

The Petroleum System of Ontario: An Overview in Core

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The petroleum industry in Ontario has a long history spanning almost 150 years. The first oil discovery was made at Oil Springs in 1858, only 60 meters below the surface in Devonian strata (40° API).

The sedimentary cover in southwestern Ontario is relatively thin and comprises Cambrian to Devonian aged strata. Oil and gas is produced from Cambrian sandstones, Ordovician hydrothermal dolomites, Silurian reefs, Silurian sandstones, Devonian sandstones, and Devonian carbonates or siliclastic-rich carbonates.

This core presentation focusses on three play types Talisman Energy actively pursues in Ontario.

Trenton-Black River reservoirs in Ontario have produced over 15 Mmstb oil and 10 Bcf gas. Strike-slip movement developed a network of faults and fractures through which relatively hot dolomitizing fluids migrated and reacted predominantly with packstones and grainstones of the Trenton and Black River groups. Reservoirs are typically heterogeneous and compartmentalized, with extreme variations in the degree of dolomitization, porosity, permeability, and production rates.

Over 82.5 Bcf gas has been produced from Lower Silurian sandstones in Ontario. Whirlpool reservoirs tend to be linear and this linearity is loosely correlated to deep-seated strike-slip faults. The relationship between faults and reservoir geometry is poorly established for the Grimsby Formation, which appears to be controlled primarily by depositional style.

Upper Silurian Guelph reefs form important reservoirs (and storage) in Ontario and have produced over 700 Bcf of gas and 13 Mmstb oil. Four types of reefs are recognized: barrier, patch, pinnacles and incipient reefs. They are commonly pervasively dolomitized and primary reef builders are stromatoporoids.