



1 : 600 / 1 : 240

WELL INFORMATION					
MWD Run Number	100				
Date run completed	17-Apr-15				
Rig Bit Number	2				
Bit Size (in)	8.750				
Tool Nominal OD (in)	6.750				
Log Start Depth (TVD, ft)	697.93				
Log End Depth (TVD, ft)	5,569.23				
Drill or Wipe	Drill				
Drill/Wipe Start Date and Time	16-Apr-15 19:24				
Drill/Wipe End Date and Time	17-Apr-15 14:00				
Min Inc (deg) @ Depth (TVD, ft)	0.66 @ 5,367.00				
Max Inc (deg) @ Depth (TVD, ft)	15.57 @ 5,461.57				
Bit TFA(in2) / Bit Type	1.21 / PDC				
Flow Rate (gpm)	591.72				
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A				
Fluid Type	Fresh Water Gel				
Density (ppg) / Viscosity (spqt)	9.47 / 28.00				
Filtrate CL (ppm)	1,200.00				
pH / Fluid Loss (mptm)	8.50 / 50				
PV (cP) / YP (lhf2)	7 / 7.00				
% Solids / % Sand	0.50 / 0.10				
% 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) @ Depth (ft)	127.50 / 5,461.57				

Max Tool Temp (degF) / Source	137.50 / PCM				
Rm @ Max Tool Temp (degF)	N/A @ N/A				
Lead MWD Engineer	Paul Kock				
Customer Representative	Justin Fields				

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM				
Software Version	5.93				
Sub Serial Number	246473				
Insert Serial Number	11619996				
Date and Time Initialized	16-Apr-15 00:40				
Date and Time Read	18-Apr-15 10:22				
ECMB SW Version	N/A				

Directional Sensor Information

Tool Type	PCDC				
Distance From Bit (ft)	55.00				
Software Version	6.33				
Sub Serial Number	246473				
Sonde Serial Number	11638623				
Sensor ID Number	N/A				
Toolface Offset (deg)	5.40				

Gamma Ray Sensor Information

Tool Type	PCG				
Distance From Bit (ft)	48.51				
Recorded Sample Period (sec)	10				
Software Version	8.15				
Sub Serial Number	246473				
Insert/Sonde Serial Number	12071280				

REMARKS

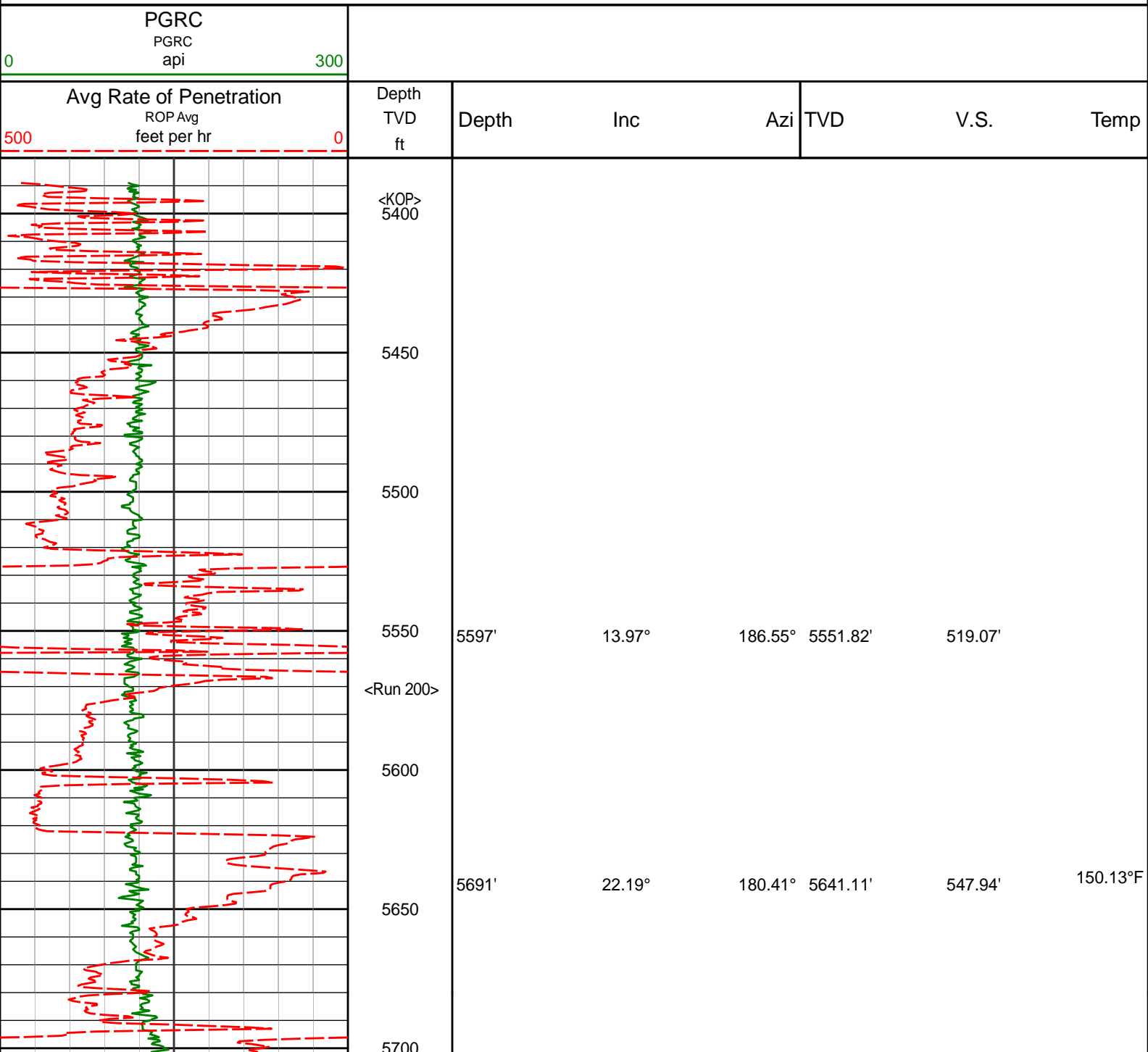
1. All depths are calibrated to the driller's pipe tally and are measured from the Rig drill floor.
2. No depth corrections have been made for pipe stretch or compression.
3. All data presented is recorded (memory data) unless otherwise stated.
 - ROPA: Average Rate of Penetration is real time data.
 - 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 8.1.10.

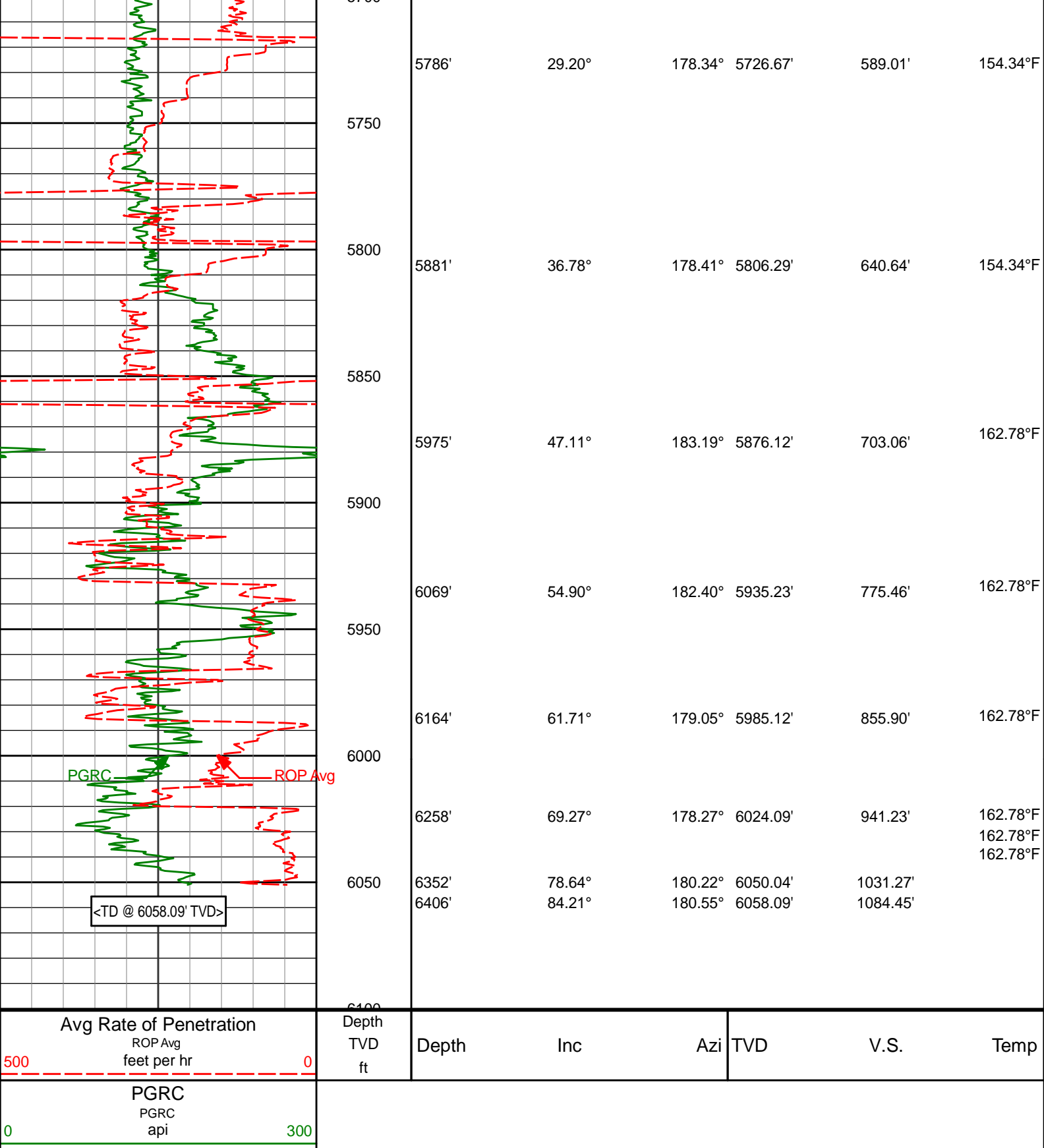
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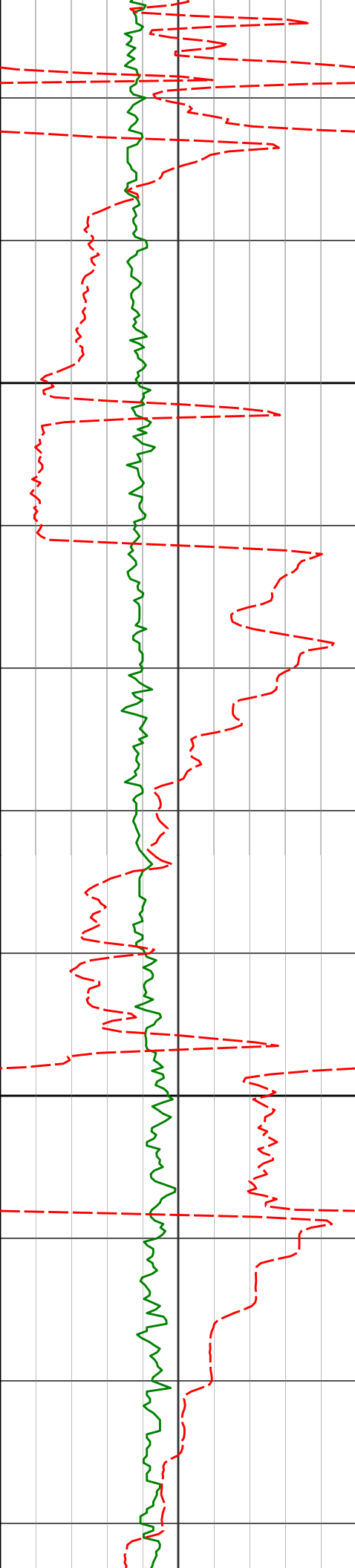
TVD Detail 1:600 Scale





TVD Detail 1:240 Scale

[illegible]



<Run 200>

5600

5700

5597'

13.97°

186.55° 5551.82'

519.07'

5691'

22.19°

180.41° 5641.11'

547.94'

150.13°F

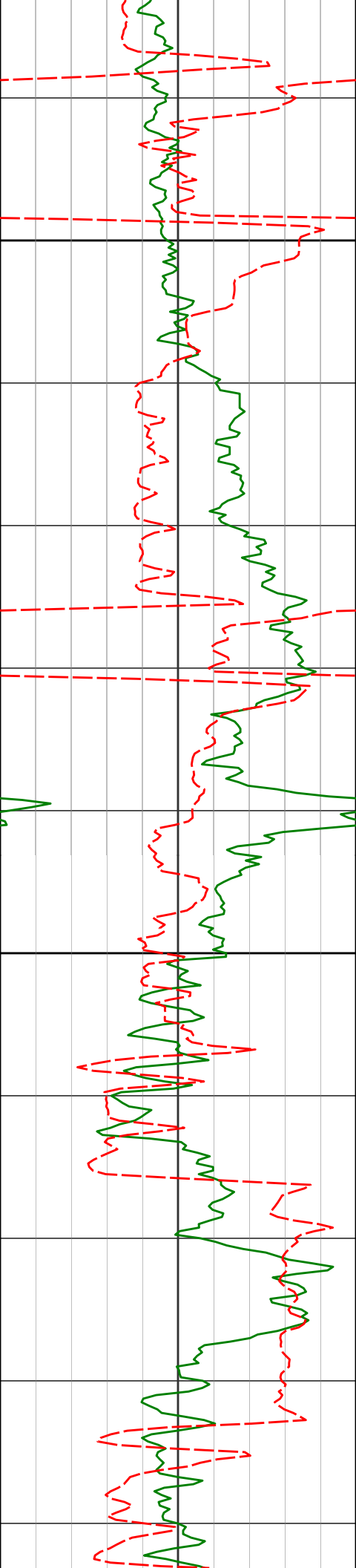
5786'

29.20°

178.34° 5726.67'

589.01'

154.34°F



5800

5881'

36.78°

178.41°

5806.29'

640.64'

154.34°F

5975'

47.11°

183.19°

5876.12'

703.06'

162.78°F

5900

6069'

54.90°

182.40°

5935.23'

775.46'

162.78°F

6164'

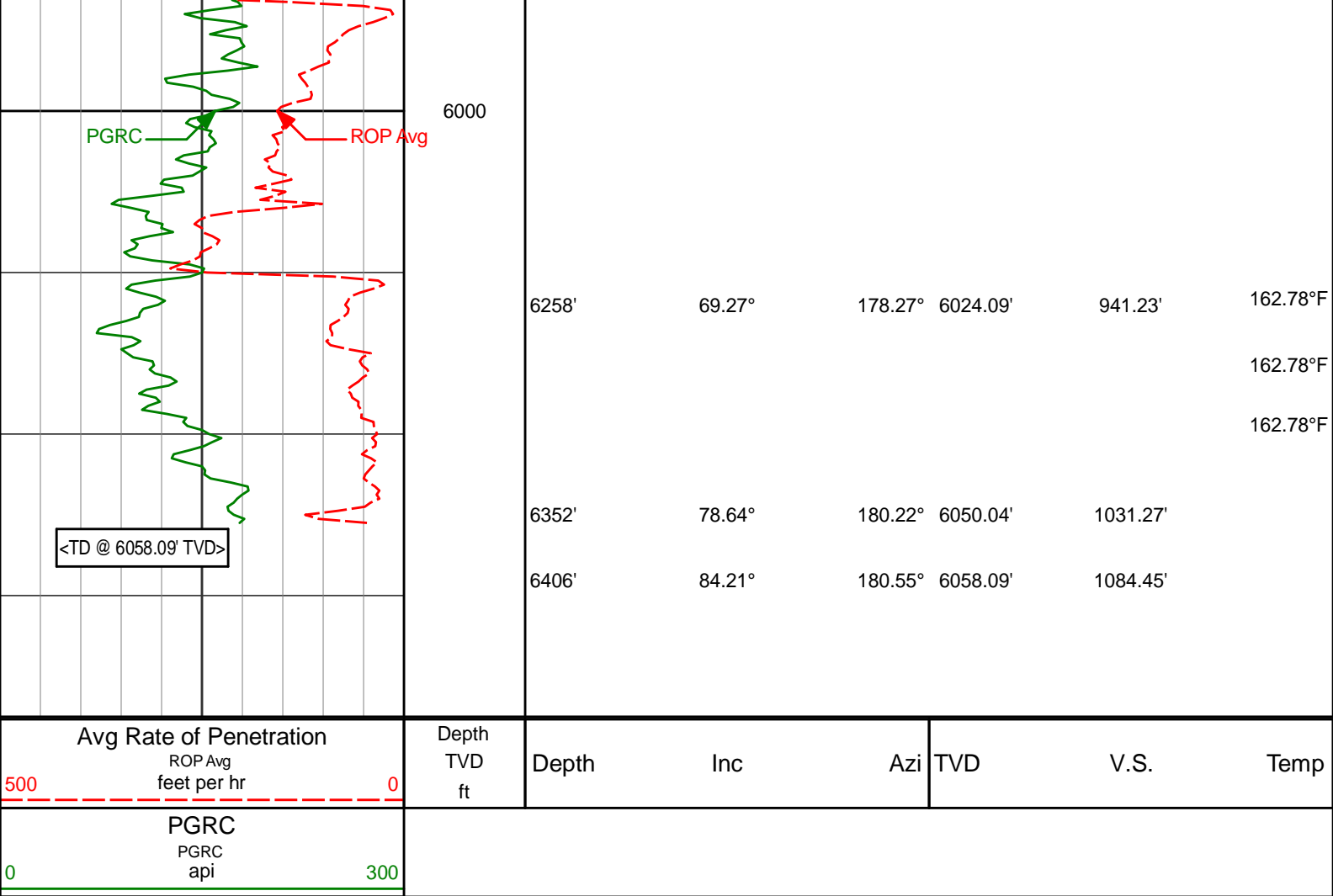
61.71°

179.05°

5985.12'

855.90'

162.78°F



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Gleason LC35-715
Wattenberg
Weld Colorado
USA
CA-XX-0902231117

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	0.50	17.36	250.00	1.04 N	0.33 E	-1.01	0.20
500.00	0.99	17.36	499.97	4.14 N	1.30 E	-4.03	0.20
727.00	1.44	17.36	726.92	8.74 N	2.73 E	-8.50	0.20
822.00	1.32	17.77	821.90	10.93 N	3.43 E	-10.63	0.13
916.00	0.68	78.80	915.88	12.07 N	4.30 E	-11.70	1.23
1105.00	1.39	277.02	1104.87	12.57 N	3.12 E	-12.29	1.08
1198.00	4.04	242.52	1197.76	11.20 N	0.91 W	-11.23	3.23
1290.00	6.28	231.07	1289.38	6.54 N	7.70 W	-7.13	2.66
1382.00	7.52	208.83	1380.73	1.90 S	14.52 W	0.75	3.18
1475.00	8.48	194.82	1472.83	13.86 S	19.21 W	12.30	2.33
1567.00	9.09	174.00	1563.78	27.65 S	20.18 W	25.97	3.50
1752.00	9.30	157.04	1746.44	55.94 S	12.83 W	54.76	1.46
1937.00	8.18	140.52	1929.31	79.87 S	1.37 E	79.73	1.48
2119.00	8.40	145.60	2109.42	100.83 S	17.12 E	101.87	0.42
2302.00	10.11	151.16	2290.03	125.93 S	32.42 E	128.10	1.05
2579.00	9.69	144.96	2562.91	166.31 S	57.52 E	170.33	0.41
2763.00	9.67	145.22	2744.30	191.67 S	75.22 E	197.01	0.03
2858.00	9.59	146.96	2837.96	204.86 S	84.09 E	210.86	0.32

2952.00	9.50	145.57	2930.66	217.82 S	92.74 E	224.46	0.26
3046.00	8.98	146.70	3023.44	230.35 S	101.15 E	237.62	0.59
3141.00	8.09	145.59	3117.38	242.06 S	109.00 E	249.91	0.95
3235.00	7.49	141.61	3210.52	252.32 S	116.54 E	260.74	0.85
3330.00	8.92	145.38	3304.54	263.24 S	124.57 E	272.25	1.60
3425.00	8.96	143.41	3398.39	275.23 S	133.17 E	284.89	0.32
3519.00	8.86	142.68	3491.26	286.87 S	141.92 E	297.18	0.16
3614.00	8.79	141.85	3585.13	298.39 S	150.83 E	309.37	0.15
3708.00	8.89	141.37	3678.01	309.71 S	159.80 E	321.36	0.14
3802.00	9.52	148.29	3770.81	322.00 S	168.42 E	334.30	1.35
3896.00	9.62	148.37	3863.50	335.30 S	176.63 E	348.21	0.11
4085.00	8.26	143.39	4050.20	359.66 S	193.02 E	373.78	0.83
4179.00	7.78	140.78	4143.28	370.01 S	201.07 E	384.73	0.65
4273.00	8.73	152.30	4236.31	381.25 S	208.40 E	396.52	2.03
4367.00	8.82	152.01	4329.21	393.93 S	215.10 E	409.69	0.11
4462.00	8.24	150.31	4423.16	406.28 S	221.89 E	422.54	0.66
4556.00	8.01	149.06	4516.22	417.75 S	228.59 E	434.50	0.31
4651.00	7.26	145.42	4610.37	428.36 S	235.40 E	445.62	0.93
4746.00	6.23	143.45	4704.71	437.45 S	241.88 E	455.19	1.11
4840.00	5.53	138.00	4798.22	444.91 S	247.95 E	463.11	0.96
4935.00	4.81	134.52	4892.83	451.10 S	253.85 E	469.74	0.83
5030.00	4.47	134.21	4987.52	456.48 S	259.35 E	475.54	0.35
5124.00	3.24	156.51	5081.31	461.47 S	263.03 E	480.80	2.04
5219.00	2.62	151.84	5176.19	465.85 S	265.13 E	485.33	0.69
5313.00	2.59	152.27	5270.09	469.62 S	267.13 E	489.25	0.04
5408.00	2.38	150.63	5365.00	473.24 S	269.10 E	493.02	0.23
5597.00	13.97	186.55	5551.82	499.43 S	268.42 E	519.07	6.41
5691.00	22.19	180.41	5641.11	528.50 S	267.00 E	547.94	8.97
5786.00	29.20	178.34	5726.67	569.66 S	267.54 E	589.01	7.44
5881.00	36.78	178.41	5806.29	621.34 S	269.00 E	640.64	7.98
5975.00	47.11	183.19	5876.12	684.04 S	267.87 E	703.06	11.49
6069.00	54.90	182.40	5935.23	756.95 S	264.33 E	775.46	8.31
6164.00	61.71	179.05	5985.12	837.71 S	263.39 E	855.90	7.77
6258.00	69.27	178.27	6024.09	923.16 S	265.41 E	941.23	8.07
6352.00	78.64	180.22	6050.04	1013.38 S	266.56 E	1031.27	10.17
6406.00	84.21	180.55	6058.09	1066.76 S	266.20 E	1084.45	10.32

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 175.47 DEGREES (GRID)
A TOTAL CORRECTION OF 7.02 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 6406.00 FEET
IS 1099.47 FEET ALONG 165.99 DEGREES (GRID)**

Survey at 250' and 500' were extrapolated between surface and the first survey

Last survey is a projection from 6352 ft MD to TD at 6406 ft MD.