

Toward Establishment of Nuclear Fuel Cycle

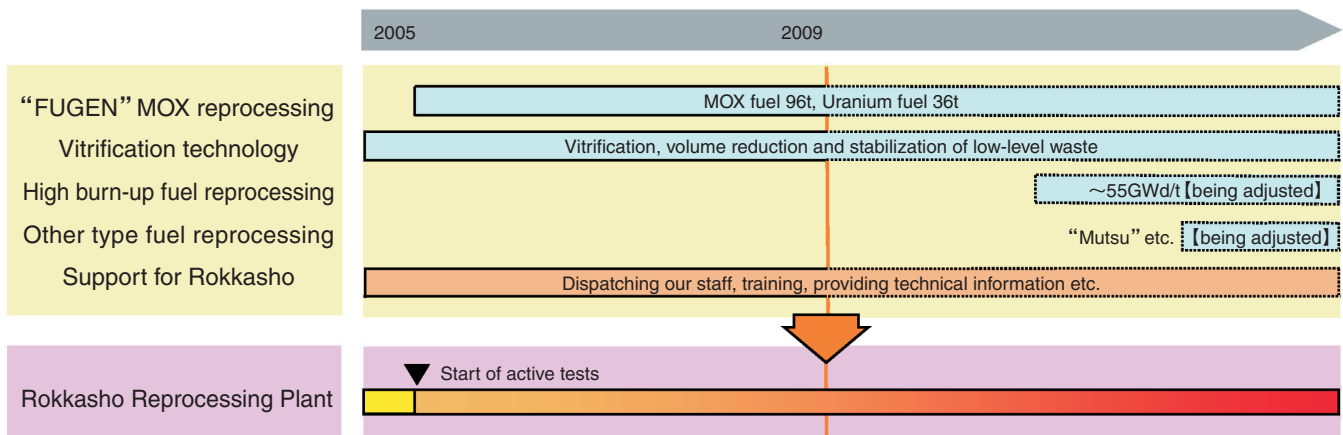


Fig.8-1 R&D to assist private enterprises' reprocessing business

To promote reprocessing of spent light water reactor fuel and usage of plutonium in light water reactors by private enterprises, we are conducting research and development of reprocessing of the "FUGEN" reactor's uranium-plutonium mixed oxide (MOX) spent fuel and vitrification of high-level waste fluid.

In response to a request by Japan Nuclear Fuel Ltd. (JNFL), we are dispatching engineers and are training JNFL staff to support their uranium enrichment, reprocessing and MOX fuel fabrication operations.

1. Development of reprocessing technology

In preparation for the reprocessing test of "FUGEN" MOX spent fuel, we are continuing basic investigations such as development of techniques for analyzing minor actinides (MA).

There now are prospects for development of a long-life glass melter for high-level liquid waste vitrification technology, thanks to experiments in reducing the erosion of the structural material (Fig.8-2).

In response to a request by JNFL, we carried out tests of glass properties and effect assessment of insoluble residue which were needed for activation tests of the vitrification facility in Rokkasho Reprocessing Plant (RRP) of JNFL.

To develop technology for volume reduction and stabilization of low-level radioactive waste, we carried out tests of cement solidification with simulated liquid waste and of nitrate decomposition of waste containing nitrates, obtaining data necessary for the facility design.

In addition, we are making arrangements with related organizations to advance reprocessing technology to treat high burn-up spent fuel (Fig.8-1).

2. Technical co-operation

We are providing technical help to JNFL for their cascade test of the super-efficient new material centrifuge for uranium enrichment, activation tests of RRP, and construction and operation of the MOX fuel fabrication facility.

RRP is in the final step of its active tests, and we have

strengthened our support, especially for the test of vitrification of high-level waste fluid, by dispatching additional technicians and carrying out entrusted research and joint research with JNFL (Fig.8-1).

In addition to the above, we are carrying out training for engineers of Nuclear Fuel Chemical Analysis Co. (Limited Liability Partnership) which is conducting analysis of uranium and plutonium etc. at RRP, and of Tokyo Electric Power Environmental Engineering Co., Inc. which conducts environmental radioactive monitoring etc. Our engineers are also dispatched to the Nuclear Material Control Center and are engaged in technical support for nuclear material control at Rokkasho district.

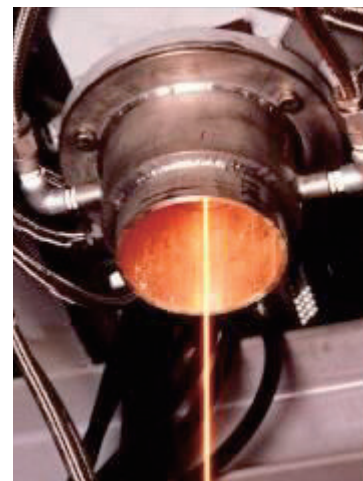


Fig.8-2 Glass melter