Stacked Deck:
Why Producers Like their Odds in the Permian
Calculating Wolfcamp Returns with RBN's Production Economics Model

- **Old is new again: one of the most exploited oil plays in history, the geologic honey pot known as the Permian Basin in West Texas and New Mexico, has become the fastest-growing production region in the U.S.**
- **The game is all about hitting the triple-commodity jackpot, where Permian producers enjoy multiple cash flow streams from crude oil, natural gas and natural gas liquids (NGLs).**
- **The Permian is many plays in one, with stacked layers of productive formations – with results from each improving due to advances in horizontal drilling and hydraulic fracturing technologies. Permian producers are "cracking the code" in many of the potential pay zones.**
- **The economics are compelling. Using RBN's production economics model, results for a representative horizontal well in the Wolfcamp play show a 63% IRR and a EUR of 1.2 MMBOE. The well recoups costs in just under a year and can break even at an exceedingly low $34/bbl. *Model download included with this report.***

The Permian is coming back again, bigger and better than ever. This twice-written-off swath of the oil patch is shaping up as the monster sandbox of future oil and gas plays, thanks to 1) better-than-expected triple commodity paydays, 2) the opportunity to produce multiple, "stacked" plays from a single location, and 3) its prime, industry-friendly location. Consequently, a number of producers are seeing very attractive rates of return in the Permian. But execution and timing are everything. True, the resources are generally known and supposedly all producers need to do is "manufacture" oil from proven reserves. But it is not so simple. Decoding the ancient Permian to harvest tight oil remains a challenge, and very location-dependent. Unlike the Bakken, Marcellus and Eagle Ford, horizontal drilling in the Permian is only now becoming the dominant well trajectory. And each operator is using a different playbook to "break the code".

To illustrate how producers are achieving such attractive rates of return in the Permian, we will drill into the details. Accordingly, this report combines a review of recent, surprisingly positive results in the Permian, along with an analysis of a representative well in one of the emerging, prolific plays – the Wolfcamp in the Midland Basin. Using the latest version of RBN's Production Economics Model we demonstrate how a well that costs $7.5 million to drill and

complete can generate a 63% discounted cash flow rate of return by leveraging three commodity revenue streams - in our well's case: 60% oil, 18% gas and 22% NGLs.

In the first half of this RBN Drill Down report we provide background on shale development, discuss the Permian's geologic rewards and special challenges, review the production profile of recent wells in the region, and consider the significant work that producers have already put in to improve drilling efficiencies. We also address how the region's burgeoning supplies of crude oil, natural gas and NGLs are getting to market, and the advantage that the Permian's location in the industry-friendly oil patch confers.

In the second half of this report, we explore the inner workings of RBN's Production Economics Model as applied to what might be considered a "typical" (if there can be such a thing) horizontal well in the Wolfcamp shale strata of the Midland Basin. In this detailed review of well economics, we define the critical metrics used to evaluate a well's short and long-term potential, and describe how the modeling process arrives at a very attractive rate of return. You can download the spreadsheet and step through the process with us. Armed with this tool, you can assess the sensitivity of the well's returns to changes in initial production rates, decline rates, commodity prices, drilling and completion costs, operating costs, and the mix of hydrocarbons that the well produces. The results demonstrate why drillers are deploying billions of dollars in the Midland Basin as this play heats up.

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