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Coal and Coalbed Methane Potential of Upper Cretaceous-Tertiary Strata in the Plains Region, Alberta, Canada

The Plains region of Alberta is underlain by approximately 250,000 sq. km. of coal-bearing strata ranging in age from Upper Jurassic to Tertiary. Coal rank varies from lignite-subbituminous at surface to semi-anthracite at maximum depths exceeding 3500m in the foreland basin near the mountain front.

The main Upper Cretaceous-Tertiary coal-bearing formations (surface to ~2000m) include the Scollard, Horseshoe Canyon and Belly River. Tertiary Scollard Fm. coals are thick (locally >20m net coal) and continuous. Upper Cretaceous Horseshoe Canyon coals are discontinuous and tend to be thin, with local thick coal pods containing up to 16m net coal. The older Belly River coals (Upper Cretaceous) are also discontinuous, are thinner than Scollard coals, and rarely exceed 5m net coal thickness.

Scollard coals are one of the main targets of CBM exploration, although relatively few wells (<25) have been tested and data reported. Gas contents typically range from 2-4cc/g. Limited permeability testing suggests in-situ values ranging from <1md to 7md. Gas contents vary between Scollard coal seams.

Recent work has focused on the regional-scale relationship between the complexity of the clastic wedges of Alberta sedimentary basin with coal characteristics and the enhanced methane potential. Detailed geological cross sections and coal distribution maps, combined with coal quality data, gas contents and adsorption isotherm data will be presented in a framework for coalbed methane exploration in the Alberta plains.