HALLIBURTON | Sperry Drilling

PCDC - Pressure Case Directional
PCGK - Pressure Case Gamma

Powered by INSITE™

1 : 600 / 1 : 240

Company	**Noble Energy**
Rig	**H&P 321**
Well	**Wells Ranch State A36-625**
Field	**Wattenburg**
Country	**USA**
API Number	**05-123-41507**

Country : **USA**
Field : **Wattenburg**
Location : **Lat: 40° 26' 24.14" North Long: 104° 28' 17.83" West**
Well : **Wells Ranch State A36-625**
Company : **Noble Energy**
Rig : **H&P 321**

LOCATION
Latitude : **40° 26' 24.14" North**
Longitude : **104° 28' 17.83" West**
UTM Easting = **3,286,238.900 ft**
UTM Northing = **1,404,806.700 ft**

Other Services
Directional Drilling

Permanent Datum : **Ground Level** Elevation : **4659.00 ft**
Log Measured From : **Drill Floor** **30.00 ft** Above Permanent Datum
Drilling Measured From : **Drill Floor**

MD LOG

Elev. KB **N/A**
DF **4689.00 ft**
GL **4659.00 ft**
WD **N/A**

Depth Logged : **821.00 ft** To **16,964.00 ft**
Date Logged : **27-Jun-15** To **05-Jul-15**
Total Depth MD : **16,964.00 ft** TVD : **6,720.78 ft**
Spud Date : **27-Jun-15**

Unit No. : **11210424** Job No. : **CA-XX-0902457671**
Plot Type : **Final**
Plot Date : **05-Jul-15**

Run No.	Borehole Record (MD) Size	From	To
100	8.750 in	821.00 ft	7,042.00 ft
200	6.125 in	7,042.00 ft	10,692.00 ft
300	6.125 in	10,692.00 ft	13,003.00 ft
400	6.125 in	13,003.00 ft	16,964.00 ft

Run No.	Borehole Record (MD) Size	From	To

Casing Record (MD)

Size	Weight	From	To
9.625 in	36.00 lbpf	30.00 ft	811.00 ft
7.000 in	27.00 lbpf	30.00 ft	7,032.00 ft

WELL INFORMATION

MWD Run Number	100	200	300	400
Date run completed	28-Jun-15	01-Jul-15	02-Jul-15	05-Jul-15
Rig Bit Number	2	3	4	5
Bit Size (in)	8.750	6.125	6.125	6.125
Tool Nominal OD (in)	6.890	4.810	4.810	4.750
Log Start Depth (MD, ft)	821.00	7,042.00	10,692.00	13,003.00
Log End Depth (MD, ft)	7,042.00	10,692.00	13,003.00	16,964.00
Drill or Wipe	Drill	Drill	Drill	Drill
Drill/Wipe Start Date and Time	27-Jun-15 04:31	29-Jun-15 19:55	01-Jun-15 09:17	03-Jul-15 01:32
Drill/Wipe End Date and Time	28-Jun-15 14:15	30-Jun-15 20:01	02-Jun-15 05:40	04-Jul-15 21:38
Min Inc (deg) @ Depth (MD, ft)	0.13 @ 1,945.00	81.24 @ 7,121.00	88.27 @ 11,373.00	87.41 @ 15,489.00
Max Inc (deg) @ Depth (MD, ft)	71.31 @ 6,980.00	91.97 @ 7,310.00	92.06 @ 11,926.00	92.00 @ 16,151.00
Bit TFA(in2) / Bit Type	0.98 / PDC	0.98 / PDC	0.98 / PDC	0.65 / PDC
Flow Rate (gpm)	589.88	306.12	315.00	303.00
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A	N/A / N/A	N/A / N/A	N/A / N/A
Fluid Type	Native/Spud Mud	Fresh Water Gel	Native/Spud Mud	Native/Spud Mud
Density (ppg) / Viscosity (spqt)	9.75 / 35.00	9.35 / 33.00	9.40 / 34.00	9.30 / 35.00
Filtrate CL (ppm)	1,700.00	2,300.00	2,200.00	2,200.00
pH / Fluid Loss (mptm)	11.00 / 10	9.30 / 9	9.80 / 8	9.00 / 7
PV (cP) / YP (lhf2)	7 / 6.00	4 / 4.00	5 / 6.00	6 / 8.00
% Solids / % Sand	3.00 / 0.25	5.30 / 0.10	5.50 / 0.10	5.20 / 0.10
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A	N/A / N/A	N/A / N/A
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A

Max Tool Temp (degF) / Source	175.40 / PCM	221.80 / PCM	238.70 / PCM	251.40 / PCM	
Rm @ Max Tool Temp (degF)	N/A @ 175.40	N/A @ N/A	N/A @ N/A	N/A @ N/A	
Lead MWD Engineer	Matt Busche	Matt Busche	Matt Busche	Matt Busche	
Customer Representative	Jeremy Stolz	Stetson Nielsen	Stetson Nielsen	Stetson Nielsen	

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM	PCM	
Software Version	5.93	5.93	5.93	5.93	
Sub Serial Number	11404267	12310741	12310741	12310741	
Insert Serial Number	11680727	11680779	11680779	11680727	
Date and Time Initialized	26-Jun-15 15:07	28-Jun-15 17:58	01-Jan-70 00:00	02-Jul-15 11:35	
Date and Time Read	28-Jun-15 21:27	02-Jul-15 20:17	02-Jul-15 20:36	05-Jul-15 14:13	
ECMB SW Version	N/A	N/A	N/A	N/A	

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC	PCDC	
Distance From Bit (ft)	56.00	67.00	67.00	64.00	
Software Version	6.33	6.21	6.21	6.33	
Sub Serial Number	11404267	12310741	12310741	12310741	
Sonde Serial Number	11478122	11638567	11638567	11478122	
Sensor ID Number	N/A	N/A	N/A	N/A	
Toolface Offset (deg)	157.90	329.70	154.80	9.80	

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG	PCG	
Distance From Bit (ft)	48.95	69.57	69.57	67.19	
Recorded Sample Period (sec)	10	10	10	10	
Software Version	8.15	8.15	8.15	8.15	
Sub Serial Number	11404267	12310741	12310741	12310741	
Insert/Sonde Serial Number	11680921	11579806	11579806	11680921	

REMARKS

1. All depths are calibrated to driller's pipe tally and are measured depth from the drill floor.

2. No depth corrections have been made for pipe stretch or compression.

3. Critical annular velocities are calculated using the "Power Law" modelforwater based fluids and the "Brigham Plastic"model for oil and synthetic based fluids.

4. All data presented is recorded data unless otherwice specified.

5. The following smoothing parameters have been applied to the data:

1:600 Log
PGRC (Gamma CG) and ROPA (Average Rate of Penetration)
Interval Resolution: 1.0 ft
Interval Distance: 3.0 ft

1:240 Log
PGRC (Gamma CG):
Interval Resolution: 0.5 ft
Interval Distance: 0.6 ft

ROPA (Average Rate Of Penetration):
Interval Resolution: 0.5 ft

Interval Resolution: 0.3 ft
Interval Distance: 1.2 ft

6. Insite Version V8.1.10

WARRANTY

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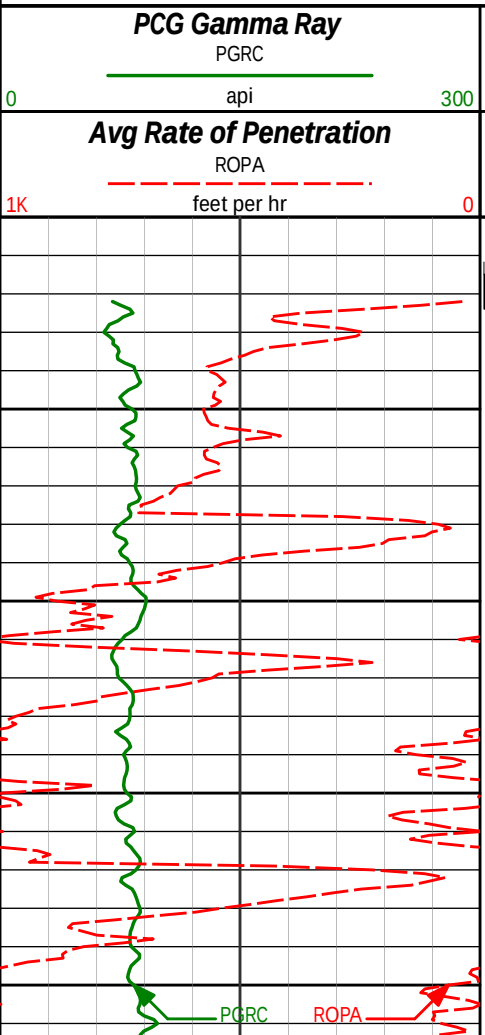
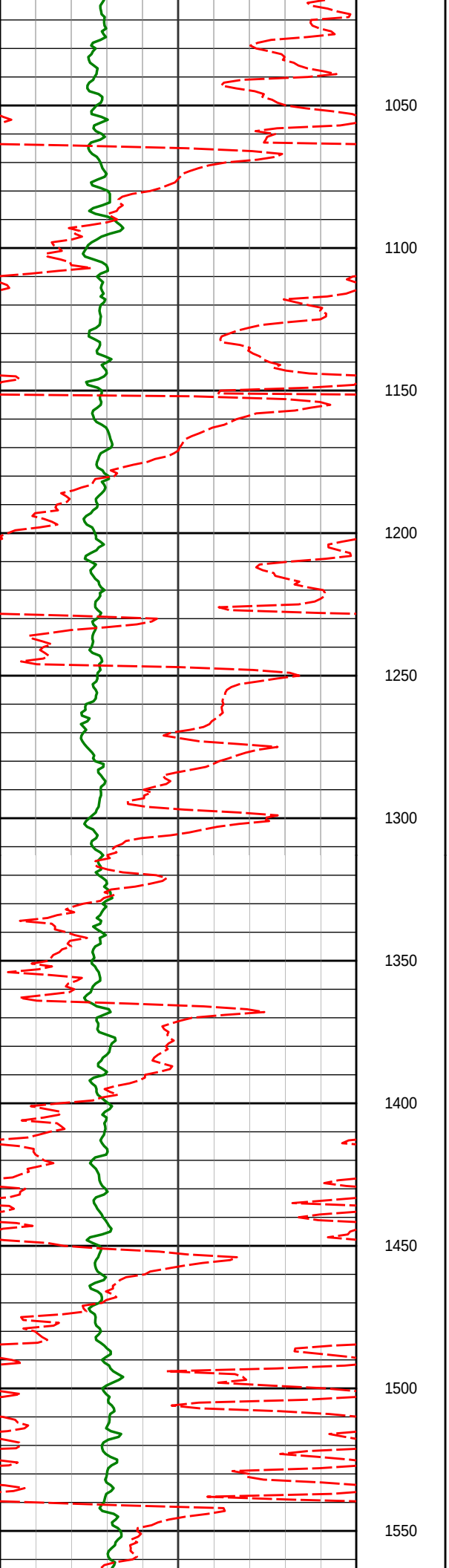
HALLIBURTON
Sperry Drilling Services
MD Correlation Log 1:600

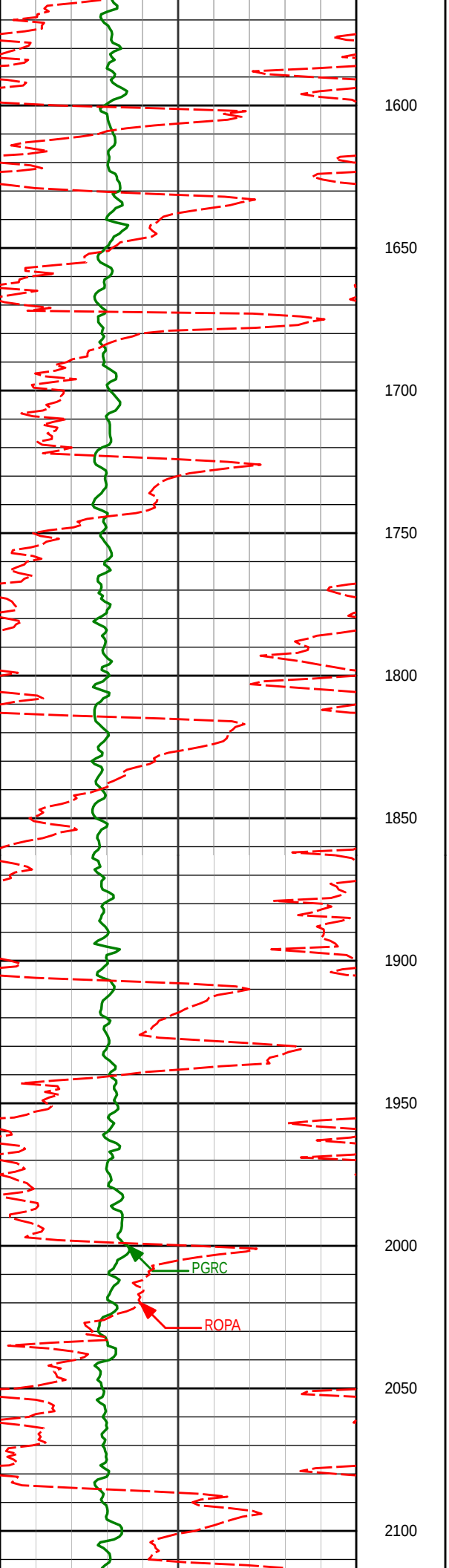
Noble Energy
Wells Ranch State A36-625
H&P 321
Sec. 31-T6N-R63W



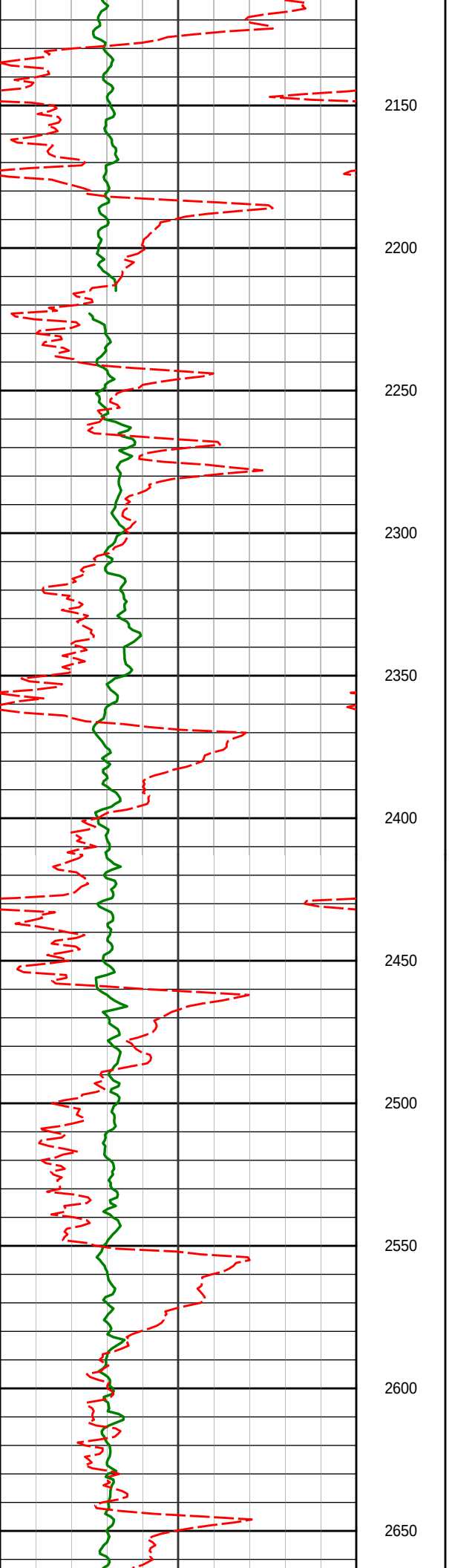
Depth	Inc.	Azi.	TVD	V.S.
857'	0.26°	41.28°	857.00'	-1.38'
919'	0.34°	41.55°	919.00'	-1.62'
1011'	0.29°	51.49°	1010.99'	-2.00'



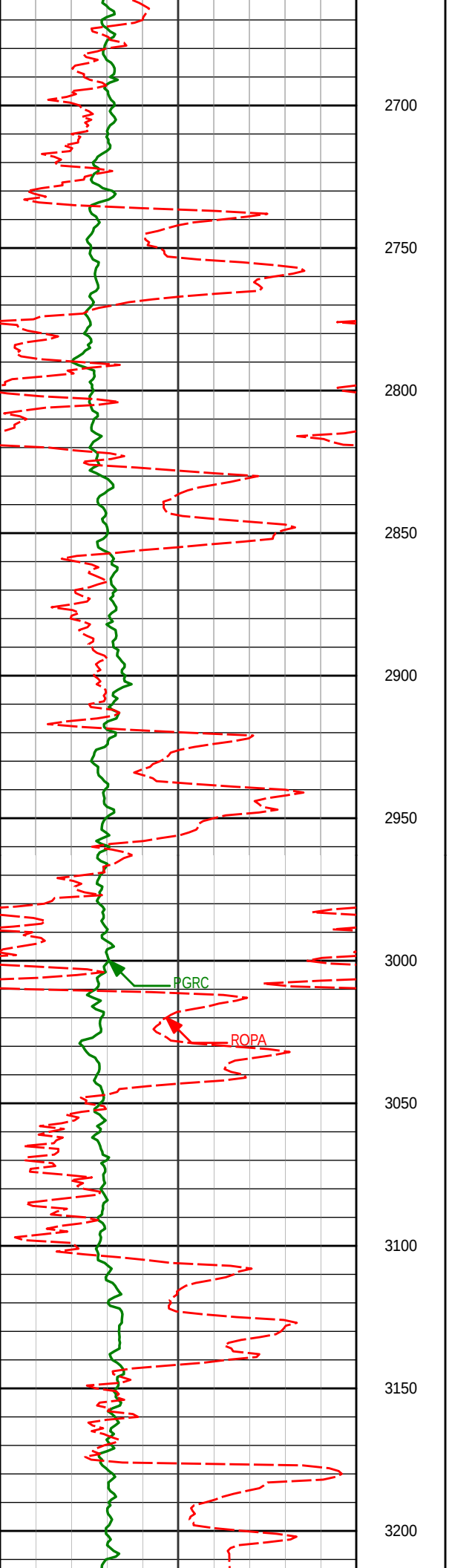
1103'	0.22°	1.45°	1102.99'	-2.21'
1208'	0.18°	313.41°	1207.99'	-2.12'
1300'	0.29°	269.55°	1299.99'	-1.79'
1392'	0.55°	269.52°	1391.99'	-1.12'
1485'	0.47°	267.03°	1484.99'	-0.29'



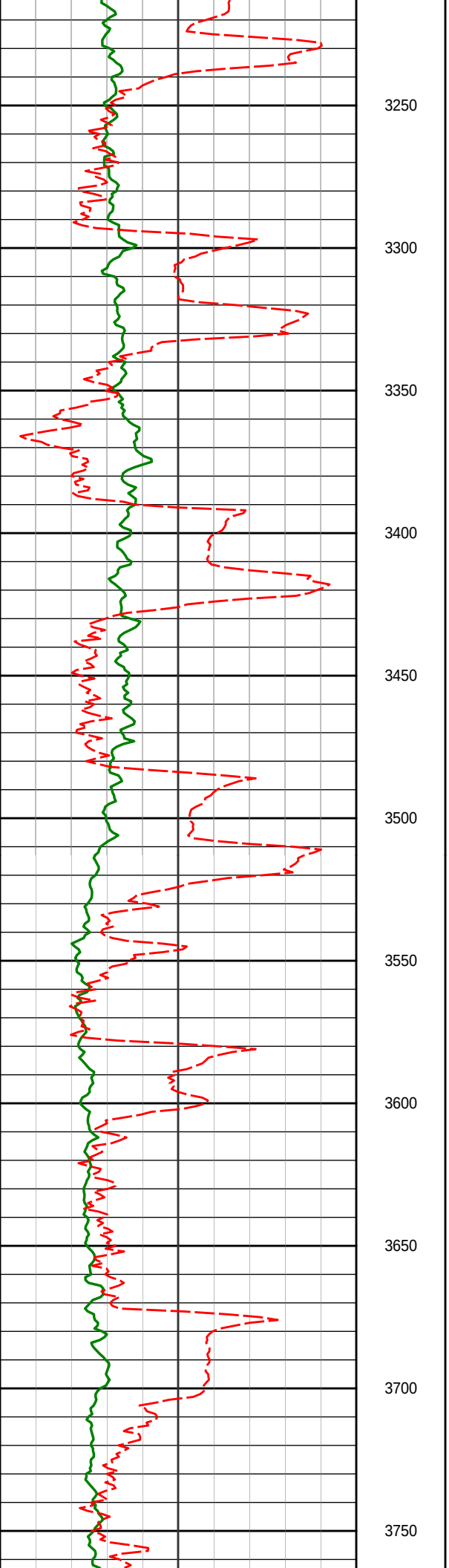
1576'	0.63°	283.17°	1575.98'	0.56'
1668'	0.65°	293.02°	1667.98'	1.51'
1761'	0.80°	286.40°	1760.97'	2.59'
1854'	0.63°	284.32°	1853.96'	3.68'
1945'	0.13°	5.86°	1944.96'	4.14'
2037'	0.41°	0.07°	2036.96'	4.09'



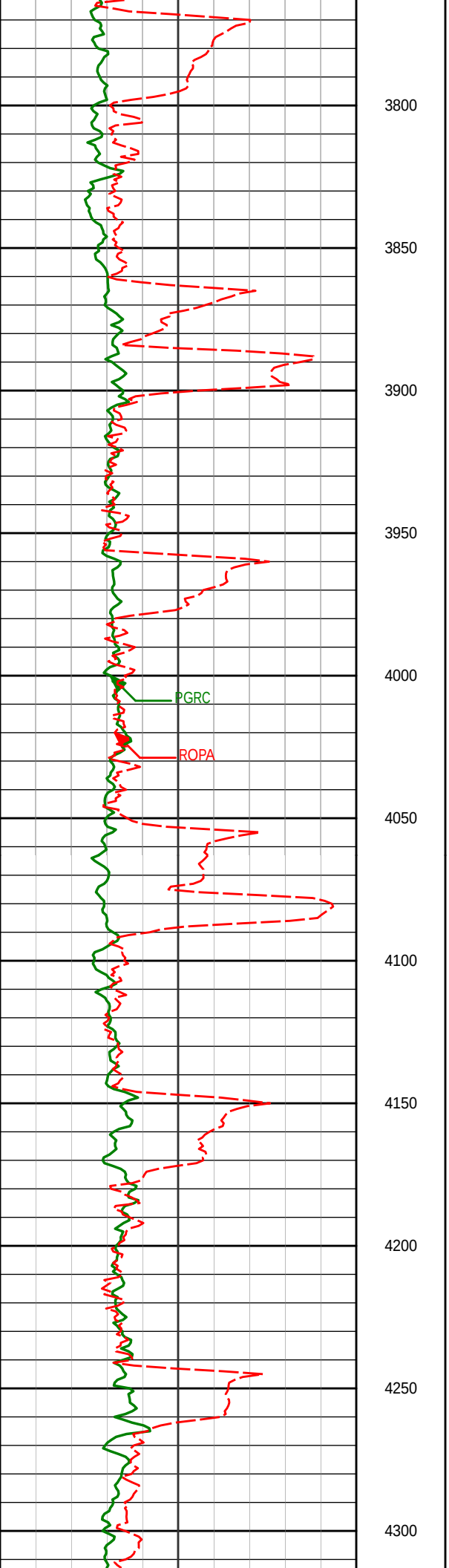
2129'	0.54°	210.44°	2128.96'	4.32'
2221'	0.56°	218.43°	2220.95'	4.87'
2313'	0.61°	204.09°	2312.95'	5.40'
2404'	0.62°	195.75°	2403.94'	5.80'
2497'	0.53°	202.69°	2496.94'	6.16'
2588'	0.47°	184.83°	2587.94'	6.41'



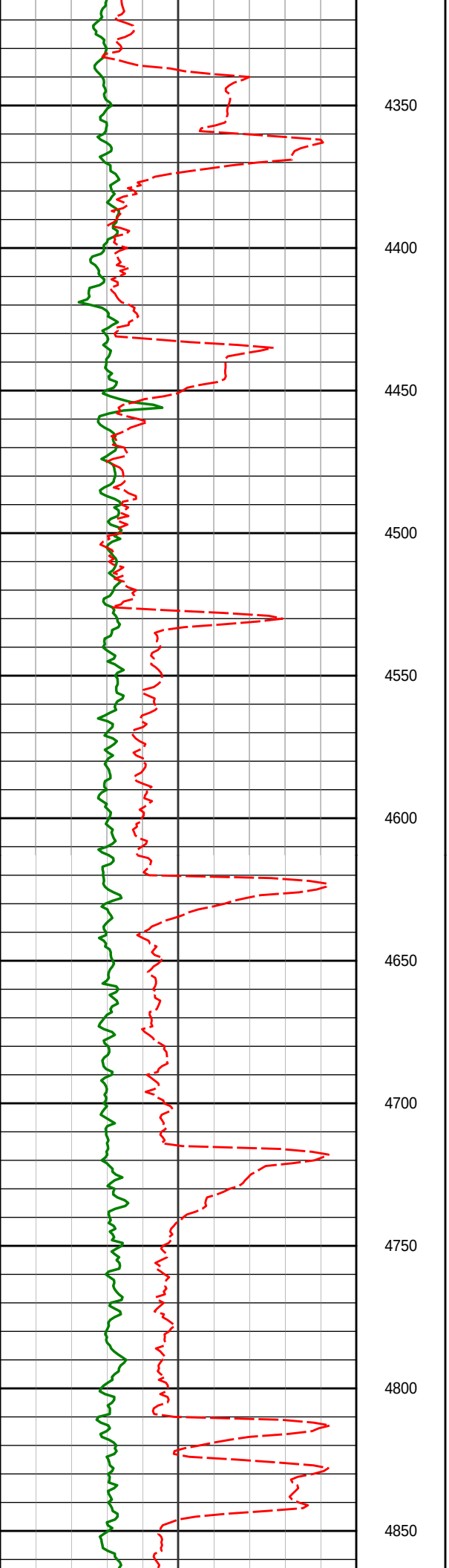
2680'	0.40°	187.30°	2679.93'	6.53'
2772'	1.75°	147.74°	2771.92'	5.93'
2863'	2.74°	130.36°	2862.84'	3.72'
2955'	3.95°	133.90°	2954.69'	0.03'
3050'	5.28°	135.67°	3049.38'	-4.98'
3145'	7.13°	123.66°	3143.82'	-12.46'



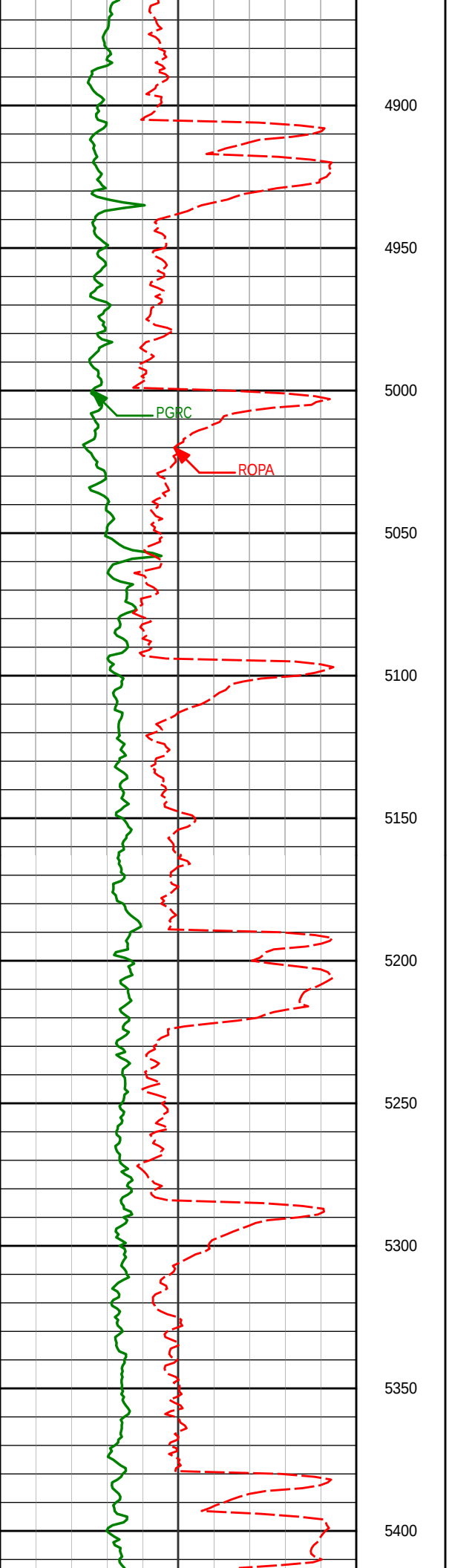
3240'	7.65°	118.61°	3238.03'	-22.45'
3334'	8.27°	119.25°	3331.13'	-33.36'
3429'	8.52°	124.62°	3425.11'	-44.56'
3524'	9.06°	119.76°	3518.99'	-56.26'
3619'	9.51°	117.86°	3612.75'	-69.13'
3713'	9.80°	117.15°	3705.42'	-82.56'



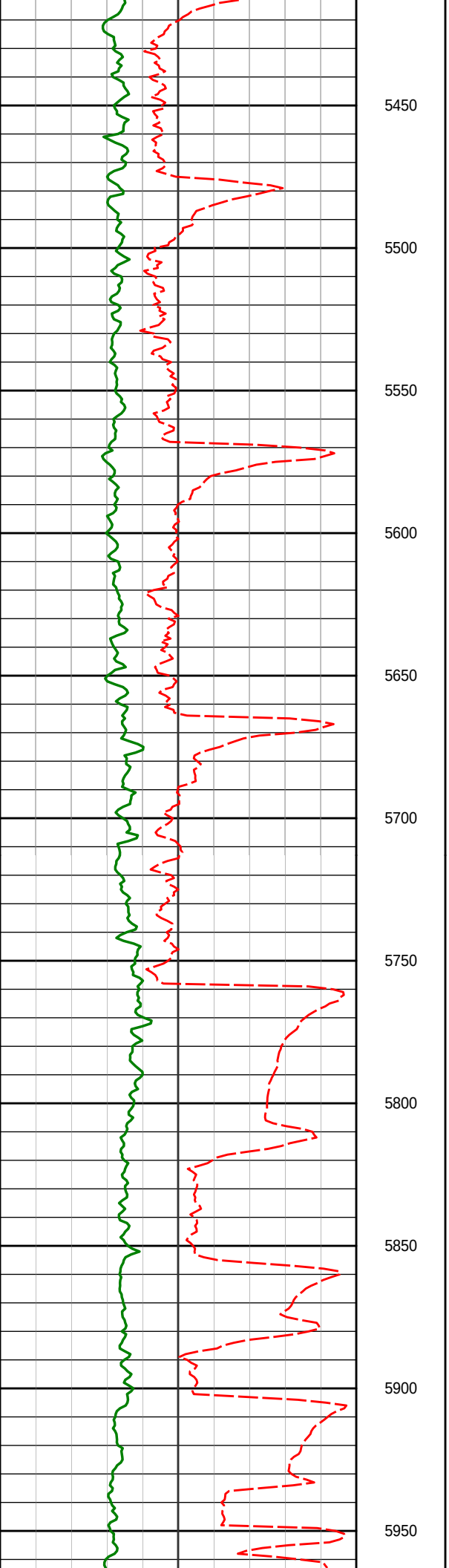
3808'	9.96°	116.32°	3799.01'	-96.55'
3903'	8.21°	114.41°	3892.81'	-109.60'
3998'	7.50°	113.92°	3986.92'	-121.03'
4093'	7.76°	116.18°	4081.08'	-132.04'
4188'	7.85°	115.58°	4175.20'	-143.22'
4282'	7.44°	116.31°	4268.36'	-154.04'



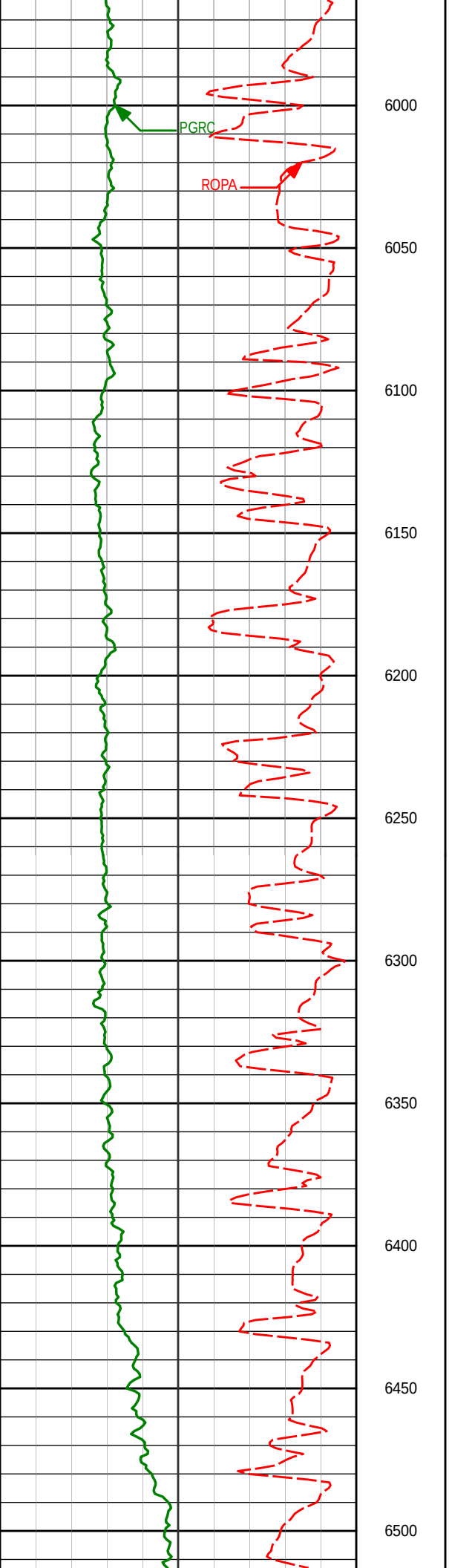
4377'	8.22°	123.08°	4362.48'	-164.76'
4472'	7.99°	124.01°	4456.53'	-175.37'
4567'	7.55°	125.09°	4550.66'	-185.40'
4661'	7.03°	126.68°	4643.90'	-194.54'
4756'	6.34°	127.34°	4738.25'	-202.88'
4850'	7.44°	113.27°	4831.58'	-212.17'



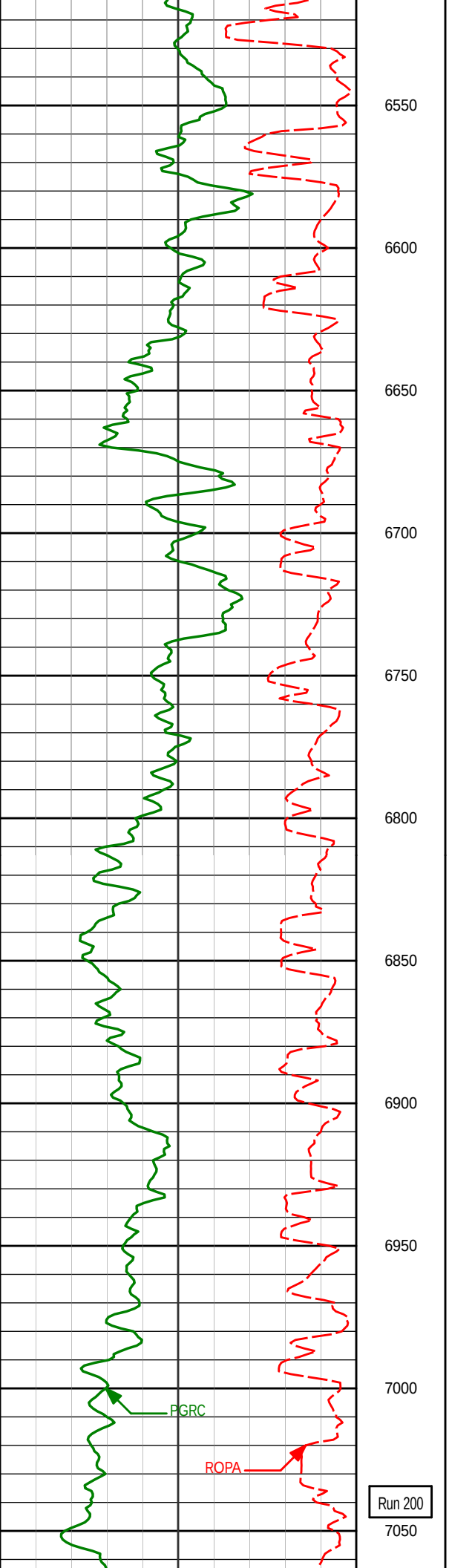
4945'	8.08°	115.78°	4925.71'	-223.42'
5039'	7.80°	115.38°	5018.81'	-234.70'
5134'	6.97°	115.25°	5113.02'	-245.34'
5228'	8.32°	114.90°	5206.18'	-256.26'
5323'	7.35°	111.31°	5300.29'	-267.76'



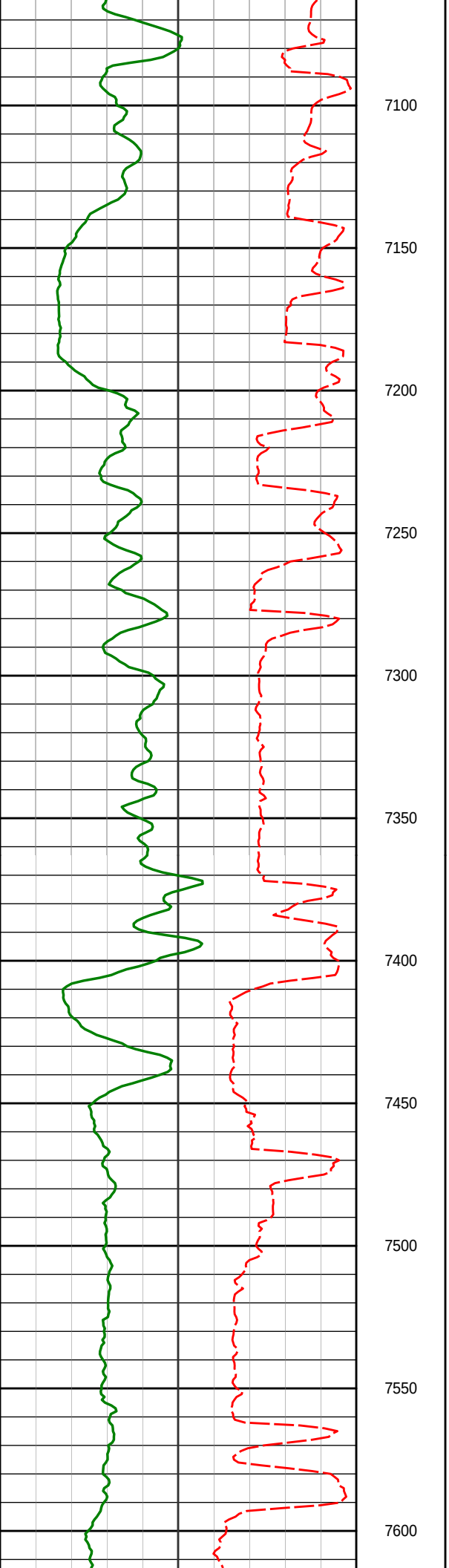
5417'	8.54°	114.21°	5393.39'	-279.34'
5512'	7.63°	113.42°	5487.44'	-291.14'
5701'	6.24°	110.42°	5675.06'	-311.61'
5795'	11.58°	132.83°	5767.92'	-322.72'
5843'	12.48°	134.24°	5814.86'	-329.45'
5890'	14.57°	143.05°	5860.56'	-336.04'
5938'	17.47°	148.73°	5906.69'	-342.60'



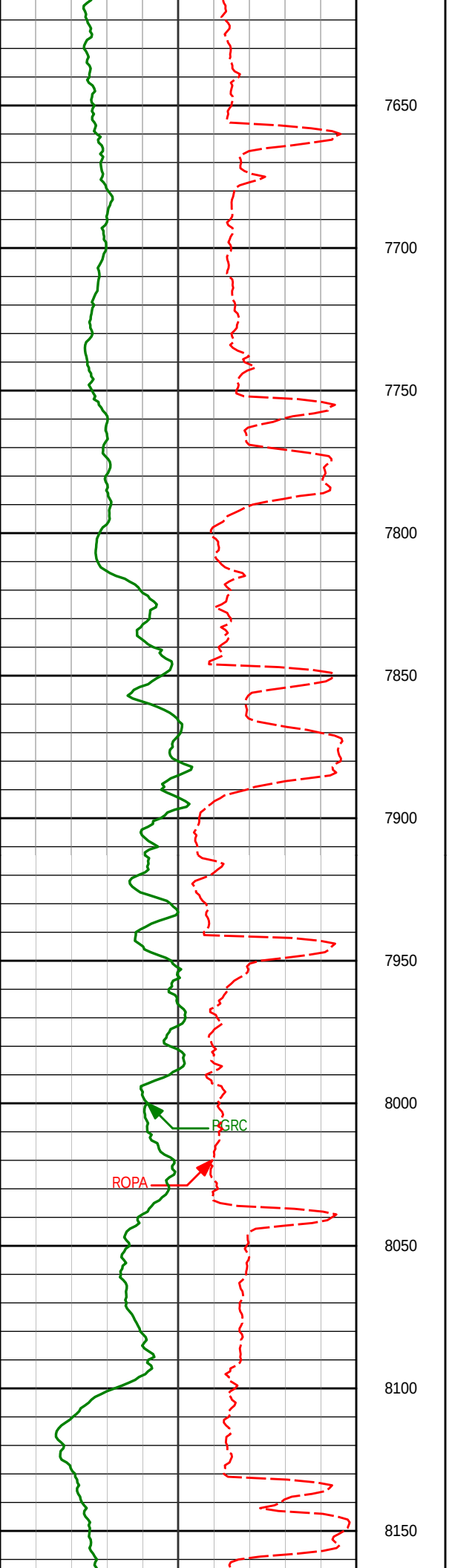
5984'	20.94°	151.92°	5950.13'	-349.10'
6032'	24.38°	157.32°	5994.42'	-355.75'
6079'	27.47°	163.87°	6036.70'	-361.10'
6127'	29.79°	167.87°	6078.83'	-365.07'
6174'	30.27°	175.51°	6119.53'	-366.78'
6222'	30.73°	183.92°	6160.91'	-365.15'
6269'	31.58°	192.44°	6201.15'	-359.97'
6317'	33.21°	200.85°	6241.70'	-350.84'
6363'	34.88°	210.16°	6279.84'	-338.12'
6411'	35.54°	218.18°	6319.08'	-321.00'
6458'	35.94°	226.19°	6357.25'	-301.18'
6506'	36.67°	234.84°	6395.96'	-278.05'



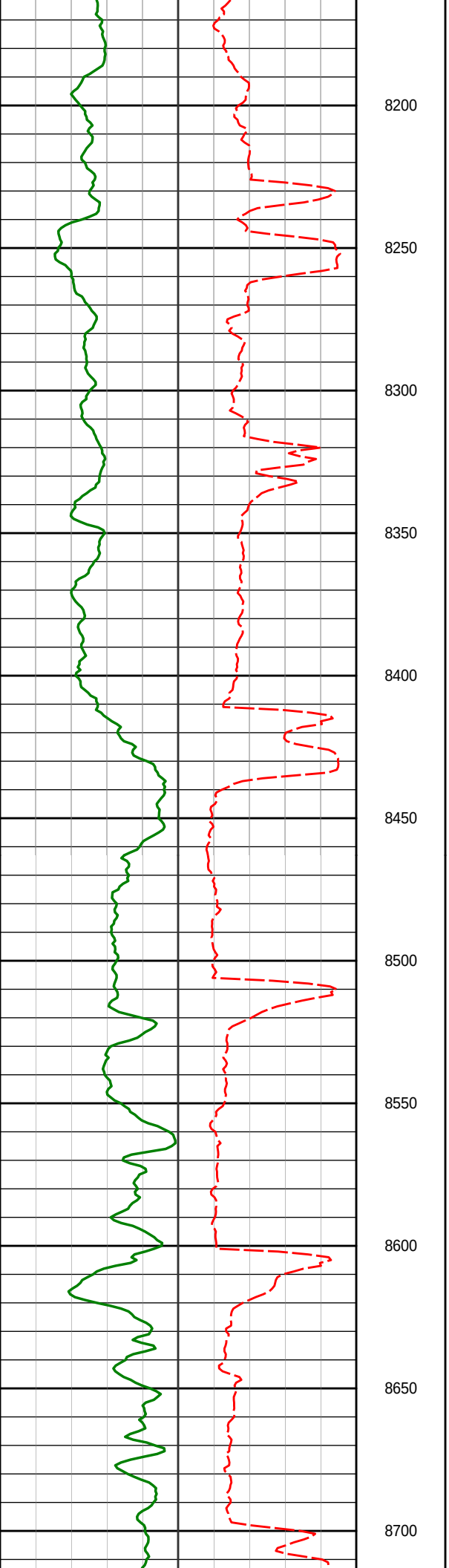
6553'	38.97°	239.07°	6433.09'	-252.84'
6648'	46.03°	248.06°	6503.15'	-193.51'
6696'	49.79°	251.44°	6535.33'	-159.30'
6742'	54.02°	253.90°	6563.70'	-124.06'
6790'	57.10°	257.60°	6590.85'	-85.11'
6837'	59.38°	261.82°	6615.60'	-45.39'
6932'	67.13°	266.76°	6658.34'	39.31'
6980'	71.31°	269.30°	6675.37'	84.14'



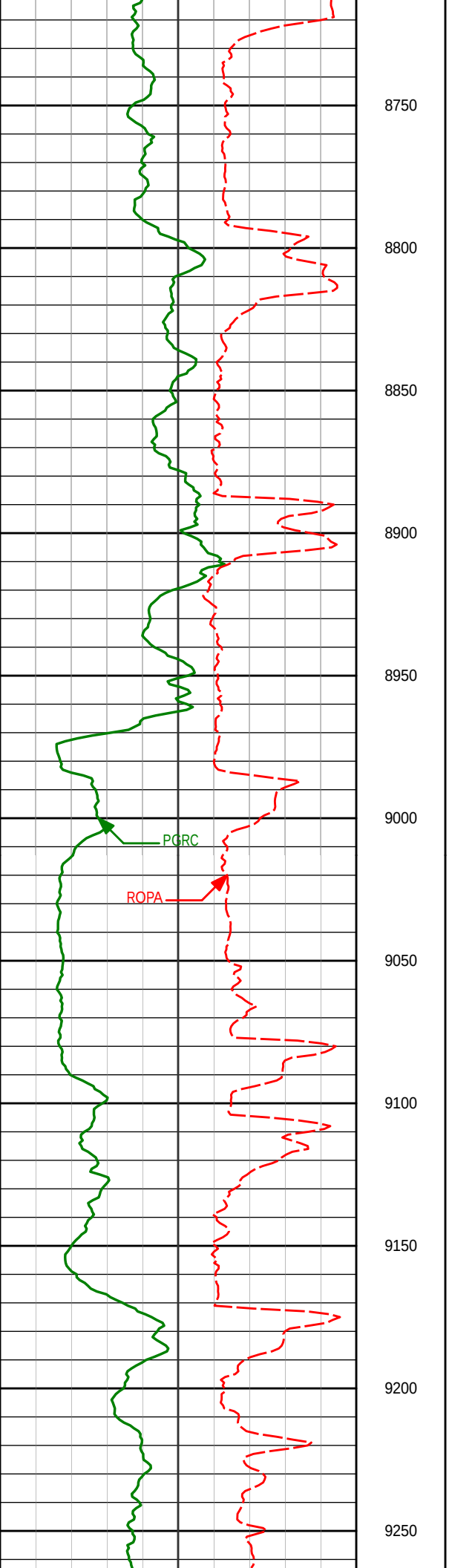
7121'	81.24°	271.67°	6708.78'	220.49'
7215'	87.94°	271.74°	6717.64'	313.54'
7310'	91.97°	270.90°	6717.71'	408.09'
7405'	90.59°	270.54°	6715.59'	502.73'
7500'	90.92°	270.00°	6714.34'	597.45'
7594'	89.54°	271.00°	6713.96'	691.14'



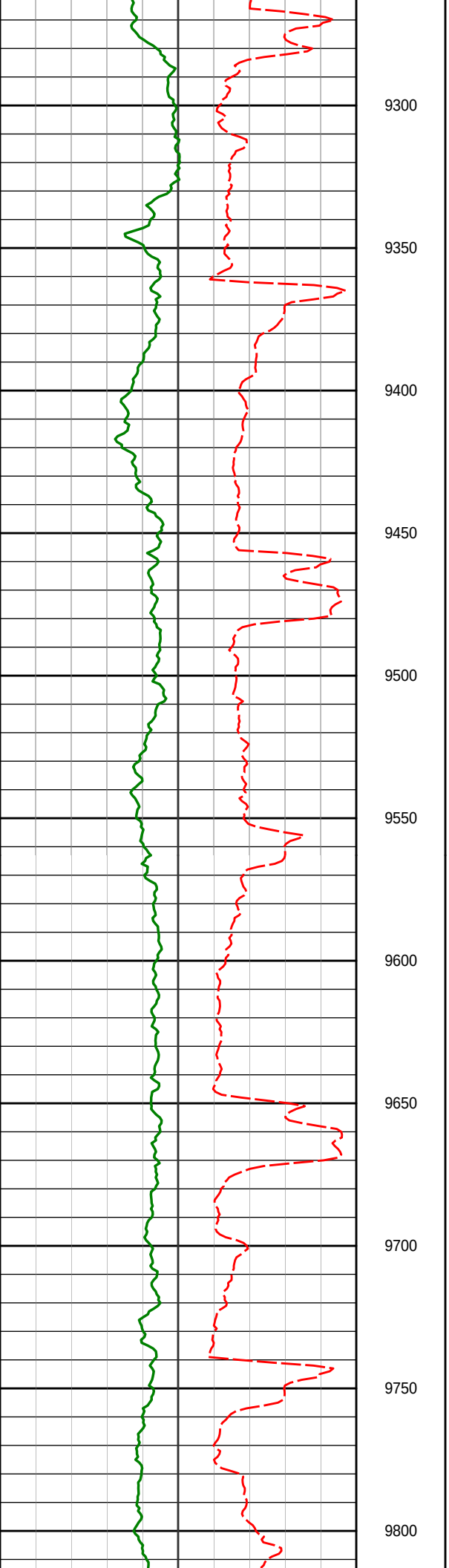
7689'	89.35°	270.46°	6714.88'	785.80'
7783'	90.89°	270.57°	6714.69'	879.49'
7878'	90.83°	269.70°	6713.26'	974.22'
7973'	90.83°	269.34°	6711.88'	1069.02'
8067'	90.99°	269.35°	6710.39'	1162.84'
8162'	90.28°	270.01°	6709.34'	1257.62'



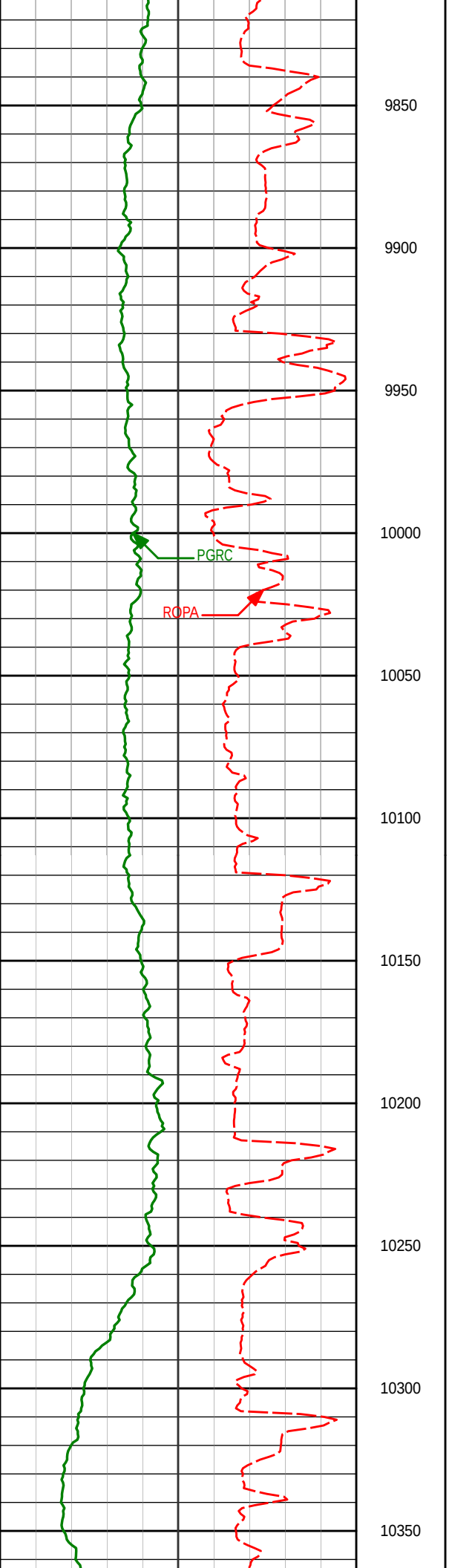
8256'	89.88°	269.13°	6709.21'	1351.43'
8351'	90.46°	268.92°	6708.93'	1446.29'
8446'	89.57°	268.94°	6708.90'	1541.15'
8540'	89.57°	269.02°	6709.61'	1635.02'
8635'	90.77°	269.38°	6709.32'	1729.86'



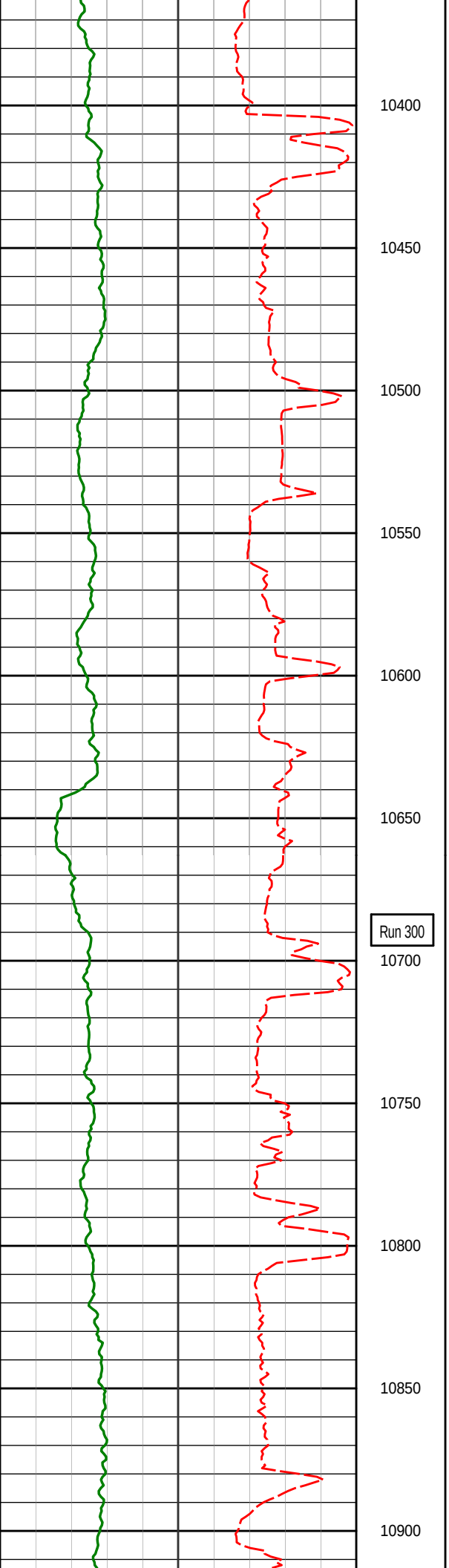
8730'	90.06°	269.37°	6708.64'	1824.68'
8825'	90.12°	268.42°	6708.49'	1919.55'
8920'	89.35°	268.49°	6708.93'	2014.45'
9014'	89.66°	268.77°	6709.74'	2108.34'
9109'	89.60°	268.37°	6710.35'	2203.24'
9204'	89.45°	268.41°	6711.14'	2298.14'



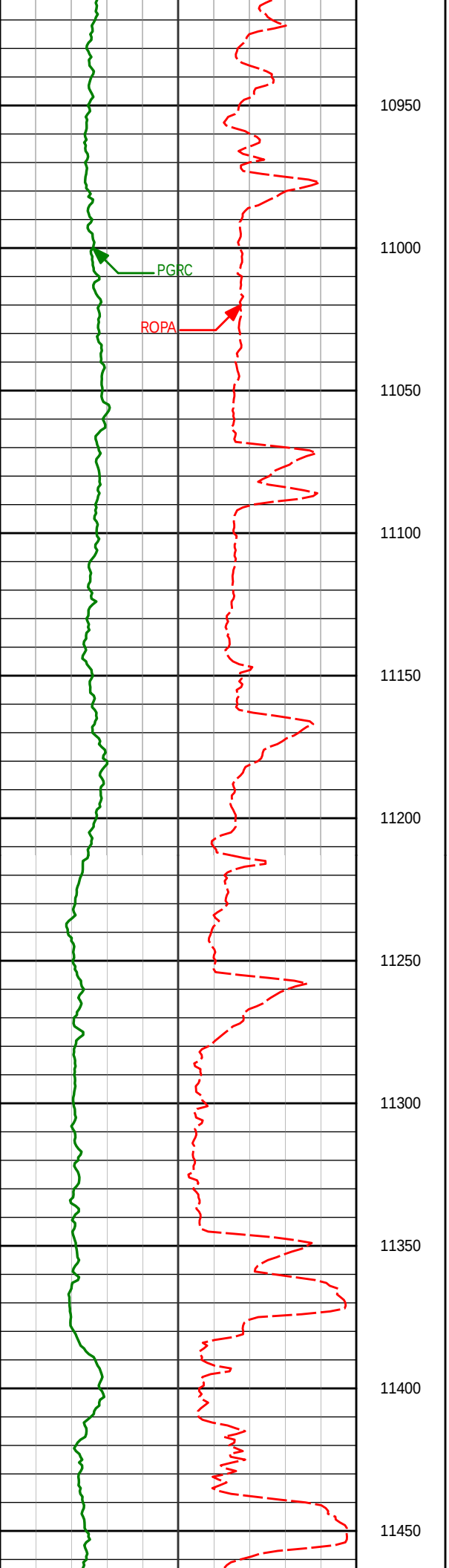
9299'	89.14°	269.05°	6712.31'	2393.02'
9393'	88.83°	269.47°	6713.97'	2486.84'
9488'	89.97°	269.25°	6714.97'	2581.66'
9583'	88.77°	267.52°	6716.01'	2676.56'
9677'	90.49°	269.33°	6716.62'	2770.46'
9772'	90.03°	268.68°	6716.19'	2865.32'



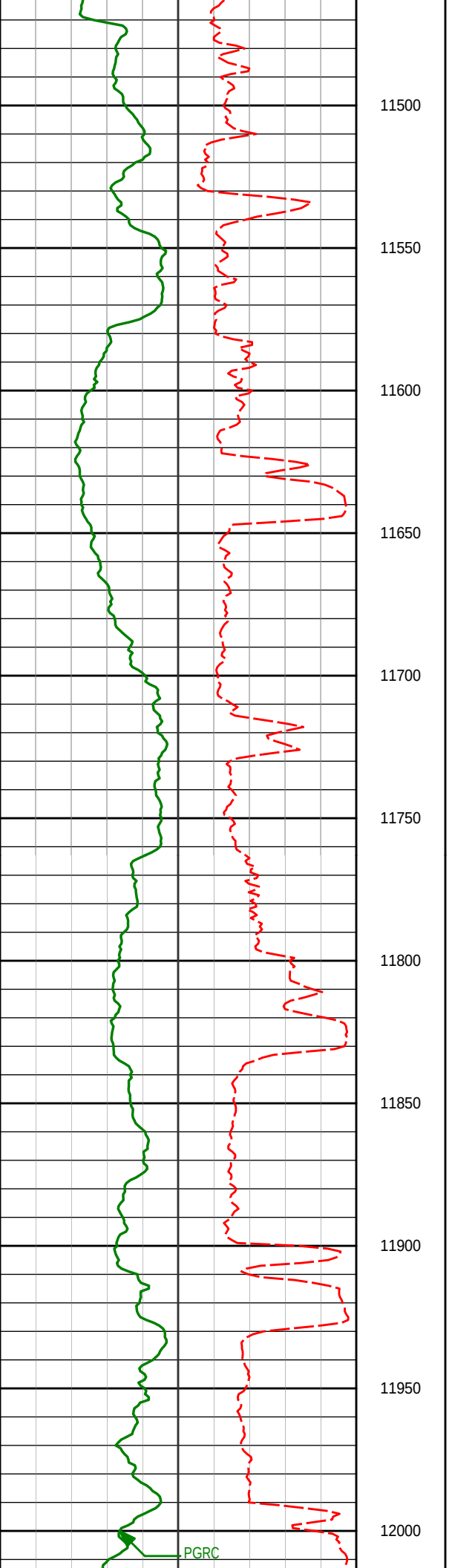
9867'	89.54°	267.49°	6716.55'	2960.25'
9962'	90.34°	268.16°	6716.65'	3055.19'
10056'	89.94°	267.74°	6716.42'	3149.13'
10151'	90.03°	267.32°	6716.44'	3244.09'
10246'	90.52°	267.62°	6715.98'	3339.06'
10340'	90.92°	268.13°	6714.80'	3432.99'



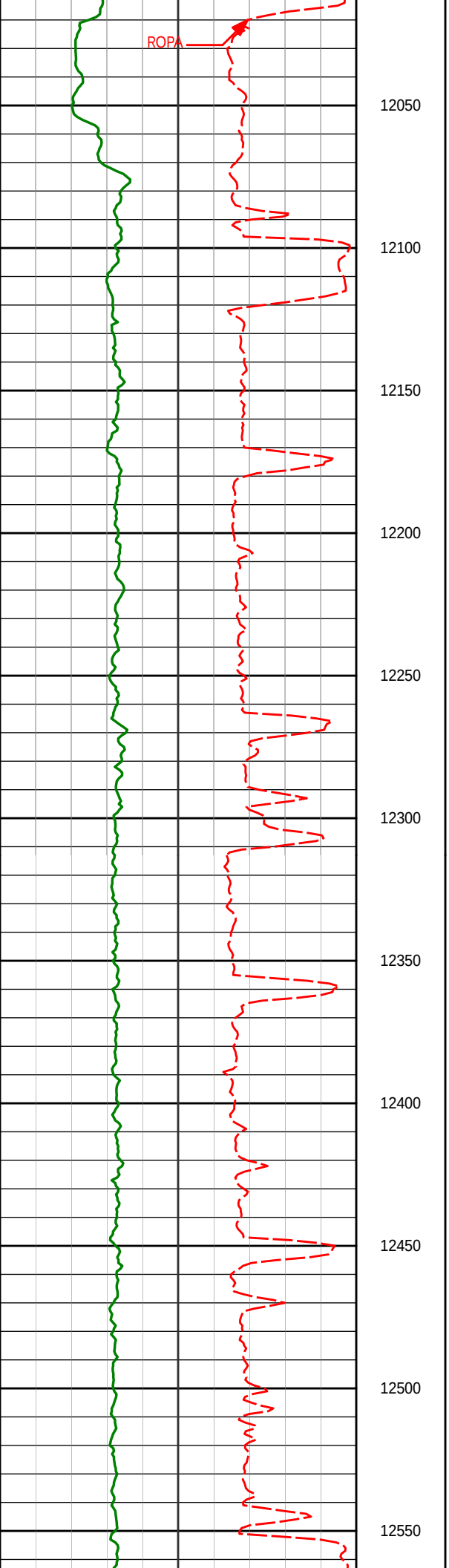
10435'	90.28°	268.19°	6713.81'	3527.91'
10530'	90.18°	267.81°	6713.43'	3622.85'
10625'	90.83°	267.87°	6712.59'	3717.79'
10719'	90.62°	268.55°	6711.40'	3811.71'
10814'	89.75°	269.34°	6711.09'	3906.57'
10909'	89.97°	269.59°	6711.33'	4001.38'



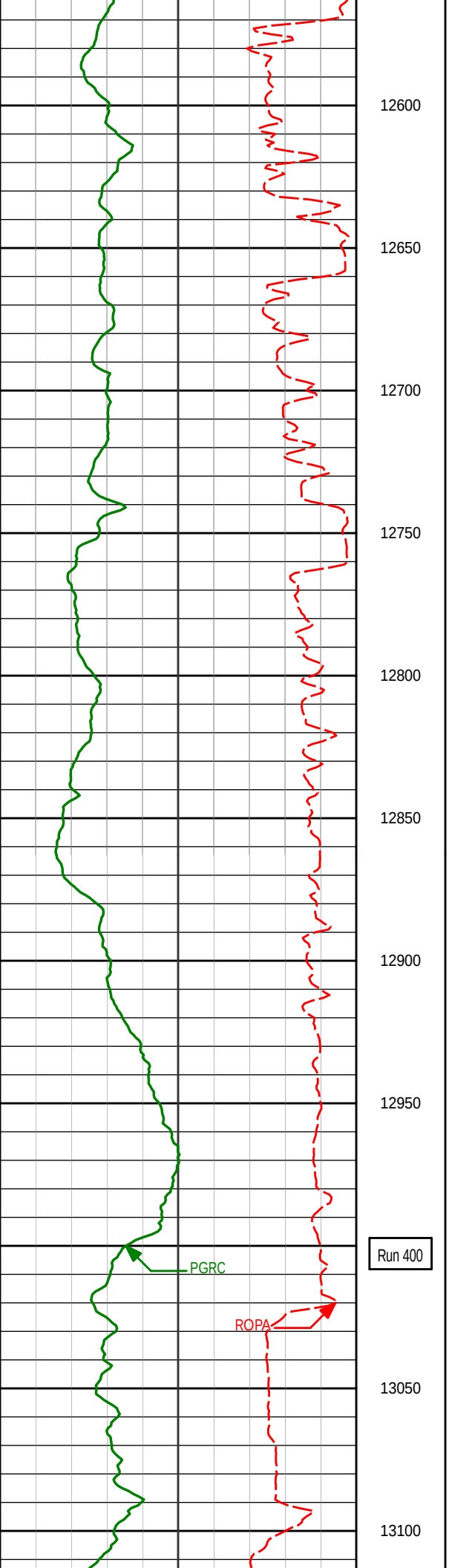
11004'	89.17°	268.66°	6712.04'	4096.23'
11098'	89.63°	268.69°	6713.02'	4190.11'
11189'	90.06°	269.38°	6713.27'	4280.98'
11281'	90.46°	269.53°	6712.85'	4372.80'
11373'	88.27°	268.78°	6713.87'	4464.64'



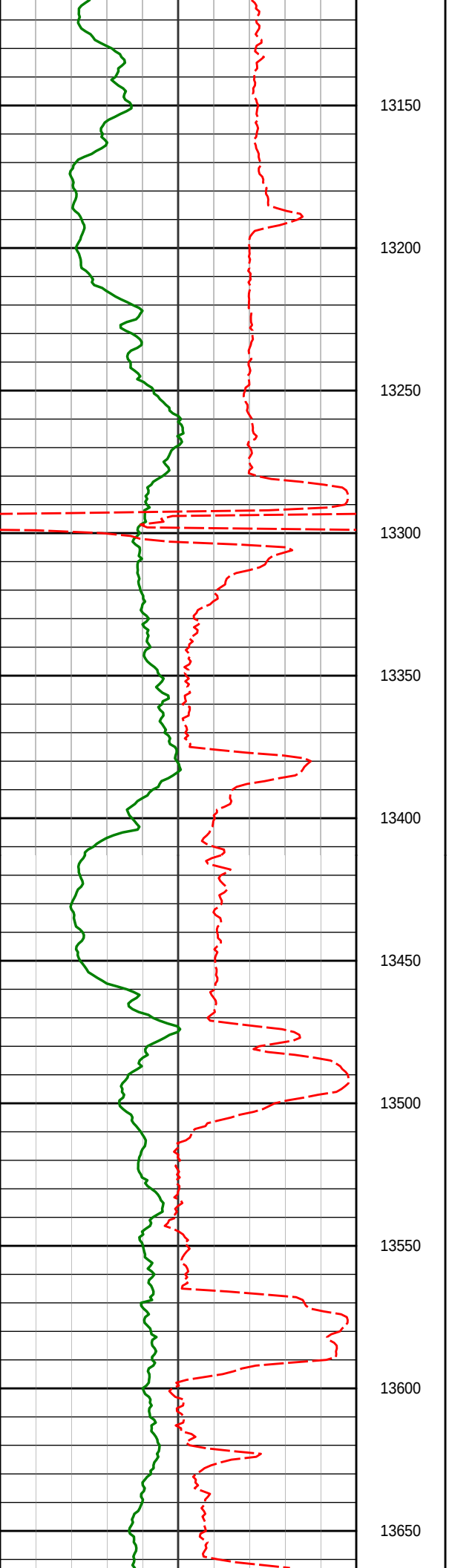
11466'	89.63°	268.28°	6715.58'	4557.52'
11557'	88.64°	267.96°	6716.95'	4648.44'
11649'	90.18°	266.50°	6717.90'	4740.41'
11742'	90.31°	266.36°	6717.50'	4833.40'
11835'	91.14°	266.73°	6716.32'	4926.39'
11926'	92.06°	268.14°	6713.78'	5017.32'



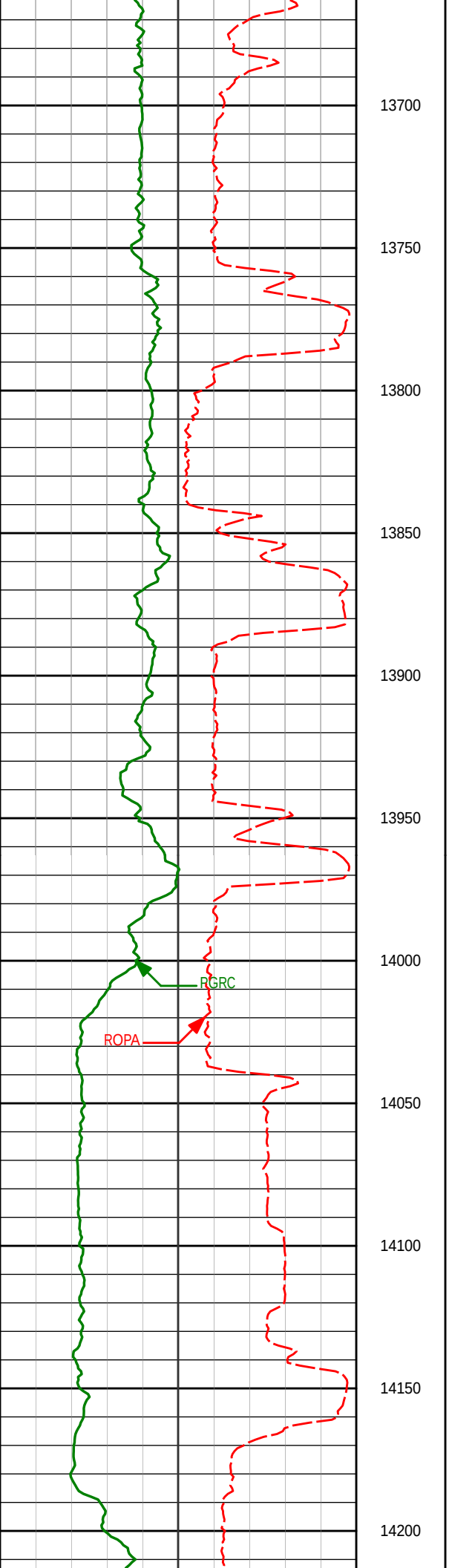
12018'	91.33°	269.09°	6711.06'	5109.17'
12110'	89.88°	269.39°	6710.09'	5201.01'
12202'	89.41°	269.08°	6710.66'	5292.85'
12294'	89.69°	269.49°	6711.38'	5384.69'
12385'	90.03°	268.61°	6711.60'	5475.55'
12478'	89.75°	267.74°	6711.78'	5568.47'



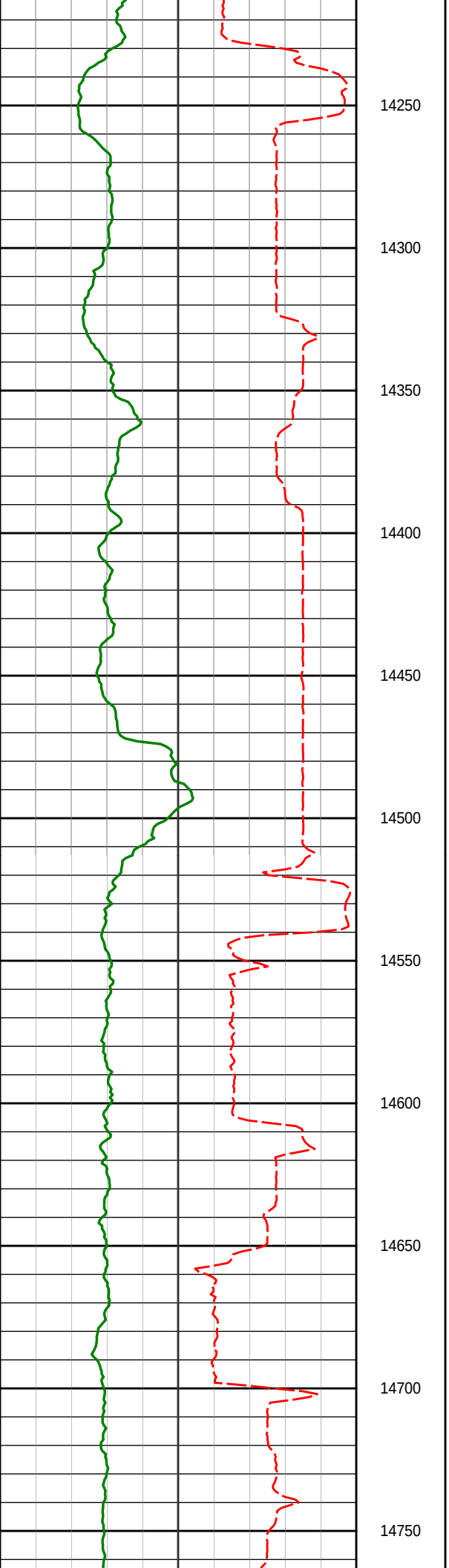
12569'	90.80°	268.08°	6711.35'	5659.41'
12661'	90.40°	270.11°	6710.38'	5751.26'
12753'	88.89°	270.71°	6710.95'	5842.97'
12844'	88.49°	271.27°	6713.03'	5933.59'
12936'	88.58°	271.05°	6715.38'	6025.17'
13031'	88.09°	270.67°	6718.15'	6119.77'



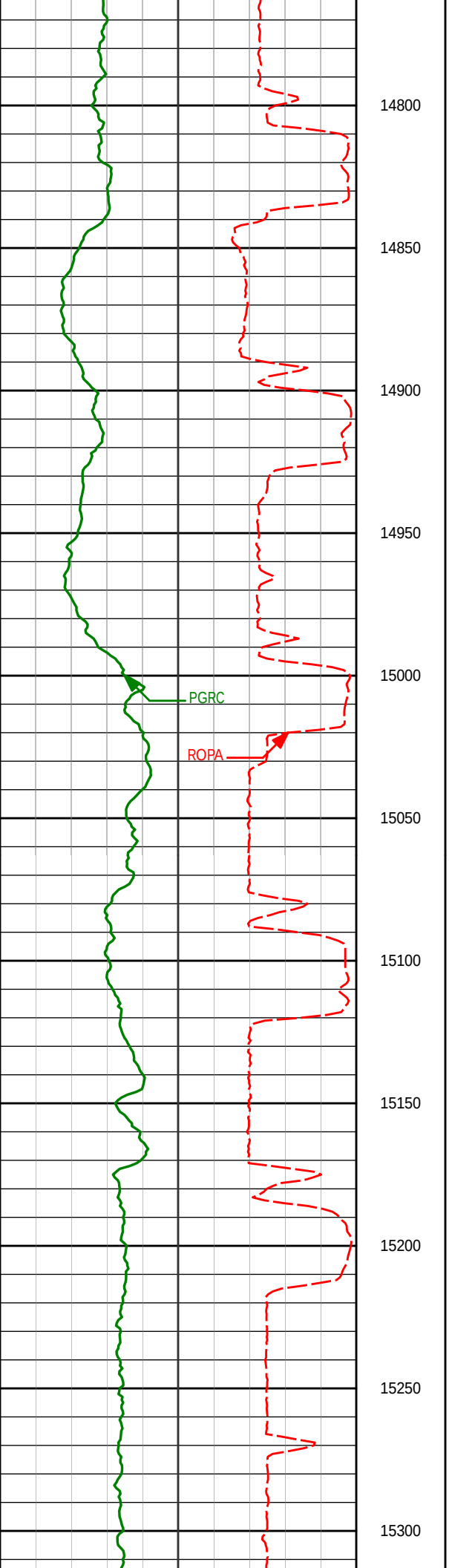
13126'	88.40°	270.50°	6721.05'	6214.41'
13220'	88.61°	270.13°	6723.51'	6308.10'
13314'	89.60°	269.81°	6724.98'	6401.85'
13409'	89.72°	269.63°	6725.54'	6496.64'
13504'	89.91°	268.85°	6725.85'	6591.48'
13598'	90.74°	268.76°	6725.31'	6685.35'



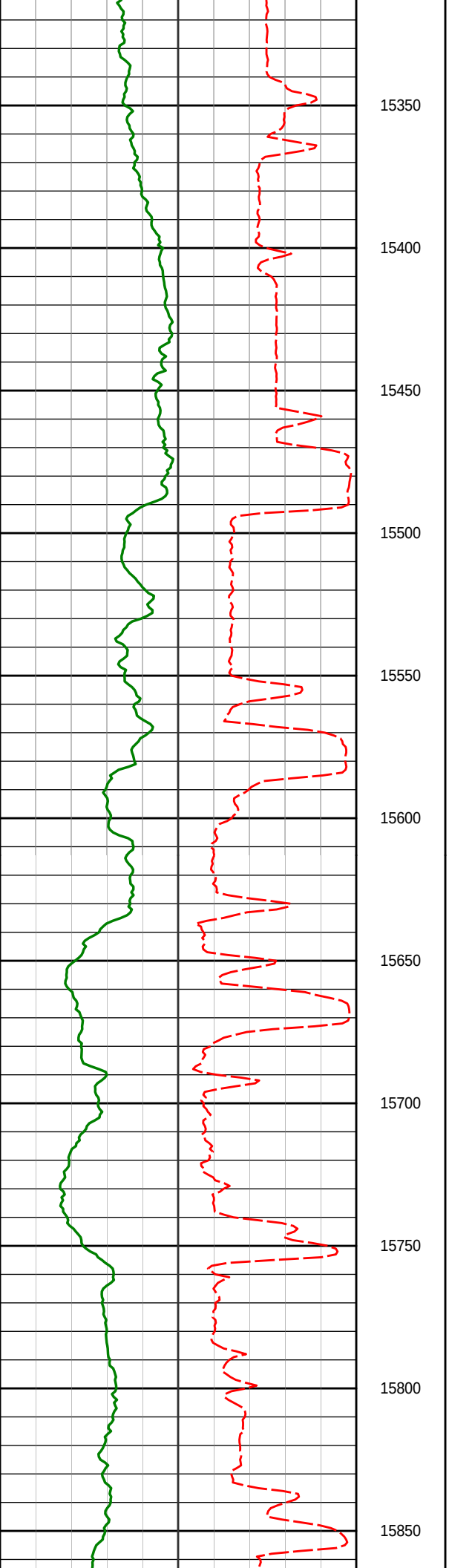
13693'	89.88°	267.57°	6724.80'	6780.28'
13787'	89.75°	266.72°	6725.10'	6874.25'
13882'	91.48°	268.37°	6724.08'	6969.20'
13976'	91.23°	269.13°	6721.86'	7063.06'
14070'	89.82°	267.70°	6721.00'	7156.96'
14165'	90.52°	268.76°	6720.72'	7251.88'



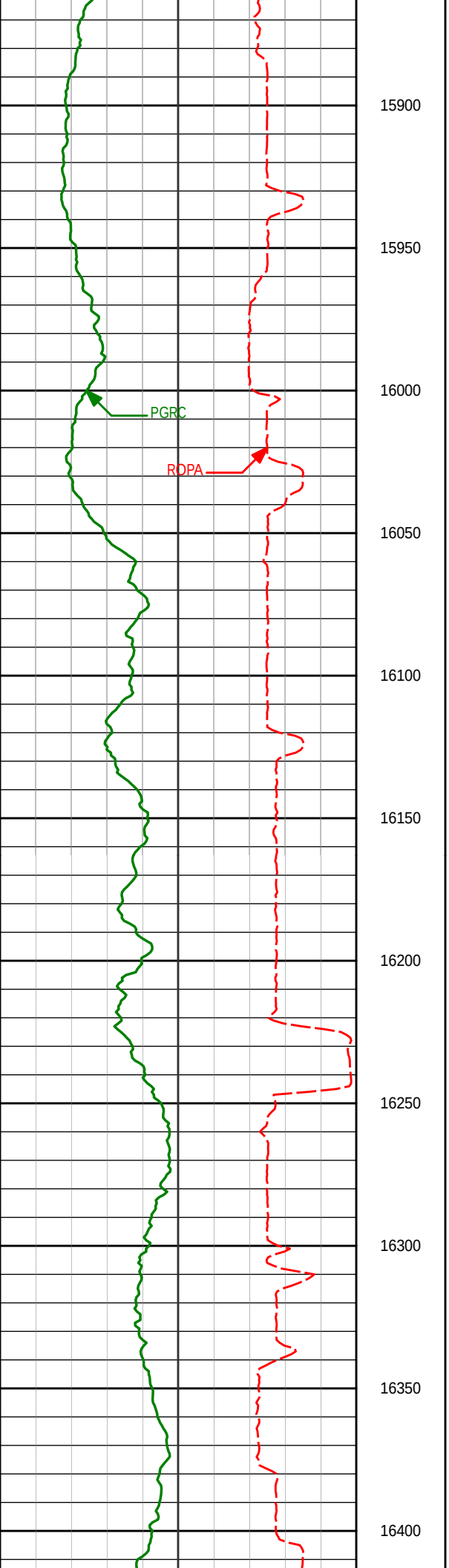
14259'	91.76°	270.84°	6718.85'	7345.63'
14354'	91.29°	270.00°	6716.32'	7440.30'
14449'	91.66°	269.54°	6713.87'	7535.06'
14543'	91.02°	270.40°	6711.67'	7628.79'
14638'	90.06°	269.30°	6710.78'	7723.56'
14732'	89.75°	266.93°	6710.94'	7817.48'



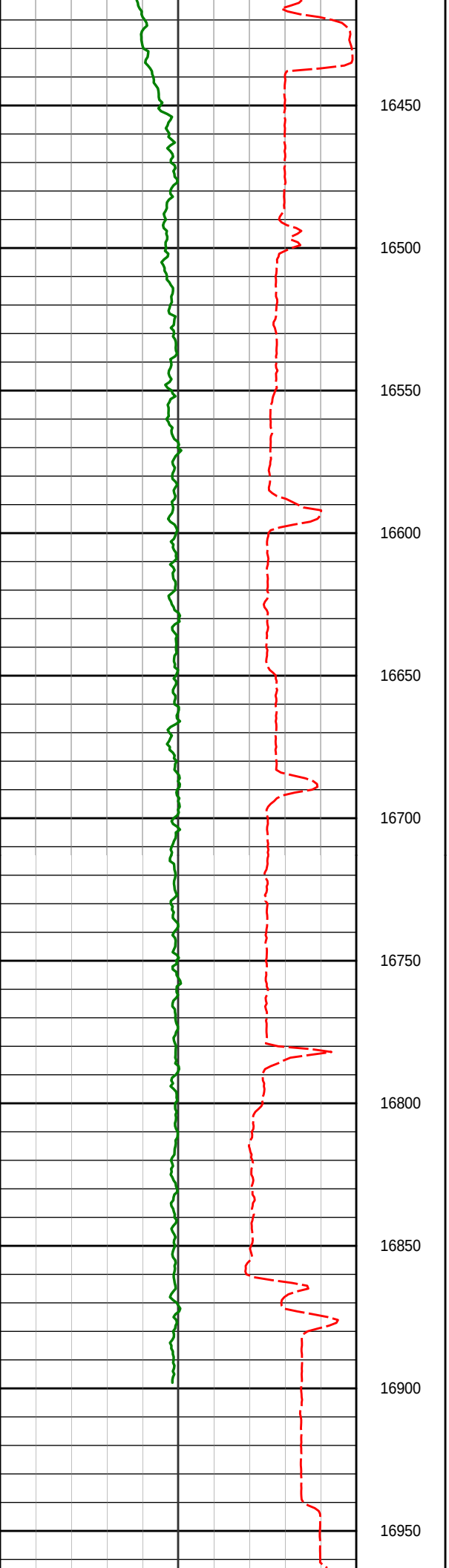
14827'	90.52°	266.34°	6710.71'	7912.47'
14921'	91.23°	268.98°	6709.28'	8006.41'
15016'	91.02°	270.60°	6707.41'	8101.17'
15111'	91.14°	272.15°	6705.62'	8195.71'
15205'	89.57°	273.28°	6705.04'	8289.04'
15300'	89.78°	272.23°	6705.58'	8383.36'



15395'	90.31°	272.31°	6705.50'	8477.78'
15489'	87.41°	271.30°	6707.37'	8571.25'
15583'	87.81°	269.83°	6711.29'	8664.85'
15678'	88.00°	269.37°	6714.76'	8759.59'
15773'	88.15°	269.30°	6717.96'	8854.37'



15867'	90.00°	269.95°	6719.47'	8948.15'
15962'	90.62°	269.91°	6718.96'	9042.91'
16057'	91.23°	269.60°	6717.43'	9137.69'
16151'	92.00°	269.29°	6714.78'	9231.47'
16246'	90.22°	269.57°	6712.94'	9326.27'
16340'	88.92°	268.15°	6713.64'	9420.13'



16435'	89.66°	267.69°	6714.82'	9515.07'
16529'	88.74°	265.45°	6716.13'	9609.04'
16624'	89.20°	266.21°	6717.84'	9704.03'
16718'	89.57°	268.00°	6718.85'	9798.00'
16813'	89.66°	267.86°	6719.49'	9892.93'
16900'	89.45°	265.72°	6720.16'	9979.92'

TD Well @ 16964' MD / 6720.78' TVD

16964'	89.45°	265.72°	6720.78'	10043.91'	

Avg Rate of Penetration
ROPA
1K feet per hr 0

PCG Gamma Ray
PGRC
0 api 300

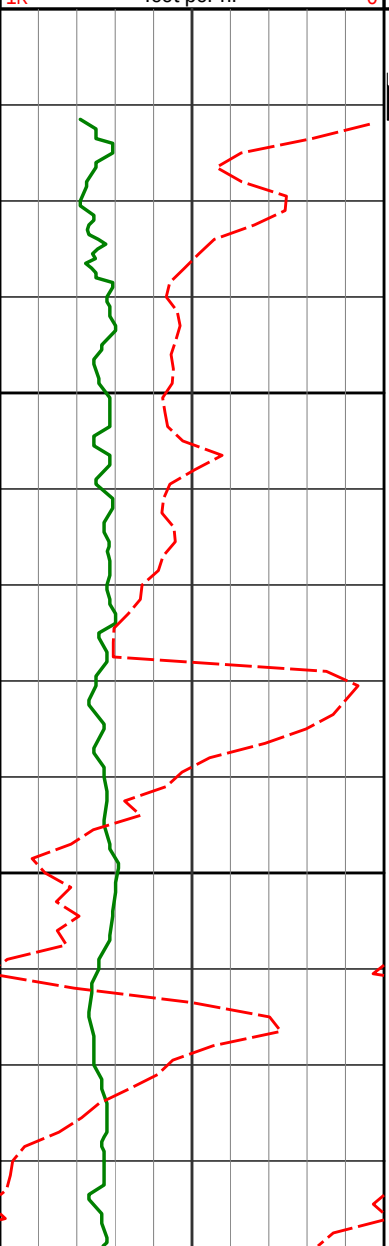
Depth ft	Depth	Inc.	Azi.	TVD	V.S.

HALLIBURTON
Sperry Drilling Services
TVD Detail Log 1:240

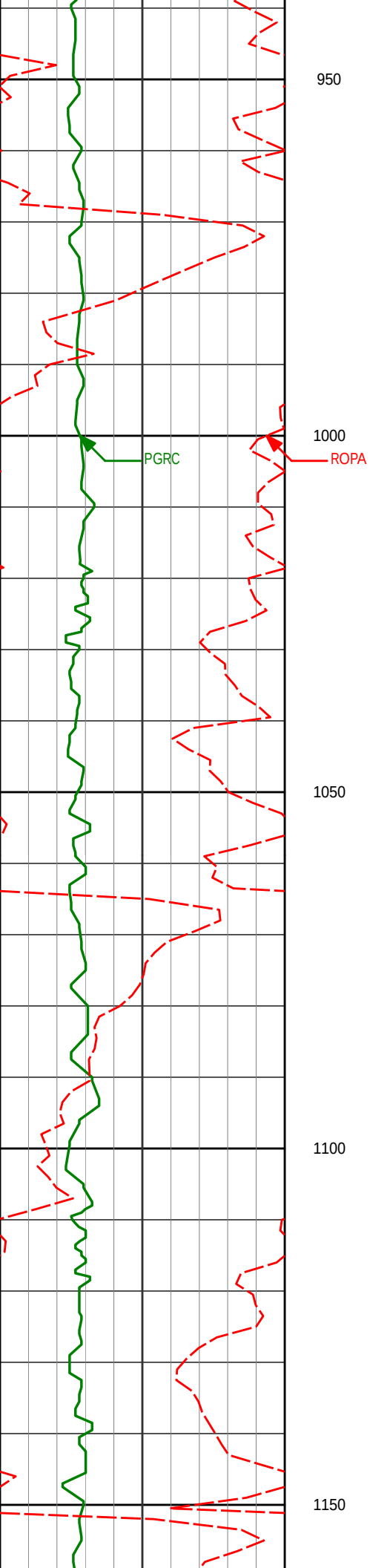
Noble Energy
Wells Ranch State A36-625
H&P 321
Sec. 31-T6N-R63W

PCG Gamma Ray
PGRC
0 api 300

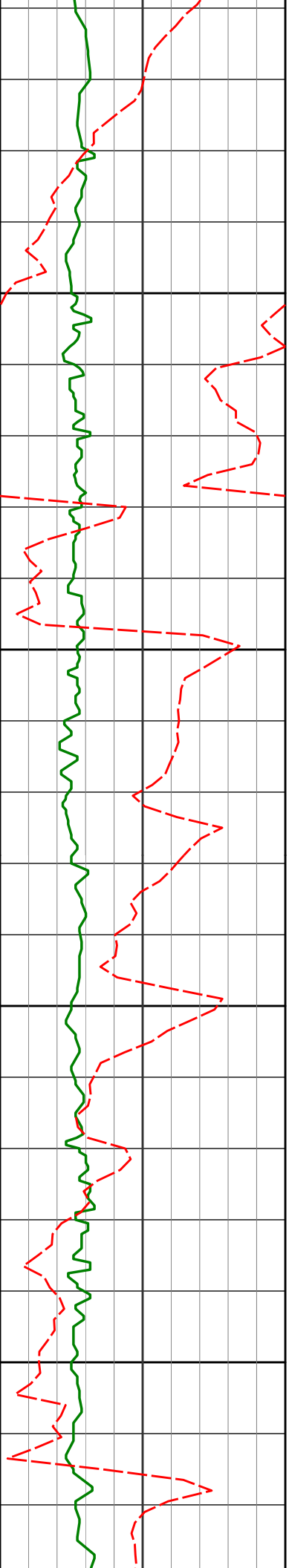
Avg Rate of Penetration
ROPA
1K feet per hr 0



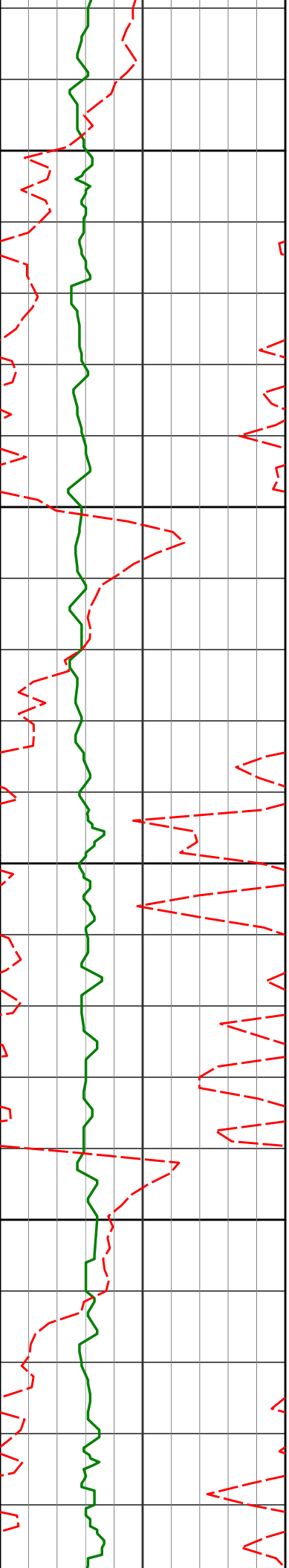
Depth ft	Depth	Inc.	Azi.	TVD	V.S.
Run 100					
850	857'	0.26°	41.28°	857.00'	-1.38'
900	919'	0.34°	41.55°	919.00'	-1.62'



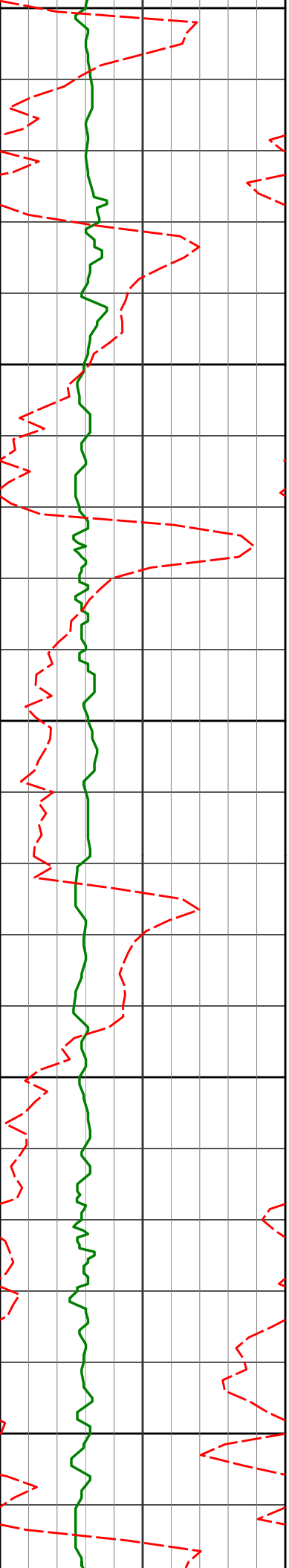
1011'	0.29°	51.49°	1010.99'	-2.00'
1103'	0.22°	1.45°	1102.99'	-2.21'



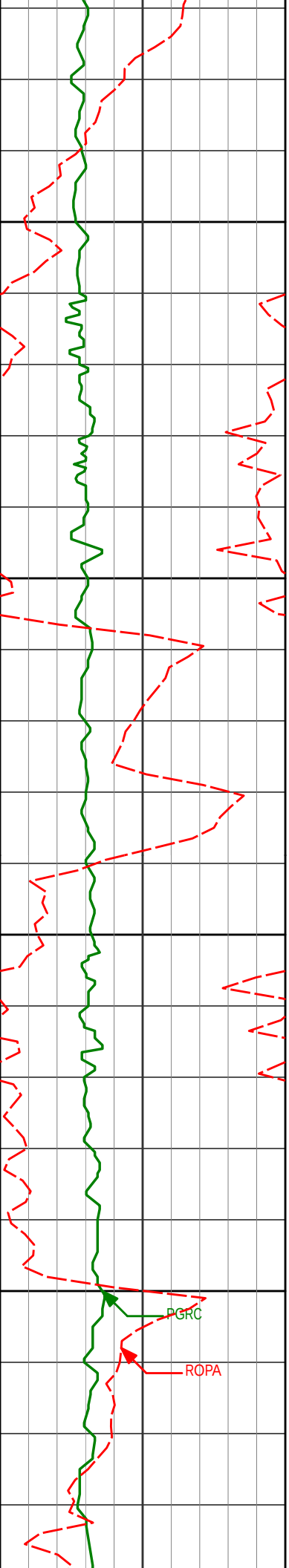
1208'	0.18°	313.41°	1207.99'	-2.12'
1300'	0.29°	269.55°	1299.99'	-1.79'



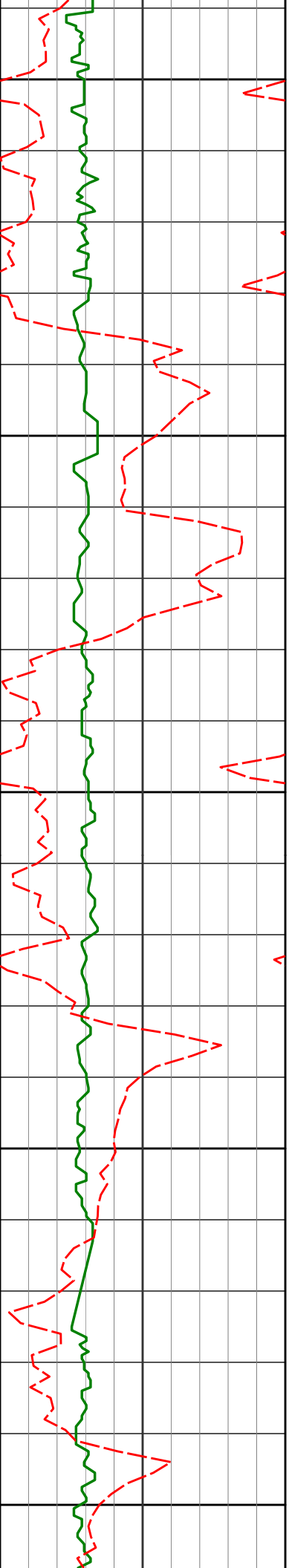
1392'	0.55°	269.52°	1391.99'	-1.12'
1485'	0.47°	267.03°	1484.99'	-0.29'
1576'	0.63°	283.17°	1575.98'	0.56'



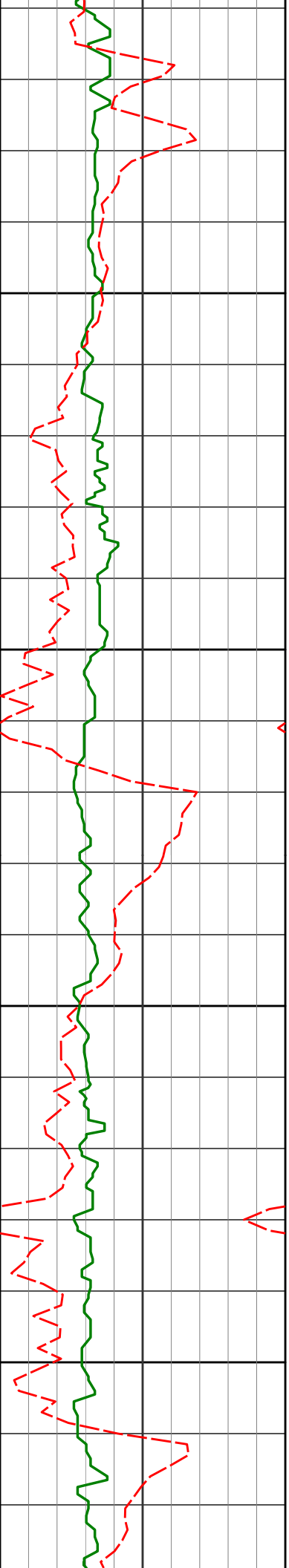
1668'	0.65°	293.02°	1667.98'	1.51'
1761'	0.80°	286.40°	1760.97'	2.59'



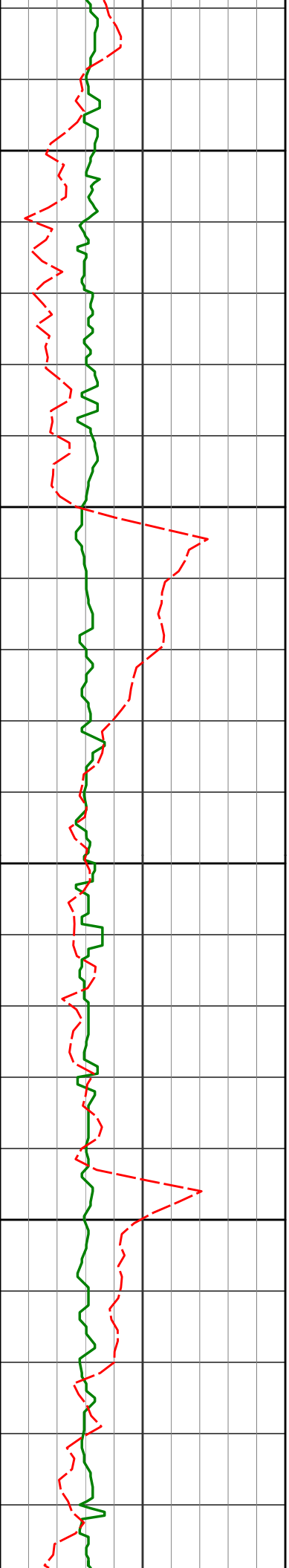
1854'	0.63°	284.32°	1853.96'	3.68'
1945'	0.13°	5.86°	1944.96'	4.14'
2037'	0.41°	0.07°	2036.96'	4.09'



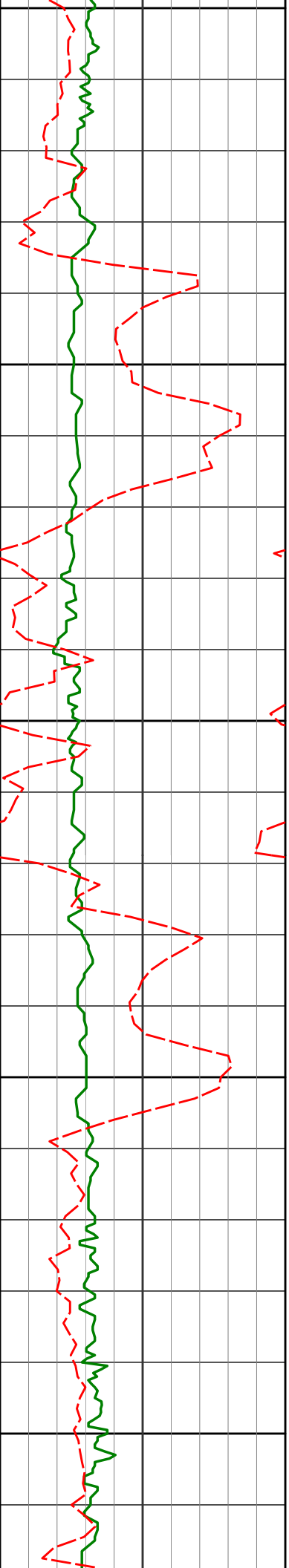
2129'	0.54°	210.44°	2128.96'	4.32'
2221'	0.56°	218.43°	2220.95'	4.87'



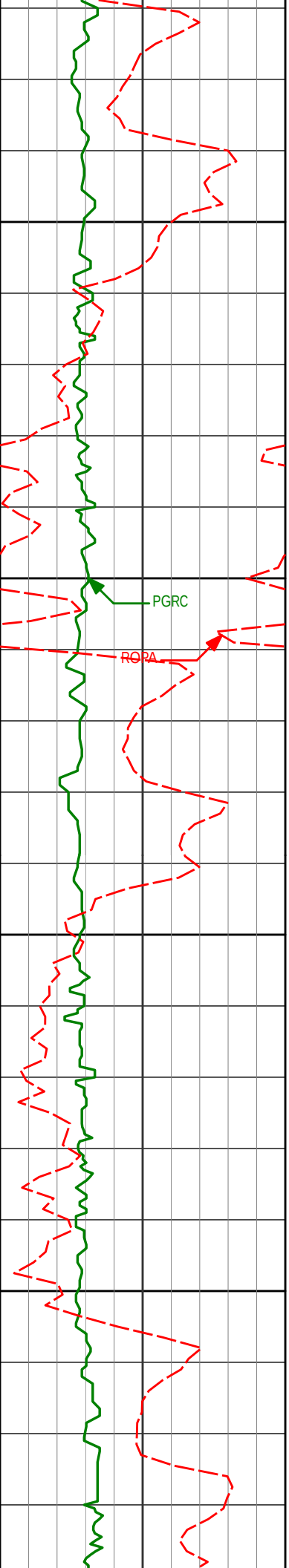
2313'	0.61°	204.09°	2312.95'	5.40'
2404'	0.62°	195.75°	2403.94'	5.80'



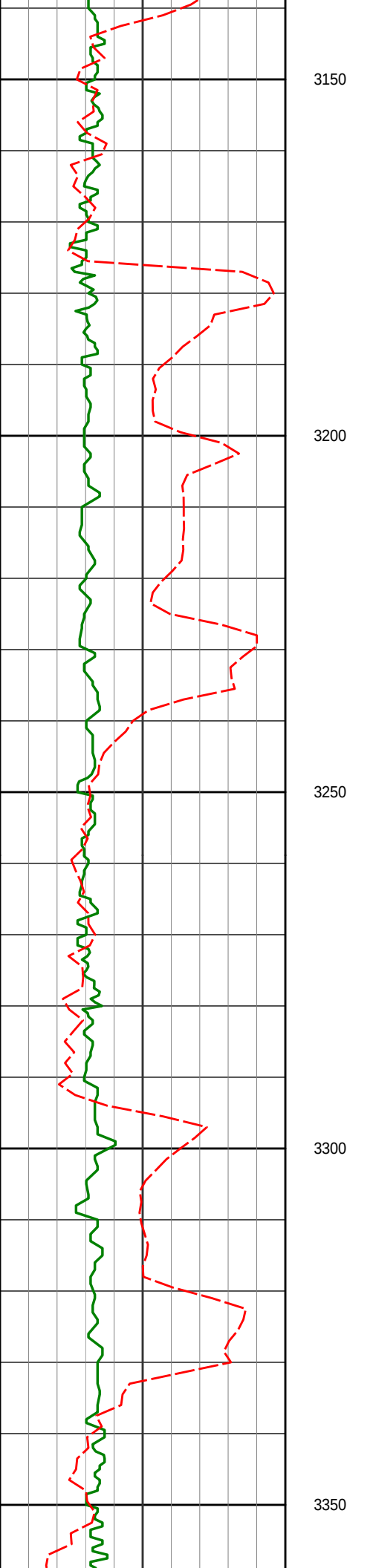
2497'	0.53°	202.69°	2496.94'	6.16'
2588'	0.47°	184.83°	2587.94'	6.41'
2680'	0.40°	187.30°	2679.93'	6.53'



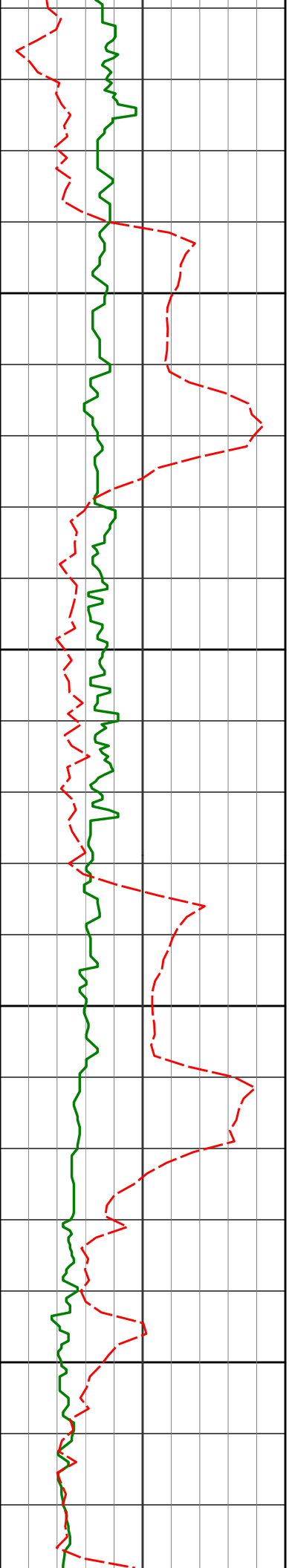
2772'	1.75°	147.74°	2771.92'	5.93'
2863'	2.74°	130.36°	2862.84'	3.72'



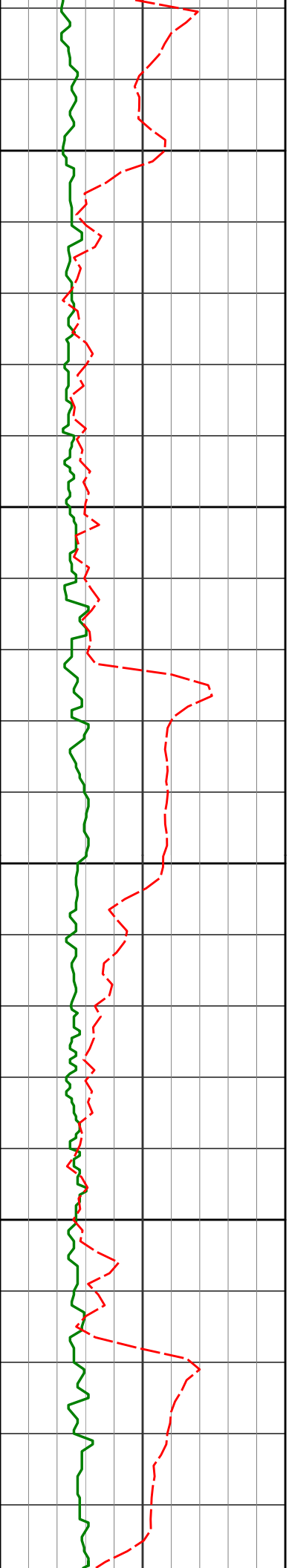
2955'	3.95°	133.90°	2954.69'	0.03'
3050'	5.28°	135.67°	3049.38'	-4.98'



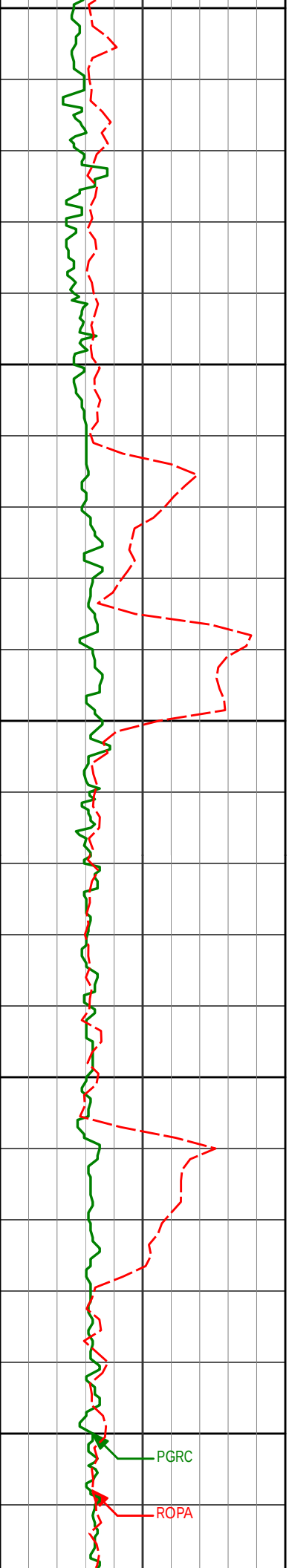
3145'	7.13°	123.66°	3143.82'	-12.46'
3240'	7.65°	118.61°	3238.03'	-22.45'
3334'	8.27°	119.25°	3331.13'	-33.36'



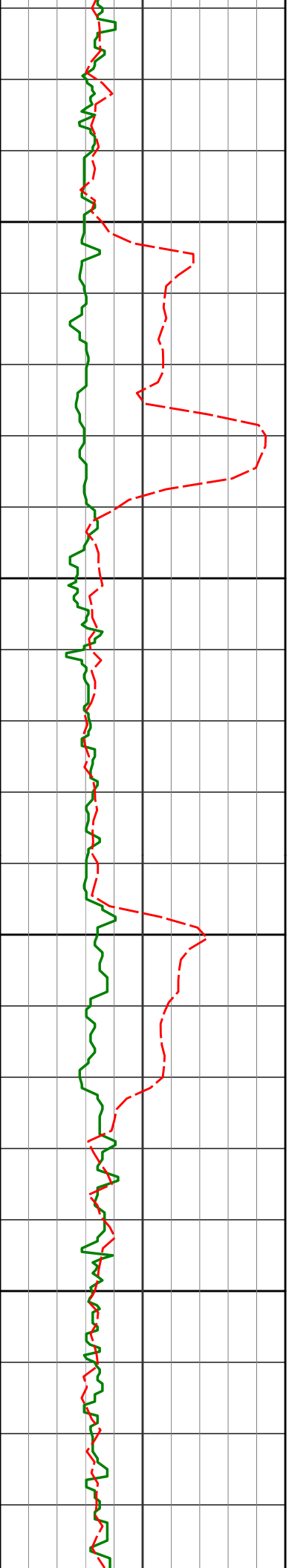
3429'	8.52°	124.62°	3425.11'	-44.56'
3524'	9.06°	119.76°	3518.99'	-56.26'



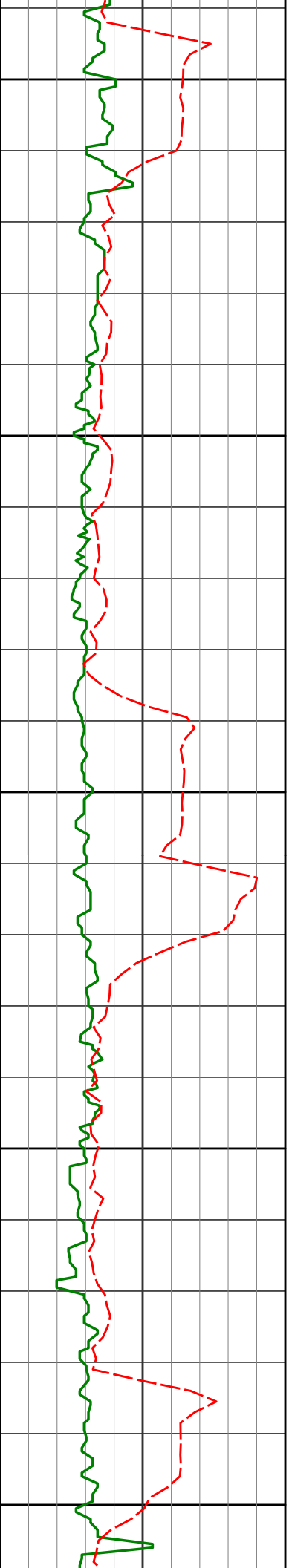
3619'	9.51°	117.86°	3612.75'	-69.13'
3713'	9.80°	117.15°	3705.42'	-82.56'



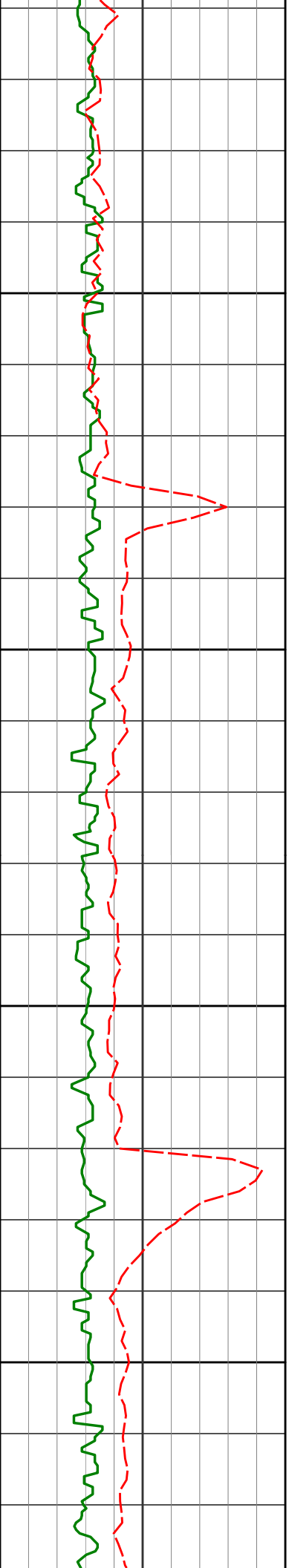
3808'	9.96°	116.32°	3799.01'	-96.55'
3903'	8.21°	114.41°	3892.81'	-109.60'
3998'	7.50°	113.92°	3986.92'	-121.03'



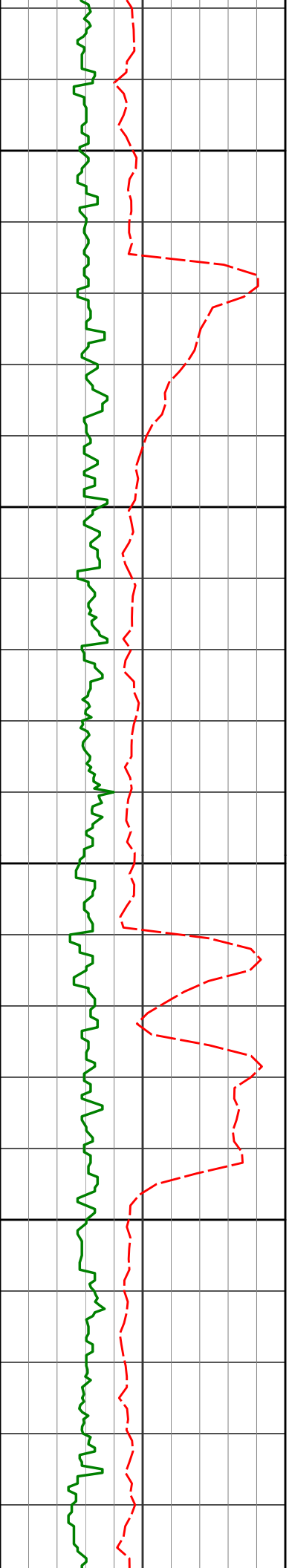
4093'	7.76°	116.18°	4081.08'	-132.04'
4188'	7.85°	115.58°	4175.20'	-143.22'



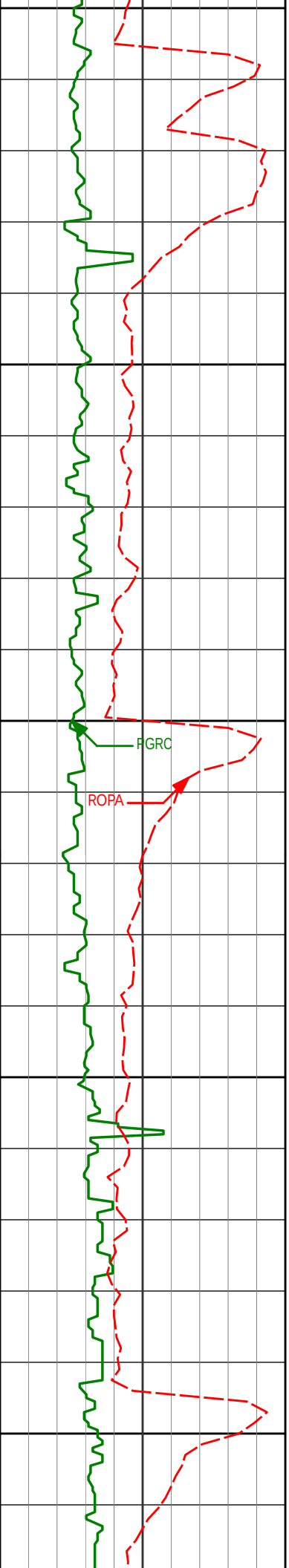
4282'	7.44°	116.31°	4268.36'	-154.04'
4377'	8.22°	123.08°	4362.48'	-164.76'



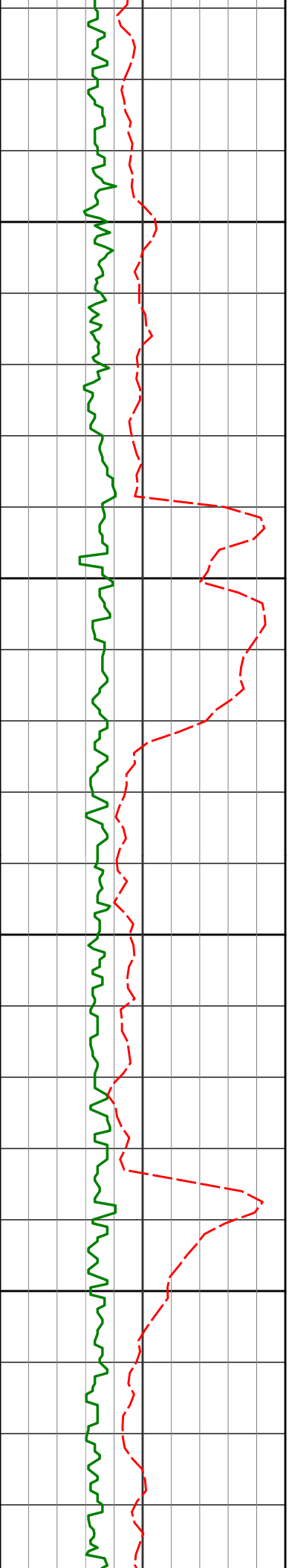
4472'	7.99°	124.01°	4456.53'	-175.37'
4567'	7.55°	125.09°	4550.66'	-185.40'
4661'	7.03°	126.68°	4643.90'	-194.54'



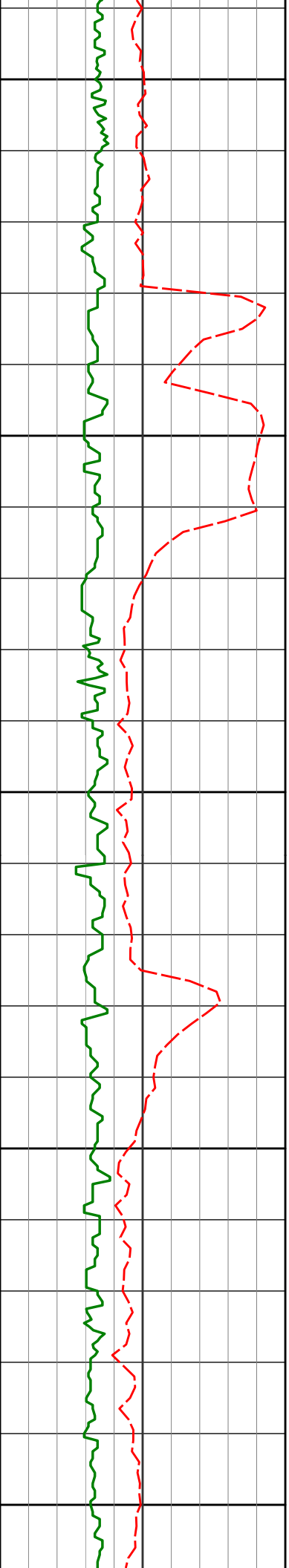
4756'	6.34°	127.34°	4738.25'	-202.88'
4850'	7.44°	113.27°	4831.58'	-212.17'



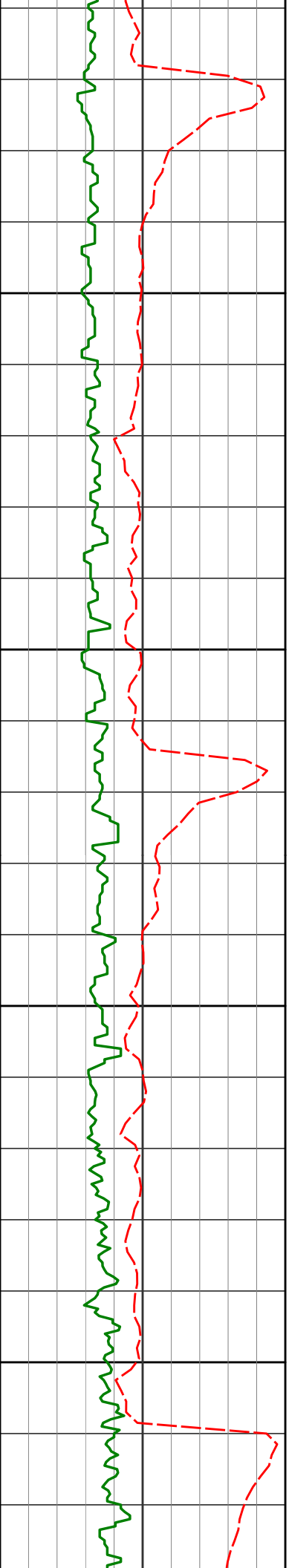
4945'	8.08°	115.78°	4925.71'	-223.42'
5039'	7.80°	115.38°	5018.81'	-234.70'



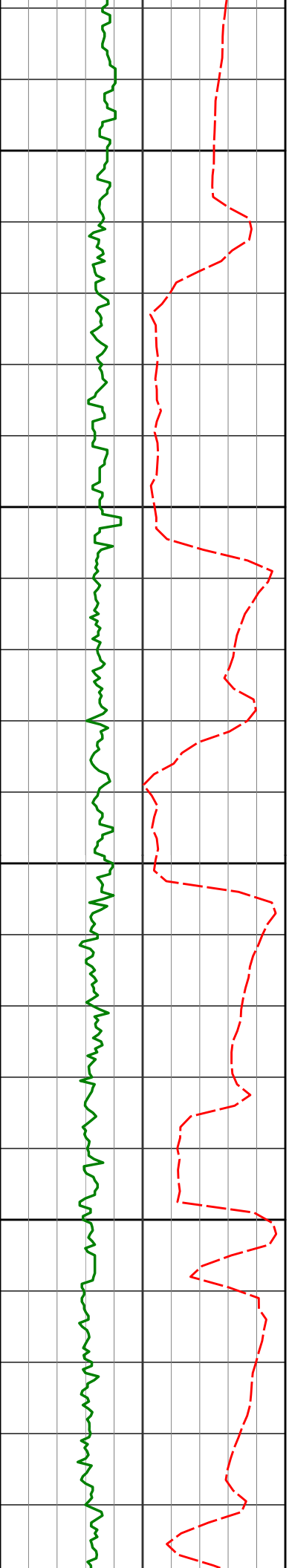
5134'	6.97°	115.25°	5113.02'	-245.34'
5228'	8.32°	114.90°	5206.18'	-256.26'
5323'	7.35°	111.31°	5300.29'	-267.76'



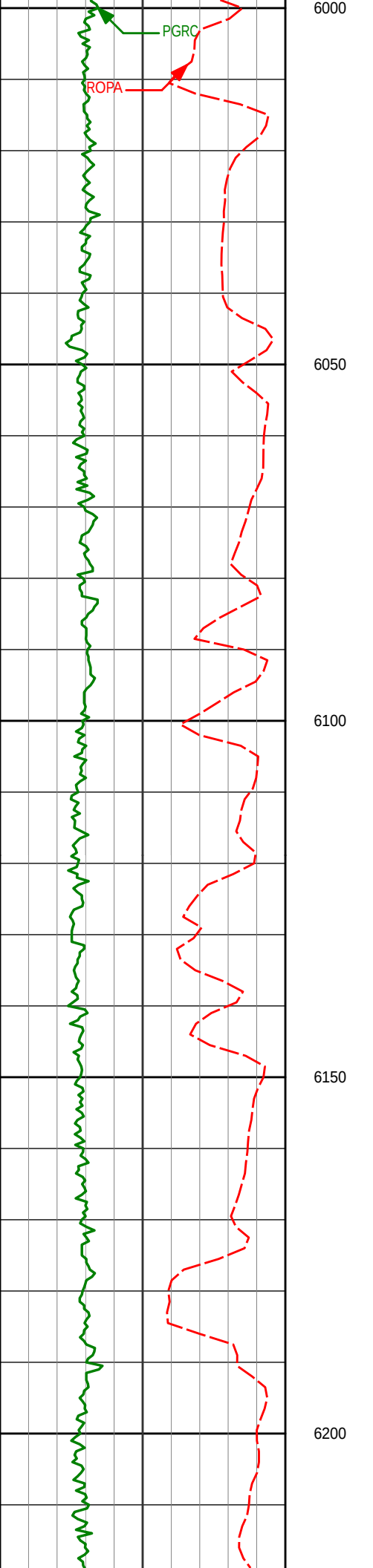
5417'	8.54°	114.21°	5393.39'	-279.34'
5512'	7.63°	113.42°	5487.44'	-291.14'



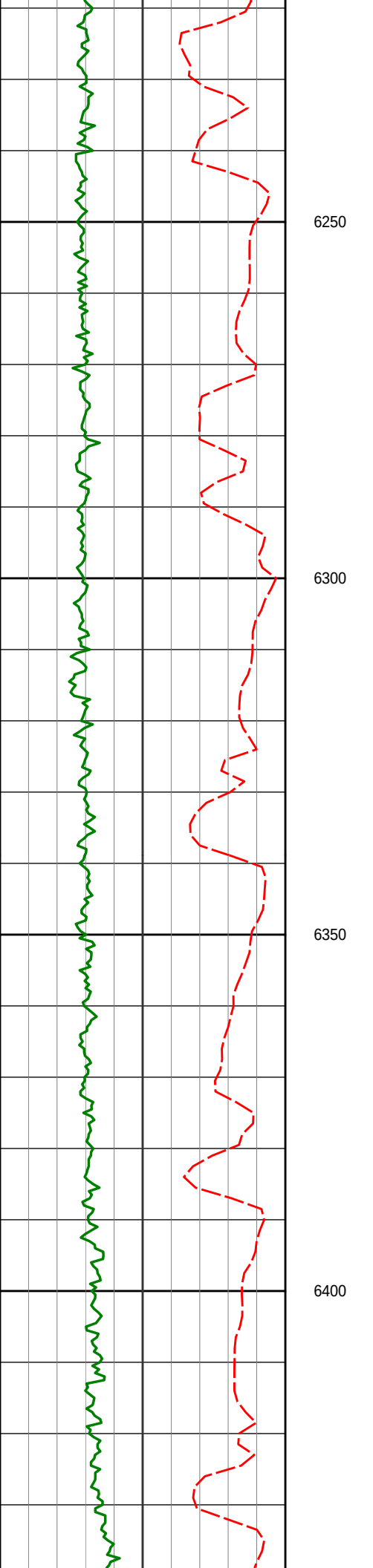
5701'	6.24°	110.42°	5675.06'	-311.61'



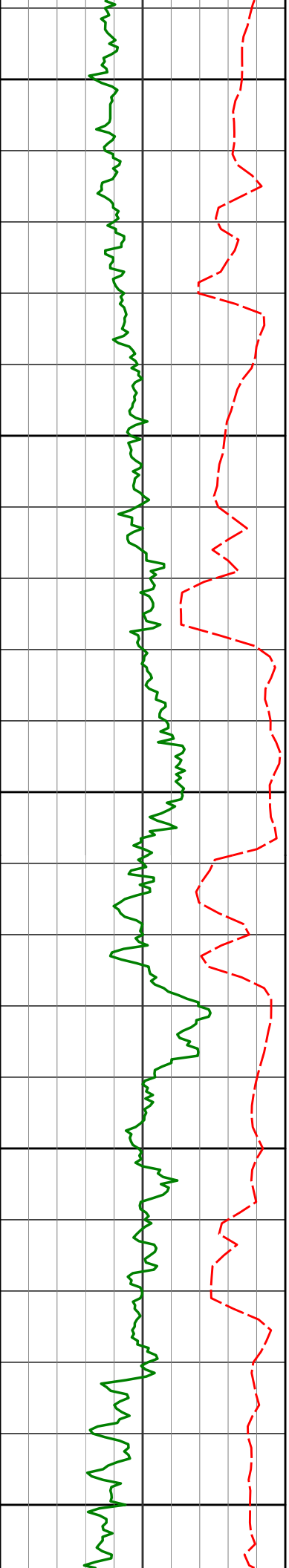
5795'	11.58°	132.83°	5767.92'	-322.72'
5843'	12.48°	134.24°	5814.86'	-329.45'
5890'	14.57°	143.05°	5860.56'	-336.04'
5938'	17.47°	148.73°	5906.69'	-342.60'
5984'	20.94°	151.92°	5950.13'	-349.10'



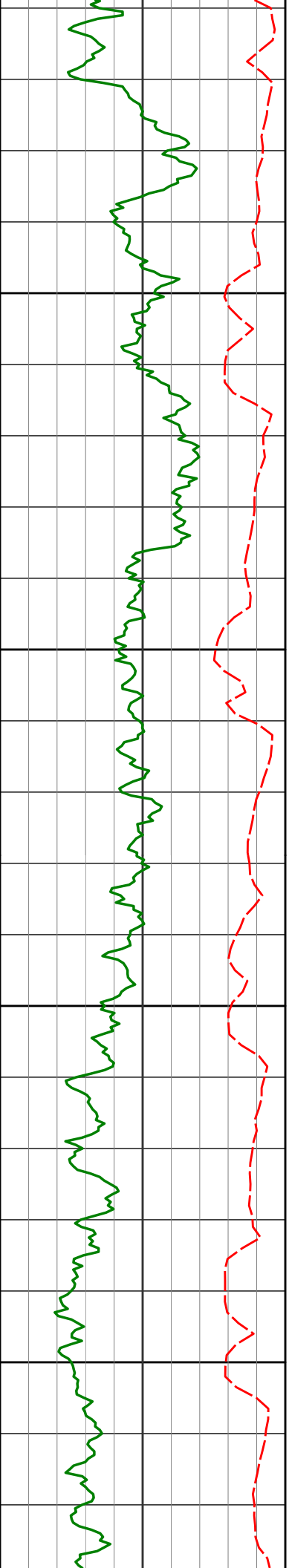
6032'	24.38°	157.32°	5994.42'	-355.75'
6079'	27.47°	163.87°	6036.70'	-361.10'
6127'	29.79°	167.87°	6078.83'	-365.07'
6174'	30.27°	175.51°	6119.53'	-366.78'



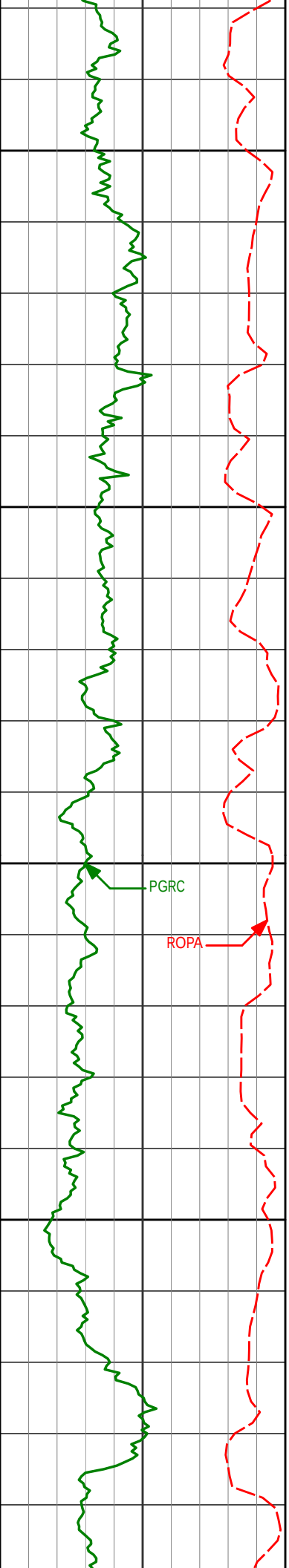
6222'	30.73°	183.92°	6160.91'	-365.15'
6269'	31.58°	192.44°	6201.15'	-359.97'
6317'	33.21°	200.85°	6241.70'	-350.84'
6363'	34.88°	210.16°	6279.84'	-338.12'
6411'	35.54°	218.18°	6319.08'	-321.00'



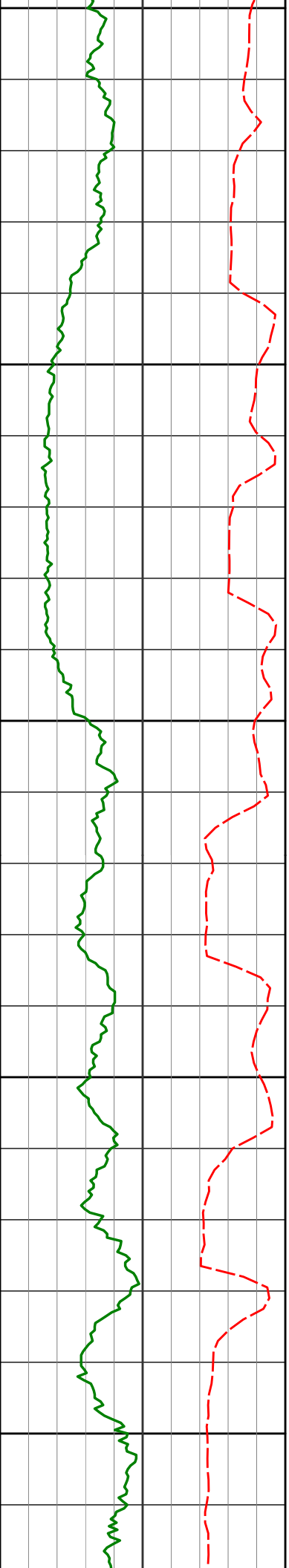
6458'	35.94°	226.19°	6357.25'	-301.18'
6506'	36.67°	234.84°	6395.96'	-278.05'
6553'	38.97°	239.07°	6433.09'	-252.84'
6648'	46.03°	248.06°	6503.15'	-193.51'



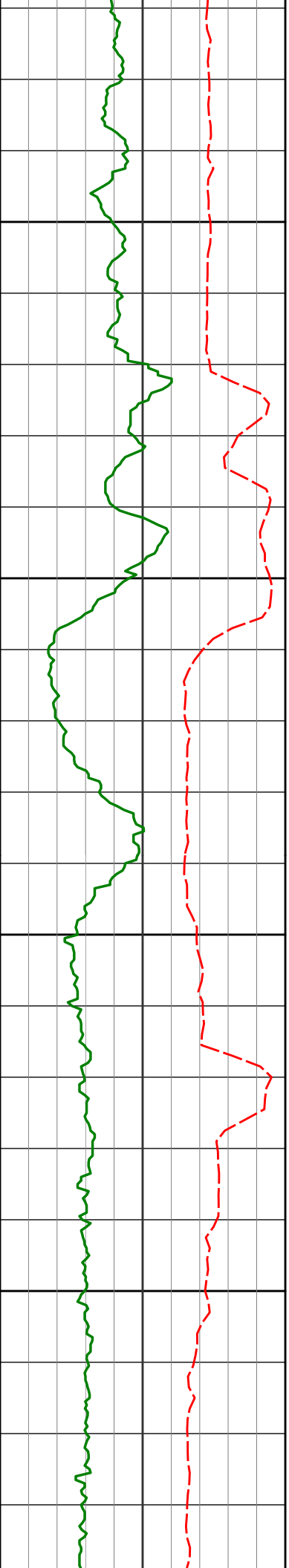
6696'	49.79°	251.44°	6535.33'	-159.30'
6742'	54.02°	253.90°	6563.70'	-124.06'
6790'	57.10°	257.60°	6590.85'	-85.11'
6837'	59.38°	261.82°	6615.60'	-45.39'



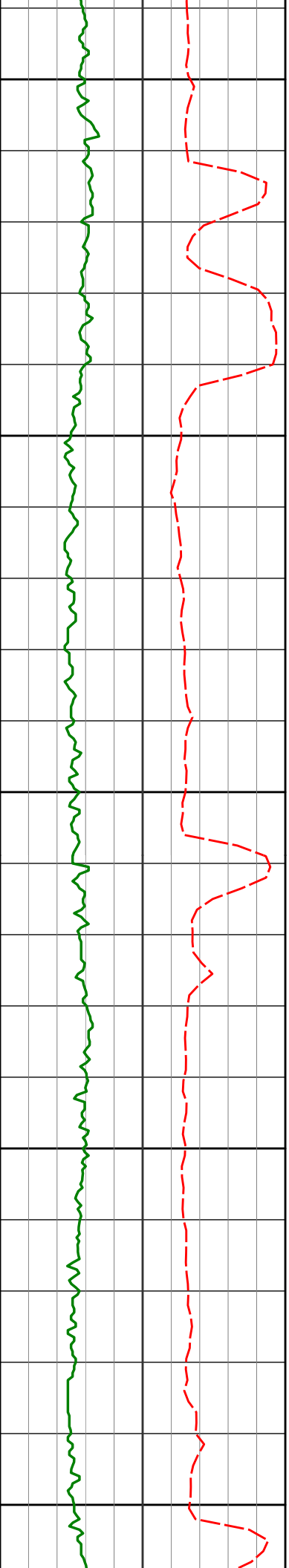
6932'	67.13°	266.76°	6658.34'	39.31'
6980'	71.31°	269.30°	6675.37'	84.14'



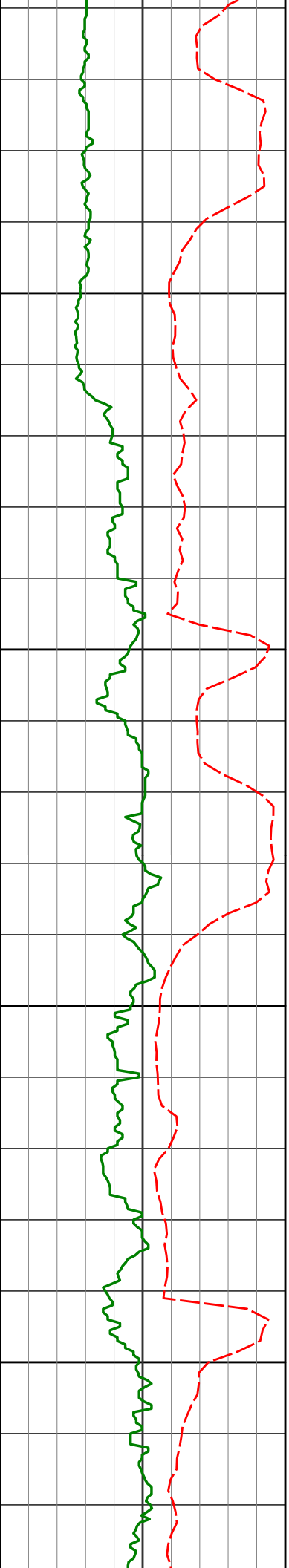
7121'	81.24°	271.67°	6708.78'	220.49'
7215'	87.94°	271.74°	6717.64'	313.54'
7310'	91.97°	270.90°	6717.71'	408.09'



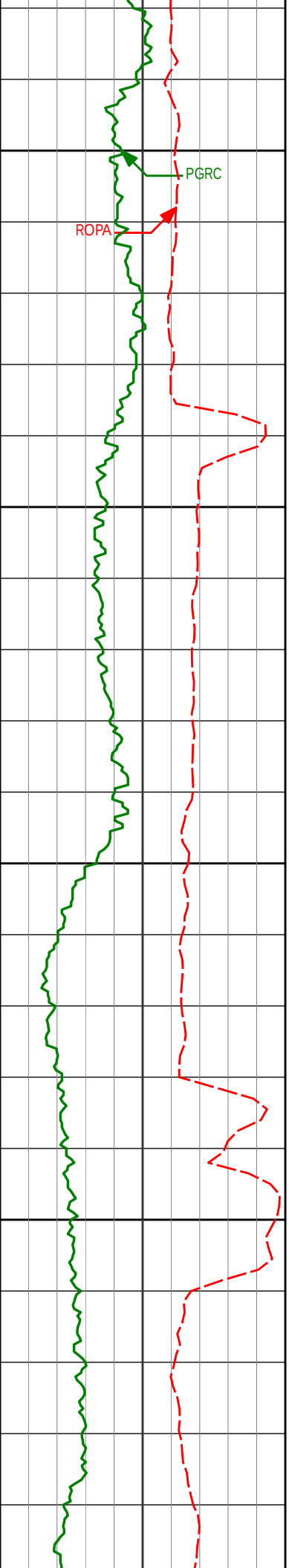
7405'	90.59°	270.54°	6715.59'	502.73'
7500'	90.92°	270.00°	6714.34'	597.45'



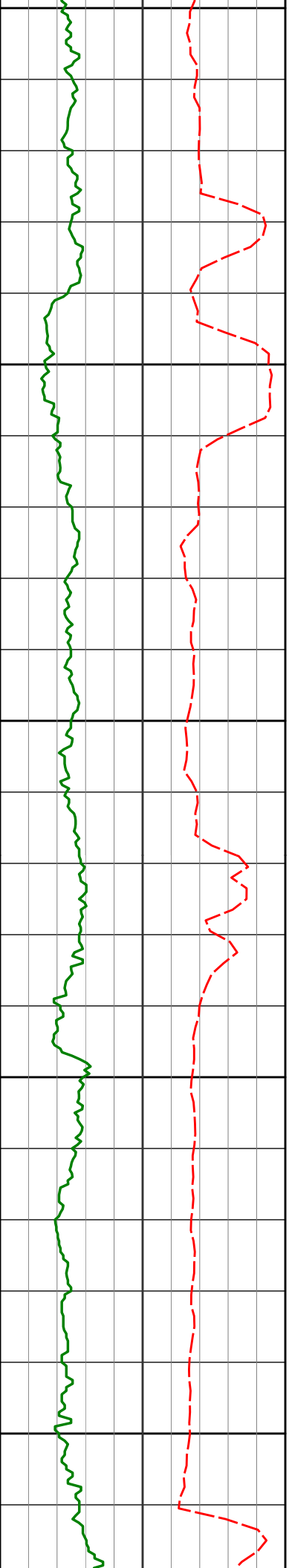
7594'	89.54°	271.00°	6713.96'	691.14'
7689'	89.35°	270.46°	6714.88'	785.80'



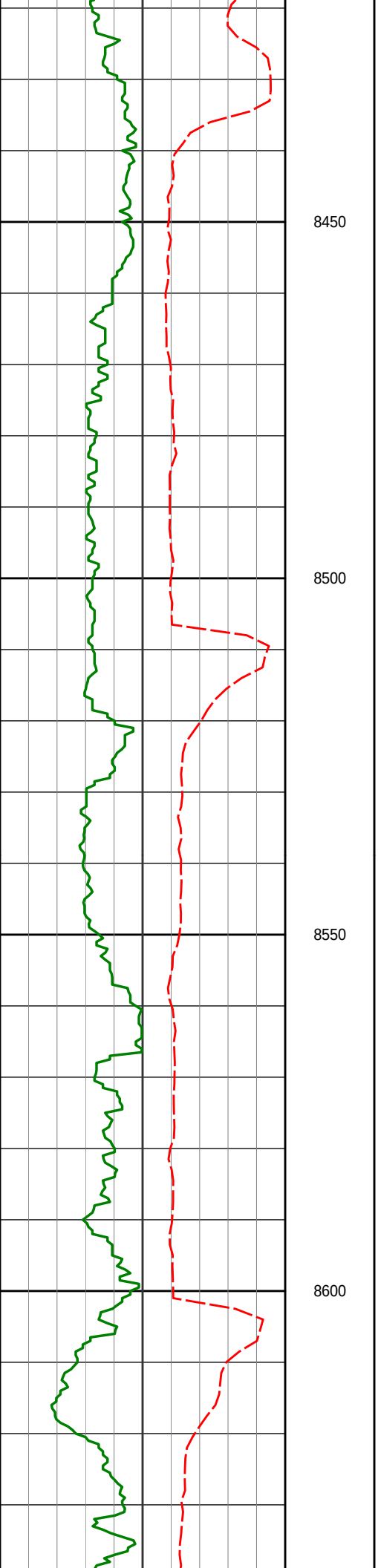
7783'	90.89°	270.57°	6714.69'	879.49'
7878'	90.83°	269.70°	6713.26'	974.22'
7973'	90.83°	269.34°	6711.88'	1069.02'



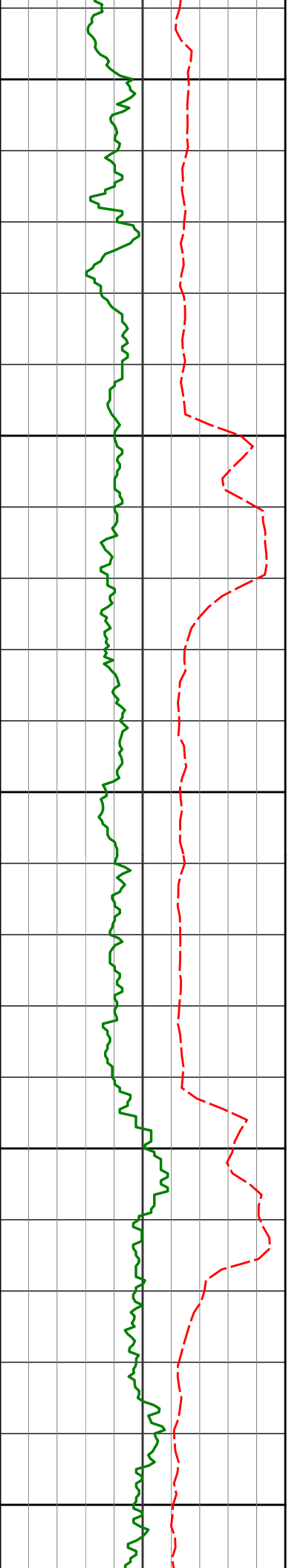
8067'	90.99°	269.35°	6710.39'	1162.84'
8162'	90.28°	270.01°	6709.34'	1257.62'



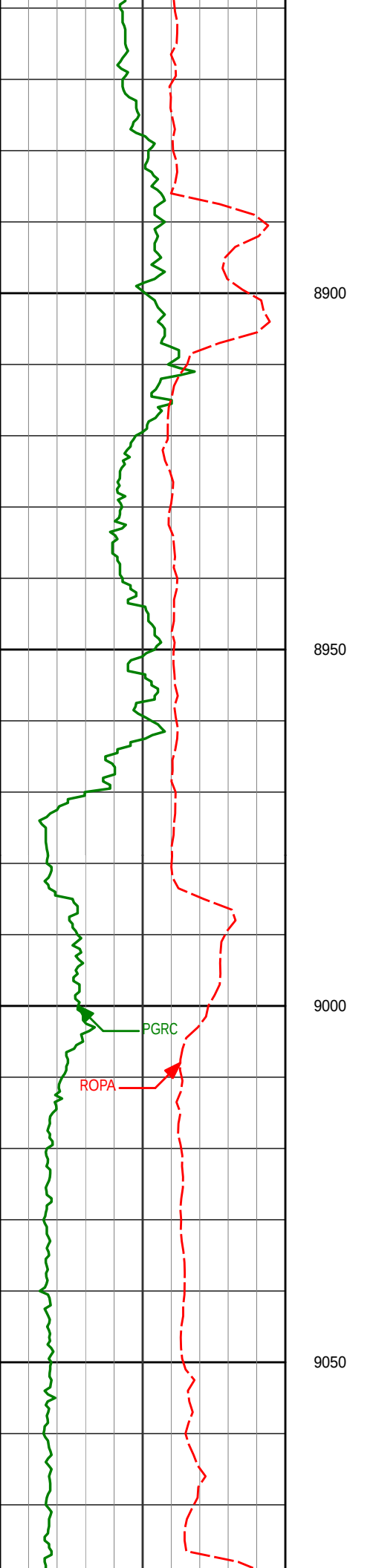
8256'	89.88°	269.13°	6709.21'	1351.43'
8351'	90.46°	268.92°	6708.93'	1446.29'



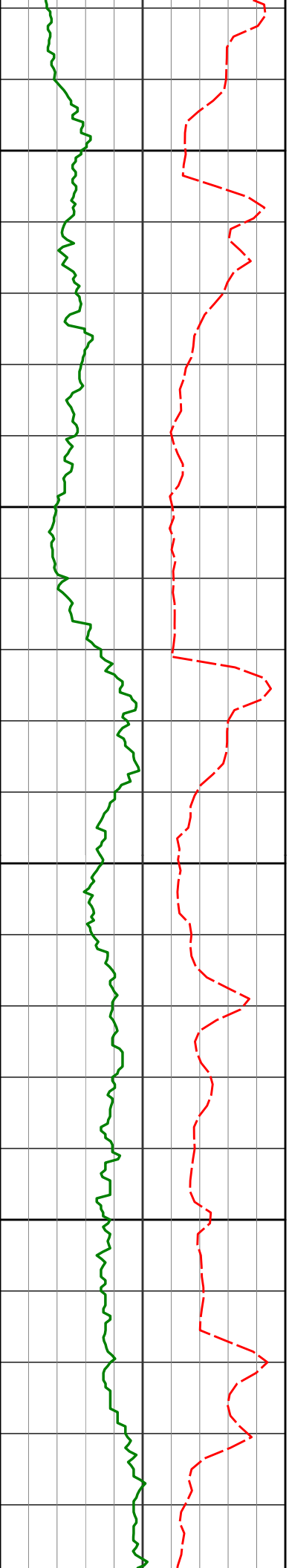
8446'	89.57°	268.94°	6708.90'	1541.15'
8540'	89.57°	269.02°	6709.61'	1635.02'
8635'	90.77°	269.38°	6709.32'	1729.86'



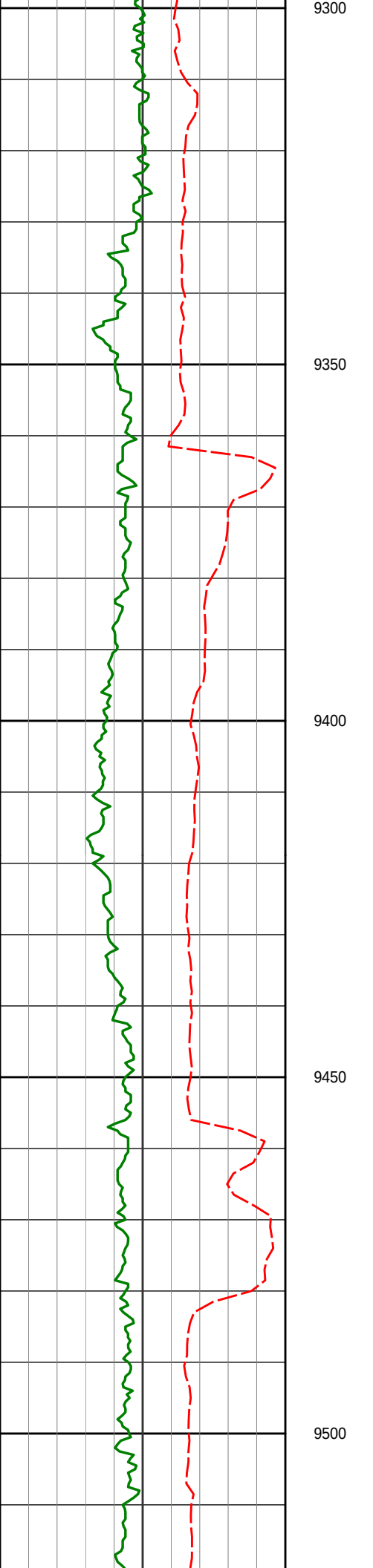
8730'	90.06°	269.37°	6708.64'	1824.68'
8825'	90.12°	268.42°	6708.49'	1919.55'



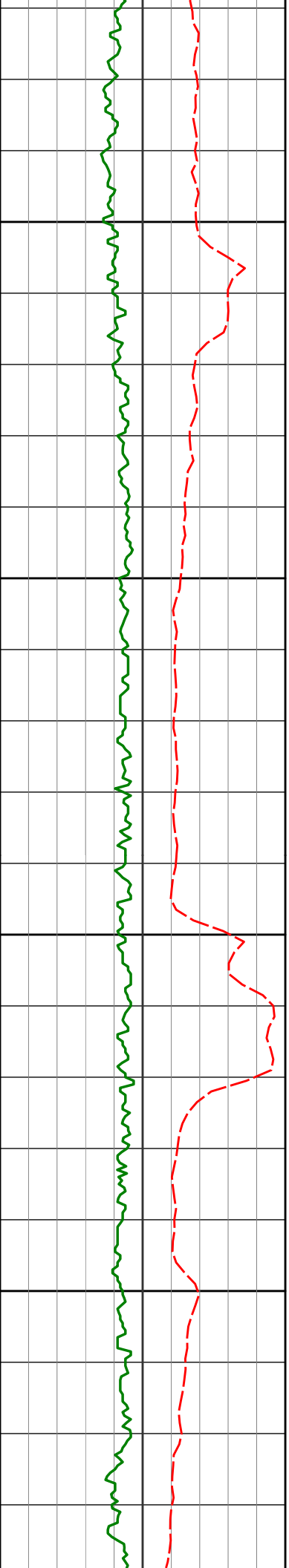
8920'	89.35°	268.49°	6708.93'	2014.45'
9014'	89.66°	268.77°	6709.74'	2108.34'



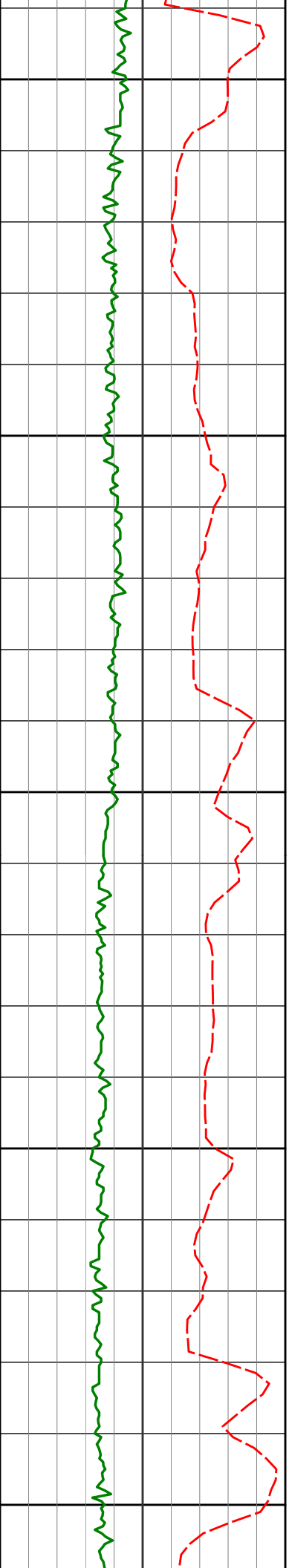
9109'	89.60°	268.37°	6710.35'	2203.24'
9204'	89.45°	268.41°	6711.14'	2298.14'



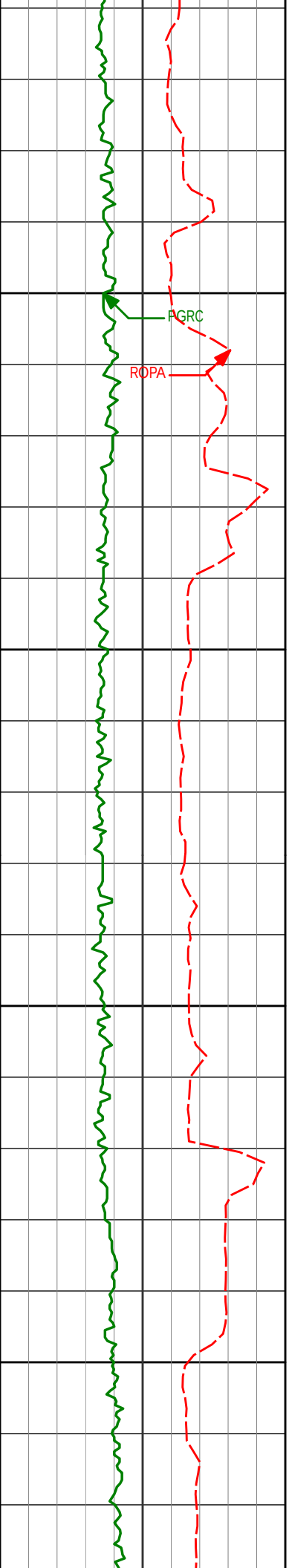
9299	89.14°	269.05°	6712.31'	2393.02'
9393'	88.83°	269.47°	6713.97'	2486.84'
9488'	89.97°	269.25°	6714.97'	2581.66'



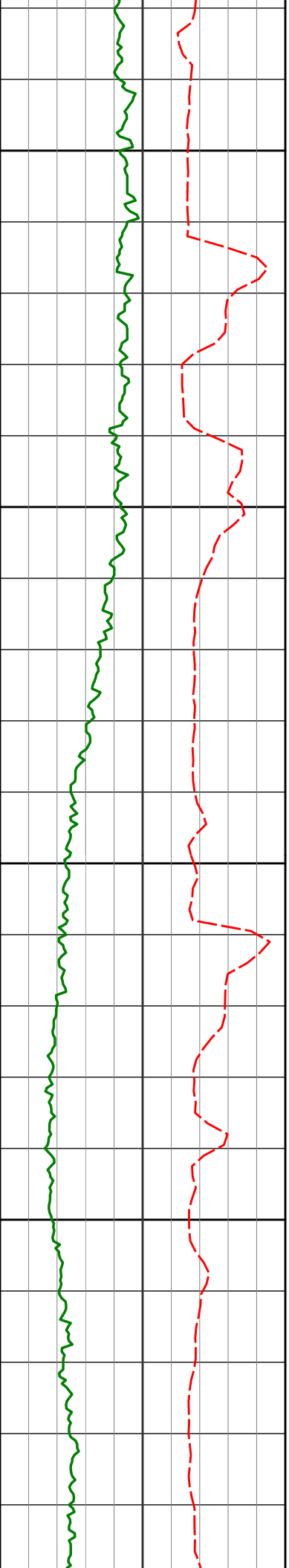
9583'	88.77°	267.52°	6716.01'	2676.56'
9677'	90.49°	269.33°	6716.62'	2770.46'



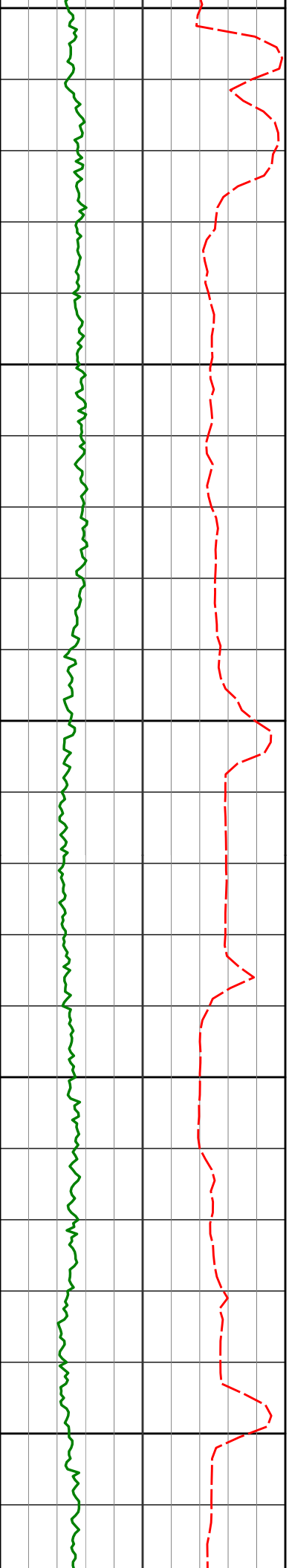
9772'	90.03°	268.68°	6716.19'	2865.32'
9867'	89.54°	267.49°	6716.55'	2960.25'



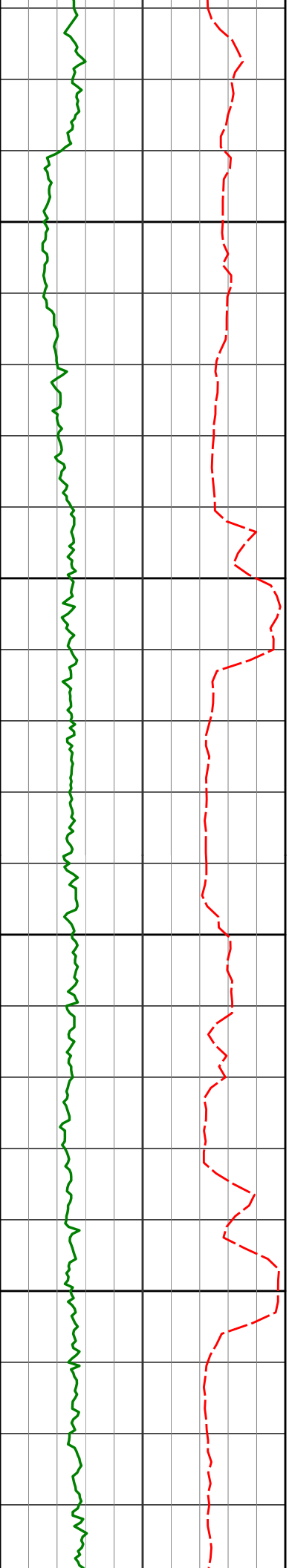
9962'	90.34°	268.16°	6716.65'	3055.19'
10056'	89.94°	267.74°	6716.42'	3149.13'
10151'	90.03°	267.32°	6716.44'	3244.09'



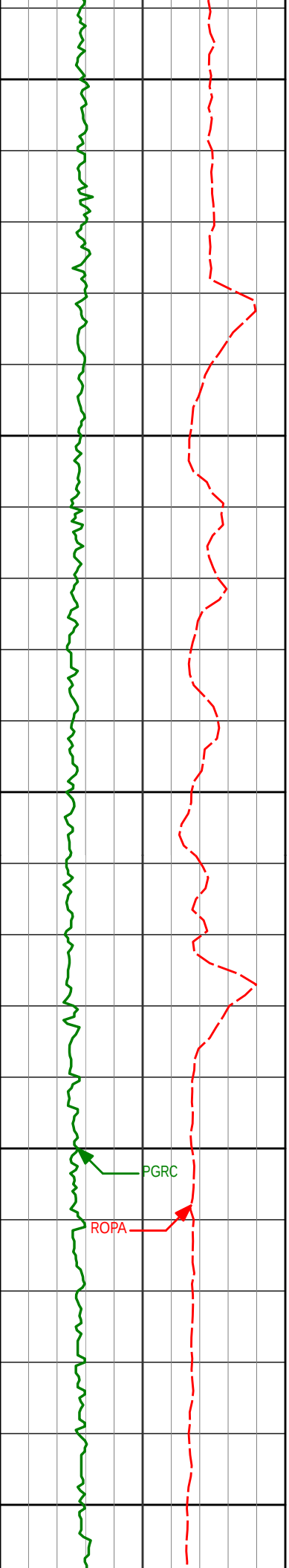
10246'	90.52°	267.62°	6715.98'	3339.06'
10340'	90.92°	268.13°	6714.80'	3432.99'



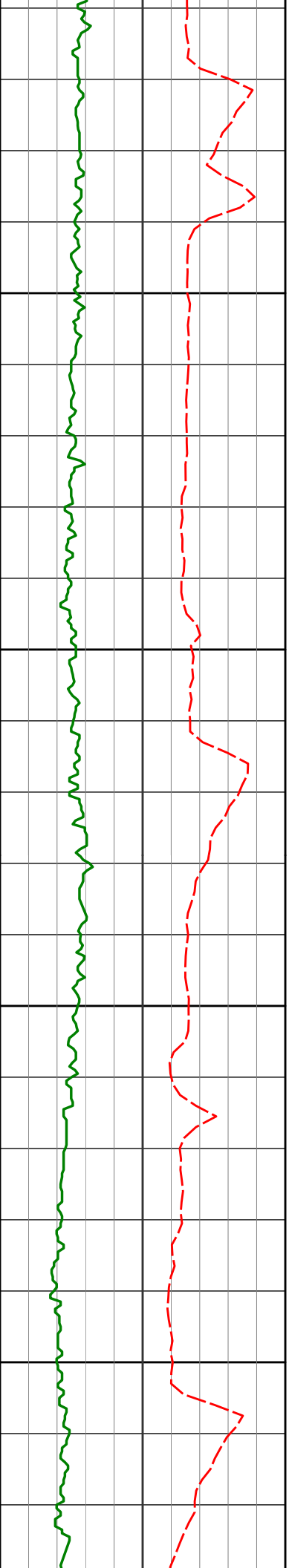
10435'	90.28°	268.19°	6713.81'	3527.91'
10530'	90.18°	267.81°	6713.43'	3622.85'



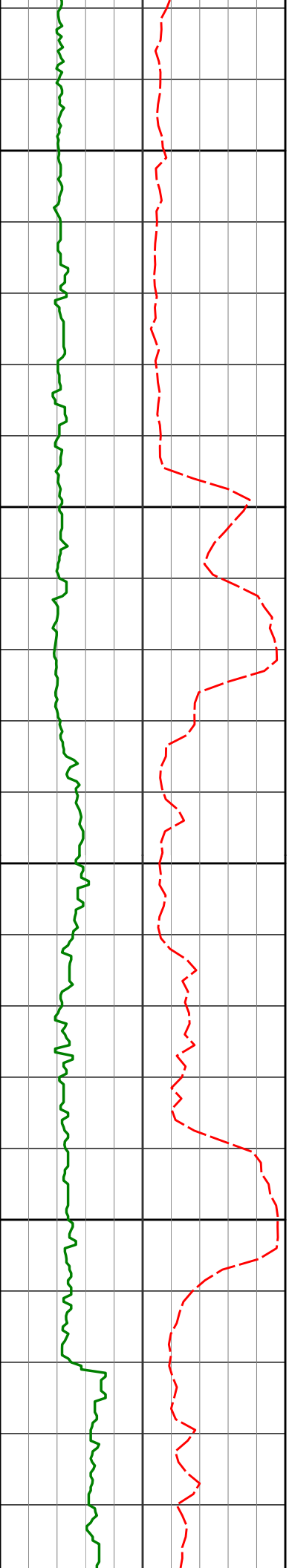
10625'	90.83°	267.87°	6712.59'	3717.79'
10719'	90.62°	268.55°	6711.40'	3811.71'
10814'	89.75°	269.34°	6711.09'	3906.57'



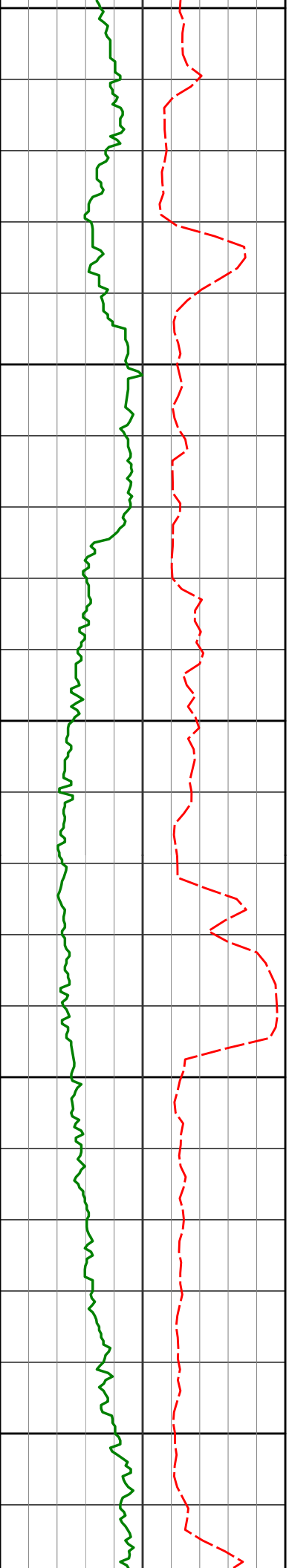
10909'	89.97°	269.59°	6711.33'	4001.38'
11004'	89.17°	268.66°	6712.04'	4096.23'



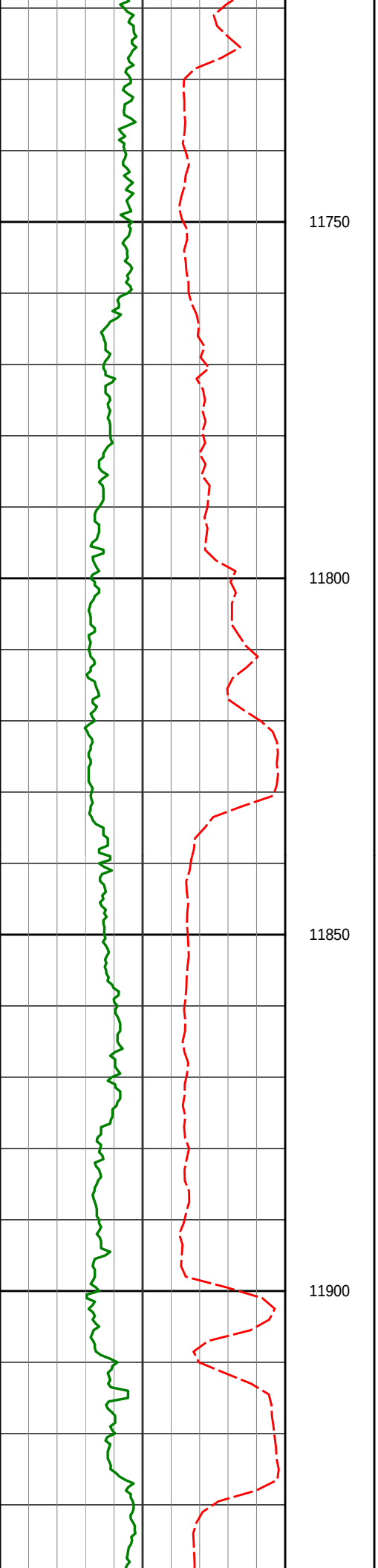
11098'	89.63°	268.69°	6713.02'	4190.11'
11189'	90.06°	269.38°	6713.27'	4280.98'



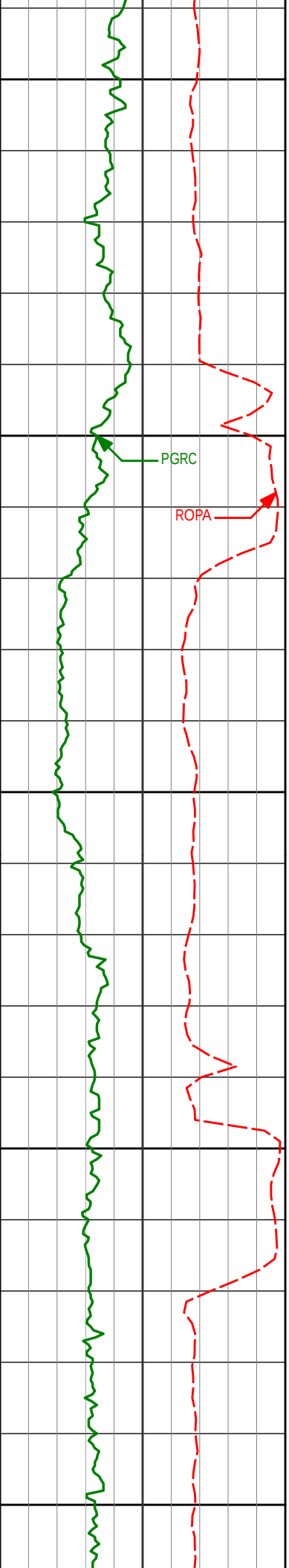
11281'	90.46°	269.53°	6712.85'	4372.80'
11373'	88.27°	268.78°	6713.87'	4464.64'
11466'	89.63°	268.28°	6715.58'	4557.52'



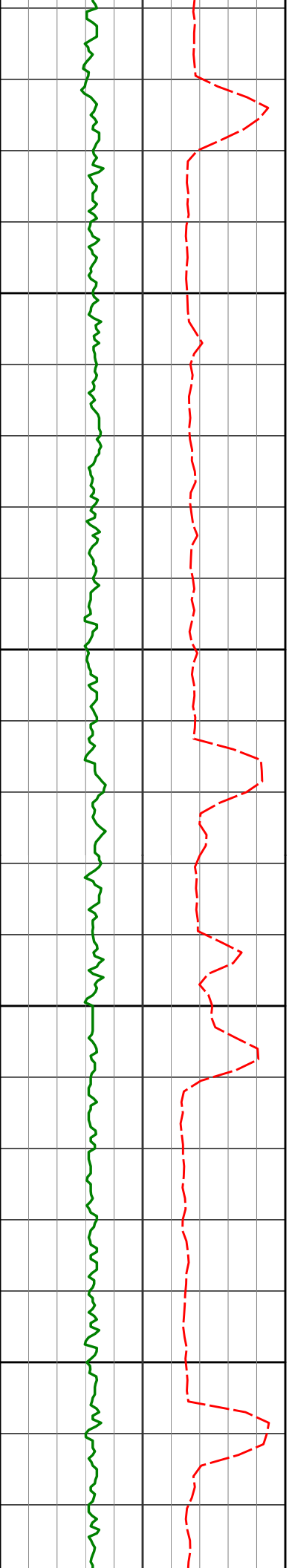
11557'	88.64°	267.96°	6716.95'	4648.44'
11649'	90.18°	266.50°	6717.90'	4740.41'



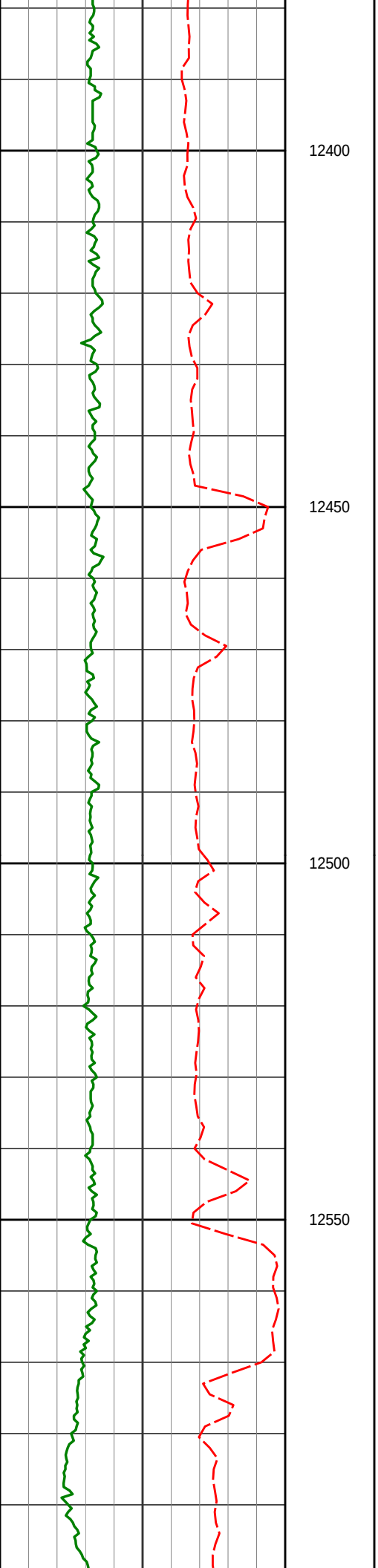
11742'	90.31°	266.36°	6717.50'	4833.40'
11835'	91.14°	266.73°	6716.32'	4926.39'
11926'	92.06°	268.14°	6713.78'	5017.32'



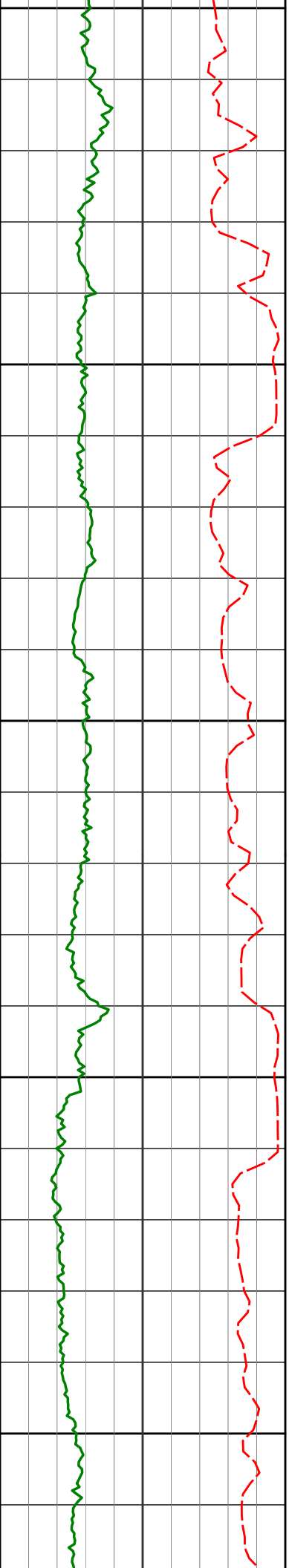
12018'	91.33°	269.09°	6711.06'	5109.17'
12110'	89.88°	269.39°	6710.09'	5201.01'



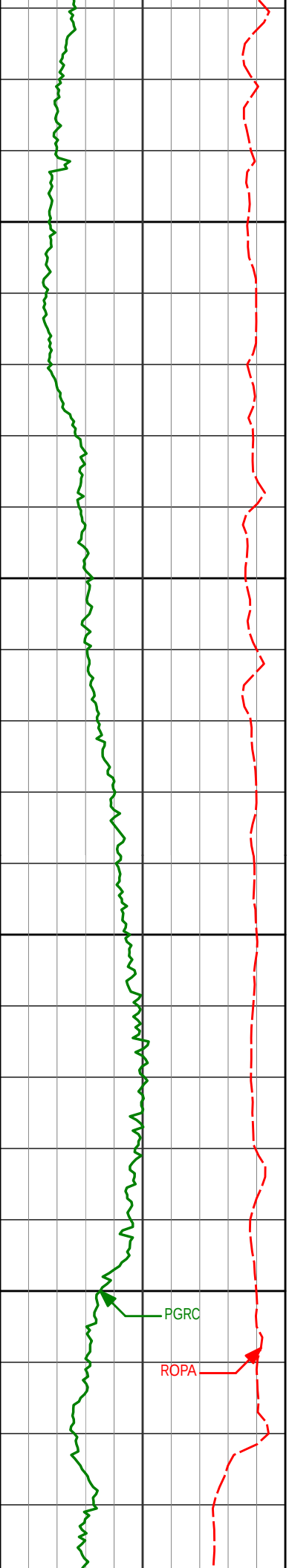
	12202'	89.41°	269.08°	6710.66'	5292.85'
	12294'	89.69°	269.49°	6711.38'	5384.69'



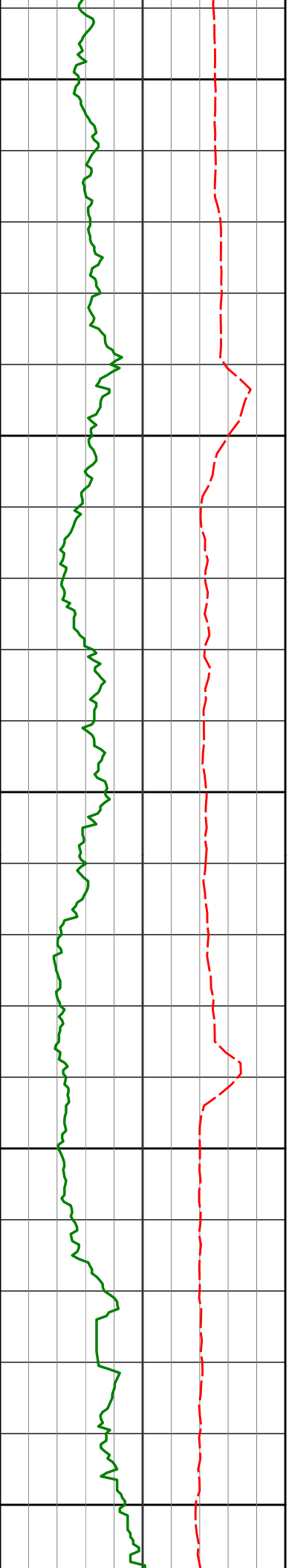
12385'	90.03°	268.61°	6711.60'	5475.55'
12478'	89.75°	267.74°	6711.78'	5568.47'
12569'	90.80°	268.08°	6711.35'	5659.41'



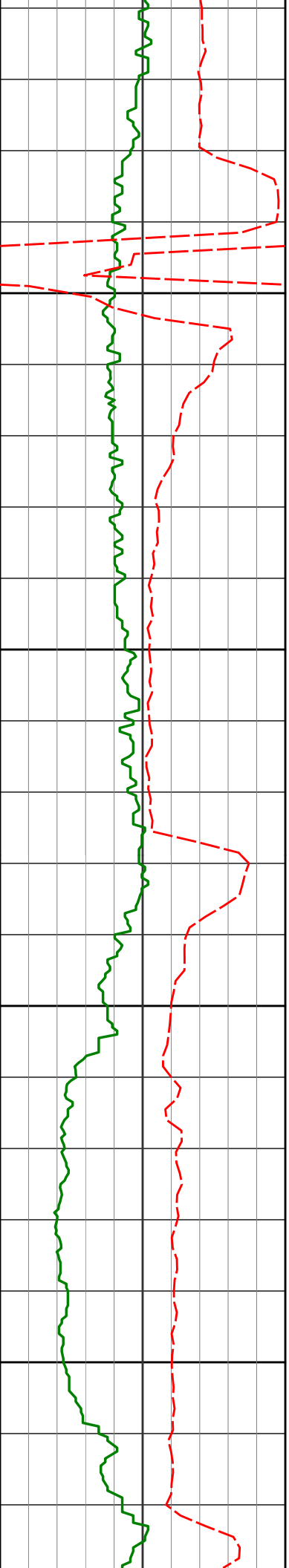
12661'	90.40°	270.11°	6710.38'	5751.26'
12753'	88.89°	270.71°	6710.95'	5842.97'



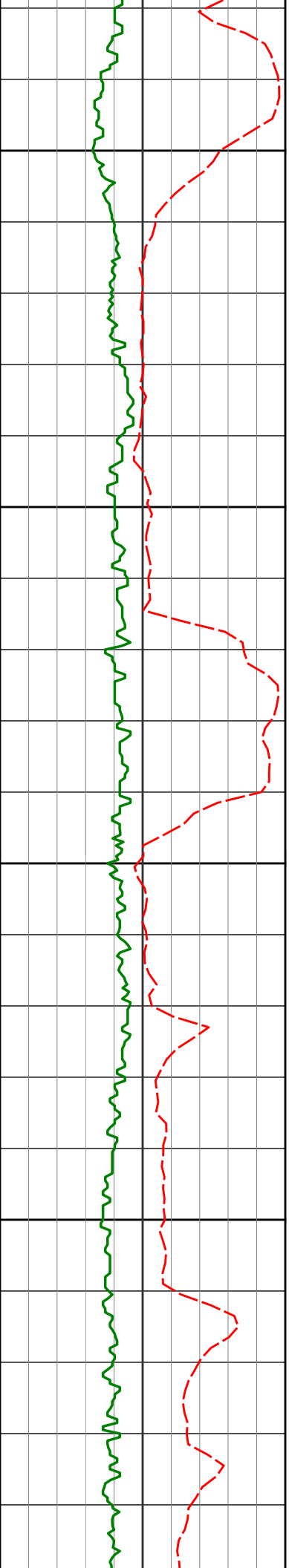
12844'	88.49°	271.27°	6713.03'	5933.59'
12936'	88.58°	271.05°	6715.38'	6025.17'
13031'	88.09°	270.67°	6718.15'	6119.77'



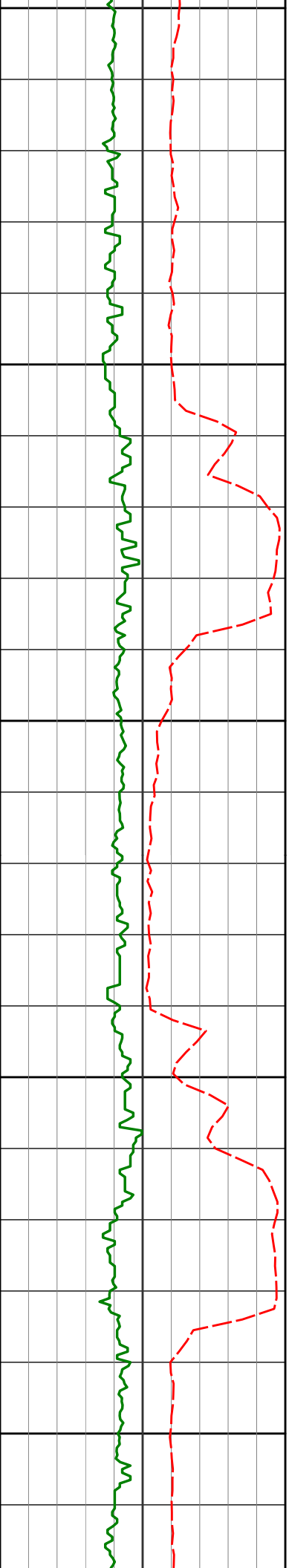
13126'	88.40°	270.50°	6721.05'	6214.41'
13220'	88.61°	270.13°	6723.51'	6308.10'



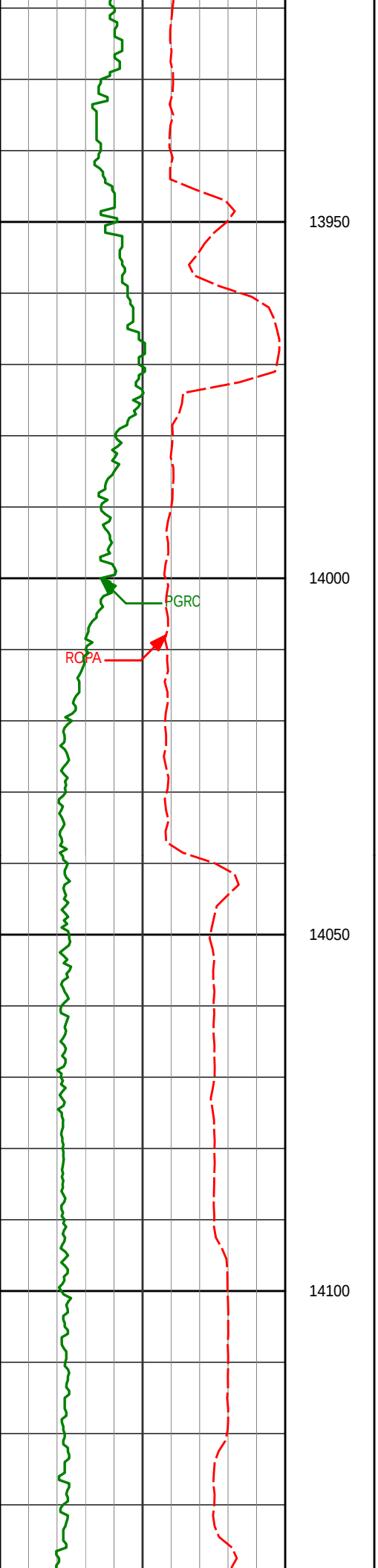
13314'	89.60°	269.81°	6724.98'	6401.85'
13409'	89.72°	269.63°	6725.54'	6496.64'



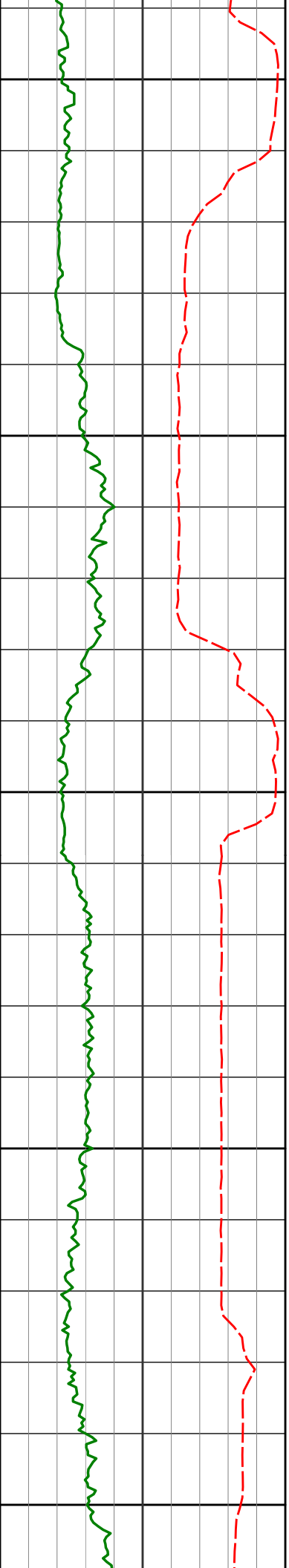
13504'	89.91°	268.85°	6725.85'	6591.48'
13598'	90.74°	268.76°	6725.31'	6685.35'
13693'	89.88°	267.57°	6724.80'	6780.28'



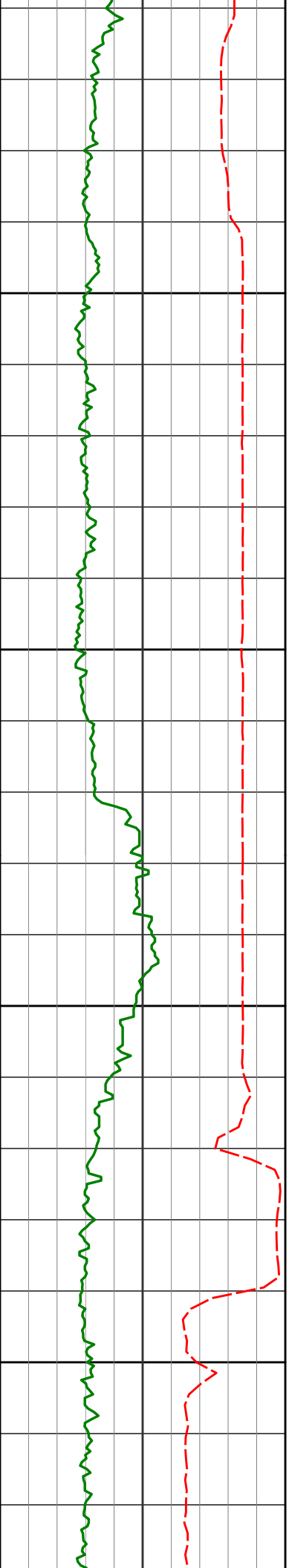
13787'	89.75°	266.72°	6725.10'	6874.25'
13882'	91.48°	268.37°	6724.08'	6969.20'



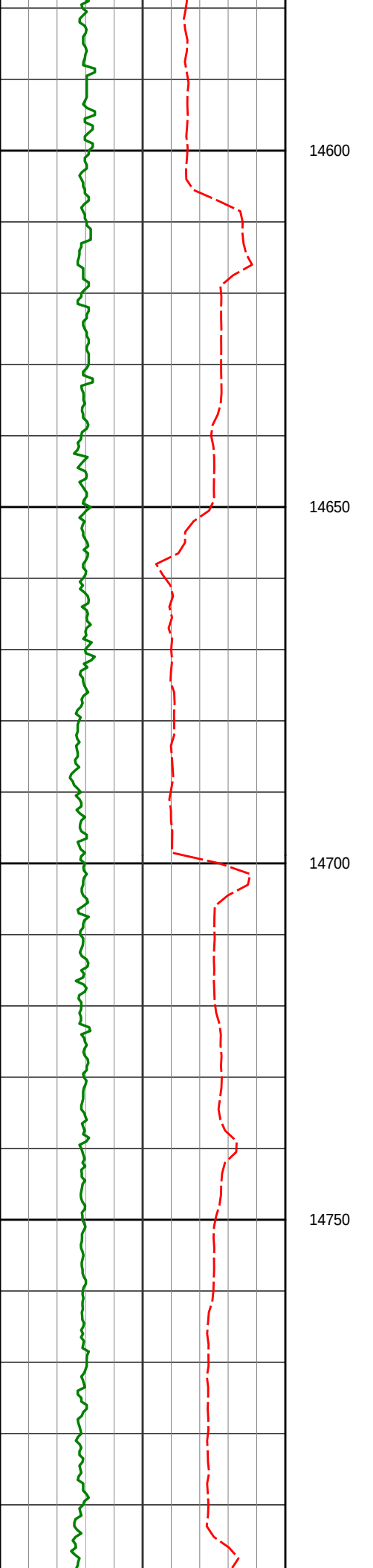
13976'	91.23°	269.13°	6721.86'	7063.06'
14070'	89.82°	267.70°	6721.00'	7156.96'



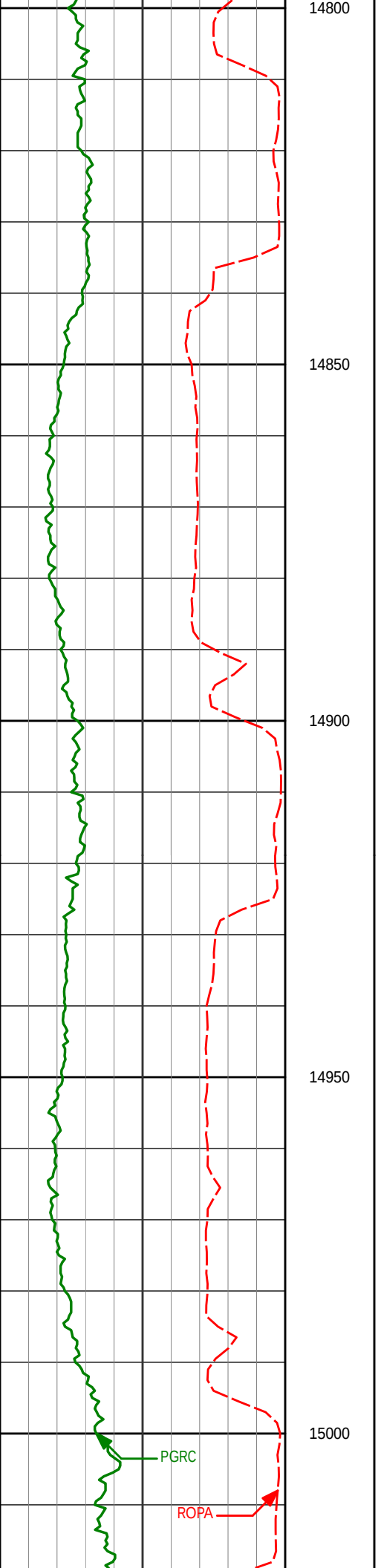
14165'	90.52°	268.76°	6720.72'	7251.88'
14259	91.76°	270.84°	6718.85	7345.83
14354'	91.29°	270.00°	6716.32'	7440.30'



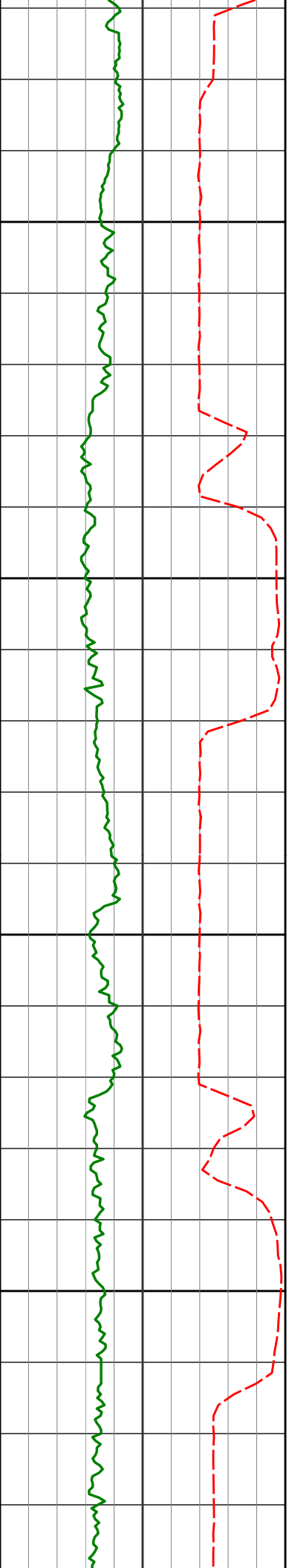
14449'	91.66°	269.54°	6713.87'	7535.06'
14543'	91.02°	270.40°	6711.67'	7628.79'



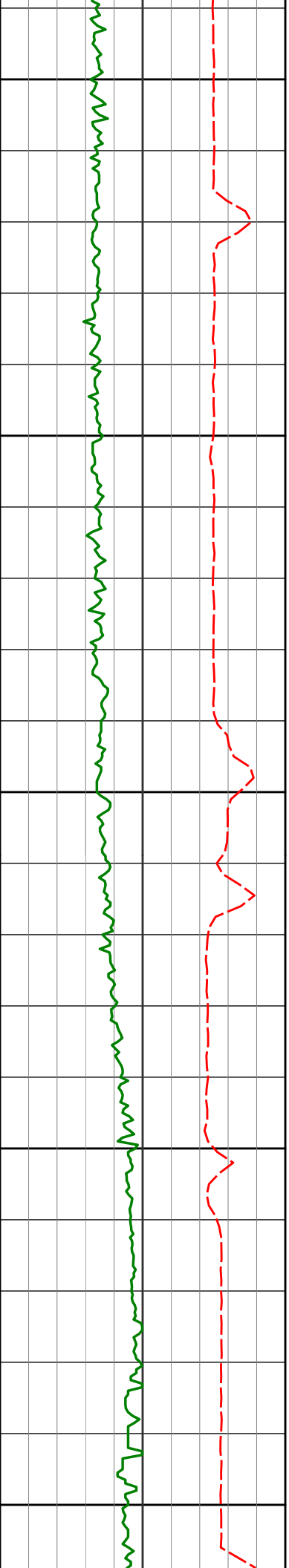
14638'	90.06°	269.30°	6710.78'	7723.56'
14732'	89.75°	266.93°	6710.94'	7817.48'



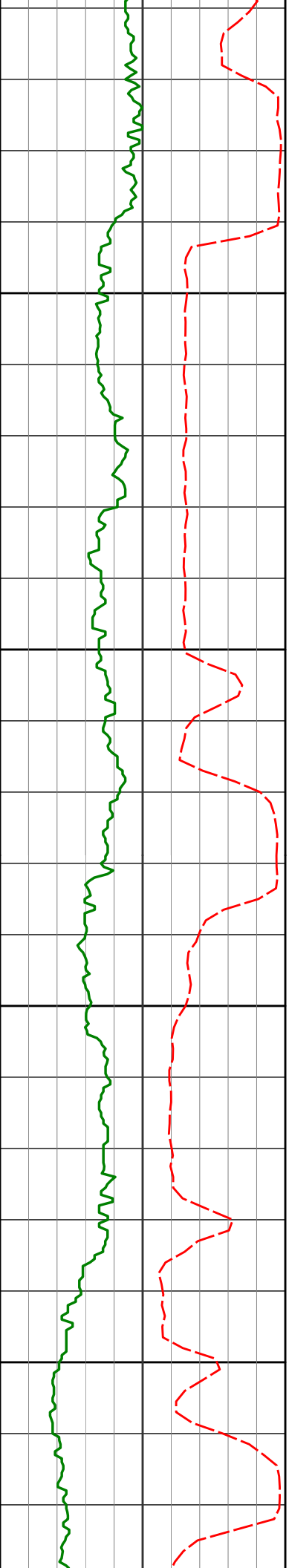
14827'	90.52°	266.34°	6710.71'	7912.47'
14921'	91.23°	268.98°	6709.28'	8006.41'
15016'	91.02°	270.60°	6707.41'	8101.17'



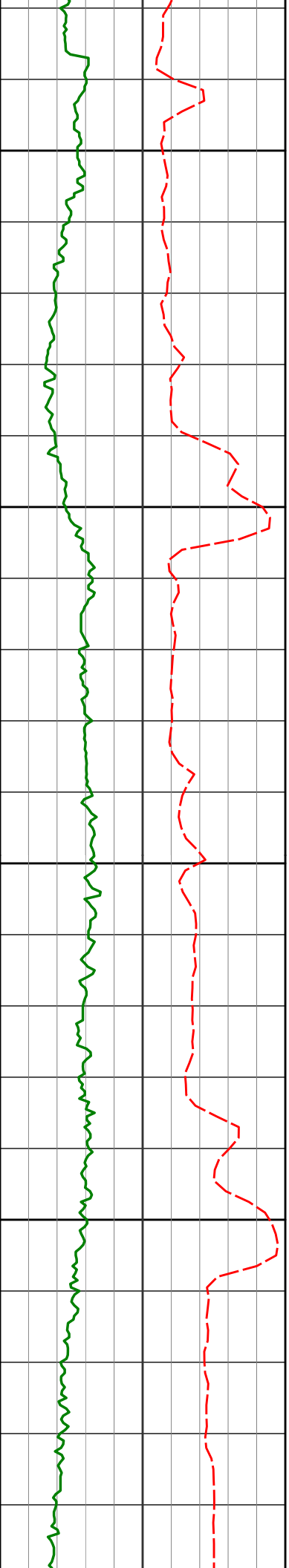
15111'	91.14°	272.15°	6705.62'	8195.71'
15205'	89.57°	273.28°	6705.04'	8289.04'



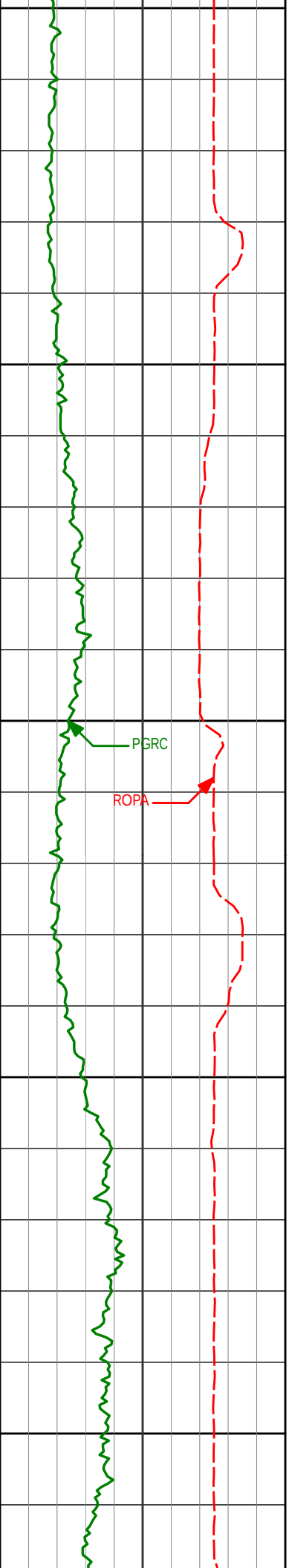
15300'	89.78°	272.23°	6705.58'	8383.36'
15395'	90.31°	272.31°	6705.50'	8477.78'



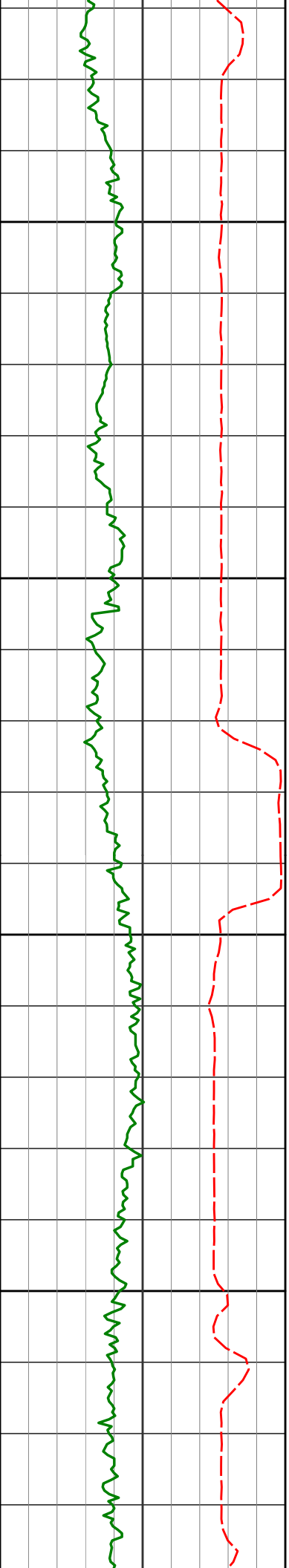
15489'	87.41°	271.30°	6707.37'	8571.25'
15583'	87.81°	269.83°	6711.29'	8664.85'
15678'	88.00°	269.37°	6714.76'	8759.59'



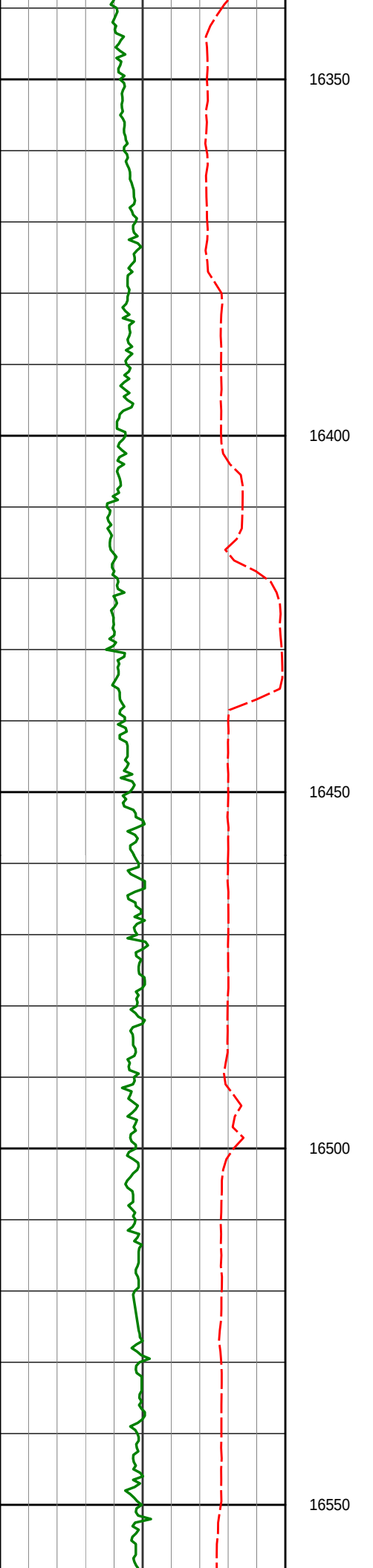
15773'	88.15°	269.30°	6717.96'	8854.37'
15867'	90.00°	269.95°	6719.47'	8948.15'



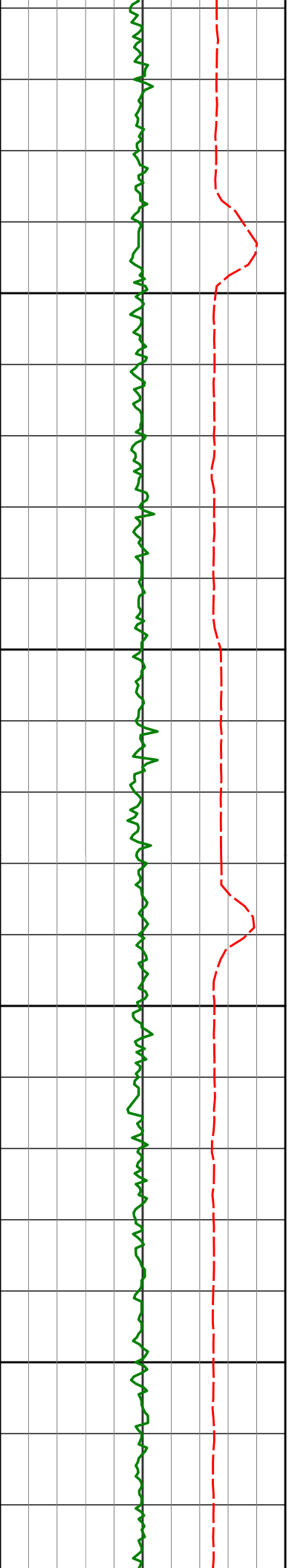
15962'	90.62°	269.91°	6718.96'	9042.91'
16057'	91.23°	269.60°	6717.43'	9137.69'



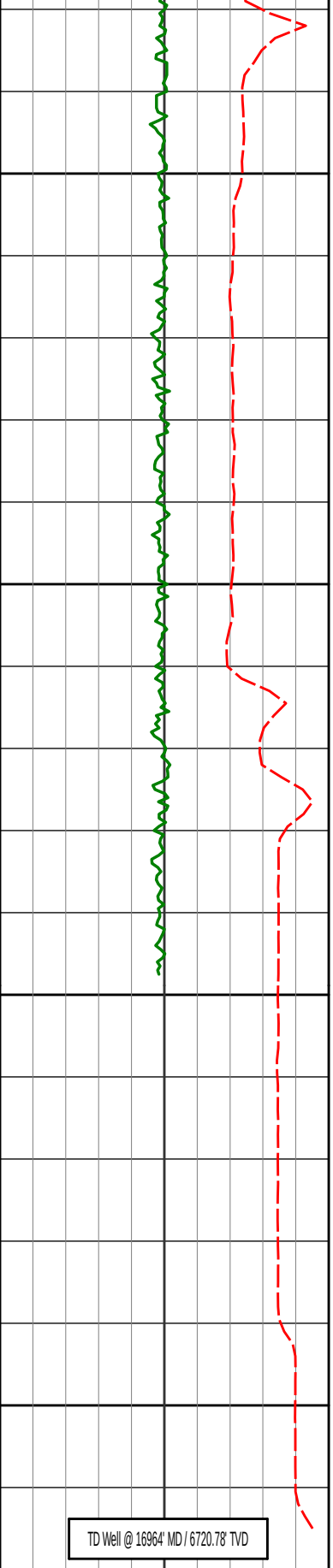
16151'	92.00°	269.29°	6714.78'	9231.47'
16246'	90.22°	269.57°	6712.94'	9326.27'



16340'	88.92°	268.15°	6713.64'	9420.13'
16435'	89.66°	267.69°	6714.82'	9515.07'
16529'	88.74°	265.45°	6716.13'	9609.04'



16624'	89.20°	266.21°	6717.84'	9704.03'
16718'	89.57°	268.00°	6718.85'	9798.00'



Depth ft	Depth	Inc.	Azi.	TVD	V.S.
16800					
	16813'	89.66°	267.86°	6719.49'	9892.93'
16850					
16900	16900'	89.45°	265.72°	6720.16'	9979.92'
16950					
	16964'	89.45°	265.72°	6720.78'	10043.91'

Avg Rate of Penetration
ROPA
1K feet per hr 0

PCG Gamma Ray
PGRC
0 api 300

HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Wells Ranch State A36-625
Wattenburg
Weld Colorado
USA
CA-XX-0902457671

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
857.00	0.26	41.28	857.00	1.46 N	1.28 E	-1.38	0.03
919.00	0.34	41.55	919.00	1.70 N	1.50 E	-1.62	0.13
1011.00	0.29	51.49	1010.99	2.05 N	1.86 E	-2.00	0.08
1103.00	0.22	1.45	1102.99	2.38 N	2.05 E	-2.21	0.24
1208.00	0.18	313.41	1207.99	2.69 N	1.93 E	-2.12	0.16
1300.00	0.29	269.55	1299.99	2.79 N	1.60 E	-1.79	0.22
1392.00	0.55	269.52	1391.99	2.78 N	0.92 E	-1.12	0.28
1485.00	0.47	267.03	1484.99	2.76 N	0.09 E	-0.29	0.09
1576.00	0.63	283.17	1575.98	2.85 N	0.77 W	0.56	0.24
1668.00	0.65	293.02	1667.98	3.17 N	1.74 W	1.51	0.12
1761.00	0.80	286.40	1760.97	3.56 N	2.85 W	2.59	0.18
1854.00	0.63	284.32	1853.96	3.87 N	3.97 W	3.68	0.18
1945.00	0.13	5.86	1944.96	4.10 N	4.44 W	4.14	0.69
2037.00	0.41	0.07	2036.96	4.53 N	4.43 W	4.09	0.31
2129.00	0.54	210.44	2128.96	4.49 N	4.65 W	4.32	1.00
2221.00	0.56	218.43	2220.95	3.76 N	5.15 W	4.87	0.09
2313.00	0.61	204.09	2312.95	2.96 N	5.63 W	5.40	0.17
2404.00	0.62	195.75	2403.94	2.05 N	5.96 W	5.80	0.10
2497.00	0.53	202.69	2496.94	1.16 N	6.26 W	6.16	0.12
2588.00	0.47	184.83	2587.94	0.40 N	6.45 W	6.41	0.18
2680.00	0.40	187.30	2679.93	0.29 S	6.53 W	6.53	0.08
2772.00	1.75	147.74	2771.92	1.80 S	5.82 W	5.93	1.59
2863.00	2.74	130.36	2862.84	4.38 S	3.42 W	3.72	1.31
2955.00	3.95	133.90	2954.69	8.00 S	0.54 E	0.03	1.33
3050.00	5.28	135.67	3049.38	13.40 S	5.95 E	-4.98	1.41
3145.00	7.13	123.66	3143.82	19.79 S	13.92 E	-12.46	2.37
3240.00	7.65	118.61	3238.03	26.09 S	24.37 E	-22.45	0.88
3334.00	8.27	119.25	3331.13	32.39 S	35.77 E	-33.36	0.67
3429.00	8.52	124.62	3425.11	39.72 S	47.52 E	-44.56	0.87
3524.00	9.06	119.76	3518.99	47.44 S	59.80 E	-56.26	0.97
3619.00	9.51	117.86	3612.75	54.82 S	73.23 E	-69.13	0.57
3713.00	9.80	117.15	3705.42	62.10 S	87.22 E	-82.56	0.33
3808.00	9.96	116.32	3799.01	69.43 S	101.78 E	-96.55	0.23
3903.00	8.21	114.41	3892.81	75.87 S	115.32 E	-109.60	1.87
3998.00	7.50	113.92	3986.92	81.19 S	127.16 E	-121.03	0.75
4093.00	7.76	116.18	4081.08	86.53 S	138.59 E	-132.04	0.42
4188.00	7.85	115.58	4175.20	92.17 S	150.19 E	-143.22	0.13
4282.00	7.44	116.31	4268.36	97.63 S	161.44 E	-154.04	0.45
4377.00	8.22	123.08	4362.48	104.07 S	172.64 E	-164.76	1.27
4472.00	7.99	124.01	4456.53	111.47 S	183.81 E	-175.37	0.28
4567.00	7.55	125.09	4550.66	118.75 S	194.39 E	-185.40	0.49
4661.00	7.03	126.68	4643.90	125.73 S	204.05 E	-194.54	0.59
4756.00	6.34	127.34	4738.25	132.39 S	212.89 E	-202.88	0.73
4850.00	7.44	113.27	4831.58	137.94 S	222.60 E	-212.17	2.13
4945.00	8.08	115.78	4925.71	143.28 S	234.27 E	-223.42	0.76
5039.00	7.80	115.38	5018.81	148.88 S	245.98 E	-234.70	0.30
5134.00	6.97	115.25	5113.02	154.10 S	257.02 E	-245.34	0.87
5228.00	8.32	114.90	5206.18	159.40 S	268.34 E	-256.26	1.44
5323.00	7.35	111.31	5300.29	164.50 S	280.24 E	-267.76	1.14
5417.00	8.54	114.21	5393.39	169.55 S	292.21 E	-279.34	1.34
5512.00	7.63	113.42	5487.44	174.95 S	304.43 E	-291.14	0.96
5701.00	6.24	110.42	5675.06	183.52 S	325.57 E	-311.61	0.76
5795.00	11.58	132.83	5767.92	191.73 S	337.29 E	-322.72	6.67

5843.00	12.48	134.24	5814.86	198.62 S	344.54 E	-329.45	1.97
5890.00	14.57	143.05	5860.56	206.89 S	351.73 E	-336.04	6.23
5938.00	17.47	148.73	5906.69	217.88 S	359.10 E	-342.60	6.86
5984.00	20.94	151.92	5950.13	231.03 S	366.56 E	-349.10	7.88
6032.00	24.38	157.32	5994.42	247.75 S	374.42 E	-355.75	8.37
6079.00	27.47	163.87	6036.70	267.12 S	381.17 E	-361.10	8.95
6127.00	29.79	167.87	6078.83	289.42 S	386.75 E	-365.07	6.27
6174.00	30.27	175.51	6119.53	312.65 S	390.14 E	-366.78	8.19
6222.00	30.73	183.92	6160.91	336.96 S	390.25 E	-365.15	8.94
6269.00	31.58	192.44	6201.15	360.97 S	386.77 E	-359.97	9.54
6317.00	33.21	200.85	6241.70	385.54 S	379.38 E	-350.84	9.97
6363.00	34.88	210.16	6279.84	408.70 S	368.28 E	-338.12	11.89
6411.00	35.54	218.18	6319.08	431.55 S	352.75 E	-321.00	9.73
6458.00	35.94	226.19	6357.25	451.85 S	334.35 E	-301.18	9.99
6506.00	36.67	234.84	6395.96	469.86 S	312.45 E	-278.05	10.77
6553.00	38.97	239.07	6433.09	485.55 S	288.29 E	-252.84	7.37
6648.00	46.03	248.06	6503.15	513.74 S	230.83 E	-193.51	9.79
6696.00	49.79	251.44	6535.33	526.03 S	197.41 E	-159.30	9.41
6742.00	54.02	253.90	6563.70	536.79 S	162.86 E	-124.06	10.11
6790.00	57.10	257.60	6590.85	546.51 S	124.50 E	-85.11	9.03
6837.00	59.38	261.82	6615.60	553.62 S	85.20 E	-45.39	9.04
6932.00	67.13	266.76	6658.34	561.93 S	0.87 E	39.31	9.38
6980.00	71.31	269.30	6675.37	563.46 S	43.97 W	84.14	10.01
7121.00	81.24	271.67	6708.78	562.24 S	180.75 W	220.49	7.23
7215.00	87.94	271.74	6717.64	559.46 S	274.24 W	313.54	7.13
7310.00	91.97	270.90	6717.71	557.27 S	369.20 W	408.09	4.33
7405.00	90.59	270.54	6715.59	556.08 S	464.16 W	502.73	1.50
7500.00	90.92	270.00	6714.34	555.63 S	559.15 W	597.45	0.67
7594.00	89.54	271.00	6713.96	554.81 S	653.14 W	691.14	1.81
7689.00	89.35	270.46	6714.88	553.60 S	748.13 W	785.80	0.60
7783.00	90.89	270.57	6714.69	552.75 S	842.12 W	879.49	1.64
7878.00	90.83	269.70	6713.26	552.53 S	937.11 W	974.22	0.92
7973.00	90.83	269.34	6711.88	553.33 S	1032.10 W	1069.02	0.38
8067.00	90.99	269.35	6710.39	554.40 S	1126.08 W	1162.84	0.17
8162.00	90.28	270.01	6709.34	554.93 S	1221.07 W	1257.62	1.02
8256.00	89.88	269.13	6709.21	555.64 S	1315.07 W	1351.43	1.03
8351.00	90.46	268.92	6708.93	557.25 S	1410.05 W	1446.29	0.65
8446.00	89.57	268.94	6708.90	559.03 S	1505.04 W	1541.15	0.94
8540.00	89.57	269.02	6709.61	560.70 S	1599.02 W	1635.02	0.09
8635.00	90.77	269.38	6709.32	562.03 S	1694.01 W	1729.86	1.32
8730.00	90.06	269.37	6708.64	563.06 S	1789.00 W	1824.68	0.75
8825.00	90.12	268.42	6708.49	564.90 S	1883.98 W	1919.55	1.00
8920.00	89.35	268.49	6708.93	567.46 S	1978.94 W	2014.45	0.81
9014.00	89.66	268.77	6709.74	569.70 S	2072.91 W	2108.34	0.44
9109.00	89.60	268.37	6710.35	572.08 S	2167.88 W	2203.24	0.43
9204.00	89.45	268.41	6711.14	574.74 S	2262.84 W	2298.14	0.16
9299.00	89.14	269.05	6712.31	576.85 S	2357.81 W	2393.02	0.75
9393.00	88.83	269.47	6713.97	578.06 S	2451.79 W	2486.84	0.56
9488.00	89.97	269.25	6714.97	579.13 S	2546.77 W	2581.66	1.22
9583.00	88.77	267.52	6716.01	581.80 S	2641.72 W	2676.56	2.22
9677.00	90.49	269.33	6716.62	584.39 S	2735.68 W	2770.46	2.66
9772.00	90.03	268.68	6716.19	586.04 S	2830.66 W	2865.32	0.84
9867.00	89.54	267.49	6716.55	589.21 S	2925.61 W	2960.25	1.35
9962.00	90.34	268.16	6716.65	592.82 S	3020.54 W	3055.19	1.10
10056.00	89.94	267.74	6716.42	596.18 S	3114.48 W	3149.13	0.62
10151.00	90.03	267.32	6716.44	600.27 S	3209.39 W	3244.09	0.45
10246.00	90.52	267.62	6715.98	604.47 S	3304.29 W	3339.06	0.60
10340.00	90.92	268.13	6714.80	607.95 S	3398.22 W	3432.99	0.69
10435.00	90.28	268.19	6713.81	611.00 S	3493.17 W	3527.91	0.68
10530.00	90.18	267.81	6713.43	614.32 S	3588.11 W	3622.85	0.41
10625.00	90.83	267.87	6712.59	617.90 S	3683.04 W	3717.79	0.69
10719.00	90.62	268.55	6711.40	620.83 S	3776.98 W	3811.71	0.76
10814.00	89.75	269.34	6711.09	622.58 S	3871.96 W	3906.57	1.24
10909.00	89.97	269.59	6711.33	623.47 S	3966.96 W	4001.38	0.35
11004.00	89.17	268.66	6712.04	624.92 S	4061.94 W	4096.23	1.29
11098.00	89.63	268.69	6713.02	627.09 S	4155.91 W	4190.11	0.49
11189.00	90.06	269.38	6713.27	628.63 S	4246.90 W	4280.98	0.89
11281.00	90.46	269.53	6712.85	629.50 S	4338.89 W	4372.80	0.46
11373.00	88.27	268.78	6713.87	630.86 S	4430.87 W	4464.64	2.52
11466.00	89.63	268.28	6715.58	633.24 S	4523.82 W	4557.52	1.56
11557.00	88.64	267.96	6716.95	636.23 S	4614.76 W	4648.44	1.14
11649.00	90.18	266.50	6717.90	640.67 S	4706.65 W	4740.41	2.31
11742.00	90.31	266.36	6717.50	646.47 S	4799.46 W	4833.40	0.21
11835.00	91.14	266.73	6716.32	652.07 S	4892.29 W	4926.39	0.98

11926.00	92.06	268.14	6713.78	656.14 S	4983.16 W	5017.32	1.85
12018.00	91.33	269.09	6711.06	658.36 S	5075.09 W	5109.17	1.30
12110.00	89.88	269.39	6710.09	659.58 S	5167.07 W	5201.01	1.61
12202.00	89.41	269.08	6710.66	660.81 S	5259.06 W	5292.85	0.61
12294.00	89.69	269.49	6711.38	661.96 S	5351.05 W	5384.69	0.54
12385.00	90.03	268.61	6711.60	663.47 S	5442.04 W	5475.55	1.04
12478.00	89.75	267.74	6711.78	666.43 S	5534.99 W	5568.47	0.98
12569.00	90.80	268.08	6711.35	669.75 S	5625.93 W	5659.41	1.21
12661.00	90.40	270.11	6710.38	671.20 S	5717.91 W	5751.26	2.25
12753.00	88.89	270.71	6710.95	670.54 S	5809.90 W	5842.97	1.77
12844.00	88.49	271.27	6713.03	668.97 S	5900.86 W	5933.59	0.76
12936.00	88.58	271.05	6715.38	667.11 S	5992.81 W	6025.17	0.26
13031.00	88.09	270.67	6718.15	665.68 S	6087.76 W	6119.77	0.65
13126.00	88.40	270.50	6721.05	664.72 S	6182.71 W	6214.41	0.37
13220.00	88.61	270.13	6723.51	664.20 S	6276.68 W	6308.10	0.45
13314.00	89.60	269.81	6724.98	664.25 S	6370.66 W	6401.85	1.11
13409.00	89.72	269.63	6725.54	664.71 S	6465.66 W	6496.64	0.23
13504.00	89.91	268.85	6725.85	665.97 S	6560.65 W	6591.48	0.85
13598.00	90.74	268.76	6725.31	667.93 S	6654.63 W	6685.35	0.89
13693.00	89.88	267.57	6724.80	670.98 S	6749.58 W	6780.28	1.55
13787.00	89.75	266.72	6725.10	675.66 S	6843.46 W	6874.25	0.91
13882.00	91.48	268.37	6724.08	679.73 S	6938.36 W	6969.20	2.52
13976.00	91.23	269.13	6721.86	681.78 S	7032.31 W	7063.06	0.85
14070.00	89.82	267.70	6721.00	684.38 S	7126.26 W	7156.96	2.14
14165.00	90.52	268.76	6720.72	687.31 S	7221.22 W	7251.88	1.34
14259.00	91.76	270.84	6718.85	687.64 S	7315.19 W	7345.63	2.58
14354.00	91.29	270.00	6716.32	686.94 S	7410.15 W	7440.30	1.01
14449.00	91.66	269.54	6713.87	687.32 S	7505.12 W	7535.06	0.62
14543.00	91.02	270.40	6711.67	687.37 S	7599.09 W	7628.79	1.14
14638.00	90.06	269.30	6710.78	687.62 S	7694.09 W	7723.56	1.54
14732.00	89.75	266.93	6710.94	690.71 S	7788.03 W	7817.48	2.54
14827.00	90.52	266.34	6710.71	696.29 S	7882.86 W	7912.47	1.02
14921.00	91.23	268.98	6709.28	700.13 S	7976.76 W	8006.41	2.91
15016.00	91.02	270.60	6707.41	700.48 S	8071.74 W	8101.17	1.72
15111.00	91.14	272.15	6705.62	698.20 S	8166.70 W	8195.71	1.64
15205.00	89.57	273.28	6705.04	693.74 S	8260.58 W	8289.04	2.06
15300.00	89.78	272.23	6705.58	689.18 S	8355.47 W	8383.36	1.13
15395.00	90.31	272.31	6705.50	685.42 S	8450.40 W	8477.78	0.56
15489.00	87.41	271.30	6707.37	682.46 S	8544.32 W	8571.25	3.27
15583.00	87.81	269.83	6711.29	681.53 S	8638.23 W	8664.85	1.62
15678.00	88.00	269.37	6714.76	682.19 S	8733.16 W	8759.59	0.52
15773.00	88.15	269.30	6717.96	683.29 S	8828.10 W	8854.37	0.17
15867.00	90.00	269.95	6719.47	683.91 S	8922.09 W	8948.15	2.09
15962.00	90.62	269.91	6718.96	684.03 S	9017.08 W	9042.91	0.65
16057.00	91.23	269.60	6717.43	684.43 S	9112.07 W	9137.69	0.72
16151.00	92.00	269.29	6714.78	685.34 S	9206.03 W	9231.47	0.88
16246.00	90.22	269.57	6712.94	686.29 S	9301.00 W	9326.27	1.90
16340.00	88.92	268.15	6713.64	688.16 S	9394.98 W	9420.13	2.05
16435.00	89.66	267.69	6714.82	691.60 S	9489.90 W	9515.07	0.92
16529.00	88.74	265.45	6716.13	697.23 S	9583.72 W	9609.04	2.58
16624.00	89.20	266.21	6717.84	704.13 S	9678.45 W	9704.03	0.93
16718.00	89.57	268.00	6718.85	708.88 S	9772.32 W	9798.00	1.94
16813.00	89.66	267.86	6719.49	712.31 S	9867.26 W	9892.93	0.18
16900.00	89.45	265.72	6720.16	717.18 S	9954.11 W	9979.92	2.47
16964.00	89.45	265.72	6720.78	721.96 S	10017.93 W	10043.91	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 265.90 DEGREES (GRID)
A TOTAL CORRECTION OF 7.49 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 16964.00 FEET
IS 10043.91 FEET ALONG 265.88 DEGREES (GRID)

Tied in @ Surface
Final survey projected to Bit.

Date Printed:05 July 2015