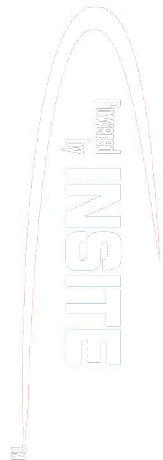


PCDC - Pressure Case Directional
PCGK - Pressure Case Gamma

1 : 240

Country		: USA					
Field		: Wattenberg					
Location		: Lat: 40° 30' 37.73" North Long: 104° 27' 3.10" West					
Well		: NCLP AA06-62-1AHNC					
Company		: Noble Energy					
Rig		: H&P 322					
LOCATION		Latitude : 40° 30' 37.73" North Longitude : 104° 27' 3.10" West		Company : Noble Energy Rig : H&P 322 Well : NCLP AA06-62-1AHNC Field : Wattenberg Country : USA API Number : 05-123-39106			
		UTM Easting = 3,291,713.362 ft UTM Northing = 1,430,534.118 ft					
Permanent Datum		: Ground Level		Elevation : 4709.00 ft		Elev. KB N/A	
Log Measured From		: Drill Floor		24.00 ft Above Permanent Datum		DF 4733.00 ft GL 4709.00 ft WD N/A	
Drilling Measured From		: Drill Floor		MD LOG			
Depth Logged		: 854.00 ft To 14,502.00 ft		Unit No. : 11210425		Job No. : CA-XX-0901286147	
Date Logged		: 01-Jul-14 To 11-Jul-14		Plot Type : Final			
Total Depth MD		: 14,502.00 ft TVD : 6,800.58 ft		Plot Date : 11-Jul-14			
Spud Date		: 01-Jul-14					
Run No.	Borehole Record (MD)			Run No.	Borehole Record (MD)		
	Size	From	To		Size	From	To
2	8.750 in	854.00 ft	6,082.00 ft				
3	8.750 in	6,082.00 ft	7,068.00 ft				
4	6.125 in	7068.00 ft	14,502.00 ft				
	Casing Record (MD)			Size	Casing Record (MD)		
	Size	Weight	From		To		
				9.625 in	36.00 lbpf	SURFACE 844.00 ft	
				7.000 in	26.00 lbpf	SURFACE 7,058.00 ft	

WELL INFORMATION

MWD Run Number	100	200	300		
Date run completed	03-Jul-14	05-Jul-14	11-Jul-14		
Rig Bit Number	2	3	4		
Bit Size (in)	8.750	8.750	6.125		
Tool Nominal OD (in)	6.750	6.750	4.750		
Log Start Depth (MD, ft)	854.00	6,082.00	7,068.00		
Log End Depth (MD, ft)	6,082.00	7,068.00	14,502.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	02-Jul-14 17:00	04-Jul-14 17:30	06-Jul-14 10:15		
Drill/Wipe End Date and Time	03-Jul-14 11:35	05-Jul-14 06:35	10-Jul-14 21:00		
Min Inc (deg) @ Depth (MD, ft)	0.20 @ 300.00	0.41 @ 6,113.00	85.84 @ 13,837.00		
Max Inc (deg) @ Depth (MD, ft)	10.05 @ 2,895.00	79.21 @ 7,010.00	93.14 @ 10,706.00		
Bit TFA(in2) / Bit Type	0.74 / PDC	0.98 / PDC	0.65 / PDC		
Flow Rate (gpm)	569.00	533.00	305.00		
Max AV (fpm) / CV (fpm) @ MWD	427.3 / 427.3	415.0 / 415.0	516.7 / 516.7		
Fluid Type	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel		
Density (ppg) / Viscosity (spqt)	9.20 / 40.00	10.60 / 41.00	9.60 / 38.00		
Filtrate CL (ppm)	2,200.00	2,000.00	2,000.00		
pH / Fluid Loss (mptm)	10.00 / N/A	9.50 / N/A	9.60 / N/A		
PV (cP) / YP (Ihf2)	12 / 12.00	14 / 16.00	11 / 9.00		
% Solids / % Sand	4.8 / .1	10.9 / 0.2	6.20 / 0.15		
% 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	165.58 / PCM	165.58 / PCM	234.50 / PCM		
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Lead MWD Engineer	Garry Igunbor	Garry Igunbor	Garry Igunbor		
Customer Representative	Charles Collver	Charles Collver	Bo Cousins		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.84	5.84	5.84		
Sub Serial Number	244108	244108	12334786		
Insert Serial Number	11619971	11619971	11619971		
Date and Time Initialized	02-Jul-14 01:19	02-Jul-14 01:19	05-Jul-14 16:05		
Date and Time Read	05-Jul-14 11:43	05-Jul-14 11:38	11-Jul-14 08:40		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	59.00	58.00	63.00		
Software Version	6.21	6.21	6.21		
Sub Serial Number	244108	244108	12334786		
Sonde Serial Number	11478073	11478073	11478073		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	330.96	73.48	125.05		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	51.62	51.32	56.32		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	244108	244108	12334786		
Insert/Sonde Serial Number	11579778	11579778	11579778		

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):
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

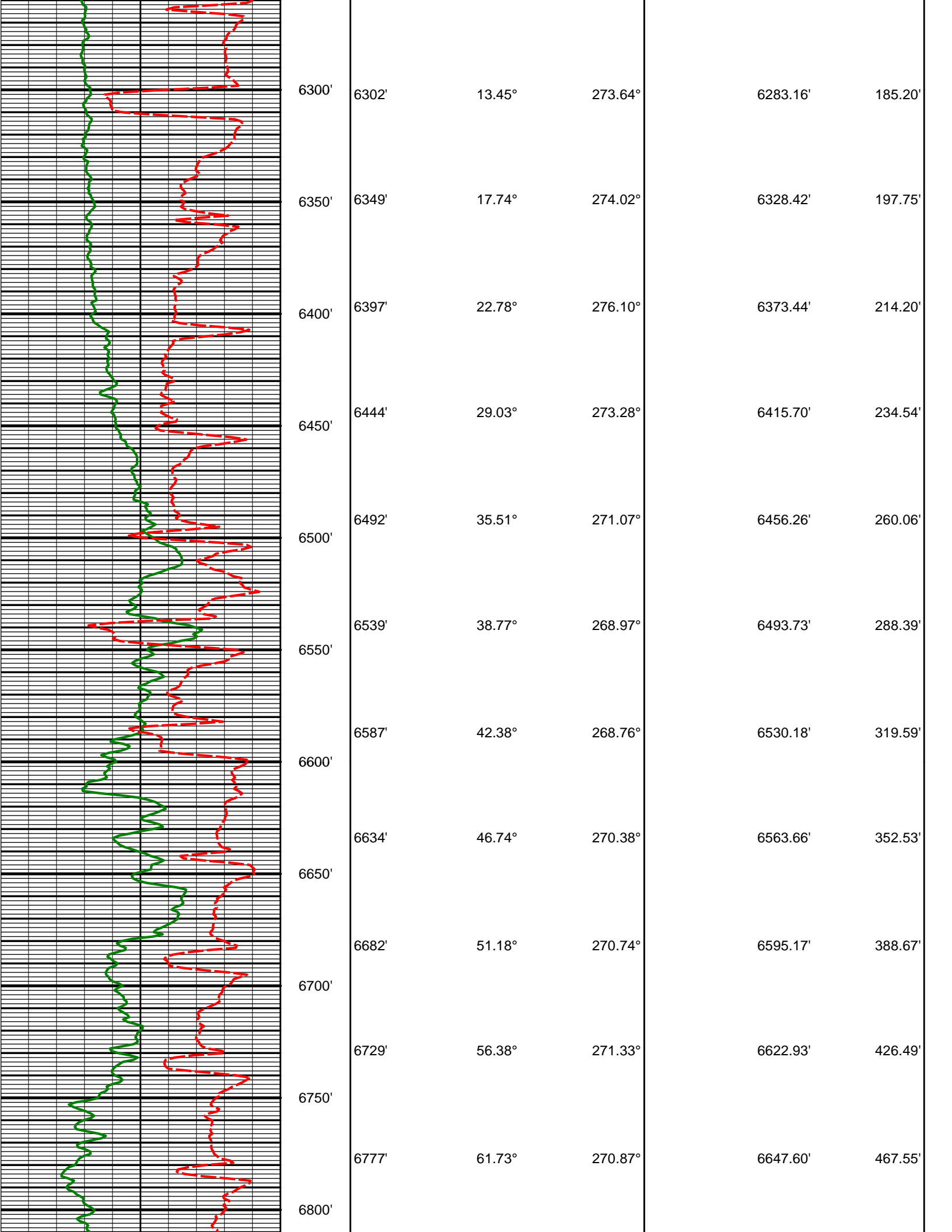
WARRANTY

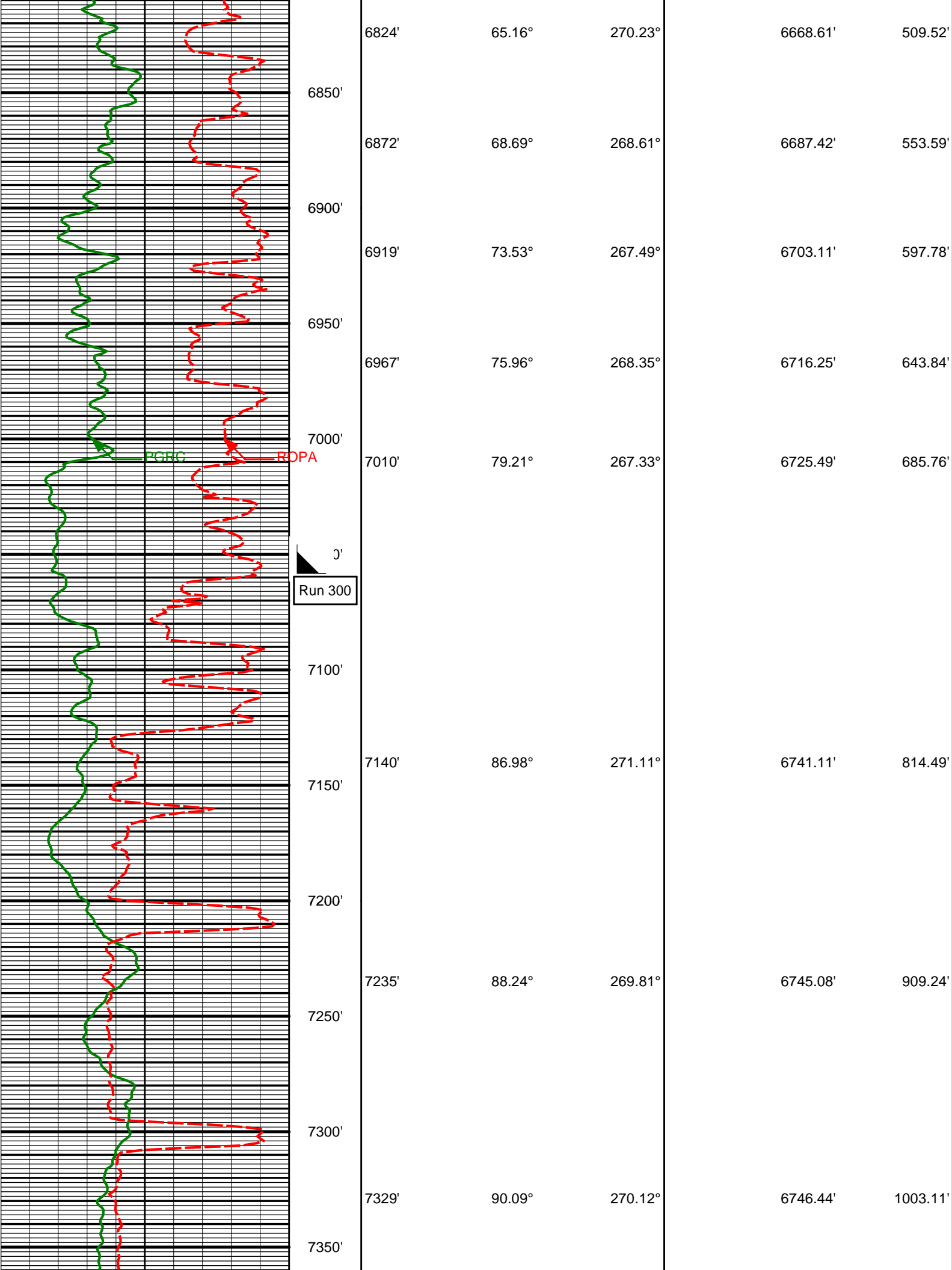
HALLIBURTON WILL USE ITS BEST EFFORTS TO FURNISH CUSTOMERS WITH ACCURATE INFORMATION AND INTERPRETATIONS THAT ARE PART OF, AND INCIDENT TO, THE SERVICES PROVIDED. HOWEVER, HALLIBURTON CANNOT AND DOES NOT WARRANT THE ACCURACY OR CORRECTNESS OF SUCH INFORMATION AND INTERPRETATIONS. UNDER NO CIRCUMSTANCES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

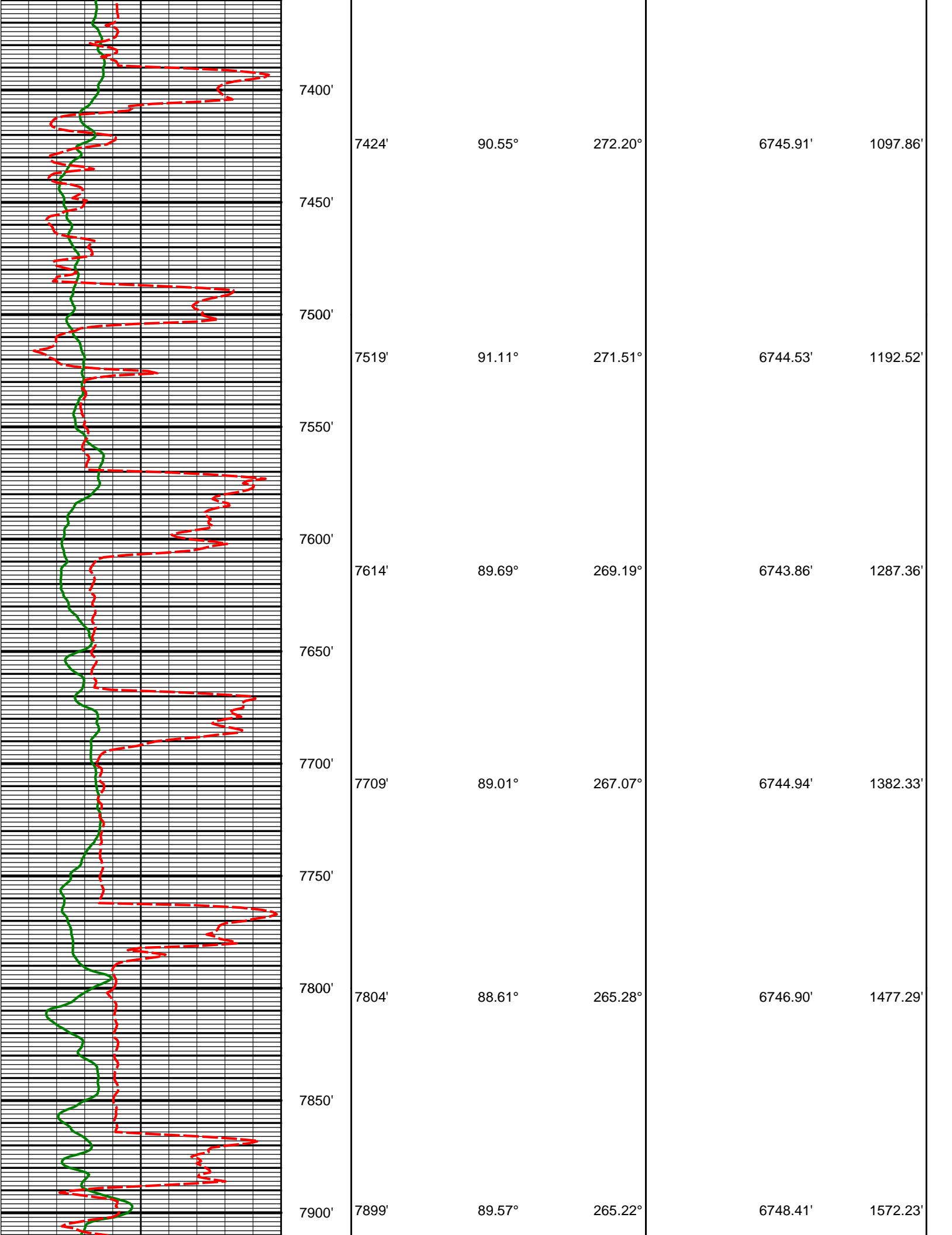
HALLIBURTON

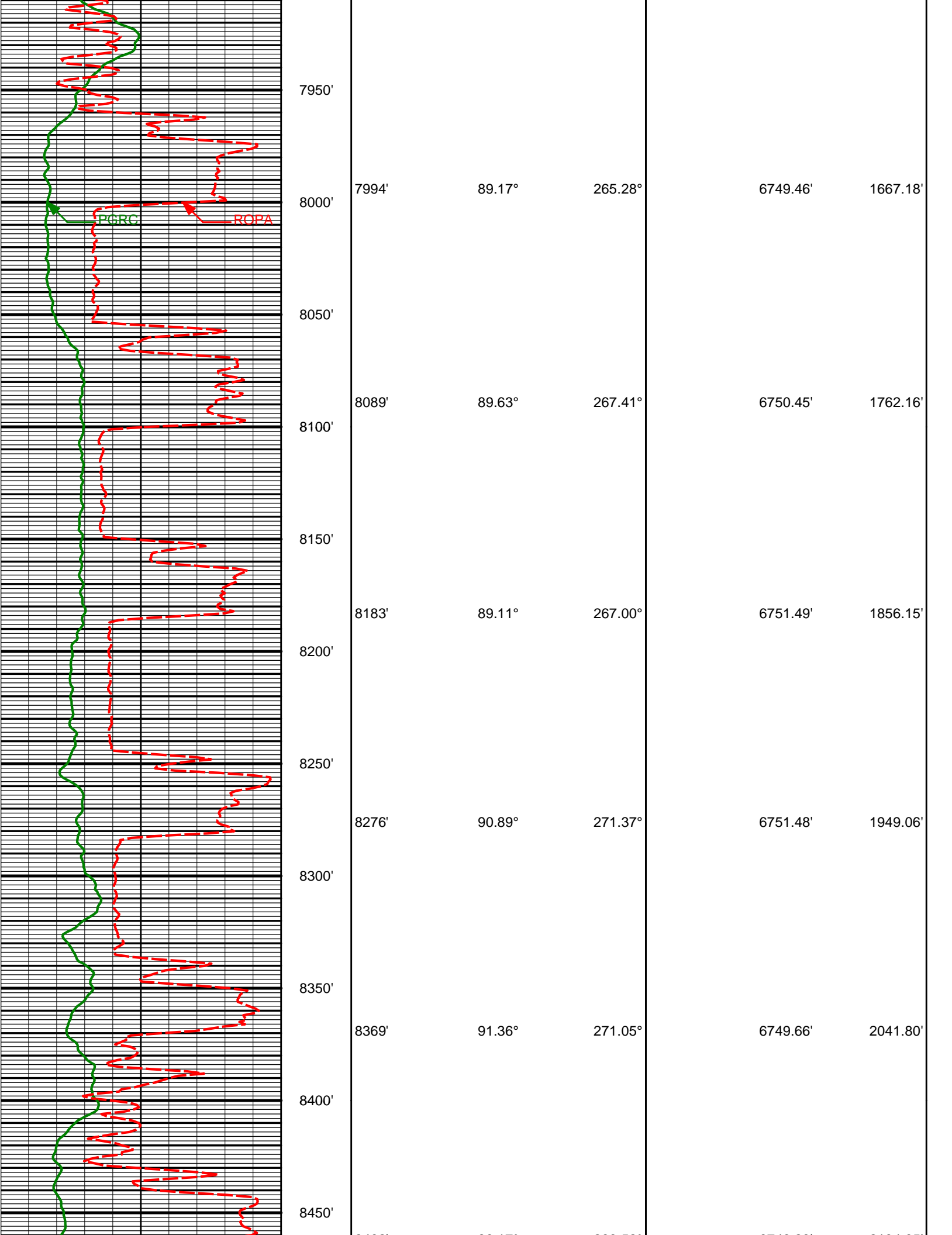
MD Detail Log 1:600

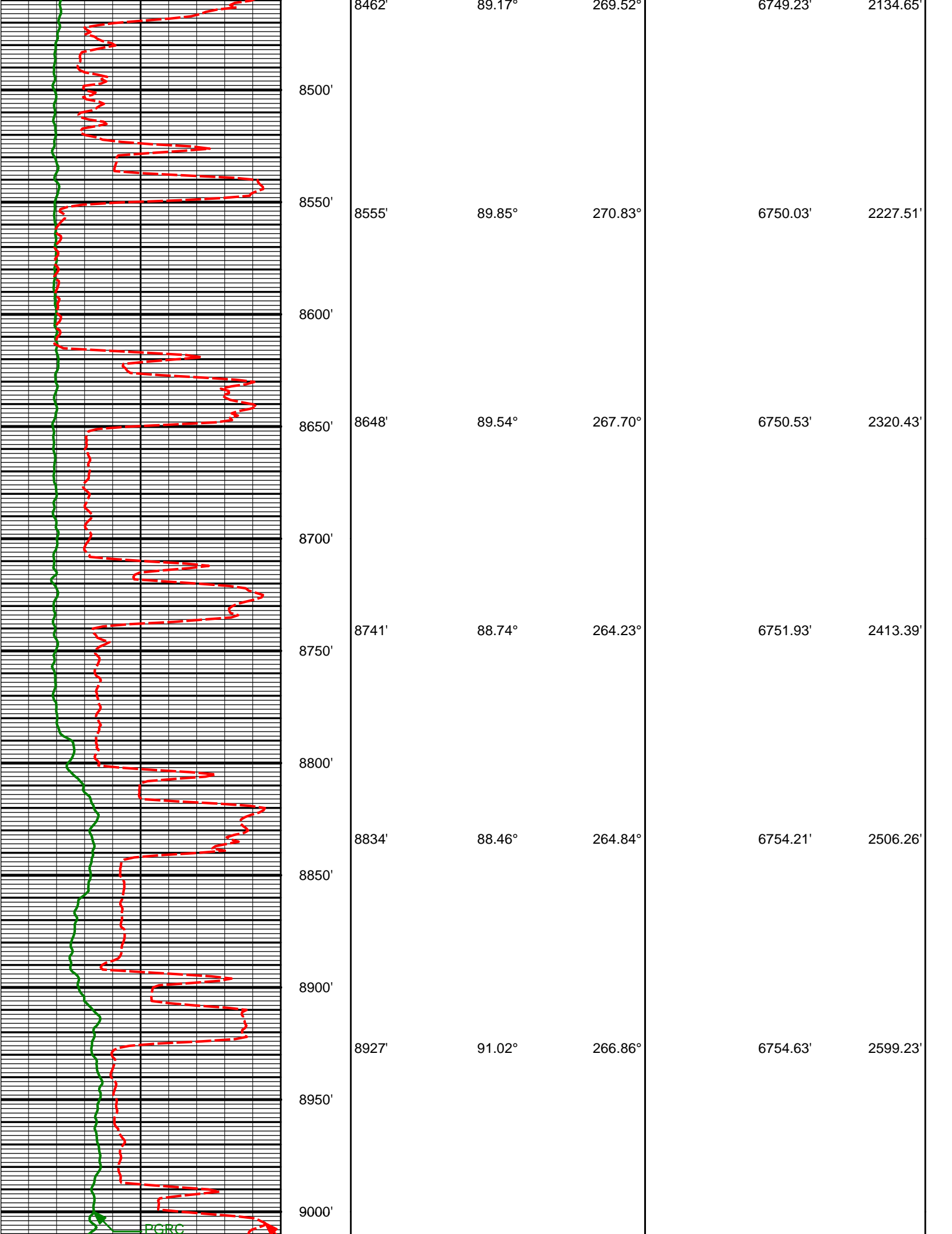
Gamma Ray (PGXC) (Api)						
0300						
Avg Rate of Penetration feet per hr	Feet					
6000						
		Depth	Inc	Azm	TVD	Vsec
	6000'	6023'	0.58°	173.44°	6005.75'	165.80'
	6050'					
	Run 200					
	6100'	6113'	0.41°	115.27°	6095.74'	165.48'
	KOP					
	6150'	6160'	2.38°	291.66°	6142.73'	166.22'
	6200'	6208'	6.00°	285.38°	6190.60'	169.51'
	6250'	6255'	9.88°	277.77°	6237.14'	175.80'

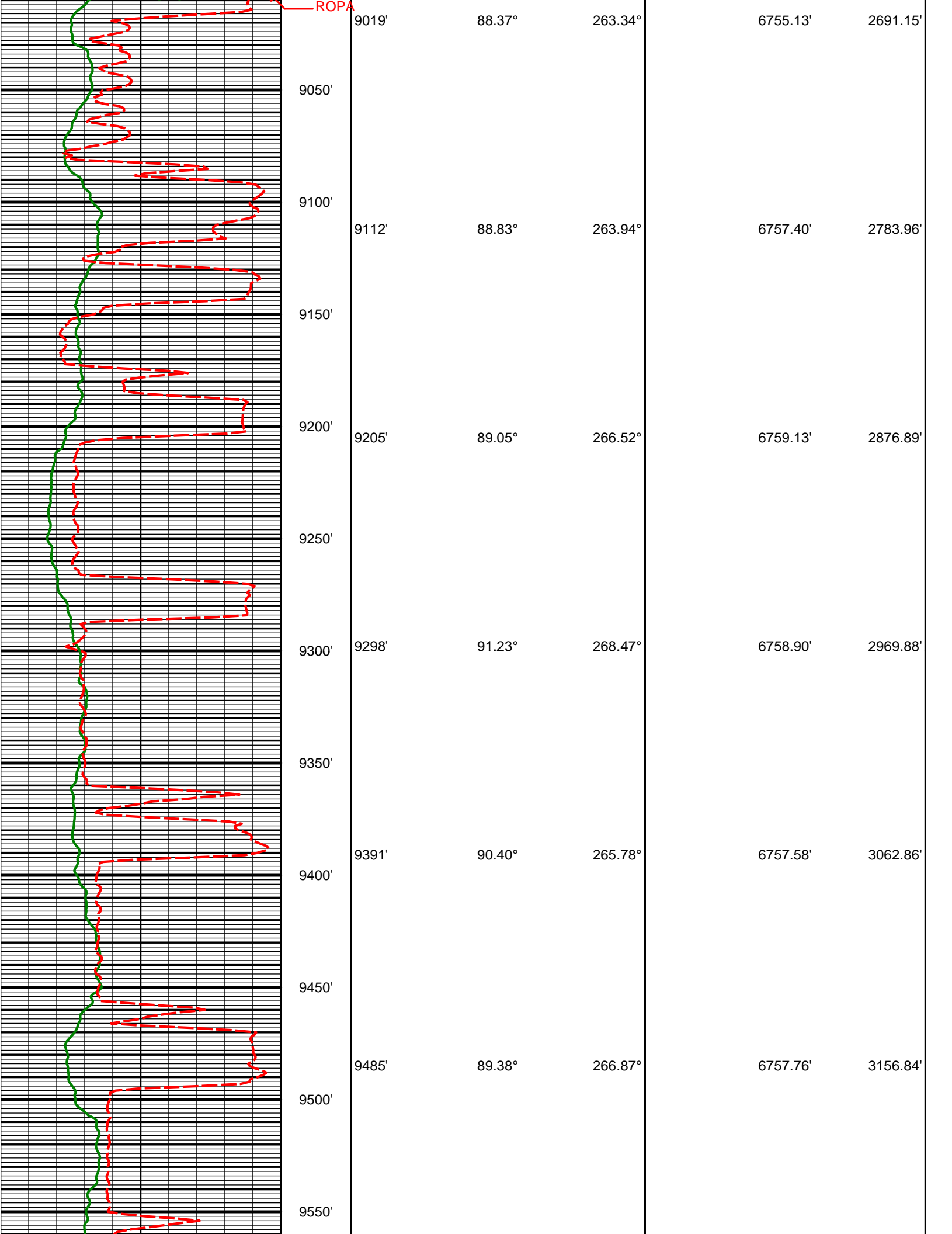


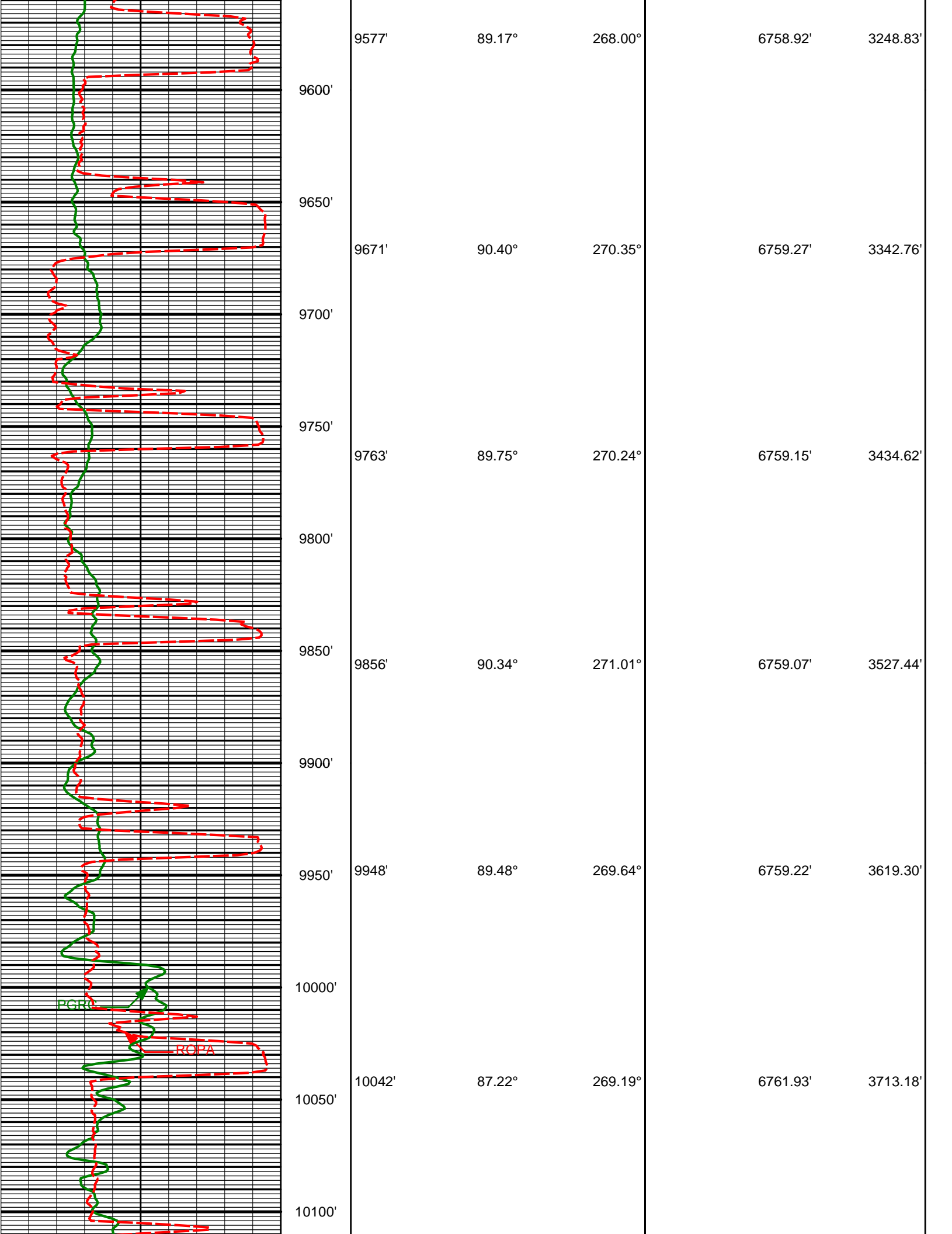


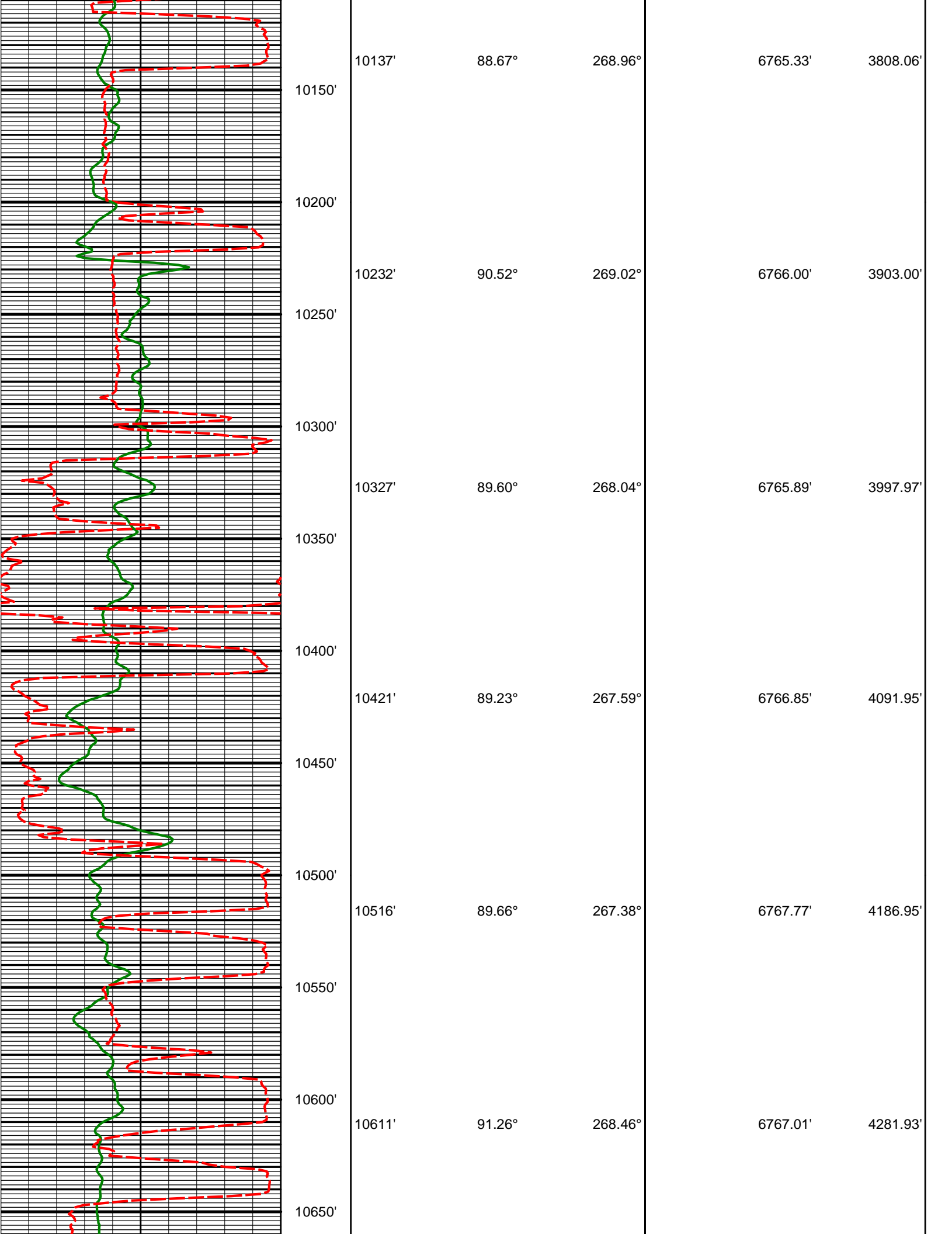


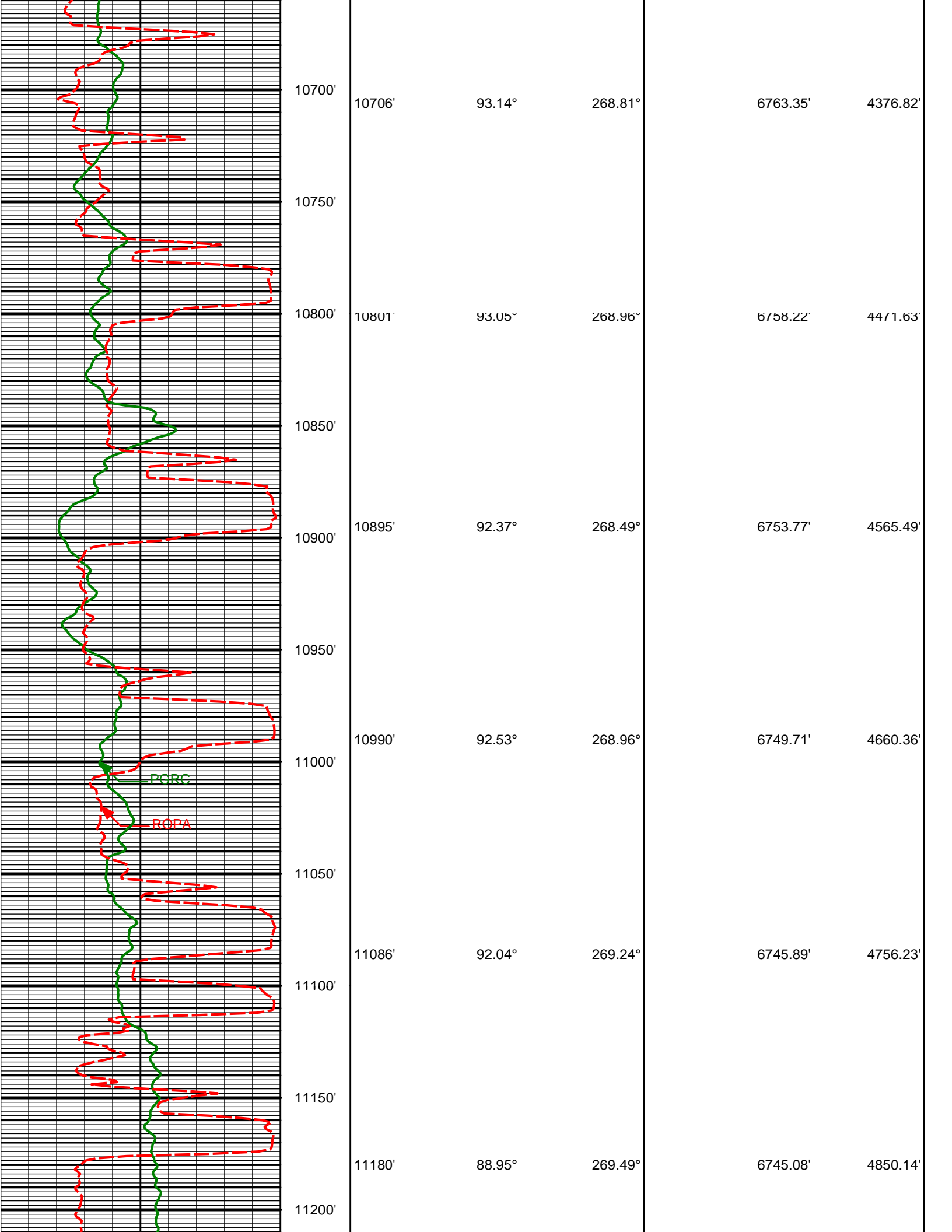


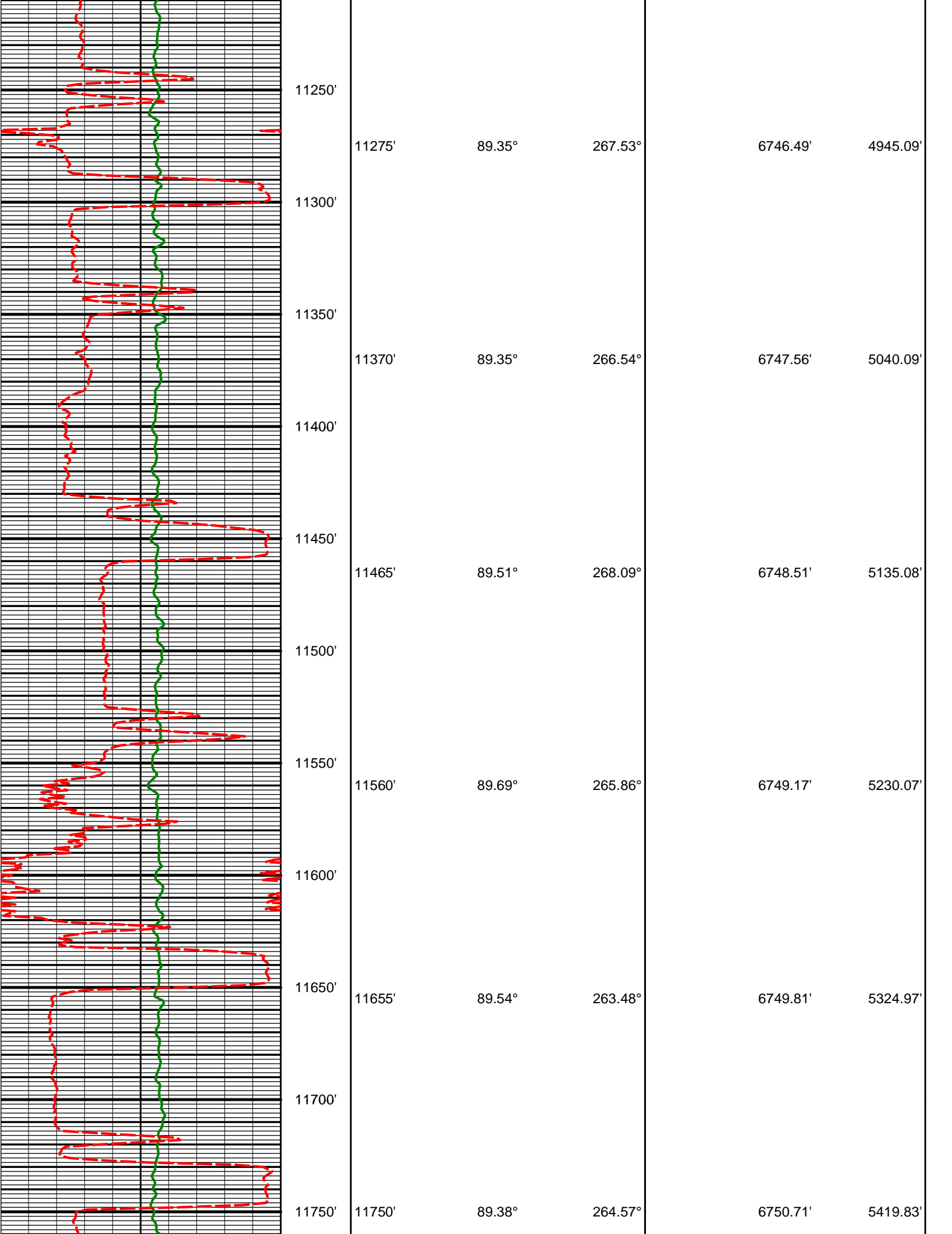


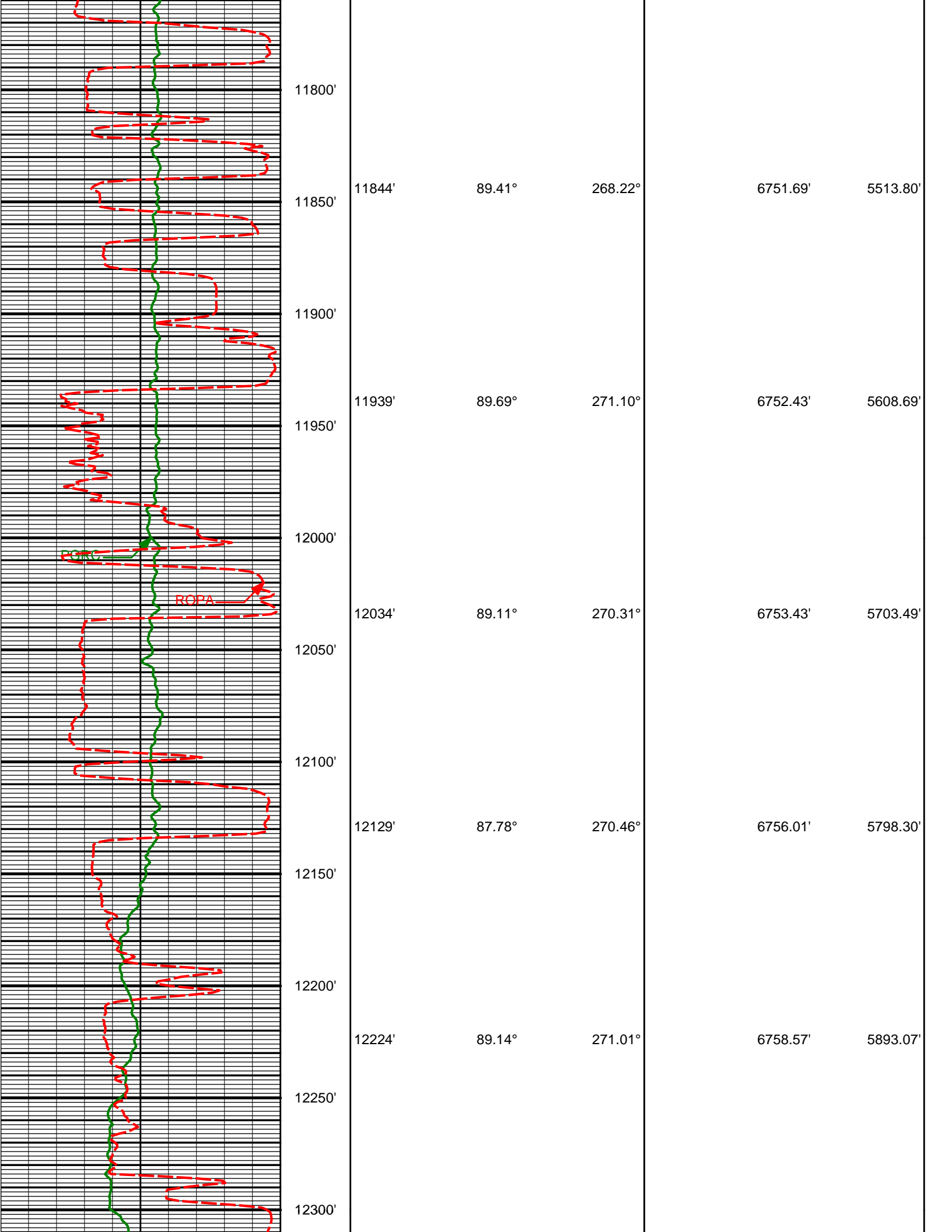


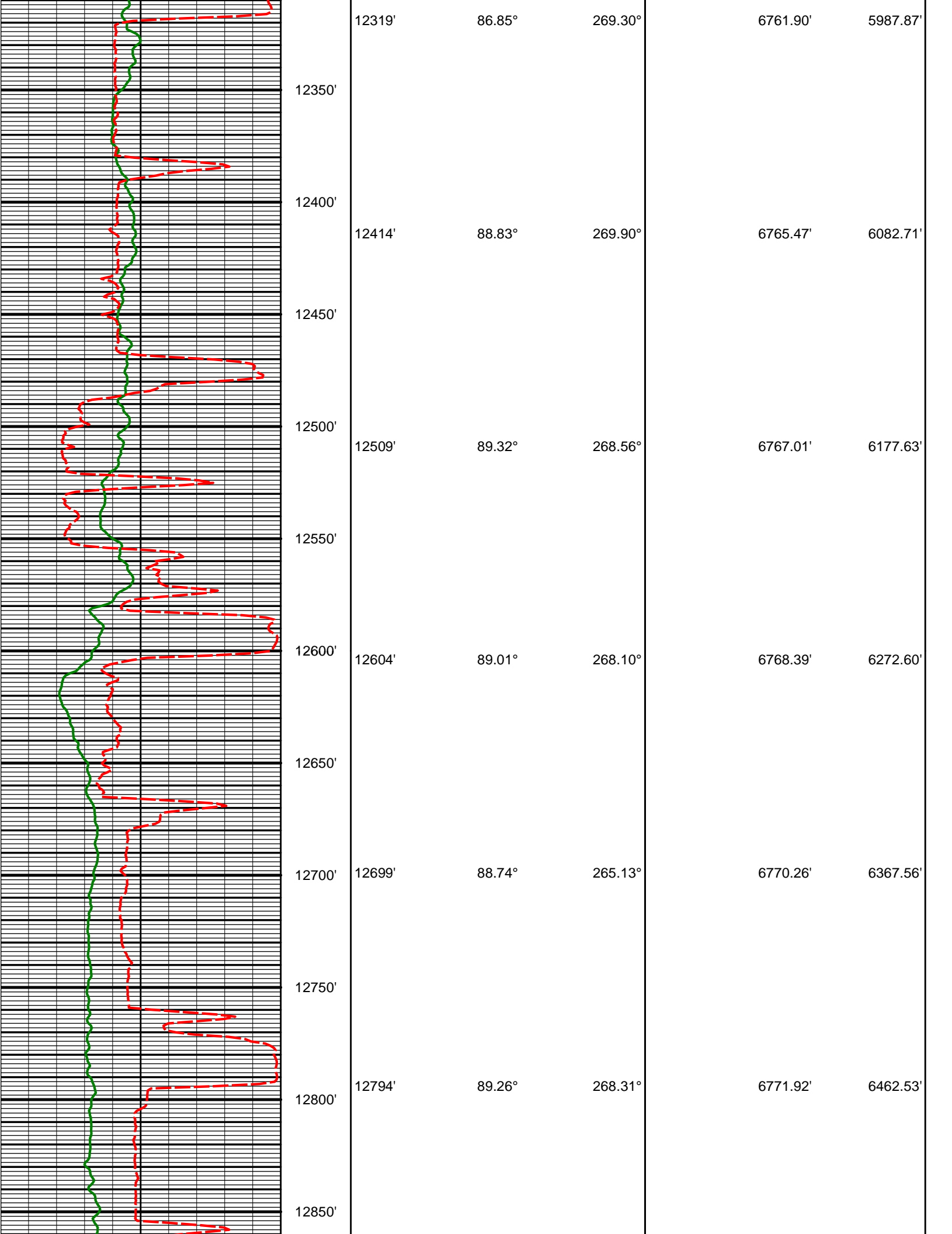


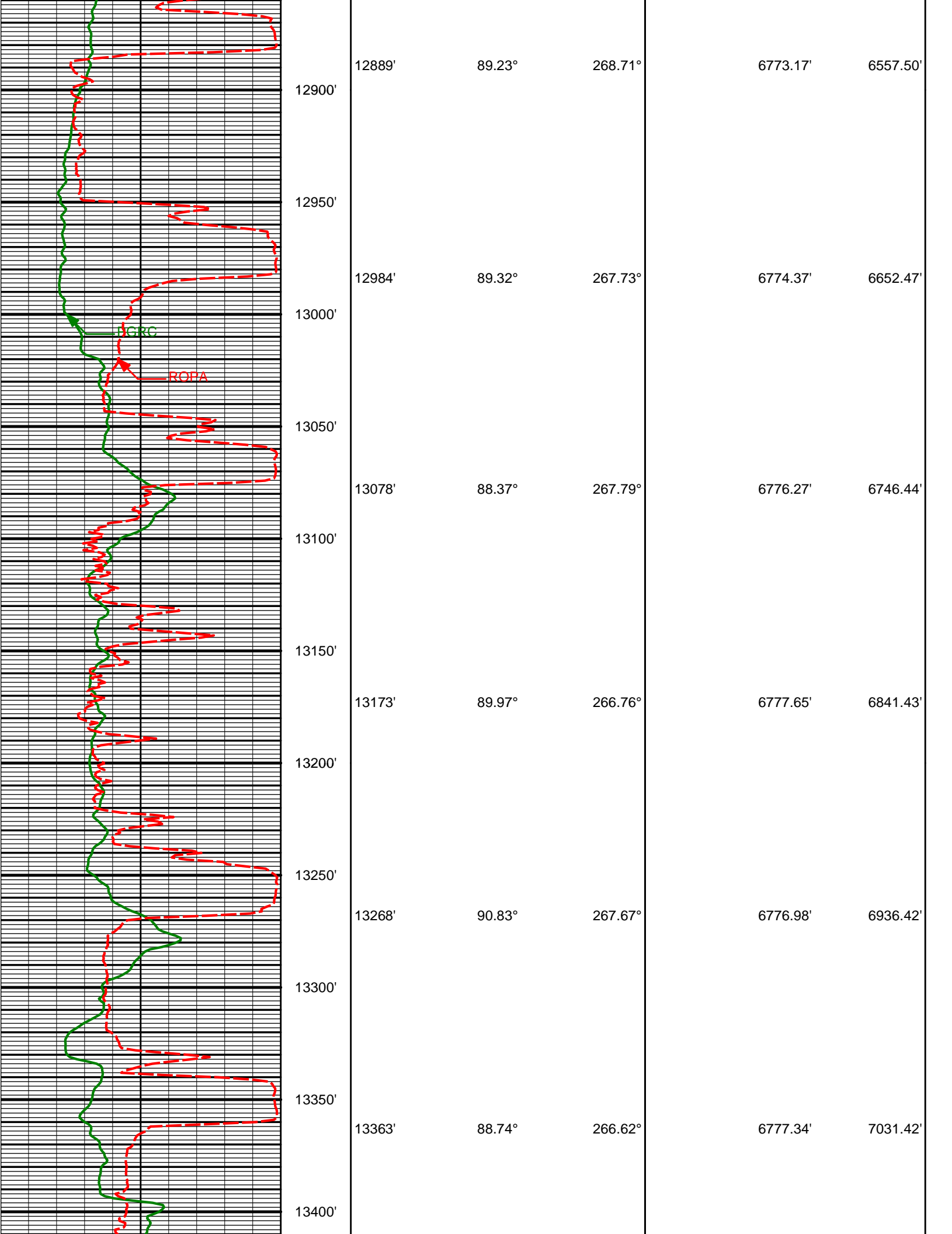


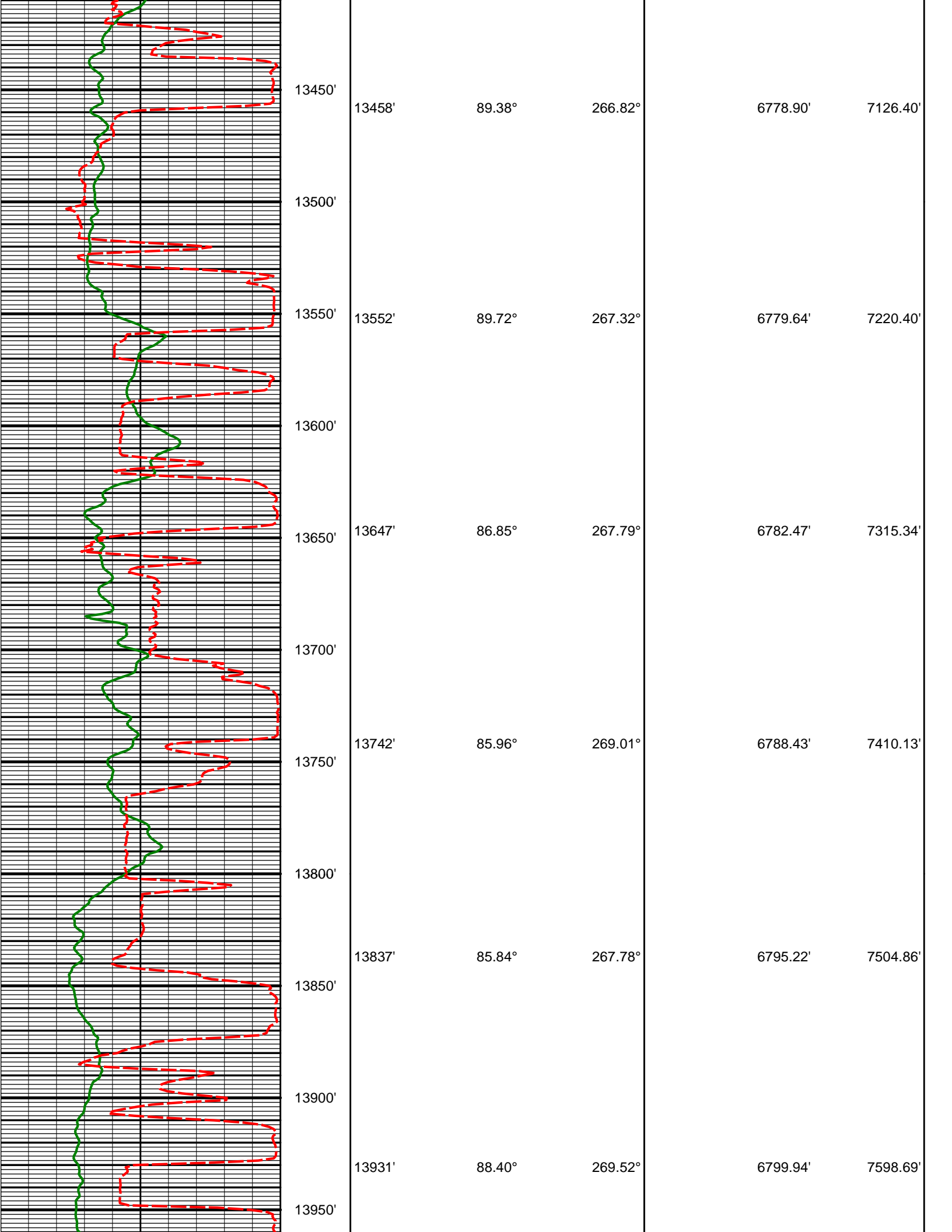


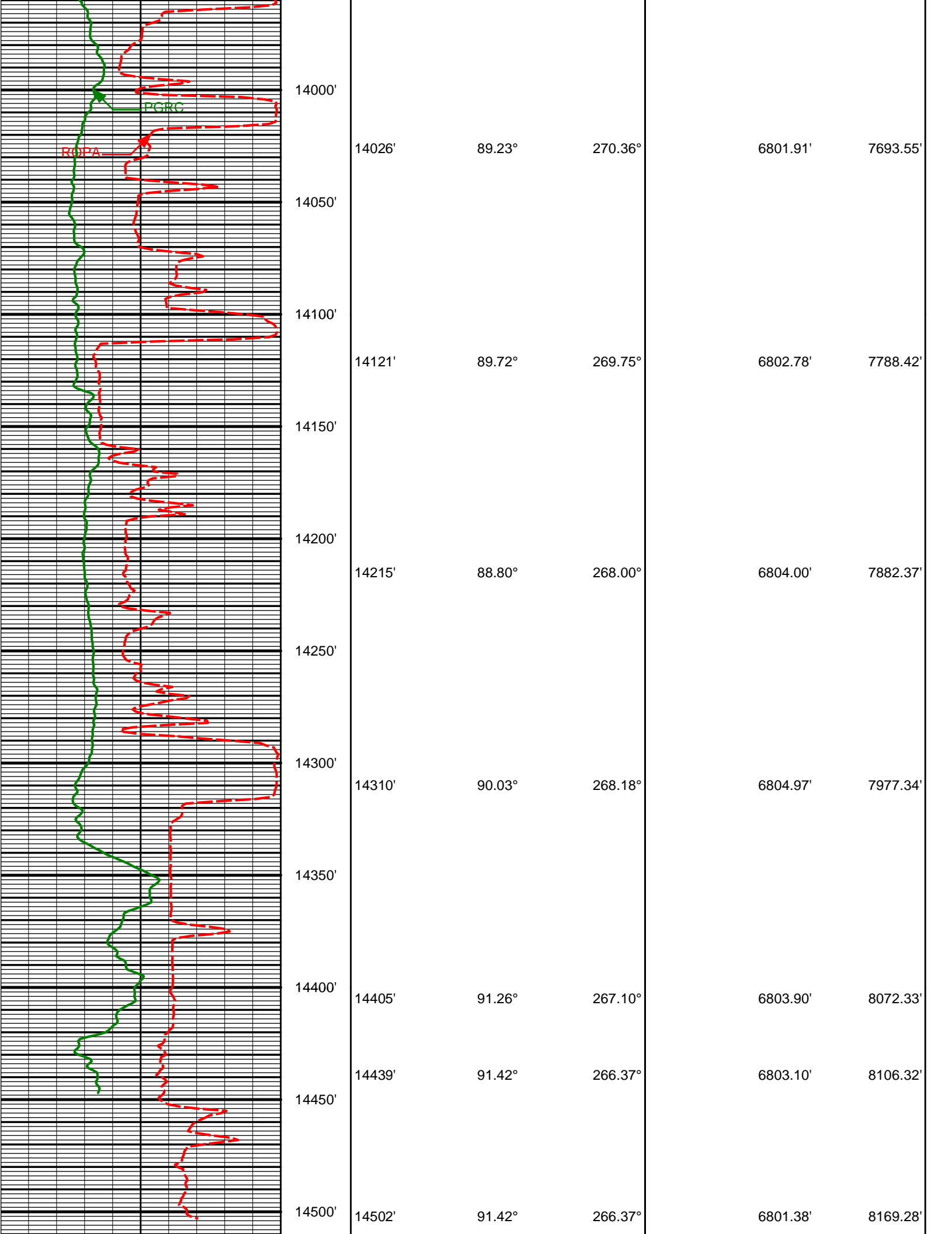


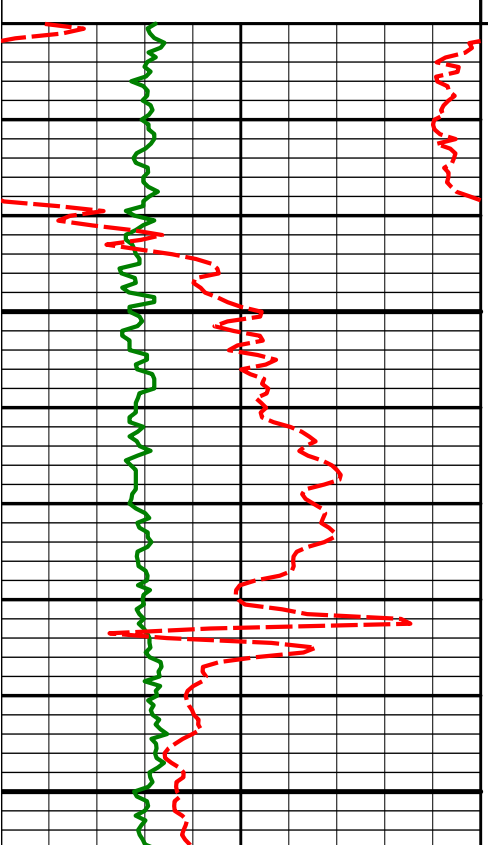


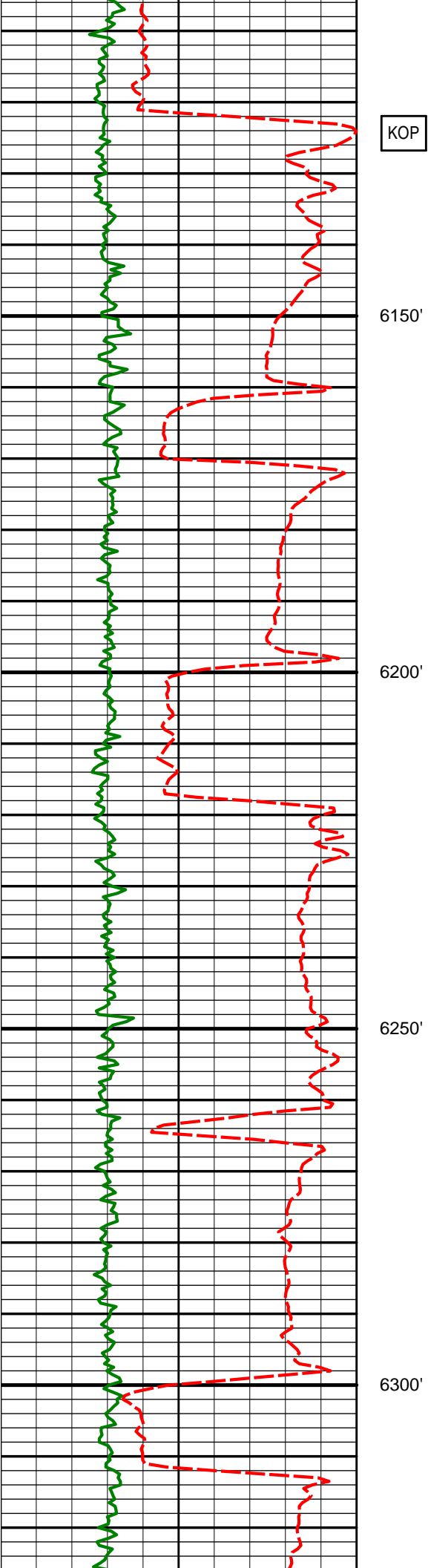




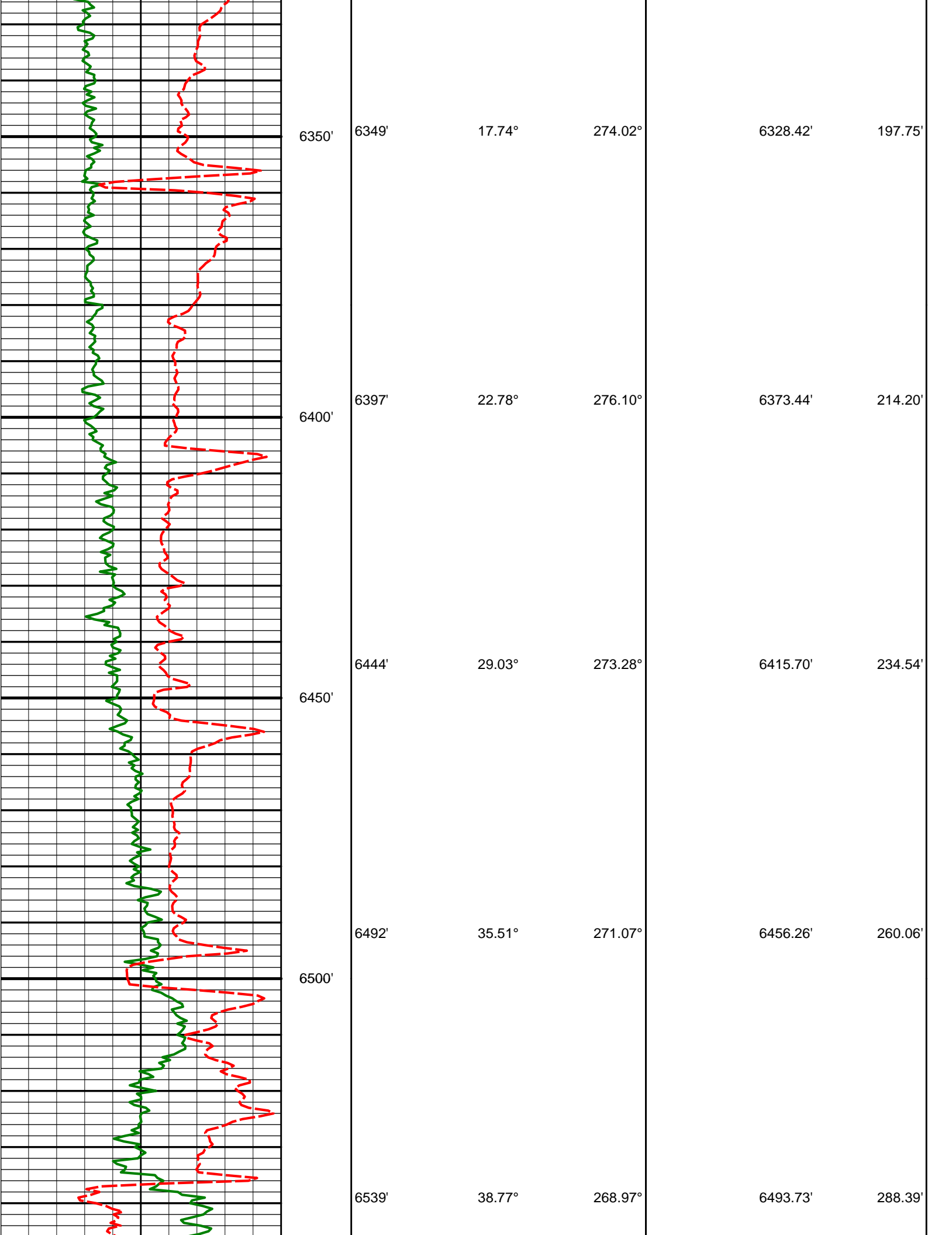


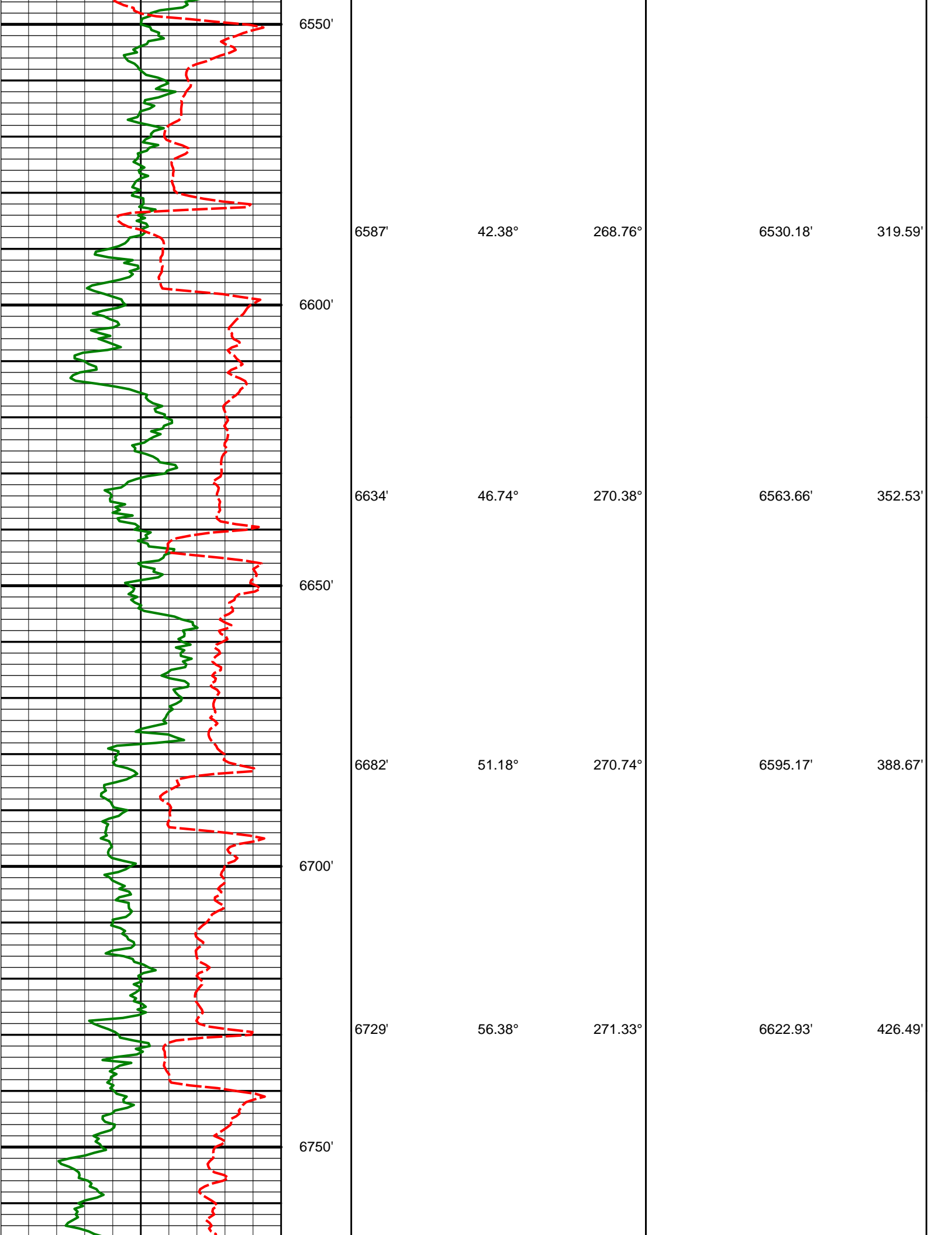


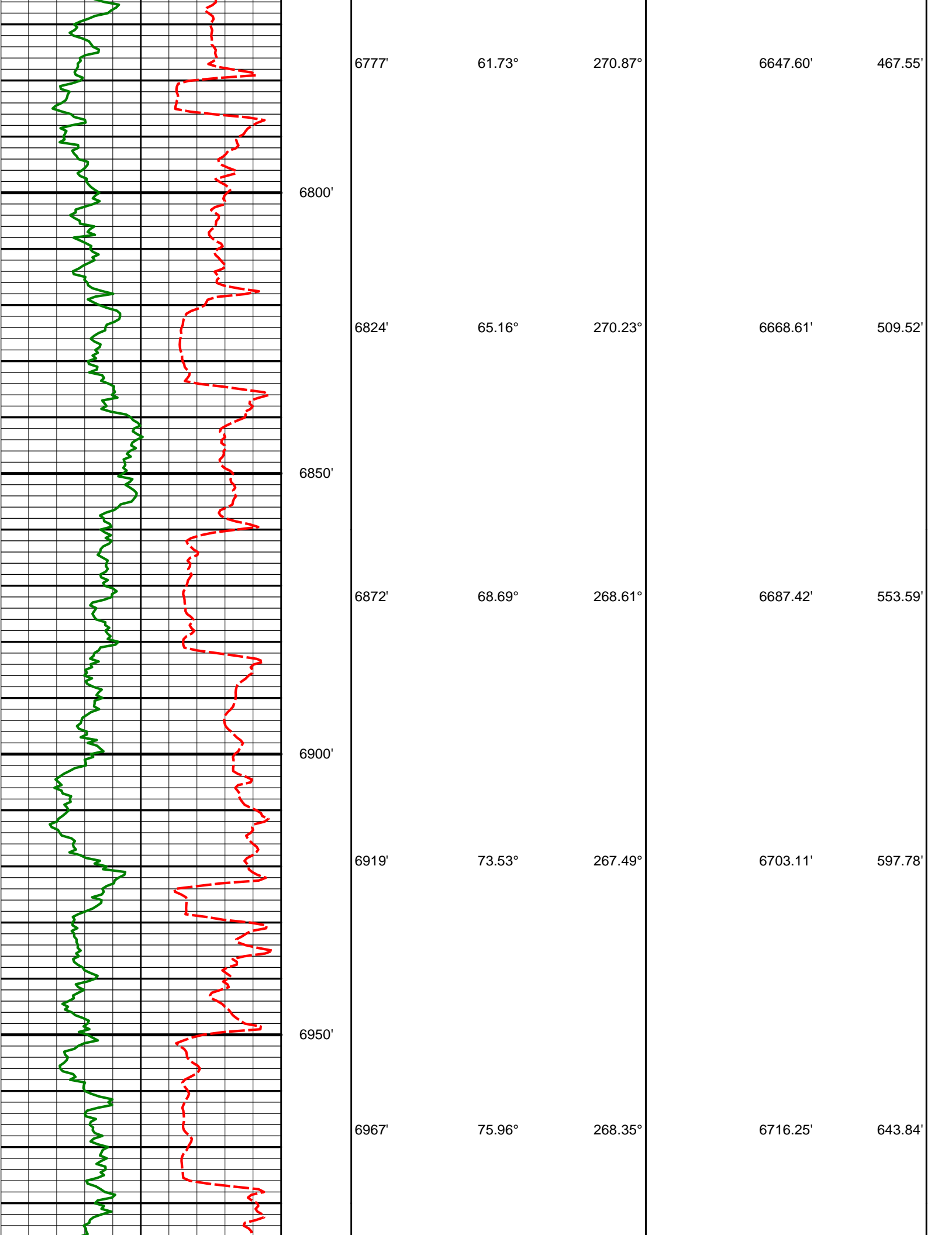
TD Lateral@14502 MD or 6800.58 TVD							
				14550'			
Avg Rate of Penetration feet per hr				Feet			
6000				Depth		Inc	
Gamma Ray (PGXC) (Api)				Azm		TVD	
0300						Vsec	
<div>HALLIBURTON</div> <div>MD Detail Log 1:240</div>							
Gamma Ray (PGXC) (Api)							
0300							
Avg Rate of Penetration feet per hr				Feet			
6000				Depth		Inc	
				Azm		TVD	
						Vsec	
				6023'		0.58°	
				173.44°		6005.75'	
						165.80'	
				6050'			
				Run 200			
				6100'			

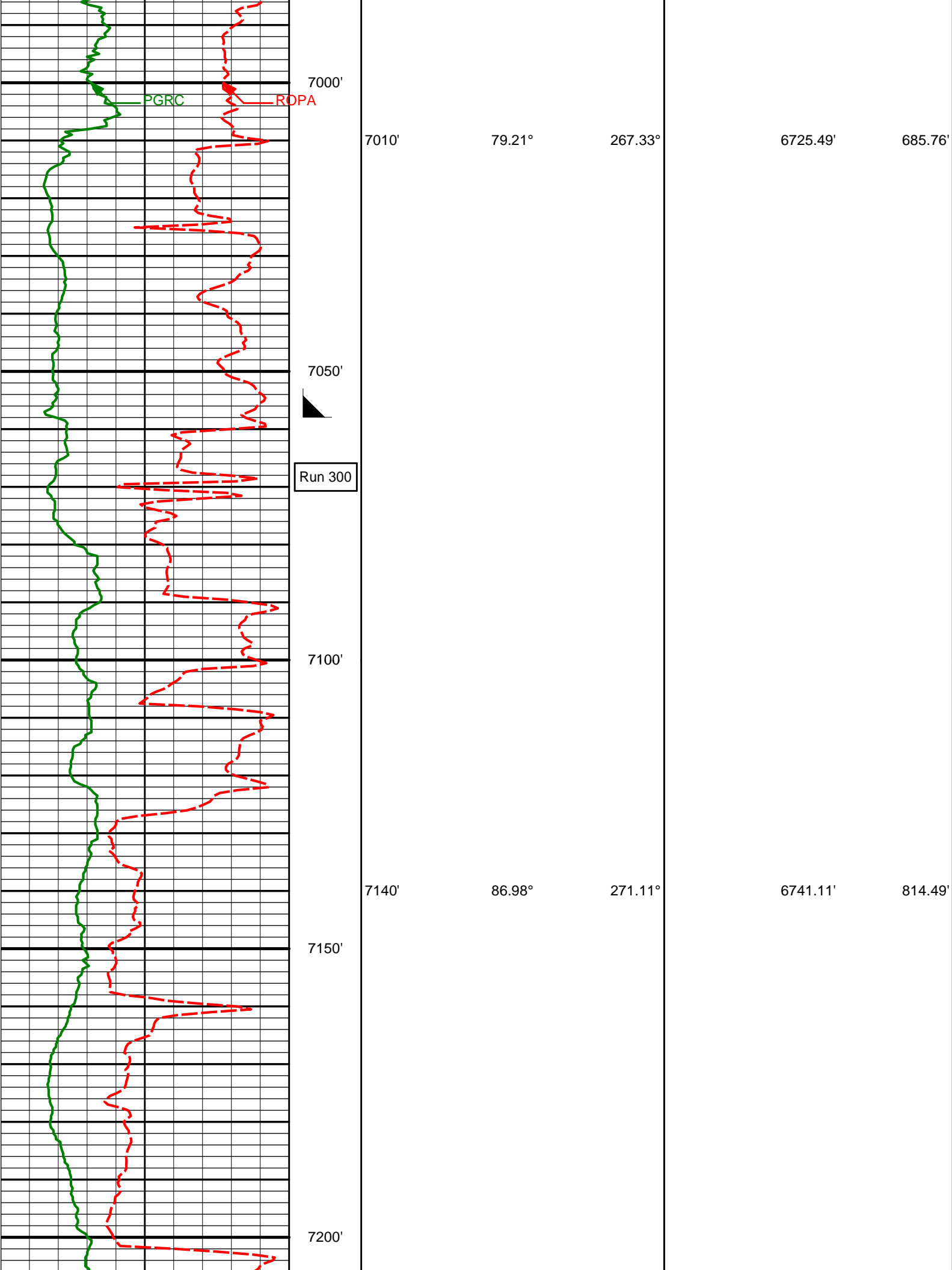


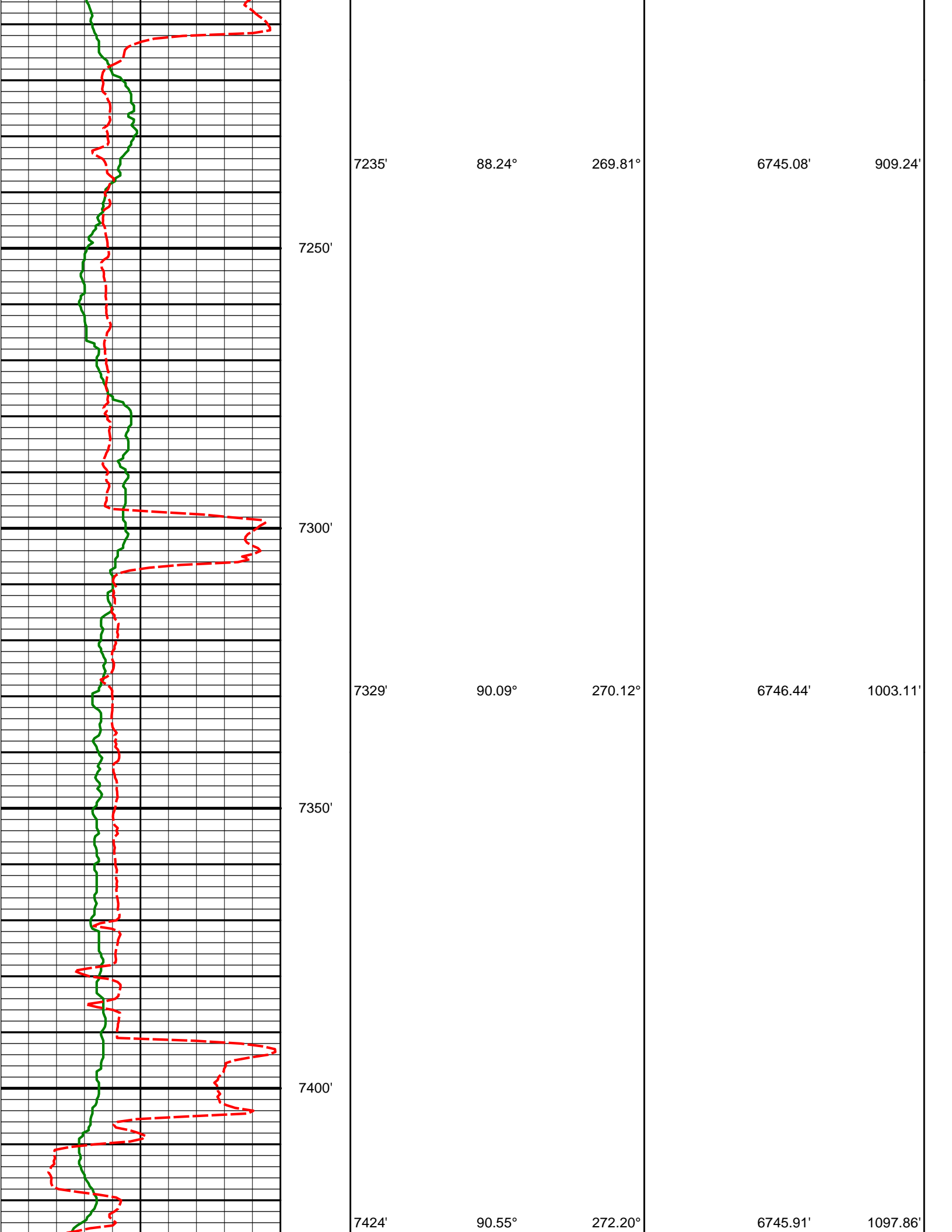
6113'	0.41°	115.27°	6095.74'	165.48'
<div>KOP</div>				
6150'				
6160'	2.38°	291.66°	6142.73'	166.22'
6200'				
6208'	6.00°	285.38°	6190.60'	169.51'
6250'				
6255'	9.88°	277.77°	6237.14'	175.80'
6300'				
6302'	13.45°	273.64°	6283.16'	185.20'

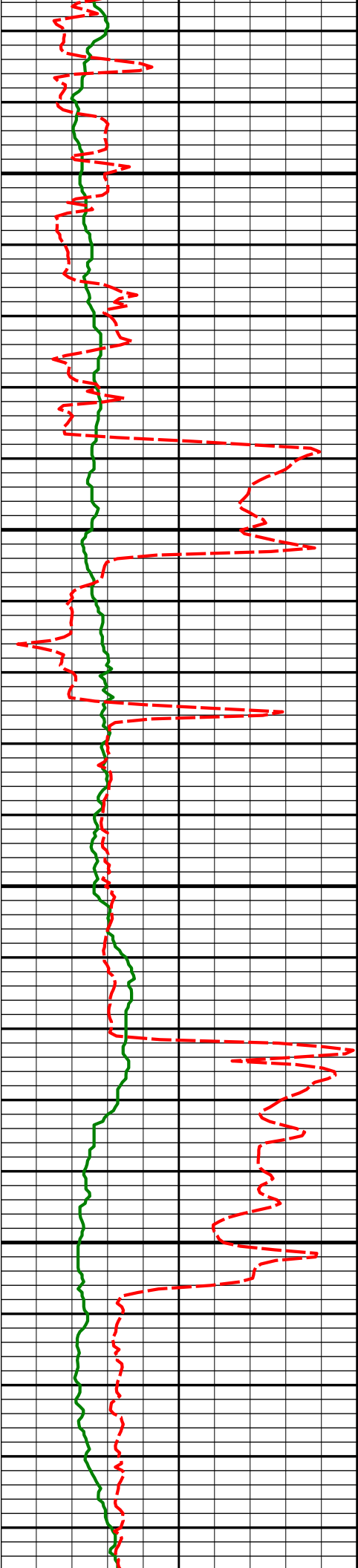












7450'

7500'

7519'

91.11°

271.51°

6744.53'

1192.52'

7550'

7600'

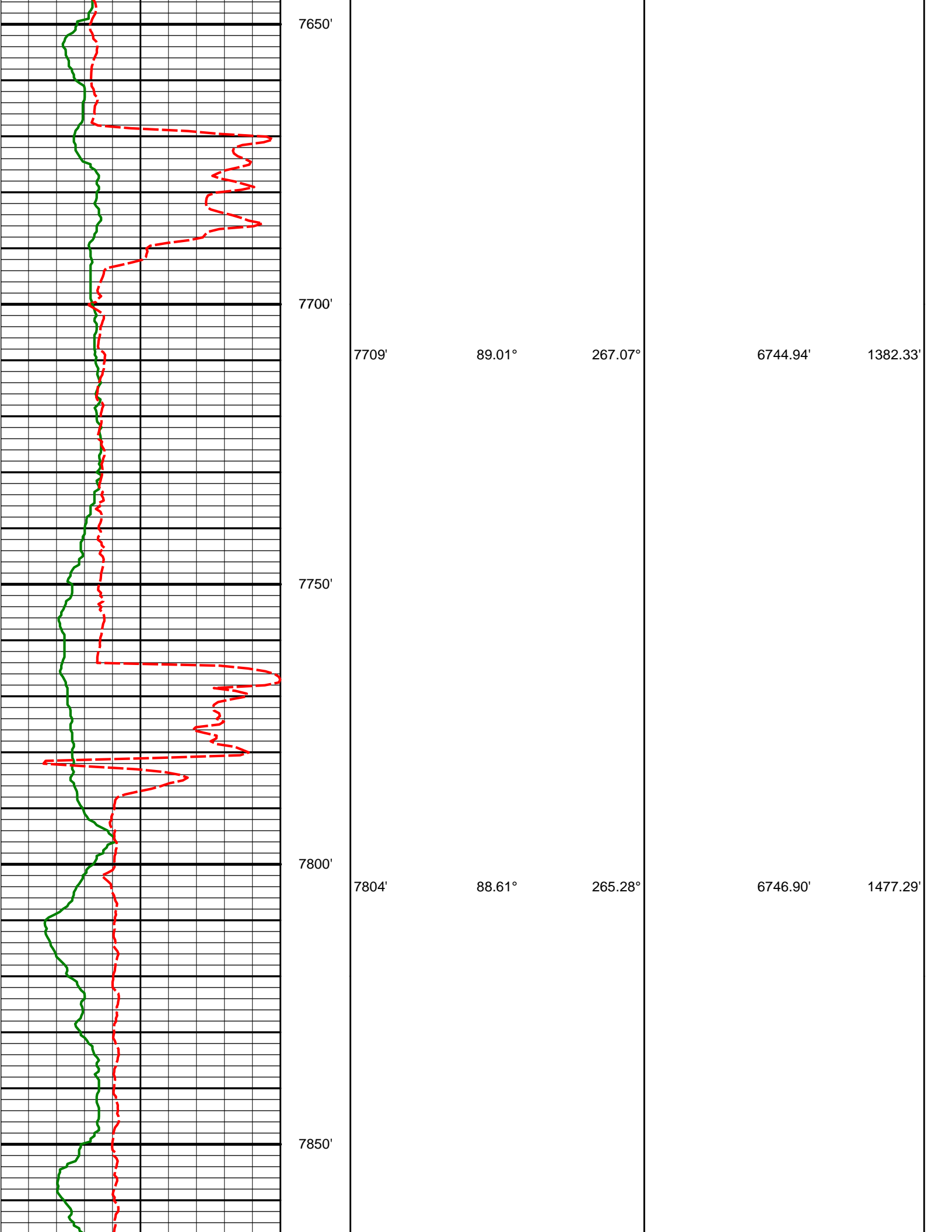
7614'

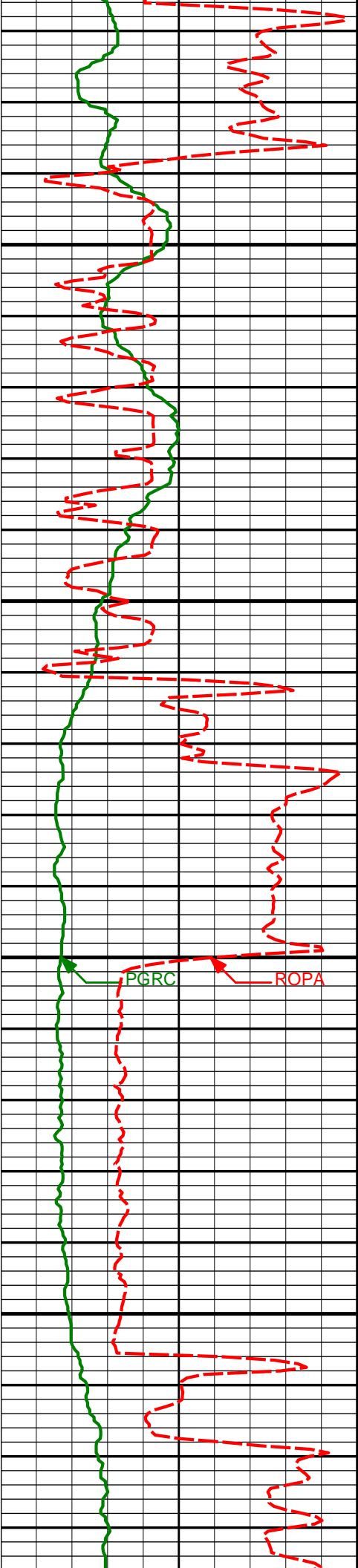
89.69°

269.19°

6743.86'

1287.36'





7900'

7899'

89.57°

265.22°

6748.41'

1572.23'

7950'

7994'

89.17°

265.28°

6749.46'

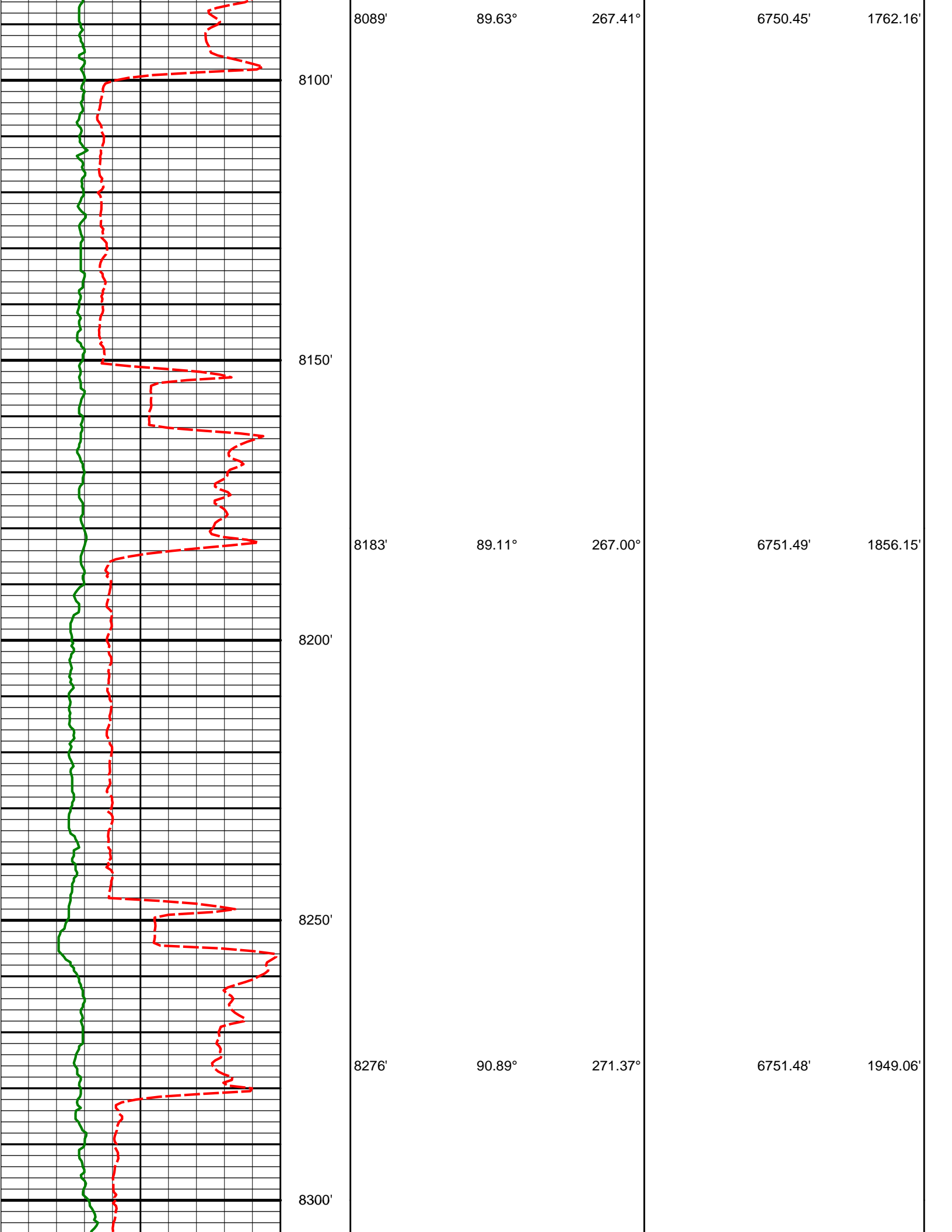
1667.18'

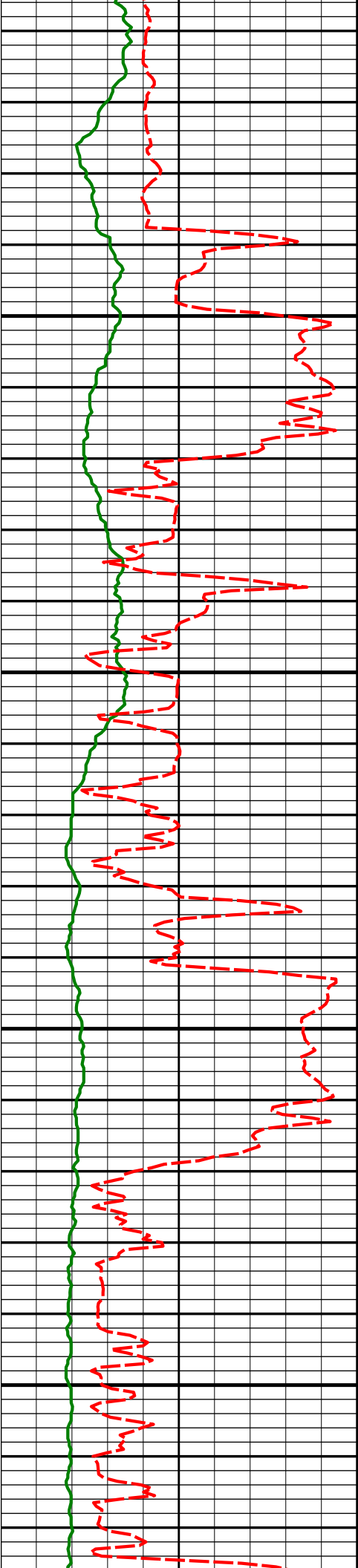
8000'

PGRC

ROPA

8050'





8350'

8369'

91.36°

271.05°

6749.66'

2041.80'

8400'

8450'

8462'

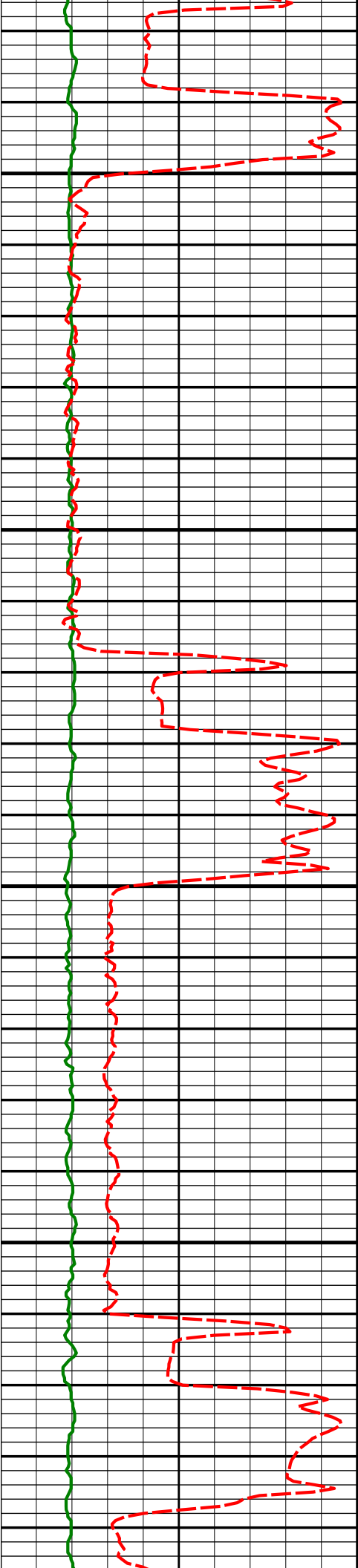
89.17°

269.52°

6749.23'

2134.65'

8500'



8550'

8555'

89.85°

270.83°

6750.03'

2227.51'

8600'

8650'

8648'

89.54°

267.70°

6750.53'

2320.43'

8700'

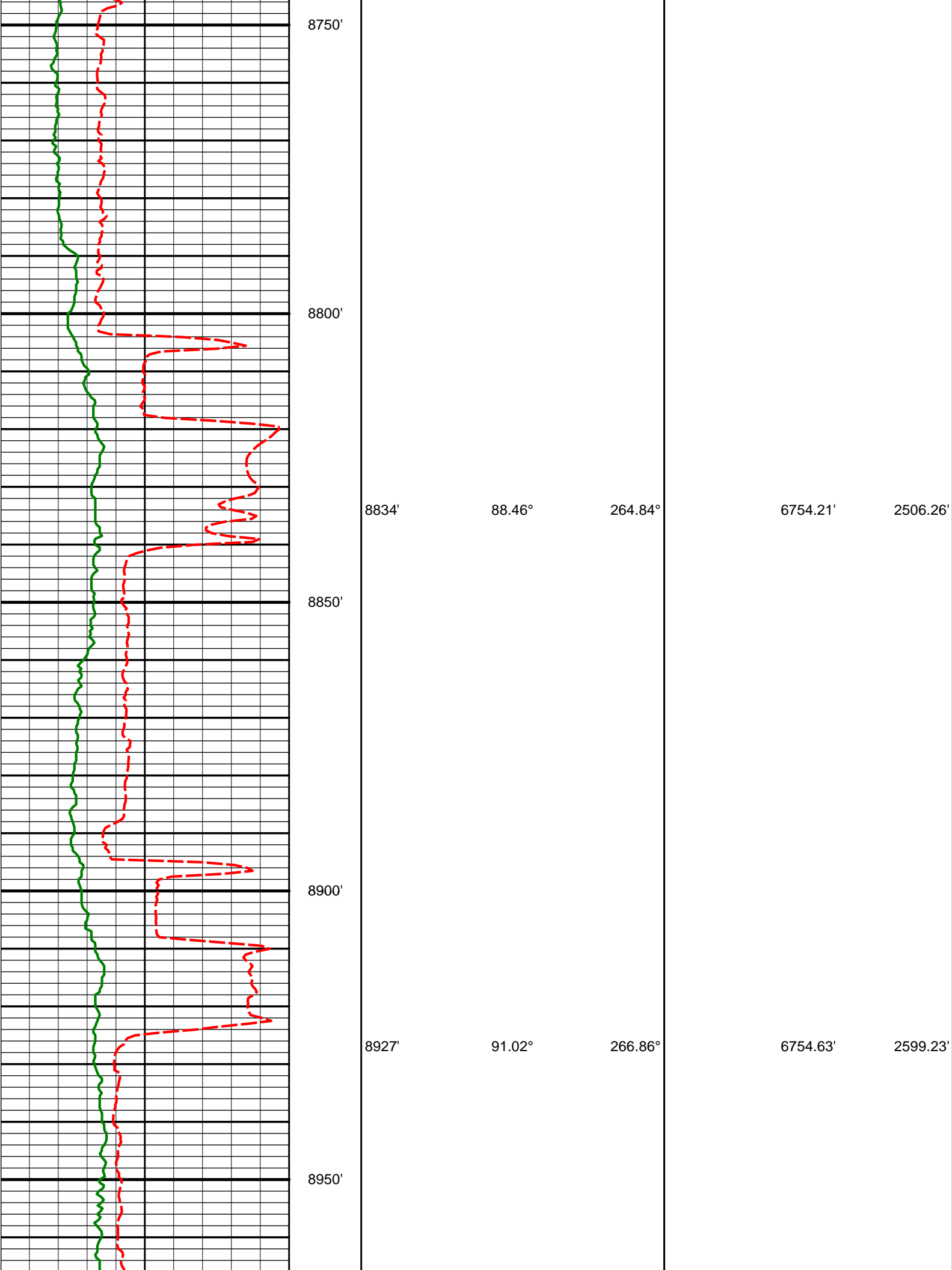
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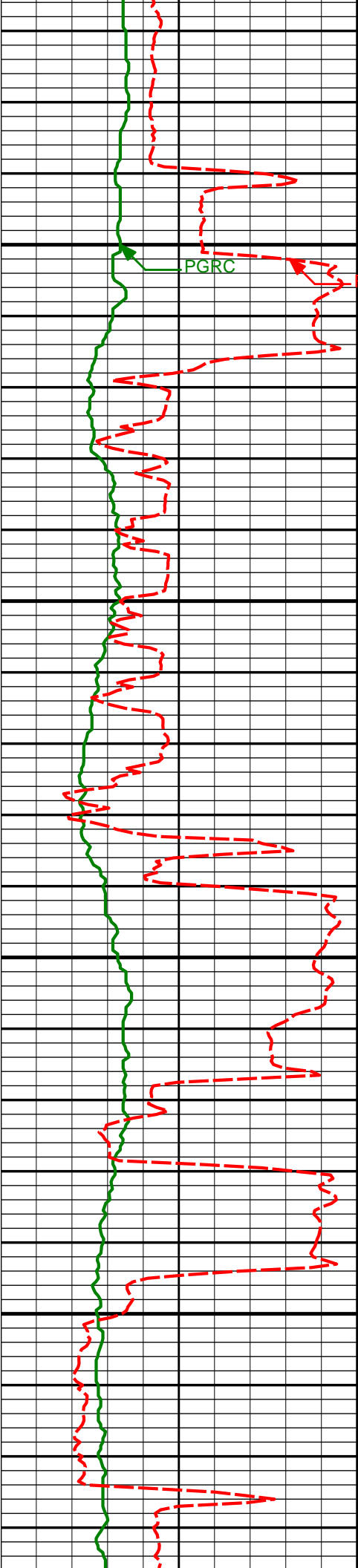
88.74°

264.23°

6751.93'

2413.39'





9000'

PGRC

ROPA

9019'

88.37°

263.34°

6755.13'

2691.15'

9050'

9100'

9112'

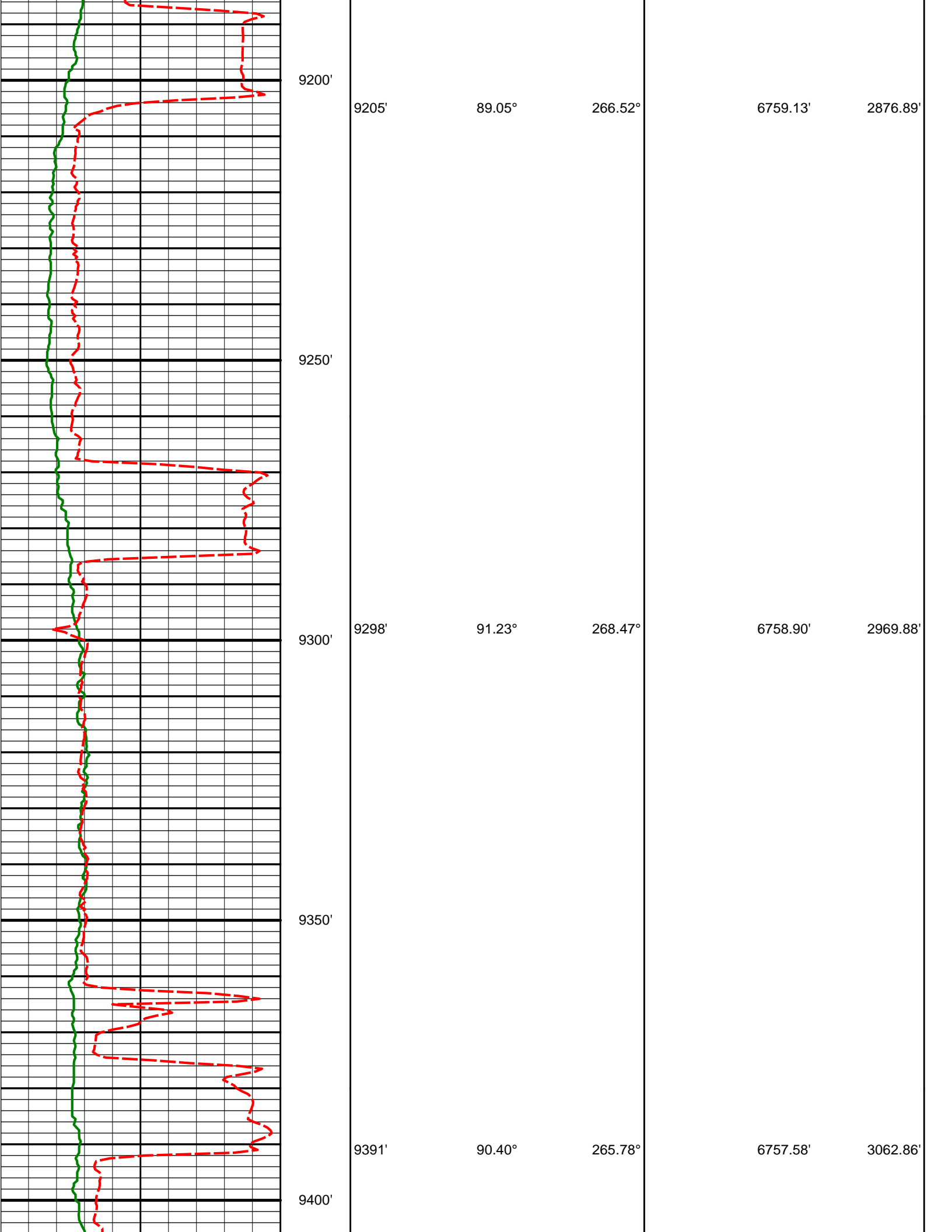
88.83°

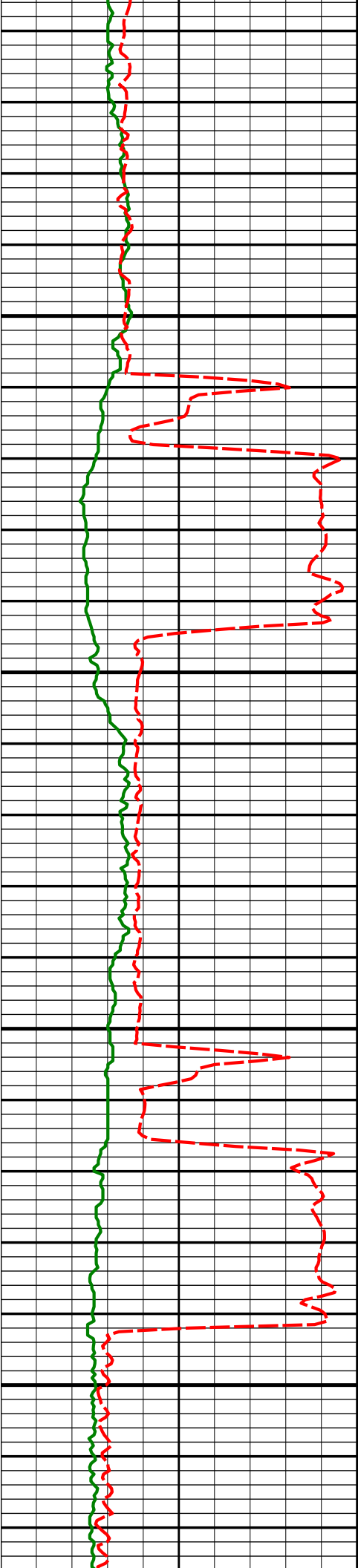
263.94°

6757.40'

2783.96'

9150'





9450'

9485'

89.38°

266.87°

6757.76'

3156.84'

9500'

9550'

9577'

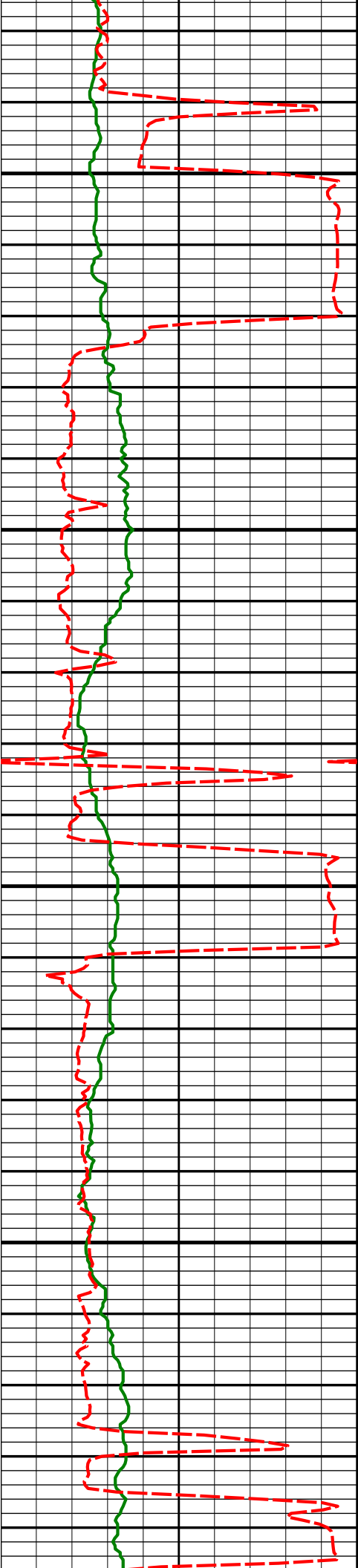
89.17°

268.00°

6758.92'

3248.83'

9600'



9650'

9671'

90.40°

270.35°

6759.27'

3342.76'

9700'

9750'

9763'

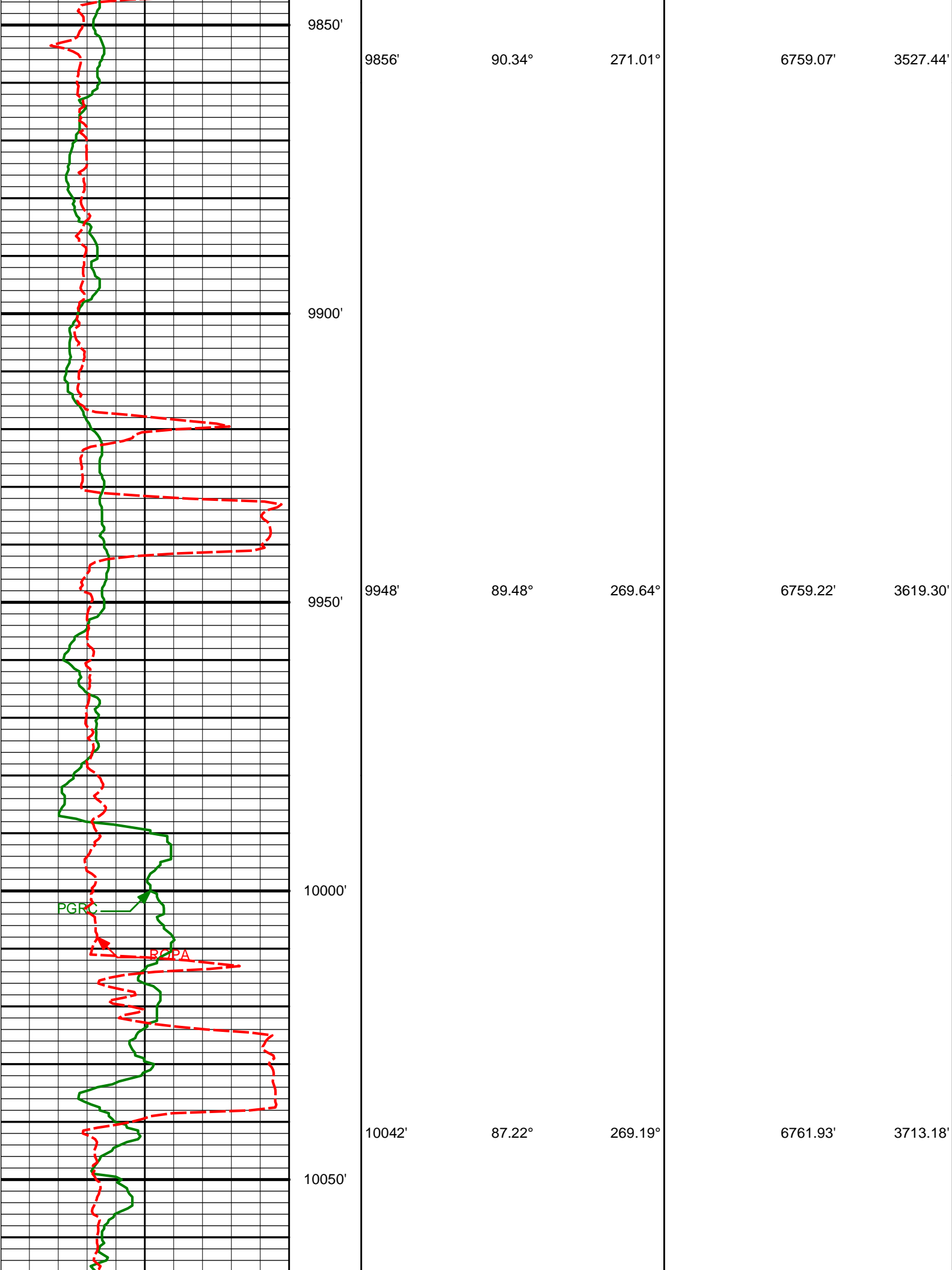
89.75°

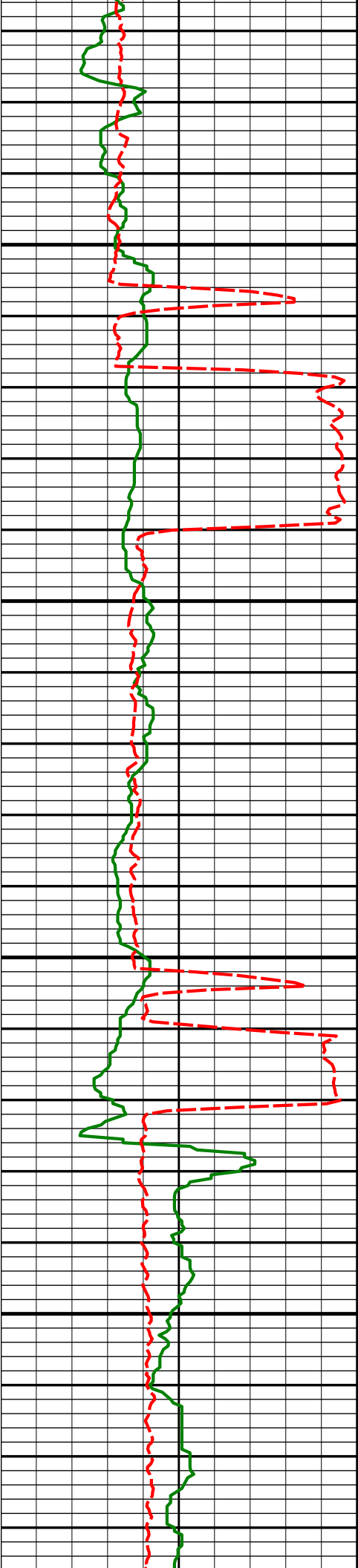
270.24°

6759.15'

3434.62'

9800'





10100'

10137'

10150'

10200'

10232'

10250'

88.67°

268.96°

6765.33'

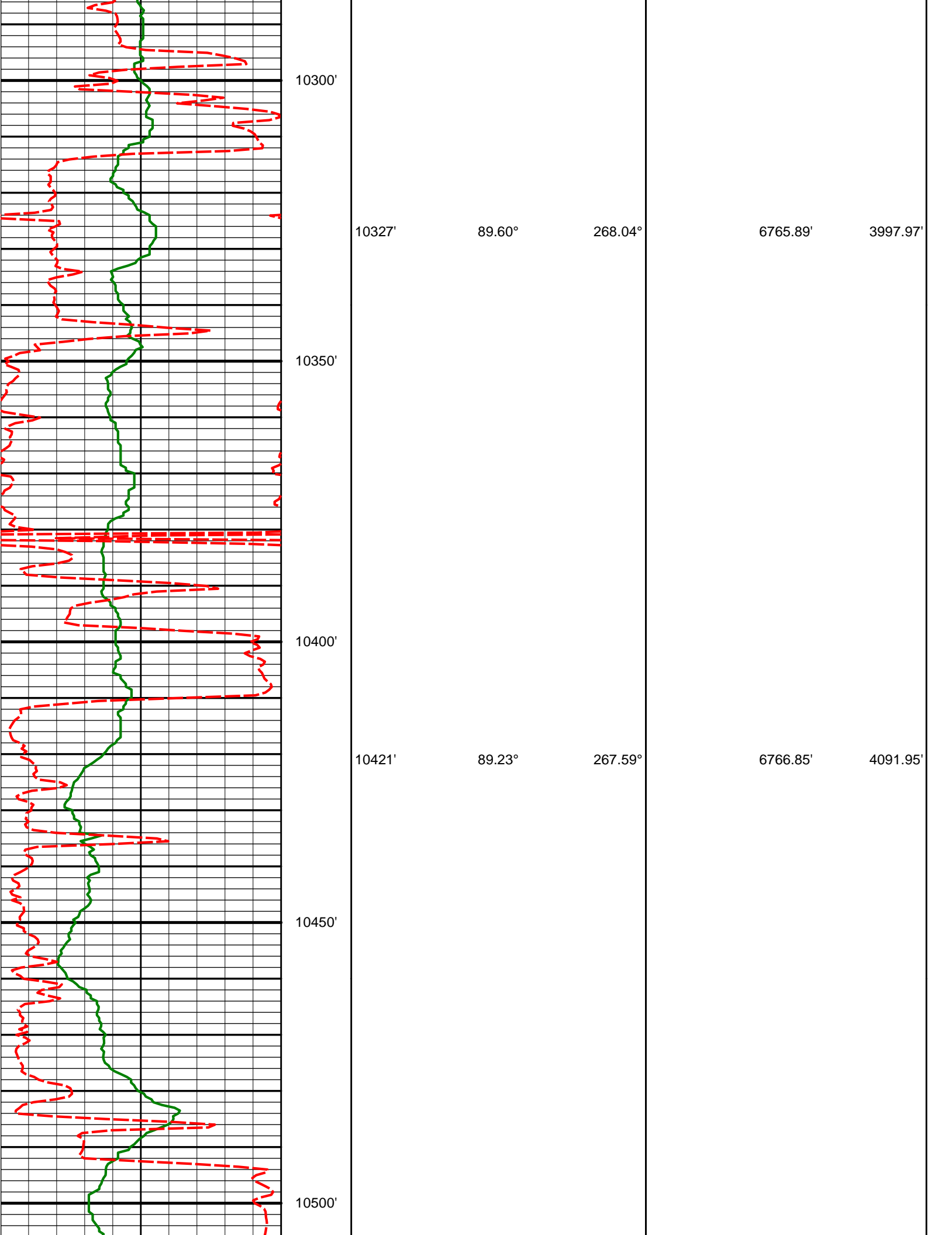
3808.06'

90.52°

269.02°

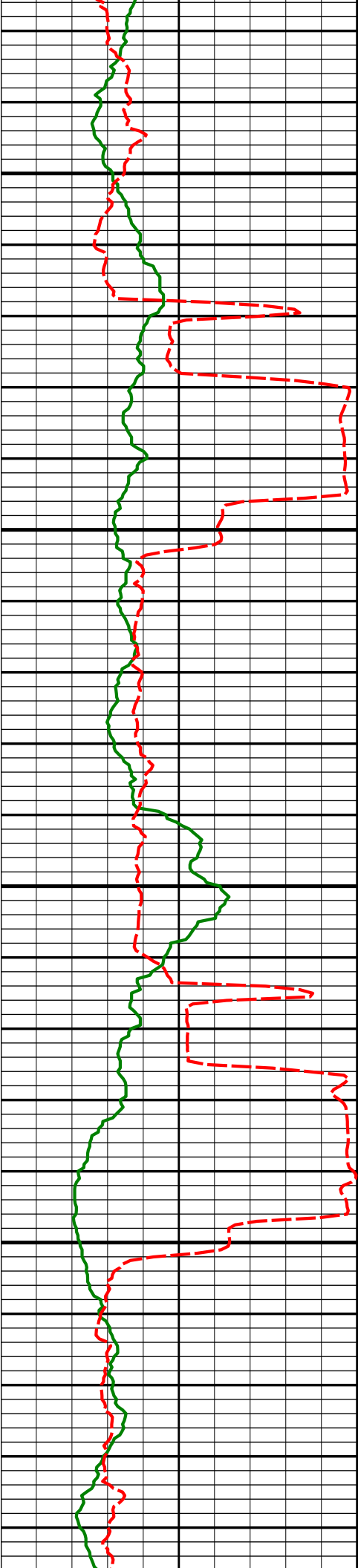
6766.00'

3903.00'





10516'	89.66°	267.38°	6767.77'	4186.95'
10550'				
10600'				
10611'	91.26°	268.46°	6767.01'	4281.93'
10650'				
10700'				
10706'	93.14°	268.81°	6763.35'	4376.82'



10750'

10800'

10850'

10900'

10801'

93.05°

268.96°

6758.22'

4471.63'

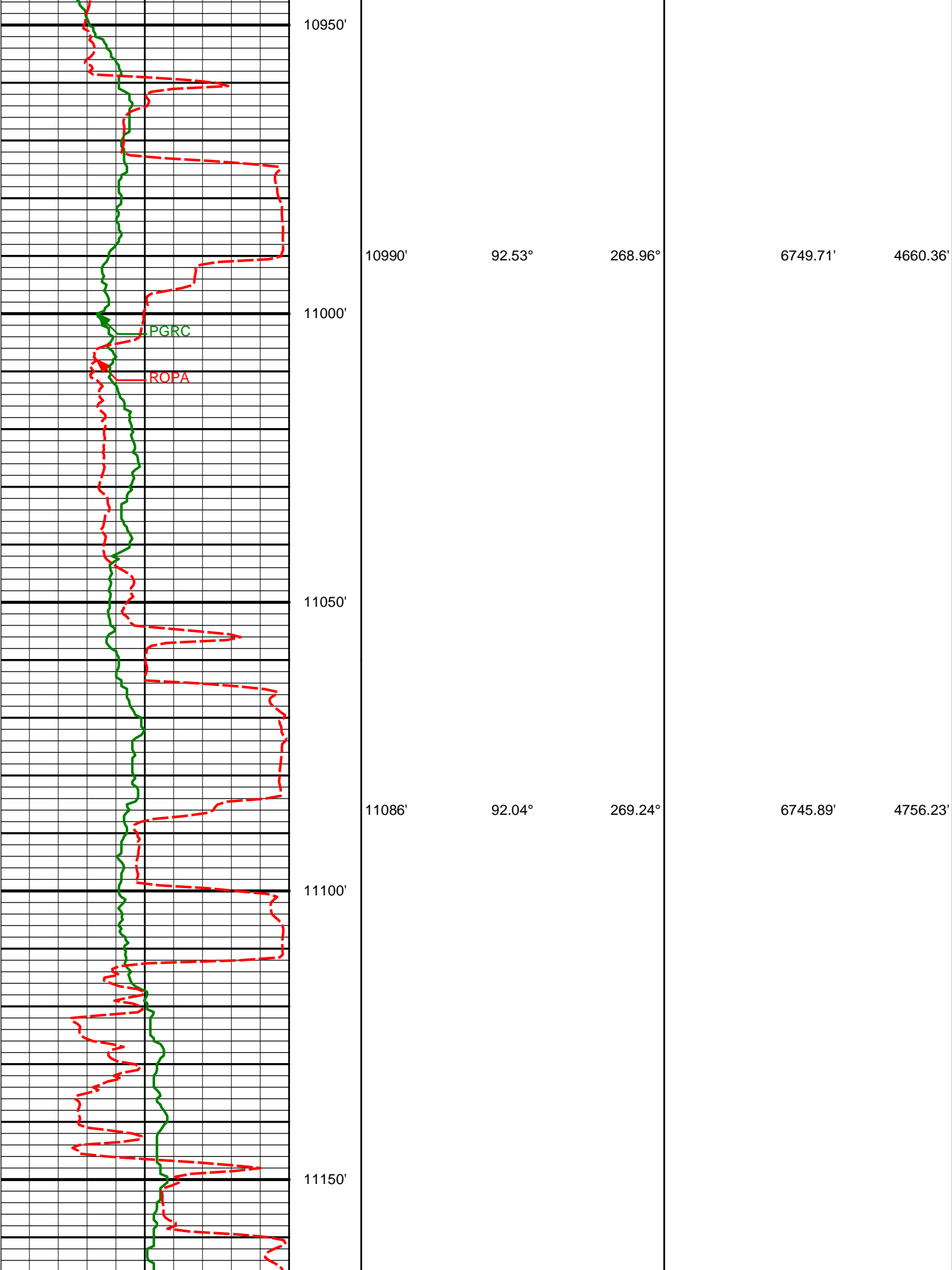
10895'

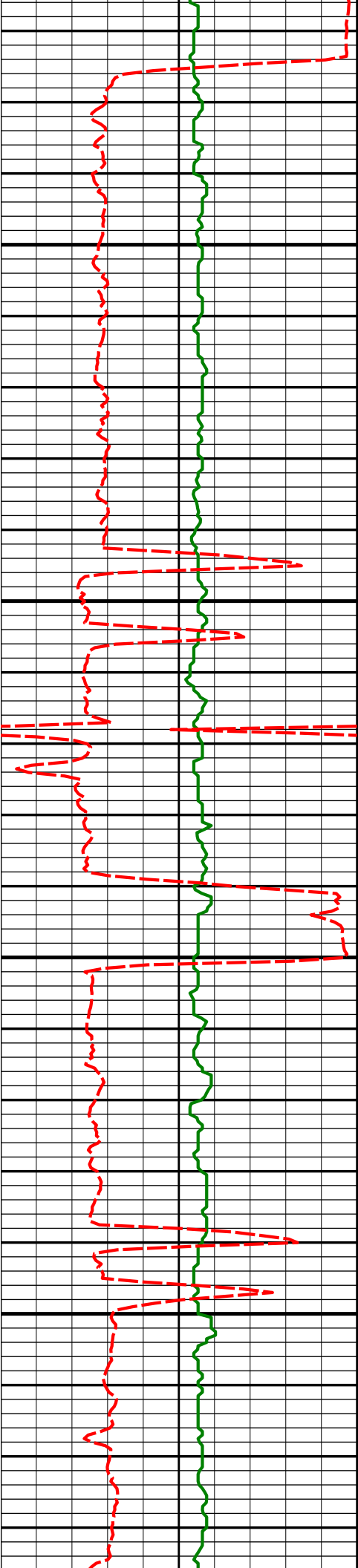
92.37°

268.49°

6753.77'

4565.49'





11180'

88.95°

269.49°

6745.08'

4850.14'

11200'

11250'

11275'

89.35°

267.53°

6746.49'

4945.09'

11300'

11350'

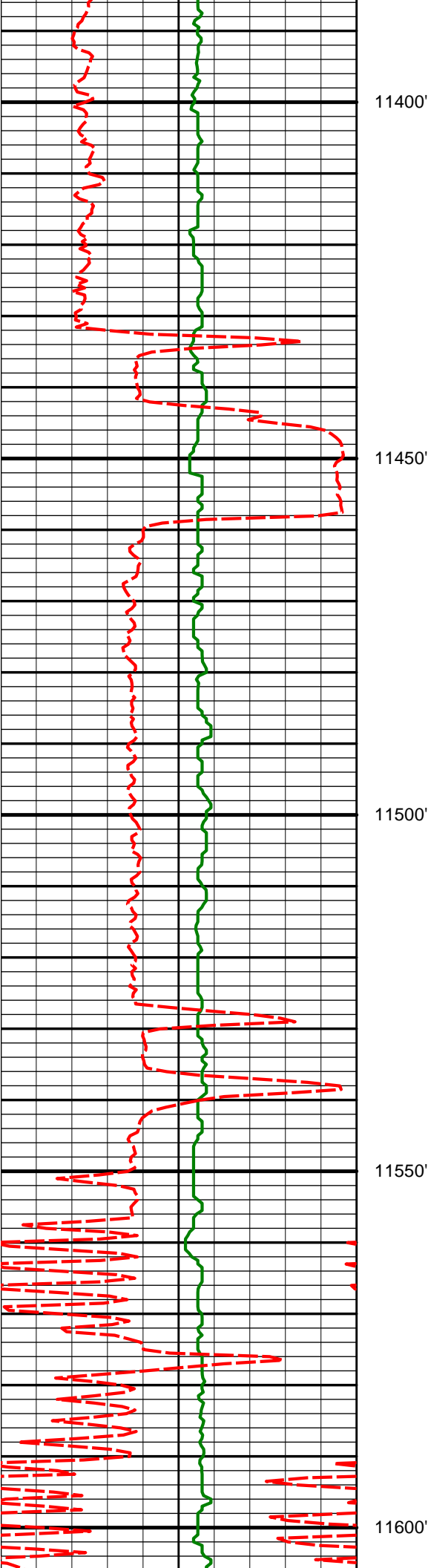
11370'

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266.54°

6747.56'

5040.09'



11465'

89.51°

268.09°

6748.51'

5135.08'

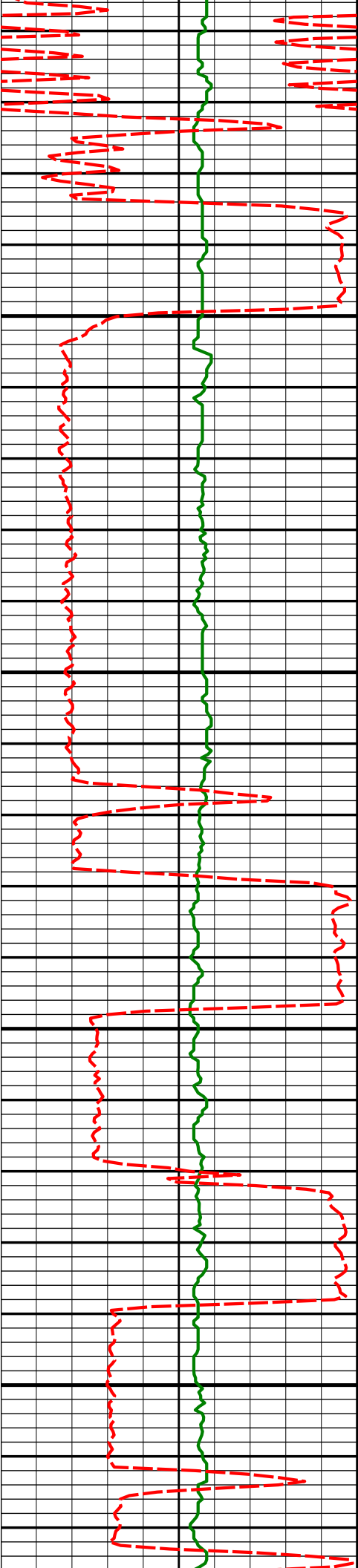
11560'

89.69°

265.86°

6749.17'

5230.07'



11650'

11655'

89.54°

263.48°

6749.81'

5324.97'

11700'

11750'

11750'

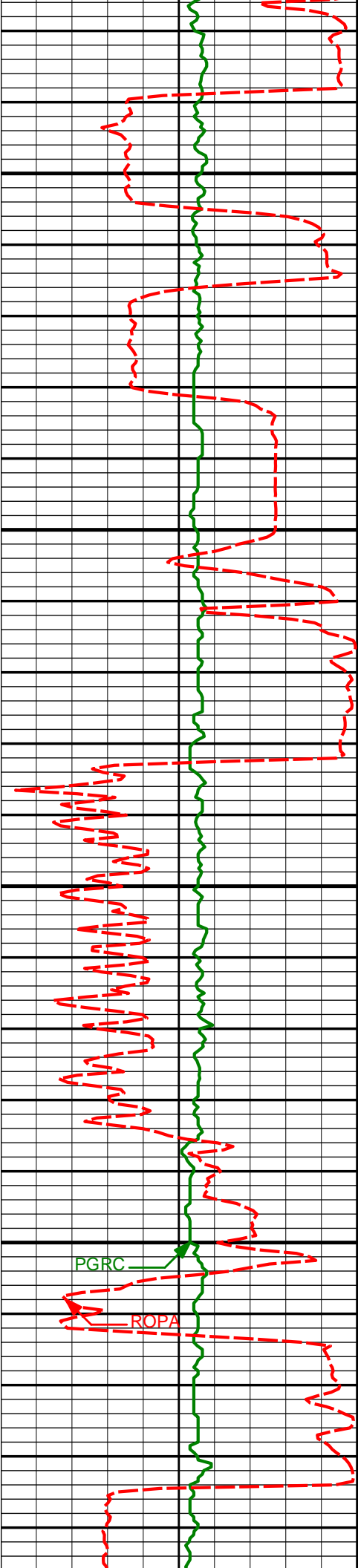
89.38°

264.57°

6750.71'

5419.83'

11800'



11844'

89.41°

268.22°

6751.69'

5513.80'

11850'

11900'

11939'

89.69°

271.10°

6752.43'

5608.69'

11950'

12000'

12034'

89.11°

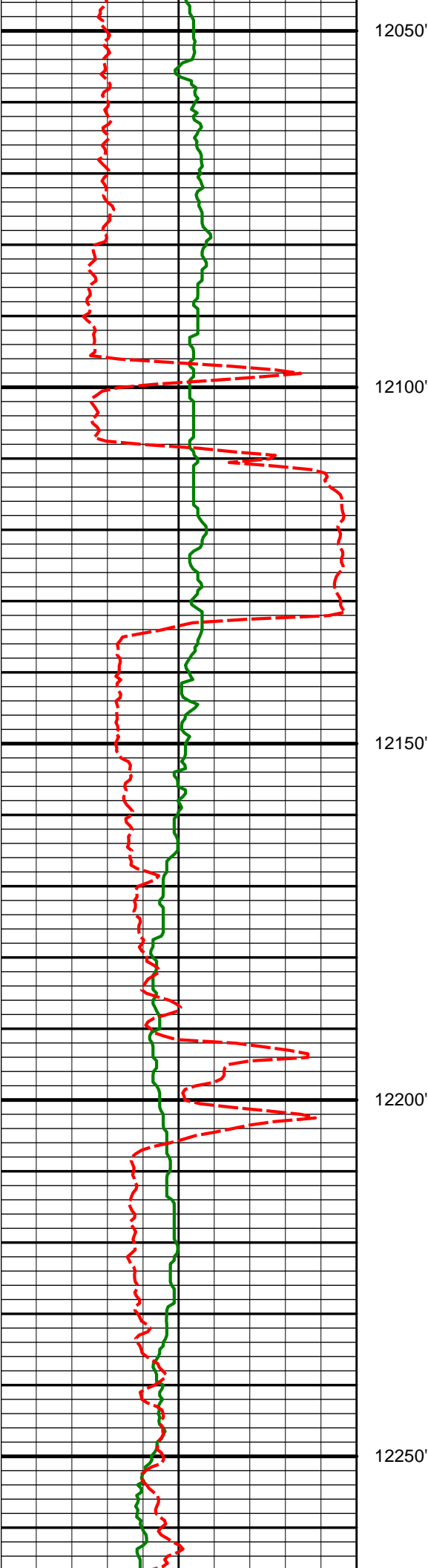
270.31°

6753.43'

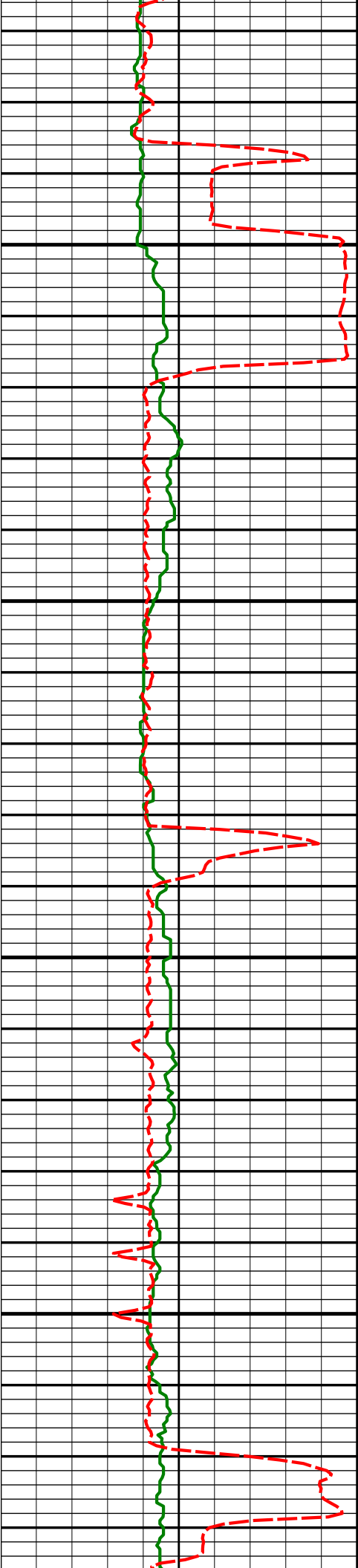
5703.49'

PGRC

ROPA



12129'	87.78°	270.46°	6756.01'	5798.30'
12224'	89.14°	271.01°	6758.57'	5893.07'



12300'

12319'

12350'

12400'

12414'

12450'

86.85°

269.30°

6761.90'

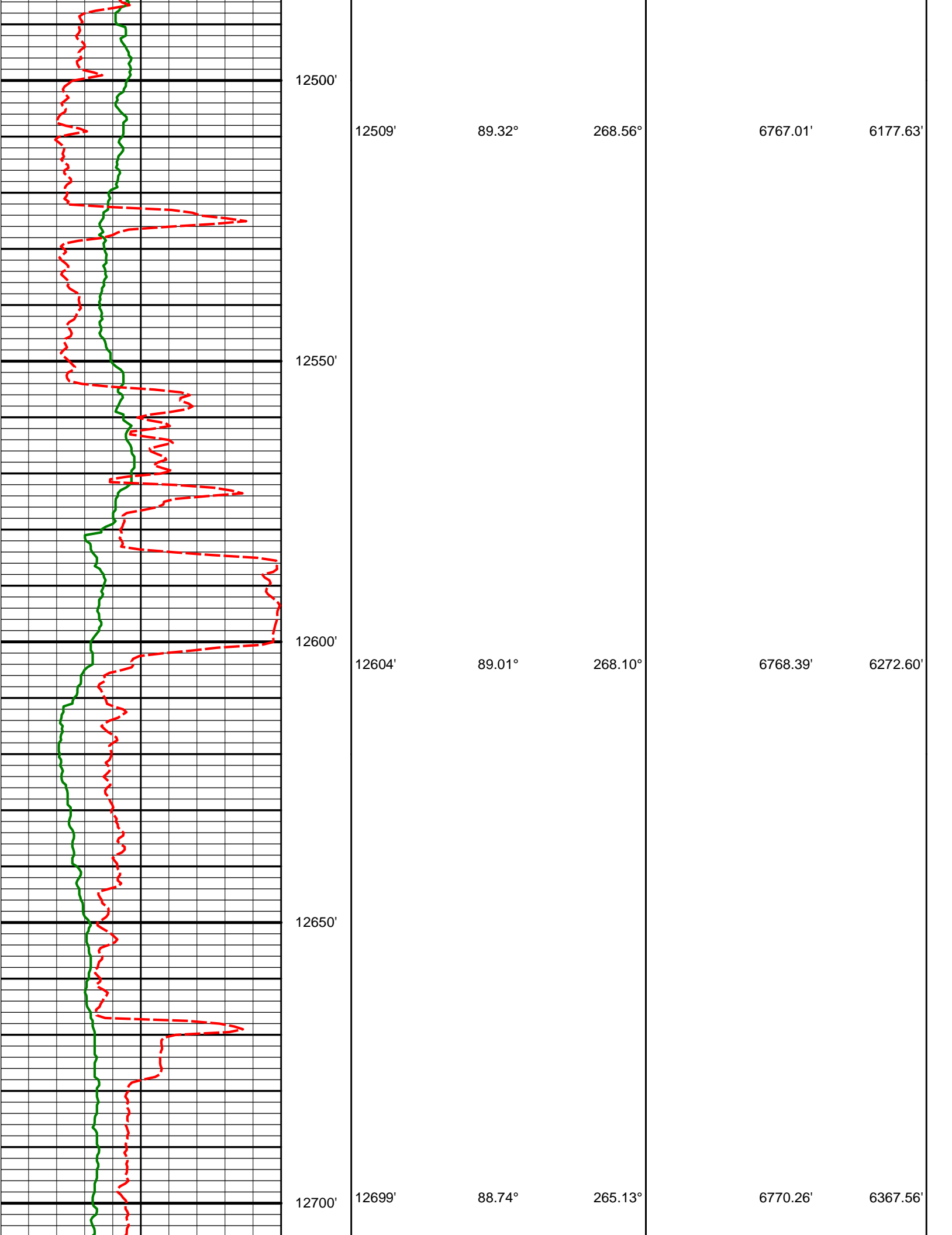
5987.87'

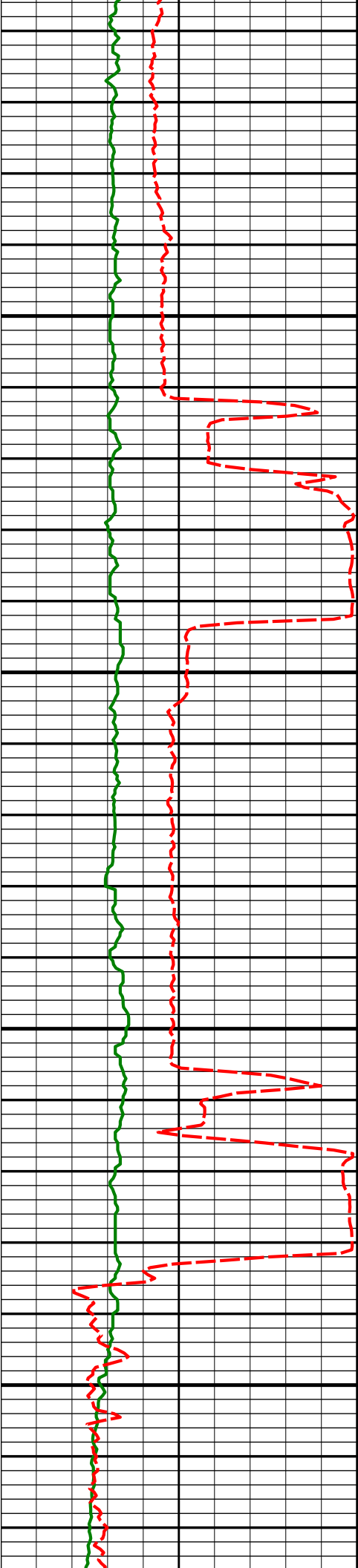
88.83°

269.90°

6765.47'

6082.71'





12750'

12800'

12850'

12900'

12794'

89.26°

268.31°

6771.92'

6462.53'

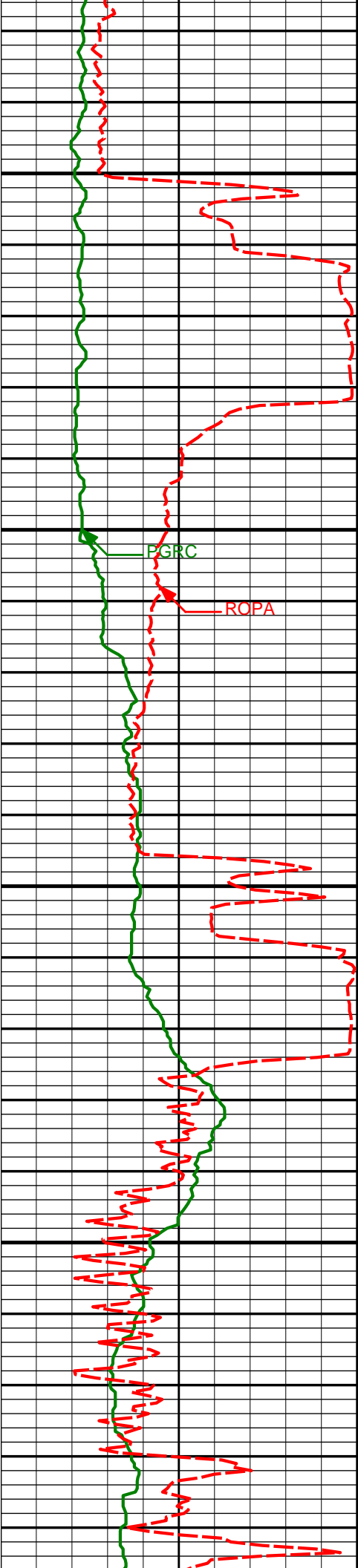
12889'

89.23°

268.71°

6773.17'

6557.50'



12950'

12984'

13000'

13050'

13078'

13100'

PGRC

ROPA

89.32°

267.73°

6774.37'

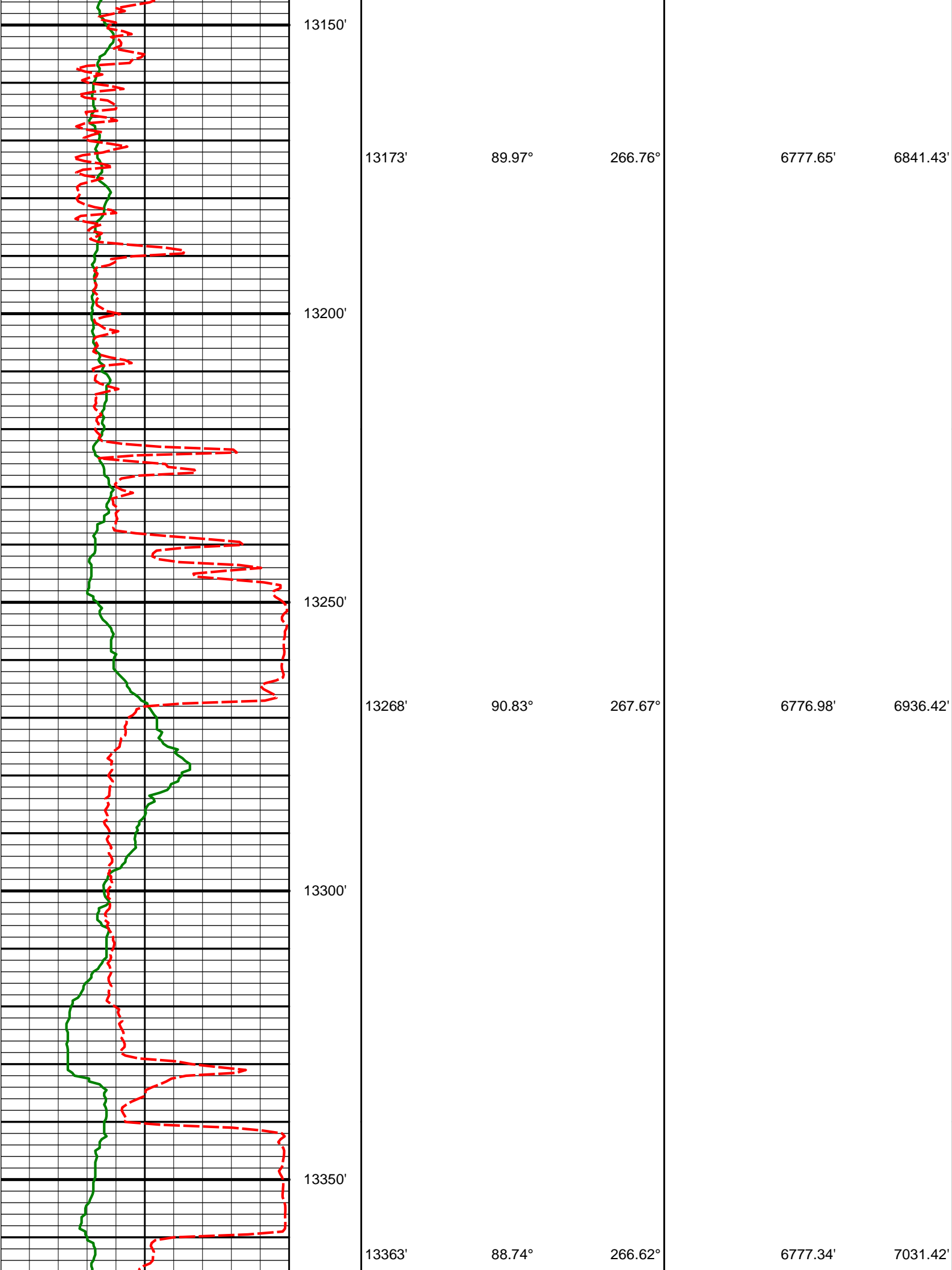
6652.47'

88.37°

267.79°

6776.27'

6746.44'





13400'

13450'

13500'

13550'

13458'

89.38°

266.82°

6778.90'

7126.40'

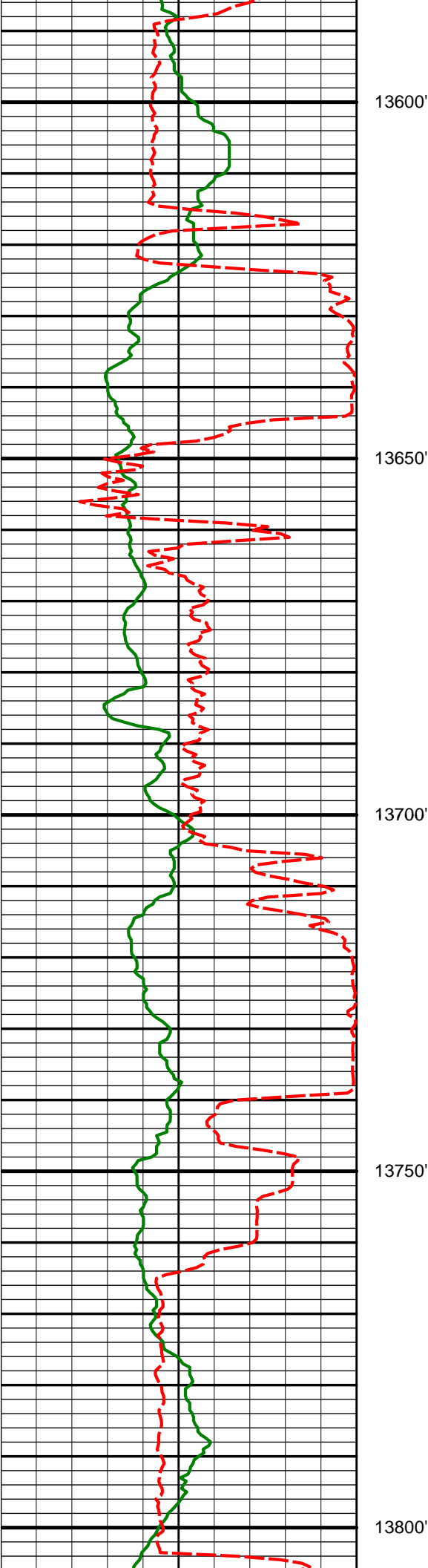
13552'

89.72°

267.32°

6779.64'

7220.40'



13647'

86.85°

267.79°

6782.47'

7315.34'

13742'

85.96°

269.01°

6788.43'

7410.13'



13837' 85.84° 267.78° 6795.22' 7504.86'

13850'

13900'

13931' 88.40° 269.52° 6799.94' 7598.69'

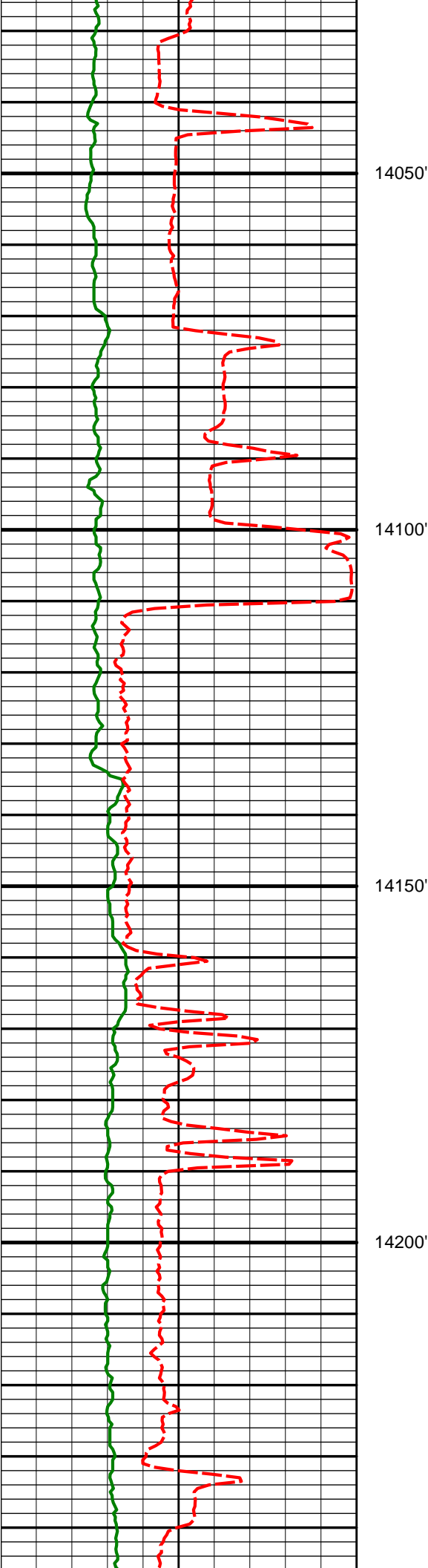
13950'

14000'

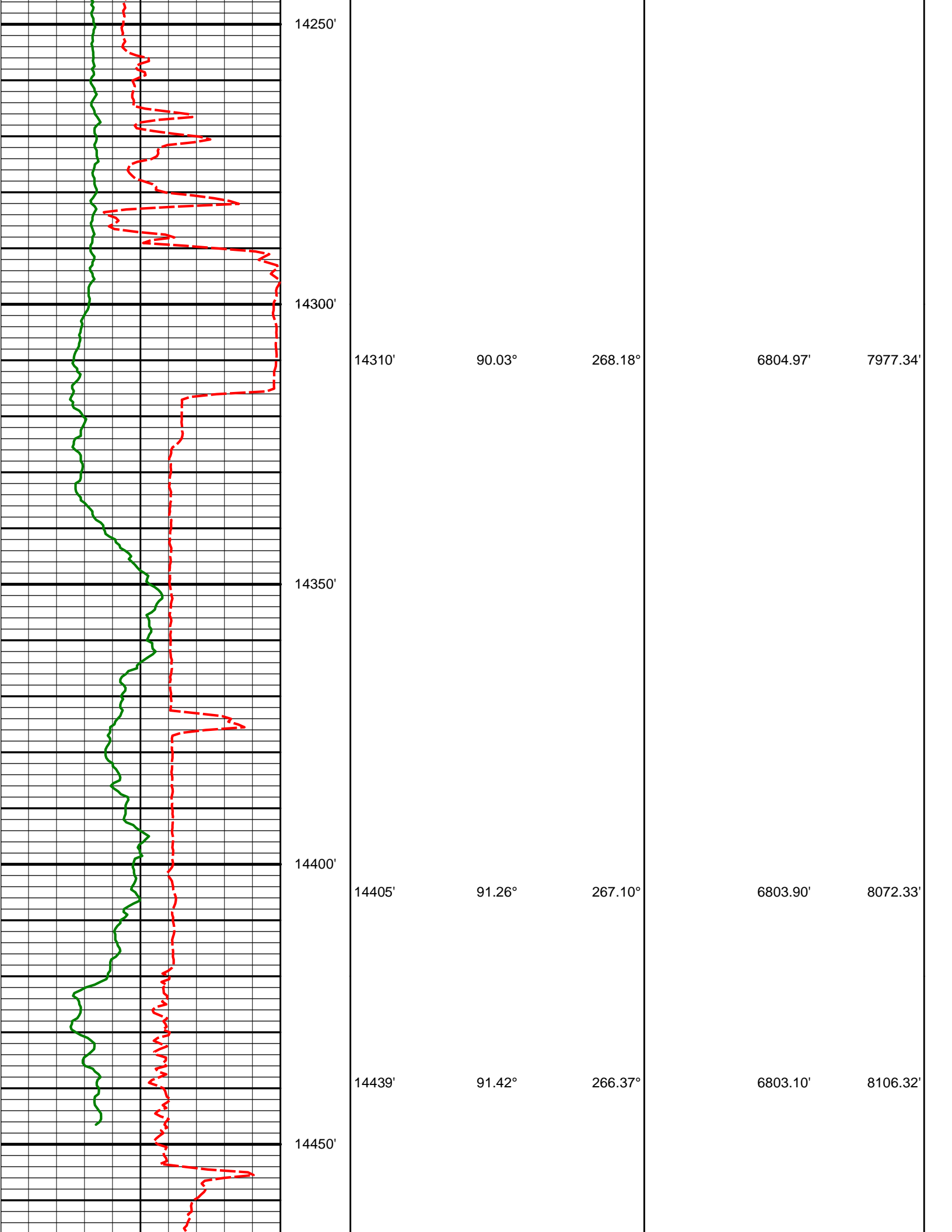
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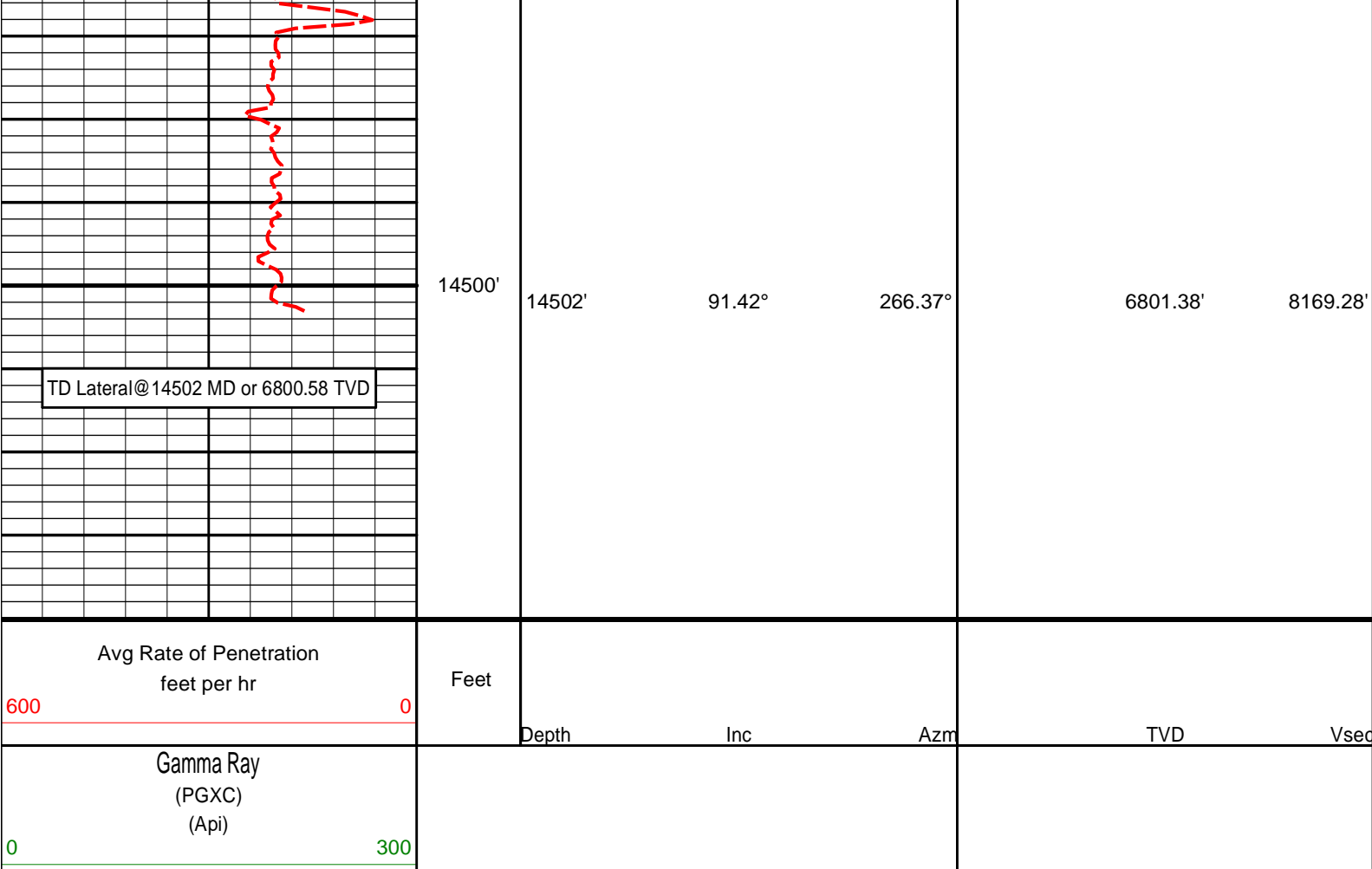
ROPA

14036' 89.23° 270.26° 6804.04' 7603.55'



14026	89.23°	270.36°	6801.91'	7693.55'
14121'	89.72°	269.75°	6802.78'	7788.42'
141215'	88.80°	268.00°	6804.00'	7882.37'





DIRECTIONAL SURVEY REPORT

Noble Energy
NCLP AA06-62-1AHNC
Wattenberg
Weld Colorado
USA
CA-XX-0901286147

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
300.00	0.20	61.67	300.00	0.25 N	0.46 E	-0.47	0.07
600.00	0.30	77.27	600.00	0.67 N	1.69 E	-1.72	0.04
841.00	0.40	312.57	840.99	1.38 N	1.68 E	-1.75	0.26
917.00	0.26	275.03	916.99	1.57 N	1.32 E	-1.39	0.33
1103.00	0.59	257.57	1102.99	1.40 N	0.04 W	-0.03	0.19
1196.00	0.56	246.10	1195.98	1.12 N	0.92 W	0.87	0.13
1289.00	0.59	254.70	1288.98	0.81 N	1.80 W	1.76	0.10
1382.00	0.73	259.01	1381.97	0.57 N	2.84 W	2.81	0.16
1475.00	0.57	257.43	1474.97	0.35 N	3.88 W	3.85	0.17
1569.00	0.46	240.27	1568.96	0.06 N	4.66 W	4.65	0.20
1664.00	0.34	260.74	1663.96	0.17 S	5.27 W	5.27	0.19
1759.00	0.58	263.42	1758.96	0.27 S	6.03 W	6.03	0.25
1853.00	1.67	281.89	1852.94	0.04 S	7.84 W	7.83	1.21
1948.00	3.11	252.16	1947.86	0.55 S	11.65 W	11.66	1.95
2043.00	4.39	241.47	2042.65	3.07 S	17.29 W	17.43	1.53
2138.00	4.80	232.01	2137.35	7.26 S	23.62 W	23.95	0.91
2233.00	5.80	222.95	2231.94	13.22 S	30.02 W	30.65	1.37
2327.00	6.48	218.74	2325.40	20.83 S	36.58 W	37.57	0.87
2422.00	7.88	220.43	2419.66	29.97 S	44.16 W	45.60	1.49
2517.00	9.22	218.05	2513.60	40.92 S	53.07 W	55.05	1.46
2611.00	9.34	219.89	2606.37	52.70 S	62.61 W	65.16	0.34
2706.00	9.04	219.98	2700.15	64.34 S	72.35 W	75.47	0.32

2800.00	9.80	220.84	2792.88	76.05 S	82.32 W	86.01	0.82
2895.00	10.05	218.81	2886.46	88.62 S	92.80 W	97.11	0.45
2990.00	9.91	218.70	2980.02	101.46 S	103.11 W	108.04	0.15
3084.00	8.92	220.16	3072.75	113.35 S	112.87 W	118.38	1.08
3179.00	9.49	220.90	3166.53	124.89 S	122.75 W	128.82	0.61
3274.00	8.53	221.67	3260.36	136.08 S	132.56 W	139.18	1.02
3369.00	6.83	227.82	3354.50	145.13 S	141.43 W	148.49	1.99
3464.00	5.06	220.34	3448.99	152.12 S	148.33 W	155.73	2.03
3559.00	4.49	213.96	3543.66	158.40 S	153.12 W	160.83	0.82
3653.00	3.97	217.26	3637.40	164.04 S	157.14 W	165.13	0.61
3748.00	4.81	216.31	3732.12	169.87 S	161.49 W	169.77	0.89
3843.00	5.40	214.36	3826.75	176.77 S	166.37 W	174.99	0.65
3938.00	4.61	209.20	3921.38	183.79 S	170.76 W	179.72	0.96
4033.00	3.18	196.28	4016.16	189.65 S	173.36 W	182.61	1.76
4127.00	1.70	176.54	4110.08	193.55 S	174.01 W	183.45	1.79
4222.00	1.08	109.37	4205.06	195.25 S	173.08 W	182.60	1.71
4317.00	0.69	108.78	4300.04	195.73 S	171.69 W	181.24	0.41
4412.00	1.77	129.43	4395.02	196.85 S	170.02 W	179.63	1.21
4507.00	1.27	132.56	4489.99	198.49 S	168.11 W	177.80	0.53
4602.00	1.76	93.23	4584.96	199.29 S	165.88 W	175.61	1.18
4696.00	0.56	45.65	4678.94	199.05 S	164.11 W	173.83	1.53
4790.00	1.24	81.97	4772.92	198.58 S	162.77 W	172.48	0.91
4885.00	1.62	84.74	4867.90	198.32 S	160.42 W	170.11	0.41
4980.00	1.48	32.50	4962.86	197.16 S	158.42 W	168.06	1.44
5075.00	1.07	29.57	5057.84	195.35 S	157.32 W	166.87	0.44
5169.00	0.79	334.36	5151.83	194.00 S	157.17 W	166.65	0.95
5264.00	0.91	327.44	5246.82	192.78 S	157.86 W	167.28	0.17
5358.00	0.91	309.37	5340.81	191.68 S	158.84 W	168.20	0.30
5453.00	0.72	301.11	5435.80	190.89 S	159.93 W	169.26	0.23
5548.00	0.25	86.66	5530.80	190.57 S	160.24 W	169.54	0.99
5643.00	0.98	116.22	5625.79	190.91 S	159.30 W	168.63	0.81
5738.00	0.49	138.91	5720.78	191.58 S	158.30 W	167.67	0.59
5833.00	1.11	141.20	5815.77	192.60 S	157.46 W	166.87	0.65
5928.00	0.98	151.73	5910.76	194.04 S	156.50 W	165.99	0.24
6023.00	0.58	173.44	6005.75	195.23 S	156.06 W	165.61	0.52
6113.00	0.41	115.27	6095.75	195.82 S	155.72 W	165.29	0.56
6160.00	2.38	291.66	6142.73	195.53 S	156.47 W	166.03	5.93
6208.00	6.00	285.38	6190.60	194.50 S	159.82 W	169.32	7.59
6255.00	9.88	277.77	6237.14	193.30 S	166.18 W	175.62	8.54
6302.00	13.45	273.64	6283.16	192.41 S	175.64 W	185.02	7.80
6349.00	17.74	274.02	6328.42	191.56 S	188.24 W	197.56	9.13
6397.00	22.78	276.10	6373.44	190.06 S	204.79 W	214.01	10.61
6444.00	29.03	273.28	6415.70	188.44 S	225.24 W	234.36	13.55
6492.00	35.51	271.07	6456.26	187.51 S	250.83 W	259.88	13.72
6539.00	38.77	268.97	6493.72	187.52 S	279.20 W	288.21	7.44
6587.00	42.38	268.76	6530.18	188.14 S	310.41 W	319.41	7.53
6634.00	46.74	270.38	6563.66	188.37 S	343.38 W	352.35	9.59
6682.00	51.18	270.74	6595.17	188.01 S	379.57 W	388.48	9.27
6729.00	56.38	271.33	6622.93	187.32 S	417.47 W	426.30	11.11
6777.00	61.73	270.87	6647.60	186.53 S	458.62 W	467.35	11.18
6824.00	65.16	270.23	6668.61	186.13 S	500.65 W	509.31	7.40
6872.00	68.69	268.61	6687.42	186.59 S	544.80 W	553.43	7.98
6919.00	73.53	267.49	6702.63	188.11 S	589.23 W	597.88	10.54
6967.00	75.96	268.35	6715.26	189.79 S	635.50 W	644.18	5.35
7010.00	79.21	267.33	6724.51	191.37 S	677.46 W	686.16	7.91
7140.00	86.98	271.11	6740.13	193.09 S	806.38 W	815.01	6.64
7235.00	88.24	269.81	6744.09	192.33 S	901.29 W	909.77	1.90
7329.00	90.09	270.12	6745.46	192.39 S	995.28 W	1003.64	2.00
7424.00	90.55	272.20	6744.93	190.46 S	1090.25 W	1098.40	2.24
7519.00	91.11	271.51	6743.55	187.39 S	1185.19 W	1193.06	0.94
7614.00	89.69	269.19	6742.89	186.81 S	1280.18 W	1287.90	2.86
7709.00	89.01	267.07	6743.97	189.91 S	1375.11 W	1382.88	2.34
7804.00	88.61	265.28	6745.94	196.25 S	1469.88 W	1477.84	1.93
7899.00	89.57	265.22	6747.45	204.11 S	1564.54 W	1572.78	1.01
7994.00	89.17	265.28	6748.50	211.98 S	1659.21 W	1667.72	0.43
8089.00	89.63	267.41	6749.49	218.03 S	1754.00 W	1762.70	2.29
8183.00	89.11	267.00	6750.52	222.62 S	1847.89 W	1856.69	0.70
8276.00	90.89	271.37	6750.52	223.94 S	1940.85 W	1949.61	5.07
8369.00	91.36	271.05	6748.70	221.98 S	2033.81 W	2042.35	0.61
8462.00	89.17	269.52	6748.27	221.51 S	2126.80 W	2135.20	2.87
8555.00	89.85	270.83	6749.06	221.23 S	2219.79 W	2228.07	1.59

8648.00	89.54	267.70	6749.56	222.42 S	2312.77 W	2320.99	3.38
8741.00	88.74	264.23	6750.96	228.96 S	2405.52 W	2413.95	3.83
8834.00	88.46	264.84	6753.23	237.82 S	2498.07 W	2506.82	0.72
8927.00	91.02	266.86	6753.65	244.55 S	2590.81 W	2599.78	3.51
9019.00	88.37	263.34	6754.14	252.40 S	2682.45 W	2691.70	4.79
9112.00	88.83	263.94	6756.41	262.70 S	2774.85 W	2784.50	0.81
9205.00	89.05	266.52	6758.13	270.43 S	2867.50 W	2877.42	2.78
9298.00	91.23	268.47	6757.91	274.50 S	2960.40 W	2970.41	3.14
9391.00	90.40	265.78	6756.58	279.16 S	3053.27 W	3063.39	3.03
9485.00	89.38	266.87	6756.76	285.19 S	3147.07 W	3157.38	1.59
9577.00	89.17	268.00	6757.93	289.30 S	3238.97 W	3249.37	1.25
9671.00	90.40	270.35	6758.28	290.66 S	3332.95 W	3343.30	2.82
9763.00	89.75	270.24	6758.16	290.18 S	3424.95 W	3435.16	0.72
9856.00	90.34	271.01	6758.09	289.17 S	3517.94 W	3527.99	1.04
9948.00	89.48	269.64	6758.23	288.65 S	3609.94 W	3619.84	1.76
10042.00	87.22	269.19	6760.94	289.61 S	3703.89 W	3713.72	2.45
10137.00	88.67	268.96	6764.34	291.14 S	3798.81 W	3808.61	1.55
10232.00	90.52	269.02	6765.02	292.81 S	3893.79 W	3903.55	1.95
10327.00	89.60	268.04	6764.92	295.25 S	3988.76 W	3998.52	1.41
10421.00	89.23	267.59	6765.88	298.83 S	4082.68 W	4092.51	0.62
10516.00	89.66	267.38	6766.80	303.00 S	4177.59 W	4187.50	0.50
10611.00	91.26	268.46	6766.03	306.45 S	4272.52 W	4282.49	2.03
10706.00	93.14	268.81	6762.39	308.71 S	4367.42 W	4377.38	2.01
10801.00	93.05	268.96	6757.26	310.56 S	4462.26 W	4472.20	0.18
10895.00	92.37	268.49	6752.81	312.65 S	4556.13 W	4566.05	0.88
10990.00	92.53	268.96	6748.75	314.76 S	4651.02 W	4660.93	0.52
11086.00	92.04	269.24	6744.92	316.27 S	4746.93 W	4756.80	0.59
11180.00	88.95	269.49	6744.11	317.31 S	4840.91 W	4850.71	3.30
11275.00	89.35	267.53	6745.52	319.78 S	4935.86 W	4945.67	2.11
11370.00	89.35	266.54	6746.60	324.69 S	5030.73 W	5040.66	1.04
11465.00	89.51	268.09	6747.54	329.14 S	5125.62 W	5135.65	1.64
11560.00	89.69	265.86	6748.21	334.16 S	5220.48 W	5230.65	2.35
11655.00	89.54	263.48	6748.85	342.98 S	5315.06 W	5325.55	2.51
11750.00	89.38	264.57	6749.74	352.87 S	5409.53 W	5420.40	1.16
11844.00	89.41	268.22	6750.73	358.78 S	5503.33 W	5514.37	3.88
11939.00	89.69	271.10	6751.48	359.34 S	5598.31 W	5609.27	3.05
12034.00	89.11	270.31	6752.48	358.17 S	5693.30 W	5704.08	1.03
12129.00	87.78	270.46	6755.05	357.53 S	5788.26 W	5798.89	1.41
12224.00	89.14	271.01	6757.61	356.32 S	5883.21 W	5893.67	1.54
12319.00	86.85	269.30	6760.93	356.06 S	5978.15 W	5988.47	3.01
12414.00	88.83	269.90	6764.51	356.72 S	6073.07 W	6083.31	2.18
12509.00	89.32	268.56	6766.04	358.00 S	6168.05 W	6178.23	1.50
12604.00	89.01	268.10	6767.43	360.77 S	6263.00 W	6273.20	0.58
12699.00	88.74	265.13	6769.29	366.37 S	6357.80 W	6368.16	3.14
12794.00	89.26	268.31	6770.95	371.81 S	6452.62 W	6463.13	3.39
12889.00	89.23	268.71	6772.21	374.28 S	6547.58 W	6558.10	0.42
12984.00	89.32	267.73	6773.41	377.23 S	6642.52 W	6653.07	1.04
13078.00	88.37	267.79	6775.30	380.90 S	6736.43 W	6747.05	1.01
13173.00	89.97	266.76	6776.68	385.42 S	6831.31 W	6842.03	2.00
13268.00	90.83	267.67	6776.02	390.03 S	6926.19 W	6937.03	1.32
13363.00	88.74	266.62	6776.37	394.76 S	7021.07 W	7032.02	2.46
13458.00	89.38	266.82	6777.93	400.20 S	7115.90 W	7127.00	0.71
13552.00	89.72	267.32	6778.67	405.00 S	7209.77 W	7221.00	0.64
13647.00	86.85	267.79	6781.51	409.05 S	7304.63 W	7315.95	3.06
13742.00	85.96	269.01	6787.47	411.70 S	7399.41 W	7410.73	1.59
13837.00	85.84	267.78	6794.26	414.36 S	7494.13 W	7505.47	1.30
13931.00	88.40	269.52	6798.98	416.57 S	7587.97 W	7599.30	3.29
14026.00	89.23	270.36	6800.95	416.67 S	7682.95 W	7694.17	1.24
14121.00	89.72	269.75	6801.82	416.57 S	7777.94 W	7789.04	0.82
14215.00	88.80	268.00	6803.03	418.42 S	7871.91 W	7882.98	2.10
14310.00	90.03	268.18	6804.00	421.59 S	7966.85 W	7977.96	1.31
14405.00	91.26	267.10	6802.93	425.50 S	8061.76 W	8072.95	1.72
14439.00	91.42	266.37	6802.14	427.43 S	8095.70 W	8106.94	2.20
14502.00	91.42	266.37	6800.58	431.42 S	8158.55 W	8169.92	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 267.14 DEGREES (GRID)
A TOTAL CORRECTION OF 7.47 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 14502.00 FEET
IS 8169.95 FEET ALONG 266.97 DEGREES (GRID)

Tie-In @ Surface

Surveys at 300 ft, 600 ft and 841 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:11 July 2014