

PCGC : Pressure Case Gamma
PCDC: Pressure Case Directional



1 : 600 / 1 : 240

[illegible]

WELL INFORMATION

MWD Run Number	100	200	300	400	
Date run completed	28-Jun-13	29-Jun-13	02-Jul-13	03-Jul-13	
Rig Bit Number	2	3	4	5	
Bit Size (in)	8.750	8.750	6.125	6.125	
Tool Nominal OD (in)	6.750	6.750	4.750	4.750	
Log Start Depth (MD, ft)	665.00	5,980.00	7,015.00	10,522.00	
Log End Depth (MD, ft)	5,980.00	7,015.00	10,522.00	11,040.00	
Drill or Wipe	Drill	Drill	Drill	Drill	
Drill/Wipe Start Date and Time	27-Jun-13 17:30	28-Jun-13 20:45	30-Jun-13 18:15	02-Jul-13 00:15	
Drill/Wipe End Date and Time	29-Jun-13 11:45	29-Jun-13 11:50	02-Jul-13 01:20	03-Jul-13 05:40	
Min Inc (deg) @ Depth (MD, ft)	.32 @ 718.00	.31 @ 5,978.00	87.19 @ 7,134.00	88.67 @ 10,815.00	
Max Inc (deg) @ Depth (MD, ft)	17.19 @ 3,646.00	84.28 @ 6,961.00	92.71 @ 9,413.00	90.03 @ 10,720.00	
Bit TFA(in2) / Bit Type	.75 / PDC	.75 / PDC	.46 / PDC	.46 / PDC	
Flow Rate (gpm)	593.79	578.21	288.69	270.00	
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A	N/A / N/A	N/A / N/A	N/A / N/A	
Fluid Type	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel	
Density (ppg) / Viscosity (spqt)	8.90 / 30.00	10.40 / 35.00	9.28 / 33.00	9.30 / 32.00	
Filtrate CL (ppm)	1,100.00	1,100.00	1,100.00	1,100.00	
pH / Fluid Loss (mptm)	9.40 / 0	9.10 / 8	9.10 / 8	8.80 / 11	
PV (cP) / YP (lbf2)	4 / 5.00	11 / 9.00	7 / 7.00	7 / 6.00	
% Solids / % Sand	3.4 / 0.30	10.70 / 0.25	6.00 / 0.25	4.8 / 0.25	
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A	N/A / N/A	N/A / N/A	
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A	
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A	
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A	
Max Fluid Temp (deg F) @ C	152.00 / 60.00	177.04 / 69.00	200.00 / 76.00	190.00 / 71.00	

Max Tool Temp (degF) / Source	158.60 / PCM	177.64 / PCM	236.82 / PCM	/ PCM	
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A	
Lead MWD Engineer	Henry Schmeidler	Henry Schmeidler	Henry Schmeidler	Henry Schmeidler	
Customer Representative	Bryant Dear	Bryant Dear	Bryant Dear	Bryant Dear	

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM	PCM	
Software Version	5.84	5.84	5.84	5.84	
Sub Serial Number	11341333	11341333	12187588	11341333	
Insert Serial Number	11680798	11680798	11680783	11680798	
Date and Time Initialized	27-Jun-13 02:08	27-Jun-13 02:08	30-Jun-13 07:22	02-Jul-13 06:11	
Date and Time Read	29-Jun-13 18:20	29-Jun-13 17:55	02-Jul-13 09:51	01-Jan-70 00:00	
ECMB SW Version	N/A	N/A	N/A	N/A	

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC	PCDC	
Distance From Bit (ft)	53.91	52.38	63.11	61.39	
Software Version	6.21	6.21	6.21	6.21	
Sub Serial Number	11341333	11341333	12187588	11341333	
Sonde Serial Number	11297515	11297515	11145704	11297515	
Sensor ID Number	N/A	N/A	N/A	N/A	
Toolface Offset (deg)	312.14	171.48	86.23	158.64	

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG	PCG	
Distance From Bit (ft)	48.91	47.38	58.13	56.41	
Recorded Sample Period (sec)	10	10	10	10	
Software Version	8.15	8.15	8.15	8.15	
Sub Serial Number	11341333	11341333	12187588	11341333	
Insert/Sonde Serial Number	11681023	11681023	11680999	11681023	

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 7.4.2
6. End of Run 200. Gap between build and lateral sections is due to Gamma sensor measure point to bit distance during the build run. Last Gamma datapoint is at 6968 ft MD. Gamma cannot be measured accurately within cased hole, and collection resumes after drilling through cement at 7015 ft MD.

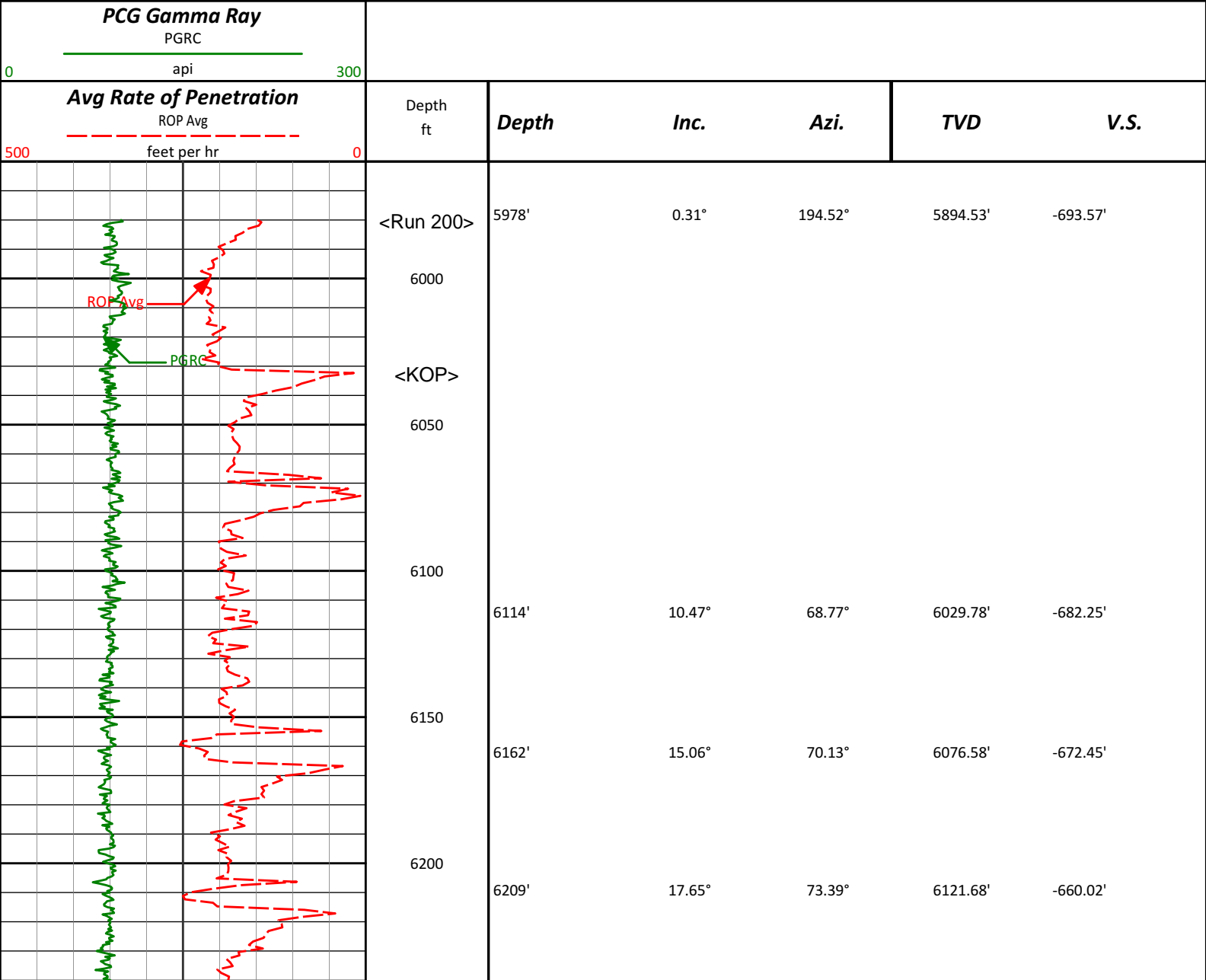
WARRANTY

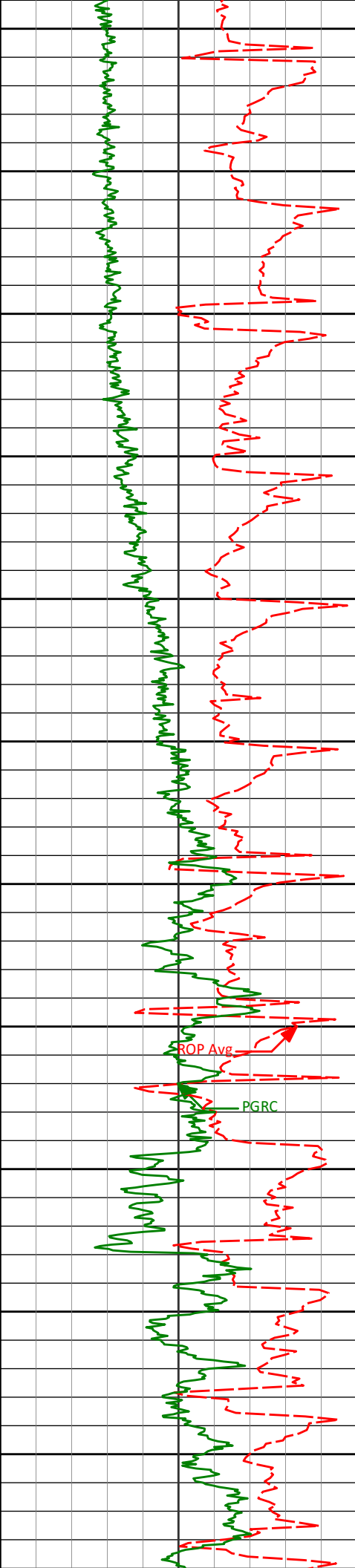
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Sperry Drilling Services

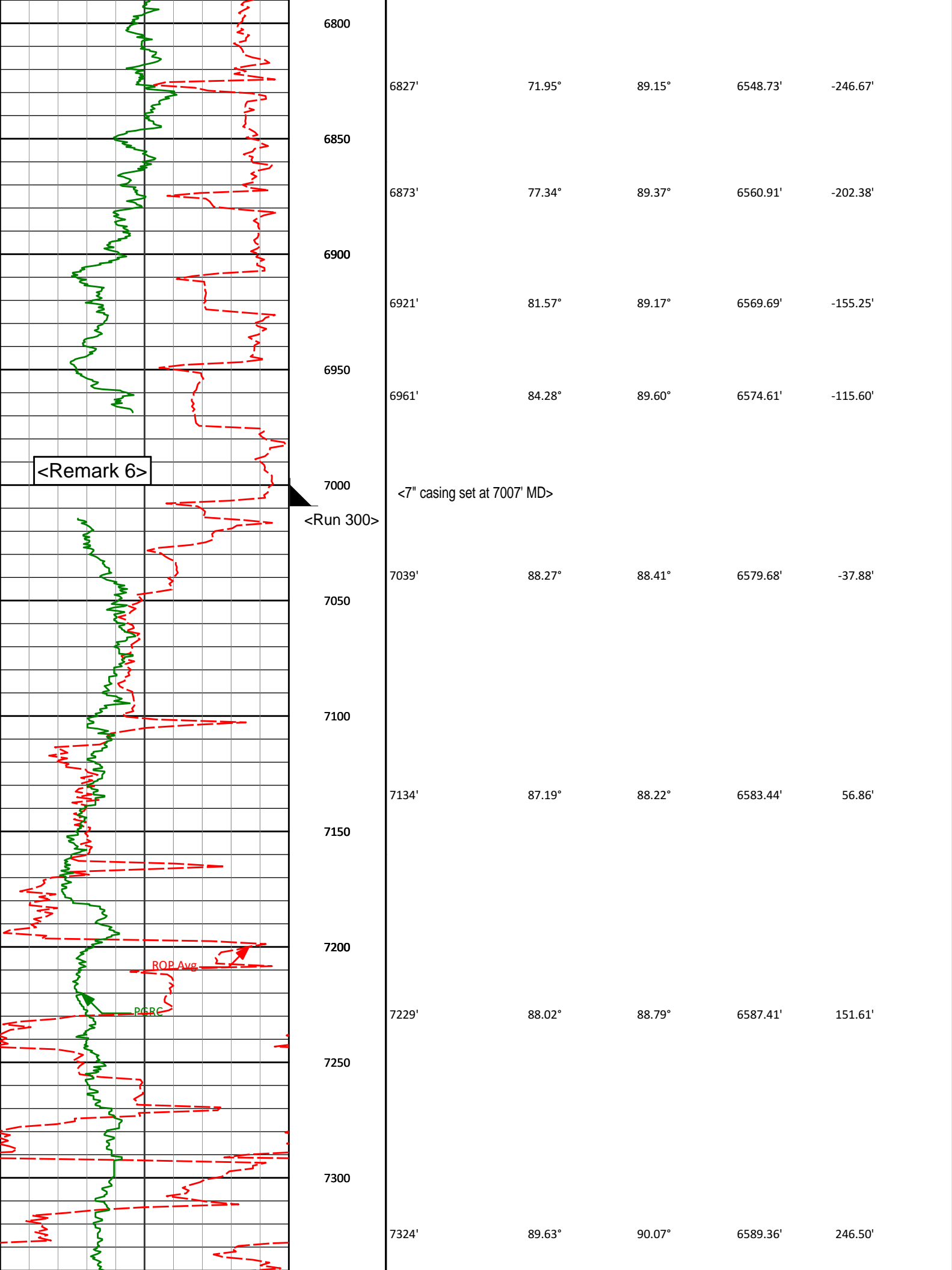
MD Main Log 1:600

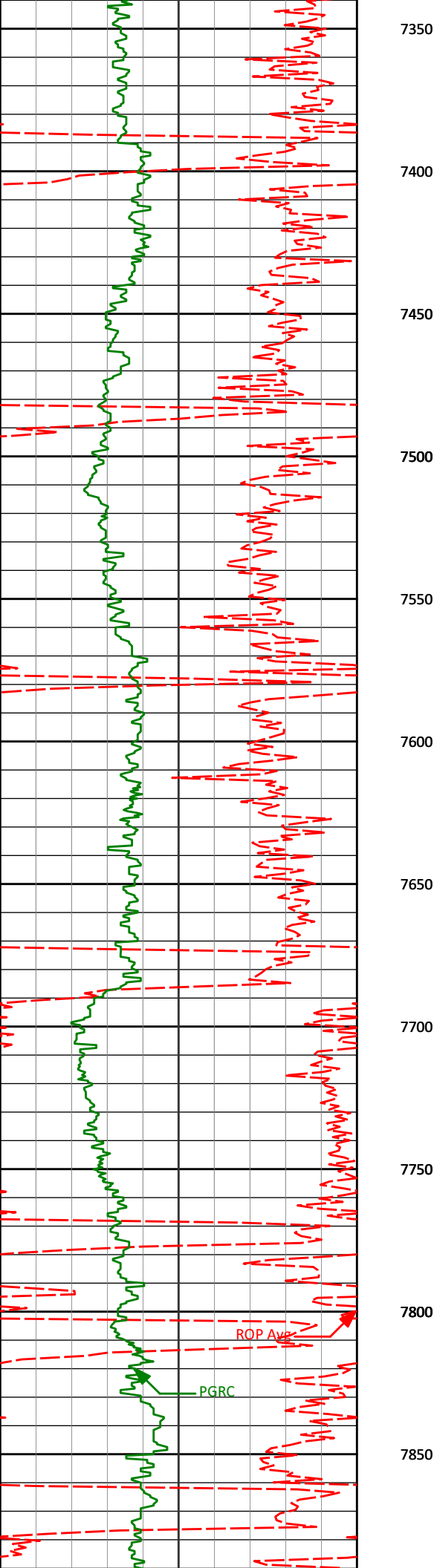
Noble Energy, Inc
Trebor B11-66-1HN
H&P 315
T5N R64W





6250	6257'	22.37°	73.04°	6166.77'	-644.46'
6300	6304'	25.49°	79.53°	6209.73'	-626.11'
6350	6352'	28.48°	86.10°	6252.51'	-604.63'
6400	6399'	32.80°	89.74°	6292.94'	-580.75'
6450	6447'	38.15°	89.30°	6332.02'	-552.92'
6500	6494'	43.44°	88.34°	6367.59'	-522.27'
6550	6542'	47.64°	92.34°	6401.21'	-488.05'
6600	6589'	51.78°	95.63°	6431.60'	-452.24'
6650	6637'	54.13°	93.75°	6460.51'	-413.98'
6700	6684'	57.26°	90.49°	6487.00'	-375.17'
6750	6732'	62.00°	90.51°	6511.27'	-333.78'
	6779'	66.46°	89.61°	6531.69'	-291.48'





7350

7400

7450

7500

7550

7600

7650

7700

7750

7800

7850

7419'

91.32°

91.24°

6588.57'

341.47'

7514'

91.20°

92.09°

6586.48'

436.44'

7609'

89.60°

92.70°

6585.82'

531.43'

7703'

91.51°

92.99°

6584.91'

625.41'

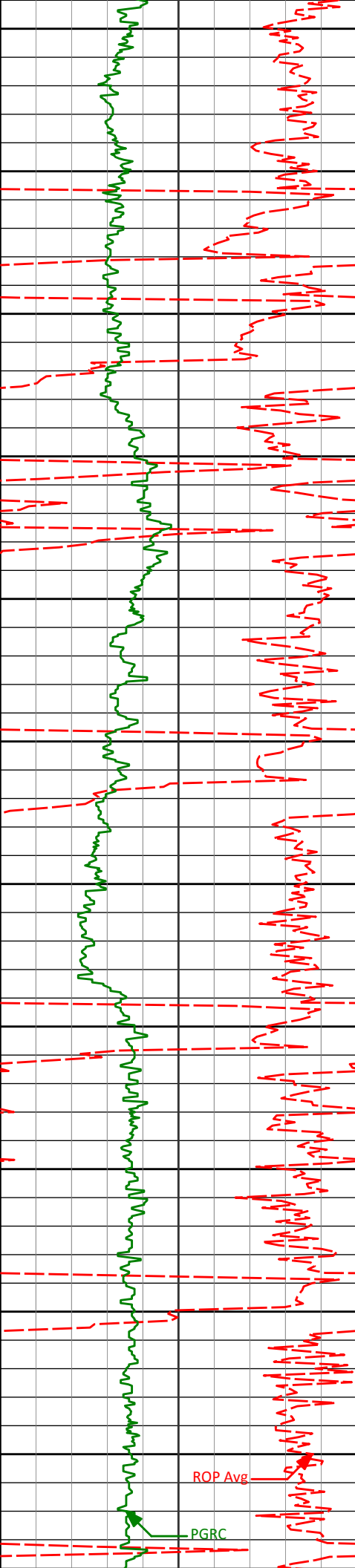
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91.85°

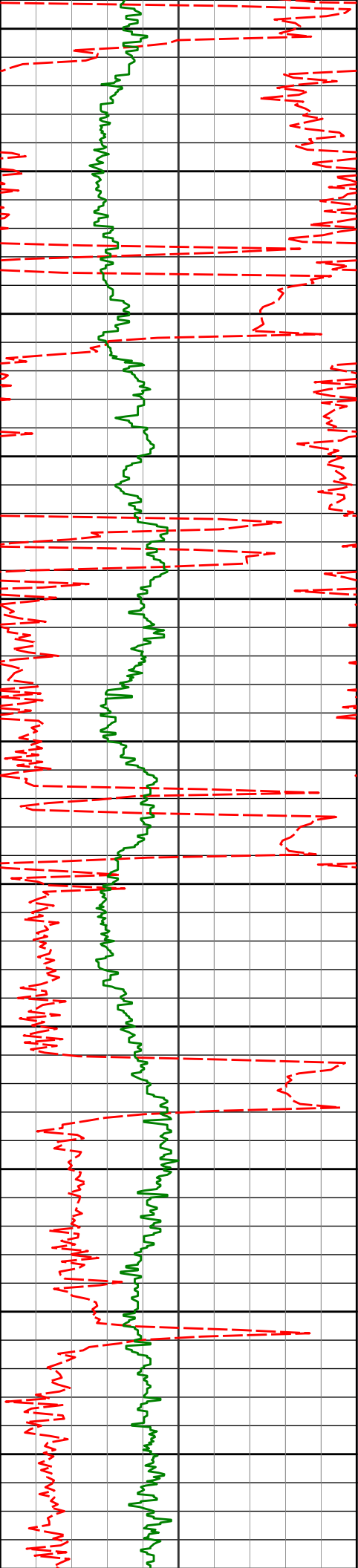
92.36°

6582.13'

720.36'



7900	7893'	90.56°	92.01°	6580.13'	815.34'
7950					
8000	7988'	90.37°	89.15°	6579.36'	910.30'
8050					
8100	8083'	88.55°	88.23°	6580.25'	1005.14'
8150					
8200	8178'	88.98°	86.36°	6582.30'	1099.81'
8250					
8300	8273'	90.65°	85.99°	6582.61'	1194.33'
8350					
8400	8368'	91.14°	89.45°	6581.12'	1289.05'



8450

8463'

89.72°

91.09°

6580.41'

1384.00'

8500

8550

8558'

89.26°

88.39°

6581.26'

1478.92'

8600

8650

8653'

88.49°

88.30°

6583.12'

1573.72'

8700

8750

8748'

89.69°

86.97°

6584.63'

1668.44'

8800

8850

8843'

90.59°

89.24°

6584.40'

1763.23'

8900

8950

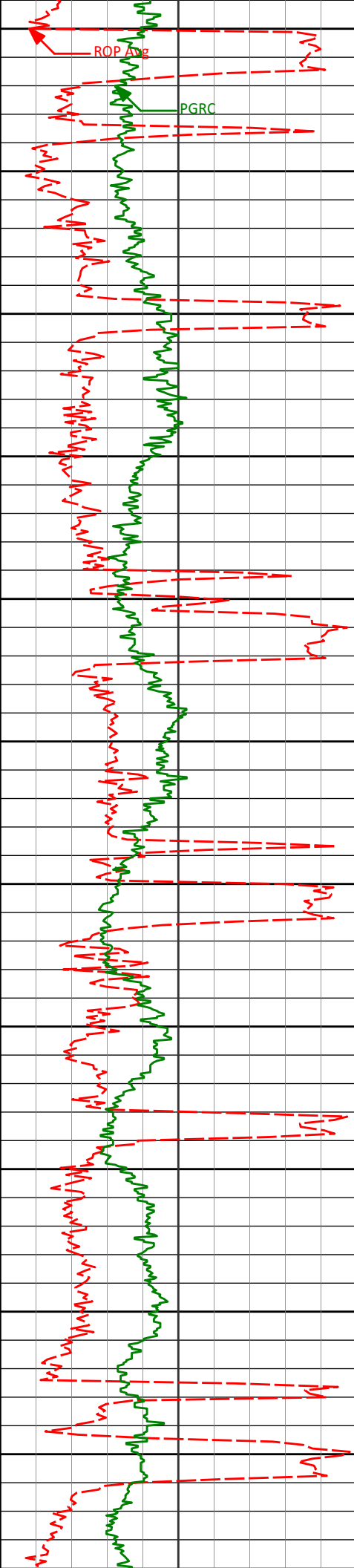
8938'

90.15°

86.10°

6583.78'

1857.95'



9000

9033'

90.92°

88.85°

6582.90'

1952.66'

9050

9100

9128'

89.75°

87.84°

6582.34'

2047.47'

9150

9200

9223'

91.60°

88.61°

6581.22'

2142.26'

9250

9300

9318'

91.82°

89.28°

6578.39'

2237.09'

9350

9400

9413'

92.71°

89.87°

6574.63'

2331.94'

9450

9500

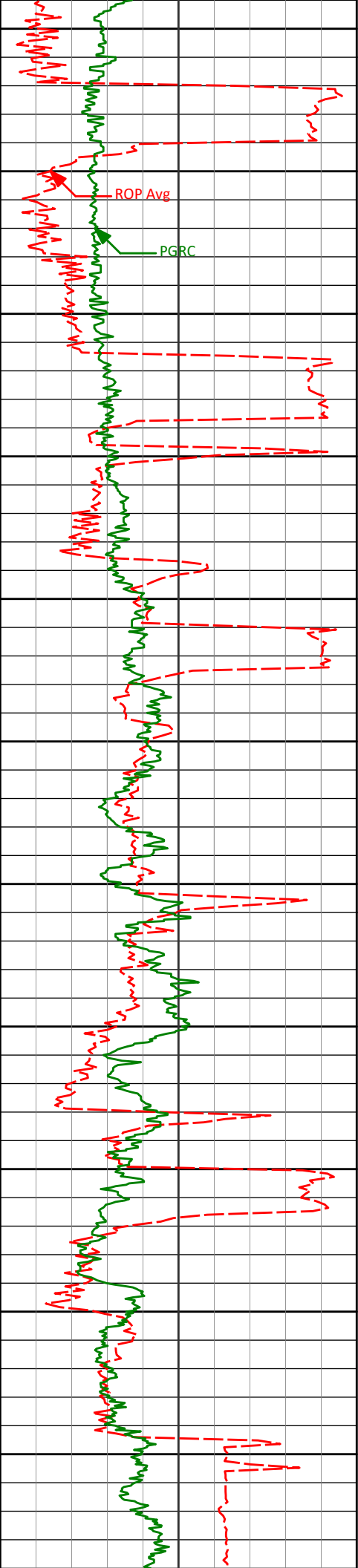
9507'

92.50°

90.96°

6570.36'

2425.81'



9550

9600

9650

9700

9750

9800

9850

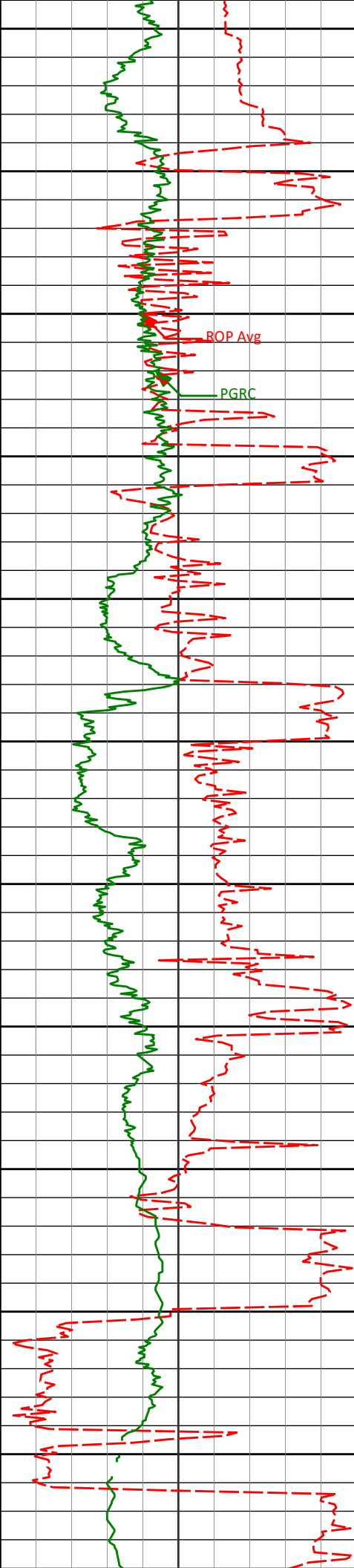
9900

9950

10000

10050

9602'	90.65°	93.31°	6567.75'	2520.76'
9697'	89.69°	91.37°	6567.47'	2615.75'
9792'	89.29°	89.87°	6568.31'	2710.72'
9887'	88.55°	89.46°	6570.10'	2805.63'
9982'	89.66°	89.29°	6571.59'	2900.53'
10077'	88.98°	90.00°	6572.71'	2995.45'



10100

10150

10200

10250

10300

10350

10400

10450

10500

<Run 400>

10550

10600

10172'

90.74°

90.32°

6572.95'

3090.40'

10267'

90.99°

92.31°

6571.51'

3185.38'

10362'

90.55°

90.53°

6570.24'

3280.36'

10530'

89.66°

90.99°

6570.12'

3448.33'

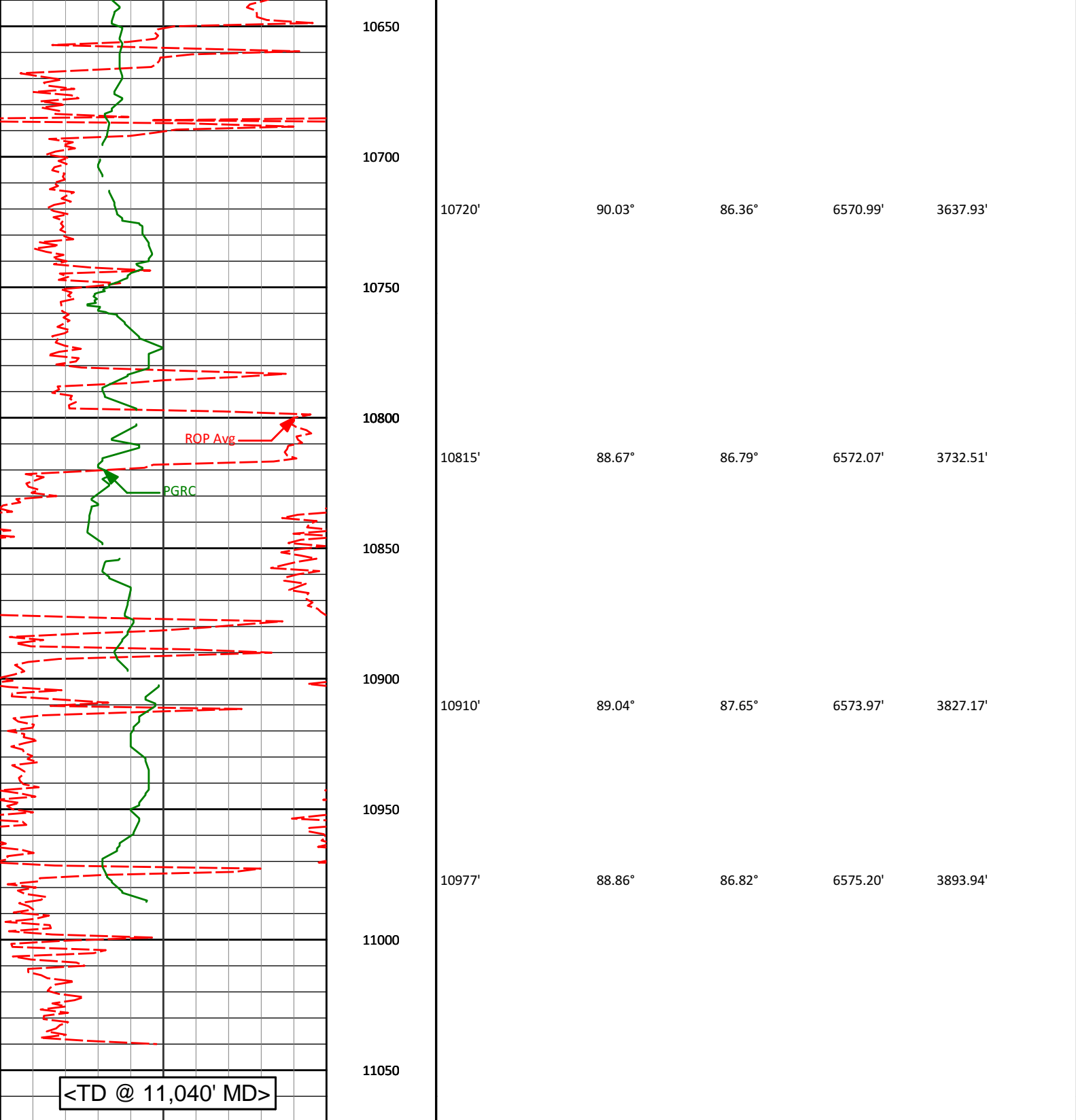
10625'

89.63°

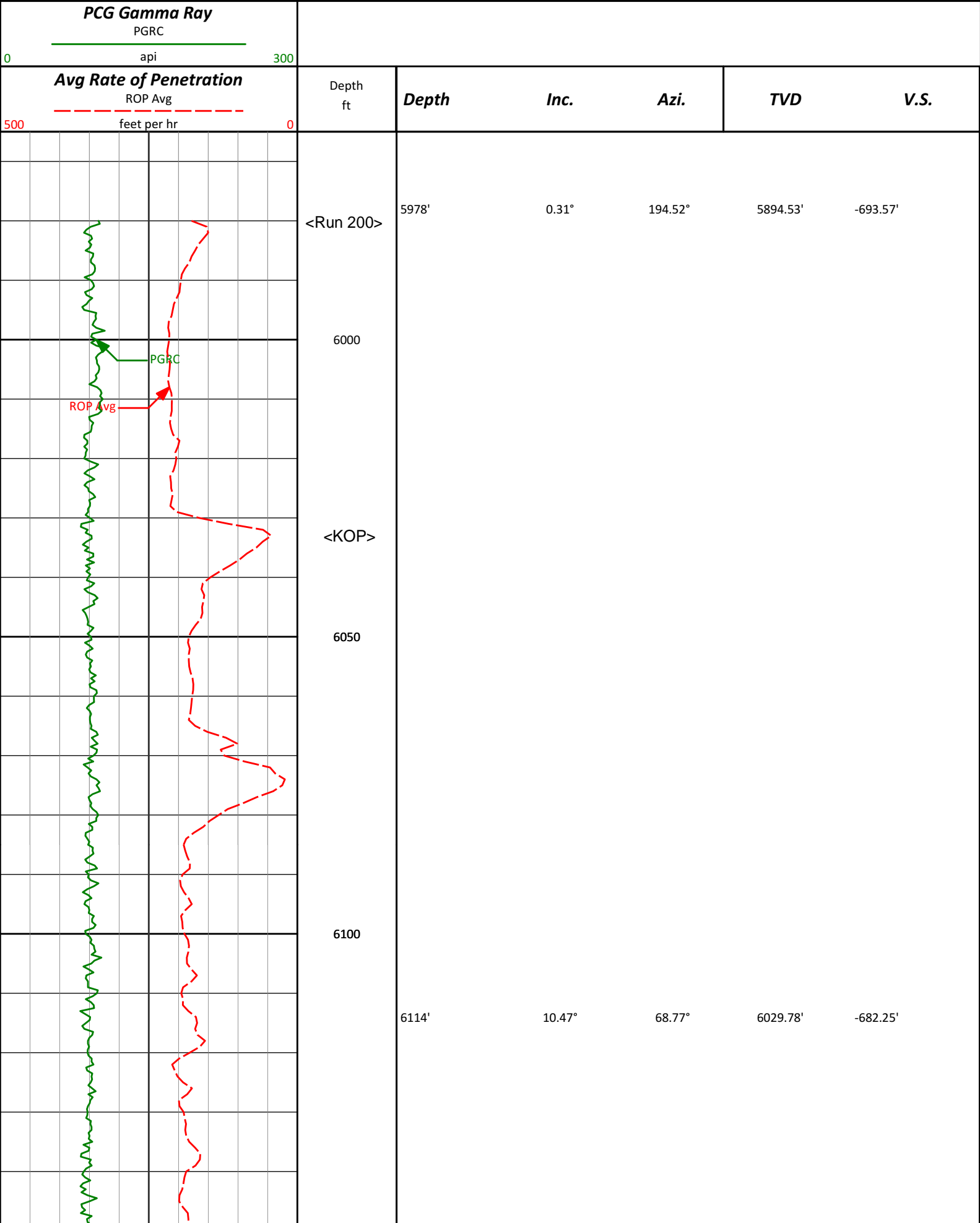
88.20°

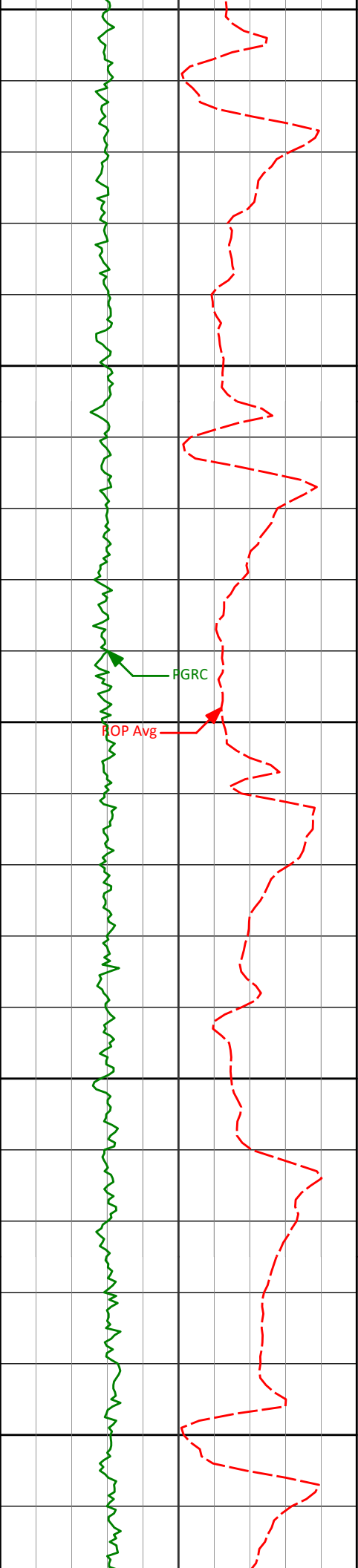
6570.71'

3543.24'



<div><div>Avg Rate of Penetration</div><div>ROP Avg</div><div>feet per hr</div><div>5000</div></div>		Depth ft	Depth	Inc.	Azi.	TVD	V.S.
<div><div>PCG Gamma Ray</div><div>PGRC</div><div>api</div><div>0300</div></div>							





6150

6162'

15.06°

70.13°

6076.58'

-672.45'

6200

6209'

17.65°

73.39°

6121.68'

-660.02'

6250

6257'

22.37°

73.04°

6166.77'

-644.46'

6300

6304'

25.49°

79.53°

6209.73'

-626.11'

6350

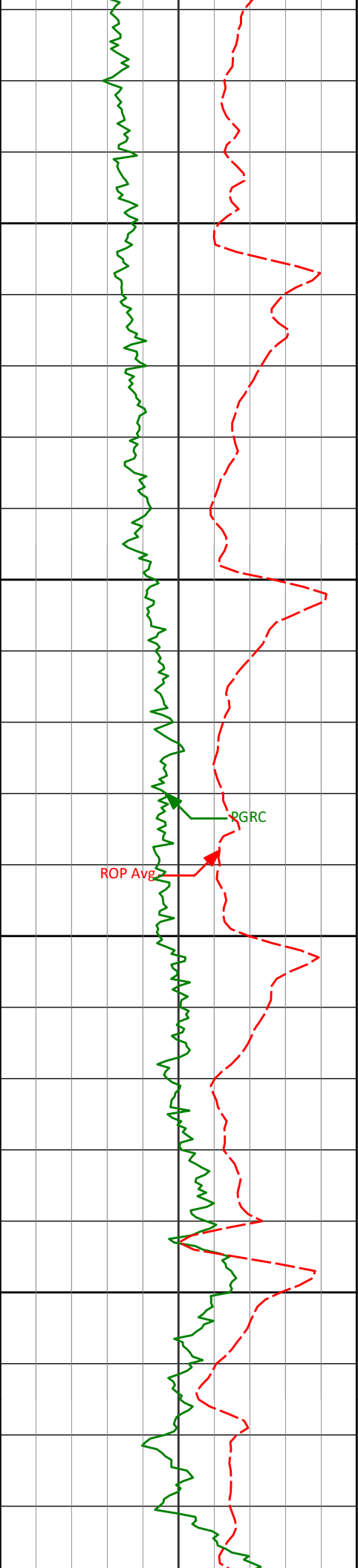
6352'

28.48°

86.10°

6252.51'

-604.63'



6400

6399'

32.80°

89.74°

6292.94'

-580.75'

6450

6447'

38.15°

89.30°

6332.02'

-552.92'

6500

6494'

43.44°

88.34°

6367.59'

-522.27'

6550

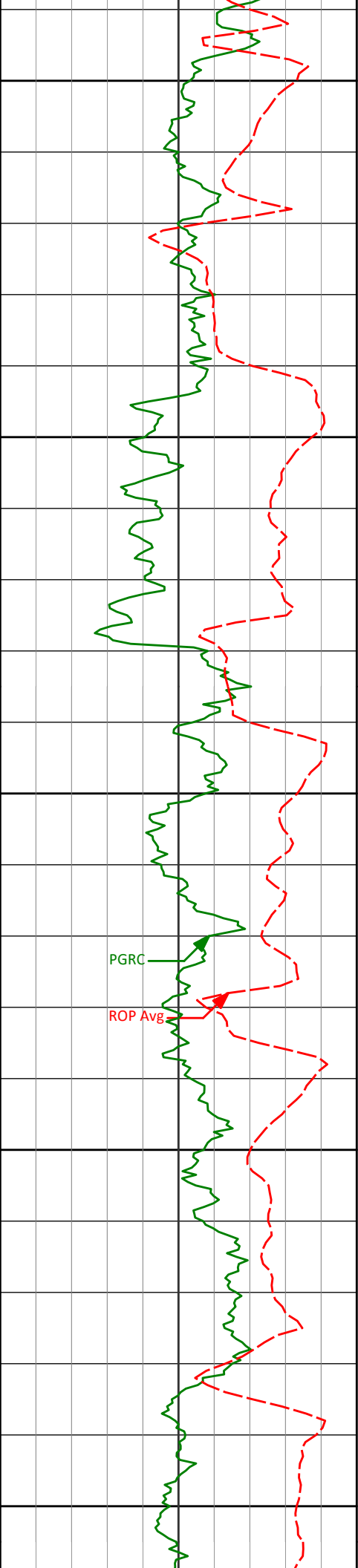
6542'

47.64°

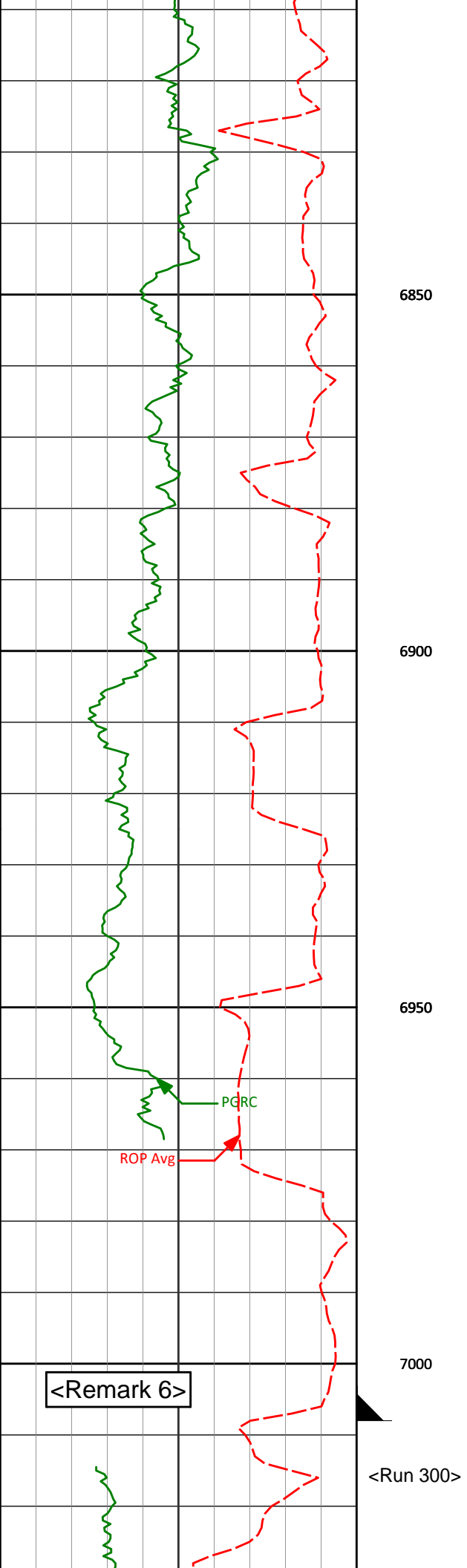
92.34°

6401.21'

-488.05'



	6589'	51.78°	95.63°	6431.60'	-452.24'
6600					
	6637'	54.13°	93.75°	6460.51'	-413.98'
6650					
	6684'	57.26°	90.49°	6487.00'	-375.17'
6700					
	6732'	62.00°	90.51°	6511.27'	-333.78'
6750					
	6779'	66.46°	89.61°	6531.69'	-291.48'
6800					



6827'	71.95°	89.15°	6548.73'	-246.67'
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6850

6873'	77.34°	89.37°	6560.91'	-202.38'
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6900

6921'	81.57°	89.17°	6569.69'	-155.25'
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6950

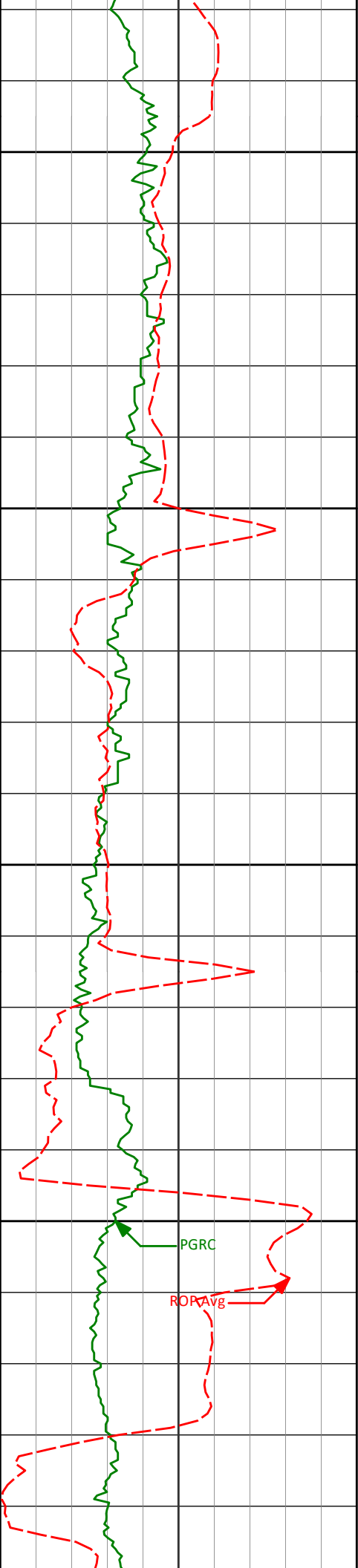
6961'	84.28°	89.60°	6574.61'	-115.60'
-------	--------	--------	----------	----------

7000

<Remark 6>

<7" casing set at 7007' MD>

<Run 300>



7050

7100

7150

7200

7039'

88.27°

88.41°

6579.68'

-37.88'

7134'

87.19°

88.22°

6583.44'

56.86'

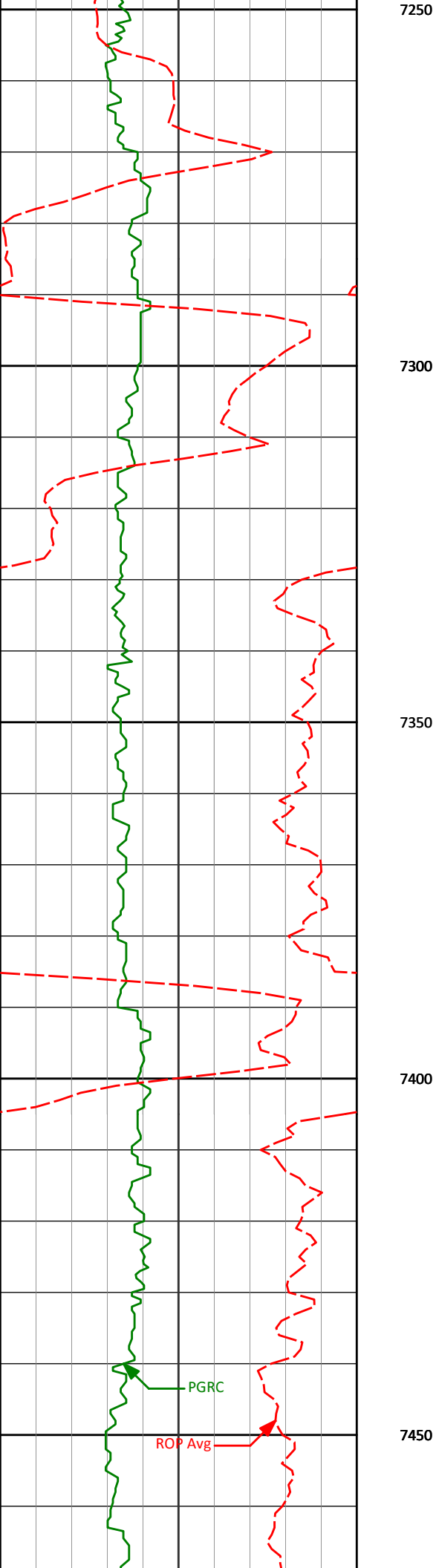
7229'

88.02°

88.79°

6587.41'

151.61'



7324'

89.63°

90.07°

6589.36'

246.50'

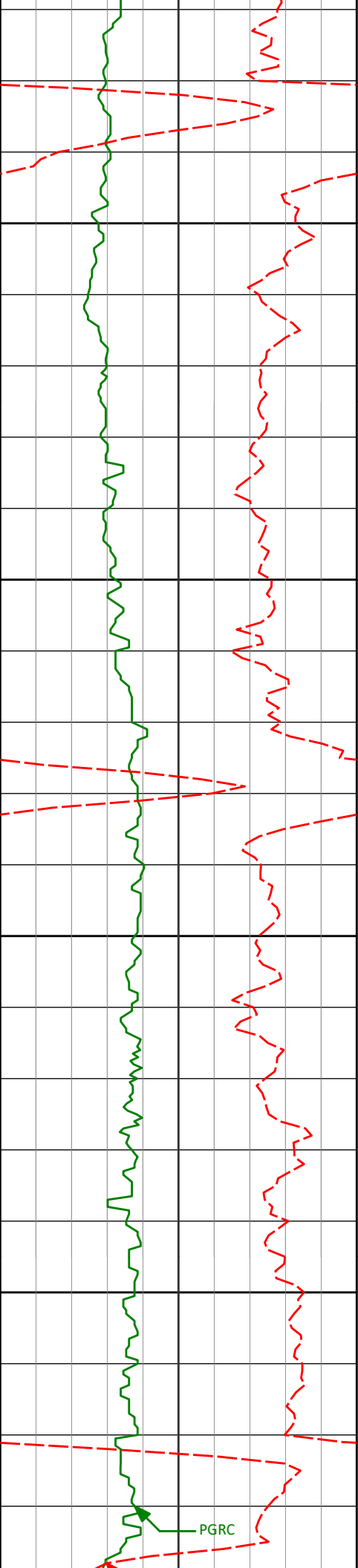
7419'

91.32°

91.24°

6588.57'

341.47'



7500

7514'

91.20°

92.09°

6586.48'

436.44'

7550

7600

7609'

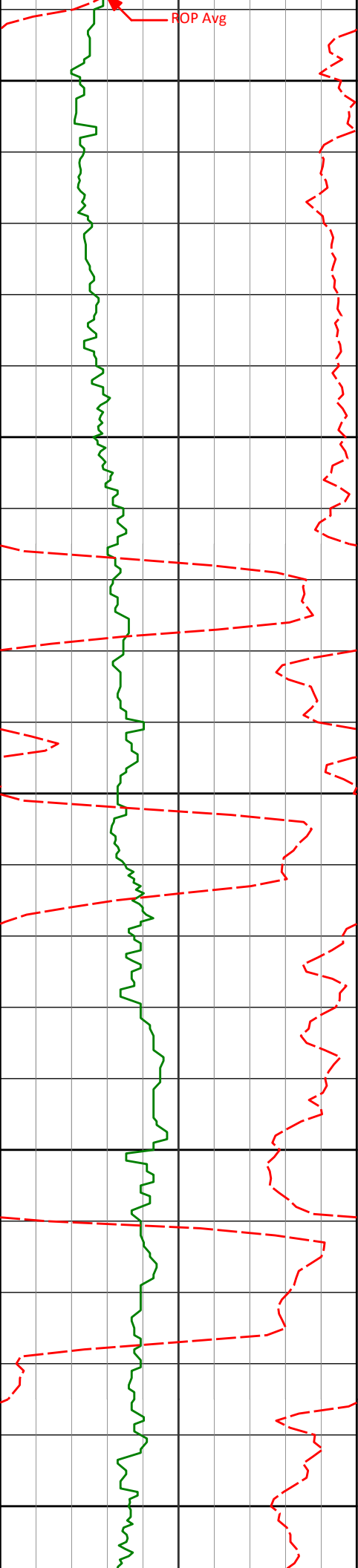
89.60°

92.70°

6585.82'

531.43'

7650



7700

7703'

91.51°

92.99°

6584.91'

625.41'

7750

7800

7798'

91.85°

92.36°

6582.13'

720.36'

7850

7900

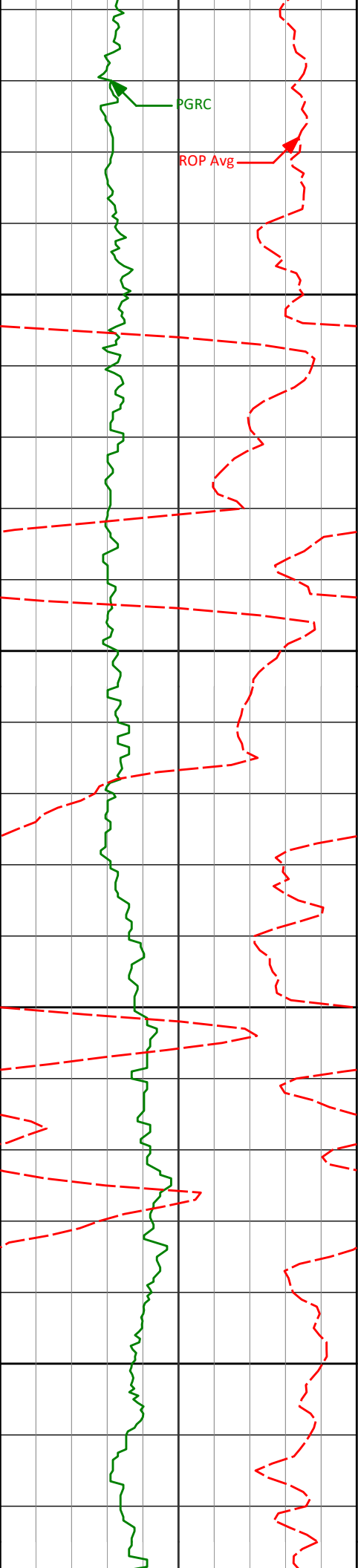
7893'

90.56°

92.01°

6580.13'

815.34'



PGRC

ROP Avg

7950

7988'

90.37°

89.15°

6579.36'

910.30'

8000

8050

8083'

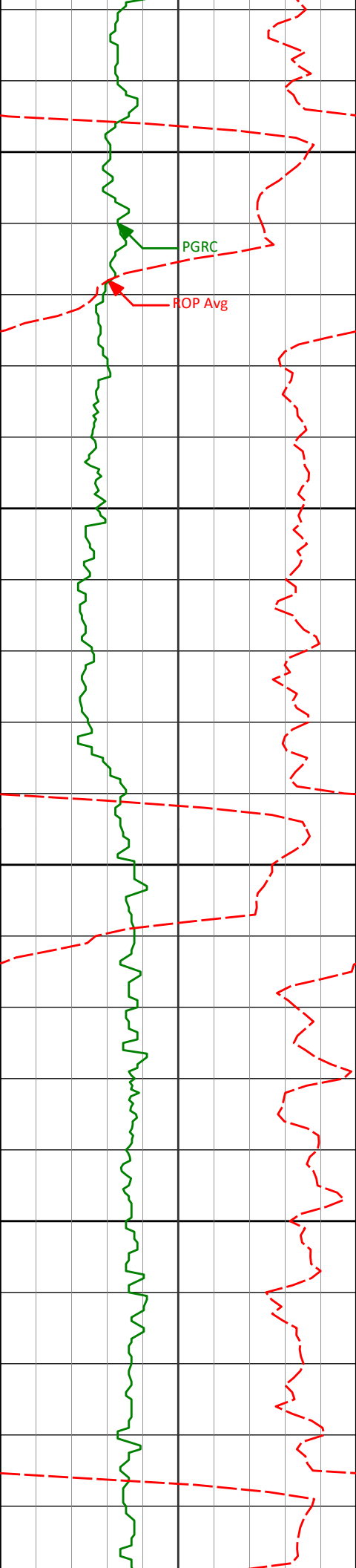
88.55°

88.23°

6580.25'

1005.14'

8100



8150

8200

8250

8300

8178'

88.98°

86.36°

6582.30'

1099.81'

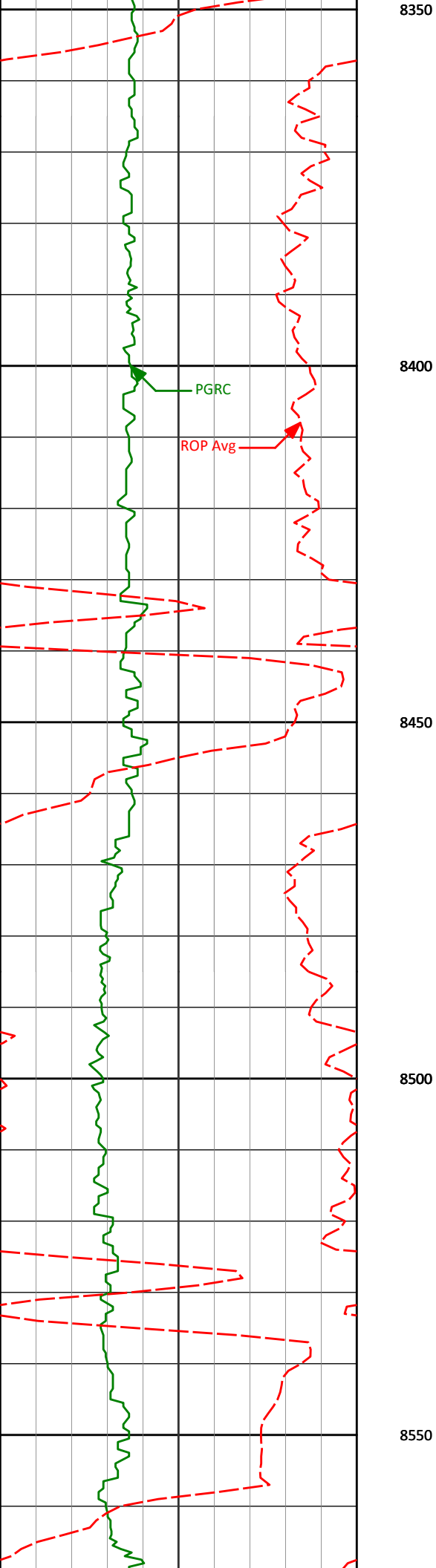
8273'

90.65°

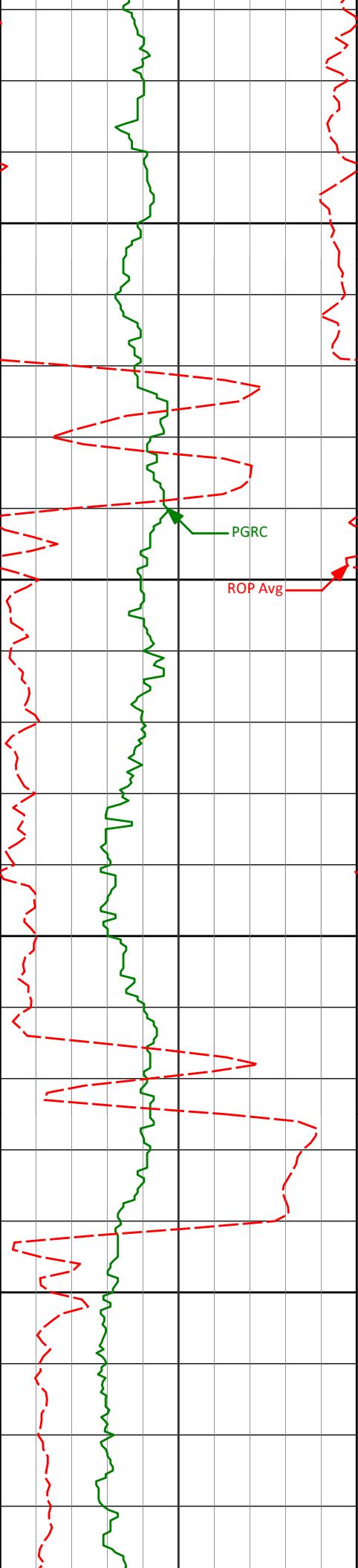
85.99°

6582.61'

1194.33'



8350				
8368'	91.14°	89.45°	6581.12'	1289.05'
8400				
8450				
8463'	89.72°	91.09°	6580.41'	1384.00'
8500				
8550				
8558'	89.26°	88.39°	6581.26'	1478.92'



8600

8650

8700

8750

8653'

88.49°

88.30°

6583.12'

1573.72'

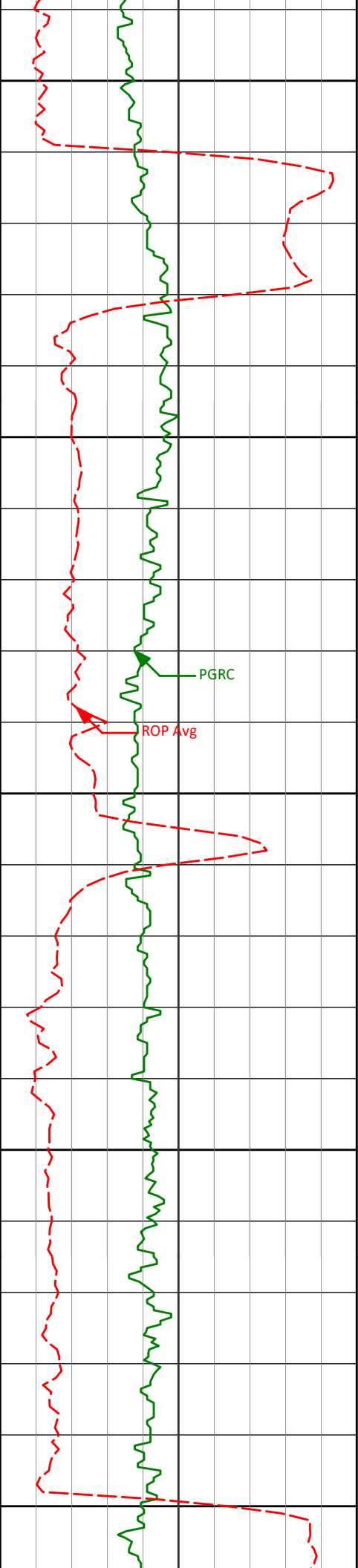
8748'

89.69°

86.97°

6584.63'

1668.44'



8800

8843'

90.59°

89.24°

6584.40'

1763.23'

8850

PGRC

ROP Avg

8900

8938'

90.15°

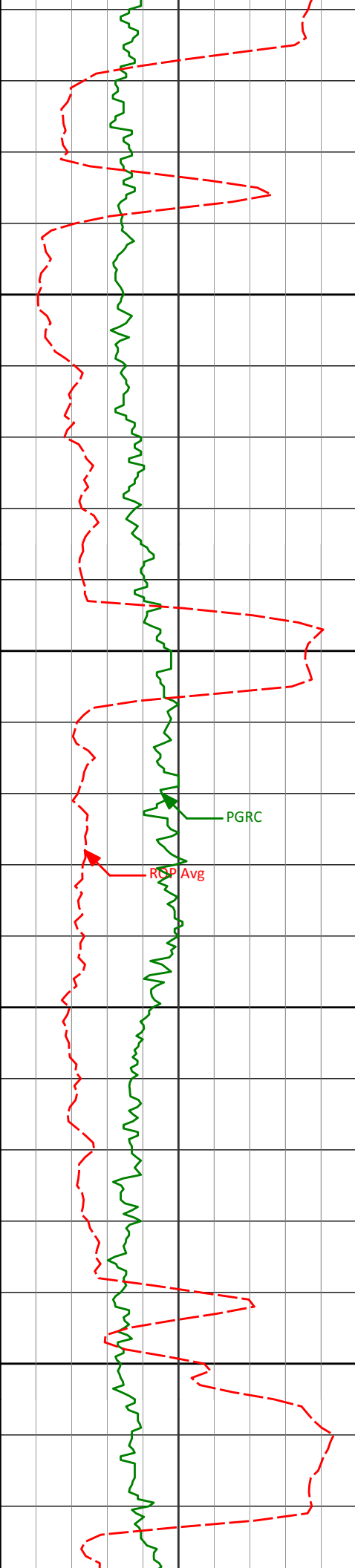
86.10°

6583.78'

1857.95'

8950

9000



9050

9100

9150

9200

9033'

90.92°

88.85°

6582.90'

1952.66'

9128'

89.75°

87.84°

6582.34'

2047.47'

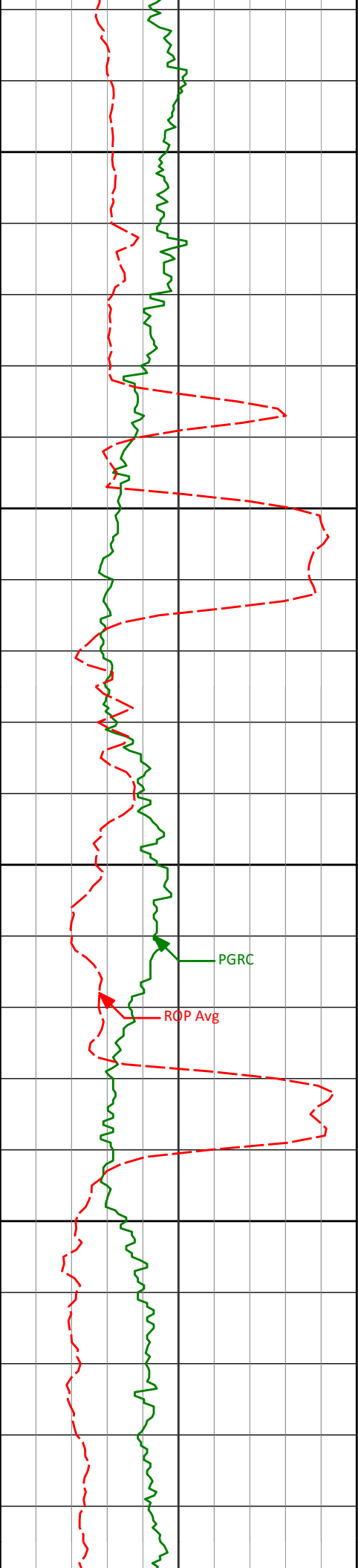
9223'

91.60°

88.61°

6581.22'

2142.26'



9250

9300

9350

9400

PGRC

RØP Avg

9318'

91.82°

89.28°

6578.39'

2237.09'

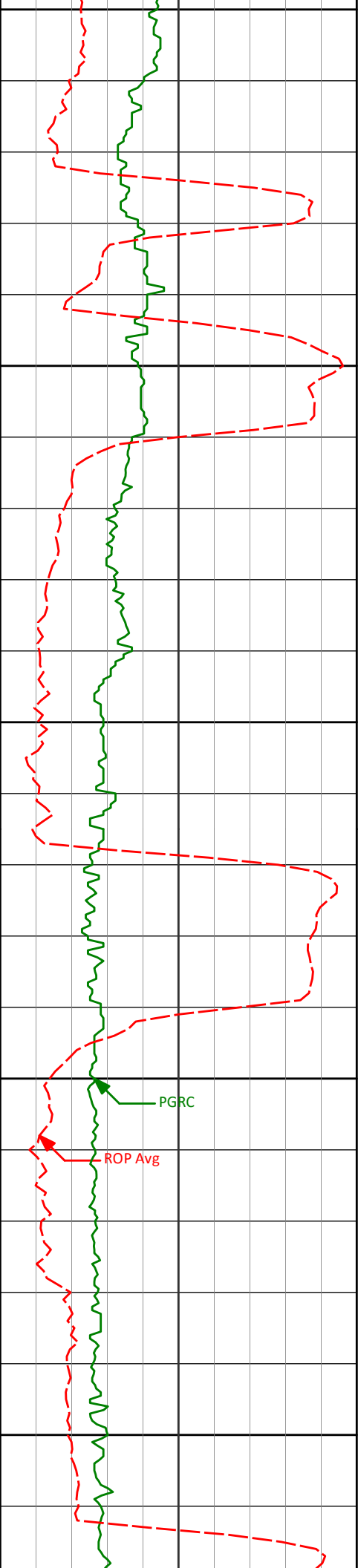
9413'

92.71°

89.87°

6574.63'

2331.94'



9450

9500

9550

9600

9650

9507'

92.50°

90.96°

6570.36'

2425.81'

9602'

90.65°

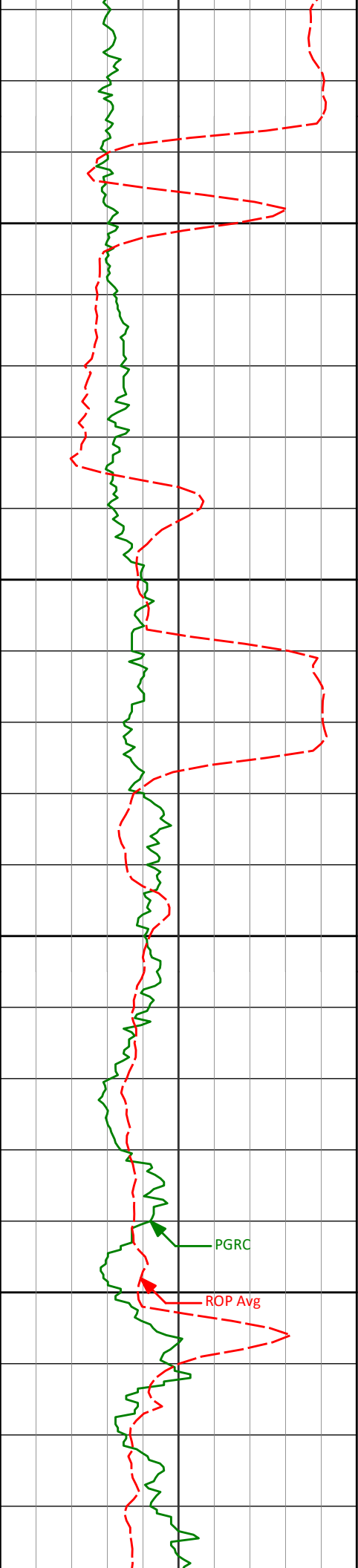
93.31°

6567.75'

2520.76'

PGRC

ROP Avg



9700

9750

9800

9850

9697'

89.69°

91.37°

6567.47'

2615.75'

9792'

89.29°

89.87°

6568.31'

2710.72'

9887'

88.55°

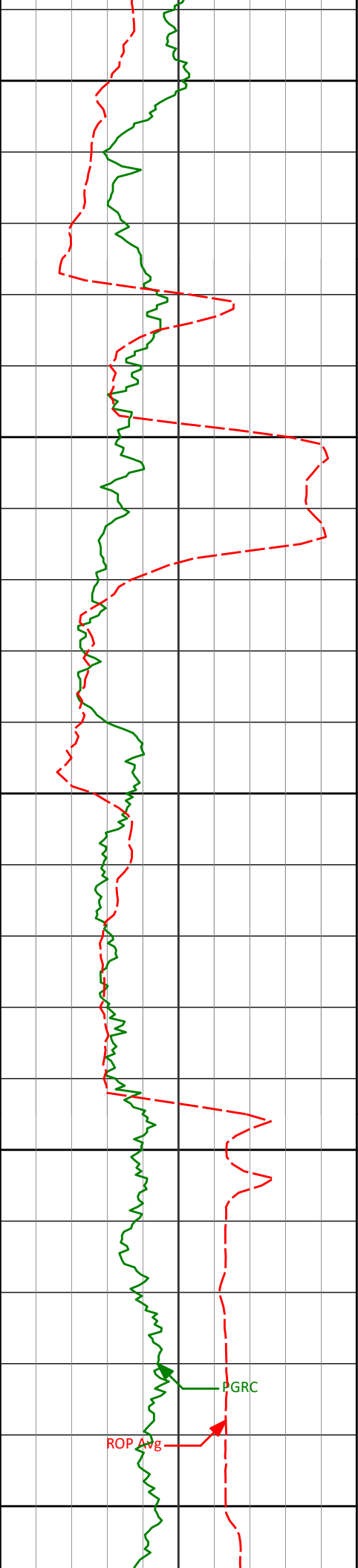
89.46°

6570.10'

2805.63'

PGRC

ROP Avg



9900

9950

10000

10050

10100

9982'

89.66°

89.29°

6571.59'

2900.53'

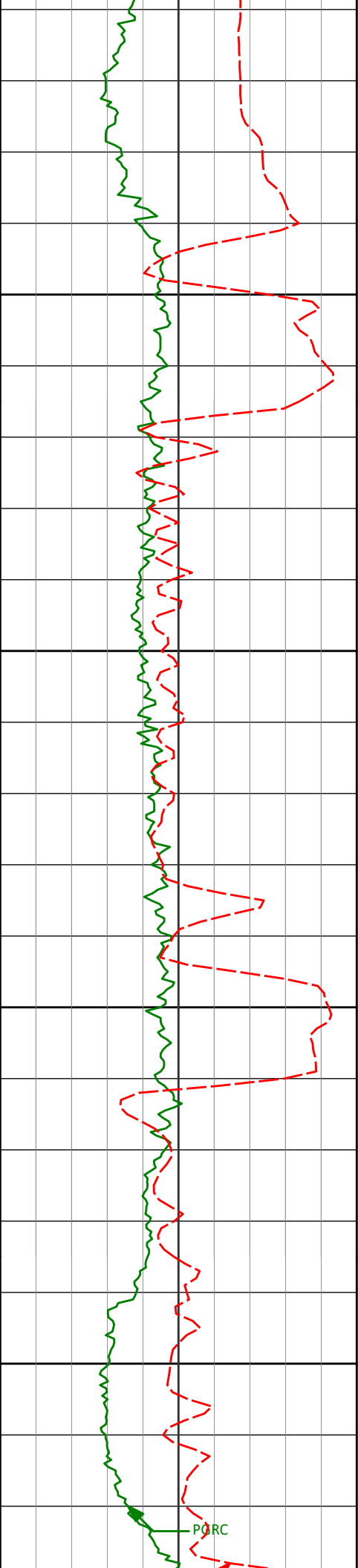
10077'

88.98°

90.00°

6572.71'

2995.45'



10150

10200

10250

10300

10172'

90.74°

90.32°

6572.95'

3090.40'

10267'

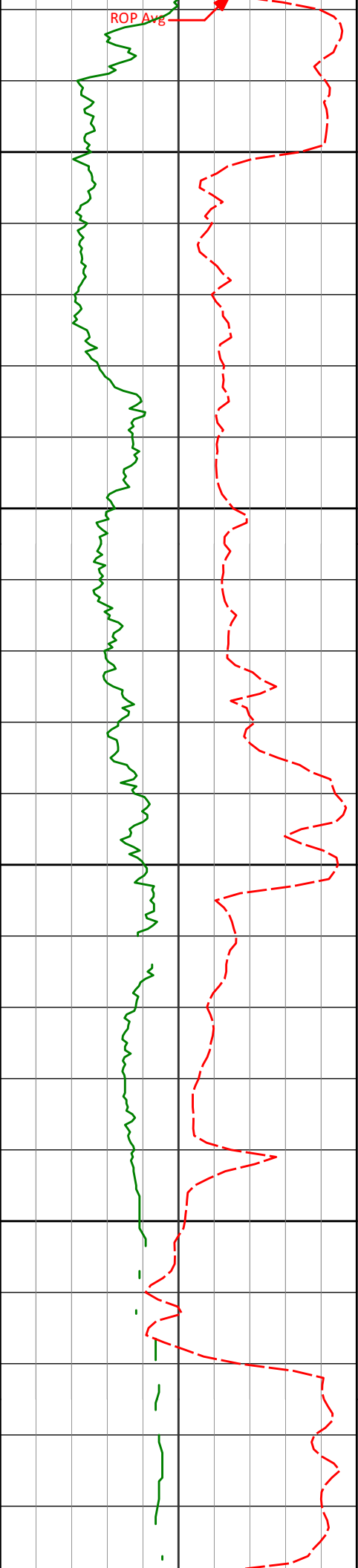
90.99°

92.31°

6571.51'

3185.38'

PORC



10350

10362'

90.55°

90.53°

6570.24'

3280.36'

10400

10450

10500

<Run 400>

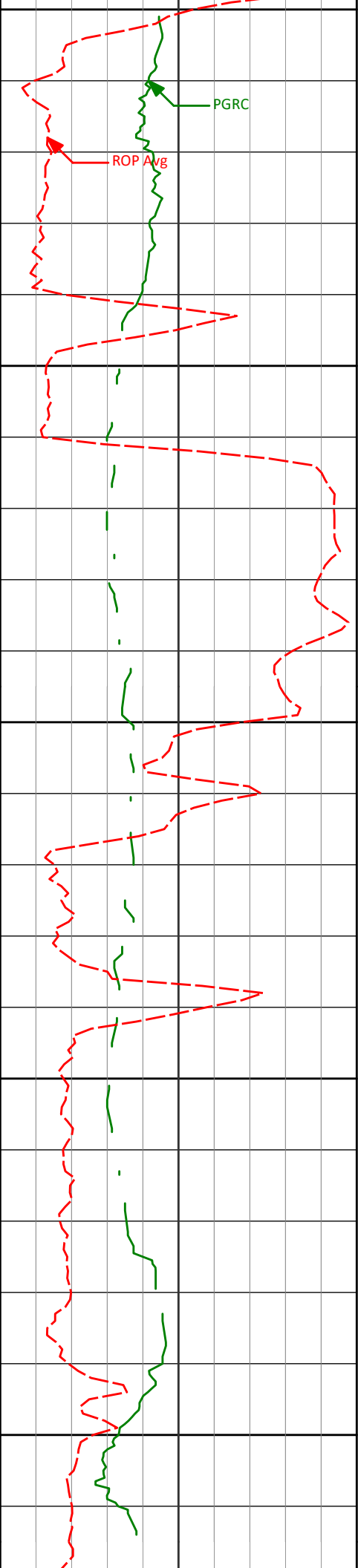
10530'

89.66°

90.99°

6570.12'

3448.33'



10550

PGRC

ROP Avg

10600

10625'

89.63°

88.20°

6570.71'

3543.24'

10650

10700

10720'

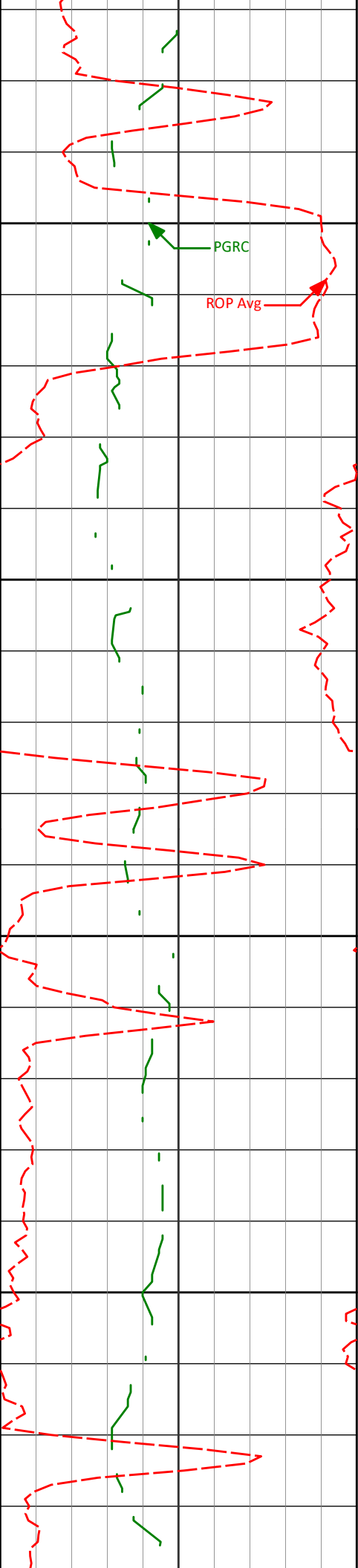
90.03°

86.36°

6570.99'

3637.93'

10750



10800

10815'

88.67°

86.79°

6572.07'

3732.51'

10850

10900

10910'

89.04°

87.65°

6573.97'

3827.17'

10950

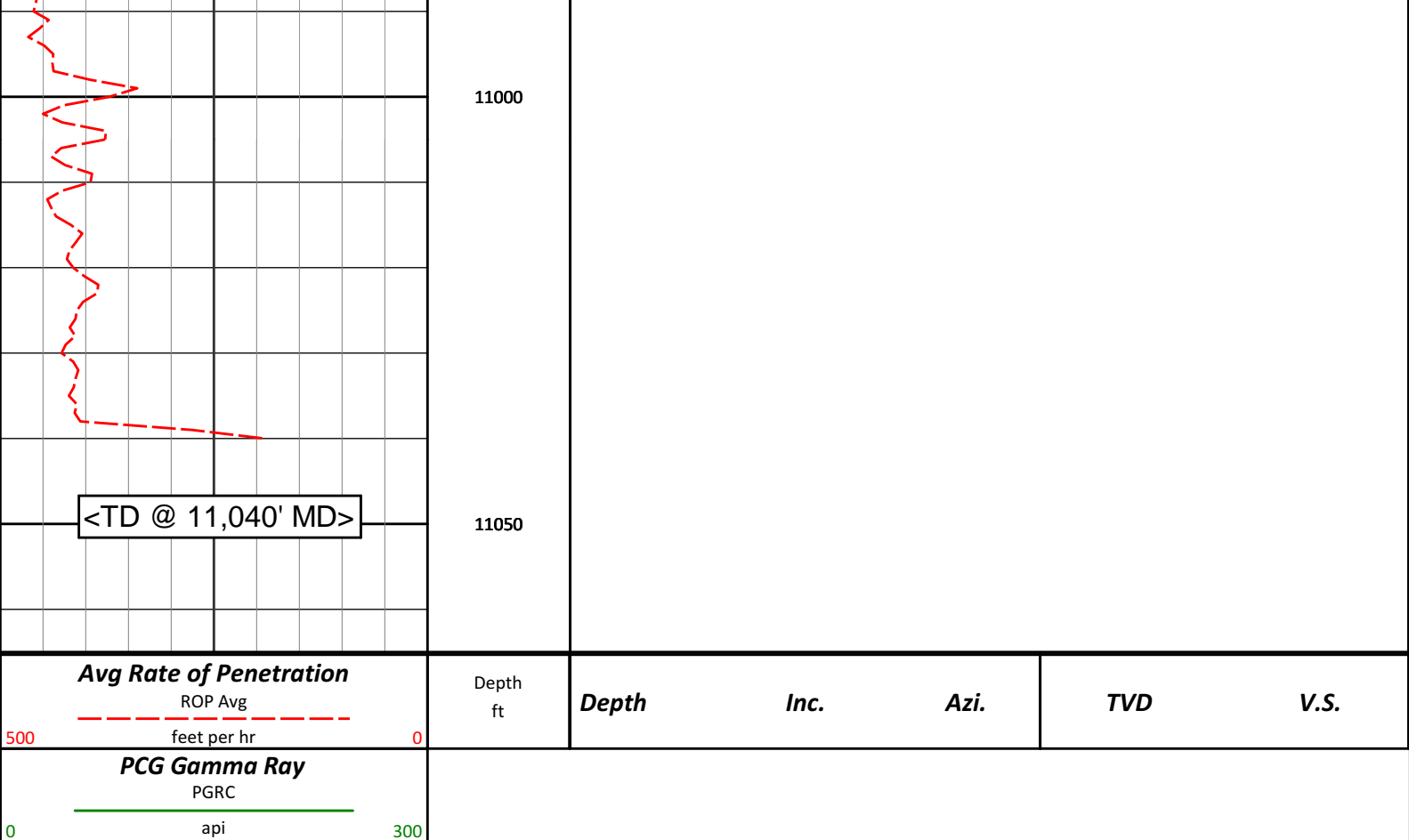
10977'

88.86°

86.82°

6575.20'

3893.94'



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Trebor B11-66-1HN
Wattenberg
Weld Colorado
USA
CA-XX-0900484412

Surface surveys at 305 ft and 613 ft have had azimuths corrected to grid north, but were not taken by Halliburton.

Last survey is a projection from 10977 ft MD to TD at 11040 ft MD.

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
305.00	0.70	78.56	304.99	0.37 N	1.83 E	1.81	0.23
613.00	0.60	3.56	612.98	2.35 N	3.77 E	3.69	0.26
718.00	0.32	353.71	717.97	3.19 N	3.77 E	3.66	0.28
811.00	2.16	290.53	810.95	4.07 N	2.10 E	1.97	2.19
904.00	1.43	269.61	903.90	4.67 N	0.70 W	-0.85	1.04
997.00	2.05	283.09	996.86	5.04 N	3.48 W	-3.65	0.79
1089.00	1.02	250.98	1088.83	5.15 N	5.86 W	-6.02	1.42
1183.00	1.52	254.22	1182.81	4.53 N	7.85 W	-7.99	0.54
1275.00	0.76	202.03	1274.79	3.64 N	9.25 W	-9.37	1.32
1368.00	0.62	192.81	1367.78	2.58 N	9.59 W	-9.67	0.19
1463.00	0.69	168.16	1462.78	1.51 N	9.59 W	-9.64	0.30
1558.00	0.77	208.93	1557.77	0.40 N	9.78 W	-9.79	0.54
1653.00	0.69	197.70	1652.76	0.71 S	10.26 W	-10.24	0.17
1748.00	0.54	236.03	1747.76	1.50 S	10.81 W	-10.75	0.45
1843.00	2.65	226.56	1842.71	3.26 S	12.78 W	-12.66	2.23
1938.00	2.79	262.73	1937.61	5.07 S	16.66 W	-16.49	1.78
2033.00	6.05	250.04	2032.32	7.07 S	23.67 W	-23.42	3.56
2128.00	6.69	265.06	2126.74	9.25 S	33.88 W	-33.56	1.87
2223.00	2.84	272.22	2222.22	12.22 S	45.22 W	-45.54	1.21

2223.00	8.01	259.06	2220.96	10.99 S	45.90 W	-45.51	1.61
2318.00	9.23	265.41	2314.89	12.85 S	59.99 W	-59.53	1.63
2412.00	11.06	263.67	2407.41	14.45 S	76.47 W	-75.95	1.97
2507.00	11.70	260.69	2500.55	17.01 S	95.03 W	-94.41	0.91
2602.00	13.91	255.30	2593.18	21.47 S	115.58 W	-114.81	2.64
2697.00	15.64	256.33	2685.04	27.39 S	139.07 W	-138.09	1.84
2792.00	15.49	255.88	2776.55	33.52 S	163.82 W	-162.62	0.20
2887.00	14.77	254.60	2868.26	39.83 S	187.80 W	-186.37	0.84
2982.00	15.46	252.95	2959.97	46.75 S	211.58 W	-209.91	0.86
3077.00	13.15	251.92	3052.02	53.82 S	233.96 W	-232.05	2.45
3172.00	14.10	254.15	3144.35	60.34 S	255.36 W	-253.22	1.14
3267.00	14.56	254.86	3236.39	66.62 S	278.02 W	-275.66	0.52
3362.00	15.04	257.19	3328.24	72.47 S	301.57 W	-299.00	0.80
3457.00	14.95	258.63	3420.00	77.62 S	325.60 W	-322.85	0.40
3551.00	16.25	258.73	3510.54	82.58 S	350.39 W	-347.46	1.38
3646.00	17.19	257.67	3601.52	88.17 S	377.14 W	-374.01	1.04
3741.00	16.50	256.01	3692.45	94.43 S	403.94 W	-400.59	0.89
3836.00	14.77	250.50	3783.93	101.74 S	428.45 W	-424.84	2.40
3931.00	13.36	250.84	3876.08	109.38 S	450.24 W	-446.36	1.49
4026.00	14.41	251.68	3968.31	116.70 S	471.83 W	-467.70	1.13
4121.00	14.39	254.06	4060.32	123.66 S	494.40 W	-490.03	0.62
4216.00	15.20	257.38	4152.17	129.62 S	517.90 W	-513.32	1.23
4311.00	13.13	255.98	4244.28	134.96 S	540.53 W	-535.76	2.21
4406.00	13.91	261.21	4336.65	139.32 S	562.28 W	-557.36	1.53
4500.00	13.91	262.68	4427.89	142.48 S	584.66 W	-579.61	0.38
4595.00	11.37	268.35	4520.59	144.21 S	605.35 W	-600.23	2.97
4690.00	12.37	254.20	4613.57	147.25 S	624.50 W	-619.28	3.23
4785.00	12.37	246.57	4706.38	154.06 S	643.63 W	-638.17	1.72
4880.00	10.54	244.30	4799.48	161.88 S	660.80 W	-655.07	1.98
4975.00	8.77	238.68	4893.13	169.41 S	674.82 W	-668.83	2.11
5070.00	6.68	228.27	4987.27	176.86 S	685.13 W	-678.89	2.64
5165.00	4.60	213.93	5081.81	183.70 S	691.38 W	-684.91	2.63
5260.00	1.80	208.91	5176.65	188.16 S	694.23 W	-687.61	2.96
5354.00	1.52	197.35	5270.61	190.65 S	695.31 W	-688.61	0.46
5450.00	1.34	222.60	5366.58	192.69 S	696.45 W	-689.68	0.68
5734.00	0.62	212.27	5650.54	196.43 S	699.52 W	-692.62	0.26
5924.00	0.67	197.90	5840.53	198.36 S	700.41 W	-693.45	0.09
5978.00	0.31	194.52	5894.53	198.80 S	700.55 W	-693.57	0.67
6114.00	10.47	68.77	6029.78	194.67 S	689.09 W	-682.25	7.83
6162.00	15.06	70.13	6076.58	190.97 S	679.15 W	-672.45	9.58
6209.00	17.65	73.39	6121.68	186.86 S	666.58 W	-660.02	5.84
6257.00	22.37	73.04	6166.77	182.11 S	650.86 W	-644.46	9.84
6304.00	25.49	79.53	6209.73	177.66 S	632.35 W	-626.11	8.68
6352.00	28.48	86.10	6252.51	175.00 S	610.77 W	-604.63	8.79
6399.00	32.80	89.74	6292.94	174.18 S	586.84 W	-580.75	10.00
6447.00	38.15	89.30	6332.02	173.94 S	559.00 W	-552.92	11.16
6494.00	43.44	88.34	6367.59	173.30 S	528.31 W	-522.27	11.33
6542.00	47.64	92.34	6401.21	173.54 S	494.07 W	-488.05	10.58
6589.00	51.78	95.63	6431.60	176.06 S	458.33 W	-452.24	10.30
6637.00	54.13	93.75	6460.51	179.19 S	420.15 W	-413.98	5.81
6684.00	57.26	90.49	6487.00	180.60 S	381.36 W	-375.17	8.78
6732.00	62.00	90.51	6511.27	180.96 S	339.96 W	-333.78	9.88
6779.00	66.46	89.61	6531.69	181.00 S	297.65 W	-291.48	9.64
6827.00	71.95	89.15	6548.73	180.51 S	252.80 W	-246.67	11.47
6873.00	77.34	89.37	6560.91	179.94 S	208.46 W	-202.38	11.73
6921.00	81.57	89.17	6569.69	179.34 S	161.28 W	-155.25	8.82
6961.00	84.28	89.60	6574.61	178.91 S	121.59 W	-115.60	6.86
7039.00	88.27	88.41	6579.68	177.56 S	43.79 W	-37.88	5.34
7134.00	87.19	88.22	6583.44	174.77 S	51.10 E	56.86	1.15
7229.00	88.02	88.79	6587.41	172.29 S	145.98 E	151.61	1.06
7324.00	89.63	90.07	6589.36	171.35 S	240.95 E	246.50	2.16
7419.00	91.32	91.24	6588.57	172.43 S	335.93 E	341.47	2.16
7514.00	91.20	92.09	6586.48	175.19 S	430.87 E	436.44	0.90
7609.00	89.60	92.70	6585.82	179.16 S	525.78 E	531.43	1.80
7703.00	91.51	92.99	6584.91	183.83 S	619.66 E	625.41	2.06
7798.00	91.85	92.36	6582.13	188.26 S	714.51 E	720.36	0.75
7893.00	90.56	92.01	6580.13	191.88 S	809.42 E	815.34	1.41
7988.00	90.37	89.15	6579.36	192.84 S	904.40 E	910.30	3.02
8083.00	88.55	88.23	6580.25	190.67 S	999.37 E	1005.14	2.15
8178.00	88.98	86.36	6582.30	186.19 S	1094.24 E	1099.81	2.02
8273.00	90.65	85.99	6582.61	179.85 S	1189.02 E	1194.33	1.80

8368.00	91.14	89.45	6581.12	176.07 S	1283.92 E	1289.05	3.68
8463.00	89.72	91.09	6580.41	176.52 S	1378.91 E	1384.00	2.28
8558.00	89.26	88.39	6581.26	176.09 S	1473.90 E	1478.92	2.88
8653.00	88.49	88.30	6583.12	173.35 S	1568.84 E	1573.72	0.82
8748.00	89.69	86.97	6584.63	169.43 S	1663.74 E	1668.44	1.89
8843.00	90.59	89.24	6584.40	166.29 S	1758.68 E	1763.23	2.57
8938.00	90.15	86.10	6583.78	162.42 S	1853.59 E	1857.95	3.34
9033.00	90.92	88.85	6582.90	158.24 S	1948.48 E	1952.66	3.01
9128.00	89.75	87.84	6582.34	155.50 S	2043.44 E	2047.47	1.63
9223.00	91.60	88.61	6581.22	152.55 S	2138.38 E	2142.26	2.11
9318.00	91.82	89.28	6578.39	150.81 S	2233.32 E	2237.09	0.74
9413.00	92.71	89.87	6574.63	150.10 S	2328.24 E	2331.94	1.12
9507.00	92.50	90.96	6570.36	150.78 S	2422.14 E	2425.81	1.18
9602.00	90.65	93.31	6567.75	154.32 S	2517.03 E	2520.76	3.15
9697.00	89.69	91.37	6567.47	158.20 S	2611.94 E	2615.75	2.28
9792.00	89.29	89.87	6568.31	159.23 S	2706.93 E	2710.72	1.63
9887.00	88.55	89.46	6570.10	158.67 S	2801.91 E	2805.63	0.89
9982.00	89.66	89.29	6571.59	157.63 S	2896.89 E	2900.53	1.18
10077.00	88.98	90.00	6572.71	157.05 S	2991.88 E	2995.45	1.03
10172.00	90.74	90.32	6572.95	157.31 S	3086.88 E	3090.40	1.88
10267.00	90.99	92.31	6571.51	159.49 S	3181.84 E	3185.38	2.11
10362.00	90.55	90.53	6570.24	161.84 S	3276.80 E	3280.36	1.93
10435.00	90.03	90.83	6569.87	162.71 S	3349.79 E	3353.34	0.82
10530.00	89.66	90.99	6570.12	164.22 S	3444.78 E	3448.33	0.42
10625.00	89.63	88.20	6570.71	163.55 S	3539.76 E	3543.24	2.94
10720.00	90.03	86.36	6570.99	159.04 S	3634.65 E	3637.93	1.98
10815.00	88.67	86.79	6572.07	153.37 S	3729.47 E	3732.51	1.50
10910.00	89.04	87.65	6573.97	148.76 S	3824.34 E	3827.17	0.99
10977.00	88.86	86.82	6575.20	145.53 S	3891.25 E	3893.94	1.27
11040.00	88.86	86.82	6576.45	142.03 S	3954.14 E	3956.68	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 91.90 DEGREES (GRID)
A TOTAL CORRECTION OF 7.86 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11040.00 FEET
IS 3956.69 FEET ALONG 92.06 DEGREES (GRID)**