HALLIBURTON | Sperry Drilling

PCG Pressure Case Gamma
PCG Pressure Case Directional

Powered by INSITE™

1 : 600 / 1 : 240

Country : **USA**
Field : **Wattenberg**
Location : **Lat: 40° 12' 9.32" North Long: 104° 38' 31.92" West**
Well : **Moser H34-717**
Company : **Noble Energy**
Rig : **H&P 343**

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Rig : **H&P 343**
Well : **Moser H34-717**
Field : **Wattenberg**
Country : **USA**
API Number : **05-123-40755**

LOCATION
Latitude : **40° 12' 9.32" North**
Longitude : **104° 38' 31.92" West**
UTM Easting = **3,239,598.118 usft**
UTM Northing = **1,317,804.439 usft**

Other Services
Directional Drilling

Permanent Datum : **Ground Level**
Elevation : **4812.00 ft**
Log Measured From : **Drill Floor** **24.00 ft** Above Permanent Datum
Drilling Measured From : **Drill Floor**

TVD LOG

Elev. KB **N/A**
DF **4836.00 ft**
GL **4812.00 ft**
WD **N/A**

Depth Logged : **882.99 ft** To **6,933.12 ft**
Date Logged : **14-Nov-15** To **16-Nov-15**
Total Depth MD : **7,294.00 ft** TVD : **6,933.12 ft**
Spud Date : **14-Nov-15**

Unit No. : **11610115**
Job No. : **CA-XX-0902863035**
Plot Type : **Final**
Plot Date : **16-Nov-15**

Run No.	Borehole Record (TVD)			Size	Casing Record (TVD)		
	Size	From	To		Weight	From	To
0100	8.750 in	882.99 ft	6,933.12 ft	9.625 in	36.60 lbpf	SURFACE	872.99 ft

WELL INFORMATION

MWD Run Number	100
Date run completed	16-Nov-15
Rig Bit Number	0100
Bit Size (in)	8.750
Tool Nominal OD (in)	6.750
Log Start Depth (TVD, ft)	882.99
Log End Depth (TVD, ft)	6,933.12
Drill or Wipe	Drill
Drill/Wipe Start Date and Time	15-Nov-15 02:30
Drill/Wipe End Date and Time	16-Nov-15 10:00
Min Inc (deg) @ Depth (TVD, ft)	0.09 @ 2,114.86
Max Inc (deg) @ Depth (TVD, ft)	88.00 @ 6,933.12
Bit TFA(in2) / Bit Type	1.04 / PDC
Flow Rate (gpm)	590.19
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A
Fluid Type	Native/Spud Mud
Density (ppg) / Viscosity (spqt)	10.80 / 37.00
Filtrate CL (ppm)	2,500.00
pH / Fluid Loss (mptm)	9.90 / 23
PV (cP) / YP (lhf2)	12 / 11.00
% Solids / % Sand	13.2 / .1
% 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	185.02 / PCM				
Rm @ Max Tool Temp (degF)	N/A @ 185.02				
Lead MWD Engineer	Brian Neu				
Customer Representative	Johnny Sanchez				

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM				
Software Version	5.93				
Sub Serial Number	11341333				
Insert Serial Number	11620295				
Date and Time Initialized	14-Nov-15 17:02				
Date and Time Read	16-Nov-15 14:12				
ECMB SW Version	N/A				

Directional Sensor Information

Tool Type	PCDC				
Distance From Bit (ft)	66.00				
Software Version	6.33				
Sub Serial Number	11341333				
Sonde Serial Number	11062040				
Sensor ID Number	N/A				
Toolface Offset (deg)	126.10				

Gamma Ray Sensor Information

Tool Type	PCG				
Distance From Bit (ft)	59.40				
Recorded Sample Period (sec)	10				
Software Version	8.15				
Sub Serial Number	11341333				
Insert/Sonde Serial Number	11680938				

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: 8.75-10.75ppg

5. The following smoothing parameters have been applied to the data:

1:600 (2"):
Interval: 1.0 ft
Coercion Distance: 3.0 ft (ROPA)
Interval: 1.0 ft
Coercion Distance: 3.0 ft (Gamma Ray)

1:240 (5")
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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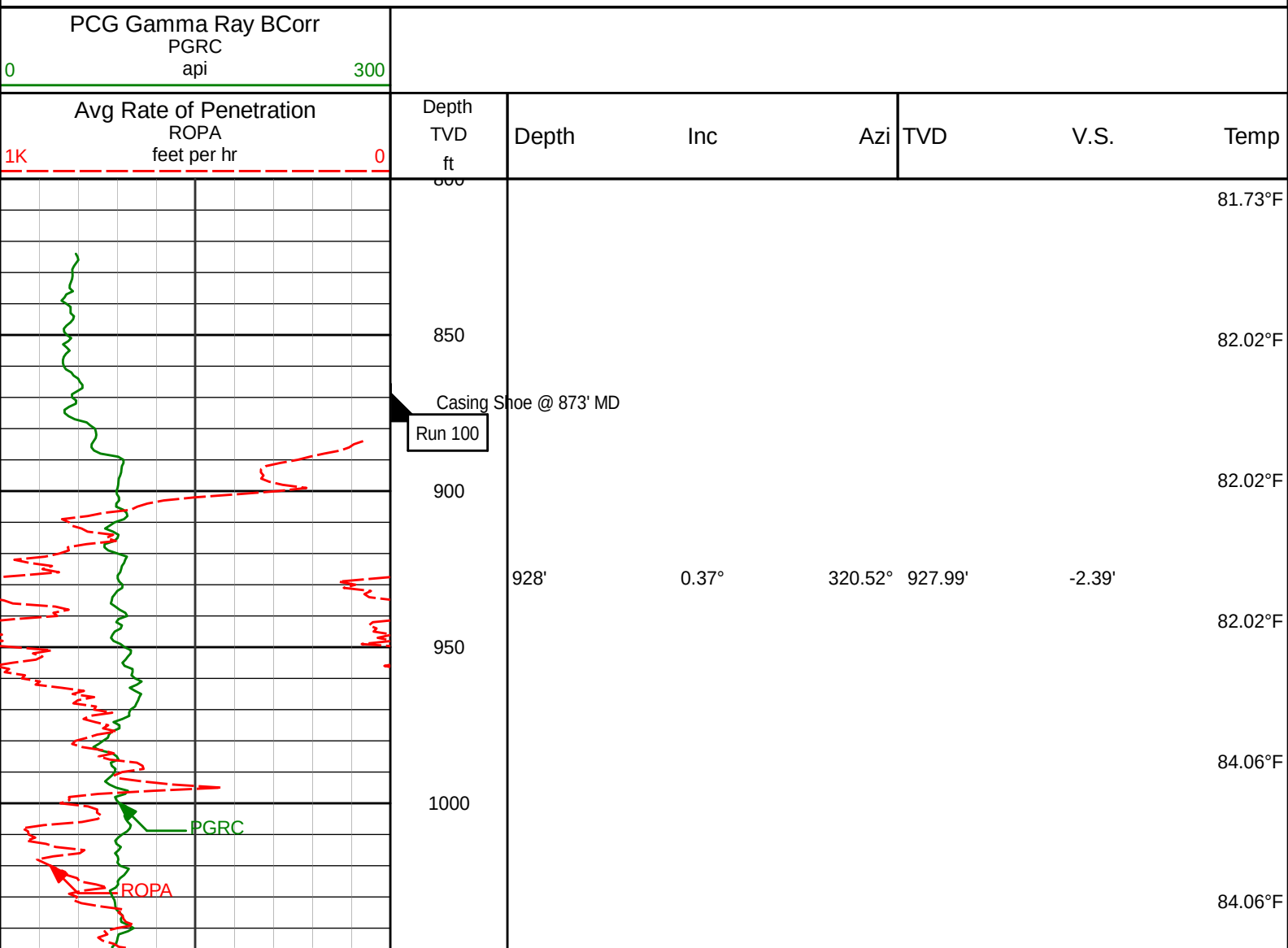
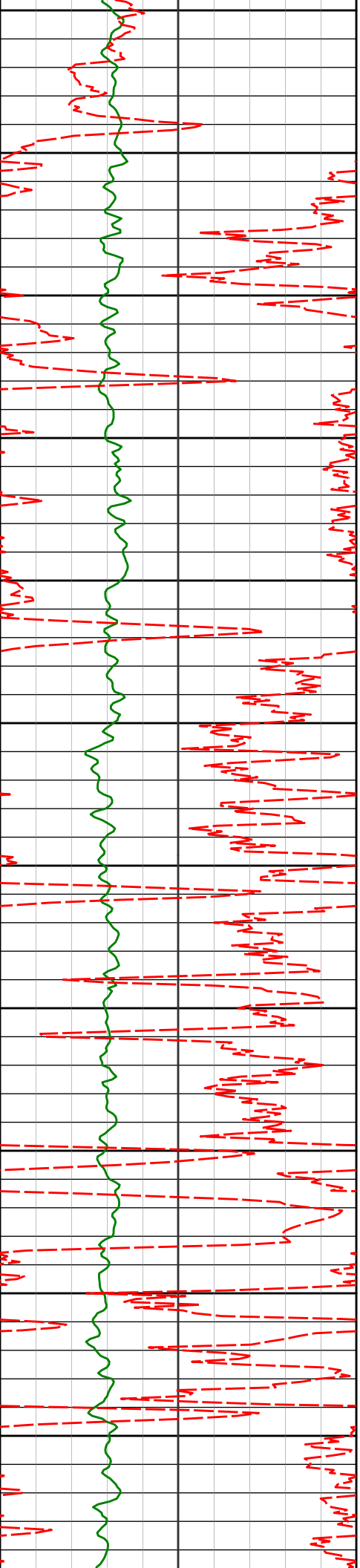
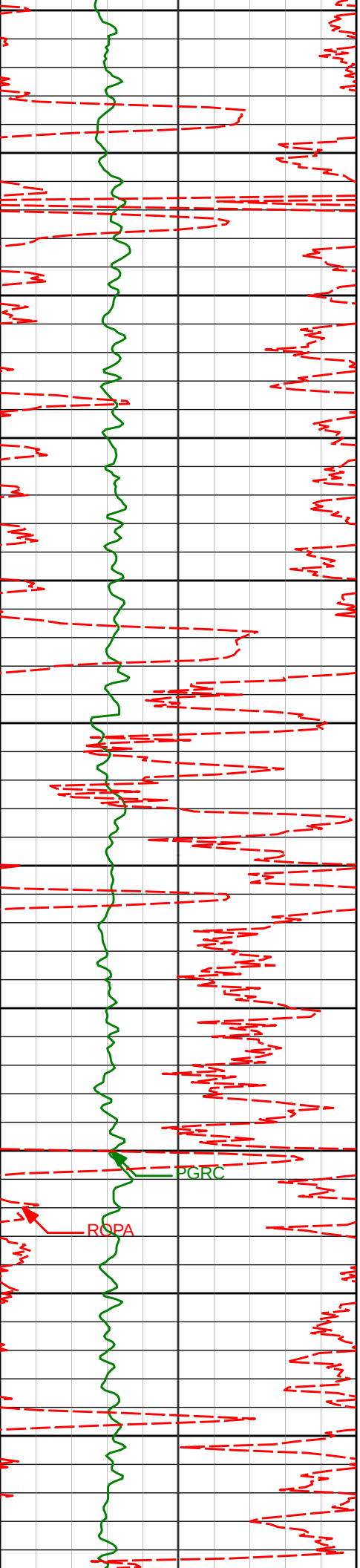
TVD Detail 1:600 Scale

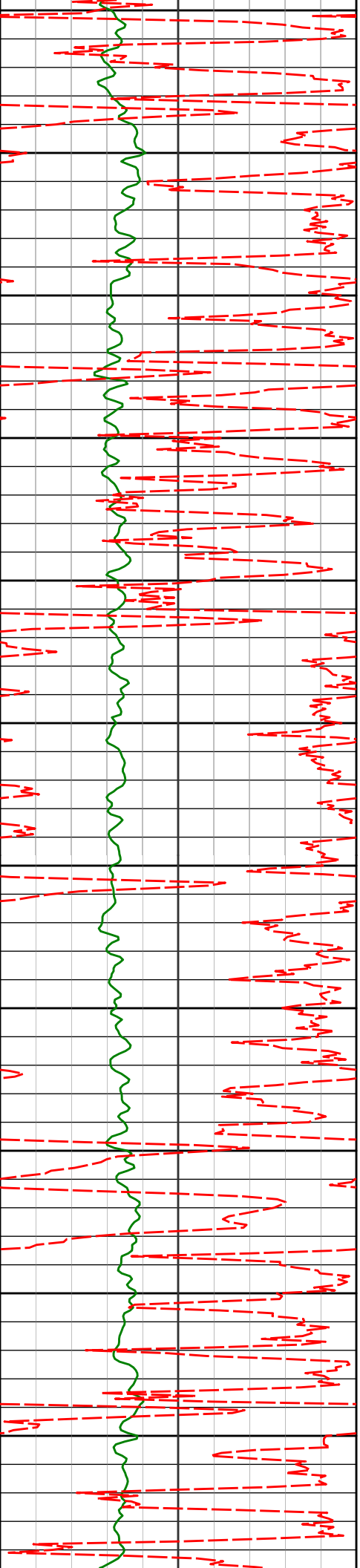




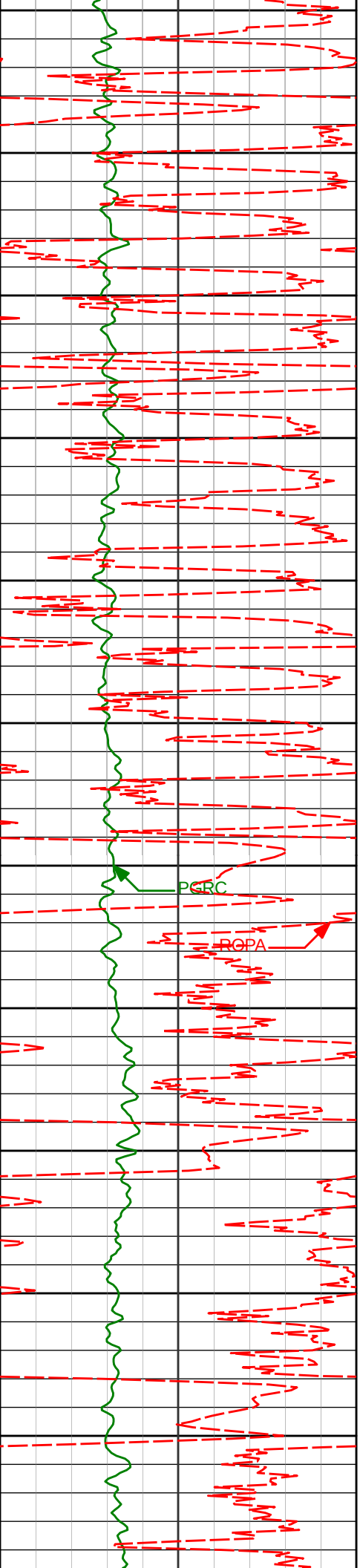
					84.06°F
1112'	0.67°	298.69°	1111.99'	-3.39'	
					86.09°F
					86.09°F
1203'	0.61°	291.33°	1202.98'	-3.85'	
					88.14°F
1294'	0.78°	284.21°	1293.97'	-4.20'	
					88.14°F
					88.14°F
1386'	0.74°	281.90°	1385.97'	-4.50'	
					89.10°F
					89.45°F
					90.19°F
					90.19°F
1568'	1.40°	170.85°	1567.95'	-2.57'	
					92.26°F



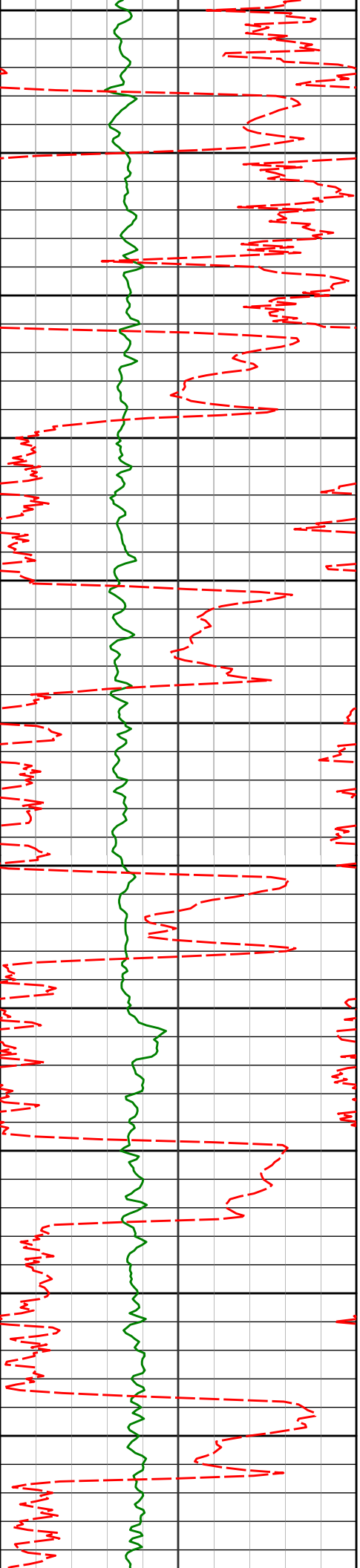
1600					93.05°F
1650	1659'	1.35°	172.24°	1658.92'	-0.41' 94.33°F
1700					94.33°F
1750	1750'	1.22°	173.20°	1749.90'	1.62' 95.73°F
1800					96.42°F
1850	1842'	1.15°	177.48°	1841.88'	3.52' 96.42°F
1900					96.42°F
1950	1933'	0.82°	181.36°	1932.86'	5.08' 98.51°F
2000					98.51°F
2050	2024'	0.34°	177.03°	2023.86'	6.00'
2100					100.62°F
	2115'	0.09°	231.04°	2114.86'	6.32' 100.62°F



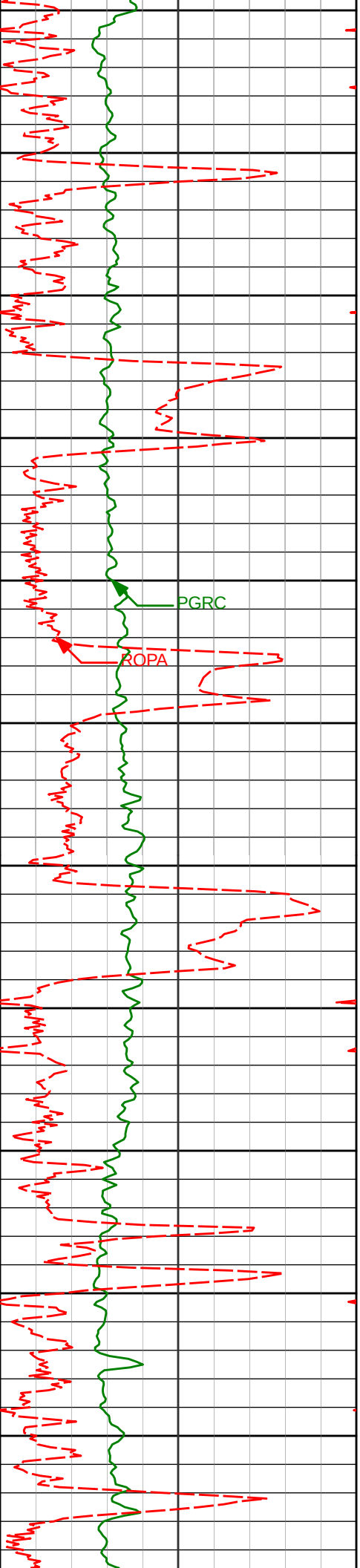
					100.62°F
2205'	0.48°	286.70°	2204.86'	6.25'	100.62°F
					102.72°F
2297'	0.85°	288.88°	2296.85'	5.89'	102.72°F
					104.83°F
					104.83°F
					104.83°F
2480'	1.38°	253.52°	2479.82'	6.00'	106.54°F
					106.97°F
					106.97°F
					109.09°F
2663'	0.18°	115.45°	2662.80'	6.70'	109.09°F



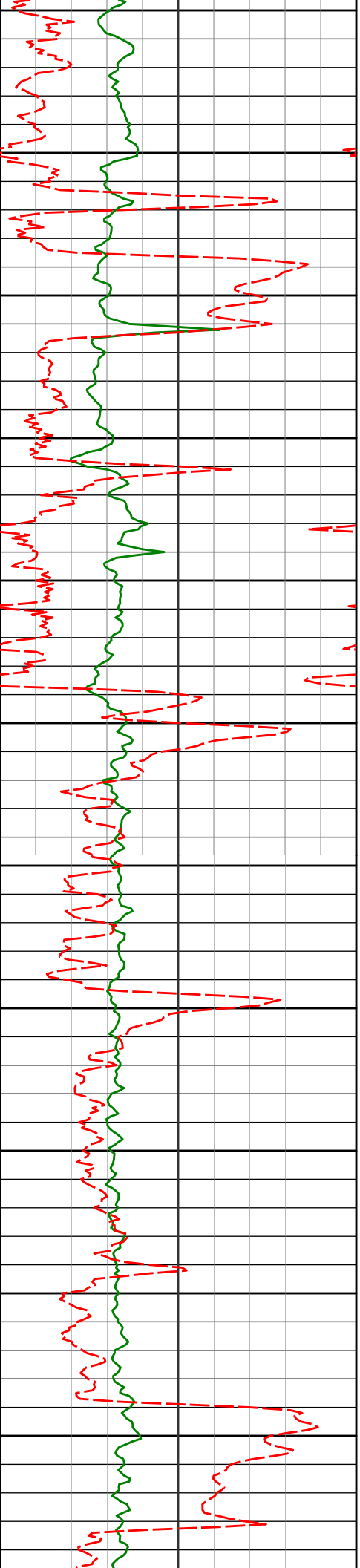
2700					111.24°F
2750	2755'	0.26°	0.94°	2754.80'	6.56'
					111.24°F
2800					
					111.24°F
2850	2849'	0.25°	348.97°	2848.80'	6.15'
					111.24°F
2900					
					112.53°F
2950	2944'	0.64°	323.97°	2943.80'	5.51'
					113.40°F
3000					
					114.23°F
3050	3038'	2.05°	79.44°	3037.78'	4.81'
					115.56°F
3100					
					115.56°F
3150					
					115.56°F
3200					
					116.01°F
	3228'	4.16°	63.77°	3227.49'	1.36'
					117.73°F



					118.37°F
3322'	3.83°	61.43°	3321.26'	-1.52'	119.91°F
					119.91°F
3417'	6.08°	74.93°	3415.90'	-4.17'	119.91°F
					120.54°F
3512'	8.05°	87.22°	3510.18'	-5.53'	121.98°F
					122.11°F
3606'	8.35°	82.68°	3603.22'	-6.41'	123.54°F
					124.30°F
3701'	11.20°	82.68°	3696.83'	-8.10'	124.30°F
					124.30°F
3795'	10.80°	83.45°	3789.11'	-9.86'	124.30°F

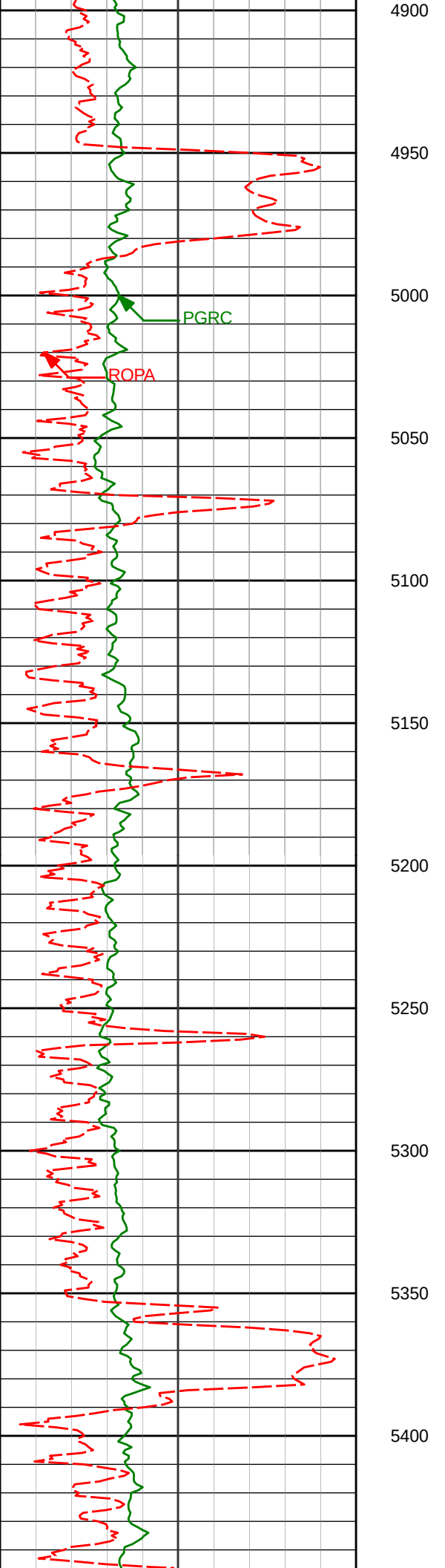


3800					126.86°F
3850					128.39°F
3900					128.73°F
3950					128.73°F
	3985'	11.65°	79.60°	3975.47'	-14.50'
4000					128.73°F
4050					129.92°F
	4079'	11.68°	83.63°	4067.53'	-16.84'
4100					130.96°F
4150					131.76°F
	4174'	10.76°	99.17°	4160.74'	-16.07'
4200					133.20°F
4250					133.20°F
	4268'	9.70°	95.40°	4253.24'	-13.55'
4300					134.84°F
					135.45°F

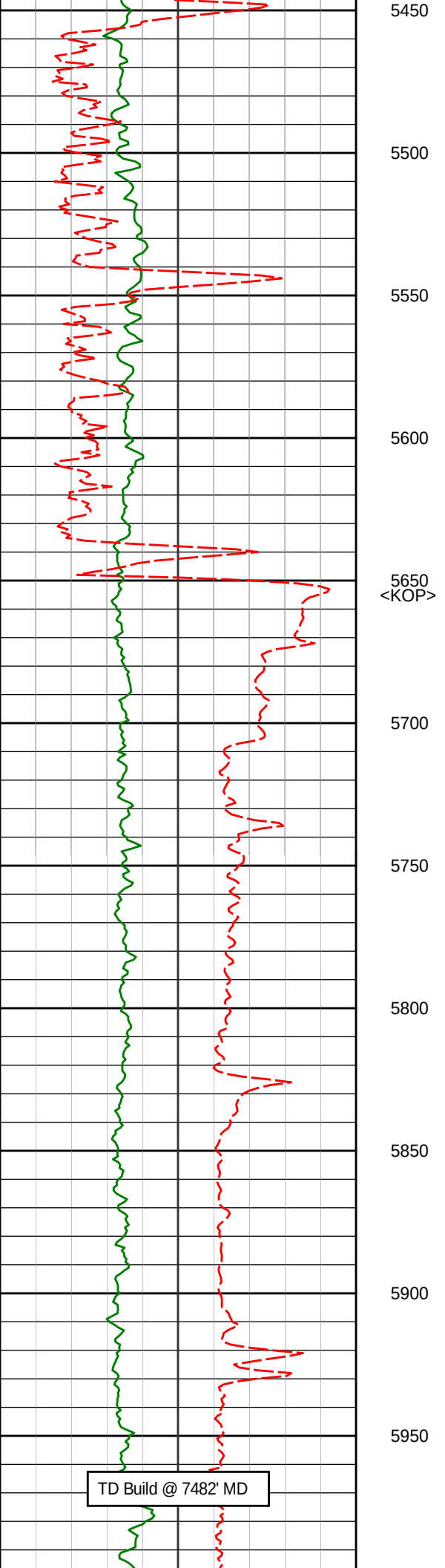


4363'	8.09°	93.91°	4347.10'	-12.00'
4458'	8.09°	96.50°	4441.15'	-10.48'
4552'	8.10°	100.18°	4534.22'	-8.26'
4646'	8.00°	98.56°	4627.29'	-5.82'
4740'	7.66°	89.34°	4720.42'	-4.62'
4835'	7.47°	83.91°	4814.60'	-5.06'

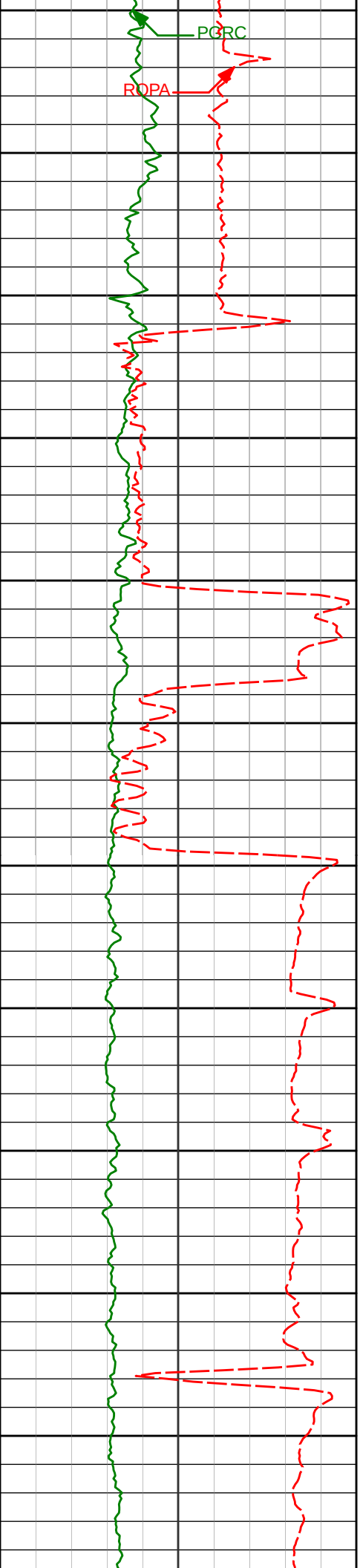
136.82°F
136.50°F
137.70°F
137.70°F
139.96°F
139.96°F
141.05°F
142.25°F
142.71°F
143.96°F
142.55°F
144.54°F



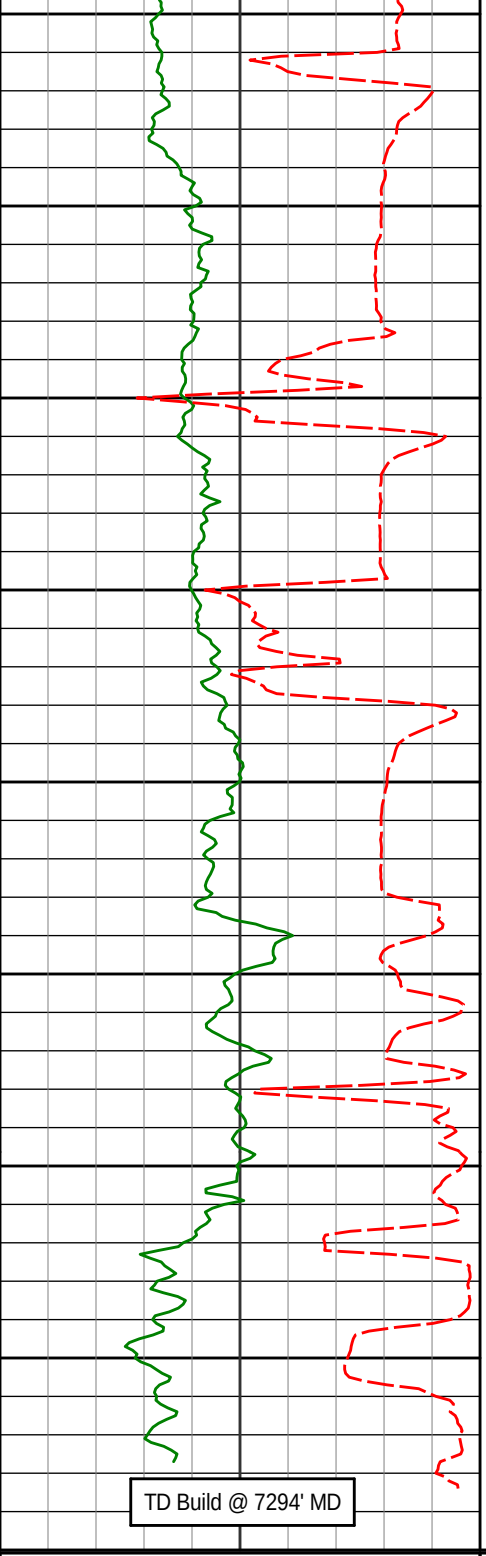
4900	4929'	4.04°	84.83°	4908.11'	-5.79'
					144.54°F
4950					144.54°F
					146.84°F
5000	5024'	1.33°	121.55°	5003.00'	-5.42'
					148.98°F
5050					
					149.14°F
5100	5119'	1.36°	107.32°	5097.97'	-4.47'
					149.14°F
5150					
					151.23°F
5200	5213'	1.44°	89.35°	5191.95'	-4.10'
					151.47°F
5250					
					152.37°F
5300	5307'	1.66°	93.63°	5285.91'	-3.97'
					150.57°F
5350					149.14°F
	5402'	1.18°	81.90°	5380.88'	-3.96'
5400					149.14°F
					150.60°F



					151.47°F
5497'	1.21°	70.29°	5475.86'	-4.40'	
					151.47°F
					150.72°F
5591'	1.33°	74.97°	5569.84'	-4.97'	
					149.24°F
<KOP>					
5686'	0.96°	137.44°	5664.82'	-4.63'	150.46°F
					151.47°F
					152.12°F
					153.79°F
5875'	0.93°	85.19°	5853.80'	-3.54'	153.79°F
					153.79°F
					154.12°F
					155.99°F



6000					156.13°F
	6064'	1.36°	47.31°	6042.77'	-5.12'
6050					
					156.13°F
6100					
					159.45°F
	6158'	1.70°	50.80°	6136.73'	-6.71'
6150					
					157.53°F
6200					
					157.04°F
	6253'	1.06°	93.26°	6231.71'	-7.51'
6250					
					156.89°F
6300					
					158.87°F
	6348'	3.49°	192.12°	6326.65'	-4.63'
6350					
					160.83°F
6400					
					162.98°F
	6443'	14.59°	194.18°	6420.32'	9.76'
6450					
					164.32°F
6500					
					166.68°F
	6538'	23.38°	189.29°	6510.07'	39.88'
					167.97°F



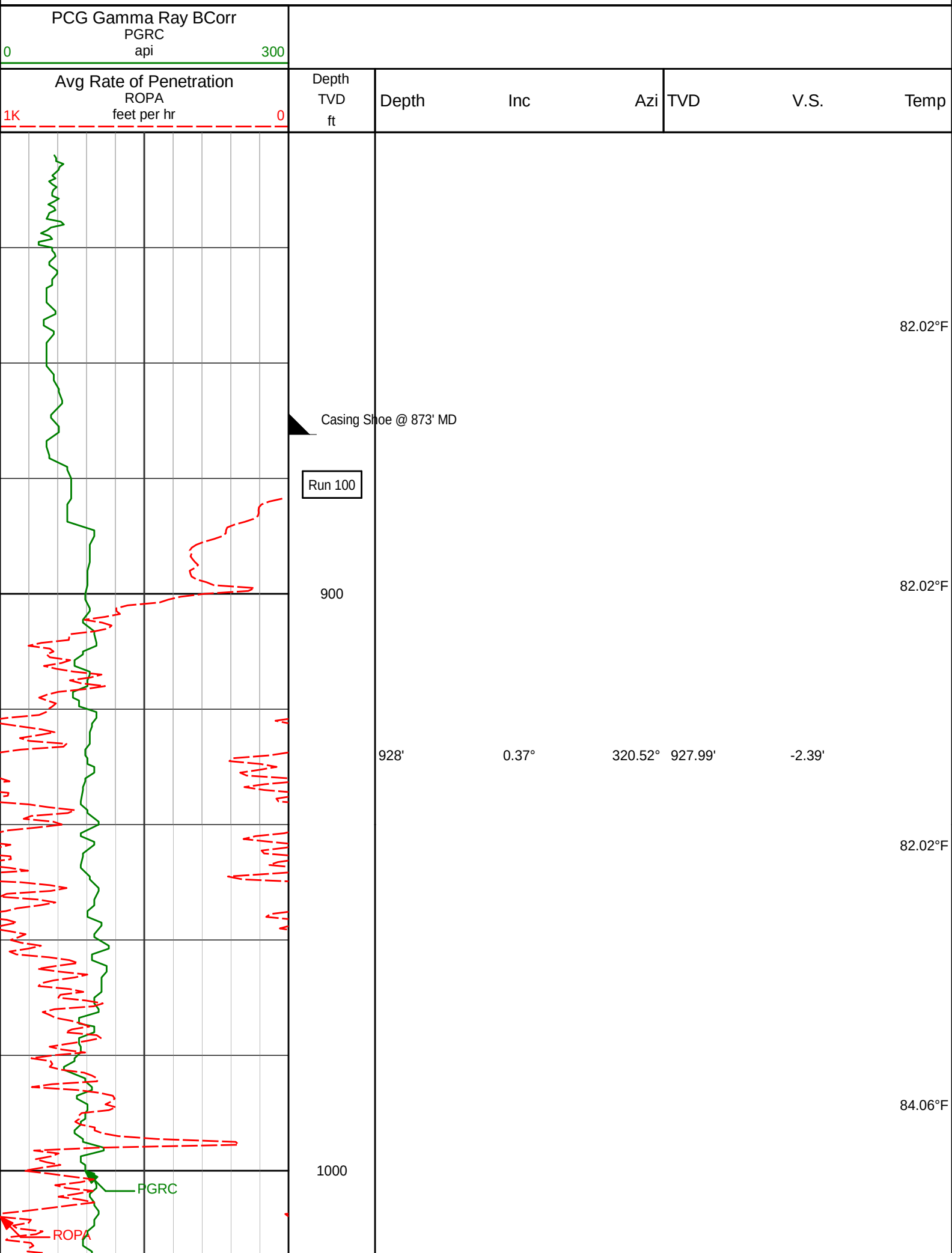
Depth	Inc	Azi	TVD	V.S.	Temp
					168.44°F
6632'	33.89°	179.07°	6592.51'	84.56'	
					170.29°F
					171.76°F
6727'	41.01°	175.26°	6667.89'	142.24'	
6822'	44.66°	182.40°	6737.58'	206.73'	
6916'	54.80°	187.87°	6798.30'	277.83'	
7011'	63.60°	185.42°	6846.90'	358.56'	
7105'	68.91°	183.90°	6884.74'	444.11'	
7200'	71.76°	183.03°	6916.70'	533.24'	
7228'	76.61°	182.83°	6924.33'	560.10'	

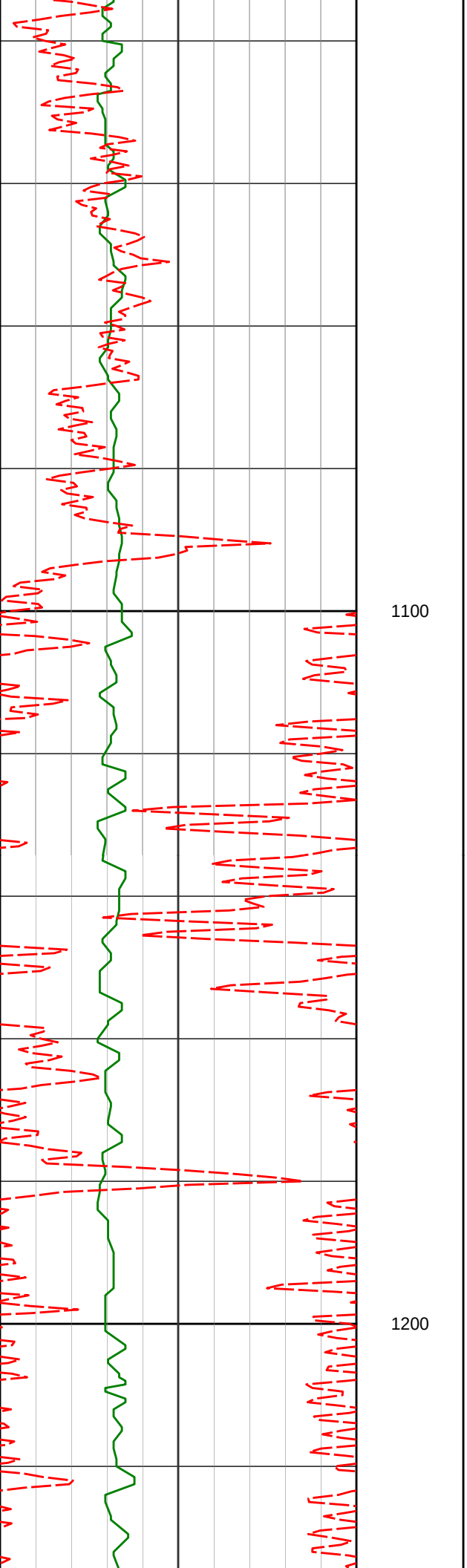
Avg Rate of Penetration
ROPA
1K feet per hr 0

PCG Gamma Ray BCorr
PGRC
0 api 300

Depth
TVD
ft

TVD Detail 1:240 Scale


PCG Gamma Ray BCorr
PGRC
0
api
300
Avg Rate of Penetration
ROPA
1K
feet per hr
0
Depth
TVD
ft
Depth
Inc
Azi
TVD
V.S.
Temp
82.02°F
Casing Shoe @ 873' MD
Run 100
900
82.02°F
928'
0.37°
320.52°
927.99'
-2.39'
82.02°F
84.06°F
1000
PGRC
ROPA



84.06°F

84.06°F

1100

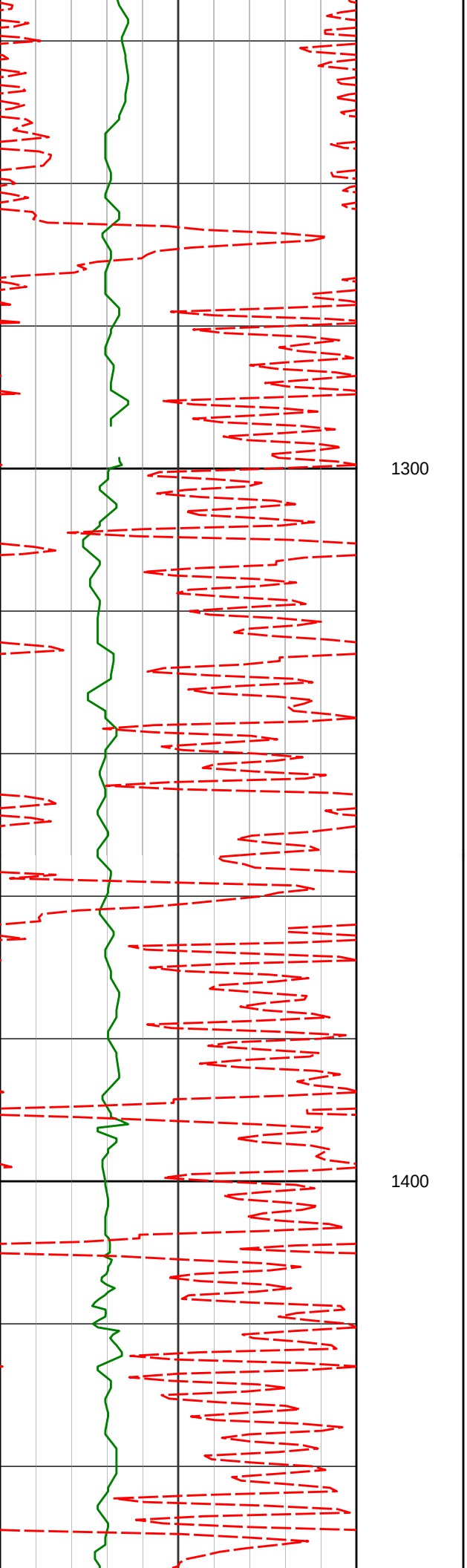
1112' 0.67° 298.69° 1111.99' -3.39'

86.09°F

86.09°F

1200

1203' 0.61° 291.33° 1202.98' -3.85'



1294'	0.78°	284.21°	1293.97'	-4.20'
1386'	0.74°	281.90°	1385.97'	-4.50'

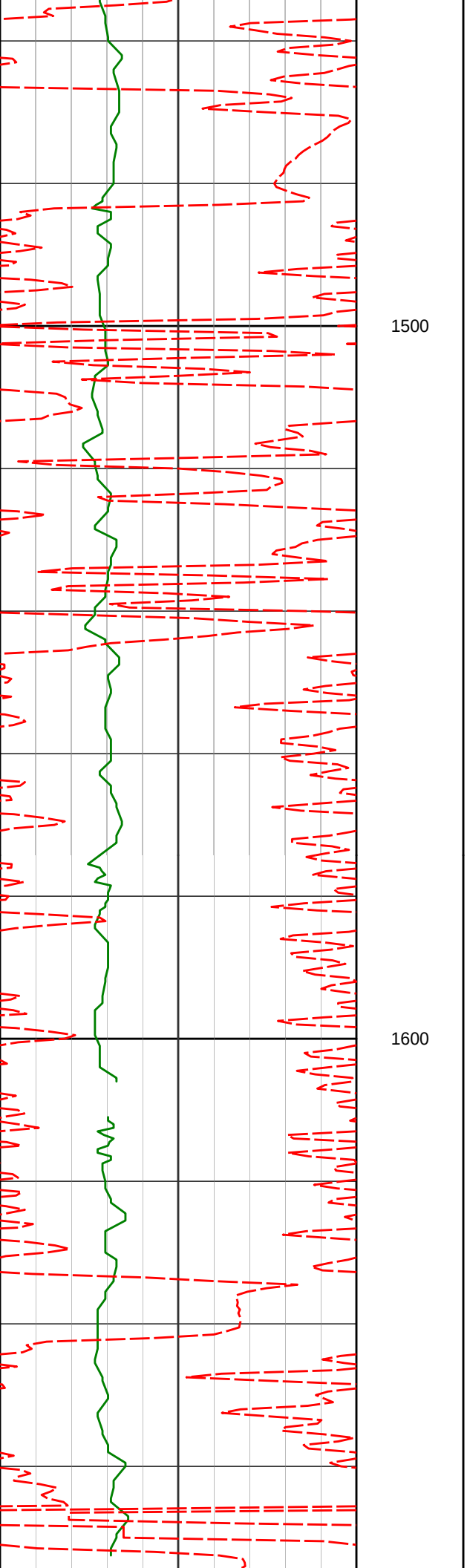
88.14°F

88.14°F

88.14°F

89.10°F

89.45°F



90.19°F

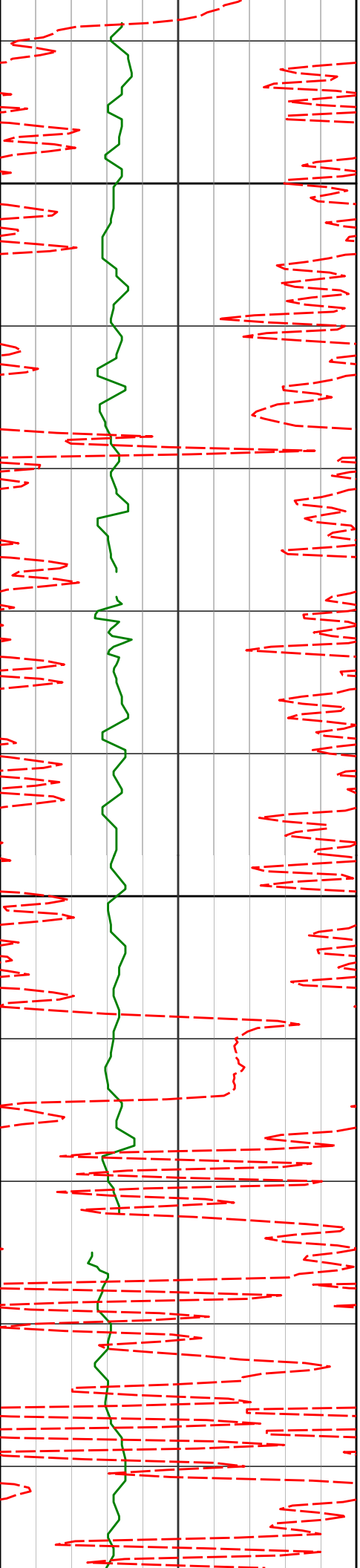
90.19°F

1568'	1.40°	170.85°	1567.95'	-2.57'

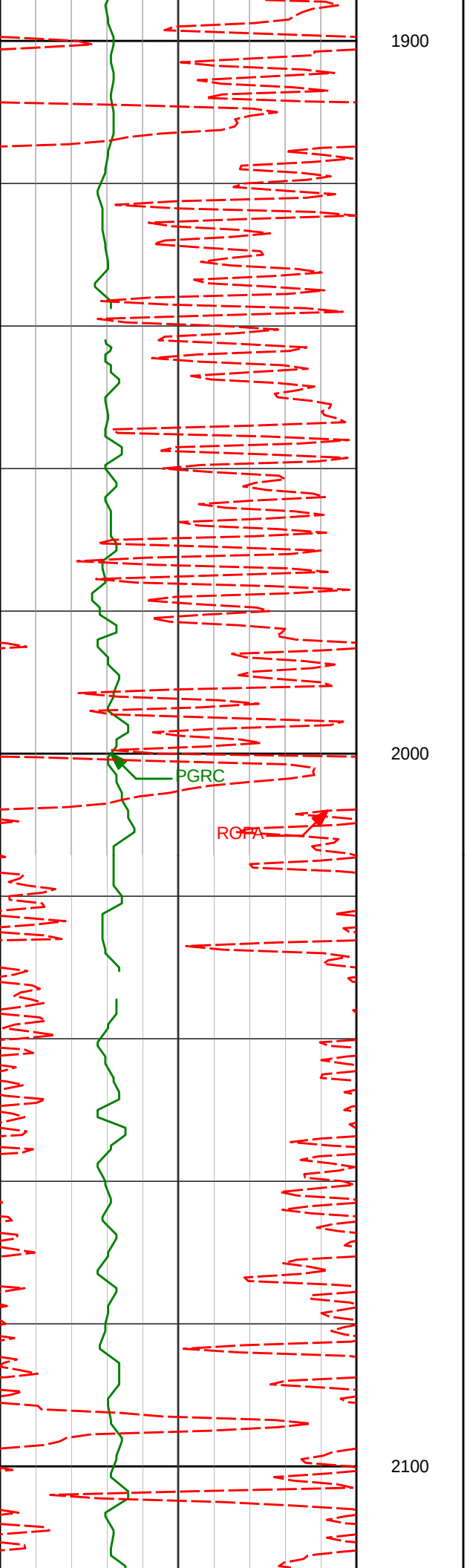
93.05°F

1659'	1.35°	172.24°	1658.92'	-0.41'

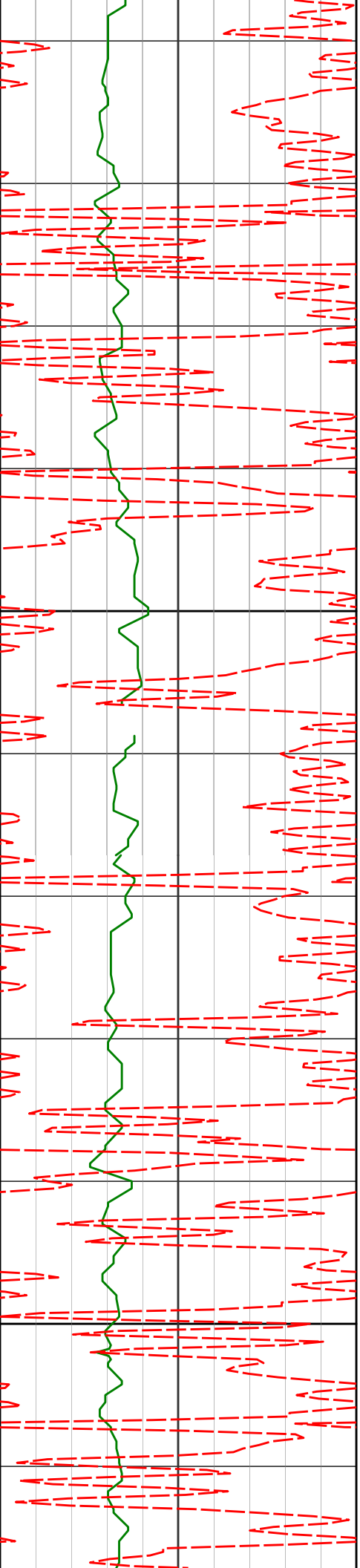
94.33°F



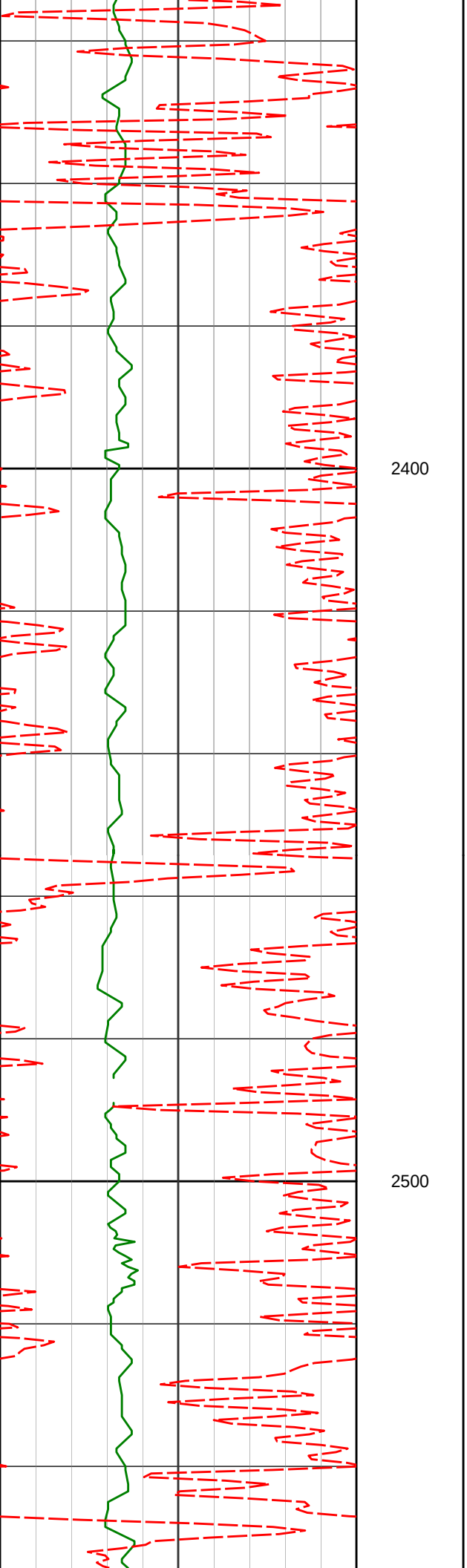
1700					94.33°F
1750'	1.22°	173.20°	1749.90'	1.62'	95.73°F
1800					96.42°F
1842'	1.15°	177.48°	1841.88'	3.52'	96.42°F
					96.42°F



1933'	0.82°	181.36°	1932.86'	5.08'	98.51°F
					98.51°F
2024'	0.34°	177.03°	2023.86'	6.00'	
					100.62°F



2115'	0.09°	231.04°	2114.86'	6.32'	
					100.62°F
2205'	0.48°	286.70°	2204.86'	6.25'	100.62°F
					102.72°F
2297'	0.85°	288.88°	2296.85'	5.89'	102.72°F



104.83°F

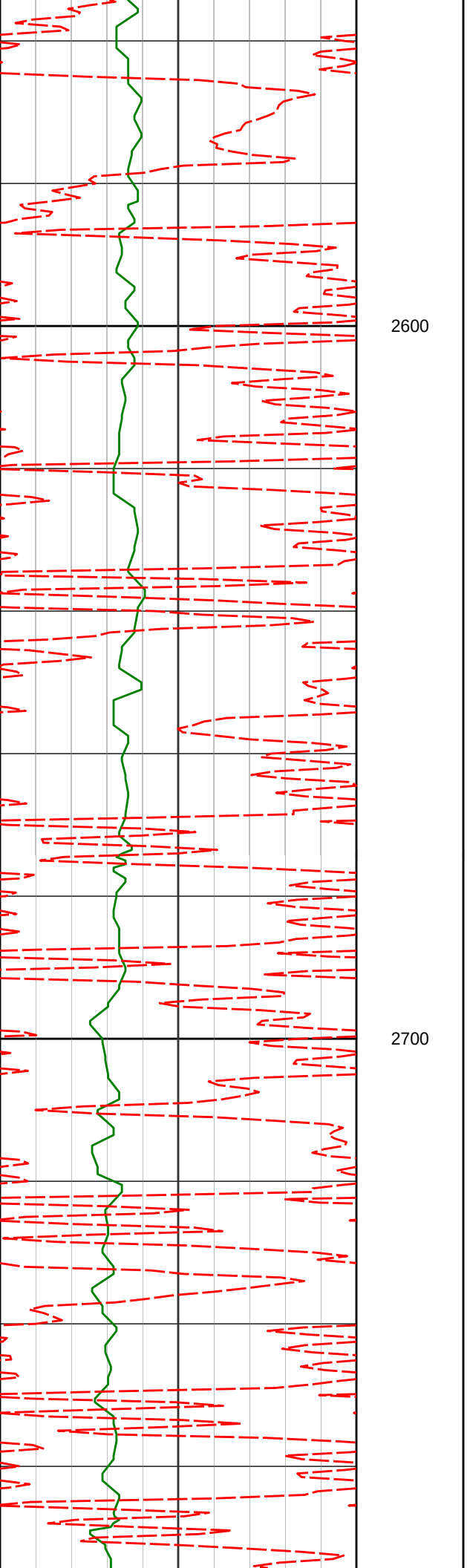
104.83°F

104.83°F

106.54°F

2480'	1.38°	253.52°	2479.82'	6.00'

106.97°F



106.97°F

109.09°F

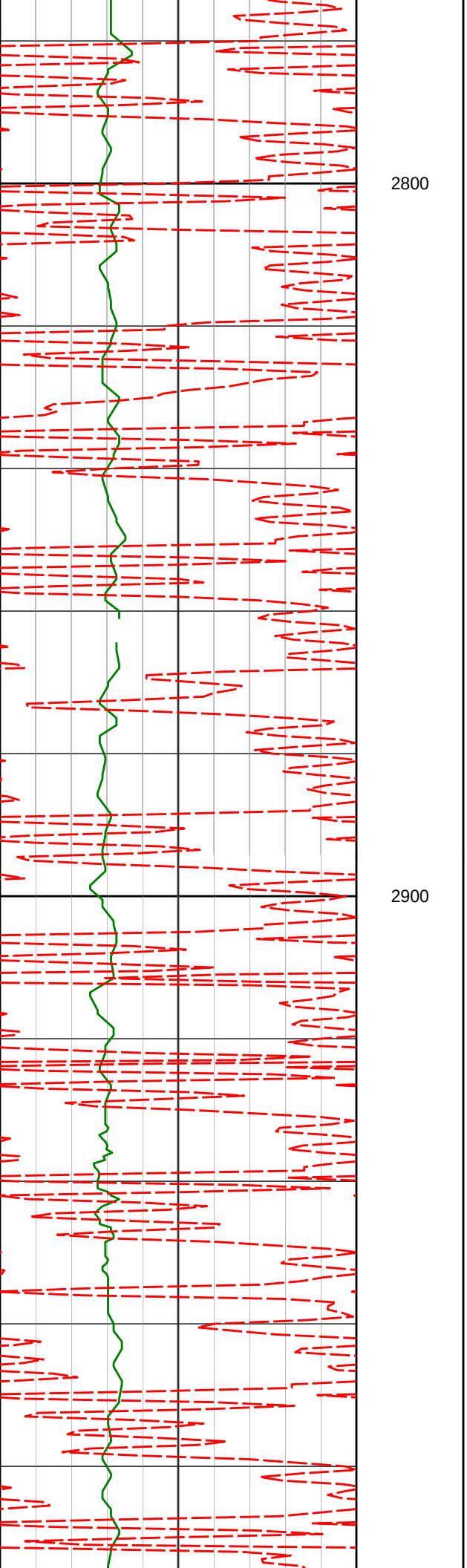
109.09°F

2663'	0.18°	115.45°	2662.80'	6.70'

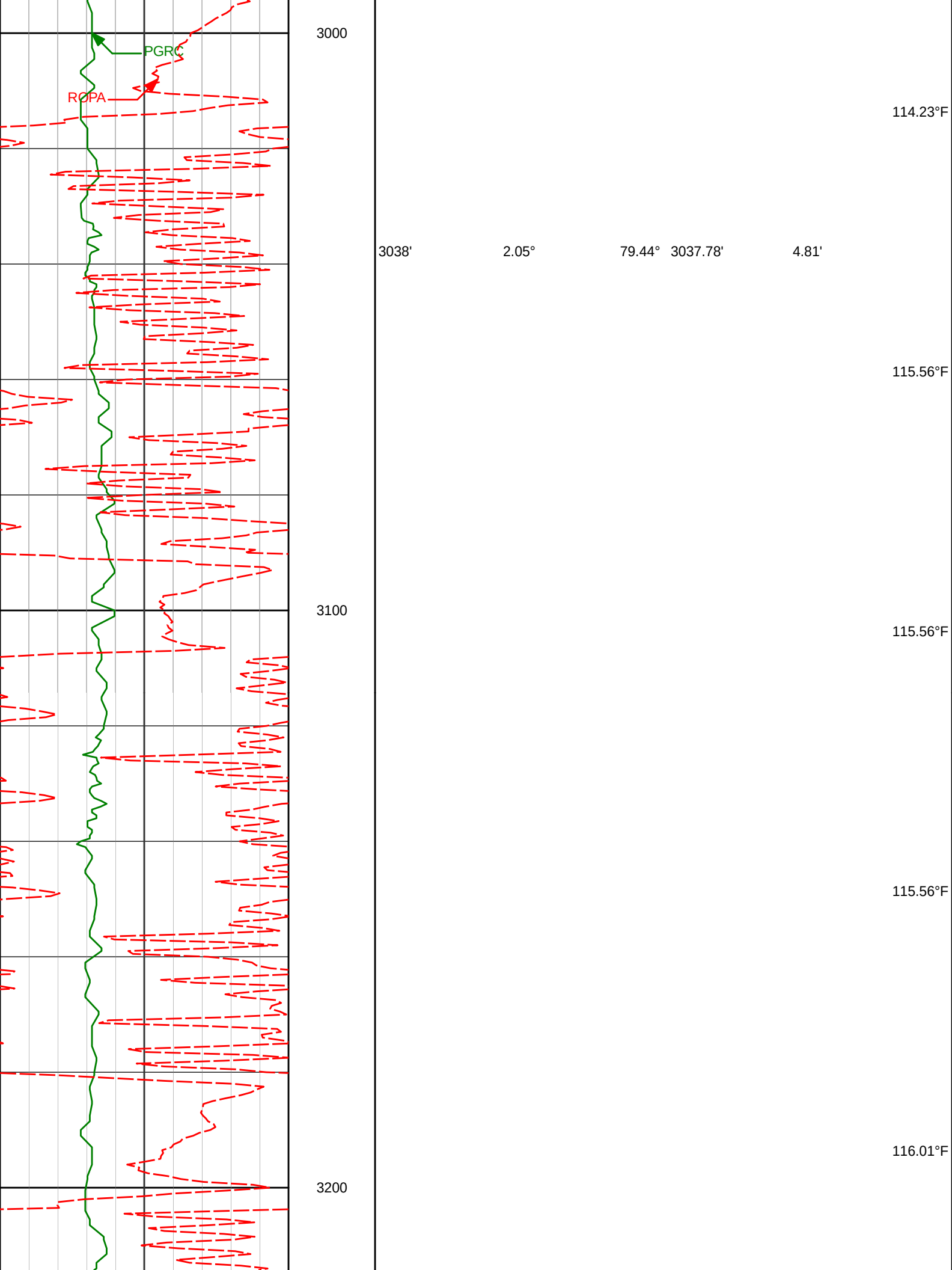
111.24°F

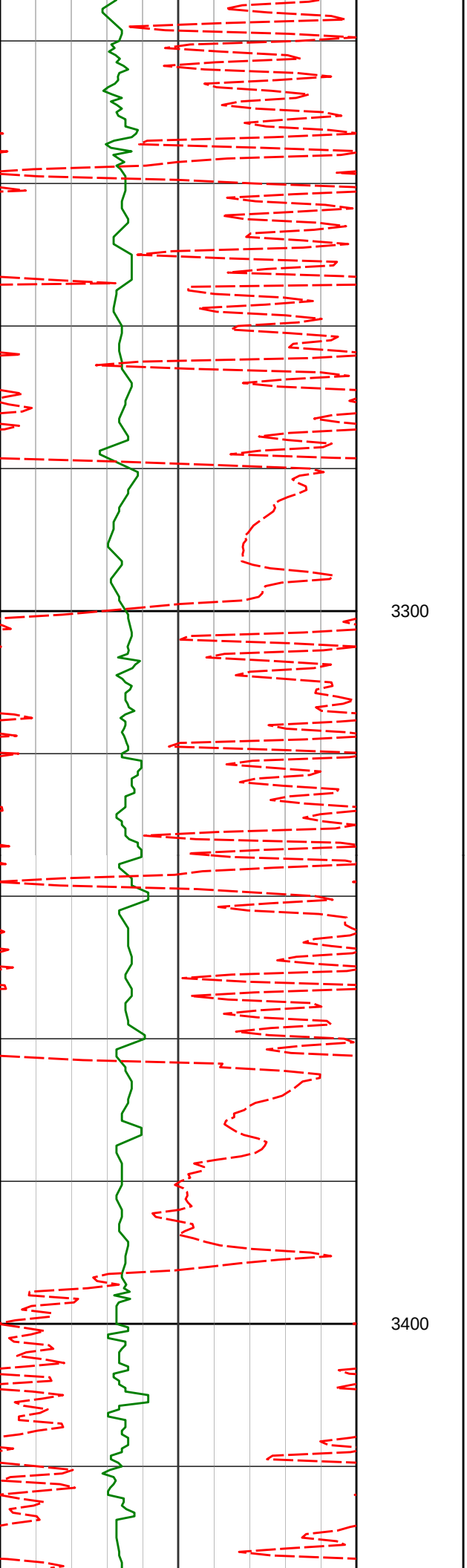
111.24°F

2755'	0.26°	0.94°	2754.80'	6.56'

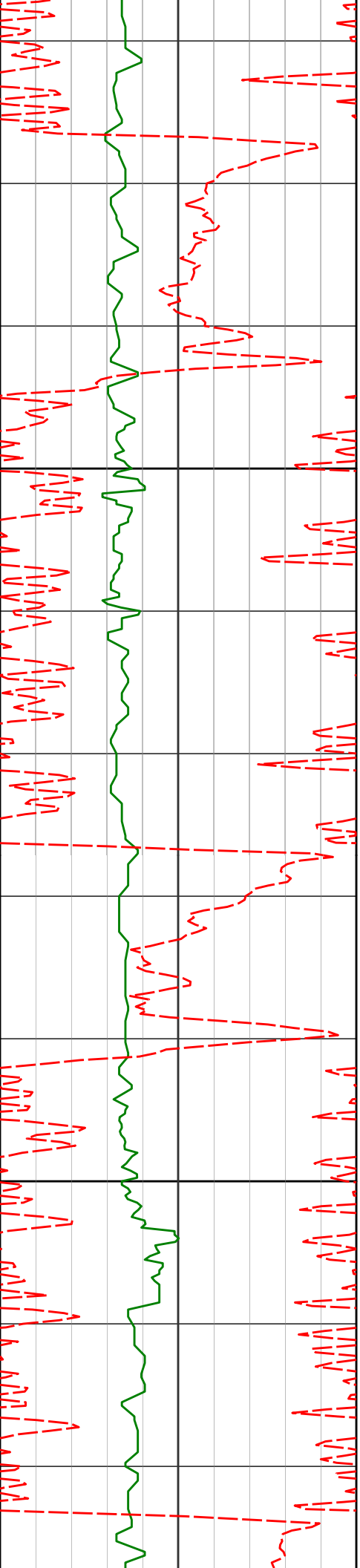


					111.24°F
					111.24°F
2849'	0.25°	348.97°	2848.80'	6.15'	
					111.24°F
					112.53°F
2944'	0.64°	323.97°	2943.80'	5.51'	
					113.40°F

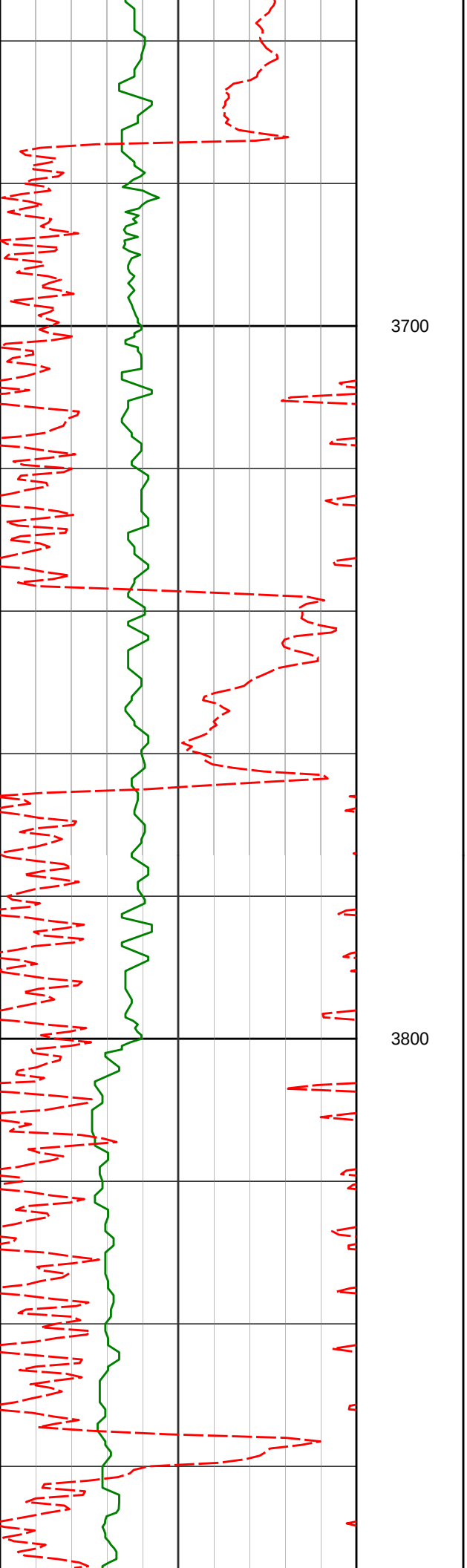

PGRC
ROPA
3000
3100
3200
3038'
2.05°
79.44°
3037.78'
4.81'
114.23°F
115.56°F
115.56°F
115.56°F
116.01°F



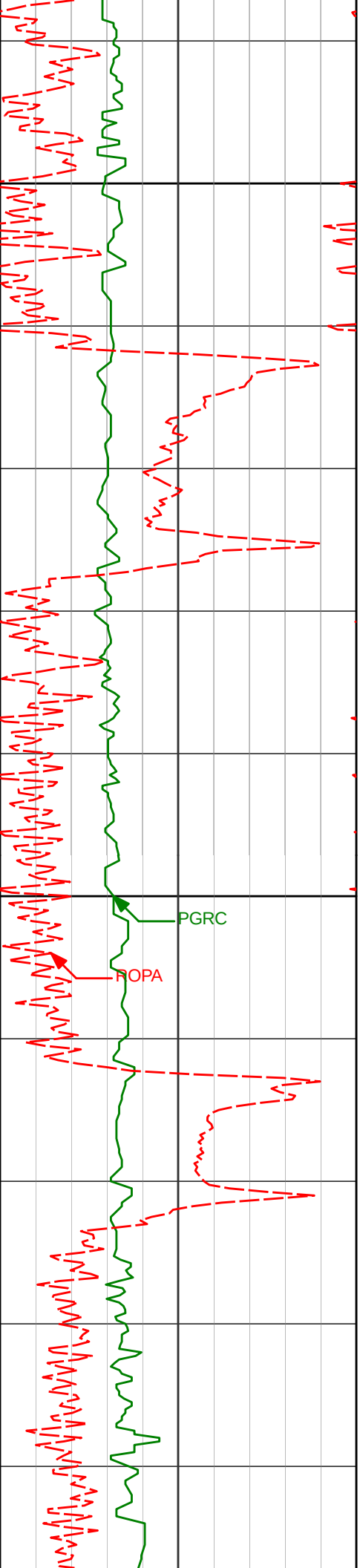
3228'	4.16°	63.77°	3227.49'	1.36'	117.73°F
					118.37°F
3322'	3.83°	61.43°	3321.26'	-1.52'	119.91°F
					119.91°F
3417'	6.08°	74.93°	3415.90'	-4.17'	119.91°F



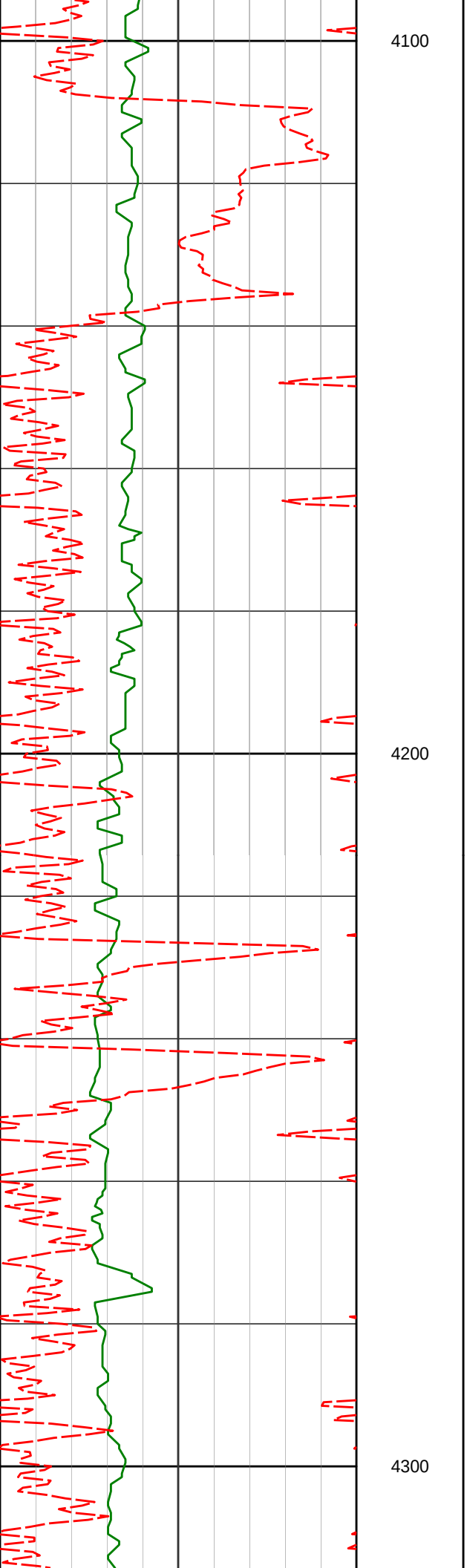
						120.54°F
3500						
	3512'	8.05°	87.22°	3510.18'	-5.53'	121.98°F
3600						123.54°F
	3606'	8.35°	82.68°	3603.22'	-6.41'	
						124.30°F



					124.30°F
3700	3701'	11.20°	82.68°	3696.83'	-8.10'
					124.30°F
					124.30°F
3800	3795'	10.80°	83.45°	3789.11'	-9.86'
					126.86°F
					128.39°F



					128.73°F
					128.73°F
3985'	11.65°	79.60°	3975.47'	-14.50'	
					128.73°F
					129.92°F
4079'	11.68°	83.63°	4067.53'	-16.84'	



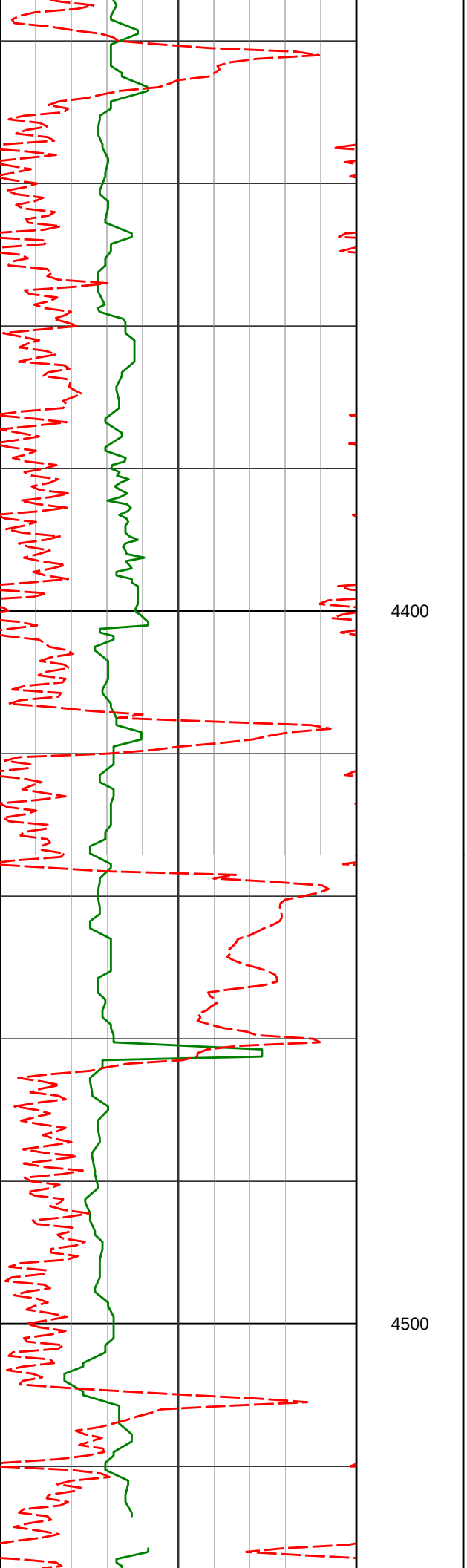
4174'	10.76°	99.17°	4160.74'	-16.07'
4268'	9.70°	95.40°	4253.24'	-13.55'

131.76°F

133.20°F

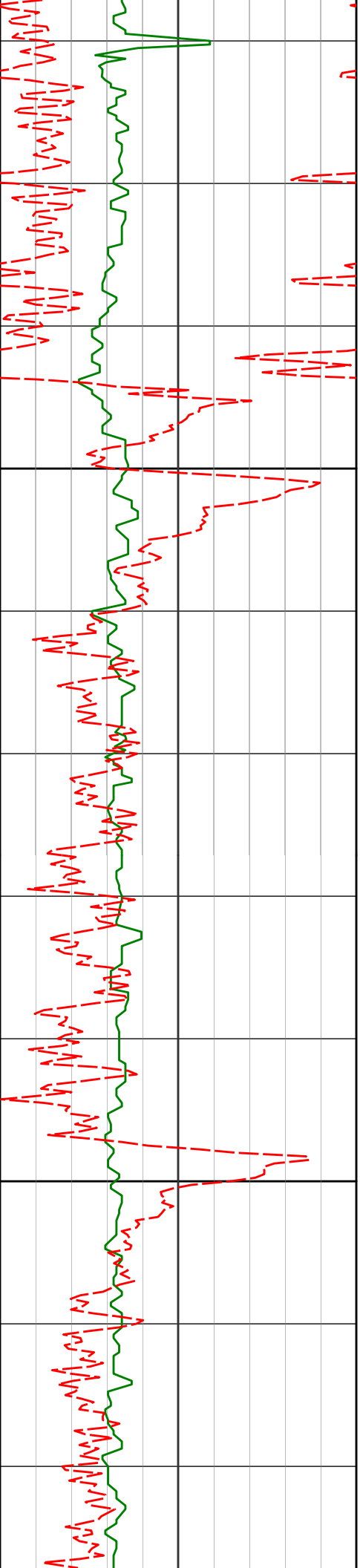
133.20°F

134.84°F



	4363'	8.09°	93.91°	4347.10'	-12.00'
	4458'	8.09°	96.50°	4441.15'	-10.48'
	4552'	8.10°	100.18°	4534.22'	-8.26'

135.45°F
136.82°F
136.50°F
137.70°F
137.70°F



4552	8.10	100.18	4534.22	-8.26

139.96°F

139.96°F

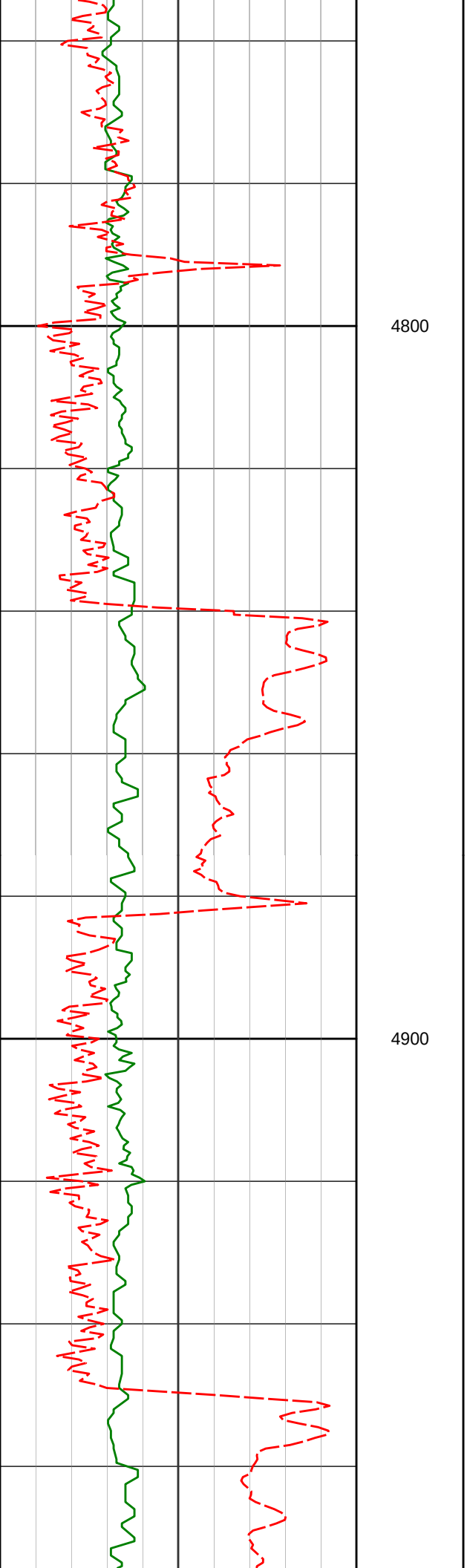
4646'	8.00°	98.56°	4627.29'	-5.82'

141.05°F

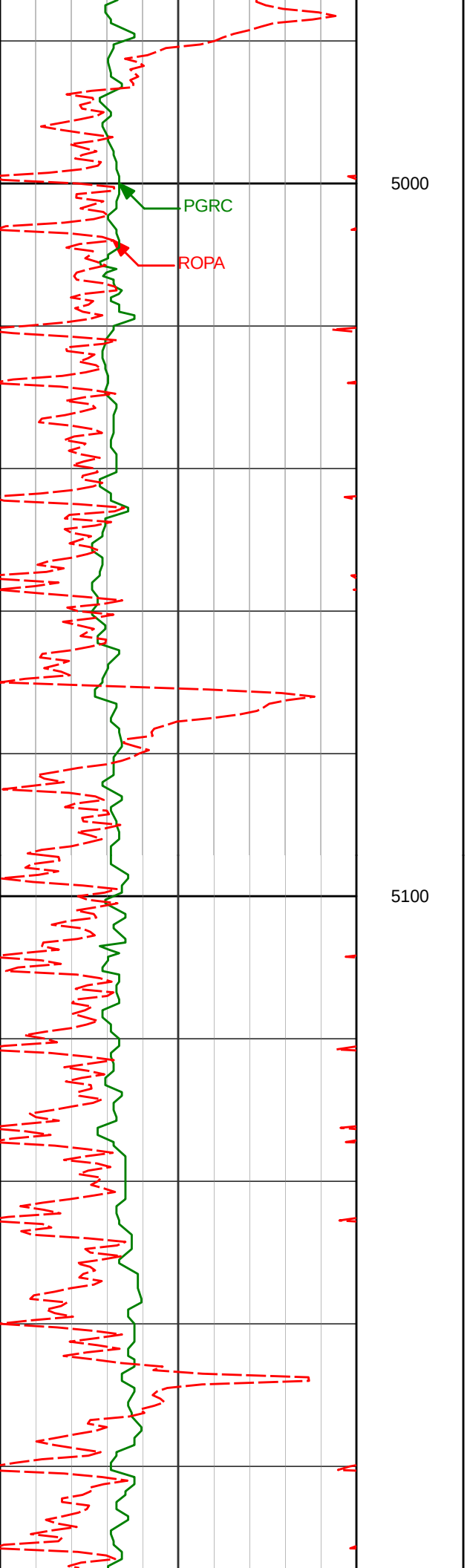
142.25°F

4740'	7.66°	89.34°	4720.42'	-4.62'

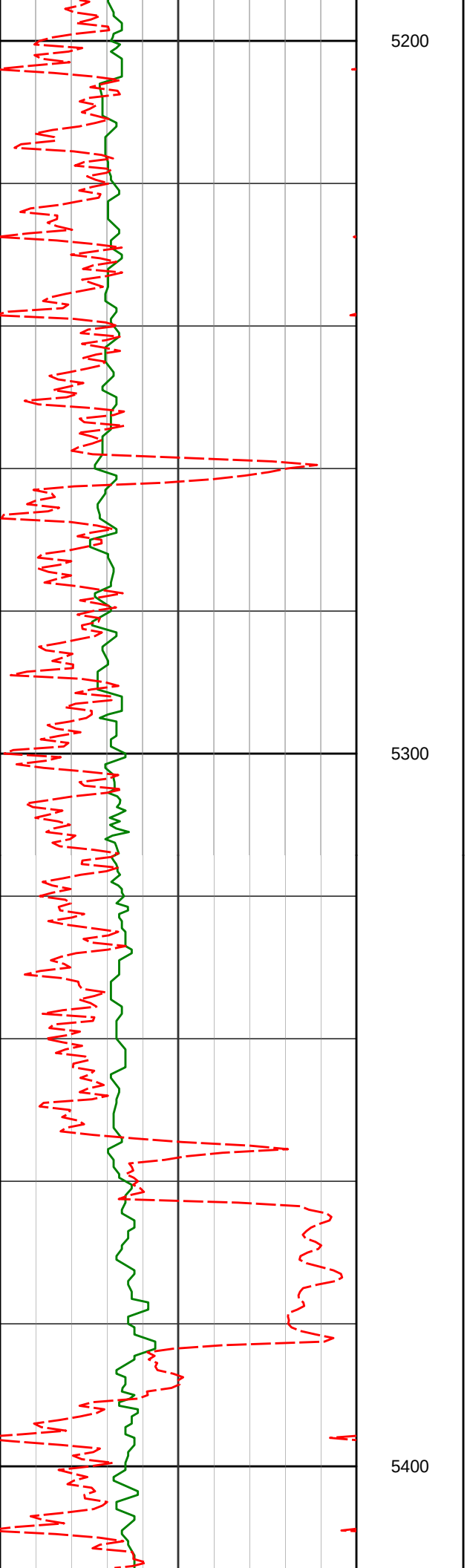
142.71°F



					143.96°F
4835'	7.47°	83.91°	4814.60'	-5.06'	142.55°F
					144.54°F
4929'	4.04°	84.83°	4908.11'	-5.79'	144.54°F
					144.54°F



5000	5024'	1.33°	121.55°	5003.00'	-5.42'	146.84°F
						148.98°F
						149.14°F
5100	5119'	1.36°	107.32°	5097.97'	-4.47'	
						149.14°F
						151.23°F
	5213'	1.44°	89.35°	5191.95'	-4.10'	



151.47°F

152.37°F

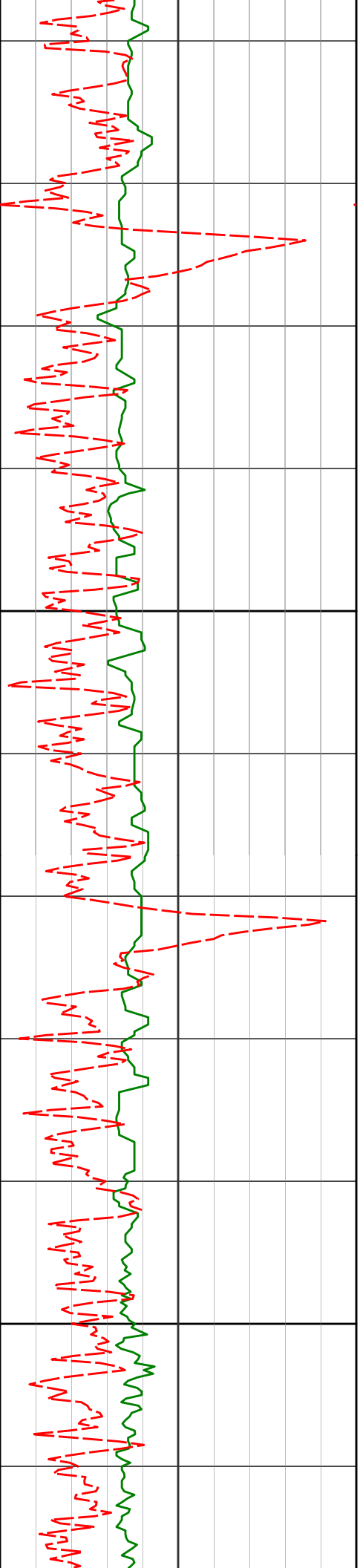
5307'	1.66°	93.63°	5285.91'	-3.97'

150.57°F

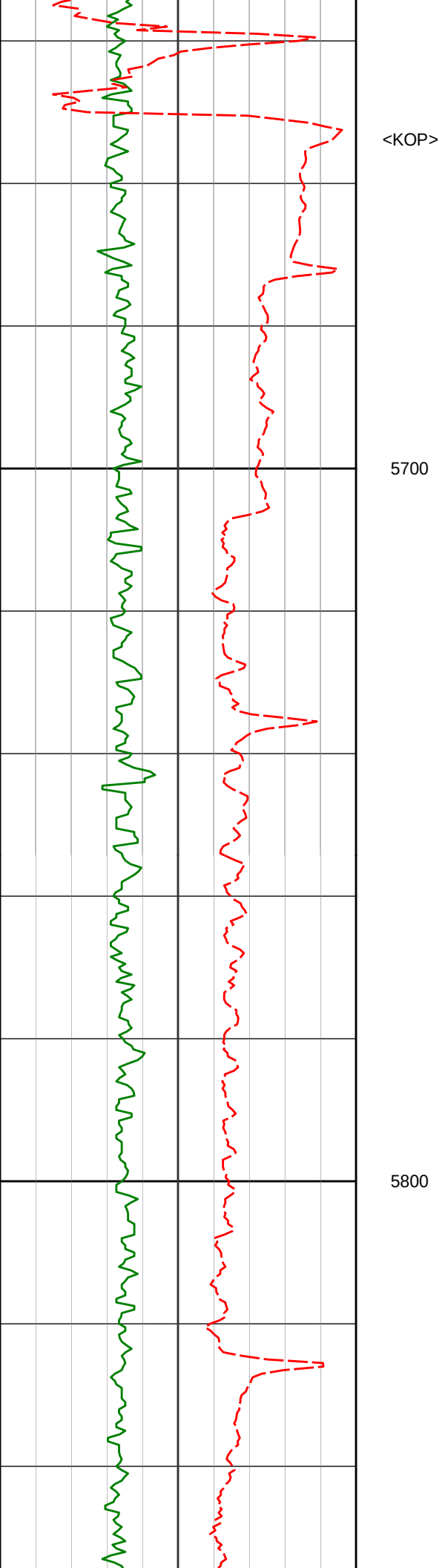
149.14°F

5402'	1.18°	81.90°	5380.88'	-3.96'

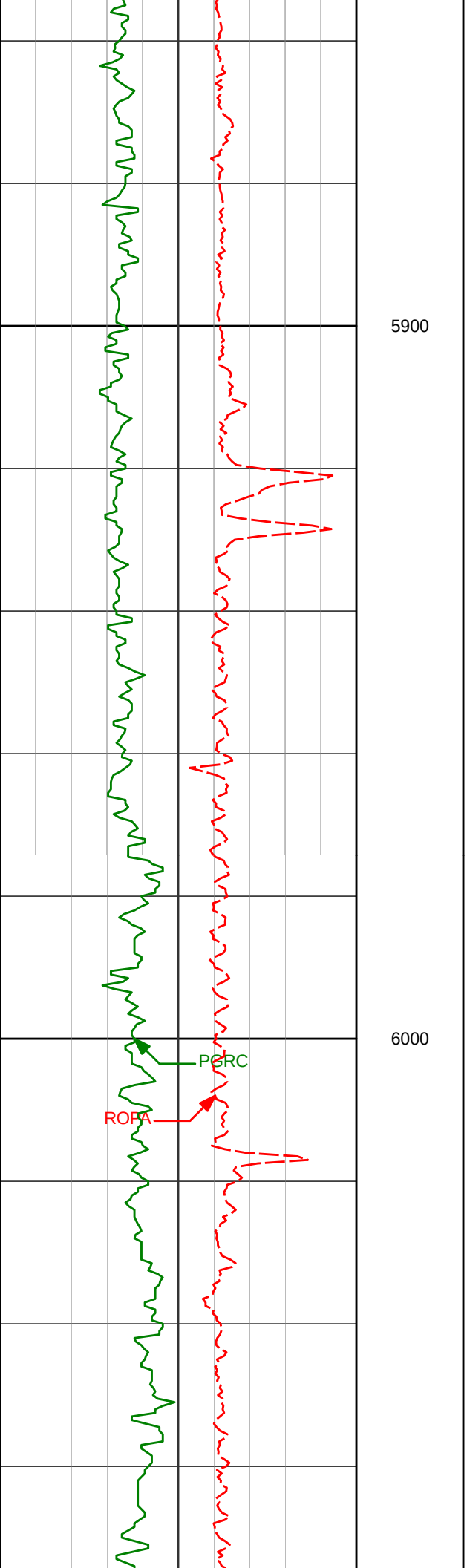
149.14°F



					150.60°F
5497'	1.21°	70.29°	5475.86'	-4.40'	
					151.47°F
5500					
5591'	1.33°	74.97°	5569.84'	-4.97'	
					150.72°F
5600					
					149.24°F



5686'	0.96°	137.44°	5664.82'	-4.63'	150.46°F
					151.47°F
					152.12°F
					153.79°F
					153.79°F
5875'	0.93°	85.19°	5853.80'	-3.54'	



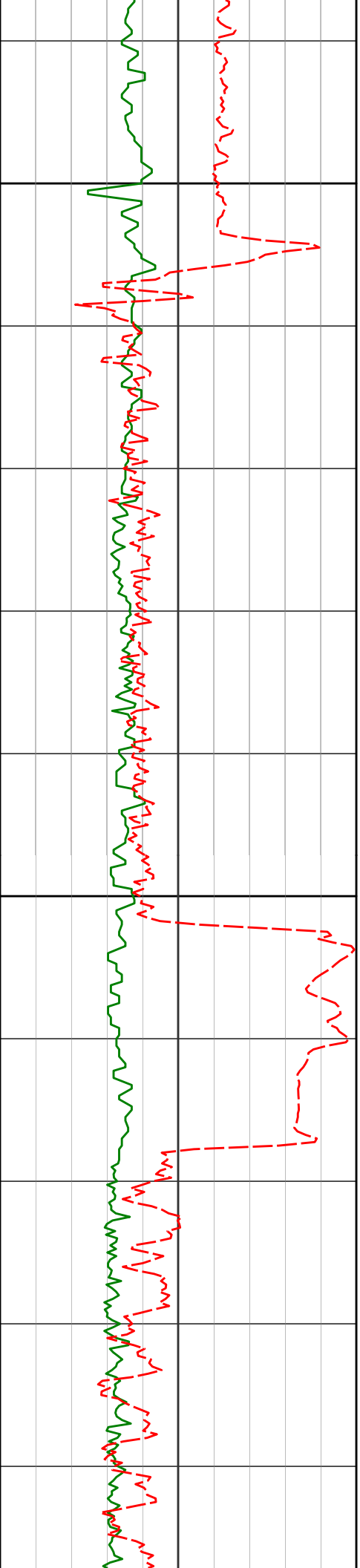
153.79°F

154.12°F

155.99°F

156.13°F

6064'	1.36°	47.31°	6042.77'	-5.12'



159.45°F

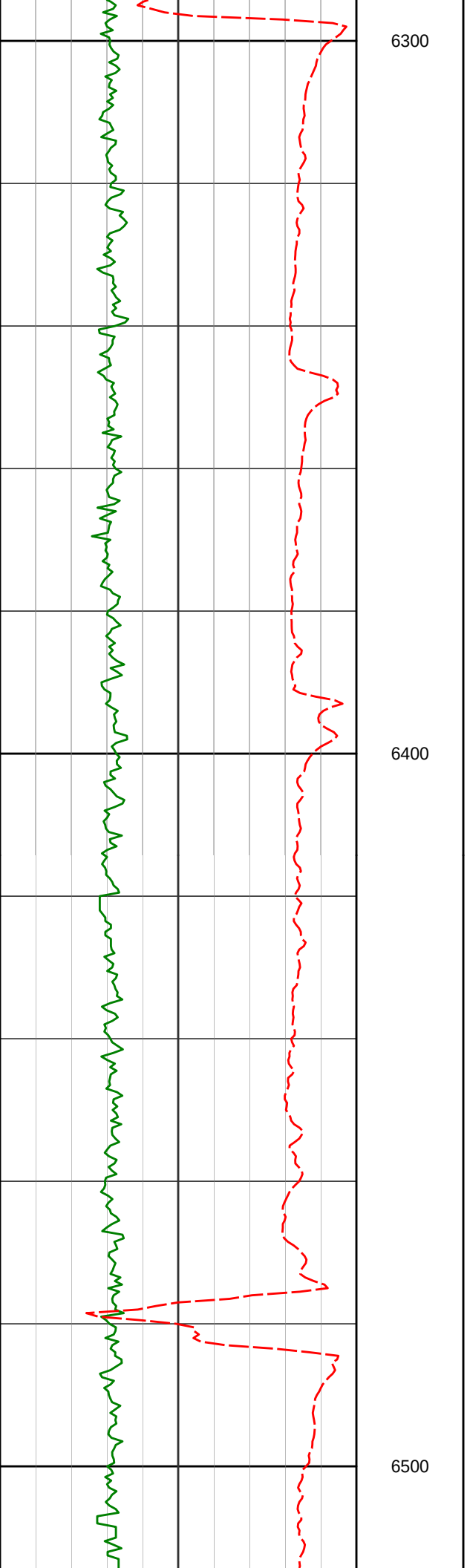
6158'	1.70°	50.80°	6136.73'	-6.71'

157.53°F

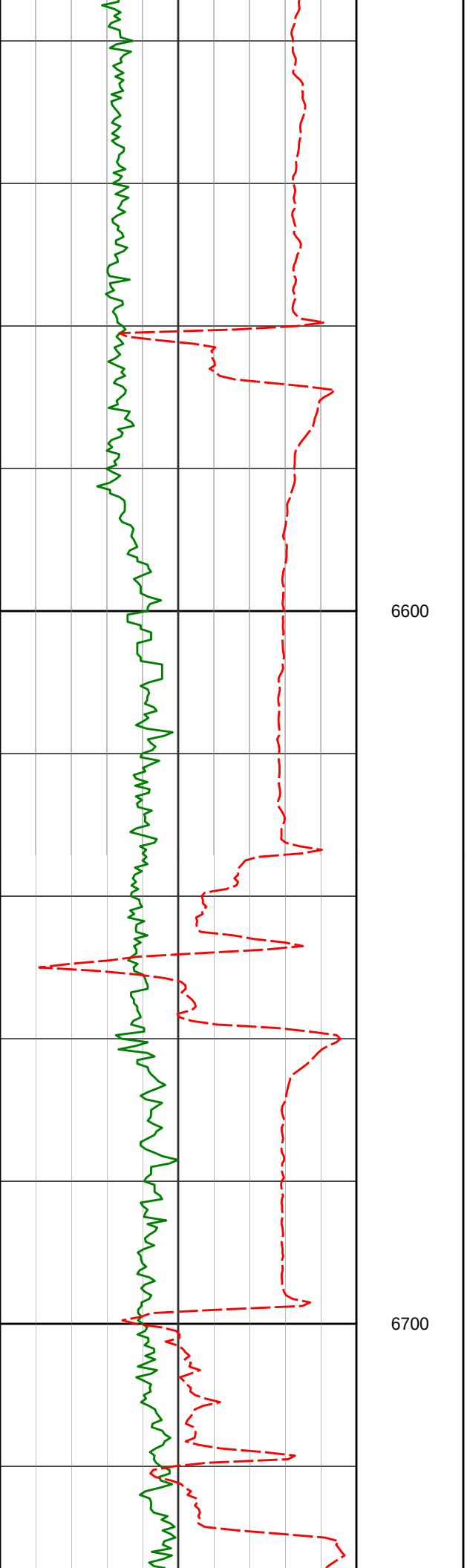
157.04°F

6253'	1.06°	93.26°	6231.71'	-7.51'

156.89°F



					158.87°F
6348'	3.49°	192.12°	6326.65'	-4.63'	
					160.83°F
					162.98°F
6443'	14.59°	194.18°	6420.32'	9.76'	
					164.32°F
					166.68°F
6538'	23.38°	189.29°	6510.07'	39.88'	



167.97°F

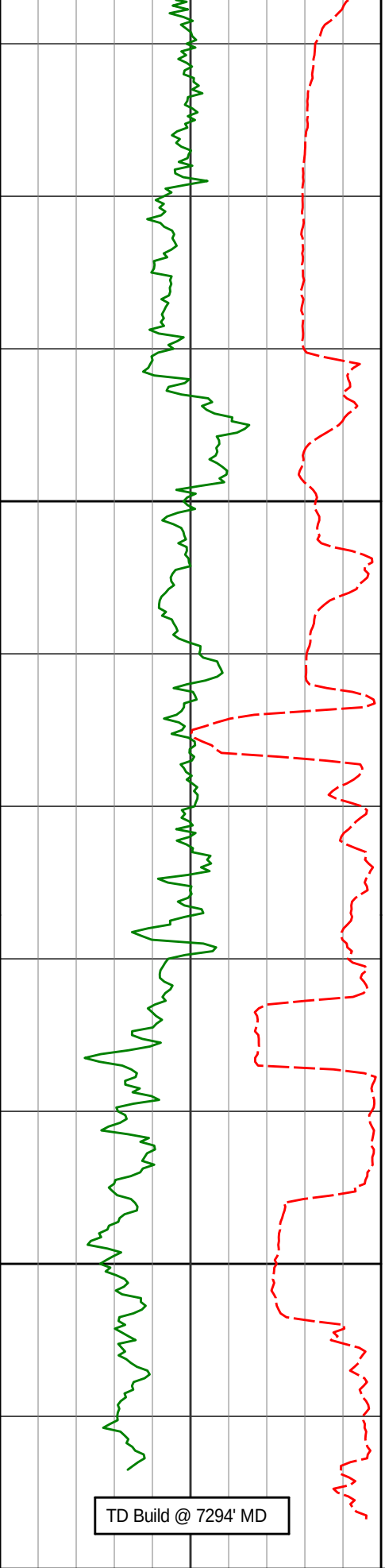
168.44°F

6632'	33.89°	179.07°	6592.51'	84.56'

170.29°F

171.76°F

6727'	41.01°	175.26°	6667.89'	142.24'



Depth	Inc	Azi	TVD	V.S.	Temp
6822'	44.66°	182.40°	6737.58'	206.73'	
6916'	54.80°	187.87°	6798.30'	277.83'	
7011'	63.60°	185.42°	6846.90'	358.56'	
7105'	68.91°	183.90°	6884.74'	444.11'	
7200'	71.76°	183.03°	6916.70'	533.24'	
7228'	76.61°	182.83°	6924.33'	560.10'	

Avg Rate of Penetration
ROPA
feet per hr
1K
0

Depth
TVD
ft

6800

6900

PCG Gamma Ray BCorr

PGRC
0 api 300

HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Moser H34-717
Wattenberg
Weld Colorado
USA
CA-XX-0902863035

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
928.00	0.37	320.52	927.99	2.34 N	1.93 W	-2.39	0.04
1112.00	0.67	298.69	1111.99	3.32 N	3.25 W	-3.39	0.19
1203.00	0.61	291.33	1202.98	3.75 N	4.17 W	-3.85	0.11
1294.00	0.78	284.21	1293.97	4.08 N	5.22 W	-4.20	0.21
1386.00	0.74	281.90	1385.97	4.36 N	6.41 W	-4.50	0.05
1568.00	1.40	170.85	1567.95	2.41 N	7.21 W	-2.57	0.99
1659.00	1.35	172.24	1658.92	0.25 N	6.89 W	-0.41	0.06
1750.00	1.22	173.20	1749.90	1.78 S	6.63 W	1.62	0.15
1842.00	1.15	177.48	1841.88	3.67 S	6.47 W	3.52	0.12
1933.00	0.82	181.36	1932.86	5.23 S	6.45 W	5.08	0.37
2024.00	0.34	177.03	2023.86	6.15 S	6.45 W	6.00	0.52
2115.00	0.09	231.04	2114.86	6.47 S	6.49 W	6.32	0.33
2205.00	0.48	286.70	2204.86	6.41 S	6.91 W	6.25	0.48
2297.00	0.85	288.88	2296.85	6.08 S	7.93 W	5.89	0.40
2480.00	1.38	253.52	2479.82	6.26 S	11.32 W	6.00	0.46
2663.00	0.18	115.45	2662.80	7.01 S	13.17 W	6.70	0.83
2755.00	0.26	0.94	2754.80	6.86 S	13.04 W	6.56	0.41
2849.00	0.25	348.97	2848.80	6.45 S	13.07 W	6.15	0.06
2944.00	0.64	323.97	2943.80	5.82 S	13.42 W	5.51	0.45
3038.00	2.05	79.44	3037.78	5.09 S	12.07 W	4.81	2.55
3228.00	4.16	63.77	3227.49	1.42 S	2.54 W	1.36	1.19
3322.00	3.83	61.43	3321.26	1.59 N	3.28 E	-1.52	0.39
3417.00	6.08	74.93	3415.90	4.42 N	10.93 E	-4.17	2.65
3512.00	8.05	87.22	3510.18	6.05 N	22.43 E	-5.53	2.60
3606.00	8.35	82.68	3603.22	7.24 N	35.78 E	-6.41	0.76
3701.00	11.20	82.68	3696.83	9.29 N	51.78 E	-8.10	3.00
3795.00	10.80	83.45	3789.11	11.46 N	69.58 E	-9.86	0.46
3985.00	11.65	79.60	3975.47	16.95 N	106.13 E	-14.50	0.60
4079.00	11.68	83.63	4067.53	19.72 N	124.92 E	-16.84	0.87
4174.00	10.76	99.17	4160.74	19.37 N	143.23 E	-16.07	3.31
4268.00	9.70	95.40	4253.24	17.23 N	159.78 E	-13.55	1.34
4363.00	8.09	93.91	4347.10	16.02 N	174.41 E	-12.00	1.70
4458.00	8.09	96.50	4441.15	14.81 N	187.72 E	-10.48	0.38
4552.00	8.10	100.18	4534.22	12.89 N	200.81 E	-8.26	0.55
4646.00	8.00	98.56	4627.29	10.75 N	213.80 E	-5.82	0.26
4740.00	7.66	89.34	4720.42	9.85 N	226.53 E	-4.62	1.38
4835.00	7.47	83.91	4814.60	10.57 N	239.00 E	-5.06	0.78
4929.00	4.04	84.83	4908.11	11.52 N	248.37 E	-5.79	3.65
5024.00	1.33	121.55	5003.00	11.25 N	252.64 E	-5.42	3.24
5119.00	1.36	107.32	5097.97	10.34 N	254.65 E	-4.47	0.35
5213.00	1.44	89.35	5191.95	10.02 N	256.89 E	-4.10	0.47
5307.00	1.66	93.63	5285.91	9.95 N	259.42 E	-3.97	0.26
5402.00	1.18	81.90	5380.88	10.00 N	261.76 E	-3.96	0.59
5497.00	1.21	70.29	5475.86	10.47 N	263.67 E	-4.40	0.26
5591.00	1.33	74.97	5569.84	11.09 N	265.66 E	-4.97	0.16
5686.00	0.96	137.44	5664.82	10.79 N	267.25 E	-4.63	1.29
5875.00	0.93	85.19	5853.80	9.76 N	269.84 E	-3.54	0.44
6064.00	1.36	47.31	6042.77	11.41 N	273.02 E	-5.12	0.45
6158.00	1.70	50.80	6136.73	13.05 N	274.92 E	-6.71	0.37
6253.00	1.06	93.26	6231.71	13.89 N	276.89 E	-7.51	1.23
6348.00	3.49	192.12	6326.65	11.01 N	277.16 E	-4.63	4.00
6443.00	14.59	194.18	6420.32	3.46 S	273.61 E	9.76	11.69
6538.00	23.38	189.29	6510.07	33.72 S	267.63 E	39.88	9.40

6632.00	33.89	179.07	6592.51	78.48 S	265.04 E	84.56	12.29
6727.00	41.01	175.26	6667.89	136.11 S	268.04 E	142.24	7.89
6822.00	44.66	182.40	6737.58	200.59 S	269.22 E	206.73	6.38
6916.00	54.80	187.87	6798.30	271.85 S	262.56 E	277.83	11.66
7011.00	63.60	185.42	6846.90	352.82 S	253.21 E	358.56	9.52
7105.00	68.91	183.90	6884.74	438.55 S	246.24 E	444.11	5.85
7200.00	71.76	183.03	6916.70	527.84 S	240.84 E	533.24	3.12
7228.00	76.61	182.83	6924.33	554.73 S	239.47 E	560.10	17.35

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 178.68 DEGREES (GRID)
A TOTAL CORRECTION OF 7.89 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 7228.00 FEET
IS 604.21 FEET ALONG 156.65 DEGREES (GRID)

Final survey is a projection to the bit at TD.

Date Printed:16 November 2015