

I. Introduction

1. Overview of the Investigation Committee

On March 11, 2011, the Fukushima Dai-ichi Nuclear Power Station (hereinafter referred to as the “Fukushima Dai-ichi NPS”) and the Fukushima Dai-ni Nuclear Power Station (hereinafter referred to as the “Fukushima Dai-ni NPS”) of the Tokyo Electric Power Company (“TEPCO”) were struck and damaged by the Tohoku District - off the Pacific Ocean Earthquake and the ensuing tsunami generated by the earthquake. This developed into a very serious nuclear accident affecting vast areas.

Large amounts of radioactive materials were released from the Fukushima Dai-ichi NPS. The area within the 20km radius of the power station was designated as the “Access Restricted Area,” with entry being prohibited unless authorized. Some areas outside the 20km radius were designated as the “Deliberate Evacuation Area.” While a new evacuation rule is in effect since April 2012 for the Access Restricted Area and Deliberate Evacuation Area for a portion of local municipalities, the situation is such that more than 110,000 residents evacuated, many of who still have to live in evacuation. In addition, the radioactive material released in the accident has spread beyond the Fukushima Prefecture border into vast areas of Eastern Japan. The problem of radioactive contamination has seriously and greatly affected the lives of people as it raised concerns about the impact of radiation on the health of many people including children; caused extensive damage to the producers of agricultural, livestock and marine products; and caused anxiety among the consumers of those products. Moreover, the accident shocked many countries throughout the world, especially those located near Japan. The discharge of contaminated water to the sea, in particular, drew criticism from the international community, not only from the neighboring countries.

The Investigation Committee on the Accident at the Fukushima Nuclear Power Stations of Tokyo Electric Power Company (hereinafter referred to as the “Investigation Committee”) was established by a Cabinet decision on May 24, 2011, with the aim of making policy recommendations on measures to prevent the further expansion of damage caused by the accident and a recurrence of similar accidents in the future. This was done by conducting a multifaceted investigation in an open and neutral manner, accountable to the public, in order to determine the causes of the accident at the Fukushima Dai-ichi and Dai-ni NPSs and the causes that contributed to the damage inflicted by the accident.

The Investigation Committee was chaired by Yotaro Hatamura (Professor

Emeritus of the University of Tokyo, Professor of Kogakuin University) and consisted of 10 members, who had been nominated by the Prime Minister of Japan. In addition, the Investigation Committee had two technical advisors nominated by the chairperson to provide the Committee with advice on specialized and technical subjects. At the Secretariat of the Investigation Committee for supporting the investigation, the Secretary-General headed a group of officials from various ministries and agencies and was assisted by eight experts in fields such as technological sociology, analysis of a severe accident at reactor facilities and evacuation behavior. The Secretary-General headed three investigation teams in the Secretariat¹ led by such experts.

Investigations into the accident have also been conducted by other parties such as TEPCO, the power company involved in the accident, and the Nuclear and Industrial Safety Agency (“NISA”), the national nuclear regulatory body, of the Ministry of Economy, Trade and Industry. Moreover, the Japanese Government submitted reports to the International Atomic Energy Agency (IAEA) via the Nuclear Emergency Response Headquarters. However, the Investigation Committee undertook its work with the mission of conducting a separate and comprehensive investigation, paying attention not only to technological issues but also to institutional issues, being independent of the existing framework of Government administration in the area of nuclear power generation^{2,3}.

2. Activities of the Investigation Committee

The Investigation Committee held its first meeting on June 7, 2011 and began its

¹ The investigation teams were: the “Social System Investigation Team,” which studied the background situations that had preceded the accident; the “Accident Causes Investigation Team,” which studied the technological problems of the accident; and the “Damage Expansion Prevention Measures Investigation Team,” which studied the appropriateness of evacuation measures and other various measures.

When the teams were first being formed, there was discussion of creating a “Legal Regulation Examination Team,” based on the discussions in these investigation teams. However, it was judged over the course of discussions that the three teams were sufficiently raising issues related to necessary recommendations. The new team was, therefore, not formed.

² For the basic principles of the Investigation Committee and the topics addressed by the Investigation Committee, see Chapter I, Sections 3 and 5 of the Interim Report <http://icanps.go.jp/eng/interim-report.html>.

³ For this accident, in addition to this Investigation Committee, the Law on Fukushima Nuclear Accident Independent Investigation Commission of the National Diet of Japan, which was approved and brought into force on September 30, 2011, established the Fukushima Nuclear Accident Independent Investigation Commission (NAIIC). This Commission published its report, in July 2012. In the private sector as well, the Rebuild Japan Initiative Foundation created the Independent Investigation Commission on the Fukushima Dai-ichi Nuclear Accident, which published its Research Investigation Report (provisional title) in February 2012.

investigations. At its sixth meeting on December 26 of the year, the Investigation Committee compiled the Interim Report. The Interim Report was based on information at a midpoint stage of investigations, but included as many details as possible related to the facts that had been revealed about the accident up to that point, with the awareness of the Investigation Committee that the accident had captured a lot of attention from people both in Japan and around the world, and that various initiatives arising from the lessons of the accident, led by relevant organizations, were already underway. Furthermore, the report deliberated, to the extent possible, problems related to, among others: the response of governmental organizations to the accident; the response to the accident at the Fukushima Dai-ichi NPS; preparedness for preventing the expansion of damage; and then-available preparedness for tsunami/severe accidents. The report also made a number of recommendations related to the ensuring of functions of emergency response centers (“Off-site Centers”), improving the monitoring operation, utilizing the System for Prediction of Environmental Emergency Dose Information (“SPEEDI”), preparing for the evacuation of residents, and the recommendations for a new nuclear safety regulatory body. An explanatory meeting for this Interim Report was held on January 20, 2012, and was attended by people from local municipalities within Fukushima Prefecture. Also at its eighth meeting on February 24 and 25, the Investigation Committee invited comments from, and exchanged opinions with, a few international experts, based on the Interim Report toward the compilation of its Final Report⁴, so that the investigation would meet the international interest in the investigation. Those experts were in the fields of nuclear power, radiation, and other aspects, from five countries (the United States, France, Sweden, Korea, and China). Knowing the outcomes of this kind of opinion exchange, the Investigation Committee continued its investigation, and concluded this Final Report at its thirteenth meeting on July 23, 2012.

For debating primarily on earthquake/tsunami countermeasures, the Investigation Committee, in addition to visits to Fukushima Dai-ichi NPS and Fukushima Dai-ni NPS, also inspected the Tokai Dai-ni NPS of the Japan Atomic

⁴ The international experts were Dr. Richard A. Meserve (Former Chairman of the Nuclear Regulatory Commission, United States), Mr. Andre-Claude Lacoste (Chairman of the French Nuclear Safety Authority (ASN), France), Dr. Lars-Erik Holm (Director General of the Swedish National Board of Health and Welfare, Sweden), Prof. Chang-Soon Heung (Professor at Korea Advanced Institute of Science and Technology (KAIST), President of the Korean Nuclear Society, Korea), Mr. Chai Guohan (Chief Engineer, Nuclear and Radiation Safety Center, Ministry of Environmental Protection of People’s Republic of China, China). Please see the Attachments to this report for a summary of the international experts’ opinions and advice.

Power Company, Onagawa NPS and the Haramachi Thermal Power Station of the Tohoku Electric Power Co., Inc., the Hamaoka NPS of the Chubu Electric Power Co., Inc. and the Kashiwazaki-Kariwa NPS of TEPCO. Furthermore, out of the municipalities affected by the nuclear accident, the Investigation Committee interviewed for collecting opinions of the mayors of Okuma Town, Futaba Town, Namie Town, Minamisoma City, and Iitate Village in Fukushima Prefecture, and the residents who had evacuated from Namie Town. The Investigation Committee also visited a temporary housing site for observation.

The Investigation Committee examined the materials, which had been submitted to the Investigation Committee mainly through arrangements made by its Secretariat, from TEPCO, NISA, the Nuclear Safety Commission of Japan (“NSC”) and other power companies and organizations concerned. In addition, the Investigation Committee interviewed⁵ many individuals concerned, including the managers, employees and committee members of these companies and organizations, former Prime Minister Naoto Kan and other people who had been members of the Cabinet at the time of the accident, and academic experts. The number of interviewees reached 772 with the time spent interviewing them amounting to about 1,479 hours. During the course of the investigations, the Investigation Committee conducted interviews with the consent of the interviewees. The Investigation Committee received a sufficient level of support from the persons concerned.

3. The Relationship between the Final Report and Interim Report

As noted in Section 2 above, the Interim Report included as much information as possible from what had been identified by the investigation of the accident by that time, and also contained a certain amount of evaluations and recommendations. Nevertheless, there were more than a few points for which investigations had not been completed at the time of the Interim Report or for which further investigation had been needed even though some information was covered in the Interim Report. After publishing the Interim Report, the Investigation Committee continued its investigation of these matters and compiled this Final Report. This Final Report, with the Interim Report as its complementary part, describes mainly the results of investigations after the Interim Report, and unless there is special reason to do so,

⁵ The committee members as well as technical advisors also interviewed together the key individuals concerned including those who had been members of the Cabinet at the time of the accident.

it does not repeat, in principle, the same content of the Interim Report. But, even if a matter was covered in the Interim Report, the item in question is included again, with information from the Interim Report quoted as appropriate, when there is a need to add additional information based on the results of investigation since then.

Below is a brief explanation about the content of this Final Report, touching on its relationship with the Interim Report.

Following this introductory chapter is Chapter II, which contains information on the damage and the responses to the accident at the Fukushima Dai-ichi NPS and the Fukushima Dai-ni NPS. The general description on the damage at the Fukushima Dai-ichi NPS was given in Chapter II of the Interim Report, while information on the responses to the accident at Units 1 through 4 of that NPS was covered in detail in Chapter IV of the Interim Report. Chapter II of this Final Report added new information in detail on the damage at the key facilities of Units 1 to 3 of the Fukushima Dai-ichi NPS, including the analysis on the expansion of damage along with the progression of the accident. There is also a discussion of the hydrogen gas explosions at the reactor buildings of Units 1, 3 and 4 of that NPS. In addition, this Chapter II of the Final Report presents: the information on the responses to the accident at Units 5 and 6 of the Fukushima Dai-ichi NPS, for which investigations had not yet been completed at the time of the Interim Report; information on the discussions and results of the restoration of external power at that NPS; and information on the responses to the accident at the Fukushima Dai-ni NPS.

Chapter III gives an overview of the organizational responses at the national level at the nuclear accident. This was discussed in the Interim Report. In line with the structure of Chapter III of the Interim Report, this Chapter III of the Final Report added some complementary descriptions, related to the results of investigations following the publication of the Interim Report. In order to clarify the chapter's corresponding relationship with that of the Interim Report, the heading and location of the corresponding items in the Interim Report are cited in the Final Report, for those items which remained completely unchanged from the Interim Report.

Chapter IV explains various types of measures that were largely taken outside the nuclear power station to prevent the spread of damage, including environmental radiation monitoring, SPEEDI, and the evacuation of residents. These items were discussed in Chapter V of the Interim Report. This Chapter IV of the Final Report added some complementary descriptions to the content of Chapter V of the Interim

Report, related to the results of investigations following the publication of the Interim Report, maintaining the structure of Chapter V of the Interim Report. Like in Chapter III above, the heading and location of the corresponding items in the Interim Report are cited here as well, for those items which remained completely unchanged from the Interim Report.

Chapter V discusses, together with Chapter VI of the Interim Report, the points which must be considered for preventing nuclear accidents beforehand, and for preventing the expansion of damage. The Interim Report discussed measures against earthquakes, tsunamis, severe accidents and measures addressing complex disasters. This Chapter V of the Final Report further developed discussions and complemented the content of the Interim Report, on scientific knowledge related to earthquakes and tsunamis arising from the zones near the Japan Trench, and on the severe accident countermeasures. It also describes the background of debate on the nuclear emergency response system thus far, and on international laws and standards.

Chapter VI analyzes major problems identified in Chapters II to V, recapitulates nine (9) major issues therefrom, such as “Building of fundamental and effective accident prevention measures,” “Lack of a viewpoint of complex disasters,” and “Importance of ‘Deficiency analysis from disaster victims’ standpoint,” and finally Chapter VI presents the recommendations of the Investigation Committee in seven (7) categories, for preventing a recurrence of nuclear disaster and for mitigating its damage. The recommendations made in the Interim Report are reproduced herein.