

Shale Gas to Three Forks: Manitoba Geological Survey's petroleum and stratigraphic investigations

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The Manitoba Geological Survey (MGS) is actively involved in several projects that benefit the oil and gas industry. Current active projects in the Williston Basin include the Shallow Unconventional Shale Gas project, the petroleum geology and stratigraphy of the Bakken-Three Forks formations, the evaluation of the basal aquifer for CO₂ storage in western Canada and northern plain USA, and the Targeted Geoscience Initiative 2 (TGI 2) project. The MGS is also active in the Hudson Bay Basin, as partners in the Geo-mapping for Energy and Minerals (GEM) program on the Hudson Bay and Foxe Basins project, looking at the hydrocarbon potential of this frontier basin. The MGS is looking at the stratigraphy of the Hudson Bay Lowland in northeastern Manitoba, with the final goal of creating a 3D model of the Manitoba portion of the Hudson Bay Lowland. Up-to-date details on most of these projects can be viewed at the MGS Activity Tracker website at <http://www.gov.mb.ca/stem/mrd/geo/mgstracker/index.html>.

The Shallow Unconventional Shale Gas project provides industry with the basic geological information they need to make exploration decisions. To date, project results have indicated that there is a thick accumulation of organic-rich shale that contains biogenic gas within its pores, fractures and adsorbed onto particle surfaces. Sandstone and siltstone beds surrounded by organic shale have been identified in outcrop, and preliminary subsurface correlations indicate multiple sandy/silty beds occurring in the subsurface.

The Bakken-Three Forks formations project is ongoing. With targets moving north from the well known Daly Sinclair Field towards less known areas, this popular oil play is changing character but never losing momentum. Moving northward, the Middle Bakken sandstone thickens and gets coarser, becoming the dominant reservoir, as the Three Forks gets thinner and less favourable. This change in character of the Middle Bakken towards the north, is the northeastern extension of the Rockville-Torquay trend.

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