

## **Horizontal Value Add: Marchand and Lower Red Fork Sandstones, Anadarko Basin**

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### **ABSTRACT**

Excalibur Resources L.L.C., was funded by EnCap in October 2013. Six principles and seven staff work from our headquarters in Dallas TX with one superintendent in Weatherford OK. Our acquire and exploit business model began with our first PDP/ HBP acquisition in 2013 and continued at a brisk pace through 2016 when we shifted emphasis to leasehold acquisitions. Our first proof-of-concept wells, drilled in 2016 provided encouragement to an aggressive delineation program for 2017. As of April 2017, we own and operate nearly 100 vertical and horizontal wells across five counties holding about 70,000 acres; of which 45% is HBP, and 75% is operated with production of 2400 boepd and rising rapidly.

Our business model involves the horizontal development of several Pennsylvanian age sandstones that are present in the central portion of the Anadarko Basin from Ellis and Roger Mills counties on the west to Blaine, Caddo, Custer, Dewey, and Grady counties on the east. The Pennsylvanian age sandstones are from youngest to oldest: the Tonkawa, Cottage Grove, Marchand, Cleveland, and the Red Fork Formations. Horizontal wells in the Tonkawa and Cleveland Formations are numerous in Ellis, Roger Mills, and Dewey Counties. This provided the backdrop needed to develop our business model with respect to drilling and completion design, type curve analysis, and depositional model. Horizontal technology was at best in an infant stage for the Marchand Formation and all but absent for the Cottage Grove and Red Fork Formations.

Paramount in the early stages of project area development was the understanding of the depositional environment represented by each of the targeted formations (Marchand, Cleveland, and Lower Red Fork). Four project areas were chosen for development and included: Dewey (15N19W, 16N19W), Blaine (14N13W) and Custer (14N14W), and northern Caddo (9N10W to 11N13W). The Cottage Grove Formation in northern Custer County is suggested as a tide and storm dominated shoreline. The Marchand Formation in northern Caddo County and the Cleveland Formation in the Dewey County area represents a tidal influenced shoreline in a complex deltaic setting. The current thought for the Lower Red Fork deposition may be slope-basinal floor complexes.

Our first proof of concept horizontal well was a Lower Red Fork Formation (bench) test in Section 30, 14N13W, Blaine County. The Mel #2H-30 had a potential of 471 bopd and 2.3 mmcfd from a true vertical depth of 10,884' to 10,973'. Our second proof of concept horizontal well was a Marchand Formation (bench) test in Section 20, 11N12W, Caddo County. The Ruckman #2H-20 had a potential of 781 bopd and 900 mcfd from a true vertical depth of 9,996' to 9,934'. Total cumulative production to date is 47,009 bo and .07 bcfg since November 2016. The 2017 drilling activity has already begun with follow-up wells to last year's successes.