Building a Reservoir Model of the STACK Play Using Core Derrived Facies

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Abstract

Building 3D reservoir models can be a key to understanding key performance indicators, allowing teams to better predict well performance at all stages of play development. In highly heterogeneous reservoirs, predicting the interwell connectivity of reservoir properties is very difficult. This model used facies derived from over 3,000' of core in 7 wells and petrophysical analysis of 700 wells to describe 1500 square miles of the Anadarko Basin. Six key facies were identified in the core data, and then tied to the petrophysical logs. Facies specific statistical distributions of hydraulic properties from routine core analysis were developed. The facies were distributed in the petrel model using object based modeling, and the reservoir properties were then populated using the statistical distributions. Reservoir temperature, pressure, and GOR were incorporated to fully define the initial conditions. The modeled results along with the results of flow simulations were used to estimate the value of the undrilled portions of the play for future development.