

PCGC: Pressure Case Gamma



1 : 600 / 1 : 240

[illegible]

WELL INFORMATION

MWD Run Number	100				
Date run completed	07-Oct-15				
Rig Bit Number	2				
Bit Size (in)	8.750				
Tool Nominal OD (in)	6.750				
Log Start Depth (TVD, ft)	676.00				
Log End Depth (TVD, ft)	6,532.56				
Drill or Wipe	Drill				
Drill/Wipe Start Date and Time	06-Oct-15 12:30				
Drill/Wipe End Date and Time	07-Oct-15 17:30				
Min Inc (deg) @ Depth (TVD, ft)	0.18 @ 816.00				
Max Inc (deg) @ Depth (TVD, ft)	83.27 @ 6,527.98				
Bit TFA(in2) / Bit Type	0.98 / PDC				
Flow Rate (gpm)	579.77				
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A				
Fluid Type	Fresh Water Gel				
Density (ppg) / Viscosity (spqt)	10.00 / 36.00				
Filtrate CL (ppm)	1,800.00				
pH / Fluid Loss (mptm)	8.70 / 0				
PV (cP) / YP (lhf2)	12 / 9.00				
% Solids / % Sand	7.2 / .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	179.70 / PCM				
Rm @ Max Tool Temp (degF)	N/A @ N/A				
Lead MWD Engineer	Paul Kock				
Customer Representative	Dave Nielsen				

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM				
Software Version	5.93				
Sub Serial Number	11619287				
Insert Serial Number	11145605				
Date and Time Initialized	06-Oct-15 06:15				
Date and Time Read	07-Oct-15 22:05				
ECMB SW Version	N/A				

Directional Sensor Information

Tool Type	PCDC				
Distance From Bit (ft)	61.00				
Software Version	6.33				
Sub Serial Number	11619287				
Sonde Serial Number	11297584				
Sensor ID Number	N/A				
Toolface Offset (deg)	150.90				

Gamma Ray Sensor Information

Tool Type	PCG				
Distance From Bit (ft)	48.98				
Recorded Sample Period (sec)	10				
Software Version	8.15				
Sub Serial Number	11619287				
Insert/Sonde Serial Number	11681042				

REMARKS

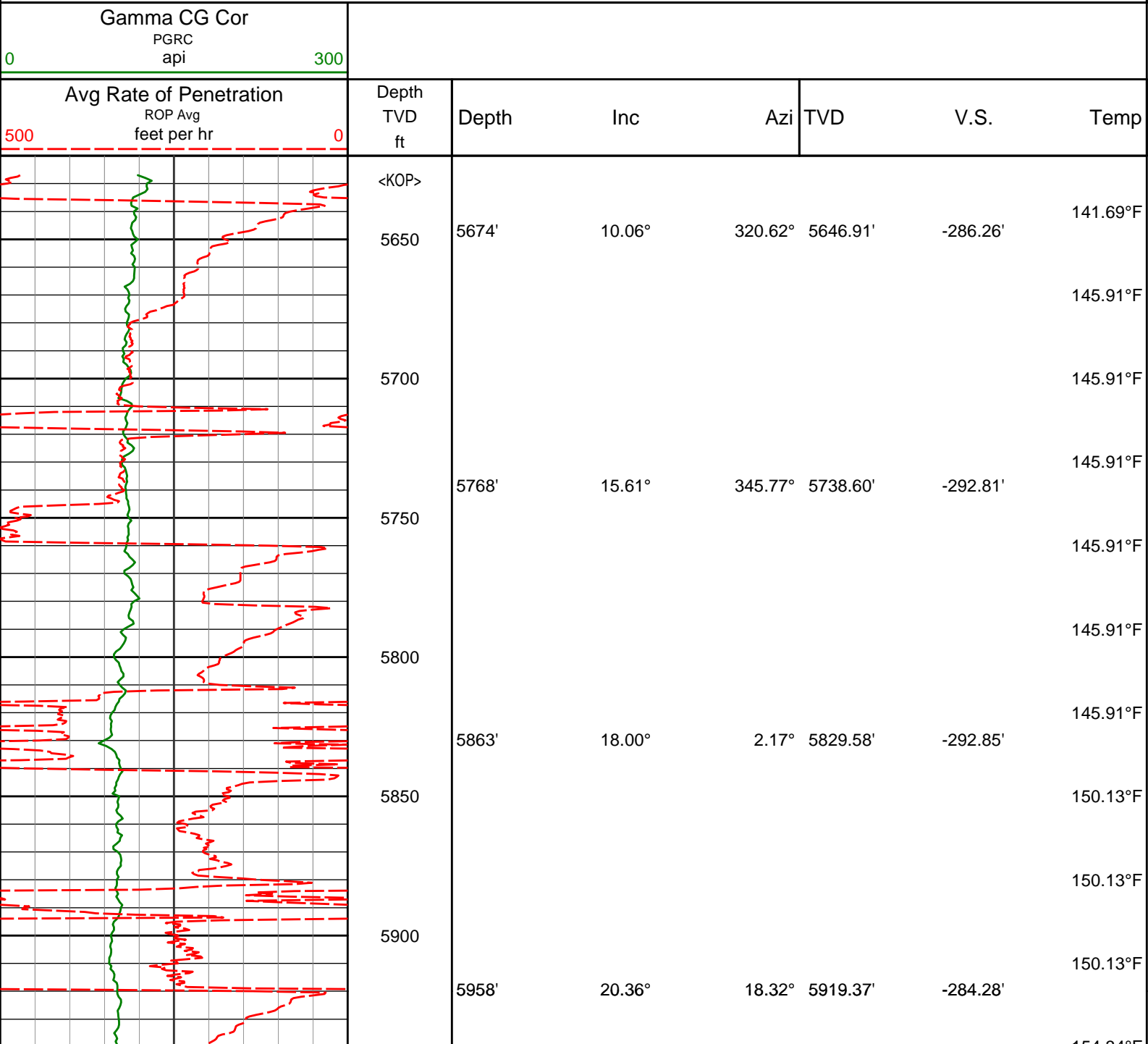
1. All depths are calibrated to the driller's pipe tally and are measured from the Rig drill floor.
2. No depth corrections have been made for pipe stretch or compression.
3. All data presented is recorded (memory data) unless otherwise stated.
 - ROPA: Average Rate of Penetration is real time data.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

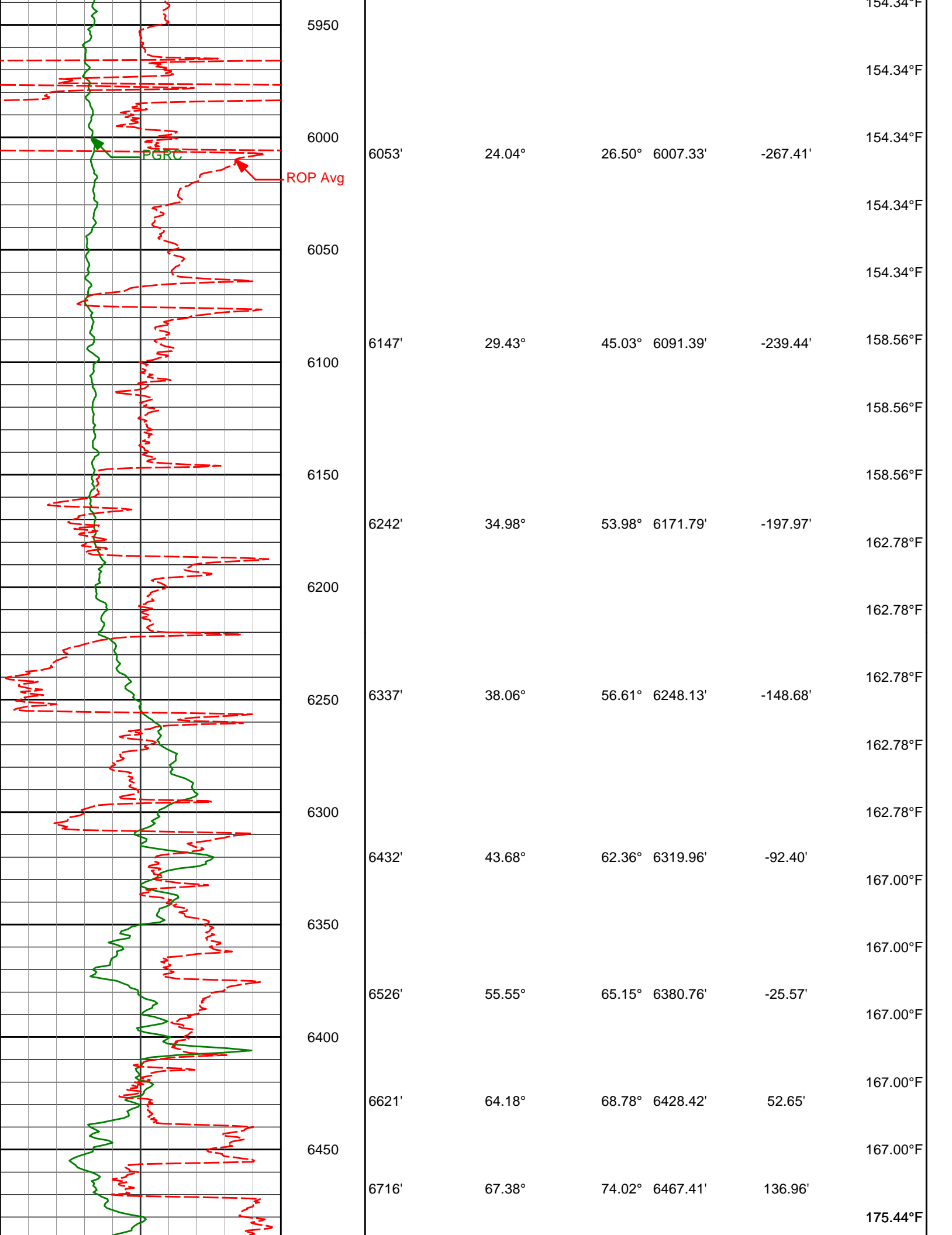
WARRANTY

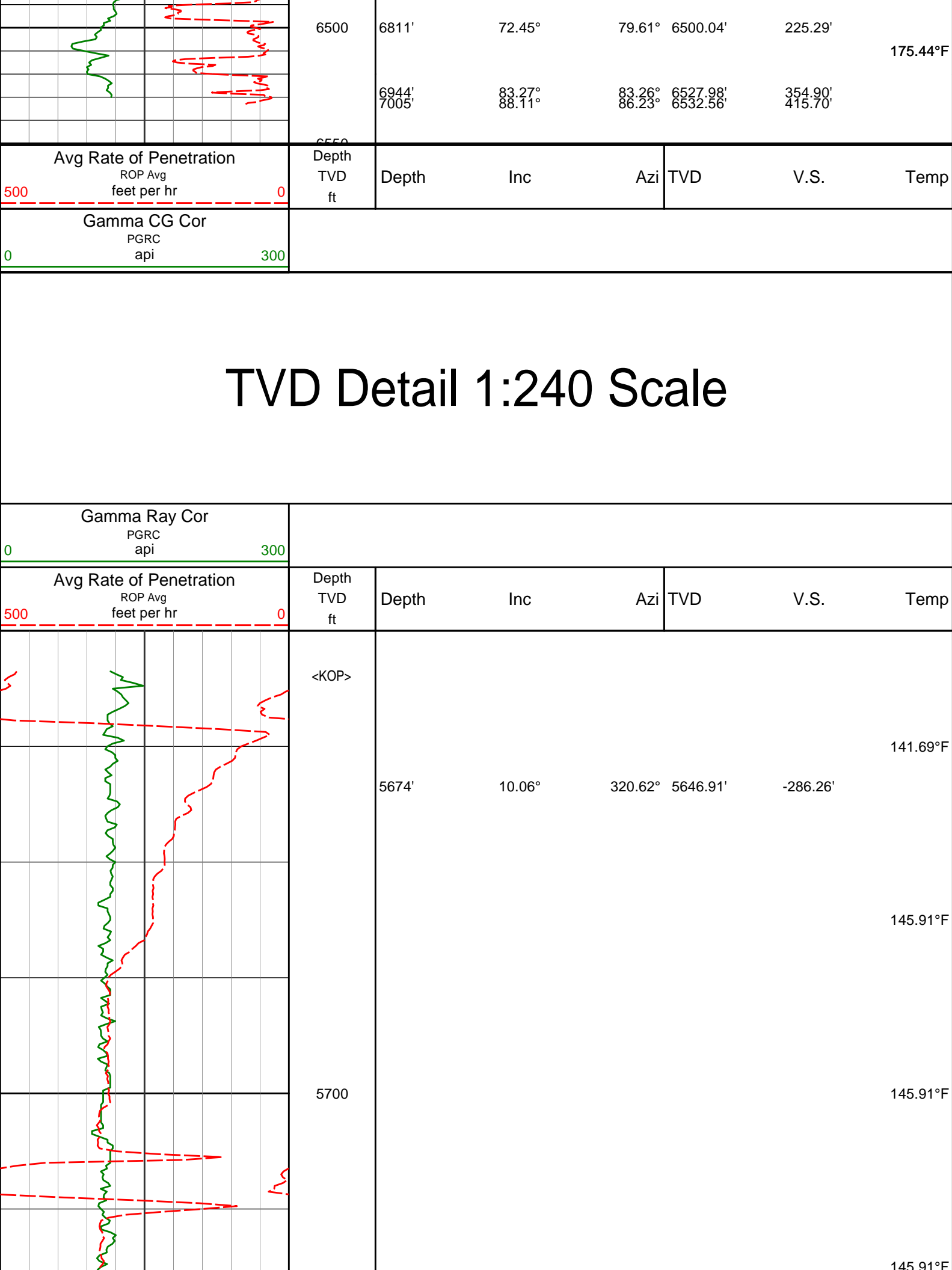
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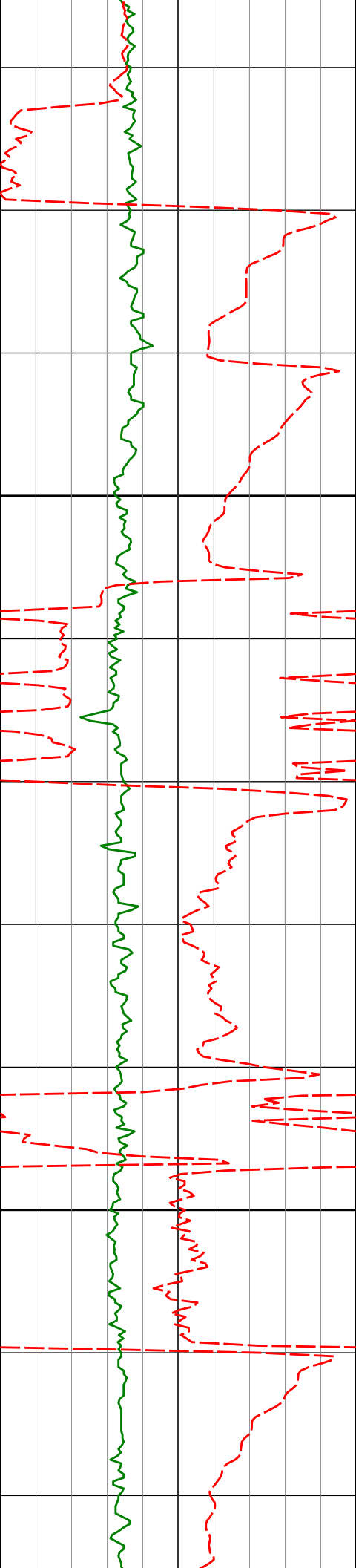
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TVD Detail 1:600 Scale









5800

5900

5768'

15.61°

345.77°

5738.60'

-292.81'

5863'

18.00°

2.17°

5829.58'

-292.85'

5958'

20.36°

18.32°

5919.37'

-284.28'

145.91°F

145.91°F

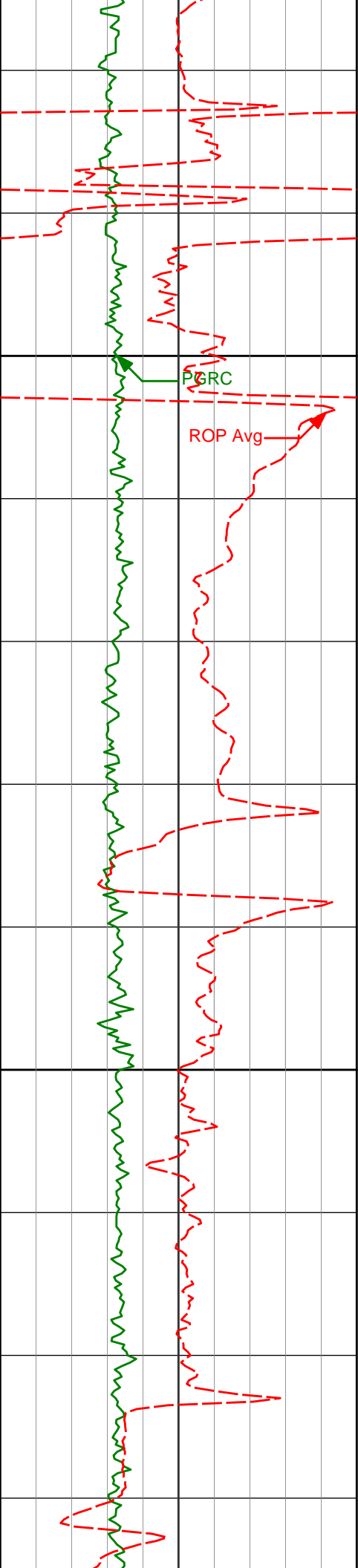
145.91°F

150.13°F

150.13°F

150.13°F

154.34°F



6000

6100

6053'

6147'

24.04°

29.43°

26.50°

45.03°

6007.33'

6091.39'

-267.41'

-239.44'

154.34°F

154.34°F

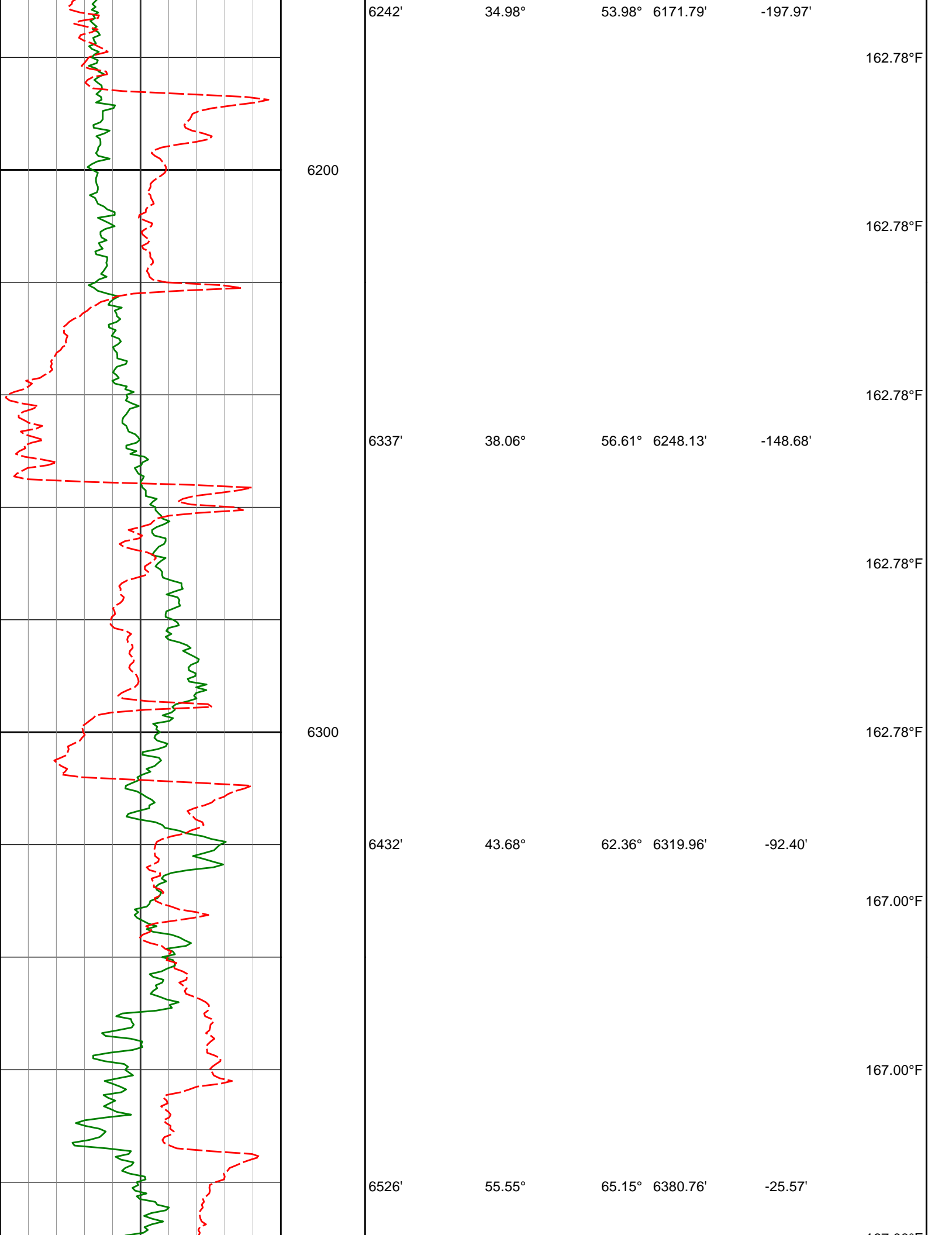
154.34°F

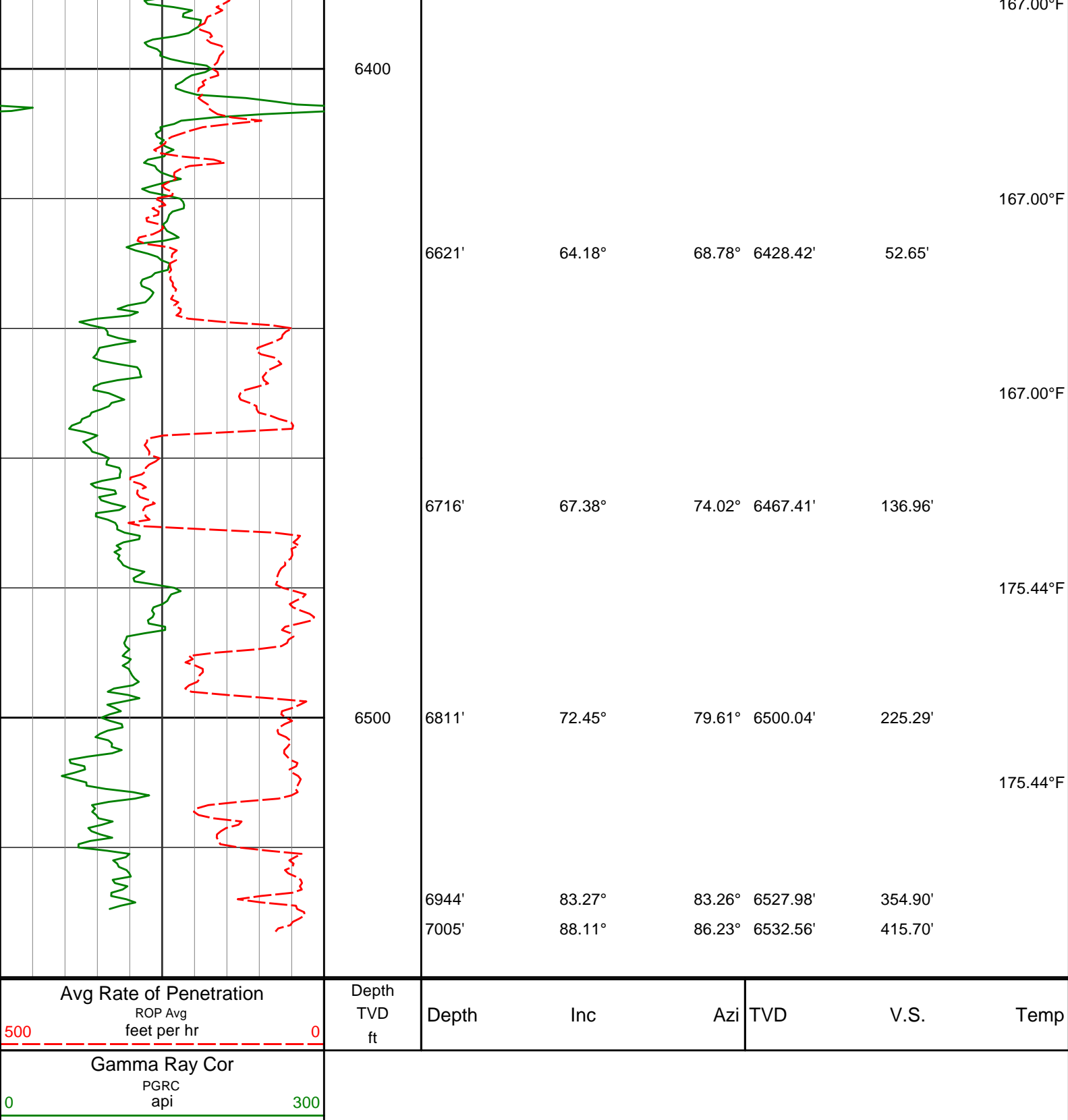
154.34°F

158.56°F

158.56°F

158.56°F





DIRECTIONAL SURVEY REPORT

Noble Energy
Wells Ranch AE32-630
Wattenberg
Weld Colorado
USA
CA-XX-0902715777

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
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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 84.63 DEGREES (GRID)
A TOTAL CORRECTION OF 7.56 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 7005.00 FEET
IS 719.47 FEET ALONG 29.92 DEGREES (GRID)

Surveys at 300 ft and 676 ft are interpolated between surface and first survey at 816 ft.

Last survey is a projection from 6944 ft MD to TD at 7005 ft MD.

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