Research Reactors: Apsara,Cirus,Kamini,Purnima I,Purnima II,Purnima III and Zerlina



# DHRUVA REACTOR

During early 1970s a strong need was felt for building a research reactor with higher neutron flux to meet the growing demand of radioisotopes and advanced research in basic sciences. This led to the setting up of a research reactor at BARC which was named Dhruva by Dr. Giani Zail Singh, the then President of India. Construction of DHRUVA was an important milestone in the development and implementation of indigenous nuclear technology in India. The reactor incorporates several features catering to the requirements of a broad-based multidisciplinary user community as also in the production of radioisotopes of high specific activity. Dhruva has been declared as a National Facility for Neutron Beam Research to cater to the needs of Indian scientific community where scientists from BARC, other units of the Department of Atomic Energy (DAE), universities and national laboratories work under collaborative projects. Many of the collaborations are supported by the University Grants Commission – DAE Consortium for Scientific Research (UGC-DAE-CSR), the Board of Research in Nuclear Sciences (BRNS) and other agencies. At present there are about 40 active projects running under the UGC-DAE-CSR scheme.

| No. | Item | Description |
|---|---|---|
| 1 | Reactor Type | Vertical Tank Type / Thermal Reactor |
| 2 | Date of Criticality | August 8,1985 |
| 3 | Reactor Power | 100 MW (Maximum) |

| | | |
|---|---|---|
| 4 | Fuel Material | Natural Uranium Metal |
| 5 | Fuel Element | Clusters |
| 6 | Fuel Cladding | Aluminium |
| 7 | Total weight of Fuel | 6.35 T |
| 8 | Core Size | 3.72m(D) x 3.87m(H) |
| 9 | Max Neutron Flux | $1.8x10^{14} n/cm^2/sec$ |
| 10 | Moderator | Heavy water |
| 11 | Coolant | Heavy water |
| 12 | Shut off Rods | Cadmium |
| 13 | Uses | Basic research; isotope production; manpower training; neutron activation analysis; testing of neutron detectors |