HALLIBURTON | **Sperry Drilling**

PCGK : Pressure Case Gamma
PCDC: Pressure Case Directional

1 : 600 / 1 : 240

Country	: USA
Field	: Wattenberg
Location	: Lat: 40° 24' 35.32" North Long: 104° 32' 40.52" West
Well	: Seyler B10-62-1HN
Company	: Noble Energy
Rig	: H&P 315

Company : **Noble Energy**
Rig : **H&P 315**
Well : **Seyler B10-62-1HN**
Field : **Wattenberg**
Country : **USA**
API Number : **05-123-37727**

LOCATION

Latitude : **40° 24' 35.32" North**
Longitude : **104° 32' 40.52" West**
UTM Easting = **3,266,047.927 ft**
UTM Northing = **1,393,567.402 ft**

Other Services
Directional Drilling

Permanent Datum : **Ground Level** Elevation : **4583.00 ft**
Log Measured From : **Drill Floor** **24.00 ft** Above Permanent Datum
Drilling Measured From : **Drill Floor**

MD LOG

Elev. KB **N/A**
DF **4607.00 ft**
GL **4583.00 ft**
WD **N/A**

Depth Logged : **625.00 ft** To **10,738.00 ft**
Date Logged : **23-Dec-13** To **31-Dec-13**
Total Depth MD : **10,738.00 ft** TVD : **6,574.70 ft**
Spud Date : **23-Dec-13**

Unit No. : **11610113**
Job No. :**CA-XX-0900916998**
Plot Type : **Final**
Plot Date : **01-Jan-14**

Run No.	Borehole Record (MD) Size	From	To	Run No.	Borehole Record (MD) Size	From	To
2	8.750 in	625.00 ft	5,970.00 ft				
3	8.750 in	5,970.00 ft	7,024.00 ft				
4	6.125 in	7,024.00 ft	9,857.00 ft				
5	6.125 in	9,857.00 ft	10,738.00 ft				

Casing Record (MD) Size	Weight	From	To
7.000 in	26.00 lbpf	SURFACE	7,016.00 ft

WELL INFORMATION

MWD Run Number	100	200	300	400	
Date run completed	26-Dec-13	27-Dec-13	30-Dec-13	31-Dec-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)	625.00	5,970.00	7,024.00	9,857.00	
Log End Depth (MD, ft)	5,970.00	7,024.00	9,857.00	10,738.00	
Drill or Wipe	Drill	Drill	Drill	Drill	
Drill/Wipe Start Date and Time	25-Dec-13 02:15	26-Dec-13 18:30	28-Dec-13 22:35	30-Dec-13 19:40	
Drill/Wipe End Date and Time	26-Dec-13 05:00	27-Dec-13 08:15	30-Dec-13 04:30	31-Dec-13 03:40	
Min Inc (deg) @ Depth (MD, ft)	0.22 @ 2,405.00	14.85 @ 5,954.00	86.99 @ 7,126.00	87.75 @ 10,258.00	
Max Inc (deg) @ Depth (MD, ft)	17.03 @ 3,732.00	81.45 @ 6,970.00	92.50 @ 8,264.00	91.45 @ 10,637.00	
Bit TFA(in2) / Bit Type	0.75 / PDC	.75 / PDC	0.65 / PDC	0.65 / PDC	
Flow Rate (gpm)	584.34	559.53	286.84	276.25	
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A	N/A / N/A	N/A / N/A	N/A / N/A	
Fluid Type	Polymer	Polymer	Polymer	Polymer	
Density (ppg) / Viscosity (spqt)	9.10 / 34.00	10.80 / 38.00	9.50 / 35.00	9.40 / 37.00	
Filtrate CL (ppm)	1,100.00	1,100.00	1,300.00	1,300.00	
pH / Fluid Loss (mptm)	8.30 / 10	8.60 / 8	8.00 / 9	8.70 / 9	
PV (cP) / YP (lhf2)	9 / 11.00	16 / 14.00	12 / 11.00	11 / 12.00	
% Solids / % Sand	7.2 / 0.75	13 / 0.4	5.5 / 0.25	5.6 / 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 Tool Temp (degF) / Source	154.30 / PCM	165.58 / PCM	220.77 / PCM	228.74 / 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	Martin Suarez	Martin Suarez	Martin Suarez	Martin Suarez	

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM	PCM	
Software Version	5.84	5.84	5.84	5.84	
Sub Serial Number	11404263	11404263	11670105	11670105	
Insert Serial Number	11400878	11400878	11400938	11400878	
Date and Time Initialized	24-Dec-13 06:12	24-Dec-13 06:12	28-Dec-13 08:33	30-Dec-13 07:45	
Date and Time Read	27-Dec-13 17:52	27-Dec-13 17:06	30-Dec-13 11:25	31-Dec-13 15:49	
ECMB SW Version	N/A	N/A	N/A	N/A	

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC	PCDC	
Distance From Bit (ft)	54.84	52.22	62.74	62.53	
Software Version	6.21	6.21	6.21	6.21	
Sub Serial Number	11404263	11404263	11670105	11670105	
Sonde Serial Number	11833264	11833264	11145699	11833264	
Sensor ID Number	N/A	N/A	N/A	N/A	
Toolface Offset (deg)	5.35	93.73	260.17	298.74	

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG	PCG	
Distance From Bit (ft)	49.84	47.22	57.76	57.55	
Recorded Sample Period (sec)	10	10	10	10	
Software Version	8.15	8.15	8.15	8.15	
Sub Serial Number	11404263	11404263	11670105	11670105	
Insert/Sonde Serial Number	11680921	11680921	12071508	11680921	

REMARKS

1. All depths are calibrated to the driller's pipe tally and are measured from the rig drill floor.

2. No depth corrections have been made for pipe stretch or compression.

3. All data presented is recorded (memory data) unless otherwise stated.
- ROPA: Average Rate of Penetration is real time data.
- PGRC: Smooth Pressure Case Gamma Ray Borehole corrected is recorded data.

4. The following smoothing parameters have been applied to the data:
- All 2" (1:600) logs - 1 ft. interval, 3 ft. coercion distance.
- All 5" (1:240) logs - .5 ft. interval, .6 ft. coercion distance.

5. INSITE version 8.0.0

6. Gamma presented inside casing from 6974 ft. MD to 7024 ft. MD.

WARRANTY

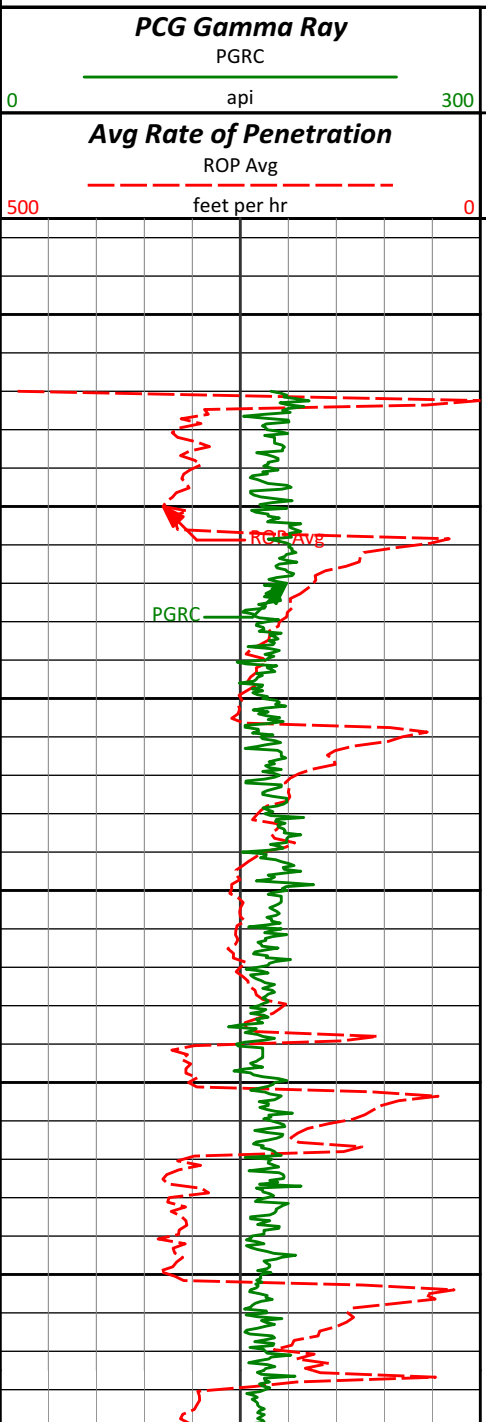
HALLIBURTON WILL USE ITS BEST EFFORTS TO FURNISH CUSTOMERS WITH ACCURATE INFORMATION AND INTERPRETATIONS

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.

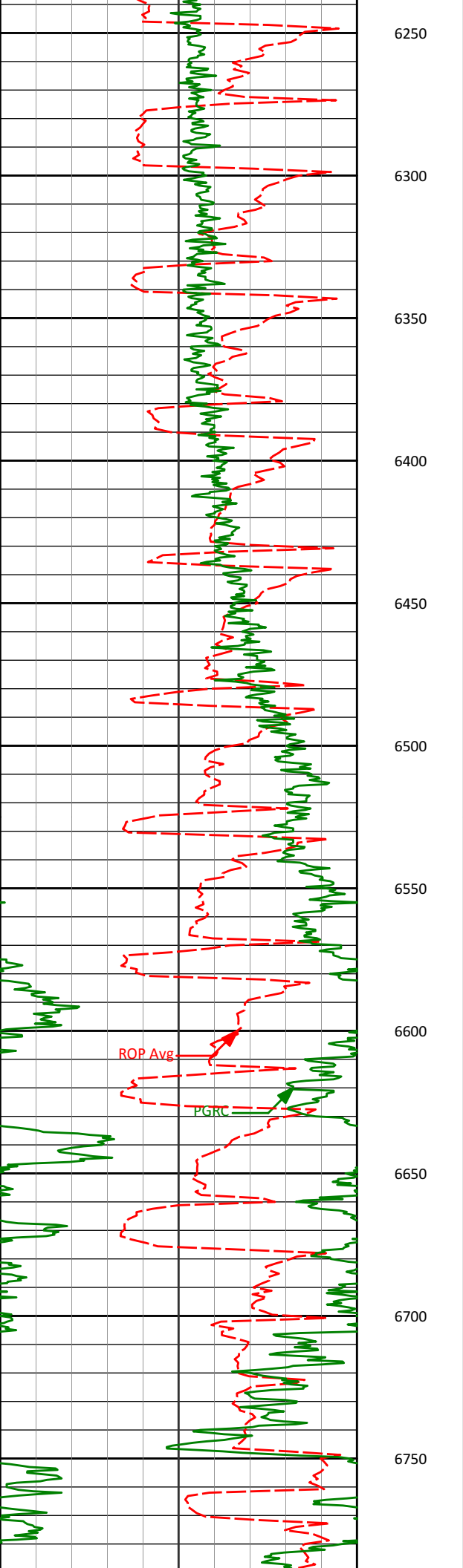
HALLIBURTON
Sperry Drilling Services

MD Main Log 1:600

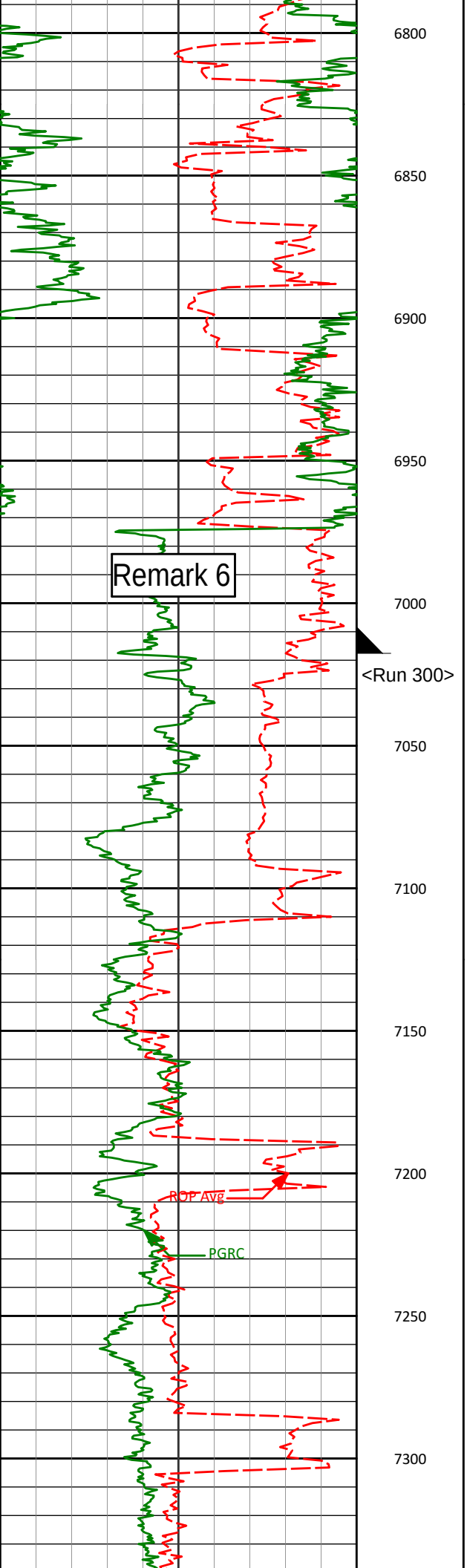
Noble Energy, Inc
Seyler B10-62-1HN
H&P 315
T5N R64W



Depth ft	Depth	Inc.	Azi.	TVD	V.S.
5950	5954'	14.85°	187.64°	5869.22'	-45.17'
<Run 200>					
6000					
<KOP>					
6050					
6100	6101'	20.50°	149.54°	6009.68'	-26.74'
6150	6149'	22.42°	134.14°	6054.38'	-13.43'
6200	6196'	21.36°	126.96°	6098.00'	1.82'



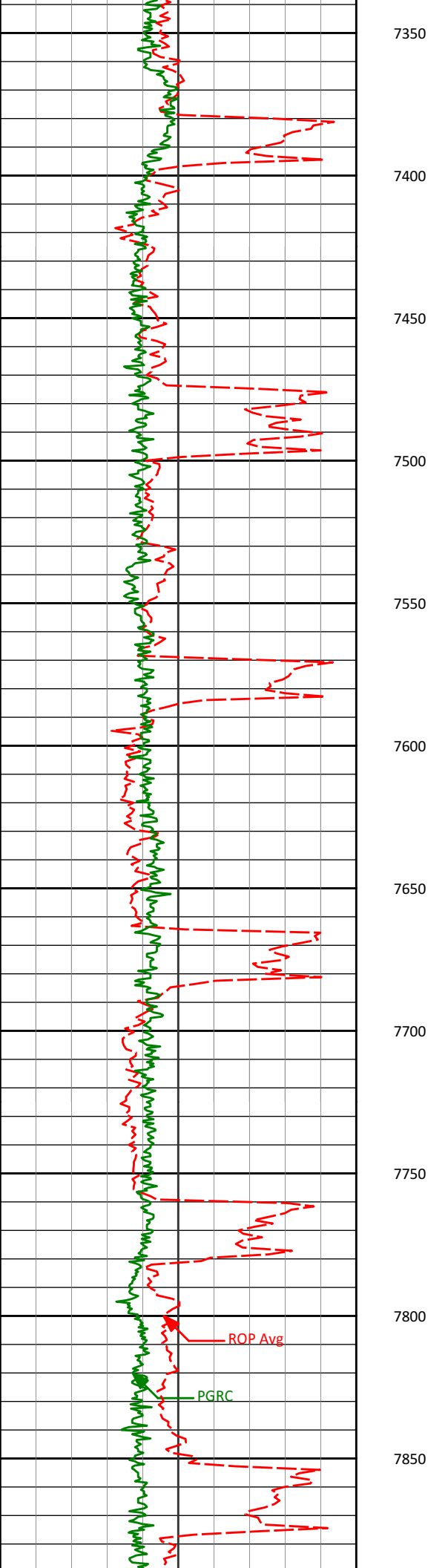
6244'	21.66°	119.14°	6142.67'	18.13'
6290'	23.17°	115.64°	6185.19'	34.99'
6338'	26.50°	112.02°	6228.75'	54.67'
6385'	28.97°	106.68°	6270.36'	76.31'
6433'	32.75°	106.50°	6311.55'	100.82'
6480'	38.81°	105.45°	6349.66'	128.20'
6528'	43.94°	103.67°	6385.67'	159.86'
6575'	49.08°	101.97°	6418.01'	193.94'
6623'	54.45°	99.72°	6447.71'	231.62'
6670'	59.65°	96.99°	6473.27'	270.99'
6718'	62.33°	94.72°	6496.54'	312.76'
6765'	64.43°	93.86°	6517.60'	354.46'



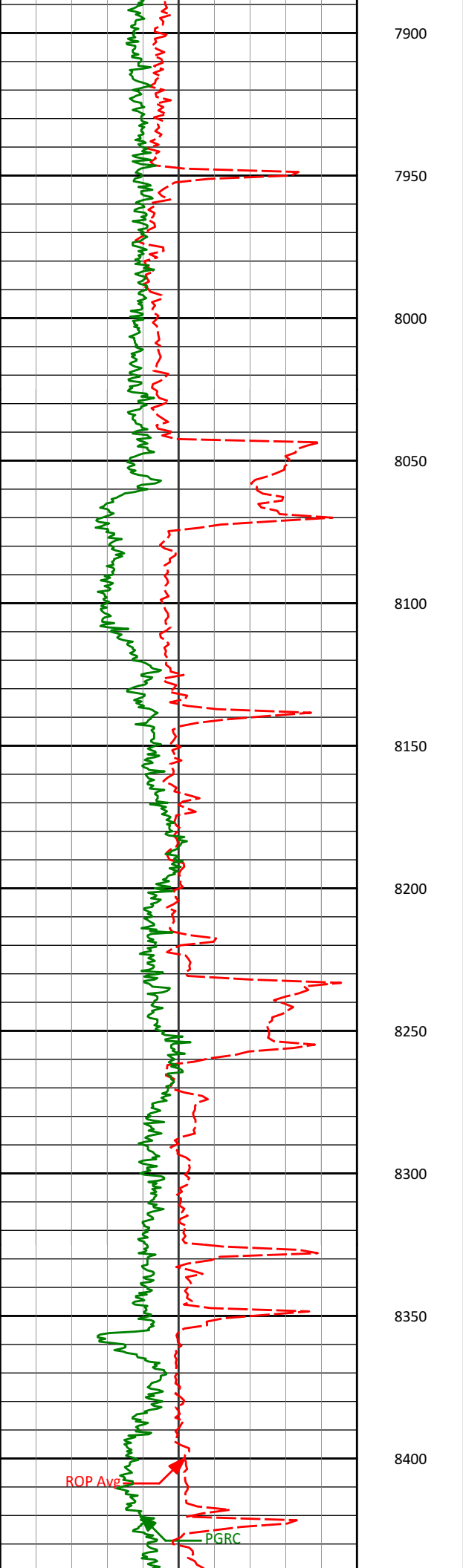
6813'	69.29°	93.15°	6536.46'	398.18'
6860'	73.18°	92.42°	6551.58'	442.18'
6908'	76.47°	90.23°	6564.14'	487.79'
6970'	81.45°	89.31°	6576.01'	547.39'

<7" casing set at 7016' MD>

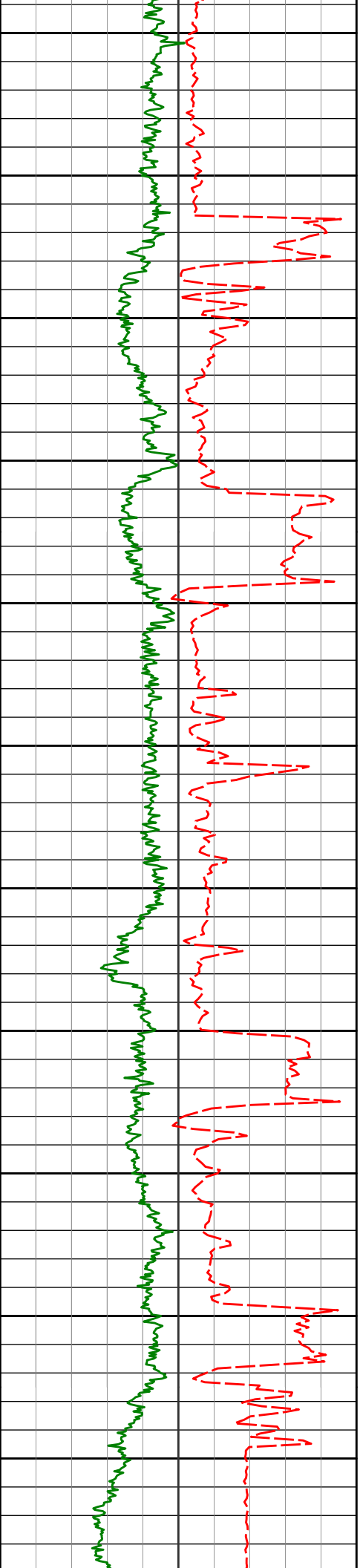
7126'	86.99°	88.81°	6591.72'	699.00'
7221'	87.53°	89.87°	6596.26'	791.82'
7315'	89.57°	90.07°	6598.64'	883.95'



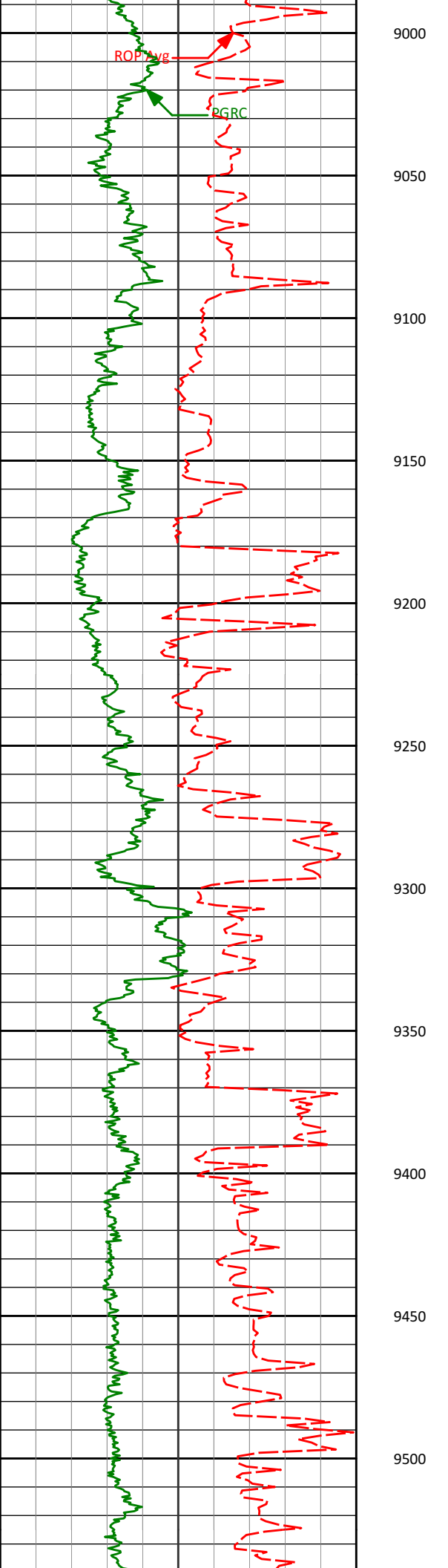
7410'	89.63°	90.29°	6599.30'	977.15'
7505'	90.86°	89.81°	6598.89'	1070.32'
7600'	90.86°	89.26°	6597.47'	1163.31'
7695'	90.74°	89.01°	6596.14'	1256.16'
7790'	92.22°	88.80°	6593.69'	1348.90'
7885'	91.76°	90.70°	6590.39'	1441.91'



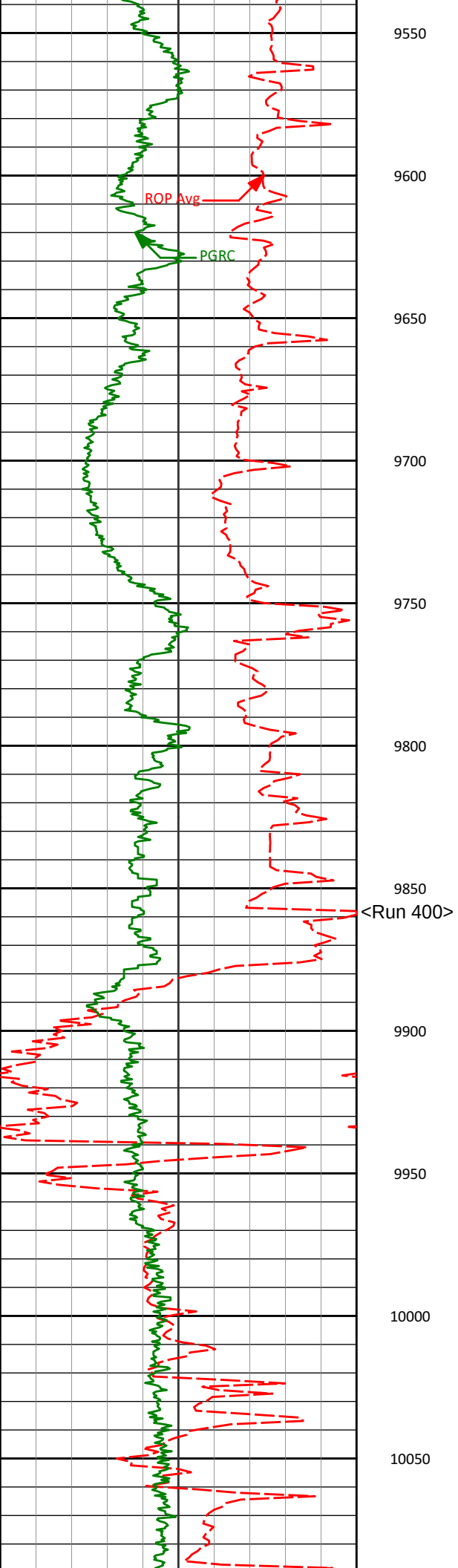
7980'	90.83°	89.47°	6588.24'	1535.06'
8074'	90.52°	91.48°	6587.13'	1627.37'
8169'	90.12°	90.91°	6586.60'	1720.89'
8264'	92.50°	92.90°	6584.43'	1814.58'
8359'	91.51°	92.34°	6581.11'	1908.42'



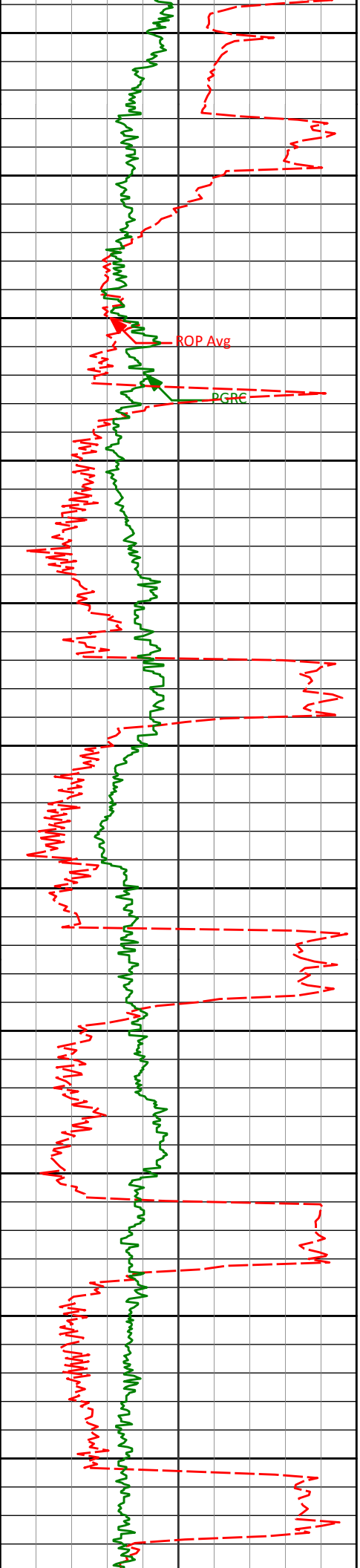
8454'	90.15°	90.53°	6579.73'	2002.00'
8549'	89.78°	89.68°	6579.79'	2095.18'
8644'	90.95°	90.27°	6579.18'	2188.32'
8739'	91.14°	89.35°	6577.45'	2281.39'
8833'	89.57°	91.05°	6576.87'	2373.62'
8928'	91.48°	91.09°	6576.00'	2467.10'



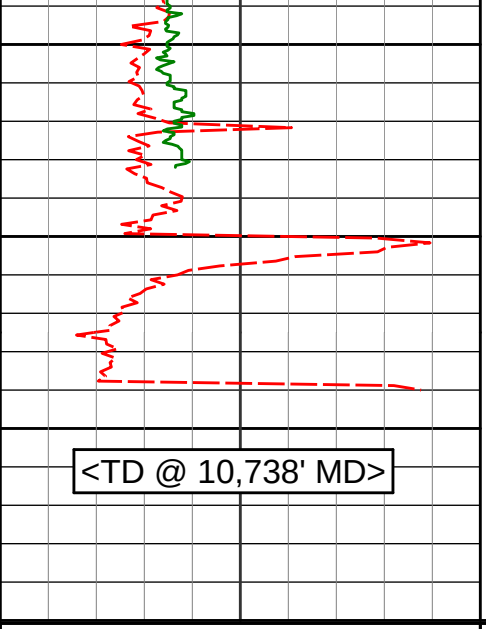
9023'	90.98°	91.10°	6573.96'	2560.57'
9118'	91.91°	91.34°	6571.56'	2654.06'
9213'	91.08°	91.49°	6569.09'	2747.61'
9308'	91.48°	90.47°	6566.96'	2841.05'
9403'	90.03°	90.51°	6565.71'	2934.34'
9498'	89.97°	88.68°	6565.71'	3027.36'



9593'	89.69°	88.93°	6565.99'	3120.10'
9688'	90.31°	90.08°	6565.99'	3213.09'
9783'	90.71°	88.85°	6565.15'	3306.05'
9878'	89.20°	89.21°	6565.22'	3398.87'
9973'	88.71°	88.58°	6566.96'	3491.63'
10068'	87.84°	87.33°	6569.81'	3584.02'



10163'	89.41°	88.42°	6572.09'	3676.38'
10258'	87.75°	85.84°	6574.45'	3768.44'
10353'	89.14°	85.91°	6577.03'	3859.98'
10448'	90.15°	87.69°	6577.62'	3951.94'
10543'	89.72°	89.14°	6577.72'	4044.53'
10637'	91.45°	89.97°	6576.76'	4136.55'



Depth ft	Depth	Inc.	Azi.	TVD	V.S.
10650					
	10674'	91.11°	89.75°	6575.94'	4172.80'
10700					
10750					

Avg Rate of Penetration
ROP Avg
500 feet per hr 0

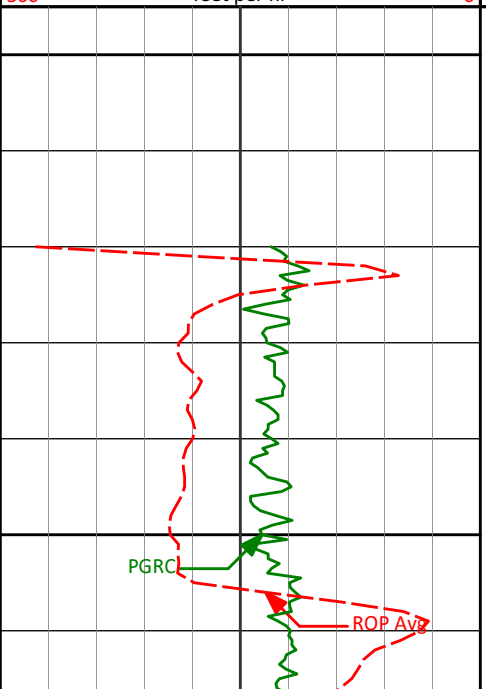
PCG Gamma Ray
PGRC
0 api 300

HALLIBURTON
Sperry Drilling Services
MD Detail Log 1:240

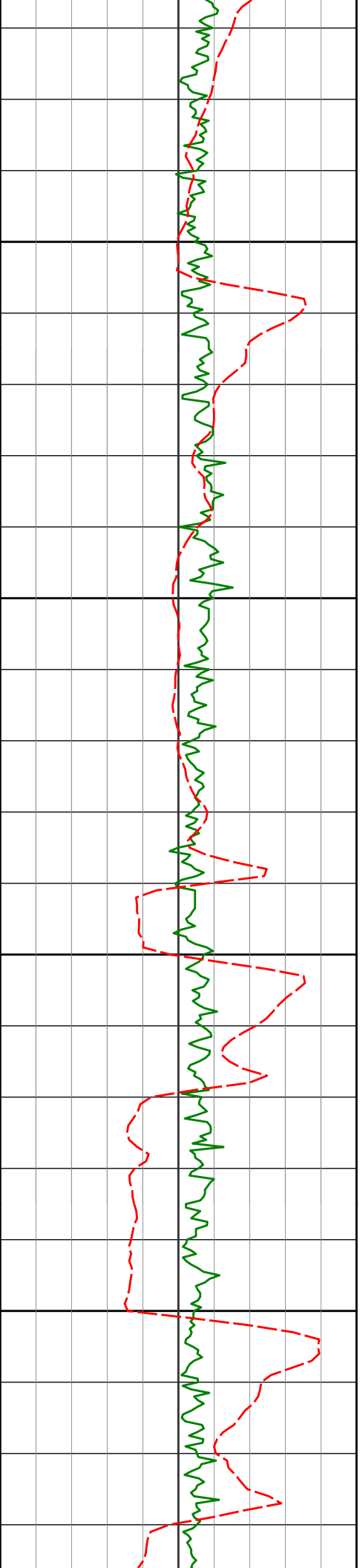
Noble Energy, Inc
Seyler B10-62-1HN
H&P 315
T5N R64W

PCG Gamma Ray
PGRC
0 api 300

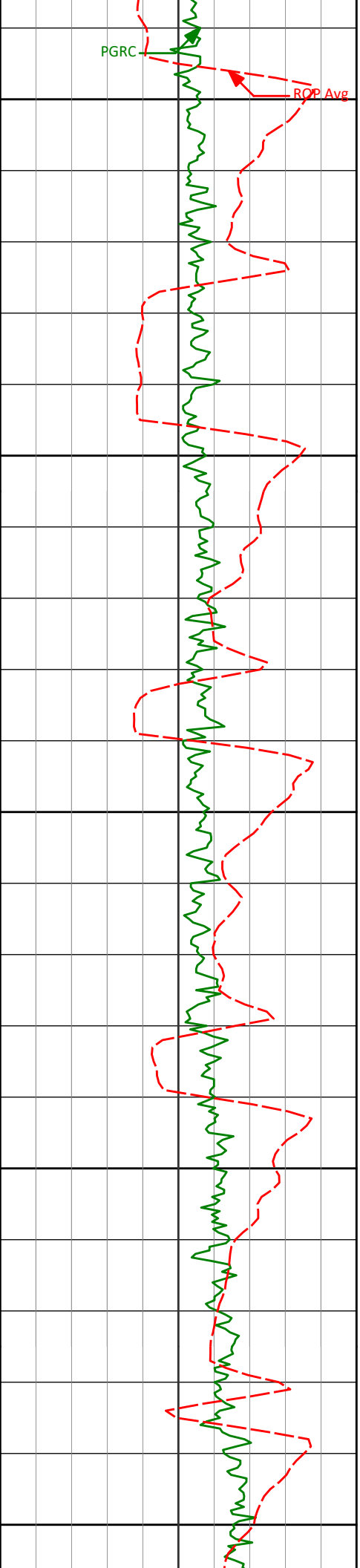
Avg Rate of Penetration
ROP Avg
500 feet per hr 0



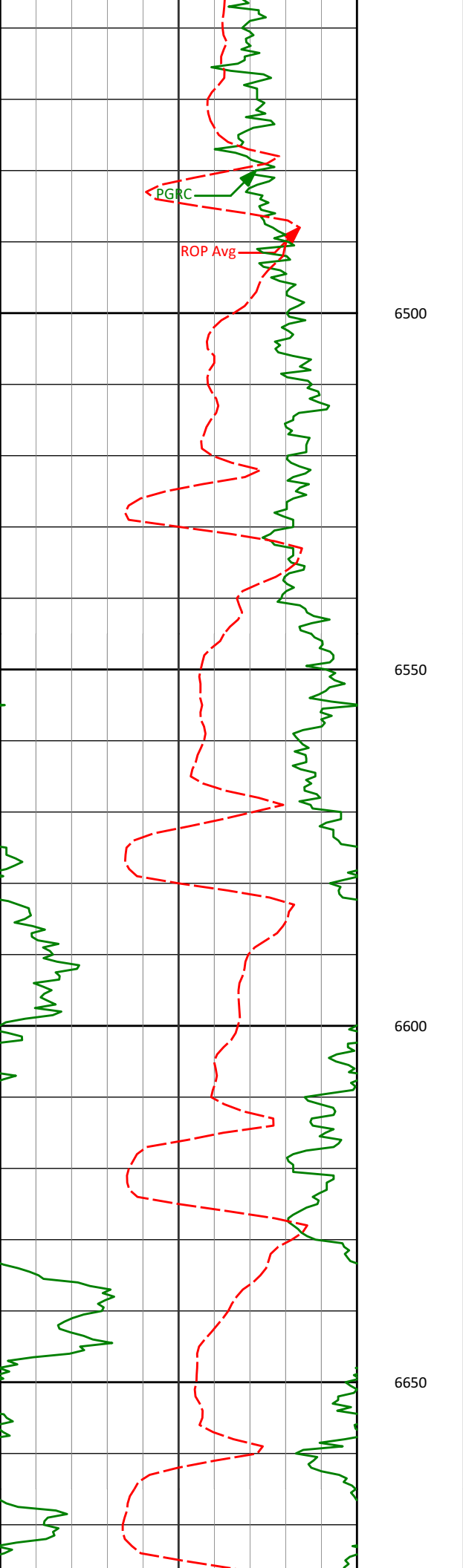
Depth ft	Depth	Inc.	Azi.	TVD	V.S.
5950					
	5954'	14.85°	187.64°	5869.22'	-45.17'
<Run 200>					
6000					
<KOP>					



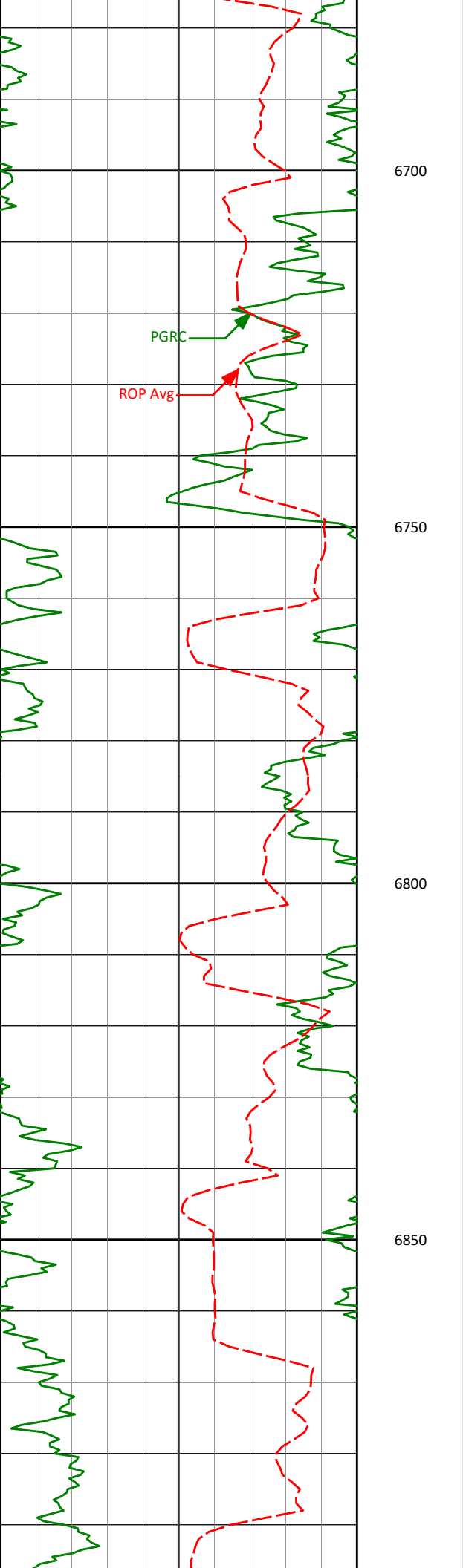
6101'	20.50°	149.54°	6009.68'	-26.74'
6149'	22.42°	134.14°	6054.38'	-13.43'
6196'	21.36°	126.96°	6098.00'	1.82'



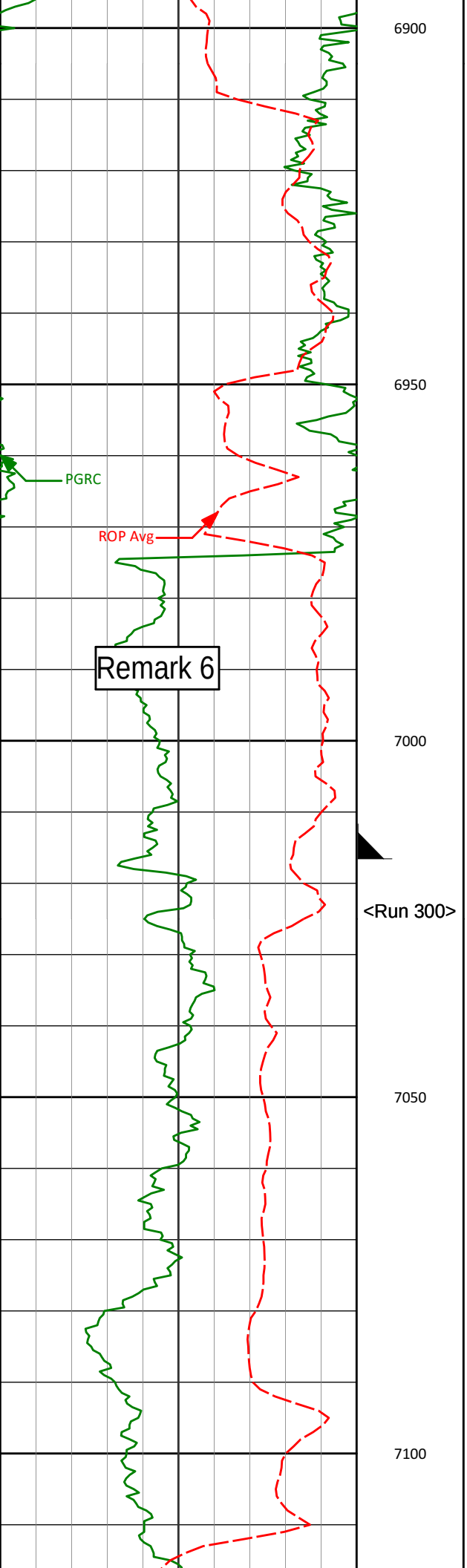
6244'	21.66°	119.14°	6142.67'	18.13'
6290'	23.17°	115.64°	6185.19'	34.99'
6338'	26.50°	112.02°	6228.75'	54.67'
6385'	28.97°	106.68°	6270.36'	76.31'
6433'	32.75°	106.50°	6311.55'	100.82'



6480'	38.81°	105.45°	6349.66'	128.20'
6528'	43.94°	103.67°	6385.67'	159.86'
6575'	49.08°	101.97°	6418.01'	193.94'
6623'	54.45°	99.72°	6447.71'	231.62'
6670'	59.65°	96.99°	6473.27'	270.99'



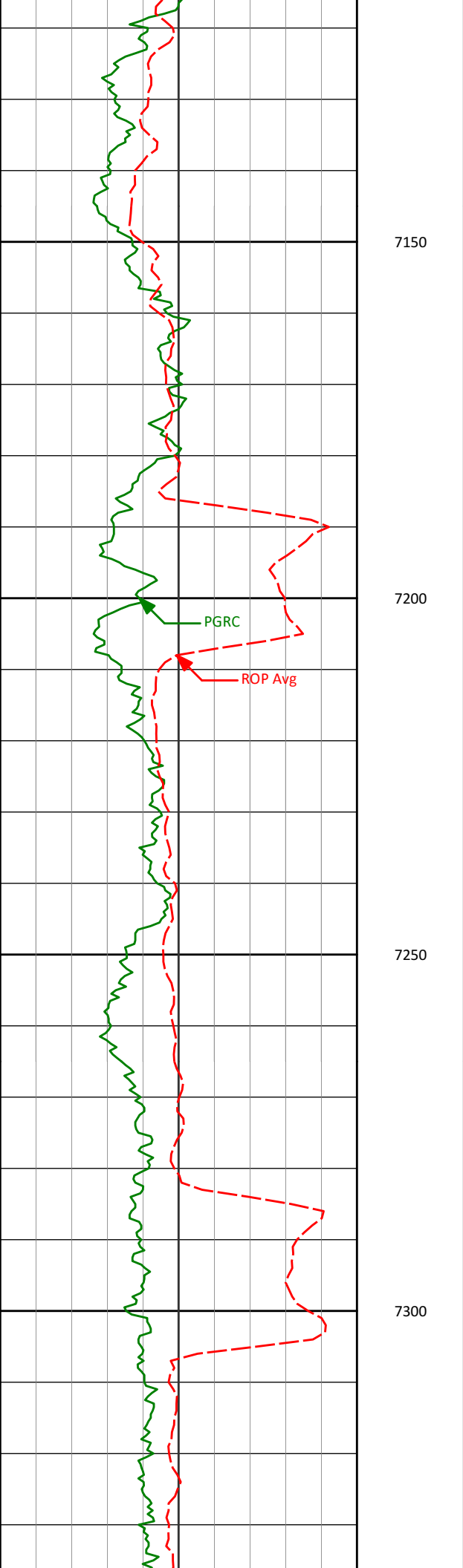
6718'	62.33°	94.72°	6496.54'	312.76'
6765'	64.43°	93.86°	6517.60'	354.46'
6813'	69.29°	93.15°	6536.46'	398.18'
6860'	73.18°	92.42°	6551.58'	442.18'



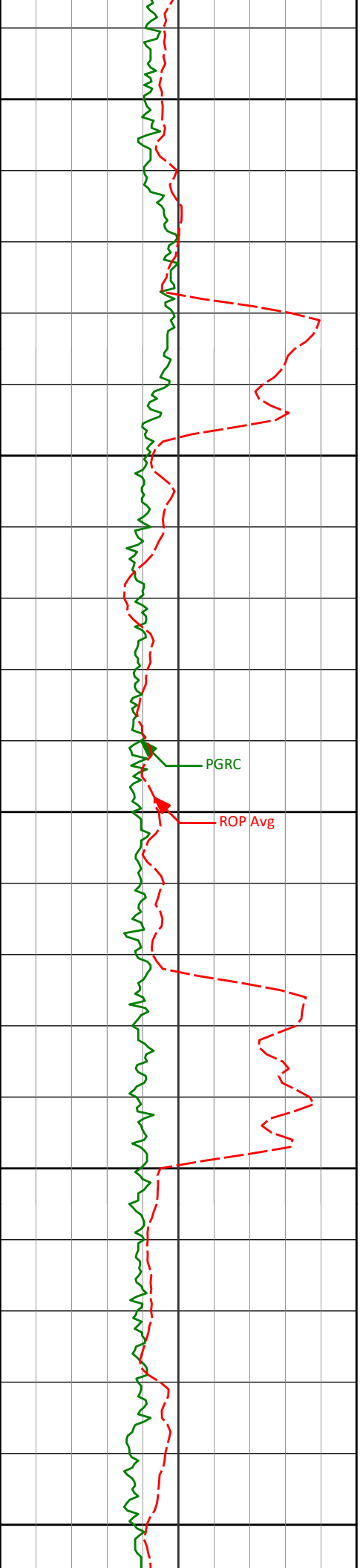
6908'	76.47°	90.23°	6564.14'	487.79'
6970'	81.45°	89.31°	6576.01'	547.39'

<7" casing set at 7016' MD>

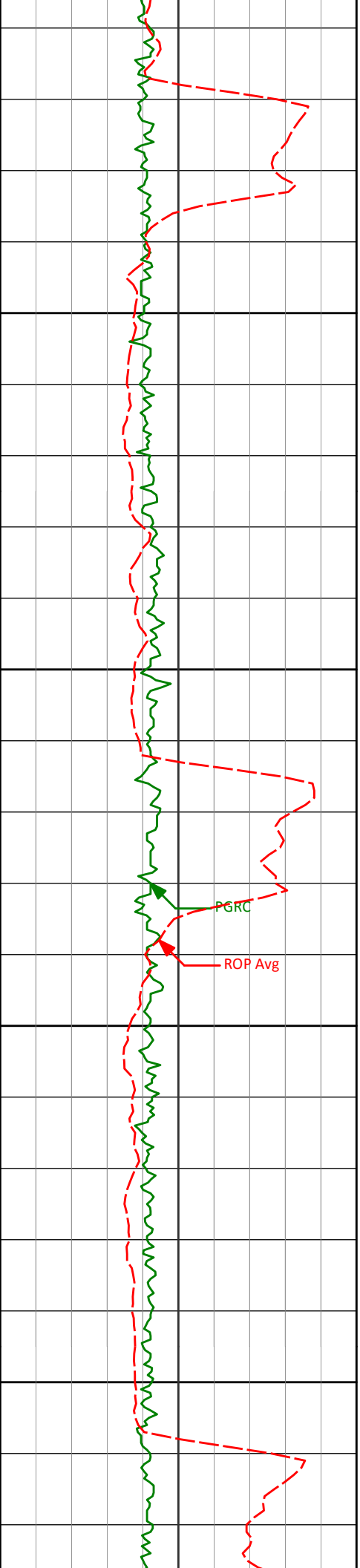
<Run 300>



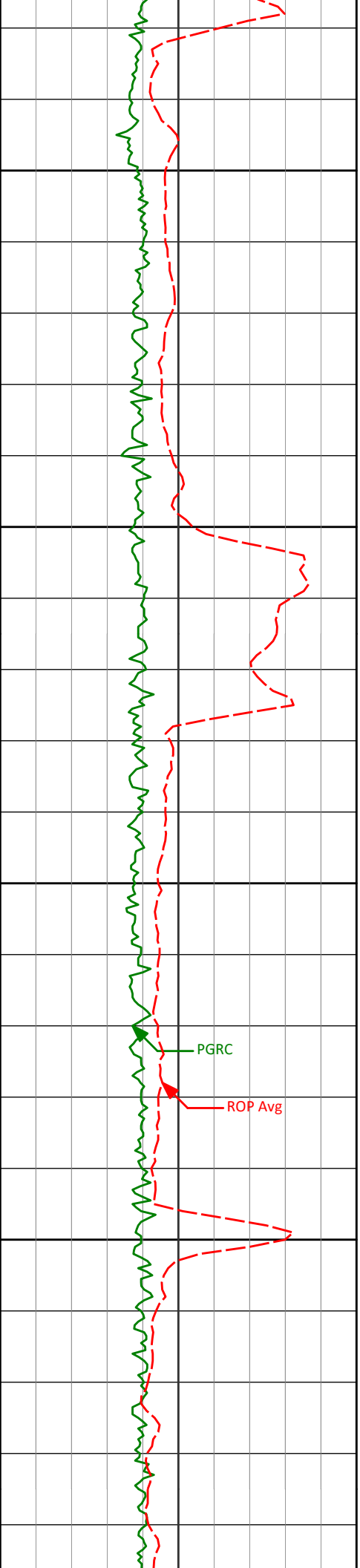
7126'	86.99°	88.81°	6591.72'	699.00'
7221'	87.53°	89.87°	6596.26'	791.82'
7315'	89.57°	90.07°	6598.64'	883.95'



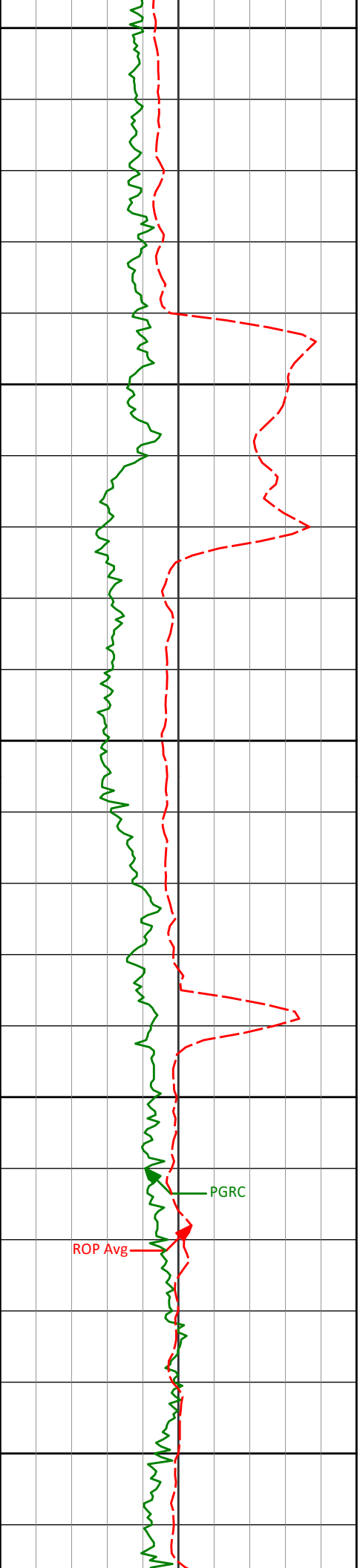
7410'	89.63°	90.29°	6599.30'	977.15'
7505'	90.86°	89.81°	6598.89'	1070.32'



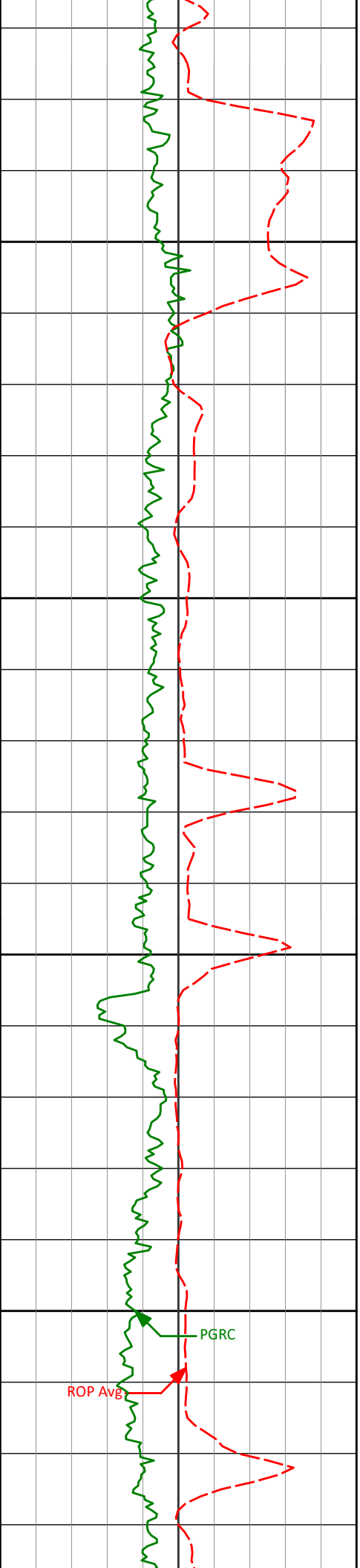
7600	7600'	90.86°	89.26°	6597.47'	1163.31'
	7695'	90.74°	89.01°	6596.14'	1256.16'



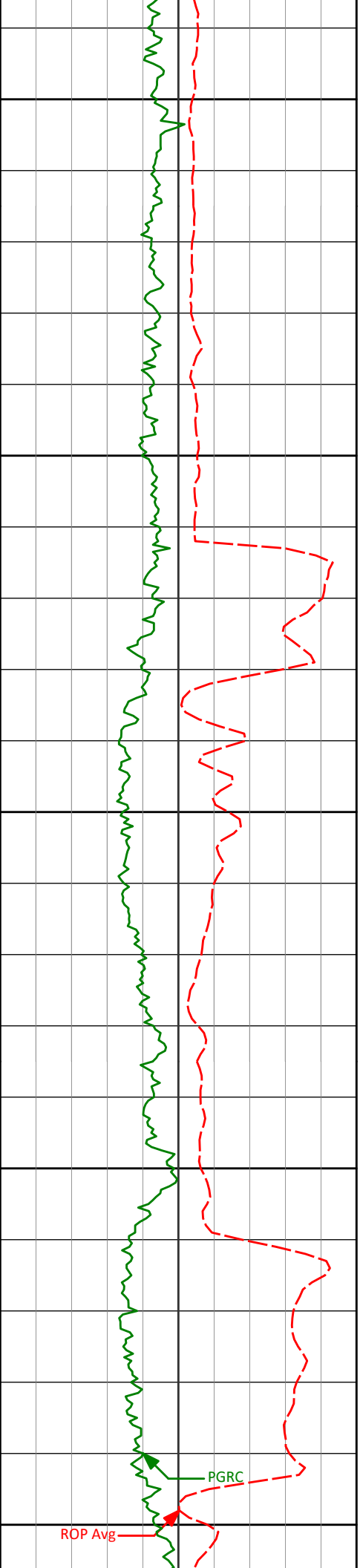
7790'	92.22°	88.80°	6593.69'	1348.90'
7885'	91.76°	90.70°	6590.39'	1441.91'
7980'	90.83°	89.47°	6588.24'	1535.06'



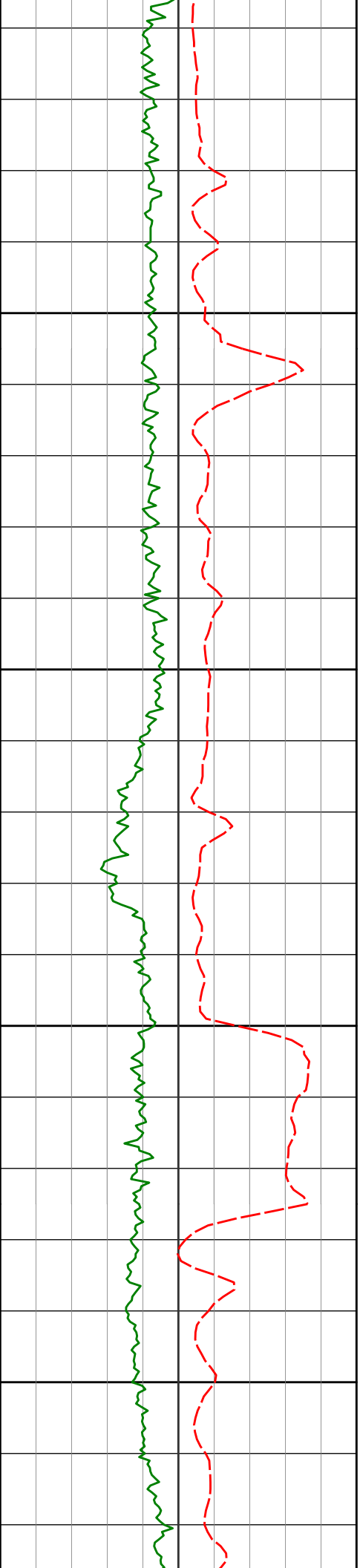
8074'	90.52°	91.48°	6587.13'	1627.37'
8169'	90.12°	90.91°	6586.60'	1720.89'



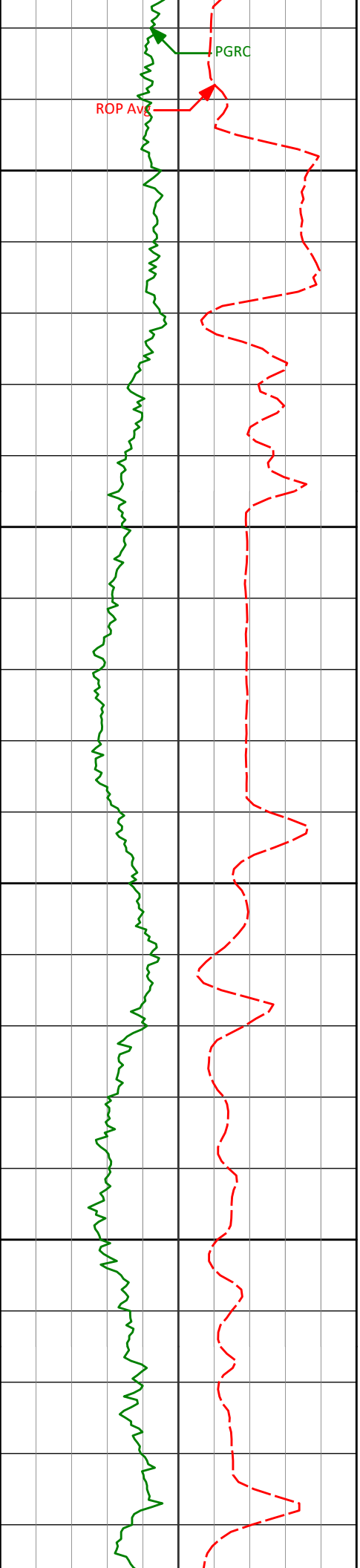
8264'	92.50°	92.90°	6584.43'	1814.58'
8359'	91.51°	92.34°	6581.11'	1908.42'



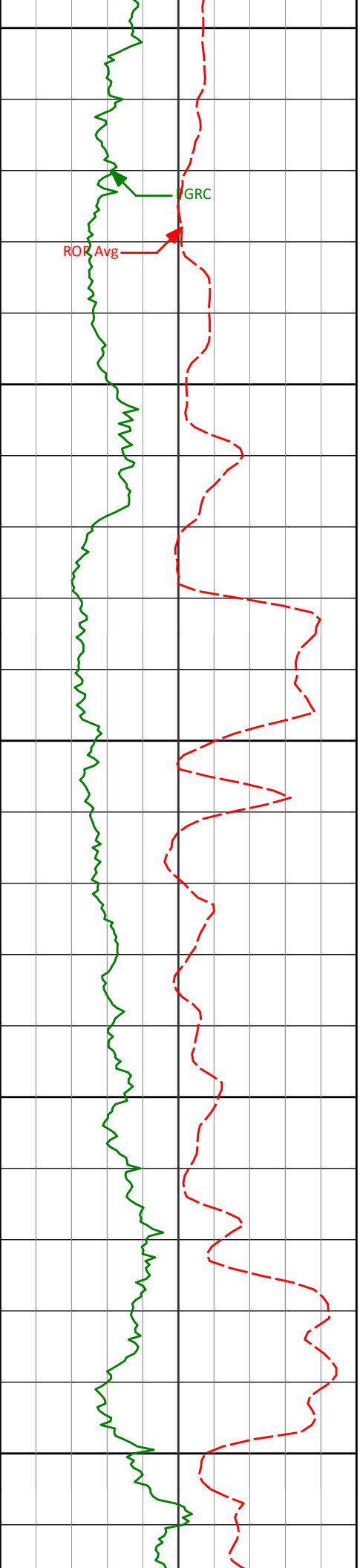
8454'	90.15°	90.53°	6579.73'	2002.00'
8549'	89.78°	89.68°	6579.79'	2095.18'
8644'	90.95°	90.27°	6579.18'	2188.32'



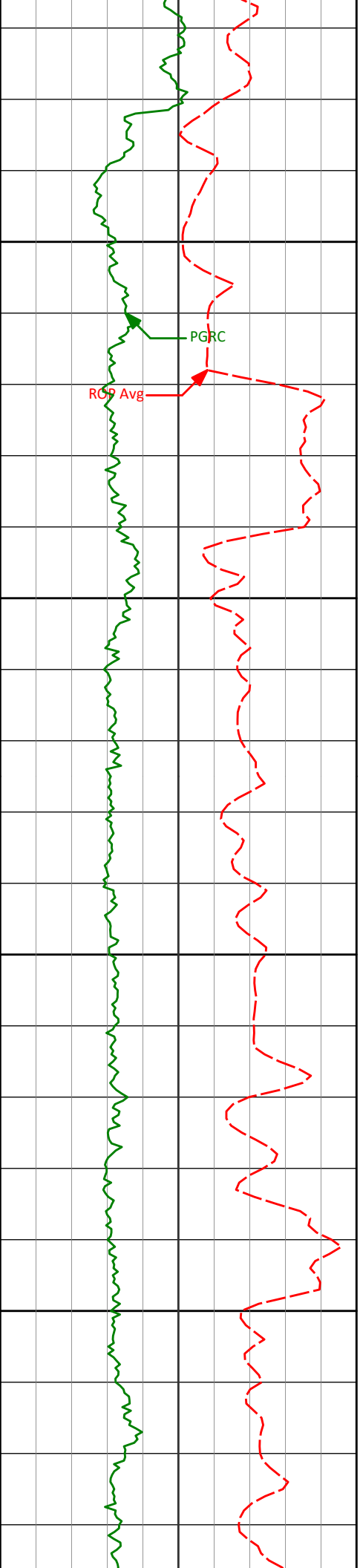
8739'	91.14°	89.35°	6577.45'	2281.39'
8833'	89.57°	91.05°	6576.87'	2373.62'



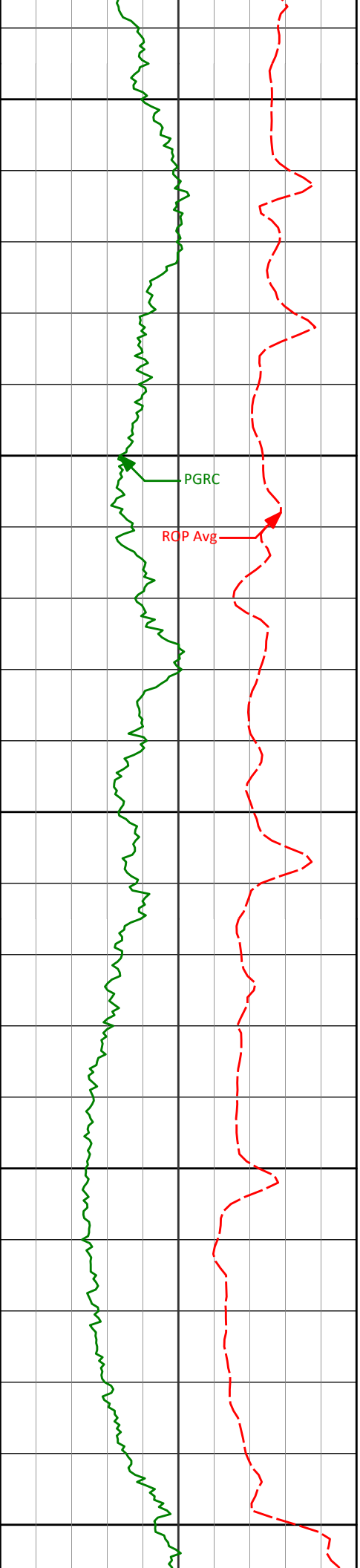
8928'	91.48°	91.09°	6576.00'	2467.10'
9023'	90.98°	91.10°	6573.96'	2560.57'



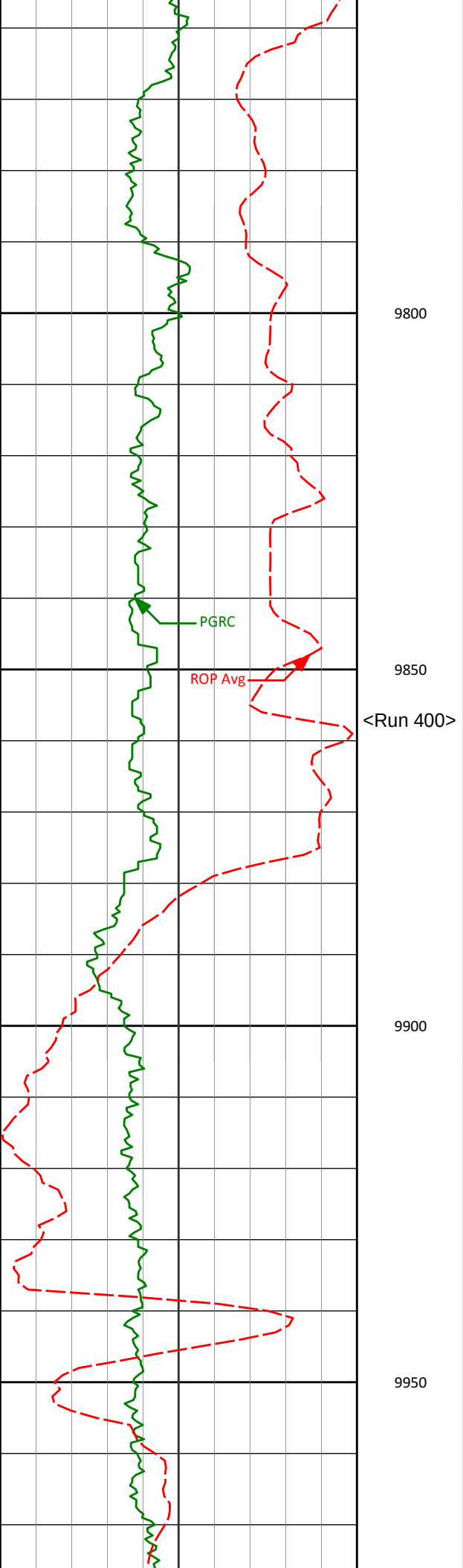
9118'	91.91°	91.34°	6571.56'	2654.06'
9213'	91.08°	91.49°	6569.09'	2747.61'
9308'	91.48°	90.47°	6566.96'	2841.05'



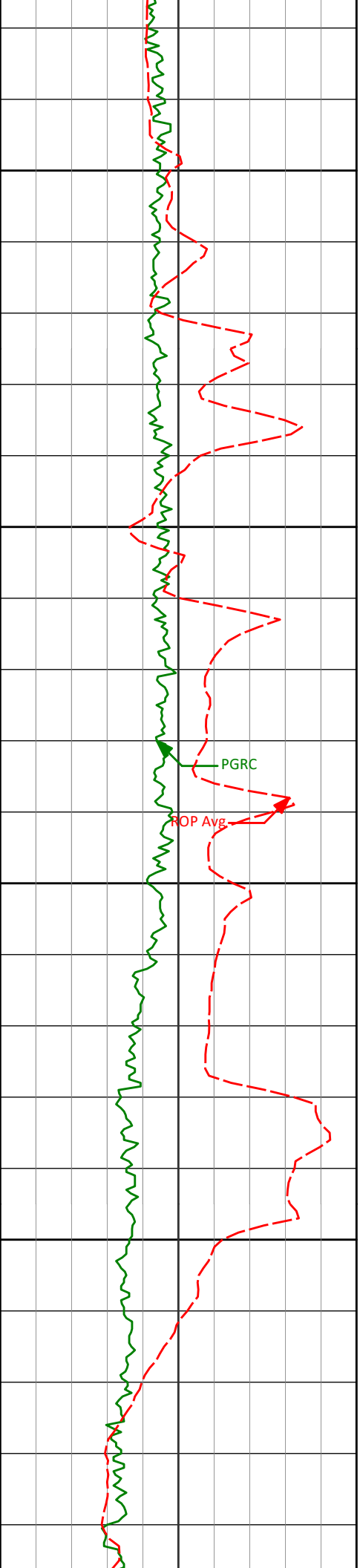
9350					
9400	9403'	90.03°	90.51°	6565.71'	2934.34'
9450					
9500	9498'	89.97°	88.68°	6565.71'	3027.36'



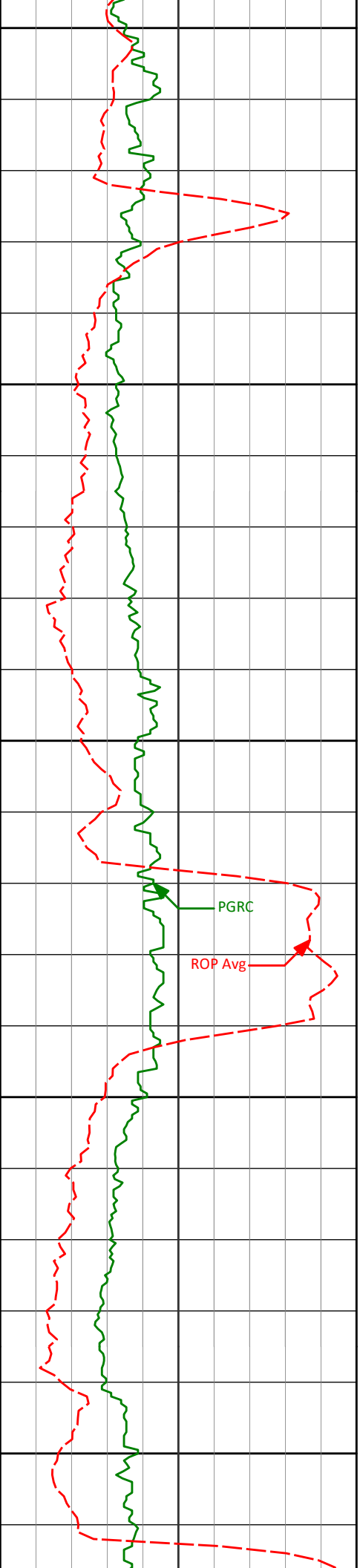
9593'	89.69°	88.93°	6565.99'	3120.10'
9688'	90.31°	90.08°	6565.99'	3213.09'



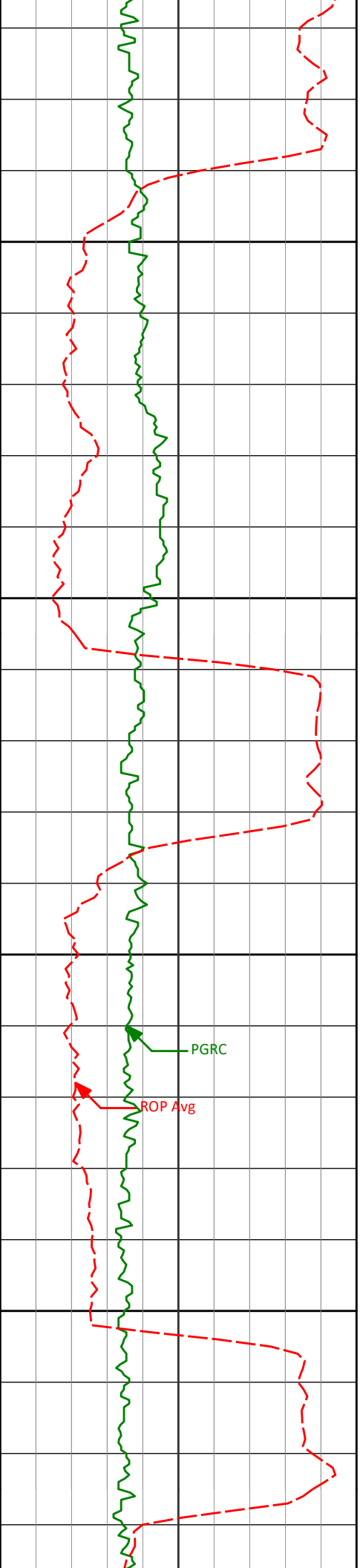
9783'	90.71°	88.85°	6565.15'	3306.05'
9878'	89.20°	89.21°	6565.22'	3398.87'
9973'	88.71°	88.58°	6566.96'	3491.63'



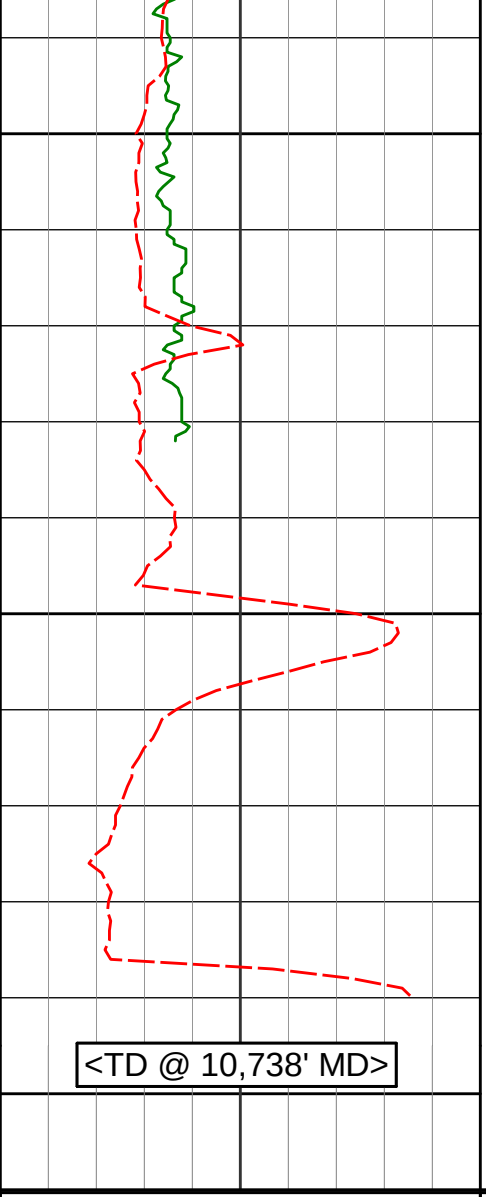
10068'	87.84°	87.33°	6569.81'	3584.02'
10163'	89.41°	88.42°	6572.09'	3676.38'



10258'	87.75°	85.84°	6574.45'	3768.44'
10353'	89.14°	85.91°	6577.03'	3859.98'



10448'	90.15°	87.69°	6577.62'	3951.94'
10543'	89.72°	89.14°	6577.72'	4044.53'



10637'	91.45°	89.97°	6576.76'	4136.55'
10674'	91.11°	89.75°	6575.94'	4172.80'

10650

10700

10750

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
Seyler B10-62-1HN
Wattenberg
Weld Colorado
USA
CA-XX-0900916998

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
304.00	0.60	62.52	303.99	0.73 N	1.41 E	1.24	0.20
585.00	0.50	65.52	584.98	1.92 N	3.83 E	3.38	0.04
715.00	0.34	83.97	714.98	2.20 N	4.73 E	4.21	0.16
807.00	0.59	47.49	806.98	2.55 N	5.35 E	4.75	0.41
898.00	0.61	82.63	897.97	2.92 N	6.18 E	5.49	0.40

992.00	0.36	77.39	991.97	3.05 N	6.96 E	6.23	0.27
1085.00	0.39	108.38	1084.97	3.02 N	7.55 E	6.81	0.22
1178.00	0.23	32.09	1177.96	3.08 N	7.95 E	7.19	0.43
1269.00	0.52	76.33	1268.96	3.33 N	8.45 E	7.63	0.43
1362.00	0.46	56.40	1361.96	3.63 N	9.17 E	8.28	0.19
1456.00	0.59	15.56	1455.96	4.31 N	9.61 E	8.58	0.41
1551.00	0.29	23.84	1550.95	5.00 N	9.84 E	8.67	0.32
1646.00	0.54	11.92	1645.95	5.66 N	10.03 E	8.72	0.28
1741.00	0.75	16.47	1740.94	6.69 N	10.30 E	8.79	0.23
1836.00	1.05	14.44	1835.93	8.13 N	10.69 E	8.89	0.32
1931.00	1.05	308.88	1930.92	9.52 N	10.23 E	8.16	1.20
2025.00	1.20	311.67	2024.90	10.72 N	8.83 E	6.55	0.17
2120.00	0.83	277.69	2119.89	11.47 N	7.40 E	5.01	0.73
2215.00	1.15	180.89	2214.88	10.61 N	6.70 E	4.49	1.57
2310.00	0.86	165.73	2309.86	8.96 N	6.87 E	4.97	0.41
2405.00	0.22	8.50	2404.86	8.45 N	7.07 E	5.27	1.12
2499.00	0.46	240.65	2498.86	8.45 N	6.77 E	4.98	0.66
2594.00	0.62	252.43	2593.85	8.10 N	5.94 E	4.24	0.20
2689.00	2.18	215.38	2688.82	6.48 N	4.41 E	3.05	1.82
2784.00	3.85	206.54	2783.69	2.15 N	1.94 E	1.48	1.82
2879.00	5.11	191.47	2878.40	4.85 S	0.33 W	0.63	1.80
2973.00	6.23	195.59	2971.94	13.87 S	2.53 W	0.24	1.27
3068.00	7.39	199.67	3066.27	24.58 S	5.98 W	-1.03	1.32
3163.00	10.07	198.84	3160.16	38.20 S	10.72 W	-3.01	2.82
3258.00	11.62	196.42	3253.46	55.24 S	16.10 W	-4.95	1.70
3353.00	12.54	194.93	3346.36	74.38 S	21.46 W	-6.45	1.02
3448.00	14.25	198.53	3438.77	95.44 S	27.84 W	-8.56	2.00
3542.00	16.06	198.63	3529.50	118.73 S	35.67 W	-11.67	1.93
3637.00	16.68	198.31	3620.65	144.12 S	44.15 W	-15.00	0.66
3732.00	17.03	193.98	3711.57	170.57 S	51.79 W	-17.31	1.37
3827.00	16.69	191.98	3802.49	197.41 S	57.99 W	-18.11	0.71
3922.00	13.89	185.21	3894.12	222.12 S	61.85 W	-17.05	3.49
4017.00	12.79	191.01	3986.56	243.80 S	64.90 W	-15.78	1.82
4112.00	12.87	192.94	4079.19	264.43 S	69.28 W	-16.02	0.46
4207.00	13.02	199.44	4171.78	284.84 S	75.21 W	-17.83	1.54
4302.00	14.62	198.02	4264.03	306.33 S	82.48 W	-20.74	1.72
4397.00	12.70	195.76	4356.34	327.78 S	89.02 W	-22.95	2.10
4491.00	12.99	194.25	4447.98	347.97 S	94.43 W	-24.29	0.47
4586.00	13.78	195.42	4540.40	369.22 S	100.07 W	-25.65	0.88
4681.00	13.46	196.11	4632.73	390.75 S	106.14 W	-27.38	0.38
4776.00	13.47	198.22	4725.12	411.88 S	112.67 W	-29.63	0.52
4871.00	14.83	197.46	4817.24	433.99 S	119.78 W	-32.26	1.44
4966.00	15.30	195.13	4908.97	457.69 S	126.70 W	-34.39	0.81
5061.00	12.40	192.92	5001.20	479.74 S	132.25 W	-35.51	3.10
5155.00	12.65	194.01	5092.96	499.56 S	137.00 W	-36.28	0.37
5250.00	12.47	195.97	5185.69	519.51 S	142.34 W	-37.60	0.49
5345.00	12.36	193.80	5278.47	539.25 S	147.59 W	-38.87	0.50
5440.00	13.16	196.29	5371.12	559.50 S	153.05 W	-40.25	1.02
5535.00	14.11	197.68	5463.44	580.92 S	159.60 W	-42.46	1.06
5630.00	13.75	198.48	5555.65	602.66 S	166.69 W	-45.15	0.43
5725.00	14.34	191.04	5647.82	624.91 S	172.52 W	-46.50	2.00
5820.00	14.71	190.13	5739.78	648.33 S	176.90 W	-46.20	0.46
5913.00	15.22	189.88	5829.63	671.98 S	181.07 W	-45.64	0.55
5954.00	14.85	187.64	5869.22	682.49 S	182.69 W	-45.17	1.68
6101.00	20.50	149.54	6009.68	723.52 S	172.10 W	-26.74	8.55
6149.00	22.42	134.14	6054.38	737.15 S	161.27 W	-13.43	12.36
6196.00	21.36	126.96	6098.00	748.54 S	147.99 W	1.82	6.12
6244.00	21.66	119.14	6142.67	758.11 S	133.27 W	18.13	6.00
6290.00	23.17	115.64	6185.19	766.16 S	117.69 W	34.99	4.38
6338.00	26.50	112.02	6228.75	774.26 S	99.24 W	54.67	7.62
6385.00	28.97	106.68	6270.36	781.47 S	78.61 W	76.31	7.45
6433.00	32.75	106.50	6311.55	788.49 S	55.02 W	100.82	7.88
6480.00	38.81	105.45	6349.66	796.03 S	28.61 W	128.20	12.96
6528.00	43.94	103.67	6385.67	803.98 S	2.09 E	159.86	10.96
6575.00	49.08	101.97	6418.01	811.52 S	35.33 E	193.94	11.25
6623.00	54.45	99.72	6447.71	818.59 S	72.35 E	231.62	11.78
6670.00	59.65	96.99	6473.27	824.29 S	111.35 E	270.99	12.09
6718.00	62.33	94.72	6496.54	828.56 S	153.11 E	312.76	6.95
6765.00	64.43	93.86	6517.60	831.70 S	195.00 E	354.46	4.76
6813.00	69.29	93.15	6536.46	834.39 S	239.05 E	398.18	10.22
6860.00	73.18	92.42	6551.58	836.55 S	283.49 E	442.18	8.41

6908.00	76.47	90.23	6564.14	837.61 S	329.79 E	487.79	8.15
6970.00	81.45	89.31	6576.01	837.37 S	390.62 E	547.39	8.16
7126.00	86.99	88.81	6591.72	834.82 S	545.75 E	699.00	3.57
7221.00	87.53	89.87	6596.26	833.72 S	640.63 E	791.82	1.25
7315.00	89.57	90.07	6598.64	833.67 S	734.60 E	883.95	2.18
7410.00	89.63	90.29	6599.30	833.97 S	829.59 E	977.15	0.24
7505.00	90.86	89.81	6598.89	834.06 S	924.59 E	1070.32	1.39
7600.00	90.86	89.26	6597.47	833.29 S	1019.58 E	1163.31	0.58
7695.00	90.74	89.01	6596.14	831.85 S	1114.56 E	1256.16	0.29
7790.00	92.22	88.80	6593.69	830.04 S	1209.50 E	1348.90	1.57
7885.00	91.76	90.70	6590.39	829.62 S	1304.44 E	1441.91	2.06
7980.00	90.83	89.47	6588.24	829.76 S	1399.41 E	1535.06	1.62
8074.00	90.52	91.48	6587.13	830.54 S	1493.40 E	1627.37	2.16
8169.00	90.12	90.91	6586.60	832.52 S	1588.38 E	1720.89	0.73
8264.00	92.50	92.90	6584.43	835.68 S	1683.29 E	1814.58	3.27
8359.00	91.51	92.34	6581.11	840.02 S	1778.13 E	1908.42	1.20
8454.00	90.15	90.53	6579.73	842.40 S	1873.08 E	2002.00	2.38
8549.00	89.78	89.68	6579.79	842.57 S	1968.08 E	2095.18	0.98
8644.00	90.95	90.27	6579.18	842.53 S	2063.08 E	2188.32	1.38
8739.00	91.14	89.35	6577.45	842.22 S	2158.06 E	2281.39	0.99
8833.00	89.57	91.05	6576.87	842.54 S	2252.05 E	2373.62	2.46
8928.00	91.48	91.09	6576.00	844.32 S	2347.03 E	2467.10	2.01
9023.00	90.98	91.10	6573.96	846.13 S	2441.99 E	2560.57	0.53
9118.00	91.91	91.34	6571.56	848.15 S	2536.93 E	2654.06	1.01
9213.00	91.08	91.49	6569.09	850.50 S	2631.87 E	2747.61	0.89
9308.00	91.48	90.47	6566.96	852.12 S	2726.83 E	2841.05	1.15
9403.00	90.03	90.51	6565.71	852.94 S	2821.82 E	2934.34	1.53
9498.00	89.97	88.68	6565.71	852.26 S	2916.81 E	3027.36	1.93
9593.00	89.69	88.93	6565.99	850.28 S	3011.79 E	3120.10	0.40
9688.00	90.31	90.08	6565.99	849.46 S	3106.79 E	3213.09	1.38
9783.00	90.71	88.85	6565.15	848.58 S	3201.78 E	3306.05	1.36
9878.00	89.20	89.21	6565.22	846.97 S	3296.76 E	3398.87	1.63
9973.00	88.71	88.58	6566.96	845.14 S	3391.72 E	3491.63	0.84
10068.00	87.84	87.33	6569.81	841.75 S	3486.62 E	3584.02	1.60
10163.00	89.41	88.42	6572.09	838.23 S	3581.52 E	3676.38	2.01
10258.00	87.75	85.84	6574.45	833.47 S	3676.36 E	3768.44	3.23
10353.00	89.14	85.91	6577.03	826.64 S	3771.08 E	3859.98	1.47
10448.00	90.15	87.69	6577.62	821.34 S	3865.92 E	3951.94	2.15
10543.00	89.72	89.14	6577.72	818.71 S	3960.88 E	4044.53	1.59
10637.00	91.45	89.97	6576.76	817.98 S	4054.87 E	4136.55	2.04
10674.00	91.11	89.75	6575.94	817.89 S	4091.86 E	4172.80	1.09
10738.00	91.11	89.75	6574.70	817.61 S	4155.85 E	4235.49	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 101.32 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 10738.00 FEET
IS 4235.51 FEET ALONG 101.13 DEGREES (GRID)

Surface surveys at 304 ft and 585 ft have had azimuths corrected to grid north, but were not taken by Halliburton.

7 inch casing shoe depth set at 7016 ft MD.

Last survey is a projection from 10674 ft MD to TD at 10738 ft MD.

Date Printed:31 December 2013