



WELL INFORMATION					
MWD Run Number	100	200	300		
Date run completed	20-May-12	21-May-12	25-May-12		
Rig Bit Number	2	3	4		
Bit Size (in)	8.750	8.750	6.125		
Tool Nominal OD (in)	6.750	6.750	4.750		
Log Start Depth (MD, ft)	575.00	1,987.00	6,979.00		
Log End Depth (MD, ft)	1,987.00	6,979.00	10,895.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	19-May-12 16:00	20-May-12 04:30	23-May-12 11:45		
Drill/Wipe End Date and Time	19-May-12 22:00	21-May-12 14:45	24-May-12 20:00		
Min Inc (deg) @ Depth (MD, ft)	.11 @ 724.00	1.63 @ 5,654.00	85.72 @ 7,032.00		
Max Inc (deg) @ Depth (MD, ft)	8.11 @ 1,932.00	83.75 @ 69.23	93.95 @ 10,835.00		
Bit TFA(in2) / Bit Type	.75 / PDC	.75 / PDC	.46 / PDC		
Flow Rate (gpm)	600.00	560.00	270.00		
Max AV (fpm) / CV (fpm) @ MWD	541.0 / NA	439.0 / NA	435.0 / NA		
Fluid Type	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel		
Density (ppg) / Viscosity (spqt)	8.70 / 27.00	10.10 / 42.00	9.60 / 35.00		
Filtrate CL (ppm)	2,300.00	3,400.00	3,100.00		
pH / Fluid Loss (mptm)	8.10 / 0	9.30 / 11	9.90 / 5		
PV (cP) / YP (Ihf2)	4 / 5.00	11 / 11.00	8 / 11.00		
% Solids / % Sand	2.20 / 0.10	9.10 / 2.50	5.90 / 0.20		
% Oil / Oil:Water Ratio	0 / 0:96.0	0 / 0:88	0 / 0:92.5		
Rm @ Measured Temp (degF)	NA @ NA	NA @ NA	NA @ NA		
Rmf @ Measured Temp (degF)	NA @ NA	NA @ NA	NA @ NA		
Rmc @ Measured Temp (degF)	NA @ NA	NA @ NA	NA @ NA		
Max Tool Temp (deg F) / S	168.05 / PDM	170.70 / PDM	220.00 / PDM		

Max Tool Temp (degF) / Source	106.97 / PCM	172.78 / PCM	226.08 / PCM		
Rm @ Max Tool Temp (degF)	NA @ NA	NA @ NA	NA @ 226.08		
Lead MWD Engineer	Gary Eifert	Gary Eifert	Gary Eifert		
Customer Representative	Johnny Sanchez	Johnny Sanchez	Johnny Sanchez		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.76	5.76	5.76		
Sub Serial Number	11341347	11341347	11297891		
Insert Serial Number	11400855	11226936	11400855		
Date and Time Initialized	16-May-12 15:50	19-May-12 23:55	21-May-12 16:57		
Date and Time Read	20-May-12 02:15	21-May-12 23:43	25-May-12 09:37		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	56.00	56.00	60.00		
Software Version	6.21	6.21	6.21		
Sub Serial Number	11341347	11341347	11297891		
Sonde Serial Number	11833220	11297574	11833220		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	26.63	171.68	145.52		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	49.03	49.03	53.22		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	11341347	11341347	11297891		
Insert/Sonde Serial Number	11292594	11121362	11292594		

REMARKS

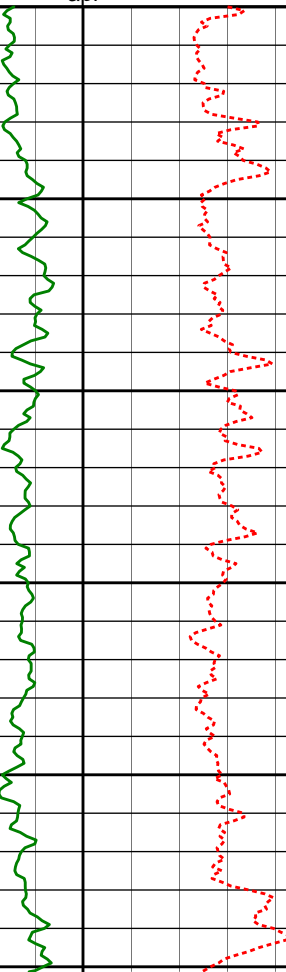
1. All depths are measured bit depths, referenced to the Driller's pipe tally and are measured from the Drill Floor, unless otherwise specified.
2. No depth corrections have been made for pipe stretch or compression.
3. Critical annual velocities are calculated using the "Power Law" model for water based fluids and the "Bingham 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:
PGRC (Corrected Gamma Ray):
Interval Resolution: 0.5 ft
Interval Distance: 0.6 ft
Gap Fill: 3.0 ft
ROPA (Average Rate of Penetration)
Interval Resolution: 0.5 ft
Interval Distance: 1.2 ft
Gap Fill: 3.0 ft
6. INSITE version 7.3.40

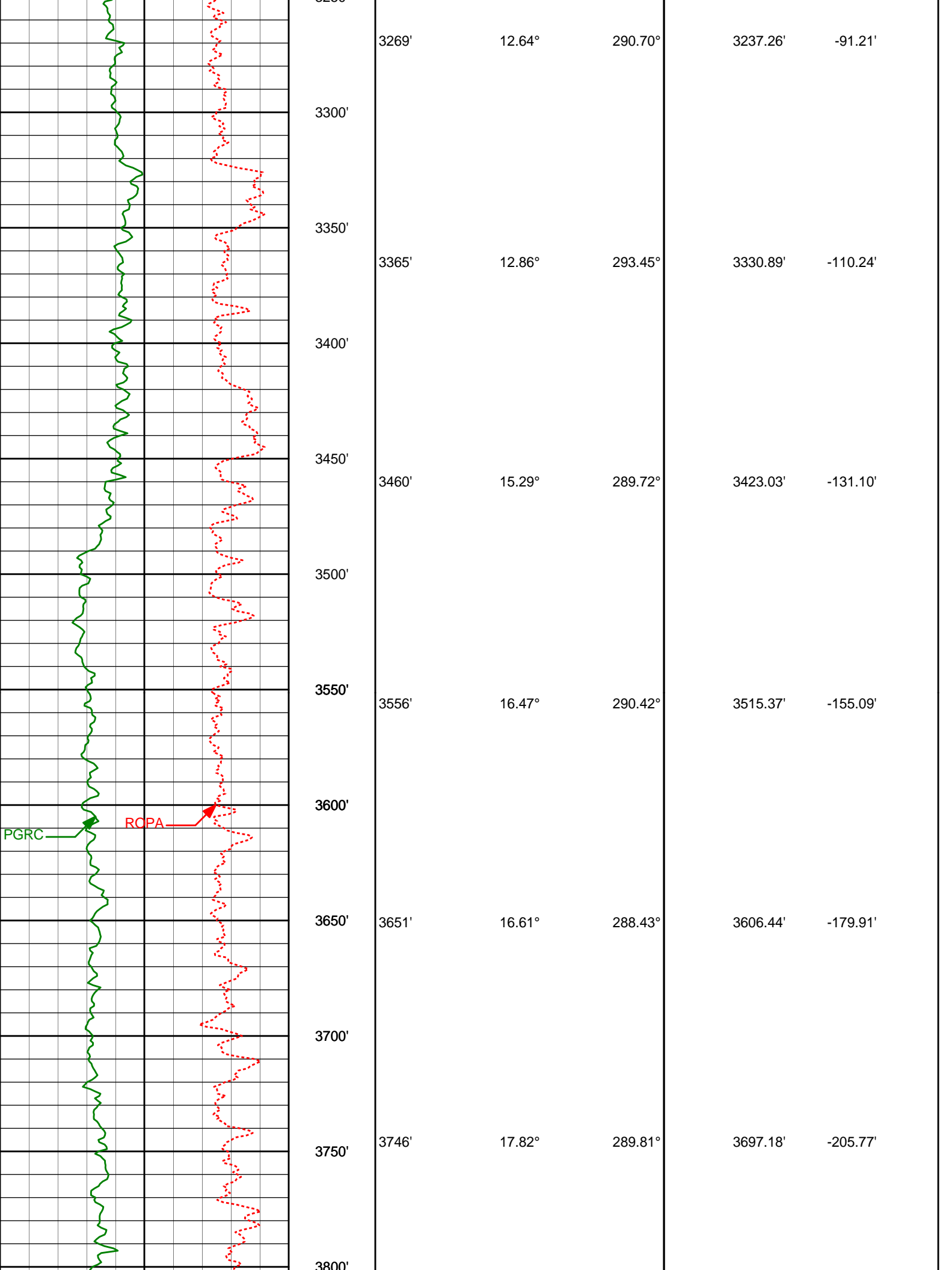
WARRANTY

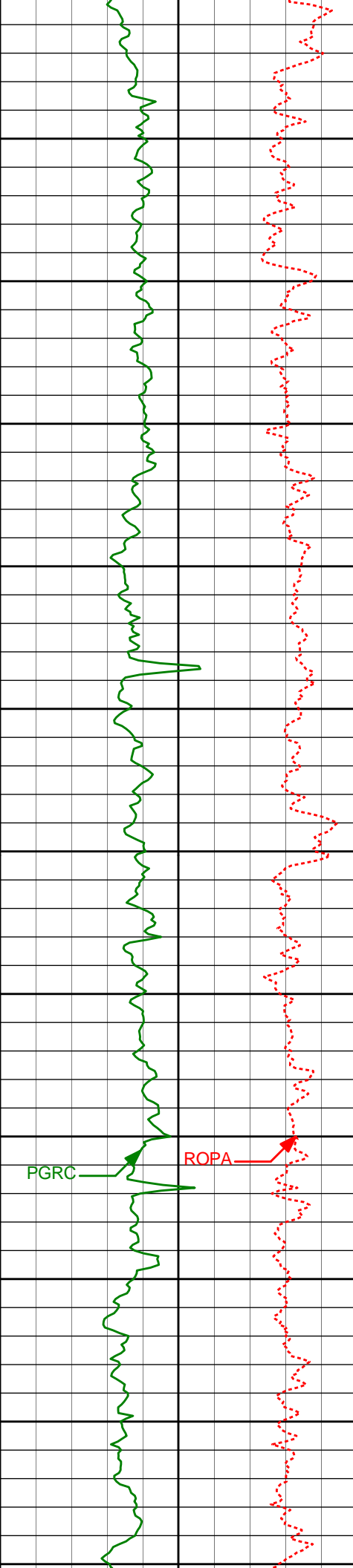
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HALLIBURTON

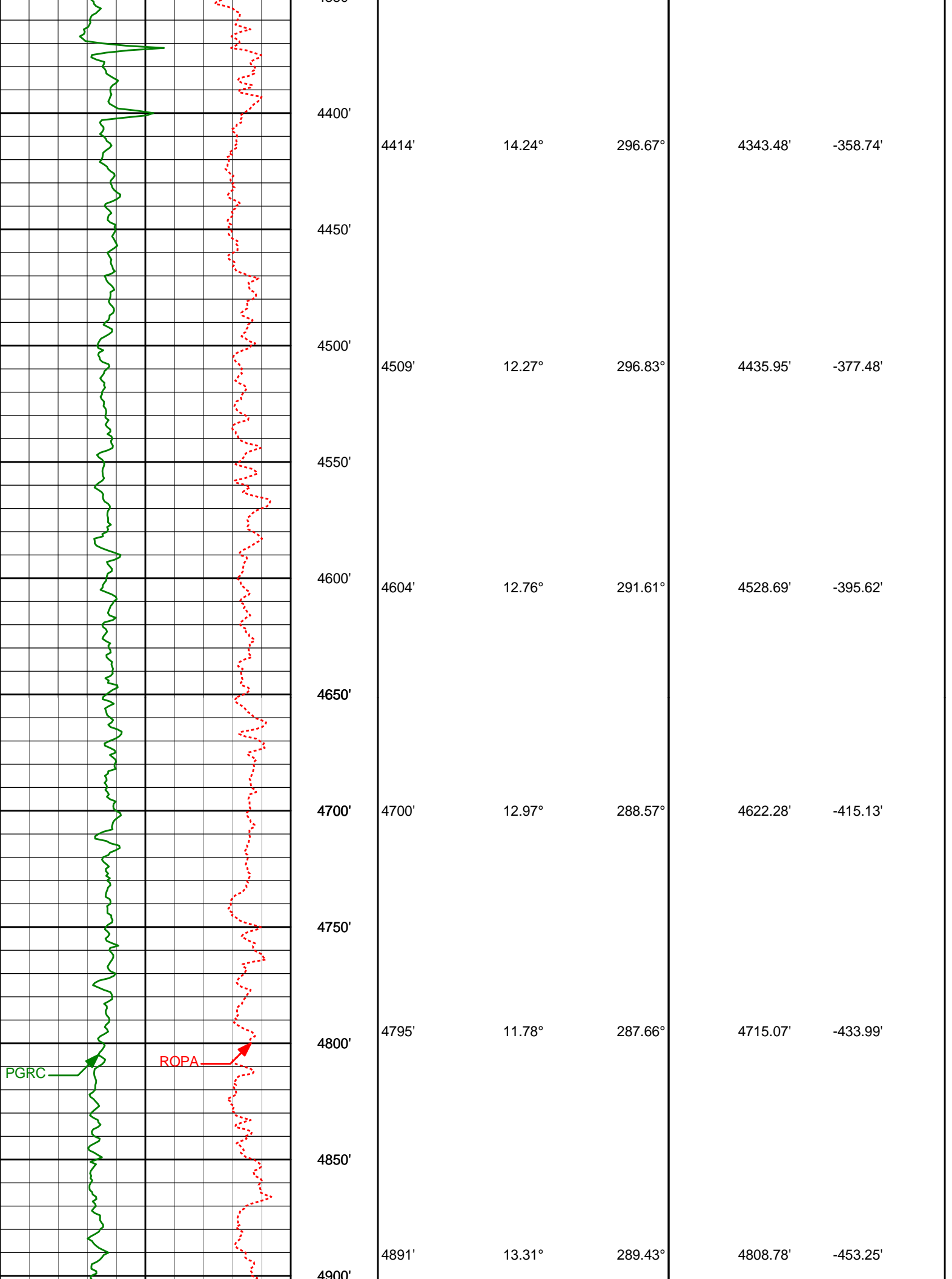
MD Main Log 1:600

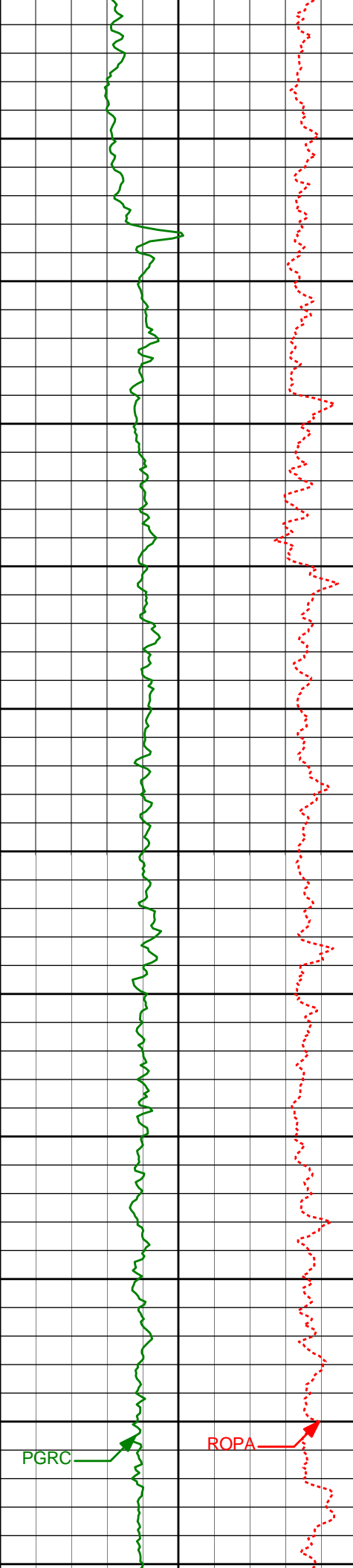
Average Rate of Penetration ROPA						
1K0						
feet per hr						
Gamma Ray PGRC		Measured Depth (ft)	Depth	Inc	Azi.	TVD
0200		1:600				V.S.
api						
		3000'				
		3050'				
		3079'	14.27°	290.87°	3052.37'	-51.37'
		3100'				
		3150'				
		3174'	13.18°	290.23°	3144.66'	-71.88'
		3200'				
		3250'				



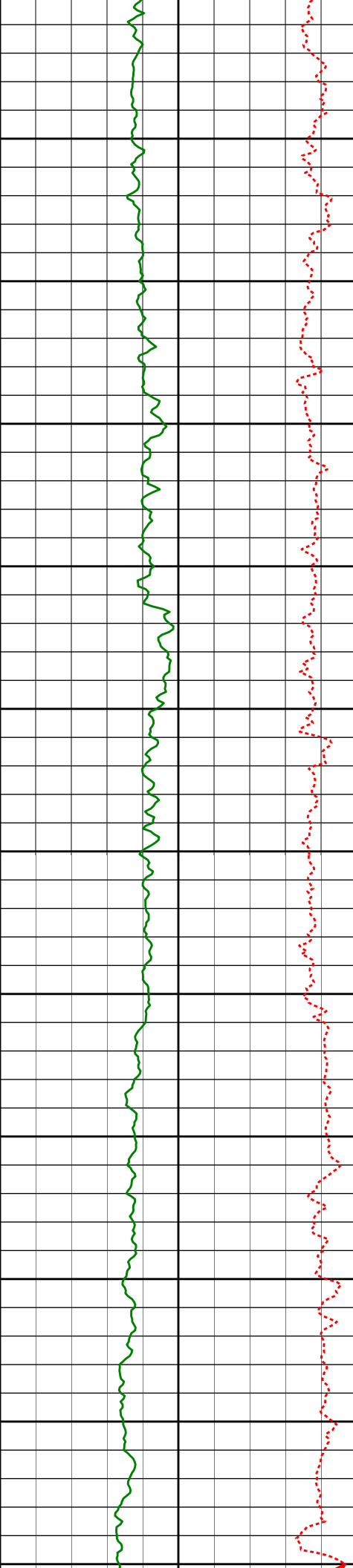


3850'				
	3841'	15.24°	290.79°	3788.25' -230.41'
3850'				
3900'				
	3937'	14.75°	292.15°	3880.98' -252.85'
3950'				
4000'				
	4032'	13.71°	289.75°	3973.06' -274.02'
4050'				
4100'				
	4127'	15.00°	290.00°	4065.09' -295.57'
4150'				
4200'				
	4223'	14.13°	290.12°	4158.01' -317.61'
4250'				
4300'				
	4318'	13.45°	289.49°	4250.27' -338.33'
4350'				

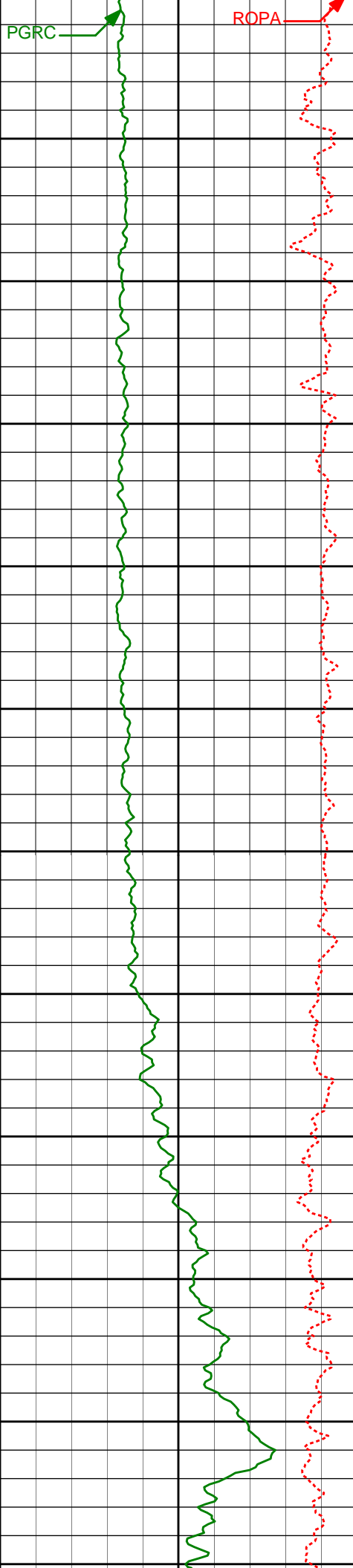




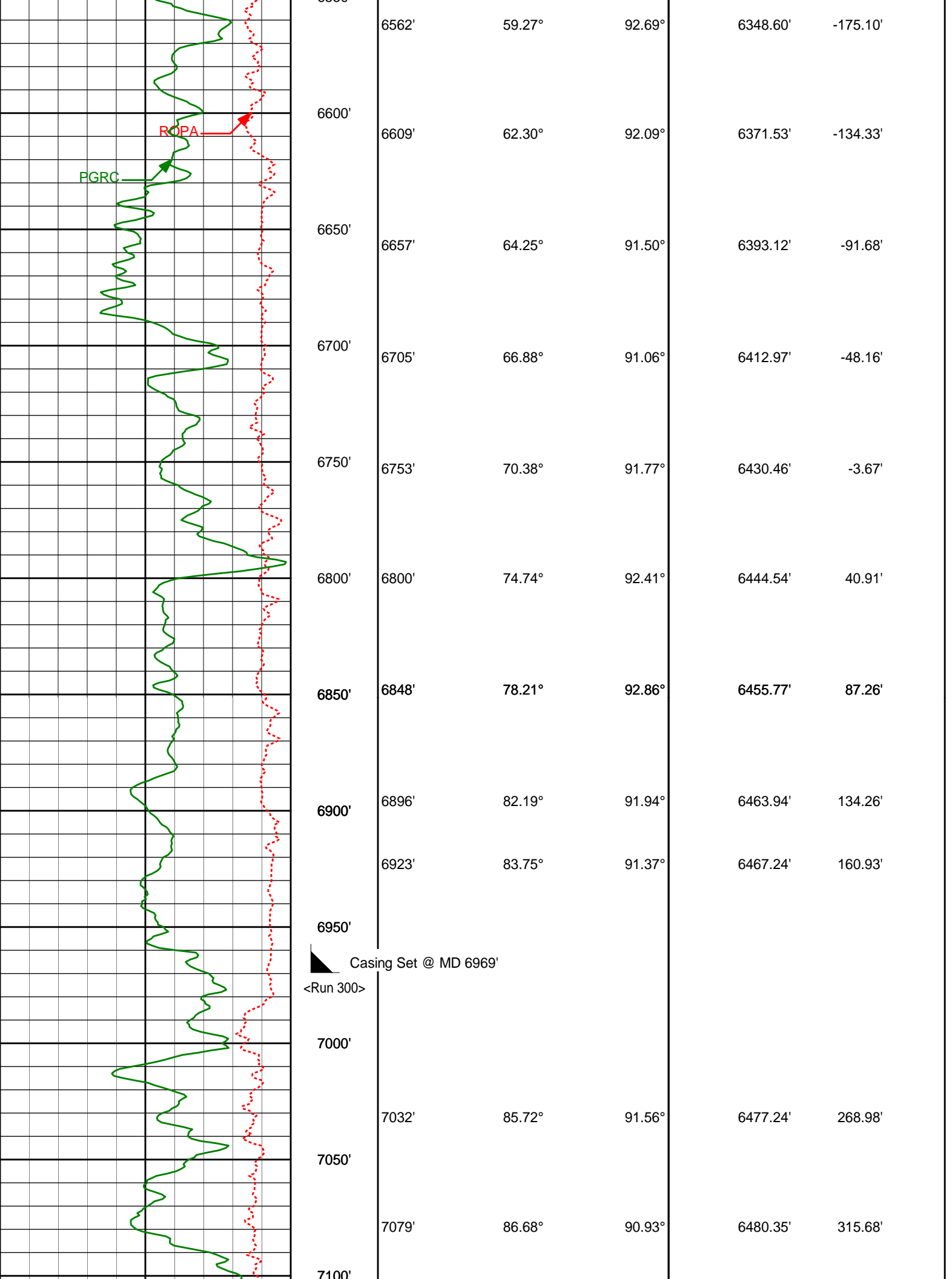
4950'				
4986'	12.80°	288.95°	4901.32'	-472.98'
5000'				
5050'				
5082'	8.36°	299.71°	4995.68'	-488.60'
5100'				
5150'				
5177'	7.03°	301.55°	5089.82'	-499.08'
5200'				
5250'				
5273'	6.04°	296.71°	5185.19'	-508.20'
5300'				
5350'				
5368'	4.79°	297.66°	5279.77'	-515.87'
5400'				
5450'				

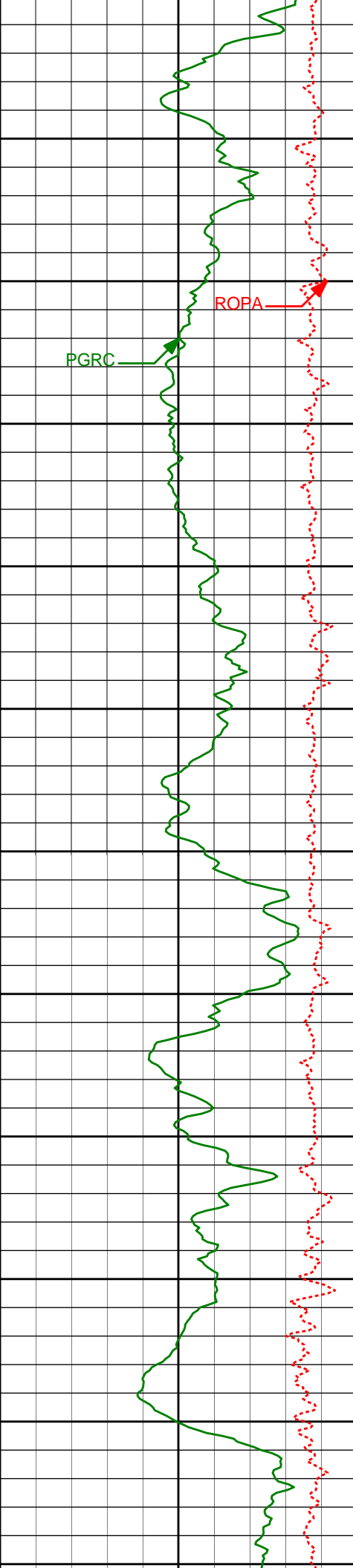


5463'	3.87°	311.12°	5374.50'	-521.52'
5500'				
5550'				
5559'	1.82°	322.17°	5470.38'	-524.66'
5600'				
5650'				
5654'	1.63°	335.81°	5565.33'	-525.97'
5700'				
5750'				
5749'	1.73°	285.58°	5660.30'	-527.78'
5800'				
5850'				
5846'	3.34°	93.57°	5757.26'	-526.36'
5900'				
5894'	8.54°	89.32°	5804.98'	-521.41'
5950'				
5942'	12.38°	84.35°	5852.18'	-512.71'
5990'				
5990'	16.49°	81.05°	5898.65'	-500.78'
6000'				

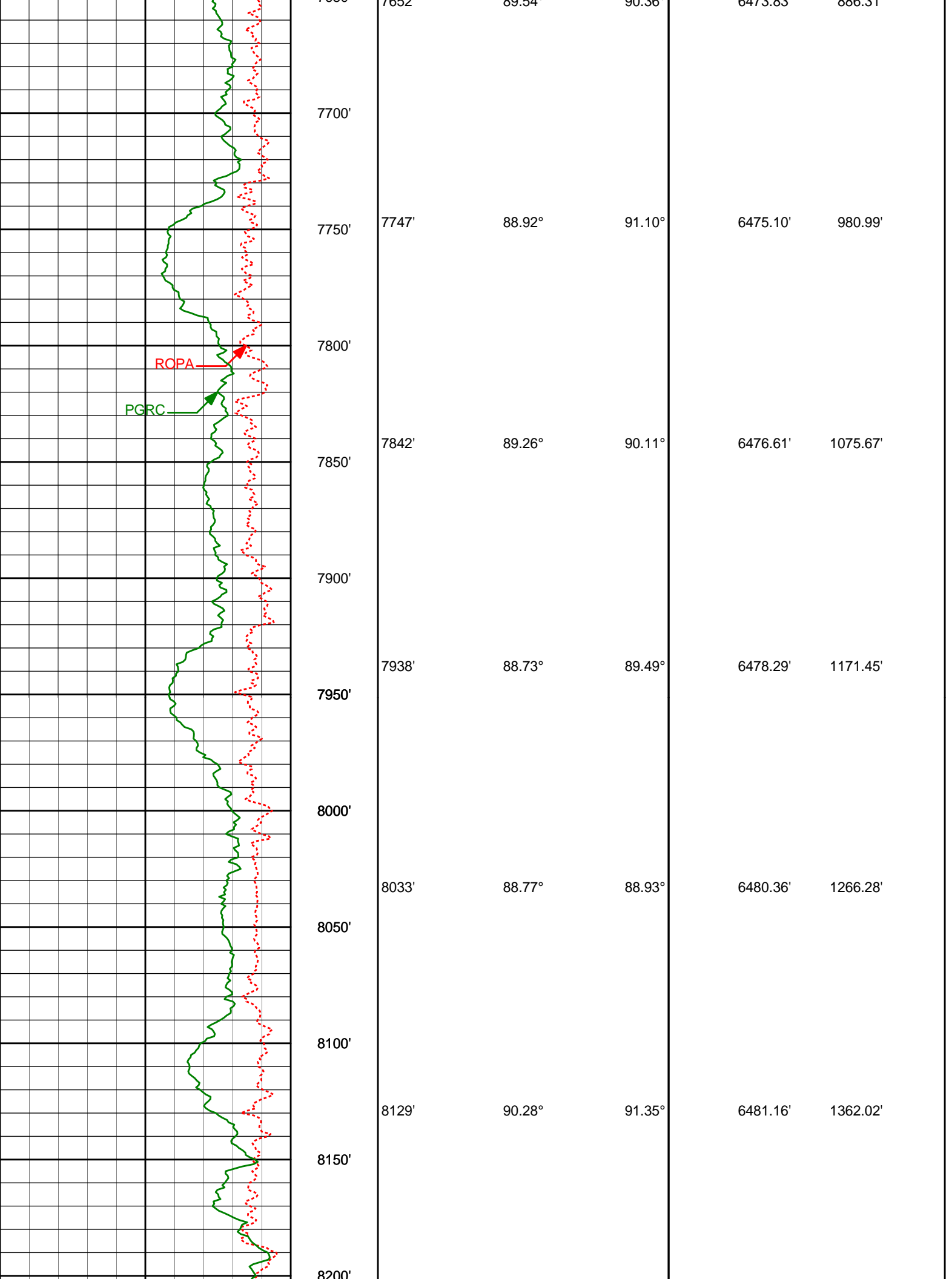


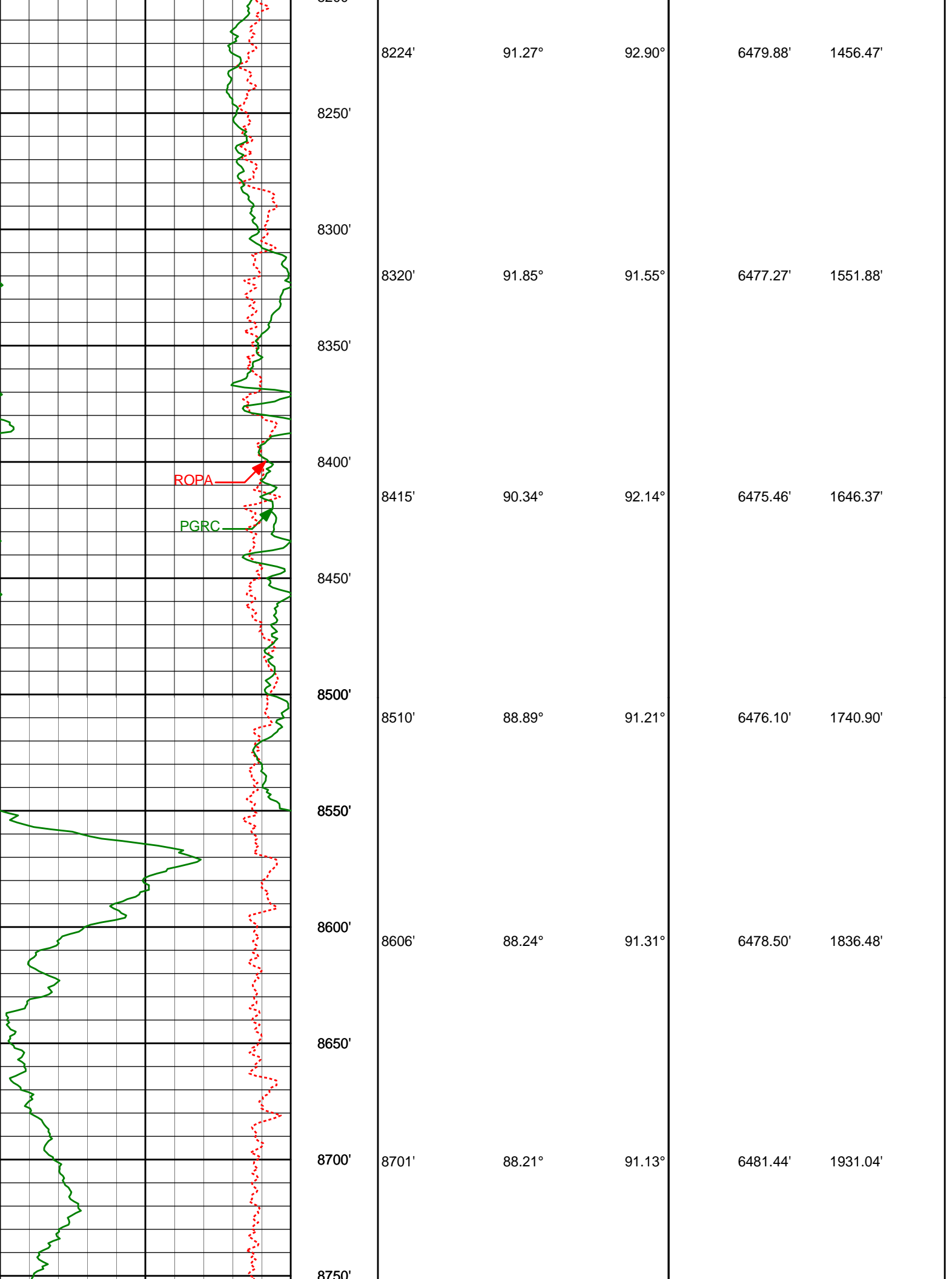
6036'	18.15°	84.08°	5942.56'	-487.11'
6050'				
6084'	20.17°	88.79°	5987.90'	-471.36'
6100'				
6132'	22.64°	90.87°	6032.59'	-453.89'
6150'				
6180'	26.11°	91.01°	6076.31'	-434.15'
6200'				
6228'	30.45°	89.05°	6118.57'	-411.48'
6250'				
6276'	35.05°	87.67°	6158.93'	-385.54'
6300'				
6323'	39.35°	87.97°	6196.35'	-357.14'
6350'				
6371'	43.85°	88.13°	6232.24'	-325.30'
6400'				
6419'	49.25°	87.74°	6265.24'	-290.49'
6450'				
6467'	52.62°	91.30°	6295.49'	-253.30'
6500'				
6514'	56.00°	92.92°	6322.91'	-215.35'
6550'				

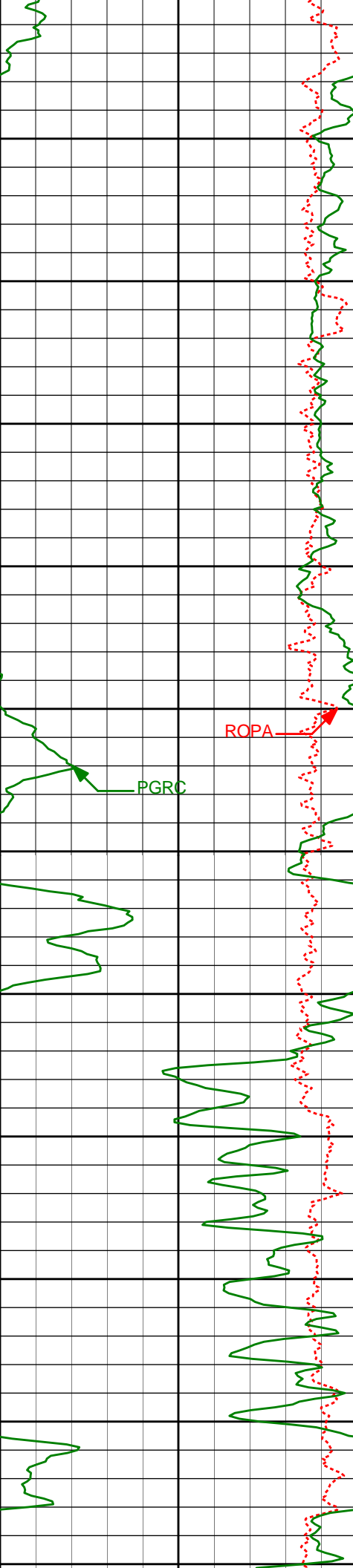




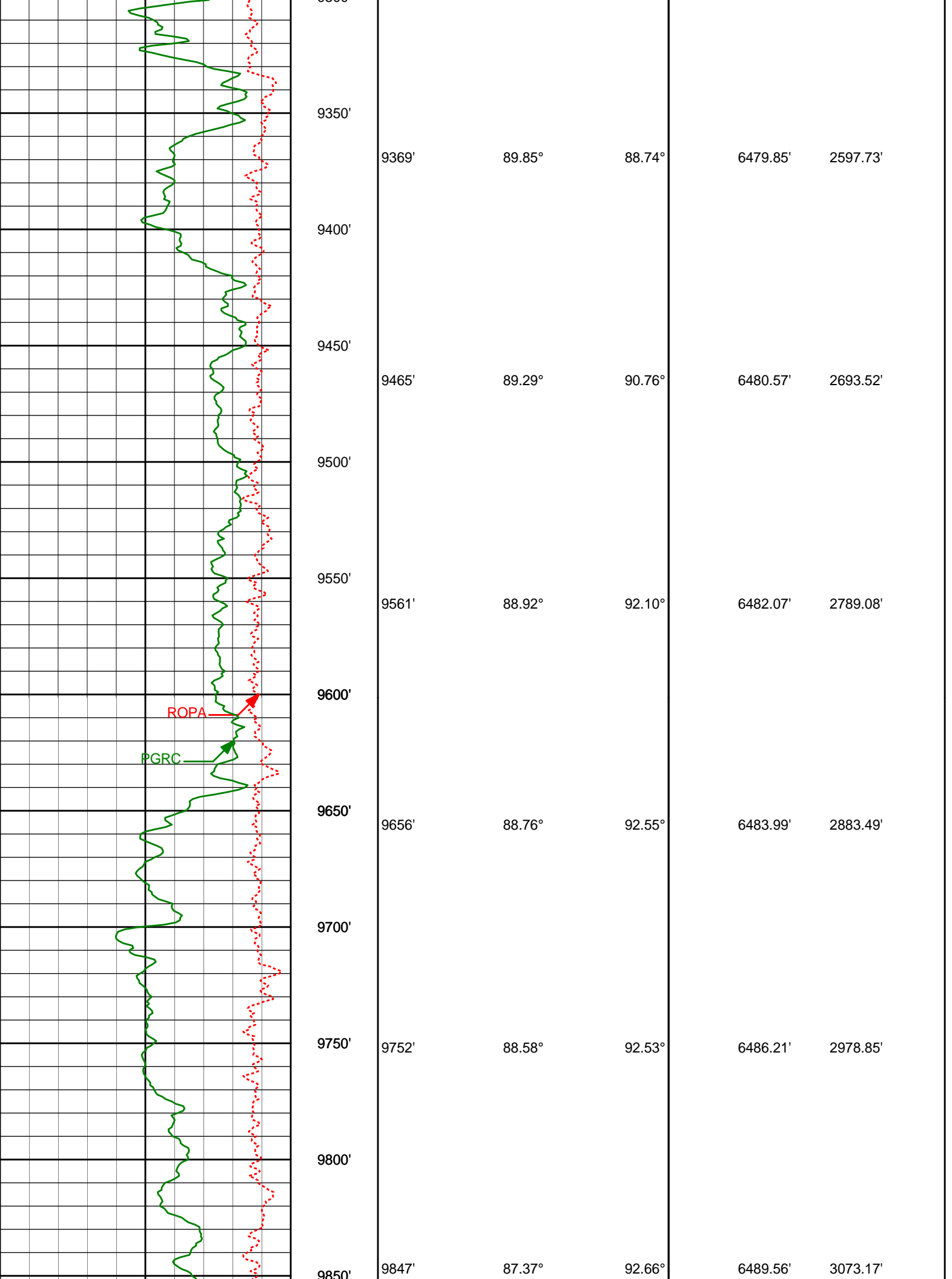
7100'				
7150'				
7174'	89.05°	90.73°	6483.89'	410.28'
7200'				
7270'	90.65°	92.21°	6484.15'	505.84'
7300'				
7365'	92.19°	91.30°	6481.80'	600.34'
7400'				
7460'	92.35°	90.32°	6478.04'	694.93'
7500'				
7556'	91.57°	90.42°	6474.76'	790.60'
7600'				
7650'				

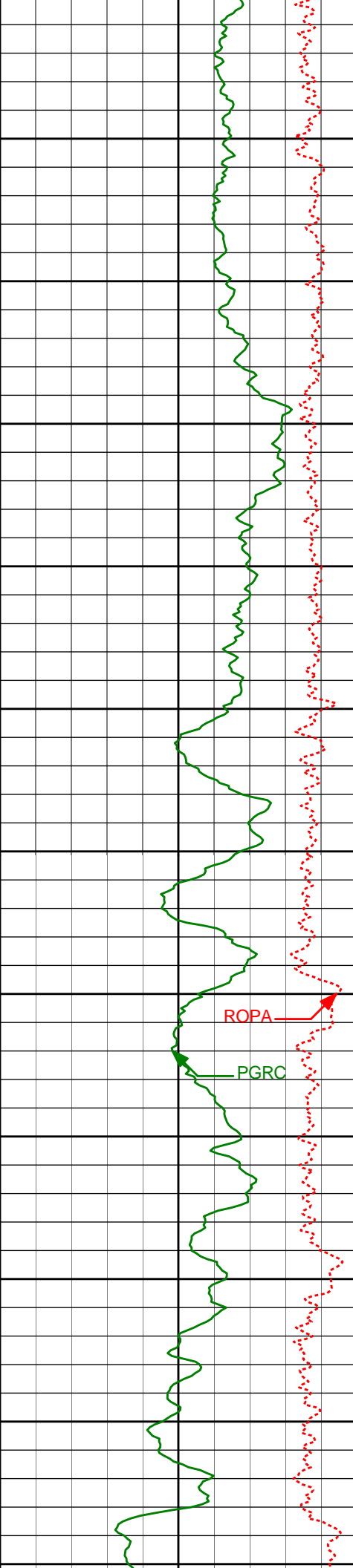




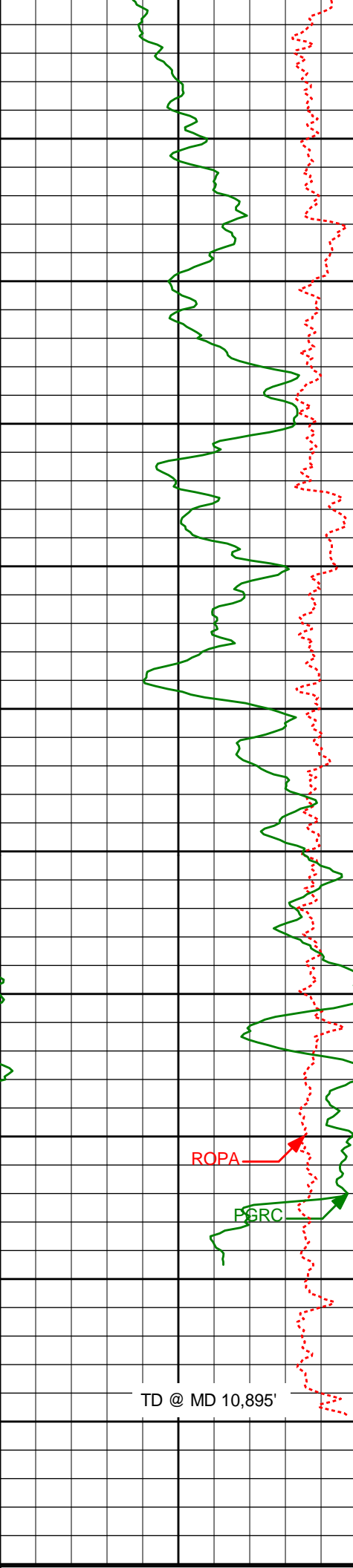


8750'					
8800'	8797'	88.33°	89.93°	6484.34'	2026.70'
8850'					
8900'	8892'	88.08°	89.47°	6487.30'	2121.46'
8950'					
9000'	8988'	89.48°	89.16°	6489.35'	2217.28'
9050'					
9100'	9083'	91.76°	88.15°	6488.33'	2312.17'
9150'					
9200'	9179'	92.65°	88.55°	6484.63'	2408.02'
9250'					
9300'	9274'	91.64°	88.80°	6481.08'	2502.85'



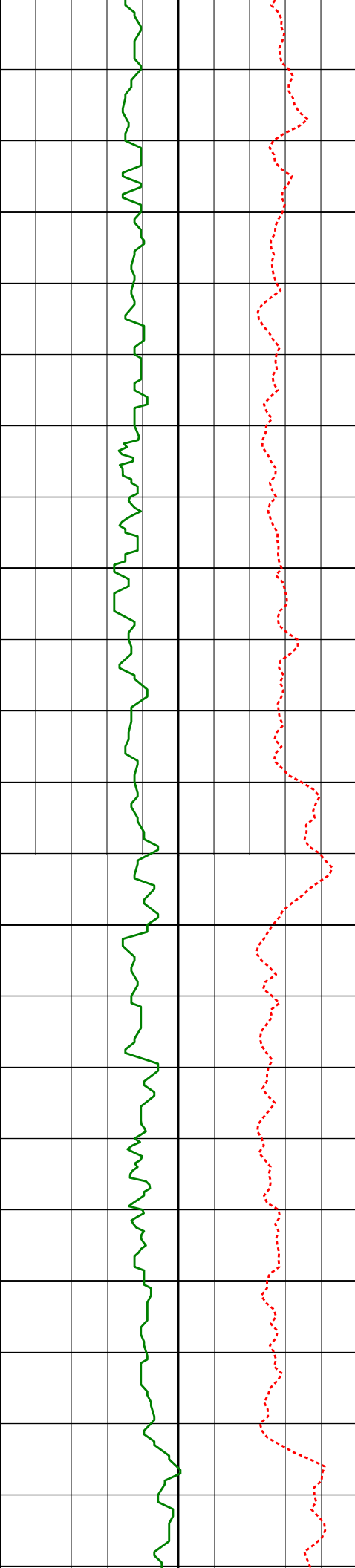


9900'				
9942'	88.61°	92.21°	6492.89'	3167.51'
9950'				
10000'				
10038'	89.04°	91.07°	6494.86'	3263.03'
10050'				
10100'				
10132'	90.25°	90.19°	6495.44'	3356.73'
10150'				
10200'				
10228'	89.88°	90.68°	6495.34'	3452.45'
10250'				
10300'				
10323'	90.19°	91.47°	6495.29'	3547.08'
10350'				
10400'				



10400'					
10450'	10418'	90.03°	91.75°	6495.11'	3641.63'
<Run 400>					
10500'					
	10514'	89.94°	90.38°	6495.13'	3737.26'
10550'					
10600'					
	10609'	89.47°	90.24°	6495.62'	3831.99'
10650'					
10700'					
	10705'	91.39°	90.07°	6494.90'	3927.74'
10750'					
10800'	10801'	93.15°	89.32°	6491.10'	4023.46'
	10835'	93.95°	88.84°	6488.99'	4057.35'
10850'					
10900'	10895'	93.95°	88.84°	6484.86'	4117.13'
10950'					

[illegible]



3150'

3174'

13.18°

290.23°

3144.66'

-71.88'

3200'

3250'

3269'

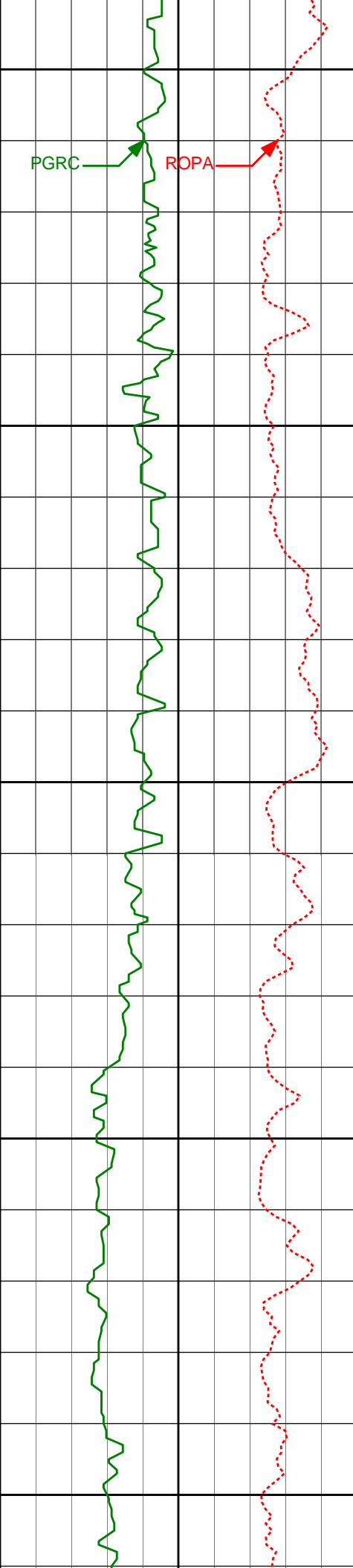
12.64°

290.70°

3237.26'

-91.21'

3300'



3350'

PGRC

ROPA

3365'

12.86°

293.45°

3330.89'

-110.24'

3400'

3450'

3460'

15.29°

289.72°

3423.03'

-131.10'

3500'

3550'

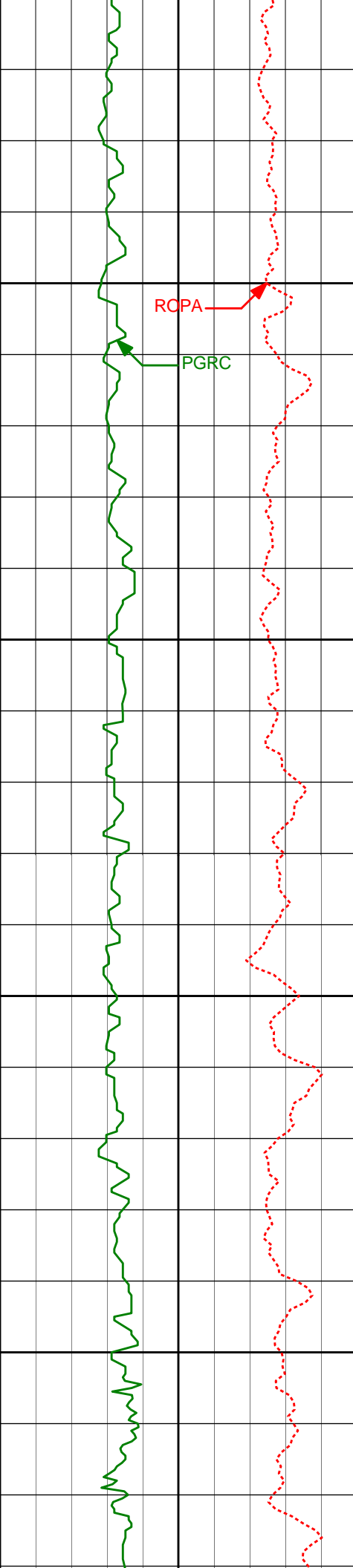
3556'

16.47°

290.42°

3515.37'

-155.09'



3600'

RCPA

PGRC

3650'

3651'

16.61°

288.43°

3606.44'

-179.91'

3700'

3750'

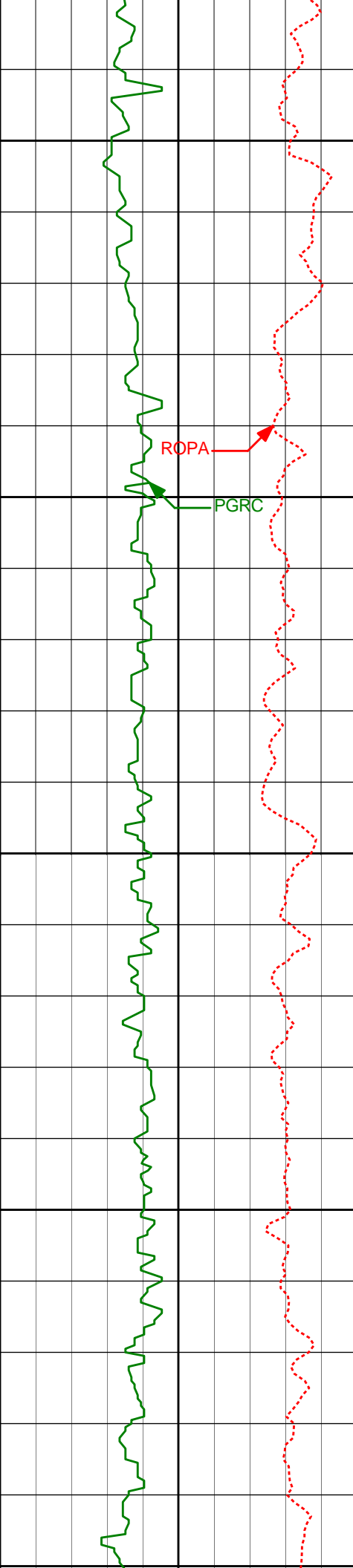
3746'

17.82°

289.81°

3697.18'

-205.77'



3800'

3841'

15.24°

290.79°

3788.25'

-230.41'

3850'

ROP



PGRC



3900'

3937'

14.75°

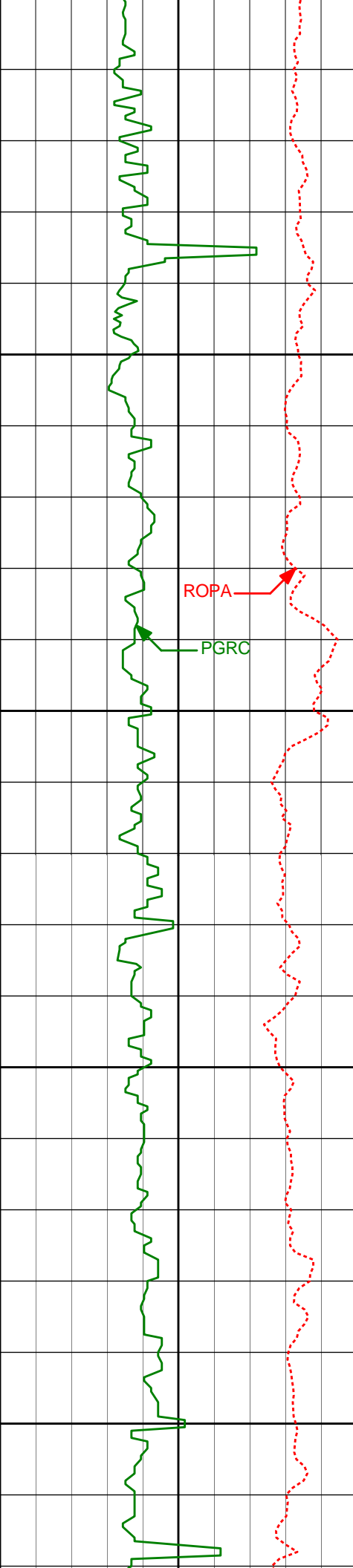
292.15°

3880.98'

-252.85'

3950'

4000'



4000'

4050'

4100'

4150'

4200'

4032'

13.71°

289.75°

3973.06'

-274.02'

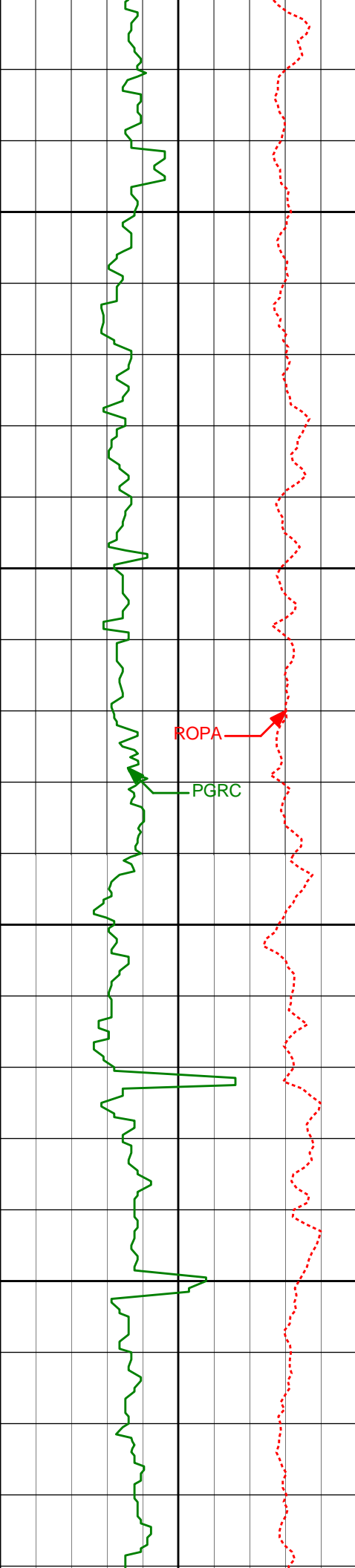
4127'

15.00°

290.00°

4065.09'

-295.57'



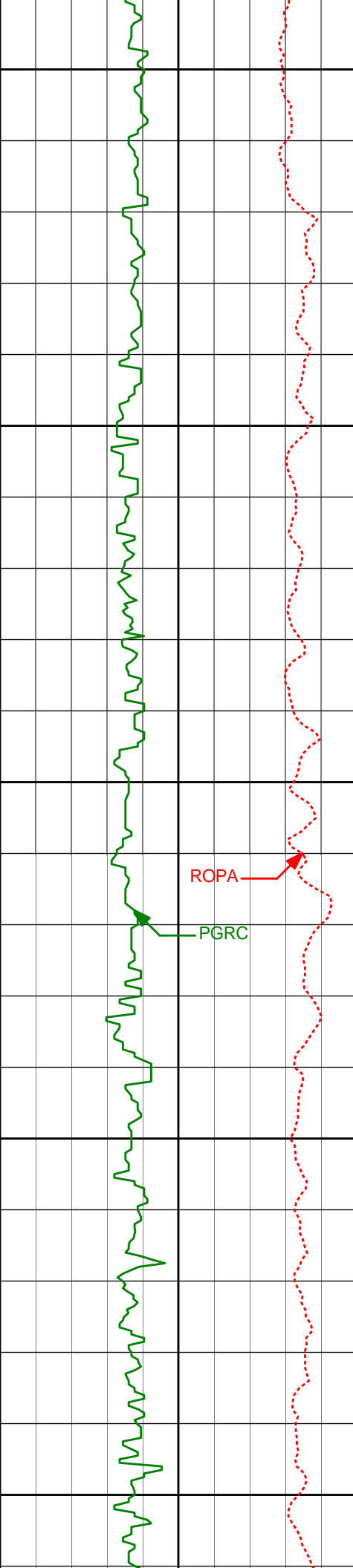
4250'

4300'

4350'

4400'

4223'	14.13°	290.12°	4158.01'	-317.61'
4318'	13.45°	289.49°	4250.27'	-338.33'
4414'	14.24°	296.67°	4343.48'	-358.74'



4450'

4500'

4550'

4600'

4650'

ROPA

PGRC

4509'

12.27°

296.83°

4435.95'

-377.48'

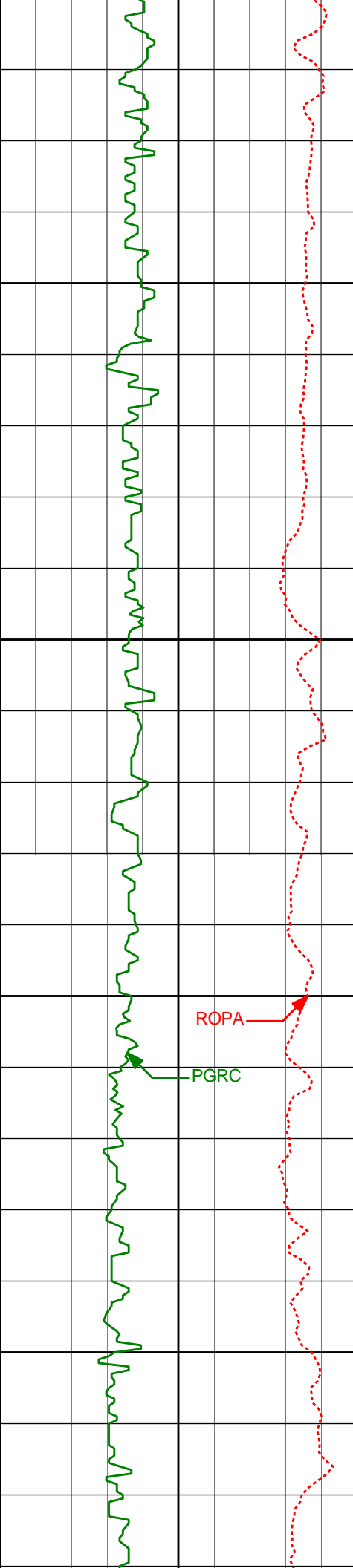
4604'

12.76°

291.61°

4528.69'

-395.62'



4700'

4750'

4800'

4850'

ROPA

PGRC

4700'

12.97°

288.57°

4622.28'

-415.13'

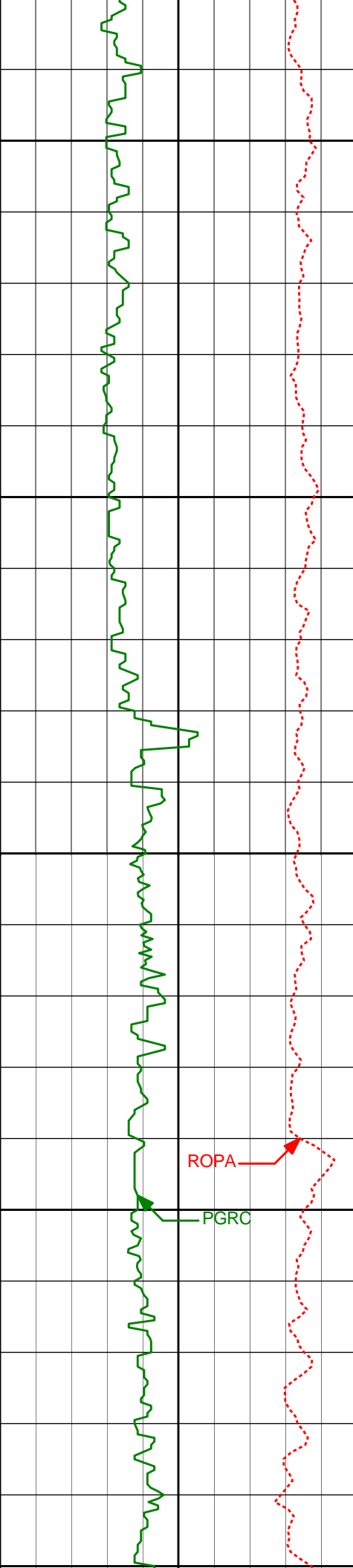
4795'

11.78°

287.66°

4715.07'

-433.99'



4900'

4950'

5000'

5050'

5100'

4891'

13.31°

289.43°

4808.78'

-453.25'

4986'

12.80°

288.95°

4901.32'

-472.98'

5082'

8.36°

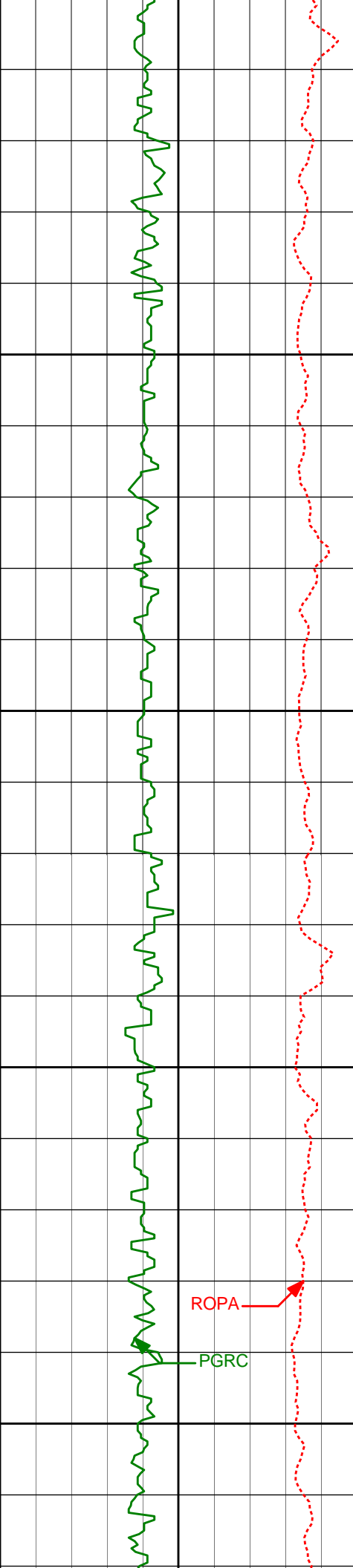
299.71°

4995.68'

-488.60'

ROPA

PGRC



5150'

5200'

5250'

5300'

5177'

7.03°

301.55°

5089.82'

-499.08'

5273'

6.04°

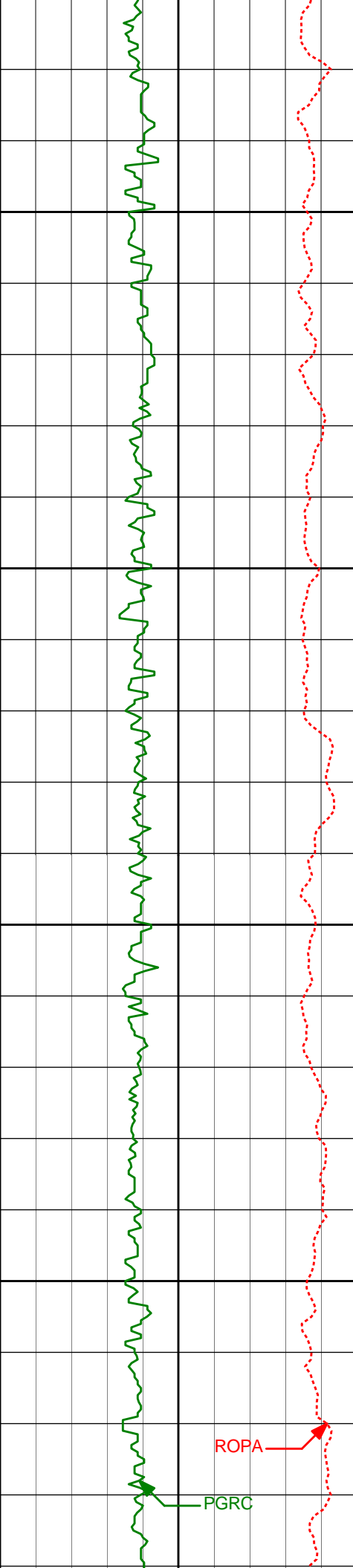
296.71°

5185.19'

-508.20'

ROPA

PGRC



5350'

5368'

4.79°

297.66°

5279.77'

-515.87'

5400'

5450'

5463'

3.87°

311.12°

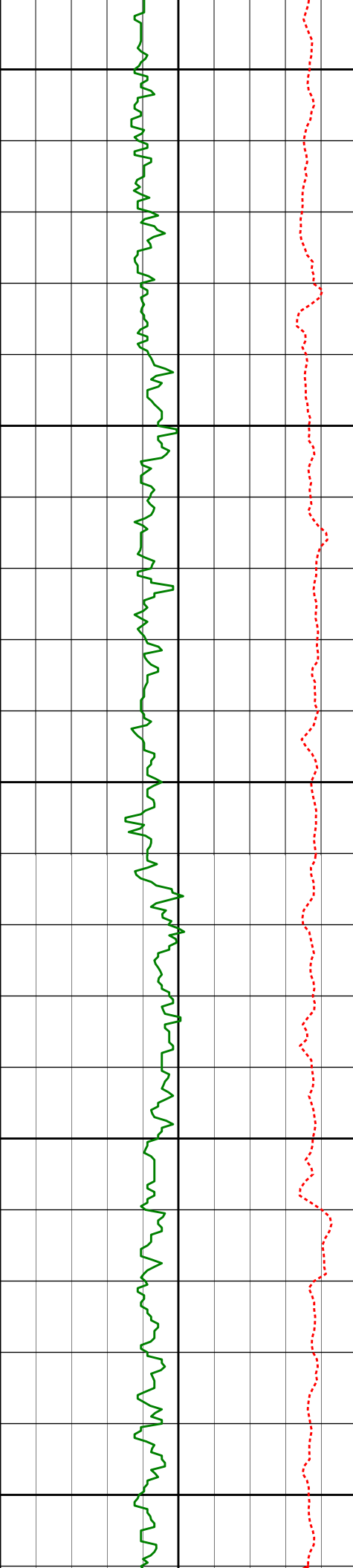
5374.50'

-521.52'

5500'

ROPA

PGRC



5550'

5600'

5650'

5700'

5750'

5559'

1.82°

322.17°

5470.38'

-524.66'

5654'

1.63°

335.81°

5565.33'

-525.97'

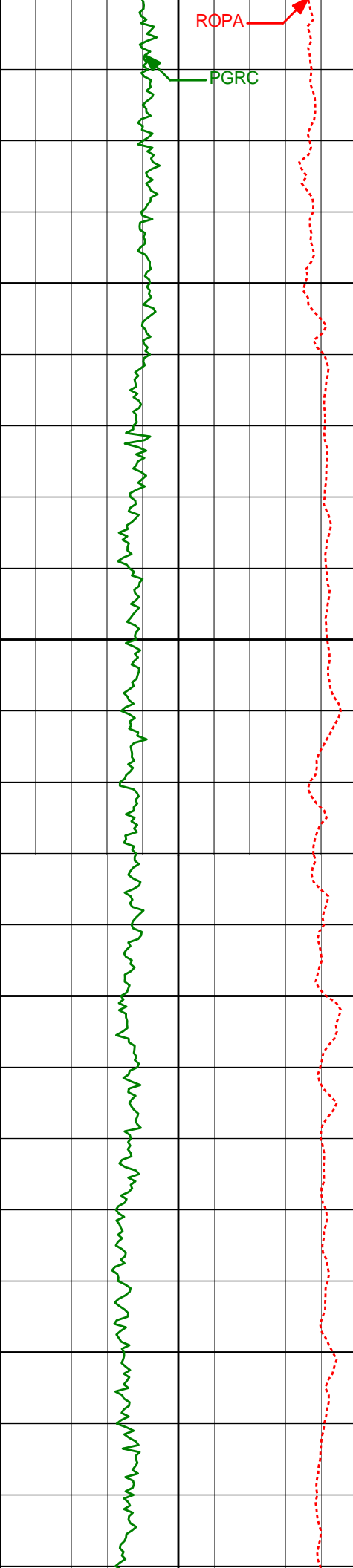
5749'

1.73°

285.58°

5660.30'

-527.78'



5800'

5850'

5900'

5950'

5846'

3.34°

93.57°

5757.26'

-526.36'

5894'

8.54°

89.32°

5804.98'

-521.41'

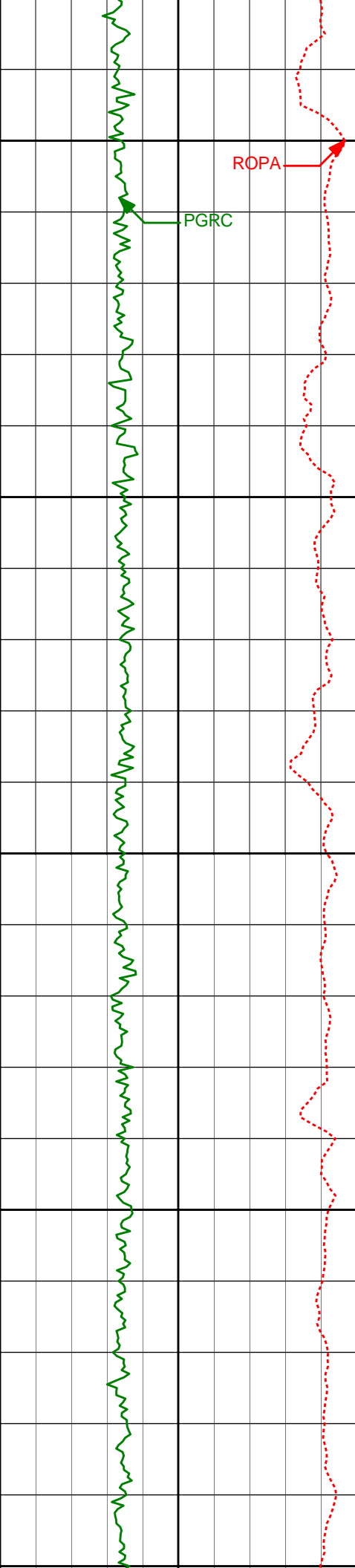
5942'

12.38°

84.35°

5852.18'

-512.71'



6000'

6050'

6100'

6150'

6200'

5990'

16.49°

81.05°

5898.65'

-500.78'

6036'

18.15°

84.08°

5942.56'

-487.11'

6084'

20.17°

88.79°

5987.90'

-471.36'

6132'

22.64°

90.87°

6032.59'

-453.89'

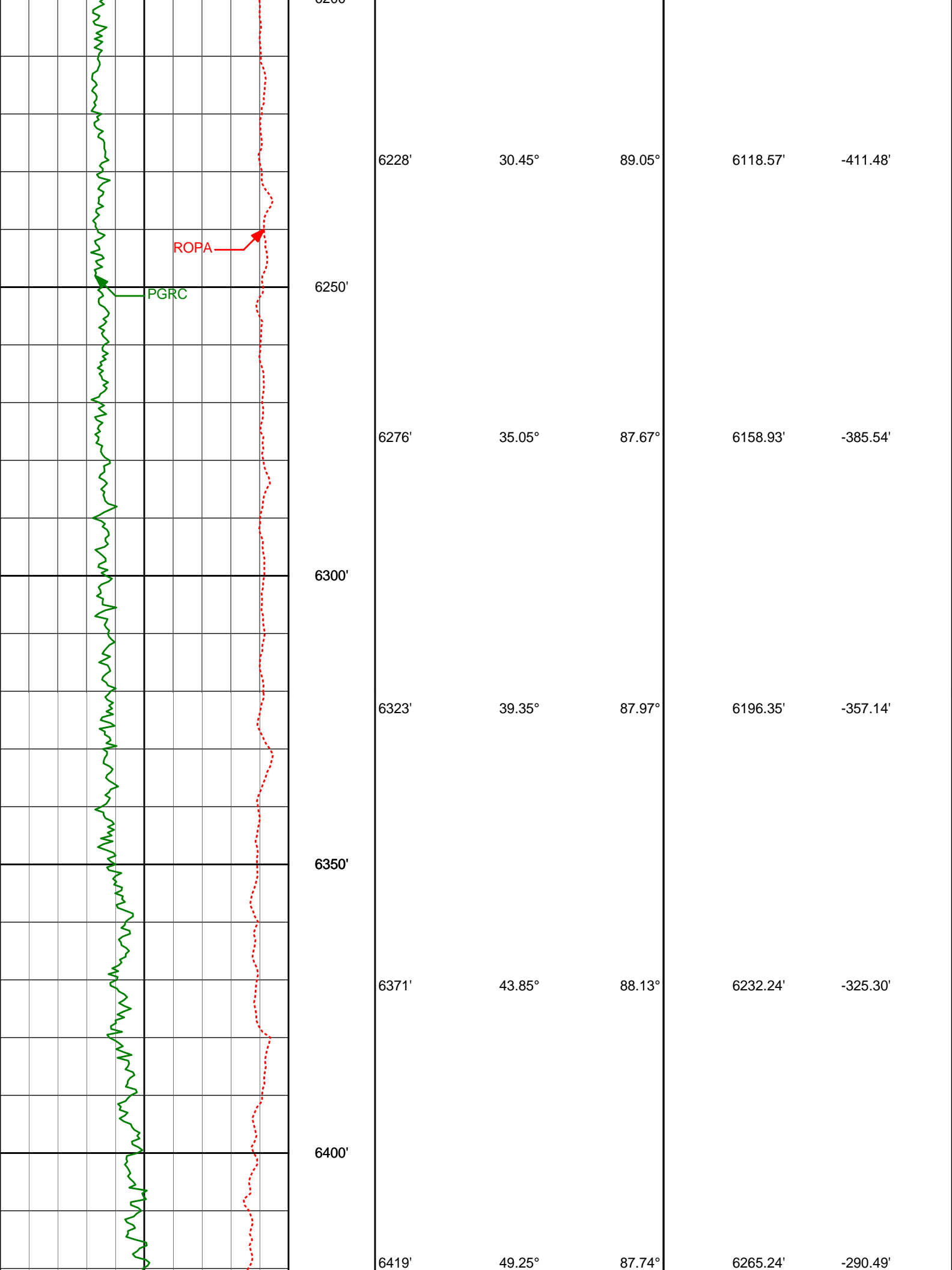
6180'

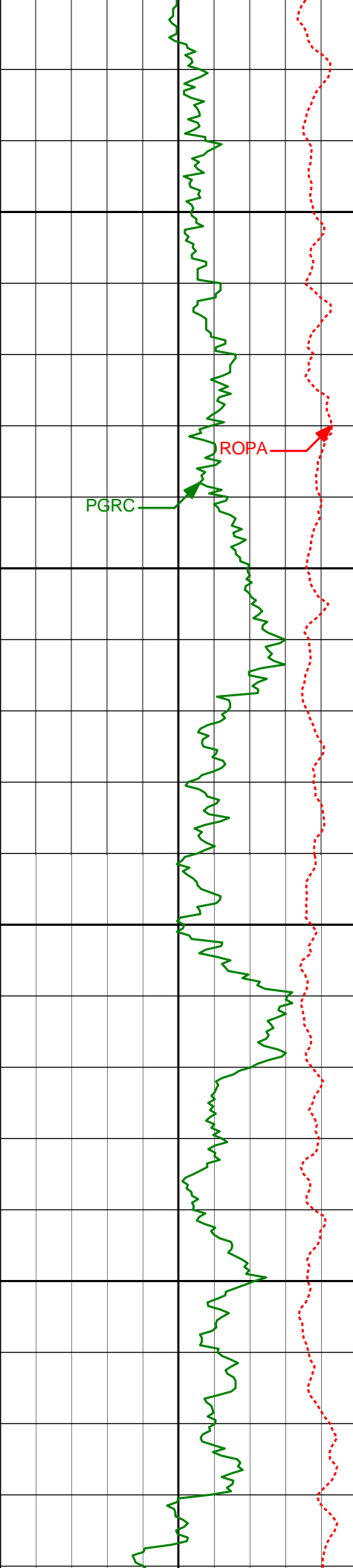
26.11°

91.01°

6076.31'

-434.15'





6450'

6467'

52.62°

91.30°

6295.49'

-253.30'

ROPA

PGRC

6500'

6514'

56.00°

92.92°

6322.91'

-215.35'

6550'

6562'

59.27°

92.69°

6348.60'

-175.10'

6600'

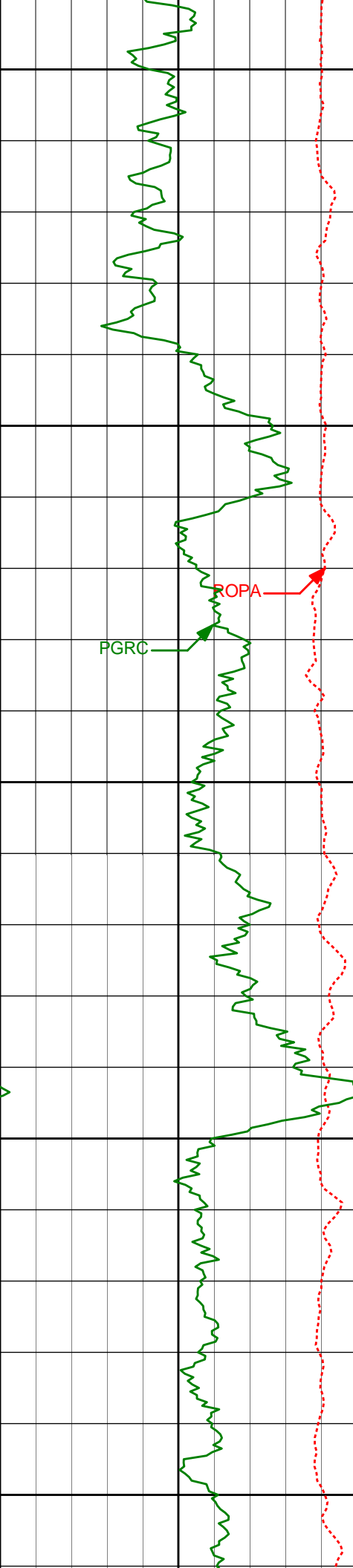
6609'

62.30°

92.09°

6371.53'

-134.33'



6650'

6657'

64.25°

91.50°

6393.12'

-91.68'

6700'

6705'

66.88°

91.06°

6412.97'

-48.16'

6750'

6753'

70.38°

91.77°

6430.46'

-3.67'

6800'

6800'

74.74°

92.41°

6444.54'

40.91'

6850'

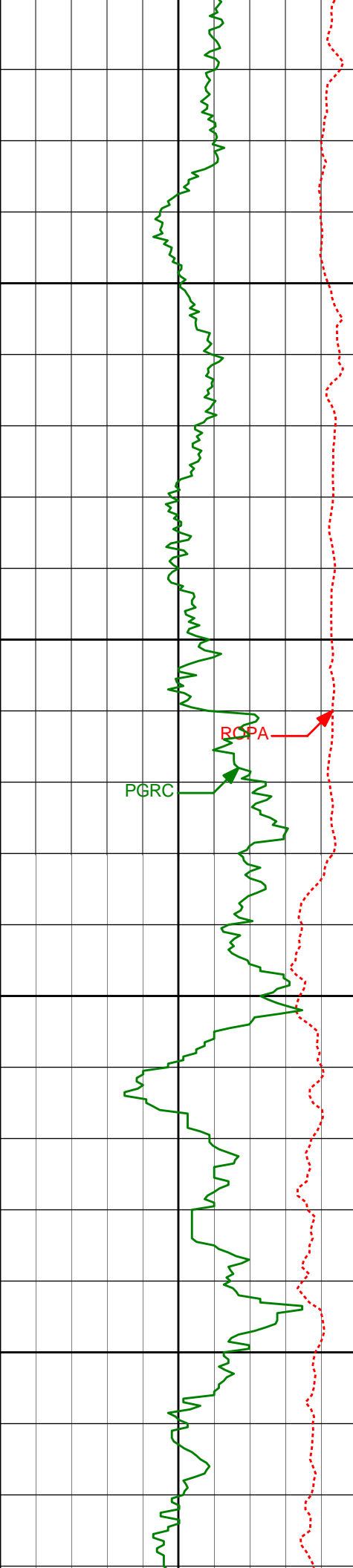
6848'

78.21°

92.86°

6455.77'


87.26'



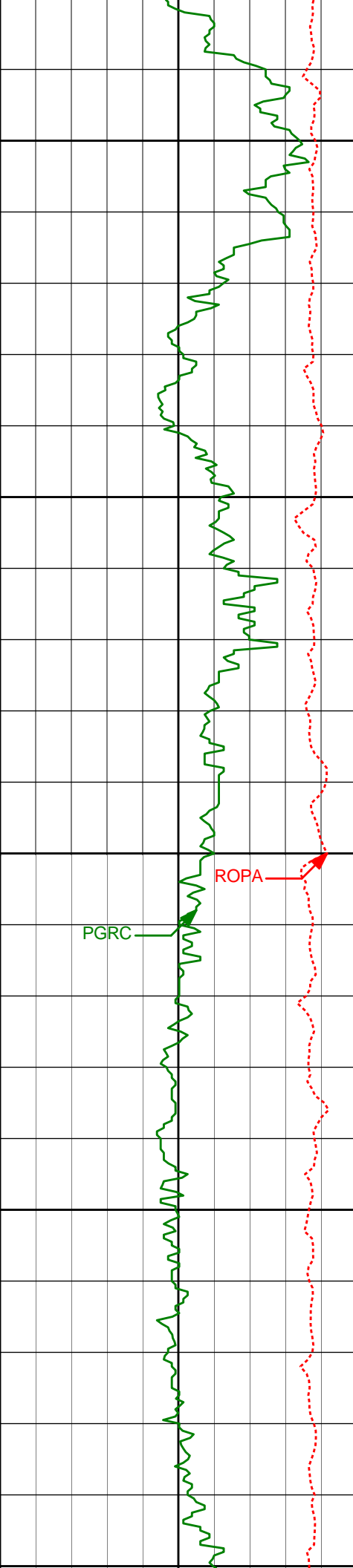
6896'	82.19°	91.94°	6463.94'	134.26'
6900'				
6923'	83.75°	91.37°	6467.24'	160.93'
6950'				
7000'				
7032'	85.72°	91.56°	6477.24'	268.98'
7050'				
7079'	86.68°	90.93°	6480.35'	315.68'

PGRC

RSPA

 Casing Set @ 6969'

<Run 300>



7100'

7150'

7174'

89.05°

90.73°

6483.89'

410.28'

7200'

ROPA

PGRC

7250'

7270'

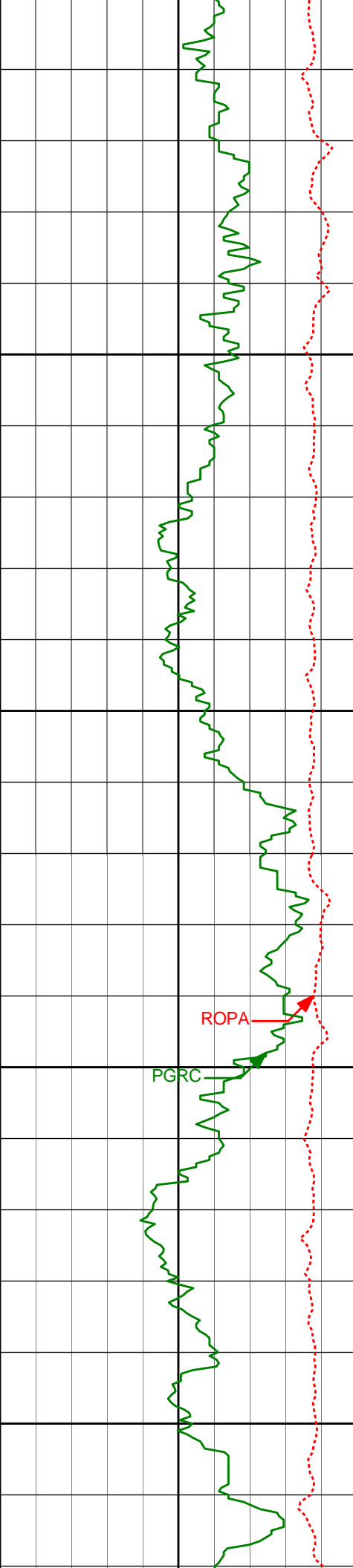
90.65°

92.21°

6484.15'

505.84'

7300'



7350'

7350'

7400'

7450'

7500'

7365'

92.19°

91.30°

6481.80'

600.34'

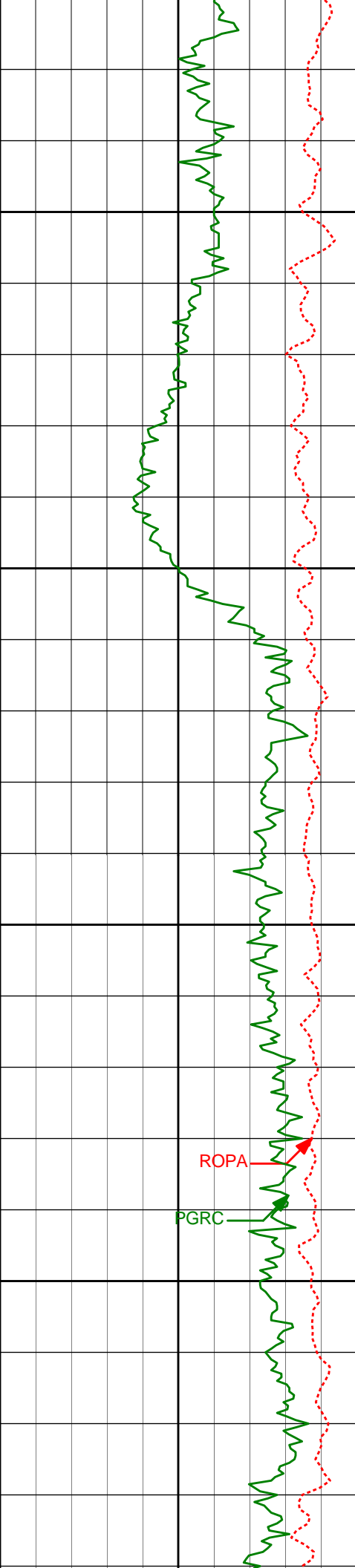
7460'

92.35°

90.32°

6478.04'

694.93'



7550'

7600'

7650'

7700'

7556'

91.57°

90.42°

6474.76'

790.60'

7652'

89.54°

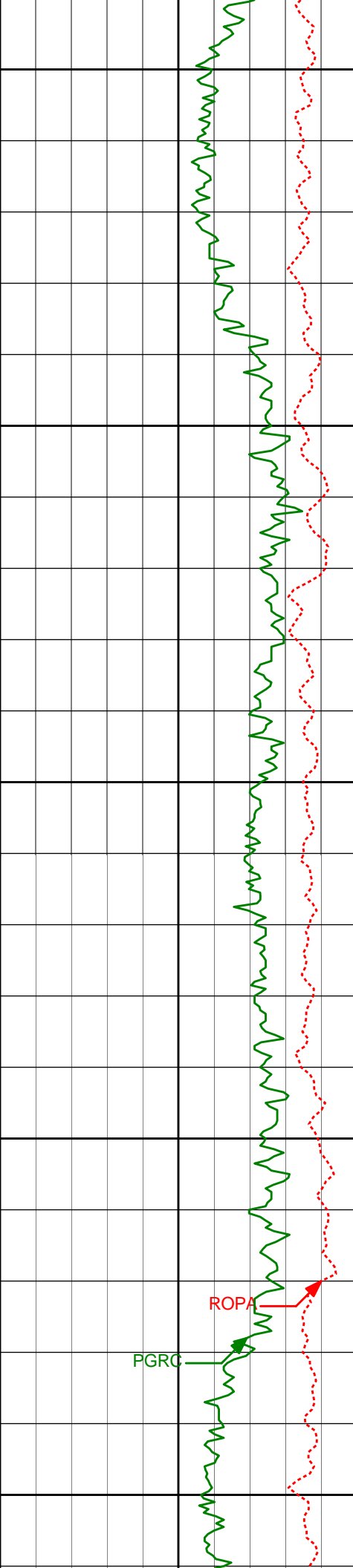
90.36°

6473.83'

886.31'

ROP

PGRC



7750'

7800'

7850'

7900'

7950'

7747'

88.92°

91.10°

6475.10'

980.99'

7842'

89.26°

90.11°

6476.61'

1075.67'

7938'

88.73°

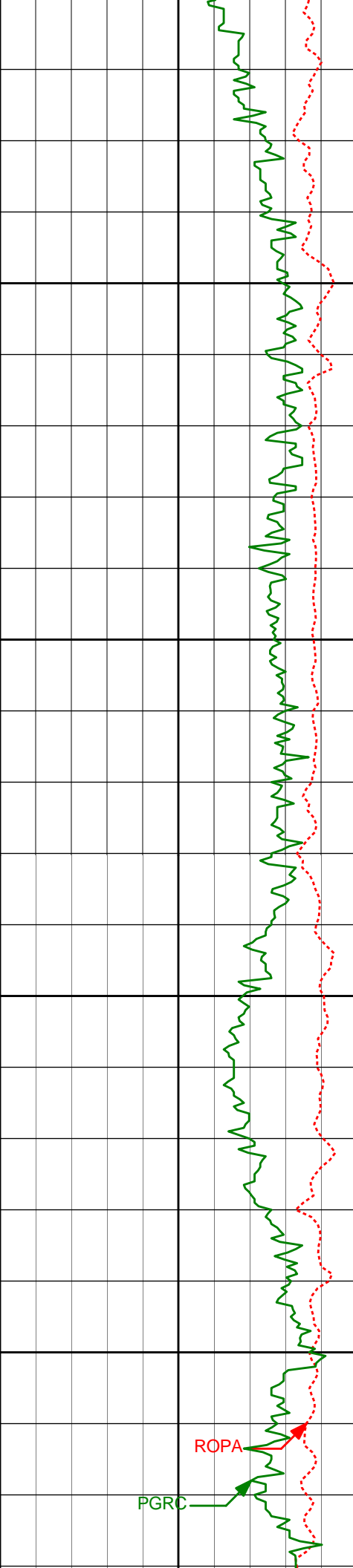
89.49°

6478.29'

1171.45'

ROPA

PGRC



8000'

8050'

8100'

8150'

8033'

88.77°

88.93°

6480.36'

1266.28'

8129'

90.28°

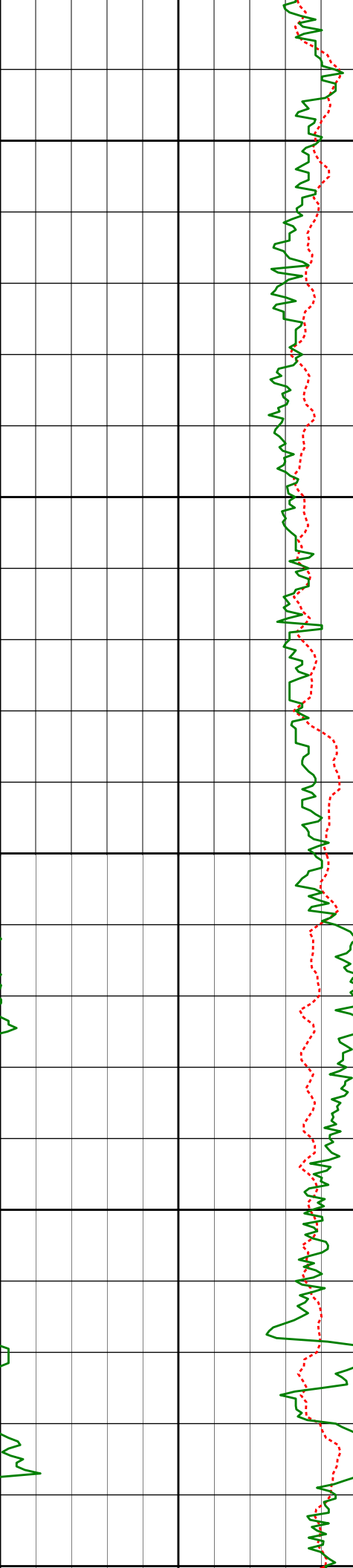
91.35°

6481.16'

1362.02'

ROPA

PGRC



8200'

8250'

8300'

8350'

8400'

8224'

91.27°

92.90°

6479.88'

1456.47'

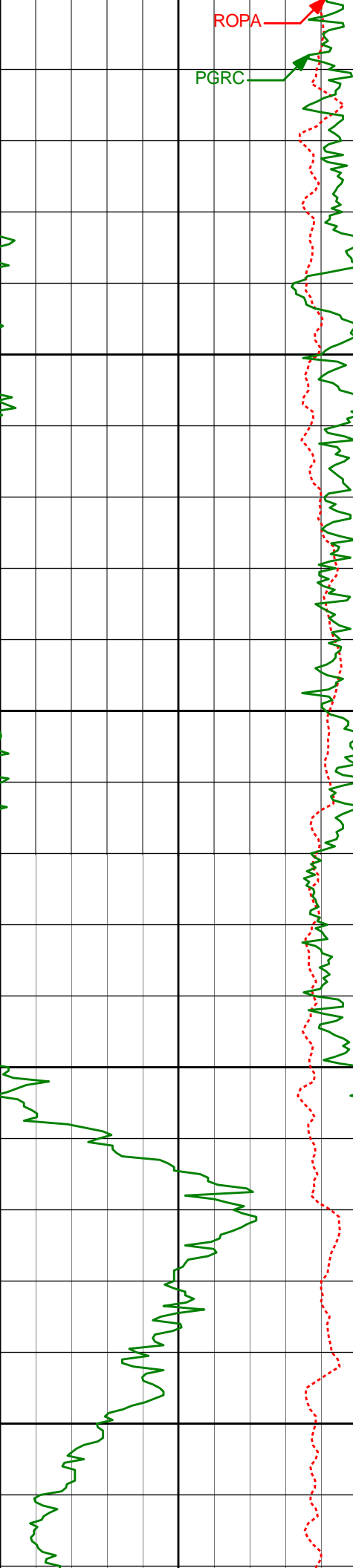
8320'

91.85°

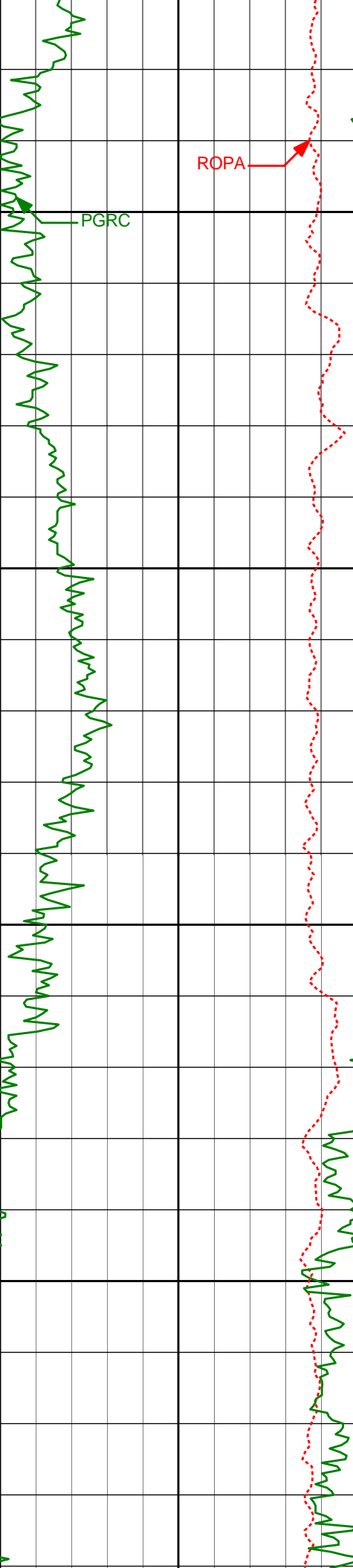
91.55°

6477.27'

1551.88'



8415'	90.34°	92.14°	6475.46'	1646.37'
8450'				
8500'				
8510'	88.89°	91.21°	6476.10'	1740.90'
8550'				
8600'				
8606'	88.24°	91.31°	6478.50'	1836.48'



ROPA

PGRC

8650'

8700'

8750'

8800'

8701'

88.21°

91.13°

6481.44'

1931.04'

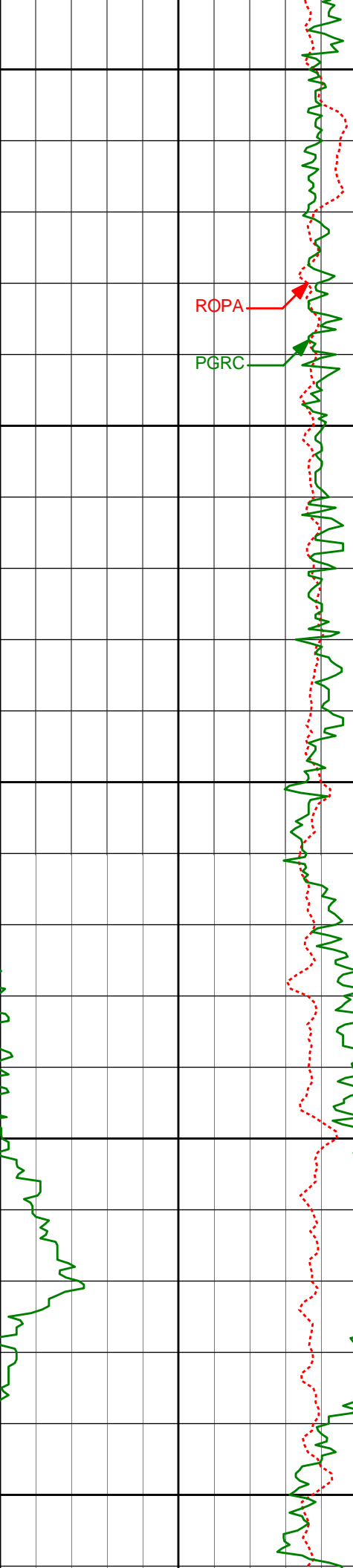
8797'

88.33°

89.93°

6484.34'

2026.70'



8850'

ROPAC

PGRC

8900'

8950'

9000'

9050'

8892'

88.08°

89.47°

6487.30'

2121.46'

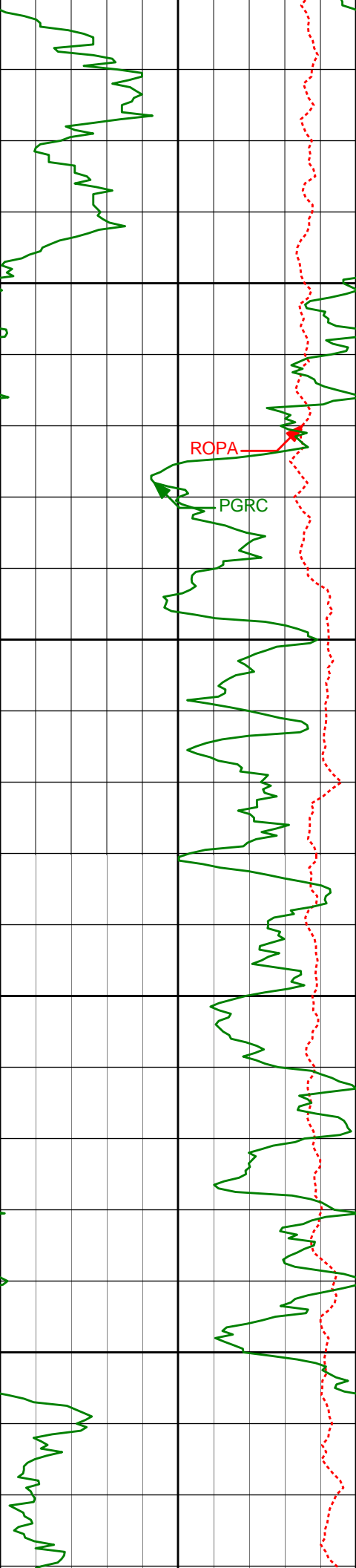
8988'

89.48°

89.16°

6489.35'

2217.28'



9083'

91.76°

88.15°

6488.33'

2312.17'

9100'

9150'

9179'

92.65°

88.55°

6484.63'

2408.02'

9200'

9250'

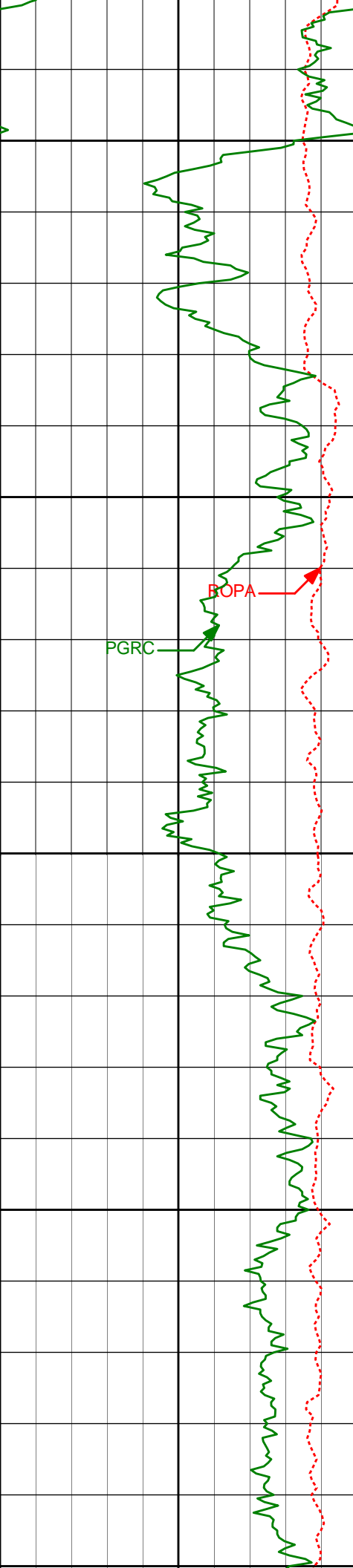
9274'

91.64°

88.80°

6481.08'

2502.85'



9300'

9350'

9400'

9450'

9500'

ROPA

PGRC

9369'

89.85°

88.74°

6479.85'

2597.73'

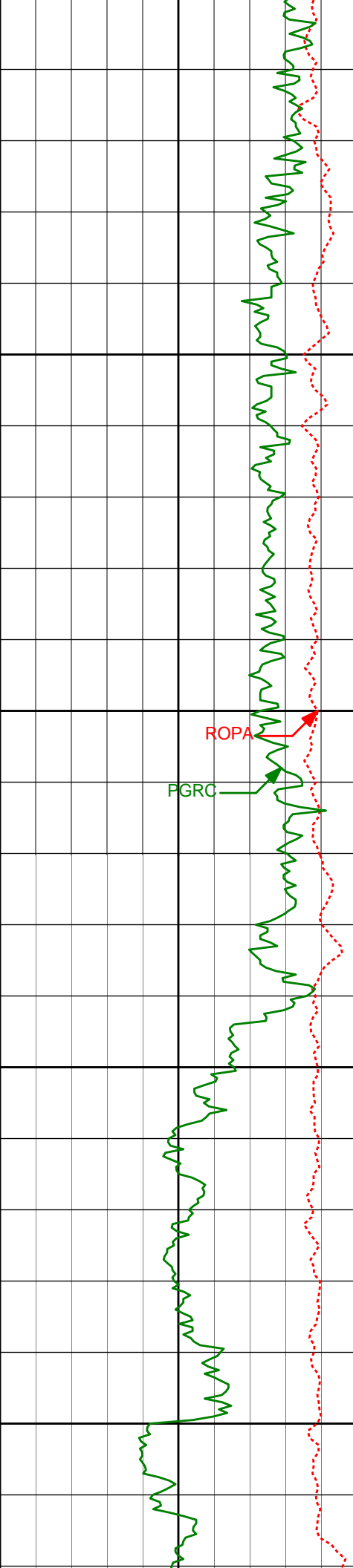
9465'

89.29°

90.76°

6480.57'

2693.52'



9550'

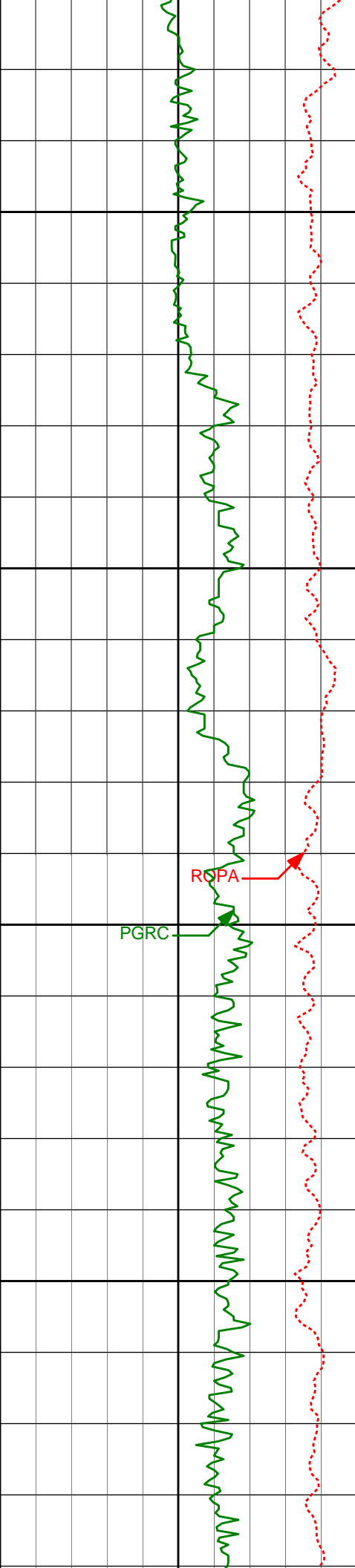
9550'

9600'

9650'

9700'

9561'	88.92°	92.10°	6482.07'	2789.08'
9656'	88.76°	92.55°	6483.99'	2883.49'



9750'

9800'

9850'

9900'

9752'

9847'

88.58°

87.37°

92.53°

92.66°

6486.21'

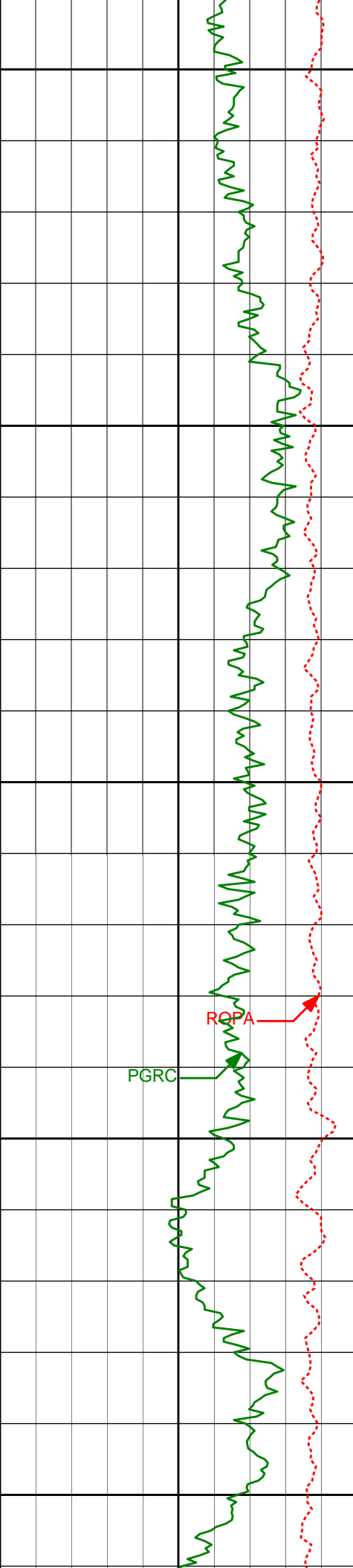
6489.56'

2978.85'

3073.17'

ROPA

PGRC



9950'

10000'

10050'

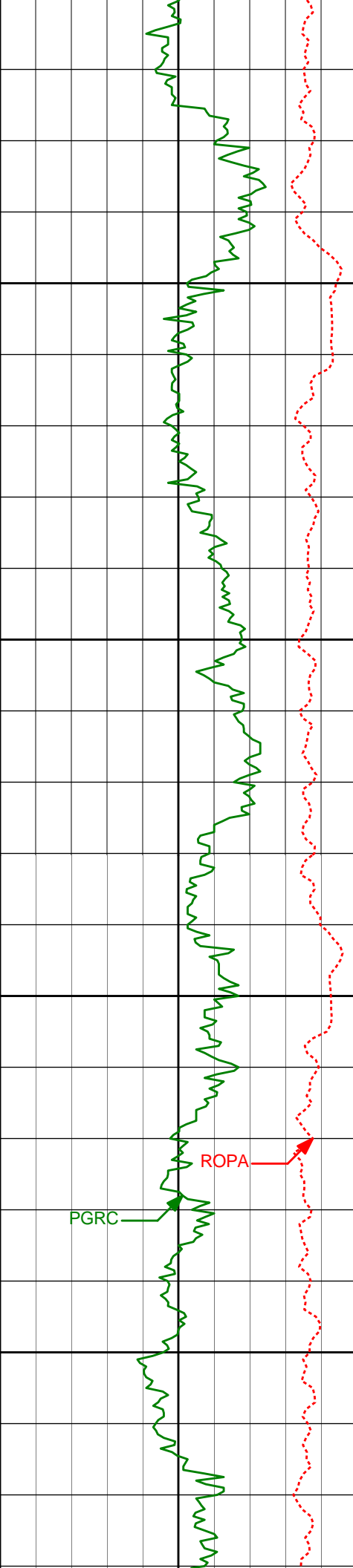
10100'

10150'

PGRC

RQPA

9942'	88.61°	92.21°	6492.89'	3167.51'
10038'	89.04°	91.07°	6494.86'	3263.03'
10132'	90.25°	90.19°	6495.44'	3356.73'



10200'

10250'

10300'

10350'

10228'

89.88°

90.68°

6495.34'

3452.45'

10323'

90.19°

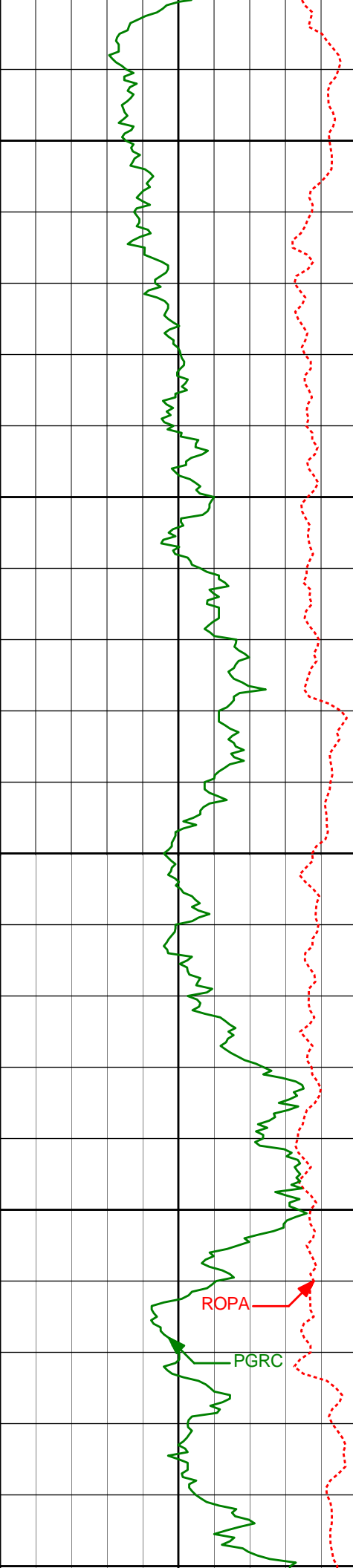
91.47°

6495.29'

3547.08'

PGRC

ROPA



10400'

10450'
<Run 400>

10500'

10550'

10600'

10418'

90.03°

91.75°

6495.11'

3641.63'

10514'

89.94°

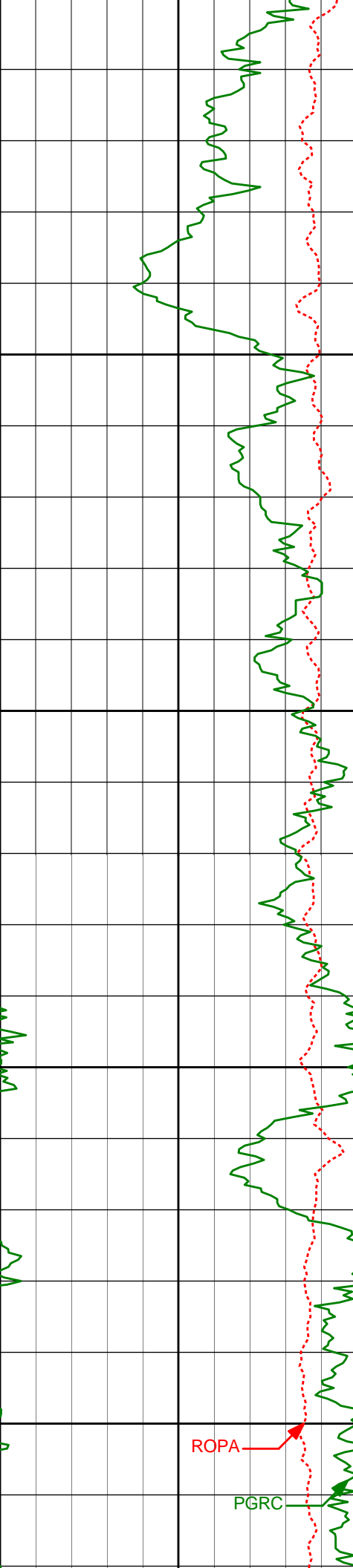
90.38°

6495.13'

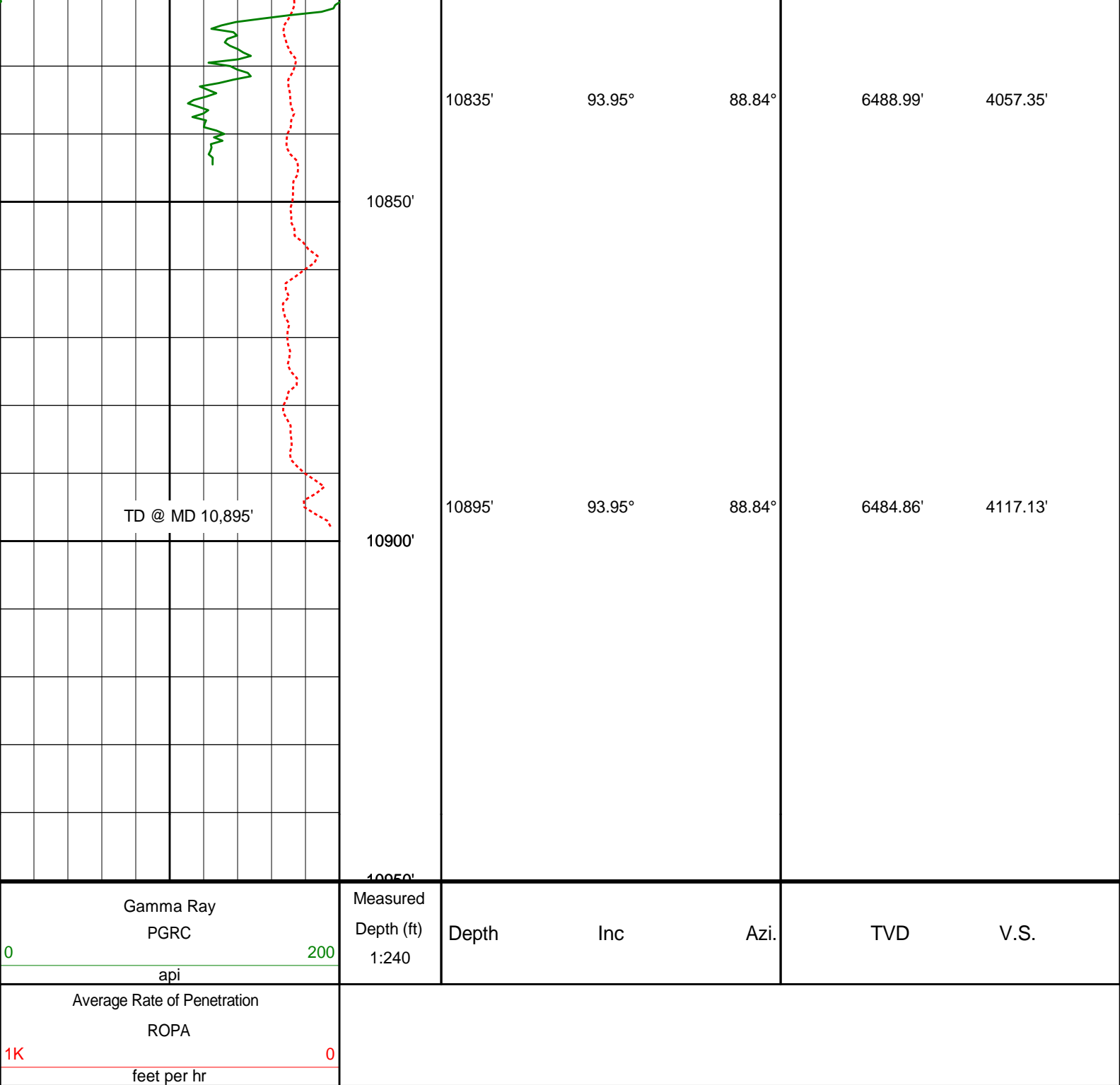
3737.26'

ROPA

PGRC



10609'	89.47°	90.24°	6495.62'	3831.99'
10650'				
10700'				
10705'	91.39°	90.07°	6494.90'	3927.74'
10750'				
10800'				
10801'	93.15°	89.32°	6491.10'	4023.46'



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
SLW State PC BB18-67HN
Wattenberg
Weld Colorado
USA
CA-XX-0009441278

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
575.00	0.00	0.00	575.00	0.00 N	0.00 E	0.00	0.00

661.00	0.37	87.91	661.00	0.01 N	0.28 E	0.28	0.43
724.00	0.11	120.35	724.00	0.01 S	0.54 E	0.54	0.45
819.00	0.36	192.45	819.00	0.35 S	0.55 E	0.53	0.36
914.00	0.25	50.98	914.00	0.51 S	0.65 E	0.61	0.60
1008.00	0.35	112.59	1008.00	0.50 S	1.07 E	1.03	0.34
1195.00	0.14	166.77	1194.99	0.94 S	1.65 E	1.58	0.16
1379.00	0.54	200.23	1378.99	1.96 S	1.40 E	1.26	0.23
1471.00	0.44	54.78	1470.99	2.17 S	1.54 E	1.39	1.02
1564.00	3.44	107.46	1563.93	2.80 S	4.49 E	4.29	3.43
1656.00	4.51	78.59	1655.72	2.91 S	10.67 E	10.44	2.43
1748.00	6.37	46.83	1747.32	1.30 N	17.93 E	17.98	3.77
1840.00	6.60	67.02	1838.74	6.85 N	26.52 E	26.93	2.48
1932.00	8.11	89.14	1930.00	9.02 N	37.89 E	38.42	3.46
2025.00	9.30	63.42	2021.96	12.48 N	51.17 E	51.91	4.34
2124.00	9.65	34.31	2119.67	22.92 N	63.01 E	64.44	4.80
2220.00	8.96	17.17	2214.42	36.71 N	69.75 E	72.12	2.96
2315.00	8.67	354.67	2308.33	50.91 N	71.27 E	74.62	3.62
2410.00	9.29	335.90	2402.18	65.04 N	67.48 E	71.81	3.14
2506.00	10.81	321.08	2496.72	79.12 N	58.65 E	63.98	3.12
2601.00	12.10	311.93	2589.83	92.71 N	45.64 E	51.94	2.34
2697.00	13.76	302.44	2683.41	105.56 N	28.52 E	35.74	2.80
2792.00	15.63	294.36	2775.31	116.90 N	7.32 E	15.38	2.92
2888.00	15.30	292.92	2867.83	127.17 N	16.13 W	-7.31	0.53
2984.00	15.08	293.06	2960.47	137.00 N	39.29 W	-29.73	0.23
3079.00	14.27	290.87	3052.37	146.01 N	61.60 W	-51.37	1.04
3174.00	13.18	290.23	3144.66	153.93 N	82.71 W	-71.88	1.16
3269.00	12.64	290.70	3237.26	161.35 N	102.60 W	-91.21	0.58
3365.00	12.86	293.45	3330.89	169.31 N	122.23 W	-110.24	0.67
3460.00	15.29	289.72	3423.03	177.75 N	143.72 W	-131.10	2.73
3556.00	16.47	290.42	3515.37	186.77 N	168.39 W	-155.09	1.25
3651.00	16.61	288.43	3606.44	195.76 N	193.89 W	-179.91	0.61
3746.00	17.82	289.81	3697.18	204.98 N	220.45 W	-205.77	1.34
3841.00	15.24	290.79	3788.25	214.34 N	245.80 W	-230.41	2.73
3937.00	14.75	292.15	3880.98	223.43 N	268.92 W	-252.85	0.62
4032.00	13.71	289.75	3973.06	231.80 N	290.72 W	-274.02	1.26
4127.00	15.00	290.00	4065.09	239.80 N	312.87 W	-295.57	1.35
4223.00	14.13	290.12	4158.01	248.08 N	335.55 W	-317.61	0.91
4318.00	13.45	289.49	4250.27	255.76 N	356.85 W	-338.33	0.72
4414.00	14.24	296.67	4343.48	264.79 N	377.93 W	-358.74	1.97
4509.00	12.27	296.83	4435.95	274.59 N	397.39 W	-377.48	2.07
4604.00	12.76	291.61	4528.69	283.01 N	416.16 W	-395.62	1.30
4700.00	12.97	288.57	4622.28	290.35 N	436.22 W	-415.13	0.74
4795.00	11.78	287.66	4715.07	296.69 N	455.57 W	-433.99	1.27
4891.00	13.31	289.43	4808.78	303.33 N	475.33 W	-453.25	1.65
4986.00	12.80	288.95	4901.32	310.39 N	495.60 W	-472.98	0.55
5082.00	8.36	299.71	4995.68	317.31 N	511.73 W	-488.60	5.04
5177.00	7.03	301.55	5089.82	323.77 N	522.69 W	-499.08	1.43
5273.00	6.04	296.71	5185.19	329.12 N	532.20 W	-508.20	1.18
5368.00	4.79	297.66	5279.77	333.20 N	540.17 W	-515.87	1.31
5463.00	3.87	311.12	5374.50	337.16 N	546.11 W	-521.52	1.44
5559.00	1.82	322.17	5470.38	340.49 N	549.49 W	-524.66	2.21
5654.00	1.63	335.81	5565.33	342.92 N	550.97 W	-525.97	0.47
5749.00	1.73	285.58	5660.30	344.54 N	552.90 W	-527.78	1.50
5846.00	3.34	93.57	5757.26	344.75 N	551.49 W	-526.36	5.19
5894.00	8.54	89.32	5804.98	344.71 N	546.53 W	-521.41	10.87
5942.00	12.38	84.35	5852.18	345.26 N	537.84 W	-512.71	8.20
5990.00	16.49	81.05	5898.65	346.82 N	525.98 W	-500.78	8.74
6036.00	18.15	84.08	5942.56	348.58 N	512.40 W	-487.11	4.11
6084.00	20.17	88.79	5987.90	349.52 N	496.69 W	-471.36	5.30
6132.00	22.64	90.87	6032.59	349.56 N	479.17 W	-453.89	5.37
6180.00	26.11	91.01	6076.31	349.23 N	459.37 W	-434.15	7.22
6228.00	30.45	89.05	6118.57	349.25 N	436.64 W	-411.48	9.26
6276.00	35.05	87.67	6158.93	350.01 N	410.69 W	-385.54	9.71
6323.00	39.35	87.97	6196.35	351.08 N	382.30 W	-357.14	9.16
6371.00	43.85	88.13	6232.24	352.16 N	350.46 W	-325.30	9.36
6419.00	49.25	87.74	6265.24	353.42 N	315.65 W	-290.49	11.27
6467.00	52.62	91.30	6295.49	353.71 N	278.40 W	-253.30	9.09
6514.00	56.00	92.92	6322.91	352.29 N	240.26 W	-215.35	7.72
6562.00	59.27	92.69	6348.60	350.31 N	199.77 W	-175.10	6.83
6609.00	62.30	92.09	6371.53	348.60 N	158.78 W	-134.33	6.53
6657.00	64.25	91.50	6393.12	347.26 N	115.93 W	-91.68	4.22
6705.00	66.88	91.06	6412.97	346.29 N	72.25 W	-48.16	5.53
6753.00	70.38	91.77	6430.46	345.19 N	27.57 W	-3.67	7.41
6800.00	74.74	92.41	6444.54	343.55 N	17.23 E	40.91	9.38

6848.00	78.21	92.86	6455.77	341.40 N	63.84 E	87.26	7.27
6896.00	82.19	91.94	6463.94	339.42 N	111.09 E	134.26	8.51
6923.00	83.75	91.37	6467.24	338.65 N	137.87 E	160.93	6.15
7032.00	85.72	91.56	6477.24	335.88 N	246.37 E	268.98	1.81
7079.00	86.68	90.93	6480.35	334.86 N	293.26 E	315.68	2.44
7174.00	89.05	90.73	6483.89	333.48 N	388.17 E	410.28	2.50
7270.00	90.65	92.21	6484.15	331.02 N	484.14 E	505.84	2.27
7365.00	92.19	91.30	6481.80	328.11 N	579.06 E	600.34	1.88
7460.00	92.35	90.32	6478.04	326.76 N	673.97 E	694.93	1.05
7556.00	91.57	90.42	6474.76	326.14 N	769.92 E	790.60	0.81
7652.00	89.54	90.36	6473.83	325.49 N	865.90 E	886.31	2.12
7747.00	88.92	91.10	6475.10	324.27 N	960.89 E	980.99	1.02
7842.00	89.26	90.11	6476.61	323.26 N	1055.87 E	1075.67	1.11
7938.00	88.73	89.49	6478.29	323.59 N	1151.85 E	1171.45	0.84
8033.00	88.77	88.93	6480.36	324.90 N	1246.82 E	1266.28	0.60
8129.00	90.28	91.35	6481.16	324.67 N	1342.81 E	1362.02	2.97
8224.00	91.27	92.90	6479.88	321.15 N	1437.73 E	1456.47	1.94
8320.00	91.85	91.55	6477.27	317.42 N	1533.62 E	1551.88	1.53
8415.00	90.34	92.14	6475.46	314.36 N	1628.55 E	1646.37	1.70
8510.00	88.89	91.21	6476.10	311.58 N	1723.50 E	1740.90	1.81
8606.00	88.24	91.31	6478.50	309.47 N	1819.45 E	1836.48	0.68
8701.00	88.21	91.13	6481.44	307.45 N	1914.38 E	1931.04	0.20
8797.00	88.33	89.93	6484.34	306.56 N	2010.33 E	2026.70	1.25
8892.00	88.08	89.47	6487.30	307.06 N	2105.28 E	2121.46	0.55
8988.00	89.48	89.16	6489.35	308.20 N	2201.25 E	2217.28	1.48
9083.00	91.76	88.15	6488.33	310.42 N	2296.21 E	2312.17	2.63
9179.00	92.65	88.55	6484.63	313.18 N	2392.10 E	2408.02	1.02
9274.00	91.64	88.80	6481.08	315.38 N	2487.01 E	2502.85	1.10
9369.00	89.85	88.74	6479.85	317.42 N	2581.97 E	2597.73	1.89
9465.00	89.29	90.76	6480.57	317.84 N	2677.96 E	2693.52	2.19
9561.00	88.92	92.10	6482.07	315.44 N	2773.92 E	2789.08	1.44
9656.00	88.76	92.55	6483.99	311.59 N	2868.82 E	2883.49	0.51
9752.00	88.58	92.53	6486.21	307.33 N	2964.70 E	2978.85	0.19
9847.00	87.37	92.66	6489.56	303.03 N	3059.54 E	3073.17	1.28
9942.00	88.61	92.21	6492.89	298.99 N	3154.40 E	3167.51	1.39
10038.00	89.04	91.07	6494.86	296.25 N	3250.34 E	3263.03	1.26
10132.00	90.25	90.19	6495.44	295.21 N	3344.33 E	3356.73	1.59
10228.00	89.88	90.68	6495.34	294.47 N	3440.32 E	3452.45	0.64
10323.00	90.19	91.47	6495.29	292.69 N	3535.31 E	3547.08	0.89
10418.00	90.03	91.75	6495.11	290.02 N	3630.27 E	3641.63	0.34
10514.00	89.94	90.38	6495.13	288.23 N	3726.25 E	3737.26	1.43
10609.00	89.47	90.24	6495.62	287.71 N	3821.25 E	3831.99	0.51
10705.00	91.39	90.07	6494.90	287.45 N	3917.24 E	3927.74	2.00
10801.00	93.15	89.32	6491.10	287.96 N	4013.16 E	4023.46	2.00
10835.00	93.95	88.84	6488.99	288.50 N	4047.09 E	4057.35	2.75
10895.00	93.95	88.84	6484.86	289.71 N	4106.93 E	4117.13	0.01

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 86.04 DEGREES (GRID)
A TOTAL CORRECTION OF 7.92 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 10895.00 FEET
IS 4117.14 FEET ALONG 85.96 DEGREES (GRID)**