

Lithological Variations within the Colorado and Montana Group in Eastern Saskatchewan and its Implication for Gas Exploration

Melinda Yurkowski*
Saskatchewan Industry and Resources, Regina, Saskatchewan, Canada
myurkowski@ir.gov.sk.ca

and

J. Christopher
Consultant, Regina, Saskatchewan, Canada

Abstract

The Colorado and Montana Groups of eastern Saskatchewan consist almost entirely of shales, with subordinate amounts of marlstones, limestones and sand. Sediments were deposited in both marine and non-marine environments that were controlled by both cyclic eustasy and regional tectonics. Numerous unconformities and variable facies recognized in the eastern margin of the Western Canada Sedimentary Basin, and recognition of eastern provenances suggest a complex geological setting. Correlation to western counterparts support recognition of major unconformity surfaces as well as lateral facies changes.

The Westgate, Fish scales and Belle Fourche dark grey shales are capped with the calcareous shale and argillaceous limestone of the Second White Specks (Greenhorn) Formation, whereas the Carlile and Niobrara are dominated by bituminous black shales and coccolithic shales, marlstones and limestones. The Alderson (Milk River) are more marine medium to light grey cyclic shales and muddy siltstones. Belly River sands, which are encased in the shales of the Lea Park and the Bearpaw, extend eastward well past the second meridian in Saskatchewan.

The major unconformities that are recognized throughout the Montana and Colorado Groups in eastern Saskatchewan may play a significant role in the trapping of hydrocarbons. Anecdotal information and DST evidence of hydrocarbon shows within the Colorado and Montana Groups in eastern Saskatchewan as well as limited production from a small number of wells all point to the need to further evaluate the hydrocarbon potential of this sparsely tested region.