

Development of SAGD Reservoir-quality Facies Contained Within a Large Ancient Point Bar, McMurray Formation, Athabasca Oil Sands, Canada

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Current development at Petro-Canada's MacKay River *In Situ* project occurs within reservoir facies of large point bars. Geometry of the main point bar is defined using dipmeter data from over 100 wells that display a consistent radiating pattern of westward-dipping beds in the core development area. The point bar depositional model inferred for Mackay River is further supported by numerous sedimentological and ichnological features that are typical of large meandering channel/bar systems in the McMurray Formation. Within the Mackay River point bar, trends of varying pay quality have been mapped, and substantial variation can be demonstrated. Upstream and mid-portions of the bar contain some of the highest-quality pay trends. Upstream reaches of the bar can also contain thick intervals of mudclast-rich breccia related to bank collapse. Pay intervals in the downstream portions of the bar contain higher proportion of mudstone beds and generally more laminated pay. Particle size analysis has highlighted two trends, a general trend of eastward-coarsening across the bar and downstream fining along the bar.

Using a point bar depositional model at MacKay allows more focused data collection programs, and provides a framework for understanding the distribution of reservoir quality facies. Particle size distribution work has shown trends consistent with a point bar model, allowing future production to be optimized by selecting the slot sizes of production liners relative to predictable grain size trends.