

Application of Gravity Surveying to Recent Ontario Oil and Gas Exploration

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Abstract

Major oil and gas pools in SW Ontario have been found to be directly associated with fault or fracture systems. High resolution aeromagnetic surveying can trace some of these faults particularly where they cause substantial dislocation of Precambrian magnetic rocks.

Gravity surveying is used to substantiate and detail "magnetic" faults and other "non-magnetic" faults that are particularly associated with density changes at shallower depth.

An intensive ground gravity survey program, begun in late 2005 (3500 measurements by this author, at 200m spacing) in the Port Burwell area on behalf of Echo Energy Canada Inc. has resulted in detailed discrimination of two major fault systems that appear to have allowed oil and gas transmission and also entrapment.

Seismic surveying has confirmed the structural nature of gravity "contacts" and verified that they affect the Trenton-Black River where dolomitization along fracture zones has resulted in substantial oil pool development.

Because major gas production is coincident with several of these "gravity" faults, a major drilling program has been initiated to test for Trenton-Black River oil as well as Silurian gas production.