

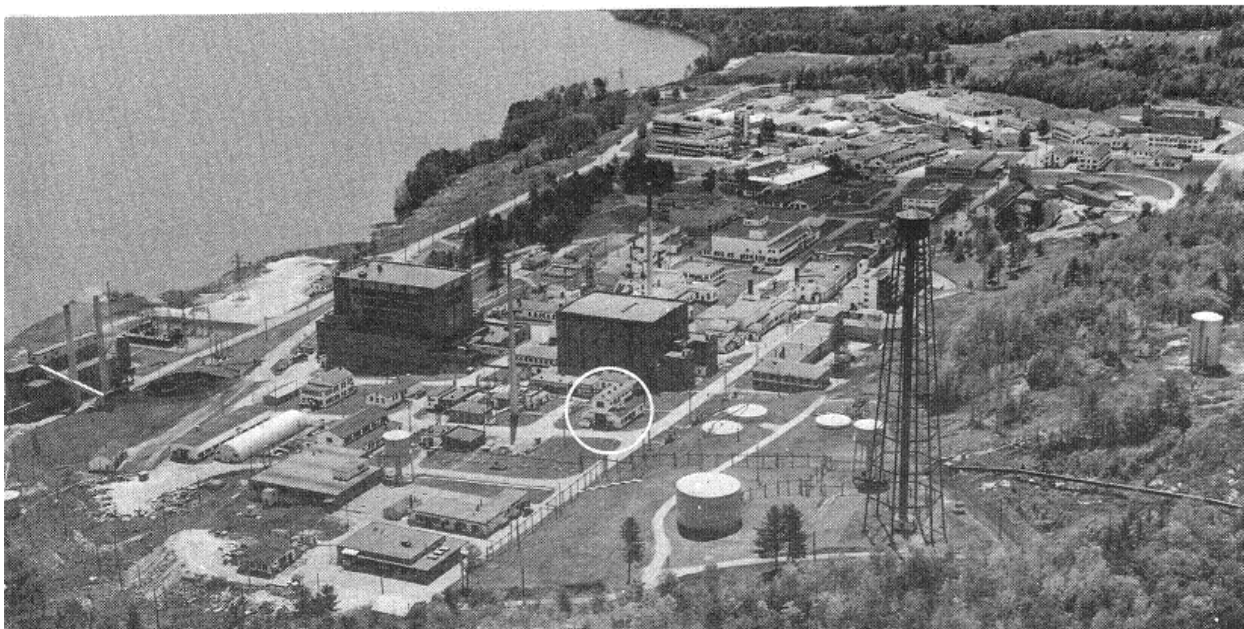
Historic Plaque commemorating the startup in 1945 of the ZEEP reactor.

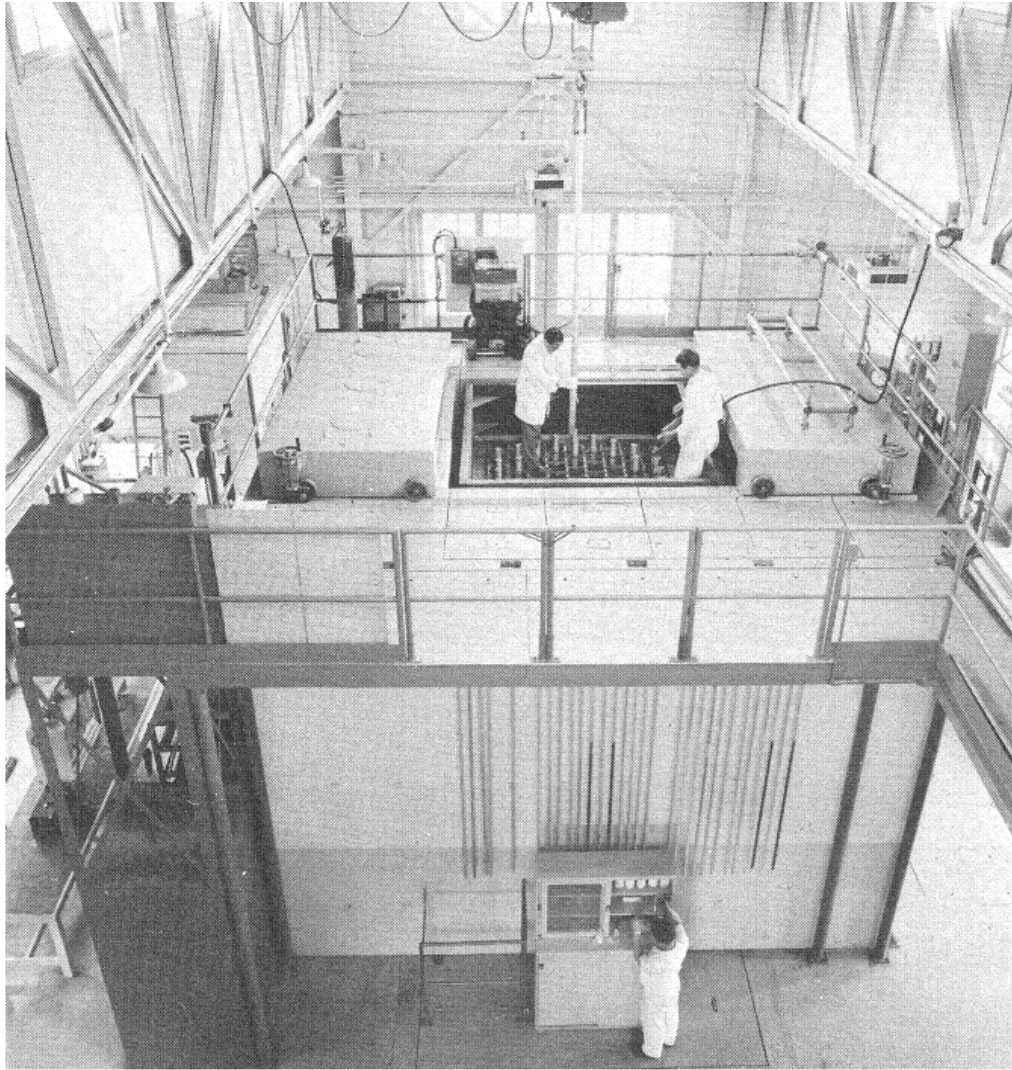
# ZEEP REACTOR

## Canada's first nuclear reactor

The Chalk River Nuclear Laboratories  
Atomic Energy of Canada Limited

The Chalk River Nuclear Laboratories. NRX reactor is in large building, right foreground, and the ZEEP building is in front of it.

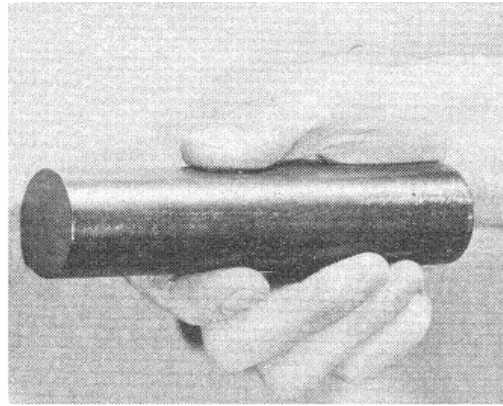
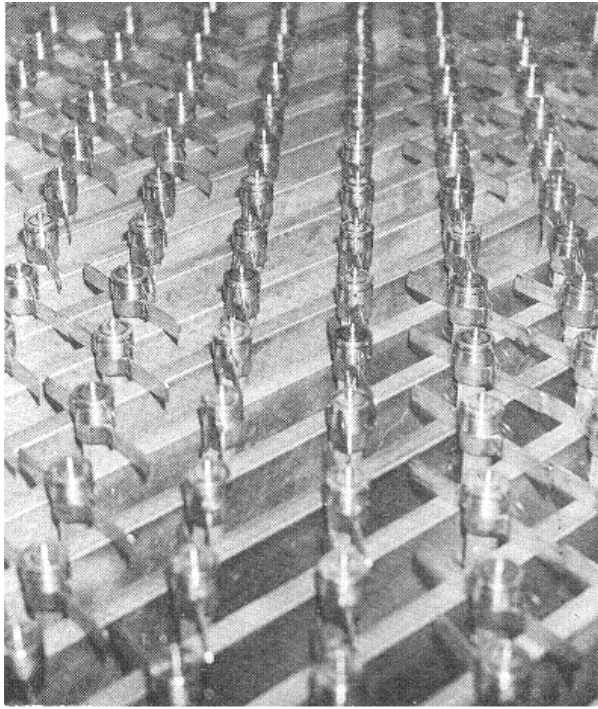




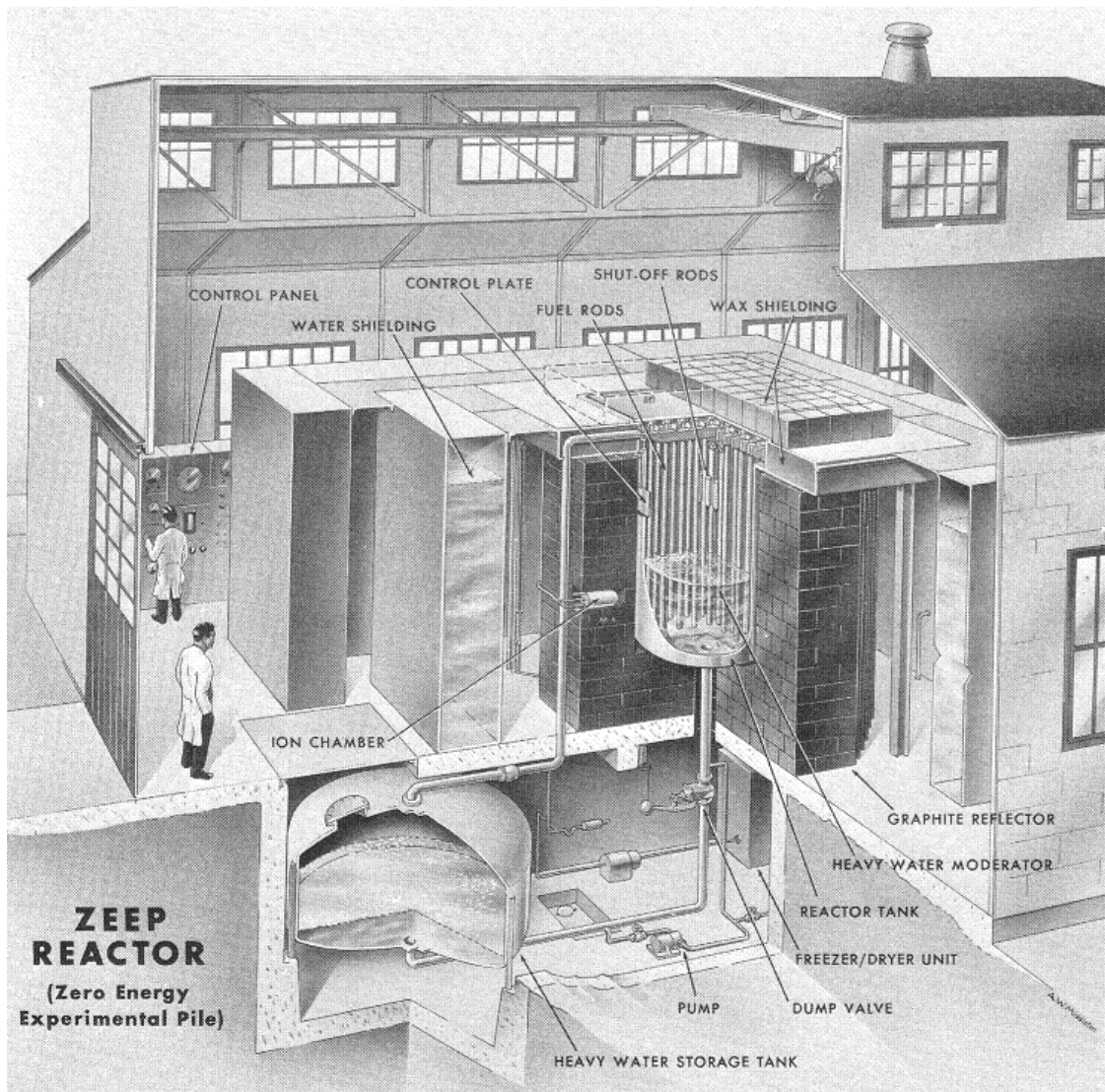
## THE ZEEP REACTOR

A nuclear chain reaction was first initiated in Canada on September 5, 1945, when the ZEEP reactor went into operation at Chalk River. Originally part of an effort to produce plutonium for nuclear weapons, the reactor was designed by a team of Canadian, British and French scientists and engineers assembled in Montreal and in Ottawa in 1942-43 under the administration of the National Research Council. Named Zero Energy Experimental Pile because it was developed to produce only one watt of heat, the ZEEP reactor was used to provide data for the design of the powerful NRX (National Research Experimental) reactor. In 1952 the project was transferred from NRC to Atomic Energy of Canada Limited.

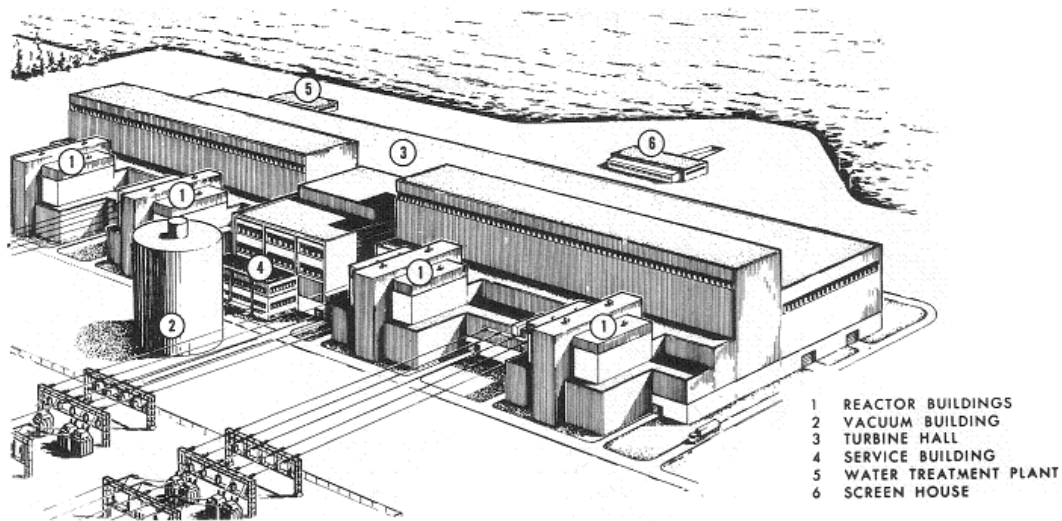
The ZEEP reactor was the first step in the development of the Canadian nuclear reactor system; heavy water moderated, fuelled with natural uranium. The Bruce nuclear power station, now under construction on Lake Huron, is a natural development of the Canadian concept. When completed, its four CANDU reactors will produce more than 3,000,000 kilowatts of electricity for the Ontario Hydro system, making it one of the largest nuclear stations in the world.



Day before a chain reaction was achieved in ZEEP, this photo (left) was taken of tops of fuel rods, which consisted of aluminum tubes containing natural uranium slugs. Tubes hung vertically in an aluminum tank 6 3/4 feet in diameter and 8 1/2 feet high. Each cylindrical uranium slug (above) weighed about five pounds. Heavy water was pumped into the tank and a chain reaction began at 3:45 pm, September 5, 1945.

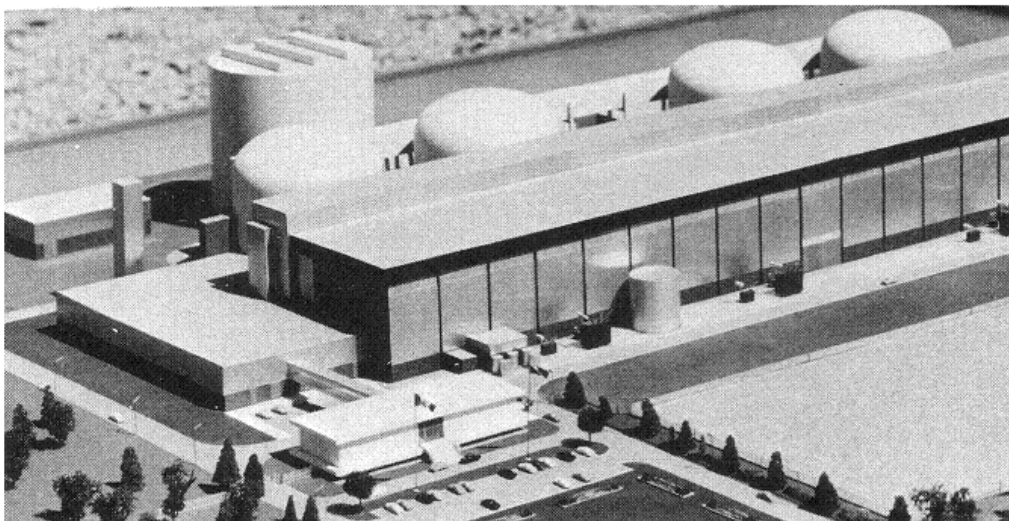


Cutaway drawing of ZEEP as it was in 1945.

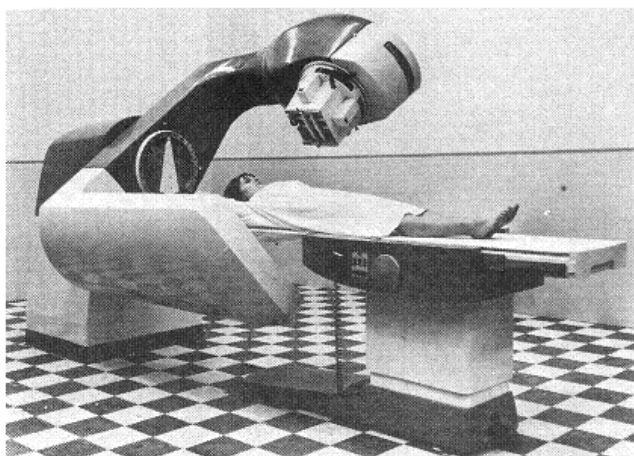


The Bruce nuclear power station on Lake Huron near Kincardine, Ontario

ZEEP was the first experimental facility of the Canadian nuclear program, which today includes nuclear power stations, cancer therapy machines, industrial plants for sterilizing medical supplies and a wide variety of research activities, all directed to the peaceful uses of nuclear energy.



The 2,000,000 kilowatt Pickering nuclear power station near Toronto.



Canadian cancer therapy machines have been installed in 52 countries.