FOREWORD

A unique feature of the nuclear industry right from its early days has been that the scientists and engineers engaged in its development have been conscious of the hazard potential associated with use of nuclear energy and ionizing radiations. Accordingly several safety elements like defence-in-depth in the form of multiple safety layers, redundancy, diversity and physical separation of components, guarding against single failures and common cause failures were introduced in the design of nuclear reactors right from the beginning. For operation of the facilities, strict rules and operating procedures including procedures for upset conditions and for handling of emergencies were put in place. This all slowly led to the development of a strong safety culture in all activities related with use of nuclear energy. When the Indian Atomic Energy programme came into being with the formation of the Atomic Energy Establishment, Trombay in 1954 and the commissioning of Apsara research reactor in 1956, the safety of this plant was ensured essentially through self regulation. It is relevant and important to point out here that Dr. H.J. Bhabha, the founder and the main architect of the Indian atomic energy programme, laid a strong foundation for a good safety culture which one sees today prevailing in all the activities related to Atomic Energy in India. The following directive which Bhabha issued on February 27, 1960 reads like a safety mission statement of an ideal nuclear industry: "Radioactive material and sources of radiation should be handled in Atomic Energy Establishment, in a manner, which not only ensures that no harm can come to workers in the Establishment or any one else, but also in an exemplary manner so as to set a standard which other organizations in the country be asked to emulate."

As the nuclear energy activities started expanding in India, a need was felt to have specialists to monitor their safety. Thus started the practice of assigning a health physicist to each of the nuclear facility whose mandate was to provide safety surveillance to its operations.

While the Health Physics Division of Bhabha Atomic Research Centre (BARC) provided safety surveillance of DAE facilities, the Directorate of Radiation Protection as the Competent Authority under Radiation Protection Rules 1971, focused on the regulation of radiological safety in non-DAE facilities. In 1972 when the first unit of Rajasthan Power Station was getting commissioned, DAE appointed an apex Committee called DAE Safety Review Committee (DAE-SRC) to review all safety aspects of RAPS-1 unit. Later, DAE-SRC continued to deal with major safety aspects and issues of all the nuclear and industrial units of DAE. In 1979 a senior level committee chaired initially by M.D. Karkhanawala and later by V.N. Meckoni reviewed the specific functions and responsibilities of DAE-SRC in order to enable DAE to discharge its obligations under the Atomic Energy Act, in particular the regulatory and safety functions envisaged under Sections 16, 17 and 23 of the Act. The Report of the Committee titled "Reorganization of Regulatory and Safety Functions" (February 1981) recommended the creation of Atomic Energy Regulatory Board by the Atomic Energy Commission with powers to lay down safety standards and assist DAE in framing rules and regulations for enforcing regulatory and safety requirements envisaged under the Atomic Energy Act 1962. The Committee also recommended that AERB should be a statutory body under the Act (if necessary by suitable amendment of the Act) to give AERB a legal basis as this would be not only in line with international practice but also enhance the public confidence on the safety of the nuclear power plants in the country.

Thus it was on November 15, 1983 that AERB was constituted under the Atomic Energy Act, 1962. Rules promulgated under this Act and the Environment Protection Act of 1986 provide the authority to AERB to ensure that the use of ionizing radiation and atomic energy in the country does not cause undue harm to the health of the workers and the public and to the environment. In the last twenty-five years the Board has grown from a handful of scientists and engineers to a vibrant institution of more than 200. Its professional strength and quality management system are vindicated by the fact that it secured

in 2006 the ISO 9001:2000 certification from the Bureau of Indian Standards. The Board uses such an accredited system for formulating and enforcing its rigorous safety norms, for carrying out in-depth safety review and conducting elaborate and effective regulatory inspections of the nuclear and radiation facilities. In its march towards attaining this status AERB had chartered its own paths and devised its own procedures to handle wide range of projects and challenging issues. AERB was fortunate to have at its helm very eminent persons who brought to bear their vast experience and expertise in different disciplines on the mature evolution of AERB. Each one of them left an indelible stamp of his personality on the fabric of AERB.

We started the AERB silver jubilee year celebrations by holding a simple function on 23 November 2007. The speakers at this function included Dr. Anil Kakodkar, Chairman, Atomic Energy Commission who himself has professionally supported AERB in a number of ways including being a member of our Safety Review Committee for operating plants. Except Dr. A. Gopalakrishnan, who unfortunately could not be present on this occasion, all past Chairmen and Vice-Chairmen of AERB spoke recalling the fond memories of their association with AERB. Excerpts of their speeches have been included in this book for their historical importance. The 'AERB Code of Ethics' and a 'Monograph on Probabilistic Safety Assessment' prepared by AERB staff were released in the function by Chairman, AEC and our new office building, 'Niyamak Bhavan-B' was inaugurated by Prof. A.K. De, the first Chairman of AERB.

This book is a brief historic account of the formation and growth of AERB over the past twenty-five years. Given the vast dimensions, both in range and content, of the responsibilities the Board has handled over these years, such an account cannot be in a simple linear format. An attempt has therefore been made to classify these activities into a few major groups and especially deal with those aspects that were challenging to the regulator. A few of the important issues or events which raised the concerns of the Board and sometimes drew public

attention have also been discussed. It is hoped that this book will offer the reader an insight into the ways in which the Board has been discharging its mandated functions.

I would like to use this opportunity to place on record our sincere appreciation and heartfelt thanks to all our colleagues in AERB, both past and present, who have worked hard and with conviction to bring this organization to the present level where it can be compared with some of the best regulatory bodies internationally. We also gratefully acknowledge the strong support that AERB has received from a number of organizations and the large number of experts who have helped us by way of participation in AERB Committees, expert groups, working groups, etc. and have advised us in a variety of ways to uphold the cause of safety.

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