

Reservoir Characteristics of the Cardium Formation in the Periphery of the Pembina Oil Field, Alberta, Canada

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Abstract

The Pembina Oil Field possesses a vast storage capacity in which a large number of wells produce from the Cardium Formation. In the subsurface of the Central Alberta Plains, the Formation grades from silty mudstones, wackes, into very fine to fine grained litharenites, which are unconformably overlain by conglomerates. An increase in drilling activity has been observed around the periphery of the Pembina Oil Field since the successful completion in 2008 of the well Bonterra Nexstar 4-25-47-03W5/1-25-47-03W5. However, among some of the successes the recent developments have resulted in wells with very high Gas to Oil Ratios (GOR) positioned relatively close to oil producing zones in the same stratigraphic interval. It is proposed that such difficulties arise to significant extent from the much more limited geological understanding of these marginal areas. The current research is aimed at developing our understanding of the geology and the fluid dynamics around Pembina's periphery and ultimately, to derive recommendations regarding improved exploration and recovery techniques with the potential to maximize recovery and efficiency of future wells.