



**Ontario Geological Survey  
Regional Resident Geologist Program**

**Petroleum Operations Section—2013**

**by**

**L. Fortner and T.R. Carter**

**2014**

# CONTENTS

---

## Petroleum Operations—2013

INTRODUCTION .....	1
EXPLORATION ACTIVITY .....	1
Cambrian Play .....	1
Ordovician Play .....	2
Silurian Sandstone Play .....	2
Silurian Carbonate Play .....	2
Devonian Play .....	2
EXPLORATION TRENDS .....	2

## Table

1. Successful oil and gas exploration wells in southern Ontario in 2013 ( <i>see</i> Figure 1 for well locations). ...	3
--	---

## Figure

1. Successful oil and gas exploration wells in southern Ontario in 2013 .....	3
---	---

# Petroleum Operations Section—2013

L. Fortner<sup>1</sup> and T.R. Carter<sup>2</sup>

<sup>1</sup>Sedimentary Geologist, Petroleum Operations Section, Ministry of Natural Resources, London, Ontario

<sup>2</sup>Chief Geologist, Petroleum Operations Section, Ministry of Natural Resources, London, Ontario

---

## INTRODUCTION

Drilling activity in southern Ontario was consistent from 2012 to 2013 after many years of steady decline. The average price of oil sold in Ontario during the year was \$98 per barrel: significantly higher than the average for 2012 of \$88. The price of natural gas in Ontario averaged \$3.88 per MMBtu in 2013, significantly higher than the average of \$2.96 in 2012.

Produced oil volumes fell to a new low in 2013. Data compiled from annual production reports submitted to the Petroleum Operations Section indicate that annual oil production dropped 16.2% to 70 187 m<sup>3</sup> in 2013 with an estimated value of \$43.3 million, compared to 83 778 m<sup>3</sup> with an estimated value of \$46.6 million in the previous year.

The recent decline in oil production has been directly related to reduced levels of drilling activity since 2004, such that there is insufficient new production to replace that from existing wells. The slight increase in oil volume produced in 2012 was apparently not a reversal of the trend. Sales value fell in 2013, as the higher average unit price for oil could not compensate for substantially decreased production.

Natural gas production declined another 7% in volume to 185 719 × 10<sup>3</sup> m<sup>3</sup>, but increased in value to an estimated \$26.1 million, compared to 200 297 × 10<sup>3</sup> m<sup>3</sup> with an estimated value of \$21.4 million in 2012. A recovery in the unit price of gas in 2013 from recent lows prevented attaining a new low in total sales value.

## EXPLORATION ACTIVITY

A total of 21 licences to drill and operate new wells were issued by the Ministry of Natural Resources in 2013, compared to 20 in 2012. An additional 76 licences were issued to plug or operate existing wells.

Drilling of 20 new wells was reported in 2013, an increase from 18 in 2012. These consisted of 9 exploratory wells, 8 development wells, 1 stratigraphic test, and 2 service wells. Three of the wells drilled in 2013 were horizontal.

Successful development drilling in 2013 resulted in 1 well reported to be an active oil producer, 1 potential oil well, and 6 private gas wells. The commercial success rate in 2013 was on par with 2012.

Exploratory drilling in 2013 resulted in 1 active oil well, 1 active gas well, 2 potential gas wells, 1 potential oil well, with 4 dry holes (Table 1; Figure 1).

## Cambrian Play

Two exploratory wells were drilled to test Cambrian targets for oil and gas in 2013. One in Elgin County was reported as an active oil well. The other, in Brant County, was plugged and abandoned. One exploratory well and one stratigraphic test had been drilled to the Cambrian in 2012.

There have been no development wells drilled to Cambrian targets since 2010.

## **Ordovician Play**

There were 4 exploration wells drilled to Ordovician targets in 2013: 3 in Essex County and 1 in Oxford County. The well in Oxford was reported as a potential oil producer. The 3 wells in Essex County were reported as an active gas well, a potential gas well, and a plugged and abandoned well. No exploration wells were drilled to Ordovician targets in 2012.

One development well was drilled in Essex County to test the Ordovician in 2013. It was reported as a successful oil producer. Two Ordovician development wells had been drilled in Essex County in 2012.

## **Silurian Sandstone Play**

As in 2012, no exploration wells tested Silurian sandstone targets in 2013.

Six development wells were drilled to Silurian sandstones in 2013. All were successful private gas producers: 3 in Welland County, 2 in Haldimand County, and 1 in Lincoln County. Only 1 development well, also a private gas producer, was drilled to Silurian sandstones in 2012.

## **Silurian Carbonate Play**

One exploratory well was drilled to test Silurian Guelph Formation reef and/or Salina Group targets in 2013. It was reported as a potential gas well in Lambton County. Two exploratory wells were drilled for Silurian Guelph Formation reef and/or Salina Group targets in 2012.

One development well was also drilled in Lambton County for Silurian Guelph Formation reef and/or Salina Group targets in 2013. It was reported as a potential oil well. Two development wells were drilled for Silurian Guelph Formation reef and/or Salina Group targets in 2012.

## **Devonian Play**

Two exploration wells tested Devonian targets in 2013 and were both reported as dry and abandoned in Middlesex County. One exploration well tested Devonian targets in 2012.

As in 2012, no development wells were drilled to test Devonian targets in 2013.

## **EXPLORATION TRENDS**

North American natural gas prices have recovered modestly from recent record lows, but have remained weak, relative to historic highs. Low natural gas prices have a dramatic impact on exploration and development activity, which has been reduced to a minimum in Ontario. Exploration activity focussing on oil has not increased significantly in spite of oil prices that have been consistently robust. Sustained higher oil prices may also negatively impact activity in Ontario by increasing the attractiveness of larger and more expensive projects in other provinces, as well as internationally.

Exploration activity, especially that targeting new play types, is not expected to increase significantly under the current economic pressure. The development of unconventional resources, which has progressed rapidly in the northeast United States, has yet to be introduced into Ontario. Equivalent targets of organic-rich facies, including the Georgian Bay–Blue Mountain Formation, that have been explored and/or exploited in other jurisdictions remain unevaluated in the province.

**Table 1.** Successful oil and gas exploration wells in southern Ontario in 2013 (see Figure 1 for well locations).

Well #	Well Name	Results	Target	TD	Latitude	Longitude	TD Date
1	Clearbeach et al. #44, Dunwich 1-A-VSA	OP - ACT	CAM	1145	42.70797361	81.43067972	24/04/2013
2	Dundee, Tilbury North 6-9-IV	GS - SUS	ORD	1115	42.2604625	82.53402111	25/06/2013
3	Dundee (Horiz. #1), Rochester 8-17-IIIIBR	GP - ACT	ORD	1373	42.24169167	82.66646556	12/07/2013
4	NRG 13-02 Oxford on Thames, East Oxford 3-20-VIII	OS - SUS	ORD	963	43.02079722	82.14701611	21/10/2013
5	Den-Mar Brines #15 (Dev. #1), Moore 5-17-XII	GP - POT	SAL	800	42.90339583	82.14701611	05/12/2013

*Abbreviations:* CAM = Cambrian; ORD = Ordovician; SAL = Salina/Guelph; GP = gas producer; GS = gas show; OP = oil producer; OS = oil show; ACT = active; POT = potential; SUS = suspended; TD = total depth (in metres).



**Figure 1.** Successful oil and gas exploration wells in southern Ontario in 2013 (current and historical county names are shown).