A NEW RADIOISOTOPE FACILITY FOR THAILAND

K.W. Horlock, L.J. Rudenas, J.H. Edwards,
Australian Nuclear Science and Technology Organisation, Australia

N.R. Wood
Australian Radiopharmaceuticals, Australia

ABSTRACT

The Thai Office of Atomic Energy for Peace (OAEP) is planning a new Nuclear Research Centre which will be located at Ongkharak, a greenfield site some 100 km North of Bangkok in Thailand.

General Atomics (GA) has submitted a bid for a turnkey contract for the core facilities comprising a 5 MW TRIGA Reactor to be supplied by GA, an Isotope Production Facility supplied by ANSTO and a Waste Processing and Storage Facility to be supplied by Hitachi through Marubeni. The buildings for these facilities will be provided by Raytheon, the largest constructor of nuclear facilities in the USA.

The proposed Isotope Production Facility will consist of a 3000 m^2 two-storey building adjacent to the reactor with a pneumatic radioisotope transfer system. Hot cells, process equipment and clean rooms will be provided as well as the usual maintenance and support services required for processing radiopharmaceutical and industrial products. The IPF has been designed with both safety and product excellence as the highest priorities. It incorporates ANSTO's 35 years of accumulated experience of design, construction and operation of radioisotopes production facilities to the highest international standard. The design and operation of the IPF meets the International Atomic Energy Agency regulatory standards and safety requirements. Radiation protection has been based on the recommendations of the International Commission on Radiological Protection. To ensure the highest standards of product purity the processing areas will be supplied with clean filtered air and operated at slightly positive pressure.

The building exhaust air will be subjected to extensive filtration and the levels of discharge of radioactive materials from the IPB via this route will be measured by appropriate instrumentation which will be monitored in the building Health Physics Control Room. Close monitoring and control will ensure that discharges remain As Low As Reasonably Achievable (ALARA). Particular care will be taken to assure compliance with ALARA principles to minimise exposure to operating personnel.

The radioisotopes to be manufactured include Phosphorus 32

(S-32 [n,p]P-32), I-131 (Te-130 [n,g]Te-131[p]I-131) for bulk, diagnostic capsules and therapeutic capsules, Iridium 192 (Ir-191[n,g]Ir-192) wire for radiotherapy and discs for industrial radiography sources and bulk Iodine 125

(Xe-124[n,g]Xe-125[beta]I-125) for radioimmunoassay.

The bid includes proposals for training OAEP staff during design and development at ANSTO's radioisotope facilities, and during construction and commissioning in Thailand.

The entire project is planned to take four years with commencement anticipated in mid 1997.

The Paper will describe the development of the design of the hot-cells, process equipment, building layout and ventilation and other services.