



**PETROLEUM  
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**ARCHIVES**

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**P.H.S. Lunch and Learn Meeting – Wednesday, June 9, 2010**

**Co-operation or Showdown: The Interaction of Government, Capital  
and People in the exploitation of Non-renewable Energy Resources**

by Erik Lizee, Alberta Historian

At its broadest, Erik Lizee's work explores the interplay of government, capital, and citizenry surrounding the exploitation of non-renewable energy resources to examine the social side of resource development. These three actors approached oil and gas resources with their own ideologies, tactics, and goals. The relationships, disagreements, and debates between and among these groups provide a glimpse into the social nature of resource development in Alberta. They illustrate competing understandings of resource development on the part of Alberta citizens, demonstrate cleavages between citizens and elected officials, and lay bare the politics of resource development in Alberta that has, in many instances, marginalized, manipulated, and devalued the meaningful participation of its citizens.

*Erik Lizee has recently completed a Master of Arts degree from the University of Alberta's Department of History and Classics. He is also currently working as a policy analyst for Alberta Environment. Prior to his M.A., Erik received a Bachelor of Arts (Honours) in History, as well as a Bachelor of Commerce, both from the University of Alberta. Erik has previously published a paper on surface rights in Alberta, as well as given a talk on "Operation Cauldron," the Atlantic Richfield plan to detonate an atomic weapon underneath the Athabasca oil sands in the late 1950s.*

TIME: 12 noon, Wednesday, June 9, 2010.

PLACE: Calgary Petroleum Club, 319 – 5th Avenue S.W. – Cardium Room

COST: Members \$30.00 and Guests \$35.00 (most welcome) (cash or cheque only)

**R.S.V.P. if you wish to attend to: Clint Tippett, 403-691-4274 or  
[clinton.tippett@shell.com](mailto:clinton.tippett@shell.com) by noon, Monday, June 7, if not sooner.**

**Individuals who indicate that they will be attending but do not materialize will be considered  
"no shows" and **will be invoiced for the cost of the luncheon.**  
Individuals who do not R.S.V.P. cannot be assured of seating.**

Schlumberger in Canada:  
A Tale of Unique Challenges and Opportunities.  
By David Finch – Historian  
A presentation to the Petroleum History Society, May 5, 2010

*“Another Huge Oil Gusher Brought in at Turner Valley”* – the April 26, 1928 edition of the High River Times bellowed. But who was there to even notice? A cow? Moose? In the middle of that month, in the spring of 1928, a crew of men quietly slipped into western Canada’s first commercial oilfield and began stringing out cables and doing a survey for Imperial Oil. *“Royalite No. 8 Oil Well in Turner Valley Blows in With a Flow of Seventeen Million Feet of Wet Gas. A Big Producer.”* We don’t know if the foreigners even read the local newspapers that spring, summer and fall, as they laboured in the oilfield. But maybe they did! *“This is the third big well to be struck in this field. Royalite No. 4, the first big gas and naptha well, has a flow of 19,000,000 cubic feet at the present time, carrying more than 600 barrels of 73 gravity naptha per day. Dalhousie No. 1...has been producing about 260 barrels per day on one separator....”*

So what was this invisible crew doing? Who for? What did they find? And what does any of this have to do with the history of Schlumberger in Canada? The title of my talk maybe gives it away: *Schlumberger in Canada: A Tale of Unique Challenges and Opportunities*. The exact details of what Schlumberger was doing in southern Alberta in 1928 are in the book – and you are all welcome to purchase a copy. Schlumberger Canada has graciously donated copies of this book to the PHS and the \$10 you pay will go into its coffers. This book cannot be purchased anywhere else, at any price, because it is for Schlumberger employees and customers.

So what was Schlumberger doing in Turner Valley in 1928? In brief, Schlumberger’s first oilfield contract in Canada was for Imperial Oil, doing a “Horizontal Electrical Exploration” technique survey in Turner Valley. This was resistivity mapping, on the surface, and I have not even been able to figure out where they got the electricity to charge up the batteries they used to do the work. Page 16 in the book explains that Schlumberger’s “horizontal exploration” survey technique in 1928 involved displacing a measuring arrangement along certain alignments at the surface of the ground. This procedure determined the resistivity of the ground and the gradient of the resistivity at each point of operation. In theory, at least, this allowed for a subsurface map to be created based on the readings. But the Schlumberger crew worked continuously from mid-April to November 1, 1928, doing more than 95 miles of measurements and 7500 readings, covering about 9 square miles of territory. “Moreover, heavy snowfalls had begun, making travel in the field slow and difficult,” Eugene Leonardon wrote in the final report dated December 14, 1928.

Did they find oil? Not really, but Leonardon’s report suggested that he had delineated the “borders of the valley.” The survey was instrumental in “the locating of a fault and the prolonging of the anticline towards the south.” And it was south along that line that Turner Valley Royalties discovered crude oil in 1936. Not an Imperial Oil discovery, but still, Schlumberger was right in the thick of things in 1928, working for Imperial in Turner Valley. That year, according to Anne Gruner, in her book *The Schlumberger Adventure*, the brothers – Marcel and Conrad Schlumberger – back in France, questioned the effectiveness of the expensive North American operations and debated whether they should retrench to Europe. Leonardon quickly telegraphed head office, asking for a chance to prove the company could be profitable in the New World. “Let us hold on for a year, hold on for 6 months, but hold on!” Finally in January 1929, Leonardon had proof. His 1928 balance sheet showed North American operations had made a profit of \$12,976.28, or \$160,000 in today’s funds. Not bad for an operation where only a few men served all the mining and oil and gas company needs for a whole continent. And over the next two years, the company’s operations in North America continued to grow.

So why is this important? When Schlumberger asked me to research and write this book, it was dating its arrival in Canada to 1949. The reasons for this date are unclear - some Schlumberger oldtimers remember working with men who started with Schlumberger here in Calgary in 1946. One of its subsidiaries came into the fold in 1949, so perhaps that was the reason for the date. But research is cumulative and each of us who writes about the 'patch contributes a bit to the overall knowledge. In this case, it was Sandy Gow's monumental work - ***Roughnecks, Rock Bits, and Rigs-The Evolution of Oil Well Drilling Technology in Alberta, 1883-1970*** – that pointed me to the Schlumberger contract in Turner Valley. And Imperial Oil's people here in Calgary found parts of the 1928 report and we appreciate their help.

What else can I tell you about Schlumberger in Canada? That is was involved with the discovery well at Leduc in 1947. And at the blowout in 1948 that really made everyone sit up and take notice when Atlantic No. 3 turned that farmer's field into a lake of oil. Schlumberger was also in Saskatchewan and British Columbia, up into the Northwest Territories, offshore in three directions, at the oil sands. Canadian Schlumberger crews have also gone overseas – a typical Canadian strategy during downturns. And it has played an important role in nearly every oilfield in Canada. Those stories are in the book. But – and you know me – I'm always looking for more! It's also been a good citizen in many ways, long before laws or even society required it to change.

It started providing academic scholarships in 1956. It opened its own in-house university in 1970 – called the Edmonton Learning Centre – and another such place in Airdrie in 1983. Vehicle accidents have always been one of the most deadly of dangers in the oil patch, and in 1984 Schlumberger introduced The Convincer – a trailer mounted vehicle simulator. Belted into a seat, you slide down a ramp and stop – SUDDENLY – after only going 8 km per hour. Long before seatbelts became mandatory in the province, Schlumberger knew their worth. The company has limited cell phone use for many years too – talking and driving is just as stupid as drinking and driving, but our politicians in Alberta have much to learn from Schlumberger! In 1999 it launched a book program called Read On! It's called "Literacy for Life! Today" and it has distributed books to 250,000 children. The topic of these books is hockey stories – fictional, but engaging. The list goes on and on. Schlumberger is not a perfect company, and some of its less glamorous moments are mentioned in the book too. It has made mistakes and learned from those lessons.

But I want to take you back to November 22, 1928. "Okalta Oil Well Came in with a Terrific Force – 1000 Barrels of Oil a Day - Largest Producer in the World" said the headline in the High River Times. So just how big was Turner Valley? So big that Winston Churchill visited in 1929, visited the gas plant, and bought shares in three companies. But that's another story, for inclusion in another book, and then maybe another talk for the Petroleum History Society. Turner Valley was a big deal in Canada in the 1920s. And that is why Schlumberger chose the title - From the Beginning – for this history book. I like the title because, in fact, Schlumberger has been part of the Canadian oil industry for a long time – 82 years as of last month. This new information may mean that Schlumberger predates Halliburton in Canada. According to the Oil News section of the High River Times on August 22, 1929: "The Halliburton Oil Well Construction Co. are now permanently located close to the Home well. A large machine shop has just been put up there by the local contractor, E.R. Kerrison." In the ongoing debate over which of these companies arrived in Canada first, this is yet another piece of the puzzle. I believe it is important to look at the history of our industry through the eyes of others. And looking at Canadian petroleum history through the story of companies based elsewhere is good for us. It easy to be insular, short-sighted, preoccupied with the booms and busts here in our province, but the Schlumberger story in Canada reflects back to us the larger story. It points out the unique aspects of our environment. It reminds us of our unusual political climate. And the technological innovations that Canadians who worked for Schlumberger crafted to meet the challenges. There is sadness too – ten Schlumberger employees died on the Ocean Ranger in 1982 – aged 24 to 31.

Schlumberger has become dominant by being excellent, by taking over other companies, by constantly striving to improve, and for managing based on the knowledge that bad times will follow good times. This seems so obvious, but not every company, or every politician, or every taxpayer and citizen of this province remembers this home truth.

A picture on page 75, near the end of the book, is a portrait of Andrew Gould, Chairman and CEO of Schlumberger Limited – the big international company. Look closely and you will see that he is out of focus! The bottle of heavy oil in his hand is clearly visible, the label warning us not to put it near heat, or to breathe the vapours. This image was taken at the grand opening of the Schlumberger Reservoir Fluids Research Centre in Edmonton, Alberta in 2005. Schlumberger opened another such centre in Calgary in 2008. Gould's presence in Alberta to help launch this Schlumberger centre is typical of the company's commitment to change. He, and we, recognize that we have used up all the easy to exploit oil, gas and bitumen. The challenges we face are steep. "The centre will focus on applications for heavy oil," he said in 2005, "which is bound to represent an increasing share of our business as the oil and gas industry seeks to maintain or boost production levels by way of reservoirs that are increasingly technologically challenging."

In 1928, Schlumberger slipped into Canada to do the work that needed to be done to help exploit western Canada's first commercial oilfield. Its history is still being made today.....

## **FROM NORTH TO SOUTH: HOW NORMAN WELLS LED TO LEDUC**

*Notes from an address by Peter McKenzie-Brown to*

*The International Commission on the History of Geological Sciences*

*Tuesday August 11, 2009 University of Calgary*

**Synopsis:** *In Canada's early years, important hydrocarbon discoveries occurred almost independently of settlement. In the frontiers, of course, that pattern continues. The relationship between Norman Wells and Alberta's post-war discovery at Leduc is one example of a pattern that turns on its head the American model of petroleum development. Remote exploration has always played a critical role in our industry's development.*

*It would be easy to think of Canada's petroleum industry as one that began in the south, grew wealthy, then began exploring and developing more remote lands. That is indeed a realistic caricature of the US industry, but in Canada the story was different. The most important oil discovery prior to Leduc actually took place just south of the Arctic Circle. In a drama worthy of the great white north, that discovery led directly to the creation of Canada's modern petroleum industry.*

Before I address the major topic of my presentation today, I would like to suggest an idea about the development of Canada's petroleum industry compared to that in the United States. Simply put, the patterns of petroleum industry development in the two countries paralleled their respective patterns of settlement. As you know, the US takes up the best temperate lands along the eastern seaboard, and there are no major barriers to settlement between New York and San Francisco. The Cordillera is a problem, but settlement in the far west was still not seriously hindered – especially after the construction of the transcontinental railways. That pattern exactly reflects the development of the US petroleum industry. In the US there are many sedimentary

basins – smallish, but regularly spaced across the country. Once Colonel Drake drilled his historic well, the American petroleum industry developed with patterns of settlement.

Canada has quite a different geography. Settlement was difficult in this country because of the predominance of the Canadian Shield, which provided barriers in many ways. Trapped between the Shield and the Cordillera, the Western Canada sedimentary basin is far bigger than the many on-shore basins in the US. Because of the Shield, it is well separated from the small basins in eastern and central Canada. The Shield and our northern latitudes created what I call the *coureurs du bois* model of how the Canadian industry developed. In case you don't know the expression, *coureurs du bois* were fur traders who earned their livelihoods with the aid of canoe transport along our mostly northward-flowing rivers. They played a big role in the creation of Canada. For example, from remote northern locations they brought information about resource potential to our political and commercial centres. Partly because of their efforts, our earliest hydrocarbons were found in outposts of settlement. Consider our Oil Springs discovery, for example, which was contemporaneous with Colonel Drake's 1859 well. Based on investigation into the well-known gum beds near Black Creek, the Oil Springs discovery took place on the north shore of Lake Erie – in an area without roads, but along the transportation and trading system afforded by the Great Lakes.

Alberta's first recorded natural gas find came in 1883 from a well at CPR siding No. 8 at Langevin, near Medicine Hat. This well was one of a series drilled at scattered points along the railway to get water for the Canadian Pacific Railway's steam-driven locomotives. The unexpected gas flow caught fire and destroyed the drilling rig. The discovery took place as we built our first transcontinental railway – itself an effort to settle our empty prairies before the Americans did the job for us. The Athabasca oil sands were already well known – in fact, the first recorded mention of Canada's bitumen deposits goes back to a Hudson's Bay Company record of June 12, 1719. Hoping to find light oil beneath the sands, in the late 19<sup>th</sup> century Ottawa undertook a drilling program to help define the region's resources. Using a rig taken north by river, in 1893 contractor A.W. Fraser began drilling for liquid oil at Athabasca, where the oil sands had been known for centuries. In 1897 he moved the rig to Pelican Rapids, also in northern Alberta. There it struck natural gas at 250 metres. But the well blew wild, flowing huge volumes of gas for 21 years. It was not until 1918 that a crew succeeded in killing the well.

These few examples illustrate my point. Quite unlike the situation in the US, Canada's early hydrocarbon exploration took place along transportation corridors rather than in settled areas. The country had been well explored during the fur trade era, but settlements were still few and far apart. That pattern is in evidence in the case of Norman Wells, to which I now turn my attention. Ask any of Canada's exploration professionals when Western Canada's oil industry began, and you will get one of two answers. The first is the Dingman #1 discovery, which began disgorging wet gas at Turner Valley in 1914. The second is Imperial's 1947 oil discovery at Leduc. The more thoughtful industrial historian would probably say Dingman was the critical event for the industry's early years, while the modern era began at Leduc. I want to suggest that another event was equally pivotal. The year was 1914. The occasion was an expedition down the Mackenzie River by a British geologist, Dr. T.O. Bosworth. There are direct links between that trip and the modern industry's birth.

**The Bosworth Expedition:** Two Calgary businessmen, F.C. Lowes and J.K. Cornwall, commissioned Bosworth's journey. They wanted to investigate the petroleum potential of northern Alberta and beyond, and to stake the most promising claims. Bosworth did not disappoint. His

confidence that the north was highly prospective is apparent on almost every page of his 69-page report. Bosworth's own words suggest how ambitious the expedition was. "The undertaking was planned in March 1914," he says. "In April I consulted with the officers of the Government Geological Survey and other Departments in Ottawa and gathered from them all available information; maps and literature bearing on the subject. *"At the beginning of May, I journeyed from London to Canada accompanied by three assistant geologists and surveyors, and on May 19th, the expedition set out from Edmonton to travel northwards in the Guidance of the Northern Trading Company. We returned to Edmonton September 24th."*

During that period, the Bosworth expedition covered huge distances. And according to his report, there were excellent exploration prospects in three general regions: *"The Mackenzie River between Old Fort Good Hope and Fort Norman; the Tar Springs District on the Great Slave Lake; and in the Tar Sand District on the Athabasca River."* His report offered concise, well-written geological descriptions of rocks, formations and structures. It also included chemical reports on both rocks and oil from the many seepages in the area. Some of his greatest praise came from investigations north of Norman Wells, areas that to this day have not yielded a major oil discovery. "Near Old Fort Good Hope (lat. 67 30') in the banks of a tributary stream, the shales are well exposed ... from the fossils it is evident that the shales are of Upper Paleozoic Age and probably belong to the Upper Devonian," he said. "This remarkable series of Bituminous Shales and Limestones, of such thickness and of such richness contains the material from which a vast amount of petroleum might be generated and might pass into an overlying porous rock. It is admirable as an oil generating formation." In a discussion of the evidence of good reservoir rock, Bosworth points to a nearby occurrence of "gray clay shales and shaley sandstone," and to another of "greenish shaley sandstone containing occasional fossils – corals, chonetes and rhynchonella." Both of the reservoir rocks Bosworth speculates upon lie above the Devonian shales. He was looking specifically for "overlying porous rock" to form the reservoir. It does not seem to have occurred to him that reefs within the shales could have served as reservoirs, even though he specifically noted the presence of Devonian corals.

Before I turn to the outcome of this expedition, which was quite important, I would like to share with you the business advice he gave his clients in the conclusion to his general report. "To avoid all competition," he said, "I strongly advise that you form a controlling company or syndicate containing the most influential men. I recommend particularly that you arrange matters in such a way that it would be to the obvious advantage of every oil man to join you, and that you freely provide the opportunity so that the Company may include every man who wishes to venture anything in the exploitation of the oilfields of the North. By this means alone can you hope to avoid competition and the unfortunate results which must follow....". In his report Bosworth noted that he had "investigated" the discovery at Turner Valley. Fifteen months in the drilling, the wet gas discovery came in on May 14, 1914 – just before Bosworth left Edmonton on his expedition. Within 20 years, that discovery would be recognized as "the largest oilfield in the British Empire." Bosworth, however, was not impressed. In his view, the real potential was in the North.

Believing Turner Valley was doomed to disappoint explorers, he wrote that "there are a number of oil companies in Western Canada who have capital in hand which must be spent on drilling wells. At this moment they are faced with failure (at Turner Valley), and might gladly turn to any region where there is a genuine reason to expect oil. Any such companies might become associated with your controlling company to the obvious advantage of all parties, on terms which can be mutually arranged...". After further commentary, he advises his clients in these words: "You would also provide for the transportation; the necessary railroads; the pipe lines, the refineries, and, what is more important than all the rest, and which would give you complete command of the

whole situation, all of the oil produced in the region would pass through your hands to be marketed by you. *"If you could succeed in promoting a great scheme on some such lines as these, no smaller rival group could hope to compete against you, and you might eventually be in the position to control the great oil fields of the North."* One of the great ironies of these comments, of course, is that they came barely three years after the Standard Oil Trust was dismantled for just such anti-competitive practices. In addition, Bosworth completely misread the importance of Turner Valley and the petroleum potential of Alberta, so smitten was he by the North. The practical value of his advice may be seen in the fact that seven decades elapsed before oil from the Norman Wells oilfield actually began flowing to southern markets.

Now, let us push on with our story. Bosworth does not remark on the coming of World War I. However, when he and his men left the world was at peace; when he returned, Europe and the British Empire had become embroiled in that terrible war. He was probably totally unaware of those developments while in the north. The exigencies of war postponed exploration of Bosworth's claims. So did the Dingman discovery. The petroleum industry by this time was focused on Turner Valley field development, where standard practice was to strip naphtha from the gas stream and flare the gas itself. By 1918 an Imperial Oil subsidiary, The Northwest Company, had acquired the properties Bosworth had staked for his clients. Imperial had hired Bosworth himself as chief geologist. The company decided to drill on one of those claims.

Imperial Oil Limited's legendary exploration geologist, Ted Link, led the drilling expedition. By train, scow and riverboat, he and his crew followed Bosworth's route north to Fort Norman, just south of the Arctic Circle. They had taken with them the wherewithal to assemble a cable-tool drilling rig, and they soon set to work. One valuable member of the party was an ox, which supplied heavy labour during the summer. As the autumn cold began killing off the forage, he delivered steaks and stew. Before moving on, it is worth noting that the most important early geological work at Norman Wells, including the location of the discovery well, needs to be attributed to Ted Link – not to T.O. Bosworth. In an important 1947 presentation to the AAPG, J.S. Stewart of the Geological Survey of Canada is adamant on this point.

**Canol:** Imperial's first well brought in the great Norman Wells discovery, in 1920. However, there was no practical way to get the oil to market. Because demand in the Northwest Territories was marginal, Imperial had little reason to develop the field. However, later in the decade the company constructed a tiny refinery at Norman Wells to supply gasoline and other products to missions, mines, riverboats and other local customers. The company did not need many wells to meet local needs, and did little investigation of the geology of the reservoir. That changed after Pearl Harbor. When the Americans came into the Second World War, they were extremely concerned about having secure local fuel supplies in the North, especially after Japan took control of a couple of Alaska's Aleutian islands. They therefore worked with Canada to develop Norman Wells into a source of local oil supply for a refining and distribution complex. This was the beginning of the Canol Project. The name supposedly comes from the contraction of "Canadian" and "oil", but I suspect the second syllable is actually "oil" with a Texas accent.

Construction crews built a 950-kilometre oil pipeline over the Mackenzie Mountains to a newly constructed refinery in Whitehorse, in the Yukon Territory. The pipeline was built over some of the most difficult terrain in the country, and much of the work had to be done in bitter cold. Crews also laid product pipelines to Skagway, Alaska. In total, they constructed 2,560 kilometres of pipeline. By any standard those lines were terrible. The line ran on top of the ground, alongside the road, often without supports. Vulnerable to frost heaving, snowstorms and flooding, the Canol pipelines were not designed for extreme cold. They were neither installed nor handled properly, and they

failed frequently. The crude oil pipeline leaked onto the permafrost. So did the product pipelines, which delivered diesel and gasoline to a fuelling station in Skagway, Alaska.

To meet the needs of the refinery, Imperial drilled more wells, and began to better understand the Norman Wells reservoir. Of particular note, the company discovered that it was a Devonian reef – of earlier vintage than the Leduc and Redwater fields soon to be discovered in Alberta, but still a Devonian reef. That turned out to be the geological key. By the time the refinery was ready to begin operations, the company had drilled 60 productive wells out of 67 project wells in total. The test for the field came on February 16, 1944 when the pipeline began operating. As a producer of good-quality oil (39° to 41° API), the field surpassed expectations. By October 1944 Norman Wells was producing 4,600 barrels per day by natural pressure. The extraordinary Canol project did not contribute meaningfully to the war effort. The threat to west coast shipping had disappeared and it was clear that the war would soon be won.

First oil flowed through the pipeline in 1944, and the refinery operated for less than a year before being mothballed. Perhaps Canol was the greatest white elephant in petroleum history. No one really knows how much the project cost, though there is no doubt the American taxpayer picked up the tab. For the following calculations I will use one of the common cost estimates: \$134 million. Total oil production was about 1.5 million barrels. In as-spent dollars, therefore, it cost \$89.33 per barrel. The Whitehorse refinery only produced 866,670 barrels of refined product. Dividing that by total project cost, you get \$0.97 per litre. Now, let's adjust those numbers by official consumer price inflation in the United States. In today's money, the oil would cost \$982 a barrel. The refined products would cost \$10.69 a litre. And that's before taxes! Later studies of the project's environmental impact in Whitehorse were revealing. The Canol legacy included the creation of an environmental horror known locally as the Maxwell Tar Pit. Appalling disposal and clean-up practices during the Canol debacle had created an oily mess that was declared an environmentally contaminated site in 1998. Forty years earlier, a man had stumbled into the pit and got stuck. He later died in hospital.

**Leduc:** Although Canol had little impact on affairs of state, it had a huge impact on oil development in Western Canada. As the result of wartime field development at Norman Wells, Imperial learned that the field's reservoir rock was Devonian reef. Armed with this knowledge, the company's geologists – led by Ted Link, who by this time was in charge of Imperial's exploration efforts – rethought their approach to Western Canada. This was an important example of thinking outside the box. Other oilmen at the time were on the hunt for big plays that looked, walked and talked like Turner Valley. They would be roughly 340 million years old. They would be thrust anticlines of Paleozoic age in a Mississippian formation. Much fruitless drilling in the foothills sought the next Turner Valley.

Perhaps we should not give all the credit to Imperial Oil for the geological idea that there might be Devonian reefs in Alberta. In an e-mail, my friend Clint Tippett asked whether GSC mapping of the Rockies west of Edmonton – work undertaken by Helen Belyea, Digby Maclaren and others – influenced Imperial's thinking. Before the Leduc discovery, Charles Stelck at the University of Alberta also gave thought to the question of Devonian reefs in Alberta. However Imperial arrived at its revolutionary idea, the importance of its decision to drill for a reef cannot be understated. That geological idea brought forth a series of great discoveries. The first came with the aid of primitive seismic technology, and it was a big one – the famous Leduc #1 discovery well. When it came in to much fanfare on February 21, 1947, Leduc laid the groundwork for one of the world's great post-war oil booms.



There is another important connection between post-war oil development in Alberta and the Canol project. The refinery built in Whitehorse played an important role in Alberta's industrial development. Imperial bought the mothballed refinery for one dollar, dismantled it and moved it to Strathcona, near Edmonton. There, the company reassembled it to handle production from Leduc and other post-war discoveries. That refinery laid the foundation for one of Canada's biggest refining complexes. As I leave this discussion, a final piece of trivia. Although Imperial is the hero of this drama, I understand that the company's geologists mapped the Leduc reefs at a 90° angle to their actual orientation. After mapping them correctly, Texaco came to have the dominant position in the Leduc chain of reefs.

**Summary:** The Norman Wells story illustrates a pattern that turns on its head the American model of petroleum industry development. Briefly put, remote exploration has played a critical role in the industry's development since the earliest years of oil and gas exploration in this country. Bosworth was wrong in important areas. However, his work greatly influenced that of his successor, Ted Link, who ultimately proved that Devonian reefs were an important key to Canada's petroleum wealth. That change in thinking paved the way for a series of discoveries that represented the birth of the modern petroleum industry in Canada. It would be easy to think of Canada's petroleum industry as one that began in southern Ontario and Alberta, grew wealthy, then began exploring and developing its frontiers. But this model doesn't fit the facts. Key discoveries and developments took place in remote regions. In the sector's early years, important discoveries occurred almost independently of settlement, and a great deal of oil and gas development continues to take place in sparsely populated areas. In our frontiers, of course, that pattern is fully intact.

If not for the Bosworth report, Canada's petroleum industry would have had quite a different history. Imperial Oil's efforts were heroic – indeed the stuff of legend. Enormously frustrated with its unbroken string of 133 dry holes, Imperial planned the program that yielded Leduc as its last major wildcat play in Alberta. If Leduc had not come in, it is easy to imagine the Devonian oil fields lying fallow for many, many years. No other big players were exploring the prairies. In the actual case, however, oilmen around the world soon became aware of this important new discovery, and they began to bring expertise and investment into the province. They created one of the first great post-war oil booms, and helped lay the foundation for one of the world's most diverse and technically advanced petroleum industries.

In respect to its long-term impact, T.O. Bosworth's 1914 report may have been the most influential geological document in Canadian history. I hope my brief comments today have given you reason to consider that claim.

References:

1. T.O. Bosworth, 1914; "The Mackenzie River between Old Fort Good Hope and Fort Norman; the Tar Springs District on the Great Slave Lake; and in the Tar Sand District on the Athabasca River." Available at the Glenbow Archives, Calgary; reference number M-8656; 69 pages.
2. J.S. Stewart, 1948; "Norman Wells Oil Field, Northwest Territories, Canada"; in *Structure of Typical American Oil Fields, Volume III*, pp. 86-109; original paper read before an AAPG meeting in Wichita, Kansas, on January 18, 1947.
3. Peter McKenzie-Brown, 1988; "Two Historical Documents: Notes for an Address to the Petroleum History Society"; online at <http://languageinstinct.blogspot.com/2006/09/two-historical-documents.html>

Note:

An online bibliography of Canadian petroleum history: <http://www.petroleumhistory.ca/history/phsBiblio.pdf>

*Thanks to Peter for providing us with this transcript of his remarks on this important subject.*

## Hon. Winston Churchill Saw Big Fields of Grain and Flowing Oil Fields

*"Turner Valley Oil Prospects makes Impression on British Statesman"*

*"Displayed Keen Interest in Royalite Plant"*

*"Visited Various Oil Wells and Watched Drilling Operations"*

From the High River Times, V. XXIII, No. 35, Thursday, August 29, 1929

In his tour of Turner Valley on Saturday last, the Right Honorable Winston Churchill was given an intimate insight into the possibilities of the Turner Valley oilfield as well as being given first hand proof of its present prospectivity. He appeared greatly impressed by the development and vast potentialities of the field, about which he had heard so much and he declared there were immense possibilities both to Alberta and the British Empire in this valuable oil-bearing structure. Throughout the trip the noted statesman fired a barrage of pertinent questions at J. H. McLeod and W. S. Herron who accompanied him during the tour. These men gave him the information he sought and when through seeing the oil wells he was inclined to believe that Turner Valley was what it claimed to be "the largest oil producing field in the British Empire".

He enquired into the early discovery of the field, its early development by pioneer oilmen of Alberta, who cooked their meals over a flame of gas seeping up through the ground.

J. H. McLeod and W. S. Herron told the veteran statesman of the early days in the development of the oil resources and he evinced deep interest in the story as it was related to him.

Lunch was served to the party in the Imperial Oil Company headquarters at which were present, Rt. Hon. Winston Churchill, his son Randolph, his brother Major Churchill, D.S.O., and his son Jack; Mayor Osborne; P. Burns; L. W. Brockington; Hon. Manning Doherty, former Minister of Agriculture in the Drury government; W. S. Herron; W. Toole; J. I. McFarland; Charles Clark; and J. H. McLeod who conducted the tour through the Valley. It was an informal luncheon and very enjoyable and the distinguished visitors appeared to enjoy the informality of the occasion.

The story of Royalite 4, one of the biggest producers in the Valley and the well that first confirmed the earlier optimism of the drillers by its big flow of naphtha, was of interest to the visitors.

After the luncheon, S. G. Coultis of the Royalite Company explained the workings of that interesting plant, and here Mr. Churchill displayed a keen insight into the intricacies of the work carried on there.

The party visited Home No. 4 and later Home No. 5 where Mr. Churchill watched the operations of drilling and bailing. Later he visited several Royalite wells, after which he motored to the E.P. Ranch where he spent the night and all day Sunday in quiet rest after what seemed to us to have been a very arduous but informative day's work.

On Monday morning, Mr. Churchill and party returned to Calgary by special car from High River to be in readiness for the noon dinner and address at the Palliser Hotel.

*Extract provided by David Finch on May 5, 2010 as a part of his Schlumberger talk. Thanks!*