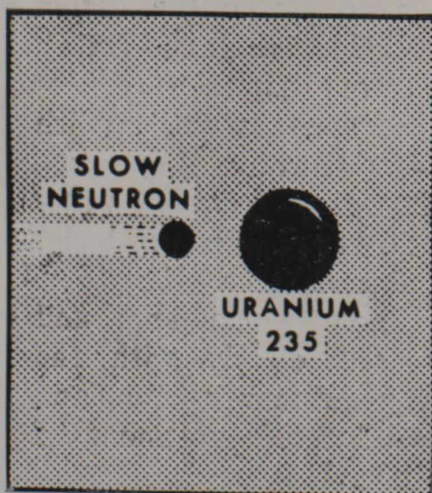


The first unit of the Rajasthan Atomic Power Project went critical at 11 a.m., August 11.

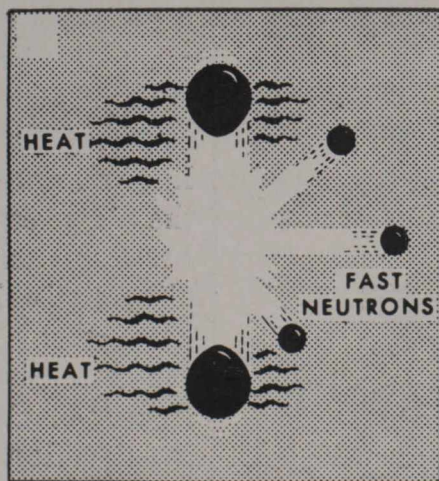
THE AIR hold test of the moderator system was relatively simple. Air at five pounds per square inch was pumped into pipes connected to the calandria. Then they introduced some helium into the system. The presence of helium can be detected by a special instrument, a mass spectrometer which can sense leaks of the order of 1 cc per year. When the joints and valves in the moderator system passed that test, the system could be tentatively deemed tight.

When the air hold test of the heat transport system started towards the end of May the entire pipe system had already been "hot" conditioned. Both the moderator and the heat transport systems had been in full operation for more than two weeks, using ordinary water. That built up a layer of black magnetic iron oxide on the inside of the piping to improve resistance to corrosion. It also pinpointed the leaks.

ONE

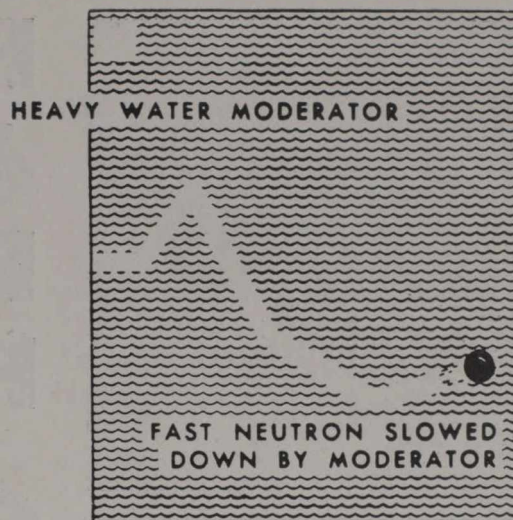


TWO



In the days before the air hold test, maintenance crews were being trained in the routine of isolating and stopping leaks operating conditions. If the section of affected pipe can't be closed off by manipulating valves, maintenance men freeze it with liquid nitrogen or dry ice. If the leaking pipe is small bore, there are special tubing pincers to squash it off and isolate the section.

THREE



About the same time, other workers were being trained in the discipline of adding heavy water to the system. Heavy water comes in hefty steel drums. The drums are plugged into the system one by one and helium under pressure is pumped in to force the heavy water out. Each routine is the subject of a detailed written procedure.

Other work was going on to relap valve surfaces, to add spring force to keep valve packings leak-tight and to inspect and introduce improvements in pumps and other equipment. Where packing had dried out over the two years since the equipment was installed it was replaced. Valves were checked to see they operated properly and the electrically driven opening and closing mechanisms were checked so that excessive force would not be applied which could otherwise result in bending the valve yoke or stem. On completion of this work in May the heat transport system's air hold test was carried out.

