

## URANIUM SOLD TO SPAIN

Canada has sold nine million pounds of uranium oxide, valued at nearly \$60 million, to electric utility companies in Spain, for the generation of electric power.

In accordance with Canada's national policy, the uranium sold to Spain will be used for peaceful purposes only; the application of International Atomic Energy Agency safeguards will serve as a guarantee.

The President of Uranium Canada Ltd, Jack Austin, who is also Deputy Minister of Energy, Mines and Resources, signed the agreement in Madrid on behalf of the Government of Canada. Also signing were Stephen B. Roman, Chairman of the Board, Denison Mines Ltd, and John Kostuik, President of Denison Mines, which negotiated the agreement on behalf of the Government of Canada.

Mr. Donald S. Macdonald, Minister of Energy, Mines and Resources, predicted the possibility of this sale in a speech last February when he noted

that although selling uranium was a difficult assignment, Canada had succeeded in making a sales agreement with Spanish utility companies.

The sale to Spain comes at a time when the supply of uranium exceeds market demand. The order will be filled from the joint Canada-Denison stockpile and the general government uranium stockpile. Deliveries will take place during the period from 1974 to 1977.

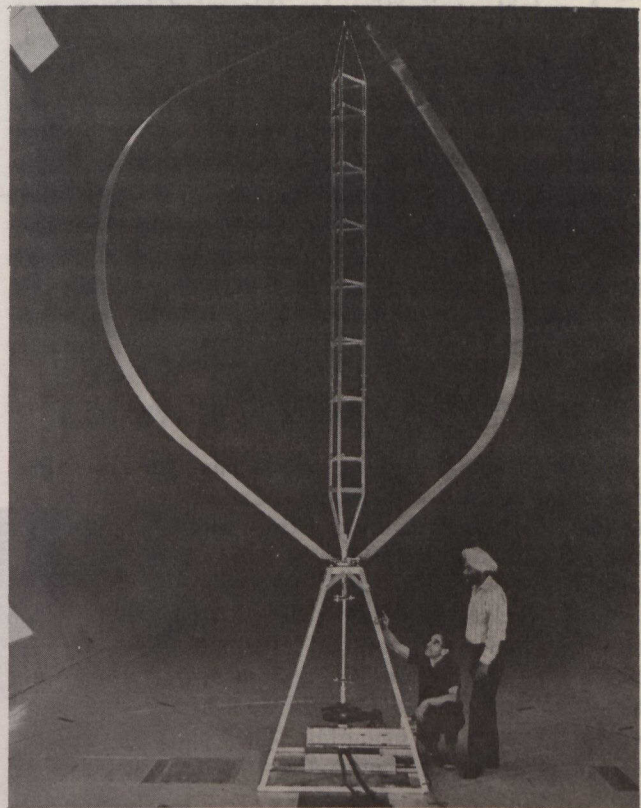
The sale will provide a market for all the uranium stockpiled under the Canada-Denison agreement of 1971, which specified that the Government of Canada, through its Crown corporation, Uranium Canada Ltd (UCAN), would acquire more than six million pounds of uranium oxide from Denison between 1971 and 1974 to stabilize employment and production at Denison's Elliot Lake mine in northern Ontario, until long-term contracts come into effect. The Government's share of revenue from the sale to Spain will recover the \$29.5 million of public funds spent in accumulating the stockpile.

## WINDMILL WITHOUT ARMS

About four years ago Raj Rangi and Peter South, of the National Research Council, started to think about better ways to harness the wind as a cheap source of power for developing countries. As a result of their background in aeronautics and access to wind-tunnel research facilities, they were able to develop a piece of equipment not directly related to aviation — a method to tap natural wind energy economically so that it could be converted into mechanical or electrical power.

Although the wind has always been an attractive source of power, the cost of harnessing it has limited its use. Many attempts to develop an economical horizontal-shaft windmill have failed because the developers found it impossible to keep the capital cost low enough to make them competitive with other power sources.

The wind turbine — by no means a revolutionary power device — is totally different from the old farmyard windmills, and possesses several distinctive characteristics. It is a high-speed machine that rotates about a vertical axis, not a horizontal one, as most conventional windmills do. The rotor consists of two or three convex metal blades of aerofoil cross-section attached to a vertical shaft, supported on ball bearings at the top and bottom of the shaft, and held with guy wires at the top. Mechanical energy, which is produced by the wind turbine, may be used for irrigation and water-pumping supply or may be converted into electrical power. Being a vertical axis machine, the wind turbine is omni-directional, eliminating the heavy gearing, heavy shaft and the complex mechanical devices required for the conventional windmill sails to keep them facing the wind.



Raj Rangi (standing) and Peter South examine the 14-foot diameter wind turbine.

## POTENTIAL USERS

"Our original intention was to provide a cheap power source for developing countries to be used in irrigation and electrical power supply," Mr. Rangi says.