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ATOMIC POWER STATION

Construction at the site of Canada's first atomic power station is expected to be resumed in July, it is announced by Atomic Energy of Canada Limited, Canadian General Electric Co. Ltd., and The Hydro-Electric Power Commission of Ontario, the three partners in the project. Known as NPD (Nuclear Power Demonstration), the plant will produce 20,000 kilowatts of electricity that will be fed into Ontario Hydro's power distribution system when the station goes into operation in 1961.

The NPD station will not produce power at a cost competitive with that produced by coal-burning power plants. It will, however, serve as a pilot plant for stations with outputs of 150,000 to 300,000 kilowatts of electricity. Atomic Energy of Canada Limited recently set up a Nuclear Power Plant Division in Toronto to produce a preliminary design for a 200,000 kilowatt atomic power station known as CANDU (Canadian Deuterium Uranium Reactor).

Work on the NPD site, which is about two miles from Rolphton, Ont., and 150 miles west northwest of Ottawa, was stopped last year to allow important technological advances to be incorporated in the design of the station's reactor. The basic system pioneered at Chalk River -- the use of natural uranium for fuel and heavy water for moderator -- has not been altered in the redesign of the station, but a different type of vessel to contain the fuel and a new method of charging and discharging the fuel are to be used.

Whereas the original NPD reactor was to have a vertical steel pressure tank to contain the uranium fuel elements and the heavy water moderator, the core of the new reactor is to be a barrel-shaped, horizontal, aluminum tank about 13 feet long and about 15 feet across its greatest diameter. Through this tank run 132 aluminum tubes into which are inserted zirconium alloy pressure tubes that contain the fuel elements and the heavy water "coolant". The latter flows over the fuel elements, becomes heated, then travels to a heat exchanger or boiler where the heat is transferred to ordinary water to make steam. The steam is fed into a conventional steam turbine that drives an electricity generator. The heavy water is recirculated through the reactor to carry more heat to the heat exchanger.

The other major design change involves the method of inserting new fuel elements and removing used elements. In the original design the fuel was to be inserted and removed from the top of the reactor. In the new fuelling system there will be a remotely operated fuelling machine at each end of the reactor vessel, thus permitting the loading and unloading of fuel from both ends. This arrangement will give a more even distribution of fresh and partially used fuel throughout the reactor and permit the most efficient use of the uranium. The fuelling operation will be carried out while the reactor is under full power.