An Analytic Approach to Sweetspot Mapping in the Eagle Ford Unconventional Play

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Abstract

The Eagle Ford Shale in South Texas is one of the top producing, yet complex unconventional plays in North America. Well-to-well production variability confounds a "factory" approach to field development, as preferred by many operators. Greater insight into sweetspot locations and optimal drilling and completions parameters is required to drive enhanced well production. While the breadth of engineering, geology and geophysics variables are daunting – modern analytic techniques provide a means to assimilate and comprehend massive amounts of disparate data.

In this study, over 3500 horizontal wells are modeled with non-linear analytics, to identify what geophysical and geologic properties define drilling sweetspots and what drilling and completions parameters drive better well production. Reservoir depth, related to pressure and thermal maturity; oil/gas mixture; thickness and proximity to faults are some of the major identified controls of Eagle Ford production sweetspots. Nominal well lengths of approximately 5500 feet with 25 fracture stages as some of the key drilling and completions parameters that correlate with optimal well production. Combining these results with current economics for oil, gas and liquids provides a unique perspective into targeting factory-based field development in unconventional plays.