

Resource Play Potential of the Ordovician Utica Shales Quebec Lowlands

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Ordovician Utica shale gas potential in the Quebec Lowlands was demonstrated within a structural anomaly at Villeroy, Quebec during the 1970's with maximum gas flows of 500 mcf/day on DST and IP's of over 4 mmcf/d at high pressure. Industry exploration, internal, and Quebec Ministry studies' results were reviewed to quantify the resource potential. In addition, 300 representative samples of core and well-cuttings were collected by the author in Quebec to augment existing data. Results show a type III kerogen, TOC of up to 2.0%, and Ro/Rhstd values over 1.6. Isotherm analysis to determine generative capacity resulted in values of up to 66 scf/ton. For the most part, Utica Shale characteristics are most similar to the Cretaceous Lewis Shale of the San Juan Basin, New Mexico. Mineralogy; however, was low in quartz, calcite and dolomite (enablers of "fracturability") when compared to other productive shale gas plays.

Existing shows, DST's, IP's, kerogen typing, TOC values, down-dip limits on Ro and isotherm analysis results were positive for shale gas plays. Mineralogy analysis indicate further work is required to determine "fracturability" of these shales; a critical risk factor that allows these shales to flow gas to the wellbore at economic rates, and over the long term, produce economic reserves.