

Potential Source Rocks in Eastern Canada Paleozoic Basins - Implications for Exploration and Known Production

M.G. Fowler* and M. Obermajer
Geological Survey of Canada Calgary, Natural Resources Canada
3303-33rd Street N.W., Calgary, AB T2L 2A7
mfowler@nrcan.gc.ca

Oil or gas accumulations/shows have been reported from Paleozoic basins in all of the provinces of eastern Canada (Ontario and east) and historically there has been commercial production from most of them although at present this only occurs in southern Ontario. In Ontario, three main oil families can be distinguished that are for the most part stratigraphically constrained to Cambro-Ordovician, Silurian and Devonian reservoirs. These oils have respectively Middle Ordovician Trenton Group marine shales, Silurian carbonates associated with evaporites of the Guelph-Salina formations and Middle Devonian black shales of the Marcellus Formation as their principle source rocks. Late Ordovician marine shales are thought to be the most probable source of the numerous oil seeps that occur mostly in Lower Devonian limestones in Quebec. In the Maritimes Basin, Mississippian-aged lacustrine intervals of the Horton Group are the source of the Stoney Creek oil field in New Brunswick, and the oil seeps around Lake Ainslie on Cape Breton Island, Nova Scotia. They are also possibly the source of some oil shows found in the Deer Lake Basin, western Newfoundland, although the younger Viséan-aged Rocky Brook Formation also contains a potential lacustrine source rock that may have sourced at least some of these hydrocarbons. The hydrocarbons found within Ordovician reservoirs such as those on the Port au Port Peninsula are sourced from Cambro-Ordovician Green Point Formation marine shales. Upper Carboniferous coals and associated shales may have contributed to gas reported from Carboniferous sediments in the Gulf of St. Lawrence.