Production History and Reservoir Characteristics of the Antrim Shale Gas Play, Michigan Basin, William B. Harrison III, Michigan Geological Repository for Research and Education, Department of Geosciences, Western Michigan University, Kalamazoo, MI 49008, harrison@wmich.edu

The Upper Devonian Antrim Shale is a major gas producer in the Michigan Basin. Although there had been occasional Antrim producing wells since 1940, the recent development began in the late 1980's as a result of new technology, access to under-utilized Silurian Niagaran Reef play infrastructure, and a federal nonconventional fuels tax credit. To date, the Antrim Shale in Northern Michigan, has produced over 2.5 TCF of gas from over 8,800 wells. Production in 2006 was nearly 140 BCF. The Antrim Shale is a classic black shale that produces natural gas by desorption processes into a complex network of fractures. The distribution of high total organic carbon and natural fractures are keys to good productivity. Although thermally immature in the producing area, the large accumulation of natural gas has been generated mainly by biogenic processes.

Numerous cores in the collection of the Michigan Geological Repository for Research and Education (MGRRE) at Western Michigan University have been studied for facies distribution, organic content, and fracture characteristics. Cores show vertical and lateral facies variation through the basin and facies control on the distribution of natural fractures. Gas in place can be measured by geochemical rock analyses and suggest 0.5 to 1.0 BCF per 40 acres in the northern part of the basin. Variable production history of project areas can be explained by reservoir rock properties measurable from core, logs, and drill cuttings.