

Optimization of Completions in Unconventional Reservoirs for Ultimate Recovery

Rocky Seale¹ and DJ Snyder²

¹Packers Plus Energy Services Inc., Houston, TX 77069, rocky.seale@packersplus.com

²Packers Plus Energy Services Inc., Houston, TX 77069, dj.snyder@packersplus.com

Over the last decade, an industry wide shift to unconventional plays has occurred due to advances in technology allowing for the recovery of previously uneconomic reserves. The primary objective of completions in these unconventional reservoirs is to increase the effective surface area of the well to maximize reservoir contact. Horizontal drilling and multi-stage fracturing are two technologies which have accomplished this. The two main methods of horizontal, multi-stage completions currently used in unconventional reservoirs: cemented liner “plug and perf” and open hole, multi-stage fracturing systems.

Operators working in a number of unconventional reservoirs, such as shales and other tight rock formations are experiencing faster than expected production decline rates, resulting in reduced long-term, ultimate recovery. This may be in part due to the abandonment of good fracturing practices, developed over the past 50 years, with the advent of horizontal, multi-stage fracturing. Issues such as near wellbore conductivity, flowback, and fracture tortuosity that can have a significant effect on the long-term production of wells need to be considered when choosing a completion method, particularly for unconventional reservoirs.

This presentation will provide an introduction to unconventional reservoirs, describe the main methods of horizontal, multi-stage completions, discuss how the choice of method can affect good fracturing practices and provide case study examples from a variety of unconventional reservoirs including tight sandstone, limestone and shale.