

Evolution[®] Brine System Reduces Drilling Days and Decreases Product Usage

Williston Basin, United States

Challenge

Reduce drilling days

Solution

Evolution brine system with EvoLube high-performance lubricant

Results

Operator saves 30% by reducing drilling days and product usage

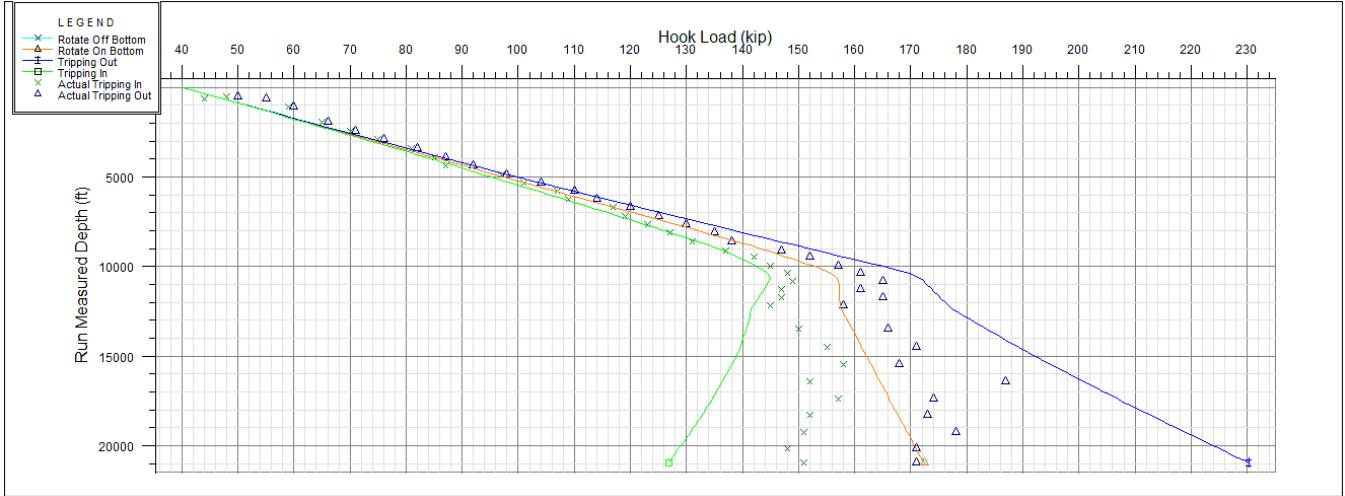
Horizontal drilling presents several challenges in the Williston Basin. The average well is drilled to a measured depth (MD) greater than 20,000 ft (6,100 m) with a true vertical depth (TVD) of 10,500 to 11,500 ft (3,200 to 3,500 m). High torque and excessive drag are challenges faced throughout the long laterals, and low lubricity coefficients are necessary to reduce pipe deterioration. Typically, produced water is used as the production interval base fluid because it contains both monovalent and divalent ions. However, since these ions can be detrimental to drilling fluid additives, the selection of the drilling fluid and lubricant were critical.

Evolution brine system using EvoLube high-performance lubricant was selected for this challenge. Concentrations of EvoLube friction reducer were made according to operational requirements and lubricity coefficients were measured daily to ensure optimum performance. Dewatering systems promoted clean brine and reduced the low-gravity solids to less than 1% by volume. EvoCon[®] fluid conditioner prevented the loss of lubricant by keeping the solids from becoming oil-wet. By reducing the loss of lubricant with the solids-control systems, lubricant costs were significantly reduced.

The performance of EvoLube and EvoCon friction reducers worked effectively to enhance the low lubricity coefficients and minimize pipe wear. By monitoring product additions based on lubricity, numerous horizontal intervals were drilled in less than five days. The operator realized savings in both reduced drilling days and lower product consumption.

- Average Depth: 20,000 to 21,500 ft (6,100 to 6,550 m) MD
- Average TVD: 10,500 to 11,500 ft (3,200 to 3,500 m) MD
- Average Lateral: 9,500 to 10,800 ft (2,900 to 3,300 m)
- Longest Lateral: 14,107 ft (4,300 m)

Case History



Torque and drag diagram showing improvements obtained using Evolution with general reductions of 15 to 25% in openhole friction factors.