



1 : 600 / 1 : 240

[illegible]

WELL INFORMATION

MWD Run Number	100				
Date run completed	21-Nov-15				
Rig Bit Number	2				
Bit Size (in)	8.750				
Tool Nominal OD (in)	6.750				
Log Start Depth (TVD, ft)	853.99				
Log End Depth (TVD, ft)	7,006.08				
Drill or Wipe	Drill				
Drill/Wipe Start Date and Time	20-Nov-15 07:15				
Drill/Wipe End Date and Time	21-Nov-15 13:10				
Min Inc (deg) @ Depth (TVD, ft)	0.20 @ 300.00				
Max Inc (deg) @ Depth (TVD, ft)	83.43 @ 7,001.67				
Bit TFA(in2) / Bit Type	0.98 / PDC				
Flow Rate (gpm)	555.42				
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A				
Fluid Type	Native/Spud Mud				
Density (ppg) / Viscosity (spqt)	10.00 / 27.00				
Filtrate CL (ppm)	1,600.00				
pH / Fluid Loss (mptm)	8.90 / 41				
PV (cP) / YP (lbf2)	1 / 1.00				
% Solids / % Sand	0.70 / 0.01				
% 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				
Min Temp (degF) / Max Temp (degF)	125.00 / 225.00				

Max Tool Temp (degF) / Source	185.02 / PCM				
Rm @ Max Tool Temp (degF)	N/A @ N/A				
Lead MWD Engineer	Henry Schmeidler				
Customer Representative	Charles Colville				

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM				
Software Version	5.93				
Sub Serial Number	10907009				
Insert Serial Number	11400901				
Date and Time Initialized	19-Nov-15 22:18				
Date and Time Read	21-Nov-15 21:42				
ECMB SW Version	N/A				

Directional Sensor Information

Tool Type	PCDC				
Distance From Bit (ft)	56.00				
Software Version	6.33				
Sub Serial Number	10907009				
Sonde Serial Number	11297584				
Sensor ID Number	N/A				
Toolface Offset (deg)	184.30				

Gamma Ray Sensor Information

Tool Type	PCG				
Distance From Bit (ft)	43.53				
Recorded Sample Period (sec)	10				
Software Version	8.15				
Sub Serial Number	10907009				
Insert/Sonde Serial Number	11681042				

REMARKS

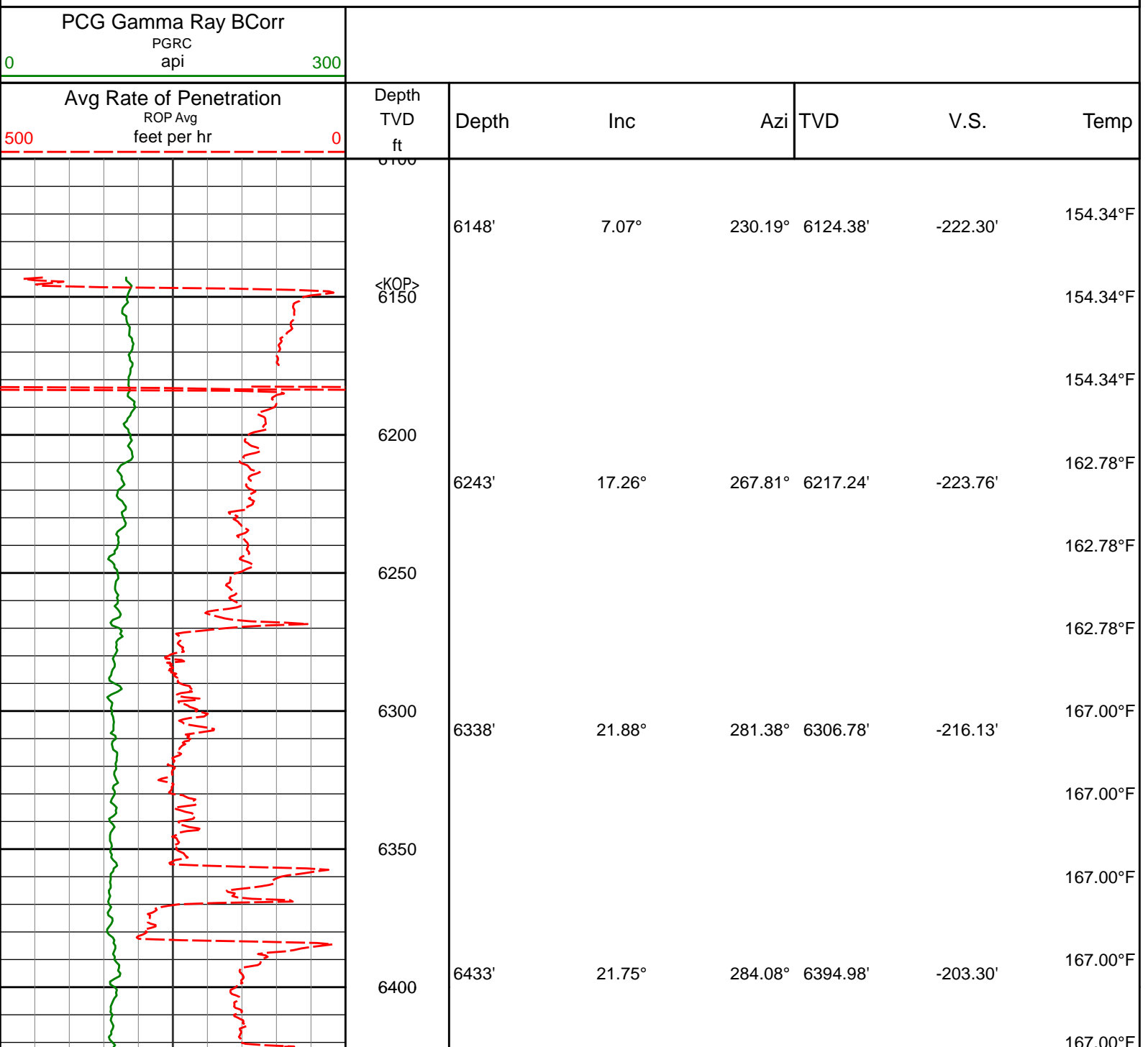
1. All depths are calibrated to the driller's pipe tally and are measured from the Rig drill floor.
2. No depth corrections have been made for pipe stretch or compression.
3. All data presented is recorded (memory data) unless otherwise stated.
 - ROPA: Average Rate of Penetration is real time data.
 - 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.

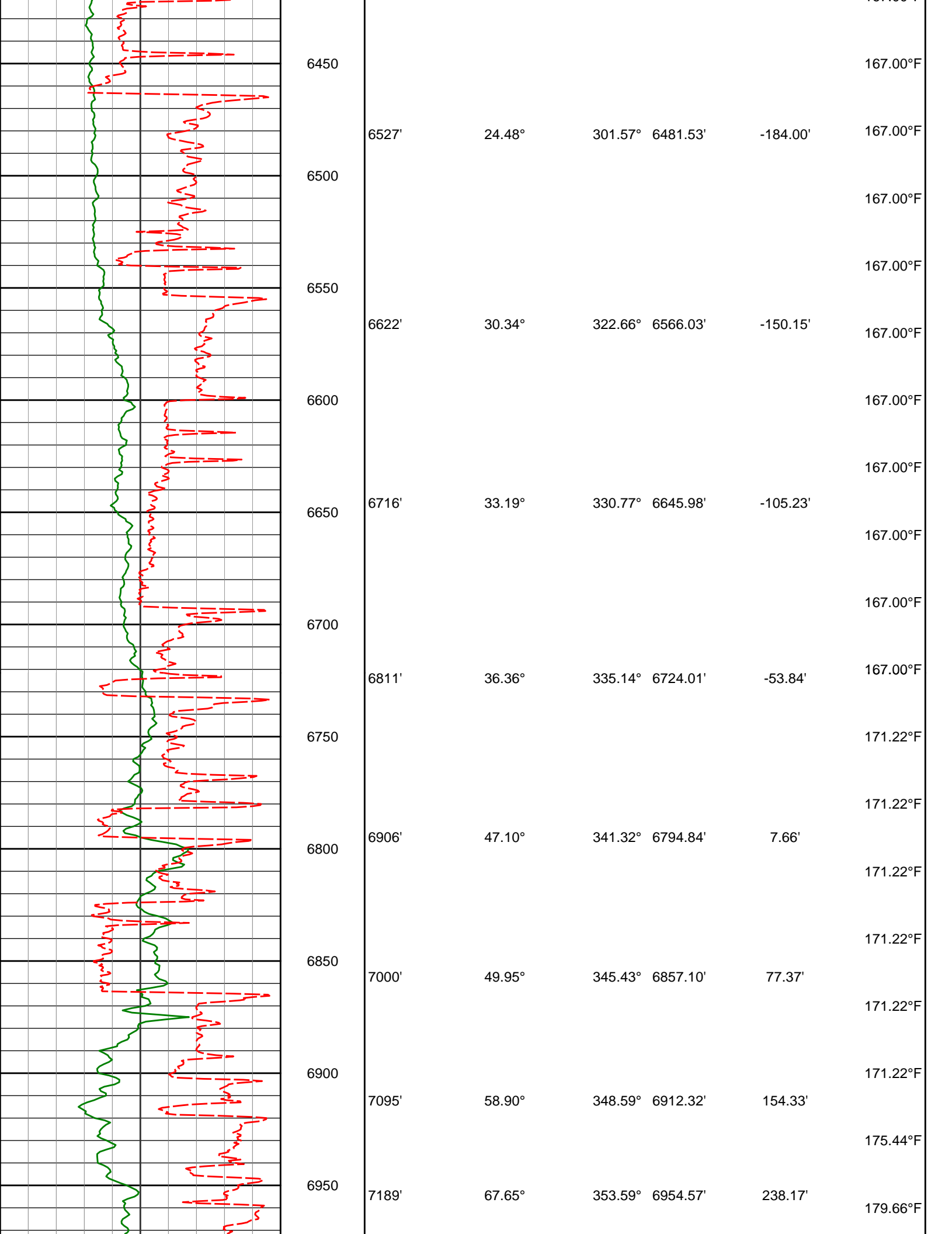
WARRANTY

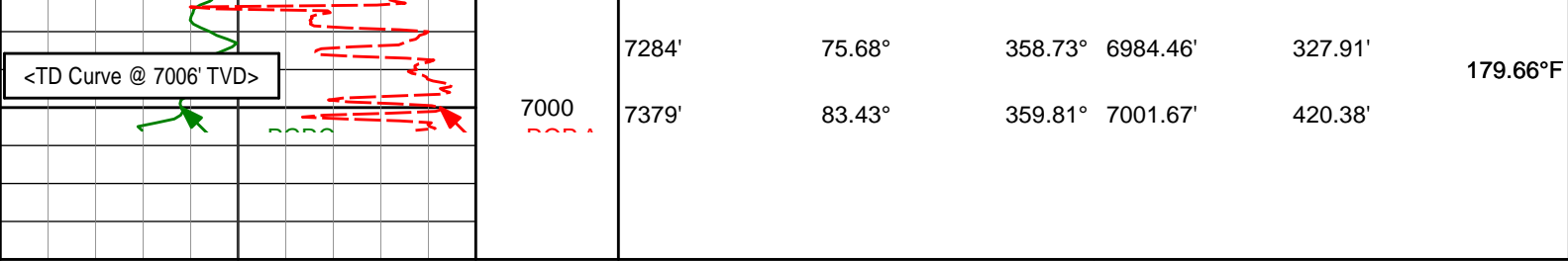
HALLIBURTON WILL USE ITS BEST EFFORTS TO FURNISH CUSTOMERS WITH ACCURATE INFORMATION AND INTERPRETATION THAT ARE PART OF, AND INCIDENT TO, THE SERVICES PROVIDED. HOWEVER, HALLIBURTON CANNOT AND DOES NOT WARRANT THE ACCURACY OR CORRECTNESS OF SUCH INFORMATION AND INTERPRETATIONS UNDER NO CIRCUMSTANCES.

WARRANT THE ACCURACY OR CORRECTNESS OF SUCH INFORMATION AND INTERPRETATIONS. UNDER NO CIRCUMSTANCES SHOULD ANY SUCH INFORMATION OR INTERPRETATION BE RELIED UPON AS THE SOLE BASIS FOR ANY DRILLING, COMPLETION, PRODUCTION, OR FINANCIAL DECISION OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING VENTURE, DRILLING RIG OR ITS CREW OR ANY OTHER THIRD PARTY. THE CUSTOMER HAS FULL RESPONSIBILITY FOR ALL DRILLING, COMPLETION AND PRODUCTION OPERATION. HALLIBURTON MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE SERVICES RENDERED. IN NO EVENT WILL HALLIBURTON BE LIABLE FOR FAILURE TO OBTAIN ANY PARTICULAR RESULTS OR FOR ANY DAMAGES, INCLUDING, BUT NOT LIMITED TO, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, RESULTING FROM THE USE OF ANY INFORMATION OR INTERPRETATION PROVIDED BY HALLIBURTON.

TVD Detail 1:600 Scale

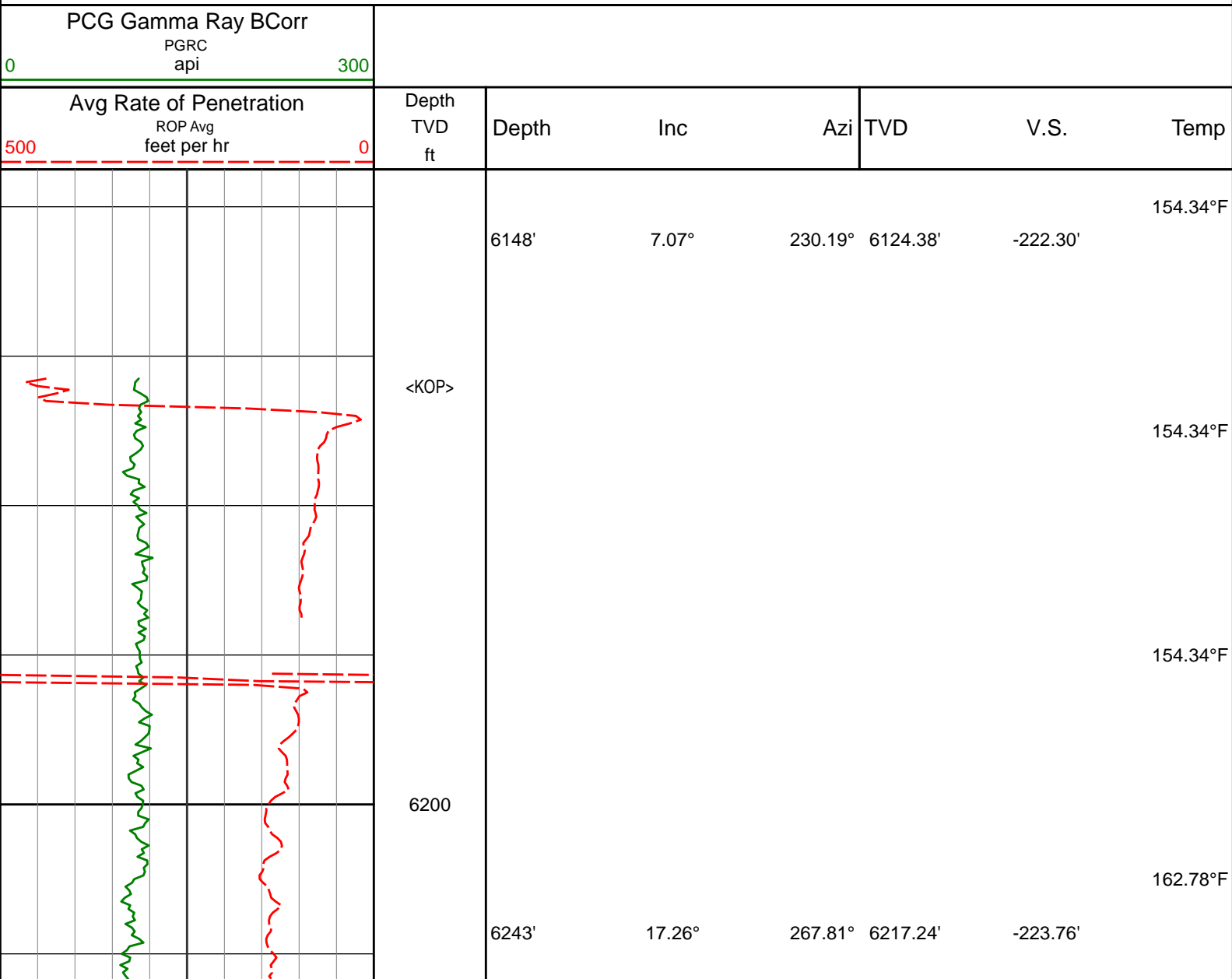


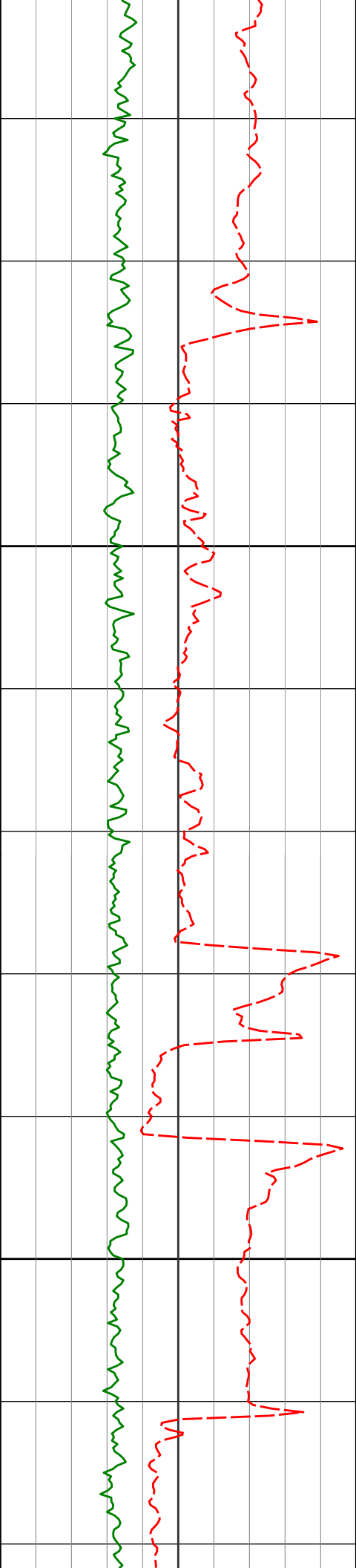




Avg Rate of Penetration ROP Avg feet per hr		Depth TVD ft	Inc		Azi	TVD	V.S.	Temp
500	0							
PCG Gamma Ray BCorr PGRC api								
0	300							

TVD Detail 1:240 Scale





6300

6400

6338'

6433'

21.88°

21.75°

281.38°

284.08°

6306.78'

6394.98'

-216.13'

-203.30'

162.78°F

162.78°F

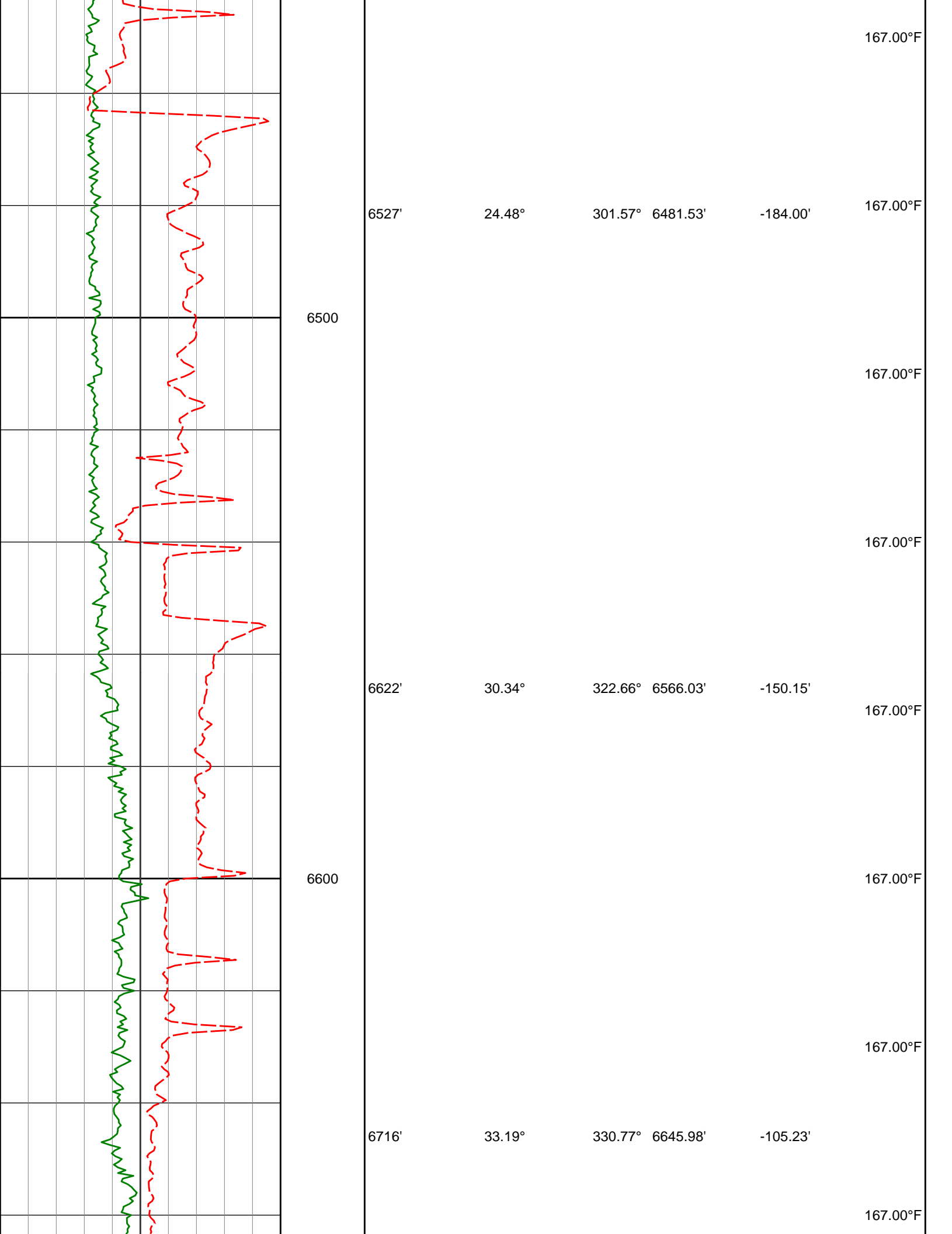
167.00°F

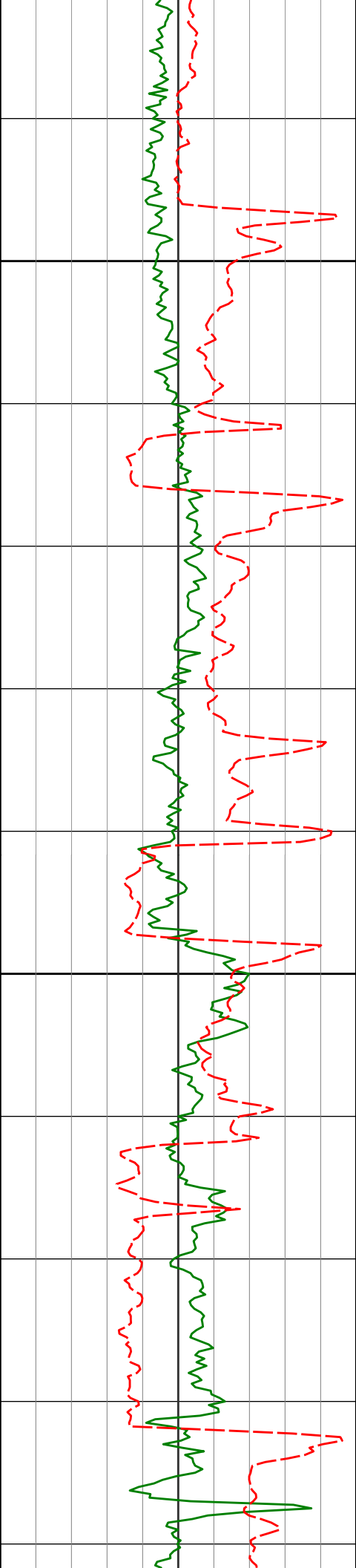
167.00°F

167.00°F

167.00°F

167.00°F





6700

6800

6811'

6906'

7000'

36.36°

47.10°

49.95°

335.14°

341.32°

345.43°

6724.01'

6794.84'

6857.10'

-53.84'

7.66'

77.37'

167.00°F

167.00°F

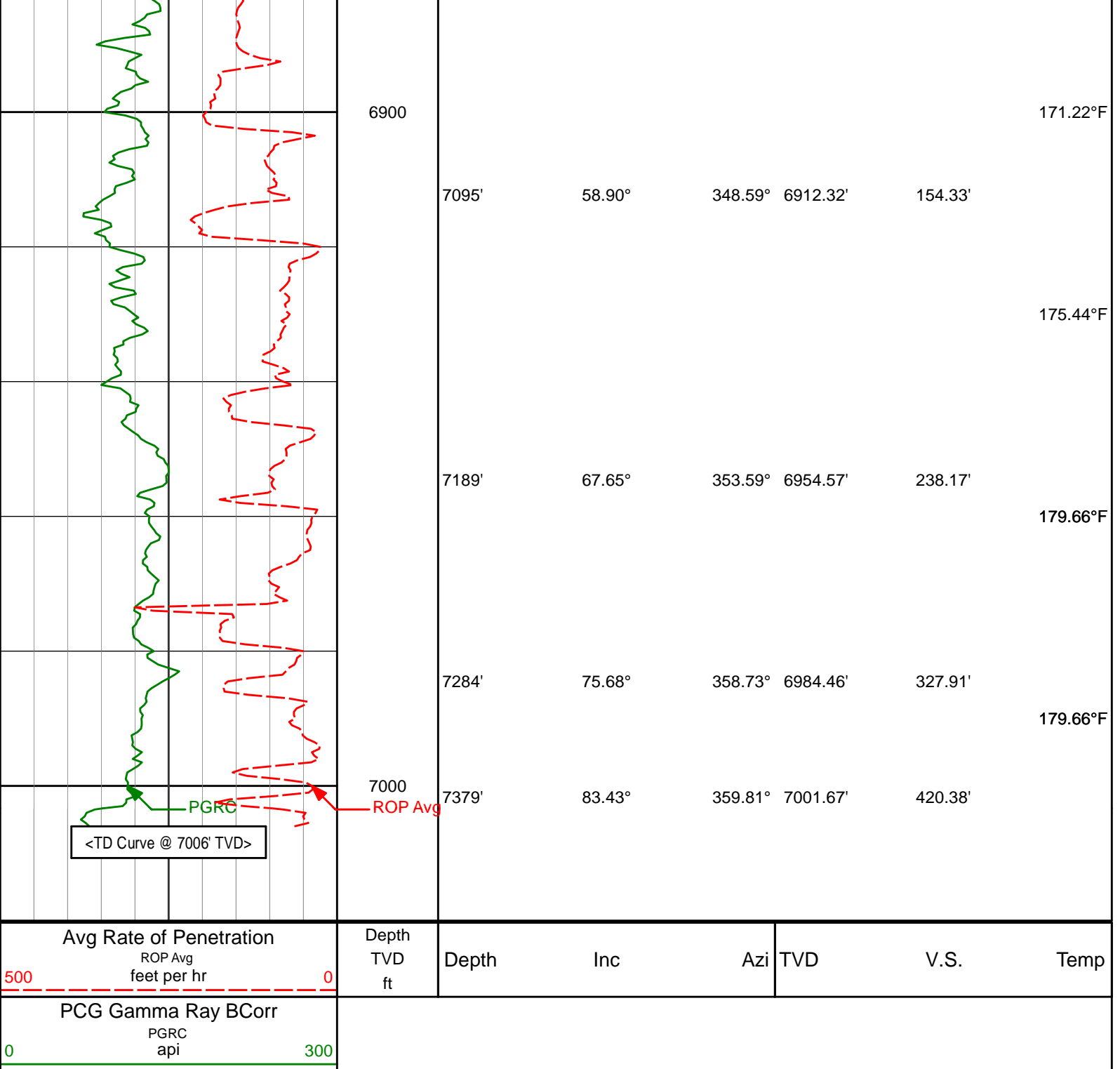
171.22°F

171.22°F

171.22°F

171.22°F

171.22°F



DIRECTIONAL SURVEY REPORT

Noble Energy
Moser State H22-785
Wattenberg
Weld Colorado
USA
CA-XX-0902771575

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
-----------------------------	--------------------------	------------------------	-----------------------------	--------------------	---------------------	-------------------------------	-----------------------

<i>Measured Depth (feet)</i>	<i>Inclination (degrees)</i>	<i>Direction (degrees)</i>	<i>Vertical Depth (feet)</i>	<i>Latitude (feet)</i>	<i>Departure (feet)</i>	<i>Vertical Section (feet)</i>	<i>Dogleg (deg/100ft)</i>
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
300.00	0.20	265.53	300.00	0.04 S	0.52 W	0.04	0.07
600.00	0.39	265.53	600.00	0.16 S	2.06 W	0.15	0.06
854.00	0.56	265.53	853.99	0.33 S	4.16 W	0.30	0.07
916.00	0.60	265.53	915.98	0.37 S	4.79 W	0.35	0.06
1105.00	0.79	264.33	1104.97	0.58 S	7.06 W	0.48	0.10
1199.00	1.09	217.11	1198.96	1.35 S	8.24 W	-0.11	0.85
1294.00	0.96	244.60	1293.94	2.41 S	9.50 W	-0.96	0.53
1386.00	0.96	249.63	1385.93	3.01 S	10.93 W	-1.35	0.09
1477.00	0.75	245.08	1476.92	3.53 S	12.19 W	-1.67	0.24
1569.00	1.04	242.92	1568.91	4.17 S	13.48 W	-2.10	0.31
1660.00	0.82	246.68	1659.90	4.80 S	14.81 W	-2.53	0.25
1751.00	0.79	228.15	1750.89	5.47 S	15.87 W	-3.04	0.29
1843.00	0.69	262.74	1842.88	5.97 S	16.89 W	-3.37	0.49
1935.00	1.10	247.53	1934.87	6.37 S	18.26 W	-3.57	0.51
2026.00	1.32	258.67	2025.85	6.91 S	20.10 W	-3.83	0.36
2209.00	1.35	264.61	2208.80	7.53 S	24.32 W	-3.81	0.08
2300.00	0.50	286.04	2299.79	7.52 S	25.78 W	-3.58	0.99
2392.00	0.50	61.55	2391.79	7.22 S	25.82 W	-3.28	1.01
2484.00	0.61	243.60	2483.78	7.25 S	25.90 W	-3.29	1.20
2576.00	1.32	232.98	2575.77	8.10 S	27.19 W	-3.95	0.80
2667.00	1.32	227.41	2666.75	9.45 S	28.80 W	-5.03	0.14
2759.00	3.95	230.69	2758.64	12.17 S	32.03 W	-7.24	2.87
2850.00	5.68	232.44	2849.32	16.90 S	38.03 W	-11.03	1.90
2941.00	6.60	227.21	2939.79	23.20 S	45.44 W	-16.15	1.18
3033.00	6.09	226.28	3031.23	30.17 S	52.85 W	-21.93	0.56
3124.00	6.96	223.25	3121.64	37.52 S	60.12 W	-28.11	1.03
3218.00	6.22	221.41	3215.02	45.50 S	67.39 W	-34.91	0.82
3312.00	6.95	221.11	3308.40	53.60 S	74.51 W	-41.86	0.78
3407.00	5.02	218.03	3402.87	61.21 S	80.85 W	-48.43	2.06
3501.00	7.00	238.66	3496.36	67.43 S	88.28 W	-53.47	3.08
3595.00	5.13	248.73	3589.83	71.93 S	97.08 W	-56.61	2.28
3690.00	6.59	246.70	3684.34	75.63 S	106.05 W	-58.92	1.56
3784.00	9.39	233.17	3777.42	82.37 S	117.15 W	-63.92	3.57
3878.00	7.73	229.04	3870.37	91.10 S	128.06 W	-70.93	1.89
3973.00	7.60	229.20	3964.52	99.39 S	137.64 W	-77.69	0.14
4068.00	7.56	229.82	4058.69	107.53 S	147.16 W	-84.31	0.10
4162.00	6.45	228.26	4151.99	115.03 S	155.83 W	-90.44	1.19
4256.00	7.80	223.86	4245.26	123.15 S	164.19 W	-97.21	1.54
4351.00	7.56	222.26	4339.41	132.42 S	172.86 W	-105.08	0.33
4446.00	6.70	217.33	4433.68	141.45 S	180.42 W	-112.88	1.11
4541.00	6.46	216.72	4528.05	150.14 S	186.98 W	-120.49	0.26
4635.00	7.70	225.41	4621.34	158.80 S	194.62 W	-127.91	1.74
4730.00	7.55	224.20	4715.50	167.75 S	203.51 W	-135.43	0.23
4824.00	7.08	225.24	4808.73	176.26 S	211.93 W	-142.59	0.52
4919.00	6.59	231.44	4903.05	183.78 S	220.35 W	-148.76	0.93
5014.00	7.90	234.07	4997.29	191.01 S	229.90 W	-154.49	1.43
5108.00	7.25	240.37	5090.47	197.74 S	240.29 W	-159.58	1.12
5203.00	6.39	241.08	5184.80	203.25 S	250.13 W	-163.57	0.91
5297.00	5.41	247.98	5278.31	207.44 S	258.81 W	-166.41	1.29
5391.00	5.45	243.59	5371.88	211.09 S	266.91 W	-168.80	0.45
5486.00	6.38	232.49	5466.38	216.31 S	275.14 W	-172.74	1.54
5581.00	5.36	230.43	5560.88	222.35 S	282.75 W	-177.57	1.09
5675.00	6.82	222.84	5654.35	229.24 S	289.93 W	-183.31	1.76
5770.00	4.97	208.73	5748.85	236.98 S	295.74 W	-190.09	2.46
5865.00	6.18	211.29	5843.40	244.96 S	300.37 W	-197.29	1.30
5959.00	7.47	211.28	5936.73	254.50 S	306.17 W	-205.85	1.37
6054.00	6.52	207.10	6031.02	264.57 S	311.83 W	-214.97	1.13
6148.00	7.07	230.19	6124.38	273.03 S	318.71 W	-222.30	2.94
6243.00	17.26	267.81	6217.24	277.33 S	337.35 W	-223.76	13.06

<i>Measured Depth (feet)</i>	<i>Inclination (degrees)</i>	<i>Direction (degrees)</i>	<i>Vertical Depth (feet)</i>	<i>Latitude (feet)</i>	<i>Departure (feet)</i>	<i>Vertical Section (feet)</i>	<i>Dogleg (deg/100ft)</i>
6338.00	21.88	281.38	6306.78	274.37 S	368.82 W	-216.13	6.79
6433.00	21.75	284.08	6394.98	266.60 S	403.24 W	-203.30	1.06
6527.00	24.48	301.57	6481.53	252.14 S	436.77 W	-184.00	7.83
6622.00	30.34	322.66	6566.03	222.67 S	468.19 W	-150.15	11.85
6716.00	33.19	330.77	6645.98	181.31 S	495.18 W	-105.23	5.45
6811.00	36.36	335.14	6724.01	133.05 S	519.72 W	-53.84	4.24
6906.00	47.10	341.32	6794.84	74.34 S	542.78 W	7.66	12.10
7000.00	49.95	345.43	6857.10	6.88 S	562.87 W	77.37	4.46
7095.00	58.90	348.59	6912.32	68.35 N	580.10 W	154.33	9.80
7189.00	67.65	353.59	6954.57	151.20 N	592.94 W	238.17	10.45
7284.00	75.68	358.73	6984.46	241.07 N	598.87 W	327.91	9.88
7379.00	83.43	359.81	7001.67	334.42 N	600.05 W	420.38	8.23
7435.00	87.55	358.50	7006.08	390.22 N	600.87 W	475.69	7.73

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 351.40 DEGREES (GRID)
A TOTAL CORRECTION OF 7.80 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 7435.00 FEET
IS 716.47 FEET ALONG 303.00 DEGREES (GRID)**

Surveys at 300 ft and 600 ft are interpolated between surface and first survey at 854 ft.

Last survey is a projection from 7379 ft MD to TD at 7435 ft MD.