

Annex II
CURRENT STATUS
OF THE THORIUM FUEL RESEARCH PROGRAMME
IN JAPAN

No thorium fuel reactor is currently planned to be built in Japan, but basic R & D works are under way to pursue the possible diversification of nuclear fuel resources through thorium utilization in the future.

1. R & D in Japan Atomic Energy Research Institute

The Japan Atomic Energy Research Institute started in 1975 basic R&D works on thorium and thorium-uranium mixed oxides to develop laboratory-scale fabrication methods, examine irradiation behaviour and to measure physico-chemical properties of these fuels.

Microsphere and pellet-type fuels have been investigated taking into account potential applications of the acquired data for the fabrication and performance analyses of both types of nuclear fuels. The main accomplishments are the following:

- development of new sol-gel process to prepare crack-free microsphere fuel with better sphericity aiming at HTGR applications and to prepare starting material for making high-density pellet with varying Th/U ratios;
- measurement of fission-gas release/irradiation-induced damage and data analyses to predict irradiation stability and densification mechanism;
- measurement of new data on equilibrium oxygen potential/stoichiometry and its effect on chemical behaviour of burn-up simulated (Th,U)O₂.

2. R & D in Universities

The Research Programme on Thorium Fuel has been performed since 1980 on the university basis, under the support of Grant-in-Aid for Energy Research of the Ministry of Education, Science and Culture of the Japanese Government. The main results have been published in the English-written report "Research on Thorium Fuel (SPEY-9,1984)".

It covers nuclear data evaluation and measurement; reactor physics experiment and analysis; fuel fabrication, irradiation and property measurement; actinides production/separation and down-stream process development; biological effect and molten salt reactor engineering.