BOOK REVIEWS

Selection of books for review is based on the editors' opinions regarding possible reader interest and on the availability of the book to the editors. Occasional selections may include books on topics somewhat peripheral to the subject matter ordinarily considered acceptable.

Title Water Coolant Technology of Power Reactors

Author Paul Cohen

Publisher Gordon & Breach Science Publishers

Pages 439

Price Reference $27.50
Professional $13.75

Reviewer John A. Ayres

This book discusses water chemistry, principally of pressurized water reactors, although relatively brief mention is made of boiling water reactors and those operating at low temperature or low power.

The dust cover states that the purpose of the book is "to assist the Nuclear Power Plant operator by presenting the elements of the scientific and engineering disciplines supporting water technology of power reactors, and (to serve) as an interpretative summary of the specialized literature of the field."

The nine chapters composing this book treat: survey of coolant technology problems, fluid flow and heat transfer, physical chemistry of water and aqueous solutions (especially those used in pressurized water reactors), radiation chemistry, behavior of gases in reactor systems, radiochemistry and nuclear chemistry of water reactor systems, chemical shim control, pH effect on reactivity, corrosion of reactor materials, and plant contamination.

It is obvious that in one relatively short volume (429 pages), all of these subjects can not be discussed in depth. The author surveys most of these subjects adequately to give the reader a general view and furnishes numerous references for a more thorough study. He discusses in fairly complete detail certain subjects, including: corrosion of zirconium alloys, plant contamination, chemistry of dilute basic solutions, chemical shim control, pH effects on reactivity, and formation of films and particulate impurities in primary systems of pressurized water reactors.

The author is at present a consultant in coolant technology at Westinghouse Advanced Reactors Division and formerly was manager of technical groups that investigated problems related to coolant chemistry in pressurized water reactors. Much of the information in this book was developed at Westinghouse by Cohen and his associates. Anyone attempting to obtain additional information by checking the references will realize the service Cohen has done. This is especially evident in the chapter on chemical shim control and pH effect on reactivity, which is presented in an integrated, logical form and includes all the pertinent information, formerly available as scattered excerpts in reports, publications, and notebooks.

Cohen states in his Preface, "The present state of the technology includes numerous unanswered questions. Many of these must be answered by the informed interpretation of plant operating experience." Some of the problems discussed in this book are still the subject of active research. Not everyone will agree with all of Cohen's conclusions, but these represent opinions by one recognized as an international expert on the subject, and are based on the information available at the present time.

In summary, this is a necessary and welcome addition to the literature and should be on the desk of anyone working with coolant systems of water-cooled reactors.

J. A. Ayres, PhD, Iowa State University, was previously associated with Pacific Northwest Laboratory of Battelle Memorial Institute and with General Electric Company as senior research associate and manager of groups investigating problems of corrosion, coolant chemistry, and reactor decontamination. He is editor and principal author of a book, Decontamination of Nuclear Reactors and Equipment, *published by Ronald Press in 1970.*

Title Radiation Damage in Reactor Materials (Proceedings of a Symposium, Vienna, June 2-6, 1969)

Editor International Atomic Energy Agency

Publisher Unipub, Inc., 1969

Pages Vol. I - 463, Vol. II - 605

Price $13.00 and $17.00

Reviewer Robert A. Weeks

One of the ostensible reasons for scientific symposia is the presentation of papers on the current status