



# Teros™ Low ECD Synthetic-Based Drilling Fluid System Increases Feet per Day Drilled by over 33%, Reducing Days on Well and Overall Costs, Marcellus Shale USA

Newpark’s expertise, ClearTrack™ hydraulic modelling software and customized Teros™ drilling fluid system enables operator to reduce costs by increasing drilling performance and efficiency

CHALLENGE	SOLUTION	RESULT
<ul style="list-style-type: none"> <li>Conventional oil-based fluid (OBM) systems can’t keep up with operational challenges</li> <li>Long laterals have potential for drilled solids build-up</li> <li>Low rate of penetration (ROP) as a result of drilling issues</li> </ul>	<ul style="list-style-type: none"> <li>A customized Teros™ Low ECD Synthetic-Based Drilling Fluid System</li> <li>Teros system engineered with optimized rheology profile to maximize hole-cleaning and ECD management</li> <li>ClearTrack™ fluid hydraulics modelling software to develop ECD roadmaps</li> </ul>	<ul style="list-style-type: none"> <li>Wells drilled 2.3 days faster than conventional OBM</li> <li>Days per 10,000 feet drilled reduced by 21%</li> <li>Feet drilled per day was increased by 33.7%.</li> <li>Lower ECD values achieved</li> <li>Reduced overall well cost</li> </ul>

## CHALLENGE

An operator drilling in the Marcellus Shale was experiencing poor drilling performance using conventional oil-based drilling fluid (OBM) systems. Improve drilling performance while reducing overall well cost was their primary driver in seeking alternative solutions.

When drilling extended-reach wells, drilling solids accumulation in the lateral section quickly becomes a problem, and this cuttings retention creates challenges in maintaining the desired drilling fluid properties and slows the drilling rate of penetration (ROP).

This build-up and degradation of cuttings downhole necessitates increasing the base fluid dilution and product consumption due to larger surface area of the solid particles. This in turn translates to higher costs for the operator. Elevated rheological profiles of conventional oil-based fluid systems also lead to increased equivalent-circulating density (ECD) posing a higher risk to downhole losses.

## SOLUTION

Following extensive consultation with the operator, and thorough laboratory evaluation, Newpark proposed implementing Teros™, a high-performance non-aqueous drilling fluid system. With superior emulsifier and wetting capability, this engineered fluid system is field-proven to deliver the drilling performance required by the operator, especially in the challenging lateral sections.

Teros facilitates more efficient solids removal at the same conditions (such as flow rate and mud weight) when compared to conventional OBM while being able to consistently maintain optimal fluid properties.

The rheology profile of the fluid is also optimized at to perform at a wide range of temperatures and pressures.

# Case History



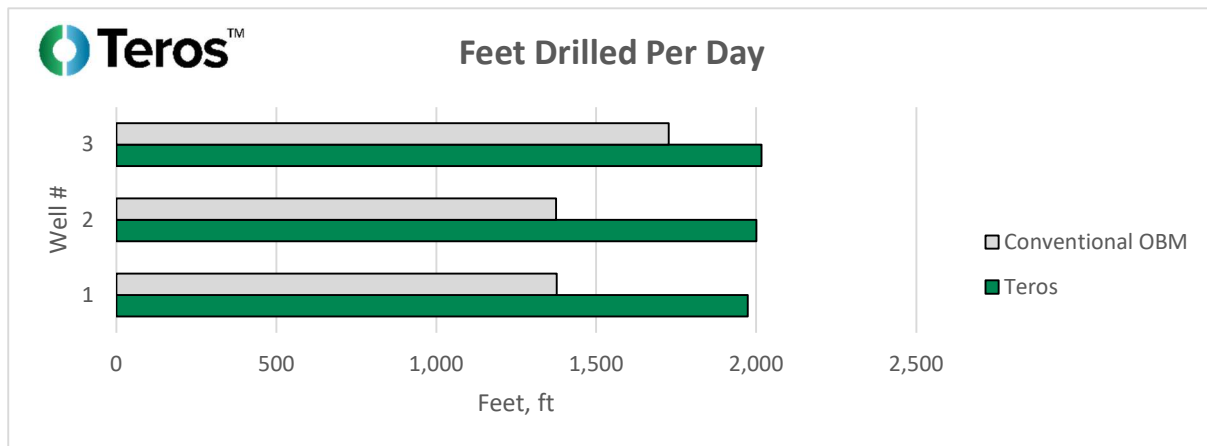
Newpark fluids specialist also utilized ClearTrack™ fluid hydraulic modelling software to synthesize the rheology data and input, matching the downhole operating parameters, into actionable ECD roadmaps as well as surge and swab optimization with the goal of minimizing trip times.

## RESULTS

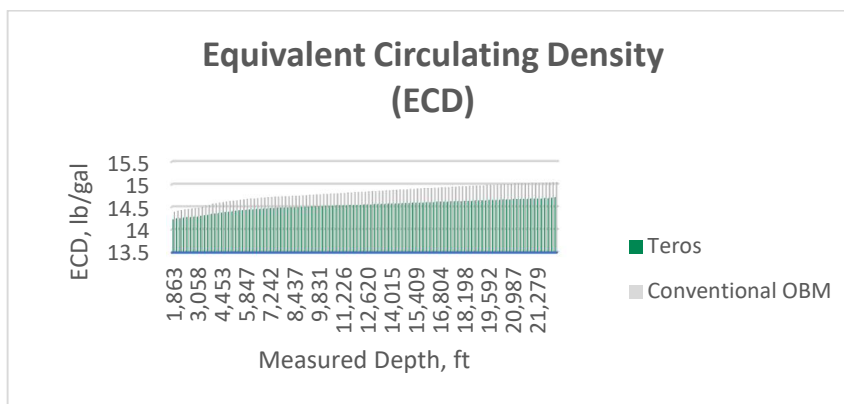
Teros successfully outperformed the conventional oil-based fluid systems used on previous wells. Rheological profiles were maintained in optimal ranges leading to lower ECD values which minimized the operator's risk to downhole losses.

Over a 6-well comparison, drilling with the Teros fluid system showed the following performance improvement:

- Interval drilled on average of 2.3 days faster
- Days per 10,000 feet drilled were reduced by 21%
- Feet drilled per day was increased by 33.7%.

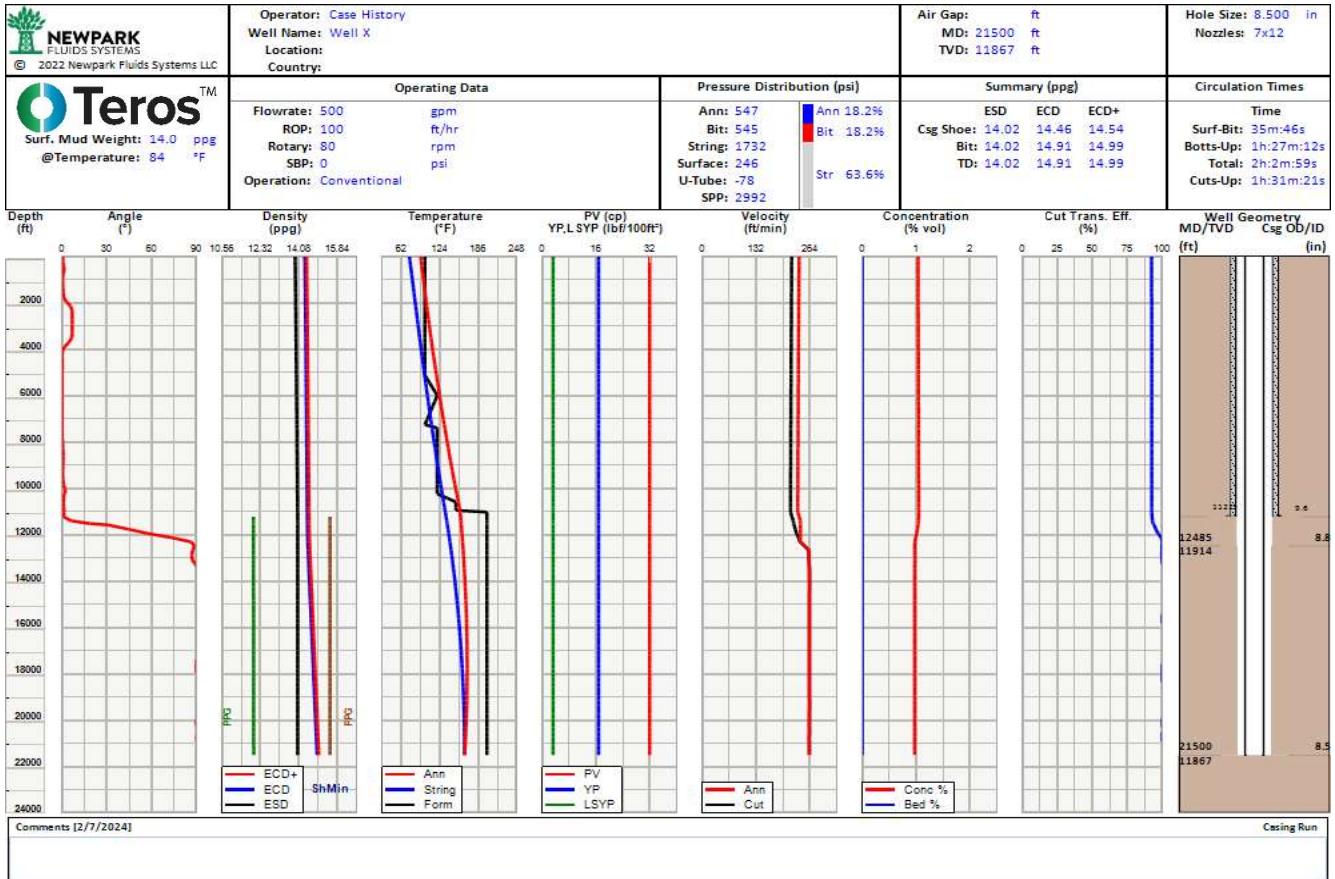


When comparing the average feet drilled per day, Teros delivers an average of 504 feet per day advantage when compared to conventional oil-based fluid systems.



Comparing the Equivalent Circulating Density of Teros against conventional oil-based fluid systems, the risk of downhole losses is greatly reduced by lowering the ECD value by 0.34 lb/gal.

# Case History



\*The information in this report is based on our experience and represents our best judgment in the matter and is intended to be helpful, but we cannot assume responsibility for any loss or accident that may result from its use. Furthermore, nothing contained herein shall be construed as a recommendation to use any product in conflict with existing patents covering any materials or uses (ClearTrack 2024)

Newpark's proprietary ClearTrack™ fluids hydraulic modelling software