

FOREWORD

In the last two decades the awareness of the potential hazard to the nuclear plants from earthquakes, has dramatically increased. This was accompanied by a development of earthquake engineering methods directed at nuclear industry and particularly at PWRs.

Most of the early nuclear plants were not specifically designed against earthquakes, although subsequent post-analysis showed a significant seismic capabilities. This was also the case for the prototype fast reactors. The seismic loading became a design requirement for the second generation of large demonstration plants designed in 1970's. The seismic methodology prevalent at the time was often found to be inadequate to cope with some of the fast reactor design features and therefore a development of new methods was initiated.

The understanding of the physical phenomena, validation of the numerical methods and the design implications have now reached a degree of maturity. This prompted the IAEA to organize a specialists' meeting on Aseismic Design of LMFBR's held in Bologna in 1987.

Following this meeting, IAEA commissioned this technical document with the aim to provide state of the art report on the subject. The document covers present knowledge and experience accumulated in all countries involved in fast reactor design.

The report is written in two parts. The theoretical background to the seismic methods and their application were written by Dr. R.J. Gibert of CEA, France, and the design considerations and the experimental validation were written by Dr. A. Martelli of ENEA, Italy. The document was edited by Dr. M. Dostal of NNC, UK.

It is hoped that this document will be of some assistance to design companies and R & D organizations in all countries at different stages of development of fast breeders technology.