



WELL INFORMATION					
MWD Run Number	100	200			
Date run completed	12-Apr-13	14-Apr-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)	637.00	5,962.99			
Log End Depth (TVD, ft)	5,963.99	6,738.32			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	11-Apr-13 16:00	12-Apr-13 23:45			
Drill/Wipe End Date and Time	12-Apr-13 11:00	13-Apr-13 20:30			
Min Inc (deg) @ Depth (TVD, ft)	.20 @ 5,339.15	1.30 @ 5,997.98			
Max Inc (deg) @ Depth (TVD, ft)	13.84 @ 3,162.11	86.21 @ 6,735.29			
Bit TFA(in2) / Bit Type	.86 / PDC	.86 / PDC			
Flow Rate (gpm)	597.18	547.44			
Max AV (fpm) / CV (fpm) @ MWD	439.0 / NA	367.0 / NA			
Fluid Type	Fresh Water Gel	Fresh Water Gel			
Density (ppg) / Viscosity (spqt)	8.60 / 26.00	10.90 / 37.00			
Filtrate CL (ppm)	2,500.00	2,200.00			
pH / Fluid Loss (mptm)	7.90 / 21	9.00 / 10			
PV (cP) / YP (Ihf2)	4 / 1.00	13 / 13.00			
% Solids / % Sand	1.60 / 0.10	12.70 / 0.15			
% Oil / Oil:Water Ratio	0 / 0:95	0 / 0:95			
Rm @ Measured Temp (degF)	NA @ NA	NA @ NA			
Rmf @ Measured Temp (degF)	NA @ NA	NA @ NA			
Rmc @ Measured Temp (degF)	NA @ NA	NA @ NA			
Mud Temp (in) @ Depth (ft)	107.07 / PDM	107.07 / PDM			

Max Tool Temp (degF) / Source	167.977 PCM	167.977 PCM			
Rm @ Max Tool Temp (degF)	NA @ NA	NA @ NA			
Lead MWD Engineer	Gary Eifert	Gary Eifert			
Customer Representative	Johnny Sanchez	Johnny Sanchez			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.76	5.76			
Sub Serial Number	11404284	11404284			
Insert Serial Number	11680784	11680784			
Date and Time Initialized	10-Apr-13 22:41	10-Apr-13 22:41			
Date and Time Read	14-Apr-13 06:59	14-Apr-13 07:05			
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	11404284	11404284			
Sonde Serial Number	11638570	11638570			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	243.73	53.49			

Gamma Ray Sensor Information

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

REMARKS

1. All depths are true vertical 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

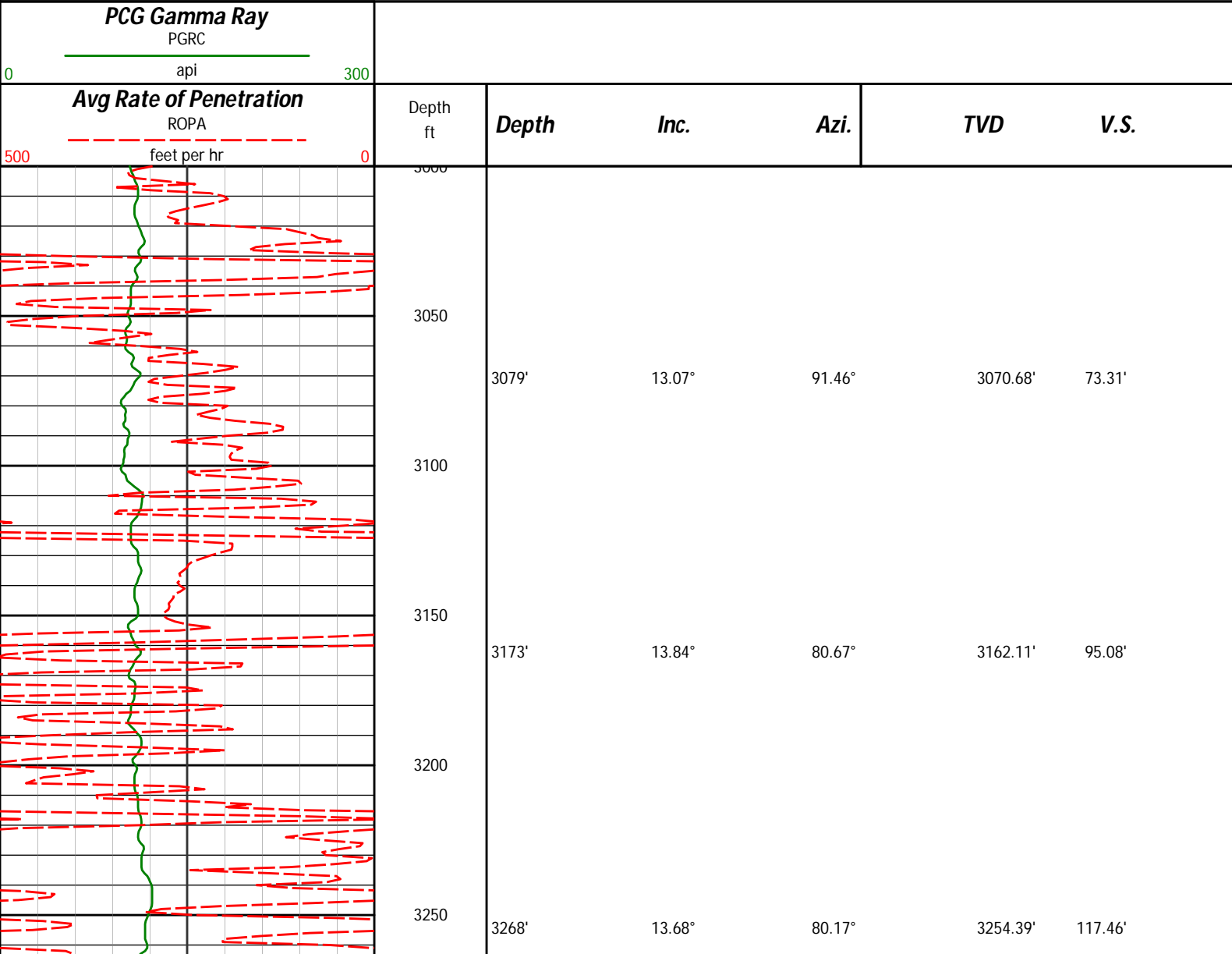
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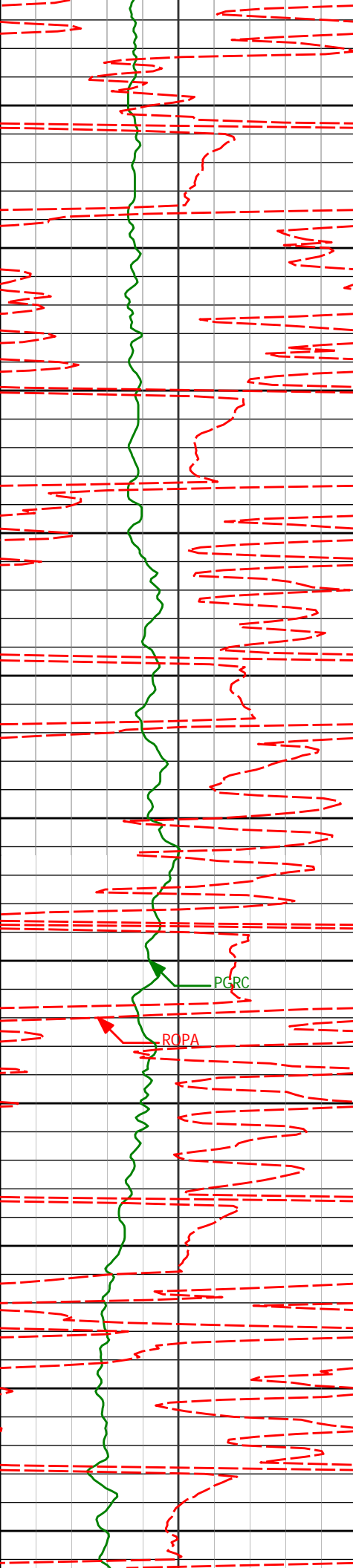
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Sperry Drilling Services

TVD Main Log 1:600

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





3300

3350

3400

3450

3500

3550

3600

3650

3700

3750

3800

3363'

11.44°

71.08°

3347.12'

137.59'

3458'

8.33°

66.42°

3440.70'

152.99'

3553'

6.32°

61.43°

3534.92'

164.05'

3648'

4.08°

65.75°

3629.52'

171.84'

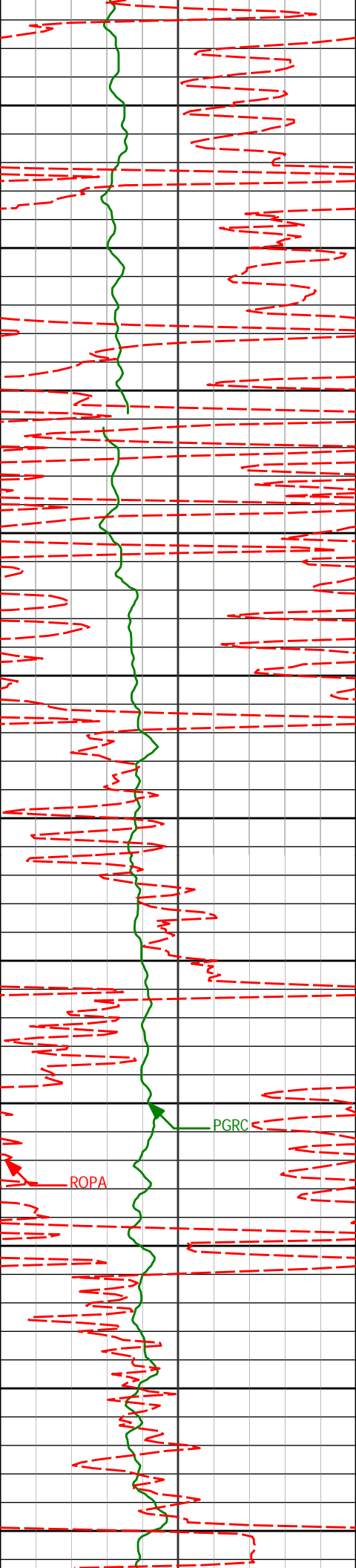
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2.96°

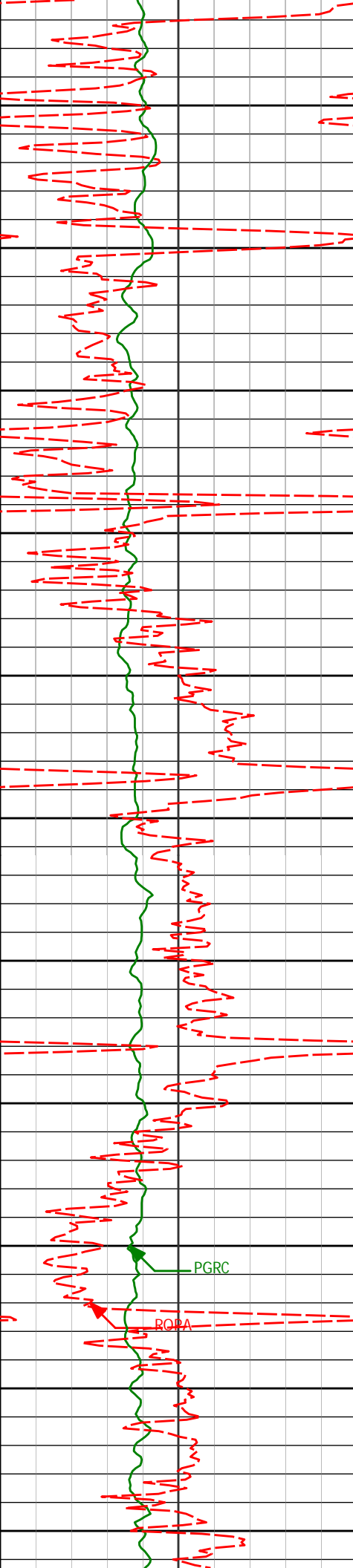
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3724.34'

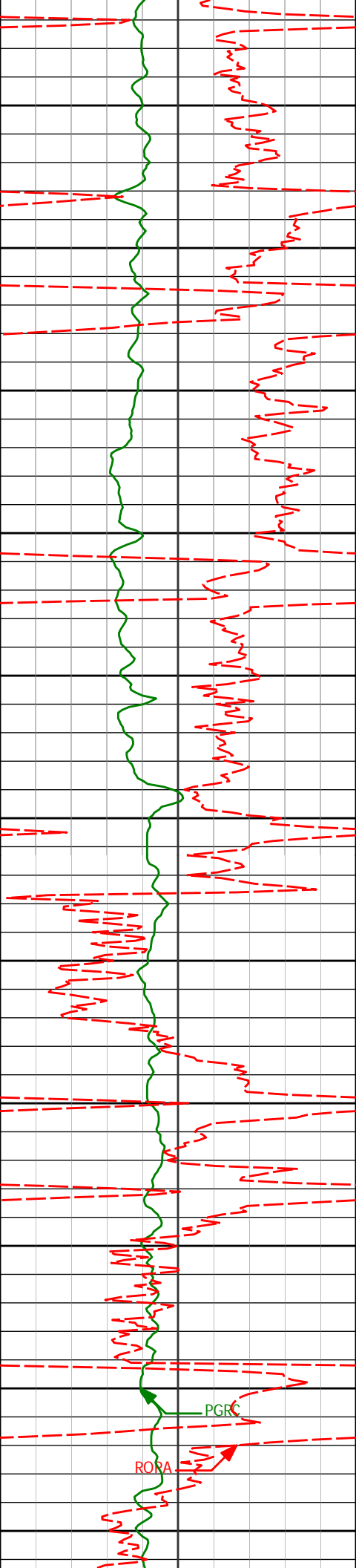
176.71'



3838'	0.33°	39.15°	3819.30'	178.64'
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'
4218'	1.11°	301.58°	4199.25'	174.60'
4313'	0.68°	290.98°	4294.24'	173.31'



4408'	0.65°	247.66°	4389.23'	172.29'
4400				
4450				
4503'	0.52°	259.46°	4484.23'	171.36'
4500				
4550				
4598'	0.50°	210.83°	4579.23'	170.71'
4600				
4650				
4693'	0.44°	280.02°	4674.22'	170.13'
4700				
4750				
4788'	0.96°	356.49°	4769.22'	169.75'
4800				
4850				
4883'	1.33°	353.14°	4864.20'	169.62'
4900				



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

5450

5453'

1.24°

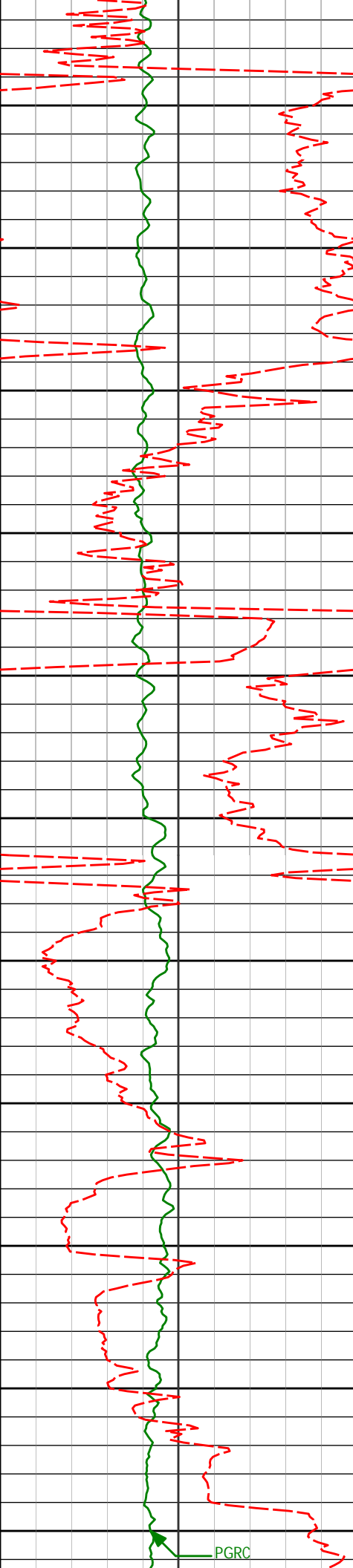
239.84°

5434.14'

170.17'

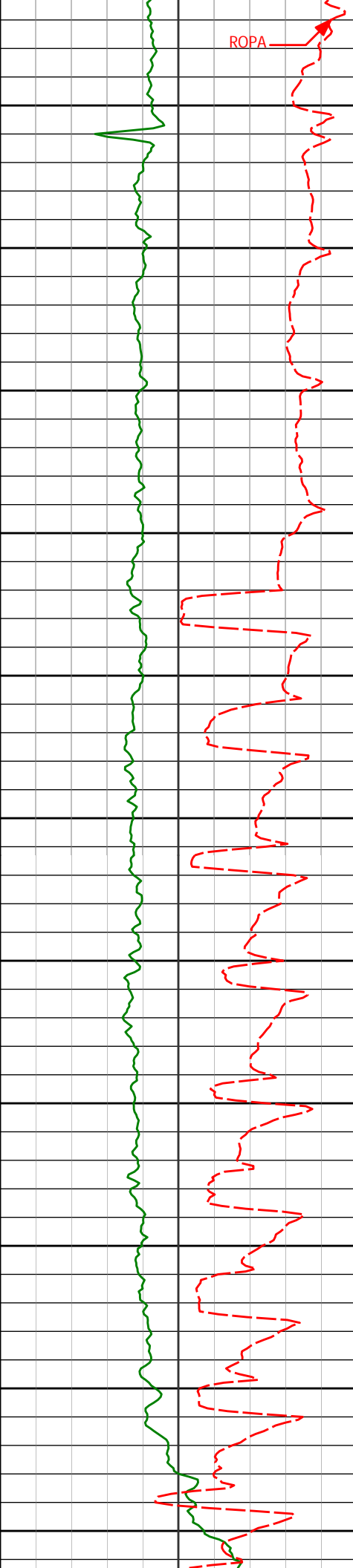
PGRC

RORA

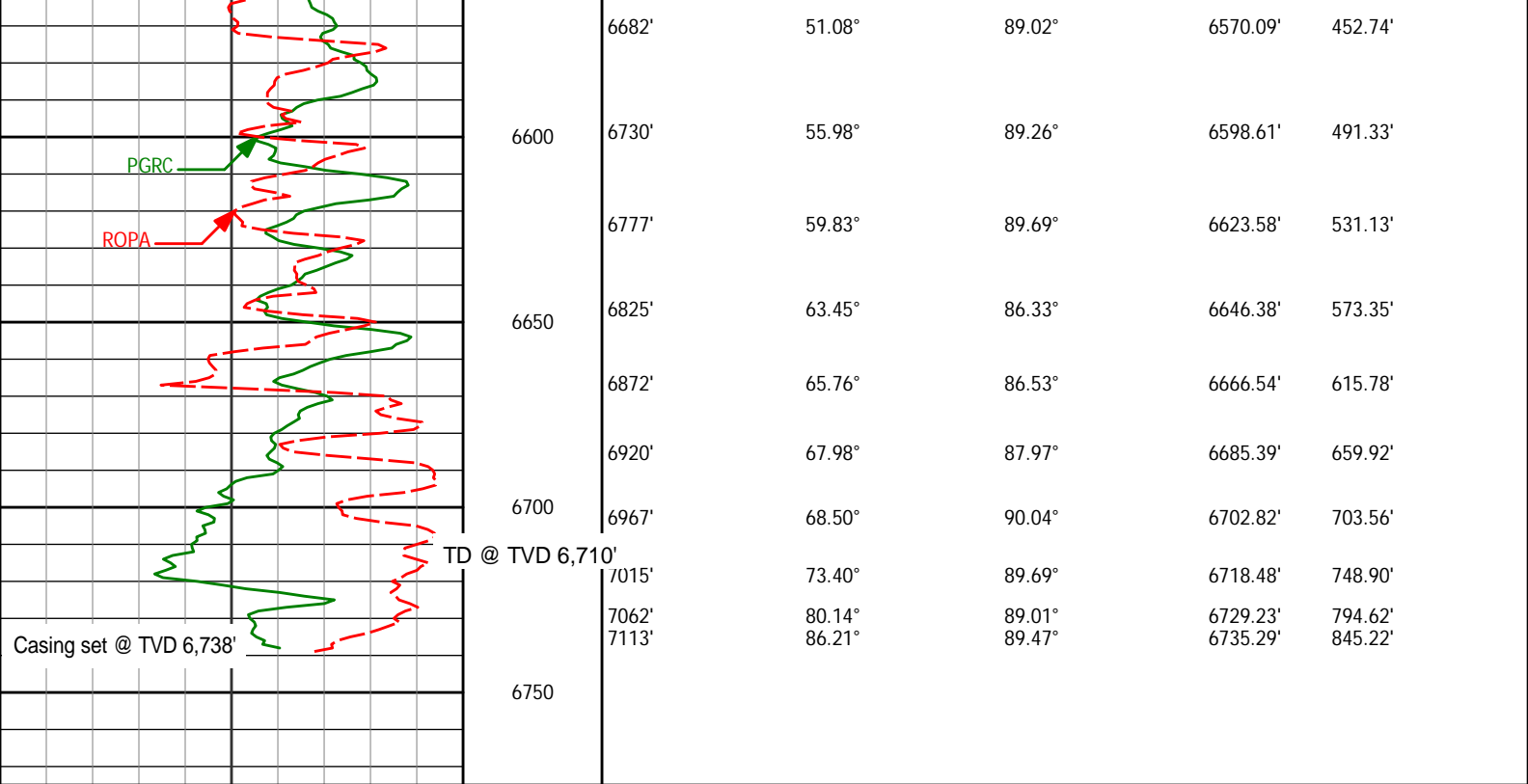


5500				
5548'	1.72°	268.54°	5529.11'	167.84'
5550				
5555				
5600				
5643'	1.20°	268.59°	5624.08'	165.42'
5650				
5700				
5738'	1.37°	233.62°	5719.06'	163.49'
5750				
5800				
5833'	1.19°	235.82°	5814.03'	161.73'
5850				
5900				
5928'	1.55°	263.21°	5909.01'	159.61'
5950				
<Run 200>				
6000				
6017'	1.30°	285.35°	5997.98'	157.45'

PGRC



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'
	6492'	37.99°	88.65°	6433.52'	321.56'
	6540'	39.80°	92.86°	6470.88'	351.66'
6500	6587'	43.82°	93.41°	6505.91'	382.87'
6550	6635'	47.52°	89.90°	6539.45'	417.13'



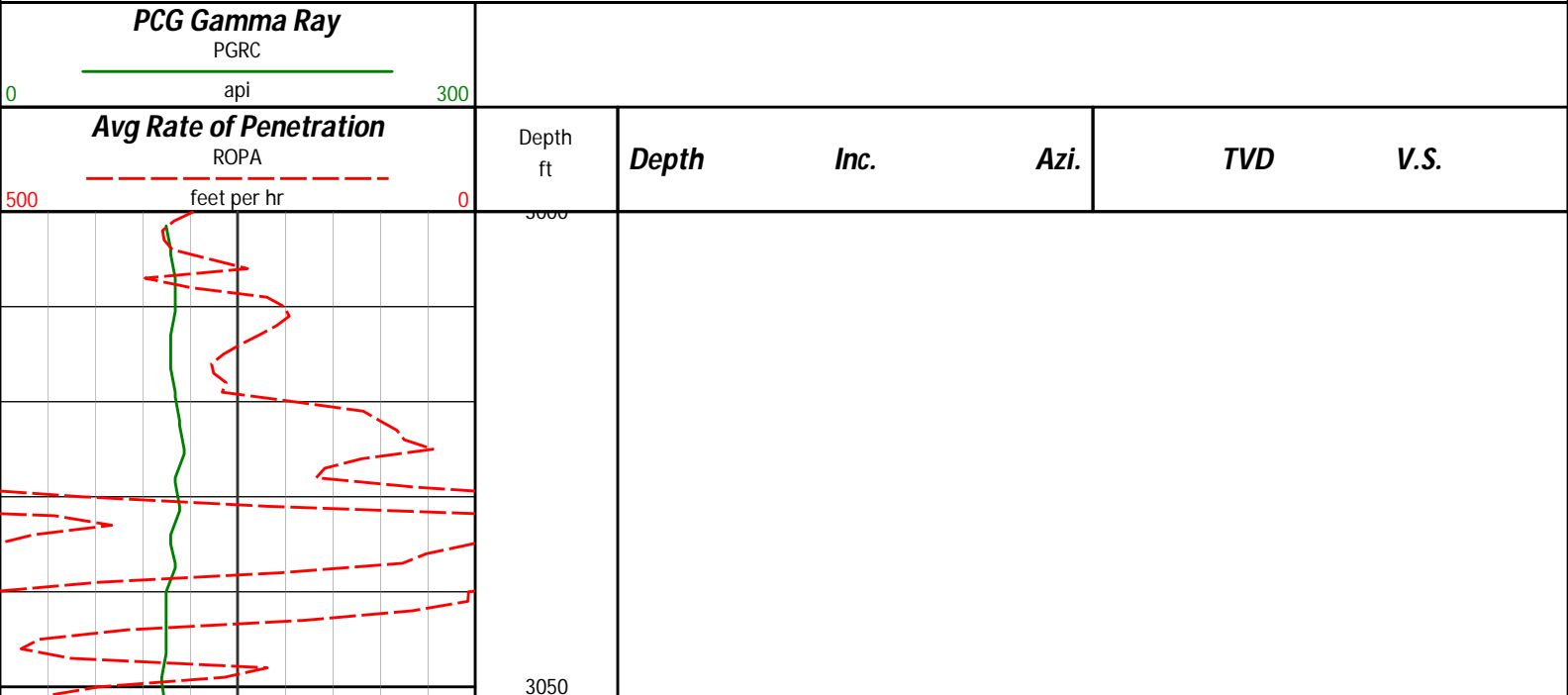
<div>Avg Rate of Penetration</div> <div>ROPA</div> <div>feet per hr</div>		Depth ft	Depth	Inc.	Azi.	TVD	V.S.
500	0						
<div>PCG Gamma Ray</div> <div>PGRC</div> <div>api</div>							
0	300						

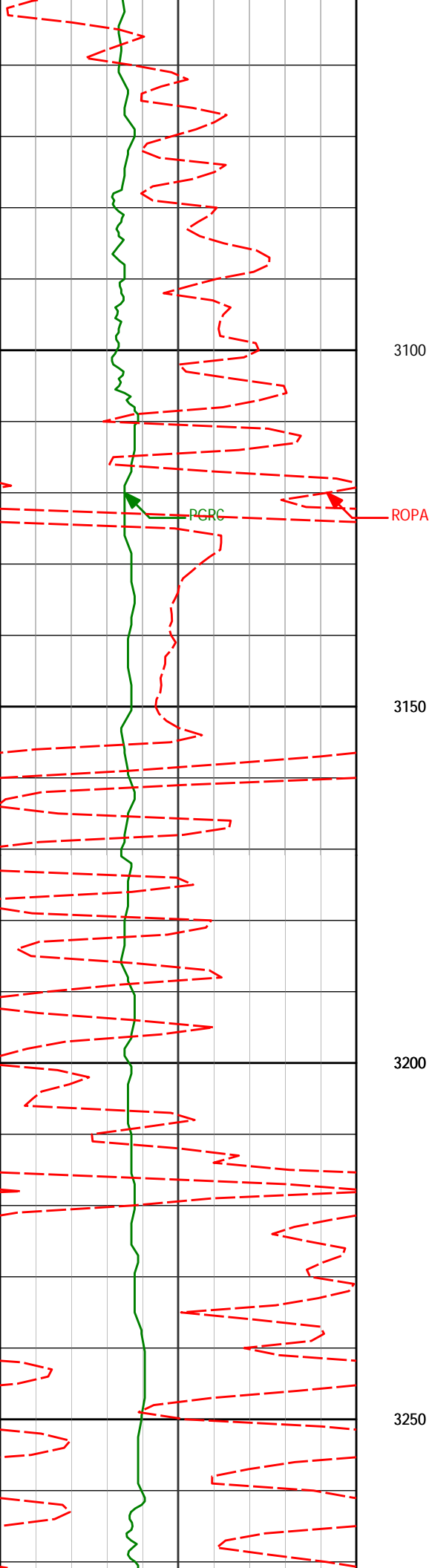
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Sperry Drilling Services

TVD Detail Log 1:240

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





3079'

13.07°

91.46°

3070.68'

73.31'

3173'

13.84°

80.67°

3162.11'

95.08'

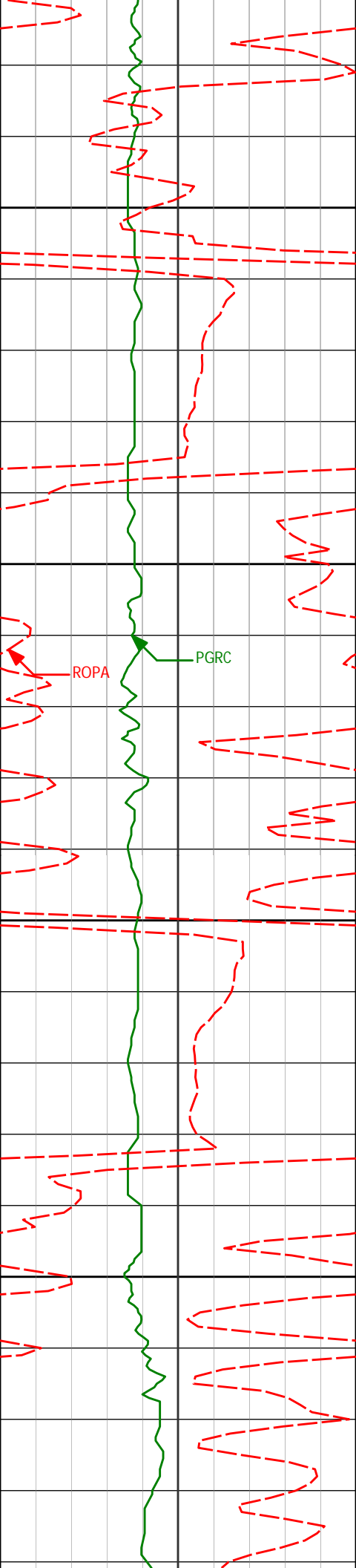
3268'

13.68°

80.17°

3254.39'

117.46'



3300

3350

3400

3450

3363'

11.44°

71.08°

3347.12'

137.59'

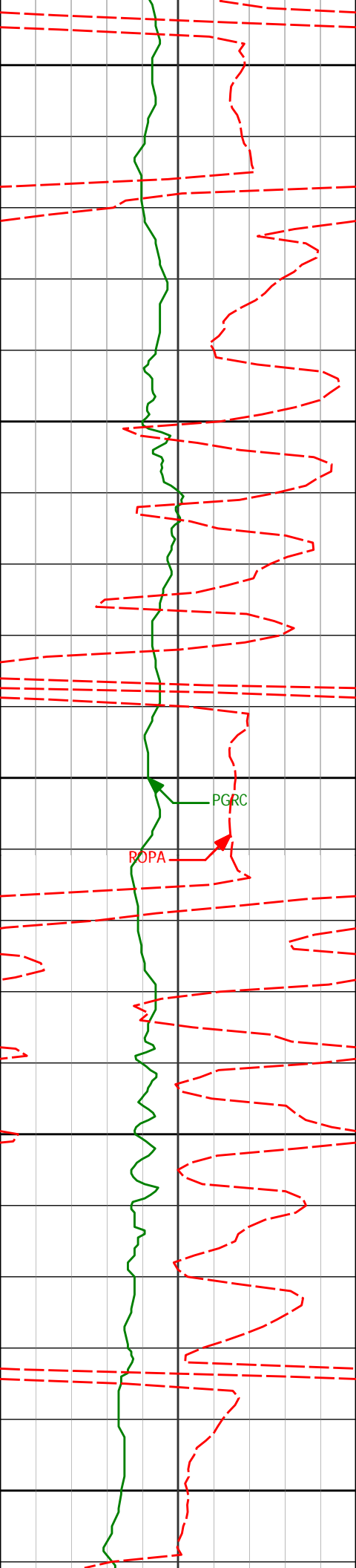
3458'

8.33°

66.42°

3440.70'

152.99'



3500

3553'

6.32°

61.43°

3534.92'

164.05'

3550

3600

3648'

4.08°

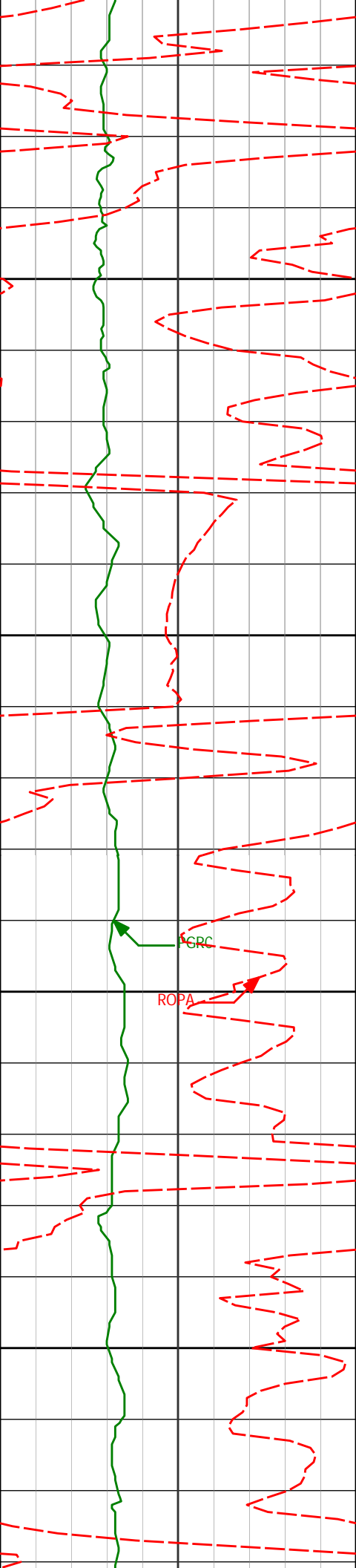
65.75°

3629.52'

171.84'

3650

3700



3743'

2.96°

43.68°

3724.34'

176.71'

3750

3800

3838'

0.33°

39.15°

3819.30'

178.64'

3850

3900

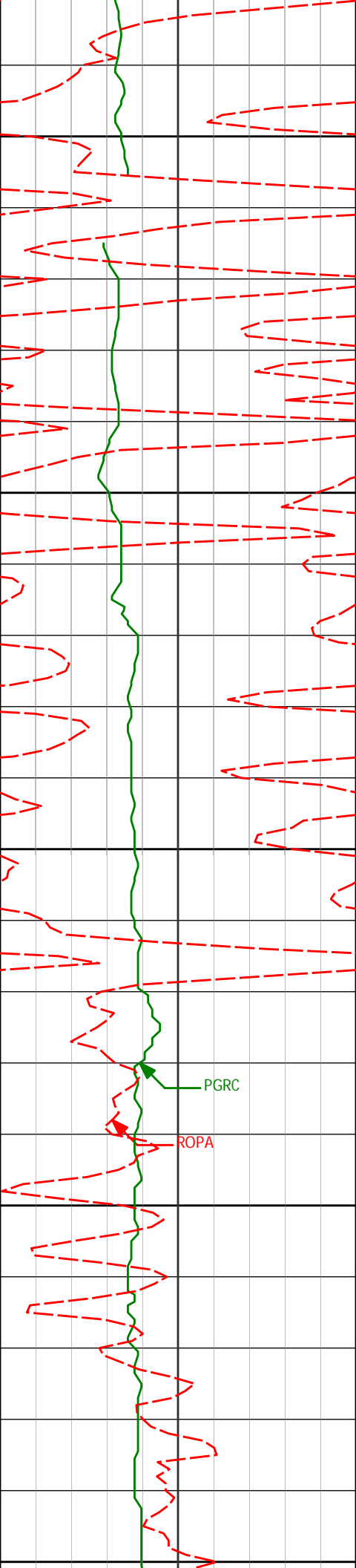
3933'

0.76°

325.69°

3914.29'

178.48'



3950

4000

4050

4100

4150

4028'

1.11°

302.82°

4009.28'

177.38'

PGRC

ROPA

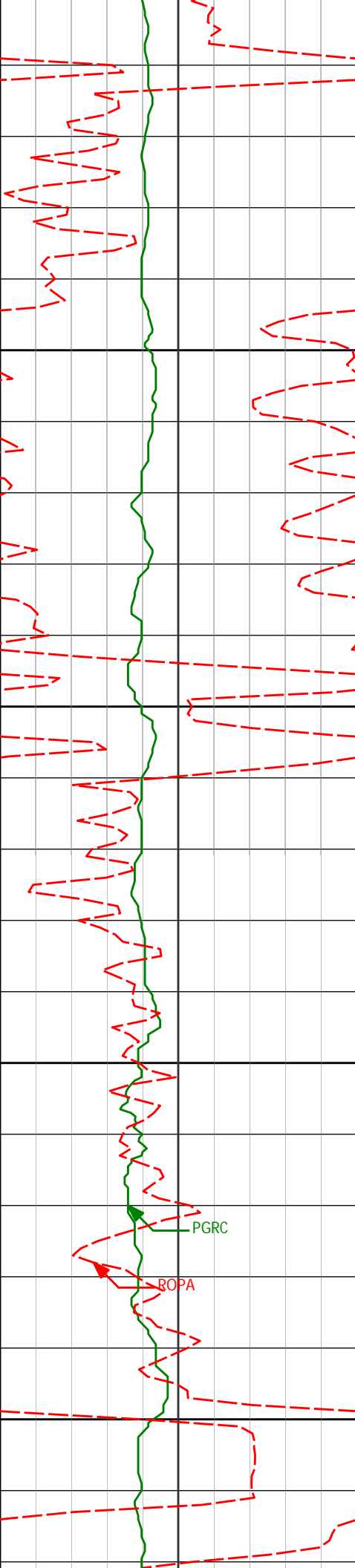
4123'

0.90°

300.91°

4104.27'

176.00'



4200

4218'

1.11°

301.58°

4199.25'

174.60'

4250

4300

4313'

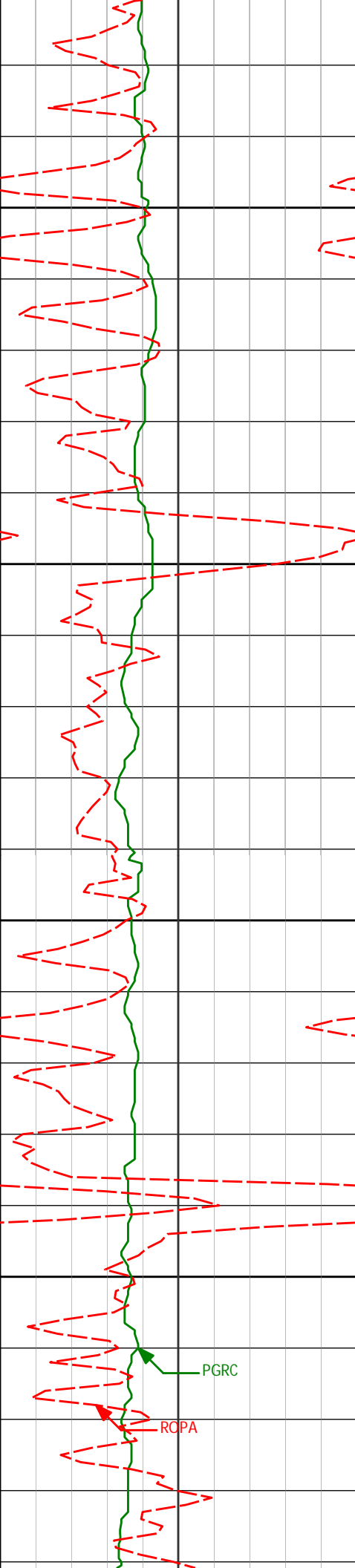
0.68°

290.98°

4294.24'

173.31'

4350



4408'

0.65°

247.66°

4389.23'

172.29'

4400

4450

4503'

0.52°

259.46°

4484.23'

171.36'

4500

4550

PGRC

RCPA

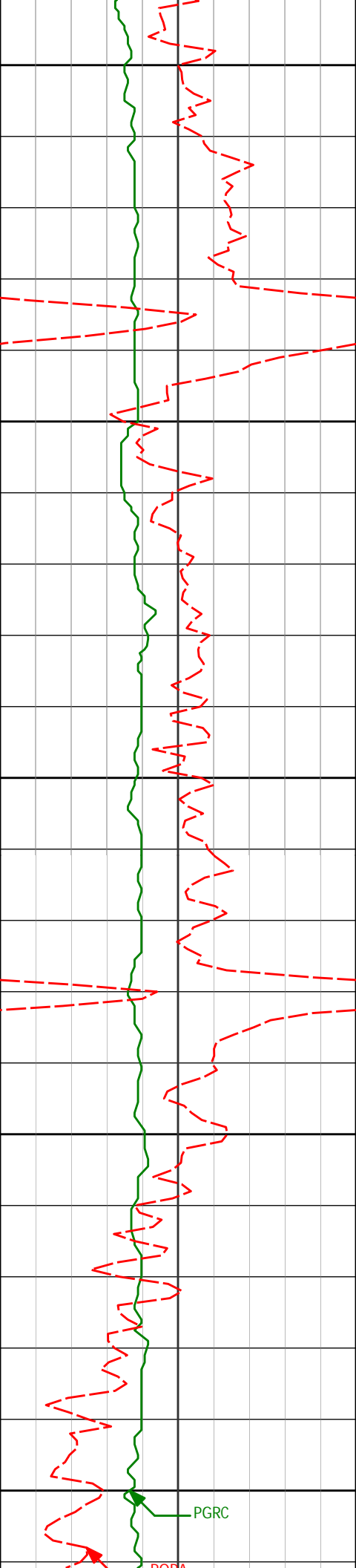
4598'

0.50°

210.83°

4579.23'

170.71'



4600

4650

4700

4750

4800

4693'

0.44°

280.02°

4674.22'

170.13'

4788'

0.96°

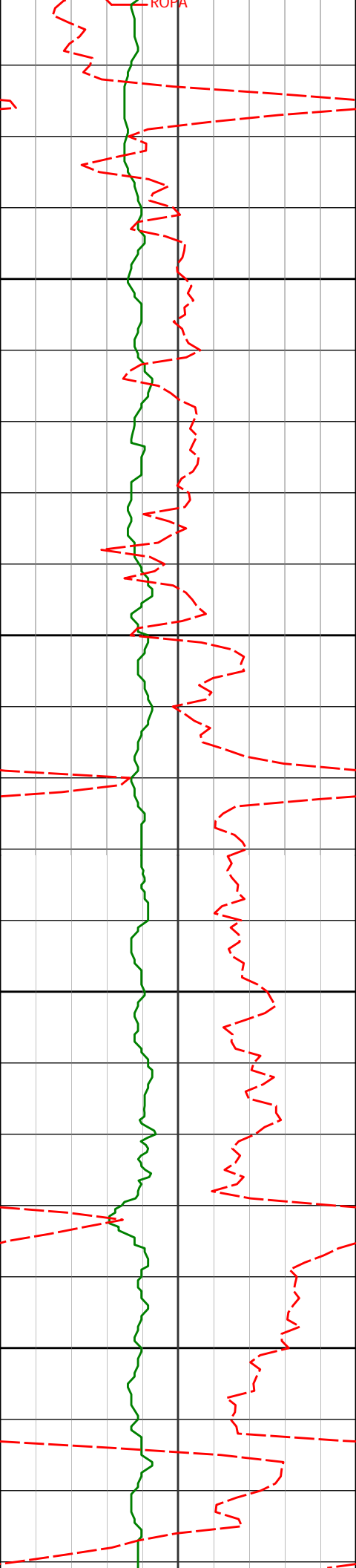
356.49°

4769.22'

169.75'

PGRC

PORA



4850

4883'

1.33°

353.14°

4864.20'

169.62'

4900

4950

4978'

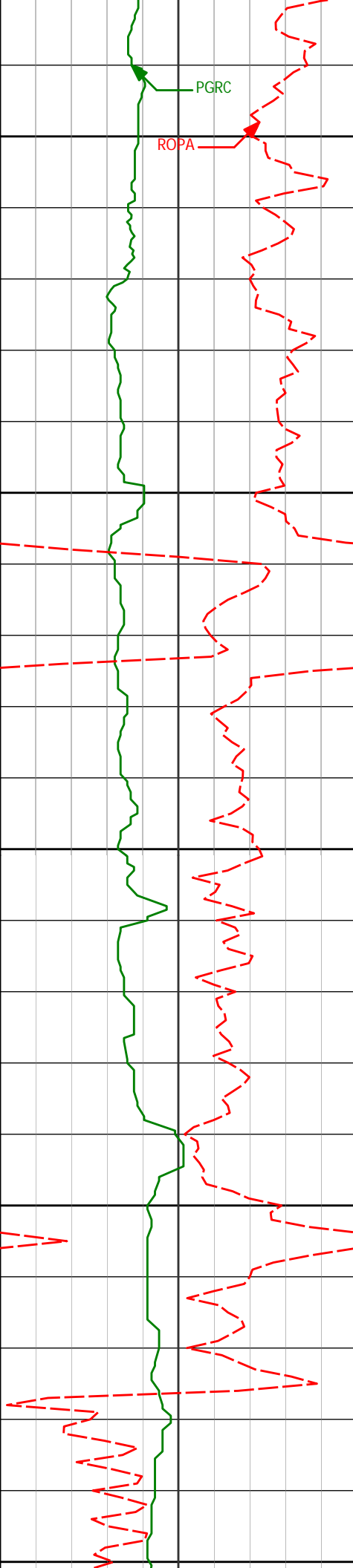
1.03°

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

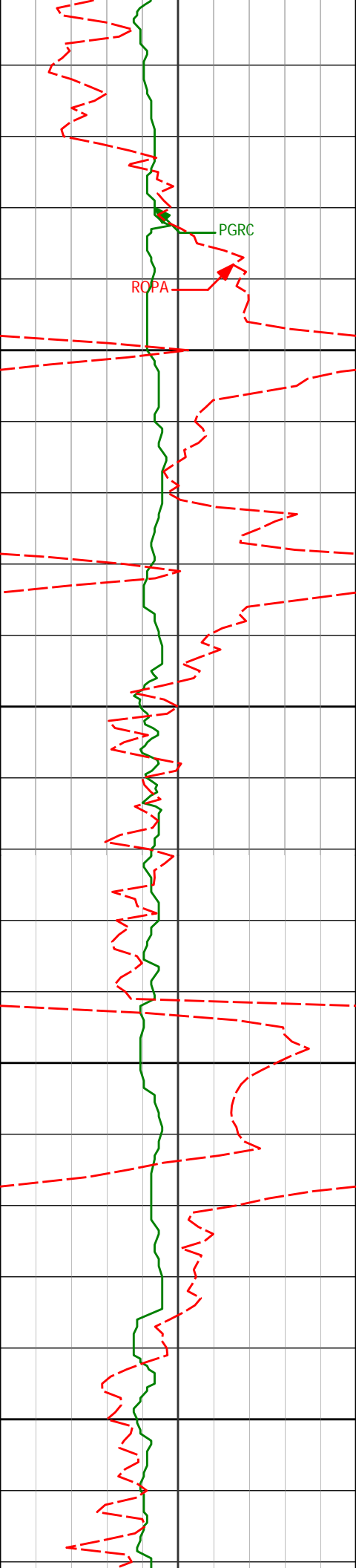
5263'

0.25°

51.23°

5244.15'

170.73'



5300

5350

5400

5450

5358'

0.20°

32.13°

5339.15'

170.99'

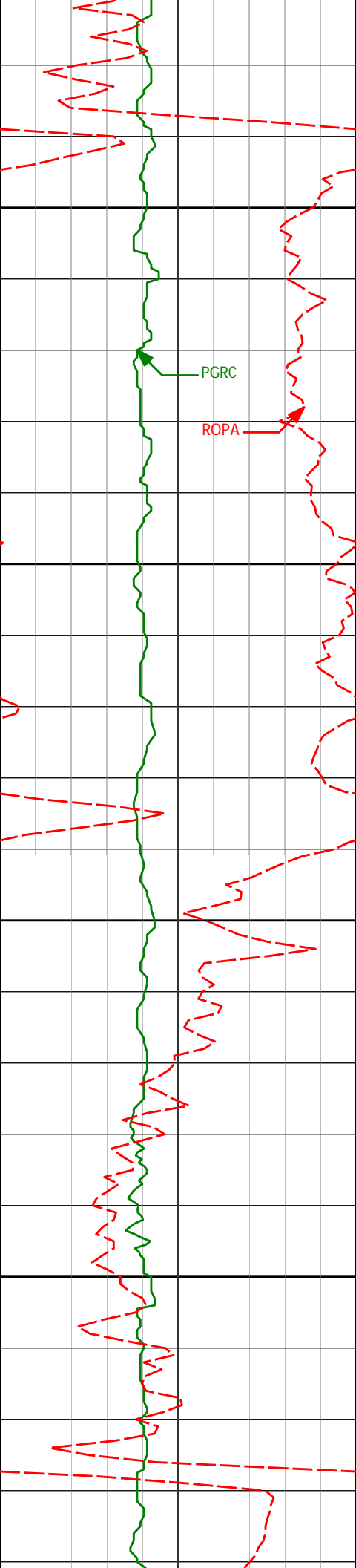
5453'

1.24°

239.84°

5434.14'

170.17'



5500

5550

5600

5650

PGRC

ROPA

5548'

1.72°

268.54°

5529.11'

167.84'

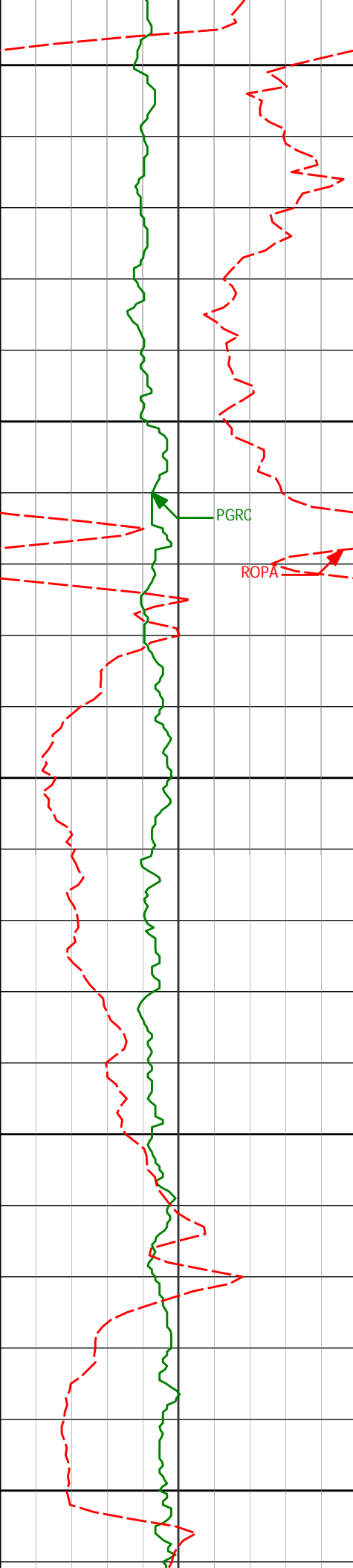
5643'

1.20°

268.59°

5624.08'

165.42'



5700

5738'

1.37°

233.62°

5719.06'

163.49'

5750

PGRC

ROPA

5800

5833'

1.19°

235.82°

5814.03'

161.73'

5850

5900

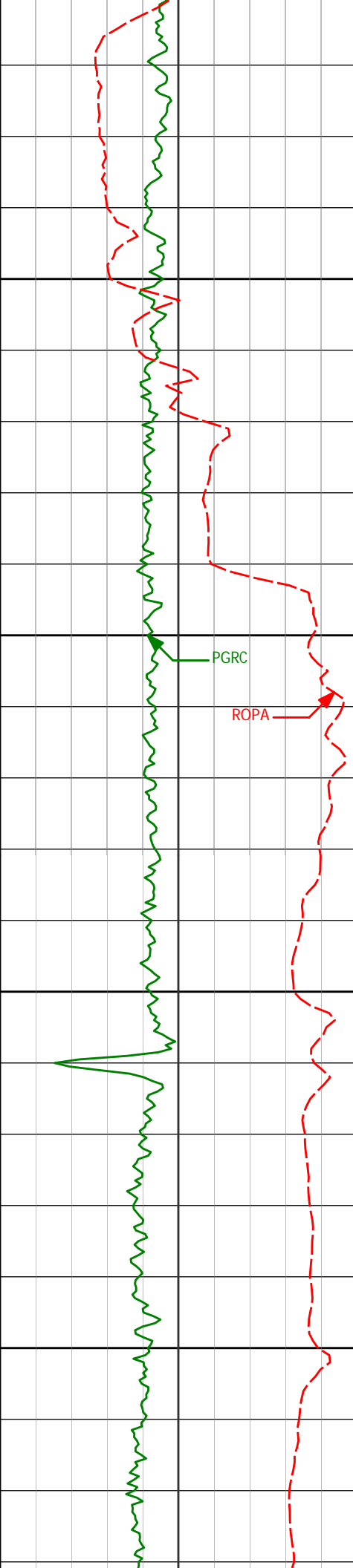
5928'

1.55°

263.21°

5909.01'

159.61'



5950

<Run 200>

6000

PGRC

ROPA

6050

6100

6017'

1.30°

285.35°

5997.98'

157.45'

6065'

2.67°

72.93°

6045.97'

158.01'

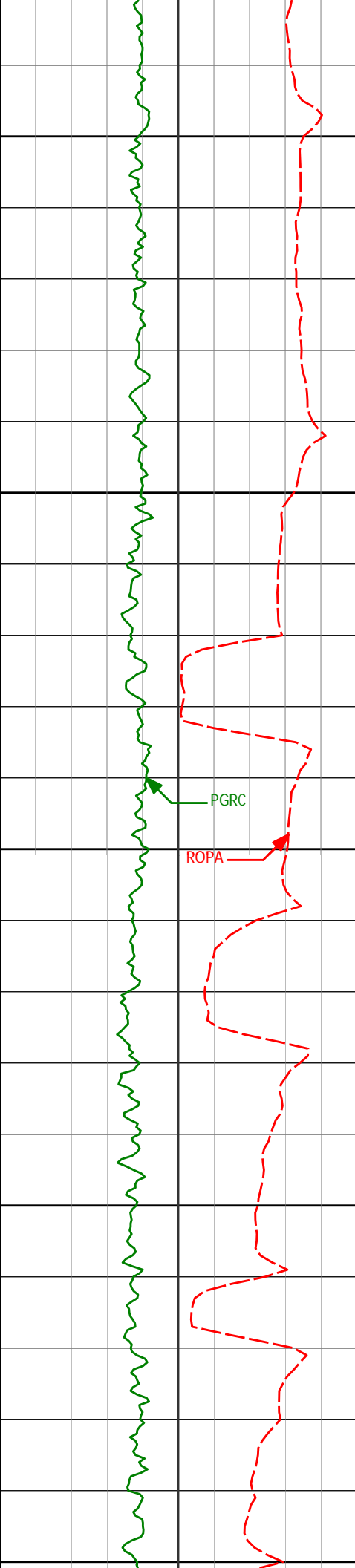
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8.35°

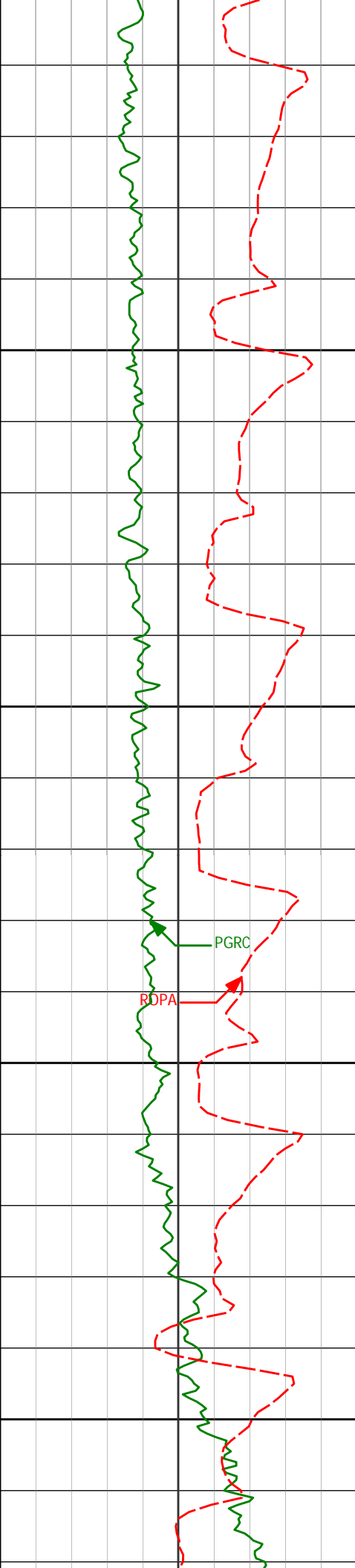
78.77°

6092.73'

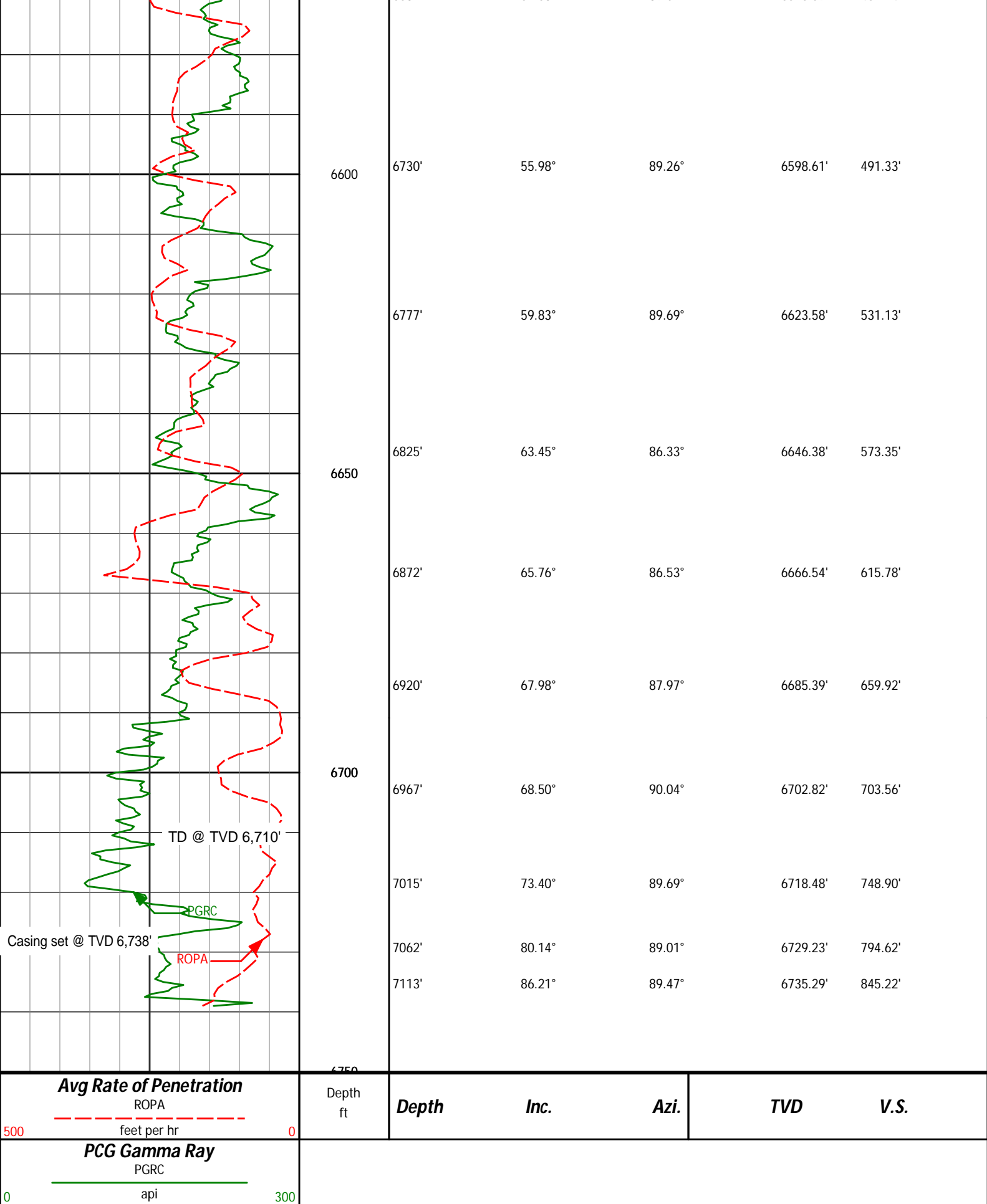
162.43'



6160'	14.47°	78.94°	6139.76'	171.80'
6150				
6207'	20.12°	79.51°	6184.62'	185.59'
6200				
6255'	23.78°	78.13°	6229.13'	203.29'
6250				
6302'	25.74°	79.92°	6271.81'	222.72'
6300				
6350'	27.76°	86.25°	6314.68'	244.21'
6350				



	6397'	31.19°	88.51°	6355.59'	267.33'
6400	6445'	35.12°	88.54°	6395.77'	293.57'
	6492'	37.99°	88.65°	6433.52'	321.56'
6450					
	6540'	39.80°	92.86°	6470.88'	351.66'
6500	6587'	43.82°	93.41°	6505.91'	382.87'
	6635'	47.52°	89.90°	6539.45'	417.13'
6550					
	6682'	51.08°	89.02°	6570.09'	452.74'



6207.00	20.12	79.51	6184.62	15.11 N	185.21 E	185.59	12.03
6255.00	23.78	78.13	6229.13	18.61 N	202.81 E	203.29	7.70
6302.00	25.74	79.92	6271.81	22.34 N	222.13 E	222.72	4.46
6350.00	27.76	86.25	6314.68	24.90 N	243.56 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

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 87.51 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 7015.00 FEET
IS 748.96 FEET ALONG 87.51 DEGREES (GRID)**