



## A Major Onshore Carboniferous Basin Development: McCully Field, New Brunswick

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### Abstract

The McCully Field was discovered near the town of Sussex, New Brunswick in 2000 by Corridor Resources Inc. and partner Potash Company of Saskatchewan (PCS). The source and reservoir rocks of the McCully Field occur in the fluvial and lacustrine Albert Formation of Early Carboniferous age, which is part of the Moncton Basin. As of March 2006, 14 wells were completed in the field and all encountered producible gas. An independent geological and engineering assessment estimates a P50 reserves of 252 bcf over an area of approximately one fifth of the McCully Field. Pressure analyses from the two wells that have been on production since 2003 indicate that these two wells alone “see” more than 50 bcf.

There are at least five reservoir sand packages (A to E) that are separated by widely correlatable shale intervals. The bottom two packages (A and B) are the thickest and have the best quality reservoirs. Porosities range from 3 to 10 percent and air permeabilities from .01 to 4 mD. The sands have little clay with porosity destruction occurring through quartz and feldspar overgrowths, carbonate cementing and occasional bitumen infilling.

Very low water saturations ( $S_w$ ) and high compressive strengths mean that in situ permeabilities are only about half of air permeabilities. However the low  $S_w$  means that the rocks are very susceptible to phase trapping by water. This is demonstrated by the dramatic productivity improvement shown by: 1) water-based fracs with long-term shut-in and 2) the addition of surface-tension reducing agents in the latest frac campaign.

The outlook for the field has been improved through the use of 3D seismic to ensure the full stratigraphic section is intersected (the A sand was missed in earlier wells due to structural complexities) and through much the greater success from the 2005 frac campaign as compared to the 2002 frac campaign.