

Discovery of a Pembina Nisku Oil Pool: A Case History of a Nisku Shelf Edge Play

Barry Hebner* and Mike Doty
Rubicon Energy Corporation,
1250-250 5th Ave SW, Calgary, AB, T2P 3G6
bhebner@rubiconenergy.com

ABSTRACT

The Pembina Nisku GG Pool was discovered in June 2001 at Rubicon et. al. 102 Pembina 06-33-049-08 W5M. In-situ permeability of nearly 2 darcies was measured during a flow test in August 2001. Initial testing was restricted to 460 bbls/d of 40⁰ API oil with only a 0.4% bottom hole drawdown. Subsequent tests have shown a 0.8% bottom hole drawdown at a flowing rate of 1,485 boe/d.

Simulation models suggest only two wells may be required to deplete the pool. Primary recovery is expected to be significant due to the excellent reservoir and fluid properties.

Sour hydrocarbons migrated up-dip from thermally mature source rock to become trapped against Cynthia shale and marlstones infilling embayments along the irregular Nisku shelf margin. Accurate mapping of the crenulated Nisku shelf margin is essential to identifying hydrocarbon trap geometries. Outcrop and modern analogs will be presented to illustrate the nature of Nisku reservoir and Cynthia trap lithofacies and their depositional relationships.

An 18 square kilometer 3D seismic program was shot prior to drilling the discovery well to accurately map the geometry of the Nisku bank margin and associated embayments. Pre-existing well control was instrumental in calibrating a 3D seismic interpretation with facies changes within the Nisku reservoir and Cynthia trap lithologies.