HALLIBURTON | Sperry Drilling

PCGK: Pressure Case Gamma
PCDC: Pressure Case Directional

Powered by INSITE™

1 : 240

Country	: USA
Field	: Wattenburg
Location	: Lat: 40° 47' 8.92" North Long: 103° 52' 49.48" West
Well	: Reagan LD06-685
Company	: Noble Energy
Rig	: H&P 517

Company : **Noble Energy**
Rig : **H&P 517**
Well : **Reagan LD06-685**
Field : **Wattenburg**
Country : **USA**
API Number : **05-123-40818**

LOCATION

Latitude : **40° 47' 8.92" North**
Longitude : **103° 52' 49.48" West**
UTM Easting = **3,448,480.163 usft**
UTM Northing = **1,533,212.890 usft**

Other Services
Directional Drilling

Permanent Datum : **Ground Level** Elevation : **4755.00 ft**
Log Measured From : **Drill Floor** **30.00 ft** Above Permanent Datum
Drilling Measured From : **Drill Floor**

TVD LOG

Elev. KB **N/A**
DF **4785.00 ft**
GL **4755.00 ft**
WD **N/A**

Depth Logged : **1,942.98 ft** To **5,874.30 ft**
Date Logged : **09-Aug-16** To **15-Aug-16**
Total Depth MD : **6,200.00 ft** TVD : **5,874.30 ft**
Spud Date : **09-Aug-16**

Unit No. : **11610115** Job No. :**CA-XX-0903470908**
Plot Type : **Final**
Plot Date : **17-Aug-16**

Run No.	Borehole Record (TVD)			Casing Record (TVD)			
	Size	From	To	Size	Weight	From	To
0100	8.500 in	1,942.98 ft	5,418.58 ft	9.625 in	36.00 lbpf	SURFACE	1,931.98 ft
0200	8.500 in	5,418.58 ft	5,749.32 ft				
0300	8.500 in	5,749.32 ft	5,874.30 ft				

WELL INFORMATION

MWD Run Number	100	200	300		
Date run completed	12-Aug-16	12-Aug-16	13-Aug-16		
Rig Bit Number	2	3	4		
Bit Size (in)	8.500	8.500	8.500		
Tool Nominal OD (in)	6.750	6.750	6.750		
Log Start Depth (TVD, ft)	1,942.98	5,418.58	5,749.32		
Log End Depth (TVD, ft)	5,418.58	5,749.32	5,874.30		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	11-Aug-16 12:00	12-Aug-16 12:30	13-Aug-16 03:00		
Drill/Wipe End Date and Time	12-Aug-16 06:00	12-Aug-16 19:00	13-Aug-16 06:00		
Min Inc (deg) @ Depth (TVD, ft)	0.34 @ 2,026.98	16.15 @ 5,503.51	38.02 @ 5,755.66		
Max Inc (deg) @ Depth (TVD, ft)	11.07 @ 2,683.45	29.88 @ 5,677.73	91.20 @ 5,875.73		
Bit TFA(in2) / Bit Type	PDC / 1.24	PDC / 1.24	PDC / 1.24		
Flow Rate (gpm)	591.91	540.00	550.00		
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A	N/A / N/A	N/A / N/A		
Fluid Type	Diesel Mud Base	Diesel Mud Base	Diesel Mud Base		
Density (ppg) / Viscosity (spqt)	9.70 / 61.00	9.60 / 50.00	9.50 / 53.00		
Filtrate CL (ppm)	35,000.00	30,000.00	29,000.00		
pH / Fluid Loss (mptm)	N/A / 14	N/A / 12	N/A / 12		
PV (cP) / YP (lhf2)	19 / 9.00	15 / 7.00	14 / 6.00		
% Solids / % Sand	10.2 / 0	10 / 0	9.30 / 0		
% Oil / Oil:Water Ratio	61.00 / 75:25	66.00 / 75:25	66.00 / 75:25		
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		

Max Tool Temp (degF) / Source	153.79 / PCM	160.83 / PCM	160.83 / PCM		
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Lead MWD Engineer	Adam Sampson	Adam Sampson	Adam Sampson		
Customer Representative	Johnny Sanchez	Johnny Sanchez	Johnny Sanchez		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.93	5.93	5.93		
Sub Serial Number	11341339	11341339	11341339		
Insert Serial Number	11400950	12230080	12230080		
Date and Time Initialized	11-Aug-16 05:39	12-Aug-16 07:09	01-Jan-70 00:00		
Date and Time Read	12-Aug-16 08:57	13-Aug-16 09:22	13-Aug-16 09:27		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	63.00	65.00	53.00		
Software Version	6.33	6.33	6.33		
Sub Serial Number	11341339	11341339	11341339		
Sonde Serial Number	11478012	11638497	11638497		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	169.60	282.60	342.90		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	56.32	58.10	46.01		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	11341339	11341339	11341339		
Insert/Sonde Serial Number	11293366	11680952	11680952		

REMARKS

1. All depths are calibrated to driller's pipe tally and are true vertical depths from the drillers 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:

Main Log 1:600 (2"):
(ROPA - Avg Rate of Penetration)
Interval: 1.0 ft, Coercion Distance: 3.0 ft, Gap fill: 5.0 ft
(PGRC - Gamma Ray Cor)
Interval: 1.0 ft, Coercion Distance: 3.0 ft, Gap fill: 5.0 ft

Detail Log 1:240 (5"):
(ROPA - Avg Rate of Penetration)
Interval: 0.5 ft, Coercion Distance: 1.2 ft, Gap fill: 3.0 ft
(PGRC - Gamma Ray Cor)
Interval: 0.5 ft, Coercion Distance: 0.6 ft, Gap fill: 3.0 ft

5. Surveys corrected by Surcon starting at 2057 ft.

WARRANTY

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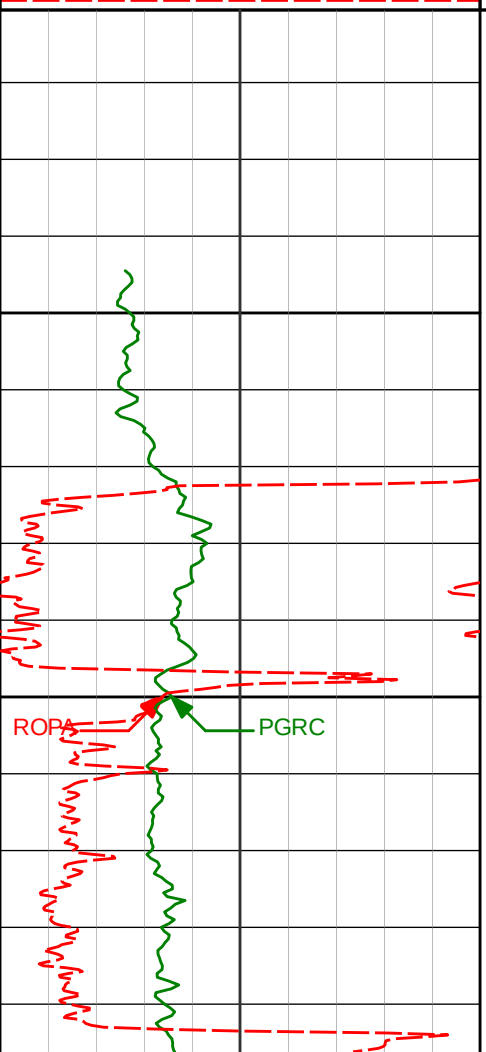
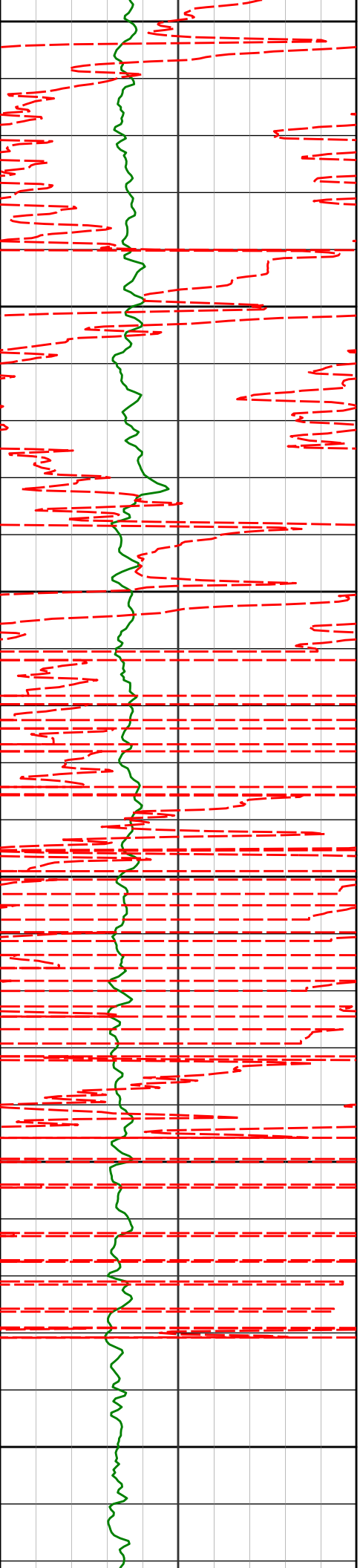
TVD Detail Log 1:600 Scale

PCG Gamma Ray BCorr
PGRC
0 api 300

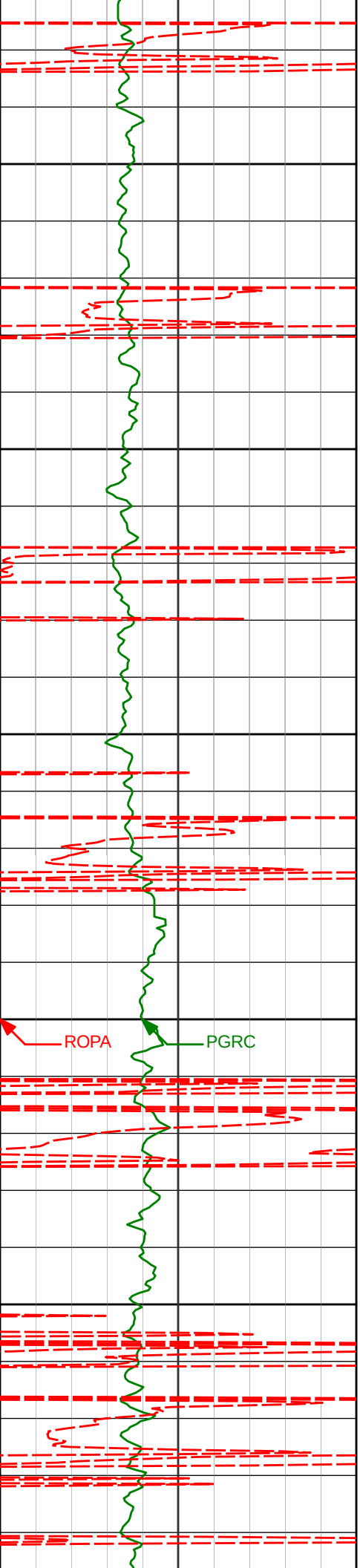
Avg Rate of Penetration
ROPA
500 feet per hr 0



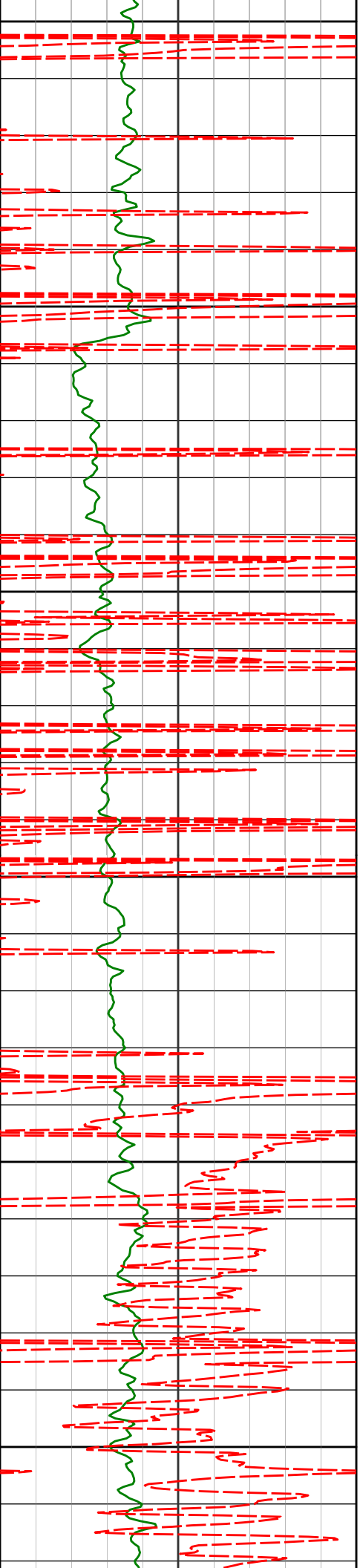
Depth TVD ft	Depth	Inc	Azi	TVD	V.S.	Temp
						96.42°F
						98.51°F
						100.62°F
1900						
	9 5/8" Casing Set @ 1927' MD					102.72°F
Run 100						
						104.83°F
						104.83°F
2000						
						104.83°F
	2027'	0.35°	131.29°	2026.98'	-2.15'	
						106.97°F
						111.24°F



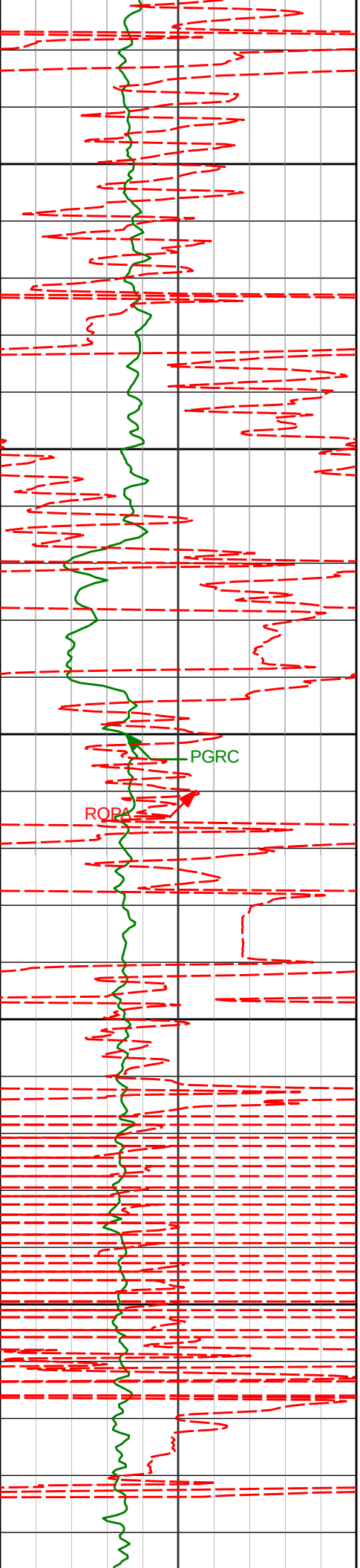
2100					111.24°F
	2122'	2.73°	86.85°	2121.94'	-4.62'
					113.40°F
					113.40°F
					113.40°F
2200					
	2216'	4.17°	66.57°	2215.77'	-9.97'
					115.56°F
					115.56°F
					115.56°F
2300					
	2310'	6.72°	69.25°	2309.34'	-18.21'
					117.73°F
					117.73°F
					117.73°F
2400					
	2405'	8.04°	69.85°	2403.55'	-29.59'
					119.91°F
					119.91°F
					119.91°F
					122.11°F
2500	2500'	10.02°	67.92°	2497.37'	-43.43'
					122.11°F
					122.11°F
					122.11°F
					122.11°F
	2594'	9.61°	66.99°	2589.99'	-58.16'
2600					
					124.30°F
					124.30°F



					124.30°F
2689'	11.07°	64.25°	2683.45'	-73.59'	
2700					126.52°F
					128.73°F
					128.73°F
2784'	12.27°	63.44°	2776.48'	-90.73'	
					128.73°F
2800					
					128.73°F
					128.73°F
2878'	11.50°	62.91°	2868.46'	-107.91'	
					128.73°F
2900					
					130.96°F
					130.96°F
2973'	12.28°	58.25°	2961.43'	-124.82'	
					133.20°F
3000					133.20°F
					133.20°F
3067'	12.46°	62.07°	3053.25'	-142.16'	
					133.20°F
					135.45°F
3100					
					135.45°F
3162'	14.70°	66.32°	3145.58'	-162.15'	
					135.45°F
					135.45°F



					135.45°F
3257'	15.68°	67.34°	3237.26'	-184.92'	135.45°F
					135.45°F
					137.70°F
					137.70°F
					137.70°F
					137.70°F
3446'	14.41°	66.94°	3419.78'	-229.91'	139.96°F
					137.70°F
					137.70°F
3540'	13.78°	65.72°	3510.95'	-250.77'	137.70°F
					139.96°F
					139.96°F
3635'	15.60°	66.72°	3602.84'	-272.71'	139.96°F
					139.96°F
					142.25°F
					142.25°F
					142.25°F



3824'	15.42°	69.92°	3784.96'	-319.44'
3918'	12.99°	70.98°	3876.08'	-341.07'
4013'	12.58°	68.78°	3968.72'	-360.72'
4109'	13.48°	69.20°	4062.25'	-380.84'
4202'	13.68°	68.49°	4152.65'	-401.11'
4297'	13.79°	66.55°	4244.93'	-421.84'

144.54°F
144.54°F
144.54°F
144.54°F
144.54°F
144.54°F
144.54°F
144.54°F
144.54°F
144.54°F
144.54°F
146.84°F
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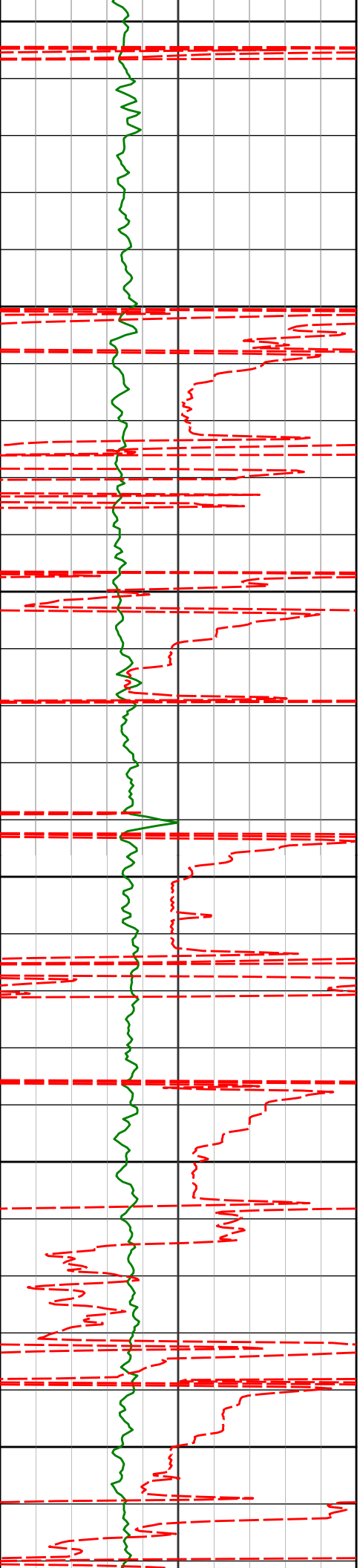
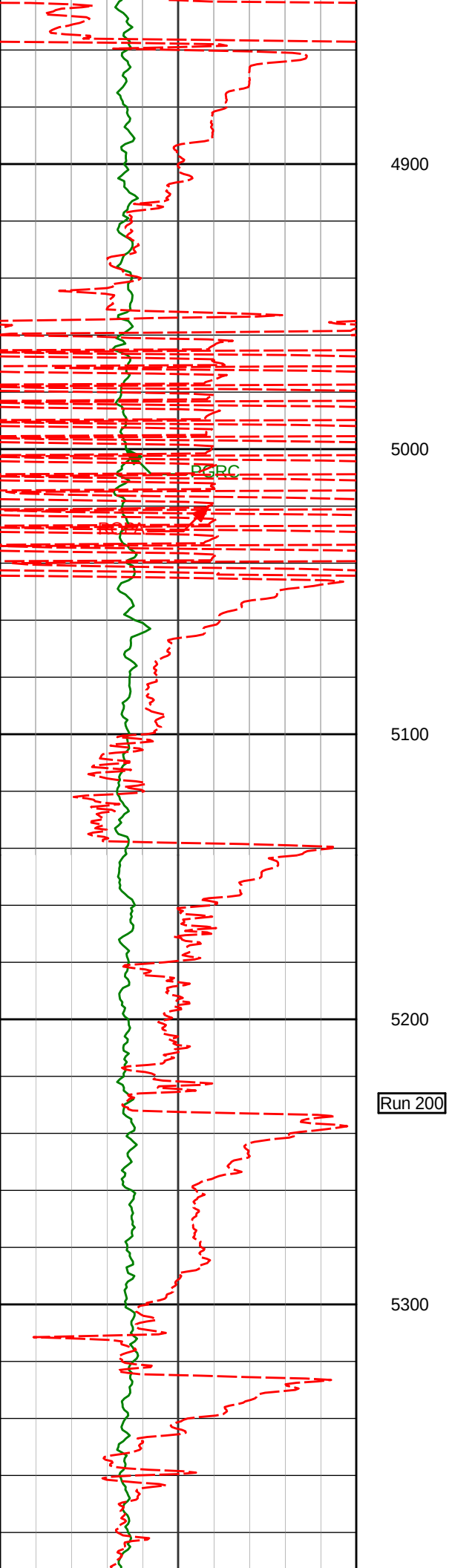
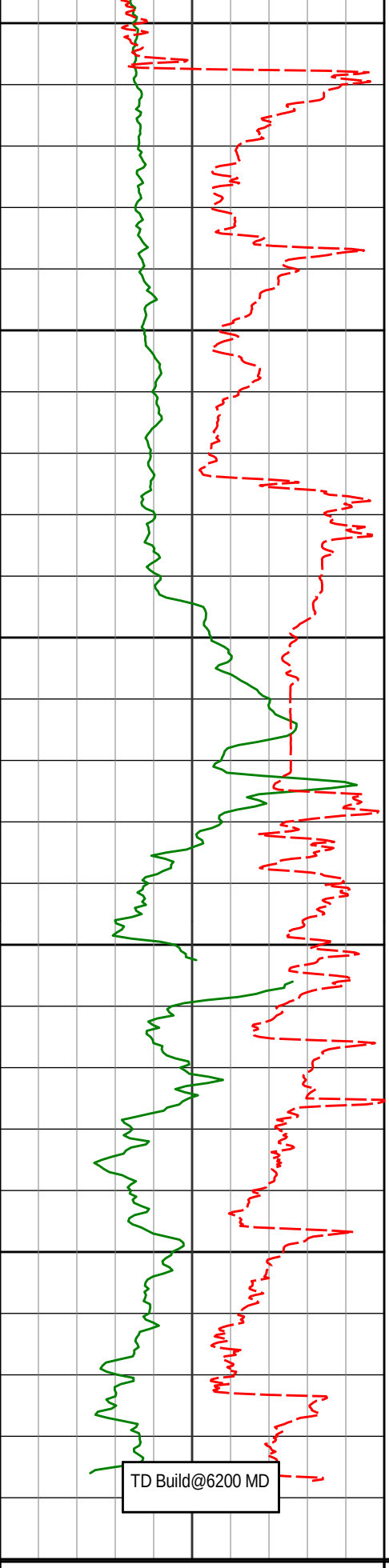
146.84°F
146.84°F
146.84°F
144.54°F



					144.54°F
4391'	12.52°	65.91°	4336.47'	-441.32'	
					149.14°F
					146.84°F
					146.84°F
4486'	12.61°	67.33°	4429.19'	-460.20'	
					149.14°F
					149.14°F
					149.14°F
4581'	12.58°	67.99°	4521.90'	-479.27'	
					149.14°F
					149.14°F
					149.14°F
4676'	11.94°	62.29°	4614.74'	-497.46'	
					149.14°F
					149.14°F
					149.14°F
4770'	12.36°	54.73°	4706.64'	-514.17'	
					149.14°F
					151.47°F
					151.47°F
4865'	11.97°	58.05°	4799.51'	-530.69'	
					139.96°F
					144.54°F



					144.54°F
4960'	12.39°	61.77°	4892.37'	-547.91'	144.54°F
					144.54°F
					146.84°F
5054'	11.87°	68.12°	4984.28'	-565.67'	149.14°F
					149.14°F
					149.14°F
5149'	8.12°	53.24°	5077.83'	-580.03'	149.14°F
					149.14°F
					146.84°F
5243'	10.04°	30.20°	5170.68'	-589.35'	149.14°F
					149.14°F
					149.14°F
					151.47°F
					151.47°F
					153.79°F
					151.47°F
					153.79°F



Depth	Inc	Azi	TVD	V.S.	Temp
5487'	9.72°	328.52°	5410.70'	-589.67'	153.79°F
					149.14°F
					149.14°F
					151.47°F
5582'	16.16°	277.53°	5503.51'	-572.20'	
					153.79°F
					153.79°F
					156.13°F
5676'	22.15°	254.76°	5592.38'	-542.10'	
					156.13°F
					156.13°F
					156.13°F
5771'	29.89°	244.87°	5677.73'	-503.50'	
					160.83°F
					160.83°F
					151.47°F
					151.47°F
5960'	54.67°	240.27°	5821.01'	-398.77'	153.79°F
					156.13°F
6054'	72.72°	237.46°	5862.50'	-327.55'	
6149'	91.20°	241.57°	5875.73'	-247.38'	

5400
5500
5600
5700
Run 300
5800

Avg Rate of Penetration
ROPA
500 feet per hr 0

Depth
TVD
ft

PCG Gamma Ray BCorr
PGRC

PGRC
0 api 300

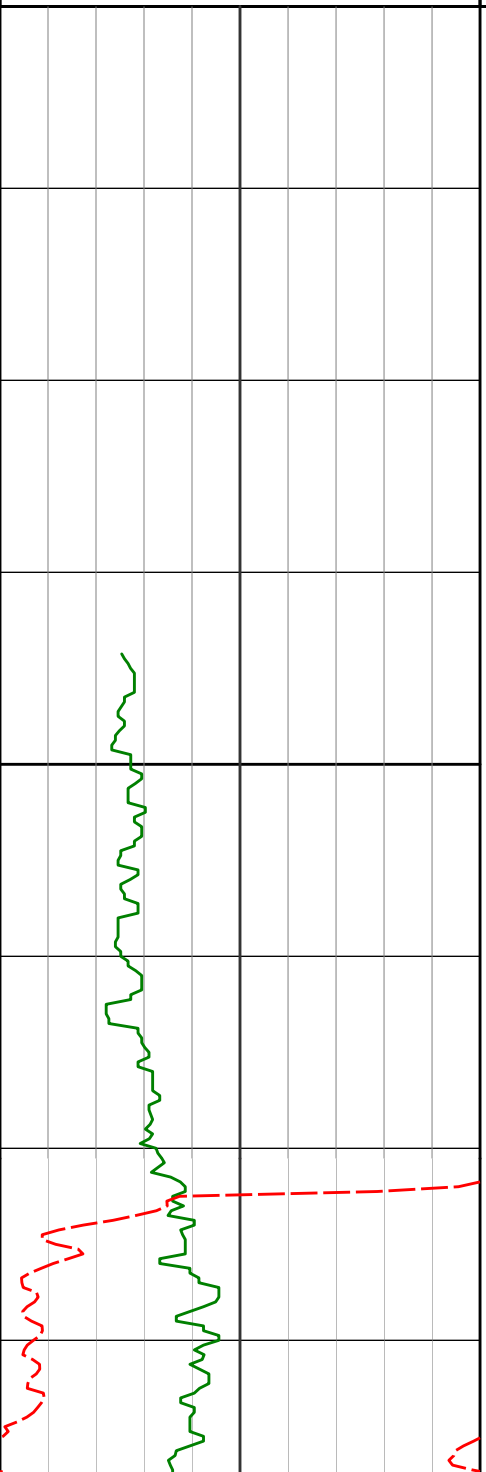
TVD Detail Log 1:240 Scale

PCG GR XHi-Range RT BCor
PGRC
0 api 300

Avg Rate of Penetration
ROPA
500 feet per hr 0

Depth
TVD
ft

Depth	Inc	Azi	TVD	V.S.	Temp



96.42°F

98.51°F

100.62°F

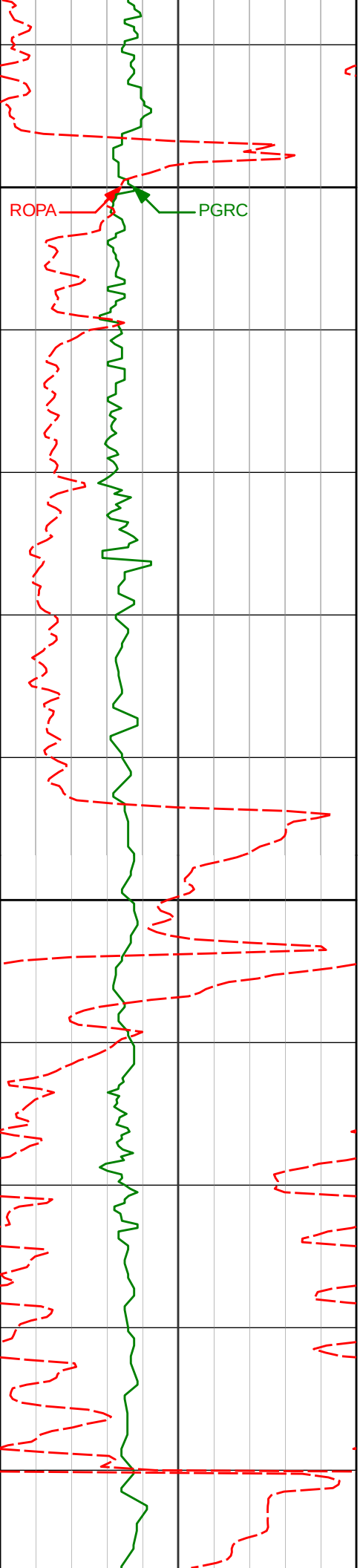
1900

9 5/8" Casing Set @ 1927' MD

Run 100

102.72°F

104.83°F



2000

2100

2027'	0.35°	131.29°	2026.98'	-2.15'
2122'	2.73°	86.85°	2121.94'	-4.62'

104.83°F

104.83°F

106.97°F

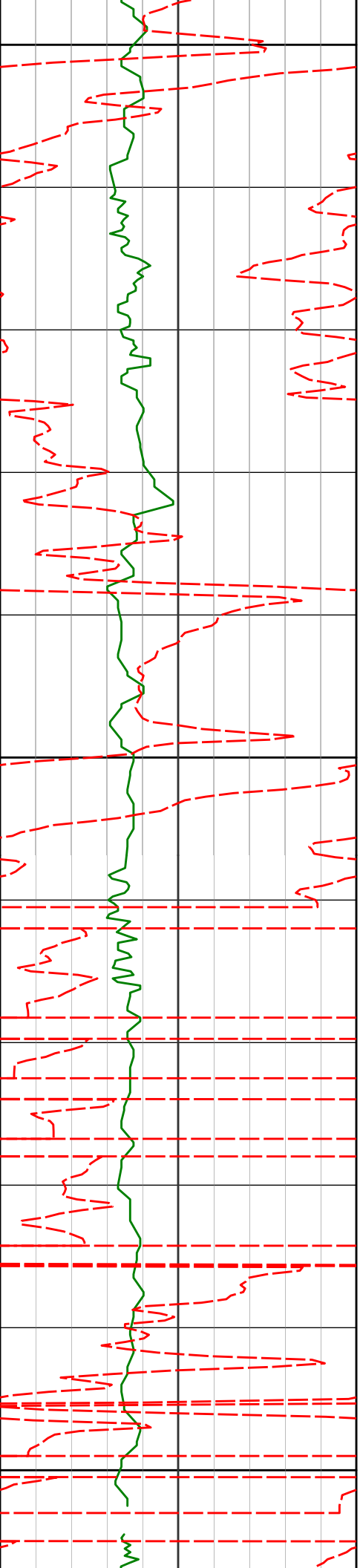
111.24°F

111.24°F

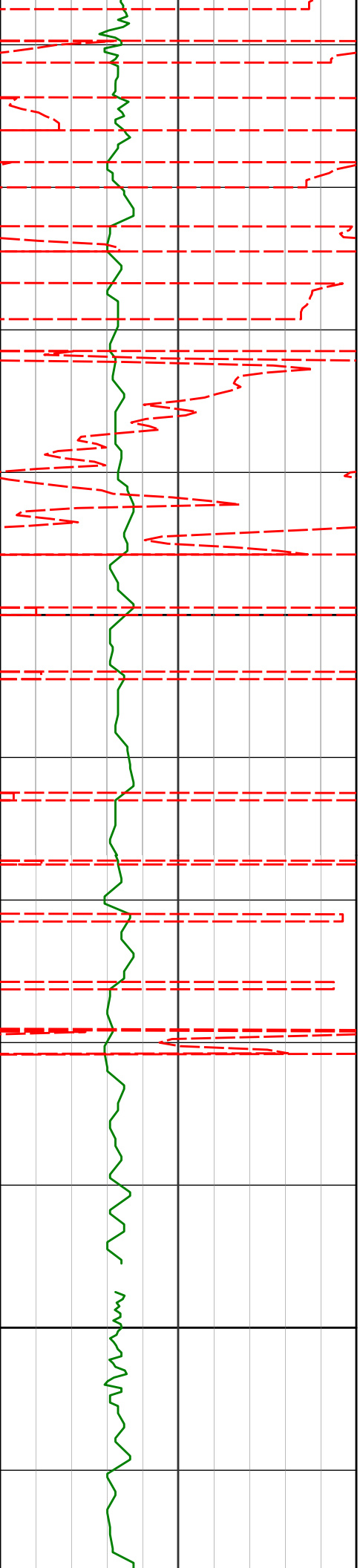
113.40°F

113.40°F

113.40°F

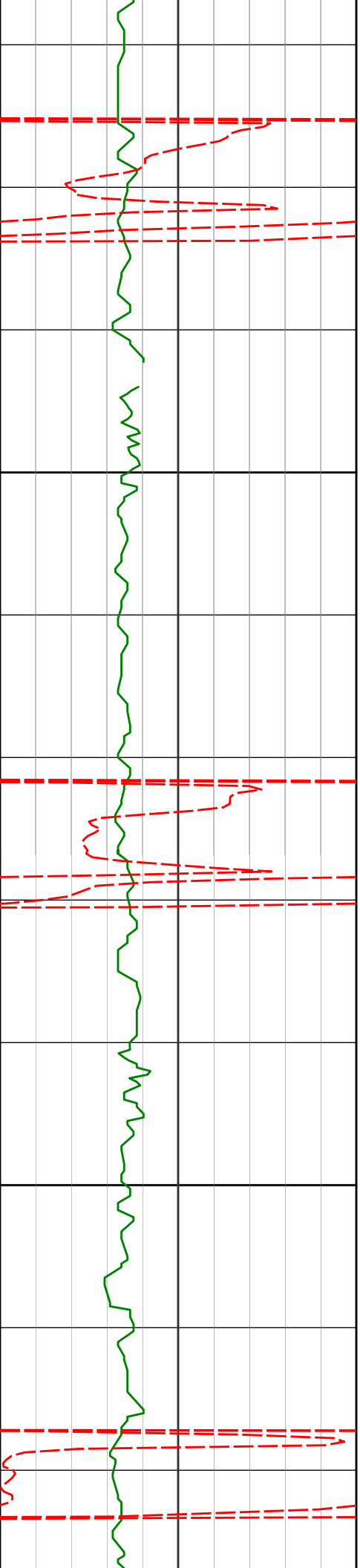


2216'	4.17°	66.57°	2215.77'	-9.97'	115.56°F
					115.56°F
					115.56°F
2310'	6.72°	69.25°	2309.34'	-18.21'	117.73°F
					117.73°F
					117.73°F
2405'	8.04°	69.85°	2403.55'	-29.59'	119.91°F

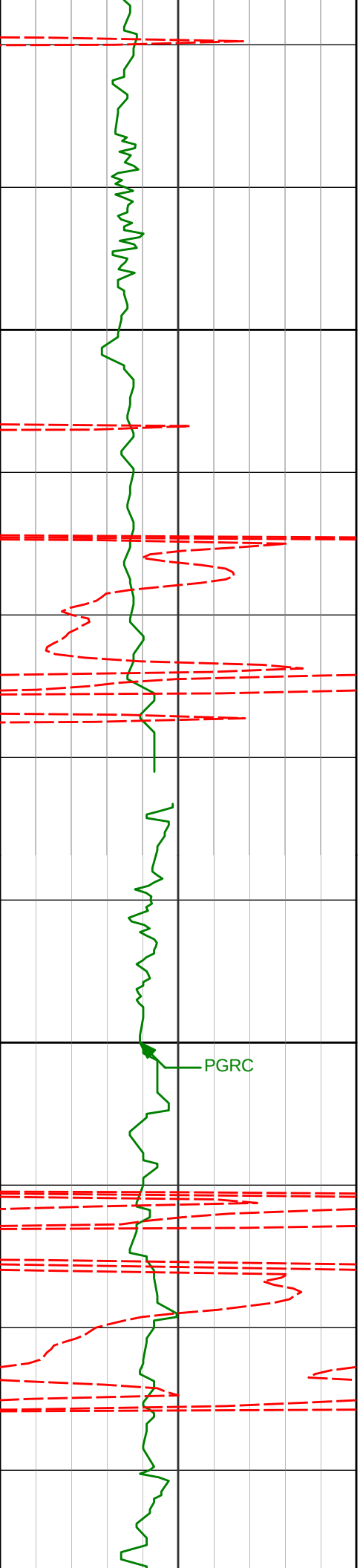


2500	2500'	10.02°	67.92°	2497.37'	-43.43'
2600	2594'	9.61°	66.99°	2589.99'	-58.16'

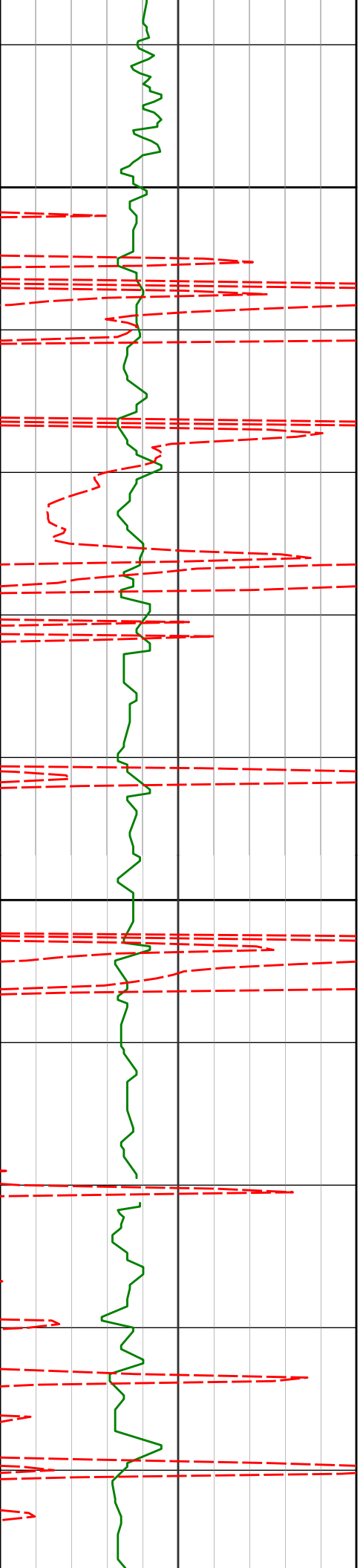
119.91°F
119.91°F
122.11°F
122.11°F
122.11°F
122.11°F
124.30°F



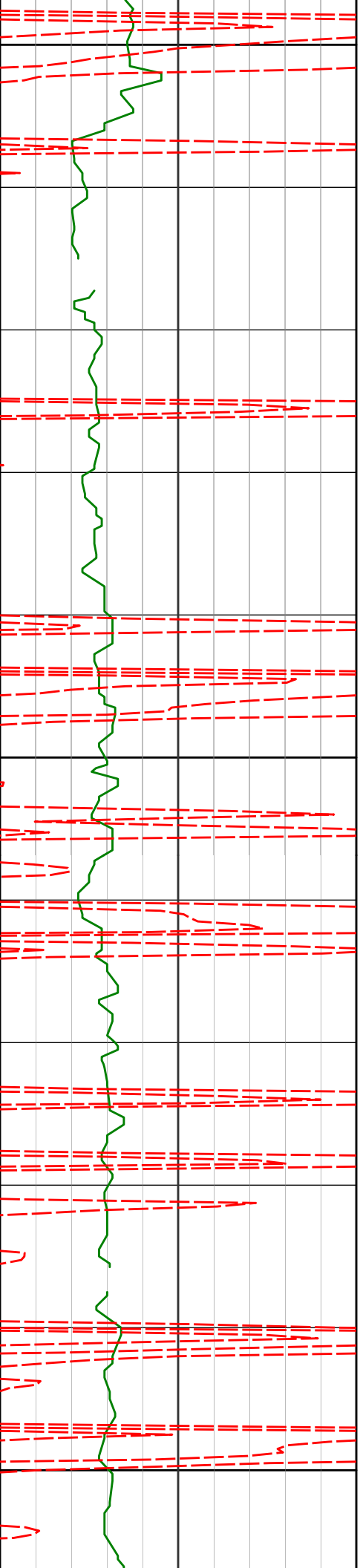
					124.30°F
					124.30°F
2689'	11.07°	64.25°	2683.45'	-73.59'	
2700					126.52°F
					128.73°F
					128.73°F
2784'	12.27°	63.44°	2776.48'	-90.73'	
2800					128.73°F
					128.73°F
					128.73°F



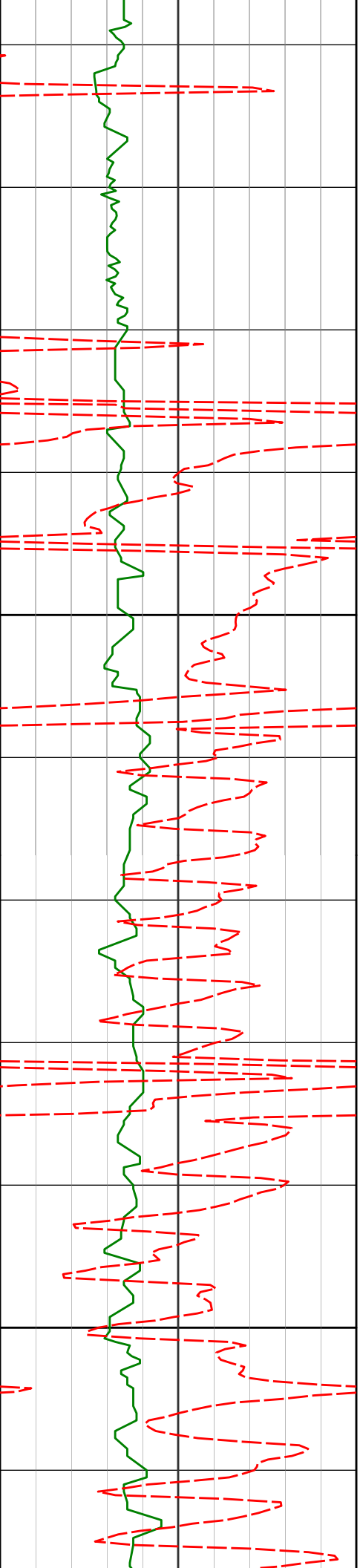
2878'	11.50°	62.91°	2868.46'	-107.91'	
					128.73°F
					130.96°F
					130.96°F
2973'	12.28°	58.25°	2961.43'	-124.82'	
					133.20°F
					133.20°F
					133.20°F
3067'	12.46°	62.07°	3053.25'	-142.16'	
					133.20°F



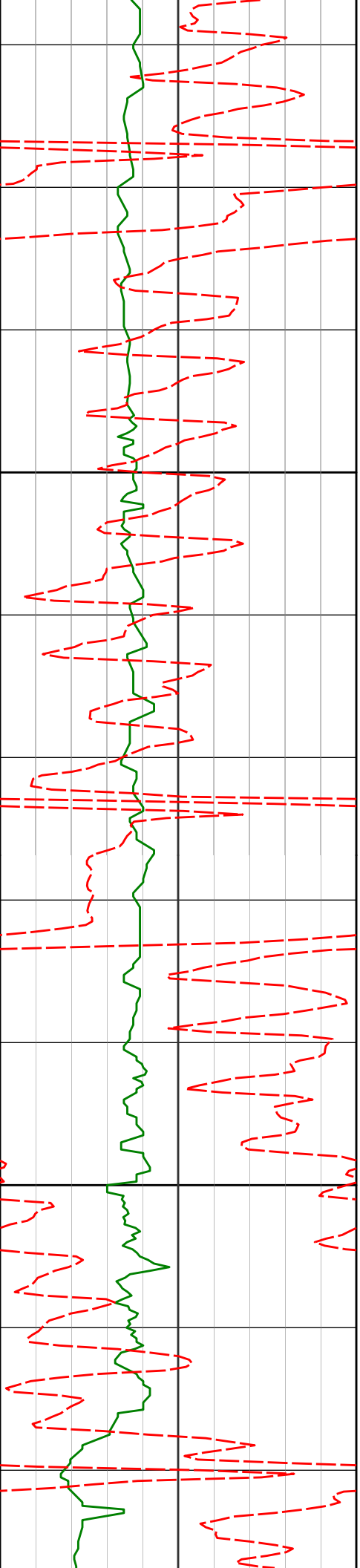
					135.45°F
					135.45°F
3162'	14.70°	66.32°	3145.58'	-162.15'	
					135.45°F
					135.45°F
					135.45°F
3257'	15.68°	67.34°	3237.26'	-184.92'	
					135.45°F



					137.70°F
					137.70°F
					137.70°F
					137.70°F
3446'	14.41°	66.94°	3419.78'	-229.91'	139.96°F
					137.70°F
					137.70°F
3540'	13.78°	65.72°	3510.95'	-250.77'	137.70°F

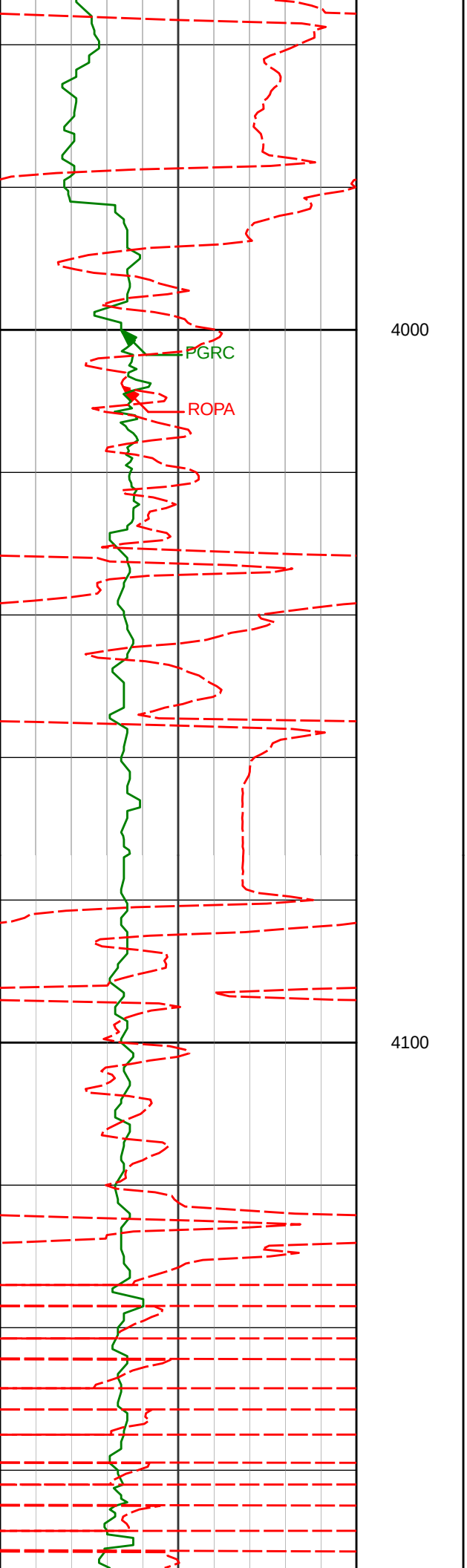


3600	3635'	15.60°	66.72°	3602.84'	-272.71'	139.96°F
3700						139.96°F
						139.96°F
						139.96°F
						142.25°F
						142.25°F
						142.25°F
						142.25°F



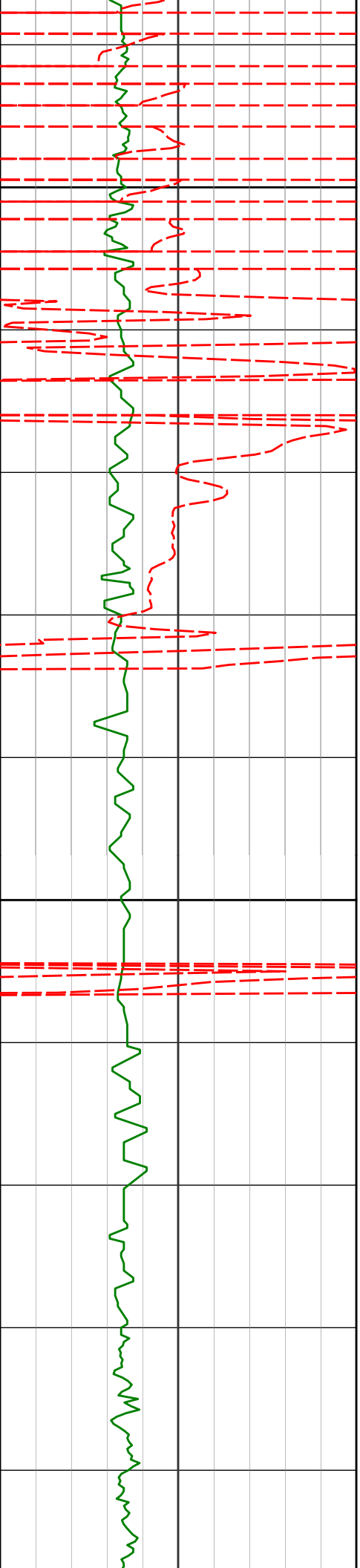
3824'	15.42°	69.92°	3784.96'	-319.44'
3918'	12.99°	70.98°	3876.08'	-341.07'

144.54°F
144.54°F
144.54°F
144.54°F
144.54°F
144.54°F
144.54°F

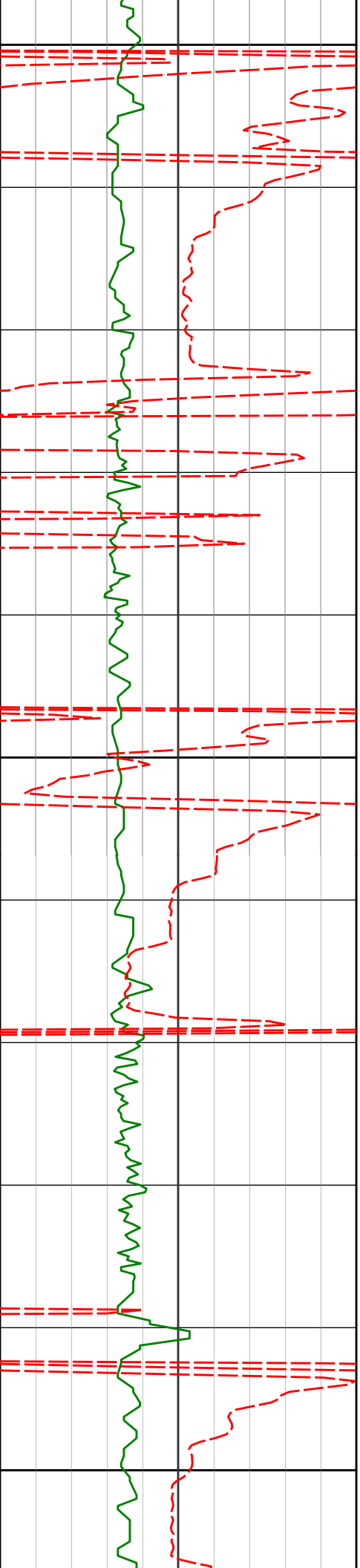


4013'	12.58°	68.78°	3968.72'	-360.72'
4109'	13.48°	69.20°	4062.25'	-380.84'
4202'	13.68°	68.49°	4152.65'	-401.11'

144.54°F
144.54°F
144.54°F
144.54°F
144.54°F
146.84°F
146.84°F
149.14°F

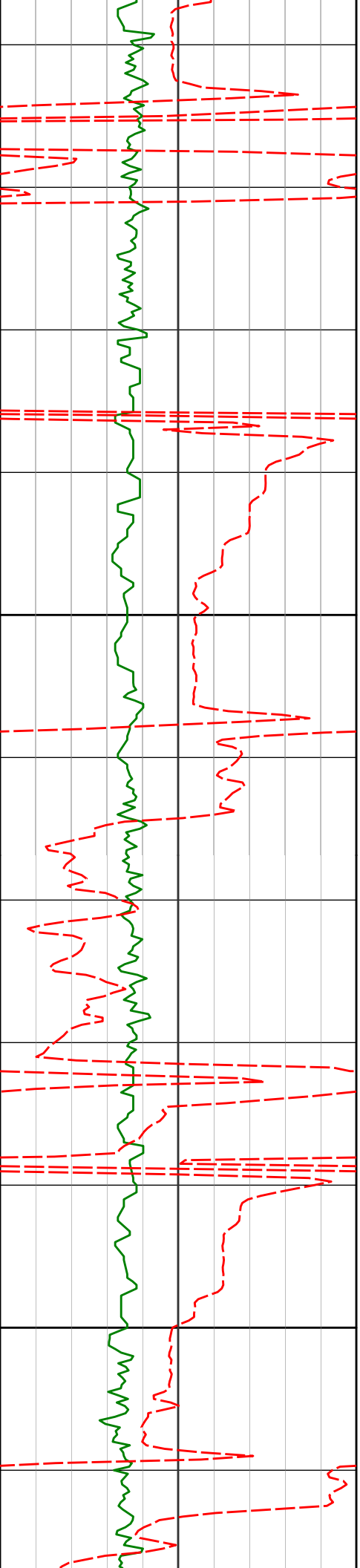


4200					146.84°F
					146.84°F
	4297'	13.79°	66.55°	4244.93'	-421.84'
					146.84°F
					144.54°F
4300					
					144.54°F
	4391'	12.52°	65.91°	4336.47'	-441.32'
					149.14°F
					146.84°F

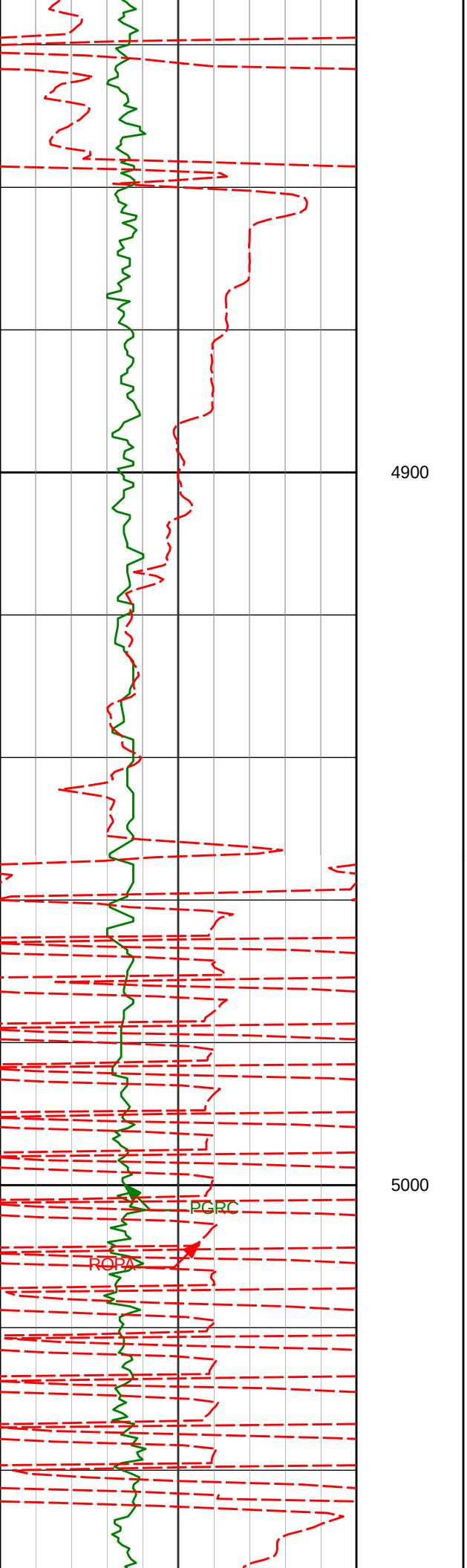


4486'	12.61°	67.33°	4429.19'	-460.20'
4581'	12.58°	67.99°	4521.90'	-479.27'

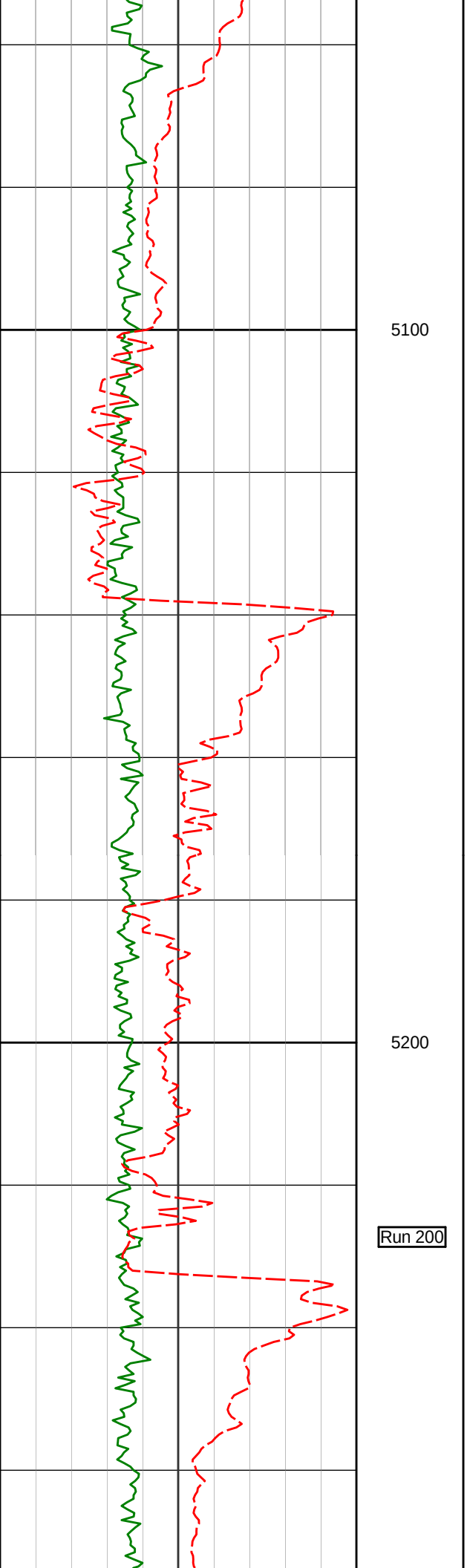
146.84°F
149.14°F
149.14°F
149.14°F
149.14°F
149.14°F
149.14°F



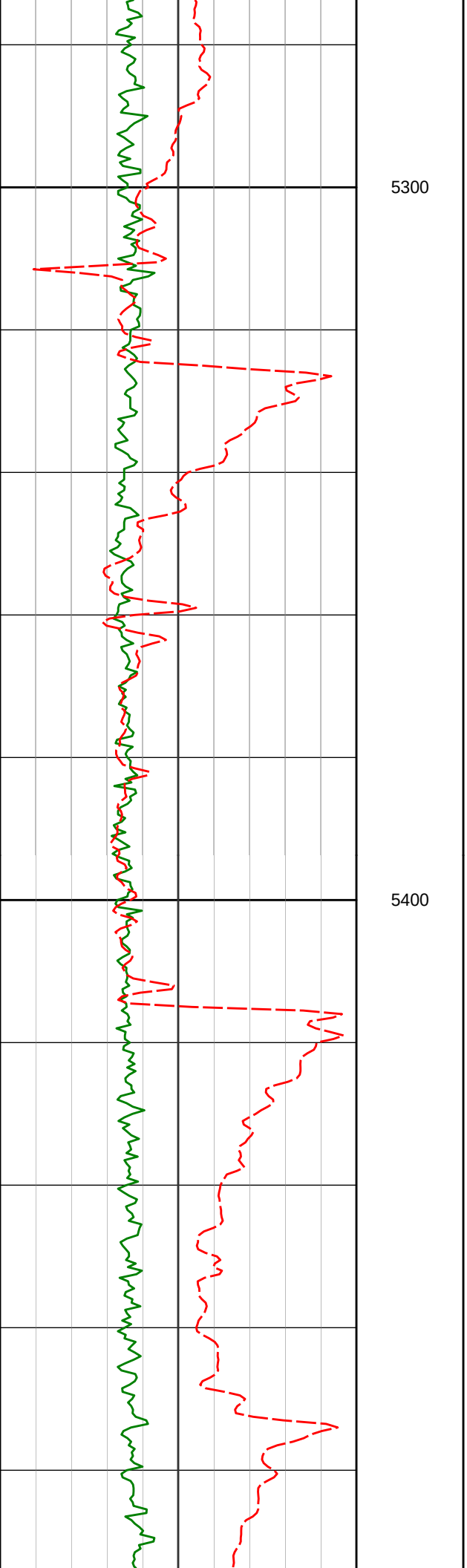
4676'	11.94°	62.29°	4614.74'	-497.46'	149.14°F
					149.14°F
					149.14°F
4700					
4770'	12.36°	54.73°	4706.64'	-514.17'	149.14°F
					151.47°F
					151.47°F
4800					
4865'	11.97°	58.05°	4799.51'	-530.69'	139.96°F
					144.54°F



					144.54°F
4960'	12.39°	61.77°	4892.37'	-547.91'	144.54°F
					144.54°F
					146.84°F
5054'	11.87°	68.12°	4984.28'	-565.67'	149.14°F
					149.14°F
					149.14°F



					149.14°F
5149'	8.12°	53.24°	5077.83'	-580.03'	
					149.14°F
					146.84°F
					149.14°F
5243'	10.04°	30.20°	5170.68'	-589.35'	
					149.14°F
					149.14°F
					151.47°F



5300

5400

151.47°F

153.79°F

151.47°F

153.79°F

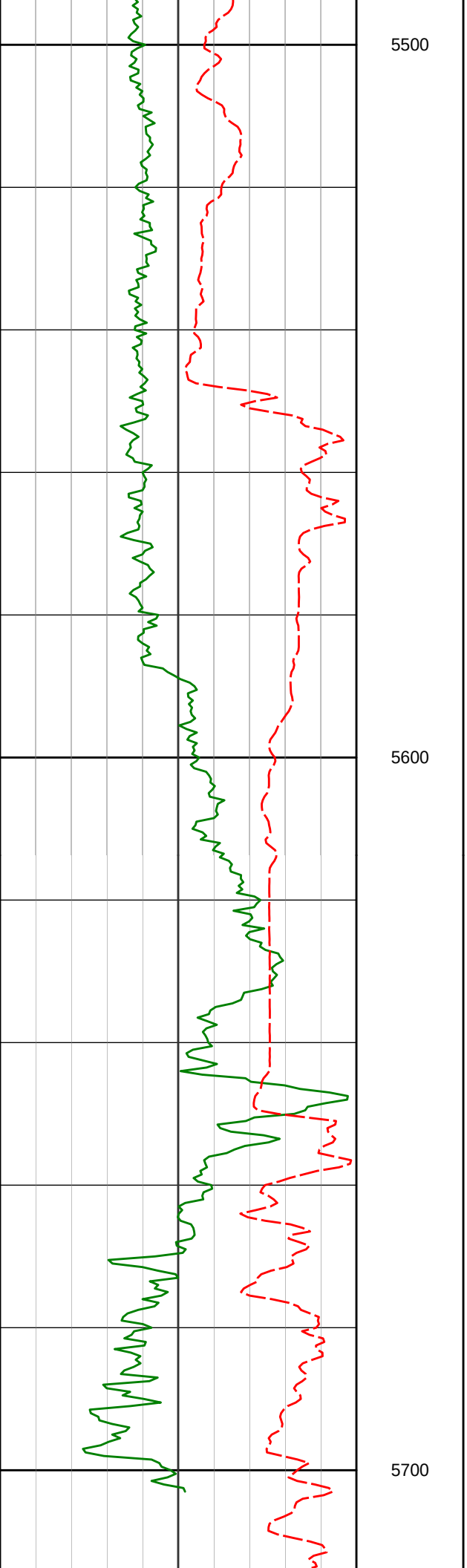
153.79°F

5487' 9.72° 328.52° 5410.70' -589.67'

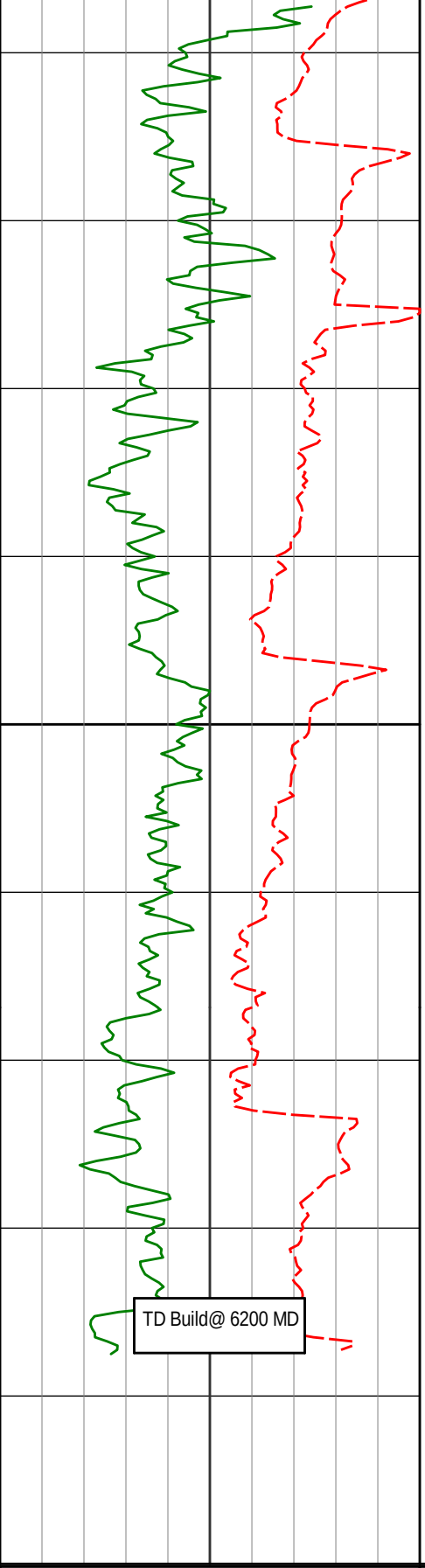
149.14°F

149.14°F

151.47°F



5582'	16.16°	277.53°	5503.51'	-572.20'	153.79°F
					153.79°F
5676'	22.15°	254.76°	5592.38'	-542.10'	156.13°F
					156.13°F
					156.13°F
					156.13°F
5771'	29.89°	244.87°	5677.73'	-503.50'	160.83°F



Depth	Inc	Azi	TVD	V.S.	Temp
5960'	54.67°	240.27°	5821.01'	-398.77'	153.79°F
6054'	72.72°	237.46°	5862.50'	-327.55'	156.13°F
6149'	91.20°	241.57°	5875.73'	-247.38'	

160.83°F
151.47°F
151.47°F

Avg Rate of Penetration
ROPA
500 feet per hr 0

PCG GR XHi-Range RT BCor
PGRC
0 api 300

Depth
TVD
ft

HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Reagan LD06-685
Wattenburg
Weld Colorado
USA
CA-XX-0903470908

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
78.00	0.16	150.07	78.00	0.09 S	0.05 E	-0.06	0.21
177.00	0.34	172.89	177.00	0.51 S	0.16 E	-0.17	0.20
271.00	0.34	148.71	271.00	1.02 S	0.34 E	-0.35	0.15
366.00	0.18	127.36	366.00	1.35 S	0.60 E	-0.62	0.19
460.00	0.48	222.40	460.00	1.73 S	0.46 E	-0.48	0.56
555.00	0.11	119.02	554.99	2.07 S	0.27 E	-0.29	0.54
650.00	0.01	288.83	649.99	2.11 S	0.34 E	-0.36	0.13
744.00	0.13	271.90	743.99	2.11 S	0.22 E	-0.25	0.13
839.00	0.20	331.29	838.99	1.96 S	0.04 E	-0.06	0.18
934.00	0.10	334.97	933.99	1.74 S	0.08 W	0.06	0.11
1028.00	0.13	49.44	1027.99	1.59 S	0.03 W	0.01	0.15
1123.00	0.15	21.81	1122.99	1.41 S	0.10 E	-0.11	0.07
1217.00	0.13	8.04	1216.99	1.19 S	0.16 E	-0.17	0.04
1311.00	0.19	79.96	1310.99	1.05 S	0.33 E	-0.34	0.21
1406.00	0.19	91.06	1405.99	1.03 S	0.64 E	-0.65	0.04
1501.00	0.21	221.88	1500.99	1.16 S	0.68 E	-0.69	0.38
1595.00	0.05	103.35	1594.99	1.30 S	0.60 E	-0.62	0.25
1689.00	0.76	154.26	1688.99	1.87 S	0.92 E	-0.94	0.78
1784.00	0.60	162.04	1783.98	2.91 S	1.34 E	-1.38	0.19
1879.00	0.19	134.31	1878.98	3.50 S	1.61 E	-1.65	0.46
1905.00	0.15	107.28	1904.98	3.54 S	1.67 E	-1.71	0.34
2027.00	0.35	131.29	2026.98	3.83 S	2.10 E	-2.15	0.18
2122.00	2.73	86.85	2121.94	3.89 S	4.57 E	-4.62	2.62
2216.00	4.17	66.57	2215.77	2.41 S	9.94 E	-9.97	1.98
2310.00	6.72	69.25	2309.34	0.90 N	18.22 E	-18.21	2.73
2405.00	8.04	69.85	2403.55	5.16 N	29.66 E	-29.59	1.39
2500.00	10.02	67.92	2497.37	10.56 N	43.56 E	-43.43	2.11
2594.00	9.61	66.99	2589.99	16.70 N	58.36 E	-58.16	0.47
2689.00	11.07	64.25	2683.45	23.76 N	73.87 E	-73.59	1.62
2784.00	12.27	63.44	2776.48	32.23 N	91.11 E	-90.73	1.27
2878.00	11.50	62.91	2868.46	40.97 N	108.39 E	-107.91	0.82
2973.00	12.28	58.25	2961.43	50.60 N	125.42 E	-124.82	1.30
3067.00	12.46	62.07	3053.25	60.61 N	142.88 E	-142.16	0.89
3162.00	14.70	66.32	3145.58	70.26 N	162.98 E	-162.15	2.58
3257.00	15.68	67.34	3237.26	80.04 N	185.87 E	-184.92	1.07
3446.00	14.41	66.94	3419.78	99.10 N	231.09 E	-229.91	0.68
3540.00	13.78	65.72	3510.95	108.28 N	252.06 E	-250.77	0.74
3635.00	15.60	66.72	3602.84	117.98 N	274.10 E	-272.71	1.94
3824.00	15.42	69.92	3784.96	136.66 N	321.06 E	-319.44	0.46
3918.00	12.99	70.98	3876.08	144.39 N	342.78 E	-341.07	2.60
4013.00	12.58	68.78	3968.72	151.62 N	362.52 E	-360.72	0.67
4109.00	13.48	69.20	4062.25	159.37 N	382.73 E	-380.84	0.95
4202.00	13.68	68.49	4152.65	167.25 N	403.09 E	-401.11	0.28
4297.00	13.79	66.55	4244.93	175.88 N	423.93 E	-421.84	0.50
4391.00	12.52	65.91	4336.47	184.49 N	443.51 E	-441.32	1.35
4486.00	12.61	67.33	4429.19	192.70 N	462.48 E	-460.20	0.34
4581.00	12.58	67.99	4521.90	200.57 N	481.64 E	-479.27	0.16
4676.00	11.94	62.29	4614.74	209.02 N	499.94 E	-497.46	1.44
4770.00	12.36	54.73	4706.64	219.35 N	516.77 E	-514.17	1.75
4865.00	11.97	58.05	4799.51	230.44 N	533.43 E	-530.69	0.84
4960.00	12.39	61.77	4892.37	240.47 N	550.76 E	-547.91	0.94
5054.00	11.87	68.12	4984.28	248.84 N	568.62 E	-565.67	1.52
5149.00	8.12	53.24	5077.83	256.50 N	583.07 E	-580.03	4.76
5243.00	10.04	30.20	5170.68	267.57 N	592.52 E	-589.35	4.33
5338.00	10.81	8.75	5264.15	283.53 N	598.04 E	-594.69	4.14
5432.00	10.63	344.69	5356.55	300.62 N	597.09 E	-593.54	4.73

5487.00	9.72	328.52	5410.70	309.47 N	593.33 E	-589.67	5.43
5582.00	16.16	277.53	5503.51	318.08 N	575.96 E	-572.20	13.17
5676.00	22.15	254.76	5592.38	315.13 N	545.83 E	-542.10	10.07
5771.00	29.89	244.87	5677.73	300.34 N	507.04 E	-503.50	9.32
5865.00	38.02	239.33	5755.66	275.58 N	460.85 E	-457.60	9.25
5960.00	54.67	240.27	5821.01	241.19 N	401.62 E	-398.77	17.54
6054.00	72.72	237.46	5862.50	197.67 N	329.88 E	-327.55	19.39
6149.00	91.20	241.57	5875.73	150.23 N	249.15 E	-247.38	19.91
6244.00	92.71	244.82	5872.49	107.42 N	164.42 E	-163.15	3.77
6338.00	91.85	246.19	5868.75	68.48 N	78.95 E	-78.15	1.72

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 270.67 DEGREES (GRID)
A TOTAL CORRECTION OF 6.91 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 6338.00 FEET
IS 104.51 FEET ALONG 49.06 DEGREES (GRID)

Surveys from 0' to 1905' are Gyro surveys.
Surveys corrected by Surcon starting at 2027 ft.

Date Printed:17 August 2016