Fact Sheet

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Australia's New Replacement Research Reactor

ANSTO is Australia's national nuclear science organisation and the centre of Australian nuclear expertise. The core of this expertise depends on a functional and capable nuclear reactor. ANSTO has been operating Australia's only nuclear research reactor, named HIFAR (High Flux Australian Reactor), since 1958. HIFAR will soon be replaced with a new world-class, multi-purpose reactor.

What is the Replacement Research Reactor?

The replacement research reactor (RRR) will be a small pool reactor using low enriched uranium fuel, which is cooled by demineralised water. The reactor will be a multi-purpose facility for radioisotope production, irradiation services and neutron beam research.

Why do we need a Replacement Research Reactor?

HIFAR has been operating safely since 1958. However, there is a need to replace HIFAR with a modern, more efficient research reactor in order to expand ANSTO's work in the development and application of new knowledge in many areas vital to Australia's future. These include human health, agriculture, industry and manufacturing, minerals and energy, construction and the environment.

What will be the Benefits?

The RRR will:

- Offer enormous opportunities for unlocking knowledge associated with biotechnology and human health, sustainability, engineering, materials, nanoscience, and environmental science
- Facilitate advances in medical research
- Provide students and researchers from Australian and overseas universities with access to a modern neutron source.

Construction progress on the replacement research reactor

Why at ANSTO?

By housing the RRR at ANSTO:

- Advantage can be taken of existing infrastructure and expertise
- The proximity of the existing site to Sydney airport facilitates the distribution of ANSTO's short-lived nuclear medicines to over 150 medical centres around the nation every day
- Advantage can be taken of the already existing 1.6km buffer zone that presently surrounds HIFAR.

A Safe, Proven Design

The RRR will be even safer than HIFAR, which has operated routinely and safely for more than 45 years. The RRR is less than one-hundredth the size of an overseas nuclear power reactor. Safety features include:

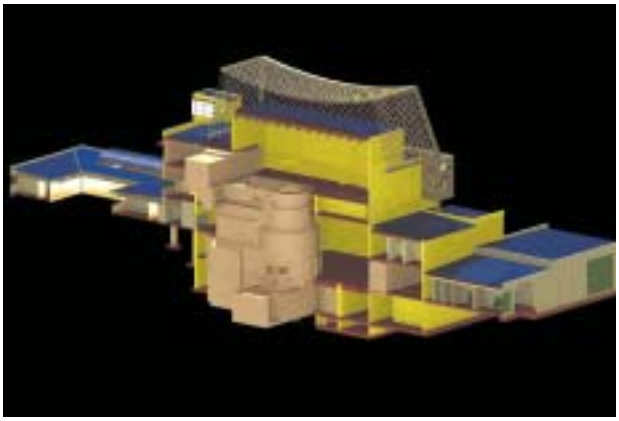
- Reactor core immersed in a pool at least 8m deep
- Multiple back-up emergency power plant and auxiliary safety systems.

The reactor building will contain all the nuclear systems as well as reactor and service pools. The building will protect the reactor from external elements and events and will also provide the structural basis for the reactor containment. The building is being made from reinforced concrete, built to withstand earthquakes, with metallic grillage for added protection.

In addition to meeting all health and safety standards, the RRR was subjected to a stringent environmental assessment process in accordance with the Environmental Protection (Impact of Proposals) Act 1974. Independent international experts reviewed key results of the assessment.

The result clearly confirmed that no environmental reasons exist on grounds of safety, health, hazard or risk to prevent the construction of RRR as proposed by ANSTO. ANSTO is also required to meet a set of conditions for the construction and operation of the RRR arising from the environmental assessment process.

Model of the completed replacement research reactor building



Cross section of the replacement research reactor

A Regulated Research Reactor

All aspects of ANSTO's activities involving the use of radiation and radioactive materials are monitored by the Commonwealth agency, the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA). Both the siting and construction of the reactor were only authorised by ARPANSA after lengthy and detailed consideration of ANSTO's licence applications, the views of independent international experts and consideration of public submissions.

What about the Waste?

ANSTO has an active waste minimisation program. It is also preparing for removal of radioactive waste currently stored on its site. Solid low level radioactive waste will be transferred to the proposed national radioactive waste repository in Arcoona, South Australia. More active waste will be sent to the proposed national store for long lived intermediate level radioactive waste.

More Information

For more information about the RRR or ANSTO, visit the web site at www.ansto.gov.au Alternatively, you can phone ANSTO on (02) 9717 3111 or email enquiries@ansto.gov.au

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