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BOOK REVIEWS

Nuclear Reactor Safety Heat Transfer

Edited by Owen C. Jones Jr

This very large book of nearly one thousand pages claims to be an organised composite summary of nuclear safety heat transfer technology and to describe the state of the art at the turn of the decade (1980's). Many of the authors are internationally recognised authorities in their fields and the book provides valuable information both for the student and seasoned engineer. Each chapter ends with a comprehensive list of references for further detailed study.

We assume that with so many contributors it has been difficult to achieve a reasonable balance. The book is virtually confined to the safety problems of light water reactors (lwr) and liquid metal fast breeder reactors (lmfbr) though it does make brief mention of other types. Table 1.1 (p 5) gives the world list of nuclear power plants operable, under construction or on order up to Dec 1979. There are more than 430 lwr, 50 gas cooled reactors and 7 lmfbr listed and yet the safety problems of lmfbr receive the same attention as those of lwr while gas cooled reactors are not seriously considered.

Chapter 2 deals with power reactor concepts and systems. The introduction admits to an overview of some selected nuclear reactor systems which have been constructed or proposed. As some of the proposed systems are not serious contenders, we suggest that if space was limited it would have been more valuable to restrict the descriptions to only those constructed and to have given more details of the operating pressures and temperatures, pressure vessel and containment problems, and other safety

related aspects. Some of this information is given elsewhere in the book but it is difficult to collate all the relevant data.

There are two chapters on Single and Two Phase Flow. Single phase problems are covered in about one percent of the pages and, though this may suggest the relative magnitude of the two groups of problems, the reader would be well advised not to assume that we are knowledgeable in all aspects of single phase flow such as flow distribution and pressure drop in complex manifolds, or in a double ended guillotine fracture.

Two authors virtually repeat the same description of Reactor Operating States that can be usefully categorised for the pressurised water reactor. We are surprised to find no mention of Einstein in a chronological summary of important events in the history of nuclear energy, in an otherwise excellent introductory chapter.

The general quality of the text and figures is good. There are, however, many examples of illegible figures (pp 167, 299, 434) and one curious confusion is in the sketches of reactor types in that the only figure suggesting a substantial primary circuit is for a system operating at close to atmospheric pressure (p 108).

For readers interested in a general introduction to the problems of nuclear reactor safety heat transfer and for the specialist concerned with lwr or lmfbr we can strongly recommend the purchase of this book. Our criticisms, a few of which are listed above, should not detract from a significant publication.

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Published, price \$99.00, by Hemisphere Publishing Corporation, 1025 Vermont Avenue NW, Washington DC 20005, USA