



| WELL INFORMATION | | | | | |
|----------------------------------|-----------------|-----------------|--|--|--|
| MWD Run Number | 100 | 200 | | | |
| Date run completed | 20-May-12 | 21-May-12 | | | |
| 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) | 575.00 | 1,984.42 | | | |
| Log End Depth (TVD, ft) | 1,984.42 | 6,472.84 | | | |
| Drill or Wipe | Drill | Drill | | | |
| Drill/Wipe Start Date and Time | 19-May-12 16:00 | 20-May-12 04:30 | | | |
| Drill/Wipe End Date and Time | 19-May-12 22:00 | 21-May-12 14:45 | | | |
| Min Inc (deg) @ Depth (TVD, ft) | .11 @ 724.00 | 1.63 @ 5,565.33 | | | |
| Max Inc (deg) @ Depth (TVD, ft) | 8.11 @ 1,930.00 | 83.75 @ 69.23 | | | |
| Bit TFA(in2) / Bit Type | .75 / PDC | .75 / PDC | | | |
| Flow Rate (gpm) | 600.00 | 560.00 | | | |
| Max AV (fpm) / CV (fpm) @ MWD | 541.0 / NA | 439.0 / NA | | | |
| Fluid Type | Fresh Water Gel | Fresh Water Gel | | | |
| Density (ppg) / Viscosity (spqt) | 8.70 / 27.00 | 10.10 / 42.00 | | | |
| Filtrate CL (ppm) | 2,300.00 | 3,400.00 | | | |
| pH / Fluid Loss (mptm) | 8.10 / 0 | 9.30 / 11 | | | |
| PV (cP) / YP (lbf2) | 4 / 5.00 | 11 / 11.00 | | | |
| % Solids / % Sand | 2.20 / 0.10 | 9.10 / 2.50 | | | |
| % Oil / Oil:Water Ratio | 0 / 0:96 | 0 / 0:88 | | | |
| Rm @ Measured Temp (degF) | NA @ NA | NA @ NA | | | |
| Rmf @ Measured Temp (degF) | NA @ NA | NA @ NA | | | |
| Rmc @ Measured Temp (degF) | NA @ NA | NA @ NA | | | |
| Max Tool Temp (deg F) / S | 168.05 / PDM | 170.70 / PDM | | | |

| | | | | | |
|-------------------------------|----------------|----------------|--|--|--|
| Max Tool Temp (degF) / Source | 106.97 / PCM | 172.78 / 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 | 11341347 | 11341347 | | | |
| Insert Serial Number | 11400855 | 11226936 | | | |
| Date and Time Initialized | 16-May-12 15:50 | 19-May-12 23:55 | | | |
| Date and Time Read | 20-May-12 02:15 | 21-May-12 23:43 | | | |
| ECMB SW Version | N/A | N/A | | | |

Directional Sensor Information

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

Gamma Ray Sensor Information

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

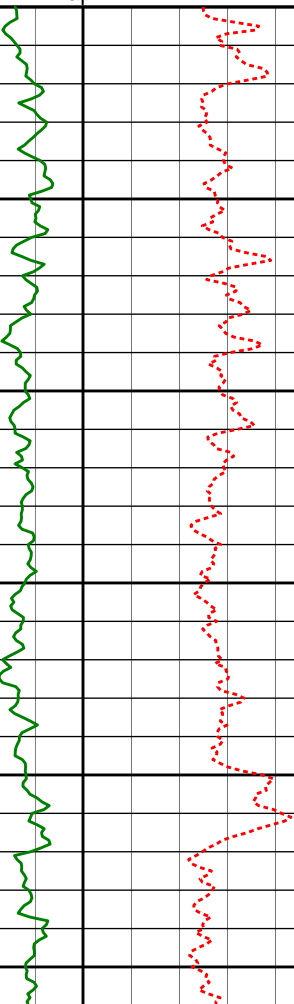
REMARKS

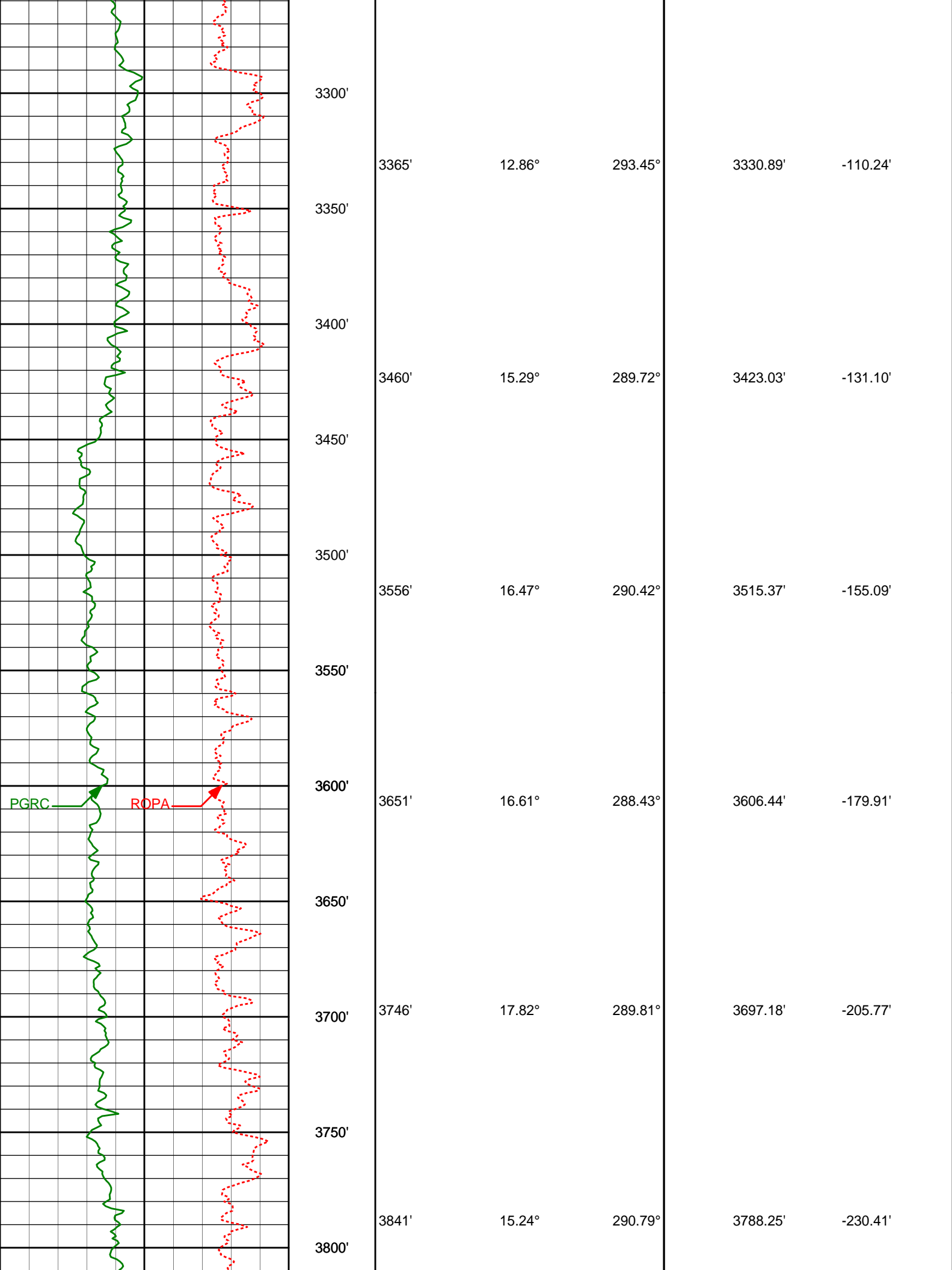
1. All depths are true vertical bit depths, referenced to the Driller's pipe tally and are measured from the Drill Floor, unless otherwise specified.
2. No depth corrections have been made for pipe stretch or compression.
3. Critical annual velocities are calculated using the "Power Law" model for water 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. INSITE version 7.3.40

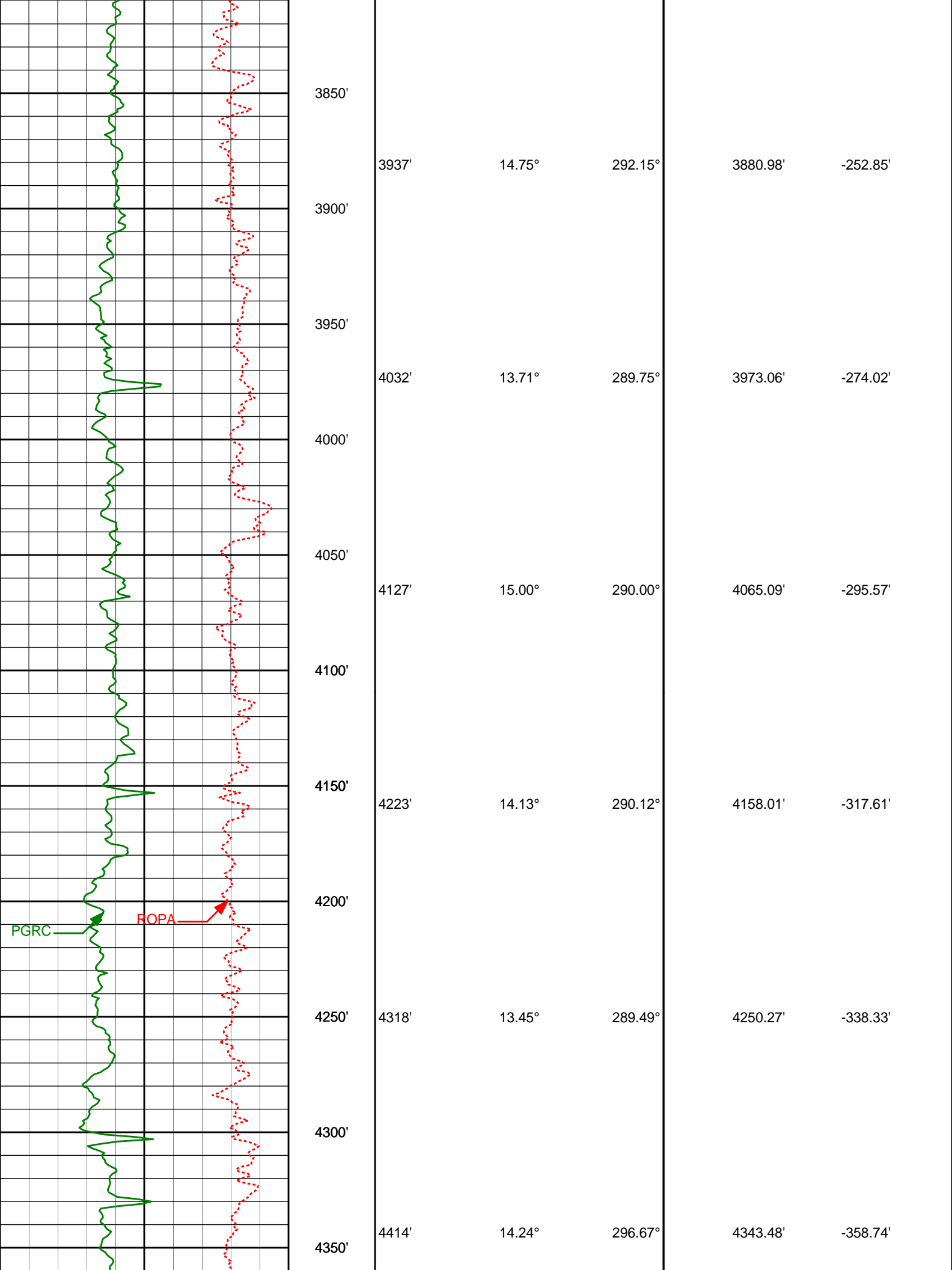
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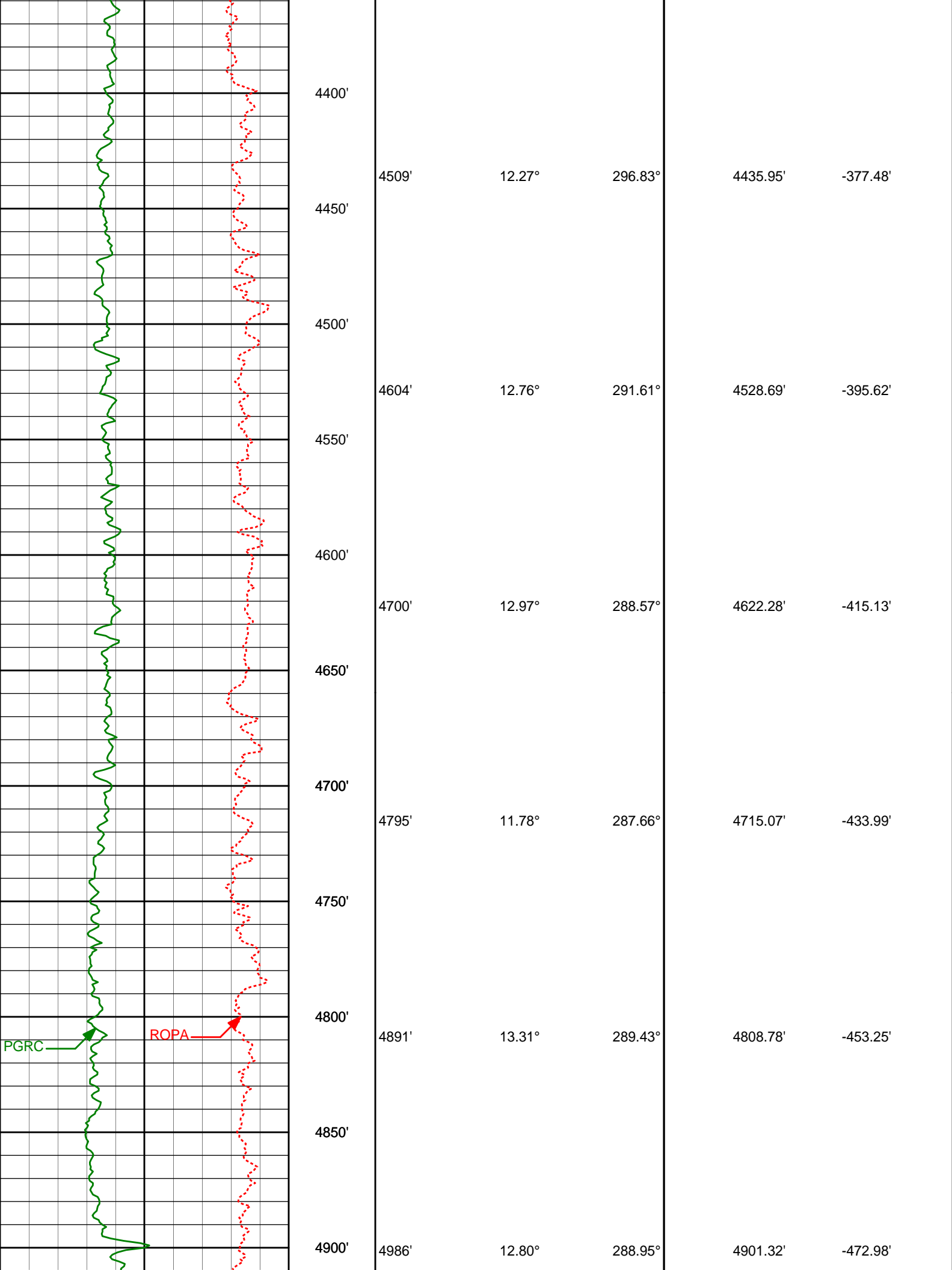
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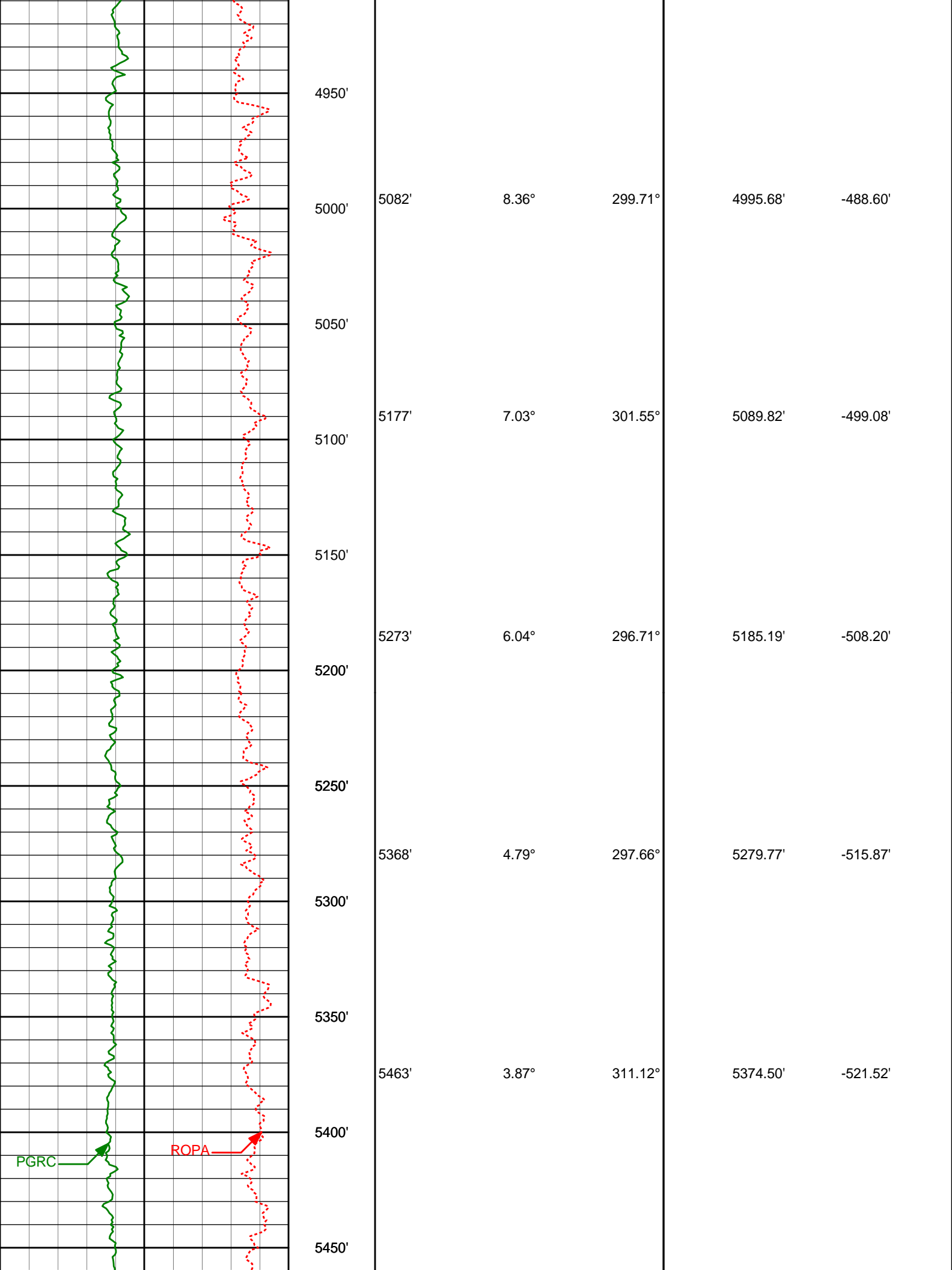
TVD Main Log 1:600

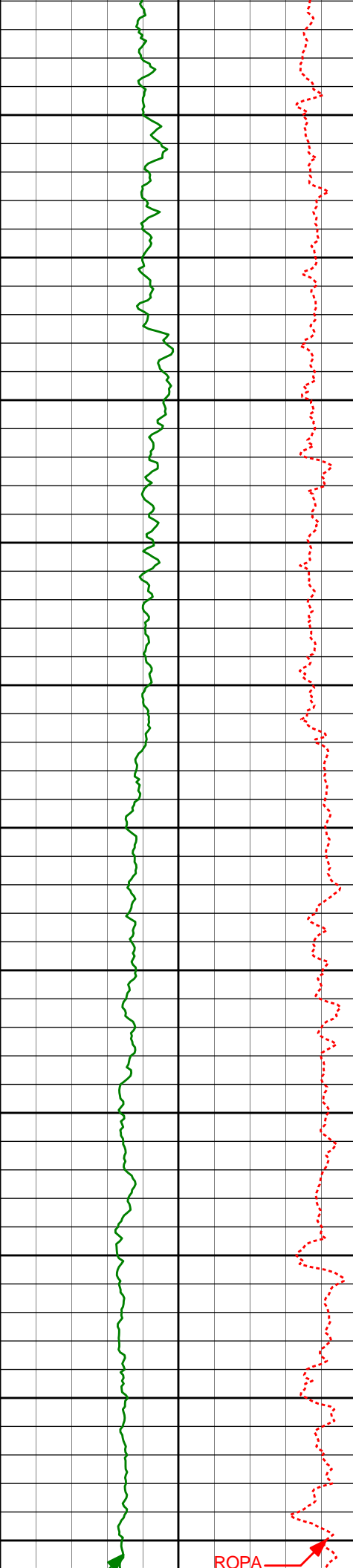
| | | | | | | |
|---|--|--------------------------------------|-------|--------|---------|-----------------|
| Average Rate of Penetration ROPA | | | | | | |
| 1K0 | | | | | | |
| feet per hr | | | | | | |
| Gamma Ray PGRC | | True Vertical Depth (ft) 1:600 | Depth | Inc | Azi. | TVDV.S. |
| 0200api | | | | | | |
|  | | 3000' | | | | |
| | | 3050' | 3079' | 14.27° | 290.87° | 3052.37'-51.37' |
| | | 3100' | | | | |
| | | 3150' | 3174' | 13.18° | 290.23° | 3144.66'-71.88' |
| | | 3200' | | | | |
| | | | 3269' | 12.64° | 290.70° | 3237.26'-91.21' |
| | | 3250' | | | | |



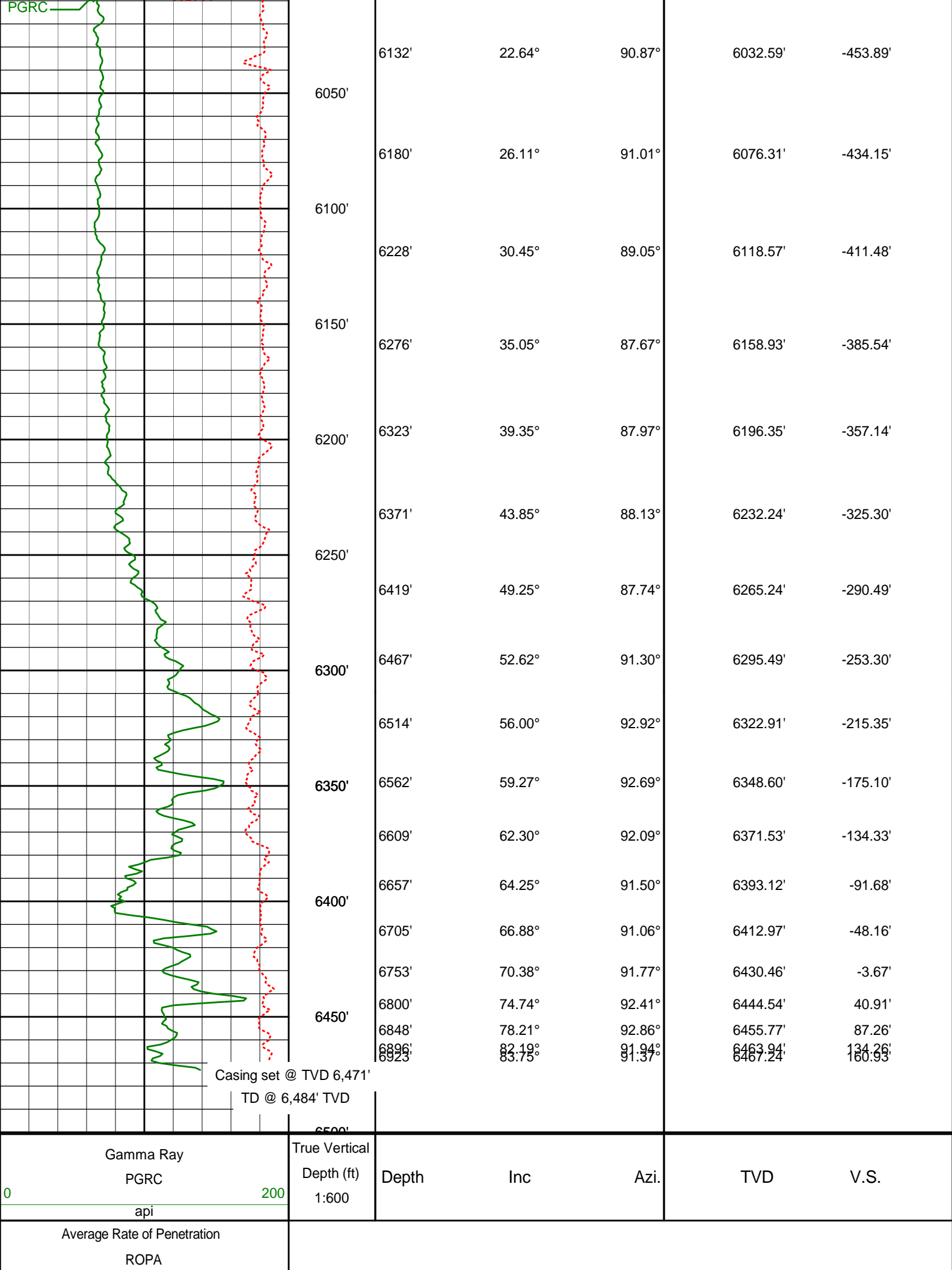


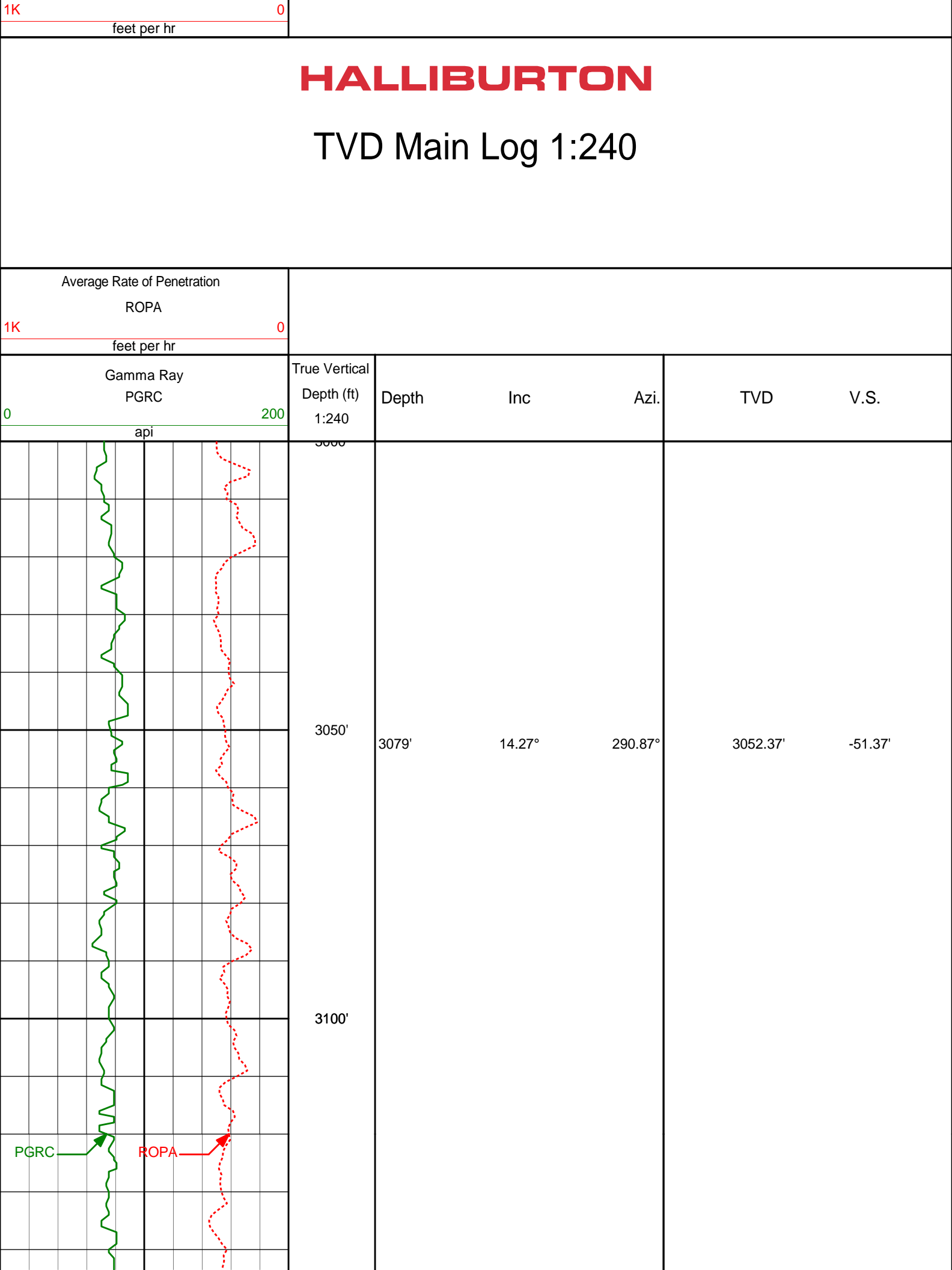


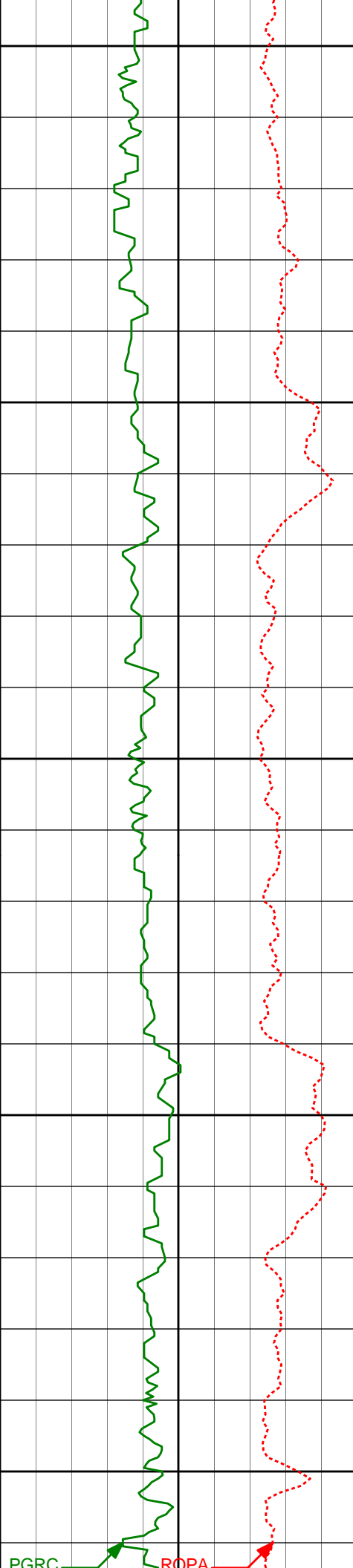




| | | | | |
|-------|--------|---------|----------|----------|
| 5559' | 1.82° | 322.17° | 5470.38' | -524.66' |
| 5500' | | | | |
| 5550' | | | | |
| 5654' | 1.63° | 335.81° | 5565.33' | -525.97' |
| 5600' | | | | |
| 5650' | | | | |
| 5749' | 1.73° | 285.58° | 5660.30' | -527.78' |
| 5700' | | | | |
| 5750' | | | | |
| 5846' | 3.34° | 93.57° | 5757.26' | -526.36' |
| 5800' | | | | |
| 5894' | 8.54° | 89.32° | 5804.98' | -521.41' |
| 5850' | | | | |
| 5942' | 12.38° | 84.35° | 5852.18' | -512.71' |
| 5900' | | | | |
| 5990' | 16.49° | 81.05° | 5898.65' | -500.78' |
| 6036' | 18.15° | 84.08° | 5942.56' | -487.11' |
| 5950' | | | | |
| 6084' | 20.17° | 88.79° | 5987.90' | -471.36' |
| 6000' | | | | |



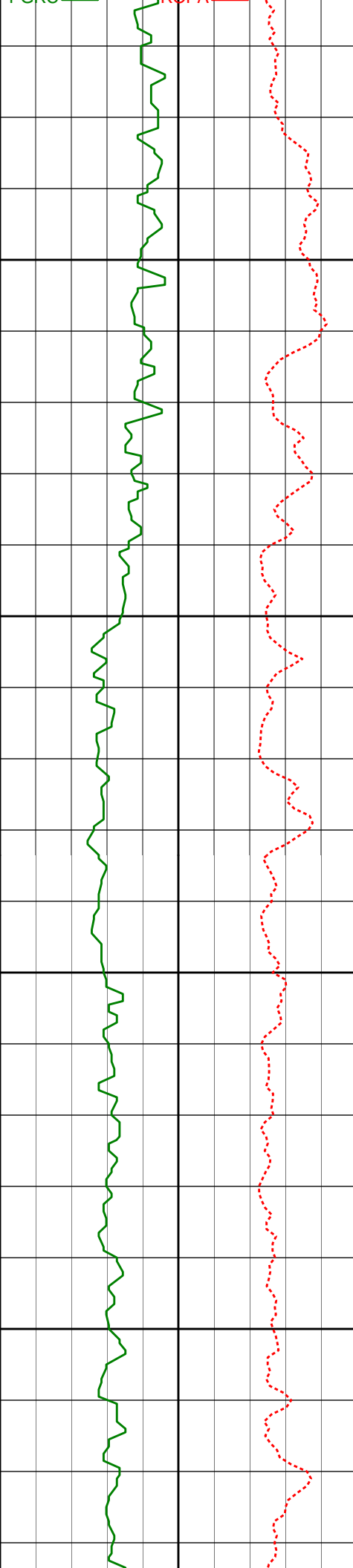




| | | | | | |
|-------|-------|--------|---------|----------|---------|
| | 3174' | 13.18° | 290.23° | 3144.66' | -71.88' |
| 3150' | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 3200' | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 3250' | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 3300' | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 3350' | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

PGRC

ROPA



3400'

3450'

3500'

3550'

3460'

15.29°

289.72°

3423.03'

-131.10'

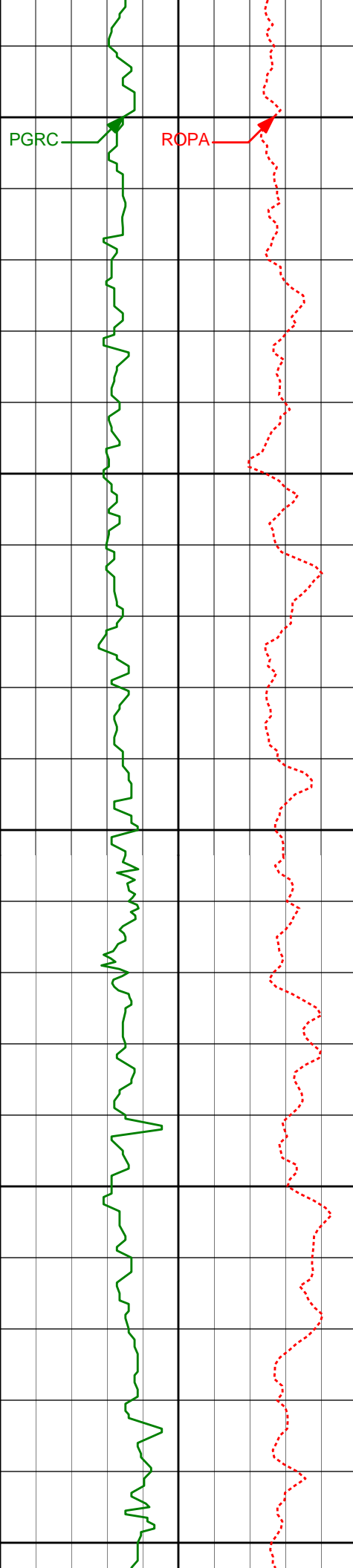
3556'

16.47°

290.42°

3515.37'

-155.09'



3600'

3651'

16.61°

288.43°

3606.44'

-179.91'

3650'

3700'

3746'

17.82°

289.81°

3697.18'

-205.77'

3750'

3841'

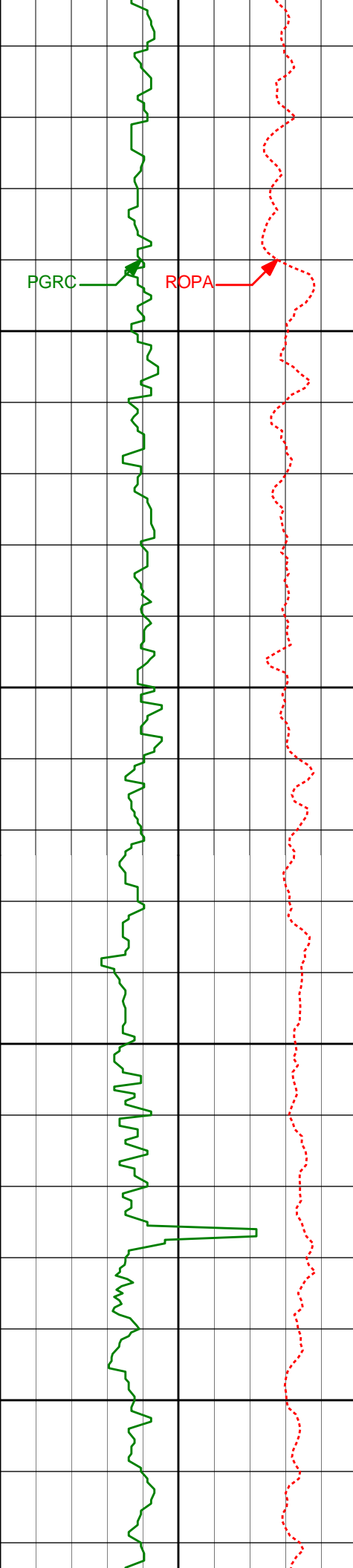
15.24°

290.79°

3788.25'

-230.41'

3800'



3850'

3937'

14.75°

292.15°

3880.98'

-252.85'

3900'

3950'

4032'

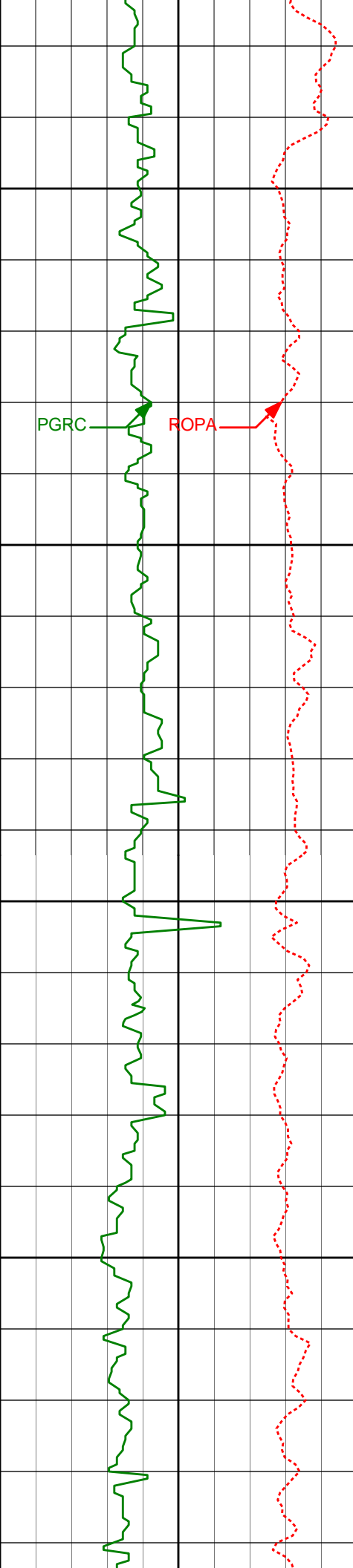
13.71°

289.75°

3973.06'

-274.02'

4000'



4050'

4127'

15.00°

290.00°

4065.09'

-295.57'

4100'

4150'

4223'

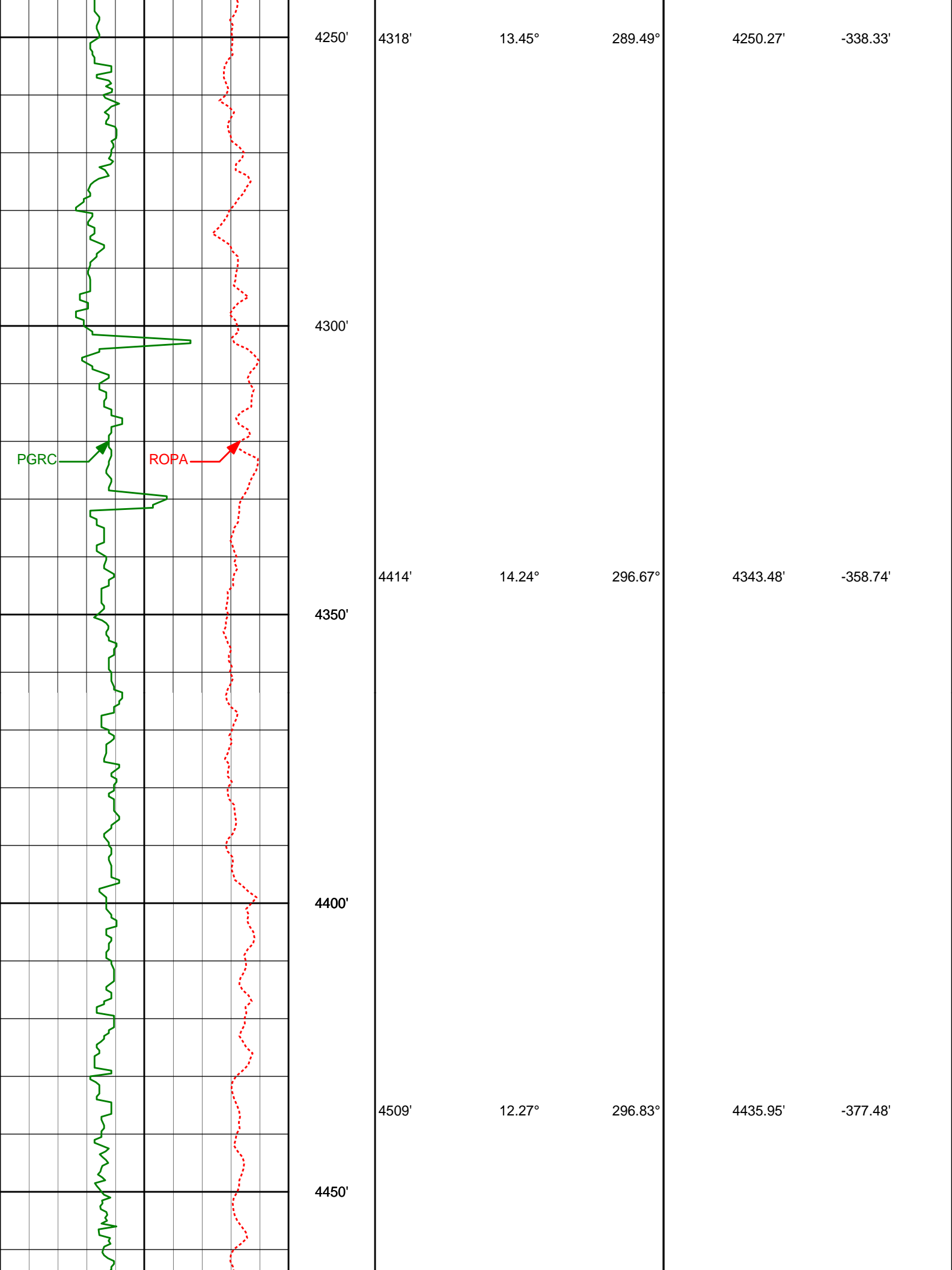
14.13°

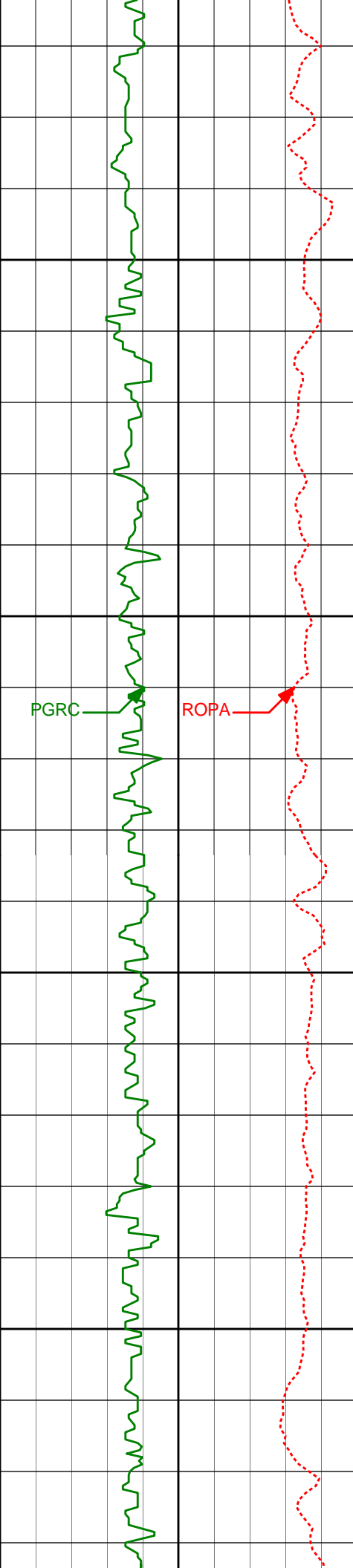
290.12°

4158.01'

-317.61'

4200'





4500'

4550'

4600'

4650'

4604'

12.76°

291.61°

4528.69'

-395.62'

4700'

12.97°

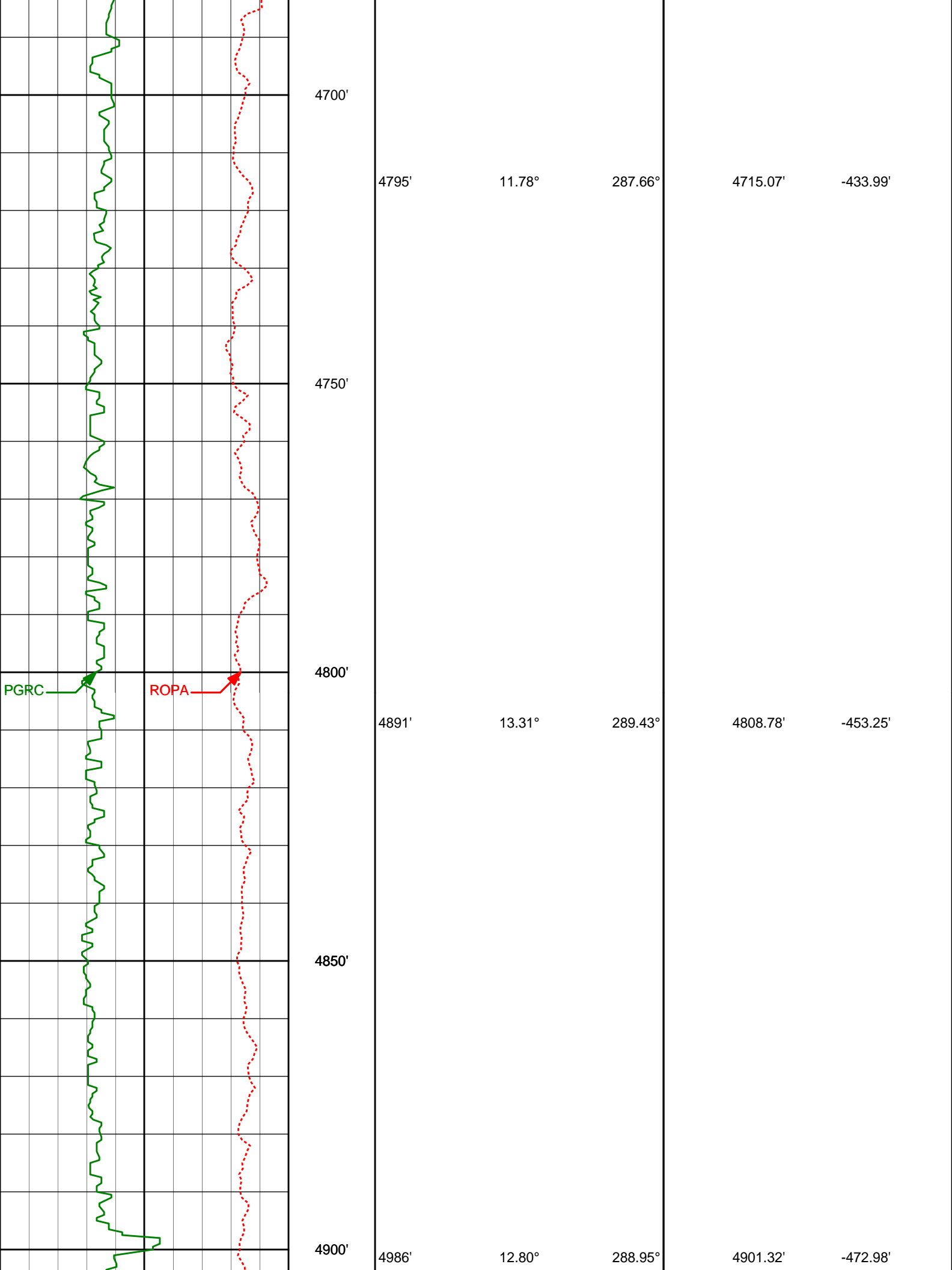
288.57°

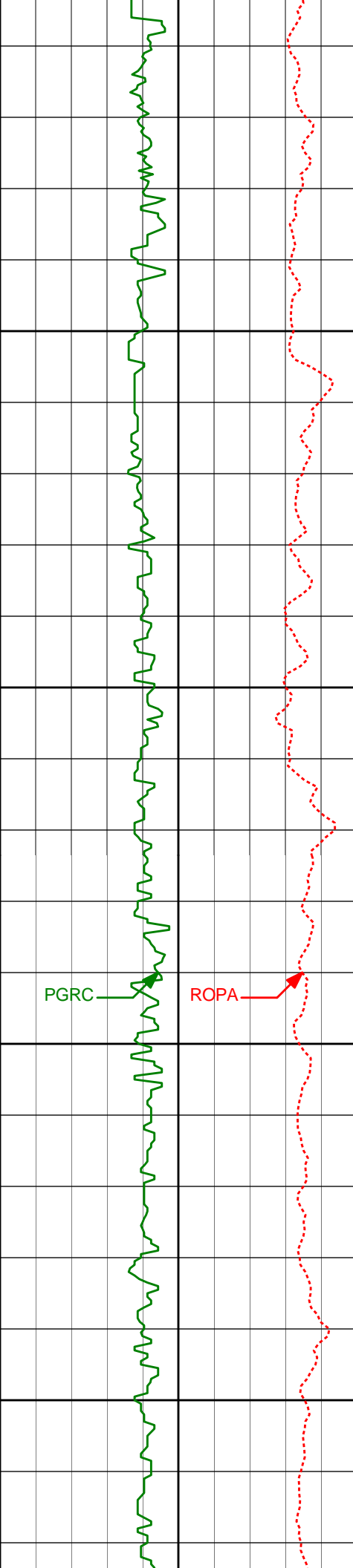
4622.28'

-415.13'

PGRC

ROPA





4950'

5000'

5050'

5100'

PGRC

ROPA

5082'

8.36°

299.71°

4995.68'

-488.60'

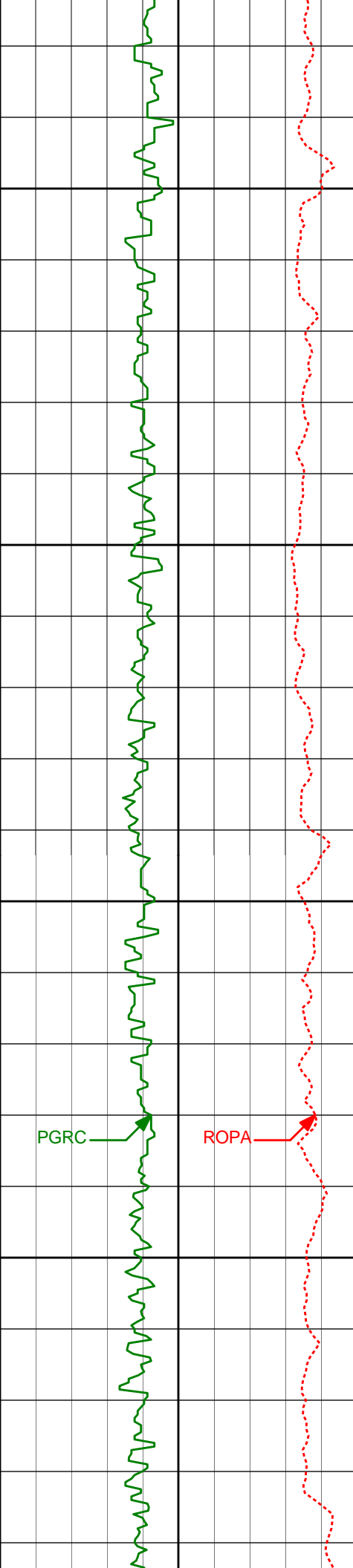
5177'

7.03°

301.55°

5089.82'

-499.08'



5150'

5273'

6.04°

296.71°

5185.19'

-508.20'

5200'

5250'

5368'

4.79°

297.66°

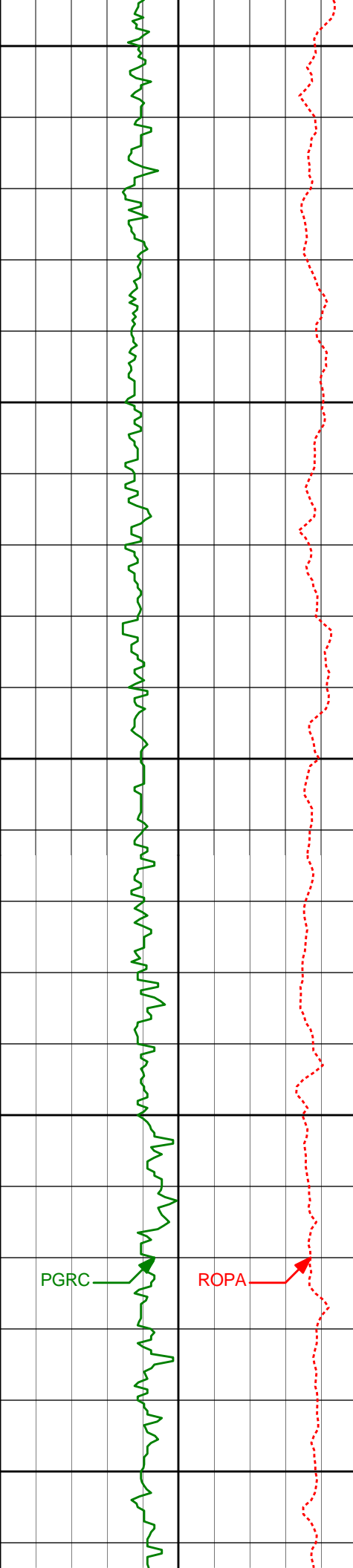
5279.77'

-515.87'

5300'

PGRC

ROPA



5350'

5463'

3.87°

311.12°

5374.50'

-521.52'

5400'

5450'

5559'

1.82°

322.17°

5470.38'

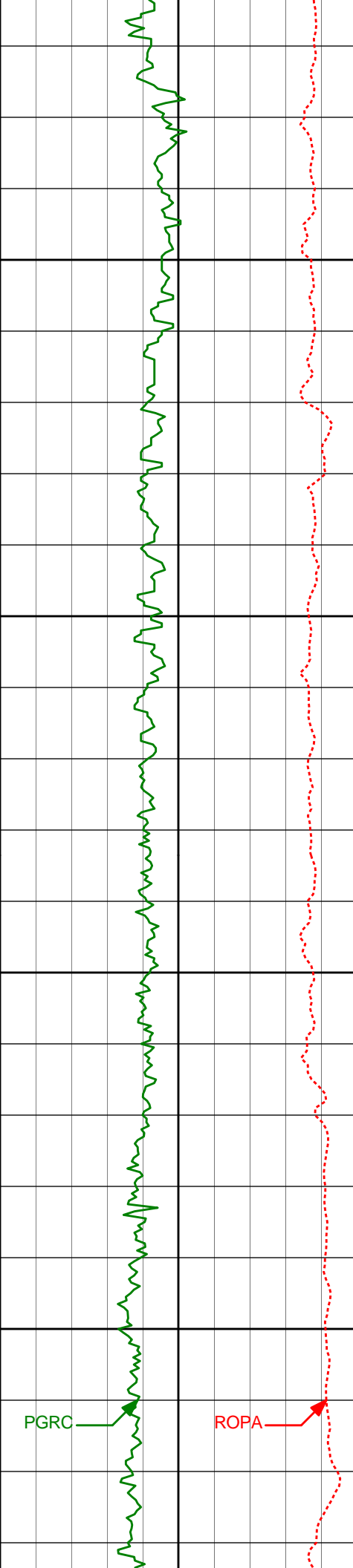
-524.66'

5500'

5550'

PGRC

ROPA



5600'

5650'

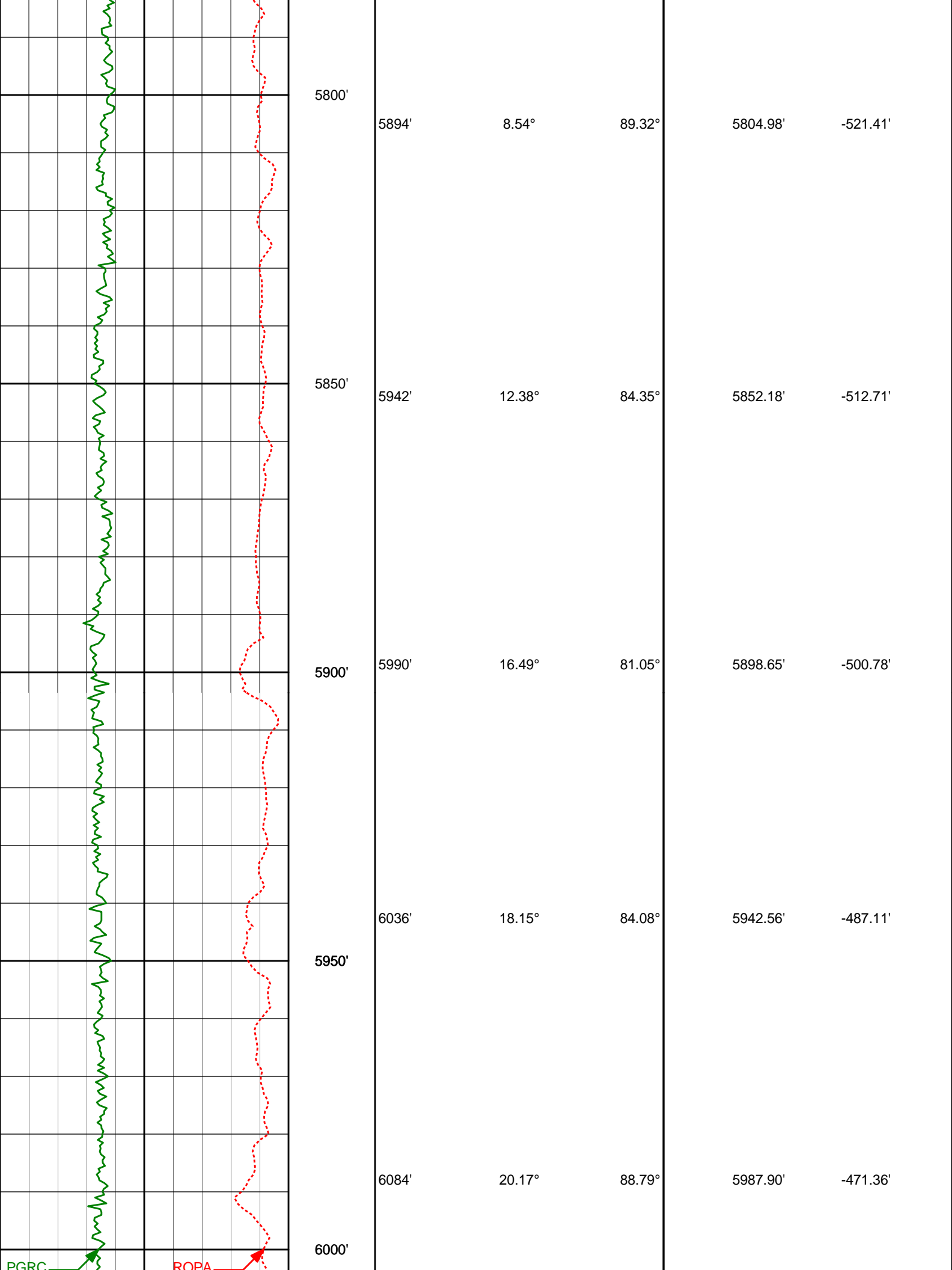
5700'

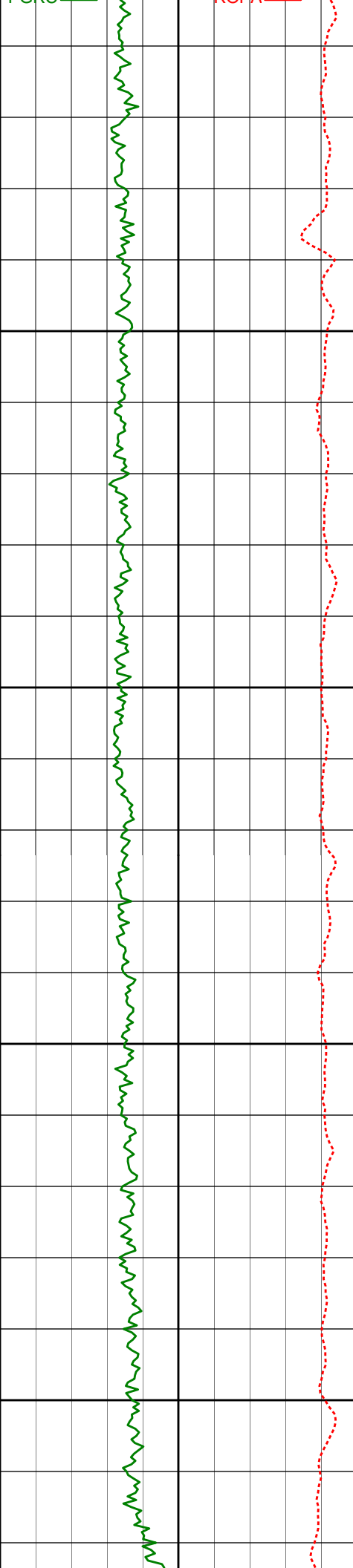
5750'

PGRC

ROPA

| | | | | |
|-------|-------|---------|----------|----------|
| 5654' | 1.63° | 335.81° | 5565.33' | -525.97' |
| 5749' | 1.73° | 285.58° | 5660.30' | -527.78' |
| 5846' | 3.34° | 93.57° | 5757.26' | -526.36' |





6050'

6100'

6150'

6200'

6132'

22.64°

90.87°

6032.59'

-453.89'

6180'

26.11°

91.01°

6076.31'

-434.15'

6228'

30.45°

89.05°

6118.57'

-411.48'

6276'

35.05°

87.67°

6158.93'

-385.54'

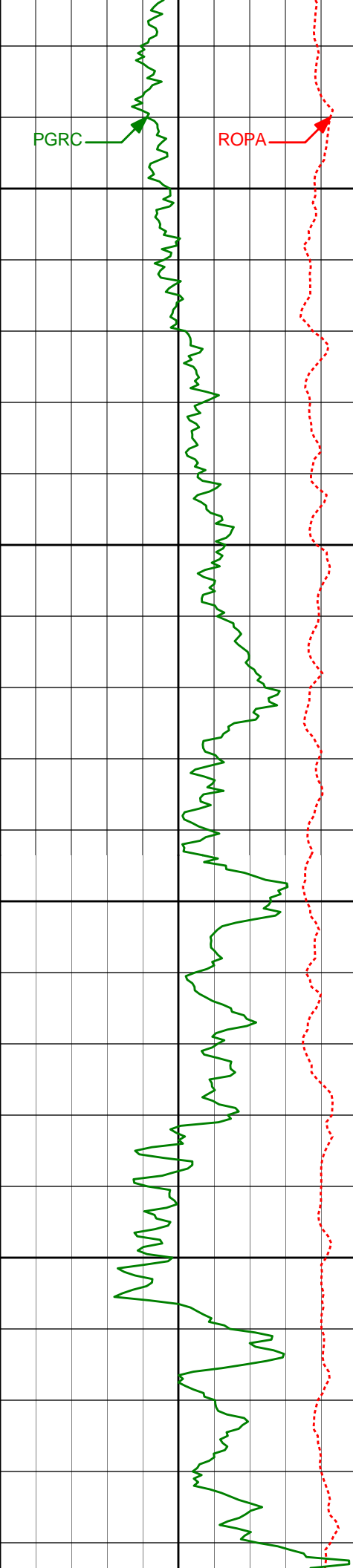
6323'

39.35°

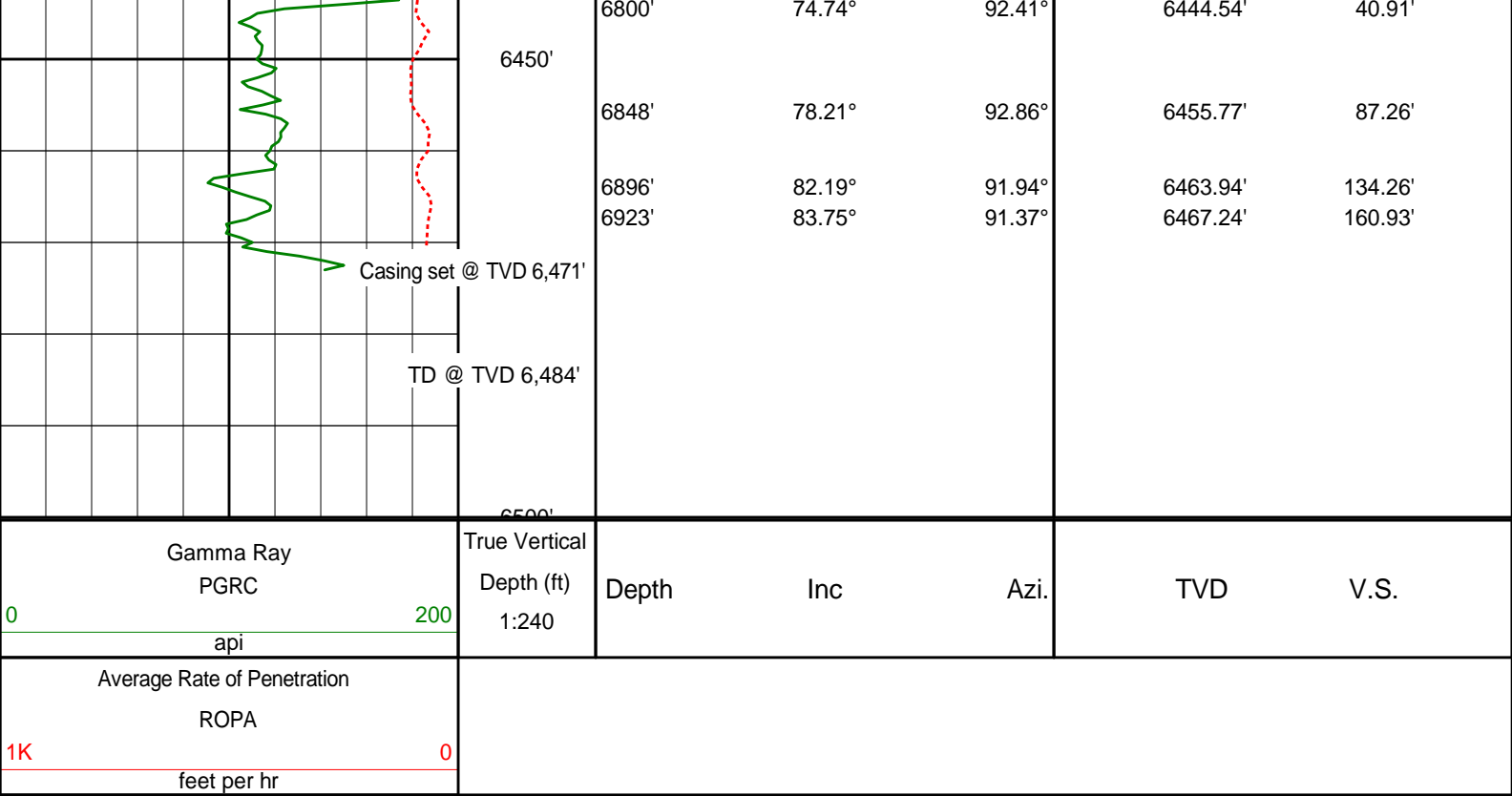
87.97°

6196.35'

-357.14'



| | | | | | |
|-------|-------|--------|--------|----------|----------|
| | 6371' | 43.85° | 88.13° | 6232.24' | -325.30' |
| 6250' | | | | | |
| | 6419' | 49.25° | 87.74° | 6265.24' | -290.49' |
| | | | | | |
| | 6467' | 52.62° | 91.30° | 6295.49' | -253.30' |
| 6300' | | | | | |
| | 6514' | 56.00° | 92.92° | 6322.91' | -215.35' |
| | | | | | |
| | 6562' | 59.27° | 92.69° | 6348.60' | -175.10' |
| 6350' | | | | | |
| | 6609' | 62.30° | 92.09° | 6371.53' | -134.33' |
| | | | | | |
| | 6657' | 64.25° | 91.50° | 6393.12' | -91.68' |
| 6400' | | | | | |
| | 6705' | 66.88° | 91.06° | 6412.97' | -48.16' |
| | | | | | |
| | 6753' | 70.38° | 91.77° | 6430.46' | -3.67' |



HALLIBURTON

DIRECTIONAL SURVEY REPORT

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

| Measured Depth (feet) | Inclination (degrees) | Direction (degrees) | Vertical Depth (feet) | Latitude (feet) | Departure (feet) | Vertical Section (feet) | Dogleg (deg/100ft) |
|-----------------------------|--------------------------|------------------------|-----------------------------|--------------------|---------------------|-------------------------------|-----------------------|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 N | 0.00 E | 0.00 | TIE-IN |
| 575.00 | 0.00 | 0.00 | 575.00 | 0.00 N | 0.00 E | 0.00 | 0.00 |
| 661.00 | 0.37 | 87.91 | 661.00 | 0.01 N | 0.28 E | 0.28 | 0.43 |
| 724.00 | 0.11 | 120.35 | 724.00 | 0.01 S | 0.54 E | 0.54 | 0.45 |
| 819.00 | 0.36 | 192.45 | 819.00 | 0.35 S | 0.55 E | 0.53 | 0.36 |
| 914.00 | 0.25 | 50.98 | 914.00 | 0.51 S | 0.65 E | 0.61 | 0.60 |
| 1008.00 | 0.35 | 112.59 | 1008.00 | 0.50 S | 1.07 E | 1.03 | 0.34 |
| 1195.00 | 0.14 | 166.77 | 1194.99 | 0.94 S | 1.65 E | 1.58 | 0.16 |
| 1379.00 | 0.54 | 200.23 | 1378.99 | 1.96 S | 1.40 E | 1.26 | 0.23 |
| 1471.00 | 0.44 | 54.78 | 1470.99 | 2.17 S | 1.54 E | 1.39 | 1.02 |
| 1564.00 | 3.44 | 107.46 | 1563.93 | 2.80 S | 4.49 E | 4.29 | 3.43 |
| 1656.00 | 4.51 | 78.59 | 1655.72 | 2.91 S | 10.67 E | 10.44 | 2.43 |
| 1748.00 | 6.37 | 46.83 | 1747.32 | 1.30 N | 17.93 E | 17.98 | 3.77 |
| 1840.00 | 6.60 | 67.02 | 1838.74 | 6.85 N | 26.52 E | 26.93 | 2.48 |
| 1932.00 | 8.11 | 89.14 | 1930.00 | 9.02 N | 37.89 E | 38.42 | 3.46 |
| 2025.00 | 9.30 | 63.42 | 2021.96 | 12.48 N | 51.17 E | 51.91 | 4.34 |
| 2124.00 | 9.65 | 34.31 | 2119.67 | 22.92 N | 63.01 E | 64.44 | 4.80 |
| 2220.00 | 8.96 | 17.17 | 2214.42 | 36.71 N | 69.75 E | 72.12 | 2.96 |
| 2315.00 | 8.67 | 354.67 | 2308.33 | 50.91 N | 71.27 E | 74.62 | 3.62 |
| 2410.00 | 9.29 | 335.90 | 2402.18 | 65.04 N | 67.48 E | 71.81 | 3.14 |
| 2506.00 | 10.81 | 321.08 | 2496.72 | 79.12 N | 58.65 E | 63.98 | 3.12 |
| 2601.00 | 12.10 | 311.93 | 2589.83 | 92.71 N | 45.64 E | 51.94 | 2.34 |
| 2697.00 | 13.76 | 302.44 | 2683.41 | 105.56 N | 28.52 E | 35.74 | 2.80 |
| 2792.00 | 15.63 | 294.36 | 2775.31 | 116.90 N | 7.32 E | 15.38 | 2.92 |
| 2888.00 | 15.30 | 292.92 | 2867.83 | 127.17 N | 16.13 W | -7.31 | 0.53 |
| 2984.00 | 15.08 | 293.06 | 2960.47 | 137.00 N | 39.29 W | -29.73 | 0.23 |
| 3079.00 | 14.27 | 290.87 | 3052.37 | 146.01 N | 61.60 W | -51.37 | 1.04 |

| | | | | | | | |
|---------|-------|--------|---------|----------|-----------|---------|-------|
| 3079.00 | 14.27 | 290.07 | 3032.97 | 140.01 N | 81.00 W | -31.07 | 1.04 |
| 3174.00 | 13.18 | 290.23 | 3144.66 | 153.93 N | 82.71 W | -71.88 | 1.16 |
| 3269.00 | 12.64 | 290.70 | 3237.26 | 161.35 N | 102.60 W | -91.21 | 0.58 |
| 3365.00 | 12.86 | 293.45 | 3330.89 | 169.31 N | 122.23 W | -110.24 | 0.67 |
| 3460.00 | 15.29 | 289.72 | 3423.03 | 177.75 N | 143.72 W | -131.10 | 2.73 |
| 3556.00 | 16.47 | 290.42 | 3515.37 | 186.77 N | 168.39 W | -155.09 | 1.25 |
| 3651.00 | 16.61 | 288.43 | 3606.44 | 195.76 N | 193.89 W | -179.91 | 0.61 |
| 3746.00 | 17.82 | 289.81 | 3697.18 | 204.98 N | 220.45 W | -205.77 | 1.34 |
| 3841.00 | 15.24 | 290.79 | 3788.25 | 214.34 N | 245.80 W | -230.41 | 2.73 |
| 3937.00 | 14.75 | 292.15 | 3880.98 | 223.43 N | 268.92 W | -252.85 | 0.62 |
| 4032.00 | 13.71 | 289.75 | 3973.06 | 231.80 N | 290.72 W | -274.02 | 1.26 |
| 4127.00 | 15.00 | 290.00 | 4065.09 | 239.80 N | 312.87 W | -295.57 | 1.35 |
| 4223.00 | 14.13 | 290.12 | 4158.01 | 248.08 N | 335.55 W | -317.61 | 0.91 |
| 4318.00 | 13.45 | 289.49 | 4250.27 | 255.76 N | 356.85 W | -338.33 | 0.72 |
| 4414.00 | 14.24 | 296.67 | 4343.48 | 264.79 N | 377.93 W | -358.74 | 1.97 |
| 4509.00 | 12.27 | 296.83 | 4435.95 | 274.59 N | 397.39 W | -377.48 | 2.07 |
| 4604.00 | 12.76 | 291.61 | 4528.69 | 283.01 N | 416.16 W | -395.62 | 1.30 |
| 4700.00 | 12.97 | 288.57 | 4622.28 | 290.35 N | 436.22 W | -415.13 | 0.74 |
| 4795.00 | 11.78 | 287.66 | 4715.07 | 296.69 N | 455.57 W | -433.99 | 1.27 |
| 4891.00 | 13.31 | 289.43 | 4808.78 | 303.33 N | 475.33 W | -453.25 | 1.65 |
| 4986.00 | 12.80 | 288.95 | 4901.32 | 310.39 N | 495.60 W | -472.98 | 0.55 |
| 5082.00 | 8.36 | 299.71 | 4995.68 | 317.31 N | 511.73 W | -488.60 | 5.04 |
| 5177.00 | 7.03 | 301.55 | 5089.82 | 323.77 N | 522.69 W | -499.08 | 1.43 |
| 5273.00 | 6.04 | 296.71 | 5185.19 | 329.12 N | 532.20 W | -508.20 | 1.18 |
| 5368.00 | 4.79 | 297.66 | 5279.77 | 333.20 N | 540.17 W | -515.87 | 1.31 |
| 5463.00 | 3.87 | 311.12 | 5374.50 | 337.16 N | 546.11 W | -521.52 | 1.44 |
| 5559.00 | 1.82 | 322.17 | 5470.38 | 340.49 N | 549.49 W | -524.66 | 2.21 |
| 5654.00 | 1.63 | 335.81 | 5565.33 | 342.92 N | 550.97 W | -525.97 | 0.47 |
| 5749.00 | 1.73 | 285.58 | 5660.30 | 344.54 N | 552.90 W | -527.78 | 1.50 |
| 5846.00 | 3.34 | 93.57 | 5757.26 | 344.75 N | 551.49 W | -526.36 | 5.19 |
| 5894.00 | 8.54 | 89.32 | 5804.98 | 344.71 N | 546.53 W | -521.41 | 10.87 |
| 5942.00 | 12.38 | 84.35 | 5852.18 | 345.26 N | 537.84 W | -512.71 | 8.20 |
| 5990.00 | 16.49 | 81.05 | 5898.65 | 346.82 N | 525.98 W | -500.78 | 8.74 |
| 6036.00 | 18.15 | 84.08 | 5942.56 | 348.58 N | 512.40 W | -487.11 | 4.11 |
| 6084.00 | 20.17 | 88.79 | 5987.90 | 349.52 N | 496.69 W | -471.36 | 5.30 |
| 6132.00 | 22.64 | 90.87 | 6032.59 | 349.56 N | 479.17 W | -453.89 | 5.37 |
| 6180.00 | 26.11 | 91.01 | 6076.31 | 349.23 N | 459.37 W | -434.15 | 7.22 |
| 6228.00 | 30.45 | 89.05 | 6118.57 | 349.25 N | 436.64 W | -411.48 | 9.26 |
| 6276.00 | 35.05 | 87.67 | 6158.93 | 350.01 N | 410.69 W | -385.54 | 9.71 |
| 6323.00 | 39.35 | 87.97 | 6196.35 | 351.08 N | 382.30 W | -357.14 | 9.16 |
| 6371.00 | 43.85 | 88.13 | 6232.24 | 352.16 N | 350.46 W | -325.30 | 9.36 |
| 6419.00 | 49.25 | 87.74 | 6265.24 | 353.42 N | 315.65 W | -290.49 | 11.27 |
| 6467.00 | 52.62 | 91.30 | 6295.49 | 353.71 N | 278.40 W | -253.30 | 9.09 |
| 6514.00 | 56.00 | 92.92 | 6322.91 | 352.29 N | 240.26 W | -215.35 | 7.72 |
| 6562.00 | 59.27 | 92.69 | 6348.60 | 350.31 N | 199.77 W | -175.10 | 6.83 |
| 6609.00 | 62.30 | 92.09 | 6371.53 | 348.60 N | 158.78 W | -134.33 | 6.53 |
| 6657.00 | 64.25 | 91.50 | 6393.12 | 347.26 N | 115.93 W | -91.68 | 4.22 |
| 6705.00 | 66.88 | 91.06 | 6412.97 | 346.29 N | 72.25 W | -48.16 | 5.53 |
| 6753.00 | 70.38 | 91.77 | 6430.46 | 345.19 N | 27.57 W | -3.67 | 7.41 |
| 6800.00 | 74.74 | 92.41 | 6444.54 | 343.55 N | 17.23 E | 40.91 | 9.38 |
| 6848.00 | 78.21 | 92.86 | 6455.77 | 341.40 N | 63.84 E | 87.26 | 7.27 |
| 6896.00 | 82.19 | 91.94 | 6463.94 | 339.42 N | 111.09 E | 134.26 | 8.51 |
| 6923.00 | 83.75 | 91.37 | 6467.24 | 338.65 N | 137.87 E | 160.93 | 6.15 |
| 7032.00 | 85.72 | 91.56 | 6477.24 | 335.88 N | 246.37 E | 268.98 | 1.81 |
| 7079.00 | 86.68 | 90.93 | 6480.35 | 334.86 N | 293.26 E | 315.68 | 2.44 |
| 7174.00 | 89.05 | 90.73 | 6483.89 | 333.48 N | 388.17 E | 410.28 | 2.50 |
| 7270.00 | 90.65 | 92.21 | 6484.15 | 331.02 N | 484.14 E | 505.84 | 2.27 |
| 7365.00 | 92.19 | 91.30 | 6481.80 | 328.11 N | 579.06 E | 600.34 | 1.88 |
| 7460.00 | 92.35 | 90.32 | 6478.04 | 326.76 N | 673.97 E | 694.93 | 1.05 |
| 7556.00 | 91.57 | 90.42 | 6474.76 | 326.14 N | 769.92 E | 790.60 | 0.81 |
| 7652.00 | 89.54 | 90.36 | 6473.83 | 325.49 N | 865.90 E | 886.31 | 2.12 |
| 7747.00 | 88.92 | 91.10 | 6475.10 | 324.27 N | 960.89 E | 980.99 | 1.02 |
| 7842.00 | 89.26 | 90.11 | 6476.61 | 323.26 N | 1055.87 E | 1075.67 | 1.11 |
| 7938.00 | 88.73 | 89.49 | 6478.29 | 323.59 N | 1151.85 E | 1171.45 | 0.84 |
| 8033.00 | 88.77 | 88.93 | 6480.36 | 324.90 N | 1246.82 E | 1266.28 | 0.60 |
| 8129.00 | 90.28 | 91.35 | 6481.16 | 324.67 N | 1342.81 E | 1362.02 | 2.97 |
| 8224.00 | 91.27 | 92.90 | 6479.88 | 321.15 N | 1437.73 E | 1456.47 | 1.94 |
| 8320.00 | 91.85 | 91.55 | 6477.27 | 317.42 N | 1533.62 E | 1551.88 | 1.53 |
| 8415.00 | 90.34 | 92.14 | 6475.46 | 314.36 N | 1628.55 E | 1646.37 | 1.70 |
| 8510.00 | 88.89 | 91.21 | 6476.10 | 311.58 N | 1723.50 E | 1740.90 | 1.81 |
| 8606.00 | 88.24 | 91.31 | 6478.50 | 309.47 N | 1819.45 E | 1836.48 | 0.68 |
| 8701.00 | 88.21 | 91.13 | 6481.44 | 307.45 N | 1914.38 E | 1931.04 | 0.20 |
| 8797.00 | 88.33 | 89.93 | 6484.34 | 306.56 N | 2010.33 E | 2026.70 | 1.25 |
| 8892.00 | 88.08 | 89.47 | 6487.30 | 307.06 N | 2105.28 E | 2121.46 | 0.55 |
| 8988.00 | 89.48 | 89.16 | 6489.35 | 308.20 N | 2201.25 E | 2217.28 | 1.48 |

| | | | | | | | |
|----------|-------|-------|---------|----------|-----------|---------|------|
| 9083.00 | 91.76 | 88.15 | 6488.33 | 310.42 N | 2296.21 E | 2312.17 | 2.63 |
| 9179.00 | 92.65 | 88.55 | 6484.63 | 313.18 N | 2392.10 E | 2408.02 | 1.02 |
| 9274.00 | 91.64 | 88.80 | 6481.08 | 315.38 N | 2487.01 E | 2502.85 | 1.10 |
| 9369.00 | 89.85 | 88.74 | 6479.85 | 317.42 N | 2581.97 E | 2597.73 | 1.89 |
| 9465.00 | 89.29 | 90.76 | 6480.57 | 317.84 N | 2677.96 E | 2693.52 | 2.19 |
| 9561.00 | 88.92 | 92.10 | 6482.07 | 315.44 N | 2773.92 E | 2789.08 | 1.44 |
| 9656.00 | 88.76 | 92.55 | 6483.99 | 311.59 N | 2868.82 E | 2883.49 | 0.51 |
| 9752.00 | 88.58 | 92.53 | 6486.21 | 307.33 N | 2964.70 E | 2978.85 | 0.19 |
| 9847.00 | 87.37 | 92.66 | 6489.56 | 303.03 N | 3059.54 E | 3073.17 | 1.28 |
| 9942.00 | 88.61 | 92.21 | 6492.89 | 298.99 N | 3154.40 E | 3167.51 | 1.39 |
| 10038.00 | 89.04 | 91.07 | 6494.86 | 296.25 N | 3250.34 E | 3263.03 | 1.26 |
| 10132.00 | 90.25 | 90.19 | 6495.44 | 295.21 N | 3344.33 E | 3356.73 | 1.59 |
| 10228.00 | 89.88 | 90.68 | 6495.34 | 294.47 N | 3440.32 E | 3452.45 | 0.64 |
| 10323.00 | 90.19 | 91.47 | 6495.29 | 292.69 N | 3535.31 E | 3547.08 | 0.89 |
| 10418.00 | 90.03 | 91.75 | 6495.11 | 290.02 N | 3630.27 E | 3641.63 | 0.34 |
| 10514.00 | 89.94 | 90.38 | 6495.13 | 288.23 N | 3726.25 E | 3737.26 | 1.43 |
| 10609.00 | 89.47 | 90.24 | 6495.62 | 287.71 N | 3821.25 E | 3831.99 | 0.51 |
| 10705.00 | 91.39 | 90.07 | 6494.90 | 287.45 N | 3917.24 E | 3927.74 | 2.00 |
| 10801.00 | 93.15 | 89.32 | 6491.10 | 287.96 N | 4013.16 E | 4023.46 | 2.00 |
| 10835.00 | 93.95 | 88.84 | 6488.99 | 288.50 N | 4047.09 E | 4057.35 | 2.75 |
| 10895.00 | 93.95 | 88.84 | 6484.86 | 289.71 N | 4106.93 E | 4117.13 | 0.01 |

CALCULATION BASED ON MINIMUM CURVATURE METHOD

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

**VERTICAL SECTION RELATIVE TO WELL HEAD
VERTICAL SECTION IS COMPUTED ALONG A DIRECTION OF 86.04 DEGREES (GRID)
A TOTAL CORRECTION OF 7.92 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

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