


1 : 600 / 1 : 240

Country : USA			
Field : Wattenberg			
Location : Lat: 40° 12' 17.39" North Long: 104° 39' 20.20" West			
Well : Moser H22-776			
Company : Noble Energy			
Rig : H&P 273			
LOCATION			
Latitude : 40° 12' 17.39" North Longitude : 104° 39' 20.20" West			
UTM Easting = 3,235,844,820 usft UTM Northing = 1,318,584,840 usft			
API Number : 05-123-40733			
Company : Noble Energy			
Rig : H&P 273			
Well : Moser H22-776			
Field : Wattenberg			
Country : USA			
Permanent Datum : Ground Level			
Log Measured From : Drill Floor			
Drilling Measured From : Drill Floor			
Depth Logged : 845.00 ft			
Date Logged : 03-Nov-15			
Total Depth MD : 11,457.00 ft			
Spud Date : 03-Nov-15			
Unit No. : 11703717			
Job No. : CA-XX-0902771573			
Plot Type : Final			
Plot Date : 08-Nov-15			
Borehole Record (MD)			
Size			
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Weight			
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Casing Record (MD)			
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Casing Record (MD)			
Size			
From			
To			
Casing			

Max Tool Temp (degF) / Source	171.20 / PCM	175.40 / PCM	247.20 / PCM		
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Lead MWD Engineer	Paul Kock	Paul Kock	Paul Kock		
Customer Representative	Dave Nielsen	Dave Nielsen	Dave Nielsen		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.93	5.93	5.93		
Sub Serial Number	11619287	11619287	12310756		
Insert Serial Number	11680789	11680789	11680789		
Date and Time Initialized	04-Nov-15 00:11	04-Nov-15 00:11	06-Nov-15 17:43		
Date and Time Read	06-Nov-15 12:00	06-Nov-15 12:07	08-Nov-15 05:30		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	55.00	55.00	68.00		
Software Version	6.21	6.21	6.21		
Sub Serial Number	11619287	11619287	12310756		
Sonde Serial Number	10993516	10993516	10993516		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	264.70	314.70	14.80		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	43.27	42.66	55.50		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	11619287	11619287	12310756		
Insert/Sonde Serial Number	11681042	11681042	11681042		

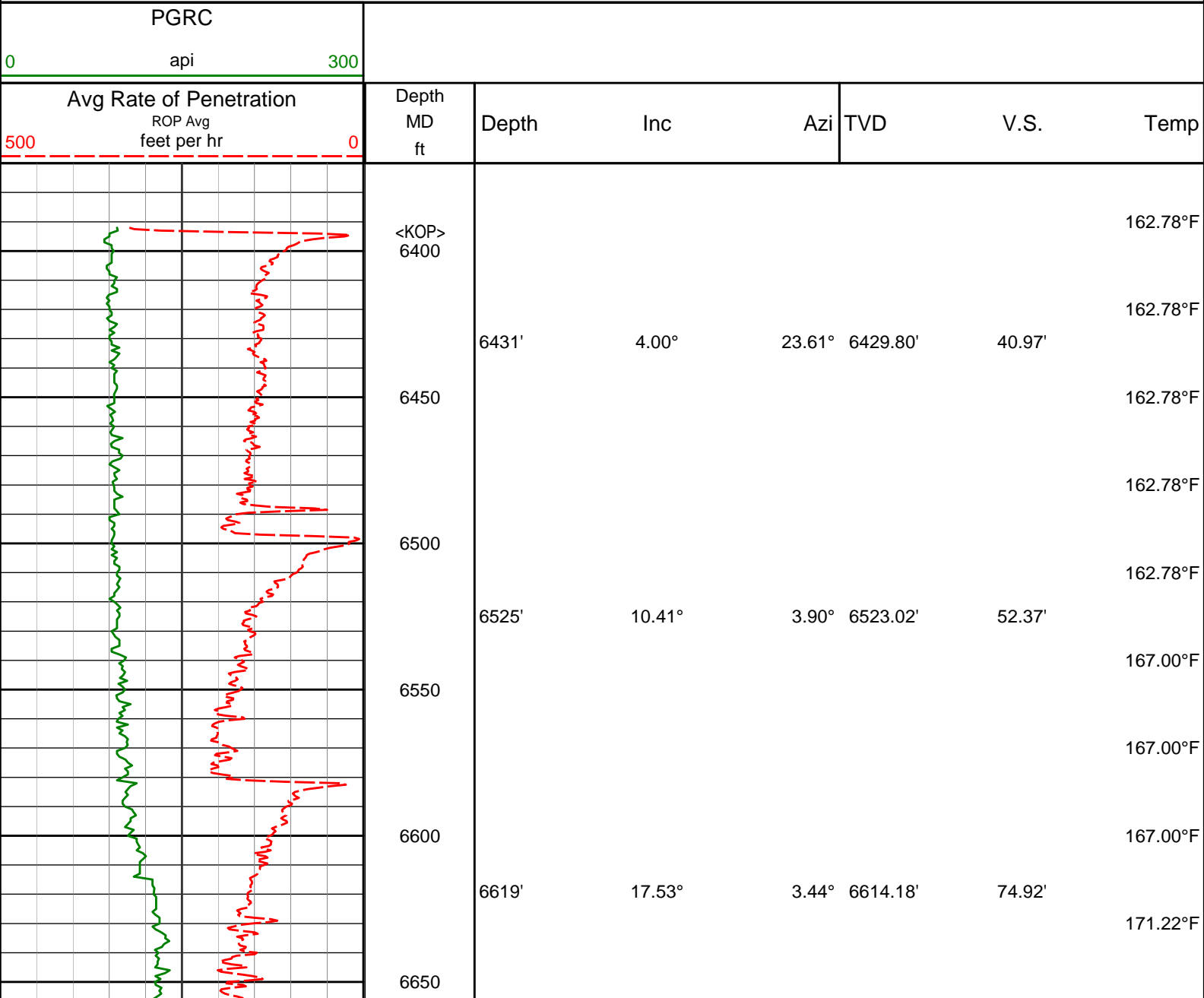
REMARKS

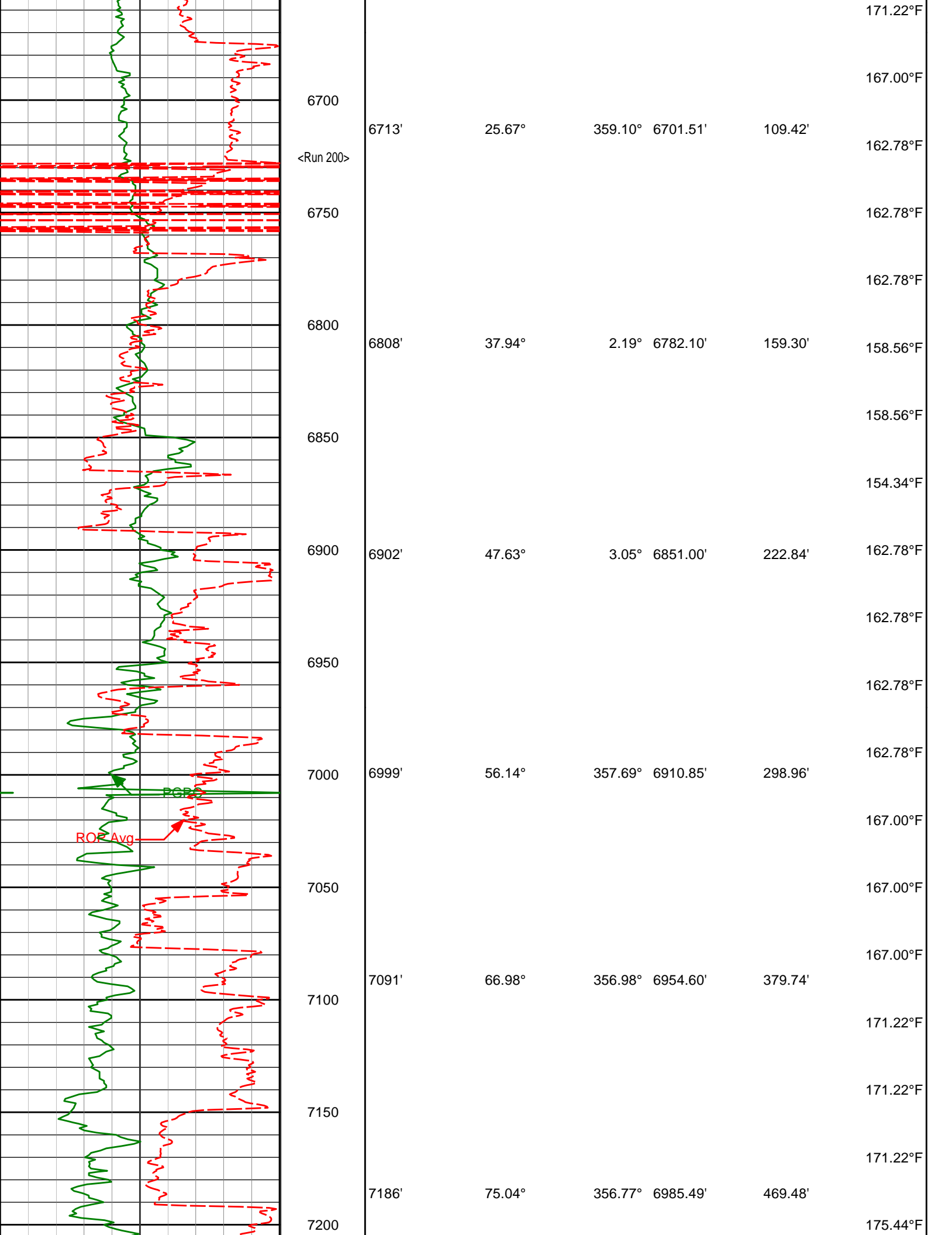
1. All depths are calibrated to the driller's pipe tally and are measured from the rig drill floor.
2. No depth corrections have been made for pipe stretch or compression.
3. All data presented is recorded (memory data) unless otherwise stated.
 - ROPA: Average Rate of Penetration is real time data.
 - PGRC: Smooth Pressure Case Gamma Ray Borehole corrected is recorded data.
4. The following smoothing parameters have been applied to the data:
 - All ROP in logs - 0.5 ft interval, 1.2 ft coercion distance.
 - Gamma in 2" (1:600) logs - 1 ft interval, 3 ft coercion distance.
 - Gamma in 5" (1:240) logs - 0.5 ft interval, 0.6 ft coercion distance.
5. INSITE version 8.3.0
6. Gamma presented inside casing/cement from 7305 ft. MD to 7348 ft. MD.
7. Gamma presented realtime from 845 ft. MD to 7305 ft. MD.

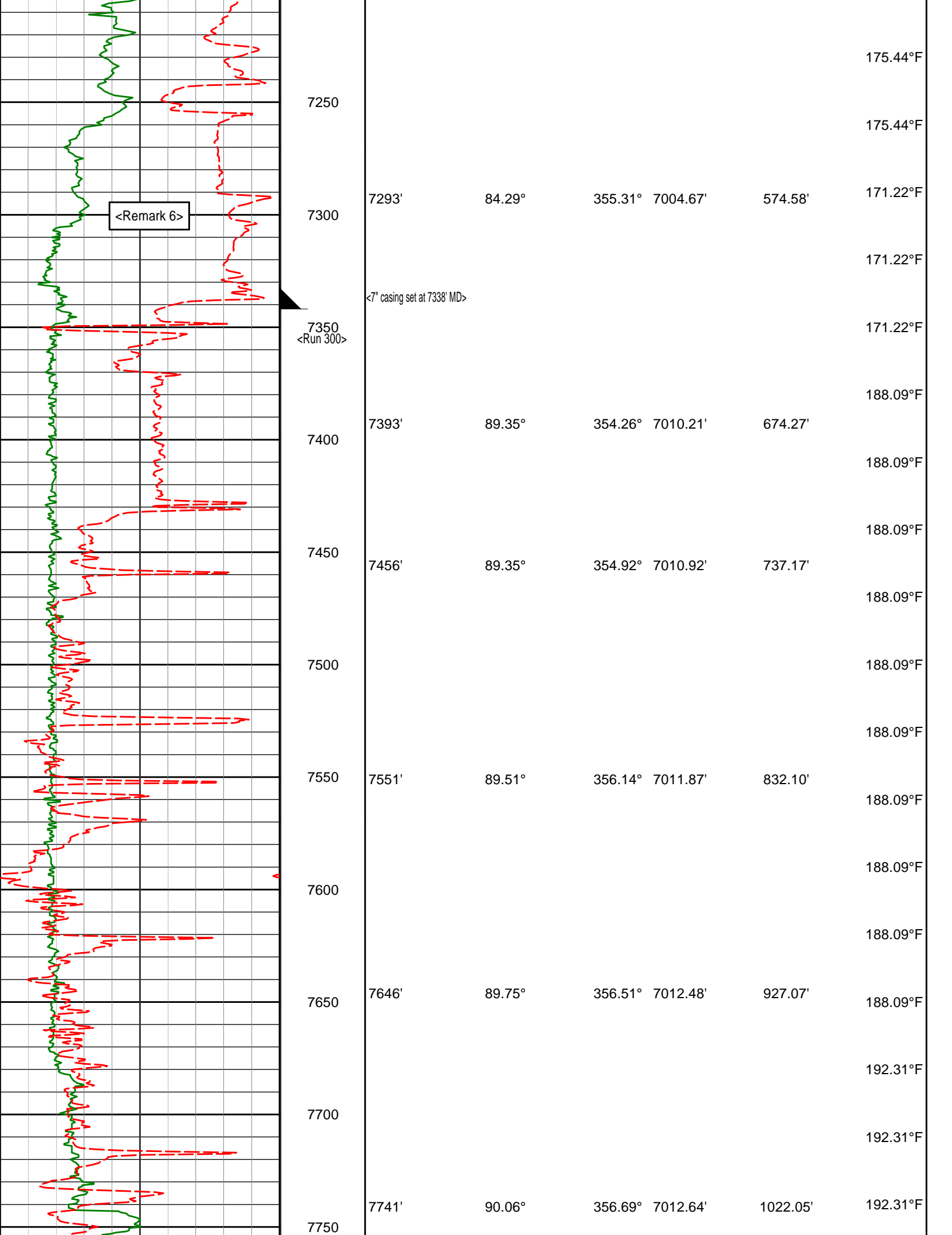
WARRANTY

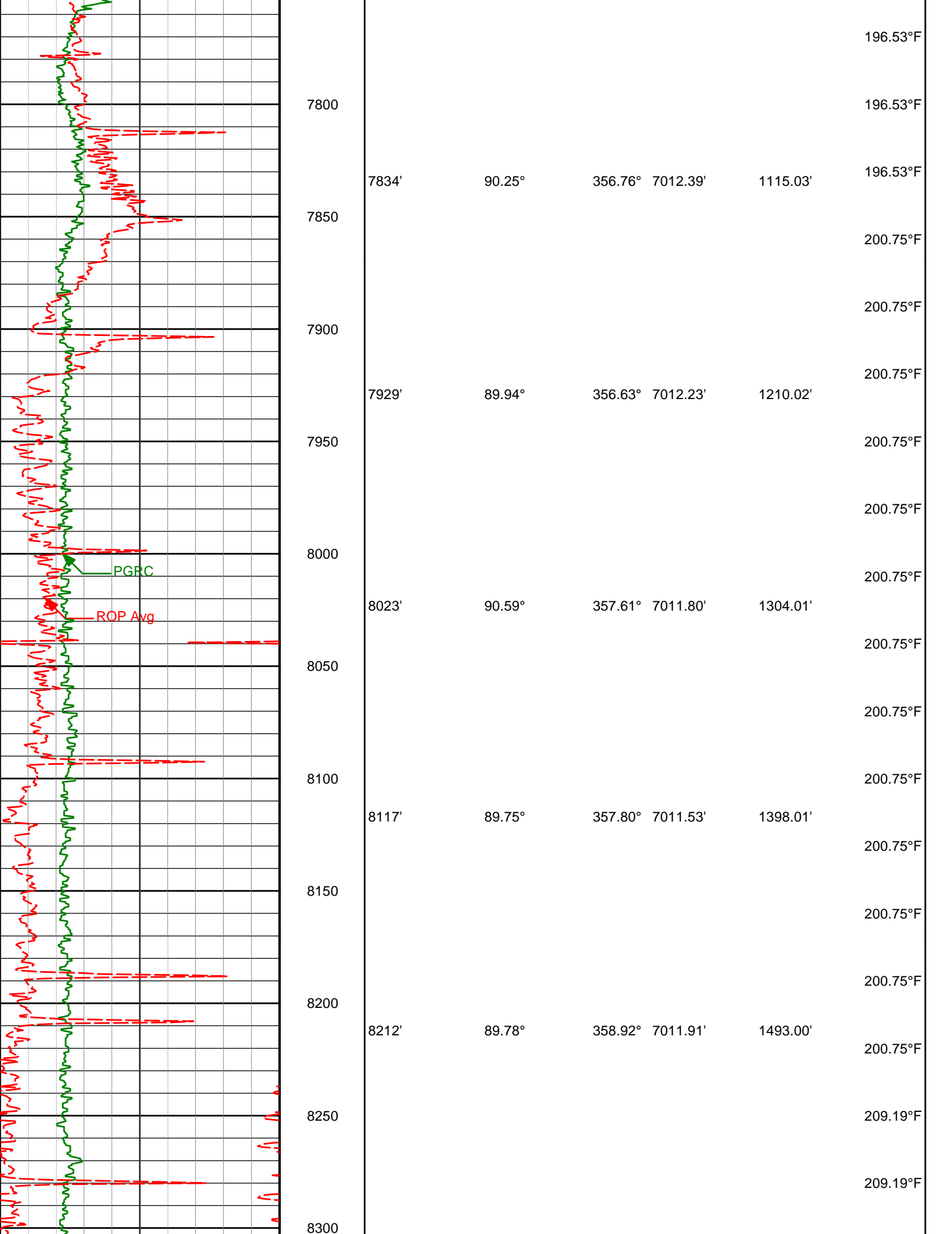
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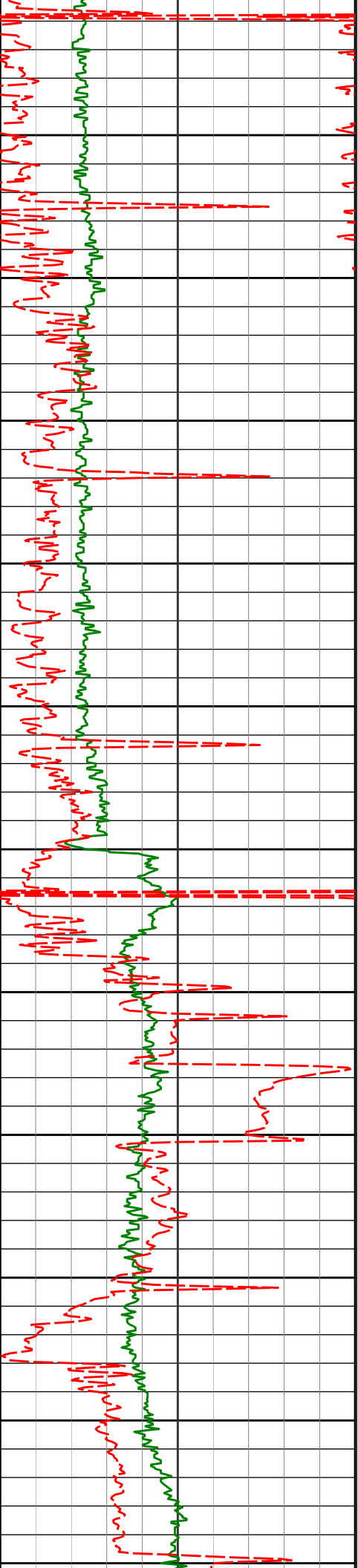
MD Detail 1:600 Scale



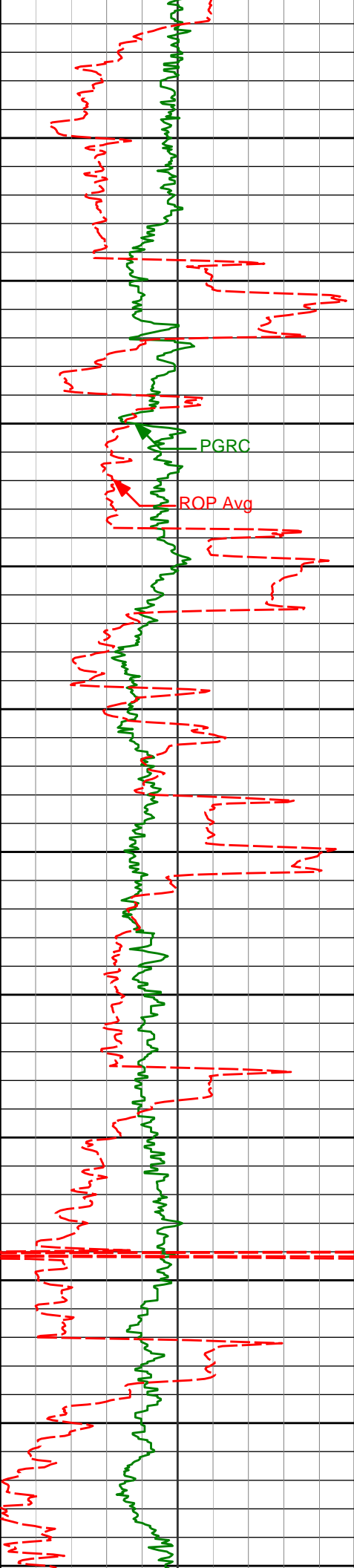




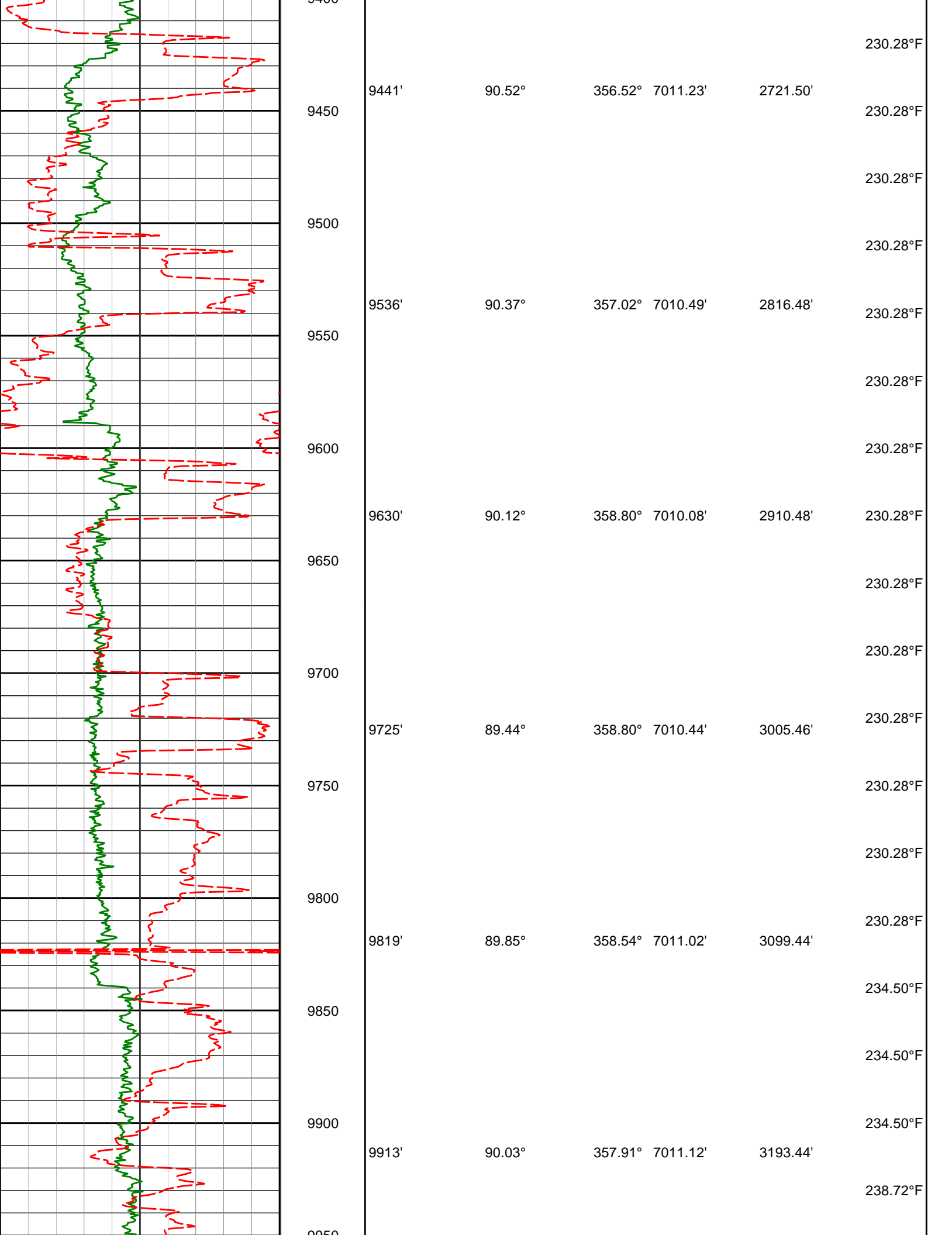


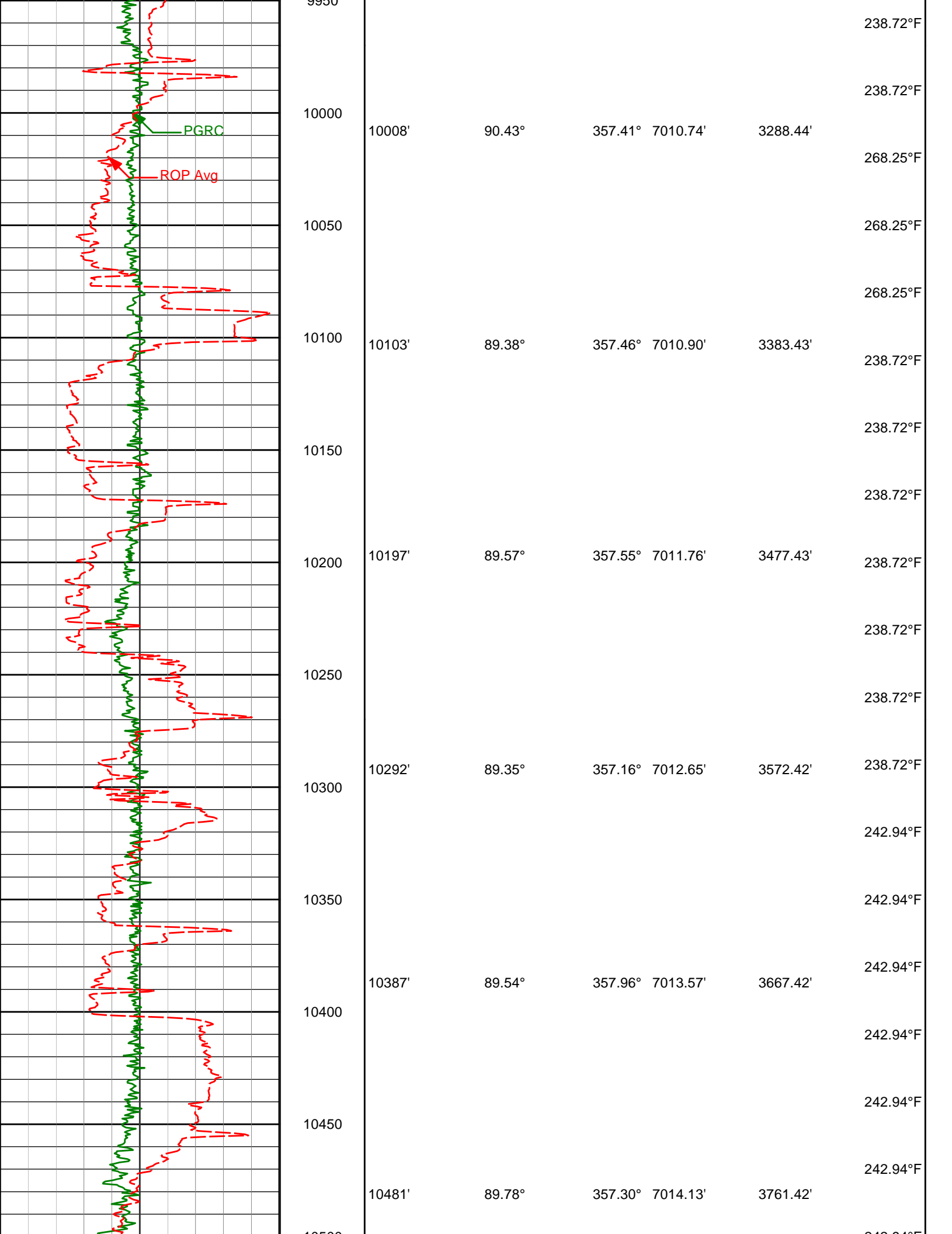


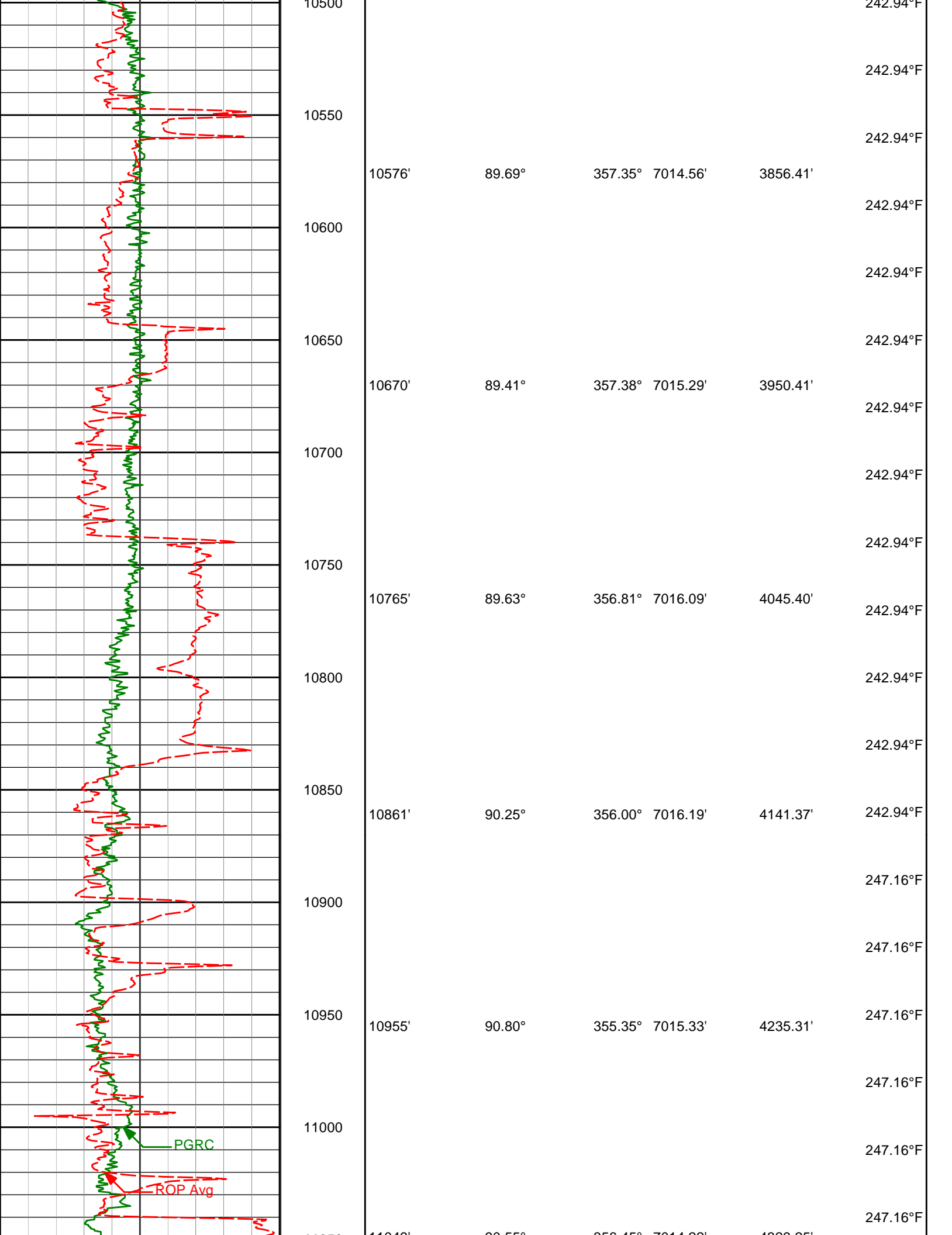
	8306'	89.51°	359.17°	7012.49'	1586.97'	209.19°F
						209.19°F
8350						209.19°F
8400	8400'	89.69°	359.25°	7013.15'	1680.94'	209.19°F
						213.41°F
8450						213.41°F
8500	8495'	90.03°	359.81°	7013.38'	1775.89'	213.41°F
						213.41°F
8550						213.41°F
8600	8590'	90.00°	359.90°	7013.36'	1870.82'	213.41°F
						217.63°F
8650						217.63°F
8700	8684'	90.19°	358.10°	7013.21'	1964.79'	217.63°F
						213.41°F
8750						213.41°F
8800	8778'	90.34°	356.55°	7012.77'	2058.79'	221.84°F
						221.84°F
8850						221.84°F

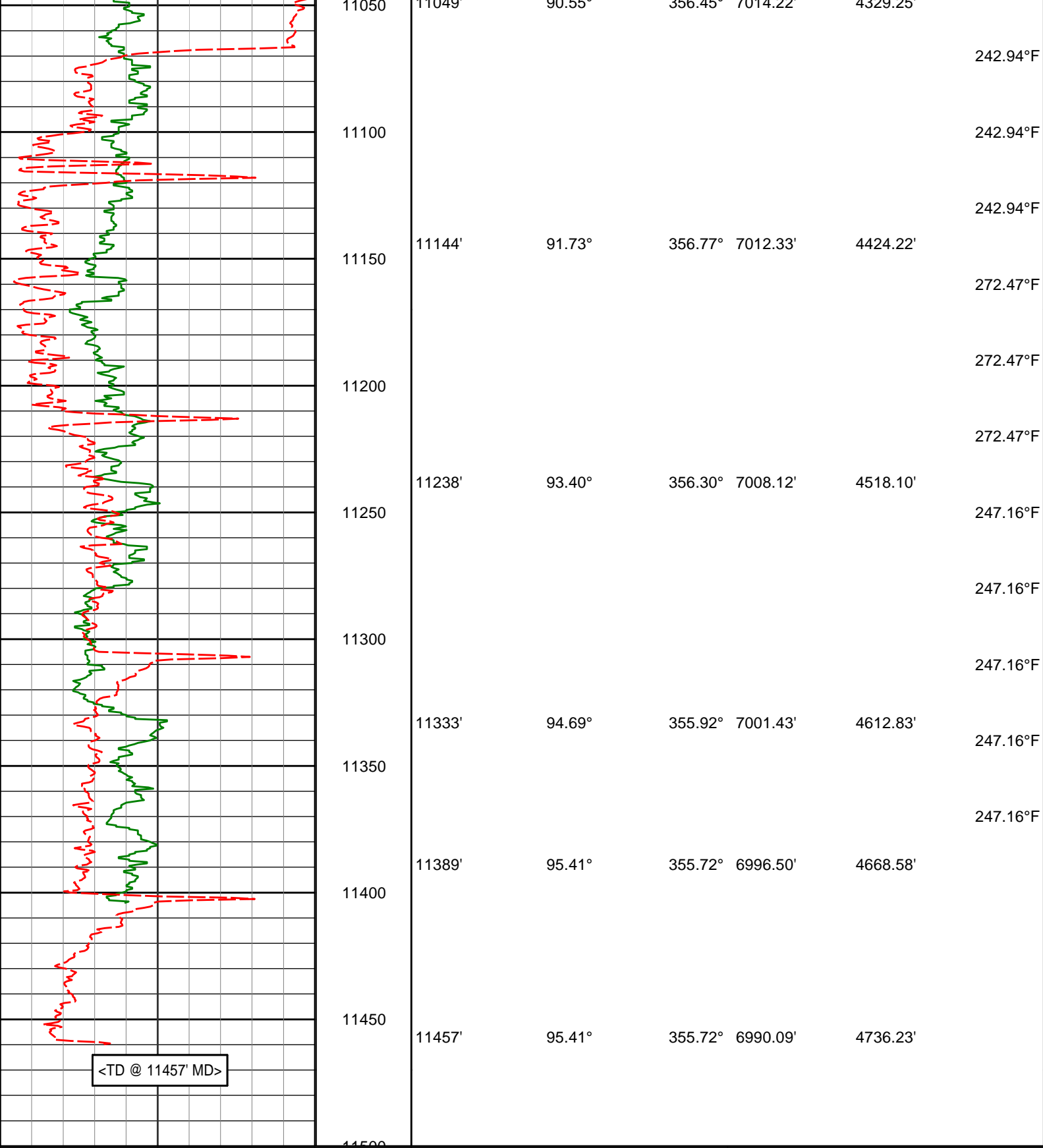


8873'	91.23°	356.35°	7011.47'	2153.76'	221.84°F
8900					221.84°F
8950					221.84°F
8968'	90.77°	355.62°	7009.81'	2248.70'	221.84°F
9000					221.84°F
9050					221.84°F
9063'	88.64°	356.47°	7010.30'	2343.65'	221.84°F
9100					221.84°F
9150					221.84°F
9157'	89.26°	356.81°	7012.02'	2437.62'	221.84°F
9200					221.84°F
9250					221.84°F
9252'	90.06°	356.20°	7012.58'	2532.59'	230.28°F
9300					230.28°F
9350					230.28°F
9346'	90.52°	355.52°	7012.10'	2626.54'	230.28°F
9400					230.28°F



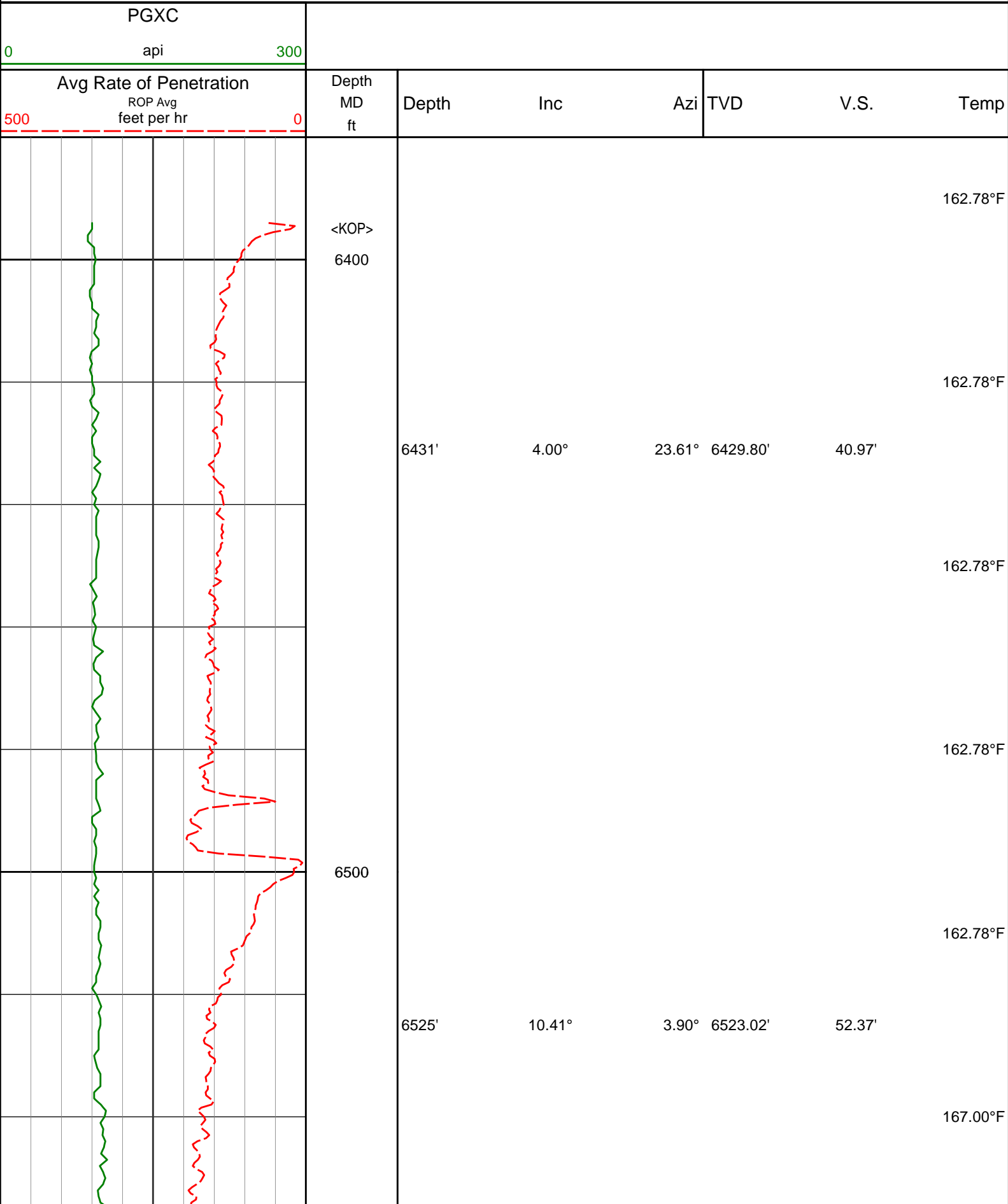


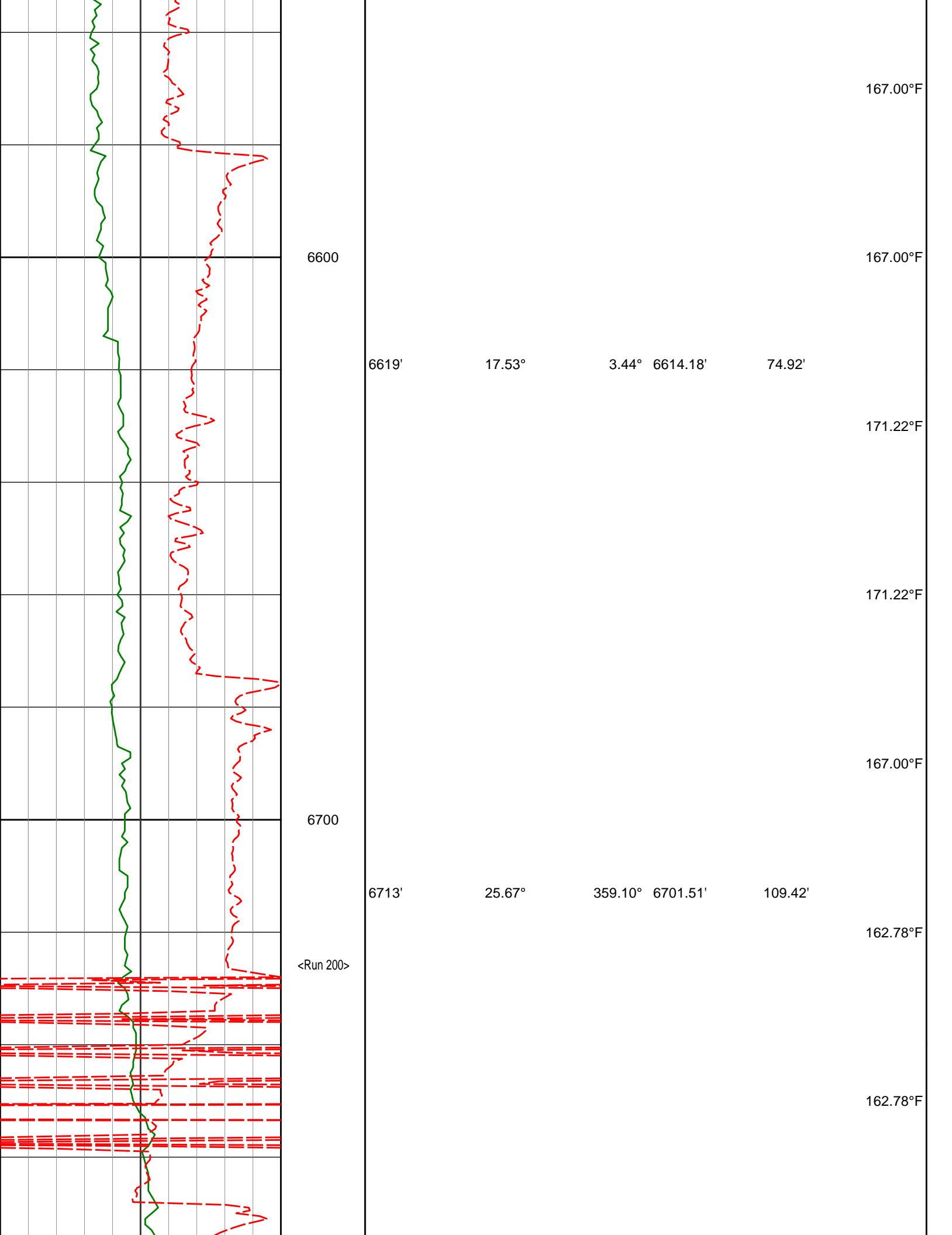


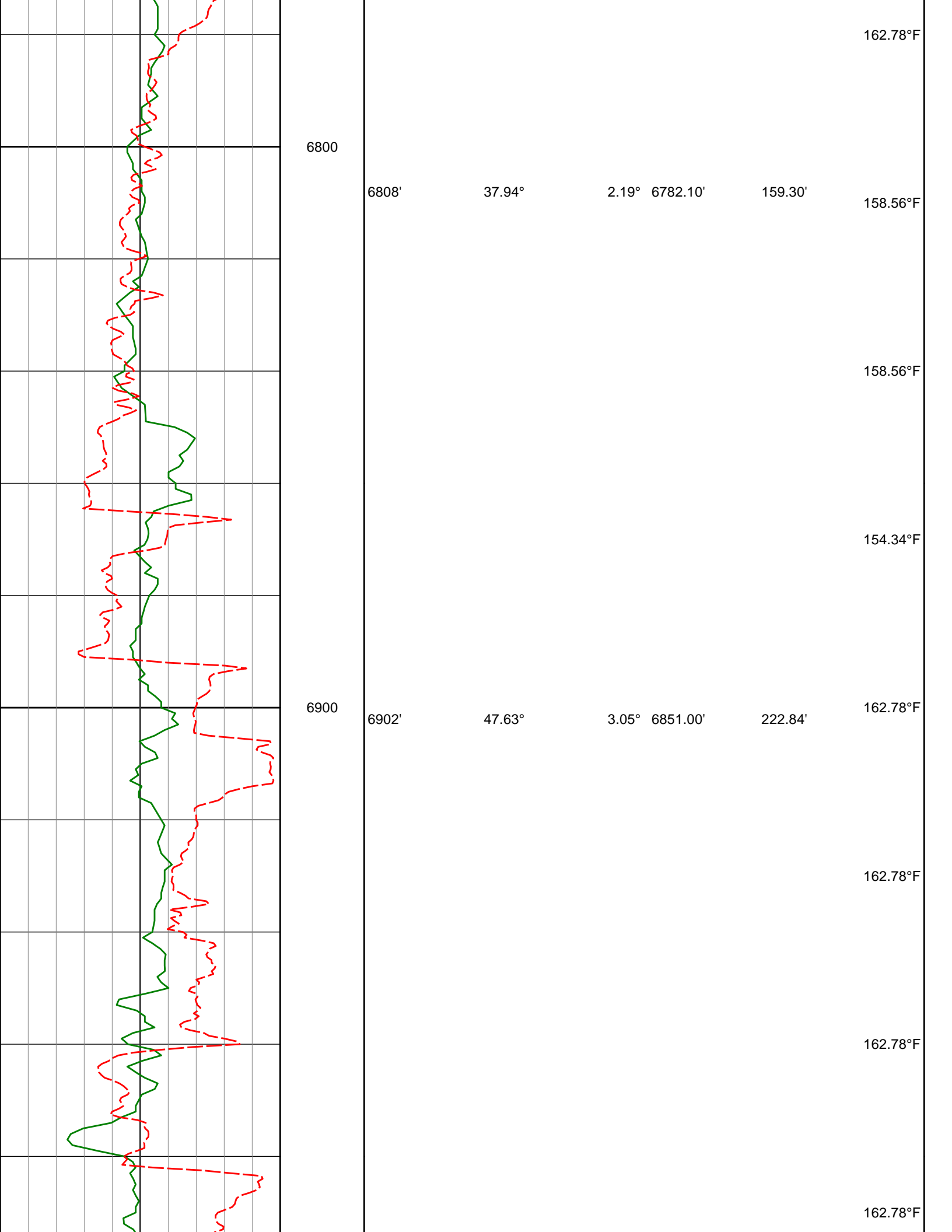


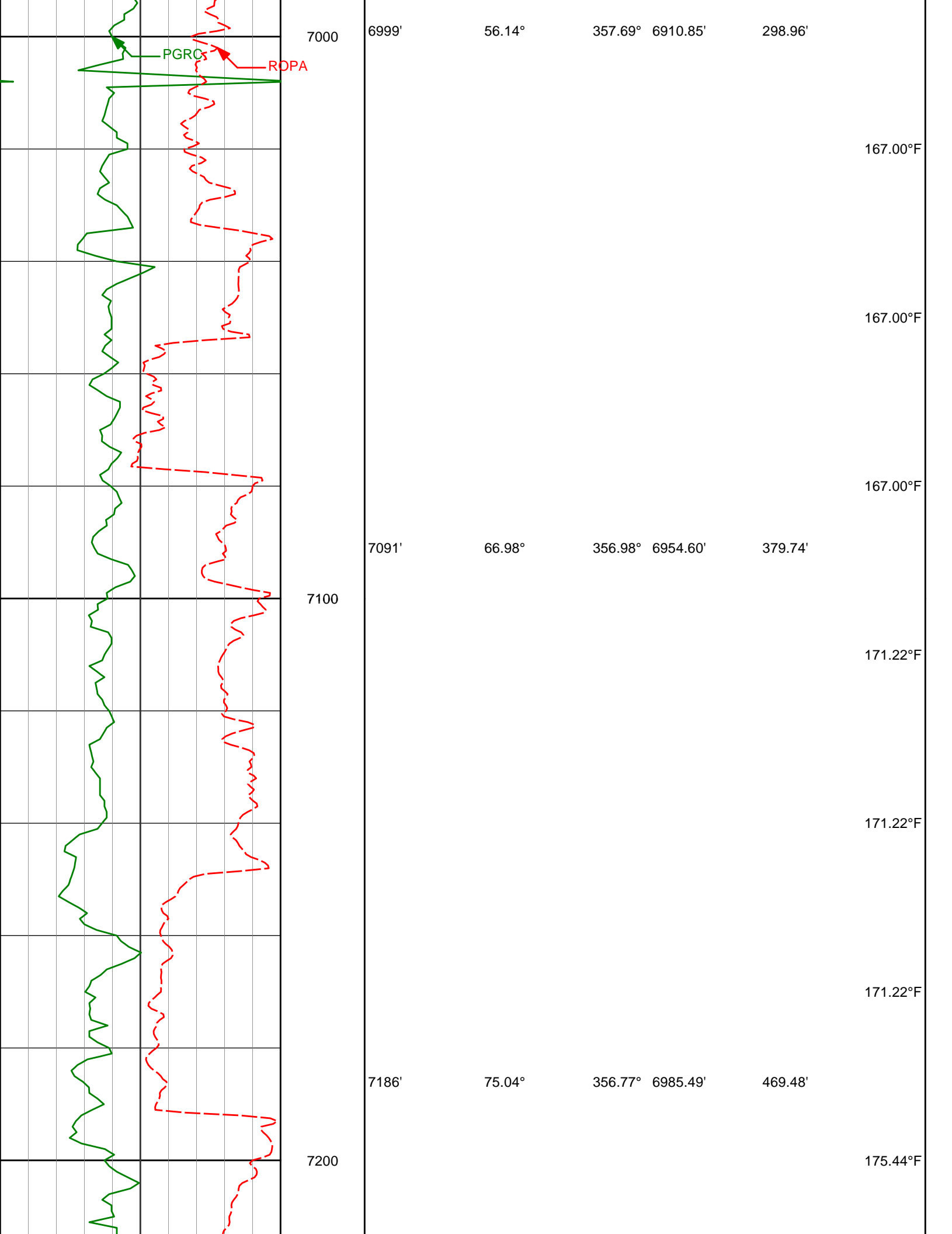
Avg Rate of Penetration ROP Avg feet per hr		Depth MD ft	Depth	Inc	Azi	TVD	V.S.	Temp
PGRC								
api								

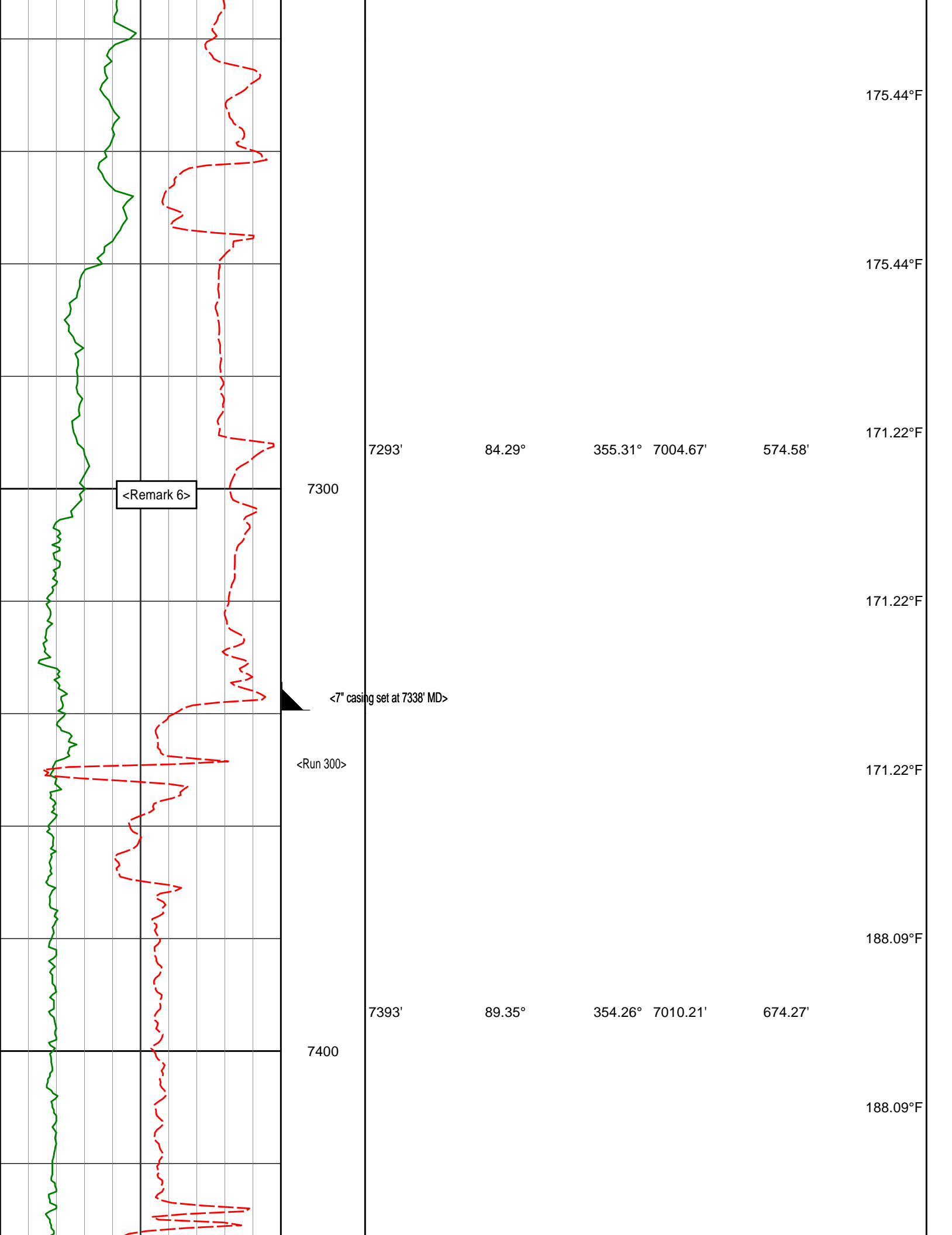
MD Detail 1:240 Scale

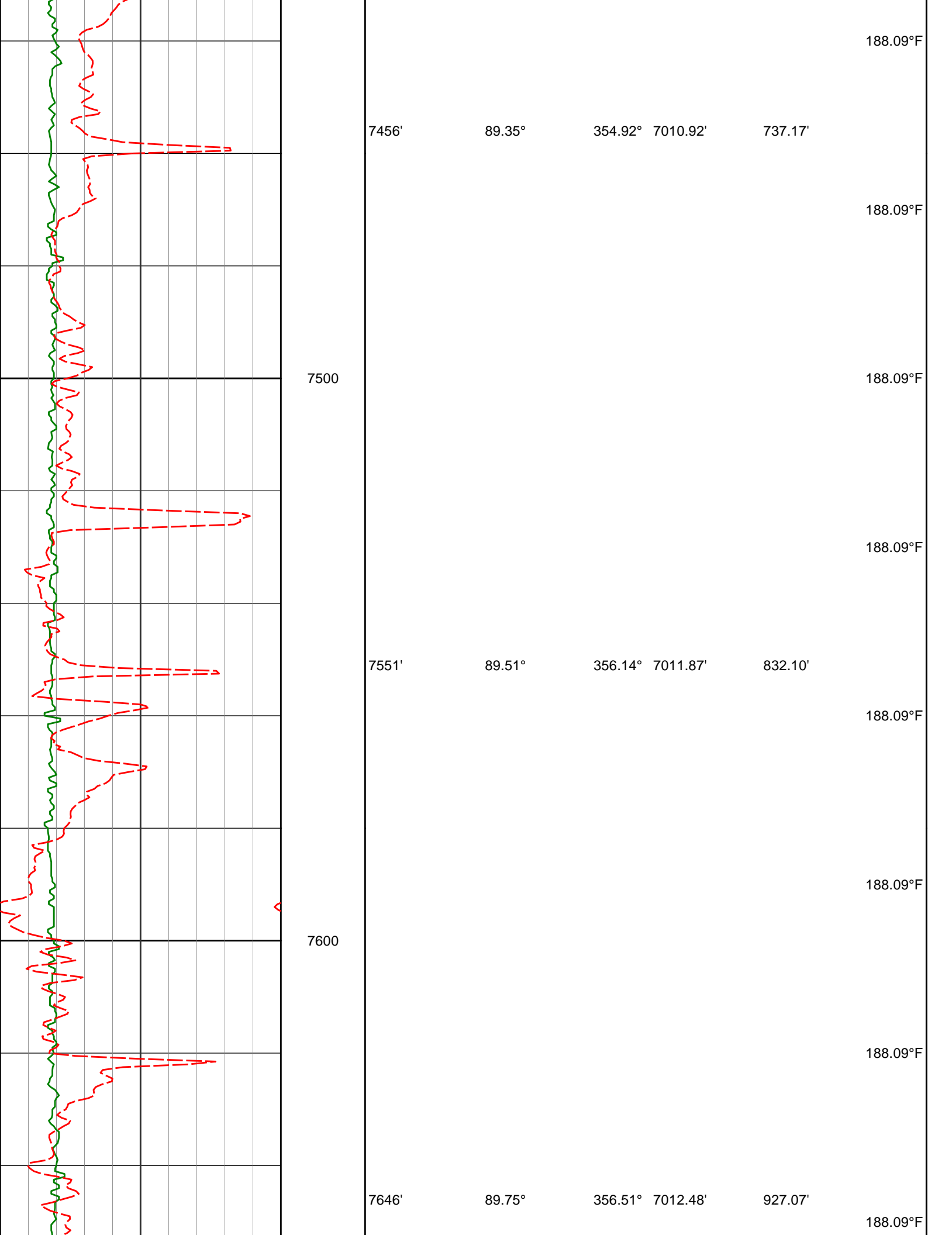


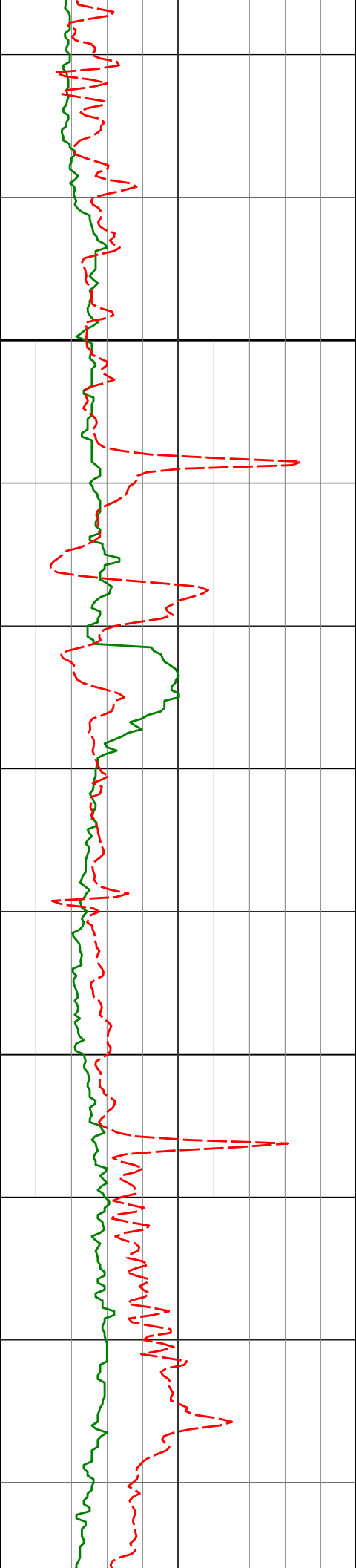












7700

7741'

90.06°

356.69°

7012.64'

1022.05'

7800

7834'

90.25°

356.76°

7012.39'

1115.03'

192.31°F

192.31°F

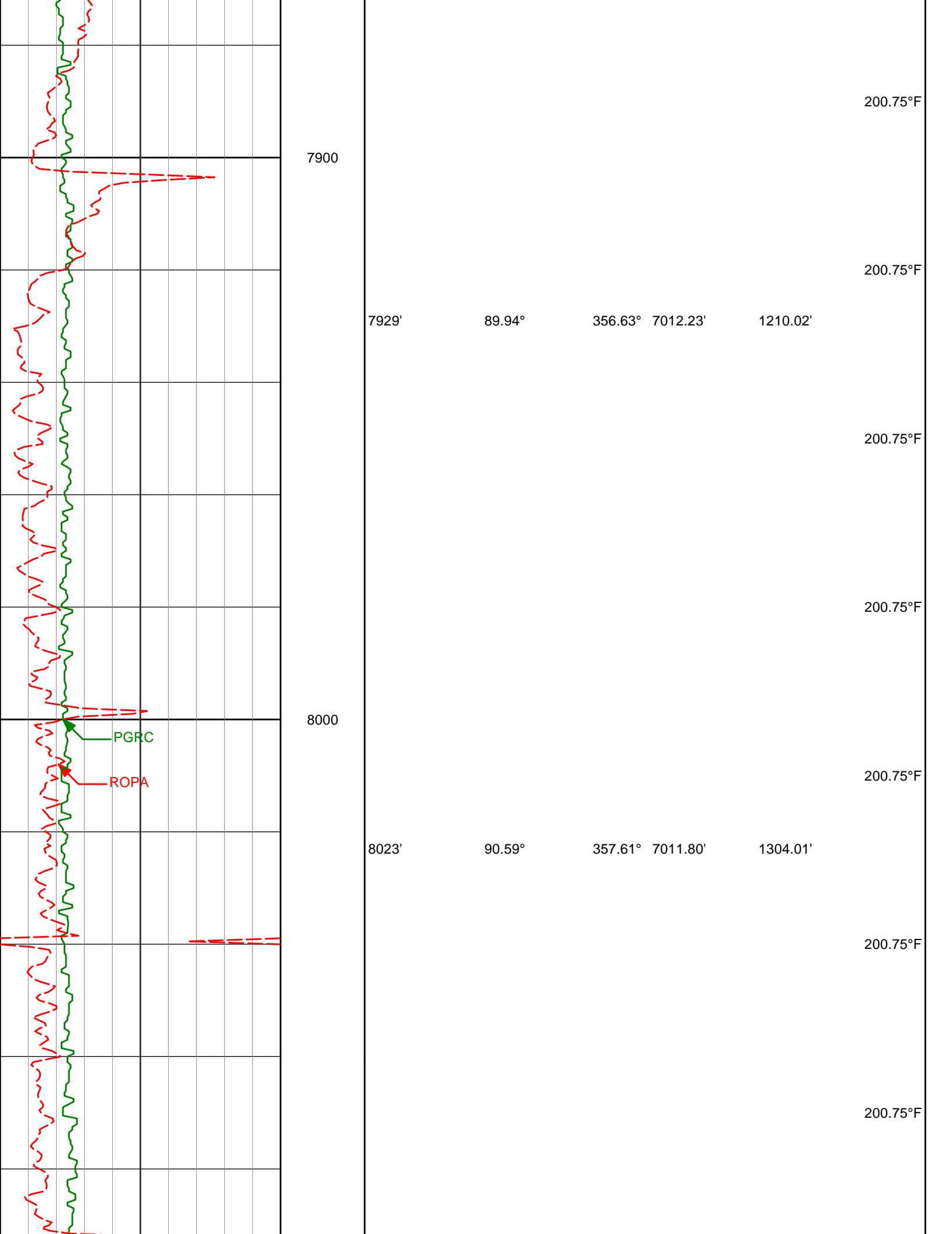
192.31°F

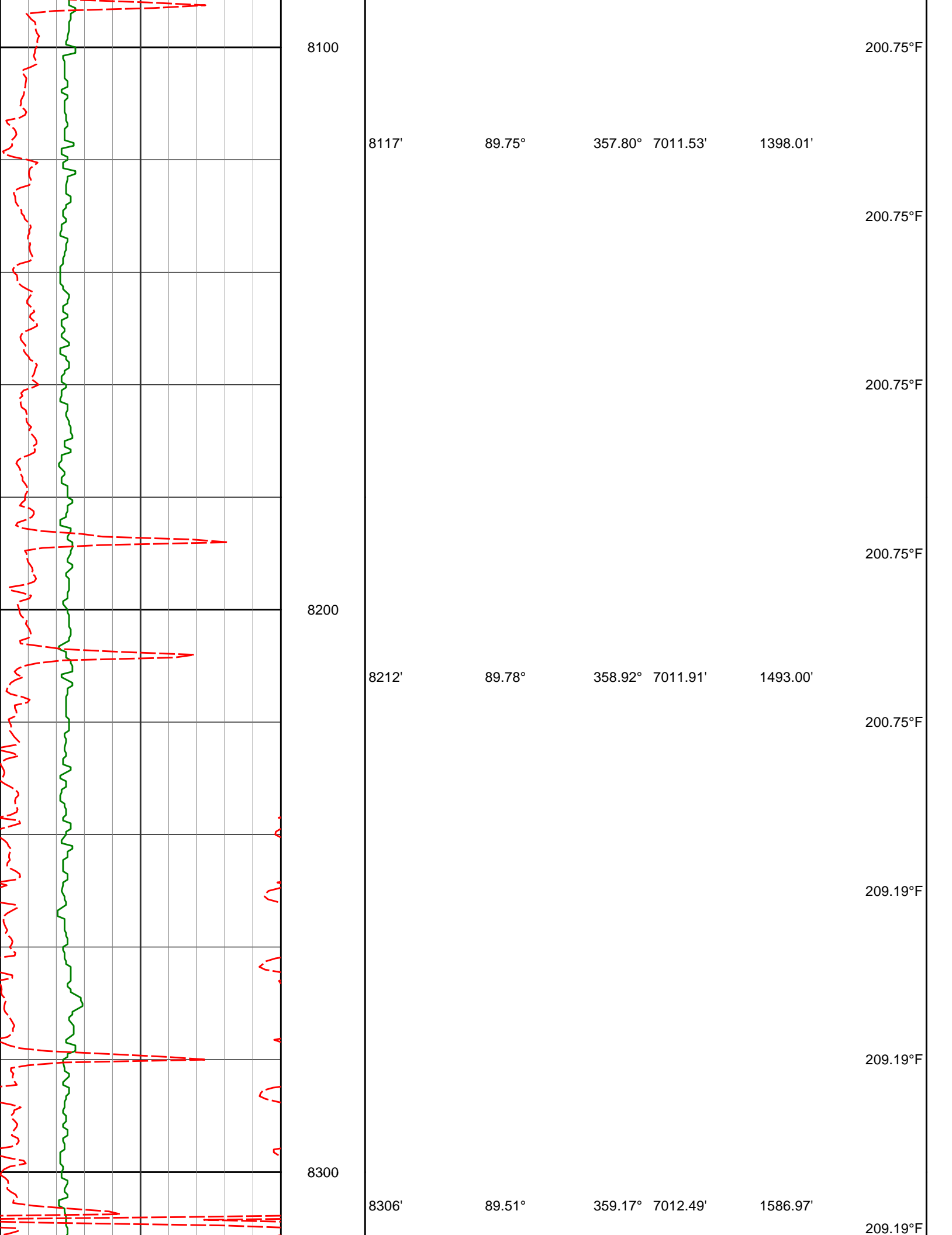
196.53°F

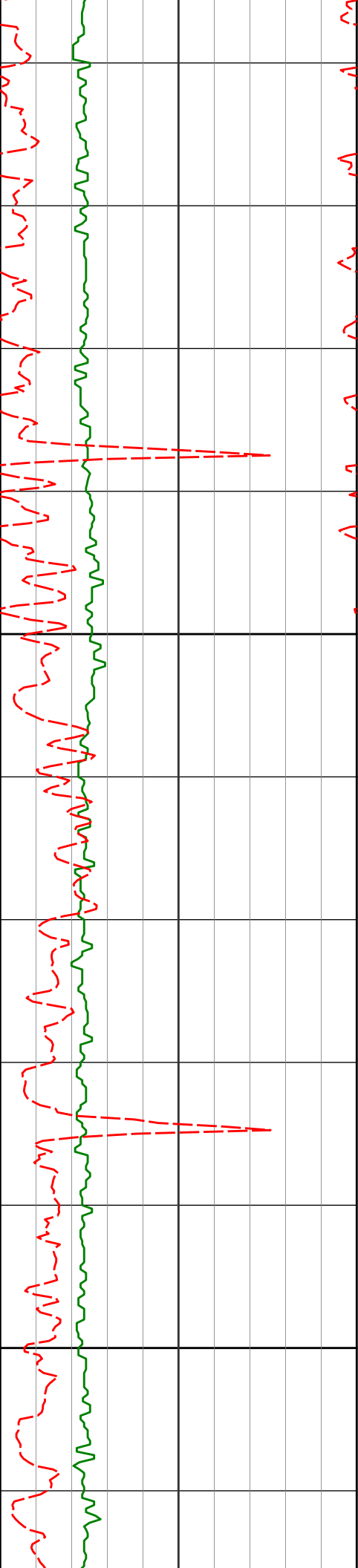
196.53°F

196.53°F

200.75°F







8400

8400'

89.69°

359.25° 7013.15'

1680.94'

209.19°F

209.19°F

209.19°F

213.41°F

213.41°F

8500

8495'

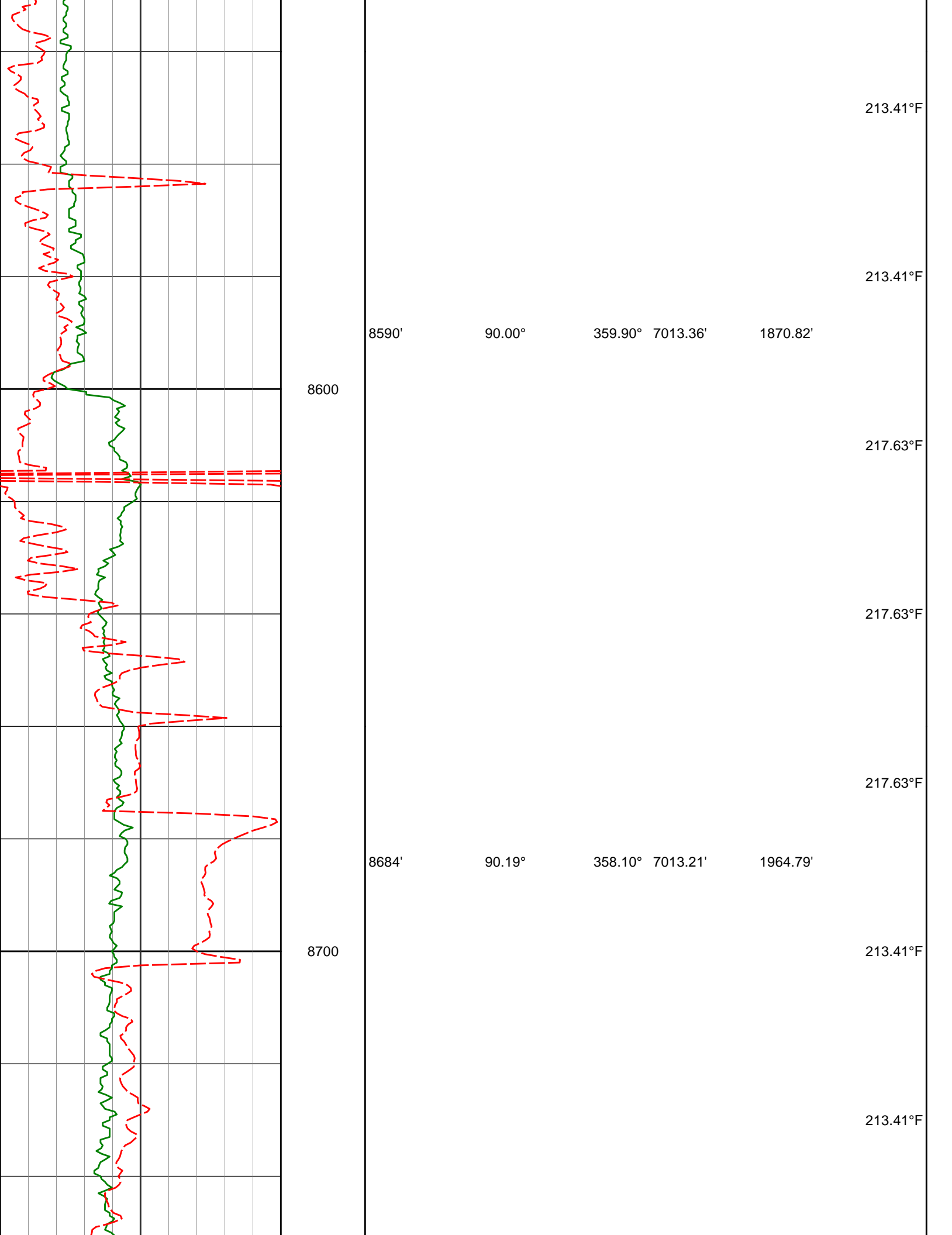
90.03°

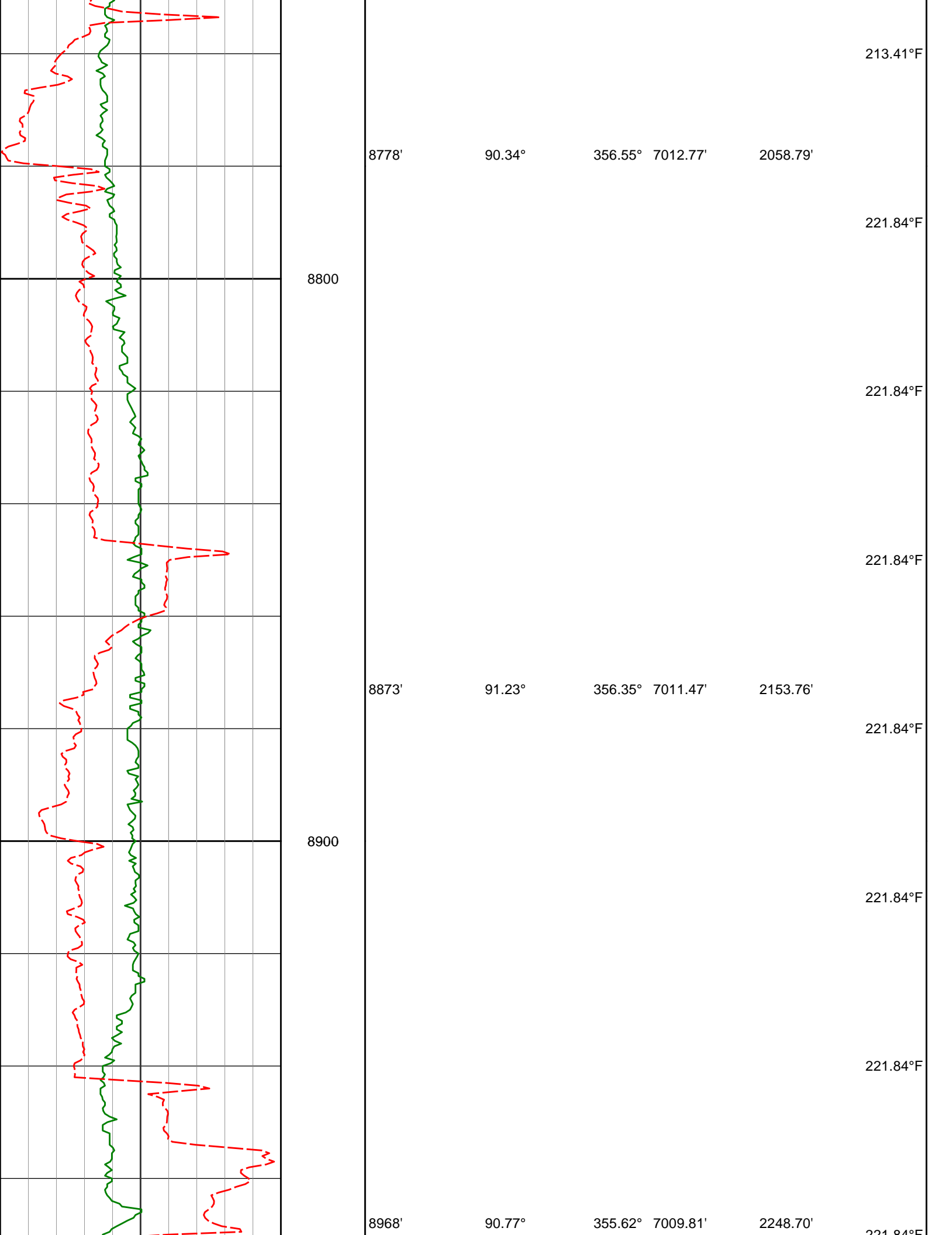
359.81° 7013.38'

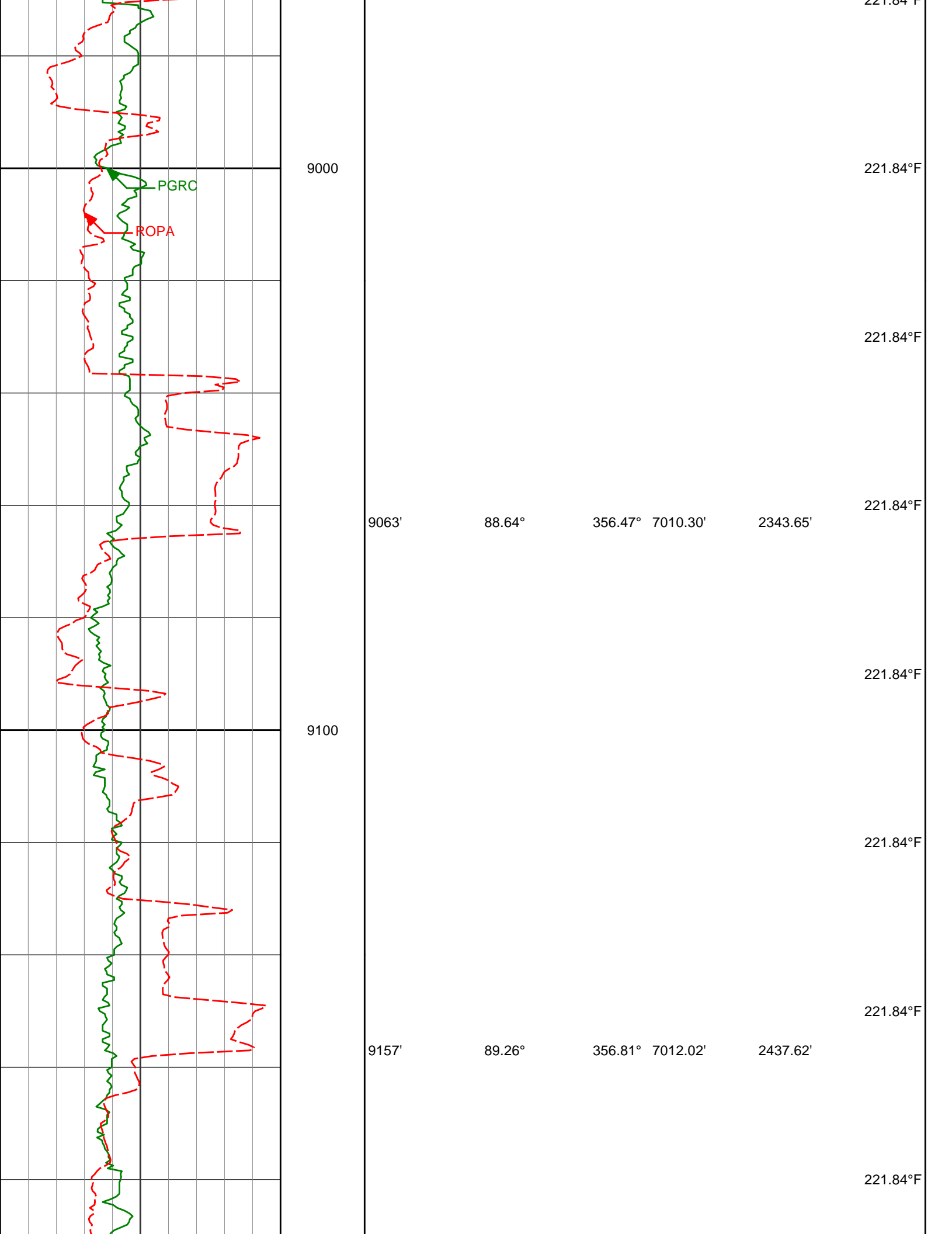
1775.89'

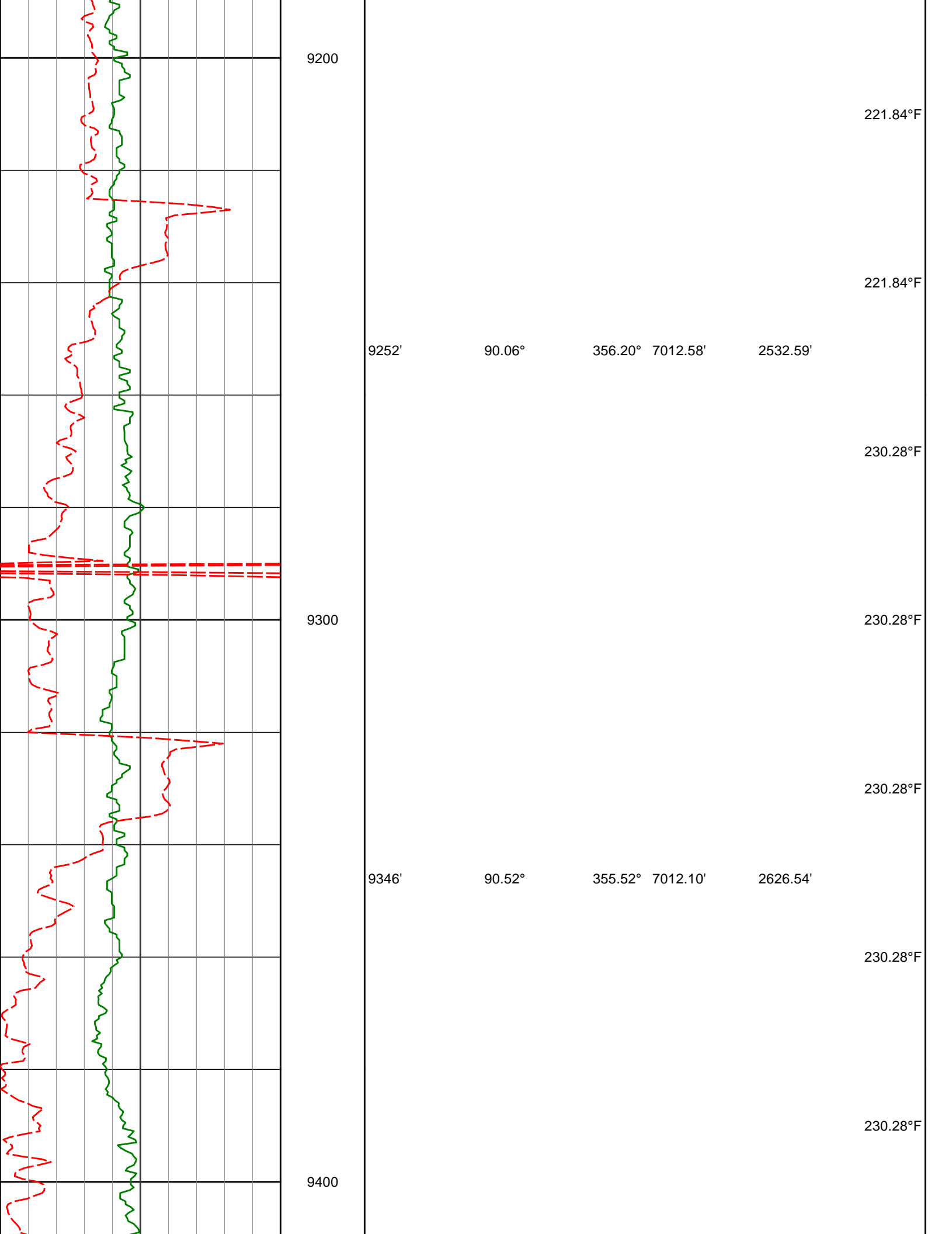
213.41°F

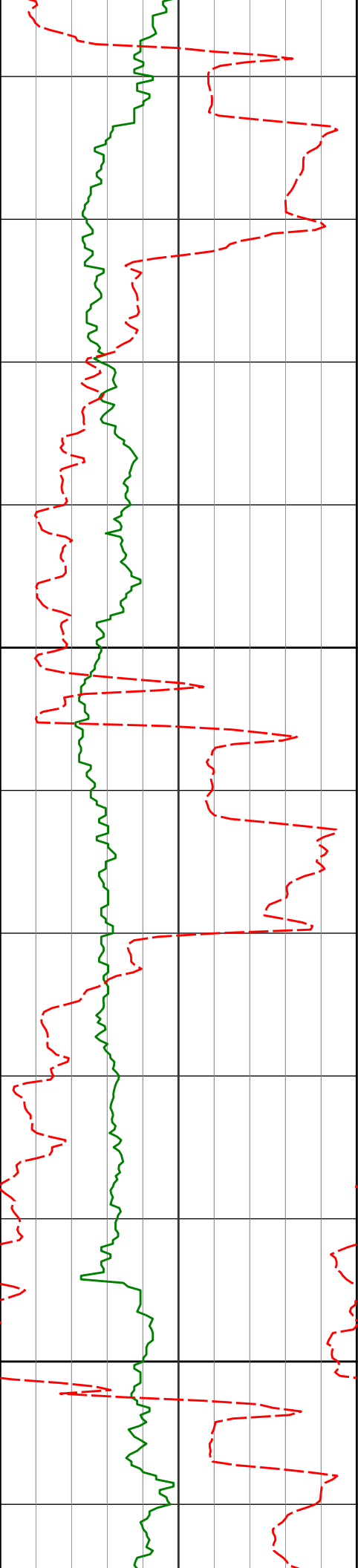
213.41°F











9500

9600

9441'

9536'

90.52°

90.37°

356.52°

357.02°

7011.23'

7010.49'

2721.50'

2816.48'

230.28°F

230.28°F

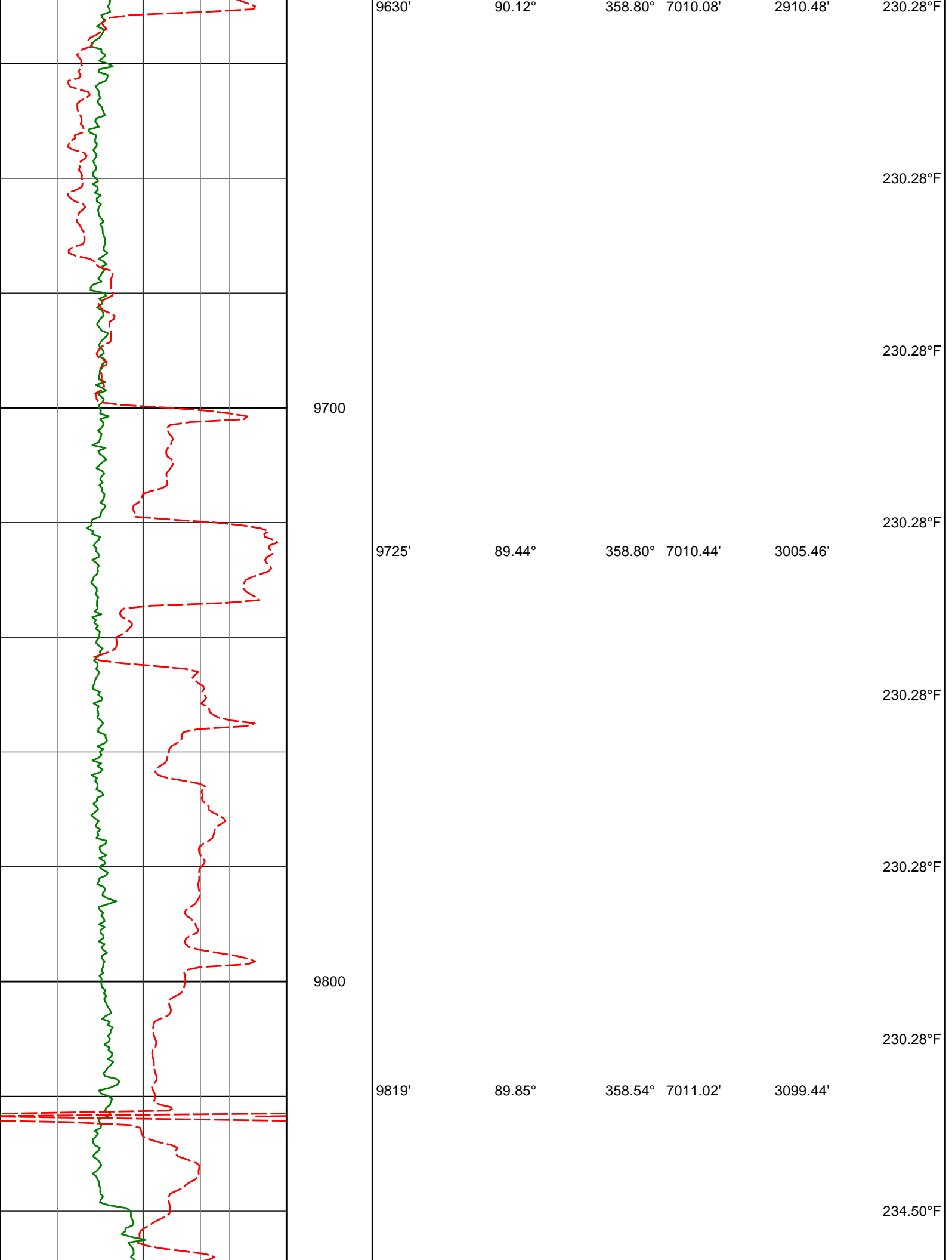
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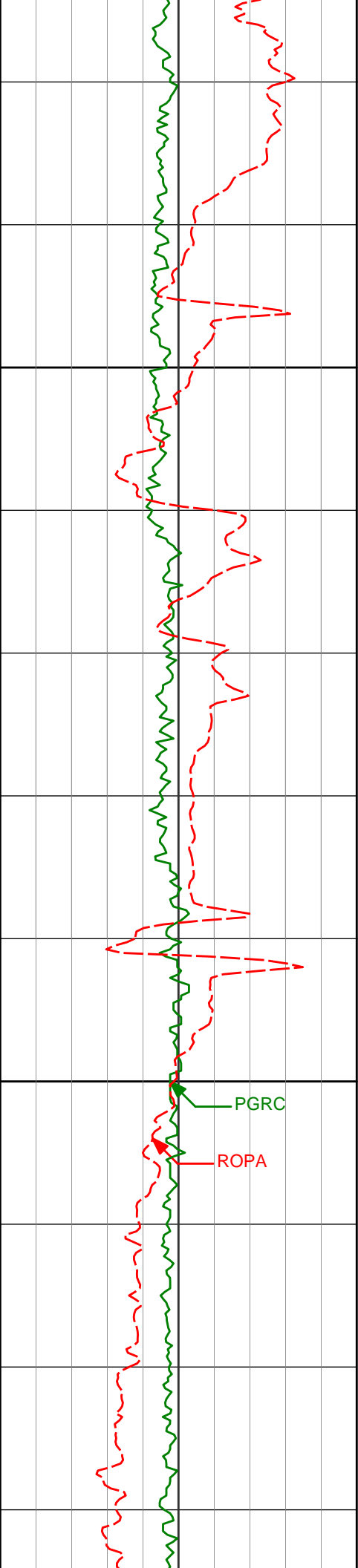
230.28°F

230.28°F

230.28°F

230.28°F





9900

10000

9913'

10008'

90.03°

90.43°

357.91°

357.41°

7011.12'

7010.74'

3193.44'

3288.44'

PGRC

ROPA

234.50°F

234.50°F

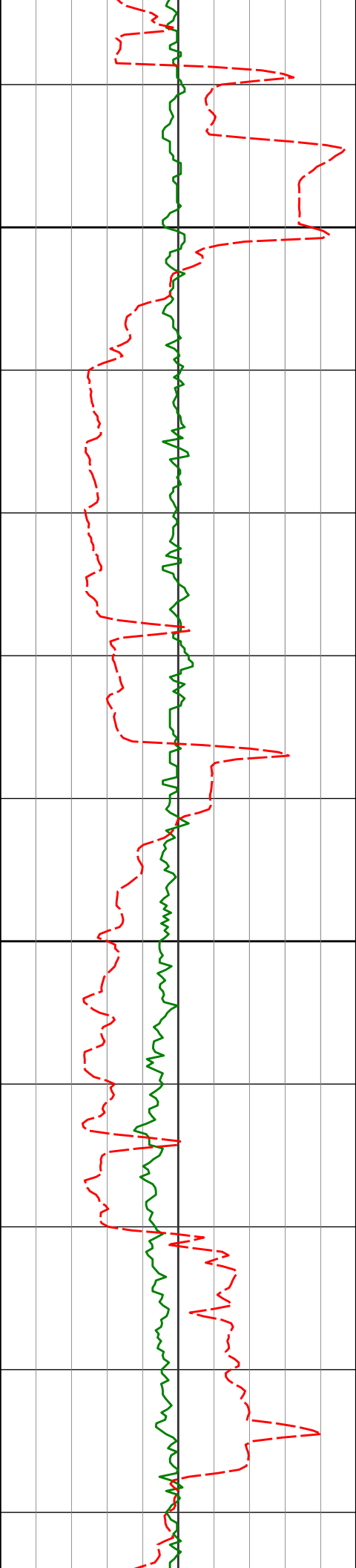
238.72°F

238.72°F

238.72°F

268.25°F

268.25°F



10100

10200

10103'

10197'

89.38°

89.57°

357.46°

357.55°

7010.90'

7011.76'

3383.43'

3477.43'

268.25°F

238.72°F

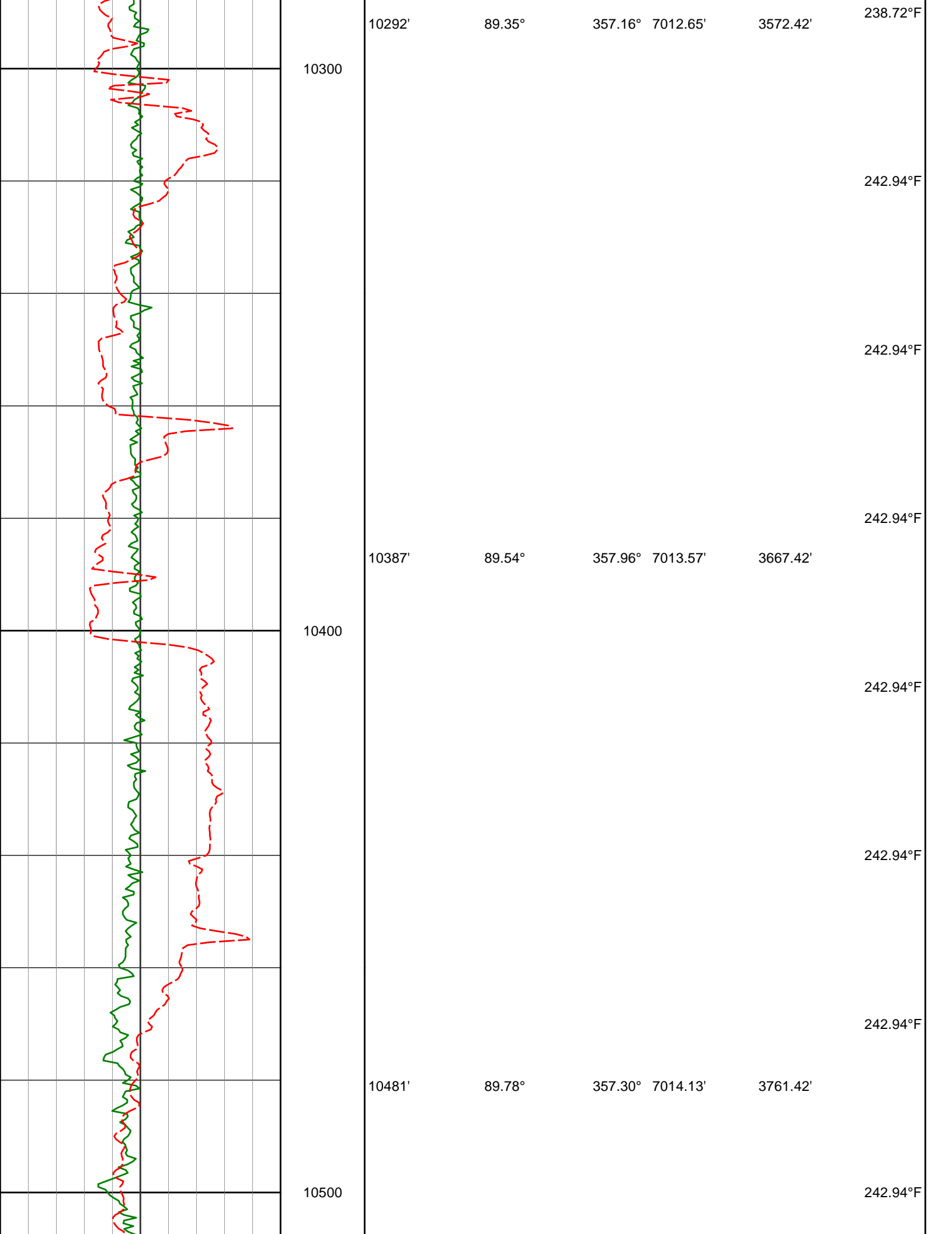
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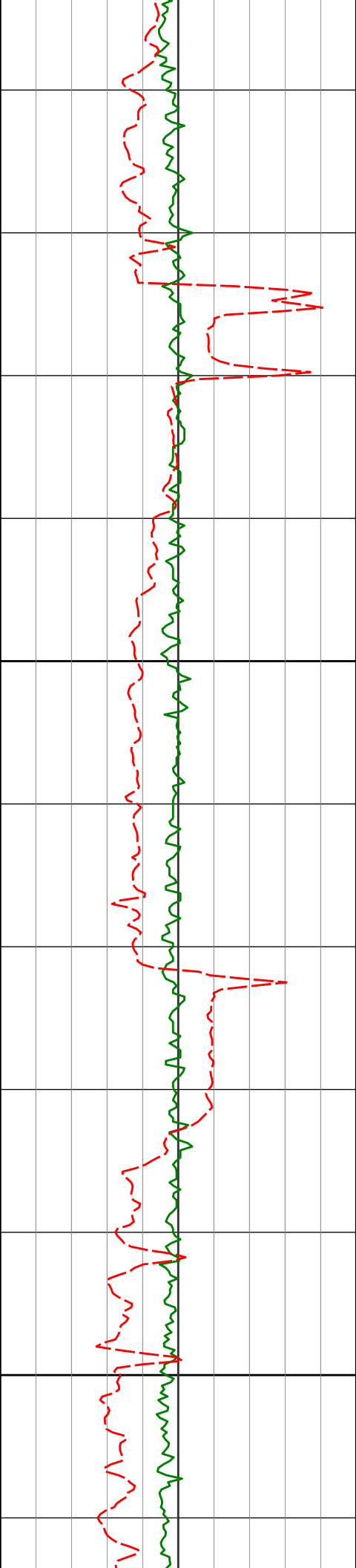
238.72°F

238.72°F

238.72°F

238.72°F





10600

10700

10576'

89.69°

357.35°

7014.56'

3856.41'

10670'

89.41°

357.38°

7015.29'

3950.41'

242.94°F

242.94°F

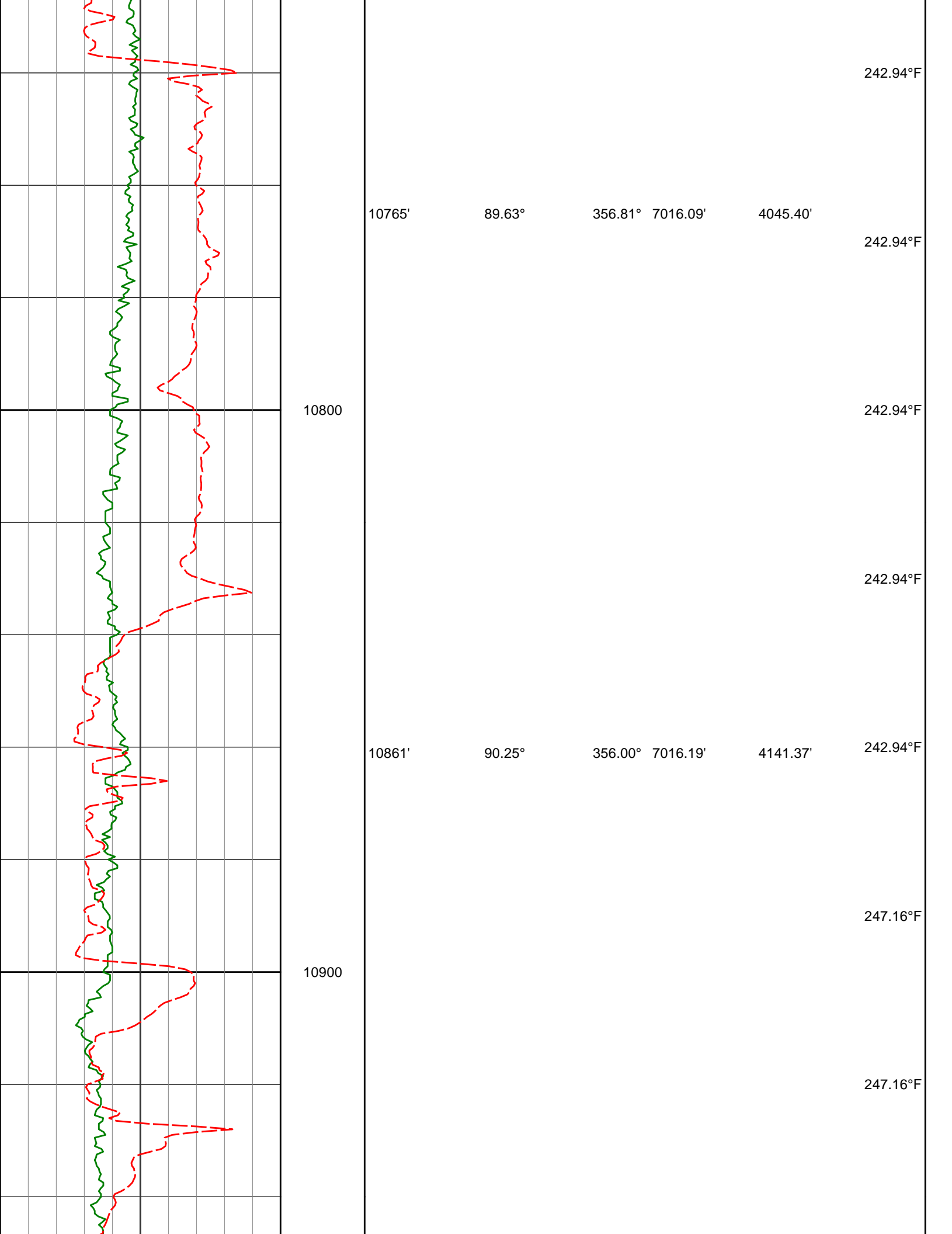
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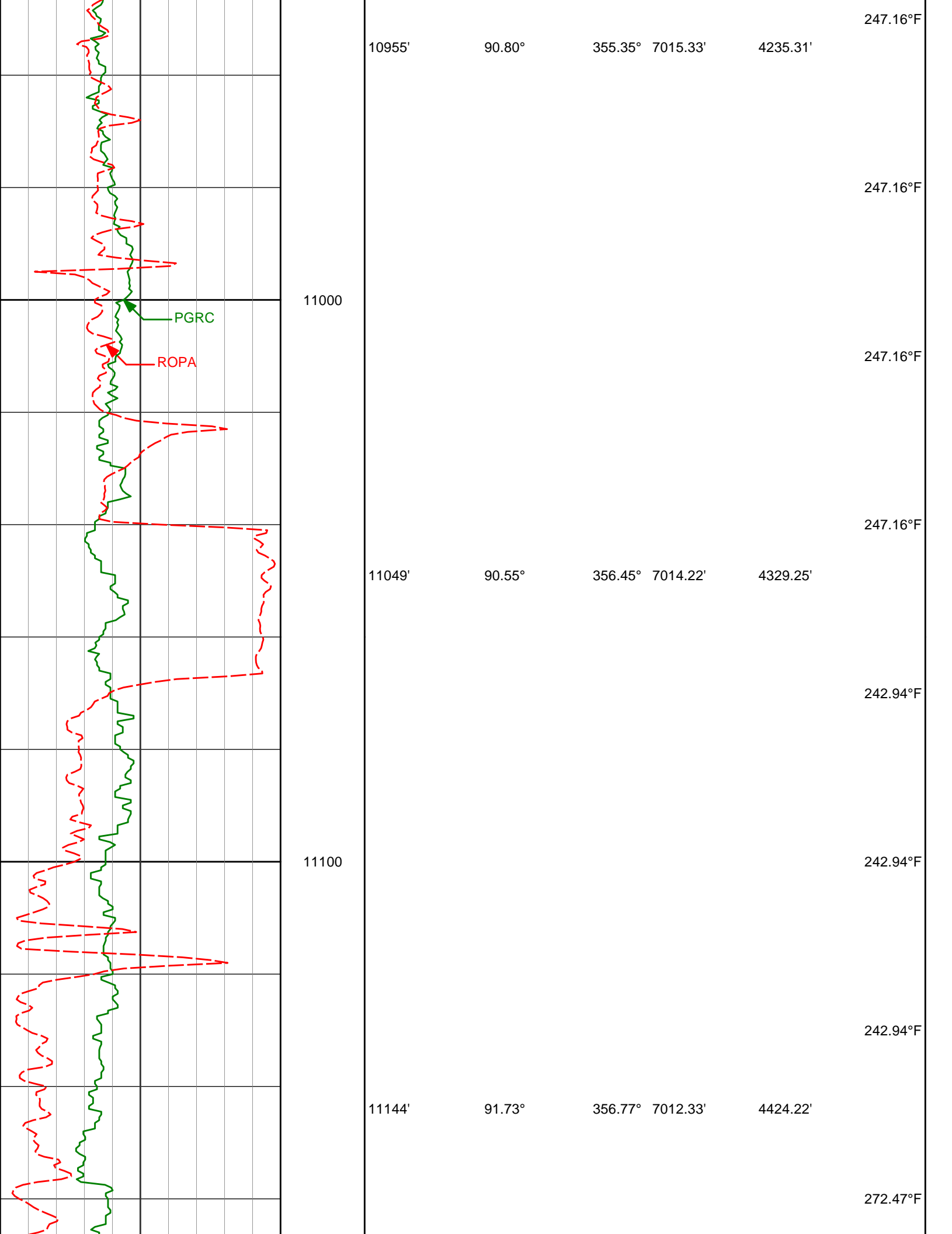
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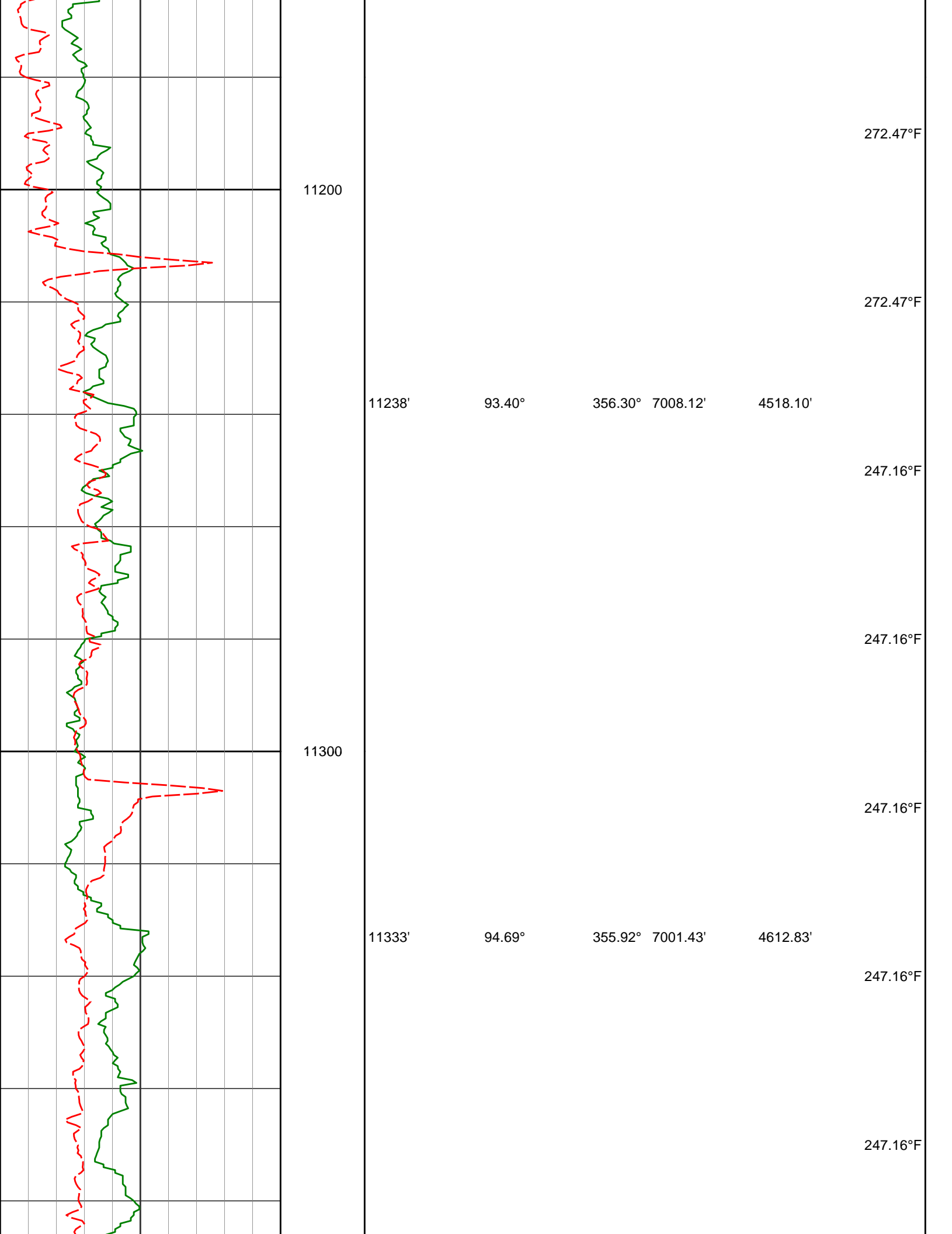
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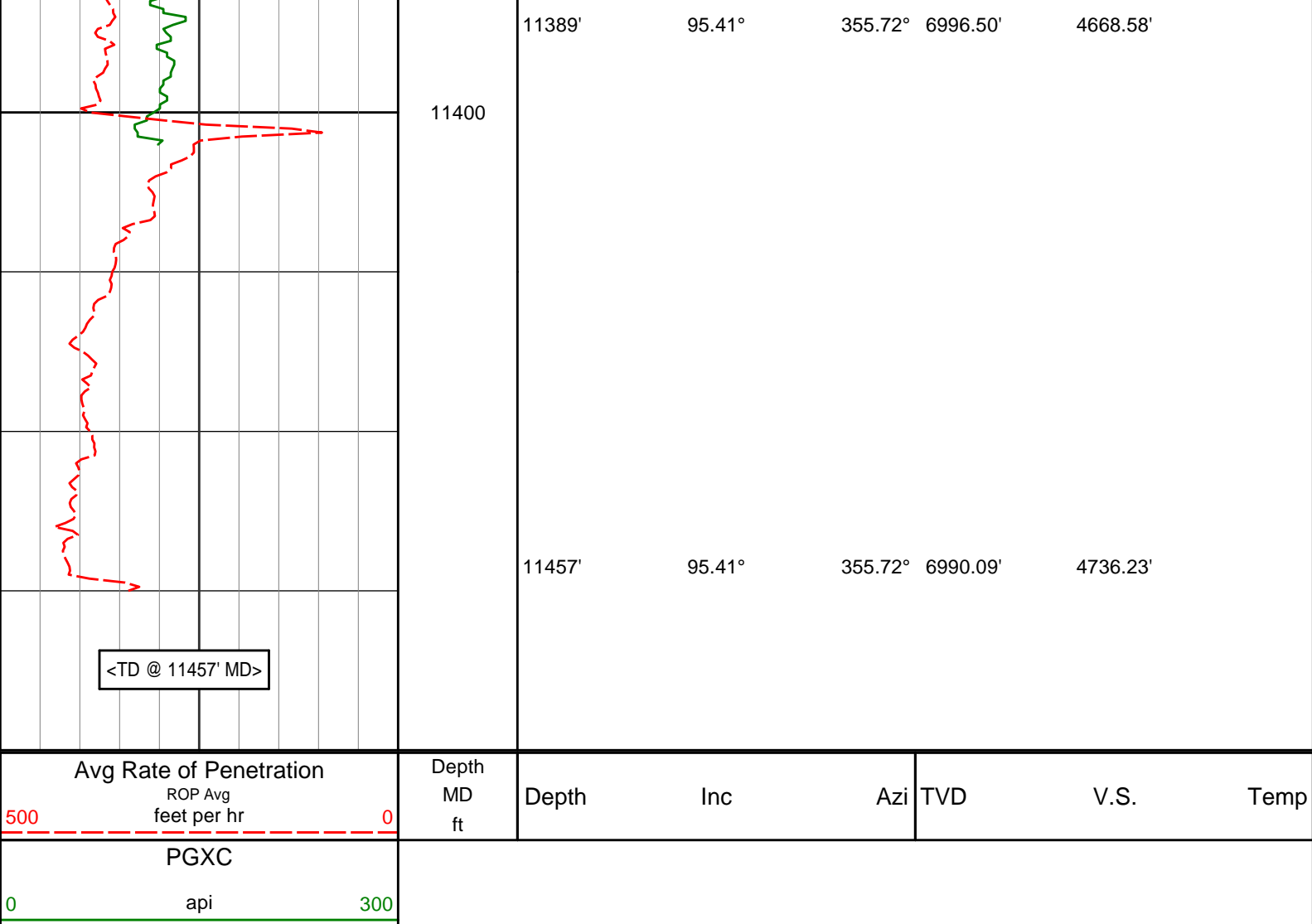
242.94°F

242.94°F









DIRECTIONAL SURVEY REPORT

Noble Energy
Moser H22-776
Wattenberg
Weld Colorado
USA
CA-XX-0902771573

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	0.11	345.62	250.00	0.23 N	0.06 W	0.23	0.04
500.00	0.23	345.62	500.00	0.95 N	0.24 W	0.96	0.05
845.00	0.39	345.62	844.99	2.76 N	0.71 W	2.79	0.05
917.00	0.42	345.62	916.99	3.25 N	0.83 W	3.28	0.04
1011.00	0.31	19.55	1010.99	3.82 N	0.83 W	3.85	0.25
1106.00	0.35	307.08	1105.99	4.24 N	0.98 W	4.28	0.41
1198.00	0.66	327.35	1197.99	4.86 N	1.49 W	4.92	0.39
1289.00	0.94	12.10	1288.98	6.03 N	1.62 W	6.09	0.72
1381.00	0.97	15.39	1380.96	7.51 N	1.26 W	7.56	0.07
1473.00	0.99	9.57	1472.95	9.04 N	0.92 W	9.07	0.11
1565.00	1.10	10.89	1564.94	10.70 N	0.62 W	10.72	0.12
1656.00	1.08	11.49	1655.92	12.41 N	0.28 W	12.41	0.03
1748.00	1.09	22.99	1747.90	14.07 N	0.23 E	14.05	0.24
1839.00	1.08	13.73	1838.89	15.70 N	0.78 E	15.65	0.19
1930.00	0.95	356.92	1929.87	17.28 N	0.94 E	17.23	0.35
2022.00	1.07	324.93	2021.86	18.74 N	0.40 E	18.71	0.62
2113.00	1.03	307.79	2112.84	19.94 N	0.73 W	19.95	0.35
2205.00	0.81	326.74	2204.83	20.99 N	1.74 W	21.05	0.41

2297.00	0.80	329.55	2296.82	22.09 N	2.43 W	22.17	0.05
2389.00	0.30	321.03	2388.82	22.84 N	2.91 W	22.94	0.54
2480.00	0.62	276.38	2479.82	23.08 N	3.55 W	23.21	0.51
2571.00	0.25	192.13	2570.81	22.94 N	4.09 W	23.08	0.71
2663.00	1.03	200.42	2662.81	21.96 N	4.42 W	22.12	0.85
2754.00	0.87	217.99	2753.79	20.65 N	5.13 W	20.84	0.37
2845.00	0.82	226.28	2844.78	19.66 N	6.02 W	19.88	0.15
2936.00	0.96	246.03	2935.77	18.90 N	7.18 W	19.17	0.37
3031.00	1.07	247.57	3030.76	18.24 N	8.73 W	18.58	0.12
3126.00	1.07	263.68	3125.74	17.80 N	10.43 W	18.21	0.32
3220.00	0.79	266.24	3219.73	17.67 N	11.94 W	18.13	0.30
3315.00	0.40	241.06	3314.72	17.46 N	12.88 W	17.97	0.48
3409.00	0.34	204.62	3408.72	17.05 N	13.29 W	17.57	0.25
3504.00	1.18	338.53	3503.72	17.70 N	13.76 W	18.24	1.51
3598.00	2.08	323.15	3597.68	19.97 N	15.14 W	20.56	1.06
3693.00	2.23	326.21	3692.61	22.88 N	17.20 W	23.55	0.19
3788.00	0.46	229.87	3787.59	24.17 N	18.52 W	24.89	2.44
3883.00	0.90	269.42	3882.58	23.92 N	19.55 W	24.68	0.65
3977.00	1.16	269.07	3976.57	23.90 N	21.24 W	24.73	0.28
4072.00	1.37	128.99	4071.56	23.16 N	21.32 W	24.00	2.51
4167.00	0.78	118.85	4166.54	22.14 N	19.87 W	22.92	0.65
4262.00	0.22	123.37	4261.53	21.72 N	19.15 W	22.47	0.59
4546.00	0.22	318.01	4545.53	21.83 N	19.06 W	22.58	0.16
4640.00	0.77	10.04	4639.53	22.59 N	19.07 W	23.34	0.70
4829.00	1.45	352.69	4828.49	26.22 N	19.16 W	26.97	0.40
4923.00	2.70	0.56	4922.43	29.61 N	19.29 W	30.36	1.36
5017.00	1.71	354.47	5016.36	33.22 N	19.40 W	33.97	1.08
5112.00	1.50	82.53	5111.33	34.79 N	18.30 W	35.50	2.35
5300.00	0.62	228.05	5299.32	34.43 N	16.62 W	35.07	1.09
5394.00	0.49	350.60	5393.31	34.48 N	17.06 W	35.14	1.04
5489.00	0.77	303.66	5488.31	35.23 N	17.66 W	35.92	0.60
5677.00	1.97	133.24	5676.28	33.72 N	16.36 W	34.35	1.45
5772.00	2.16	91.36	5771.22	32.56 N	13.38 W	33.07	1.57
5866.00	2.15	78.69	5865.16	32.87 N	9.87 W	33.24	0.51
5960.00	2.30	77.28	5959.09	33.63 N	6.30 W	33.86	0.17
6055.00	2.38	53.56	6054.01	35.22 N	2.85 W	35.31	1.02
6149.00	1.83	53.68	6147.95	37.27 N	0.07 W	37.24	0.59
6337.00	1.23	105.08	6335.89	38.52 N	4.29 E	38.32	0.76
6431.00	4.00	23.61	6429.80	41.27 N	6.57 E	40.97	4.26
6525.00	10.41	3.90	6523.02	52.75 N	8.46 E	52.37	7.21
6619.00	17.53	3.44	6614.18	75.38 N	9.89 E	74.92	7.57
6713.00	25.67	359.10	6701.51	109.93 N	10.42 E	109.42	8.83
6808.00	37.94	2.19	6782.10	159.88 N	11.22 E	159.30	13.02
6902.00	47.63	3.05	6851.00	223.59 N	14.17 E	222.84	10.33
6999.00	56.14	357.69	6910.85	299.79 N	14.45 E	298.96	9.78
7091.00	66.98	356.98	6954.60	380.47 N	10.67 E	379.74	11.81
7186.00	75.04	356.77	6985.49	470.09 N	5.78 E	469.48	8.48
7293.00	84.29	355.31	7004.67	574.99 N	1.51 W	574.58	8.75
7393.00	89.35	354.26	7010.21	674.39 N	10.58 W	674.27	5.17
7456.00	89.35	354.92	7010.92	737.10 N	16.53 W	737.17	1.05
7551.00	89.51	356.14	7011.87	831.80 N	23.94 W	832.10	1.29
7646.00	89.75	356.51	7012.48	926.61 N	30.03 W	927.07	0.47
7741.00	90.06	356.69	7012.64	1021.44 N	35.66 W	1022.05	0.38
7834.00	90.25	356.76	7012.39	1114.29 N	40.97 W	1115.03	0.21
7929.00	89.94	356.63	7012.23	1209.13 N	46.46 W	1210.02	0.35
8023.00	90.59	357.61	7011.80	1303.01 N	51.19 W	1304.01	1.25
8117.00	89.75	357.80	7011.53	1396.93 N	54.95 W	1398.01	0.91
8212.00	89.78	358.92	7011.91	1491.89 N	57.68 W	1493.00	1.18
8306.00	89.51	359.17	7012.49	1585.87 N	59.25 W	1586.97	0.40
8400.00	89.69	359.25	7013.15	1679.86 N	60.54 W	1680.94	0.22
8495.00	90.03	359.81	7013.38	1774.86 N	61.32 W	1775.89	0.69
8590.00	90.00	359.90	7013.36	1869.86 N	61.56 W	1870.82	0.10
8684.00	90.19	358.10	7013.21	1963.84 N	63.21 W	1964.79	1.93
8778.00	90.34	356.55	7012.77	2057.73 N	67.60 W	2058.79	1.65
8873.00	91.23	356.35	7011.47	2152.54 N	73.48 W	2153.76	0.97
8968.00	90.77	355.62	7009.81	2247.29 N	80.14 W	2248.70	0.91
9063.00	88.64	356.47	7010.30	2342.06 N	86.70 W	2343.65	2.41
9157.00	89.26	356.81	7012.02	2435.88 N	92.21 W	2437.62	0.75
9252.00	90.06	356.20	7012.58	2530.70 N	98.01 W	2532.59	1.06
9346.00	90.52	355.52	7012.10	2624.45 N	104.80 W	2626.54	0.88
9441.00	90.52	356.52	7011.23	2719.22 N	111.39 W	2721.50	1.05

9536.00	90.37	357.02	7010.49	2814.06 N	116.75 W	2816.48	0.55
9630.00	90.12	358.80	7010.08	2908.00 N	120.18 W	2910.48	1.92
9725.00	89.44	358.80	7010.44	3002.97 N	122.17 W	3005.46	0.71
9819.00	89.85	358.54	7011.02	3096.95 N	124.36 W	3099.44	0.51
9913.00	90.03	357.91	7011.12	3190.90 N	127.27 W	3193.44	0.69
10008.00	90.43	357.41	7010.74	3285.82 N	131.15 W	3288.44	0.67
10103.00	89.38	357.46	7010.90	3380.72 N	135.40 W	3383.43	1.10
10197.00	89.57	357.55	7011.76	3474.63 N	139.49 W	3477.43	0.22
10292.00	89.35	357.16	7012.65	3569.52 N	143.87 W	3572.42	0.46
10387.00	89.54	357.96	7013.57	3664.43 N	147.92 W	3667.42	0.86
10481.00	89.78	357.30	7014.13	3758.35 N	151.80 W	3761.42	0.74
10576.00	89.69	357.35	7014.56	3853.25 N	156.23 W	3856.41	0.11
10670.00	89.41	357.38	7015.29	3947.14 N	160.56 W	3950.41	0.30
10765.00	89.63	356.81	7016.09	4042.02 N	165.37 W	4045.40	0.64
10861.00	90.25	356.00	7016.19	4137.83 N	171.39 W	4141.37	1.06
10955.00	90.80	355.35	7015.33	4231.56 N	178.48 W	4235.31	0.91
11049.00	90.55	356.45	7014.22	4325.31 N	185.20 W	4329.25	1.19
11144.00	91.73	356.77	7012.33	4420.12 N	190.81 W	4424.22	1.28
11238.00	93.40	356.30	7008.12	4513.85 N	196.49 W	4518.10	1.84
11333.00	94.69	355.92	7001.43	4608.39 N	202.92 W	4612.83	1.42
11389.00	95.41	355.72	6996.50	4664.03 N	206.98 W	4668.58	1.33
11457.00	95.41	355.72	6990.09	4731.54 N	212.04 W	4736.23	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 357.70 DEGREES (GRID)
A TOTAL CORRECTION OF 7.91 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11457.00 FEET
IS 4736.29 FEET ALONG 357.43 DEGREES (GRID)**

Surveys at 250 ft, 500 ft and 845 are interpolated between surface and first survey at 917 ft.

Last survey is a projection from 11389 ft MD to TD at 11457 ft MD.