

Oil and Gas Exploration and Development Activity in Ontario in 2007

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INTRODUCTION

While 2007 saw world oil prices reach record highs any benefit for Canadian producers was largely nullified by an equivalent rise in value of the Canadian dollar. Natural gas prices were also up from 2006 levels, but still short of the 2003-2005 levels due to healthy inventories of natural gas in storage reservoirs. Drilling activity in Ontario decreased compared to 2006, with production levels also falling.

Production figures compiled from annual production reports submitted to the Petroleum Resources Centre indicate annual oil production declined 13% to 107,687 m³ valued at \$52.3 million in 2007, compared to 124,658 m³ valued at \$57.1 million the previous year. Natural gas production declined 14% to 292,443 10³ m³ valued at \$82.3 million compared to 340,254 10³ m³ valued at \$97.9 million in 2006. The decline in oil and gas production is directly related to reduced levels of drilling activity in the past four years such that there is insufficient new production to replace reserves produced from existing wells.

EXPLORATION ACTIVITY

A total of 91 licences to drill and operate new wells were issued by the Ministry of Natural Resources in 2007, compared to 146 in 2006. An additional twenty-two licences were issued for plugging of orphan wells, 5 existing wells were licensed for oil production from historical oil fields and 15 existing wells were licensed for production as private gas wells.

Drilling of 77 new wells was reported in 2007, compared to 94 wells drilled in 2006. These consisted of 19 exploratory wells, 31 development wells and 27 service wells. Three horizontal wells were drilled during the year. 2007 exploratory drilling resulted in 6 wells reported as gas producers and one well reported as a potential oil producer (Table 1; Figure 1). Successful development drilling was down from 2006 with 3 wells reported to be oil producers, 19 as gas producers and 3 as private gas wells, compared with 5 oil producers, 27 gas producers and 12 private gas wells in 2006. Successful oil wells were completed in Ordovician and Devonian targets, with gas completions occurring in Silurian sandstone reservoirs in Norfolk and Elgin counties. No wells were drilled offshore Lake Erie in 2007.

The number of successful exploration wells drilled in Ontario was down from 14 in 2006 to 7 in 2007, mainly due to an absence of activity on Lake Erie.

Cambrian Play

Rowe Energy Corporation drilled one exploratory well to test Cambrian targets for oil in 2007.

Ordovician Play

Three exploration and two development wells were drilled in Ordovician targets in 2007, compared to one exploration and three development wells in 2006. The Ordovician development drilling resulted in one new oil producer for Greentree Oil and Gas Ltd. in the Tilbury West 3-2-X Pool.

Silurian Sandstone Play

Exploration and development of Silurian sandstone targets was down from 2006. In 2007 a total of 11 exploration and 25 development wells were completed compared to 30 and 48 respectively in 2006. Of the 10 exploration wells, 2 were completed as gas wells, 3 were capped and 1 was reported as a potential producer.

Of the 25 development wells drilled in Silurian sandstone targets in 2007, 8 were completed as gas producers, 9 were capped gas producers, 5 were listed as potential gas producers, 2 were suspended and 1 was abandoned. All the successful gas wells and capped and potential wells were located in the Bayham and Norfolk pools. Three of the successful development wells were private gas wells.

Silurian Carbonate Play

Three exploratory wells were drilled to test Silurian Guelph reef and/or Salina Formation structural targets in 2007. One well was plugged and abandoned and two were suspended.

There were two development tests of Silurian Guelph–Salina targets in 2007, with Clearbeach Resources Inc. reporting a potential oil well in the Becher West Pool and Northern Cross Energy Ltd. suspending a gas show.

Devonian Play

Two successful horizontal oil wells and 8 injection wells were completed in the Devonian Aldborough 7-D-VII Pool by Greentree Oil and Gas Ltd.

EXPLORATION TRENDS

Recent exploration has been focused in the proven Silurian sandstone reservoirs, however, interest in the oil potential of the Ordovician and Cambrian reservoirs continues. Exploration in the Ordovician play has declined considerably in the past 4 years with a focus on extension or development drilling of known trends. Essex County and southern Kent County are still the most attractive onshore locations, but exploration will have to expand to the north and east if oil production is to be maintained. There is considerable remaining untested potential for natural gas in this play beneath the eastern basin of Lake Erie and in onshore areas east and north from Kent County to the Niagara Escarpment. A recent reassessment of potential in this play by the Ministry of Natural Resources indicates potential remaining undiscovered resources totalling 201 billion cubic feet (5.7 billion m³) of natural gas and 16.6 million barrels (2.64 million m³) of oil. There also may be potential for trapping of natural gas in sandy facies of the Ordovician Shadow Lake Formation over the crest of the Algonquin Arch.

Although world natural gas prices in 2007 were higher than 2006, they are still lower than levels in 2003-2005 and the higher Canadian dollar reduced prices in Canadian dollars. Higher natural gas prices in 2008 should greatly enhance the economics of all the gas plays in Ontario. There is potential for discovery of Cambrian gas or oil pools along the pinch-out edge of the Cambrian sandstone in the subsurface, or in fault-controlled structures. There may be considerable unrealized potential in fault-related structural traps in the Salina A-1 and A-2 Carbonate units in Kent, Elgin and Middlesex counties.

Shale gas is attracting considerable interest in Canada and the United States but this has not yet translated into activity in Ontario. Open File Report 5384 published by the Geological Survey of Canada in 2006 identifies potential for undiscovered resources of natural gas in three formations in Ontario; the Kettle Point Formation (“Antrim Shale, Ohio Shale”), the Collingwood/Blue Mountain formations (“Utica Shale”), and the Marcellus Formation. Over 2.5 trillion cubic feet (Tcf) of natural gas of biogenic origin have been produced to date from the Antrim Shale (Kettle Point) in northern Michigan. The best shale gas prospects in Ontario may be for biogenic gas where the Kettle Point, Marcellus and Collingwood/Blue Mountain shales are directly overlain by glacial drift, but dry thermogenic gas may also be present at deeper depths.

Table 1. Successful exploratory wells in southwestern Ontario in 2007 (see Figure 1 for well locations).

Well #	Well Name	Results	Target	TD	Latitude	Longitude	TD Date
1	NOG #16, Windham 2 - 1 - X	GP - CAP	CLI	287.00	42.90213694	-80.33303056	2007/04/24
2	NOG #13, Windham 8 - 1 - IX	GP - CAP	CLI	285.00	42.90541194	-80.33148667	2007/06/04
3	NOG #6, Windham 6 - 10 - XII	GP - CAP	CLI	322.00	42.86167222	-80.38750028	2007/01/23
4	NOG #19, Windham 7 - 3 - XI	GP - CAP	CLI	296.00	42.87912444	-80.34039722	2007/09/12
5	NFK #5, Townsend 8 - 2 - XI	GP - ACT	CLI	319.00	42.88556556	-80.30845000	2007/01/18
6	NOG #20, Windham 5-4-XI	GP-POT	CLI	294.0	42.88138972	-80.34503833	2007/09/24
7	REC #26, Aldborough 8-20-IV WD	OP-POT	CAM	1165.3	42.61900500	-81.64003889	2007/08/27

Abbreviations: ACT, active; CAP, capped; CAM, Cambrian; CLI, Silurian Clinton-Cataract; GP, gas producer; TD, target depth in metres.

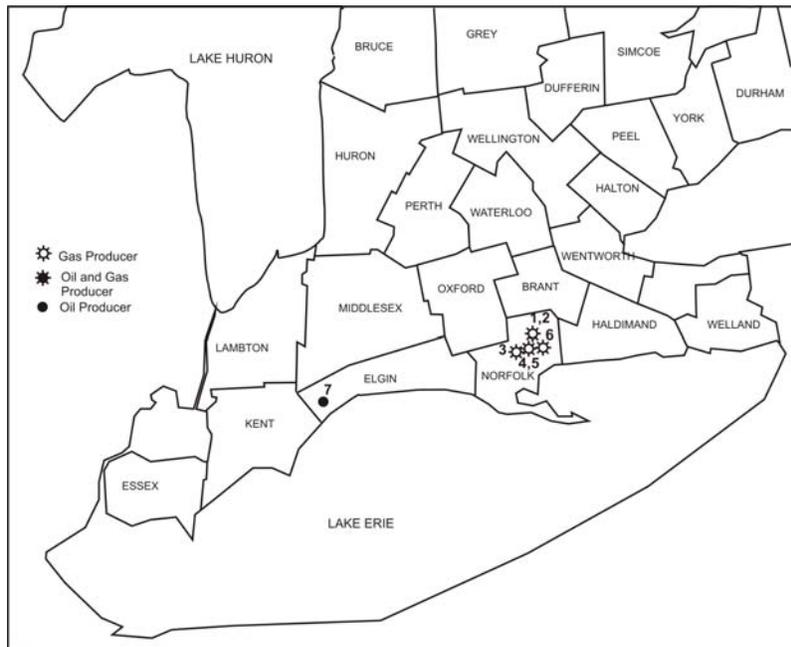


Figure 1. Successful exploratory wells in Ontario in 2007.