

## Petrocan market leaps ahead

When Petro-Canada was set up by the federal government eight years ago, industry officials greeted the new national oil company with suspicion and scorn, writes Paul Taylor of the *Globe and Mail*.

But economic necessity has forced private competitors to change their tune. They may not be pleased with Petrocan's political overlord, but they certainly like the look of its money.

### Room for expansion

Petrocan — with Ottawa's financial backing — has continued to grow during a period of economic recession and falling world oil prices and seems to offer unlimited room for expansion. It is rapidly becoming one of the biggest exploration companies in Western Canada and is already the major player in the frontier regions.

Petrocan's market growth			
	1981	1982	1983
refined oil product sales	\$1 756-m	\$2 205-m	—
Gasoline market share per cent	6.4	8.7	14.3
Service stations	1 350	1 379	2 900
Refineries	2	2.5*	3.5*

\*OWNS 49 per cent of Port Moody, British Columbia refinery.

Petrocan's marketing and refining operations are also growing at a rapid pace. During the first ten months of 1983, its share of the national gasoline market rose to 14.3 per cent from 13.5 per cent (or 8.7 per cent if the BP Canada acquisition is excluded) — a fact Petrocan officials point to as a clear indication that Canadians support their company.

### Trim costs

Petrocan also represents an attractive exploration partner for many debt-strapped, cash-starved oil companies. By joining forces with Petrocan, oil companies can trim the cost of their exploration programs — and Petrocan has a big budget. In late December, the federal government approved a 1984 capital budget of \$1.53 billion — most of which will be spent on the search for new oil and natural gas reserves.

## National Research Council tackles northern lights mystery

Canada will start a major study of the northern lights this year to try to explain some of the bizarre atmospheric events that scramble radio communications and overload power grids.

The National Research Council (NRC) will spend up to \$10 million on sophisticated radars, sensors and cameras to watch the Earth's upper atmosphere when the aurora is on display.

Combined with a \$500-million study proposed by the US National Aeronautics and Space Administration (NASA), the research should go far "toward helping us understand what's going on overhead", says NRC spokesman Alister Vallance Jones.

The shimmering northern lights are caused by interactions between the Earth's atmosphere and tiny, charged particles and gases whizzing through space from the sun. These particles and gases — called plasmas — rush past Earth at speeds of up to 1 000 kilometres a second, disturbing the magnetic field around the planet. Scientists believe they are responsible for the dazzling display of lights visible in northern Canada.

But the plasmas in the atmosphere can also wreak havoc on radio signals, power grids, weather patterns and communications satellites.

"It's like a giant jigsaw puzzle," says Mr. Vallance Jones, principal investigator for CANOPUS, as the Canadian study is called. "There are some areas we know a lot about, but we don't yet understand how all the activity out there fits together."

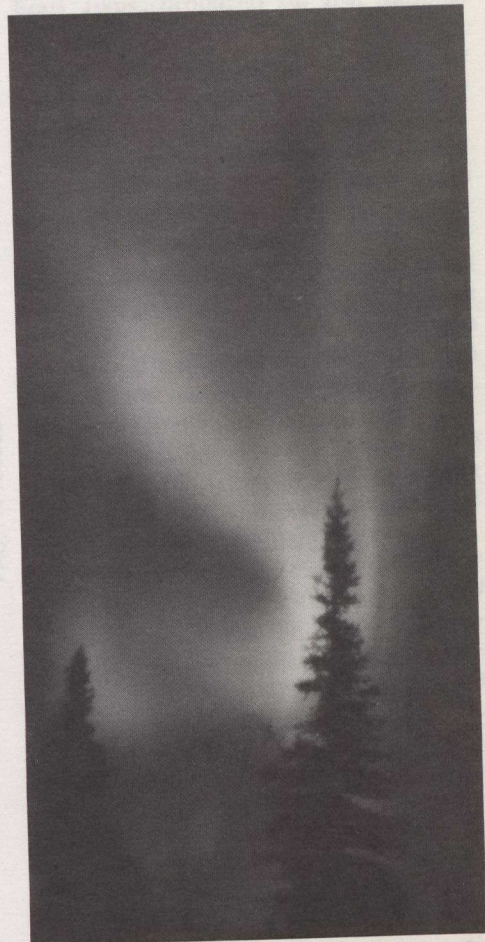
A network of ground observation stations across Canada should give physicists more data on the northern lights than they have ever had before. The project should last five to ten years.

Scientists are also interested in the complicated atmospheric action because there is evidence that Mercury, Jupiter and Saturn are surrounded by a magnetic field similar to that of Earth.

"Understanding the Earth's upper atmosphere is invaluable in looking at other planets, even at other galaxies," says Alister Vallance Jones.

Starting in 1989, NASA plans to launch four special satellites to get a space-eye view of the phenomenon. Japan and the European Space Agency hope to collaborate.

Sweden is getting ready to launch a Viking satellite next year that will study



NRC study hopes to unveil some of the mysteries of the northern lights.

the aurora in Scandinavian countries, while other European satellites are planned for 1984. Canada's ground network of stations will serve all these projects.

As the first part of the project, two special radar systems will be installed at Red Lake, Ontario and Nipawin, Saskatchewan in the fall. They will be aimed at an area of Manitoba where the northern lights pulsate with particular brilliance. A pulse will be sent out by the radar, and from its reflection, researchers will measure the speed at which plasma in the atmosphere drifts. Such information can be used to help chart the electrical field and make better guesses about what the field is like further out in space.

At the same time, the NRC will build other observation bases with devices that measure disturbances in the magnetic field and shifts in the number of particles infiltrating Earth's atmosphere. The instruments will automatically transmit data to a central computer at the National Research Council in Ottawa.