The Explorers - From Mr. Mackenzie to Petro-Can

Alexander Mackenzie, a thrifty man who nevertheless gave his name to Canada's mighty northern river, stopped to examine some slate formations in the river valley one July day in 1789.

He would later note in his diary that "amongst the small stones were ... petroleum like pieces of yellow wax but more friable."

In 1888 Robert G. McConnell, of the Geological Survey of Canada, examined the Mackenzie Valley and came to a more prescient conclusion.

"The possible oil country ... is seen to be almost co-extensive with the Valley itself. Its remoteness from the present centres of population ... will probably delay its development some years to come but it is only a question of time."

In 1920 the Northwest Co., forerunner of Imperial Oil, Ltd., struck oil at Norman Wells in the Northwest Territories, 900 miles northwest of Edmonton, Alberta. That field has produced 25 million barrels and is still producing.

Exploration moved north, and by 1958 drilling permits were being issued in considerable numbers.

In 1968 British Petroleum Ltd. and Atlantic Richfield found oil at Prudhoe Bay, Alaska, touching off a wave of explorations in that area and in the Mackenzie Delta. The last large public sale of permits in Canada was in January, 1969, and by the end of that year permits had been granted for 400 million acres in the Northwest Territories, offshore and on the Arctic Islands. They required the posting of work bonds against exploration within twelve years.

CANMAR (Canadian Marine Drilling, a subsidiary of Dome Petroleum Ltd. of Calgary) received permission to begin experimental drilling in 1976. By the end of 1979 it had drilled ten wells, the deepest 16,000 feet, in water as deep as 200 feet. Panarctic Oils Ltd. (owned 50 per cent by the federal government and 50 per cent by nineteen private companies) began exploration in the Arctic Islands, focusing on the Sverdrup Basin.

More than forty companies have drilling interests in the Beaufort Sea and Mackenzie River Delta.

Dome Petroleum Ltd., Esso Resources Canada Ltd. and Gulf Canada Resources Ltd. have the greatest interests. Last November Dome, the largest, got promising results from wells at Kopanoar and Koakoak. Experts say the first has a potential of 280 million to 2 billion barrels of oil, the second 300 million to 2 billion. Dome, Gulf Canada and Hunt International Petroleum each have a more than 20 per cent share in the fields.

Late last year Esso drilled the Alerk P-23 exploration well on a sacrificial beach island sixty kilometres north of Tuktoyaktuk. Esso began drilling at West Atkinson L-19 this spring. Panarctic began drilling from four ice platforms during the late winter and will have four rigs in operation in 1983.

For oil drillers the Arctic begins at the Mackenzie Delta and Alaska's North Slope on the edge of the Beaufort Sea. It extends to Canada's Arctic Islands.

Canada's Beaufort Basin has 25 million acres, on and offshore, with an estimated potential of 9.4 billion barrels of oil and 112 trillion cubic feet of natural gas.

There have been major oil discoveries in the Beaufort, mostly by Dome Petroleum, at Koakoak, Kopanoar, Tarsiut, and by Esso Resources at Issungnak.

There is more oil and gas farther northeast in the Islands. The Geological Survey of Canada estimates that they hold 4.3 billion barrels of oil and 87 trillion cubic feet of gas.

Much, but by no means all, can be recovered.

The deciding factor is cost—oil companies and the Canadian government are investing enormous amounts of money and taking great calculated risks. Industry experts believe that with a return of 10 to 15 per cent on investment, 70 to 85 per cent of the oil in the Beaufort Sea can be brought to market.

At the same returns a much smaller part of the "undiscovered, non-associated" gas could be recovered, perhaps no more than 15 per cent. Non-associated gas is found alone, not in oil fields, and it is much harder to make a profit from it.

The exploration for Arctic oil and gas is heavily capital intensive. It can cost $100,000 a day to maintain a drilling rig, even when it's not drilling.

It is also technically challenging—most of the equipment now in use in the Arctic has been invented or at least radically changed in the last few years. The rigs must protect themselves from the wind, the cold and the ice.

Arctic Ice

There are two kinds of Arctic ice—first year and multi-year, which is less salty, tougher and thicker. There are three kinds of Arctic ice formations—shore ice, solidly attached to land; the northern ice pack, which never melts; and the shear ice, which moves around in between them.

Drilling ships and rigs in the Arctic are protected by modern ice-breakers, which have no