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ATOMIC RESEARCH IN CANADA

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The first major fruits of Canadian atomic energy research now appear close at hand. The Hydro-Electric Power Commission of Ontario is constructing a multi-unit nuclear electric generating station at Pickering, near Toronto. Each unit will generate 500 megawatts (1 megawatt = 1,000 kilowatts), and it is planned to bring two units into operation in 1970-71. Estimates indicate that the power will be generated for less than 4 mill/kwh (0.4 cents a kilowatt hour) and will be competitive with that from other available types of thermal-generating stations. The Quebec Hydro-Electric Commission is also entering the nuclear field with a 250-megawatt prototype nuclear-generating station of advanced design. Like the earlier CANDU (Canadian Deuterium Uranium) reactors, the design employs natural uranium as the fuel and heavy water as the moderator but the heat will be carried from the fuel by boiling ordinary water instead of by heavy water at a pressure sufficient to prevent boiling. The design is distinguished by the title CANDU-BLW-250 (Canadian Deuterium Uranium-Boiling Light Water-250 megawatts).

The first nuclear-power demonstration (NPD) reactor, CANDU-PHW-20 (pressurized heavy water-20 megawatts), at Rolphton, Ontario, gave very good service in 1964, achieving a capacity factor of 82 per cent, exceeding the target of 80 per cent. Moreover, in December 1964 and January 1965, when the target was 96 per cent, a capacity factor of 98 per cent was achieved. In December 1965 and January 1966, the figure was still above target (96.5 per cent). The reactor at the 200-megawatt station at Douglas Point on Lake Huron went into operation November 15, 1966.

Canadian heavy-water power reactors are also under construction in India and Pakistan. To meet the prospective large demand for heavy water, two production plants are being constructed in Nova Scotia by private industries and the purchase of a total of 2,500 tons of heavy water has been underwritten by the Federal Government.

Although nuclear power is expected to restore the world market for uranium, the major build-up is expected in the 1970s. The high energy yield from the fission of uranium is the key to economic nuclear power. The yield is so high that the cost of the raw uranium is a very minor component of the cost of electric power.