HALLIBURTON | Sperry Drilling

PCG Pressure Case Gamma
PCG Pressure Case Directional

Powered by INSITE™

1 : 600 / 1 : 240

Country : USA
Field : Wattenburg
Location : Lat: 40° 29' 44.88" North Long: 104° 23' 42.07" West
Well : Wells Ranch AA11-628
Company : Noble Energy Inc.
Rig : H&P 343

Company : **Noble Energy Inc.**
Rig : **H&P 343**
Well : **Wells Ranch AA11-628**
Field : **Wattenburg**
Country : **USA**
API Number : **05-123-41247**

LOCATION
Latitude : **40° 29' 44.88" North**
Longitude : **104° 23' 42.07" West**
UTM Easting = **3,307,305.684 ft**
UTM Northing = **1,425,375.113 ft**

Other Services
Directional Drilling

Permanent Datum : **Ground Level** Elevation : **4833.00 ft**
Log Measured From : **Drill Floor** **24.00 ft** Above Permanent Datum
Drilling Measured From : **Drill Floor**

TVD LOG

Elev. KB **N/A**
DF **4857.00 ft**
GL **4833.00 ft**
WD **N/A**

Depth Logged : **600.00 ft** To **6,663.76 ft**
Date Logged : **10-Jun-15** To **13-Jun-15**
Total Depth MD : **7,053.00 ft** TVD : **6,663.76 ft**
Spud Date : **10-Jun-15**

Unit No. : **11610115** Job No. : **CA-XX-0902258970**
Plot Type : **Final**
Plot Date : **16-Jun-15**

Run No.	Borehole Record (TVD)			Size	Casing Record (TVD)		
	Size	From	To		Weight	From	To
0100	8.750 in	600.00 ft	6,663.76 ft	9.625 in	36.60 lbpf	SURFACE	592.00 ft

WELL INFORMATION

MWD Run Number	100
Date run completed	13-Jun-15
Rig Bit Number	0100
Bit Size (in)	8.750
Tool Nominal OD (in)	6.750
Log Start Depth (TVD, ft)	600.00
Log End Depth (TVD, ft)	6,663.76
Drill or Wipe	Drill
Drill/Wipe Start Date and Time	11-Jun-15 17:15
Drill/Wipe End Date and Time	12-Jun-15 18:30
Min Inc (deg) @ Depth (TVD, ft)	0.22 @ 733.00
Max Inc (deg) @ Depth (TVD, ft)	89.17 @ 6,663.41
Bit TFA(in2) / Bit Type	0.98 / PDC
Flow Rate (gpm)	593.76
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A
Fluid Type	Native/Spud Mud
Density (ppg) / Viscosity (spqt)	8.70 / 27.00
Filtrate CL (ppm)	21.00
pH / Fluid Loss (mptm)	8.40 / 44
PV (cP) / YP (lhf2)	3 / 2.00
% Solids / % Sand	2.40 / 0.25
% Oil / Oil:Water Ratio	N/A / N/A
Rm @ Measured Temp (degF)	N/A @ N/A
Rmf @ Measured Temp (degF)	N/A @ N/A
Rmc @ Measured Temp (degF)	N/A @ N/A

Max Tool Temp (degF) / Source	172.78 / PCM				
Rm @ Max Tool Temp (degF)	N/A @ N/A				
Lead MWD Engineer	Brian Neu				
Customer Representative	Johnny Sanchez				

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM				
Software Version	5.93				
Sub Serial Number	11404299				
Insert Serial Number	11680771				
Date and Time Initialized	11-Jun-15 10:51				
Date and Time Read	13-Jun-15 00:06				
ECMB SW Version	N/A				

Directional Sensor Information

Tool Type	PCDC				
Distance From Bit (ft)	63.00				
Software Version	6.33				
Sub Serial Number	11404299				
Sonde Serial Number	11477975				
Sensor ID Number	N/A				
Toolface Offset (deg)	135.10				

Gamma Ray Sensor Information

Tool Type	PCG				
Distance From Bit (ft)	56.14				
Recorded Sample Period (sec)	10				
Software Version	8.15				
Sub Serial Number	11404299				
Insert/Sonde Serial Number	11120592				

REMARKS

1. All depths are calibrated to driller's pipe tally and are total vertical depth 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. Environmental parameters used in gamma and resistance processing:
Hole Size: 8.75"
Mud Density: 9.9-11.0
5. The following smoothing parameters have been applied to the data:
Interval: 0.5 ft
Coercion Distance: 1.2 ft (ROPA)
Interval: 0.5 ft
Coercion Distance: 0.6 ft (Gamma Ray)

WARRANTY

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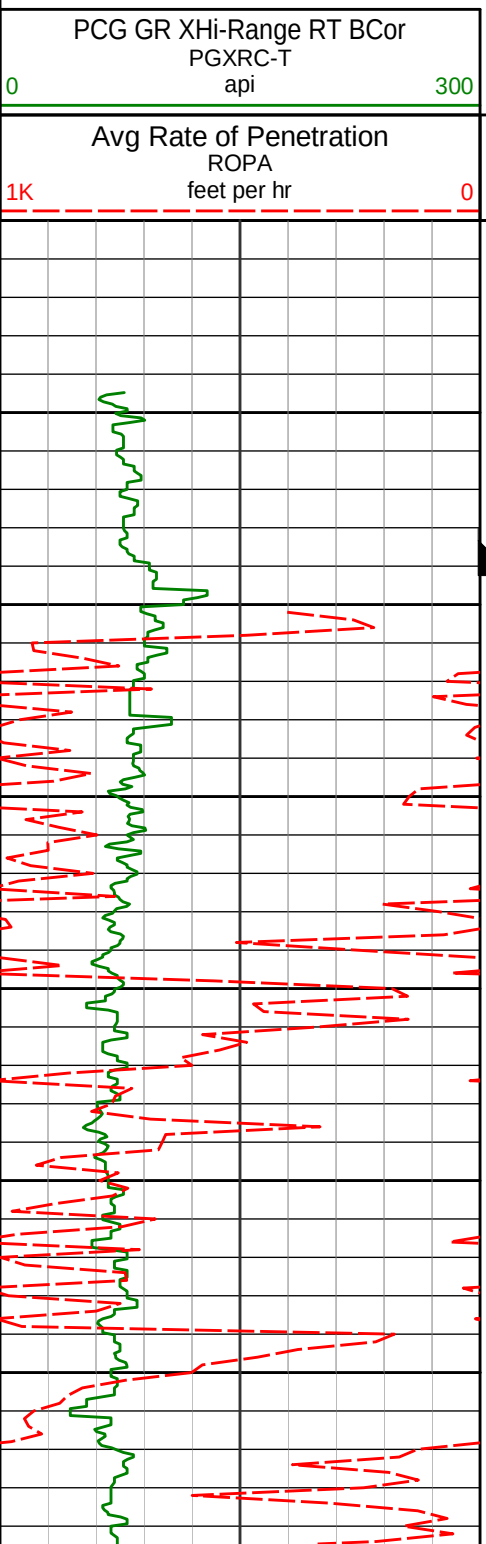
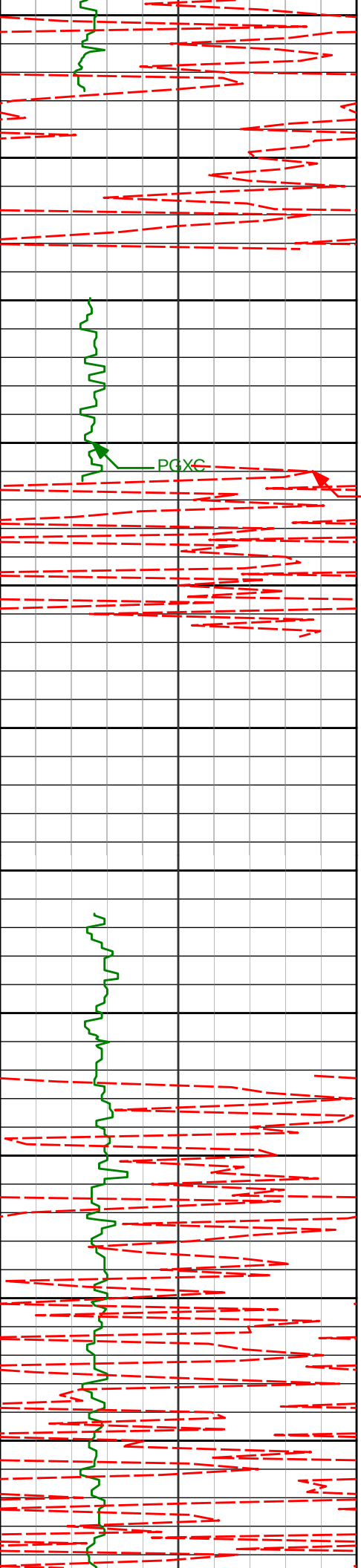
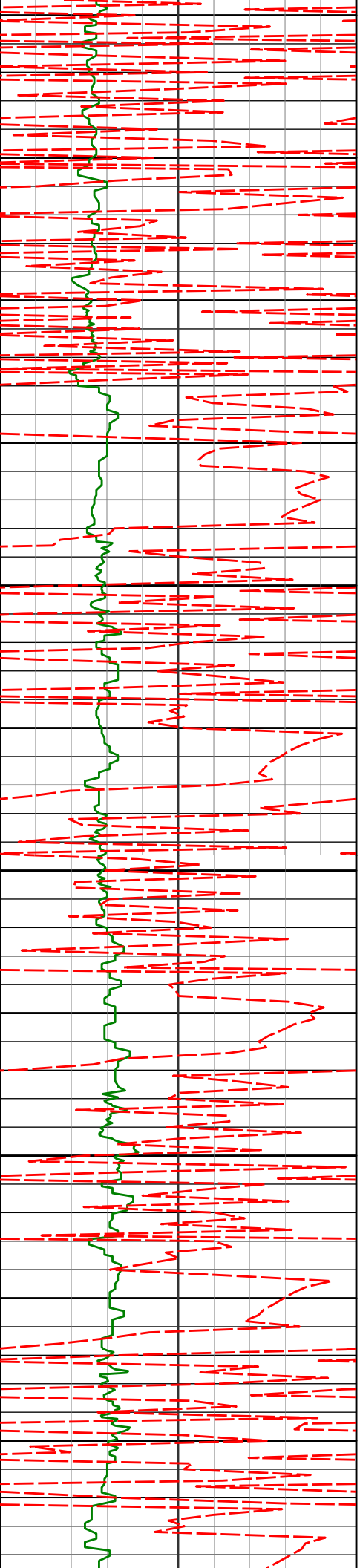
TVD Detail 1:600 Scale



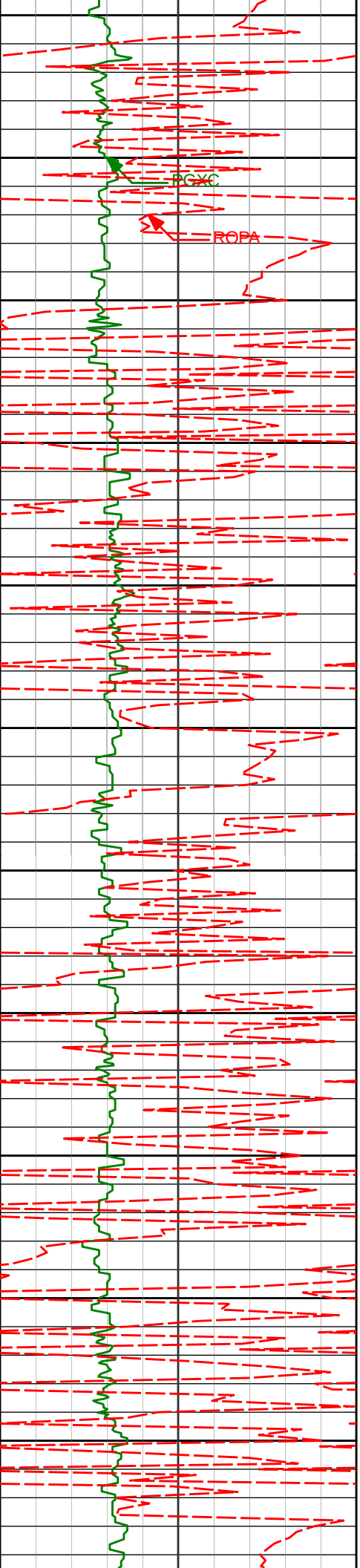
Depth TVD ft	Depth	Inc	Azi	TVD	V.S.	Temp
550						86.09°F
	Casing Shoe @ 592'					86.09°F
	Run 100					
	638'	0.25°	305.12°	638.00'	1.20'	86.22°F
650						
						87.26°F
700						
	733'	0.22°	350.39°	733.00'	1.42'	87.57°F
750						
						86.09°F
800						
	827'	0.26°	56.55°	827.00'	1.29'	86.09°F



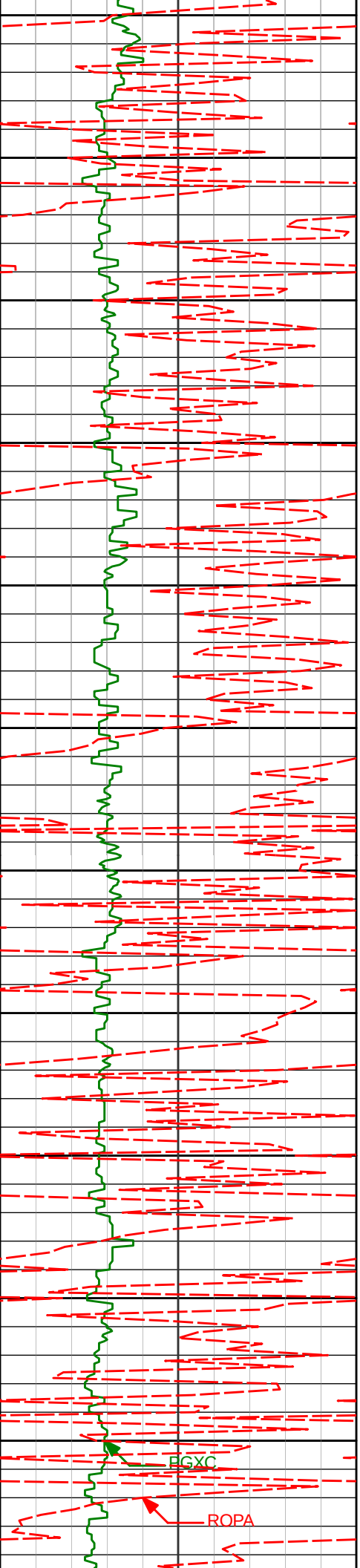
					88.14°F
					88.14°F
922'	0.28°	151.82°	922.00'	0.99'	
					89.11°F
					89.23°F
1017'	0.30°	142.24°	1016.99'	0.71'	
1110'	0.40°	172.07°	1109.99'	0.48'	
					90.19°F
					90.19°F
1203'	0.57°	179.16°	1202.99'	0.39'	
					90.19°F
1297'	0.62°	182.84°	1296.98'	0.35'	
					90.19°F
					92.26°F
1389'	0.72°	192.98°	1388.98'	0.44'	



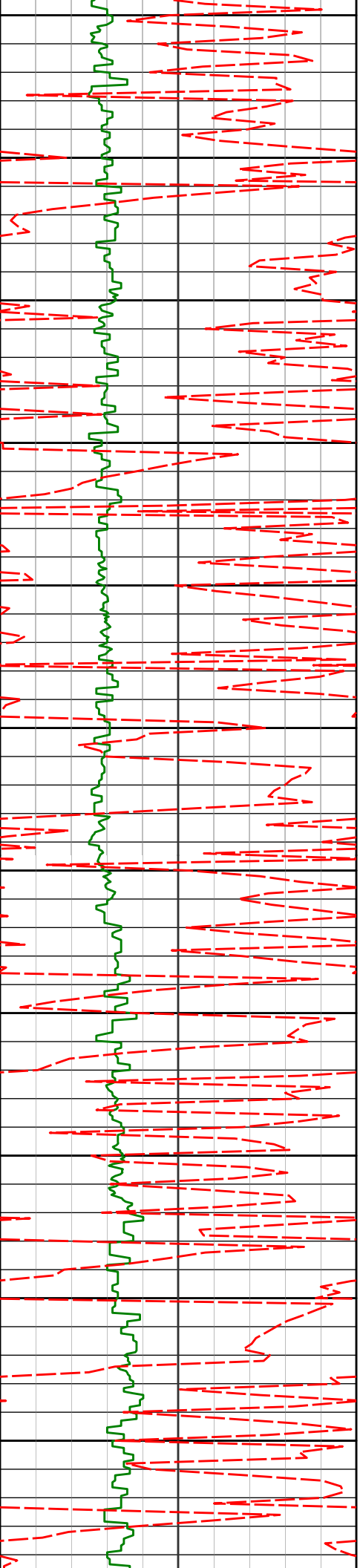
					92.26°F
					92.26°F
1483'	0.58°	192.12°	1482.97'	0.62'	93.14°F
					93.99°F
1575'	1.47°	55.97°	1574.96'	-0.25'	94.72°F
					96.22°F
1668'	3.44°	42.10°	1667.87'	-2.95'	96.64°F
					97.82°F
1760'	5.22°	25.48°	1759.61'	-6.26'	98.51°F
					98.51°F
1852'	6.38°	22.96°	1851.14'	-9.57'	100.24°F
					100.62°F
1946'	7.38°	27.22°	1944.46'	-13.78'	101.20°F



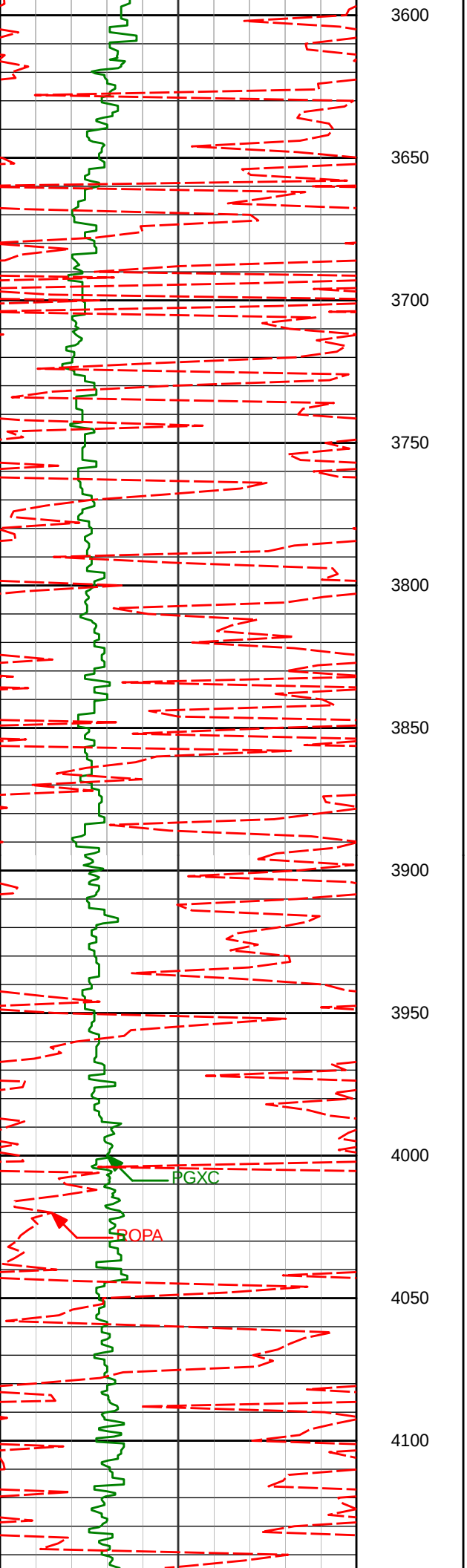
1950	1940'	7.38°	27.22°	1944.46'	-13.78'
					102.34°F
2000					
					102.72°F
	2039'	9.22°	24.97°	2036.48'	-18.96'
2050					
					102.72°F
2100					
					104.34°F
	2131'	7.95°	20.44°	2127.45'	-23.56'
2150					
					104.83°F
2200					
					104.83°F
	2222'	9.48°	25.03°	2217.40'	-28.20'
2250					
					104.83°F
2300					
					104.83°F
	2314'	8.73°	23.08°	2308.24'	-33.37'
2350					
					106.97°F
2400					
					106.97°F
	2407'	8.22°	18.19°	2400.23'	-37.48'
2450					
					106.97°F
					108.77°F
	2499'	9.88°	25.35°	2491.08'	-42.14'



					109.09°F
					109.09°F
2593'	9.35°	22.05°	2583.76'	-47.63'	
					109.09°F
					109.09°F
2685'	9.05°	19.46°	2674.58'	-52.05'	
					111.24°F
					111.24°F
2778'	8.61°	17.46°	2766.48'	-55.80'	
					111.24°F
					111.24°F
2870'	10.04°	21.56°	2857.26'	-60.00'	
					113.40°F
					113.40°F
2965'	9.76°	17.83°	2950.84'	-64.63'	
					113.40°F
					113.40°F
3059'	9.79°	16.58°	3043.48'	-68.47'	

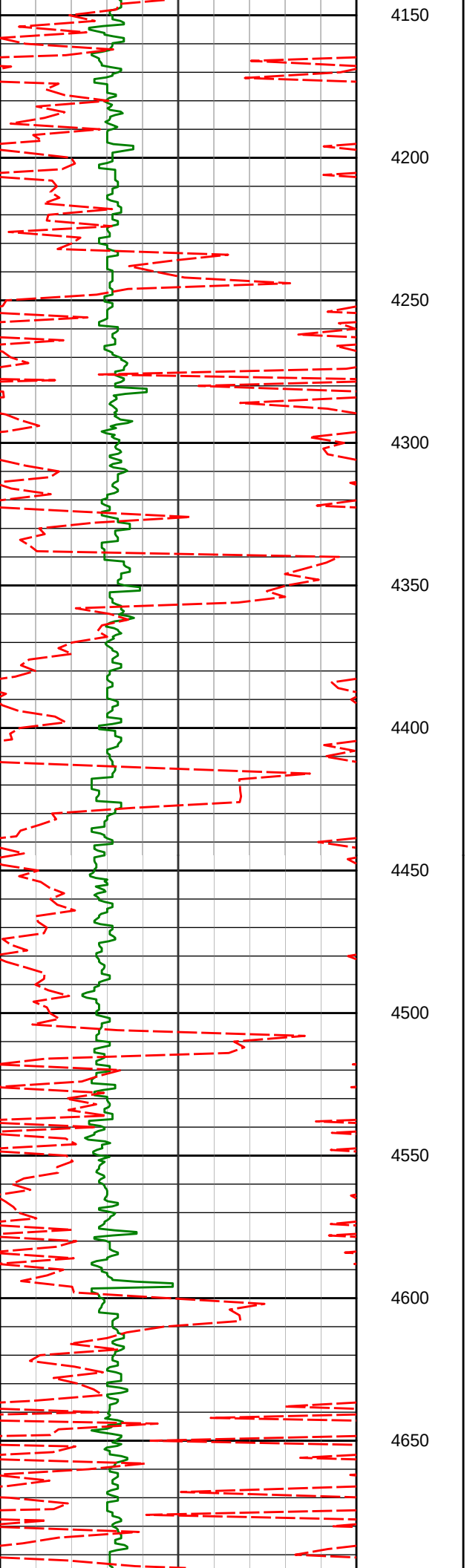


					113.40°F
					113.40°F
3154'	8.95°	14.07°	3137.21'	-71.71'	
					115.56°F
					115.56°F
3249'	8.61°	11.44°	3231.10'	-74.11'	
					115.56°F
					115.56°F
3343'	8.81°	21.35°	3324.02'	-77.34'	
					117.56°F
					117.73°F
3438'	8.88°	23.95°	3417.89'	-82.19'	
					118.87°F
					118.79°F
3533'	9.59°	28.86°	3511.66'	-88.20'	
					119.91°F
					119.91°F

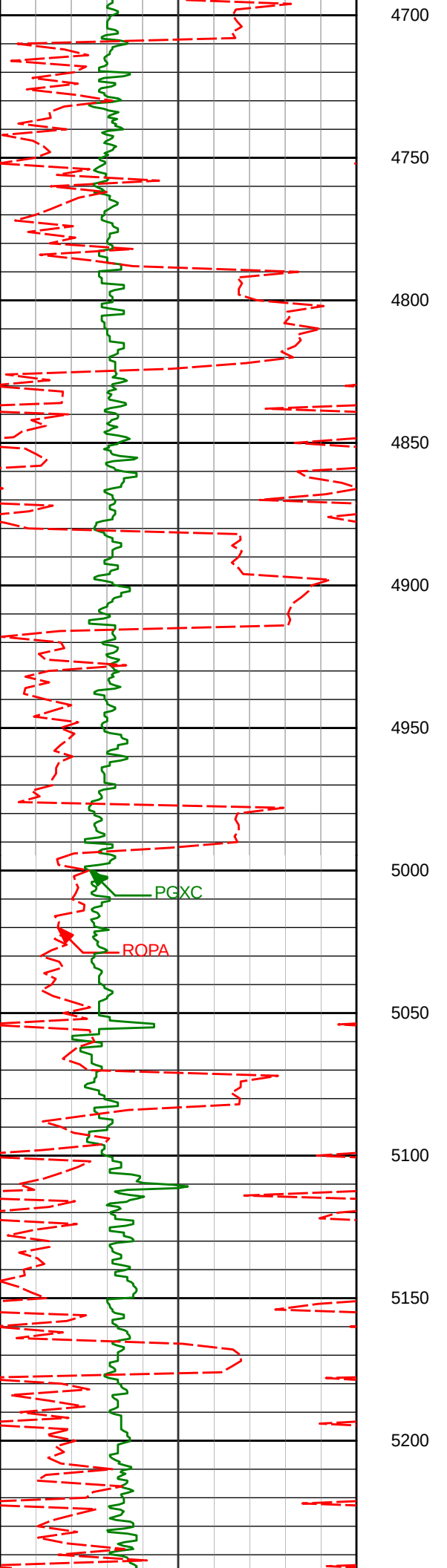


3600	3628'	9.20°	25.38°	3605.39'	-94.48'
3650					
3700	3722'	9.47°	24.91°	3698.14'	-100.16'
3750					
3800	3817'	10.11°	23.54°	3791.76'	-105.93'
3850					
3900	3911'	10.56°	23.50°	3884.23'	-111.77'
3950					
4000	4005'	11.02°	20.92°	3976.57'	-117.47'
4050					
4100	4100'	9.18°	22.74°	4070.09'	-122.75'

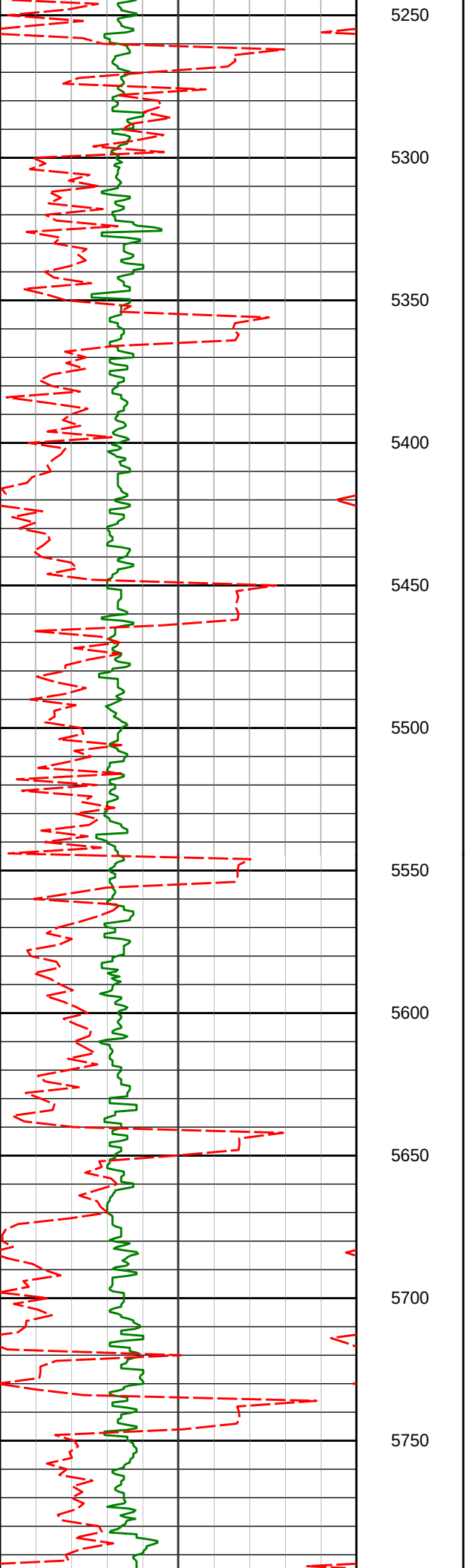
119.91°F
122.11°F
122.11°F
122.11°F
122.11°F
124.30°F
124.30°F
124.30°F
125.62°F
126.52°F
126.52°F
126.52°F
127.45°F



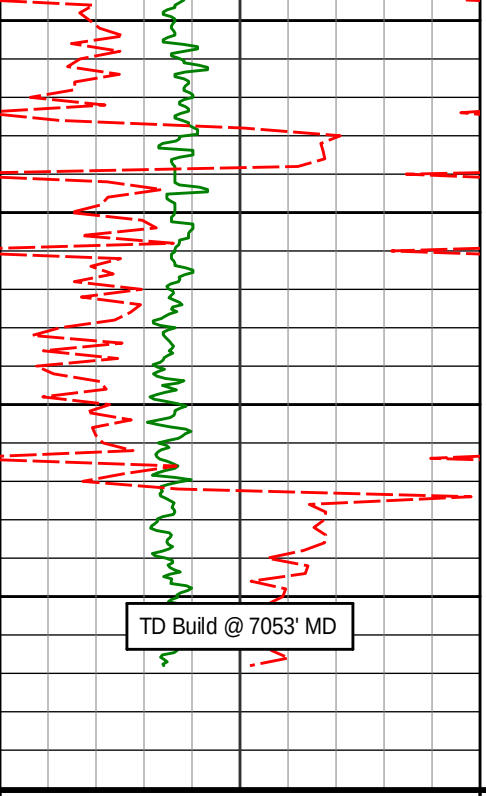
4195'	8.95°	21.74°	4163.91'	-127.62'	128.73°F
					129.14°F
4289'	8.49°	17.79°	4256.82'	-131.67'	130.41°F
					129.14°F
4384'	9.58°	15.18°	4350.64'	-135.06'	130.96°F
					132.12°F
4478'	9.03°	12.26°	4443.40'	-137.83'	133.20°F
					133.20°F
4573'	8.57°	8.07°	4537.29'	-139.59'	133.20°F
					133.20°F
					133.96°F
					135.45°F



4700					
	4762'	6.75°	358.01°	4724.60'	-139.75'
4750					136.75°F
					136.22°F
4800					
	4857'	5.64°	358.84°	4819.04'	-138.88'
4850					137.07°F
					137.70°F
4900					
	4952'	3.58°	21.41°	4913.74'	-139.44'
4950					137.70°F
					137.70°F
5000					
	5046'	2.93°	22.93°	5007.59'	-141.16'
5050					139.96°F
					139.96°F
5100					
	5141'	2.48°	21.18°	5102.48'	-142.61'
5150					142.25°F
					142.25°F
5200					
	5235'	1.89°	21.27°	5196.41'	-143.71'
					142.25°F
					144.05°F



					144.54°F
5330'	1.14°	24.01°	5291.38'	-144.53'	
					146.27°F
					146.84°F
5425'	0.88°	28.63°	5386.36'	-145.18'	
					146.84°F
					146.84°F
5519'	0.86°	58.04°	5480.35'	-146.06'	
					146.84°F
					147.25°F
5614'	0.83°	93.84°	5575.34'	-147.34'	
					149.14°F
					151.72°F
5708'	0.81°	80.19°	5669.33'	-148.67'	
					154.84°F
					148.91°F
5803'	0.73°	88.41°	5764.33'	-149.93'	
					149.31°F



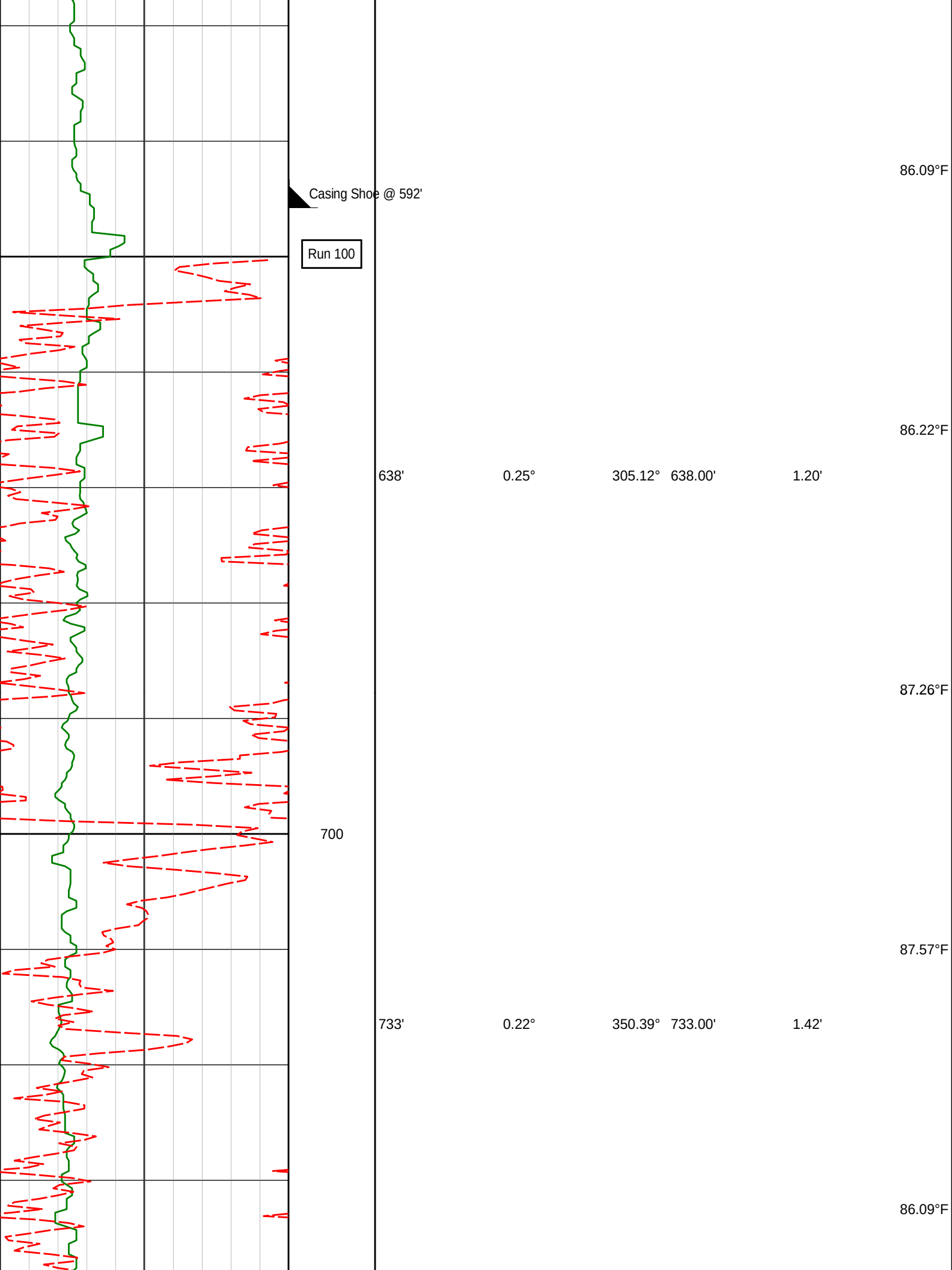
Avg Rate of Penetration ROPA feet per hr (1K – 0)	Depth TVD ft	Depth	Inc	Azi	TVD	V.S.	Temp
	5800						151.47°F
	5850						151.47°F
	5900						151.47°F
	5950	5992'	1.54°	116.52°	5953.29'	-153.47'	151.39°F
							150.03°F

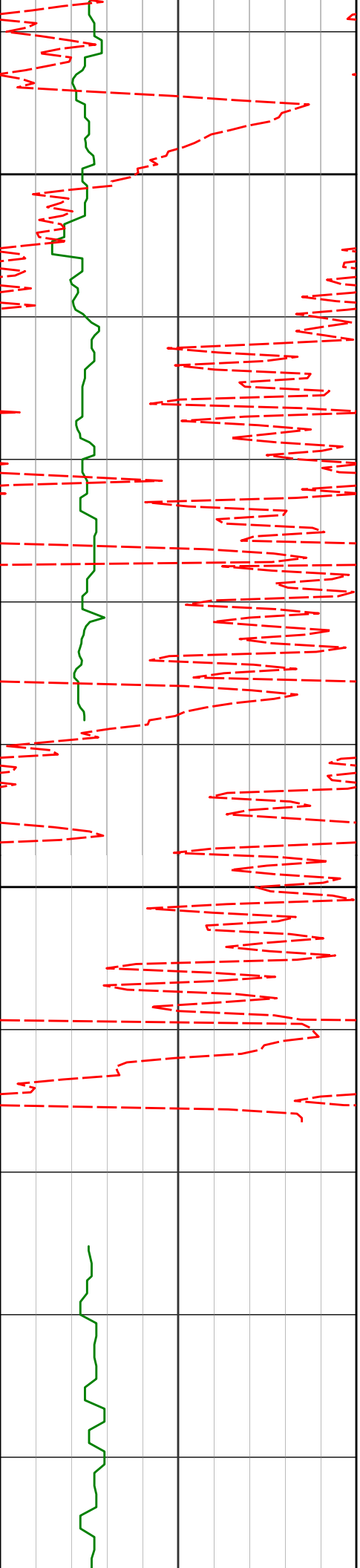
PCG GR XHi-Range RT BCor
PGXRC-T
0 api 300

TVD Detail 1:240 Scale

PCG Gamma Ray BCorr
PGRC
0 api 300

Avg Rate of Penetration ROPA feet per hr (1K – 0)	Depth TVD ft	Depth	Inc	Azi	TVD	V.S.	Temp
							86.09°F


86.09°F
Casing Shoe @ 592'
Run 100
86.22°F
638'
0.25°
305.12°
638.00'
1.20'
87.26°F
700
87.57°F
733'
0.22°
350.39°
733.00'
1.42'
86.09°F



800

900

827'	0.26°	56.55°	827.00'	1.29'
922'	0.28°	151.82°	922.00'	0.99'

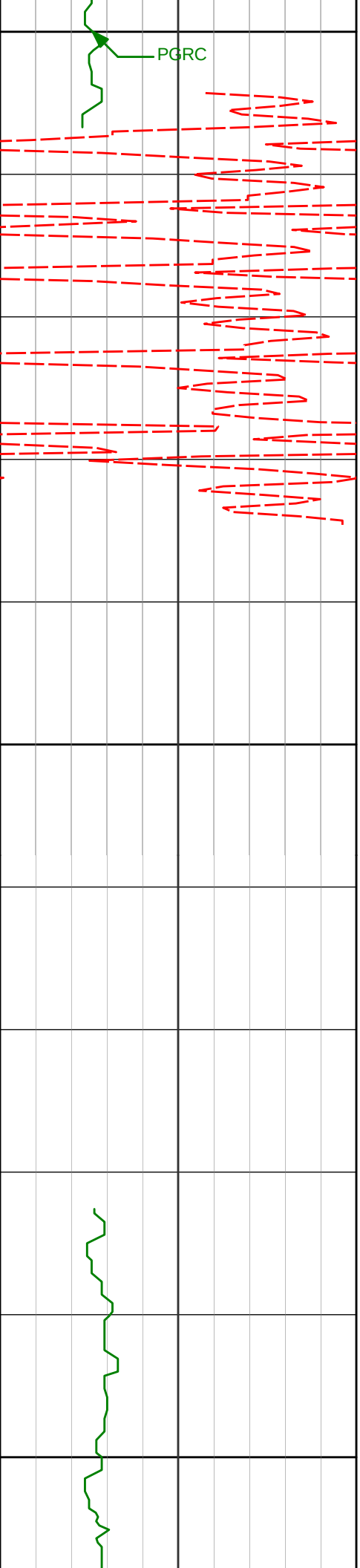
86.09°F

88.14°F

88.14°F

89.11°F

89.23°F



1000

1017' 0.30° 142.24° 1016.99' 0.71'

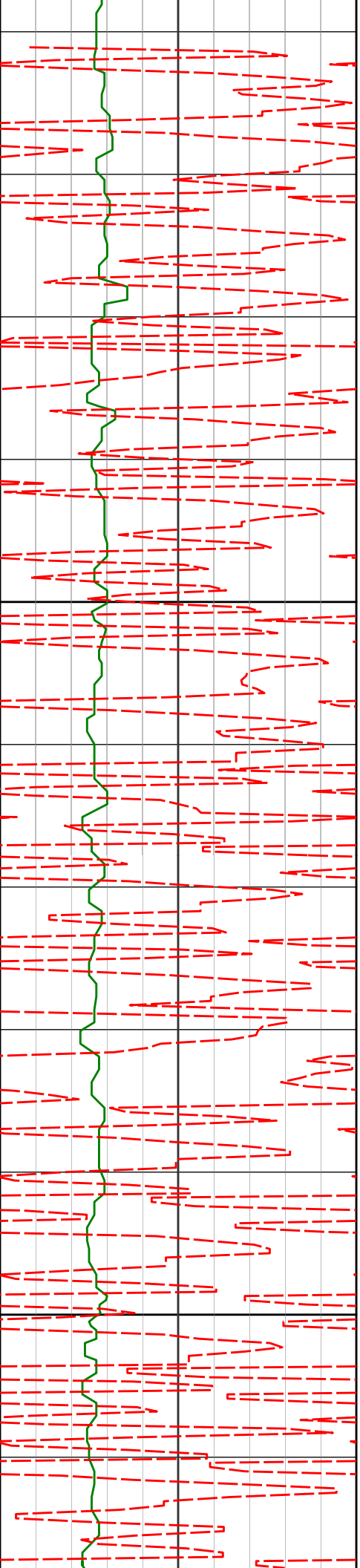
1100

1110' 0.40° 172.07° 1109.99' 0.48'

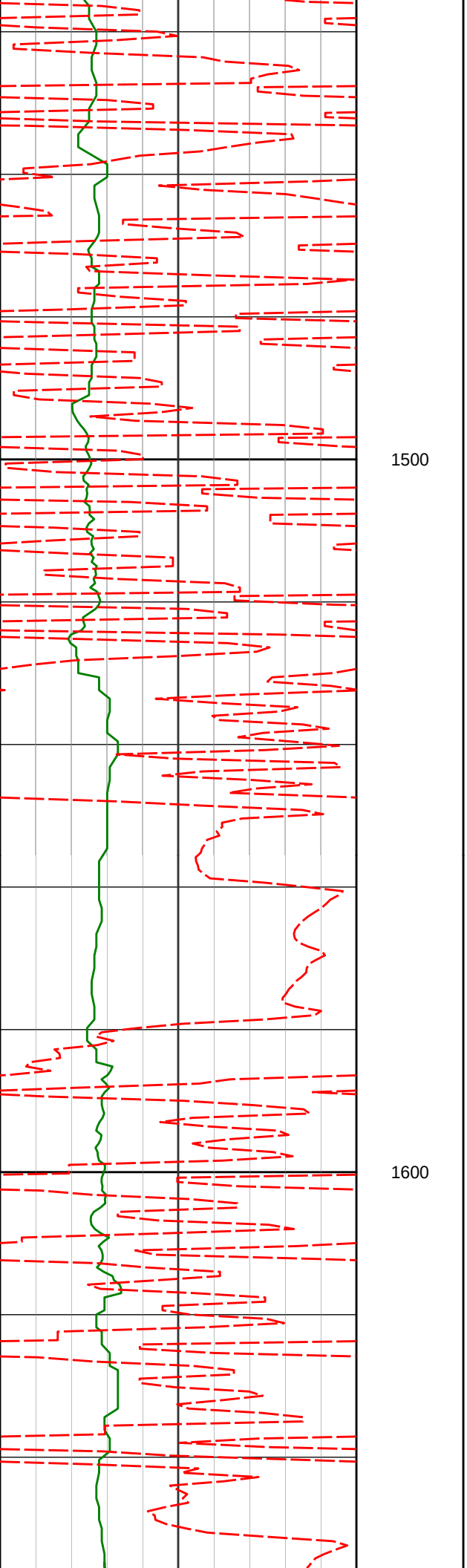
90.19°F

1200

1203' 0.57° 179.16° 1202.99' 0.39'



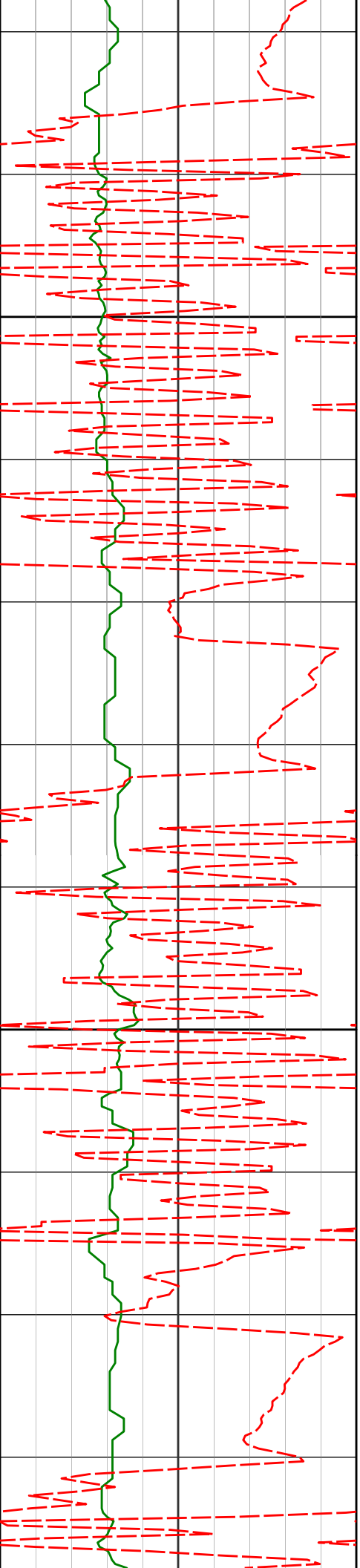
1297'	0.62°	182.84°	1296.98'	0.35'	90.19°F
1300					90.19°F
					92.26°F
1389'	0.72°	192.98°	1388.98'	0.44'	92.26°F
1400					



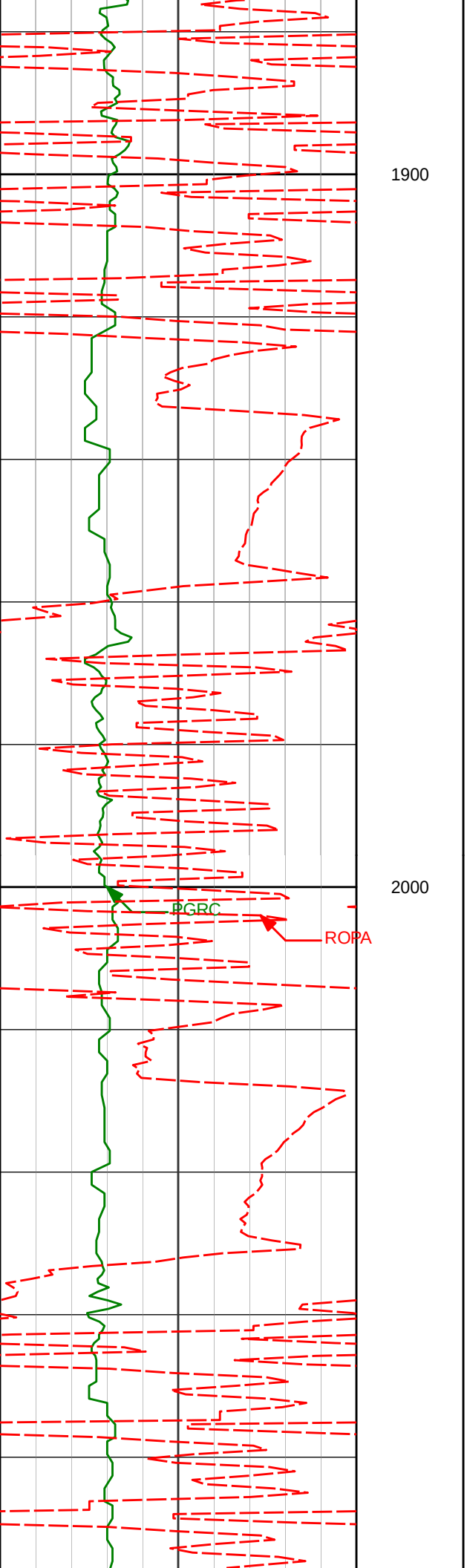
					92.26°F
1483'	0.58°	192.12°	1482.97'	0.62'	93.14°F
					93.99°F
1575'	1.47°	55.97°	1574.96'	-0.25'	94.72°F
					96.22°F

1500

1600



1668'	3.44°	42.10°	1667.87'	-2.95'	96.64°F
1700					97.82°F
1760'	5.22°	25.48°	1759.61'	-6.26'	98.51°F
1800					98.51°F
1852'	6.38°	22.96°	1851.14'	-9.57'	100.24°F



100.62°F

101.20°F

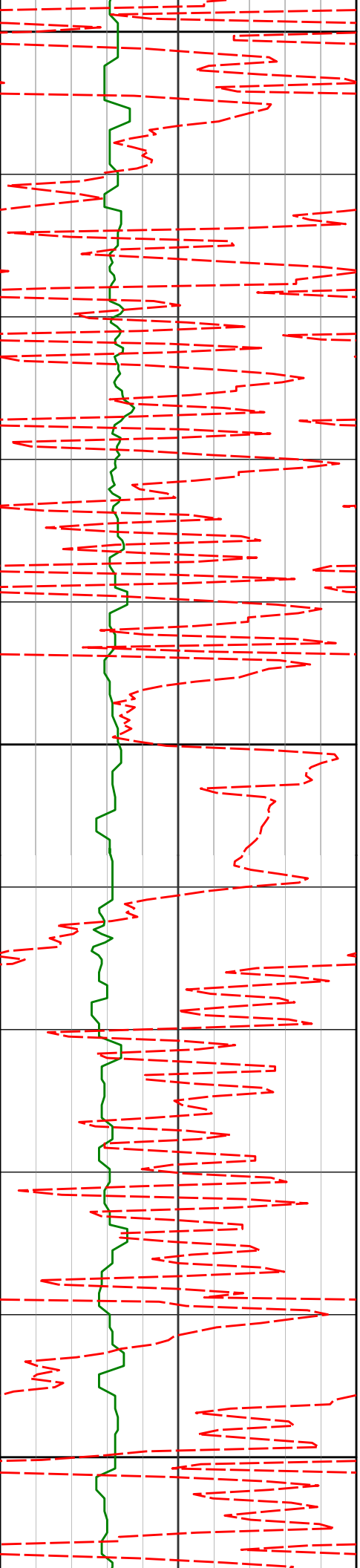
1946'	7.38°	27.22°	1944.46'	-13.78'

102.34°F

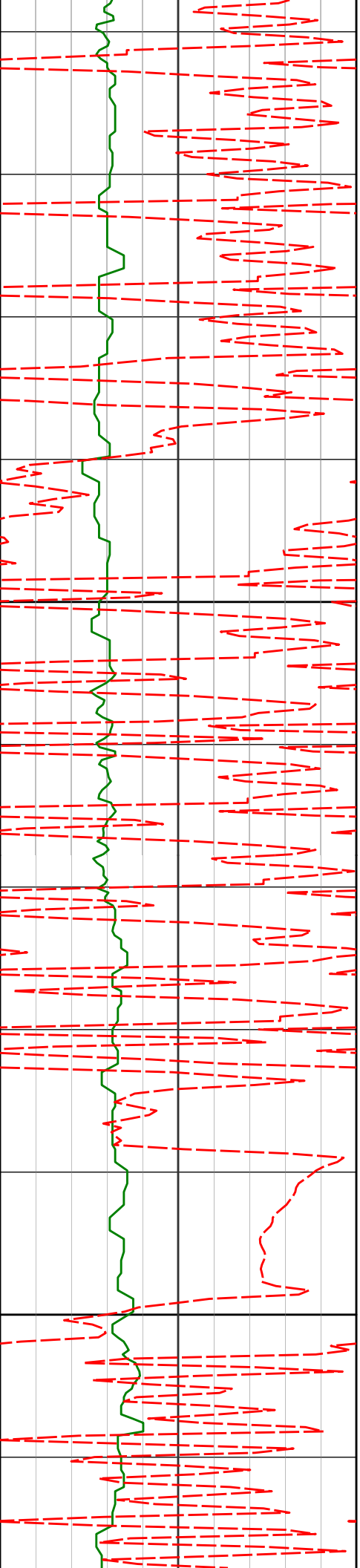
102.72°F

2039'	9.22°	24.97°	2036.48'	-18.96'

102.72°F



					104.34°F
2131'	7.95°	20.44°	2127.45'	-23.56'	
					104.83°F
					104.83°F
2222'	9.48°	25.03°	2217.40'	-28.20'	
					104.83°F
					104.83°F
2314'	8.73°	23.08°	2308.24'	-33.37'	



2400	2407'	8.22°	18.19°	2400.23'	-37.48'
2500	2499'	9.88°	25.35°	2491.08'	-42.14'

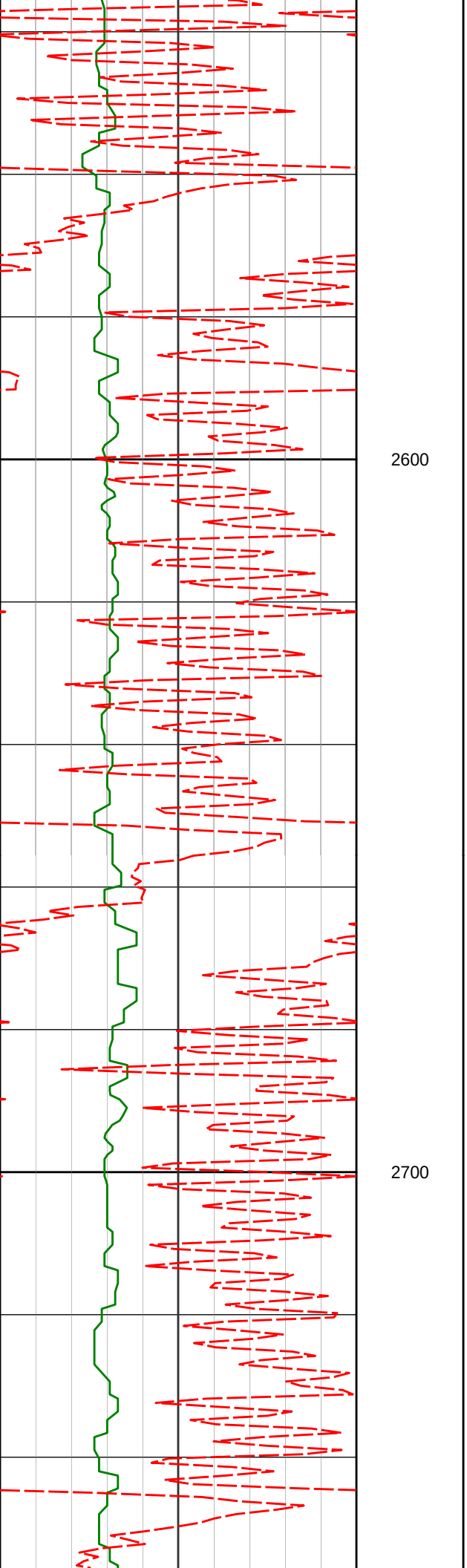
106.97°F

106.97°F

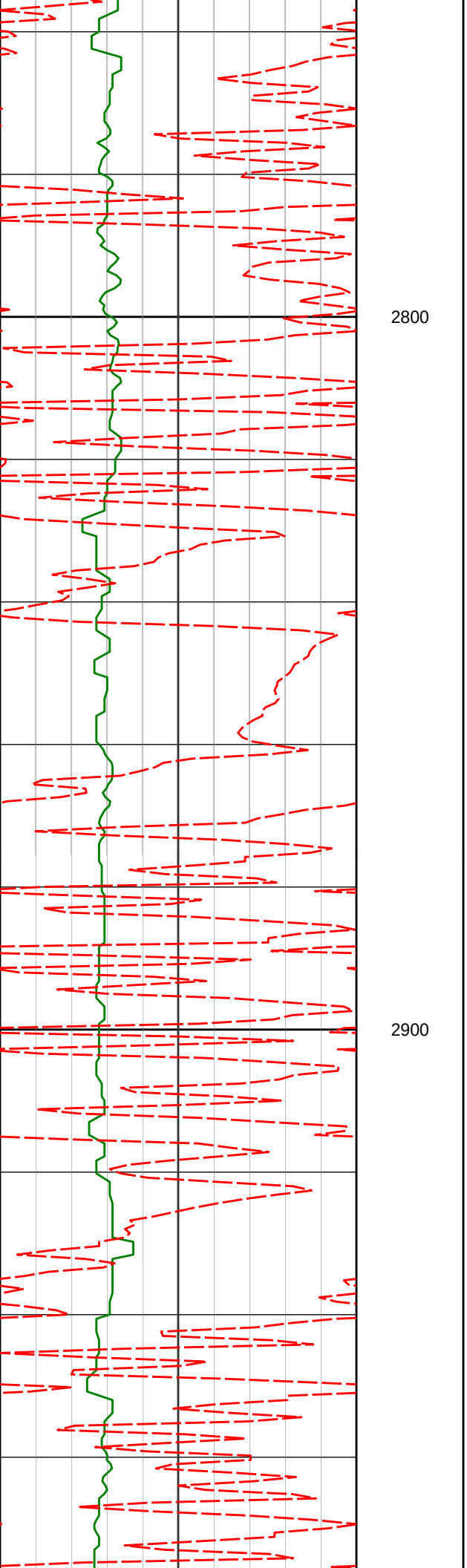
106.97°F

108.77°F

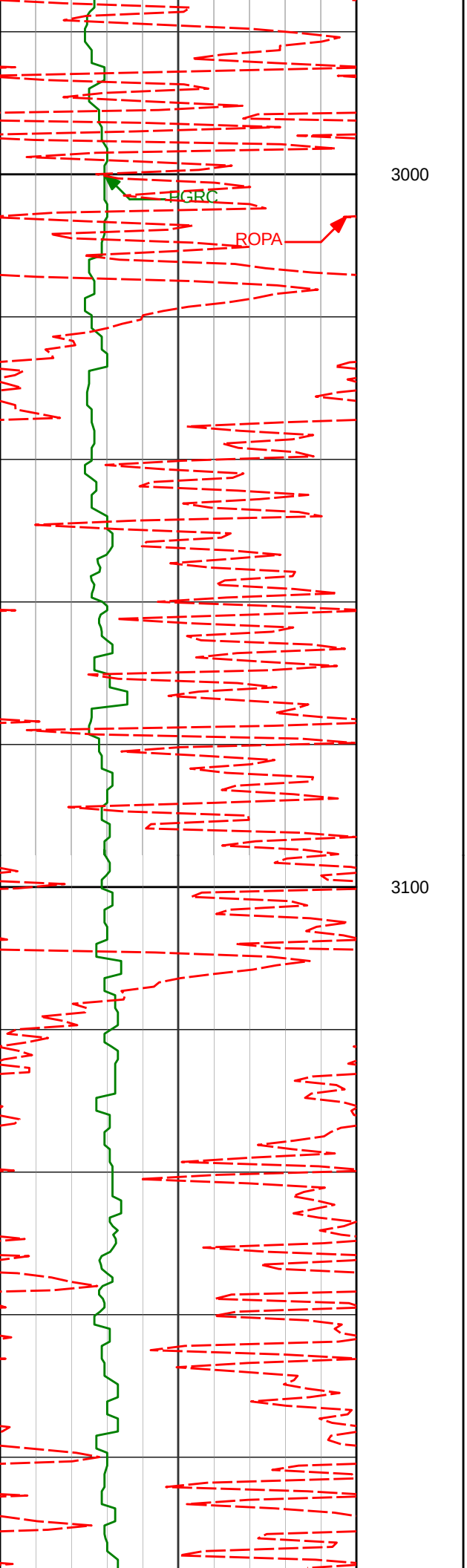
109.09°F



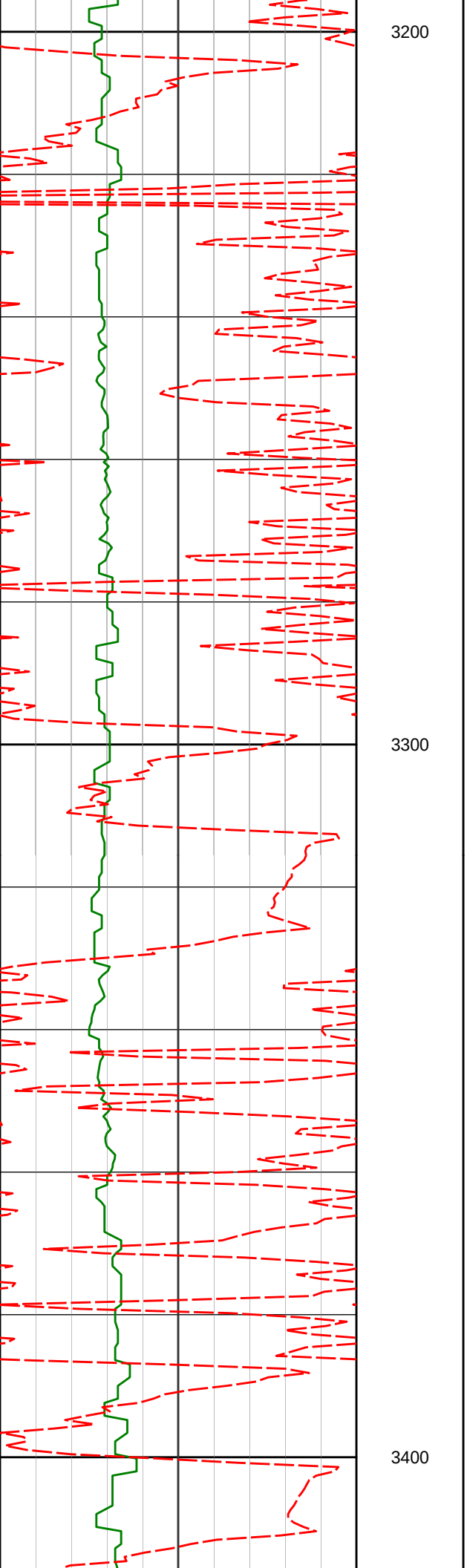
					109.09°F
2593'	9.35°	22.05°	2583.76'	-47.63'	
2600					
					109.09°F
					109.09°F
2685'	9.05°	19.46°	2674.58'	-52.05'	
2700					111.24°F
					111.24°F



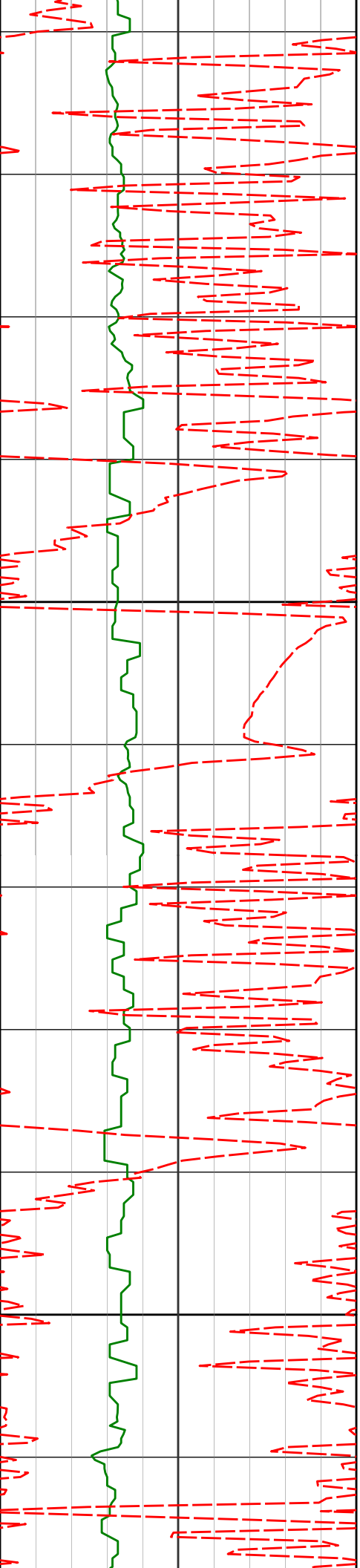
2778'	8.61°	17.46°	2766.48'	-55.80'	
					111.24°F
					111.24°F
2870'	10.04°	21.56°	2857.26'	-60.00'	
					113.40°F
					113.40°F
2965'	9.76°	17.83°	2950.84'	-64.63'	
					113.40°F



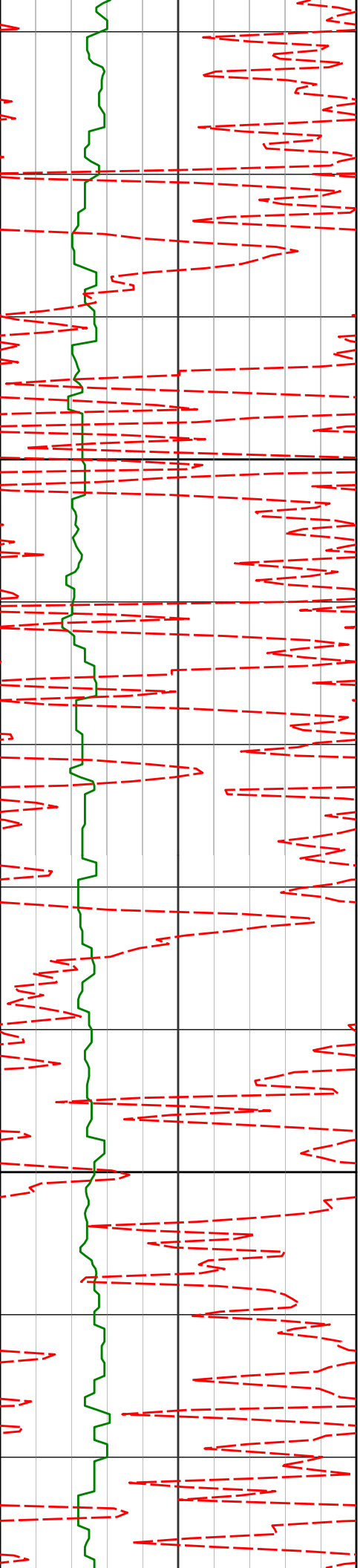
					113.40°F
3059'	9.79°	16.58°	3043.48'	-68.47'	
					113.40°F
					113.40°F
3154'	8.95°	14.07°	3137.21'	-71.71'	
					115.56°F
					115.56°F



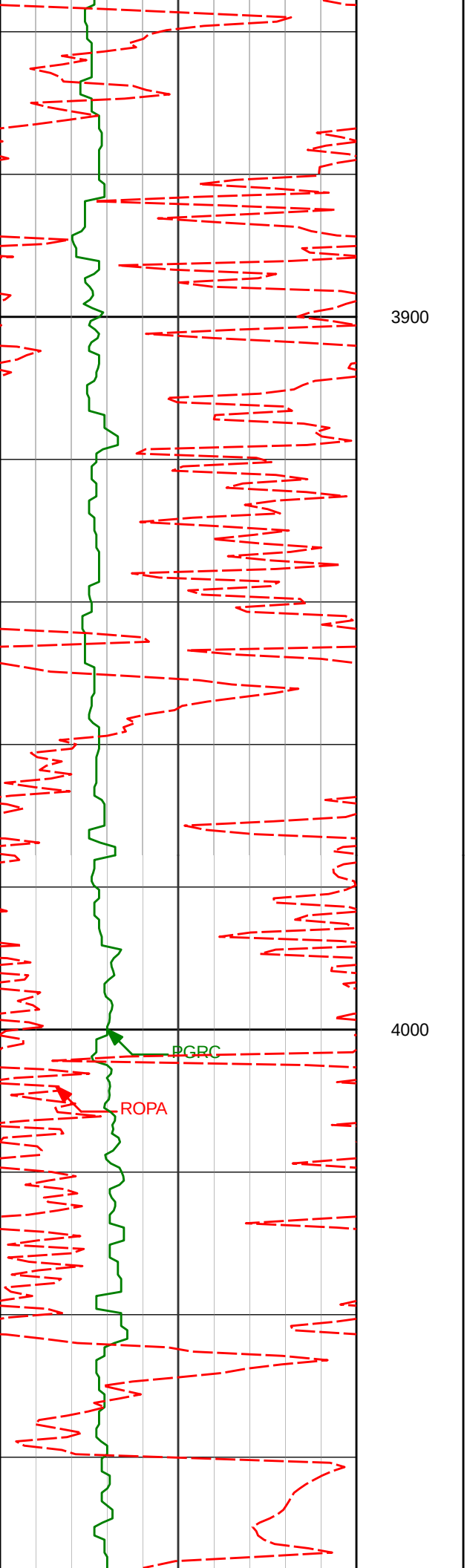
3249'	8.61°	11.44°	3231.10'	-74.11'	115.56°F
					115.56°F
3343'	8.81°	21.35°	3324.02'	-77.34'	117.56°F
					117.73°F



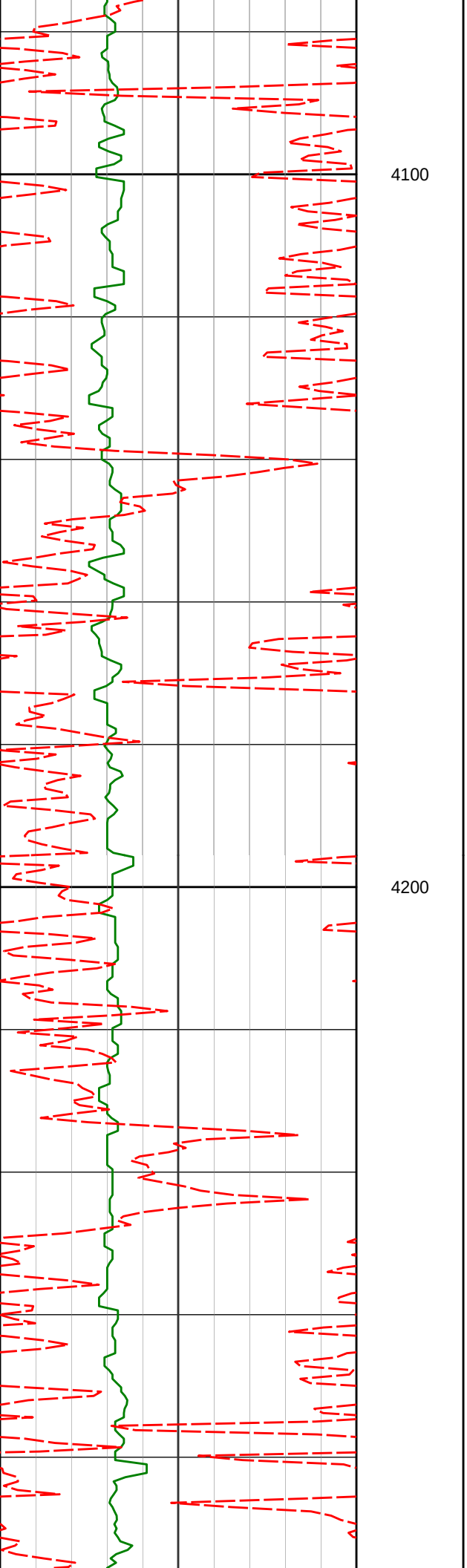
3438'	8.88°	23.95°	3417.89'	-82.19'	118.87°F
					118.79°F
3533'	9.59°	28.86°	3511.66'	-88.20'	119.91°F
					119.91°F
3628'	9.20°	25.38°	3605.39'	-94.48'	119.91°F



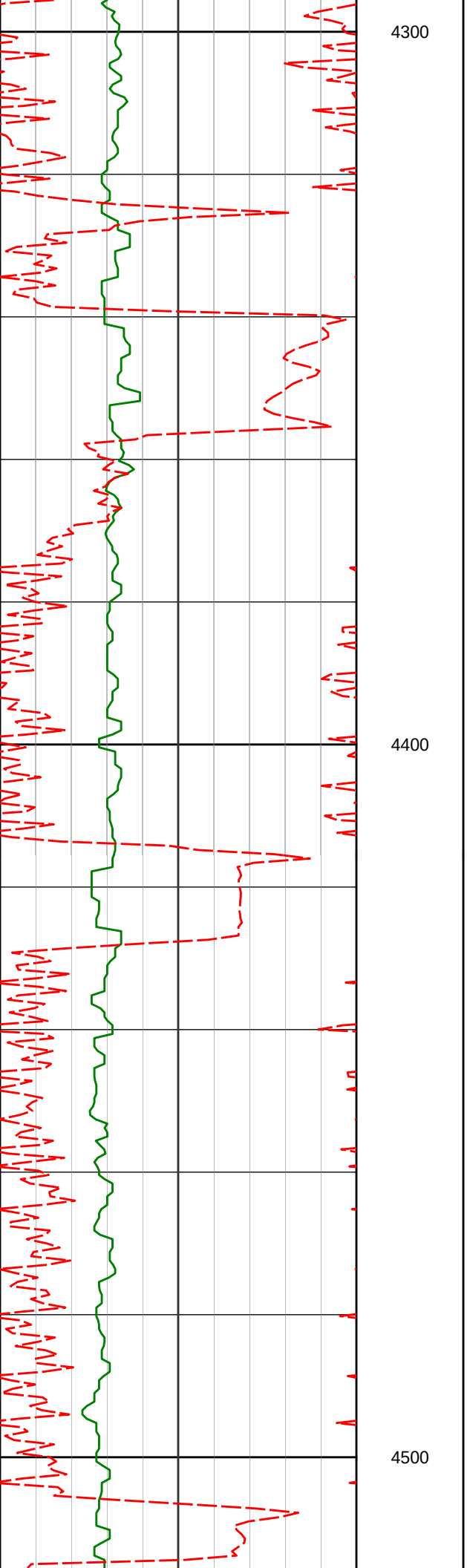
						122.11°F
						122.11°F
3700	3722'	9.47°	24.91°	3698.14'	-100.16'	
						122.11°F
						122.11°F
3800	3817'	10.11°	23.54°	3791.76'	-105.93'	
						124.30°F



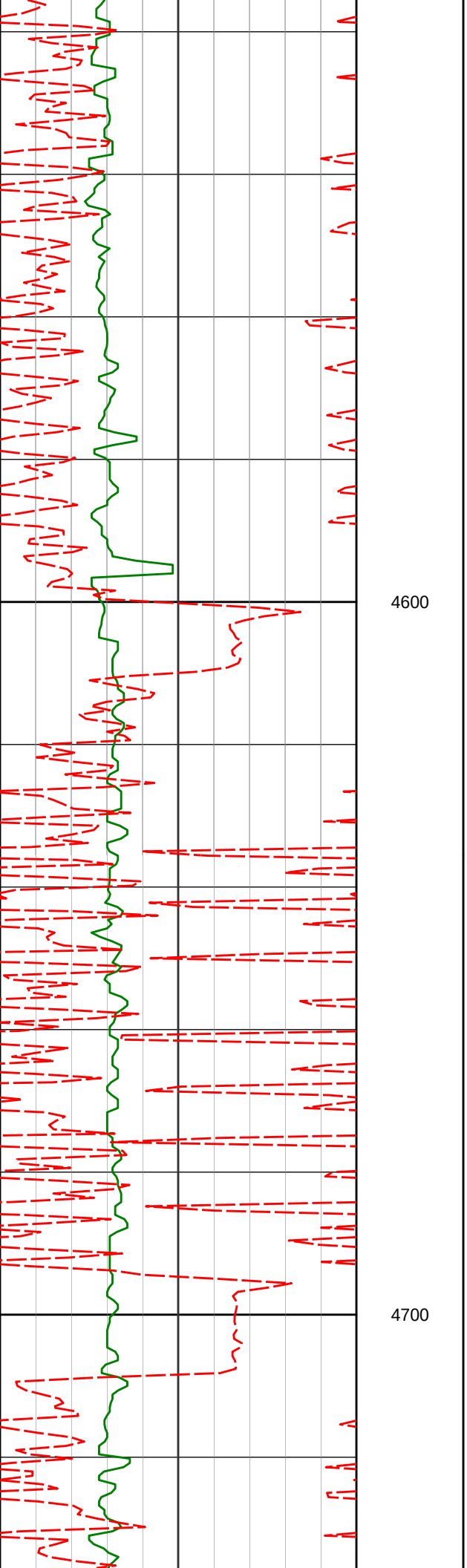
					124.30°F
3911'	10.56°	23.50°	3884.23'	-111.77'	
					124.30°F
					125.62°F
4005'	11.02°	20.92°	3976.57'	-117.47'	
					126.52°F
					126.52°F
4100'	9.18°	22.74°	4070.09'	-122.75'	



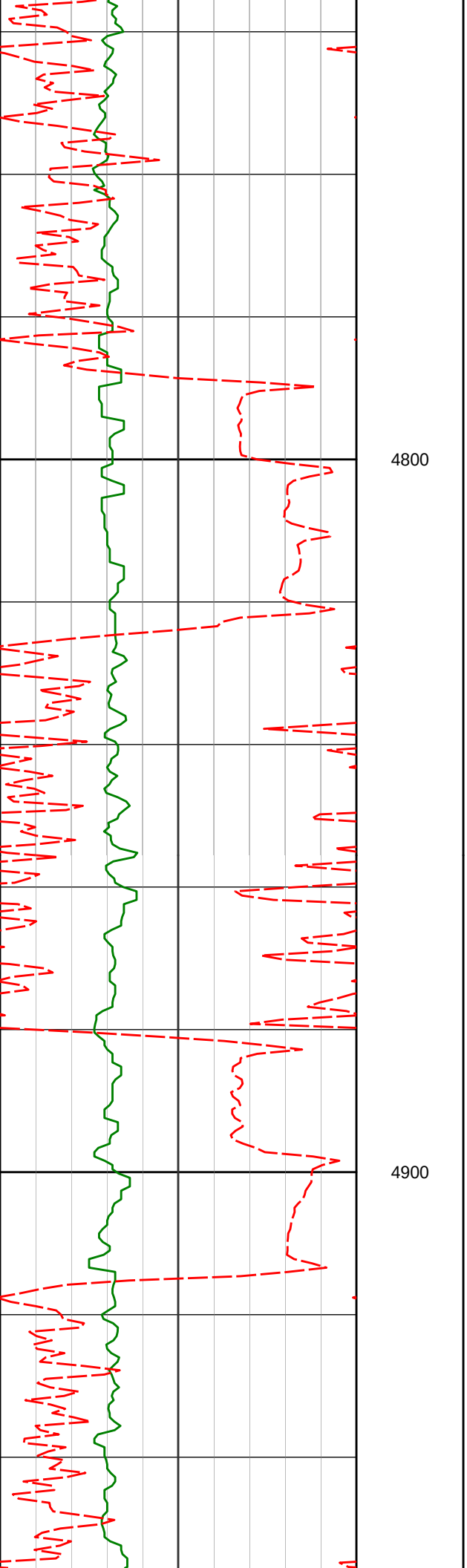
					126.52°F
					127.45°F
4195'	8.95°	21.74°	4163.91'	-127.62'	
					128.73°F
					129.14°F
4289'	8.49°	17.79°	4256.82'	-131.67'	
					130.41°F



					129.14°F
4384'	9.58°	15.18°	4350.64'	-135.06'	
					130.96°F
					132.12°F
4478'	9.03°	12.26°	4443.40'	-137.83'	
					133.20°F
					133.20°F



4573'	8.57°	8.07°	4537.29'	-139.59'	133.20°F
					133.20°F
					133.96°F
					135.45°F
4762'	6.75°	358.01°	4724.60'	-139.75'	136.75°F



136.22°F

4800

137.07°F

4857' 5.64° 358.84° 4819.04' -138.88'

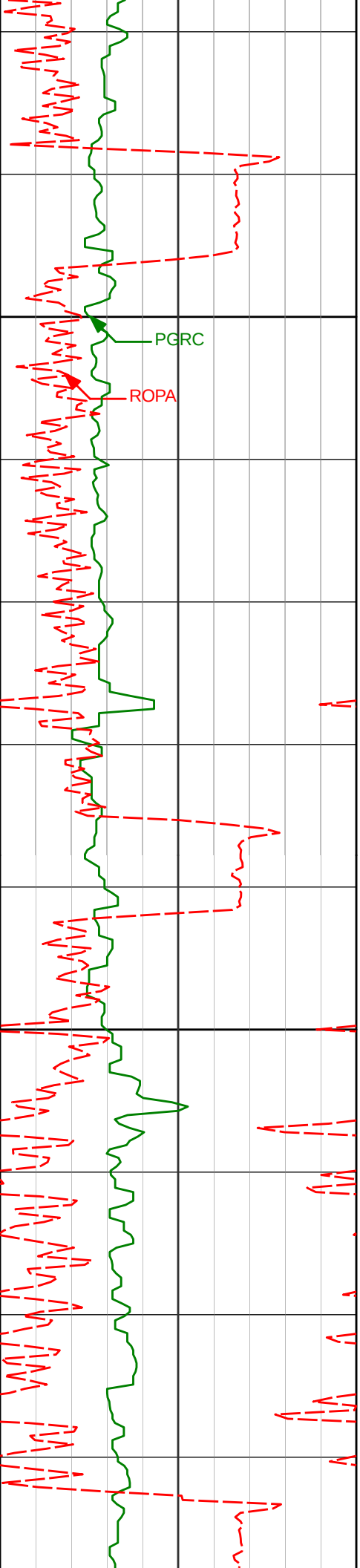
137.70°F

4900

137.70°F

4952' 3.58° 21.41° 4913.74' -139.44'

137.70°F



5000

5046' 2.93° 22.93° 5007.59' -141.16'

139.96°F

139.96°F

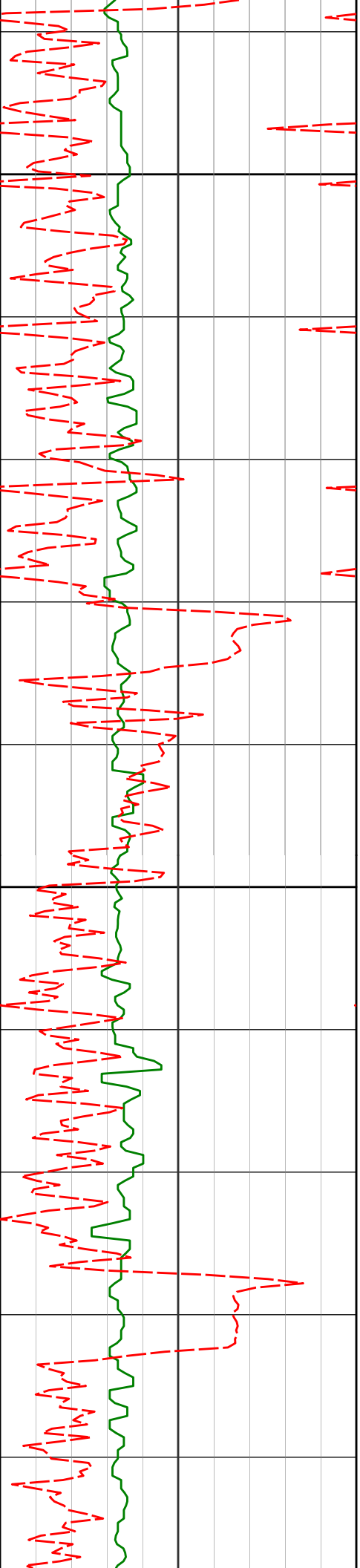
142.25°F

5100

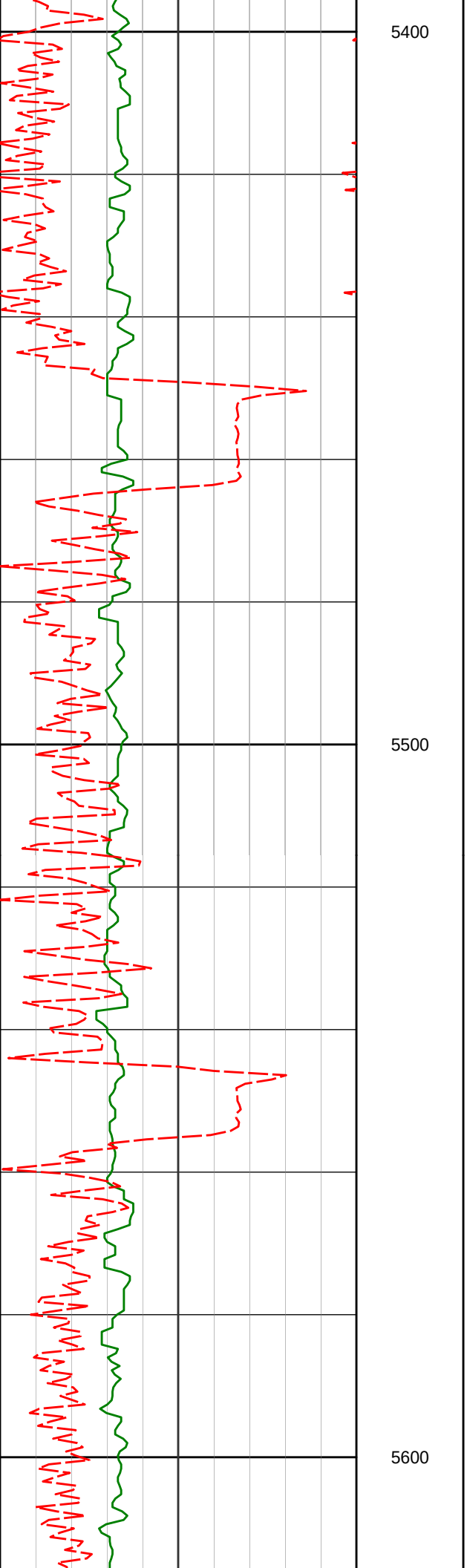
5141' 2.48° 21.18° 5102.48' -142.61'

142.25°F

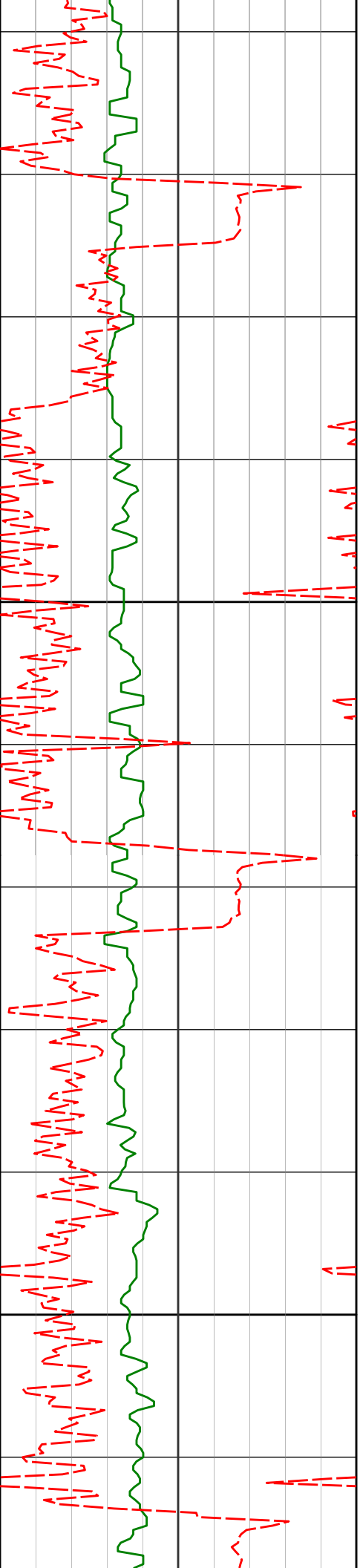
142.25°F



5200	5235'	1.89°	21.27°	5196.41'	-143.71'
					144.05°F
					144.54°F
5300	5330'	1.14°	24.01°	5291.38'	-144.53'
					146.27°F
					146.84°F
	5425'	0.88°	28.63°	5386.36'	-145.18'



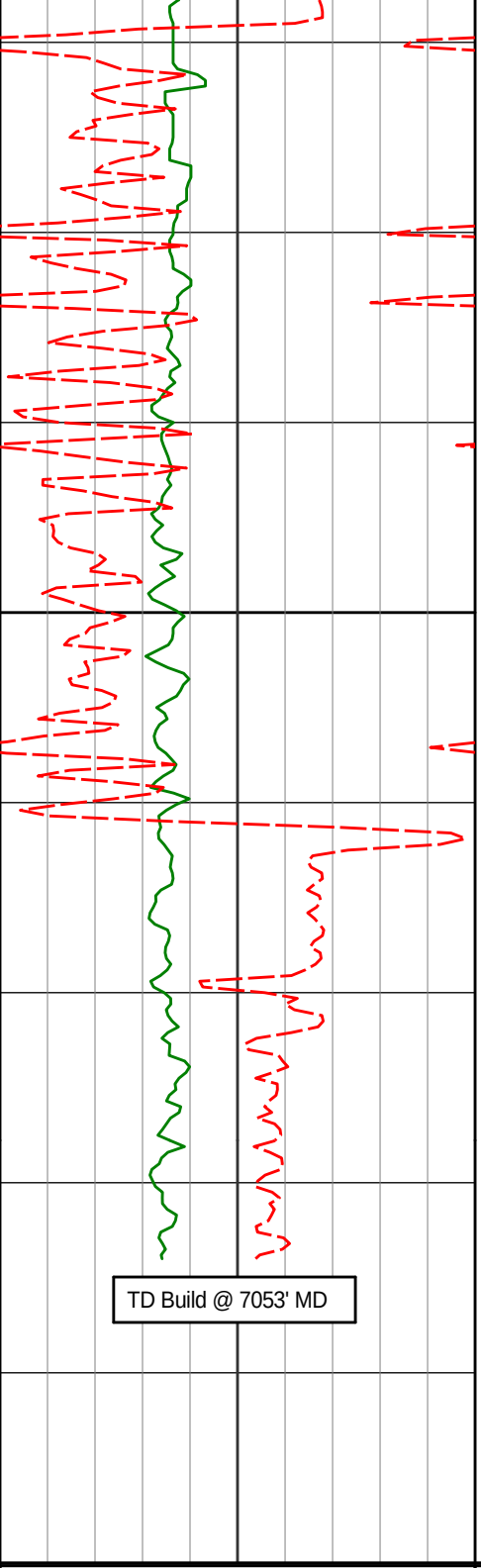
					146.84°F
					146.84°F
5519'	0.86°	58.04°	5480.35'	-146.06'	
					146.84°F
					147.25°F
5614'	0.83°	93.84°	5575.34'	-147.34'	
					149.14°F



					151.72°F
5708'	0.81°	80.19°	5669.33'	-148.67'	154.84°F
					148.91°F
5803'	0.73°	88.41°	5764.33'	-149.93'	149.31°F
					151.47°F

5700

5800



Depth	Inc	Azi	TVD	V.S.	Temp
5992'	1.54°	116.52°	5953.29'	-153.47'	

151.47°F

151.47°F

151.39°F

150.03°F

Avg Rate of Penetration
ROPA
1K feet per hr 0

PCG Gamma Ray BCorr
PGRC
0 api 300

Depth
TVD
ft

5900

6000

HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy Inc.

Wells Ranch AA11-628

0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
638.00	0.25	305.12	638.00	0.81 N	1.16 W	1.20	0.04
733.00	0.22	350.39	733.00	1.12 N	1.36 W	1.42	0.20
827.00	0.26	56.55	827.00	1.42 N	1.21 W	1.29	0.29
922.00	0.28	151.82	922.00	1.34 N	0.92 W	0.99	0.42
1017.00	0.30	142.24	1016.99	0.94 N	0.66 W	0.71	0.06
1110.00	0.40	172.07	1109.99	0.42 N	0.46 W	0.48	0.22
1203.00	0.57	179.16	1202.99	0.36 S	0.41 W	0.39	0.19
1297.00	0.62	182.84	1296.98	1.33 S	0.43 W	0.35	0.07
1389.00	0.72	192.98	1388.98	2.39 S	0.58 W	0.44	0.17
1483.00	0.58	192.12	1482.97	3.43 S	0.81 W	0.62	0.15
1575.00	1.47	55.97	1574.96	3.22 S	0.07 E	-0.25	2.09
1668.00	3.44	42.10	1667.87	0.48 S	2.93 E	-2.95	2.20
1760.00	5.22	25.48	1759.61	5.35 N	6.58 E	-6.26	2.34
1852.00	6.38	22.96	1851.14	13.83 N	10.37 E	-9.57	1.30
1946.00	7.38	27.22	1944.46	24.01 N	15.17 E	-13.78	1.19
2039.00	9.22	24.97	2036.48	36.08 N	21.05 E	-18.96	2.01
2131.00	7.95	20.44	2127.45	48.72 N	26.38 E	-23.56	1.57
2222.00	9.48	25.03	2217.40	61.40 N	31.75 E	-28.20	1.85
2314.00	8.73	23.08	2308.24	74.69 N	37.69 E	-33.37	0.88
2407.00	8.22	18.19	2400.23	87.50 N	42.54 E	-37.48	0.95
2499.00	9.88	25.35	2491.08	100.88 N	47.97 E	-42.14	2.18
2593.00	9.35	22.05	2583.76	115.25 N	54.29 E	-47.63	0.82
2685.00	9.05	19.46	2674.58	128.99 N	59.50 E	-52.05	0.55
2778.00	8.61	17.46	2766.48	142.53 N	64.03 E	-55.80	0.58
2870.00	10.04	21.56	2857.26	156.56 N	69.05 E	-60.00	1.72
2965.00	9.76	17.83	2950.84	171.93 N	74.56 E	-64.63	0.74
3059.00	9.79	16.58	3043.48	187.17 N	79.28 E	-68.47	0.23
3154.00	8.95	14.07	3137.21	202.08 N	83.38 E	-71.71	0.98
3249.00	8.61	11.44	3231.10	216.21 N	86.58 E	-74.11	0.55
3343.00	8.81	21.35	3324.02	229.81 N	90.60 E	-77.34	1.61
3438.00	8.88	23.95	3417.89	243.29 N	96.22 E	-82.19	0.43
3533.00	9.59	28.86	3511.66	256.93 N	103.02 E	-88.20	1.11
3628.00	9.20	25.38	3605.39	270.72 N	110.10 E	-94.48	0.72
3722.00	9.47	24.91	3698.14	284.53 N	116.58 E	-100.16	0.30
3817.00	10.11	23.54	3791.76	299.26 N	123.20 E	-105.93	0.71
3911.00	10.56	23.50	3884.23	314.72 N	129.93 E	-111.77	0.48
4005.00	11.02	20.92	3976.57	331.02 N	136.57 E	-117.47	0.72
4100.00	9.18	22.74	4070.09	346.49 N	142.75 E	-122.75	1.97
4195.00	8.95	21.74	4163.91	360.34 N	148.41 E	-127.62	0.29
4289.00	8.49	17.79	4256.82	373.74 N	153.24 E	-131.67	0.80
4384.00	9.58	15.18	4350.64	388.05 N	157.45 E	-135.06	1.23
4478.00	9.03	12.26	4443.40	402.82 N	161.07 E	-137.83	0.77
4573.00	8.57	8.07	4537.29	417.11 N	163.65 E	-139.59	0.83
4762.00	6.75	358.01	4724.60	442.15 N	165.24 E	-139.75	1.19
4857.00	5.64	358.84	4819.04	452.40 N	164.95 E	-138.88	1.17
4952.00	3.58	21.41	4913.74	459.83 N	165.94 E	-139.44	2.85
5046.00	2.93	22.93	5007.59	464.77 N	167.94 E	-141.16	0.70
5141.00	2.48	21.18	5102.48	468.92 N	169.63 E	-142.61	0.48
5235.00	1.89	21.27	5196.41	472.25 N	170.93 E	-143.71	0.63
5330.00	1.14	24.01	5291.38	474.58 N	171.88 E	-144.53	0.79
5425.00	0.88	28.63	5386.36	476.08 N	172.61 E	-145.18	0.29
5519.00	0.86	58.04	5480.35	477.09 N	173.56 E	-146.06	0.47
5614.00	0.83	93.84	5575.34	477.42 N	174.85 E	-147.34	0.55
5708.00	0.81	80.19	5669.33	477.49 N	176.19 E	-148.67	0.21
5803.00	0.73	88.41	5764.33	477.62 N	177.46 E	-149.93	0.14
5992.00	1.54	116.52	5953.29	476.52 N	180.94 E	-153.47	0.51
6087.00	2.83	258.00	6048.25	475.46 N	179.79 E	-152.38	4.36
6181.00	9.82	261.50	6141.63	473.79 N	169.58 E	-142.28	7.45
6276.00	13.43	272.47	6234.67	473.07 N	150.54 E	-123.31	4.44
6371.00	22.18	286.10	6325.07	478.53 N	122.23 E	-94.73	10.14
6466.00	30.11	290.03	6410.29	491.69 N	82.55 E	-54.37	8.54
6560.00	40.91	286.76	6486.70	508.69 N	30.76 E	-1.70	11.66
6655.00	49.50	281.51	6553.60	524.90 N	34.56 W	64.45	9.85
6749.00	58.93	266.96	6608.70	529.93 N	110.22 W	140.27	16.03
6844.00	73.72	267.15	6646.74	525.48 N	196.86 W	226.52	15.57

6937.00	87.50	268.94	6661.88	522.40 N	288.34 W	317.67	14.94
6990.00	89.17	269.67	6663.41	521.76 N	341.31 W	370.52	3.43

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 273.27 DEGREES (GRID)
A TOTAL CORRECTION OF 7.38 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 6990.00 FEET
IS 623.48 FEET ALONG 326.81 DEGREES (GRID)

Final survey is a straight line projection to TD.

Date Printed:15 June 2015