

Max Tool Temp (degF) / Source	145.90 / PCM	167.97 / PCM	188.10 / PCM	226.08 / 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	Osahon Igunbor	Osahon Igunbor	Osahon Igunbor	Robert Ley	
Customer Representative	Jeremy Stolz	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	11331930	11331930	11750423	11331930	
Insert Serial Number	11680106	11680106	12001055	11680106	
Date and Time Initialized	08-Nov-13 12:04	01-Jan-70 00:00	11-Nov-13 18:35	13-Nov-13 16:38	
Date and Time Read	11-Nov-13 20:25	11-Nov-13 20:19	14-Nov-13 01:04	15-Nov-13 23:31	
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	56.00	61.00	61.00	
Software Version	6.21	6.21	6.21	6.21	
Sub Serial Number	11331930	11331930	11750423	11331930	
Sonde Serial Number	12174582	12174582	11833221	12174582	
Sensor ID Number	N/A	N/A	N/A	N/A	
Toolface Offset (deg)	27.33	55.71	164.32	299.25	

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG	PCG	
Distance From Bit (ft)	51.71	49.41	54.40	53.82	
Recorded Sample Period (sec)	10	10	10	10	
Software Version	8.15	8.15	8.15	8.15	
Sub Serial Number	11331930	11331930	11750423	11331930	
Insert/Sonde Serial Number	12037396	12037396	12071301	12037396	

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

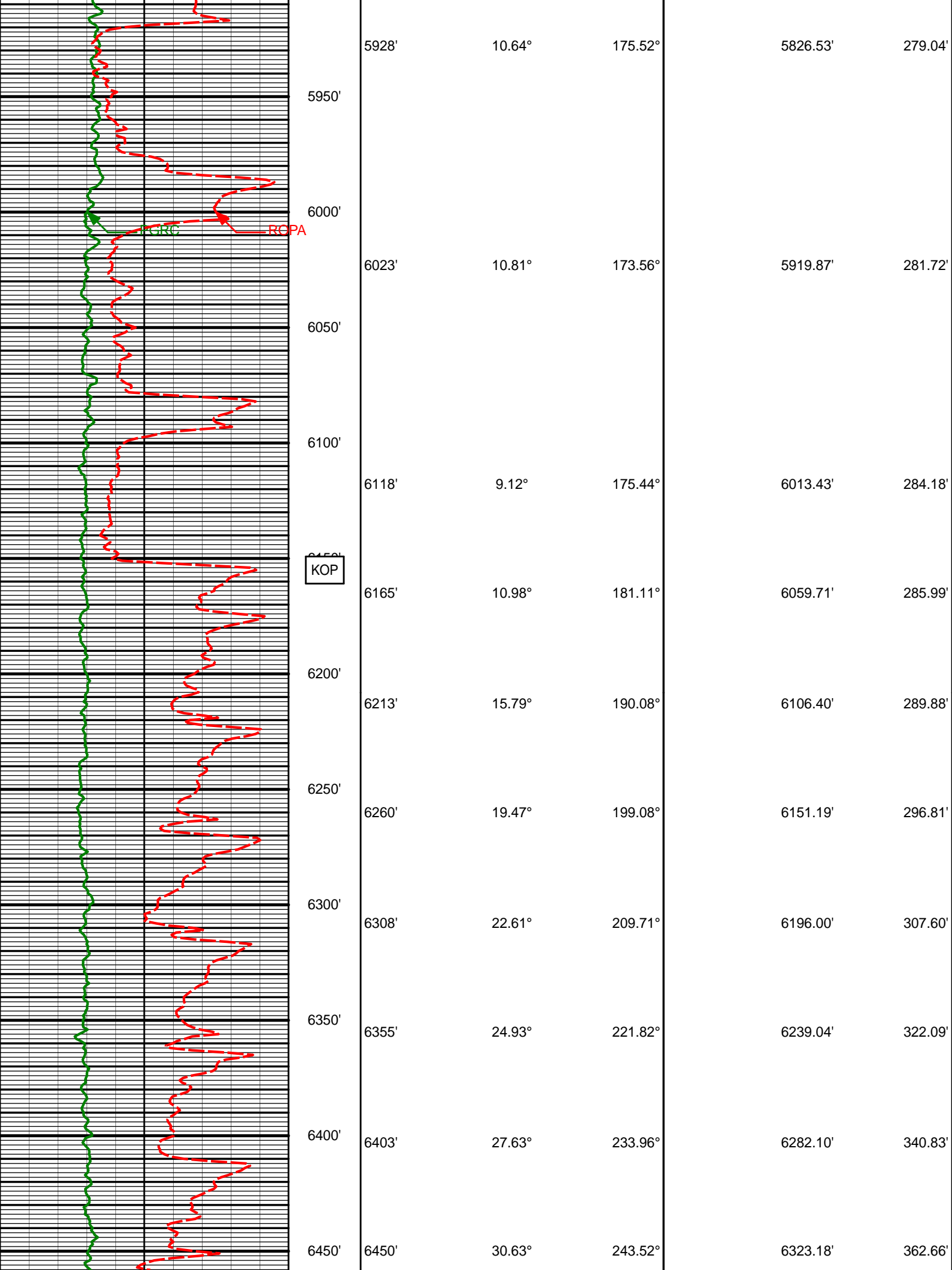
HALLIBURTON WILL USE ITS BEST EFFORTS TO FURNISH CUSTOMERS WITH ACCURATE INFORMATION AND INTERPRETATIONS

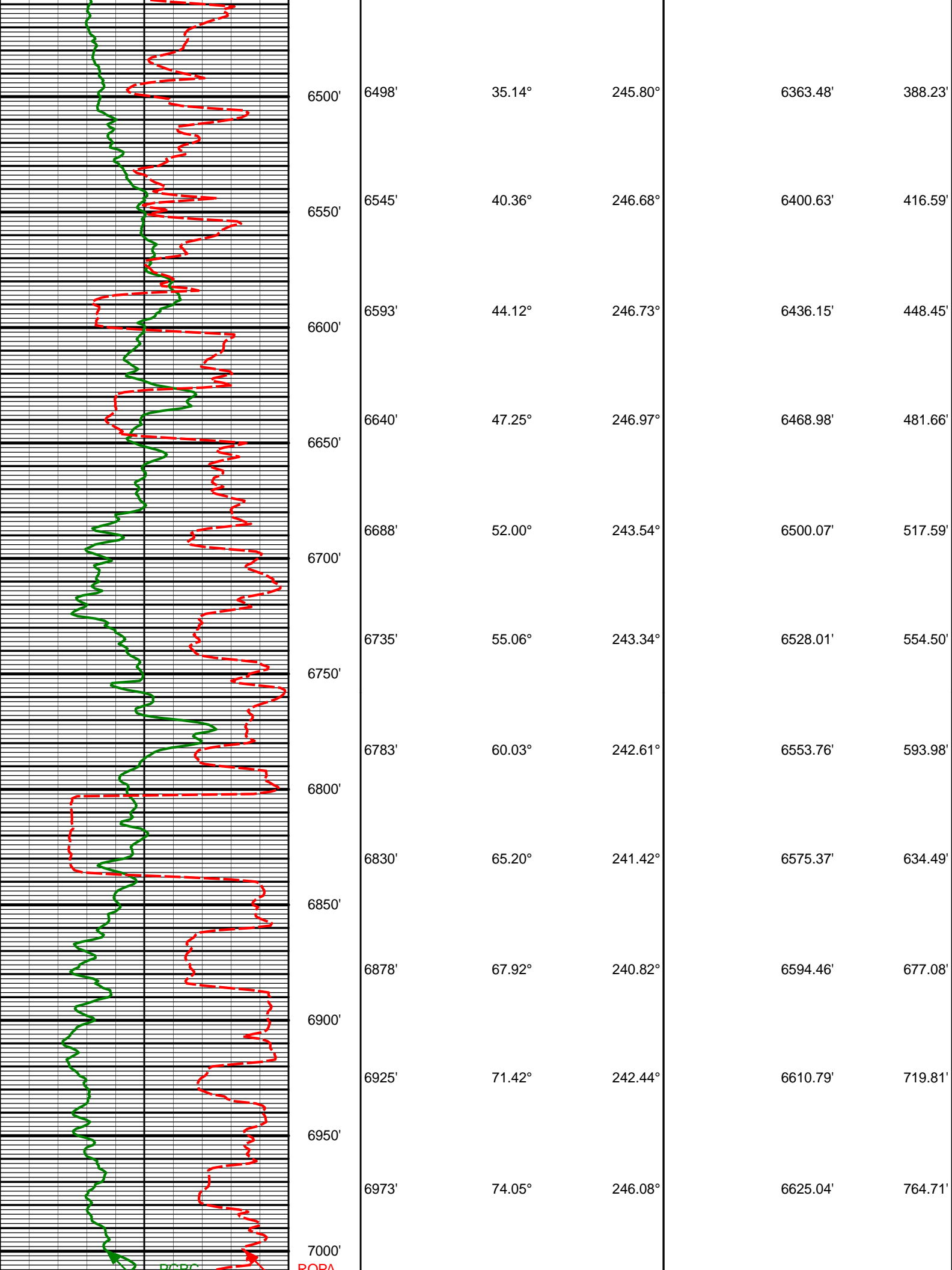
THAT ARE PART OF, AND INCIDENT TO, THE SERVICES PROVIDED. HOWEVER, HALLIBURTON CANNOT AND DOES NOT WARRANT THE ACCURACY OR CORRECTNESS OF SUCH INFORMATION AND INTERPRETATIONS. UNDER NO CIRCUMSTANCES SHOULD ANY SUCH INFORMATION OR INTERPRETATION BE RELIED UPON AS THE SOLE BASIS FOR ANY DRILLING, COMPLETION,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

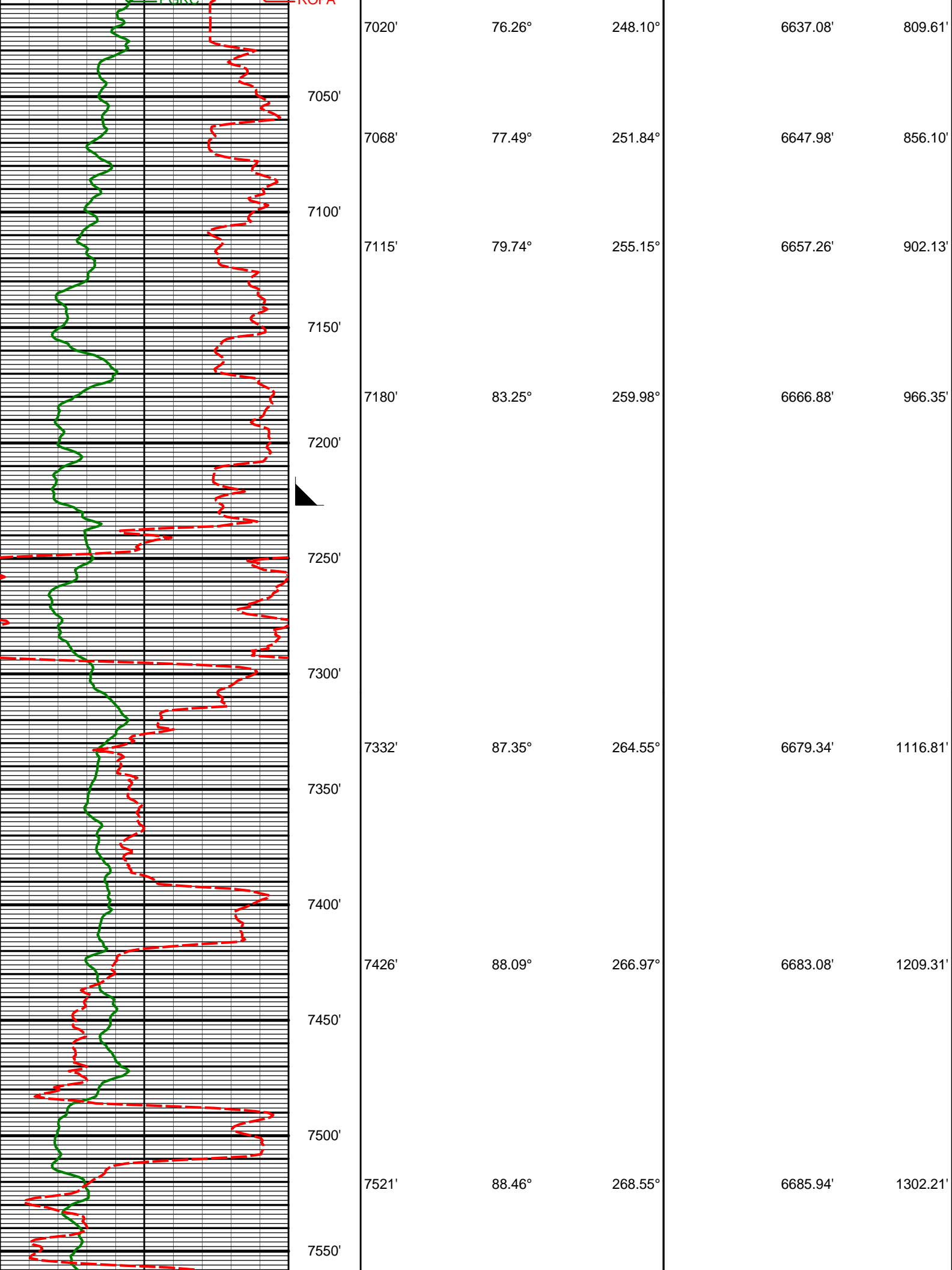
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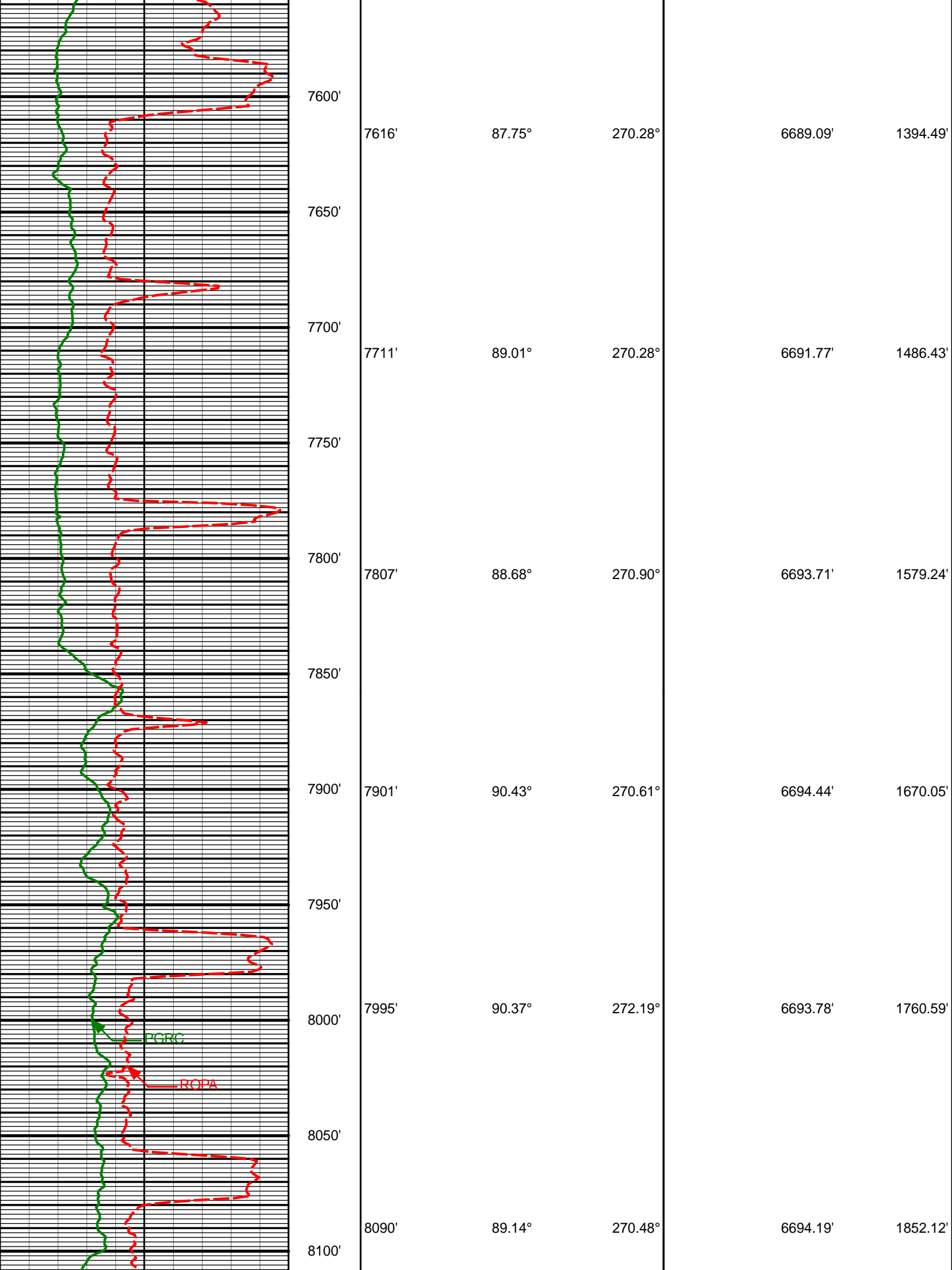
TVD Detail Log 1:600

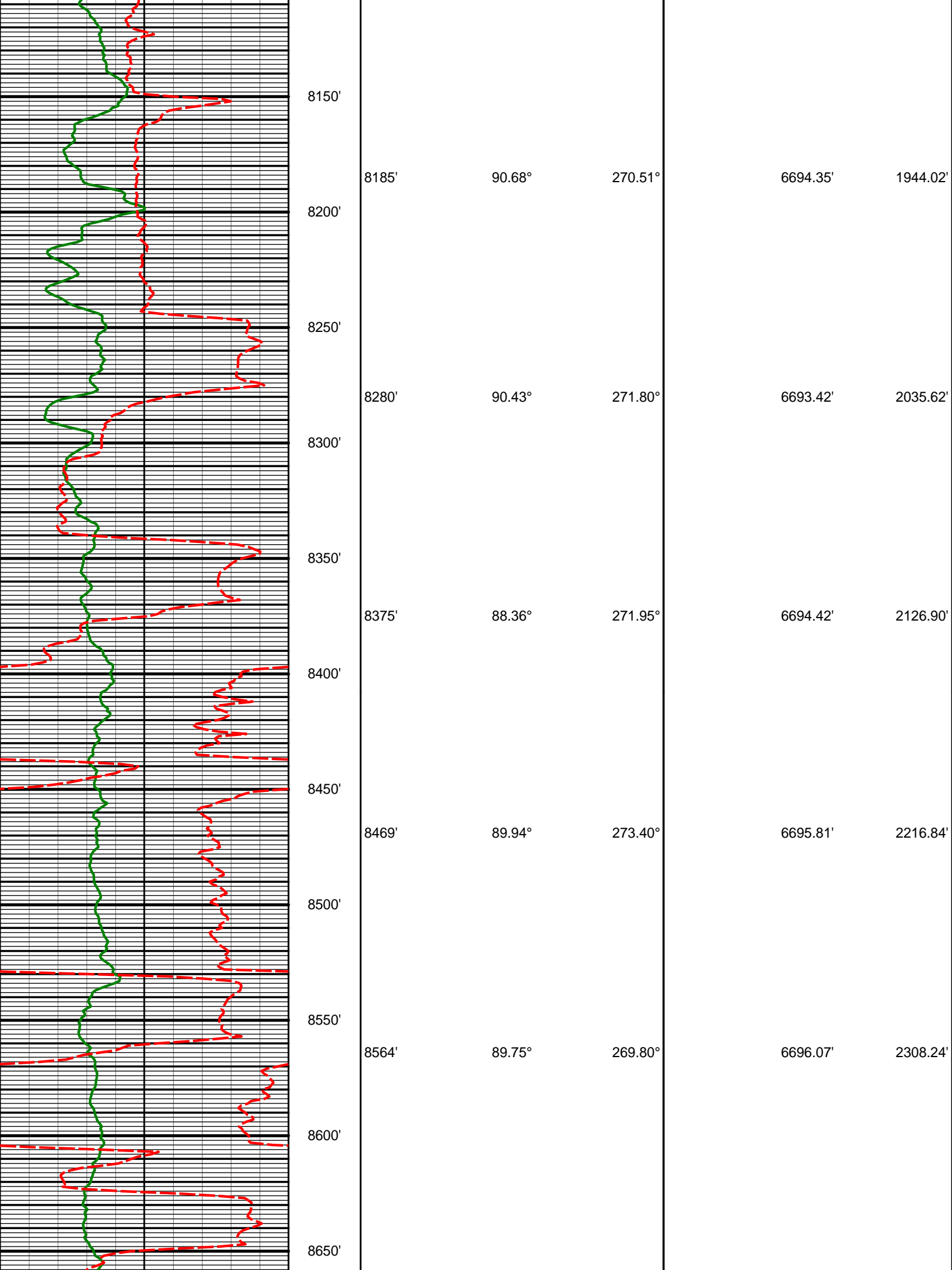
Gamma Ray (PGXC) (Api)								
0 300								
Avg Rate of Penetration feet per hr		Feet						
600 0			Depth	Inc	Azm	TVD	Vsec	
			5650'	5651'	5.49°	174.76°	5552.64'	268.58'
			5700'	Run 200				
			5750'	5738'	8.46°	177.13°	5638.99'	270.48'
			5800'					
			5850'	5833'	8.93°	188.58°	5732.90'	274.71'
	5900'							

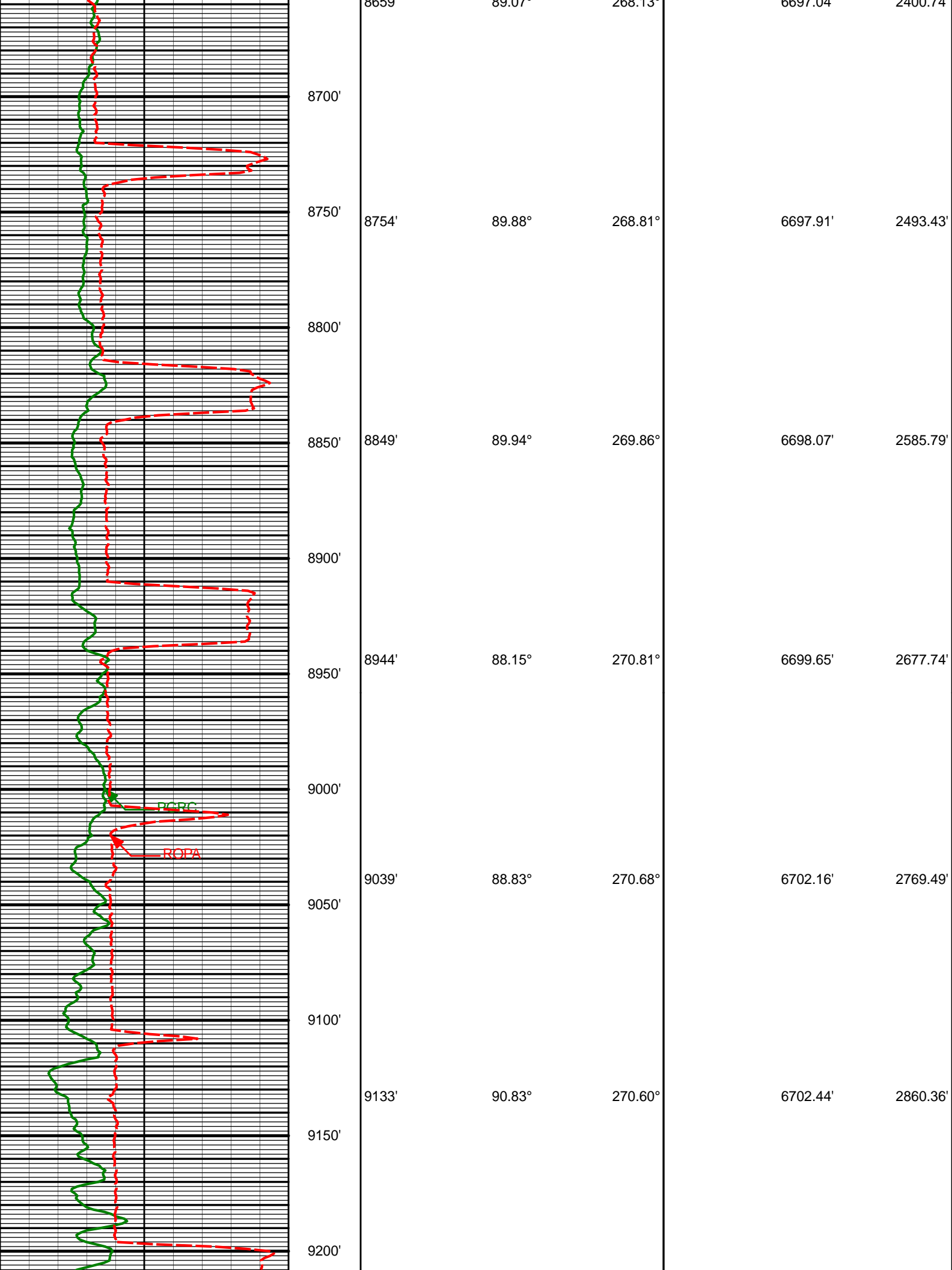


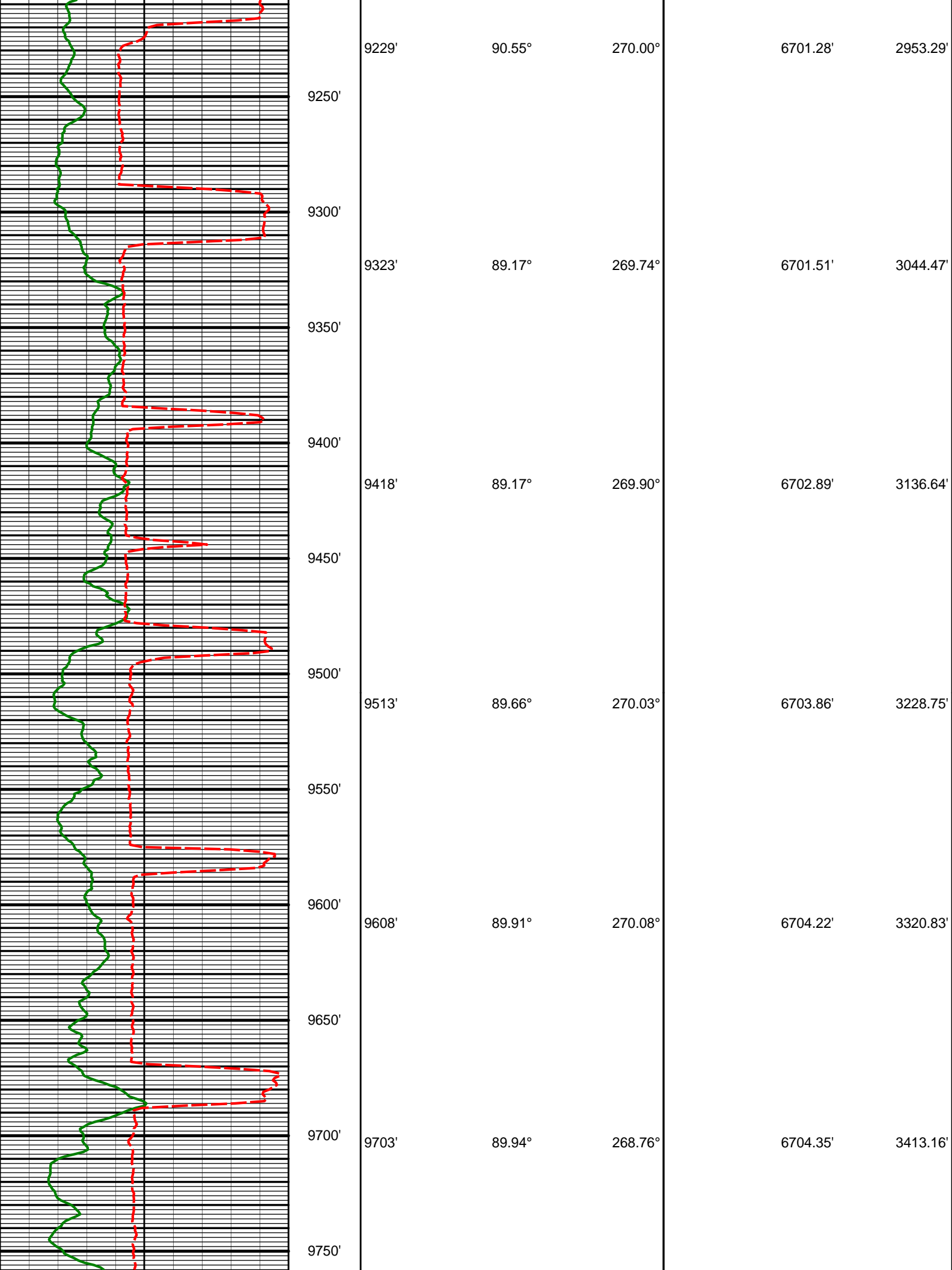


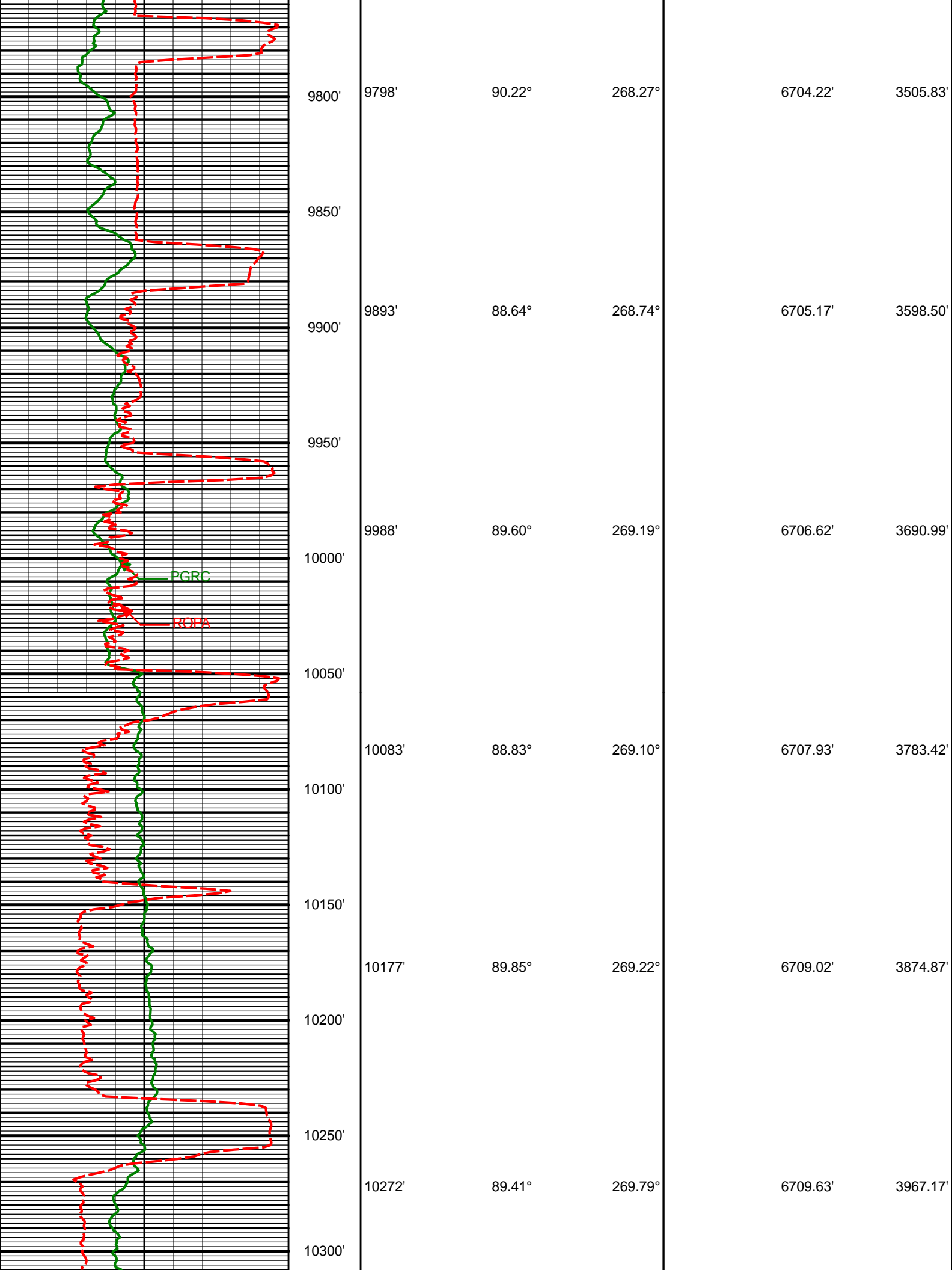


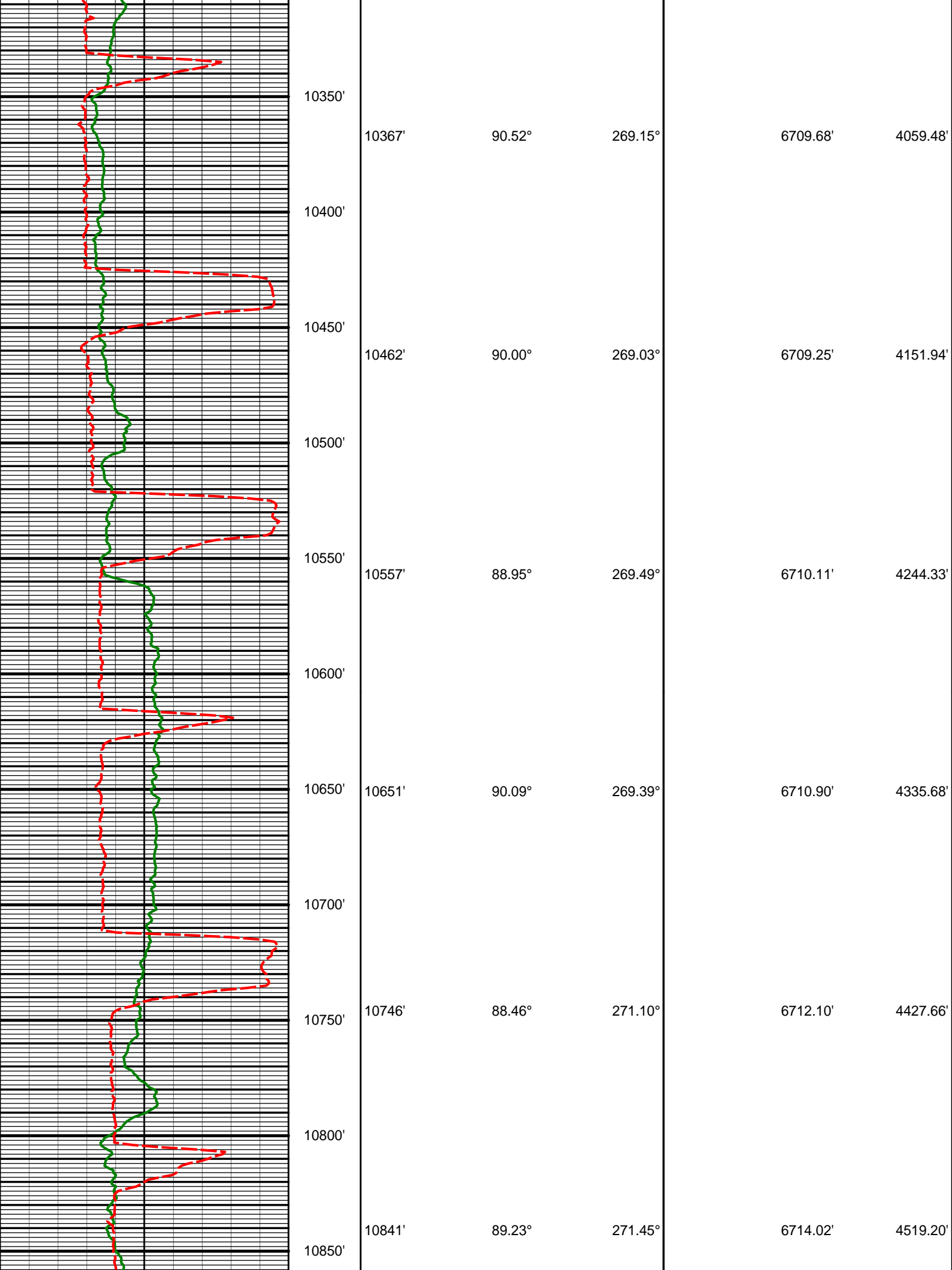


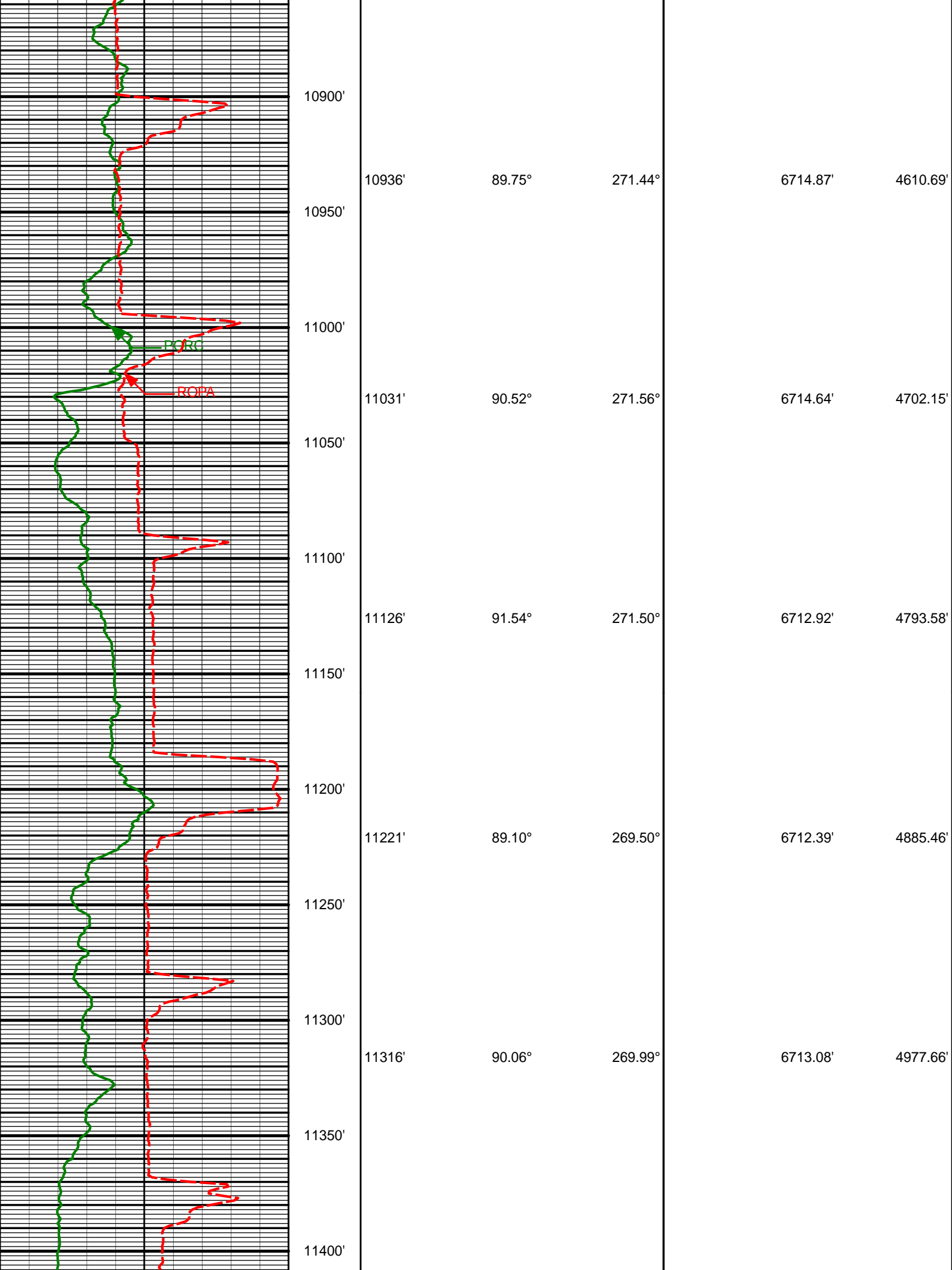


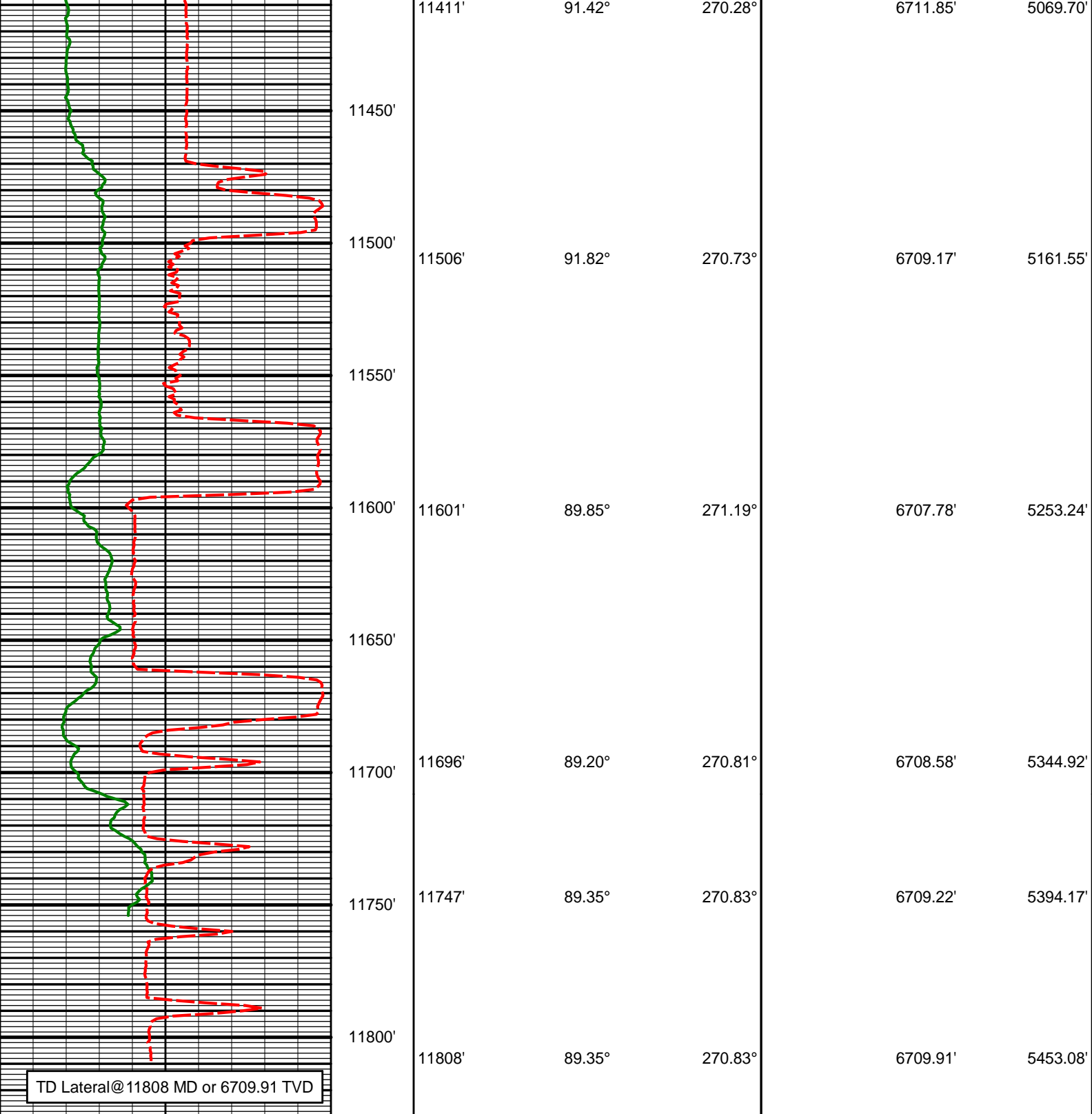






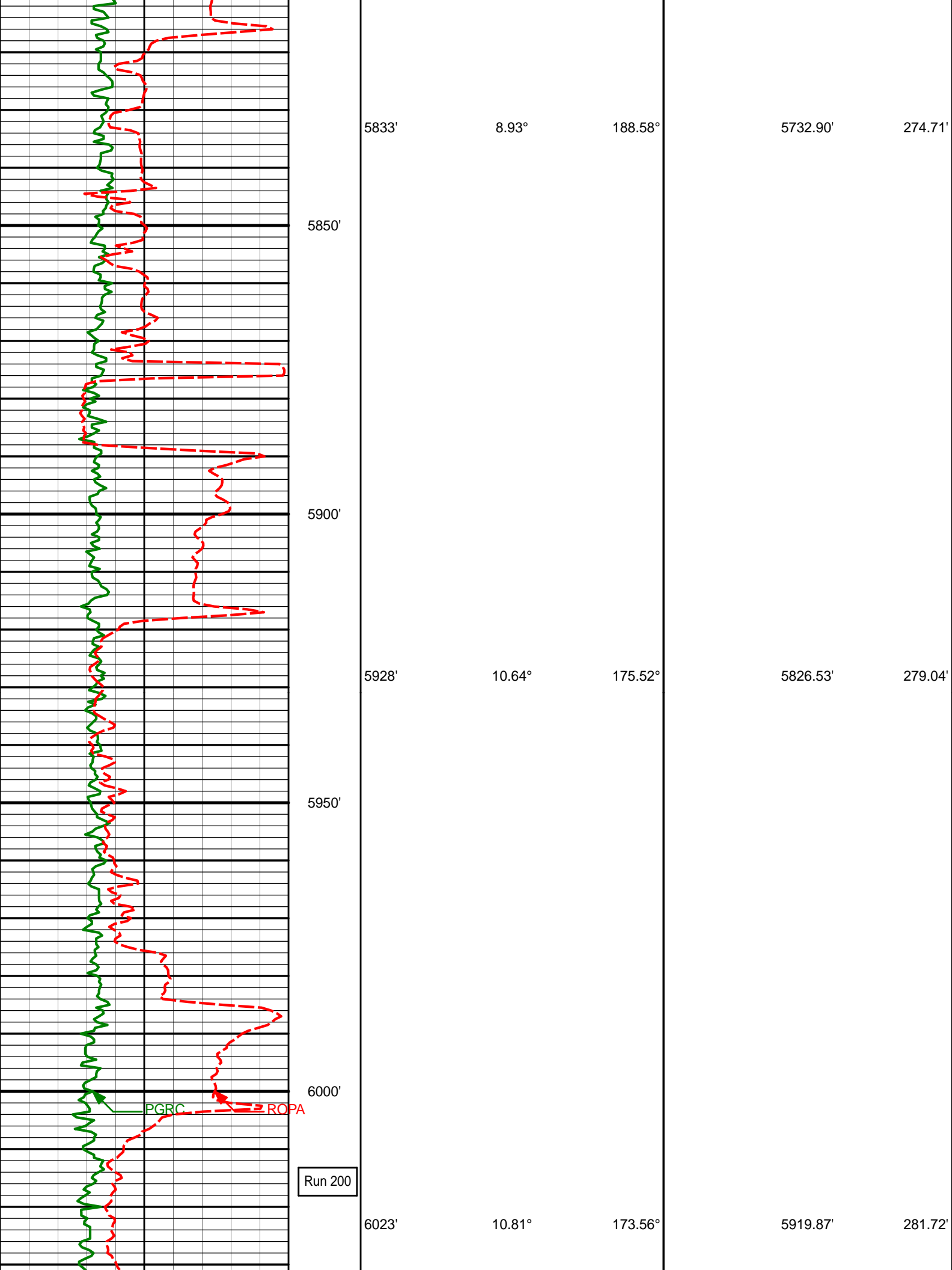




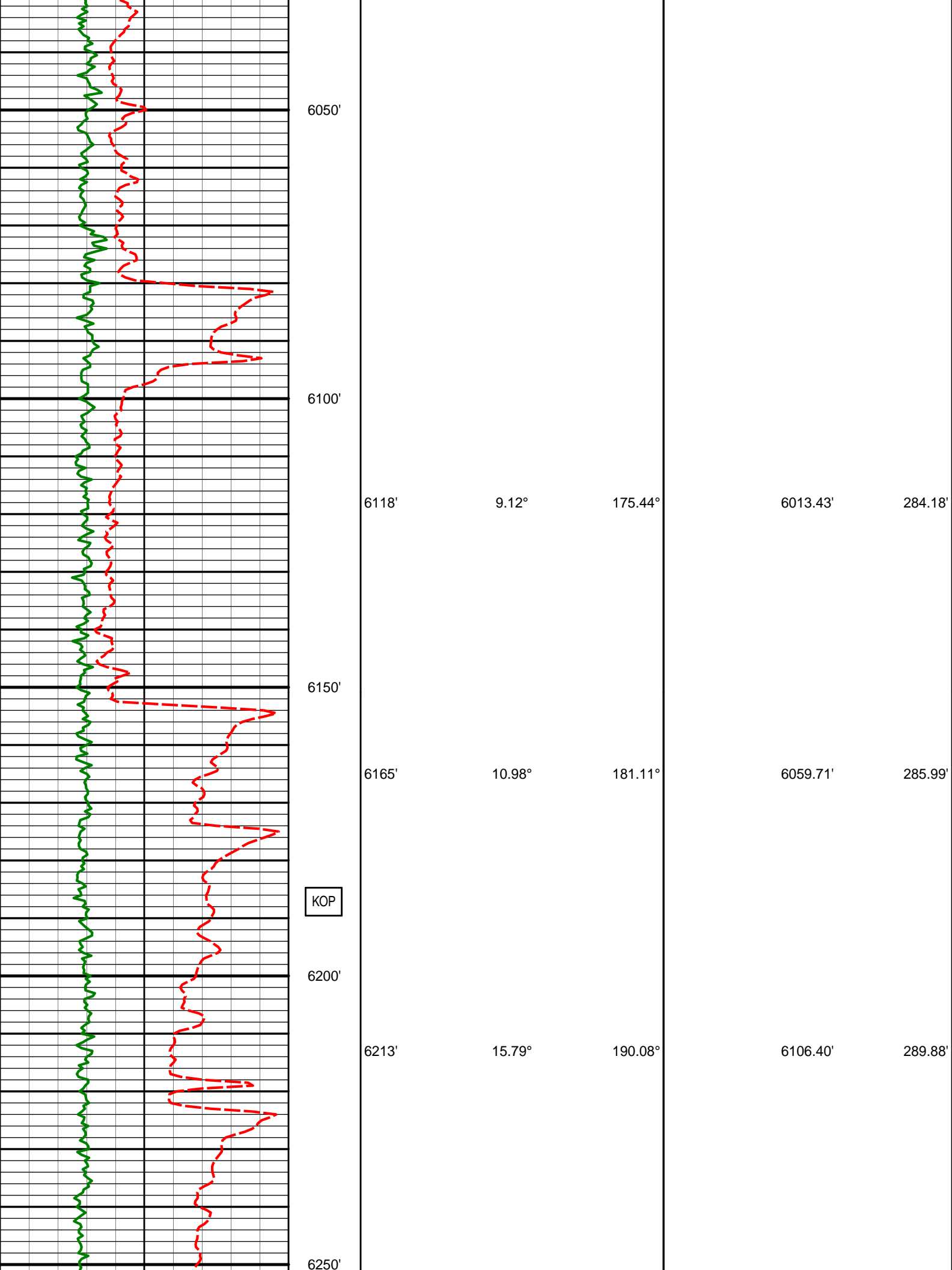


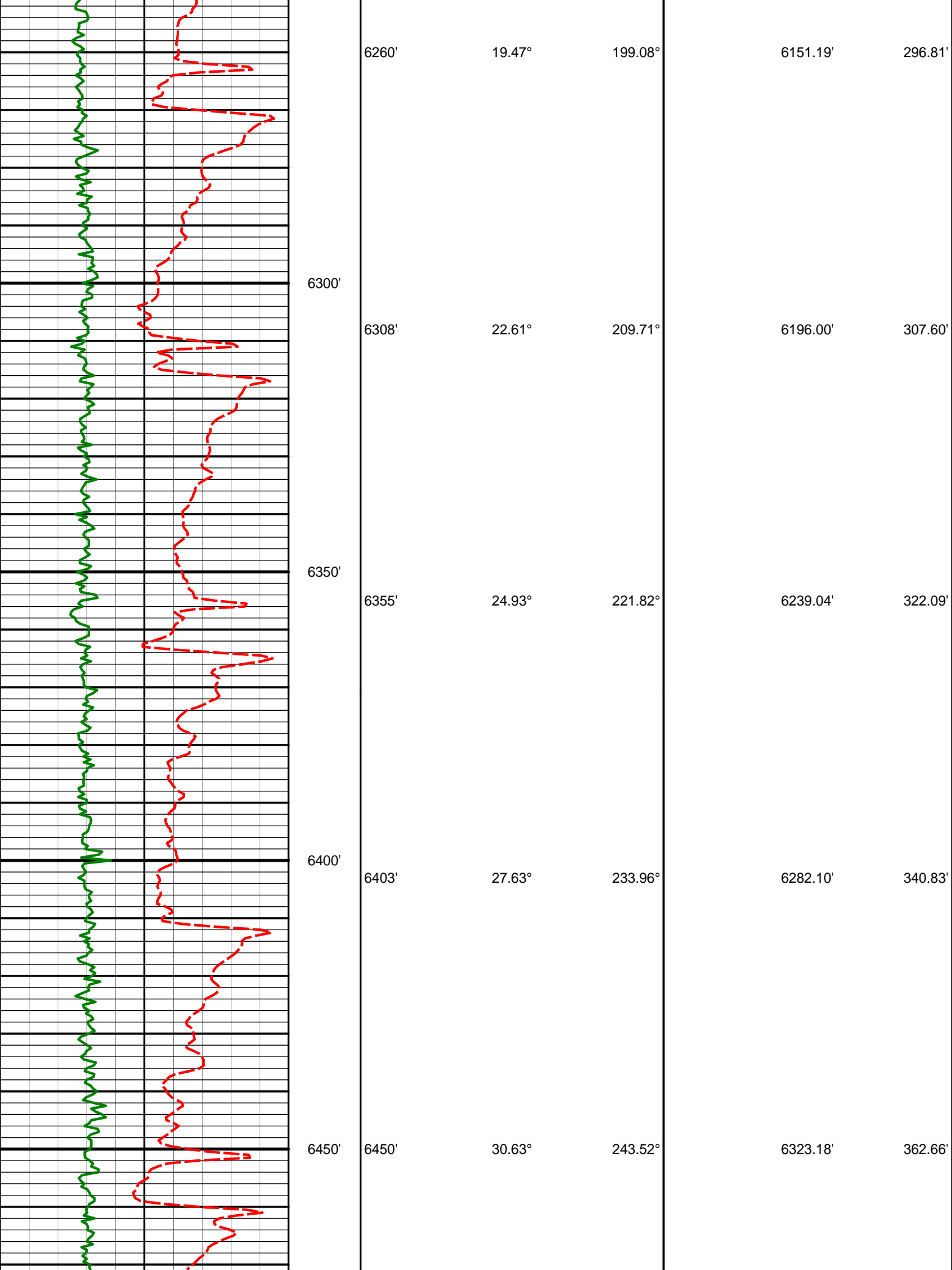
<p>Avg Rate of Penetration feet per hr</p> <p>600 0</p>	<p>Feet</p>	<p>Depth</p>	<p>Inc</p>	<p>Azm</p>	<p>TVD</p>	<p>Vsec</p>
<p>Gamma Ray (PGXC) (Api)</p> <p>0 300</p>						

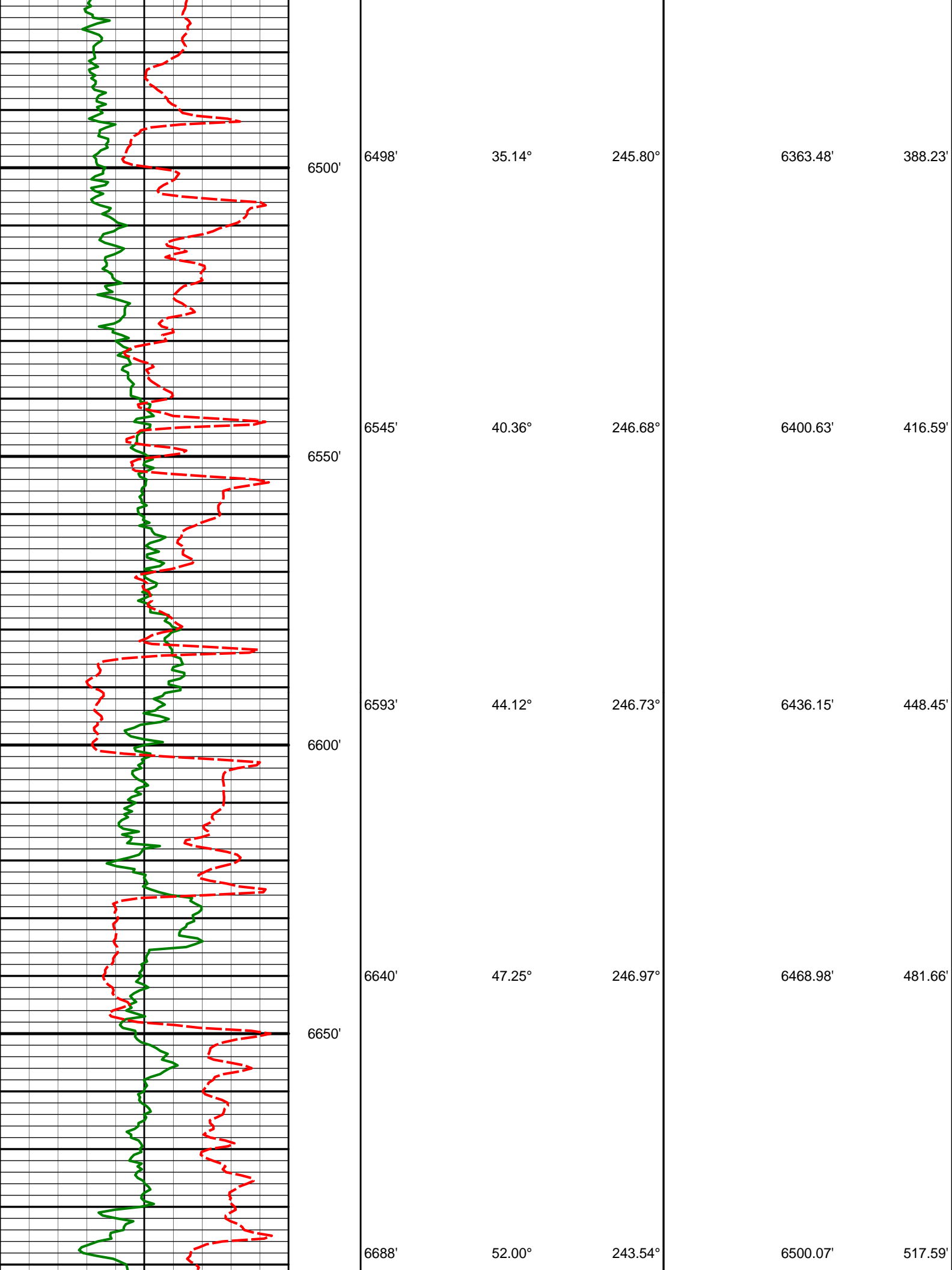
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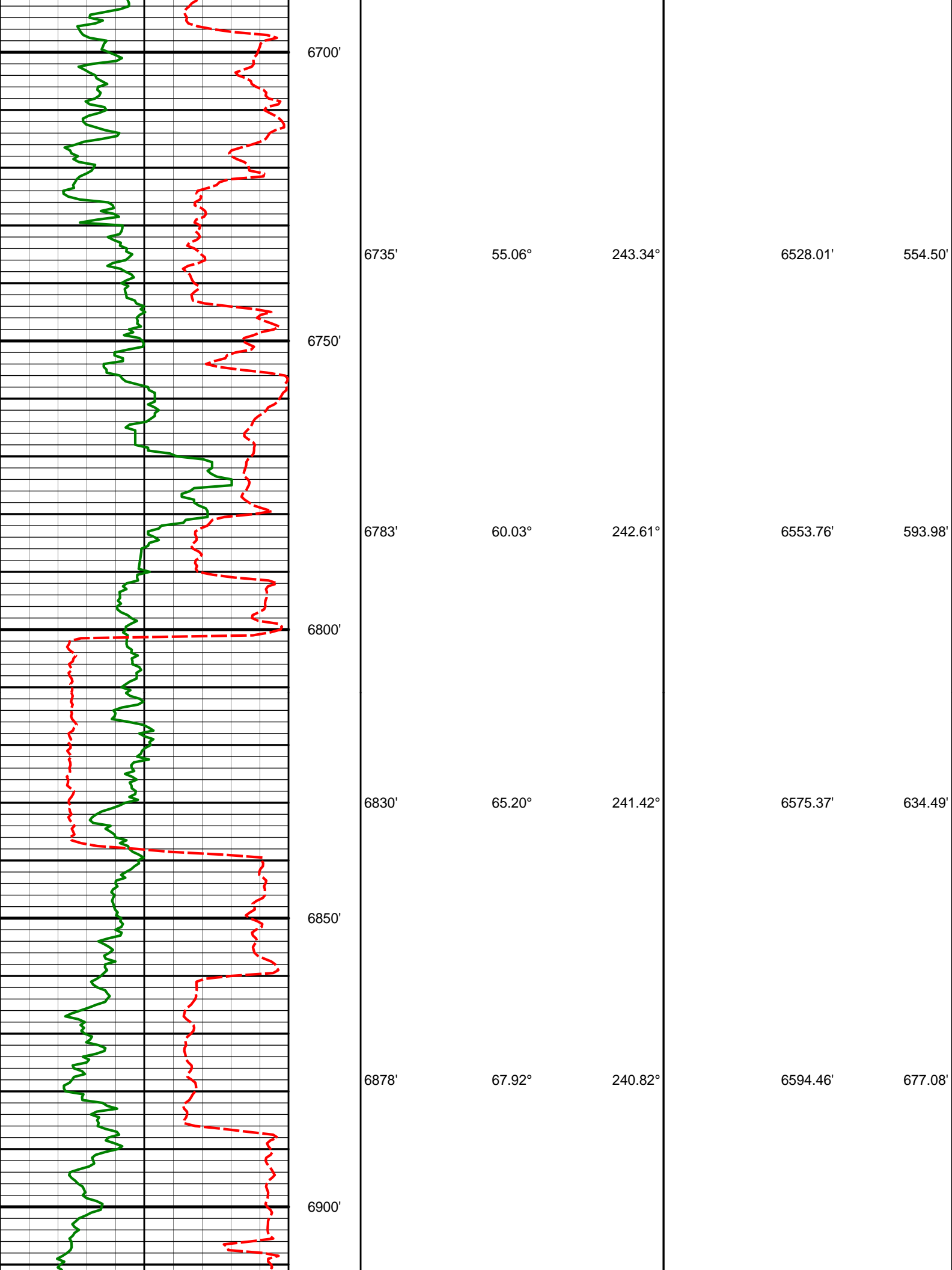


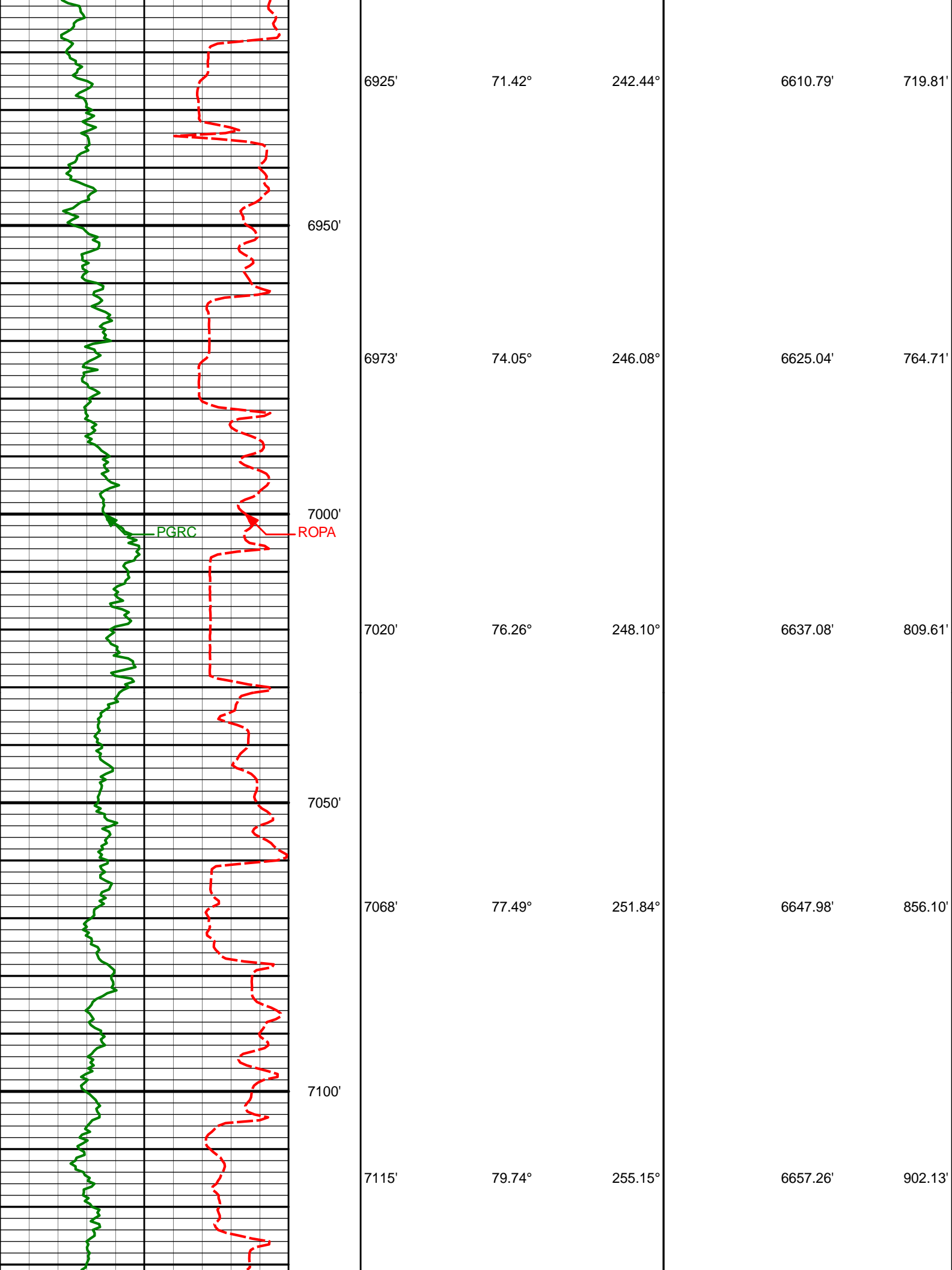
Run 200

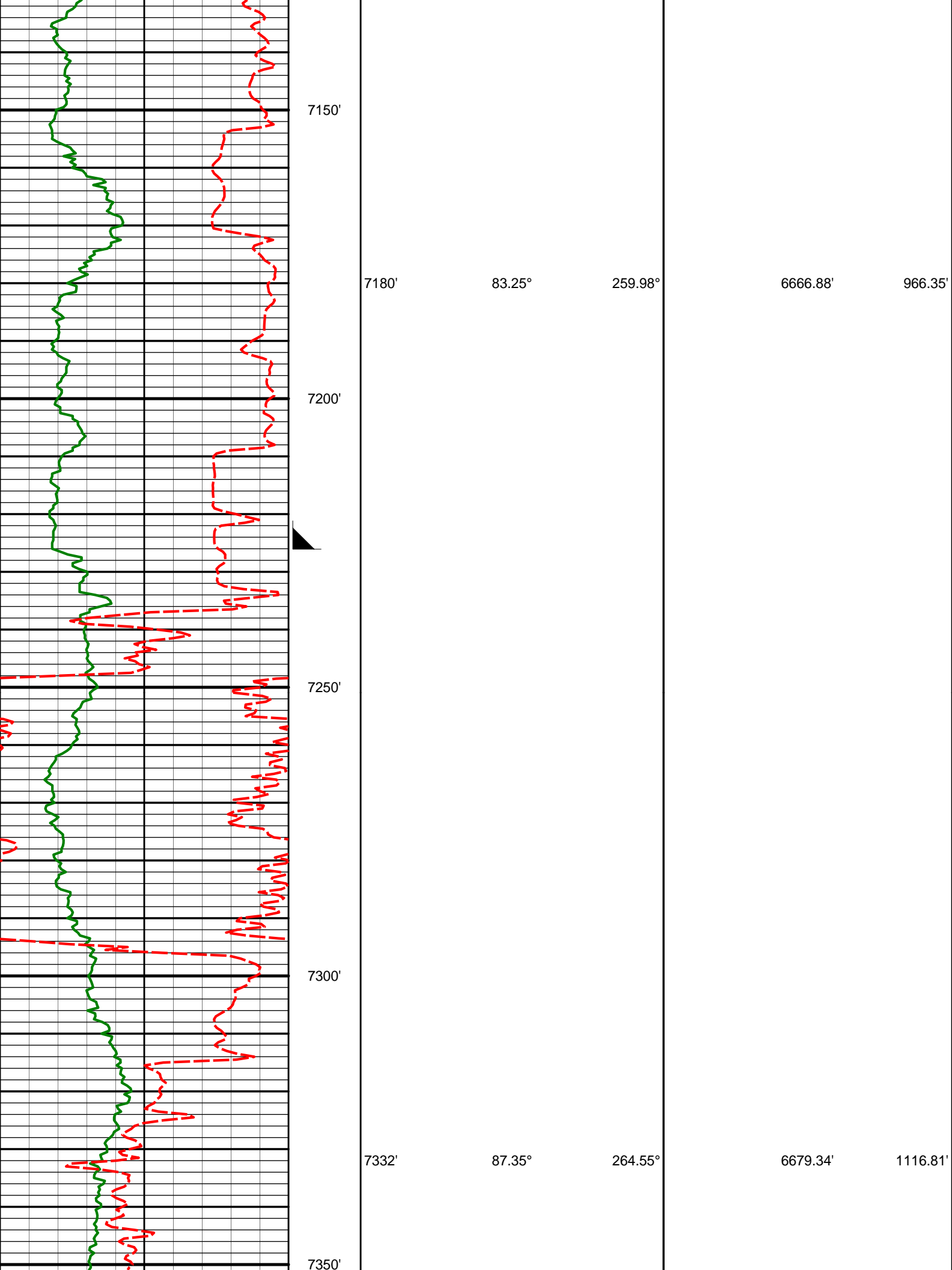


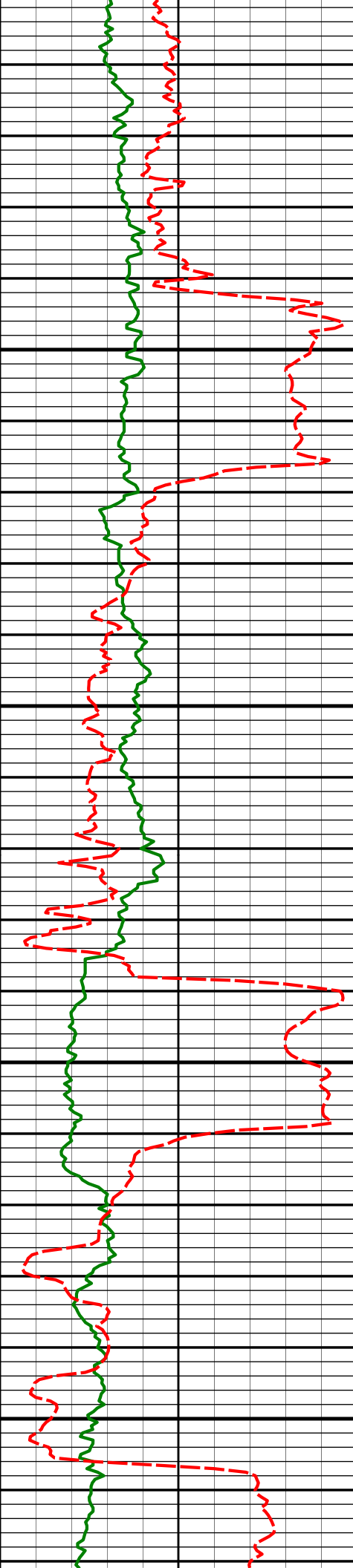












7400'

7426'

88.09°

266.97°

6683.08'

1209.31'

7450'

7500'

7521'

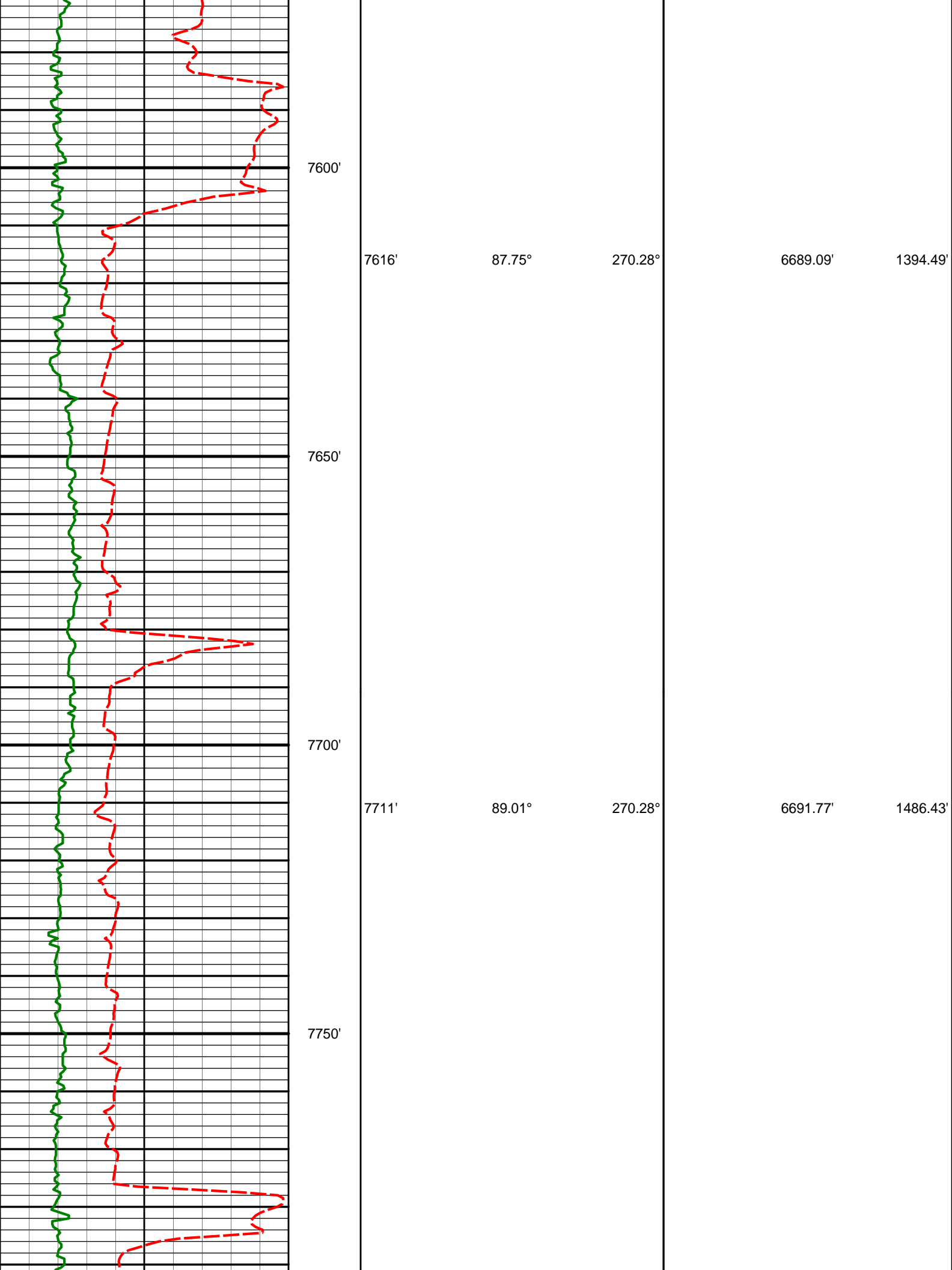
88.46°

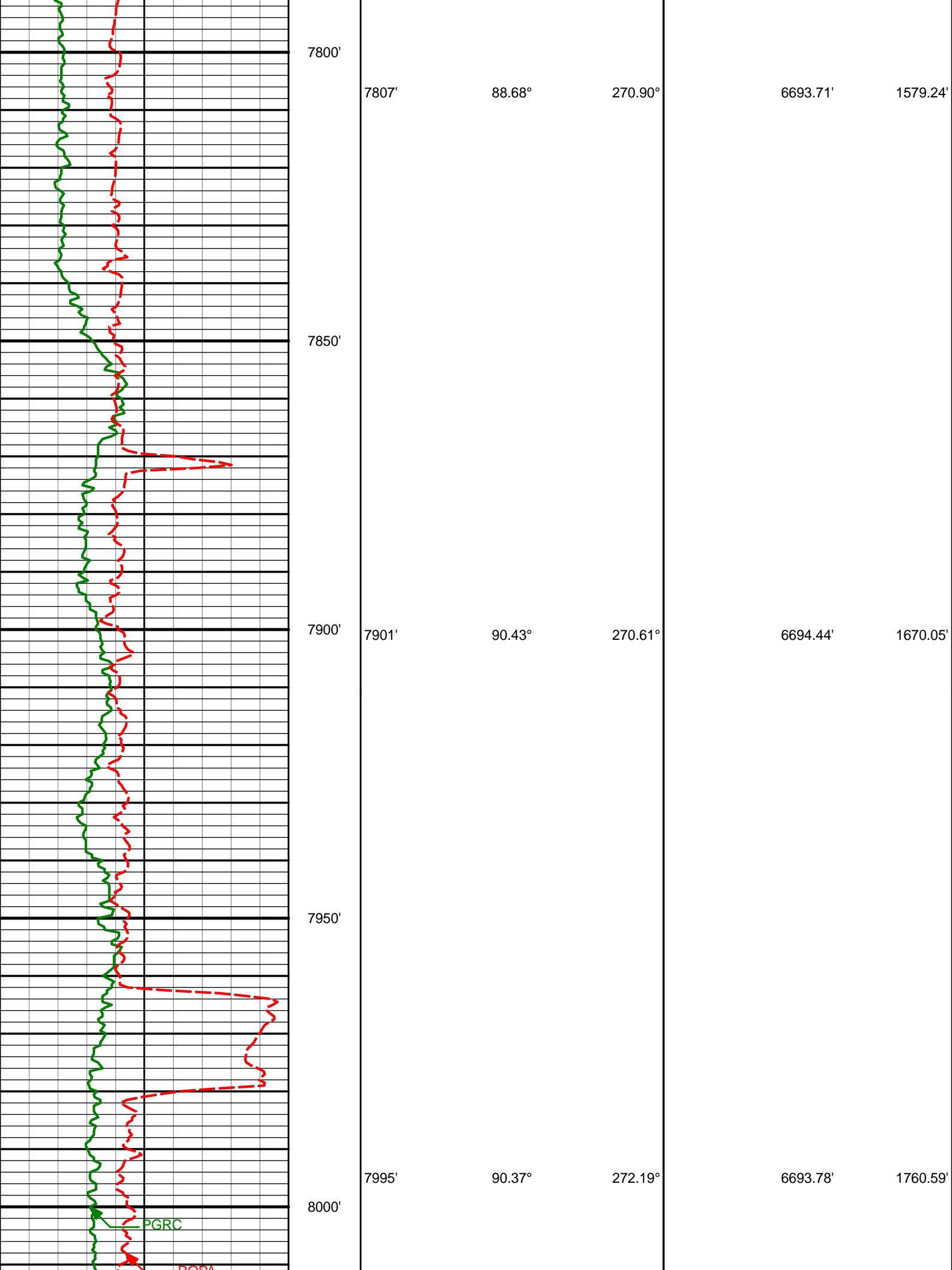
268.55°

6685.94'

1302.21'

7550'





7800'

7807'

88.68°

270.90°

6693.71'

1579.24'

7850'

7900'

7901'

90.43°

270.61°

6694.44'

1670.05'

7950'

8000'

7995'

90.37°

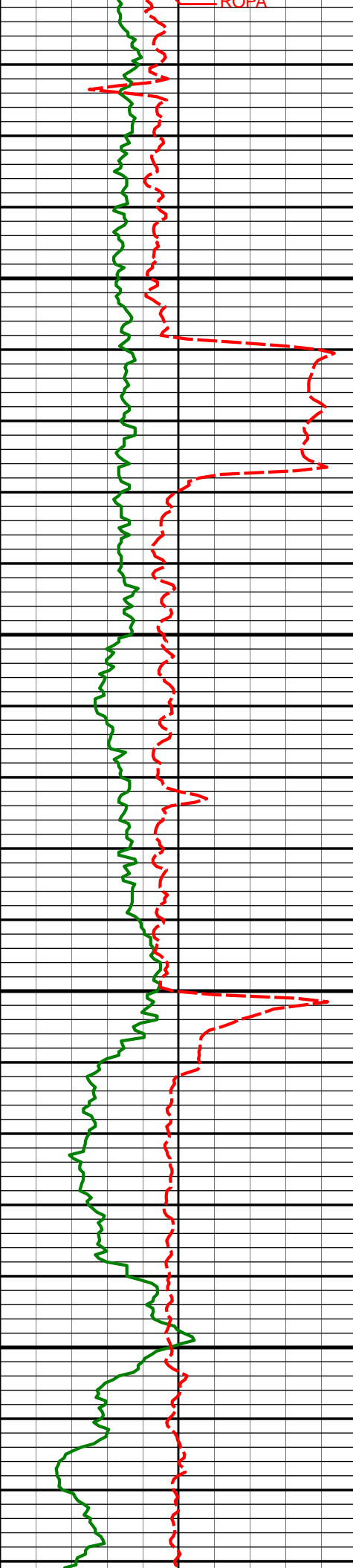
272.19°

6693.78'

1760.59'

PGRC

POPA



RUPA

8050'

8090'

89.14°

270.48°

6694.19'

1852.12'

8100'

8150'

8185'

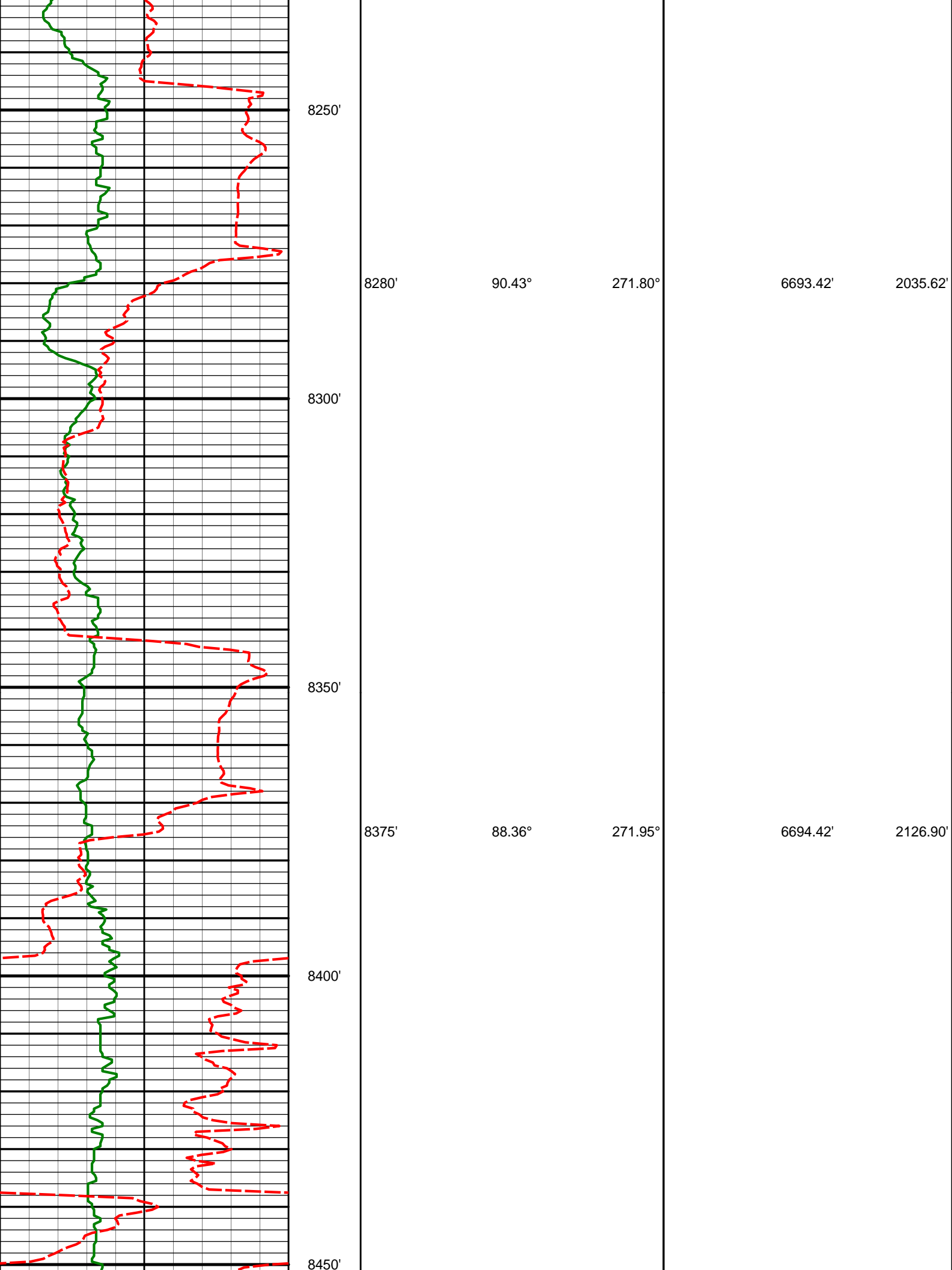
90.68°

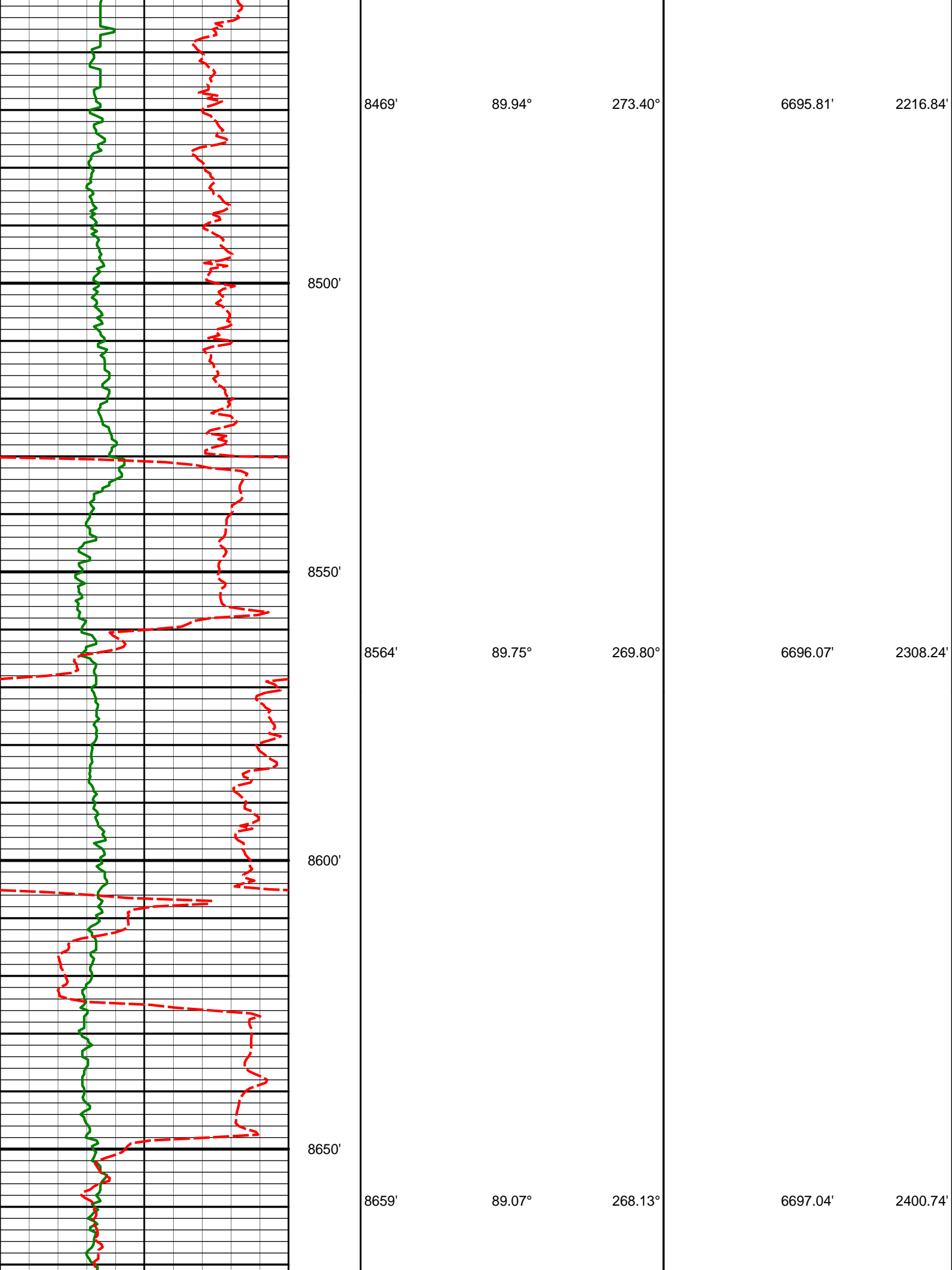
270.51°

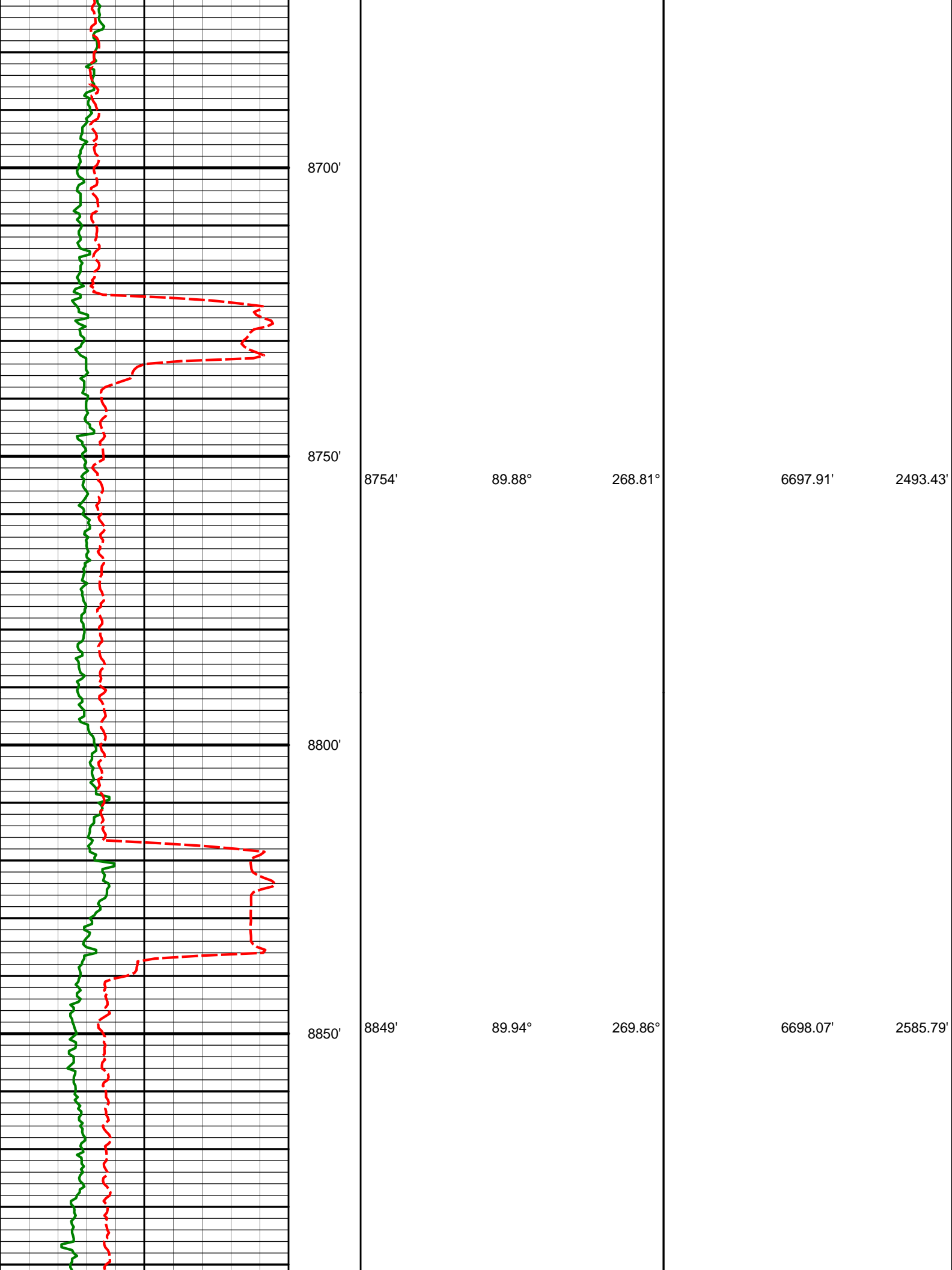
6694.35'

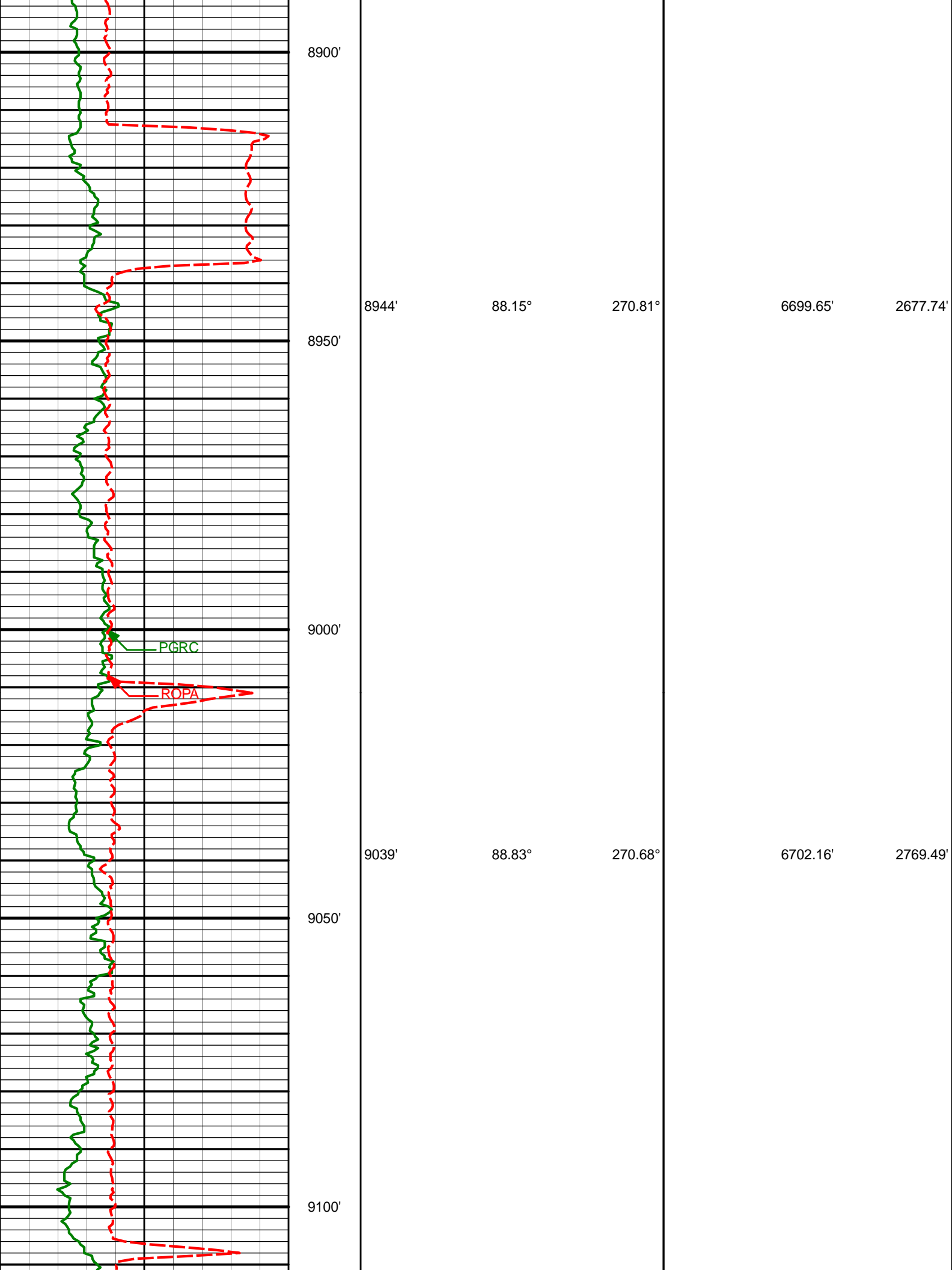
1944.02'

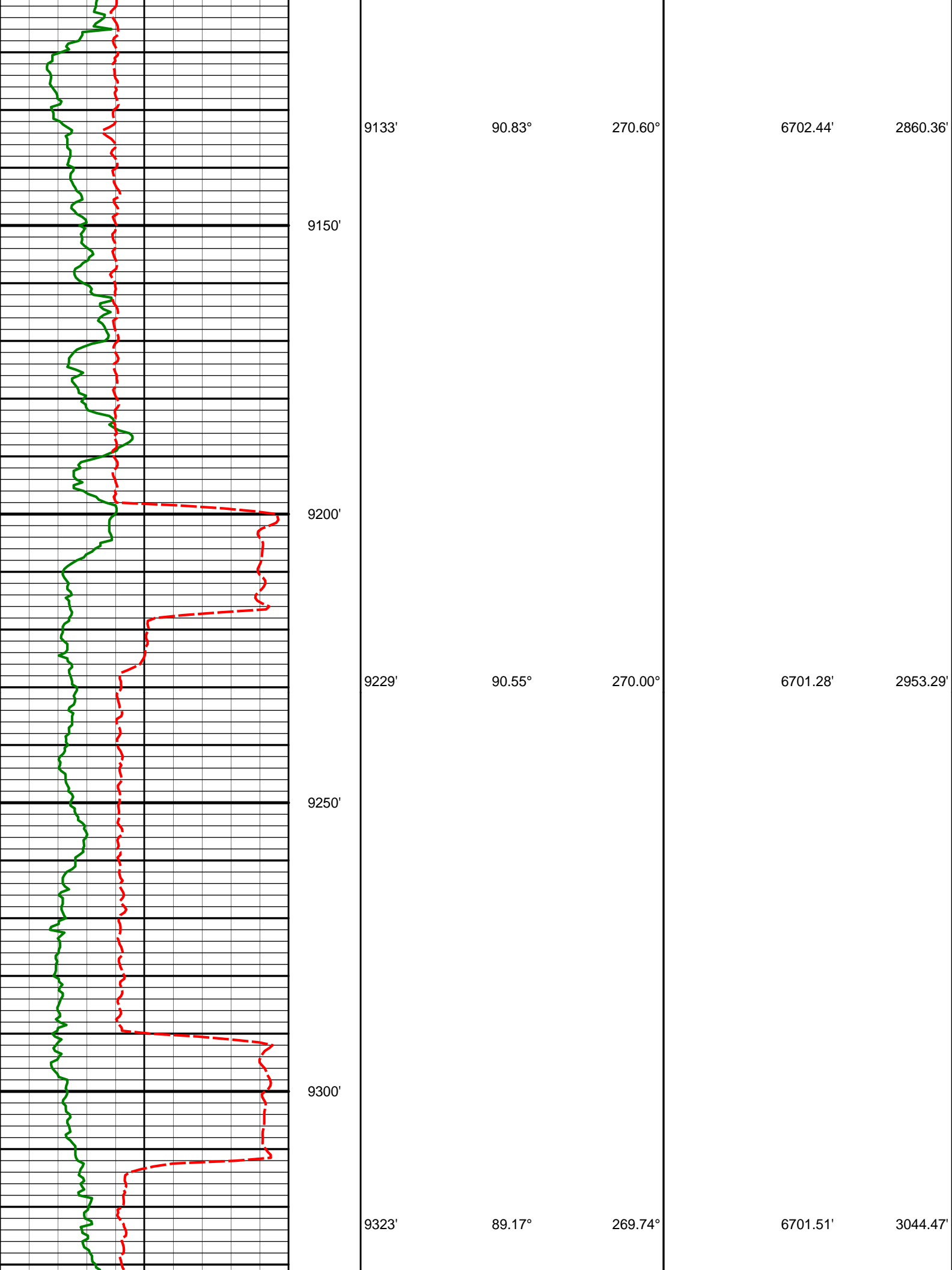
8200'

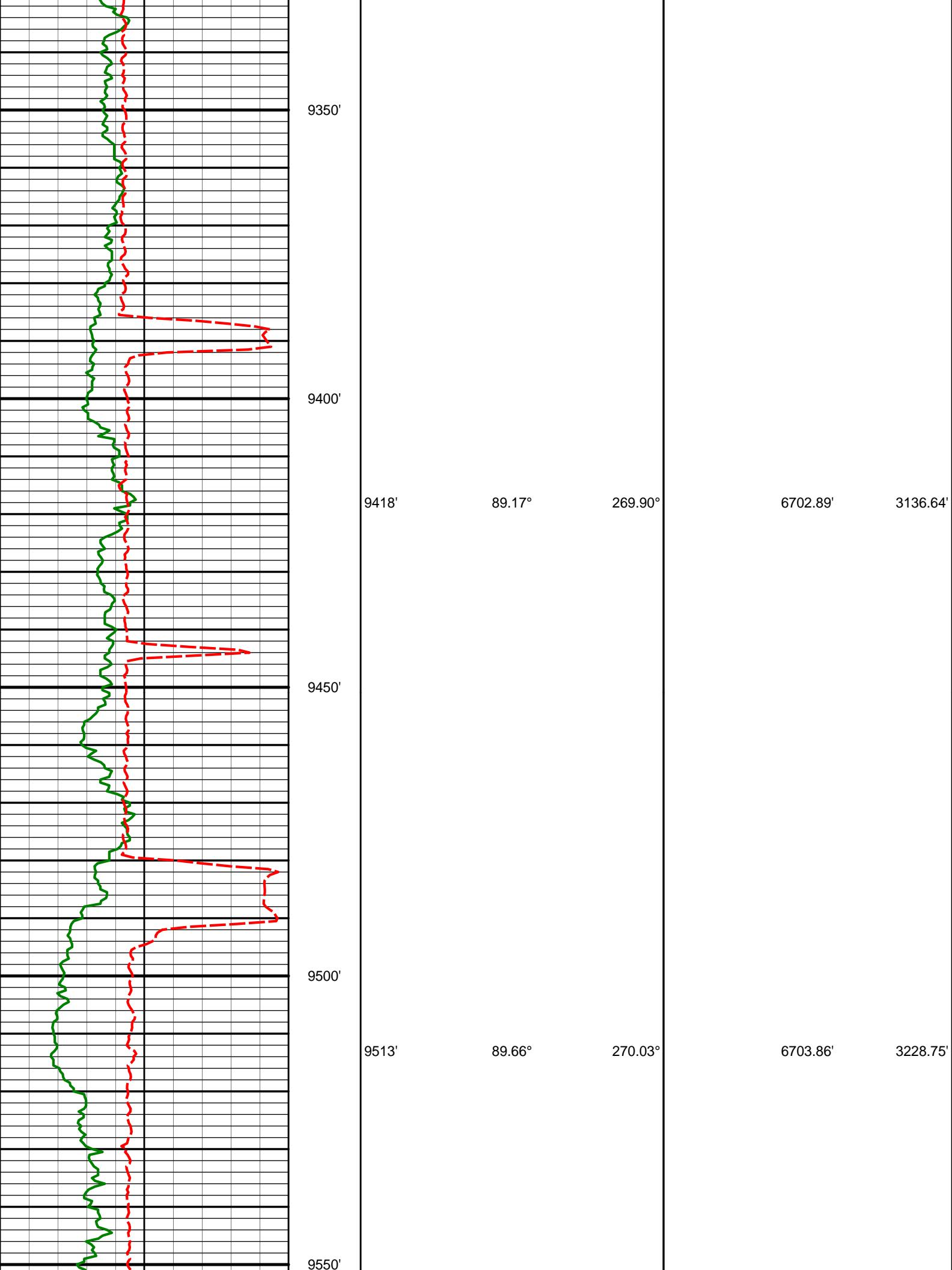














9600'

9608'

89.91°

270.08°

6704.22'

3320.83'

9650'

9700'

9703'

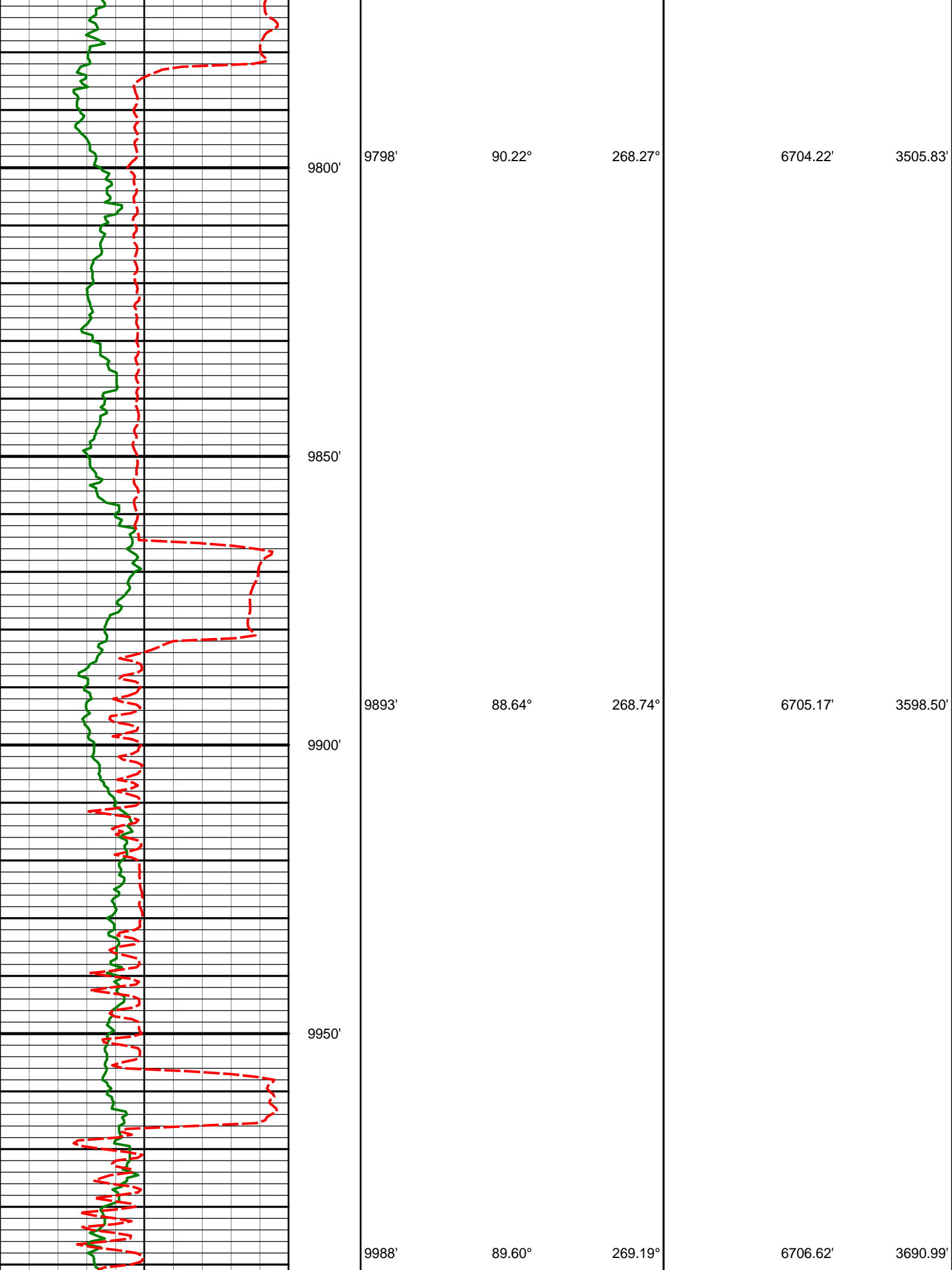
89.94°

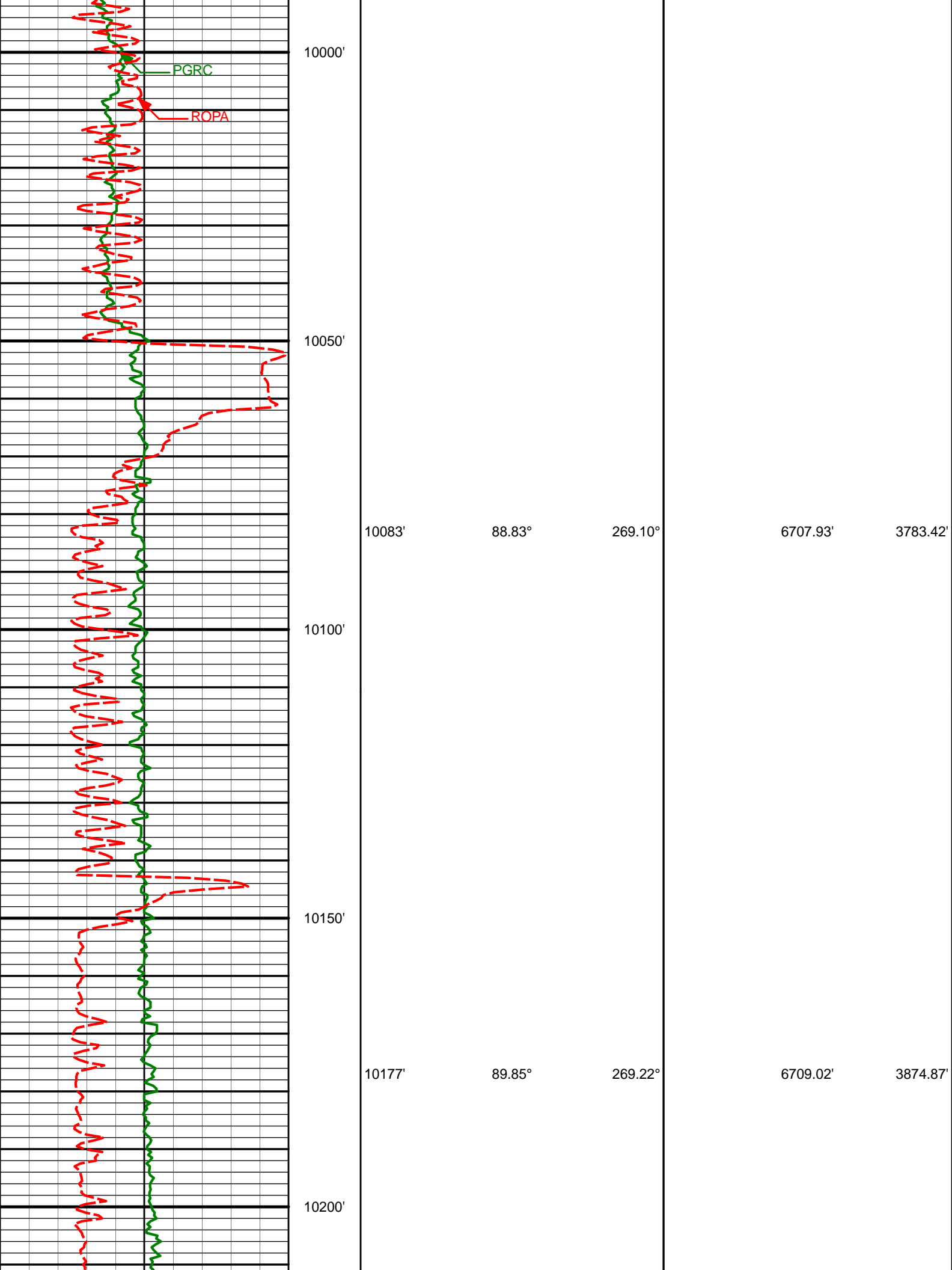
268.76°

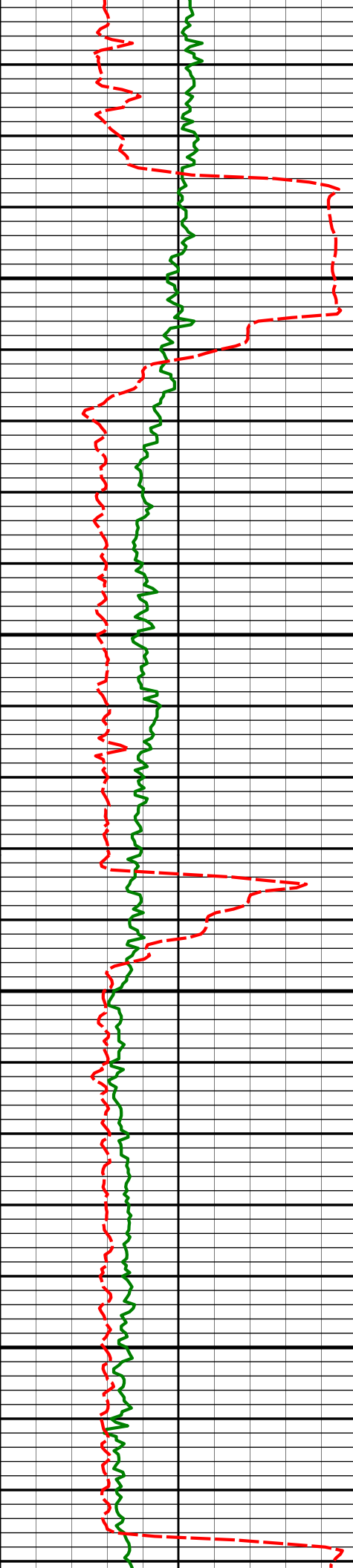
6704.35'

3413.16'

9750'







10250'

10272'

89.41°

269.79°

6709.63'

3967.17'

10300'

10350'

10367'

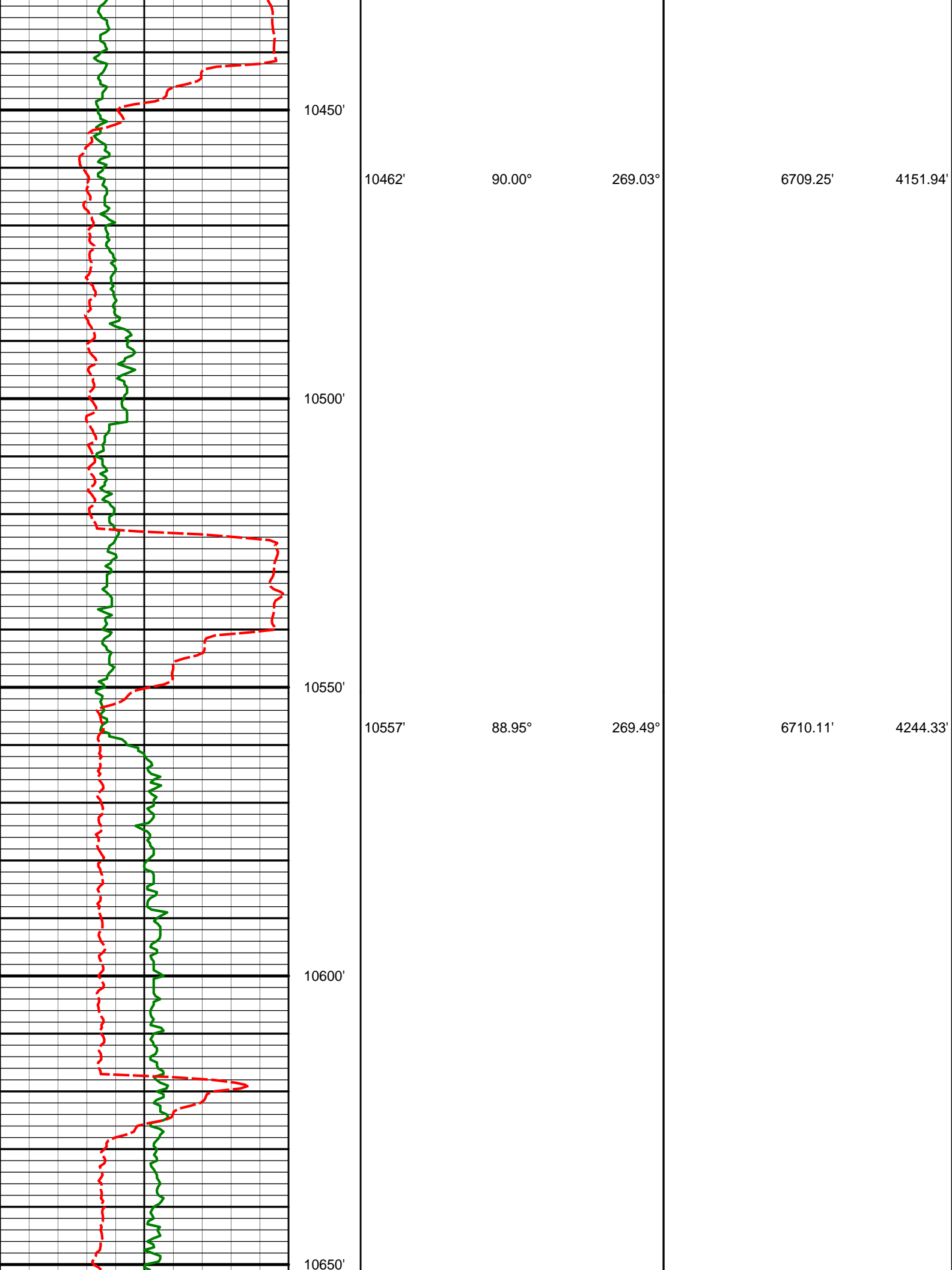
90.52°

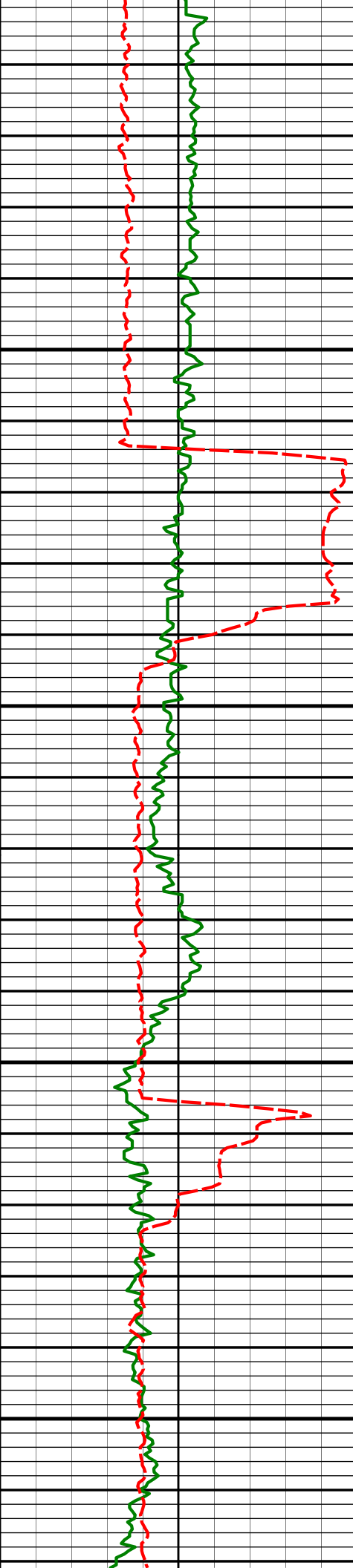
269.15°

6709.68'

4059.48'

10400'



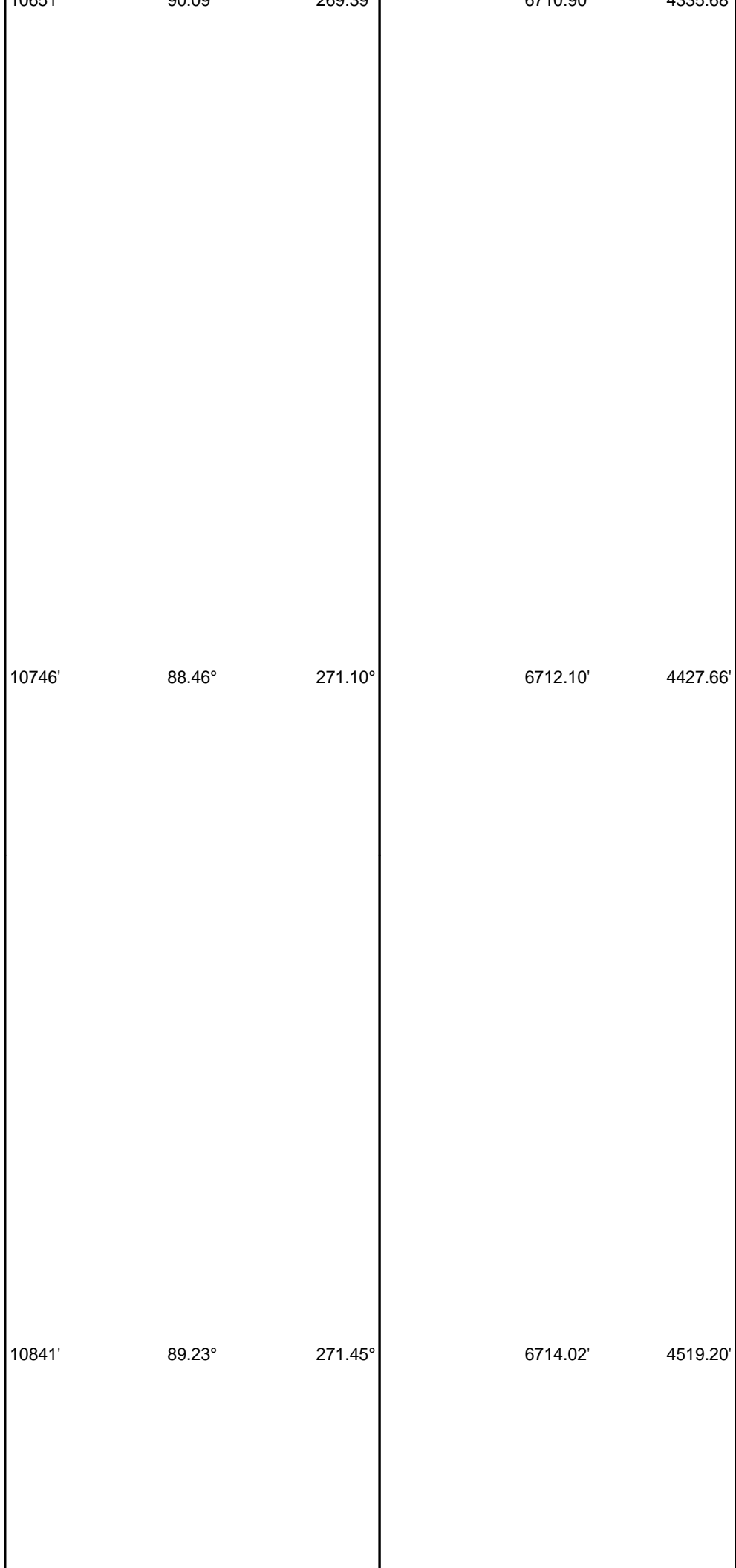


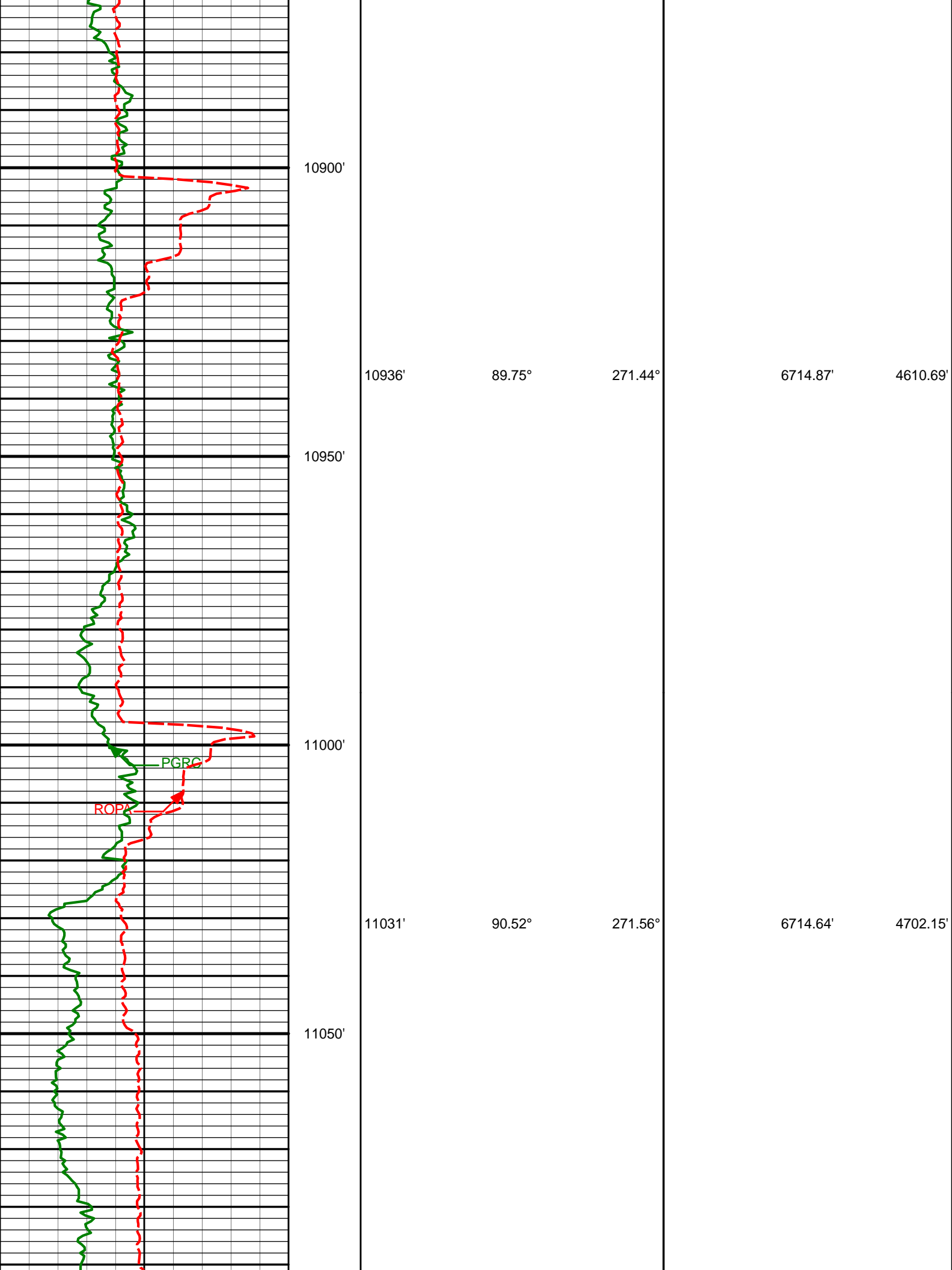
10700'

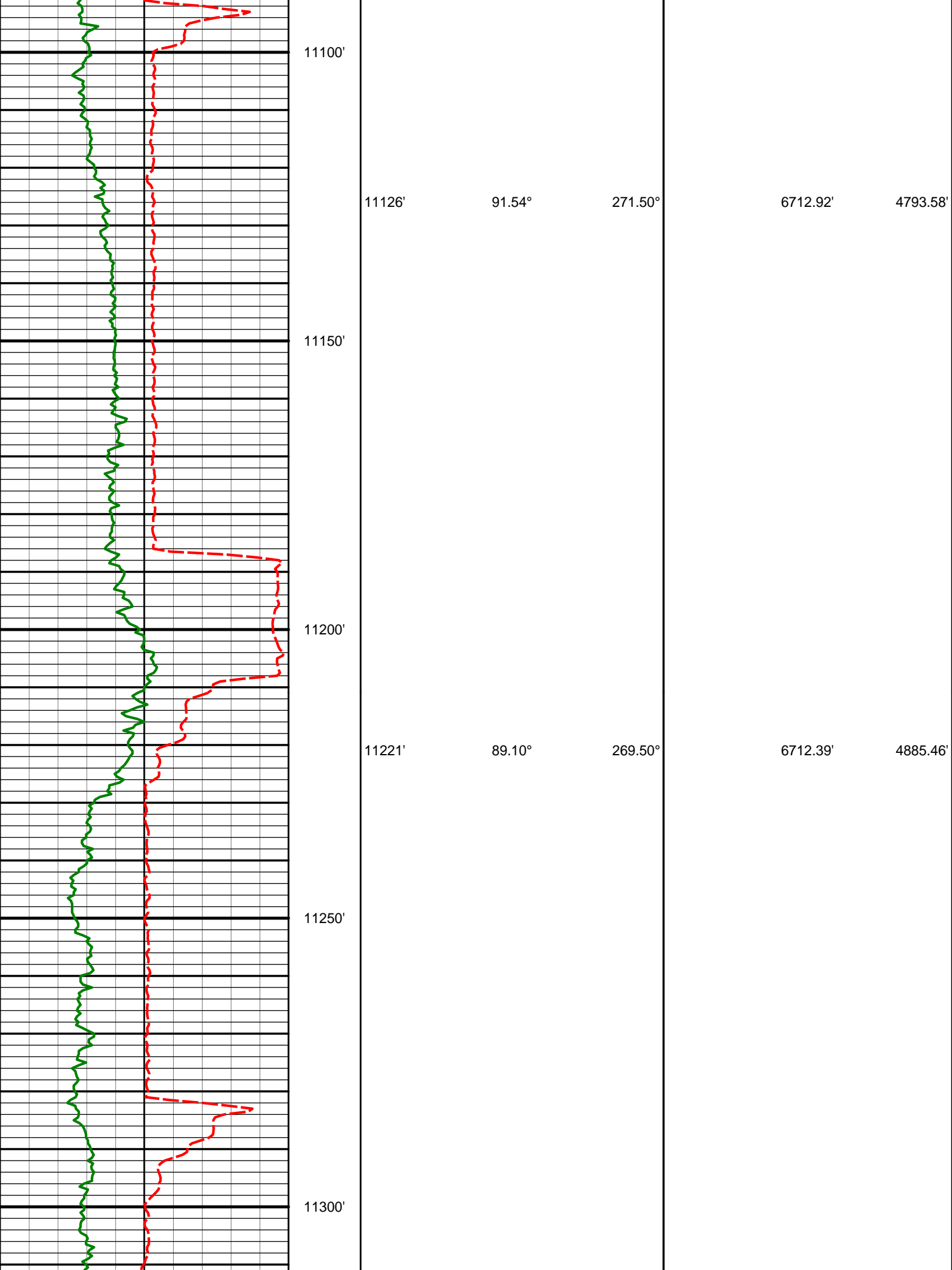
10750'

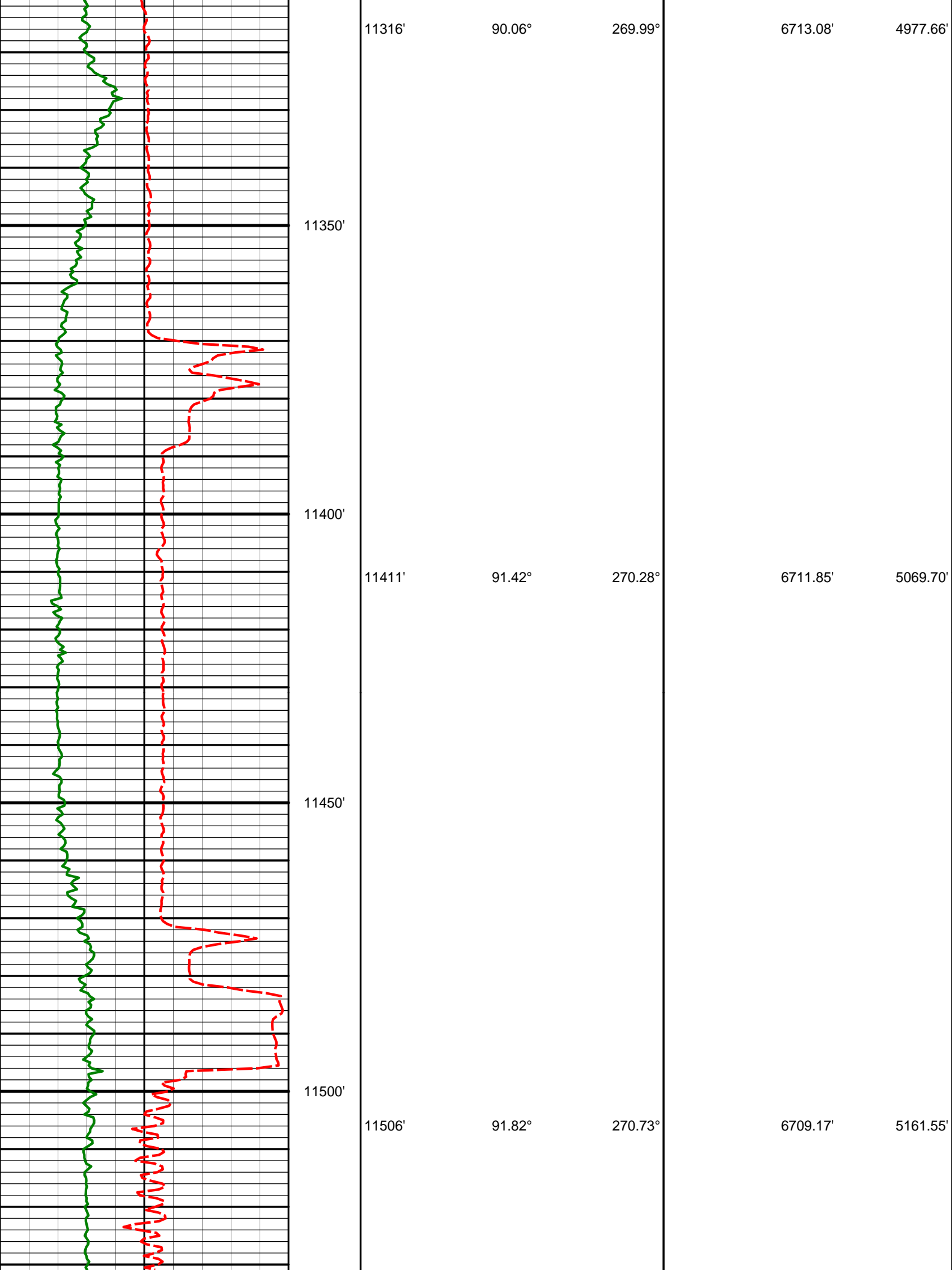
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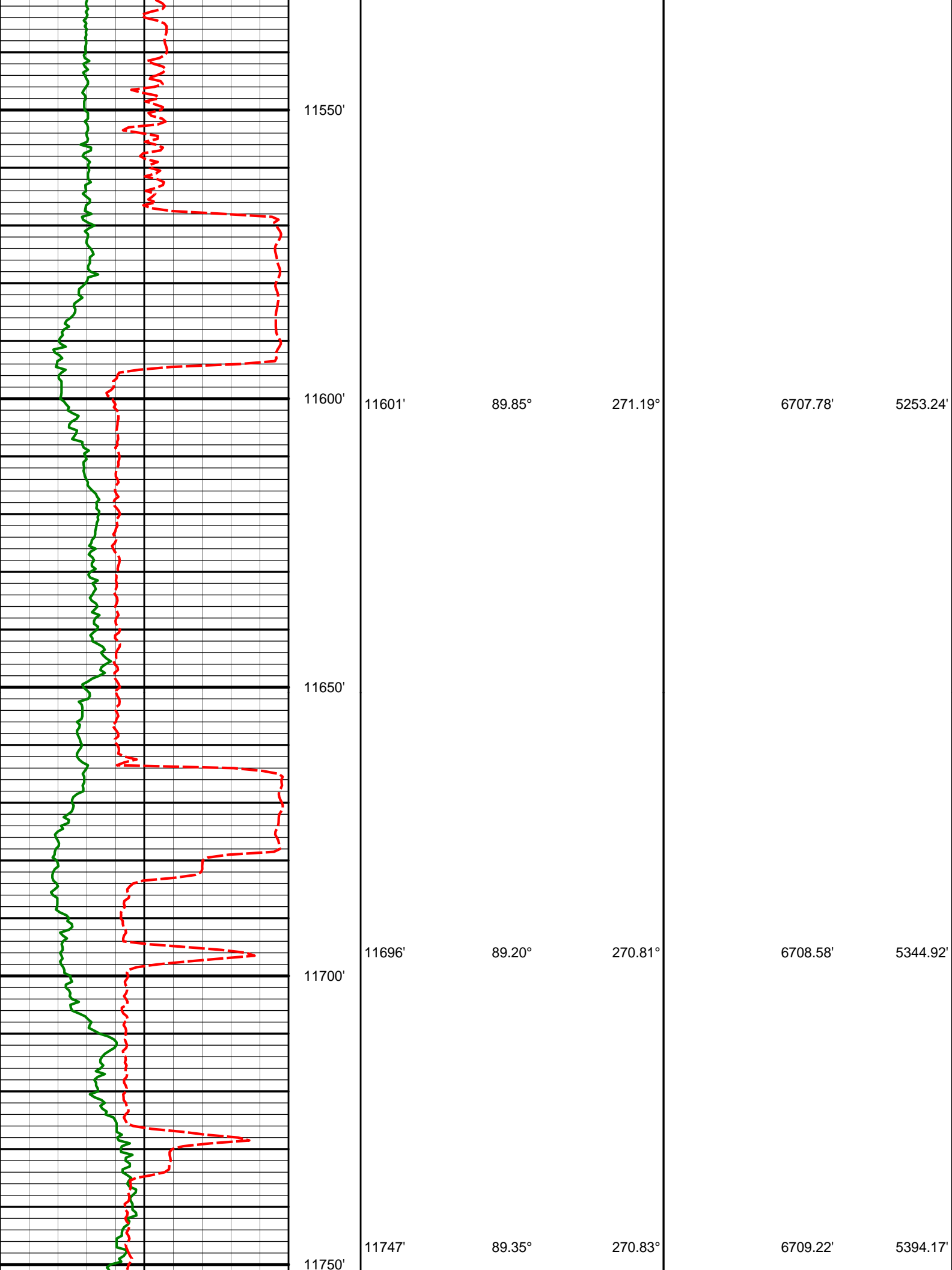
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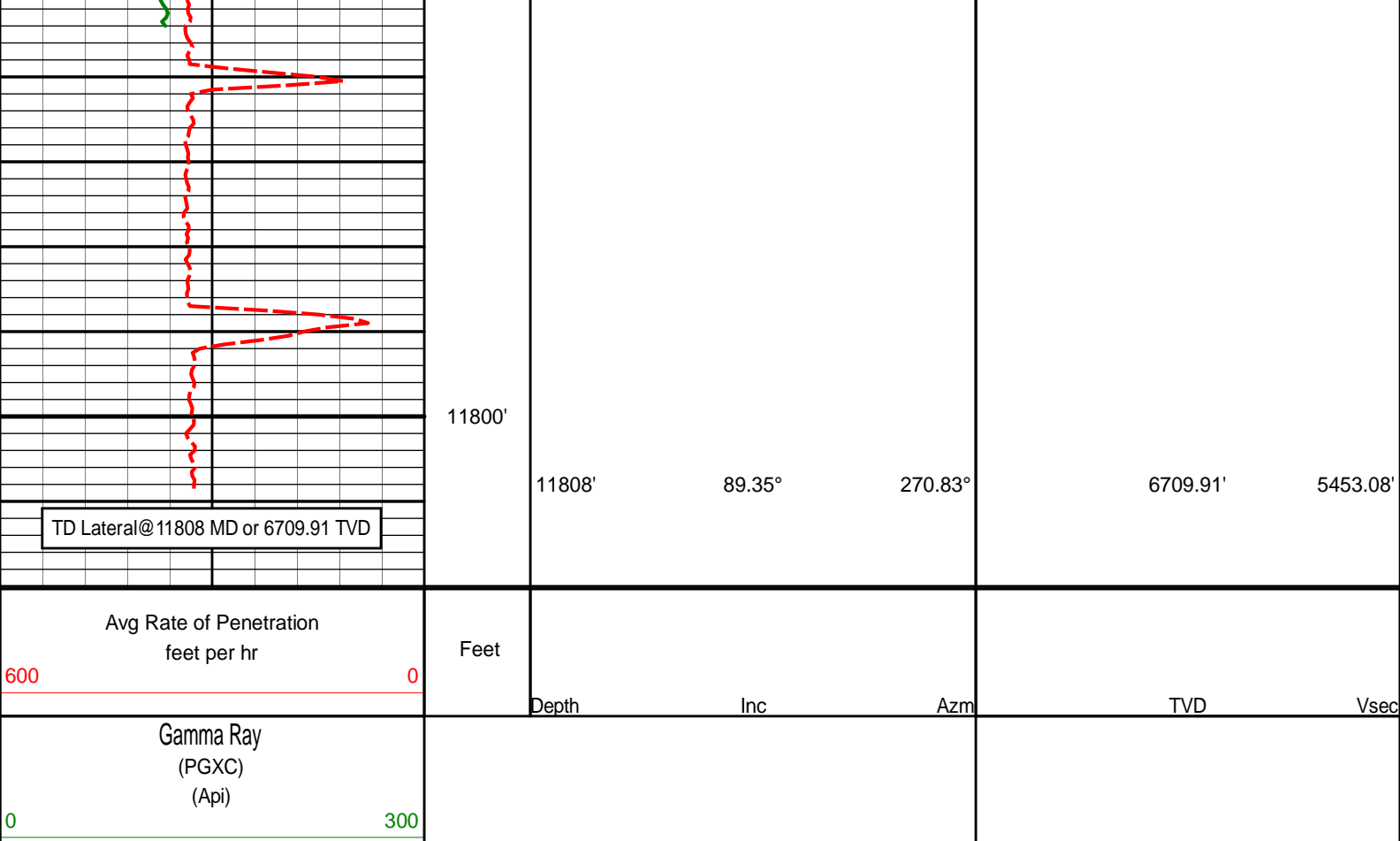












DIRECTIONAL SURVEY REPORT

Noble Energy
Wells Ranch AA26-62-1HN
Wattenberg
Weld Colorado
USA
CA-XX-0900829266

<i>Measured Depth (feet)</i>	<i>Inclination (degrees)</i>	<i>Direction (degrees)</i>	<i>Vertical Depth (feet)</i>	<i>Latitude (feet)</i>	<i>Departure (feet)</i>	<i>Vertical Section (feet)</i>	<i>Dogleg (deg/100ft)</i>
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
252.00	1.10	307.10	251.98	1.46 N	1.93 W	1.51	0.44
503.00	0.20	60.70	502.97	3.13 N	3.47 W	2.60	0.48
745.00	0.50	88.80	744.97	3.36 N	2.04 W	1.16	0.14
930.00	0.20	274.50	929.96	3.40 N	1.56 W	0.68	0.38
1011.00	0.65	358.64	1010.96	3.87 N	1.71 W	0.71	0.81
1105.00	2.40	205.84	1104.94	2.63 N	2.58 W	1.86	3.18
1197.00	4.95	194.25	1196.74	2.95 S	4.40 W	4.99	2.87
1291.00	8.00	191.71	1290.13	13.30 S	6.73 W	9.78	3.26
1384.00	10.55	186.82	1381.91	28.09 S	9.05 W	15.66	2.86
1477.00	13.80	187.56	1472.81	47.54 S	11.52 W	22.82	3.50
1572.00	15.11	182.50	1564.80	71.14 S	13.55 W	30.58	1.91
1667.00	14.79	182.35	1656.59	95.62 S	14.59 W	37.58	0.34
1761.00	13.71	180.99	1747.69	118.74 S	15.27 W	43.91	1.20
1856.00	14.34	182.12	1839.86	141.76 S	15.90 W	50.17	0.72
1951.00	14.75	184.61	1931.82	165.57 S	17.31 W	57.37	0.79
2046.00	13.41	184.41	2023.96	188.61 S	19.13 W	64.78	1.41
2141.00	12.28	177.97	2116.59	209.68 S	19.62 W	70.42	1.92
2236.00	13.96	183.41	2209.11	231.22 S	19.94 W	76.01	2.20
2330.00	11.93	182.88	2300.72	252.24 S	21.10 W	82.29	2.16
2425.00	12.60	176.24	2393.56	272.38 S	20.92 W	87.05	1.64
2520.00	12.72	177.79	2486.25	293.17 S	19.84 W	91.10	0.38
2615.00	13.32	175.16	2578.80	314.53 S	18.51 W	95.05	0.89
2710.00	13.85	180.95	2671.15	336.81 S	17.77 W	99.80	1.54
2805.00	12.61	181.32	2763.63	358.54 S	18.20 W	105.54	1.32

2900.00	13.92	182.49	2856.09	380.32 S	18.94 W	111.59	1.42
2995.00	13.77	177.98	2948.33	403.04 S	19.03 W	117.25	1.15
3090.00	13.67	186.05	3040.63	425.51 S	19.82 W	123.52	2.02
3184.00	11.42	185.19	3132.38	445.82 S	21.83 W	130.45	2.41
3279.00	12.53	180.59	3225.31	465.49 S	22.79 W	136.20	1.54
3374.00	12.22	186.38	3318.11	485.78 S	24.01 W	142.36	1.35
3469.00	11.89	186.89	3411.02	505.48 S	26.30 W	149.41	0.36
3564.00	10.77	188.25	3504.17	523.98 S	28.75 W	156.32	1.21
3658.00	11.23	182.22	3596.44	541.83 S	30.37 W	162.26	1.32
3753.00	12.47	180.86	3689.41	561.33 S	30.88 W	167.54	1.34
3848.00	14.21	183.05	3781.85	583.24 S	31.65 W	173.66	1.90
3943.00	15.74	181.83	3873.62	607.76 S	32.68 W	180.67	1.64
4038.00	14.18	184.48	3965.40	632.23 S	34.00 W	187.95	1.79
4132.00	12.13	181.92	4056.93	653.58 S	35.23 W	194.38	2.27
4227.00	11.82	181.12	4149.86	673.28 S	35.76 W	199.71	0.37
4322.00	11.46	181.95	4242.91	692.45 S	36.27 W	204.91	0.42
4417.00	10.63	182.46	4336.15	710.63 S	36.97 W	210.04	0.88
4512.00	11.22	189.18	4429.43	728.51 S	38.82 W	216.22	1.48
4606.00	12.28	185.15	4521.46	747.49 S	41.17 W	223.15	1.42
4701.00	10.23	183.93	4614.63	765.97 S	42.66 W	229.12	2.16
4796.00	10.10	184.44	4708.14	782.69 S	43.88 W	234.41	0.17
4891.00	9.98	176.46	4801.69	799.21 S	44.02 W	238.59	1.47
4987.00	9.54	176.24	4896.30	815.45 S	42.98 W	241.57	0.46
5082.00	10.11	178.06	4989.90	831.64 S	42.18 W	244.76	0.69
5176.00	9.32	188.08	5082.56	847.42 S	42.97 W	249.40	1.98
5271.00	8.41	183.90	5176.43	861.97 S	44.53 W	254.47	1.17
5365.00	9.14	180.33	5269.33	876.29 S	45.04 W	258.48	0.97
5461.00	9.03	182.69	5364.12	891.45 S	45.44 W	262.58	0.41
5556.00	6.91	181.67	5458.20	904.61 S	45.95 W	266.31	2.23
5651.00	5.49	174.76	5552.64	914.85 S	45.71 W	268.58	1.69
5738.00	8.46	177.13	5638.99	925.39 S	45.00 W	270.48	3.43
5833.00	8.93	188.58	5732.90	939.66 S	45.75 W	274.71	1.88
5928.00	10.64	175.52	5826.53	955.70 S	46.17 W	279.04	2.94
6023.00	10.81	173.56	5919.87	973.30 S	44.49 W	281.72	0.42
6118.00	9.12	175.44	6013.43	989.65 S	42.89 W	284.18	1.81
6165.00	10.98	181.11	6059.71	997.84 S	42.68 W	285.99	4.47
6213.00	15.79	190.08	6106.40	1008.85 S	43.91 W	289.88	10.89
6260.00	19.47	199.08	6151.19	1022.55 S	47.59 W	296.81	9.73
6308.00	22.61	209.71	6196.00	1038.13 S	54.79 W	307.60	10.26
6355.00	24.93	221.82	6239.04	1053.38 S	65.88 W	322.09	11.48
6403.00	27.63	233.96	6282.10	1067.48 S	81.64 W	340.83	12.50
6450.00	30.63	243.52	6323.18	1079.24 S	101.18 W	362.66	11.77
6498.00	35.14	245.80	6363.48	1090.36 S	124.74 W	388.23	9.73
6545.00	40.36	246.68	6400.63	1101.94 S	151.07 W	416.59	11.16
6593.00	44.12	246.73	6436.15	1114.70 S	180.71 W	448.45	7.83
6640.00	47.25	246.97	6468.98	1127.91 S	211.63 W	481.66	6.68
6688.00	52.00	243.54	6500.07	1143.24 S	244.80 W	517.59	11.28
6735.00	55.06	243.34	6528.01	1160.14 S	278.61 W	554.50	6.53
6783.00	60.03	242.61	6553.76	1178.55 S	314.67 W	593.98	10.42
6830.00	65.20	241.42	6575.37	1198.13 S	351.51 W	634.49	11.23
6878.00	67.92	240.82	6594.46	1219.40 S	390.06 W	677.08	5.78
6925.00	71.42	242.44	6610.79	1240.33 S	428.84 W	719.81	8.12
6973.00	74.05	246.08	6625.04	1260.23 S	470.12 W	764.71	9.08
7020.00	76.26	248.10	6637.08	1277.91 S	511.96 W	809.61	6.27
7068.00	77.49	251.84	6647.98	1293.91 S	555.87 W	856.10	8.01
7115.00	79.74	255.15	6657.26	1306.99 S	600.04 W	902.13	8.40
7180.00	83.25	259.98	6666.88	1320.82 S	662.79 W	966.35	9.12
7332.00	87.35	264.55	6679.34	1341.17 S	812.83 W	1116.81	4.03
7426.00	88.09	266.97	6683.08	1348.12 S	906.49 W	1209.31	2.69
7521.00	88.46	268.55	6685.94	1351.82 S	1001.38 W	1302.21	1.71
7616.00	87.75	270.28	6689.09	1352.79 S	1096.32 W	1394.49	1.96
7711.00	89.01	270.28	6691.77	1352.33 S	1191.27 W	1486.43	1.33
7807.00	88.68	270.90	6693.71	1351.34 S	1287.25 W	1579.24	0.74
7901.00	90.43	270.61	6694.44	1350.10 S	1381.23 W	1670.05	1.90
7995.00	90.37	272.19	6693.78	1347.81 S	1475.20 W	1760.59	1.68
8090.00	89.14	270.48	6694.19	1345.61 S	1570.17 W	1852.12	2.22
8185.00	90.68	270.51	6694.35	1344.79 S	1665.16 W	1944.02	1.62
8280.00	90.43	271.80	6693.42	1342.87 S	1760.14 W	2035.62	1.39
8375.00	88.36	271.95	6694.42	1339.76 S	1855.08 W	2126.90	2.18
8469.00	89.94	273.40	6695.81	1335.37 S	1948.96 W	2216.84	2.27
8564.00	89.75	269.80	6696.07	1332.72 S	2043.90 W	2308.24	3.79
8659.00	89.07	268.13	6697.04	1334.44 S	2138.88 W	2400.74	1.90
8754.00	89.88	268.81	6697.91	1336.98 S	2233.84 W	2493.43	1.11
8849.00	89.94	269.86	6698.07	1338.08 S	2328.83 W	2585.79	1.11
8944.00	88.15	270.81	6699.65	1337.53 S	2423.81 W	2677.74	2.13

9039.00	88.83	270.68	6702.16	1336.29 S	2518.77 W	2769.49	0.73
9133.00	90.83	270.60	6702.44	1335.23 S	2612.76 W	2860.36	2.14
9229.00	90.55	270.00	6701.28	1334.73 S	2708.75 W	2953.29	0.69
9323.00	89.17	269.74	6701.51	1334.93 S	2802.75 W	3044.47	1.50
9418.00	89.17	269.90	6702.89	1335.23 S	2897.74 W	3136.64	0.17
9513.00	89.66	270.03	6703.86	1335.28 S	2992.73 W	3228.75	0.54
9608.00	89.91	270.08	6704.22	1335.19 S	3087.73 W	3320.83	0.26
9703.00	89.94	268.76	6704.35	1336.15 S	3182.72 W	3413.16	1.39
9798.00	90.22	268.27	6704.22	1338.61 S	3277.69 W	3505.83	0.59
9893.00	88.64	268.74	6705.17	1341.08 S	3372.65 W	3598.50	1.73
9988.00	89.60	269.19	6706.62	1342.80 S	3467.62 W	3690.99	1.11
10083.00	88.83	269.10	6707.93	1344.22 S	3562.60 W	3783.42	0.82
10177.00	89.85	269.22	6709.02	1345.59 S	3656.59 W	3874.87	1.09
10272.00	89.41	269.79	6709.63	1346.41 S	3751.58 W	3967.17	0.76
10367.00	90.52	269.15	6709.68	1347.29 S	3846.57 W	4059.48	1.35
10462.00	90.00	269.03	6709.25	1348.80 S	3941.56 W	4151.94	0.57
10557.00	88.95	269.49	6710.11	1350.03 S	4036.55 W	4244.33	1.21
10651.00	90.09	269.39	6710.90	1350.95 S	4130.54 W	4335.68	1.22
10746.00	88.46	271.10	6712.10	1350.54 S	4225.52 W	4427.66	2.49
10841.00	89.23	271.45	6714.02	1348.43 S	4320.48 W	4519.20	0.89
10936.00	89.75	271.44	6714.87	1346.04 S	4415.44 W	4610.69	0.55
11031.00	90.52	271.56	6714.64	1343.55 S	4510.41 W	4702.15	0.82
11126.00	91.54	271.50	6712.92	1341.02 S	4605.36 W	4793.58	1.07
11221.00	89.10	269.50	6712.39	1340.19 S	4700.34 W	4885.46	3.32
11316.00	90.06	269.99	6713.08	1340.62 S	4795.34 W	4977.66	1.13
11411.00	91.42	270.28	6711.85	1340.40 S	4890.33 W	5069.70	1.46
11506.00	91.82	270.73	6709.17	1339.56 S	4985.29 W	5161.55	0.63
11601.00	89.85	271.19	6707.78	1337.97 S	5080.26 W	5253.24	2.13
11696.00	89.20	270.81	6708.58	1336.32 S	5175.24 W	5344.92	0.79
11747.00	89.35	270.83	6709.22	1335.59 S	5226.23 W	5394.17	0.31
11808.00	89.35	270.83	6709.91	1334.70 S	5287.22 W	5453.08	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 DIRECTION OF 255.81 DEGREES (GRID)
A TOTAL CORRECTION OF 7.66 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.

**HORIZONTAL DISPLACEMENT(CLOSURE) AT 11808.00 FEET
IS 5453.08 FEET ALONG 255.83 DEGREES (GRID)**

Tie-In @ Surface

Surveys at 252 ft, 503 ft, 745 ft and 930 ft were taken and provided by HP 322 while they were drilling the surface hole.