

Williston Basin Anomalies

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ABSTRACT

Over the past 50 years, the SE Saskatchewan portion of the Williston Basin, has produced mainly from Mississippian Subcrop, Structural, and Stratigraphic play types. In 1995, Bob Yurkovich of Berkley Petroleum made an Ordovician Red River Yeoman discovery which re-ignited exploration in the Devonian to Cambrian section of the Williston Basin. Since that time at least 20 additional significant discoveries have been made in the Red River Yeoman beds. Since that time additional horizons, which had not previously been produced in the Canadian portion of the Williston Basin, have had significant discoveries. The Ordovician Winnipeg sand (55-65 degree API sweet oil) and the Devonian Duperow (Leduc eq.) (42 degree API sweet oil) have both produced with IP's over 100 m³/d and cumulative production of over 30,000 m³ in less than 3 years. Some of the cores of these zones pose interesting questions. For example, the Winnipeg sand is a regional fine to medium grained sand that seems to be porous and very permeable (Darcy permeability) over the entire SE Saskatchewan portion of the Williston Basin. Yet locally, over some basement features, the Winnipeg sand is rendered nearly impervious by apparent pressure solution. The Duperow discoveries vary laterally from a regional lime mudstone to possible localized hydrothermal dolomitization along fault trends. The dolomitization creates vugs large enough to drop a pen thru the core. These features along with new pool discoveries in the Mississippian Bakken, Devonian Birdbear (Nisku eq.), and Devonian Winnipegosis (Keg River eq.) all tend to be localized above or beside possible granitic basement intrusives. A core was taken of basement from the Froude Red River Yeoman discovery well.