Overview of Japanese Activities

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Among issues relevant to developing nuclear electricity generation, radioactive waste management is the most important issue as well as safety assurance of nuclear installations in Japan like other countries. In particular, the management of high level radioactive waste generated from the reprocessing of spent nuclear fuels have been questioned in achieving the safe containment of long-lived radionuclides of actinides and fission products.

National policy of managing this high level radioactive wastes is to solidify in a stable form and to dispose of ultimately into deep geological formations after 30 to 50 years of storage for cooling. Toward this goal, guidelines for research and development were adopted in 1980 by the Advisory Committee on Radioactive Waste Management to the Atomic Energy Commission. Since that, research and development of technology of the high level waste disposal have been conducted along with the guidelines. This has been further endorsed in the last revision of the Long-term Programme for Development and Utilization of Nuclear Energy by the Atomic Energy Commission in 1987, and the Advisory Committee reviewed the plans, in 1989, and emphasized the importance of the research and development of safety assurance with artificial barriers and near field formations, based on the principal considerations of safety assurance of the geological disposal.

At the same time, the Long-term Programme has adopted to promote the research and development on:

-Separation of nuclides being contained in reprocessing HLW according to their half-lives and potential usefulness;

-Transmutation of long-lived radioactive nuclides into short-lived nuclides or non-radioactive nuclides.

It was stated that this kind of research is extremely important from the standpoint of conversion of high-level radioactive waste into useful resources and their disposal efficiency. Research and developmental activities may also be quite encouraged by this policy in a large variety of fields from chemical processing to new-type reactors and to accelerator engineering.

Along with the programme, the research and development activities required in that connection are being carried out in a systematic way with the active cooperation of the Japan Atomic Energy Research Institute (JAERI), the Power Reactor and Nuclear Fuel Development Corporation (PNC), and the Central Research Institute of Electric Power Industry (CRIEPI).

Major items of the research and development for the nuclide partitioning and transmutation technology and expected time schedule are shown in Figs. 1 to 3. The Science and Technology Agency has been funding to JAERI and PNC as listed in Table 1. It should be noted that the funds are only for equipment and its maintenance, and that does not include the costs for personnel and facility operations concerned. The work in CRIEPI is supported by the contribution from the utility companies.

The Long-term Programme will be reviewed again by the Atomic Energy Commission in 1992. In that occasion the research and development programme on this subject shall also be reviewed in accordance with the results and progress of work. In this connection, today's information exchange under the OECD/NEA is of great importance to us to evaluate current technical achievement and future perspective on the actinide and fission product partitioning and transmutation.

Table 1. STA Funds to JAERI and PNC

Unit: M¥

	JAERI		PNC	
	Partitioning	Transmutation	Partitioning	Transmutation
FY1989	120	215	156	196
FY1990	209	243	96	435
FY1991*	218	354	100	649

*: Proposal

Fig. 1 R&D SCHEDULE OF NUCLIDES PARTITIONING

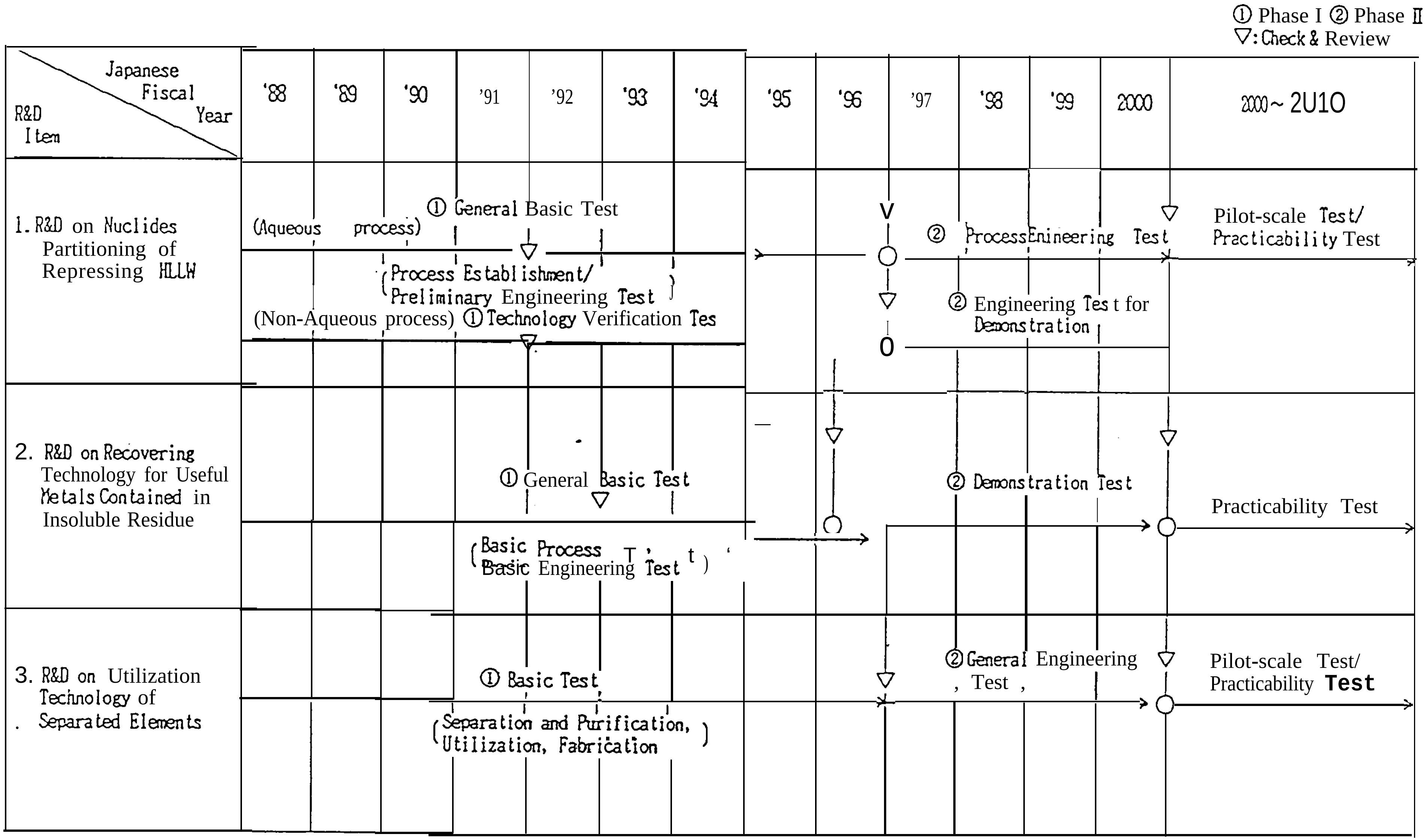

Fig. 2 R&D SCHEDULE OF TRANSMUTATION BY REACTOR

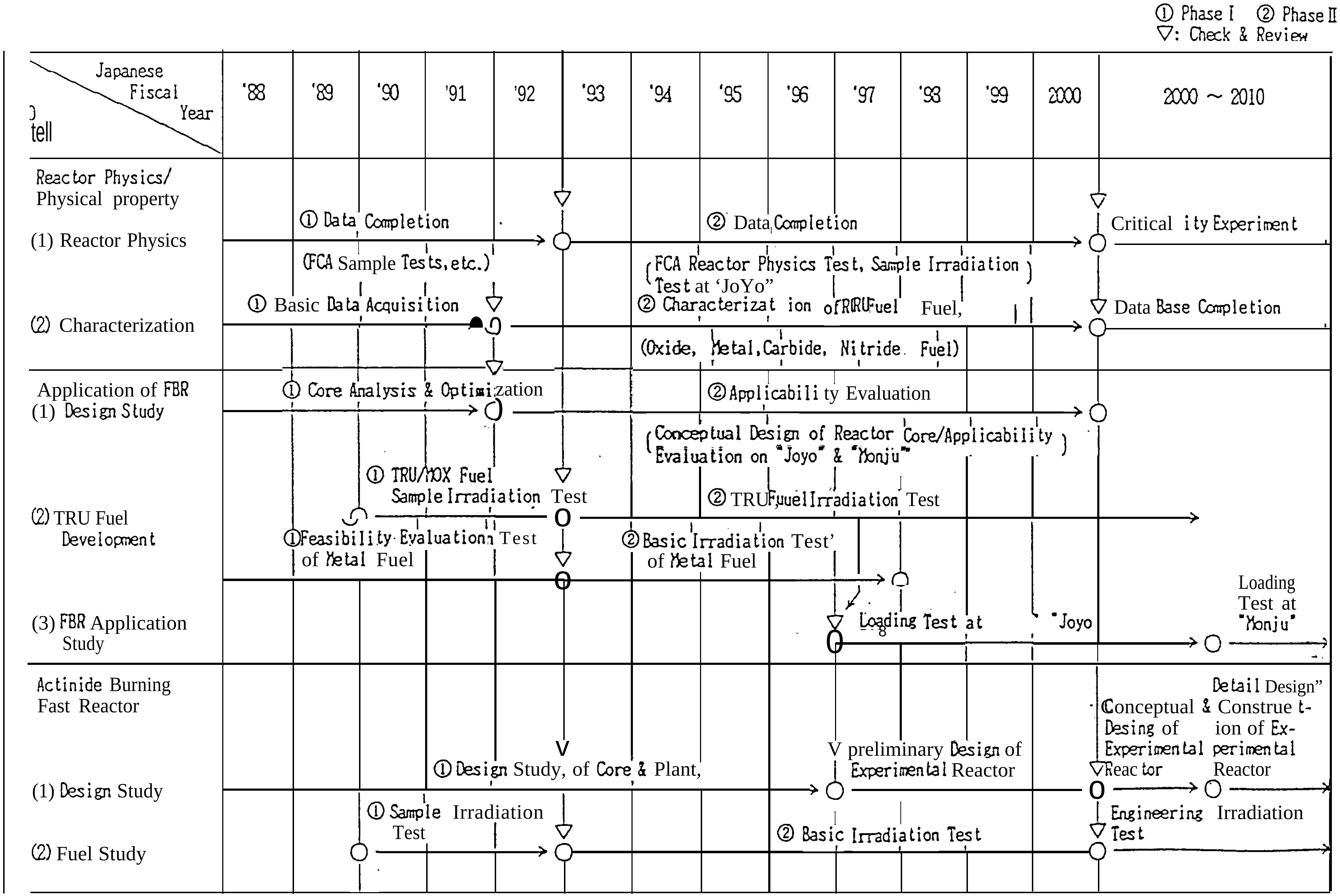

Fig. 3 R&D SCHEDULE OF TRANSMUTATION BY ACCELERATOR