



1 : 240

[illegible]

## WELL INFORMATION

MWD Run Number	100	200			
Date run completed	22-Sep-13	28-Sep-13			
Rig Bit Number	0100	0200			
Bit Size (in)	8.750	6.125			
Tool Nominal OD (in)	6.750	4.750			
Log Start Depth (MD, ft)	1,225.00	7,707.00			
Log End Depth (MD, ft)	7,707.00	14,452.00			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	20-Sep-13 06:00	24-Sep-13 01:00			
Drill/Wipe End Date and Time	22-Sep-13 06:30	28-Sep-13 03:30			
Min Inc (deg) @ Depth (MD, ft)	.27 @ 1,392.00	87.53 @ 9,851.00			
Max Inc (deg) @ Depth (MD, ft)	83.11 @ 7,656.00	92.84 @ 11,651.00			
Bit TFA(in2) / Bit Type	PDC / .97	.59 / PDC			
Flow Rate (gpm)	590.85	270.94			
Max AV (fpm) / CV (fpm) @ MWD	601.0 / 495.0	N/A / N/A			
Fluid Type	Fresh Water Gel	Fresh Water Gel			
Density (ppg) / Viscosity (spqt)	9.80 / 20.00	9.30 / 42.00			
Filtrate CL (ppm)	12,000.00	1,600.00			
pH / Fluid Loss (mptm)	8.90 / 10	9.50 / 14			
PV (cP) / YP (lbf2)	20 / 9.80	12 / 12.00			
% Solids / % Sand	.01 / .01	5.3 / .10			
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A			
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Max Tool Temp (deg F) / S	428.00 / 20.00	242.00 / 10.00			

Max Tool Temp (degF) / Source	180.09 / PCM	240.23 / HCIM			
Rm @ Max Tool Temp (degF)	N/A @ 180.09	N/A @ 240.23			
Lead MWD Engineer	Patrick Lane	Patrick Lane			
Customer Representative	Stan Walters	Stan Walters			

## SENSOR INFORMATION

### Downhole Processor Information

Tool Type	PCM	HCIM			
Software Version	5.84	88.56			
Sub Serial Number	11404289	11512738			
Insert Serial Number	11399998	11062260			
Date and Time Initialized	18-Sep-13 19:24	24-Sep-13 00:55			
Date and Time Read	22-Sep-13 17:42	28-Sep-13 16:36			
ECMB SW Version	N/A	N/A			

### Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	53.00	49.33			
Software Version	6.21	6.21			
Sub Serial Number	11404289	11122415			
Sonde Serial Number	11062116	11833237			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	323.73	101.56			

### Gamma Ray Sensor Information

Tool Type	PCG	DGR			
Distance From Bit (ft)	55.47	71.28			
Recorded Sample Period (sec)	10	8			
Software Version	8.15	N/A			
Sub Serial Number	11404289	11512738			
Insert/Sonde Serial Number	11579774	11184661			

### Resistivity Sensor Information

Tool Type		Slim P4			
Distance From Bit (ft)		64.30			
Recorded Sample Period (sec)		6			
Software Version		5.55			
Sub Serial Number		47296			
Receiver Insert Serial Number		260883			
Transmitter Insert Serial Number		11062260			
Receiver Orientation		Down			

### DDSr-DGR Sensor Information

Tool Type		DDSr-DGR			
Distance From Bit (ft)		74.20			
Recorded Sample Period (sec)		12			
Software Version		10.88			
Sub Serial Number		11512738			
Insert Serial Number		11270370			
Sensor ID Number		7035			

## REMARKS

1. All depths are true vertical depths referenced to the Driller's pipe tally

1. All depths are true vertical 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. All data presented is recorded data unless otherwise specified
- 4. 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

5. INSITE version 7.4.1

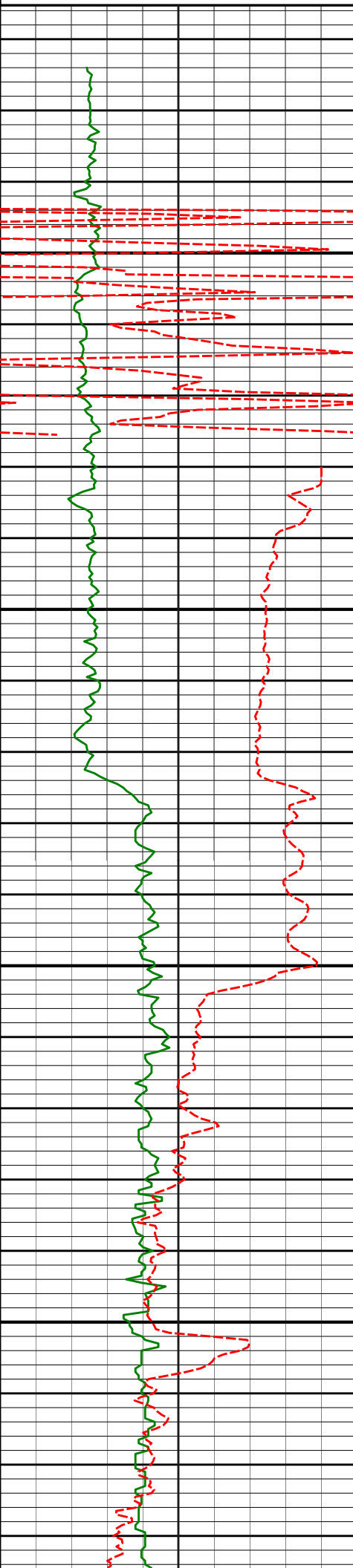
WARRANTY

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MD 1:240 Detail Log

PCG Gamma Ray BCorr (PGRC) api						
0	250					
Avg Rate of Penetration (ROPA) feet per hr						
500	0					
Gamma Ray KclBh (DGRC) api		Depth ft 1 : 240				
0	250	DEPTH	INC	AZI	TVD	VS



1250

1300

1350

1400

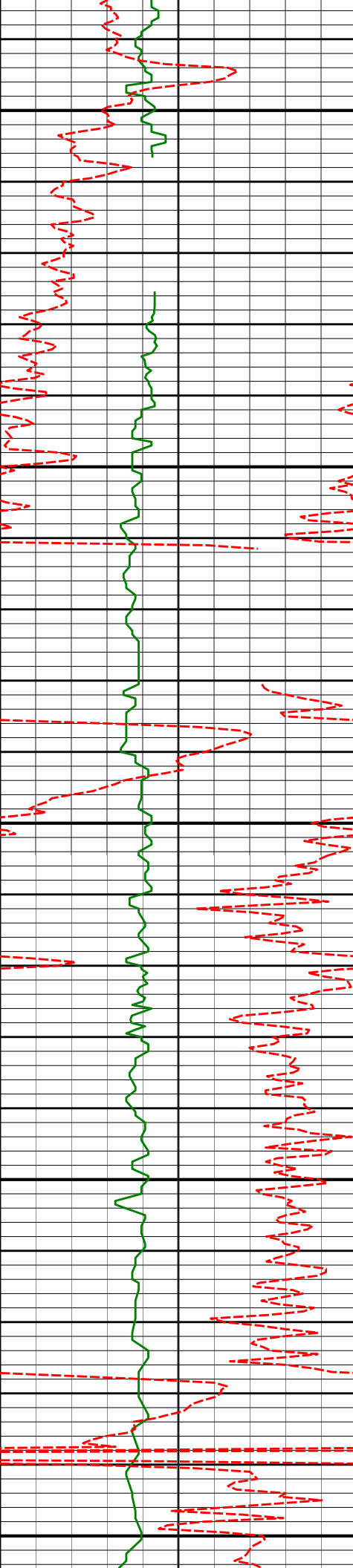
1392'

0.27°

273.25°

1391.97'

7.67'



1450

1485'

0.59°

308.37°

1484.97'

7.97'

1500

1550

1578'

0.35°

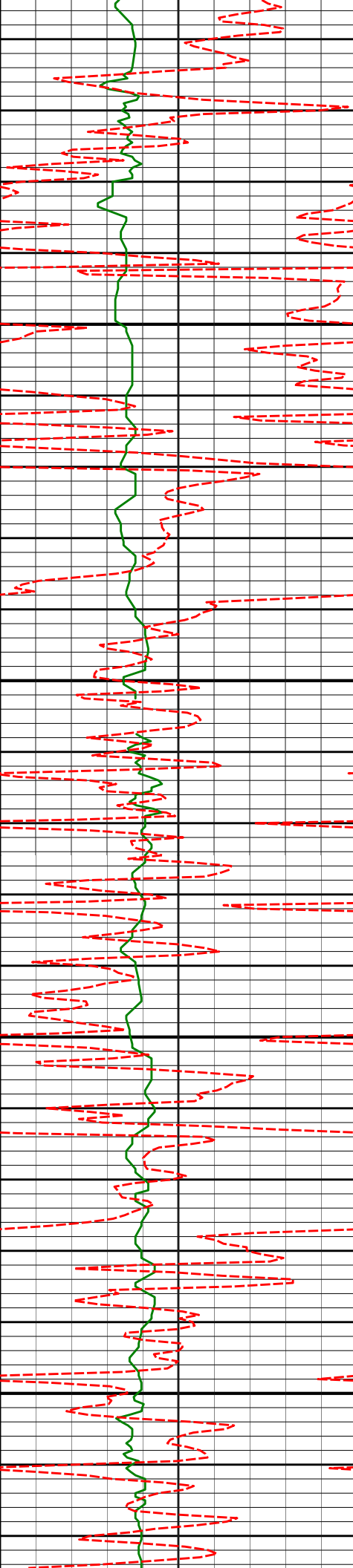
309.90°

1577.96'

8.45'

1600

1650



1700

1750

1800

1850

1672'

0.47°

301.63°

1671.96'

8.84'

1765'

2.08°

273.69°

1764.93'

9.15'

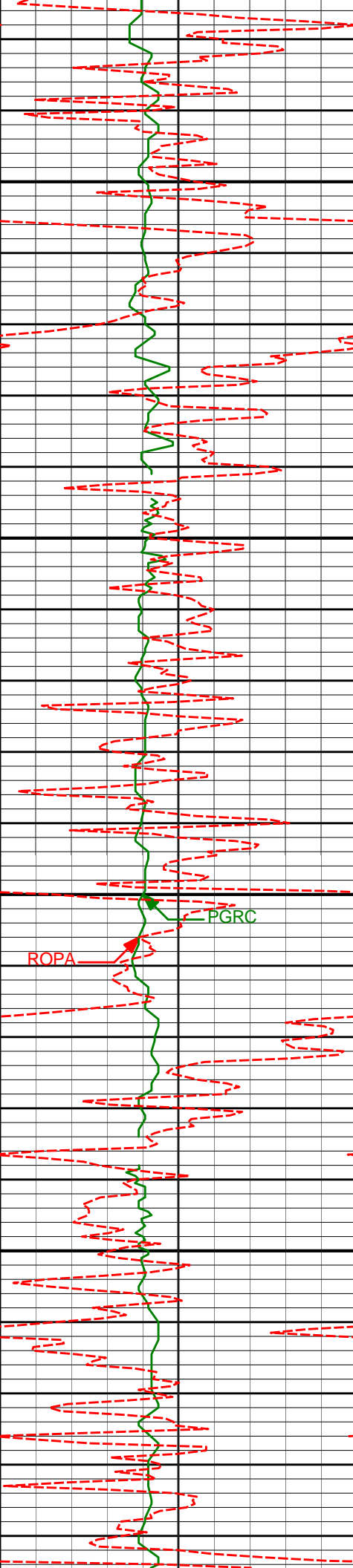
1859'

3.20°

269.09°

1858.83'

9.22'



1900

1950

2000

2050

1952'

4.01°

277.79°

1951.65'

9.62'

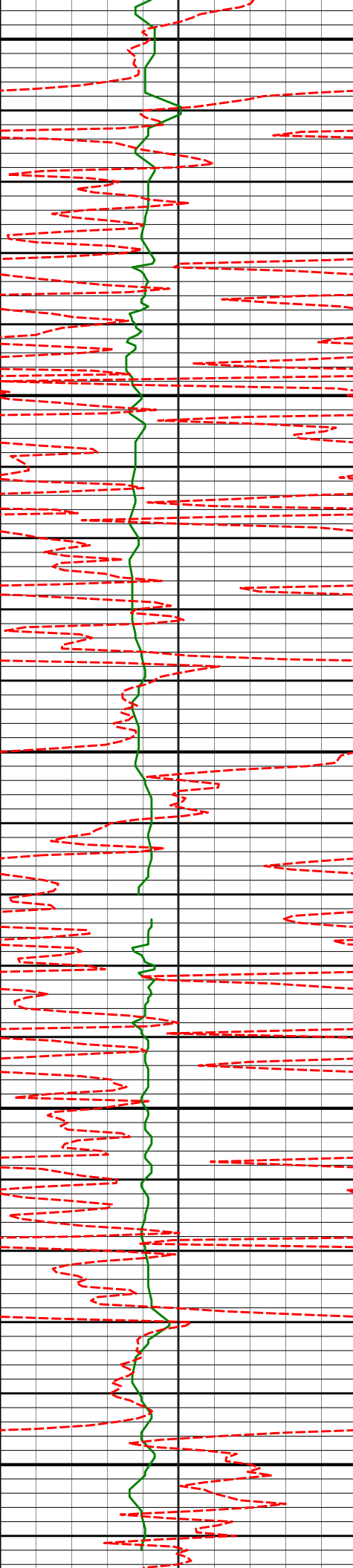
2046'

6.58°

273.81°

2045.24'

10.42'



2100

2139'

8.39°

271.63°

2137.44'

10.97'

2150

2200

2233'

9.12°

267.86°

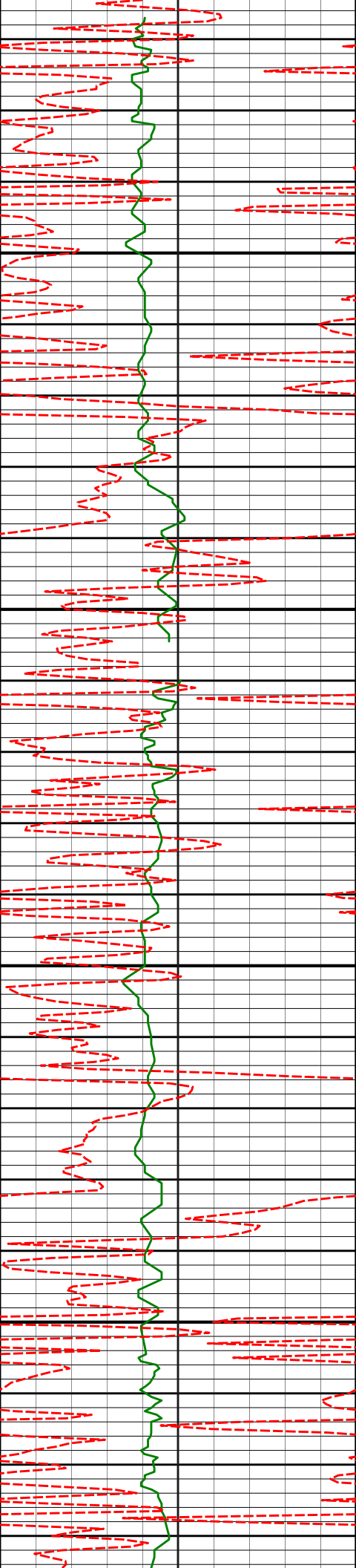
2230.35'

10.88'

2250

2300





2326'

10.40°

261.71°

2322.00'

9.40'

2350

2400

2419'

10.81°

256.25°

2413.42'

6.11'

2450

2500

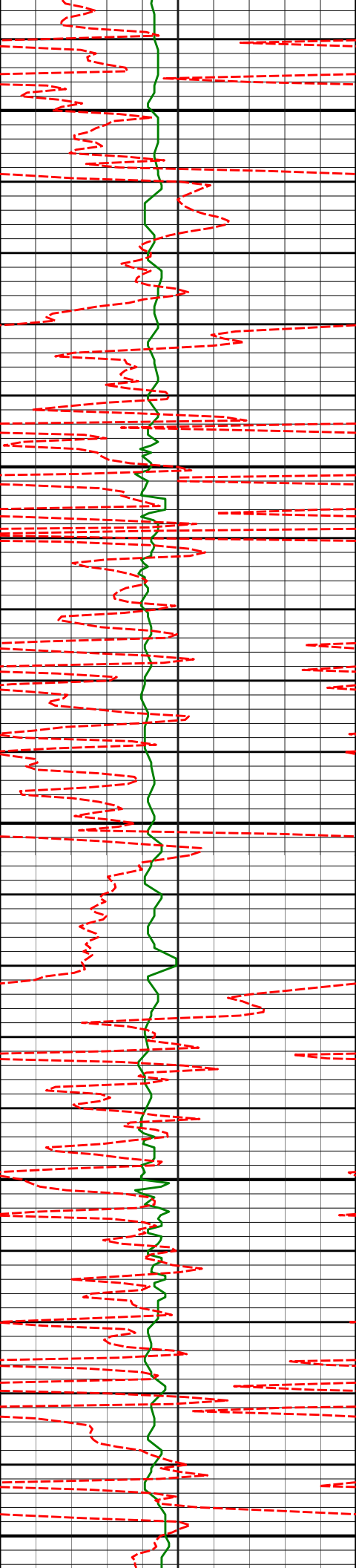
2512'

11.84°

253.26°

2504.61'

1.29'



2550

2600

2650

2700

2750

2606'

11.24°

250.19°

2596.71'

-4.59'

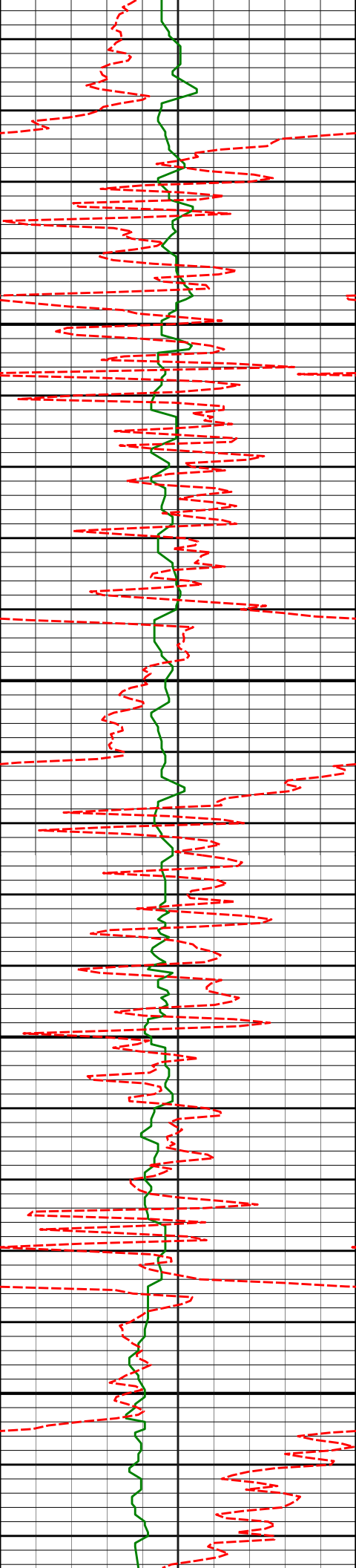
2701'

11.49°

253.24°

2689.84'

-10.46'



2800

2850

2900

2950

2795'

12.78°

252.62°

2781.74'

-16.26'

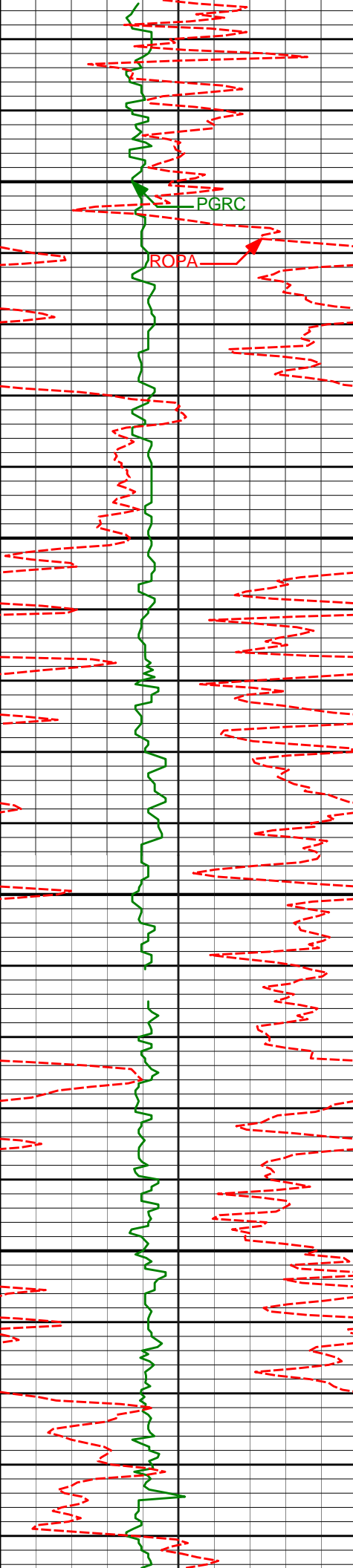
2890'

13.99°

250.99°

2874.16'

-23.14'



3000

3050

3100

3150

2984'

15.07°

250.19°

2965.15'

-30.99'

3079'

15.18°

260.51°

3056.87'

-37.23'

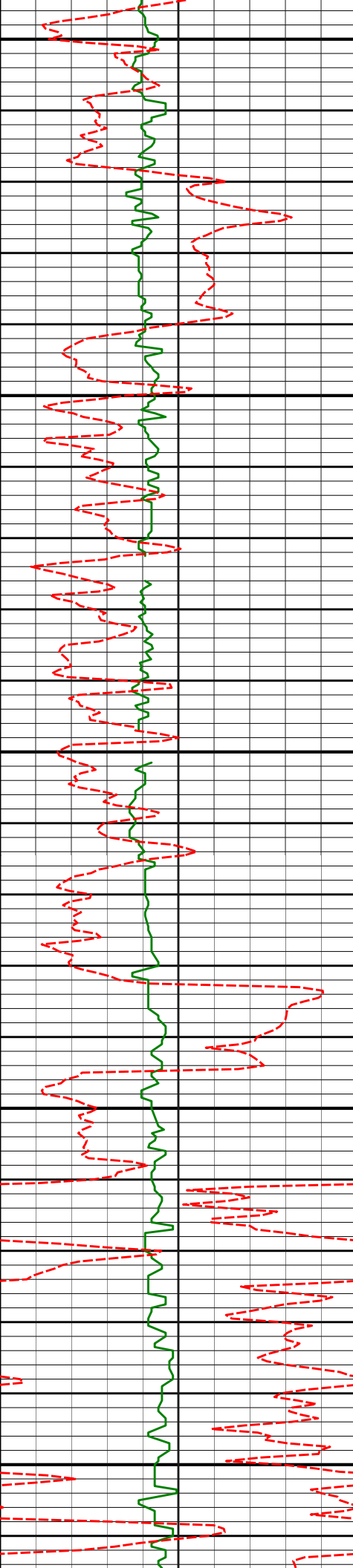
3173'

14.22°

259.32°

3147.80'

-41.39'



3200

3250

3300

3350

3400

3268'

14.85°

257.70°

3239.76'

-46.15'

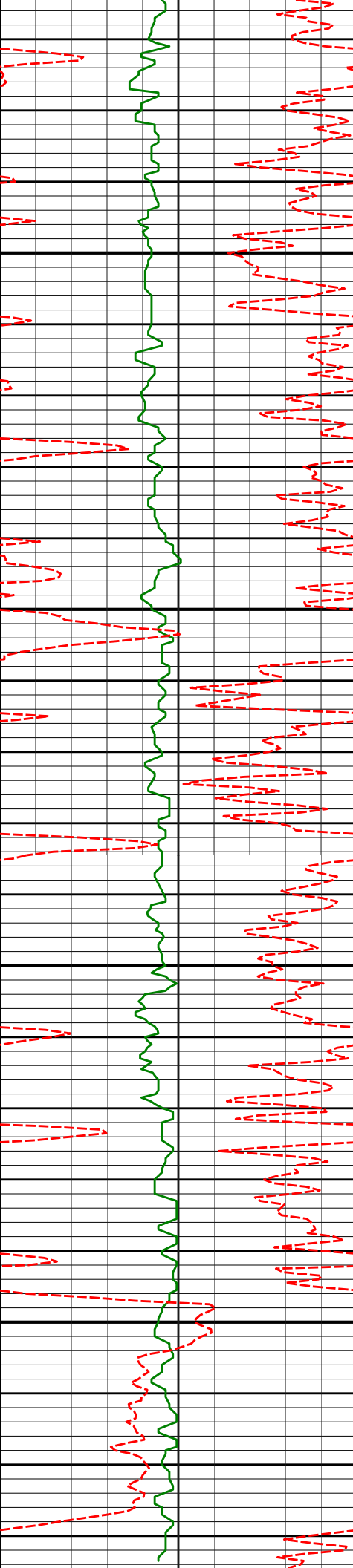
3363'

14.90°

263.92°

3331.58'

-50.03'



3450

3457'

14.12°

261.48°

3422.58'

-53.01'

3500

3550

3552'

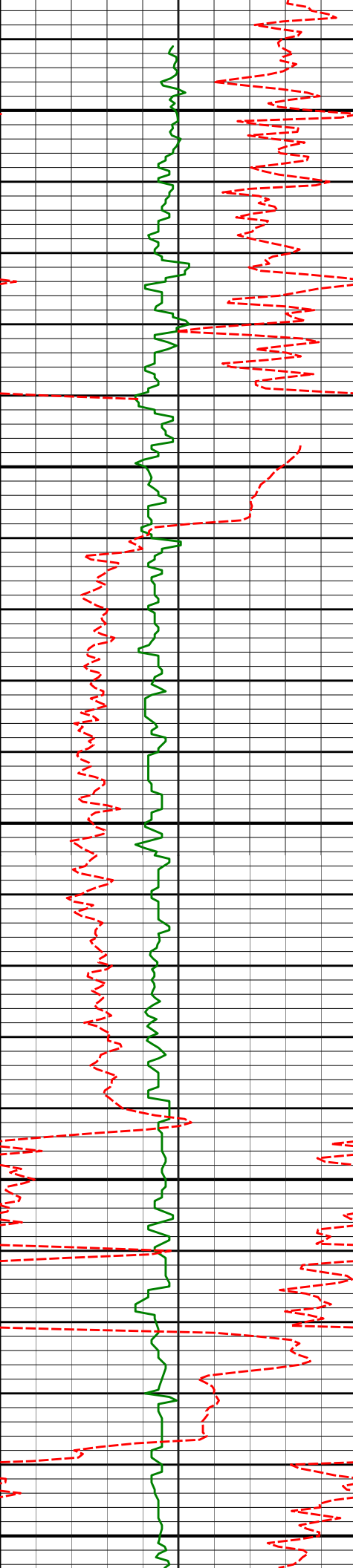
12.70°

257.93°

3514.99'

-56.91'

3600



3650

3647'

14.35°

270.25°

3607.37'

-59.05'

3700

3750

3742'

14.40°

267.20°

3699.40'

-59.57'

3800

3837'

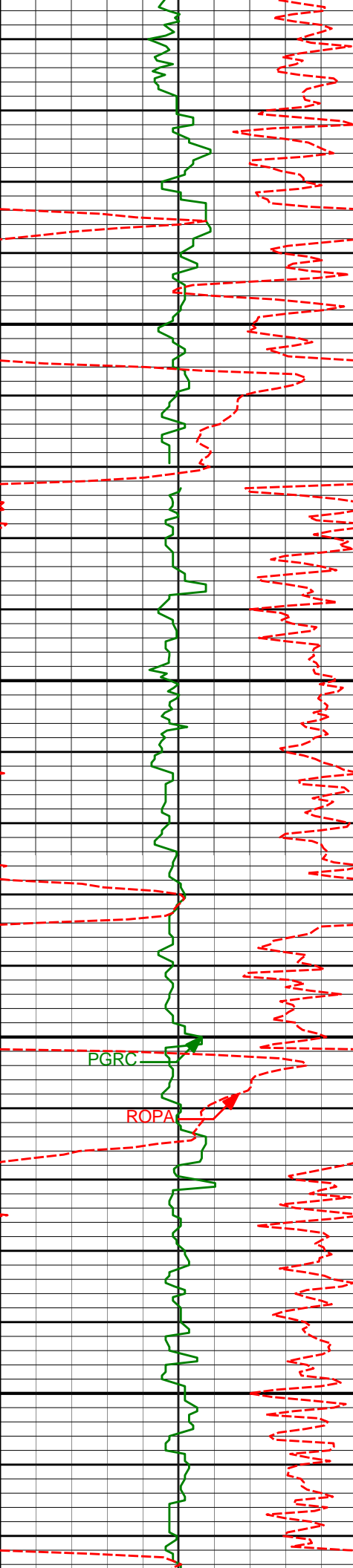
14.47°

262.53°

3791.40'

-61.70'

3850



3900

3950

4000

4050

3932'

15.78°

259.90°

3883.11'

-65.50'

PGRC

ROPA

4027'

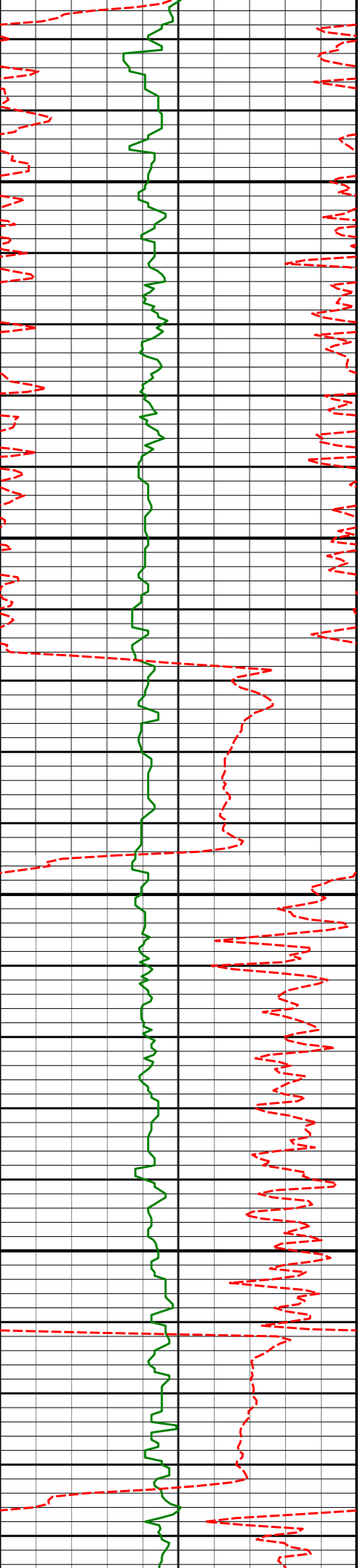
15.51°

262.46°

3974.59'

-69.44'





4100

4121'

14.36°

261.42°

4065.42'

-72.82'

4150

4200

4216'

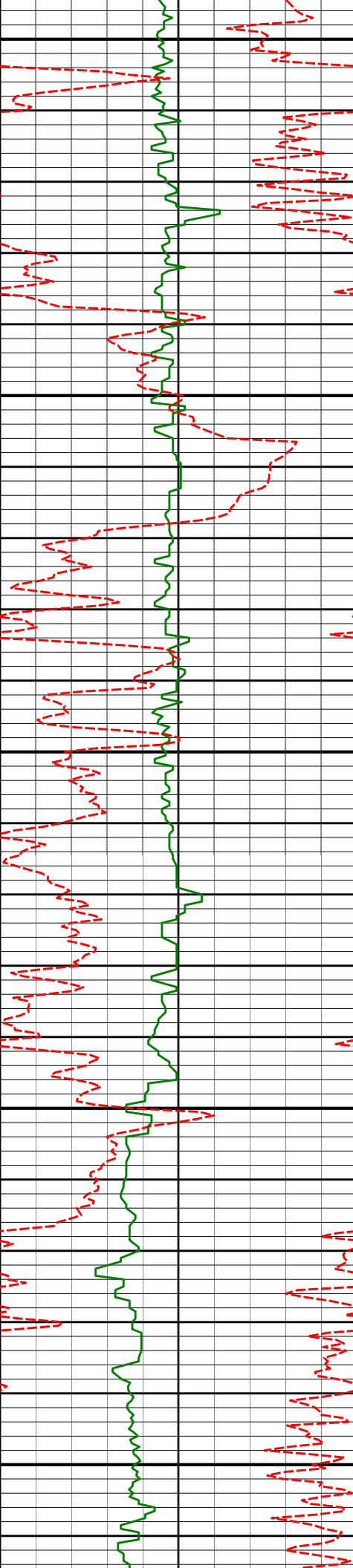
14.81°

278.65°

4157.40'

-72.75'

4250



4300

4311'

18.10°

284.37°

4248.50'

-67.27'

4350

4400

4406'

17.50°

279.03°

4338.96'

-61.36'

4450

4500

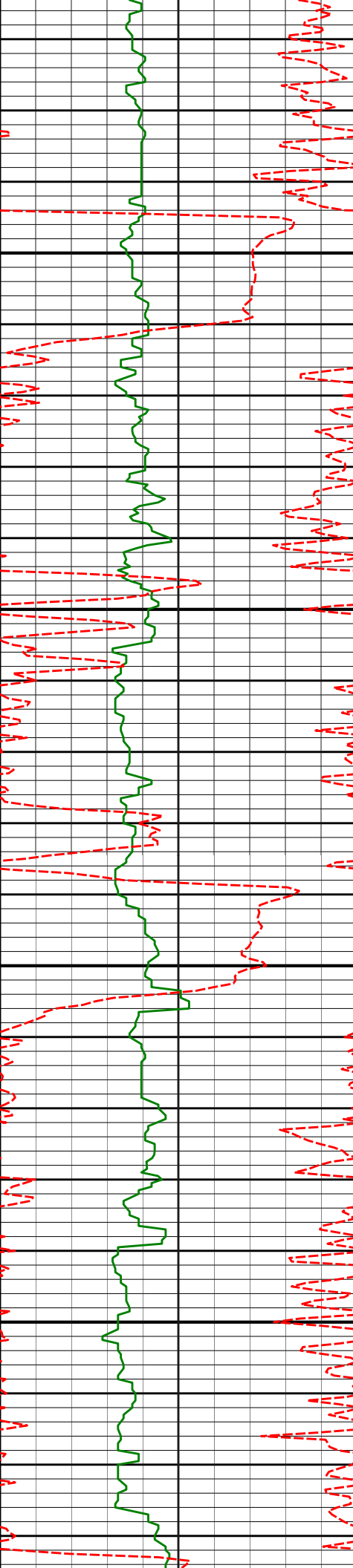
4500'

16.56°

279.05°

4428.84'

-57.04'



4550

4595'

16.28°

271.80°

4519.97'

-54.49'

4600

4650

4689'

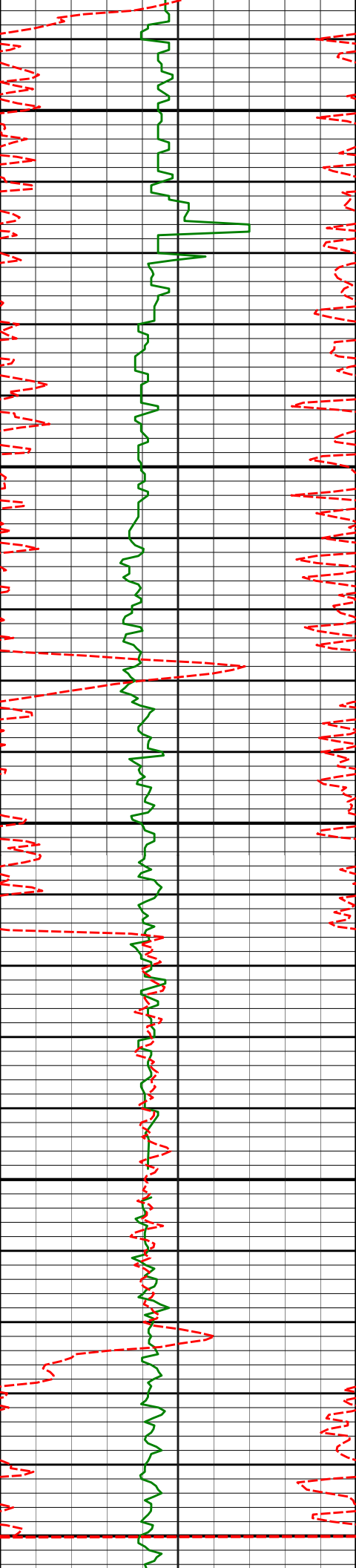
15.50°

264.60°

4610.39'

-55.26'

4700



4750

4784'

14.76°

262.60°

4702.09'

-58.01'

4800

4850

4878'

14.48°

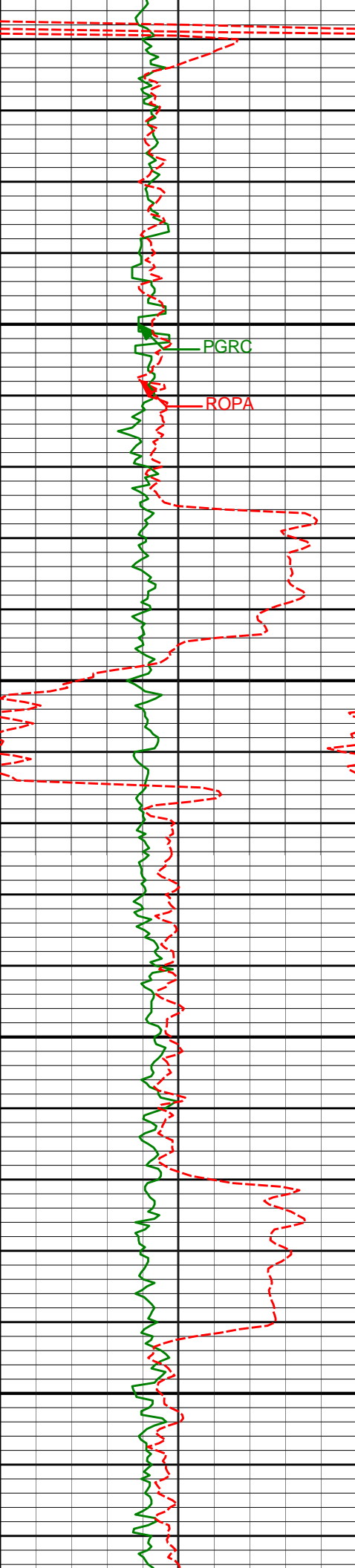
262.50°

4793.05'

-61.09'

4900

4950



5000

5050

5100

5150

4973'

13.51°

260.31°

4885.23'

-64.50'

5068'

14.08°

256.25°

4977.49'

-69.12'

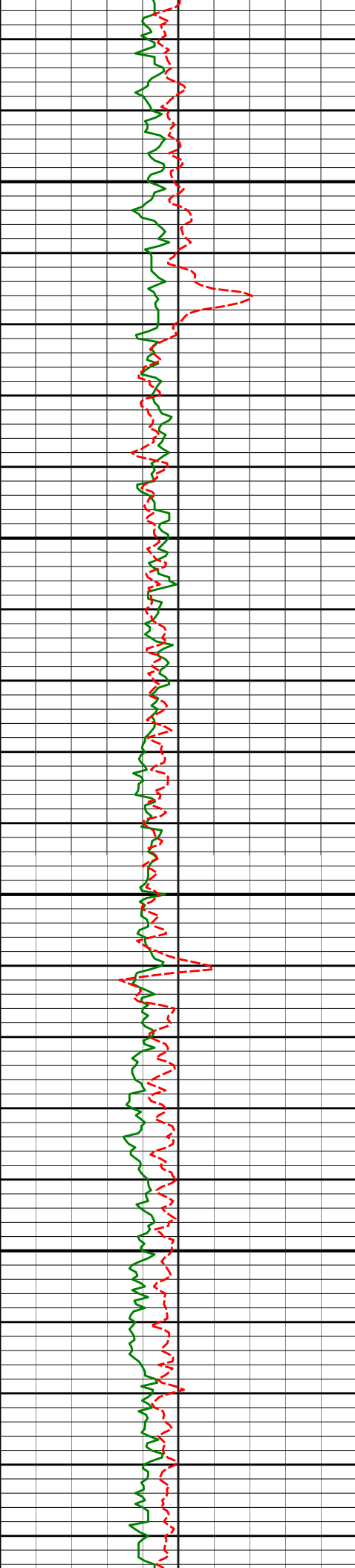
5163'

15.67°

257.59°

5069.30'

-74.63'



5200

5250

5300

5350

5258'

15.07°

255.72°

5160.91'

-80.43'

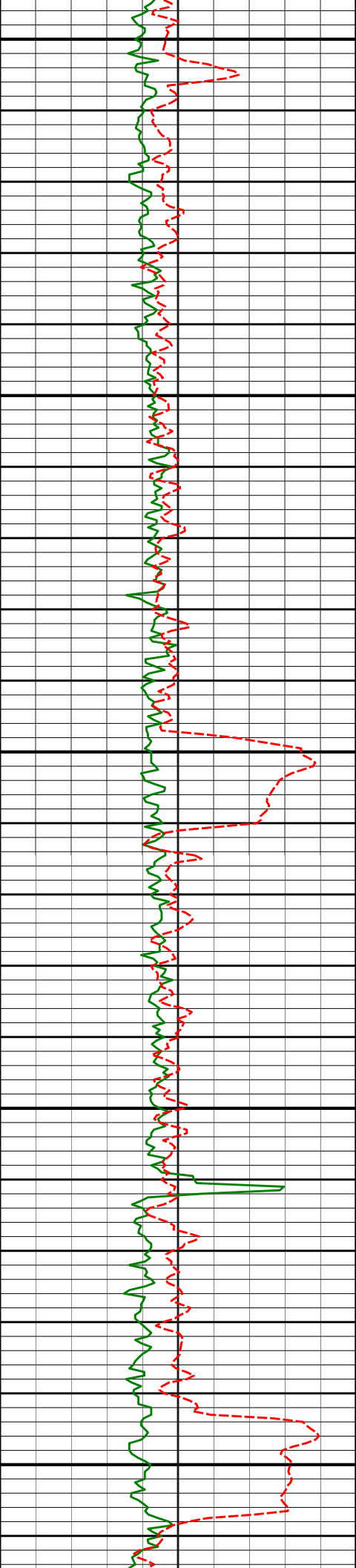
5353'

14.41°

254.40°

5252.78'

-86.66'



5400

5450

5500

5550

5600

5447'

13.37°

251.78°

5344.03'

-93.20'

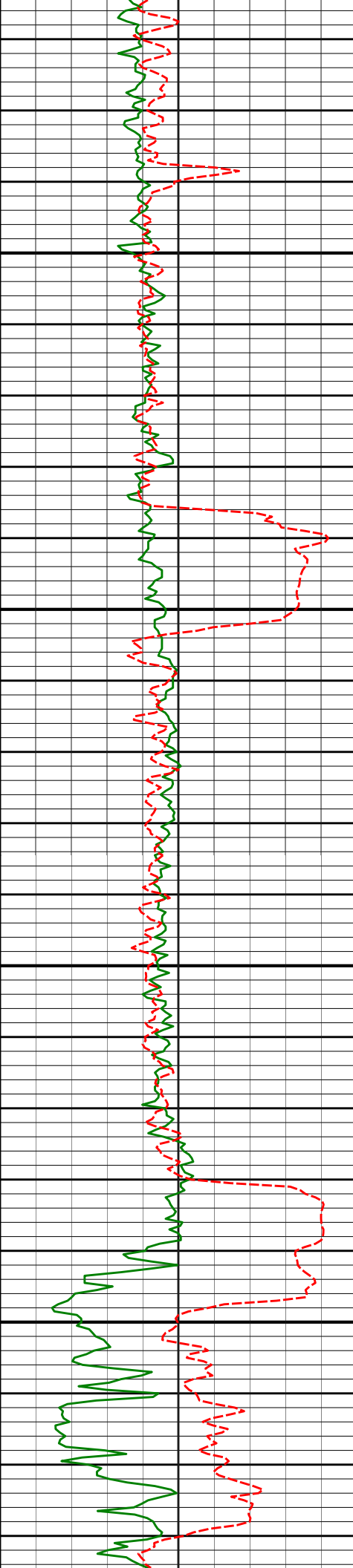
5542'

10.85°

256.87°

5436.91'

-98.67'



5650

5700

5750

5800

5637'

8.40°

260.26°

5530.57'

-101.87'

5732'

6.05°

268.84°

5624.81'

-103.15'

5826'

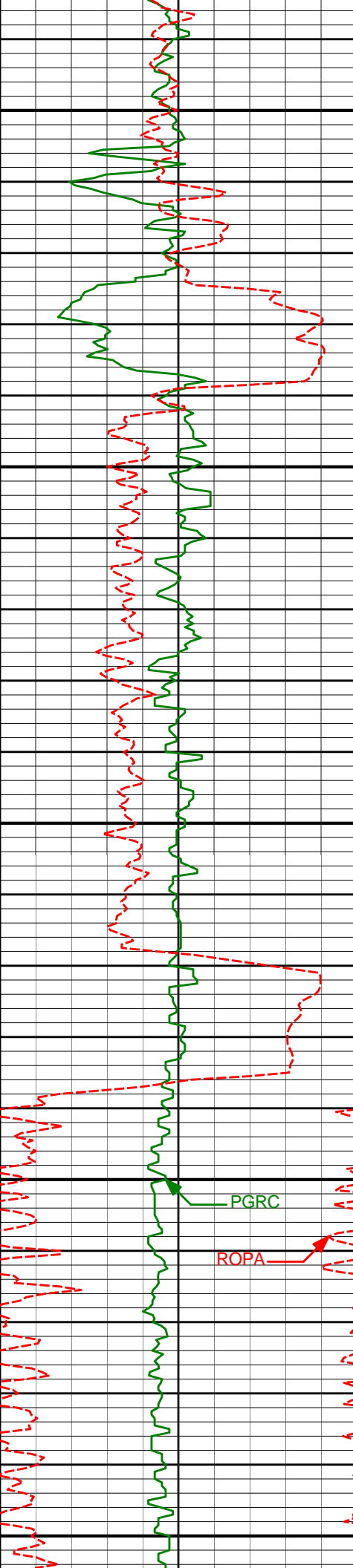
2.82°

266.17°

5718.51'

-103.40'





5850

5900

5950

6000

6050

5921'

2.68°

228.04°

5813.41'

-105.04'

PGRC

ROPA

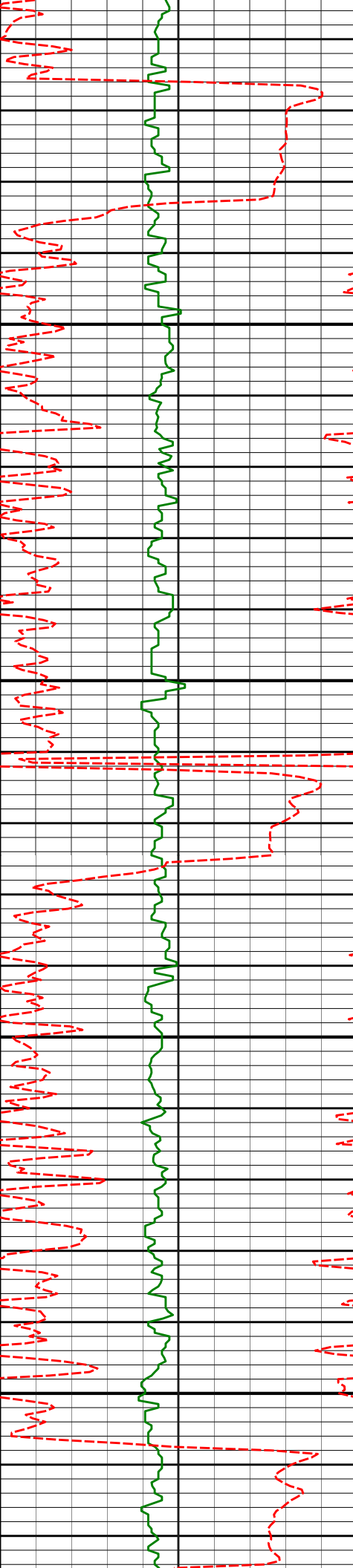
6016'

1.11°

153.38°

5908.37'

-107.35'



6100

6111'

3.16°

91.85°

6003.31'

-108.26'

6150

6200

6206'

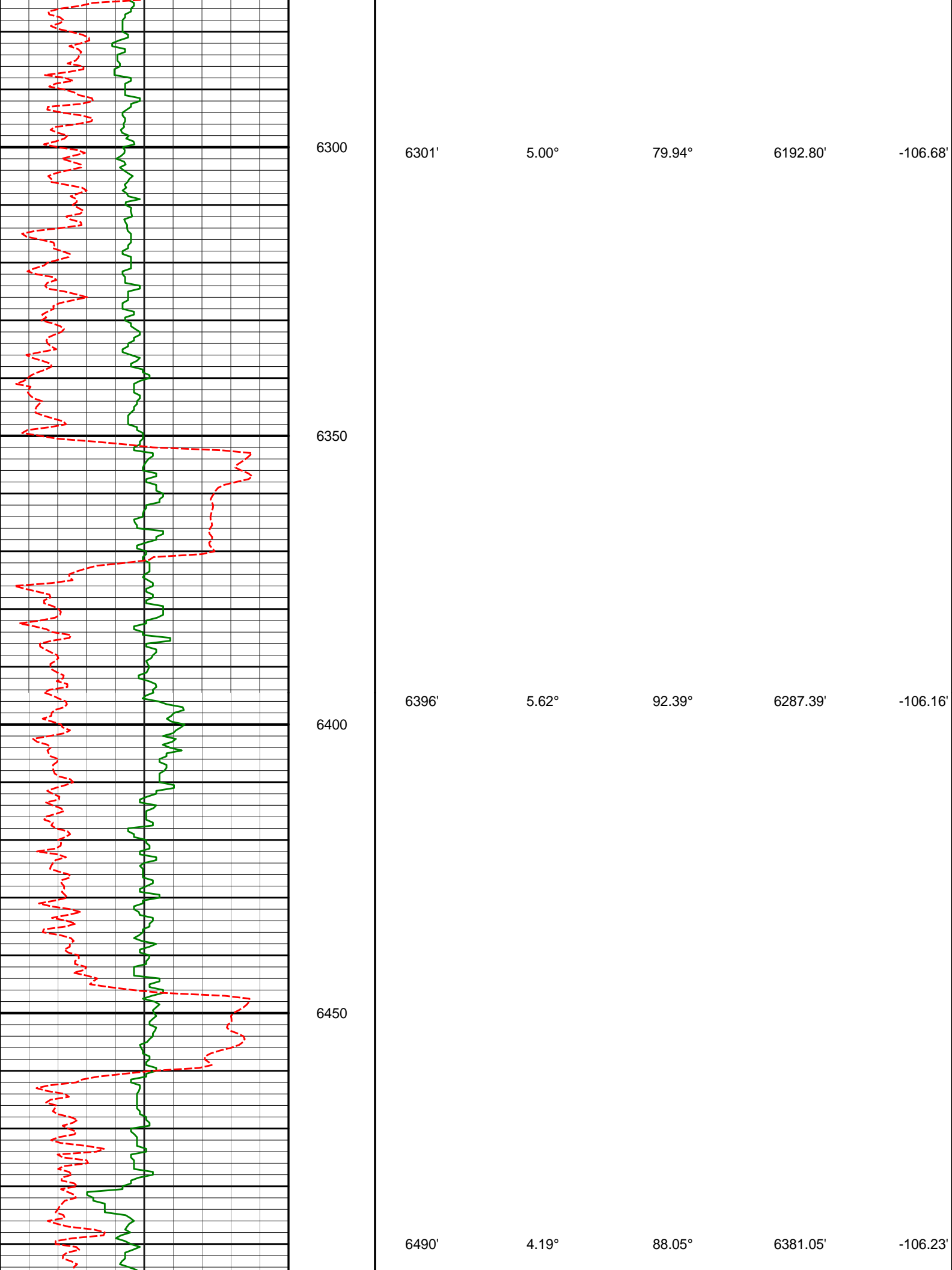
4.26°

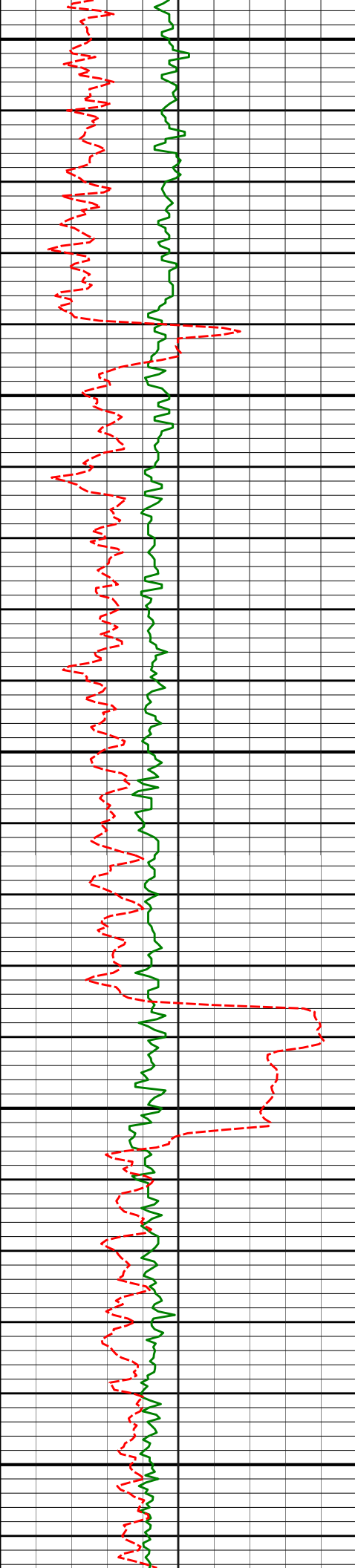
82.33°

6098.11'

-107.88'

6250





6500

6550

6600

6650

6700

6585'

3.53°

88.32°

6475.83'

-106.03'

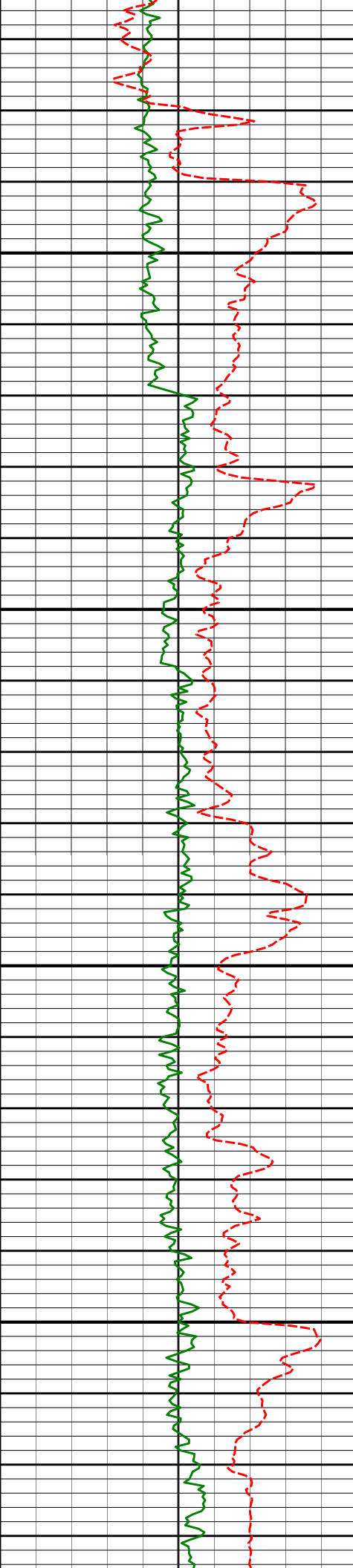
6680'

1.20°

95.55°

6570.74'

-106.04'



6750

6775'

5.73°

357.81°

6665.58'

-101.39'

6800

6822'

12.63°

4.30°

6711.95'

-93.91'

6850

6870'

17.62°

10.29°

6758.28'

-81.52'

6900

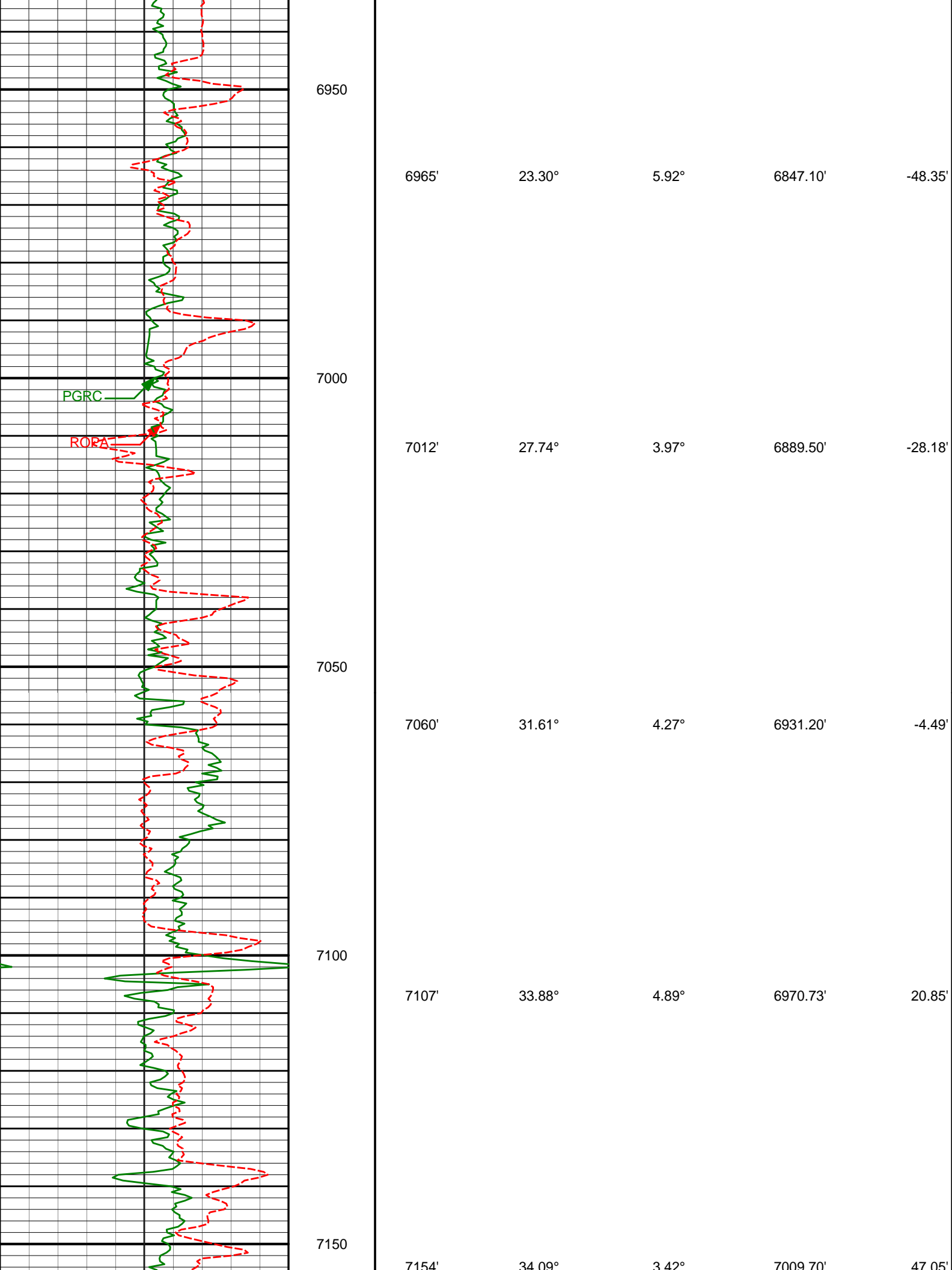
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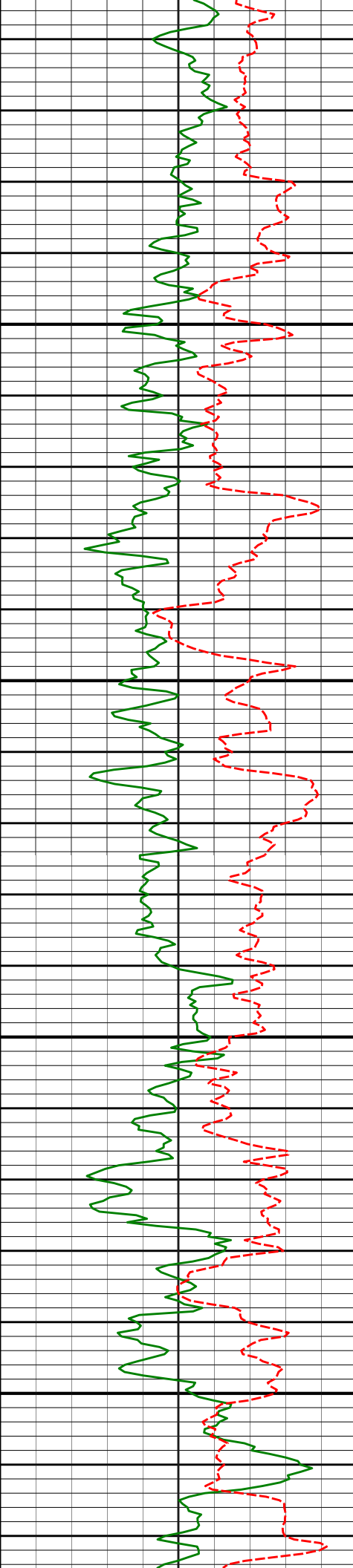
20.96°

10.19°

6802.63'

-66.25'





7200

7201'

35.88°

358.74°

7048.22'

73.97'

7250

7249'

40.87°

356.12°

7085.84'

103.72'

7300

7296'

47.37°

355.17°

7119.56'

136.33'

7350

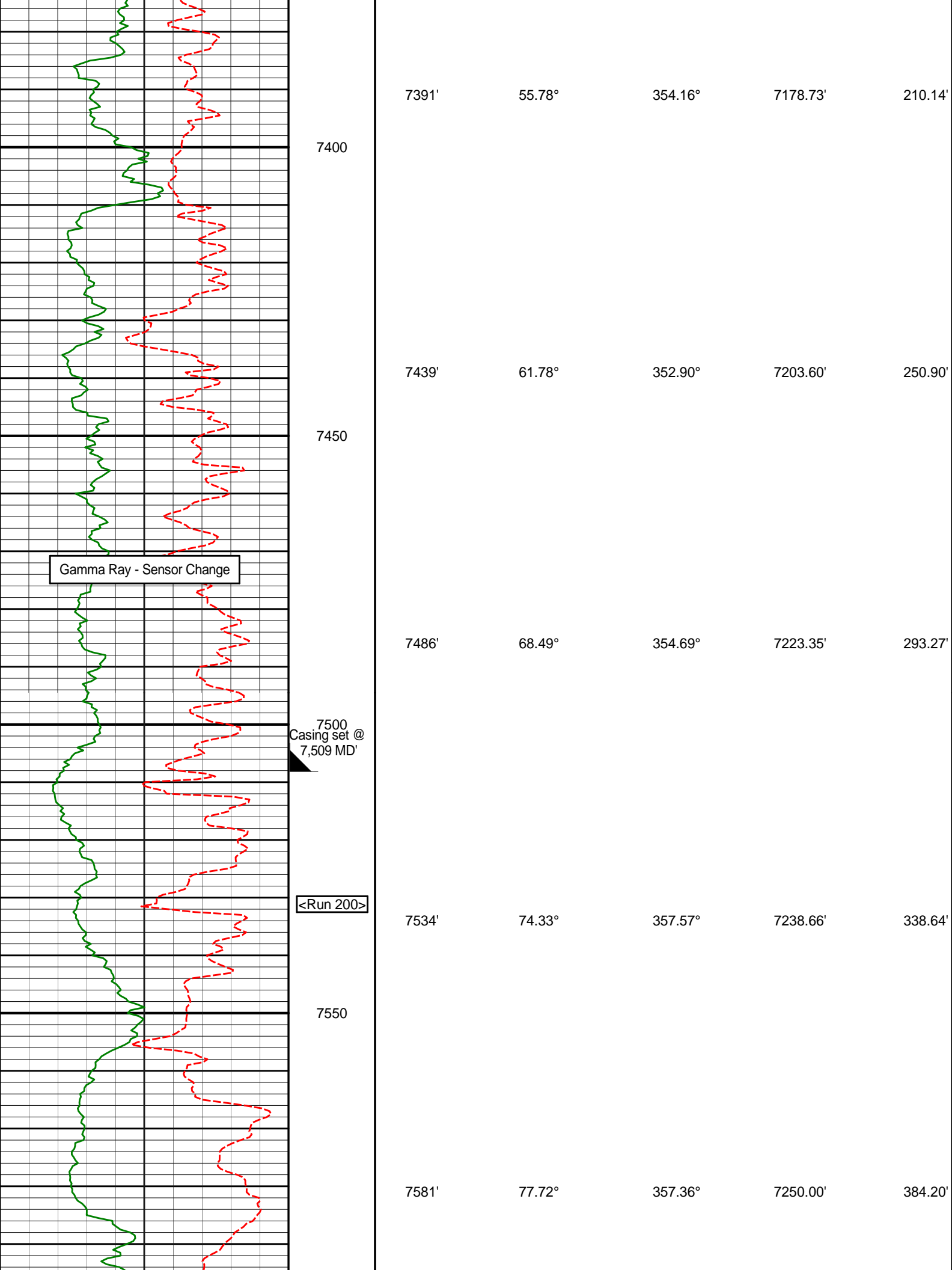
7344'

51.34°

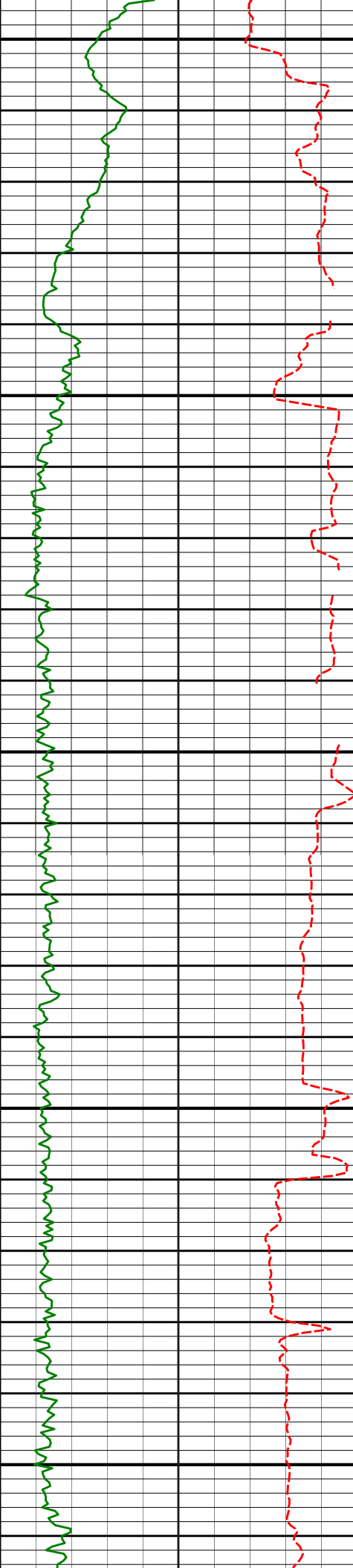
353.42°

7150.82'

172.56'







7600

7629'

80.96°

358.69°

7258.88'

431.33'

7650

7700

7730'

88.77°

359.42°

7267.86'

531.83'

7750

7800

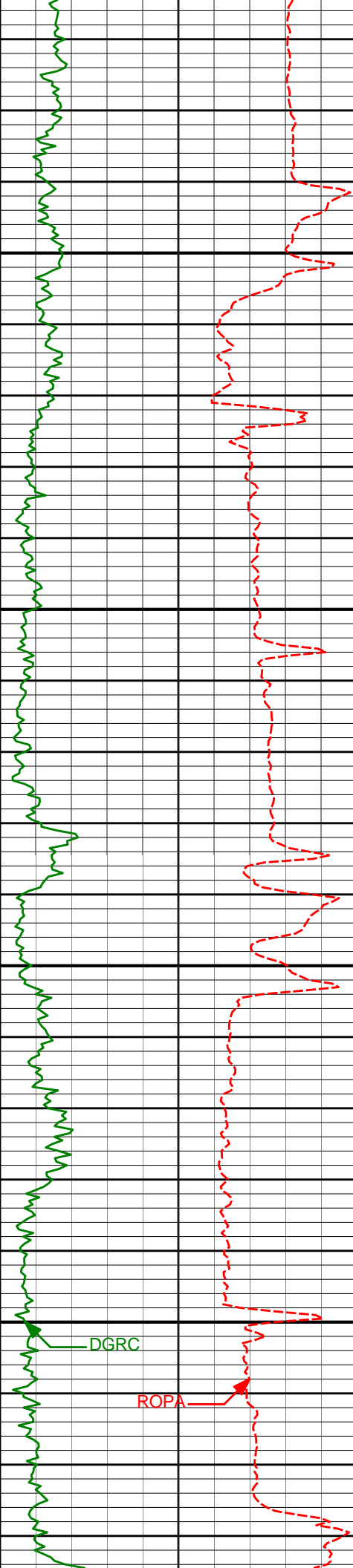
7791'

88.70°

359.89°

7269.21'

592.82'



7850

7885'

89.32°

0.10°

7270.83'

686.80'

7900

7950

7978'

88.58°

0.99°

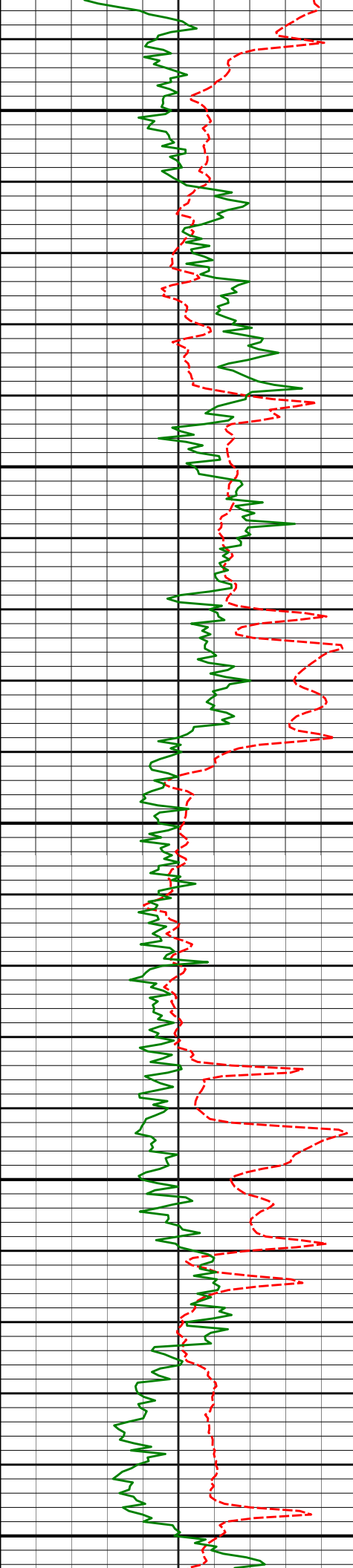
7272.53'

779.78'

8000

DGRC

ROPA



8050

8072'

88.70°

1.81°

7274.76'

873.72'

8100

8134'

88.70°

0.79°

7276.17'

935.69'

8150

8200

8227'

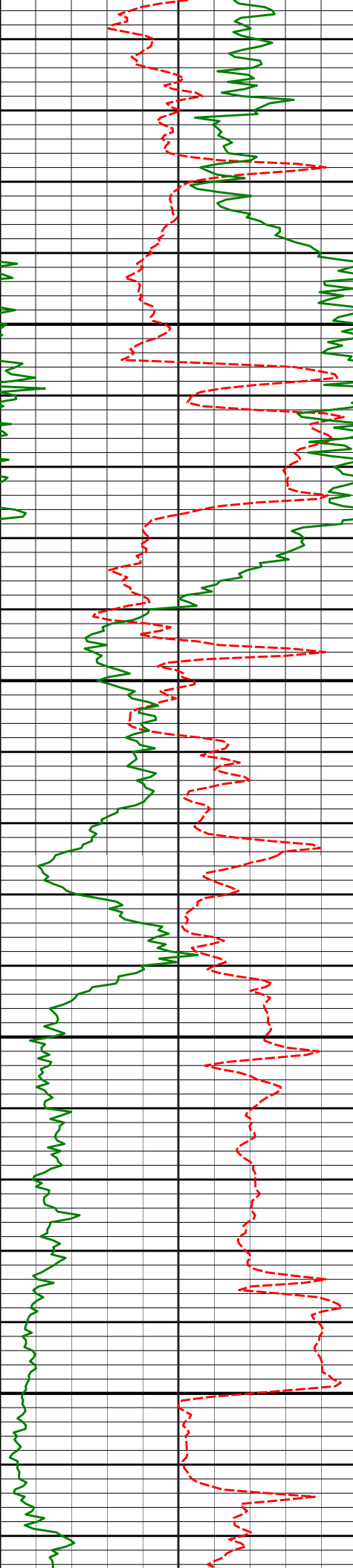
89.88°

2.52°

7277.32'

1028.64'

8250



8300

8321'

90.68°

1.46°

7276.86'

1122.58'

8350

8383'

89.75°

2.05°

7276.63'

1184.55'

8400

8445'

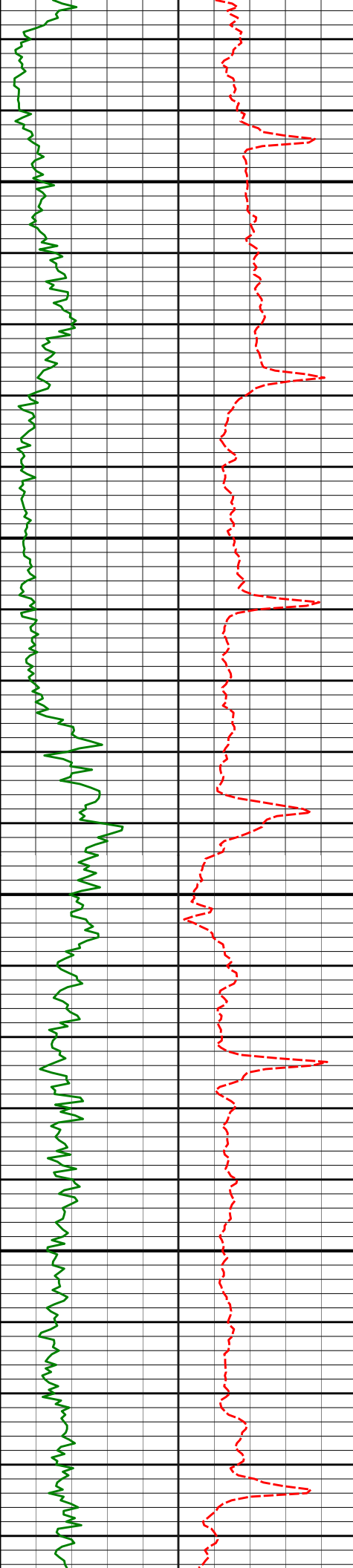
90.49°

1.57°

7276.50'

1246.52'

8450



8500

8539'

90.43°

2.41°

7275.74'

1340.46'

8550

8600

8632'

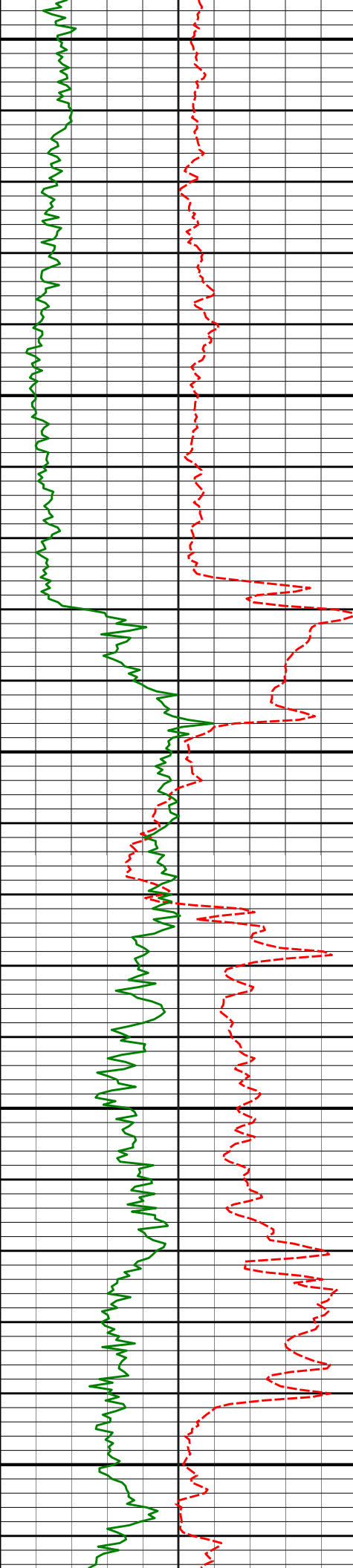
90.12°

1.04°

7275.29'

1433.41'

8650



8700

8726'

88.45°

359.22°

7276.45'

1527.40'

8750

8800

8819'

90.62°

359.03°

7277.21'

1620.38'

8850

8900

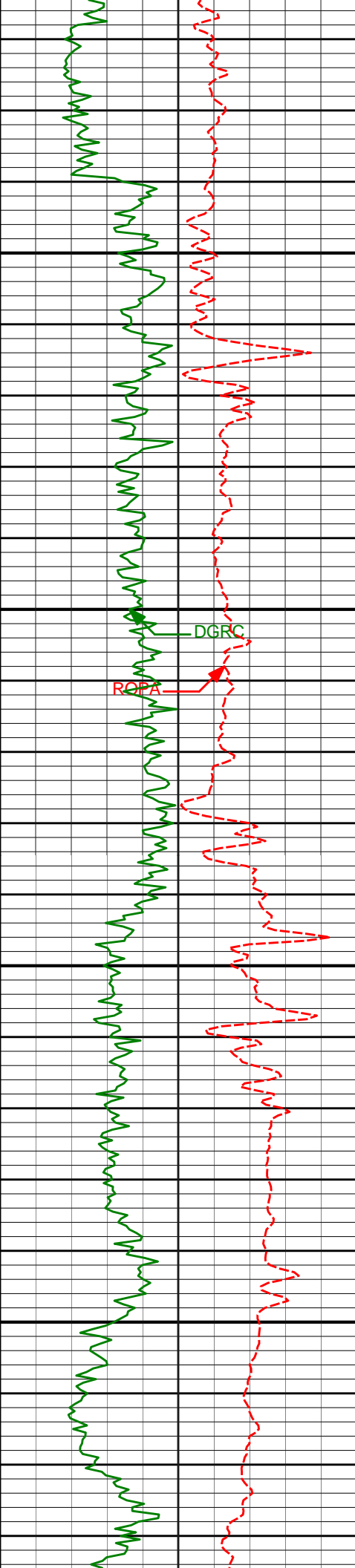
8913'

90.12°

1.46°

7276.60'

1714.37'



8950

9000

9050

9100

9006'

89.38°

359.80°

7277.00'

1807.36'

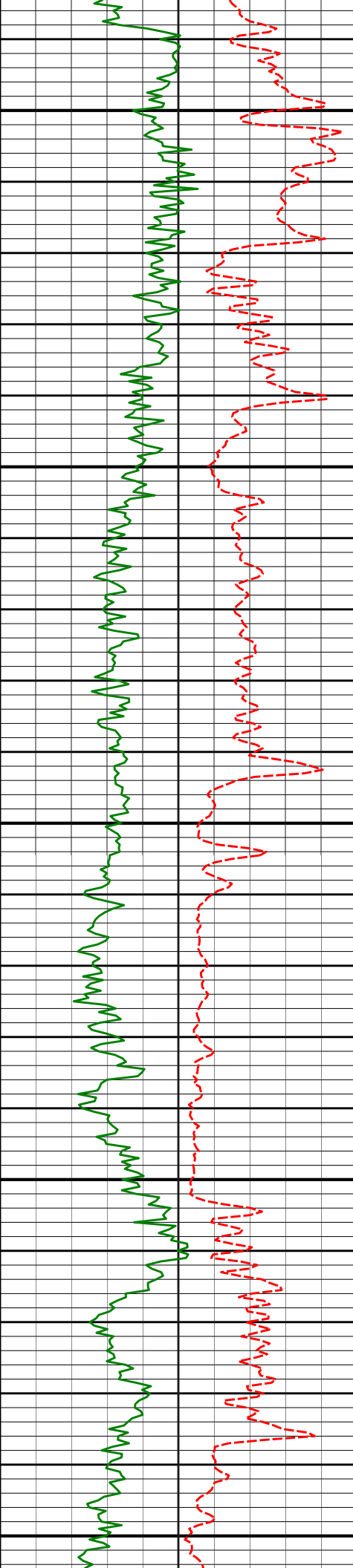
9099'

88.21°

358.81°

7278.95'

1900.33'



9150

9200

9250

9300

9350

9193'

90.06°

1.31°

7280.37'

1994.31'

9285'

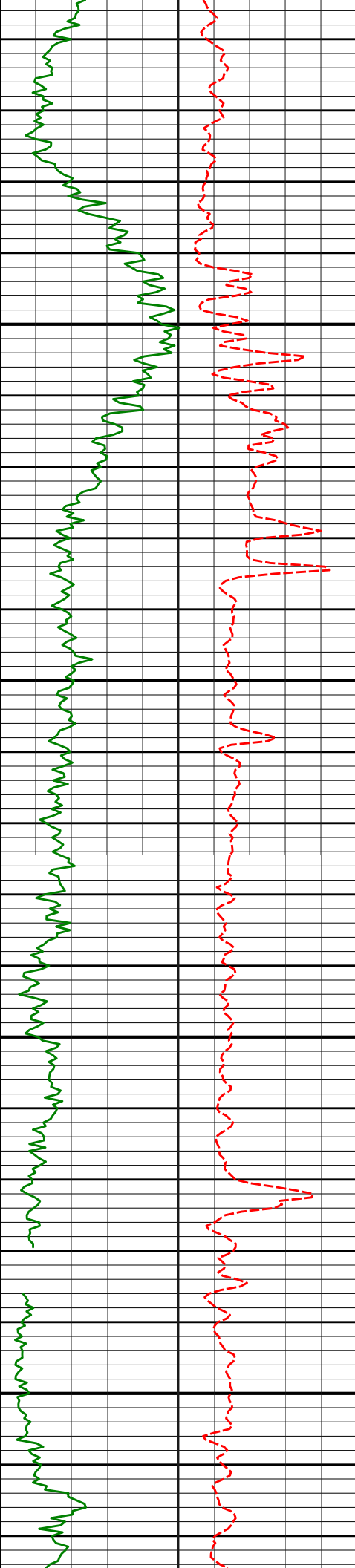
89.51°

1.58°

7280.71'

2086.28'





9400

9450

9500

9550

9379'

88.89°

0.90°

7282.03'

2180.24'

9472'

89.32°

1.76°

7283.48'

2273.21'

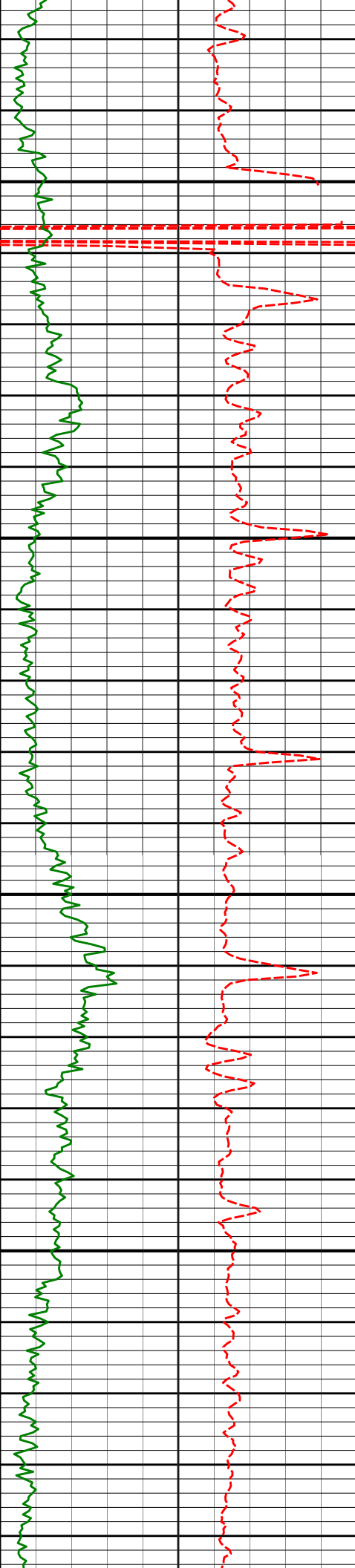
9567'

88.46°

0.39°

7285.33'

2368.17'



9600

9650

9700

9750

9661'

88.52°

1.12°

7287.81'

2462.13'

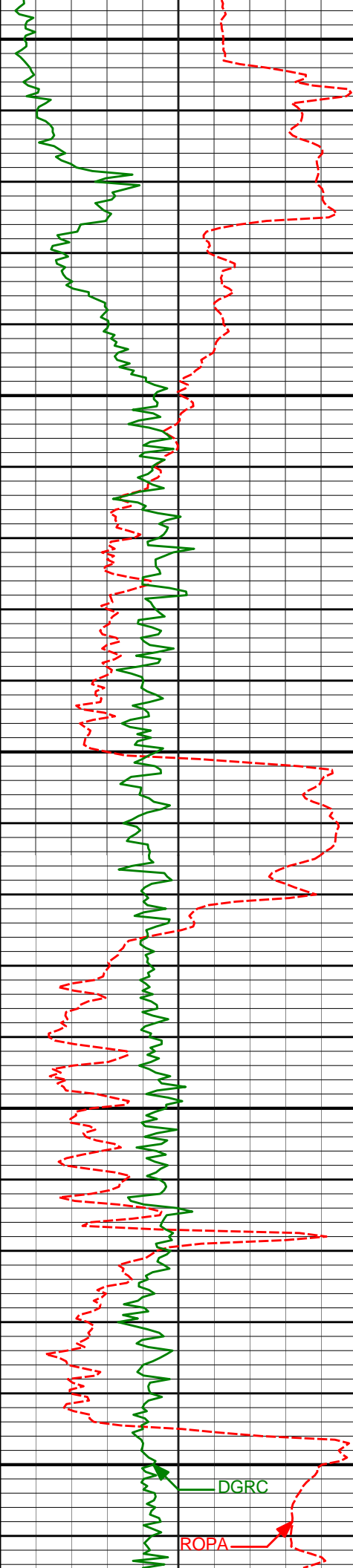
9756'

88.08°

359.12°

7290.63'

2557.08'



9800

9850

9900

9950

10000

9851'

87.53°

359.04°

7294.26'

2652.00'

9945'

88.76°

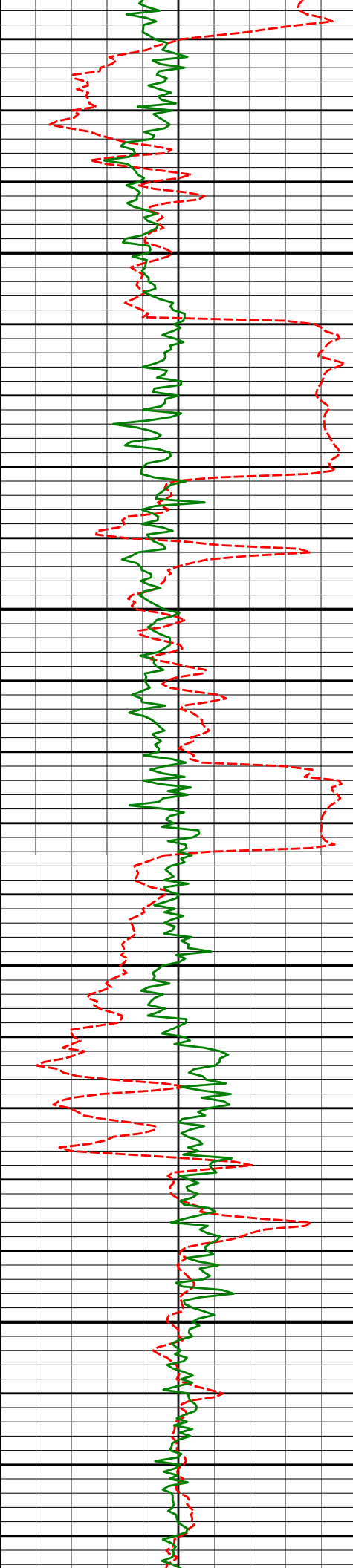
358.16°

7297.30'

2745.92'

DGRC

ROPA



10050

10100

10150

10200

10040'

89.57°

1.10°

7298.69'

2840.89'

10135'

91.17°

1.97°

7298.07'

2935.85'

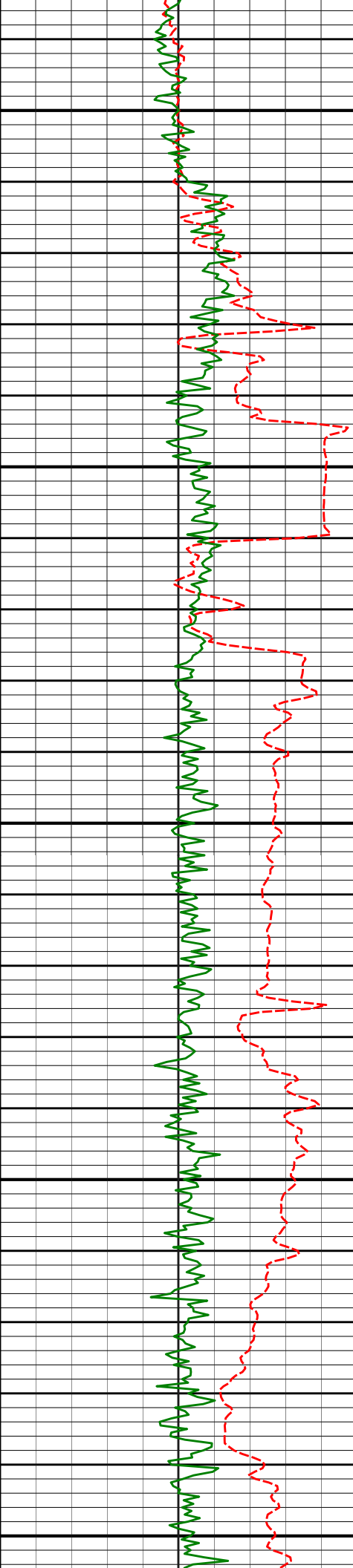
10230'

90.62°

2.76°

7296.59'

3030.76'



10250

10300

10350

10400

10450

10325'

91.85°

1.18°

7294.54'

3125.68'

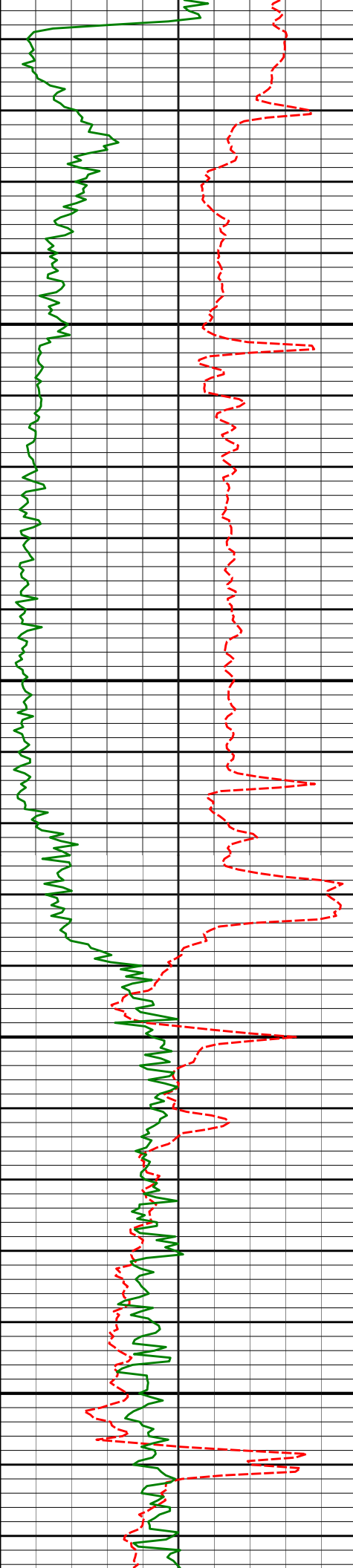
10420'

92.03°

1.30°

7291.32'

3220.60'



10500

10515'

91.73°

1.17°

7288.21'

3315.53'

10550

10600

10609'

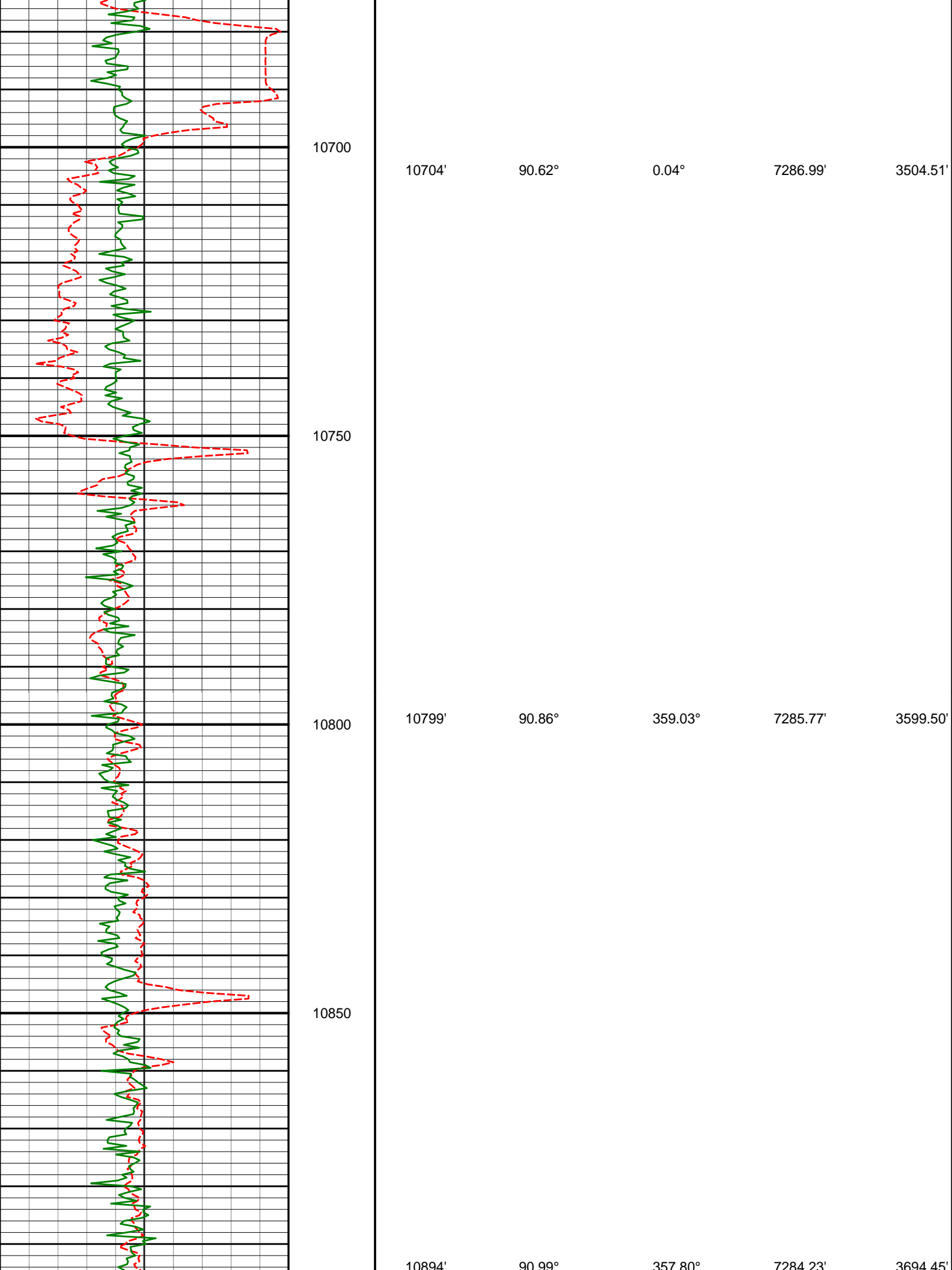
89.57°

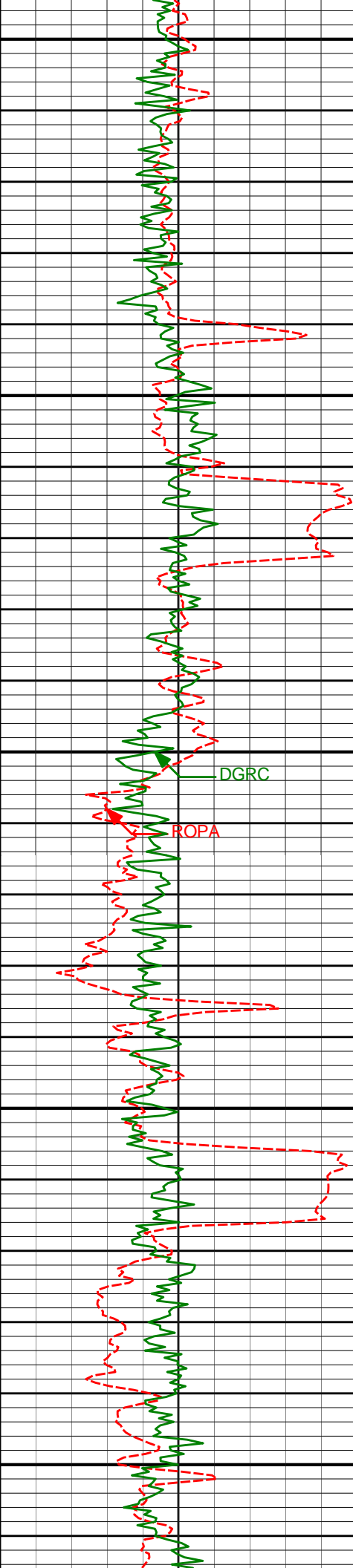
359.80°

7287.15'

3409.51'

10650





10900

10950

11000

11050

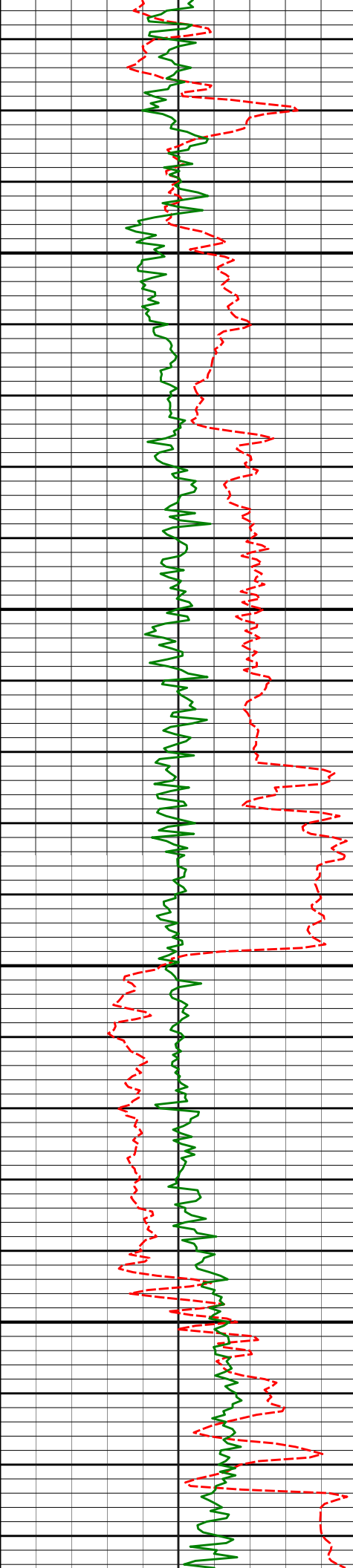
11100

DGRC

ROPA

10988'	90.00°	357.66°	7283.42'	3788.37'
11083'	90.19°	358.19°	7283.26'	3883.30'





11150

11200

11250

11300

11177'

88.21°

356.26°

7284.58'

3977.18'

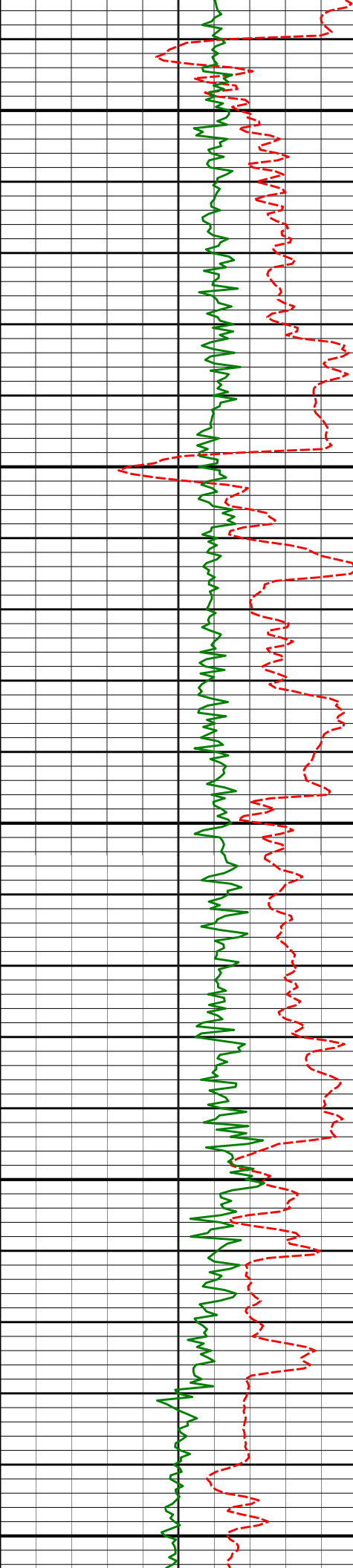
11272'

89.51°

356.07°

7286.47'

4071.94'



11350

11366'

90.31°

355.77°

7286.62'

4165.70'

11400

11450

11461'

91.30°

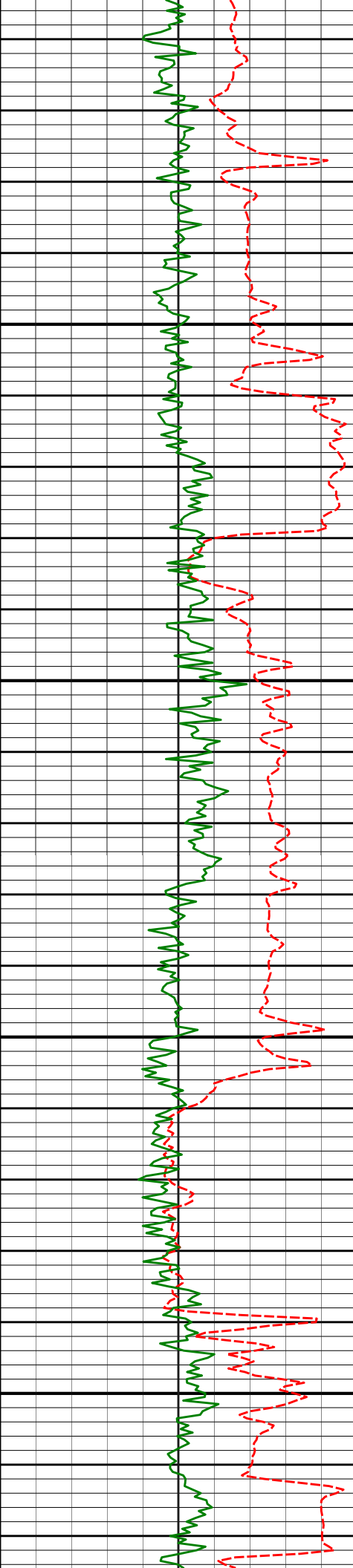
358.35°

7285.29'

4260.56'

11500

11550



11600

11650

11700

11750

11556'

92.10°

358.38°

7282.48'

4355.48'

11651'

92.84°

0.07°

7278.39'

4450.38'

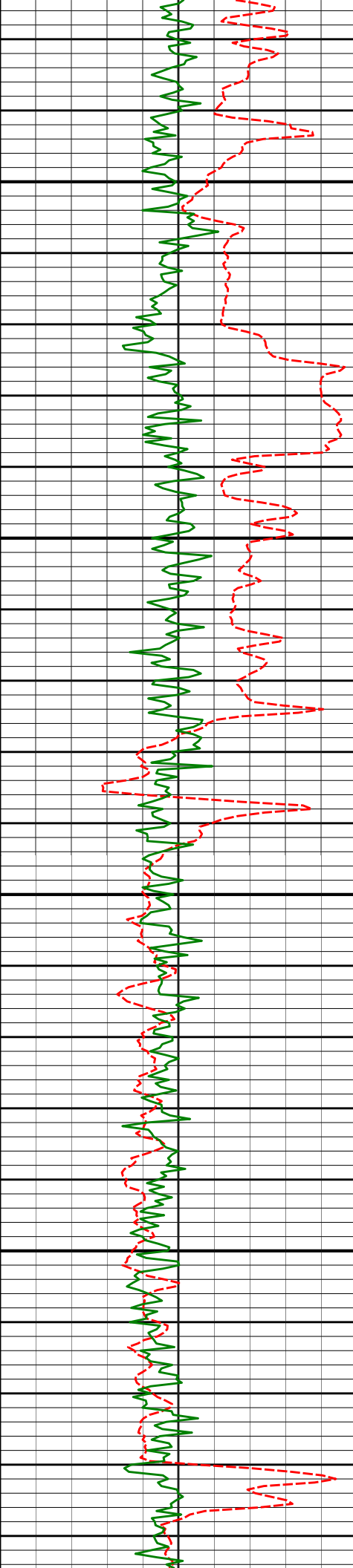
11746'

92.41°

358.63°

7274.04'

4545.27'



11800

11850

11900

11950

11841'

91.55°

0.61°

7270.76'

4640.20'

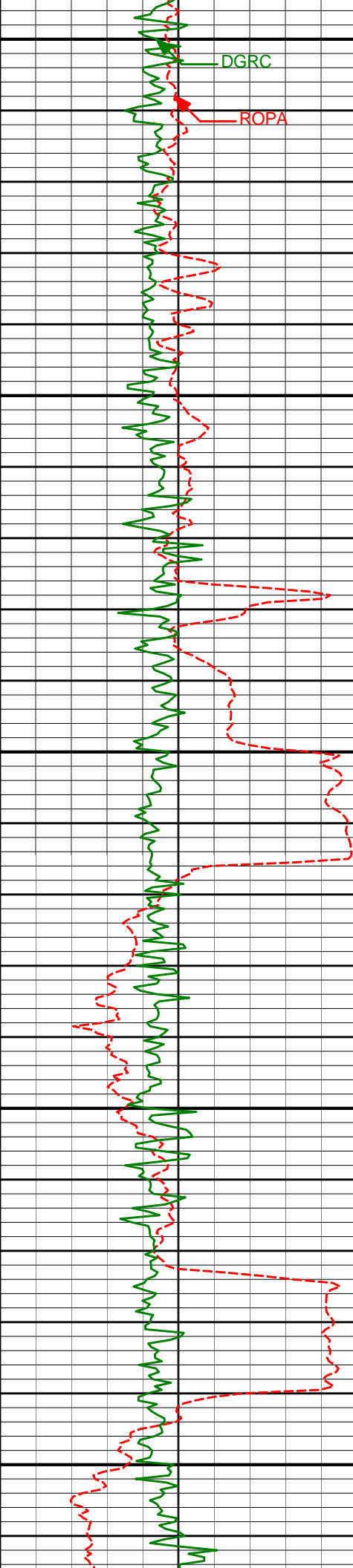
11935'

90.87°

359.42°

7268.78'

4734.18'



DGRC

ROPA

12000

12050

12100

12150

12200

12030'

89.94°

358.38°

7268.12'

4829.16'

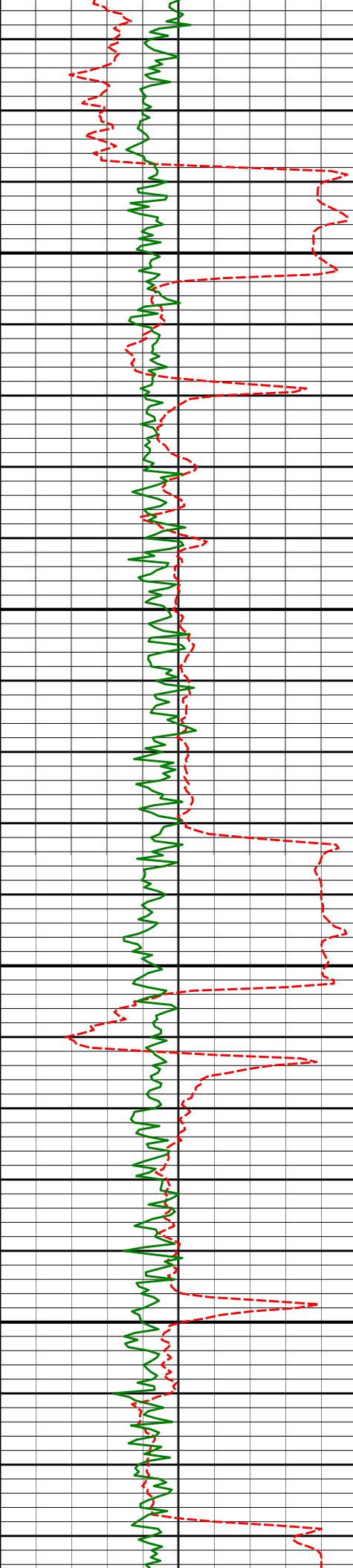
12125'

88.83°

357.73°

7269.14'

4924.10'



12250

12300

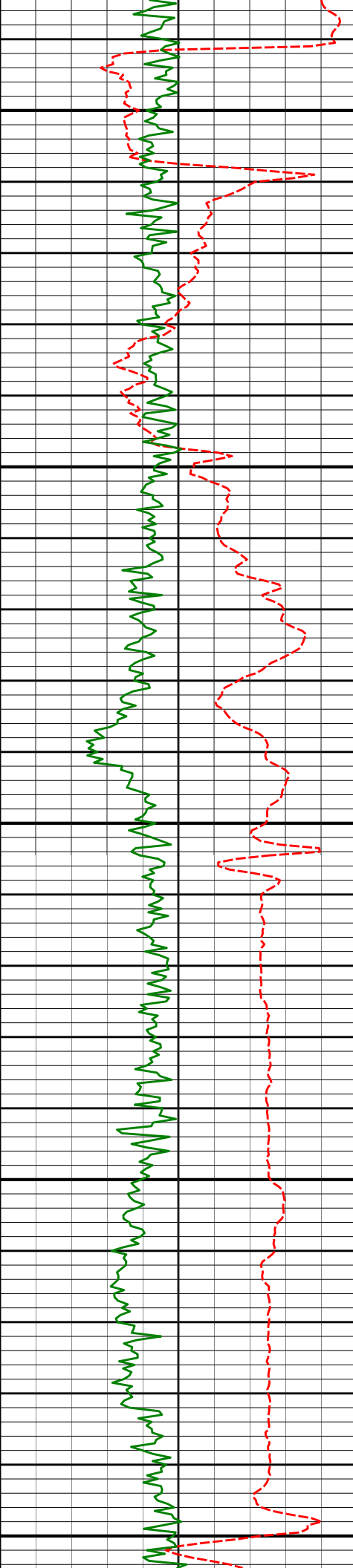
12350

12400

12220'	90.00°	357.70°	7270.11'	5019.01'
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12314'	90.12°	359.75°	7270.01'	5112.99'
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12409'	90.56°	2.01°	7269.45'	5207.97'
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12450

12500

12550

12600

12650

12504'

91.48°

2.46°

7267.76'

5302.88'

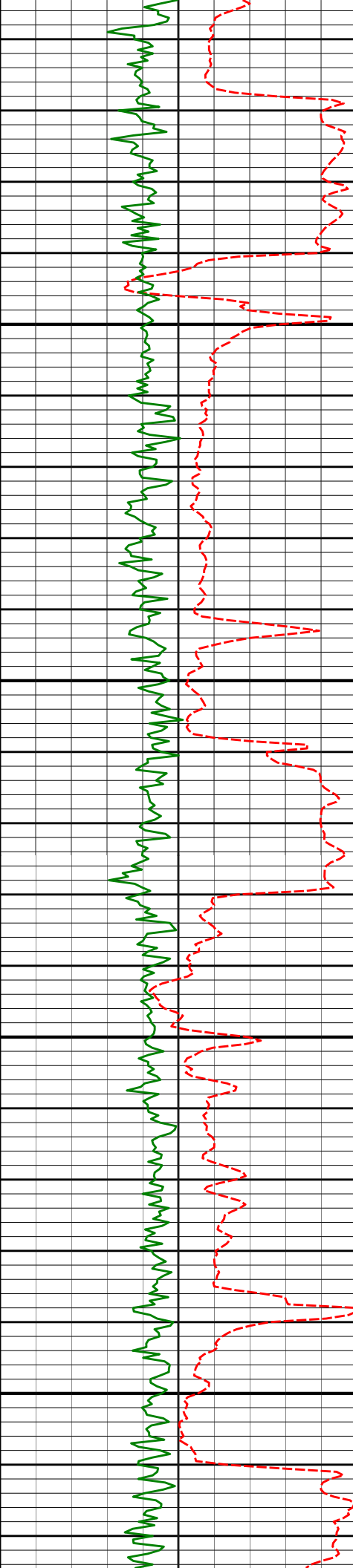
12599'

89.81°

359.61°

7266.69'

5397.84'



12700

12750

12800

12850

12694'

88.21°

359.15°

7268.32'

5492.82'

12789'

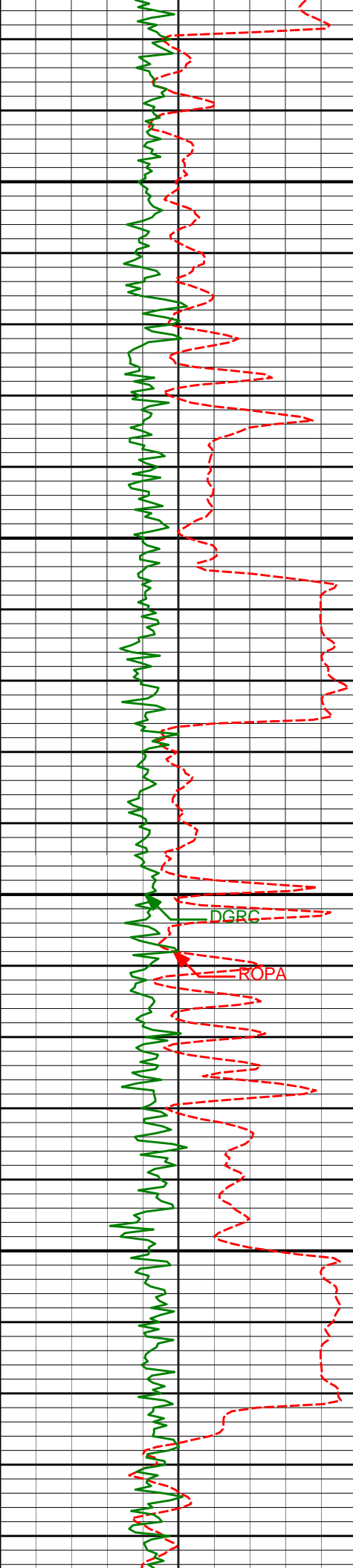
89.51°

358.22°

7270.22'

5587.77'





12900

12950

13000

13050

12884'

90.06°

359.39°

7270.57'

5682.75'

12978'

89.51°

359.01°

7270.93'

5776.74'

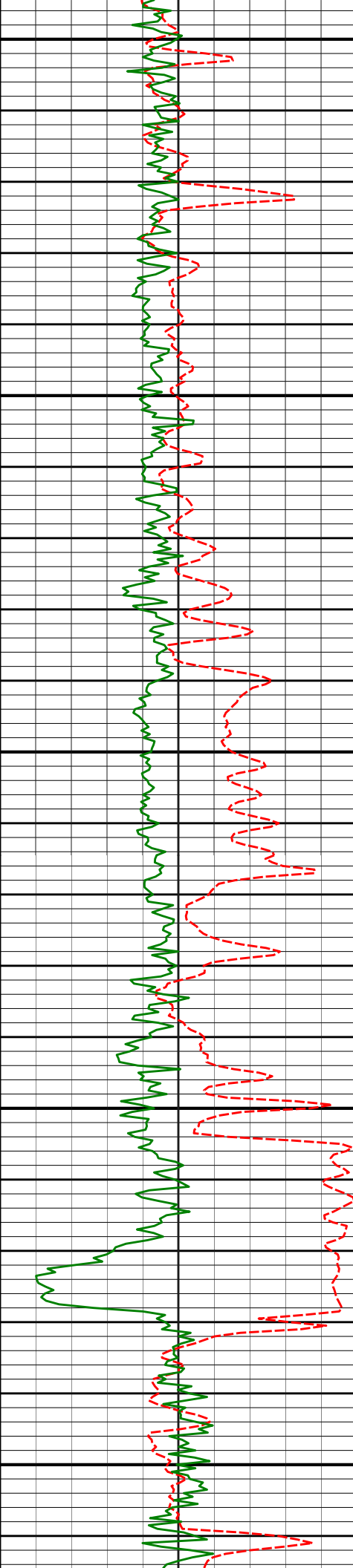
13073'

90.31°

1.43°

7271.08'

5871.73'



13100

13150

13200

13250

13300

13168'

90.25°

1.11°

7270.62'

5966.71'

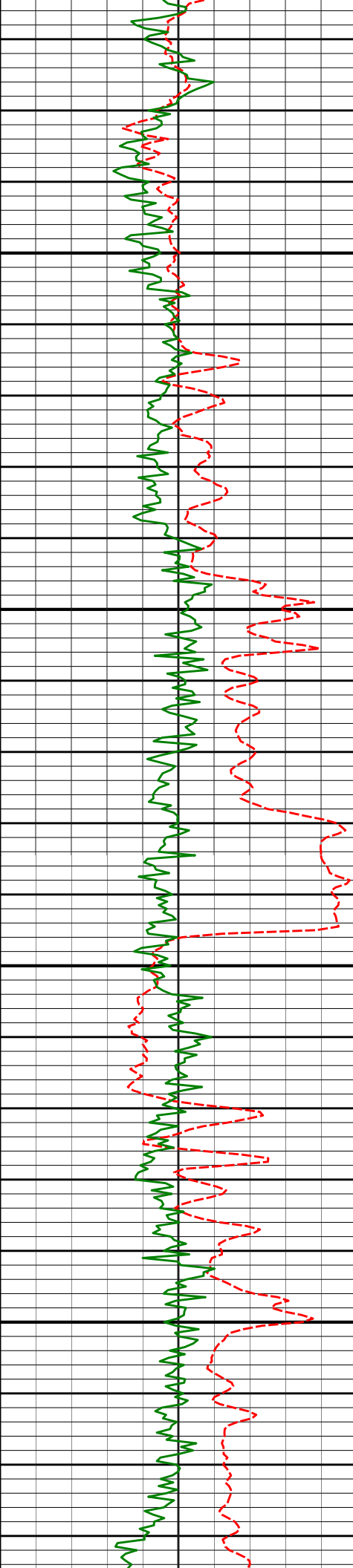
13263'

89.88°

2.07°

7270.52'

6061.67'



13350

13358'

90.37°

2.73°

7270.31'

6156.58'

13400

13450

13453'

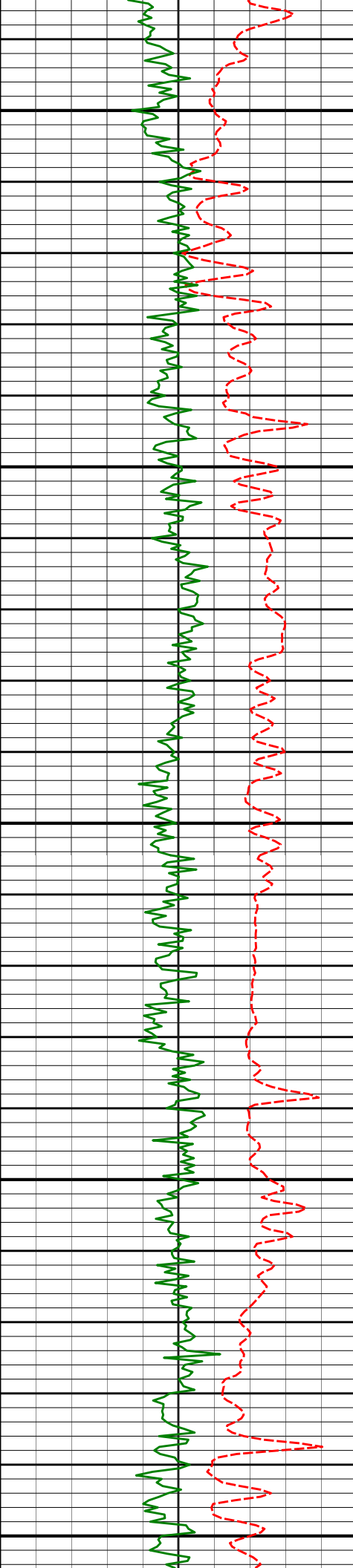
88.95°

2.76°

7270.88'

6251.47'

13500



13550

13600

13650

13700

13750

13548'

89.82°

3.34°

7271.90'

6346.33'

13642'

89.69°

2.57°

7272.31'

6440.20'

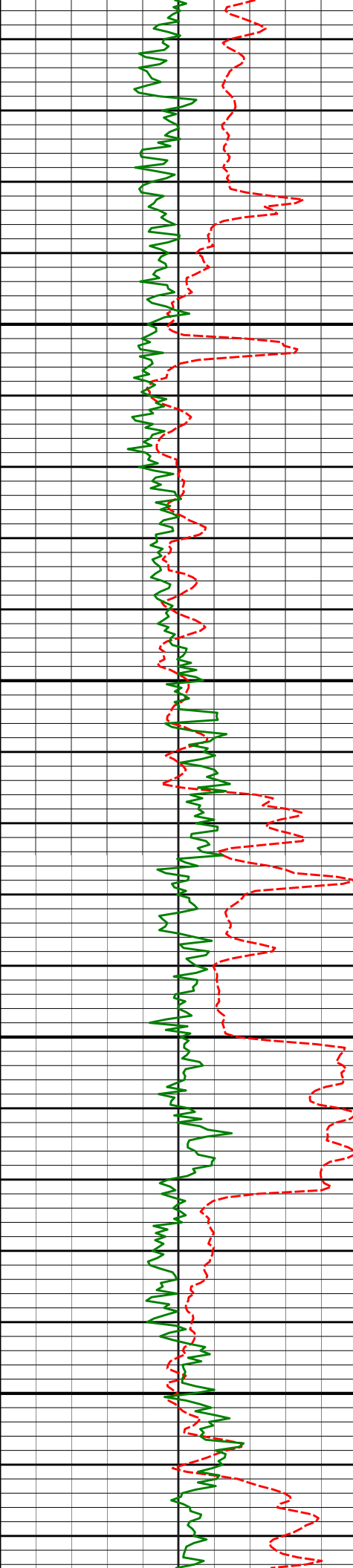
13737'

89.07°

3.46°

7273.33'

6535.07'



13800

13850

13900

13950

13832'

88.58°

2.34°

7275.28'

6629.92'

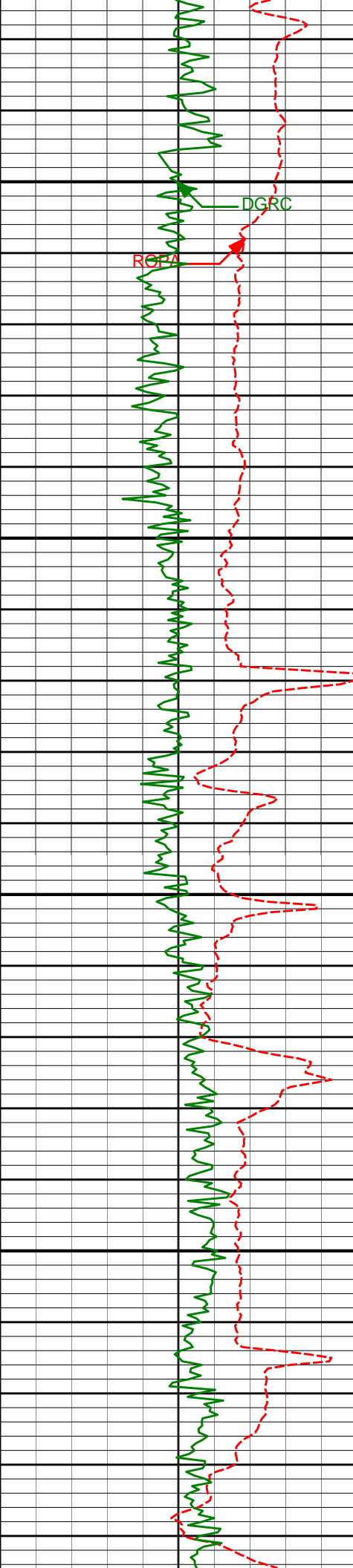
13927'

90.87°

3.00°

7275.73'

6724.81'



14000

14050

14100

14150

14022'

91.42°

3.35°

7273.84'

6819.65'

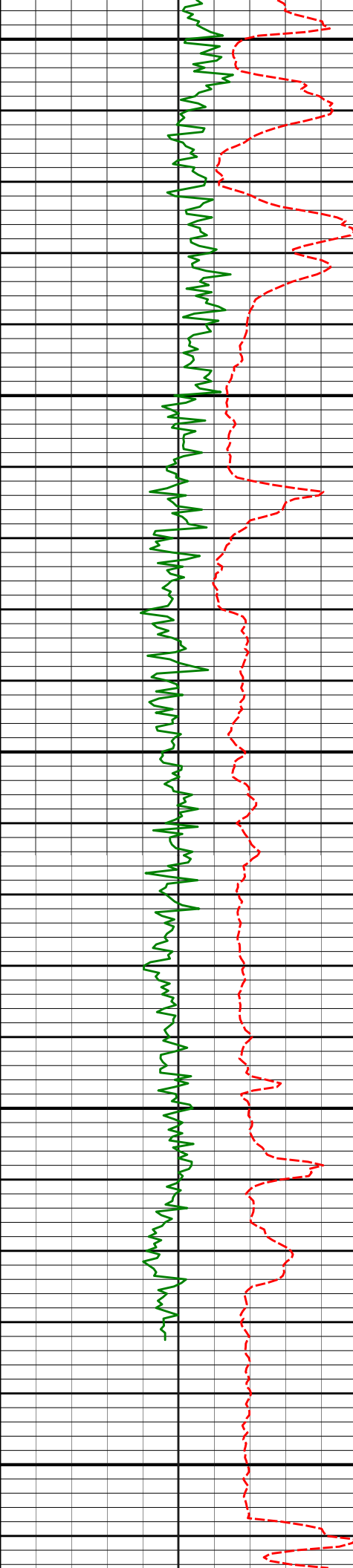
14117'

91.17°

1.69°

7271.68'

6914.53'



14200

14250

14300

14350

14400

14212'

90.18°

 $1.22^\circ$ 

7270.56'

7009.49'

14306'

89.94°

1.02°

7270.46'

7103.47'

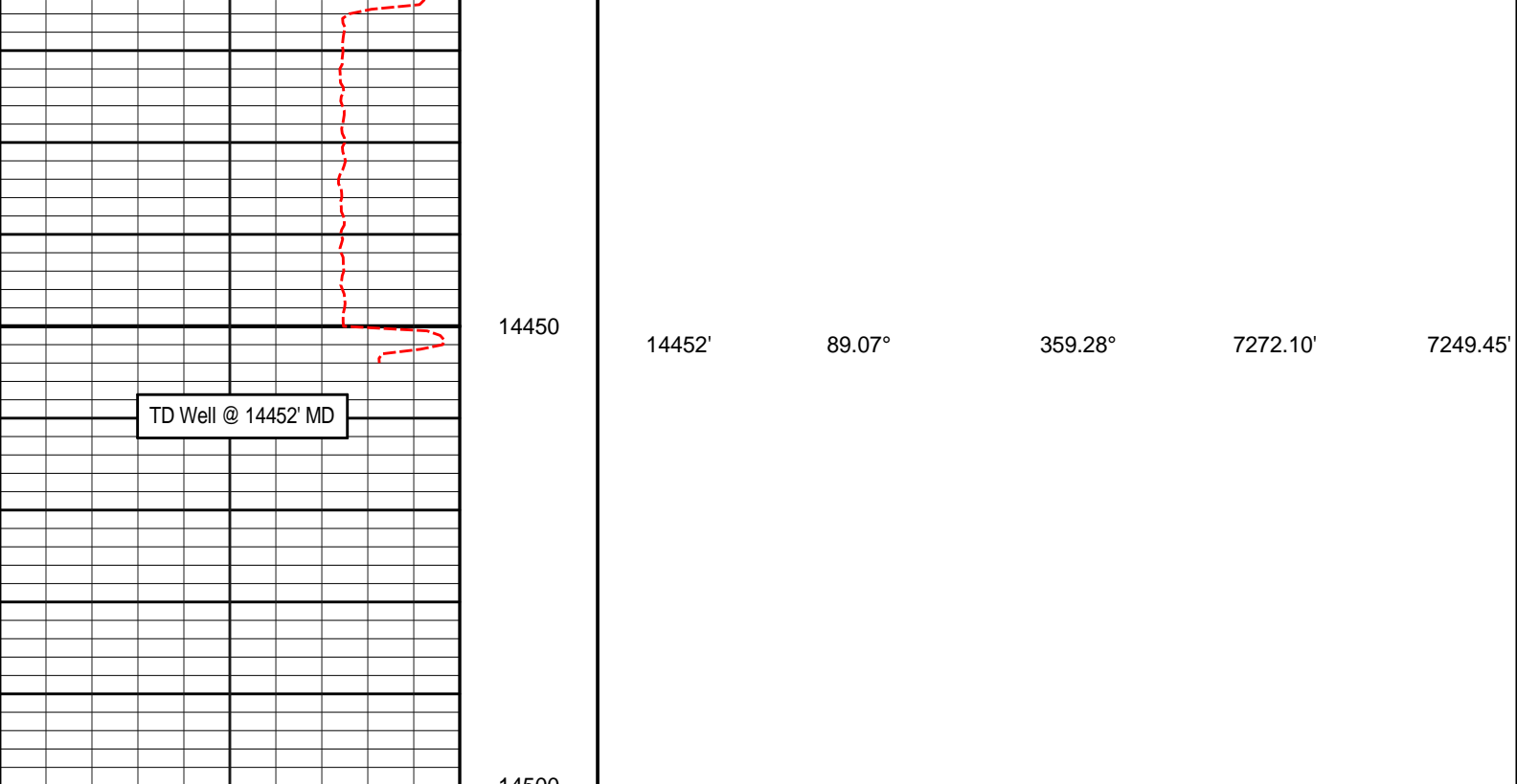
14401'

89.07°

359.28°

7271.28'

7198.46'



14450

14452'

89.07°

359.28°

7272.10'

7249.45'

TD Well @ 14452' MD

Gamma Ray KclBh (DGRC) api	Depth ft 1 : 240	DEPTH	INC	AZI	TVD	VS
0 250						
Avg Rate of Penetration (ROPA) feet per hr						
500 0						
PCG Gamma Ray BCorr (PGRC) api						
0 250						

**HALLIBURTON**

Sperry Drilling

# MD 1:240 Detail Log



**HALLIBURTON**

## DIRECTIONAL SURVEY REPORT

Anadarko Petroleum Corp.  
Gittlein 30C-28HZ  
Wattenberg  
Weld Colorado  
USA





7344.00	51.34	353.42	7150.82	172.56 N	832.86 W	172.56	8.71
7391.00	55.78	354.16	7178.73	210.14 N	836.94 W	210.14	9.55
7439.00	61.78	352.90	7203.60	250.90 N	841.58 W	250.90	12.68
7486.00	68.49	354.69	7223.35	293.27 N	846.17 W	293.27	14.69
7534.00	74.33	357.57	7238.66	338.64 N	849.22 W	338.64	13.42
7581.00	77.72	357.36	7250.00	384.20 N	851.24 W	384.20	7.24
7629.00	80.96	358.69	7258.88	431.33 N	852.86 W	431.33	7.28
7656.00	83.11	358.35	7262.62	458.06 N	853.55 W	458.06	8.04
7730.00	88.77	359.42	7267.86	531.83 N	854.98 W	531.83	7.78
7791.00	88.70	359.89	7269.21	592.82 N	855.34 W	592.82	0.78
7885.00	89.32	0.10	7270.83	686.80 N	855.35 W	686.80	0.69
7978.00	88.58	0.99	7272.53	779.78 N	854.47 W	779.78	1.24
8072.00	88.70	1.81	7274.76	873.72 N	852.17 W	873.72	0.89
8134.00	88.70	0.79	7276.17	935.69 N	850.77 W	935.69	1.65
8227.00	89.88	2.52	7277.32	1028.64 N	848.09 W	1028.64	2.25
8321.00	90.68	1.46	7276.86	1122.58 N	844.82 W	1122.58	1.41
8383.00	89.75	2.05	7276.63	1184.55 N	842.93 W	1184.55	1.77
8445.00	90.49	1.57	7276.50	1246.52 N	840.98 W	1246.52	1.42
8539.00	90.43	2.41	7275.74	1340.46 N	837.71 W	1340.46	0.90
8632.00	90.12	1.04	7275.29	1433.41 N	834.92 W	1433.41	1.52
8726.00	88.45	359.22	7276.45	1527.40 N	834.71 W	1527.40	2.62
8819.00	90.62	359.03	7277.21	1620.38 N	836.13 W	1620.38	2.33
8913.00	90.12	1.46	7276.60	1714.37 N	835.72 W	1714.37	2.64
9006.00	89.38	359.80	7277.00	1807.36 N	834.70 W	1807.36	1.95
9099.00	88.21	358.81	7278.95	1900.33 N	835.83 W	1900.33	1.65
9193.00	90.06	1.31	7280.37	1994.31 N	835.73 W	1994.31	3.31
9285.00	89.51	1.58	7280.71	2086.28 N	833.41 W	2086.28	0.67
9379.00	88.89	0.90	7282.03	2180.24 N	831.37 W	2180.24	0.98
9472.00	89.32	1.76	7283.48	2273.21 N	829.21 W	2273.21	1.04
9567.00	88.46	0.39	7285.33	2368.17 N	827.43 W	2368.17	1.71
9661.00	88.52	1.12	7287.81	2462.13 N	826.19 W	2462.13	0.78
9756.00	88.08	359.12	7290.63	2557.08 N	825.99 W	2557.08	2.15
9851.00	87.53	359.04	7294.26	2652.00 N	827.52 W	2652.00	0.59
9945.00	88.76	358.16	7297.30	2745.92 N	829.82 W	2745.92	1.61
10040.00	89.57	1.10	7298.69	2840.89 N	830.43 W	2840.89	3.20
10135.00	91.17	1.97	7298.07	2935.85 N	827.89 W	2935.85	1.92
10230.00	90.62	2.76	7296.59	3030.76 N	823.98 W	3030.76	1.02
10325.00	91.85	1.18	7294.54	3125.68 N	820.72 W	3125.68	2.11
10420.00	92.03	1.30	7291.32	3220.60 N	818.67 W	3220.60	0.23
10515.00	91.73	1.17	7288.21	3315.53 N	816.62 W	3315.53	0.35
10609.00	89.57	359.80	7287.15	3409.51 N	815.82 W	3409.51	2.72
10704.00	90.62	0.04	7286.99	3504.51 N	815.95 W	3504.51	1.13
10799.00	90.86	359.03	7285.77	3599.50 N	816.72 W	3599.50	1.10
10894.00	90.99	357.80	7284.23	3694.45 N	819.35 W	3694.45	1.29
10988.00	90.00	357.66	7283.42	3788.37 N	823.07 W	3788.37	1.06
11083.00	90.19	358.19	7283.26	3883.30 N	826.51 W	3883.30	0.59
11177.00	88.21	356.26	7284.58	3977.18 N	831.06 W	3977.18	2.93
11272.00	89.51	356.07	7286.47	4071.94 N	837.41 W	4071.94	1.38
11366.00	90.31	355.77	7286.62	4165.70 N	844.09 W	4165.70	0.91
11461.00	91.30	358.35	7285.29	4260.56 N	848.97 W	4260.56	2.91
11556.00	92.10	358.38	7282.48	4355.48 N	851.67 W	4355.48	0.84
11651.00	92.84	0.07	7278.39	4450.38 N	852.96 W	4450.38	1.94
11746.00	92.41	358.63	7274.04	4545.27 N	854.04 W	4545.27	1.58
11841.00	91.55	0.61	7270.76	4640.20 N	854.67 W	4640.20	2.28
11935.00	90.87	359.42	7268.78	4734.18 N	854.64 W	4734.18	1.45
12030.00	89.94	358.38	7268.12	4829.16 N	856.47 W	4829.16	1.47
12125.00	88.83	357.73	7269.14	4924.10 N	859.69 W	4924.10	1.36
12220.00	90.00	357.70	7270.11	5019.01 N	863.48 W	5019.01	1.24
12314.00	90.12	359.75	7270.01	5112.99 N	865.58 W	5112.99	2.18
12409.00	90.56	2.01	7269.45	5207.97 N	864.12 W	5207.97	2.43
12504.00	91.48	2.46	7267.76	5302.88 N	860.41 W	5302.88	1.08
12599.00	89.81	359.61	7266.69	5397.84 N	858.70 W	5397.84	3.48
12694.00	88.21	359.15	7268.32	5492.82 N	859.73 W	5492.82	1.76
12789.00	89.51	358.22	7270.22	5587.77 N	861.91 W	5587.77	1.68
12884.00	90.06	359.39	7270.57	5682.75 N	863.89 W	5682.75	1.36
12978.00	89.51	359.01	7270.93	5776.74 N	865.21 W	5776.74	0.72
13073.00	90.31	1.43	7271.08	5871.73 N	864.85 W	5871.73	2.69
13168.00	90.25	1.11	7270.62	5966.71 N	862.75 W	5966.71	0.35
13263.00	89.88	2.07	7270.52	6061.67 N	860.12 W	6061.67	1.08
13358.00	90.37	2.73	7270.31	6156.59 N	856.14 W	6156.58	0.87
13453.00	88.95	2.76	7270.88	6251.47 N	851.60 W	6251.47	1.49
13548.00	89.82	3.34	7271.90	6346.33 N	846.55 W	6346.33	1.10
13642.00	89.69	2.57	7272.31	6440.20 N	841.69 W	6440.20	0.83
13737.00	89.07	3.46	7273.33	6535.07 N	836.70 W	6535.07	1.13

13832.00	88.58	2.34	7275.28	6629.92 N	831.89 W	6629.92	1.28
13927.00	90.87	3.00	7275.73	6724.81 N	827.47 W	6724.81	2.50
14022.00	91.42	3.35	7273.84	6819.65 N	822.21 W	6819.65	0.69
14117.00	91.17	1.69	7271.68	6914.53 N	818.04 W	6914.53	1.77
14212.00	90.18	1.22	7270.56	7009.49 N	815.63 W	7009.49	1.15
14306.00	89.94	1.02	7270.46	7103.47 N	813.79 W	7103.47	0.34
14401.00	89.07	359.28	7271.28	7198.46 N	813.55 W	7198.46	2.05
14452.00	89.07	359.28	7272.10	7249.45 N	814.19 W	7249.45	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 0.00 DEGREES (TRUE)  
A TOTAL CORRECTION OF 8.52 DEG FROM MAGNETIC NORTH TO TRUE NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.  
HORIZONTAL DISPLACEMENT(CLOSURE) AT 14452.00 FEET  
IS 7295.03 FEET ALONG 353.59 DEGREES (TRUE)**

**Survey's tied on to surface gyro's.  
Final survey is a projection to bit.**