

**EVALUATION OF A COMPLEX LOWER  
MANNVILLE CHANNEL PROSPECT:  
INTEGRATED GEOLOGICAL AND  
GEOPHYSICAL MODELS**

J.C. HOPKINS and D.C. LAWTON  
Department of Geology and Geophysics,  
University of Calgary, Calgary, Alberta T2N 1N4  
and  
J.D. GUNN  
Lacana Petroleum Ltd.  
503, 706 - 7th Avenue S.W., Calgary, Alberta

**A Lower Mannville channel complex in southern Alberta was identified on a conventional seismic section by an erosional valley in the Mississippian surface. The channel was drilled and forty metres of argillaceous sandstone was**

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recovered from the target interval. Oil staining was visible within the core but tests produced only muddy water. In contrast, thin sands updip and adjacent to the channel tested up to 300 m<sup>3</sup>/day gas and 800 m of oil.

Sediments adjacent to the channel are interpreted as contemporaneous levee and splay deposits, whereas the argillaceous sandstone within the channel is either a fine-grained point bar or an abandoned channel fill. In the latter case, coarse sandy point bar deposits can be expected to occur elsewhere in the channel system.

The internal geometry of the channel fill cannot be resolved directly from the seismic data because of the small size of the channel. However, the planar form of reflections from sediments directly above the channel shows that there is little compaction of the fill and implies it to be sand-dominated rather than shale-dominated. Reflection geometry above Lower Mannville channels can provide a means of determining the type of channel fill.