

PCGK - Pressure Case Gamma

1 : 600 / 1 : 240

[illegible]

WELL INFORMATION

MWD Run Number	100	200			
Date run completed	22-Jun-14	23-Jun-14			
Rig Bit Number	2	3			
Bit Size (in)	8.750	8.750			
Tool Nominal OD (in)	6.840	6.840			
Log Start Depth (MD, ft)	875.00	6,057.00			
Log End Depth (MD, ft)	6,057.00	7,097.00			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	15-Jun-14 11:44	23-Jun-14 03:56			
Drill/Wipe End Date and Time	15-Jun-14 11:44	23-Jun-14 12:57			
Min Inc (deg) @ Depth (MD, ft)	0.07 @ 5,527.00	0.44 @ 6,096.00			
Max Inc (deg) @ Depth (MD, ft)	1.20 @ 3,441.00	85.90 @ 7,043.00			
Bit TFA(in2) / Bit Type	0.98 / PDC	1.74 / PDC			
Flow Rate (gpm)	596.57	595.00			
Max AV (fpm) / CV (fpm) @ MWD	NA / 0.0	NA / NA			
Fluid Type	Native/Spud Mud	Native/Spud Mud			
Density (ppg) / Viscosity (spqt)	8.90 / 31.00	9.80 / 45.00			
Filtrate CL (ppm)	NA	NA			
pH / Fluid Loss (mptm)	9.20 / 14	9.00 / 6			
PV (cP) / YP (lbf2)	4 / 2.00	10 / 11.00			
% Solids / % Sand	3.80 / 0.60	7.20 / 0.30			
% Oil / Oil:Water Ratio	NA / NA	NA / NA			
Rm @ Measured Temp (degF)	NA @ NA	NA @ NA			
Rmf @ Measured Temp (degF)	NA @ NA	NA @ NA			
Rmc @ Measured Temp (degF)	@ NA	NA @ NA			
Max Tool Temp (in F) / C	150.45 / 66.36	150.45 / 66.36			

Max Tool Temp (degF) / Source	158.47 / PCM	158.47 / PCM			
Rm @ Max Tool Temp (degF)	NA @ 158.47	NA @ 158.47			
Lead MWD Engineer	Kyle Wass	Kyle Wass			
Customer Representative	Stetson Nielsen	Stetson Nielsen			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.84	5.76			
Sub Serial Number	12365886	12365886			
Insert Serial Number	11145581	11145581			
Date and Time Initialized	20-Jun-14 14:24	01-Jan-70 00:00			
Date and Time Read	01-Jan-70 00:00	23-Jun-14 17:37			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	56.00	54.00			
Software Version	6.21	6.21			
Sub Serial Number	12365886	12365886			
Sonde Serial Number	11638573	11638573			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	58.58	217.81			

Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	49.03	46.42			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	12365886	12365886			
Insert/Sonde Serial Number	11120591	11120591			

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: 0.5 ft
Interval Distance: 1.2 ft

6. Insite Version V8.0.10

WARRANTY

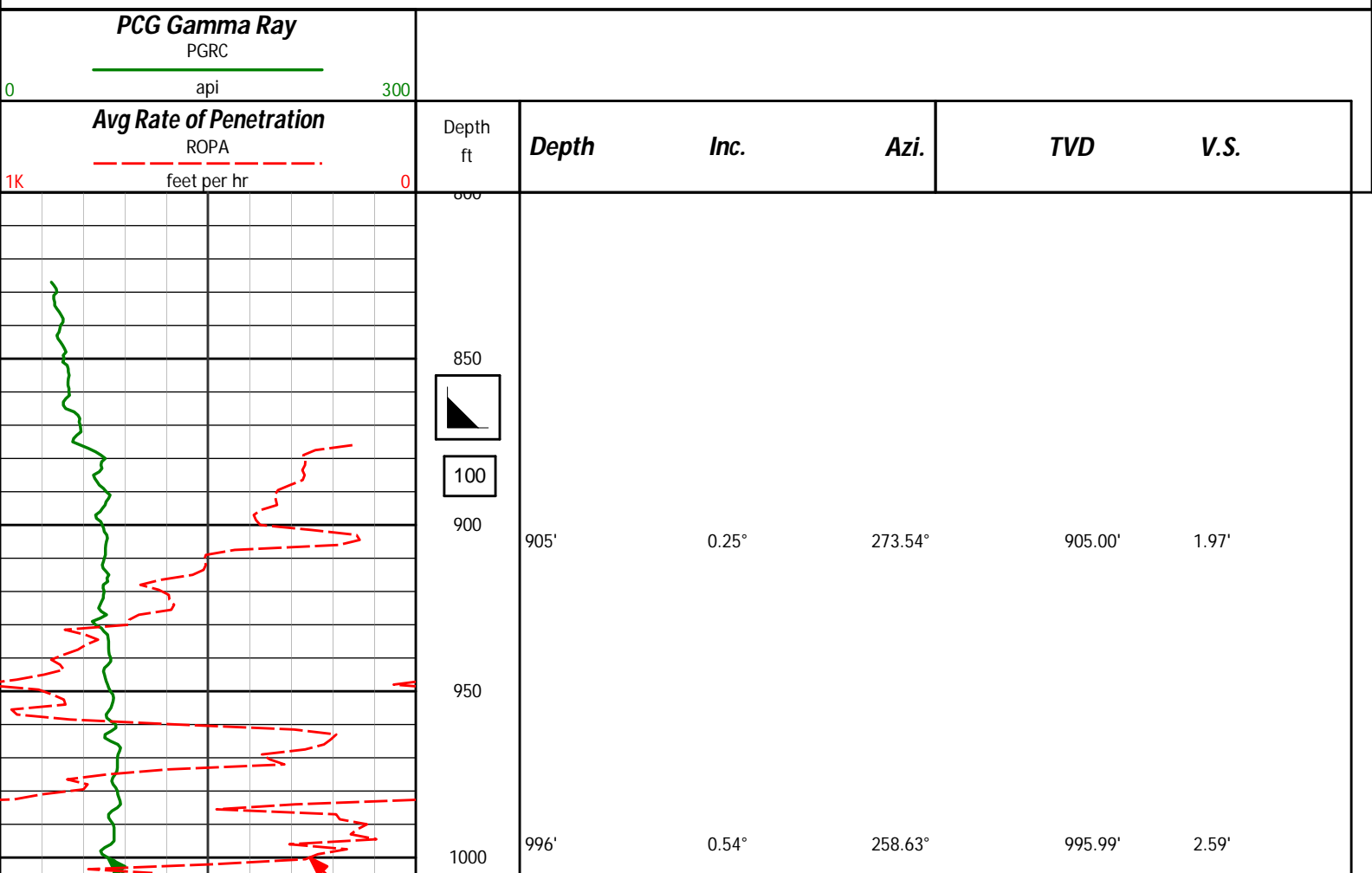
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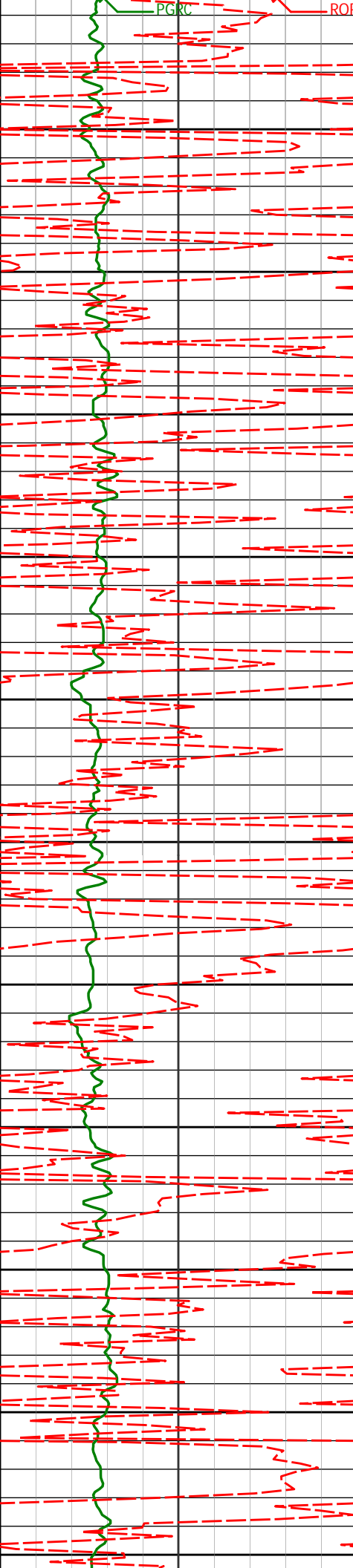
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Sperry Drilling Services

TVD Correlation Log 1:600

Noble Energy
NCLP AA06-69-1BHNC
H&P 321
Sec. 4-T6N-R63W





1050

1089'

0.68°

253.44°

1088.99'

3.54'

1100

1150

1182'

0.64°

263.89°

1181.98'

4.59'

1200

1250

1274'

0.59°

260.65°

1273.98'

5.56'

1300

1350

1365'

0.73°

259.25°

1364.97'

6.59'

1400

1450

1457'

0.68°

255.15°

1456.97'

7.69'

1500

1550

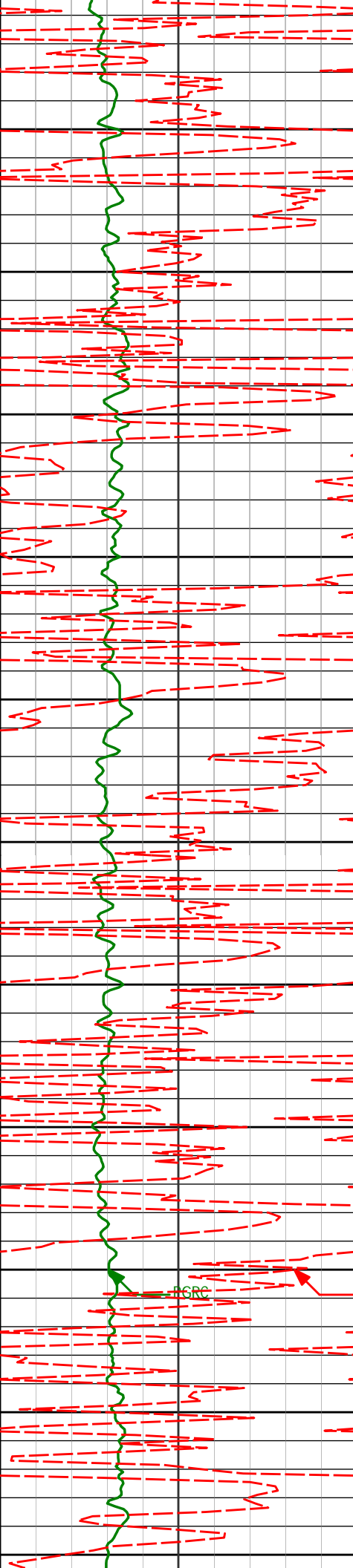
1549'

0.42°

225.95°

1548.96'

8.45'



1600
1650
1700
1750
1800
1850
1900
1950
2000
2050
2100

1641'
1736'
1831'
1926'
2020'

0.31°
0.16°
0.37°
0.32°
0.49°

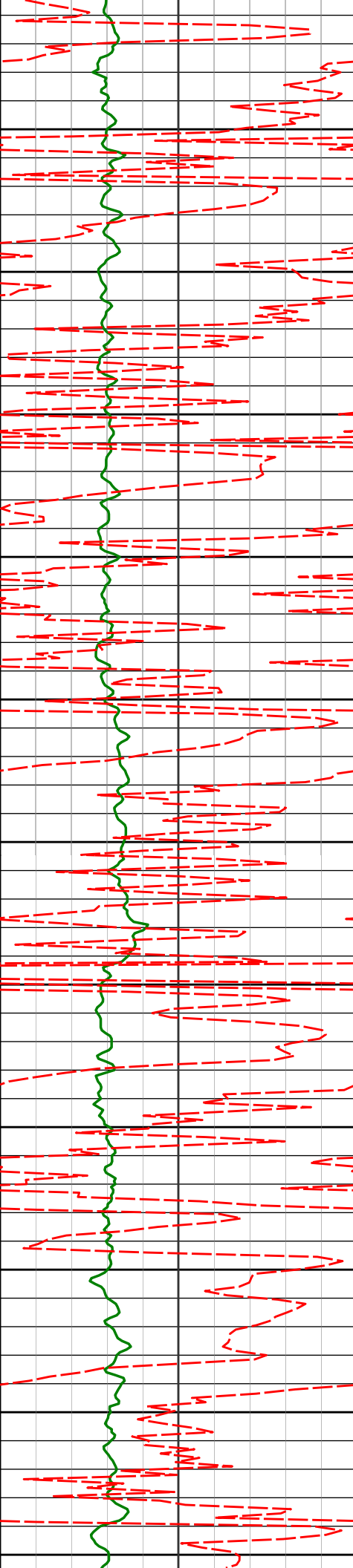
226.83°
295.66°
144.26°
136.38°
169.59°

1640.96'
1735.96'
1830.96'
1925.96'
2019.95'

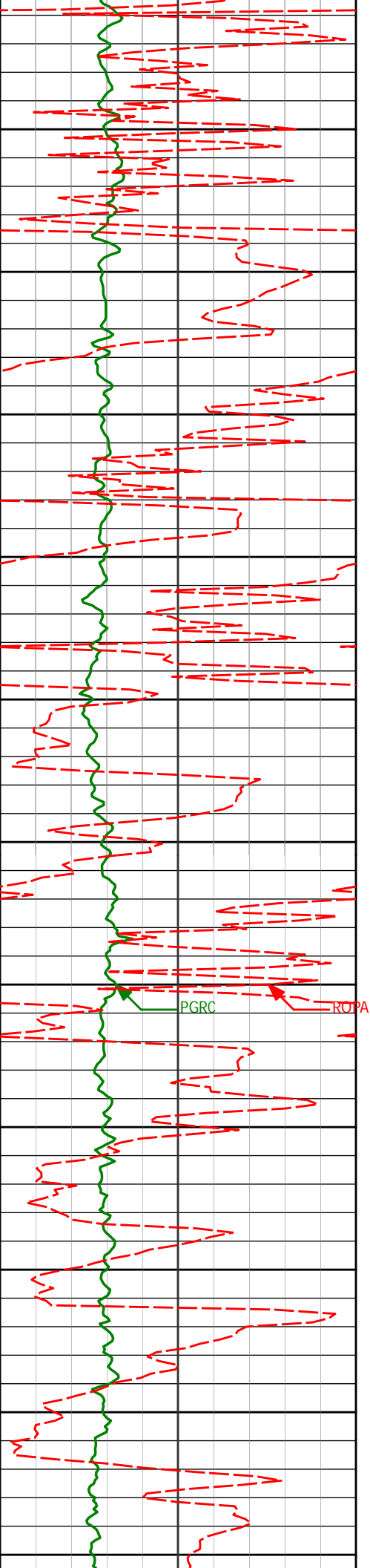
8.87'
9.17'
9.11'
8.74'
8.47'

RGRC

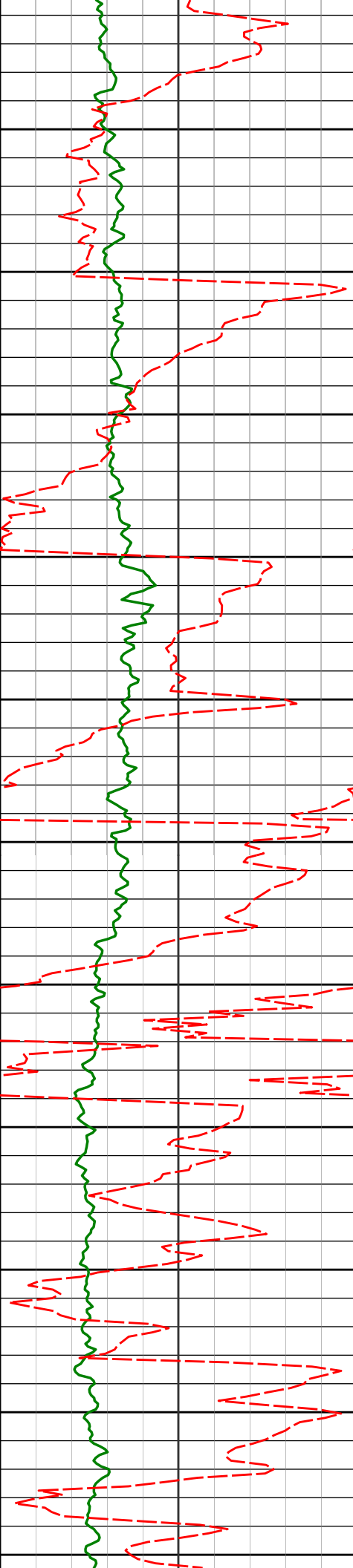
ROPA



2115'	0.42°	91.37°	2114.95'	8.05'
2150				
2200				
2210'	0.61°	96.75°	2209.95'	7.19'
2250				
2300				
2304'	0.79°	87.91°	2303.94'	6.05'
2350				
2400				
2399'	1.16°	100.85°	2398.93'	4.45'
2450				
2494'	1.15°	13.35°	2493.91'	3.30'
2500				
2550				
2589'	0.76°	271.26°	2588.91'	3.72'
2600				
2650				



2683'	0.99°	288.90°	2682.89'	5.12'
2700				
2750				
2778'	0.51°	90.31°	2777.89'	5.48'
2800				
2850				
2873'	0.38°	94.00°	2872.89'	4.74'
2900				
2950				
2968'	0.36°	97.72°	2967.89'	4.13'
3000				
3063'	0.45°	90.39°	3062.88'	3.46'
3100				
3150				
3157'	0.34°	102.53°	3156.88'	2.82'
3200				



3250

3252'

0.16°

173.34°

3251.88'

2.52'

3300

3350

3346'

0.49°

155.84°

3345.88'

2.34'

3400

3450

3441'

1.20°

163.20°

3440.87'

1.86'

3500

3550

3536'

0.79°

290.09°

3535.86'

2.17'

3600

3650

3631'

1.08°

307.00°

3630.85'

3.52'

3700

3750

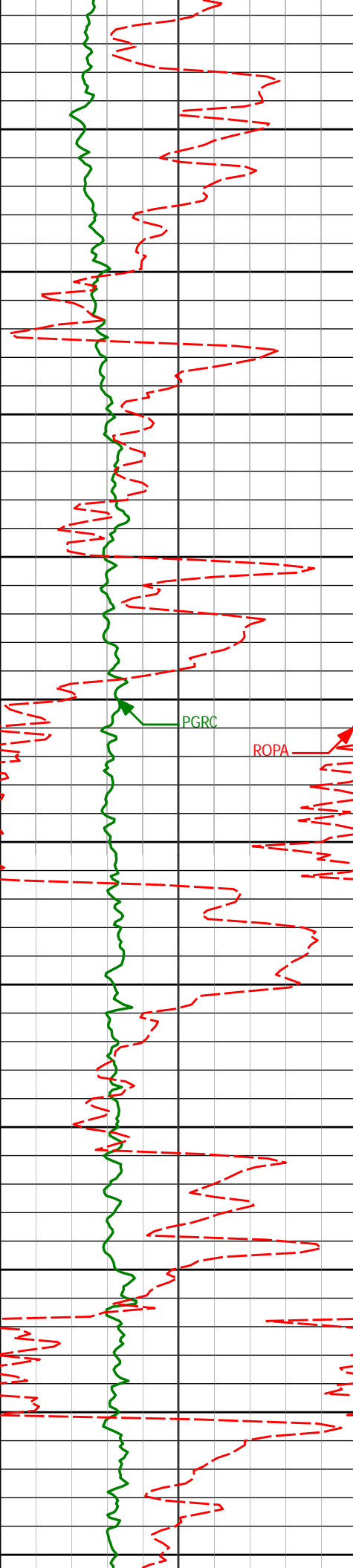
3726'

0.37°

25.54°

3725.84'

4.11'



3800

3820'

0.48°

58.17°

3819.84'

3.66'

3850

3900

3915'

0.67°

66.47°

3914.83'

2.82'

3950

4000

4010'

1.03°

61.19°

4009.82'

1.57'

4050

4100

4105'

0.40°

82.15°

4104.82'

0.50'

4150

4200

4200'

0.25°

170.27°

4199.81'

0.14'

4250

4294'

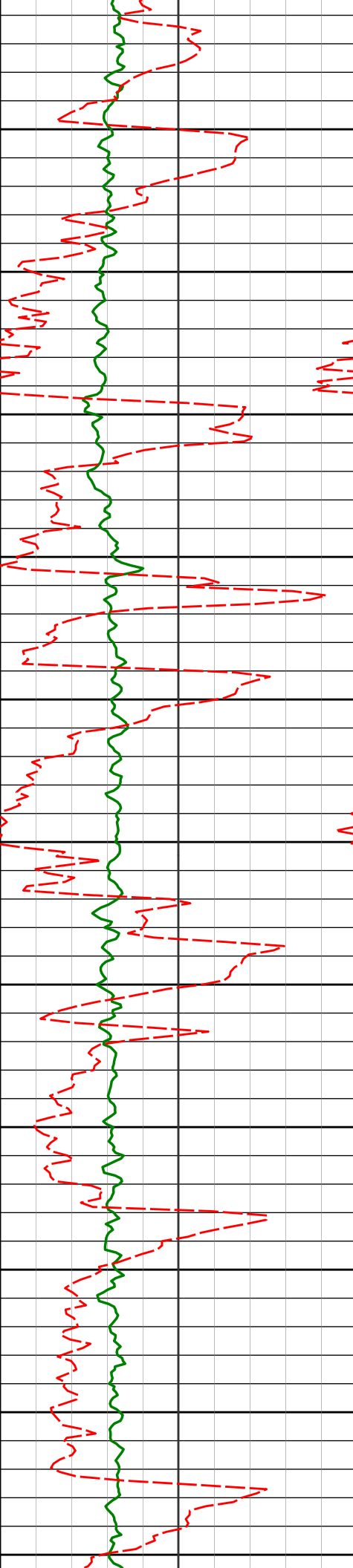
0.92°

148.10°

4293.81'

-0.31'

4300



4350

4389'

0.38°

180.08°

4388.80'

-0.73'

4400

4450

4484'

0.25°

188.84°

4483.80'

-0.71'

4500

4550

4579'

0.44°

170.60°

4578.80'

-0.75'

4600

4650

4674'

0.53°

110.79°

4673.80'

-1.23'

4700

4750

4769'

0.21°

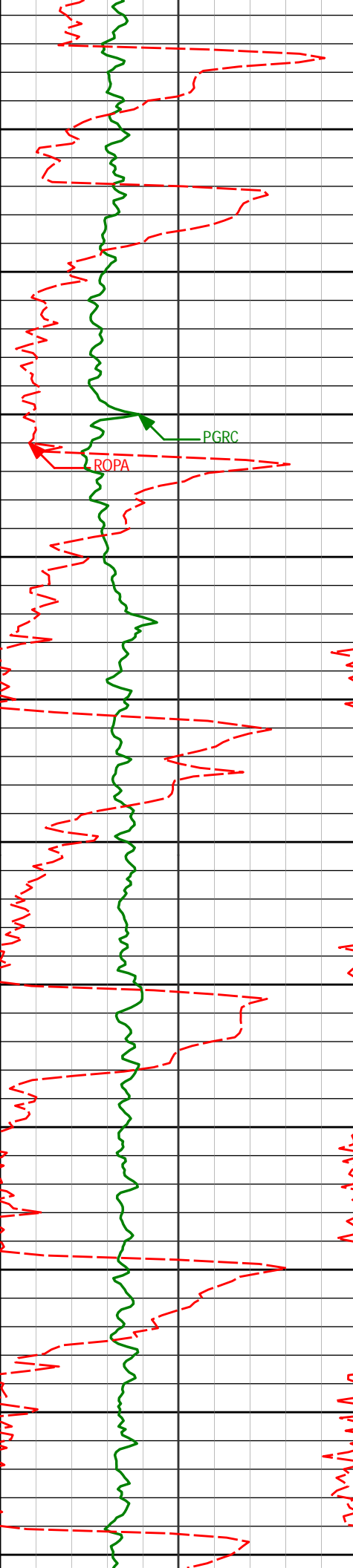
143.15°

4768.80'

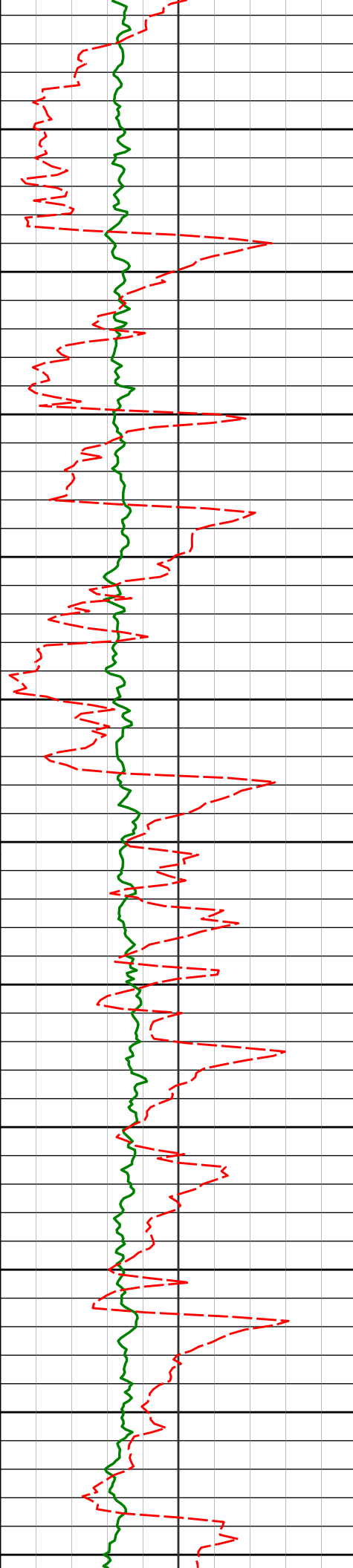
-1.75'

4800

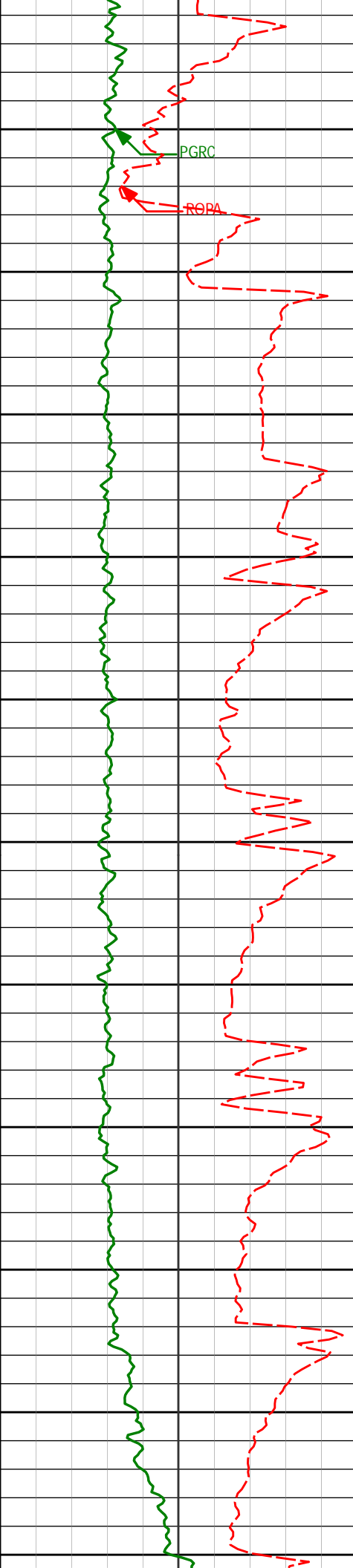
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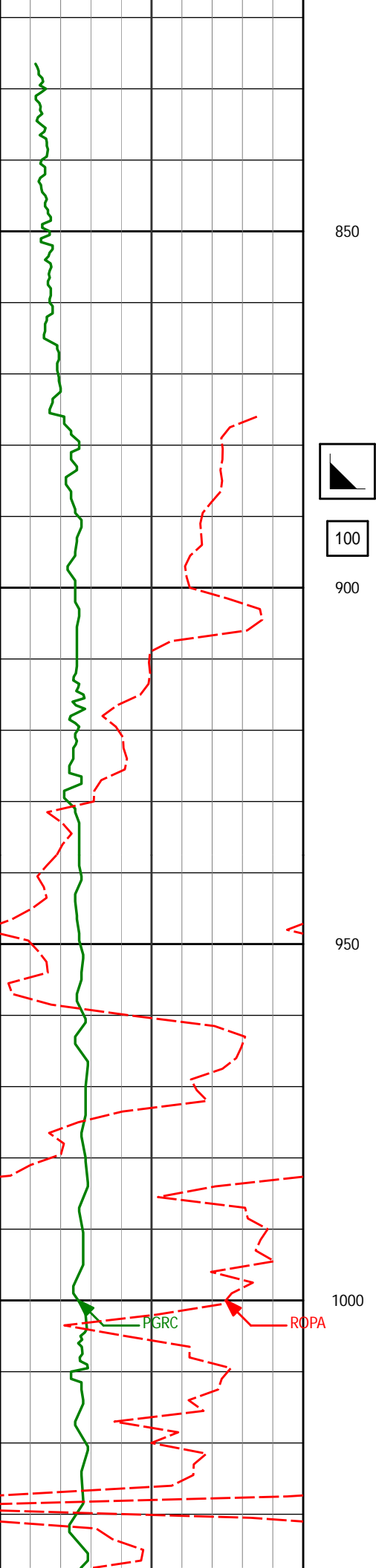
4864'	0.22°	233.77°	4863.79'	-1.71'
4900				
4950				
4958'	0.33°	203.08°	4957.79'	-1.46'
5000				
5050				
5053'	0.26°	211.13°	5052.79'	-1.25'
5100				
5148'	0.18°	230.48°	5147.79'	-1.03'
5200				
5243'	0.34°	198.56°	5242.79'	-0.83'
5300				
5338'	0.53°	258.33°	5337.79'	-0.32'
5350				
5400				



	5433'	0.54°	264.64°	5432.78'	0.55'
5450					
5500					
	5527'	0.07°	333.08°	5526.78'	1.02'
5550					
5600					
	5622'	0.22°	41.31°	5621.78'	0.93'
5650					
5700					
	5717'	0.17°	343.58°	5716.78'	0.86'
5750					
5800					
	5811'	0.19°	17.53°	5810.78'	0.85'
5850					
5900	5906'	0.25°	344.46°	5905.78'	0.87'
5950					



6000	6001'	0.39°	11.44°	6000.78'	0.87'
6050	6064'	0.50°	358.95°	6063.78'	0.84'
6100	6096'	0.44°	2.43°	6095.78'	0.84'
6150					
6200	6191'	6.44°	266.72°	6190.58'	6.15'
6250					
6300	6285'	13.77°	280.04°	6283.07'	22.48'
6350					
6400	6380'	19.78°	277.91°	6373.98'	49.63'
6450	6475'	32.55°	274.04°	6459.08'	91.29'
6500					



905'

0.25°

273.54°

905.00'

1.97'

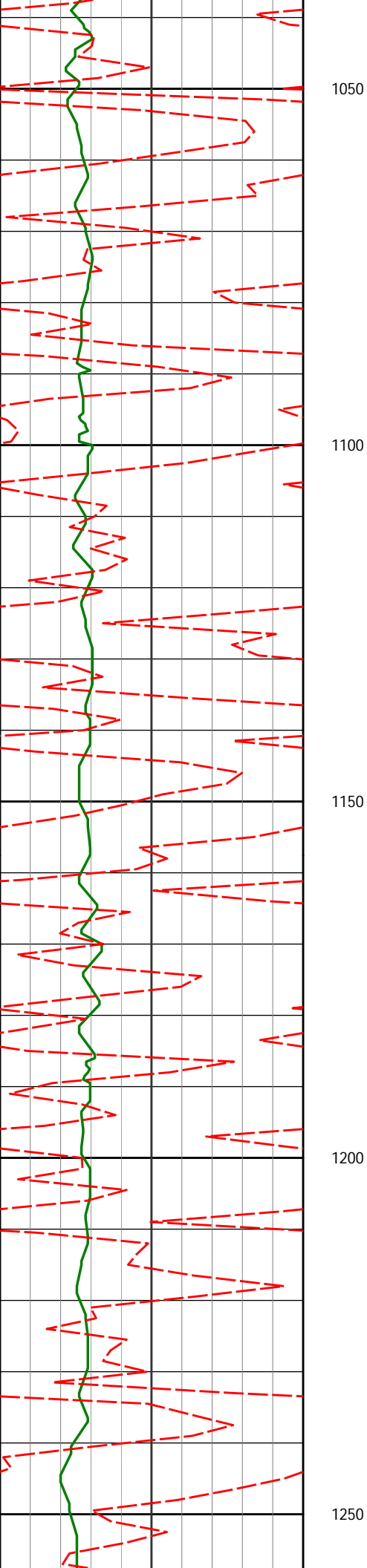
996'

0.54°

258.63°

995.99'

2.59'



1089'

0.68°

253.44°

1088.99'

3.54'

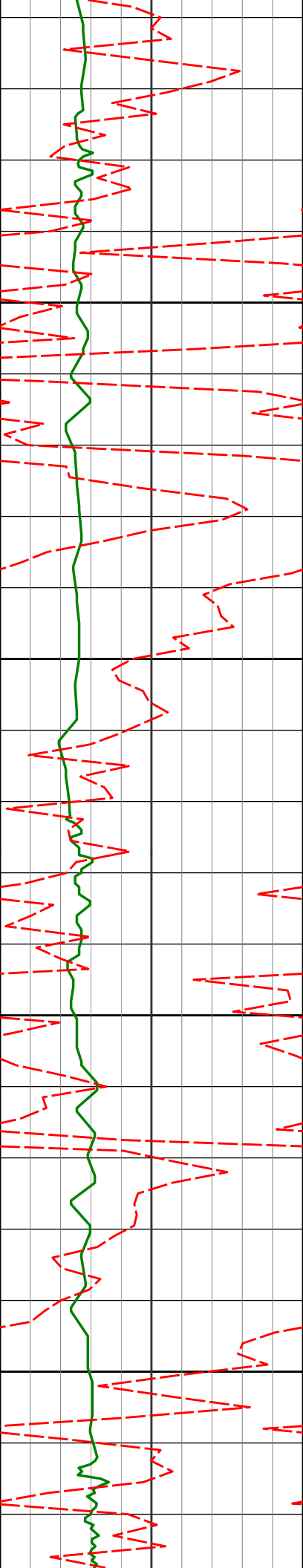
1182'

0.64°

263.89°

1181.98'

4.59'



1274'

0.59°

260.65°

1273.98'

5.56'

1300

1350

1365'

0.73°

259.25°

1364.97'

6.59'

1400

1450

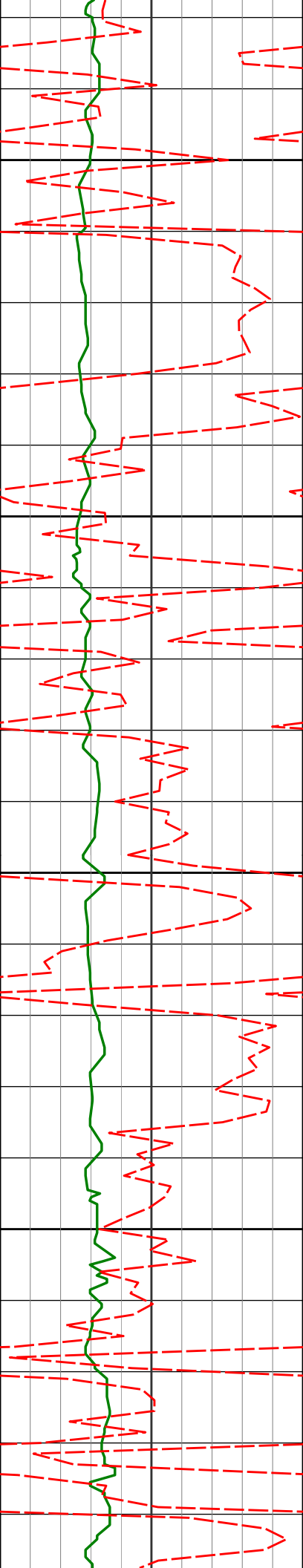
1457'

0.68°

255.15°

1456.97'

7.69'



1500

1550

1600

1650

1549'

0.42°

225.95°

1548.96'

8.45'

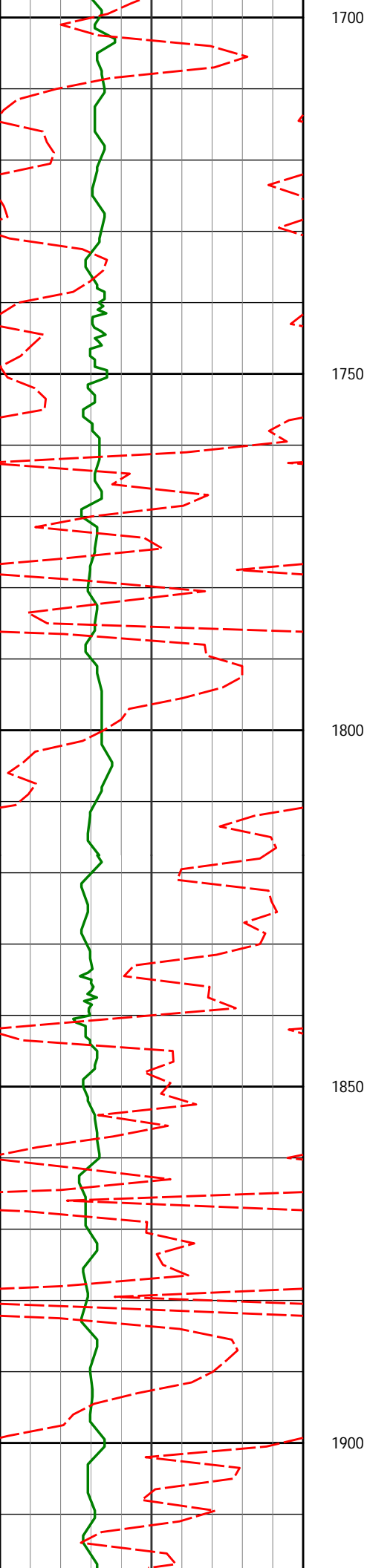
1641'

0.31°

226.83°

1640.96'

8.87'



1736'

0.16°

295.66°

1735.96'

9.17'

1750

1800

1831'

0.37°

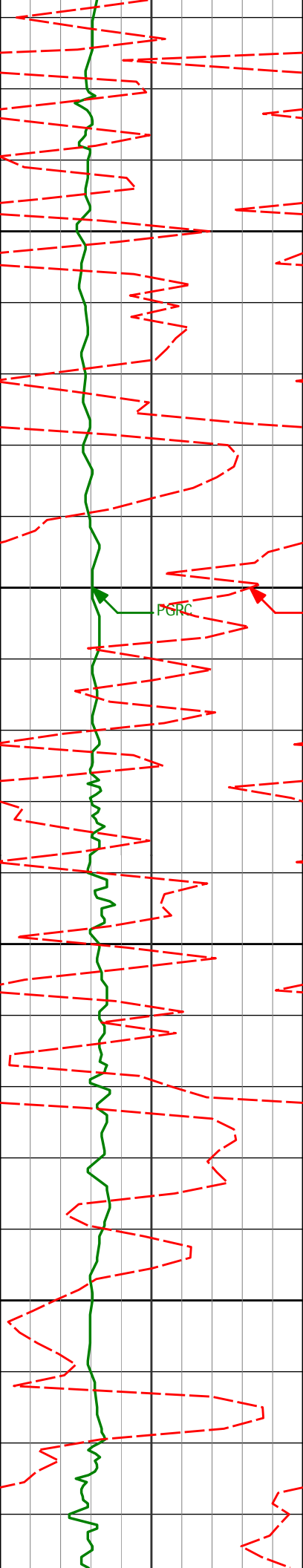
144.26°

1830.96'

9.11'

1850

1900



1926'

0.32°

136.38°

1925.96'

8.74'

1950

2000

PGRC

ROPA

2020'

0.49°

169.59°

2019.95'

8.47'

2050

2100

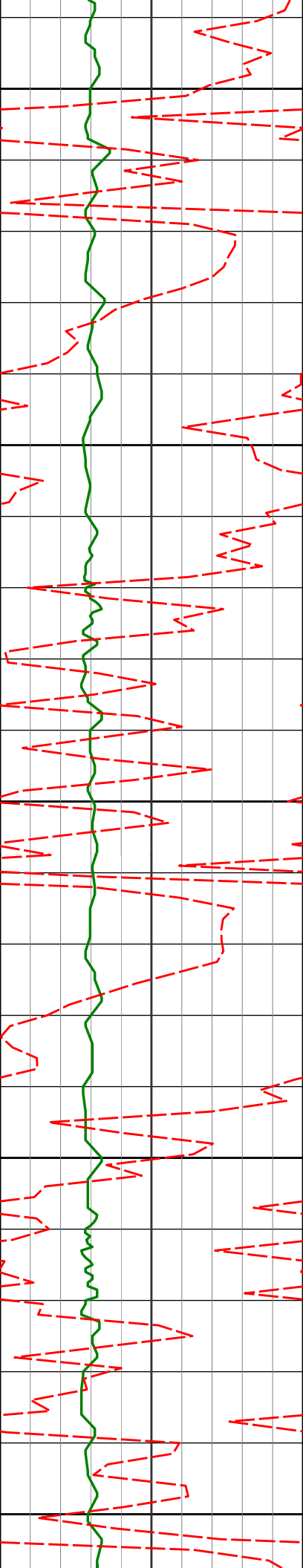
2115'

0.42°

91.37°

2114.95'

8.05'



2150

2200

2250

2300

2350

2210'

0.61°

96.75°

2209.95'

7.19'

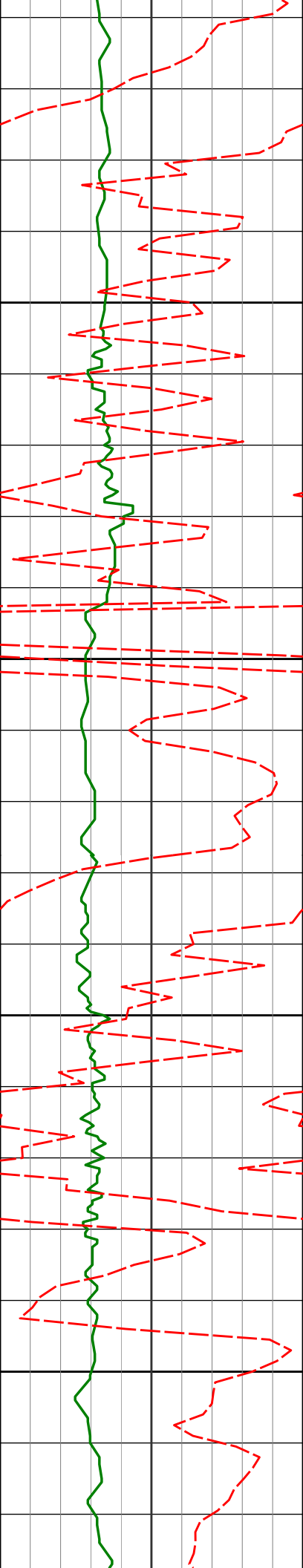
2304'

0.79°

87.91°

2303.94'

6.05'



2400

2450

2500

2550

2399'

2494'

1.16°

1.15°

100.85°

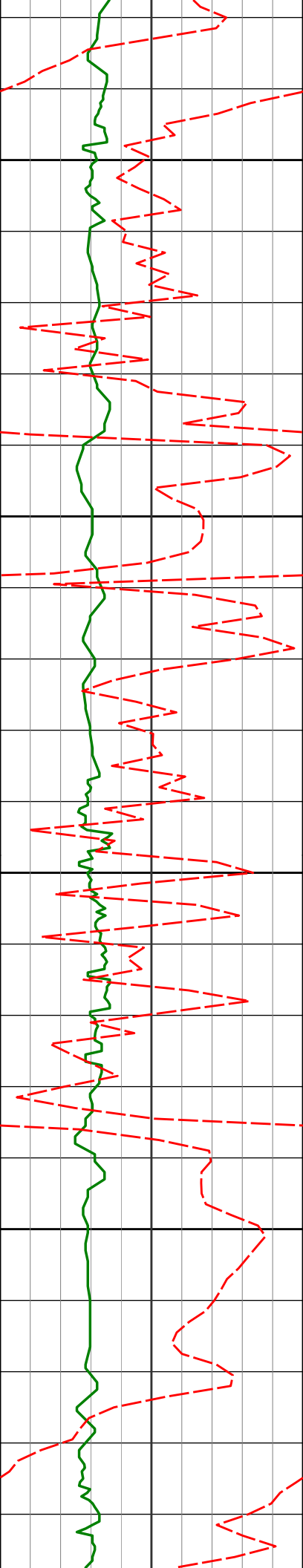
13.35°

2398.93'

2493.91'

4.45'

3.30'



2589'

0.76°

271.26°

2588.91'

3.72'

2600

2650

2683'

0.99°

288.90°

2682.89'

5.12'

2700

2750

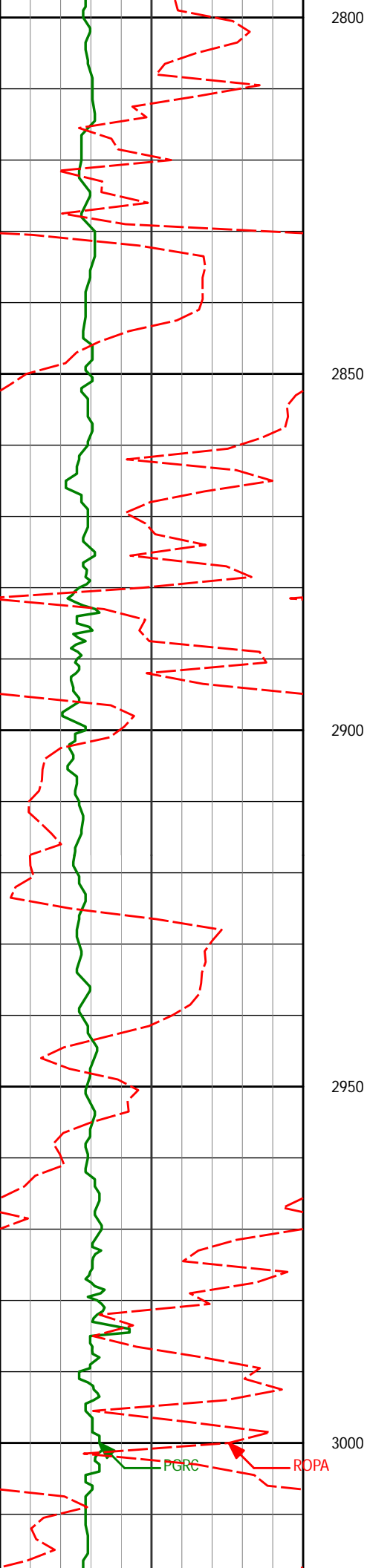
2778'

0.51°

90.31°

2777.89'

5.48'



2873'

0.38°

94.00°

2872.89'

4.74'

2850

2900

2950

2968'

0.36°

97.72°

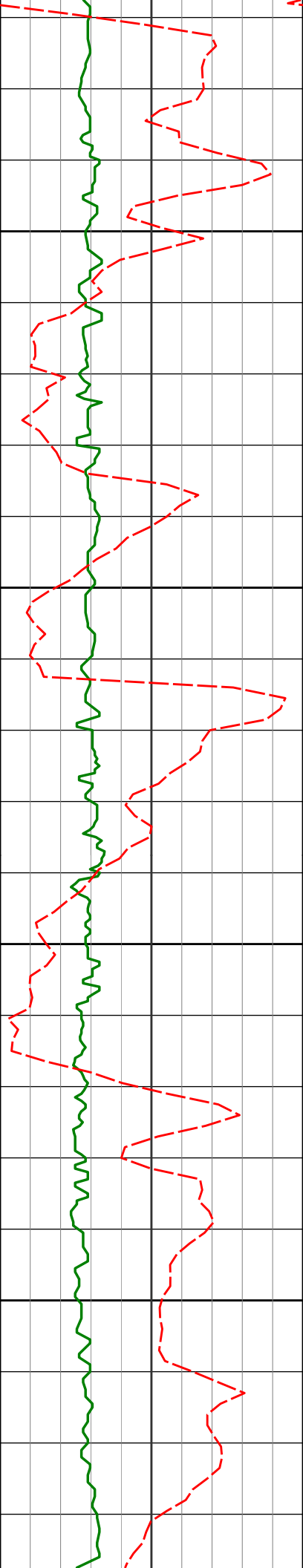
2967.89'

4.13'

3000

PGRC

RDPA



3050

3063'

0.45°

90.39°

3062.88'

3.46'

3100

3150

3157'

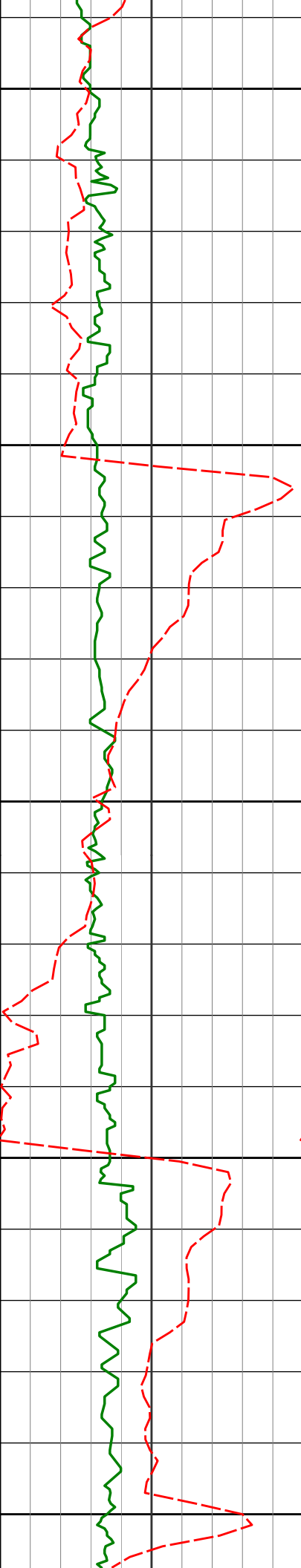
0.34°

102.53°

3156.88'

2.82'

3200



3250

3252'

0.16°

173.34°

3251.88'

2.52'

3300

3350

3346'

0.49°

155.84°

3345.88'

2.34'

3400

3450

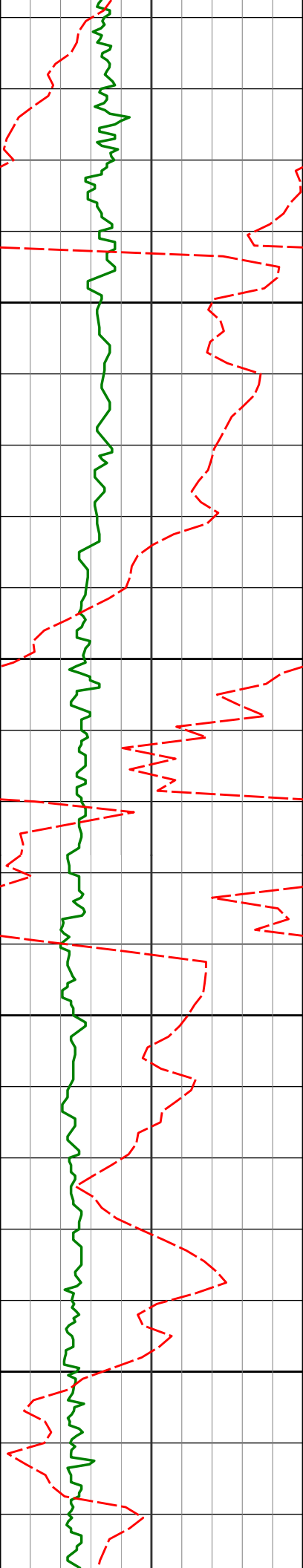
3441'

1.20°

163.20°

3440.87'

1.86'



3500

3550

3600

3650

3536'

0.79°

290.09°

3535.86'

2.17'

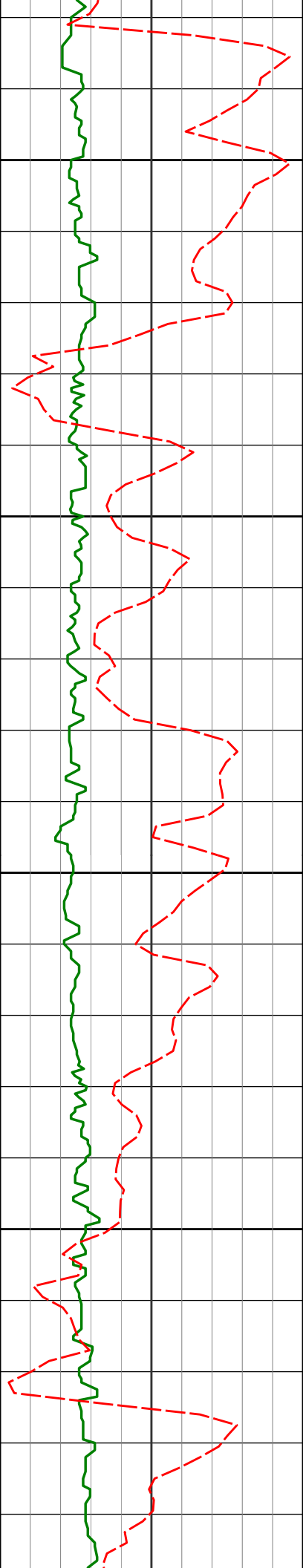
3631'

1.08°

307.00°

3630.85'

3.52'



3700

3750

3800

3850

3726'

0.37°

25.54°

3725.84'

4.11'

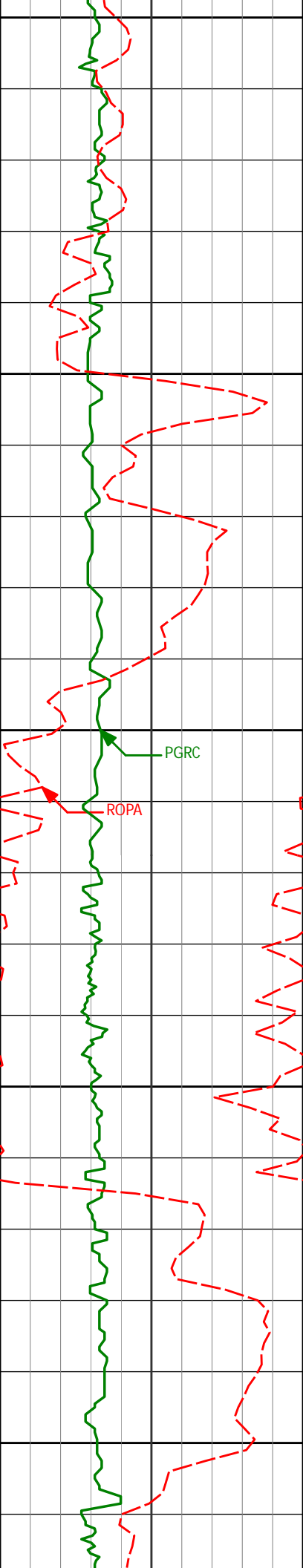
3820'

0.48°

58.17°

3819.84'

3.66'



3900

3915'

0.67°

66.47°

3914.83'

2.82'

3950

4000

PGRC

4010'

1.03°

61.19°

4009.82'

1.57'

ROPA

4050

4100

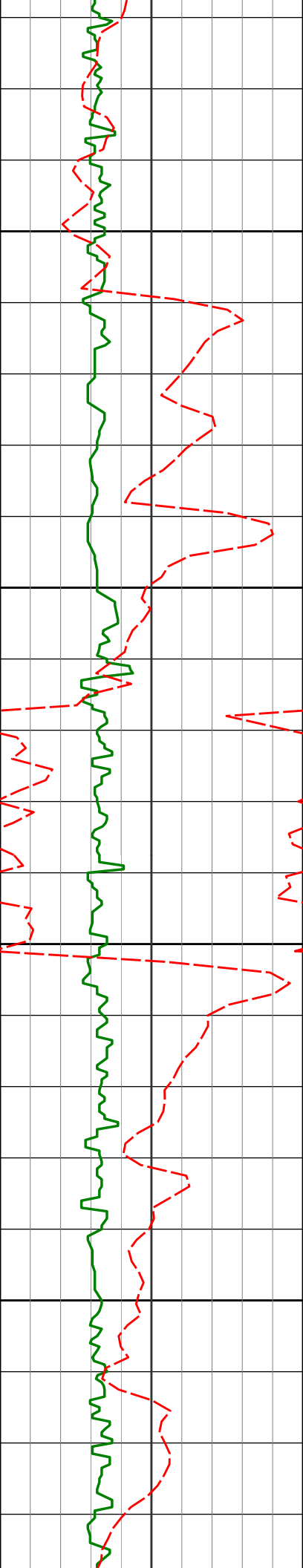
4105'

0.40°

82.15°

4104.82'

0.50'



4150

4200

4250

4300

4200'

4294'

0.25°

0.92°

170.27°

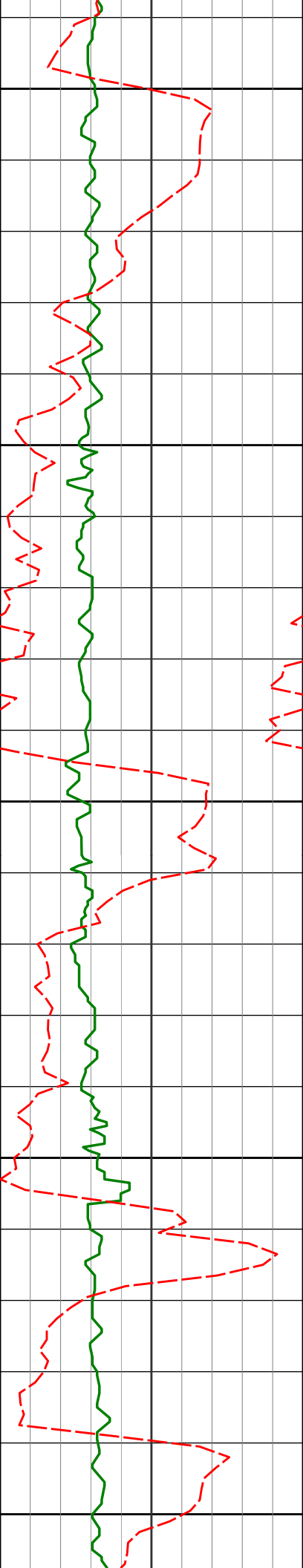
148.10°

4199.81'

4293.81'

0.14'

-0.31'



4350

4389'

0.38°

180.08°

4388.80'

-0.73'

4400

4450

4484'

0.25°

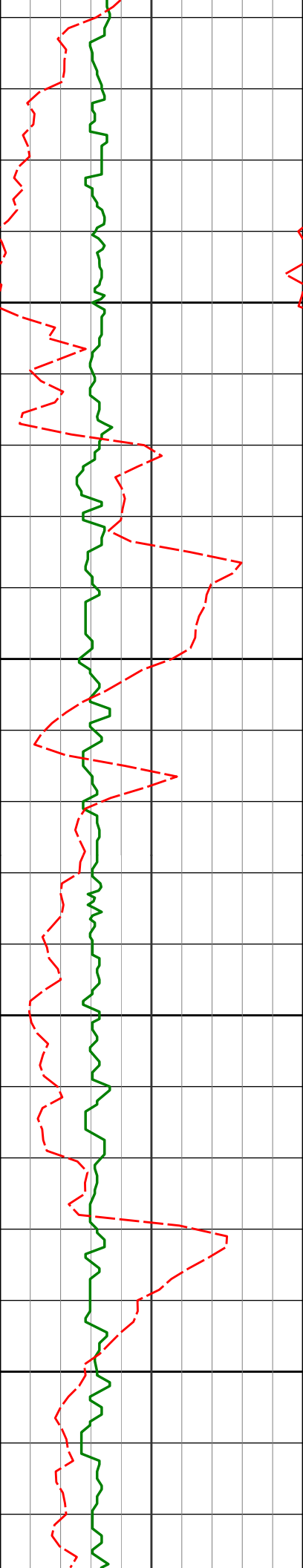
188.84°

4483.80'

-0.71'

4500

4550



4579'

0.44°

170.60°

4578.80'

-0.75'

4600

4650

4674'

0.53°

110.79°

4673.80'

-1.23'

4700

4750

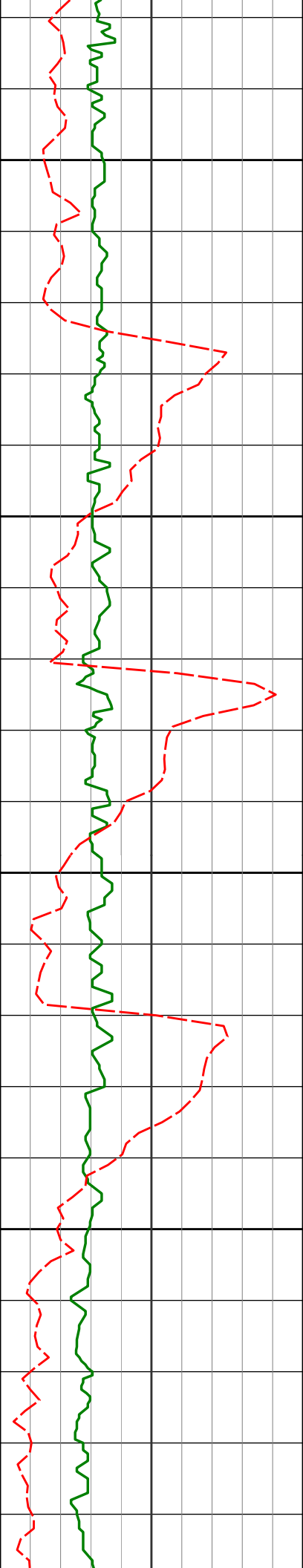
4769'

0.21°

143.15°

4768.80'

-1.75'



4800

4850

4900

4950

4864'

0.22°

233.77°

4863.79'

-1.71'

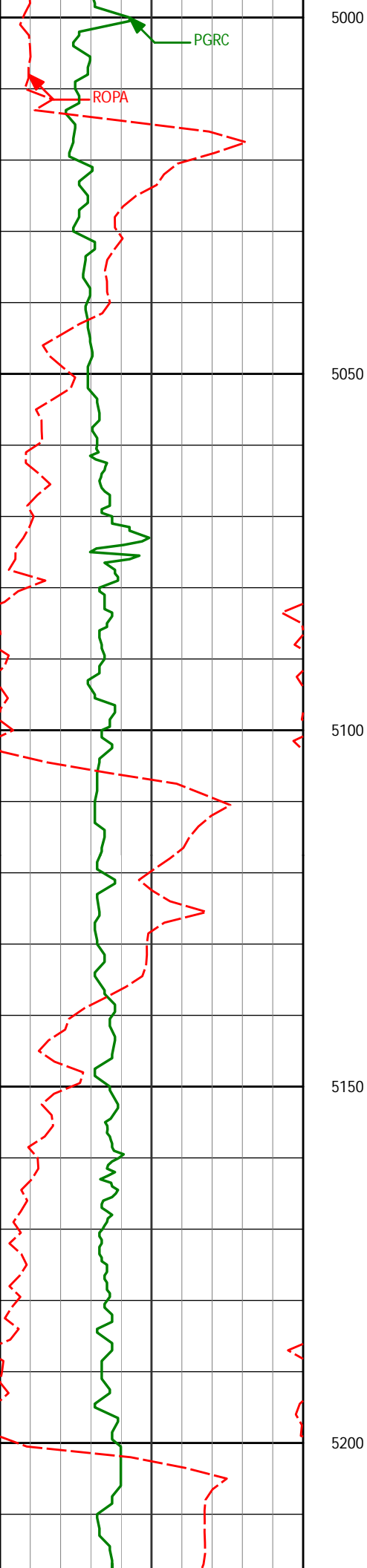
4958'

0.33°

203.08°

4957.79'

-1.46'



5053'

0.26°

211.13°

5052.79'

-1.25'

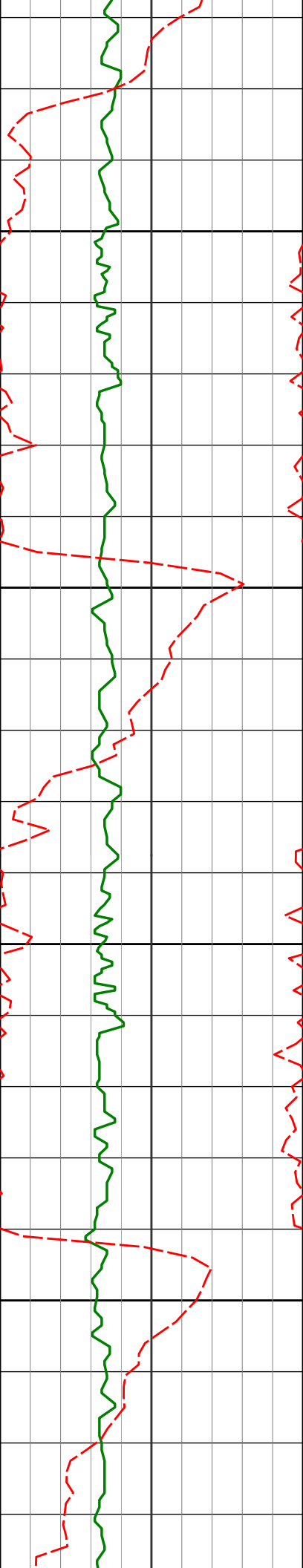
5148'

0.18°

230.48°

5147.79'

-1.03'



5243'

0.34°

198.56°

5242.79'

-0.83'

5250

5300

5338'

0.53°

258.33°

5337.79'

-0.32'

5350

5400

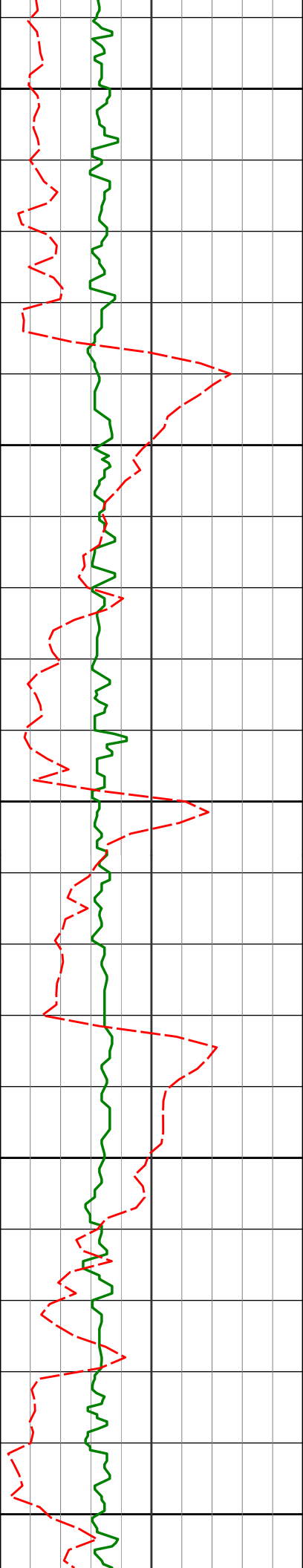
5433'

0.54°

264.64°

5432.78'

0.55'



5450

5500

5550

5600

5650

5527'

0.07°

333.08°

5526.78'

1.02'

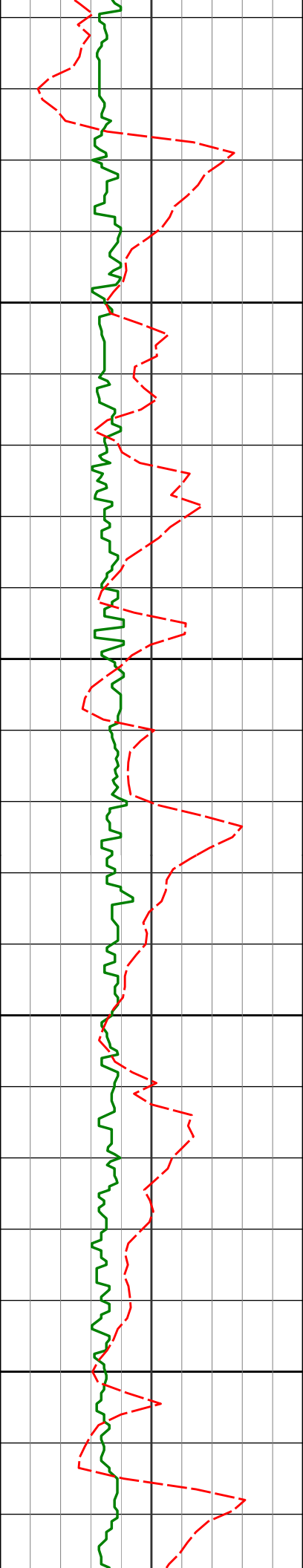
5622'

0.22°

41.31°

5621.78'

0.93'



5700

5717'

0.17°

343.58°

5716.78'

0.86'

5750

5800

5811'

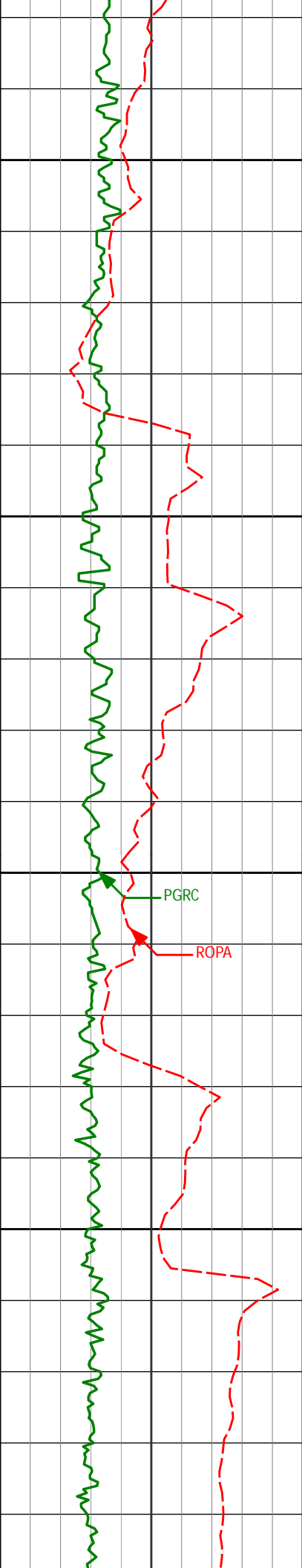
0.19°

17.53°

5810.78'

0.85'

5850



5900

5906'

0.25°

344.46°

5905.78'

0.87'

5950

6000

6001'

0.39°

11.44°

6000.78'

0.87'

PGRC

ROPA

6050

200

6064'

0.50°

358.95°

6063.78'

0.84'

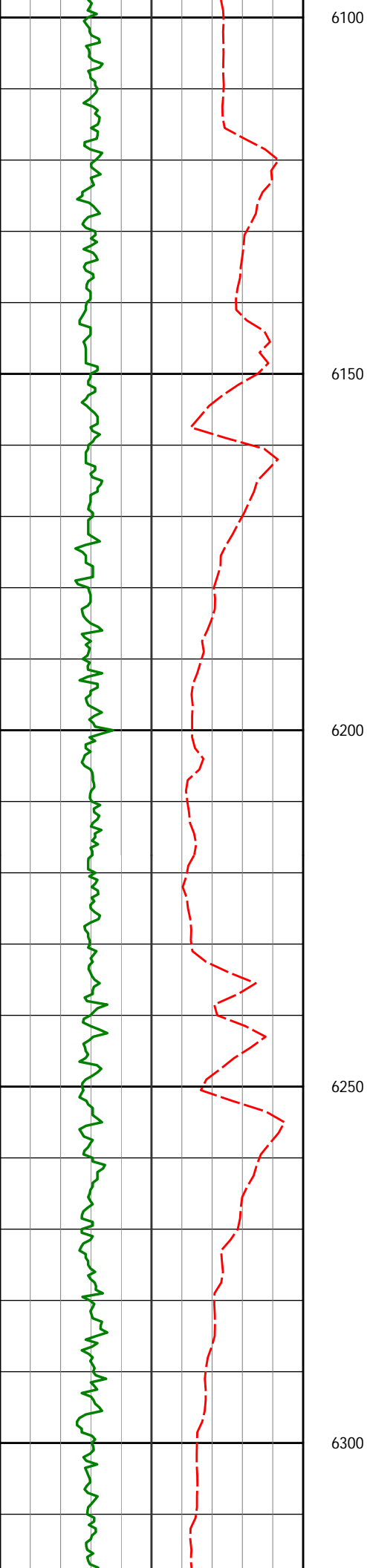
6096'

0.44°

2.43°

6095.78'

0.84'



6191'

6.44°

266.72°

6190.58'

6.15'

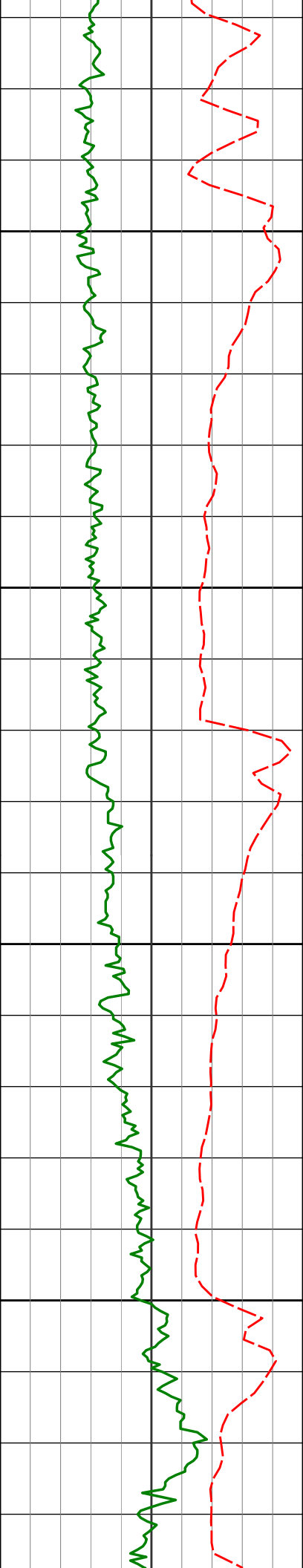
6285'

13.77°

280.04°

6283.07'

22.48'



6350

6380'

19.78°

277.91°

6373.98'

49.63'

6400

6450

6475'

32.55°

274.04°

6459.08'

91.29'

6500

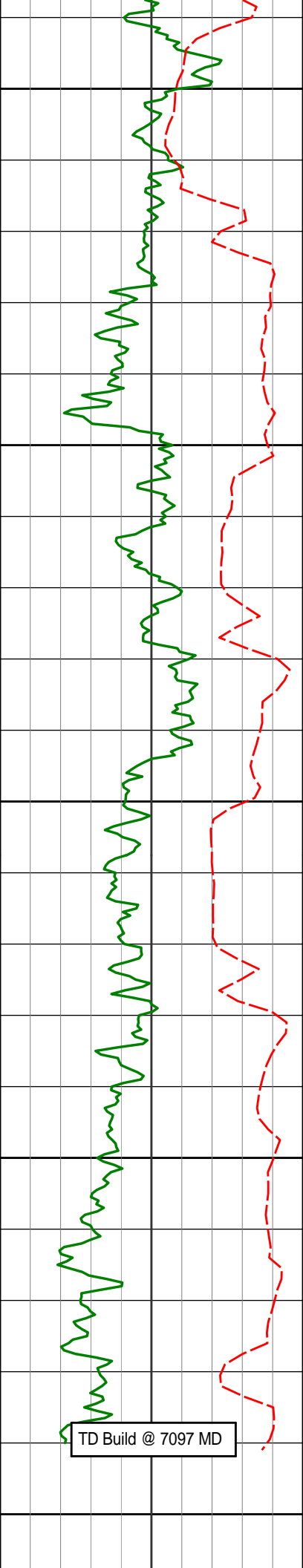
6569'

46.89°

270.43°

6531.20'

151.17'



6550

6664'

53.34°

271.01°

6592.09'

224.03'

6600

6759'

57.99°

273.67°

6645.66'

302.42'

6650

6854'

63.54°

276.57°

6692.05'

385.06'

6700

6948'

76.10°

278.90°

6724.42'

472.50'

7043'

85.90°

276.95°

6739.26'

565.54'

6750

TD Build @ 7097 MD

Avg Rate of Penetration <div> <div>ROPA</div> <div>feet per hr</div> </div> <div>1K0</div>		Depth ft	Depth	Inc.	Azi.	TVD	V.S.
PCG Gamma Ray <div> <div>PGRC</div> <div>api</div> </div> <div>0300</div>							

HALLIBURTON

DIRECTIONAL SURVEY REPORT

**Noble
NCLP AA06-68-1BHNC
Wattenberg
Weld Colorado
USA
CA-XX-0901284310**

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
907.00	0.70	160.93	906.98	5.24 S	1.81 E	-1.54	0.08
998.00	0.70	29.96	997.97	5.28 S	2.27 E	-1.99	1.40
1091.00	0.94	260.13	1090.97	4.92 S	1.80 E	-1.55	1.60
1185.00	1.26	238.56	1184.95	5.59 S	0.16 E	0.13	0.55
1276.00	0.15	132.61	1275.95	6.19 S	0.61 W	0.92	1.44
1368.00	0.38	86.85	1367.94	6.26 S	0.21 W	0.53	0.32
1459.00	0.41	61.00	1458.94	6.08 S	0.37 E	-0.06	0.20
1551.00	0.37	68.98	1550.94	5.82 S	0.94 E	-0.64	0.07
1644.00	0.39	79.42	1643.94	5.65 S	1.53 E	-1.24	0.08
1737.00	0.46	81.46	1736.94	5.54 S	2.21 E	-1.92	0.08
1830.00	0.59	65.02	1829.93	5.28 S	3.01 E	-2.74	0.21
1923.00	0.64	72.87	1922.93	4.92 S	3.94 E	-3.69	0.11
2017.00	0.66	69.33	2016.92	4.58 S	4.95 E	-4.71	0.05
2112.00	0.65	56.36	2111.91	4.09 S	5.91 E	-5.69	0.16
2206.00	0.75	54.39	2205.91	3.43 S	6.86 E	-6.67	0.11
2301.00	0.74	206.15	2300.90	3.62 S	7.09 E	-6.90	1.52
2396.00	0.66	191.46	2395.90	4.71 S	6.71 E	-6.46	0.21
2490.00	1.34	182.07	2489.88	6.34 S	6.57 E	-6.23	0.74
2585.00	5.00	216.71	2584.73	10.77 S	4.05 E	-3.49	4.18
2679.00	4.88	215.02	2678.38	17.33 S	0.69 W	1.58	0.20
2774.00	4.70	213.96	2773.05	23.86 S	5.19 W	6.41	0.21
2869.00	6.24	208.29	2867.61	31.64 S	9.81 W	11.42	1.72
2964.00	8.31	193.78	2961.85	42.86 S	13.89 W	16.08	2.90
3059.00	10.23	192.25	3055.60	57.77 S	17.32 W	20.27	2.04
3153.00	9.77	189.75	3148.18	73.79 S	20.44 W	24.21	0.67
3248.00	10.12	190.63	3241.75	89.93 S	23.34 W	27.94	0.40
3343.00	8.54	185.82	3335.49	105.15 S	25.60 W	30.98	1.85
3438.00	10.16	191.32	3429.23	120.39 S	27.96 W	34.12	1.95
3532.00	10.97	193.77	3521.63	137.21 S	31.71 W	38.73	0.99
3627.00	11.85	190.40	3614.76	155.58 S	35.63 W	43.59	1.16
3722.00	10.51	188.07	3707.95	173.75 S	38.60 W	47.49	1.49
3817.00	11.02	187.19	3801.28	191.34 S	40.96 W	50.75	0.56
3911.00	11.11	191.85	3893.53	209.12 S	43.94 W	54.64	0.96
4006.00	9.47	194.52	3987.00	225.64 S	47.78 W	59.33	1.80
4101.00	9.09	195.73	4080.76	240.43 S	51.77 W	64.08	0.45
4196.00	8.46	197.11	4174.65	254.33 S	55.86 W	68.88	0.70
4291.00	6.67	203.33	4268.82	266.08 S	60.11 W	73.72	2.07
4385.00	6.21	188.44	4362.23	276.12 S	63.01 W	77.14	1.84
4480.00	4.56	176.12	4456.81	284.97 S	63.51 W	78.09	2.11
4575.00	2.18	165.60	4551.64	290.49 S	62.81 W	77.67	2.58
4670.00	0.41	283.51	4646.62	292.16 S	62.69 W	77.64	2.53
4764.00	0.75	307.07	4740.62	291.71 S	63.51 W	78.44	0.43
4859.00	0.63	312.32	4835.61	290.99 S	64.39 W	79.28	0.14
4954.00	0.58	288.44	4930.60	290.48 S	65.23 W	80.09	0.27
5049.00	0.48	121.62	5025.60	290.54 S	65.35 W	80.21	1.11
5144.00	0.65	126.32	5120.60	291.07 S	64.58 W	79.47	0.19
5239.00	0.72	131.58	5215.59	291.78 S	63.69 W	78.63	0.10

5334.00	0.57	132.53	5310.58	292.50 S	62.90 W	77.87	0.16
5429.00	0.55	111.88	5405.58	292.99 S	62.13 W	77.13	0.21
5523.00	0.38	109.21	5499.58	293.26 S	61.42 W	76.43	0.18
5618.00	0.03	332.11	5594.58	293.34 S	61.13 W	76.15	0.42
5713.00	0.31	247.80	5689.58	293.42 S	61.38 W	76.40	0.32
5808.00	0.34	263.49	5784.57	293.54 S	61.90 W	76.92	0.10
5902.00	0.74	252.20	5878.57	293.76 S	62.75 W	77.79	0.44
6022.00	0.77	257.82	5998.56	294.17 S	64.28 W	79.33	0.07
6093.00	1.16	272.34	6069.55	294.24 S	65.46 W	80.52	0.64
6141.00	2.02	265.06	6117.53	294.29 S	66.79 W	81.85	1.84
6187.00	6.73	262.38	6163.38	294.72 S	70.27 W	85.35	10.25
6235.00	12.06	268.20	6210.72	295.25 S	78.08 W	93.17	11.27
6282.00	15.76	273.98	6256.34	294.96 S	89.36 W	104.42	8.40
6330.00	17.61	269.92	6302.32	294.52 S	103.12 W	118.14	4.55
6377.00	21.13	265.11	6346.65	295.25 S	118.68 W	133.72	8.22
6425.00	25.45	260.54	6390.74	297.69 S	137.48 W	152.62	9.75
6472.00	29.82	261.08	6432.36	301.16 S	159.00 W	174.29	9.31
6520.00	36.04	262.22	6472.63	304.93 S	184.81 W	200.25	13.02
6567.00	42.21	266.60	6509.08	307.74 S	214.30 W	229.85	14.38
6615.00	44.14	271.62	6544.10	308.22 S	247.12 W	262.65	8.21
6661.00	44.16	274.82	6577.11	306.42 S	279.10 W	294.50	4.85
6709.00	45.20	273.43	6611.24	304.00 S	312.76 W	327.99	2.97
6756.00	48.97	267.67	6643.25	303.72 S	347.14 W	362.32	12.03
6804.00	55.07	264.46	6672.78	306.36 S	384.86 W	400.12	13.76
6851.00	63.39	264.12	6696.80	310.38 S	425.01 W	440.42	17.71
6899.00	73.21	265.68	6714.53	314.32 S	469.38 W	484.93	20.68
6946.00	75.49	267.57	6727.21	316.98 S	514.55 W	530.18	6.21
6994.00	77.82	268.31	6738.29	318.65 S	561.22 W	576.88	5.08
7040.00	81.99	270.25	6746.35	319.22 S	606.49 W	622.12	9.97
7061.00	84.50	271.39	6748.82	318.92 S	627.34 W	642.92	13.11
7145.00	89.14	272.56	6753.48	316.03 S	711.14 W	726.46	5.70
7213.00	89.66	272.20	6754.19	313.20 S	779.08 W	794.16	0.93
7308.00	90.52	272.20	6754.04	309.56 S	874.00 W	888.78	0.91
7402.00	88.27	271.75	6755.03	306.32 S	967.94 W	982.42	2.44
7497.00	88.70	271.97	6757.54	303.24 S	1062.85 W	1077.05	0.51
7592.00	88.86	269.38	6759.57	302.12 S	1157.82 W	1171.83	2.73
7687.00	91.14	269.87	6759.57	302.74 S	1252.81 W	1266.73	2.45
7782.00	90.03	268.40	6758.60	304.17 S	1347.79 W	1361.66	1.94
7877.00	89.51	267.94	6758.98	307.21 S	1442.74 W	1456.64	0.73
7972.00	88.98	267.38	6760.23	311.09 S	1537.65 W	1551.62	0.81
8067.00	91.73	267.77	6759.64	315.10 S	1632.55 W	1646.61	2.92
8161.00	91.48	268.32	6757.01	318.31 S	1726.46 W	1740.56	0.64
8256.00	91.26	268.26	6754.74	321.14 S	1821.39 W	1835.51	0.24
8351.00	90.34	268.38	6753.41	323.93 S	1916.34 W	1930.47	0.98
8446.00	88.74	268.05	6754.17	326.89 S	2011.29 W	2025.45	1.72
8540.00	89.35	268.45	6755.74	329.76 S	2105.23 W	2119.41	0.78
8635.00	89.78	268.25	6756.46	332.49 S	2200.19 W	2214.39	0.50
8730.00	89.45	268.31	6757.10	335.35 S	2295.14 W	2309.36	0.35
8825.00	89.17	268.81	6758.24	337.73 S	2390.11 W	2404.32	0.60
8920.00	88.34	268.62	6760.31	339.86 S	2485.06 W	2499.26	0.90
9015.00	88.40	267.69	6763.01	342.92 S	2579.97 W	2594.20	0.98
9109.00	87.84	266.42	6766.10	347.75 S	2673.79 W	2688.15	1.48
9204.00	90.15	267.52	6767.76	352.77 S	2768.64 W	2783.13	2.69
9299.00	90.37	268.58	6767.33	356.00 S	2863.58 W	2878.11	1.14
9394.00	89.57	268.89	6767.38	358.10 S	2958.56 W	2973.07	0.90
9488.00	90.62	268.97	6767.22	359.85 S	3052.54 W	3067.01	1.12
9583.00	86.18	268.14	6769.88	362.25 S	3147.45 W	3161.92	4.75
9678.00	88.03	268.41	6774.67	365.10 S	3242.28 W	3256.77	1.97
9773.00	90.46	269.25	6775.93	367.04 S	3337.24 W	3351.71	2.71
9868.00	88.98	268.30	6776.39	369.07 S	3432.22 W	3446.66	1.85
9962.00	90.00	268.13	6777.23	372.00 S	3526.17 W	3540.64	1.10
10057.00	91.57	270.11	6775.92	373.46 S	3621.14 W	3635.56	2.66
10150.00	90.43	269.89	6774.30	373.46 S	3714.12 W	3728.42	1.25
10242.00	89.26	268.50	6774.55	374.75 S	3806.11 W	3820.35	1.97
10334.00	91.17	268.89	6774.21	376.85 S	3898.08 W	3912.31	2.12
10426.00	92.25	269.49	6771.46	378.15 S	3990.03 W	4004.20	1.34
10518.00	90.86	268.66	6768.96	379.63 S	4081.98 W	4096.11	1.76
10611.00	91.11	268.37	6767.37	382.04 S	4174.93 W	4189.06	0.41
10703.00	88.80	268.58	6767.44	384.49 S	4266.90 W	4281.03	2.52
10794.00	87.78	267.38	6770.15	387.70 S	4357.80 W	4371.97	1.73
10886.00	89.32	268.30	6772.48	391.16 S	4449.70 W	4463.93	1.95
10977.00	88.43	268.03	6774.27	394.08 S	4540.63 W	4554.90	1.02
11070.00	91.26	270.09	6774.52	395.60 S	4633.61 W	4647.82	3.76
11163.00	92.81	270.46	6771.22	395.15 S	4726.54 W	4740.62	1.71

11255.00	91.11	269.80	6768.07	394.95 S	4818.48 W	4832.42	1.98
11347.00	89.85	270.19	6767.30	394.95 S	4910.48 W	4924.30	1.43
11438.00	89.20	269.27	6768.05	395.38 S	5001.47 W	5015.19	1.24
11530.00	89.78	269.70	6768.87	396.21 S	5093.47 W	5107.11	0.78
11622.00	87.90	268.15	6770.74	397.94 S	5185.42 W	5199.03	2.65
11716.00	86.30	268.13	6775.49	400.98 S	5279.25 W	5292.89	1.70
11809.00	86.95	267.37	6780.97	404.63 S	5372.02 W	5385.72	1.07
11902.00	89.85	267.66	6783.56	408.66 S	5464.88 W	5478.67	3.13
11996.00	89.51	267.48	6784.09	412.64 S	5558.80 W	5572.67	0.41

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 267.05 DEGREES (GRID)
A TOTAL CORRECTION OF 7.43 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11996.00 FEET
IS 5574.09 FEET ALONG 265.75 DEGREES (GRID)**

Tied in @ Surface