

The Coalbed Methane Potential of the Upper Cretaceous Horseshoe Canyon Formation: Evidence from Outcrop of the Red Deer River Valley

By

Dwayne F. Giggs

University of Alberta, Department of Earth and Atmospheric Sciences,
Edmonton, Alberta, Canada (dgiggs@ualberta.ca)

In the well-developed Western Canada Sedimentary Basin that has extensive, well-documented coal resources, coalbed methane is fast becoming a new and exciting play. In this era, because of the need for cleaner fuel sources, these coal resources are being evaluated as a source for more ecologically sound methane gas that is found in water contained within coal seams and bound to the coal itself. The coal seams also have potential as a sink for greenhouse gases because coal can preferentially adsorb carbon dioxide after the methane is produced.

Study is focused on the coalbed methane potential of the Horseshoe Canyon Formation of the Uppermost Cretaceous of the Alberta Foreland Basin. After retreat of the Bearpaw Sea, the Horseshoe Canyon was deposited as a prograding clastic wedge during Campanian and Maastrichtian time. Deposits are mainly marginal marine but range from non-marine to marine successions that consist of interbedded mudstones, siltstones, and sandstones with as many as ten coal seams.

The area of investigation is near Drumheller, Alberta, Canada, on the expansive outcrop in the Red Deer River valley. The thesis will concentrate on the methane production potential of the coal seams and the effects of the inter-seam strata on this production. The research strategy includes an extensive, detailed outcrop and core study using an integrated approach including sedimentology, stratigraphy, and ichnology. Upon completion, I will have defined some of the potential, as well as limitations, of coalbed methane as a resource in this part of the Western Canada Sedimentary Basin.