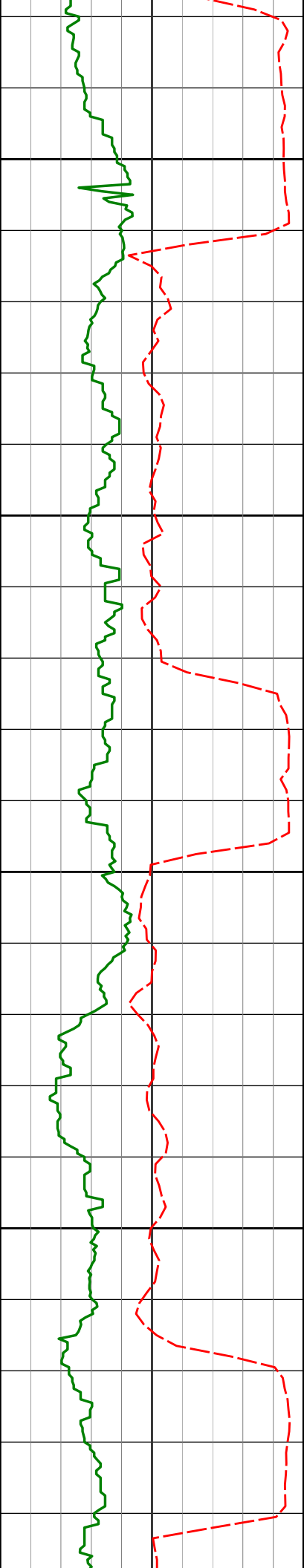
88.52°

267.87°

6773.10'

3639.72'

10150



10200

10208'

94.14°

269.35°

6770.89'

3733.92'

10250

10300

10303'

93.83°

269.08°

6764.29'

3828.08'

10350

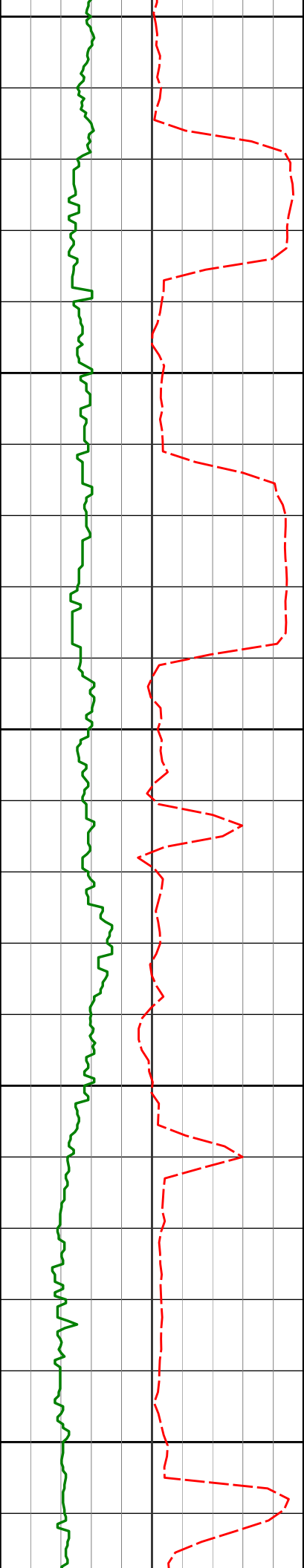
10208'

94.14°

269.35°

6770.89'

3733.92'



10400

10450

10500

10550

10600

10398'

92.22°

268.46°

10398'

6759.28'

3922.24'

10493'

88.06°

269.94°

6759.05'

4016.60'

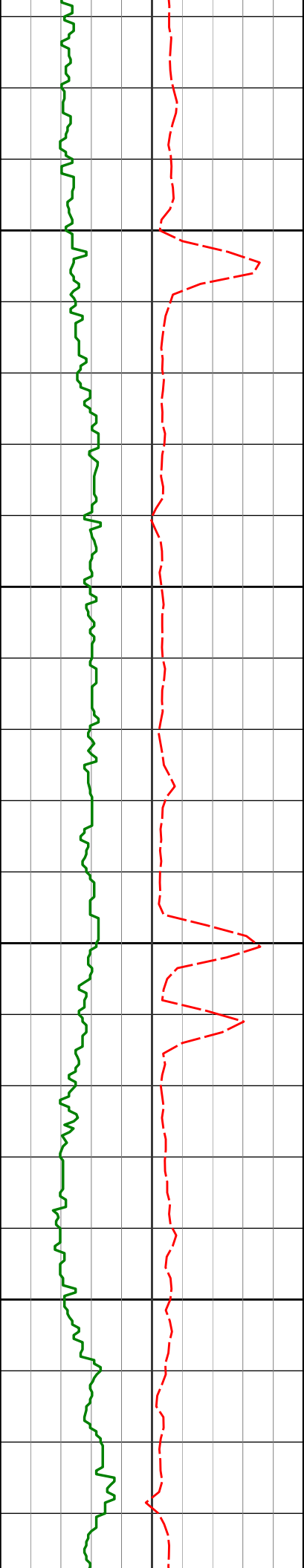
10588'

89.07°

270.05°

6761.42'

4111.09'



10650

10682'

88.21°

268.89°

6763.66'

4204.50'

10700

10750

10777'

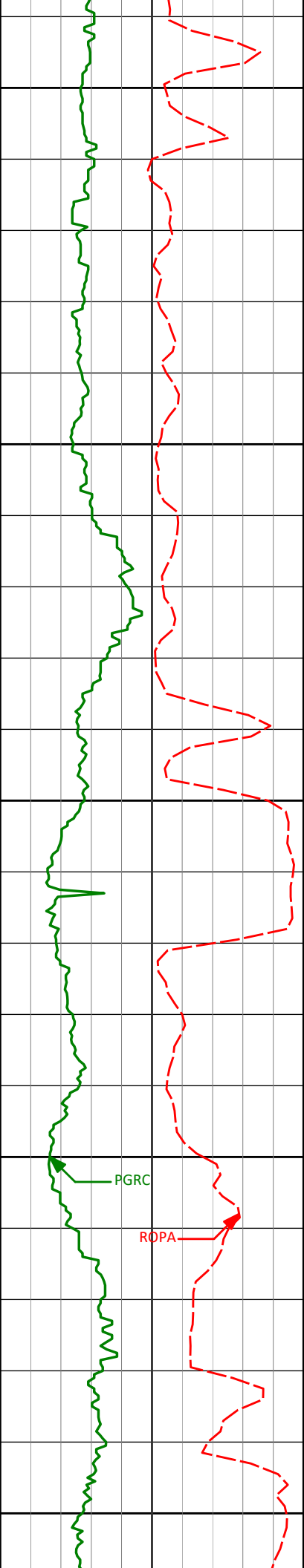
90.52°

269.67°

6764.71'

4298.88'

10800



10850

10872'

91.54°

269.30°

6763.00'

4393.30'

10900

10950

10967'

90.99°

268.88°

6760.90'

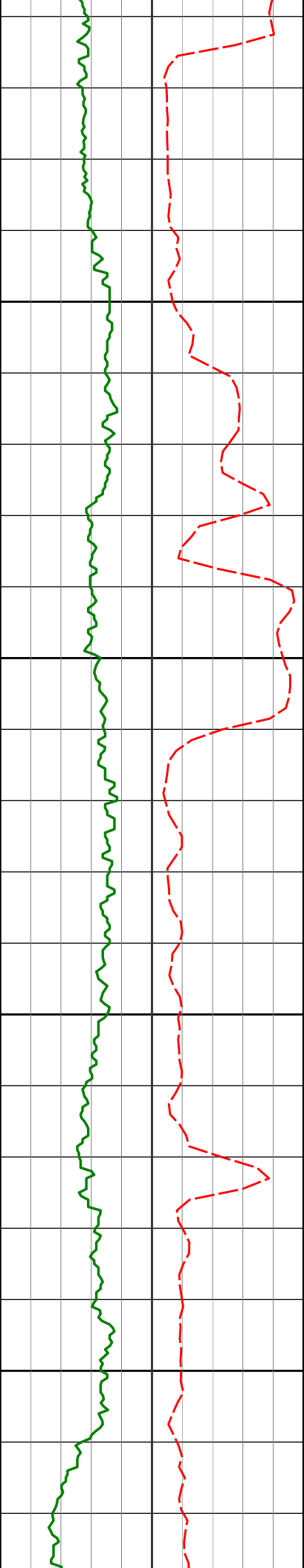
4487.64'

11000

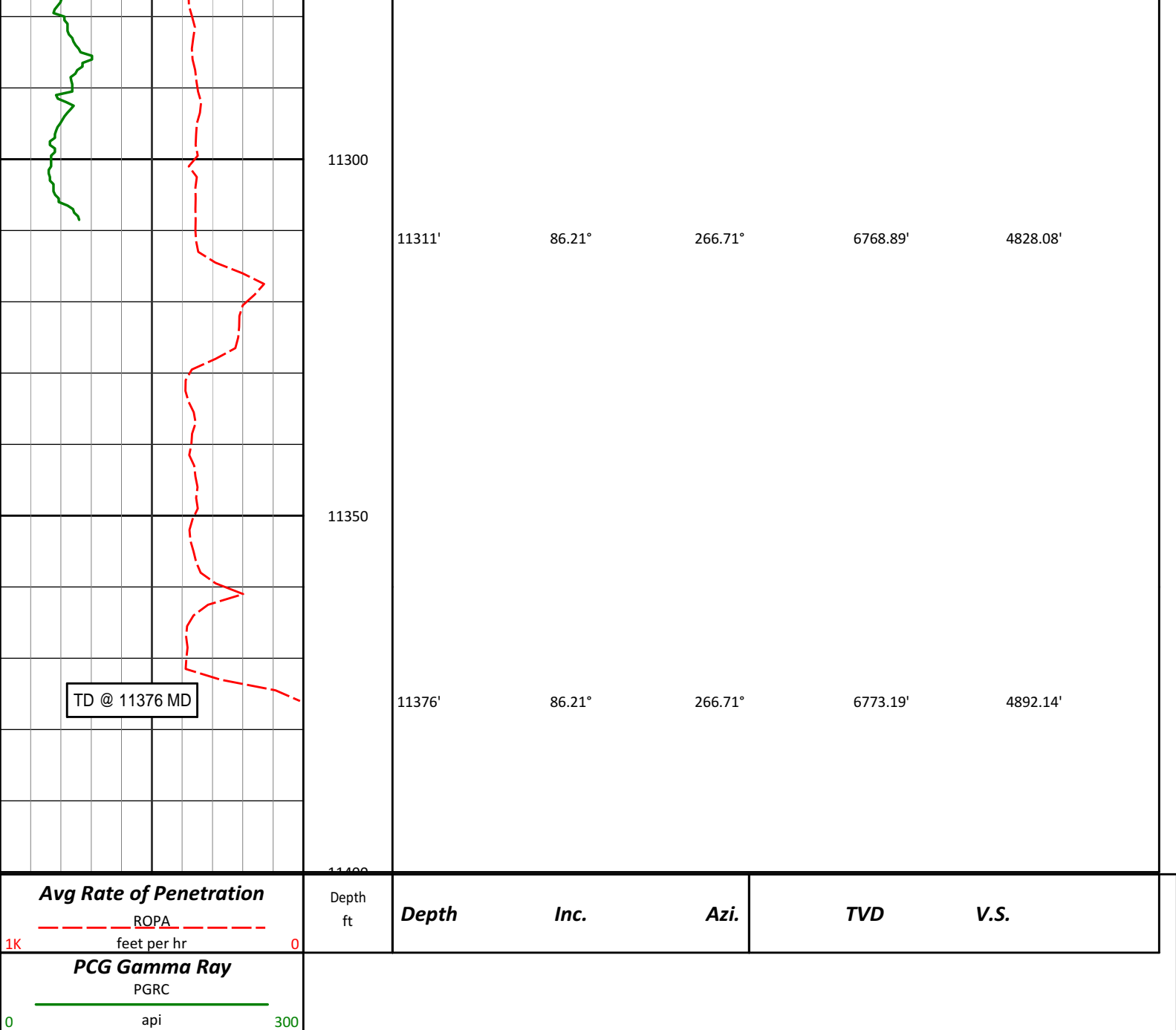
PGRC

ROPA

11050



	11062'	90.31°	268.10°	6759.83'	4581.87'
11100					
11150					
	11157'	88.09°	267.79°	6761.15'	4675.98'
11200					
11250	11251'	86.88°	267.11°	6765.28'	4768.90'



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble
NCLP AA06-69HNC
Wattenberg
Weld Colorado
USA
CA-XX-0901286146
Other Information:

First Three Survey's from 3rd party source (Multi Shot EMS)
Survey Depth 269 Inc 0.40 Azi 255.46
Survey Depth 545 Inc 0.40 Azi 137.16
Survey Depth 823 Inc 0.60 Azi 57.36

Measured	Vertical	Vertical
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Depth (feet)	Inclination (degrees)	Direction (degrees)	Depth (feet)	Latitude (feet)	Departure (feet)	Section (feet)	Dogleg (deg/100ft)
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
269.00	0.40	255.46	269.00	0.24 S	0.91 W	0.88	0.15
545.00	0.40	137.16	544.99	1.18 S	1.19 W	1.06	0.25
823.00	0.60	57.36	822.99	1.11 S	0.70 E	-0.81	0.24
905.00	0.29	195.38	904.99	1.08 S	1.01 E	-1.11	1.02
996.00	0.23	187.02	995.98	1.48 S	0.92 E	-1.07	0.08
1089.00	0.15	254.81	1088.98	1.70 S	0.78 E	-0.95	0.24
1182.00	0.11	247.61	1181.98	1.77 S	0.58 E	-0.76	0.05
1274.00	0.24	221.13	1273.98	1.94 S	0.37 E	-0.57	0.16
1365.00	0.22	211.39	1364.98	2.24 S	0.16 E	-0.38	0.05
1457.00	0.00	190.12	1456.98	2.39 S	0.07 E	-0.30	0.24
1549.00	0.10	228.99	1548.98	2.44 S	0.00 E	-0.25	0.11
1641.00	0.18	237.25	1640.98	2.57 S	0.18 W	-0.08	0.09
1736.00	0.37	229.97	1735.98	2.85 S	0.54 W	0.25	0.20
1831.00	0.36	214.78	1830.98	3.29 S	0.94 W	0.61	0.10
1926.00	0.46	210.06	1925.98	3.87 S	1.30 W	0.91	0.11
2020.00	0.56	311.59	2019.97	3.89 S	1.84 W	1.44	0.84
2115.00	2.50	358.18	2114.94	1.51 S	2.25 W	2.09	2.27
2209.00	4.51	356.89	2208.76	4.23 N	2.52 W	2.93	2.14
2304.00	5.84	1.58	2303.37	12.79 N	2.58 W	3.85	1.47
2399.00	7.70	6.12	2397.70	23.95 N	1.77 W	4.16	2.04
2494.00	9.87	2.79	2491.58	38.41 N	0.70 W	4.54	2.35
2589.00	11.98	358.70	2584.86	56.41 N	0.53 W	6.16	2.36
2683.00	12.27	358.57	2676.76	76.15 N	1.00 W	8.61	0.31
2778.00	11.60	357.88	2769.71	95.78 N	1.60 W	11.17	0.72
2873.00	12.10	357.30	2862.68	115.27 N	2.42 W	13.94	0.54
2968.00	12.29	357.10	2955.54	135.32 N	3.40 W	16.92	0.20
3062.00	11.80	355.87	3047.47	154.89 N	4.60 W	20.07	0.59
3157.00	11.32	356.66	3140.54	173.89 N	5.85 W	23.21	0.53
3252.00	9.97	354.00	3233.90	191.38 N	7.25 W	26.35	1.51
3346.00	10.03	354.65	3326.48	207.62 N	8.86 W	29.58	0.14
3441.00	10.19	357.52	3420.00	224.25 N	10.00 W	32.38	0.56
3536.00	11.53	1.16	3513.30	242.14 N	10.17 W	34.34	1.58
3631.00	12.95	359.60	3606.14	262.28 N	10.05 W	36.23	1.53
3725.00	13.91	359.33	3697.57	284.11 N	10.26 W	38.62	1.02
3820.00	14.66	0.15	3789.63	307.55 N	10.36 W	41.07	0.82
3915.00	14.41	356.89	3881.59	331.38 N	10.97 W	44.06	0.90
4010.00	11.80	356.47	3974.11	352.88 N	12.21 W	47.44	2.75
4105.00	11.01	357.32	4067.23	371.64 N	13.23 W	50.33	0.85
4199.00	9.12	356.52	4159.78	388.04 N	14.10 W	52.84	2.02
4294.00	8.71	353.94	4253.63	402.71 N	15.32 W	55.52	0.60
4389.00	9.05	355.02	4347.49	417.30 N	16.73 W	58.38	0.40
4484.00	9.29	353.63	4441.28	432.37 N	18.23 W	61.38	0.34
4579.00	10.11	355.55	4534.92	448.30 N	19.72 W	64.46	0.93
4674.00	9.88	357.70	4628.48	464.76 N	20.70 W	67.08	0.46
4769.00	10.61	357.43	4721.96	481.64 N	21.42 W	69.48	0.77
4863.00	11.91	356.90	4814.15	499.97 N	22.33 W	72.22	1.39
4958.00	10.05	355.45	4907.41	518.02 N	23.52 W	75.21	1.98
5053.00	9.38	357.77	5001.05	534.02 N	24.48 W	77.76	0.82
5148.00	8.13	358.36	5094.94	548.47 N	24.97 W	79.70	1.32
5243.00	7.79	359.70	5189.02	561.63 N	25.20 W	81.24	0.41
5338.00	6.97	358.84	5283.23	573.83 N	25.35 W	82.61	0.87
5432.00	5.16	357.63	5376.70	583.75 N	25.64 W	83.89	1.93
5527.00	4.30	356.26	5471.38	591.58 N	26.05 W	85.08	0.91
5622.00	3.30	349.34	5566.17	597.82 N	26.78 W	86.44	1.16
5717.00	1.18	17.32	5661.10	601.44 N	27.00 W	87.02	2.45
5811.00	0.28	121.10	5755.09	602.24 N	26.51 W	86.61	1.36
5906.00	0.34	148.07	5850.09	601.89 N	26.17 W	86.23	0.16
6001.00	0.40	134.00	5945.08	601.42 N	25.78 W	85.80	0.11
6062.00	0.51	107.93	6006.08	601.18 N	25.37 W	85.37	0.38
6124.00	0.66	115.83	6068.08	600.94 N	24.78 W	84.76	0.27
6191.00	2.49	253.20	6135.06	600.35 N	25.83 W	85.74	4.49
6285.00	13.87	264.48	6227.96	598.68 N	39.04 W	98.72	12.17
6380.00	17.53	264.08	6319.40	596.10 N	64.62 W	123.91	3.85
6475.00	23.62	266.42	6408.30	593.44 N	97.87 W	156.73	6.47
6569.00	37.89	268.90	6488.87	591.70 N	145.78 W	204.22	15.24
6664.00	50.08	269.76	6557.10	590.98 N	211.62 W	269.67	12.85
6759.00	55.53	270.73	6614.51	591.33 N	287.27 W	344.97	5.79
6854.00	58.45	270.76	6666.25	592.36 N	366.92 W	424.32	3.07
6950.00	58.75	272.22	6722.27	593.53 N	439.75 W	503.35	2.22

6902.00	61.51	269.63	6690.27	592.50 N	408.47 W	465.68	6.69
6948.00	64.77	268.17	6711.05	591.70 N	449.49 W	506.42	7.63
6996.00	73.58	266.80	6728.10	589.72 N	494.27 W	550.77	18.55
7043.00	78.04	267.16	6739.62	587.32 N	539.76 W	595.79	9.52
7098.00	81.80	268.20	6749.24	585.14 N	593.86 W	649.40	7.09
7175.00	84.60	270.00	6758.36	583.94 N	670.29 W	725.33	4.31
7270.00	85.56	269.33	6766.51	583.38 N	764.94 W	819.45	1.23
7365.00	87.35	270.08	6772.38	582.90 N	859.75 W	913.74	2.04
7460.00	90.43	269.91	6774.22	582.89 N	954.72 W	1008.23	3.25
7555.00	91.29	269.60	6772.79	582.48 N	1049.71 W	1102.70	0.96
7649.00	91.05	268.07	6770.87	580.57 N	1143.67 W	1196.00	1.65
7744.00	91.79	267.97	6768.52	577.29 N	1238.58 W	1290.11	0.79
7839.00	91.02	268.26	6766.19	574.17 N	1333.50 W	1384.24	0.87
7934.00	90.71	268.56	6764.76	571.53 N	1428.45 W	1478.45	0.45
8029.00	89.45	268.21	6764.62	568.85 N	1523.41 W	1572.67	1.38
8124.00	87.90	266.96	6766.82	564.85 N	1618.30 W	1666.68	2.10
8219.00	89.97	266.70	6768.59	559.60 N	1713.13 W	1760.51	2.20
8313.00	90.93	268.08	6767.85	555.32 N	1807.03 W	1853.51	1.79
8408.00	90.83	269.05	6766.39	552.94 N	1901.99 W	1947.75	1.03
8503.00	89.69	269.09	6765.96	551.40 N	1996.97 W	2042.11	1.20
8598.00	90.68	269.68	6765.65	550.38 N	2091.96 W	2136.52	1.21
8692.00	88.30	268.03	6766.49	548.50 N	2185.93 W	2229.83	3.08
8787.00	90.34	268.46	6767.62	545.59 N	2280.87 W	2324.01	2.19
8881.00	90.40	268.06	6767.01	542.74 N	2374.83 W	2417.20	0.43
8976.00	91.73	269.02	6765.24	540.32 N	2469.78 W	2511.43	1.73
9071.00	92.00	269.14	6762.15	538.79 N	2564.72 W	2605.74	0.31
9165.00	91.08	268.45	6759.62	536.82 N	2658.66 W	2699.02	1.22
9260.00	88.92	269.10	6759.62	534.78 N	2753.63 W	2793.31	2.37
9355.00	88.77	267.73	6761.54	532.16 N	2848.57 W	2887.51	1.45
9450.00	90.03	269.43	6762.53	529.80 N	2943.53 W	2981.76	2.23
9545.00	91.02	268.72	6761.66	528.27 N	3038.52 W	3076.12	1.28
9640.00	90.06	270.27	6760.77	527.43 N	3133.50 W	3170.54	1.92
9735.00	88.46	269.54	6762.00	527.28 N	3228.49 W	3265.04	1.85
9829.00	91.42	270.54	6762.09	527.34 N	3322.48 W	3358.56	3.32
9924.00	85.96	267.61	6764.27	525.81 N	3417.40 W	3452.85	6.52
10019.00	87.41	267.44	6769.76	521.72 N	3512.15 W	3546.72	1.54
10113.00	88.52	267.87	6773.10	517.87 N	3606.01 W	3639.72	1.27
10208.00	94.14	269.35	6770.89	515.57 N	3700.91 W	3733.92	6.12
10303.00	93.83	269.08	6764.29	514.27 N	3795.67 W	3828.08	0.43
10398.00	92.22	268.46	6759.28	512.23 N	3890.52 W	3922.24	1.82
10493.00	88.06	269.94	6759.05	510.91 N	3985.48 W	4016.60	4.65
10588.00	89.07	270.05	6761.42	510.90 N	4080.45 W	4111.09	1.07
10682.00	88.21	268.89	6763.66	510.03 N	4174.42 W	4204.50	1.54
10777.00	90.52	269.67	6764.71	508.83 N	4269.40 W	4298.88	2.57
10872.00	91.54	269.30	6763.00	507.98 N	4364.38 W	4393.30	1.14
10967.00	90.99	268.88	6760.90	506.47 N	4459.34 W	4487.64	0.73
11062.00	90.31	268.10	6759.83	503.97 N	4554.30 W	4581.87	1.09
11157.00	88.09	267.79	6761.15	500.56 N	4649.23 W	4675.98	2.36
11251.00	86.88	267.11	6765.28	496.39 N	4743.04 W	4768.90	1.48
11311.00	86.21	266.71	6768.89	493.16 N	4802.84 W	4828.08	1.30
11376.00	86.21	266.71	6773.19	489.43 N	4867.59 W	4892.14	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 275.74 DEGREES (GRID)
A TOTAL CORRECTION OF 7.46 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11376.00 FEET
IS 4892.14 FEET ALONG 275.74 DEGREES (GRID)**

Tied in @ Surface