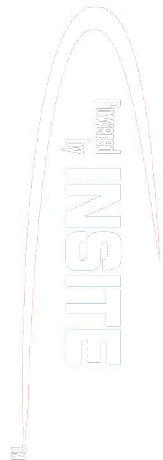


PCDC - Pressure Case Directional
PCGK - Pressure Case Gamma

1 : 240

Country		: USA							
Field		: Wattenberg							
Location		: Lat: 40° 26' 41.50" North Long: 104° 23' 38.76" West							
Well		: Wells Ranch AA35-67-1AHNA							
Company		: Noble Energy							
Rig		: H&P 322							
LOCATION		<div>Company : Noble Energy</div> <div>Rig : H&P 322</div> <div>Well : Wells Ranch AA35-67-1AHNA</div> <div>Field : Wattenberg</div> <div>Country : USA</div> <div>API Number : 05-123-38654</div>							
Latitude : 40° 26' 41.50" North						Other Services Directional Drilling			
Longitude : 104° 23' 38.76" West									
UTM Easting = 3307792.806 ft									
UTM Northing = 1406822.565 ft									
Permanent Datum : Ground Level						Elevation : 4790.00 ft		Elev. KB N/A	
Log Measured From : Drill Floor						24.00 ft Above Permanent Datum		DF 4814.00 ft GL 4790.00 ft WD N/A	
Drilling Measured From : Drill Floor						MD LOG			
Depth Logged : 679.00 ft To 11,094.00 ft		Unit No. : 11210425		Job No. :CA-XX-0901017382					
Date Logged : 22-Feb-14 To 02-Mar-14		Plot Type : Final							
Total Depth MD : 11,094.00 ft TVD : 6,537.95 ft		Plot Date : 02-Mar-14							
Spud Date : 22-Feb-14									
Run No.	Borehole Record (MD)		Run No.	Borehole Record (MD)					
	Size	From To		Size	From To				
2	8.750 in	679.00 ft 5,872.00 ft							
3	8.750 in	5,872.00 ft 6,880.00 ft							
4	6.125 in	6,880.00 ft 10,304.00 ft							
5	6.125 in	10,304.00 ft 11,094.00 ft							

WELL INFORMATION

MWD Run Number	100	200	300	400	
Date run completed	24-Feb-14	25-Feb-14	28-Feb-14	02-Mar-14	
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)	679.00	5,872.00	6,880.00	10,304.00	
Log End Depth (MD, ft)	5,872.00	6,880.00	10,304.00	11,094.00	
Drill or Wipe	Drill	Drill	Drill	Drill	
Drill/Wipe Start Date and Time	23-Feb-14 20:50	25-Feb-14 02:15	27-Feb-14 04:45	01-Mar-14 02:00	
Drill/Wipe End Date and Time	24-Feb-14 16:00	25-Feb-14 13:00	28-Feb-14 11:45	01-Mar-14 15:00	
Min Inc (deg) @ Depth (MD, ft)	0.07 @ 5,362.00	0.14 @ 5,875.00	85.81 @ 6,954.00	89.04 @ 10,843.00	
Max Inc (deg) @ Depth (MD, ft)	12.57 @ 3,750.00	78.34 @ 6,823.00	92.90 @ 7,997.00	92.41 @ 10,463.00	
Bit TFA(in2) / Bit Type	0.75 / PDC	0.98 / PDC	0.46 / PDC	0.86 / PDC	
Flow Rate (gpm)	569.00	583.00	274.00	271.00	
Max AV (fpm) / CV (fpm) @ MWD	462.9 / 462.9	462.9 / 462.9	465.0 / 465.0	442.9 / 442.9	
Fluid Type	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel	
Density (ppg) / Viscosity (spqt)	8.80 / 31.00	10.00 / 38.00	9.55 / 37.00	9.60 / 37.00	
Filtrate CL (ppm)	2,000.00	2,300.00	2,200.00	2,000.00	
pH / Fluid Loss (mptm)	9.80 / N/A	10.00 / N/A	10.40 / N/A	9.90 / N/A	
PV (cP) / YP (lbf2)	4 / 5.00	13 / 12.00	8 / 9.00	8 / 8.00	
% Solids / % Sand	3.2 / .25	11.7 / .5	6 / .15	5.7 / .1	
% 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	141.70 / PCM	158.47 / PCM	209.20 / PCM	218.14 / 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	Robert Ley	Robert Ley	Robert Ley	Robert Ley	
Customer Representative	Charles Collver	Jeremy Stolz	Jeremy Stolz	Jeremy Stolz	

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM	PCM	
Software Version	5.84	5.84	5.84	5.84	
Sub Serial Number	11404289	11404289	12310740	12310740	
Insert Serial Number	11680738	11680738	11680738	11620293	
Date and Time Initialized	23-Feb-14 10:52	25-Feb-14 10:52	26-Feb-14 15:54	28-Feb-14 16:01	
Date and Time Read	25-Feb-14 19:38	25-Feb-14 19:47	28-Feb-14 21:22	02-Mar-14 03:04	
ECMB SW Version	N/A	N/A	N/A	N/A	

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC	PCDC	
Distance From Bit (ft)	58.00	57.00	62.00	62.00	
Software Version	6.21	6.21	6.21	6.21	
Sub Serial Number	11404289	11404289	12310740	12310740	
Sonde Serial Number	11638621	11638621	11638621	11168934	
Sensor ID Number	N/A	N/A	N/A	N/A	
Toolface Offset (deg)	323.68	354.21	310.08	311.40	

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG	PCG	
Distance From Bit (ft)	50.96	50.24	54.85	55.02	
Recorded Sample Period (sec)	10	10	10	10	
Software Version	8.15	8.15	8.15	8.15	
Sub Serial Number	11404289	11404289	12310740	12310740	
Insert/Sonde Serial Number	11681001	11681001	11681001	11120594	

REMARKS

1. All depths are measured depths and are calibrated to the driller' pipe tally and are measured from the 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.

4. The Following smoothing parameters have been applied to the data"

PGXR (Gamma Ray CG):

Interval Resolution: 0.5 feet

Coercion Distance: 0.6 feet

Gap Fill: 3.0 feet

ROPA (Rate of Penetration):

Interval Resolution: 0.5 feet

Coercion Distance: 1.2 feet

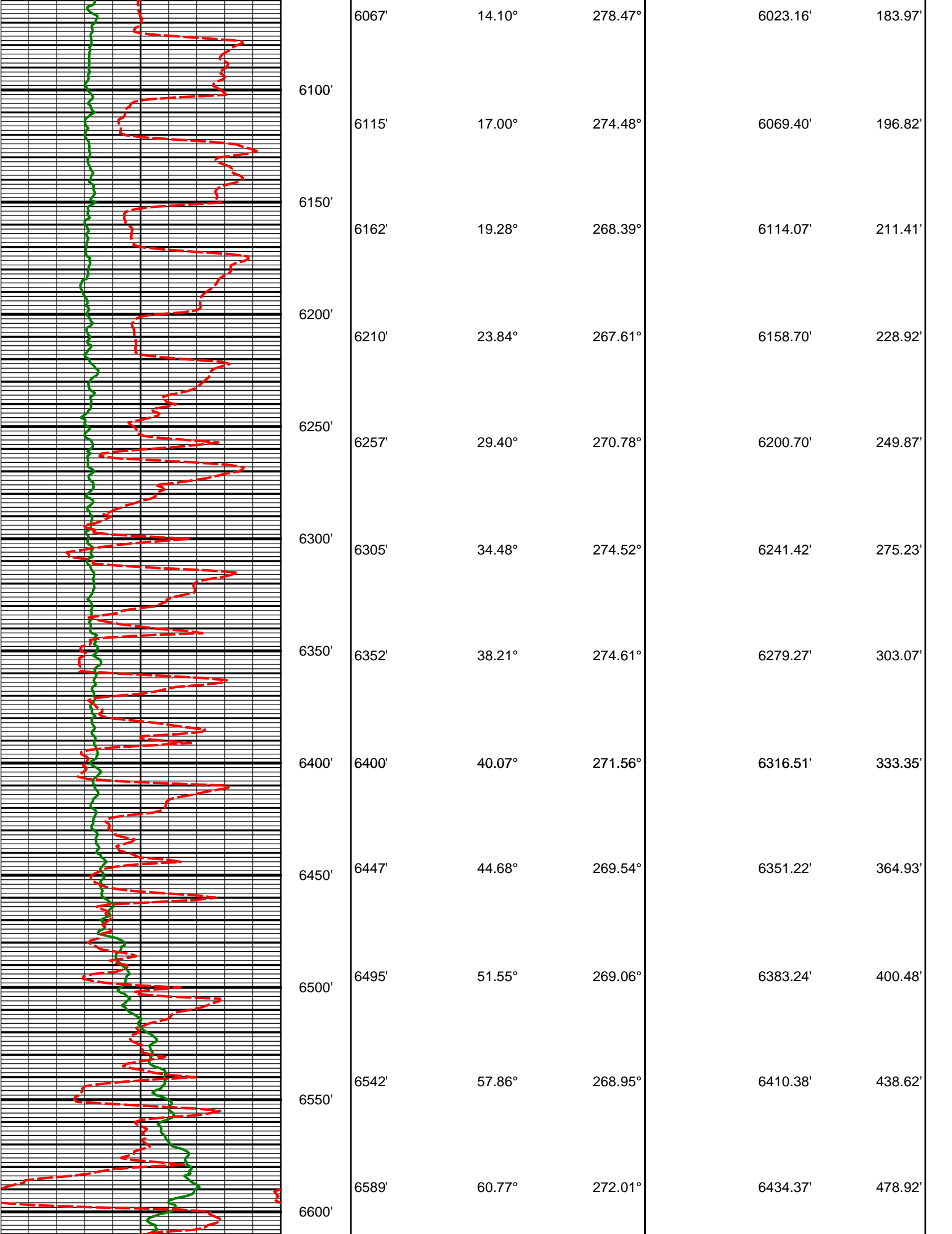
WARRANTY

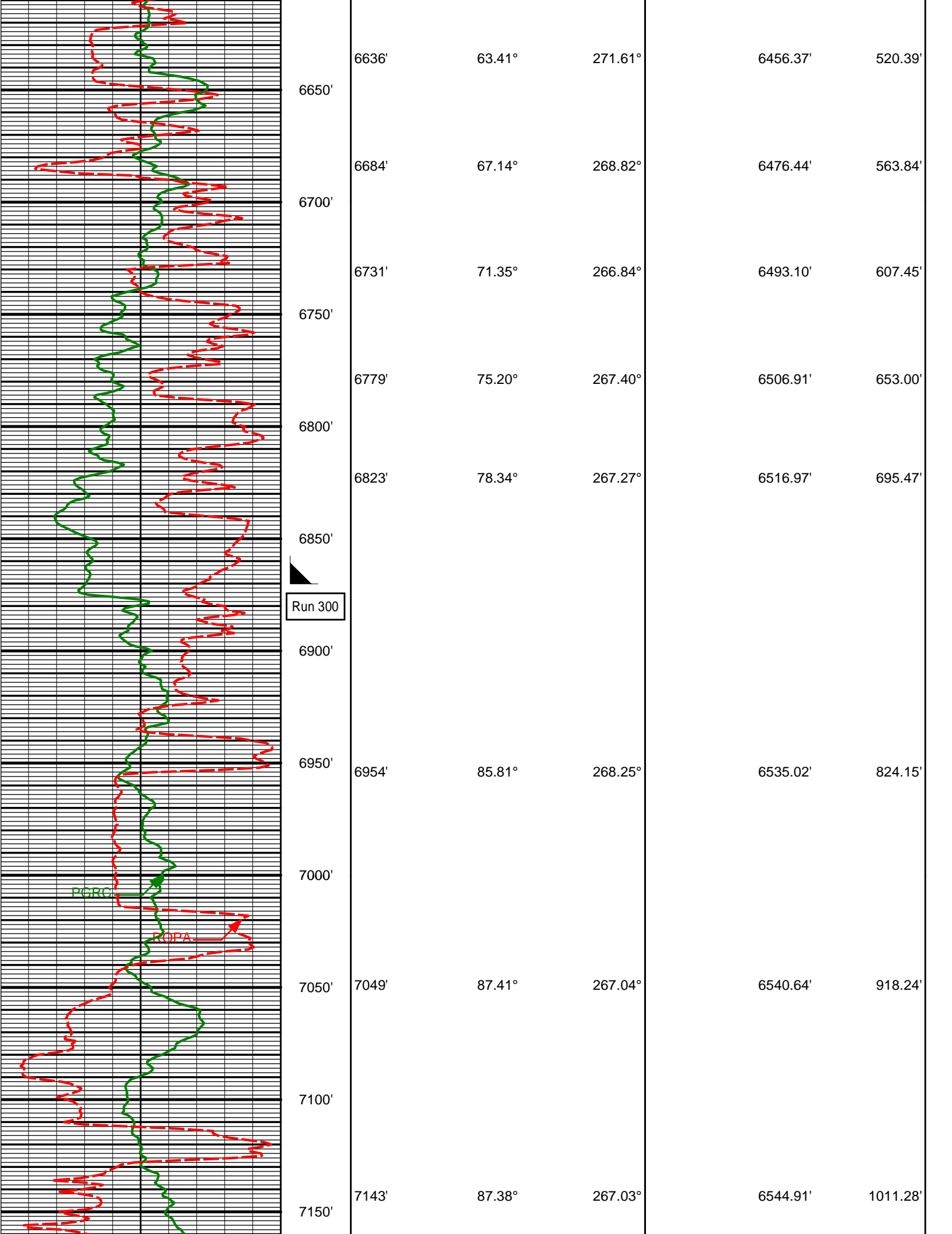
HALLIBURTON WILL USE ITS BEST EFFORTS TO FURNISH CUSTOMERS WITH ACCURATE INFORMATION AND INTERPRETATIONS THAT ARE PART OF, AND INCIDENT TO, THE SERVICES PROVIDED. HOWEVER, HALLIBURTON CANNOT AND DOES NOT WARRANT THE ACCURACY OR CORRECTNESS OF SUCH INFORMATION AND INTERPRETATIONS. UNDER NO CIRCUMSTANCES 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.

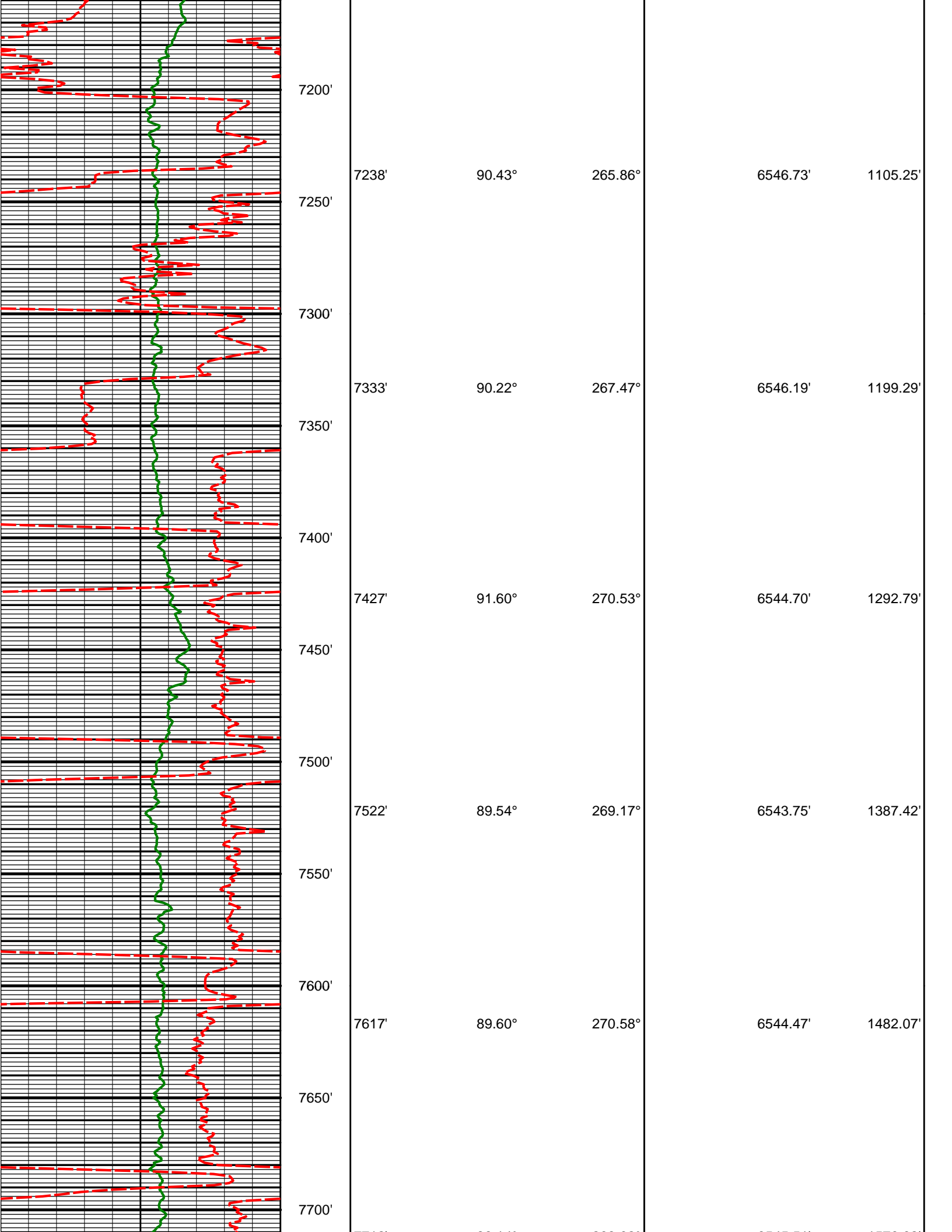
HALLIBURTON

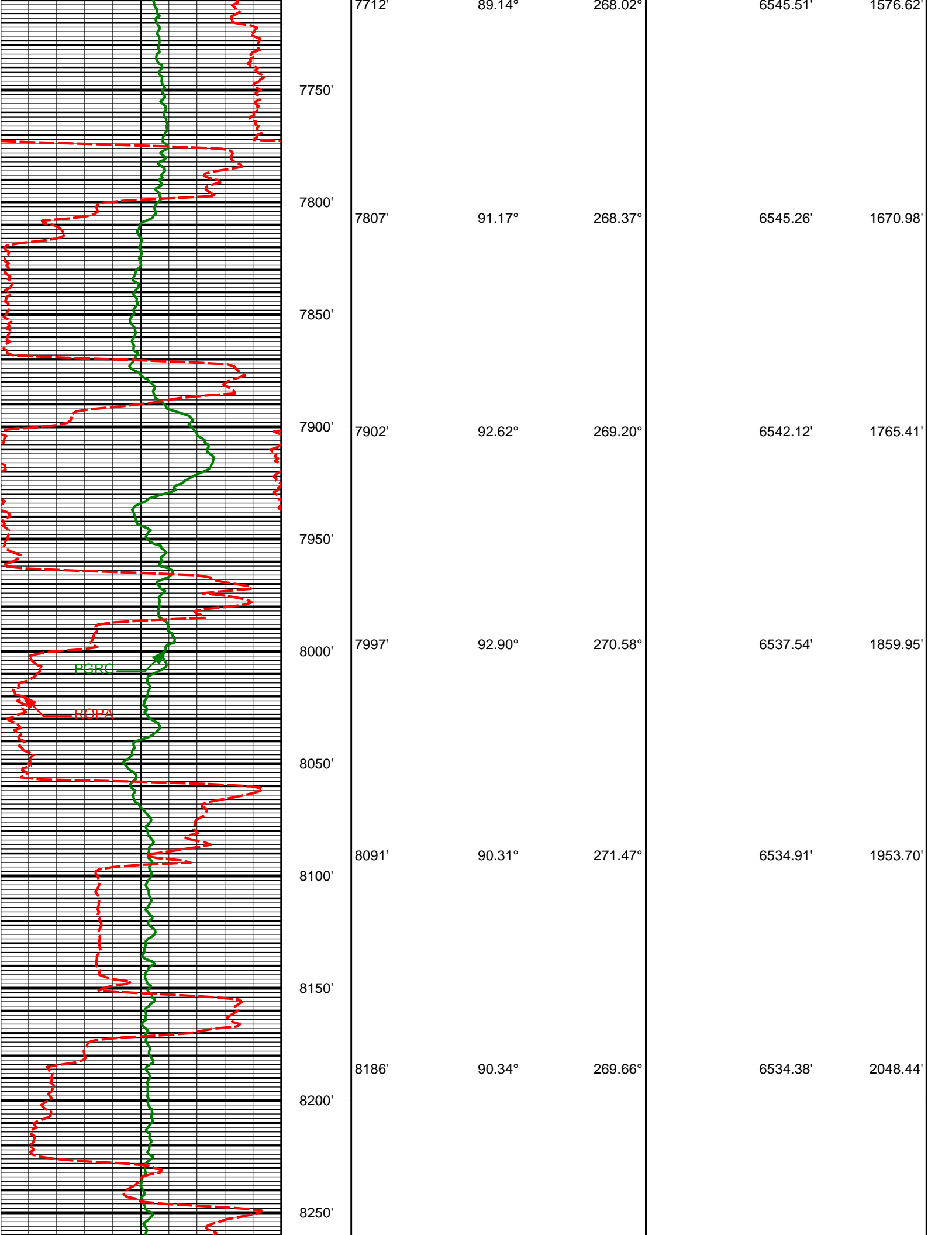
MD Detail Log 1:600

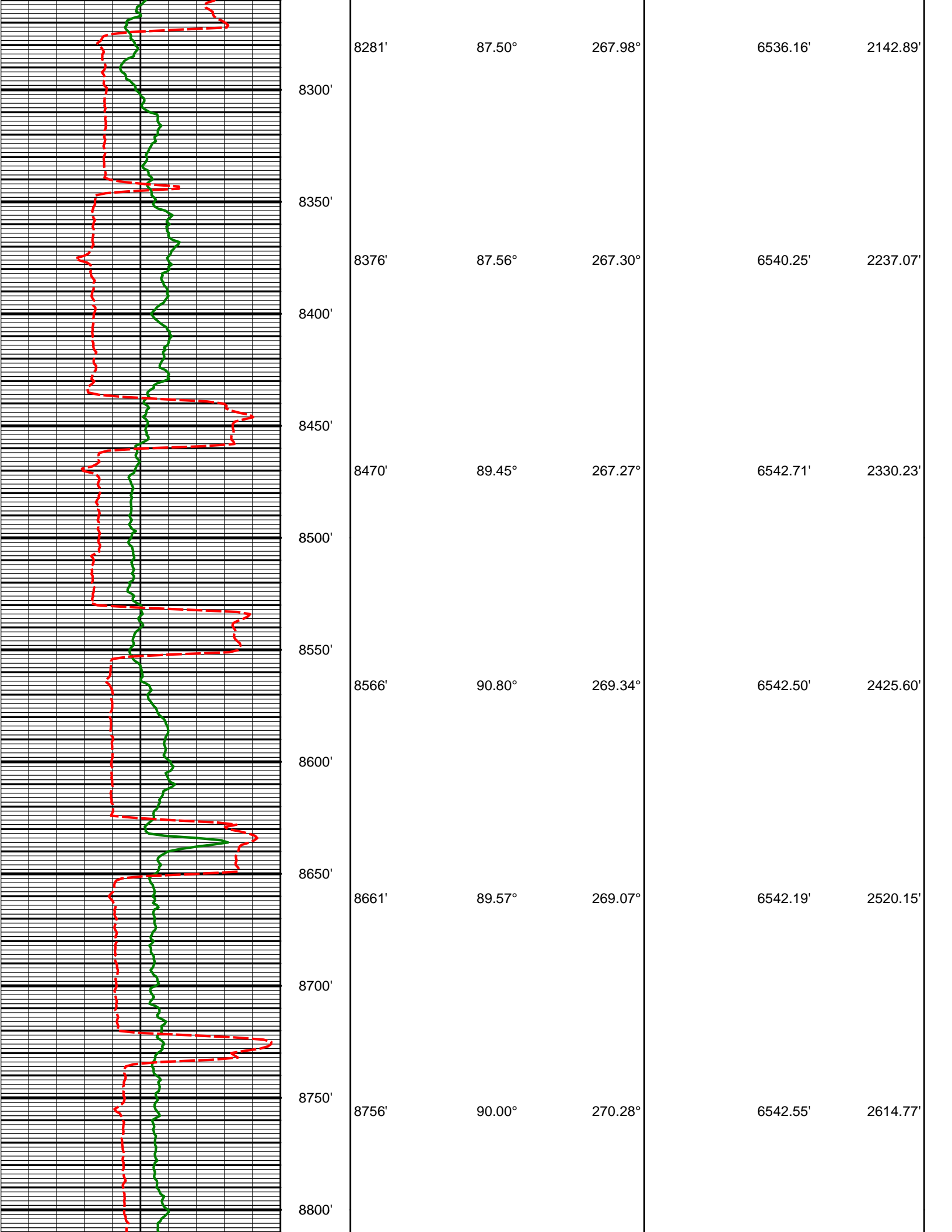
Gamma Ray (PGXC) (Api)						
0300						
Avg Rate of Penetration feet per hr	Feet					
6000		Depth	Inc	Azm	TVD	Vsec
	5800	5814'	0.14°	225.02°	5771.85'	164.75'
	5850'					
	Run 200	5875'	0.14°	151.98°	5832.85'	164.75'
	5900'					
	KOP	5925'	0.44°	241.54°	5882.85'	164.88'
	5950'					
		5972'	5.10°	281.68°	5929.78'	167.11'
	6000'					
		6020'	10.96°	277.54°	5977.29'	173.79'
	KOP					

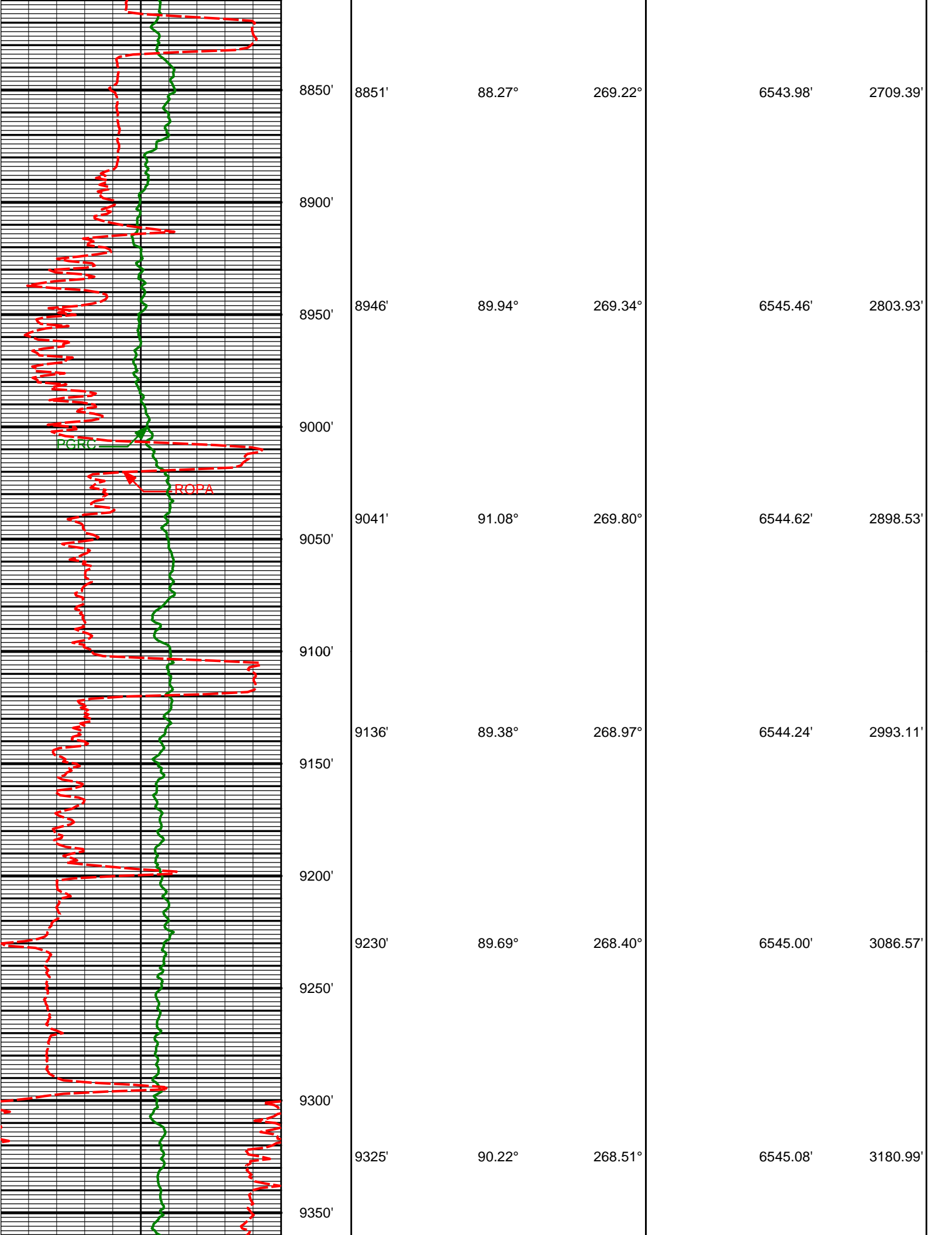


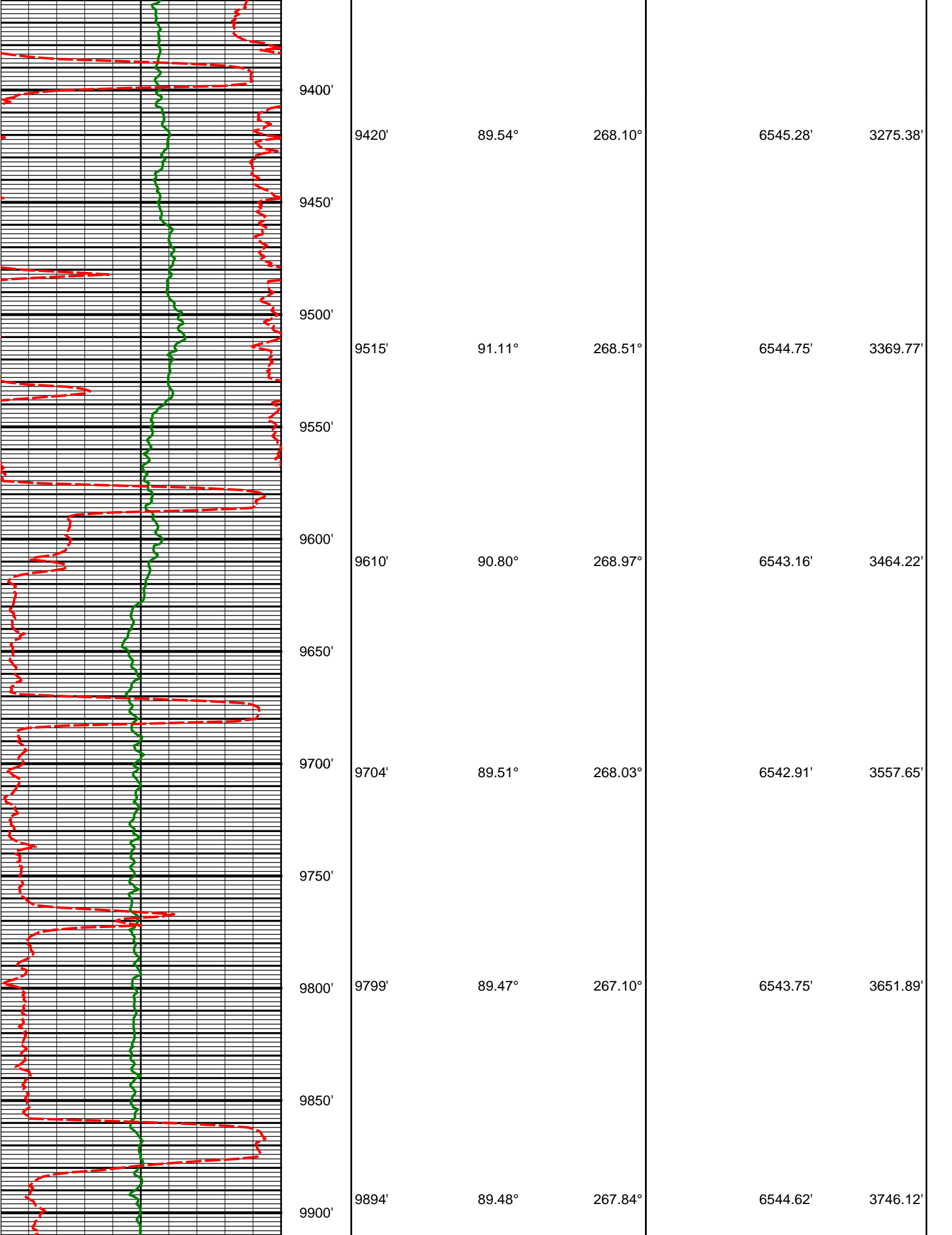


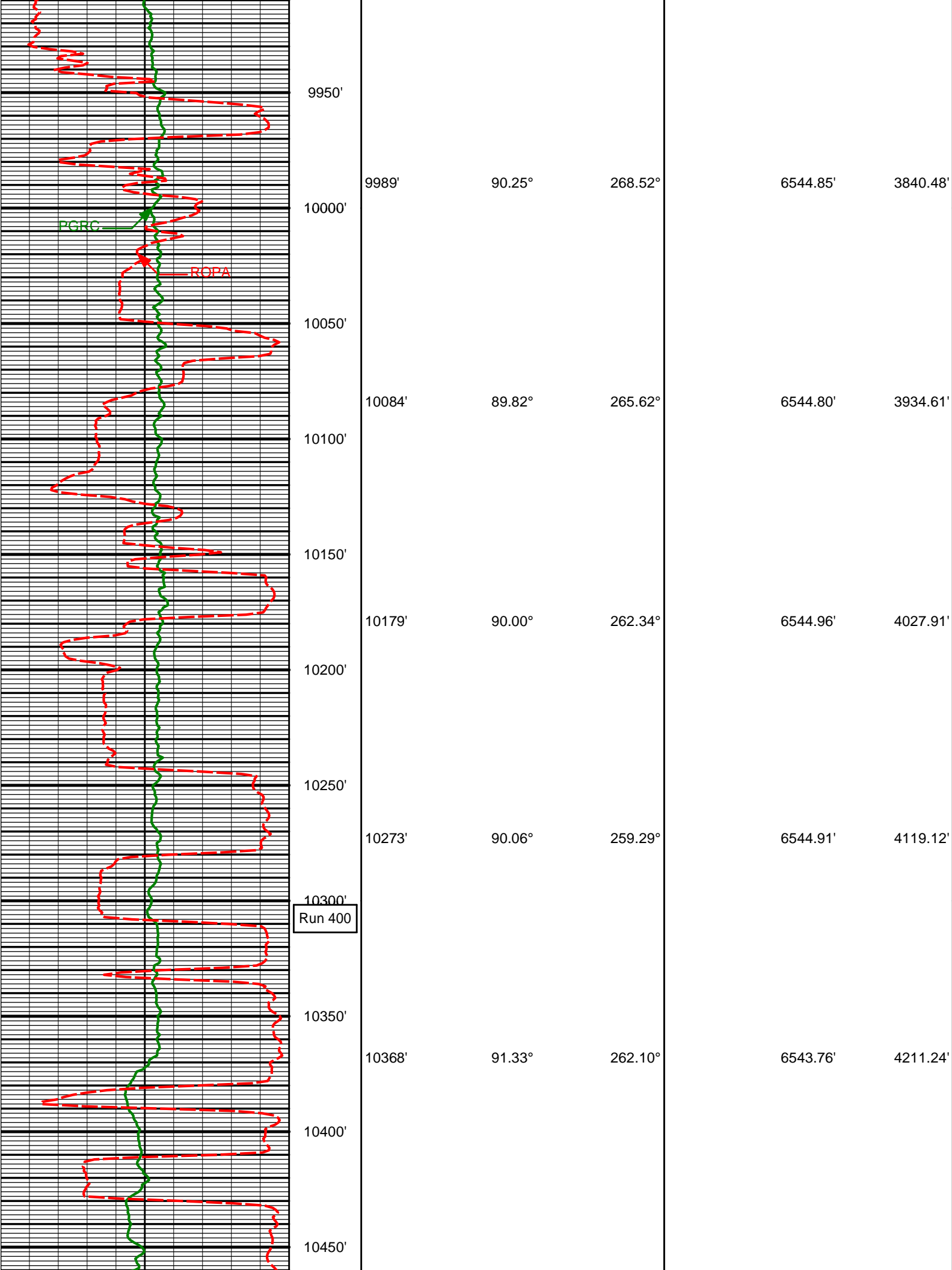


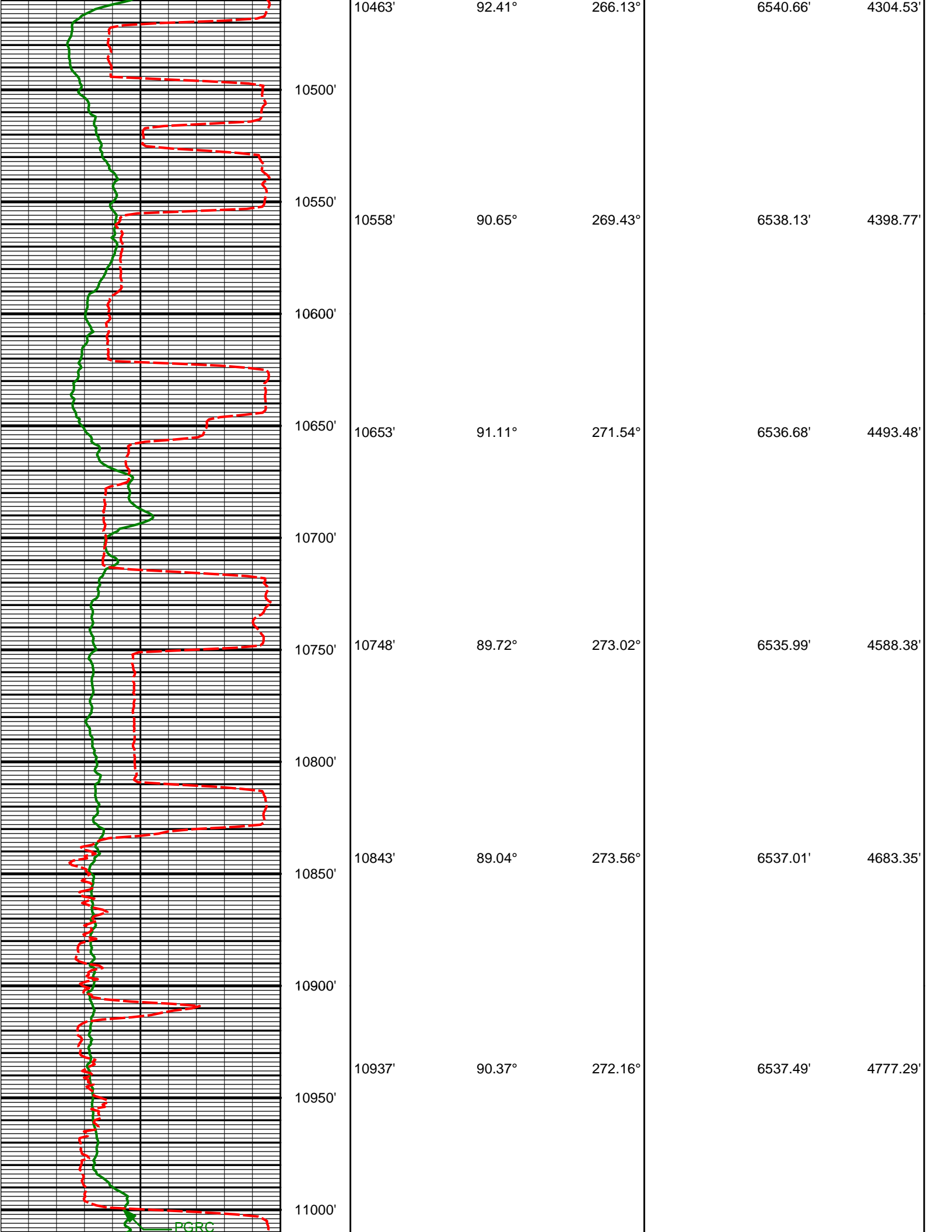


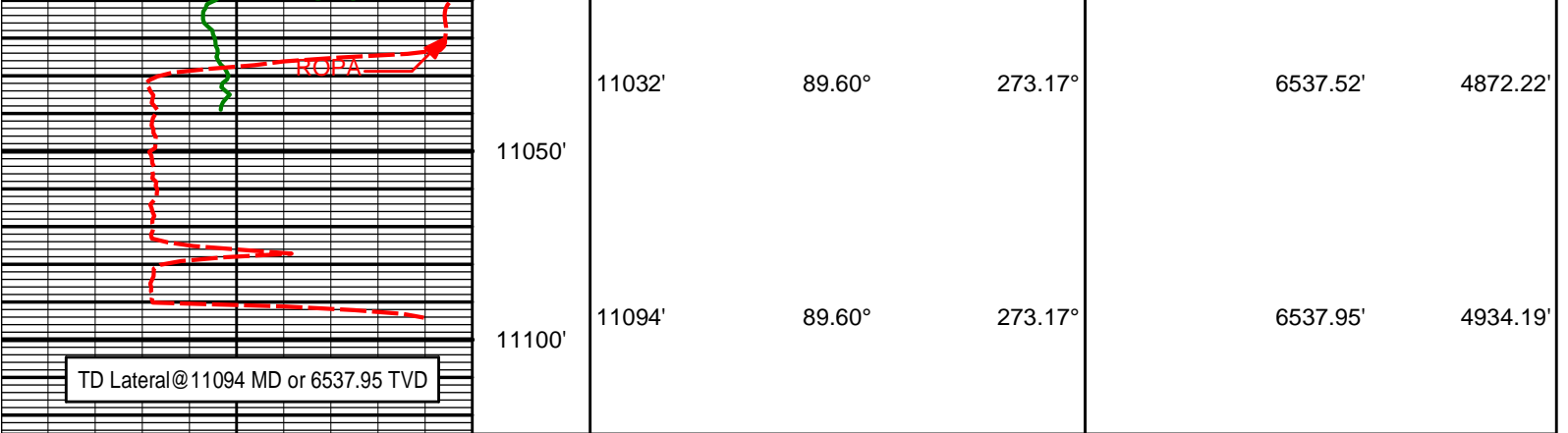








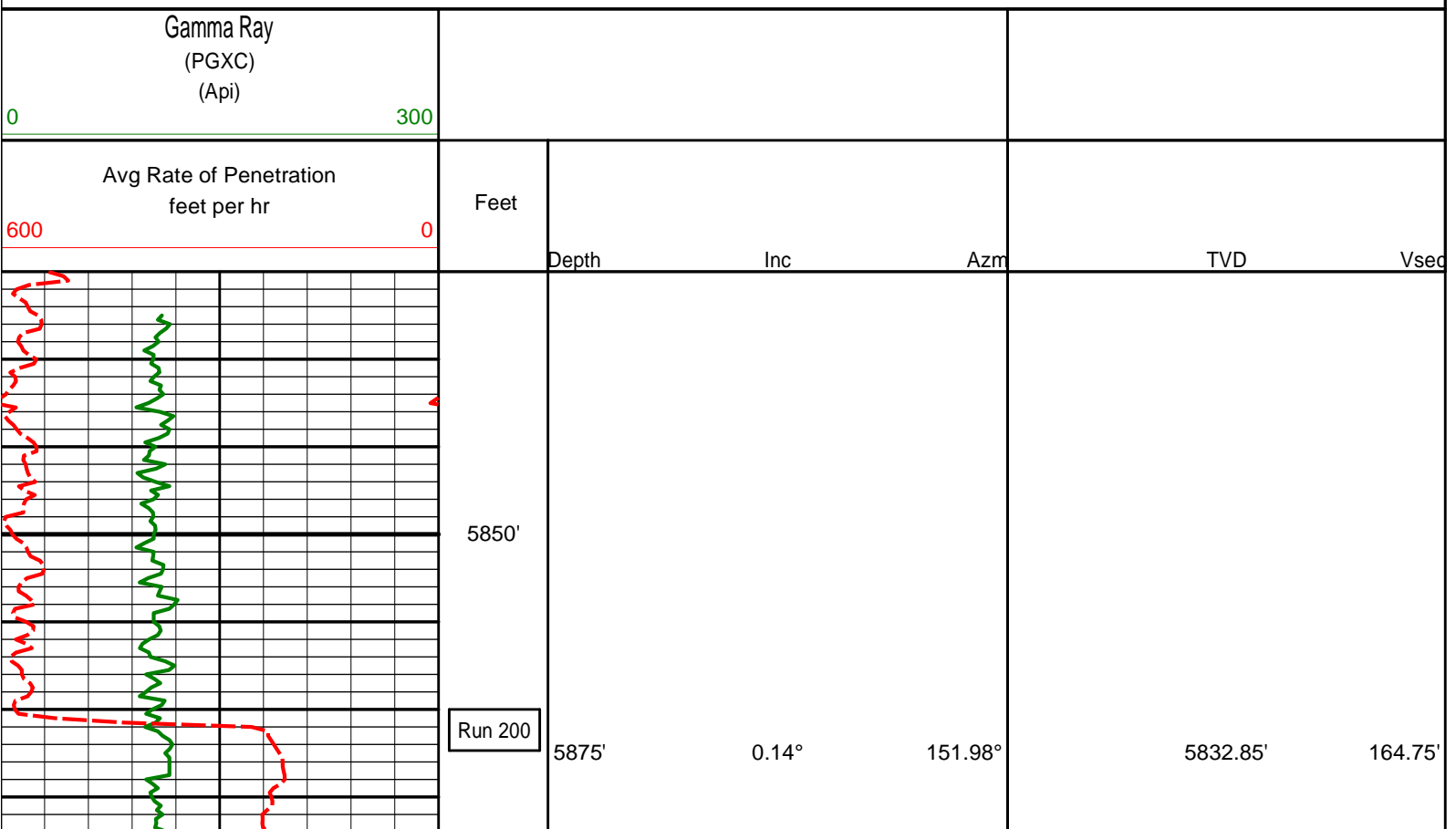


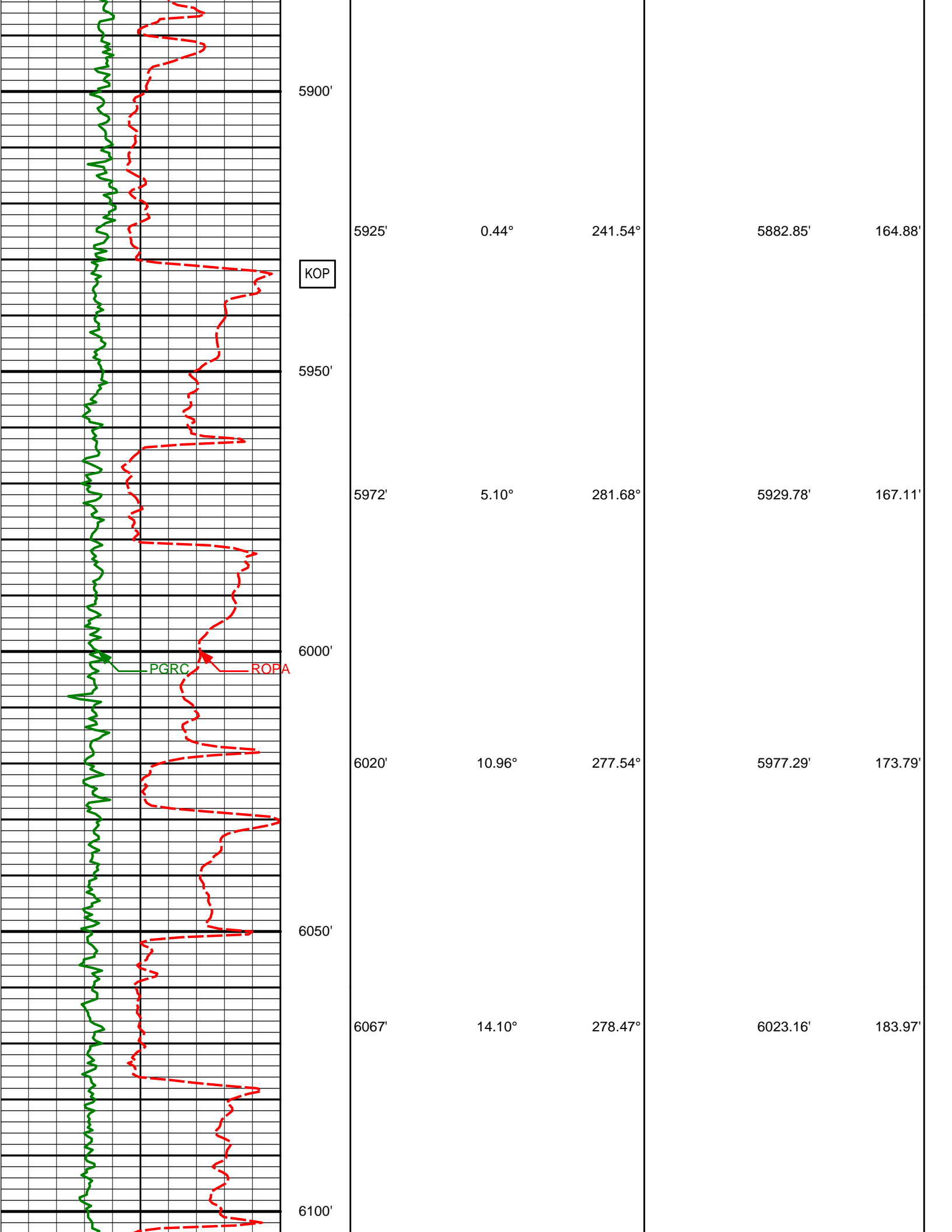


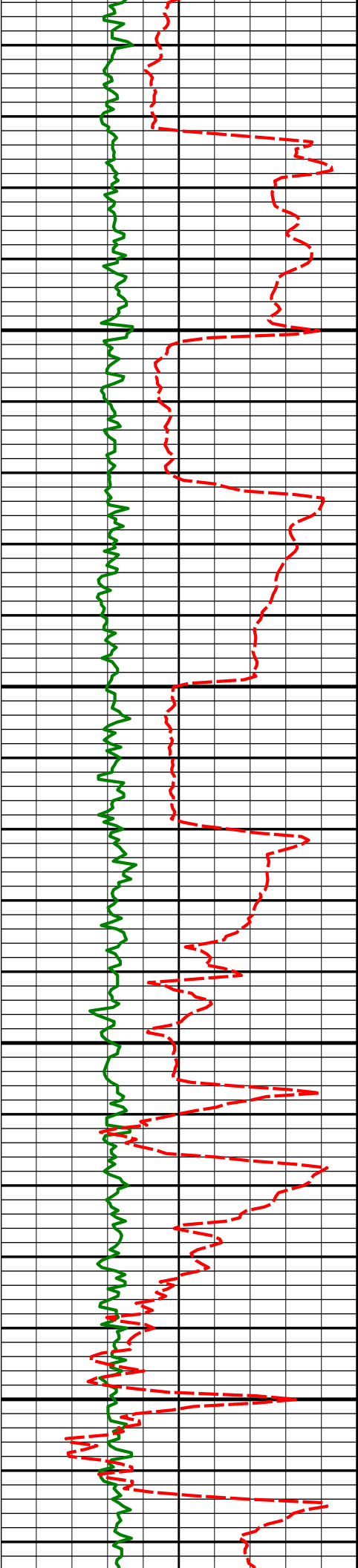
Avg Rate of Penetration feet per hr	Feet					
6000		Depth	Inc	Azm	TVD	Vsec
Gamma Ray (PGXC) (Api)						
0300						

HALLIBURTON

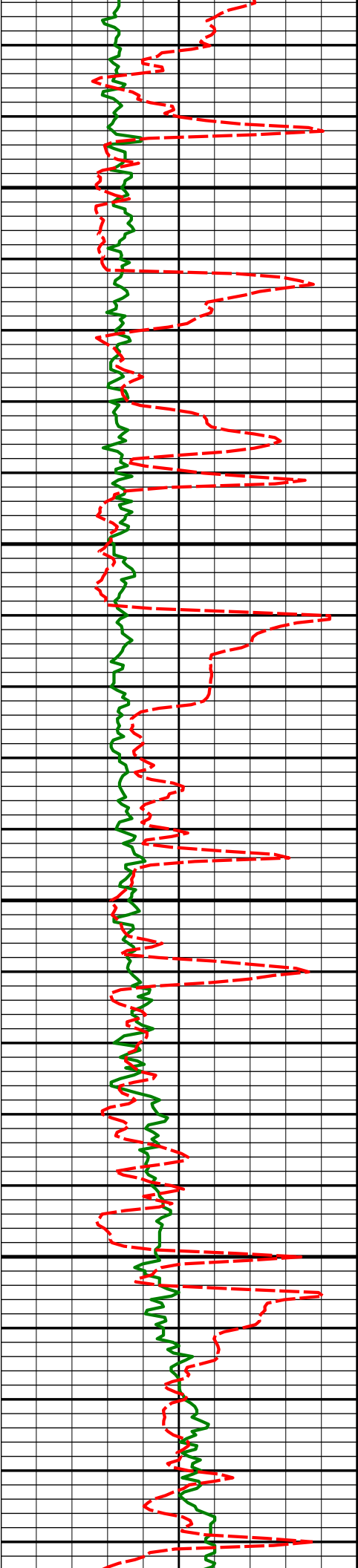
MD Detail Log 1:240







6115'	17.00°	274.48°	6069.40'	196.82'
6150'				
6162'	19.28°	268.39°	6114.07'	211.41'
6200'				
6210'	23.84°	267.61°	6158.70'	228.92'
6250'				
6257'	29.40°	270.78°	6200.70'	249.87'
6300'				
6305'	34.48°	274.52°	6241.42'	275.23'



6350'

6352'

38.21°

274.61°

6279.27'

303.07'

6400'

6400'

40.07°

271.56°

6316.51'

333.35'

6450'

6447'

44.68°

269.54°

6351.22'

364.93'

6500'

6495'

51.55°

269.06°

6383.24'

400.48'

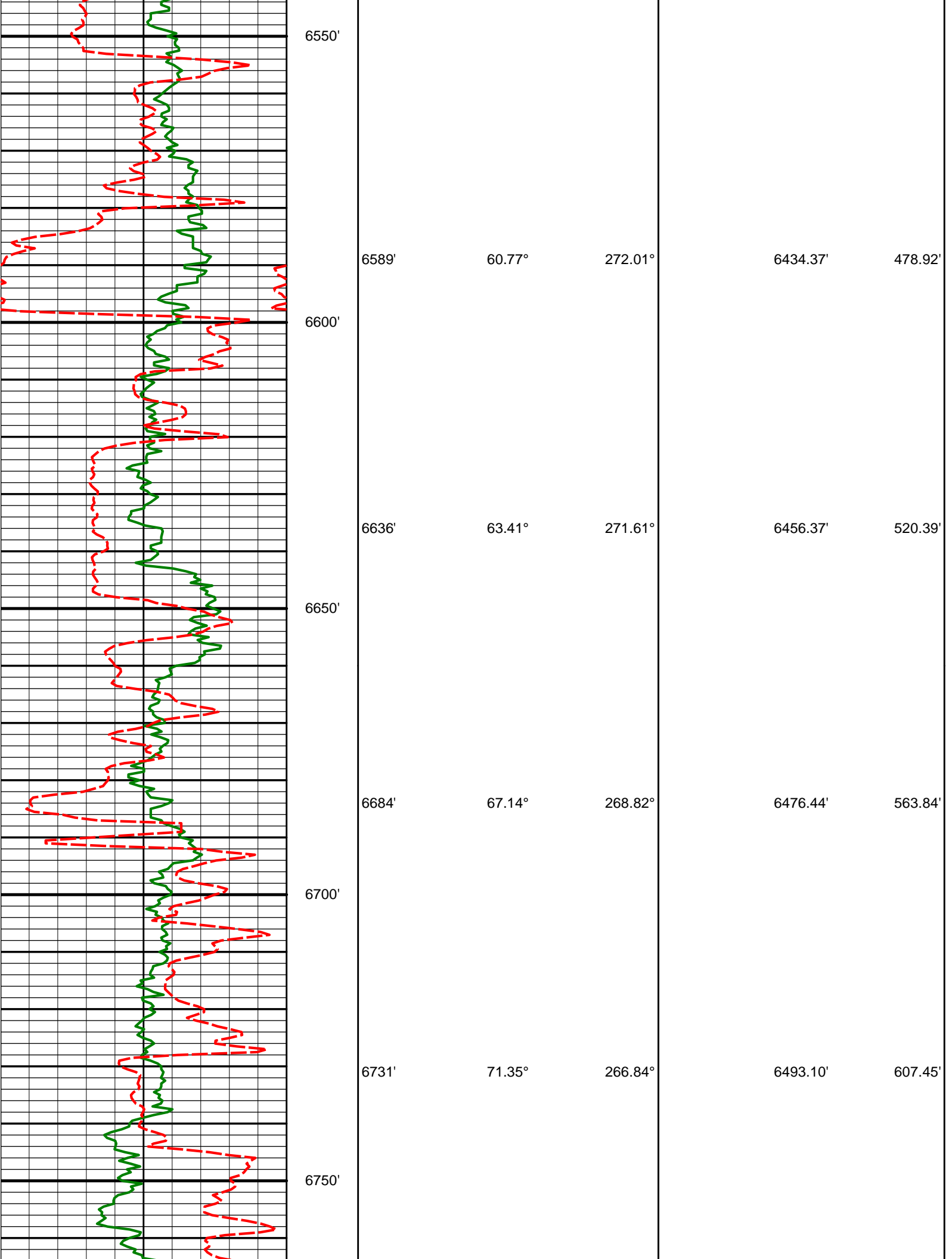
6542'

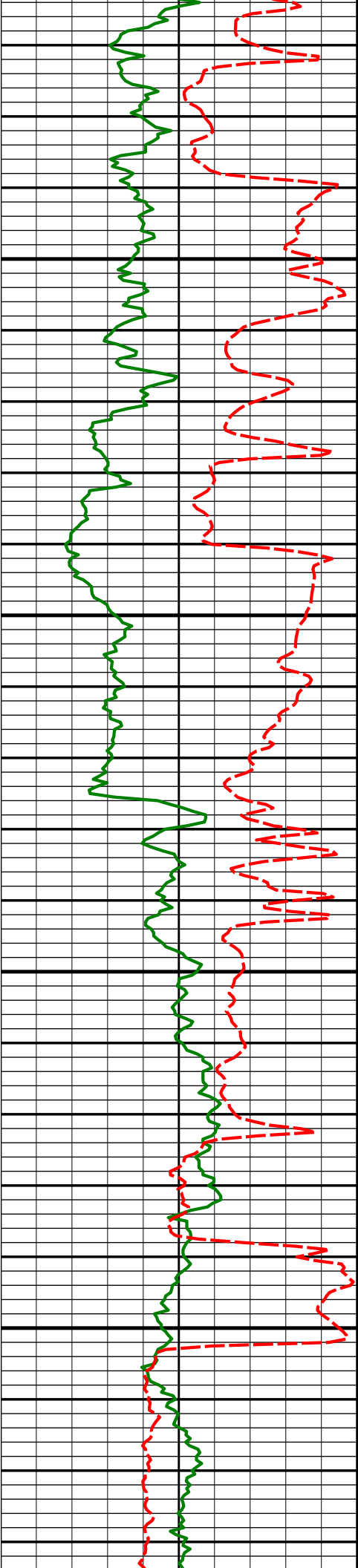
57.86°

268.95°

6410.38'

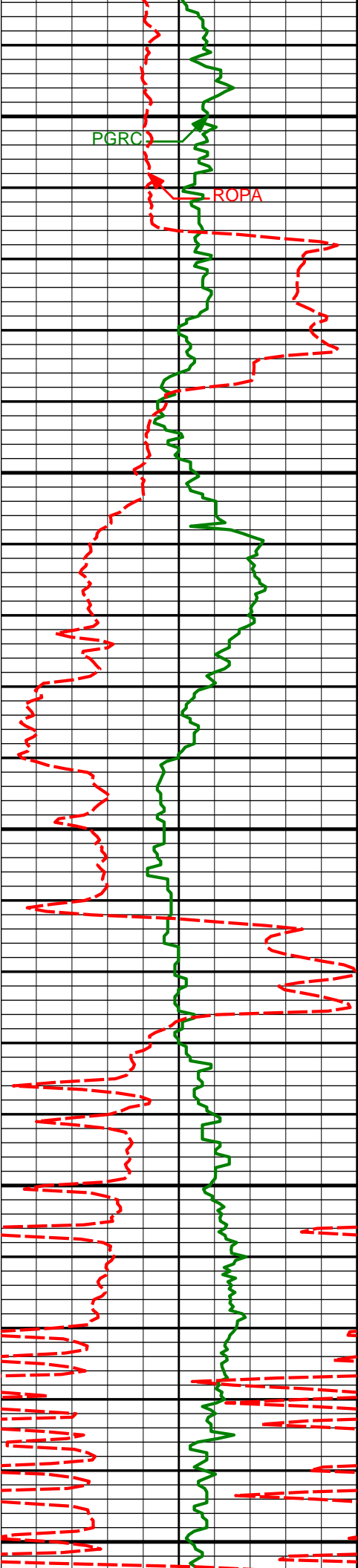
438.62'





Run 300

6779'	75.20°	267.40°	6506.91'	653.00'
6800'				
6823'	78.34°	267.27°	6516.97'	695.47'
6850'				
6900'				
6950'				
6954'	85.81°	268.25°	6535.02'	824.15'



7000'

7050'

7100'

7150'

7200'

7049'

87.41°

267.04°

6540.64'

918.24'

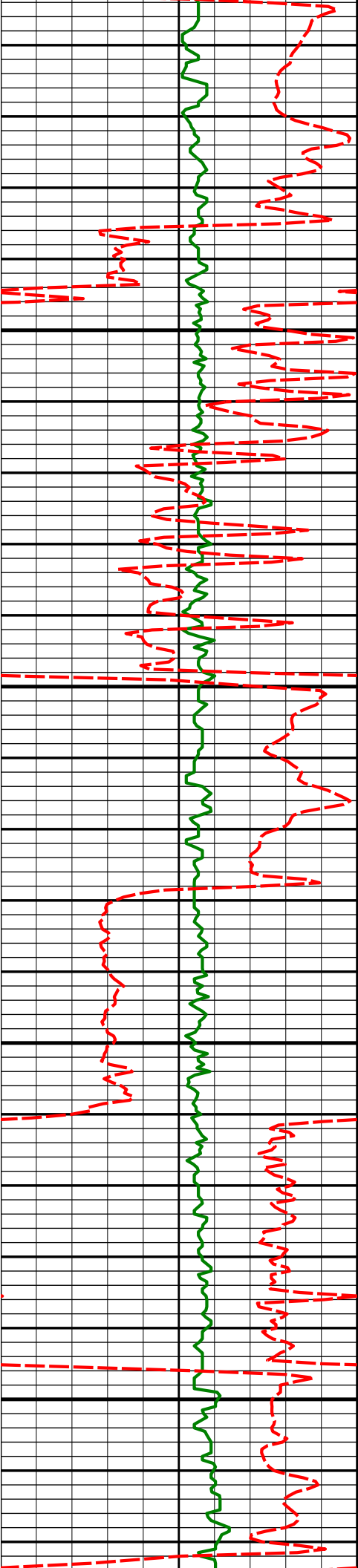
7143'

87.38°

267.03°

6544.91'

1011.28'



7238'

90.43°

265.86°

6546.73'

1105.25'

7250'

7300'

7333'

90.22°

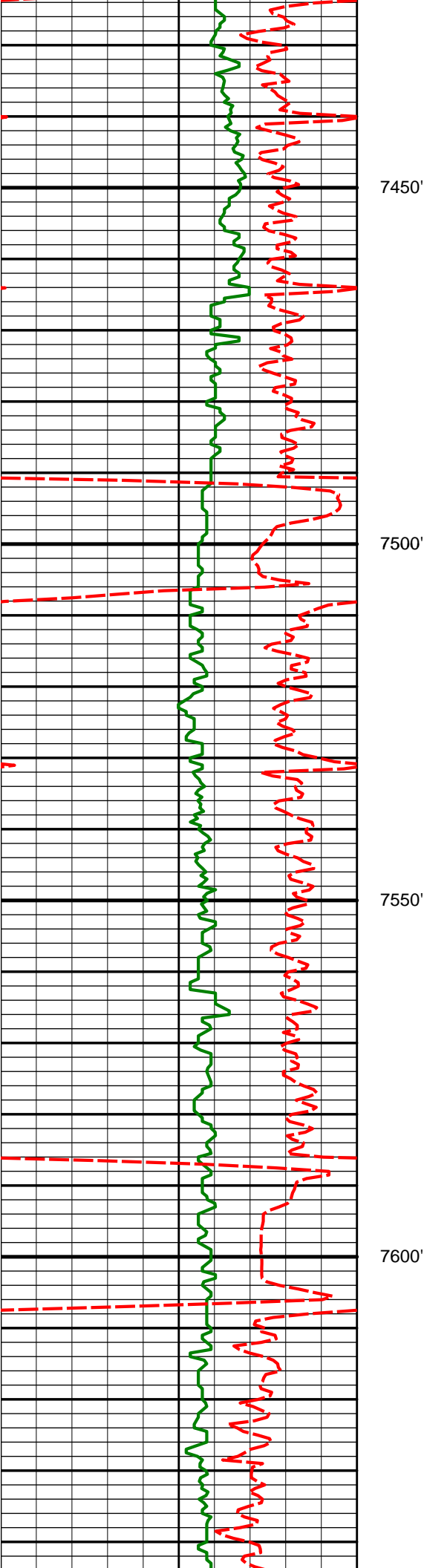
267.47°

6546.19'

1199.29'

7350'

7400'



7427'

91.60°

270.53°

6544.70'

1292.79'

7450'

7500'

7522'

89.54°

269.17°

6543.75'

1387.42'

7550'

7600'

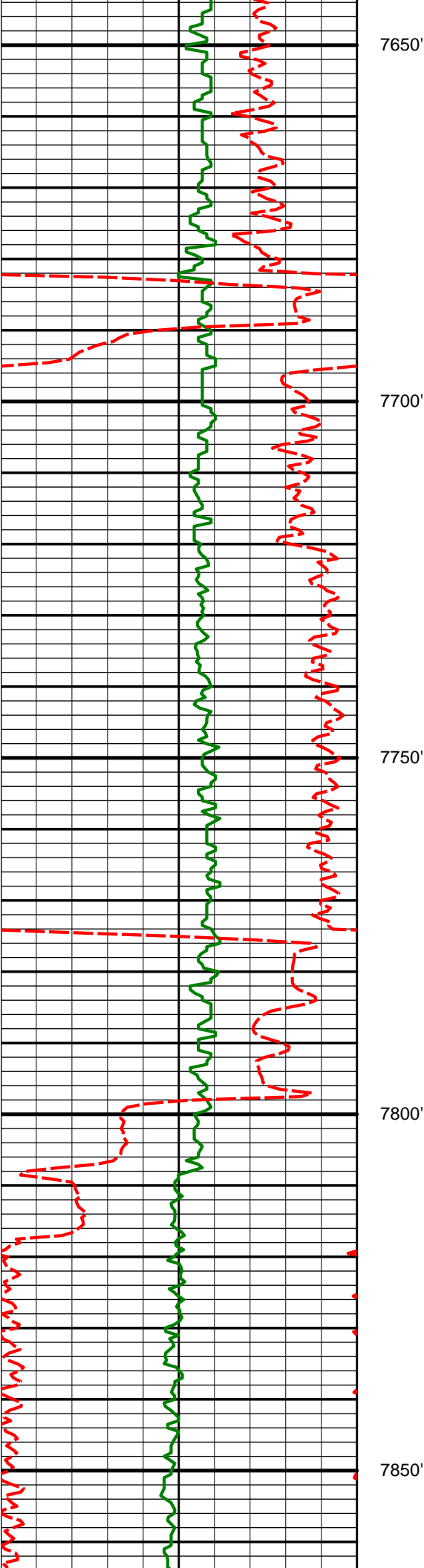
7617'

89.60°

270.58°

6544.47'

1482.07'



7712'

89.14°

268.02°

6545.51'

1576.62'

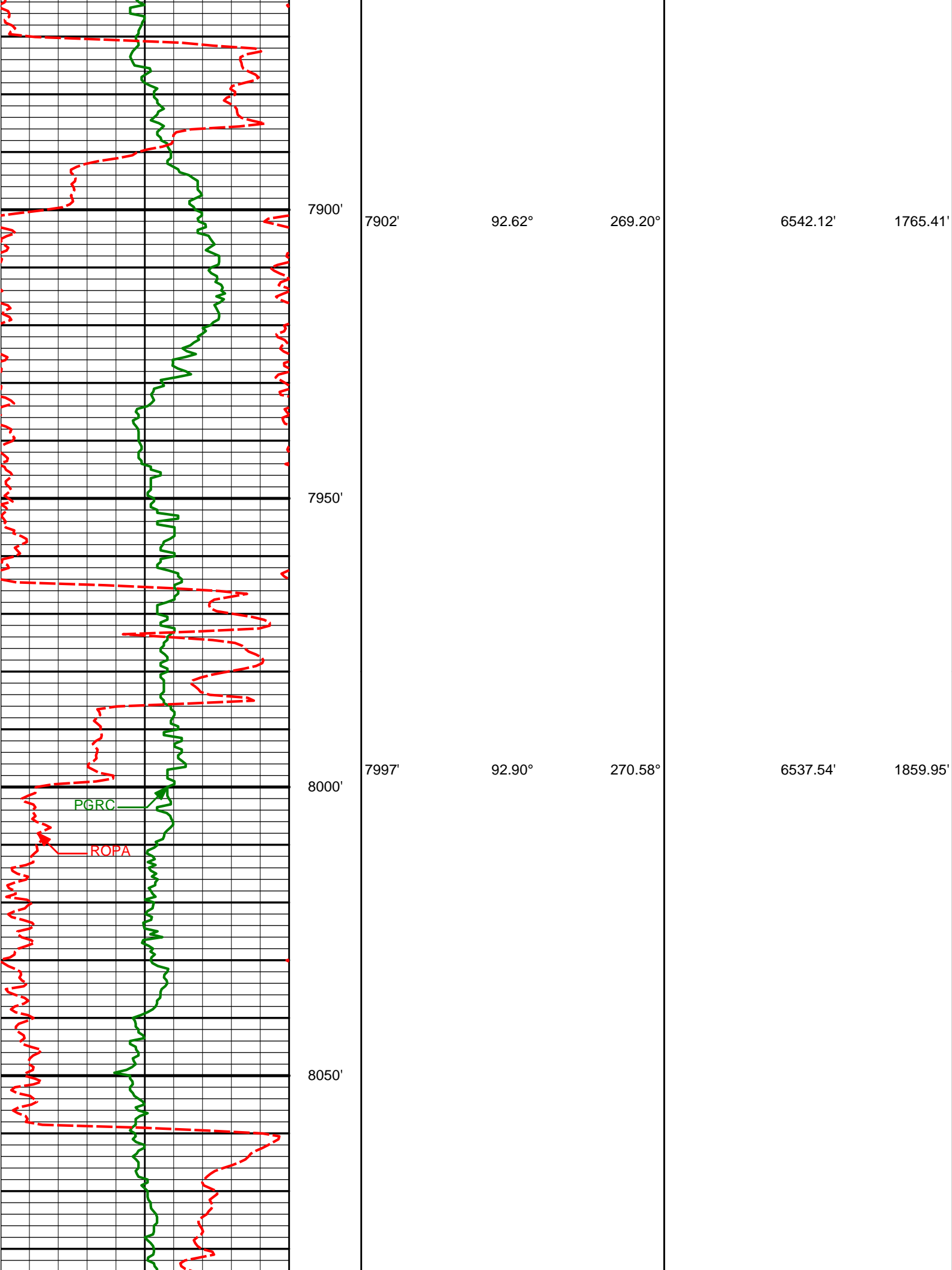
7807'

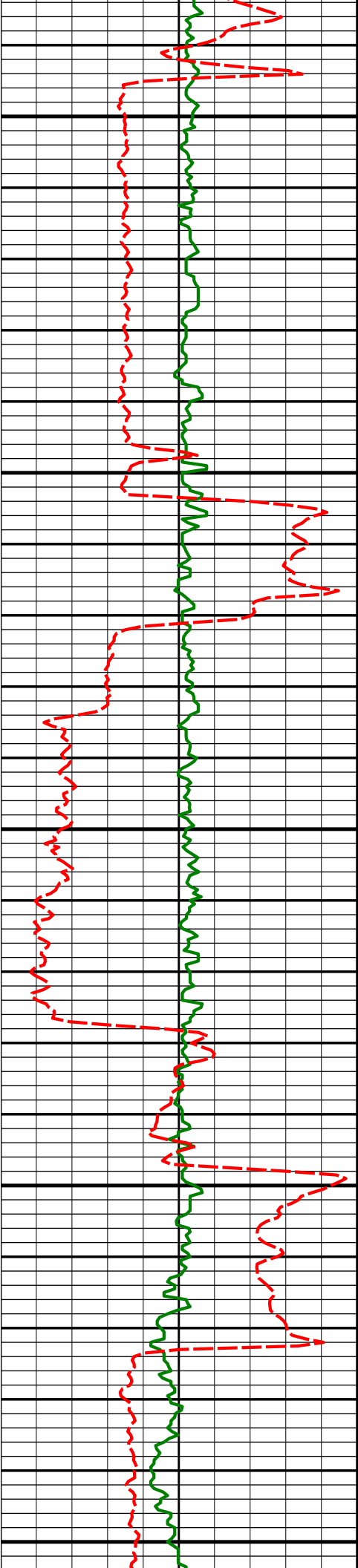
91.17°

268.37°

6545.26'

1670.98'





8091'	90.31°	271.47°	6534.91'	1953.70'
-------	--------	---------	----------	----------

8100'

8150'

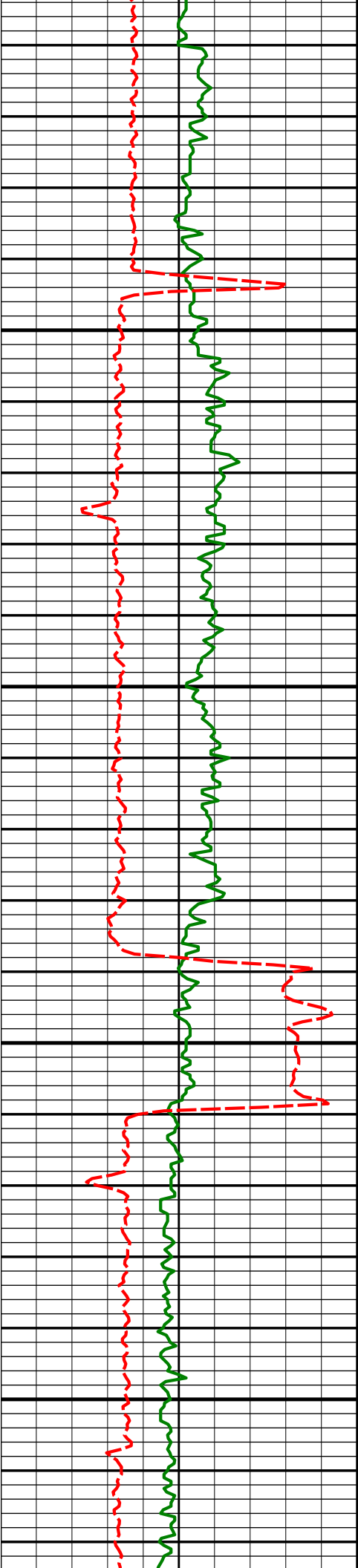
8186'	90.34°	269.66°	6534.38'	2048.44'
-------	--------	---------	----------	----------

8200'

8250'

8281'	87.50°	267.98°	6536.16'	2142.89'
-------	--------	---------	----------	----------

8300'



8350'

8376'

87.56°

267.30°

6540.25'

2237.07'

8400'

8450'

8470'

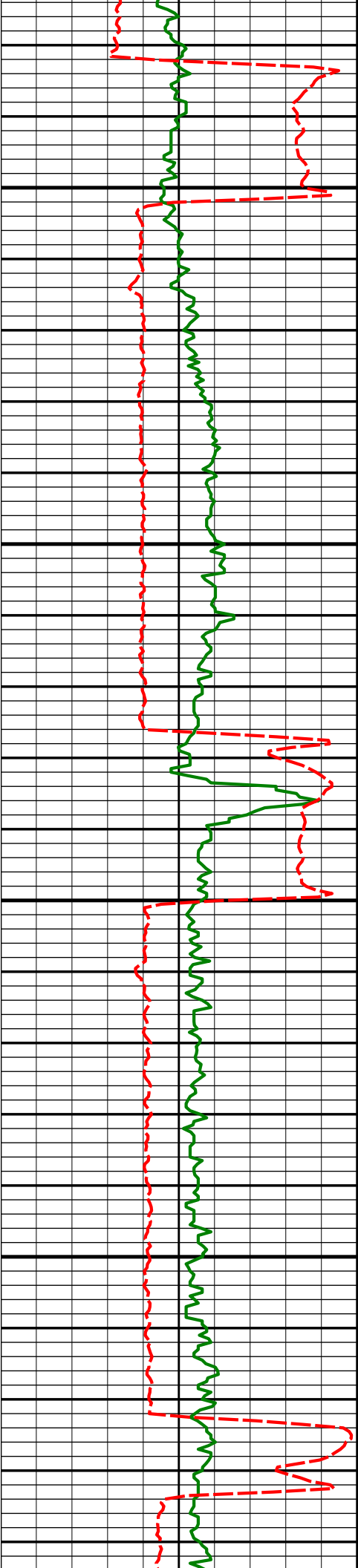
89.45°

267.27°

6542.71'

2330.23'

8500'



8550'

8566'

90.80°

269.34°

6542.50'

2425.60'

8600'

8650'

8661'

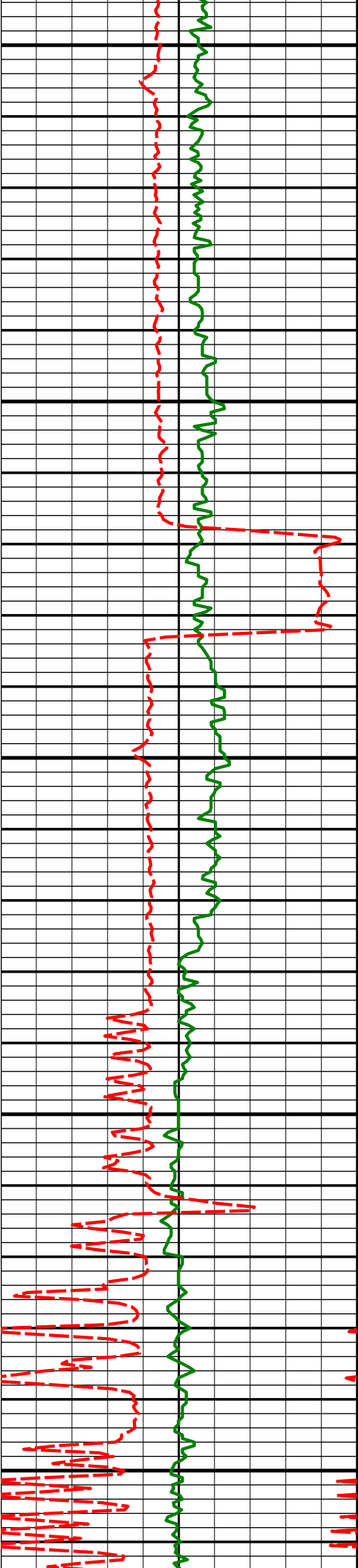
89.57°

269.07°

6542.19'

2520.15'

8700'



8750'

8756'

90.00°

270.28°

6542.55'

2614.77'

8800'

8850'

8851'

88.27°

269.22°

6543.98'

2709.39'

8900'

8950'

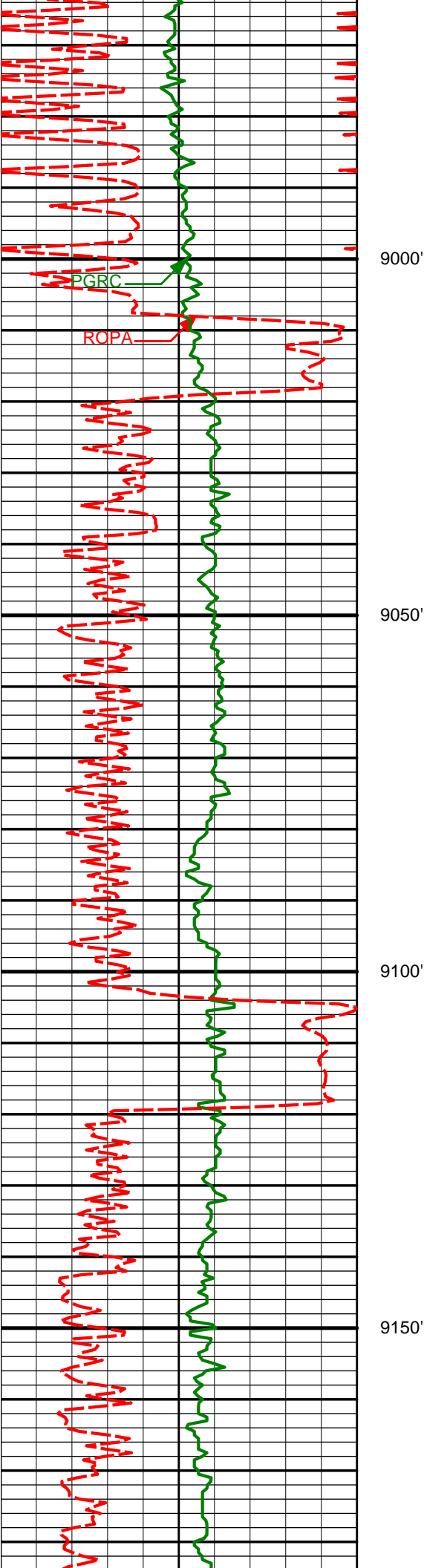
8946'

89.94°

269.34°

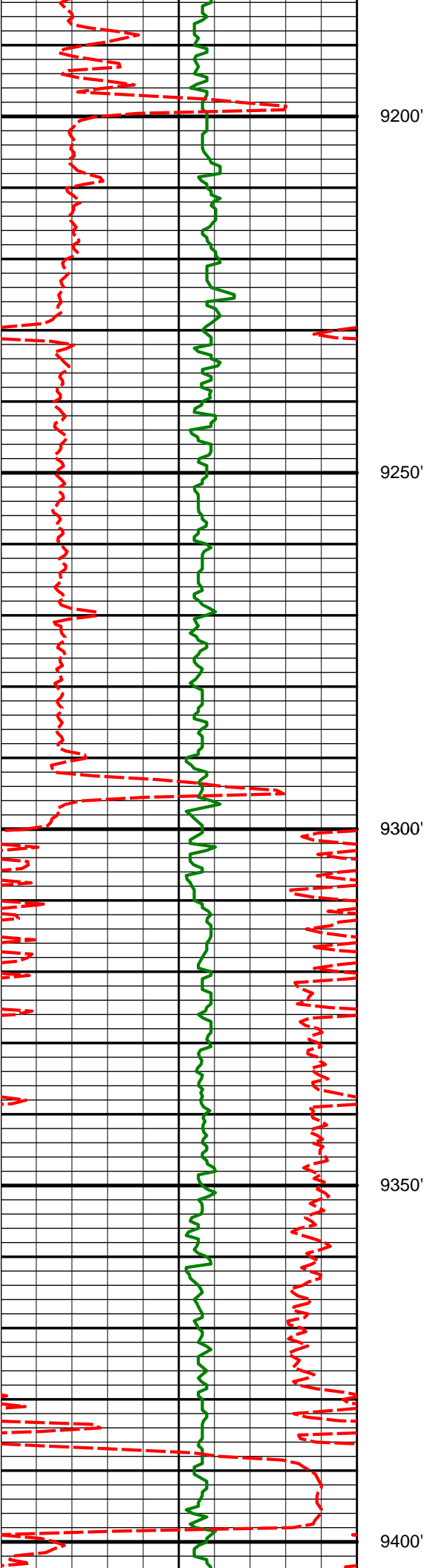
6545.46'

2803.93'



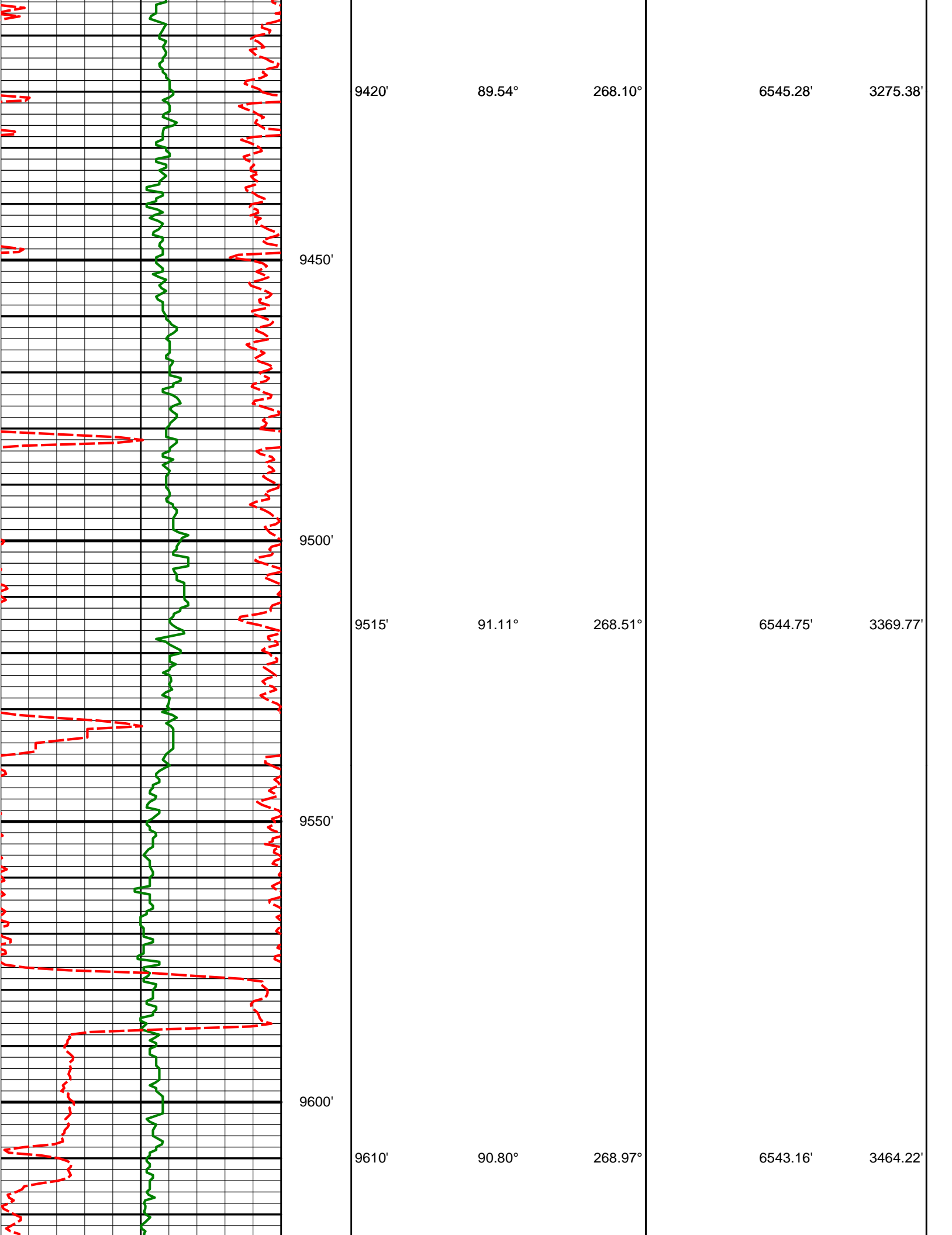
9041'	91.08°	269.80°	6544.62'	2898.53'
-------	--------	---------	----------	----------

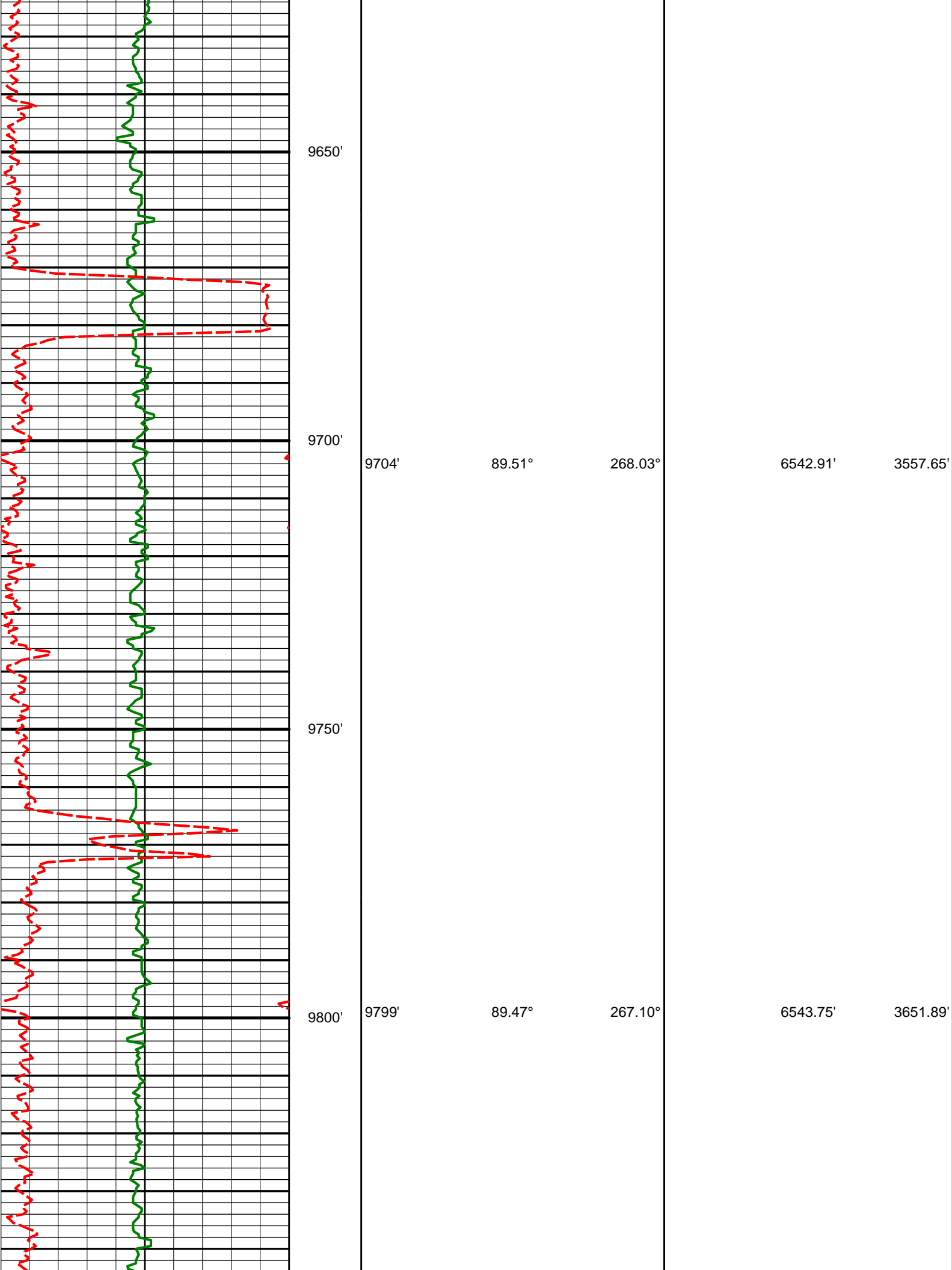
9136'	89.38°	268.97°	6544.24'	2993.11'
-------	--------	---------	----------	----------

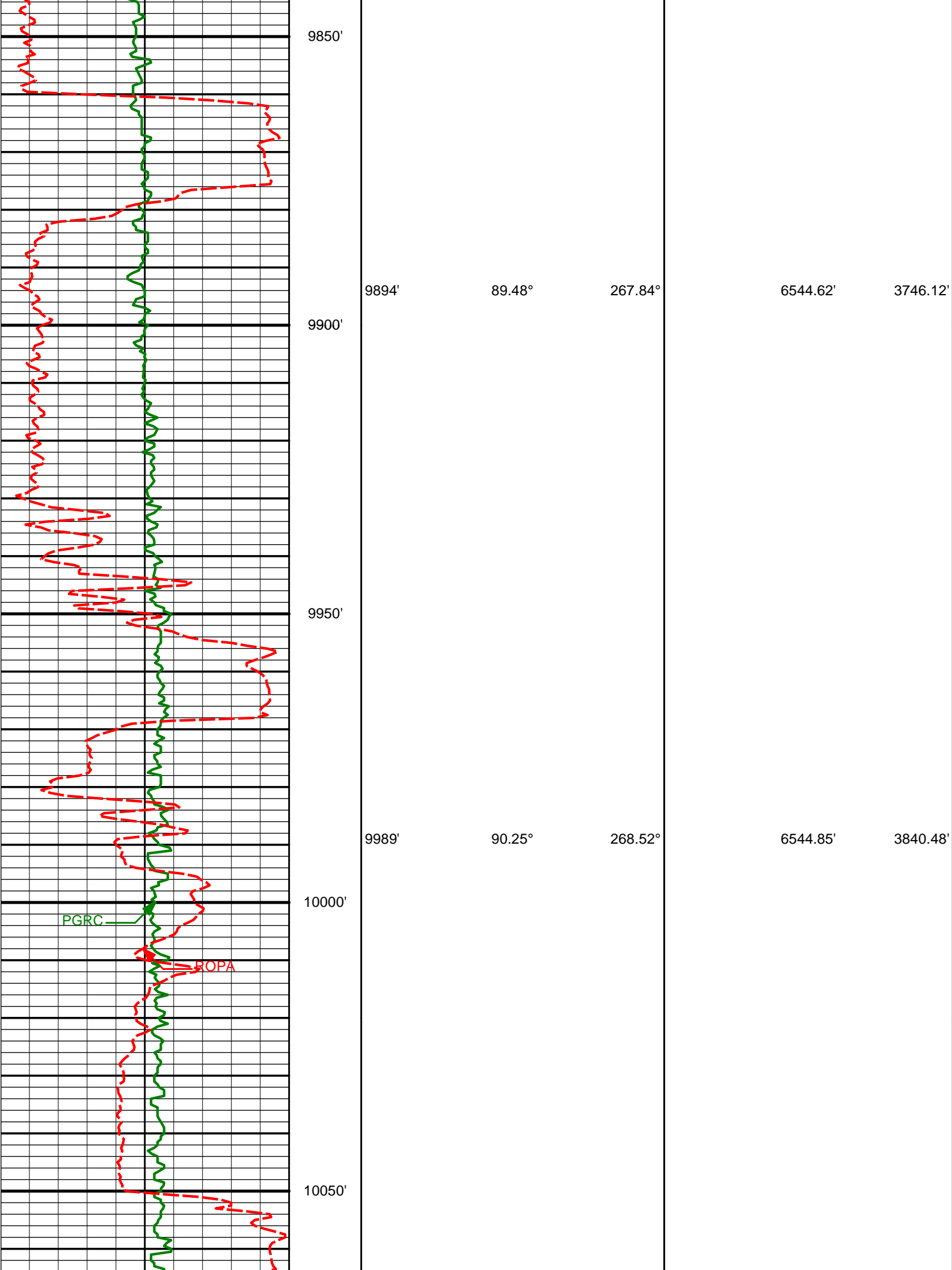


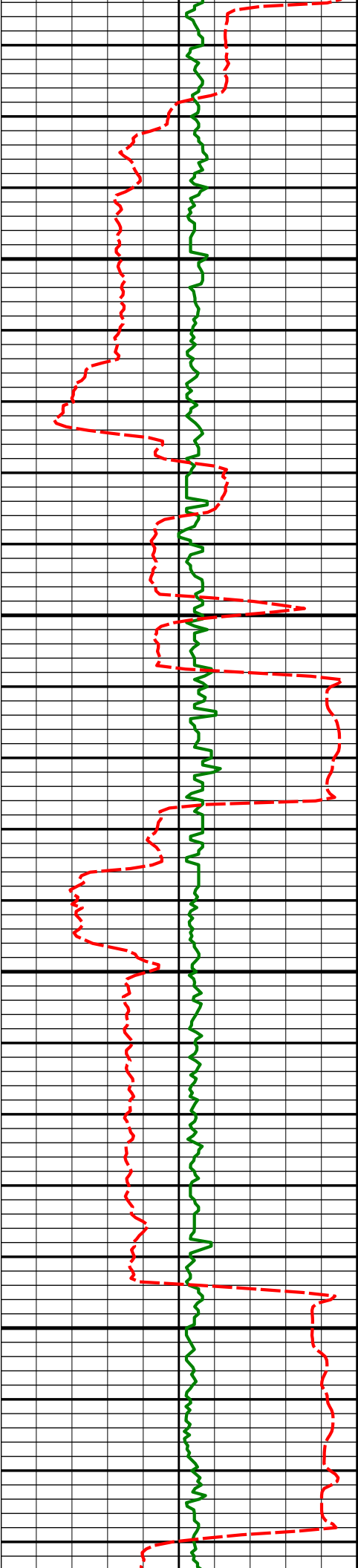
9200'				
9230'	89.69°	268.40°	6545.00'	3086.57'

9325'	90.22°	268.51°	6545.08'	3180.99'
-------	--------	---------	----------	----------









10084'

10100'

10150'

10200'

10250'

10084'

89.82°

265.62°

6544.80'

3934.61'

10179'

90.00°

262.34°

6544.96'

4027.91'

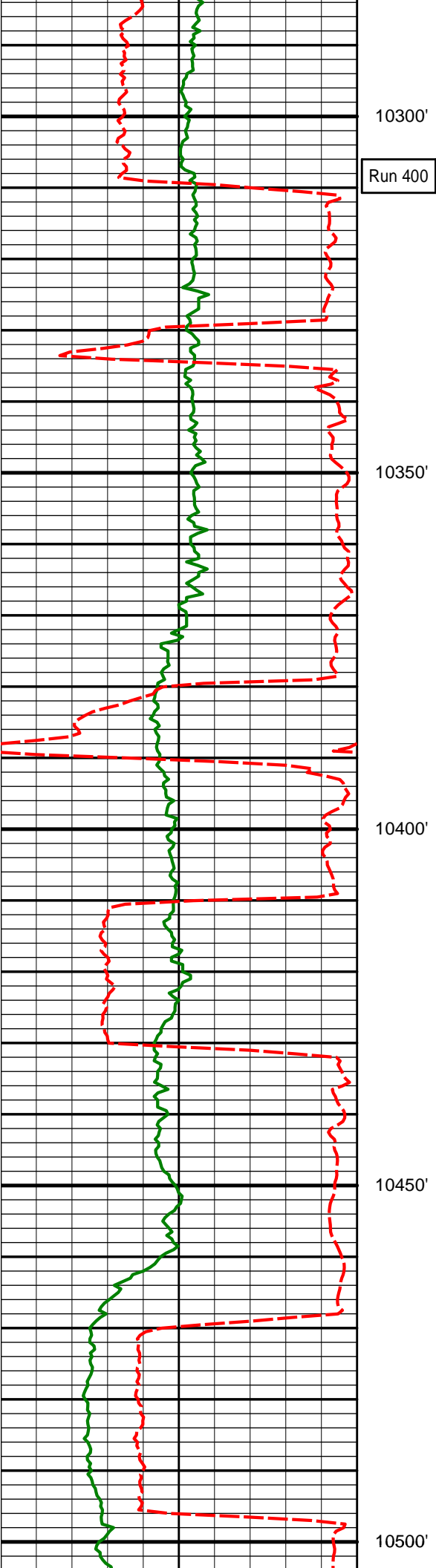
10273'

90.06°

259.29°

6544.91'

4119.12'



10300'

Run 400

10350'

10368'

91.33°

262.10°

6543.76'

4211.24'

10400'

10450'

10463'

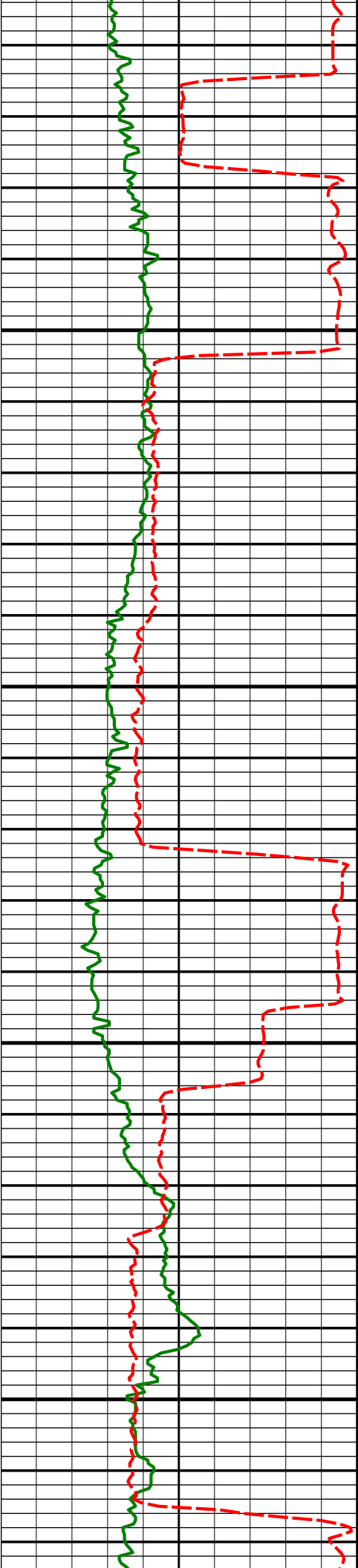
92.41°

266.13°

6540.66'

4304.53'

10500'



10550'

10558'

90.65°

269.43°

6538.13'

4398.77'

10600'

10650'

10653'

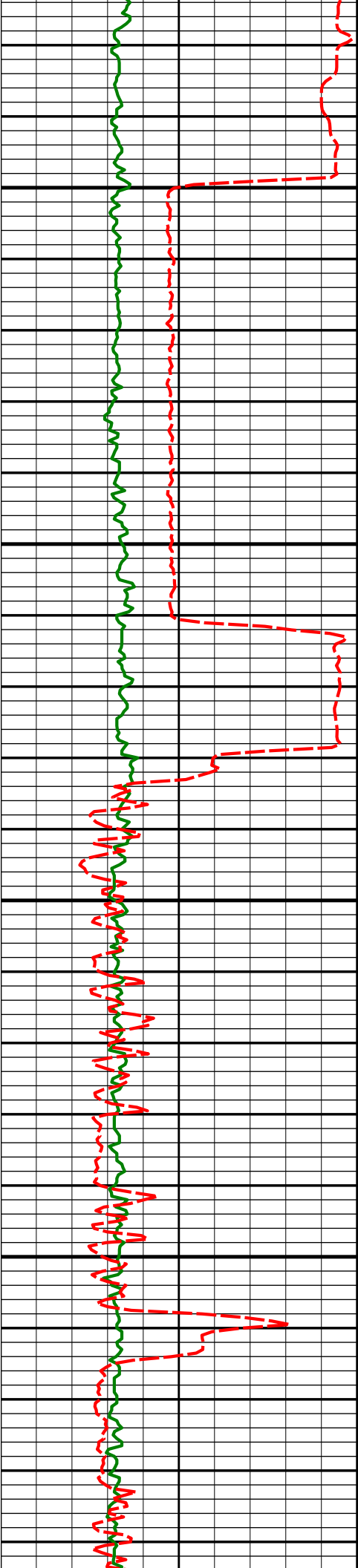
91.11°

271.54°

6536.68'

4493.48'

10700'



10750'

10800'

10850'

10900'

10748'

10843'

10937'

89.72°

89.04°

90.37°

273.02°

273.56°

272.16°

6535.99'

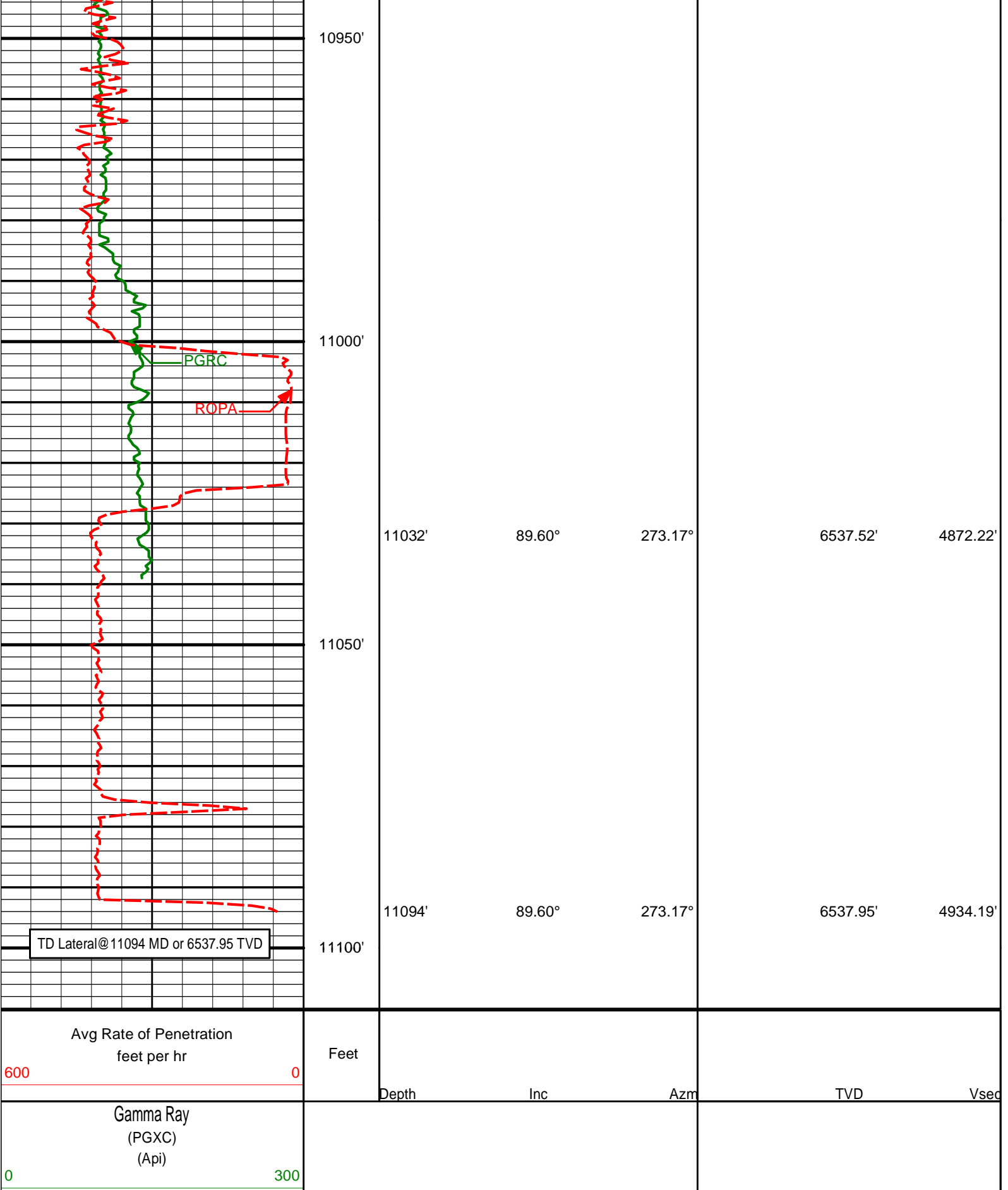
6537.01'

6537.49'

4588.38'

4683.35'

4777.29'



DIRECTIONAL SURVEY REPORT

Noble Energy
Wells Ranch AA35-67-1AHNA
Wattenberg

Weld Colorado USA CA-XX-0901017382							
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
265.00	0.50	256.33	265.00	0.27 S	1.12 W	1.10	0.19
490.00	0.40	288.03	489.99	0.26 S	2.82 W	2.79	0.12
637.00	0.60	250.33	636.98	0.36 S	4.04 W	3.99	0.25
730.00	0.49	102.09	729.98	0.61 S	4.11 W	4.04	1.12
823.00	0.55	78.81	822.98	0.61 S	3.29 W	3.23	0.23
916.00	0.94	54.73	915.97	0.08 S	2.23 W	2.22	0.53
1009.00	1.31	55.18	1008.95	0.96 N	0.74 W	0.82	0.40
1102.00	1.20	68.83	1101.93	1.92 N	1.04 E	-0.87	0.34
1195.00	1.18	64.60	1194.91	2.68 N	2.81 E	-2.58	0.10
1287.00	1.18	72.75	1286.89	3.37 N	4.57 E	-4.27	0.18
1381.00	1.19	78.62	1380.87	3.85 N	6.46 E	-6.11	0.13
1474.00	2.22	2.31	1473.84	5.84 N	7.48 E	-6.97	2.43
1570.00	4.24	346.85	1569.68	11.15 N	6.75 E	-5.80	2.27
1665.00	6.29	339.65	1664.28	19.45 N	4.14 E	-2.51	2.26
1759.00	7.58	342.82	1757.59	30.19 N	0.52 E	2.00	1.43
1854.00	9.20	345.65	1851.57	43.54 N	3.21 W	6.83	1.76
1949.00	10.38	348.15	1945.19	59.27 N	6.85 W	11.78	1.31
2043.00	10.74	341.97	2037.60	75.89 N	11.30 W	17.60	1.27
2138.00	9.55	340.53	2131.11	91.74 N	16.67 W	24.27	1.29
2233.00	10.36	342.88	2224.68	107.34 N	21.82 W	30.70	0.96
2328.00	9.27	341.47	2318.28	122.76 N	26.76 W	36.92	1.18
2422.00	9.41	338.76	2411.04	137.10 N	31.95 W	43.29	0.49
2517.00	9.87	337.35	2504.70	151.86 N	37.90 W	50.45	0.55
2612.00	10.62	338.56	2598.18	167.52 N	44.24 W	58.07	0.82
2707.00	10.66	345.96	2691.55	184.20 N	49.57 W	64.78	1.44
2802.00	9.07	344.71	2785.14	199.95 N	53.68 W	70.19	1.70
2896.00	9.19	350.32	2877.96	214.49 N	56.89 W	74.60	0.96
2991.00	10.26	343.96	2971.59	230.10 N	60.50 W	79.51	1.59
3086.00	9.24	341.99	3065.22	245.47 N	65.20 W	85.47	1.13
3181.00	9.98	342.43	3158.89	260.57 N	70.04 W	91.55	0.79
3276.00	9.54	347.78	3252.52	276.11 N	74.19 W	96.99	1.06
3371.00	8.98	346.71	3346.28	291.01 N	77.56 W	101.59	0.61
3465.00	9.78	349.11	3439.02	305.99 N	80.75 W	106.02	0.95
3560.00	8.86	347.09	3532.77	321.04 N	83.91 W	110.43	1.02
3655.00	11.06	346.60	3626.33	337.04 N	87.66 W	115.50	2.32
3750.00	12.57	348.13	3719.31	356.03 N	91.90 W	121.31	1.62
3844.00	11.83	351.40	3811.19	375.56 N	95.44 W	126.47	1.08
3939.00	10.88	347.12	3904.33	393.93 N	98.90 W	131.45	1.33
4034.00	10.06	346.63	3997.75	410.75 N	102.82 W	136.75	0.87
4129.00	9.50	346.20	4091.37	426.44 N	106.60 W	141.84	0.59
4224.00	8.60	344.31	4185.18	440.89 N	110.40 W	146.83	1.00
4319.00	7.44	343.23	4279.25	453.63 N	114.10 W	151.58	1.23
4414.00	6.88	341.08	4373.51	464.90 N	117.72 W	156.13	0.65
4509.00	6.60	339.83	4467.85	475.41 N	121.45 W	160.72	0.33
4604.00	4.89	345.95	4562.37	484.47 N	124.31 W	164.33	1.92
4699.00	4.16	330.09	4657.08	491.39 N	127.02 W	167.61	1.51
4793.00	2.35	341.38	4750.93	496.17 N	129.33 W	170.31	2.04
4888.00	0.54	125.33	4845.90	497.76 N	129.59 W	170.70	2.95
4983.00	1.15	86.45	4940.89	497.56 N	128.28 W	169.38	0.85
5077.00	1.09	103.18	5034.88	497.41 N	126.46 W	167.56	0.35
5173.00	1.00	99.08	5130.86	497.07 N	124.75 W	165.82	0.12
5268.00	0.59	123.86	5225.85	496.67 N	123.52 W	164.57	0.55
5362.00	0.07	85.52	5319.85	496.41 N	123.07 W	164.09	0.57
5457.00	0.14	245.05	5414.85	496.36 N	123.11 W	164.13	0.21
5553.00	0.10	205.24	5510.85	496.24 N	123.25 W	164.26	0.09
5647.00	0.19	237.69	5604.85	496.09 N	123.42 W	164.41	0.12
5742.00	0.22	213.49	5699.85	495.85 N	123.65 W	164.62	0.10
5814.00	0.14	225.02	5771.85	495.67 N	123.79 W	164.75	0.13
5875.00	0.14	151.98	5832.85	495.55 N	123.81 W	164.75	0.27
5925.00	0.44	241.54	5882.85	495.41 N	123.95 W	164.88	0.92
5972.00	5.10	281.68	5929.78	495.75 N	126.15 W	167.11	10.15
6020.00	10.96	277.54	5977.29	496.78 N	132.77 W	173.79	12.26
6067.00	14.10	278.47	6023.16	498.21 N	142.86 W	183.97	6.69
6115.00	17.88	274.48	6069.48	498.63 N	155.64 W	196.83	6.45

6115.00	17.00	274.48	6069.40	499.62 N	155.64 W	196.82	6.45
6162.00	19.28	268.39	6114.07	499.93 N	170.26 W	211.41	6.30
6210.00	23.84	267.61	6158.70	499.31 N	187.88 W	228.92	9.51
6257.00	29.40	270.78	6200.70	499.07 N	208.92 W	249.87	12.21
6305.00	34.48	274.52	6241.42	500.30 N	234.27 W	275.23	11.34
6352.00	38.21	274.61	6279.27	502.52 N	262.03 W	303.07	7.94
6400.00	40.07	271.56	6316.51	504.13 N	292.27 W	333.35	5.57
6447.00	44.68	269.54	6351.22	504.41 N	323.94 W	364.93	10.23
6495.00	51.55	269.06	6383.24	503.96 N	359.65 W	400.48	14.33
6542.00	57.86	268.95	6410.38	503.29 N	397.99 W	438.62	13.43
6589.00	60.77	272.01	6434.37	503.65 N	438.39 W	478.92	8.33
6636.00	63.41	271.61	6456.37	504.96 N	479.90 W	520.39	5.68
6684.00	67.14	268.82	6476.44	505.11 N	523.49 W	563.84	9.39
6731.00	71.35	266.84	6493.10	503.43 N	567.39 W	607.45	9.78
6779.00	75.20	267.40	6506.91	501.12 N	613.30 W	653.00	8.10
6823.00	78.34	267.27	6516.97	499.13 N	656.08 W	695.47	7.15
6954.00	85.81	268.25	6535.02	494.07 N	785.64 W	824.15	5.75
7049.00	87.41	267.04	6540.64	490.17 N	880.38 W	918.24	2.11
7143.00	87.38	267.03	6544.91	485.31 N	974.16 W	1011.28	0.03
7238.00	90.43	265.86	6546.73	479.43 N	1068.95 W	1105.25	3.44
7333.00	90.22	267.47	6546.19	473.90 N	1163.78 W	1199.29	1.71
7427.00	91.60	270.53	6544.70	472.27 N	1257.74 W	1292.79	3.58
7522.00	89.54	269.17	6543.75	472.02 N	1352.73 W	1387.42	2.61
7617.00	89.60	270.58	6544.47	471.80 N	1447.73 W	1482.07	1.49
7712.00	89.14	268.02	6545.51	470.64 N	1542.70 W	1576.62	2.74
7807.00	91.17	268.37	6545.26	467.65 N	1637.65 W	1670.98	2.17
7902.00	92.62	269.20	6542.12	465.63 N	1732.58 W	1765.41	1.76
7997.00	92.90	270.58	6537.54	465.46 N	1827.46 W	1859.95	1.49
8091.00	90.31	271.47	6534.91	467.14 N	1921.40 W	1953.70	2.91
8186.00	90.34	269.66	6534.38	468.09 N	2016.39 W	2048.44	1.91
8281.00	87.50	267.98	6536.16	466.14 N	2111.34 W	2142.89	3.47
8376.00	87.56	267.30	6540.25	462.24 N	2206.17 W	2237.07	0.72
8470.00	89.45	267.27	6542.71	457.79 N	2300.03 W	2330.23	2.00
8566.00	90.80	269.34	6542.50	454.95 N	2395.98 W	2425.60	2.58
8661.00	89.57	269.07	6542.19	453.64 N	2490.97 W	2520.15	1.33
8756.00	90.00	270.28	6542.55	453.10 N	2585.97 W	2614.77	1.35
8851.00	88.27	269.22	6543.98	452.69 N	2680.95 W	2709.39	2.13
8946.00	89.94	269.34	6545.46	451.49 N	2775.93 W	2803.93	1.76
9041.00	91.08	269.80	6544.62	450.78 N	2870.92 W	2898.53	1.29
9136.00	89.38	268.97	6544.24	449.76 N	2965.91 W	2993.11	1.99
9230.00	89.69	268.40	6545.00	447.60 N	3059.88 W	3086.57	0.69
9325.00	90.22	268.51	6545.08	445.03 N	3154.84 W	3180.99	0.56
9420.00	89.54	268.10	6545.28	442.21 N	3249.80 W	3275.38	0.84
9515.00	91.11	268.51	6544.75	439.40 N	3344.76 W	3369.77	1.71
9610.00	90.80	268.97	6543.16	437.31 N	3439.72 W	3464.22	0.59
9704.00	89.51	268.03	6542.91	434.85 N	3533.68 W	3557.65	1.70
9799.00	89.47	267.10	6543.75	430.82 N	3628.59 W	3651.89	0.97
9894.00	89.48	267.84	6544.62	426.63 N	3723.50 W	3746.12	0.78
9989.00	90.25	268.52	6544.85	423.62 N	3818.45 W	3840.48	1.08
10084.00	89.82	265.62	6544.80	418.77 N	3913.31 W	3934.61	3.09
10179.00	90.00	262.34	6544.96	408.81 N	4007.78 W	4027.91	3.46
10273.00	90.06	259.29	6544.91	393.80 N	4100.56 W	4119.12	3.24
10368.00	91.33	262.10	6543.76	378.44 N	4194.29 W	4211.24	3.24
10463.00	92.41	266.13	6540.66	368.71 N	4288.72 W	4304.53	4.39
10558.00	90.65	269.43	6538.13	365.03 N	4383.60 W	4398.77	3.93
10653.00	91.11	271.54	6536.68	365.83 N	4478.58 W	4493.48	2.27
10748.00	89.72	273.02	6535.99	369.60 N	4573.49 W	4588.38	2.14
10843.00	89.04	273.56	6537.01	375.05 N	4668.33 W	4683.35	0.91
10937.00	90.37	272.16	6537.49	379.73 N	4762.21 W	4777.29	2.05
11032.00	89.60	273.17	6537.52	384.15 N	4857.10 W	4872.22	1.34
11094.00	89.60	273.17	6537.95	387.58 N	4919.01 W	4934.19	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 274.79 DEGREES (GRID)
A TOTAL CORRECTION OF 7.63 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11094.00 FEET
IS 4934.25 FEET ALONG 274.51 DEGREES (GRID)

Tie-In @ Surface

Surveys at 265 ft, 490 ft and 637 ft, were taken and provided by HP 322 while they were drilling the surface hole and have been converted from magnetic north to grid north.

Date Printed:02 March 2014