



1 : 600 / 1 : 240

WELL INFORMATION					
MWD Run Number	100				
Date run completed	04-Apr-16				
Rig Bit Number	100				
Bit Size (in)	8.500				
Tool Nominal OD (in)	6.750				
Log Start Depth (MD, ft)	1,933.00				
Log End Depth (MD, ft)	11,825.00				
Drill or Wipe	Drill				
Drill/Wipe Start Date and Time	02-Apr-16 12:09				
Drill/Wipe End Date and Time	04-Apr-16 14:20				
Min Inc (deg) @ Depth (MD, ft)	0.47 @ 1,966.00				
Max Inc (deg) @ Depth (MD, ft)	91.32 @ 9,681.00				
Bit TFA(in2) / Bit Type	1.53 / PDC				
Flow Rate (gpm)	591.14				
Max AV (fpm) / CV (fpm) @ MWD	507.0 / 0.0				
Fluid Type	Diesel Mud Base				
Density (ppg) / Viscosity (spqt)	9.50 / 44.00				
Filtrate CL (ppm)	35,000.00				
pH / Fluid Loss (mptm)	NA / NA				
PV (cP) / YP (lhf2)	13 / 10.00				
% Solids / % Sand	10.70 / 0				
% Oil / Oil:Water Ratio	66.00 / 66:24				
Rm @ Measured Temp (degF)	N/A @ N/A				
Rmf @ Measured Temp (degF)	N/A @ N/A				
Rmc @ Measured Temp (degF)	N/A @ N/A				
Max Tool Temp (degF) / S	222.00 / PGM				

Max Tool Temp (degF) / Source	226.08 / PCM				
Rm @ Max Tool Temp (degF)	N/A @ 226.08				
Lead MWD Engineer	Mason Smith				
Customer Representative	Drew Geerdes				

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM				
Software Version	5.93				
Sub Serial Number	11382329				
Insert Serial Number	12230081				
Date and Time Initialized	02-Apr-16 06:05				
Date and Time Read	04-Apr-16 22:43				
ECMB SW Version	N/A				

Directional Sensor Information

Tool Type	PCDC				
Distance From Bit (ft)	63.00				
Software Version	6.33				
Sub Serial Number	11382329				
Sonde Serial Number	10859920				
Sensor ID Number	N/A				
Toolface Offset (deg)	16.40				

Gamma Ray Sensor Information

Tool Type	PCG				
Distance From Bit (ft)	56.53				
Recorded Sample Period (sec)	10				
Software Version	8.15				
Sub Serial Number	11382329				
Insert/Sonde Serial Number	11681051				

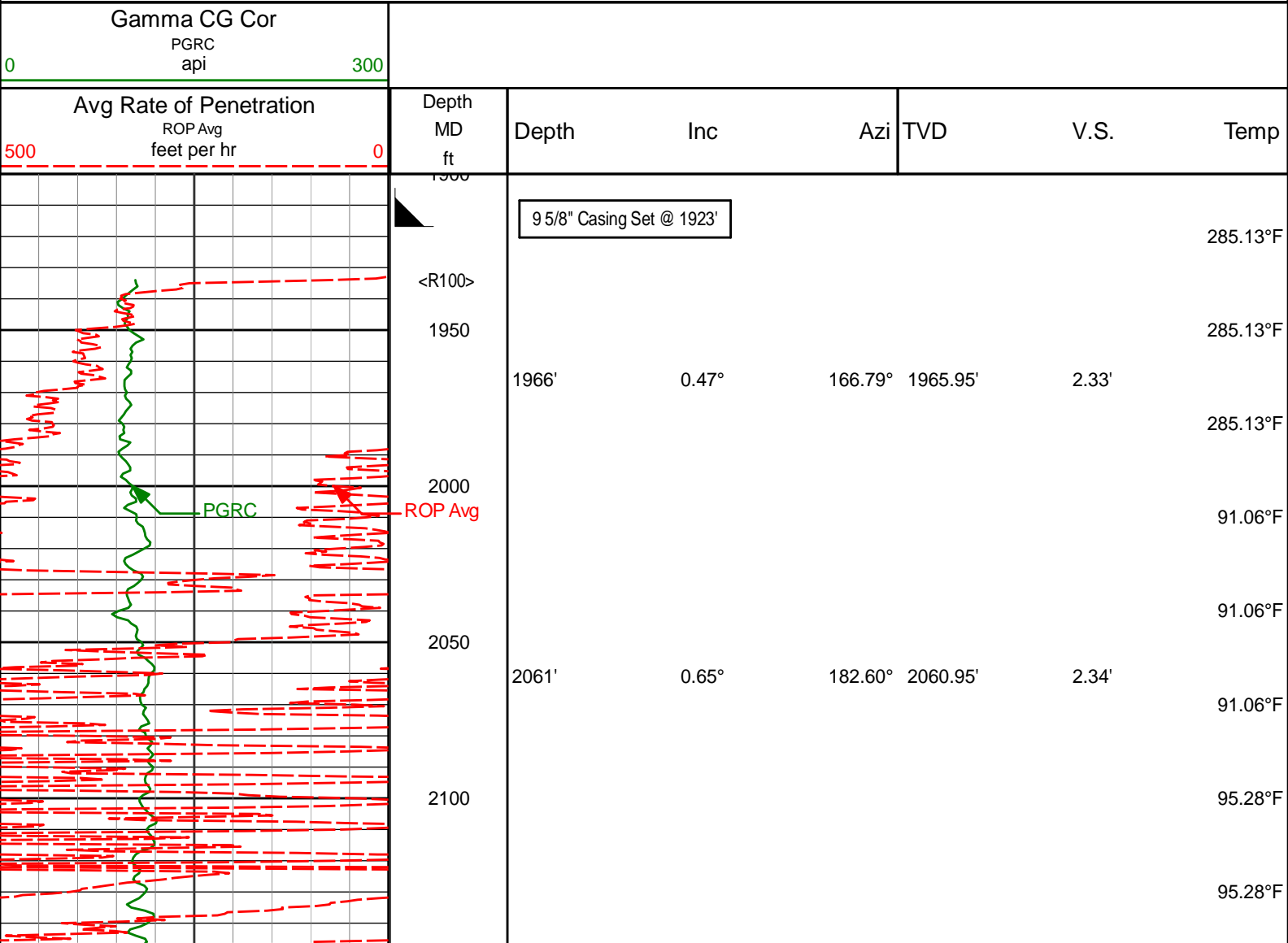
REMARKS

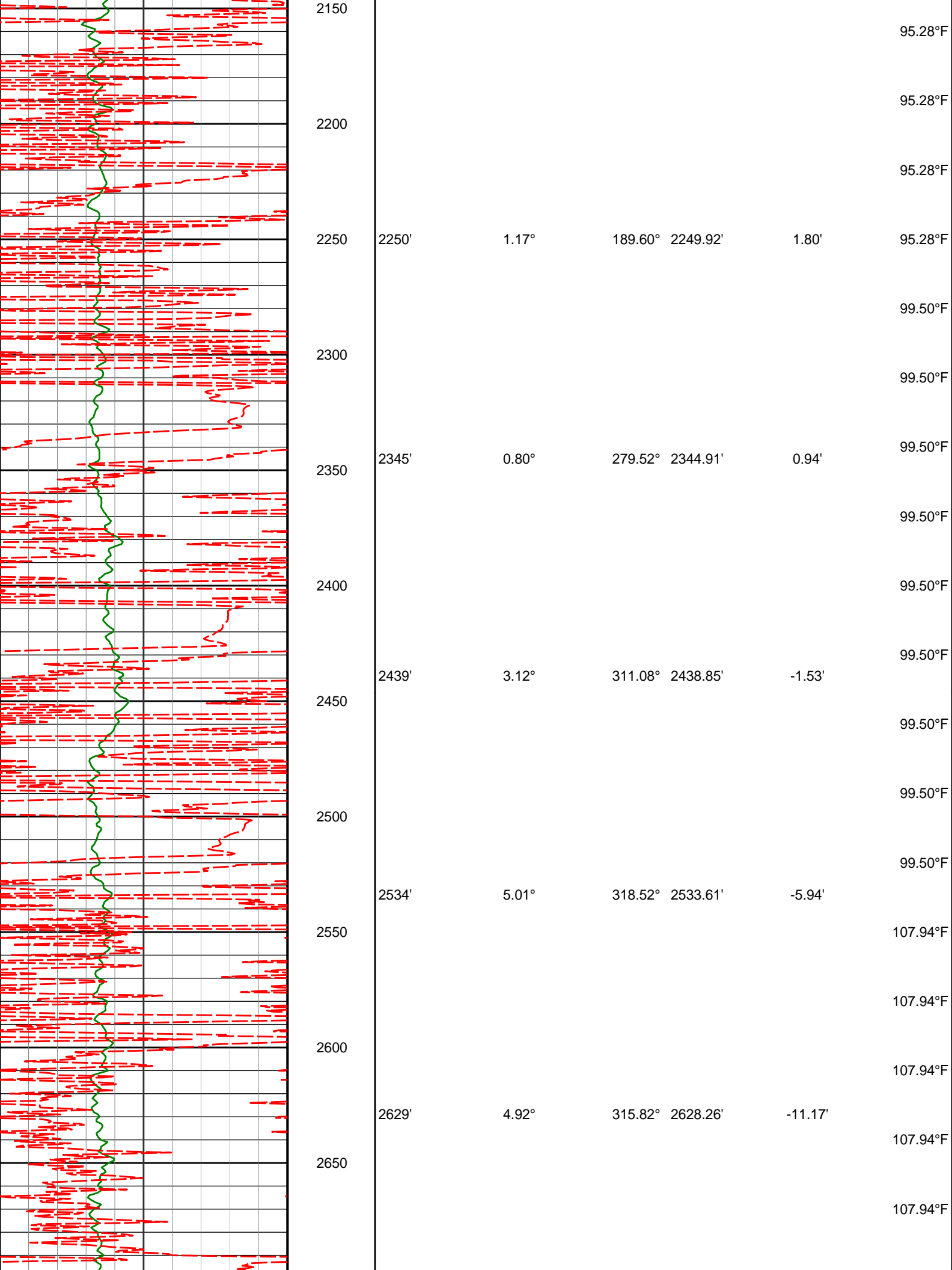
1. All depths are calibrated to driller's pipe tally and are measured depths from the drill floor.
2. No depth corrections have been made for pipe stretch or compression.
3. All data presented is recorded (memory data) unless otherwise stated.
4. The following smoothing parameters have been applied to the data:
 - 1: 600 (2"):
 - Interval: 1.0 ft
 - Coercion Distance: 3.0 ft (ROPA)
 - Interval: 1.0 ft
 - Coercion Distance: 3.0 ft (Gamma Ray)
 - 1: 240 (5")
 - Interval: 0.5 ft
 - Coercion Distance: 1.2 ft (ROPA)
 - Interval: 0.5 ft
 - Coercion Distance: 0.6 ft (Gamma Ray)
5. Final survey is a projection to the bit.

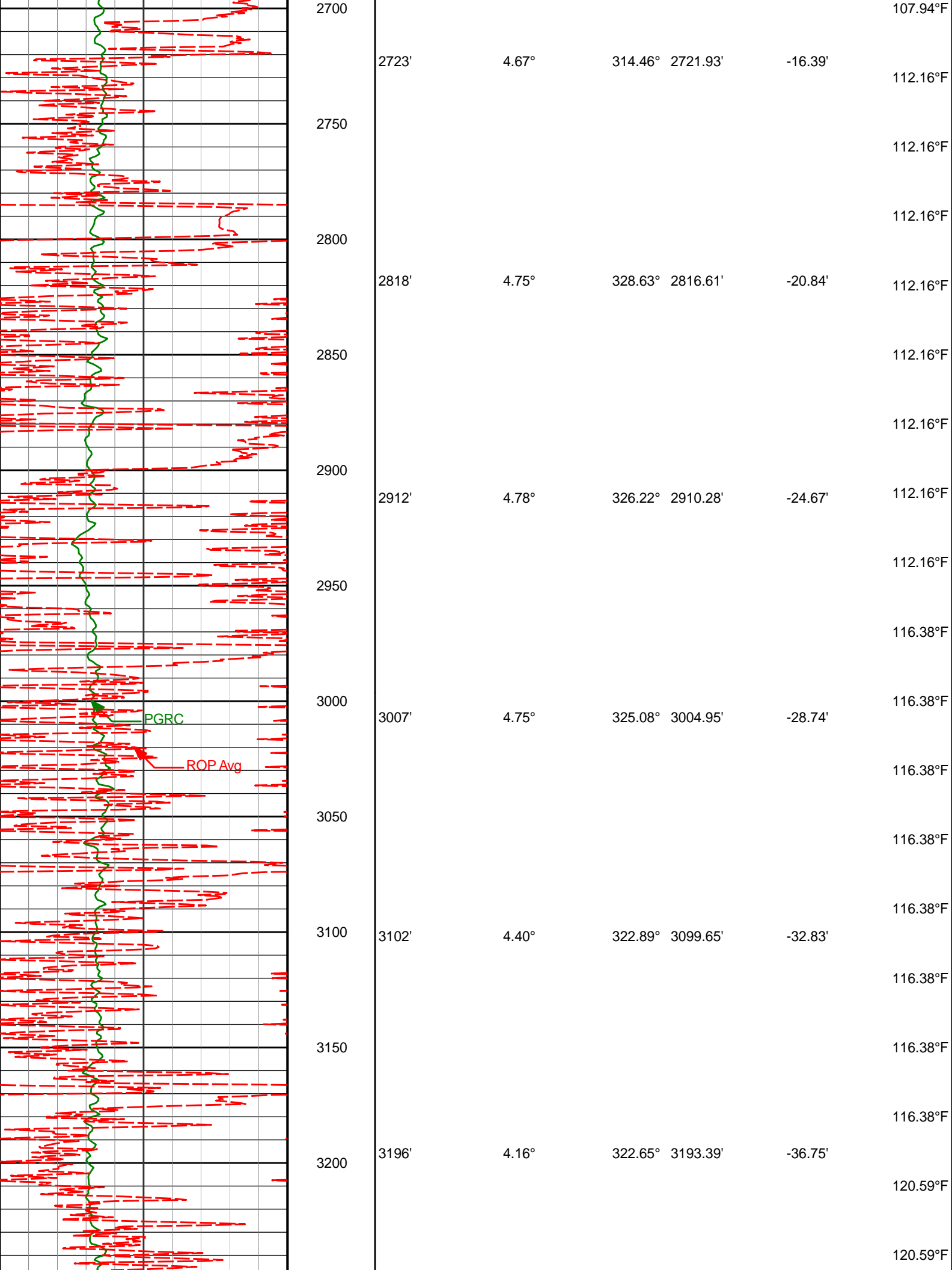
WARRANTY

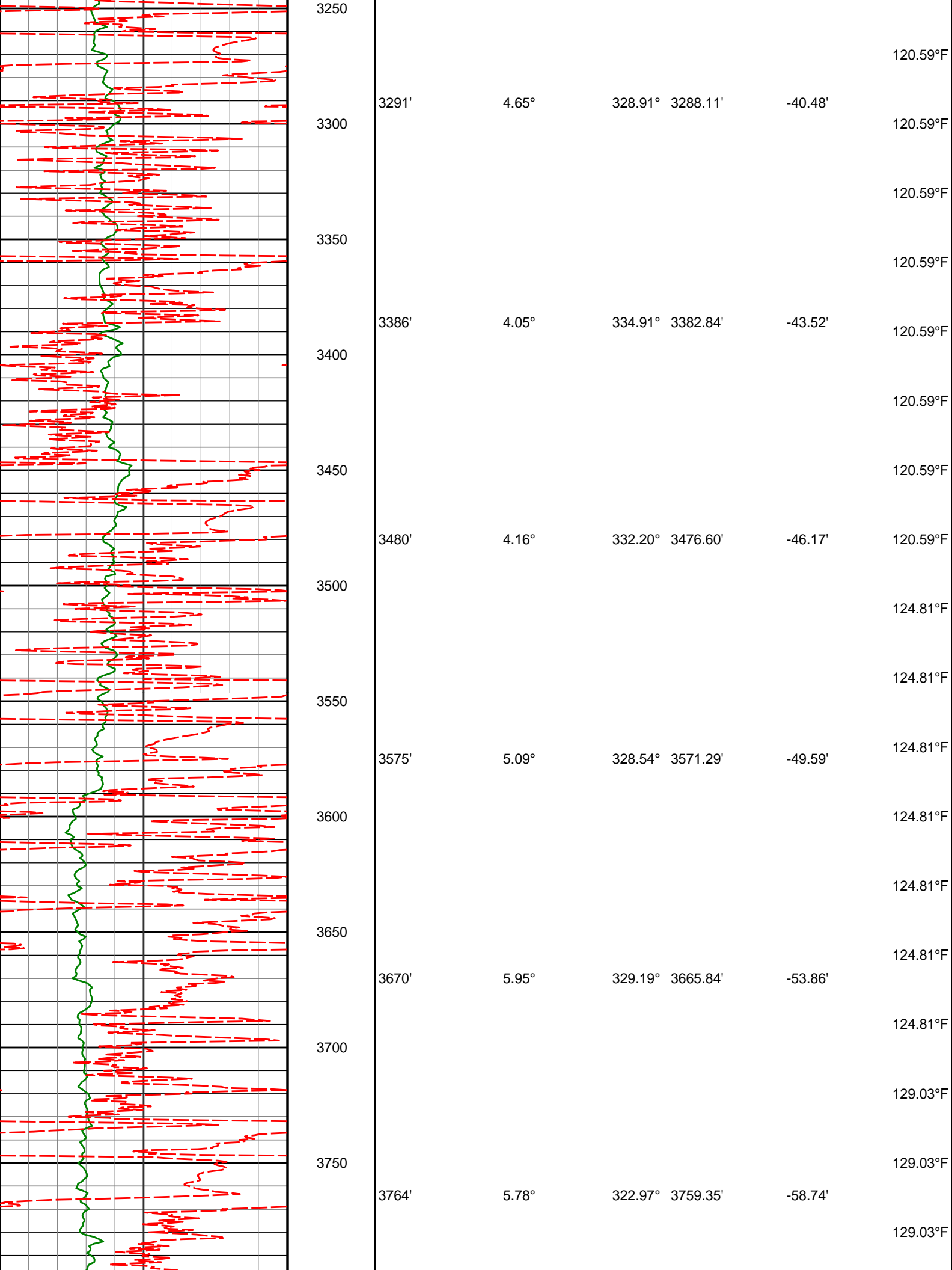
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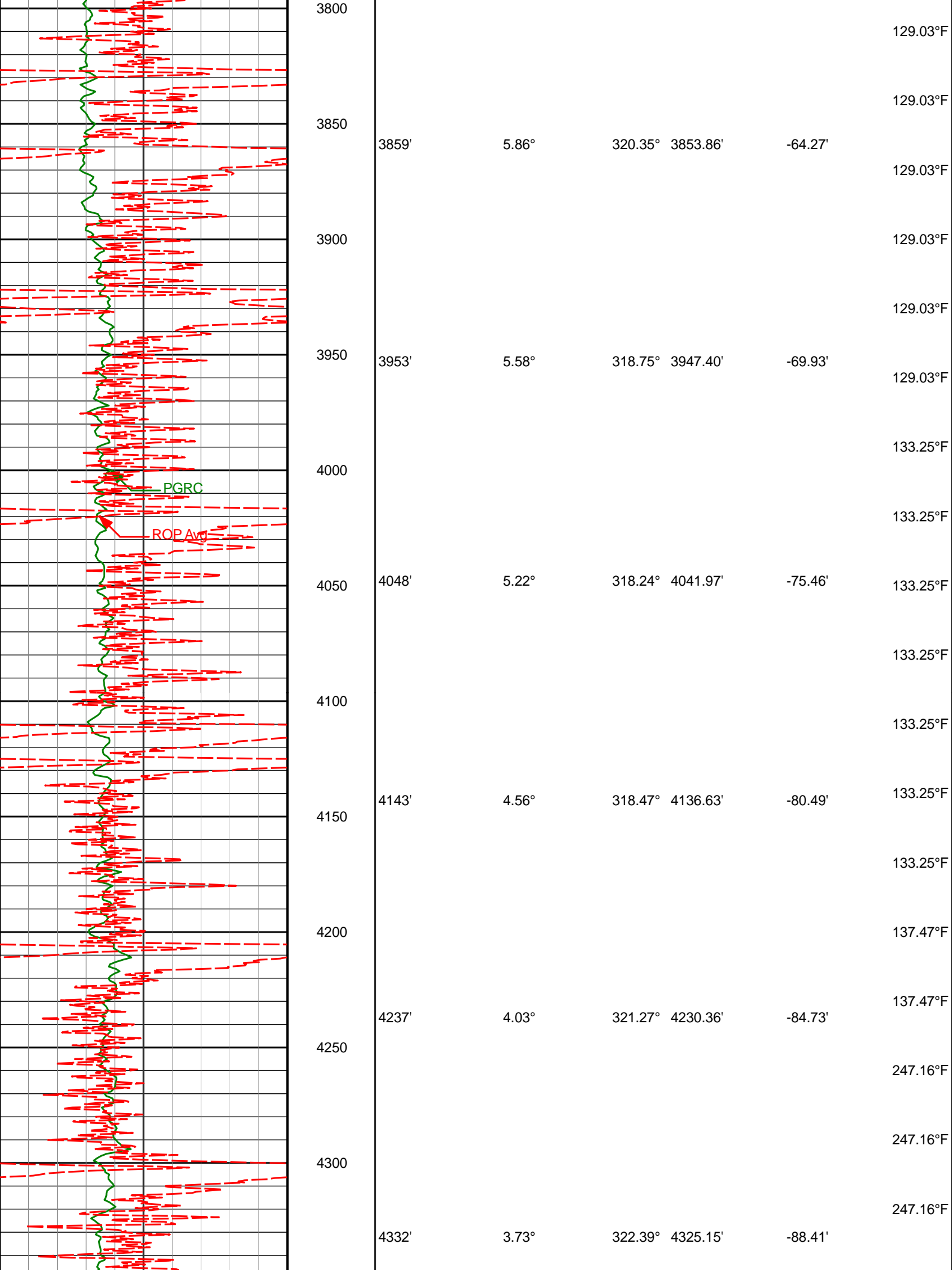
MD Detail 1:600 Scale

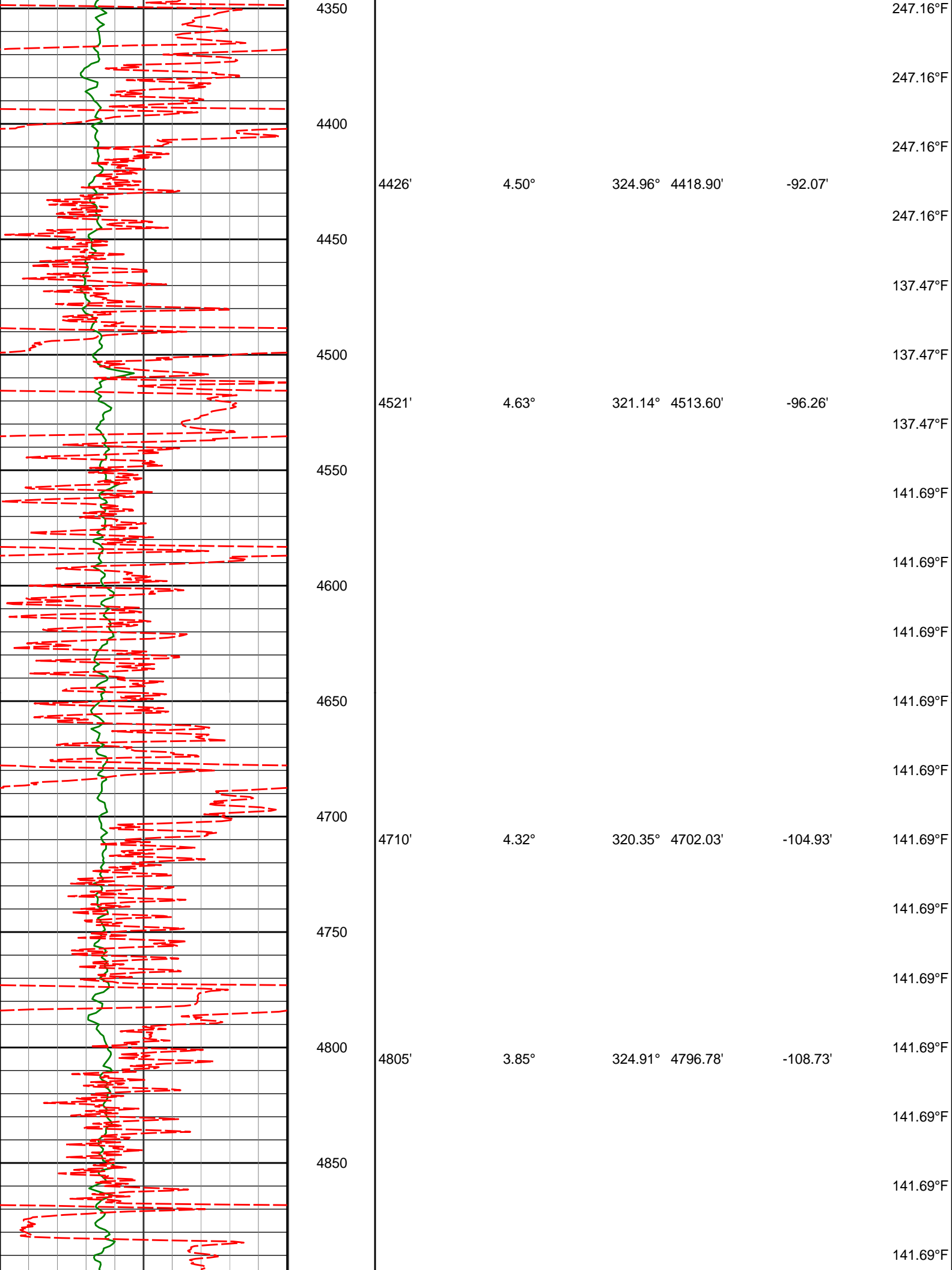


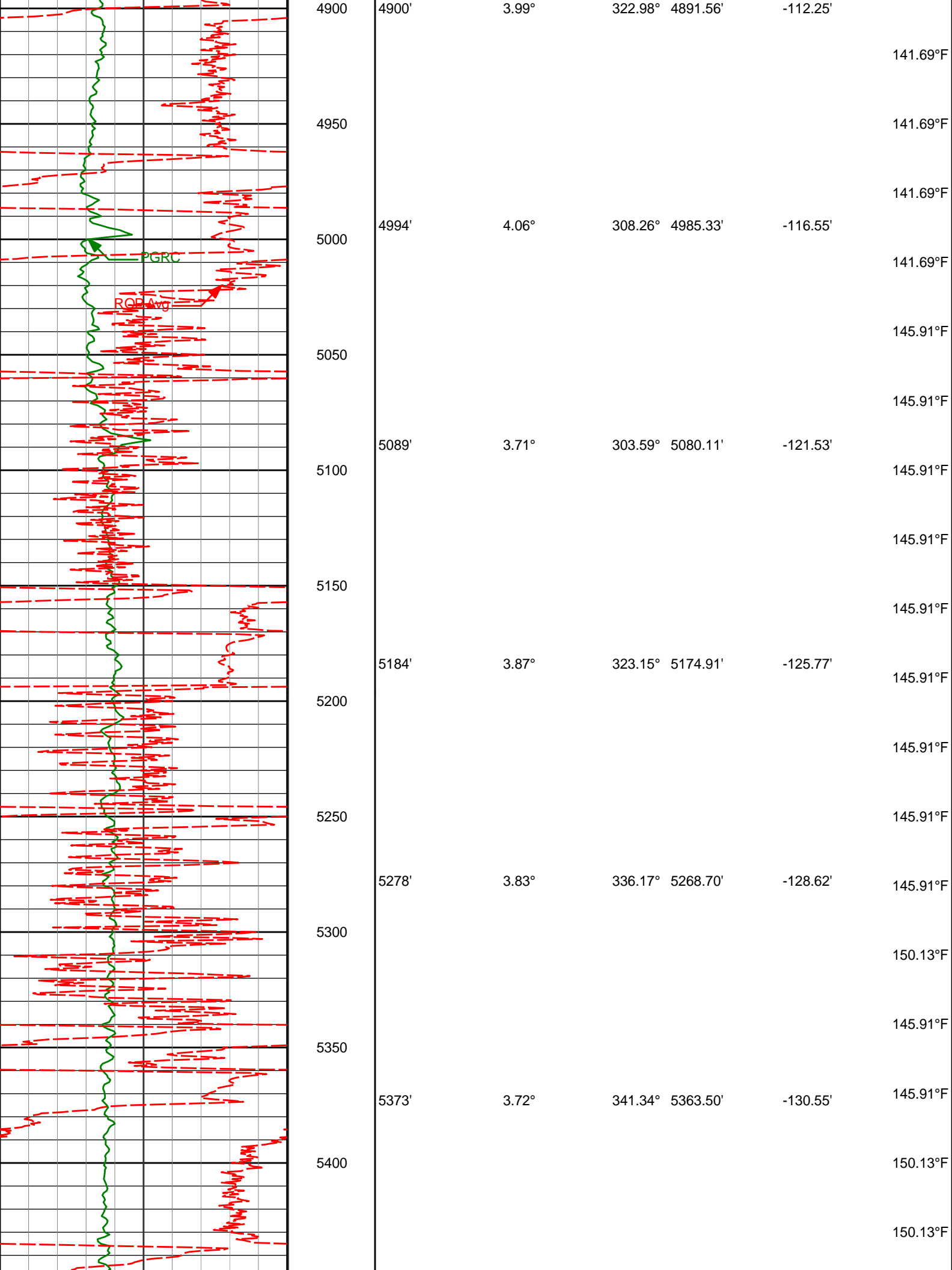


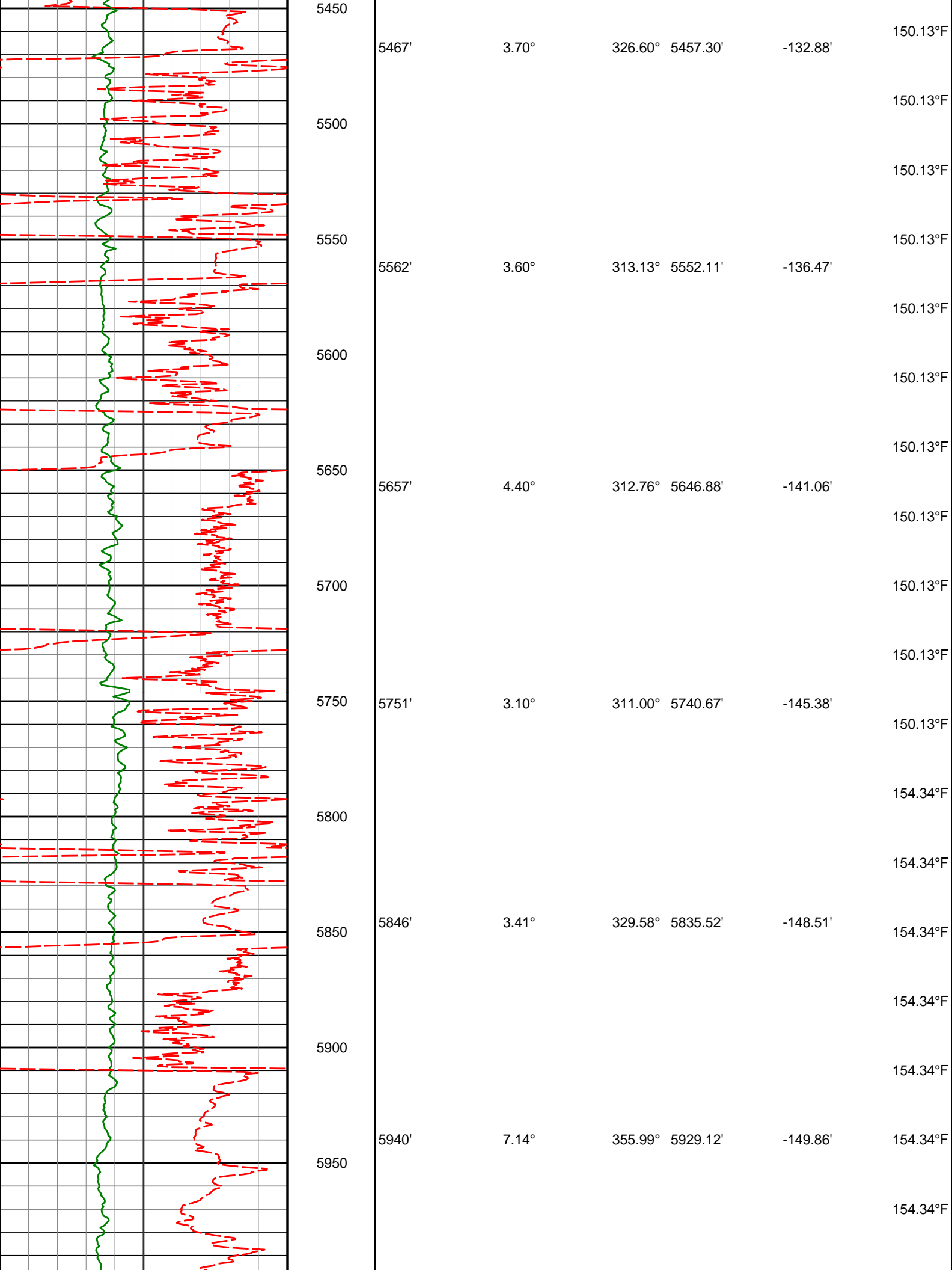


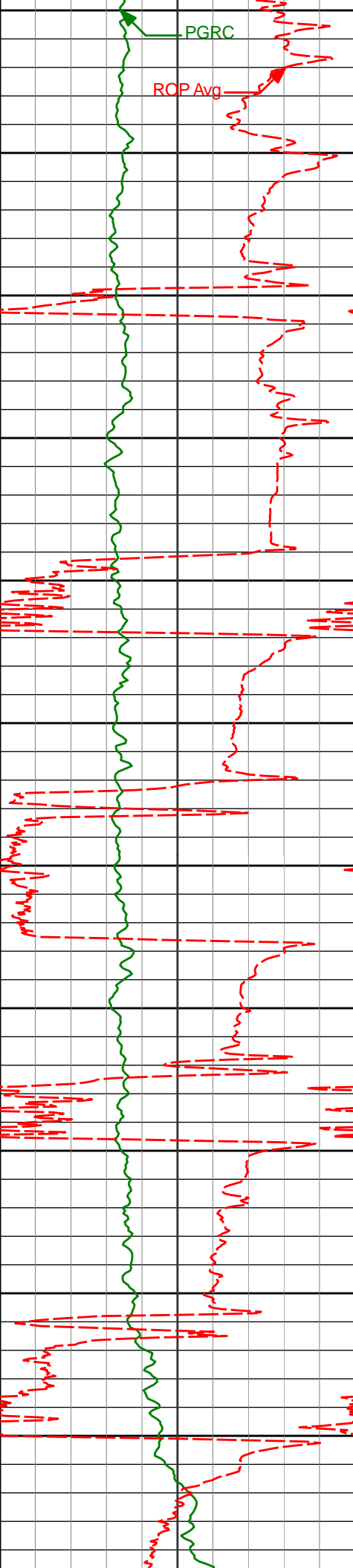




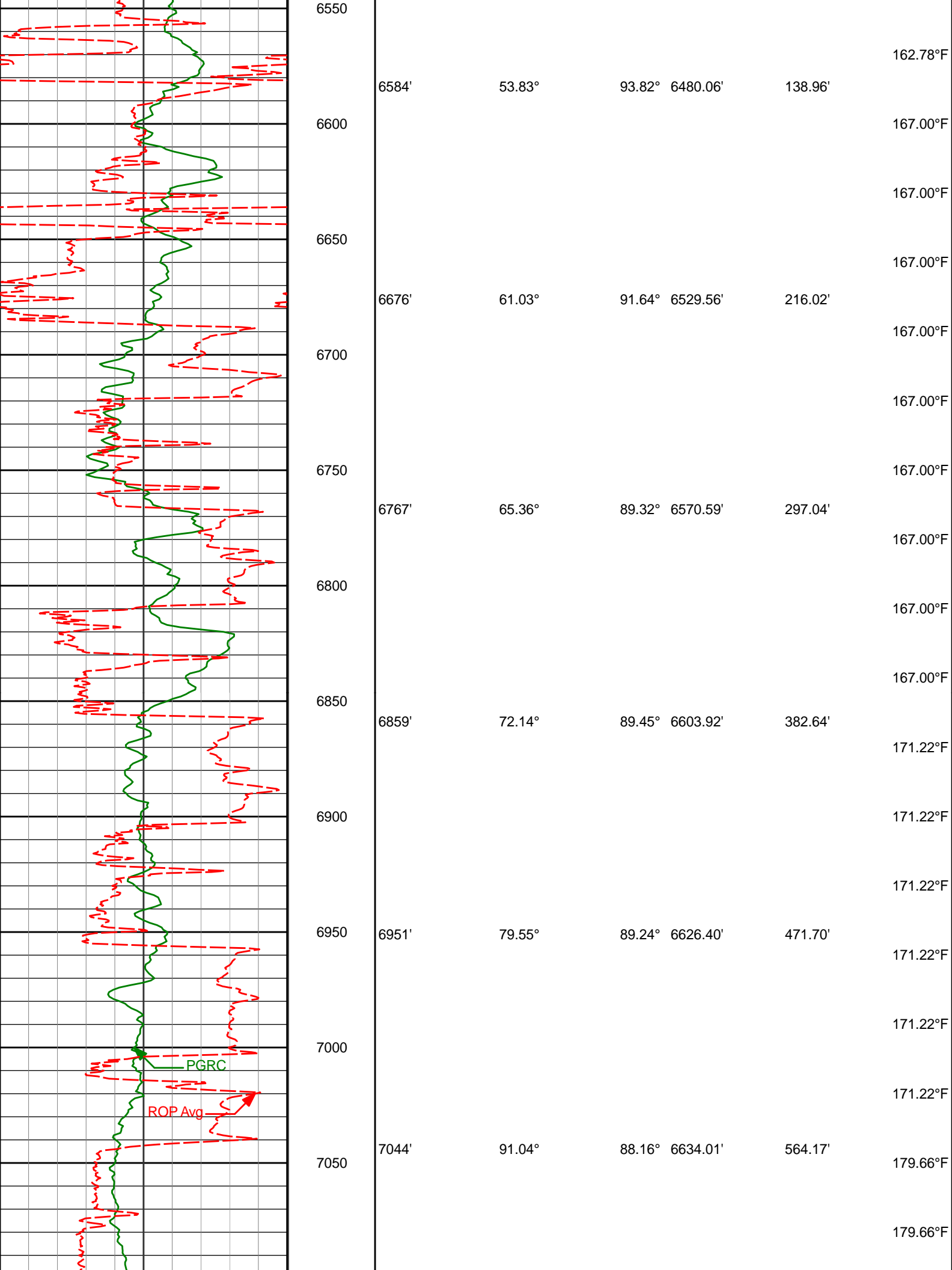


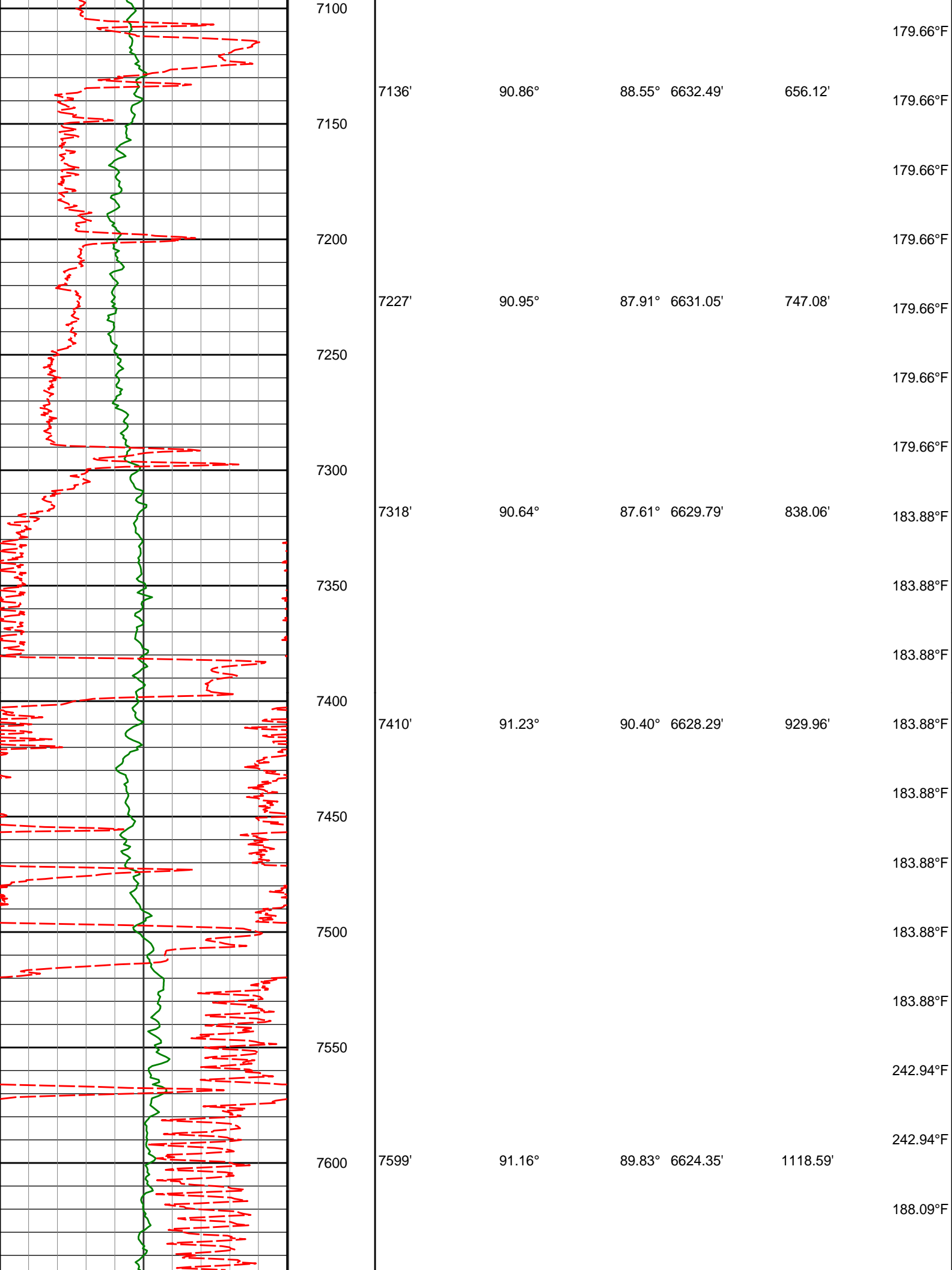


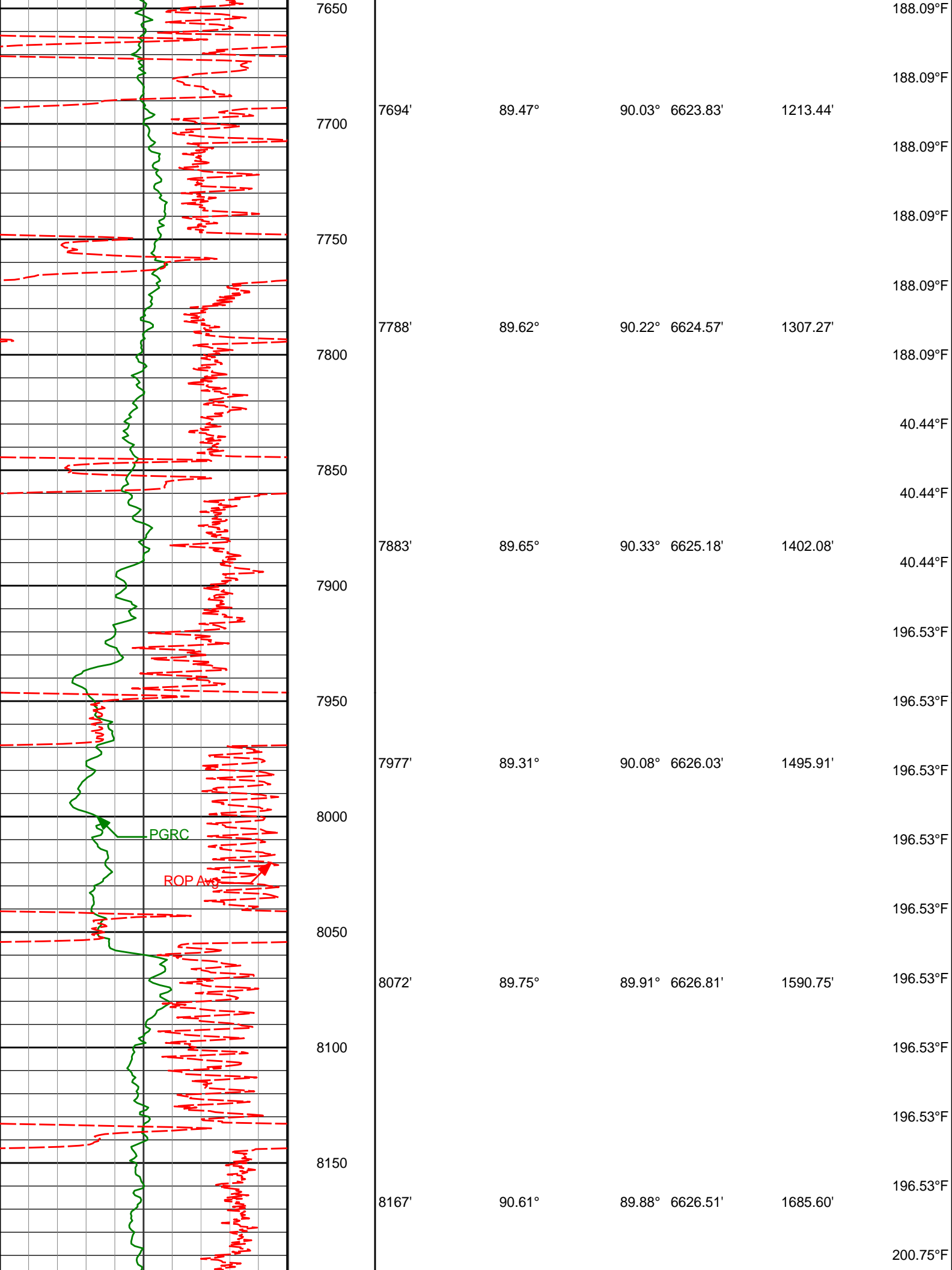


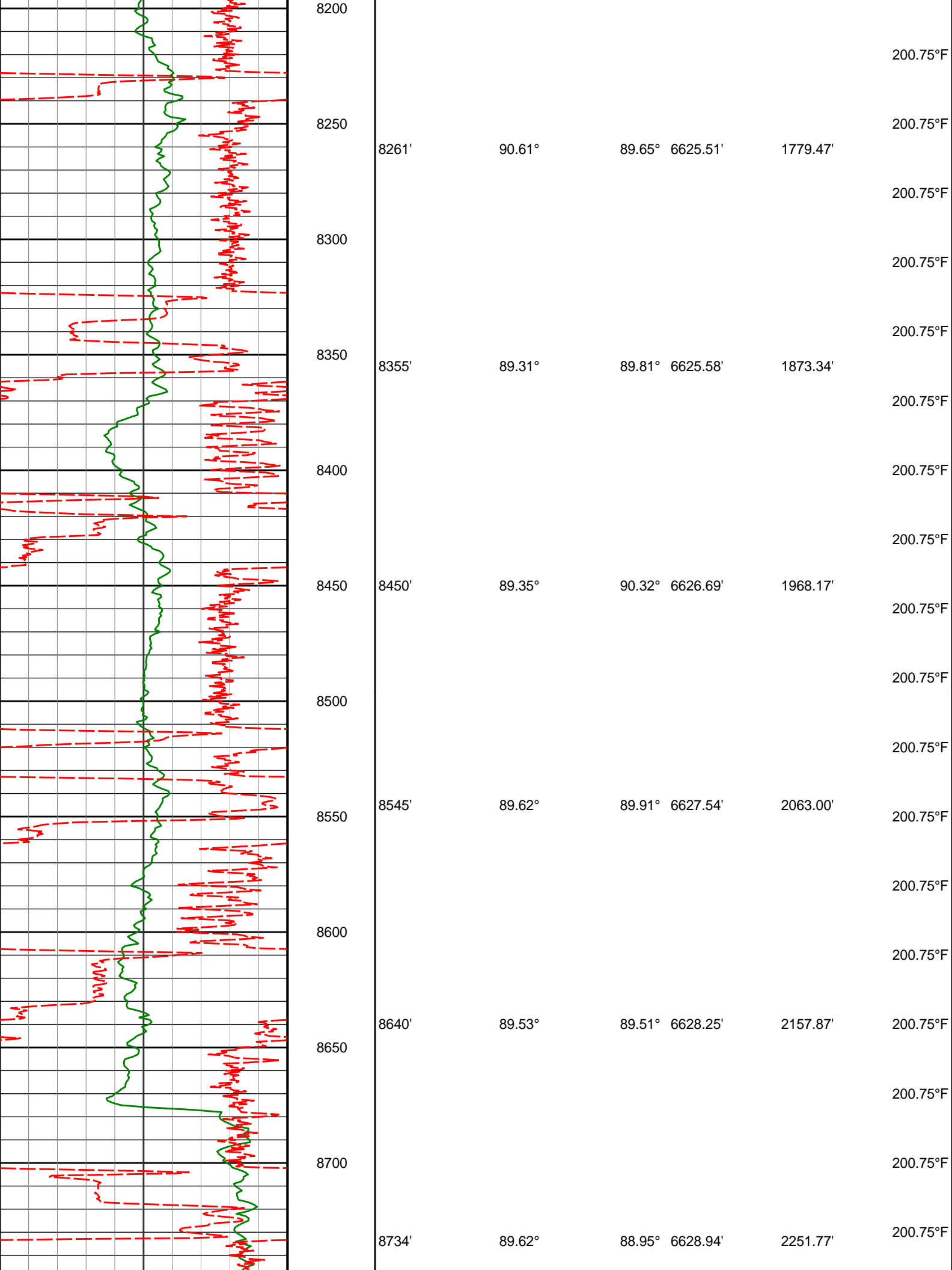


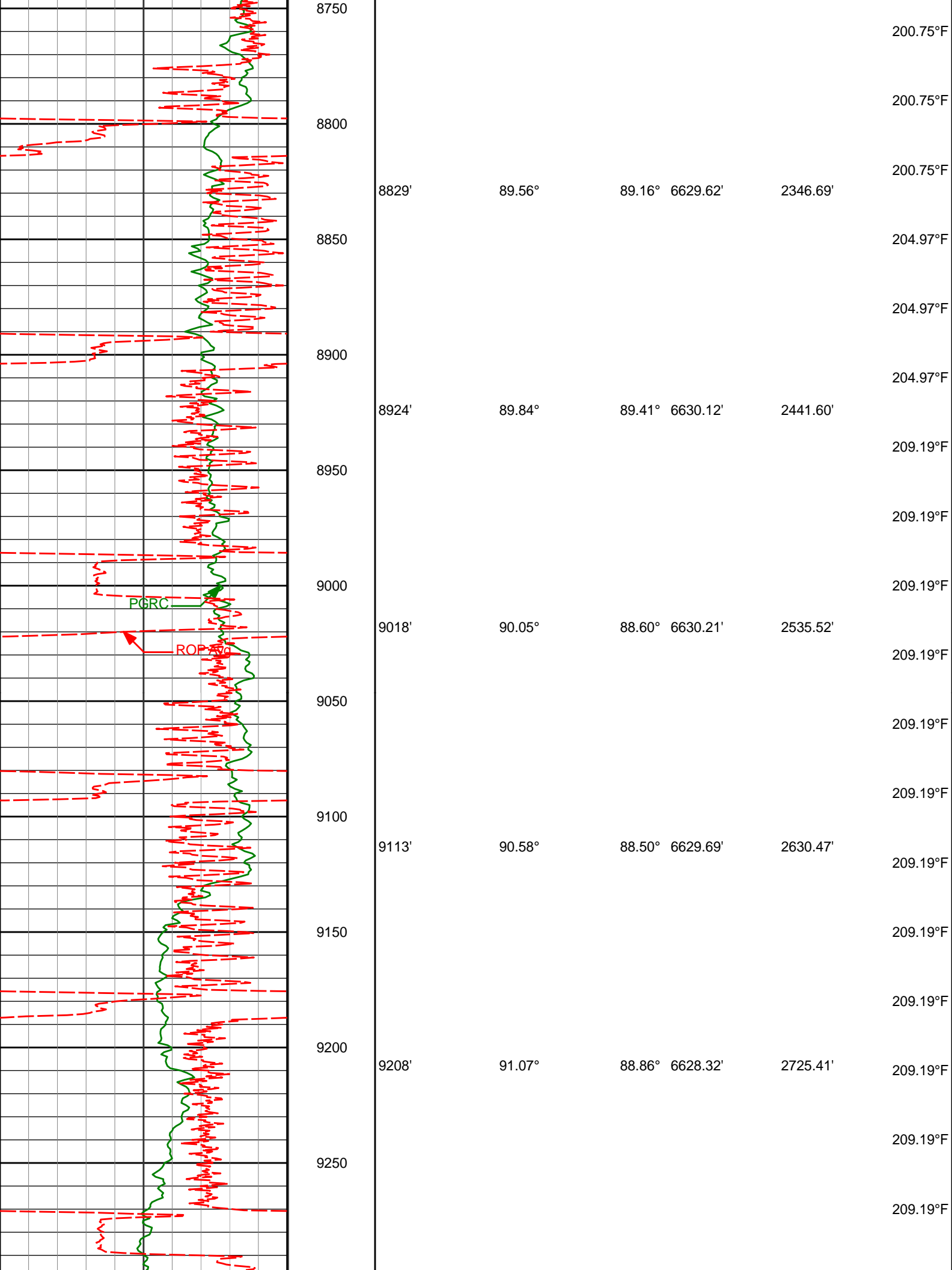
					154.34°F
6033'	10.79°	51.36°	6021.12'	-142.82'	154.34°F
6050					154.34°F
					154.34°F
6100					154.34°F
6124'	17.73°	85.64°	6109.41'	-121.96'	154.34°F
6150					158.56°F
					158.56°F
6200					158.56°F
6217'	26.37°	87.57°	6195.53'	-87.08'	158.56°F
6250					162.78°F
					162.78°F
6300					162.78°F
6309'	31.76°	87.88°	6275.91'	-42.41'	162.78°F
					162.78°F
6350					162.78°F
					162.78°F
6400	37.35°	87.93°	6350.83'	9.17'	162.78°F
					162.78°F
6450					264.03°F
					264.03°F
6492'	44.81°	88.92°	6420.13'	69.55'	162.78°F
6500					162.78°F

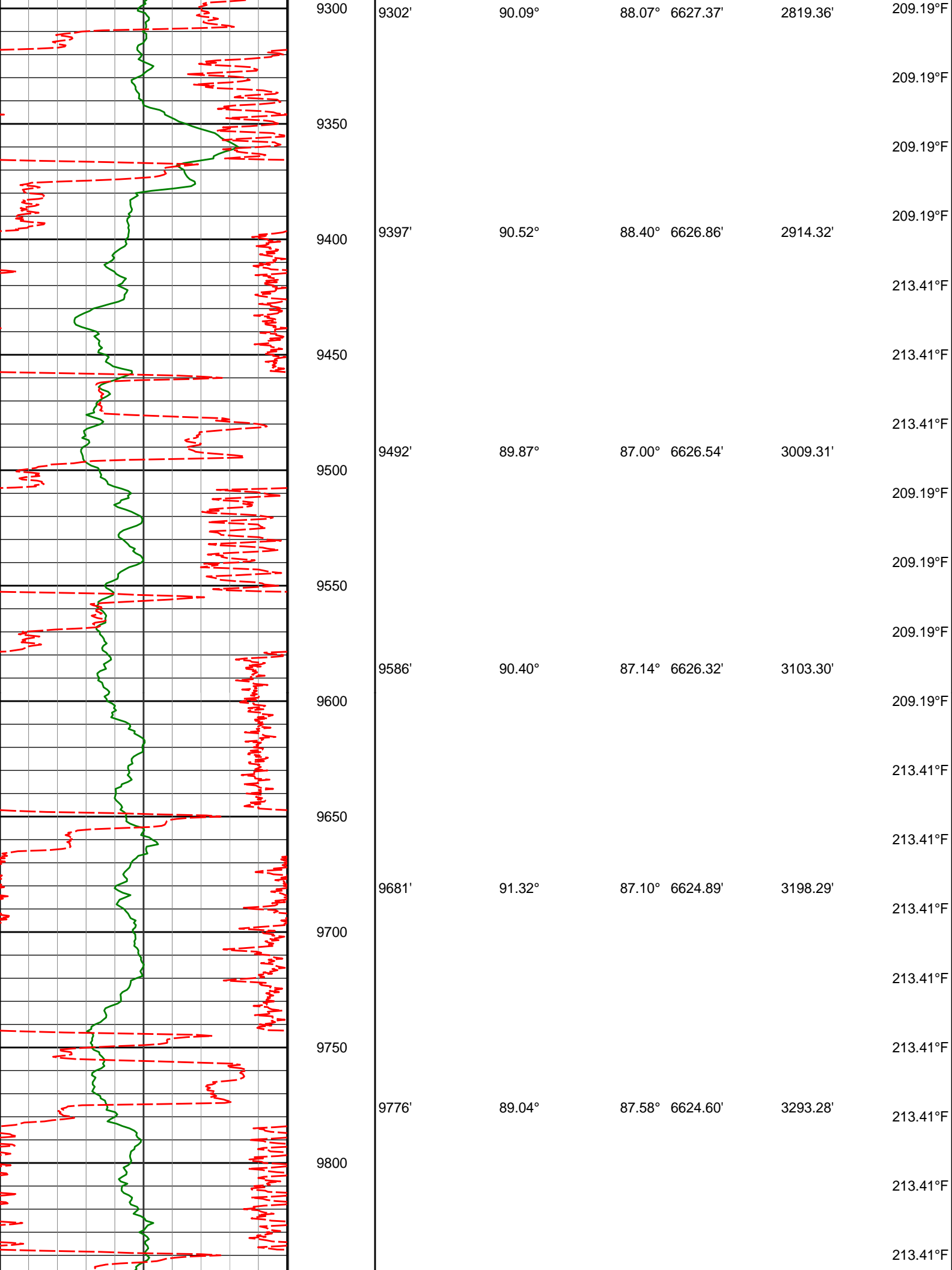


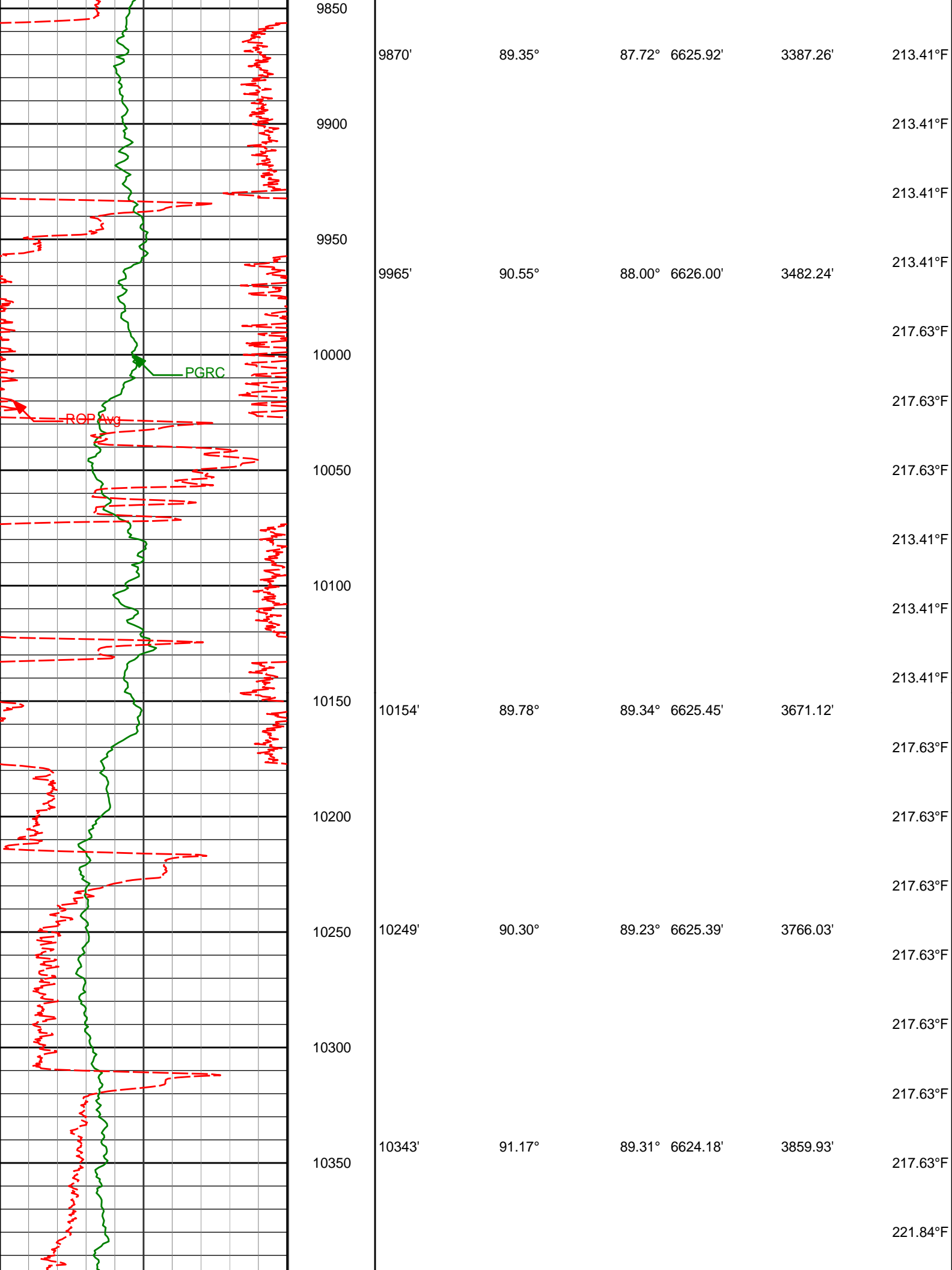


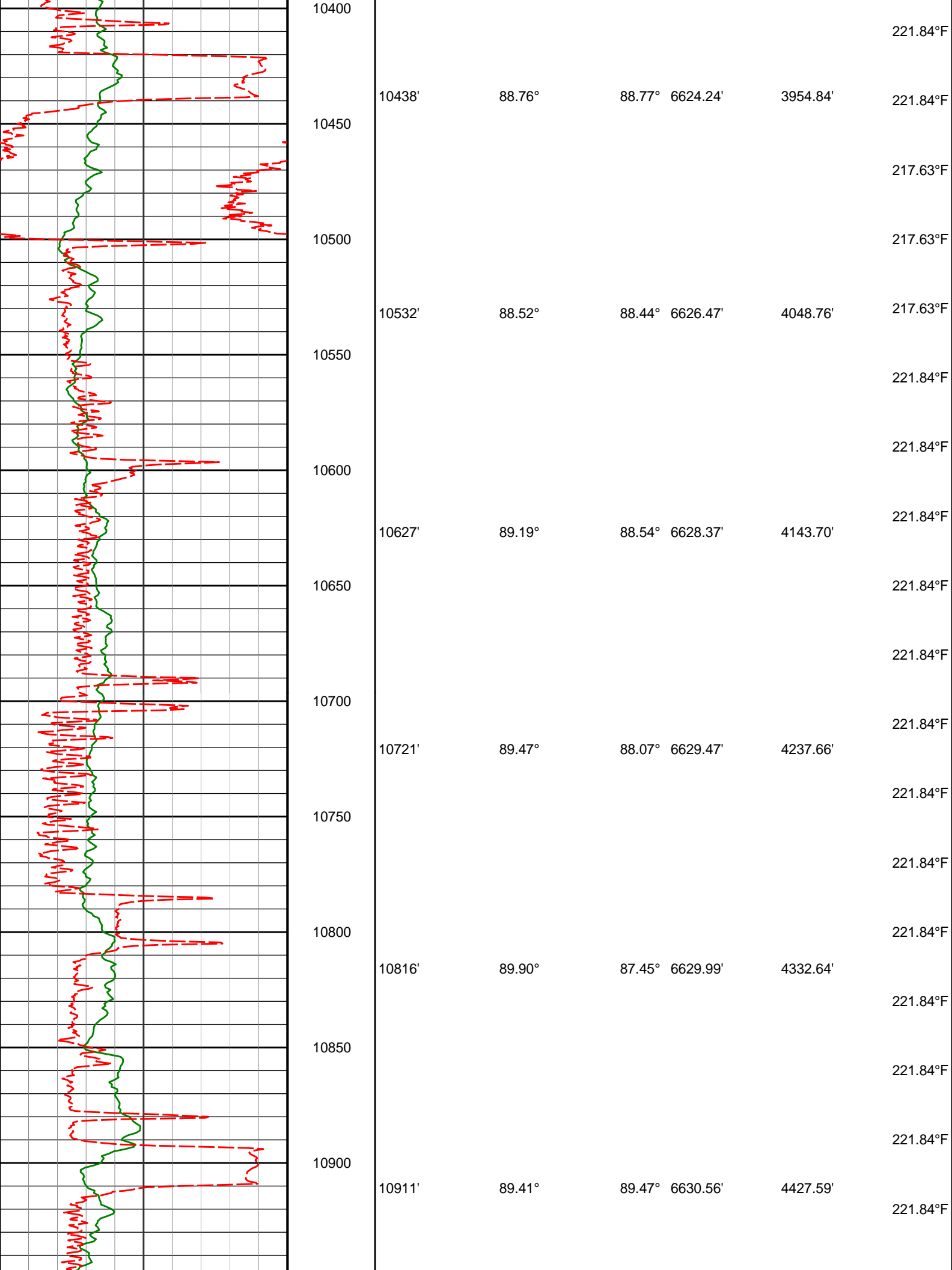


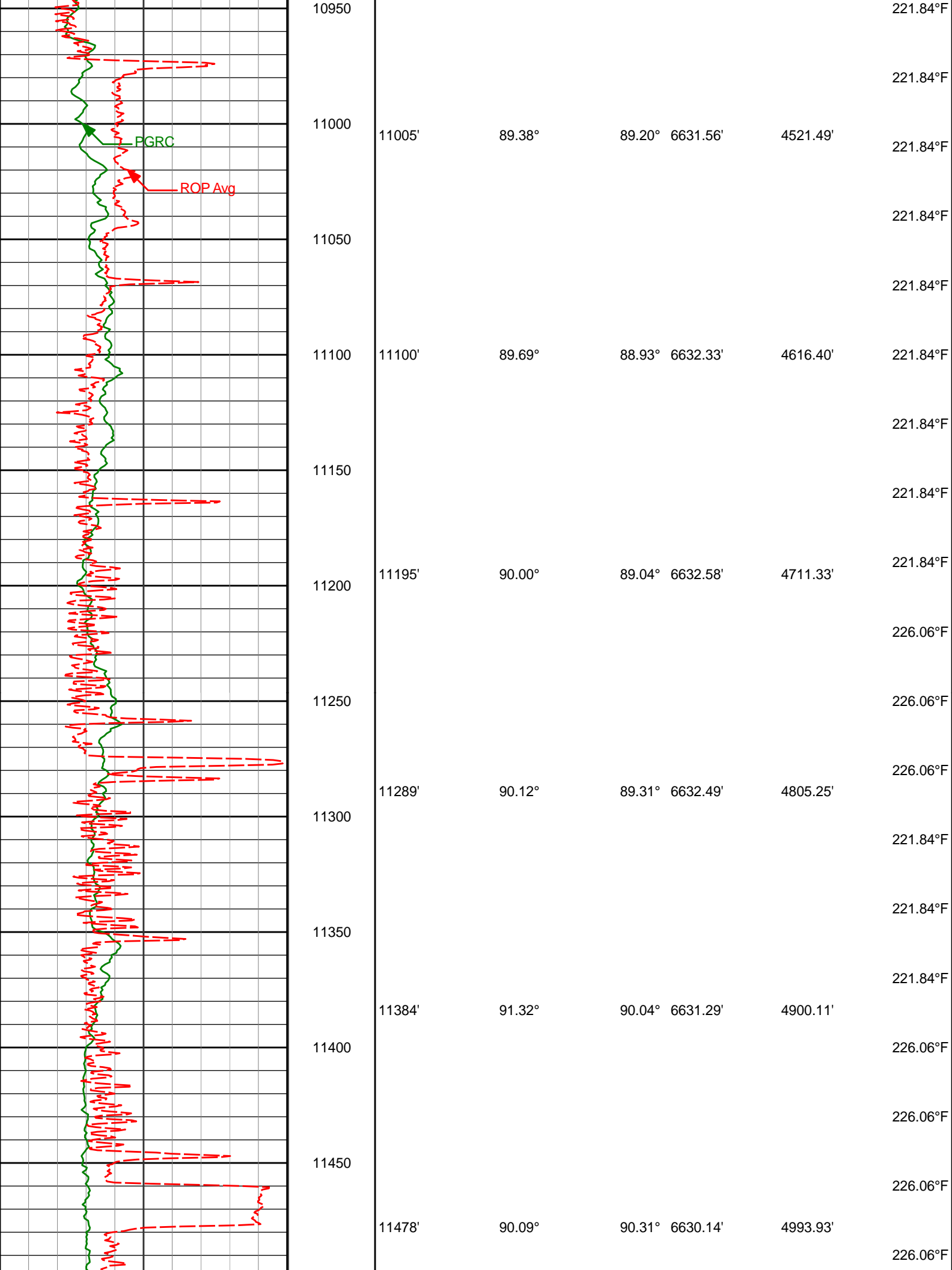


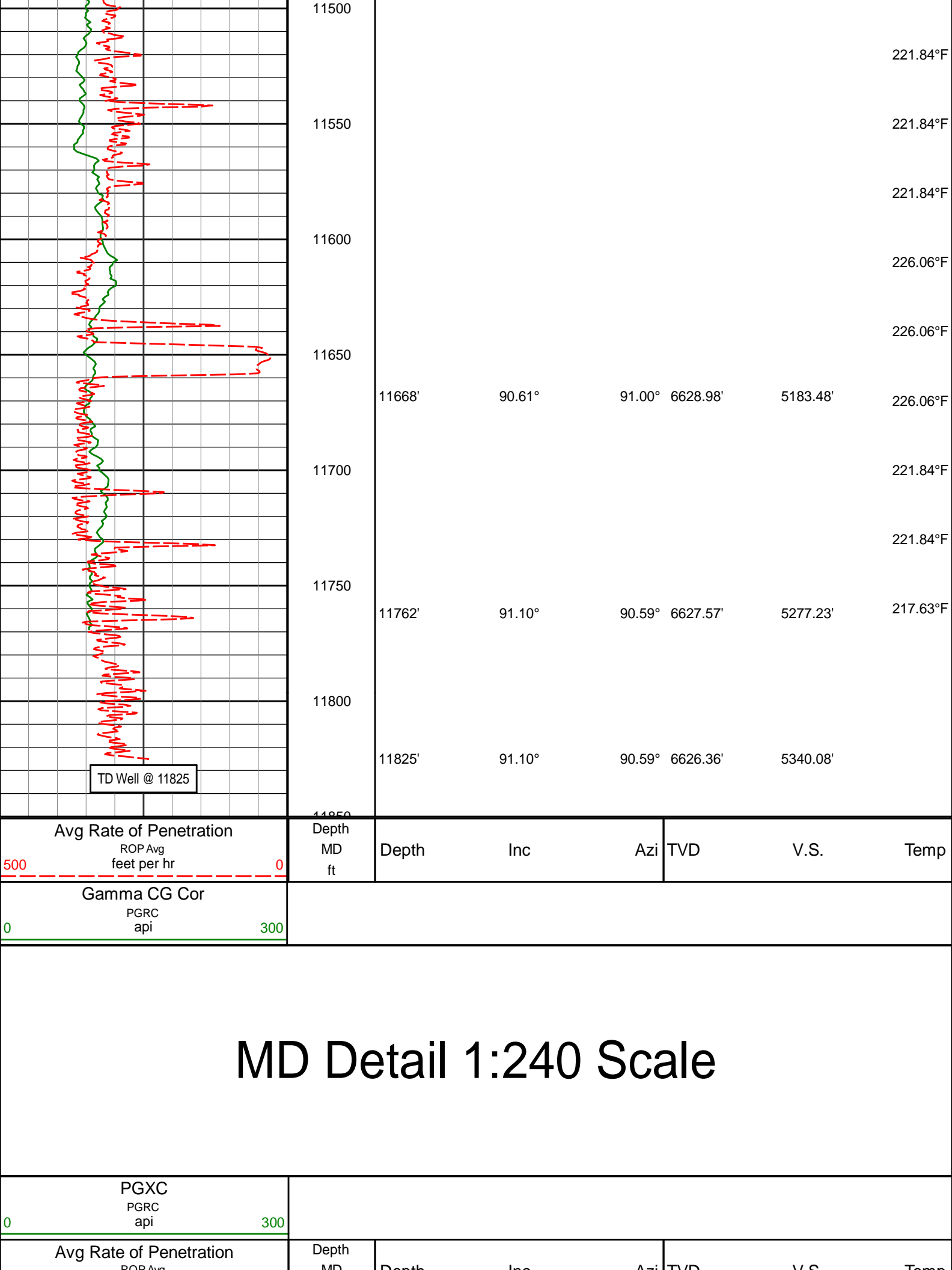












TD Well @ 11825

Avg Rate of Penetration

ROP Avg
feet per hr

500

0

Gamma CG Cor

PGRC
api

0

300

MD Detail 1:240 Scale

PGXC

PGRC
api

0

300

Avg Rate of Penetration

ROP Avg

Depth
MD

Depth

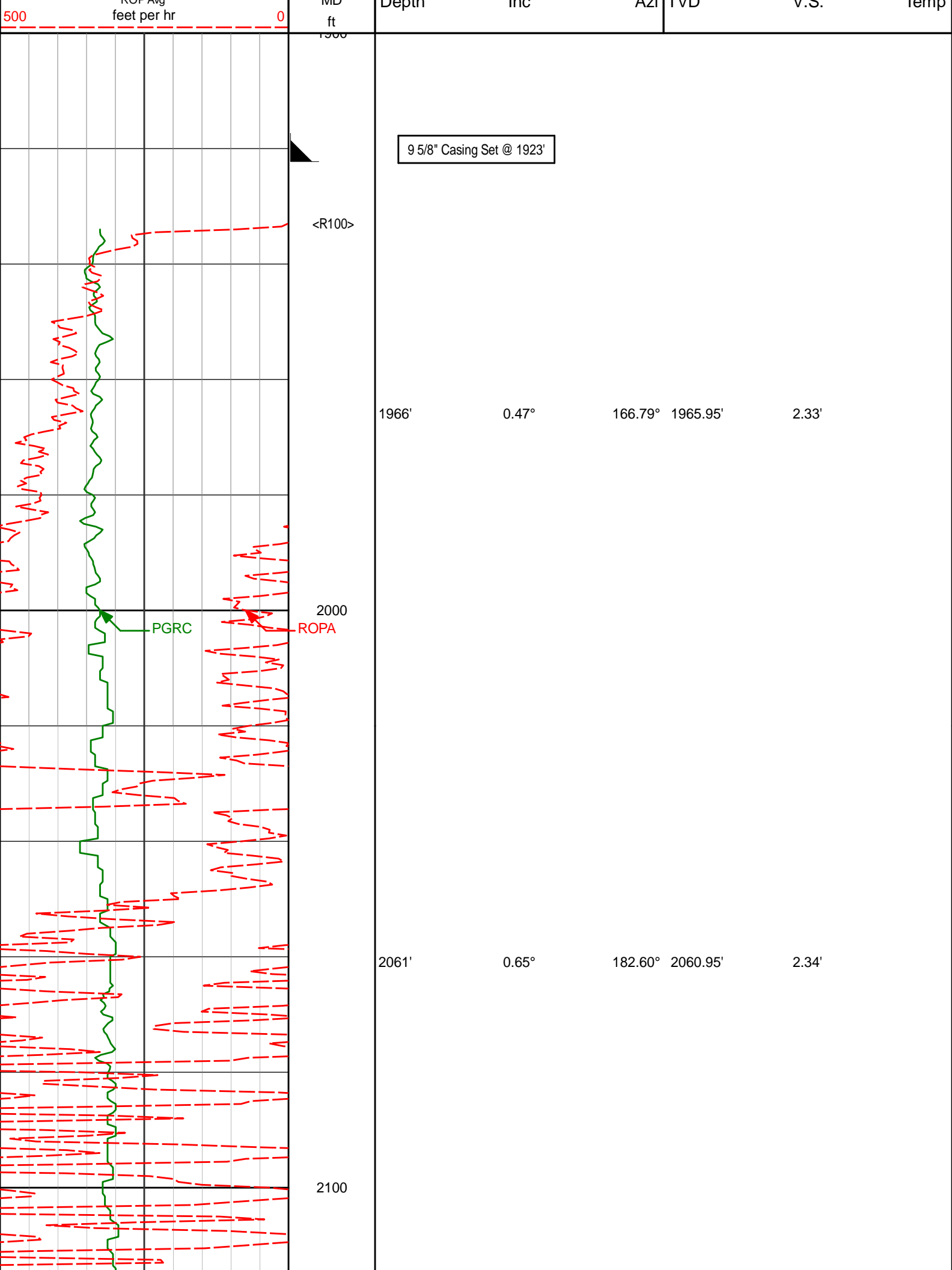
Inc

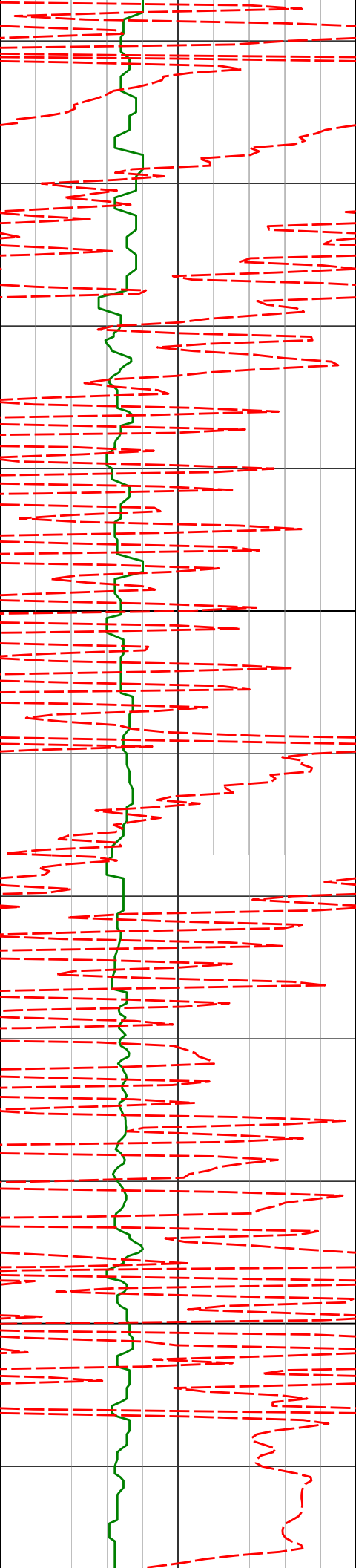
Azi

TVD

V.S.

Temp





2200

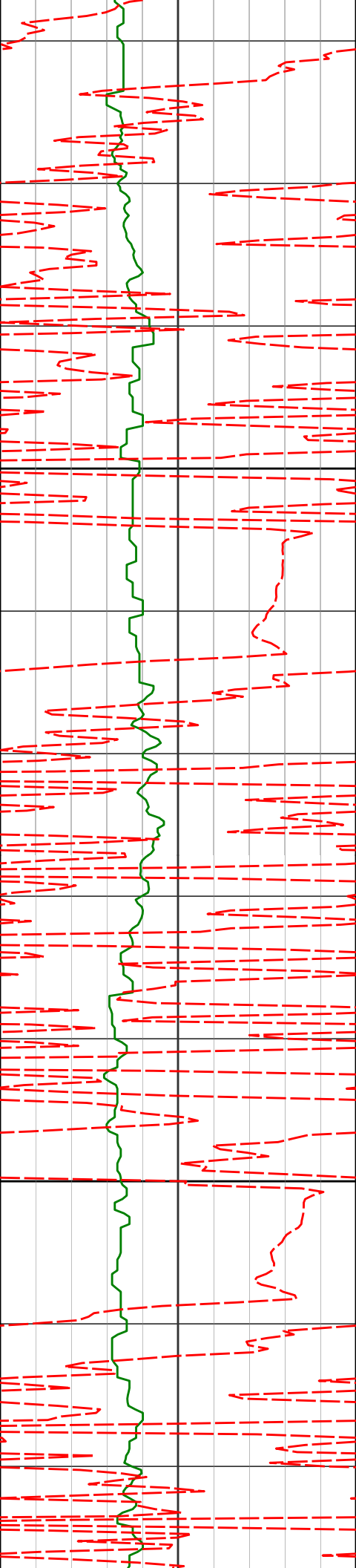
2250'

1.17°

189.60° 2249.92'

1.80'

2300



2345'

0.80°

279.52° 2344.91'

0.94'

2400

2439'

3.12°

311.08° 2438.85'

-1.53'

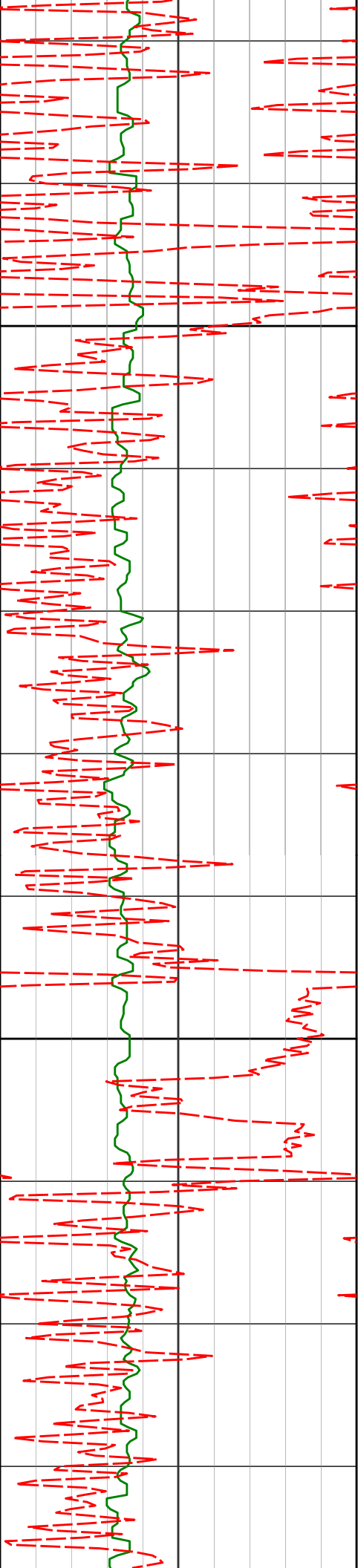
2500

2534'

5.01°

318.52° 2533.61'

-5.94'



2600

2629'

4.92°

315.82° 2628.26'

-11.17'

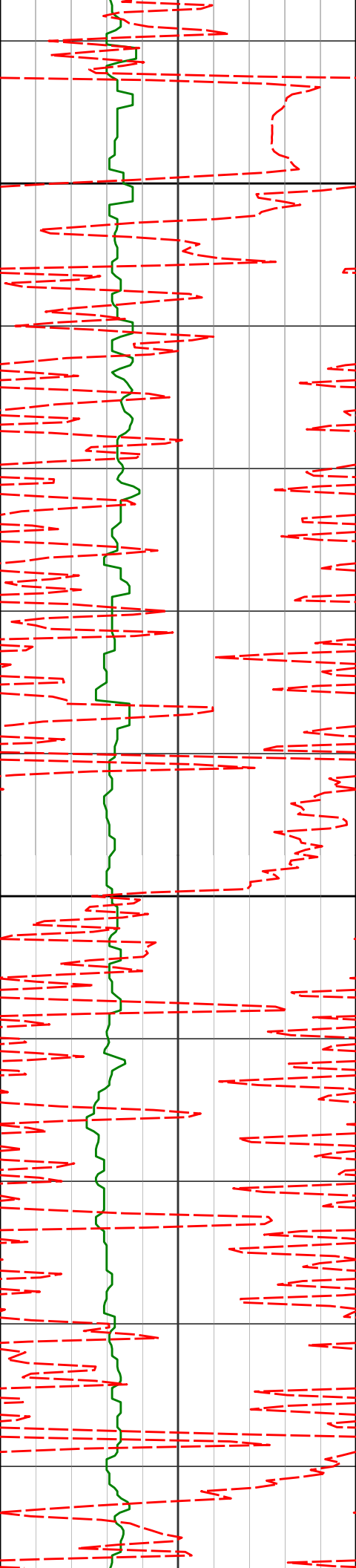
2700

2723'

4.67°

314.46° 2721.93'

-16.39'



2800

2818'

4.75°

328.63°

2816.61'

-20.84'

2900

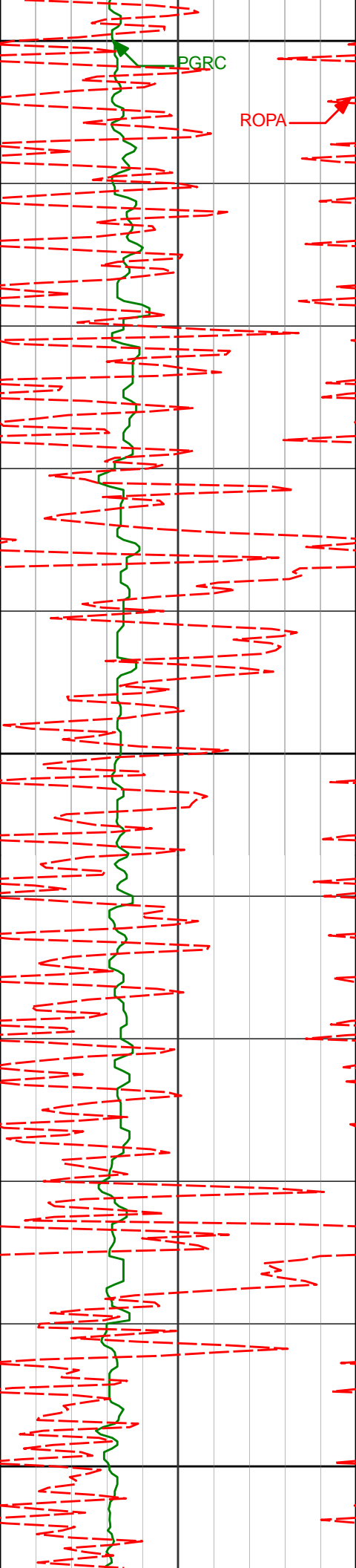
2912'

4.78°

326.22°

2910.28'

-24.67'



3000

3007'

4.75°

325.08° 3004.95'

-28.74'

3100

3102'

4.40°

322.89° 3099.65'

-32.83'

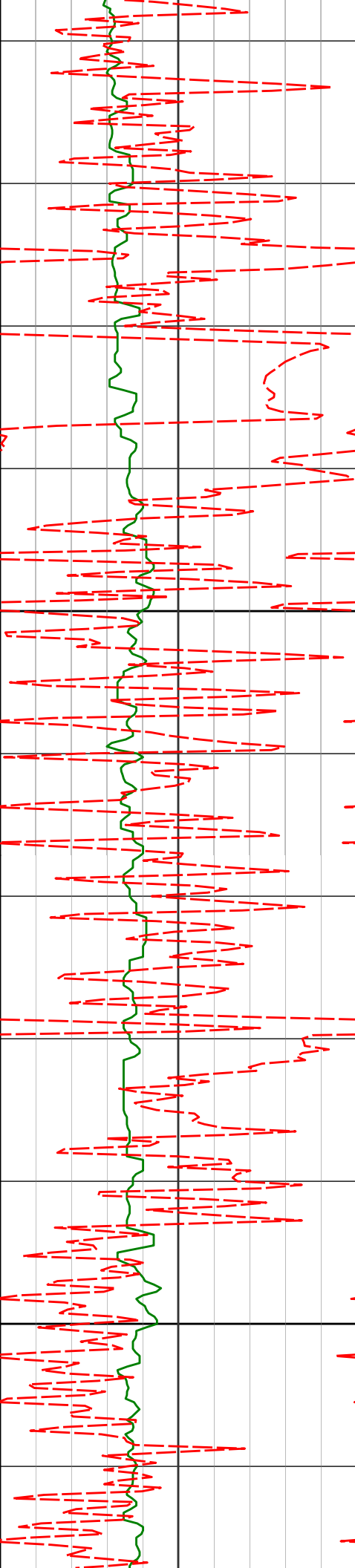
3200

3196'

4.16°

322.65° 3193.39'

-36.75'

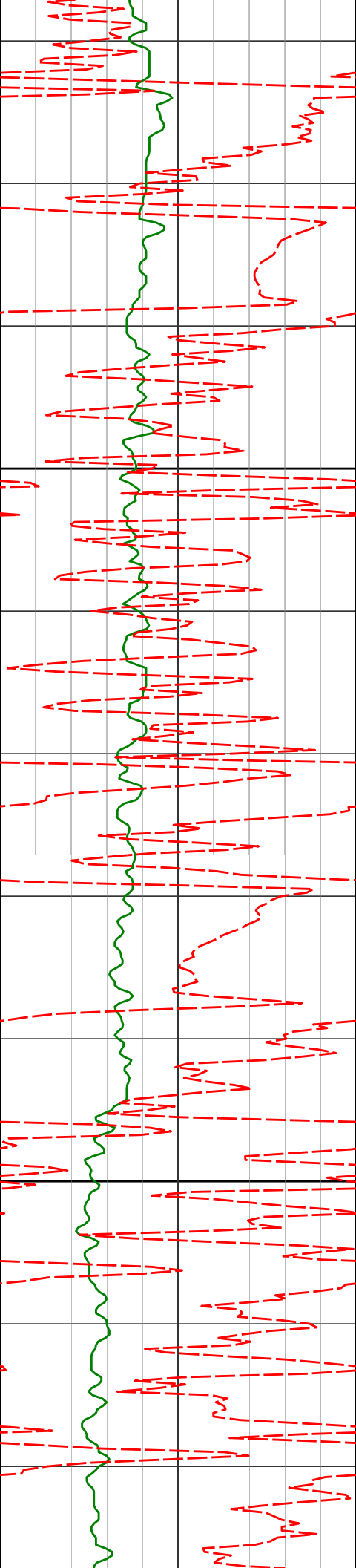


3291'	4.65°	328.91°	3288.11'	-40.48'
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3300

3386'	4.05°	334.91°	3382.84'	-43.52'
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3400



3480'

4.16°

332.20° 3476.60'

-46.17'

3500

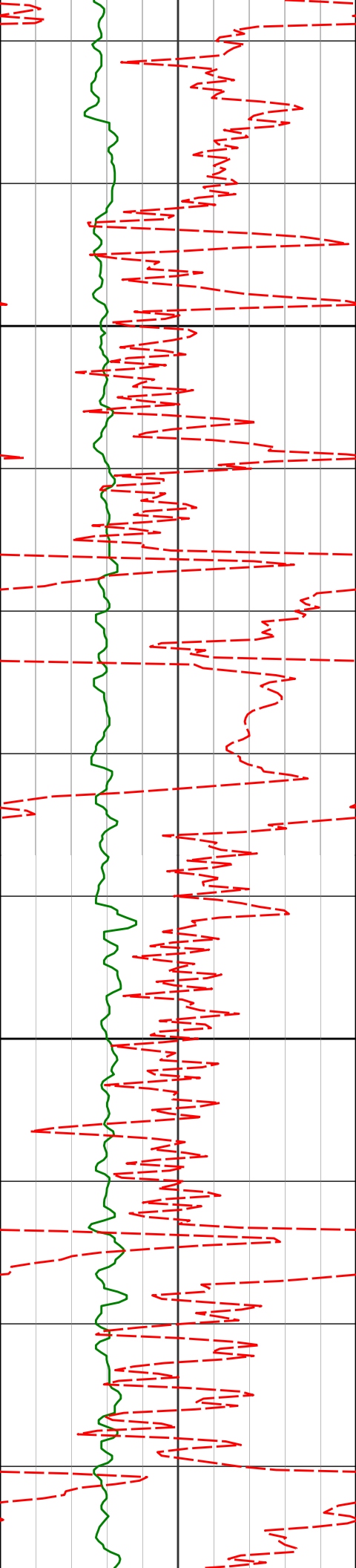
3575'

5.09°

328.54° 3571.29'

-49.59'

3600



3670'

5.95°

329.19° 3665.84'

-53.86'

3700

3764'

5.78°

322.97° 3759.35'

-58.74'

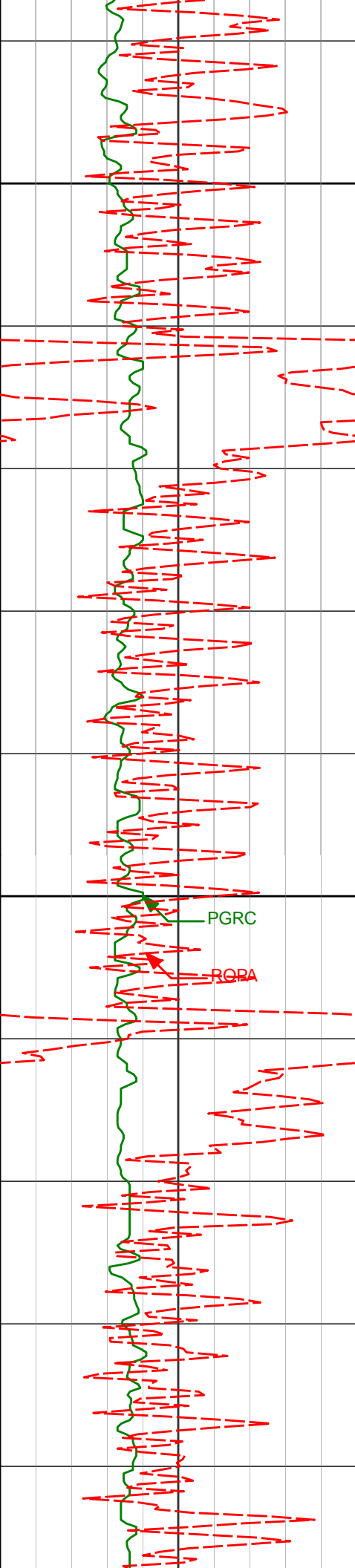
3800

3859'

5.86°

320.35° 3853.86'

-64.27'



3900

3953'

5.58°

318.75° 3947.40'

-69.93'

4000

PGRC

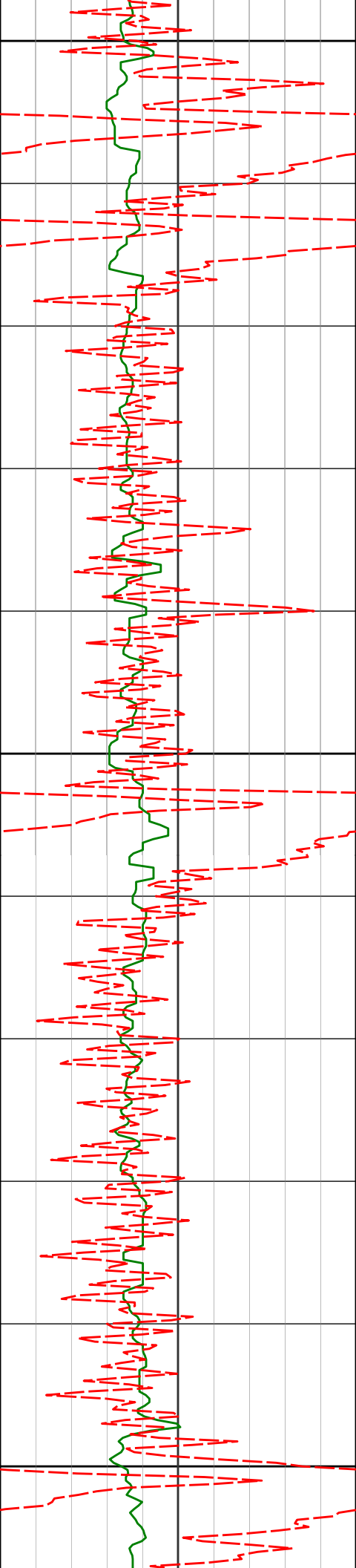
RQPA

4048'

5.22°

318.24° 4041.97'

-75.46'



4100

4143'

4.56°

318.47° 4136.63'

-80.49'

4200

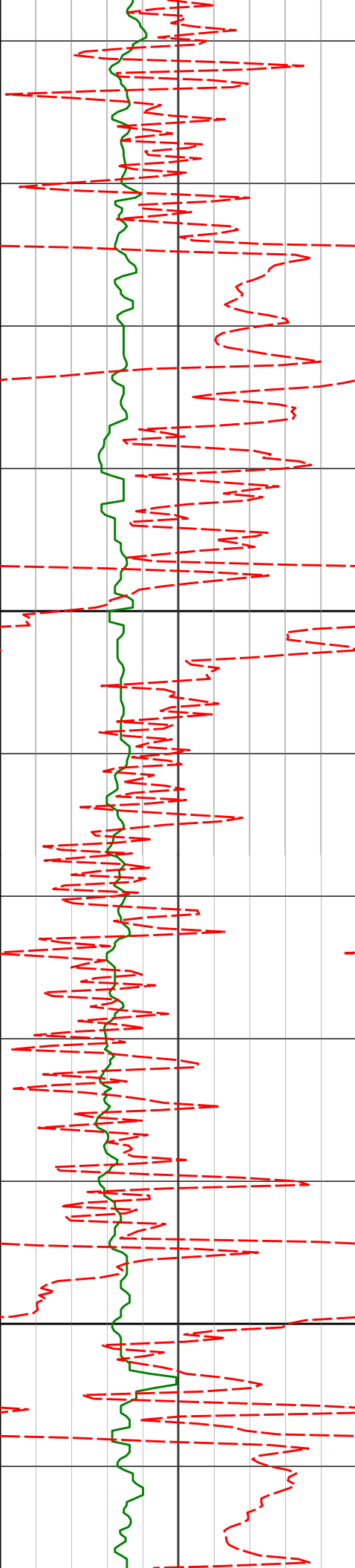
4237'

4.03°

321.27° 4230.36'

-84.73'

4300



4400

4500

4332'

3.73°

322.39° 4325.15'

-88.41'

4426'

4.50°

324.96° 4418.90'

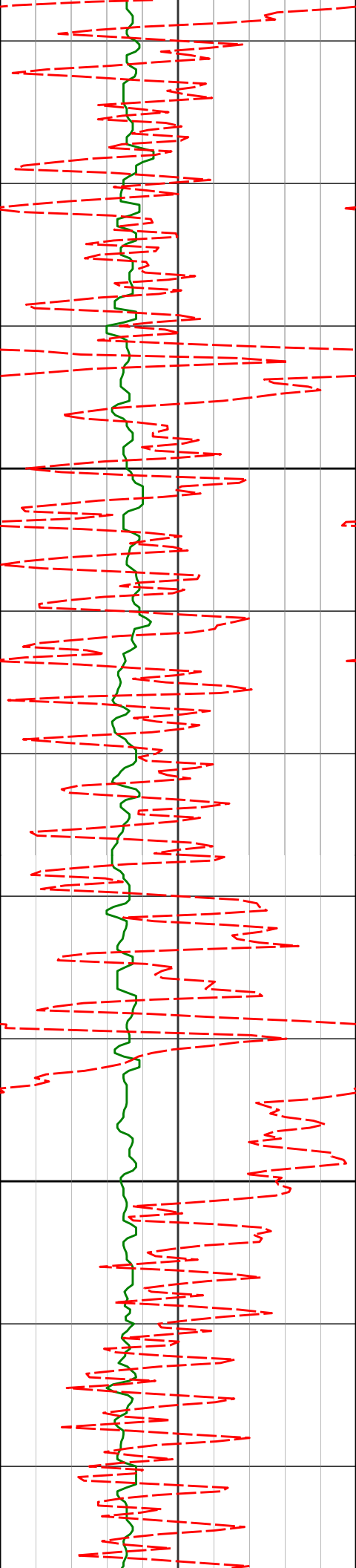
-92.07'

4521'

4.63°

321.14° 4513.60'

-96.26'



4600

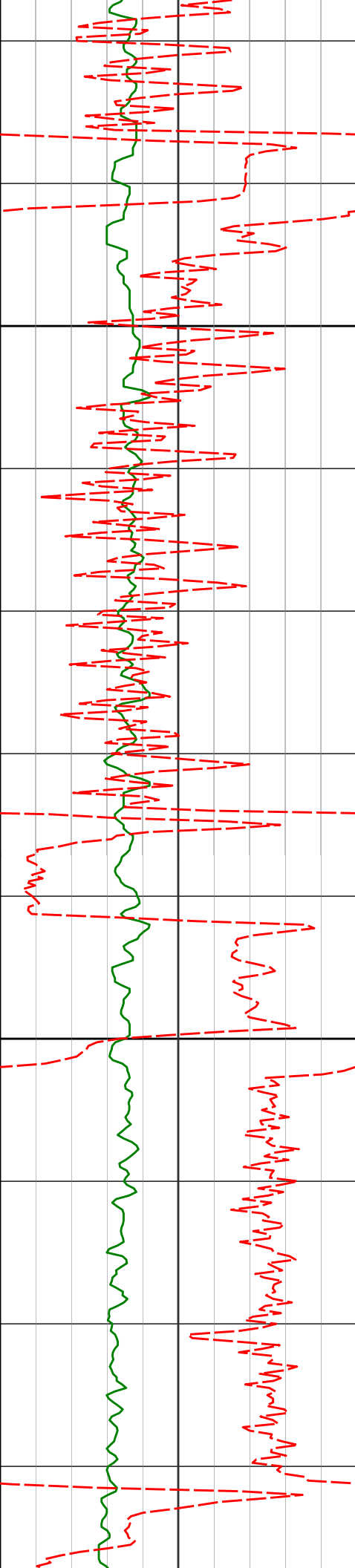
4700

4710'

4.32°

320.35° 4702.03'

-104.93'



4800

4805'

3.85°

324.91° 4796.78'

-108.73'

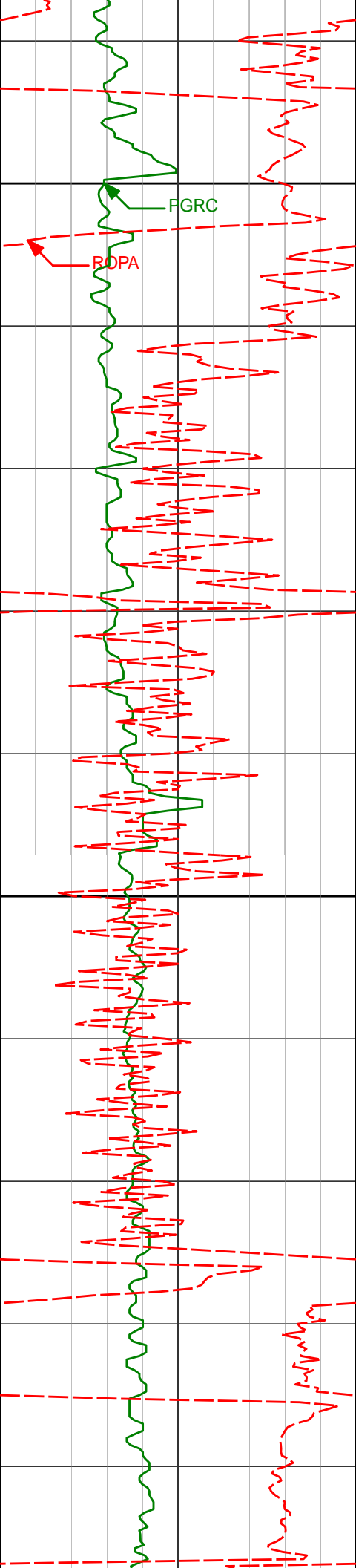
4900

4900'

3.99°

322.98° 4891.56'

-112.25'



5000

5100

4994'

4.06°

308.26° 4985.33'

-116.55'

5089'

3.71°

303.59° 5080.11'

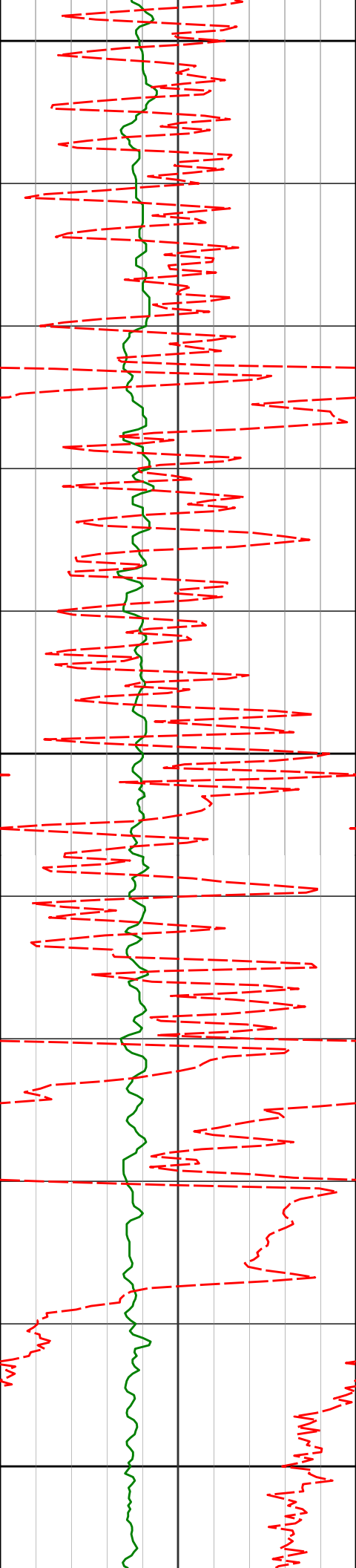
-121.53'

5184'

3.87°

323.15° 5174.91'

-125.77'



5200

5300

5400

5278'

3.83°

336.17° 5268.70'

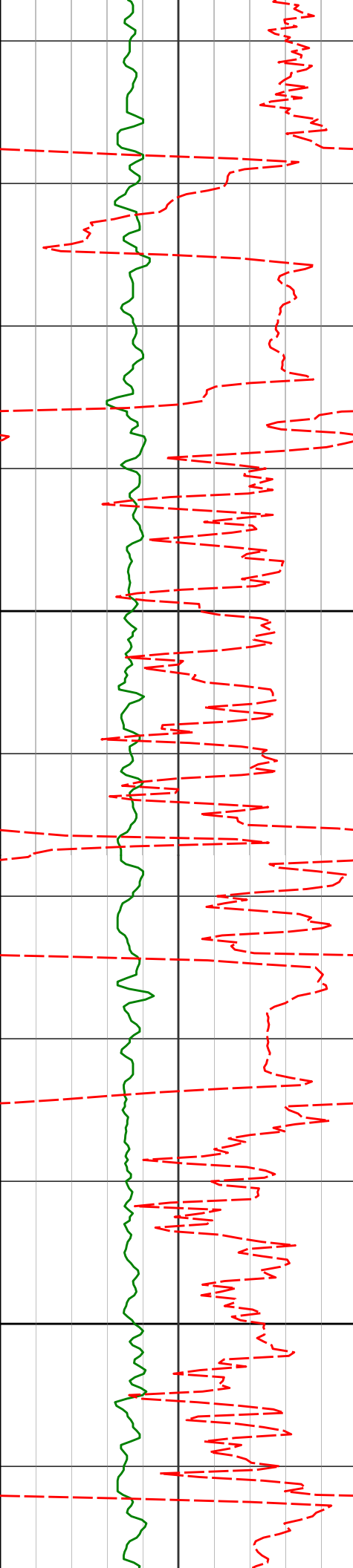
-128.62'

5373'

3.72°

341.34° 5363.50'

-130.55'



5500

5600

5467'

3.70°

326.60° 5457.30'

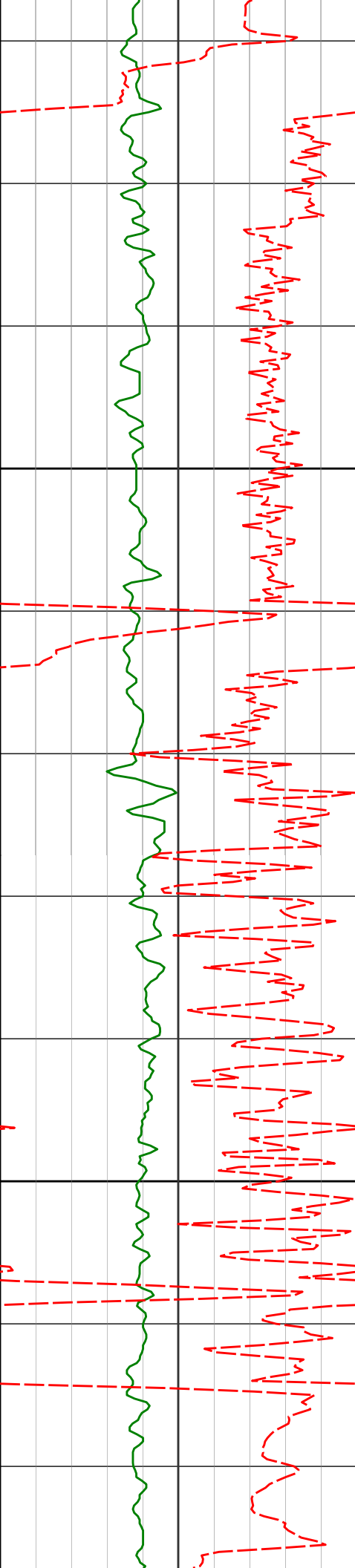
-132.88'

5562'

3.60°

313.13° 5552.11'

-136.47'



5700

5800

5657'

4.40°

312.76° 5646.88'

-141.06'

5751'

3.10°

311.00° 5740.67'

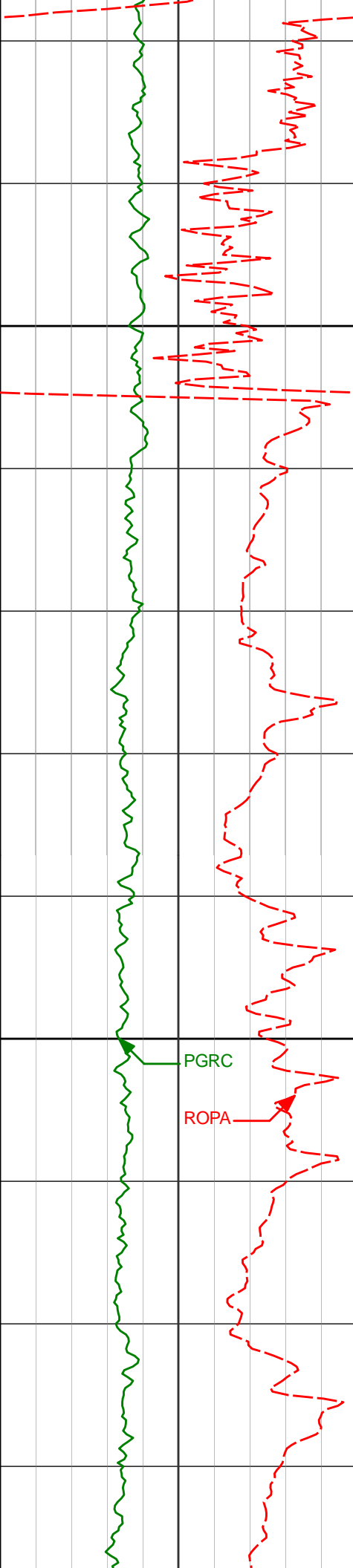
-145.38'

5846'

3.41°

329.58° 5835.52'

-148.51'



5900

5940'

7.14°

355.99° 5929.12'

-149.86'

6000

PGRC

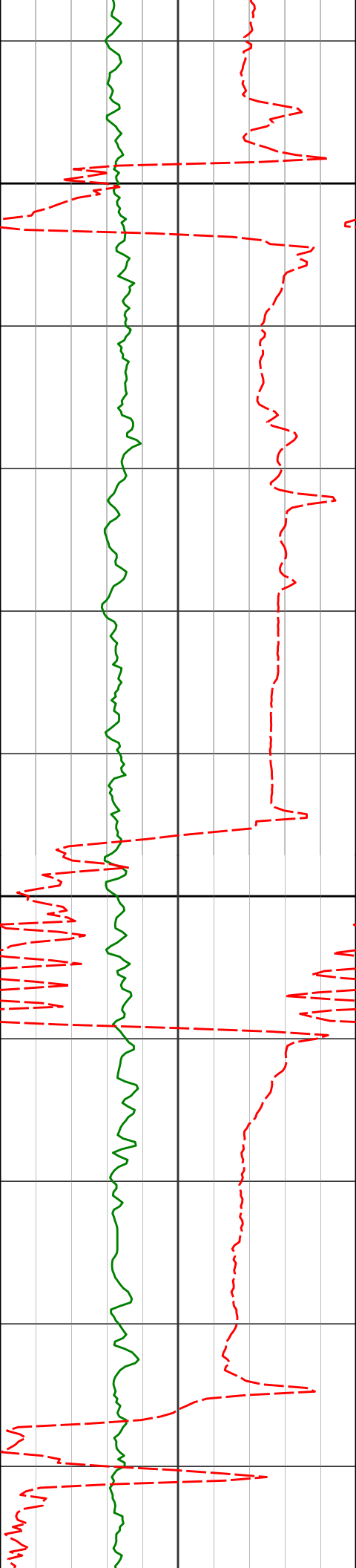
ROPA

6033'

10.79°

51.36° 6021.12'

-142.82'



6100

6124'

17.73°

85.64° 6109.41'

-121.96'

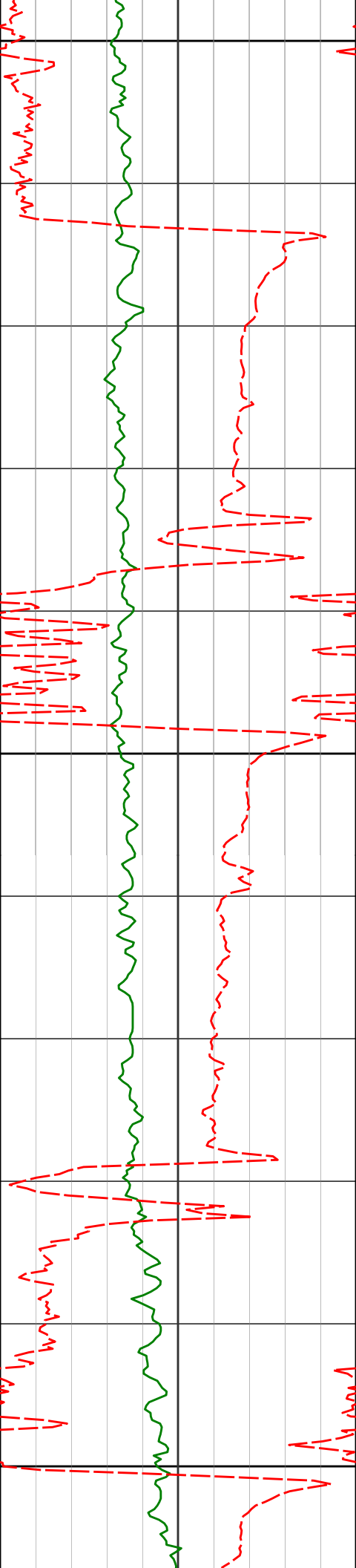
6200

6217'

26.37°

87.57° 6195.53'

-87.08'



6300

6309'

31.76°

87.88° 6275.91'

-42.41'

6400

6400'

37.35°

87.93° 6350.83'

9.17'

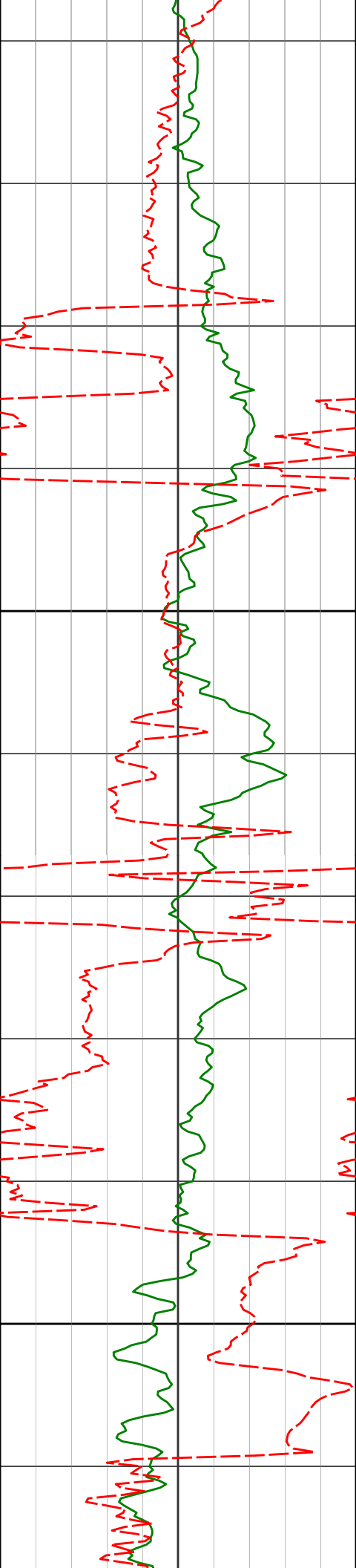
6500

6492'

44.81°

88.92° 6420.13'

69.55'



6584'

53.83°

93.82° 6480.06'

138.96'

6600

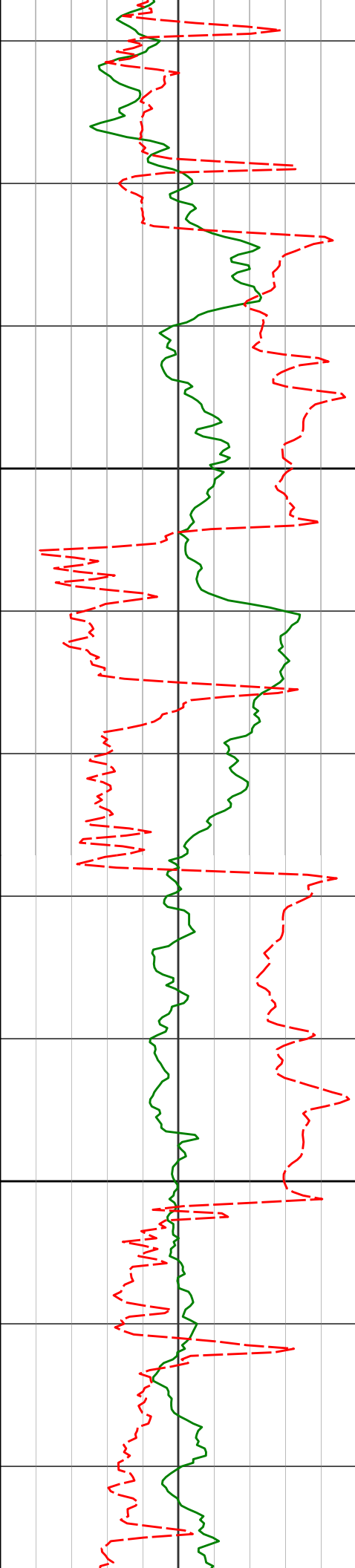
6676'

61.03°

91.64° 6529.56'

216.02'

6700



6800

6900

6767'

65.36°

89.32° 6570.59'

297.04'

6859'

72.14°

89.45° 6603.92'

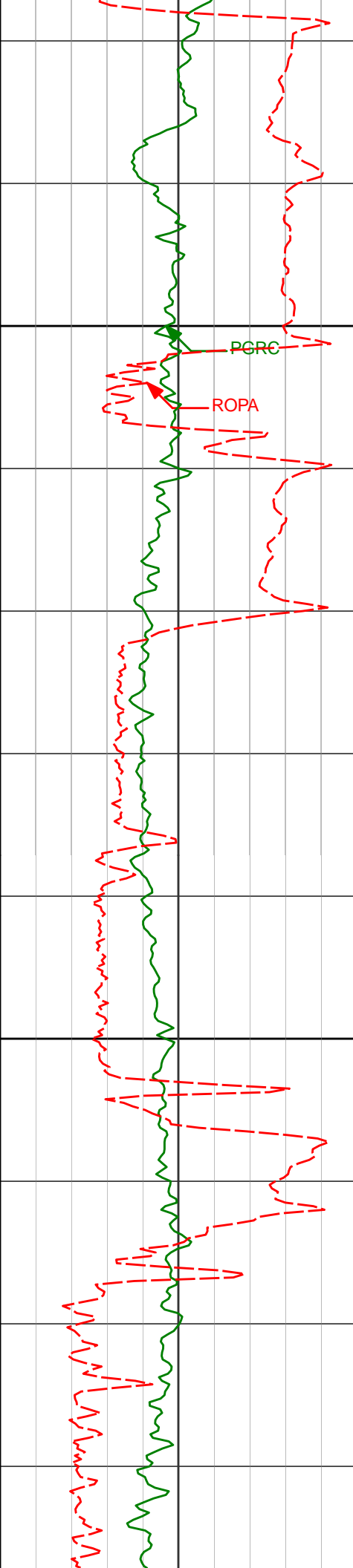
382.64'

6951'

79.55°

89.24° 6626.40'

471.70'



7000

7044'

91.04°

88.16° 6634.01'

564.17'

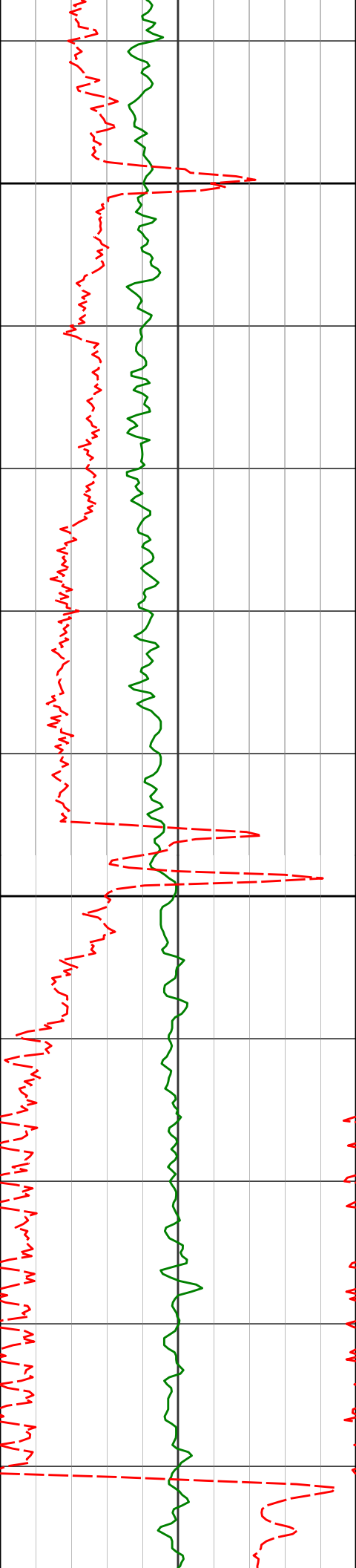
7100

7136'

90.86°

88.55° 6632.49'

656.12'



7200

7227'

90.95°

87.91° 6631.05'

747.08'

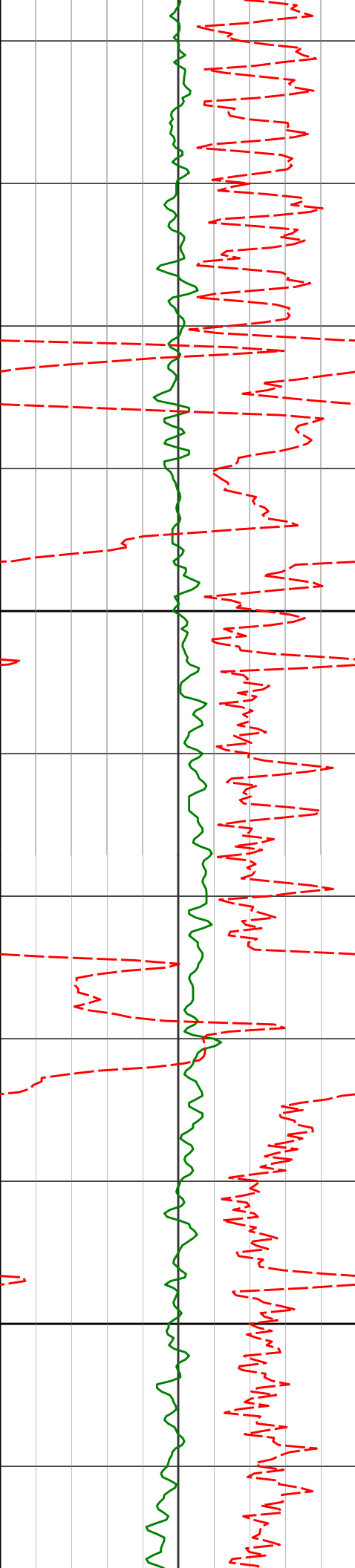
7300

7318'

90.64°

87.61° 6629.79'

838.06'



7700

7800

7694'

89.47°

90.03° 6623.83'

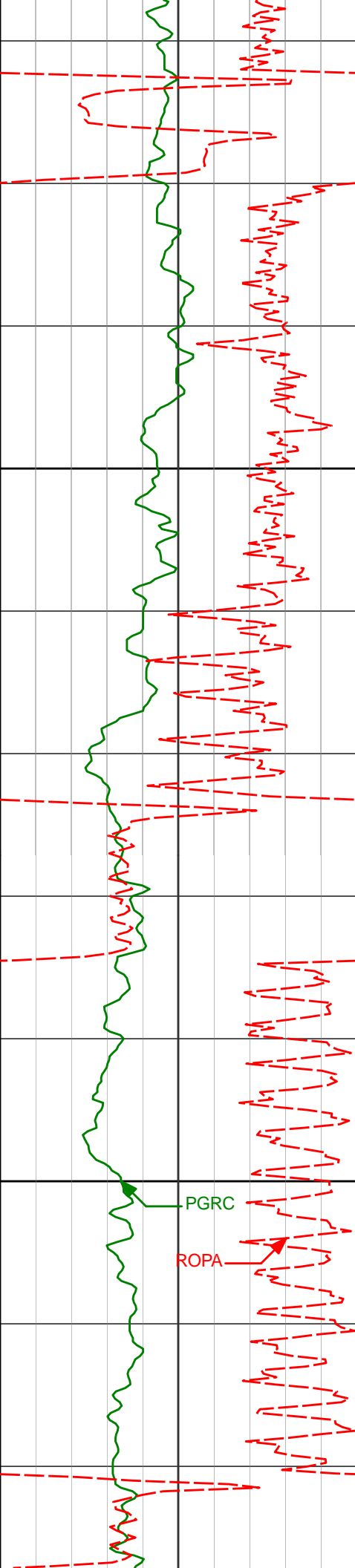
1213.44'

7788'

89.62°

90.22° 6624.57'

1307.27'



7883' 89.65° 90.33° 6625.18' 1402.08'

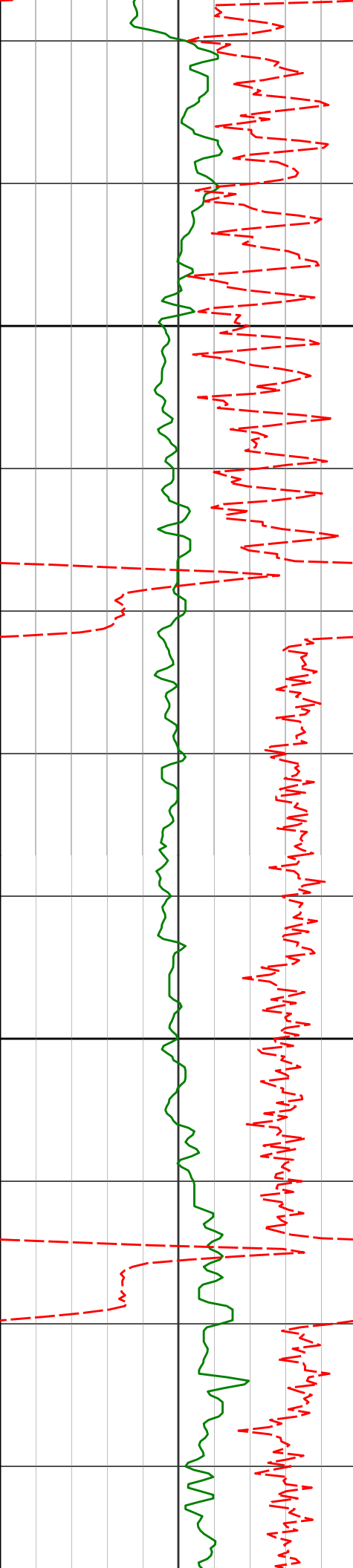
7900

7977' 89.31° 90.08° 6626.03' 1495.91'

8000

PGRC

ROPA



8100

8200

8072'

89.75°

89.91° 6626.81'

1590.75'

8167'

90.61°

89.88° 6626.51'

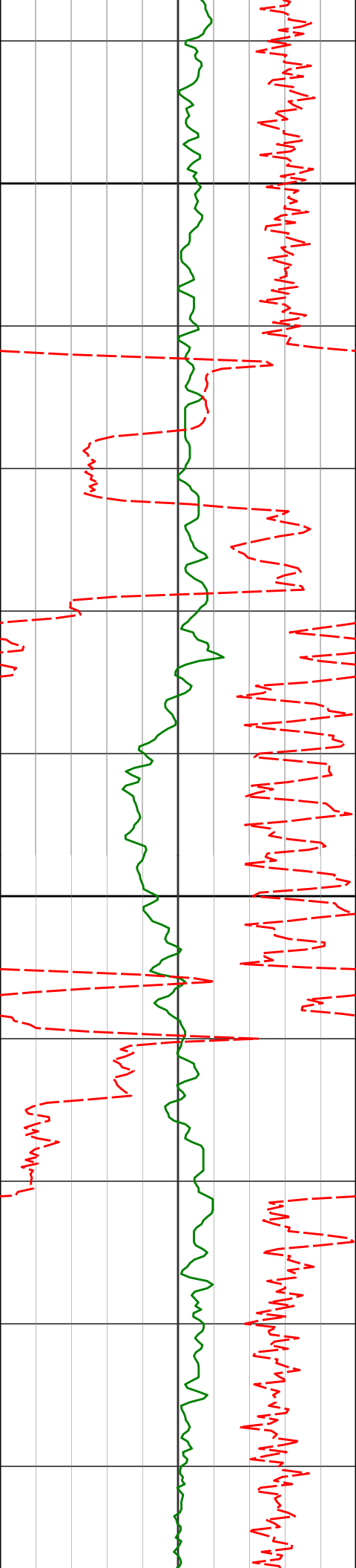
1685.60'

8261'

90.61°

89.65° 6625.51'

1779.47'



8300

8355'

89.31°

89.81° 6625.58'

1873.34'

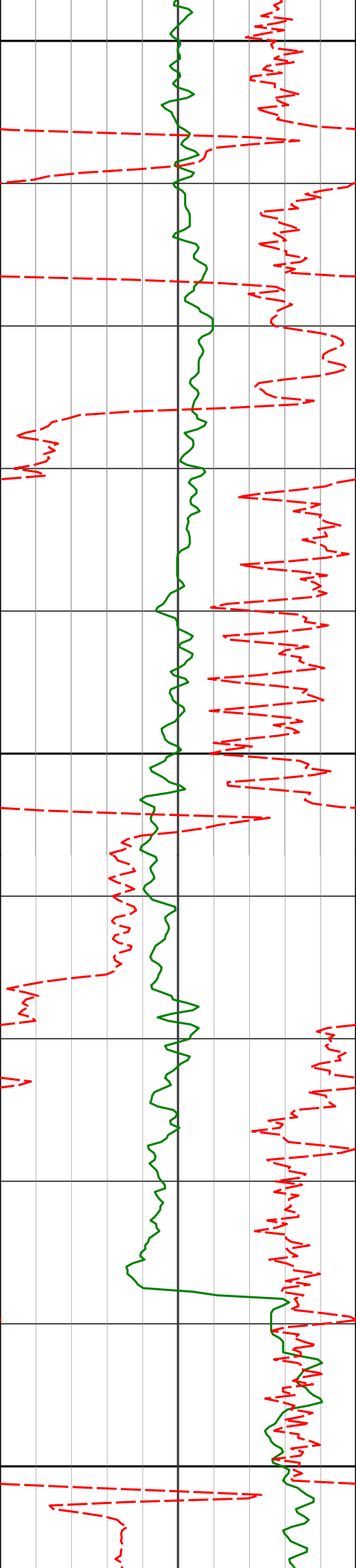
8400

8450'

89.35°

90.32° 6626.69'

1968.17'



8500

8545'

89.62°

89.91° 6627.54'

2063.00'

8600

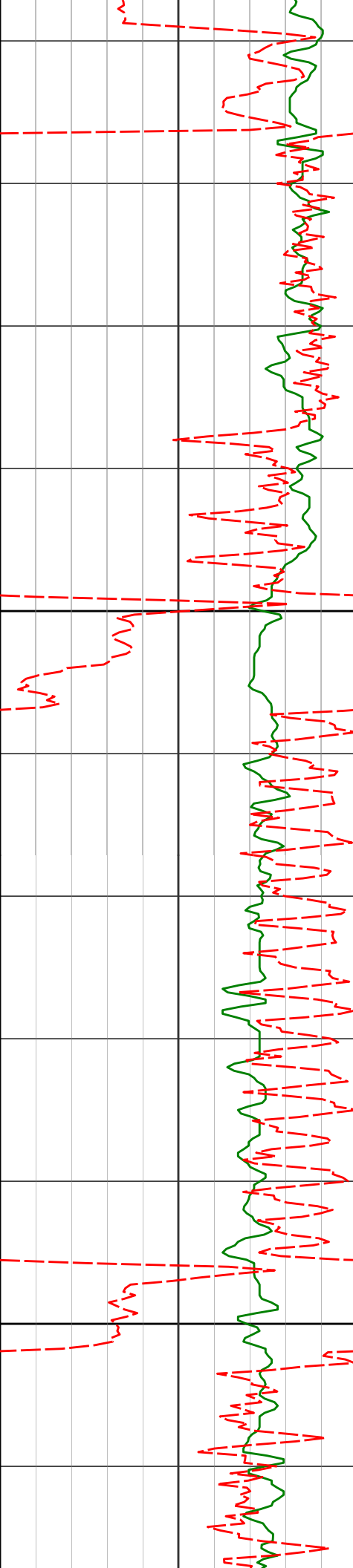
8640'

89.53°

89.51° 6628.25'

2157.87'

8700



8734'

89.62°

88.95° 6628.94'

2251.77'

8800

8829'

89.56°

89.16° 6629.62'

2346.69'

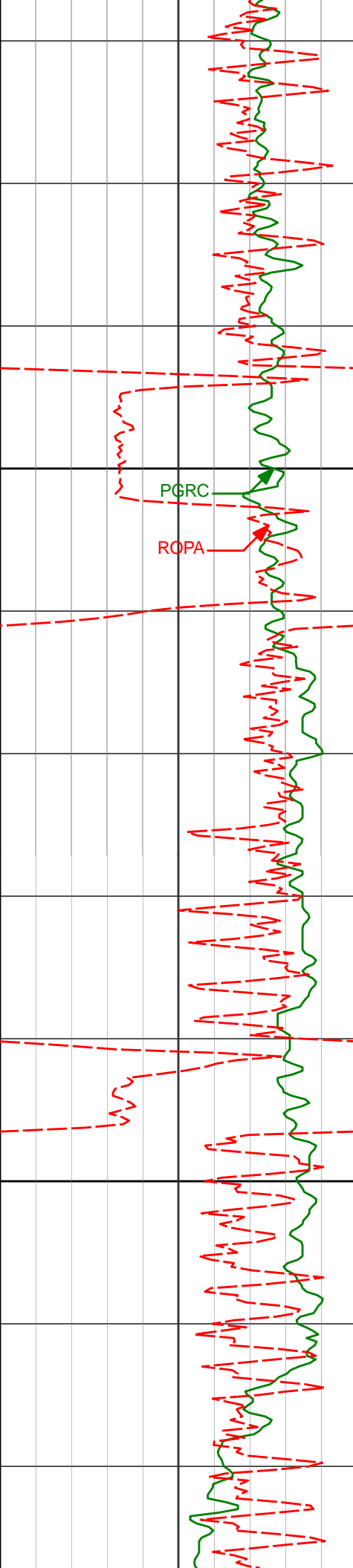
8900

8924'

89.84°

89.41° 6630.12'

2441.60'



9000

9018'

90.05°

88.60° 6630.21'

2535.52'

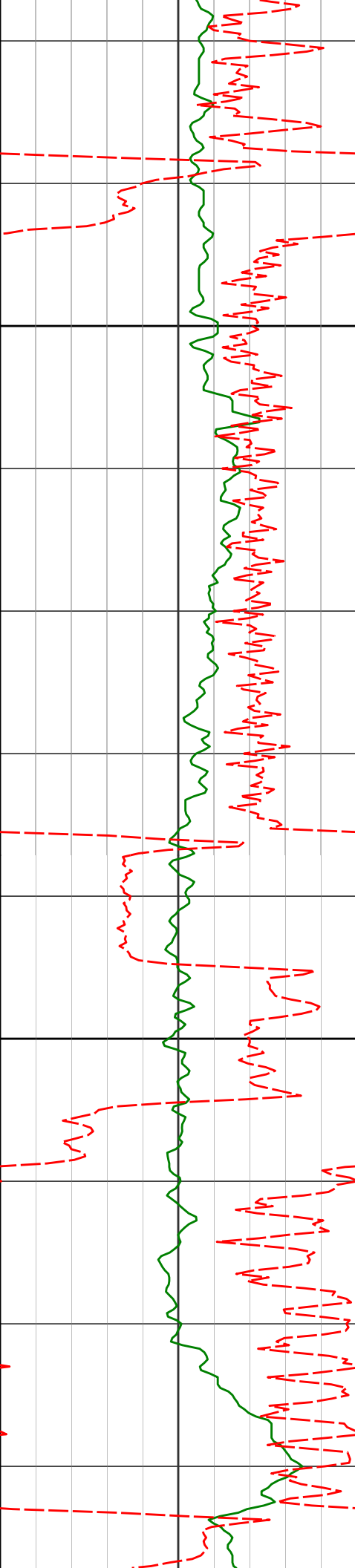
9100

9113'

90.58°

88.50° 6629.69'

2630.47'



9200

9208'

91.07°

88.86° 6628.32'

2725.41'

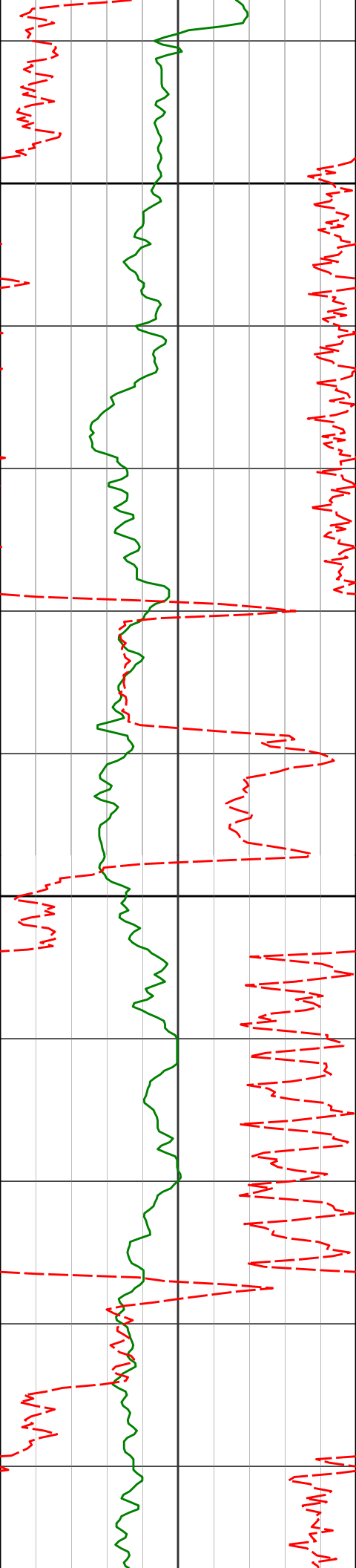
9300

9302'

90.09°

88.07° 6627.37'

2819.36'



9400

9500

9397'

90.52°

88.40° 6626.86'

2914.32'

9492'

89.87°

87.00° 6626.54'

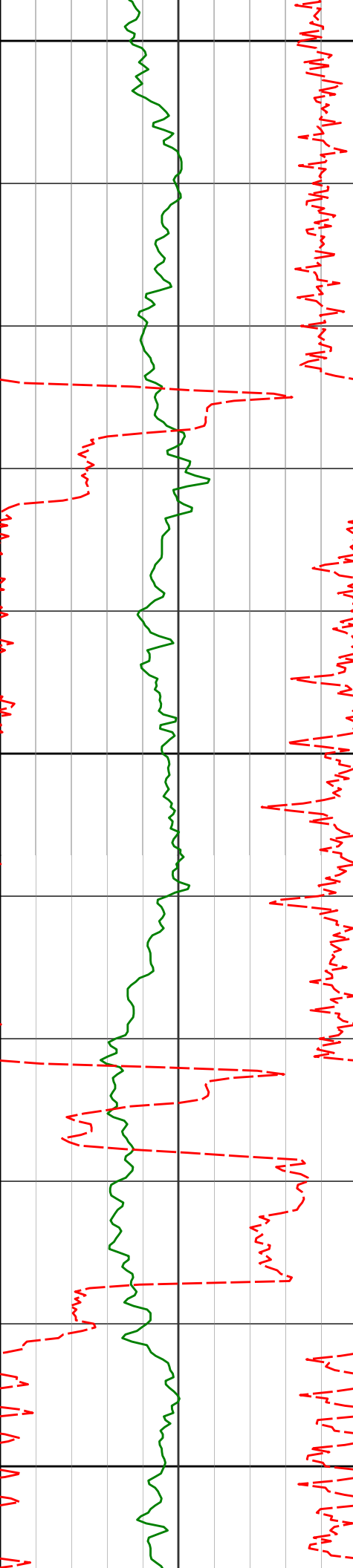
3009.31'

9586'

90.40°

87.14° 6626.32'

3103.30'



9600

9681'

91.32°

87.10° 6624.89'

3198.29'

9700

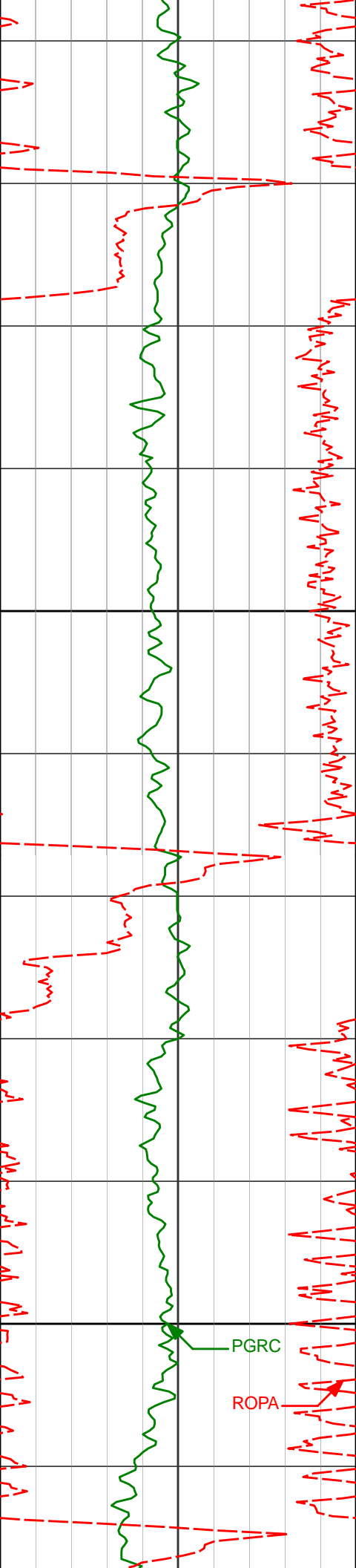
9776'

89.04°

87.58° 6624.60'

3293.28'

9800



9900

10000

PGRC

ROPA

9870'

89.35°

87.72° 6625.92'

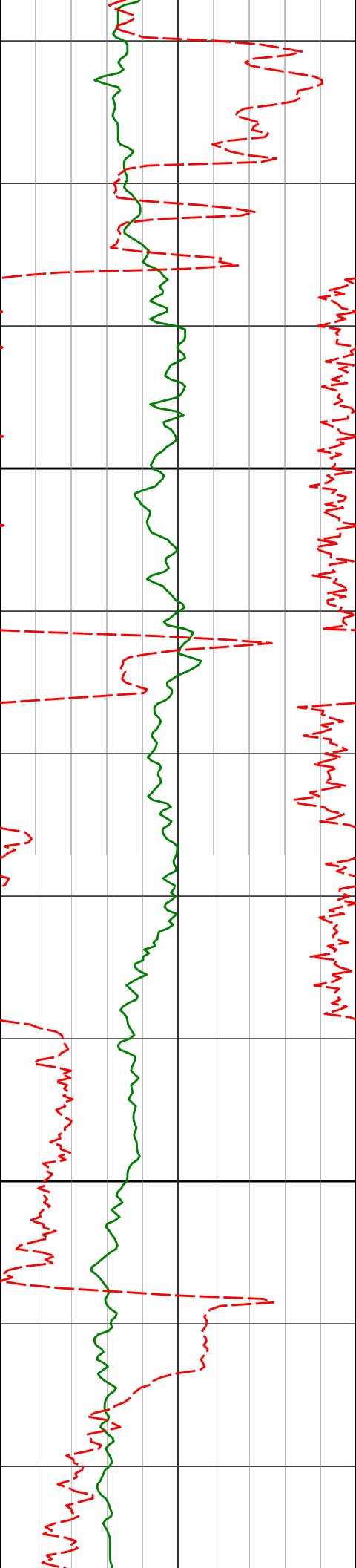
3387.26'

9965'

90.55°

88.00° 6626.00'

3482.24'



10100

10154'

89.78°

89.34° 6625.45'

3671.12'

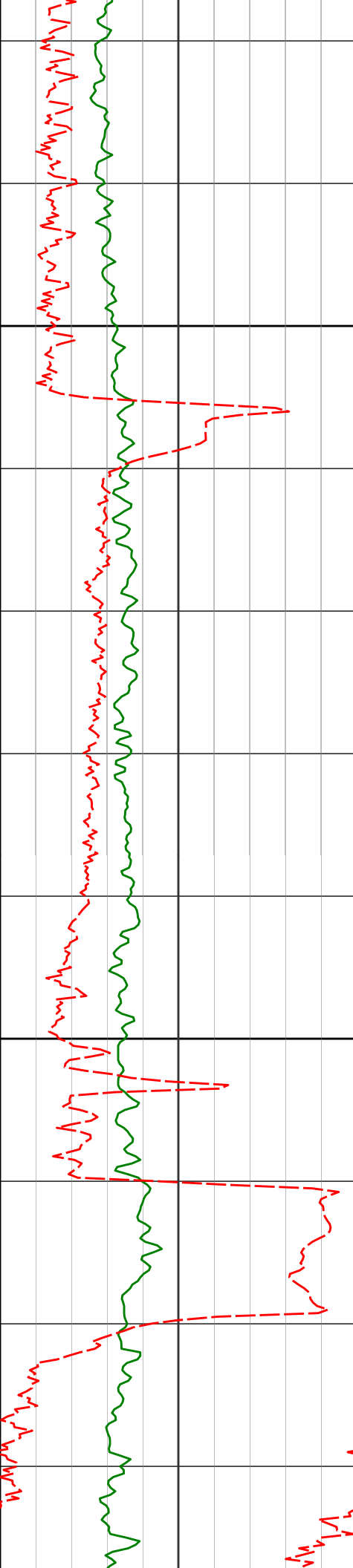
10200

10249'

90.30°

89.23° 6625.39'

3766.03'



10300

10343'

91.17°

89.31° 6624.18'

3859.93'

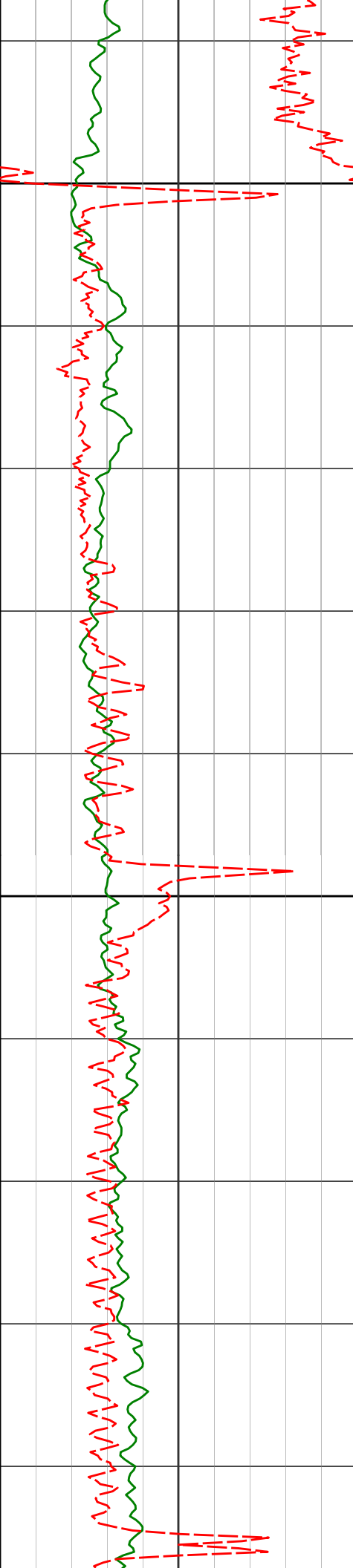
10400

10438'

88.76°

88.77° 6624.24'

3954.84'



10500

10532'

88.52°

88.44° 6626.47'

4048.76'

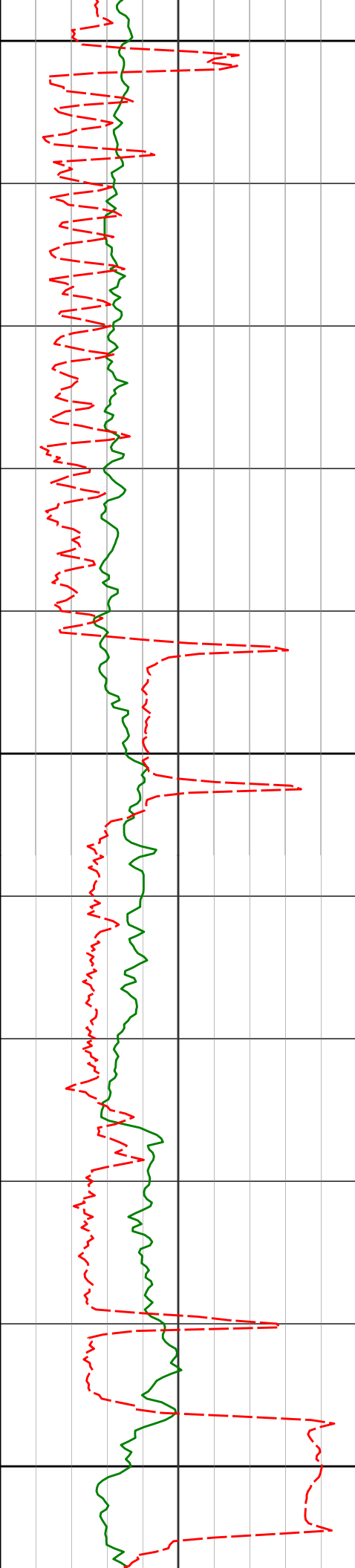
10600

10627'

89.19°

88.54° 6628.37'

4143.70'



10700

10721'

89.47°

88.07° 6629.47'

4237.66'

10800

10816'

89.90°

87.45° 6629.99'

4332.64'

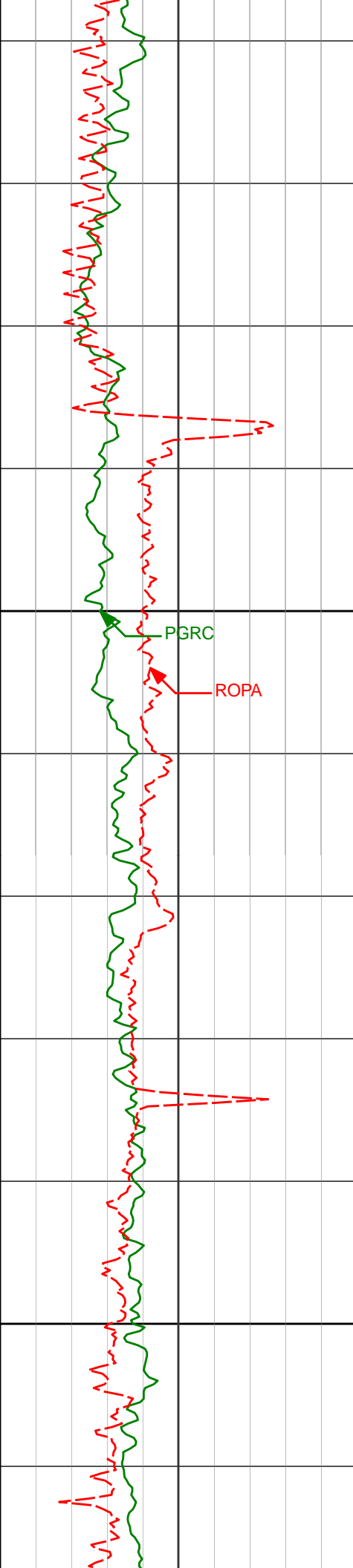
10900

10911'

89.41°

89.47° 6630.56'

4427.59'



11000

11005'

89.38°

89.20° 6631.56'

4521.49'

PGRC

ROPA

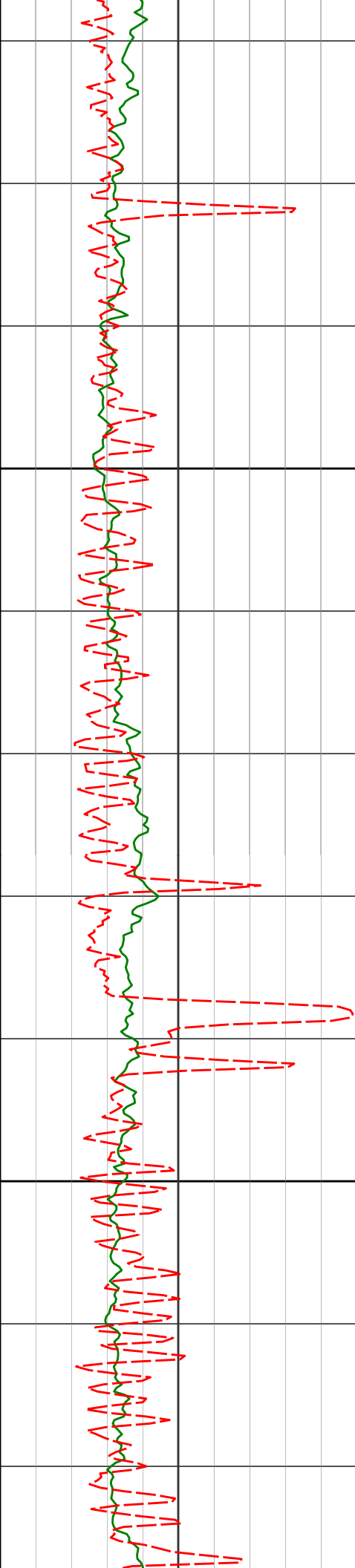
11100

11100'

89.69°

88.93° 6632.33'

4616.40'



11200

11300

11195'

90.00°

89.04° 6632.58'

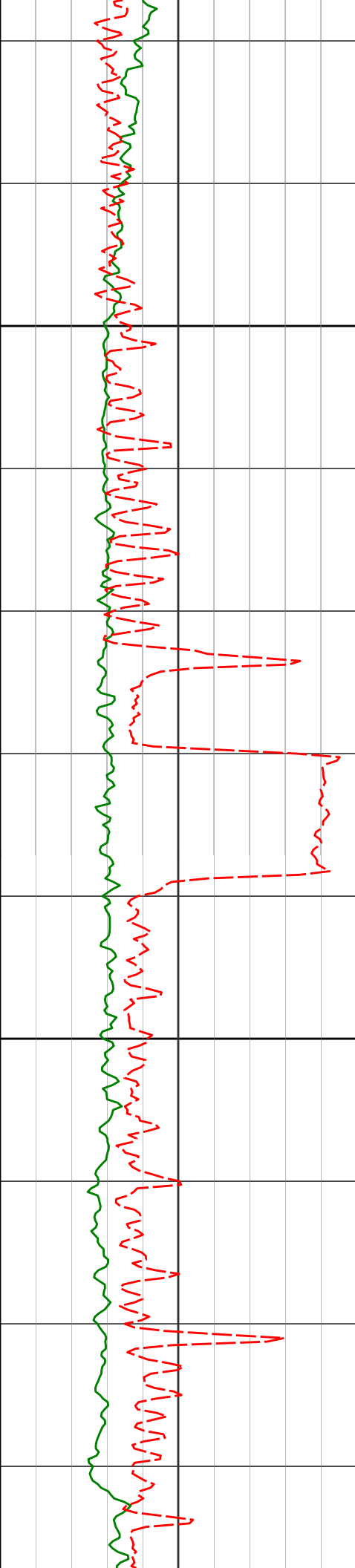
4711.33'

11289'

90.12°

89.31° 6632.49'

4805.25'



11400

11384'

91.32°

90.04° 6631.29'

4900.11'

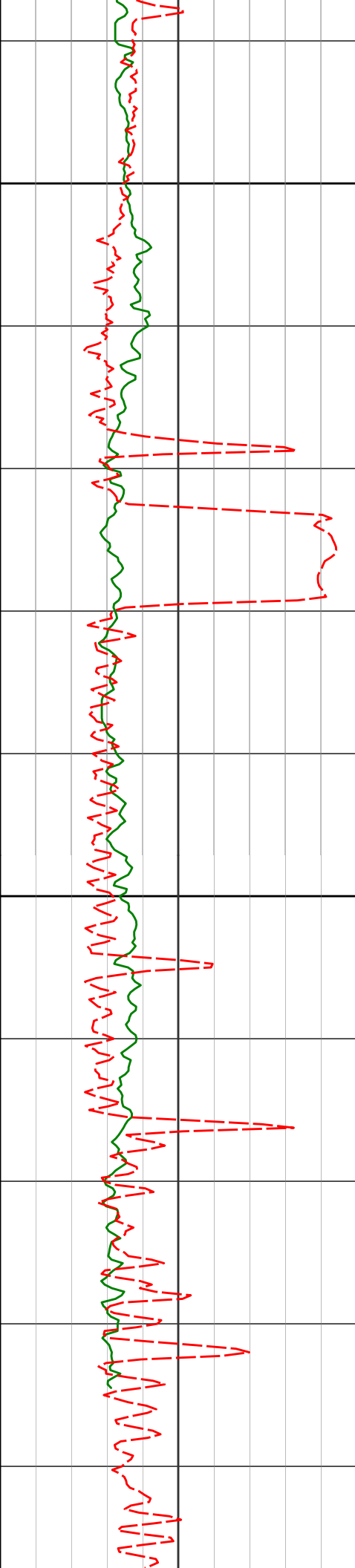
11478'

90.09°

90.31° 6630.14'

4993.93'

11500



11600

11668'

90.61°

91.00° 6628.98'

5183.48'

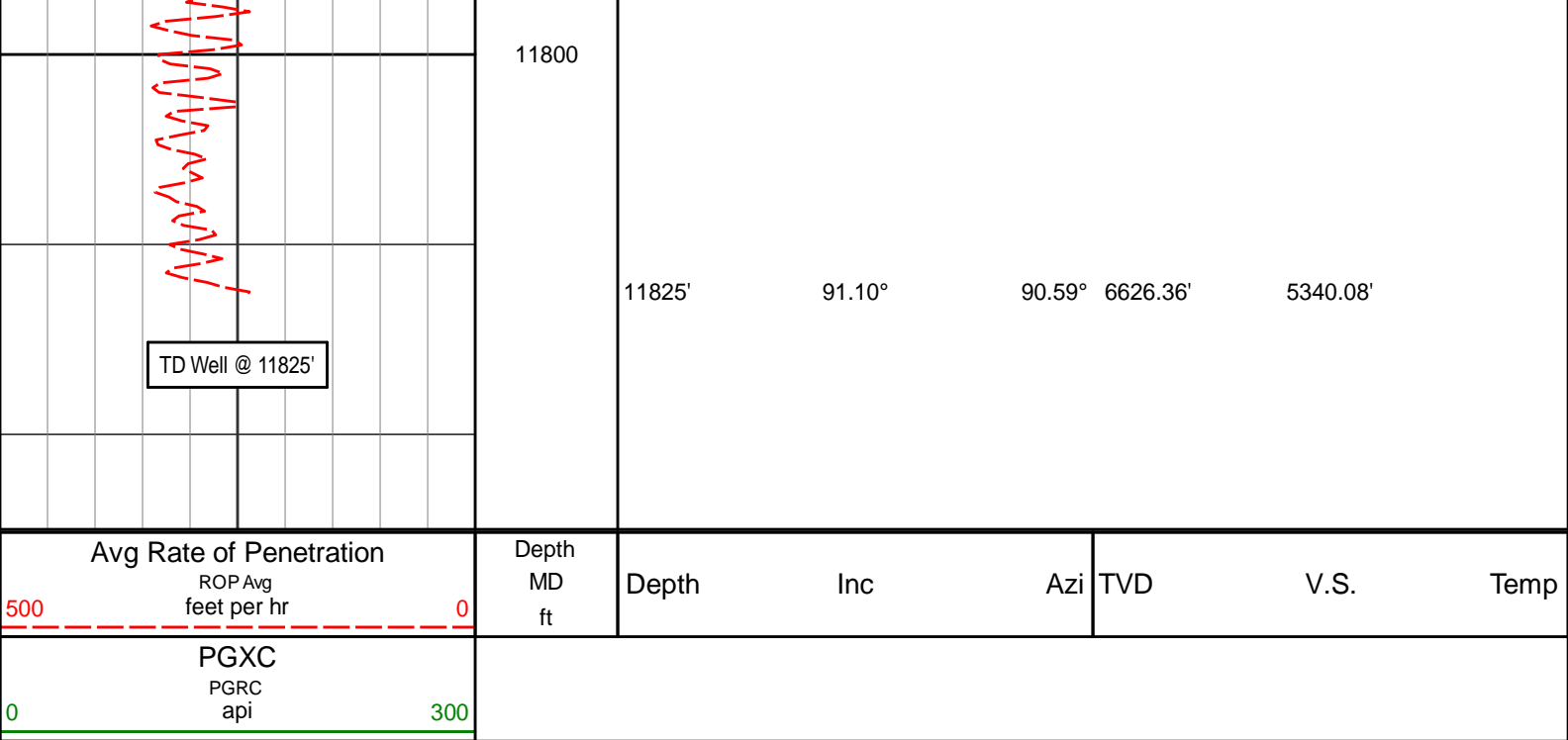
11700

11762'

91.10°

90.59° 6627.57'

5277.23'



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Wells Ranch AA22-650
Wattenberg
Weld Colorado
USA
CA-XX-0903206504

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
84.00	0.47	182.63	84.00	0.34 S	0.02 W	-0.04	0.56
175.00	0.40	171.27	175.00	1.03 S	0.02 E	-0.04	0.12
270.00	0.38	178.19	269.99	1.67 S	0.08 E	-0.02	0.05
362.00	0.29	187.31	361.99	2.21 S	0.06 E	-0.07	0.11
455.00	0.35	203.47	454.99	2.70 S	0.09 W	-0.24	0.12
549.00	0.33	208.60	548.99	3.20 S	0.33 W	-0.51	0.04
644.00	0.30	207.84	643.99	3.66 S	0.58 W	-0.79	0.03
738.00	0.23	231.61	737.99	4.00 S	0.84 W	-1.07	0.14
833.00	0.09	266.49	832.99	4.12 S	1.07 W	-1.30	0.17
928.00	0.18	286.82	927.99	4.08 S	1.28 W	-1.51	0.11
1022.00	0.21	305.01	1021.99	3.94 S	1.57 W	-1.79	0.07
1117.00	0.12	297.54	1116.99	3.80 S	1.80 W	-2.01	0.10
1211.00	0.16	280.58	1210.99	3.73 S	2.01 W	-2.22	0.06
1306.00	0.19	27.19	1305.99	3.56 S	2.07 W	-2.27	0.30
1401.00	0.45	38.03	1400.98	3.13 S	1.77 W	-1.94	0.28
1495.00	0.58	36.71	1494.98	2.46 S	1.26 W	-1.39	0.14
1590.00	0.82	46.97	1589.97	1.61 S	0.47 W	-0.56	0.28
1684.00	0.73	52.62	1683.96	0.78 S	0.49 E	0.45	0.13
1779.00	0.49	85.62	1778.96	0.39 S	1.38 E	1.36	0.44
1873.00	0.51	141.16	1872.96	0.68 S	2.04 E	2.00	0.50
1915.00	0.54	151.72	1914.95	1.00 S	2.26 E	2.19	0.24
1966.00	0.47	166.79	1965.95	1.42 S	2.42 E	2.33	0.29
2061.00	0.65	182.60	2060.95	2.34 S	2.48 E	2.34	0.25
2250.00	1.17	189.60	2249.92	5.32 S	2.11 E	1.80	0.28
2345.00	0.80	279.52	2344.91	6.17 S	1.29 E	0.94	1.49
2439.00	3.12	311.08	2438.85	4.38 S	1.28 W	-1.53	2.63
2534.00	5.01	318.52	2533.61	0.42 N	5.98 W	-5.94	2.06
2629.00	4.92	315.82	2628.26	6.45 N	11.56 W	-11.17	0.26
2723.00	4.67	314.46	2721.93	12.02 N	17.10 W	-16.39	0.29

2818.00	4.75	328.63	2816.61	18.09 N	21.91 W	-20.84	1.23
2912.00	4.78	326.22	2910.28	24.67 N	26.12 W	-24.67	0.22
3007.00	4.75	325.08	3004.95	31.19 N	30.57 W	-28.74	0.11
3102.00	4.40	322.89	3099.65	37.32 N	35.02 W	-32.83	0.41
3196.00	4.16	322.65	3193.39	42.90 N	39.26 W	-36.75	0.26
3291.00	4.65	328.91	3288.11	48.93 N	43.34 W	-40.48	0.72
3386.00	4.05	334.91	3382.84	55.27 N	46.75 W	-43.52	0.79
3480.00	4.16	332.20	3476.60	61.30 N	49.75 W	-46.17	0.23
3575.00	5.09	328.54	3571.29	67.94 N	53.55 W	-49.59	1.02
3670.00	5.95	329.19	3665.84	75.75 N	58.27 W	-53.86	0.91
3764.00	5.78	322.97	3759.35	83.72 N	63.62 W	-58.74	0.70
3859.00	5.86	320.35	3853.86	91.27 N	69.59 W	-64.27	0.29
3953.00	5.58	318.75	3947.40	98.40 N	75.67 W	-69.93	0.34
4048.00	5.22	318.24	4041.97	105.10 N	81.59 W	-75.46	0.39
4143.00	4.56	318.47	4136.63	111.15 N	86.97 W	-80.49	0.69
4237.00	4.03	321.27	4230.36	116.52 N	91.52 W	-84.73	0.61
4332.00	3.73	322.39	4325.15	121.58 N	95.50 W	-88.41	0.32
4426.00	4.50	324.96	4418.90	127.02 N	99.48 W	-92.07	0.84
4521.00	4.63	321.14	4513.60	133.05 N	104.02 W	-96.26	0.35
4710.00	4.32	320.35	4702.03	144.47 N	113.35 W	-104.93	0.16
4805.00	3.85	324.91	4796.78	149.84 N	117.47 W	-108.73	0.61
4900.00	3.99	322.98	4891.56	155.09 N	121.29 W	-112.25	0.20
4994.00	4.06	308.26	4985.33	159.76 N	125.87 W	-116.55	1.10
5089.00	3.71	303.59	5080.11	163.54 N	131.08 W	-121.53	0.49
5184.00	3.87	323.15	5174.91	167.81 N	135.56 W	-125.77	1.36
5278.00	3.83	336.17	5268.70	173.21 N	138.73 W	-128.62	0.93
5373.00	3.72	341.34	5363.50	179.03 N	140.99 W	-130.55	0.38
5467.00	3.70	326.60	5457.30	184.44 N	143.63 W	-132.88	1.01
5562.00	3.60	313.13	5552.11	189.04 N	147.49 W	-136.47	0.91
5657.00	4.40	312.76	5646.88	193.55 N	152.34 W	-141.06	0.85
5751.00	3.10	311.00	5740.67	197.66 N	156.91 W	-145.38	1.39
5846.00	3.41	329.58	5835.52	201.78 N	160.28 W	-148.51	1.15
5940.00	7.14	355.99	5929.12	210.03 N	162.10 W	-149.86	4.64
6033.00	10.79	51.36	6021.12	221.25 N	155.70 W	-142.82	9.58
6124.00	17.73	85.64	6109.41	227.64 N	135.17 W	-121.96	11.71
6217.00	26.37	87.57	6195.53	229.60 N	100.34 W	-87.08	9.32
6309.00	31.76	87.88	6275.91	231.36 N	55.70 W	-42.41	5.85
6400.00	37.35	87.93	6350.83	233.24 N	4.14 W	9.17	6.15
6492.00	44.81	88.92	6420.13	234.86 N	56.25 E	69.55	8.13
6584.00	53.83	93.82	6480.06	233.00 N	125.88 E	138.96	10.60
6676.00	61.03	91.64	6529.56	229.37 N	203.26 E	216.02	8.08
6767.00	65.36	89.32	6570.59	228.72 N	284.46 E	297.04	5.28
6859.00	72.14	89.45	6603.92	229.64 N	370.15 E	382.64	7.37
6951.00	79.55	89.24	6626.40	230.67 N	459.29 E	471.70	8.06
7044.00	91.04	88.16	6634.01	232.77 N	551.79 E	564.17	12.40
7136.00	90.86	88.55	6632.49	235.41 N	643.74 E	656.12	0.46
7227.00	90.95	87.91	6631.05	238.22 N	734.69 E	747.08	0.71
7318.00	90.64	87.61	6629.79	241.78 N	825.61 E	838.06	0.47
7410.00	91.23	90.40	6628.29	243.37 N	917.57 E	929.96	3.10
7599.00	91.16	89.83	6624.35	242.99 N	1106.53 E	1118.59	0.30
7694.00	89.47	90.03	6623.83	243.11 N	1201.53 E	1213.44	1.79
7788.00	89.62	90.22	6624.57	242.90 N	1295.52 E	1307.27	0.26
7883.00	89.65	90.33	6625.18	242.45 N	1390.52 E	1402.08	0.12
7977.00	89.31	90.08	6626.03	242.11 N	1484.51 E	1495.91	0.45
8072.00	89.75	89.91	6626.81	242.12 N	1579.51 E	1590.75	0.50
8167.00	90.61	89.88	6626.51	242.29 N	1674.51 E	1685.60	0.91
8261.00	90.61	89.65	6625.51	242.68 N	1768.50 E	1779.47	0.24
8355.00	89.31	89.81	6625.58	243.12 N	1862.50 E	1873.34	1.39
8450.00	89.35	90.32	6626.69	243.02 N	1957.49 E	1968.17	0.54
8545.00	89.62	89.91	6627.54	242.82 N	2052.49 E	2063.00	0.52
8640.00	89.53	89.51	6628.25	243.31 N	2147.48 E	2157.87	0.43
8734.00	89.62	88.95	6628.94	244.57 N	2241.47 E	2251.77	0.60
8829.00	89.56	89.16	6629.62	246.14 N	2336.46 E	2346.69	0.23
8924.00	89.84	89.41	6630.12	247.32 N	2431.45 E	2441.60	0.40
9018.00	90.05	88.60	6630.21	248.95 N	2525.43 E	2535.52	0.89
9113.00	90.58	88.50	6629.69	251.36 N	2620.40 E	2630.47	0.57
9208.00	91.07	88.86	6628.32	253.55 N	2715.37 E	2725.41	0.64
9302.00	90.09	88.07	6627.37	256.06 N	2809.33 E	2819.36	1.34
9397.00	90.52	88.40	6626.86	258.99 N	2904.28 E	2914.32	0.57
9492.00	89.87	87.00	6626.54	262.80 N	2999.20 E	3009.31	1.62
9586.00	90.40	87.14	6626.32	267.61 N	3093.08 E	3103.30	0.58
9681.00	91.32	87.10	6624.89	272.38 N	3187.94 E	3198.29	0.97
9776.00	89.04	87.58	6624.60	276.79 N	3282.83 E	3293.28	2.45
9870.00	89.35	87.72	6625.92	280.64 N	3376.75 E	3387.26	0.36
9965.00	90.55	88.00	6626.00	284.10 N	3471.68 E	3482.24	1.20

9965.00	90.53	88.00	6626.00	284.19 N	3471.08 E	3462.24	1.50
10154.00	89.78	89.34	6625.45	288.58 N	3660.62 E	3671.12	0.82
10249.00	90.30	89.23	6625.39	289.76 N	3755.61 E	3766.03	0.56
10343.00	91.17	89.31	6624.18	290.96 N	3849.60 E	3859.93	0.93
10438.00	88.76	88.77	6624.24	292.55 N	3944.58 E	3954.84	2.60
10532.00	88.52	88.44	6626.47	294.84 N	4038.52 E	4048.76	0.43
10627.00	89.19	88.54	6628.37	297.34 N	4133.47 E	4143.70	0.71
10721.00	89.47	88.07	6629.47	300.12 N	4227.42 E	4237.66	0.58
10816.00	89.90	87.45	6629.99	303.83 N	4322.35 E	4332.64	0.79
10911.00	89.41	89.47	6630.56	306.39 N	4417.31 E	4427.59	2.19
11005.00	89.38	89.20	6631.56	307.48 N	4511.29 E	4521.49	0.29
11100.00	89.69	88.93	6632.33	309.03 N	4606.28 E	4616.40	0.43
11195.00	90.00	89.04	6632.58	310.71 N	4701.26 E	4711.33	0.35
11289.00	90.12	89.31	6632.49	312.07 N	4795.25 E	4805.25	0.31
11384.00	91.32	90.04	6631.29	312.60 N	4890.24 E	4900.11	1.48
11478.00	90.09	90.31	6630.14	312.32 N	4984.23 E	4993.93	1.34
11668.00	90.61	91.00	6628.98	310.15 N	5174.21 E	5183.48	0.45
11762.00	91.10	90.59	6627.57	308.84 N	5268.19 E	5277.23	0.68
11825.00	91.10	90.59	6626.36	308.19 N	5331.18 E	5340.08	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 86.73 DEGREES (GRID)
A TOTAL CORRECTION OF 7.60 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11825.00 FEET
IS 5340.08 FEET ALONG 86.69 DEGREES (GRID)**

Surveys through 1933' are gyro surveys.

Last survey is a projection to the bit at TD.