A Deposition and Reservoir Model for the Prue Sandstone in the Southwest Oklahoma City Area and the Effect of Foam Fracturing on Unlocking its Reserves

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The study area extends from Oklahoma City Field approximately 25 miles to the southwest and covers 10 townships. The study was originally a Masters thesis by John Broker. This original study and additional reservoir analysis lead to the drilling and completion of a significant discovery well in the Prue Sandstone in Section 22-T10N-R5W. This discovery has lead to the drilling of several development wells.

The study indicates that the Prue Sandstone was deposited around the western side of the Oklahoma City Field area as a highstand delta sequence. A significant drop in sea level then caused incision of a valley through the delta complex and deposition of a lowstand delta sequence west of the study area. The incision cut through the underlying Verdigris Limestone. Subsequent to incision, sea level rose, backfilling the valleys with sand and shales forming a major incised valley fill complex covering parts of the entire study area. The sandstone accumulated to a thickness of 80 feet.

Original completions in the Prue Sandstone date to initial development of the Oklahoma City Field in the early thirties. During the 1980's the Prue channel was developed west of the Oklahoma City Field with production extending 12 miles under the Oklahoma City Airport. Several wells west of this area encountered a lower porosity Prue IVF Sand which was tested and produced with minimal economic success. The aforementioned discovery in section 22-T10N-R5W was drilled in this area of known Prue sand but was completed with modern techniques. The results using new completion procedures have lead to further expansion of the play.

The integration of core analysis, log analysis, regional depositional modeling, sequence stratigraphy, and completion technology used in the Prue Sandstone has lead to a workable exploration model for Cherokee sands in the southeastern Anadarko Basin.