HALLIBURTON | Sperry Drilling

PCGK : Pressure Case Gamma
PCDC: Pressure Case Directional

Powered by INSITE™

1 : 600 / 1 : 240

Company	: **Noble Energy**
Rig	: **H&P 315**
Well	: **SLW Ranch B01-67-1HN**
Field	: **Wattenberg**
Country	: **USA**
API Number	: **05-123-36321**

Country : **USA**
Field : **Wattenberg**
Location : **Lat: 40°25' 54.88" North Long: 104°29' 22.06" West**
Well : **SLW Ranch B01-67-1HN**
Company : **Noble Energy**
Rig : **H&P 315**

LOCATION
Latitude : **40°25' 54.88" North**
Longitude : **104°29' 22.06" West**
UTM Easting = **3,281,306.977 ft**
UTM Northing = **1,401,788.455 ft**

Other Services
Directional Drilling

Permanent Datum : **Ground Level** Elevation : **4612.00 ft**
Log Measured From : **Drill Floor** **24.00 ft** Above Permanent Datum
Drilling Measured From : **Drill Floor**

MD LOG

Elev. KB **N/A**
DF **4636.00 ft**
GL **4612.00 ft**
WD **N/A**

Depth Logged : **670.00 ft** To **11,165.00 ft**
Date Logged : **09-Jan-13** To **13-Jan-13**
Total Depth MD : **11,165.00 ft** TVD : **6,682.54 ft**
Spud Date : **08-Jan-13**

Unit No. : **11610113** Job No. : **CA-XX-0900071990**
Plot Type : **Final**
Plot Date : **13-Jan-13**

Run No.	Borehole Record (MD) Size	From	To
2	8.750 in	670.00 ft	5,978.00 ft
3	8.750 in	5,978.00 ft	7,026.00 ft
4	6.125 in	7,025.73 ft	11,165.00 ft

Run No.	Borehole Record (MD) Size	From	To

Casing Record (MD) Size	Weight	From	To
7.000 in	26.00 lbpf	SURFACE	7,014.00 ft

WELL INFORMATION

MWD Run Number	100	200	300
Date run completed	09-Jan-13	10-Jan-13	13-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)	670.00	5,978.00	7,026.00
Log End Depth (MD, ft)	5,978.00	7,026.00	11,165.00
Drill or Wipe	Drill	Drill	Drill
Drill/Wipe Start Date and Time	09-Jan-13 05:00	10-Jan-13 04:33	11-Jan-13 20:00
Drill/Wipe End Date and Time	09-Jan-13 19:00	10-Jan-13 18:40	13-Jan-13 03:00
Min Inc (deg) @ Depth (MD, ft)	.24 @ 3,834.00	.31 @ 6,010.00	87.13 @ 7,043.00
Max Inc (deg) @ Depth (MD, ft)	13.34 @ 2,789.00	81.50 @ 6,972.00	92.19 @ 10,554.00
Bit TFA(in2) / Bit Type	.75 / PDC	.75 / PDC	.86 / PDC
Flow Rate (gpm)	594.73	592.39	268.83
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)	8.73 / 29.00	10.50 / 38.00	9.40 / 36.00
Filtrate CL (ppm)	1,300.00	1,200.00	1,200.00
pH / Fluid Loss (mptm)	9.90 / 0	9.20 / 0	9.50 / 12
PV (cP) / YP (lhf2)	3 / 3.00	9 / 9.00	5 / 7.00
% Solids / % Sand	3.3 / 0.25	12.5 / .25	6.5 / 0.25
% 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	150.10 / PCM	175.21 / PCM	230.30 / PCM		
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Lead MWD Engineer	Paul Kock	Paul Kock	Paul Kock		
Customer Representative	Dave Nielsen	Dave Nielsen	Dave Neilsen		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.76	5.76	5.76		
Sub Serial Number	11341343	11341343	11672158		
Insert Serial Number	10997267	10997267	11055831		
Date and Time Initialized	08-Jan-13 20:49	08-Jan-13 20:49	11-Jan-13 03:29		
Date and Time Read	11-Jan-13 00:15	11-Jan-13 00:05	13-Jan-13 14:39		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	55.11	52.54	59.31		
Software Version	6.21	6.21	6.21		
Sub Serial Number	11341343	11341343	11672158		
Sonde Serial Number	11833052	11833052	10993516		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	32.02	140.92	136.13		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	50.01	47.44	54.23		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	11341343	11341343	11672158		
Insert/Sonde Serial Number	11293261	11293261	11292593		

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 6978 ft MD. Gamma cannot be measured accurately within cased hole, and collection resumes after drilling through cement at 7026 ft MD.

WARRANTY

HALLIBURTON WILL USE ITS BEST EFFORTS TO FURNISH CUSTOMERS WITH ACCURATE INFORMATION AND INTERPRETATIONS THAT ARE PART OF, AND INCIDENT TO, THE SERVICES PROVIDED. HOWEVER, HALLIBURTON CANNOT AND DOES NOT WARRANT THE ACCURACY OR CORRECTNESS OF SUCH INFORMATION AND INTERPRETATIONS. UNDER NO CIRCUMSTANCES SHOULD ANY SUCH INFORMATION OR INTERPRETATION BE RELIED UPON AS THE SOLE BASIS FOR ANY DRILLING, COMPLETION, PRODUCTION, OR FINANCIAL DECISION OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING VENTURE, DRILLING RIG OR ITS CREW OR ANY OTHER THIRD PARTY. THE CUSTOMER HAS FULL RESPONSIBILITY FOR ALL DRILLING, COMPLETION AND PRODUCTION OPERATION. HALLIBURTON MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE SERVICES RENDERED. IN NO EVENT WILL HALLIBURTON BE LIABLE FOR FAILURE TO OBTAIN ANY PARTICULAR RESULTS OR FOR ANY DAMAGES, INCLUDING, BUT NOT LIMITED TO, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, RESULTING FROM THE USE OF ANY INFORMATION OR INTERPRETATION PROVIDED BY HALLIBURTON.

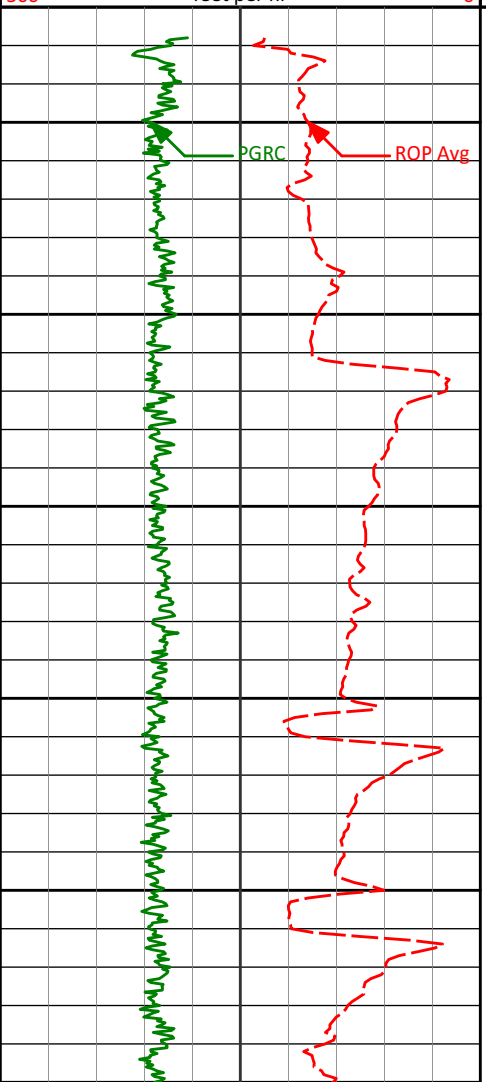
HALLIBURTON
Sperry Drilling Services

MD Main Log 1:600

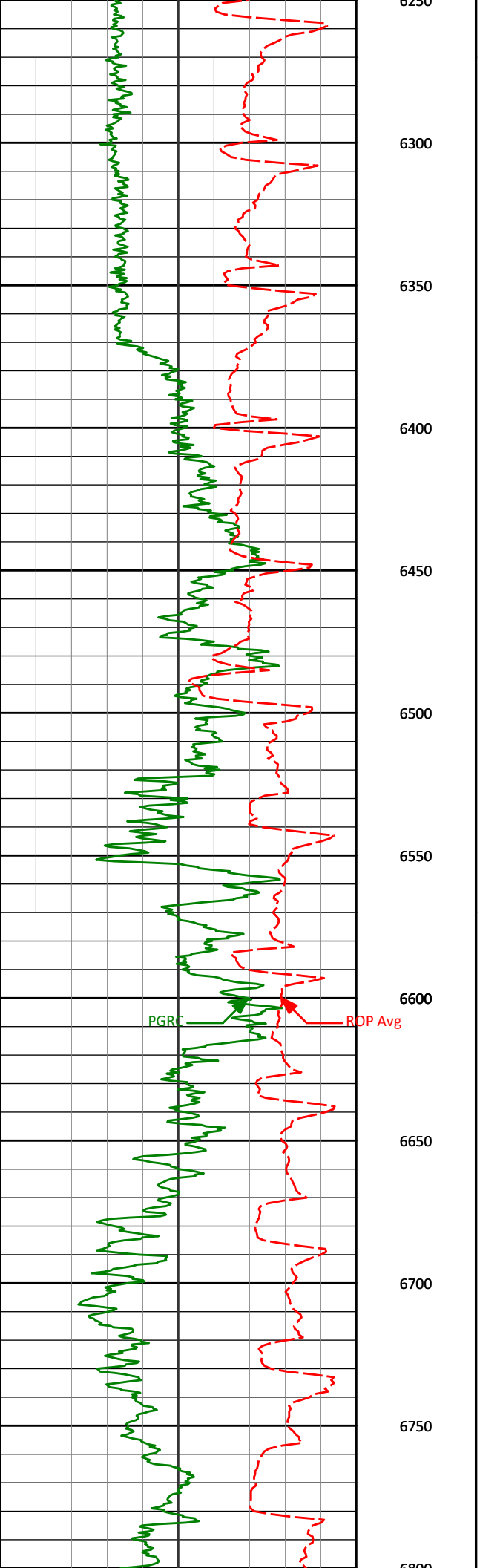
Noble Energy, Inc
SLW Ranch B01-67-1HN
H&P 315
T5N R64W

PCG Gamma Ray
PGRC
0 api 300

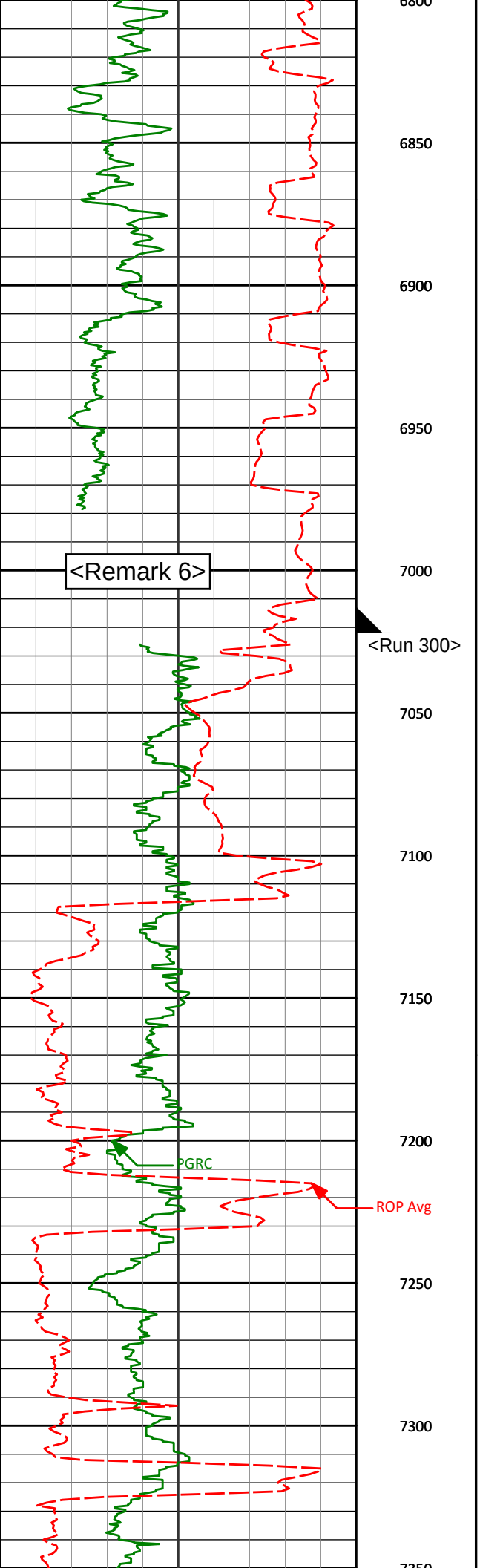
Avg Rate of Penetration
ROP Avg
500 feet per hr 0



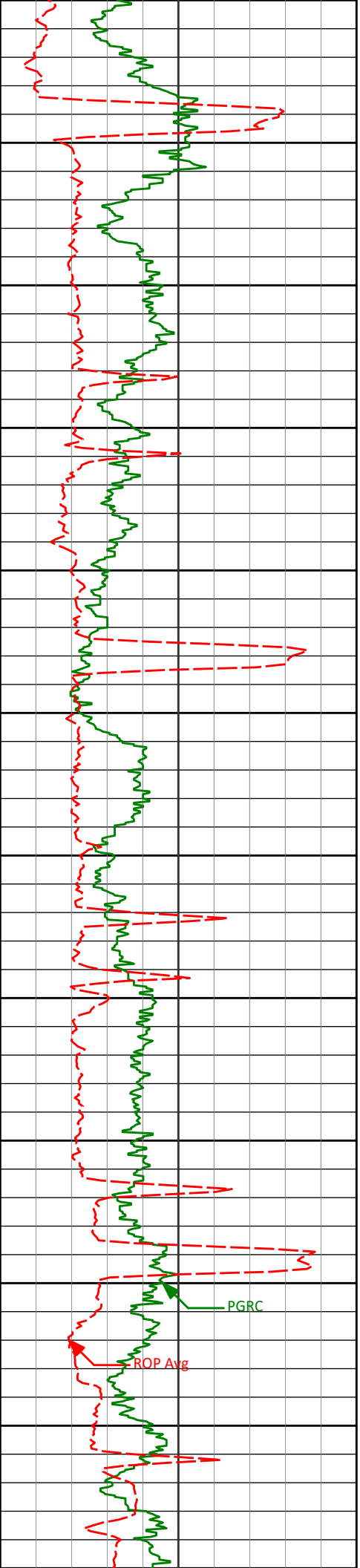
Depth ft	***Depth***	***Inc.***	***Azi.***	***TVD***	***V.S.***
<Run 200>					
6000	6010'	0.31°	276.90°	5986.46'	-140.91'
6050					
<KOP>					
6100	6111'	5.79°	272.45°	6087.28'	-135.58'
6150	6159'	11.20°	274.61°	6134.73'	-128.56'
6200	6205'	14.40°	270.35°	6179.58'	-118.44'
6250					



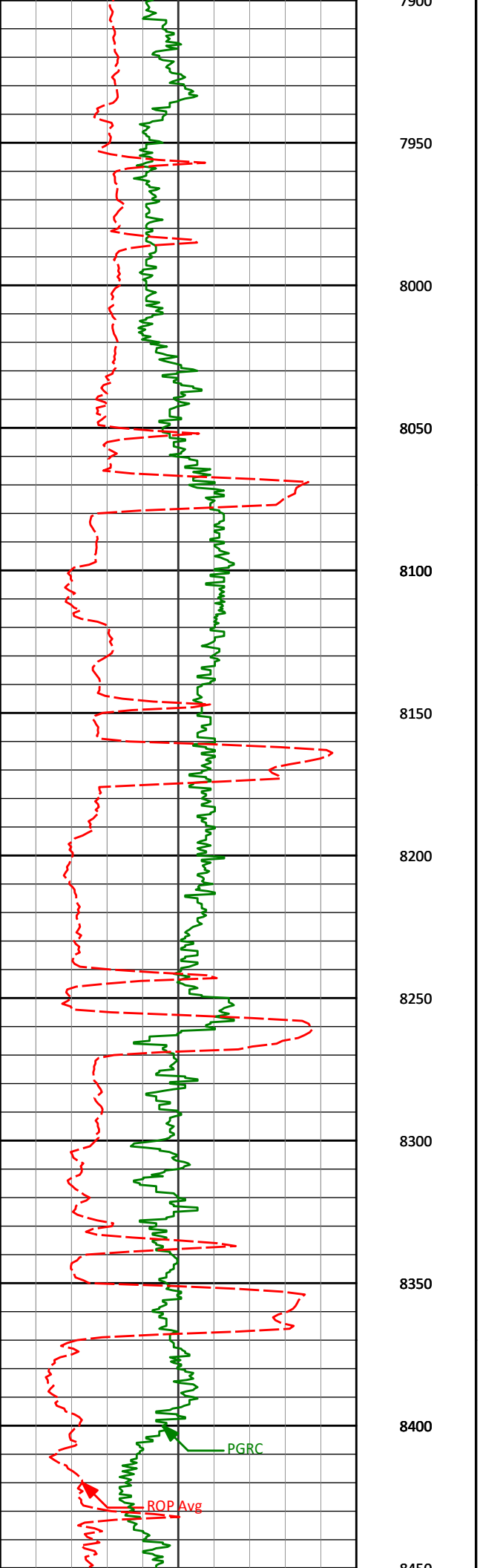
6253'	18.20°	269.77°	6225.65'	-105.01'
6300'	22.28°	270.50°	6269.74'	-88.80'
6348'	25.53°	271.51°	6313.61'	-69.43'
6395'	30.00°	271.32°	6355.19'	-47.65'
6443'	35.27°	268.09°	6395.60'	-21.83'
6490'	39.65°	265.63°	6432.90'	6.74'
6538'	43.36°	264.85°	6468.85'	38.54'
6585'	47.97°	267.00°	6501.68'	72.14'
6633'	52.55°	268.19°	6532.36'	109.02'
6680'	56.69°	269.69°	6559.57'	147.27'
6728'	60.98°	269.00°	6584.40'	188.26'
6775'	63.74°	269.05°	6606.21'	229.81'



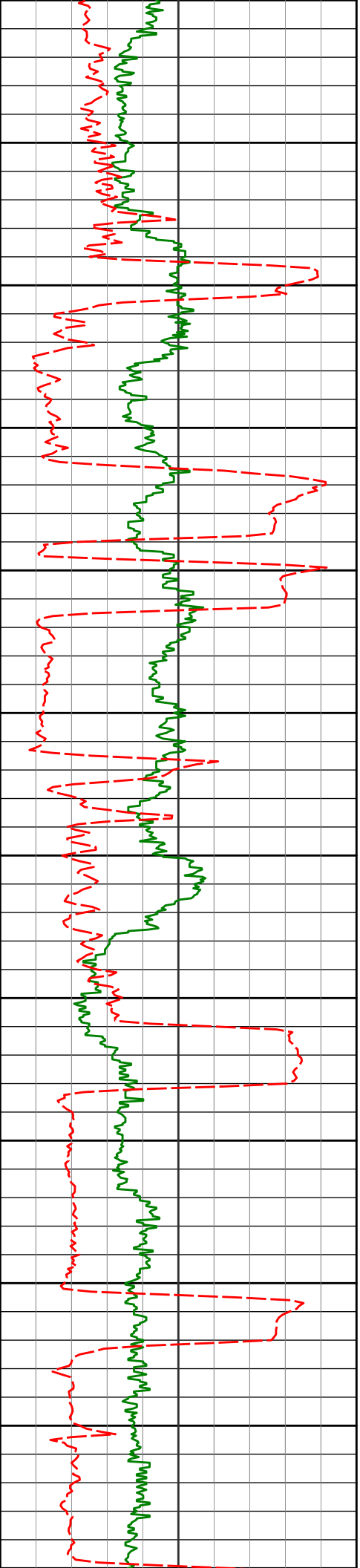
6823'	68.56°	269.23°	6625.61'	273.60'
6870'	**72.81°**	**268.86°**	**6641.15'**	**317.85'**
6918'	77.54°	268.07°	6653.43'	364.17'
6972'	81.50°	265.87°	6663.26'	417.21'
<7" casing set at 7014' MD>				
7043'	87.13°	270.57°	6670.29'	487.71'
7137'	91.29°	271.40°	6671.58'	581.30'
7232'	89.26°	271.26°	6671.12'	675.87'
7327'	89.41°	269.80°	6672.22'	770.54'



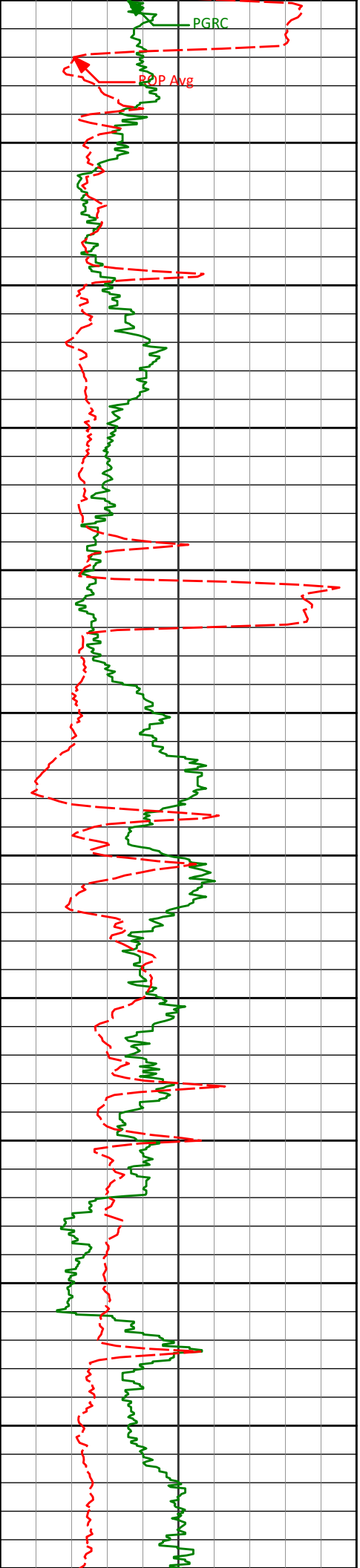
7422'	88.61°	267.89°	6673.86'	865.39'
7517'	89.14°	268.87°	6675.73'	960.28'
7612'	89.29°	267.35°	6677.03'	1055.20'
7707'	89.88°	267.57°	6677.72'	1150.16'
7802'	89.20°	267.99°	6678.48'	1245.10'
7897'	89.48°	268.76°	6679.58'	1340.00'



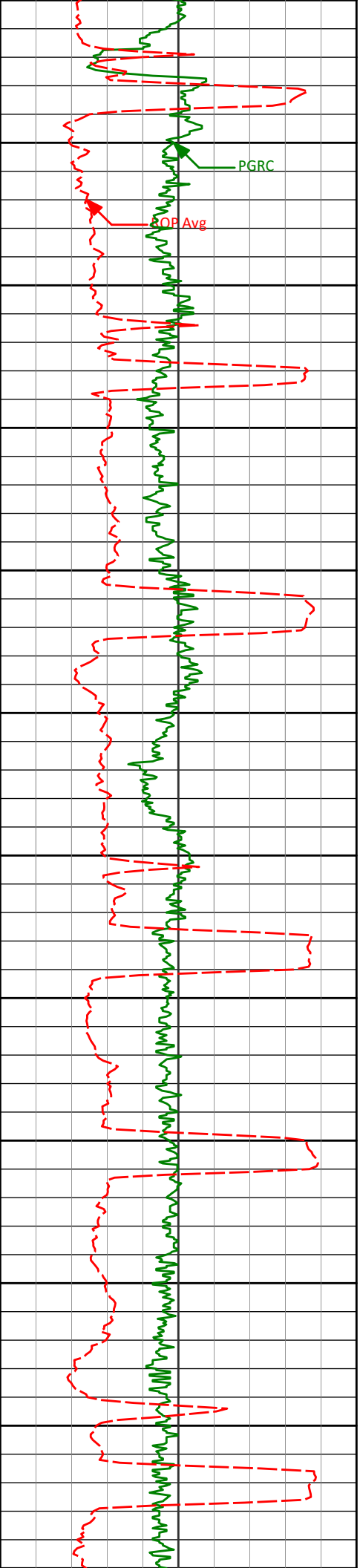
7992'	90.22°	269.80°	6679.84'	1434.83'
8087'	89.94°	269.91°	6679.71'	1529.60'
8181'	88.89°	269.57°	6680.67'	1623.38'
8276'	89.35°	269.50°	6682.13'	1718.17'
8371'	89.41°	268.32°	6683.15'	1813.03'



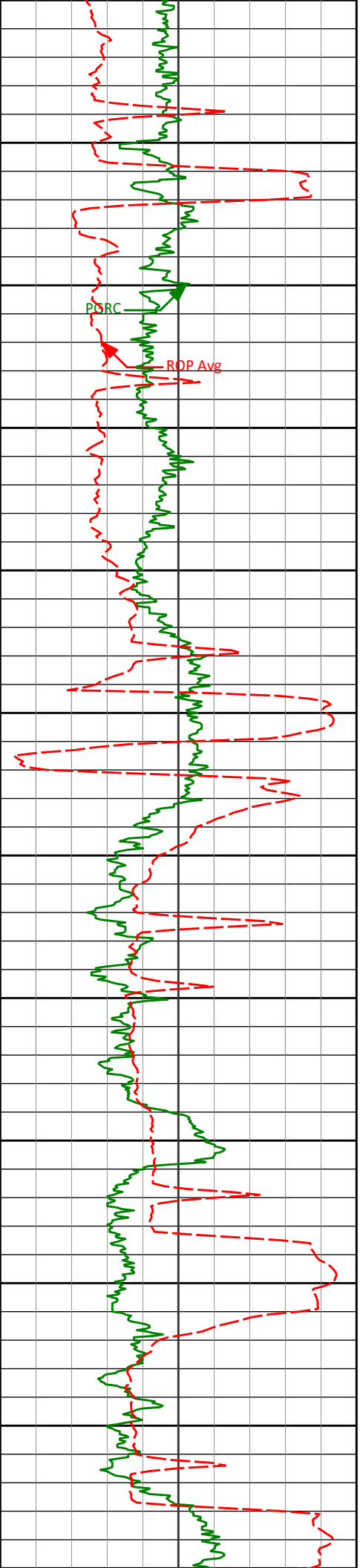
8466'	90.28°	269.59°	6683.41'	1907.89'
8561'	91.14°	269.73°	6682.24'	2002.67'
8656'	89.20°	268.72°	6681.96'	2097.50'
8751'	90.46°	268.98°	6682.24'	2192.37'
8846'	89.60°	268.06°	6682.19'	2287.26'
8941'	89.51°	268.25°	6682.93'	2382.18'



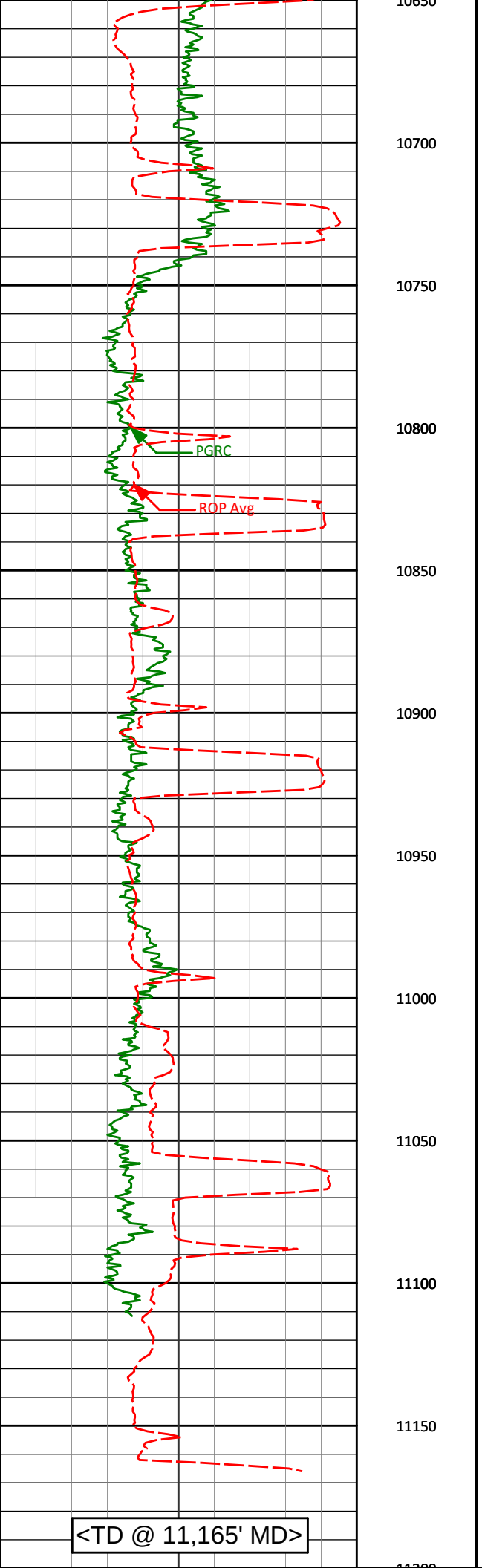
9035'	88.34°	267.98°	6684.70'	2476.09'
9130'	89.38°	269.30°	6686.59'	2570.96'
9225'	88.80°	268.32°	6688.10'	2665.82'
9320'	89.04°	267.95°	6689.89'	2760.73'
9415'	89.85°	268.76°	6690.81'	2855.63'
9510'	91.02°	269.22°	6690.09'	2950.48'



9550					
9600	9605'	91.08°	269.38°	6688.35'	3045.30'
9650					
9700	9700'	90.56°	269.84°	6687.00'	3140.08'
9750					
9800	9795'	90.74°	269.02°	6685.93'	3234.89'
9850					
9900	9889'	90.62°	269.52°	6684.81'	3328.72'
9950					
10000	9984'	90.12°	269.02°	6684.20'	3423.55'
10050					
10100	10079'	89.82°	268.76°	6684.25'	3518.42'



10174'	88.70°	267.49°	6685.48'	3613.33'
10269'	90.25°	268.30°	6686.35'	3708.26'
10364'	89.54°	268.46°	6686.53'	3803.17'
10459'	91.79°	269.32°	6685.43'	3898.02'
10554'	92.19°	267.64°	6682.14'	3992.86'
10649'	90.71°	267.09°	6679.73'	4087.80'



10744'	88.15°	265.95°	6680.68'	4182.78'
10838'	88.61°	267.66°	6683.33'	4276.72'
10933'	89.44°	269.69°	6684.95'	4371.59'
11028'	91.24°	269.87°	6684.38'	4466.36'
11104'	90.59°	270.35°	6683.17'	4542.14'

Avg Rate of Penetration
ROP Avg
500 feet per hr 0

PCG Gamma Ray
PGRC
0 api 300

Depth
ft

Depth	Inc.	Azi.	TVD	V.S.

HALLIBURTON
Sperry Drilling Services
MD Detail Log 1:240

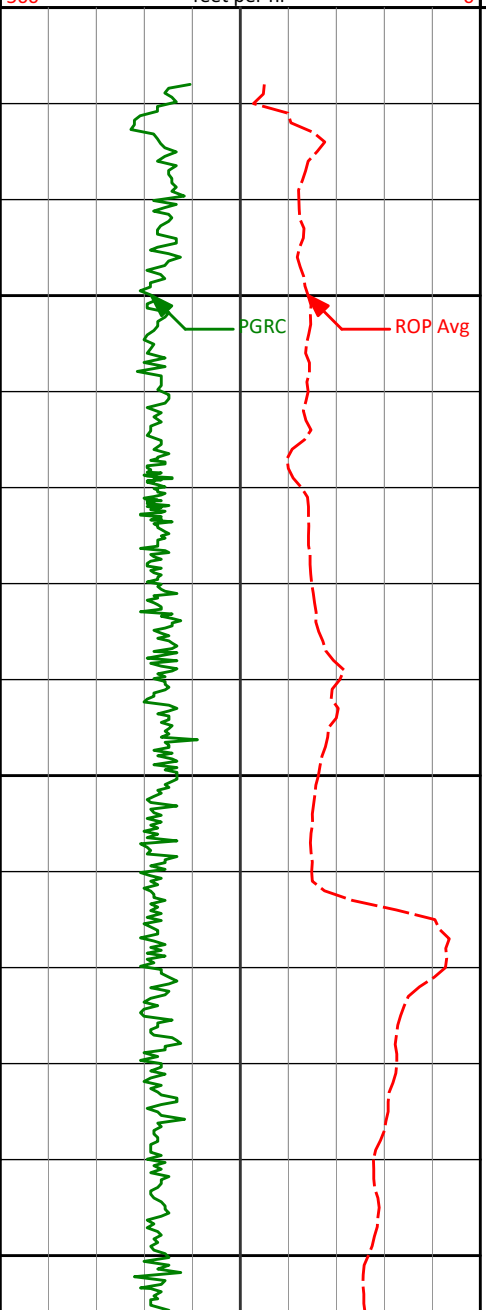
Noble Energy, Inc
SLW Ranch B01-67-1HN
H&P 315
T5N R64W

PCG Gamma Ray
PGRC
0 api 300

Avg Rate of Penetration
ROP Avg
500 feet per hr 0

Depth
ft

Depth	Inc.	Azi.	TVD	V.S.



<Run 200>

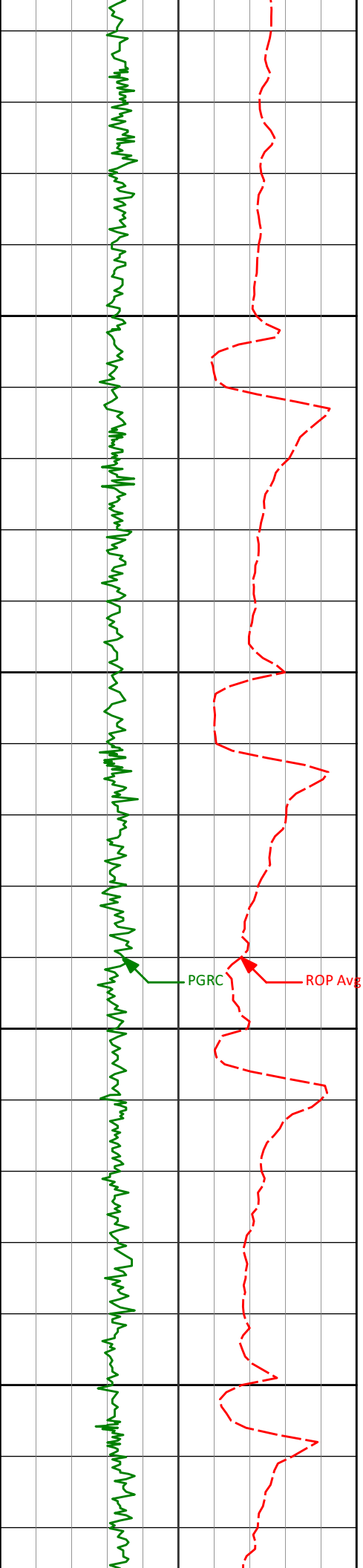
6000

Depth	Inc.	Azi.	TVD	V.S.
6010'	0.31°	276.90°	5986.46'	-140.91'

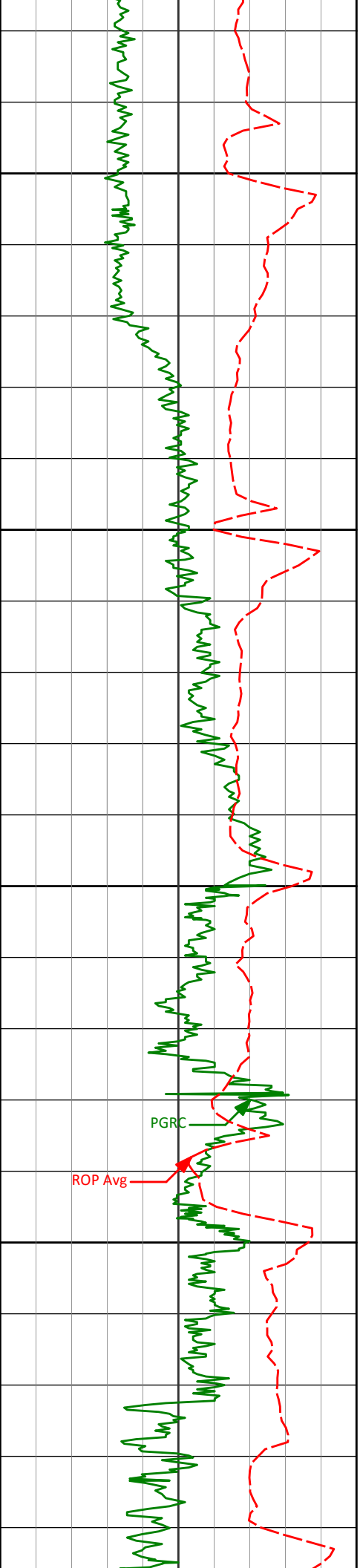
6050

<KOP>

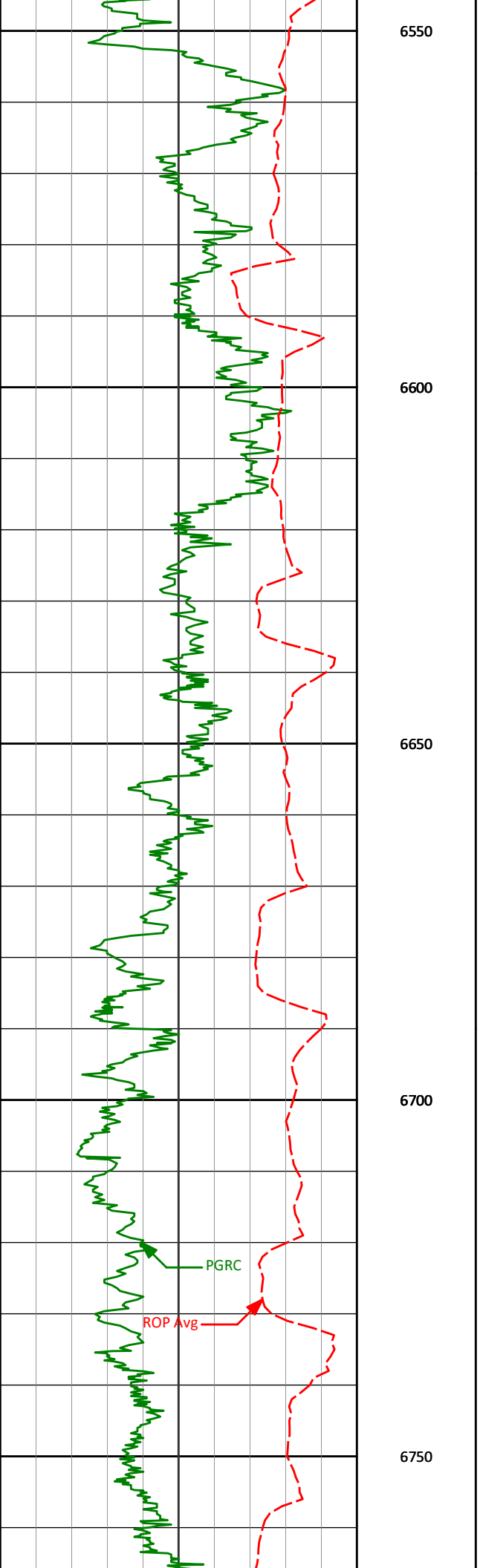
6100



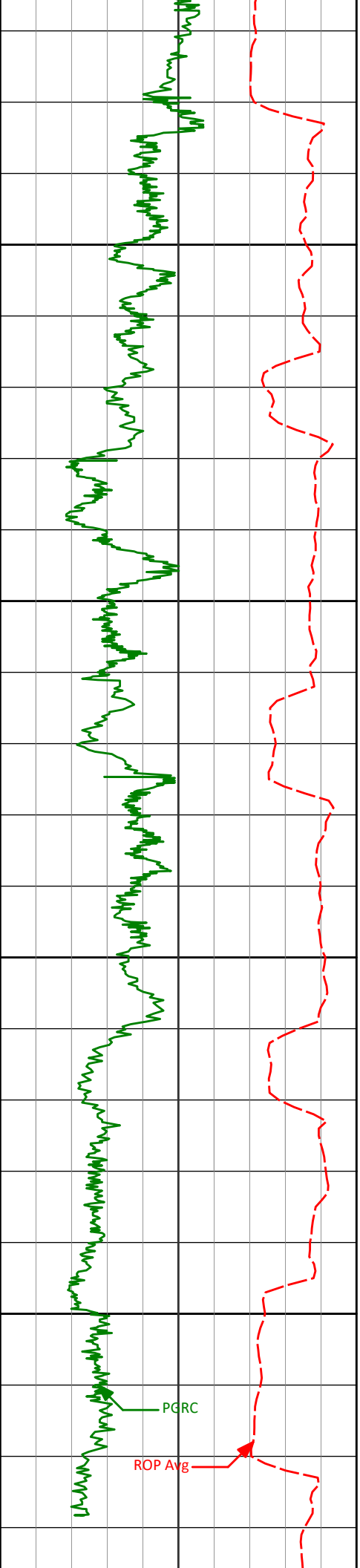
6111'	5.79°	272.45°	6087.28'	-135.58'
6159'	11.20°	274.61°	6134.73'	-128.56'
6205'	14.40°	270.35°	6179.58'	-118.44'
6253'	18.20°	269.77°	6225.65'	-105.01'
6300'	22.28°	270.50°	6269.74'	-88.80'



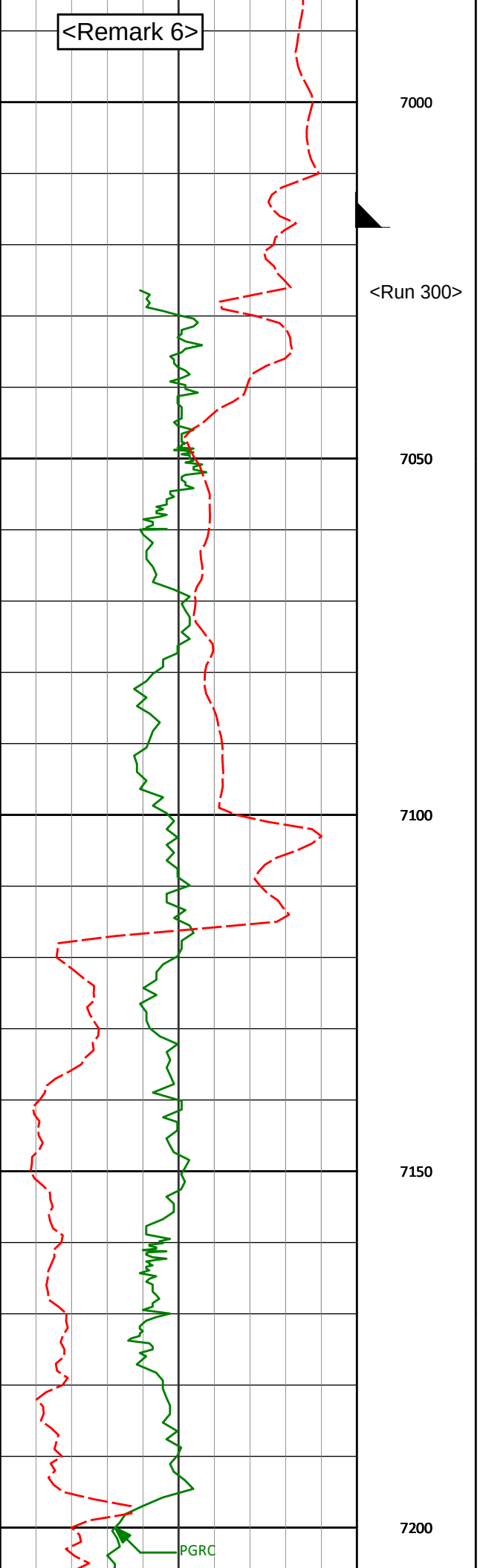
6348'	25.53°	271.51°	6313.61'	-69.43'
6395'	30.00°	271.32°	6355.19'	-47.65'
6443'	35.27°	268.09°	6395.60'	-21.83'
6490'	39.65°	265.63°	6432.90'	6.74'
6538'	43.36°	264.85°	6468.85'	38.54'



6585'	47.97°	267.00°	6501.68'	72.14'
6633'	52.55°	268.19°	6532.36'	109.02'
6680'	56.69°	269.69°	6559.57'	147.27'
6728'	60.98°	269.00°	6584.40'	188.26'



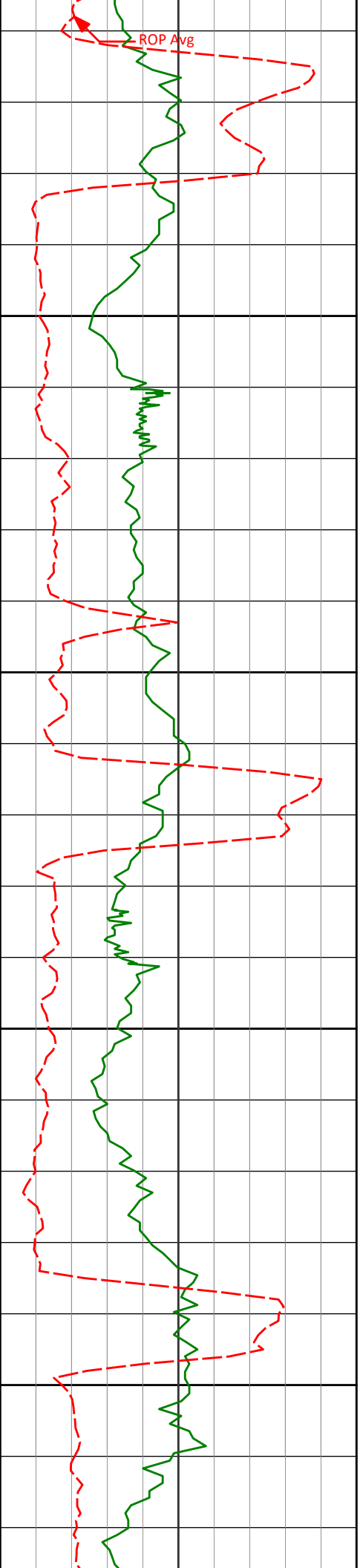
6775'	63.74°	269.05°	6606.21'	229.81'
6823'	68.56°	269.23°	6625.61'	273.60'
6870'	72.81°	268.86°	6641.15'	317.85'
6918'	77.54°	268.07°	6653.43'	364.17'
6972'	81.50°	265.87°	6663.26'	417.21'



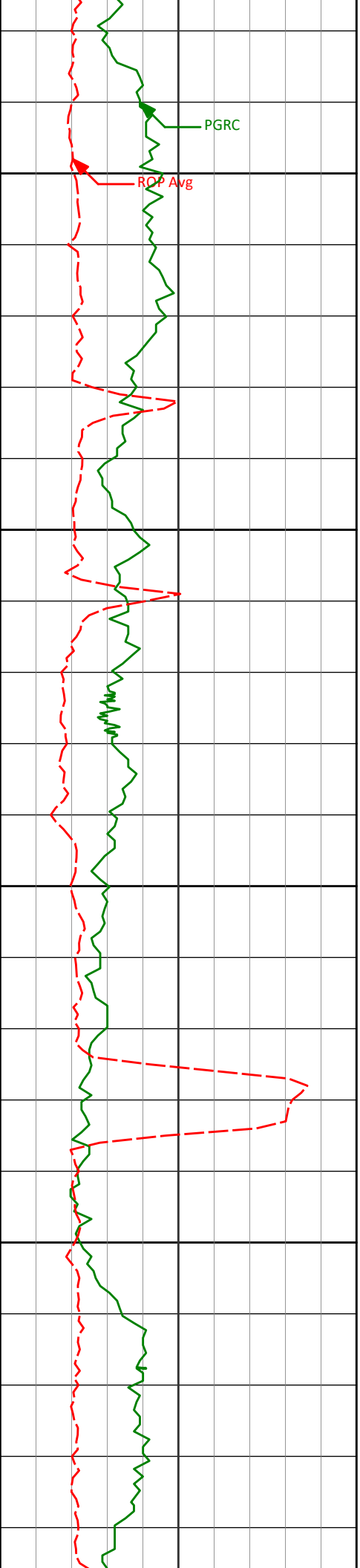
<7" casing set at 7014' MD>

<Run 300>

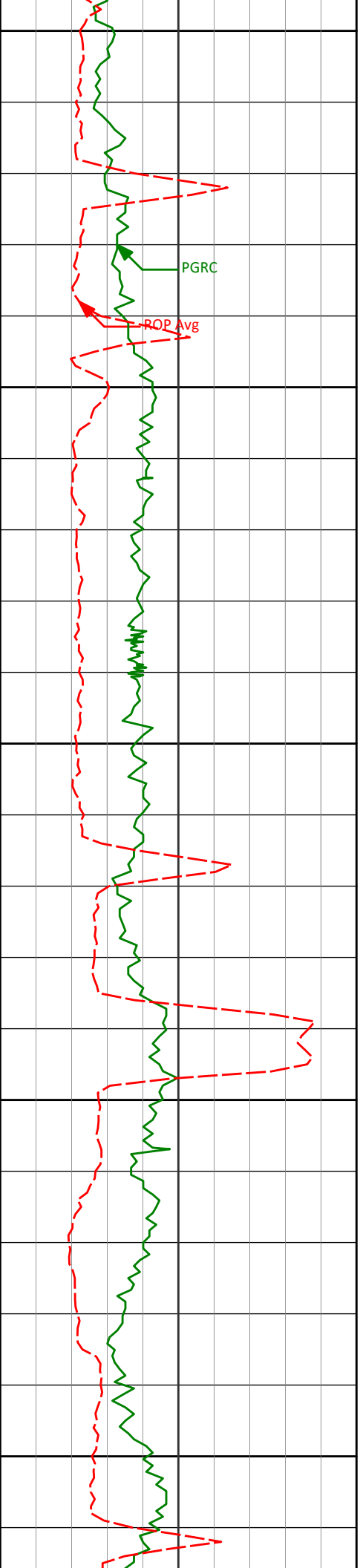
7043'	87.13°	270.57°	6670.29'	487.71'
7137'	91.29°	271.40°	6671.58'	581.30'



7232'	89.26°	271.26°	6671.12'	675.87'
7327'	89.41°	269.80°	6672.22'	770.54'
7422'	88.61°	267.89°	6673.86'	865.39'



7450					
7500					
	7517'	89.14°	268.87°	6675.73'	960.28'
7550					
7600					
	7612'	89.29°	267.35°	6677.03'	1055.20'



7650

7700

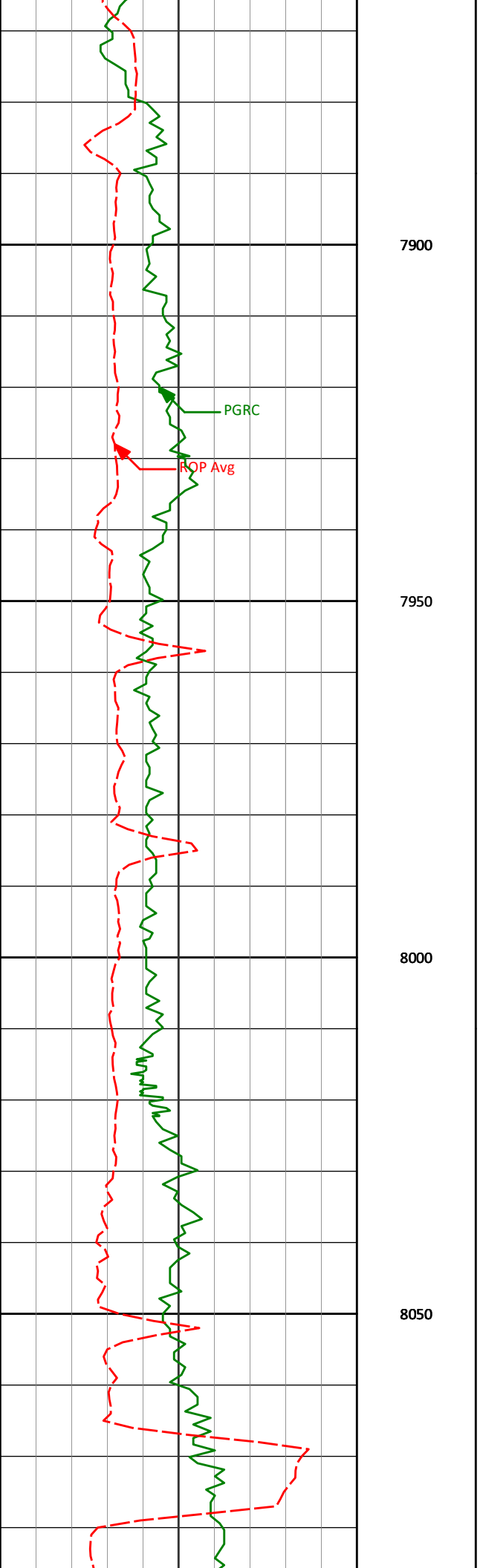
7707'	89.88°	267.57°	6677.72'	1150.16'

7750

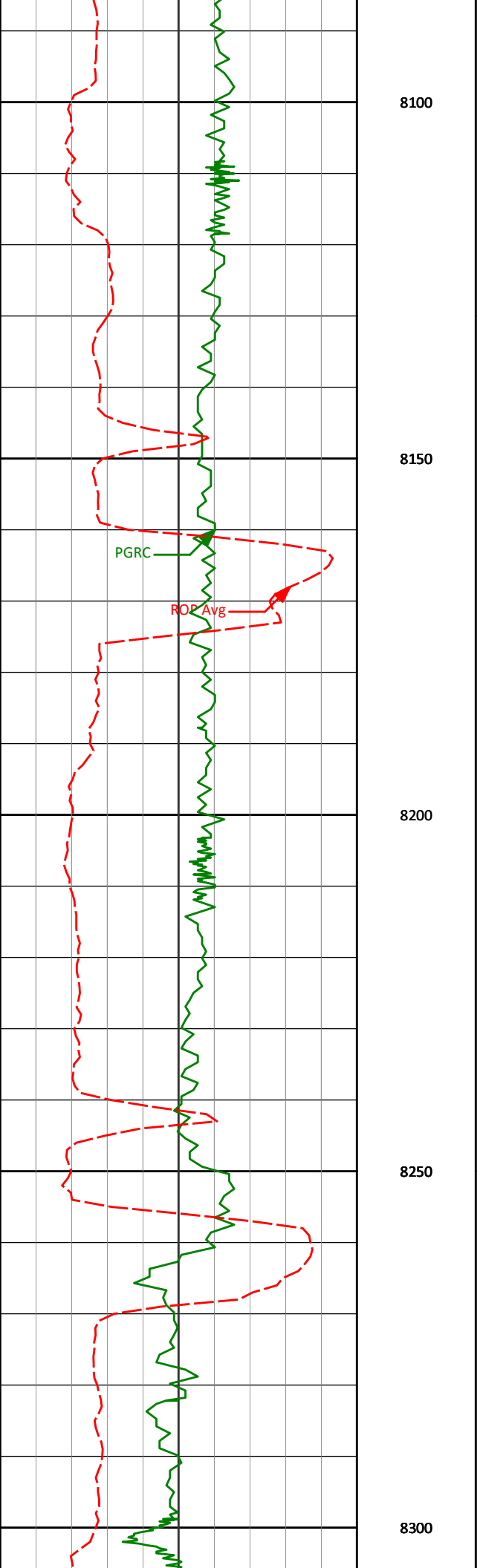
7800

7802'	89.20°	267.99°	6678.48'	1245.10'

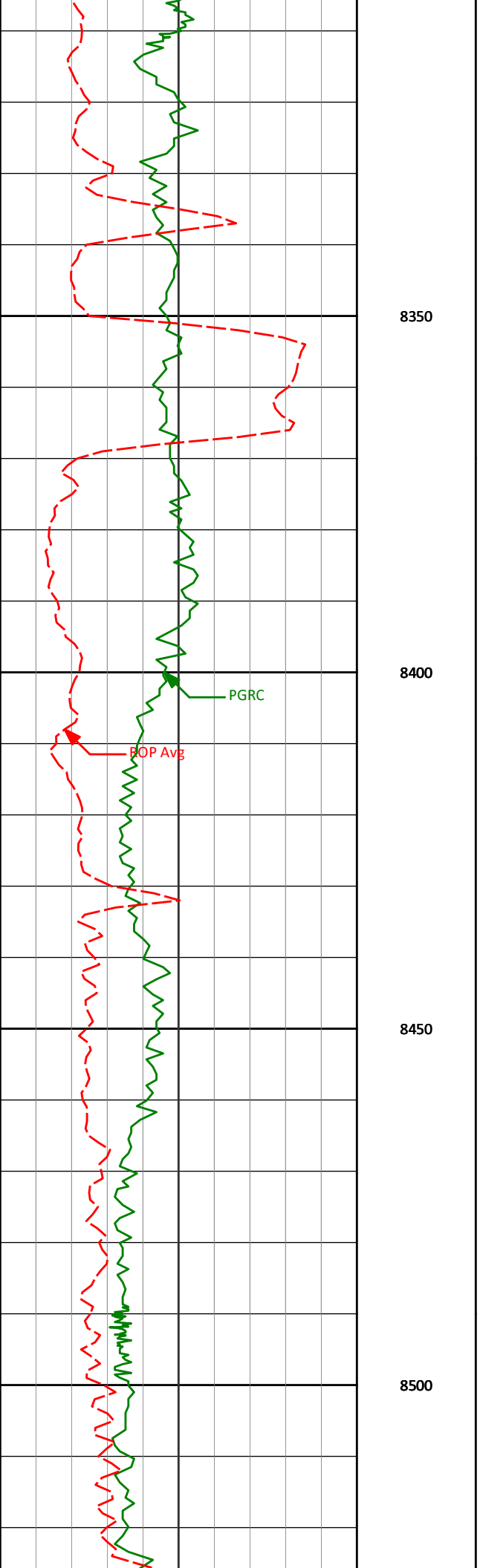
7850



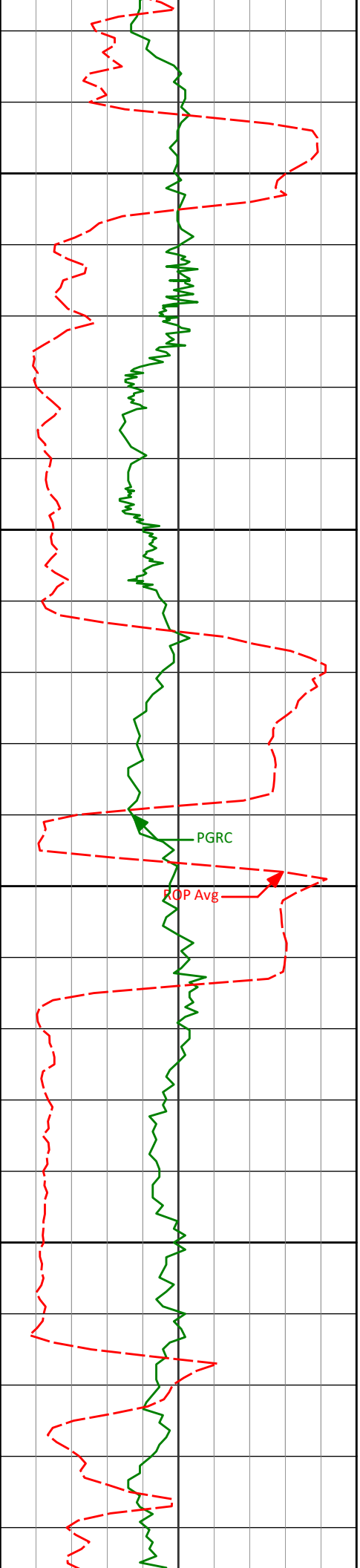
7897'	89.48°	268.76°	6679.58'	1340.00'
7992'	90.22°	269.80°	6679.84'	1434.83'



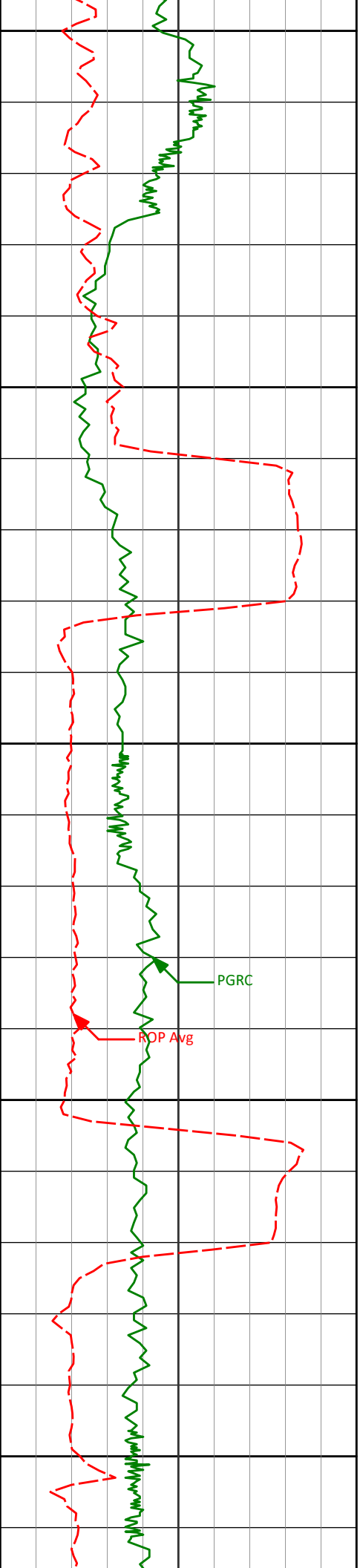
8087'	89.94°	269.91°	6679.71'	1529.60'
8181'	88.89°	269.57°	6680.67'	1623.38'
8276'	89.35°	269.50°	6682.13'	1718.17'



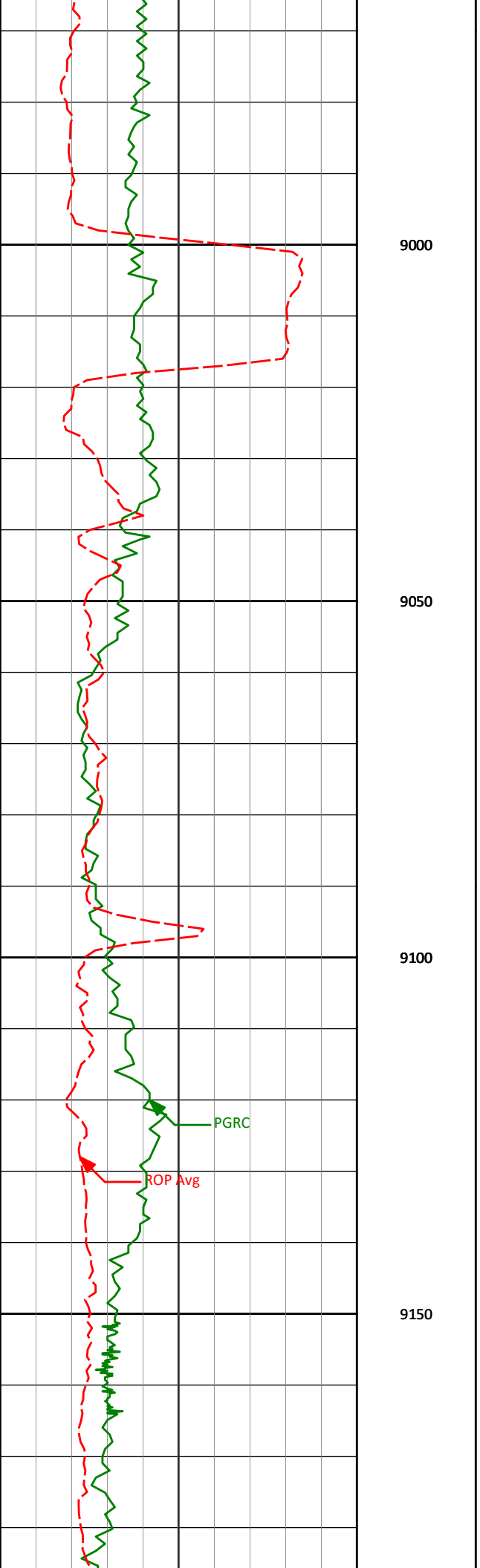
8371'	89.41°	268.32°	6683.15'	1813.03'
8466'	90.28°	269.59°	6683.41'	1907.89'



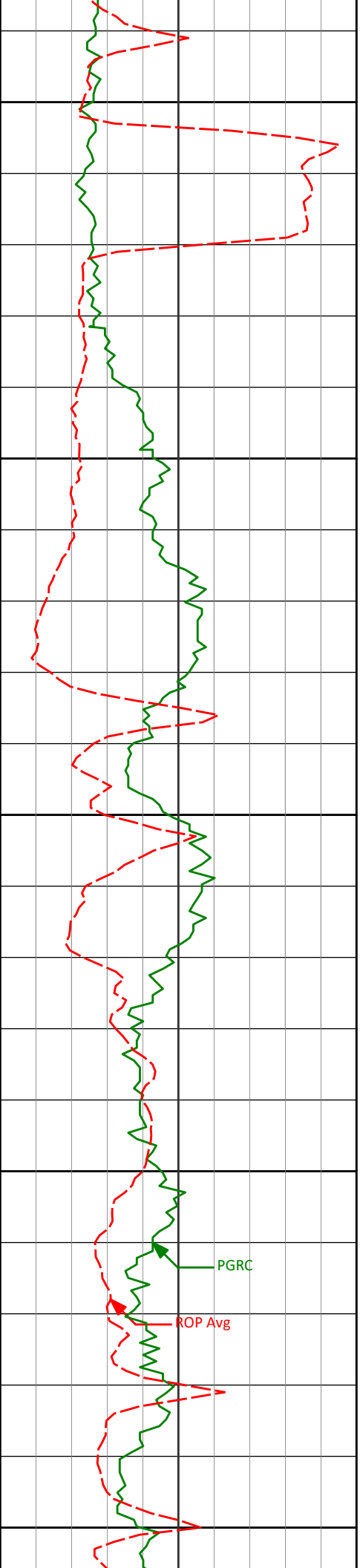
8561'	91.14°	269.73°	6682.24'	2002.67'
8656'	89.20°	268.72°	6681.96'	2097.50'



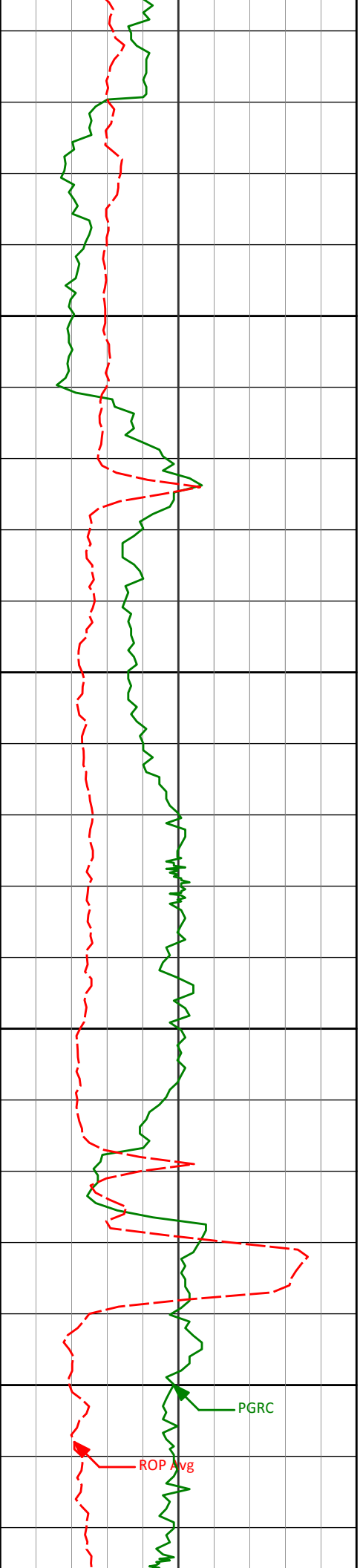
8751'	90.46°	268.98°	6682.24'	2192.37'
8846'	89.60°	268.06°	6682.19'	2287.26'
8941'	89.51°	268.25°	6682.93'	2382.18'



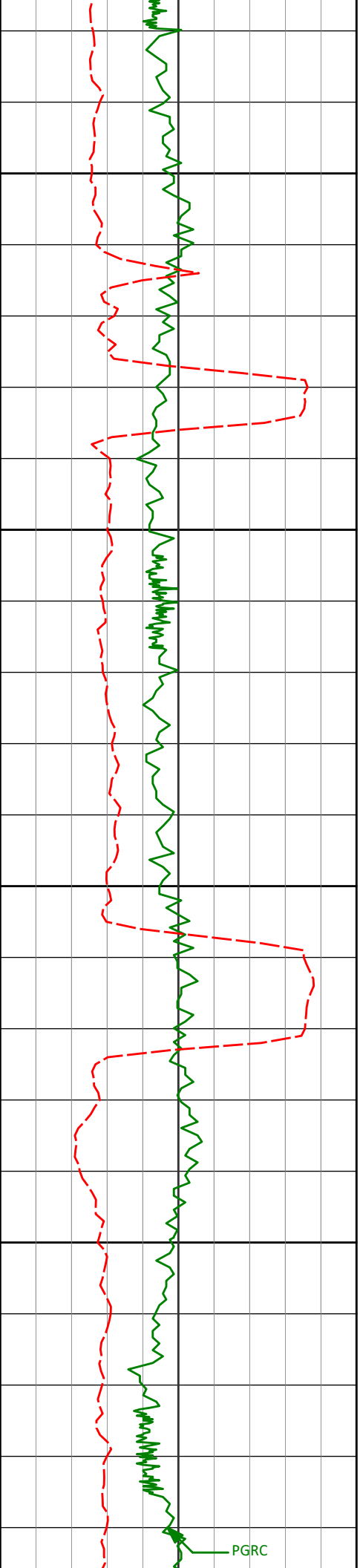
9035'	88.34°	267.98°	6684.70'	2476.09'
9130'	89.38°	269.30°	6686.59'	2570.96'



9225'	88.80°	268.32°	6688.10'	2665.82'
9320'	89.04°	267.95°	6689.89'	2760.73'

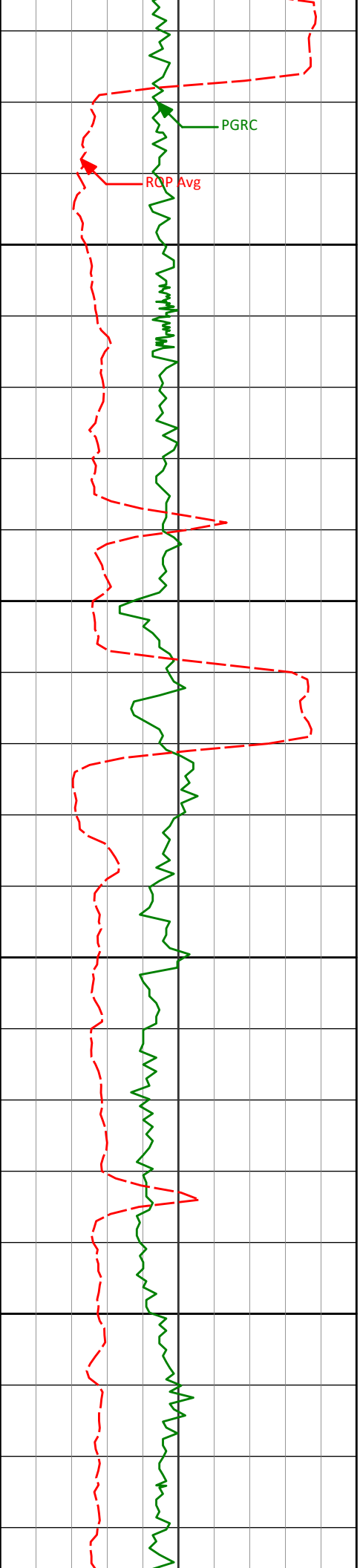


9415'	89.85°	268.76°	6690.81'	2855.63'
9510'	91.02°	269.22°	6690.09'	2950.48'
9605'	91.08°	269.38°	6688.35'	3045.30'

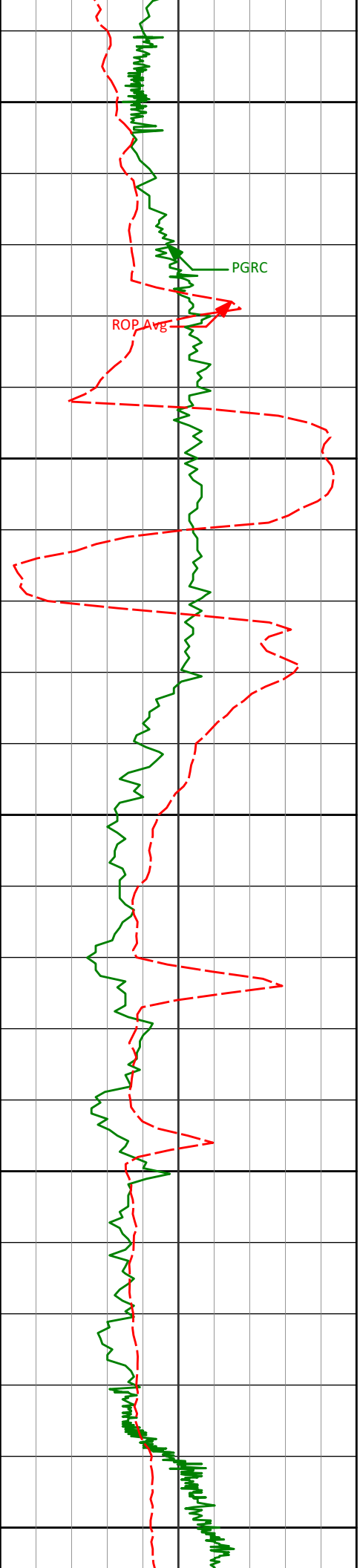


9700	9700'	90.56°	269.84°	6687.00'	3140.08'
	9795'	90.74°	269.02°	6685.93'	3234.89'

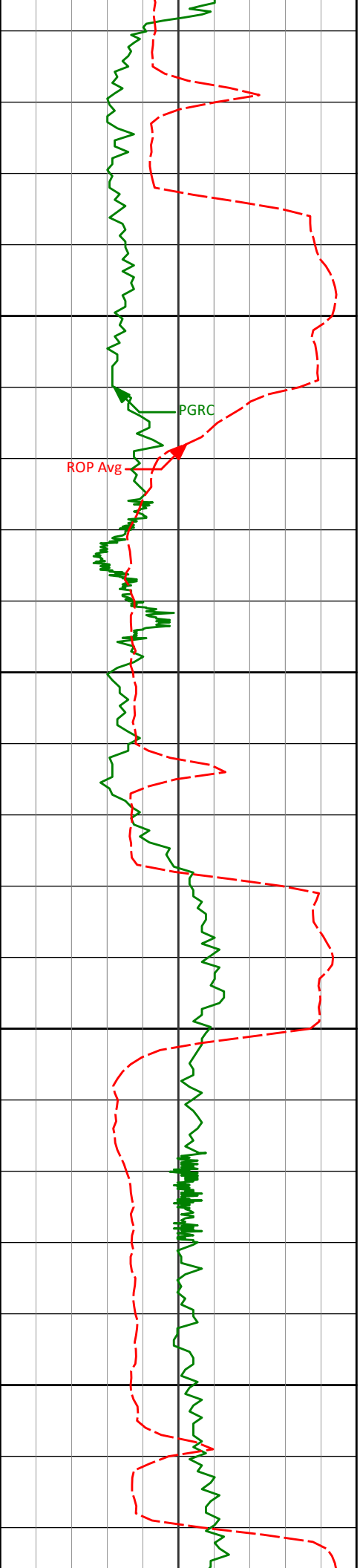
9889'	90.62°	269.52°	6684.81'	3328.72'
9984'	90.12°	269.02°	6684.20'	3423.55'



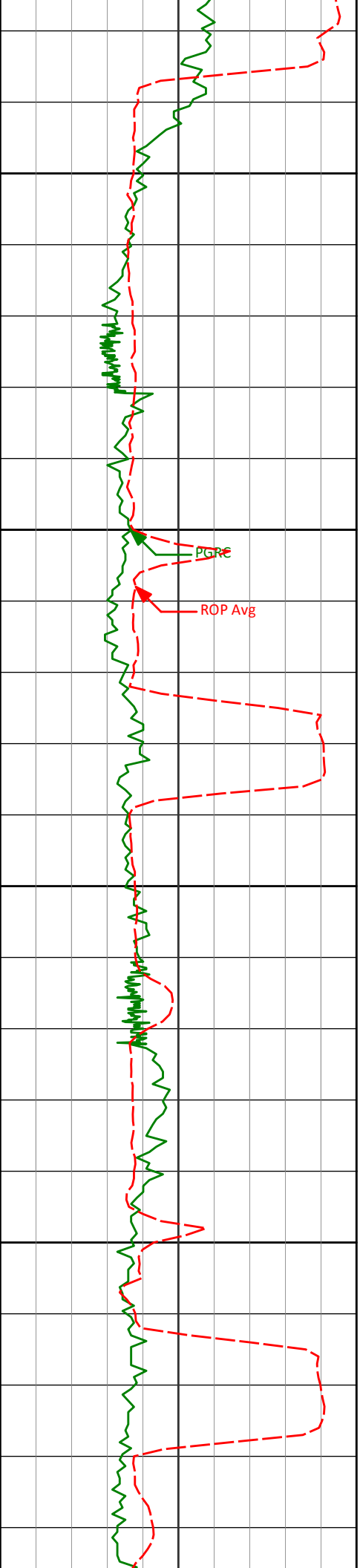
10079'	89.82°	268.76°	6684.25'	3518.42'
10174'	88.70°	267.49°	6685.48'	3613.33'
10269'	90.25°	268.30°	6686.35'	3708.26'



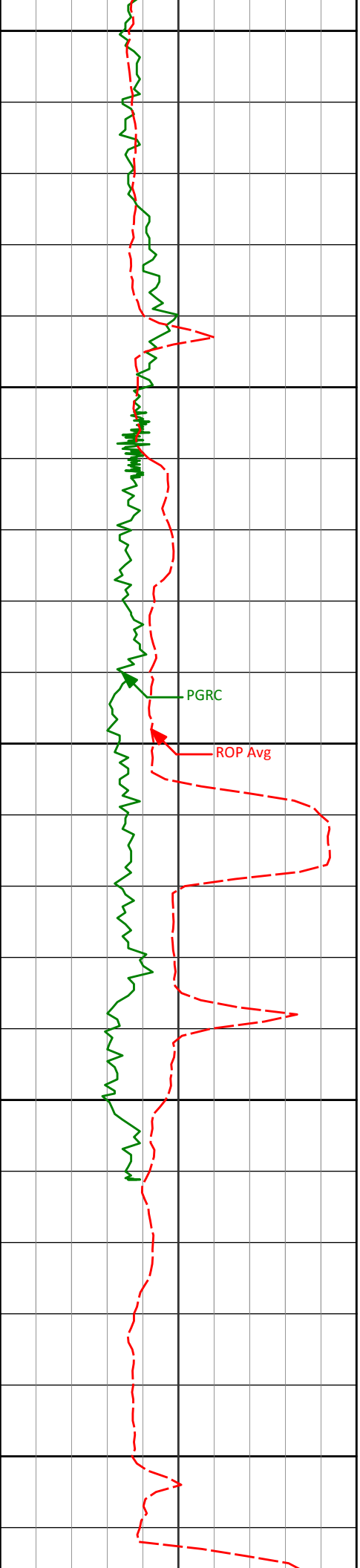
10300					
10350					
	10364'	89.54°	268.46°	6686.53'	3803.17'
10400					
10450					
	10459'	91.79°	269.32°	6685.43'	3898.02'
10500					



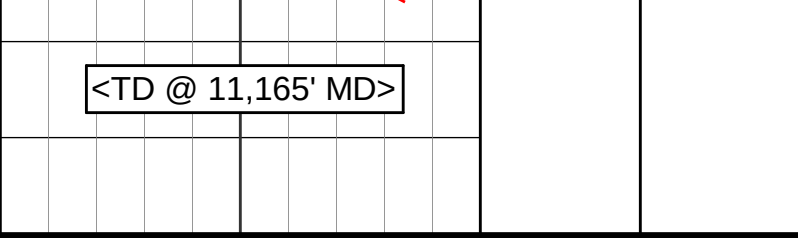
10550	10554'	92.19°	267.64°	6682.14'	3992.86'
10600					
10650	10649'	90.71°	267.09°	6679.73'	4087.80'
10700					



10744'	88.15°	265.95°	6680.68'	4182.78'
10838'	88.61°	267.66°	6683.33'	4276.72'
10933'	89.44°	269.69°	6684.95'	4371.59'



11028'	91.24°	269.87°	6684.38'	4466.36'
11104'	90.59°	270.35°	6683.17'	4542.14'



Avg Rate of Penetration	Depth	Depth	Inc.	Azi.	TVD	V.S.
ROP Avg	ft					
500 feet per hr 0						
PCG Gamma Ray						
PGRC						
0 api 300						

HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
SLW Ranch B01-67-1HN
Wattenberg
Weld Colorado
USA
CA-XX-0900071990
Survey depth 660 ft created to tie surveys onto bottom of the surface casing shoe.

Last survey is a projection from 11104 ft MD to TD at 11165 ft MD.

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
660.00	0.00	0.00	660.00	0.00 N	0.00 E	0.00	TIE-IN
715.00	0.50	331.07	715.00	0.21 N	0.12 W	0.10	0.91
808.00	0.68	273.08	808.00	0.60 N	0.87 W	0.82	0.64
901.00	0.41	287.37	900.99	0.73 N	1.74 W	1.68	0.33
993.00	0.78	257.18	992.99	0.69 N	2.66 W	2.60	0.51
1086.00	0.40	275.78	1085.98	0.58 N	3.60 W	3.54	0.45
1178.00	0.73	114.45	1177.98	0.37 N	3.38 W	3.35	1.21
1271.00	0.65	104.73	1270.97	0.01 S	2.33 W	2.33	0.15
1364.00	0.78	99.82	1363.96	0.25 S	1.20 W	1.21	0.15
1459.00	1.15	127.56	1458.95	0.94 S	0.19 E	-0.13	0.62
1554.00	2.94	115.68	1553.89	2.58 S	3.15 E	-2.95	1.93
1649.00	4.97	115.43	1648.66	5.41 S	9.06 E	-8.65	2.14
1744.00	5.50	112.34	1743.26	8.91 S	16.99 E	-16.31	0.63
1839.00	5.99	96.36	1837.79	11.18 S	26.13 E	-25.25	1.75
1934.00	6.94	113.93	1932.19	14.06 S	36.30 E	-35.19	2.30
2029.00	8.34	125.89	2026.35	20.43 S	47.13 E	-45.53	2.22
2124.00	8.22	130.93	2120.36	28.92 S	57.84 E	-55.60	0.77
2219.00	8.64	142.00	2214.34	38.99 S	67.36 E	-64.37	1.76
2314.00	8.89	154.41	2308.24	51.23 S	74.93 E	-71.03	2.00
2409.00	10.15	158.59	2401.94	65.64 S	81.15 E	-76.20	1.51
2504.00	11.80	157.27	2495.20	82.39 S	87.96 E	-81.78	1.77
2599.00	11.69	154.07	2588.21	100.00 S	95.92 E	-88.45	0.70
2694.00	12.66	154.45	2681.07	118.05 S	104.62 E	-95.82	1.02
2789.00	13.34	157.95	2773.64	137.59 S	113.22 E	-102.99	1.09
2884.00	10.95	153.98	2866.51	155.86 S	121.29 E	-109.72	2.66
2979.00	10.88	163.76	2959.80	172.57 S	127.76 E	-114.97	1.95
3074.00	8.34	158.52	3053.46	187.59 S	132.79 E	-118.90	2.82
3169.00	5.69	162.93	3147.74	198.50 S	136.69 E	-122.00	2.84
3264.00	5.89	156.62	3242.26	207.47 S	140.01 E	-124.66	0.70
3359.00	5.90	159.17	3336.76	216.51 S	143.68 E	-127.67	0.28
3454.00	4.11	157.01	3431.39	224.20 S	146.74 E	-130.17	1.90
3549.00	4.89	155.00	3526.10	231.01 S	149.78 E	-132.71	0.85
3644.00	4.13	174.15	3620.81	238.09 S	151.84 E	-134.26	1.77
3739.00	1.97	195.40	3715.67	243.07 S	151.76 E	-133.82	2.53
3834.00	0.24	104.80	3810.65	244.69 S	151.51 E	-133.45	2.09

4119.00	0.55	271.47	4095.65	244.81 S	150.72 E	-132.65	0.27
4404.00	1.02	185.84	4380.63	247.29 S	149.10 E	-130.86	0.39
4689.00	1.76	85.66	4665.57	249.48 S	153.20 E	-134.79	0.77
4974.00	0.73	89.07	4950.50	249.12 S	159.37 E	-140.97	0.36
5259.00	0.61	72.80	5235.48	248.64 S	162.64 E	-144.27	0.08
5543.00	0.77	243.69	5519.47	249.04 S	162.38 E	-143.98	0.49
5828.00	0.41	205.13	5804.46	250.81 S	160.23 E	-141.70	0.18
5921.00	0.25	272.68	5897.46	251.10 S	159.89 E	-141.34	0.42
6010.00	0.31	276.90	5986.46	251.07 S	159.45 E	-140.91	0.07
6111.00	5.79	272.45	6087.28	250.82 S	154.09 E	-135.58	5.43
6159.00	11.20	274.61	6134.73	250.34 S	147.02 E	-128.56	11.28
6205.00	14.40	270.35	6179.58	249.94 S	136.84 E	-118.44	7.26
6253.00	18.20	269.77	6225.65	249.94 S	123.38 E	-105.01	7.91
6300.00	22.28	270.50	6269.74	249.89 S	107.12 E	-88.80	8.71
6348.00	25.53	271.51	6313.61	249.54 S	87.68 E	-69.43	6.81
6395.00	30.00	271.32	6355.19	249.00 S	65.79 E	-47.65	9.53
6443.00	35.27	268.09	6395.60	249.18 S	39.93 E	-21.83	11.56
6490.00	39.65	265.63	6432.90	250.78 S	11.40 E	6.74	9.84
6538.00	43.36	264.85	6468.85	253.43 S	20.29 W	38.54	7.81
6585.00	47.97	267.00	6501.68	255.79 S	53.82 W	72.14	10.35
6633.00	52.55	268.67	6532.36	257.17 S	90.69 W	109.02	9.90
6680.00	56.69	269.31	6559.57	257.84 S	129.00 W	147.27	8.87
6728.00	60.98	269.34	6584.40	258.32 S	170.06 W	188.26	8.93
6775.00	63.74	269.66	6606.21	258.68 S	211.69 W	229.81	5.91
6823.00	68.56	269.84	6625.61	258.87 S	255.57 W	273.60	10.05
6870.00	72.81	269.30	6641.15	259.21 S	299.92 W	317.85	9.09
6918.00	77.54	268.63	6653.43	260.05 S	346.30 W	364.17	9.95
6972.00	81.50	267.71	6663.26	261.75 S	399.36 W	417.21	7.52
7043.00	87.13	270.57	6670.29	262.80 S	469.96 W	487.71	8.89
7137.00	91.29	271.40	6671.58	261.18 S	563.92 W	581.30	4.52
7232.00	89.26	271.26	6671.12	258.98 S	658.89 W	675.87	2.15
7327.00	89.41	269.80	6672.22	258.10 S	753.87 W	770.54	1.54
7422.00	88.61	267.89	6673.86	260.01 S	848.84 W	865.39	2.18
7517.00	89.14	268.87	6675.73	262.70 S	943.78 W	960.28	1.17
7612.00	89.29	267.35	6677.03	265.83 S	1038.71 W	1055.20	1.61
7707.00	89.88	267.57	6677.72	270.04 S	1133.62 W	1150.16	0.66
7802.00	89.20	267.99	6678.48	273.72 S	1228.54 W	1245.10	0.84
7897.00	89.48	268.76	6679.58	276.41 S	1323.50 W	1340.00	0.86
7992.00	90.22	269.80	6679.84	277.61 S	1418.49 W	1434.83	1.34
8087.00	89.94	269.91	6679.71	277.85 S	1513.49 W	1529.60	0.31
8181.00	88.89	269.57	6680.67	278.28 S	1607.48 W	1623.38	1.17
8276.00	89.35	269.50	6682.13	279.05 S	1702.47 W	1718.17	0.49
8371.00	89.41	268.32	6683.15	280.85 S	1797.44 W	1813.03	1.24
8466.00	90.28	269.59	6683.41	282.59 S	1892.42 W	1907.89	1.62
8561.00	91.14	269.73	6682.24	283.15 S	1987.41 W	2002.67	0.92
8656.00	89.20	268.72	6681.96	284.43 S	2082.40 W	2097.50	2.30
8751.00	90.46	268.98	6682.24	286.34 S	2177.38 W	2192.37	1.36
8846.00	89.60	268.06	6682.19	288.80 S	2272.34 W	2287.26	1.33
8941.00	89.51	268.25	6682.93	291.85 S	2367.29 W	2382.18	0.22
9035.00	88.34	267.98	6684.70	294.95 S	2461.22 W	2476.09	1.28
9130.00	89.38	269.30	6686.59	297.20 S	2556.17 W	2570.96	1.77
9225.00	88.80	268.32	6688.10	299.17 S	2651.14 W	2665.82	1.20
9320.00	89.04	267.95	6689.89	302.26 S	2746.07 W	2760.73	0.47
9415.00	89.85	268.76	6690.81	304.99 S	2841.03 W	2855.63	1.20
9510.00	91.02	269.22	6690.09	306.66 S	2936.01 W	2950.48	1.33
9605.00	91.08	269.38	6688.35	307.83 S	3030.98 W	3045.30	0.18
9700.00	90.56	269.84	6687.00	308.47 S	3125.97 W	3140.08	0.73
9795.00	90.74	269.02	6685.93	309.42 S	3220.96 W	3234.89	0.88
9889.00	90.62	269.52	6684.81	310.61 S	3314.94 W	3328.72	0.55
9984.00	90.12	269.02	6684.20	311.82 S	3409.93 W	3423.55	0.74
10079.00	89.82	268.76	6684.25	313.67 S	3504.92 W	3518.42	0.42
10174.00	88.70	267.49	6685.48	316.77 S	3599.85 W	3613.33	1.78
10269.00	90.25	268.30	6686.35	320.26 S	3694.78 W	3708.26	1.83
10364.00	89.54	268.46	6686.53	322.95 S	3789.74 W	3803.17	0.77
10459.00	91.79	269.32	6685.43	324.79 S	3884.71 W	3898.02	2.54
10554.00	92.19	267.64	6682.14	327.31 S	3979.62 W	3992.86	1.82
10649.00	90.71	267.09	6679.73	331.67 S	4074.48 W	4087.80	1.66
10744.00	88.15	265.95	6680.68	337.44 S	4169.30 W	4182.78	2.94
10838.00	88.61	267.66	6683.33	342.67 S	4263.11 W	4276.72	1.88
10933.00	89.44	269.69	6684.95	344.87 S	4358.06 W	4371.59	2.31
11028.00	91.24	269.87	6684.38	345.24 S	4453.06 W	4466.36	1.90
11104.00	90.59	270.35	6683.17	345.09 S	4529.05 W	4542.14	1.06

11165.00	90.59	270.35	6682.54	344.72 S	4590.04 W	4602.95	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 265.86 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 11165.00 FEET
IS 4602.97 FEET ALONG 265.71 DEGREES (GRID)

Date Printed:13 January 2013