



1 : 240

[illegible]

WELL INFORMATION

MWD Run Number	100	200	300		
Date run completed	18-Nov-17	23-Nov-17	24-Nov-17		
Rig Bit Number	2	3	4		
Bit Size (in)	8.500	6.125	6.125		
Tool Nominal OD (in)	6.75	4.75	4.75		
Log Start Depth (MD, ft)	1,879.00	5,980.00	14,675.00		
Log End Depth (MD, ft)	5,980.00	14,675.00	15,970.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	18-Nov-17 01:00	19-Nov-17 13:30	23-Nov-17 18:00		
Drill/Wipe End Date and Time	18-Nov-17 13:45	22-Nov-17 15:45	24-Nov-17 05:30		
Min Inc (deg) @ Depth (MD, ft)	0.94 @ 5,938.00	N/A @ N/A	88.59 @ 14,868.00		
Max Inc (deg) @ Depth (MD, ft)	17.86 @ 1,920.00	N/A @ N/A	91.41 @ 14,688.00		
Bit TFA(in2) / Bit Type	0.75 / PDC	0.75 / PDC	0.75 / PDC		
Flow Rate (gpm)	584.12	298.62	282.00		
Max AV (fpm) / CV (fpm) @ MWD	N/A	N/A	613.4 / 369.3		
Fluid Type	Diesel Mud Base	Diesel Mud Base	Diesel Mud Base		
Density (ppg) / Viscosity (spqt)	9.20 / 63.00	9.46 / 58.00	9.45 / 58.00		
Filtrate CL (ppm)	32,000.00	33,000.00	38,000.00		
pH / API Filtrate (mptm)	N/A	N/A	N/A		
PV (cP) / YP (lbf2)	16 / 9.00	18 / 9.00	15 / 8.00		
% Solids / % Sand	10.00 / N/A	11.00 / N/A	10.00 / N/A		
% Oil / Oil:Water Ratio	68.00 / 77:23	69.00 / 78:22	72.00 / 80:20		
Rm @ Measured Temp (degF)	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		
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Max Tool Temp (deg F) / C	N/A	N/A	N/A		

Max Tool Temp (degF) / Source	N/A	N/A	N/A		
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ 252.90		
Lead MWD Engineer	Max Trainoff	Jason Davis	Jason Davis		
Customer Representative	Luke Rains	Luke Rains	Luke Rains		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	Sperry Next Gen	Sperry Next Gen	Sperry Next Gen		
Software Version	N/A	N/A	N/A		
Sub Serial Number	N/A	N/A	N/A		
Insert Serial Number	N/A	N/A	N/A		
Date and Time Initialized	01-Jan-70 00:00:00	01-Jan-70 00:00:00	01-Jan-70 00:00:00		
Date and Time Read	01-Jan-70 00:00:00	01-Jan-70 00:00:00	01-Jan-70 00:00:00		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	Sperry Next Gen DM	Sperry Next Gen DM	Sperry Next Gen DM		
Distance From Bit (ft)	42	46	46		
Software Version	N/A	N/A	N/A		
Sub Serial Number	N/A	N/A	N/A		
Sonde Serial Number	N/A	N/A	N/A		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	N/A	N/A	N/A		

Gamma Ray Sensor Information

Tool Type	Sperry Next Gen GM	Sperry Next Gen GM	Sperry Next Gen GM		
Distance From Bit (ft)	37.45	41.42	39.62		
Recorded Sample Period (sec)	N/A	N/A	N/A		
Software Version	N/A	N/A	N/A		
Sub Serial Number	N/A	N/A	N/A		
Insert/Sonde Serial Number	N/A	N/A	N/A		

REMARKS

1. All depths are calibrated 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. Run 100 was drilled with Sperry Next Gen MWD tools. Directional Module SN: D068, Gamma Module SN: G066
4. Runs 200 and 300 were drilled with Sperry Next Gen MWD tools. Directional Module SN: D068, Gamma Module SN: G066
5. All data presented is recorded data unless otherwise stated.
6. All gamma data was corrected for collar thickness only.
7. The following smoothing parameters have been applied to the data:

GR (Gamma Ray):
Interval Resolution: 0.5ft
Interval Distance: 0.6ft
Gap Fill: 3.0ft

ROPA (Average Rate of Penetration):
Interval Resolution:0.5ft
Interval Distance:1.2ft
Gap Fill:3.0ft

8. Surveys from 1916-15582 corrected by Sperry Survey Management
9. GR data from 15040-15230 is realtime data due to missing read data
10. 25' Hole in ROP from missing ROP data.

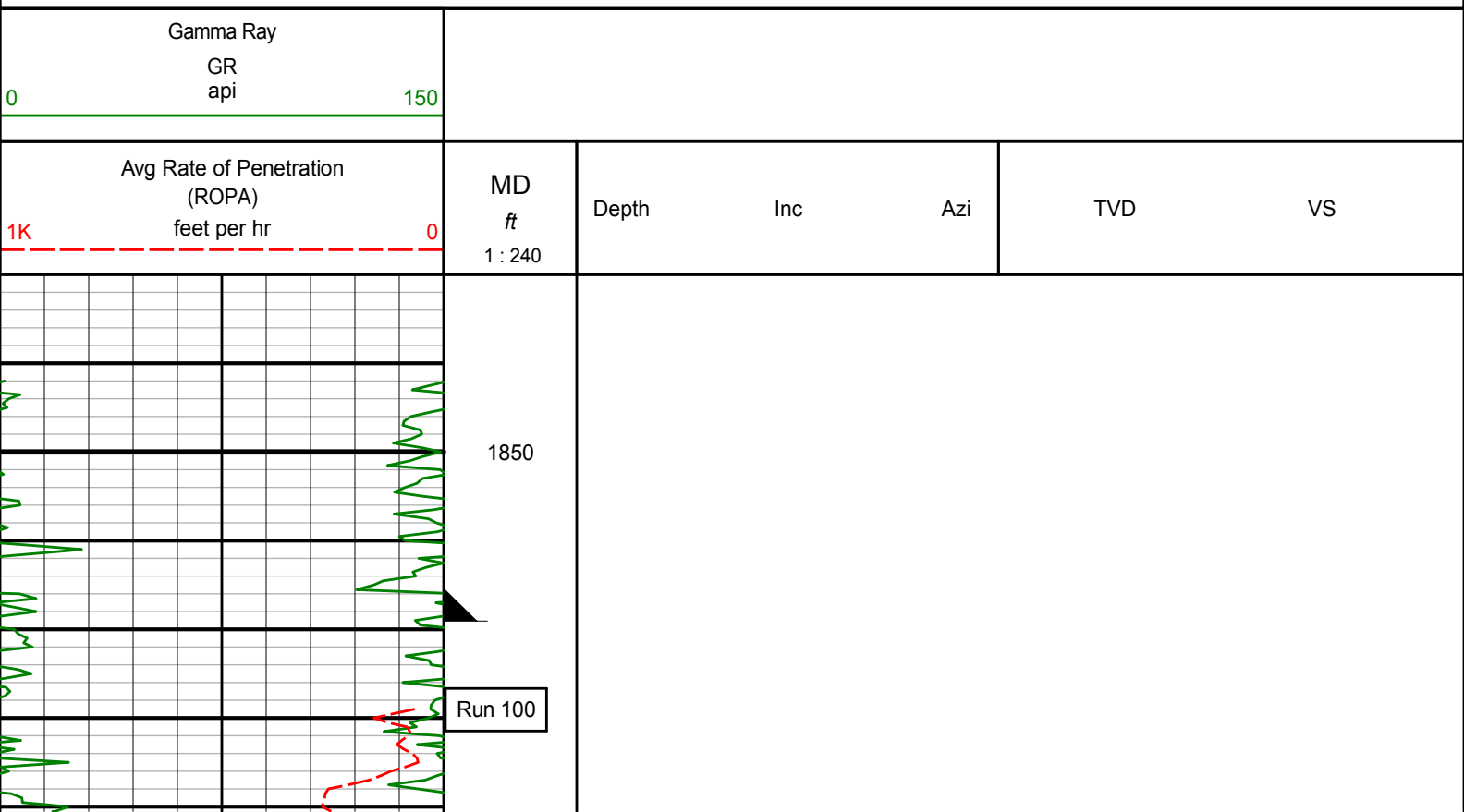
INSITE version 8.5

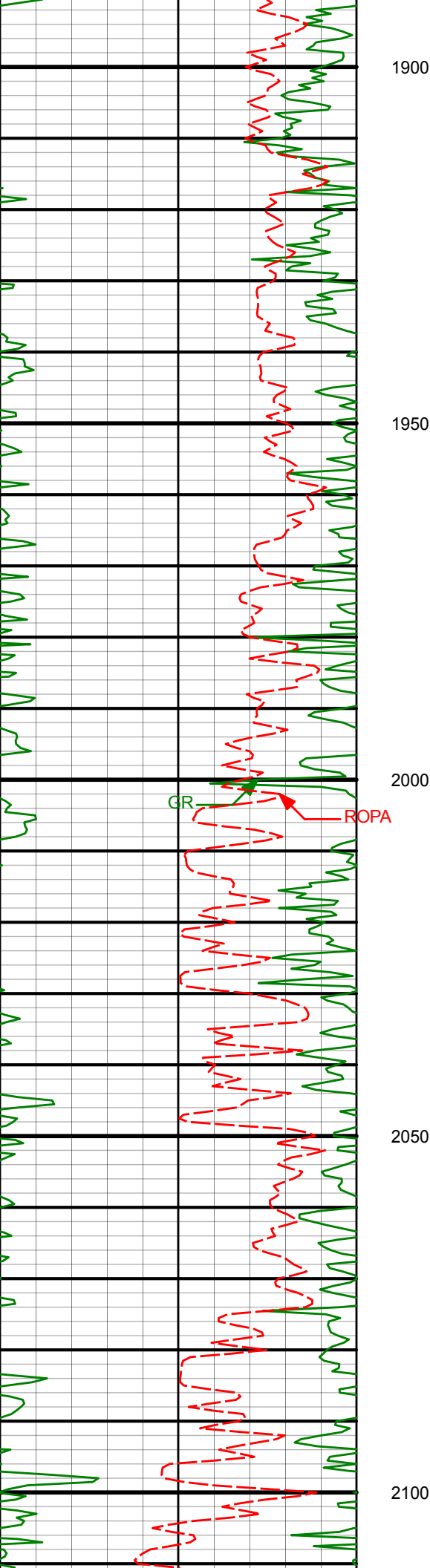
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Detail Log 1:240

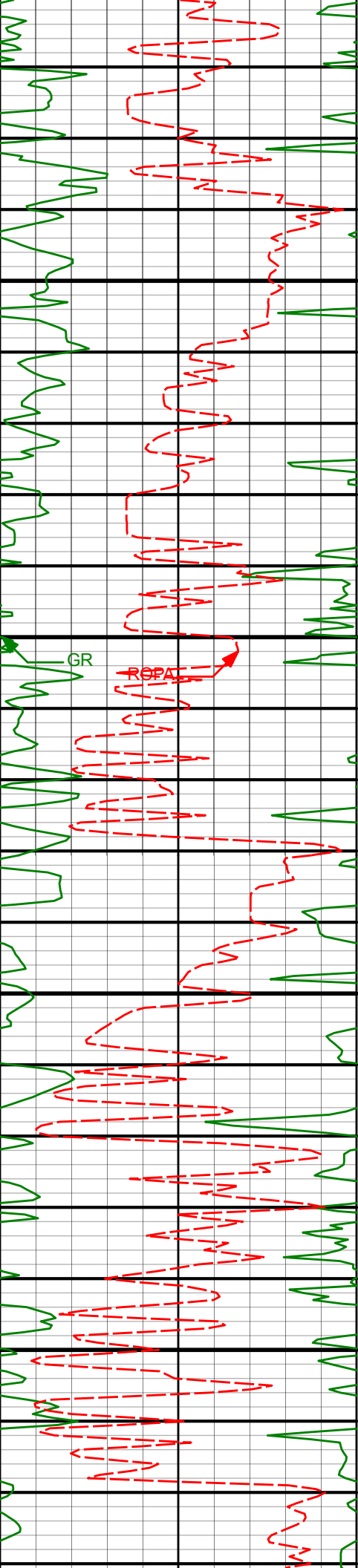




1920' 17.86° 211.75° 1872.55' -296.69'

2010' 17.08° 209.81° 1958.40' -319.81'

2100' 16.82° 210.46° 2044.49' -342.43'



2150

2200

2250

2300

2190'

2280'

16.51°

15.59°

209.56°

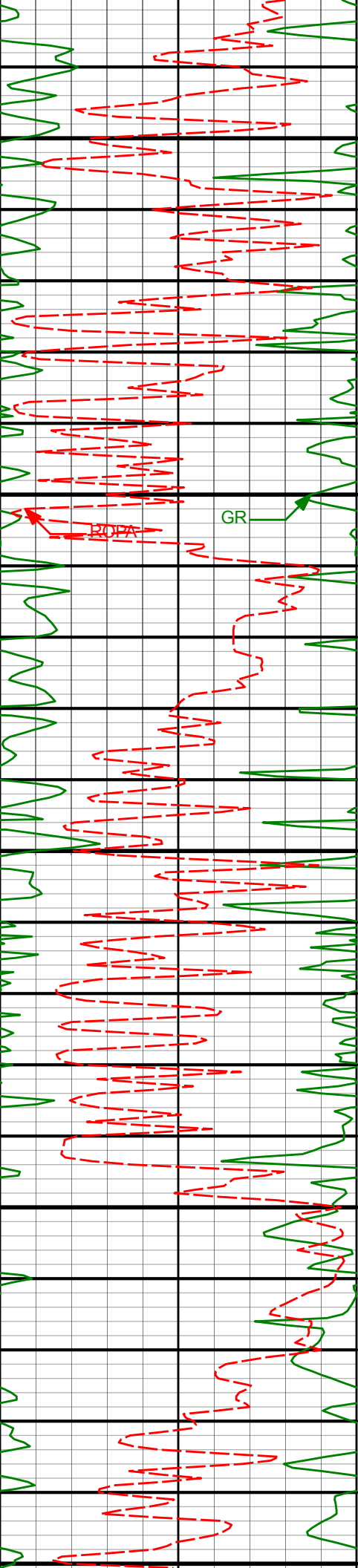
208.31°

2130.71'

2217.20'

-364.70'

-386.40'



2350

2369'

15.00°

207.48°

2303.05'

-407.09'

2400

GR

ROPA

2450

2459'

13.83°

205.82°

2390.21'

-427.04'

2500

2550

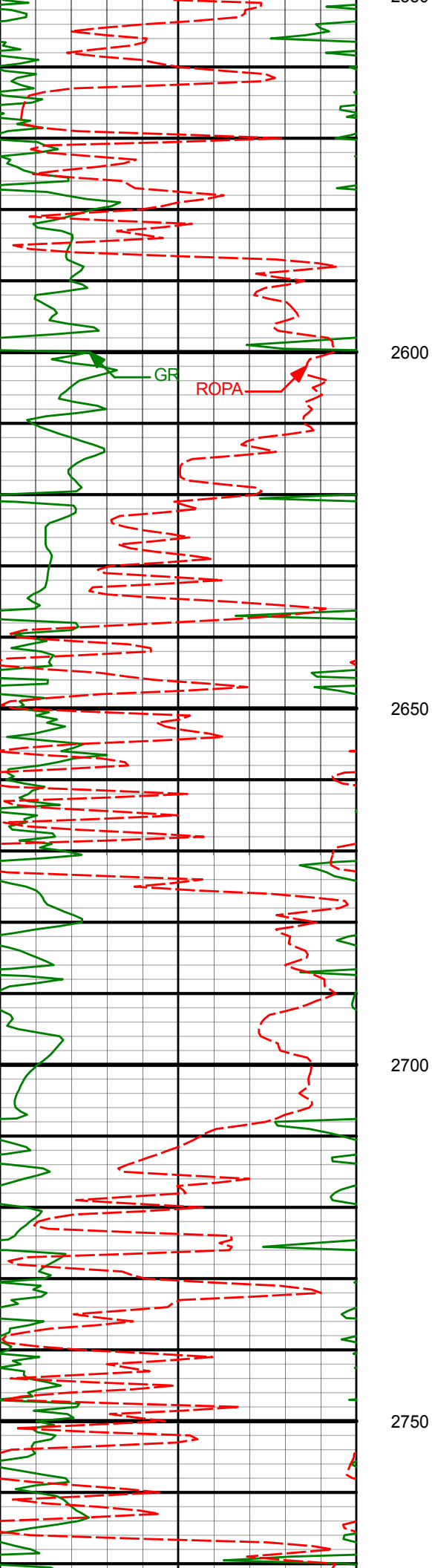
2549'

14.21°

204.31°

2477.53'

-446.74'



2639'

14.26°

203.29°

2564.77'

-466.94'

2600

2650

2700

2729'

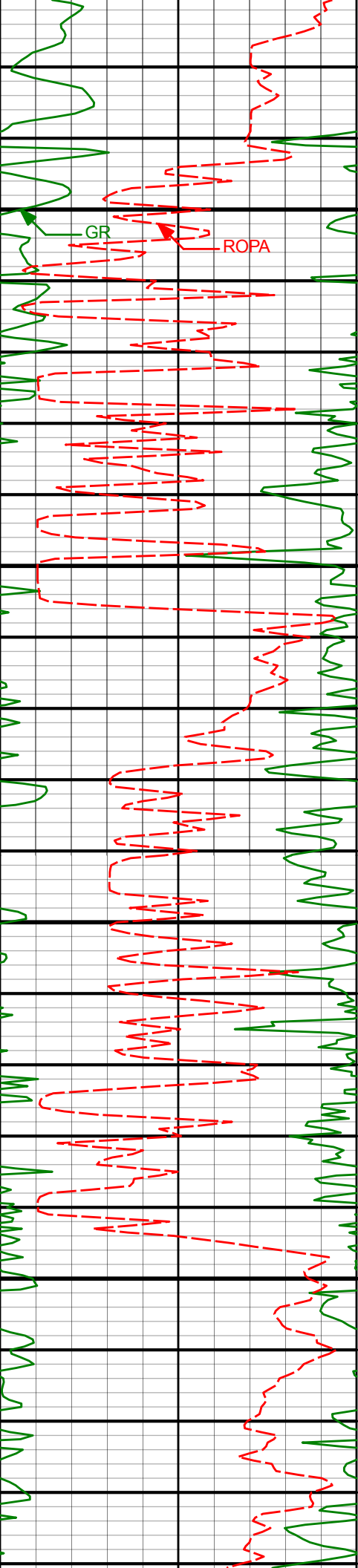
14.63°

199.74°

2651.93'

-487.77'

2750



2800

2850

2900

2950

2818'

13.48°

199.80°

2738.26'

-508.08'

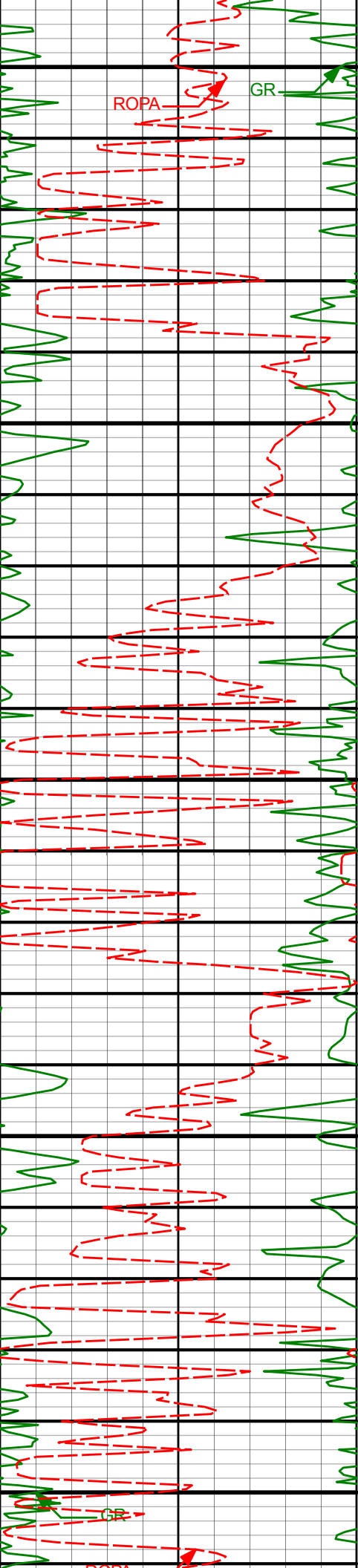
2908'

11.81°

196.21°

2826.07'

-526.76'



3000

3050

3100

3150

3200

2998'

11.74°

205.41°

2914.19'

-543.85'

3088'

14.29°

205.89°

3001.87'

-562.07'

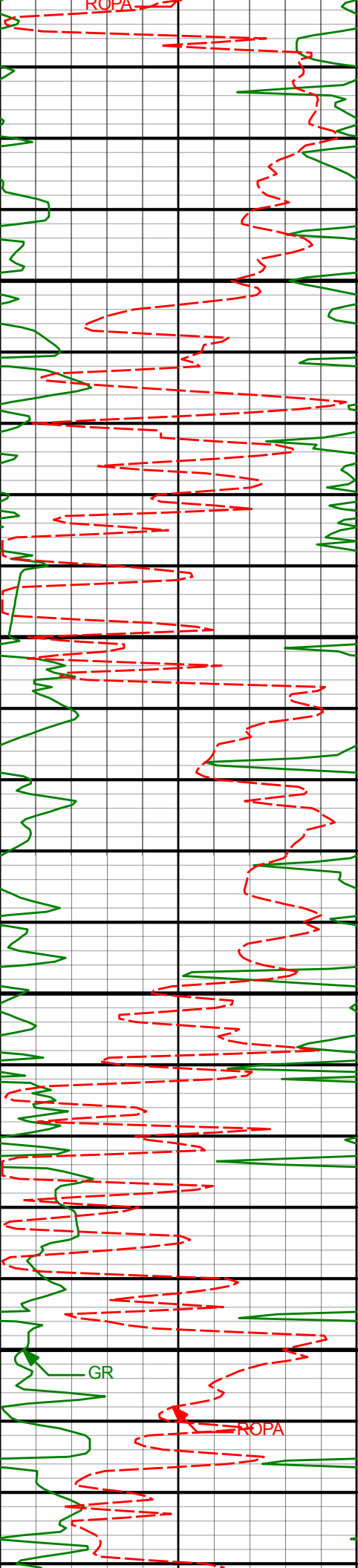
3177'

12.94°

205.55°

3088.36'

-580.89'



3250

3267'

14.17°

205.02°

3175.86'

-599.91'

3300

3350

3357'

15.30°

201.89°

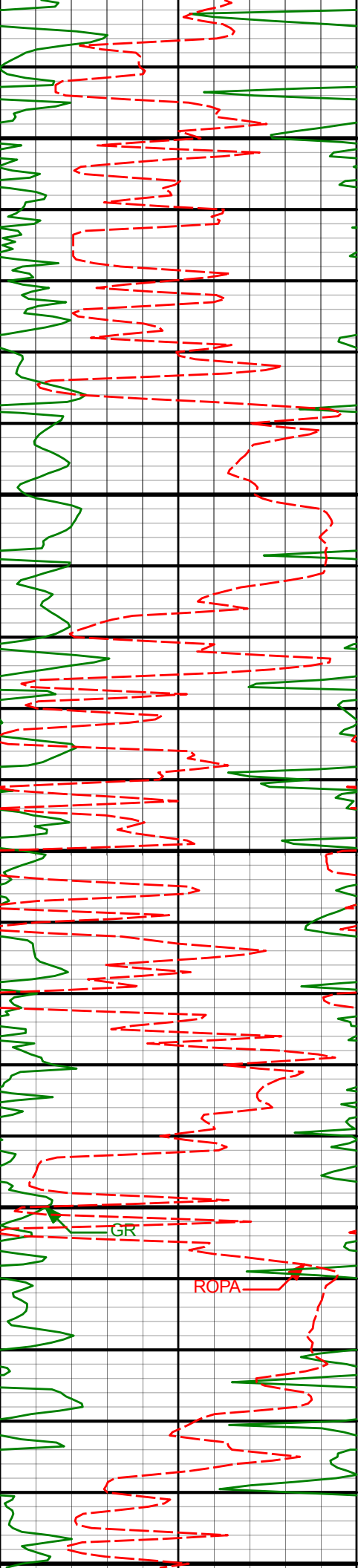
3262.90'

-620.85'

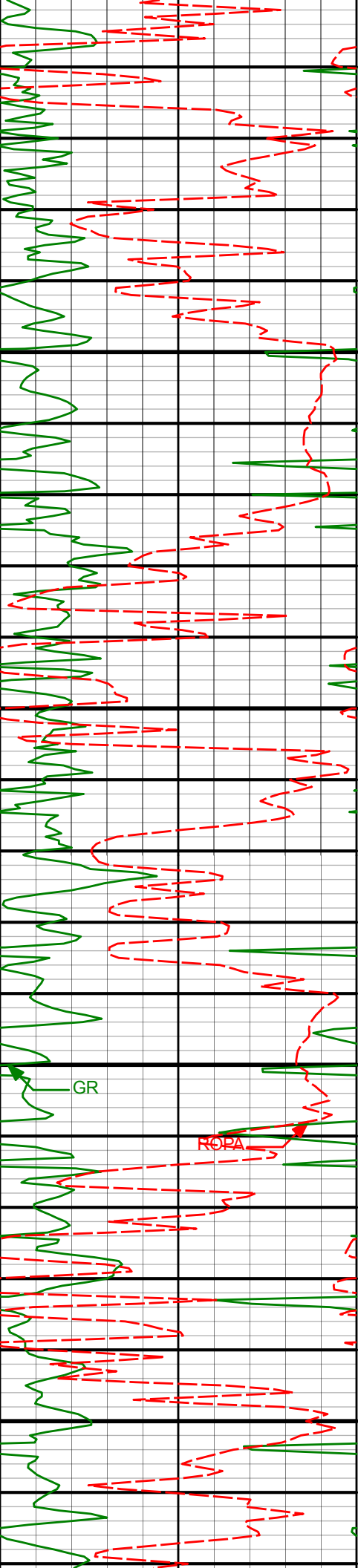
3400

GR

ROPA



3447'	13.28°	202.09°	3350.11'	-641.40'
3450				
3500				
3536'	12.72°	197.99°	3436.83'	-660.16'
3550				
3600				
3626'	13.20°	197.69°	3524.53'	-679.34'
3650				



3700

3750

3800

3850

3716'

14.22°

190.94°

3611.98'

-699.95'

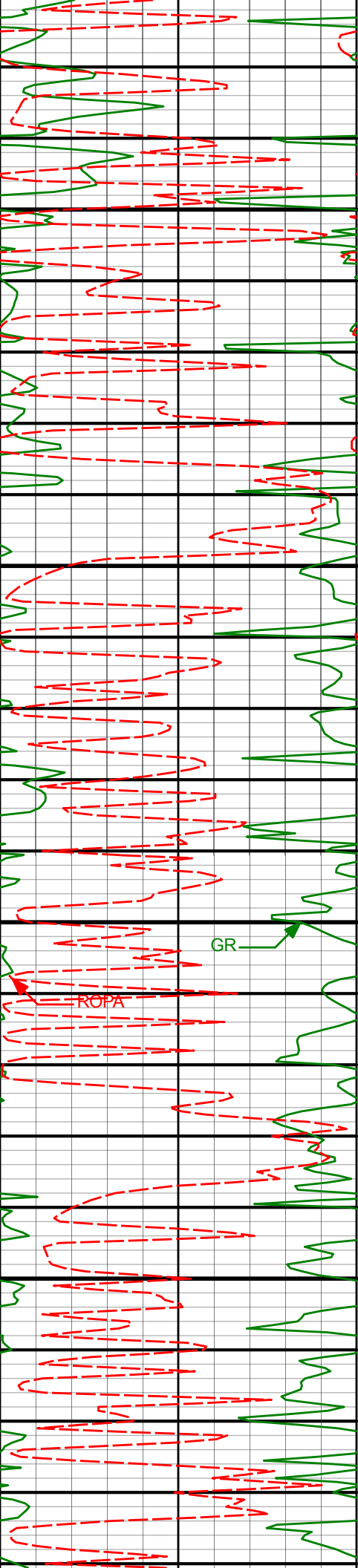
3806'

14.23°

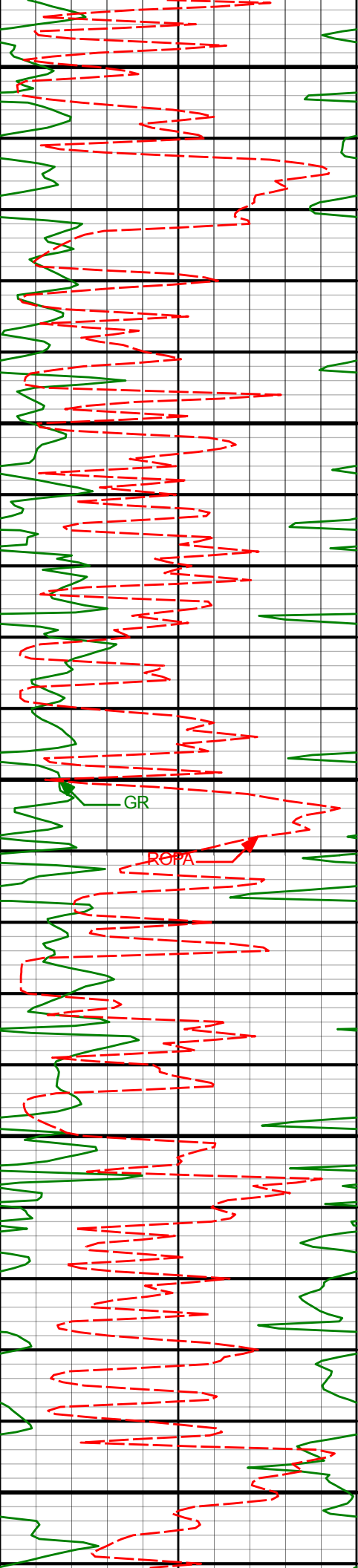
192.51°

3699.22'

-721.58'



3896'	11.92°	195.33°	3786.88'	-741.32'
3900				
3950				
3985'	9.32°	197.73°	3874.35'	-757.02'
4000				
4050				
4075'	7.77°	203.00°	3963.35'	-769.53'



4100

4150

4200

4250

4300

4164'

6.03°

209.12°

4051.70'

-779.13'

GR

ROPA

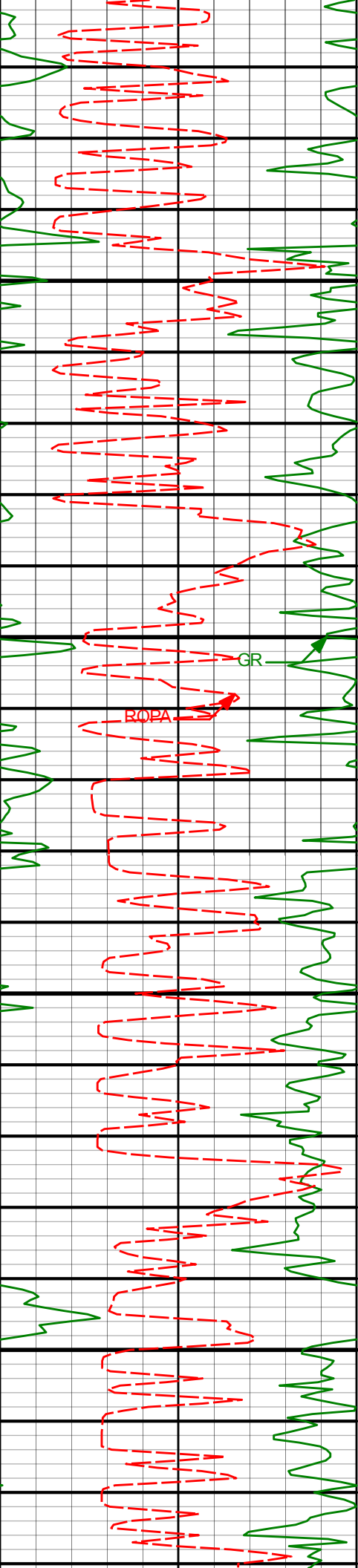
4254'

4.91°

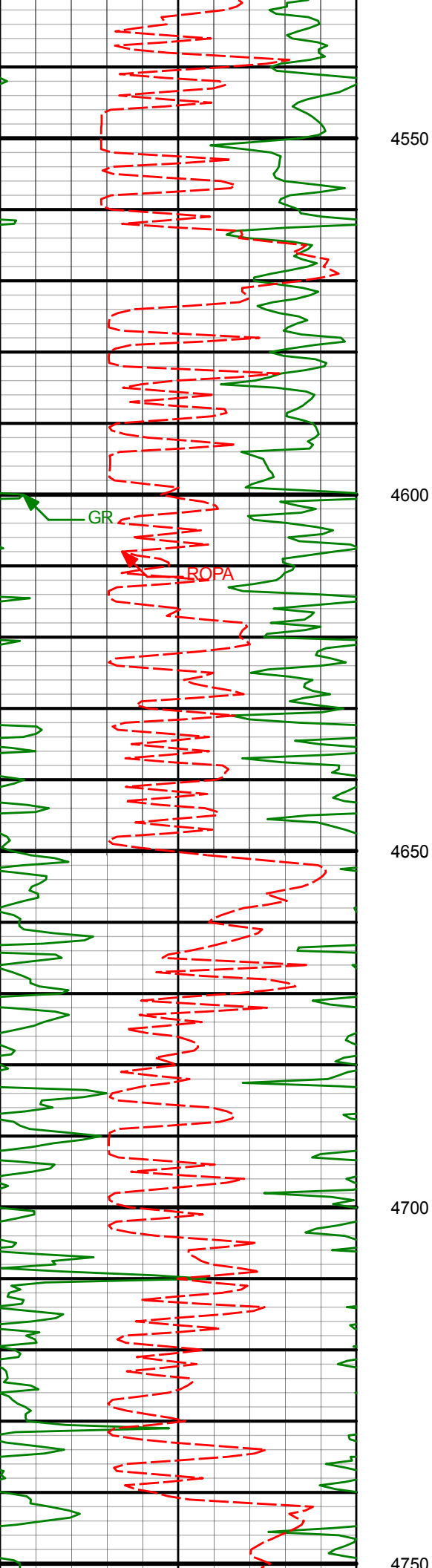
205.65°

4141.29'

-786.71'

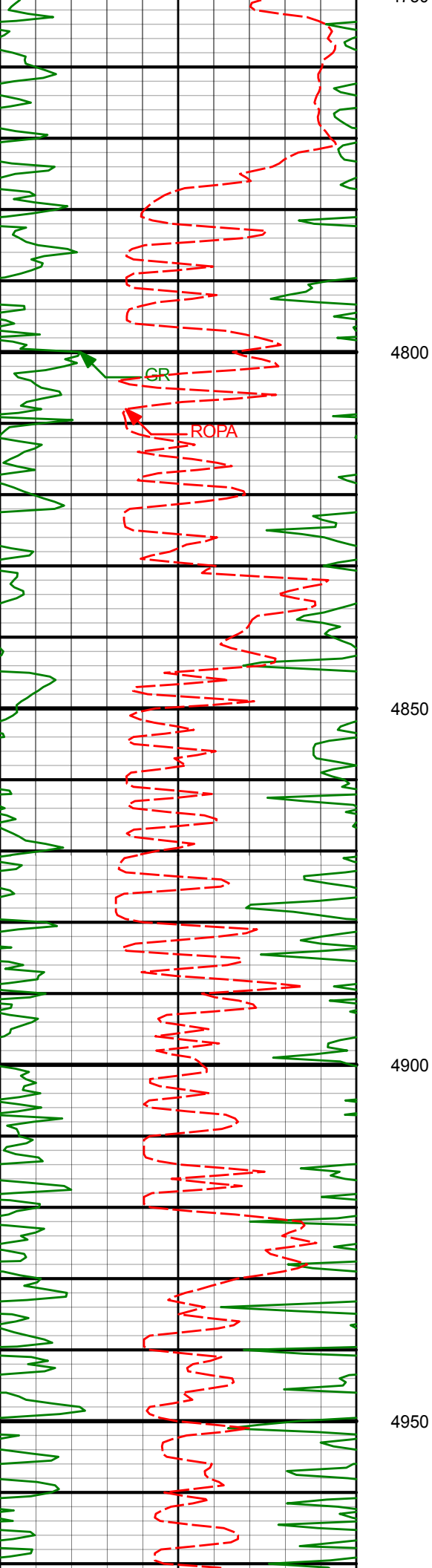


4344'	4.09°	209.52°	4231.01'	-792.97'
4350				
4400				
4434'	2.99°	210.17°	4320.84'	-797.77'
4450				
4500				
4523'	3.07°	220.20°	4409.71'	-801.58'



4613'	2.77°	221.31°	4499.60'	-805.03'
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4703'	2.96°	230.84°	4589.48'	-808.11'
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4793'

3.00°

185.07°

4679.38'

-811.91'

4800

GP

ROPA

4850

4883'

2.97°

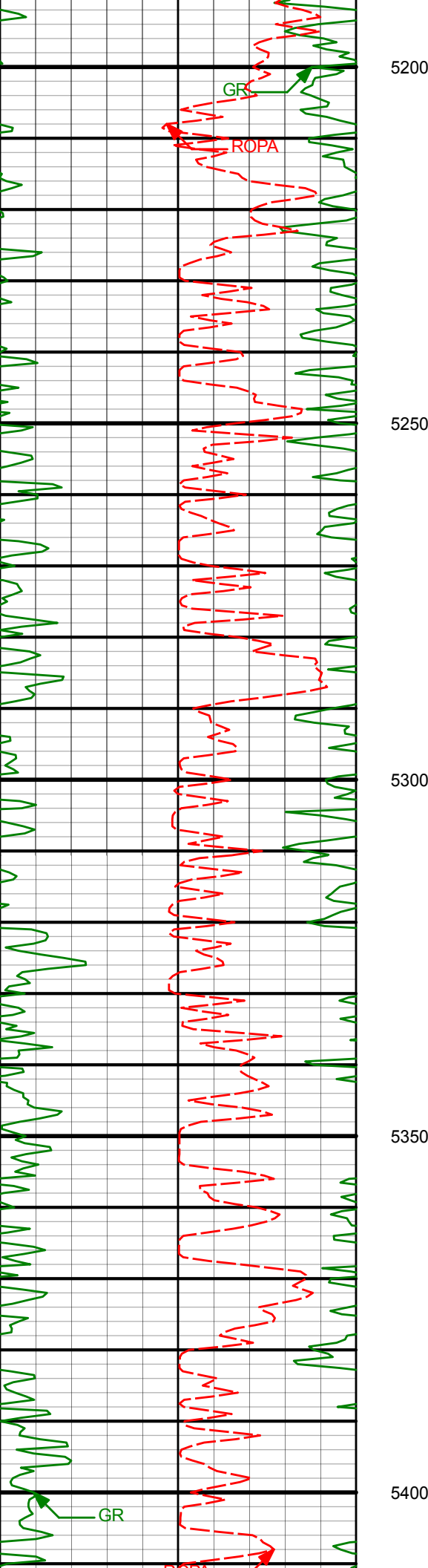
187.93°

4769.25'

-816.57'

4900

4950



5200

5250

5300

5350

5400

5242'

3.16°

190.90°

5127.79'

-834.23'

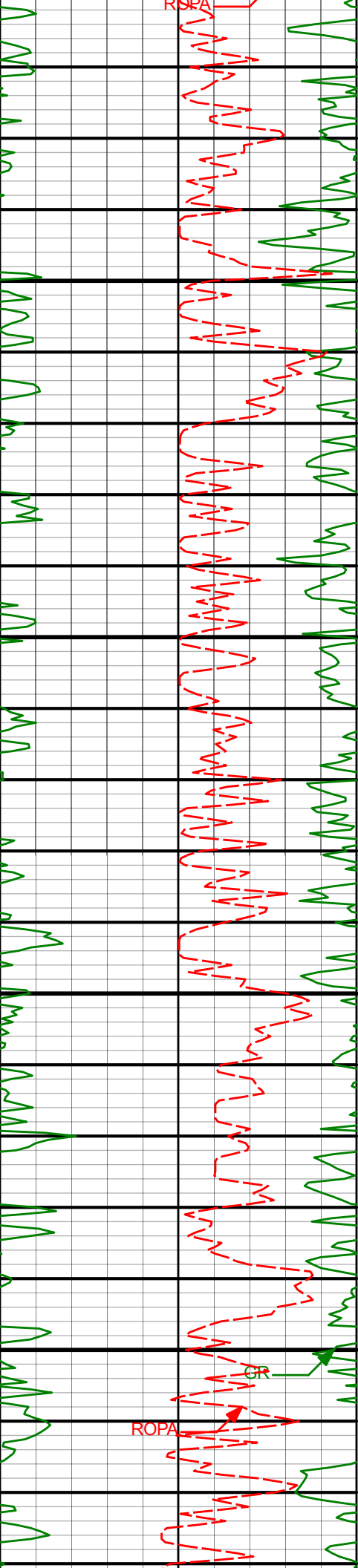
5331'

2.80°

201.37°

5216.67'

-838.66'



5421'

2.48°

205.05°

5306.57'

-842.46'

5450

5500

5511'

2.25°

199.47°

5396.49'

-845.88'

5550

5600

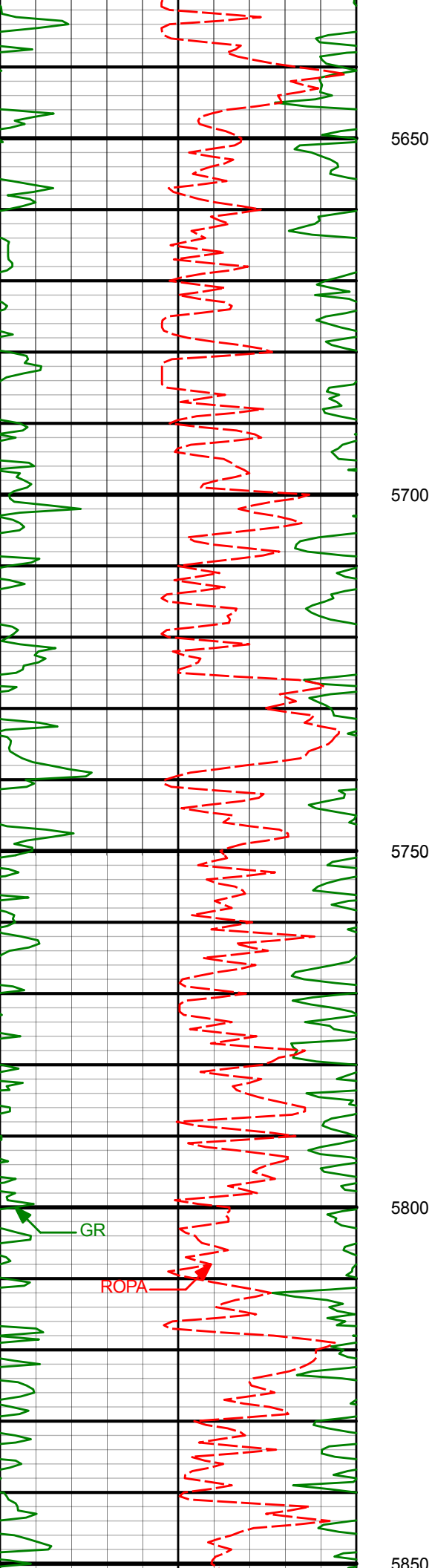
5601'

1.98°

201.00°

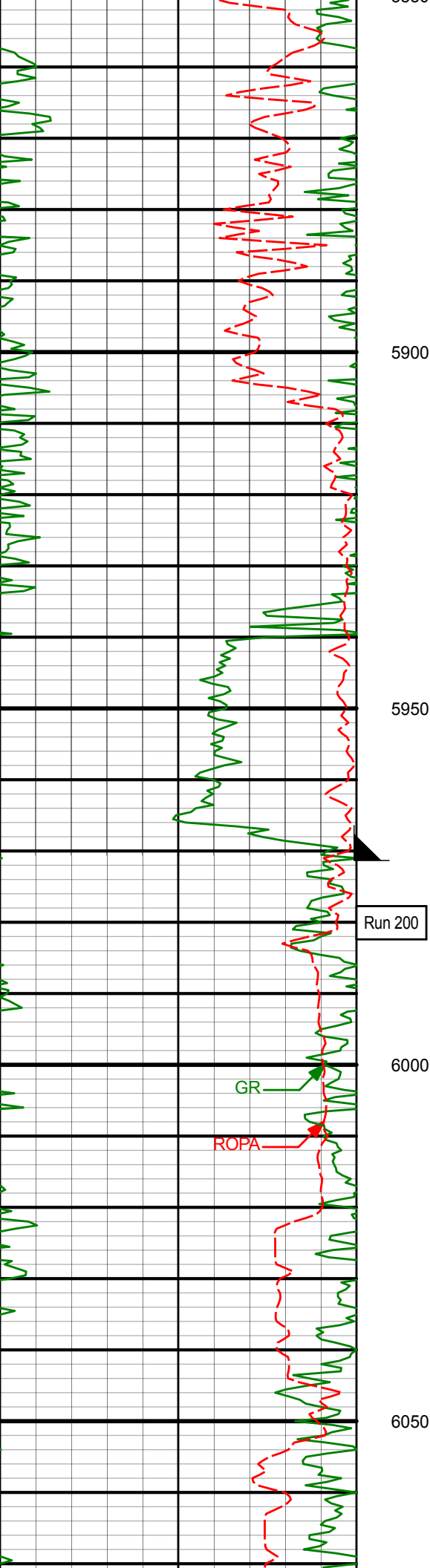
5486.43'

-848.99'



5690'	1.70°	216.12°	5575.39'	-851.48'
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5780'	1.24°	226.19°	5665.36'	-853.23'
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5870' 1.31° 217.13° 5755.34' -854.71'

5900

5938' 0.94° 240.49° 5823.32' -855.60'

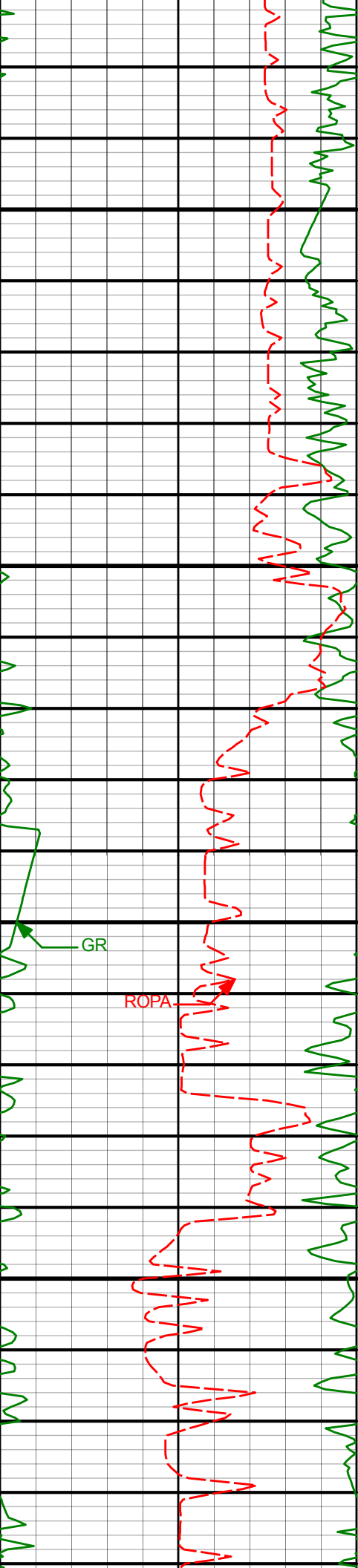
5950

Run 200

6000

6002' 0.91° 266.18° 5887.31' -855.89'

6050



6100

6150

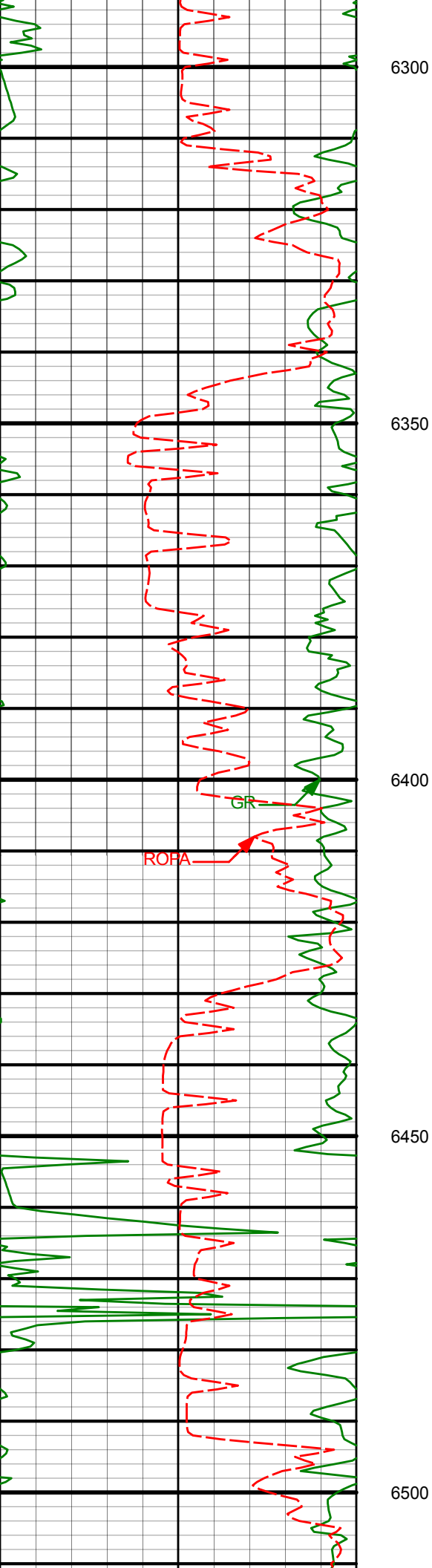
6200

6250

6092' 0.78° 260.73° 5977.30' -856.03'

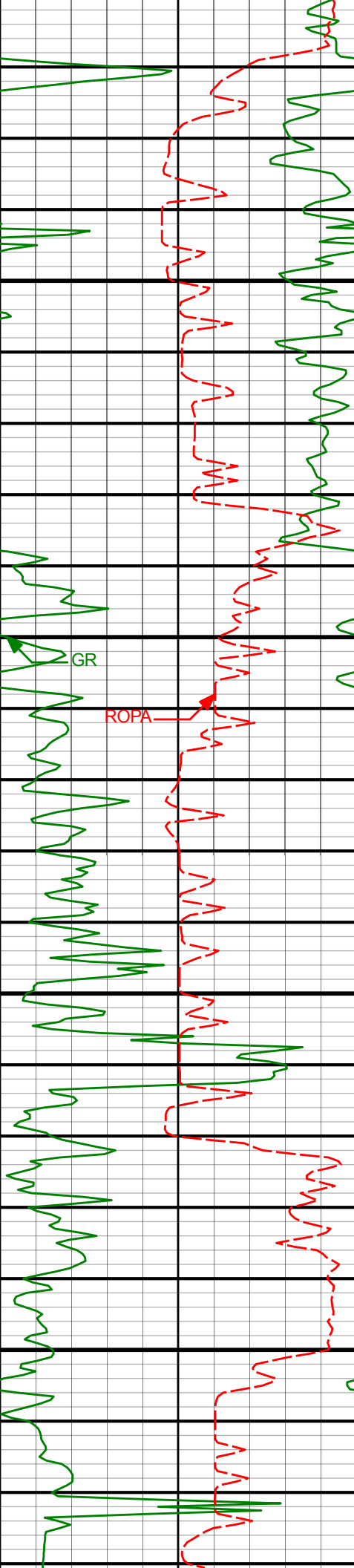
6182' 2.74° 241.84° 6067.26' -857.13'

6272' 2.38° 255.43° 6157.17' -858.59'

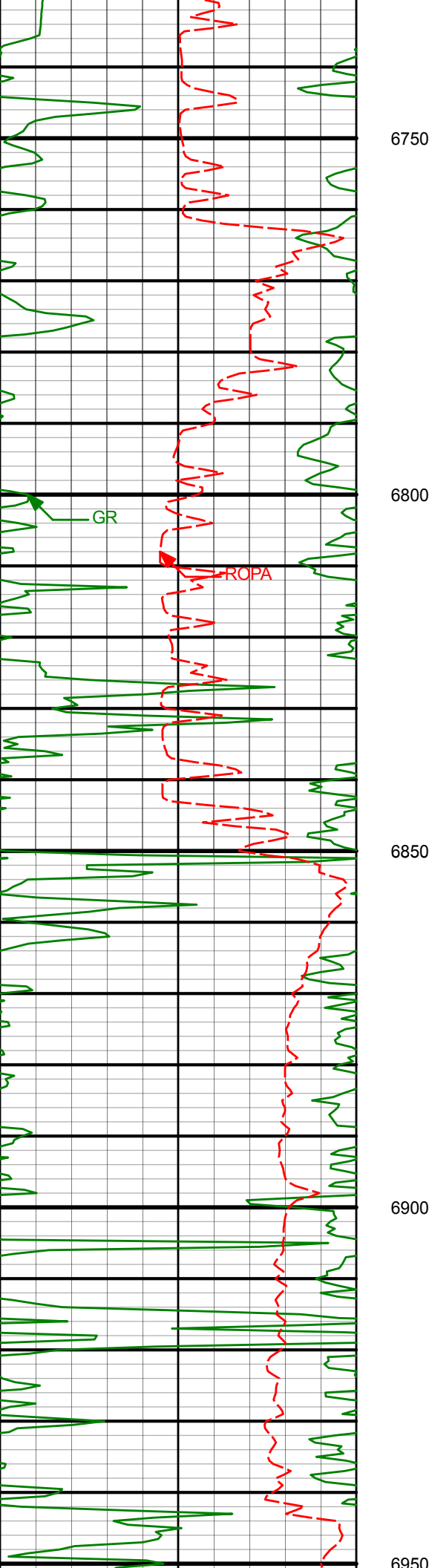


6361'	2.21°	243.73°	6246.10'	-859.79'
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6451'	2.64°	238.11°	6336.02'	-861.64'
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6541'	2.85°	205.96°	6425.92'	-864.73'
6550				
6600				
6631'	1.94°	215.87°	6515.84'	-867.96'
6650				
6700				
6720'	0.58°	350.65°	6604.83'	-868.74'



6810'

1.37°

305.56°

6694.81'

-867.66'

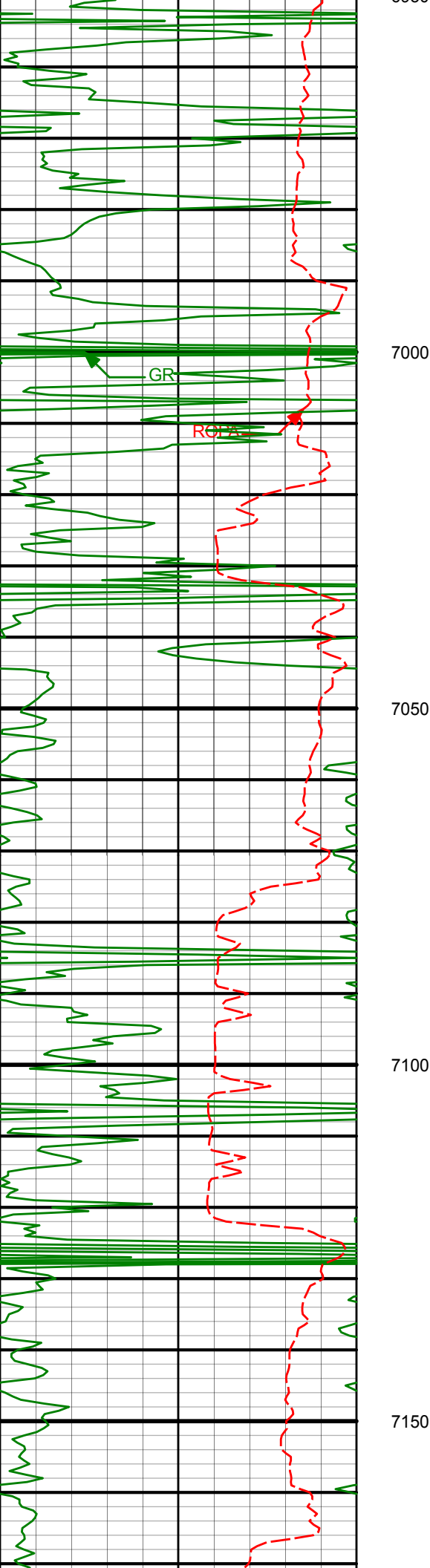
6900'

7.57°

20.94°

6784.53'

-861.50'



6990'

19.02°

11.06°

6871.98'

-841.54'

7000

GR

ROF

7050

7079'

26.37°

9.77°

6954.04'

-807.81'

7100

7150

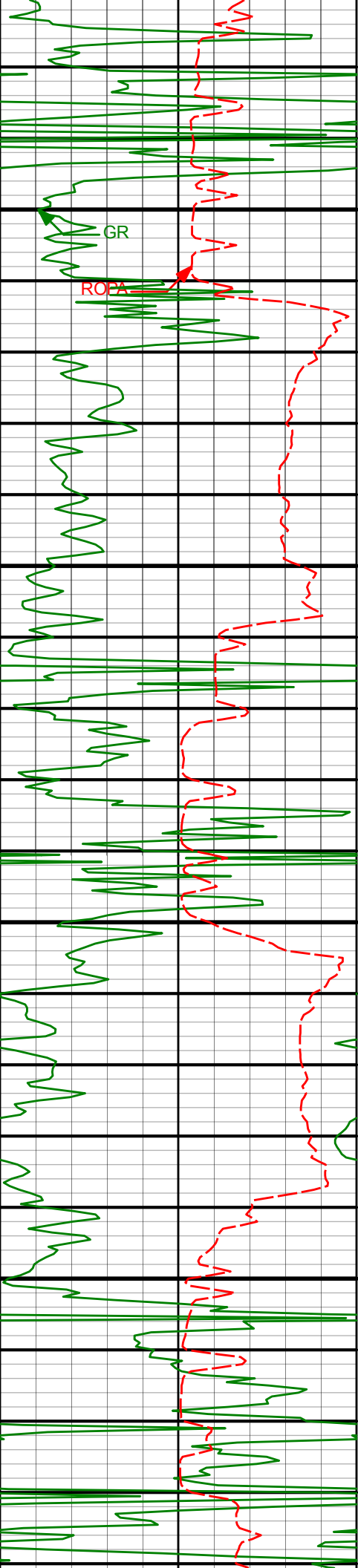
7169'

26.42°

2.60°

7034.67'

-768.12'



7200

7250

7300

7350

7259'

29.76°

5.78°

7114.07'

-725.90'

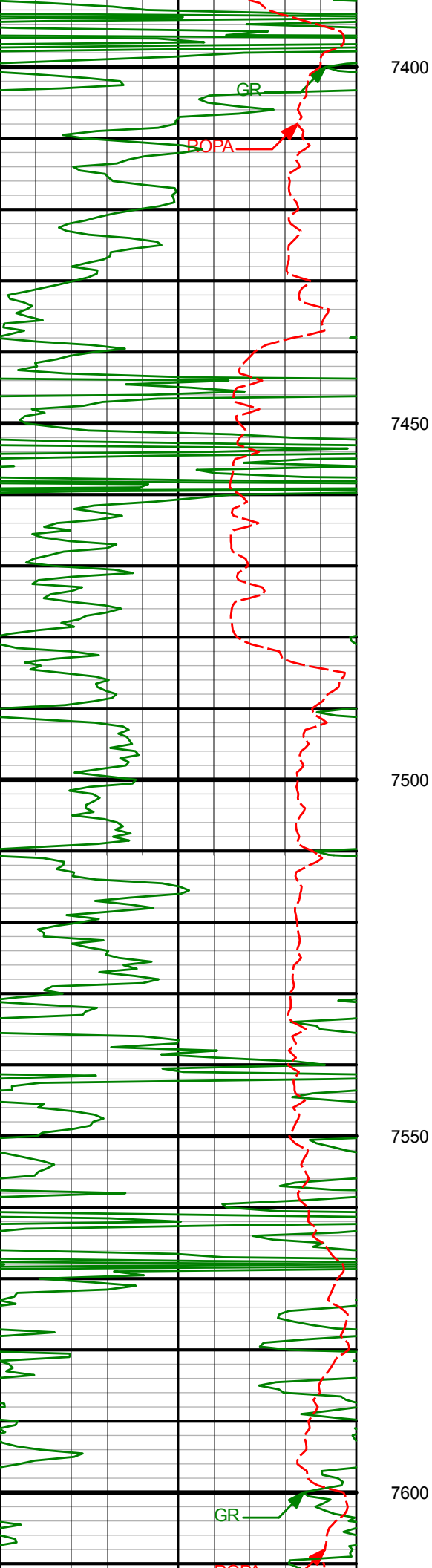
7348'

30.17°

356.77°

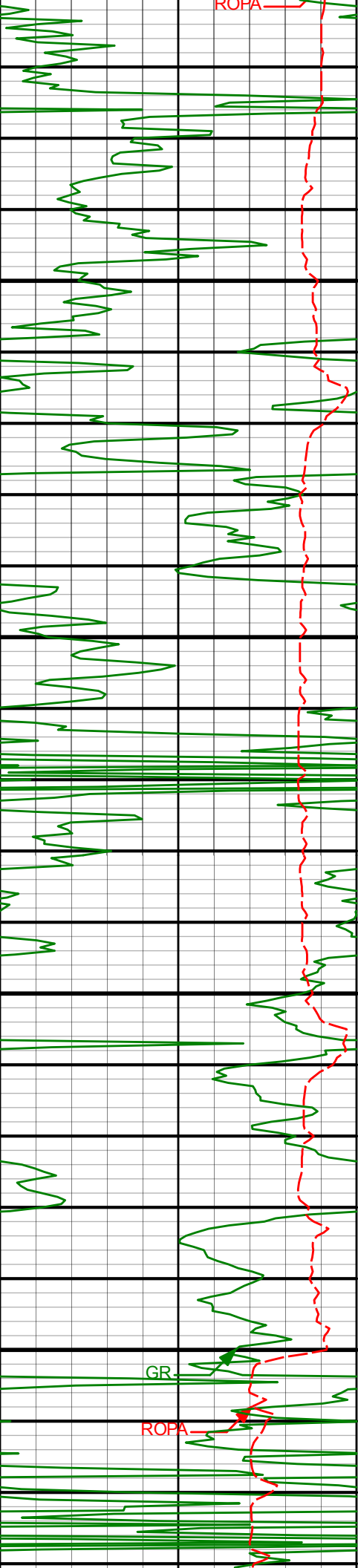
7191.21'

-681.58'



7438' 31.96° 357.43° 7268.30' -635.19'

7528' 35.40° 359.19° 7343.18' -585.30'



7618'	44.30°	6.36°	7412.24'	-527.87'
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7650

7700

7707'	57.22°	5.15°	7468.42'	-459.47'
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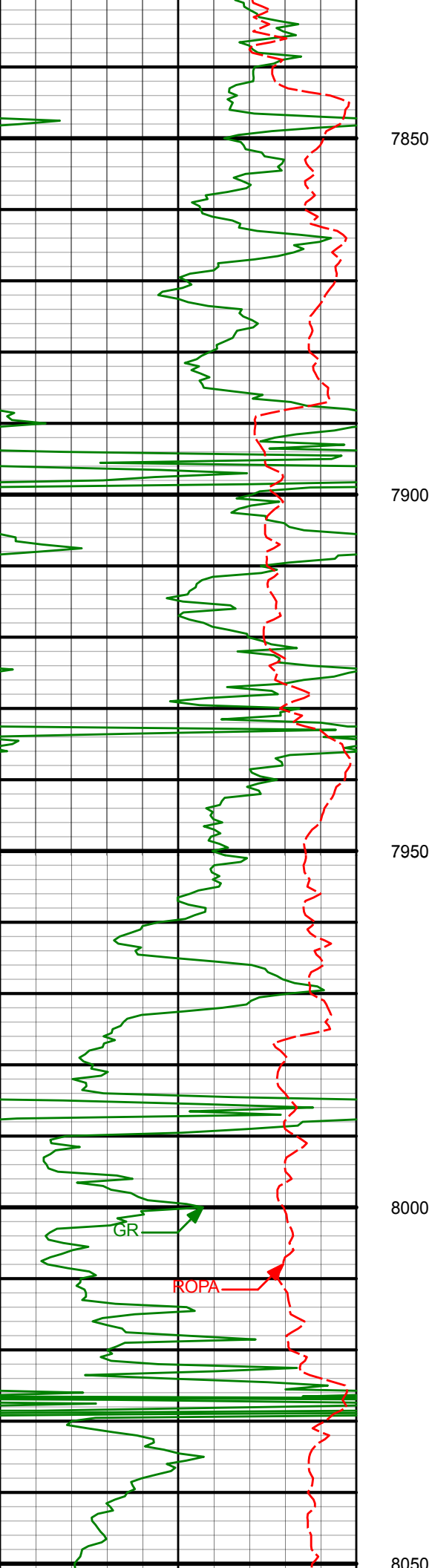
7750

7800

7797'	68.38°	359.58°	7509.52'	-379.67'
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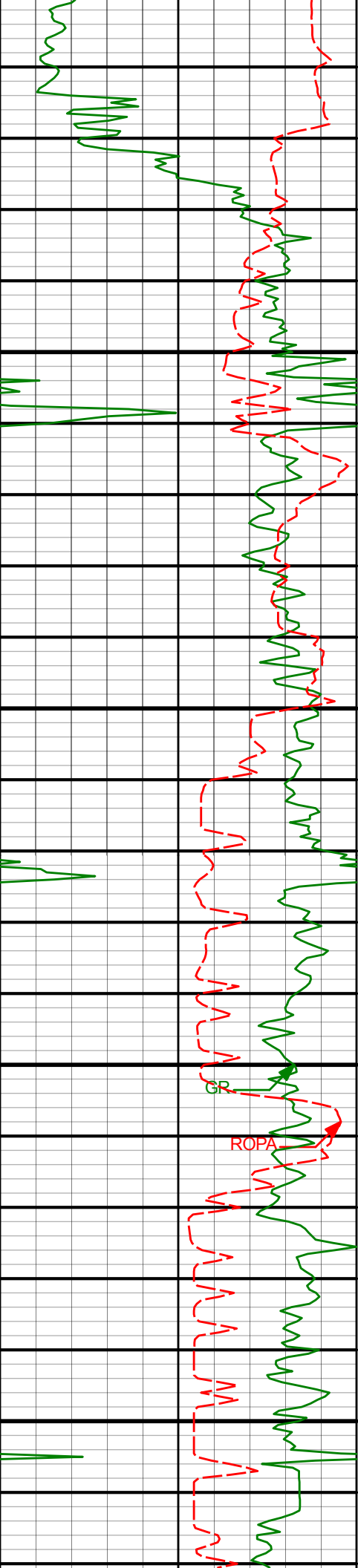
GR

ROPA



7887' 73.41° 356.98° 7538.98' -294.69'

7977' 77.84° 357.57° 7561.32' -207.61'



8066

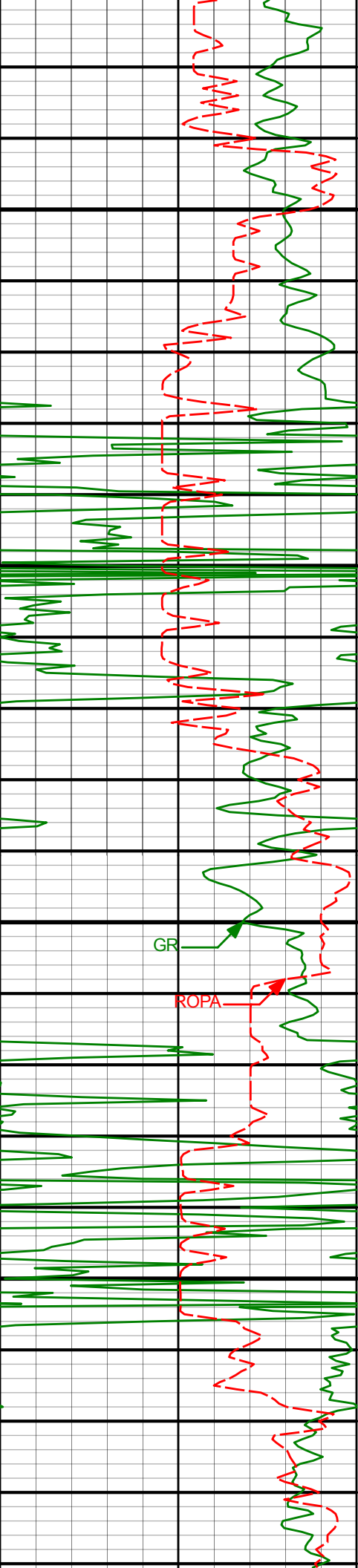
8100

8150

8200

8250

8066'	84.04°	358.24°	7575.33'	-119.81'
8156'	89.90°	358.09°	7580.09'	-30.00'
8246'	88.51°	356.80°	7581.34'	59.92'



8300

8336'

87.67°

356.15°

7584.34'

149.72'

8350

8400

GR

ROPA

8426'

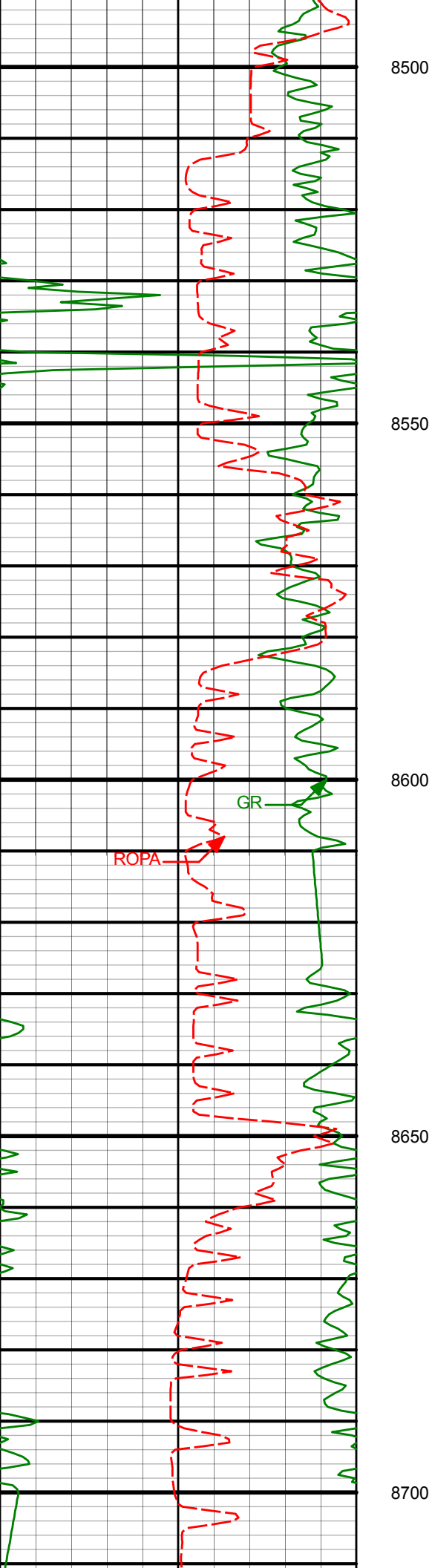
87.79°

357.95°

7587.91'

239.55'

8450



8516'

89.39°

358.86°

7590.12'

329.50'

8605'

90.57°

359.37°

7590.15'

418.49'

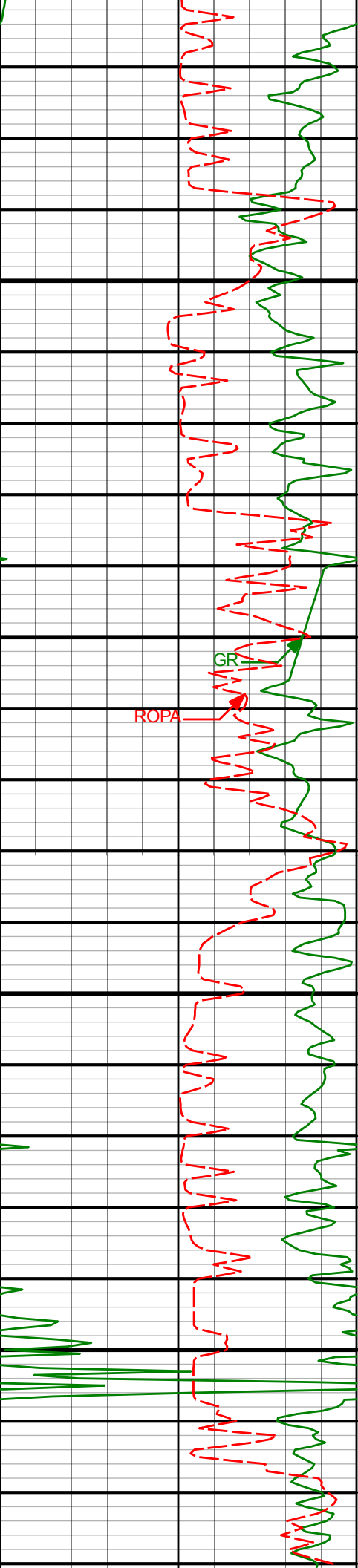
8695'

91.07°

359.01°

7588.87'

508.48'



8750

8785'

90.65°

358.57°

7587.52'

598.46'

8800

ROPA

GR

8850

8875'

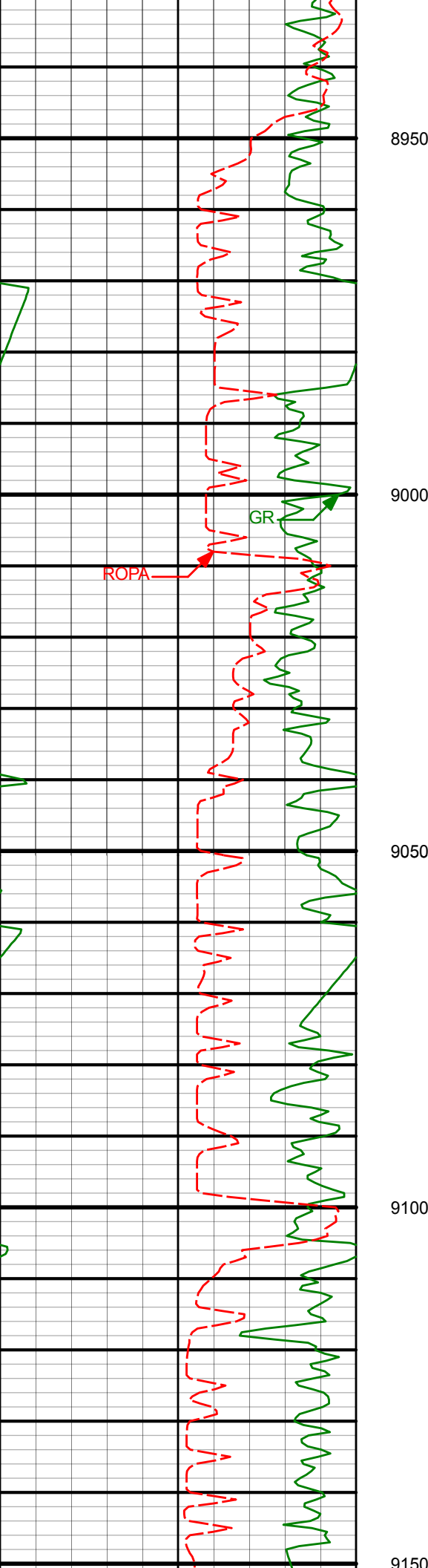
90.82°

358.12°

7586.36'

688.43'

8900



8964'

90.48°

0.23°

7585.35'

777.41'

9054'

90.44°

0.48°

7584.62'

867.40'

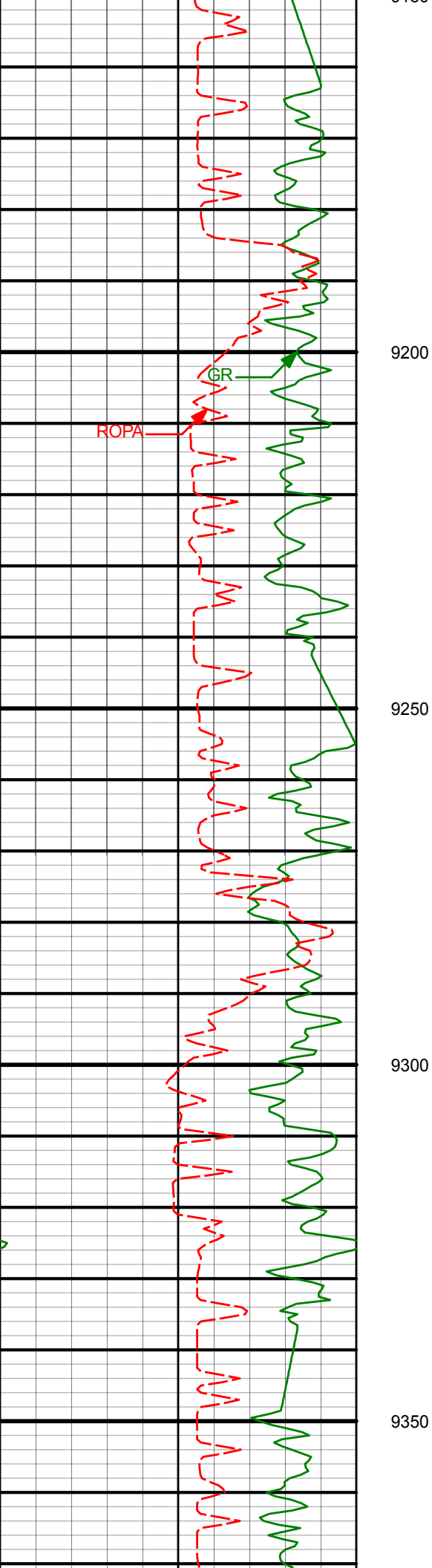
9144'

90.06°

359.99°

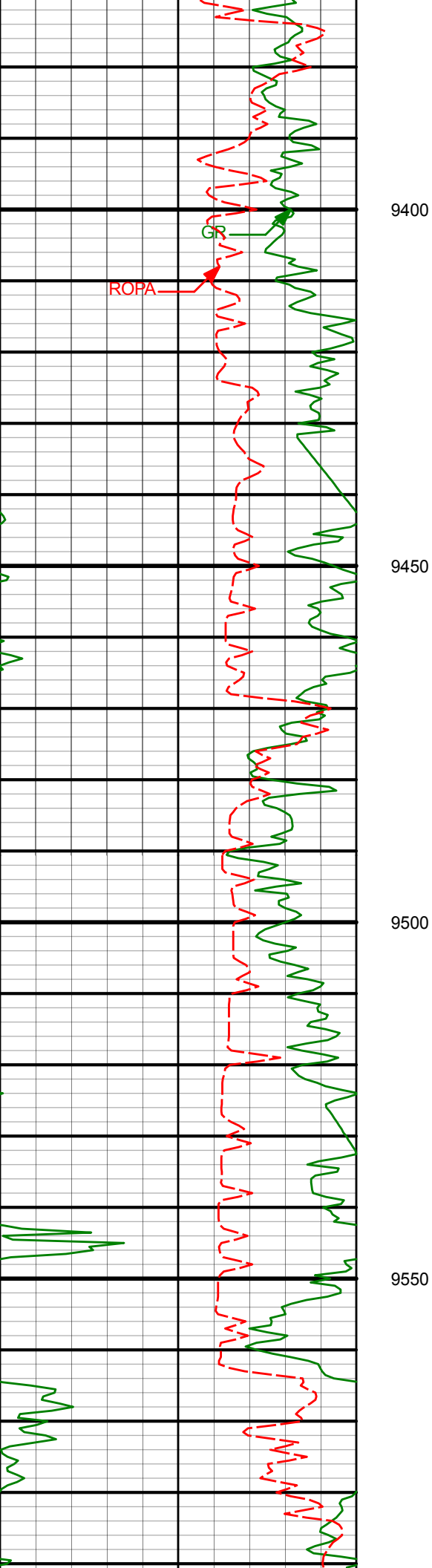
7584.23'

957.40'



9238'	90.23°	359.70°	7583.99'	1051.40'
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9333'	89.27°	359.31°	7584.40'	1146.39'
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9427'

89.35°

359.85°

7585.54'

1240.39'

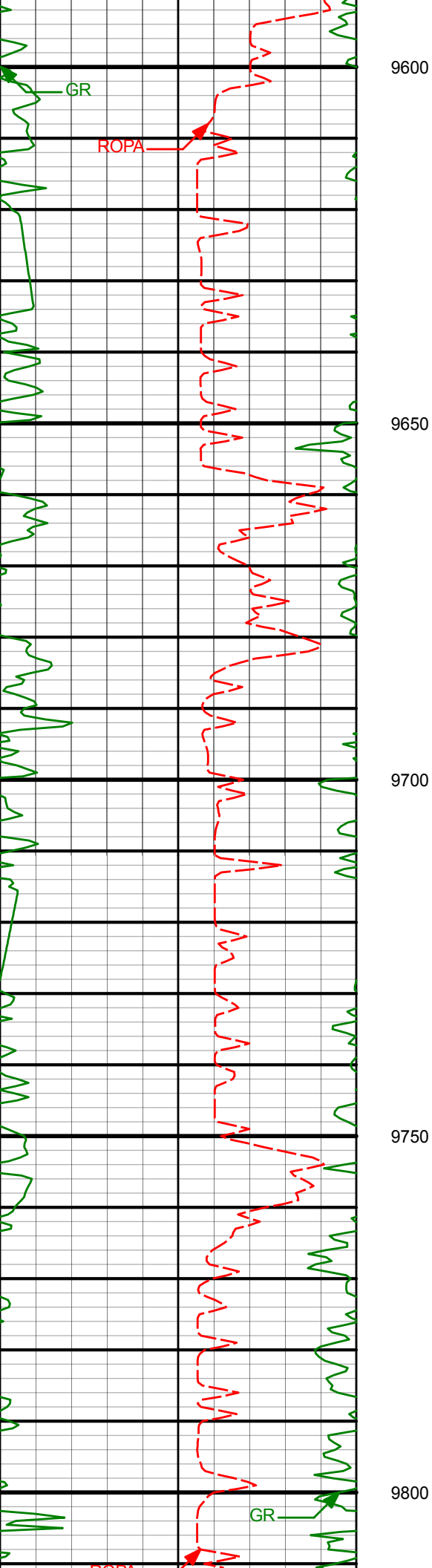
9521'

89.27°

359.53°

7586.68'

1334.38'



9616'

91.28°

0.85°

7586.22'

1429.37'

9650

9700

9710'

91.24°

1.04°

7584.16'

1523.32'

9750

9800

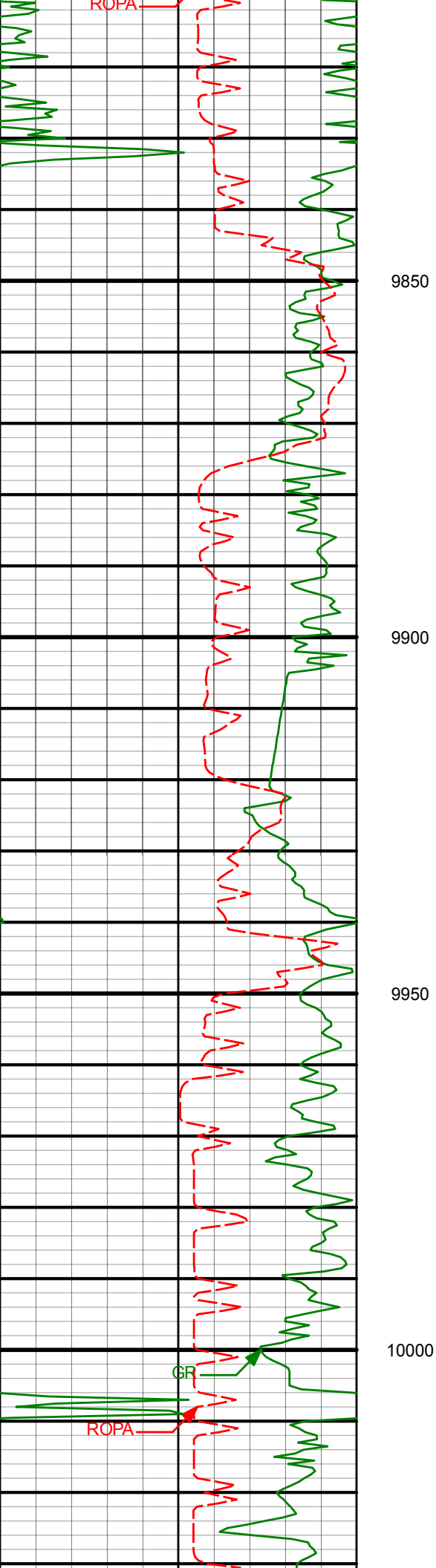
9804'

90.90°

0.72°

7582.40'

1617.29'



9898'

92.17°

358.59°

7579.88'

1711.24'

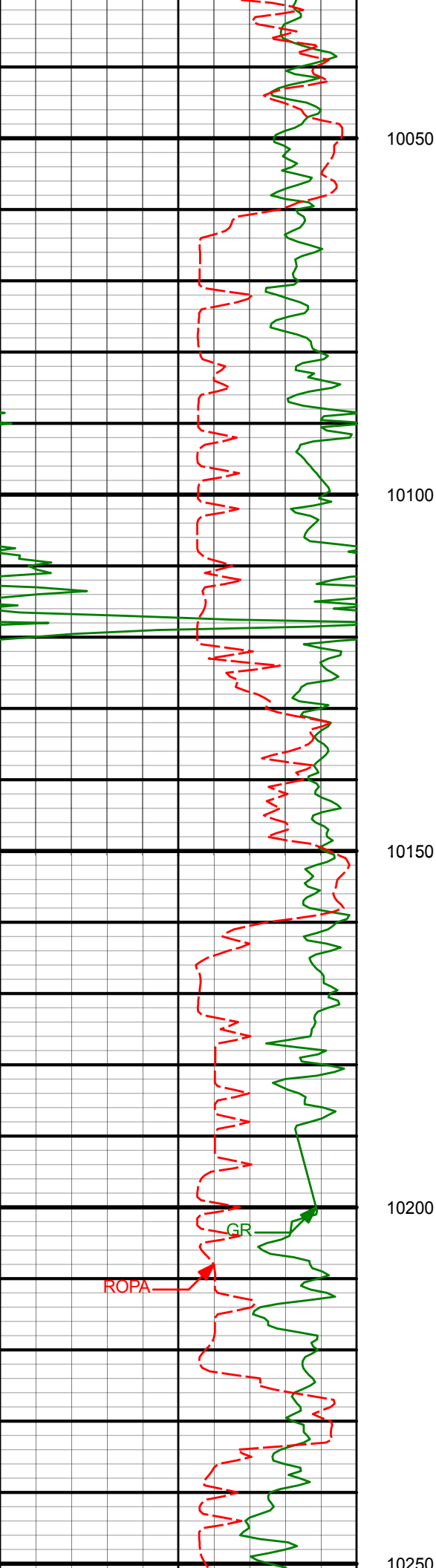
9993'

91.66°

358.31°

7576.71'

1806.17'



10050

10087'

90.11°

357.65°

7575.27'

1900.11'

10100

10150

10181'

89.06°

358.56°

7575.96'

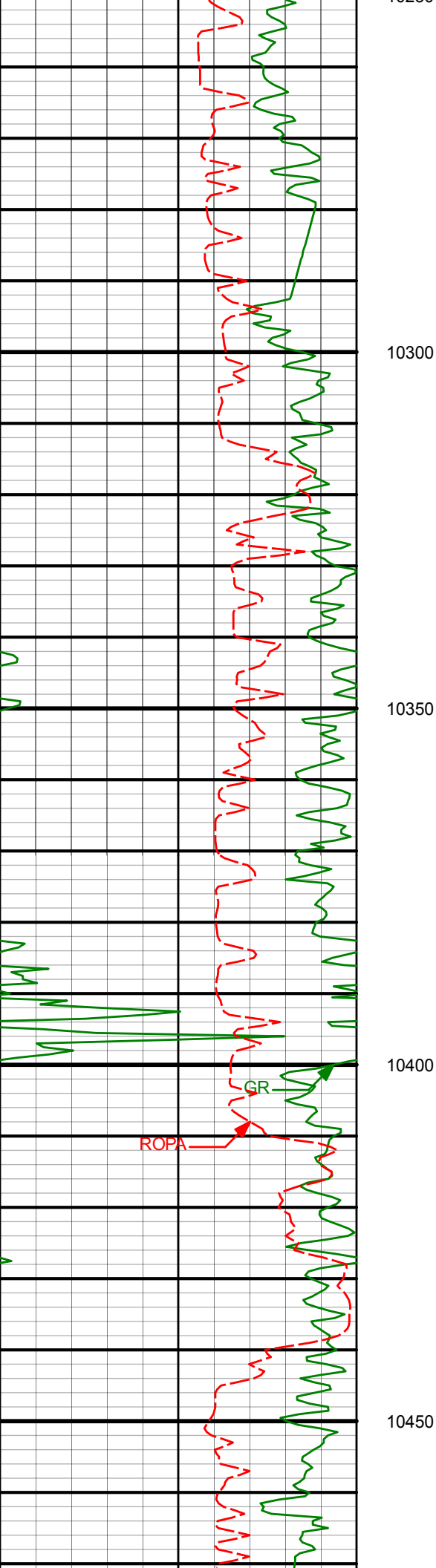
1994.07'

10200

GR

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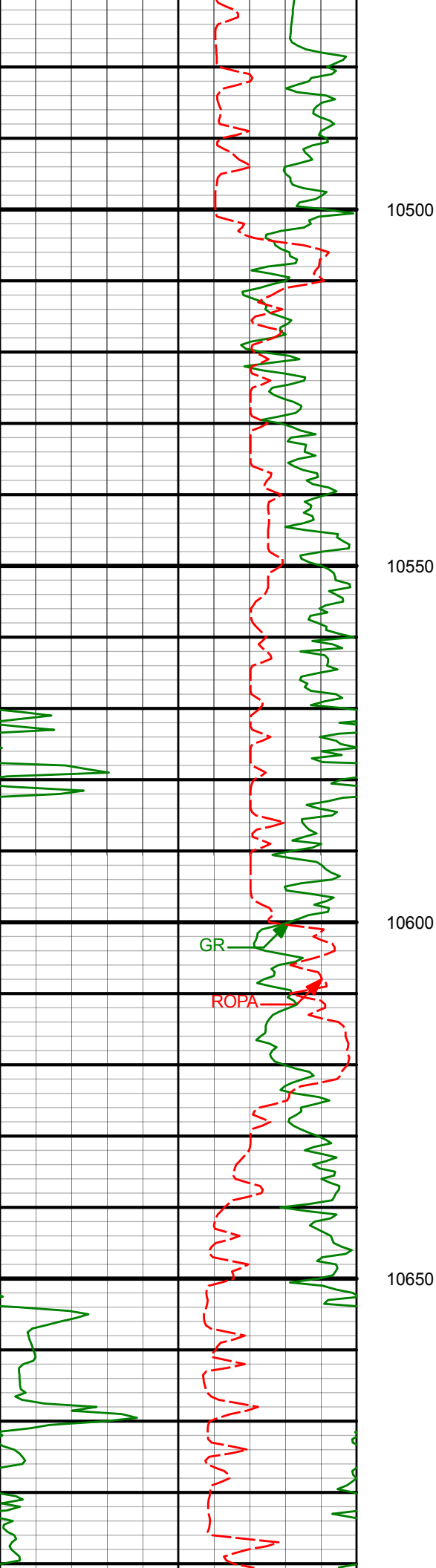
10250



10276'	89.01°	358.12°	7577.56'	2089.03'
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10370'	89.01°	357.72°	7579.18'	2182.97'
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10464'	89.81°	359.95°	7580.14'	2276.95'
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10558'

89.85°

358.69°

7580.41'

2370.95'

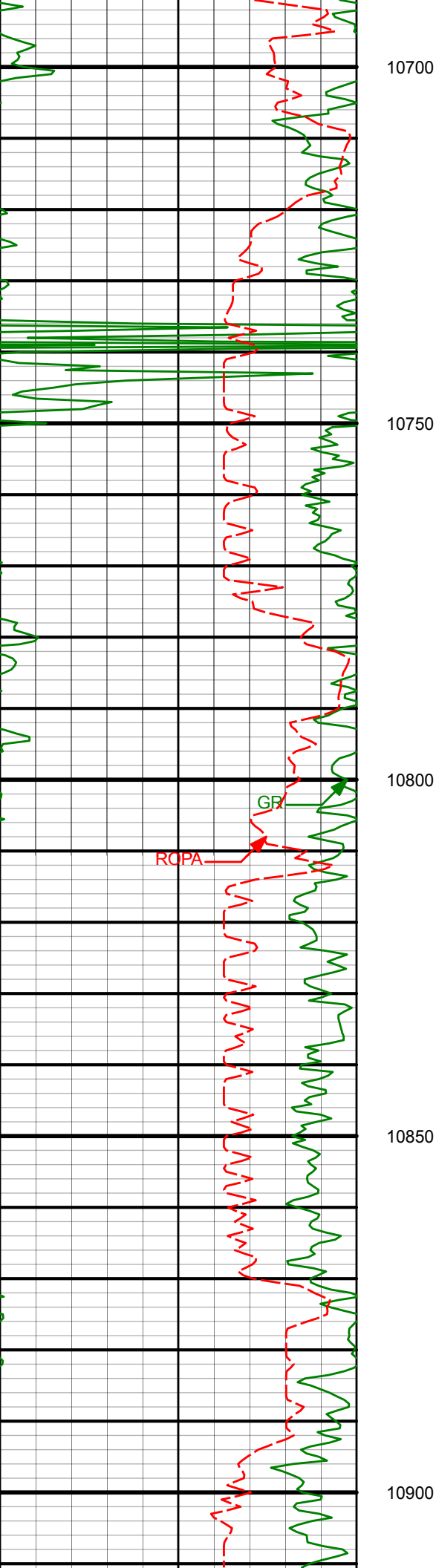
10648'

89.14°

0.08°

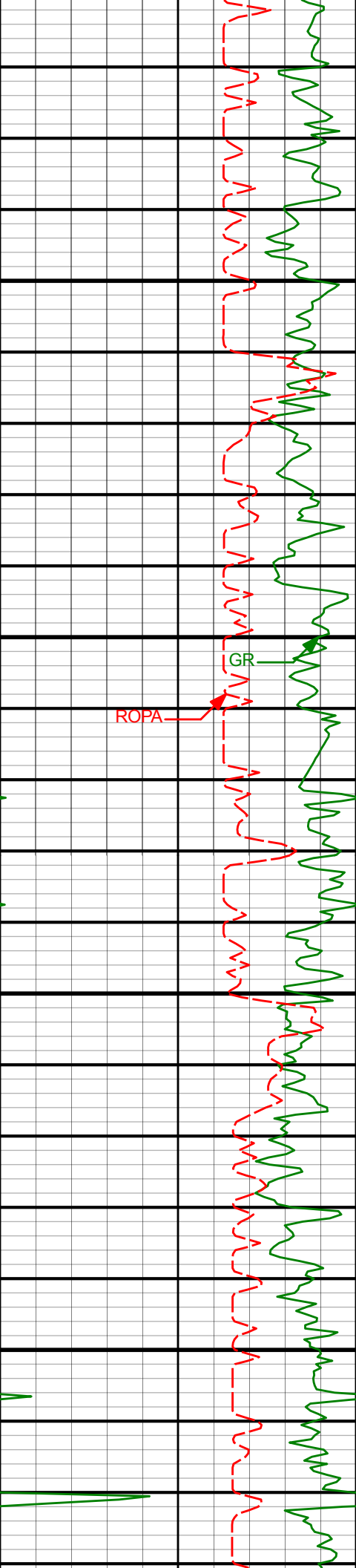
7581.21'

2460.94'



10738' 89.73° 0.60° 7582.10' 2550.93'

10828' 90.82° 1.81° 7581.67' 2640.89'



10950

11000

11050

11100

10918'

90.90°

1.11°

7580.32'

2730.84'

11007'

91.07°

0.60°

7578.78'

2819.81'

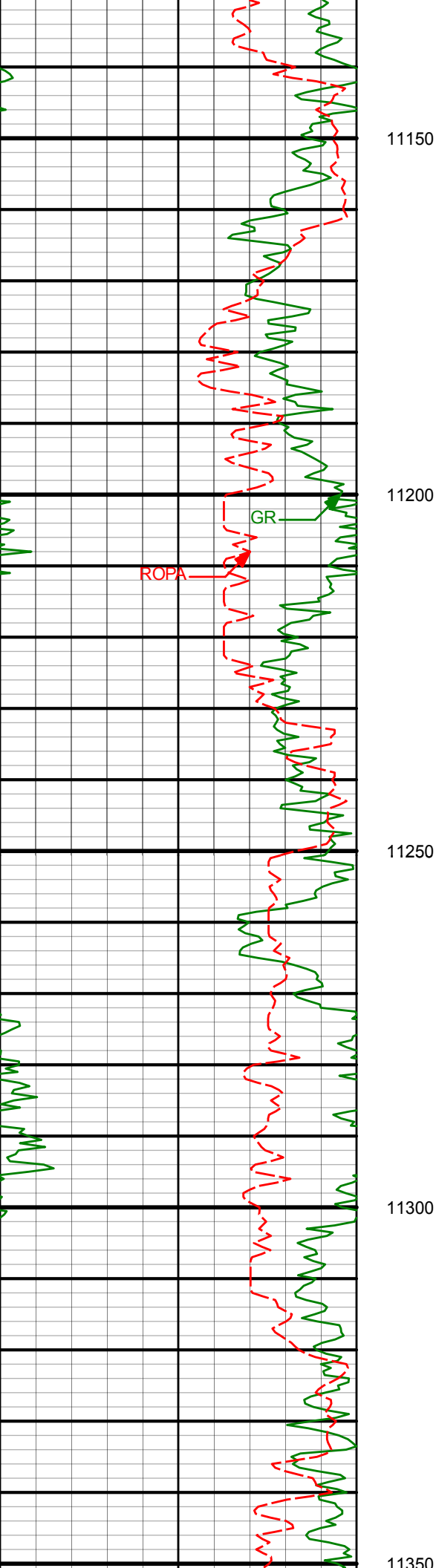
11097'

91.54°

0.95°

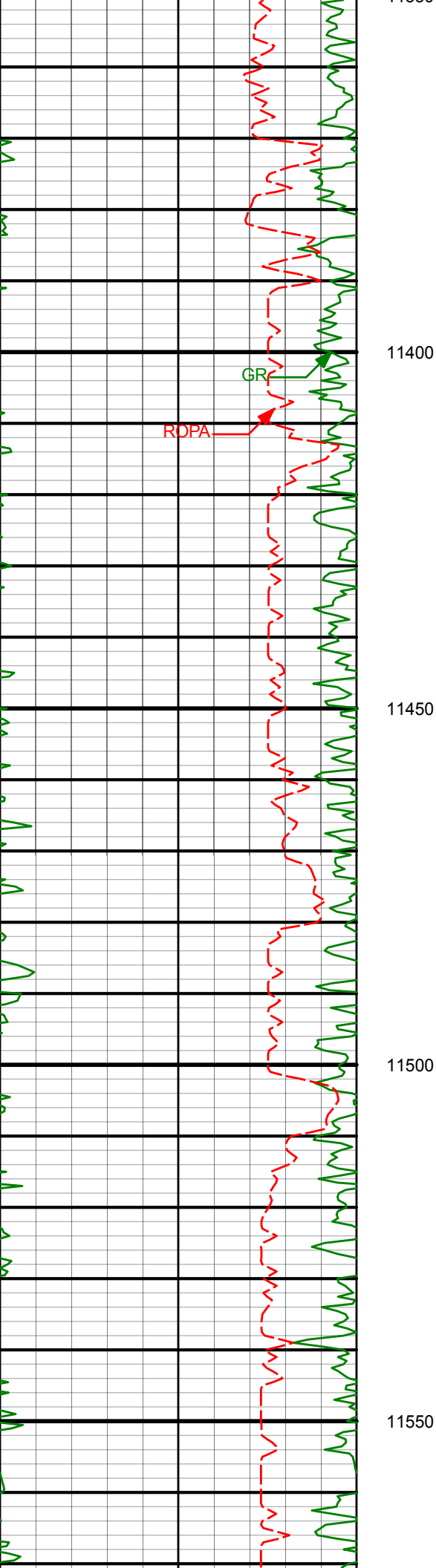
7576.73'

2909.77'



11187' 90.19° 1.64° 7575.38' 2999.72'

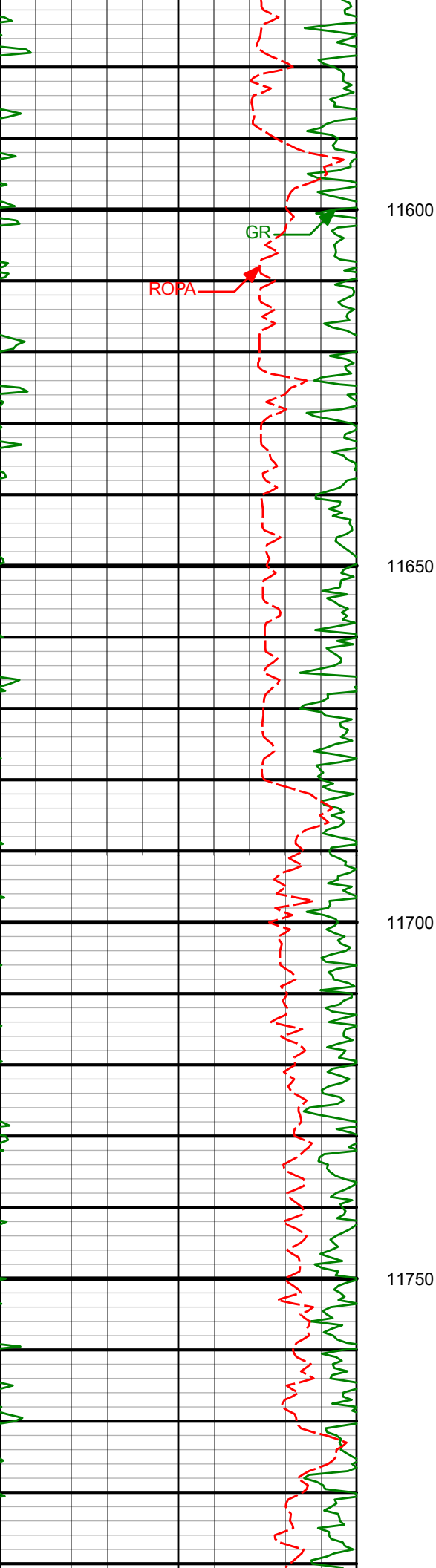
11277' 87.79° 1.23° 7576.96' 3089.66'



11366'	89.06°	1.63°	7579.41'	3178.58'
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11456'	88.68°	1.56°	7581.19'	3268.51'
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11546'	88.97°	2.05°	7583.04'	3358.43'
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11636'

88.85°

1.44°

7584.75'

3448.35'

11650

11700

11725'

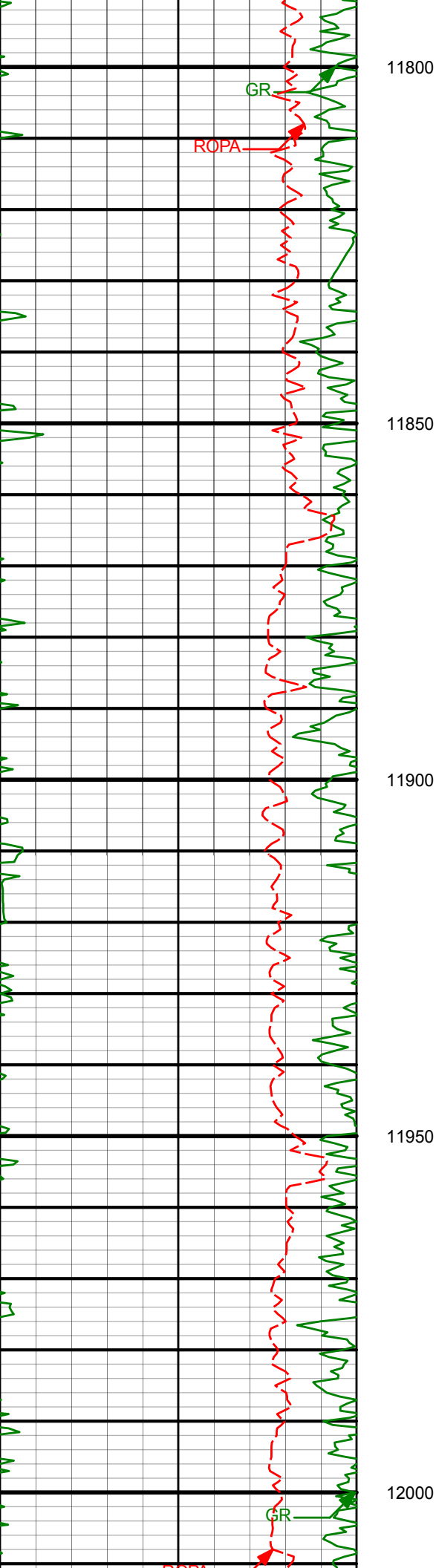
88.97°

1.14°

7586.45'

3537.30'

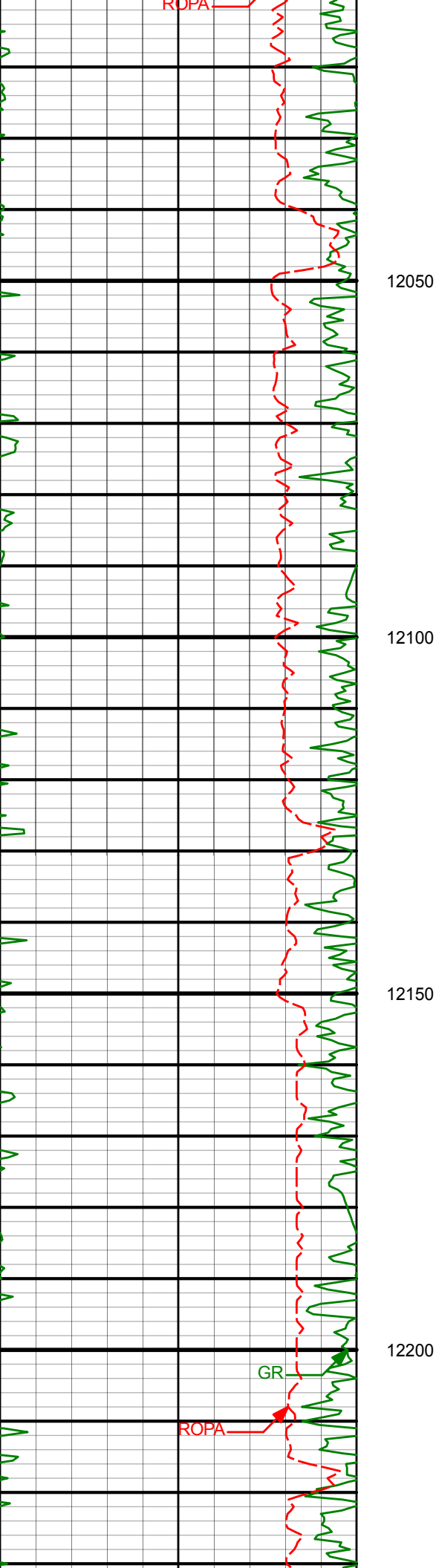
11750



11815'	89.01°	0.17°	7588.03'	3627.28'
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11905'	89.43°	359.95°	7589.25'	3717.26'
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11995'	89.69°	359.47°	7589.94'	3807.26'
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12084'

89.73°

359.58°

7590.40'

3896.26'

12050

12100

12150

12174'

89.85°

359.32°

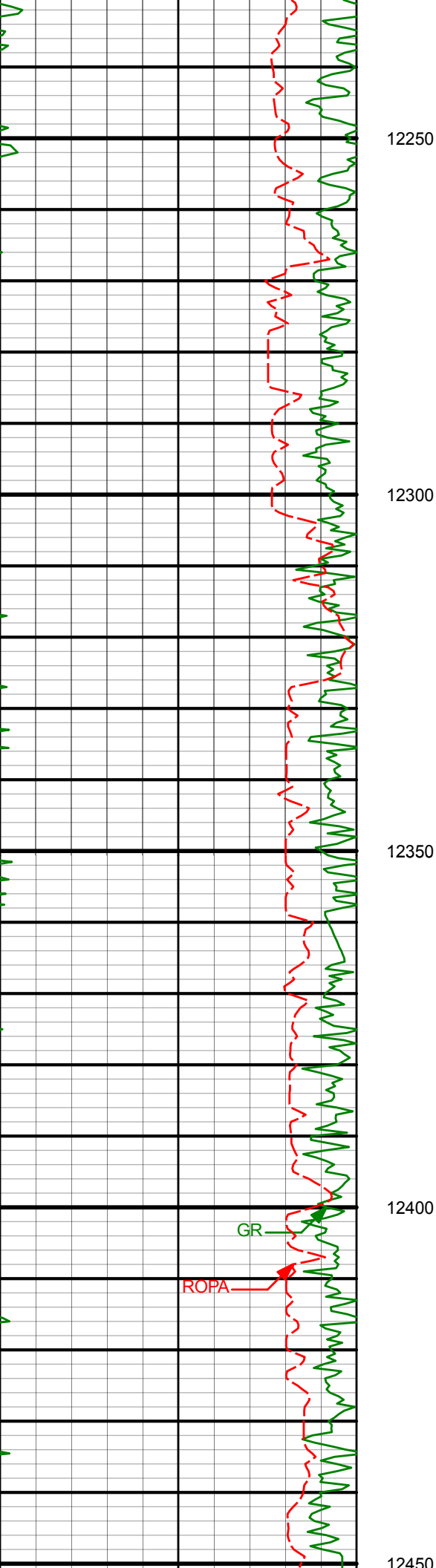
7590.73'

3986.26'

12200

GR

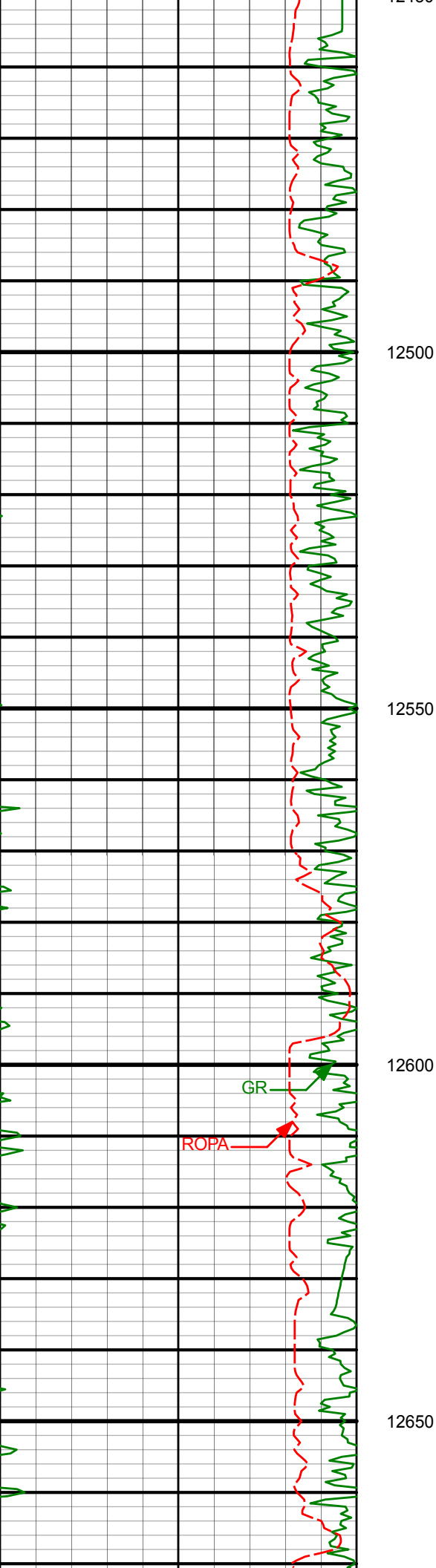
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12264'	89.98°	359.25°	7590.86'	4076.26'
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12354'	89.10°	0.12°	7591.59'	4166.25'
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12443'	89.48°	0.23°	7592.69'	4255.24'
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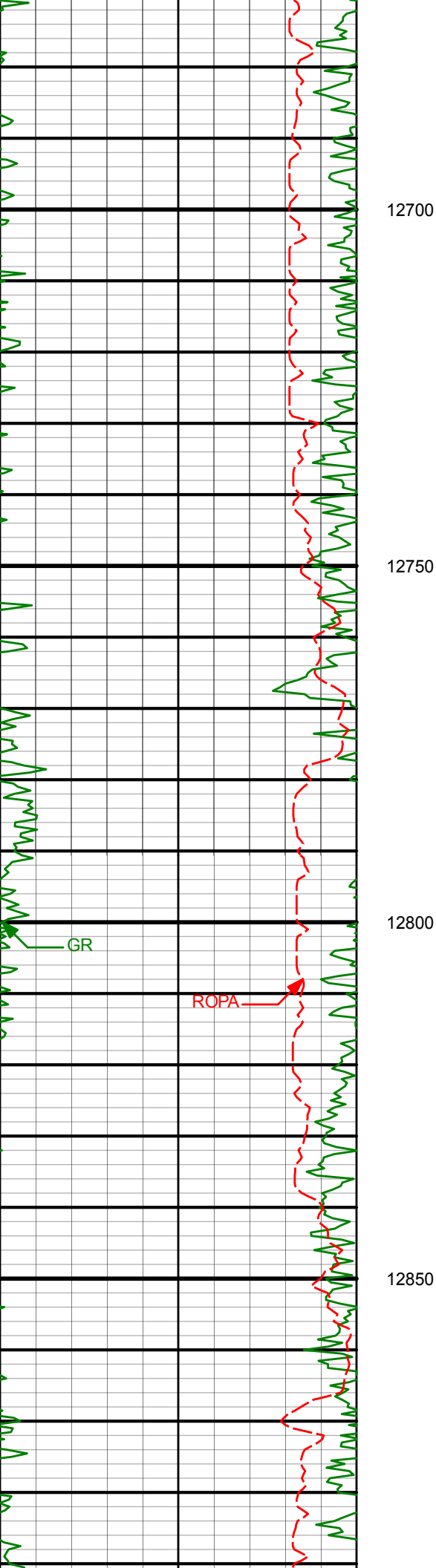
12623'

89.56°

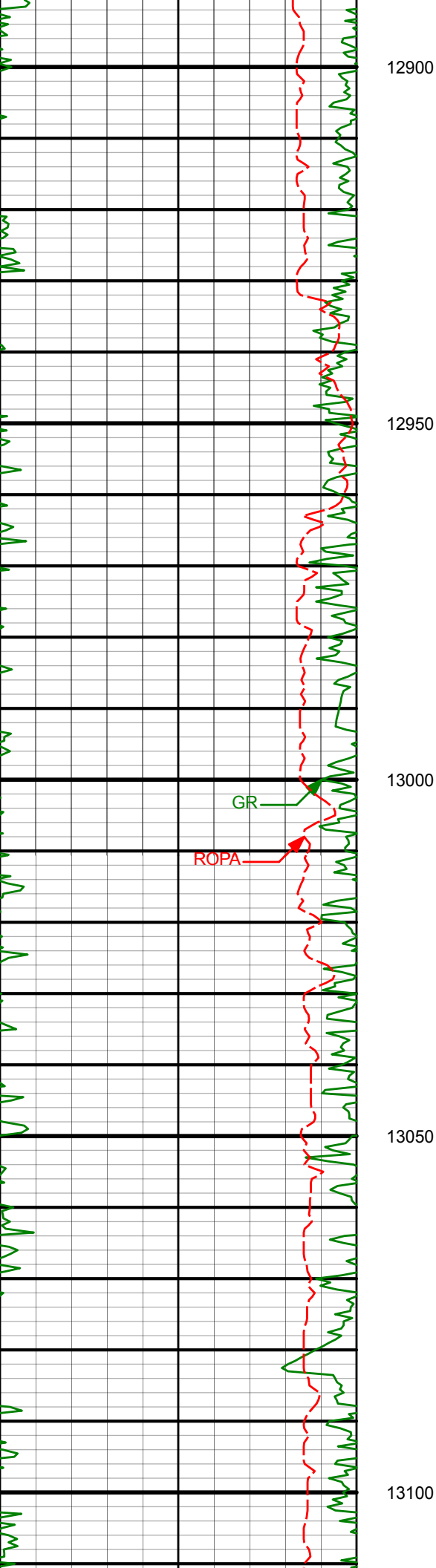
358.30°

7594.21'

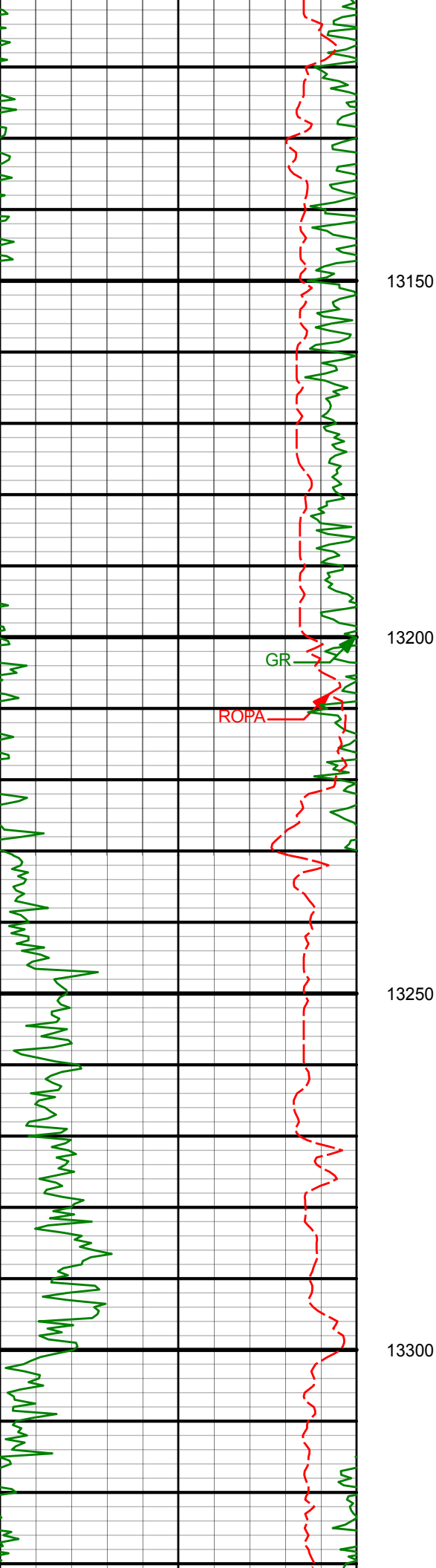
4435.22'



12713'	90.19°	358.34°	7594.41'	4525.20'
12803'	88.17°	357.64°	7595.69'	4615.14'



12893'	88.47°	358.26°	7598.33'	4705.06'
12900				
12950				
12982'	90.65°	359.59°	7599.01'	4794.04'
13000				
13050				
13072'	91.41°	359.65°	7597.40'	4884.03'
13100				



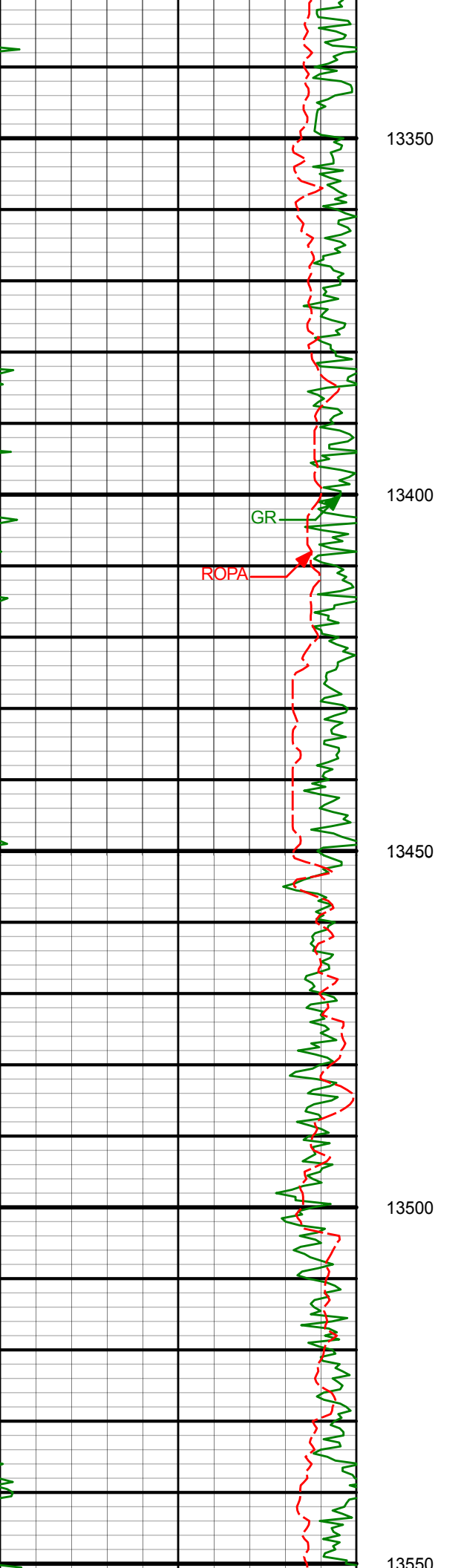
13252'

90.06°

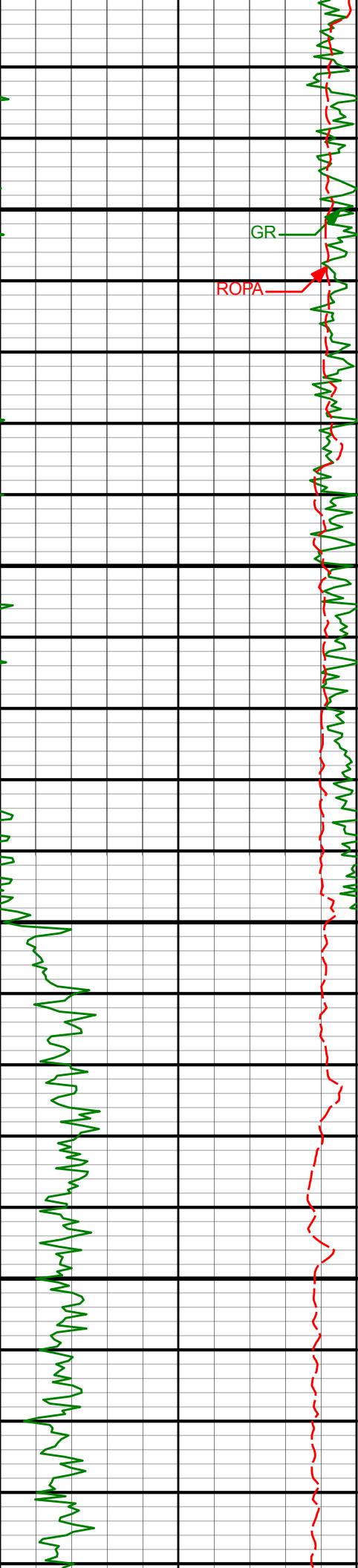
358.71°

7595.09'

5064.00'



13342'	90.94°	358.69°	7594.30'	5153.98'
13350				
13400				
13431'	91.28°	358.90°	7592.57'	5242.96'
13450				
13500				
13521'	91.66°	359.87°	7590.26'	5332.92'
13550				



13800

13850

13900

13950

13790'

87.80°

357.34°

7595.13'

5601.71'

13880'

88.51°

357.21°

7598.03'

5691.58'

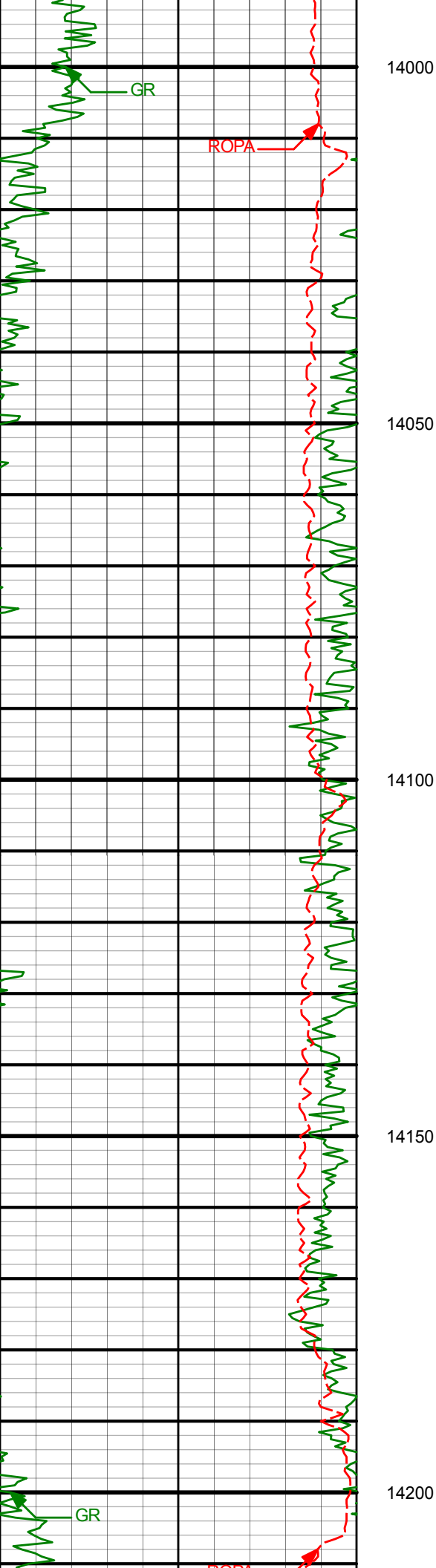
13970'

89.81°

357.83°

7599.35'

5781.51'



14060'

90.27°

358.00°

7599.29'

5871.46'

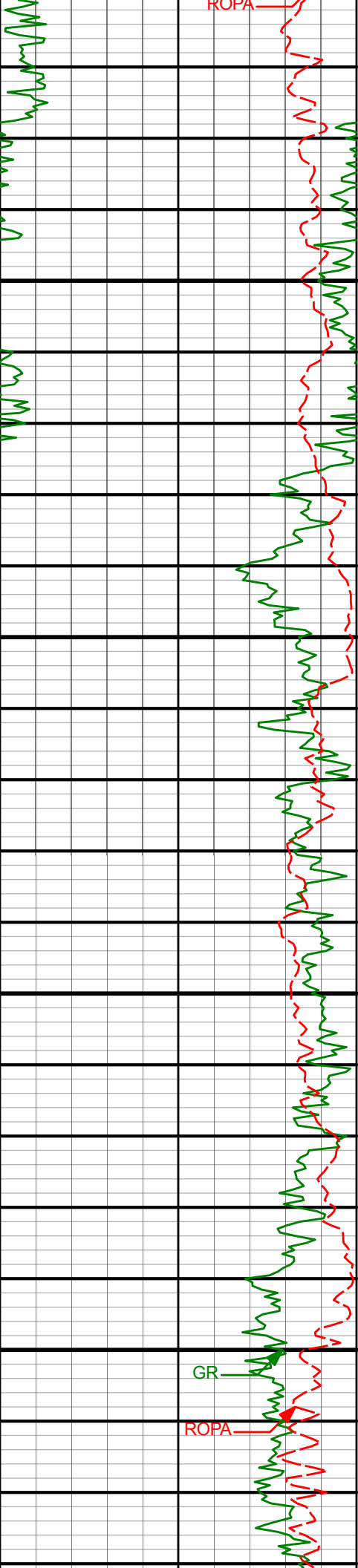
14149'

90.90°

358.07°

7598.37'

5960.42'



14239' 90.27° 357.26° 7597.45' 6050.36'

14250

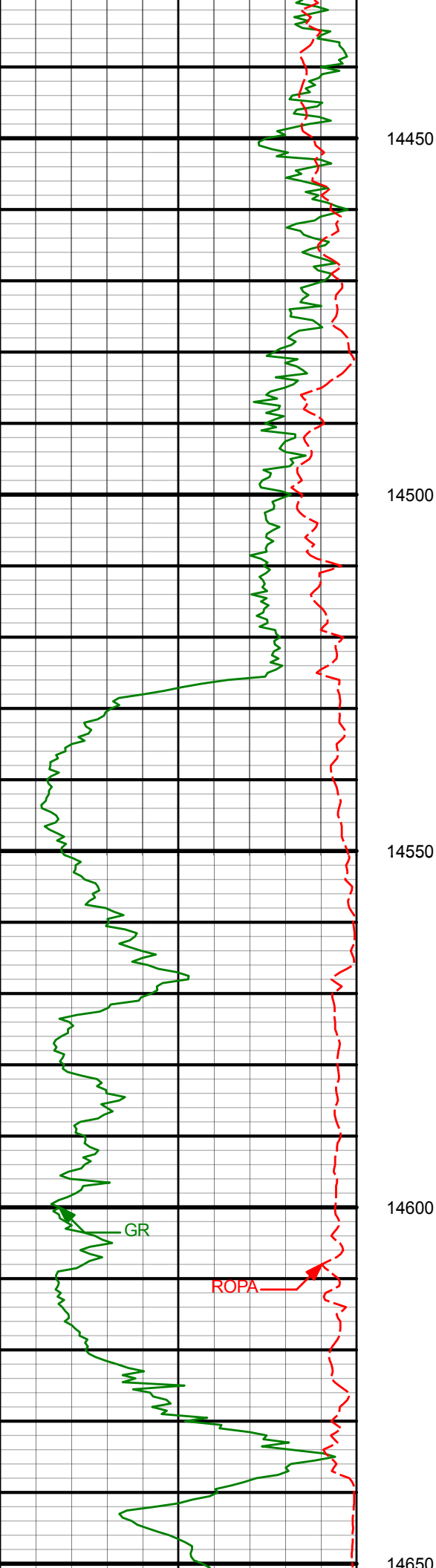
14300

14329' 88.84° 357.81° 7598.14' 6140.29'

14350

14400

14419' 88.55° 359.56° 7600.19' 6230.25'



14450

14500

14550

14600

14650

14509'

90.11°

359.76°

7601.25'

6320.24'

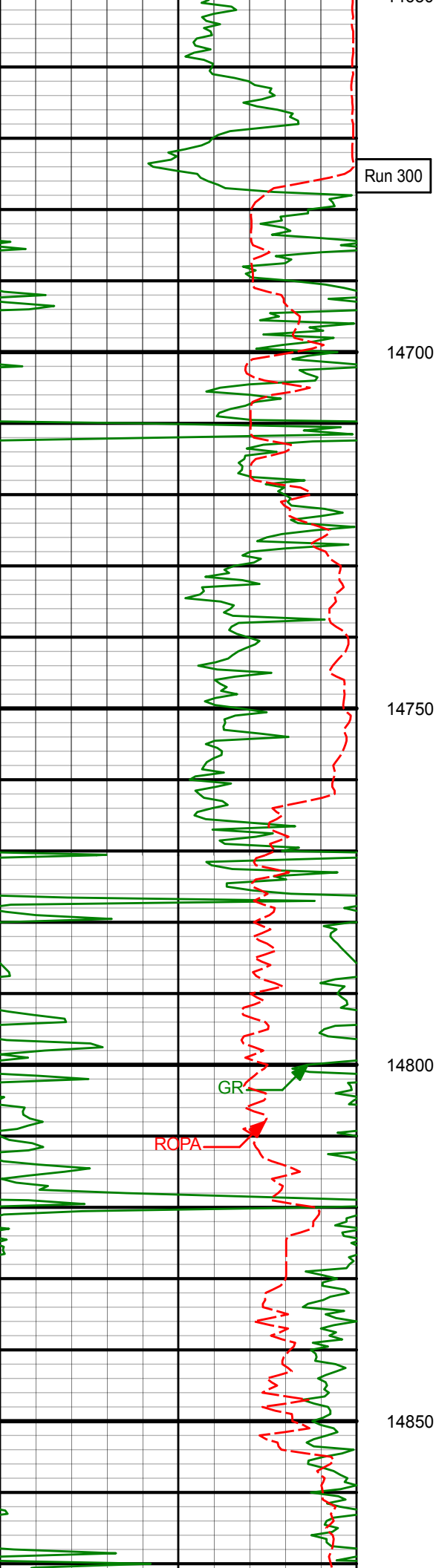
14598'

89.81°

0.21°

7601.31'

6409.24'



14688'	91.41°	359.96°	7600.35'	6499.23'
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14700

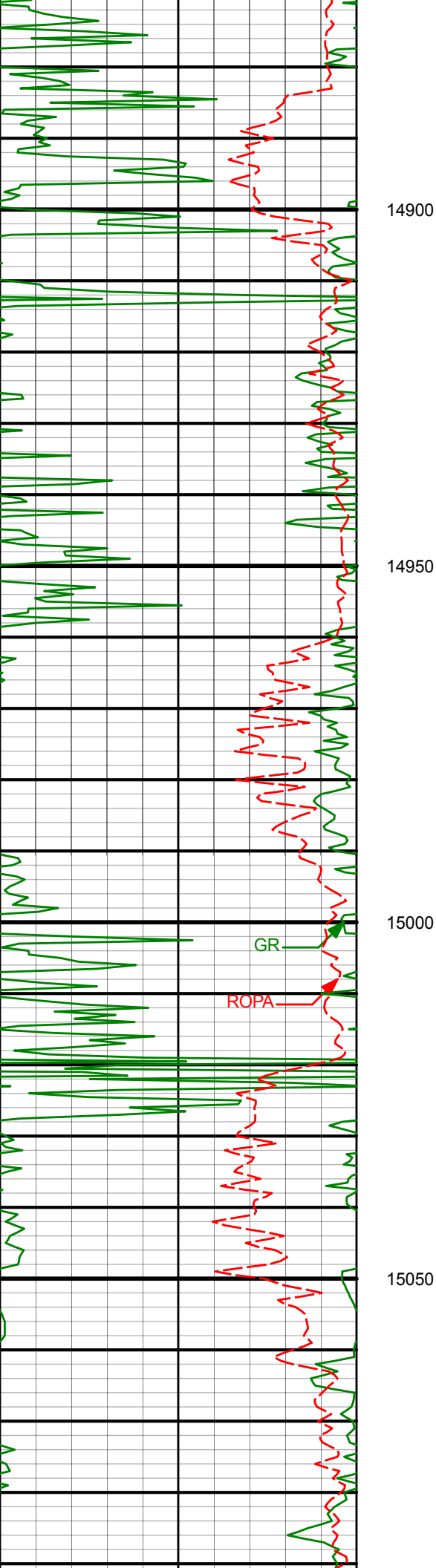
14750

14778'	89.98°	357.55°	7599.27'	6589.20'
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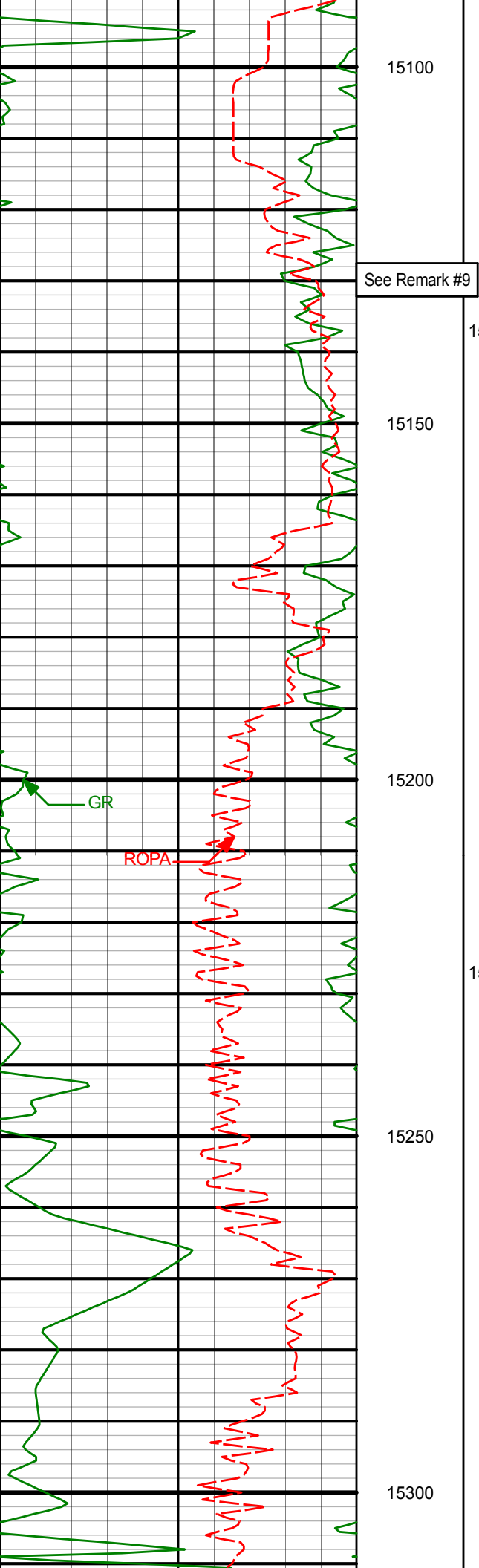
14800

14850

14868'	88.59°	356.02°	7600.39'	6679.08'
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14957'	90.73°	355.67°	7600.91'	6767.87'
15047'	89.64°	357.97°	7600.61'	6857.75'



15137'

88.97°

2.36°

7601.70'

6947.72'

15150

15200

15227'

89.43°

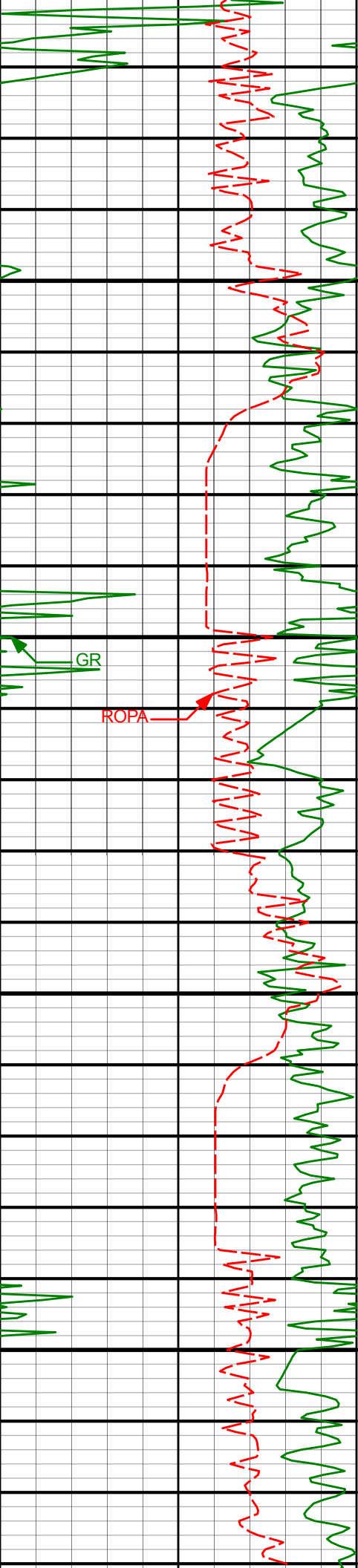
4.89°

7602.95'

7037.49'

15250

15300



15316'

89.73°

4.79°

7603.60'

7126.12'

15350

15400

15406'

89.81°

3.88°

7603.97'

7215.83'

15450

15500

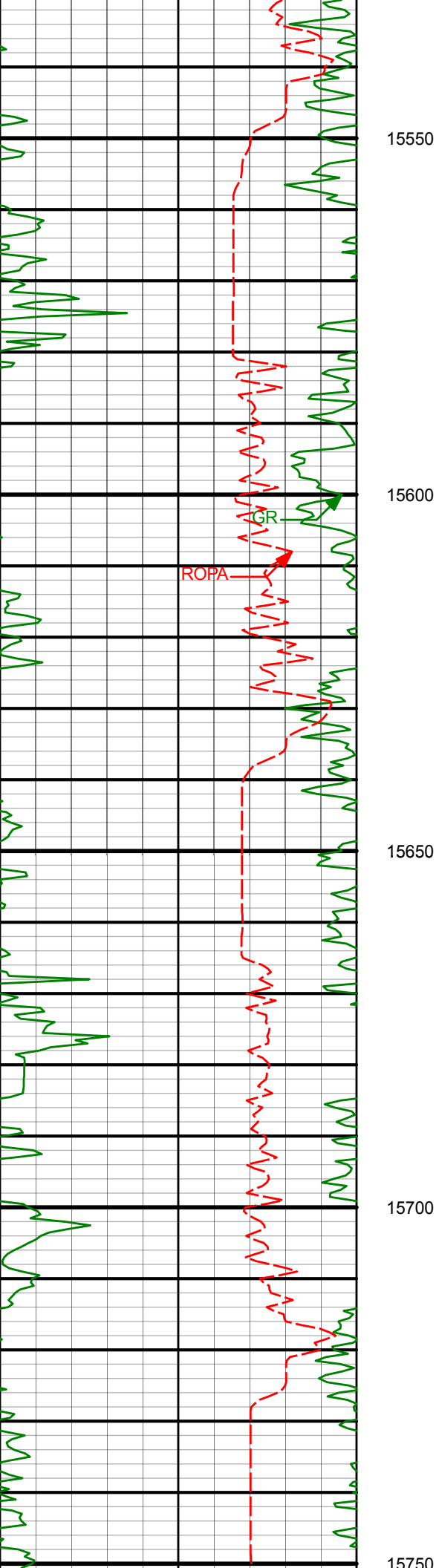
15496'

90.10°

3.17°

7604.03'

7305.62'



15586'

90.15°

2.75°

7603.84'

7395.47'

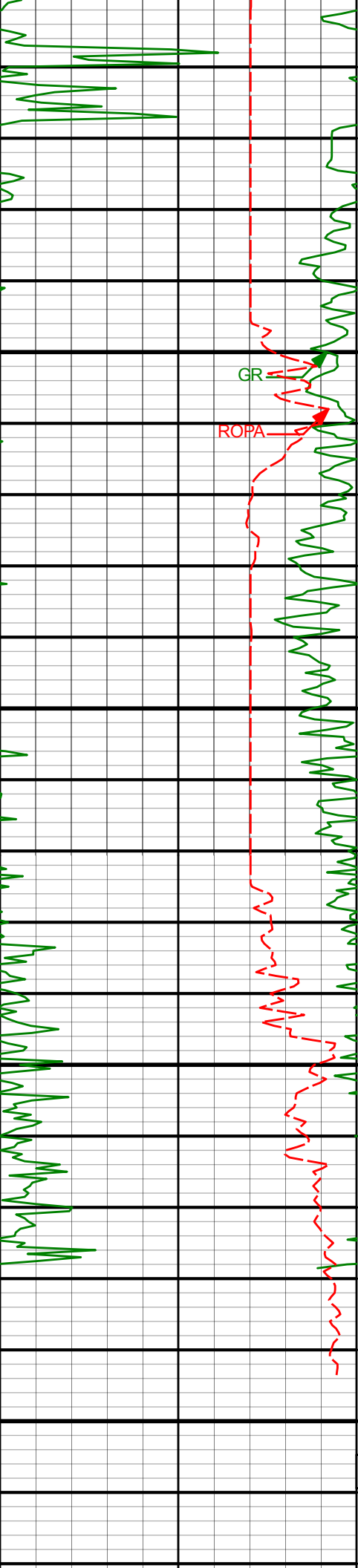
15676'

90.27°

2.40°

7603.51'

7485.36'



15765'

90.15°

2.12°

7603.18'

7574.27'

15800

GR

ROPA

15850

15855'

89.90°

2.40°

7603.15'

7664.18'

15900

15898'

89.89°

2.35°

7603.23'

7707.13'

15950

See Remark #10

15970'

89.89°

2.35°

7603.36'

7779.05'

TD Well @ 15970'MD							

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
862.00	8.53	209.93	859.70	39.00 S	21.82 W	-38.87	0.72
893.00	9.49	208.43	890.32	43.24 S	24.19 W	-43.10	3.19
925.00	10.24	210.28	921.84	48.01 S	26.88 W	-47.86	2.54
957.00	10.94	208.00	953.30	53.15 S	29.74 W	-52.98	2.55
988.00	11.73	210.28	983.69	58.47 S	32.71 W	-58.29	2.93
1020.00	12.61	211.26	1014.97	64.26 S	36.16 W	-64.06	2.82
1051.00	12.17	212.21	1045.25	69.92 S	39.66 W	-69.70	1.56
1083.00	13.67	208.87	1076.44	76.09 S	43.28 W	-75.84	5.23
1114.00	14.28	209.93	1106.52	82.61 S	46.96 W	-82.35	2.13
1146.00	14.85	207.73	1137.50	89.66 S	50.84 W	-89.37	2.48
1178.00	15.91	210.10	1168.35	97.08 S	54.94 W	-96.78	3.85
1210.00	16.22	210.02	1199.10	104.75 S	59.38 W	-104.41	0.97
1241.00	16.61	207.56	1228.84	112.42 S	63.60 W	-112.07	2.57
1273.00	16.88	209.23	1259.48	120.53 S	67.98 W	-120.15	1.72
1305.00	17.18	208.79	1290.08	128.73 S	72.53 W	-128.32	1.02
1336.00	17.75	210.28	1319.65	136.82 S	77.11 W	-136.39	2.34
1368.00	17.89	209.93	1350.11	145.30 S	82.02 W	-144.83	0.55
1400.00	18.46	211.25	1380.52	153.89 S	87.11 W	-153.40	2.20
1431.00	18.33	212.57	1409.93	162.19 S	92.28 W	-161.67	1.41
1463.00	18.54	212.83	1440.29	170.71 S	97.74 W	-170.16	0.70
1494.00	18.81	211.60	1469.66	179.10 S	103.03 W	-178.53	1.54
1526.00	19.07	211.51	1499.93	187.95 S	108.47 W	-187.35	0.82
1558.00	19.12	210.28	1530.16	196.94 S	113.84 W	-196.30	1.27
1621.00	19.51	210.63	1589.62	214.90 S	124.41 W	-214.20	0.65
1652.00	20.00	209.84	1618.79	223.95 S	129.68 W	-223.22	1.80
1684.00	20.26	209.14	1648.84	233.54 S	135.10 W	-232.78	1.11
1715.00	19.69	211.60	1677.97	242.67 S	140.45 W	-241.89	3.28
1747.00	19.07	210.02	1708.16	251.79 S	145.89 W	-250.97	2.54
1779.00	19.03	210.46	1738.41	260.82 S	151.15 W	-259.97	0.47
1811.00	18.02	212.57	1768.75	269.48 S	156.46 W	-268.61	3.79
1829.00	17.67	212.39	1785.89	274.14 S	159.42 W	-273.24	1.97
1920.00	17.86	211.75	1872.55	297.66 S	174.16 W	-296.69	0.30
2010.00	17.08	209.81	1958.40	320.87 S	188.00 W	-319.81	1.08
2100.00	16.82	210.46	2044.49	343.56 S	201.17 W	-342.43	0.36
2190.00	16.51	209.56	2130.71	365.90 S	214.08 W	-364.70	0.45
2280.00	15.59	208.31	2217.20	387.67 S	226.12 W	-386.40	1.09
2369.00	15.00	207.48	2303.05	408.42 S	237.11 W	-407.09	0.71
2459.00	13.83	205.82	2390.21	428.43 S	247.17 W	-427.04	1.38
2549.00	14.21	204.31	2477.53	448.18 S	256.40 W	-446.74	0.58
2639.00	14.26	203.29	2564.77	468.43 S	265.33 W	-466.94	0.29
2729.00	14.63	199.74	2651.93	489.31 S	273.55 W	-487.77	1.07
2818.00	13.48	199.80	2738.26	509.65 S	280.86 W	-508.08	1.29
2908.00	11.81	196.21	2826.07	528.38 S	286.99 W	-526.76	2.05
2998.00	11.74	205.41	2914.19	545.49 S	293.49 W	-543.85	2.08
3088.00	14.29	205.89	3001.87	563.76 S	302.27 W	-562.07	2.84
3177.00	12.94	205.55	3088.36	582.64 S	311.37 W	-580.89	1.53
3267.00	14.17	205.02	3175.86	601.71 S	320.37 W	-599.91	1.37
3357.00	15.30	201.89	3262.90	622.70 S	329.46 W	-620.85	1.54
3447.00	13.28	202.09	3350.11	643.30 S	337.77 W	-641.40	2.25
3536.00	12.72	197.99	3436.83	662.09 S	344.64 W	-660.16	1.21
3626.00	13.20	197.69	3524.53	681.31 S	350.83 W	-679.34	0.53
3716.00	14.22	190.94	3611.98	701.95 S	356.05 W	-699.95	2.11
3806.00	14.23	192.51	3699.22	723.60 S	360.54 W	-721.58	0.43
3896.00	11.92	195.33	3786.88	743.37 S	365.39 W	-741.32	2.67
3985.00	9.32	197.73	3874.35	759.10 S	370.02 W	-757.02	2.96
4075.00	7.77	203.00	3963.35	771.64 S	374.62 W	-769.53	1.92
4164.00	6.03	209.12	4051.70	781.26 S	379.24 W	-779.13	2.13
4254.00	4.91	205.65	4141.29	788.87 S	383.21 W	-786.71	1.29
4344.00	4.09	209.52	4231.01	795.14 S	386.46 W	-792.97	0.97
4434.00	2.99	210.17	4320.84	799.96 S	389.22 W	-797.77	1.23

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
4523.00	3.07	220.20	4409.71	803.78 S	391.93 W	-801.58	0.60
4613.00	2.77	221.31	4499.60	807.25 S	394.91 W	-805.03	0.34
4703.00	2.96	230.84	4589.48	810.35 S	398.15 W	-808.11	0.57
4793.00	3.00	185.07	4679.38	814.16 S	400.16 W	-811.91	2.57
4883.00	2.97	187.93	4769.25	818.82 S	400.69 W	-816.57	0.17
4972.00	3.00	199.23	4858.13	823.30 S	401.77 W	-821.05	0.66
5062.00	2.90	194.31	4948.01	827.74 S	403.11 W	-825.47	0.30
5152.00	2.73	195.84	5037.91	832.01 S	404.26 W	-829.73	0.20
5242.00	3.16	190.90	5127.79	836.51 S	405.32 W	-834.23	0.56
5331.00	2.80	201.37	5216.67	840.94 S	406.57 W	-838.66	0.73
5421.00	2.48	205.05	5306.57	844.75 S	408.20 W	-842.46	0.41
5511.00	2.25	199.47	5396.49	848.18 S	409.61 W	-845.88	0.36
5601.00	1.98	201.00	5486.43	851.29 S	410.75 W	-848.99	0.30
5690.00	1.70	216.12	5575.39	853.80 S	412.08 W	-851.48	0.63
5780.00	1.24	226.19	5665.36	855.55 S	413.57 W	-853.23	0.59
5870.00	1.31	217.13	5755.34	857.04 S	414.90 W	-854.71	0.23
5938.00	0.94	240.49	5823.32	857.94 S	415.85 W	-855.60	0.85
6002.00	0.91	266.18	5887.31	858.23 S	416.82 W	-855.89	0.65
6092.00	0.78	260.73	5977.30	858.38 S	418.13 W	-856.03	0.17
6182.00	2.74	241.84	6067.26	859.49 S	420.63 W	-857.13	2.24
6272.00	2.38	255.43	6157.17	860.97 S	424.33 W	-858.59	0.78
6361.00	2.21	243.73	6246.10	862.20 S	427.65 W	-859.79	0.56
6451.00	2.64	238.11	6336.02	864.06 S	430.97 W	-861.64	0.55
6541.00	2.85	205.96	6425.92	867.16 S	433.71 W	-864.73	1.70
6631.00	1.94	215.87	6515.84	870.41 S	435.58 W	-867.96	1.10
6720.00	0.58	350.65	6604.83	871.19 S	436.54 W	-868.74	2.68
6810.00	1.37	305.56	6694.81	870.12 S	437.49 W	-867.66	1.16
6900.00	7.57	20.94	6784.53	863.95 S	436.24 W	-861.50	8.16
6990.00	19.02	11.06	6871.98	843.96 S	431.29 W	-841.54	12.92
7079.00	26.37	9.77	6954.04	810.20 S	425.15 W	-807.81	8.28
7169.00	26.42	2.60	7034.67	770.49 S	420.85 W	-768.12	3.54
7259.00	29.76	5.78	7114.07	728.25 S	417.69 W	-725.90	4.06
7348.00	30.17	356.77	7191.21	683.92 S	416.72 W	-681.58	5.07
7438.00	31.96	357.43	7268.30	637.54 S	419.07 W	-635.19	2.02
7528.00	35.40	359.19	7343.18	587.66 S	420.51 W	-585.30	3.97
7618.00	44.30	6.36	7412.24	530.21 S	417.39 W	-527.87	11.12
7707.00	57.22	5.15	7468.42	461.77 S	410.56 W	-459.47	14.56
7797.00	68.38	359.58	7509.52	381.96 S	407.46 W	-379.67	13.56
7887.00	73.41	356.98	7538.98	296.99 S	410.05 W	-294.69	6.22
7977.00	77.84	357.57	7561.32	209.93 S	414.18 W	-207.61	4.96
8066.00	84.04	358.24	7575.33	122.14 S	417.39 W	-119.81	7.01
8156.00	89.90	358.09	7580.09	32.35 S	420.27 W	-30.00	6.51
8246.00	88.51	356.80	7581.34	57.55 N	424.28 W	59.92	2.10
8336.00	87.67	356.15	7584.34	147.32 N	429.82 W	149.72	1.18
8426.00	87.79	357.95	7587.91	237.13 N	434.45 W	239.55	2.01
8516.00	89.39	358.86	7590.12	327.06 N	436.96 W	329.50	2.05
8605.00	90.57	359.37	7590.15	416.05 N	438.34 W	418.49	1.44
8695.00	91.07	359.01	7588.87	506.03 N	439.61 W	508.48	0.69
8785.00	90.65	358.57	7587.52	596.00 N	441.51 W	598.46	0.68
8875.00	90.82	358.12	7586.36	685.96 N	444.11 W	688.43	0.53
8964.00	90.48	0.23	7585.35	774.94 N	445.39 W	777.41	2.40
9054.00	90.44	0.48	7584.62	864.93 N	444.84 W	867.40	0.28
9144.00	90.06	359.99	7584.23	954.93 N	444.47 W	957.40	0.69
9238.00	90.23	359.70	7583.99	1048.93 N	444.72 W	1051.40	0.35
9333.00	89.27	359.31	7584.40	1143.92 N	445.54 W	1146.39	1.10
9427.00	89.35	359.85	7585.54	1237.91 N	446.23 W	1240.39	0.59
9521.00	89.27	359.53	7586.68	1331.91 N	446.74 W	1334.38	0.35
9616.00	91.28	0.85	7586.22	1426.90 N	446.43 W	1429.37	2.53
9710.00	91.24	1.04	7584.16	1520.86 N	444.88 W	1523.32	0.20
9804.00	90.90	0.72	7582.40	1614.83 N	443.44 W	1617.29	0.49

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
9898.00	92.17	358.59	7579.88	1708.79 N	444.00 W	1711.24	2.63
9993.00	91.66	358.31	7576.71	1803.70 N	446.56 W	1806.17	0.61
10087.00	90.11	357.65	7575.27	1897.63 N	449.87 W	1900.11	1.79
10181.00	89.06	358.56	7575.96	1991.57 N	452.99 W	1994.07	1.47
10276.00	89.01	358.12	7577.56	2086.52 N	455.74 W	2089.03	0.46
10370.00	89.01	357.72	7579.18	2180.44 N	459.16 W	2182.97	0.43
10464.00	89.81	359.95	7580.14	2274.41 N	461.07 W	2276.95	2.52
10558.00	89.85	358.69	7580.41	2368.40 N	462.19 W	2370.95	1.34
10648.00	89.14	0.08	7581.21	2458.39 N	463.15 W	2460.94	1.74
10738.00	89.73	0.60	7582.10	2548.39 N	462.62 W	2550.93	0.87
10828.00	90.82	1.81	7581.67	2638.36 N	460.73 W	2640.89	1.81
10918.00	90.90	1.11	7580.32	2728.32 N	458.44 W	2730.84	0.79
11007.00	91.07	0.60	7578.78	2817.30 N	457.12 W	2819.81	0.61
11097.00	91.54	0.95	7576.73	2907.27 N	455.90 W	2909.77	0.65
11187.00	90.19	1.64	7575.38	2997.23 N	453.86 W	2999.72	1.68
11277.00	87.79	1.23	7576.96	3087.18 N	451.60 W	3089.66	2.70
11366.00	89.06	1.63	7579.41	3176.12 N	449.38 W	3178.58	1.49
11456.00	88.68	1.56	7581.19	3266.07 N	446.88 W	3268.51	0.43
11546.00	88.97	2.05	7583.04	3356.00 N	444.04 W	3358.43	0.64
11636.00	88.85	1.44	7584.75	3445.94 N	441.30 W	3448.35	0.69
11725.00	88.97	1.14	7586.45	3534.90 N	439.30 W	3537.30	0.37
11815.00	89.01	0.17	7588.03	3624.88 N	438.27 W	3627.28	1.07
11905.00	89.43	359.95	7589.25	3714.88 N	438.18 W	3717.26	0.53
11995.00	89.69	359.47	7589.94	3804.87 N	438.63 W	3807.26	0.61
12084.00	89.73	359.58	7590.40	3893.87 N	439.37 W	3896.26	0.13
12174.00	89.85	359.32	7590.73	3983.86 N	440.24 W	3986.26	0.32
12264.00	89.98	359.25	7590.86	4073.85 N	441.37 W	4076.26	0.16
12354.00	89.10	0.12	7591.59	4163.85 N	441.87 W	4166.25	1.38
12443.00	89.48	0.23	7592.69	4252.84 N	441.60 W	4255.24	0.44
12623.00	89.56	358.30	7594.21	4432.81 N	443.90 W	4435.22	1.07
12713.00	90.19	358.34	7594.41	4522.77 N	446.54 W	4525.20	0.70
12803.00	88.17	357.64	7595.69	4612.70 N	449.70 W	4615.14	2.37
12893.00	88.47	358.26	7598.33	4702.61 N	452.92 W	4705.06	0.77
12982.00	90.65	359.59	7599.01	4791.58 N	454.58 W	4794.04	2.87
13072.00	91.41	359.65	7597.40	4881.56 N	455.18 W	4884.03	0.84
13252.00	90.06	358.71	7595.09	5061.52 N	457.76 W	5064.00	0.91
13342.00	90.94	358.69	7594.30	5151.50 N	459.80 W	5153.98	0.98
13431.00	91.28	358.90	7592.57	5240.46 N	461.67 W	5242.96	0.45
13521.00	91.66	359.87	7590.26	5330.42 N	462.64 W	5332.92	1.15
13611.00	89.94	359.85	7589.01	5420.41 N	462.86 W	5422.91	1.91
13701.00	87.21	357.66	7591.25	5510.35 N	464.81 W	5512.86	3.89
13790.00	87.80	357.34	7595.13	5599.18 N	468.69 W	5601.71	0.75
13880.00	88.51	357.21	7598.03	5689.03 N	472.96 W	5691.58	0.81
13970.00	89.81	357.83	7599.35	5778.93 N	476.86 W	5781.51	1.60
14060.00	90.27	358.00	7599.29	5868.87 N	480.14 W	5871.46	0.55
14149.00	90.90	358.07	7598.37	5957.81 N	483.20 W	5960.42	0.71
14239.00	90.27	357.26	7597.45	6047.73 N	486.86 W	6050.36	1.14
14329.00	88.84	357.81	7598.14	6137.65 N	490.73 W	6140.29	1.70
14419.00	88.55	359.56	7600.19	6227.60 N	492.80 W	6230.25	1.97
14509.00	90.11	359.76	7601.25	6317.58 N	493.33 W	6320.24	1.74
14598.00	89.81	0.21	7601.31	6406.58 N	493.35 W	6409.24	0.61
14688.00	91.41	359.96	7600.35	6496.58 N	493.22 W	6499.23	1.79
14778.00	89.98	357.55	7599.27	6586.54 N	495.18 W	6589.20	3.11
14868.00	88.59	356.02	7600.39	6676.39 N	500.23 W	6679.08	2.29
14957.00	90.73	355.67	7600.91	6765.14 N	506.68 W	6767.87	2.44
15047.00	89.64	357.97	7600.61	6855.00 N	511.68 W	6857.75	2.83
15137.00	88.97	2.36	7601.70	6944.97 N	511.42 W	6947.72	4.94
15227.00	89.43	4.89	7602.95	7034.77 N	505.73 W	7037.49	2.86
15316.00	89.73	4.79	7603.60	7123.45 N	498.22 W	7126.12	0.35
15406.00	89.81	3.88	7603.97	7213.19 N	491.42 W	7215.83	1.01

Wagner 2C-10HZ

<i>Measured Depth (feet)</i>	<i>Inclination (degrees)</i>	<i>Direction (degrees)</i>	<i>Vertical Depth (feet)</i>	<i>Latitude (feet)</i>	<i>Departure (feet)</i>	<i>Vertical Section (feet)</i>	<i>Dogleg (deg/100ft)</i>
15496.00	90.10	3.17	7604.03	7303.02 N	485.88 W	7305.62	0.86
15586.00	90.15	2.75	7603.84	7392.90 N	481.22 W	7395.47	0.47
15676.00	90.27	2.40	7603.51	7482.81 N	477.17 W	7485.36	0.42
15765.00	90.15	2.12	7603.18	7571.74 N	473.66 W	7574.27	0.35
15855.00	89.90	2.40	7603.15	7661.67 N	470.12 W	7664.18	0.42
15898.00	89.89	2.35	7603.23	7704.63 N	468.34 W	7707.13	0.11
15970.00	89.89	2.35	7603.36	7776.57 N	465.38 W	7779.05	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 359.68 DEGREES (TRUE)
A TOTAL CORRECTION OF 8.38 DEG FROM MAGNETIC NORTH TO TRUE NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 15970.00 FEET
IS 7790.48 FEET ALONG 356.58 DEGREES (TRUE)**