

**PCDC - Pressure Case Directional  
PCGK - Pressure Case Gamma**

**1 : 600 / 1 : 240**

Country		: USA			
Field		: Wattenburg			
Location		: Lat: 40° 17' 21.41" North Long: 104° 44' 2.65" West			
Well		: Burton K25-69-1HNL			
Company		: Noble Energy			
Rig		: H&P 321			
LOCATION		Latitude : 40° 17' 21.41" North Longitude : 104° 44' 2.65" West		Company : Noble Energy Rig : H&P 321 Well : Burton K25-69-1HNL Field : Wattenburg Country : USA API Number : 05-123-38365	
		UTM Easting = 3,213,665,170 ft UTM Northing = 1,349,148,680 ft			
Other Services Directional Drilling					
Permanent Datum		: Ground Level		Elev. : 4752.00 ft	
Log Measured From		: Drill Floor		30.00 ft Above Permanent Datum	
Drilling Measured From		: Drill Floor		TVD LOG	
Depth Logged		: 709.00 ft To 7,126.20 ft		Unit No. : 11210424	
Date Logged		: 27-Oct-14 To 01-Nov-14		Job No. :CA-XX-0901764742	
Total Depth MD		: 7,484.00 ft TVD : 7,126.20 ft		Plot Type : Final	
Spud Date		: 28-Oct-14		Plot Date : 01-Nov-14	
Borehole Record (TVD)				Borehole Record (TVD)	
Run No.	Size	From	To	Run No.	Size
100	8.750 in	709.00 ft	5,932.12 ft		
200	8.750 in	5,932.12 ft	6,974.16 ft		
300	8.750 in	6,974.16 ft	7,126.20 ft		
				Casing Record (TVD)	
				Size	Weight
				9.625 in	34.90 lbpf
					SURFACE
					699.00 ft
					</

**WELL INFORMATION**

MWD Run Number	100	200	300		
Date run completed	30-Oct-14	31-Oct-14	01-Nov-14		
Rig Bit Number	2	3	4		
Bit Size (in)	8.750	8.750	8.750		
Tool Nominal OD (in)	6.850	6.850	6.750		
Log Start Depth (TVD, ft)	709.00	5,934.12	6,974.16		
Log End Depth (TVD, ft)	5,934.12	6,974.16	7,126.20		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	29-Oct-14 20:43	31-Oct-14 02:38	31-Oct-14 22:42		
Drill/Wipe End Date and Time	30-Oct-14 17:11	31-Oct-14 10:00	01-Nov-14 05:05		
Min Inc (deg) @ Depth (TVD, ft)	0.15 @ 4,078.28	0.15 @ 6,257.11	49.95 @ 7,002.21		
Max Inc (deg) @ Depth (TVD, ft)	9.41 @ 2,852.73	36.54 @ 6,932.85	84.45 @ 7,123.36		
Bit TFA(in2) / Bit Type	0.78 / PDC	0.78 / PDC	0.78 / PDC		
Flow Rate (gpm)	588.28	586.94	558.00		
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A	N/A / N/A	N/A / N/A		
Fluid Type	Native/Spud Mud	Native/Spud Mud	Native/Spud Mud		
Density (ppg) / Viscosity (spqt)	8.90 / 27.00	9.00 / 36.00	9.60 / 36.00		
Filtrate CL (ppm)	1,600.00	1,700.00	1,700.00		
pH / Fluid Loss (mptm)	9.70 / 45	8.90 / 8	8.90 / 5		
PV (cP) / YP (Ihf2)	2 / 1.00	7 / 10.00	7 / 10.00		
% Solids / % Sand	3.80 / 0.15	4.20 / 0.15	4.20 / 0.15		
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A	N/A / N/A		
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		

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

## SENSOR INFORMATION

### Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.93	5.93	5.93		
Sub Serial Number	11342274	11342274	11342274		
Insert Serial Number	11680790	11680790	11680785		
Date and Time Initialized	27-Oct-14 22:16	01-Jan-70 00:00	31-Oct-14 12:30		
Date and Time Read	31-Oct-14 15:13	31-Oct-14 15:19	01-Jan-70 00:00		
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	54.00		
Software Version	6.21	6.21	6.21		
Sub Serial Number	11342274	11342274	11342274		
Sonde Serial Number	11181577	11181577	11297590		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	17.41	332.27	88.53		

### Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	48.50	46.20	46.41		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	11342274	11342274	11342274		
Insert/Sonde Serial Number	11120594	11120594	11681002		

## 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 Distance: 1.2 ft

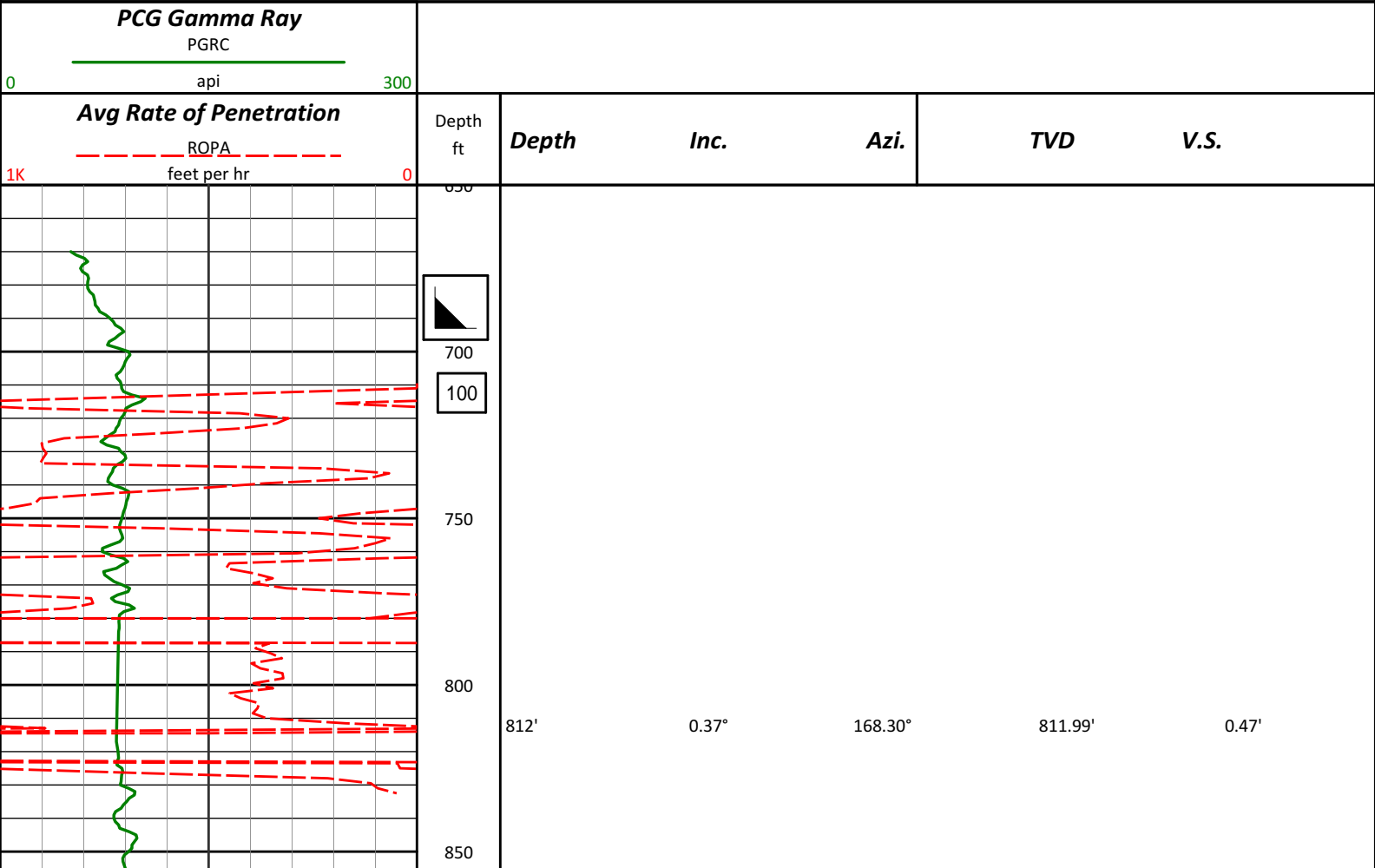
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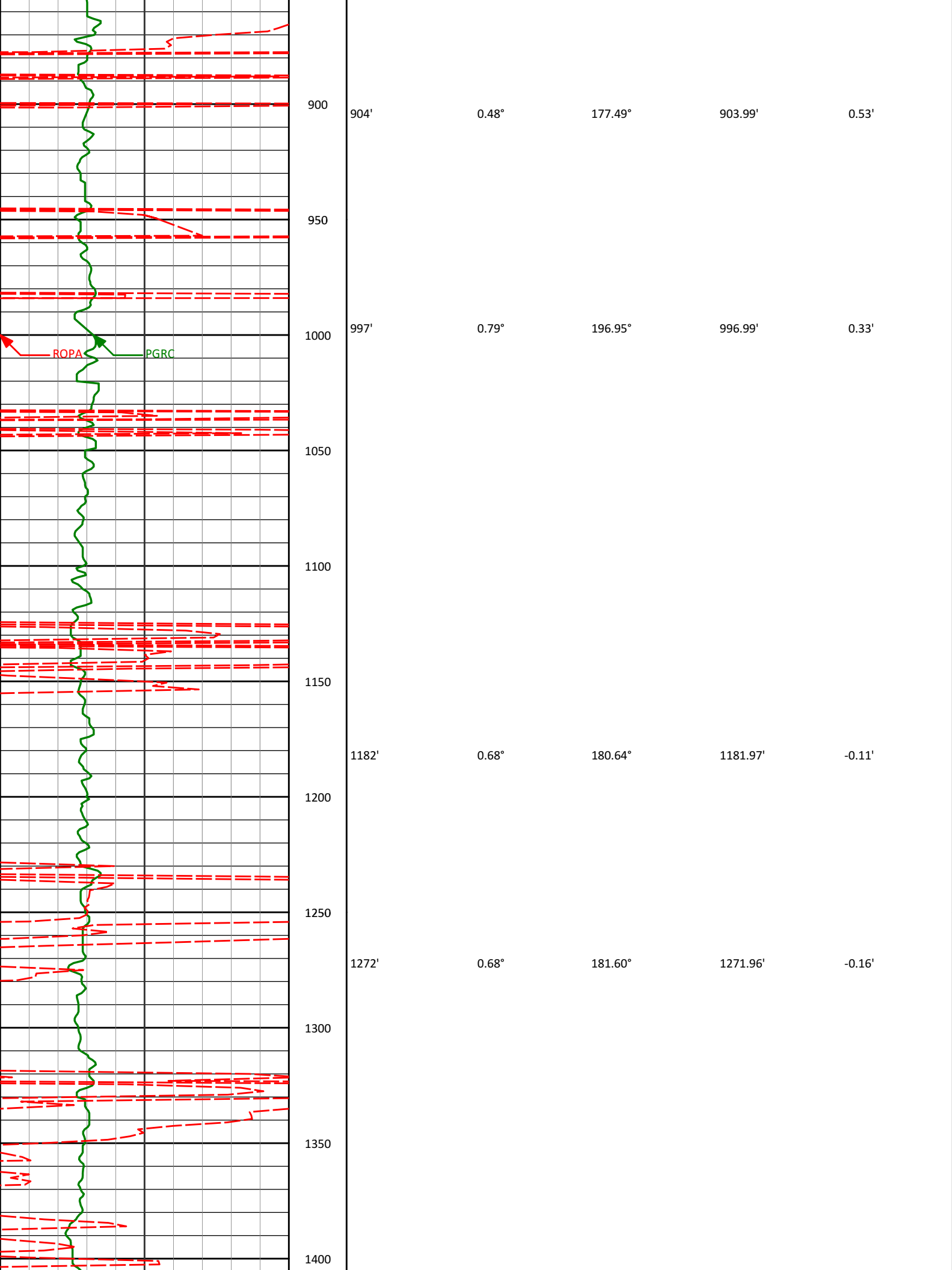
WARRANTY

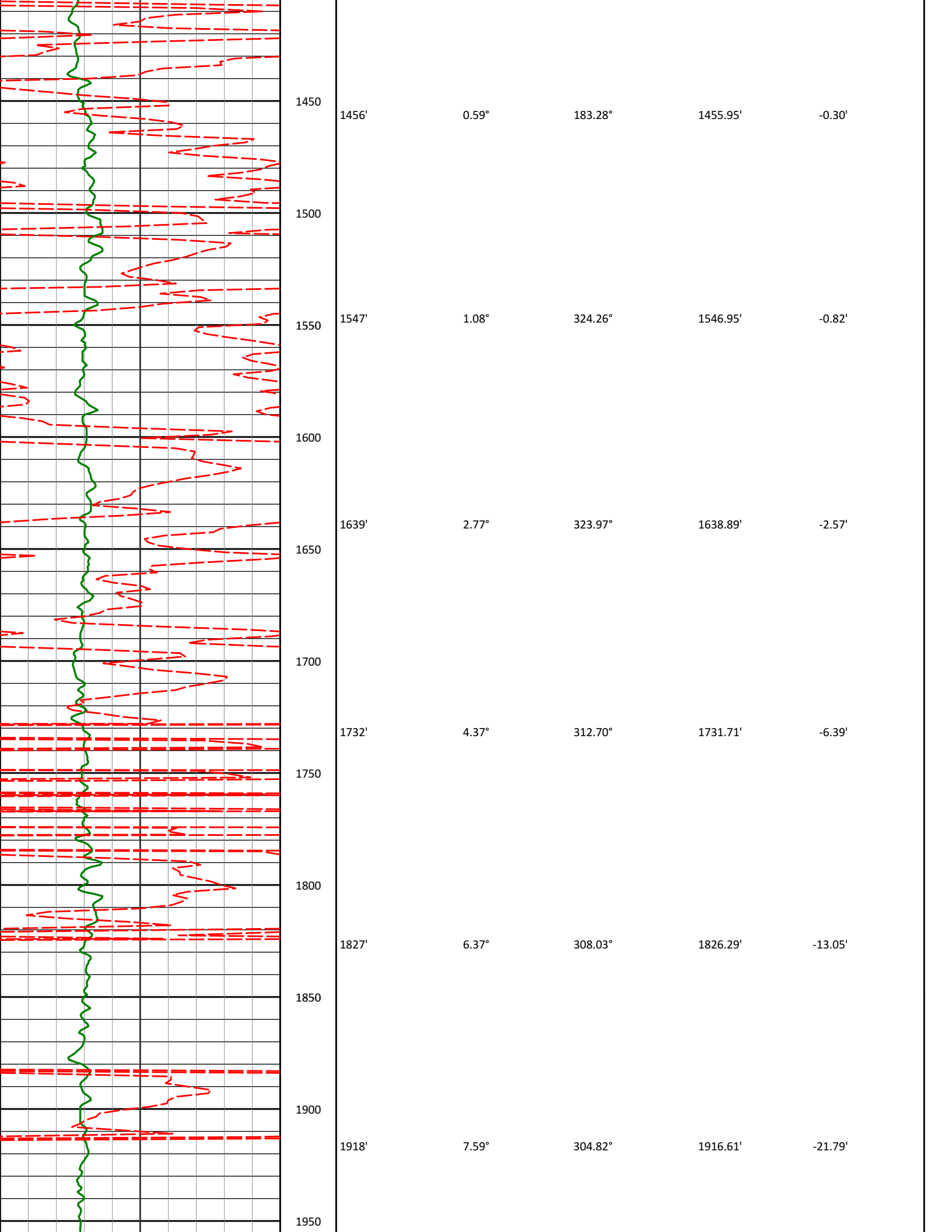
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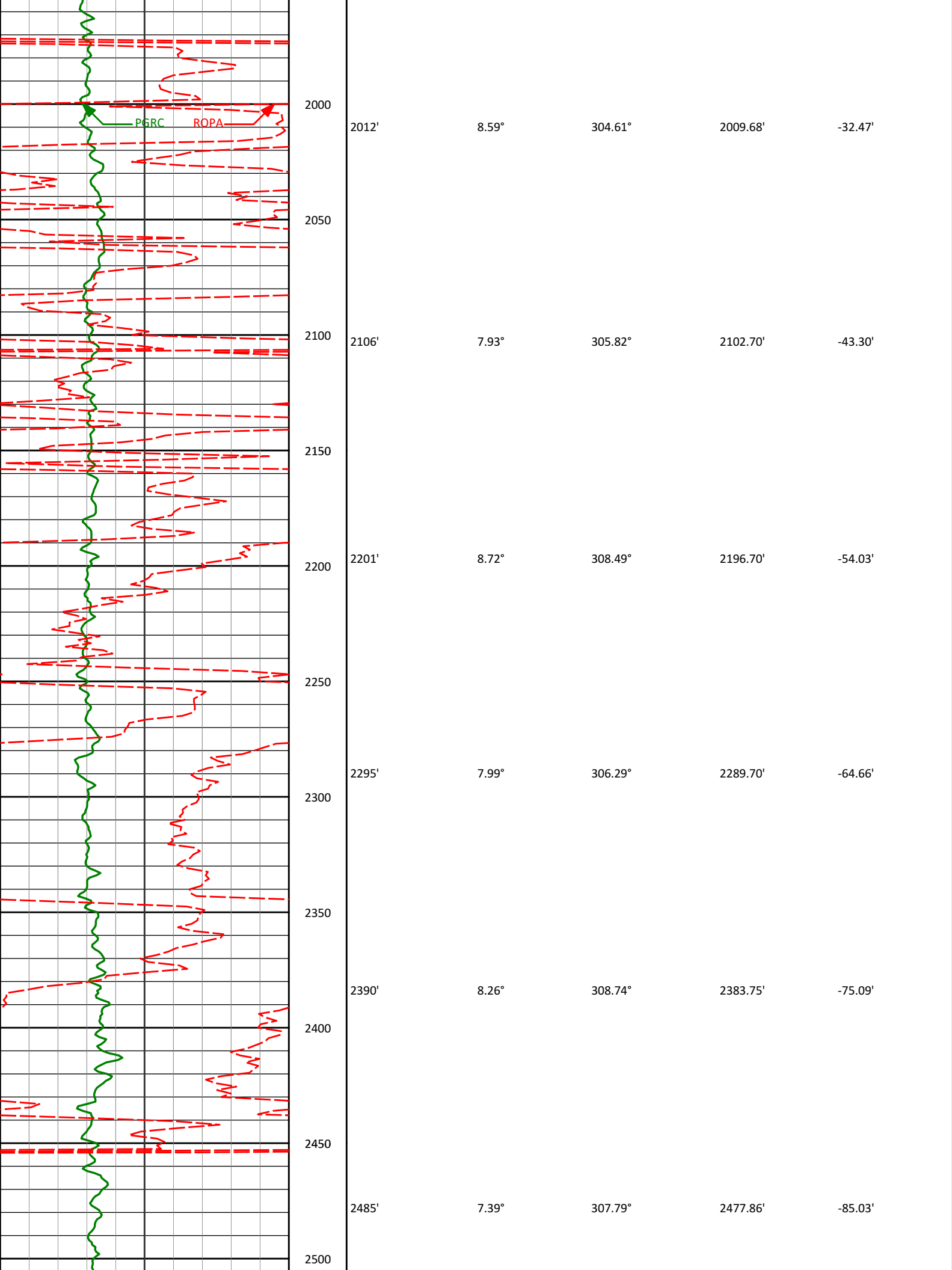
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Sperry Drilling Services  
TVD Correlation Log 1:600

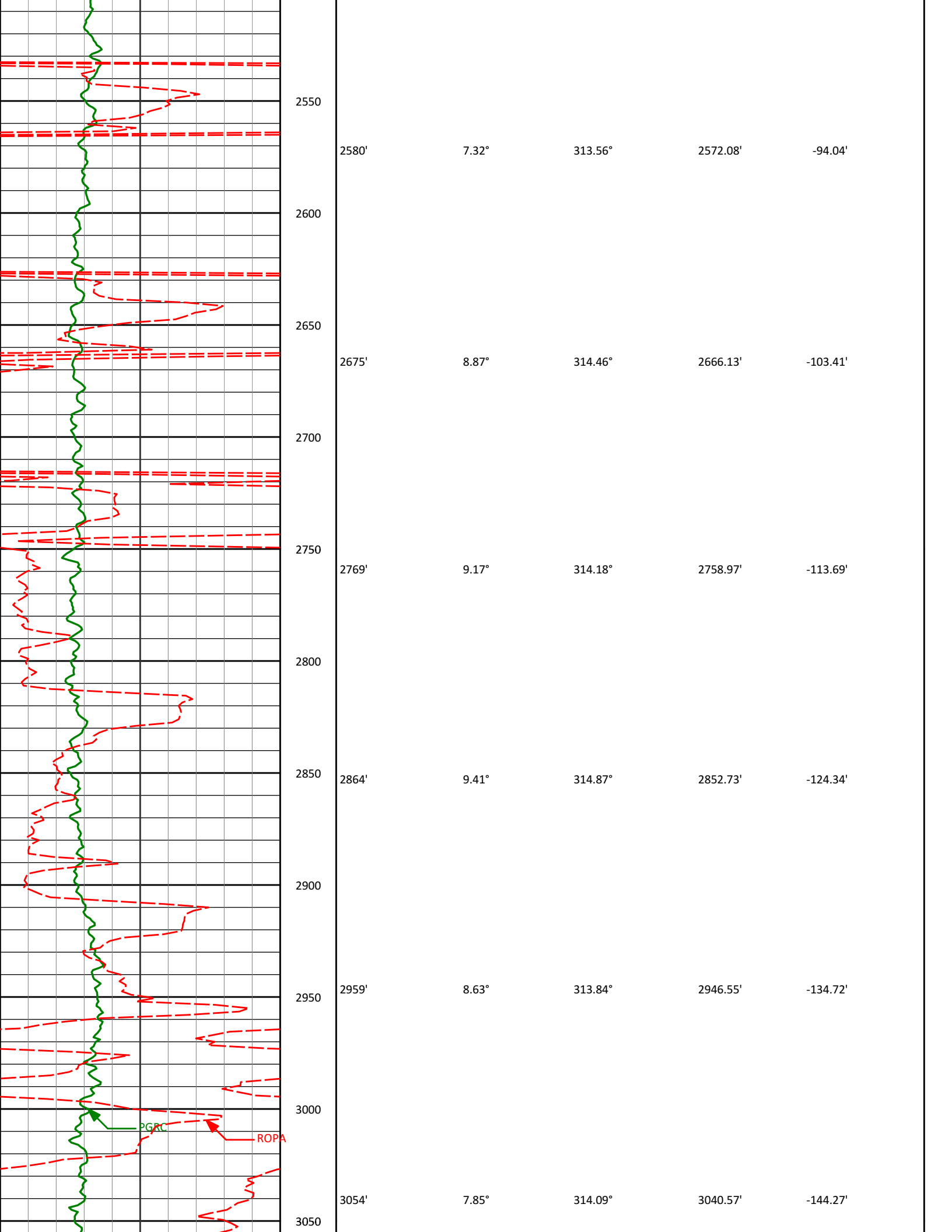
Noble Energy  
Burton K25-69-1HNL-A1  
H&P 321  
Sec.25-T4N-R66W

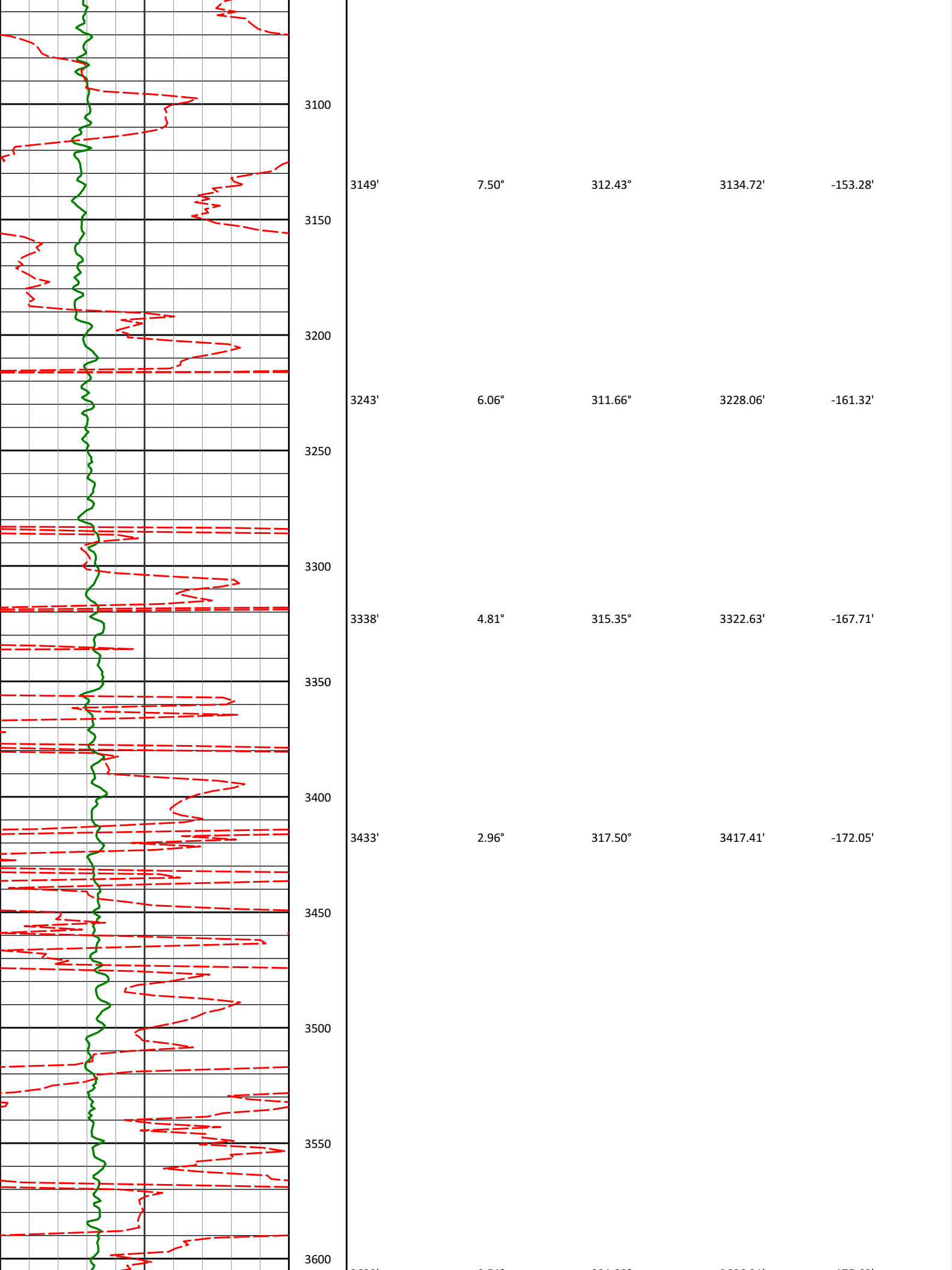


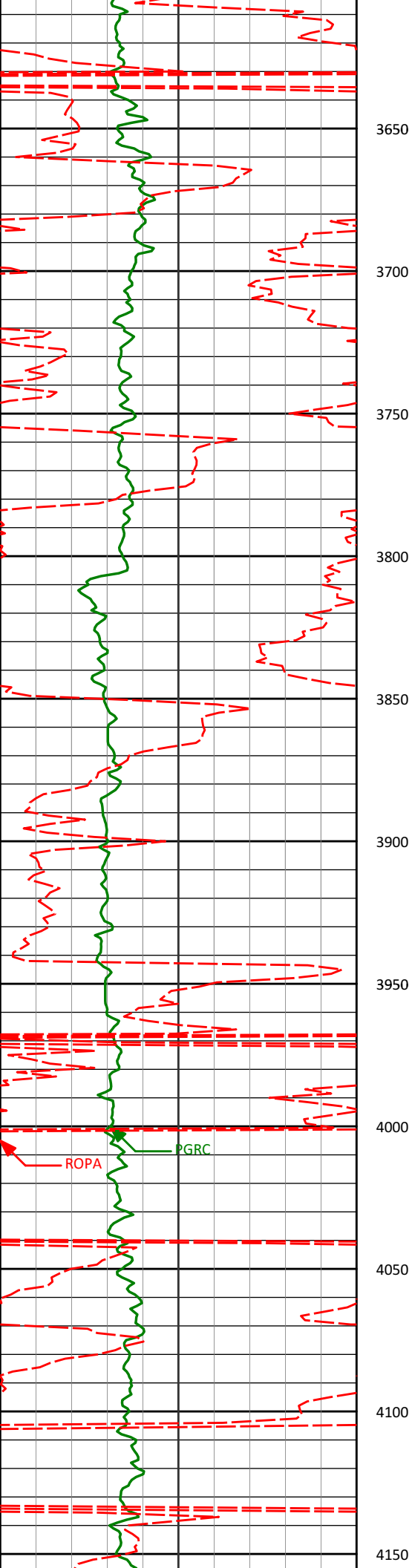




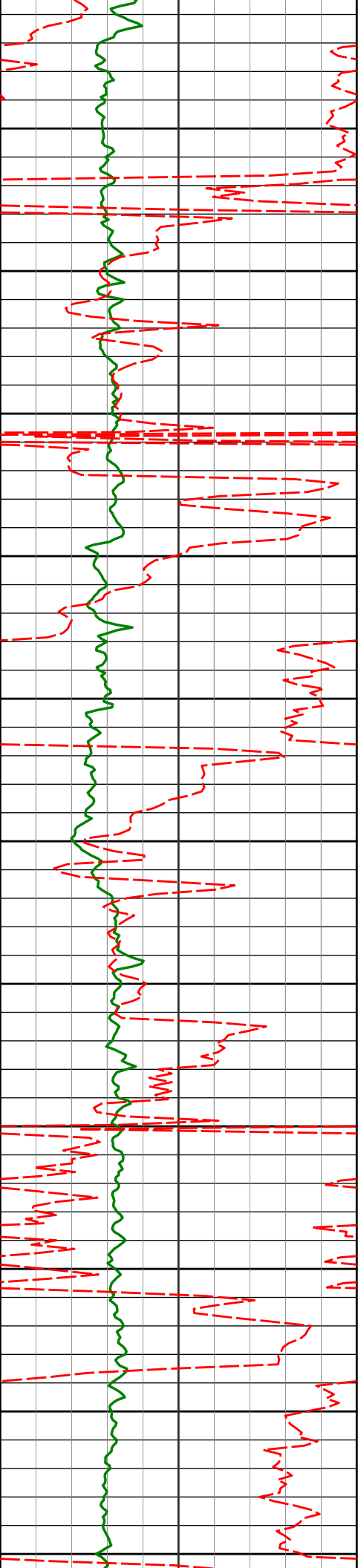








3622'	0.51°	331.32°	3606.31'	-175.63'
3717'	0.16°	129.97°	3701.30'	-175.73'
3811'	0.97°	163.57°	3795.30'	-175.42'
3905'	0.90°	167.58°	3889.29'	-175.08'
4000'	0.65°	169.27°	3984.28'	-174.85'
4094'	0.15°	271.54°	4078.28'	-174.89'



4189'

1.11°

286.51°

4173.27'

-175.89'

4200

4250

4284'

1.18°

299.87°

4268.25'

-177.60'

4300

4350

4400

4450

4473'

0.90°

332.35°

4457.22'

-179.91'

4500

4550

4568'

1.34°

330.80°

4552.20'

-180.76'

4600

4650

4663'

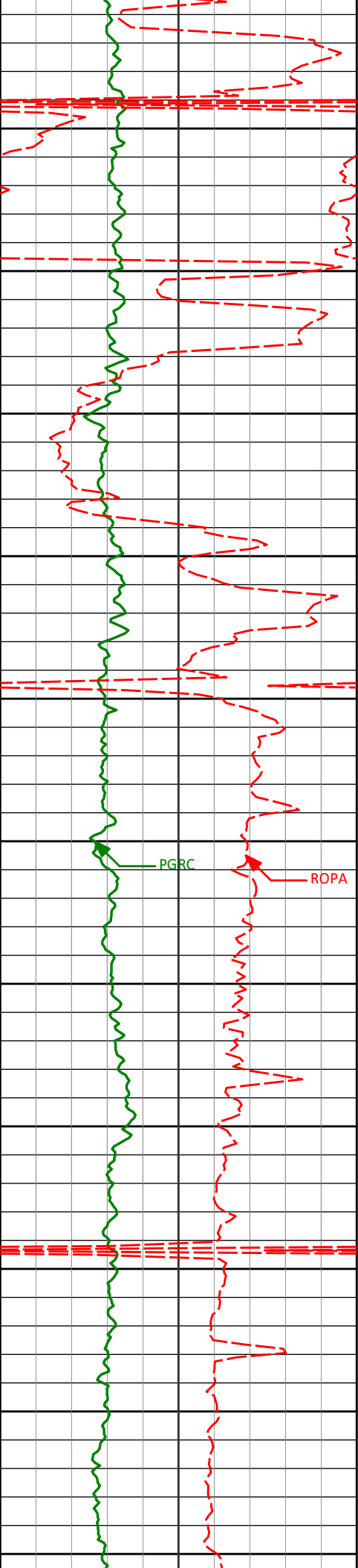
1.38°

290.98°

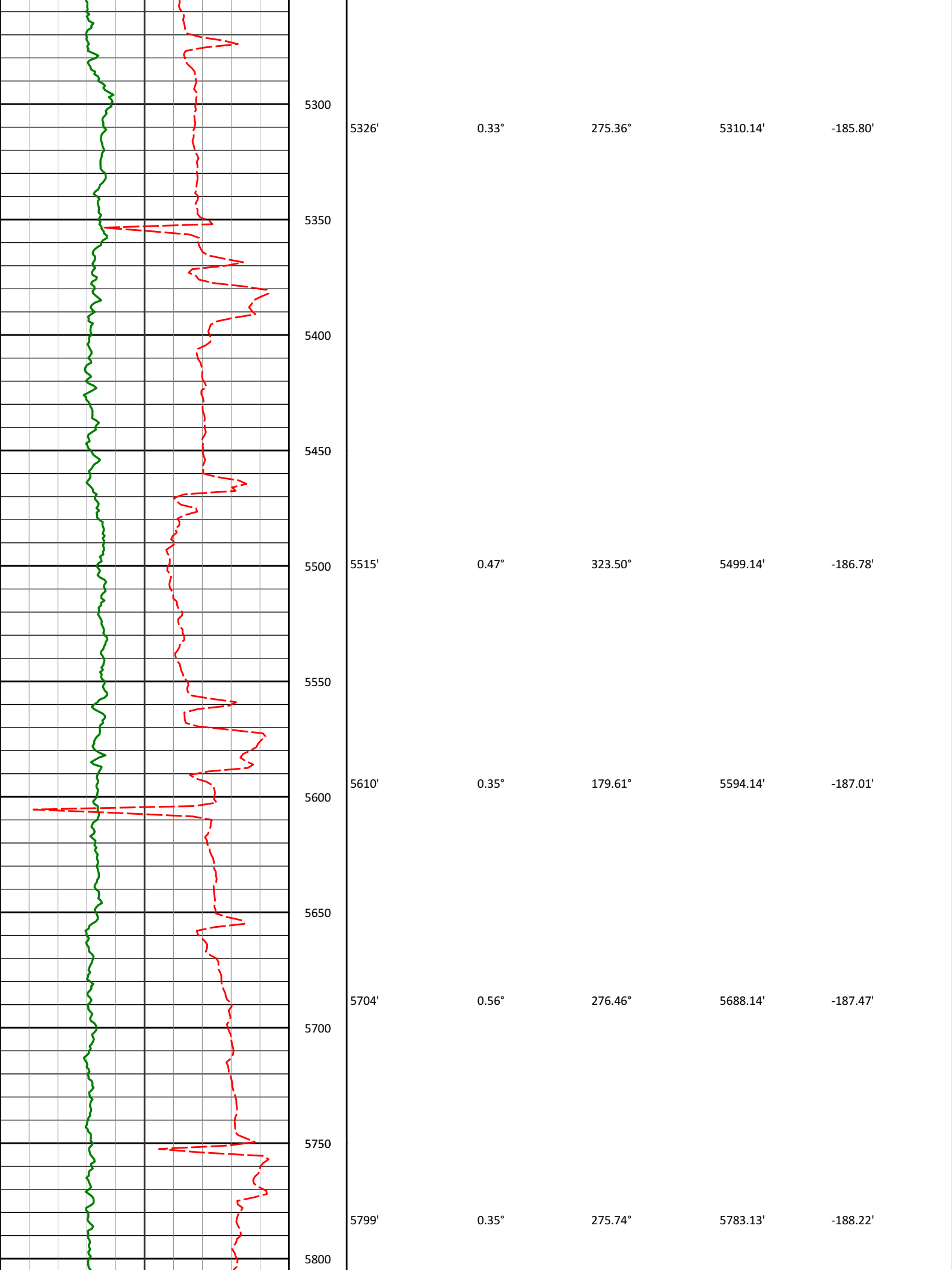
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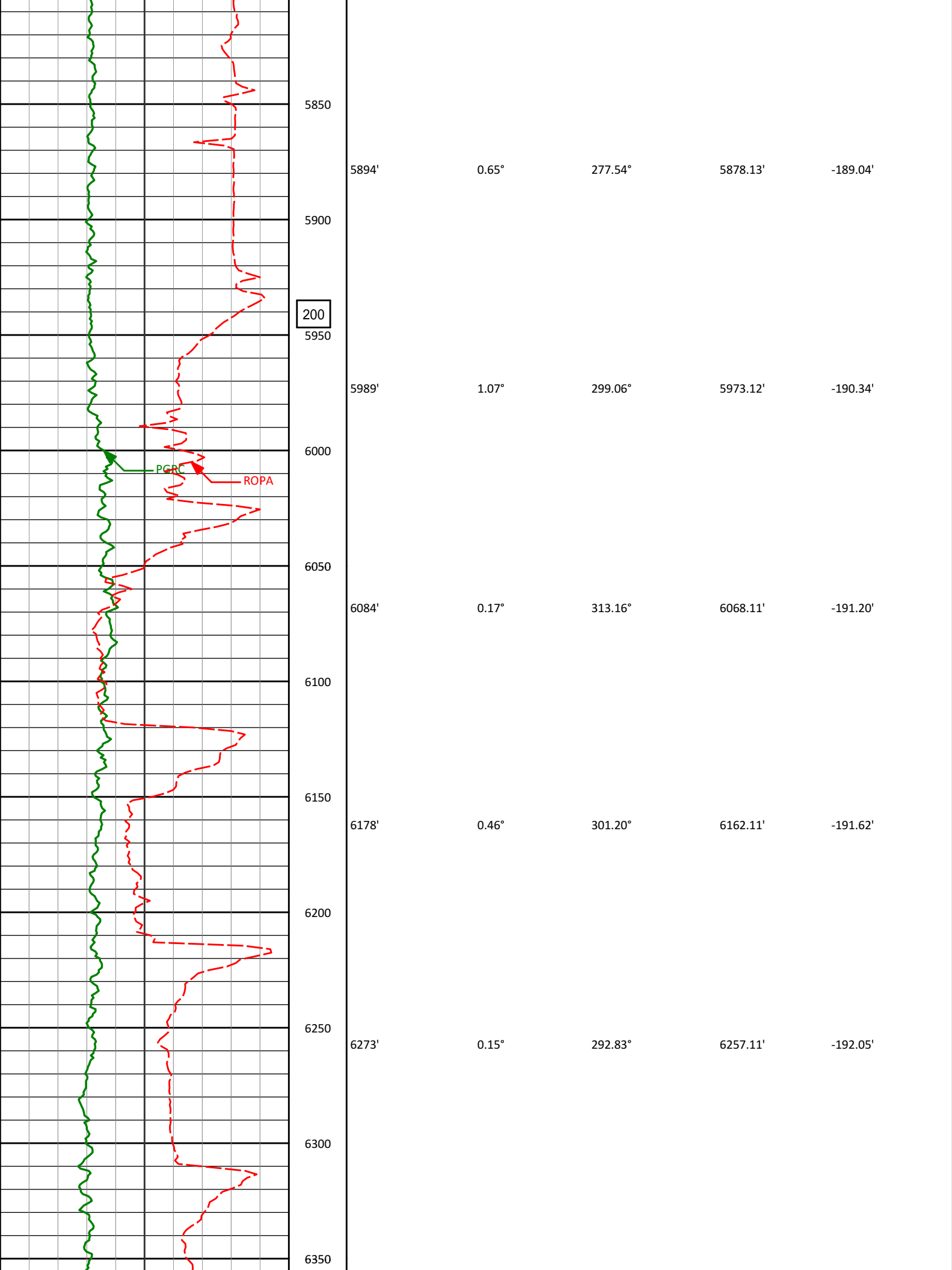
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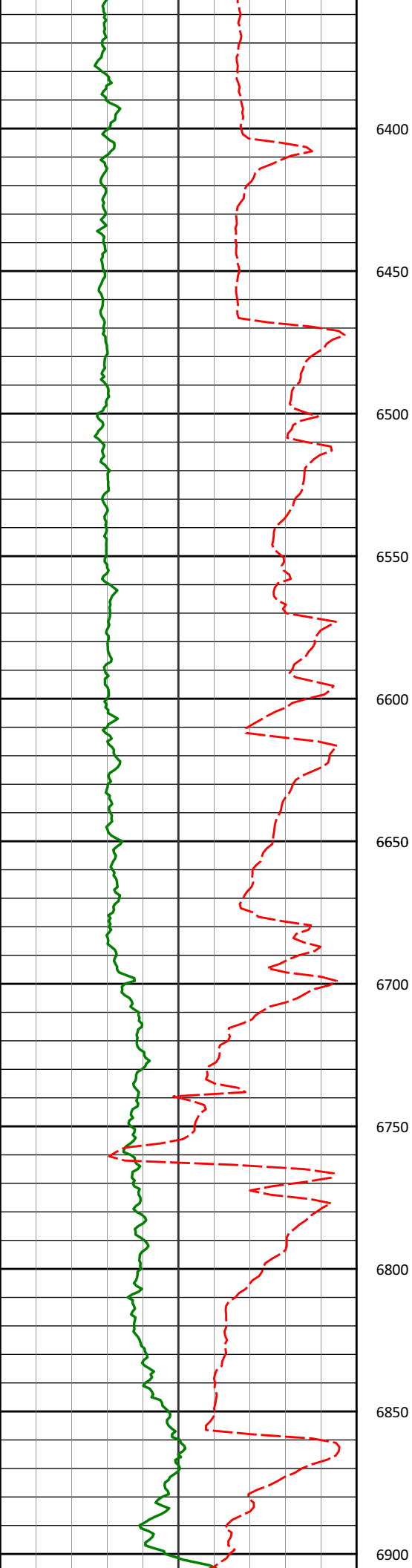
4700



4757'	1.09°	273.74°	4741.16'	-184.27'
4750				
4800				
4850				
4900				
4947'	0.34°	122.71°	4931.15'	-185.60'
4950				
5000				
5042'	0.25°	132.17°	5026.15'	-185.22'
5050				
5100				
5136'	0.22°	185.86°	5120.14'	-185.10'
5150				
5200				
5231'	0.26°	249.99°	5215.14'	-185.32'
5250				







6462'

0.18°

240.44°

6446.11'

-192.54'

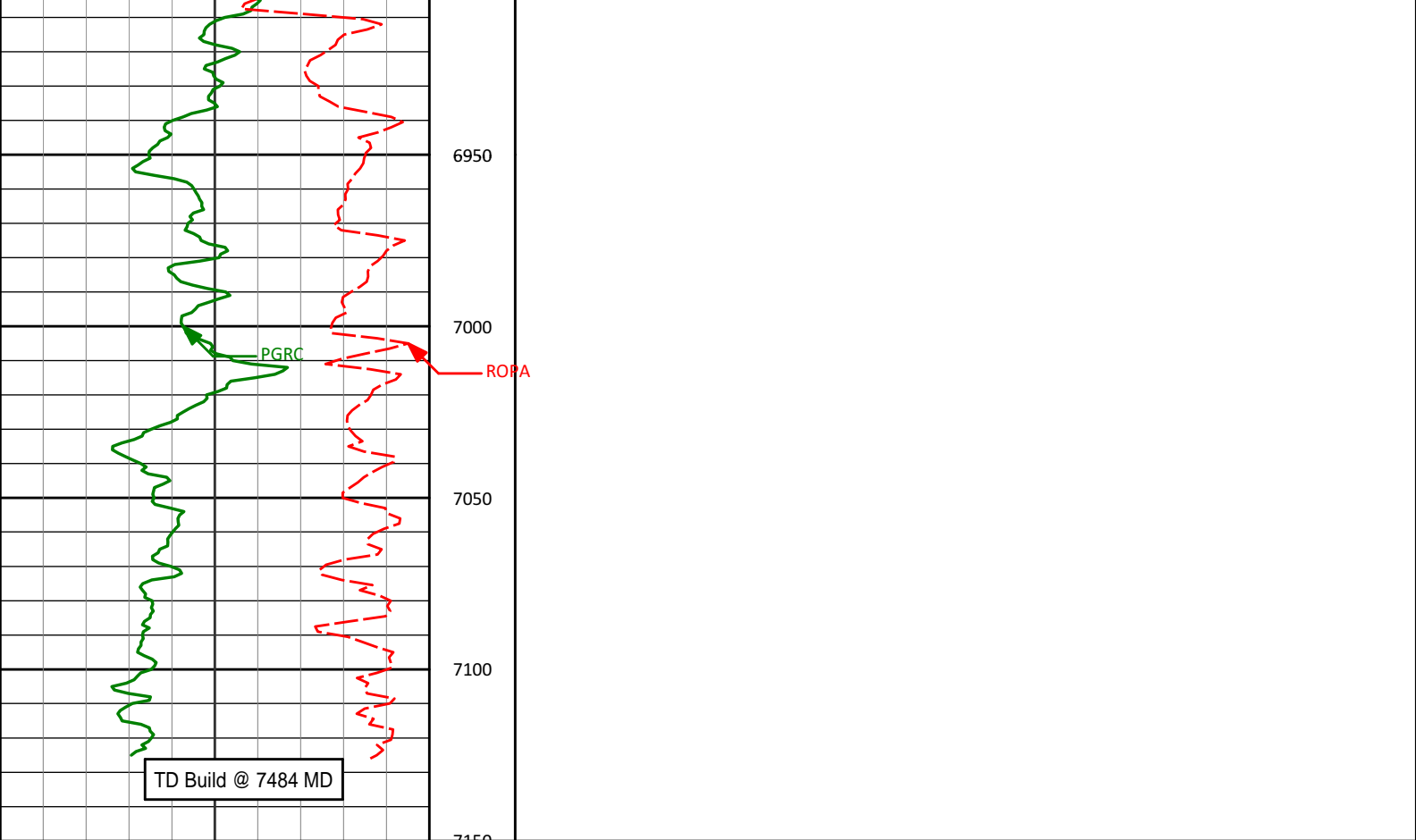
6557'

7.19°

84.56°

6540.86'

-186.73'

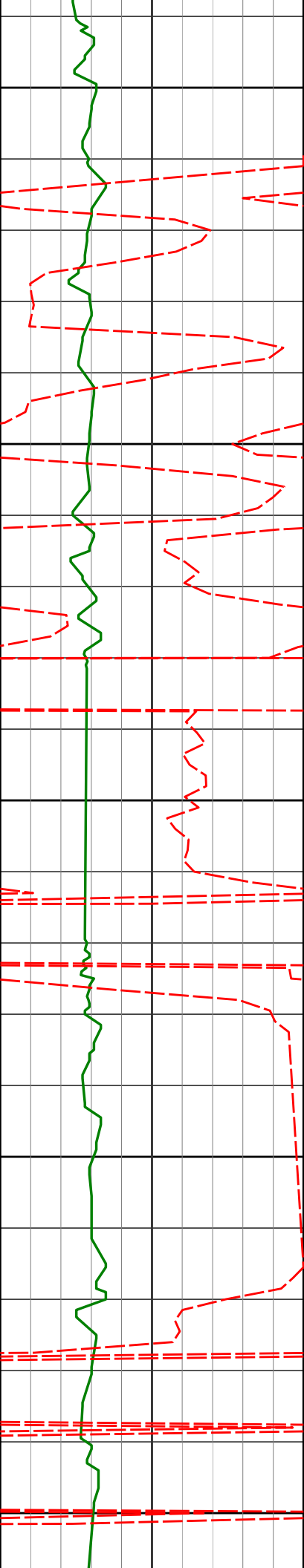


<div><div>Avg Rate of Penetration</div><div><div>1K</div><div>0</div></div><div><div>ROP</div><div>feet per hr</div></div></div>		Depth ft	Depth	Inc.	Azi.	TVD	V.S.
<div><div>PCG Gamma Ray</div><div><div>0</div><div>300</div></div><div><div>PGRC</div><div>api</div></div></div>							

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**Sperry Drilling Services**  
TVD Detail Log 1:240

Noble Energy  
Burton K25-69-1HNL-A1  
H&P 321  
Sec. 25-T4N-R66W

<div>PCG Gamma Ray</div> <div>PGRC</div> <div><div>0</div><div>api</div><div>300</div></div>															
<div>Avg Rate of Penetration</div> <div>ROPA</div> <div><div>1K</div><div>feet per hr</div><div>0</div></div>				Depth ft		Depth		Inc.		Azi.		TVD		V.S.	
<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><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Run 100

700



750

800

850

900

812'

0.37°

168.30°

811.99'

0.47'

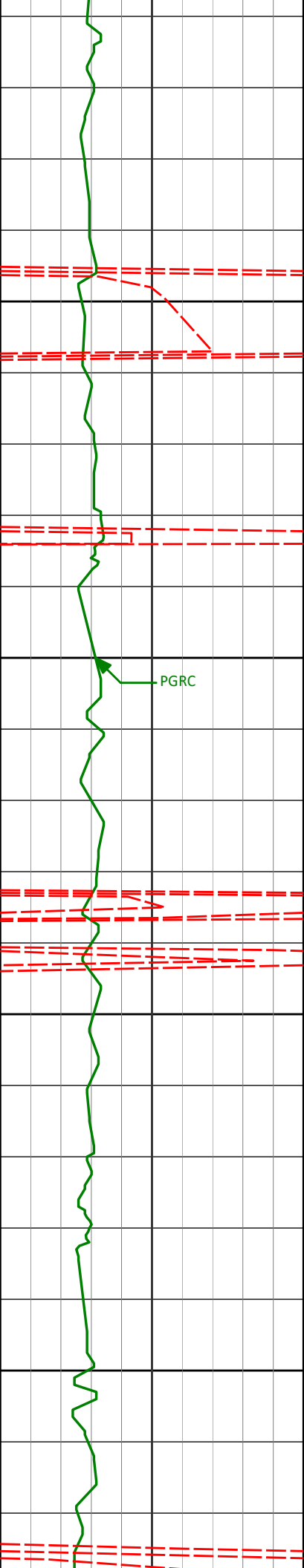
904'

0.48°

177.49°

903.99'

0.53'



950

1000

1050

1100

997'

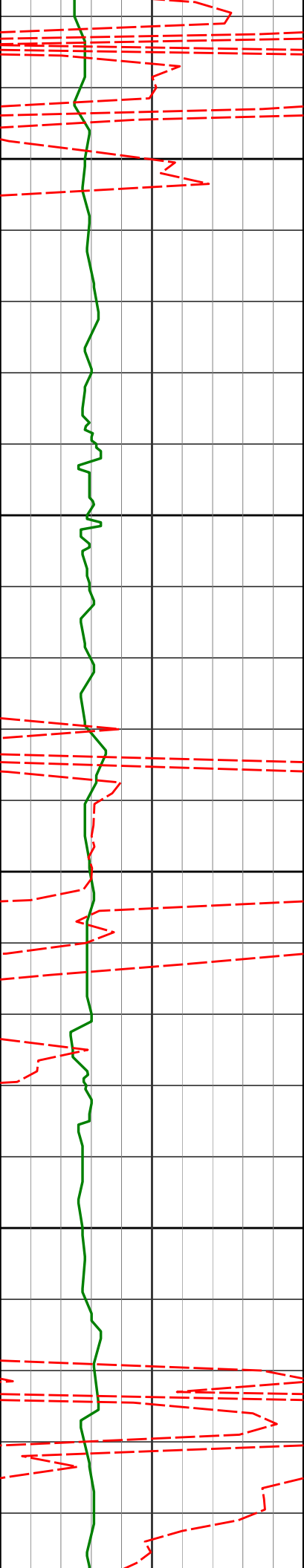
0.79°

196.95°

996.99'

0.33'

PGRC



1150

1182'

0.68°

180.64°

1181.97'

-0.11'

1200

1250

1272'

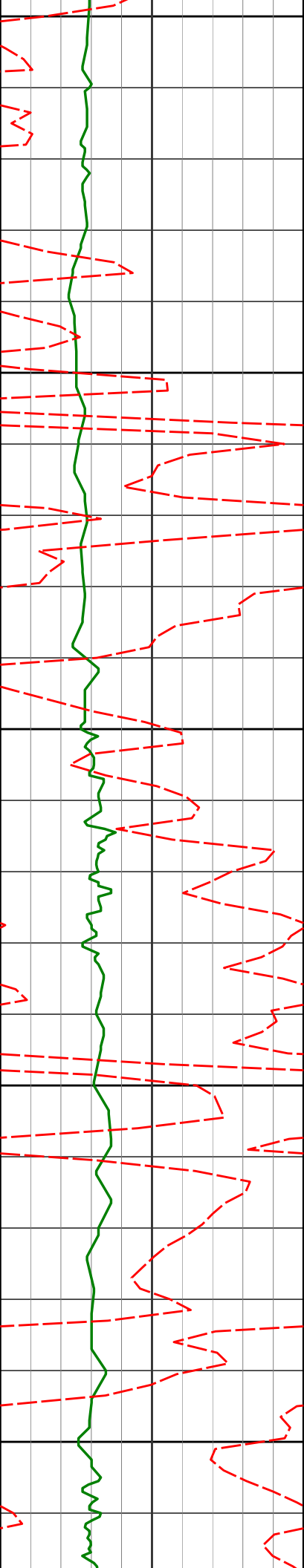
0.68°

181.60°

1271.96'

-0.16'

1300



1350

1400

1450

1500

1550

1456'

0.59°

183.28°

1455.95'

-0.30'

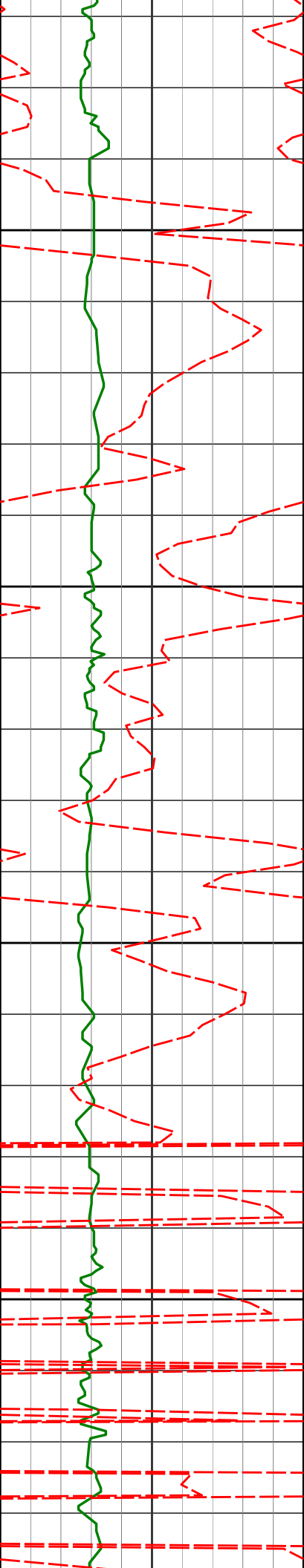
1547'

1.08°

324.26°

1546.95'

-0.82'



1600

1650

1700

1750

1639'

2.77°

323.97°

1638.89'

-2.57'

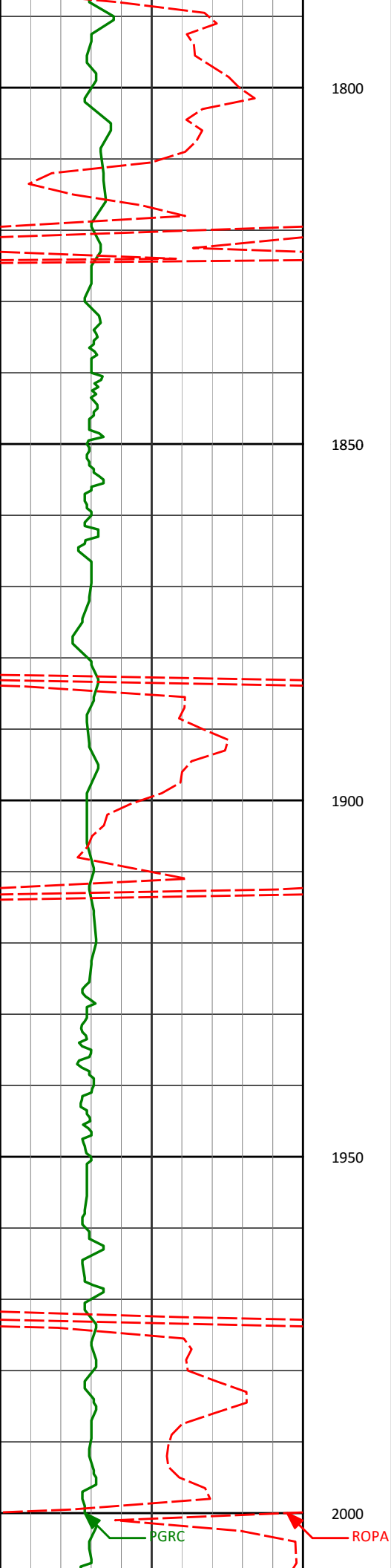
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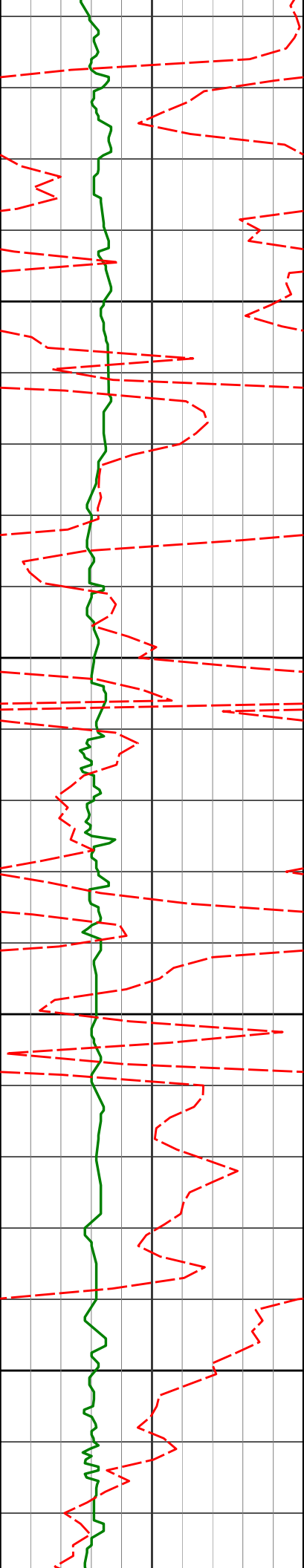
4.37°

312.70°

1731.71'

-6.39'





2050

2100

2150

2200

2012'

2106'

2201'

8.59°

7.93°

8.72°

304.61°

305.82°

308.49°

2009.68'

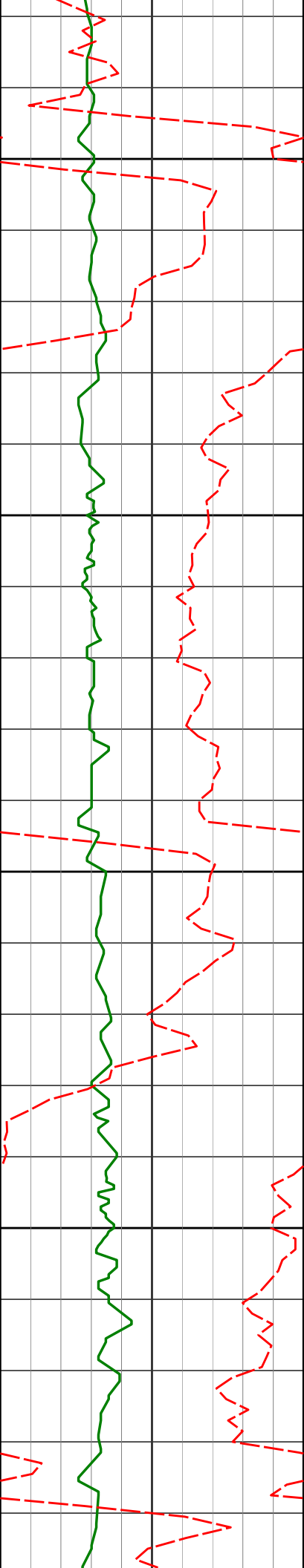
2102.70'

2196.70'

-32.47'

-43.30'

-54.03'



2250

2300

2350

2400

2295'

2390'

7.99°

8.26°

306.29°

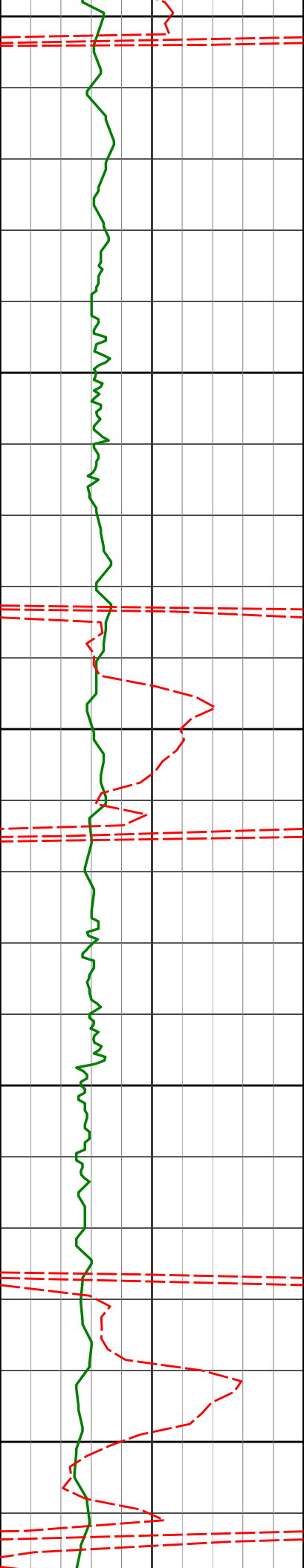
308.74°

2289.70'

2383.75'

-64.66'

-75.09'



2450

2485'

7.39°

307.79°

2477.86'

-85.03'

2500

2550

2580'

7.32°

313.56°

2572.08'

-94.04'

2600

2650

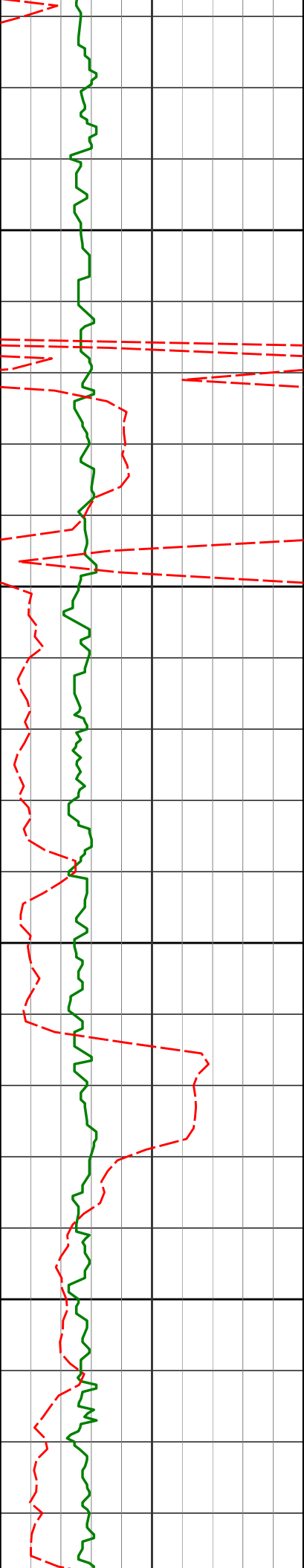
2675'

8.87°

314.46°

2666.13'

-103.41'



2700

2750

2800

2850

2769'

9.17°

314.18°

2758.97'

-113.69'

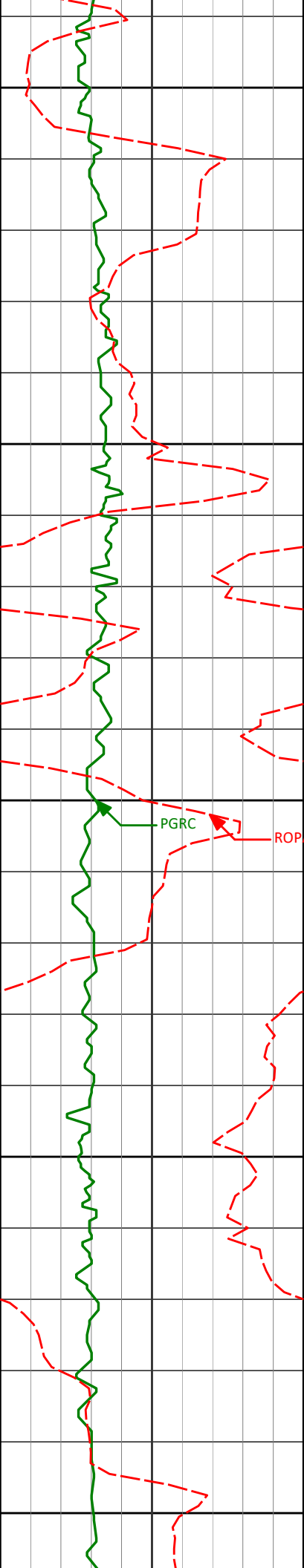
2864'

9.41°

314.87°

2852.73'

-124.34'



2900

2950

3000

3050

3100

2959'

8.63°

313.84°

2946.55'

-134.72'

3054'

7.85°

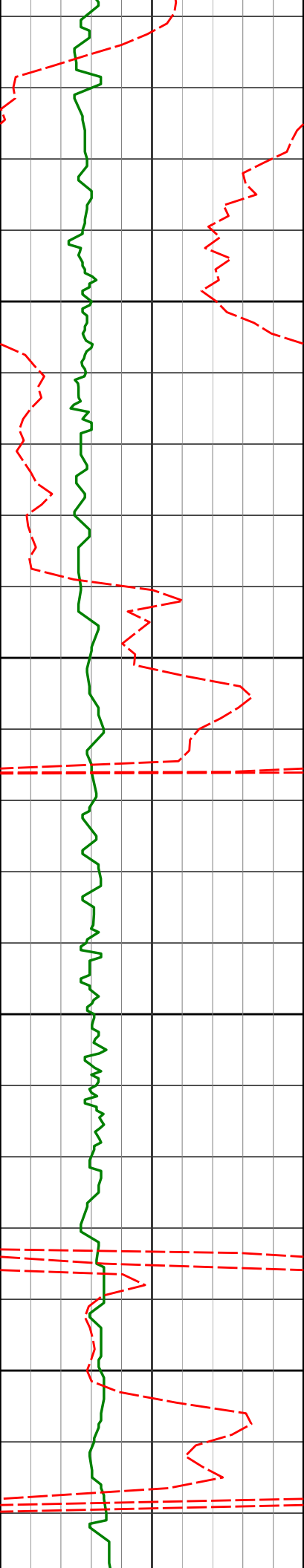
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3040.57'

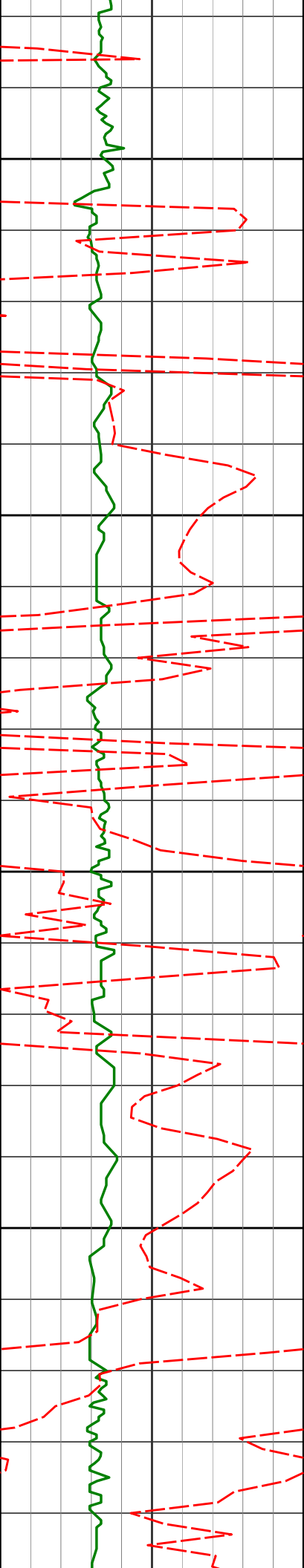
-144.27'

PGRC

ROPA



3149'	7.50°	312.43°	3134.72'	-153.28'
3150				
3200				
3243'	6.06°	311.66°	3228.06'	-161.32'
3250				
3300				
3338'	4.81°	315.35°	3322.63'	-167.71'



3350

3400

3450

3500

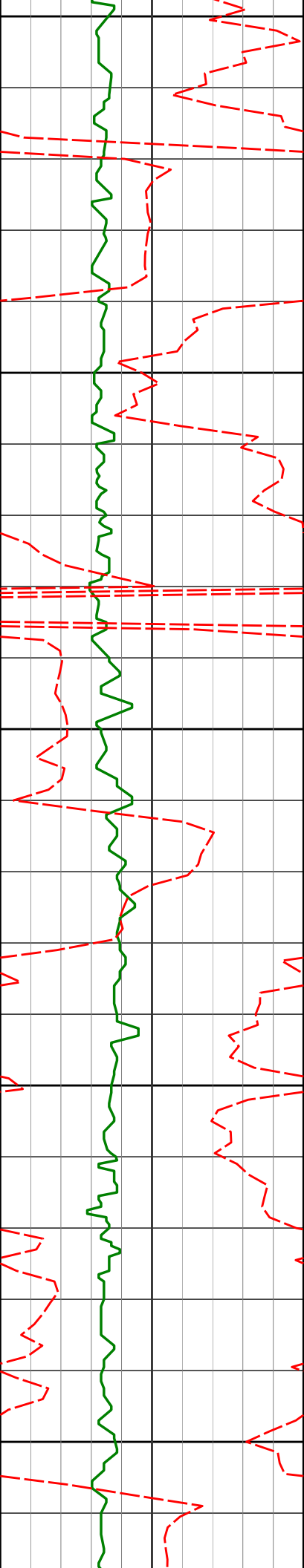
3433'

2.96°

317.50°

3417.41'

-172.05'



3550

3600

3650

3700

3750

3622'

0.51°

331.32°

3606.31'

-175.63'

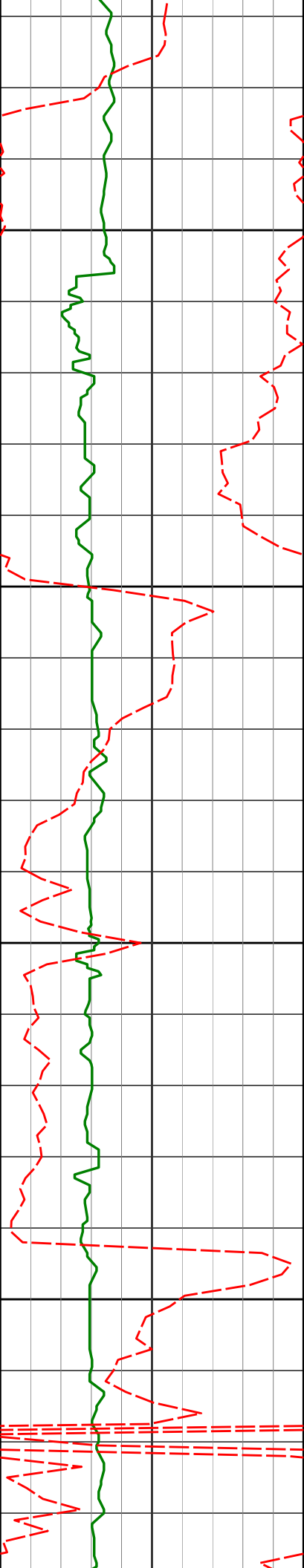
3717'

0.16°

129.97°

3701.30'

-175.73'



3811'      0.97°      163.57°      3795.30'      -175.42'

3800

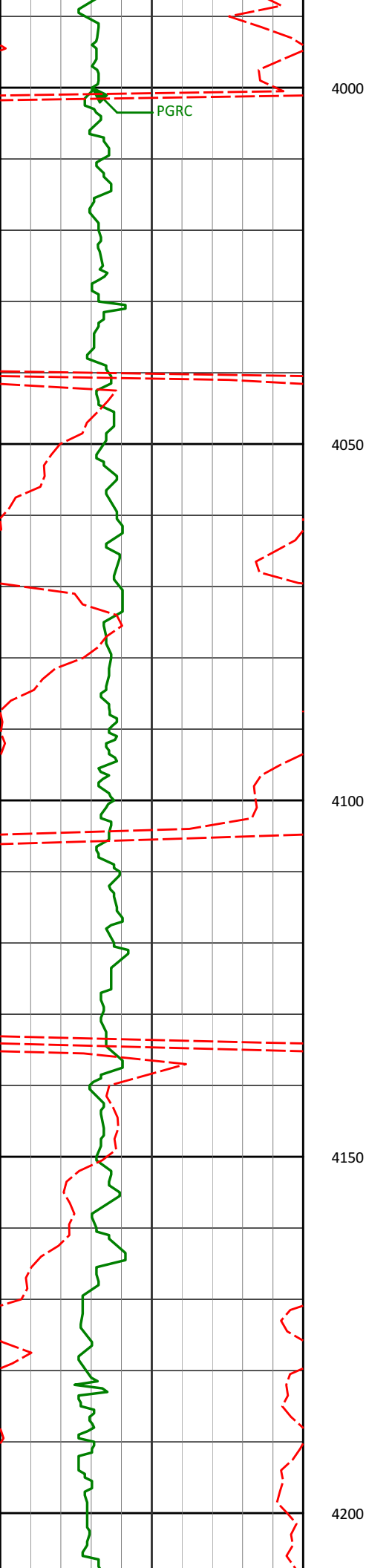
3850

3905'      0.90°      167.58°      3889.29'      -175.08'

3900

3950

4000'      0.65°      169.27°      3984.28'      -174.85'



4094'

0.15°

271.54°

4078.28'

-174.89'

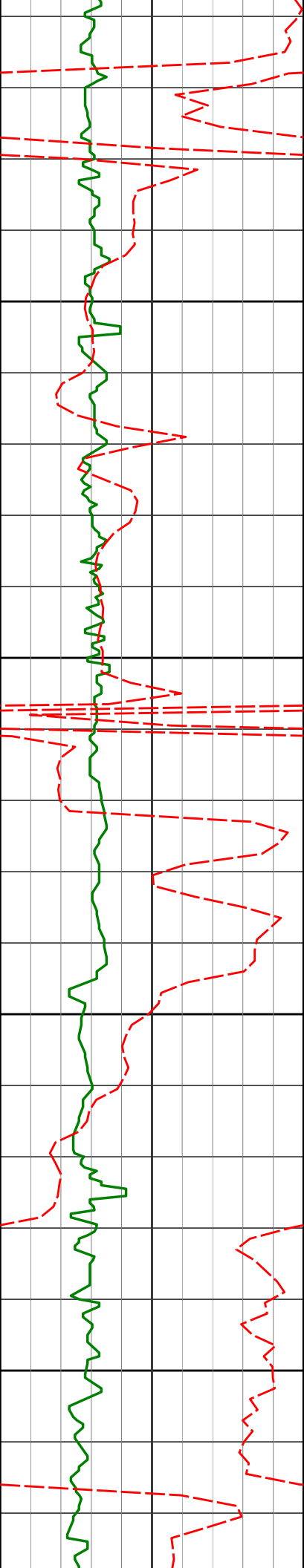
4189'

1.11°

286.51°

4173.27'

-175.89'



4250

4284'

1.18°

299.87°

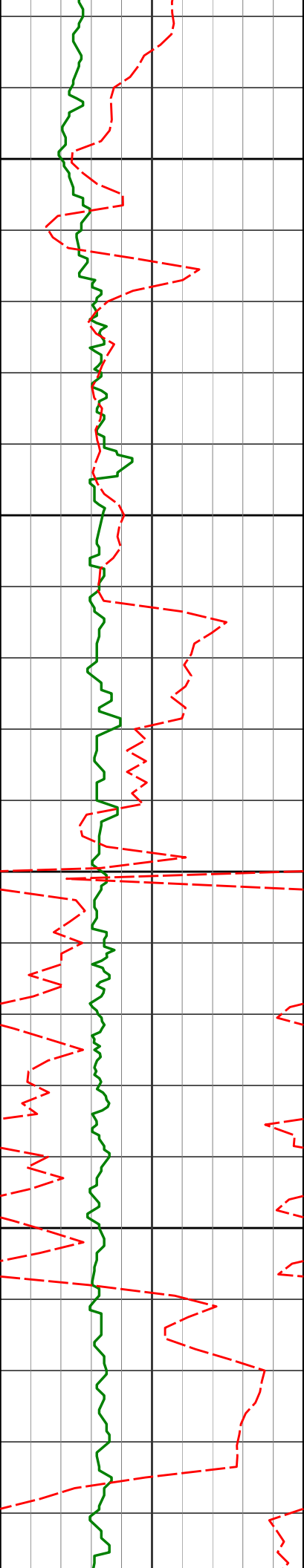
4268.25'

-177.60'

4300

4350

4400



4450

4473'

0.90°

332.35°

4457.22'

-179.91'

4500

4550

4568'

1.34°

330.80°

4552.20'

-180.76'

4600

4663'

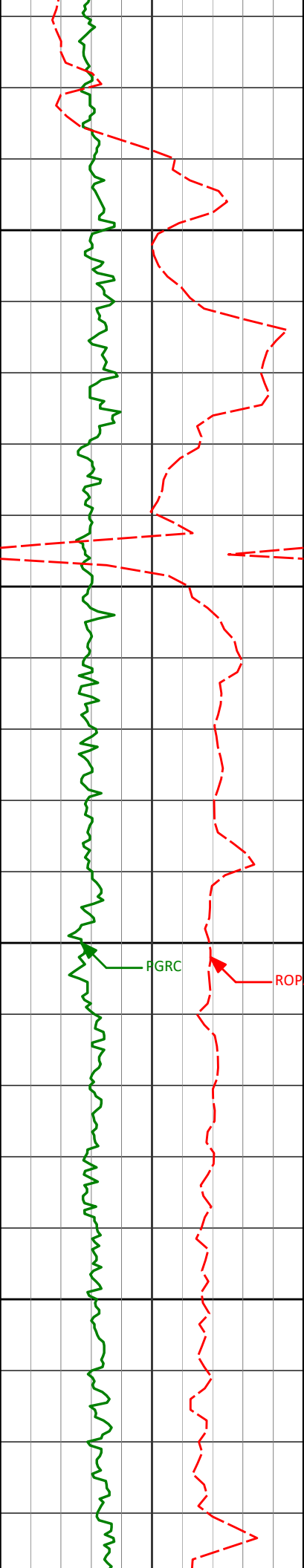
1.38°

290.98°

4647.18'

-182.33'





4900

4947'

0.34°

122.71°

4931.15'

-185.60'

4950

5000

FGRC

ROPA

5042'

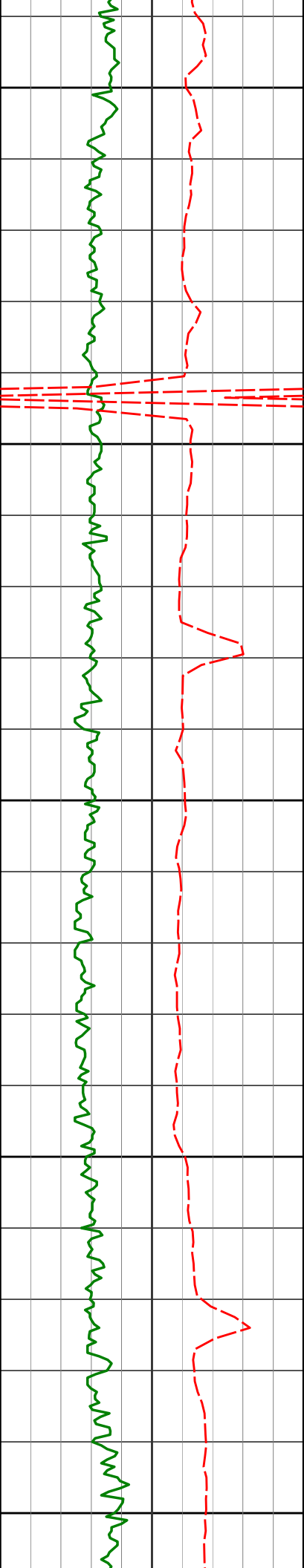
0.25°

132.17°

5026.15'

-185.22'

5050



5100

5136'

0.22°

185.86°

5120.14'

-185.10'

5150

5200

5231'

0.26°

249.99°

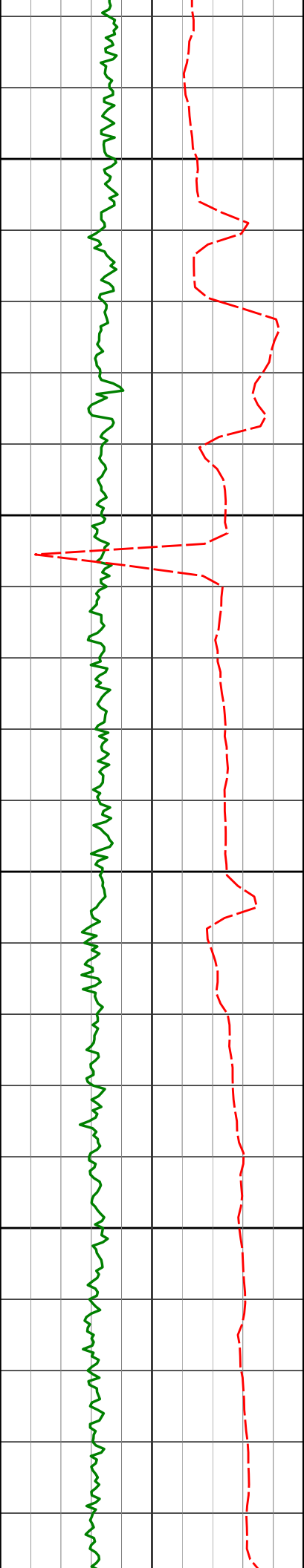
5215.14'

-185.32'

5250

5300





5550

5600

5650

5700

5610'

0.35°

179.61°

5594.14'

-187.01'

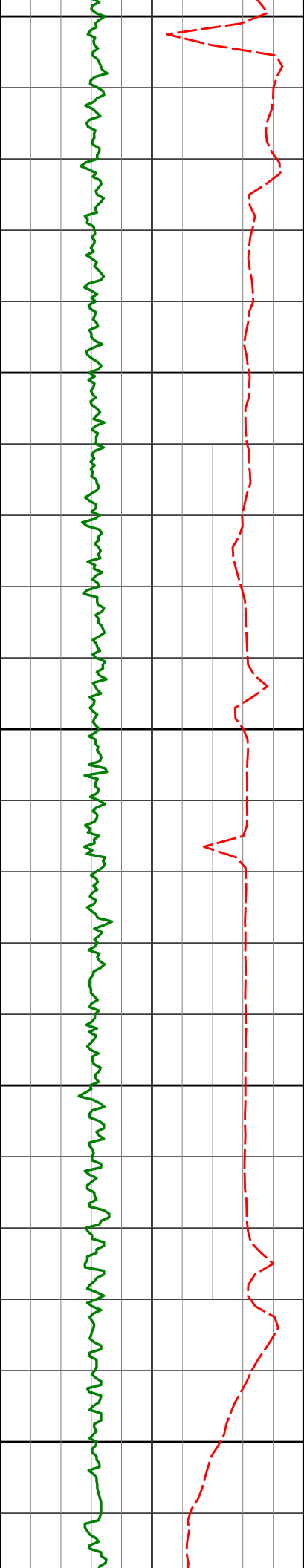
5704'

0.56°

276.46°

5688.14'

-187.47'



5750

5799'

5800

5850

5894'

5900

200

5950

5799'

0.35°

275.74°

5783.13'

-188.22'

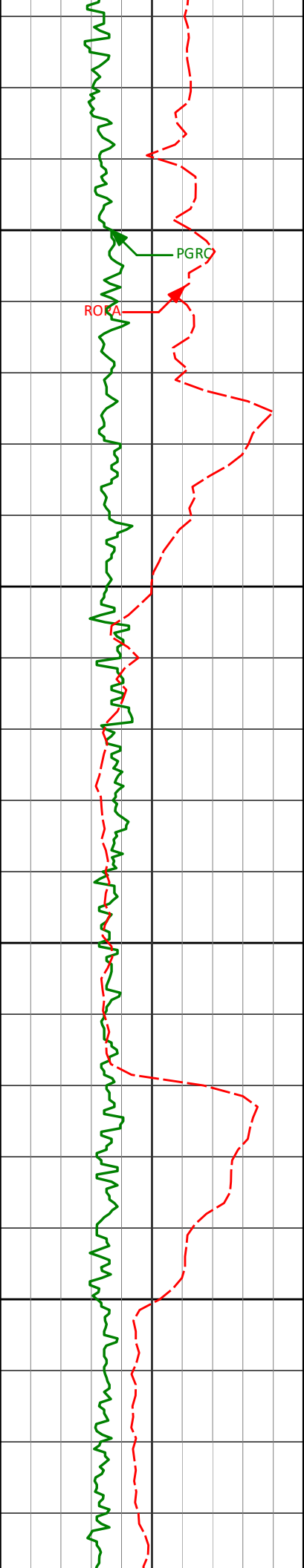
5894'

0.65°

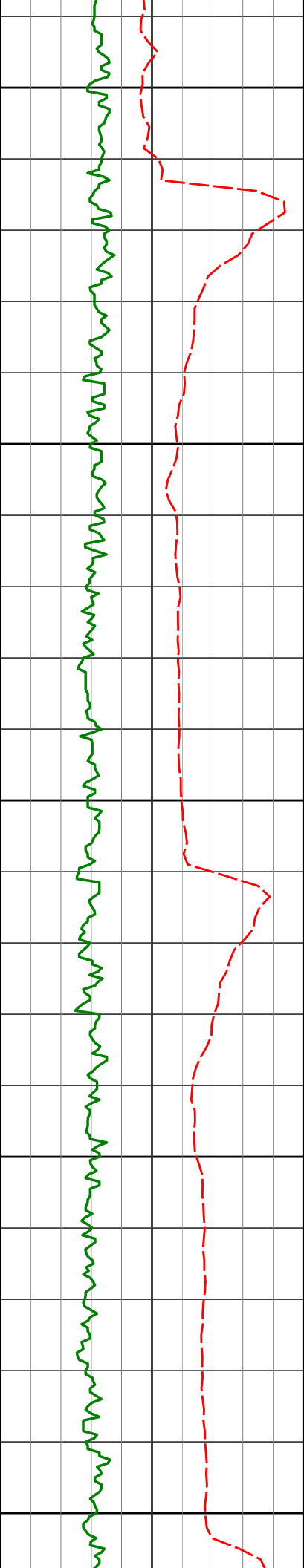
277.54°

5878.13'

-189.04'



5989'	1.07°	299.06°	5973.12'	-190.34'
6000				
6050				
6084'	0.17°	313.16°	6068.11'	-191.20'
6100				
6150				
6178'	0.46°	301.20°	6162.11'	-191.62'



6200

6250

6300

6350

6400

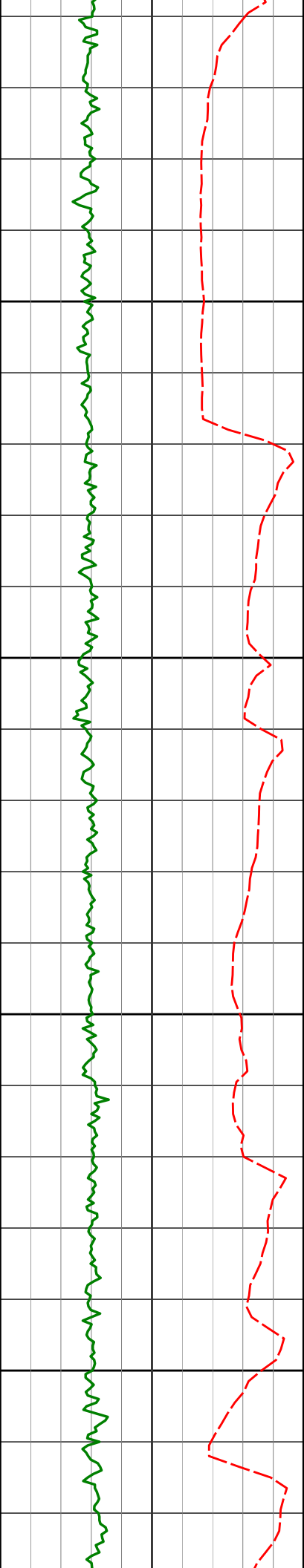
6273'

0.15°

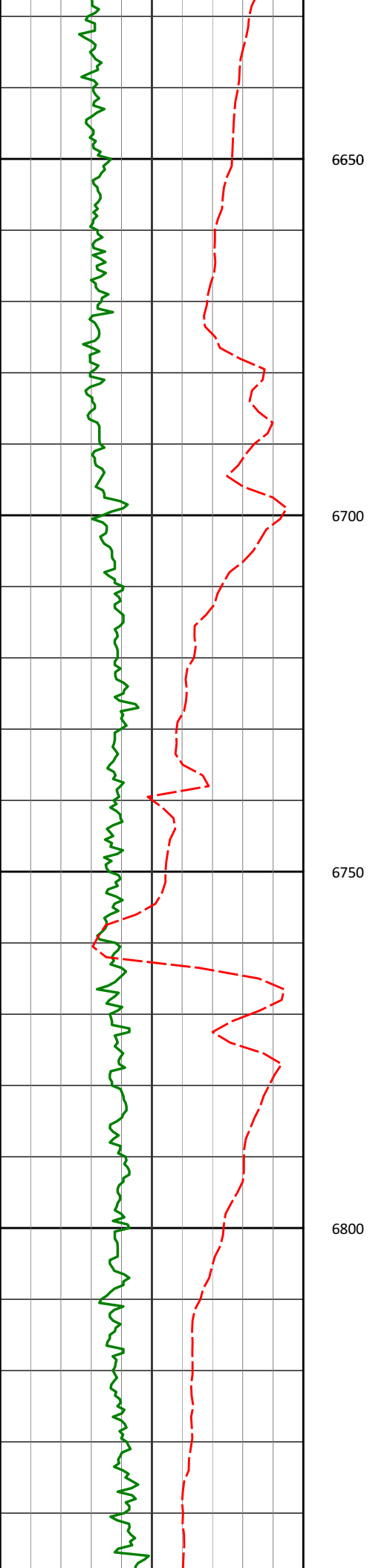
292.83°

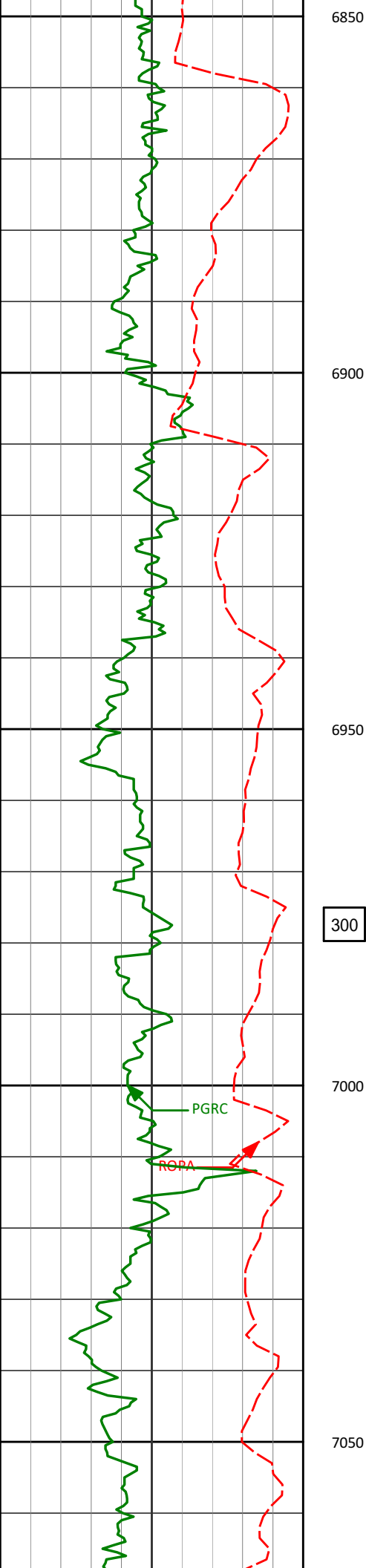
6257.11'

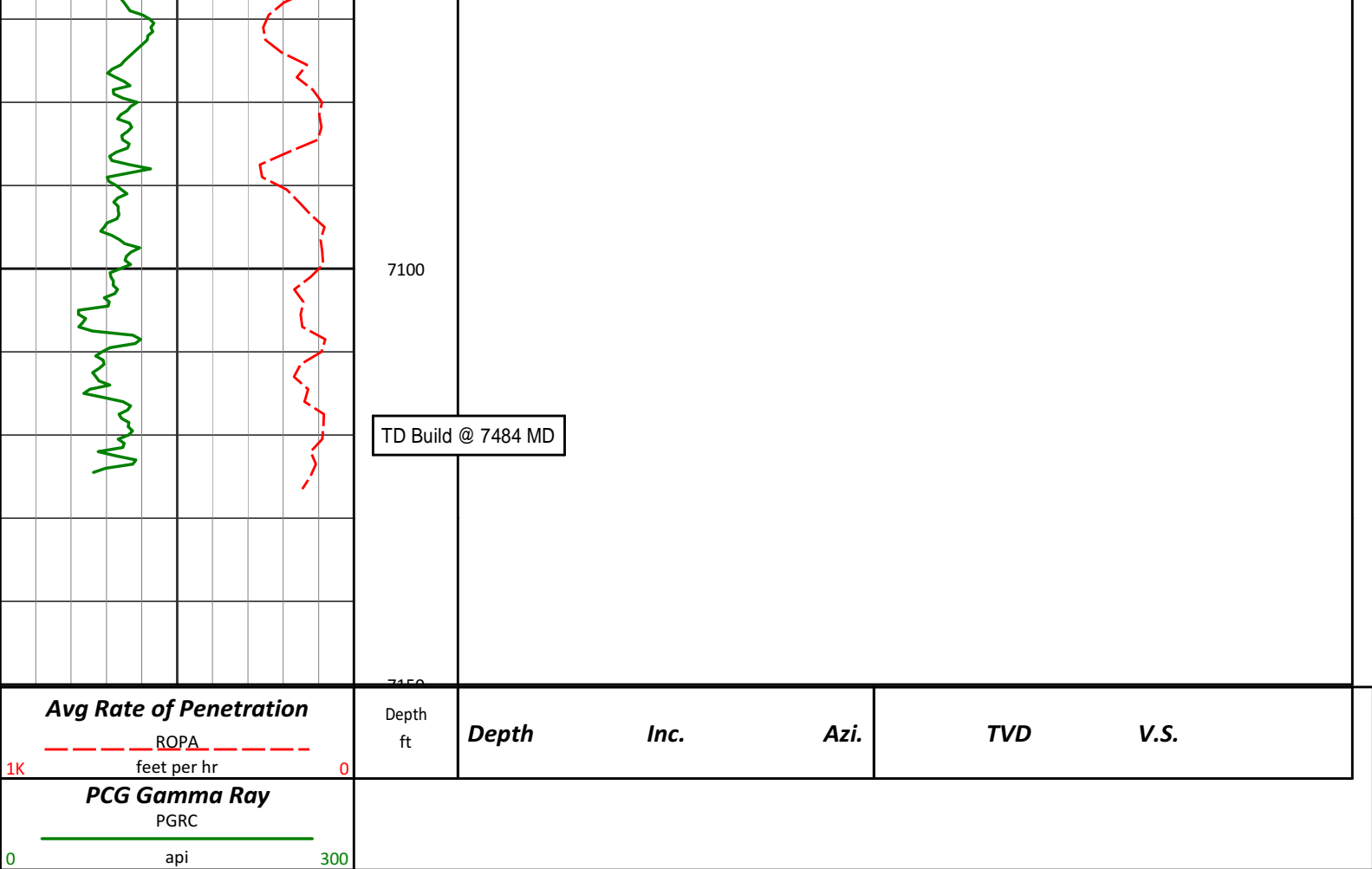
-192.05'



6450	6462'	0.18°	240.44°	6446.11'	-192.54'
6500					
6550	6557'	7.19°	84.56°	6540.86'	-186.73'
6600					







## HALLIBURTON

### DIRECTIONAL SURVEY REPORT

Noble Energy  
Burton K25-69-1HNL  
Wattenburg  
Weld Colorado  
USA  
CA-XX-0901764742

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
812.00	0.37	168.30	811.99	2.57 S	0.53 E	0.47	0.05
904.00	0.48	177.49	903.99	3.24 S	0.61 E	0.53	0.14
997.00	0.79	196.95	996.99	4.25 S	0.44 E	0.33	0.40
1182.00	0.68	180.64	1181.97	6.56 S	0.05 E	-0.11	0.13
1272.00	0.68	181.60	1271.96	7.63 S	0.03 E	-0.16	0.01
1456.00	0.59	183.28	1455.95	9.67 S	0.05 W	-0.30	0.05
1547.00	1.08	324.26	1546.95	9.44 S	0.58 W	-0.82	1.74
1639.00	2.77	323.97	1638.89	6.94 S	2.39 W	-2.57	1.84
1732.00	4.37	312.70	1731.71	2.72 S	6.32 W	-6.39	1.87
1827.00	6.37	308.03	1826.29	2.98 N	13.13 W	-13.05	2.15
1918.00	7.59	304.82	1916.61	9.53 N	22.04 W	-21.79	1.41
2012.00	8.59	304.61	2009.68	17.06 N	32.92 W	-32.47	1.06
2106.00	7.93	305.82	2102.70	24.84 N	43.95 W	-43.30	0.73
2201.00	8.72	308.49	2196.70	33.16 N	54.90 W	-54.03	0.93
2295.00	7.99	306.29	2289.70	41.46 N	65.74 W	-64.66	0.85
2390.00	8.26	308.74	2383.75	49.64 N	76.39 W	-75.09	0.46
2485.00	7.39	307.79	2477.86	57.65 N	86.54 W	-85.03	0.93
2580.00	7.32	313.56	2572.08	65.57 N	95.75 W	-94.04	0.78
2675.00	8.87	314.46	2666.13	74.87 N	105.37 W	-103.41	1.64

2769.00	9.17	314.18	2758.97	85.16 N	115.91 W	-113.69	0.32
2864.00	9.41	314.87	2852.73	95.92 N	126.85 W	-124.34	0.28
2959.00	8.63	313.84	2946.55	106.33 N	137.49 W	-134.72	0.84
3054.00	7.85	314.09	3040.57	115.78 N	147.29 W	-144.27	0.82
3149.00	7.50	312.43	3134.72	124.48 N	156.53 W	-153.28	0.44
3243.00	6.06	311.66	3228.06	131.92 N	164.76 W	-161.32	1.53
3338.00	4.81	315.35	3322.63	138.09 N	171.31 W	-167.71	1.37
3433.00	2.96	317.50	3417.41	142.73 N	175.76 W	-172.05	1.95
3622.00	0.51	331.32	3606.31	147.07 N	179.47 W	-175.63	1.31
3717.00	0.16	129.97	3701.30	147.35 N	179.57 W	-175.73	0.70
3811.00	0.97	163.57	3795.30	146.50 N	179.24 W	-175.42	0.90
3905.00	0.90	167.58	3889.29	145.02 N	178.86 W	-175.08	0.10
4000.00	0.65	169.27	3984.28	143.76 N	178.60 W	-174.85	0.26
4094.00	0.15	271.54	4078.28	143.24 N	178.62 W	-174.89	0.74
4189.00	1.11	286.51	4173.27	143.51 N	179.63 W	-175.89	1.02
4284.00	1.18	299.87	4268.25	144.25 N	181.36 W	-177.60	0.29
4473.00	0.90	332.35	4457.22	146.54 N	183.73 W	-179.91	0.34
4568.00	1.34	330.80	4552.20	148.17 N	184.62 W	-180.76	0.46
4663.00	1.38	290.98	4647.18	149.55 N	186.23 W	-182.33	0.98
4757.00	1.09	273.74	4741.16	150.01 N	188.18 W	-184.27	0.50
4947.00	0.34	122.71	4931.15	149.82 N	189.51 W	-185.60	0.74
5042.00	0.25	132.17	5026.15	149.53 N	189.12 W	-185.22	0.11
5136.00	0.22	185.86	5120.14	149.22 N	188.99 W	-185.10	0.23
5231.00	0.26	249.99	5215.14	148.96 N	189.21 W	-185.32	0.27
5326.00	0.33	275.36	5310.14	148.91 N	189.68 W	-185.80	0.15
5515.00	0.47	323.50	5499.14	149.59 N	190.69 W	-186.78	0.19
5610.00	0.35	179.61	5594.14	149.61 N	190.91 W	-187.01	0.82
5704.00	0.56	276.46	5688.14	149.37 N	191.37 W	-187.47	0.74
5799.00	0.35	275.74	5783.13	149.46 N	192.12 W	-188.22	0.22
5894.00	0.65	277.54	5878.13	149.56 N	192.94 W	-189.04	0.32
5989.00	1.07	299.06	5973.12	150.06 N	194.25 W	-190.34	0.55
6084.00	0.17	313.16	6068.11	150.58 N	195.13 W	-191.20	0.95
6178.00	0.46	301.20	6162.11	150.87 N	195.55 W	-191.62	0.31
6273.00	0.15	292.83	6257.11	151.12 N	196.00 W	-192.05	0.33
6462.00	0.18	240.44	6446.11	151.07 N	196.48 W	-192.54	0.08
6557.00	7.19	84.56	6540.86	151.56 N	190.69 W	-186.73	7.74
6651.00	12.85	88.95	6633.39	152.31 N	174.36 W	-170.40	6.07
6746.00	19.79	91.18	6724.51	152.17 N	147.69 W	-143.74	7.33
6841.00	26.16	93.44	6811.93	150.58 N	110.67 W	-106.77	6.77
6935.00	33.32	91.91	6893.50	148.48 N	64.12 W	-60.29	7.66
6983.00	36.54	89.28	6932.85	148.22 N	36.65 W	-32.83	7.40
7030.00	42.61	89.22	6969.06	148.61 N	6.72 W	-2.91	12.92
7078.00	49.95	88.18	7002.21	149.42 N	27.94 E	31.76	15.37
7125.00	56.87	87.10	7030.21	150.98 N	65.62 E	69.47	14.84
7173.00	64.59	86.83	7053.66	153.20 N	107.40 E	111.29	16.09
7220.00	68.16	88.96	7072.50	154.77 N	150.42 E	154.34	8.66
7268.00	71.37	91.61	7089.10	154.54 N	195.45 E	199.35	8.46
7315.00	75.72	92.26	7102.41	153.01 N	240.48 E	244.33	9.35
7363.00	78.18	92.83	7113.25	150.94 N	287.19 E	290.97	5.25
7430.00	84.45	90.10	7123.36	149.26 N	353.37 E	357.08	10.19

**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 88.53 DEGREES (GRID)  
A TOTAL CORRECTION OF 7.97 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.  
HORIZONTAL DISPLACEMENT(CLOSURE) AT 7430.00 FEET  
IS 383.59 FEET ALONG 67.10 DEGREES (GRID)**

**Tied in @ Surface**