

Coalbed Methane Potential of Upper Cretaceous-Tertiary Strata in the Alberta Plains

A. Beaton*, C. Pana, D. Chen and W. Langenberg
Energy and Utilities Board, Alberta Geological Survey,
4999-98 Ave, Edmonton, Alberta, Canada T6B 2X3
*abeaton@gov.ab.ca

Coal-bearing strata of Upper Cretaceous-Tertiary age cover approximately 250,000 sq. km of the Alberta plains. Strata within the Alberta Plains gently dip westward from outcrop towards the Alberta Syncline, where depth of Upper Cretaceous-Tertiary coals can exceed 2000 m. Coal rank within these strata varies from subbituminous at surface to high volatile A bituminous at depth.

The main Upper Cretaceous-Tertiary coal-bearing strata include the Scollard, Horseshoe Canyon and Belly River formations. Scollard Formation coals are thick (locally >20 m net coal) and laterally extensive. Upper Cretaceous Horseshoe Canyon coals are somewhat discontinuous and generally thinner than the Scollard coals, however local thick coal pods containing up to 16 m net coal are present. Belly River coals (Upper Cretaceous) are also discontinuous, are thinner than Scollard coals, and rarely exceed 5 m net coal thickness.

Scollard coals have been the targets of early CBM exploration, although relatively few wells have been tested and data reported. Gas contents typically range from 2-4 cc/g, values consistent with the low rank of these coals. Limited testing suggests low permeability, ranging from <1 md to 7 md. There is no public domain data available on the Horseshoe Canyon and Belly River CBM contents.

Mapping of coal distribution, coal quality, gas contents and isotherm data have allowed estimation of CBM potential for the major coal zones within Upper Cretaceous-Tertiary strata in the Plains.