# Exploration of the Upper Devonian Leduc Heavy Oil Carbonate Reservoir in Northeastern Alberta, Canada

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Approximately 100 km northwest of the city of Ft. McMurray, the northern terminus of the Leduc Rimbey-Meadowbrook reef trend subcrops beneath Cretaceous clastic sediments of the Athabasca deposit. Previously, the Leduc Formation in northern Alberta was poorly understood because of the limited deep well control and the lack of core information. However, recent exploration activity has provided new subsurface information that has quantified the reservoir potential of the Leduc Formation. With this new data, the Leduc Formation has been identified as an exciting prospect for future bitumen development because its excellent reservoir quality and its significant resource base of more than 10 billion barrels of bitumen in place.

Like the Leduc reefs in south-central Alberta, the Leduc Formation in northern Alberta displays excellent reservoir characteristics. It is a porous reefal dolostone with high permeability. In northern Alberta, the original vuggy and moldic porosity is also enhanced by karst related dissolution. In some zones, there are bitumen lined sub-vertical to vertical fractures, large vugs, and in extreme circumstances metre size “caves” that are filled with bitumen. Work is ongoing to identify method(s) that will exploit this resource.