

Reservoir Characterization and Modeling of a Keg River “Pinnacle” Reef, Shekilie Oilfield

J.M. Bever and B. Slevinsky - Petro-Canada Oil and Gas

The Keg River C2C oil pool is a small, Mid Devonian, “Pinnacle” Reef within the Shekilie Oilfield in Northern Alberta. The pool has been intersected by both vertical and horizontal boreholes which provide information to form a comprehensive, three dimensional reservoir model of a pinnacle reef.

Overall reef geometry and pool dimensions were interpreted using 3-D Seismic and well control. Log analysis, geological concepts of reef growth and comparison to subsurface and outcrop analogues were used to organize the variability within the reef.

A pinnacle reef model is progressively detailed to resolve increasingly, complex production issues. A preliminary “tank” model determines fluid and gas contacts and estimates reserves. A divided “tank” or block model assists with selecting perforation intervals, forecasting oil recovery and predicting the rate of primary depletion.

Additional, nearby well control is included in the reservoir model. Many “solutions” for reservoir variability are done using spatial statistical methods constrained by known well data. These sophisticated models are the basis for simulations used for designing and monitoring secondary and tertiary production practices.

Reservoir models and modelling generated on modern computer software given dynamic, continuous methods for reservoir management.