



CANADA

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## NUCLEAR REACTOR STUDY

A \$600,000 contract for a design study and associated development of a nuclear power reactor has been awarded to Canadian General Electric Company Limited, it has been announced by Atomic Energy of Canada Limited, the Crown company which operates the Chalk River research centre.

The reactor, known as OCDRE (Organic-Cooled, Deuterium-moderated Reactor Experiment), is somewhat different from the type of nuclear reactor which Canada has developed to date, in that an organic liquid rather than heavy water is used to transfer heat from the uranium fuel to the steam generators.

There has been a growing interest in the use of organic liquids as reactor coolants as they cost about 40 cents a pound compared to \$28.00 a pound for heavy water. A nuclear power station using an organic coolant might not only prove to be economic for Canadian nuclear power stations in general, but also may prove to be particularly attractive in small and medium size stations in the more remote areas including some Arctic centres. Before an organic-cooled plant could be considered for installation in such locations, much work must be done in investigating new design problems and studying new materials and fuel costs.

The decision to proceed with the design study resulted from discussions among members of the staffs of the Department of Northern Affairs, The Northern Canada Power Commission,

and Atomic Energy of Canada Limited. The first of these three government organizations is responsible for the establishment and administration of government centres in the Arctic and is promoting the development of natural resources in the North. The Northern Canada Power Commission constructs and operates conventional power plants at various centres in the Northwest Territories and in the Yukon Territory.

The Civilian Atomic Power Department of Canadian General Electric Company Limited in Peterborough, Ontario, has been studying the use of organic cooling in power reactors and presented a description of a preliminary design for such a system at the Second International Conference on the Peaceful Uses of Atomic Energy in Geneva last September. A research experiment to test some features of an organic cooling system has been in operation in the NRX research reactor at Chalk River.

Although fuel costs of nuclear power stations are low in comparison with fuel costs of coal and oil-burning power stations, the capital costs of nuclear power stations are high. Organic coolants appear to offer means of reducing these capital costs. Not only is there the saving in the cost of the heavy water coolant, but also, because the organic liquid has a high boiling point, a low pressure system could be used in the reactor thus saving the expense associated with the higher

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