

Exploration strategy based on a proven sedimentological model for the glauconitic sandstone (Lower Cretaceous) of Southern Alberta

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Abstrak (Abstract)

A comprehensive sedimentological study of the glauconitic sandstone (Mannville Group) of Southern Alberta has shed light on the reservoir complexities and sandbody geometry of this important hydrocarbon-producing formation. The study includes most of the glauconitic pools from Countess to Rockford, which occur within a pronounced southeast-northwest trending paleovalley, incised into regional Ostracod beds.

Both high permeability glauconitic and younger, low permeability Upper Mannville channels followed the same valley. Where directly overlain by an Upper Mannville channel, the glauconitic was usually truncated or completely removed by erosion. This resulted in isolated pods of glauconitic sandstone, which form ideal stratigraphic traps.

Sedimentological and petrographic analysis of glauconitic and Upper Mannville sandstones has shown that they can be differentiated on the basis of texture, sedimentary structures, and mineral composition.

With the use of 3-D seismic, glauconitic sandstones and cross cutting Upper Mannville channels can be accurately mapped. Seismic surveys should be confined to the width of the paleovalley that can be identified on well logs by the absence of region ostragod beds. The integrated approach of using a sound sedimentological model coupled with 3-D seismic has led to a highly successful drilling program throughout the study area since 1989.