

# CASE STUDY

JULY 2023

Drilling Tools International is the exclusive US Distribution Partner for CT Energy Services RotoSteer™ Technology. DTI owns and operates a fleet of RotoSteer™ tools across the United States.

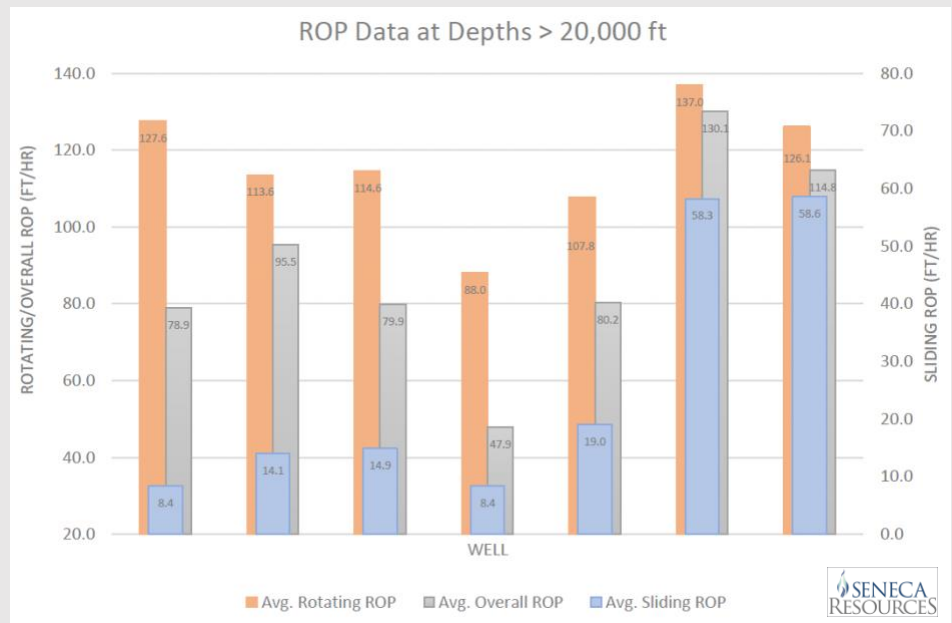
**OPERATOR/CUSTOMER:**  
Seneca Resources

## ROTOSTEER™

The RotoSteer™ employs conventional drilling technology with the addition of a specialized drilling-based motor system as a method of drilling horizontal wells. The revolutionary design allows the operator to utilize the benefits of a conventional BHA while at the same time, capitalizing on the advantages of continuous drill string rotation.

## OVERVIEW:

Seneca Resources has seen repeat success using the RotoSteer™ tool on the 110HU and 111HU wells in Tioga County, Pennsylvania. The RotoSteer™ outperformed the conventional assembly and TD'd the 110HU well at a planned depth of 27,687'. It was used to drill 8,341 feet from 19,346' to TD with an average ROP of 130'/hr, a full 70% faster than a conventional approach with vibration tools.



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## ROP DATA AT DEPTHS:

ROP Data at Depths > 20,000 FT				
Well	Well MD	Avg. Rotating ROP	Avg. Sliding ROP	Overall ROP
No. 1	28,133	127.6	8.4	78.9
No. 2	28,301	113.6	14.1	95.5
No. 3	28,246	114.6	14.9	79.9
No. 4	24,973	88.0	8.4	47.9
No. 5	26,170	107.8	19.0	80.2
<b>No. 6</b>	<b>27,687</b>	<b>137.0</b>	<b>58.3</b>	<b>130.1</b>
<b>No. 7</b>	<b>26,399</b>	<b>126.1</b>	<b>58.6</b>	<b>114.8</b>

ROP Data at Depths > 20,000 FT			
Well Type	Avg. Rotating ROP	Avg. Sliding ROP	Overall ROP
Non-RotoSteer™	110.3	13.0	76.5
<b>RotoSteer™</b>	<b>131.6</b>	<b>58.4</b>	<b>122.5</b>
% Improvement	19.2%	350.9%	60.1%

- In the RotoSteer™ trials on number 6 and 7, the curve and part of the lateral were drilled conventionally then tripped for the RotoSteer™ tool at approximately 20,000 ft MD and 18,500 ft MD respectively.
- Increase in sliding ROP of 350% from average of 13 ft/hr to 58 ft/hr
- Increase in rotating ROP of 19% from 110 ft/hr to 137 ft/hr
  - Maximum ROP peaks were not as high with RotoSteer™ tool, but overall rotating ROP average decreased less significantly throughout the lateral than non RotoSteer™ runs
- Increase in overall ROP average of 60% from 76 ft/hr to 122 ft/hr

Due to the capabilities of the RotoSteer™, the team was able to slide for 37' in 34 minutes at 26,937' which was approximately 17,755' Vertical Section. Important to note: Of all the wells drilled with bent housing tools, this was the deepest slide on record and was performed efficiently and economically within 713' of the total depth of 27,687'.

## RECORD BREAKING RESULTS

Congratulations to our US Distribution Partner, *Drilling Tools International*, and Seneca Resources on this milestone achievement using the RotoSteer™ tool.

