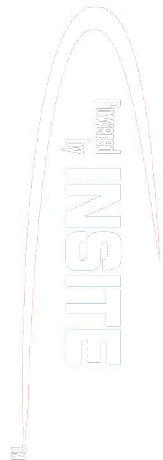


PCDC - Pressure Case Directional
PCGK - Pressure Case Gamma

1 : 240

Country		: USA		<div>Company : Noble Energy</div> <div>Rig : H&P 322</div> <div>Well : Wells Ranch AA26-65HN</div> <div>Field : Wattenberg</div> <div>Country : USA</div> <div>API Number : 0512337568</div>			
Field		: Wattenberg					
Location		: Lat: 40° 27' 18.58" North Long: 104° 23' 38.76" West					
Well		: Wells Ranch AA26-65HN					
Company		: Noble Energy					
Rig		: H&P 322		<div>Other Services</div> <div>Directional Drilling</div>			
LOCATION							
		Latitude : 40° 27' 18.58" North Longitude : 104° 23' 38.76" West					
		UTM Easting = 3307746.010 ft UTM Northing = 1410574.573 ft					
Permanent Datum		: Ground Level		Elevation : 4791.00 ft		Elev. KB N/A	
Log Measured From		: Drill Floor		24.00 ft Above Permanent Datum		DF 4815.00 ft GL 4791.00 ft WD N/A	
Drilling Measured From		: Drill Floor		MD LOG			
Depth Logged		: 982.00 ft To 10,655.00 ft		Unit No. : 11210425		Job No. :CA-XX-0900758833	
Date Logged		: 19-Sep-13 To 25-Sep-13		Plot Type : Final			
Total Depth MD		: 10,655.00 ft TVD : 6,701.03 ft		Plot Date : 25-Sep-13			
Spud Date		: 18-Sep-13					
Run No.		Borehole Record (MD)		Run No.		Borehole Record (MD)	
	Size	From	To		Size	From	To
2	8.750 in	982.00 ft	6,104.00 ft				
3	8.750 in	6,104.40 ft	7,068.00 ft				
4	6.125 in	7,068.00 ft	10,655.00 ft				
					Size	Weight	From
							To
					9.625 in	36.00 lbpf	SURFACE
					7.000 in	26.00 lbpf	SURFACE

WELL INFORMATION

MWD Run Number	100	200	300		
Date run completed	20-Sep-13	21-Sep-13	25-Sep-13		
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)	982.00	6,104.00	7,068.00		
Log End Depth (MD, ft)	6,104.00	7,068.00	10,655.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	19-Sep-13 14:30	20-Sep-13 23:30	23-Sep-13 00:00		
Drill/Wipe End Date and Time	20-Sep-13 15:00	21-Sep-13 13:45	24-Sep-13 16:00		
Min Inc (deg) @ Depth (MD, ft)	0.83 @ 1,014.00	9.25 @ 6,107.00	85.80 @ 7,902.00		
Max Inc (deg) @ Depth (MD, ft)	12.22 @ 1,670.00	80.47 @ 7,011.00	92.28 @ 10,178.00		
Bit TFA(in2) / Bit Type	0.75 / PDC	0.90 / PDC	0.46 / PDC		
Flow Rate (gpm)	574.15	560.55	271.00		
Max AV (fpm) / CV (fpm) @ MWD	98.1 / 98.1	98.1 / 98.1	529.2 / 529.2		
Fluid Type	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel		
Density (ppg) / Viscosity (spqt)	8.85 / 30.00	10.50 / 36.00	9.50 / 35.00		
Filtrate CL (ppm)	25.00	2,500.00	23.00		
pH / Fluid Loss (mptm)	11.20 / N/A	9.50 / N/A	8.80 / N/A		
PV (cP) / YP (Ihf2)	1 / 3.00	10 / 8.00	10 / 7.00		
% Solids / % Sand	1.00 / 0.25	10.5 / 0.35	7.40 / 0.25		
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A	N/A / N/A		
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		

Max Tool Temp (degF) / Source	154.30 / PCM	171.20 / PCM	220.77 / PCM		
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Lead MWD Engineer	Robert Ley	Robert Ley	Robert Ley		
Customer Representative	Jeremy Stolz	Jeremy Stolz	Jeremy Stolz		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.84	5.84	5.84		
Sub Serial Number	11404284	11404284	11404284		
Insert Serial Number	10997273	10997273	11400855		
Date and Time Initialized	19-Sep-13 06:35	01-Jan-70 00:00	22-Sep-13 09:52		
Date and Time Read	21-Sep-13 18:54	21-Sep-13 19:47	25-Sep-13 03:37		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	54.00	57.00	62.00		
Software Version	6.21	6.21	6.21		
Sub Serial Number	11404284	11404284	11404284		
Sonde Serial Number	11145692	11145692	11833053		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	223.03	236.52	315.56		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	47.61	50.08	54.70		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	11404284	11404284	11404284		
Insert/Sonde Serial Number	11293312	11293312	11293390		

REMARKS

1. All depths are true vertical 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

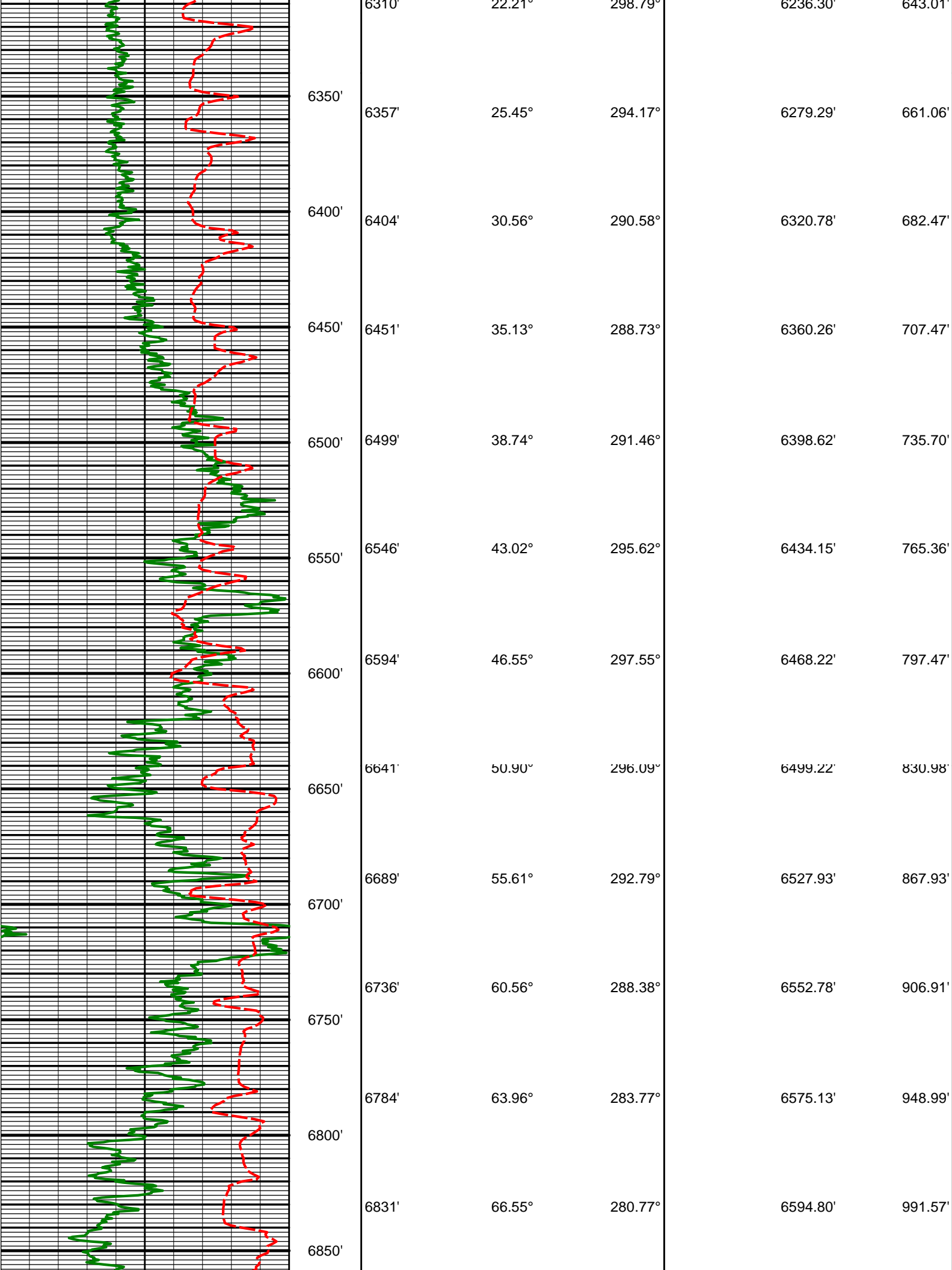
HALLIBURTON WILL USE ITS BEST EFFORTS TO FURNISH CUSTOMERS WITH ACCURATE INFORMATION AND INTERPRETATIONS

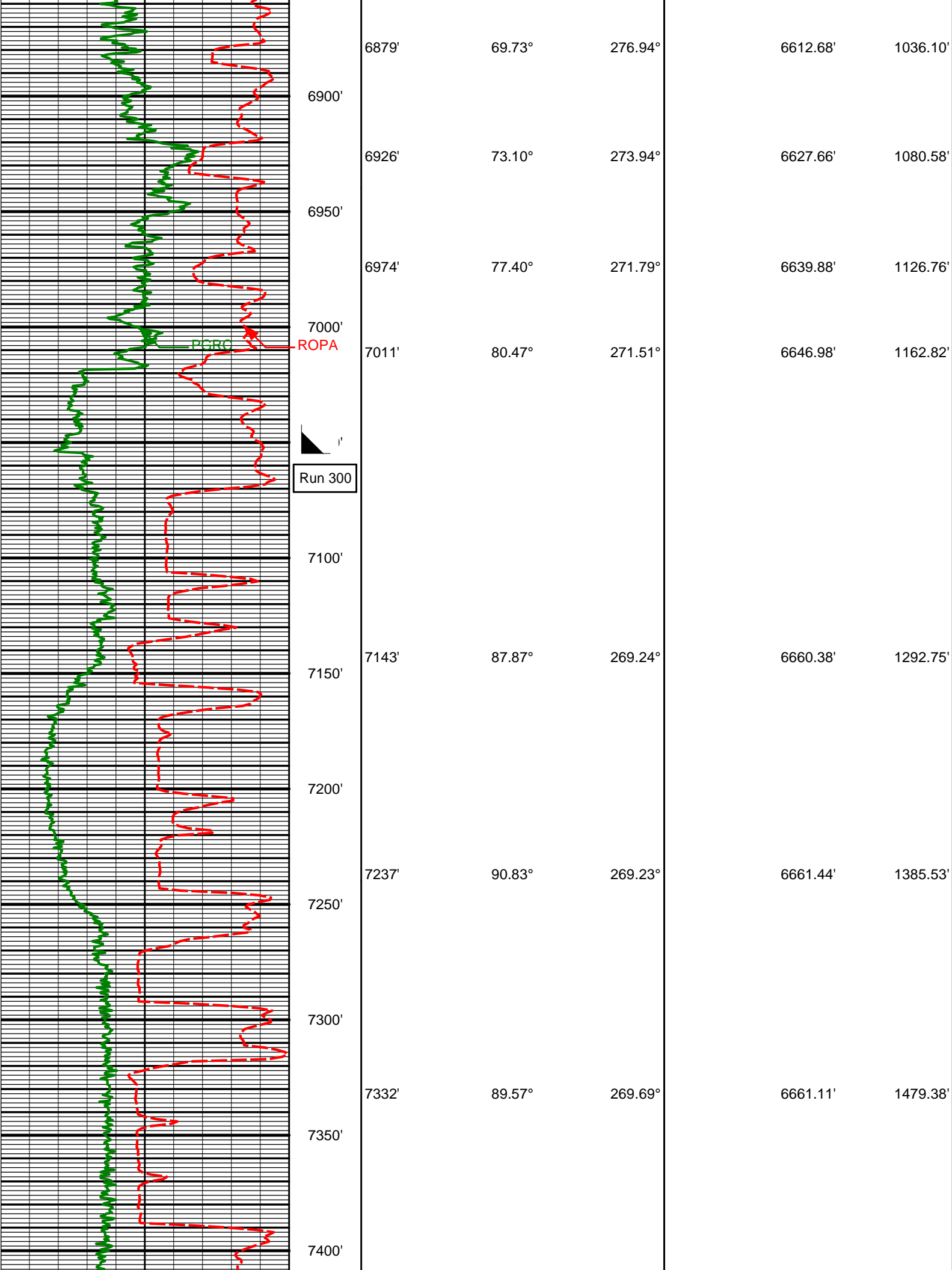
THAT ARE PART OF, AND INCIDENT TO, THE SERVICES PROVIDED. HOWEVER, HALLIBURTON CANNOT AND DOES NOT WARRANT THE ACCURACY OR CORRECTNESS OF SUCH INFORMATION AND INTERPRETATIONS. UNDER NO CIRCUMSTANCES SHOULD ANY SUCH INFORMATION OR INTERPRETATION BE RELIED UPON AS THE SOLE BASIS FOR ANY DRILLING, COMPLETION, 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.

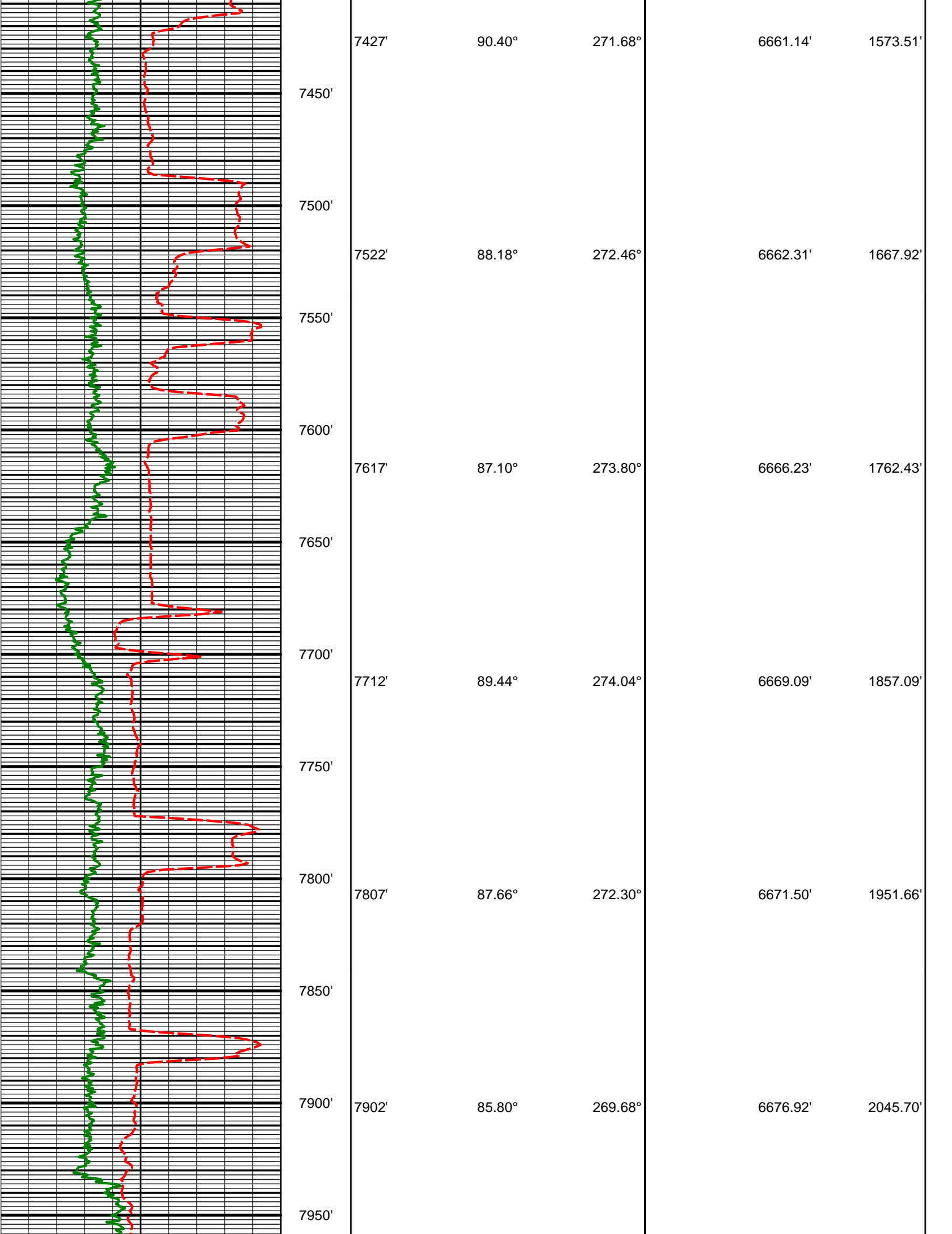
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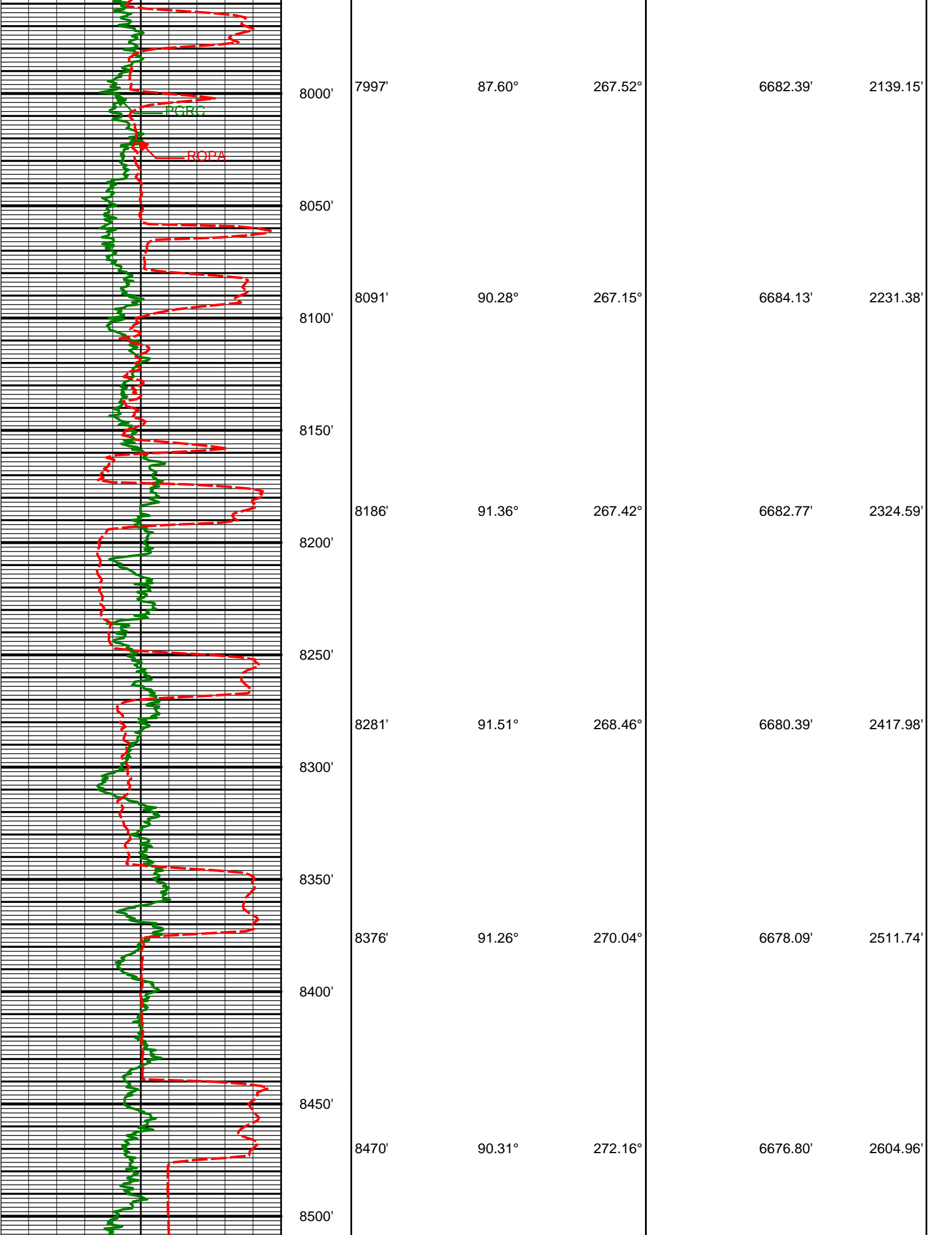
TVD Detail Log 1:600

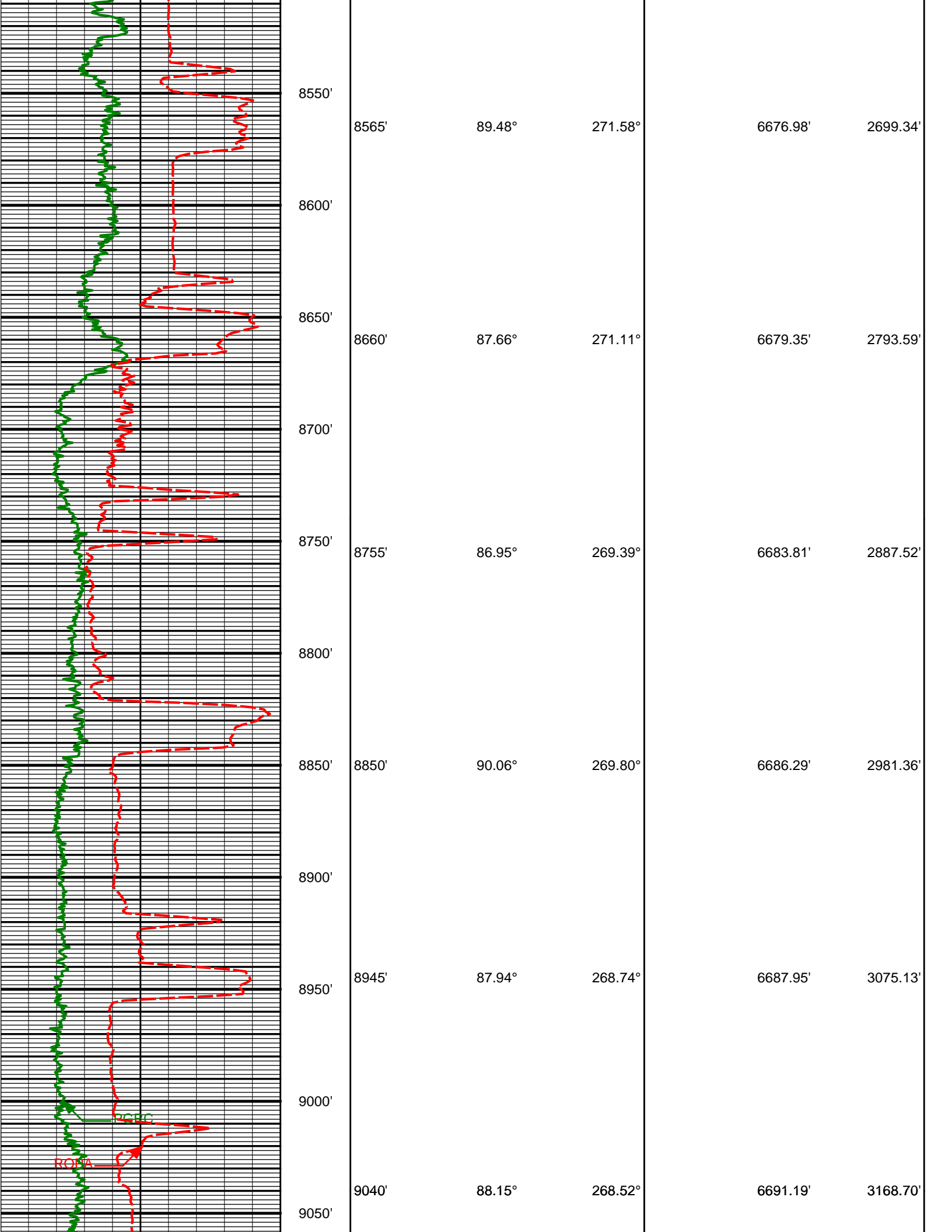
Gamma Ray Cor (PGRC) (Api)							
0300							
Avg Rate of Penetration feet per hr		Feet					
6000							
		Depth	Inc	Azm	TVD	Vsec	
		6050'	6050'	9.18°	315.32°	5984.62'	587.59'
		Run 200	6107'	9.25°	308.19°	6040.89'	595.20'
			6120'	9.63°	306.58°	6053.71'	597.06'
		6150'					
		KOP	6167'	11.28°	307.47°	6099.93'	604.55'
		6200'					
			6215'	15.74°	304.10°	6146.59'	614.52'
		6250'					
			6262'	19.24°	303.01°	6191.41'	627.31'
		6300'					

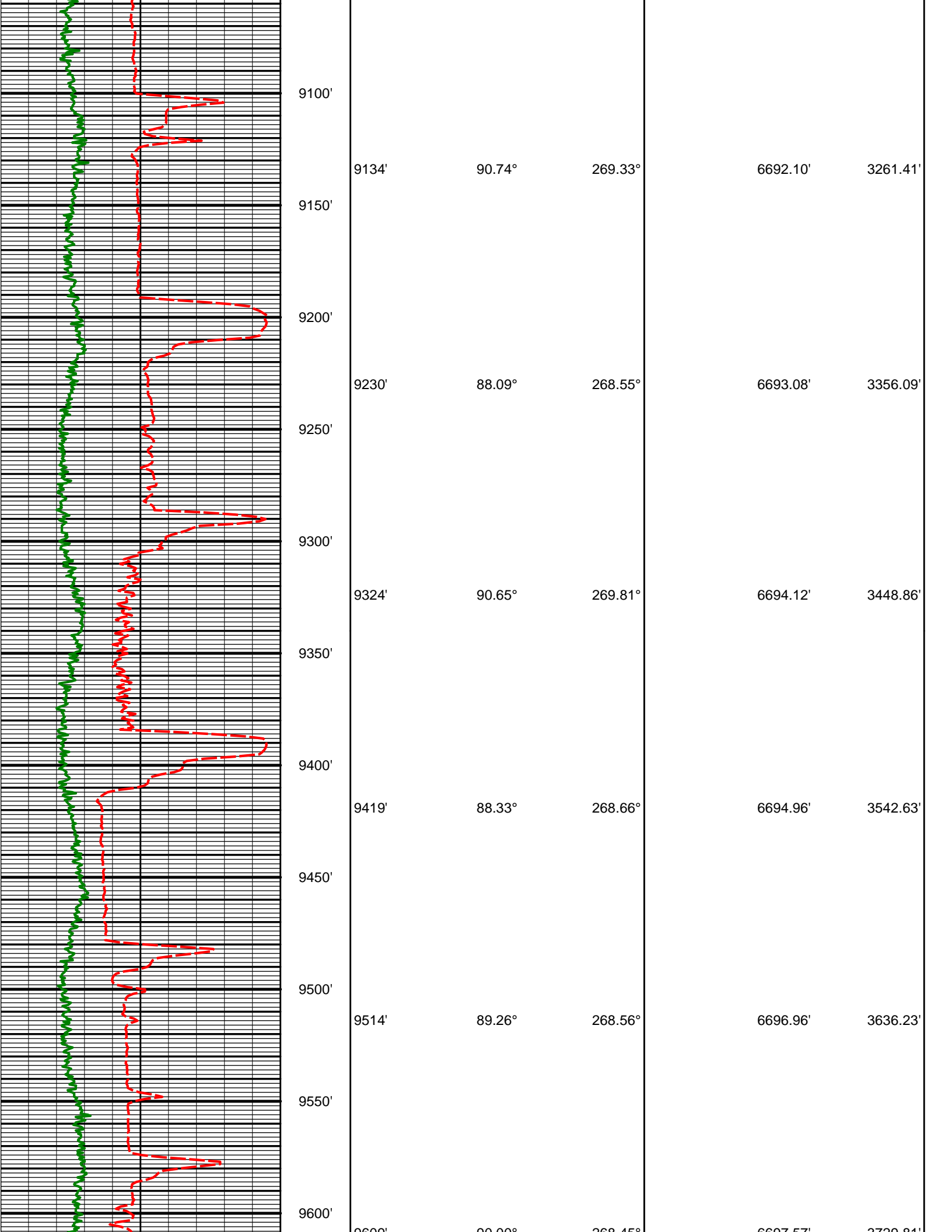


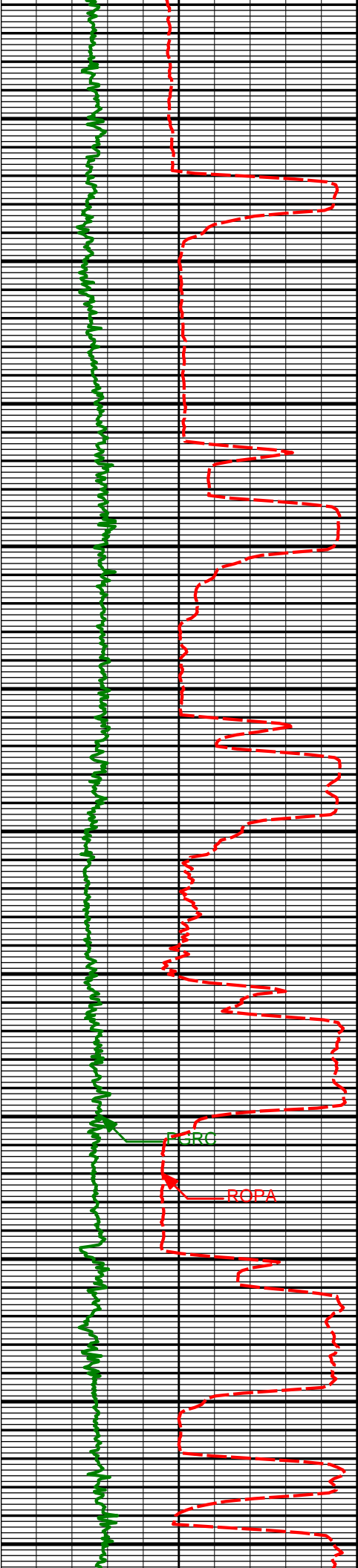




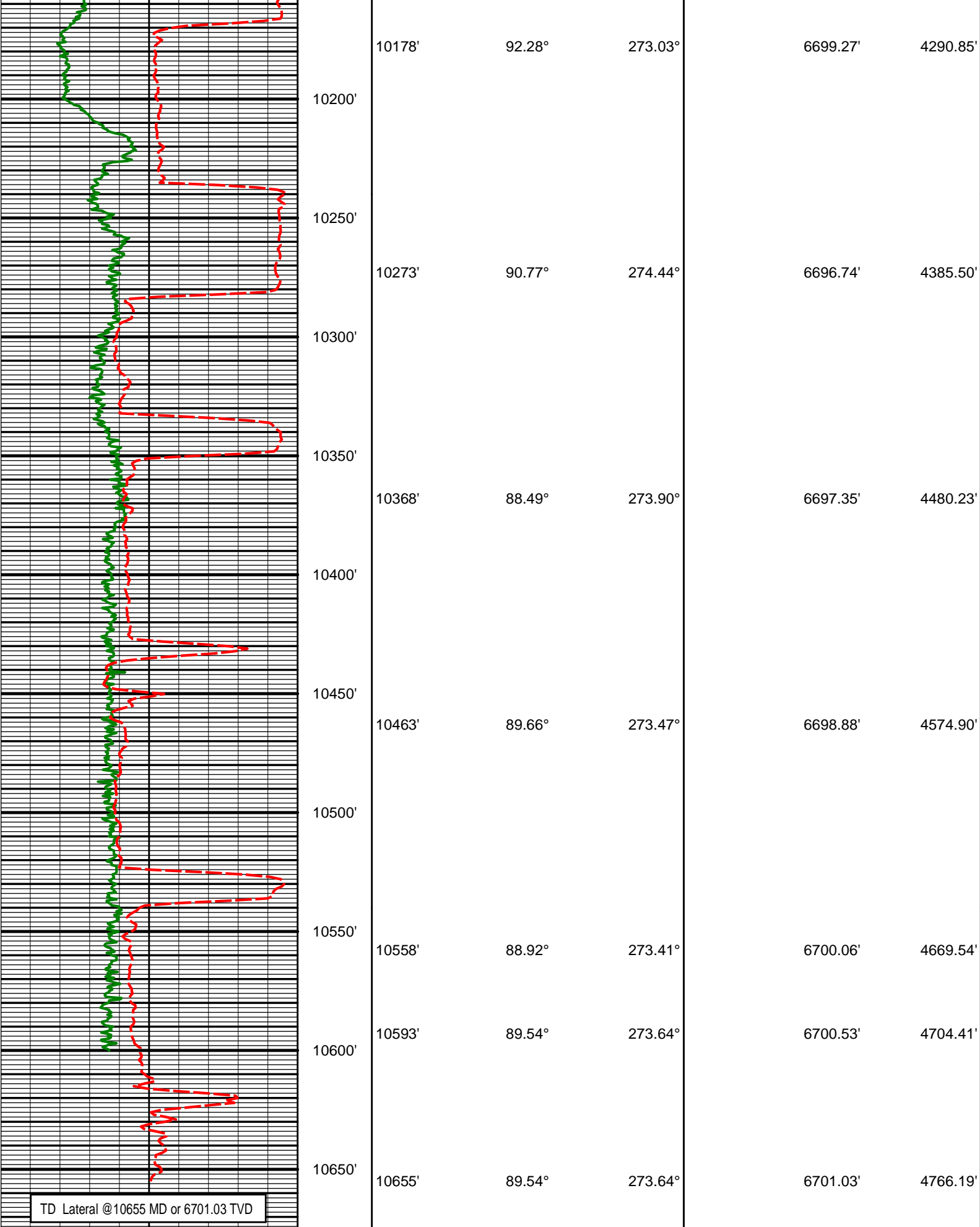








	9609'	90.00°	268.43°	6697.57'	3729.81'
9650'					
9700'	9704'	89.63°	267.46°	6697.88'	3823.24'
9750'					
9800'	9799'	89.72°	267.43°	6698.42'	3916.50'
9850'					
9900'	9894'	89.91°	268.25°	6698.73'	4009.89'
9950'					
10000'	9989'	88.77°	268.92°	6699.82'	4103.49'
10050'					
10100'	10084'	89.82°	271.07°	6700.99'	4197.46'
10150'					



Avg Rate of Penetration feet per hr		Feet		
600	0			

	Depth	Inc	Azm	TVD	Vsed
Gamma Ray Cor (PGRC) (Api)					
0	300				

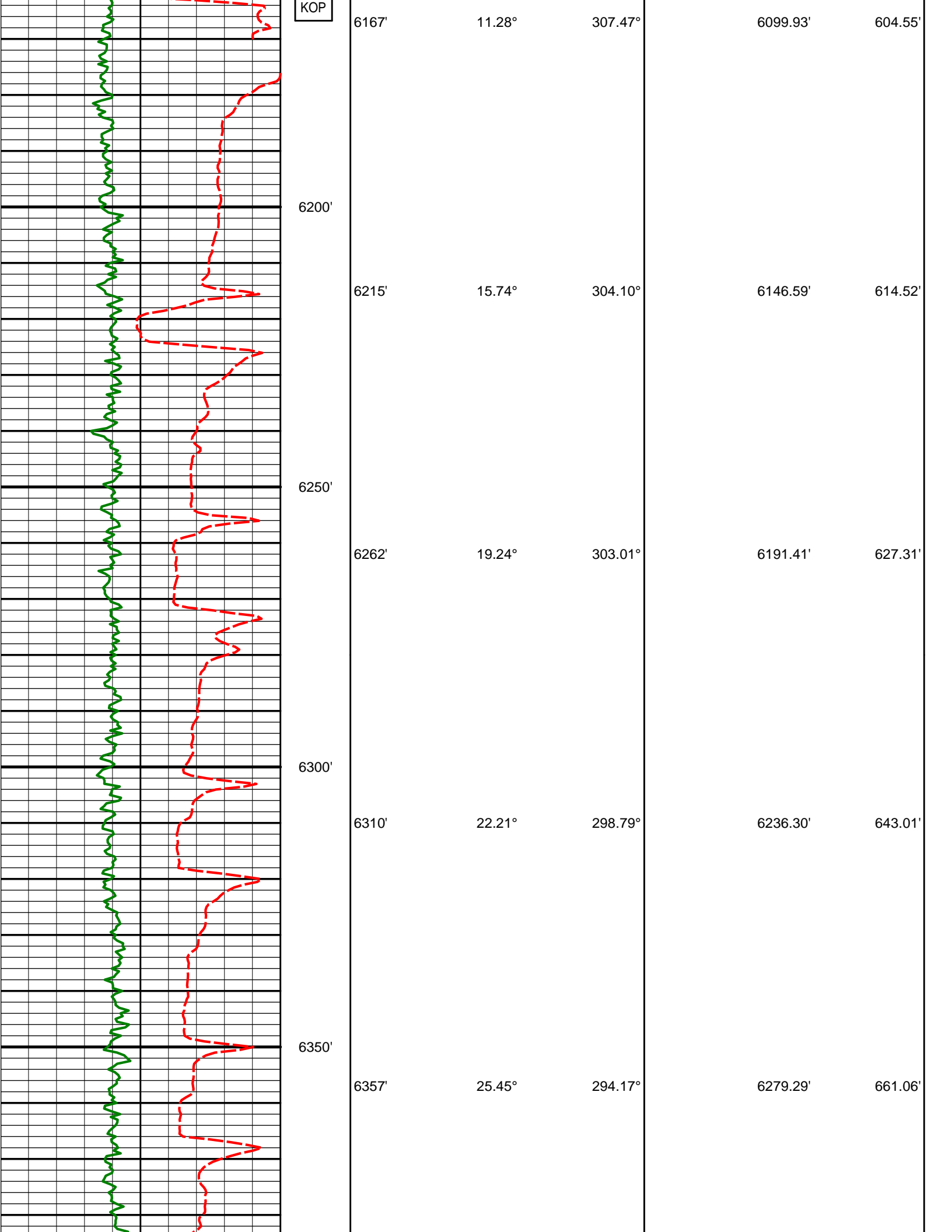
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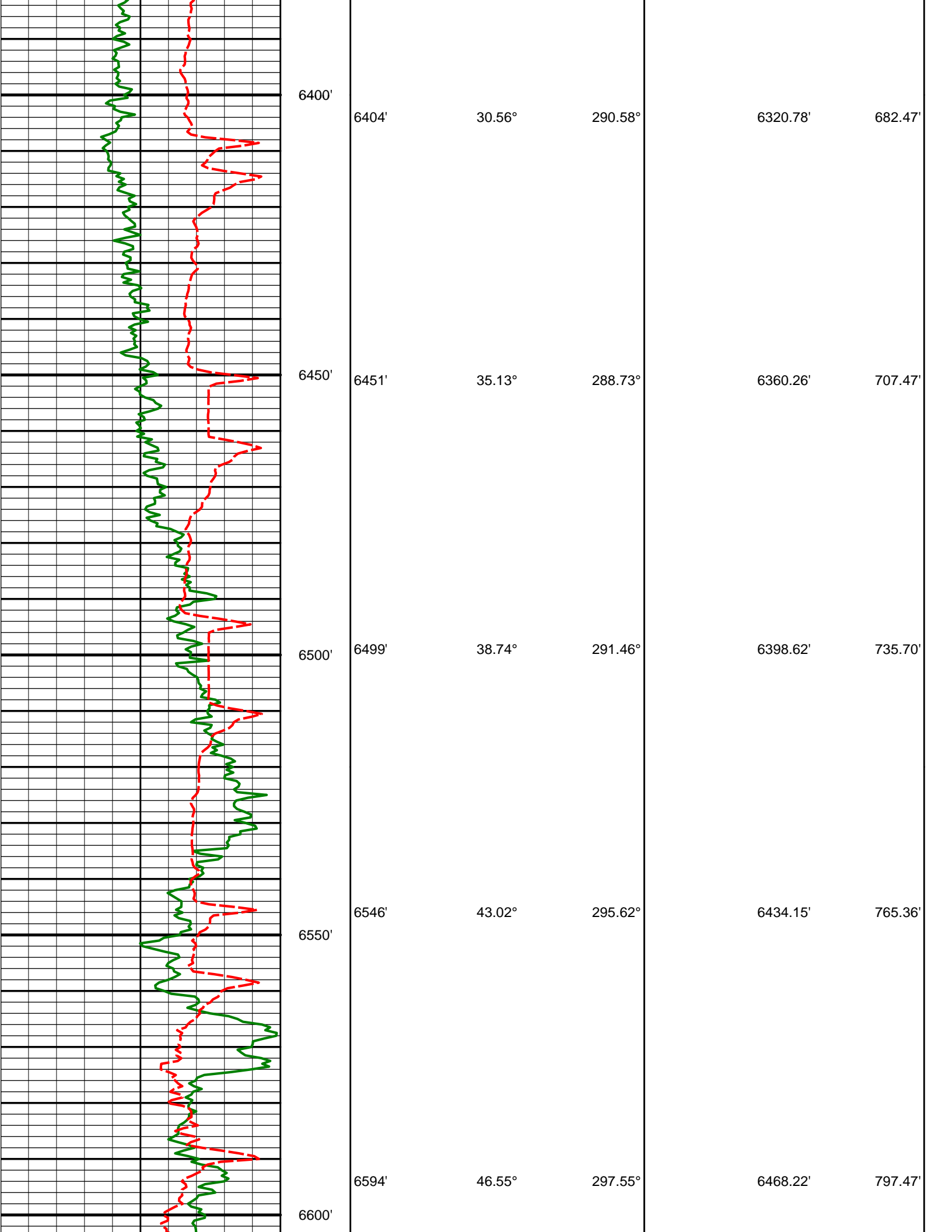
TVD Detail Log 1:240

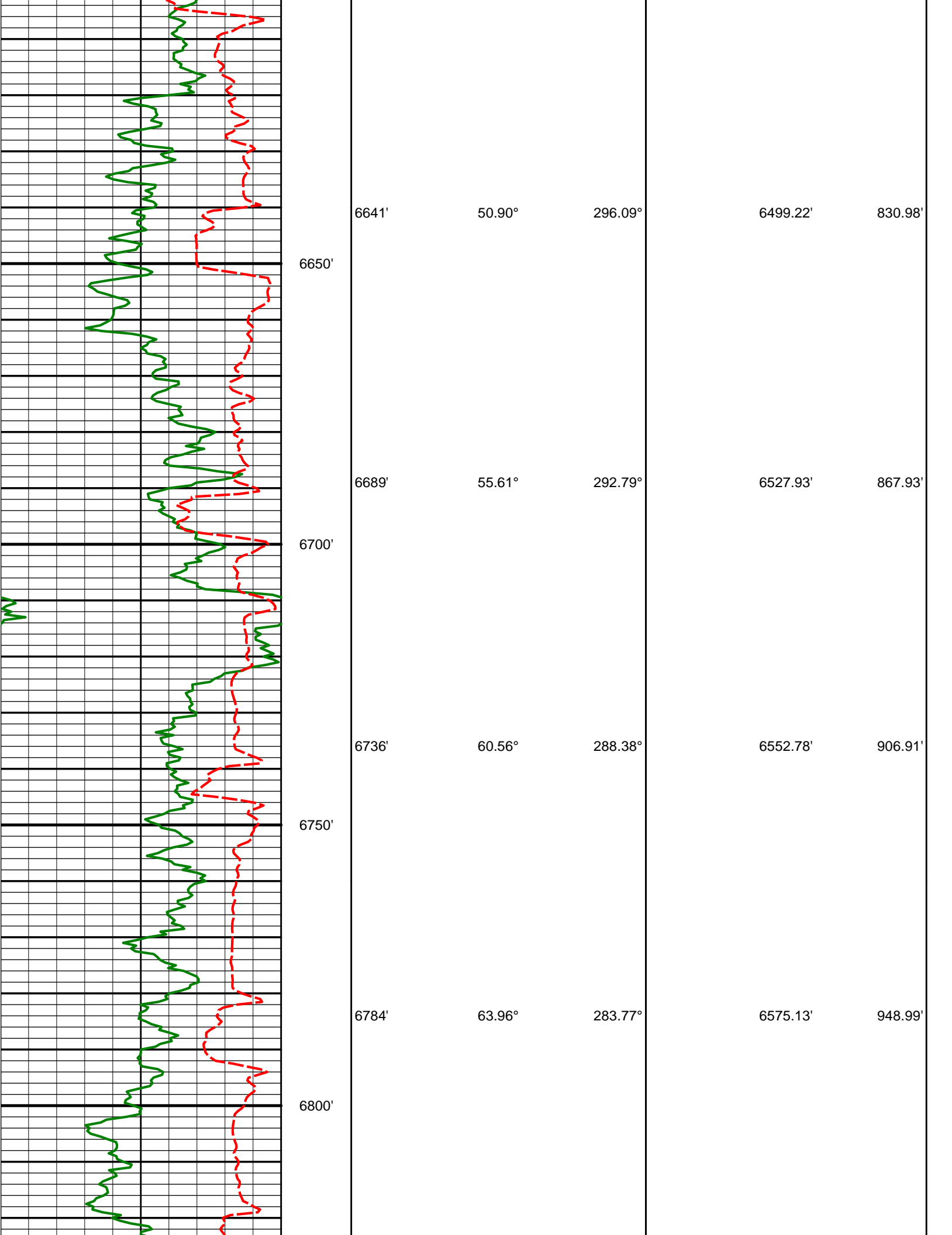
Gamma Ray Cor (PGRC) (A _{pi})		
0	300	

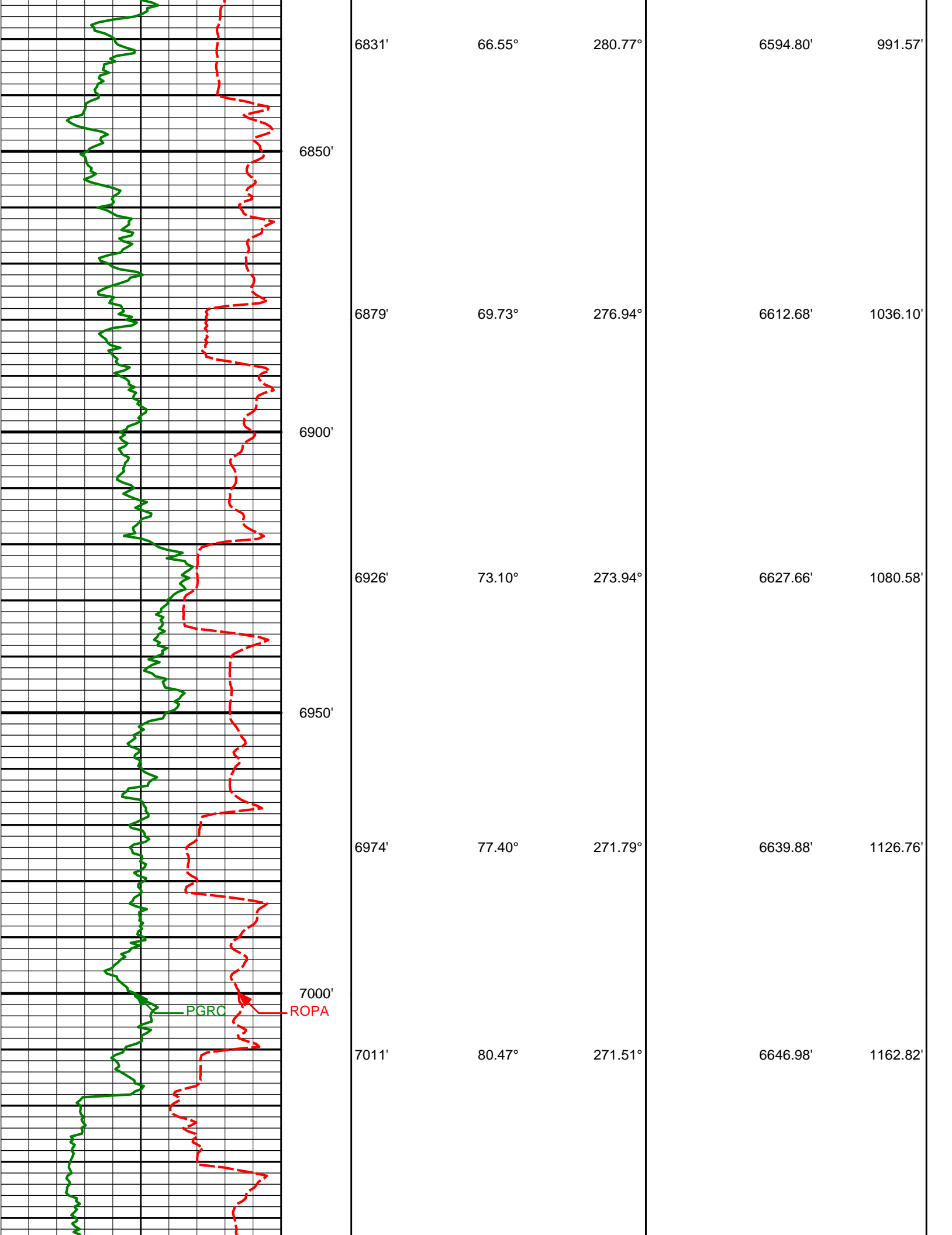
Avg Rate of Penetration feet per hr		Feet				
600	0					
		Depth	Inc	Azm	TVD	Vsed

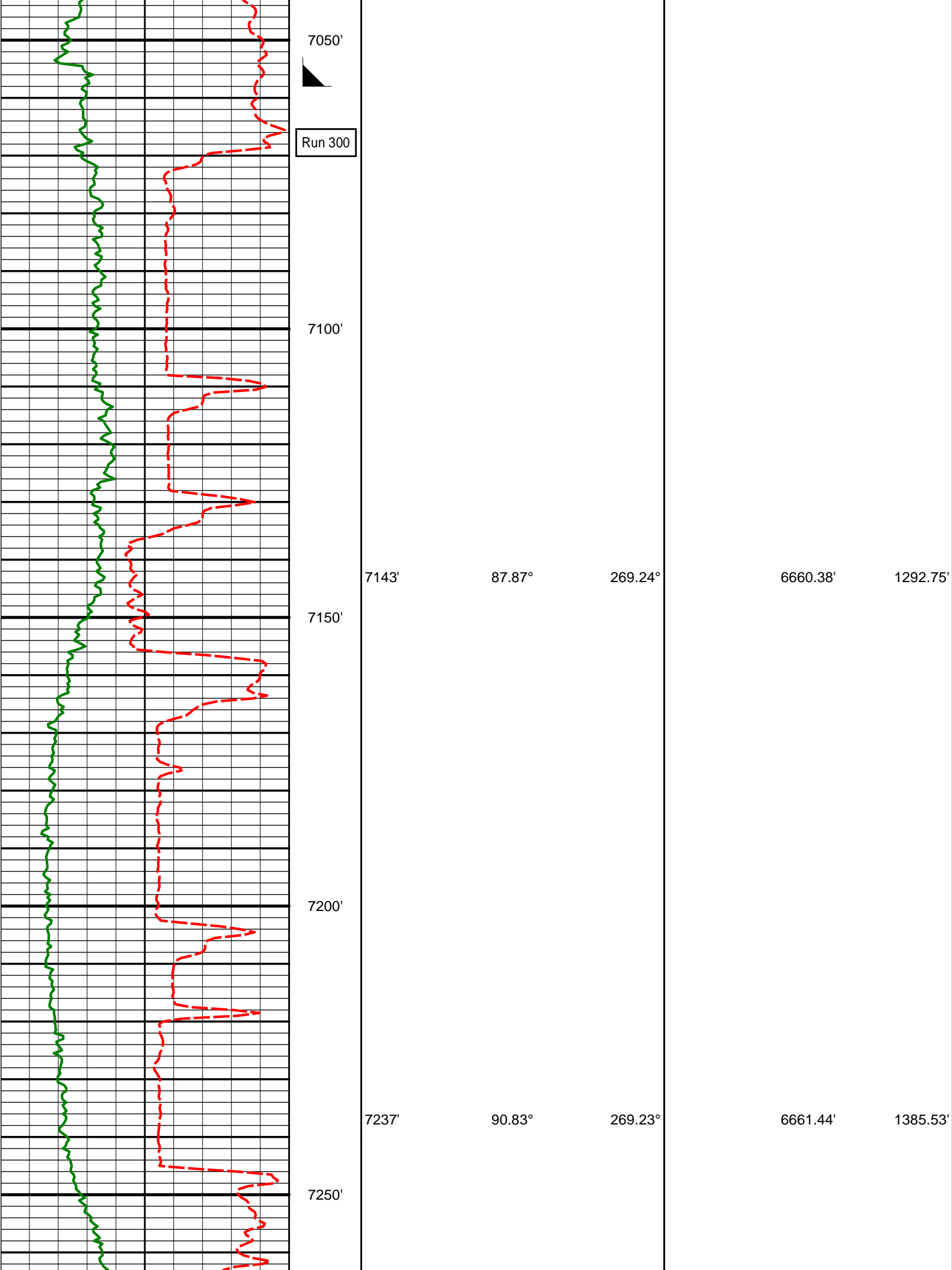
Depth	Time	Heading	Roll	Pitch
6050'	6050'	9.18°	315.32°	5984.62'
6100'	6107'	9.25°	308.19°	6040.89'
6120'	6120'	9.63°	306.58°	6053.71'
6150'				

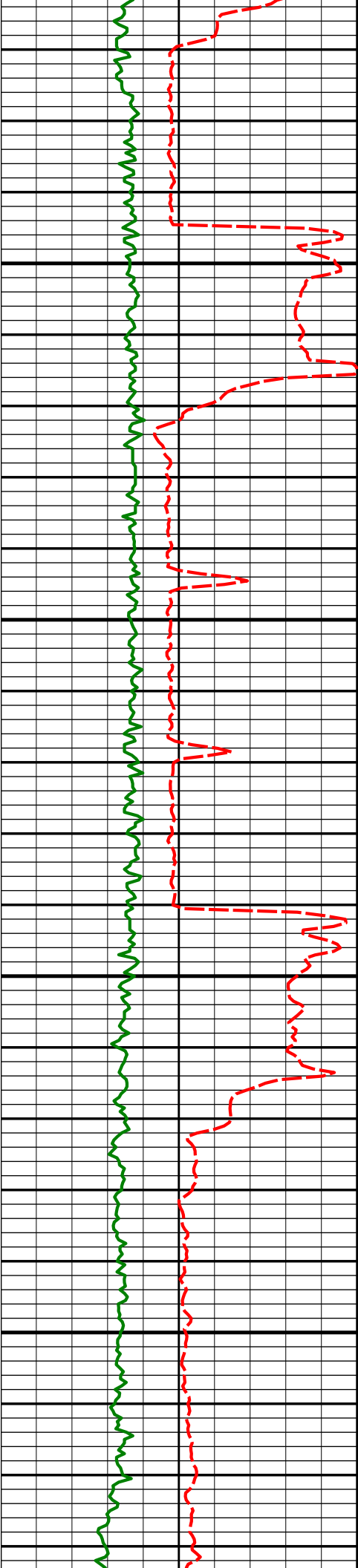












7300'

7332'

89.57°

269.69°

6661.11'

1479.38'

7350'

7400'

7427'

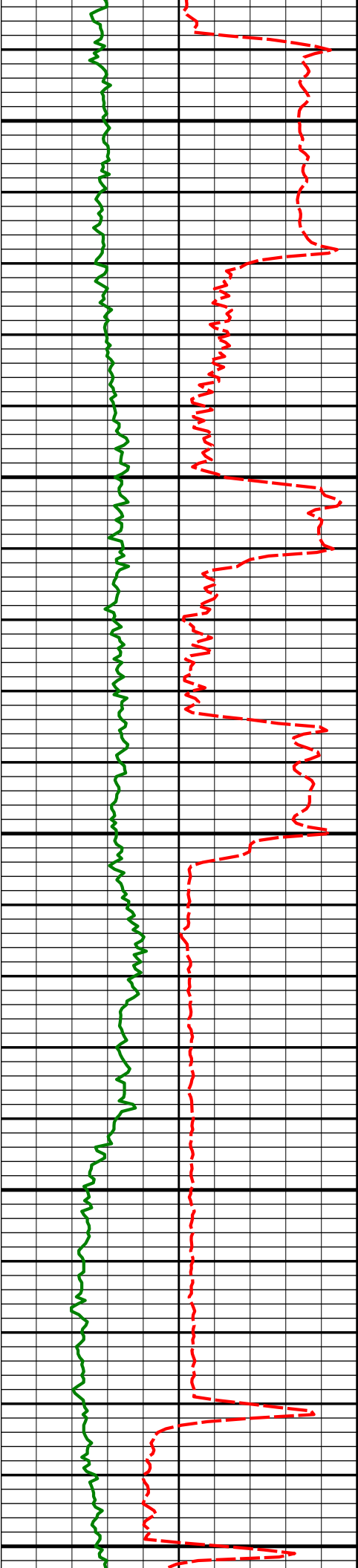
90.40°

271.68°

6661.14'

1573.51'

7450'



7500'

7522'

88.18°

272.46°

6662.31'

1667.92'

7550'

7600'

7617'

87.10°

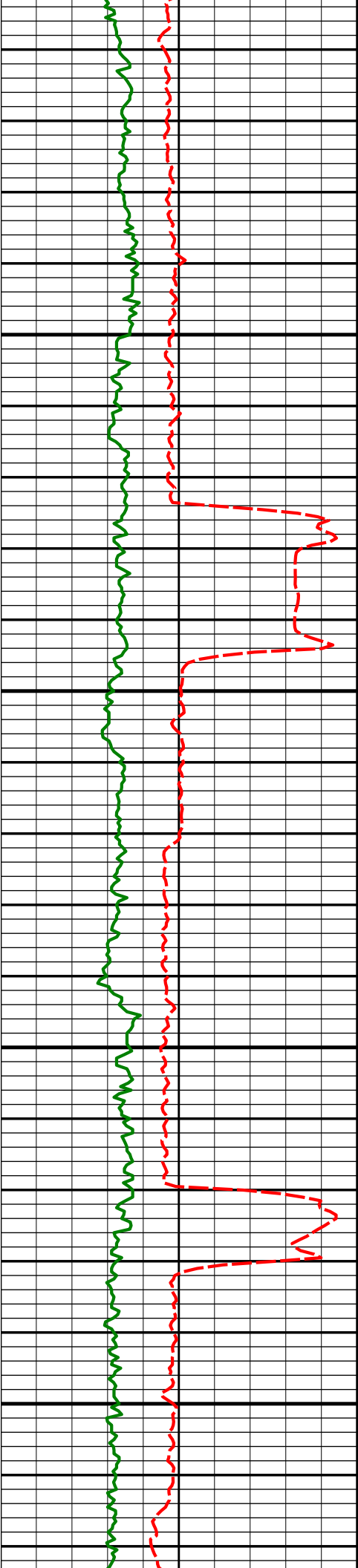
273.80°

6666.23'

1762.43'

7650'

7700'



7712'

89.44°

274.04°

6669.09'

1857.09'

7750'

7800'

7807'

87.66°

272.30°

6671.50'

1951.66'

7850'

7900'

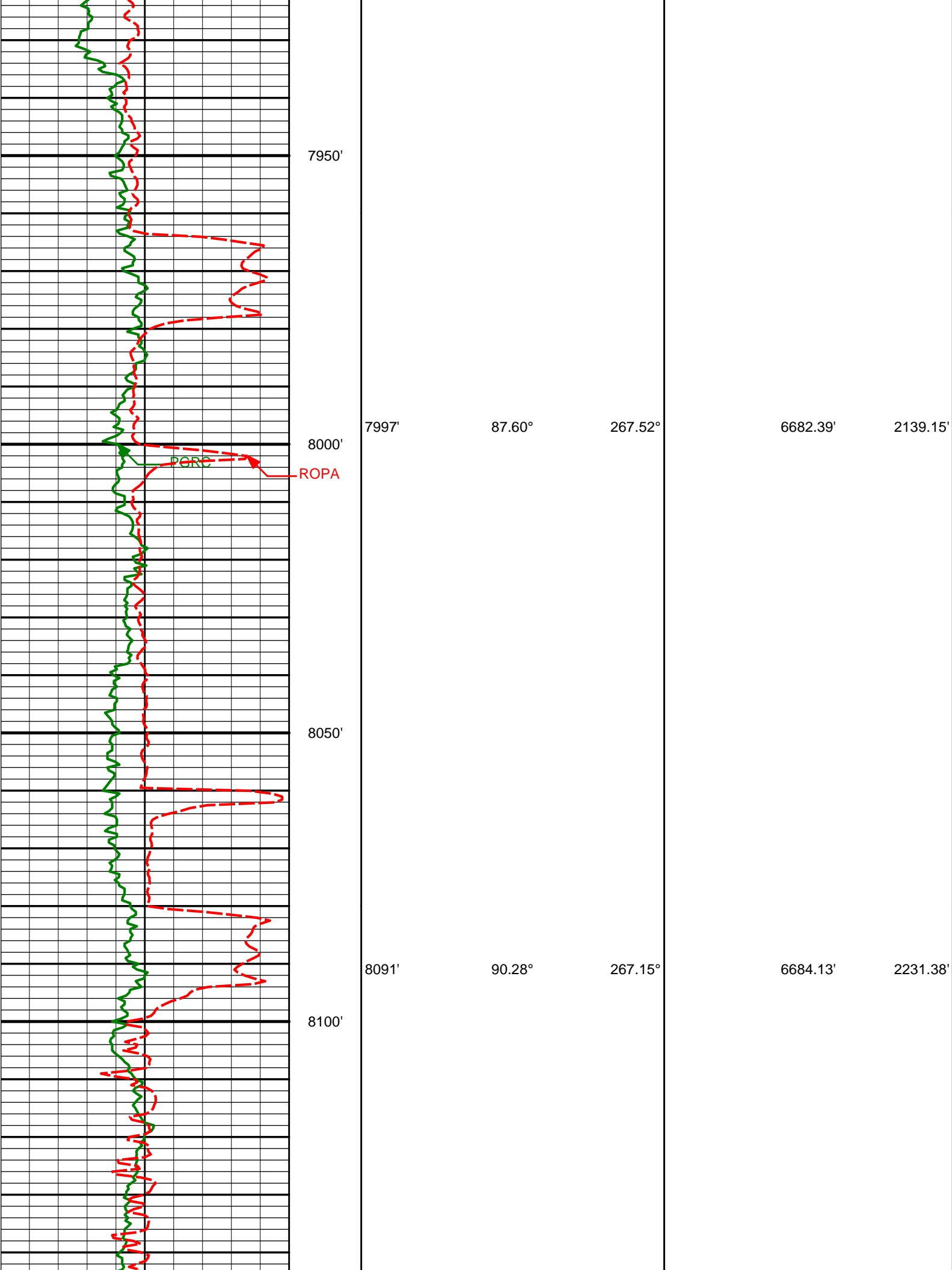
7902'

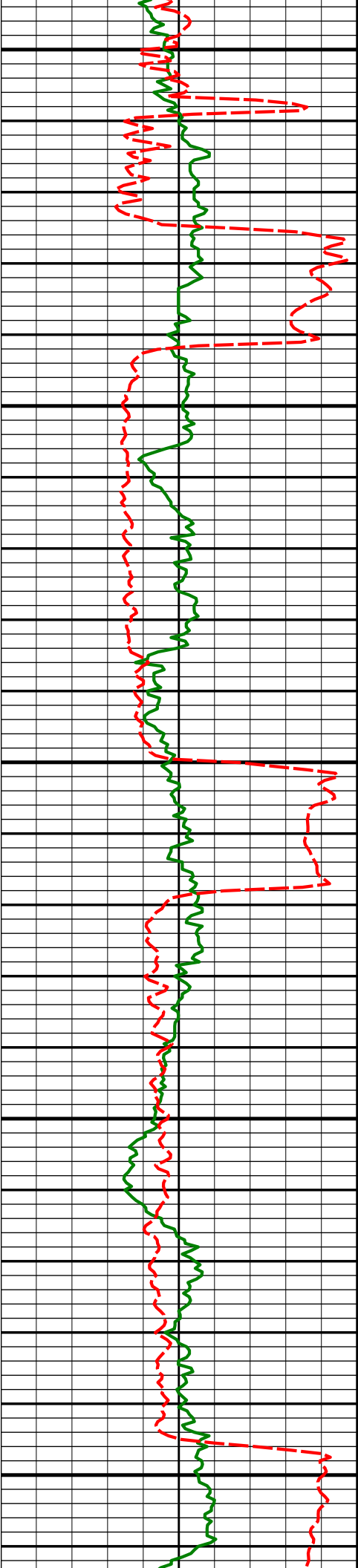
85.80°

269.68°

6676.92'

2045.70'





8150'

8186'

91.36°

267.42°

6682.77'

2324.59'

8200'

8250'

8281'

91.51°

268.46°

6680.39'

2417.98'

8300'

8350'



8376'

91.26°

270.04°

6678.09'

2511.74'

8400'

8450'

8470'

90.31°

272.16°

6676.80'

2604.96'

8500'

8550'

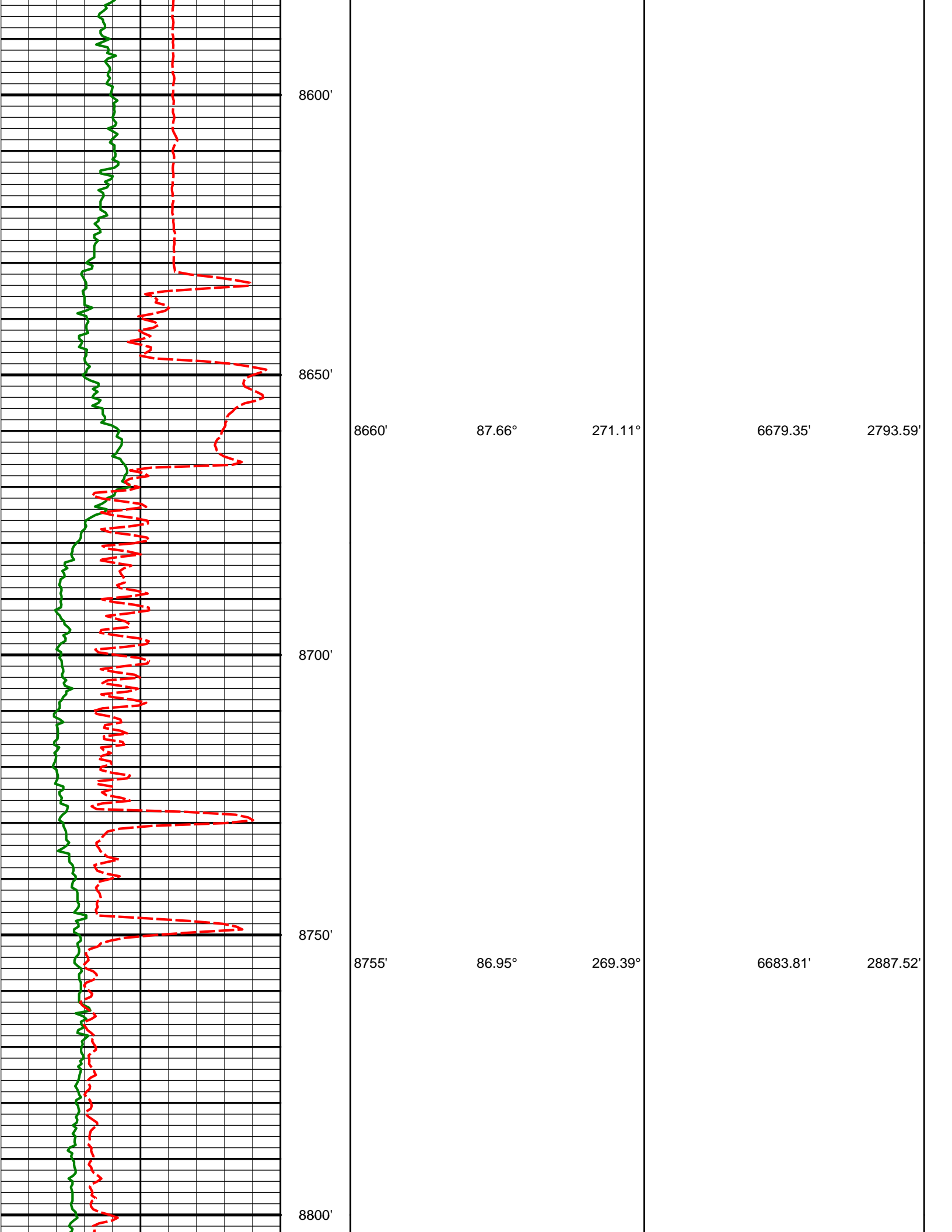
8565'

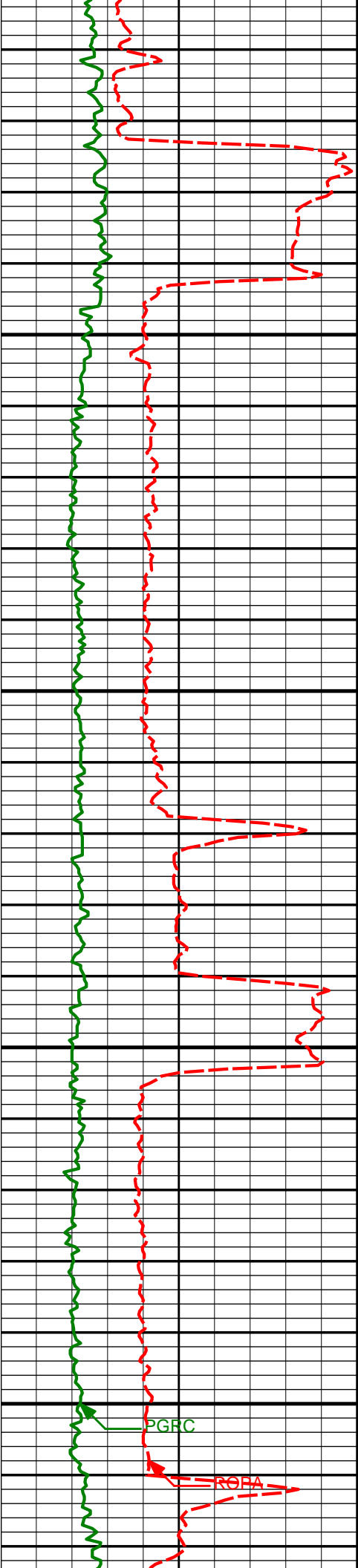
89.48°

271.58°

6676.98'

2699.34'





8850'

8900'

8950'

9000'

8850'

8945'

90.06°

87.94°

269.80°

268.74°

6686.29'

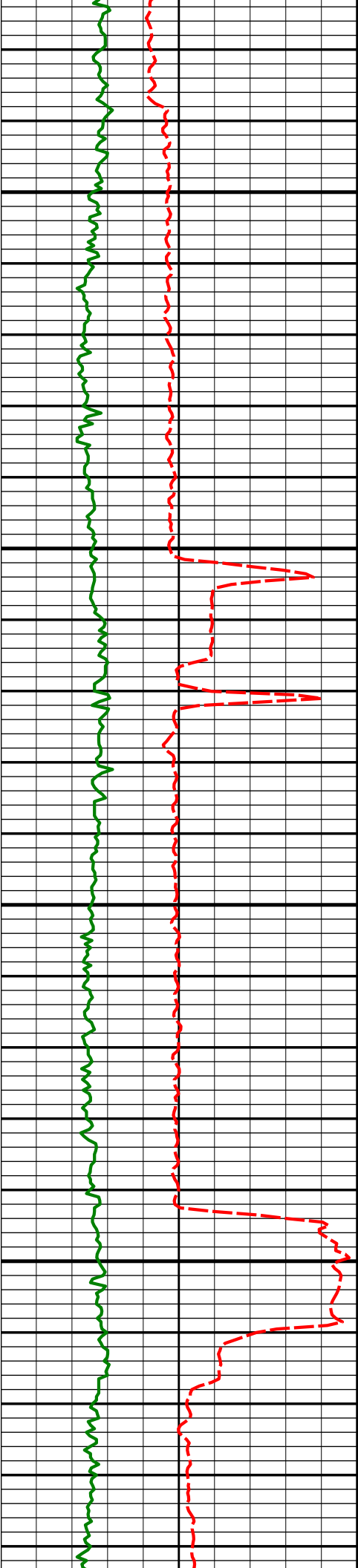
6687.95'

2981.36'

3075.13'

PGRC

ROPA



9040'

88.15°

268.52°

6691.19'

3168.70'

9050'

9100'

9134'

90.74°

269.33°

6692.10'

3261.41'

9150'

9200'

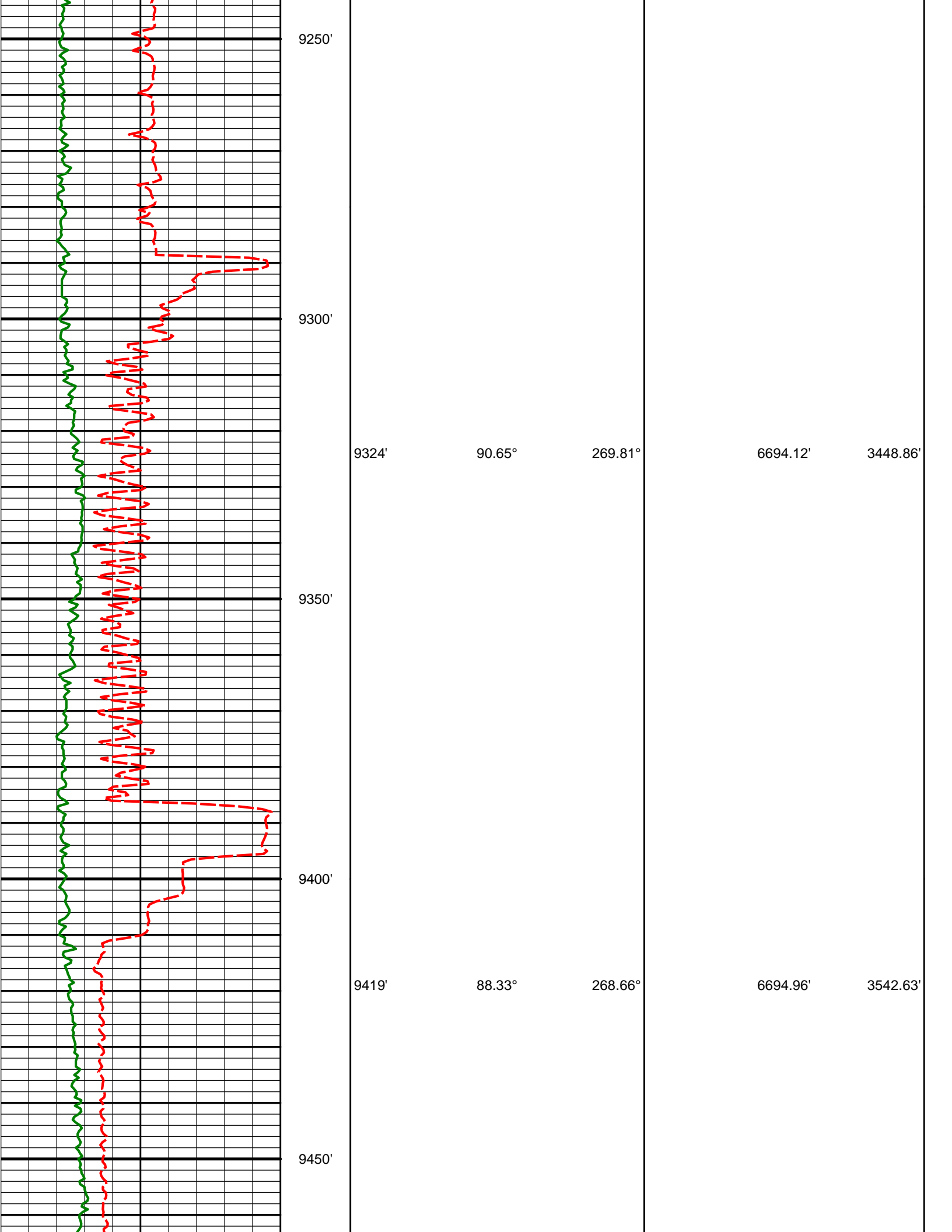
9230'

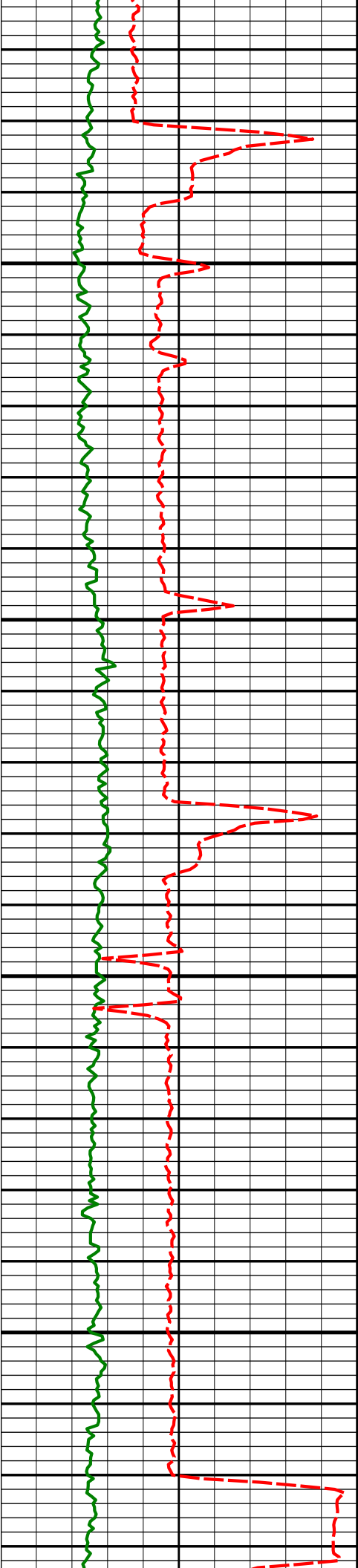
88.09°

268.55°

6693.08'

3356.09'





9500'

9514'

89.26°

268.56°

6696.96'

3636.23'

9550'

9600'

9609'

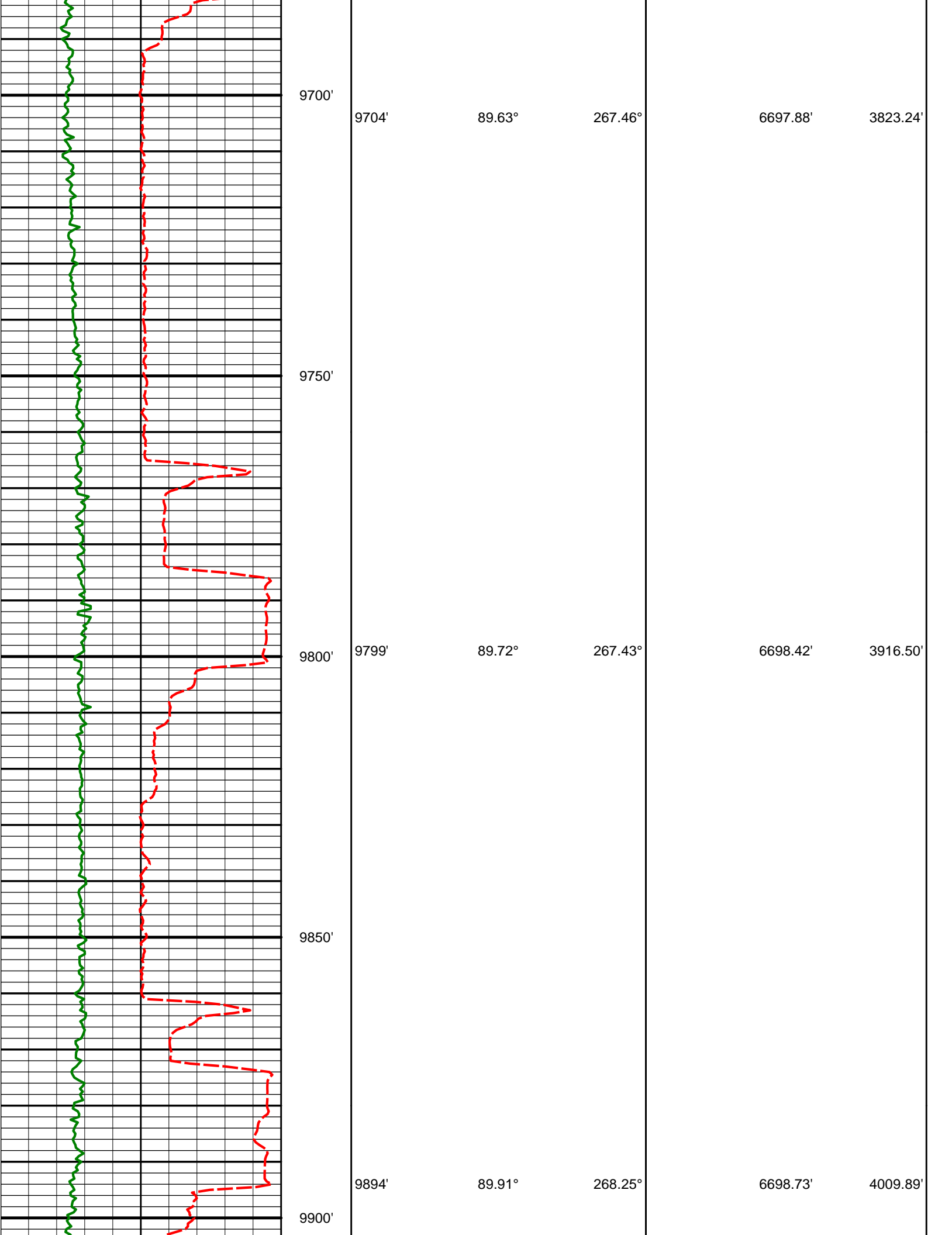
90.00°

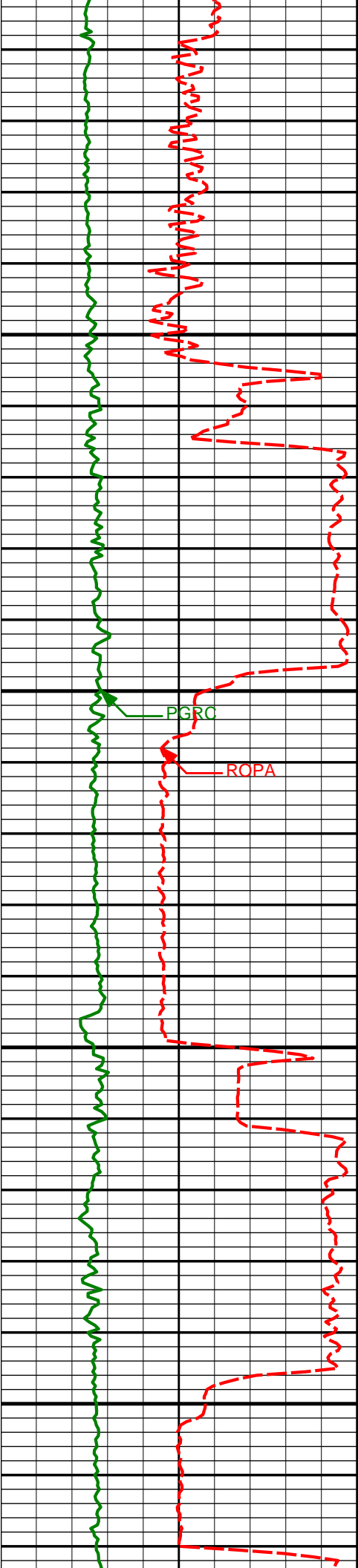
268.45°

6697.57'

3729.81'

9650'





9950'

9989'

88.77°

268.92°

6699.82'

4103.49'

10000'

PGRC

ROPA

10050'

10084'

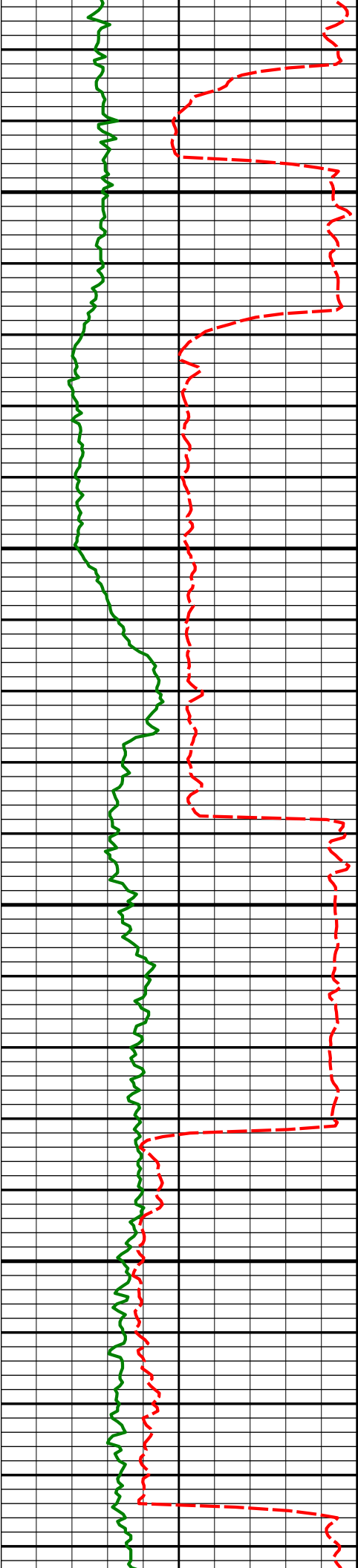
89.82°

271.07°

6700.99'

4197.46'

10100'



10150'

10178'

92.28°

273.03°

6699.27'

4290.85'

10200'

10250'

10273'

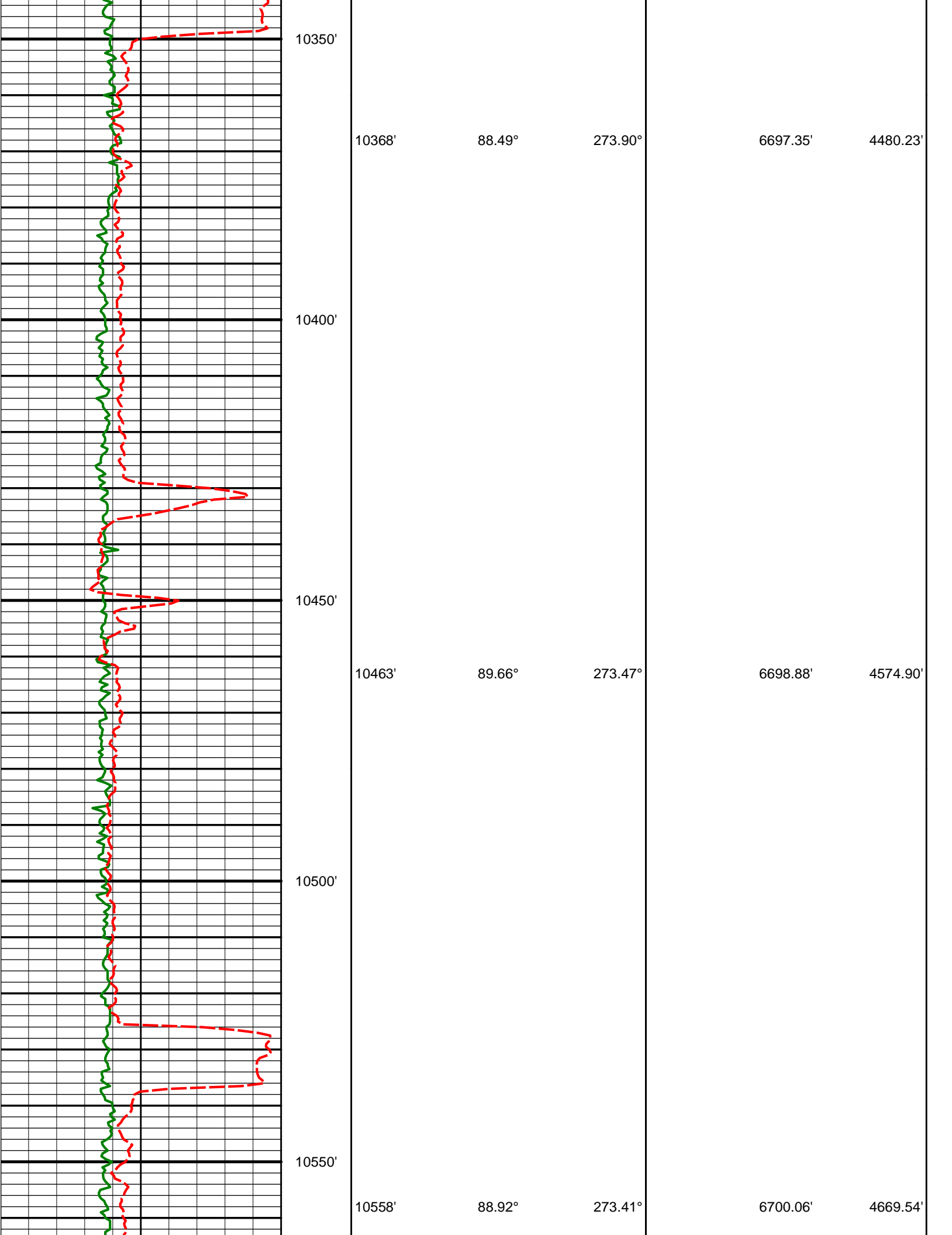
90.77°

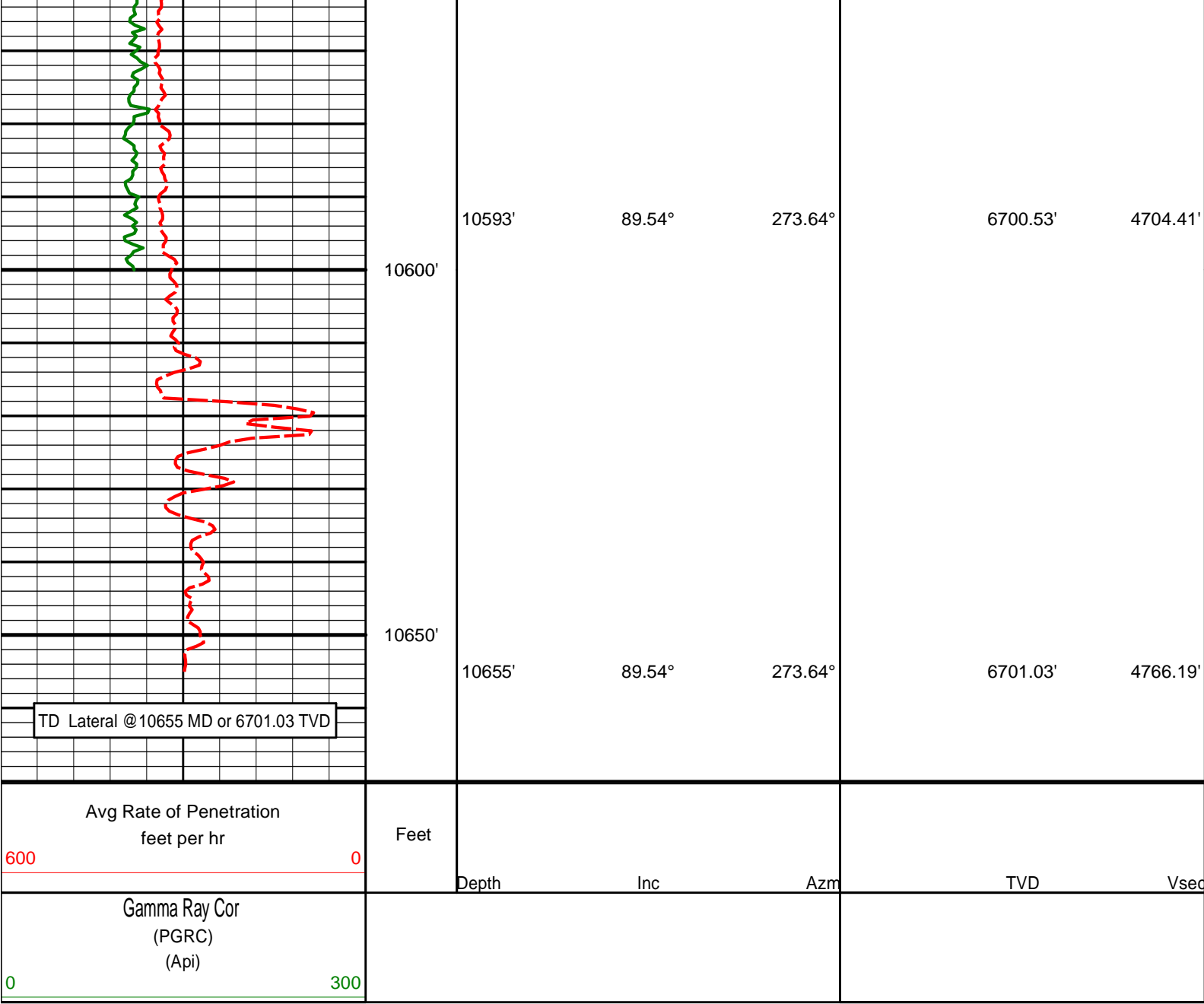
274.44°

6696.74'

4385.50'

10300'





HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Wells Ranch AA26-65HN
Wattenberg
Weld Colorado
USA
CA-XX-0900758833

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
250.00	0.50	92.70	250.00	0.05 S	1.09 E	-1.09	0.20
500.00	0.40	56.10	499.99	0.38 N	2.90 E	-2.82	0.12
750.00	0.30	129.80	749.99	0.45 N	4.13 E	-4.02	0.17
982.00	0.20	229.50	981.98	0.20 S	4.29 E	-4.27	0.17
1014.00	0.83	304.92	1013.98	0.10 S	4.06 E	-4.03	2.51
1107.00	1.58	302.44	1106.96	0.97 N	2.42 E	-2.25	0.81
1200.00	1.44	331.64	1199.93	2.69 N	0.79 E	-0.38	0.83
1293.00	4.30	315.82	1292.81	6.22 N	2.20 W	3.08	3.16
1386.00	7.77	312.57	1385.28	12.97 N	9.26 W	11.06	3.75

1479.00	11.16	316.31	1477.00	23.73 N	20.11 W	23.36	3.70
1575.00	11.71	321.01	1571.09	38.02 N	32.66 W	37.86	1.13
1670.00	12.22	323.51	1664.03	53.60 N	44.70 W	52.05	0.77
1764.00	11.29	322.46	1756.06	68.90 N	56.23 W	65.69	1.02
1859.00	10.11	323.03	1849.40	82.93 N	66.91 W	78.31	1.25
1953.00	11.36	314.05	1941.76	95.96 N	78.52 W	91.70	2.22
2048.00	10.62	313.81	2035.02	108.53 N	91.57 W	106.44	0.78
2143.00	9.43	309.75	2128.57	119.56 N	103.87 W	120.22	1.46
2238.00	9.79	314.60	2222.24	130.21 N	115.60 W	133.38	0.93
2332.00	10.21	322.74	2314.82	142.45 N	126.34 W	145.79	1.57
2427.00	9.09	321.11	2408.47	155.00 N	136.15 W	157.33	1.21
2522.00	10.30	321.79	2502.11	167.51 N	146.11 W	169.02	1.28
2617.00	9.54	321.73	2595.69	180.37 N	156.24 W	180.91	0.80
2712.00	10.02	318.23	2689.31	192.71 N	166.62 W	192.99	0.80
2807.00	9.80	314.89	2782.89	204.58 N	177.86 W	205.83	0.65
2902.00	10.42	318.14	2876.42	216.69 N	189.32 W	218.94	0.89
2997.00	11.16	317.91	2969.74	229.91 N	201.21 W	232.64	0.78
3092.00	10.51	316.61	3063.04	243.03 N	213.33 W	246.54	0.73
3186.00	8.74	317.70	3155.72	254.54 N	224.02 W	258.80	1.89
3281.00	8.83	317.10	3249.60	265.22 N	233.85 W	270.08	0.14
3376.00	8.18	314.17	3343.56	275.27 N	243.66 W	281.25	0.82
3471.00	8.31	315.36	3437.58	284.86 N	253.33 W	292.22	0.23
3565.00	8.79	324.19	3530.54	295.52 N	262.30 W	302.66	1.49
3660.00	9.52	321.90	3624.33	307.59 N	271.40 W	313.42	0.86
3755.00	11.09	321.83	3717.79	320.96 N	281.89 W	325.76	1.65
3850.00	12.08	320.02	3810.85	335.76 N	293.93 W	339.82	1.11
3945.00	11.75	317.26	3903.81	350.48 N	306.88 W	354.79	0.69
4039.00	10.03	316.20	3996.11	363.42 N	319.04 W	368.71	1.84
4134.00	9.81	322.31	4089.69	375.79 N	329.72 W	381.08	1.13
4229.00	8.79	322.28	4183.44	387.94 N	339.10 W	392.14	1.07
4324.00	7.70	319.89	4277.46	398.55 N	347.65 W	402.14	1.20
4419.00	8.17	319.99	4371.55	408.59 N	356.09 W	411.95	0.49
4513.00	8.03	318.13	4464.61	418.59 N	364.76 W	422.00	0.32
4608.00	8.90	319.15	4558.58	429.09 N	374.00 W	432.67	0.93
4703.00	9.17	315.11	4652.40	440.01 N	384.15 W	444.30	0.73
4798.00	9.78	315.58	4746.10	451.14 N	395.14 W	456.80	0.65
4893.00	7.58	315.96	4840.01	461.41 N	405.14 W	468.20	2.32
4988.00	8.33	316.40	4934.09	470.90 N	414.24 W	478.59	0.79
5083.00	9.66	320.55	5027.92	482.03 N	424.05 W	489.92	1.56
5178.00	9.90	320.11	5121.54	494.45 N	434.36 W	501.93	0.26
5273.00	8.21	316.76	5215.36	505.66 N	444.24 W	513.34	1.86
5368.00	8.43	327.49	5309.36	516.48 N	452.63 W	523.22	1.65
5463.00	7.83	324.15	5403.41	527.60 N	460.16 W	532.30	0.80
5558.00	8.10	325.10	5497.49	538.33 N	467.78 W	541.40	0.32
5653.00	9.55	326.83	5591.37	550.42 N	475.92 W	551.22	1.55
5748.00	7.53	327.72	5685.31	562.28 N	483.56 W	560.51	2.13
5843.00	7.37	331.20	5779.51	572.88 N	489.82 W	568.25	0.50
5938.00	7.11	326.81	5873.75	583.14 N	495.97 W	575.84	0.64
6050.00	9.18	315.32	5984.62	595.29 N	506.05 W	587.59	2.34
6107.00	9.25	308.19	6040.89	601.36 N	512.85 W	595.20	2.01
6120.00	9.63	306.58	6053.71	602.65 N	514.54 W	597.06	3.56
6167.00	11.28	307.47	6099.93	607.79 N	521.35 W	604.55	3.53
6215.00	15.74	304.10	6146.59	614.30 N	530.47 W	614.52	9.43
6262.00	19.24	303.01	6191.41	622.10 N	542.25 W	627.31	7.48
6310.00	22.21	298.79	6236.30	630.78 N	556.84 W	643.01	6.92
6357.00	25.45	294.17	6279.29	639.19 N	573.84 W	661.06	7.95
6404.00	30.56	290.58	6320.78	647.53 N	594.25 W	682.47	11.44
6451.00	35.13	288.73	6360.26	656.08 N	618.26 W	707.47	9.95
6499.00	38.74	291.46	6398.62	666.01 N	645.33 W	735.70	8.26
6546.00	43.02	295.62	6434.15	678.33 N	673.49 W	765.36	10.79
6594.00	46.55	297.55	6468.22	693.48 N	703.71 W	797.47	7.88
6641.00	50.90	296.09	6499.22	709.40 N	735.23 W	830.98	9.54
6689.00	55.61	292.79	6527.93	725.27 N	770.24 W	867.93	11.25
6736.00	60.56	288.38	6552.78	739.25 N	807.58 W	906.91	13.20
6784.00	63.96	283.77	6575.13	750.98 N	848.39 W	948.99	11.06
6831.00	66.55	280.77	6594.80	760.04 N	890.09 W	991.57	8.00
6879.00	69.73	276.94	6612.68	766.88 N	934.09 W	1036.10	9.94
6926.00	73.10	273.94	6627.66	771.09 N	978.43 W	1080.58	9.38
6974.00	77.40	271.79	6639.88	773.40 N	1024.78 W	1126.76	9.95
7011.00	80.47	271.51	6646.98	774.45 N	1061.07 W	1162.82	8.33

7143.00	87.87	269.24	6660.38	775.29 N	1192.29 W	1292.75	5.86
7237.00	90.83	269.23	6661.44	774.03 N	1286.26 W	1385.53	3.15
7332.00	89.57	269.69	6661.11	773.14 N	1381.25 W	1479.38	1.41
7427.00	90.40	271.68	6661.14	774.27 N	1476.24 W	1573.51	2.27
7522.00	88.18	272.46	6662.31	777.70 N	1571.17 W	1667.92	2.48
7617.00	87.10	273.80	6666.23	782.89 N	1665.94 W	1762.43	1.81
7712.00	89.44	274.04	6669.09	789.38 N	1760.67 W	1857.09	2.48
7807.00	87.66	272.30	6671.50	794.63 N	1855.48 W	1951.66	2.62
7902.00	85.80	269.68	6676.92	796.27 N	1950.30 W	2045.70	3.38
7997.00	87.60	267.52	6682.39	793.95 N	2045.11 W	2139.15	2.96
8091.00	90.28	267.15	6684.13	789.58 N	2138.98 W	2231.38	2.88
8186.00	91.36	267.42	6682.77	785.08 N	2233.86 W	2324.59	1.17
8281.00	91.51	268.46	6680.39	781.67 N	2328.77 W	2417.98	1.11
8376.00	91.26	270.04	6678.09	780.42 N	2423.73 W	2511.74	1.68
8470.00	90.31	272.16	6676.80	782.23 N	2517.70 W	2604.96	2.47
8565.00	89.48	271.58	6676.98	785.33 N	2612.65 W	2699.34	1.07
8660.00	87.66	271.11	6679.35	787.56 N	2707.59 W	2793.59	1.98
8755.00	86.95	269.39	6683.81	787.97 N	2802.48 W	2887.52	1.96
8850.00	90.06	269.80	6686.29	787.30 N	2897.43 W	2981.36	3.30
8945.00	87.94	268.74	6687.95	786.09 N	2992.40 W	3075.13	2.49
9040.00	88.15	268.52	6691.19	783.82 N	3087.32 W	3168.70	0.32
9134.00	90.74	269.33	6692.10	782.06 N	3181.29 W	3261.41	2.89
9230.00	88.09	268.55	6693.08	780.28 N	3277.26 W	3356.09	2.88
9324.00	90.65	269.81	6694.12	778.94 N	3371.23 W	3448.86	3.04
9419.00	88.33	268.66	6694.96	777.67 N	3466.21 W	3542.63	2.73
9514.00	89.26	268.56	6696.96	775.36 N	3561.16 W	3636.23	0.98
9609.00	90.00	268.45	6697.57	772.89 N	3656.13 W	3729.81	0.79
9704.00	89.63	267.46	6697.88	769.50 N	3751.07 W	3823.24	1.11
9799.00	89.72	267.43	6698.42	765.26 N	3845.97 W	3916.50	0.10
9894.00	89.91	268.25	6698.73	761.68 N	3940.90 W	4009.89	0.89
9989.00	88.77	268.92	6699.82	759.33 N	4035.86 W	4103.49	1.39
10084.00	89.82	271.07	6700.99	759.33 N	4130.85 W	4197.46	2.52
10178.00	92.28	273.03	6699.27	762.69 N	4224.76 W	4290.85	3.35
10273.00	90.77	274.44	6696.74	768.87 N	4319.52 W	4385.50	2.17
10368.00	88.49	273.90	6697.35	775.78 N	4414.26 W	4480.23	2.47
10463.00	89.66	273.47	6698.88	781.89 N	4509.05 W	4574.90	1.31
10558.00	88.92	273.41	6700.06	787.59 N	4603.87 W	4669.54	0.78
10593.00	89.54	273.64	6700.53	789.74 N	4638.80 W	4704.41	1.89
10655.00	89.54	273.64	6701.03	793.67 N	4700.67 W	4766.19	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 278.40 DEGREES (GRID)
A TOTAL CORRECTION OF 7.68 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 10655.00 FEET
IS 4767.21 FEET ALONG 279.58 DEGREES (GRID)**

Tie-In @ Surface

Surveys at 250 ft, 500 ft, 750 ft and 982 ft were taken and provided by HP 322 while they were drilling the surface hole.

Survey @ 10655 is a projection to the bit.