

PCGK - Pressure Case Gamma

1 : 240

[illegible]

WELL INFORMATION

MWD Run Number	100	200			
Date run completed	30-Jul-14	07-Aug-14			
Rig Bit Number	0100	0200			
Bit Size (in)	8.750	6.125			
Tool Nominal OD (in)	6.750	4.750			
Log Start Depth (MD, ft)	990.00	7,953.00			
Log End Depth (MD, ft)	7,953.00	15,238.00			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	27-Jul-14 18:15	01-Aug-14 13:00			
Drill/Wipe End Date and Time	30-Jul-14 12:15	05-Aug-14 18:15			
Min Inc (deg) @ Depth (MD, ft)	0.11 @ 1,102.00	88.61 @ 15,193.00			
Max Inc (deg) @ Depth (MD, ft)	89.70 @ 7,953.00	91.97 @ 11,496.00			
Bit TFA(in2) / Bit Type	0.97 / N/A	1.86 / N/A			
Flow Rate (gpm)	589.10	281.55			
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A	N/A / N/A			
Fluid Type	Native/Spud Mud	Native/Spud Mud			
Density (ppg) / Viscosity (spqt)	9.55 / 42.00	9.60 / 41.00			
Filtrate CL (ppm)	250.00	200.00			
pH / Fluid Loss (mptm)	8.90 / 2	9.50 / 6			
PV (cP) / YP (lbf2)	13 / 16.00	12 / 13.00			
% Solids / % Sand	1.00 / 0.50	5.00 / 0.50			
% Oil / Oil:Water Ratio	2.00 / N/A	2.00 / N/A			
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 (in F) / C	478.78 / 248.21	334.40 / 174.11			

Max Tool Temp (degF) / Source	172.78 / PCM	231.42 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ 172.78	N/A @ 297.8			
Lead MWD Engineer	Caleb Jones	Caleb Jones			
Customer Representative	Luke Raines	Scott Hancock			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.93	5.93			
Sub Serial Number	11404286	12310752			
Insert Serial Number	11680783	11400842			
Date and Time Initialized	27-Jul-14 09:58	01-Aug-14 01:50			
Date and Time Read	31-Jul-14 12:12	07-Aug-14 13:13			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	48.83	43.72			
Software Version	6.21	6.21			
Sub Serial Number	11404286	12310752			
Sonde Serial Number	11833261	11833264			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	179.46	55.33			

Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	44.10	48.67			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	11404286	12310752			
Insert/Sonde Serial Number	11681007	11579777			

REMARKS

1. All depths are measured depths, referenced to the Driller's pipe tally and are measured from the Kelly Bushing, unless otherwise specified.
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 "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

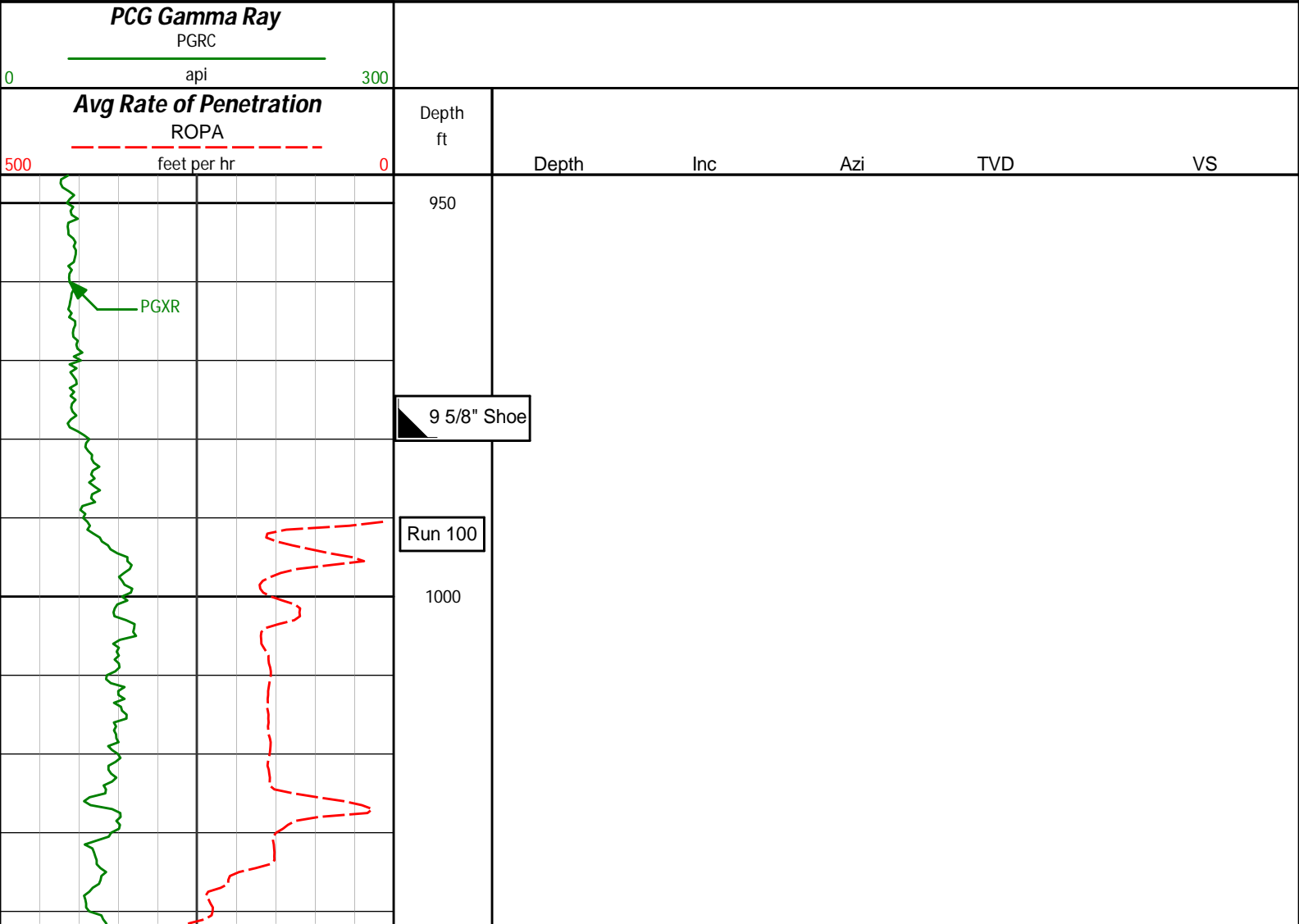
Insite version: 8.0.2

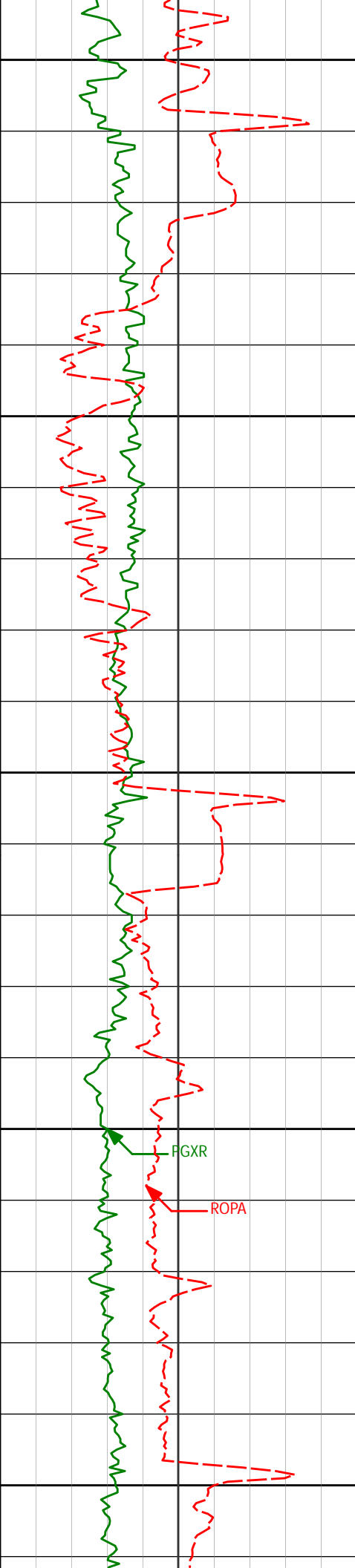
WARRANTY

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HALLIBURTON
Sperry Drilling Services
MD Detail Log 1:240

Anadarko Petroleum Corp.
Howard 28N-29HZ
Xtreme 22
Sec. 32-T1N-R67W





1050

1100

1150

1200

1250

1102'

0.11°

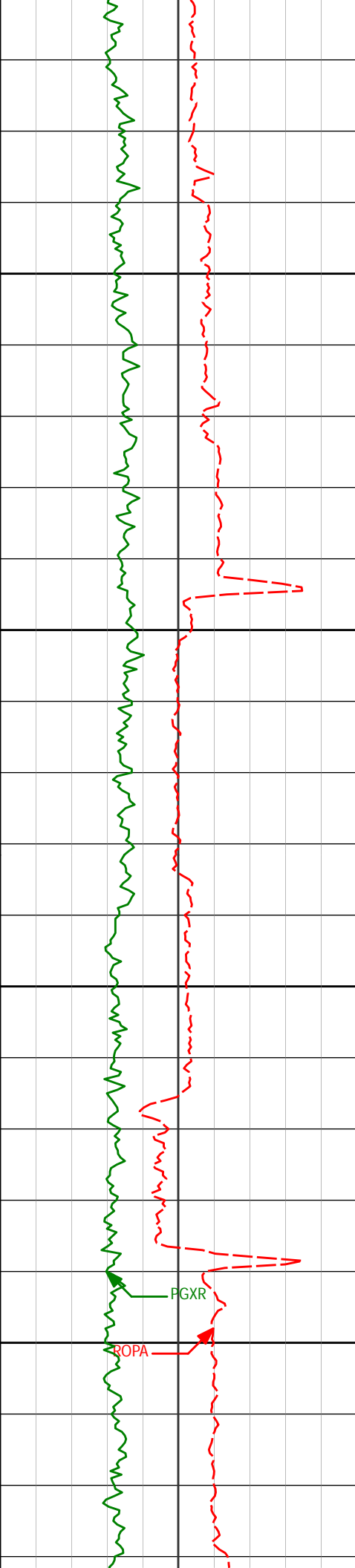
3.03°

1101.98'

1.05'

FGXR

ROPA



1300

1350

1400

1450

1291'

0.42°

2.97°

1290.98'

1.92'

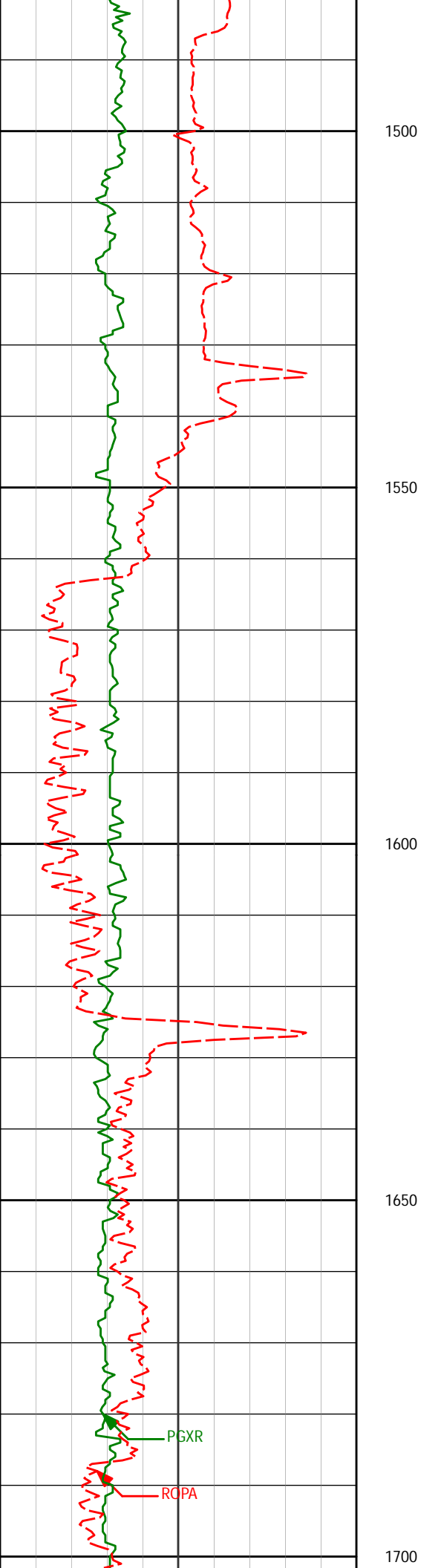
1480'

0.40°

304.60°

1479.97'

2.98'



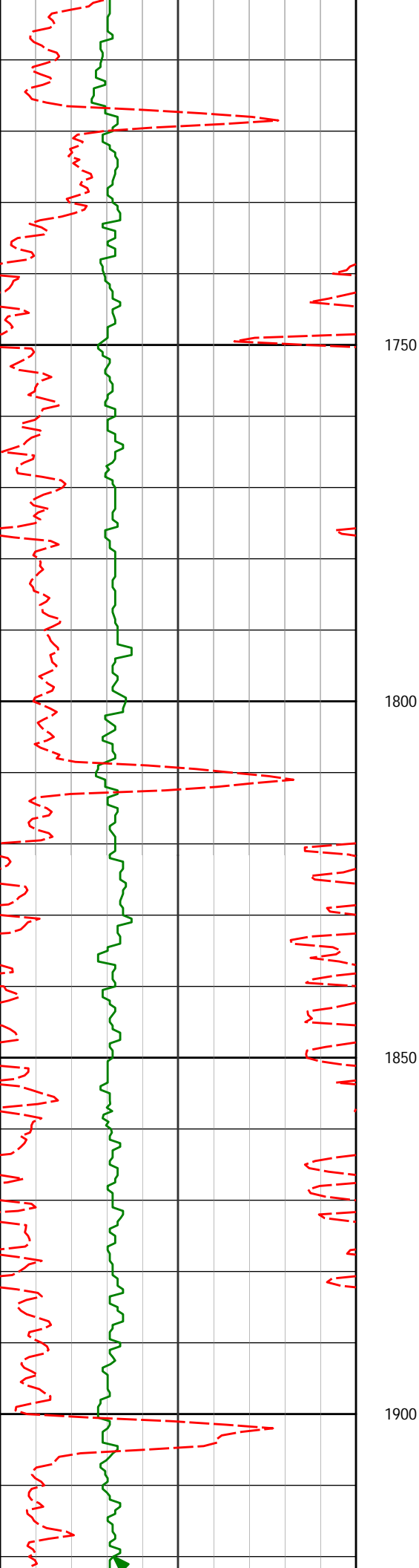
1666'

0.28°

291.69°

1665.97'

3.50'



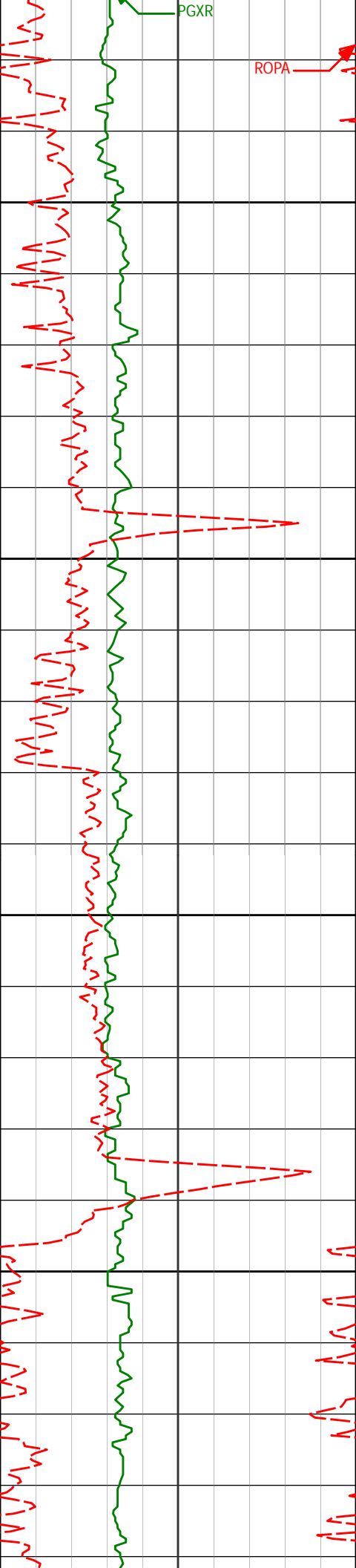
1849'

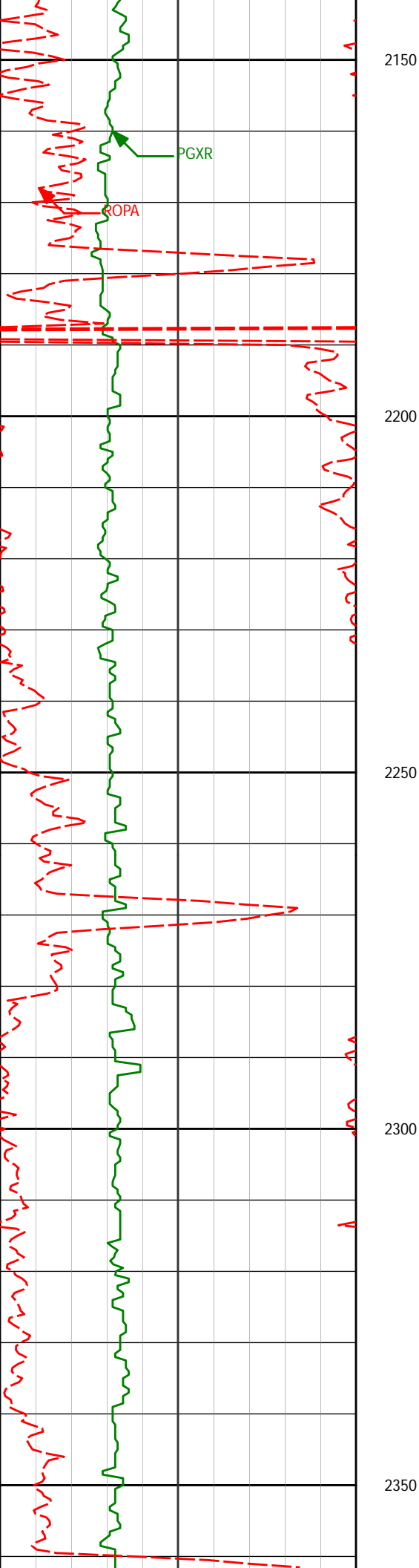
0.33°

299.59°

1848.97'

3.91'





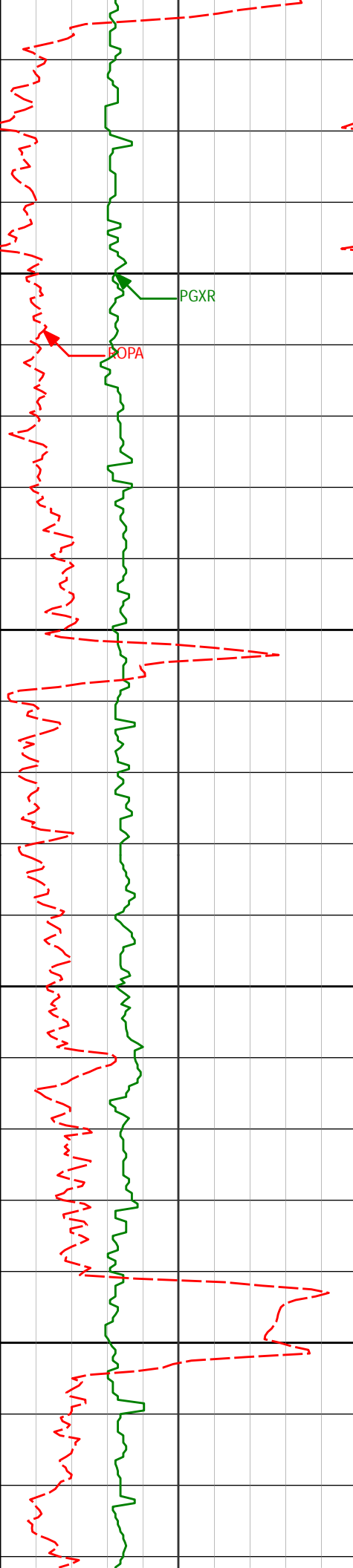
2215'

0.66°

304.75°

2214.96'

5.66'



2400

2450

2500

2550

2399'

0.65°

317.57°

2398.94'

7.01'

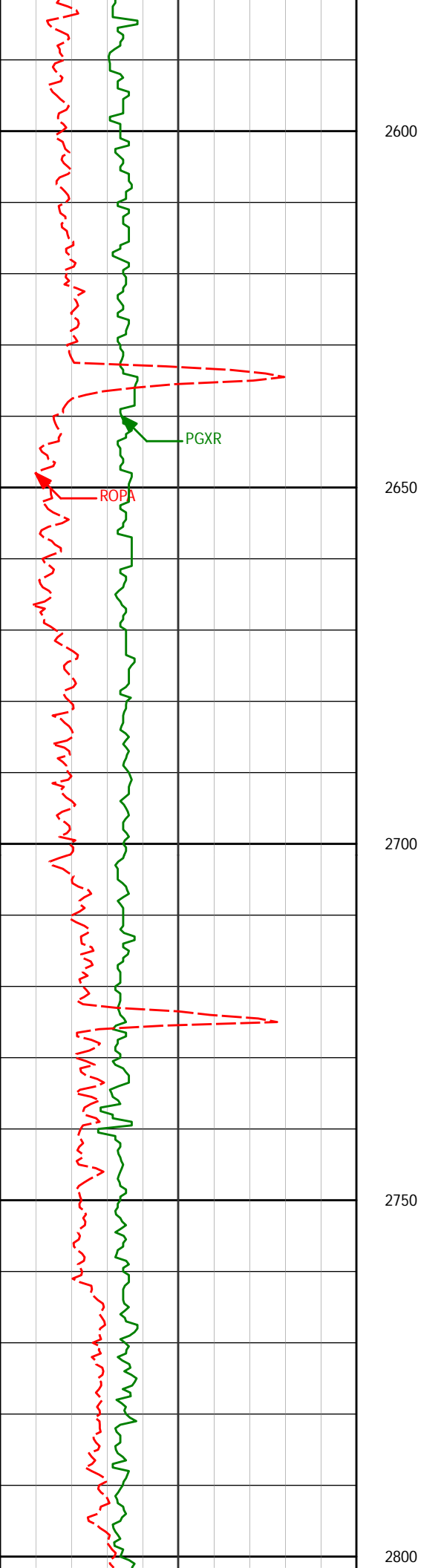
2581'

1.18°

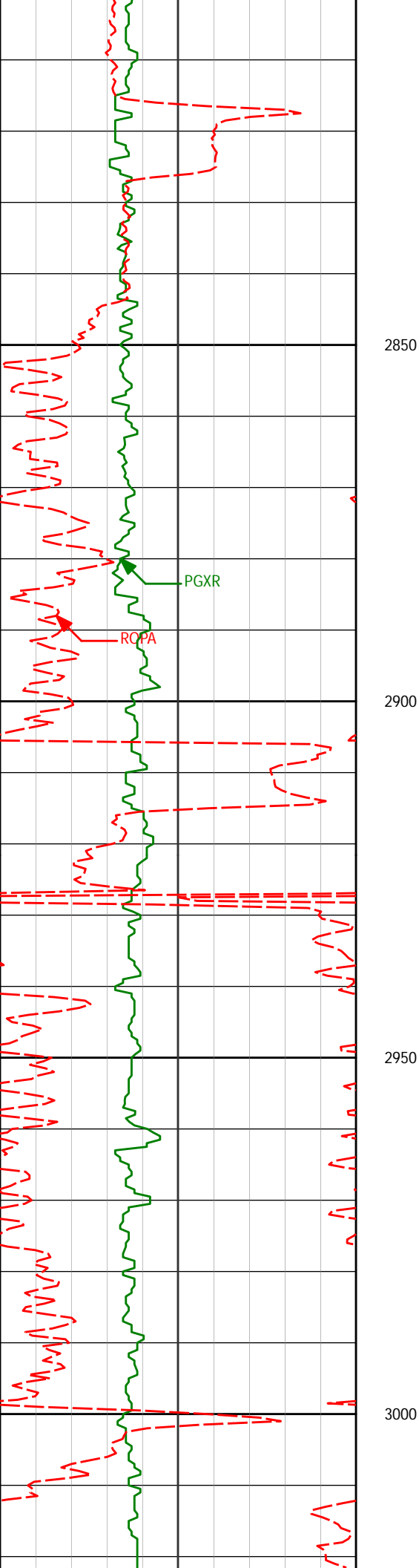
169.01°

2580.93'

5.93'



2600				
2650				
2700				
2750				
2765'	1.11°	170.21°	2764.90'	2.32'
2800				



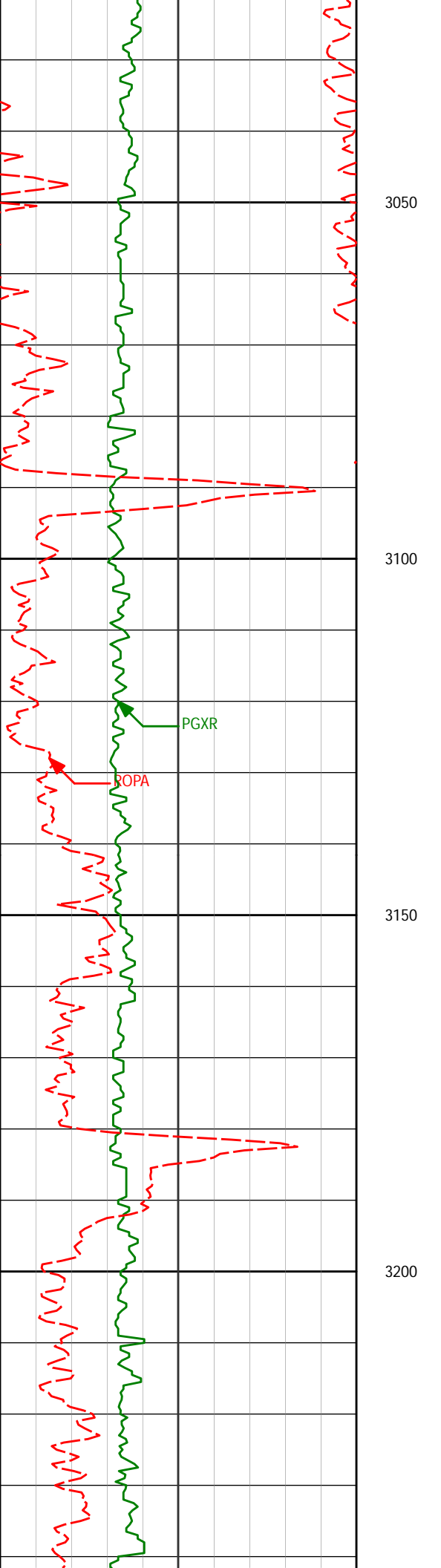
2948'

0.36°

124.44°

2947.88'

0.26'



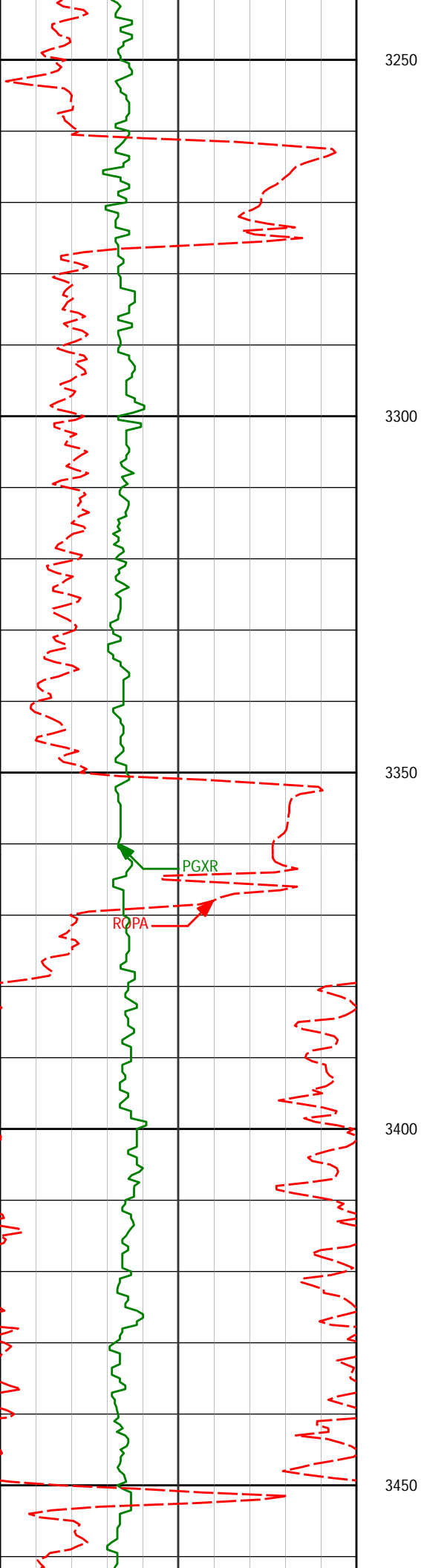
3131'

0.32°

174.25°

3130.88'

-0.57'



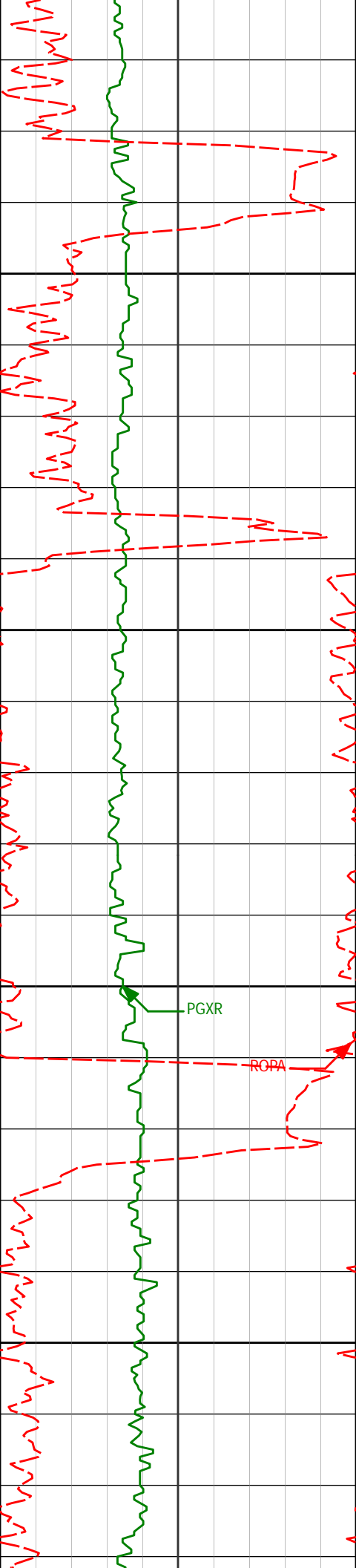
3315'

2.55°

125.39°

3314.81'

-3.40'



3485'

5.21°

112.13°

3484.41'

-8.35'

3500

3550

3600

3650

PGXR

ROPA

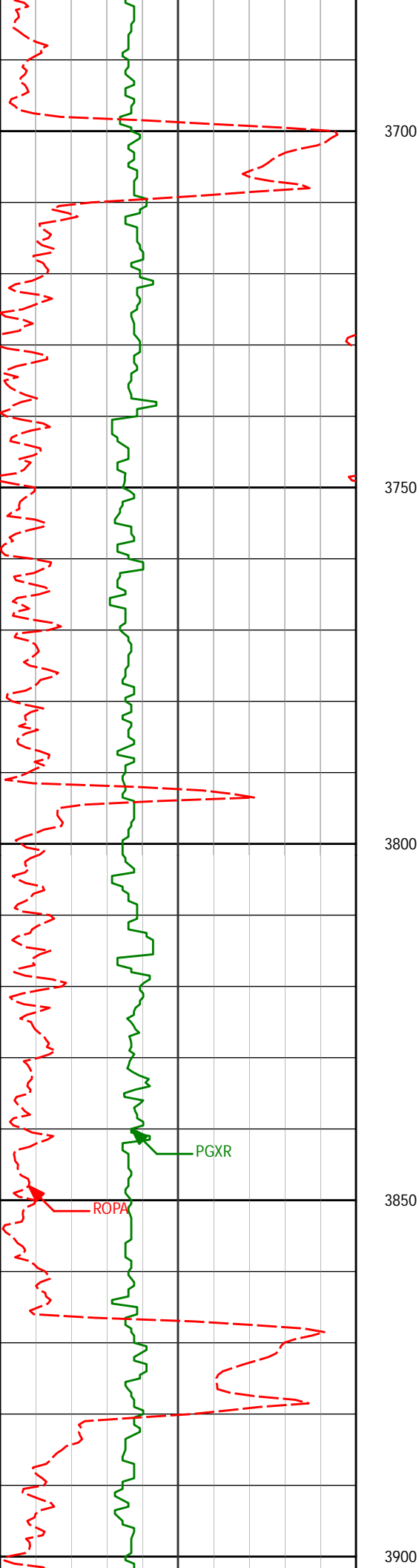
3657'

7.44°

100.51°

3655.36'

-13.06'



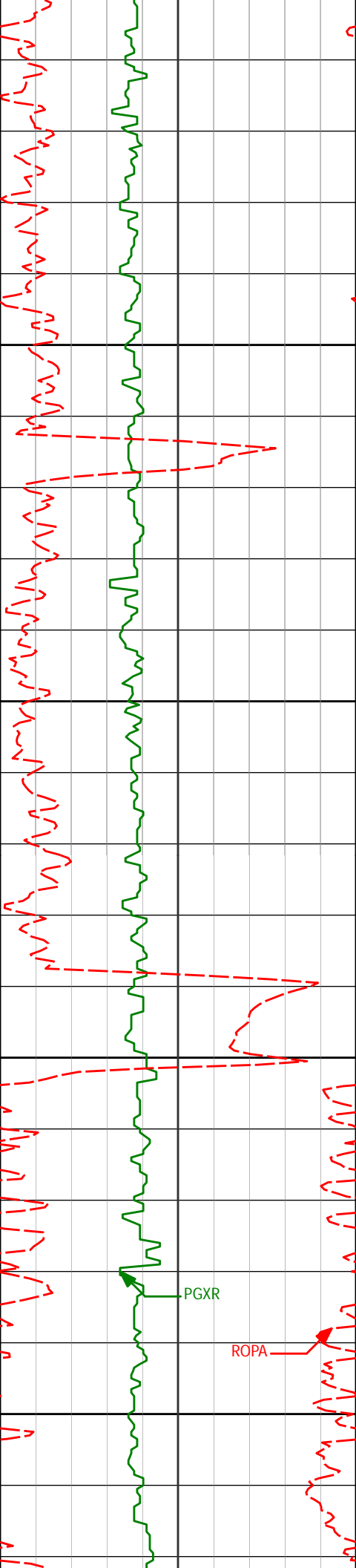
3828'

8.11°

97.81°

3824.79'

-16.39'



3950

4000

4050

4100

PGXR

ROPA

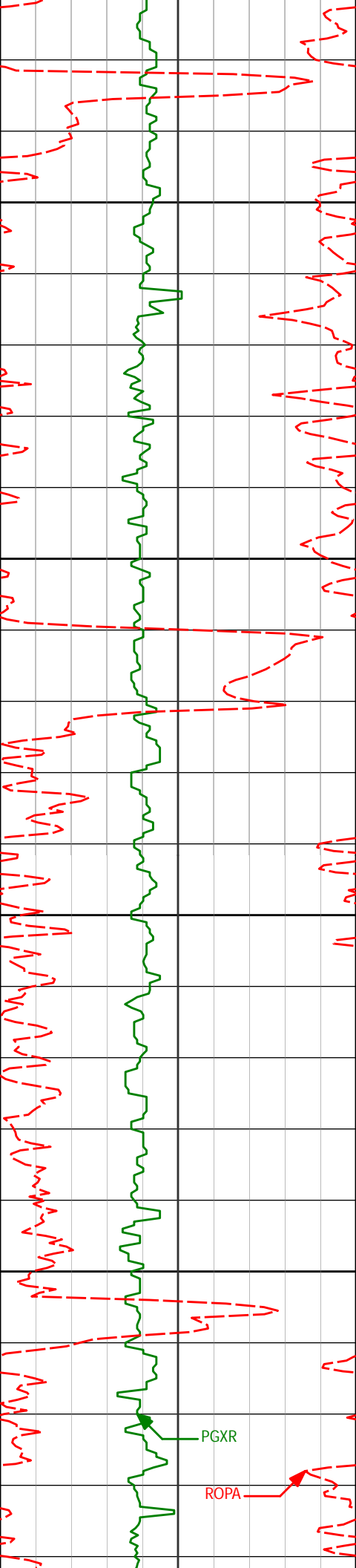
3999'

9.03°

94.83°

3993.88'

-18.79'



4150

4200

4250

4300

PGXR

ROPA

4169'

9.92°

99.86°

4161.56'

-22.02'

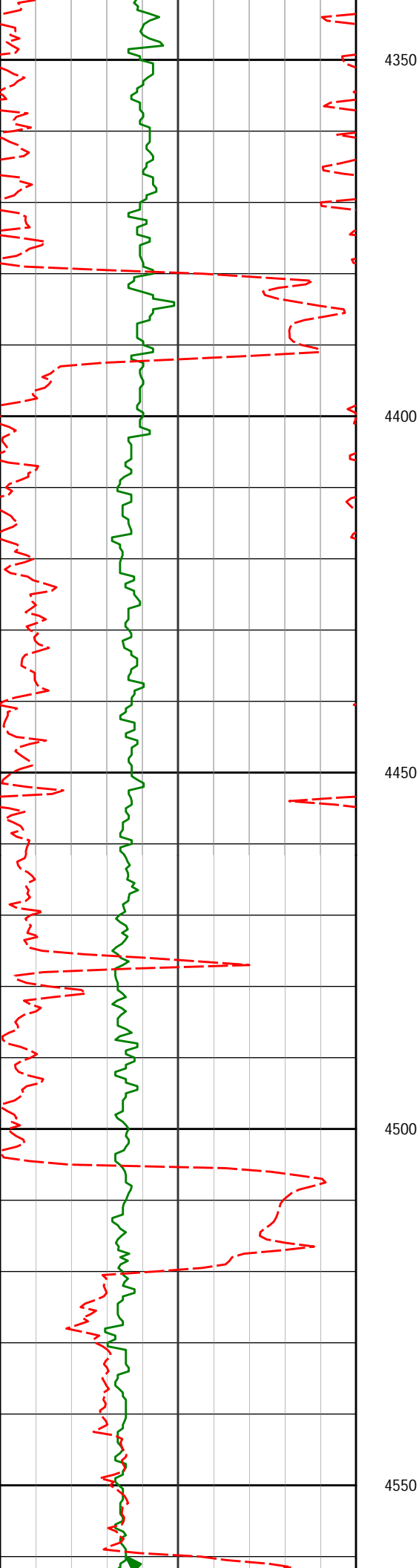
4340'

10.07°

105.50°

4329.97'

-28.12'



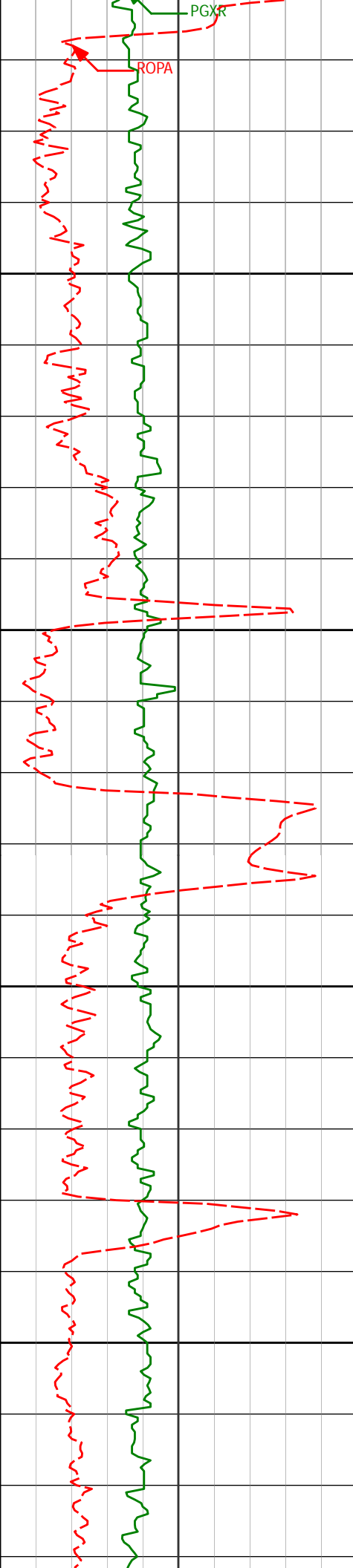
4511'

10.39°

112.81°

4498.26'

-37.67'



4600

4650

4700

4750

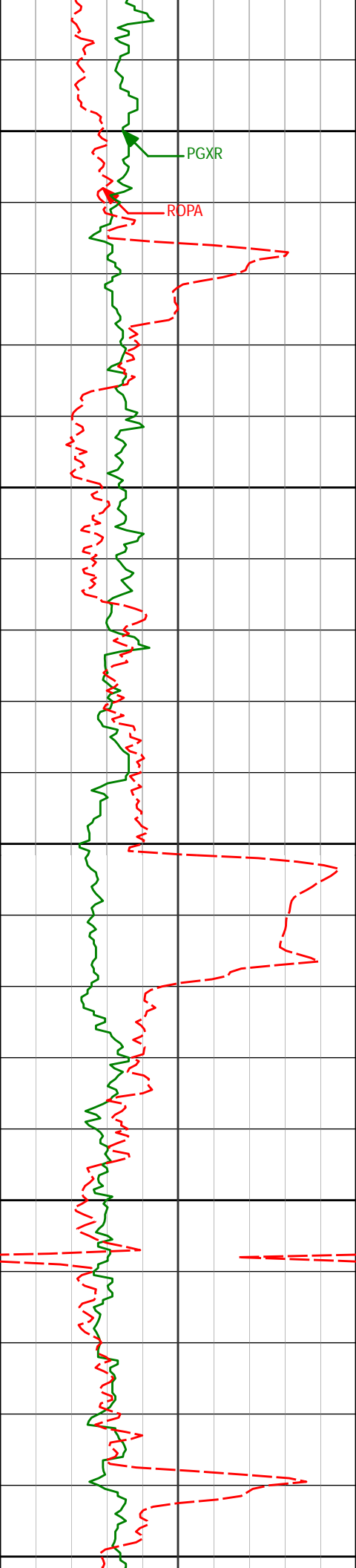
4680'

11.15°

113.24°

4664.28'

-49.61'



4800

PGXR

ROPA

4850

4851'

10.16°

112.25°

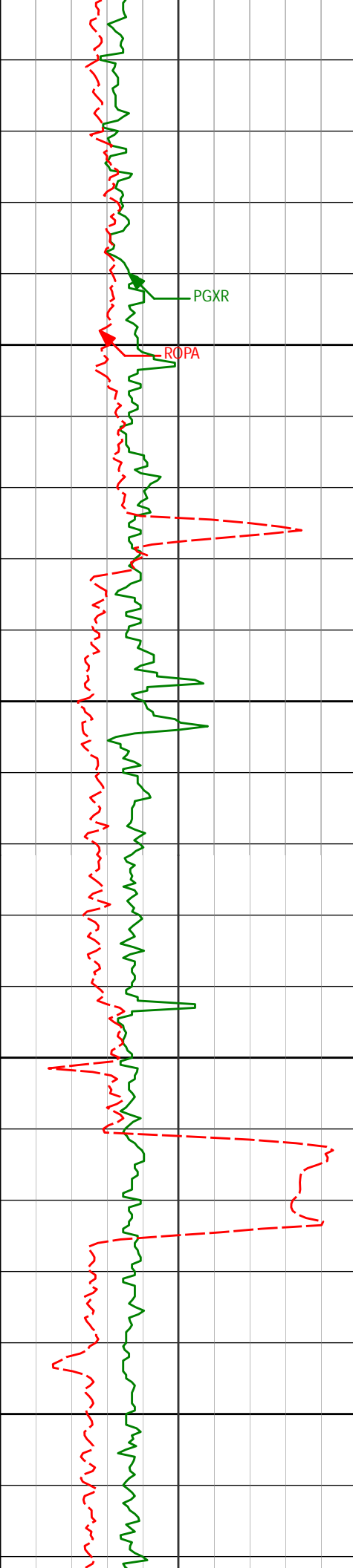
4832.33'

-61.42'

4900

4950

5000



5050

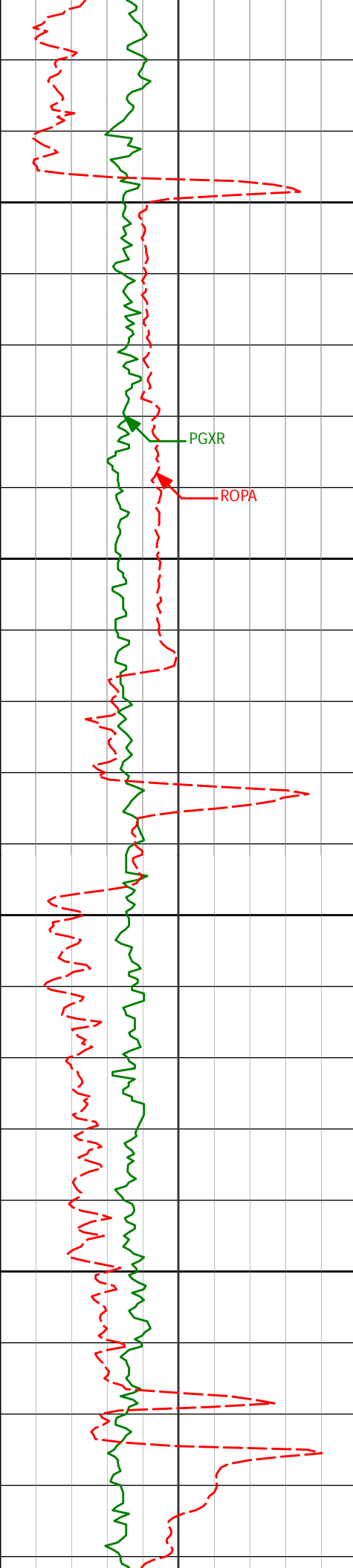
5100

5150

5200

5022'	11.96°	109.37°	5000.15'	-72.56'
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5192'	11.79°	104.22°	5166.51'	-82.18'
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5250

5300

5350

5400

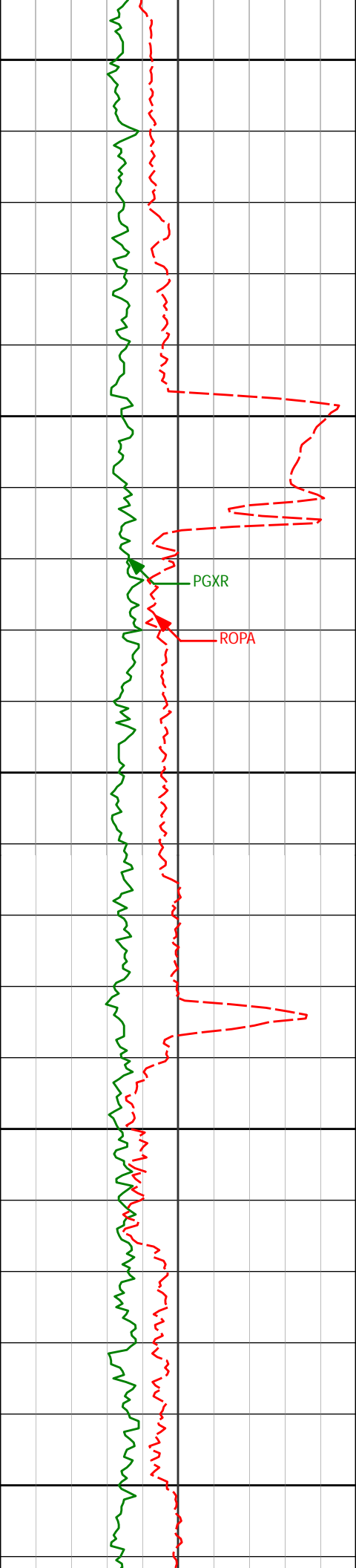
5362'

10.95°

106.55°

5333.18'

-90.58'



5450

5500

5550

5600

5650

PGXR

ROPA

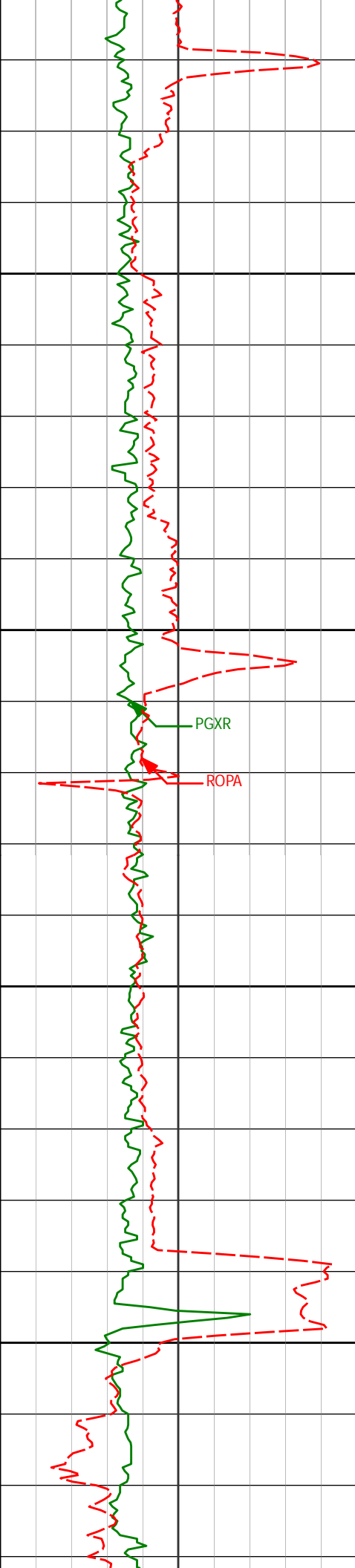
5534'

12.34°

98.06°

5501.64'

-97.32'



5700

5750

5800

5850

5702'

11.58°

97.70°

5666.00'

-101.60'

PGXR

ROPA

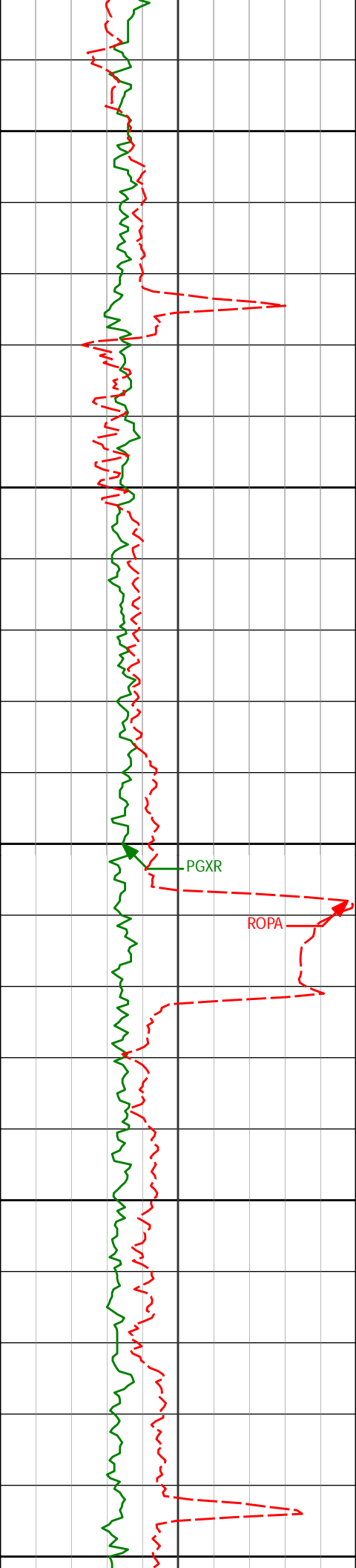
5871'

10.74°

101.21°

5831.80'

-106.46'



5900

5950

6000

6050

6100

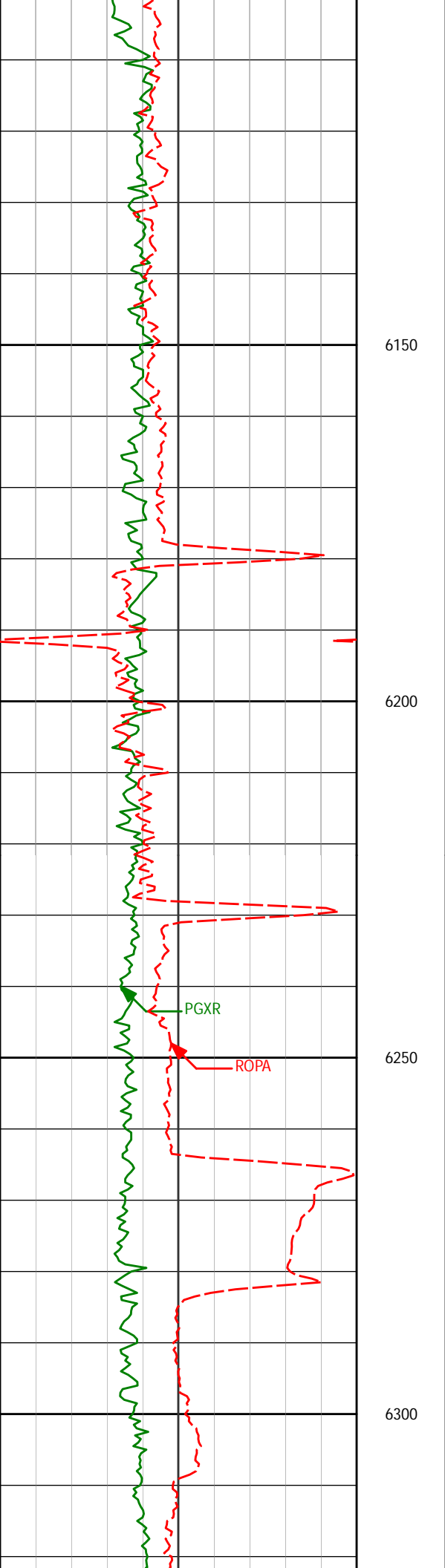
6043'

9.05°

110.63°

6001.25'

-113.93'



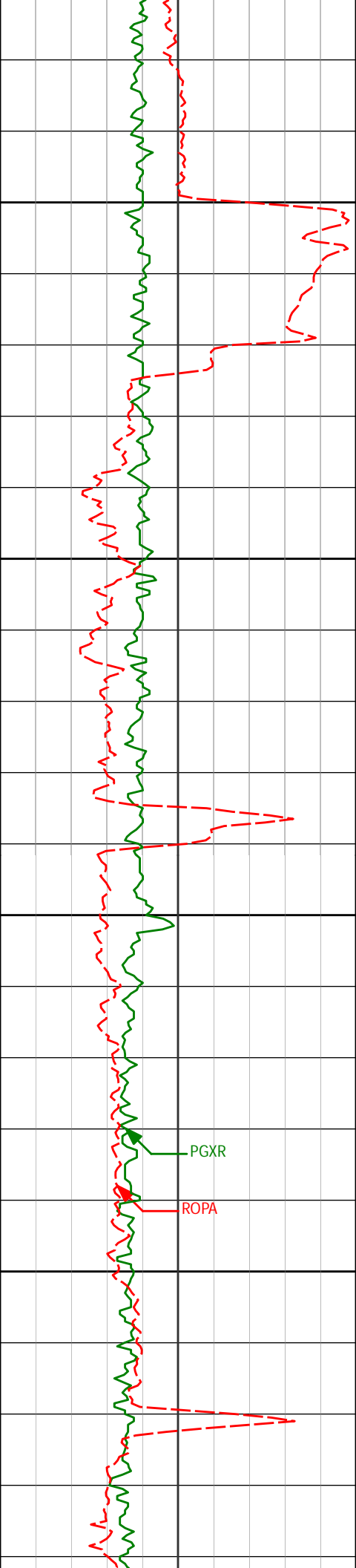
6214'

7.26°

110.77°

6170.51'

-122.18'



6350

6385'

10.55°

107.24°

6339.43'

-130.29'

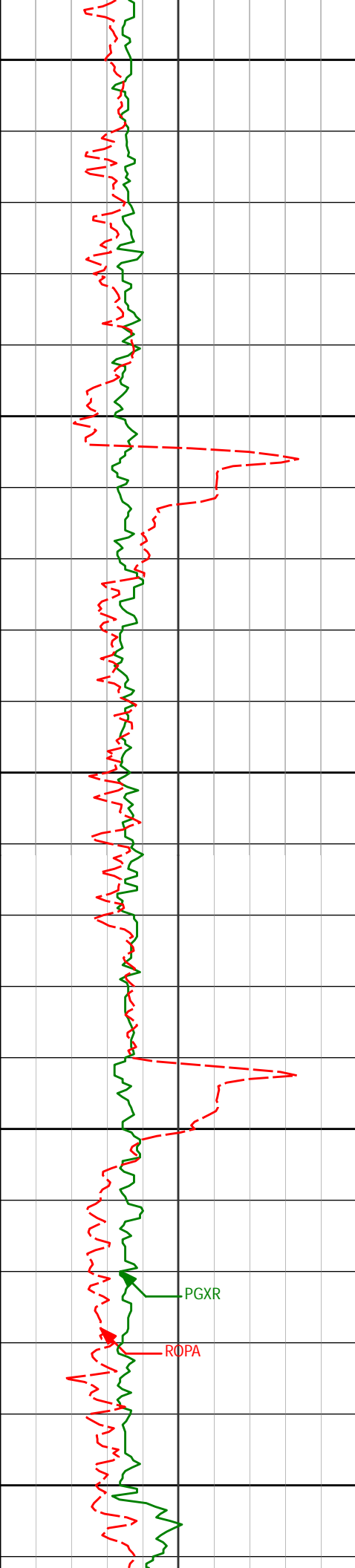
6400

6450

6500

PGXR

ROPA



6550

6555'

7.29°

108.46°

6507.35'

-137.95'

6600

6650

6700

6750

PGXR

ROPA

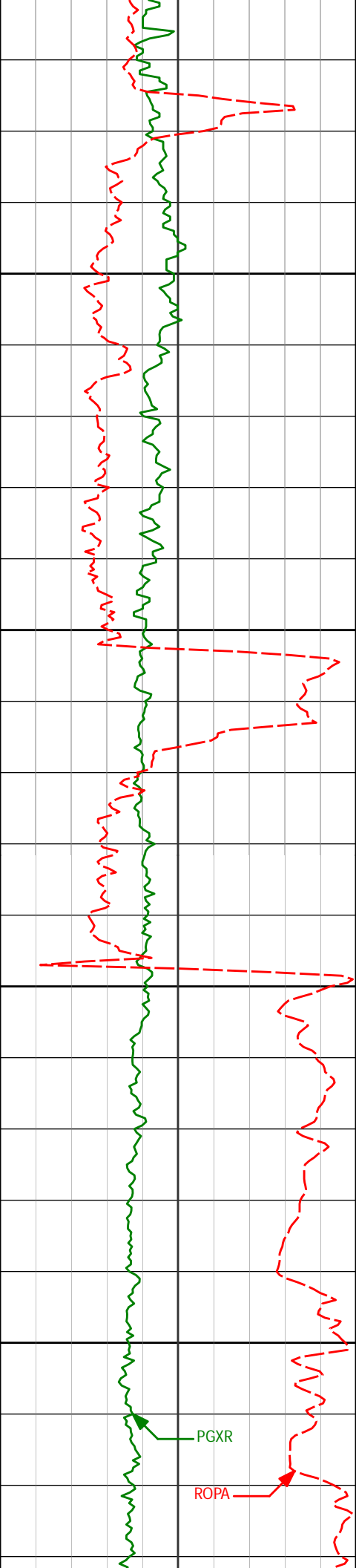
6726'

5.44°

105.44°

6677.29'

-143.28'



6800

6850

6900

6950

6898'

3.12°

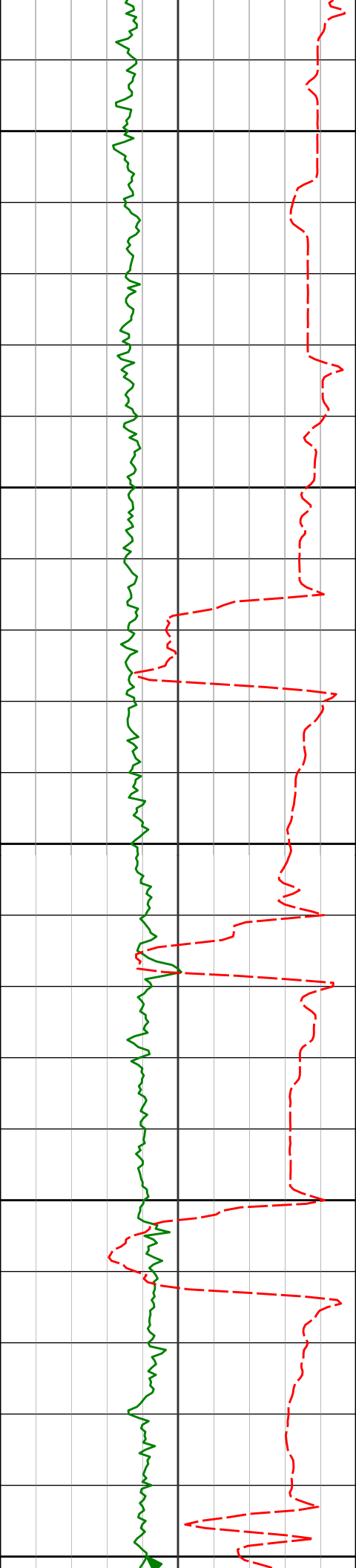
105.03°

6848.80'

-146.49'

PGXR

ROPA



7000

7050

7100

7150

7200

6983'

2.04°

93.63°

6933.71'

-147.13'

7026'

1.57°

81.97°

6976.69'

-147.08'

7068'

4.29°

359.74°

7018.64'

-145.42'

7111'

8.78°

359.54°

7061.35'

-140.52'

7154'

12.08°

357.88°

7103.64'

-132.75'

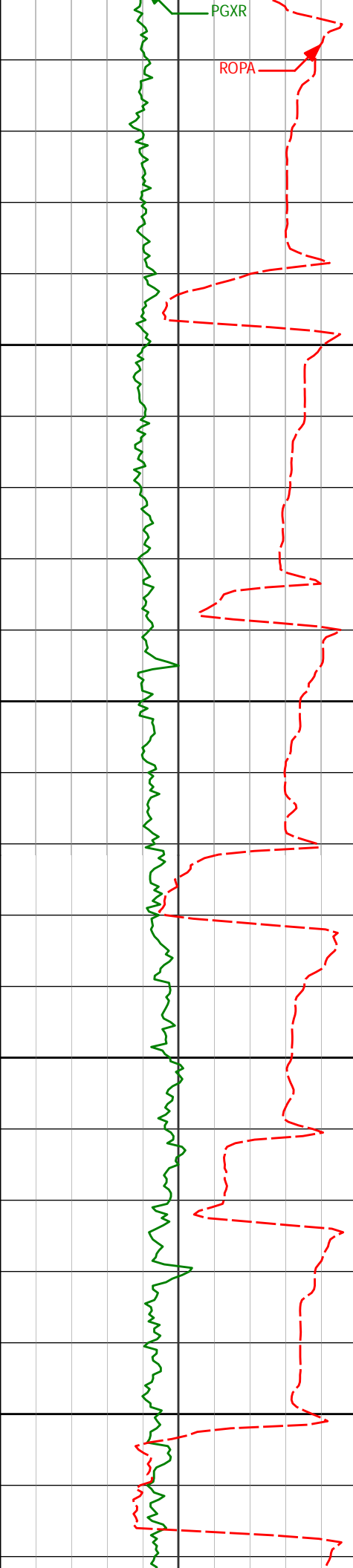
7196'

15.96°

359.24°

7144.38'

-122.58'



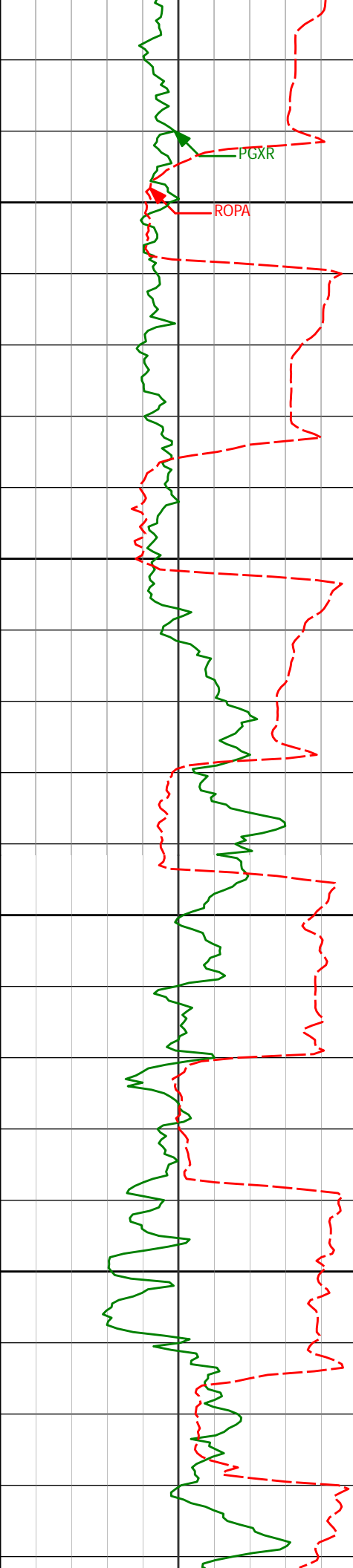
7250

7300

7350

7400

7238'	20.20°	1.46°	7184.29'	-109.55'
7281'	25.05°	4.30°	7223.97'	-93.03'
7323'	29.57°	1.47°	7261.28'	-73.78'
7366'	33.93°	1.57°	7297.84'	-51.16'
7409'	38.31°	359.70°	7332.57'	-25.83'



7450

7452'

42.07°

358.81°

7365.41'

1.91'

7500

7494'

45.90°

359.15°

7395.63'

31.05'

7550

7537'

49.64°

359.89°

7424.52'

62.88'

7600

7580'

53.26°

358.88°

7451.31'

96.49'

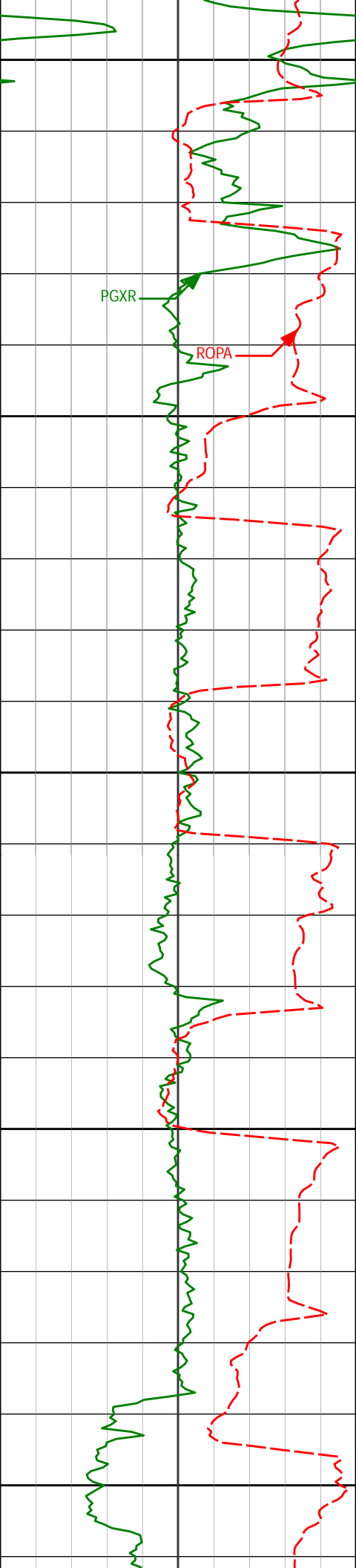
7623'

56.91°

357.66°

7475.92'

131.71'



7650

7665'

61.19°

358.19°

7497.52'

167.67'

7700

7708'

65.11°

358.49°

7516.94'

205.99'

7750

7751'

68.86°

358.47°

7533.74'

245.53'

7800

7794'

72.73°

358.92°

7547.89'

286.10'

7850

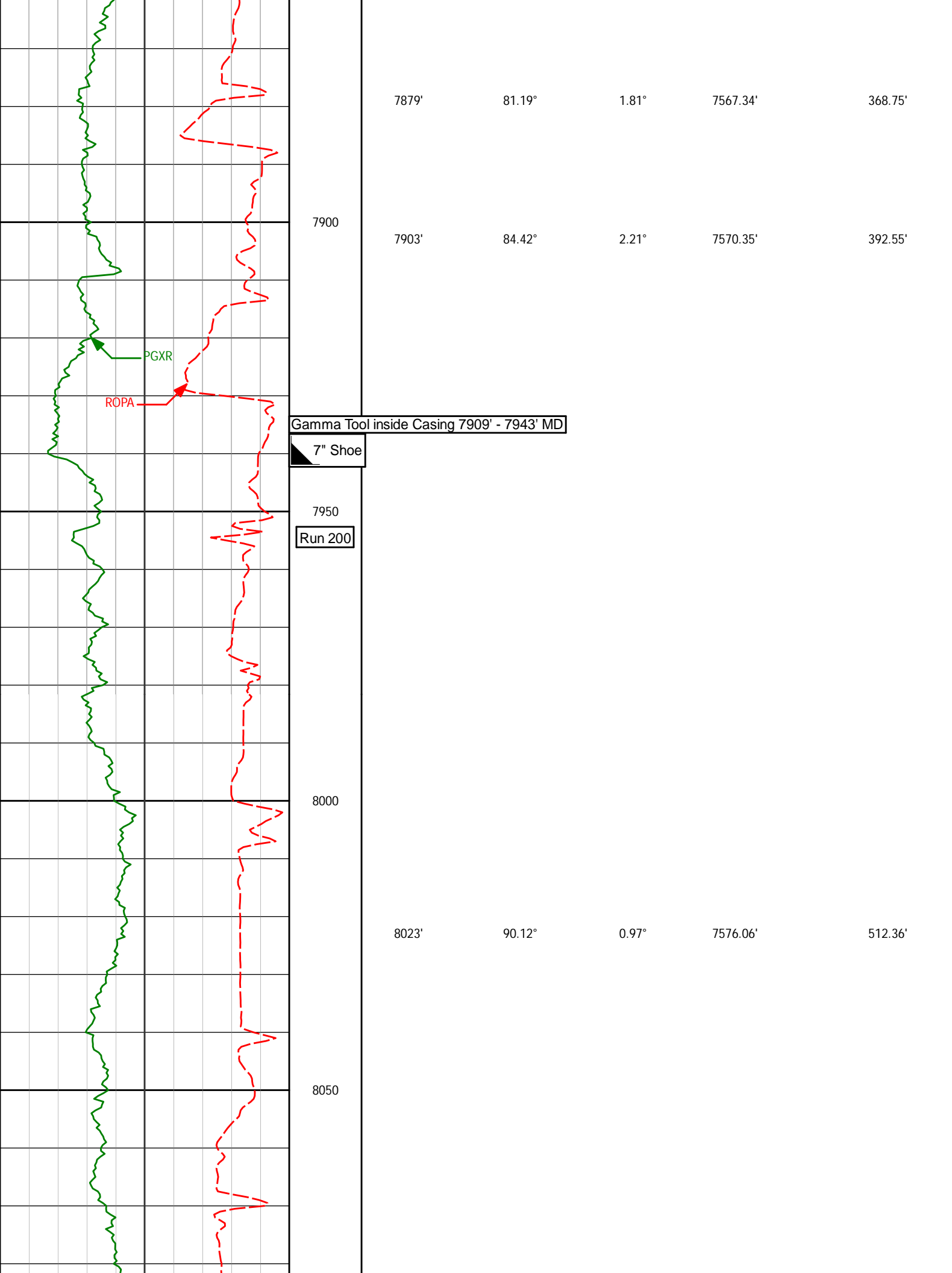
7837'

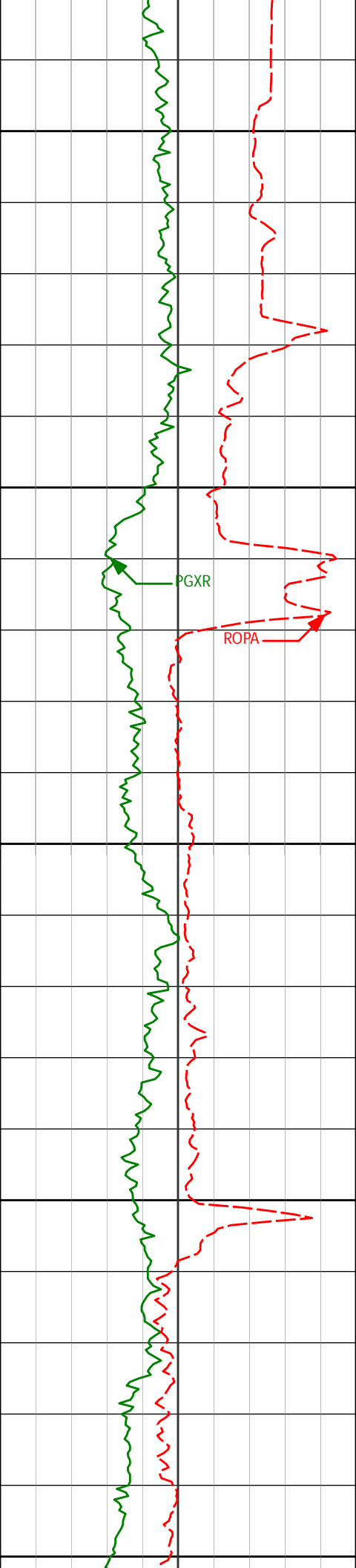
76.60°

359.95°

7559.26'

327.55'





8100

8150

8200

8250

8300

PGXR

ROPA

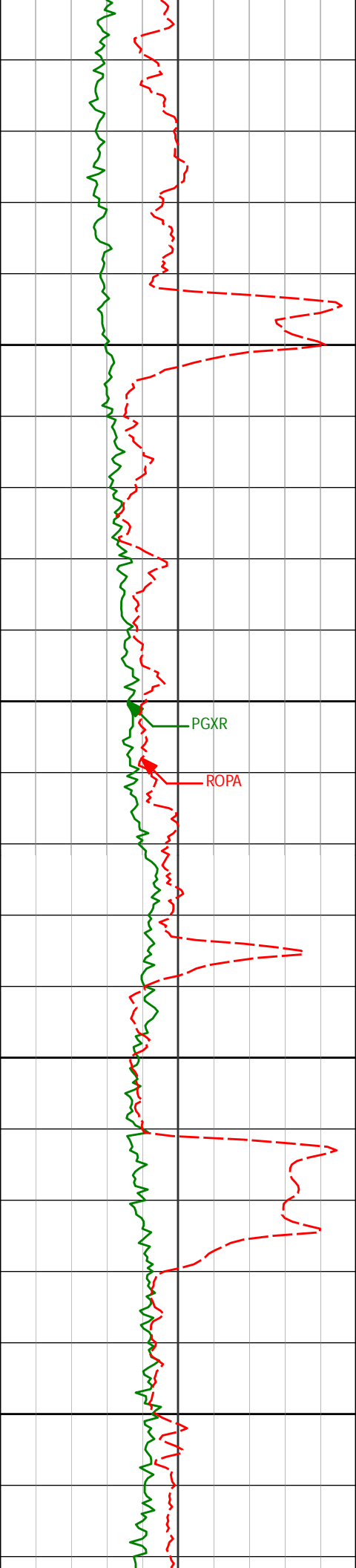
8206'

90.22°

0.17°

7575.52'

695.35'



8350

8390'

89.54°

358.29°

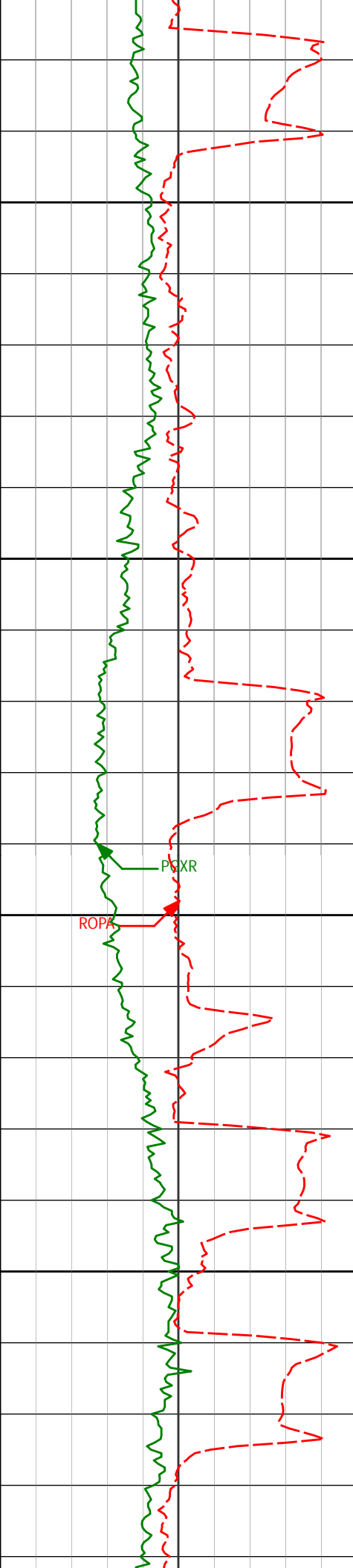
7575.91'

879.27'

8400

8450

8500



8550

8572'

91.72°

358.63°

7573.90'

1061.09'

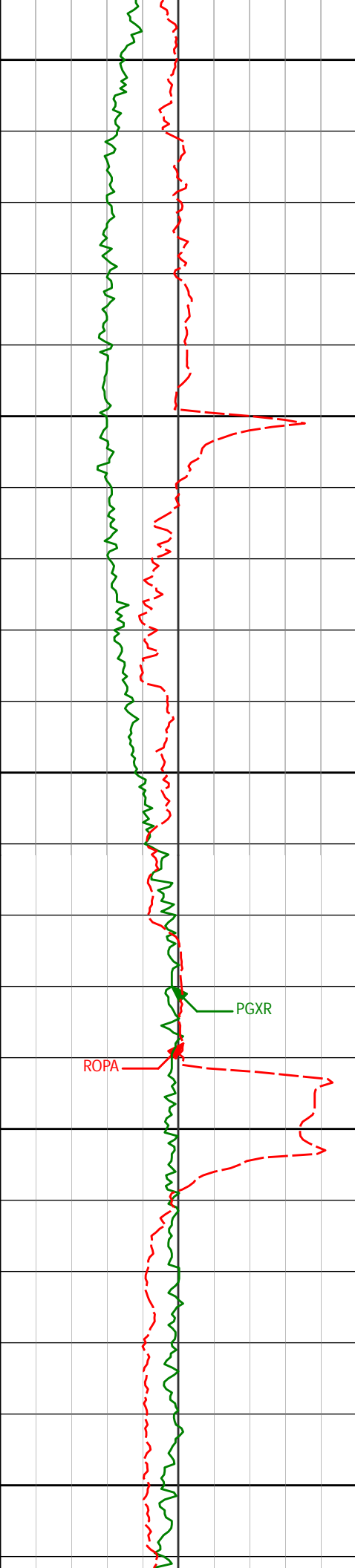
8600

8650

8700

PSXR

ROPA



8750

8755'

89.38°

1.32°

7572.15'

1244.03'

8800

8850

PGXR

ROPA

8900

8933'

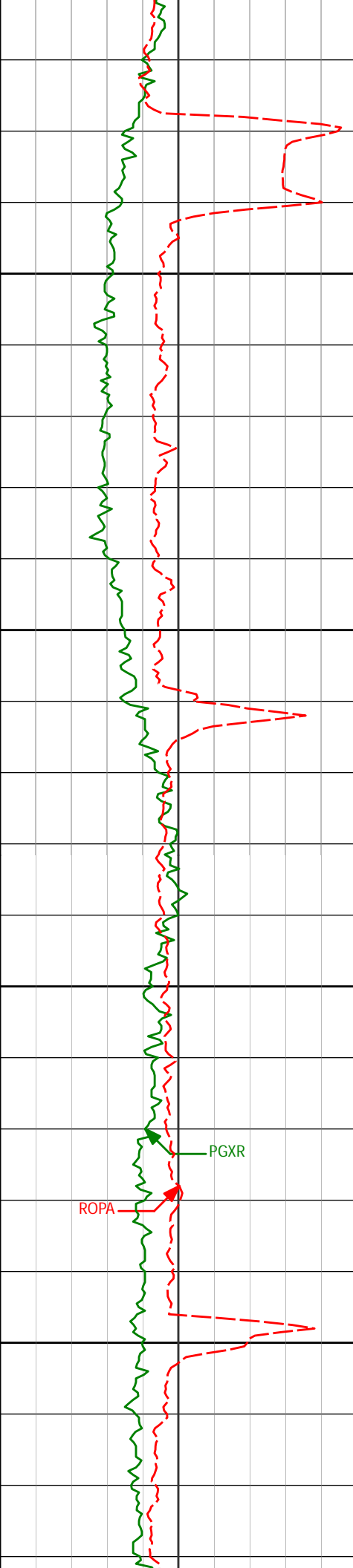
89.17°

0.73°

7574.40'

1422.02'

8950



9000

9050

9100

9150

9104'

89.63°

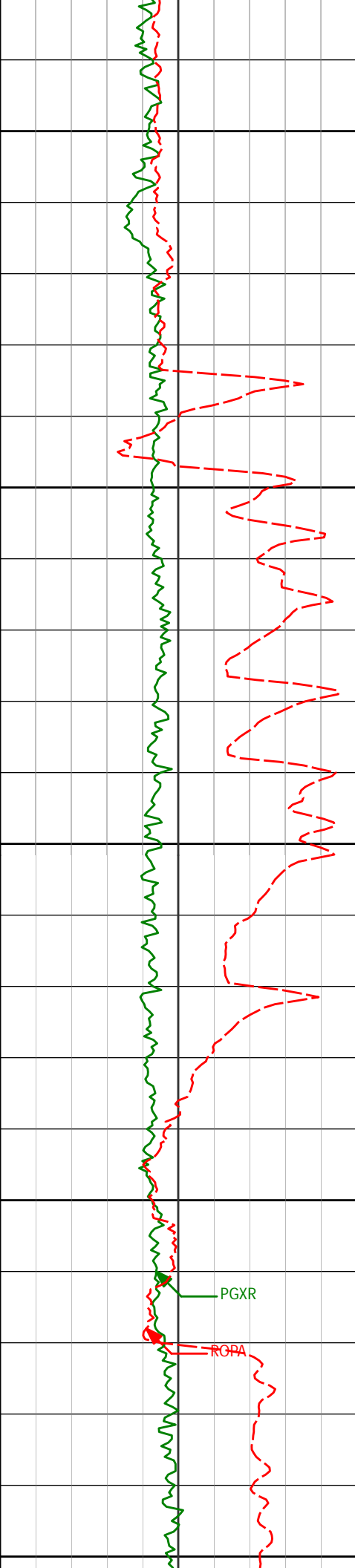
1.46°

7576.19'

1593.00'

PGXR

ROPA



9200

9250

9300

9350

9400

9274'

89.54°

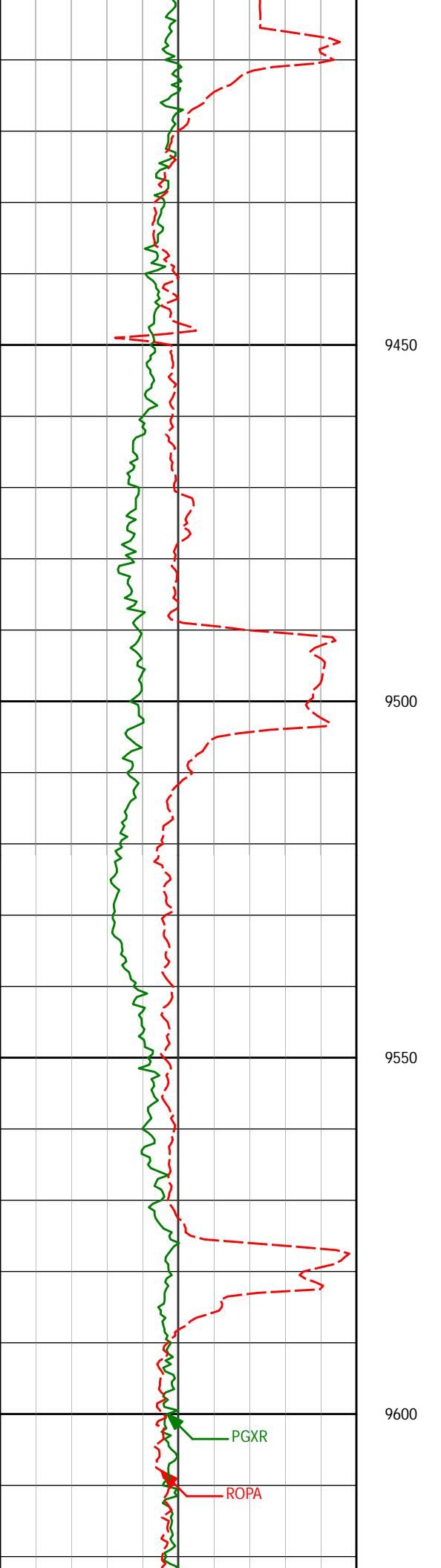
1.03°

7577.42'

1763.00'

PGXR

ROPA



9445'

89.14°

0.92°

7579.39'

1933.98'

9450

9500

9550

9600

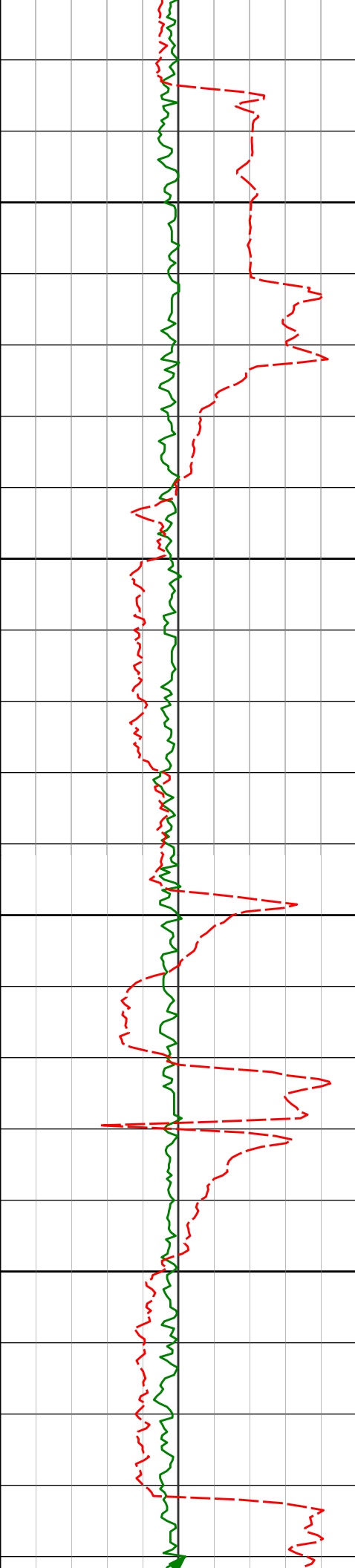
9617'

90.18°

359.92°

7580.41'

2105.97'



9650

9700

9750

9800

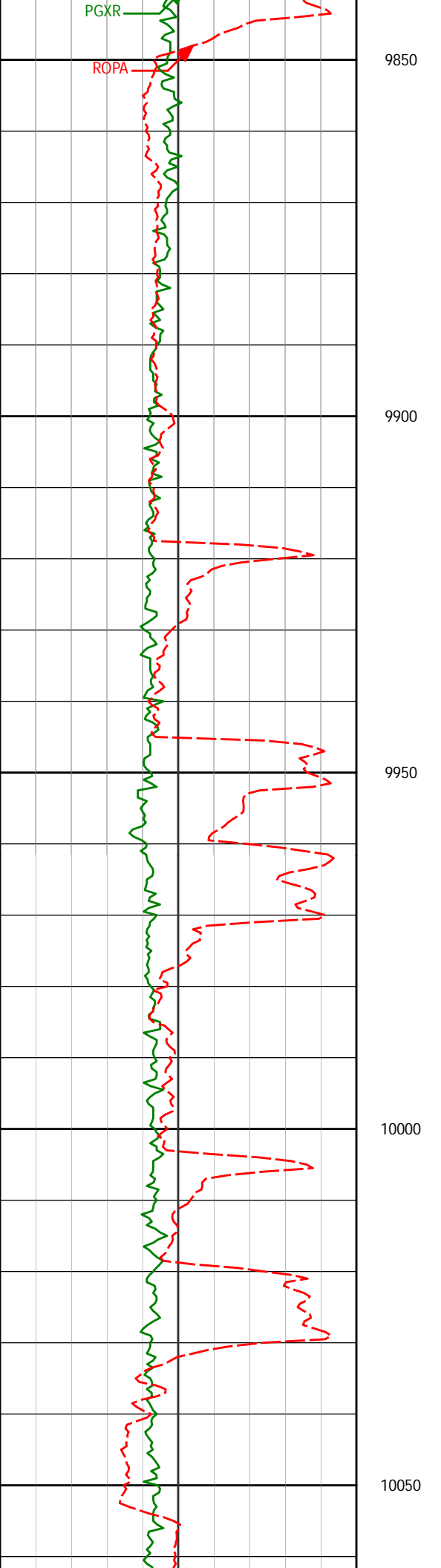
9787'

90.65°

359.73°

7579.18'

2275.94'



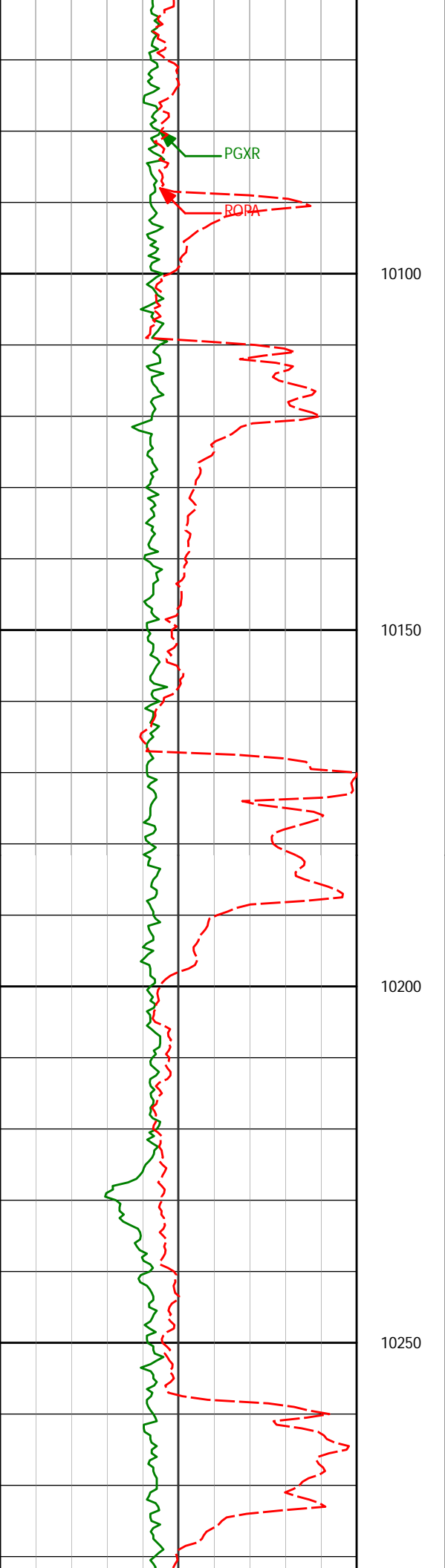
9958'

90.37°

358.98°

7577.66'

2446.88'



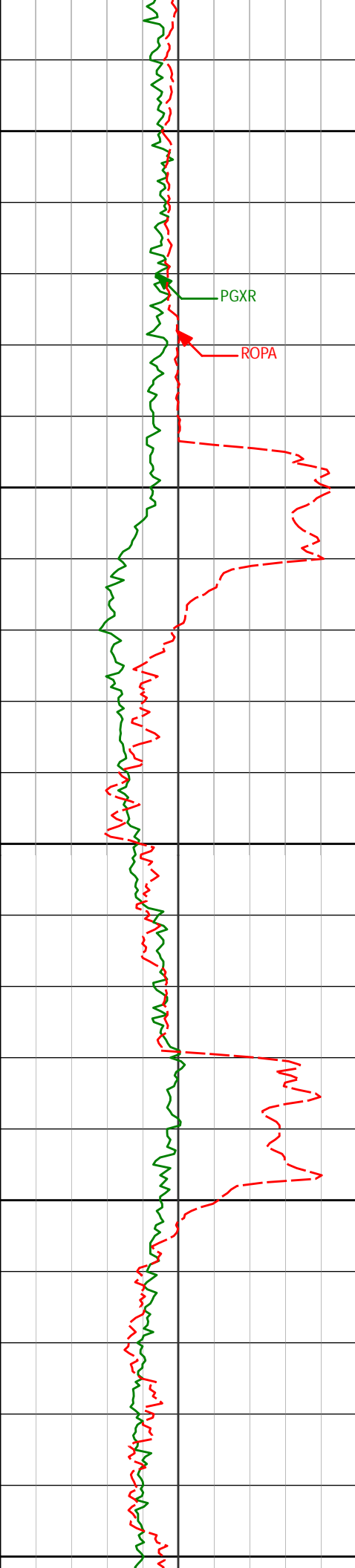
10128'

90.92°

358.45°

7575.75'

2616.75'



10300

10350

10400

10450

10500

10299'

91.32°

359.70°

7572.40'

2787.63'

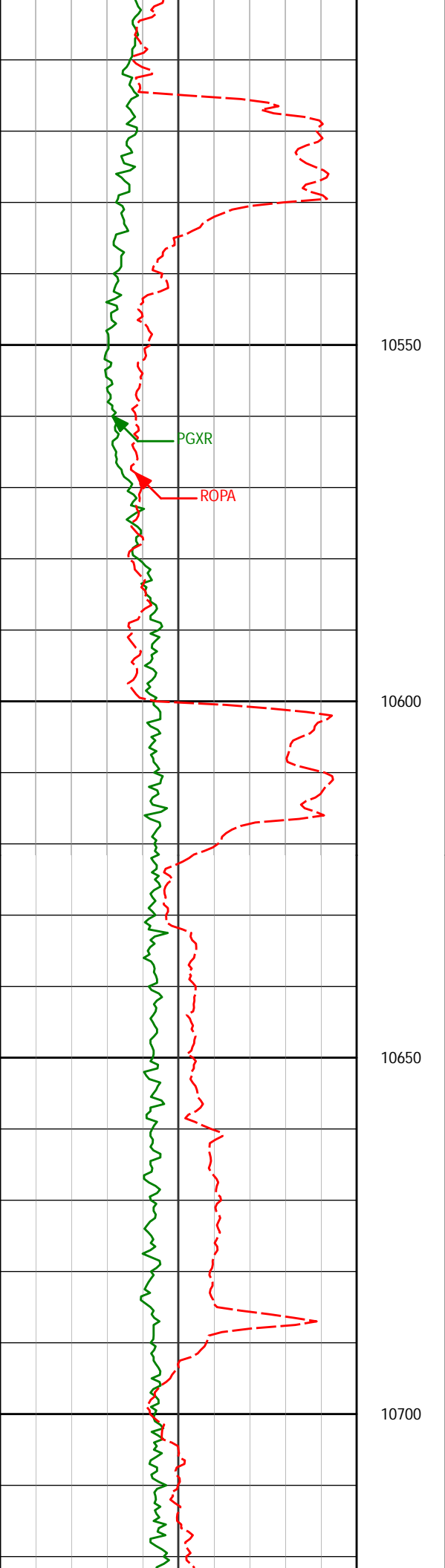
10470'

90.71°

359.38°

7569.37'

2958.56'



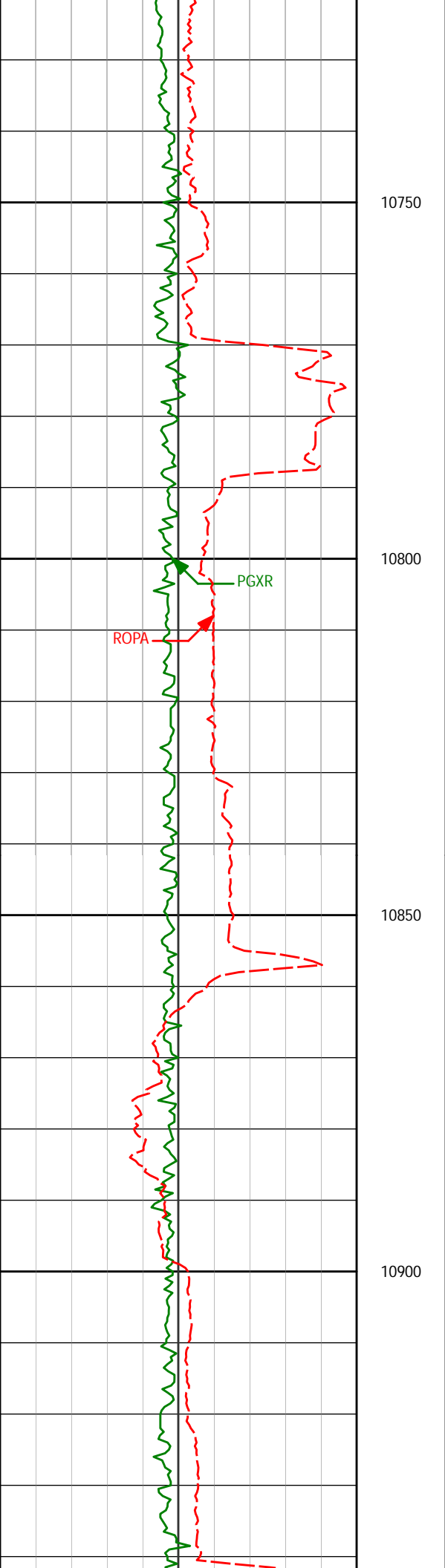
10641'

90.34°

1.02°

7567.81'

3129.54'



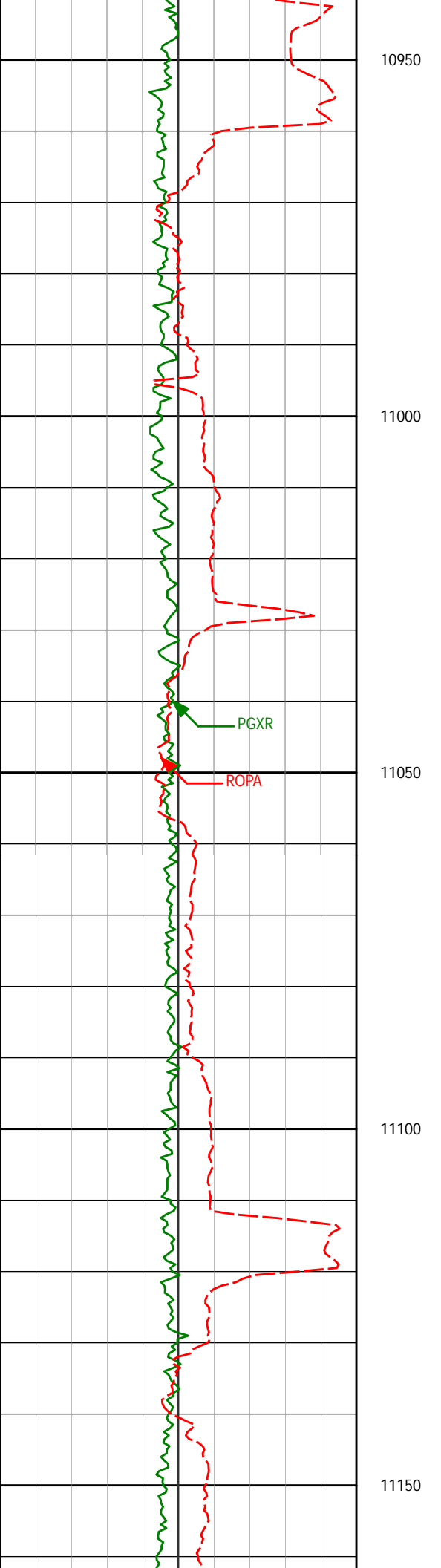
10811'

90.43°

1.65°

7566.67'

3299.52'



10950

11000

11050

11100

11150

10982'

89.60°

2.16°

7566.62'

3470.49'

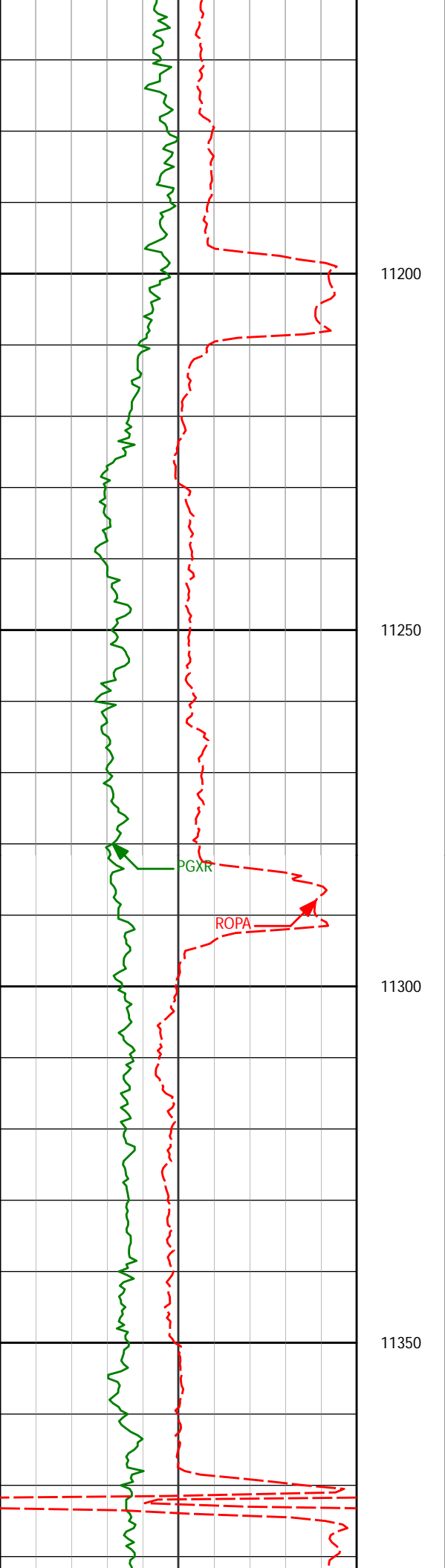
11153'

88.89°

1.43°

7568.87'

3641.45'



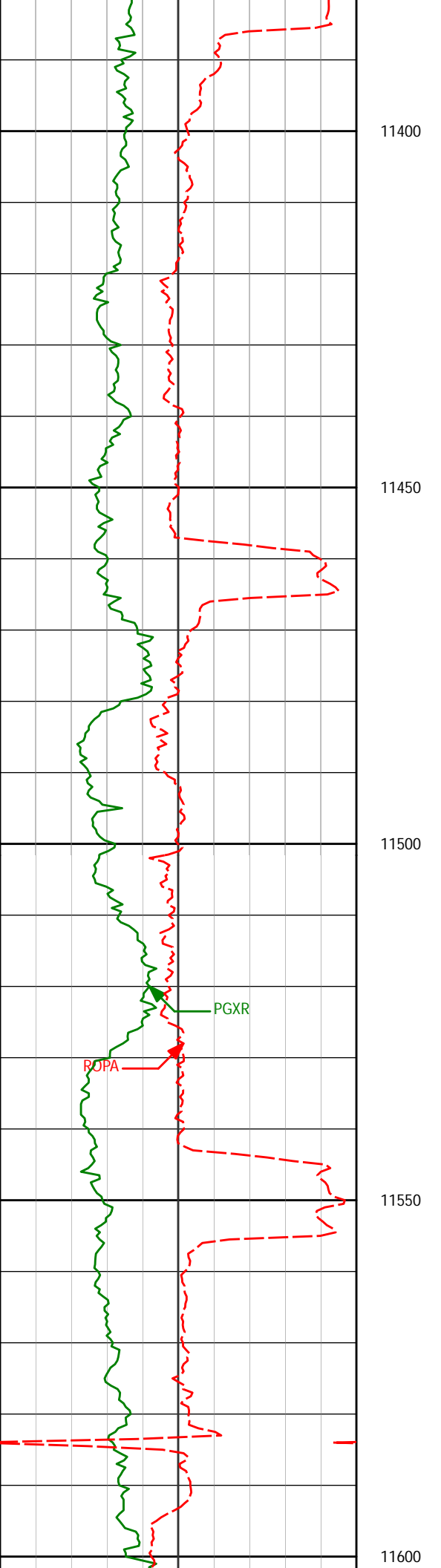
11324'

89.94°

0.69°

7570.62'

3812.44'



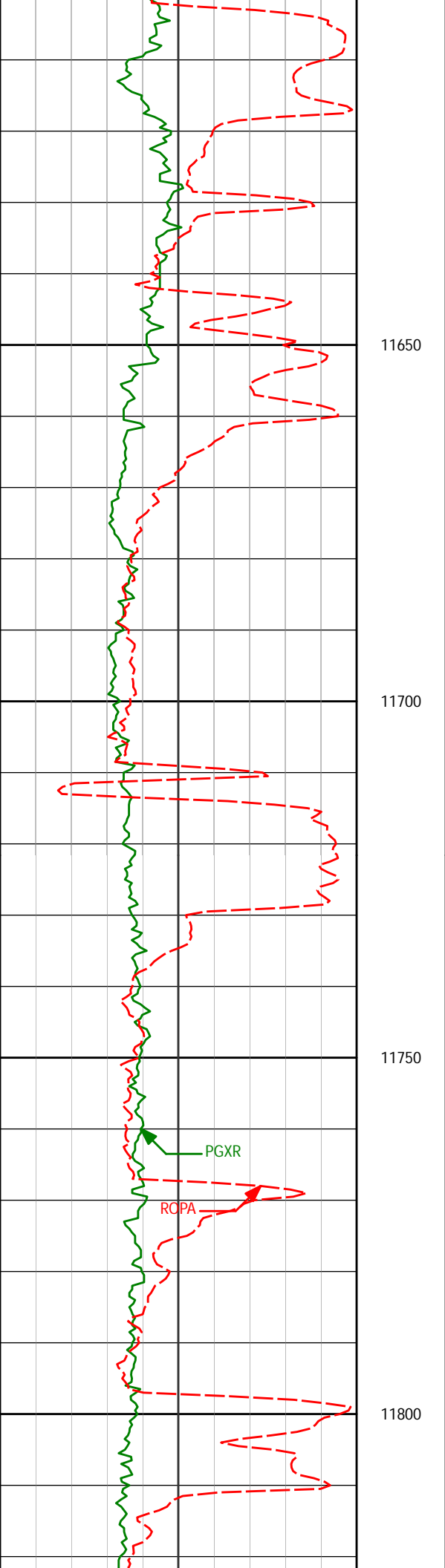
11496'

91.97°

359.59°

7567.75'

3984.39'



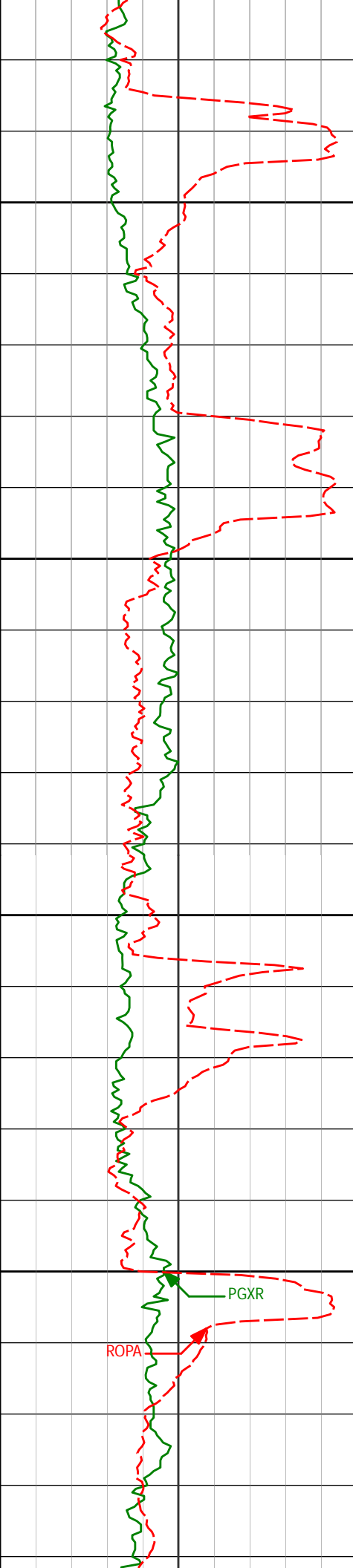
11667'

90.37°

0.00°

7564.26'

4155.32'



11850

11900

11950

12000

11837'

91.02°

2.28°

7562.20'

4325.29'

12008'

89.26°

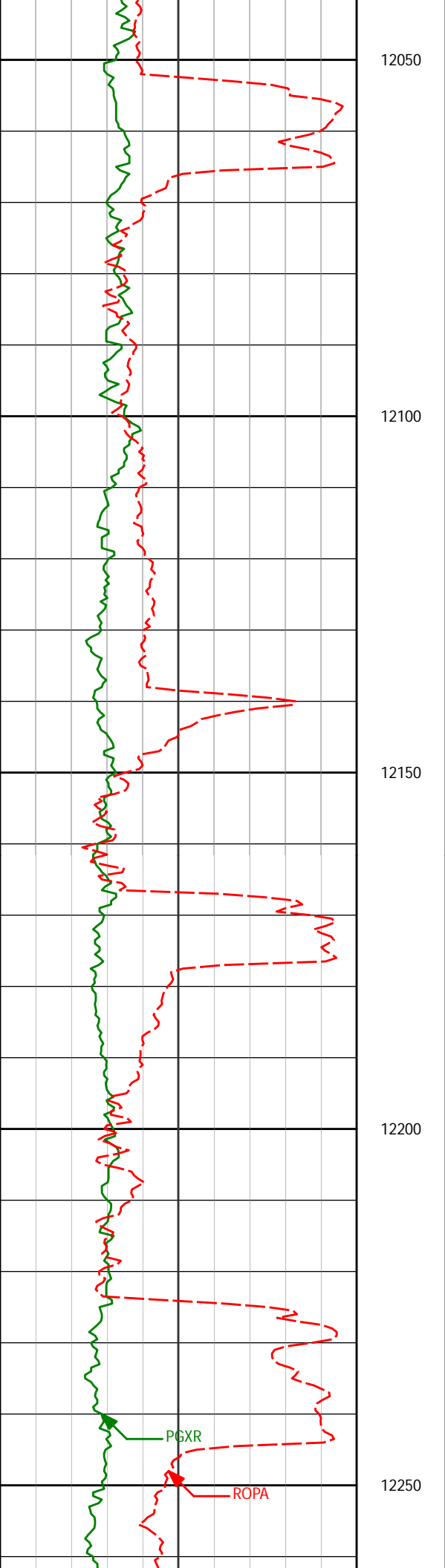
1.40°

7561.78'

4496.26'

PGXR

ROPA



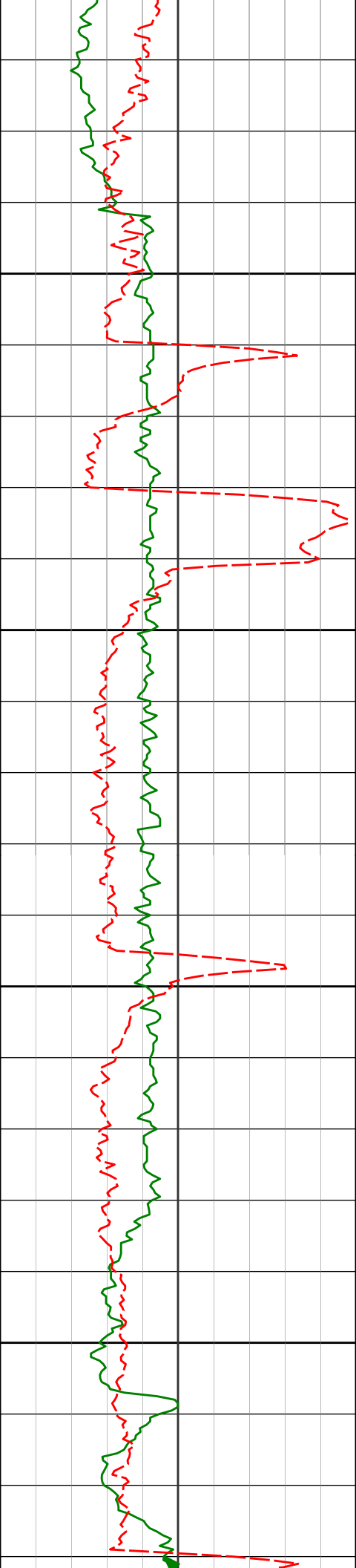
12180'

89.51°

0.30°

7563.63'

4668.24'



12300

12350

12400

12450

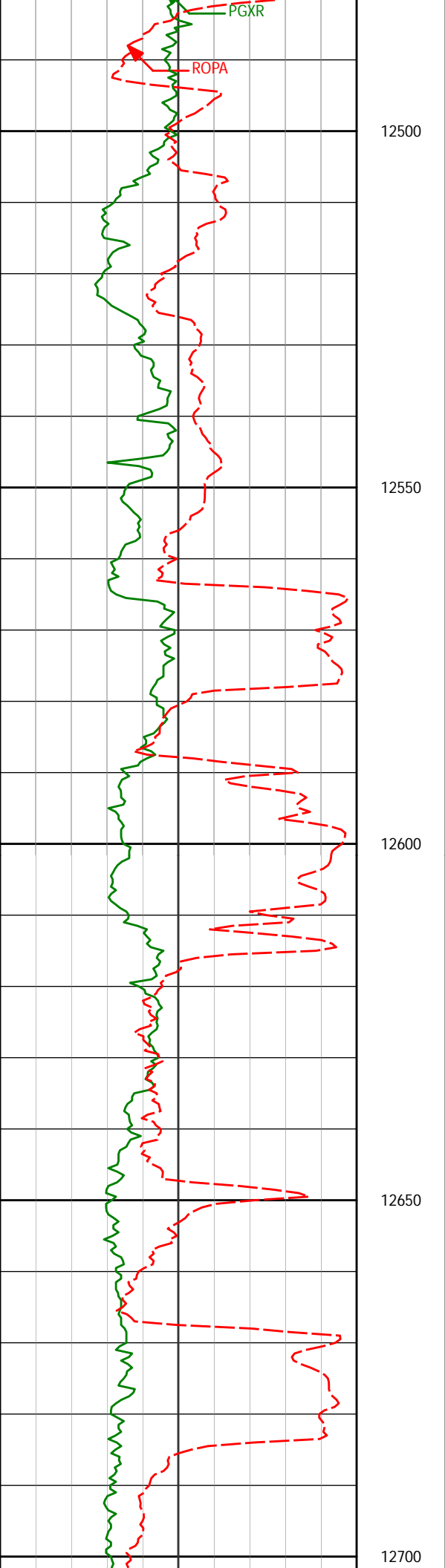
12351'

90.25°

1.45°

7563.99'

4839.24'



12519'

89.66°

1.00°

7564.12'

5007.23'

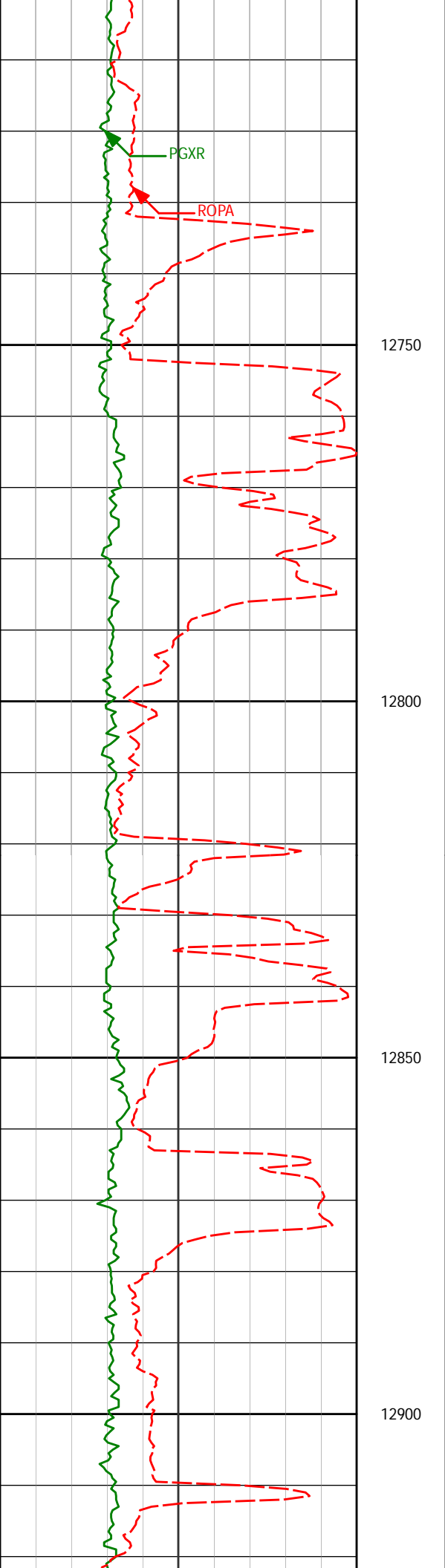
12689'

89.75°

1.56°

7564.99'

5177.23'



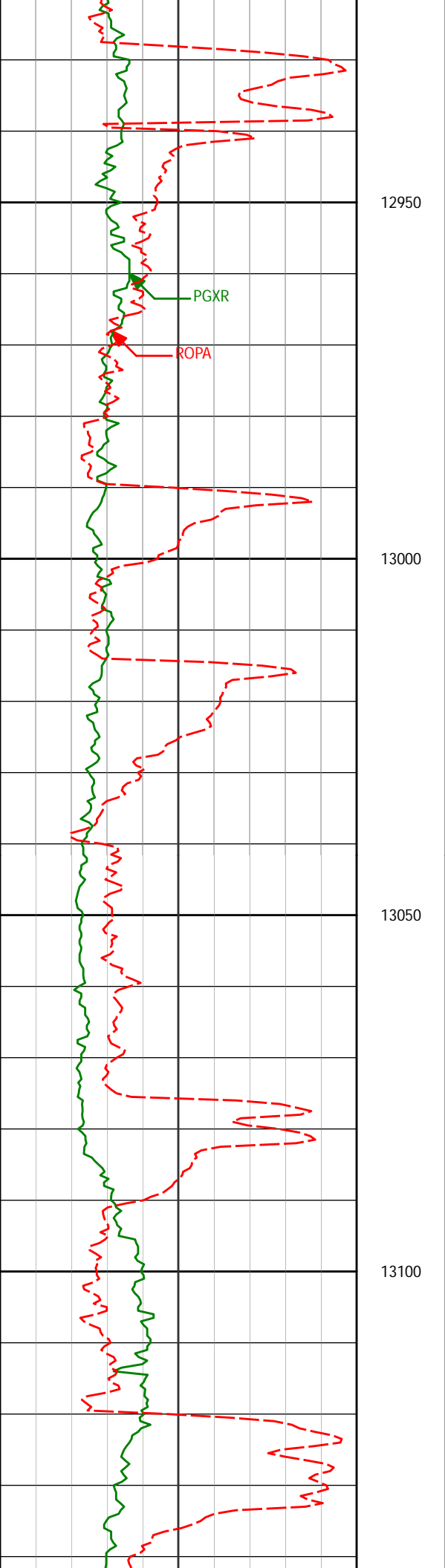
12859'

90.83°

3.52°

7564.13'

5347.14'



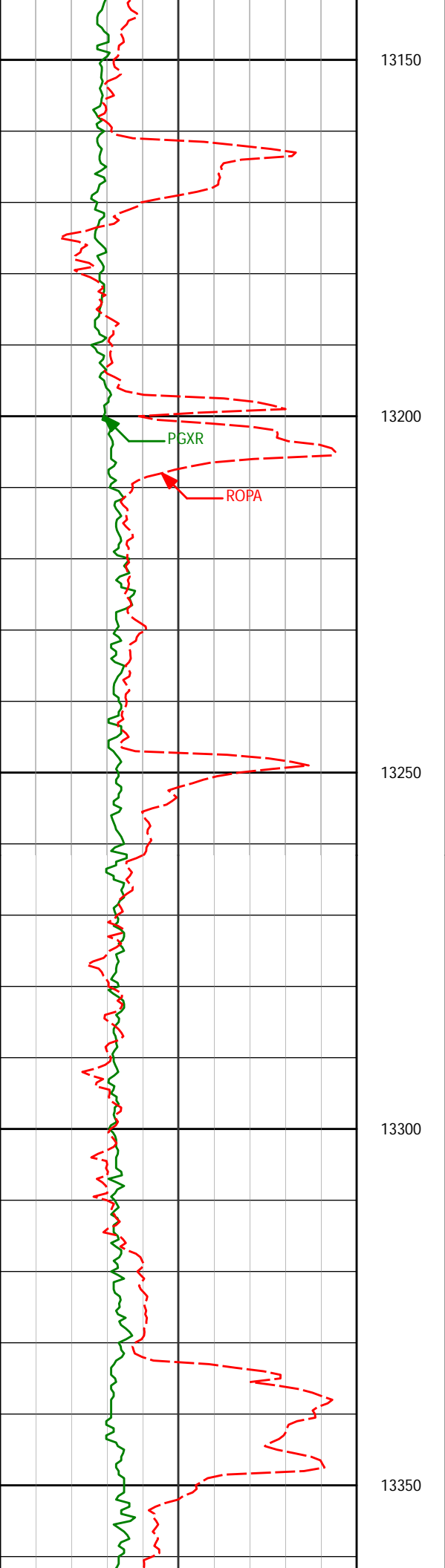
13031'

89.88°

2.33°

7563.07'

5519.01'



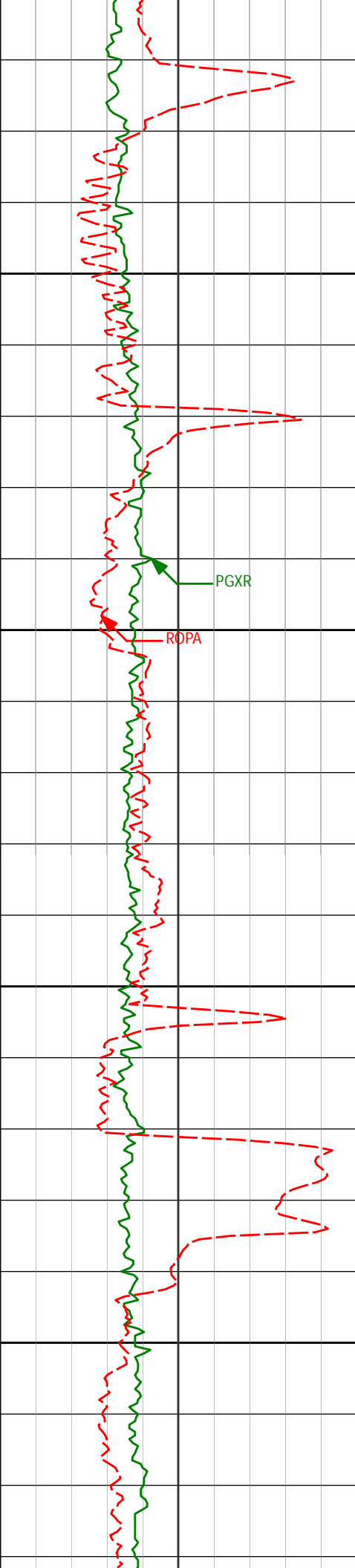
13202'

90.03°

3.13°

7563.20'

5689.92'



13400

13450

13500

13550

13373'

89.51°

2.16°

7563.89'

5860.83'

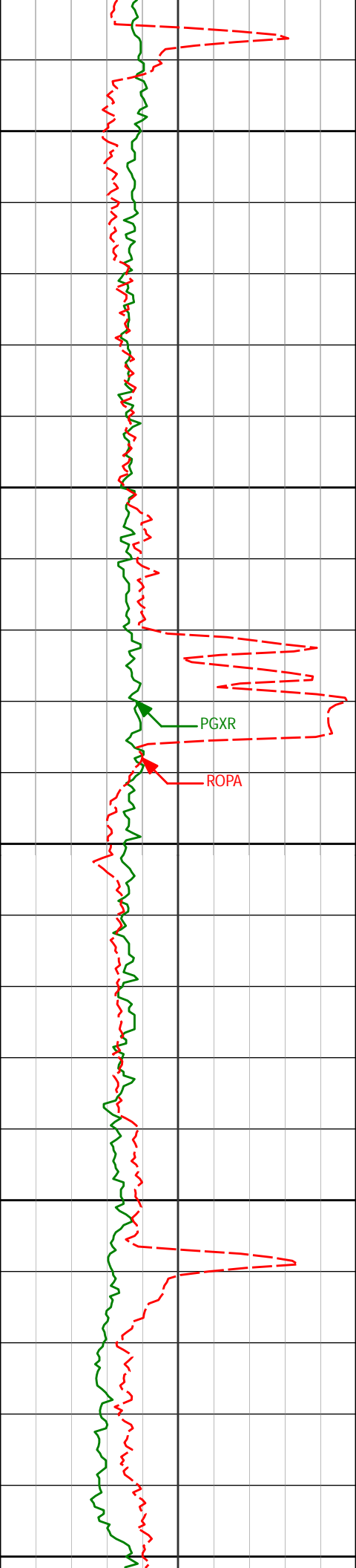
13541'

91.02°

2.47°

7563.11'

6028.77'



13600

13650

13700

13750

13800

PGXR

ROPA

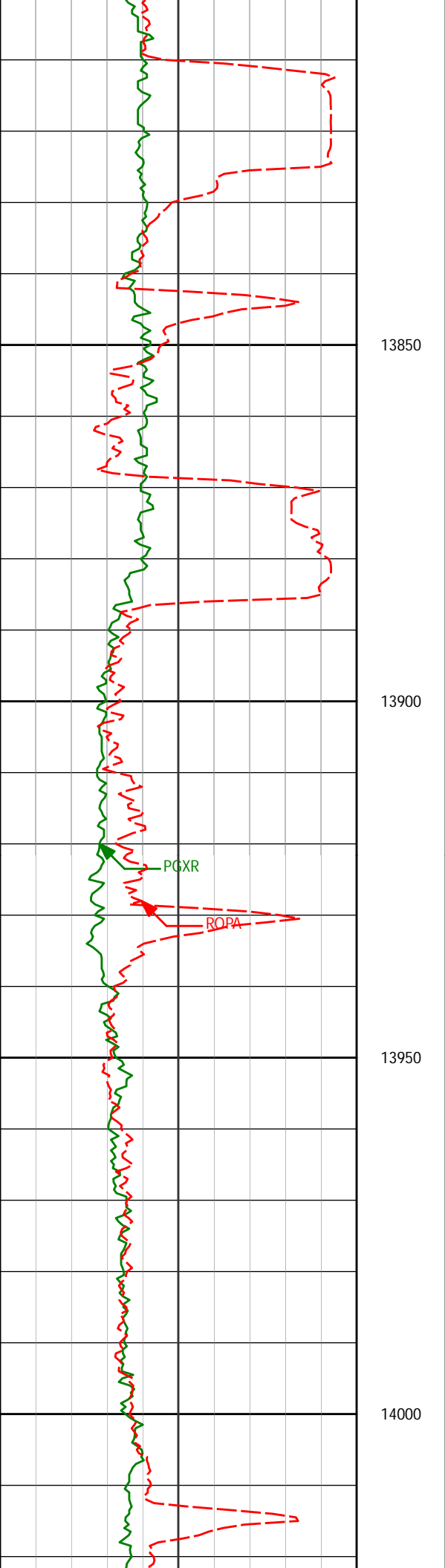
13712'

89.66°

2.04°

7562.10'

6199.71'



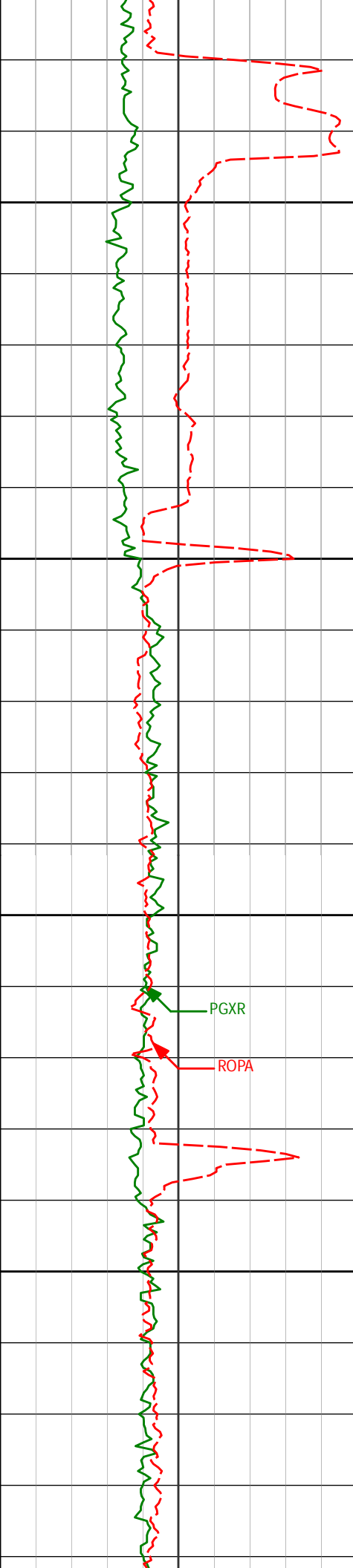
13883'

88.71°

1.29°

7564.53'

6370.67'



14050

14100

14150

14200

PGXR

ROPA

14053'

89.72°

1.09°

7566.86'

6540.65'

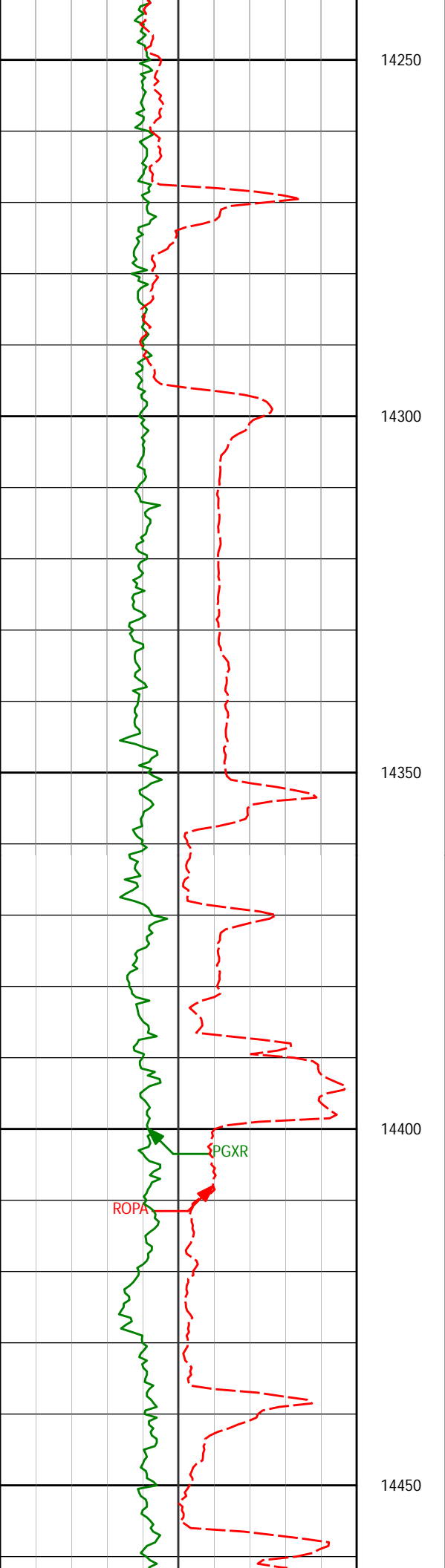
14223'

89.97°

359.85°

7567.32'

6710.64'



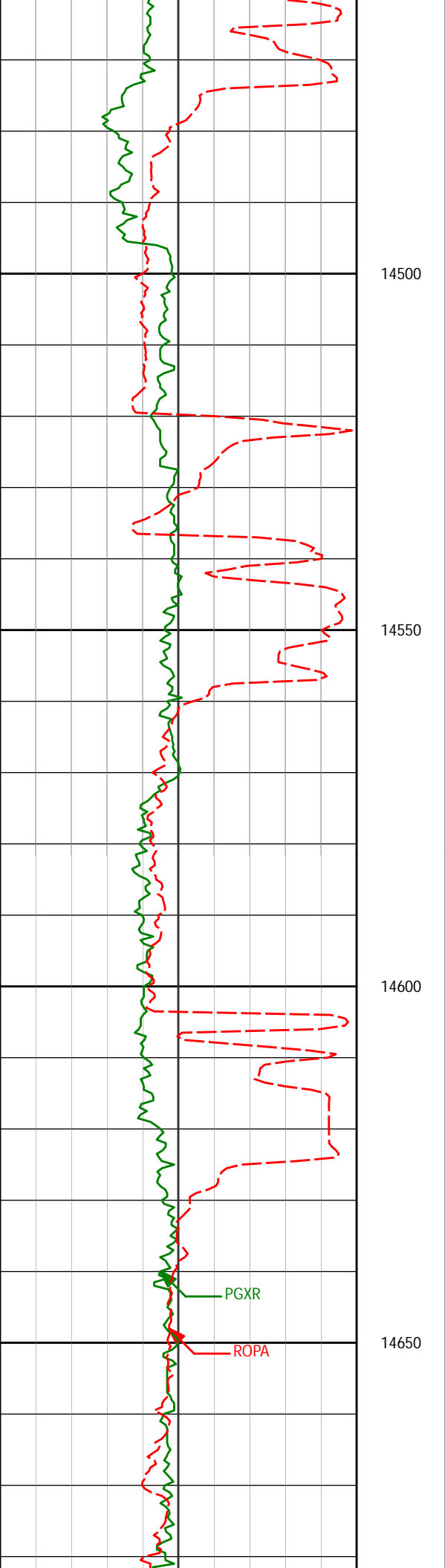
14392'

89.94°

359.38°

7567.45'

6879.60'



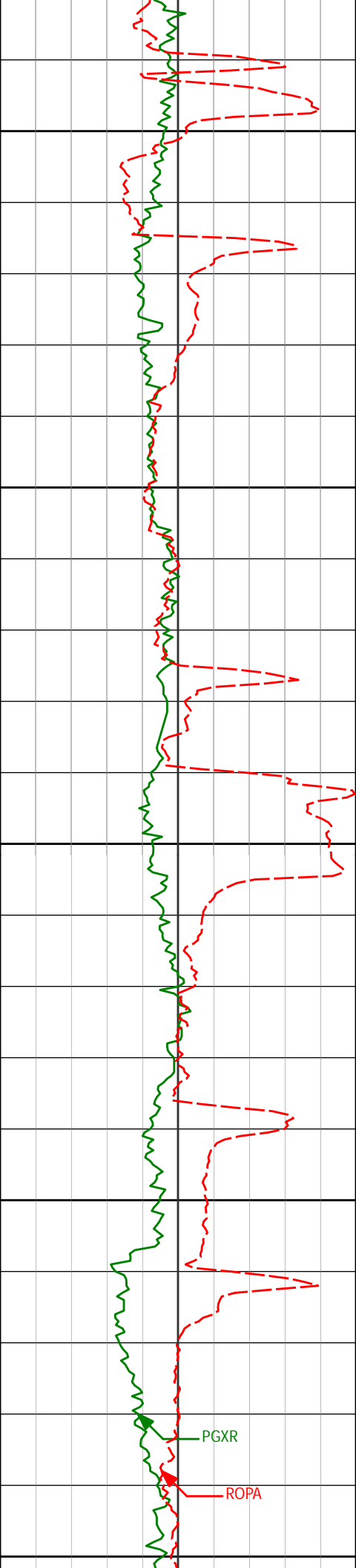
14561'

89.88°

0.14°

7567.72'

7048.57'



14700

14750

14800

14850

14900

14729'

90.89°

0.49°

7566.59'

7216.56'

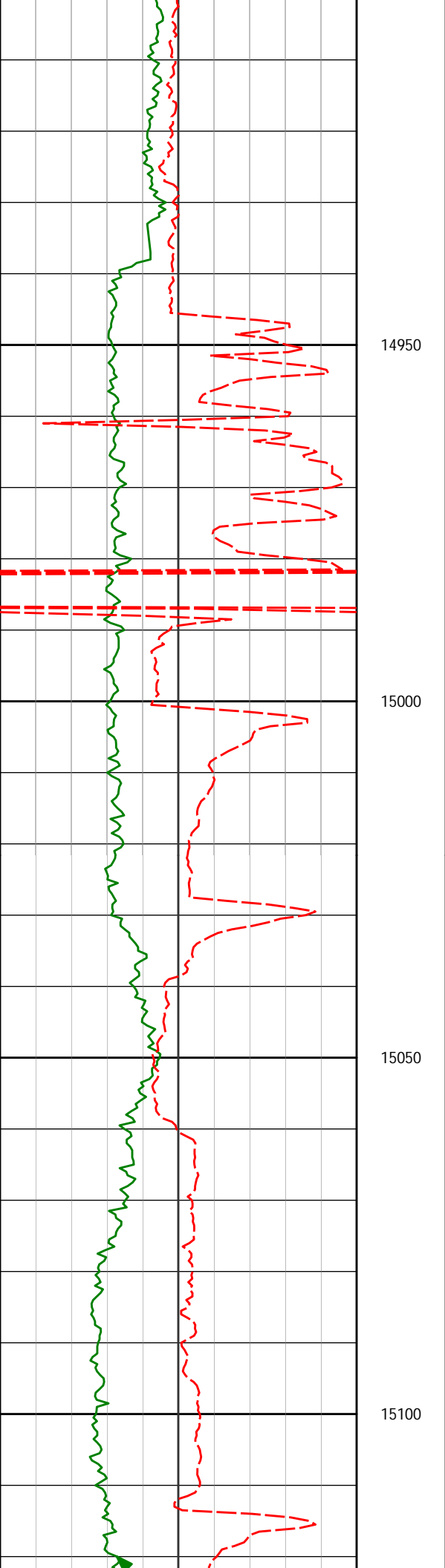
14900'

90.59°

359.89°

7564.38'

7387.53'



15070'

89.20°

357.70°

7564.69'

7557.41'

1849.00	0.33	299.59	1848.97	3.88 N	2.66 E	3.91	0.04
2032.00	0.40	315.62	2031.96	4.59 N	1.75 E	4.62	0.07
2215.00	0.66	304.75	2214.96	5.65 N	0.44 E	5.66	0.15
2399.00	0.65	317.57	2398.94	7.03 N	1.14 W	7.01	0.08
2581.00	1.18	169.01	2580.93	5.95 N	1.48 W	5.93	0.97
2765.00	1.11	170.21	2764.90	2.33 N	0.81 W	2.32	0.04
2948.00	0.36	124.44	2947.88	0.26 N	0.04 W	0.26	0.49
3131.00	0.32	174.25	3130.88	0.57 S	0.49 E	-0.57	0.16
3315.00	2.55	125.39	3314.81	3.46 S	3.88 E	-3.40	1.28
3485.00	5.21	112.13	3484.41	8.56 S	14.11 E	-8.35	1.64
3657.00	7.44	100.51	3655.36	13.53 S	32.30 E	-13.06	1.49
3828.00	8.11	97.81	3824.79	17.19 S	55.13 E	-16.39	0.45
3999.00	9.03	94.83	3993.88	19.96 S	80.46 E	-18.79	0.60
4169.00	9.92	99.86	4161.56	23.59 S	108.18 E	-22.02	0.71
4340.00	10.07	105.50	4329.97	30.11 S	137.10 E	-28.12	0.58
4511.00	10.39	112.81	4498.26	40.08 S	165.72 E	-37.67	0.78
4680.00	11.15	113.24	4664.28	52.43 S	194.78 E	-49.61	0.45
4851.00	10.16	112.25	4832.33	64.67 S	223.93 E	-61.42	0.59
5022.00	11.96	109.37	5000.15	76.26 S	254.61 E	-72.56	1.10
5192.00	11.79	104.22	5166.51	86.37 S	288.06 E	-82.18	0.63
5362.00	10.95	106.55	5333.18	95.23 S	320.38 E	-90.58	0.56
5534.00	12.34	98.06	5501.64	102.46 S	354.24 E	-97.32	1.28
5702.00	11.58	97.70	5666.00	107.24 S	388.72 E	-101.60	0.45
5871.00	10.74	101.21	5831.80	112.57 S	420.98 E	-106.46	0.64
6043.00	9.05	110.63	6001.25	120.46 S	449.36 E	-113.93	1.36
6214.00	7.26	110.77	6170.51	129.03 S	472.05 E	-122.18	1.05
6385.00	10.55	107.24	6339.43	137.50 S	497.11 E	-130.29	1.95
6555.00	7.29	108.46	6507.35	145.53 S	522.22 E	-137.95	1.92
6726.00	5.44	105.44	6677.29	151.12 S	540.32 E	-143.28	1.10
6898.00	3.12	105.03	6848.80	154.51 S	552.70 E	-146.49	1.35
6983.00	2.04	93.63	6933.71	155.21 S	556.45 E	-147.13	1.40
7026.00	1.57	81.97	6976.69	155.17 S	557.79 E	-147.08	1.38
7068.00	4.29	359.74	7018.64	153.52 S	558.36 E	-145.42	10.39
7111.00	8.78	359.54	7061.35	148.63 S	558.32 E	-140.52	10.44
7154.00	12.08	357.88	7103.64	140.85 S	558.13 E	-132.75	7.71
7196.00	15.96	359.24	7144.38	130.68 S	557.89 E	-122.58	9.27
7238.00	20.20	1.46	7184.29	117.65 S	558.00 E	-109.55	10.23
7281.00	25.05	4.30	7223.97	101.14 S	558.87 E	-93.03	11.56
7323.00	29.57	1.47	7261.28	81.90 S	559.80 E	-73.78	11.19
7366.00	33.93	1.57	7297.84	59.29 S	560.41 E	-51.16	10.14
7409.00	38.31	359.70	7332.57	33.95 S	560.67 E	-25.83	10.50
7452.00	42.07	358.81	7365.41	6.21 S	560.30 E	1.91	8.85
7494.00	45.90	359.15	7395.63	22.95 N	559.78 E	31.05	9.14
7537.00	49.64	359.89	7424.52	54.78 N	559.52 E	62.88	8.79
7580.00	53.26	358.88	7451.31	88.40 N	559.15 E	96.49	8.62
7623.00	56.91	357.66	7475.92	123.64 N	558.08 E	131.71	8.80
7665.00	61.19	358.19	7497.52	159.63 N	556.78 E	167.67	10.25
7708.00	65.11	358.49	7516.94	197.97 N	555.67 E	205.99	9.14
7751.00	68.86	358.47	7533.74	237.52 N	554.62 E	245.53	8.72
7794.00	72.73	358.92	7547.89	278.11 N	553.70 E	286.10	9.05
7837.00	76.60	359.95	7559.26	319.57 N	553.29 E	327.55	9.29
7879.00	81.19	1.81	7567.34	360.77 N	553.93 E	368.75	11.76
7903.00	84.42	2.21	7570.35	384.56 N	554.76 E	392.55	13.56
8023.00	90.12	0.97	7576.06	504.32 N	558.09 E	512.36	4.86
8206.00	90.22	0.17	7575.52	687.31 N	559.91 E	695.35	0.44
8390.00	89.54	358.29	7575.91	871.29 N	557.43 E	879.27	1.09
8572.00	91.72	358.63	7573.90	1053.20 N	552.54 E	1061.09	1.21
8755.00	89.38	1.32	7572.15	1236.16 N	552.46 E	1244.03	1.95
8933.00	89.17	0.73	7574.40	1414.12 N	555.65 E	1422.02	0.35
9104.00	89.63	1.46	7576.19	1585.07 N	558.91 E	1593.00	0.50
9274.00	89.54	1.03	7577.42	1755.03 N	562.61 E	1763.00	0.26
9445.00	89.14	0.92	7579.39	1925.99 N	565.52 E	1933.98	0.24
9617.00	90.18	359.92	7580.41	2097.98 N	566.78 E	2105.97	0.84
9787.00	90.65	359.73	7579.18	2267.98 N	566.26 E	2275.94	0.30
9958.00	90.37	358.98	7577.66	2438.96 N	564.33 E	2446.88	0.47
10128.00	90.92	358.45	7575.75	2608.90 N	560.52 E	2616.75	0.45
10299.00	91.32	359.70	7572.40	2779.84 N	557.76 E	2787.63	0.77
10470.00	90.71	359.38	7569.37	2950.81 N	556.39 E	2958.56	0.40
10641.00	90.34	1.02	7567.81	3121.79 N	556.99 E	3129.54	0.98
10811.00	90.43	1.65	7566.67	3291.74 N	560.95 E	3299.52	0.37
10982.00	89.60	2.16	7566.62	3462.65 N	566.63 E	3470.49	0.57
11153.00	88.89	1.43	7568.87	3633.55 N	571.99 E	3641.45	0.60
11324.00	89.94	0.69	7570.62	3804.50 N	575.15 E	3812.44	0.75
11496.00	91.97	359.59	7567.75	3976.47 N	575.57 E	3984.39	1.34
11667.00	90.37	0.00	7564.26	4147.43 N	574.96 E	4155.32	0.97

11837.00	91.02	2.28	7562.20	4317.37 N	578.34 E	4325.29	1.39
12008.00	89.26	1.40	7561.78	4488.27 N	583.83 E	4496.26	1.15
12180.00	89.51	0.30	7563.63	4660.24 N	586.38 E	4668.24	0.66
12351.00	90.25	1.45	7563.99	4831.21 N	588.99 E	4839.24	0.80
12519.00	89.66	1.00	7564.12	4999.18 N	592.58 E	5007.23	0.44
12689.00	89.75	1.56	7564.99	5169.13 N	596.38 E	5177.23	0.33
12859.00	90.83	3.52	7564.13	5338.95 N	603.92 E	5347.14	1.32
13031.00	89.88	2.33	7563.07	5510.72 N	612.69 E	5519.01	0.89
13202.00	90.03	3.13	7563.20	5681.52 N	620.84 E	5689.92	0.48
13373.00	89.51	2.16	7563.89	5852.34 N	628.73 E	5860.83	0.64
13541.00	91.02	2.47	7563.11	6020.19 N	635.51 E	6028.77	0.92
13712.00	89.66	2.04	7562.10	6191.05 N	642.24 E	6199.71	0.83
13883.00	88.71	1.29	7564.53	6361.96 N	647.21 E	6370.67	0.71
14053.00	89.72	1.09	7566.86	6531.90 N	650.74 E	6540.65	0.61
14223.00	89.97	359.85	7567.32	6701.89 N	652.13 E	6710.64	0.74
14392.00	89.94	359.38	7567.45	6870.89 N	651.00 E	6879.60	0.28
14561.00	89.88	0.14	7567.72	7039.89 N	650.29 E	7048.57	0.45
14729.00	90.89	0.49	7566.59	7207.88 N	651.21 E	7216.56	0.64
14900.00	90.59	359.89	7564.38	7378.86 N	651.78 E	7387.53	0.39
15070.00	89.20	357.70	7564.69	7548.81 N	648.21 E	7557.41	1.53
15193.00	88.61	356.24	7567.04	7671.61 N	641.71 E	7680.10	1.28
15238.00	88.61	356.24	7568.13	7716.50 N	638.76 E	7724.94	0.00

CALCULATION BASED ON MINIMUM CURVATURE METHOD

**SURVEY COORDINATES RELATIVE TO WELL SYSTEM REFERENCE POINT
TVD VALUES GIVEN RELATIVE TO DRILLING MEASUREMENT POINT**

**VERTICAL SECTION RELATIVE TO WELL HEAD
VERTICAL SECTION IS COMPUTED ALONG A DIRECTION OF 0.83 DEGREES (TRUE)
A TOTAL CORRECTION OF 8.46 DEG FROM MAGNETIC NORTH TO TRUE NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 15238.00 FEET
IS 7742.89 FEET ALONG 4.73 DEGREES (TRUE)**

Directional surveys tied onto Gyro's @ 905' MD. Final Survey is a straightline projection to bit.