

Book Review

Water Coolant Technology of Power Reactors. By Paul Cohen. Published under the direction of the American Nuclear Society for the Division of Technical Information, U.S. Atomic Energy Commission. Gordon and Breach Science Publishers, New York (1969). 439 pp. \$17.50.

The author's 20 years of experience in the field of water coolant technology with the Westinghouse organization has fitted him well for the difficult task of writing this book. He states in the preface that the monograph is directed primarily toward the needs of operators of water-cooled nuclear power plants and that it presents the elements of the supporting scientific and engineering disciplines and an interpretive summary of the specialized literature of the field.

There is no doubt that this monograph fills a real need in the technology of power reactors. It brings together under one cover a wealth of information on the subjects Fluid Flow, Heat and Mass Transfer, Physical Chemistry of Water and Aqueous Solutions, Radiation Chemistry and Behavior of Gases in Reactor Systems, Radio- and Nuclear Chemistry of Water Reactor Systems, Chemical Shim Control and pH Effect on Reactivity, Coolant Purification and Waste Disposal, Corrosion of Reactor Materials, and Plant Contamination. The book does not contain any discussion of environmental pollution problems generated by power reactors, and the space allotted to waste disposal is rather small.

It is natural that the author has made maximum use of data obtained within Westinghouse but the book is in no way restrictive in that 70% of the 338 references are from other establishments located not only in the U.S. but in many other countries including Canada, the U.K., and Russia. This wide coverage of the literature makes the book an excellent source of original data references.

The author points out that the many unanswered ques-

tions in power reactor technology must be resolved by informed interpretation of plant operating experience. While many may not agree with Cohen's interpretations, they serve to stimulate thought and discussion. Many of the problems in this field are still being investigated and much more operating experience is required before solutions will be found.

This monograph serves another important function in that it focuses the attention of nuclear power plant operators and designers on chemical control which has often been neglected in the desire to produce electricity with a high capacity factor.

While the book has been directed mainly at the needs of power reactor operators it is a recommended addition to the libraries of all organizations in the field of nuclear power. However, nonspecialists will find the book difficult because of the diversity of the subject matter, the large amount of detailed data, and a lack of integration of many aspects of the subjects. There are, unfortunately, many errors in the text which are not all covered by the errata sheet.

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About the Reviewer: G. M. Allison has been associated with the Chalk River laboratories of Atomic Energy of Canada for 23 years. Since 1954 he has been involved with problems relating to the chemistry of coolants in loops and power reactors including fission-product release from failed fuel, radiation decomposition of ammonia in boiling water systems and corrosion-product activity transport.