

Approach to a Precise Geologic Model of a Point Bar, McMurray Formation, Southern Athabasca Oil Sands Area

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Abstract

Petrobank is constructing the WHITESANDS pilot project to field-demonstrate its patented THAI™ (Toe-to-Heel-Air Injection) oil sands recovery process. THAI™ is a revolutionary new combustion process, that combines a vertical air injection well with a horizontal production well. During the process a combustion front is created where part of the oil in the reservoir is burned, generating heat which reduces the viscosity of the oil allowing it to flow by gravity to the horizontal production well. The combustion front sweeps the oil from the toe to the heel of the horizontal producing well recovering an estimated 80 percent of the original oil-in-place while partially upgrading the crude oil in-situ.

To ensure success of the THAI™ process, a reliable geologic model is constructed based on the integration of regional geologic study, 3-D seismic data, core, FMI and conventional logs. Regional geologic study helps to understand the stratigraphy and depositional environment of the McMurray Formation. 3-D seismic is used to define the channel trends and boundaries. Core and conventional logs are the basis for detailed facies classification and interpretation. FMI is the key to delineate the 3-dimensional geometry of the point bar, especially to depict the attitude of IHS precisely.