Country : **USA**
Field : **Wattenberg**
Location : **Lat: 40°29' 48.05" North**
Long: 104°22' 33.56" West
Well : **Wells Ranch AA12-62-1HN**
Company : **Noble Energy**
Rig : **H&P 315**

HALLIBURTON | Sperry Drilling

Powered by INSITE™

PCGK : Pressure Case Gamma
PCDC: Pressure Case Directional

1 : 600 / 1 : 240

Company : **Noble Energy**
Rig : **H&P 315**
Well : **Wells Ranch AA12-62-1HN**
Field : **Wattenberg**
Country : **USA**
API Number : **0512335628**

LOCATION
Latitude : **40°29' 48.05" North**
Longitude : **104°22' 33.56" West**
UTM Easting = **3,312,593.91 ft**
UTM Northing = **1,425,762.39 ft**

Other Services
Directional Drilling

Permanent Datum : **Ground Level** Elevation : **4857.00 ft**
Log Measured From : **Drill Floor** **24.00 ft** Above Permanent Datum
Drilling Measured From : **Drill Floor**

MD LOG

Elev. KB **N/A**
DF **4881.00 ft**
GL **4857.00 ft**
WD **N/A**

Depth Logged : **704.00 ft** To **11,038.00 ft**
Date Logged : **06-Sep-12** To **10-Sep-12**
Total Depth MD : **11,038.00 ft** TVD : **6,678.83 ft**
Spud Date : **05-Sep-12**

Unit No. : **11610113** Job No. :**CA-XX-0009691524**
Plot Type : **Final**
Plot Date : **11-Sep-12**

Borehole Record (MD)

Run No.	Size	From	To
2	8.750 in	704.00 ft	5,967.00 ft
3	8.750 in	5,967.00 ft	7,131.00 ft
4	6.130 in	7,131.00 ft	11,038.00 ft

Borehole Record (MD)

Run No.	Size	From	To

Casing Record (MD)

Size	Weight	From	To
7.000 in	26.00 lbpf	SURFACE	7,119.00 ft

WELL INFORMATION

MWD Run Number	100	200	300		
Date run completed	06-Sep-12	08-Sep-12	10-Sep-12		
Rig Bit Number	2	3	4		
Bit Size (in)	8.750	8.750	6.130		
Tool Nominal OD (in)	6.750	6.750	4.750		
Log Start Depth (MD, ft)	704.00	5,967.00	7,131.00		
Log End Depth (MD, ft)	5,967.00	7,131.00	11,038.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	06-Sep-12 00:50	07-Sep-12 02:00	09-Sep-12 03:40		
Drill/Wipe End Date and Time	06-Sep-12 19:05	07-Sep-12 22:00	10-Sep-12 10:10		
Min Inc (deg) @ Depth (MD, ft)	.37 @ 3,064.00	13.60 @ 5,946.00	87.07 @ 10,508.00		
Max Inc (deg) @ Depth (MD, ft)	14.14 @ 4,013.00	87.67 @ 7,131.00	91.33 @ 9,939.00		
Bit TFA(in2) / Bit Type	.75 / PDC	.75 / PDC	.46 / PDC		
Flow Rate (gpm)	592.00	569.00	269.00		
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)	8.97 / 34.00	10.17 / 41.00	9.18 / 31.00		
Filtrate CL (ppm)	1,400.00	1,200.00	1,400.00		
pH / Fluid Loss (mptm)	9.20 / 7	9.20 / 8	9.00 / 11		
PV (cP) / YP (lhf2)	9 / 8.00	12 / 13.00	5 / 5.00		
% Solids / % Sand	6.1 / 0.35	13.3 / 0.30	4.9 / 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	154.30 / PCM	175.21 / PCM	226.08 / PCM		
Rm @ Max Tool Temp (degF)	N/A @ 154.30	N/A @ 175.21	N/A @ 226.08		
Lead MWD Engineer	Paul Kock	Paul Kock	Paul Kock		
Customer Representative	Martin Suarez	Martin Suarez	Martin Suarez		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.76	5.76	5.76		
Sub Serial Number	11341320	11341320	11751282		
Insert Serial Number	11680781	11680781	11680751		
Date and Time Initialized	05-Sep-12 20:39	05-Sep-12 20:39	08-Sep-12 16:15		
Date and Time Read	08-Sep-12 05:17	08-Sep-12 05:11	10-Sep-12 21:11		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	55.74	54.30	61.42		
Software Version	6.21	6.21	6.21		
Sub Serial Number	11341320	11341320	11751282		
Sonde Serial Number	11833225	11833225	300426		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	218.74	358.40	169.81		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	50.94	49.50	56.62		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	11341320	11341320	11751282		
Insert/Sonde Serial Number	11681000	11681000	11579775		

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 7083 ft. MD. Gamma cannot be measured within cased hole, and collection resumes after drilling through cement at 7131 ft MD.

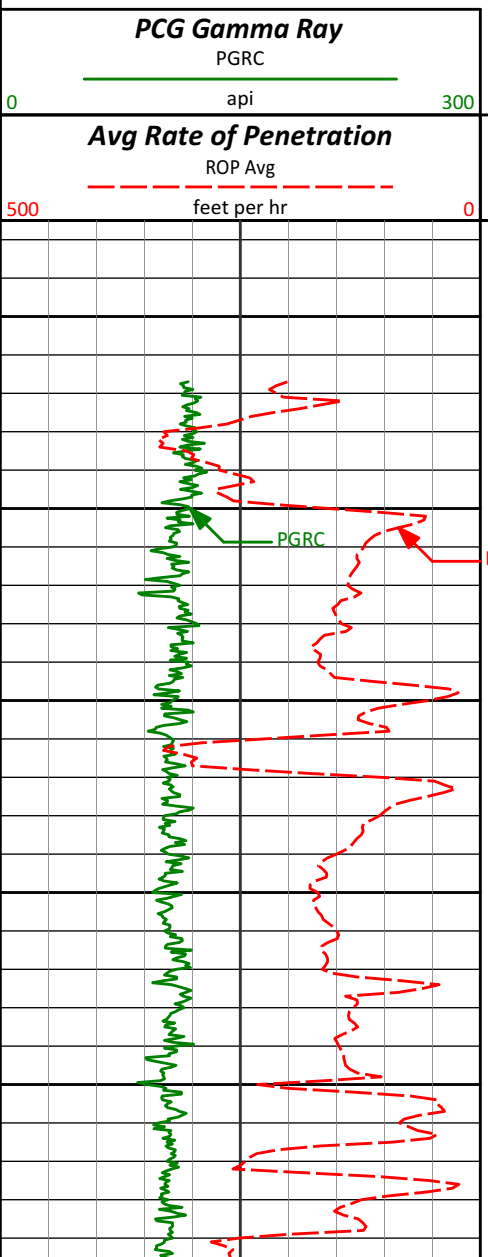
WARRANTY

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.

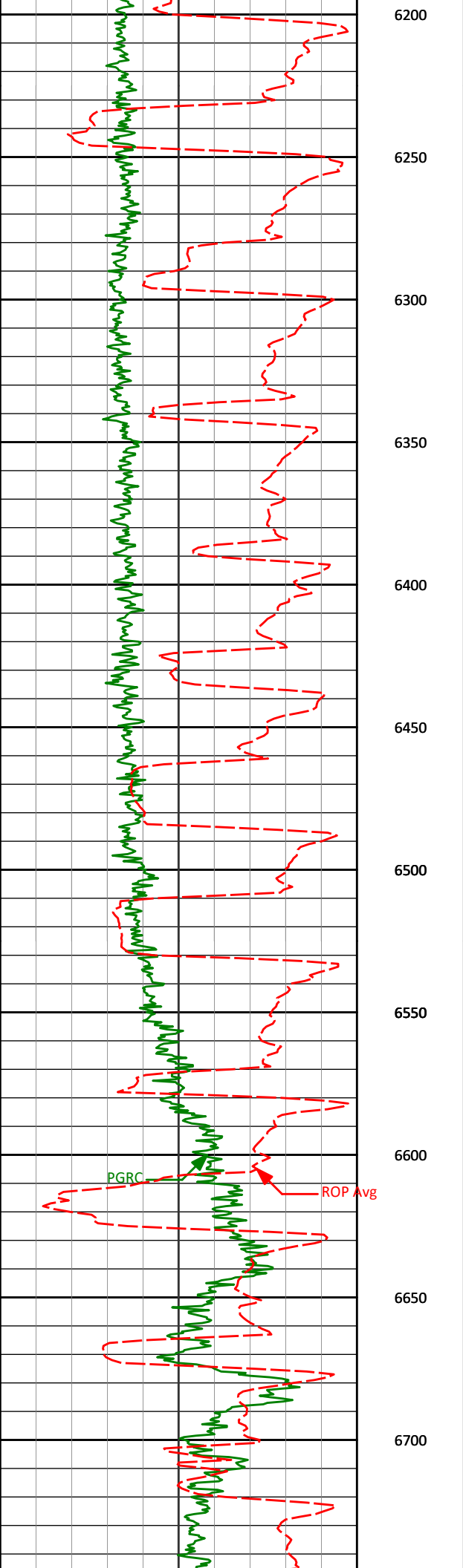
HALLIBURTON
Sperry Drilling Services

MD Main Log 1:600

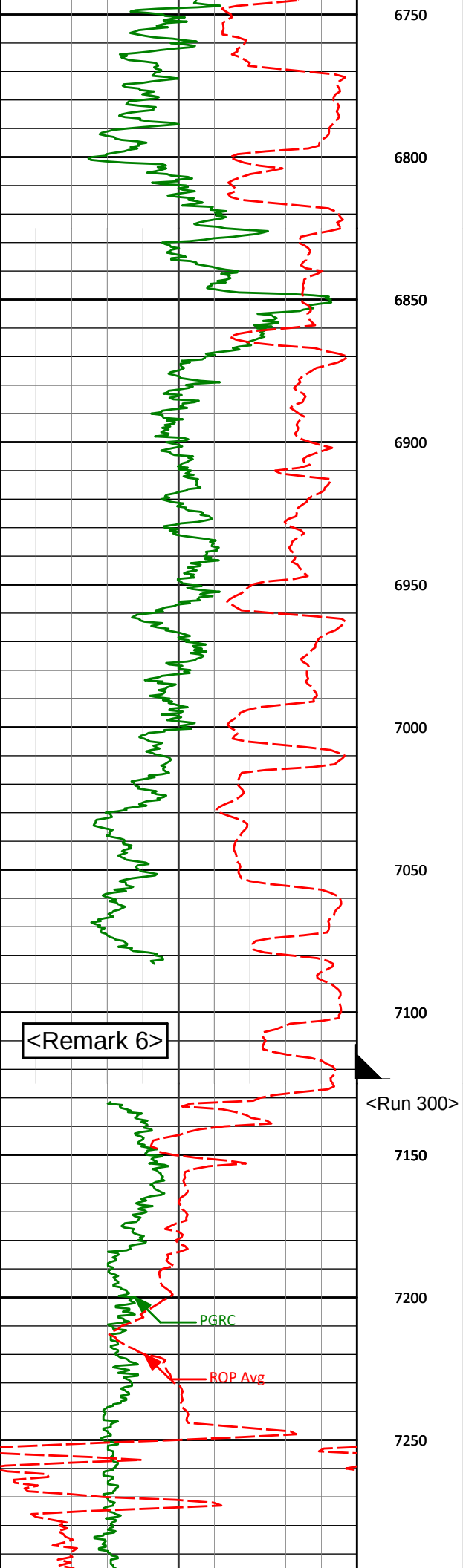
Noble Energy, Inc
Wells Ranch AA12-62-1HN
H&P 315
T6N R63W



Depth ft	Depth	Inc.	Azi.	TVD	V.S.
5950	5946'	13.60°	182.68°	5893.55'	-20.34'
<Run 200>					
6000 <KOP>					
6050	6051'	17.10°	203.09°	5994.87'	-9.40'
6100	6098'	19.76°	215.44°	6039.47'	-0.05'
6150	6146'	22.72°	225.19°	6084.22'	13.25'
	6193'	23.98°	226.03°	6127.37'	28.54'



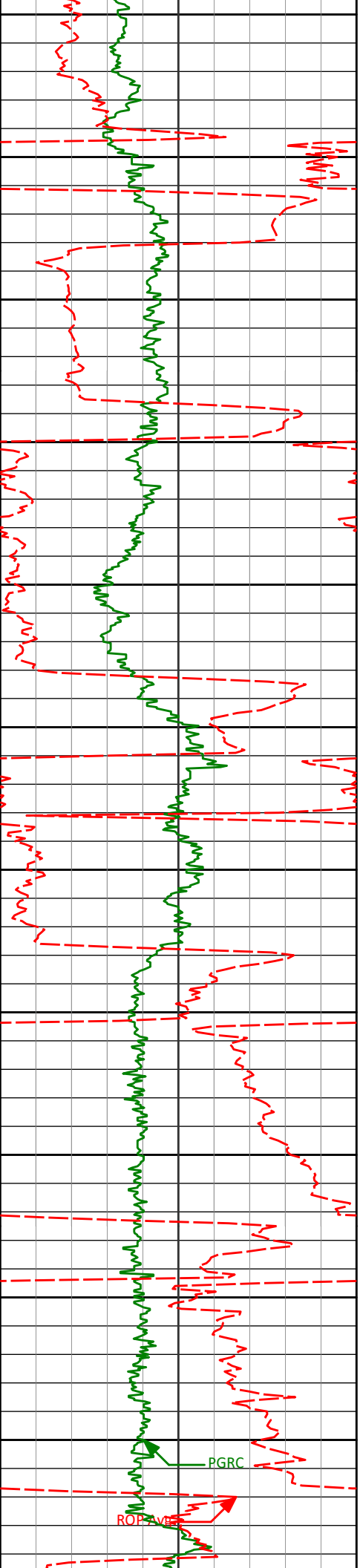
6241'	25.29°	232.57°	6171.01'	45.65'
6288'	27.16°	236.87°	6213.17'	64.35'
6336'	30.80°	240.00°	6255.16'	85.91'
6383'	34.89°	243.49°	6294.64'	110.05'
6431'	38.75°	246.22°	6333.06'	137.76'
6477'	40.85°	247.51°	6368.40'	166.38'
6525'	**42.76°**	**249.56°**	**6404.18'**	**197.68'**
6572'	46.92°	251.71°	6437.50'	230.32'
6620'	49.82°	255.16°	6469.39'	265.92'
6667'	54.22°	257.54°	6498.31'	302.86'
6715'	56.80°	259.68°	6525.49'	342.40'



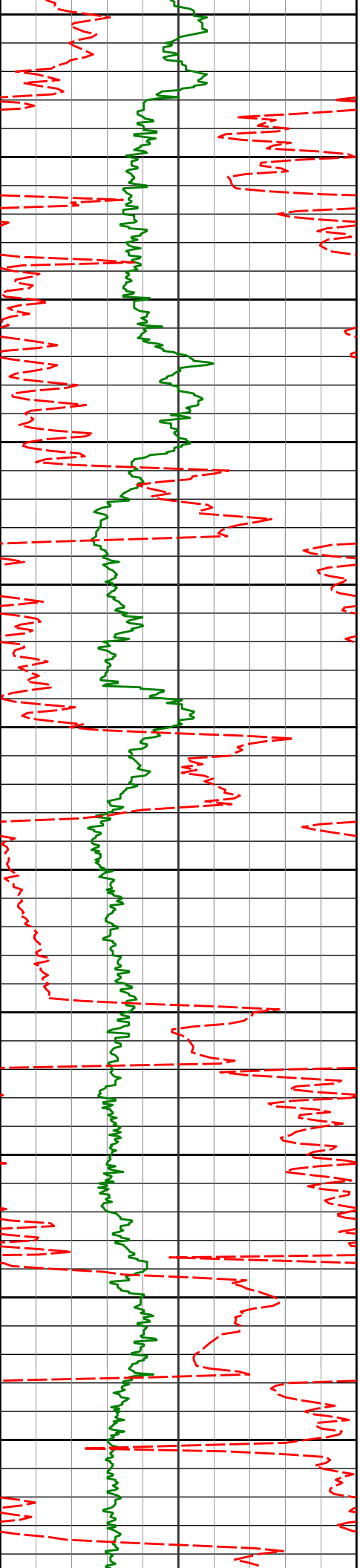
6762'	59.07°	261.89°	6550.44'	382.22'
6810'	61.81°	262.72°	6574.12'	423.94'
6857'	66.16°	263.32°	6594.73'	466.13'
6905'	71.36°	265.33°	6612.11'	510.75'
6952'	76.54°	266.86°	6625.10'	555.68'
7000'	80.34°	268.98°	6634.72'	602.30'
7075'	83.32°	268.24°	6645.38'	675.78'

<7" casing set at 7119' MD>

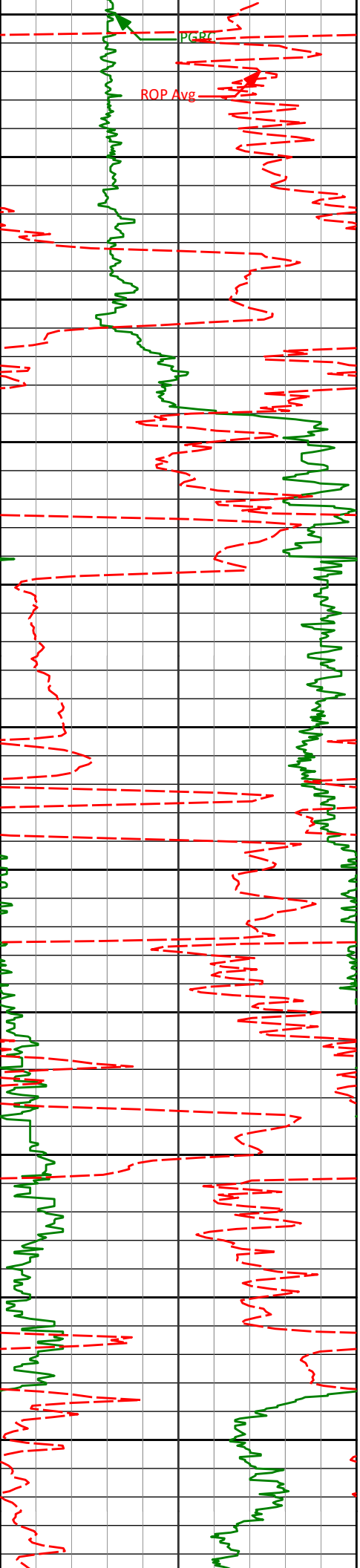
7187'	88.09°	270.31°	6653.77'	786.11'
7282'	90.34°	270.04°	6655.07'	879.74'



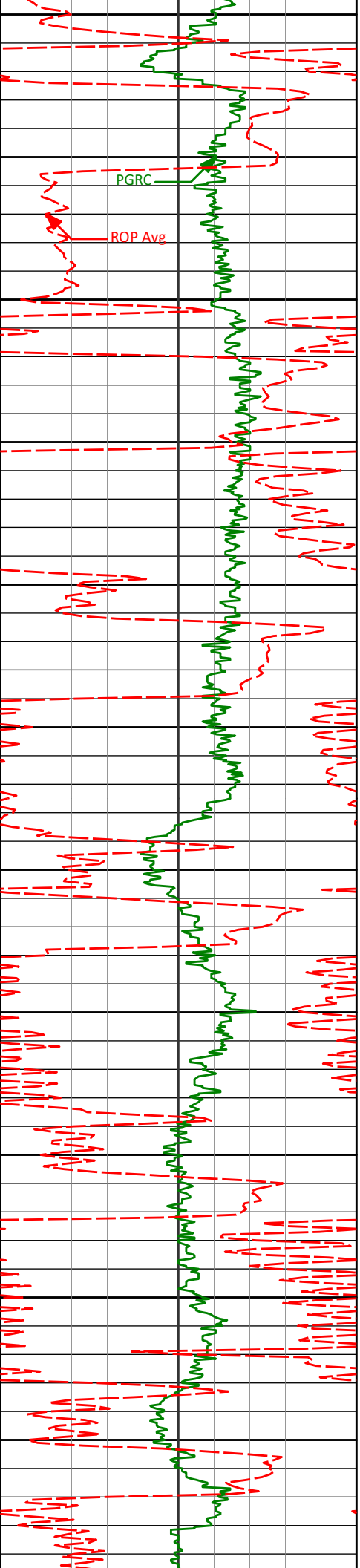
7377'	90.56°	269.03°	6654.33'	973.55'
7471'	90.95°	267.96°	6653.09'	1066.61'
7566'	90.83°	269.77°	6651.61'	1160.58'
7661'	89.75°	267.37°	6651.12'	1254.62'
7756'	89.85°	267.32°	6651.46'	1348.94'



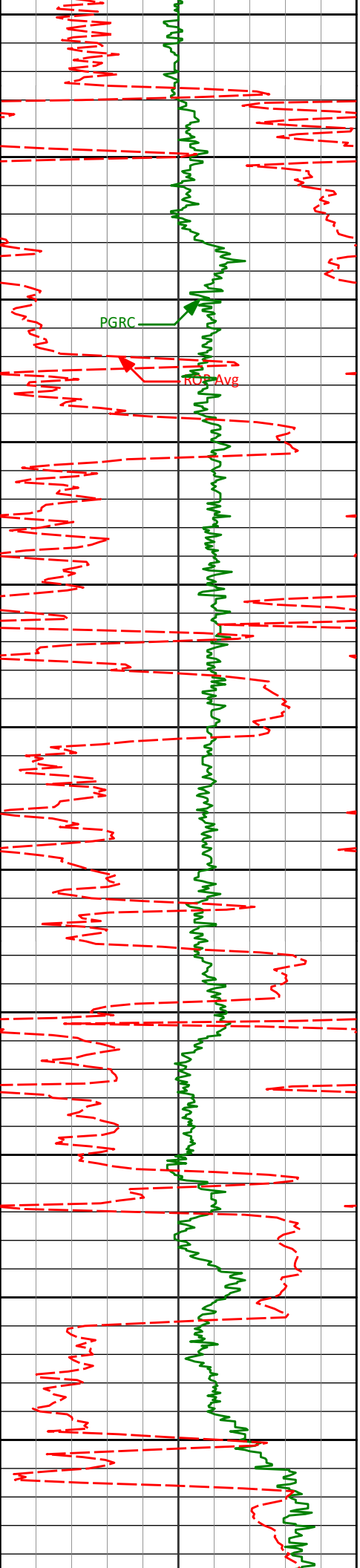
7851'	87.13°	267.55°	6653.96'	1443.20'
7946'	90.71°	268.30°	6655.75'	1537.36'
8041'	90.96°	267.94°	6654.37'	1631.50'
8135'	90.12°	269.27°	6653.48'	1724.55'
8230'	91.20°	269.66°	6652.39'	1818.38'
8325'	89.91°	272.55°	6651.47'	1911.73'



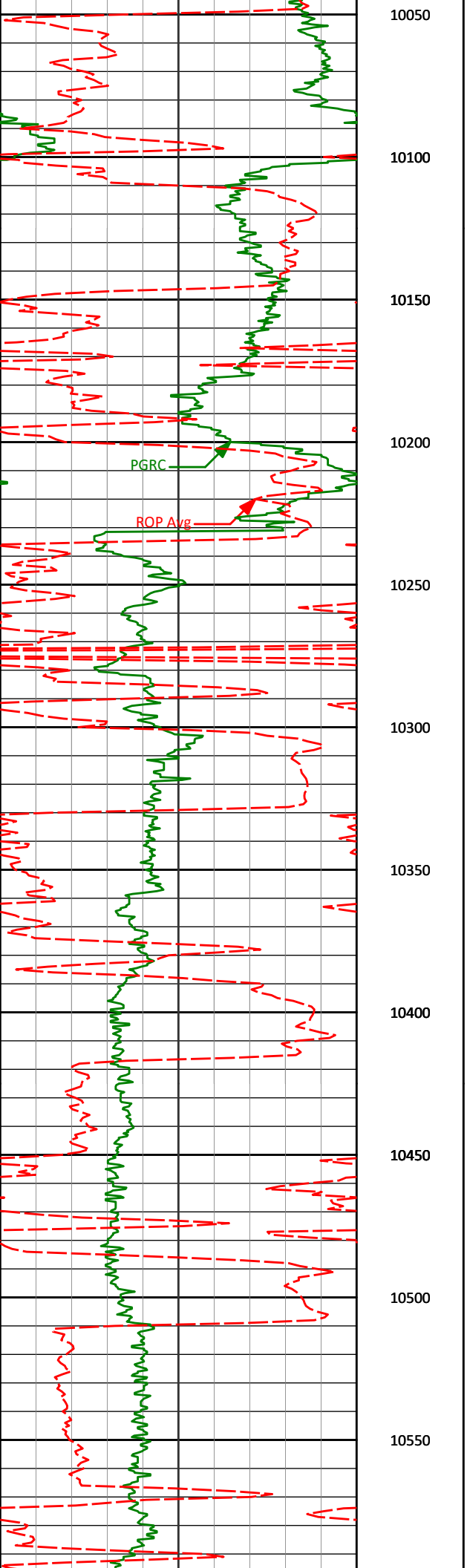
8400				
8420'	89.35°	271.70°	6652.08'	2004.77'
8450				
8500				
8515'	88.83°	271.68°	6653.59'	2097.94'
8550				
8600				
8610'	90.31°	270.32°	6654.31'	2191.33'
8650				
8700				
8705'	90.28°	270.97°	6653.82'	2284.83'
8750				
8800				
8800'	88.03°	267.87°	6655.23'	2378.65'
8850				
8900				
8895'	90.06°	267.34°	6656.81'	2472.89'



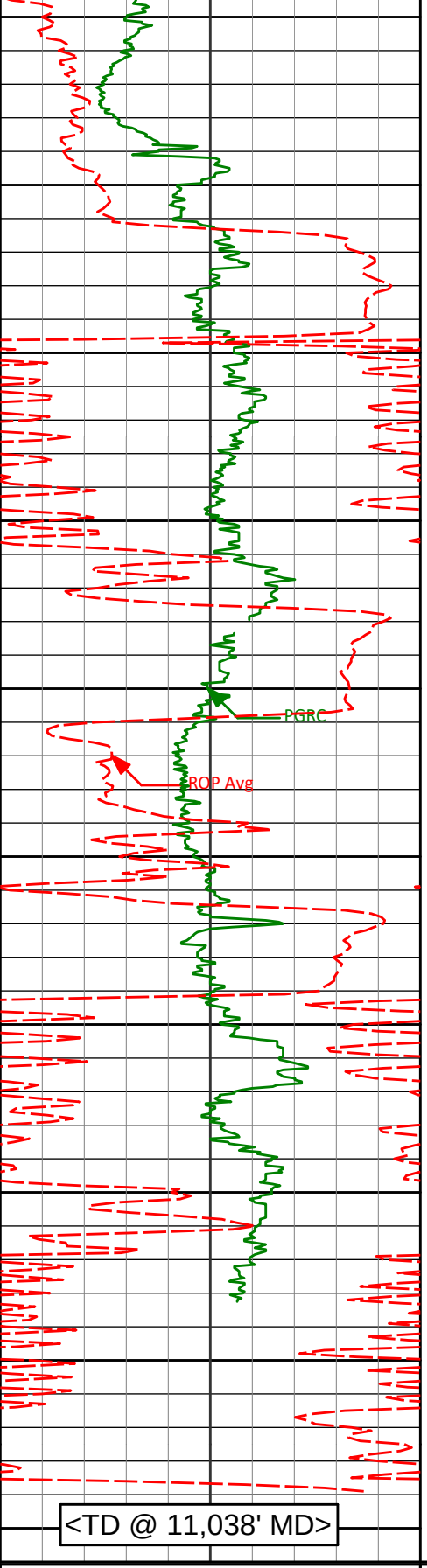
8950				
8989'	90.86°	267.32°	6656.06'	2566.22'
9000				
9050				
9084'	90.00°	267.35°	6655.34'	2660.53'
9100				
9150				
9179'	88.58°	268.23°	6656.51'	2754.75'
9200				
9250				
9274'	87.93°	268.67°	6659.40'	2848.78'
9300				
9350				
9369'	88.09°	269.36°	6662.70'	2942.67'
9400				
9450				
9464'	88.46°	270.33°	6665.56'	3036.36'



9559'	88.74°	270.21°	6667.88'	3129.94'
9654'	89.51°	271.47°	6669.33'	3223.38'
9749'	89.72°	269.44°	6669.97'	3316.93'
9844'	90.55°	269.86°	6669.74'	3410.71'
9939'	91.33°	269.88°	6668.18'	3504.42'
10033'	90.46°	271.32°	6666.71'	3596.94'



10128'	90.00°	271.12°	6666.33'	3690.27'
10223'	88.80°	270.52°	6667.33'	3783.72'
10318'	89.44°	270.02°	6668.78'	3877.32'
10413'	87.94°	268.96°	6670.95'	3971.12'
10508'	87.07°	268.32°	6675.09'	4065.07'



Depth ft	Depth	Inc.	Azi.	TVD	V.S.
10600	10603'	89.29°	269.61°	6678.10'	4158.97'
10650					
10700	10698'	89.97°	270.05°	6678.72'	4252.70'
10750					
10800	10793'	90.89°	270.89°	6678.00'	4346.25'
10850					
10900	10888'	88.39°	270.18°	6678.59'	4439.78'
10950					
11000	10975'	90.52°	269.83°	6679.41'	4525.57'
11050					

Avg Rate of Penetration
ROP Avg
500 feet per hr 0

PCG Gamma Ray
PGRC
0 api 300

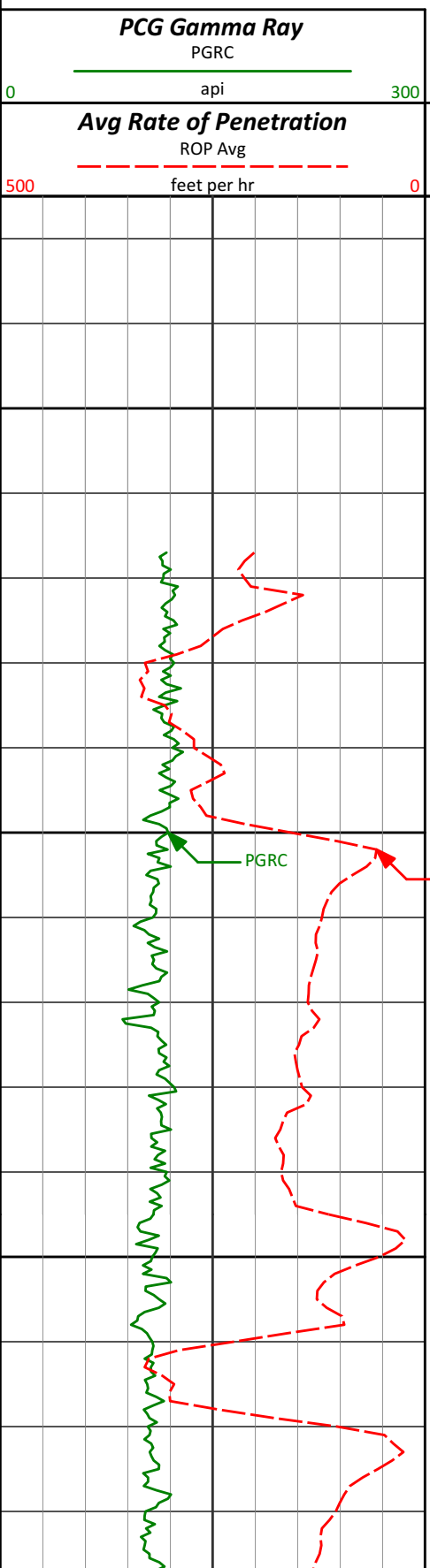
HALLIBURTON

HALLIBURTON

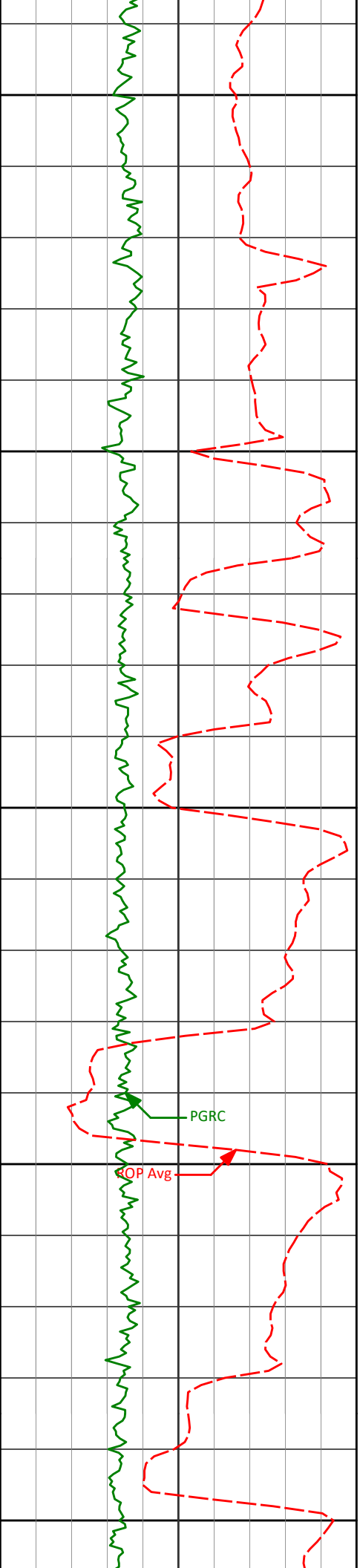
Sperry Drilling Services

MD Detail Log 1:240

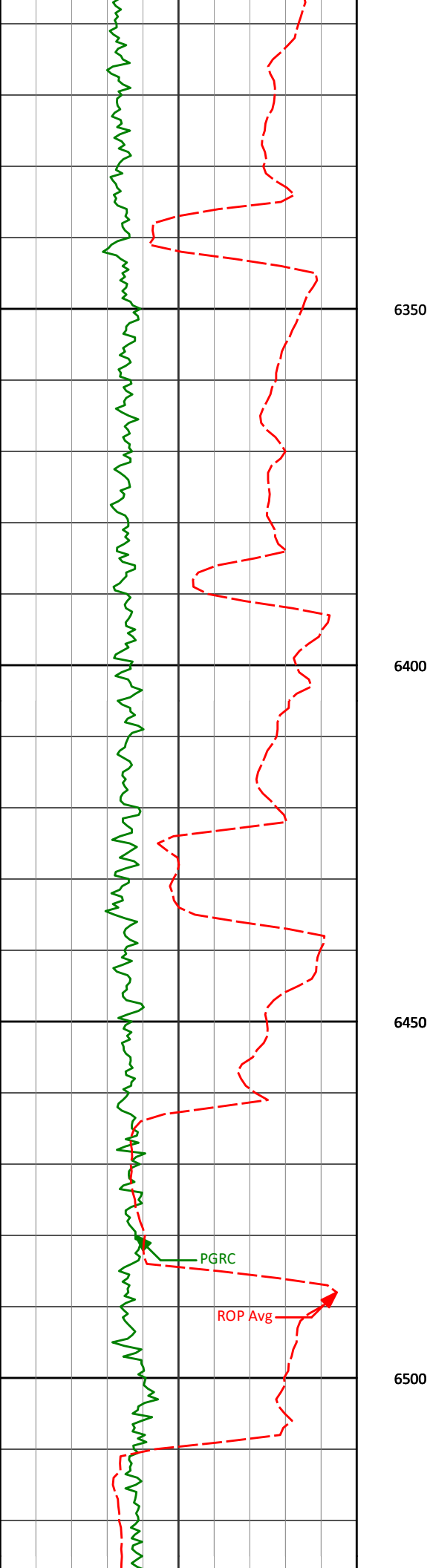
Noble Energy, Inc
Wells Ranch AA12-62-1HN
H&P 315
T6N R63W



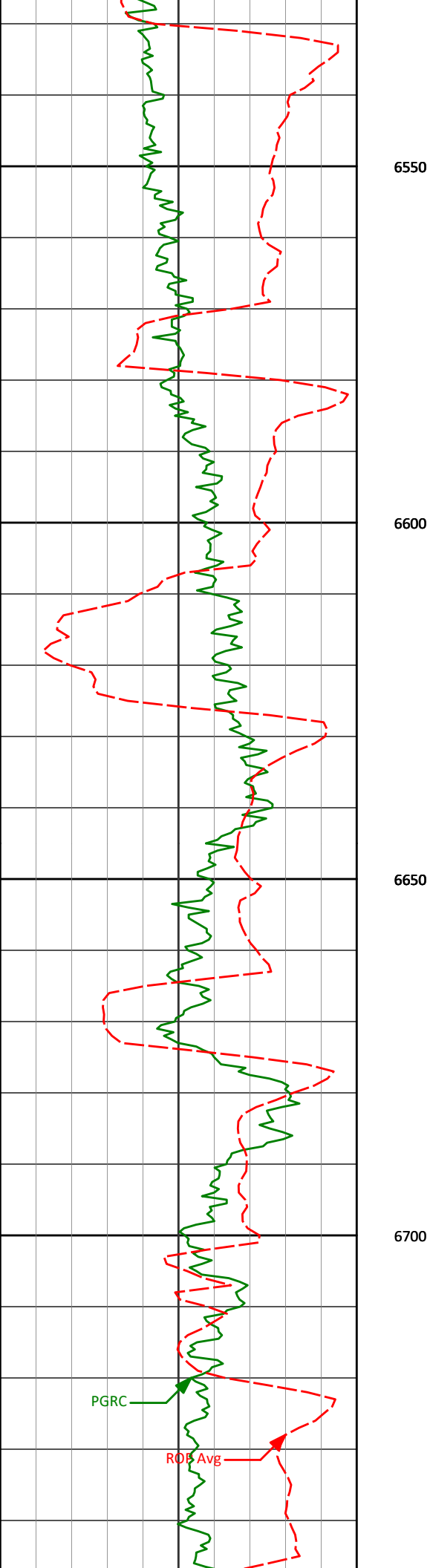
Depth ft	Depth	Inc.	Azi.	TVD	V.S.
	5946'	13.60°	182.68°	5893.55'	-20.34'
5950					
<Run 200>					
6000 <KOP>					
6050	6051'	17.10°	203.09°	5994.87'	-9.40'



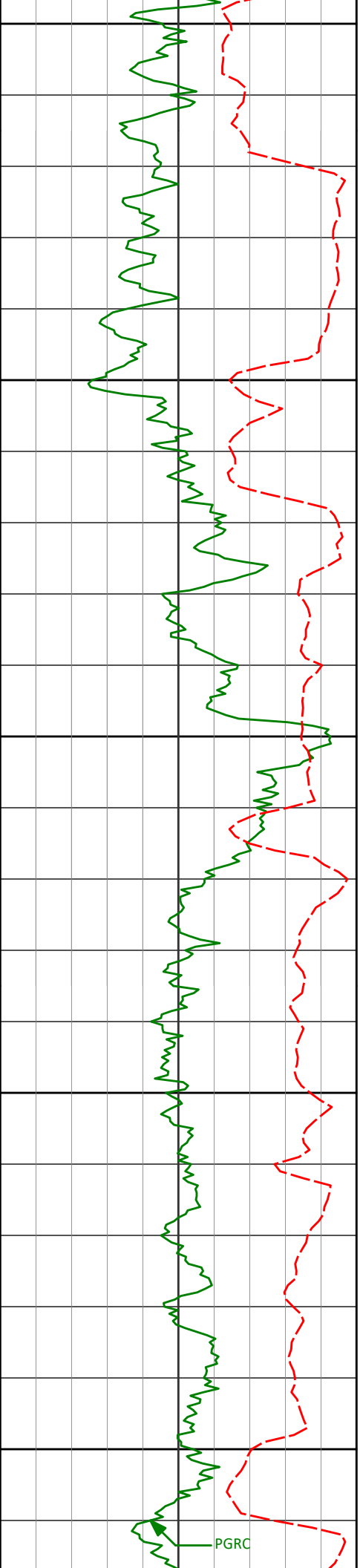
6098'	19.76°	215.44°	6039.47'	-0.05'
6146'	22.72°	225.19°	6084.22'	13.25'
6193'	23.98°	226.03°	6127.37'	28.54'
6241'	25.29°	232.57°	6171.01'	45.65'
6288'	27.16°	236.87°	6213.17'	64.35'



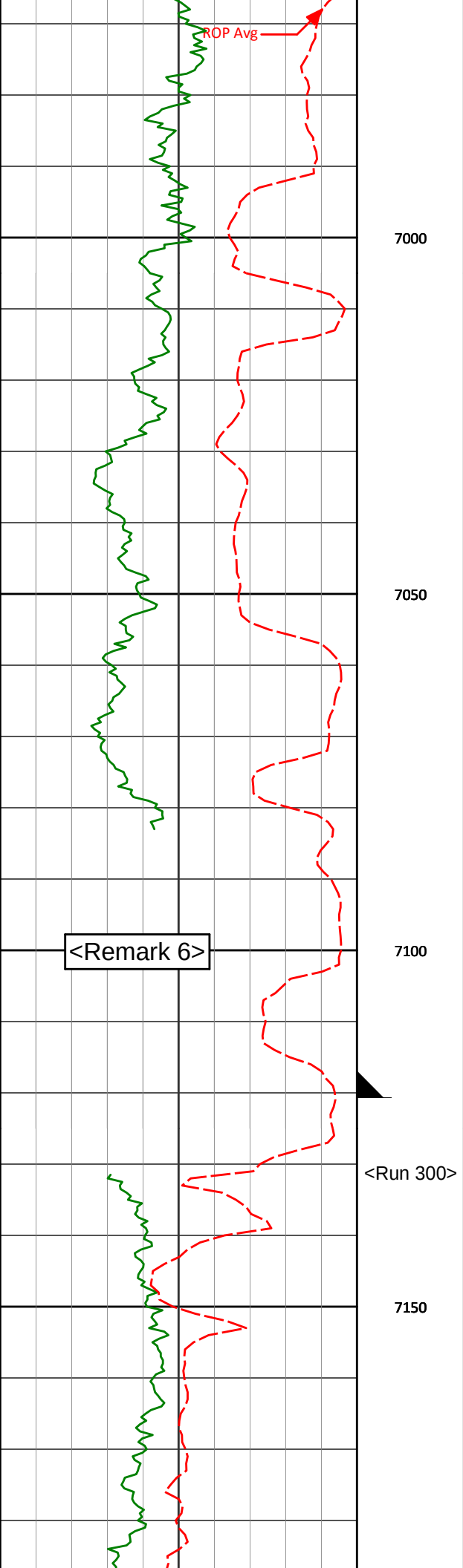
6336'	30.80°	240.00°	6255.16'	85.91'
6383'	34.89°	243.49°	6294.64'	110.05'
6431'	38.75°	246.22°	6333.06'	137.76'
6477'	40.85°	247.51°	6368.40'	166.38'
6525'	42.76°	249.56°	6404.18'	197.68'



6572'	46.92°	251.71°	6437.50'	230.32'
6620'	49.82°	255.16°	6469.39'	265.92'
6667'	54.22°	257.54°	6498.31'	302.86'
6715'	56.80°	259.68°	6525.49'	342.40'

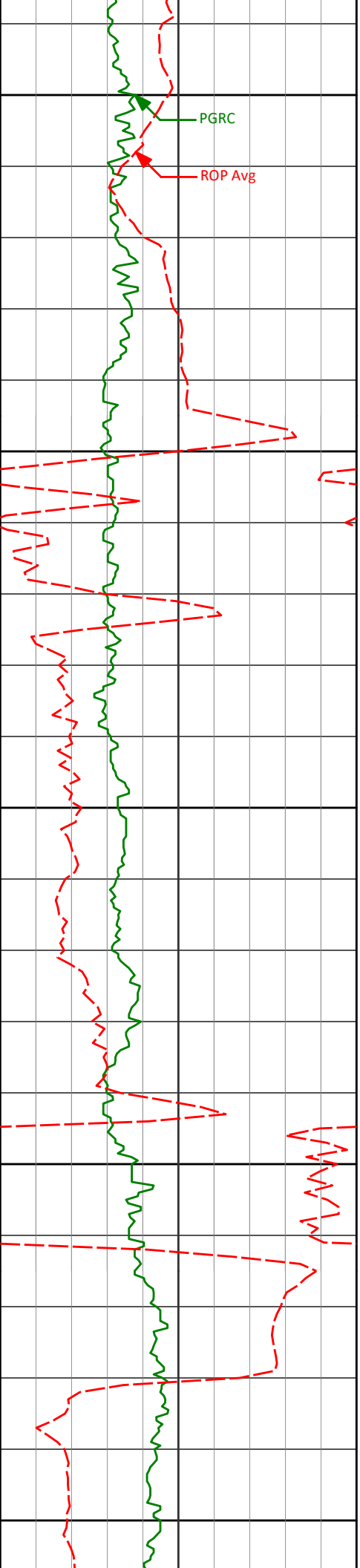


6762'	59.07°	261.89°	6550.44'	382.22'
6810'	61.81°	262.72°	6574.12'	423.94'
6857'	66.16°	263.32°	6594.73'	466.13'
6905'	71.36°	265.33°	6612.11'	510.75'
6952'	76.54°	266.86°	6625.10'	555.68'

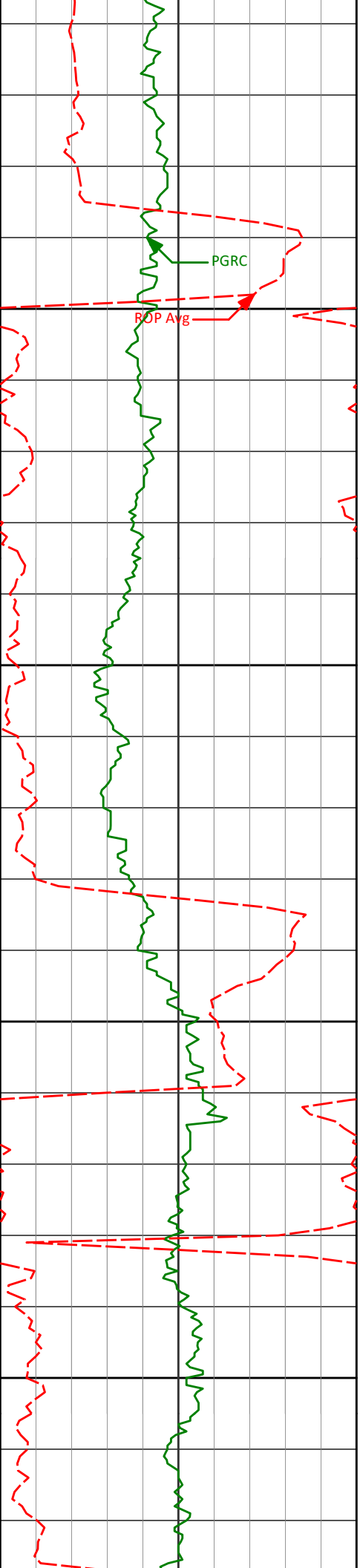


7000'	80.34°	268.98°	6634.72'	602.30'
7075'	83.32°	268.24°	6645.38'	675.78'

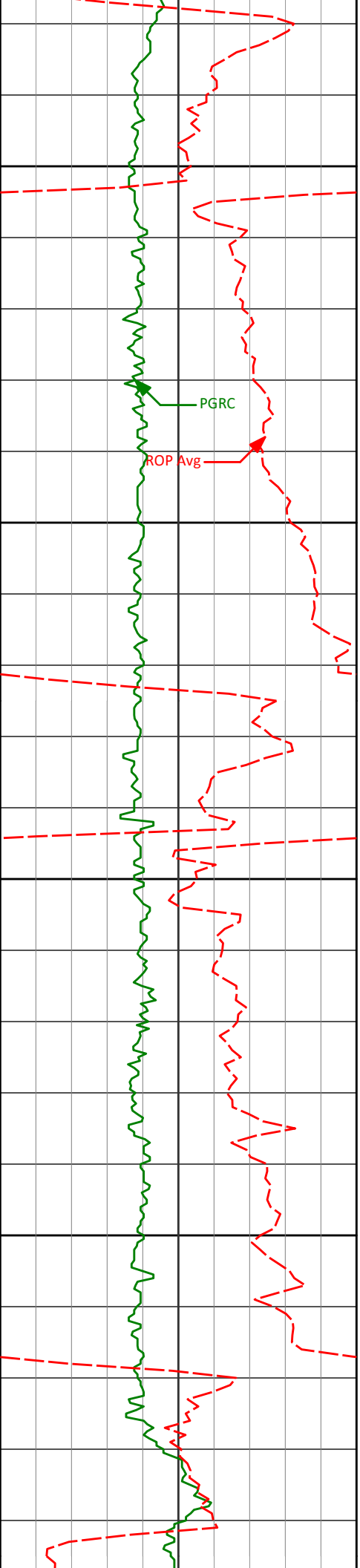
<7" casing set at 7119' MD>



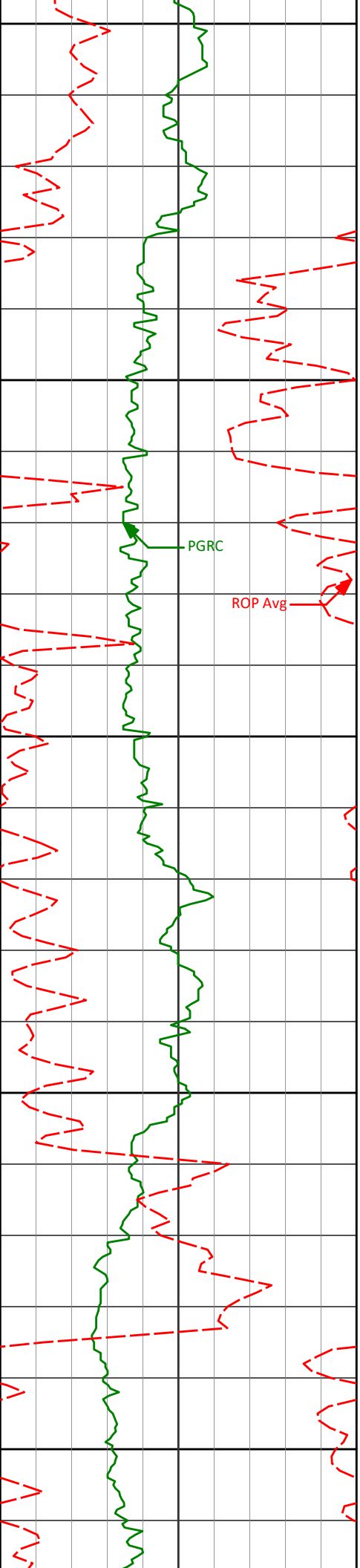
7187'	88.09°	270.31°	6653.77'	786.11'
7282'	90.34°	270.04°	6655.07'	879.74'
7377'	90.56°	269.03°	6654.33'	973.55'



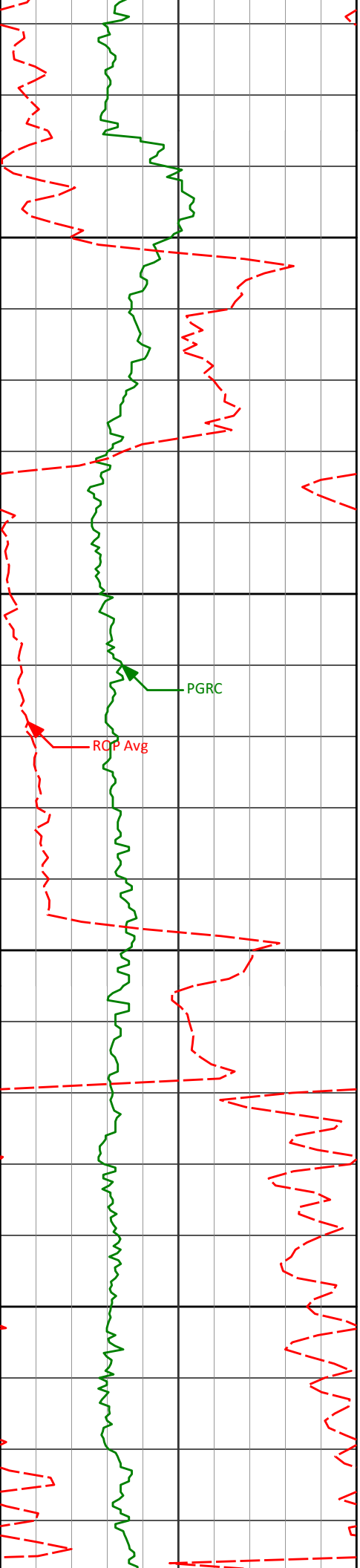
7471'	90.95°	267.96°	6653.09'	1066.61'
7566'	90.83°	269.77°	6651.61'	1160.58'



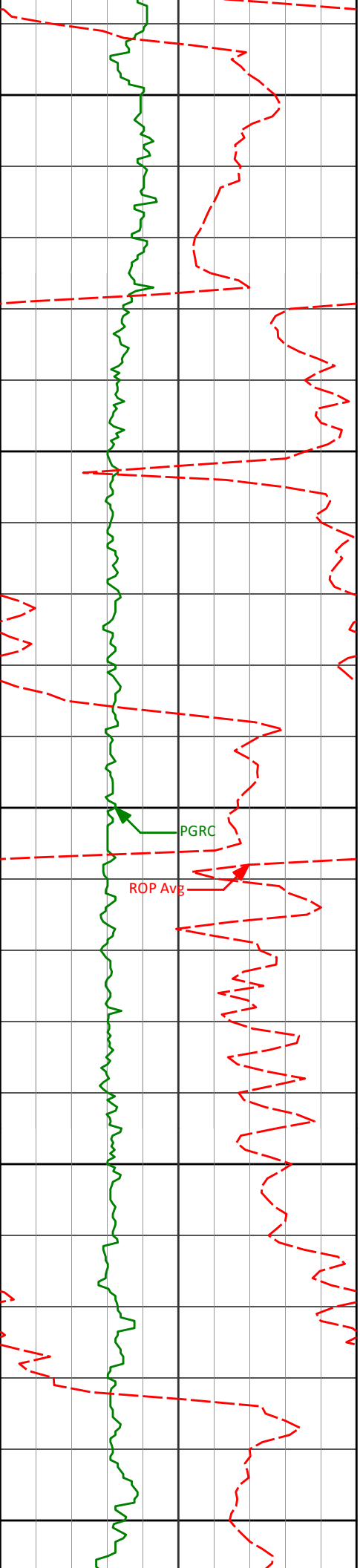
7661'	89.75°	267.37°	6651.12'	1254.62'
7756'	89.85°	267.32°	6651.46'	1348.94'



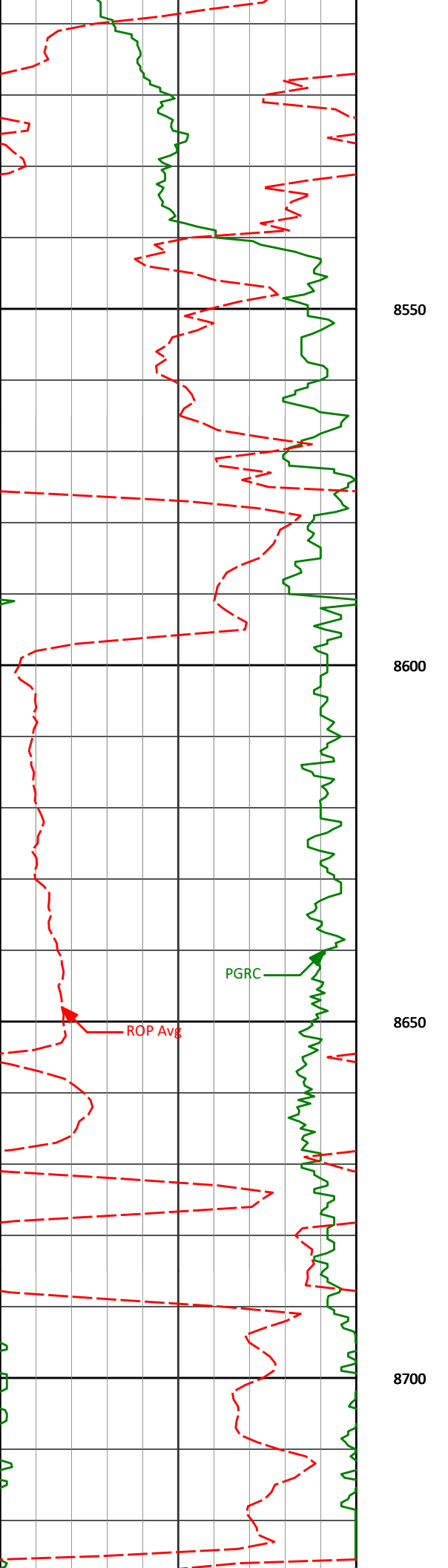
7851'	87.13°	267.55°	6653.96'	1443.20'
7946'	90.71°	268.30°	6655.75'	1537.36'
8041'	90.96°	267.94°	6654.37'	1631.50'



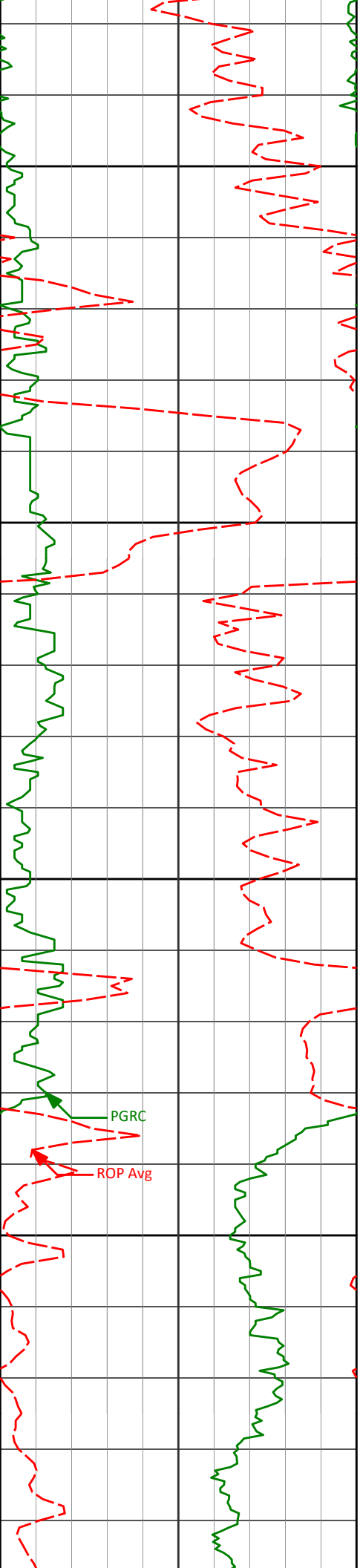
8135'	90.12°	269.27°	6653.48'	1724.55'
8230'	91.20°	269.66°	6652.39'	1818.38'



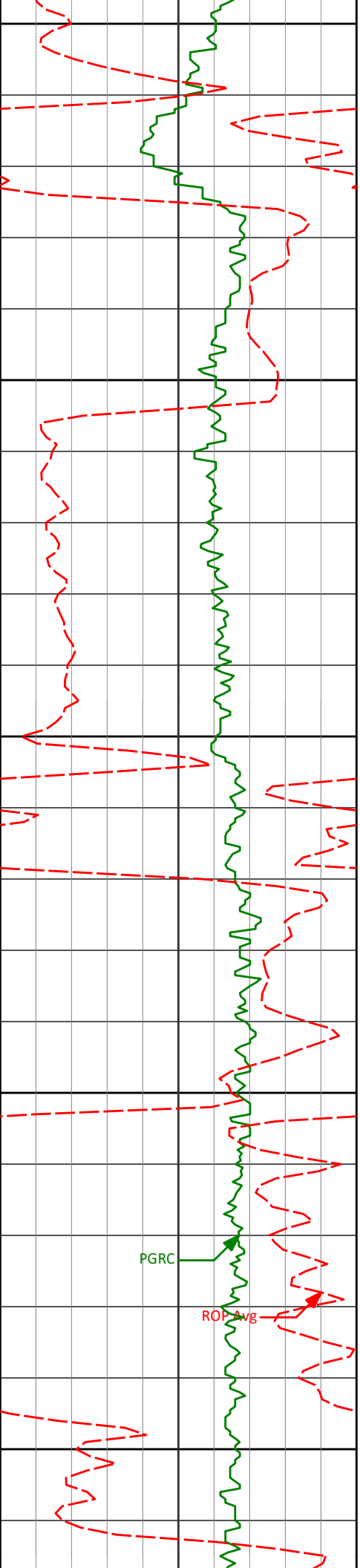
8300				
8325'	89.91°	272.55°	6651.47'	1911.73'
8350				
8400				
8420'	89.35°	271.70°	6652.08'	2004.77'
8450				
8500				



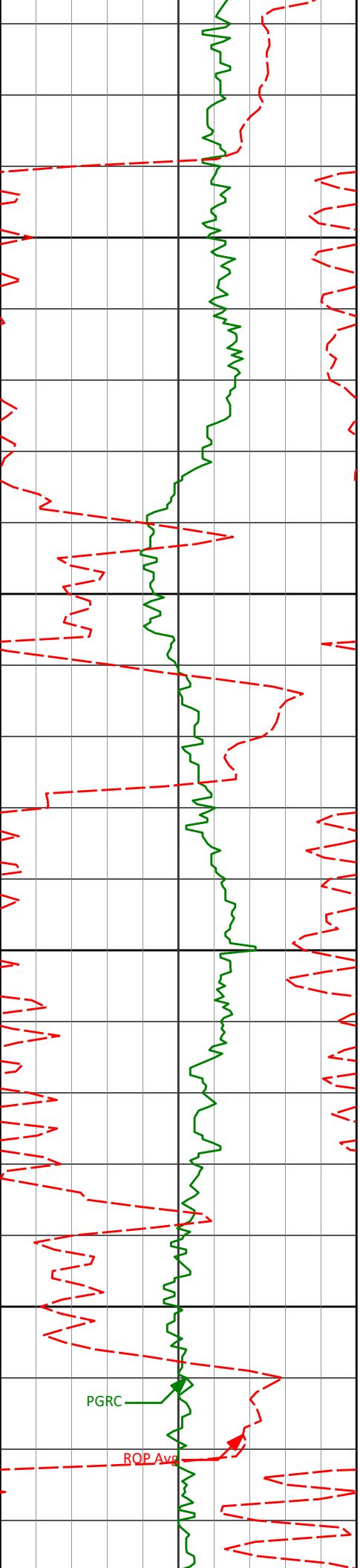
8515'	88.83°	271.68°	6653.59'	2097.94'
8610'	90.31°	270.32°	6654.31'	2191.33'
8705'	90.28°	270.97°	6653.82'	2284.83'



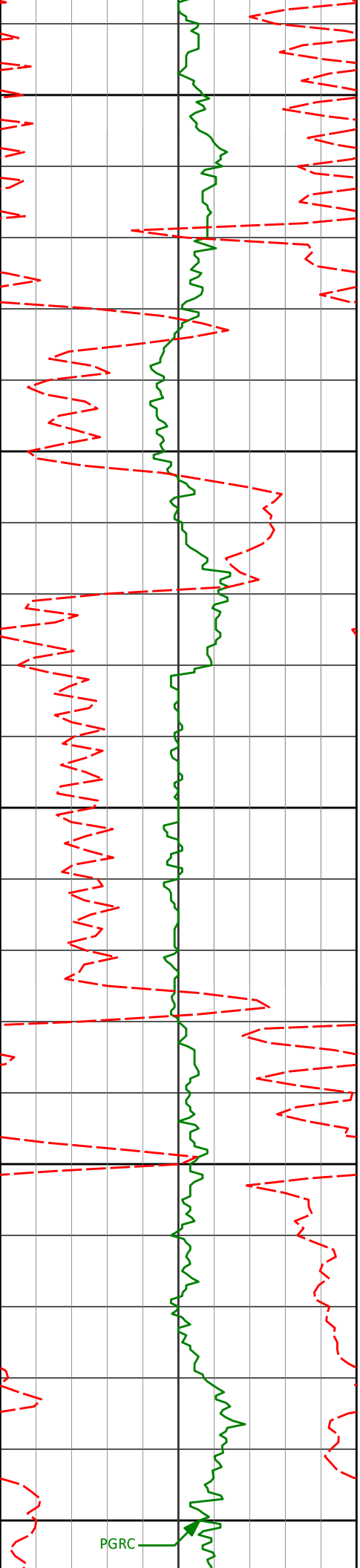
8750					
8800	8800'	88.03°	267.87°	6655.23'	2378.65'
8850					
	8895'	90.06°	267.34°	6656.81'	2472.89'
8900					



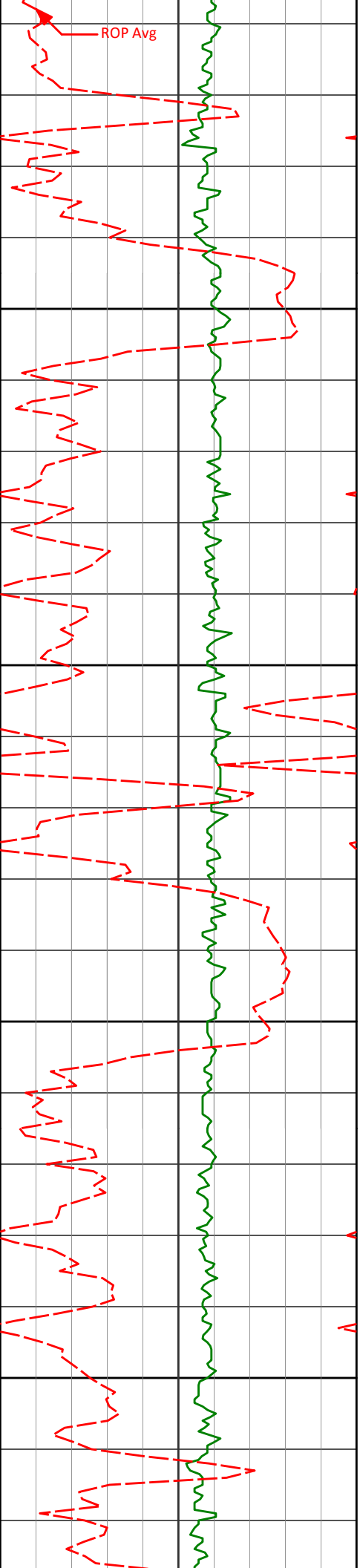
8989'	90.86°	267.32°	6656.06'	2566.22'
9084'	90.00°	267.35°	6655.34'	2660.53'



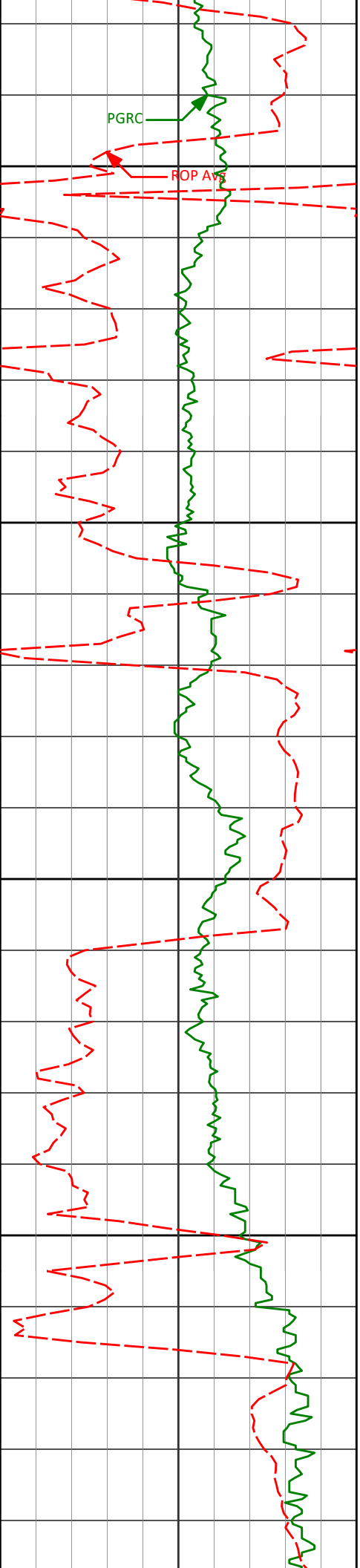
9179'	88.58°	268.23°	6656.51'	2754.75'
9274'	87.93°	268.67°	6659.40'	2848.78'
9369'	88.09°	269.36°	6662.70'	2942.67'



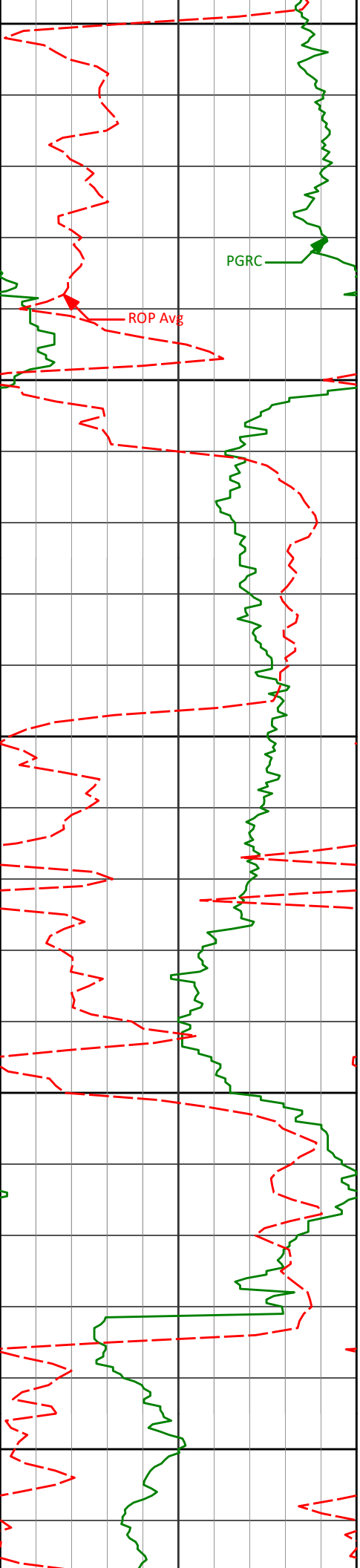
9464'	88.46°	270.33°	6665.56'	3036.36'
9559'	88.74°	270.21°	6667.88'	3129.94'



9654'	89.51°	271.47°	6669.33'	3223.38'
9749'	89.72°	269.44°	6669.97'	3316.93'



9844'	90.55°	269.86°	6669.74'	3410.71'
9939'	91.33°	269.88°	6668.18'	3504.42'
10033'	90.46°	271.32°	6666.71'	3596.94'



10050

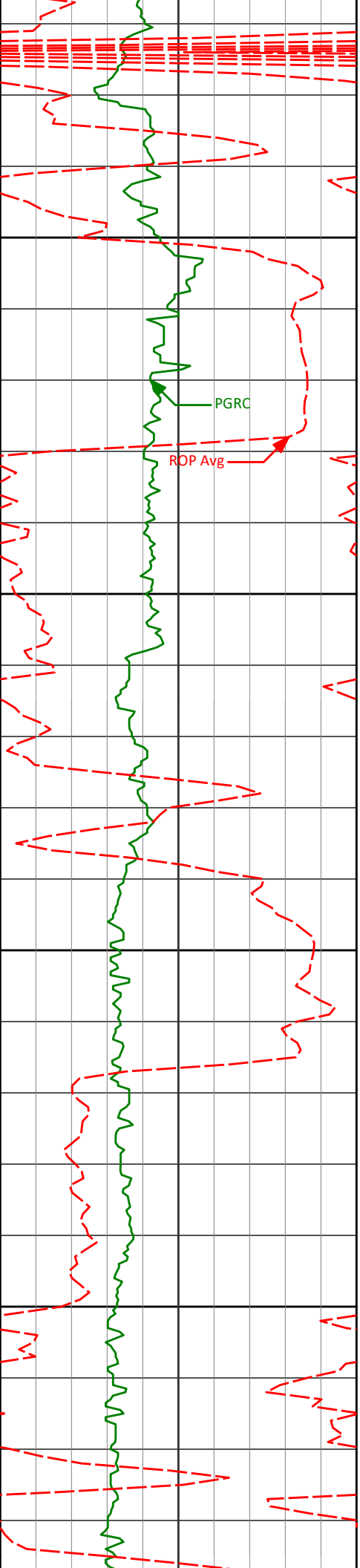
10100

10150

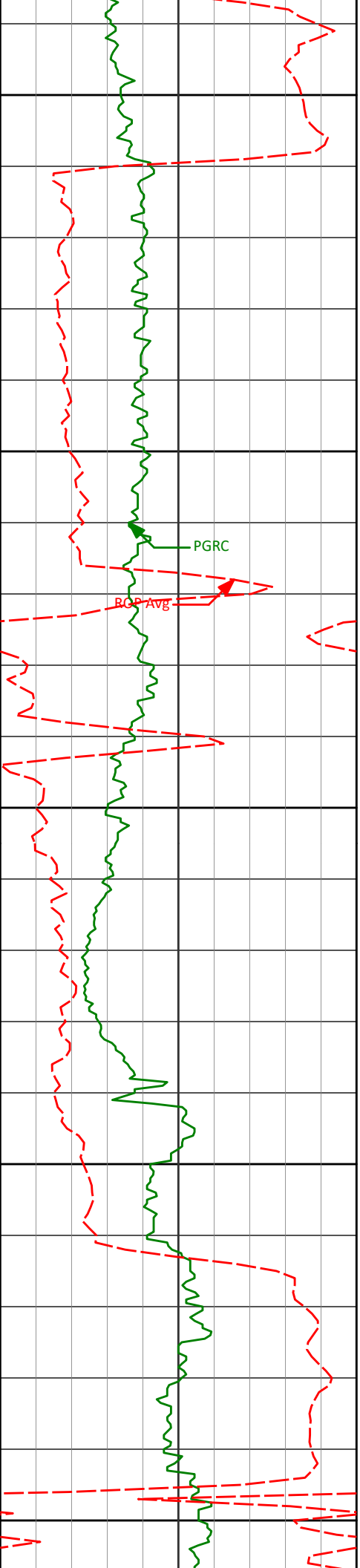
10200

10250

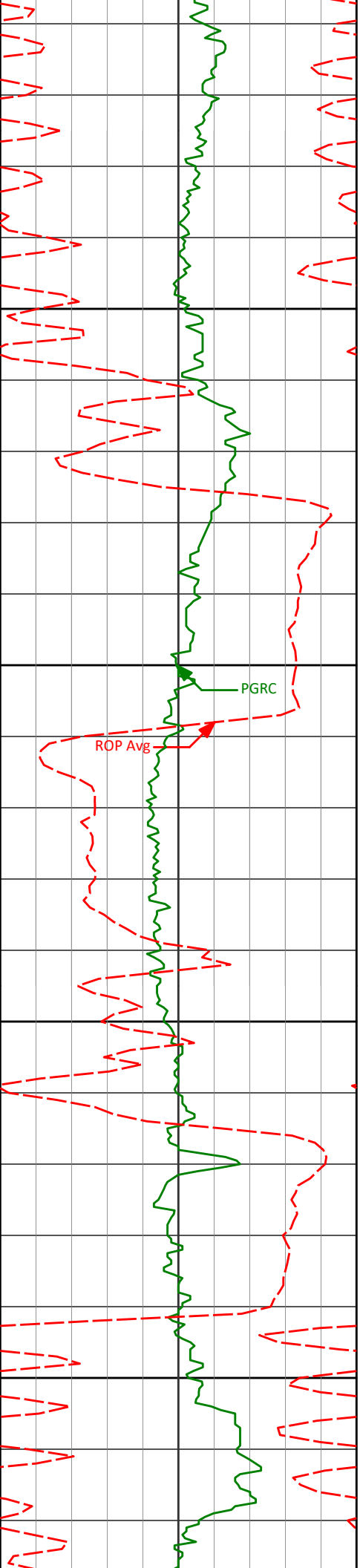
10128'	90.00°	271.12°	6666.33'	3690.27'
10223'	88.80°	270.52°	6667.33'	3783.72'



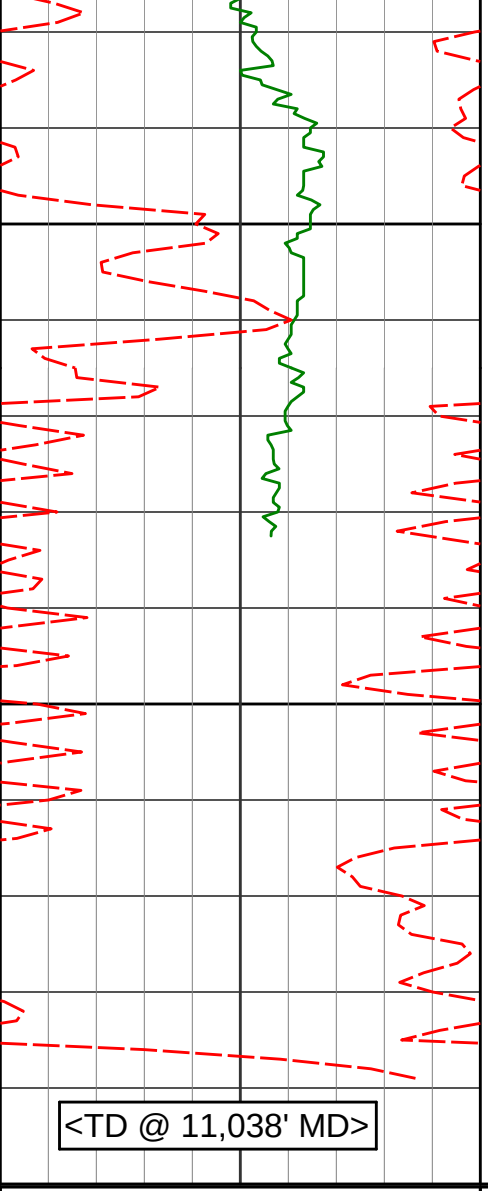
10318'	89.44°	270.02°	6668.78'	3877.32'
10413'	87.94°	268.96°	6670.95'	3971.12'



10508'	87.07°	268.32°	6675.09'	4065.07'
10603'	89.29°	269.61°	6678.10'	4158.97'
10698'	89.97°	270.05°	6678.72'	4252.70'



10793'	90.89°	270.89°	6678.00'	4346.25'
10888'	88.39°	270.18°	6678.59'	4439.78'



10975'	90.52°	269.83°	6679.41'	4525.57'	

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

DIRECTIONAL SURVEY REPORT

Noble Energy
Wells Ranch AA12-62-1HN
Wattenberg
Weld Colorado
USA
CA-XX-0009691524
Survey depth 694 ft created to tie surveys onto bottom of the surface casing shoe.

Last survey is a projection to TD.

Measured Depth (feet)	*Inclination (degrees)*	*Direction (degrees)*	*Vertical Depth (feet)*	*Latitude (feet)*	*Departure (feet)*	*Vertical Section (feet)*	*Dogleg (deg/100ft)*
694.00	**0.00**	**0.00**	**694.00**	**0.00 N**	**0.00 E**	**0.00**	**TIE-IN**
802.00	**0.65**	**203.26**	**802.00**	**0.56 S**	**0.24 W**	**0.33**	**0.60**
1079.00	**0.87**	**252.46**	**1078.98**	**2.63 S**	**2.86 W**	**3.25**	**0.24**

1356.00	0.41	229.49	1355.96	3.91 S	5.61 W	6.18	0.19
1641.00	0.65	285.52	1640.95	4.14 S	7.95 W	8.52	0.19
1926.00	0.65	217.37	1925.93	4.98 S	10.48 W	11.16	0.26
2211.00	0.51	294.57	2210.92	5.74 S	12.60 W	13.38	0.26
2495.00	1.60	6.52	2494.88	1.27 S	13.29 W	13.32	0.54
2780.00	0.52	196.93	2779.85	1.44 N	13.22 W	12.80	0.74
3064.00	0.37	224.42	3063.84	0.46 S	14.24 W	14.12	0.09
3159.00	0.39	181.18	3158.84	1.00 S	14.46 W	14.43	0.30
3254.00	2.27	184.10	3253.81	3.20 S	14.60 W	14.93	1.97
3349.00	3.63	161.86	3348.68	7.94 S	13.80 W	14.92	1.84
3444.00	4.75	157.89	3443.43	14.43 S	11.38 W	13.62	1.22
3539.00	6.82	152.69	3537.94	23.09 S	7.32 W	11.04	2.24
3633.00	8.14	167.77	3631.15	34.55 S	3.35 W	9.02	2.51
3728.00	10.38	170.28	3724.91	49.56 S	0.48 W	8.68	2.39
3823.00	12.56	166.75	3818.00	68.05 S	3.34 E	7.98	2.42
3918.00	13.48	166.46	3910.56	88.87 S	8.30 E	6.53	0.96
4013.00	14.14	168.26	4002.81	110.99 S	13.25 E	5.31	0.83
4108.00	13.43	170.11	4095.08	133.22 S	17.50 E	4.79	0.88
4203.00	12.95	169.05	4187.57	154.54 S	21.42 E	4.46	0.57
4298.00	10.73	173.34	4280.55	173.77 S	24.47 E	4.64	2.51
4393.00	11.26	171.20	4373.81	191.72 S	26.91 E	5.20	0.70
4488.00	11.95	165.63	4466.87	210.41 S	30.77 E	4.49	1.39
4582.00	12.16	165.17	4558.79	229.41 S	35.72 E	2.76	0.25
4677.00	11.64	163.08	4651.75	248.25 S	41.07 E	0.60	0.72
4772.00	11.41	165.08	4744.84	266.50 S	46.28 E	-1.52	0.48
4867.00	12.25	152.33	4837.83	284.51 S	53.38 E	-5.54	2.88
4962.00	11.27	154.58	4930.84	301.82 S	62.05 E	-11.22	1.14
5057.00	11.24	155.35	5024.01	318.62 S	69.90 E	-16.18	0.16
5152.00	10.94	156.74	5117.24	335.32 S	77.32 E	-20.73	0.43
5246.00	10.27	156.43	5209.63	351.19 S	84.19 E	-24.88	0.72
5341.00	10.93	154.84	5303.01	367.10 S	91.40 E	-29.36	0.76
5436.00	11.43	164.00	5396.22	384.30 S	97.83 E	-32.85	1.94
5531.00	11.52	175.71	5489.33	402.81 S	101.13 E	-33.04	2.45
5626.00	13.05	175.54	5582.15	422.97 S	102.68 E	-31.23	1.61
5721.00	13.94	180.59	5674.53	445.10 S	103.39 E	-28.27	1.55
5816.00	12.87	179.12	5766.94	467.12 S	103.44 E	-24.67	1.18
5909.00	13.15	177.67	5857.56	488.04 S	104.03 E	-21.79	0.47
5946.00	13.60	182.68	5893.55	496.59 S	103.99 E	-20.34	3.35
6051.00	17.10	203.09	5994.87	523.15 S	97.36 E	-9.40	6.08
6098.00	19.76	215.44	6039.47	535.99 S	90.04 E	-0.05	10.02
6146.00	22.72	225.19	6084.22	549.13 S	78.75 E	13.25	9.58
6193.00	23.98	226.03	6127.37	562.16 S	65.44 E	28.54	2.77
6241.00	25.29	232.57	6171.01	575.17 S	50.28 E	45.65	6.30
6288.00	27.16	236.87	6213.17	587.13 S	33.32 E	64.35	5.68
6336.00	30.80	240.00	6255.16	599.27 S	13.49 E	85.91	8.21
6383.00	34.89	243.49	6294.64	611.29 S	8.97 W	110.05	9.60
6431.00	38.75	246.22	6333.06	623.48 S	35.01 W	137.76	8.73
6477.00	40.85	247.51	6368.40	635.04 S	62.09 W	166.38	4.90
6525.00	42.76	249.56	6404.18	646.74 S	91.87 W	197.68	4.90
6572.00	46.92	251.71	6437.50	657.70 S	123.13 W	230.32	9.43
6620.00	49.82	255.16	6469.39	667.91 S	157.52 W	265.92	8.09
6667.00	54.22	257.54	6498.31	676.62 S	193.51 W	302.86	10.16
6715.00	56.80	259.68	6525.49	684.42 S	232.29 W	342.40	6.51
6762.00	59.07	261.89	6550.44	690.79 S	271.60 W	382.22	6.27
6810.00	61.81	262.72	6574.12	696.38 S	312.97 W	423.94	5.90
6857.00	66.16	263.32	6594.73	701.51 S	354.88 W	466.13	9.33
6905.00	71.36	265.33	6612.11	705.91 S	399.39 W	510.75	11.50
6952.00	76.54	266.86	6625.10	708.98 S	444.43 W	555.68	11.46
7000.00	80.34	268.98	6634.72	710.68 S	491.42 W	602.30	9.02
7075.00	83.32	268.24	6645.38	712.48 S	565.63 W	675.78	4.08
7187.00	88.09	270.31	6653.77	713.89 S	677.26 W	786.11	4.64
7282.00	90.34	270.04	6655.07	713.60 S	772.25 W	879.74	2.38
7377.00	90.56	269.03	6654.33	714.36 S	867.24 W	973.55	1.09
7471.00	90.95	267.96	6653.09	716.82 S	961.20 W	1066.61	1.21
7566.00	90.83	269.77	6651.61	718.70 S	1056.17 W	1160.58	1.90
7661.00	89.75	267.37	6651.12	721.07 S	1151.13 W	1254.62	2.77
7756.00	89.85	267.32	6651.46	725.47 S	1246.02 W	1348.94	0.11
7851.00	87.13	267.55	6653.96	729.71 S	1340.89 W	1443.20	2.87
7946.00	90.71	268.30	6655.75	733.15 S	1435.79 W	1537.36	3.85
8041.00	90.96	267.94	6654.37	736.26 S	1530.73 W	1631.50	0.46
8135.00	90.12	269.27	6653.48	738.55 S	1624.70 W	1724.55	1.67

8230.00	91.20	269.66	6652.39	739.44 S	1719.68 W	1818.38	1.21
8325.00	89.91	272.55	6651.47	737.61 S	1814.65 W	1911.73	3.34
8420.00	89.35	271.70	6652.08	734.09 S	1909.58 W	2004.77	1.07
8515.00	88.83	271.68	6653.59	731.28 S	2004.53 W	2097.94	0.55
8610.00	90.31	270.32	6654.31	729.62 S	2099.51 W	2191.33	2.12
8705.00	90.28	270.97	6653.82	728.55 S	2194.50 W	2284.83	0.69
8800.00	88.03	267.87	6655.23	729.51 S	2289.46 W	2378.65	4.03
8895.00	90.06	267.34	6656.81	733.47 S	2384.36 W	2472.89	2.22
8989.00	90.86	267.32	6656.06	737.85 S	2478.26 W	2566.22	0.85
9084.00	90.00	267.35	6655.34	742.27 S	2573.15 W	2660.53	0.91
9179.00	88.58	268.23	6656.51	745.93 S	2668.07 W	2754.75	1.76
9274.00	87.93	268.67	6659.40	748.49 S	2762.99 W	2848.78	0.82
9369.00	88.09	269.36	6662.70	750.12 S	2857.92 W	2942.67	0.75
9464.00	88.46	270.33	6665.56	750.38 S	2952.87 W	3036.36	1.09
9559.00	88.74	270.21	6667.88	749.93 S	3047.84 W	3129.94	0.32
9654.00	89.51	271.47	6669.33	748.54 S	3142.82 W	3223.38	1.55
9749.00	89.72	269.44	6669.97	747.78 S	3237.81 W	3316.93	2.14
9844.00	90.55	269.86	6669.74	748.36 S	3332.81 W	3410.71	0.98
9939.00	91.33	269.88	6668.18	748.57 S	3427.79 W	3504.42	0.81
10033.00	90.46	271.32	6666.71	747.59 S	3521.77 W	3596.94	1.79
10128.00	90.00	271.12	6666.33	745.56 S	3616.75 W	3690.27	0.53
10223.00	88.80	270.52	6667.33	744.20 S	3711.73 W	3783.72	1.42
10318.00	89.44	270.02	6668.78	743.76 S	3806.72 W	3877.32	0.86
10413.00	87.94	268.96	6670.95	744.61 S	3901.69 W	3971.12	1.93
10508.00	87.07	268.32	6675.09	746.86 S	3996.57 W	4065.07	1.14
10603.00	89.29	269.61	6678.10	748.58 S	4091.50 W	4158.97	2.70
10698.00	89.97	270.05	6678.72	748.86 S	4186.50 W	4252.70	0.85
10793.00	90.89	270.89	6678.00	748.07 S	4281.49 W	4346.25	1.31
10888.00	88.39	270.18	6678.59	747.18 S	4376.47 W	4439.78	2.74
10975.00	90.52	269.83	6679.41	747.17 S	4463.46 W	4525.57	2.48
11038.00	90.52	269.83	6678.83	747.36 S	4526.46 W	4587.73	0.01

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 260.62 DEGREES (GRID)
A TOTAL CORRECTION OF 7.82 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11038.00 FEET
IS 4587.74 FEET ALONG 260.62 DEGREES (GRID)

Date Printed:10 September 2012