

PCGC : Pressure Case Gamma
PCDC: Pressure Case Directional

1:600 / 1:240

[illegible]

WELL INFORMATION

MWD Run Number	100	200	300		
Date run completed	29-Sep-14	30-Sep-14	04-Oct-14		
Rig Bit Number	2	3	4		
Bit Size (in)	8.750	8.750	6.125		
Tool Nominal OD (in)	6.830	6.750	4.750		
Log Start Depth (MD, ft)	1,212.00	5,050.00	6,189.00		
Log End Depth (MD, ft)	5,050.00	6,189.00	10,339.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	28-Sep-14 19:15	29-Sep-14 23:00	01-Oct-14 11:45		
Drill/Wipe End Date and Time	29-Sep-14 05:50	30-Sep-14 09:50	03-Oct-14 16:00		
Min Inc (deg) @ Depth (MD, ft)	0.43 @ 1,270.00	0.34 @ 5,097.00	85.92 @ 6,205.00		
Max Inc (deg) @ Depth (MD, ft)	14.45 @ 3,534.00	81.59 @ 6,135.00	92.37 @ 8,157.00		
Bit TFA(in2) / Bit Type	0.74 / PDC	0.91 / PDC	0.75 / PDC		
Flow Rate (gpm)	583.17	595.00	293.00		
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A	N/A / N/A	N/A / N/A		
Fluid Type	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel		
Density (ppg) / Viscosity (spqt)	9.60 / 31.00	10.60 / 90.00	10.30 / 36.00		
Filtrate CL (ppm)	200.00	150.00	150.00		
pH / Fluid Loss (mptm)	9.10 / 0	9.50 / 7	9.40 / 0		
PV (cP) / YP (lbf2)	3 / 5.00	18 / 24.00	15 / 2.00		
% Solids / % Sand	.2 / .2	10.30 / 0.20	10 / .2		
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A	N/A / N/A		
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
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 (in F) / S	158.46 / PGM	122.22 / PGM	212.12 / PGM		

Max Tool Temp (degF) / Source	150.10 / PCM	162.80 / PCM	213.40 / PCM		
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Lead MWD Engineer	Juan Pablo Centeno	Juan Pablo Centeno	Juan Pablo Centeno		
Customer Representative	Justin Fields	Justin Fields	Justin Fields		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.93	5.93	5.93		
Sub Serial Number	11404274	11404274	12310756		
Insert Serial Number	11400845	11400845	11055866		
Date and Time Initialized	26-Sep-14 15:32	29-Sep-14 16:38	01-Oct-14 02:29		
Date and Time Read	29-Sep-14 15:43	30-Sep-14 15:56	04-Oct-14 03:24		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	53.00	52.26	63.53		
Software Version	6.21	6.21	6.21		
Sub Serial Number	11404274	11404274	12310756		
Sonde Serial Number	11297588	11297588	11833253		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	50.60	313.74	115.66		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	47.90	47.16	58.43		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	11404274	11404274	12310756		
Insert/Sonde Serial Number	11680972	11680972	11293339		

REMARKS

1. All depths are calibrated to the driller's pipe tally and are measured from the rig 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.
 - ROPA: Average Rate of Penetration is real time data.
 - PGRC: Smooth Pressure Case Gamma Ray Borehole corrected is recorded data.
4. The following smoothing parameters have been applied to the data:
 - All 2" (1:600) logs - 1 ft. interval, 3 ft. coercion distance.
 - All 5" (1:240) logs - .5 ft. interval, .6 ft. coercion distance.
5. INSITE version 8.0.20
6. Gamma presented inside casing/cement from 6142 ft. MD to 6179 ft. MD.

WARRANTY

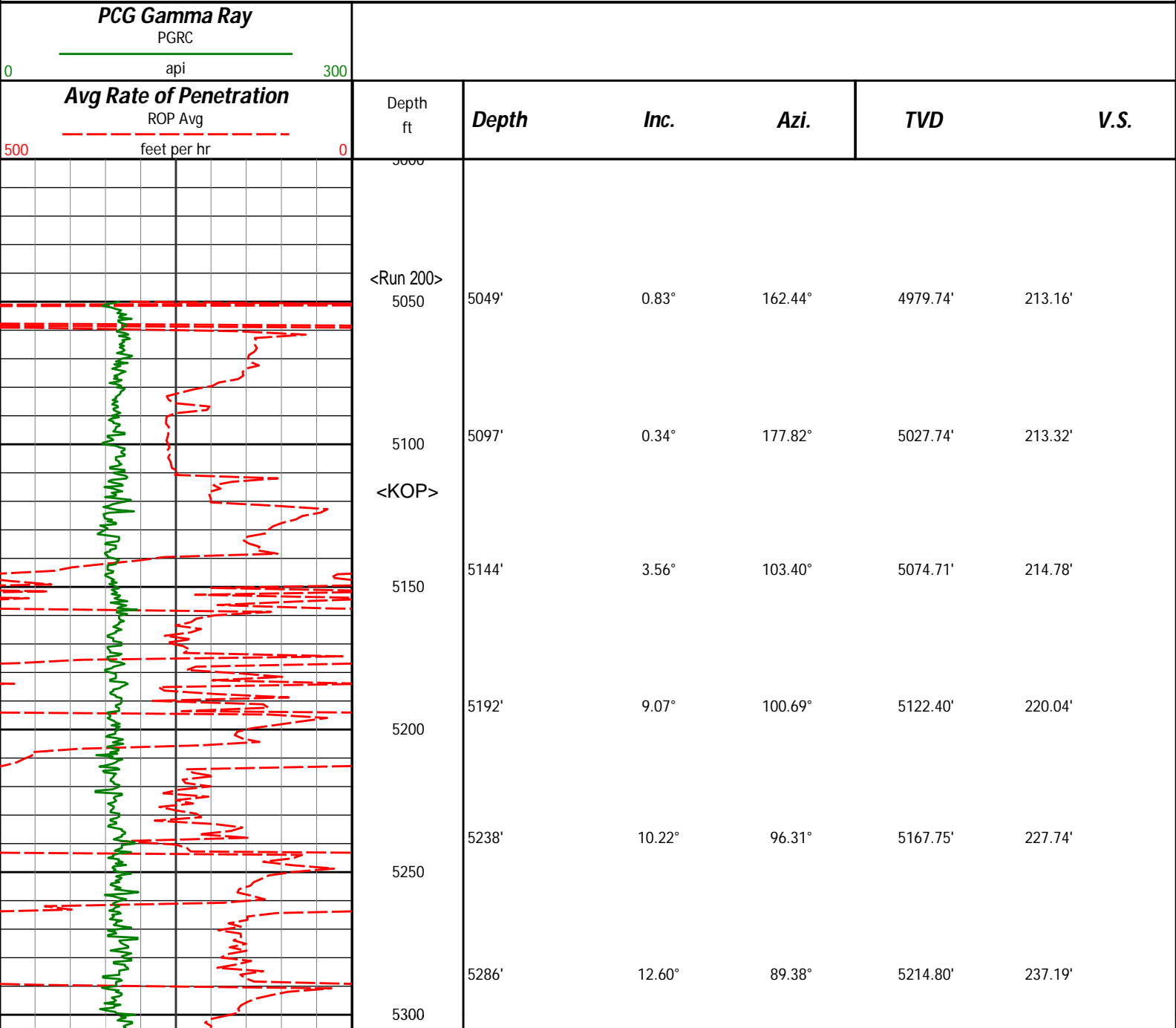
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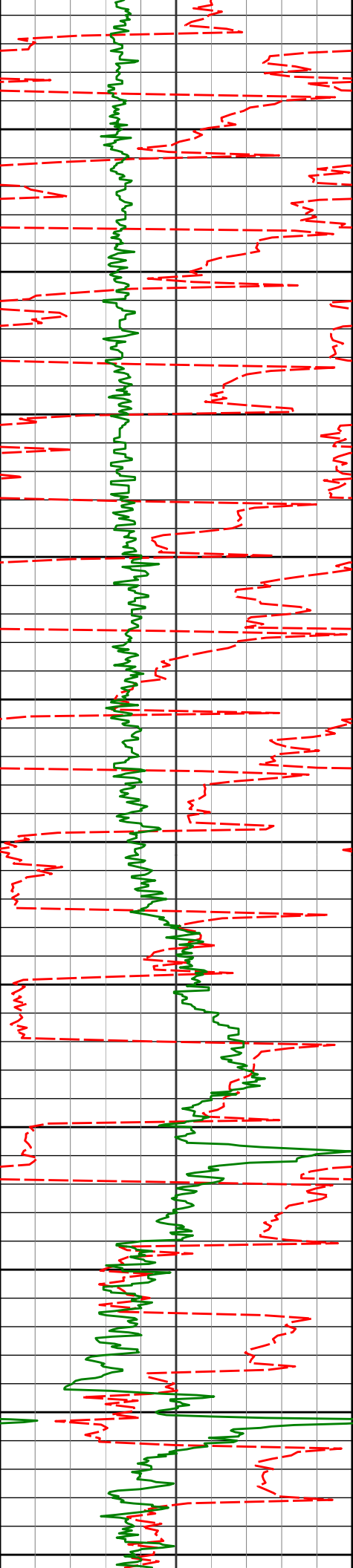
HALLIBURTON

Sperry Drilling Services

MD Main Log 1:600

Noble Energy, Inc
Rohn State LD10-69HN
H&P 273
T9N R58W





5350

5400

5450

5500

5550

5600

5650

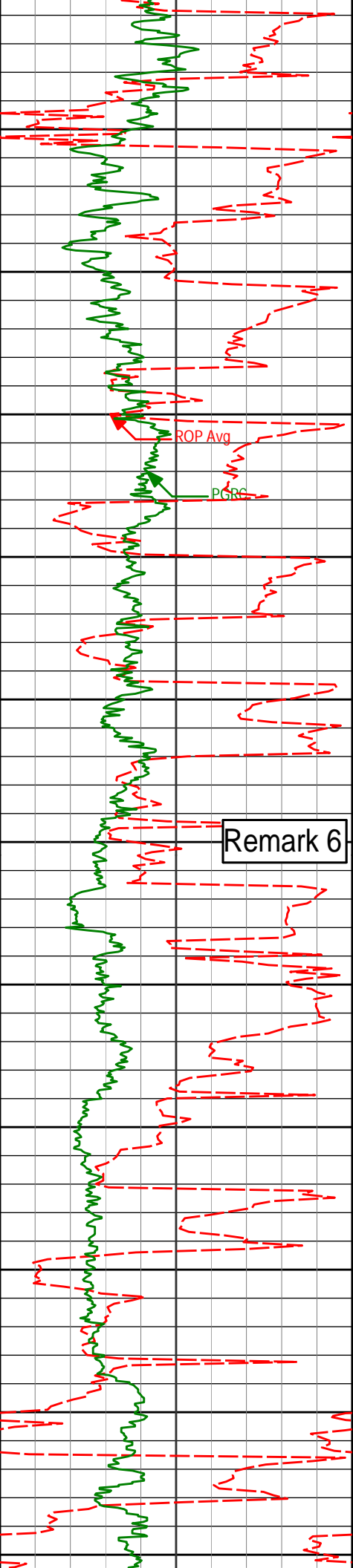
5700

5750

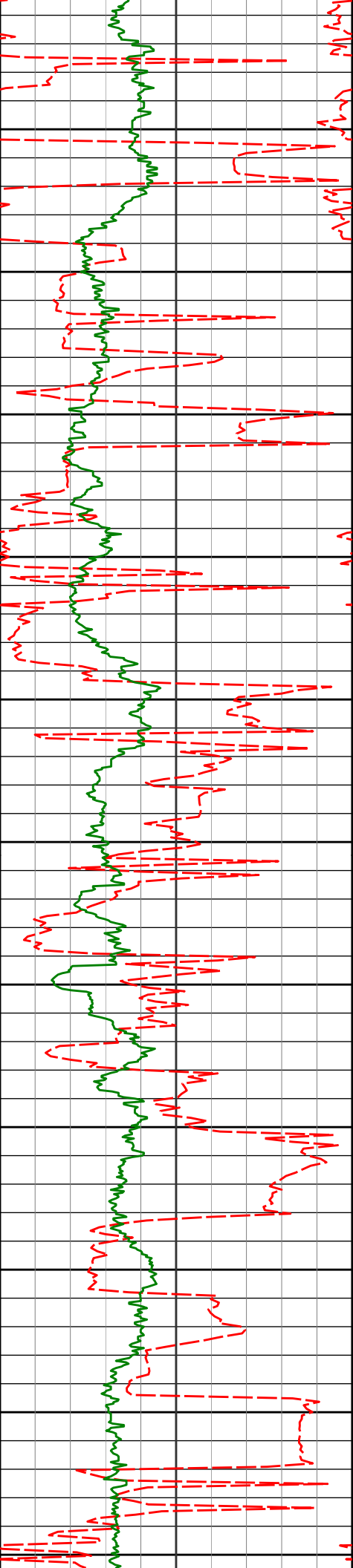
5800

5850

5333'	17.11°	84.88°	5260.21'	249.07'
5381'	21.35°	87.08°	5305.53'	264.63'
5428'	25.10°	87.57°	5348.71'	282.94'
5476'	27.15°	86.74°	5391.81'	303.81'
5523'	30.81°	87.72°	5432.91'	326.30'
5571'	36.44°	90.69°	5472.87'	352.68'
5618'	39.44°	90.92°	5509.93'	381.44'
5666'	43.90°	89.25°	5545.78'	413.16'
5712'	48.93°	88.88°	5577.48'	446.21'
5760'	52.85°	89.66°	5607.76'	483.18'
5807'	56.08°	89.91°	5635.07'	521.18'



5900	5902'	62.81°	90.40°	5683.70'	602.26'
5950	5950'	65.57°	90.44°	5704.59'	645.25'
6000	5997'	70.36°	90.23°	5722.22'	688.58'
6050	6045'	74.65°	88.94°	5736.65'	734.04'
6100	6092'	79.27°	88.53°	5747.25'	779.43'
6150	6135'	81.59°	90.51°	5754.40'	821.54'
	<7" casing set at 6179' MD>				
	<Run 300>				
6200	6205'	85.92°	88.75°	5762.01'	890.65'
6250					
6300	6298'	88.40°	90.40°	5766.62'	982.90'
6350					
6400	6391'	88.77°	89.12°	5768.93'	1075.29'



6450

6483'

87.96°

87.45°

5771.55'

1166.37'

6500

6550

6577'

88.67°

86.99°

5774.32'

1259.18'

6600

6650

6672'

89.48°

86.48°

5775.85'

1352.88'

6700

6736'

88.39°

86.87°

5777.04'

1415.99'

6750

6800

6830'

91.60°

85.55°

5777.04'

1508.55'

6850

6900

6925'

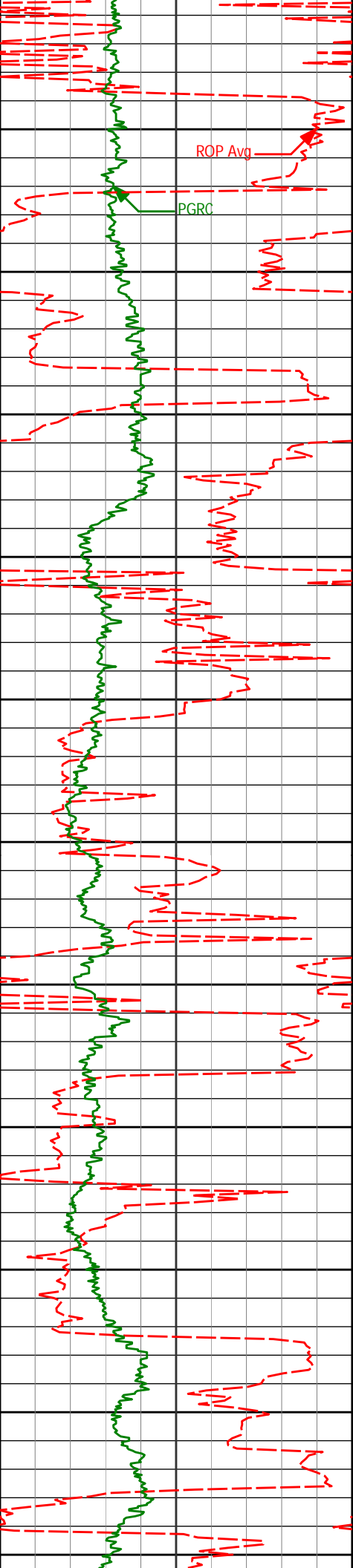
91.88°

88.59°

5774.15'

1602.29'

6950



7000
7020'
7050
7100
7115'
7150
7200
7210'
7250
7300
7305'
7350
7400
7399'
7450
7494'
7500

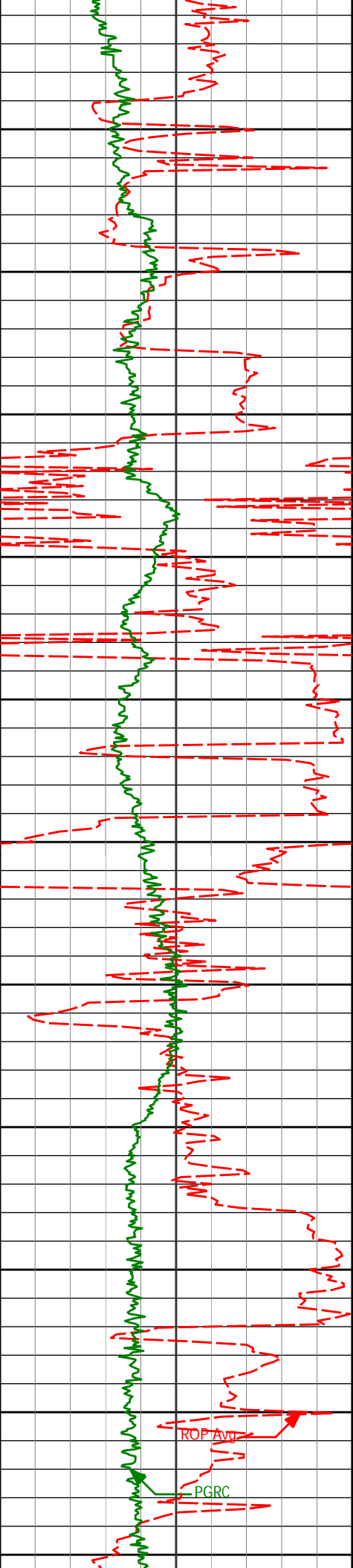
7020'
7115'
7210'
7305'
7399'
7494'

90.65°
88.89°
87.66°
87.53°
88.55°
89.26°

90.38°
91.24°
91.08°
90.50°
90.40°
89.69°

5772.06'
5772.44'
5775.30'
5779.29'
5782.50'
5784.32'

1696.62'
1791.19'
1885.78'
1980.28'
2073.75'
2168.18'



7550

7589'

88.27°

89.36°

5786.36'

2262.52'

7600

7650

7684'

87.22°

88.84°

5790.10'

2356.72'

7700

7750

7778'

88.89°

88.06°

5793.28'

2449.80'

7800

7850

7873'

89.01°

87.22°

5795.02'

2543.73'

7900

7950

7968'

91.79°

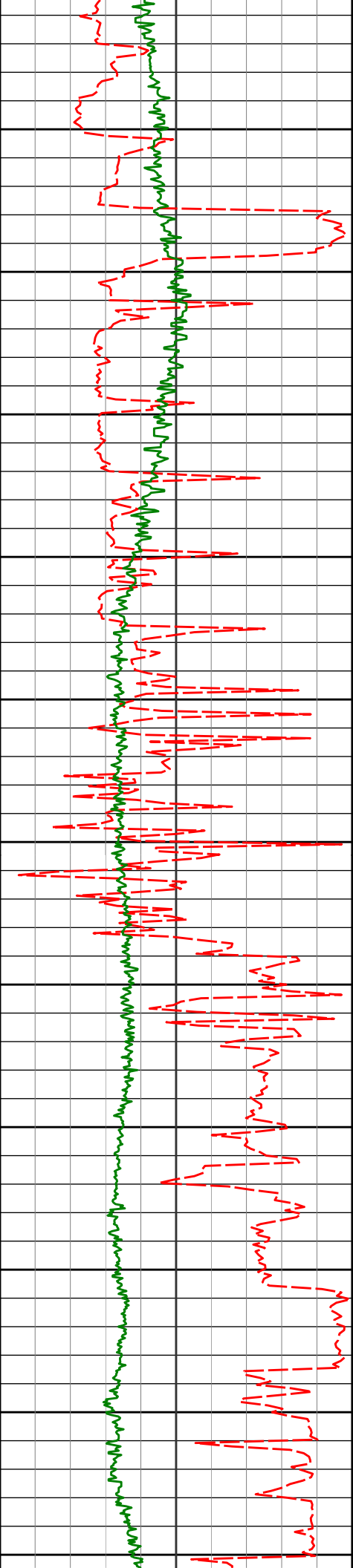
86.11°

5794.35'

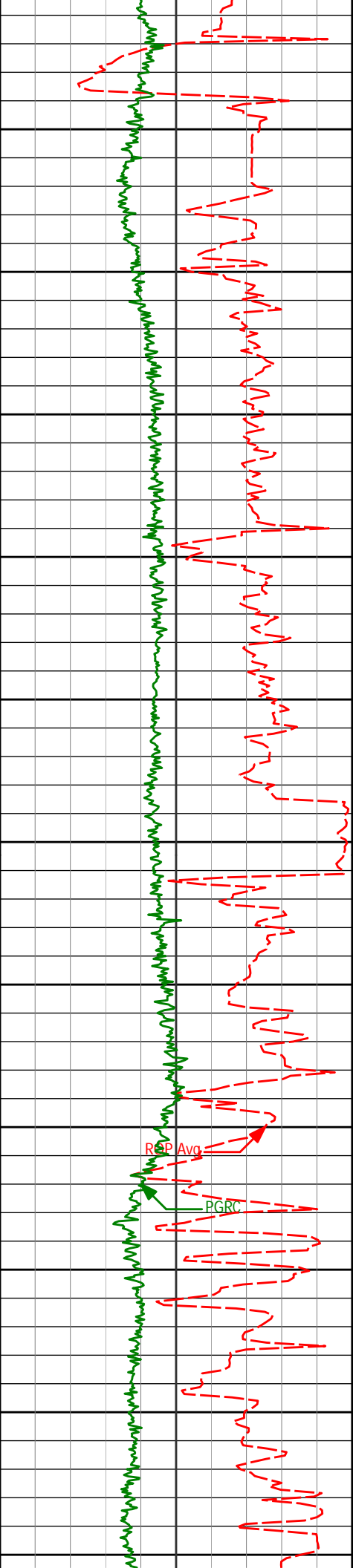
2637.41'

8000

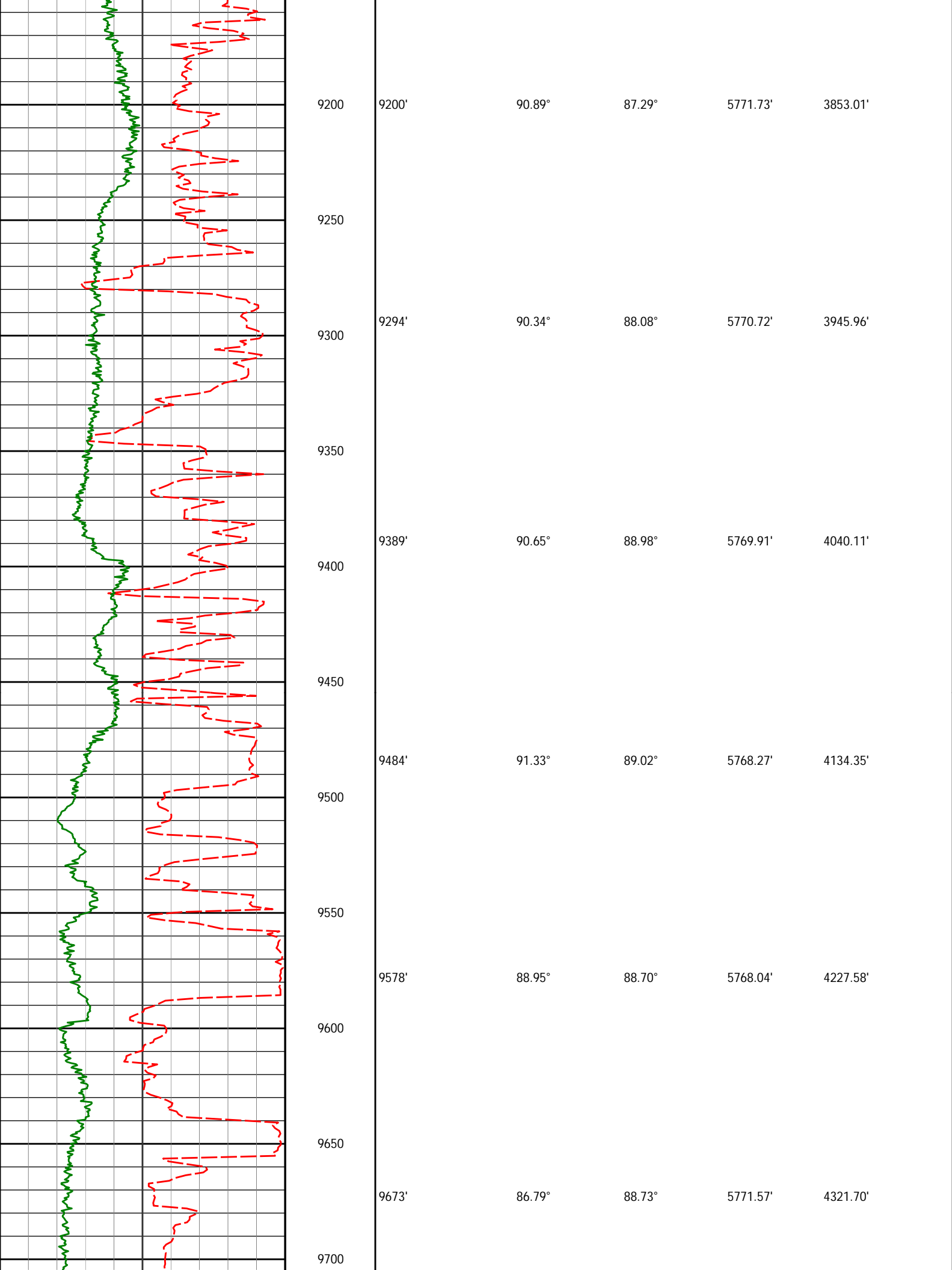
8050

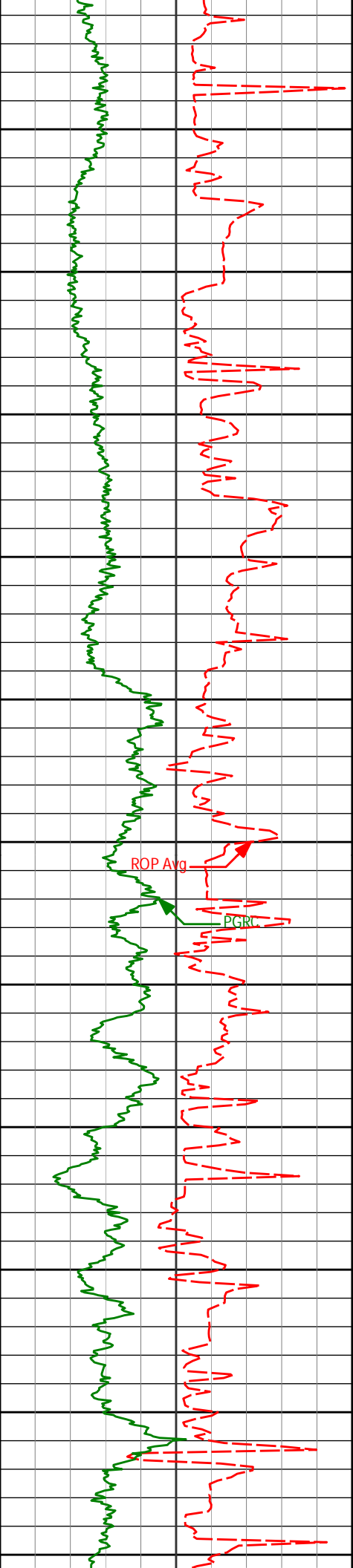


	8063'	91.08°	85.19°	5791.98'	2730.78'
8100					
8150	8157'	92.37°	86.47°	5789.14'	2823.20'
8200					
8250	8252'	91.79°	86.18°	5785.69'	2916.73'
8300					
8350	8347'	91.11°	86.10°	5783.29'	3010.24'
8400					
8450	8441'	89.60°	86.58°	5782.71'	3102.85'
8500					
8550	8536'	91.33°	87.69°	5781.94'	3196.66'
8600					



8631'	91.57°	87.81°	5779.54'	3290.60'
8650				
8700				
8726'	91.05°	87.79°	5777.37'	3384.56'
8750				
8800				
8821'	90.15°	86.95°	5776.37'	3478.43'
8850				
8900				
8916'	90.89°	88.02°	5775.50'	3572.33'
8950				
9000				
9010'	90.71°	87.44°	5774.19'	3665.30'
9050				
9100				
9105'	90.68°	87.25°	5773.04'	3759.16'
9150				





9750

9768'

86.67°

88.16°

5776.99'

4415.68'

9800

9850

9862'

86.73°

87.74°

5782.40'

4508.55'

9900

9950

9957'

86.85°

87.20°

5787.72'

4602.31'

10000

ROP Avg

PGR

10050

10052'

87.35°

87.20°

5792.53'

4696.02'

10100

10150

10147'

87.87°

87.26°

5796.49'

4789.78'

10200

10250

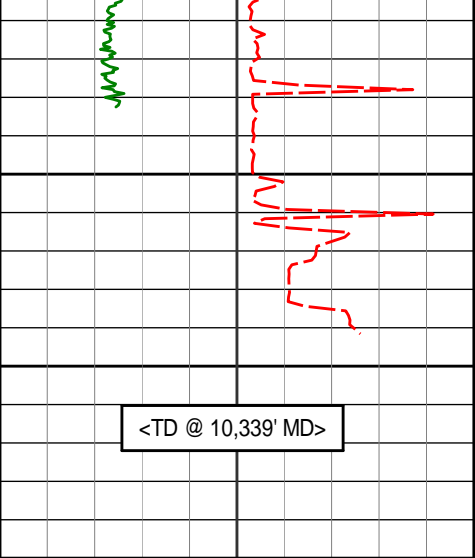
10242'

88.15°

87.05°

5799.79'

4883.54'



<TD @ 10,339' MD>

10300

10350

10400

Avg Rate of Penetration

ROP Avg

feet per hr

PCG Gamma Ray

PGRC

api

Depth
ft

Depth

Inc.

Azi.

TVD

V.S.

HALLIBURTON

Sperry Drilling Services

MD Detail Log 1:240

Noble Energy, Inc
Rohn State LD10-69HN
H&P 273
T9N R58W

PCG Gamma Ray

PGRC

api

Avg Rate of Penetration

ROP Avg

feet per hr

Depth
ft

Depth

Inc.

Azi.

TVD

V.S.

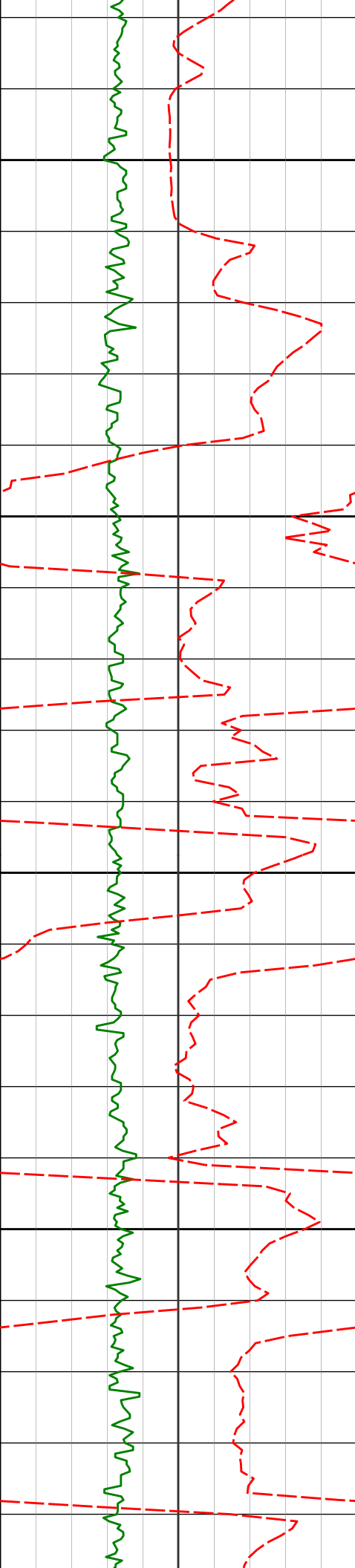
<Run 200>
5050

5049'

 0.83° 162.44°

4979.74'

213.16'



<KOP>

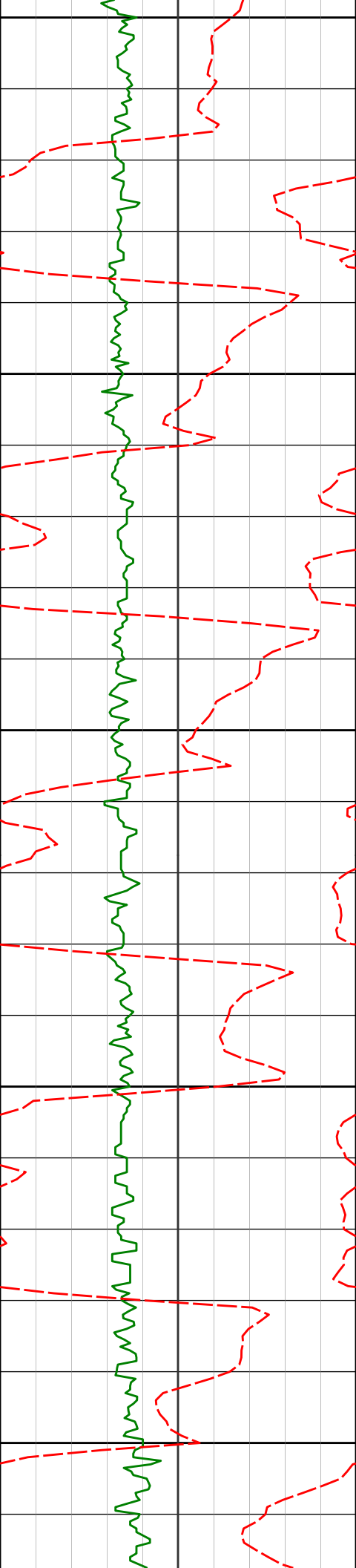
5100

5150

5200

5250

5097'	0.34°	177.82°	5027.74'	213.32'
5144'	3.56°	103.40°	5074.71'	214.78'
5192'	9.07°	100.69°	5122.40'	220.04'
5238'	10.22°	96.31°	5167.75'	227.74'
5286'	12.60°	89.38°	5214.80'	237.19'



5300

5333'

17.11°

84.88°

5260.21'

249.07'

5350

5381'

21.35°

87.08°

5305.53'

264.63'

5400

5428'

25.10°

87.57°

5348.71'

282.94'

5450

5476'

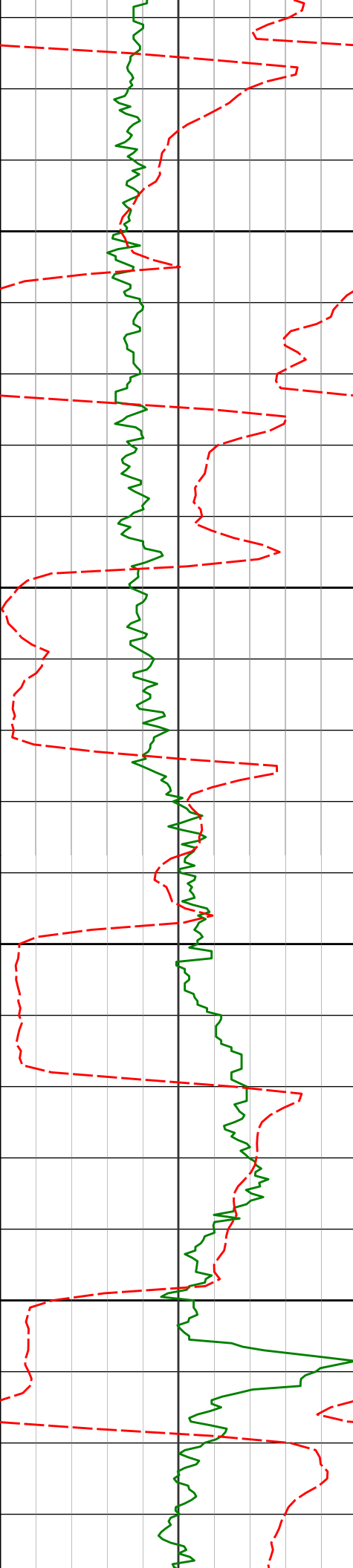
27.15°

86.74°

5391.81'

303.81'

5500



5523'

30.81°

87.72°

5432.91'

326.30'

5550

5571'

36.44°

90.69°

5472.87'

352.68'

5600

5618'

39.44°

90.92°

5509.93'

381.44'

5650

5666'

43.90°

89.25°

5545.78'

413.16'

5700

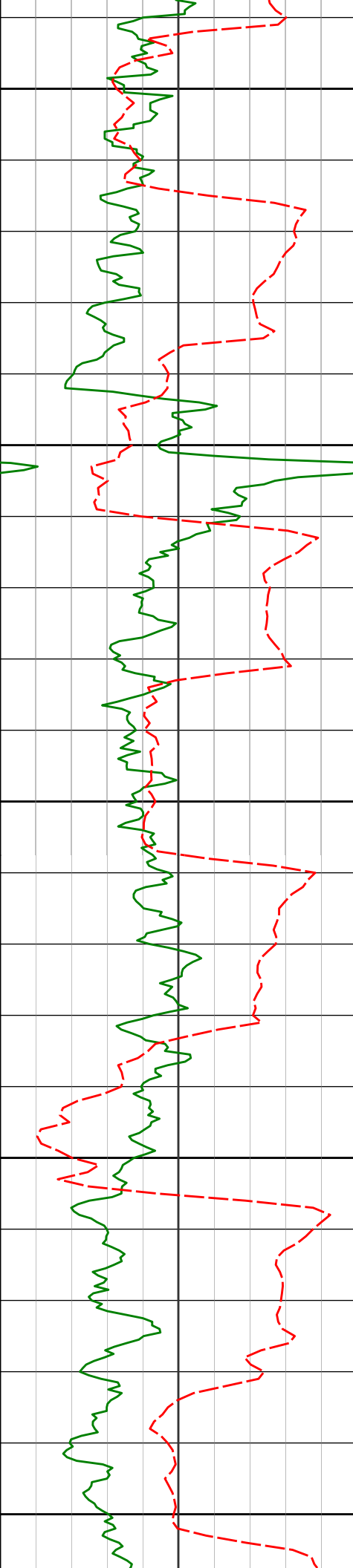
5712'

48.93°

88.88°

5577.48'

446.21'



5750

5760'

52.85°

89.66°

5607.76'

483.18'

5800

5807'

56.08°

89.91°

5635.07'

521.18'

5850

5855'

58.98°

89.97°

5660.84'

561.43'

5900

5902'

62.81°

90.40°

5683.70'

602.26'

5950

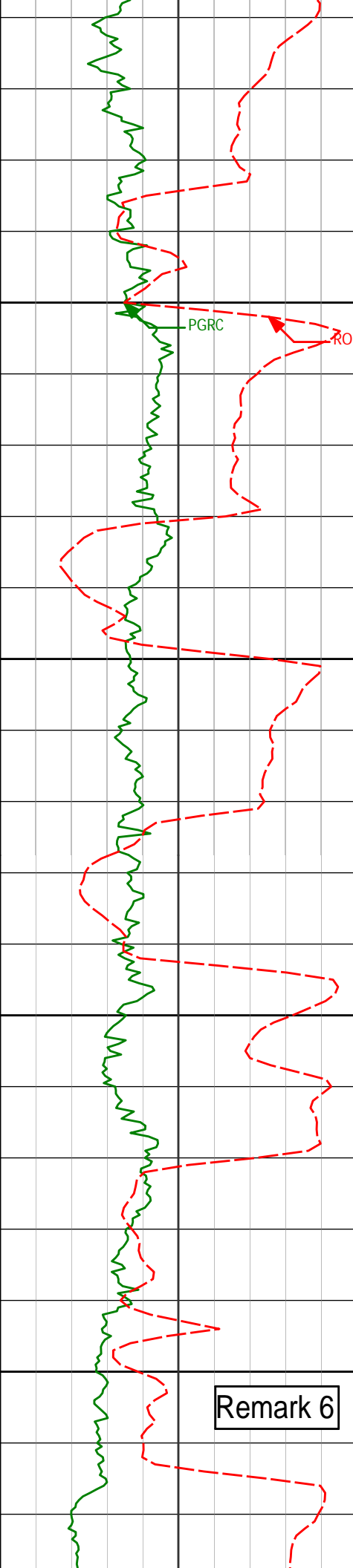
5950'

65.57°

90.44°

5704.59'

645.25'



6000

6050

6100

6150

5997'

70.36°

90.33°

5722.22'

688.58'

6045'

74.65°

88.94°

5736.65'

734.04'

6092'

79.27°

88.53°

5747.25'

779.43'

6135'

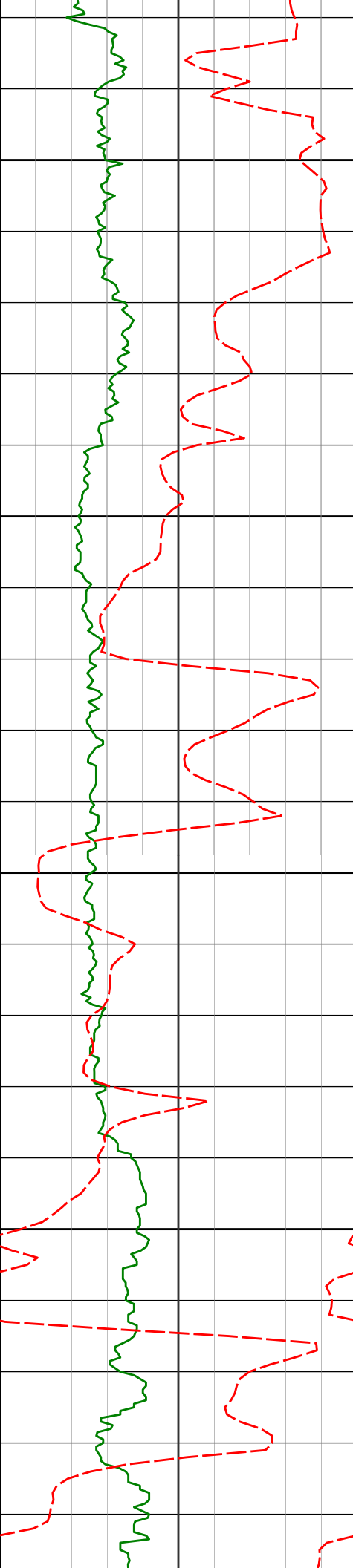
81.59°

90.51°

5754.40'

821.54'

47" casing set at 6170' MD



<Run 300>

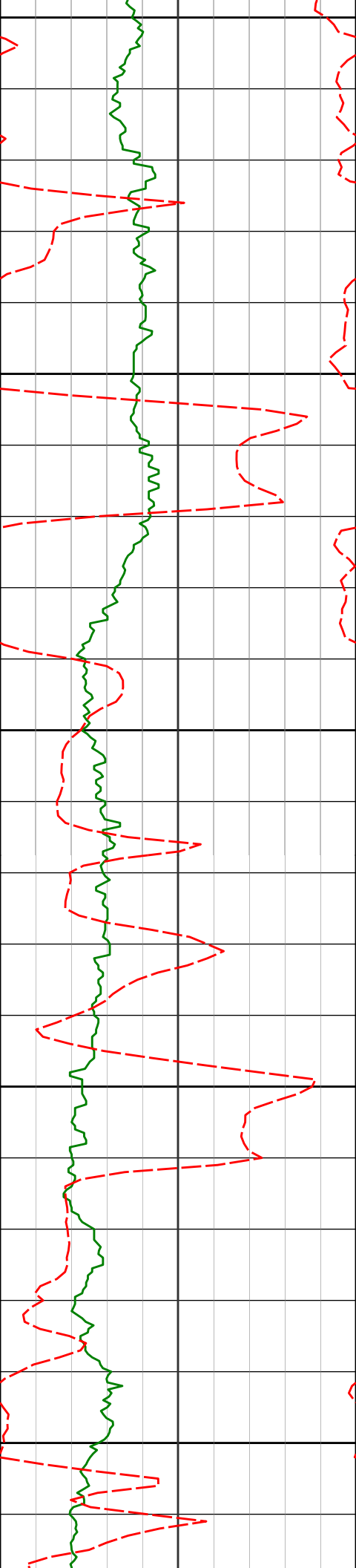
6200

6250

6300

6350

<7 casing set at 6179 MD>				
6205'	85.92°	88.75°	5762.01'	890.65'
6298'	88.40°	90.40°	5766.62'	982.90'
6391'	88.77°	89.12°	5768.93'	1075.29'



6400

6450

6500

6550

6600

6483'

87.96°

87.45°

5771.55'

1166.37'

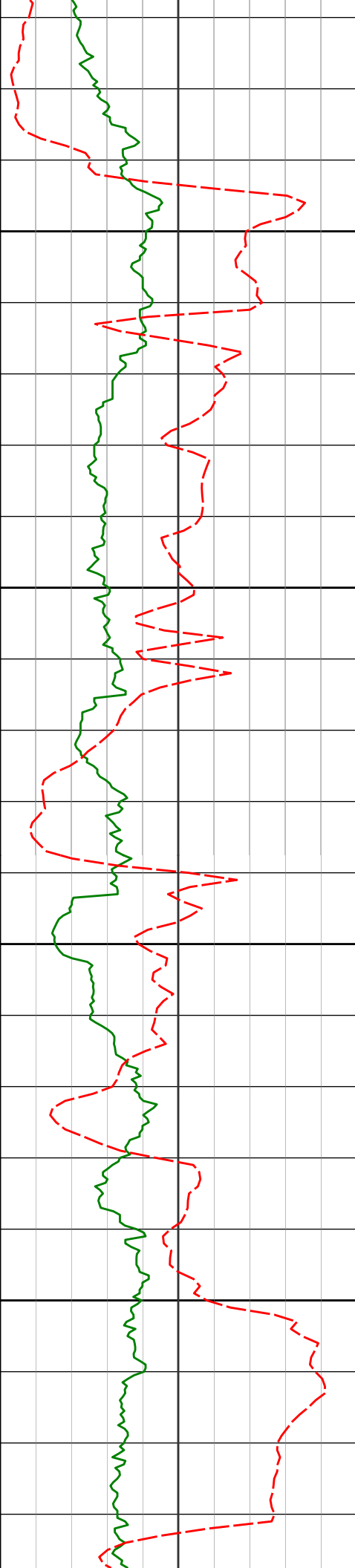
6577'

88.67°

86.99°

5774.32'

1259.18'



6650

6672'

89.48°

86.48°

5775.85'

1352.88'

6700

6736'

88.39°

86.87°

5777.04'

1415.99'

6750

6800

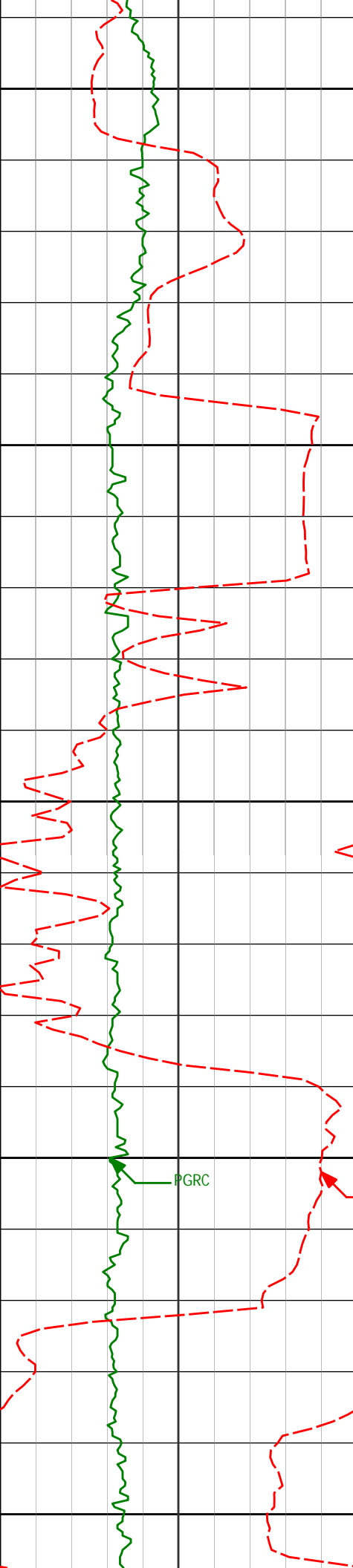
6830'

91.60°

85.55°

5777.04'

1508.55'



6850

6900

6950

7000

7050

PGRC

ROP Avg

6925'

91.88°

88.59°

5774.15'

1602.29'

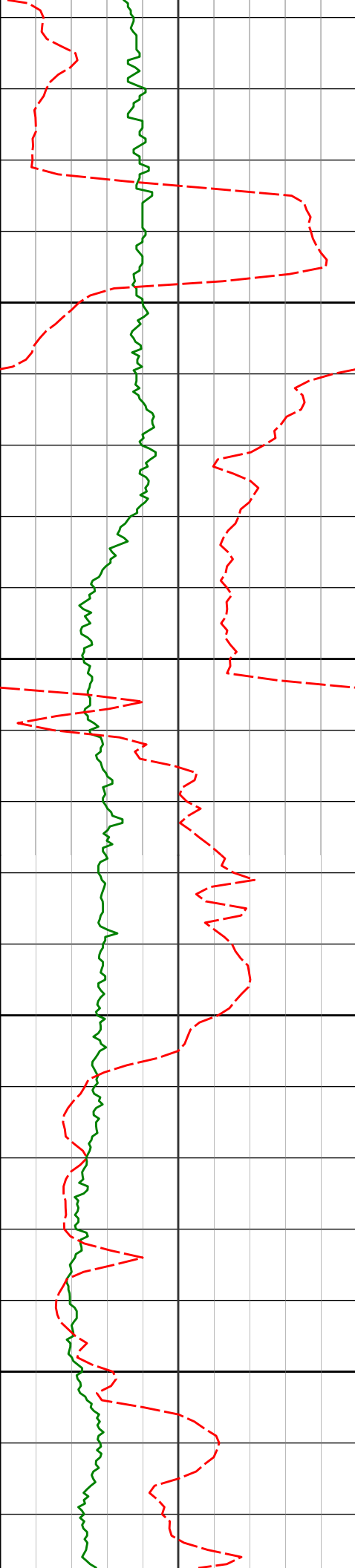
7020'

90.65°

90.38°

5772.06'

1696.62'



7100

7115'

88.89°

91.24°

5772.44'

1791.19'

7150

7200

7210'

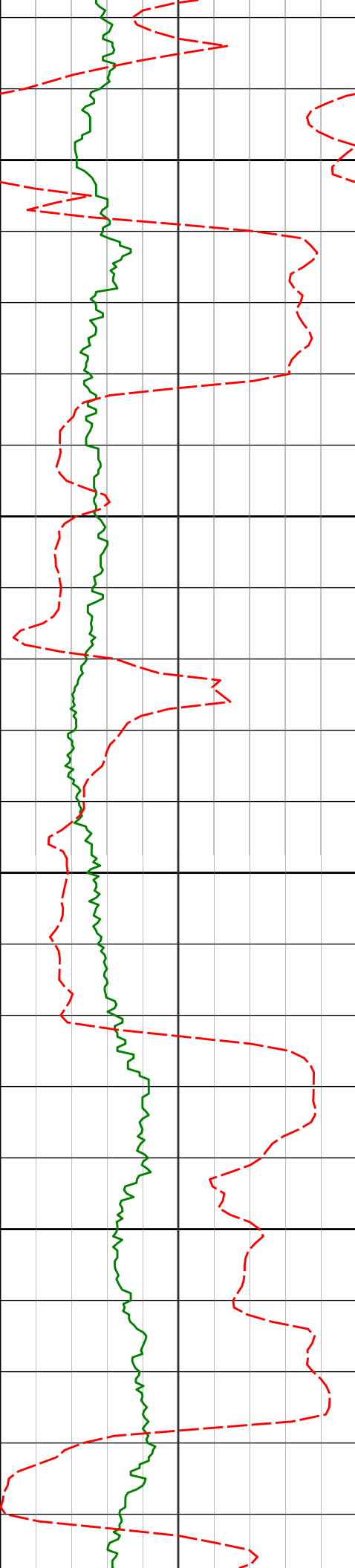
87.66°

91.08°

5775.30'

1885.78'

7250



7300

7305'

87.53°

90.50°

5779.29'

1980.28'

7350

7400

7399'

88.55°

90.40°

5782.50'

2073.75'

7450

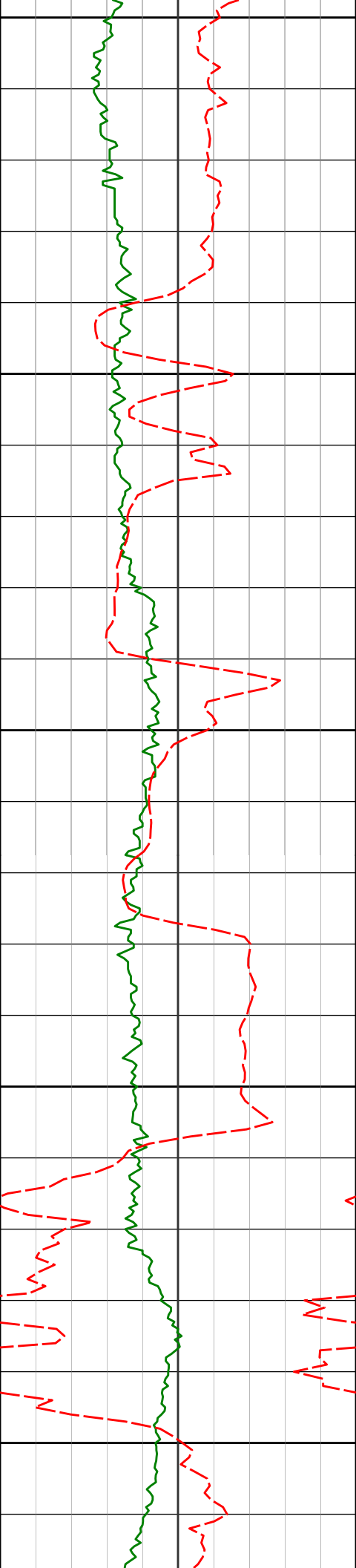
7494'

89.26°

89.69°

5784.32'

2168.18'



7500

7550

7600

7650

7700

7589'

88.27°

89.36°

5786.36'

2262.52'

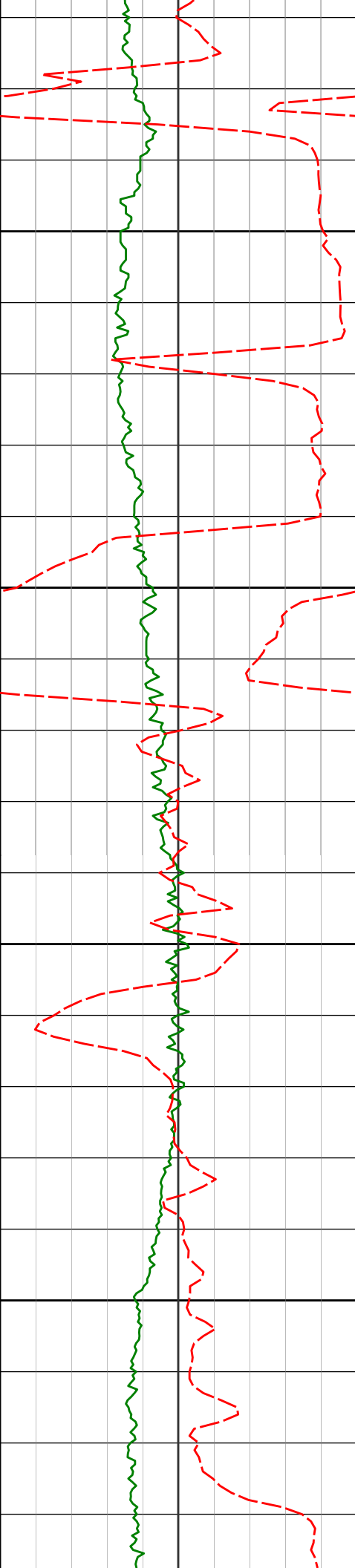
7684'

87.22°

88.84°

5790.10'

2356.72'



7750

7778'

88.89°

88.06°

5793.28'

2449.80'

7800

7850

7873'

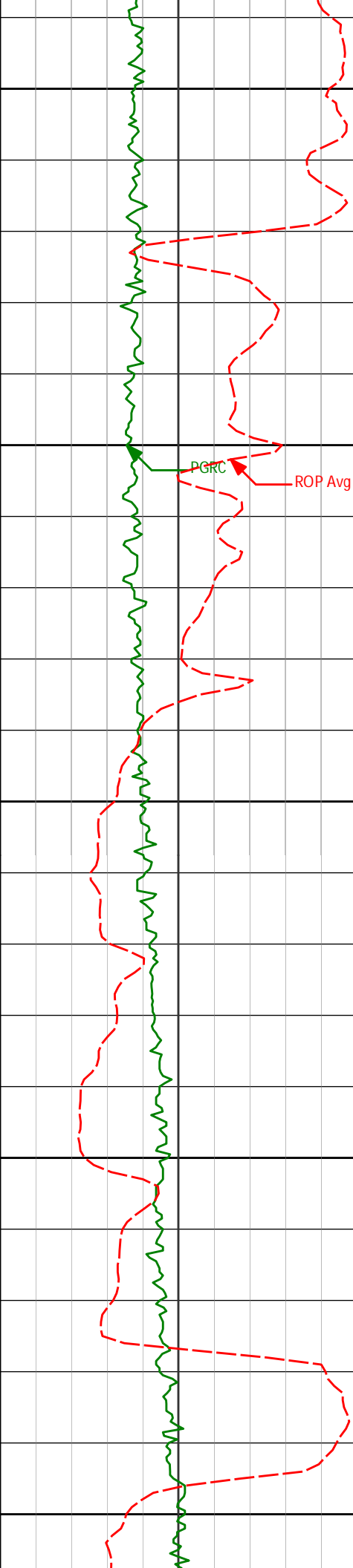
89.01°

87.22°

5795.02'

2543.73'

7900



7950

7968'

91.79°

86.11°

5794.35'

2637.41'

8000

PGRC

ROP Avg

8050

8063'

91.08°

85.19°

5791.98'

2730.78'

8100

8150

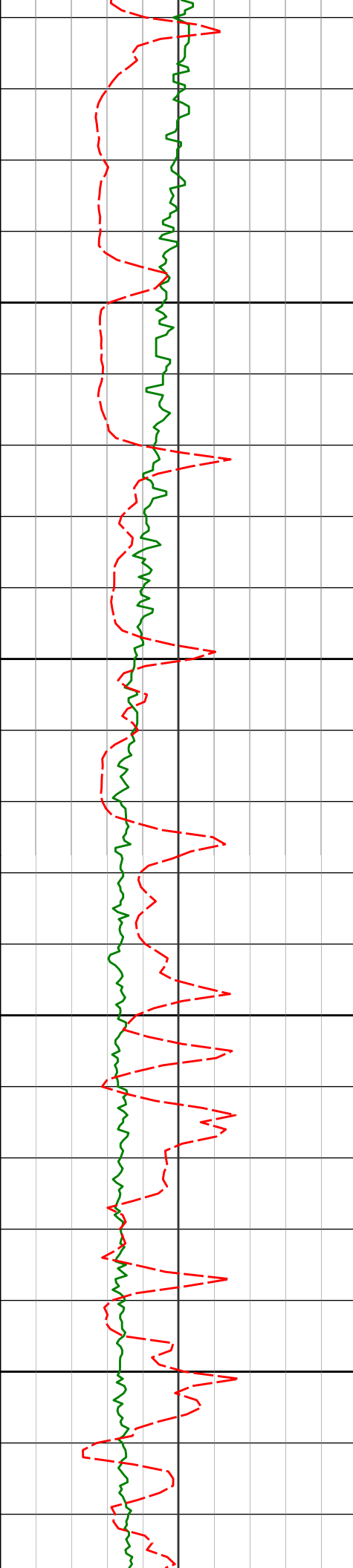
8157'

92.37°

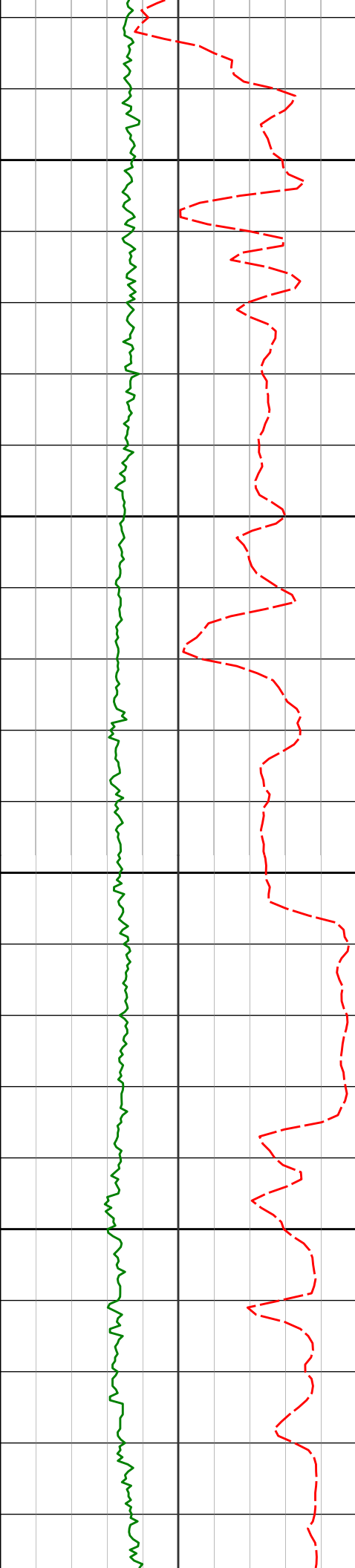
86.47°

5789.14'

2823.20'



Station	Latitude	Longitude	Distance (m)	Angle (°)
8252'	91.79°	86.18°	5785.69'	2916.73'
8347'	91.11°	86.10°	5783.29'	3010.24'



8400

8450

8500

8550

8441'

89.60°

86.58°

5782.71'

3102.85'

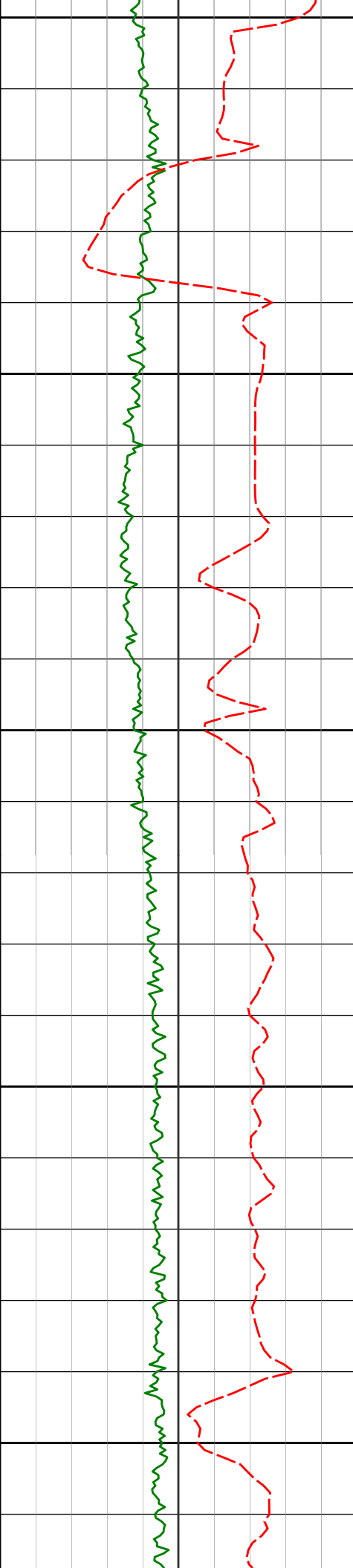
8536'

91.33°

87.69°

5781.94'

3196.66'



8600

8631'

91.57°

87.81°

5779.54'

3290.60'

8650

8700

8726'

91.05°

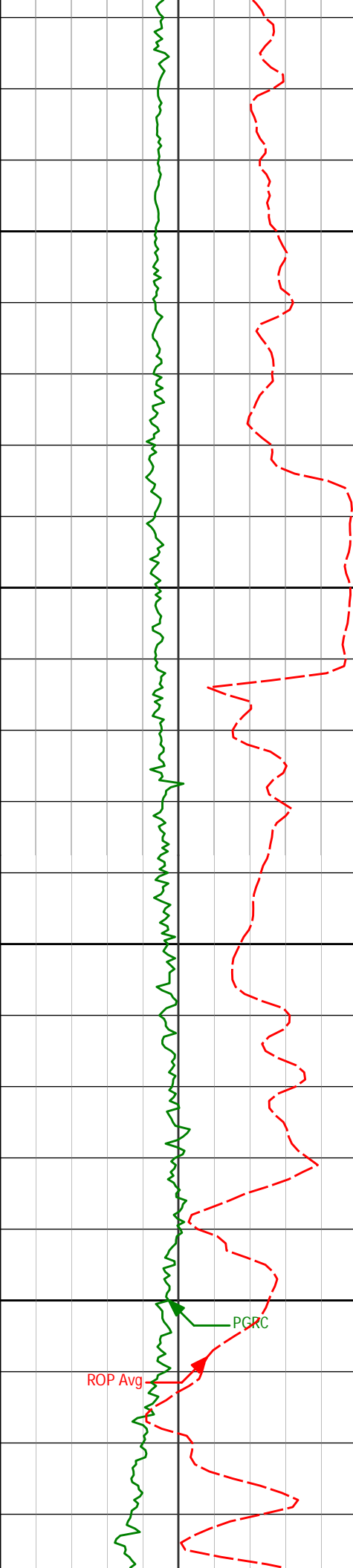
87.79°

5777.37'

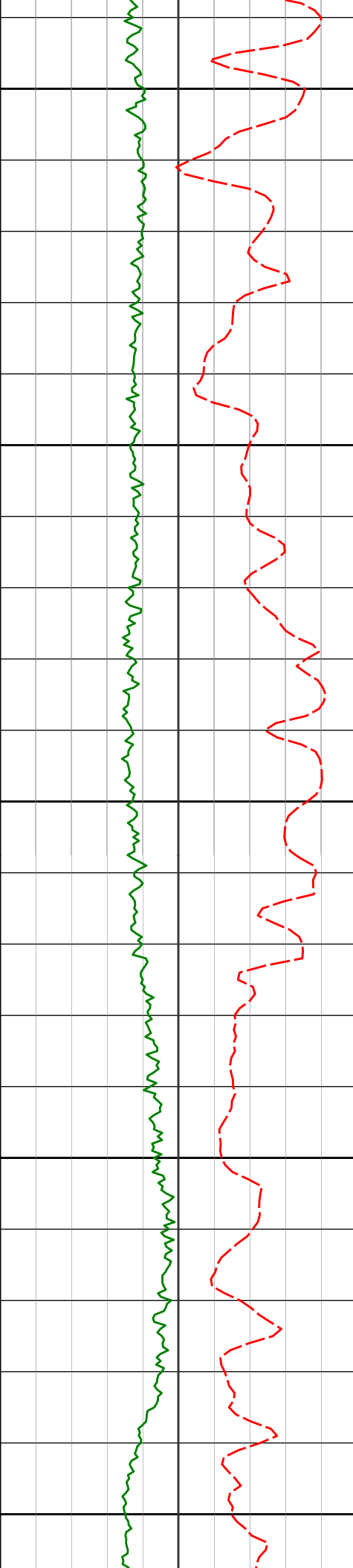
3384.56'

8750

8800



8821'	90.15°	86.95°	5776.37'	3478.43'
8850				
8900				
8916'	90.89°	88.02°	5775.50'	3572.33'
8950				
9000				
9010'	90.71°	87.44°	5774.19'	3665.30'



9050

9100

9150

9200

9250

9105'

90.68°

87.25°

5773.04'

3759.16'

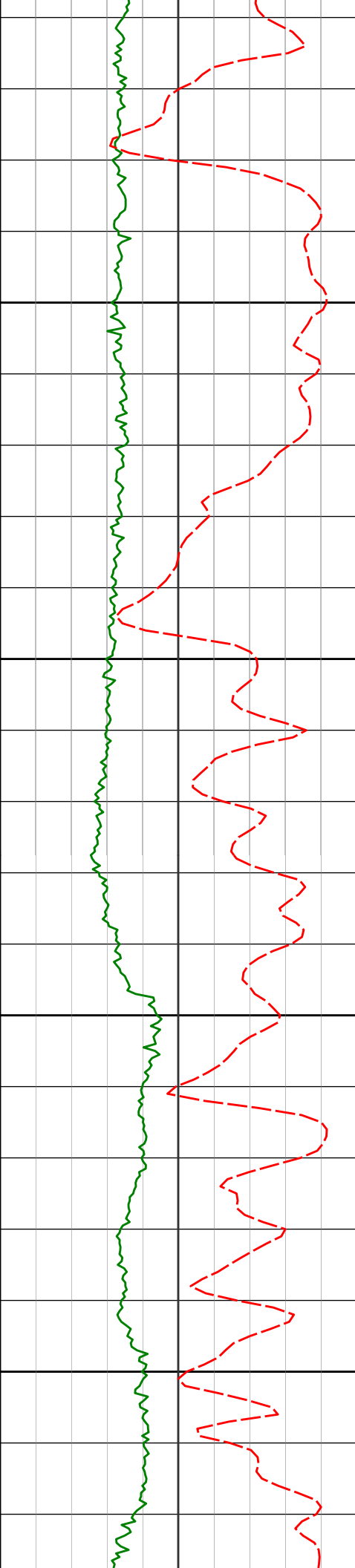
9200'

90.89°

87.29°

5771.73'

3853.01'



9300

9350

9400

9450

9294'

90.34°

88.08°

5770.72'

3945.96'

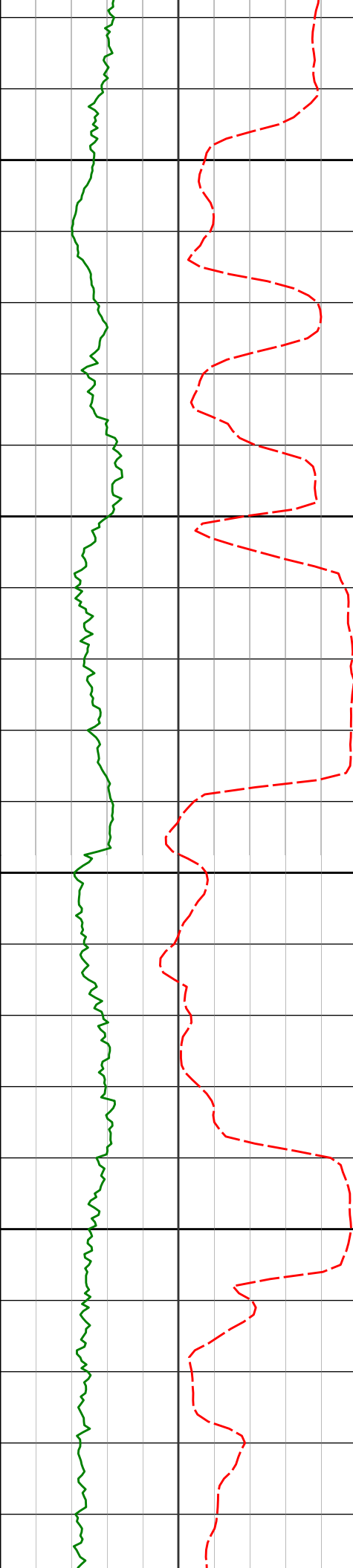
9389'

90.65°

88.98°

5769.91'

4040.11'



9500

9550

9600

9650

9484'

91.33°

89.02°

5768.27'

4134.35'

9578'

88.95°

88.70°

5768.04'

4227.58'

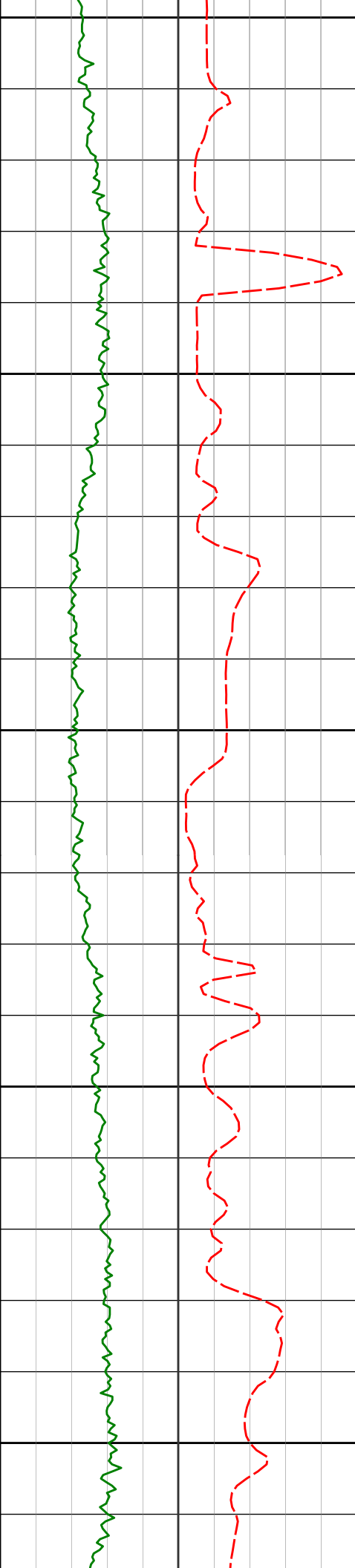
9673'

86.79°

88.73°

5771.57'

4321.70'



9700

9750

9800

9850

9900

9768'

86.67°

88.16°

5776.99'

4415.68'

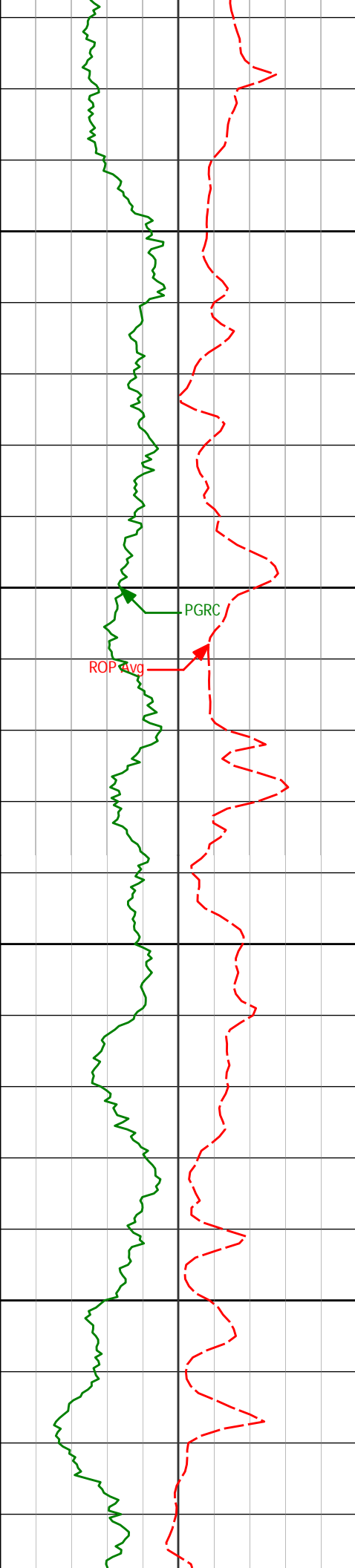
9862'

86.73°

87.74°

5782.40'

4508.55'



9950

9957'

86.85°

87.20°

5787.72'

4602.31'

10000

PGRC

ROP avg

10050

10052'

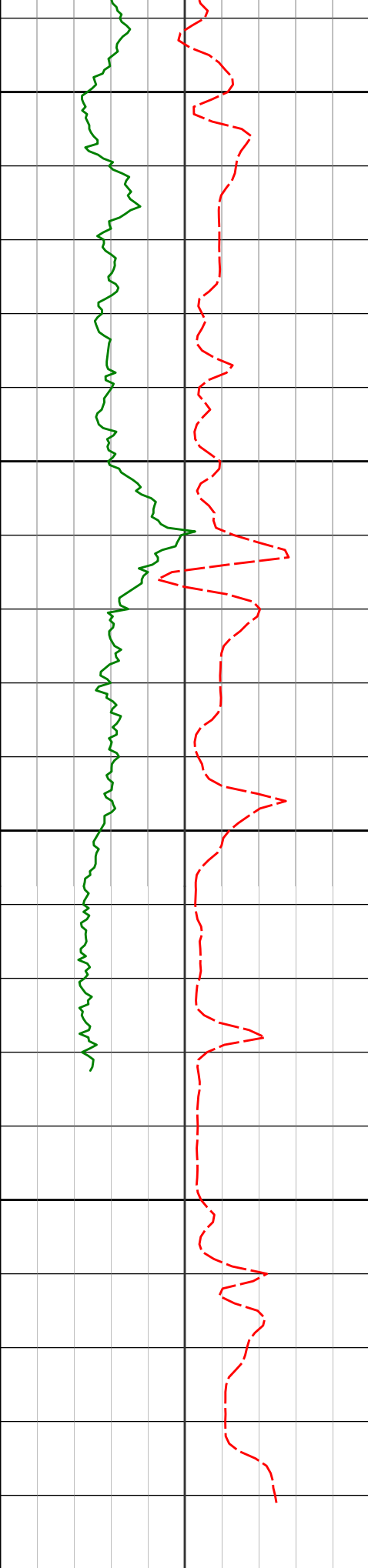
87.35°

87.20°

5792.53'

4696.02'

10100



10150

10200

10250

10300

10350

10147'

87.87°

87.26°

5796.49'

4789.78'

10242'

88.15°

87.05°

5799.79'

4883.54'

<TD @ 10,339' MD>

[illegible]

HALLIBURTON

DIRECTIONAL SURVEY REPORT

**Noble Energy
Rohn State LD10-69HN
Weld
Weld Colorado
USA
CA-XX-0901698595**

Surveys from 5997 ft MD to 6135 ft MD are IFR1 and MSA corrected.

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
340.00	0.30	333.58	340.00	0.80 N	0.40 W	-0.48	0.09
830.00	0.40	335.98	829.99	3.51 N	1.66 W	-2.03	0.02
1200.00	0.40	335.98	1199.98	5.87 N	2.71 W	-3.33	0.00
1270.00	0.43	204.34	1269.98	5.85 N	2.92 W	-3.54	1.08
1363.00	3.23	178.73	1362.92	2.92 N	3.01 W	-3.30	3.06
1455.00	6.31	170.19	1454.59	4.66 S	2.09 W	-1.57	3.43
1547.00	8.45	171.83	1545.83	16.33 S	0.26 W	1.50	2.34
1640.00	9.85	166.17	1637.64	30.82 S	2.61 E	5.92	1.78
1733.00	10.80	166.90	1729.14	47.03 S	6.48 E	11.52	1.04
1828.00	12.82	168.71	1822.12	66.05 S	10.57 E	17.63	2.16
1922.00	12.85	167.65	1913.77	86.49 S	14.85 E	24.08	0.25
2017.00	13.12	165.02	2006.34	107.23 S	19.89 E	31.34	0.68
2112.00	12.96	164.24	2098.89	127.90 S	25.57 E	39.22	0.25
2206.00	12.57	163.80	2190.57	147.87 S	31.29 E	47.05	0.42
2301.00	12.72	172.21	2283.27	168.16 S	35.59 E	53.52	1.94
2491.00	12.62	172.30	2468.65	209.44 S	41.21 E	63.55	0.05
2586.00	12.74	172.39	2561.33	230.10 S	43.98 E	68.54	0.13
2680.00	12.95	171.41	2652.98	250.79 S	46.93 E	73.69	0.32
2775.00	12.65	171.24	2745.62	271.59 S	50.10 E	79.09	0.32
2870.00	12.42	171.69	2838.35	291.98 S	53.16 E	84.34	0.26
2965.00	12.22	165.94	2931.17	311.84 S	57.08 E	90.37	1.31
3059.00	11.63	166.28	3023.14	330.70 S	61.75 E	97.05	0.63
3154.00	13.18	166.94	3115.92	350.56 S	66.47 E	103.88	1.64
3344.00	13.74	165.79	3300.70	393.54 S	76.91 E	118.89	0.32
3438.00	13.98	165.14	3391.96	415.34 S	82.56 E	126.86	0.31
3534.00	14.45	165.95	3485.02	438.17 S	88.44 E	135.17	0.53
3628.00	12.87	164.10	3576.36	459.62 S	94.16 E	143.17	1.74
3723.00	11.95	164.15	3669.14	479.26 S	99.74 E	150.84	0.97
3818.00	11.30	165.34	3762.19	497.73 S	104.78 E	157.84	0.74
3913.00	12.04	167.96	3855.22	516.41 S	109.20 E	164.25	0.96
4008.00	12.15	168.12	3948.12	535.88 S	113.33 E	170.45	0.13
4103.00	11.87	169.01	4041.04	555.26 S	117.25 E	176.44	0.35
4187.00	11.52	168.41	4122.82	573.88 S	121.63 E	182.33	0.27

4197.00	11.53	169.41	4133.08	573.99 S	120.82 E	182.00	0.37
4292.00	10.66	163.91	4226.31	591.77 S	125.00 E	188.08	1.45
4387.00	8.83	160.03	4319.93	607.07 S	129.93 E	194.63	2.04
4482.00	7.57	159.68	4413.96	619.80 S	134.59 E	200.64	1.33
4577.00	5.97	163.27	4508.29	630.41 S	138.19 E	205.36	1.74
4672.00	3.93	158.53	4602.93	638.17 S	140.80 E	208.79	2.20
4766.00	2.00	155.58	4696.80	642.66 S	142.66 E	211.12	2.05
4861.00	1.18	166.48	4791.77	645.13 S	143.57 E	212.30	0.92
4956.00	0.92	176.41	4886.75	646.84 S	143.85 E	212.76	0.33
5049.00	0.83	162.44	4979.74	648.23 S	144.10 E	213.16	0.25
5097.00	0.34	177.82	5027.74	648.71 S	144.21 E	213.32	1.06
5144.00	3.56	103.40	5074.71	649.18 S	145.63 E	214.78	7.41
5192.00	9.07	100.69	5122.40	650.23 S	150.81 E	220.04	11.50
5238.00	10.22	96.31	5167.75	651.35 S	158.43 E	227.74	2.96
5286.00	12.60	89.38	5214.80	651.77 S	167.90 E	237.19	5.71
5333.00	17.11	84.88	5260.21	651.09 S	179.92 E	249.07	9.90
5381.00	21.35	87.08	5305.53	650.02 S	195.68 E	264.63	8.95
5428.00	25.10	87.57	5348.71	649.16 S	214.19 E	282.94	8.00
5476.00	27.15	86.74	5391.81	648.10 S	235.30 E	303.81	4.33
5523.00	30.81	87.72	5432.91	647.01 S	258.04 E	326.30	7.86
5571.00	36.44	90.69	5472.87	646.70 S	284.61 E	352.68	12.21
5618.00	39.44	90.92	5509.93	647.10 S	313.50 E	381.44	6.38
5666.00	43.90	89.25	5545.78	647.13 S	345.40 E	413.16	9.58
5712.00	48.93	88.88	5577.48	646.58 S	378.70 E	446.21	10.95
5760.00	52.85	89.66	5607.76	646.12 S	415.93 E	483.18	8.27
5807.00	56.08	89.91	5635.07	645.98 S	454.17 E	521.18	6.89
5855.00	58.98	89.97	5660.84	645.93 S	494.66 E	561.43	6.05
5902.00	62.81	90.40	5683.70	646.07 S	535.72 E	602.26	8.19
5950.00	65.57	90.44	5704.59	646.39 S	578.93 E	645.25	5.74
5997.00	70.36	90.21	5722.22	646.63 S	622.48 E	688.58	10.21
6045.00	74.65	88.94	5736.65	646.29 S	668.25 E	734.04	9.29
6092.00	79.27	88.53	5747.25	645.28 S	714.01 E	779.43	9.87
6135.00	81.59	90.51	5754.40	644.92 S	756.41 E	821.54	7.05
6205.00	85.92	88.75	5762.01	644.47 S	825.97 E	890.65	6.67
6298.00	88.40	90.40	5766.62	643.78 S	918.84 E	982.90	3.20
6391.00	88.77	89.12	5768.93	643.39 S	1011.81 E	1075.29	1.43
6483.00	87.96	87.45	5771.55	640.64 S	1103.73 E	1166.37	2.02
6577.00	88.67	86.99	5774.32	636.09 S	1197.58 E	1259.18	0.90
6672.00	89.48	86.48	5775.85	630.68 S	1292.41 E	1352.88	1.00
6736.00	88.39	86.87	5777.04	626.97 S	1356.29 E	1415.99	1.80
6830.00	91.60	85.55	5777.04	620.76 S	1450.07 E	1508.55	3.69
6925.00	91.88	88.59	5774.15	615.90 S	1544.89 E	1602.29	3.21
7020.00	90.65	90.38	5772.06	615.05 S	1639.86 E	1696.62	2.29
7115.00	88.89	91.24	5772.44	616.39 S	1734.84 E	1791.19	2.06
7210.00	87.66	91.08	5775.30	618.31 S	1829.78 E	1885.78	1.31
7305.00	87.53	90.50	5779.29	619.62 S	1924.69 E	1980.28	0.63
7399.00	88.55	90.40	5782.50	620.35 S	2018.63 E	2073.75	1.09
7494.00	89.26	89.69	5784.32	620.43 S	2113.61 E	2168.18	1.06
7589.00	88.27	89.36	5786.36	619.64 S	2208.58 E	2262.52	1.10
7684.00	87.22	88.84	5790.10	618.16 S	2303.50 E	2356.72	1.23
7778.00	88.89	88.06	5793.28	615.61 S	2397.40 E	2449.80	1.96
7873.00	89.01	87.22	5795.02	611.70 S	2492.31 E	2543.73	0.89
7968.00	91.79	86.11	5794.35	606.18 S	2587.13 E	2637.41	3.15
8063.00	91.08	85.19	5791.98	598.98 S	2681.83 E	2730.78	1.22
8157.00	92.37	86.47	5789.14	592.15 S	2775.53 E	2823.20	1.94
8252.00	91.79	86.18	5785.69	586.07 S	2870.27 E	2916.73	0.69
8347.00	91.11	86.10	5783.29	579.68 S	2965.03 E	3010.24	0.72
8441.00	89.60	86.58	5782.71	573.68 S	3058.83 E	3102.85	1.69
8536.00	91.33	87.69	5781.94	568.93 S	3153.70 E	3196.66	2.16
8631.00	91.57	87.81	5779.54	565.21 S	3248.60 E	3290.60	0.29
8726.00	91.05	87.79	5777.37	561.57 S	3343.51 E	3384.56	0.55
8821.00	90.15	86.95	5776.37	557.21 S	3438.40 E	3478.43	1.30
8916.00	90.89	88.02	5775.50	553.04 S	3533.30 E	3572.33	1.37
9010.00	90.71	87.44	5774.19	549.32 S	3627.22 E	3665.30	0.64
9105.00	90.68	87.25	5773.04	544.92 S	3722.11 E	3759.16	0.21
9200.00	90.89	87.29	5771.73	540.39 S	3816.99 E	3853.01	0.23
9294.00	90.34	88.08	5770.72	536.59 S	3910.91 E	3945.96	1.03
9389.00	90.65	88.98	5769.91	534.15 S	4005.87 E	4040.11	1.00
9484.00	91.33	89.02	5768.27	532.50 S	4100.84 E	4134.35	0.72
9578.00	88.95	88.70	5768.04	530.63 S	4194.82 E	4227.58	2.55
9673.00	86.79	88.73	5771.57	528.50 S	4289.72 E	4321.70	2.27
9768.00	86.67	88.16	5776.99	525.93 S	4384.53 E	4415.68	0.61
9862.00	86.73	87.74	5782.40	522.58 S	4478.32 E	4508.55	0.45
9957.00	86.85	87.20	5787.72	518.39 S	4573.07 E	4602.31	0.59
10052.00	87.35	87.20	5792.53	513.75 S	4667.84 E	4696.02	0.52

10147.00	87.87	87.26	5796.49	509.16 S	4762.65 E	4789.78	0.56
10242.00	88.15	87.05	5799.79	504.46 S	4857.47 E	4883.54	0.37
10339.00	88.15	87.05	5802.92	499.47 S	4954.29 E	4979.26	0.00

<p> 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 96.19 DEGREES (GRID) A TOTAL CORRECTION OF 6.98 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD. HORIZONTAL DISPLACEMENT(CLOSURE) AT 10339.00 FEET IS 4979.41 FEET ALONG 95.76 DEGREES (GRID) Surface surveys at 340 ft, 830 ft, and 1200 ft have had azimuths corrected to grid north, but were not taken by Halliburton. Last survey is a projection from 10242 ft MD to TD at 10339 ft MD. </p>							
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