

Multivariate Statistical Analysis of Bakken Completions – Aiming for Optimal Design

*Mark Lenko, Intelligence Director (interim), Engineering Director, Canadian Discovery Ltd.
Samantha Foster, Intermediate Engineer, Canadian Discovery Ltd.*

Canadian Discovery Ltd. (CDL) has used a multivariate statistical analysis to examine the optimal completion techniques that maximize Estimated Ultimate Recovery (EUR) and minimize half cycle (drilling and completion costs) for wells drilled in the Viewfield Area of the Bakken Resource Play. Operators have tried a variety of operational practices that have yielded a spectrum of results, and shows a path toward optimal outcomes.

Using detailed well completion information from CDL's Well Completion and Frac Database (WCFD) as well as EUR and drilling and completion costs, from CDL's Catalyst software, a multivariate statistical analysis was carried out to identify which combination of operational practices would increase the probability of a) maximizing resource recovery and b) minimizing the half-cycle cost per boe. This is a classification problem that is widely used in other industries, such as medical diagnostics, but also has interesting, and underutilized applications for energy development.

The talk will outline the region of focus, data used, the statistical technique, results of the analysis and potential improvements and applications for future work.