

FOREWORD

One of the primary requirements for nuclear power plants and facilities is to ensure safety and the absence of damage under strong external dynamic loadings such as earthquakes. The designs of liquid metal fast reactors (LMFRs) include systems which operate at low pressure and components which are thin-walled and flexible. These features may be severely affected by earthquakes. Therefore, the International Atomic Energy Agency supports the activities of Member States to apply seismic isolation technology to LMFRs in advanced reactor technology development.

The IAEA organizes meetings and co-ordinated research programmes in which Member States exchange experimental and analytical data. The IAEA has sponsored two meetings on the seismic behaviour of LMFRs: Reactor-block anti-seismic design and verification (Bologna, Italy, October 1987) and seismic isolation technology (San Jose, California, March 1992). The participants of the first meeting recommended performing benchmark analyses to compare and validate the computer codes developed in different countries. This proposal was consistent with the conclusion that detailed core seismic analysis was important to ensure fast reactor safety during an earthquake. The IAEA Working Group on LMFR endorsed this proposal at its meeting in April 1990 and after that year the IAEA approved the Co-ordinated Research Programme (CRP) on Intercomparison of LMFR Seismic Analysis Codes.

The codes used for the structural design of the core and reactor internals were validated in two stages. The first stage was the comparison of the analytical results with the Italian PEC reactor core experiments. In stage two the Japanese and French reactor core experiments were compared.

The results have been published in the following two volumes:

- Volume 1: Validation of Seismic Analysis Codes using Reactor Core Experiments (IAEA-TECDOC-798)
- Volume 2: Verification and Improvement of Reactor Core Seismic Analysis Codes using Core Mock-up Experiments (IAEA-TECDOC-829).

This publication (Volume 3) contains the final papers summarizing the validation of the codes on the basis of comparison of observed effects with computer simulated effects on reactor cores from seismic disturbances.