

**PCGK : Pressure Case Gamma**  
**PCDC: Pressure Case Directional**

**1 : 600 / 1 : 240**

Country : <b>USA</b>			
Field : <b>Wattenberg</b>			
Location : <b>Lat: 40°25' 55.09" North</b> <b>Long: 104°29' 22.06" West</b>			
Well : <b>SLW Ranch B01-68-1HN</b>			
Company : <b>Noble Energy</b>			
Rig : <b>H&amp;P 315</b>			
LOCATION			
Latitude : <b>40°25' 55.09" North</b> Longitude : <b>104°29' 22.06" West</b>			
UTM Easting = <b>3,281,306.73 ft</b> UTM Northing = <b>1,401,809.70 ft</b>			
Company : <b>Noble Energy</b>			
Rig : <b>H&amp;P 315</b>			
Well : <b>SLW Ranch B01-68-1HN</b>			
Field : <b>Wattenberg</b>			
Country : <b>USA</b>			
API Number : <b>05-123-36320</b>			
Permanent Datum : <b>Ground Level</b>			
Log Measured From : <b>Drill Floor</b>			
Drilling Measured From : <b>Drill Floor</b>			
Elevation : <b>4613.00 ft</b>			
24.00 ft Above Permanent Datum			
<b>MD LOG</b>			
Depth Logged : <b>631.00 ft To 11,204.00 ft</b>			
Date Logged : <b>02-Jan-13 To 06-Jan-13</b>			
Total Depth MD : <b>11,204.00 ft</b> TVD : <b>6,685.94 ft</b>			
Spud Date : <b>01-Jan-13</b>			
Unit No. : <b>11610113</b>			
Job No. : <b>CA-XX-0900071985</b>			
Plot Type : <b>Final</b>			
Plot Date : <b>07-Jan-13</b>			
Run No.			
Size			
From			
To			
8.750 in			
631.00 ft			
6,057.00 ft			
8.750 in			
6,057.00 ft			
7,085.00 ft			
6.125 in			
7,085.00 ft			
11,204.00 ft			
Run No.			
Size			
From			
To			
7.000 in			
26.00 lppf			
SURFACE			
7,075.00 ft			

**WELL INFORMATION**

MWD Run Number	100	200	300		
Date run completed	03-Jan-13	04-Jan-13	07-Jan-13		
Rig Bit Number	2	3	4		
Bit Size (in)	8.750	8.750	6.125		
Tool Nominal OD (in)	6.750	6.750	4.750		
Log Start Depth (MD, ft)	631.00	6,057.00	7,085.00		
Log End Depth (MD, ft)	6,057.00	7,085.00	11,204.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	01-Jan-13 07:25	03-Jan-13 10:40	05-Jan-13 02:00		
Drill/Wipe End Date and Time	03-Jan-13 00:45	03-Jan-13 23:45	06-Jan-13 11:20		
Min Inc (deg) @ Depth (MD, ft)	.02 @ 811.00	1.17 @ 6,063.00	85.53 @ 7,105.00		
Max Inc (deg) @ Depth (MD, ft)	12.36 @ 2,887.00	80.73 @ 7,030.00	92.63 @ 10,558.00		
Bit TFA(in2) / Bit Type	.75 / PDC	.75 / PDC	.46 / PDC		
Flow Rate (gpm)	596.51	595.00	270.00		
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		
Density (ppg) / Viscosity (spqt)	9.80 / 28.00	10.50 / 37.00	9.38 / 31.00		
Filtrate CL (ppm)	1,300.00	1,300.00	1,600.00		
pH / Fluid Loss (mptm)	9.30 / 0	9.20 / 0	9.10 / 0		
PV (cP) / YP (lhf2)	3 / 2.00	11 / 11.00	7 / 4.00		
% Solids / % Sand	2.6 / .25	12.30 / 0.20	6.90 / 0.20		
% 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 (degF) / Source	170.37 / PCM	170.37 / PCM	228.74 / PCM		
Rm @ Max Tool Temp (degF)	N/A @ 170.37	N/A @ 170.37	N/A @ 228.74		
Lead MWD Engineer	Paul Kock	Paul Kock	Paul Kock		
Customer Representative	Dave Nielsen	Dave Nielsen	Dave Nielsen		

## SENSOR INFORMATION

### Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.76	5.76	5.76		
Sub Serial Number	11341343	11341343	11633670		
Insert Serial Number	10997267	10997267	11680751		
Date and Time Initialized	01-Jan-13 22:00	01-Jan-13 22:00	04-Jan-13 07:35		
Date and Time Read	04-Jan-13 05:36	04-Jan-13 05:44	07-Jan-13 04:18		
ECMB SW Version	N/A	N/A	N/A		

### Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	54.92	52.51	59.84		
Software Version	6.21	6.21	6.21		
Sub Serial Number	11341343	11341343	11633670		
Sonde Serial Number	11833052	11833052	10993516		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	168.67	25.56	209.20		

### Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	49.82	47.41	54.76		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	11341343	11341343	11633670		
Insert/Sonde Serial Number	11121379	11121379	11293261		

## 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 7.3.5
6. End of Run 200. Gap between build and lateral section is due to Gamma sensor measure point to bit distance during the build run. Last Gamma datapoint is at 7038 ft MD. Gamma cannot be measured accurately within cased hole, and collection resumes after drilling through cement at 7085 ft MD.

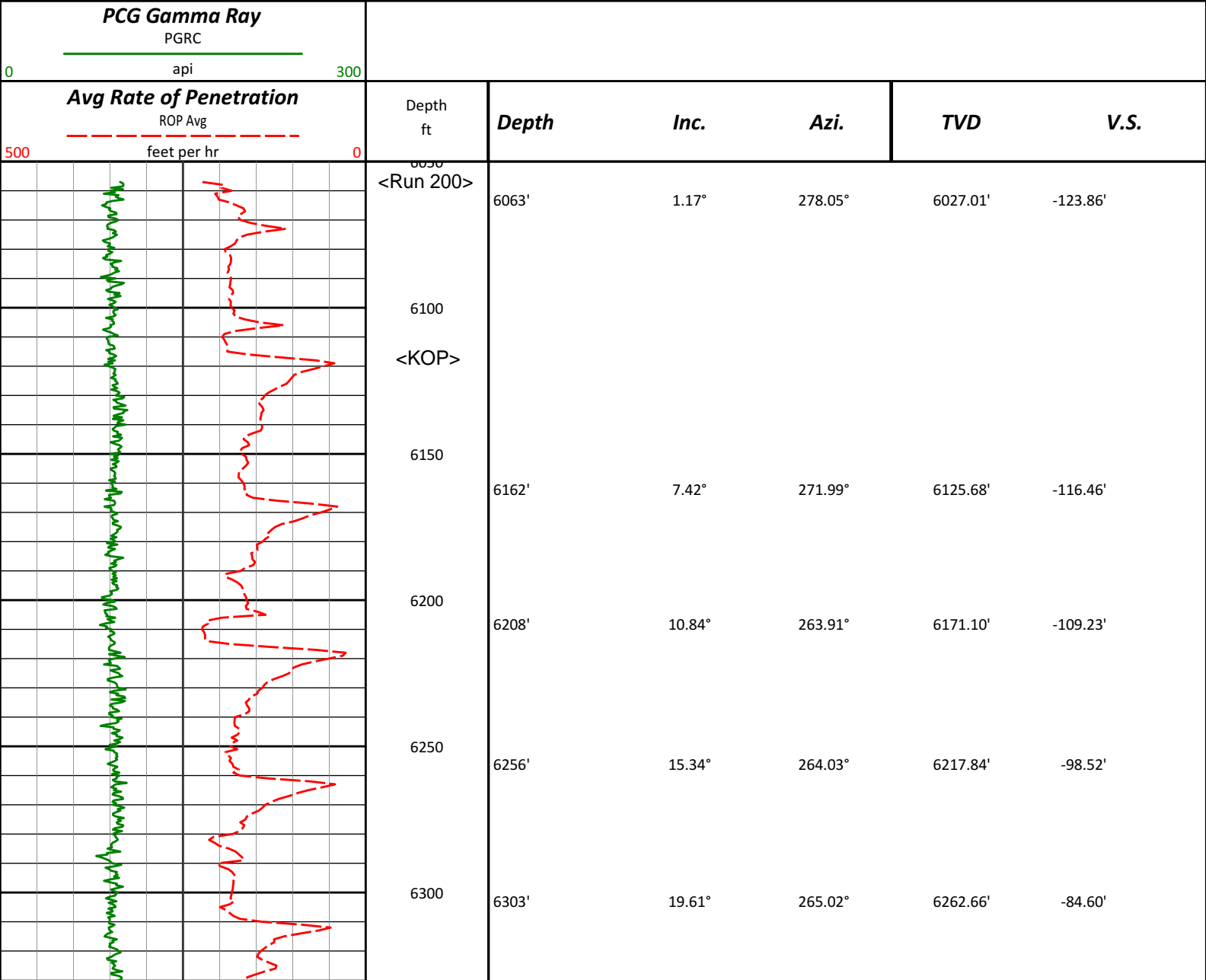
WARRANTY

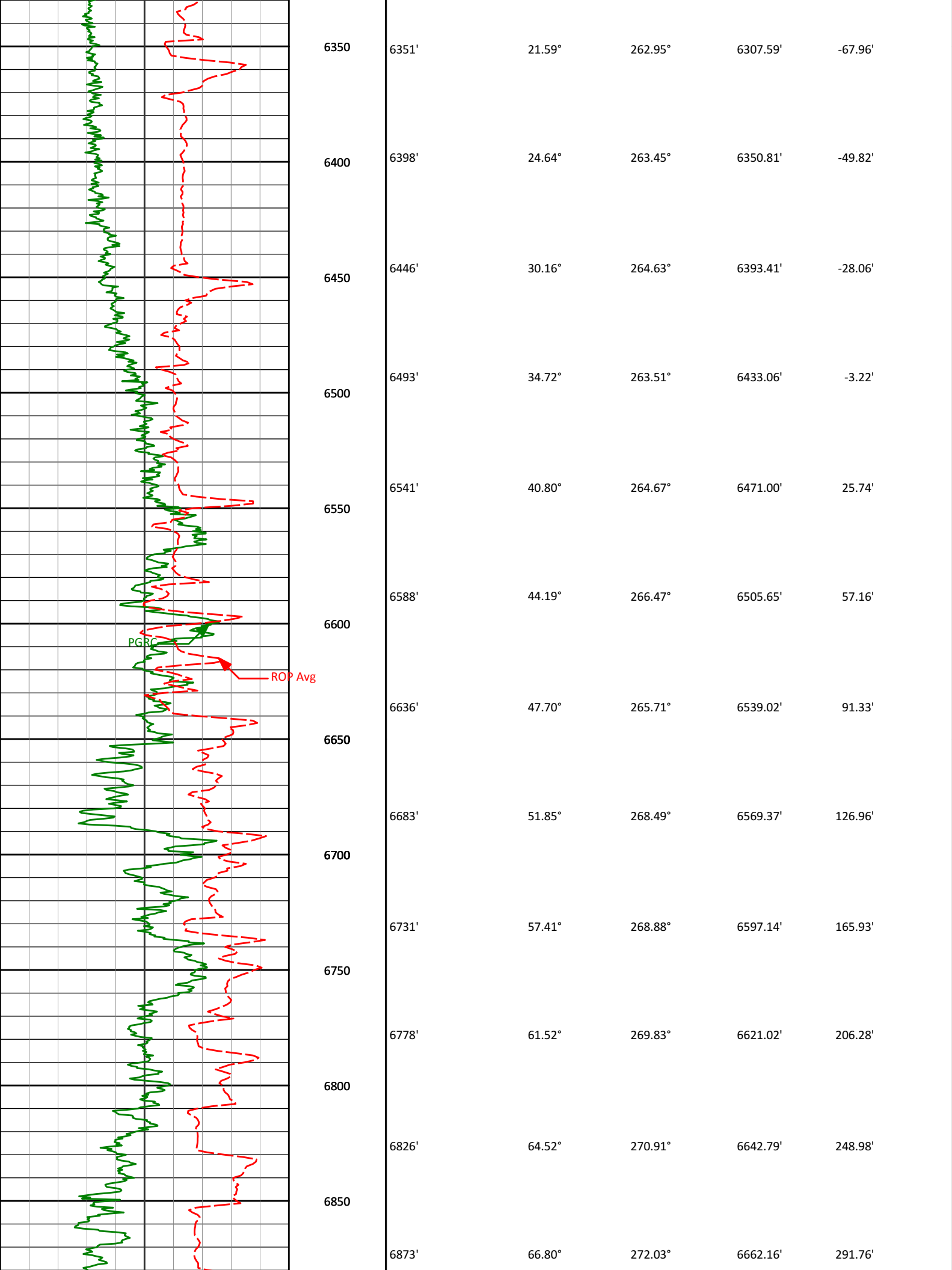
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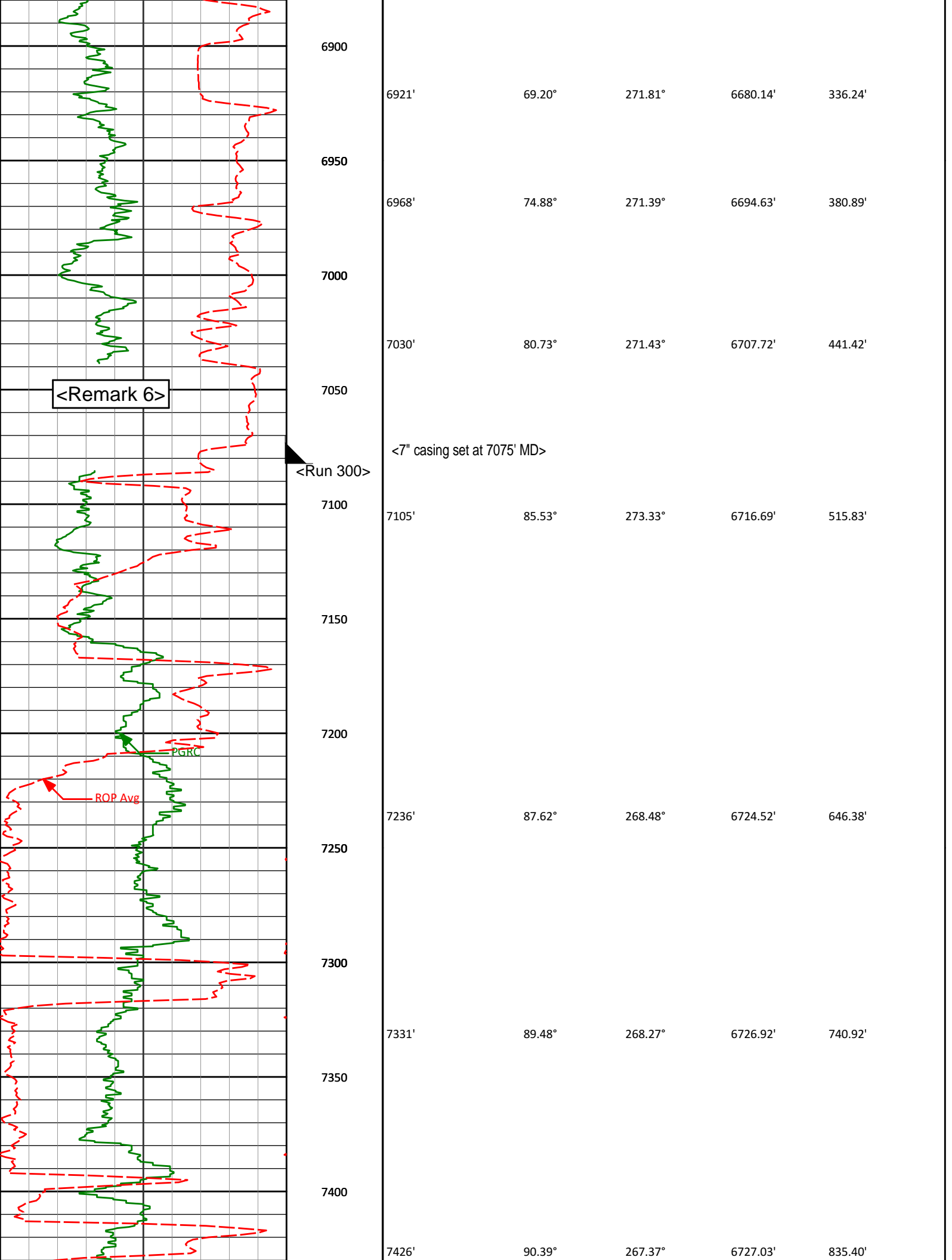
HALLIBURTON  
Sperry Drilling Services

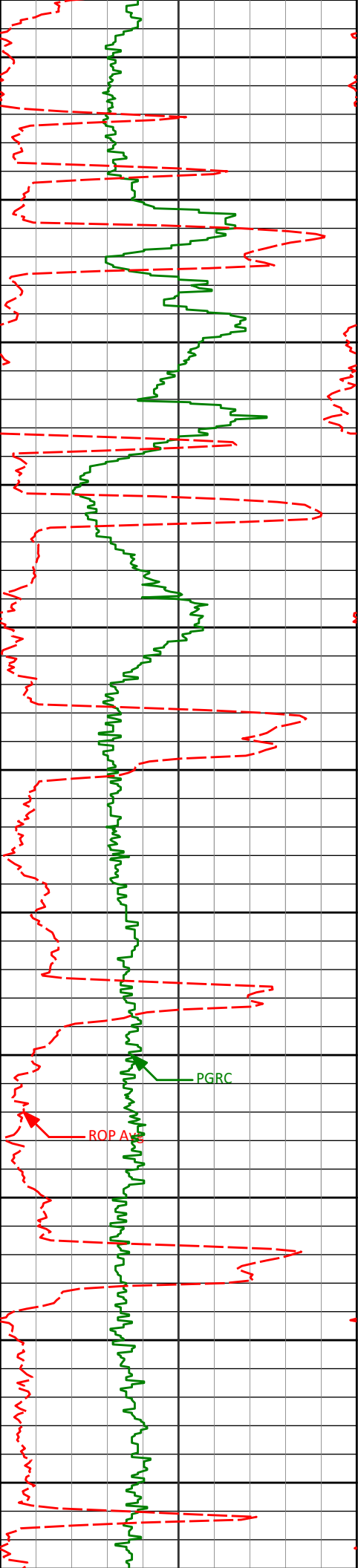
MD Main Log 1:600

Noble Energy, Inc  
SLW Ranch B01-68-1HN  
H&P 315  
T5N R64W









7450

7500

7550

7600

7650

7700

7750

7800

7850

7900

7950

7521'

91.93°

267.35°

6725.10'

929.78'

7616'

92.11°

267.94°

6721.76'

1024.18'

7711'

90.38°

268.08°

6719.69'

1118.66'

7806'

90.98°

269.15°

6718.57'

1213.27'

7901'

89.39°

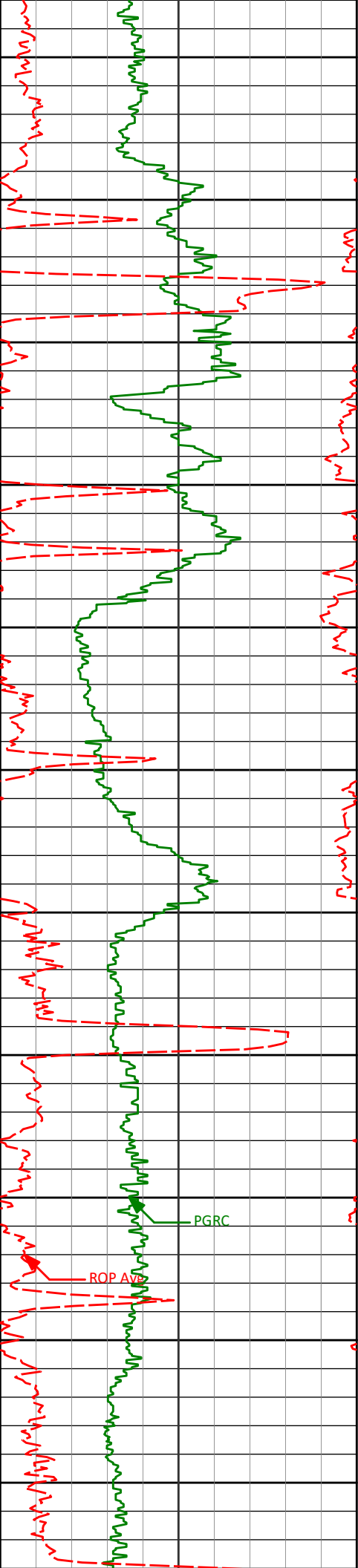
269.03°

6718.27'

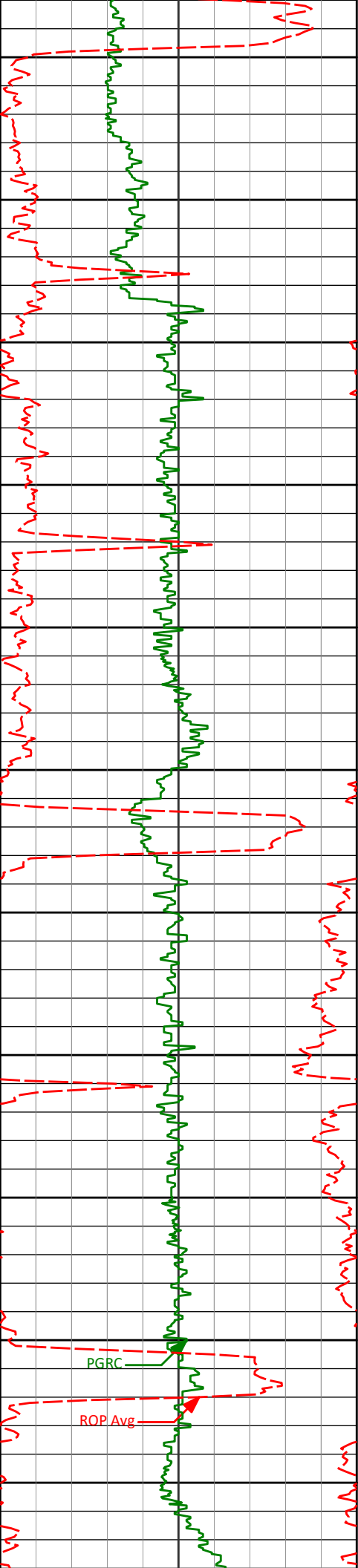
1307.94'

PGRC

ROP A



8000	7996'	89.48°	269.25°	6719.21'	1402.62'
8050					
8100	8090'	90.95°	269.41°	6718.85'	1496.34'
8150					
8200	8185'	91.38°	270.11°	6716.92'	1591.08'
8250					
8300	8280'	91.54°	269.33°	6714.51'	1685.81'
8350					
8400	8375'	90.39°	268.74°	6712.91'	1780.46'
8450					
8500	8470'	89.90°	267.88°	6712.67'	1875.03'



8550

8565'

90.44°

269.92°

6712.39'

1969.67'

8600

8650

8660'

90.21°

269.58°

6711.84'

2064.43'

8700

8750

8755'

89.83°

270.23°

6711.81'

2159.21'

8800

8850

8849'

91.41°

269.30°

6710.79'

2252.97'

8900

8950

8944'

89.83°

268.45°

6709.76'

2347.61'

9000

PGRC

ROP Avg

9050

9039'

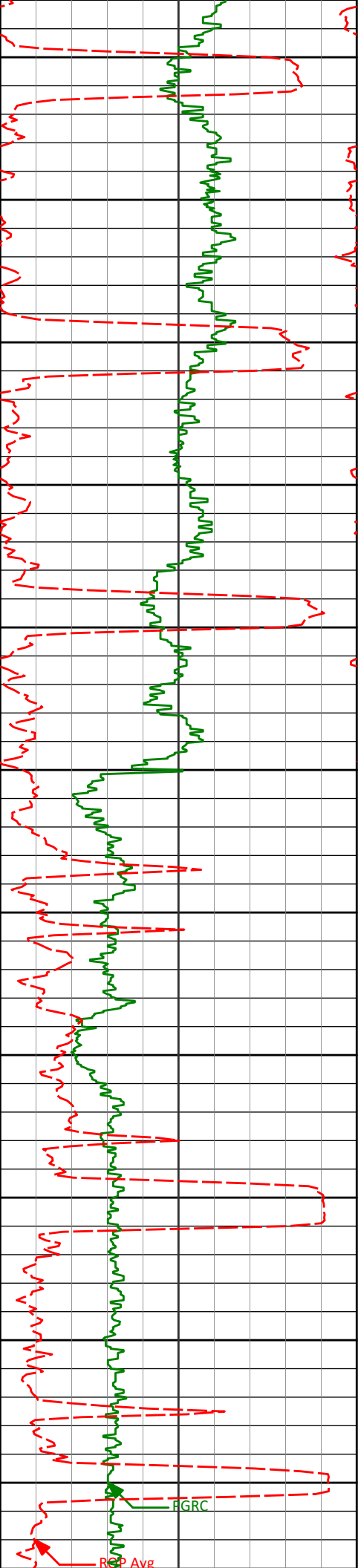
90.63°

267.12°

6709.39'

2442.08'





9100

9134'

91.63°

267.57°

6707.52'

2536.46'

9150

9200

9229'

90.71°

269.18°

6705.57'

2631.01'

9250

9300

9324'

92.03°

269.19°

6703.30'

2725.68'

9350

9400

9419'

92.21°

268.62°

6699.78'

2820.26'

9450

9500

9514'

90.37°

268.13°

6697.65'

2914.81'

9550

9600

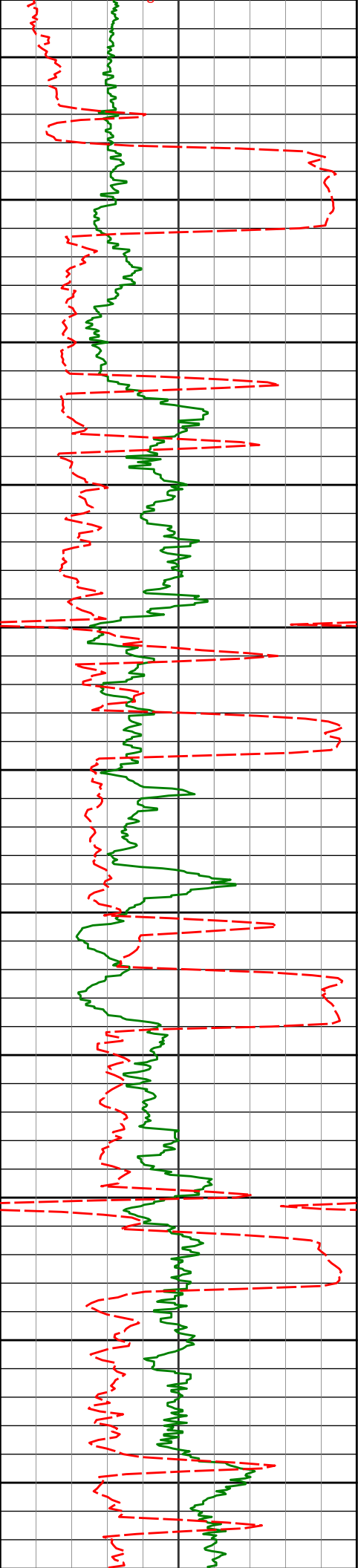
9609'

87.60°

265.31°

6699.34'

3009.05'



9650

9700

9750

9800

9850

9900

9950

10000

10050

10100

10150

9704'

90.11°

269.05°

6701.24'

3103.38'

9798'

91.67°

268.99°

6699.78'

3197.03'

9893'

91.98°

269.56°

6696.75'

3291.69'

9988'

91.15°

270.57°

6694.16'

3386.45'

10083'

89.65°

271.35°

6693.49'

3481.33'

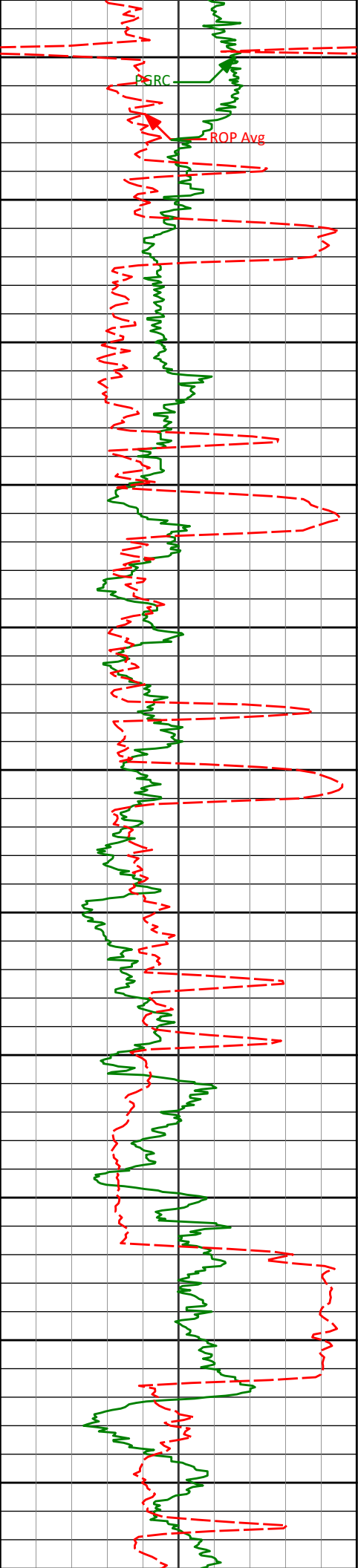
10178'

90.55°

271.34°

6693.33'

3576.24'



10200

10250

10300

10350

10400

10450

10500

10550

10600

10650

10700

10273'

90.36°

270.89°

6692.57'

3671.13'

10368'

90.50°

269.78°

6691.86'

3765.95'

10463'

91.10°

268.80°

6690.53'

3860.65'

10558'

92.63°

268.25°

6687.44'

3955.19'

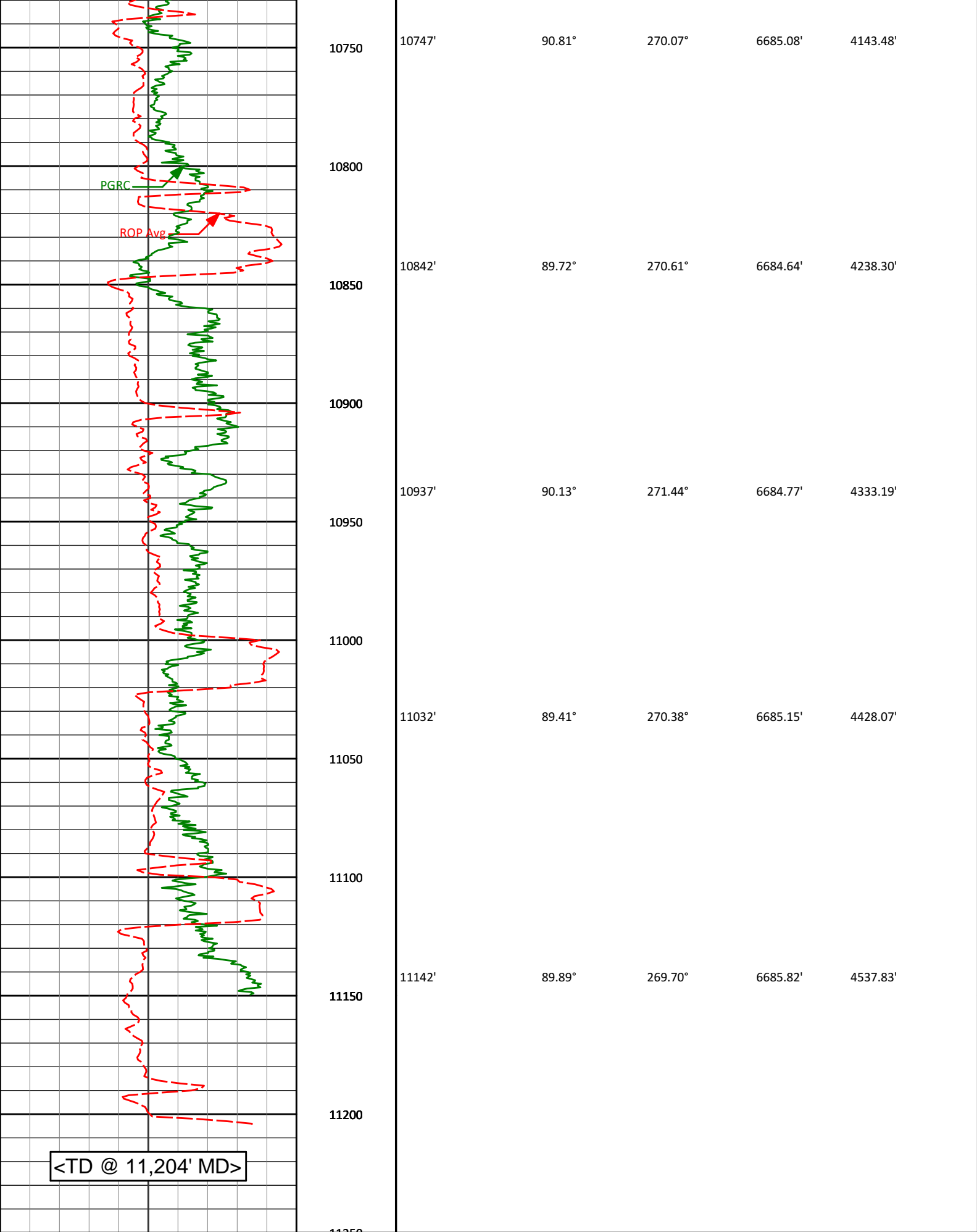
10653'

89.71°

268.75°

6685.50'

4049.76'



10750

10800

10850

10900

10950

11000

11050

11100

11150

11200

10747'

90.81°

270.07°

6685.08'

4143.48'

10842'

89.72°

270.61°

6684.64'

4238.30'

10937'

90.13°

271.44°

6684.77'

4333.19'

11032'

89.41°

270.38°

6685.15'

4428.07'

11142'

89.89°

269.70°

6685.82'

4537.83'

<TD @ 11,204' MD>

**Avg Rate of Penetration**

ROP Avg

500 feet per hr 0

Depth  
ft

**Depth**

**Inc.**

**Azi.**

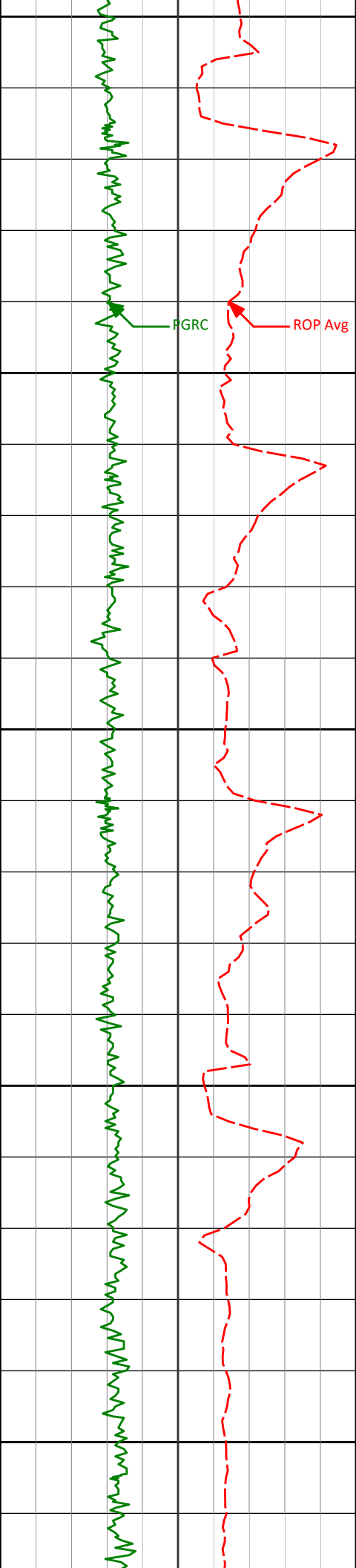
**TVD**

**V.S.**

HALLIBURTON  
Sperry Drilling Services  
MD Detail Log 1:240

Noble Energy, Inc  
SLW Ranch B01-68-1HN  
H&P 315  
T5N R64W

PCG Gamma Ray PGRC 0300 api		Depth	Inc.	Azi.	
Avg Rate of Penetration ROP Avg 5000 feet per hr	Depth ft		TVD	V.S.	
	6050				
	<Run 200>				
		6063'	1.17°	278.05°	6027.01' -123.86'
	6100				
	<KOP>				
	6150				
		6162'	7.42°	271.99°	6125.68' -116.46'



6200

6208'

10.84°

263.91°

6171.10'

-109.23'

6250

6256'

15.34°

264.03°

6217.84'

-98.52'

6300

6303'

19.61°

265.02°

6262.66'

-84.60'

6350

6351'

21.59°

262.95°

6307.59'

-67.96'

6400

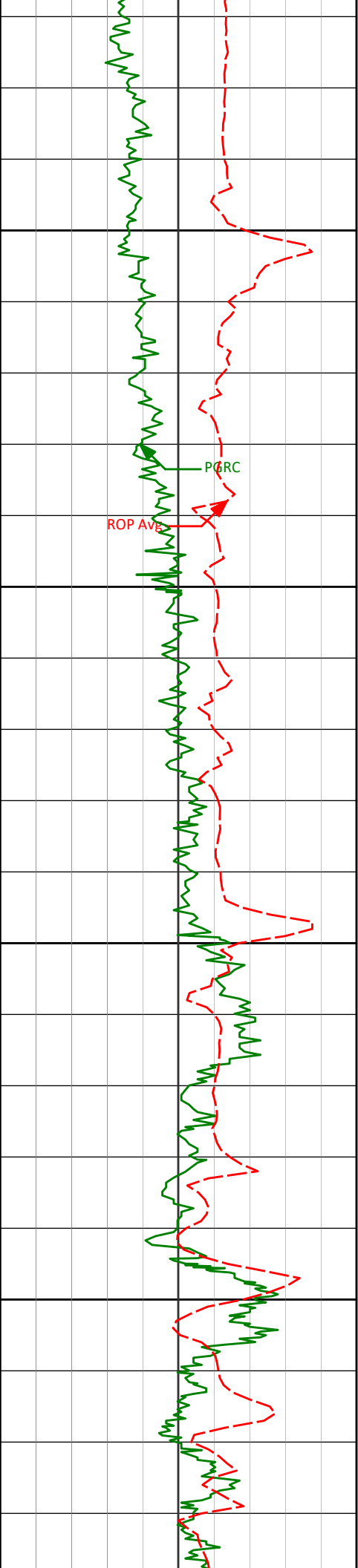
6398'

24.64°

263.45°

6350.81'

-49.82'



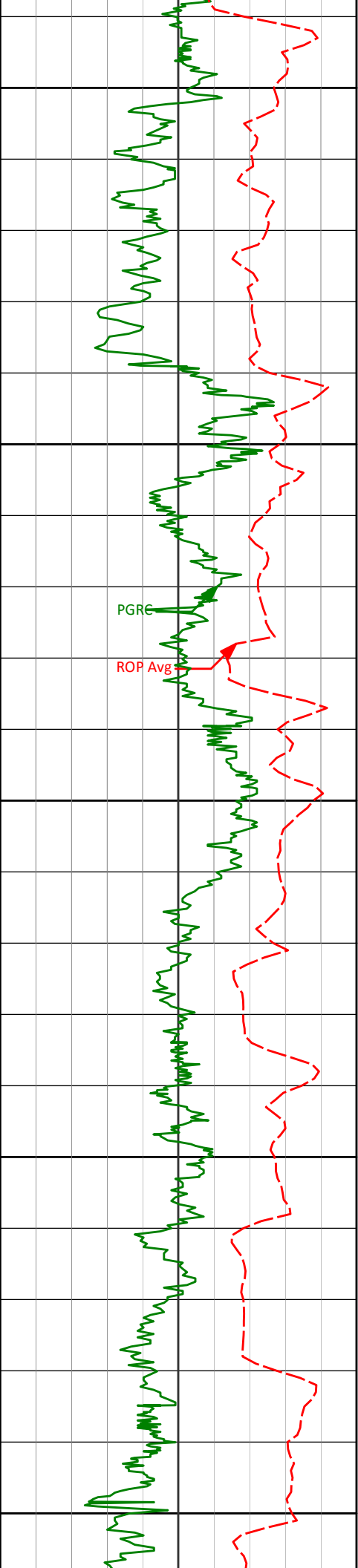
6450

6500

6550

6600

6446'	30.16°	264.63°	6393.41'	-28.06'
6493'	34.72°	263.51°	6433.06'	-3.22'
6541'	40.80°	264.67°	6471.00'	25.74'
6588'	44.19°	266.47°	6505.65'	57.16'
6636'	47.70°	265.71°	6539.02'	91.33'



6650

6683'

51.85°

268.49°

6569.37'

126.96'

6700

PGRC

ROP Avg

6731'

57.41°

268.88°

6597.14'

165.93'

6750

6778'

61.52°

269.83°

6621.02'

206.28'

6800

6826'

64.52°

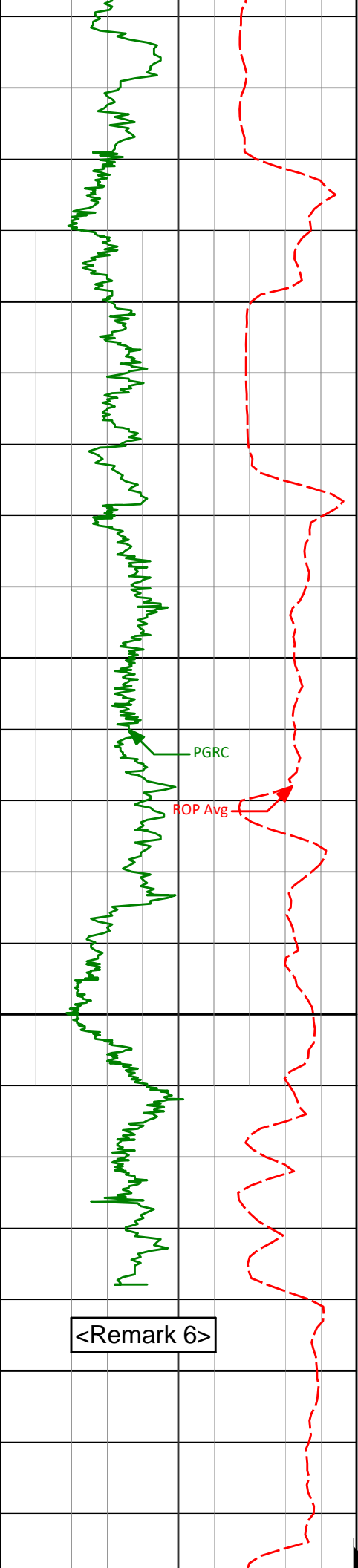
270.91°

6642.79'

248.98'

6850





6900

6950

7000

7050

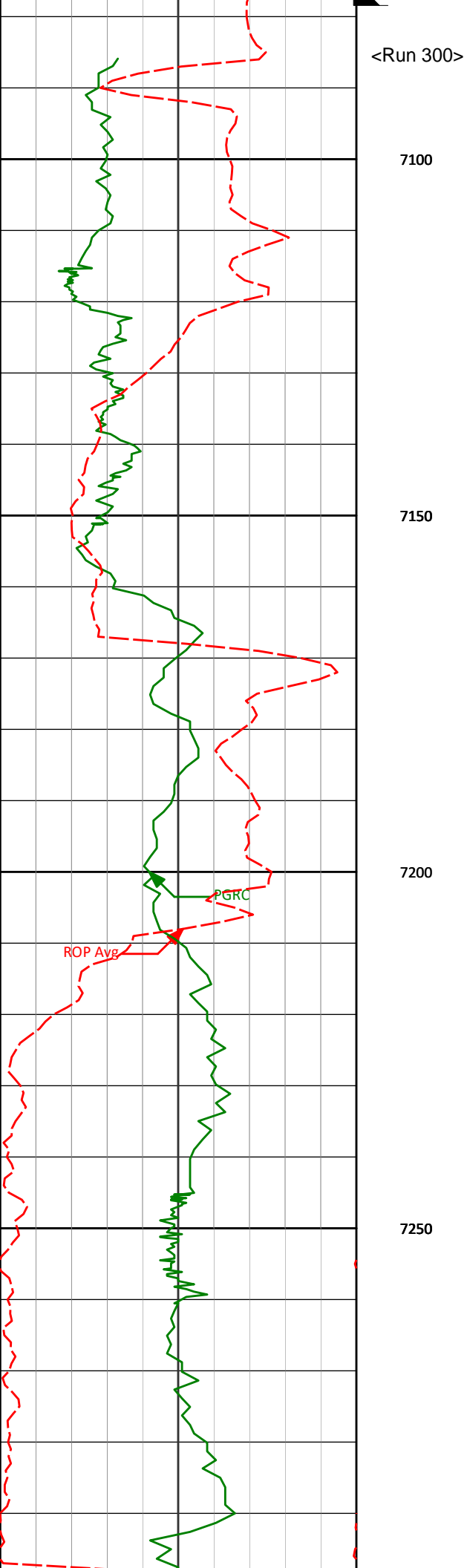
6873' 66.80° 272.03° 6662.16' 291.76'

6921' 69.20° 271.81° 6680.14' 336.24'

6968' 74.88° 271.39° 6694.63' 380.89'

7030' 80.73° 271.43° 6707.72' 441.42'

<7" casing set at 7075' MD>



<Run 300>

7100

7105'

85.53°

273.33°

6716.69'

515.83'

7150

7200

PGRC

ROP Avg

7236'

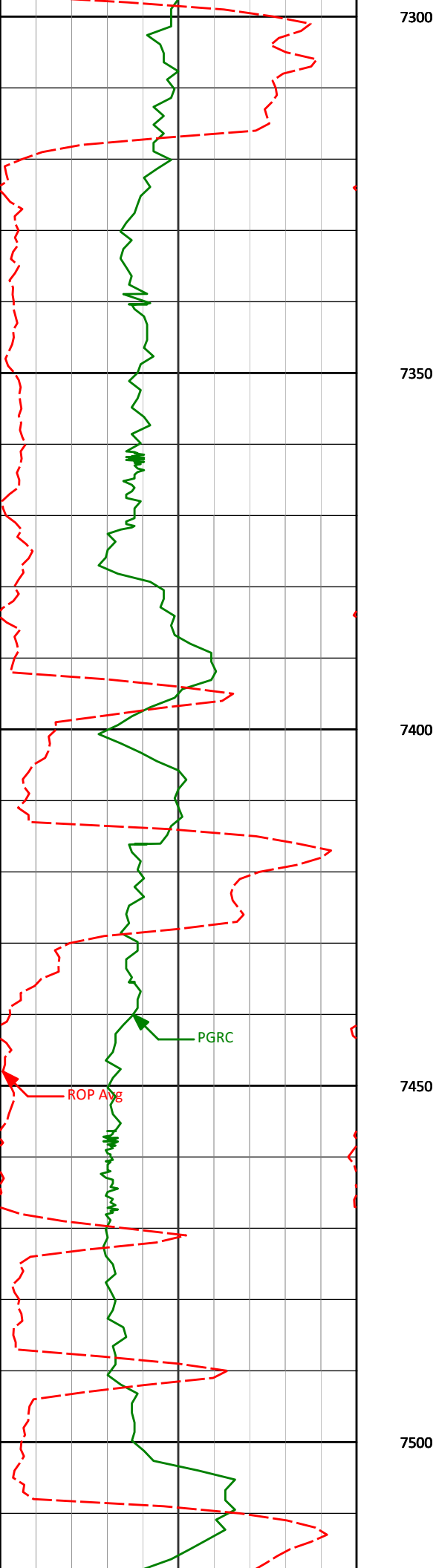
87.62°

268.48°

6724.52'

646.38'

7250



7331'

89.48°

268.27°

6726.92'

740.92'

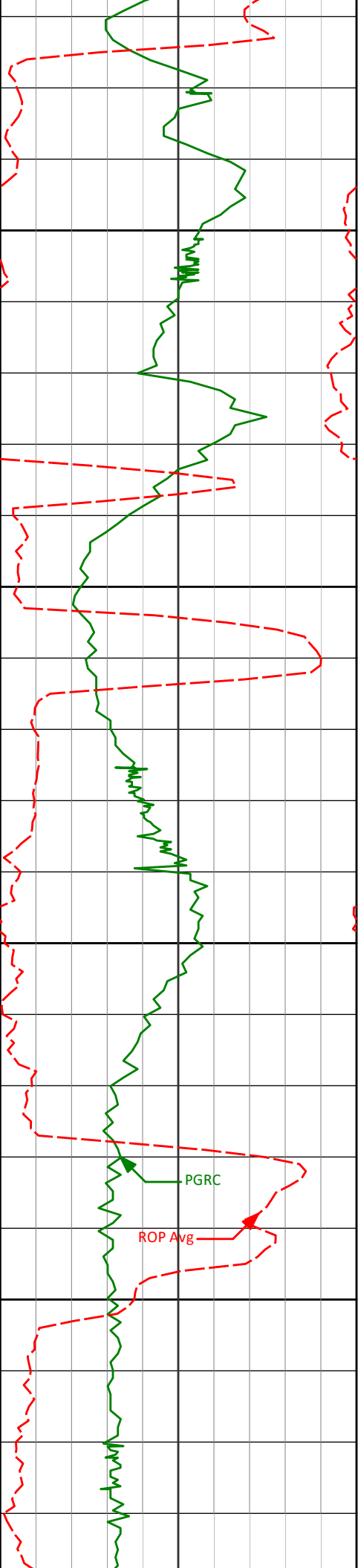
7426'

90.39°

267.37°

6727.03'

835.40'



7550

7600

7650

7700

PGRC

ROP Avg

7521'

91.93°

267.35°

6725.10'

929.78'

7616'

92.11°

267.94°

6721.76'

1024.18'

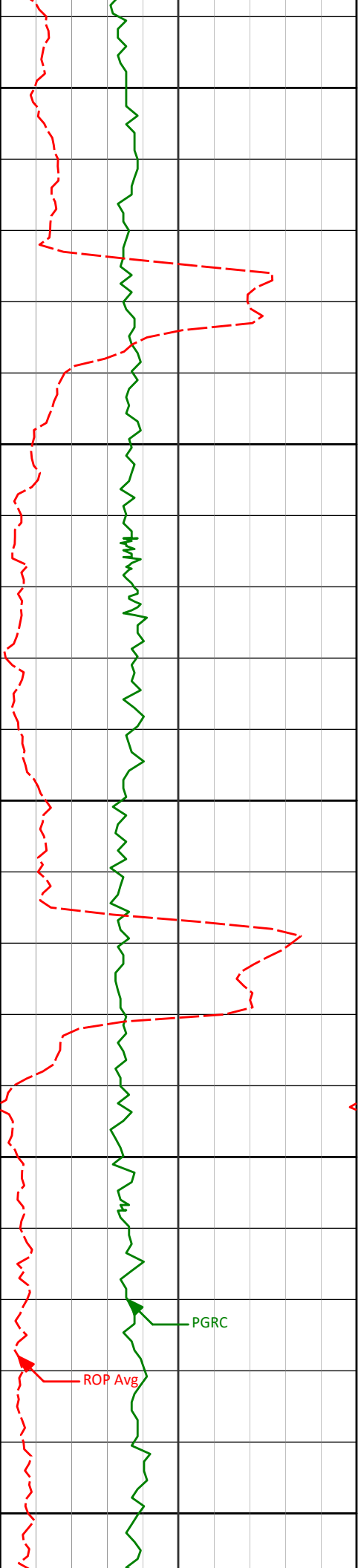
7711'

90.38°

268.08°

6719.69'

1118.66'



7750

7800

7850

7900

7950

7806'

90.98°

269.15°

6718.57'

1213.27'

7901'

89.39°

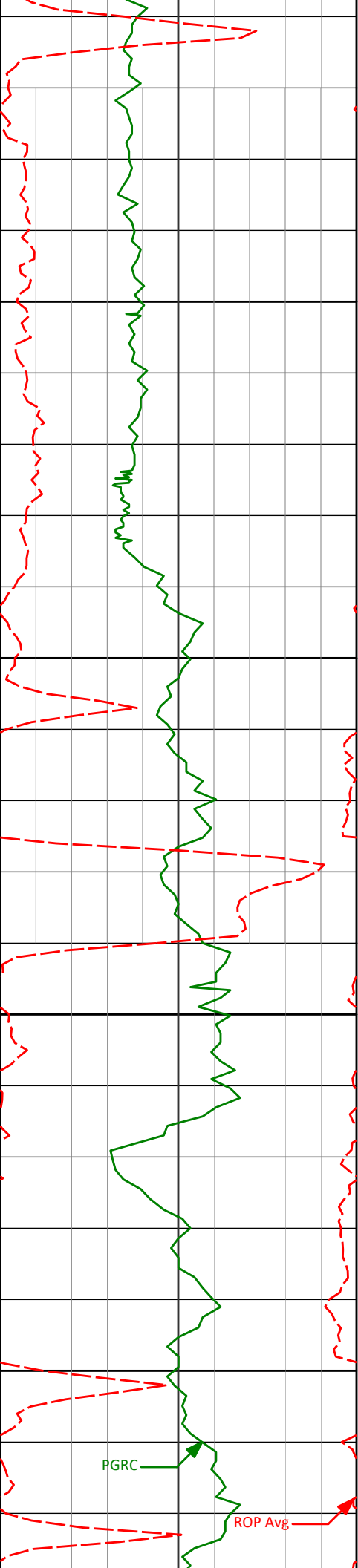
269.03°

6718.27'

1307.94'

PGRC

ROP Avg



8000

8050

8100

8150

7996'

89.48°

269.25°

6719.21'

1402.62'

8090'

90.95°

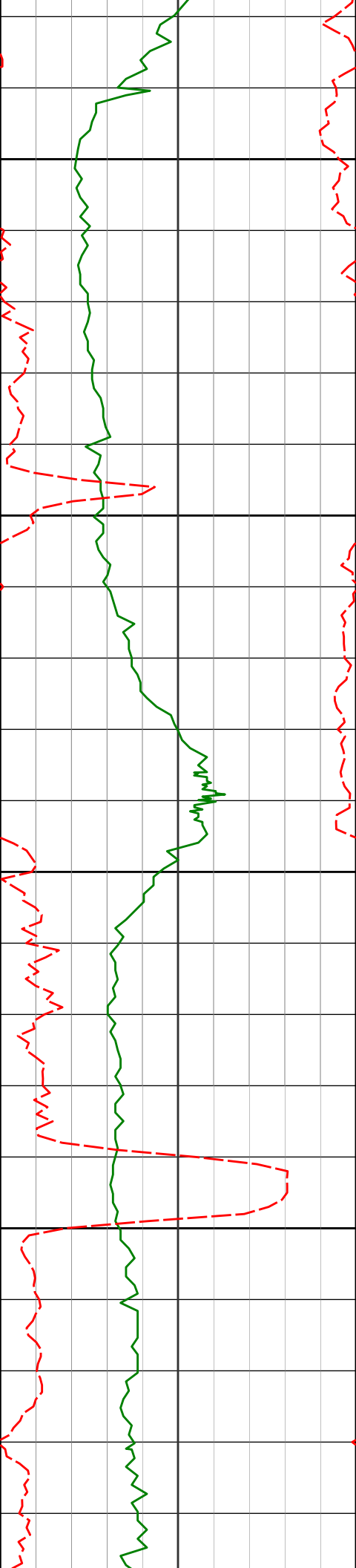
269.41°

6718.85'

1496.34'

PGRC

ROP Avg



8200

8250

8300

8350

8185'

91.38°

270.11°

6716.92'

1591.08'

8280'

91.54°

269.33°

6714.51'

1685.81'

8375'

90.39°

268.74°

6712.91'

1780.46'



8400

8450

8500

8550

8600

8470'

89.90°

267.88°

6712.67'

1875.03'

8565'

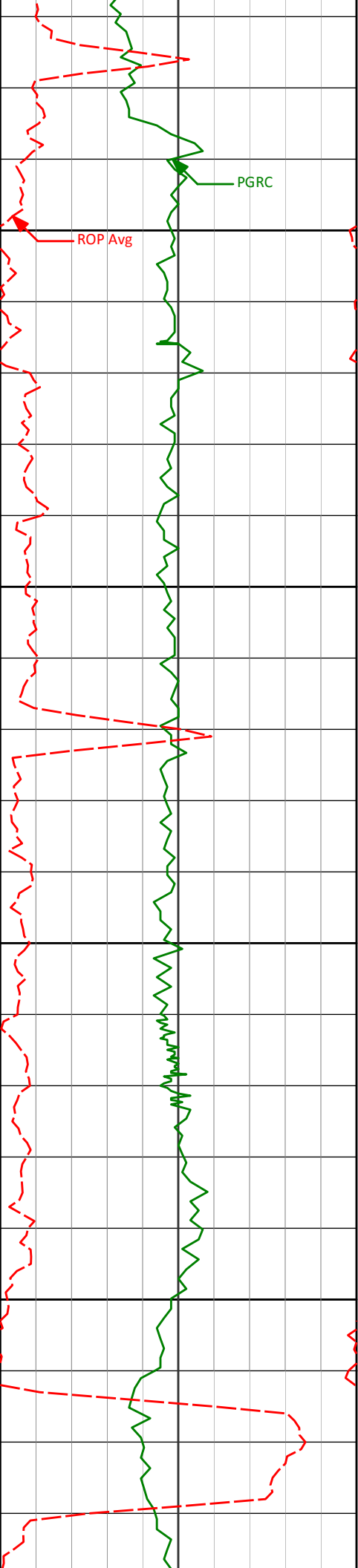
90.44°

269.92°

6712.39'

1969.67'





8650

8700

8750

8800

8660'

90.21°

269.58°

6711.84'

2064.43'

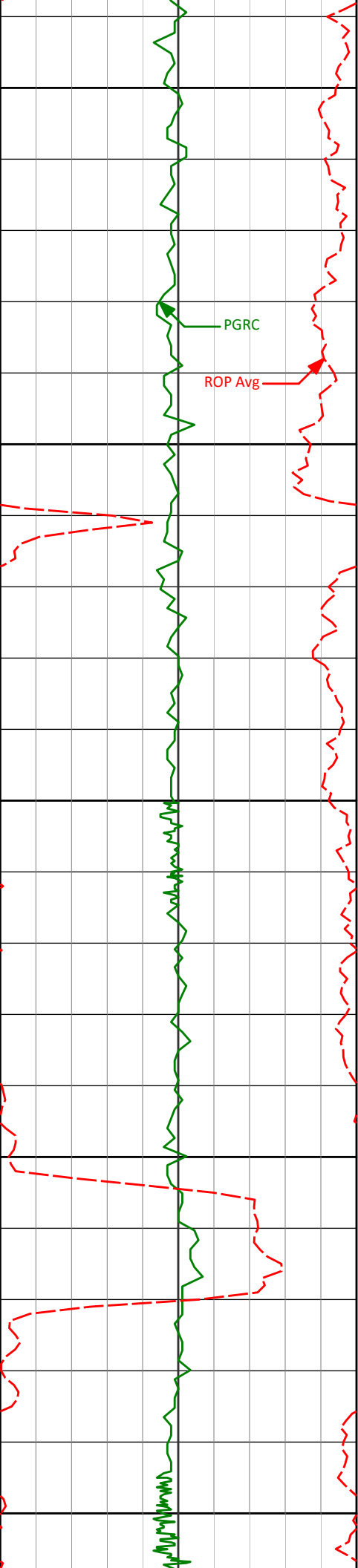
8755'

89.83°

270.23°

6711.81'

2159.21'



8850

8900

8950

9000

9050

PGRC

ROP Avg

8849'

91.41°

269.30°

6710.79'

2252.97'

8944'

89.83°

268.45°

6709.76'

2347.61'

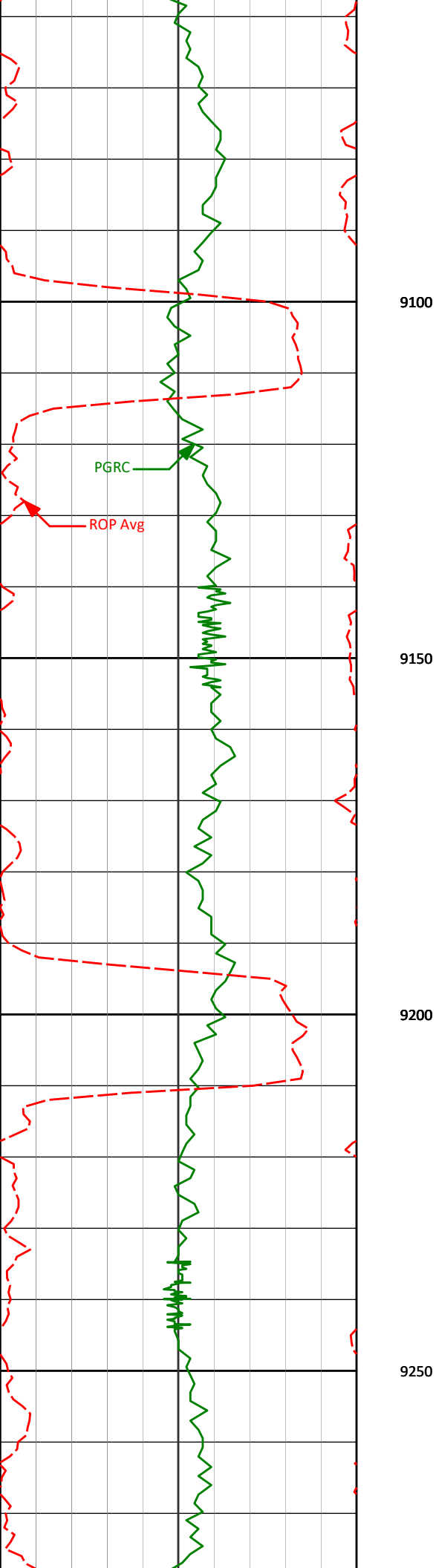
9039'

90.63°

267.12°

6709.39'

2442.08'



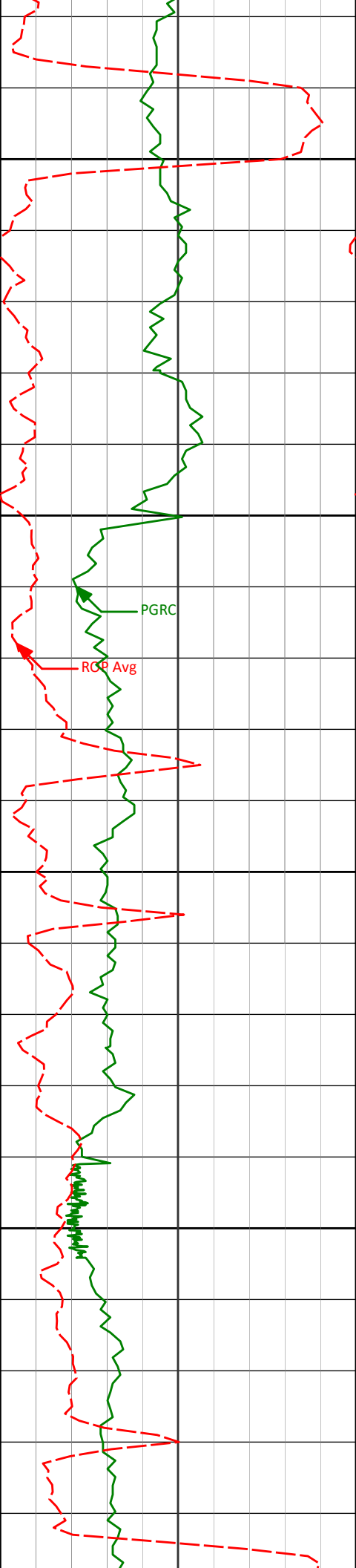
9134'	91.63°	267.57°	6707.52'	2536.46'
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9150

9200

9229'	90.71°	269.18°	6705.57'	2631.01'
-------	--------	---------	----------	----------

9250



9300

9324'

92.03°

269.19°

6703.30'

2725.68'

9350

9400

9419'

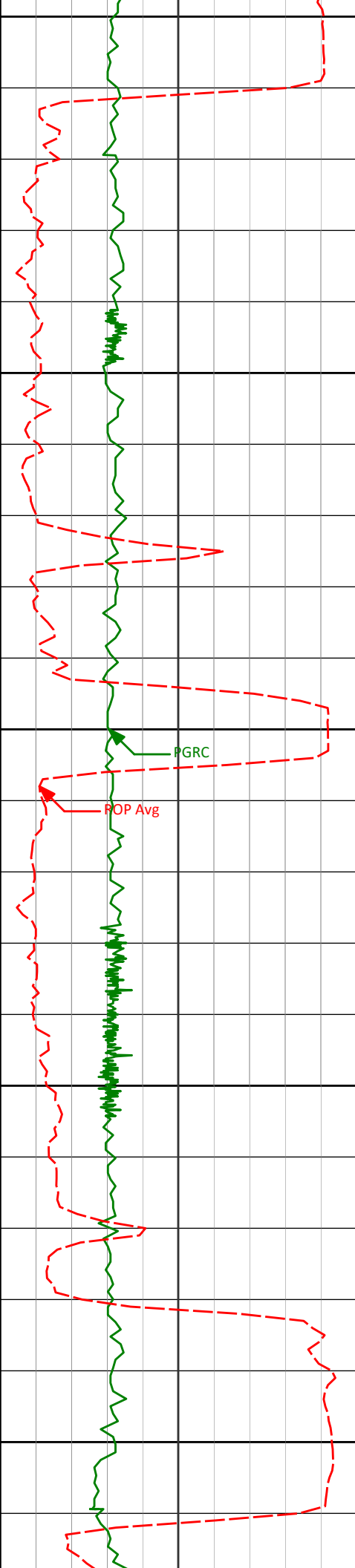
92.21°

268.62°

6699.78'

2820.26'

9450



9500

9514'

90.37°

268.13°

6697.65'

2914.81'

9550

9600

9609'

87.60°

265.31°

6699.34'

3009.05'

9650

9700

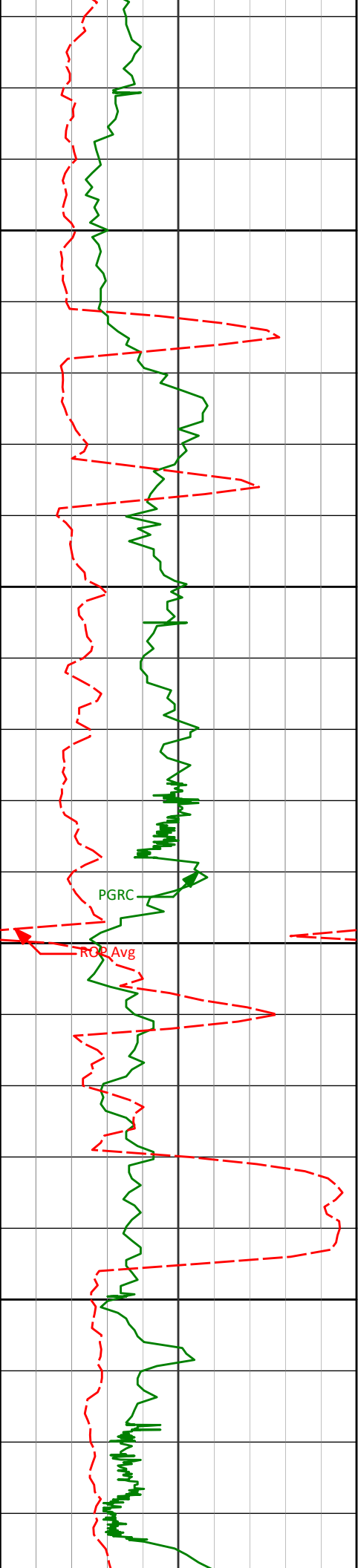
9704'

90.11°

269.05°

6701.24'

3103.38'



9750

9800

9850

9900

9798'

91.67°

268.99°

6699.78'

3197.03'

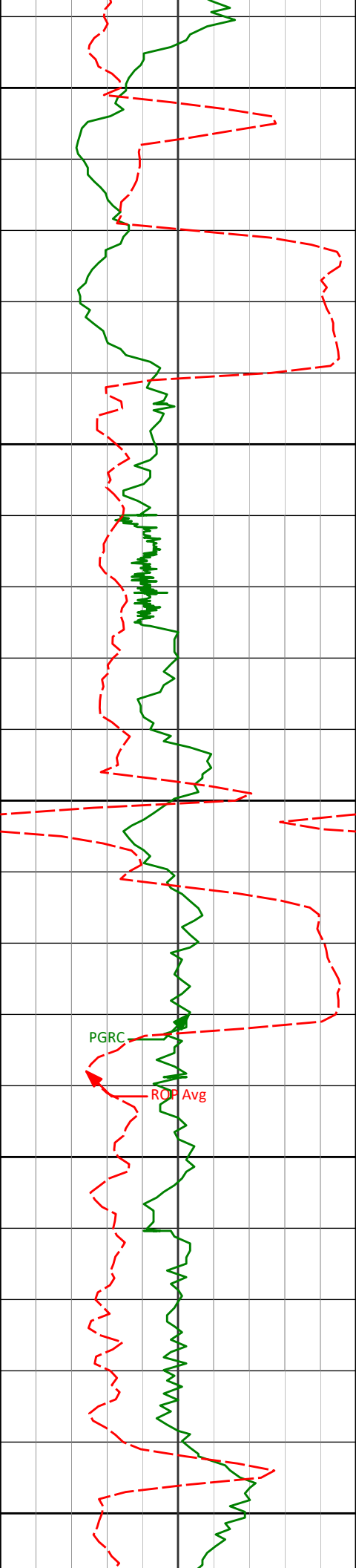
9893'

91.98°

269.56°

6696.75'

3291.69'



9950

9988'

91.15°

270.57°

6694.16'

3386.45'

10000

10050

10083'

89.65°

271.35°

6693.49'

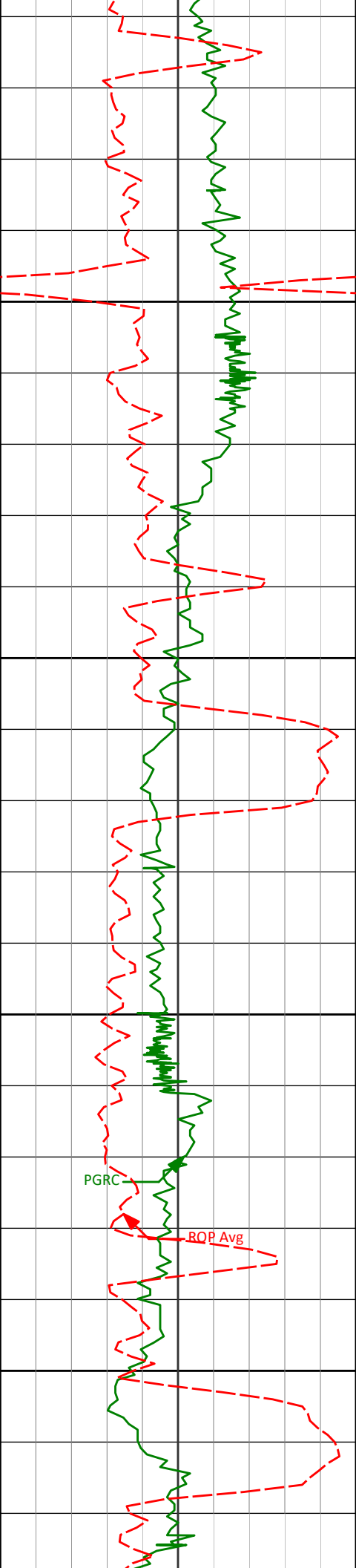
3481.33'

10100

10150

PGRC

ROP Avg



10200

10250

10300

10350

10178'

90.55°

271.34°

6693.33'

3576.24'

10273'

90.36°

270.89°

6692.57'

3671.13'

10368'

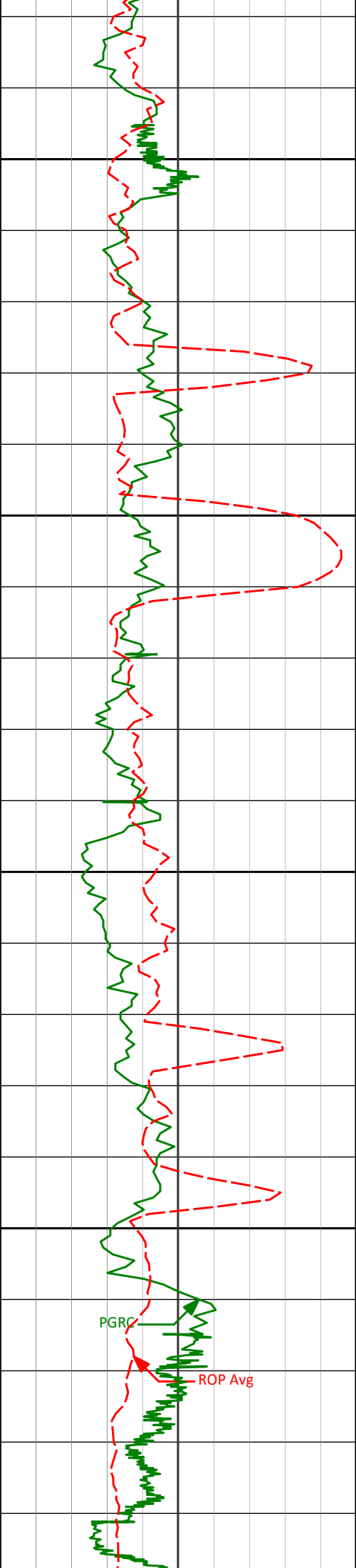
90.50°

269.78°

6691.86'

3765.95'





10400

10450

10500

10550

10463'

91.10°

268.80°

6690.53'

3860.65'

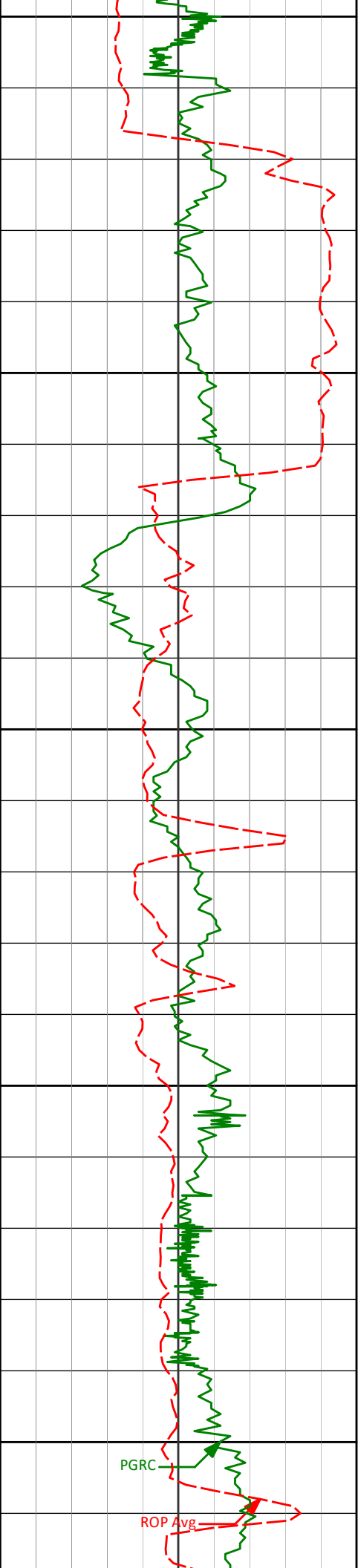
10558'

92.63°

268.25°

6687.44'

3955.19'



10600

10650

10700

10750

10800

PGRC

ROP Avg

10653'

89.71°

268.75°

6685.50'

4049.76'

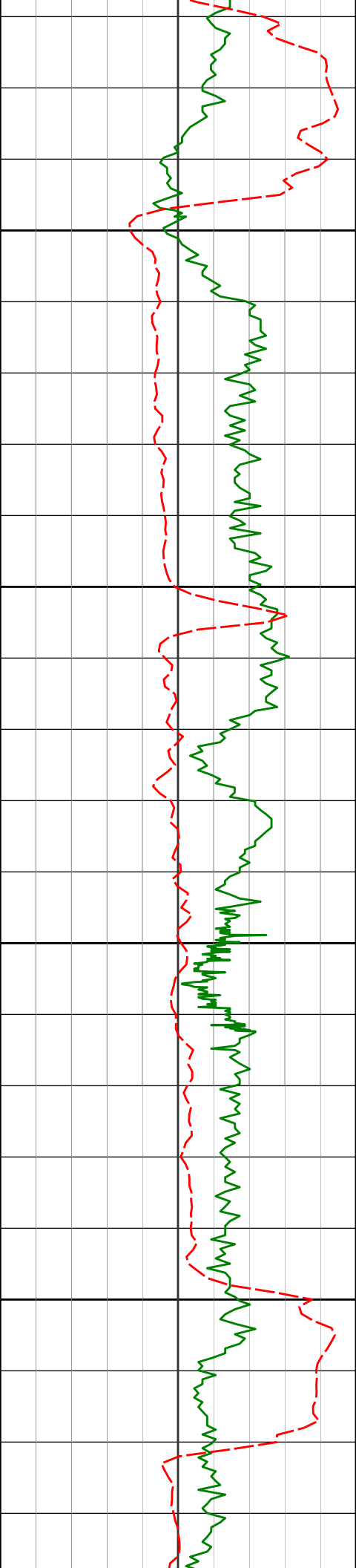
10747'

90.81°

270.07°

6685.08'

4143.48'



10850

10900

10950

11000

10842'

89.72°

270.61°

6684.64'

4238.30'

10937'

90.13°

271.44°

6684.77'

4333.19'

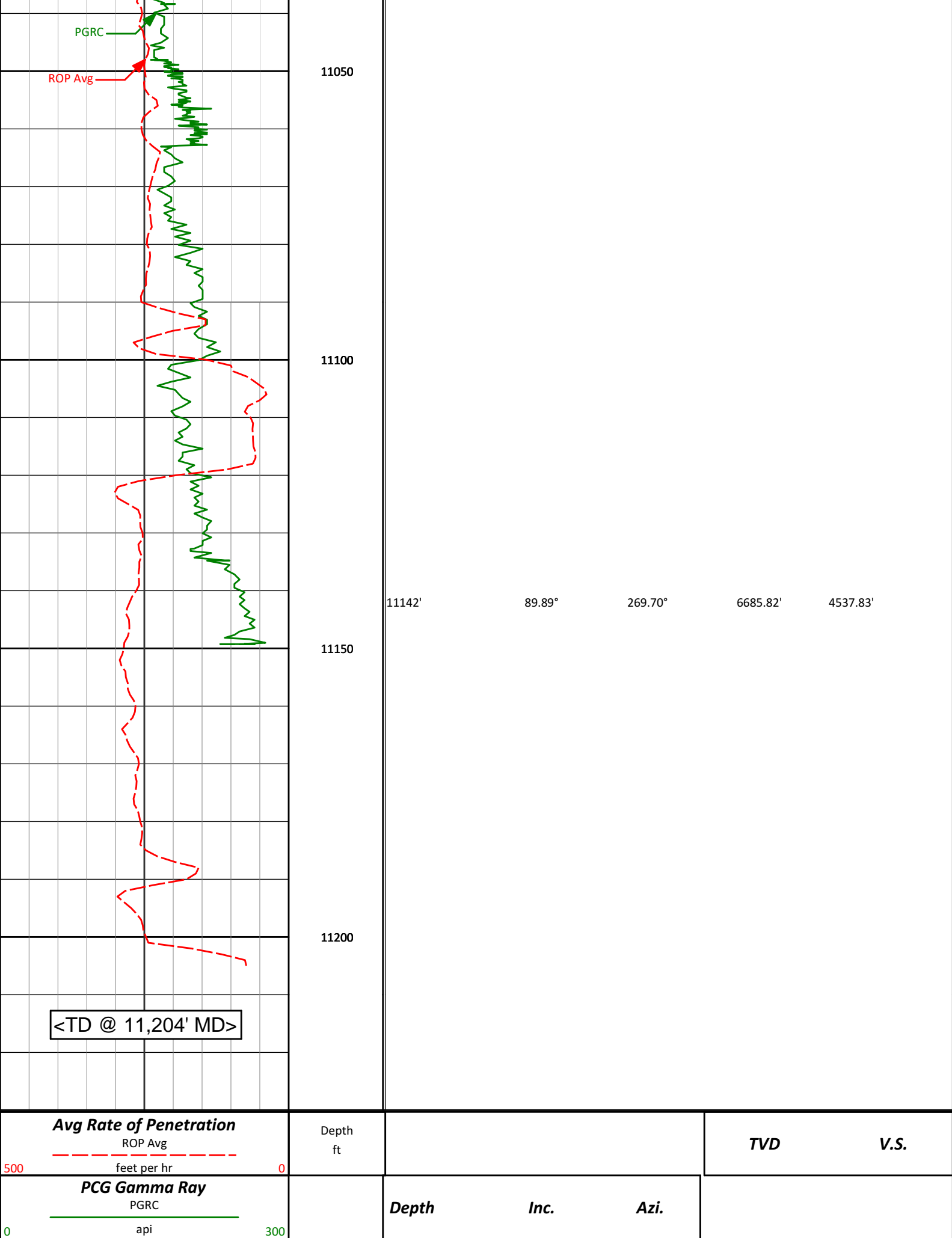
11032'

89.41°

270.38°

6685.15'

4428.07'





# HALLIBURTON

## DIRECTIONAL SURVEY REPORT

Noble Energy  
SLW Ranch B01-68-1HN  
Wattenberg  
Weld Colorado  
USA  
CA-XX-0900071985

Survey depth 621 ft created to tie surveys onto bottom of the surface casing shoe.

Last survey is a projection from 11142 ft MD to TD at 11204 ft MD.

<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>
621.00	0.00	0.00	621.00	0.00 N	0.00 E	0.00	TIE-IN
718.00	0.06	28.38	718.00	0.05 N	0.02 E	-0.02	0.06
811.00	0.02	338.05	811.00	0.11 N	0.04 E	-0.04	0.06
903.00	1.48	134.18	902.99	0.70 S	0.89 E	-0.93	1.62
996.00	0.32	60.24	995.98	1.41 S	1.97 E	-2.06	1.53
1089.00	1.17	70.95	1088.97	0.97 S	3.10 E	-3.15	0.91
1182.00	0.98	61.00	1181.95	0.27 S	4.69 E	-4.69	0.29
1275.00	0.74	80.85	1274.94	0.21 N	5.97 E	-5.95	0.40
1368.00	1.05	81.49	1367.93	0.43 N	7.41 E	-7.36	0.33
1463.00	1.10	82.30	1462.92	0.68 N	9.17 E	-9.10	0.06
1558.00	2.76	65.88	1557.86	1.73 N	12.16 E	-12.01	1.82
1653.00	4.54	81.73	1652.66	3.21 N	17.96 E	-17.71	2.14
1748.00	5.66	76.35	1747.29	4.85 N	26.23 E	-25.85	1.28
1843.00	6.61	53.67	1841.76	9.20 N	35.19 E	-34.51	2.72
1938.00	7.62	48.12	1936.02	16.65 N	44.29 E	-43.09	1.28
2033.00	8.62	41.15	2030.07	26.22 N	53.67 E	-51.81	1.47
2128.00	9.04	32.71	2123.95	37.86 N	62.39 E	-59.74	1.43
2223.00	9.40	30.91	2217.72	50.80 N	70.41 E	-66.89	0.49
2318.00	10.23	19.51	2311.34	65.41 N	77.21 E	-72.71	2.22
2413.00	10.04	11.52	2404.86	81.48 N	81.68 E	-76.10	1.49
2508.00	9.69	9.10	2498.46	97.48 N	84.60 E	-77.95	0.57
2603.00	10.40	11.49	2592.00	113.78 N	87.57 E	-79.84	0.87
2698.00	12.16	11.51	2685.16	131.99 N	91.28 E	-82.33	1.85
2793.00	12.30	11.32	2778.01	151.72 N	95.26 E	-85.00	0.15
2887.00	12.36	14.08	2869.84	171.30 N	99.68 E	-88.10	0.63
2983.00	12.30	12.18	2963.62	191.26 N	104.33 E	-91.43	0.43
3078.00	11.84	13.58	3056.52	210.63 N	108.76 E	-94.56	0.58
3173.00	10.80	11.43	3149.67	228.82 N	112.81 E	-97.40	1.18
3268.00	10.23	12.62	3243.08	245.78 N	116.41 E	-99.87	0.64
3363.00	10.02	18.89	3336.60	261.82 N	120.93 E	-103.31	1.18
3458.00	9.59	19.59	3430.22	277.10 N	126.26 E	-107.62	0.46
3553.00	9.34	20.59	3523.92	291.78 N	131.63 E	-112.00	0.32
3648.00	9.69	12.04	3617.62	306.82 N	136.01 E	-115.38	1.53
3743.00	10.33	14.13	3711.17	322.91 N	139.76 E	-118.05	0.77
3838.00	9.13	11.33	3804.80	338.56 N	143.32 E	-120.57	1.36
3933.00	8.86	11.94	3898.63	353.10 N	146.31 E	-122.59	0.31
4028.00	6.03	7.87	3992.82	365.20 N	148.51 E	-123.98	3.02
4123.00	4.87	7.92	4087.39	374.14 N	149.75 E	-124.62	1.22
4218.00	3.60	2.22	4182.13	381.11 N	150.42 E	-124.83	1.41
4313.00	0.20	171.39	4277.07	383.93 N	150.56 E	-124.78	3.99
4408.00	0.44	265.36	4372.07	383.73 N	150.22 E	-124.46	0.52
4693.00	0.26	146.81	4657.07	383.10 N	149.51 E	-123.79	0.21
4978.00	0.74	19.84	4942.06	384.28 N	150.49 E	-124.69	0.32
5262.00	1.00	333.57	5226.03	388.23 N	150.01 E	-123.95	0.26
5357.00	0.71	72.05	5321.03	389.15 N	150.20 E	-124.08	1.38
5452.00	0.32	136.74	5416.02	389.14 N	150.94 E	-124.82	0.68
5737.00	0.10	73.82	5701.02	388.62 N	151.73 E	-125.64	0.10
5927.00	0.23	282.50	5891.02	388.75 N	151.51 E	-125.41	0.17
6000.00	0.71	249.12	5964.02	388.62 N	150.94 E	-124.86	0.73
6063.00	1.17	278.05	6027.01	388.57 N	149.94 E	-123.86	1.02
6162.00	7.42	271.99	6125.68	388.93 N	142.55 E	-116.46	6.32
6208.00	10.84	263.91	6171.10	388.58 N	135.28 E	-109.23	7.93

6256.00	15.34	264.03	6217.84	387.44 N	124.47 E	-98.52	9.36
6303.00	19.61	265.02	6262.66	386.10 N	110.43 E	-84.60	9.12
6351.00	21.59	262.95	6307.59	384.32 N	93.63 E	-67.96	4.39
6398.00	24.64	263.45	6350.81	382.14 N	75.31 E	-49.82	6.51
6446.00	30.16	264.63	6393.41	379.87 N	53.35 E	-28.06	11.54
6493.00	34.72	263.51	6433.06	377.25 N	28.29 E	-3.22	9.79
6541.00	40.80	264.67	6471.00	374.25 N	0.94 W	25.74	12.77
6588.00	44.19	266.47	6505.65	371.81 N	32.59 W	57.16	7.65
6636.00	47.70	265.71	6539.02	369.45 N	66.99 W	91.33	7.40
6683.00	51.85	268.49	6569.37	367.66 N	102.82 W	126.96	9.92
6731.00	57.41	268.88	6597.14	366.77 N	141.94 W	165.93	11.60
6778.00	61.52	269.83	6621.02	366.32 N	182.41 W	206.28	8.92
6826.00	64.52	270.91	6642.79	366.60 N	225.17 W	248.98	6.56
6873.00	66.80	272.03	6662.16	367.70 N	267.98 W	291.76	5.31
6921.00	69.20	271.81	6680.14	369.19 N	312.46 W	336.24	5.02
6968.00	74.88	271.39	6694.63	370.44 N	357.13 W	380.89	12.11
7030.00	80.73	271.43	6707.72	371.93 N	417.69 W	441.42	9.44
7105.00	85.53	273.33	6716.69	375.03 N	492.06 W	515.83	6.88
7236.00	87.62	268.48	6724.52	377.09 N	622.76 W	646.38	4.03
7331.00	89.48	268.27	6726.92	374.39 N	717.69 W	740.92	1.97
7426.00	90.39	267.37	6727.03	370.78 N	812.62 W	835.40	1.35
7521.00	91.93	267.35	6725.10	366.41 N	907.49 W	929.78	1.62
7616.00	92.11	267.94	6721.76	362.50 N	1002.35 W	1024.18	0.65
7711.00	90.38	268.08	6719.69	359.21 N	1097.27 W	1118.66	1.82
7806.00	90.98	269.15	6718.57	356.91 N	1192.24 W	1213.27	1.29
7901.00	89.39	269.03	6718.27	355.40 N	1287.22 W	1307.94	1.68
7996.00	89.48	269.25	6719.21	353.97 N	1382.20 W	1402.62	0.25
8090.00	90.95	269.41	6718.85	352.88 N	1476.19 W	1496.34	1.58
8185.00	91.38	270.11	6716.92	352.48 N	1571.17 W	1591.08	0.86
8280.00	91.54	269.33	6714.51	352.01 N	1666.14 W	1685.81	0.84
8375.00	90.39	268.74	6712.91	350.41 N	1761.11 W	1780.46	1.36
8470.00	89.90	267.88	6712.67	347.61 N	1856.07 W	1875.03	1.04
8565.00	90.44	269.92	6712.39	345.79 N	1951.05 W	1969.67	2.22
8660.00	90.21	269.58	6711.84	345.37 N	2046.04 W	2064.43	0.43
8755.00	89.83	270.23	6711.81	345.22 N	2141.04 W	2159.21	0.79
8849.00	91.41	269.30	6710.79	344.83 N	2235.03 W	2252.97	1.95
8944.00	89.83	268.45	6709.76	342.97 N	2330.00 W	2347.61	1.89
9039.00	90.63	267.12	6709.39	339.29 N	2424.93 W	2442.08	1.63
9134.00	91.63	267.57	6707.52	334.89 N	2519.81 W	2536.46	1.16
9229.00	90.71	269.18	6705.57	332.20 N	2614.75 W	2631.01	1.95
9324.00	92.03	269.19	6703.30	330.85 N	2709.71 W	2725.68	1.39
9419.00	92.21	268.62	6699.78	329.04 N	2804.62 W	2820.26	0.63
9514.00	90.37	268.13	6697.65	326.34 N	2899.56 W	2914.81	2.00
9609.00	87.60	265.31	6699.34	320.91 N	2994.37 W	3009.05	4.16
9704.00	90.11	269.05	6701.24	316.24 N	3089.21 W	3103.38	4.74
9798.00	91.67	268.99	6699.78	314.63 N	3183.18 W	3197.03	1.66
9893.00	91.98	269.56	6696.75	313.43 N	3278.13 W	3291.69	0.68
9988.00	91.15	270.57	6694.16	313.54 N	3373.09 W	3386.45	1.38
10083.00	89.65	271.35	6693.49	315.13 N	3468.07 W	3481.33	1.78
10178.00	90.55	271.34	6693.33	317.36 N	3563.04 W	3576.24	0.95
10273.00	90.36	270.89	6692.57	319.21 N	3658.02 W	3671.13	0.51
10368.00	90.50	269.78	6691.86	319.76 N	3753.01 W	3765.95	1.18
10463.00	91.10	268.80	6690.53	318.59 N	3848.00 W	3860.65	1.21
10558.00	92.63	268.25	6687.44	316.14 N	3942.91 W	3955.19	1.72
10653.00	89.71	268.75	6685.50	313.66 N	4037.85 W	4049.76	3.13
10747.00	90.81	270.07	6685.08	312.69 N	4131.84 W	4143.48	1.83
10842.00	89.72	270.61	6684.64	313.25 N	4226.83 W	4238.30	1.28
10937.00	90.13	271.44	6684.77	314.95 N	4321.82 W	4333.19	0.98
11032.00	89.41	270.38	6685.15	316.46 N	4416.80 W	4428.07	1.35
11142.00	89.89	269.70	6685.82	316.54 N	4526.80 W	4537.83	0.76
11204.00	89.89	269.70	6685.94	316.21 N	4588.80 W	4599.67	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 CLOSURE OF 273.94 DEGREES (GRID)

A TOTAL CORRECTION OF 7.91 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.  
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11204.00 FEET  
IS 4599.68 FEET ALONG 273.94 DEGREES (GRID)

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