



WELL INFORMATION					
MWD Run Number	100	200	300		
Date run completed	12-Apr-13	14-Apr-13	17-Apr-13		
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)	637.00	5,982.00	7,167.00		
Log End Depth (MD, ft)	5,983.00	7,167.00	11,116.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	11-Apr-13 16:00	12-Apr-13 23:45	15-Apr-13 09:45		
Drill/Wipe End Date and Time	12-Apr-13 11:00	13-Apr-13 20:30	16-Apr-13 20:00		
Min Inc (deg) @ Depth (MD, ft)	.20 @ 5,358.00	1.30 @ 6,017.00	88.12 @ 8,389.00		
Max Inc (deg) @ Depth (MD, ft)	13.84 @ 3,173.00	86.21 @ 7,113.00	92.22 @ 9,149.00		
Bit TFA(in2) / Bit Type	.86 / PDC	.86 / PDC	.46 / PDC		
Flow Rate (gpm)	597.18	547.44	270.00		
Max AV (fpm) / CV (fpm) @ MWD	439.0 / NA	367.0 / NA	428.0 / NA		
Fluid Type	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel		
Density (ppg) / Viscosity (spqt)	8.60 / 26.00	10.90 / 37.00	9.55 / 34.00		
Filtrate CL (ppm)	2,500.00	2,200.00	2,600.00		
pH / Fluid Loss (mptm)	7.90 / NA	9.00 / NA	9.30 / NA		
PV (cP) / YP (Ihf2)	4 / 1.00	13 / 13.00	9 / 9.00		
% Solids / % Sand	1.60 / 0.10	12.70 / 0.15	6.60 / 0.15		
% Oil / Oil:Water Ratio	0 / 0:95	0 / 0:95	0 / 0:95		
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	127.07 / PDM	127.07 / PDM	217.01 / PDM		

Max Tool Temp (degF) / Source	167.97 / PCM	167.97 / PCM	217.61 / PCM		
Rm @ Max Tool Temp (degF)	NA @ NA	NA @ NA	NA @ NA		
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	11404284	11404284	11744816		
Insert Serial Number	11680784	11680784	11680747		
Date and Time Initialized	10-Apr-13 22:41	10-Apr-13 22:41	13-Apr-13 23:01		
Date and Time Read	14-Apr-13 06:59	14-Apr-13 07:05	17-Apr-13 06:39		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	55.00	54.00	68.00		
Software Version	6.21	6.21	6.21		
Sub Serial Number	11404284	11404284	11744816		
Sonde Serial Number	11638570	11638570	11638501		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	243.73	53.49	138.69		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	48.11	47.08	61.60		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	11404284	11404284	11744816		
Insert/Sonde Serial Number	11579820	11579820	11293345		

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. The depth used for the tie in survey is the shoe depth of the surface casing and assumes an inclination and azimuth of zero.
7. INSITE version 7.4.01

WARRANTY

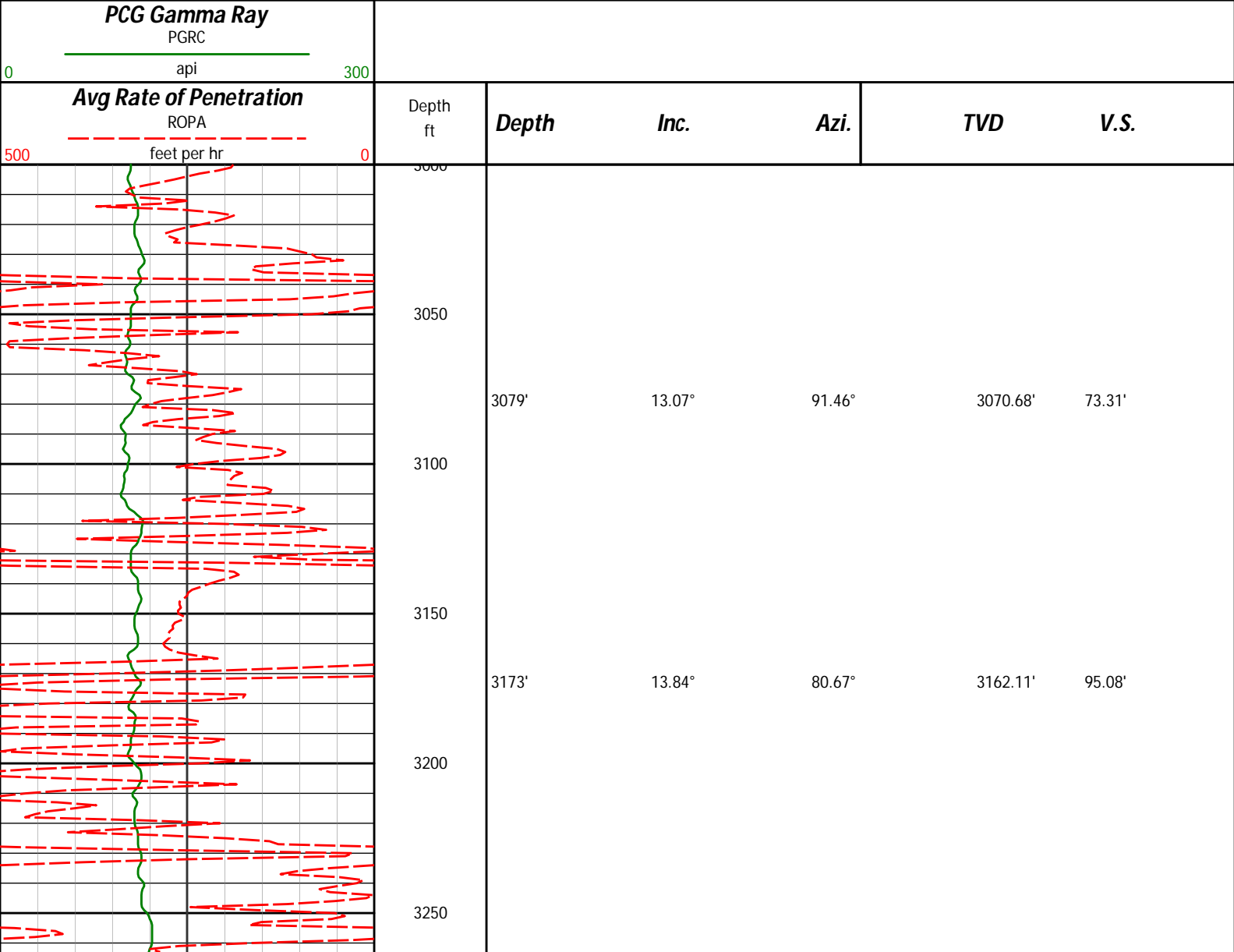
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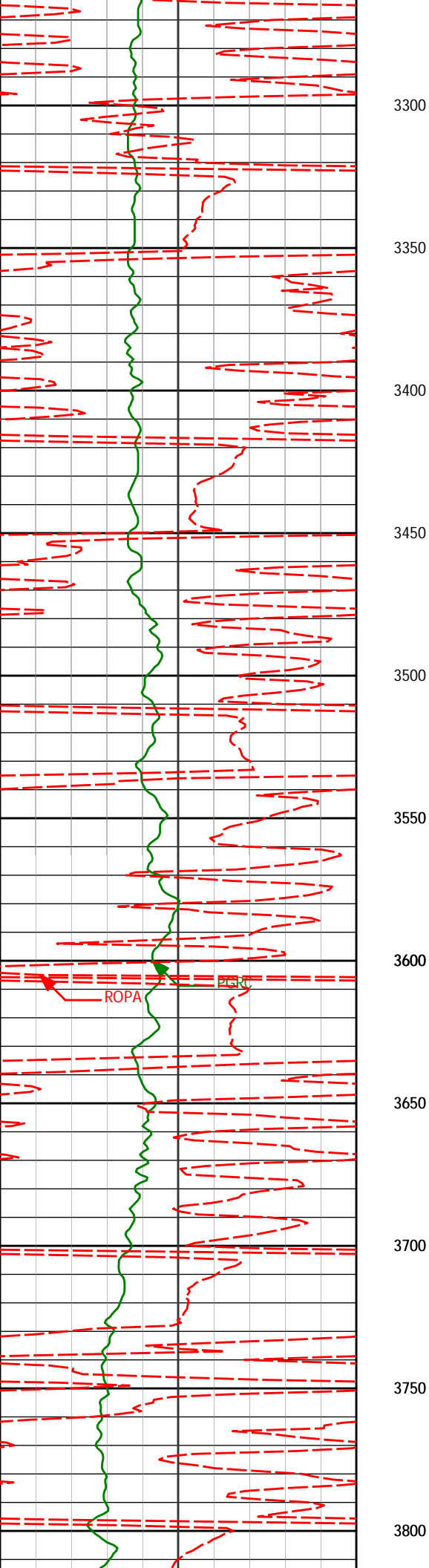
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Sperry Drilling Services

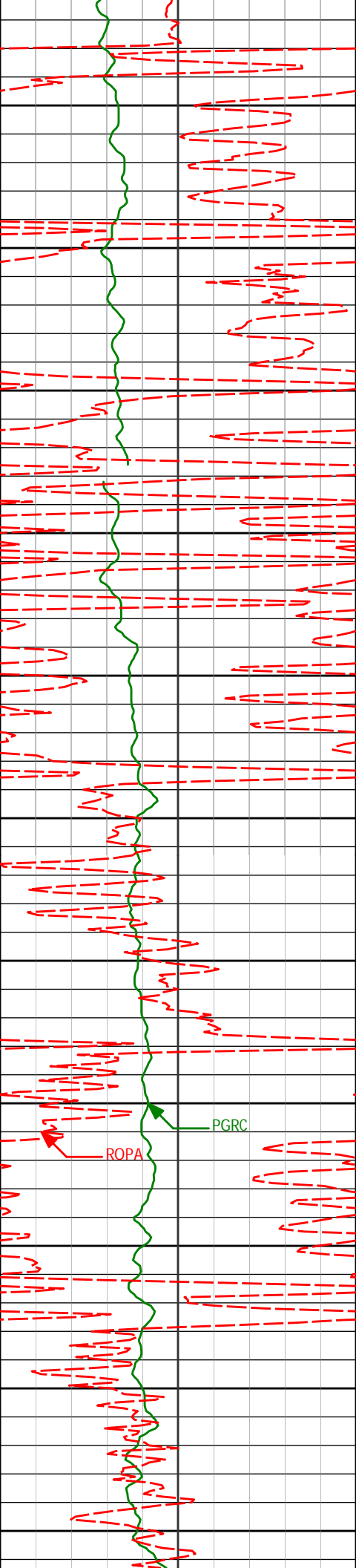
MD Main Log 1:600

Noble Energy
Wells Ranch AE05-63HN
H&P 343
T6N-R62W

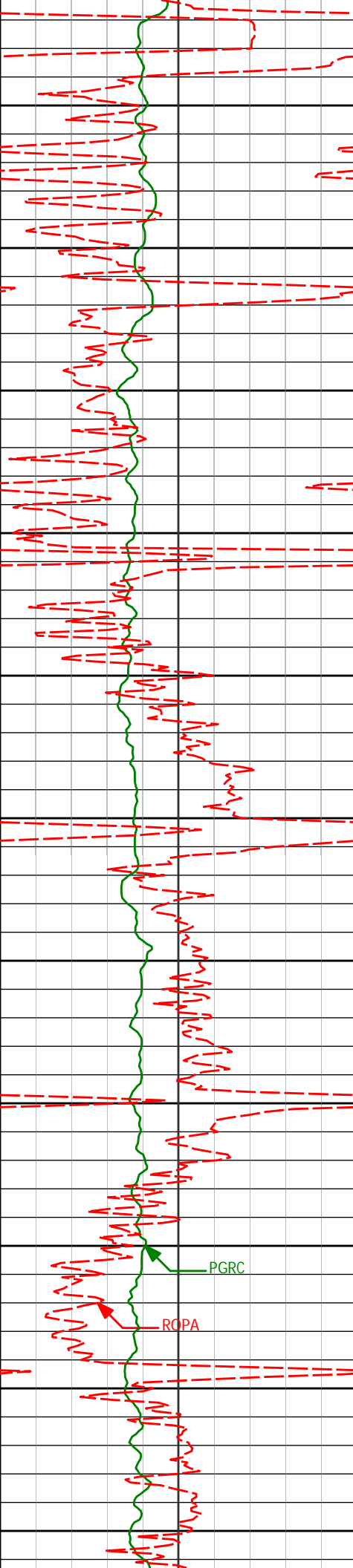




3268'	13.68°	80.17°	3254.39'	117.46'
3300				
3350				
3363'	11.44°	71.08°	3347.12'	137.59'
3400				
3450				
3458'	8.33°	66.42°	3440.70'	152.99'
3500				
3550				
3553'	6.32°	61.43°	3534.92'	164.05'
3600				
3650				
3648'	4.08°	65.75°	3629.52'	171.84'
3700				
3750				
3743'	2.96°	43.68°	3724.34'	176.71'
3800				



3838'	0.33°	39.15°	3819.30'	178.64'
3850				
3900				
3933'	0.76°	325.69°	3914.29'	178.48'
3950				
4000				
4028'	1.11°	302.82°	4009.28'	177.38'
4050				
4100				
4123'	0.90°	300.91°	4104.27'	176.00'
4150				
4200				
4218'	1.11°	301.58°	4199.25'	174.60'
4250				
4300				
4313'	0.68°	290.98°	4294.24'	173.31'
4350				



4400

4408'

0.65°

247.66°

4389.23'

172.29'

4450

4500

4503'

0.52°

259.46°

4484.23'

171.36'

4550

4600

4598'

0.50°

210.83°

4579.23'

170.71'

4650

4700

4693'

0.44°

280.02°

4674.22'

170.13'

4750

4800

4788'

0.96°

356.49°

4769.22'

169.75'

PGRC

ROPA

4850

4900

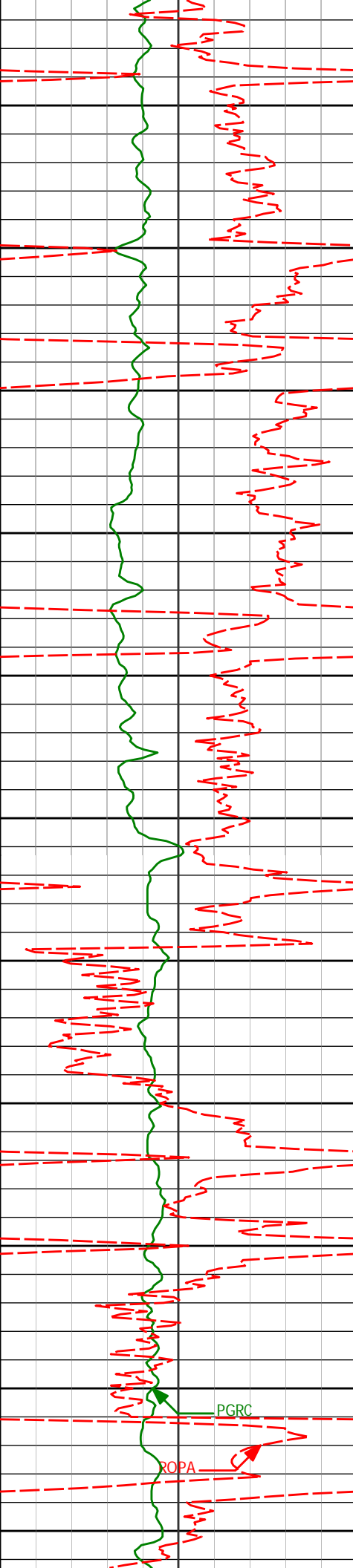
4883'

1.33°

353.14°

4864.20'

169.62'



4950

4978'

1.03°

359.05°

4959.18'

169.54'

5000

5050

5073'

1.27°

12.78°

5054.16'

169.82'

5100

5150

5168'

0.29°

85.00°

5149.15'

170.32'

5200

5250

5263'

0.25°

51.23°

5244.15'

170.73'

5300

5350

5358'

0.20°

32.13°

5339.15'

170.99'

5400

PGRC

ROPA

5450

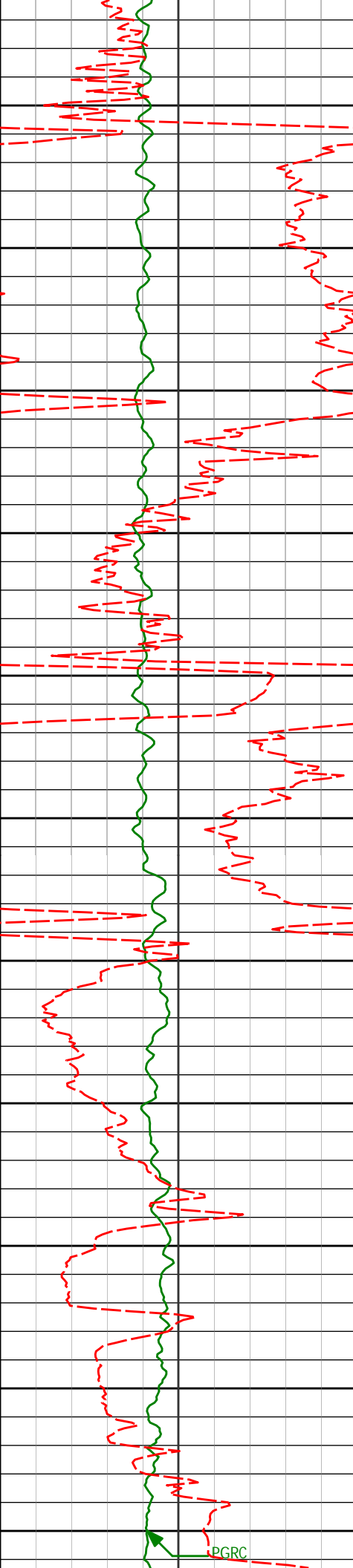
5453'

1.24°

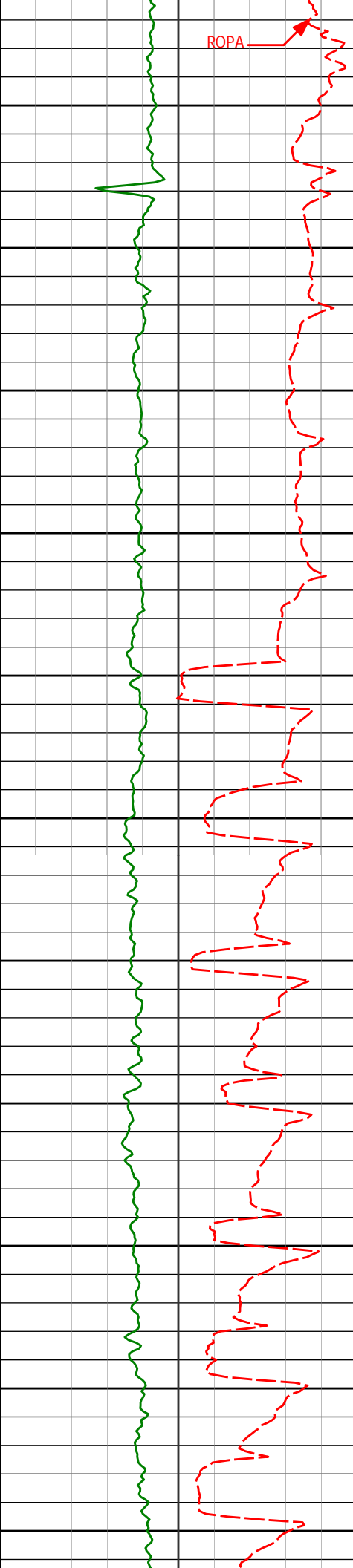
239.84°

5434.14'

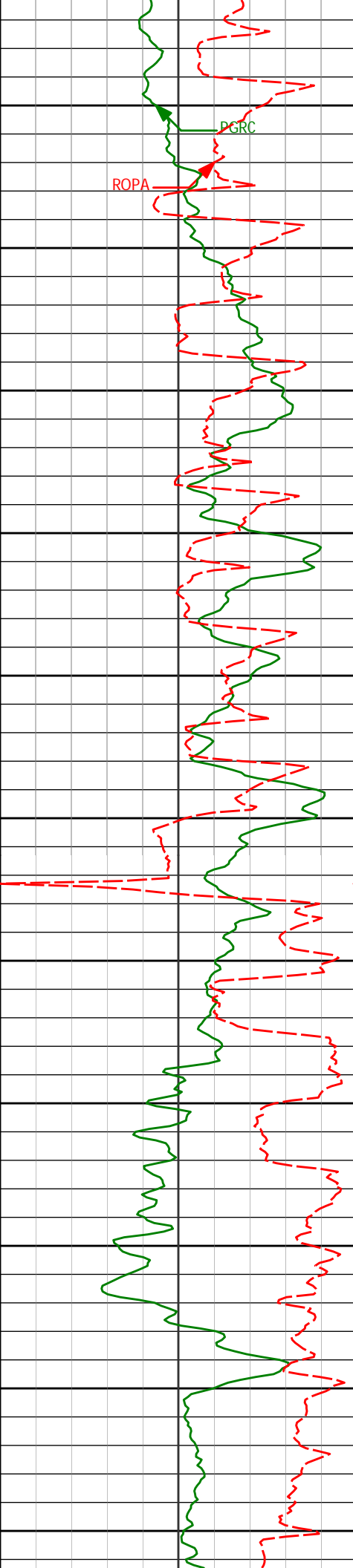
170.17'



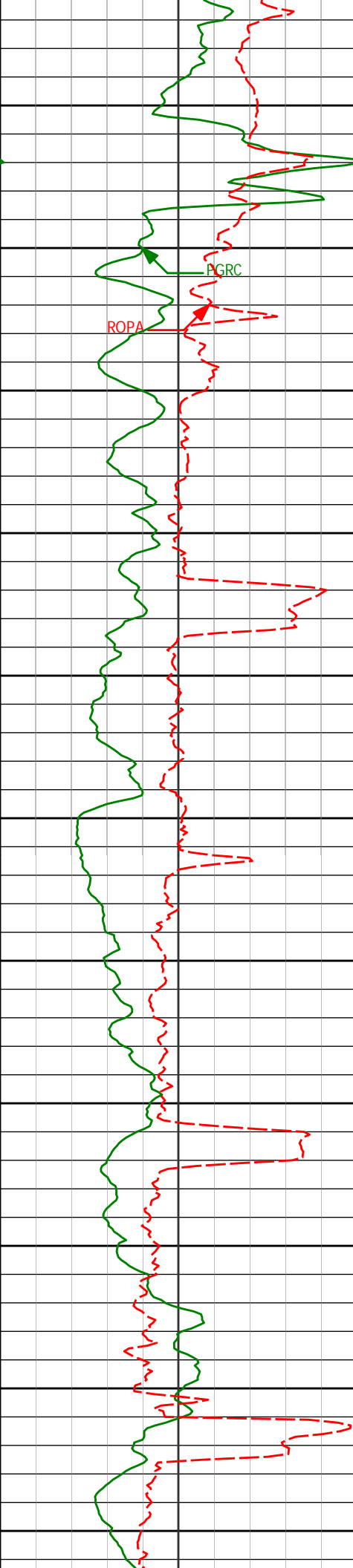
5500				
5550	5548'	1.72°	268.54°	5529.11' 167.84'
5600				
5650	5643'	1.20°	268.59°	5624.08' 165.42'
5700				
5750	5738'	1.37°	233.62°	5719.06' 163.49'
5800				
5850	5833'	1.19°	235.82°	5814.03' 161.73'
5900				
5950	5928'	1.55°	263.21°	5909.01' 159.61'
<Run 200>				
6000				



6017'	1.30°	285.35°	5997.98'	157.45'
6050				
6065'	2.67°	72.93°	6045.97'	158.01'
6100				
6112'	8.35°	78.77°	6092.73'	162.43'
6150				
6160'	14.47°	78.94°	6139.76'	171.80'
6200				
6207'	20.12°	79.51°	6184.62'	185.59'
6250				
6255'	23.78°	78.13°	6229.13'	203.29'
6300				
6302'	25.74°	79.92°	6271.81'	222.72'
6350				
6350'	27.76°	86.25°	6314.68'	244.21'
6400				
6397'	31.19°	88.51°	6355.59'	267.33'
6450				
6445'	35.12°	88.54°	6395.77'	293.57'
6500				
6492'	37.99°	88.65°	6433.52'	321.56'
6540'	39.80°	92.86°	6470.88'	351.66'
6550				



6600	6587'	43.82°	93.41°	6505.91'	382.87'
6650	6635'	47.52°	89.90°	6539.45'	417.13'
6700	6682'	51.08°	89.02°	6570.09'	452.74'
6750	6730'	55.98°	89.26°	6598.61'	491.33'
6800	6777'	59.83°	89.69°	6623.58'	531.13'
6850	6825'	63.45°	86.33°	6646.38'	573.35'
6900	6872'	65.76°	86.53°	6666.54'	615.78'
6950	6920'	67.98°	87.97°	6685.39'	659.92'
7000	6967'	68.50°	90.04°	6702.82'	703.56'
7050	7015'	73.40°	89.69°	6718.48'	748.90'
7100	7062'	80.14°	89.01°	6729.23'	794.62'
	7112'	86.21°	89.47°	6735.20'	845.22'



7150
<Run 300>

Casing Set @ 7,157'

7200

PGRC

ROPA

7250

7250'	89.08°	88.87°	6740.92'	982.07'
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7300

7350

7345'	88.80°	88.17°	6742.67'	1077.05'
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7400

7450

7440'	90.25°	88.60°	6743.46'	1172.05'
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7500

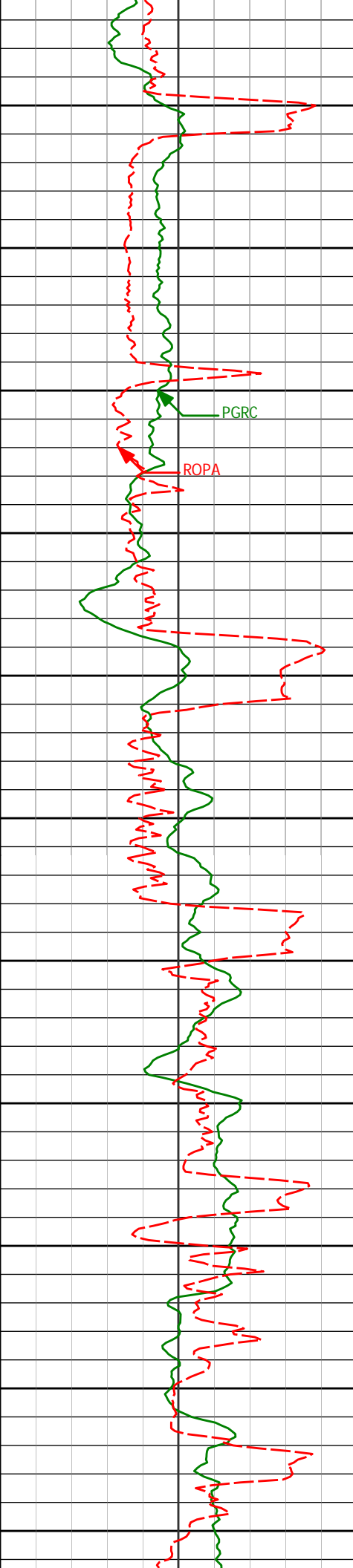
7550

7547'	90.59°	89.35°	6742.68'	1279.03'
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7600

7650

7629'	90.22°	89.08°	6742.10'	1361.02'
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7700

7724'

89.66°

89.36°

6742.20'

1456.01'

7750

7800

PGRC

ROPA

7819'

91.36°

91.73°

6741.35'

1550.91'

7850

7900

7914'

90.31°

90.23°

6739.97'

1645.79'

7950

8000

8009'

90.86°

87.79°

6739.00'

1740.77'

8050

8100

8104'

90.09°

87.27°

6738.21'

1835.76'

8150

8200

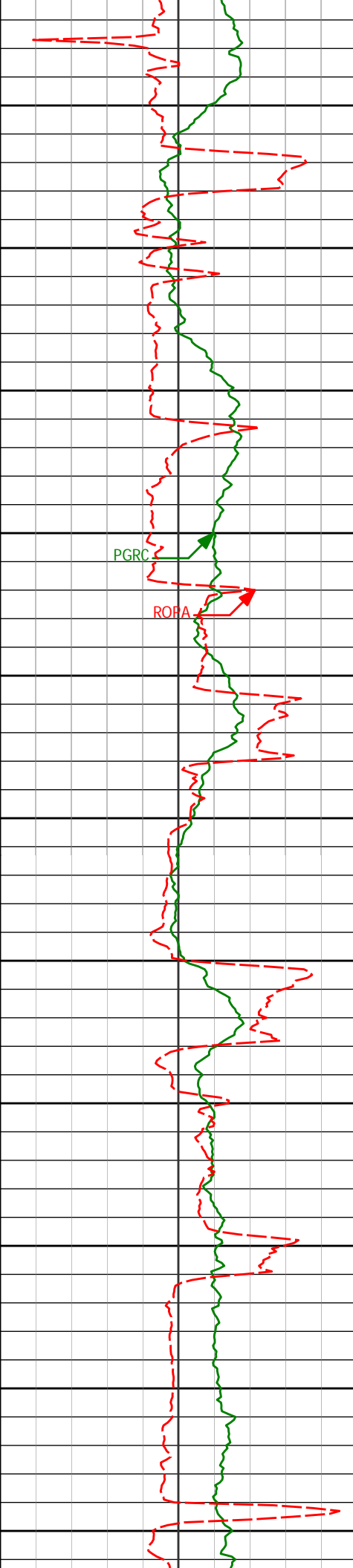
8199'

90.22°

86.21°

6737.95'

1930.72'



8250

8300

8350

8400

8450

8500

8550

8600

8650

8700

8750

8294'

88.77°

85.94°

6738.79'

2025.65'

8389'

88.12°

85.13°

6741.37'

2120.51'

8484'

88.40°

87.07°

6744.25'

2215.40'

8579'

91.70°

90.86°

6744.17'

2310.36'

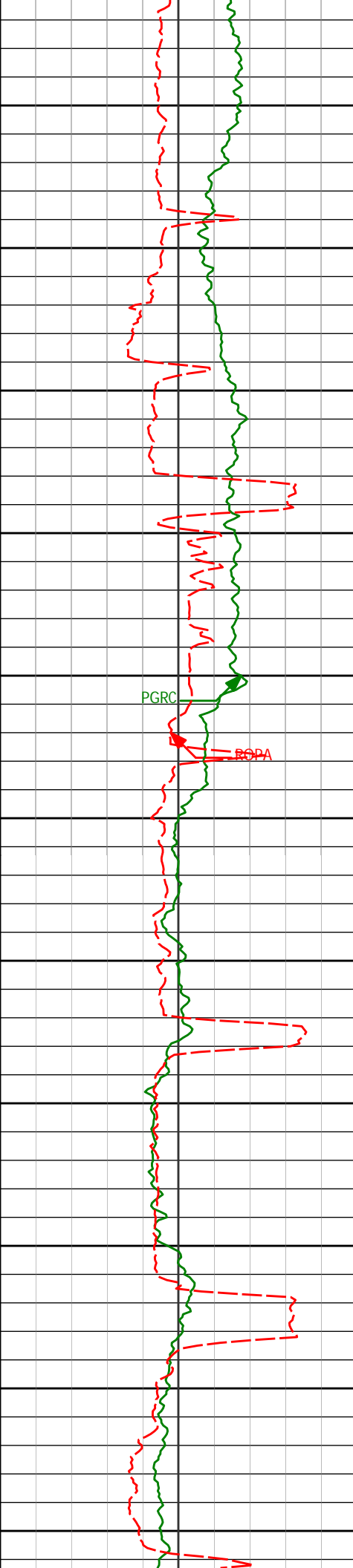
8674'

90.15°

89.67°

6742.64'

2405.28'



8800

8850

8900

8950

9000

9050

9100

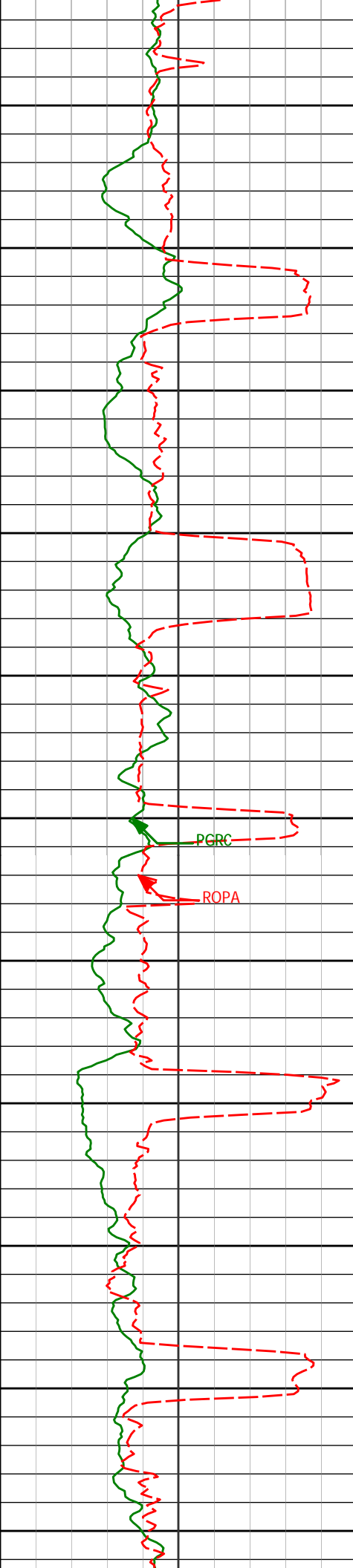
9150

9200

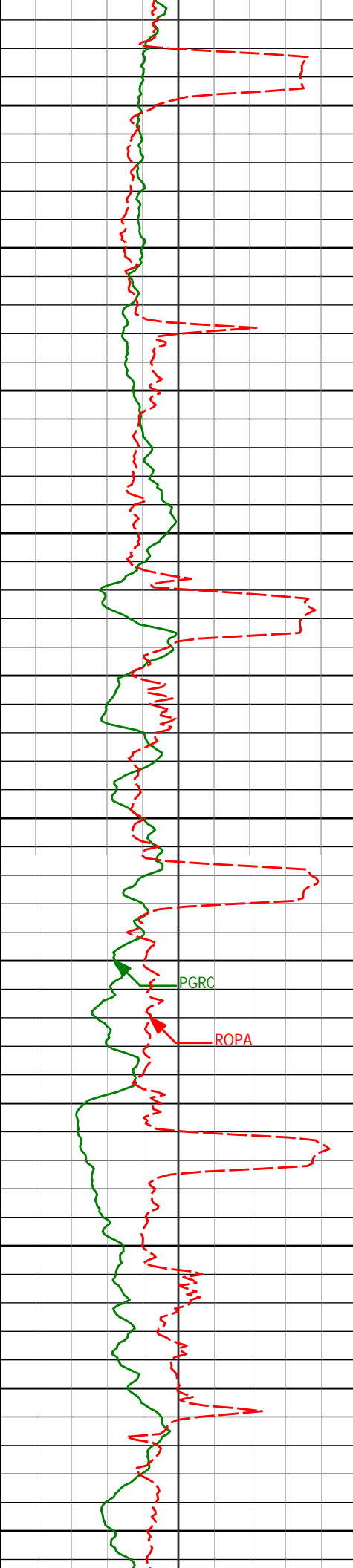
9250

9300

8769'	90.65°	90.86°	6741.97'	2500.21'
8864'	90.95°	89.68°	6740.65'	2595.14'
8959'	90.89°	87.19°	6739.12'	2690.12'
9054'	91.54°	86.51°	6737.11'	2785.07'
9149'	92.22°	86.76°	6733.99'	2879.99'
9244'	90.31°	86.36°	6731.89'	2974.92'



9350	9339'	90.86°	85.31°	6730.92'	3069.83'
9400					
9450	9434'	90.37°	85.74°	6729.90'	3164.72'
9500					
9550	9529'	91.42°	88.46°	6728.42'	3259.68'
9600					
9650	9624'	91.29°	88.39°	6726.17'	3354.65'
9700					
9750	9719'	91.82°	89.64°	6723.60'	3449.60'
9800					
9850	9814'	90.59°	89.74°	6721.60'	3544.55'



9900

9909'	89.20°	88.29°	6721.77'	3639.54'
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9950

10000

10004'	88.73°	86.92°	6723.49'	3734.51'
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10050

10100

10099'	90.68°	88.46°	6723.98'	3829.50'
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10150

10200

10194'	90.37°	89.62°	6723.11'	3924.48'
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10250

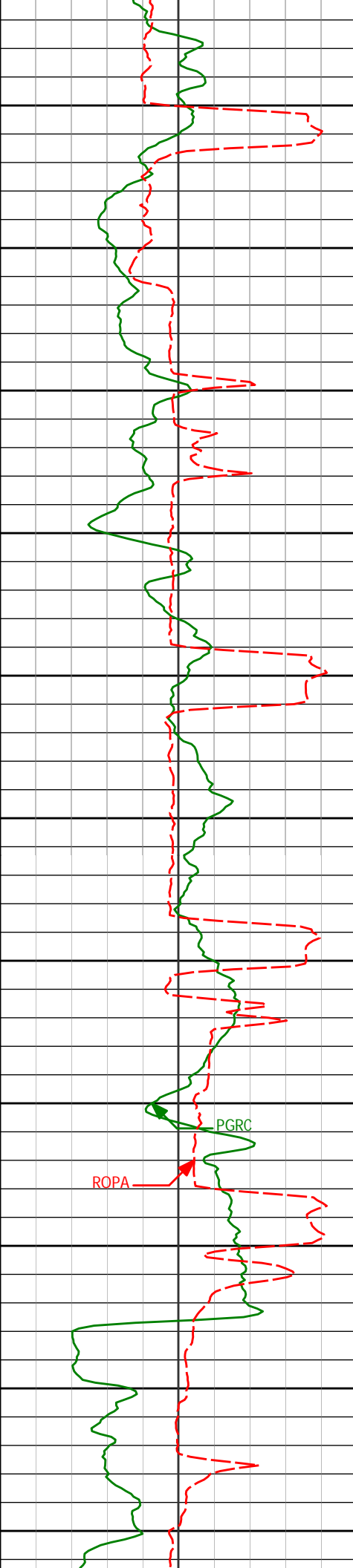
10300

10289'	90.68°	91.54°	6722.24'	4019.39'
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10350

10400

10384'	91.57°	90.66°	6720.37'	4114.25'
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10450

10479'

90.80°

89.77°

6718.41'

4209.18'

10500

10550

10574'

91.85°

89.22°

6716.21'

4304.12'

10600

10650

10669'

90.90°

87.58°

6713.93'

4399.09'

10700

10750

10763'

90.34°

86.45°

6712.91'

4493.06'

10800

10850

10859'

89.41°

87.60°

6713.12'

4589.04'

10900

10950

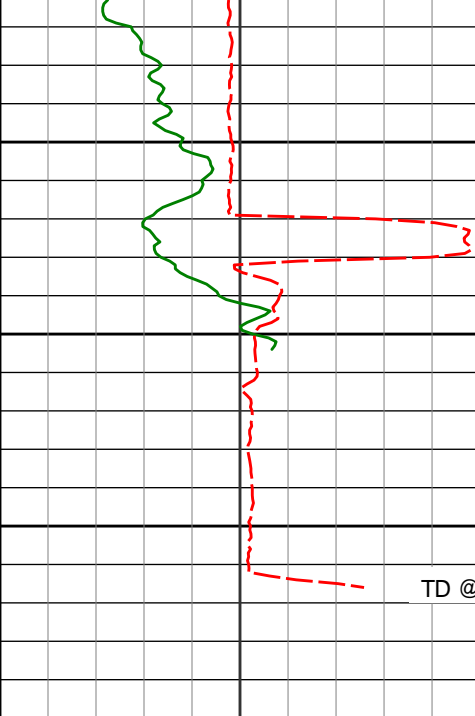
10953'

90.99°

86.94°

6712.79'

4683.02'



Avg Rate of Penetration ROPA <div> <div></div> <div>500</div> <div>0</div> </div> feet per hr		Depth ft	Depth	Inc.	Azi.	TVD	V.S.
PCG Gamma Ray PGRC <div> <div></div> <div>0</div> <div>300</div> </div> api							

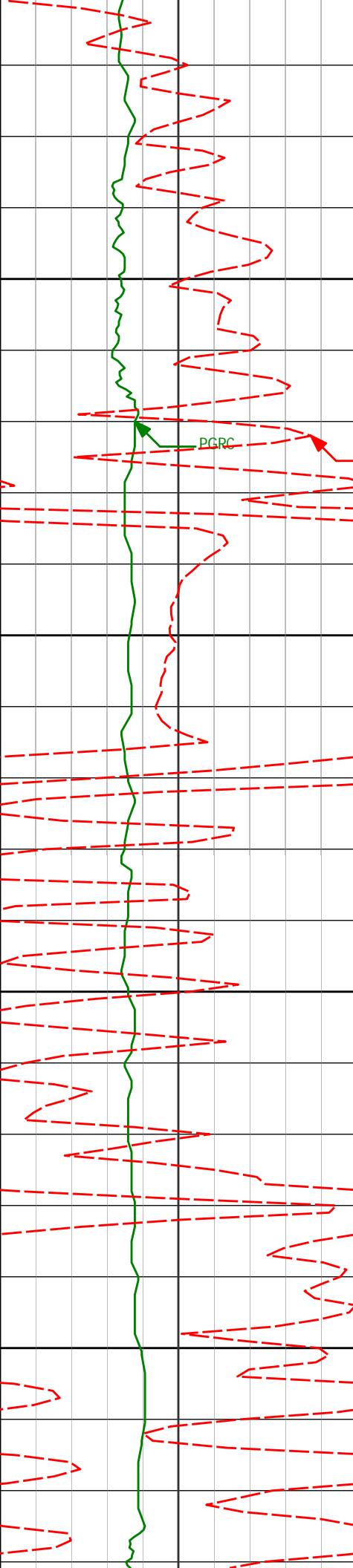
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Sperry Drilling Services

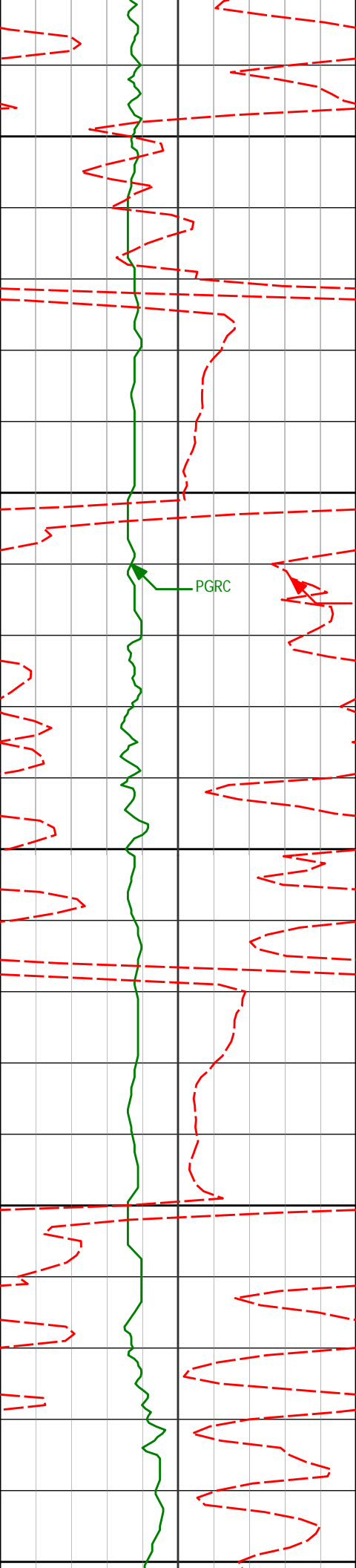
MD Detail Log 1:240

Noble Energy
Wells Ranch AE05-63HN
H&P 343
T6N-R62W

PCG Gamma Ray PGRC 0 300 api						
Avg Rate of Penetration ROPA 500 0 feet per hr		Depth ft	<i>Depth</i>	<i>Inc.</i>	<i>Azi.</i>	<i>TVD</i> <i>V.S.</i>
		3000				
		3050				



3079'	13.07°	91.46°	3070.68'	73.31'
3100				
3150				
3173'	13.84°	80.67°	3162.11'	95.08'
3200				
3250				
3268'	13.68°	80.17°	3254.39'	117.46'



3300

3350

3400

3450

3500

3363'

11.44°

71.08°

3347.12'

137.59'

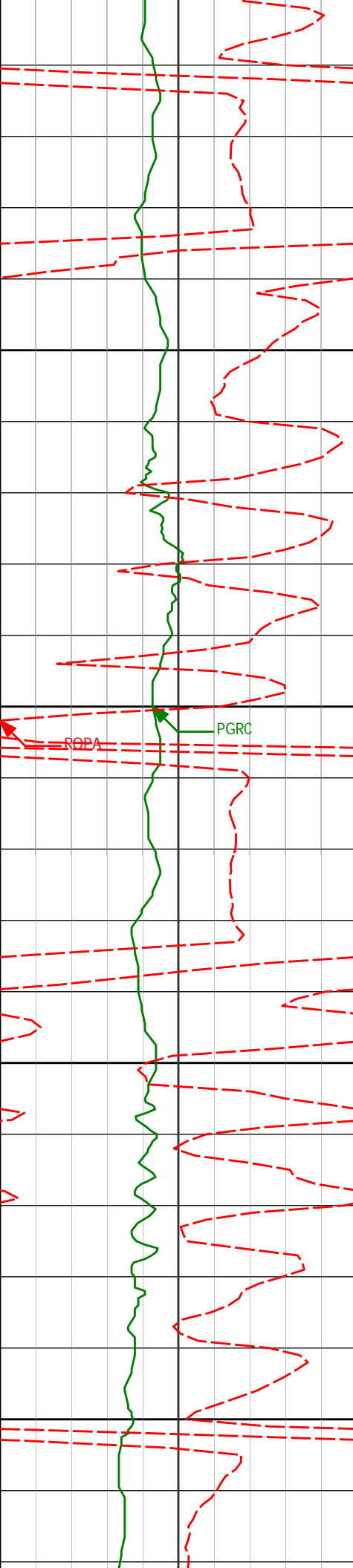
3458'

8.33°

66.42°

3440.70'

152.99'



3550

3553'

6.32°

61.43°

3534.92'

164.05'

3600

ROPA

PGRC

3650

3648'

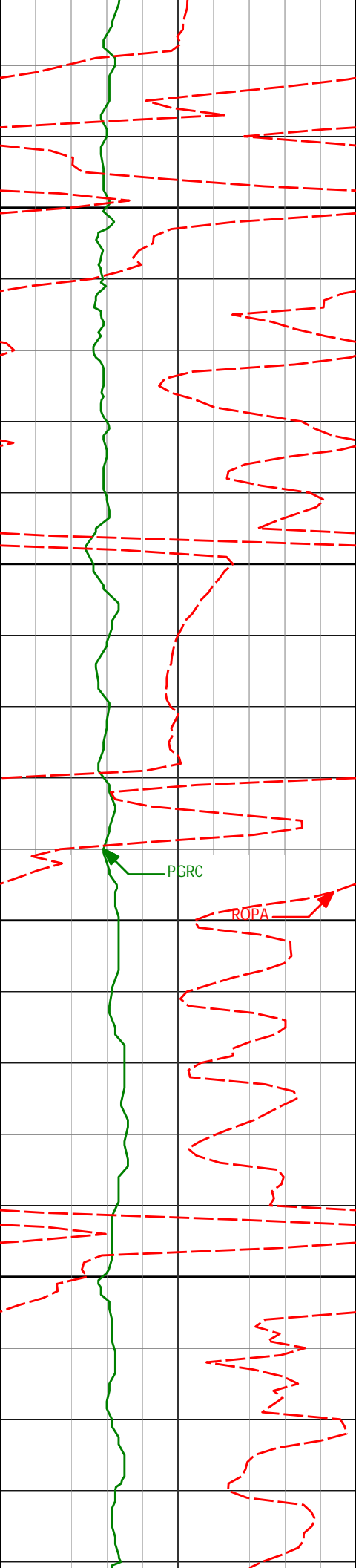
4.08°

65.75°

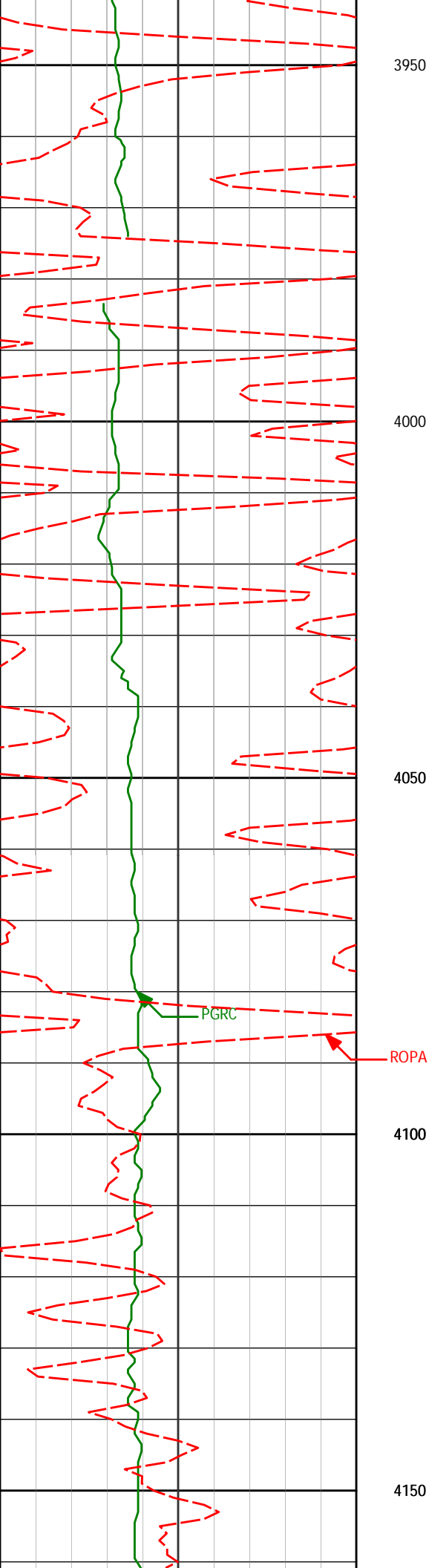
3629.52'

171.84'

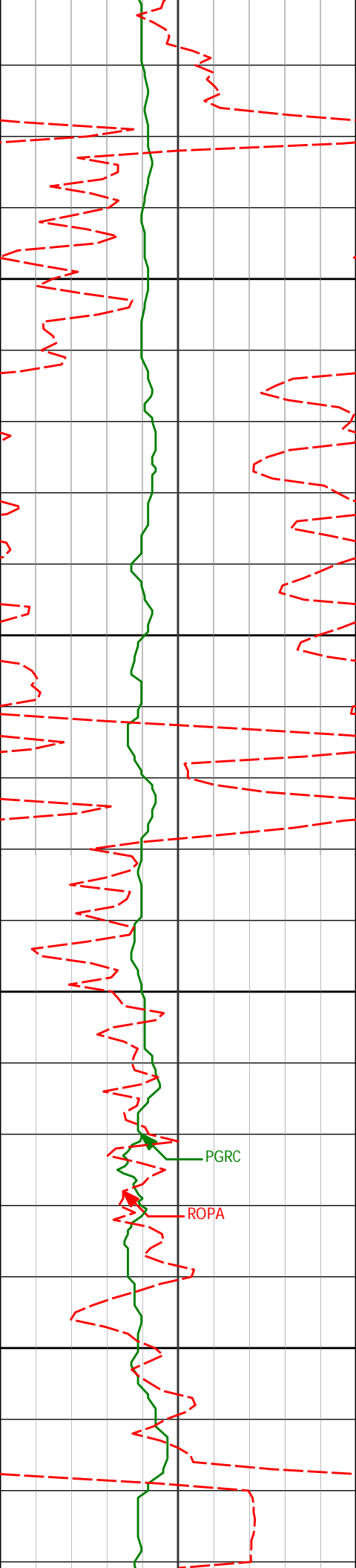
3700



3743'	2.96°	43.68°	3724.34'	176.71'
3750				
3800				
3838'	0.33°	39.15°	3819.30'	178.64'
3850				
3900				
3933'	0.76°	325.69°	3914.29'	178.48'



4028'	1.11°	302.82°	4009.28'	177.38'
4123'	0.90°	300.91°	4104.27'	176.00'



4200

4250

4300

4350

4218'

1.11°

301.58°

4199.25'

174.60'

4313'

0.68°

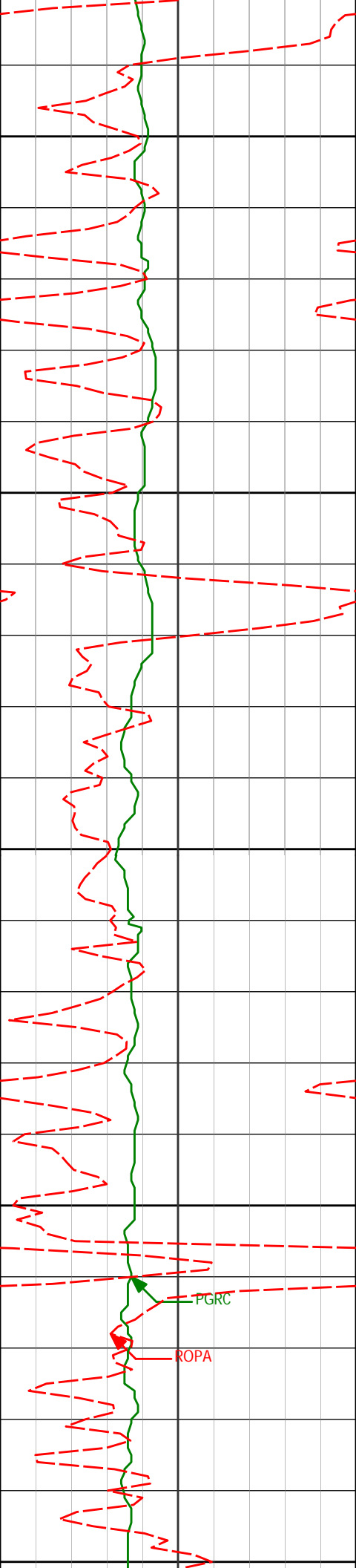
290.98°

4294.24'

173.31'

PGRC

ROPA



4400

4408'

0.65°

247.66°

4389.23'

172.29'

4450

4500

4503'

0.52°

259.46°

4484.23'

171.36'

4550

PGRC

ROPA

4600

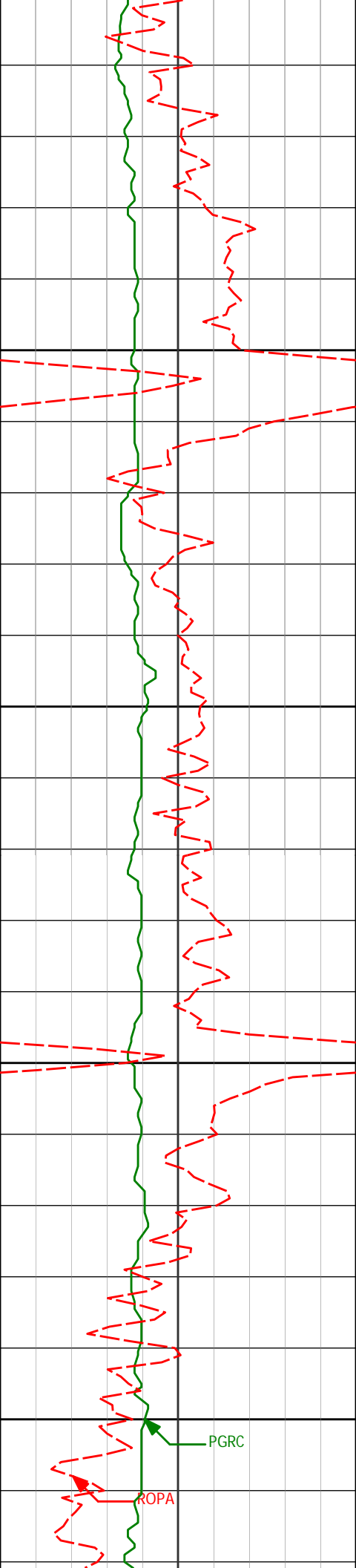
4598'

0.50°

210.83°

4579.23'

170.71'



4650

4693'

0.44°

280.02°

4674.22'

170.13'

4700

4750

4788'

0.96°

356.49°

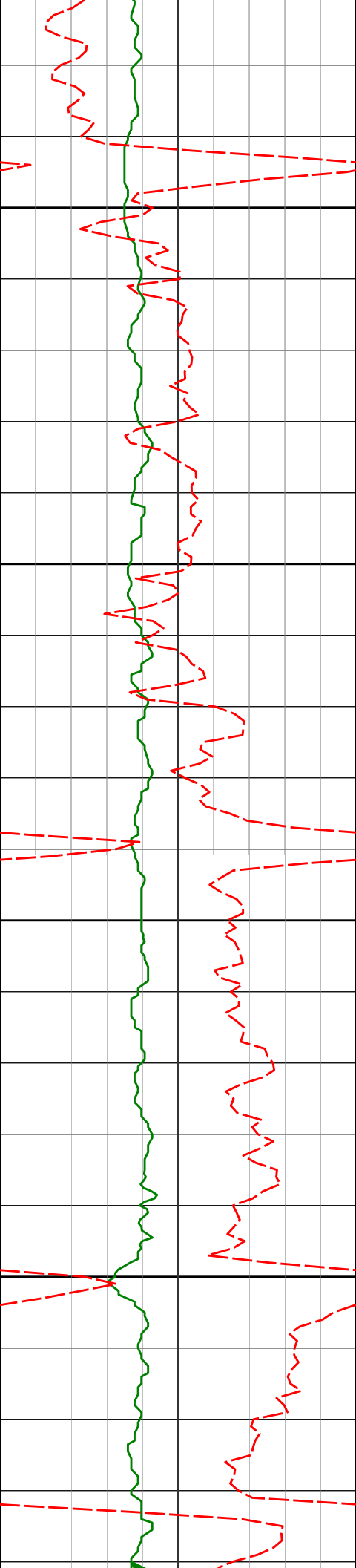
4769.22'

169.75'

4800

PGRC

ROPA



4850

4883'

1.33°

353.14°

4864.20'

169.62'

4900

4950

4978'

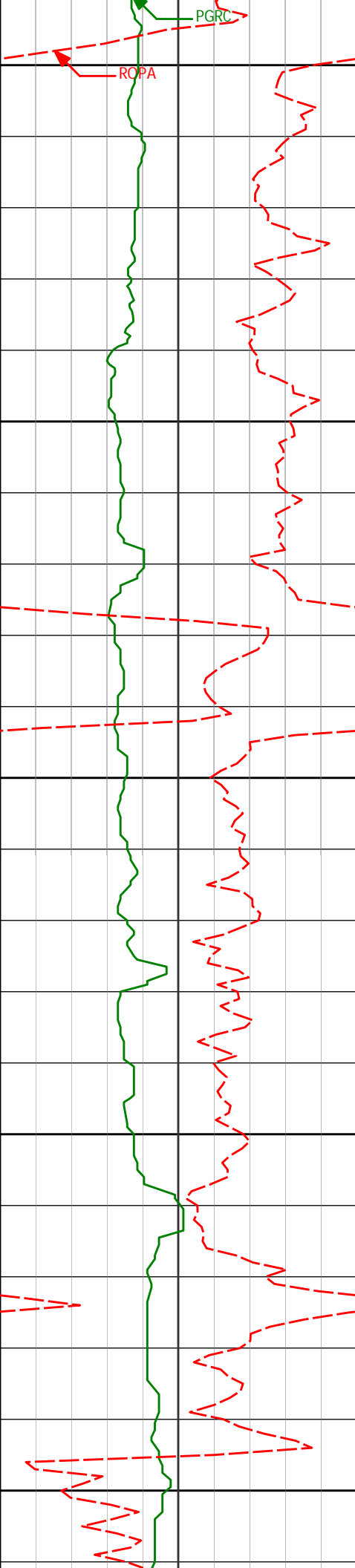
1.03°

359.05°

4959.18'

169.54'

5000



5050

5100

5150

5200

5250

5073'

1.27°

12.78°

5054.16'

169.82'

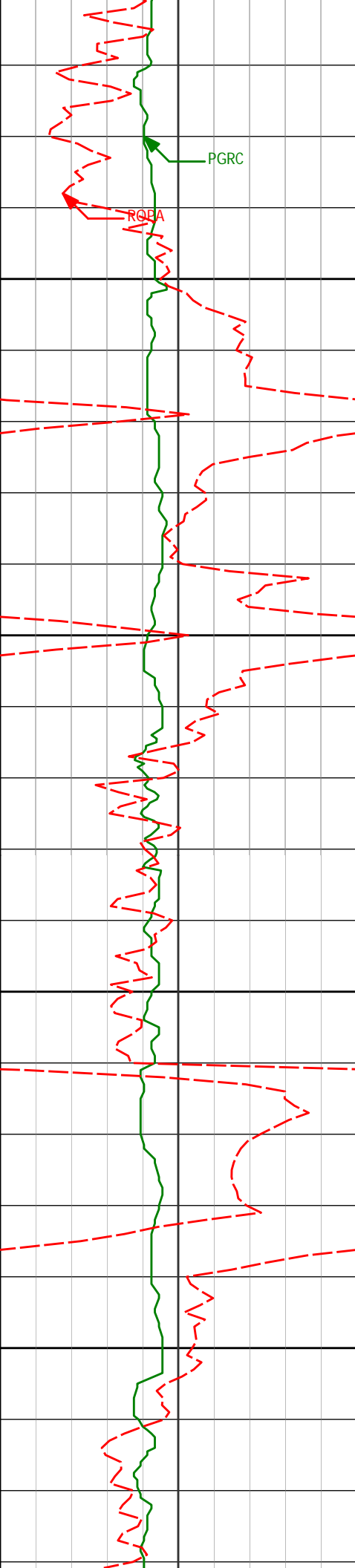
5168'

0.29°

85.00°

5149.15'

170.32'



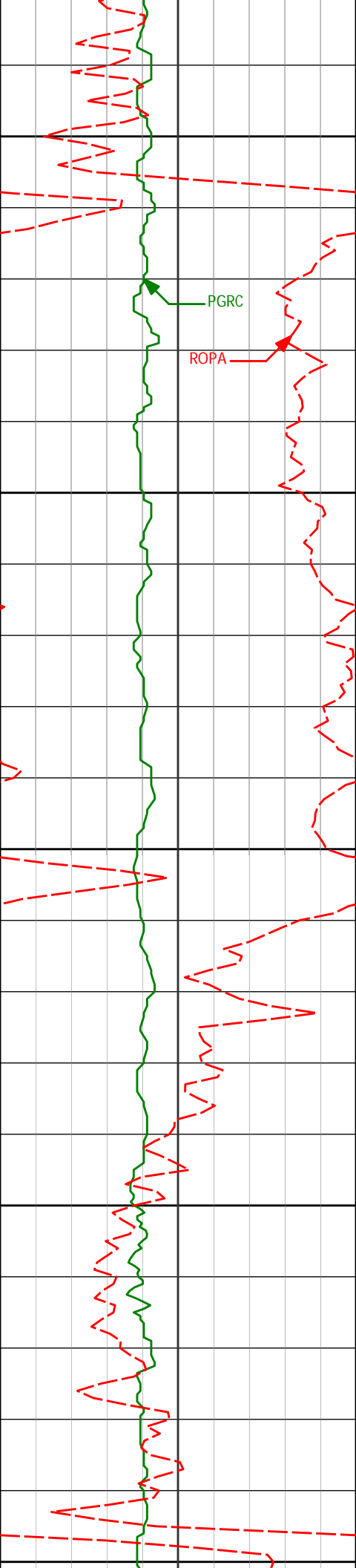
5300

5350

5400

5450

5263'	0.25°	51.23°	5244.15'	170.73'
5358'	0.20°	32.13°	5339.15'	170.99'
5453'	1.24°	239.84°	5434.14'	170.17'



5500

PGRC

ROPA

5550

5600

5650

5700

5548'

1.72°

268.54°

5529.11'

167.84'

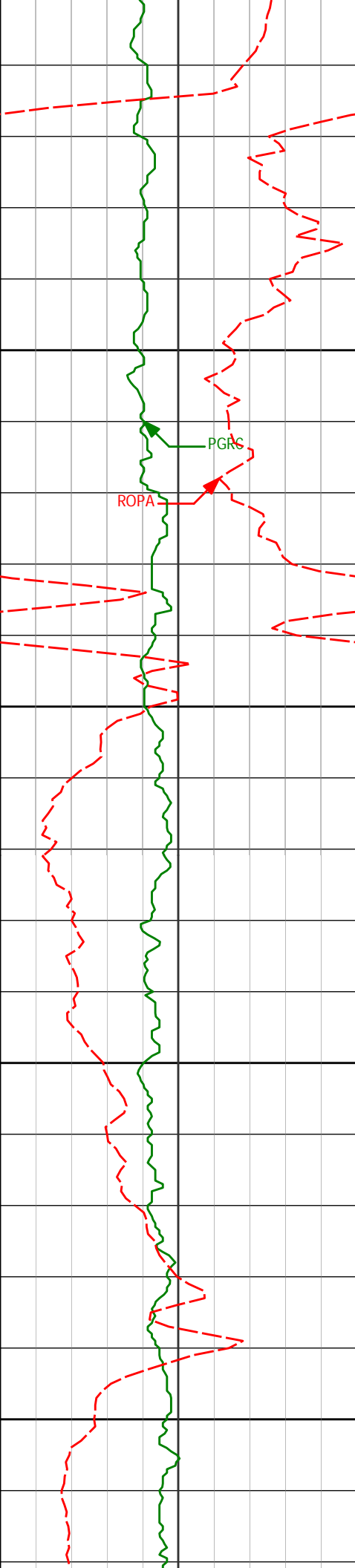
5643'

1.20°

268.59°

5624.08'

165.42'



5750

5800

5850

5900

5738'

1.37°

233.62°

5719.06'

163.49'

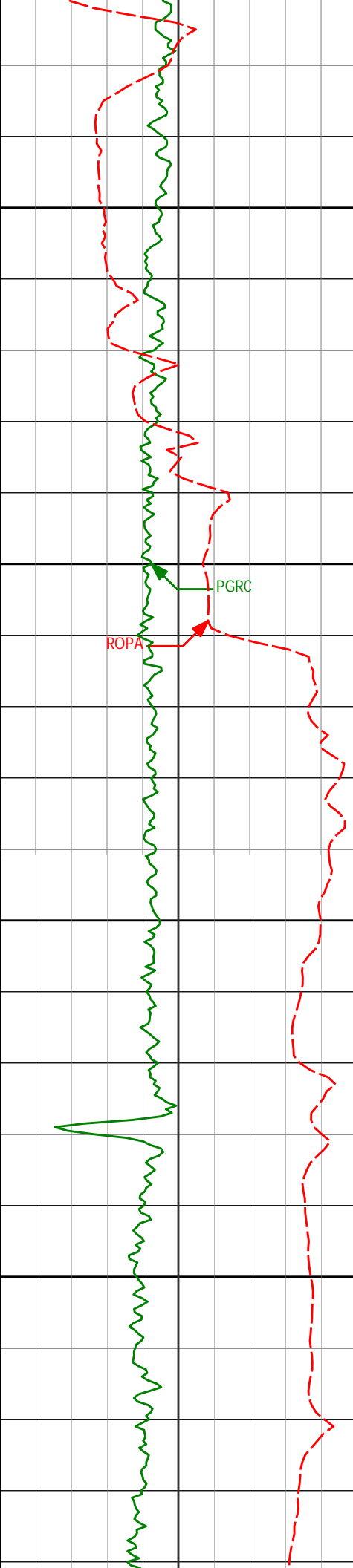
5833'

1.19°

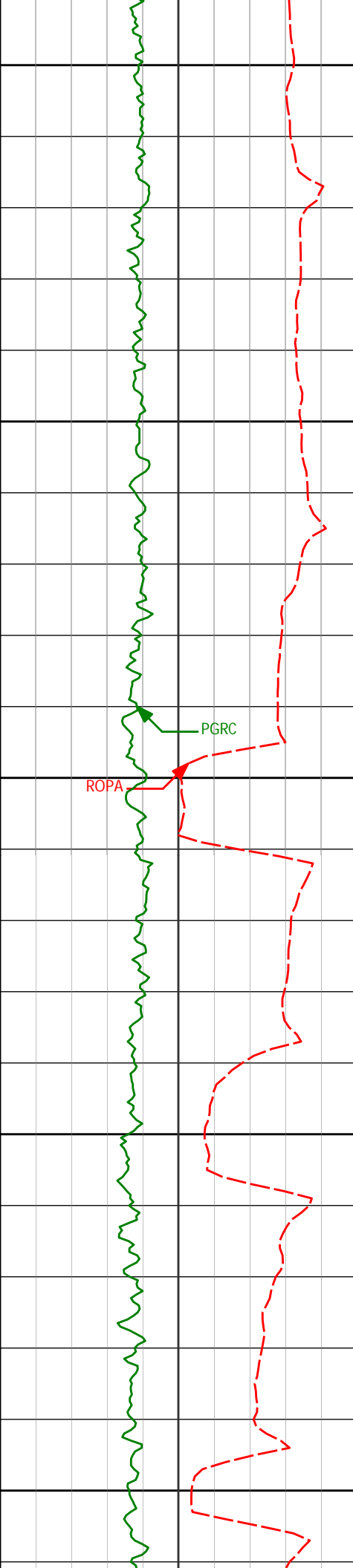
235.82°

5814.03'

161.73'



5928'	1.55°	263.21°	5909.01'	159.61'
6017'	1.30°	285.35°	5997.98'	157.45'
6065'	2.67°	72.93°	6045.97'	158.01'
6112'	8.35°	78.77°	6092.73'	162.43'



6150

6160'

14.47°

78.94°

6139.76'

171.80'

6200

6207'

20.12°

79.51°

6184.62'

185.59'

6250

6255'

23.78°

78.13°

6229.13'

203.29'

6300

6302'

25.74°

79.92°

6271.81'

222.72'

6350

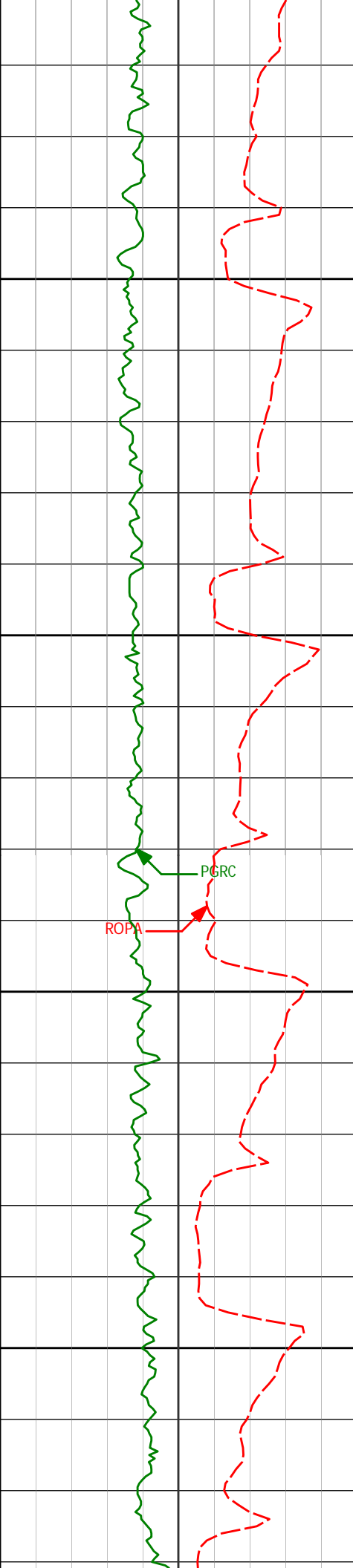
6350'

27.76°

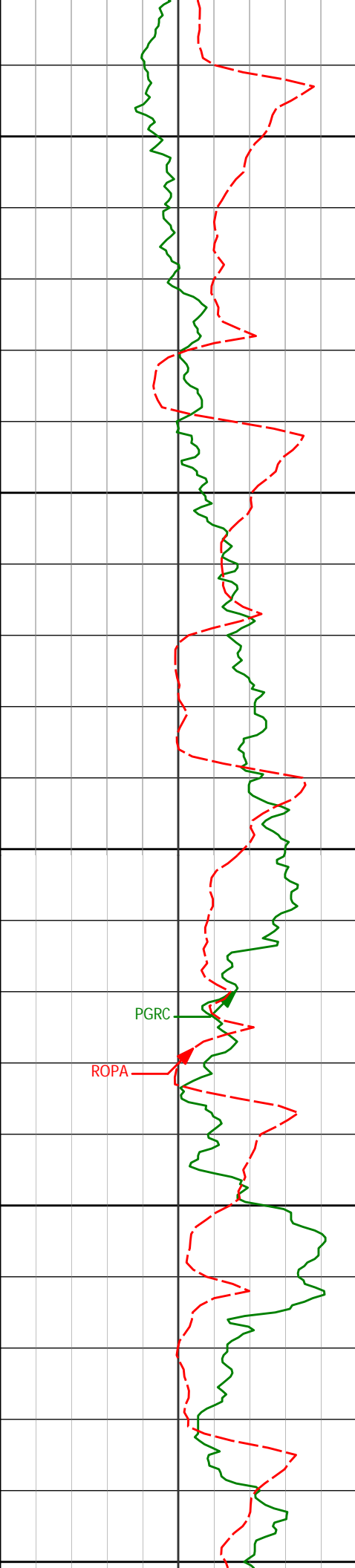
86.25°

6314.68'

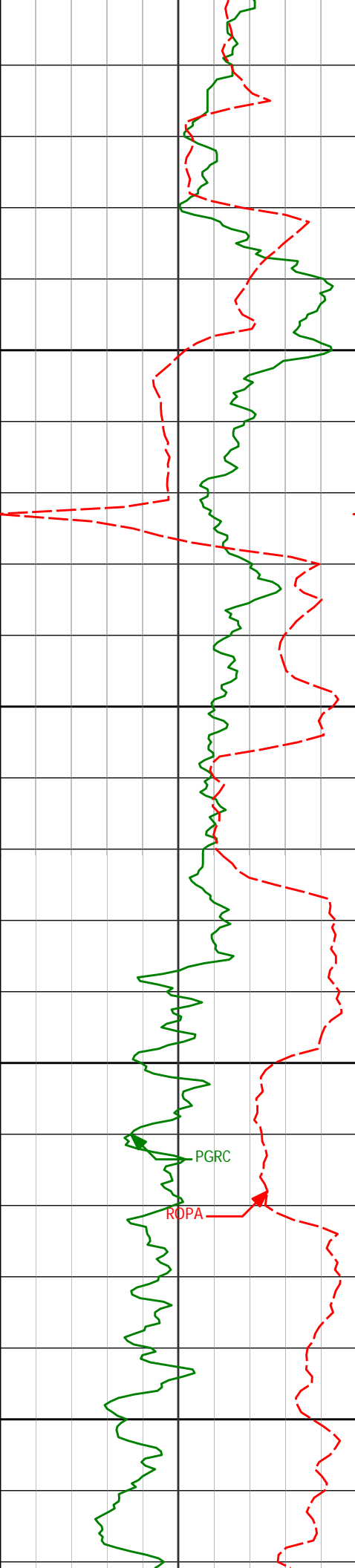
244.21'



6397'	31.19°	88.51°	6355.59'	267.33'
6400				
6445'	35.12°	88.54°	6395.77'	293.57'
6450				
6492'	37.99°	88.65°	6433.52'	321.56'
6500				
6540'	39.80°	92.86°	6470.88'	351.66'
6550				



6587'	43.82°	93.41°	6505.91'	382.87'
6600				
6635'	47.52°	89.90°	6539.45'	417.13'
6650				
6682'	51.08°	89.02°	6570.09'	452.74'
6700				
6730'	55.98°	89.26°	6598.61'	491.33'
6750				
6777'	59.83°	89.69°	6623.58'	531.13'
6800				



6850

6900

6950

7000

6825'

63.45°

86.33°

6646.38'

573.35'

6872'

65.76°

86.53°

6666.54'

615.78'

6920'

67.98°

87.97°

6685.39'

659.92'

6967'

68.50°

90.04°

6702.82'

703.56'

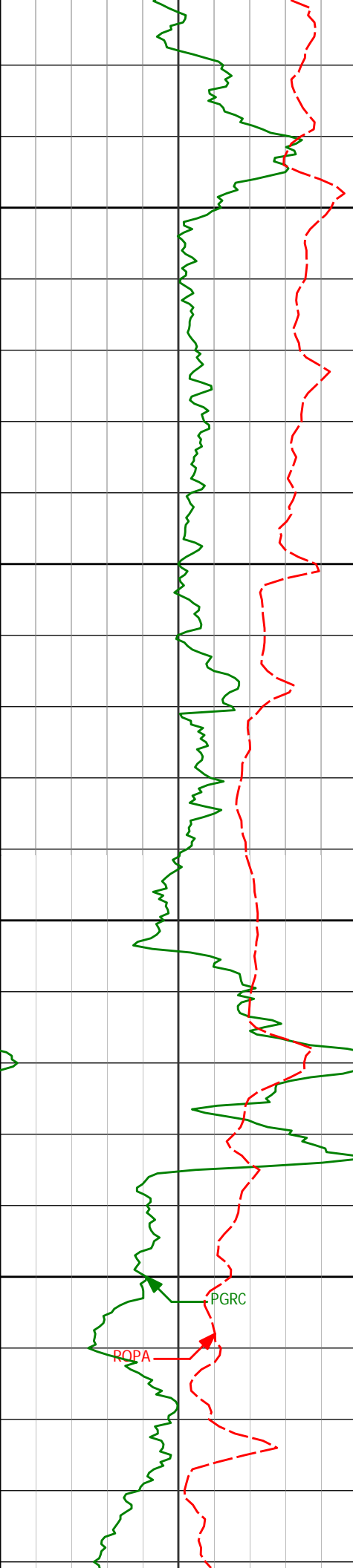
7015'

73.40°

89.69°

6718.48'

748.90'



7050

7062'

80.14°

89.01°

6729.23'

794.62'

7100

7113'

86.21°

89.47°

6735.29'

845.22'

7150



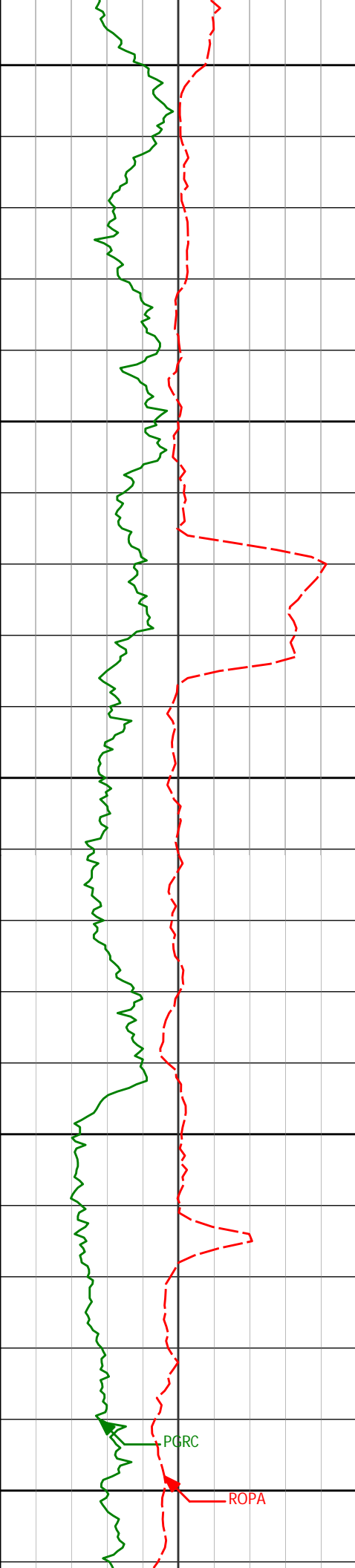
Casing Set @ 7,157'

<Run 300>

7200

PGRC

ROPA



7250

7250'

89.08°

88.87°

6740.92'

982.07'

7300

7345'

88.80°

88.17°

6742.67'

1077.05'

7350

7400

7440'

90.25°

88.60°

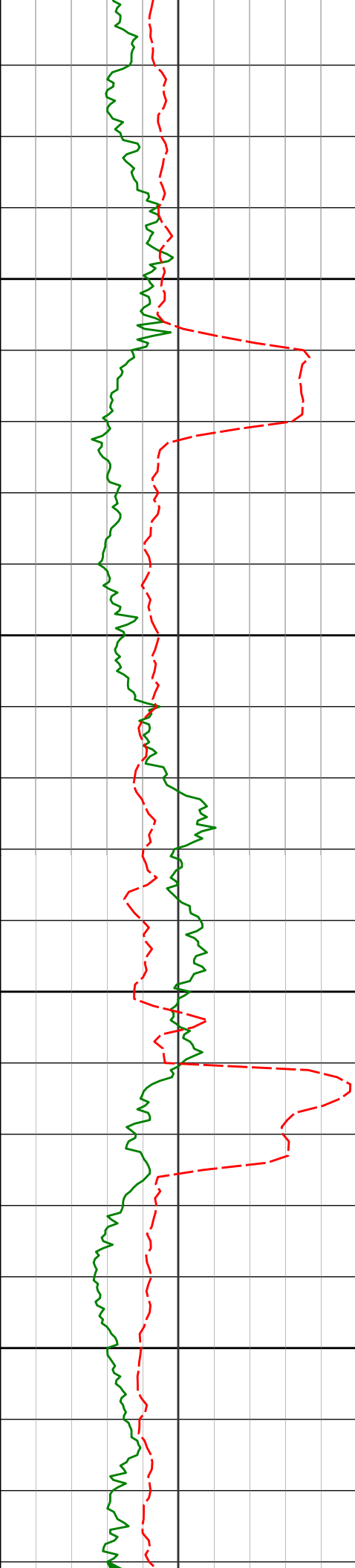
6743.46'

1172.05'

7450

PGRC

ROPA



7500

7550

7600

7650

7547'

90.59°

89.35°

6742.68'

1279.03'

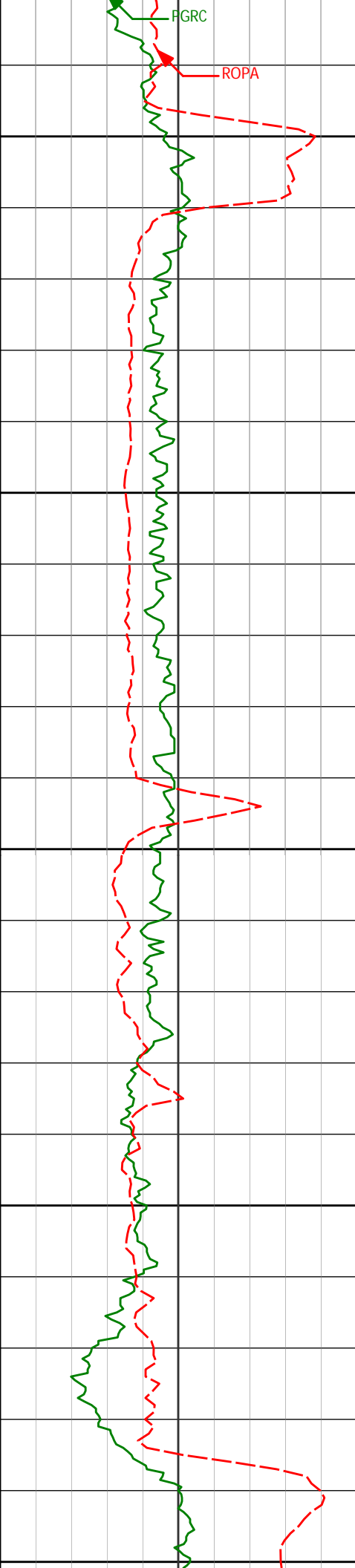
7629'

90.22°

89.08°

6742.10'

1361.02'



7700

7750

7800

7850

7900

7724'

89.66°

89.36°

6742.20'

1456.01'

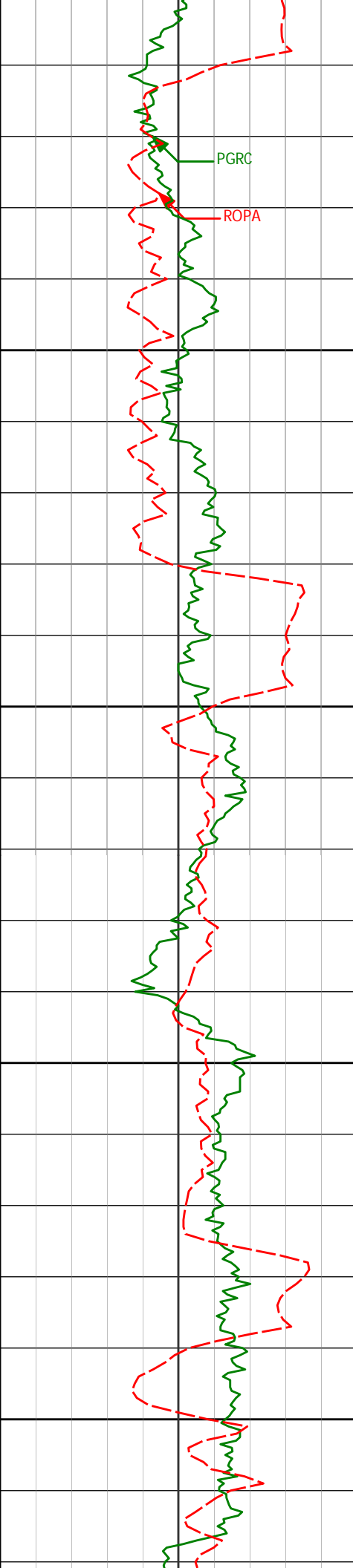
7819'

91.36°

91.73°

6741.35'

1550.91'



7950

8000

8050

8100

7914'

90.31°

90.23°

6739.97'

1645.79'

8009'

90.86°

87.79°

6739.00'

1740.77'

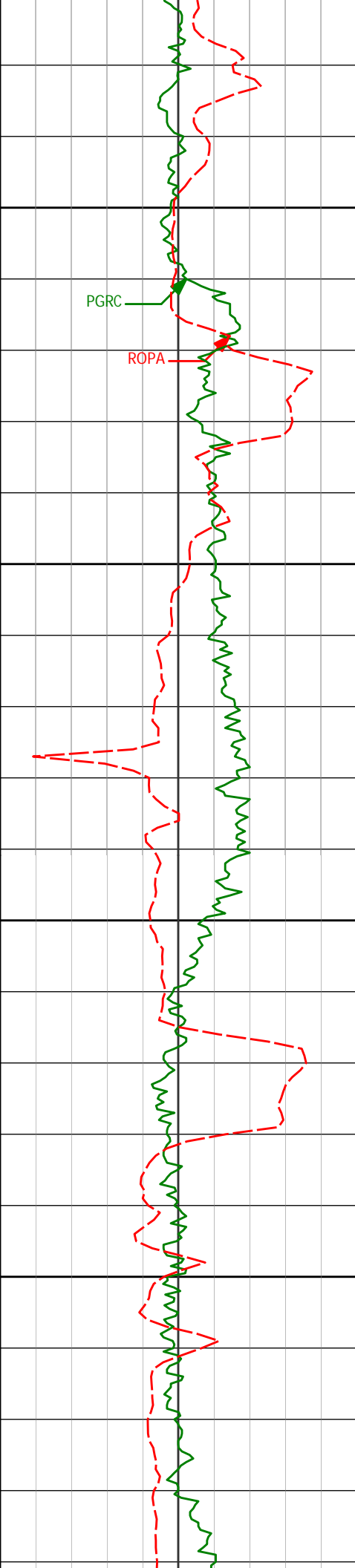
8104'

90.09°

87.27°

6738.21'

1835.76'



8150

PGRC

ROPA

8200

8250

8300

8199'

90.22°

86.21°

6737.95'

1930.72'

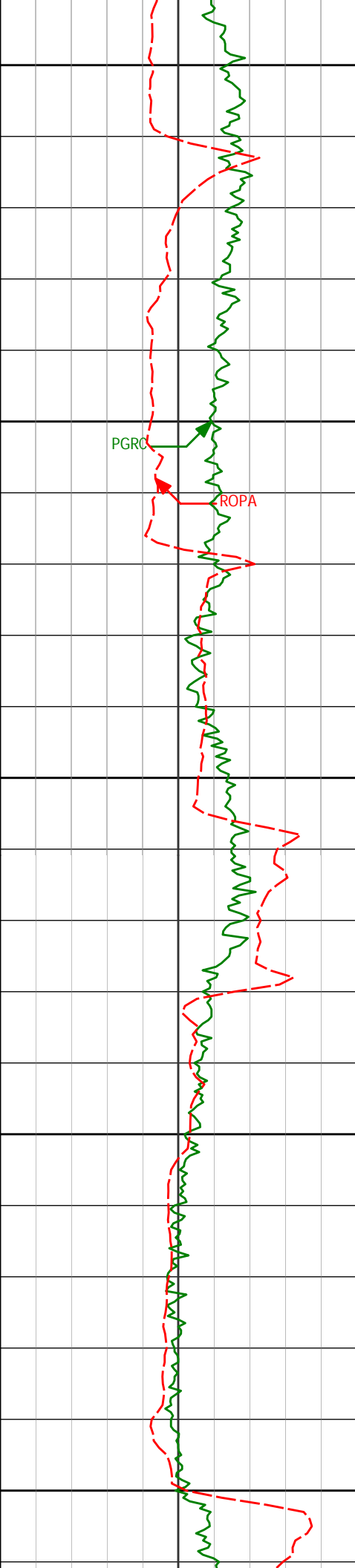
8294'

88.77°

85.94°

6738.79'

2025.65'



8350

8389'

88.12°

85.13°

6741.37'

2120.51'

8400

PGRC

ROPA

8450

8484'

88.40°

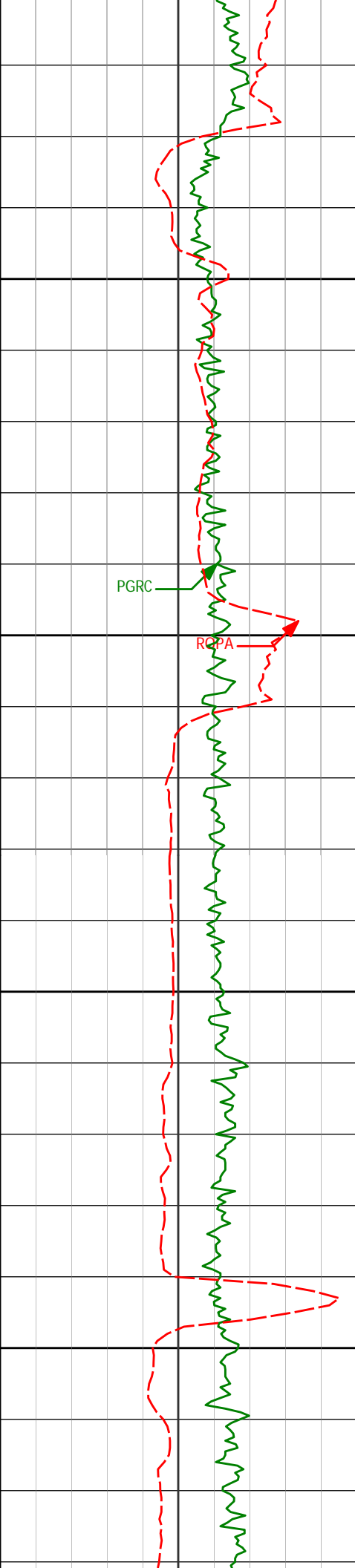
87.07°

6744.25'

2215.40'

8500

8550



8579'

91.70°

90.86°

6744.17'

2310.36'

8600

PGRC

RCPA

8650

8674'

90.15°

89.67°

6742.64'

2405.28'

8700

8750

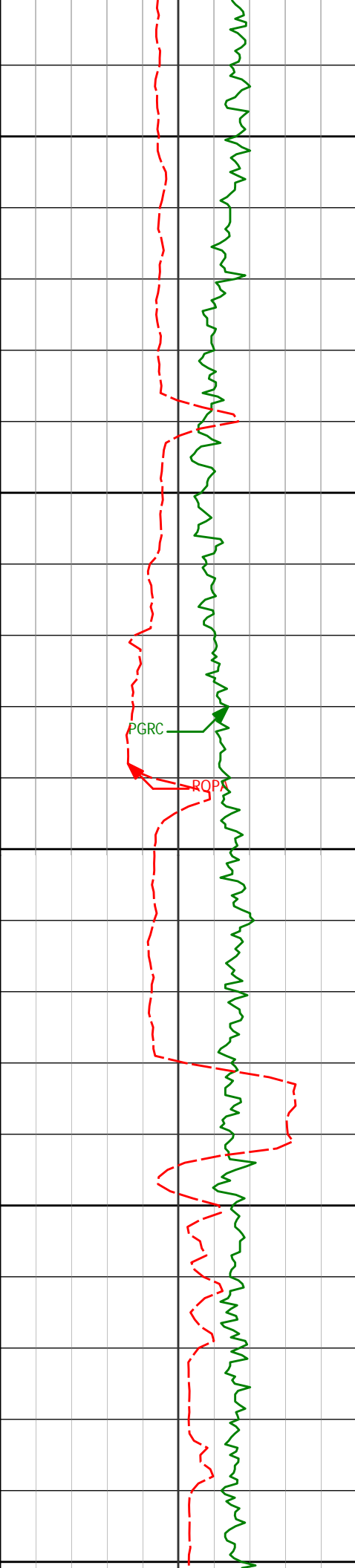
8769'

90.65°

90.86°

6741.97'

2500.21'



8800

8850

8900

8950

9000

8864'

90.95°

89.68°

6740.65'

2595.14'

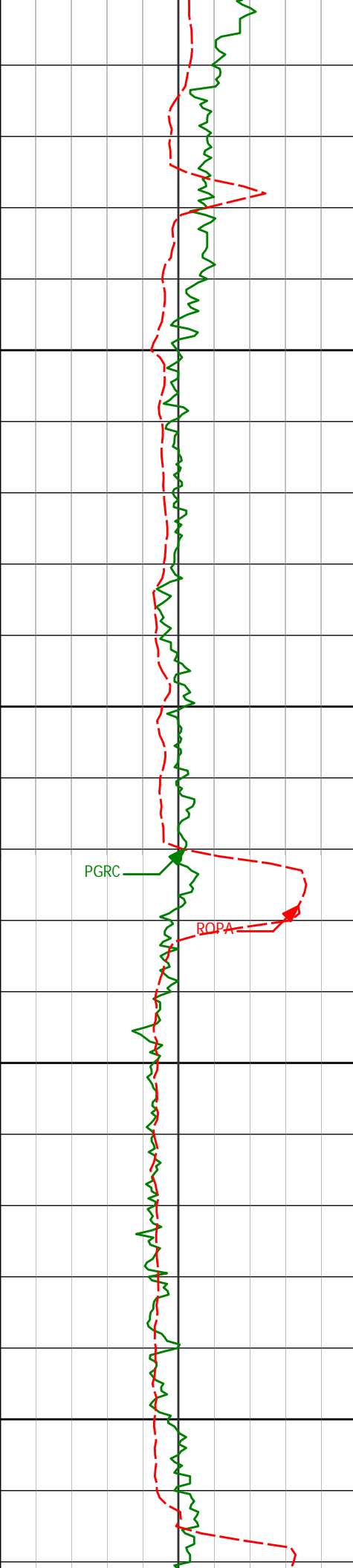
8959'

90.89°

87.19°

6739.12'

2690.12'



9050

9054'

91.54°

86.51°

6737.11'

2785.07'

9100

PGRC

ROPA

9150

9149'

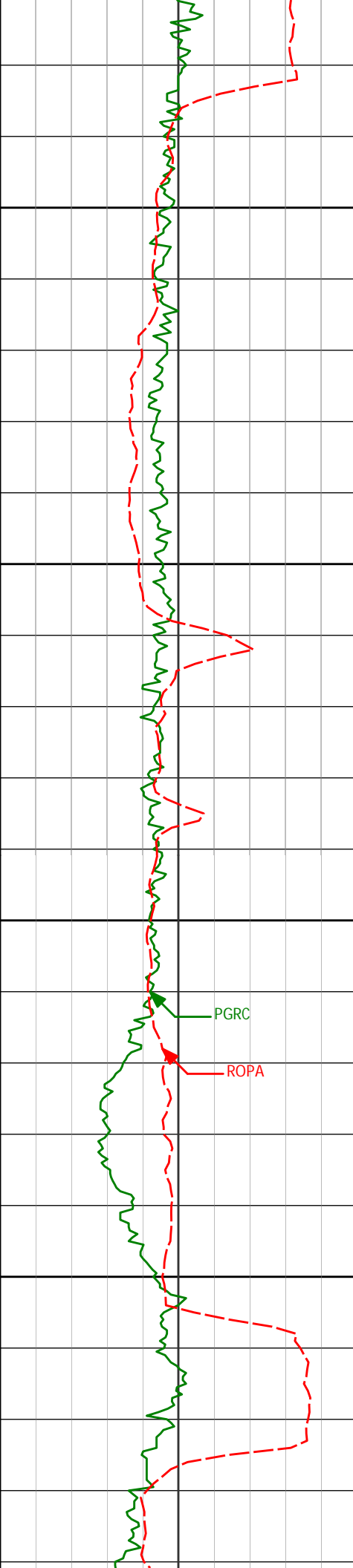
92.22°

86.76°

6733.99'

2879.99'

9200



9244'

90.31°

86.36°

6731.89'

2974.92'

9250

9300

9339'

90.86°

85.31°

6730.92'

3069.83'

9350

9400

9434'

90.37°

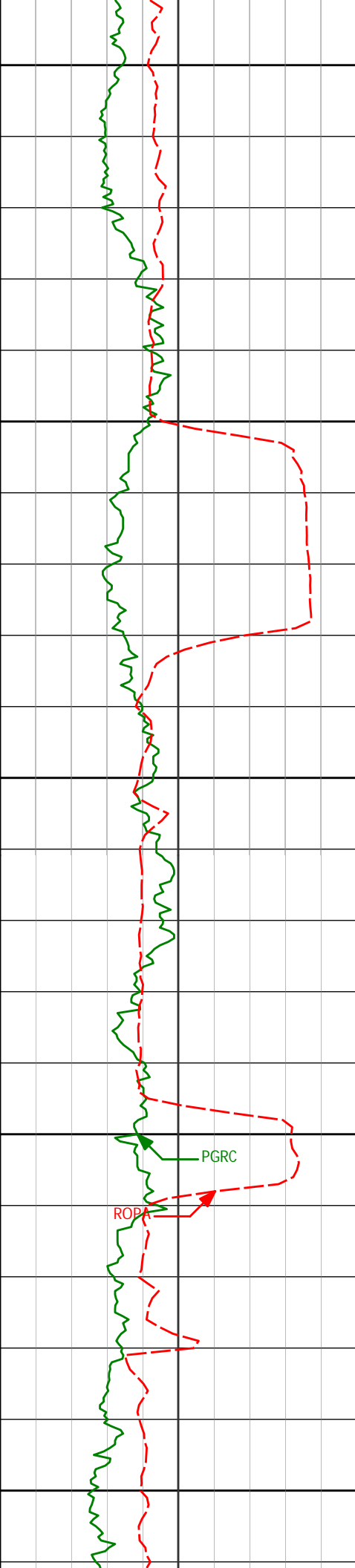
85.74°

6729.90'

3164.72'

PGRC

ROPA



9450

9500

9550

9600

9650

9529'

91.42°

88.46°

6728.42'

3259.68'

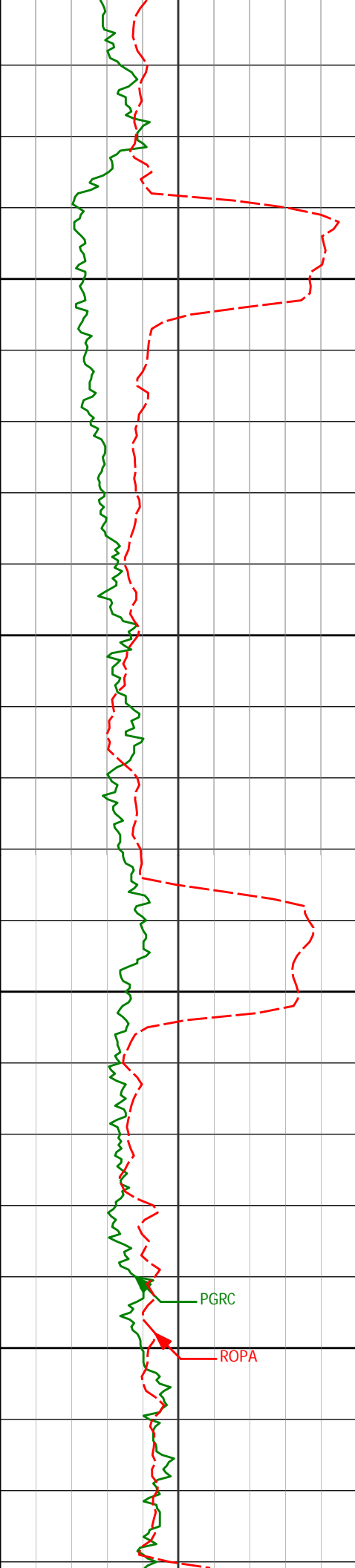
9624'

91.29°

88.39°

6726.17'

3354.65'



9700

9719'

91.82°

89.64°

6723.60'

3449.60'

9750

9800

9814'

90.59°

89.74°

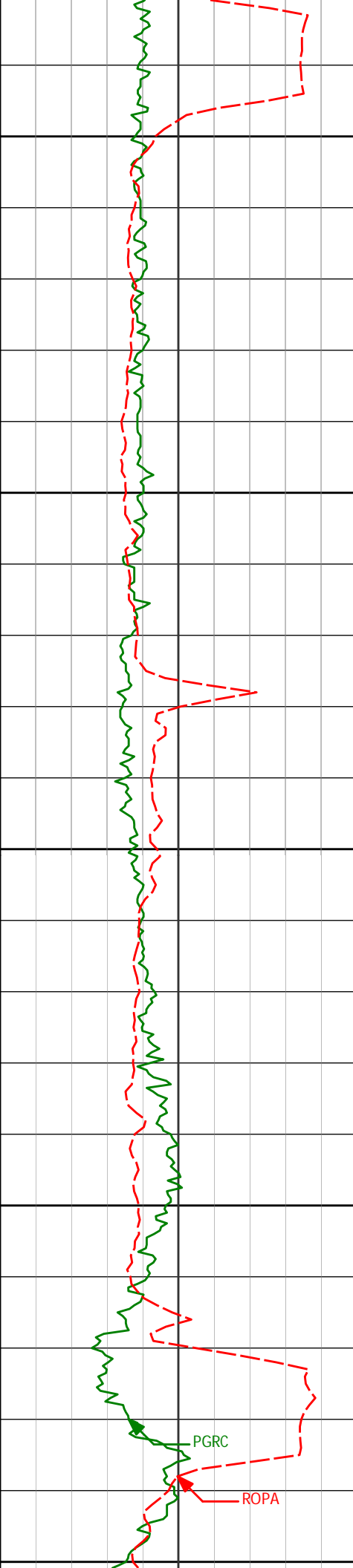
6721.60'

3544.55'

9850

PGRC

ROPA



9900

9909'

89.20°

88.29°

6721.77'

3639.54'

9950

10000

10004'

88.73°

86.92°

6723.49'

3734.51'

10050

10100

10099'

90.68°

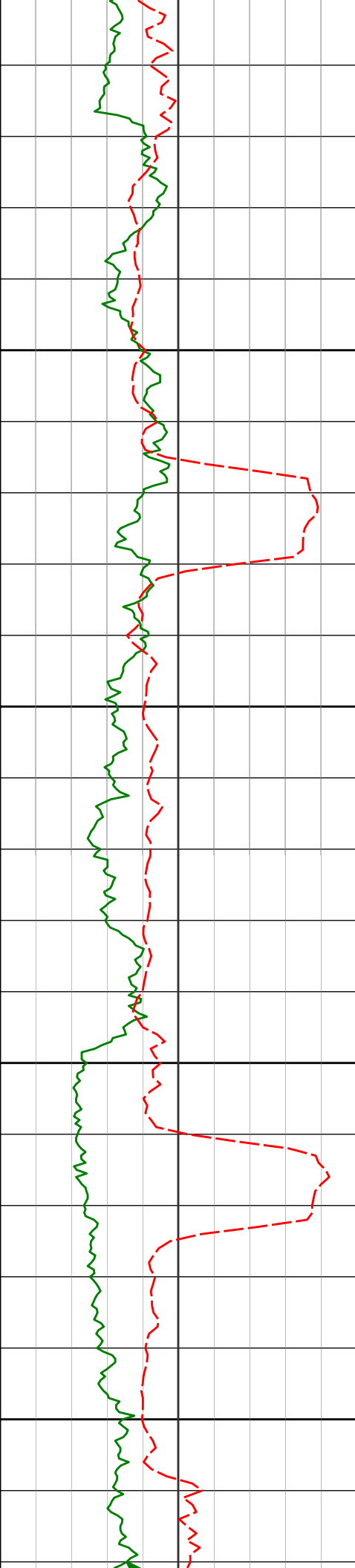
88.46°

6723.98'

3829.50'

PGRC

ROPA



10150

10200

10250

10300

10194'

90.37°

89.62°

6723.11'

3924.48'

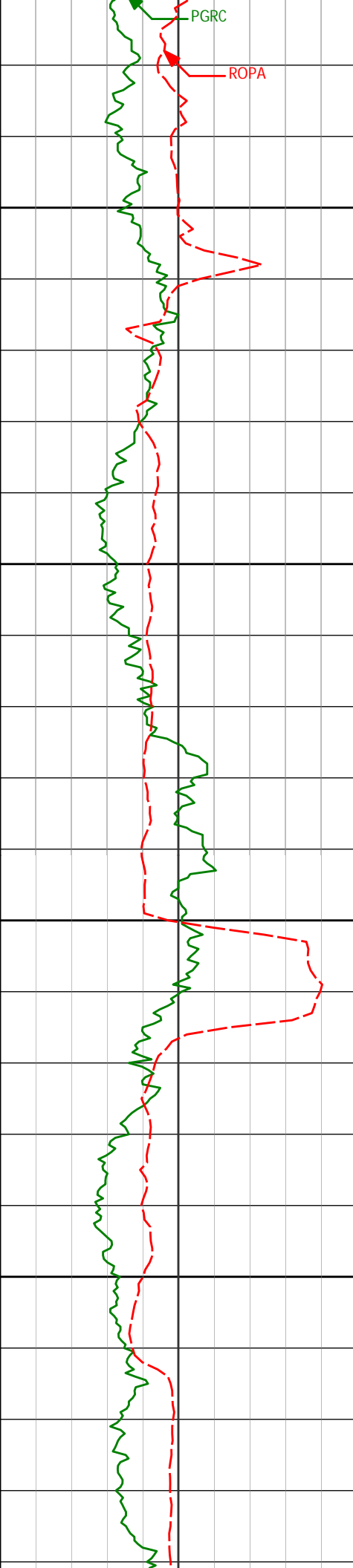
10289'

90.68°

91.54°

6722.24'

4019.39'



10350

10400

10450

10500

10384'

91.57°

90.66°

6720.37'

4114.25'

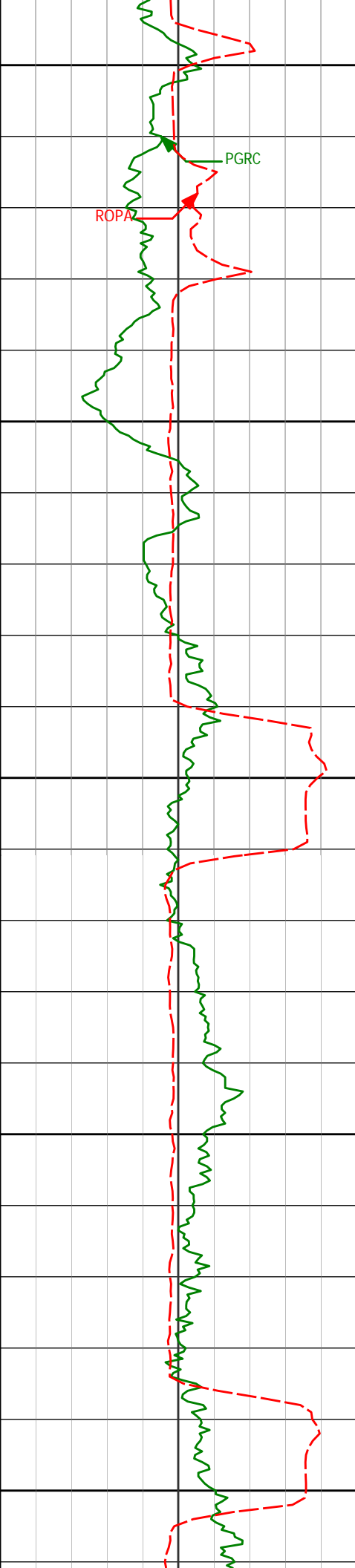
10479'

90.80°

89.77°

6718.41'

4209.18'



10550

10600

10650

10700

10750

10574'

91.85°

89.22°

6716.21'

4304.12'

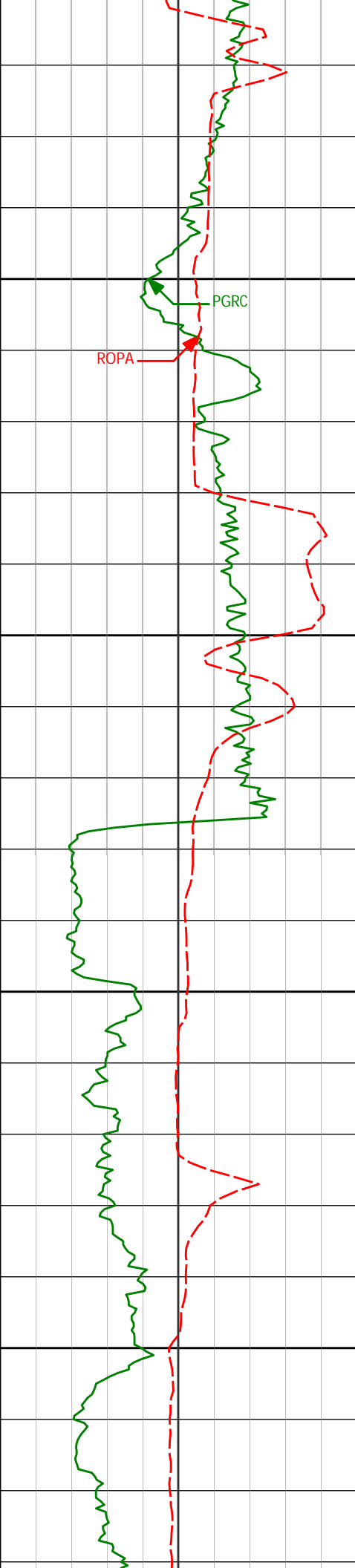
10669'

90.90°

87.58°

6713.93'

4399.09'



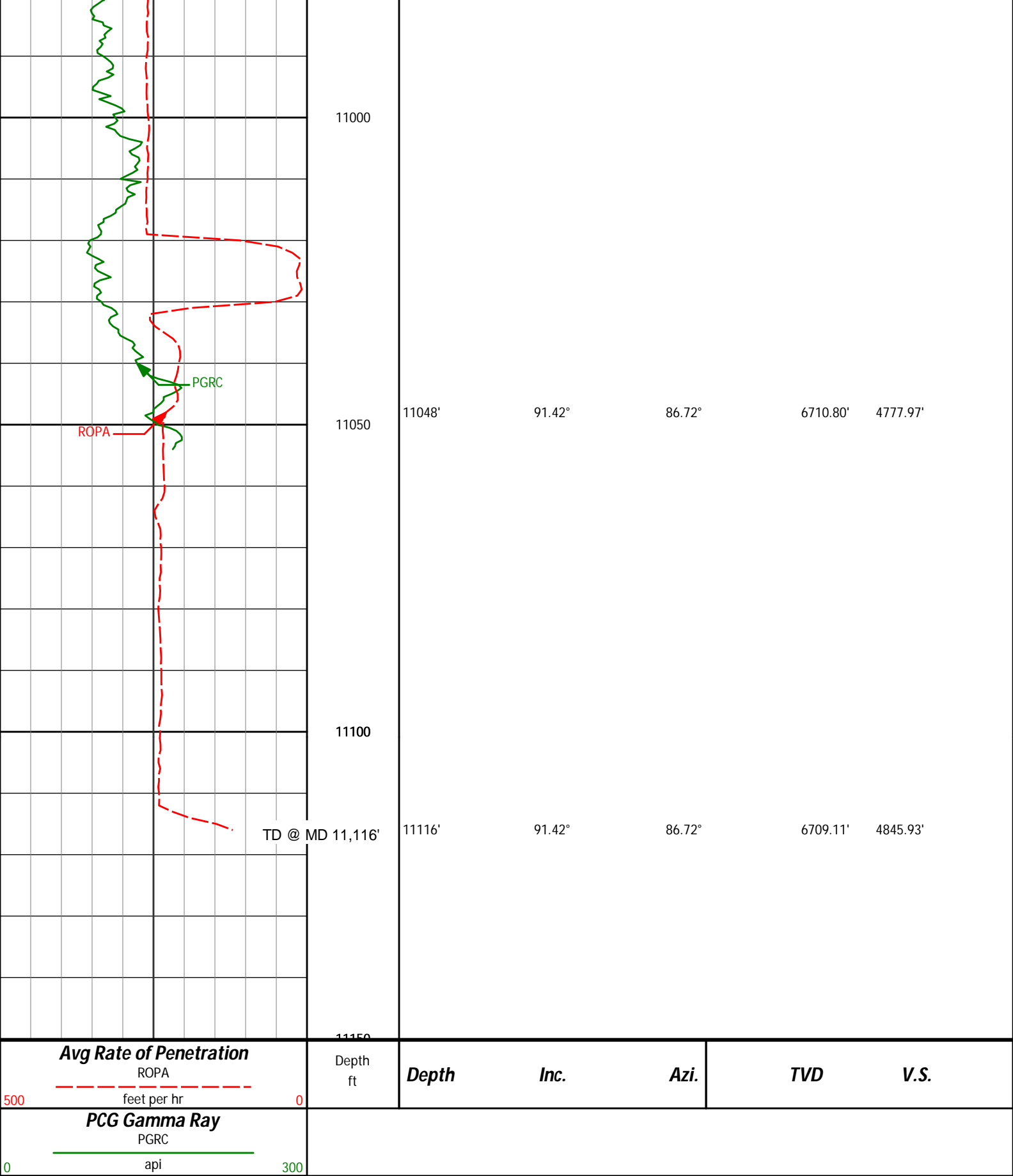
10800

10850

10900

10950

10763'	90.34°	86.45°	6712.91'	4493.06'
10859'	89.41°	87.60°	6713.12'	4589.04'
10953'	90.99°	86.94°	6712.79'	4683.02'



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Wells Branch A505 62HN

6250.00	27.76	86.25	6214.68	24.00 N	242.56 E	244.31	7.27
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6330.00	27.76	86.23	6314.68	24.90 N	243.36 E	244.21	7.27
6397.00	31.19	88.51	6355.59	25.93 N	266.65 E	267.33	7.67
6445.00	35.12	88.54	6395.77	26.61 N	292.89 E	293.57	8.19
6492.00	37.99	88.65	6433.52	27.29 N	320.87 E	321.56	6.11
6540.00	39.80	92.86	6470.88	26.87 N	350.99 E	351.66	6.67
6587.00	43.82	93.41	6505.91	25.15 N	382.27 E	382.87	8.59
6635.00	47.52	89.90	6539.45	24.20 N	416.58 E	417.13	9.31
6682.00	51.08	89.02	6570.09	24.54 N	452.20 E	452.74	7.71
6730.00	55.98	89.26	6598.61	25.11 N	490.78 E	491.33	10.22
6777.00	59.83	89.69	6623.58	25.48 N	530.59 E	531.13	8.23
6825.00	63.45	86.33	6646.38	26.96 N	572.79 E	573.35	9.74
6872.00	65.76	86.53	6666.54	29.61 N	615.16 E	615.78	4.93
6920.00	67.98	87.97	6685.39	31.72 N	659.25 E	659.92	5.39
6967.00	68.50	90.04	6702.82	32.48 N	702.89 E	703.56	4.24
7015.00	73.40	89.69	6718.48	32.59 N	748.25 E	748.90	10.23
7062.00	80.14	89.01	6729.23	33.11 N	793.97 E	794.62	14.41
7113.00	86.21	89.47	6735.29	33.78 N	844.58 E	845.22	11.94
7250.00	89.08	88.87	6740.92	35.76 N	981.44 E	982.07	2.14
7345.00	88.80	88.17	6742.67	38.21 N	1076.39 E	1077.05	0.79
7440.00	90.25	88.60	6743.46	40.89 N	1171.34 E	1172.05	1.59
7547.00	90.59	89.35	6742.68	42.81 N	1278.32 E	1279.03	0.77
7629.00	90.22	89.08	6742.10	43.93 N	1360.31 E	1361.02	0.56
7724.00	89.66	89.36	6742.20	45.22 N	1455.30 E	1456.01	0.66
7819.00	91.36	91.73	6741.35	44.32 N	1550.28 E	1550.91	3.07
7914.00	90.31	90.23	6739.97	42.69 N	1645.26 E	1645.79	1.93
8009.00	90.86	87.79	6739.00	44.34 N	1740.23 E	1740.77	2.63
8104.00	90.09	87.27	6738.21	48.43 N	1835.14 E	1835.76	0.98
8199.00	90.22	86.21	6737.95	53.83 N	1929.98 E	1930.72	1.12
8294.00	88.77	85.94	6738.79	60.33 N	2024.75 E	2025.65	1.55
8389.00	88.12	85.13	6741.37	67.73 N	2119.43 E	2120.51	1.09
8484.00	88.40	87.07	6744.25	74.19 N	2214.16 E	2215.40	2.06
8579.00	91.70	90.86	6744.17	75.90 N	2309.11 E	2310.36	5.29
8674.00	90.15	89.67	6742.64	75.46 N	2404.10 E	2405.28	2.06
8769.00	90.65	90.86	6741.97	75.02 N	2499.09 E	2500.21	1.36
8864.00	90.95	89.68	6740.65	74.58 N	2594.08 E	2595.14	1.28
8959.00	90.89	87.19	6739.12	77.17 N	2689.02 E	2690.12	2.62
9054.00	91.54	86.51	6737.11	82.39 N	2783.86 E	2785.07	0.99
9149.00	92.22	86.76	6733.99	87.96 N	2878.64 E	2879.99	0.76
9244.00	90.31	86.36	6731.89	93.66 N	2973.44 E	2974.92	2.05
9339.00	90.86	85.31	6730.92	100.56 N	3068.19 E	3069.83	1.25
9434.00	90.37	85.74	6729.90	107.97 N	3162.89 E	3164.72	0.69
9529.00	91.42	88.46	6728.42	112.78 N	3257.75 E	3259.68	3.07
9624.00	91.29	88.39	6726.17	115.39 N	3352.68 E	3354.65	0.16
9719.00	91.82	89.64	6723.60	117.02 N	3447.63 E	3449.60	1.43
9814.00	90.59	89.74	6721.60	117.53 N	3542.61 E	3544.55	1.30
9909.00	89.20	88.29	6721.77	119.17 N	3637.59 E	3639.54	2.11
10004.00	88.73	86.92	6723.49	123.14 N	3732.49 E	3734.51	1.52
10099.00	90.68	88.46	6723.98	126.96 N	3827.40 E	3829.50	2.62
10194.00	90.37	89.62	6723.11	128.56 N	3922.38 E	3924.48	1.26
10289.00	90.68	91.54	6722.24	127.59 N	4017.37 E	4019.39	2.05
10384.00	91.57	90.66	6720.37	125.77 N	4112.33 E	4114.25	1.32
10479.00	90.80	89.77	6718.41	125.41 N	4207.31 E	4209.18	1.24
10574.00	91.85	89.22	6716.21	126.25 N	4302.28 E	4304.12	1.25
10669.00	90.90	87.58	6713.93	128.90 N	4397.21 E	4399.09	1.99
10763.00	90.34	86.45	6712.91	133.80 N	4491.08 E	4493.06	1.34
10859.00	89.41	87.60	6713.12	138.78 N	4586.94 E	4589.04	1.54
10953.00	90.99	86.94	6712.79	143.26 N	4680.83 E	4683.02	1.82
11048.00	91.42	86.72	6710.80	148.51 N	4775.67 E	4777.97	0.51
11116.00	91.42	86.72	6709.11	152.40 N	4843.53 E	4845.93	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 CLOSURE OF 88.20 DEGREES (GRID)
A TOTAL CORRECTION OF 7.72 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11116.00 FEET
IS 4845.93 FEET ALONG 88.20 DEGREES (GRID)**