



# A True History of Oil and Gas Development

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## Introduction

The traditional view of the oil industry is that it started in the USA in 1859. Not true, I'm afraid.

The oil seeps at Baku (in present-day Azerbaijan) flowed freely for many centuries before year 1. They played a major role around 600 BC in the Zoroastrian religion of Persia and India. Uses of petroleum are mentioned in the Old Testament of the Bible. Chinese and Japanese writings that predate the first millennium by as much as 900 years describe the use of natural gas and oil from natural flows, seeps, and hand dug wells. Credit for the first drilled oil well goes to the Chinese in the year 347 AD.

Oil lamps in public buildings were in use as early as 1500 BC. A town near Grenoble France had natural gas street lamps in the year 100 !! Oil streetlights appeared in Cordoba around 900, London in 1414, and Paris in 1524.

Sir Thomas Shirley presented a paper to the Royal Society in 1658 on natural gas flows in Britain. In 1739, V.I. Veitbrecht published an article "About Oil" in the Russian scientific magazine "Primechaniya na Vedomosti" where he described the Baku area oil wells and provided a plan of the oil and gas fields. This may be the first technical paper with a reservoir description.

Coal-gas (manufactured gas) dates back to 1726 in England. Oil was extracted from oil sands in Pechelbron France in 1735. Creation of coal-oil by distillation of coal and oil shales occurred between 1781 and 1820 in England, France, and Germany.

A Canadian, Dr. Abraham Gesner, developed the distillation of kerosene from crude oil and bitumen in 1846. Kerosene helped reduce the use of whale oil for illumination. Some claim the whale oil problem had already been overcome by manufactured gas and oil from coal, but the two events certainly helped the "Save the Whales" campaign. The Americans give Benjamin Sillian credit for the invention of kerosene in 1855, but he was at least third in line after Gesner and a Polish druggist named Ignacy Lukasiewicz (1853). Coal-oil and kerosene are the same product – just different sources.

## Early Exploration

Joseph de la Roche d'Allion reported seeing oil seeps in what is now New York state in 1632. Gas seeps were reported as early as 1622, also in New York. Peter Pond was the first non-native to report the discovery of oil in Canada in 1778 at what is now the Athabasca oil sands in northeast Alberta.

Azerbaijan claims the first drilled well in the modern era at Bibi-Heybat, a suburb of Baku on the Caspian Sea, in 1846. The first drilled oil wells in Europe were located near Bucharest in Romania in 1857 but Poland makes the same claim for 1854 at Bobrka.

The completion of the first commercial oil well in North America occurred in 1858 at Oil Springs, Lambton County, Ontario and was quickly followed by more oil at Petrolia, Ontario. The man's name was James Miller Williams, who had taken over a bankrupt operation. This was a hand dug well and the first drilled wells came in 1860. Some of these flowed up to 7000 barrels per day, often before anyone thought to build a storage pit or tank. Some of the early oil flowed down creeks to be wasted in the Great Lakes, but it had been doing that for eons before, from natural seepage.

There was an Oil Springs and a Petrolia in Pennsylvania too, but these wells came a year later (Edwin Drake, Titusville, 1859). There's a Petrolia in Texas, and another in California, not to mention the park in Baku set up by the Nobel brothers. It gets confusing.

It would appear that Drake's well placed the USA sixth in line in the sweepstakes for who drilled the first oil well, after China, Azerbaijan, Poland, Romania, and Canada. Until 1901, Baku's annual oil output exceeded that of the USA by as much as 25%.

## Oil and Gas in Eastern Canada

As noted earlier, Peter Pond was the first non-native to report the discovery of oil in Canada in 1778 at what is now the Athabasca oil sands. Canada's first commercial oil wells were found in Oil Springs and Petrolia, near Sarnia, Ontario, in 1858, a year before Edwin Drake's discovery at Oil Springs (Titusville), Pennsylvania. Both the Oil Springs discoveries were known before these dates from flowing seeps.

The subsequent development of Canada's first petroleum complex at Petrolia is a little known part of the industrial saga of the oil industry. Canada's chemical valley in Sarnia traces its ances-

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try directly to this area. During the period 1861 to 1897, nearly the entire requirement of Canada for crude, lubricants, waxes, kerosene, gasoline, and a widening range of chemicals for food, medicine, and industry was produced here. From 1863 to 1870, Canada was a major exporter of crude and refined products to the United States and Europe.

The contribution that Canadians made to the world's petroleum industry during the same period is even less appreciated. Men trained in the production, transportation, refining, and administration of this new resource, took their knowledge and skills to every corner of the world, opening many of the great oil fields that are still major suppliers of crude. They laboured on every continent in a hundred different countries. And the tradition continues to this day.

For more on this topic, look at *“Hard Oiler! – The Story of Early Canadian’s Quest for Oil at Home and Abroad”*, by Gary May, 1998, Hounslow Press, ISBN: 1550023160. *“Petroleum in Canada”* by Victor Ross, 1917, Southam Press gives a similar and more contemporaneous view.

New Brunswick achieved commercial production at Stoney Creek in 1884, although it was pretty minor by early Ontario standards, and these wells continued in production until modern times. Quebec, Prince Edward Island, onshore Nova Scotia, and onshore Newfoundland never found commercial quantities of oil or gas.

## Oil and Gas in Western Canada

The first gas well in Alberta was drilled at Alderson (also known as Langevin Siding), near Medicine Hat, by the Canadian Pacific Railway. They were, of course, looking for water. This well was immediately abandoned. A second well, the following year, again struck gas (it was only 8 feet away from the first one) and produced off-and-on for about 40 years. These, and similar wells, came to the notice of the Canadian government.

Dr. George Dawson of the Geological Survey of Canada, collected information on the wells at Langevin Siding and others, and presented a paper to the Royal Society of Canada in May, 1886. The paper was called *“On Certain Borings in Manitoba and the Northwest Territory”*. The paper contained detailed sample descriptions of the wells – possibly the first “well logs” in Western Canada. An example is shown below (Figure 1) courtesy Petroleum History Society and author Micky Gulless.

By the early 1890s several more wells had been drilled in the Medicine Hat area, producing gas for homes and factories. This is the discovery that caused Rudyard Kipling to admit he liked Medicine Hat but *“It has all Hell for a basement!”*

By 1908, development of the Medicine Hat and Bow Island gas fields led to the first pipelines to deliver natural gas to Alberta communities. Construction of a 16-inch pipeline from southwest of Medicine Hat to Calgary began in April 1912 and was completed in only 86 days. A second leg reached Lethbridge in July the same year.



*A view of the Halifax Harbour from just below the Global Santa-Fe's Galaxy II helipad. Note the orange lifeboat just below the helipad. Photo Courtesy of the Bercha Group.*



*A Whittaker single davit lifeboat (TEMPSE). This is one type of lifeboat used when it becomes necessary to evacuate an offshore platform. Photo courtesy of the Bercha Group.*



MANITOBA AND THE NORTHWEST. 67.

indicate that the covering of Cretaceous rocks is here thinner than in other parts of the region traversed by the railway line. The purely scientific interest attaching to the section, which a continuation of the boring of the lowest beds of the Cretaceous should yield, has already been adverted to. The section in this well, as ascertained in the manner above described, is as follows:—

Depth from Surface, Feet.	Description of Strata.	Thickness of Each, Feet.
0	Clay loam.....	20
27	Quick-sand.....	3
30	Clay.....	12
42	Quick-sand.....	10
52	Clay and sand.....	8
60	Quick-sand.....	7
67	Clay.....	8
75	Quick-sand.....	8
83	Sandstone.....	16
99	Sandstone (grey, fine-grained clay).....	9
108	Lime rock (fine calcareous sandstone) [small supply of water].....	8
116	Hard gas (dark shale).....	8
124	Coarse sand.....	8
132	Sandstone (greenish clay).....	8
140	Sandstone (greenish clay).....	8
148	Lime rock (fine calcareous sandstone).....	7
155	Sandstone.....	7
162	Small coal seam.....	—
169	Sandstone.....	18
187	Sandstone.....	5
192	White clay.....	20
212	Sandstone.....	50
217	Lime rock.....	5
222	Loose chaly sandstone.....	137
359	Brownish ferruginous clay.....	5
364	Dark lime-rock.....	5
369	Small coal seam.....	—
369	Sandstone.....	50
419	Gravel [small supply of water].....	7
426	Sandstone.....	5
431	Lime rock.....	4
435	Sandstone.....	7
442	Hard gas (dark shale).....	13
455	Clay.....	26
481	Loose chaly sandstone (fine grey clay).....	350
507	Lime rock (fine calcareous sandstone).....	5
512	Hard sandstone.....	50
562	Sand and sandstone, with bands of hard-gas and supply of gas.....	20
582	Sandstone, with streaks of hard gravel.....	50
632	Gravel and clay.....	43
675	Hard lims. Great flow of gas.....	5
680	Shale and "lime rock," [probably calcareous limestone] with layers of very dark, soft shale in second hole, to bottom.....	271
Total.....		1,428

No. IV, 1888. 13.

Figure 1: The first well log in Western Canada???

The Alberta oil boom didn't begin until 1914 with the drilling of Dingman #1 near Turner Valley. This wet gas success started a stock market flurry that died less than a year later with the loss of most of the investors' money.

The well was the precursor for the deeper zone discovery drilled ten years later. Royalite #4 put Turner Valley on the oil and gas map for real.

In 1919, Imperial Oil geologist Ted Link, a crew of six drillers and an ox named "Nig" made a six-week, 1200 mile journey northward by railway, river boat, and on foot to the site now known as Norman Wells NWT, along the Mackenzie River. The ox helped to build a log house and put the drilling rig in place before being butchered to provide food for the the winter. Drilling resumed in the spring with the world's most northerly oil discovery coming in August 1920.

Between 1920 and 1947, there were a dozen or so significant oil discoveries in the Cretaceous of Alberta, but no "elephants", and nothing very deep. Imperial Oil's Leduc #1 Devonian oil discovery in 1947 ended a long dry spell in the Alberta search. Although minor shows were found much earlier, 1951 saw the first commercial oil discoveries in Manitoba and NE British Columbia, followed by Saskatchewan 1953. Over the next 20 years, Canada became self sufficient in oil and gas.



Figure 2: Dingman #1, Turner Valley, 1914 – a replica lives at Heritage Park in Calgary (Glenbow Museum photo)

### Oil and Gas in Canada's Frontiers

Great Canadian Oil Sands Ltd (later Suncor) began production of the Athabasca tar sands north of Fort McMurray in 1967. Shell drilled offshore British Columbia that year, but found nothing. A few years later, the BC Government placed a moratorium on further drilling that has not been lifted.

On the other frontiers, hydrocarbons were found offshore Nova Scotia (gas at Sable Island, 1967, oil at Cohasset, 1973), offshore Newfoundland (oil at Terra Nova, 1984), offshore in the Beaufort Sea and MacKenzie Delta (gas at Taglu, 1971, oil at Amauligak, 1978), onshore and offshore in the High Arctic Islands (gas at Drake Point, 1969 – oil at Bent Horn, 1974). It took between 20 and 30 years for some of these to come on-stream, and Arctic gas is still shut-in.

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### About the Author

E. R. (Ross) Crain, P.Eng. is a Consulting Petrophysicist and a Professional Engineer with over 35 years of experience in reservoir description, petrophysical analysis, and management. He has been a specialist in the integration of well log analysis and petrophysics with geophysical, geological, engineering, and simulation phases of oil and gas exploration and exploitation, with widespread Canadian and Overseas experience.

His textbook, “Crain’s Petrophysical Handbook on CD-ROM” is widely used as a reference to practical log analysis. Mr. Crain is an Honourary Member and Past President of the Canadian Well Logging Society (CWLS), a Member of Society of Petrophysicists and Well Log Analysts (SPWLA), and a Registered Professional Engineer with Alberta Professional Engineers, Geologists and Geophysicists (APEGGA).

## Announcement - Talk is No Longer Cheap

Local talent has been under represented at our monthly technical luncheons. So, in addition to the usual President’s Award for the year’s best technical luncheon presentation there will be a new Vice-President’s Award. This award, in the amount of \$500, will be for the best luncheon talk by a Canadian-based speaker who is from an oil company or from a university or college.

Anyone who is considering presenting at a luncheon or who has a suggestion for an interesting topic should contact John Nieto at (403) 231-0276 or [john\\_nieto@anadarko.com](mailto:john_nieto@anadarko.com).