

1. INTRODUCTION

The design of LMFBR reactor-block and other components might be greatly affected by a design and safety requirements for the fast reactor plant to withstand earthquakes. In fact, the presence of rather flexible structures and non-neglibible clearances, which are necessary to minimize the effects of thermal conditions, may lead to considerable amplifications of the seismic motion of structures and components. Furthermore, the use of thin wall shells could cause buckling of the large vessels.

In some countries, in which large earthquakes are expected, restraints have been applied to the main vessel and/or the core, to make these structures as stiff as possible, and thus to avoid large seismic amplifications. In other countries and especially where earthquakes are less important, flexible structures and unrestrained vessels and cores have been adopted.

A detailed seismic analysis of vessels and reactor-block internals appeared necessary to the LMFBR designers of most countries: such analysis required a development of new specialized numerical techniques. In parallel, advanced and expensive experiments including on-site testing, were considered necessary to validate the numerical methods.

The role of seismic isolation concept is becoming increasingly important in all countries involved in fast reactor design. Its influence extends to all aspects of aseismic design from specification of ground motion, methodologies, component design and qualification to licensing. If the development and application of the seismic isolation is successful, it will relegate the importance of earthquake loadings in fast reactor design to a secondary effect.