

The Canol Project, 1942-45

1992 is the 50th anniversary of diverse military activities, including the Canol Project, in northwestern Canada initiated by the United States War Department as defence measures during World War II. It seems appropriate, then, to mark the Canol Project's "birthday" with a profile of its accomplishments for the oil industry. Then, as now, public attention focused on certain wartime projects — primarily the Alaska Highway — while neglecting others. Except for the fact that the press dramatized the difficulty in constructing a mountain pipeline, the Canol Project is among the least known episodes of the war years in Canada. Yet Canol's contribution to the advance of oil exploration and development in the Mackenzie Basin is one of the significant events of the time.

In August 1940, before the U.S. entered World War II, Prime Minister Mackenzie King and President Franklin D. Roosevelt met in Ogdensburg, New York, to decide upon future defence collaboration. Their agreement was the basis for U.S. military activities in Canada that began as soon as the Japanese attacked Pearl Harbor in December 1941. Meanwhile, President Roosevelt had negotiated a deal to supply the Soviet Union with thousands of fighter planes on a "lend-lease" basis. These aircraft would fly to Siberia by way of Alaska, using an air route through northwestern Canada. As soon as the U.S. declared war, American aircraft converged on the region to transport men and materials to Alaska and to prepare the way for delivering the lend-lease airplanes (Dziuban, 1959).

Three major projects of the American military in northwestern Canada emerged from these events: the Northwest Staging Route of aerodromes, from Edmonton to Whitehorse, for planes en route to Alaska and the U.S.S.R.; the celebrated Alaska Military Highway to Fairbanks, linking the staging route airfields; and the Canol Project, centring on the Norman Wells oil field, the intended source of fuel for aircraft and vehicles using the staging route and the highway. Edmonton became the regional headquarters for the three interlocked schemes, for which some 33 000 Americans poured into the Northwest.

In the original Canol orders issued 29-30 April 1942, the U.S. War Department authorized its Army engineers to proceed with several operations. Chief among these were: 1) to arrange with Standard Oil Company of New Jersey (parent of Imperial Oil Limited — IOL) to drill at least nine new wells in the vicinity of Norman Wells and to expand existing production and refining facilities; 2) to survey and build a crude oil pipeline and pumping stations by 15 September from the Mackenzie River at Norman Wells to Whitehorse, Yukon, which was a staging route airfield on the highway; 3) to provide the freighting needed for oil field and pipeline work via the Athabasca-Mackenzie waterway, that is, between the railhead at Fort McMurray and the oil camp at Norman Wells; and 4) to erect by 1 October a refinery at Whitehorse to process 3000 barrels of crude oil a day.

The project began to expand amid a confusion of purposes. For example, the U.S. Army engineers were installing a different

pipeline along the railway from Skagway, Alaska, to Whitehorse. This line was to carry gasoline shipped by Standard Oil of California (a separate entity from Standard of New Jersey) in tankers from its Los Angeles refineries. Before the end of the year this Canol Number 2, the first of three additional lines, was pumping ready-to-use fuel into Whitehorse before any pipe had been laid west of Camp Canol across the river from Norman Wells. Plainly, this was a coup for California Standard, thanks to the intervention of Harold Ickes, U.S. Secretary of the Interior.

The freighting operation was also expanding. During the summer of 1942 a great deal of equipment, supplies, and personnel did indeed go downriver to Norman Wells. In the fall a good portion of the equipment and supplies was returned to Edmonton, from where it was then shipped by railway to Peace River, the starting point of a temporary highway into the North.

At the same time, the Americans were installing 7 aerodromes throughout the Mackenzie Basin. The 7 later grew to 10, then 14, and finally 15. Surveys for more aerodromes were progressing beyond Norman Wells into Rat Pass between the Mackenzie Delta and the Yukon Basin (Barry, 1979).

Crude oil was eventually pumped through the Norman Wells line to Whitehorse. When parts for a refinery finally arrived in Whitehorse, refining also began. But the erratic march toward these and other objectives shows how covert commercial rivalries, political infighting, and swelling ambitions were influencing work on the Canol Project.

Canol's first year was so rife with confusion that many local citizens complained. The Canadian government finally took action in May 1943 by posting General W.W. Foster to Edmonton with orders to report directly to the Privy Council on the activities of the Americans. General Foster's files document the proliferation of the Canol Project and the rapid expansion of the Norman Wells oil field.



Main Street, Norman Wells camp. Photo credit: Provincial Archives of Alberta, U.S. Army Signal Corps Photo, no. 79.120/51.

In 1941, Imperial Oil held 3305 acres in the Norman oil field. In May 1942, an order-in-council, P.C. 4140, established a reservation for the Canol Project allowing IOL to sink wells anywhere within 80 km of its Discovery Well Number 1. IOL, as the nominee of the U.S. government, was to prospect and drill on some five million acres. Less than eight months later an international treaty was signed by Canada and the United States setting aside a still larger reserve for the Canol Project. The tract was bounded on the north by the Beaufort Sea, on the east by the 112th meridian, on the south by the 60th parallel, and on the west by the Yukon border with Alaska. In March 1943, P.C. 2447 established this enlarged reserve but slightly trimmed its size by setting the eastern boundary 110 km east of the Mackenzie River. Canol now had an oil reservation of about 500 million acres on which Imperial Oil was to be the only wildcatter. The American military was responsible for patrolling this enormous piece of Canadian territory.

At the same time, Canadian authorities were drawing up much tougher general regulations for wildcatting in the North. P.C. 742, of 28 January 1943, demanded higher royalties, increased surveillance, and more reports than ever before. It gave the government of Canada the right of seizure with compensation and it reinforced the Crown's claim to half of any oil locations. But tacked on to this order-in-council was a special section restricting permits to Imperial Oil, the U.S. War Department's contractor.

Two weeks after publishing these comprehensive regulations, the government brought forth yet another order-in-council pertinent to Canol: P.C. 1138 (12 February 1943). This document established *within* the larger reserve two substantial tracts to which the new and more onerous regulations explicitly did *not* apply. One of these inner tracts, the Peel and Wind River neighbourhood around Hungry Lake, took in 2.5 million acres of Yukon Territory. The other, amounting to 10.5 million acres, covered the lower Mackenzie Basin from the Carcajou River to the mouth of Thunder River and almost to the Arctic Red River settlement. These two districts were of such urgent interest to the American military that Ottawa, invoking the all-purpose War Measures Act, rushed off this peculiar order-in-council to exempt them from the general wildcatting regulations just published. Consequently, neither permits nor reports were required for prospecting and drilling in these two areas.

There are contradictions in the record as to the number of wells drilled for Canol during the next 18 months. Richard LeSeuer, vice president of Imperial Oil, in a statement to a U.S. Senate Committee in the fall of 1943, claimed "thirty wells — approximately." This estimate matches the *Schedule of Wells* (1973), which lists 33 wells drilled by that time on Canol's lands. On the other hand, Ted Link, chief geologist at Norman Wells, told an Edmonton newspaper that same fall that there were by then 50 proven wells, all of them producers. This was about twice the number reported to the Canadian authorities in an internal memo of 1 December 1943, which recorded only 23 wells, of which only 21 were producers. The discrepancy shocked General Foster.

But this government memo, which was prepared for the Privy Council by the Interdepartmental Panel on Joint Defence Projects, calls attention to an interesting circumstance; so far all production was coming from wells on the company's original lease and was subject only to the comparatively easy terms of the old 1914 regulations. The regulations of 1921, with a

somewhat stiffer schedule of royalties, actually applied to only one of the company's wells — Bear Island Number 1, completed and abandoned in 1923. Despite the liberal terms first set out for Canol, despite the enlargement of the reserve, and despite exemptions for wildcatting and the waiver of general requirements, the producing wells were confined to the oil leases IOL held before the war.

Once the initial requirements of 3000 barrels a day seemed likely to be met with ease, the military revised its urgent needs. The stated goal became 20 000 barrels a day. To achieve this goal they considered financing oil exploration as far as the Mackenzie flowed — hence, the expansion of the Canol reserve in 1943.

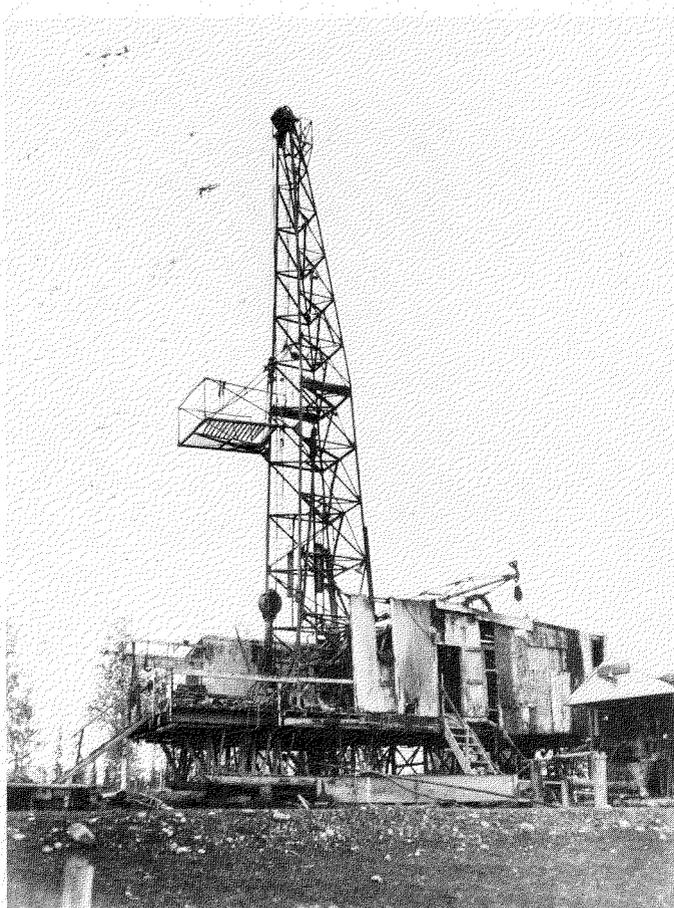
Yet this change of purpose was not as sudden as might appear. Preparations for expansion occurred early on. In April 1942, just days before the Canol orders were issued and a month before the House of Commons learned that such a project was afoot, the U.S. Army Air Force dispatched seven bombers equipped with trimetric cameras to photograph a 320-km-wide belt through the Mackenzie Basin, beginning about 80 km north of Edmonton and ending at the Arctic Ocean. Parallel flights were 48 km apart, with diagonal flights between the parallels at every 160 km. Additional flights meandered all the main rivers. Within a month some 34 000 photographs were taken, representing 414 000 km² of the oil country to be explored. The fact that most of the air photos were of country still under ice and snow was typical of American photogrammetric standards at the time, according to Canadian surveyor John Carroll (1947). Later, these photographs were converted into polyconic project maps, which were available at the time of negotiations during the winter of 1942-43 to enlarge the Canol oil reserve.

Some surface exploration began near Norman Wells in 1942. In April 1943, Link organized 36 geologists into three-man teams for a methodical search of outcrops from the lower stretches of the Liard and North Nahanni rivers north to Arctic Red River and Peel River. One party explored the Nelson and the Liard rivers from Fort Nelson to Fort Simpson.

By the end of the season they had completed surveys of 35 separate areas, covering nearly every significant creek bed and riverbank almost to Aklavik. Meanwhile, a seismic reflection crew was working the muskeg across the river from Norman Wells and exploring along the Mackenzie. The efficiency with which the surface explorations were carried out suggests a campaign planned in advance on the basis of an aerial overview of the whole terrain and capitalizing on Ted Link's intimate knowledge of conditions.

Canol Geological Investigations, jointly authored by G.S. Hume and T.A. Link (1945), is a collaboration of the Geological Survey of Canada and Imperial Oil Limited. Accounts of major structural features of the Mackenzie Basin mesh details obtained from exploratory drilling and exploration on the ground with those readable from aerial photos. The description of the Arctic Red River anticline explicitly refers to aerial photographs.

By the spring of 1944, political pressure in the United States forced the U.S. military to retreat to the position of customer only. Following negotiations in Ottawa, P.C. 2904, issued on 27 April 1944, announced the termination of U.S. exploration activities in the Northwest Territories and Yukon. With the goal of establishing a "strategic oil reserve," the government of Canada took over the financing of wildcatting



Portable oil derrick, Norman Wells. Photo credit: Provincial Archives of Alberta, U.S. Army Signal Corps Photo, no. 79.120/49.

under the Canol label. The Crown was now the partner of IOL in oil field development, and so it remained until the end of the war in 1945. Under the above order-in-council, the Crown acquired one-third interest in IOL's existing Norman properties, while relinquishing its half interest in Bear Island Number 1.

Two months later, another order-in-council, P.C. 5059, 30 June 1944, cancelled all the regulations, reserves, and restrictions pending from 1943. Postwar exploration in the N.W.T. would be open to all comers under completely new regulations, which henceforth would claim no shares for the Crown. Still intact, however, was the partnership with Imperial Oil

established in the April order. Until the end of the war, and even for several months thereafter, the line between what was the Canol Project and what was not became somewhat fuzzy.

Altogether, from June 1942 until January 1946, when its drilling in the region stopped, Imperial Oil drilled a reported 83 wells in the Mackenzie Basin, of which 18 were on Bear Island. Nearby Goose Island was likewise punched full of holes. An important innovation at the time was the directional well drilled under the Mackenzie River, which did produce oil. This was Imperial's Canol Bear Island Number 3, spudded 15 August 1943 and completed that October.

Of 59 producing wells drilled during the four war years of Canol's existence, all were development wells except Imperial Canol Goose Island Number 1, classed as an extension test. All but 4 of these producers were apparently capped. Those 4 evidently supplied most of the 1.6 million barrels of oil reportedly sold to the U.S. military during Canol days.

Significantly, rotary rigs first appeared in the Norman field during Canol days so that cores could be taken for analysis. O.D. Boggs, Imperial Oil's interpreter of samples, used wild-cating cores to conclude that the producing zone at Norman was 5000 acres in extent, at the minimum. Boggs also associated the field with an ancient coral reef lying in the Fort Creek shales. This piece of information, when published, established the Mackenzie Basin as a one-time tropics and inspired a generation of "reef-conscious" geologists.

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