



WELL INFORMATION					
MWD Run Number	100	200			
Date run completed	22-Sep-13	23-Sep-13			
Rig Bit Number	2	3			
Bit Size (in)	8.750	8.750			
Tool Nominal OD (in)	6.750	6.750			
Log Start Depth (TVD, ft)	970.99	5,901.26			
Log End Depth (TVD, ft)	5,901.26	6,601.81			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	21-Sep-13 17:00	22-Sep-13 17:30			
Drill/Wipe End Date and Time	22-Sep-13 11:00	23-Sep-13 10:00			
Min Inc (deg) @ Depth (TVD, ft)	.10 @ 5,562.27	.63 @ 5,939.26			
Max Inc (deg) @ Depth (TVD, ft)	19.01 @ 3,775.24	75.20 @ 6,588.55			
Bit TFA(in2) / Bit Type	.86 / PDC	1.24 / PDC			
Flow Rate (gpm)	598.73	572.58			
Max AV (fpm) / CV (fpm) @ MWD	500.0 / 500.0	500.0 / 500.0			
Fluid Type	Fresh Water Gel	Fresh Water Gel			
Density (ppg) / Viscosity (spqt)	8.40 / 26.00	10.20 / 40.00			
Filtrate CL (ppm)	2,500.00	1,300.00			
pH / Fluid Loss (mptm)	8.00 / 50	9.60 / 9			
PV (cP) / YP (lbf2)	2 / 1.00	11 / 12.00			
% Solids / % Sand	0.40 / 0.28	8.20 / 0.15			
% Oil / Oil:Water Ratio	0 / 0:90	0 / 0:90			
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Max Tool Temp (deg F) / S	122.22 / PDC	122.22 / PDC			

Max Tool Temp (degF) / Source	163.20 / PCM	163.20 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A			
Lead MWD Engineer	Adam Sampson	Adam Sampson			
Customer Representative	Matt Settles	Matt Settles			

## SENSOR INFORMATION

### Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.84	5.84			
Sub Serial Number	11341325	11341325			
Insert Serial Number	11400840	11400840			
Date and Time Initialized	21-Sep-13 07:55	01-Jan-70 00:00			
Date and Time Read	23-Sep-13 15:22	23-Sep-13 15:29			
ECMB SW Version	N/A	N/A			

### Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	55.00	54.00			
Software Version	6.21	6.21			
Sub Serial Number	11341325	11341325			
Sonde Serial Number	11902117	11902117			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	101.35	241.95			

### Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	48.71	48.71			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	11341325	11341325			
Insert/Sonde Serial Number	11579845	11579845			

## REMARKS

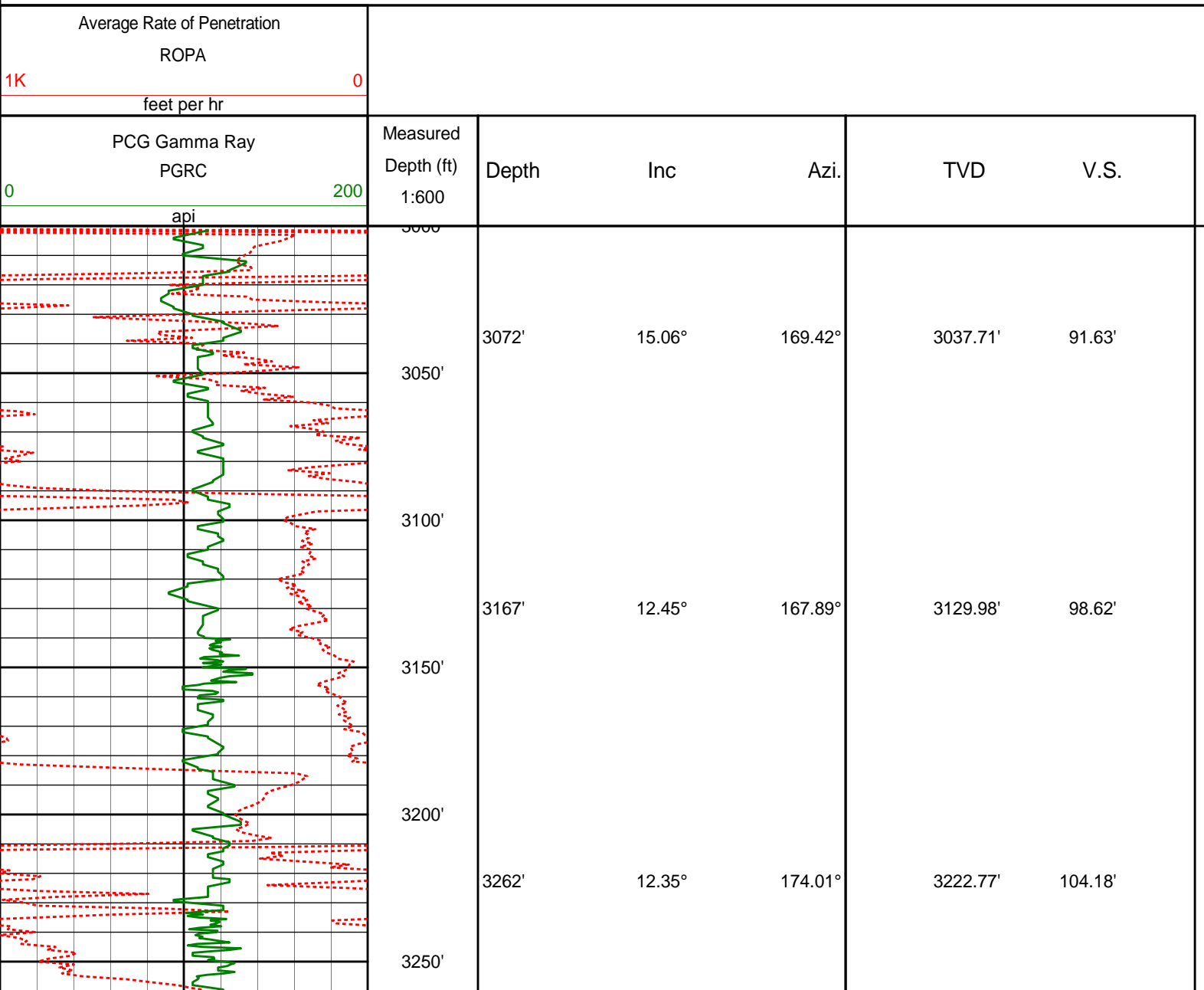
1. All depths are true vertical depths, referenced to the Driller's pipe tally and are measured from the Drill Floor, unless otherwise specified.
2. No depth corrections have been made for pipe stretch or compression.
3. Critical annual velocities are calculated using the "Power Law" model for water 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 7.4.2

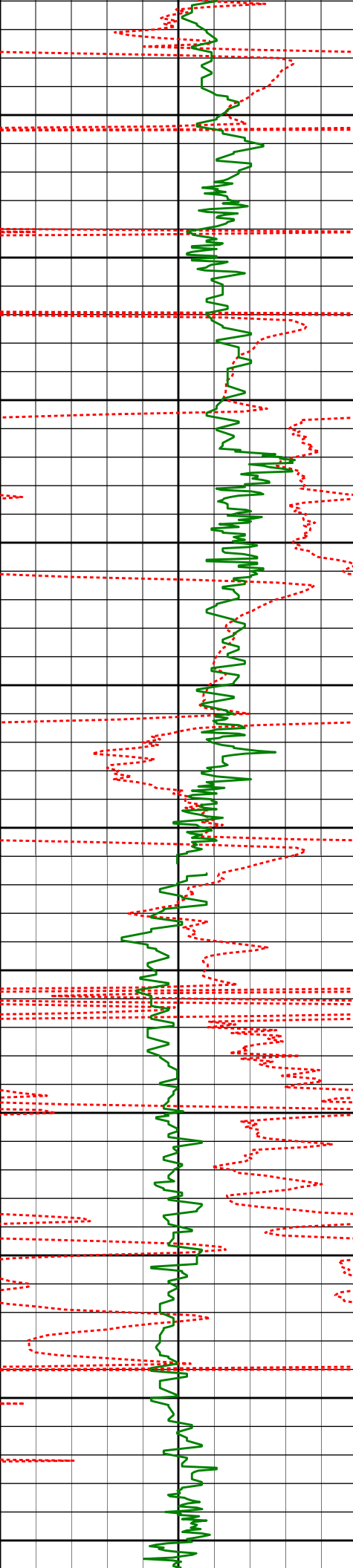
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## HALLIBURTON

### TVD Main Log 1:600





3300'

3357'

11.61°

169.55°

3315.70'

109.25'

3350'

3400'

3452'

11.26°

164.15°

3408.82'

115.64'

3450'

3500'

3547'

12.86°

167.30°

3501.72'

122.73'

3550'

3600'

3642'

15.58°

172.03°

3593.80'

129.50'

3650'

3700'

3737'

17.17°

172.23°

3684.94'

136.26'

3750'

3800'

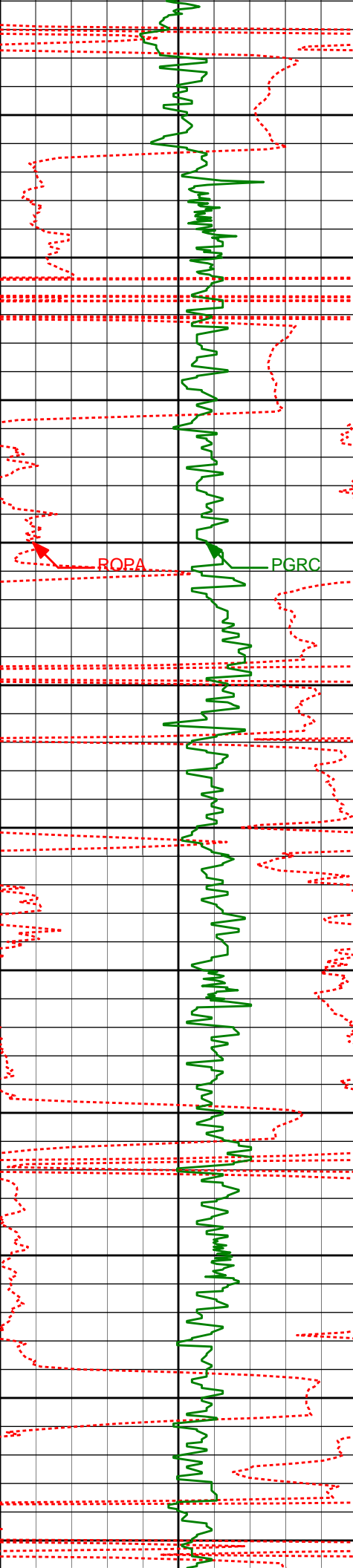
3832'

19.01°

171.15°

3775.24'

143.94'



3850'

3927'

17.23°

167.69°

3865.53'

152.70'

3900'

3950'

4021'

13.19°

169.89°

3956.22'

160.37'

4000'

4050'

4100'

4150'

4211'

9.54°

173.19°

4142.45'

170.47'

4200'

4250'

4306'

8.28°

172.68°

4236.30'

173.98'

4300'

4350'

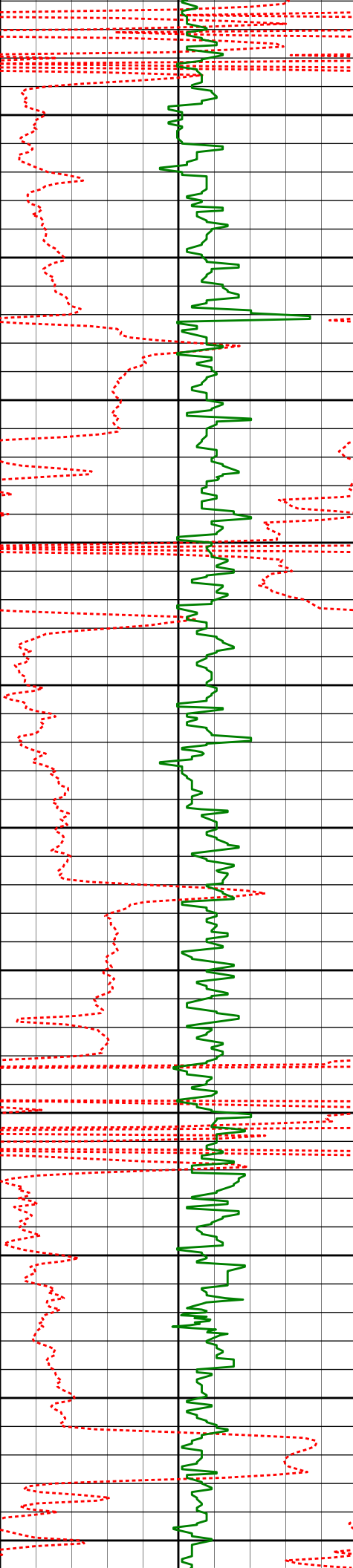
4401'

8.38°

175.12°

4330.30'

177.04'



4400'

4450'

4500'

4550'

4600'

4650'

4700'

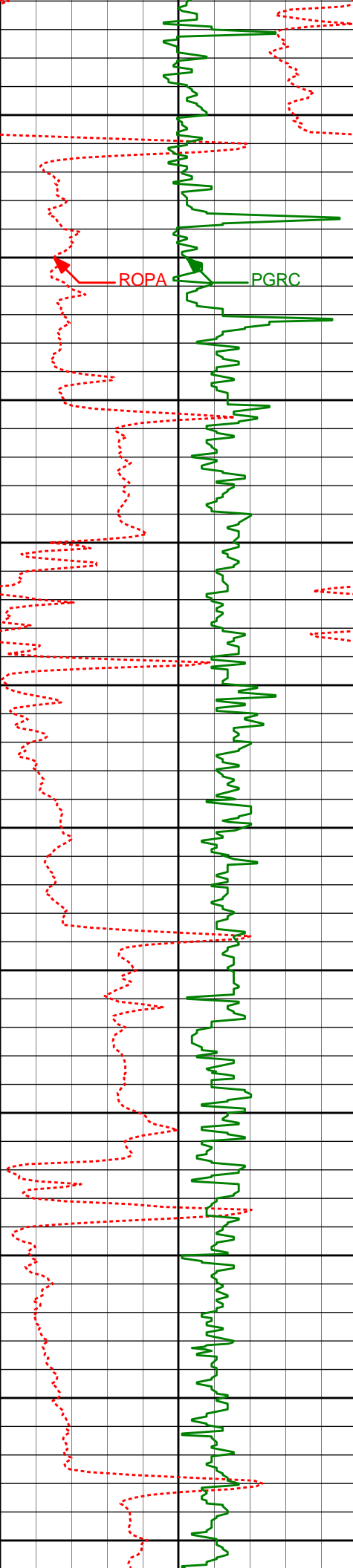
4750'

4800'

4850'

4900'

4496'	7.06°	179.98°	4424.44'	179.13'
4591'	5.31°	182.75°	4518.88'	180.12'
4686'	3.82°	180.41°	4613.58'	180.78'
4781'	3.08°	183.14°	4708.40'	181.29'
4876'	2.00°	186.49°	4803.31'	181.46'
4971'	0.56°	217.47°	4898.28'	181.23'



4950'

5000'

5050'

5100'

5150'

5200'

5250'

5300'

5350'

5400'

5450'

5066'

0.50°

185.53°

4993.28'

181.00'

5160'

0.50°

236.25°

5087.28'

180.70'

5255'

0.34°

320.28°

5182.28'

180.18'

5350'

0.60°

261.70°

5277.27'

179.49'

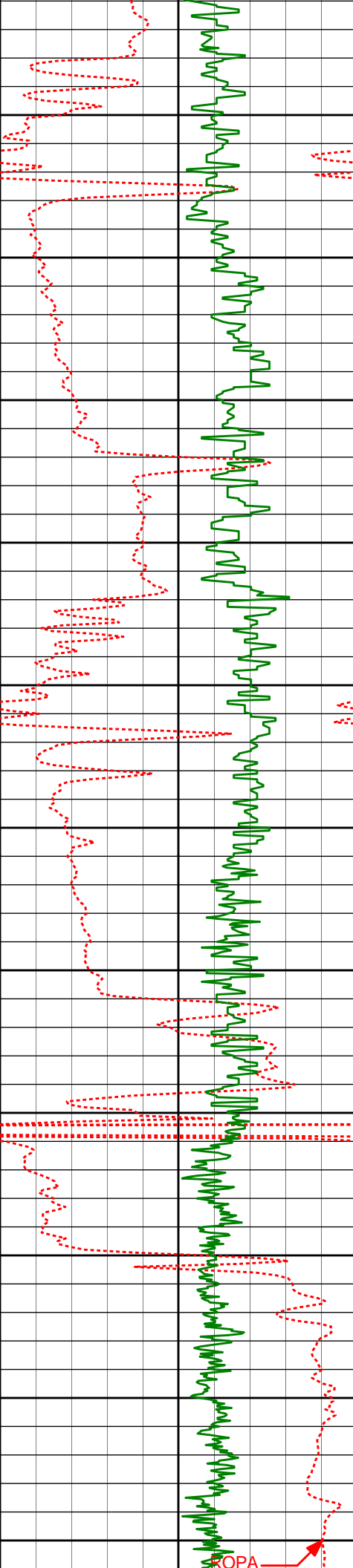
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0.59°

253.46°

5372.27'

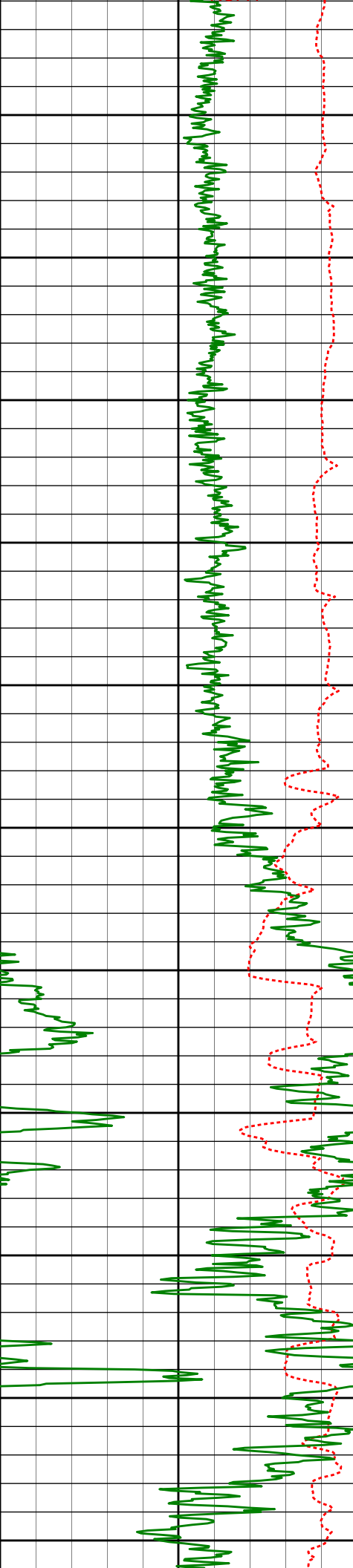
178.56'



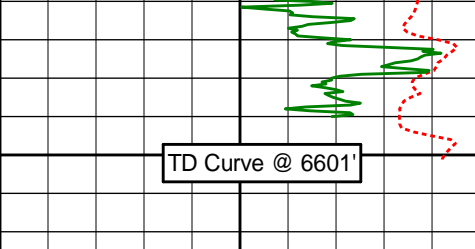
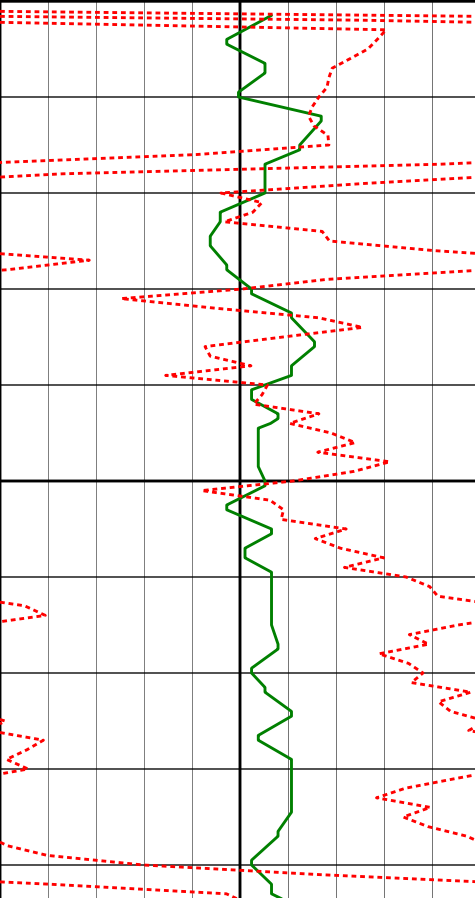
Run 200

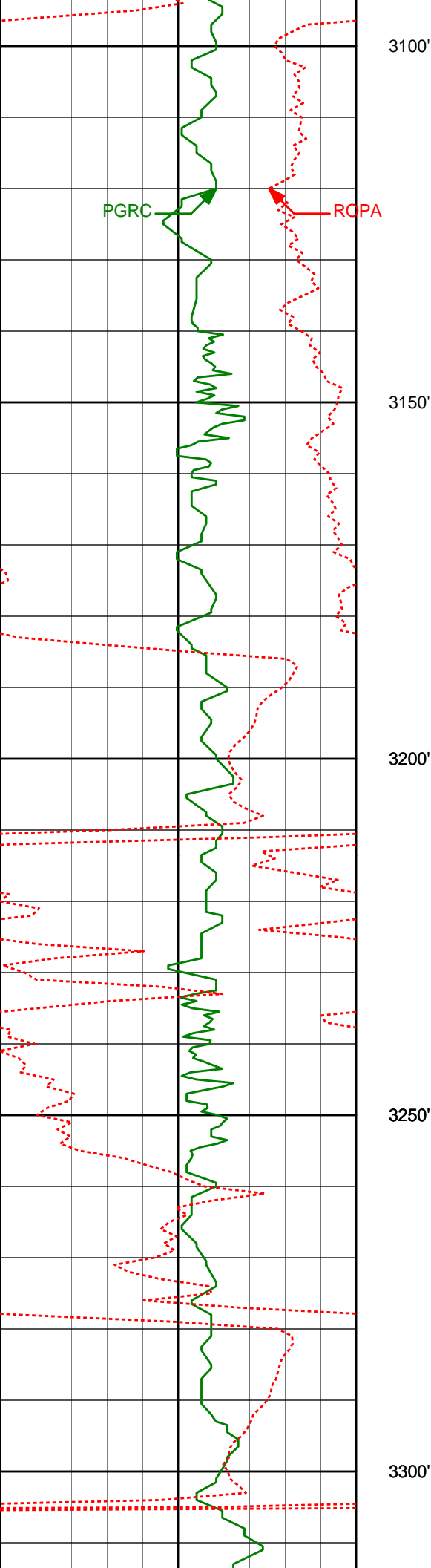
5540'	0.15°	333.66°	5467.27'	178.05'
5500'				
5550'				
5635'	0.10°	83.71°	5562.27'	178.06'
5600'				
5650'				
5730'	0.35°	331.07°	5657.27'	177.97'
5700'				
5750'	0.31°	16.21°	5752.26'	177.84'
5800'				
5850'	0.33°	30.77°	5844.26'	177.99'
5900'				
6012'	0.63°	101.20°	5939.26'	178.63'
5950'				
6000'				





	6107'	10.64°	98.82°	6033.68'	187.93'
6050'					
6100'					
	6201'	21.66°	98.25°	6123.83'	214.03'
6150'					
6200'	6296'	32.95°	96.82°	6208.11'	257.53'
6250'	6344'	39.43°	90.70°	6246.84'	285.78'
6300'	6391'	43.62°	86.69°	6282.03'	316.61'
	6439'	45.03°	86.68°	6316.37'	349.63'
6350'	6486'	45.93°	87.02°	6349.32'	382.64'
6400'	6534'	49.41°	87.67°	6381.64'	417.64'
	6581'	52.23°	87.65°	6411.33'	453.61'
6450'	6629'	55.17°	87.25°	6439.74'	491.78'
	6676'	56.91°	86.88°	6466.00'	530.21'
6500'	6724'	59.21°	86.08°	6491.39'	570.28'
	6771'	63.25°	87.26°	6514.00'	610.86'
	6819'	66.13°	89.08°	6534.52'	653.72'
6550'	6865'	70.09°	89.22°	6551.67'	695.91'

		6600'	6913'	71.73°	88.79°	6567.37'	740.75'
			6960'	74.58°	87.36°	6580.99'	785.10'
			6989'	75.20°	87.11°	6588.55'	812.63'
PCG Gamma Ray PGRC 0200 api		Measured Depth (ft) 1:600	DepthIncAzi.			TVDV.S.	
Average Rate of Penetration ROPA 1K0 feet per hr							
HALLIBURTON  TVD Main Log 1:240							
Average Rate of Penetration ROPA 1K0 feet per hr							
PCG Gamma Ray PGRC 0200 api		Measured Depth (ft) 1:240	DepthIncAzi.			TVDV.S.	
		3072'	15.06°	169.42°	3037.71'	91.63'	
		3050'					



3167'

12.45°

167.89°

3129.98'

98.62'

3262'

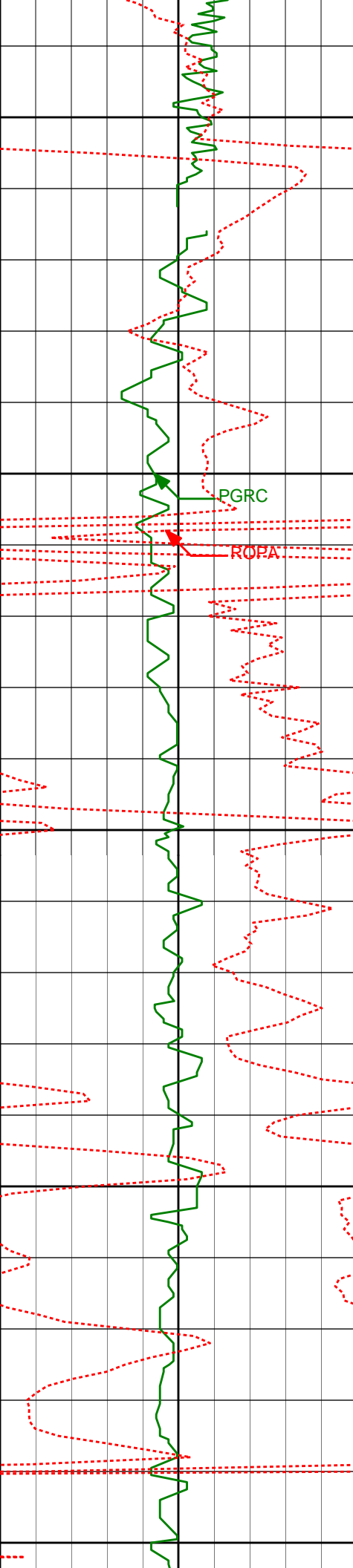
12.35°

174.01°

3222.77'

104.18'





3550'

3642'

15.58°

172.03°

3593.80'

129.50'

3600'

PGRC

ROPA

3650'

3737'

17.17°

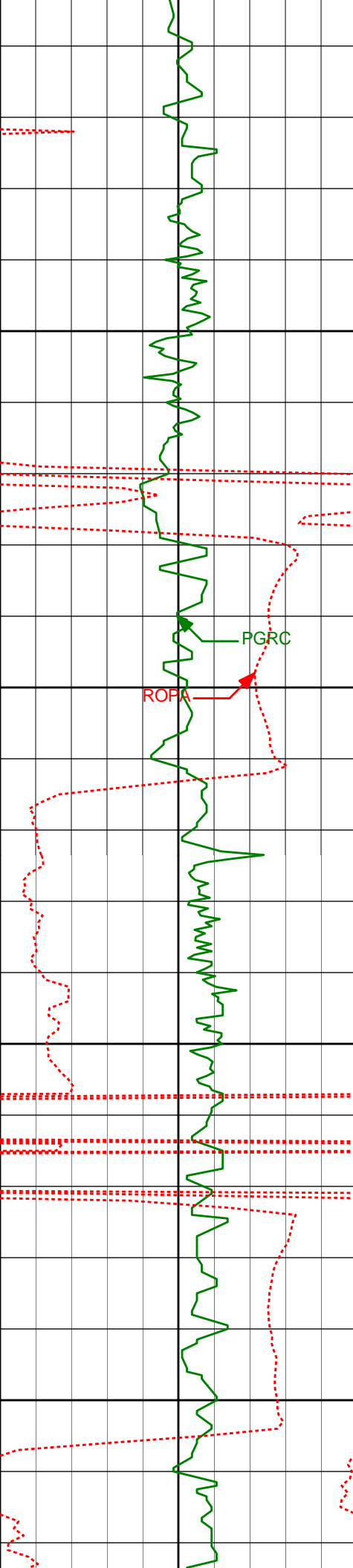
172.23°

3684.94'

136.26'

3700'

3750'



3800'

3850'

3900'

3950'

3832'

19.01°

171.15°

3775.24'

143.94'

3927'

17.23°

167.69°

3865.53'

152.70'

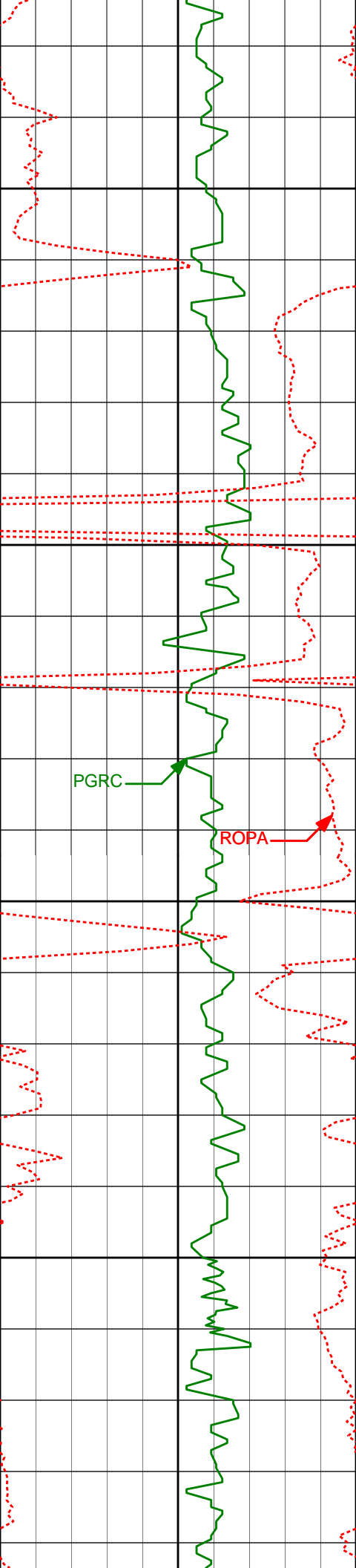
4021'

13.19°

169.89°

3956.22'

160.37'



4000'

4050'

4100'

4150'

PGRC

ROPA

4116'

11.41°

170.99°

4049.04'

166.07'

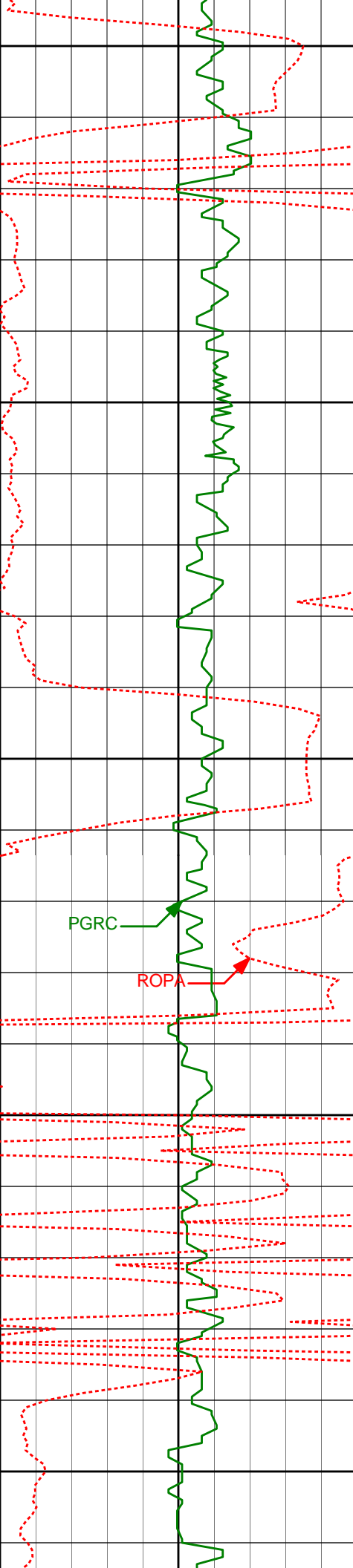
4211'

9.54°

173.19°

4142.45'

170.47'



4200'

4306'

8.28°

172.68°

4236.30'

173.98'

4250'

4300'

PGRC

ROPA

4401'

8.38°

175.12°

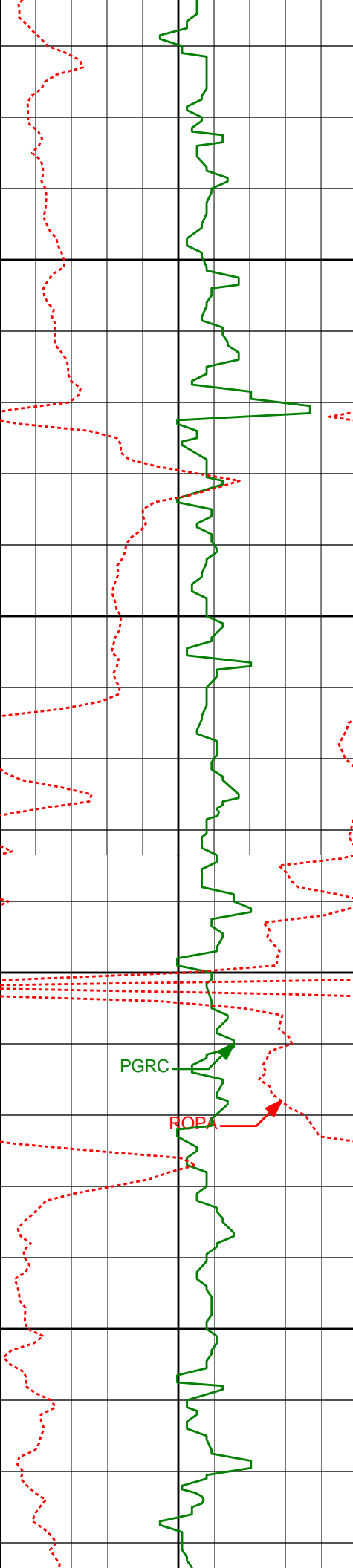
4330.30'

177.04'

4350'

4400'





4450'

4500'

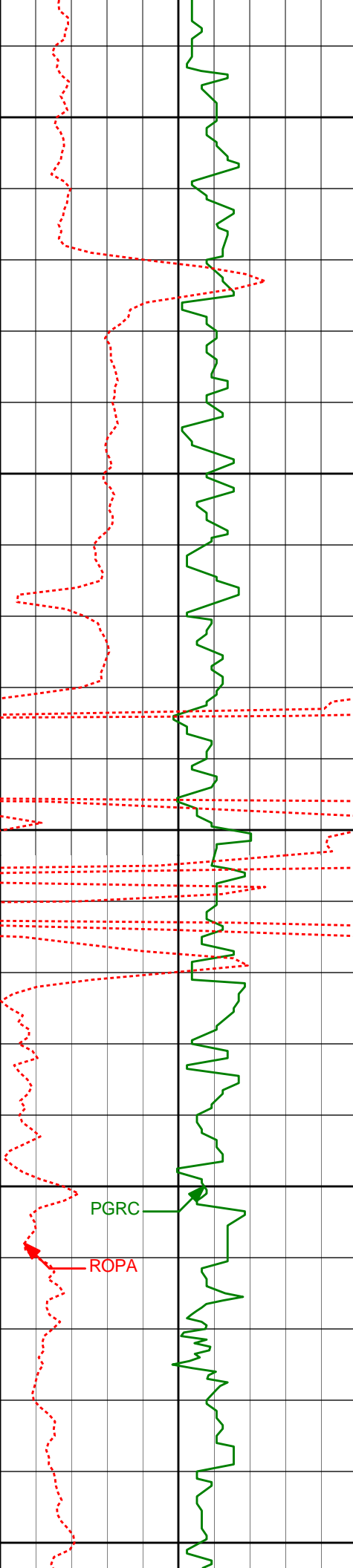
4550'

4600'

PGRC

ROPA

4496'	7.06°	179.98°	4424.44'	179.13'
4591'	5.31°	182.75°	4518.88'	180.12'
4686'	3.82°	180.41°	4613.58'	180.78'



4650'

4700'

4750'

4800'

4850'

4781'

3.08°

183.14°

4708.40'

181.29'

4876'

2.00°

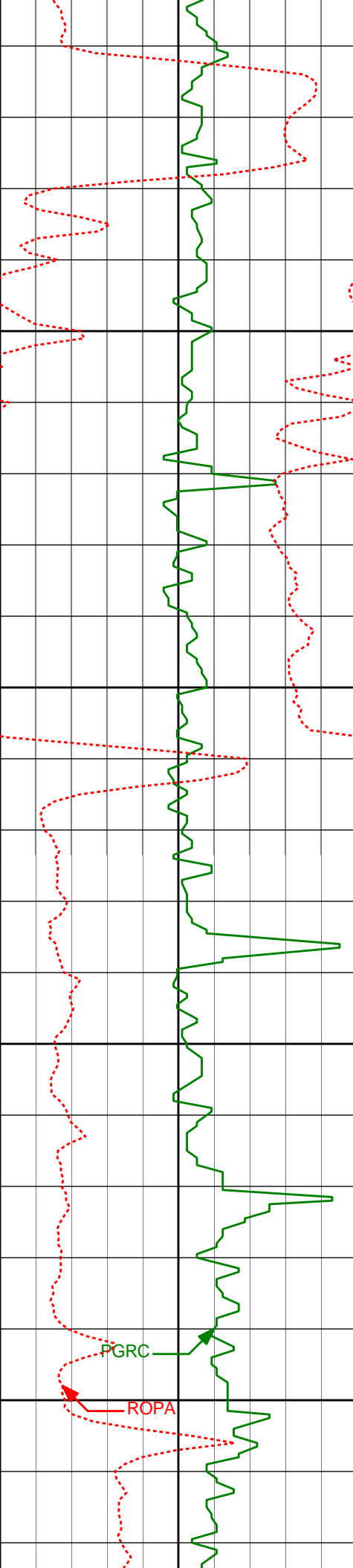
186.49°

4803.31'

181.46'

PGRC

ROPA



4900'

4950'

5000'

5050'

4971'

5066'

0.56°

0.50°

217.47°

185.53°

4898.28'

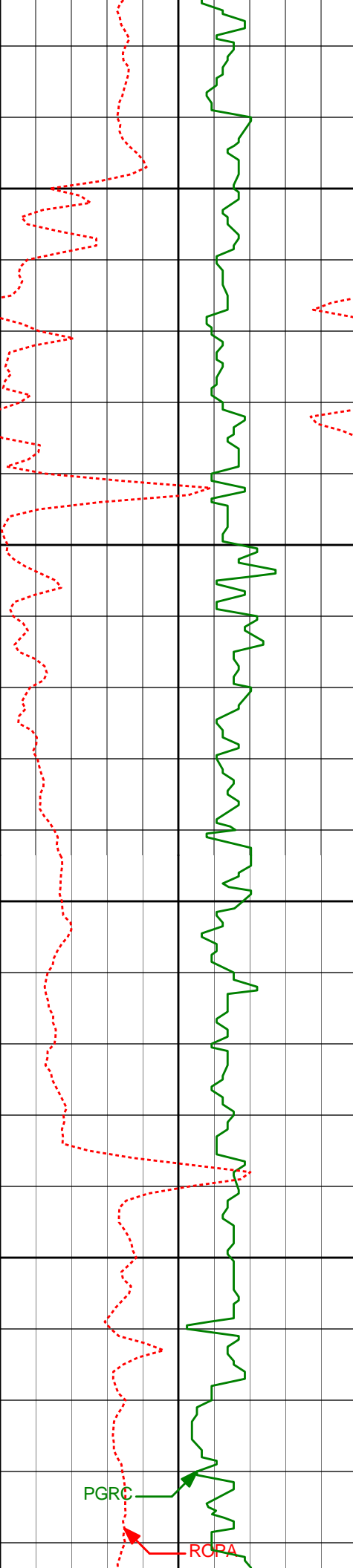
4993.28'

181.23'

181.00'

PGRC

ROPA



5100'

5150'

5200'

5250'

5160'

0.50°

236.25°

5087.28'

180.70'

5255'

0.34°

320.28°

5182.28'

180.18'

5350'

0.60°

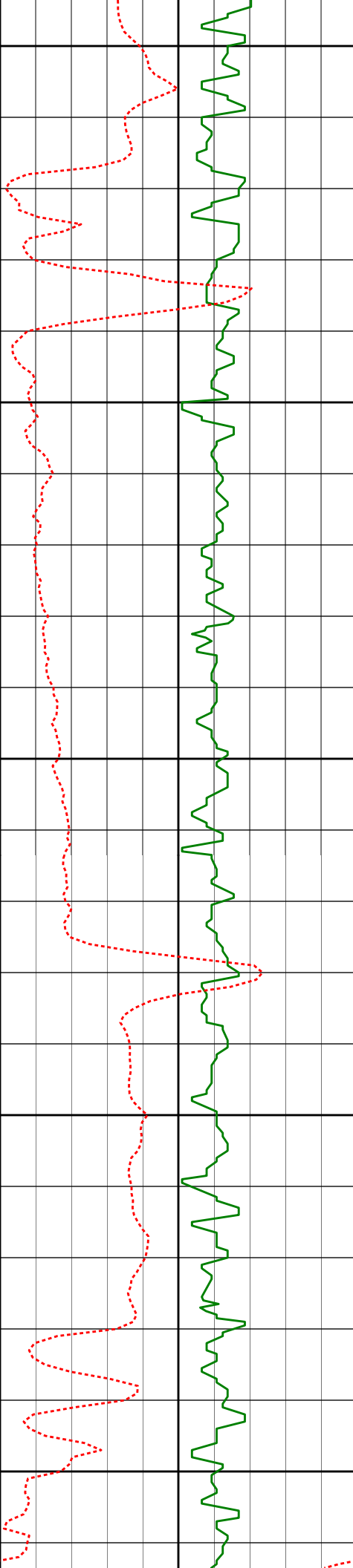
261.70°

5277.27'

179.49'

PGRC

RCRA



5300'

5350'

5400'

5450'

5500'

5445'

0.59°

253.46°

5372.27'

178.56'

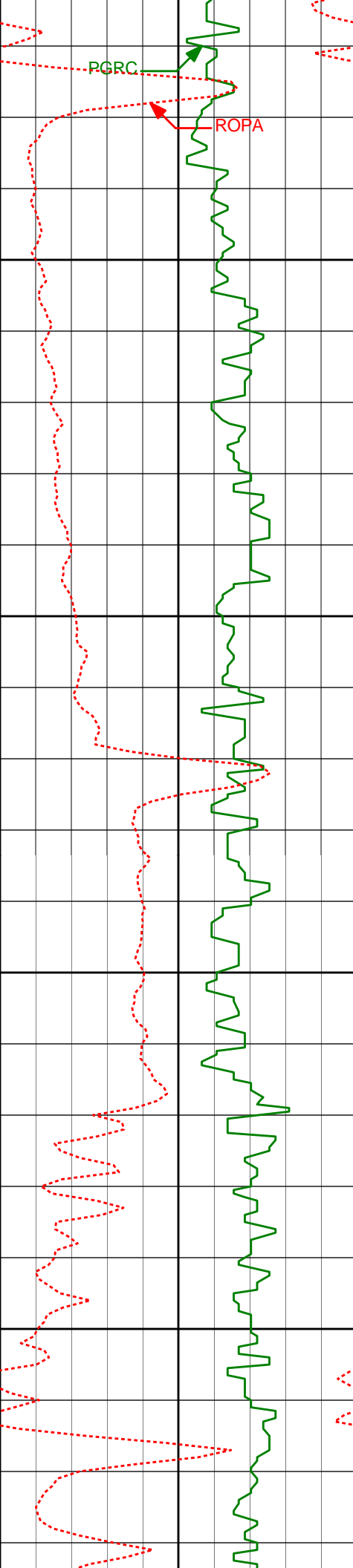
5540'

0.15°

333.66°

5467.27'

178.05'



5550'

5635'

0.10°

83.71°

5562.27'

178.06'

5600'

5650'

5730'

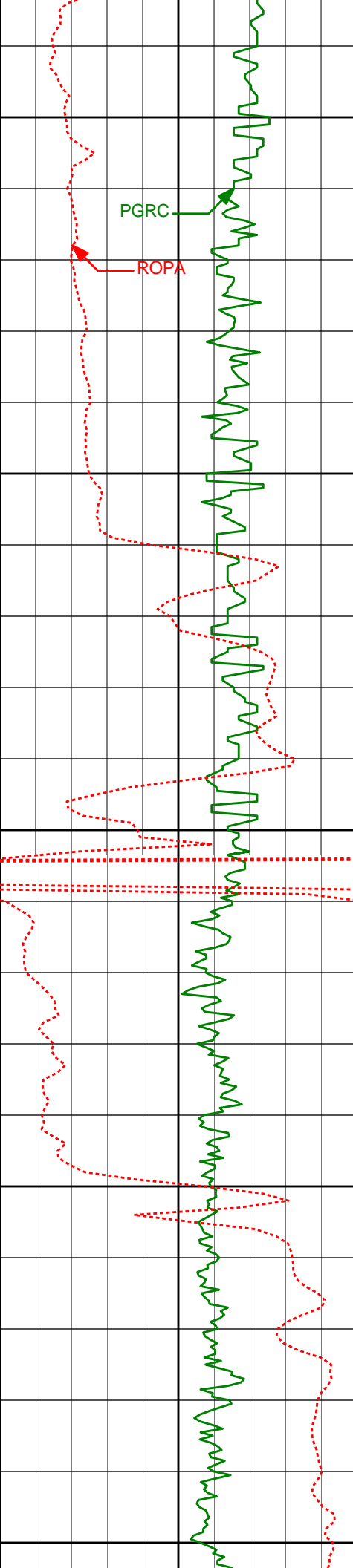
0.35°

331.07°

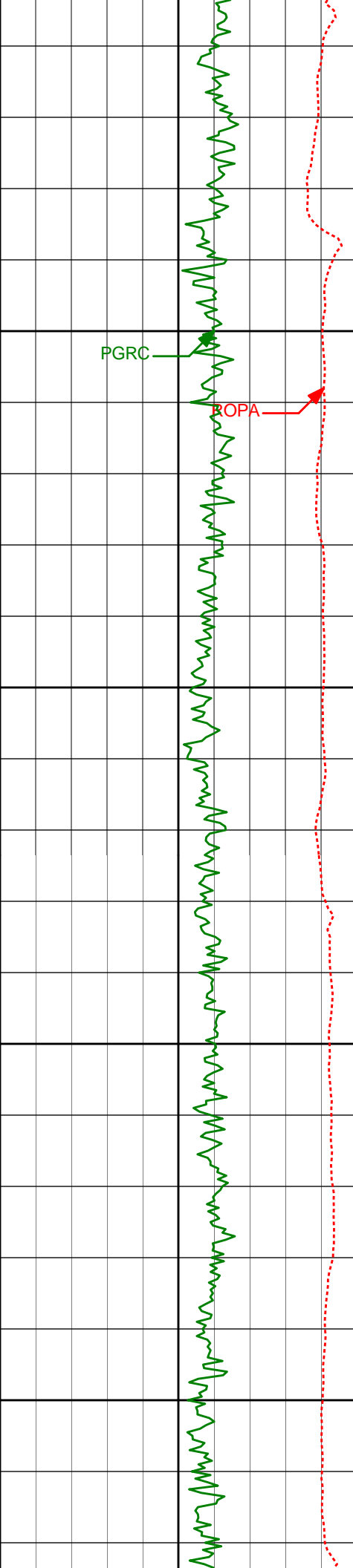
5657.27'

177.97'

5700'



5750'	5825'	0.31°	16.21°	5752.26'	177.84'
5800'					
5850'	5917'	0.33°	30.77°	5844.26'	177.99'
5900'					
5950'	6012'	0.63°	101.20°	5939.26'	178.63'



6000'

6050'

6100'

6150'

6107'

10.64°

98.82°

6033.68'

187.93'

6201'

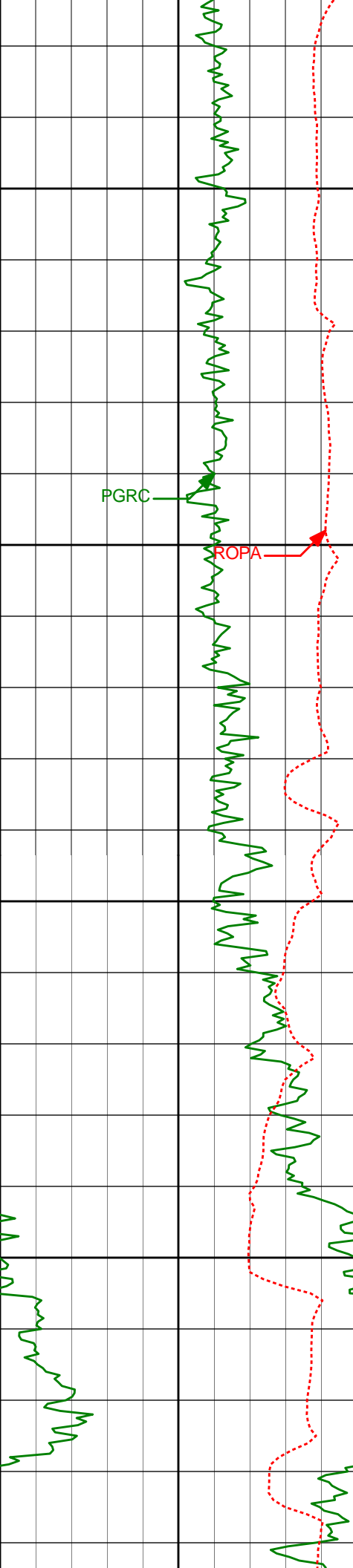
21.66°

98.25°

6123.83'

214.03'





6200'

6296'

32.95°

96.82°

6208.11'

257.53'

6250'

6344'

39.43°

90.70°

6246.84'

285.78'

6300'

6391'

43.62°

86.69°

6282.03'

316.61'

6350'

6439'

45.03°

86.68°

6316.37'

349.63'

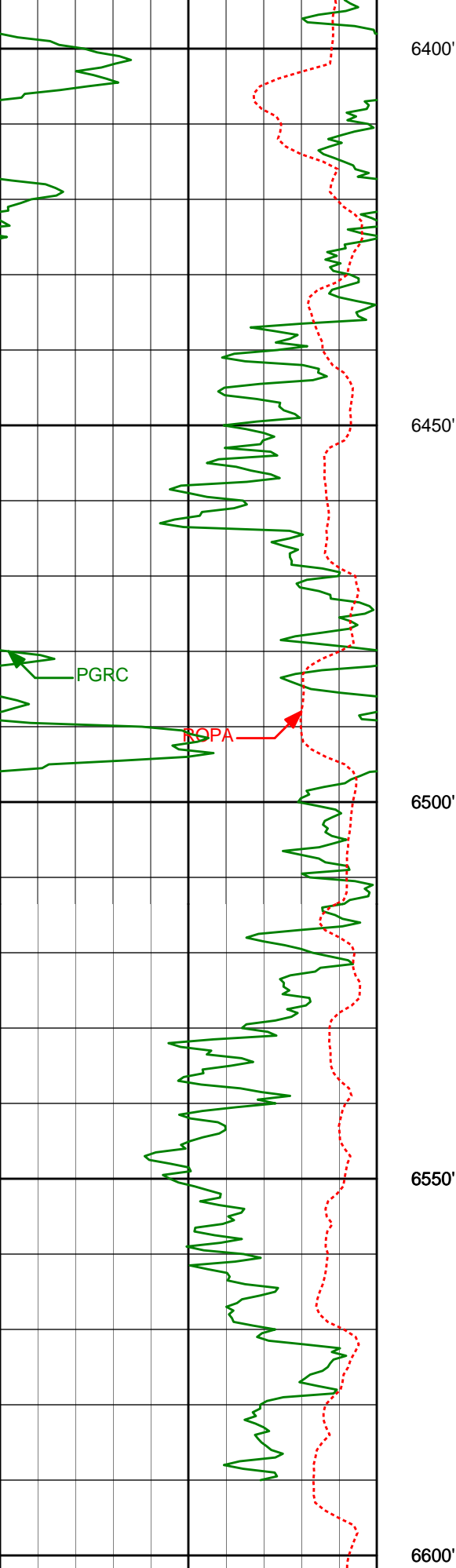
6534'

49.41°

87.67°

6381.64'

417.64'



TD Curve @ 6601'

6581'	52.23°	87.65°	6411.33'	453.61'
6629'	55.17°	87.25°	6439.74'	491.78'
6676'	56.91°	86.88°	6466.00'	530.21'
6724'	59.21°	86.08°	6491.39'	570.28'
6771'	63.25°	87.26°	6514.00'	610.86'
6819'	66.13°	89.08°	6534.52'	653.72'
6865'	70.09°	89.22°	6551.67'	695.91'
6913'	71.73°	88.79°	6567.37'	740.75'
6960'	74.58°	87.36°	6580.99'	785.10'
6989'	75.20°	87.11°	6588.55'	812.63'



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
355.00	0.10	51.60	355.00	0.19 N	0.24 E	0.22	0.03
645.00	0.10	51.60	645.00	0.51 N	0.64 E	0.58	0.00
935.00	0.60	262.40	934.99	0.46 N	0.67 W	-0.72	0.24
994.00	0.28	228.14	993.99	0.33 N	1.08 W	-1.11	0.68
1086.00	0.22	11.36	1085.99	0.35 N	1.21 W	-1.25	0.52
1272.00	0.12	179.04	1271.99	0.50 N	1.14 W	-1.19	0.18
1458.00	1.74	206.03	1457.96	2.23 S	2.38 W	-2.10	0.88
1553.00	4.47	191.19	1552.81	7.16 S	3.73 W	-2.86	2.97
1648.00	6.46	181.98	1647.38	16.13 S	4.63 W	-2.70	2.28
1743.00	8.01	181.61	1741.62	28.09 S	5.00 W	-1.66	1.63
1838.00	8.67	176.38	1835.62	41.85 S	4.74 W	0.22	1.06
2028.00	11.80	166.43	2022.58	75.04 S	0.73 E	9.56	1.89
2122.00	12.66	170.40	2114.45	94.54 S	4.70 E	15.80	1.28
2217.00	14.38	159.44	2206.83	115.85 S	10.58 E	24.15	3.24
2313.00	12.79	158.91	2300.14	136.93 S	18.59 E	34.58	1.66
2407.00	13.30	165.23	2391.72	157.10 S	25.09 E	43.41	1.61
2502.00	14.27	163.97	2483.98	178.92 S	31.11 E	51.96	1.07
2597.00	13.31	164.95	2576.24	200.73 S	37.19 E	60.56	1.04
2692.00	13.49	168.60	2668.66	222.15 S	42.22 E	68.07	0.91
2787.00	12.26	167.65	2761.27	242.87 S	46.56 E	74.83	1.31
2882.00	13.33	173.61	2853.91	263.61 S	49.94 E	80.62	1.79
2977.00	15.16	175.53	2945.99	286.88 S	52.13 E	85.53	1.99
3072.00	15.06	169.42	3037.71	311.39 S	55.36 E	91.63	1.68
3167.00	12.45	167.89	3129.98	333.54 S	59.78 E	98.62	2.77
3262.00	12.35	174.01	3222.77	353.66 S	62.99 E	104.18	1.39
3357.00	11.61	169.55	3315.70	373.16 S	65.78 E	109.25	1.25
3452.00	11.26	164.15	3408.82	391.49 S	70.05 E	115.64	1.19
3547.00	12.86	167.30	3501.72	410.73 S	74.90 E	122.73	1.82
3642.00	15.58	172.03	3593.80	433.68 S	79.00 E	129.50	3.11
3737.00	17.17	172.23	3684.94	460.21 S	82.66 E	136.26	1.67
3832.00	19.01	171.15	3775.24	489.39 S	86.94 E	143.94	1.97
3927.00	17.23	167.69	3865.53	518.43 S	92.32 E	152.70	2.19
4021.00	13.19	169.89	3956.22	542.60 S	97.17 E	160.37	4.34
4116.00	11.41	170.99	4049.04	562.55 S	100.55 E	166.07	1.89
4211.00	9.54	173.19	4142.45	579.65 S	102.95 E	170.47	2.01
4306.00	8.28	172.68	4236.30	594.25 S	104.76 E	173.98	1.33
4401.00	8.38	175.12	4330.30	607.94 S	106.22 E	177.04	0.39
4496.00	7.06	179.98	4424.44	620.67 S	106.81 E	179.13	1.55
4591.00	5.31	182.75	4518.88	630.90 S	106.60 E	180.12	1.87
4686.00	3.82	180.41	4613.58	638.46 S	106.37 E	180.78	1.58

4781.00	3.08	183.14	4708.40	644.17 S	106.21 E	181.29	0.80
4876.00	2.00	186.49	4803.31	648.37 S	105.88 E	181.46	1.15
4971.00	0.56	217.47	4898.28	650.38 S	105.41 E	181.23	1.63
5066.00	0.50	185.53	4993.28	651.16 S	105.09 E	181.00	0.31
5160.00	0.50	236.52	5087.28	651.80 S	104.70 E	180.70	0.46
5255.00	0.34	320.28	5182.28	651.81 S	104.18 E	180.18	0.60
5350.00	0.60	261.70	5277.27	651.67 S	103.51 E	179.49	0.54
5445.00	0.59	253.46	5372.27	651.88 S	102.54 E	178.56	0.09
5540.00	0.15	333.66	5467.27	651.90 S	102.02 E	178.05	0.61
5635.00	0.10	83.71	5562.27	651.78 S	102.05 E	178.06	0.22
5730.00	0.35	331.07	5657.27	651.52 S	101.99 E	177.97	0.42
5825.00	0.31	16.21	5752.26	651.02 S	101.92 E	177.84	0.27
5917.00	0.33	30.77	5844.26	650.55 S	102.13 E	177.99	0.09
6012.00	0.63	101.20	5939.26	650.42 S	102.78 E	178.63	0.64
6107.00	10.64	98.82	6033.68	651.87 S	111.98 E	187.93	10.54
6201.00	21.66	98.25	6123.83	655.70 S	137.80 E	214.03	11.72
6296.00	32.95	96.82	6208.11	661.30 S	180.95 E	257.53	11.90
6344.00	39.43	90.70	6246.84	663.04 S	209.19 E	285.78	15.44
6391.00	43.62	86.69	6282.03	662.29 S	240.32 E	316.61	10.55
6439.00	45.03	86.68	6316.37	660.35 S	273.80 E	349.63	2.94
6486.00	45.93	87.02	6349.32	658.51 S	307.26 E	382.64	1.98
6534.00	49.41	87.67	6381.64	656.87 S	342.70 E	417.64	7.32
6581.00	52.23	87.65	6411.33	655.38 S	379.10 E	453.61	6.00
6629.00	55.17	87.25	6439.74	653.66 S	417.74 E	491.78	6.16
6676.00	56.91	86.88	6466.00	651.66 S	456.67 E	530.21	3.76
6724.00	59.21	86.08	6491.39	649.16 S	497.33 E	570.28	5.00
6771.00	63.25	87.59	6514.00	646.89 S	538.45 E	610.86	9.04
6819.00	66.13	88.04	6534.52	645.24 S	581.81 E	653.72	6.06
6865.00	70.09	88.31	6551.67	643.88 S	624.46 E	695.91	8.63
6913.00	71.73	87.87	6567.37	642.37 S	669.80 E	740.75	3.52
6960.00	74.58	86.43	6580.99	640.13 S	714.72 E	785.10	6.74
6989.00	75.20	86.17	6588.55	638.32 S	742.66 E	812.63	2.31

# 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 96.76 DEGREES (GRID)  
A TOTAL CORRECTION OF 7.63 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.  
HORIZONTAL DISPLACEMENT(CLOSURE) AT 6989.00 FEET  
IS 979.28 FEET ALONG 130.68 DEGREES (GRID)