

IAEA-TECDOC-1405

Operational and decommissioning experience with fast reactors

*Proceedings of a technical meeting
held in Cadarache, France, 11–15 March 2002*



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FOREWORD

The fast reactor, which can generate electricity and breed additional fissile material for future fuel stocks, is a resource that will be needed when economic uranium supplies for the advanced water cooled reactors or other thermal-spectrum options diminish.

Further, the fast-fission fuel cycle in which material is recycled offers the flexibility needed to contribute decisively towards solving the problem of growing 'spent' fuel inventories by greatly reducing the volume of high level waste that must be disposed of in long term repositories. This is a waste management option that also should be retained for future generations.

The fast reactor has been the subject of research and development programmes in a number of countries for more than 50 years. Now, despite early sharing and innovative worldwide research and development, ongoing work is confined to China, France, India, Japan, the Republic of Korea, and the Russian Federation. Information generated worldwide will be needed in the future. Presently, it is in danger of being lost — even in those countries continuing the work.

Many Member States have repeatedly underscored the importance of knowledge preservation and transmission to the young generation. In response to expressed needs by Member States, the IAEA has undertaken concrete steps towards the implementation of a fast reactor data retrieval and knowledge preservation initiative. Within the framework and drawing on the wide expertise of its Technical Working Group on Fast Reactors (TWG-FR), the IAEA convened, November 22–24 1999, an Advisory Group Meeting on Evaluation of Fast Reactor Core Physics Tests. The outcome of this advisory group meeting was to underline the importance of an IAEA initiated effort to preserve fast reactor physics knowledge with an exhaustive review of all available sources of fast reactor experimental data, including data from critical facilities.

The initiative received further support at a special technical session, entitled Passing on Fifty Years of Fast Reactor Knowledge to a New Generation in Nuclear Research and Development, which was held at the 2001 American Nuclear Society Winter Meeting, and co-chaired by Argonne National Laboratory (ANL) and IAEA staff.

In another, more general development, the IAEA Director General convened a meeting of senior officials from around the world to address the more general issue of nuclear knowledge management (17–19 June 2002). At this meeting, there was widespread agreement that, for sustainability reasons, long term development of nuclear power, as a part of the world's future energy mix, will require fast reactor technology and, that given the decline in fast reactor development projects, data retrieval and knowledge preservation efforts in this area are of particular importance.

Operational experience constitutes an important aspect of any fast reactor knowledge base. It is within the framework of the aforementioned initiative, and with the objective of gathering and exchanging information on fast reactor operational and decommissioning experience, and initiating the process of analyzing it (a necessary step in the process of transforming 'knowledge' into 'wisdom'), that the IAEA convened the Technical Meeting on Operational and Decommissioning Experience with Fast Reactors. The technical meeting, hosted by CEA, Centre d'Etudes de Cadarache, France, was held 11–15 March 2002.

The IAEA would like to express its appreciation to all the participants, authors of papers, chairpersons, and to the hosts at CEA Cadarache.

The IAEA officer responsible for this publication was A. Stanculescu of the Division of Nuclear Power.

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