# CASE STUDY – DRILLING FLUIDS

## The Novel Application of CLEAR Slide to Enhance Lateral Length

### Challenge

Across Western Canada operators have been trying to extend lateral lengths to "new limits". This often pushes the boundaries of what conventional fluid systems can achieve. Floc brines for example can provide substantial gains in ROP but can eventually result in exceeding the torque limitations of the drilling equipment. This increases the difficulty in sliding and controlling directional tools on lateral wells. Liquid lubricants can be added to enhance the brine, but they generally only provide temporary gains.

By providing a fluid system that combines the lubricity benefits of OBM with the ROP enhancements of floc brine, new lateral lengths can be reached. Preferably, without dramatically increasing the cost of the fluid itself or the maintenance cost.

### Solution

The solution is the application of a filtercake, in which, coefficient of friction modifying materials can be embedded to provide sustainable and maintainable benefits. This filtercake will trap liquid lubricants exactly where they are needed rather than allowing them to coat drilled solids which are then removed. Efficiently using the lubricant reduces waste and lowers the cost of maintenance.

To further reduce the total cost of ownership, great care was taken to ensure the system will maintain its' ability to flocculate and be able to switch from a polymer system to a basic floc system with minimal treatment. This reduces the risk of "dump and dilute" treatments, which add up extremely quickly.

Beyond's novel polymer system is compatible with any base brine (including produced water) allowing for a wide range of densities to be utilized while maintaining solids-free. This provides further benefits in ROP.

With CLEAR Slide operators can expect:

- Reduced torque/drag compared to floc brines
- Greatly enhanced ROP compared to OBM
- A system compatible with all brines and able to maintain solids-free
- The ability to react to real-time hole conditions and viscosify, as needed
- A substantially lower per $m^3$ cost compared to a similar density oil-base mud (depending on base brine)

### Results

Provided below are the drilling results of 2 lateral intervals using CLEAR Slide. Using CLEAR Slide on the second well of a two-well pad showed significant drilling improvements with ROP comparable to brine while torque remained comparable to invert.

**Figure 1** presents a comparison of two wells of a similar trajectory on the same pad. Notice the significant drop in torque as CLEAR Slide was introduced to the system, with OBM providing no additional benefit.

**Figure 2** highlights the ROP benefits of CLEAR Slide vs OBM. Allowing wells to be drilled with a lower total cost, in less time.

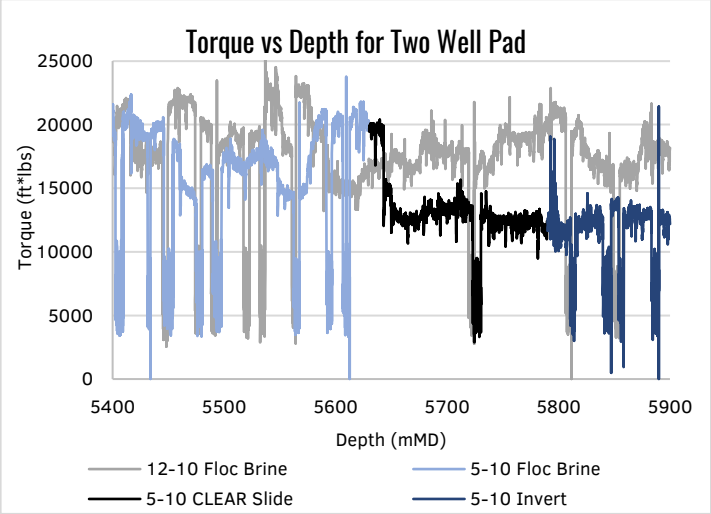


**Figure 1: Torque vs Depth for (12-12) pad**

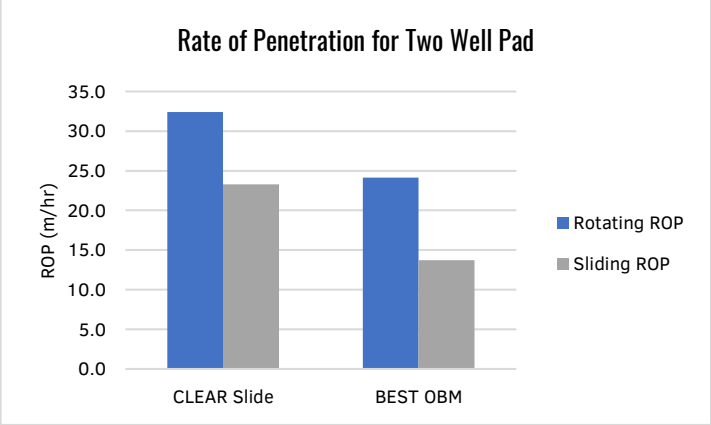


**Figure 2: Rate of Penetration Comparison for (12-12) pad**