

Validation of fast reactor thermomechanical and thermohydraulic codes

*Final report of a co-ordinated research project
1996–1999*



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FOREWORD

This report is a summary of the work performed under a co-ordinated research project (CRP) entitled Harmonization and Validation of Fast Reactor Thermomechanical and Thermo-Hydraulic Codes and Relations using Experimental Data. The project was organized by the IAEA on the recommendation of the IAEA's Technical Working Group on Fast Reactors (TWGFR) and carried out from 1996 to 1999.

In certain conditions, temperature fluctuations in the coolant close to a structure caused by thermal striping can lead to thermomechanical damage to structures. Institutes from a number of Member States have an interest in improving engineering tools and prediction techniques concerning the characterization of the thermal striping effects, in which numerical models have a major role. Therefore, the IAEA through its advanced reactor technology development programme supports the activities of Member States in this area. Design analyses applied to thermal striping phenomena need to be firmly established, and the CRP provided a valuable tool in assessing their reliability.

Eleven institutes from France, India, Italy, Japan, the Republic of Korea, the Russian Federation and the United Kingdom co-operated in this CRP.

This report documents the CRP activities, provides the main results and recommendations and includes the work carried out by the research groups at the participating institutes within the CRP on harmonization and validation of fast reactor thermomechanical and thermohydraulic codes and relations.

The IAEA would like to express its appreciation to all who took part in the project and in the preparation of this report. Special thanks go to O. Gelineau and M. Sperandio of the FRAMATOME-NOVATOME (France) who served as Chairpersons throughout the Research Co-ordination Meetings (RCM). The IAEA officers responsible for this work were A. Rineiskii and A. Stanculescu of the Division of Nuclear Power.

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