

The Stratigraphic Setting, Hydrocarbon Exploration Plays and Production in Southern Ontario

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Southern Ontario is underlain by a relatively undeformed succession of Upper Cambrian to Upper Devonian (locally Mississippian?) strata up to 1500 metres thick, forming the western portion of the St. Lawrence Platform. These strata were deposited in a series of shallow epicontinental seas, punctuated by short episodes of exposure and erosion over the underlying Algonquin Arch. The Algonquin Arch is a major basement ridge which trends northeasterly beneath southern Ontario and marks the transition from the epicontinental carbonate-dominated Michigan Basin in the west to the clastic-dominated Appalachian Basin to the southeast. Where the Algonquin Arch meets the Findlay Arch south of Chatham there is a structural depression known as the Chatham Sag. The Chatham Sag contains the thickest accumulation of Paleozoic strata in southern Ontario and is the location of the first commercial oil well in North America, dug in 1858 near the town of Oil Springs.

An estimated 50,000 wells have been drilled in southern Ontario with 100 new wells drilled each year. Hydrocarbon reservoirs in southern Ontario occur at depths from 100 to 1000 metres, with production from a variety of trap types. Exploration is currently dominated by an oil play targeting dolomitized fault zones in Ordovician limestones, and natural gas plays in stratigraphic traps in Lower Silurian sandstones and Middle Silurian reefs. Cumulative Ontario production to the end of 2000 has totaled approximately 12.6 million m³ (79 million bbl) of oil and 33.7 billion cubic metres (1.2 Tcf) of natural gas.