Shale Gas Prospects of the Carboniferous Sediments from New Brunswick and Nova Scotia, Eastern Canada

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Abstract
Various physical and geochemical constraints of the organic-rich sediments (mainly shale) from the Carboniferous Horton (lacustrine facies) and Cumberland (terrestrial facies) Groups of New Brunswick and Nova Scotia have been evaluated to illustrate the overall petroleum potential. The current data suggests that the amount of methane adsorption or overall C1 to C6+ hydrocarbon variability observed by headspace analysis and determination of porosity/permeability of various shale samples depend on organic facies, maturation and structural stress.

The Horton Group shale from the McCully Field, New Brunswick and Antigonish, Stellarton or Windsor subbasins from Nova Scotia have a gas capacity that varies between 1 to 10 cm3/gm (associated coals have 3-20 cm3/gm). The amount of dry and wet gas content depends on the lipid enrichment (related to TOC and hydrogen index values) and fractionation due within the lithological facies variation (shale versus sandy shale or sandstone). Evidence of gas seepages, gas concentrations from various geochemical analysis in various shale and associated sandstone samples, and the presence of micro-fractures within various organic-rich shales (especially within the gas-charged shale in an advanced maturity) from these basins suggest that thick organic-rich Horton and Cumberland (Early and Late Carboniferous age) Group shales could be major prospects for unconventional dry shale gas in these basins.