Int. J. Heat Mass Transfer. Vol. 24, No. 10, p. 1749, 1981
Printed in Great Britain

Pergamon Press Ltd

BOOK REVIEW

J. M. DELHAYE, M. GIOT and M. L. RIETHMULLER (Editors), **Thermohydraulics of Two-Phase Systems for Industrial Design and Nuclear Engineering.** Hemisphere/McGraw–Hill, 1981, U.S. $39.50.

ACCORDING to the dust jacket "This advanced text provides engineers with a comprehensive study of the latest advances in thermohydraulics of two-phase systems applicable to industry, including nuclear, mechanical, chemical and petroleum engineering facilities". If I had bought this book after looking at the title and the dust jacket I would be tempted to write to the publisher and ask for my money back. It should be realised that this book is concerned almost exclusively with the study of two-phase systems in the context of nuclear reactor safety. Light water-cooled thermal reactor problems are treated most extensively, although there is some information about sodium-cooled fast reactor problems. The exclusively nuclear safety nature of the book can be illustrated by noting that Page 1 introduces the abbreviations LWR, LOCA, PWR, BWR and ECC and that the second section of Chapter 1 is entitled "PWR LOCA–ECC".

This book presents a written form of a series of lectures given at the von Karman Institute for Fluid Dynamics in 1978. There are 20 chapters contributed by 6 authors (J. Costa, D. Grand, J. M. Delhaye, Y. Y. Hsu, M. Giot, and G. Yadigaroglu). The chapters vary greatly in length: from 7 to 45 pages. Most of the work referred to was published in 1978 or earlier, and little attempt seems to have been made to add later work. The book does not suffer too much from the diverse authorship. The chapters appear to have been edited and appear in similar formats, although there is only limited cross-referencing between chapters. It is a pleasure to see that the diagrams have been redrawn to a uniform standard and rarely contain extraneous information. There do not appear to be very many typographical errors, though equation (4) on Page 73 is a spectacular exception.

Accepting that this is a book on nuclear safety and two-phase flow, have the authors done a good job in reviewing their topics? The answer to this question must in general be 'yes'. Most of the chapters cover the field very well and provide many references where the subject matter can be studied in more detail. As an additional bonus I found that about two-thirds of the chapters were more or less comprehensible on first reading, and I could imagine that nearly half the chapters would be of some assistance to practical engineers.

Looking at individual chapters, there were three which I found particularly useful:

(1) "Two-Phase Flow Patterns" by Delhaye where the flow patterns and various prediction methods were well described.

(2) "Boiling Heat Transfer Equations" by Hsu where a mass of information is authoratively presented on saturated and film boiling.

(3) "Regime Transitions in Boiling Heat Transfer" by Yadigaroglu which provides a mainly descriptive account of the changes in boiling heat transfer which can occur.

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