

Hydrocarbon Potential of the Birdbear Formation in Saskatchewan

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Two petroleum systems define two widely separated production areas for upper Devonian Birdbear hydrocarbons plays in Saskatchewan: the Williston Basin petroleum system in southeastern Saskatchewan and the Alberta Basin (eastern edge) petroleum system in west central area of the province.

In the southeast, the Birdbear Formation hosts initial oil in place of 6.9 million m³ and has yielded in total 1.1 million m³ of light to medium oil from a total of 59 production wells out of 155 perforated wells, of which 13 are horizontal wells. Among the total production, 51% is produced from Hummingbird pool that is a structural trap associated with collapse structure caused by multiple-stage salt solution and 40% is produced from Kisbey pool, Tatagwa and the Walpole areas where up-dipping closures of non-permeable rock are the primary trapping mechanism.

In west-central Saskatchewan, heavy oil has been intermittently produced from the Birdbear since 1968. The recent application of horizontal technology in west-central Saskatchewan resulted in a sharp increase of production from 8 m³/day in December 2007 to 400 m³/day in December 2010. Most of the high producing wells are drilled in structural highs along the subcrop edge of the formation where the traps are formed by updip escarpment edges and reservoir quality is enhanced by dissolution during uplift and erosion related to the sub Mesozoic unconformity.

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