

**A re-evaluation of the shoreface, channel, and regional sand facies within the Colony and McLaren formations, upper Mannville Group, east central Alberta: implications for reservoir potential**

**James Newsome**

*Department of Geology, Acadia University, Wolfville, Nova Scotia B0P 1X0, Canada*

The Cretaceous Mannville Group in east-central Alberta has proven to be a prolific heavy oil and gas reservoir. The Colony and McLaren formations (upper Mannville Group) contain mud-dominated regional sands, with progradational shoreface deposits aligned in a northeast-southwest lineation. Sand filled channels are common as well and, in the past, have been considered as the primary exploration target. Most previous estimations of reservoir potential have relied heavily on the combined Colony and McLaren channel sands. This study is an attempt to re-evaluate reservoir potential by considering channel, shoreface, and regional sand facies within the Colony and McLaren formations as separate and unique exploration targets.

Channel, shoreface, and regional sand facies were identified within the Colony and McLaren formations through the evaluation of 360 Gamma/Neutron-density and Specific Po-

tential/Resistivity logs from the study area. Interpretations were verified through correlation with core samples. Seven distinct depositional successions were identified. These interpretations were used to construct separate isopachs for the Colony and McLaren formations in which the channel, shoreface, and regional sand facies were all delineated. It was found that the majority of gas is located within these channel facies. However, significant gas was also delineated within the shoreface facies, and to a lesser extent, within the regional sand facies. The size and shape of shoreface and regional sand facies, in conjunction with structural maps, can be used to accurately assess pool volumes and potential for interconnection. With this data it is now possible to estimate remaining gas volumes in individual pools, a valuable aid in acquiring land for future exploration and development.