
A Workflow for Rapid Well Location Ranking in Resource Plays

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EXTENDED ABSTRACT

The development of pervasive unconventional hydrocarbon plays within the last decade has fundamentally changed how drilling locations and targets are selected. During the initial acceleration of drilling activity to exploit these unconventional reservoirs, wells were typically rapidly planned and drilled statistically based on access and surface considerations, while targeting primary geologic zones. Recent economic conditions, however, require a more disciplined approach whereby multiple geological and geomechanical performance indicators must be considered to ensure favorable economic results. However, analysis and definition of prime reservoir positions can be a laborious activity, with persistently high levels of uncertainty.

From a development standpoint, the ranking of drilling opportunities, based on a confidently-risked understanding of key performance indicators, leads to a more effective and efficient drilling schedule. Optimally economic wells can be drilled early in the schedule, while poor performers can be avoided, with potentially significant impacts on capital expenditure, cash flow, estimated ultimate recovery, and rate of return.

Ranking locations can also be applied at the exploration stage to direct land acquisition and shed marginal acreage. The most profound question can be: Where to start? Resource plays can cover thousands to hundreds of thousands of square miles. Finding the most attractive acreage can at first appear an overwhelming endeavor.

Herein we present a workflow to streamline this process. We demonstrate data import, aggradation, computation, and delineation for improved ranking of possible drilling targets. Not only can these methods greatly increase success ratio, but the increased efficiency of the analytical process maximizes the utilization of costly and sparse human resources. Moreover, the workflow can be largely automated and configured for sensitivity analysis of key variables further streamlining the process. The result is a rapid ranking of drilling scenarios while adding more confidence to drilling decisions.

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