

Preface

In 2011, a gigantic tsunami, triggered by the Great East Japan Earthquake, caused a catastrophe at Fukushima Daiichi Nuclear Power Plant in Japan. The local situation remains critical, and it will take several decades to resolve the consequences of the accident. Many victims of the nuclear disaster are still forced to live away from their homes; they bear various inconveniences, and the accident will have serious impacts on their life and health far into the future. Many social and technical problems must be solved before we can reach closure on the Fukushima Daiichi accident. The accident at Fukushima has undoubtedly damaged people's trust in nuclear technology. To restore the status of nuclear power generation to that achieved before the Fukushima accident, trust in nuclear technology must be rebuilt. To achieve this, it is essential to analyze in depth the causes of the accident and subsequent responses, and to explain these clearly to people worldwide.

Japan is one of the most earthquake- and tsunami-prone countries in the world, and has been pursuing the development and advancement of seismic engineering technologies for nuclear power plants since the 1950s, through huge efforts and investments. Seismic safety engineering of nuclear power plants in Japan has been acknowledged globally and is the pride of Japanese scientists and engineers. However, the accident at Fukushima destroyed people's confidence in nuclear technologies, including that of Japanese experts.

While this book was being written, public opinion remained divided around the question of whether it is plausible to continue using nuclear energy into the future. Not only the public, but also politicians, critics, scientists, and engineers involved in nuclear power are now split between two different attitudes toward this question. At all levels of society in Japan, it is important to take sufficient time to form a calm, scientific judgment.

Even if Japan were to discontinue nuclear power in the future, the country would still need advanced technologies for the reactor decommissioning and radioactive waste disposal. Therefore, Japan must continue to develop these technologies and accumulate knowledge for the future. However, with growing concerns about global warming and unstable petroleum prices, an increasing number of Asian

countries are seeking to use nuclear power for energy security and to reduce carbon dioxide emissions.

I believe that the experience of the severe accident at Fukushima will contribute significantly to improving the safety of nuclear power plants against earthquakes and tsunamis around the world, and that the technology and knowledge that Japan has accumulated contributes greatly to the efforts of other countries to improve the safety of their nuclear power plants. The objective of writing this book was to compile, in a systematic manner, information on nuclear power plant seismic safety technology and knowledge, pass it on to future generations, and share this information with people worldwide.

Tokyo, Japan
July 2016

Masanori Hamada

Earthquake Engineering for Nuclear Facilities

Hamada, M.; Kuno, M. (Eds.)

2017, X, 303 p. 244 illus., 108 illus. in color., Hardcover

ISBN: 978-981-10-2515-0