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OPERATIONAL-SAFETY ADVANTAGES OF LMFBR's: THE EBR-II EXPERIENCE AND TESTING PROGRAM

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J. I. Sackett, R. W. Lindsay, and G. H. Golden
EBR-II Project
Argonne National Laboratory
Argonne, Illinois and Idaho Falls, Idaho

ABSTRACT

LMFBR's contain many inherent characteristics that simplify control and improve operating safety and reliability. The EBR-II design is such that good advantage was taken of these characteristics, resulting in a very favorable operating history and allowing for a program of off-normal testing to further demonstrate the safe response of LMFBR's to upsets. The experience already gained, and that expected from the future testing program, will contribute to further development of design and safety criteria for LMFBR's. Inherently safe characteristics are emphasized and include natural convective flow for decay heat removal, minimal need for emergency power and a large negative reactivity feedback coefficient. These characteristics at EBR-II allow for ready application of computer diagnosis and control to demonstrate their effectiveness in response to simulated plant accidents. This latter testing objective is an important part in improvements in the man-machine interface (MMI).

INTRODUCTION

Nuclear power plants have two traditional lines of protection, a highly reliable plant protection system (PPS) to protect the plant, and containment to protect the public. These are also further subdivided and described as "lines of assurance." Many of these features tradition-

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