

PCGK : Pressure Case Gamma
PCDC: Pressure Case Directional

1 : 600 / 1 : 240

Country : USA			
Field : Wattenberg			
Location : Lat: 40°29' 28.14" North Long: 104°22' 28.42" West			
Well : Wells Ranch AE18-68-1HN			
Company : Noble Energy			
Rig : H&P 315			
LOCATION			
Latitude : 40°29' 28.14" North Longitude : 104°22' 28.42" West			
UTM Easting = 3,313,016.53 ft UTM Northing = 1,423,752.78 ft			
Company : Noble Energy Rig : H&P 315 Well : Wells Ranch AE18-68-1HN Field : Wattenberg Country : USA API Number : 0512335674			
Other Services Directional Drilling			
Permanent Datum : Ground Level	Elevation : 4849.00 ft		
Log Measured From : Drill Floor	24.00 ft Above Permanent Datum		
Drilling Measured From : Drill Floor	MD LOG		
Depth Logged : 637.00 ft To 11,082.00 ft	Unit No. : 11610113		
Date Logged : 01-Nov-12 To 07-Nov-12	Job No. : CA-XX-0009901119		
Total Depth MD : 11,082.00 ft TVD : 6,650.83 ft	Plot Type : Final		
Spud Date : 01-Nov-12	Plot Date : 07-Nov-12		
Run No.	Borehole Record (MD)	Run No.	Borehole Record (MD)
2	Size 8.750 in From 637.00 ft To 5,870.00 ft	Size	To
3	8.750 in 5,870.00 ft 7,039.00 ft		
4	6.125 in 7,039.00 ft 11,082.00 ft		
		Casing Record (MD)	
		Size 7.000 in Weight 26.00 lbpf From SURFACE To 7,029.00 ft	

WELL INFORMATION

MWD Run Number	100	200	300		
Date run completed	03-Nov-12	04-Nov-12	06-Nov-12		
Rig Bit Number	2	3	4		
Bit Size (in)	8.750	8.750	6.125		
Tool Nominal OD (in)	6.750	6.750	4.75		
Log Start Depth (MD, ft)	637.00	5,870.00	7,039.00		
Log End Depth (MD, ft)	5,870.00	7,039.00	11,082.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	02-Nov-12 14:20	03-Nov-12 14:00	05-Nov-12 17:40		
Drill/Wipe End Date and Time	03-Nov-12 04:15	04-Nov-12 10:30	06-Nov-12 13:45		
Min Inc (deg) @ Depth (MD, ft)	0 @ 627.00	.68 @ 5,876.00	87.54 @ 7,384.00		
Max Inc (deg) @ Depth (MD, ft)	7.87 @ 2,600.00	88.89 @ 7,039.00	91.41 @ 11,020.00		
Bit TFA(in2) / Bit Type	.75 / PDC	.75 / PDC	.46 / PDC		
Flow Rate (gpm)	591.00	559.00	268.00		
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)	8.85 / 33.00	10.60 / 38.00	9.25 / 28.00		
Filtrate CL (ppm)	1,400.00	1,400.00	1,500.00		
pH / Fluid Loss (mptm)	9.10 / 10	9.10 / 9	8.90 / 12		
PV (cP) / YP (Ihf2)	10 / 6.00	11 / 11.00	3 / 5.00		
% Solids / % Sand	3.00 / 0.25	11.3 / 0.25	5.7 / 0.2		
% 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	141.70 / PCM	170.37 / PCM	228.74 / PCM		
Rm @ Max Tool Temp (degF)	N/A @ 141.70	N/A @ 170.37	N/A @ 228.74		
Lead MWD Engineer	Henry Schmeidler	Henry Schmeidler	Henry Schmeidler		
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	246130	246130	11854094		
Insert Serial Number	11680744	11680744	11680777		
Date and Time Initialized	02-Nov-12 06:28	02-Nov-12 06:28	04-Nov-12 23:00		
Date and Time Read	04-Nov-12 18:11	04-Nov-12 18:02	06-Nov-12 23:51		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	54.99	54.99	60.30		
Software Version	6.21	6.21	6.21		
Sub Serial Number	246130	246130	11854094		
Sonde Serial Number	11478107	11478107	11833231		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	129.49	304.90	240.50		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	50.19	50.19	55.50		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	246130	246130	11854094		
Insert/Sonde Serial Number	11680968	11680968	11293280		

REMARKS

1. All depths are calibrated to the driller's pipe tally and are measured from the rig drill floor.
2. No depth corrections have been made for pipe stretch or compression.
3. All data presented is recorded (memory data) unless otherwise stated.
 - ROPA: Average Rate of Penetration is real time data.
 - PGRC: Smooth Pressure Case Gamma Ray Borehole corrected is recorded data.
4. The following smoothing parameters have been applied to the data:
 - All 2" (1:600) logs - 1 ft. interval, 3 ft. coercion distance.
 - All 5" (1:240) logs - .5 ft. interval, .6 ft. coercion distance.
5. INSITE version 7.4.01
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 6989 ft. MD. Gamma cannot be measured within cased hole, and collection resumes after drilling through cement at 7039 ft. MD.

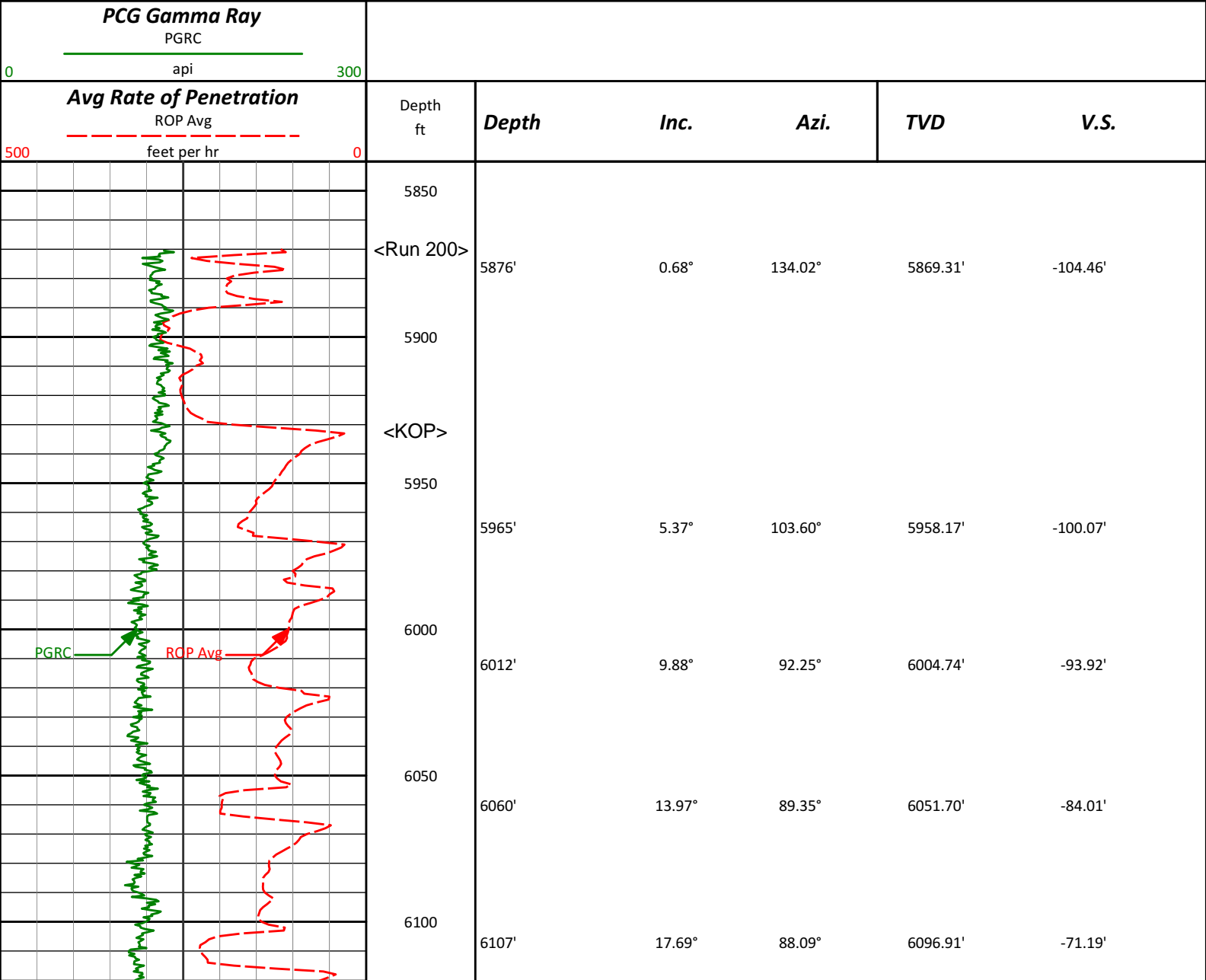
WARRANTY

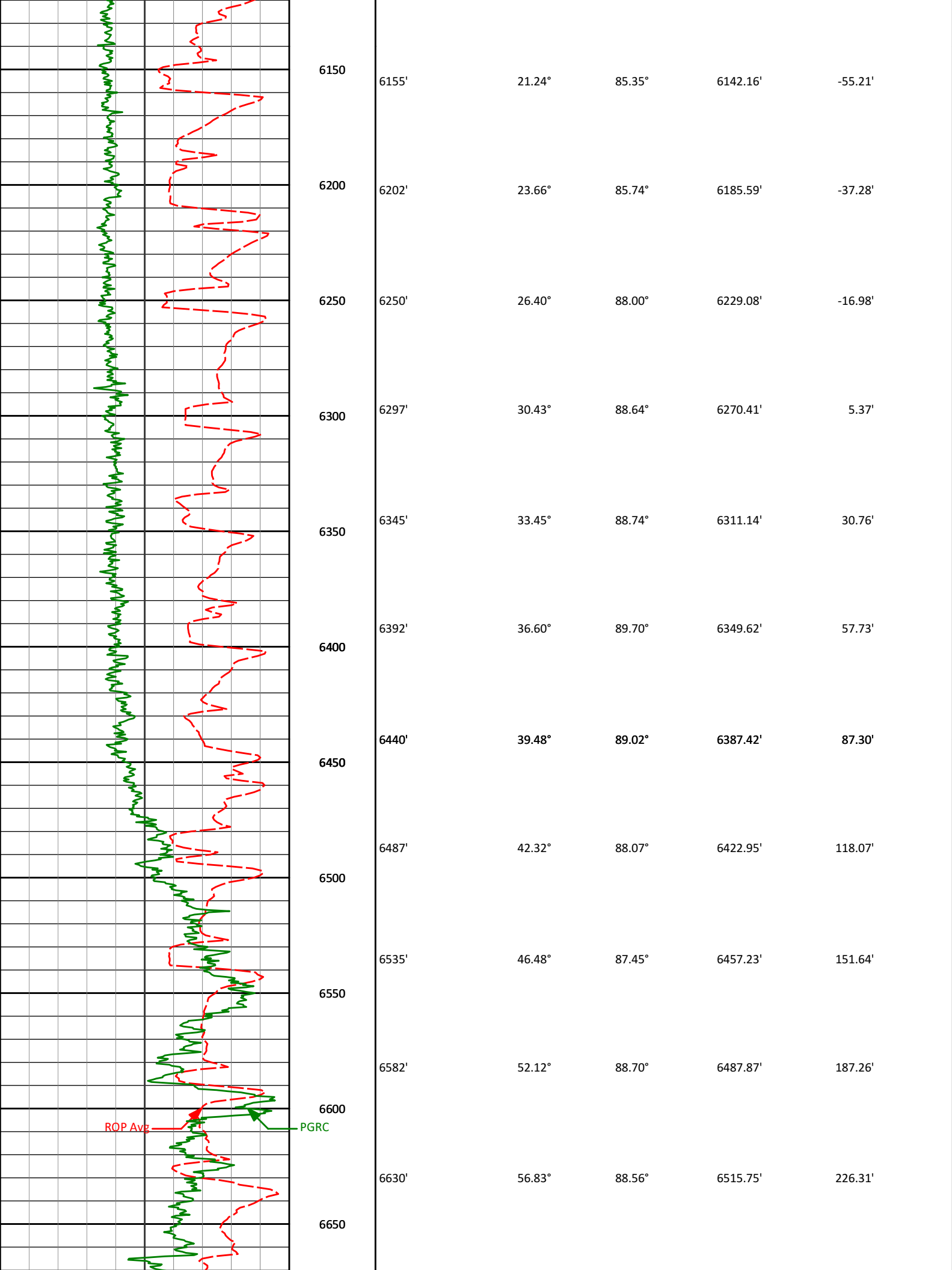
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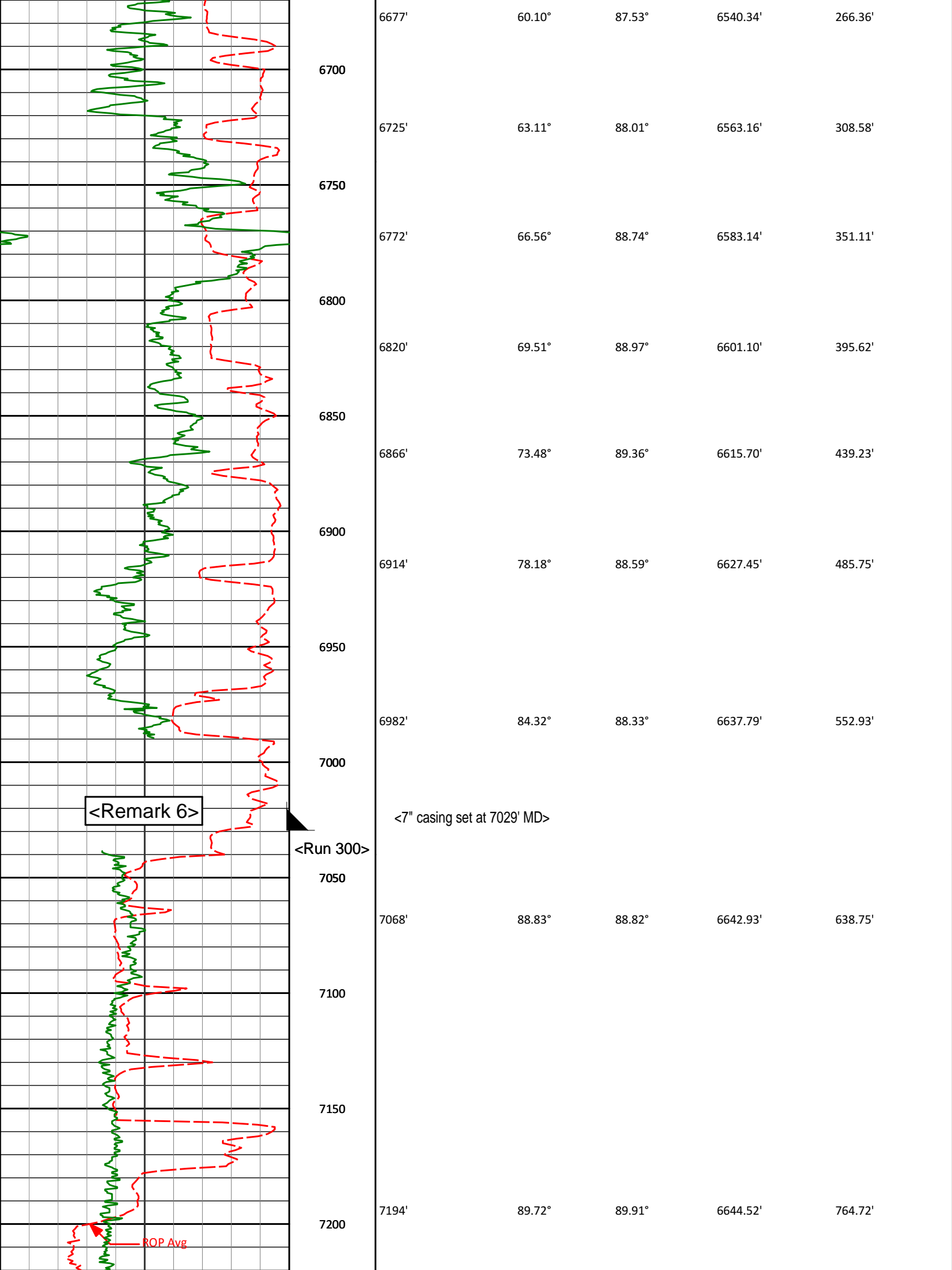
HALLIBURTON
Sperry Drilling Services

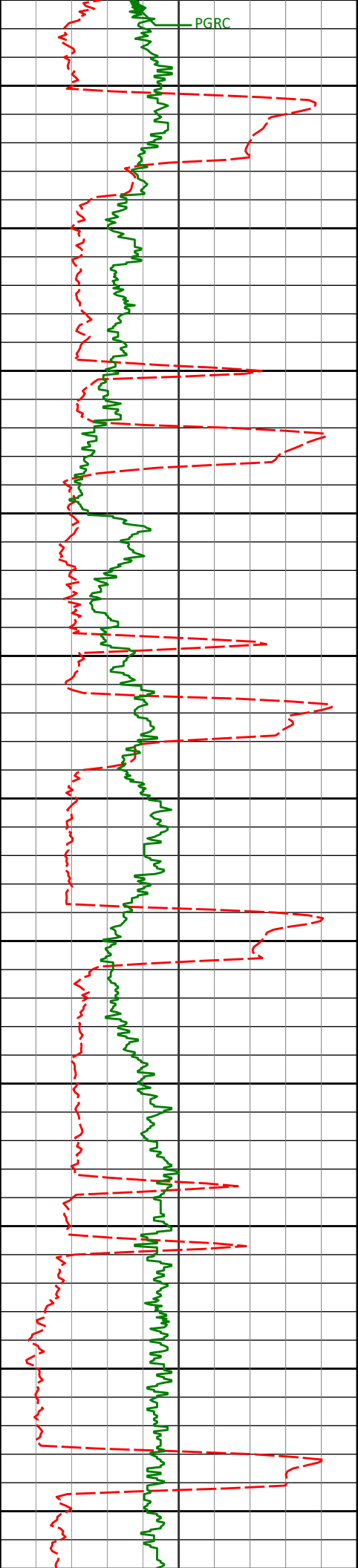
MD Main Log 1:600

Noble Energy, Inc
Wells Ranch AE18-68-1HN
H&P 315
T6N R62W

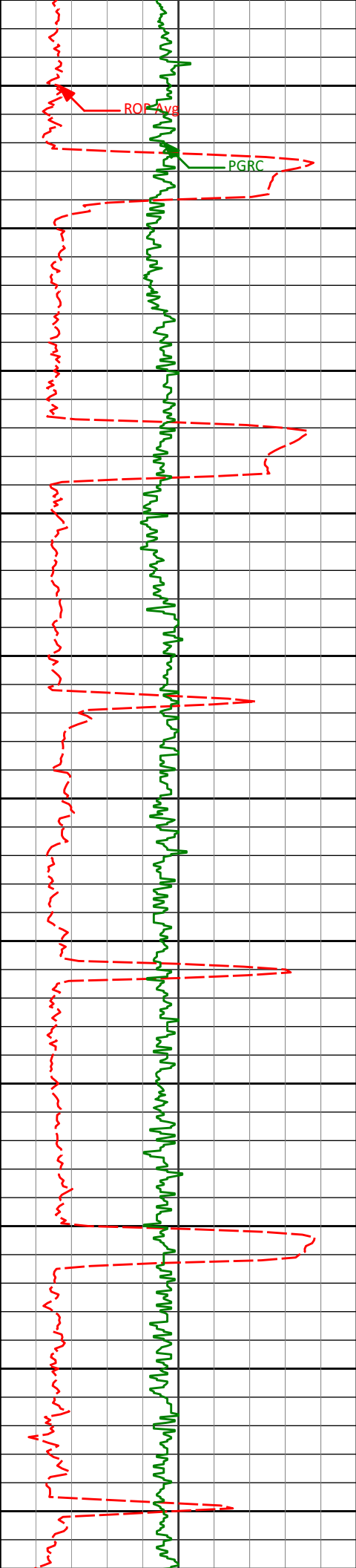








7250				
7289'	88.74°	89.53°	6645.80'	859.68'
7300				
7350				
7384'	87.54°	90.04°	6648.89'	954.60'
7400				
7450				
7479'	87.65°	89.24°	6652.88'	1049.49'
7500				
7550				
7574'	88.83°	87.58°	6655.79'	1144.44'
7600				
7650				
7669'	90.52°	87.78°	6656.33'	1239.43'
7700				
7750				
7764'	90.71°	90.16°	6655.30'	1334.41'



7800

7850

7900

7950

8000

8050

8100

8150

8200

8250

8300

7859'

90.34°

89.54°

6654.44'

1429.38'

7954'

90.00°

88.43°

6654.15'

1524.37'

8048'

89.85°

87.43°

6654.28'

1618.37'

8143'

90.25°

86.76°

6654.20'

1713.34'

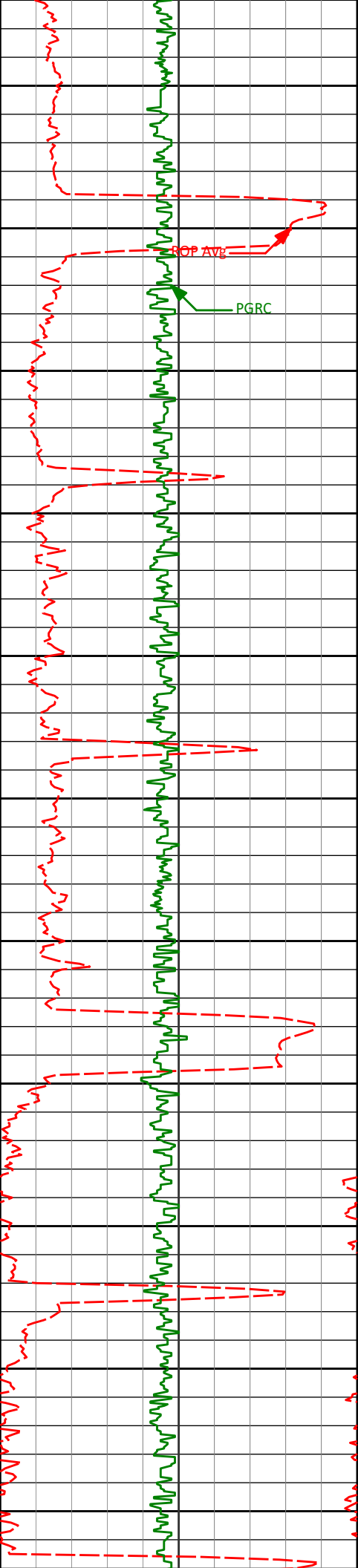
8238'

90.25°

87.38°

6653.79'

1808.32'



8333'	90.15°	86.99°	6653.46'	1903.29'
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8350

8400

ROP Avg
PGRC

8428'	90.31°	88.61°	6653.08'	1998.29'
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8450

8500

8523'	90.37°	88.44°	6652.52'	2093.28'
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8550

8600

8618'	90.40°	87.70°	6651.88'	2188.28'
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8650

8700

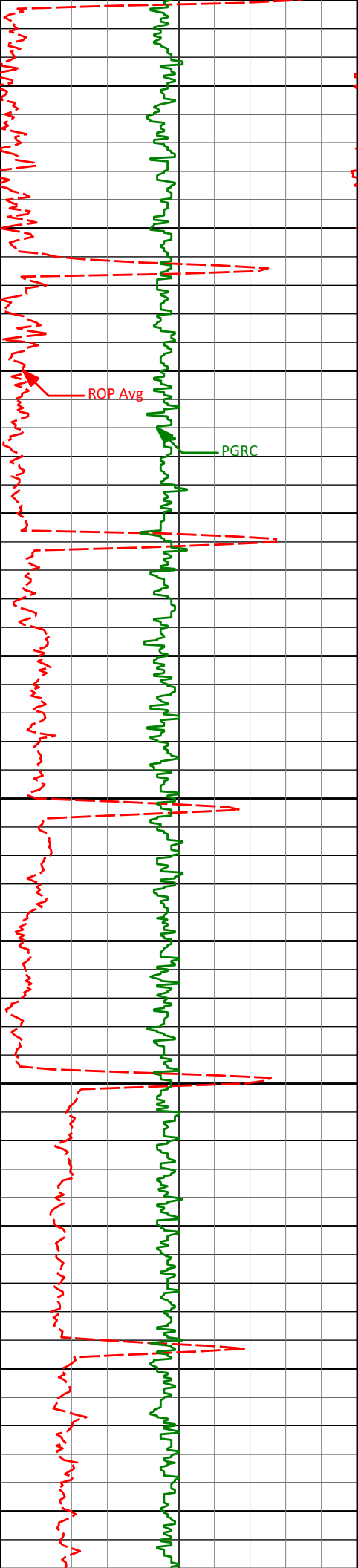
8713'	90.52°	90.01°	6651.11'	2283.27'
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8750

8800

8808'	90.43°	89.67°	6650.32'	2378.23'
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8850



8900

8903'

90.15°

89.56°

6649.84'

2473.21'

8950

9000

8998'

90.06°

89.84°

6649.66'

2568.18'

9050

9100

9092'

90.22°

89.52°

6649.43'

2662.16'

9150

9200

9187'

90.18°

89.18°

6649.10'

2757.14'

9250

9300

9282'

90.12°

89.28°

6648.84'

2852.13'

9350

9400

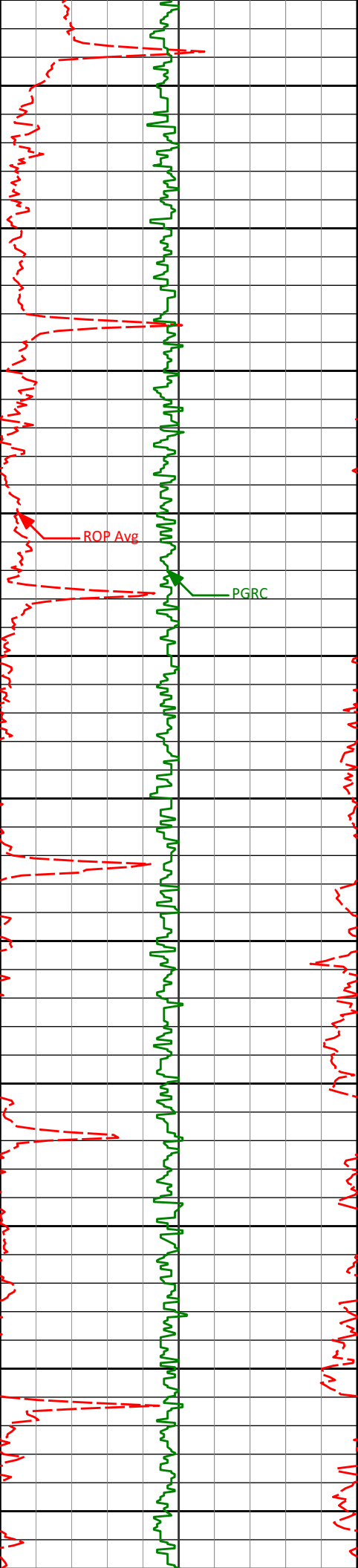
9377'

90.12°

88.55°

6648.64'

2947.13'



9450

9472'

90.25°

88.22°

6648.33'

3042.13'

9500

9550

9567'

90.15°

88.20°

6648.00'

3137.12'

9600

ROP Avg

PGRC

9650

9662'

90.15°

87.95°

6647.74'

3232.12'

9700

9750

9757'

90.15°

87.69°

6647.49'

3327.12'

9800

9850

9852'

90.34°

87.58°

6647.08'

3422.11'

9900

9950

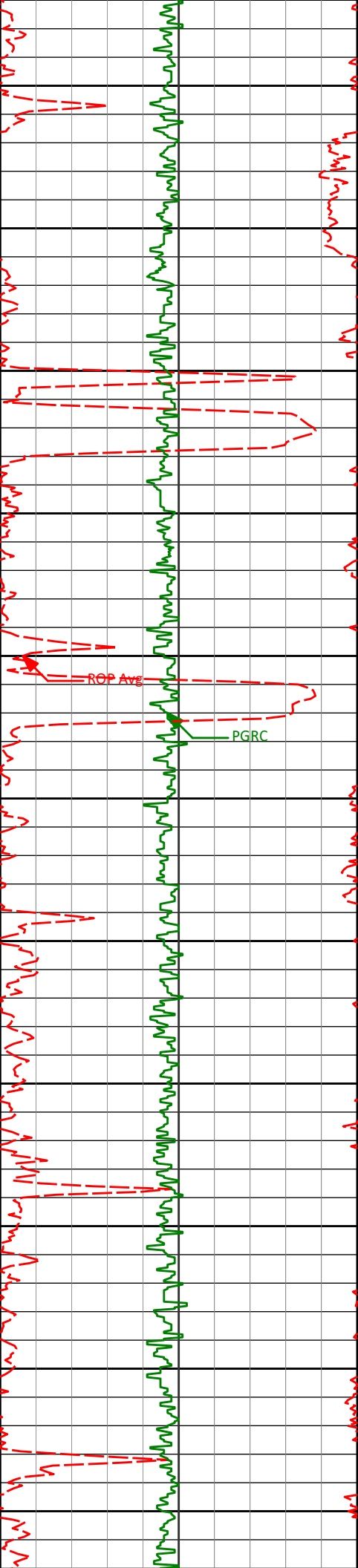
9947'

90.06°

87.23°

6646.75'

3517.09'



10000

10042'

90.06°

86.80°

6646.65'

3612.07'

10050

10100

10137'

89.75°

87.93°

6646.80'

3707.05'

10150

10200

10232'

88.86°

88.44°

6647.95'

3802.04'

10250

10300

10327'

90.49°

88.75°

6648.48'

3897.04'

10350

10400

10421'

90.00°

88.61°

6648.08'

3991.03'

10450

10500

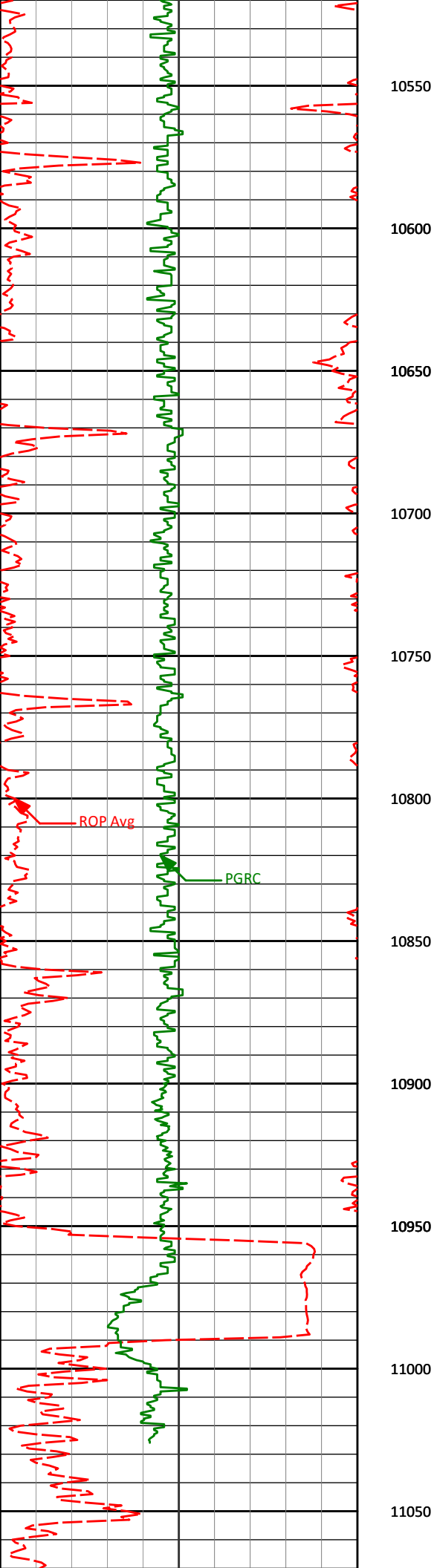
10516'

89.78°

88.78°

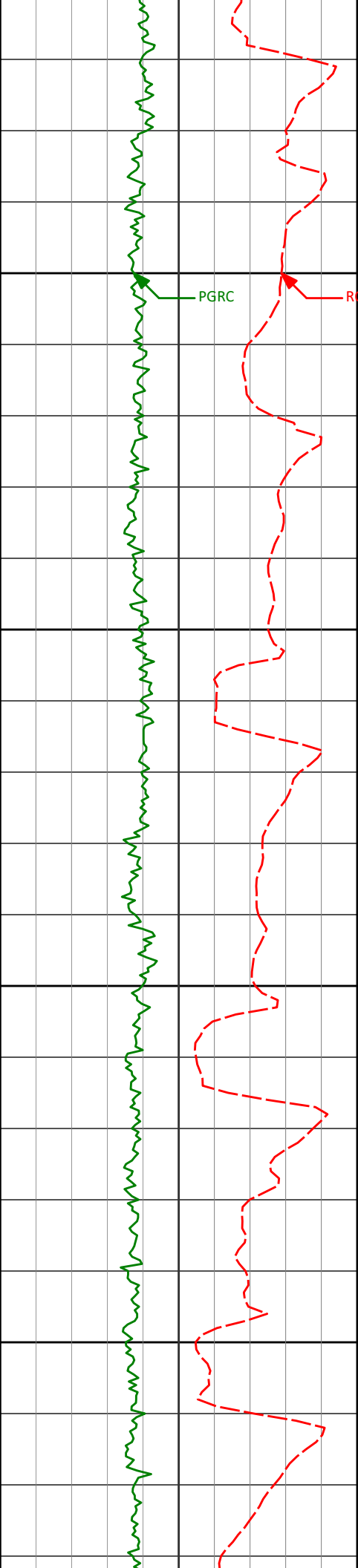
6648.26'

4086.03'

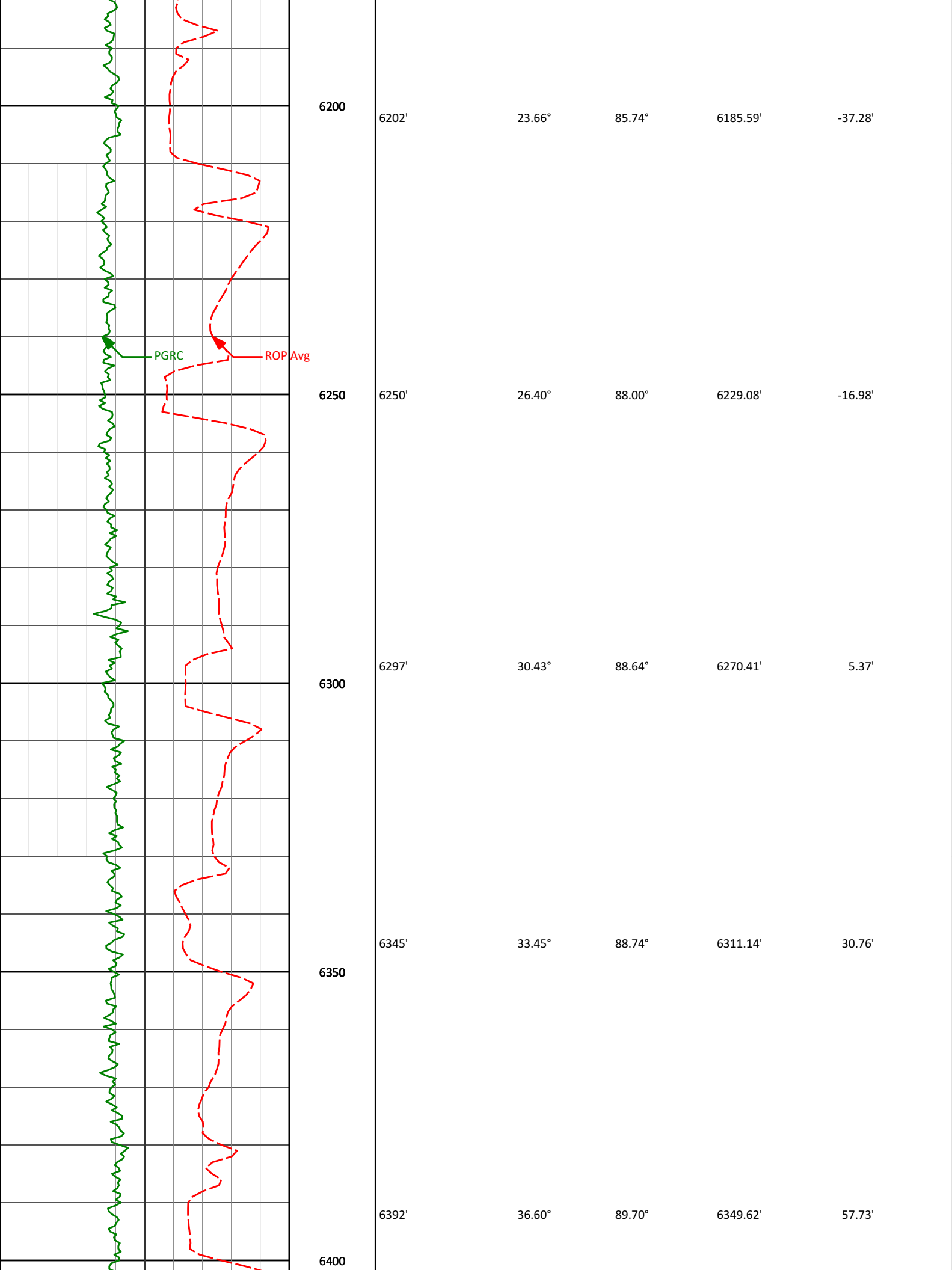


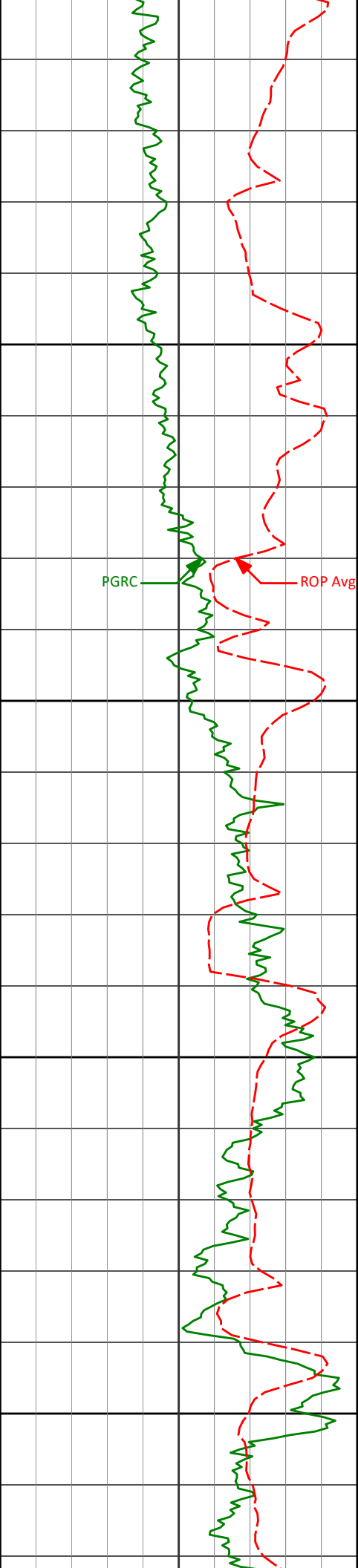
10611'	89.72°	88.84°	6648.67'	4181.03'
10706'	89.51°	88.71°	6649.31'	4276.02'
10801'	89.51°	88.64°	6650.12'	4371.02'
10896'	88.24°	88.54°	6651.99'	4466.00'
11020'	91.41°	88.35°	6652.36'	4589.98'

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <TD @ 11,082' MD> </div>		11100					
Avg Rate of Penetration ROP Avg ----- feet per hr		Depth ft	Depth	Inc.	Azi.	TVD	V.S.
500	0						
PCG Gamma Ray PGRC ----- api							
0	300						
<h1 style="color: red; margin: 0;">HALLIBURTON</h1> <h2 style="color: red; margin: 0;">Sperry Drilling Services</h2> <h3 style="margin: 0;">MD Detail Log 1:240</h3> <div style="text-align: right; margin-top: 10px;"> Noble Energy, Inc Wells Ranch AE18-68-1HN H&P 315 T6N R62W </div>							
PCG Gamma Ray PGRC ----- api							
0	300						
Avg Rate of Penetration ROP Avg ----- feet per hr		Depth ft	Depth	Inc.	Azi.	TVD	V.S.
500	0						
		5850					
		<Run 200>					
		5876'	0.68°	134.02°	5869.31'	-104.46'	
		5900					
		<KOP>					
		5950					



5965'	5.37°	103.60°	5958.17'	-100.07'
6012'	9.88°	92.25°	6004.74'	-93.92'
6060'	13.97°	89.35°	6051.70'	-84.01'
6107'	17.69°	88.09°	6096.91'	-71.19'
6155'	21.24°	85.35°	6142.16'	-55.21'





6450

6500

6550

6600

6440'

39.48°

89.02°

6387.42'

87.30'

6487'

42.32°

88.07°

6422.95'

118.07'

6535'

46.48°

87.45°

6457.23'

151.64'

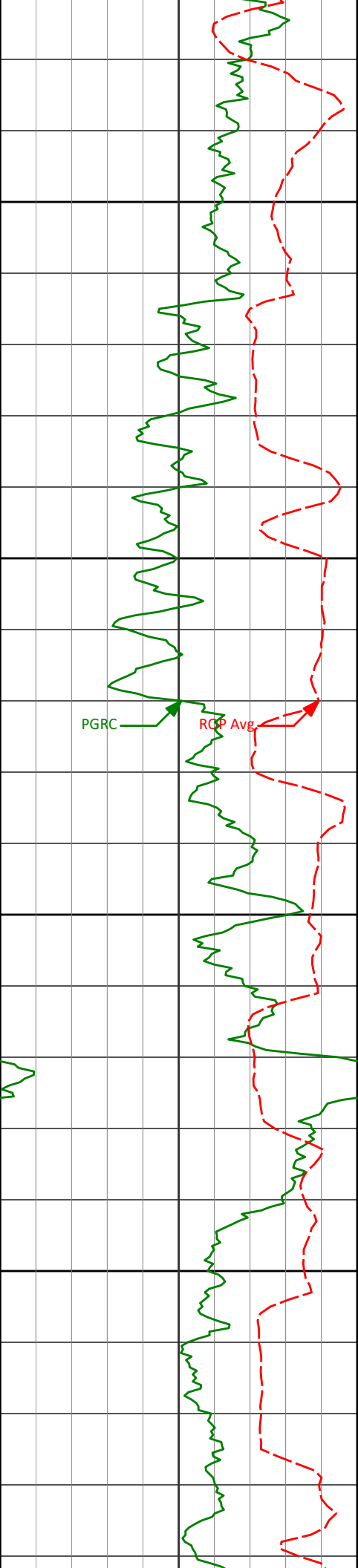
6582'

52.12°

88.70°

6487.87'

187.26'



6650

6700

6750

6800

6630'

56.83°

88.56°

6515.75'

226.31'

6677'

60.10°

87.53°

6540.34'

266.36'

6725'

63.11°

88.01°

6563.16'

308.58'

6772'

66.56°

88.74°

6583.14'

351.11'

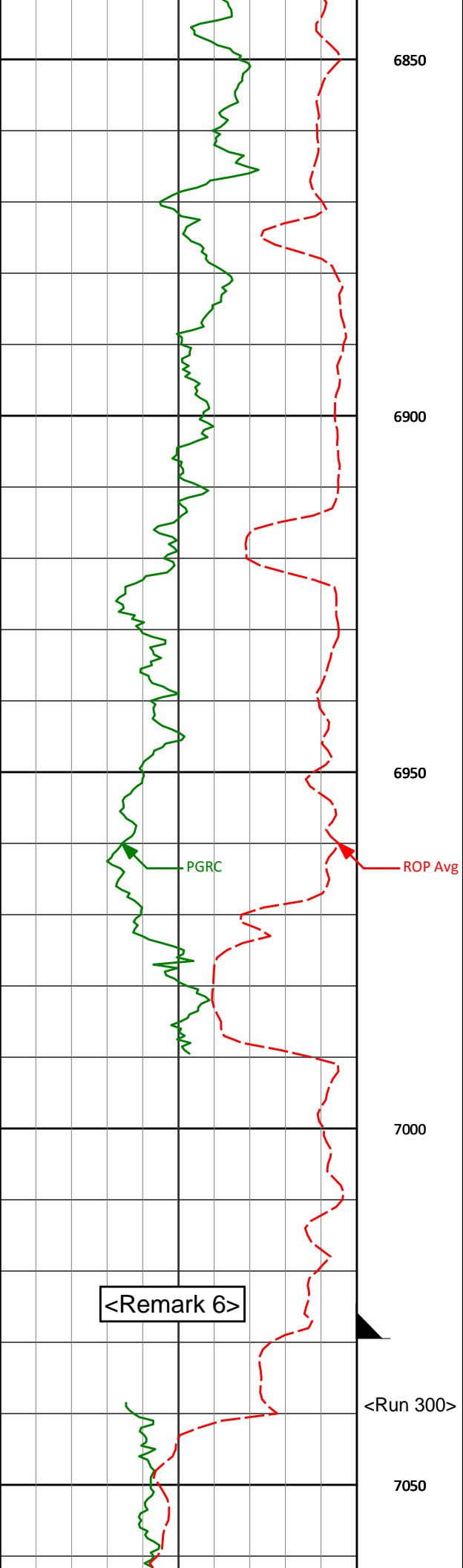
6820'

69.51°

88.97°

6601.10'

395.62'



6850

6866'

73.48°

89.36°

6615.70'

439.23'

6900

6914'

78.18°

88.59°

6627.45'

485.75'

6950

6982'

84.32°

88.33°

6637.79'

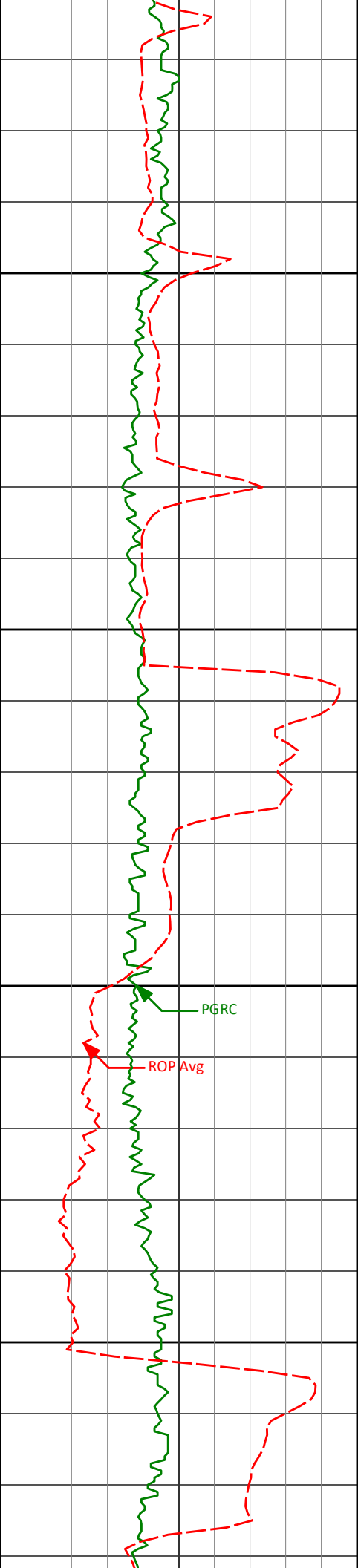
552.93'

7000

<7" casing set at 7029' MD>

<Run 300>

7050



7068'

88.83°

88.82°

6642.93'

638.75'

7100

7150

7194'

89.72°

89.91°

6644.52'

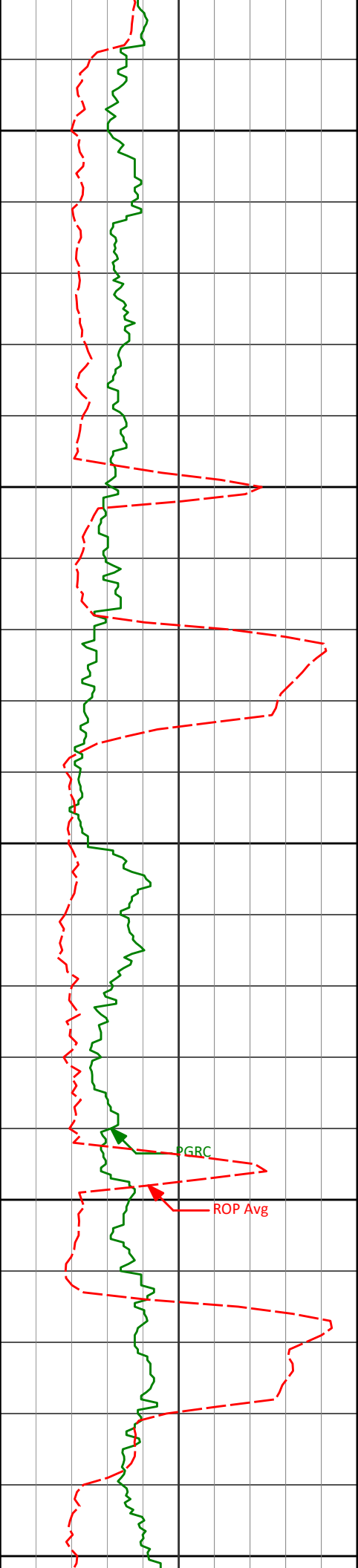
764.72'

7200

PGRC

ROP Avg

7250



7300

7350

7400

7450

7500

7289'

88.74°

89.53°

6645.80'

859.68'

7384'

87.54°

90.04°

6648.89'

954.60'

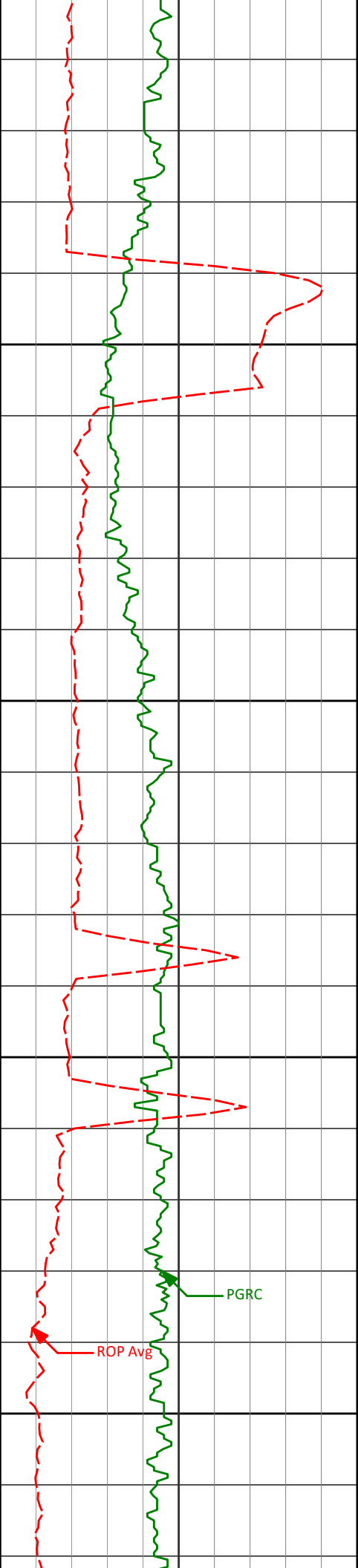
7479'

87.65°

89.24°

6652.88'

1049.49'



7550

7574'

88.83°

87.58°

6655.79'

1144.44'

7600

7650

7669'

90.52°

87.78°

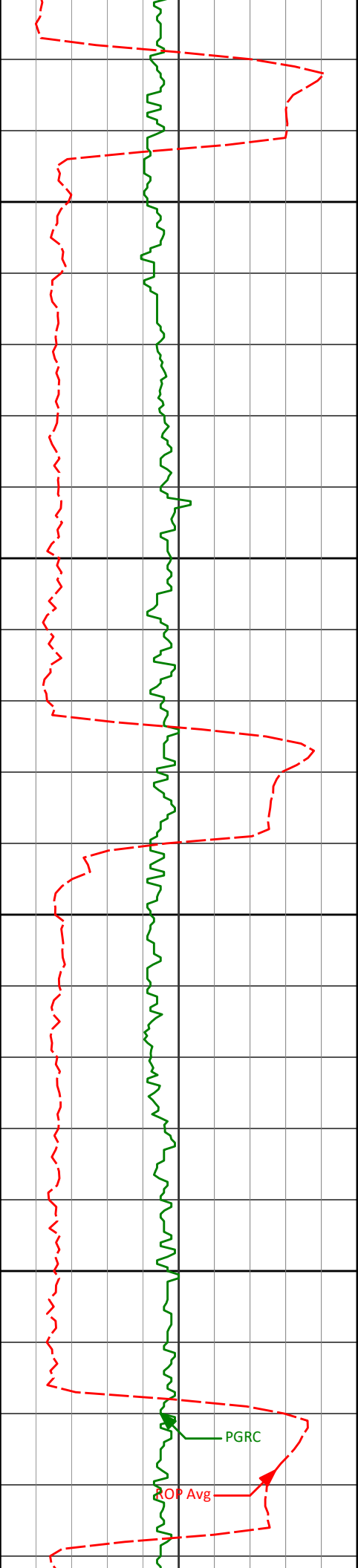
6656.33'

1239.43'

7700

PGRC

ROP Avg



7750

7764'

90.71°

90.16°

6655.30'

1334.41'

7800

7850

7859'

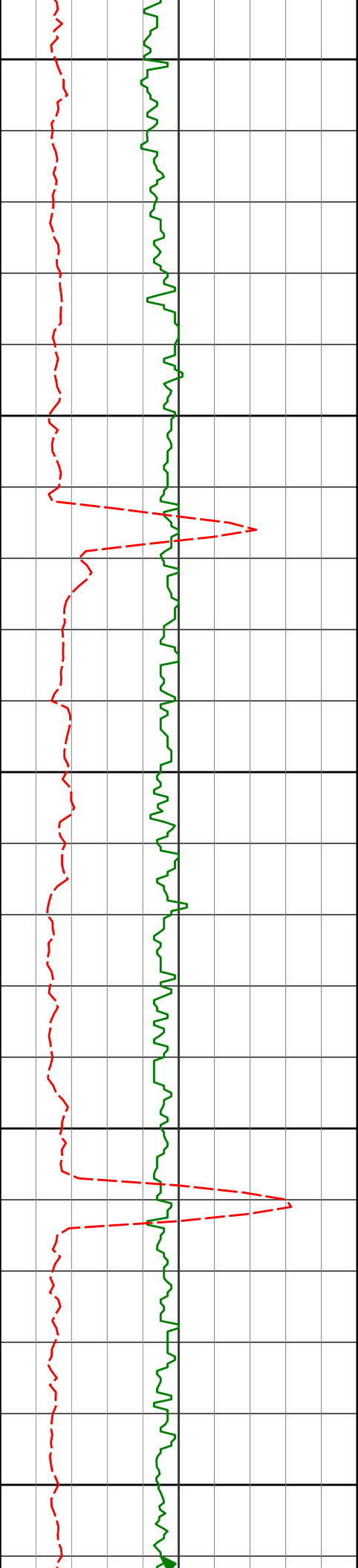
90.34°

89.54°

6654.44'

1429.38'

7900



7950

7954'	90.00°	88.43°	6654.15'	1524.37'
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8000

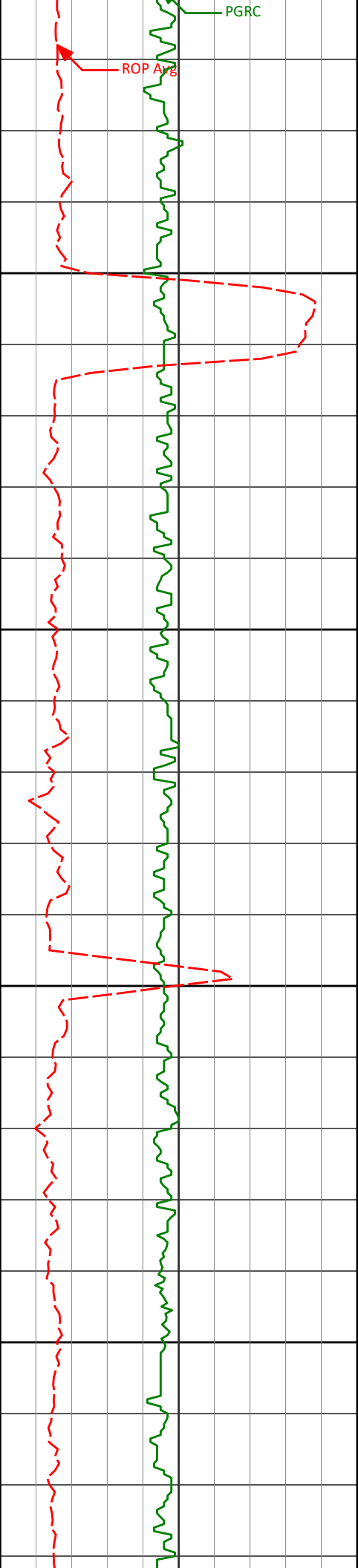
8050

8048'	89.85°	87.43°	6654.28'	1618.37'
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8100

8150

8143'	90.25°	86.76°	6654.20'	1713.34'
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8200

8238'

90.25°

87.38°

6653.79'

1808.32'

8250

8300

8333'

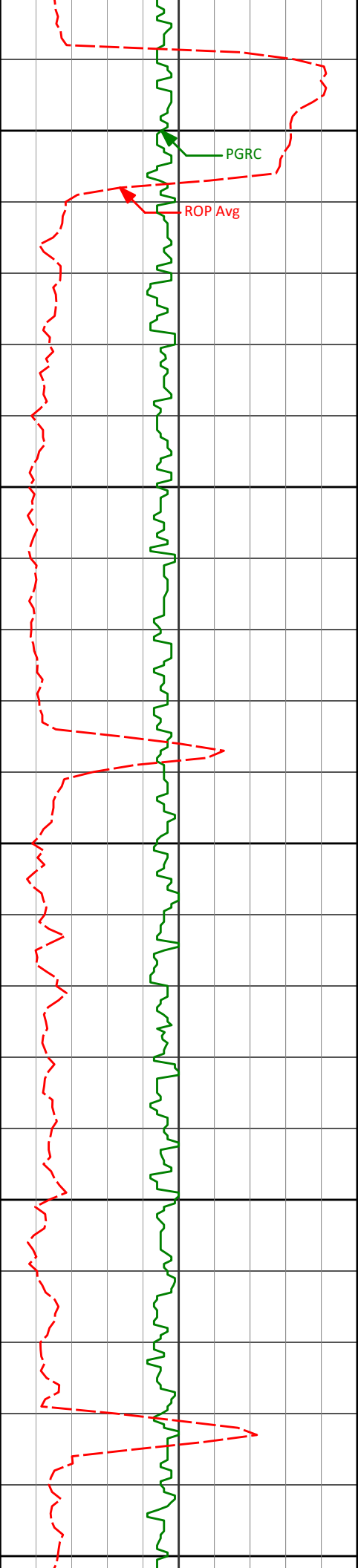
90.15°

86.99°

6653.46'

1903.29'

8350



8400

8428'

90.31°

88.61°

6653.08'

1998.29'

8450

8500

8523'

90.37°

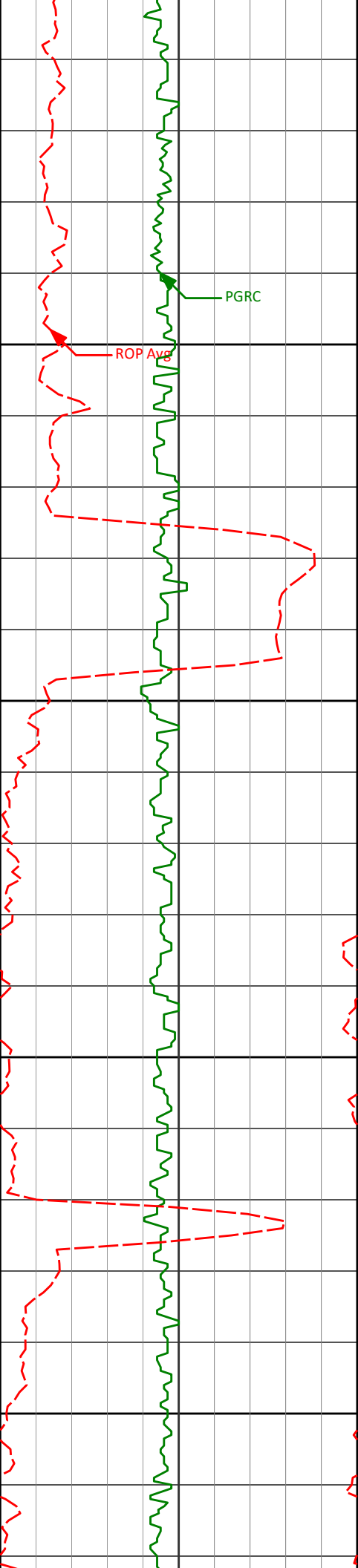
88.44°

6652.52'

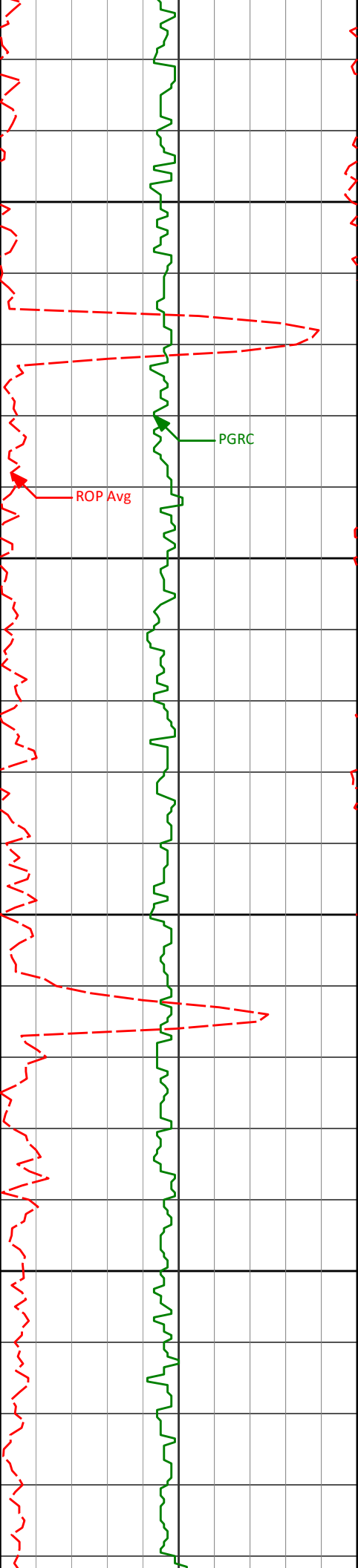
2093.28'

8550

8600



8618'	90.40°	87.70°	6651.88'	2188.28'
8650				
8700				
8713'	90.52°	90.01°	6651.11'	2283.27'
8750				
8800				
8808'	90.43°	89.67°	6650.32'	2378.23'



8850

8900

8950

9000

8903'

90.15°

89.56°

6649.84'

2473.21'

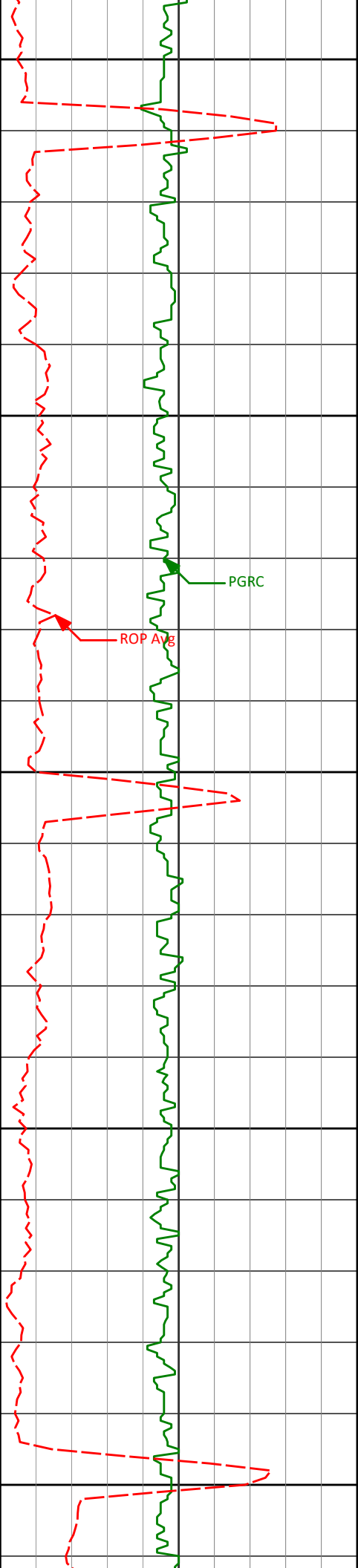
8998'

90.06°

89.84°

6649.66'

2568.18'



9050

9092'	90.22°	89.52°	6649.43'	2662.16'
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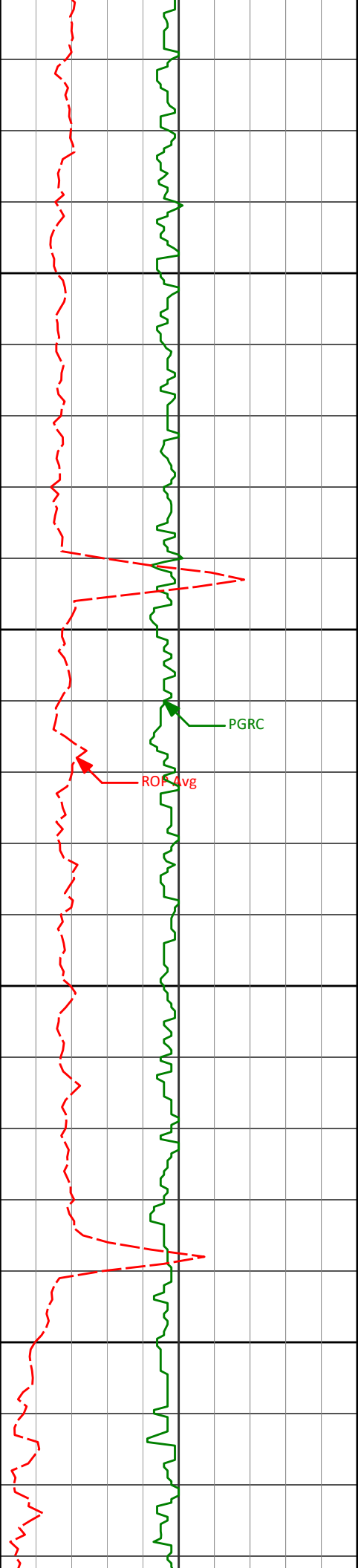
9100

9150

9187'	90.18°	89.18°	6649.10'	2757.14'
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9200

9250



9282'

90.12°

89.28°

6648.84'

2852.13'

9300

9350

9377'

90.12°

88.55°

6648.64'

2947.13'

9400

9450

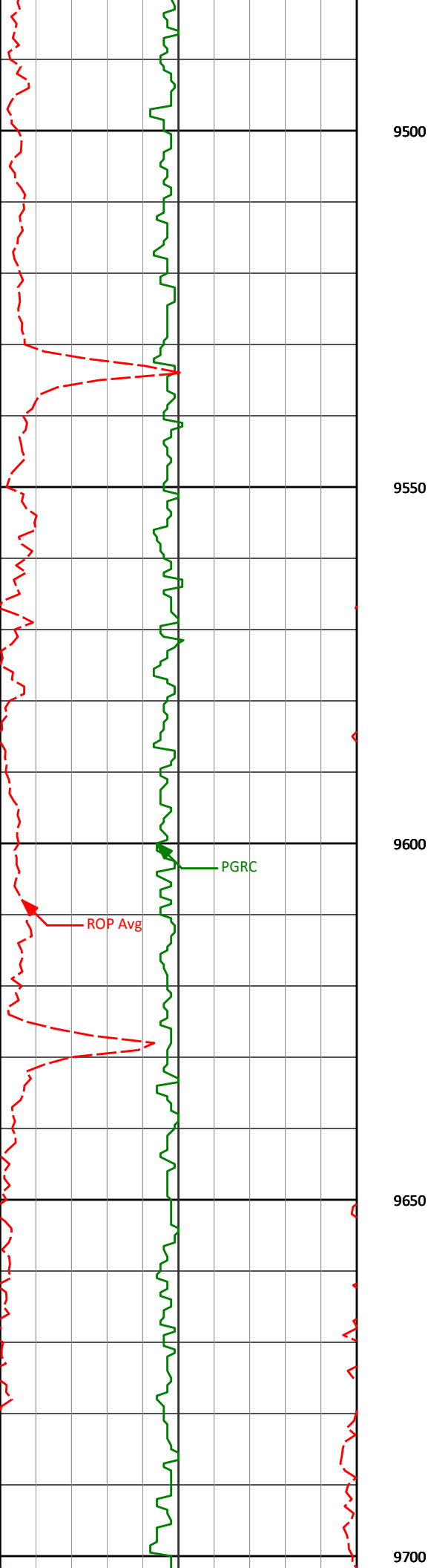
9472'

90.25°

88.22°

6648.33'

3042.13'



9567'

90.15°

88.20°

6648.00'

3137.12'

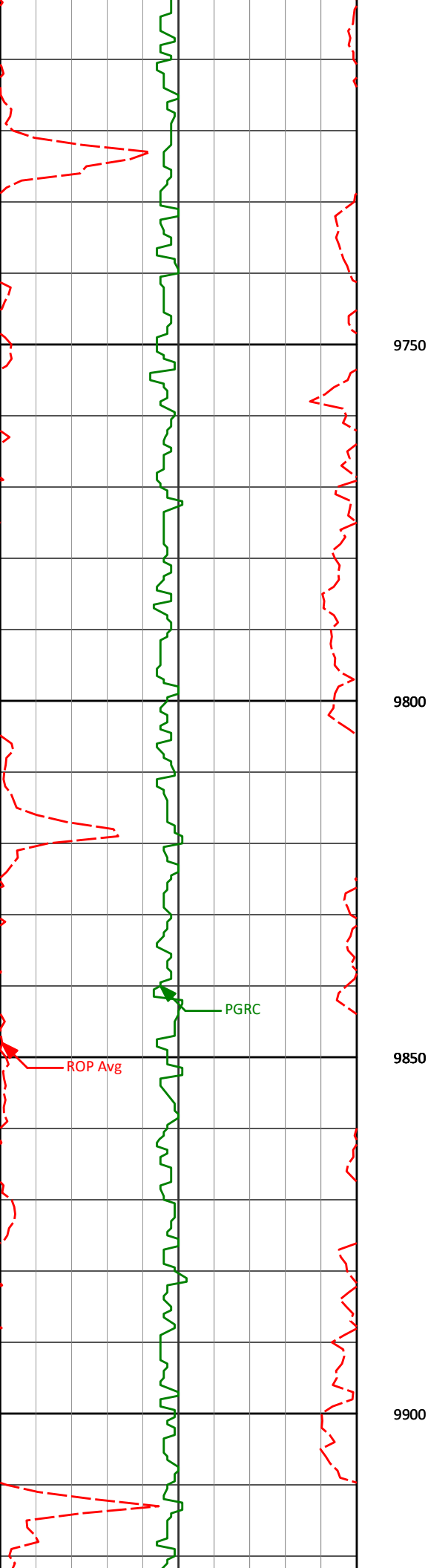
9662'

90.15°

87.95°

6647.74'

3232.12'



9757'

90.15°

87.69°

6647.49'

3327.12'

9750

9800

9850

9900

9852'

90.34°

87.58°

6647.08'

3422.11'



9947'	90.06°	87.23°	6646.75'	3517.09'
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10000

10042'	90.06°	86.80°	6646.65'	3612.07'
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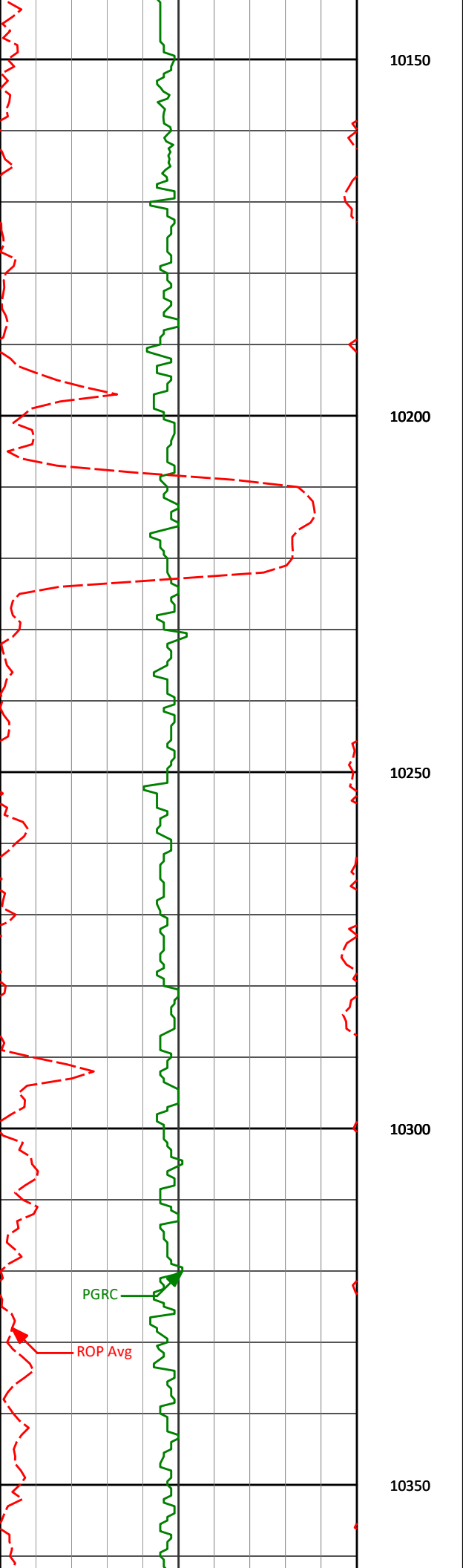
10050

PGRC

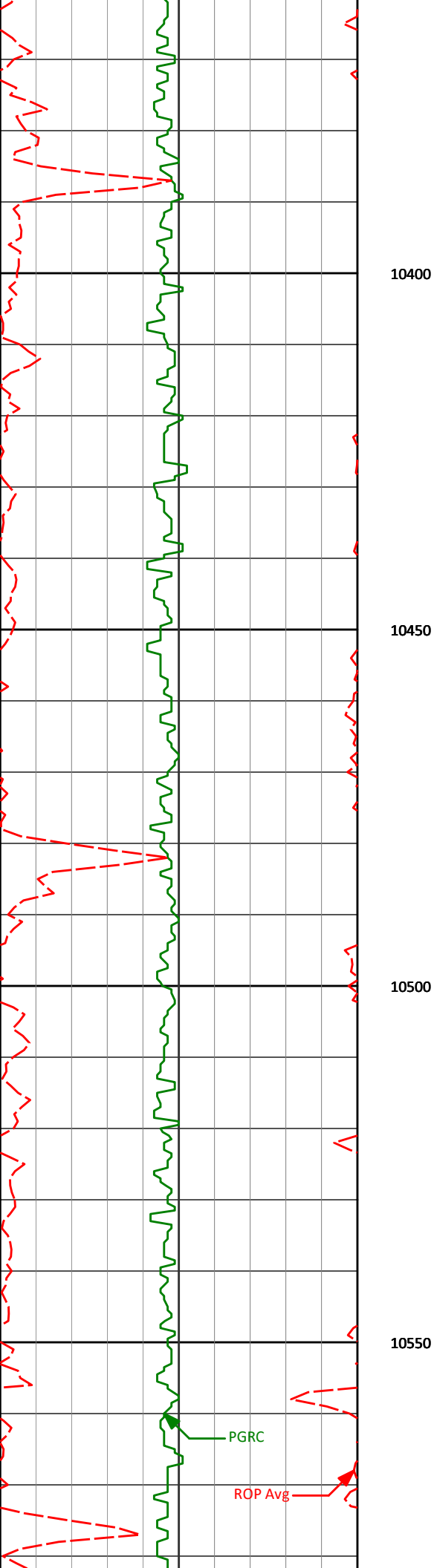
ROP Avg

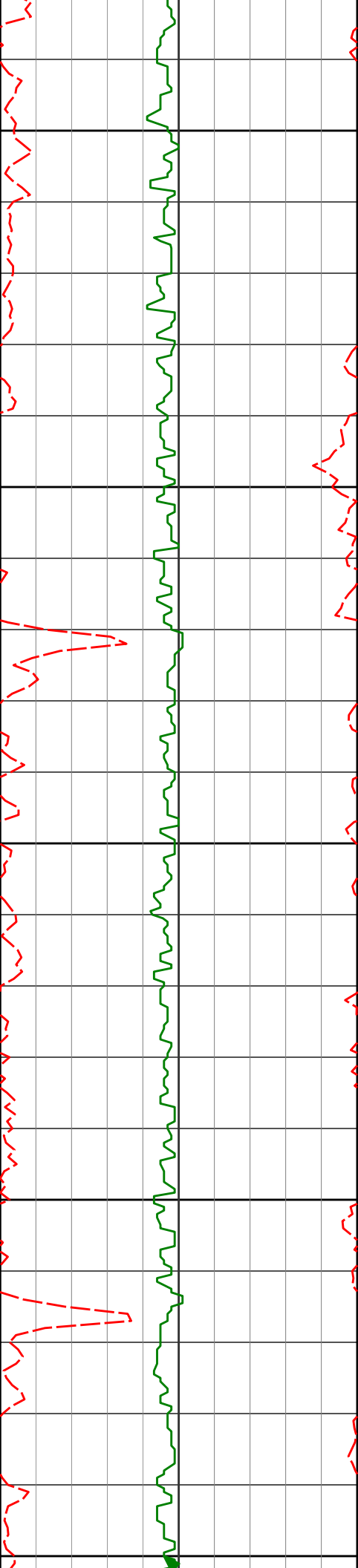
10100

10137'	89.75°	87.93°	6646.80'	3707.05'
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10150				
10200				
10232'	88.86°	88.44°	6647.95'	3802.04'
10250				
10300				
10327'	90.49°	88.75°	6648.48'	3897.04'
10350				





10600

10611'

89.72°

88.84°

6648.67'

4181.03'

10650

10700

10706'

89.51°

88.71°

6649.31'

4276.02'

10750

10800

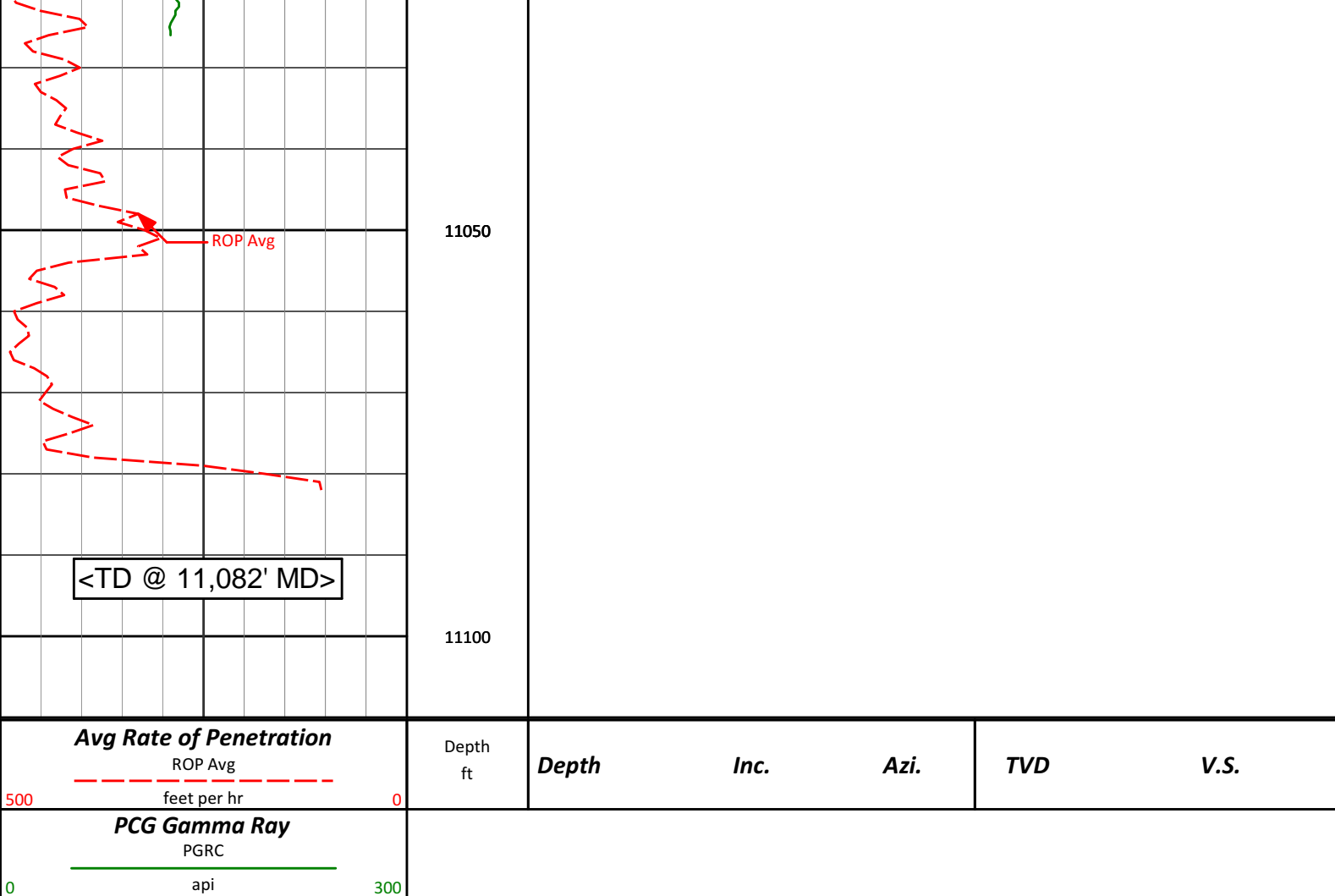
10801'

89.51°

88.64°

6650.12'

4371.02'



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Wells Ranch AE18-68-1HN
Wattenberg
Weld Colorado
USA
CA-XX-0009901119

Survey depth 627 ft created to tie surveys onto bottom of the surface casing shoe.

Last survey is a projection to the bit at TD.

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
627.00	0.00	0.00	627.00	0.00 N	0.00 E	0.00	TIE-IN
718.00	0.13	76.08	718.00	0.02 N	0.10 E	0.10	0.14
997.00	0.38	184.80	997.00	0.81 S	0.32 E	0.30	0.16
1275.00	0.36	249.93	1274.99	2.02 S	0.57 W	-0.63	0.14
1557.00	0.91	180.92	1556.98	4.57 S	1.44 W	-1.57	0.30
1841.00	1.37	319.16	1840.95	4.27 S	3.69 W	-3.81	0.75
2031.00	2.93	303.93	2030.81	0.15 N	9.20 W	-9.19	0.87
2126.00	5.15	291.69	2125.57	3.08 N	15.18 W	-15.08	2.50
2221.00	3.47	280.94	2220.30	5.21 N	21.97 W	-21.81	1.96
2316.00	5.31	284.01	2315.02	6.82 N	29.05 W	-28.85	1.95
2411.00	5.49	296.76	2409.60	9.93 N	37.38 W	-37.08	1.27
2505.00	6.71	295.20	2503.07	14.29 N	46.35 W	-45.93	1.31
2600.00	7.87	291.14	2597.30	18.99 N	57.44 W	-56.87	1.33
2695.00	7.85	290.63	2691.41	23.62 N	69.57 W	-68.87	0.07
2790.00	7.85	287.45	2785.52	27.85 N	81.83 W	-81.01	0.46

2885.00	6.29	291.61	2879.79	31.72 N	92.86 W	-91.92	1.74
2980.00	5.62	298.57	2974.28	35.86 N	101.78 W	-100.72	1.04
3075.00	4.34	278.84	3068.93	38.63 N	109.41 W	-108.27	2.23
3169.00	1.86	268.64	3162.79	39.14 N	114.45 W	-113.29	2.69
3264.00	1.03	239.89	3257.76	38.68 N	116.73 W	-115.58	1.14
3549.00	1.87	167.09	3542.68	32.86 N	117.90 W	-116.92	0.65
3834.00	1.70	160.61	3827.54	24.33 N	115.46 W	-114.72	0.09
4118.00	1.46	95.98	4111.46	19.99 N	110.46 W	-109.85	0.60
4403.00	1.02	41.16	4396.40	21.52 N	105.17 W	-104.52	0.42
4688.00	1.03	20.30	4681.35	25.85 N	102.61 W	-101.83	0.13
4973.00	0.48	275.34	4966.34	28.37 N	102.91 W	-102.06	0.44
5258.00	0.42	266.18	5251.33	28.41 N	105.14 W	-104.29	0.03
5542.00	0.47	354.88	5535.32	29.50 N	106.28 W	-105.40	0.22
5813.00	0.38	135.87	5806.32	29.95 N	105.75 W	-104.86	0.29
5876.00	0.68	134.02	5869.31	29.54 N	105.34 W	-104.46	0.48
5965.00	5.37	103.60	5958.17	28.19 N	100.91 W	-100.07	5.38
6012.00	9.88	92.25	6004.74	27.51 N	94.74 W	-93.92	10.08
6060.00	13.97	89.35	6051.70	27.42 N	84.82 W	-84.01	8.62
6107.00	17.69	88.09	6096.91	27.72 N	72.01 W	-71.19	7.95
6155.00	21.24	85.35	6142.16	28.67 N	56.05 W	-55.21	7.62
6202.00	23.66	85.74	6185.59	30.06 N	38.15 W	-37.28	5.18
6250.00	26.40	88.00	6229.08	31.15 N	17.88 W	-16.98	6.03
6297.00	30.43	88.64	6270.41	31.79 N	4.47 E	5.37	8.59
6345.00	33.45	88.74	6311.14	32.37 N	29.85 E	30.76	6.31
6392.00	36.60	89.70	6349.62	32.73 N	56.82 E	57.73	6.79
6440.00	39.48	89.02	6387.42	33.07 N	86.40 E	87.30	6.06
6487.00	42.32	88.07	6422.95	33.86 N	117.15 E	118.07	6.18
6535.00	46.48	87.45	6457.23	35.18 N	150.70 E	151.64	8.73
6582.00	52.12	88.70	6487.87	36.36 N	186.30 E	187.26	12.16
6630.00	56.83	88.56	6515.75	37.29 N	225.34 E	226.31	9.81
6677.00	60.10	87.53	6540.34	38.66 N	265.37 E	266.36	7.20
6725.00	63.11	88.01	6563.16	40.30 N	307.56 E	308.58	6.33
6772.00	66.56	88.74	6583.14	41.50 N	350.07 E	351.11	7.49
6820.00	69.51	88.97	6601.10	42.39 N	394.57 E	395.62	6.14
6866.00	73.48	89.36	6615.70	43.03 N	438.18 E	439.23	8.67
6914.00	78.18	88.59	6627.45	43.86 N	484.70 E	485.75	9.92
6982.00	84.32	88.33	6637.79	45.66 N	551.85 E	552.93	9.04
7068.00	88.83	88.82	6642.93	47.79 N	637.65 E	638.75	5.27
7194.00	89.72	89.91	6644.52	49.19 N	763.63 E	764.72	1.12
7289.00	88.74	89.53	6645.80	49.66 N	858.62 E	859.68	1.11
7384.00	87.54	90.04	6648.89	50.01 N	953.56 E	954.60	1.38
7479.00	87.65	89.24	6652.88	50.60 N	1048.48 E	1049.49	0.85
7574.00	88.83	87.58	6655.79	53.23 N	1143.39 E	1144.44	2.14
7669.00	90.52	87.78	6656.33	57.08 N	1238.31 E	1239.43	1.80
7764.00	90.71	90.16	6655.30	58.78 N	1333.28 E	1334.41	2.51
7859.00	90.34	89.54	6654.44	59.03 N	1428.28 E	1429.38	0.75
7954.00	90.00	88.43	6654.15	60.71 N	1523.26 E	1524.37	1.23
8048.00	89.85	87.43	6654.28	64.11 N	1617.20 E	1618.37	1.08
8143.00	90.25	86.76	6654.20	68.92 N	1712.07 E	1713.34	0.82
8238.00	90.25	87.38	6653.79	73.78 N	1806.95 E	1808.32	0.65
8333.00	90.15	86.99	6653.46	78.45 N	1901.83 E	1903.29	0.42
8428.00	90.31	88.61	6653.08	82.10 N	1996.76 E	1998.29	1.72
8523.00	90.37	88.44	6652.52	84.55 N	2091.72 E	2093.28	0.20
8618.00	90.40	87.70	6651.88	87.75 N	2186.67 E	2188.28	0.78
8713.00	90.52	90.01	6651.11	89.65 N	2281.64 E	2283.27	2.44
8808.00	90.43	89.67	6650.32	89.92 N	2376.64 E	2378.23	0.37
8903.00	90.15	89.56	6649.84	90.55 N	2471.63 E	2473.21	0.31
8998.00	90.06	89.84	6649.66	91.05 N	2566.63 E	2568.18	0.31
9092.00	90.22	89.52	6649.43	91.57 N	2660.63 E	2662.16	0.38
9187.00	90.18	89.18	6649.10	92.65 N	2755.62 E	2757.14	0.36
9282.00	90.12	89.28	6648.84	93.93 N	2850.61 E	2852.13	0.12
9377.00	90.12	88.55	6648.64	95.73 N	2945.59 E	2947.13	0.77
9472.00	90.25	88.22	6648.33	98.41 N	3040.56 E	3042.13	0.37
9567.00	90.15	88.20	6648.00	101.38 N	3135.51 E	3137.12	0.10
9662.00	90.15	87.95	6647.74	104.57 N	3230.46 E	3232.12	0.26
9757.00	90.15	87.69	6647.49	108.18 N	3325.39 E	3327.12	0.28
9852.00	90.34	87.58	6647.08	112.10 N	3420.30 E	3422.11	0.22
9947.00	90.06	87.23	6646.75	116.40 N	3515.21 E	3517.09	0.48
10042.00	90.06	86.80	6646.65	121.35 N	3610.08 E	3612.07	0.45
10137.00	89.75	87.93	6646.80	125.71 N	3704.97 E	3707.05	1.24
10232.00	88.86	88.44	6647.95	128.72 N	3799.92 E	3802.04	1.08

10327.00	90.49	88.75	6648.48	131.05 N	3894.89 E	3897.04	1.75
10421.00	90.00	88.61	6648.08	133.22 N	3988.86 E	3991.03	0.55
10516.00	89.78	88.78	6648.26	135.39 N	4083.83 E	4086.03	0.29
10611.00	89.72	88.84	6648.67	137.36 N	4178.81 E	4181.03	0.09
10706.00	89.51	88.71	6649.31	139.39 N	4273.79 E	4276.02	0.26
10801.00	89.51	88.64	6650.12	141.58 N	4368.76 E	4371.02	0.08
10896.00	88.24	88.54	6651.99	143.92 N	4463.71 E	4466.00	1.34
11020.00	91.41	88.35	6652.36	147.29 N	4587.65 E	4589.98	2.56
11082.00	91.41	88.35	6650.83	149.08 N	4649.60 E	4651.96	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 88.16 DEGREES (GRID)							
A TOTAL CORRECTION OF 7.80 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED							
HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.							
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11082.00 FEET							
IS 4651.99 FEET ALONG 88.16 DEGREES (GRID)							

Date Printed:07 November 2012