

Introduction

This volume represents the second in what is expected to become a series of conference proceedings flowing from periodic international meetings. The latest of these meetings, which was held in Vienna, Austria, on 8–10 October 1984, was sponsored principally by the International Atomic Energy Agency, Nuclear Power Division. Other key supporters included approximately 20 member nations, the Secretariat of the IAEA Working Group on Reliability of Reactor Pressure Components, and ASTM Committee E-10 on Nuclear Technology and Applications. Historically, this Specialists Meeting grew from and continued a series of highly successful meetings begun in 1967 with irregularly scheduled follow-on meetings since that date.

The latest of the Specialists Meetings contained papers in four areas: (1) overviews of national positions on research or operational considerations; (2) periodic surveillance of radiation embrittlement and related research activities; (3) pressure vessel integrity and regulatory considerations; and (4) fundamental mechanisms of radiation embrittlement. Besides these formal sessions, detailed discussion was encouraged. This discussion provided much supplemental guidance to support the Summary that seeks to identify not only the results of this meeting but the crucial needs remaining in filling our knowledge base for this subject. In connection with the latter, there was remarkable unanimity concerning the gaps in our knowledge that will be the focus for future studies and later meetings. The collective appraisal of the scope of our knowledge on the subject of radiation embrittlement of reactor structural steels resides in two areas—assuring safety of currently operating systems through knowledge and enhancing future integrity through fundamental studies—the results of which will provide guidance for minimizing the negative consequences of high energy neutron radiation exposure of nuclear reactor components in the future.

The greatest benefit of this volume is the provision in one place of the results of critical studies from many nations, both those with and those now developing nuclear power plants for electricity production. It is believed, therefore, that this represents an international status report of lasting value. Further, the catalytic effects of this international interaction are most effective and, while not always evident from the cold written word, are most evident in the lively forum created during the meeting of specialists. Hopefully, the essence of these interactions is captured in the rather cryptic summary gleaned from the combination of formal sessions and the less formal discussion. Underlying the total effort is a dedication

to effective electric power generation using nuclear knowledge for imminently peaceful uses that may enhance the standard of living of all the world's peoples. This high goal has been vigorously promoted by the principal sponsor as well as the most unselfish scientist and engineer participants.

Special recognition is due the many knowledgeable and articulate contributors, both authors and discussors, who made this meeting the effective forum of knowledge that was the goal of all. Other individuals deserving special gratitude and credit include: Dr. H. J. Laue, director, IAEA Nuclear Power Division; Mr. R. Skjoeldebrand, his associate director; Mr. V. Lyssakov, scientific secretary for the meeting and the sponsoring IAEA Working Group; the many participating specialists who made the discussion so valuable; the reviewers who unselfishly shared their expertise; the ASTM Committee on Publications, an elite and tireless group; and, finally, the dedicated ASTM editorial staff.

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