IV. Emergency Response Measures Primarily Implemented outside the Fukushima Dai-ichi Nuclear Power Station in Response to the Accident

1. Environmental Radiation Monitoring

(1) Preparedness for environmental radiation monitoring before the accident occurred and the initial situation regarding monitoring after the accident

a. Role sharing among the central government, local governments, and nuclear power operators before the accident occurred

See Chapter V 1. (1) a. of the Interim Report.

b. The initial monitoring activities that were conducted outside the premises of the Fukushima Dai-ichi NPS after the accident

(a) Initial land area monitoring after the accident

See Chapter V 1. (1) b. of the Interim Report[1].

(b) How aircraft monitoring started

The Ministry of Education, Culture, Sports, Science and Technology (MEXT) started to discuss monitoring by aircraft from around March 12 (see Chapter V 1. (2) b. of the Interim Report), and decided to have staff of the Nuclear Safety Technology Center embark on a helicopter of the Self-Defense Forces (SDF) to conduct monitoring, after coordination with the SDF and the Nuclear and Industrial Safety Agency (NISA).

As a result, the Ministry of Defense dispatched an SDF helicopter to a sports park in Rokkasho Village, Kamikita County, Aomori Prefecture[2], and the helicopter arrived at the park around 13:00 of the same day. However, as the monitoring staff had not arrived at the park yet, the helicopter left the park at around 13:10 that day[3]. The Nuclear Safety Technology Center

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[1] The subsequent investigation found that monitoring by monitoring cars by the Fukushima prefectural government from early in the morning of March 12 was conducted with the participation of staff of the Nuclear Emergency Assistance & Training Center (NEAT) of the Japan Atomic Energy Agency, who were sent to the Environmental Radioactivity Monitoring Center of Fukushima and arrived early in the morning of the same day, together with employees of the Fukushima prefectural government.

[2] The sports park was chosen as a meeting spot on the morning of March 12 at the request of the Nuclear Safety Technology Center.

[3] At that time, the helicopter crew of the Self-Defense Forces could not use wireless communication equipment they

staff, meanwhile, arrived at the sports park by 14:30 of the same day and stood by, but as the SDF helicopter had already taken off, the monitoring staff and the SDF helicopter failed to join together[4].

Subsequently, the MEXT continued to consider the implementation of aircraft monitoring and engaged in coordination with the Ministry of Defense and other parties concerned. However, monitoring by the SDF aircraft could not be carried out due to the impact of an explosion at the Reactor Building of Unit 3 at the Fukushima Dai-ichi Nuclear Power Station (hereinafter referred to as the "Fukushima Dai-ichi NPS") of Tokyo Electric Power Company (hereinafter referred to as "TEPCO") on March 14. As it turned out, the MEXT measured the levels of air radiation dose rates by aircraft beyond 30km from the Fukushima Dai-ichi NPS on March 25 for the first time, with the cooperation of the Japan Aerospace Exploration Agency (JAXA), an independent administrative organization (see Chapter V 1. (2) b. of the Interim Report).

c. The monitoring activities conducted within the premises of the Fukushima Dai-ichi NPS after the accident

See Chapter V 1. (1) c. of the Interim Report.

(2) Efforts to assign responsibility for radiation monitoring and the subsequent enhancement of monitoring activities

a. Efforts to assign responsibility for radiation monitoring within the government for the land area more than 20km from the Fukushima Dai-ichi NPS[5]

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carried with them, and thus were not able to check with or report to the headquarters, etc.

[4] In this regard, in hearings conducted by the Investigation Committee, the MEXT claimed that the MEXT "told the SDF that it wants the SDF helicopter to get together with the monitoring staff at the sports park at 14:30 on March 12." On the other hand, the SDF helicopter crew actually dispatched to the sports park said that they were "instructed to fly to the sports park as soon as we are ready." Whether this communication was made through NISA is not clear, and the possibility cannot be ruled out that the communication was made directly between the MEXT and the Ministry of Defense. In any event, one of the reasons for these different accounts appears to be the lack of sufficient coordination about the get-together time and other matters among the parties concerned. Exactly what gave rise to the difference in their accounts was not necessarily made clear, however.

[5] Though we covered the efforts to assign responsibility for radiation monitoring within the government for the land area more than 20km from the Fukushima Dai-ichi NPS in Chapter V 1. (2) a. of the Interim Report, we discuss them again in this section on the basis of facts confirmed in the subsequent investigation and verification.

As described in Chapter V 1. (1) b. of the Interim Report, since the Fukushima prefectural government and other parties concerned, due to the impact of the earthquake and the ensuing tsunami, were not able to conduct sufficient monitoring based on the Emergency Preparedness and Response Center (hereinafter referred to as the "Off-site Center"), where the Nuclear Emergency Response Local Headquarters (hereinafter referred to as the "Local NERHQ") of the national government, starting around March 13, Special Advisor to the Prime Minister, Mr. Goshi Hosono (hereinafter referred to as "Special Advisor Hosono") and others within the government asked executive officials at MEXT several times to conduct more proactive radiation monitoring activities on a national basis.

Under these circumstances, in the evening of March 15, the monitoring of the radiation levels in the air conducted by the MEXT using a monitoring car traveling around in Namie Town[6], Futaba-gun, Fukushima Prefecture, observed radiation dose rates as high as 330μSv/h. The MEXT recognized that it might also be necessary to explain its evaluation of these levels, including their hazardous nature and the judgment of necessity of evacuation, but it might be difficult to conduct the evaluation of the monitoring data on its own because it did not have data on plants at the Fukushima Dai-ichi NPS.

And so, Vice Minister Kan Suzuki of the MEXT (hereinafter referred to as "Vice MEXT Minister Suzuki") consulted with Deputy Chief Cabinet Secretary Tetsuro Fukuyama (hereinafter referred to as "Deputy Chief Cabinet Secretary Fukuyama) over the night of March 15 and early in the morning of March 16, and decided to seek the holding of a meeting on the assignment of responsibility concerning radiation monitoring activities within the government chaired by Chief Cabinet Secretary Yukio Edano (hereinafter referred to as "Chief Cabinet Secretary Edano").

Chief Cabinet Secretary Edano, for his part, had felt for some time that not only the monitoring of radiation levels was not being carried out sufficiently but also the results of

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[6] The Interim Report specified the location where this high radiation dose rate was observed as "Hirusone, Namie Town, Futaba-gun, Fukushima Prefecture." Later, however, the MEXT explained to the Investigation Committee that there was an error in the press release announced by the MEXT on March 16 and in related materials the MEXT submitted to the Investigation Committee. When the Investigation Committee looked into relevant facts, the location above turned out to be "Kawafusa, Namie Town." On February 10, 2012, the MEXT announced a correction to the press release announced on March 16, 2011.

monitoring conducted by the MEXT, the police, the SDF, electric power companies and other relevant organizations were not consolidated and shared to the fullest extent.

Following these developments, the meeting was called hurriedly at the Crisis Management Center of the Prime Minister's Office at around 8:00 of March 16, with Chief Cabinet Secretary Edano, Deputy Chief Cabinet Secretary for Crisis Management Tetsuro Ito (hereinafter referred to as "Deputy Chief Cabinet Secretary for Crisis Management Ito") and relevant officials from MEXT, NISA and the Nuclear Safety Commission (hereinafter referred to as "NSC") participating[7]. At the meeting on the roles and responsibilities for monitoring within the government, Chief Cabinet Secretary Edano instructed as follows: MEXT should compile and publish the monitoring data collected by individual organizations concerned in land areas beyond 20km from the Fukushima Dai-ichi NPS; the NSC should evaluate the monitoring data; and the Nuclear Emergency Response Headquarters (hereinafter referred to as "NERHQ") should take any necessary measures based on the evaluation of the NSC. No one at the meeting made any reference to whether the evaluation of the monitoring data assigned to the NSC under Chief Cabinet Secretary Edano's instructions would include predictions by the System for Prediction of Environmental Emergency Dose Information (SPEEDI).

From March 16, based on the government's instructions regarding these roles and responsibilities, the Local NERHQ, located at the Fukushima Prefectural Office, decided to deliver the monitoring data compiled on its own to both the ERC of METI and the Emergency Operating Center (EOC) of MEXT while MEXT compiled the data to deliver to the NSC for its evaluation and started publishing it from the same day.

Moreover, the NSC shared the results of its evaluation of the monitoring data with the all relevant ministries and agencies by delivering the data to the ERC, EOC, and the Prime Minister's Office. The Commission did not initially release its evaluation results when the roles and responsibilities within the government were determined on March 16 as Chief Cabinet Secretary Edano had continually held press conferences, addressing some of the evaluation of the monitoring activities. Subsequently, however, the Commission started to release its

[7] Participants included Vice MEXT Minister Suzuki, Toshifumi Tanaka, Deputy Director-General for Policy Evaluation in the MEXT Minister's Secretariat, NSC Commissioner Shizuyo Kusumi, and Akira Fukushima, attached to NISA.

evaluation results from March 25 since it had been strongly urged to by MEXT and also because it had been pointed out by the media that its activities were hard for the general public to understand.

b. The monitoring activities conducted in the area beyond 20km from the Fukushima Dai-ichi NPS from March 15

See Chapter V 1. (2) b. of the Interim Report.

The Department of Energy (DOE) of the United States of America (hereinafter referred to as the "U.S.") had independently conducted aircraft monitoring around the Fukushima Dai-ichi NPS using an aircraft of the U.S. Forces in Japan (please see Chapter V 1. (2) b. of the Interim Report). The results of aircraft monitoring conducted from March 17 to March 20 (map data showing the distribution of radiation doses around the Fukushima Dai-ichi NPS) were delivered around that time to NISA[8] and MEXT via the Ministry of Foreign Affairs.

On March 20, MEXT received the aforementioned data from the Ministry of Foreign Affairs, and confirmed that the distribution patterns of radiation doses shown by the data are consistent with the results of monitoring conducted by MEXT and Fukushima Prefecture, etc. since immediately after the accident. On the following March 21, MEXT held consultations with DOE staff, starting to make arrangements for the subsequent implementation of joint aircraft monitoring. Furthermore, as the aforementioned data had not been delivered to the NSC (please see a), which was in charge of the evaluation of monitoring data, MEXT on the same day asked the Ministry of Foreign Affairs to send the data to the NSC as well[9]. As these data were obtained from the U.S. and the U.S. reportedly asked to keep them undisclosed externally, MEXT, on the same day after consultations with the aforementioned DOE staff, asked the U.S. via the Ministry of Foreign Affairs to make these data public, and around March 22, the U.S.

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[8] At NISA, the International Affairs Office of the Policy Planning and Coordination Division received the aforementioned data from the Ministry of Foreign Affairs on March 18 and March 20, and it is highly likely that they were shared by the radiation monitoring squad in charge of monitoring at the NERHQ Secretariat (ERC). But it could not be ascertained whether these data were shared by NISA's squads, including the residents safety squad and NISA executives partly because of vague memories of parties concerned.

[9] Subsequently, the Ministry of Foreign Affairs sent the aforementioned data to the Cabinet Secretariat, the Ministry of Health, Labour and Welfare and the NSC, in addition to NISA and MEXT, in a bid to share them with relevant organizations.

(DOE) made them public[10].

c. The monitoring activities conducted in the areas surrounding the Fukushima Dai-ichi NPS

See Chapter V 1. (2) c. of the Interim Report.

d. Monitoring coordination meeting

See Chapter V 1. (2) d. of the Interim Report.

2. Utilization and Dissemination of Information Yielded by SPEEDI

(1) Overview of the SPEEDI system

See Chapter V 2. (1) of the Interim Report.

At the Fukushima Dai-ichi NPS, due to the loss of external power supply caused by the earthquake on March 11, TEPCO's Safety Parameter Display System (SPDS), which aggregates information within the reactor (release source information, etc.), ended up being unable to transfer data to the Emergency Response Support System (ERSS), a system that transfers data to SPEEDI (see Chapter V 2. (1) of the Interim Report). It is believed that SPDS was rendered inoperative in the wake of the loss of external power supply because the media converter (MC), one of relay equipment for the transfer of data from SPDS to ERSS, was installed at the Fukushima Dai-ichi NPS training building that did not have an emergency power generator[11], and also because the MC was not connected to an uninterruptible

[10] On March 24, MEXT, through the Ministry of Foreign Affairs, made an inquiry to the U.S. about the advisability of posting the URL of the DOE website that posted the aforementioned data on the MEXT website, and on March 30, the said URL was posted on the MEXT website.

[11] The MC installed at the nuclear safety inspector room of the Fukushima Dai-ichi NPS usually receives power generated by Unit 1 (it cannot receive power generated by an emergency diesel generator of Unit 1), but was also to receive power, when Unit 1 is inoperative, from the backup power sources of Okuma Transmission Line No. 1 (hereinafter referred to as "Okuma Transmission Line 1L") or the TEPCO nuclear power line of Tohoku Electric Power Company (hereinafter referred to as "TEPCO nuclear power line"). After the earthquake, however, power transmission from Unit 1 was halted due to the scrum of Unit 1, and the backup power sources of Okuma Transmission Line 1L and the TEPCO nuclear power line also became unavailable. Another MC installed at the Seismic Isolation Building did not lose power supply because power was available from an emergency gas turbine generator for exclusive use at the building.

The MC was installed at the Fukushima Dai-ichi NPS training building under the following circumstances: Previously, SPDS data from individual power stations of TEPCO were transferred to ERSS via the TEPCO head

power-supply system (UPS) which temporarily supplies power in times of power outage[12] (see Figure IV-1 (i) and (ii)).

However, the UPS in the latter case is just equipment for temporary power supply and a built-in battery of the UPS is designed to become depleted after around two hours at the earliest. Therefore, it is believed that even if the MC and the UPS had been connected, it would have become impossible to transfer SPDS data to ERSS sooner or later as long as no emergency generator was installed at the training building. Furthermore, as described in V2 (1) of the Interim Report, after 16:43 on March 11, the government's dedicated line (Integrated Nuclear Emergency Preparedness Network) through which SPDS data is sent to the main computer of ERSS via the Off-site Center became unavailable (see Figure IV-1 (iii)). Thus, it is believed that even if an emergency generator had been installed at the training building, the transfer of SPDS data to ERSS would have been impossible.

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office. After the fire accident at TEPCO's Kashiwazaki-Kariwa Nuclear Power Station following the Niigata Chuetsu Offshore Earthquake that occurred in July 2007, however, TEPCO switched to a system under which each power station transfers SPDS data directly to the government's dedicated line (Integrated Nuclear Emergency Preparedness Network) that sends data to the main computer of ERSS in order to avoid a situation where SPDS data from all of its power stations cannot be transferred to ERSS when the head office's equipment fails. The Fukushima Dai-ichi NPS also shifted to a system that transfers SPDS data directly to the dedicated line described above. As the MC, if connected to a UPS, can operate temporarily on power feeding from the UPS even in the event of the loss of external power supply, TEPCO decided to install the MC at the nuclear safety inspector room of the Fukushima Dai-ichi NPS where the above-mentioned dedicated line is led in, after consulting with NISA and the Japan Nuclear Energy Safety Organization (JNES), an independent administrative organization.

[12] The MC and the UPS were not connected under the following circumstances: In November 2010, when TEPCO tried to install the MC in the nuclear safety inspector room of the Fukushima Dai-ichi NPS, it made a mistake about the installation location and a supply cable connecting the MC and the UPS turned out to be too short, making it impossible for TEPCO to connect the MC to the UPS on that work day. Furthermore, TEPCO failed to undertake additional work until March 11, 2011, the day the earthquake struck, leaving the MC unconnected to the UPS. JNES was aware of the situation since immediately after the inconclusive installation work described about, but failed to confirm whether TEPCO undertook additional work to connect the MC and the UPS.

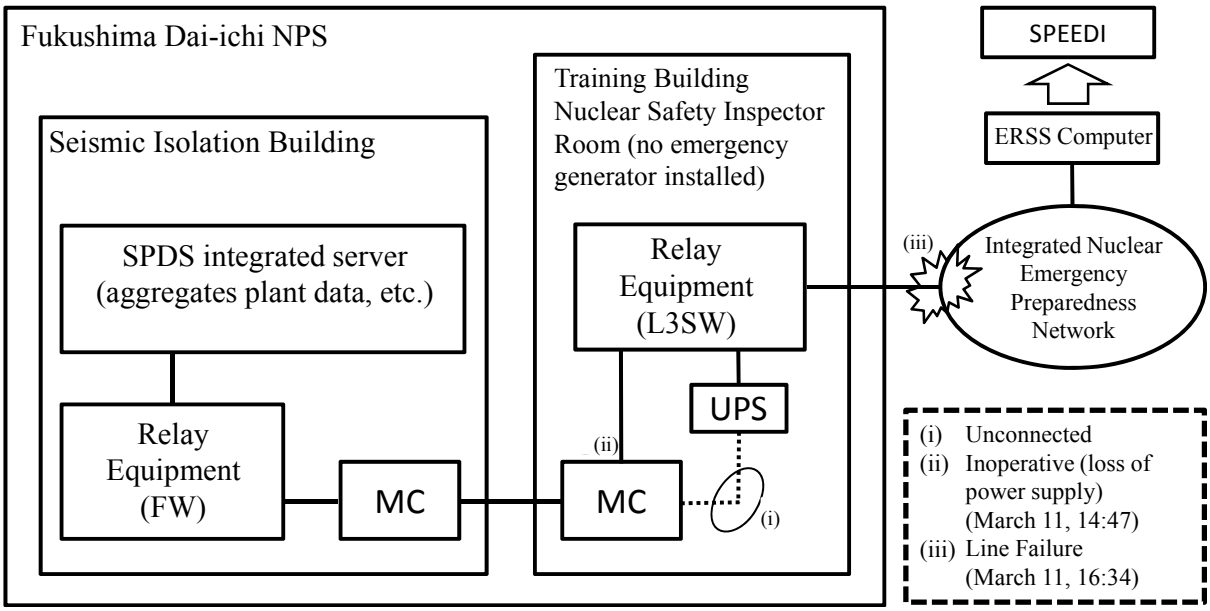


Fig. IV-1 Transfer of SPDS Data to ERSS

(2) Utilization and dissemination of information yielded by SPEEDI up to March 15

See Chapter V 2. (2) of the Interim Report.

(3) Relationship between SPEEDI calculation results and evacuation measures concerning the Fukushima Dai-ichi NPS accident

As described in Chapter V 2. (2) a. of the Interim Report, under the MEXT's instructions since the accident occurred on March 11, the Nuclear Safety Technology Center, which manages and operates SPEEDI, calculated the likely atmospheric dispersion of radioactive materials on hourly basis assuming a unit radioactivity release rate of a 1Bq/h from the Fukushima Dai-ichi NPS and reported the results of the calculations to relevant organizations.

The calculation results were useful in making judgment on which direction people should be evacuated as they predict the directions of dispersion of radioactive materials. But none of these organizations used these results to discuss practical evacuation measures nor considered making them public, since the organizations thought that the calculations based on an assumed unit release rate did not show any actual radiation dose levels.

In this section, we look at the relationship between evacuation orders the government issued

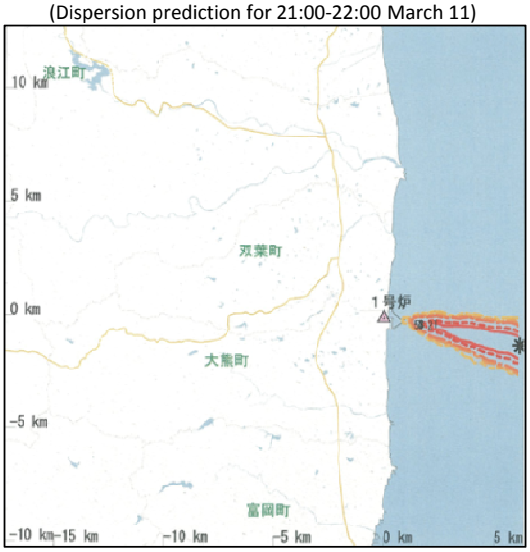
between March 11 and March 15 in relation to the accident at the Fukushima Dai-ichi NPS and the SPEEDI calculation results based on an assumed unit release rate[13].

a. Relationship between an evacuation order out of a 3km radius (at 21:23 on March 11) and SPEEDI

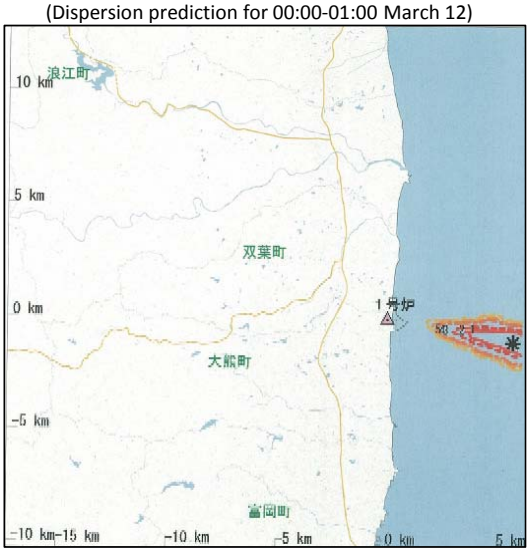
At 21:23 on March 11, the government issued an evacuation order to residents within a 3km radius of the Fukushima Dai-ichi NPS and also issued a stay-indoors order to residents within a 3-10km radius of the nuclear power station. According to the SPEEDI calculation results assuming unit release rates since 21:00 the same day (see Figure IV-2), from 21:00 of the same day until 5:00 on March 12, when the scope of the evacuation zone was extended to a 10km radius of the Fukushima Dai-ichi NPS, radioactive materials emitted from the Fukushima Dai-ichi NPS were consistently predicted to disperse seaward (from the east to the southeast).

[13] The MEXT website lists delivered maps based on fixed-time calculations assuming a unit release rate for the wind field (ground height), airborne concentration (iodine) and absorbed dose rate in air. In this section, we used delivery maps for airborne concentration (iodine). Though the website lists hourly calculation results, we decided to list bihourly delivery maps, in principle, unless there are big fluctuations in dispersion trends.

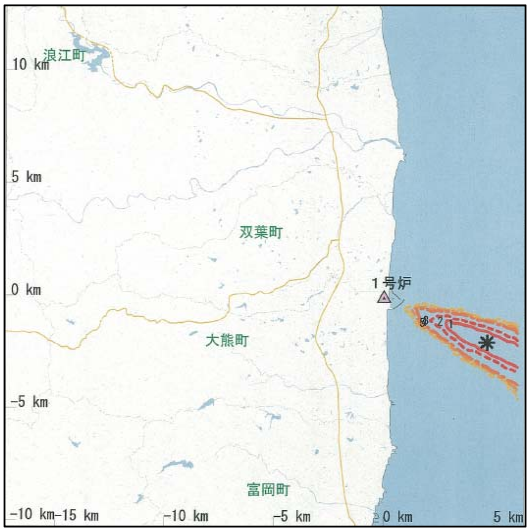
Fixed-time calculation results at 21:00 March 11
(Dispersion prediction for 21:00-22:00 March 11)



Fixed-time calculation results at 00:00 March 12
(Dispersion prediction for 00:00-01:00 March 12)



Fixed-time calculation results at 02:00 March 12
(Dispersion prediction for 02:00-03:00 March 12)



Fixed-time calculation results at 04:00 March 12
(Dispersion prediction for 04:00-05:00 March 12)

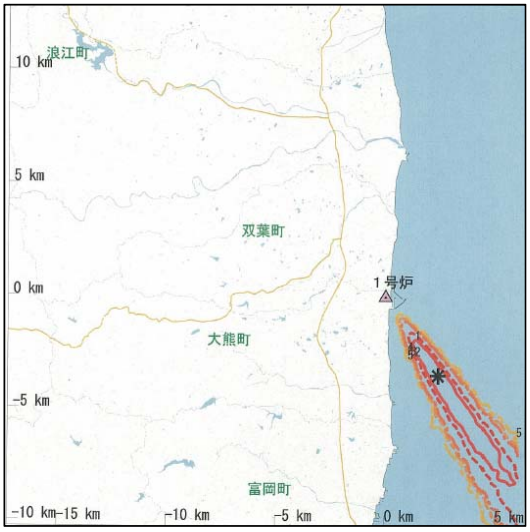


Fig. IV-2 Fixed-time calculation results from 21:00 on March 11 to 4:00 on March 12 (excerpts)

Prepared based on materials listed on the MEXT website

b. Relationship between an evacuation order out of a 10km radius (at 5:44 on March 12) and SPEEDI

At 5:44 on March 12, the government issued an evacuation order to residents within a 10km radius of the Fukushima Dai-ichi NPS. According to the SPEEDI calculation results assuming unit release rates since 5:00 the same day (see Figure IV-3), from 5:00 until 12:00 of the same day, radioactive materials emitted from the Fukushima Dai-ichi NPS were consistently

predicted to disperse seaward (to the southeast). Later, they were predicted to disperse to the south from 13:00 to 15:00 the same day, to the west from 15:00 to 16:00, and from the northwest to the north from 16:00 to 18:00, respectively.

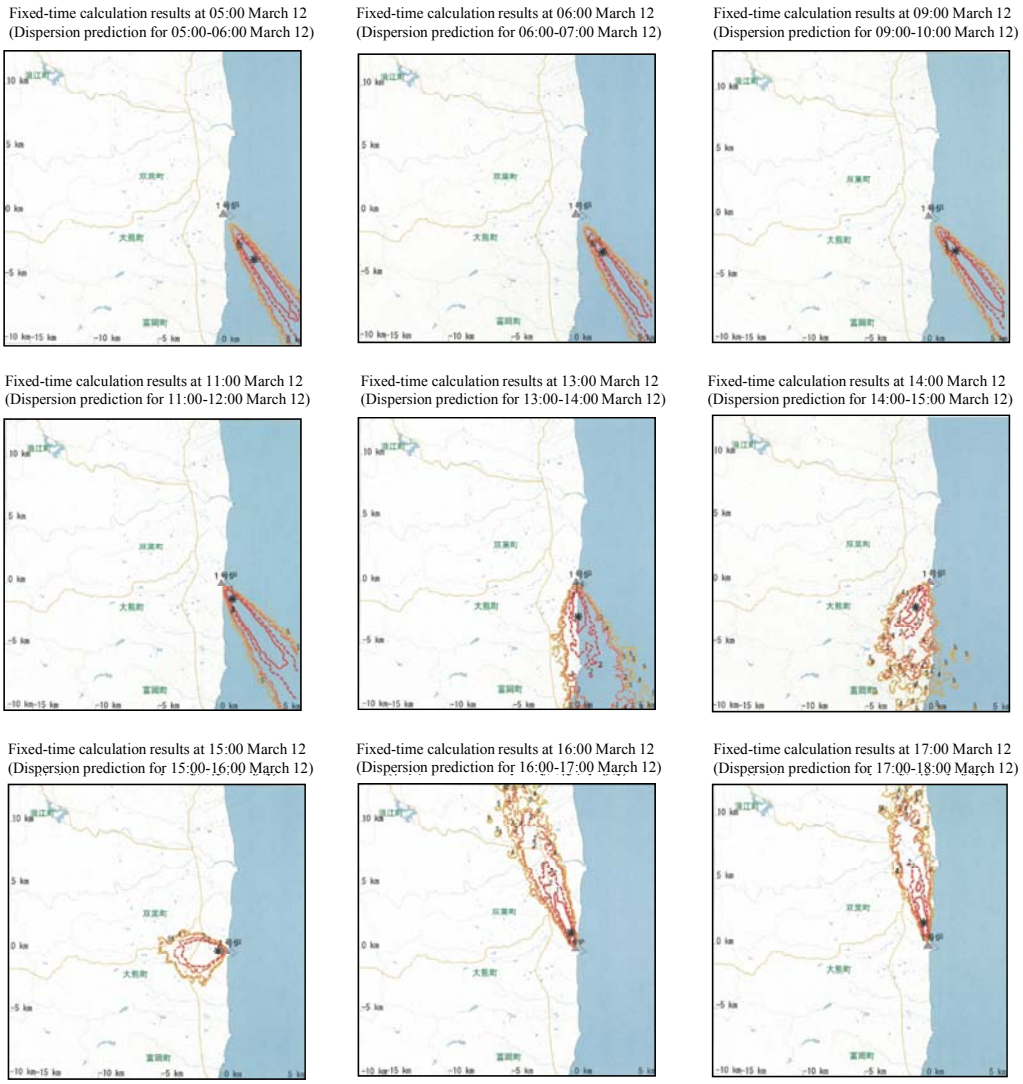


Fig. IV-3 Fixed-time calculation results from 5:00 to 17:00 on March 12 (excerpts)

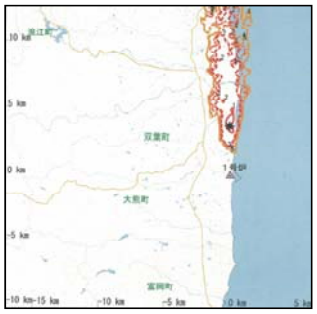
Compiled from information on the MEXT website

c. Relationship between an evacuation order out of a 20km radius (at 18:25 on March 12) and SPEEDI

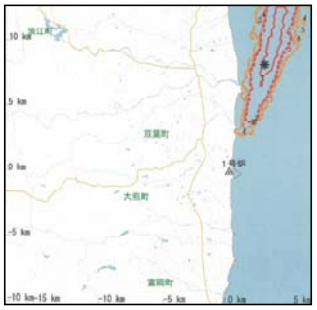
At 18:25 on March 12, the government issued an evacuation order to residents within a 20km radius of the Fukushima Dai-ichi NPS. According to the SPEEDI calculation results assuming

unit release rates since 18:00 the same day (See Figure IV-4), radioactive materials emitted from the Fukushima Dai-ichi NPS were predicted to disperse to the north from 18:00 to 19:00 of the same day. But they were consistently predicted to disperse seaward (to the northeast) from 20:00 March 12 until 10:00 March 13, except between 4:00 and 5:00 March 13, when they were predicted to disperse to the north.

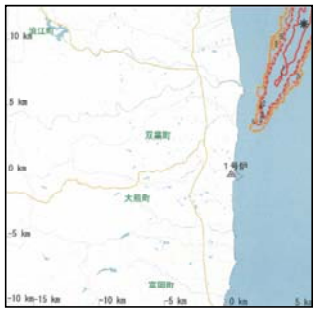
Fixed-time calculation results at 18:00 March 12
(Dispersion prediction for 18:00-19:00 March 12)



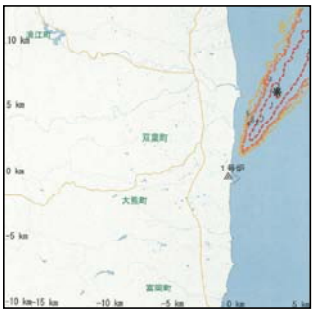
Fixed-time calculation results at 20:00 March 12
(Dispersion prediction for 20:00-21:00 March 12)



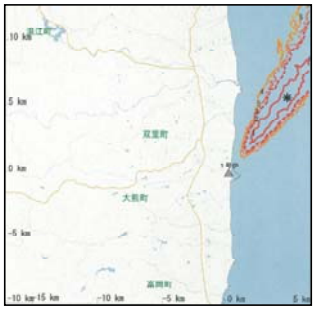
Fixed-time calculation results at 22:00 March 12
(Dispersion prediction for 22:00-23:00 March 12)



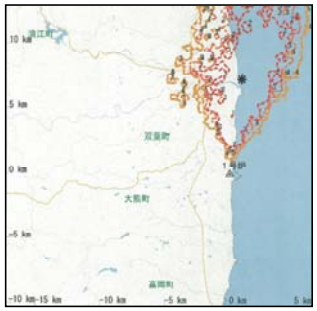
Fixed-time calculation results at 00:00 March 13
(Dispersion prediction for 00:00-01:00 March 13)



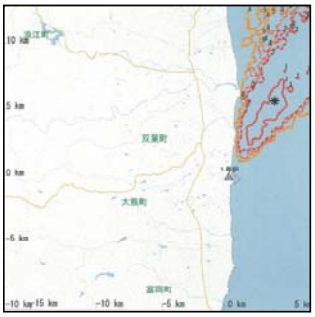
Fixed-time calculation results at 02:00 March 13
(Dispersion prediction for 02:00-03:00 March 13)



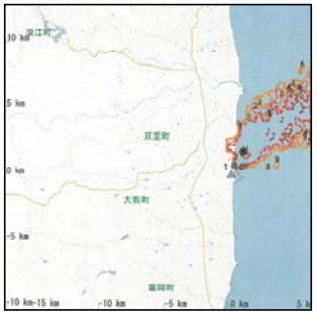
Fixed-time calculation results at 04:00 March 13
(Dispersion prediction for 04:00-05:00 March 13)



Fixed-time calculation results at 06:00 March 13
(Dispersion prediction for 06:00-07:00 March 13)



Fixed-time calculation results at 08:00 March 13
(Dispersion prediction for 08:00-09:00 March 13)



Fixed-time calculation results at 10:00 March 13
(Dispersion prediction for 10:00-11:00 March 13)

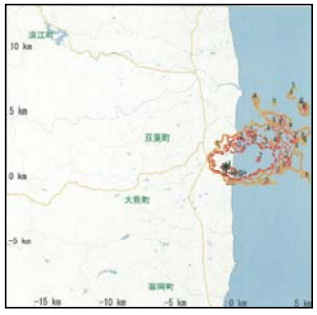


Fig. IV-4 Fixed-time calculation results from 18:00 on March 11 to 10:00 on March 13 (excerpts)

Compiled from information on the MEXT website

d. Relationship between a stay-indoors order in a 20-30km radius (at 11:00 on March 15) and SPEEDI

At 11:00 on March 15, the government issued a stay-indoors order to residents within a 20-30km radius of the Fukushima Dai-ichi NPS. According to the SPEEDI calculation results assuming unit release rates since 11:00 that day (see Figure IV-5), radioactive materials emitted from the Fukushima Dai-ichi NPS were predicted to disperse to the southwest from 11:00 to 12:00 of the same day, but from the west to the northwest from 13:00 March 15 to 2:00 March 16. From 3:00 March 16 onward, they were predicted to disperse from the south to the southeast.

At 9:00 on March 15, prior to the stay-indoors order above, the high radiation dose rate of 11,930μSv/h was measured near the main gate of the Fukushima Dai-ichi NPS (see Figure IV-6)[14]. According the SPEEDI calculation results assumed unit release rates around the time when this dose rate was measured, radioactive materials emitted from the Fukushima Dai-ichi NPS were predicted to disperse to the southwest from 9:00 to 10:00 the same day. At around 23:00 on March 15, the high radiation dose rates of about 7,000μSv/h to 8,000μSv/h were measured again near the main gate of the Fukushima Dai-ichi NPS. According to the SPEEDI calculation results assuming unit release rates since 23:00 the same day (see Figure IV-5), radioactive materials emitted from the Fukushima Dai-ichi NPS were predicted to disperse to the northwest from 23:00 March 15 to 2:00 March 16[15].

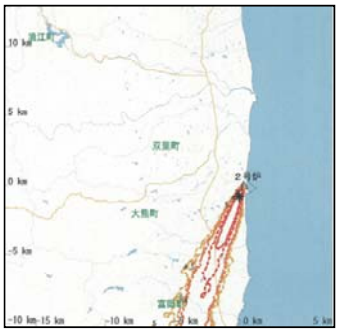
While the government issued the stay-indoors order on March 15, Minami Soma City provided guidance to evacuate out of the city to those who wanted to move out on the same day onward, and many residents evacuated to Iitate Village and Kawamata Town. In the morning of March 15, Namie Town, at the mayor's judgment, already decided to evacuate residents to Nihonmatsu City, and implemented the evacuation after communicating the decision to residents (for the evacuation situation in Minami Soma City and Namie Town, see Chapter V 3.

[14] Around that time, the radiation dose rate was measured at 8,217μSv/h at 8:31 and at 8,837μSv/h at 10:15.

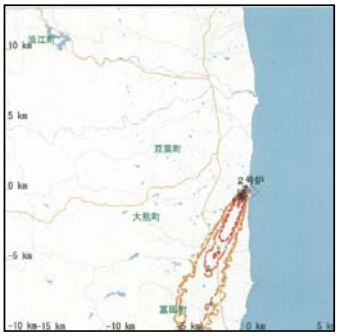
[15] High radiation dose rates were measured near the main gate of the Fukushima Dai-ichi NPS on March 16 as well. For example, the dose rate stood at 10,850μSv/h at 12:30 and at 8,234μSv/h at 12:40 the same day. According to the SPEEDI calculation results assuming unit release rates from 12:00 March 16 when these high dose rates were measures, radioactive materials emitted from the Fukushima Dai-ichi NPS were predicted to disperse over the land area from the southwest to the south from 12:00 to 14:00 the same day, and seaward (to the southeast) after that hours.

(3) f. and c. of the Interim Report, respectively). Of residents of these municipalities, those who began evacuating early in the evening of March 15 (around 15:00) were likely to have followed the evacuation routes in the same direction as the dispersion of radioactive materials.

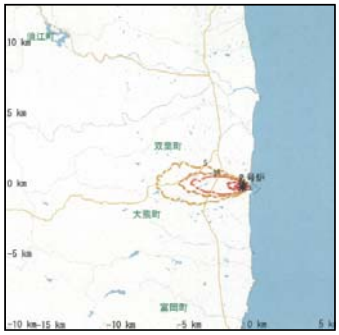
Fixed-time calculation results at 09:00 March 15
(Dispersion prediction for 09:00-10:00 March 15)



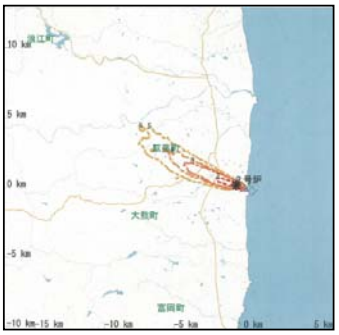
Fixed-time calculation results at 11:00 March 15
(Dispersion prediction for 11:00-12:00 March 15)



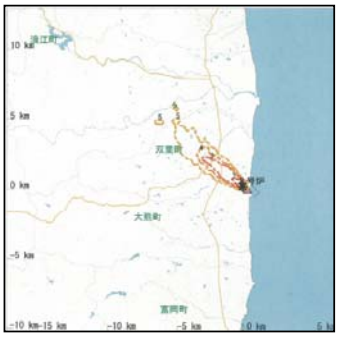
Fixed-time calculation results at 13:00 March 15
(Dispersion prediction for 13:00-14:00 March 15)



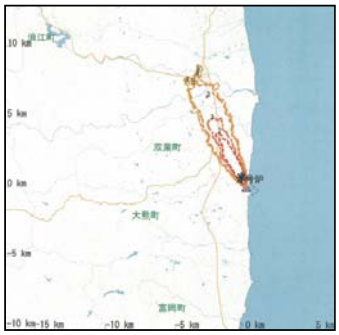
Fixed-time calculation results at 15:00 March 15
(Dispersion prediction for 15:00-16:00 March 15)



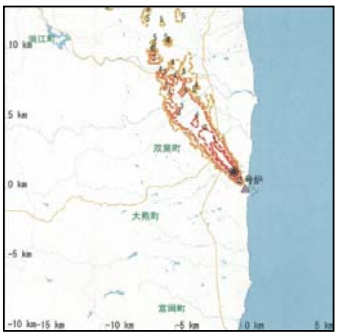
Fixed-time calculation results at 17:00 March 15
(Dispersion prediction for 17:00-18:00 March 15)



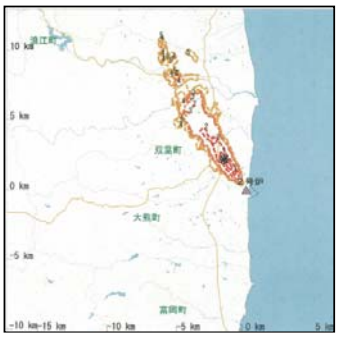
Fixed-time calculation results at 19:00 March 15
(Dispersion prediction for 19:00-20:00 March 15)



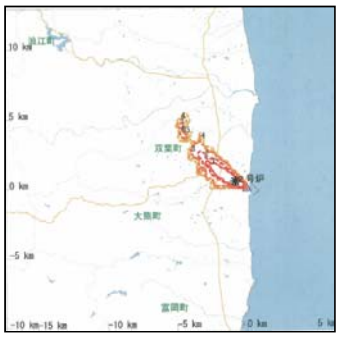
Fixed-time calculation results at 21:00 March 15
(Dispersion prediction for 21:00-22:00 March 15)



Fixed-time calculation results at 23:00 March 15
(Dispersion prediction for 23:00 March 15-00:00 March 16)

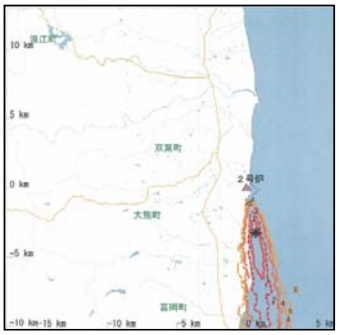


Fixed-time calculation results at 01:00 March 16
(Dispersion prediction for 01:00-02:00 March 16)



Fixed-time calculation results at 03:00 March 16
(Dispersion prediction for 03:00-04:00 March 16)

Fixed-time calculation results at 05:00 March 16
(Dispersion prediction for 05:00-06:00 March 16)



Fixed-time calculation results at 07:00 March 16
(Dispersion prediction for 07:00-08:00 March 16)

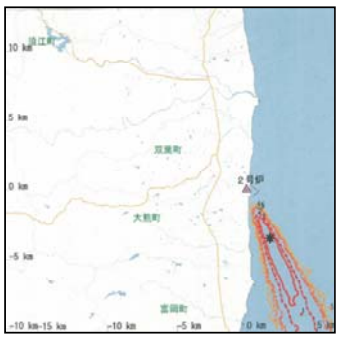


Fig. IV-5 Fixed-time calculation results from 9:00 on March 15 to 7:00 on March 16 (excerpts)

Compiled from information on the MEXT website

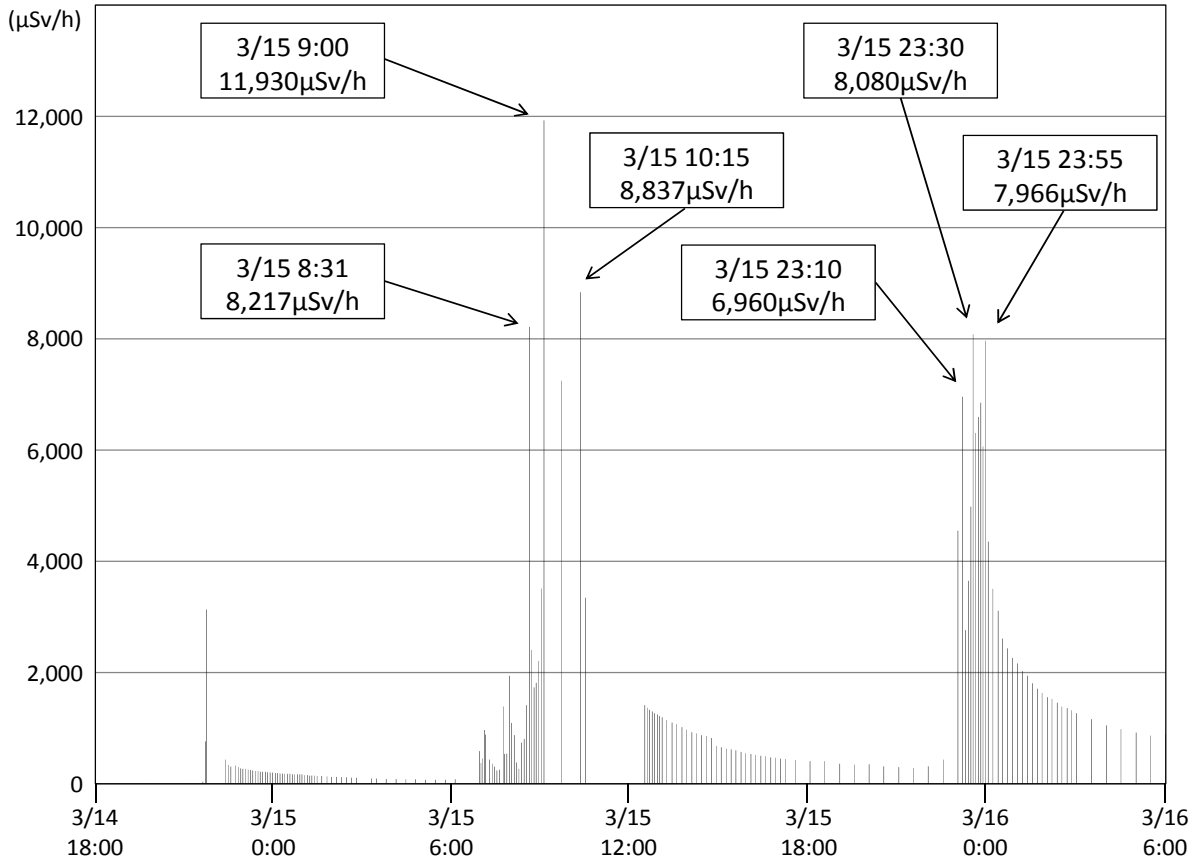


Fig. IV-6 Changes in radiation dose rates measured near the main gate of the Fukushima Dai-ichi NPS

Compiled from information on the TEPCO website

(4) Utilization and dissemination of information produced by SPEEDI from March 16 onward

a. Assignment of roles and responsibilities concerning how to operate and utilize SPEEDI within the government from March 16 onward[16]

As described in Chapter V 2. (3) a. of the Interim Report, the MEXT was urged by the media to release SPEEDI predictions at its press conference on March 15. In response to this, the

[16] Though we covered the assignment of roles and responsibilities concerning how to operate and utilize SPEEDI within the government from March 16 onward in Chapter V 2. (3) a. of the Interim Report, we describe the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

Ministry first briefed the three most important officials (the Minister, the Vice-Minister and the Parliamentary Secretary) of the Ministry about SPEEDI, using the predictions obtained by both SPEEDI and the worldwide version of SPEEDI (WSPEEDI), which covers wider regions, assuming that all radioactive materials (10^{18}Bq of iodine and 10^{19}Bq of noble gas) were released at one time.

While the calculation results stemmed from the simulation based on the assumption that all the radioactive materials were released at one time, a phenomenon that had not actually taken place, they showed that high-level radioactive clouds would move over the Tohoku Region devastated by the earthquake. Thus, the release of the results made it essential to make an in-depth explanation about the process of the calculations[17]. However, no concrete decision was made on the necessity of the release of the results on this occasion.

On the following day, on March 16, at a meeting attended by the three most important officials of the MEXT[18], MEXT Vice Minister Suzuki explained that since the MEXT is not to evaluate radiation monitoring data under "Chief Cabinet Secretary Edano's" instructions (see 1. (2) a.) given at a meeting on the roles and responsibilities concerning monitoring activities within the government, held at the Prime Minister's Office in the morning of the same day, the NSC, which was assigned to evaluate monitoring data, should hereafter operate and publicize SPEEDI matters. The participants in the meeting agreed to this.

While Chief Cabinet Secretary Edano's instructions mentioned above assigned the task of the evaluation of monitoring data to the NSC, his instructions did not explicitly say that SPEEDI predictions are included in the "evaluation." In the first place, no one made any reference to SPEEDI at the meeting where Chief Cabinet Secretary Edano gave the instructions (see 1. (2)

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[17] The Interim Report, in Chapter V 2. (3) a., included a passage that said that there was an opinion expressed by a participant in the explanatory meeting that "the release of the predictions could cause people unnecessary confusion." This included on the basis of statements made by a person who attended the meeting. However, in hearings conducted by the Investigation Committee after the release of the Interim Report, other people who also attended the meeting made statements that effectively denied the reported opinion. Since it is no longer clear whether the reported opinion was actually expressed, the Investigation Committee decided to delete the reference to the reported opinion.

[18] The Interim Report, in Chapter V 2. (3) a., described this meeting as the meeting of "the three most important officials of the MEXT. But the MEXT said that it was just a session for consultations attended by the three most important officials of the MEXT and was not the formal meeting of the three most important officials of the MEXT.

a.).

On the same day, MEXT verbally informed the NSC the agreement above on a change of an operation body of SPEEDI. The Ministry then sent both the two operators of the Nuclear Safety Technology Center, who had been working in the EOC, to the Secretariat of the NSC.

On this matter, the NSC did not take it that the operation of SPEEDI was transferred to the NSC. However, with the understanding that it can hereafter conduct calculations using SPEEDI without requesting the MEXT for the calculations, the NSC started the operation of the system after accepting the operators mentioned above.

b. Performing a retrospective (backward) estimation of release source information by SPEEDI and disclosing the predictions

(a) Start of the retrospective estimation by SPEEDI and the disclosure of calculation results

See Chapter V 2. (3) b. of the Interim Report.

(b) The retrospective estimation of release source information by SPEEDI and implementation of investigation on the exposure of infant thyroid glands to radiation

As described in Chapter V 2. (3) b. and Chapter V 3. (2) a. of the Interim Report, starting around March 17, the NSC performed the SPEEDI retrospective estimation of the release source information. On March 23, the NSC performed a SPEEDI infant thyroid gland equivalent dose calculation based on a limited number of monitoring results. As a result, the NSC estimated that there were areas with high equivalent doses beyond the designated evacuation zone to the northwest and south of the Fukushima Dai-ichi NPS. The NSC took this fact seriously and reported it to the Prime Minister's Office. After discussions at a meeting presided over by Prime Minister Naoto Kan (hereinafter referred to as "Prime Minister Kan"), joined by Cabinet Secretary Advisor Kosako and such experts as Kazuo Sakai, director of the Research Center for Radiation Protection, National Institute of Radiological Sciences, it was concluded that since the high dose rates, that represent the values when one stays outdoors for 24 hours, are overestimated, the evacuation zones should not be expanded immediately and investigation on the exposure of infant thyroid glands to radiation should be conducted to confirm the data values based on actual measurement.

Therefore, on March 25, the NSC requested NERHQ to conduct investigation on the exposure of infant thyroid glands to radiation covering those aged between one and 15 in the stay-indoors zones and areas with high infant thyroid equivalent doses estimated by SPEEDI. The Local NERHQ conducted investigation on the exposure of infant thyroid glands to radiation in Iwaki City March 26-27, in Kawamata Town March 28-30, and in Iitate Village March 30. The investigation found no one with the exposure beyond the screening level (0.2μSv/h)[19] shown by the NSC.

c. Disclosure of SPEEDI calculation results[20]

People had become increasingly interested in SPEEDI calculation results and the disclosure of them before they were disclosed on March 23.

The consideration of the release of SPEEDI calculation results commenced from around late March. The MEXT, the NISA and the NSC consulted with Deputy Chief Cabinet Secretary Fukuyama, Deputy Chief Cabinet Secretary for Crisis Management Ito and other officials about the release of SPEEDI calculation results and what to do when requests for the disclosure of SPEEDI calculation results are filed based on the Administrative Organs Information Disclosure Act.

By mid-April, they had almost come to agreement that in response to a request to disclose the SPEEDI calculation results based on Information Disclosure Act: (i) the results of calculation assuming radioactive release at the unit release rate of 1Bq/h should be disclosed; (ii) the results of SPEEDI calculations of cumulative dose, which is estimated by the retrospective method which contains the release source information estimated by the observed monitoring data, should be disclosed when the predictions are judged by the NSC to be reliable enough for the disclosure; and (iii) the results of the SPEEDI calculations conducted by the MEXT, the NISA, the NSC and other organizations based on the various assumptions of input data should not be disclosed since people would confuse if such the results were disclosed. However, the SPEEDI

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[19] This value is equivalent to the infant thyroid equivalent value of 100mSv proposed as an index for the intake of stable iodine tablets in Regulatory Guide "Emergency Preparedness for Nuclear Facilities."

[20] Though the Interim Report, in Chapter V 2. (3) c., addressed the release of SPEEDI calculation results, we describe the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

calculation results remained undisclosed until late April, except for (ii) (see Chapter V 2. (3) b. of the Interim Report).

Meanwhile, following the release of the results of dispersion predictions[21] assuming the emission of radioactive materials in the total amount of 1Bq conducted by the Japan Meteorological Agency (JMA) on April 5 at the instruction of Chief Cabinet Secretary Edano, and some media reports in late April that the government had not disclosed the SPEEDI calculation results, the MEXT, NISA and the NSA considered the matter again, and on April 25, sought Chief Cabinet Secretary Edano's endorsement for the policy to release some of the SPEEDI calculation results in accordance with (i) through (iii) described above. But Chief Cabinet Secretary Edano pushed the policy a step further, and instructed to release all of the SPEEDI calculation results.

Following Chief Cabinet Secretary Edano's instructions, Special Advisor Hosono announced the release of SPEEDI calculation results at a joint press conference of the government and TEPCO (hereinafter referred to as the "Integrated HQ Joint Press Conference" on April 25, and the MEXT, NISA and NSC published the SPEEDI calculation results on their websites by May 3.

3. Evacuation of Citizens

(1) Initial situation regarding the decision, instruction, communication and implementation of evacuation programs[22]

a. Implementation of evacuation programs regarding the Fukushima Dai-ichi NPS accident

In response to the fact that all AC power supplies were lost and the Emergency Core Cooling System was unable to inject water to the Fukushima Dai-ichi NPS, Prime Minister Kan declared a nuclear emergency situation at 19:03 on March 11 and established the Nuclear Emergency Response Headquarters (NERHQ) in the Prime Minister's Office (see Chapter III 2.

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[21] At the request of the International Atomic Energy Agency (IAEA), the JMA conducted dispersion predictions of iodine 131 assuming the emission of the radioactive material in the total amount of 1Bq for a three-day period after the emission since the accident occurred on March 11, and submitted the prediction results to IAEA.

[22] Though we covered "Initial situation regarding the decision, instruction, communication and implementation of evacuation programs" in the Interim Report V 3. (1), we describe the matter again about items a. and b. in this section on the basis of facts confirmed in the subsequent investigation and verification.

(1)).

In response to the declaration of the nuclear emergency state at the Fukushima Dai-ichi NPS, the Fukushima Prefecture Nuclear Emergency Response Center (hereinafter referred to as the "Prefecture Nuclear Emergency Response Center") discussed an instruction of evacuation for citizens within a 2km radius of the nuclear power plant, where regular nuclear emergency drills and exercises were conducted. At 20:50 that day, Prefectural Governor Yuhei Sato requested that the municipalities of the Okuma and Futaba towns instruct residents within a 2km radius of the Fukushima Dai-ichi NPS to evacuate.

This request was not issued on the basis of a specific act but de facto measure to prevent a disastrous scenario. In response to this request, officials from the towns of Okuma and Futaba used all possible communication means such as a municipal disaster management radio communication network, sound trucks and door-to-door visits by fire fighters, to instruct residents in the area to evacuate.

Later, after a press conference by Chief Cabinet Secretary Edano concerning the declaration of the nuclear emergency state, NSC Chairman Haruki Madarame (hereinafter referred to as "NSC Chairman Madarame"), Vice Director-General of the Nuclear and Industrial Safety Agency Eiji Hiraoka (hereinafter referred to as "Vice Director-General of NISA Hiraoka") and TEPCO executives convened in a small room on the mezzanine of the Crisis Management Center in the basement of the Prime Minister's Office (hereinafter referred to as the "basement mezzanine on the Prime Minister's Office"), where Prime Minister Kan, Minister of Economy, Trade and Industry Banri Kaieda (hereinafter referred to as "METI Minister Kaieda"), Deputy Chief Cabinet Secretary Fukuyama and Special Advisor Hosono asked for their opinions on the conditions of the nuclear reactors, the range of the evacuation area and other matters[23]

In that discussion, various opinions were offered including "reactor cores might be damaged in the worst case scenario" and "a vent operation is required to avoid that." In terms of the range

[23] The Nuclear Emergency Response Manual stipulates that if it is too difficult for the Joint Council for Nuclear Emergency Response, which is organized by Local NERHQ and other relevant organizations, to discuss a draft evacuation order, in the case of a commercial nuclear power plant disaster, then METI should discuss a draft evacuation order and the METI Minister, in the presence of the Deputy Chief Cabinet Secretary for Crisis Management, the NISA Vice Director-General and the Disaster Prevention Minister, should present the draft evacuation order to the Chief of NERHQ, and then the NERHQ issues an evacuation order. In the case of the nuclear accident at the Fukushima Dai-ichi NPS, an evacuation order was issued without following this protocol.

of the evacuation area, Regulatory Guide "Emergency Preparedness for Nuclear Facilities," which was created by the NSC, states that the range of the emergency preparedness zone (EPZ) where emergency countermeasures are sufficiently taken should be within a 10km radius but the preventive action zone (PAZ) that is described in a document of the International Atomic Energy Agency (IAEA) is the area within a 3km radius. So "within a 3km radius" is sufficient, even if it assumed that a vent operation is required. Moreover, concerns were expressed that if an extensive range of the evacuation area is set from the outset, residents within a 3km radius of the nuclear power plant, who should evacuate quickly, may find it difficult to evacuate because of possible traffic snarl-up. In addition, Vice Director-General of NISA Hiraoka explained that a regular evacuation drill is conducted within a 3km radius under a supposed vent operation. Based on these opinions and explanations, the evacuation was instructed for the zone within a 3km radius of the Fukushima Dai-ichi NPS and a stay-indoors was instructed for the zone within a 3 to 10km radius from the Fukushima Dai-ichi NPS.

In response to this decision reached in a meeting held at the basement mezzanine of the Prime Minister's Office at 21:23 March 11, the NERHQ instructed the Fukushima prefecture and all relevant local governments to issue an evacuation order to citizens within a 3km radius of the Fukushima Dai-ichi NPS and to issue a stay-indoors order to citizens within a 10km radius of the power station. At 21:52 the same day, Chief Cabinet Secretary Edano held a press conference concerning the evacuation orders.

Subsequently, it became clear that there was an abnormal increase in the pressure inside the primary containment vessel at Unit 1 and that no vent operation was conducted at Units 1 and 2. At around 5:30 on March 12, Prime Minister Kan, Chief Cabinet Secretary Edano and other ministers concerned discussed the range of the evacuation zone again at the basement mezzanine of the Prime Minister's Office in the presence of Vice Director-General of NISA Hiraoka and NSC Chairman Madarame. During this discussion, opinions were expressed that it would not be necessary to extend the evacuation zone if a vent operation is to be conducted under well-controlled conditions and that given that a vent operation is yet to be conducted, even a relatively significant hazard could be handled if an EPZ is expanded to within a 10km radius. Based on these opinions, it was decided that the evacuation zone would be expanded to within a 10km radius.

At 05:44 March 12, the NERHQ instructed the Fukushima prefecture and all relevant local governments to issue an evacuation order to citizens within a 10km radius of the Fukushima Dai-ichi NPS. At 09:35 the same day, Chief Cabinet Secretary Edano held a press conference about the evacuation order. A 06:15 the same day, after the decision was made to expand the evacuation zone, Prime Minister Kan flew to the Fukushima Dai-ichi NPS by helicopter.

When a vent operation was still being attempted at 15:36 on March 12, there was an explosion in the Reactor Building of Unit 1. At the time, as the injection of seawater into Unit 1 was not yet to be conducted despite the depletion of freshwater to cool down the reactor of Unit 1, METI Minister Kaieda, at 17:55 the same day, ordered TEPCO to inject seawater into Unit 1, as an administration order pursuant to Article 64, Paragraph 3 of the Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors. Subsequently, METI Minister Kaieda, Special Advisor Hosono, NSC Chairman Maradame, Vice Director-General of NISA Hiraoka and TEPCO Fellow Ichiro Takekuro reported to Prime Minister Kan to that effect at Prime Minister Kan's office on the fifth floor of the Prime Minister's Office.

When Prime Minister Kan asked about the possibility of recriticality in the case of seawater being injected into the reactor, NSC Chairman Madarame did not rule out the possibility of recriticality[24,25], and Prime Minister Kan took his remarks as meaning that there is a possibility of recriticality from the injection of seawater. Subsequently, the ministers concerned considered the seawater injection again[26], and at the same time, considered the expansion of the evacuation zone and decided to expand the range of the evacuation order to within a 20km radius of the nuclear power station[27], given that there was an explosion in the Reactor Building of Unit 1 at 15:36, as mentioned above, and that what sort of the explosion it was remained unknown. At 18:25 on March 12, NERHQ instructed the Fukushima prefecture and relevant local

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[24] The Interim Report, in IV 4. (1) c., based on remarks of NSC Chairman Madarame, wrote that NSC Chairman Madarame told Prime Minister Kan, "We don't need to worry about the recriticality so much." When the Investigation Committee held hearings on others present at the meeting other than NSC Chairman Madarame, these people's statements were identical as that "NSC Chairman Madarame did not rule out the possibility of recriticality." Thus, the Investigation Committee acknowledged relevant facts as described in this report.

[25] Vice Director-General of NISA Hiraoka and others who were also present at the meeting did not express any opinion on NSC Chairman Madarame's remarks.

[26] The background to this is as described in IV 4. (1) c. of the Interim Report.

[27] One of those who took part in this consideration explained that they "decided to consider an expansion of the range of the evacuation zone as the possibility of recriticality cannot be ruled out."

governments to issue an evacuation order to residents within a 20km radius of the Fukushima Dai-ichi NPS.

At 20:32 the same day, Prime Minister Kan addressed the Japanese public to explain the expansion of the evacuation zone range. Following Prime Minister Kan, at 20:50 the same day, Chief Cabinet Secretary Edano talked about the explosion at the Reactor Building of Unit 1, explaining that it was not the explosion of the primary containment vessel so a large volume of radioactive material would not leak out. He also explained the expansion of the evacuation zone range.

Later, the following incidents occurred in succession: at 11:01 on March 14, the Reactor Building of Unit 3 exploded; at around 06:00 on March 15, a big boom was heard from Unit 4; at around 08:11 the same day, some damage to the fifth floor of the Reactor Building of Unit 4 was confirmed; and at 09:38 on the same day, a fire broke out in the northwest section of the third floor of the Reactor Building of Unit 4. These incidents prompted Chief Cabinet Secretary Edano and relevant cabinet members to meet in the morning of the same day on the fifth floor of the Prime Minister's Office and discuss the further expansion of the evacuation zone. In the course of this meeting, they also discussed an expansion of the evacuation order range to within a 30km radius of the Fukushima Dai-ichi NPS, but they reached a conclusion that the stay-indoors evacuation would be more effective under a tense situation where a massive release of radioactive materials could occur at any moment, considering that the expansion of the evacuation order range to within a 30km radius would mean some 150,000 new evacuees and the evacuation would take several days and that if the massive release of radioactive materials occurs during the evacuation, evacuating residents risk the exposure to these radioactive materials. So, at 11:00 on March 15, NERHQ issued an order to the Fukushima prefecture and all relevant local governments to issue a stay-indoors order to citizens within a 20 to 30km radius of the Fukushima Dai-ichi NPS[28]. Immediately after this, a press conference by the Prime Minister and the Chief Cabinet Secretary was held to explain the order in greater

[28] On March 14, NSC Chairman Madarame and Vice Chairman Yutaka Kukita had advised Prime Minister Kan and Chief Cabinet Secretary Edano in the Prime Minister's Office not to extend the evacuation zone beyond the 20km radius from the Fukushima Dai-ichi NPS, which had been already decided for evacuation within 20km and to remain the 20km-30km zone as the stay indoors evacuation zone.

detail.

b. Implementation of evacuation plans regarding the Fukushima Dai-ni NPS

At 18:33 on March 11, the cooling function of the reactor cores at Units 1, 2 and 4 of TEPCO's Fukushima Dai-ni Nuclear Power Station (hereinafter referred to as "Fukushimia Dai-ni NPS") was lost. In response to this incident, a notice to that effect pursuant to the provisions of Article 10, Paragraph 1 of the Act on Special Measures Concerning Nuclear Emergency Preparedness was issued. At 05:22 the next day, March 12, at Unit 1, at 05:32 on the same day at Unit 2 and at 06:07 the same day at Unit 4, the pressure suppression function was lost. A report of a specified event to that effect, pursuant to the provisions of Article 15, Paragraph 1 of the Act on Special Measures Concerning Nuclear Emergency Preparedness was submitted.

In response to this report, METI judged that a nuclear emergency had occurred and reported to this to Prime Minister Kan, who was at the Fukushima Dai-ichi NPS. Having obtained approval from Prime Minister Kan, at 7:45 on March 12, METI issued a declaration of a nuclear emergency state concerning the Fukushima Dai-ni NPS and established the government nuclear emergency response headquarters. This emergency response headquarters was integrated into NERHQ, which had been established the previous day to take care of the Fukushima Dai-ichi NPS.

At the same time that METI issued the declaration of the nuclear emergency state in the name of the Prime Minister, they also issued an evacuation order to citizens within a 3km radius of the Fukushima Dai-ni NPS and issued a stay-indoors order to citizens within a 3 to 10km radius of the power station.

At 15:36 on March 12, an explosion occurred in Unit 1 of the Fukushima Dai-ichi NPS.

In response to this explosion, relevant cabinet members held a discussion at the Prime Minister's Office on how to grasp the plant situation and how to take protective measures. Though the parameters of the reactors (Units 1, 2 and 4)[29] of the Fukushima Dai-ni NPS were now not showing particularly abnormal values higher than the previous levels at that stage, they

[29] The Unit 3 reactor came to a cold shutdown status at around 12:15 March 12.

considered the impact of the aforementioned explosion on the surrounding area of the Fukushima Dai-ni NPS and the possibility of a similar incident occurring at the Fukushima Dai-ni NPS. Thus, on the off chance that an incident might occur, it was decided that the range of the evacuation zone be extended. At 17:39 the same day, NERHQ instructed the Fukushima prefectural government and other relevant local governments to issue an evacuation order to citizens within a 10km radius of the Fukushima Dai-ni NPS.

Moreover, it was less probable that any additional hazardous incidents might occur at the Fukushima Dai-ni NPS. Even if a hazardous incident were to occur, it would most likely be an incident that would progress slowly and its impact on the surrounding area might be limited. In response to this probability, on April 21, NERHQ issued an order to reduce the range of the evacuation zone to within an 8km radius of the Fukushima Dai-ni NPS[30].

c. How evacuation orders were communicated

See Chapter V 3. (1) c. of the Interim Report.

d. How evacuation buses were arranged

See Chapter V 3. (1) d. of the Interim Report.

(2) Evacuation from hospitals within a 20km radius of the Fukushima Dai-ichi NPS

a. Overview of the implementation of evacuation from hospitals

(a) Futaba Kosei Hospital (located in Futaba Town)

Between around the evening of March 12 and around the evening of March 13, the first and 12th helicopter squadrons of the Ground Self-Defense Force (GSDF) carried patients from school fields of Futaba Elementary School and Futaba High School. The regional riot police of the Fukushima Prefectural Police also transported patients to the school field of Futaba High School.

[30] By this order all the evacuation zones around the Fukushima Dai-ni NPS were included in the evacuation zones around Fukushima Dai-ichi NPS.

(b) Futaba Hospital (located in Okuma Town)

As described in b below.

(c) Fukushima Prefectural Ono Hospital (located in Okuma Town)

The hospital completed the evacuation of patients within March 12, as it had reduced the number of hospitalized patients ahead of the merger with Futaba Kosei Hospital.

(d) Imamura Hospital (located in Tomioka Town)

Between around 13:20 on March 15 and around 3:35 on March 16, the GSDF 12th helicopter squadron transported a total of 49 patients from the school field of Tomioka Dai-ichi Junior High School to the school field of Koriyama High School in a total of six flights. The Futaba Police Station of the Fukushima Prefectural Police Department (hereinafter referred to as the "Futaba Police Station") supported the transportation task.

(e) Namie Nishi Hospital (located in Namie Town)

On March 12, the fire department headquarters of the Futaba Regional Association of Cities, Towns and Villages undertook operations to transport patients. On March 14 and 15, the riot police of the Fukushima Prefectural Police Department, the regional riot police of the Fukushima Prefectural Police Department and the Futaba Police Station transported a total of 23 patients to Fukushima Medical University Hospital by large transport vehicles.

(f) Minami Soma Municipal Odaka Hospital (located in Minami Soma City)

On March 13, the regional riot police of the Fukushima Prefectural Police Department, using large transport vehicles, carried a total of 103 patients to Municipal General Hospital Minamisoma. On the same day, the fire department headquarters of the Futaba Regional Association of Cities, Towns and Villages transported 20 of these patients to other hospitals.

(g) Odaka Akasaka Hospital (located in Minami Soma City)

Between March 14 and March 15, the riot police of the Fukushima Prefectural Police Department, the regional riot police of the Fukushima Prefectural Police Department, the

Futaba Police Station and a contingent of police officers sent from other regions, using large transport vehicles, carried a total of 66 patients to Iwaki-Koyo High School.

b. Evacuation from Futaba Hospital and other hospitals

(a) From March 12 until the rescue on March 14

Following the evacuation order issued early in the morning of March 12 to residents within a 10km radius of the Fukushima Dai-ichi NPS (see (1) a. above), at Futaba Hospital located in Okuma Town, a total of 209 patients who could walk on their own and all staff members of the hospital, except for Futaba Hospital Director Ichiro Suzuki (hereinafter referred to as "Hospital Director Suzuki"), began boarding on five large buses arranged for evacuation at around 12:00 on March 12, and started the evacuation at around 14:00 the same day. At this point of time, some 130 patients of Futaba Hospital, Hospital Director Suzuki, a total of 98 people staying at Deauville Futaba, a nursing healthcare facility for the elderly in Okuma town affiliated with Futaba Hospital (hereinafter referred to as "Deauville Futaba"), and two of the facility's staff stayed behind[31]. However, after having arranged the five buses mentioned above to go to Futaba Hospital, Okuma Town judged that the evacuation from the hospital was completed, and therefore did not take any particular further action to confirm the status of the evacuation there later.

At around 15:00 the same day, meanwhile, the 12th Brigade Transportation Support Squadron of the Ground Self-Defense Force departed the Koriyama Garrison for the Off-site Center to help evacuate people still remaining in the evacuation area. But the Transportation Support Squadron could not find the Off-site Center, and after learning on radio that there was a hydrogen explosion at the Fukushima Dai-ichi NPS, returned to Koriyama[32]. Thus, the rescue of patients and others remaining at Futaba Hospital was put off to the following day onward.

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[31] Many of the patients left behind at Futaba Hospital were bedridden for dementia, with some of them also suffering from terminal cancer. Later, of some 130 patients remaining at Futaba Hospital, four died at the hospital (two were confirmed dead on March 13 and another two on March 14), and another patient left the hospital and went missing.

[32] Cell phones were not all but working around the nuclear power stations, and the SDF wireless equipment, in the absence of a linking station, had only a limited communication region at the time. Thus, the 12th Brigade Transportation Support Squadron of the Ground Self-Defense Force did not have any means of communicating with its command center.

In the morning of March 13, the Prefecture Nuclear Emergency Response Center received the request that "the Prefecture Nuclear Emergency Response Center takes care of patients staying behind at Futaba Hospital and other places." Upon receiving the request, at around 13:00 the same day, the Prefecture Nuclear Emergency Response Center asked the Ground Self-Defense Force Liaison (hereinafter referred to as the "GSDF Liaison") dispatched there to rescue and transport these patients[33]. In response to the request, the 12th Brigade Transportation Support Squadron departed the Koriyama Garrison at around 00:00 on March 14[34], in an organization of three large buses and six microbuses, and arrived at Deauville Futaba and Futaba Hospital at around 4:00 the same day. It took about half a day between the receipt of the request and the departure from the garrison because of adjustments required between the 12th Brigade Command Center and the Tohoku (North Eastern) District Army Headquarters of the Ground Self-Defense Force[35]. Upon receiving the request from the Off-site Center, the Prefecture Nuclear Emergency Response Center prepared lists of hospitals and people staying behind within a 20km radius of the Fukushima Dai-ichi NPS by around 21:40 on March 13, and based on these lists, the rescue team of the Prefecture Nuclear Emergency Response Center began coordinating screening sites[36] and evacuation shelters[37].

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[33] The Futaba Police Station, meanwhile, was engaged in activities to grasp the status of residents remaining within its jurisdiction and evacuate them. Upon learning at around the evening of March 13 that Hospital Director Suzuki and patients stayed behind at Futaba Hospital, the Chief of the Futaba Police Station and others headed for Futaba Hospital, and the police station conveyed the information that many bedridden patients were remaining at Futaba Hospital to the Emergency Disaster Countermeasures Headquarters of the Fukushima Prefectural Police Headquarters. The Emergency Disaster Countermeasures Headquarters relayed the information to a police officer dispatched to the Prefecture Nuclear Emergency Response Center, and the police officer provided the information to the staff of the Prefecture Nuclear Emergency Response Center and asked for coordination of rescue and transportation operations. But this information was not shared within the Prefecture Nuclear Emergency Response Center.

[34] At the time, the 12th Brigade Command Center did not have the information that many of remaining patients are bedridden, and thus judged that patients could be transported in large buses

[35] On reasons for the delay, the 12th Brigade Command Center explained, "we were considering carrying out the rescue operations at Futaba Hospital and other places in cooperation with the Tohoku District Army Headquarters. But as we could not contact with them, we decided to do the task only with the 12th Brigade Transportation Support Squadron."

[36] By that time, facilities that already accepted evacuees told the Prefecture Nuclear Emergency Response Center that they want the screening/decontamination of evacuees as conditions for their acceptance, the Response Center had to conduct the screening before the evacuation. See Chapter 4, (5) a. for the significance of the screening.

[37] Under the Fukushima Prefecture regional disaster prevention plan, while the residents evacuation/safety team is responsible for matters related to "evacuation of afflicted residents (except for the provision of foods in times of evacuation and provision of medical services)," the rescue team is responsible for matters related to "measures for

The Sousou Healthcare Center was chosen as the screening site, as the healthcare center has jurisdiction over the Sousou District where hospitals on the list are located. As for evacuation shelters, none of hospitals within the prefecture came up with replies that they could accept hospitalized patients being evacuated. And as the information that many of patients at Futaba Hospital are bedridden was not shared within the Prefecture Nuclear Emergency Response Center, the Response Center judged that given that Futaba Hospital is a mental disease hospital, few patients there have physical problems. So, the Prefecture Nuclear Emergency Response Center chose Iwaki-Koyo High School as an evacuation shelter for those patients and told the high school that the Response Center would send them to the high school[38].

(b) Rescue on March 14

The 12th Brigade Transportation Support Squadron that arrived at Futaba Hospital at around 4:00 on March 14, together with the Chief of the Futaba Police Station and other police officers stationed at Futaba Hospital, under the instructions of Hospital Director Suzuki, took all 98 people remaining at Deauville Futaba and 34 of the patients remaining at Futaba Hospital aboard the transportation vehicles and started transporting them to the Sousou Healthcare Center by around 10:30 the same day[39].

At around the 12:00 the same day, the Transportation Support Squadron arrived at the

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people requiring support in times of disaster." Thus, the residents evacuation/safety team thought the evacuation of people requiring support in times of disaster, such as hospitalized patients, is the responsibility of the rescue team, while the rescue team did not recognize that the evacuation of people requiring support in times of disaster, such as hospitalized patients falls under its responsibility.

[38] The GSDF Liaison, given that there are many hospitals and patients requiring the rescue and that the SDF has only a limited number of transportation vehicles, concluded that the SDF should undertake transportation operations only between hospitals and the screening site and shuttle transportation between them would be more efficient. Thus, the GSDF Liaison told the Prefecture Nuclear Emergency Response Center that the SDF would take care of transportation up to the screening site and the Response Center should coordinate transportation from there to the evacuation shelter. Since the police information received by the rescue team that many of patients at Futaba Hospital are bedridden was not shared within the Prefecture Nuclear Emergency Response Center, the Response Center accepted the SDF request, judging that the transportation of patients involving the aforementioned transfer would be possible, and the residents evacuation/safety team arranged the chartering of private-sector buses for the transportation of patients from the screening site to the evacuation shelter.

[39] As the 12th Brigade Transportation Support Squadron was not familiar with the area, a police vehicle of the Futaba Police Station deployed at Futaba Hospital led way to the Sousou Healthcare Center. Four out of the 34 patients carried from Futaba Hospital were transported in the police vehicle.

Sousou Healthcare Center, and the screening of the patients and others got under way[40]. However, after looking the conditions of the patients carried there, the director of the Sousou Healthcare Center judged that it would be difficult to transfer the patients to chartered private-sector buses standing by at the screening site, and asked the Transportation Support Squadron to transport them to the destination of Iwaki-Koyo High School without carrying them off the SDF vehicles.

The Transportation Support Squadron was originally to transport patients by shuttle between Futaba Hospital and the screening site. In response to the request above, however, the squadron agreed to carry the patients to Iwaki-Koyo High School, and departed for Iwaki-Koyo High School at around 15:00 after communicating with the 12th Brigade Command Center to that effect[41]. One staff member of the Sousou Healthcare Center accompanied the squadron to show it the way.

Around this time, the Persons with Disabilities Welfare Division of the Social Health & Welfare Department of Fukushima Prefecture, which is responsible for psychiatric hospitals, upon obtaining the information that patients of Futaba Hospital are being transported to Iwaki-Koyo High School as the evacuation shelter, judged it necessary to find a hospital as an ultimate transportation destination, and obtained the consent to the acceptance of a total of 82 people from Fukushima Prefectural Medical University Hospital, Fukushima Prefectural Aizu General Hospital, Takeda General Hospital and Aizunishi Hospital. At that stage, the Division had the information that buses carrying the patients of Futaba Hospital had already departed for Iwaki-Koyo High School. So, the Division only told Iwaki-Koyo High School that it made arrangements for the acceptance of the 82 people at other hospitals, but did not give that information to the Prefecture Nuclear Emergency Response Center.

As the 12th Brigade Transportation Support Squadron had the information that there was a hydrogen explosion in Unit 3 of the Fukushima Dai-ichi NPS at around 11:00 March 14, prior

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[40] The staff of the Soso Healthcare Center who took charge of the screening judged that the conditions of the four of the 34 patients carried from Futaba Hospital were so bad that they could not withstand the transportation to the evacuation shelter, and arranged for the transportation of them to another hospital in Minami Soma City.

[41] As the vehicles of the Transportation Support Squadron did not carry wireless equipment and cell phones were not working so well, the squadron could not communicate with the 12th Brigade Command Center after the communication from the Soso Healthcare Center until it arrived at Iwaki-Koyo High School. The 12th Brigade Command Center could not communicate with the Transportation Support Squadron, either.

to the departure from the Sousou Healthcare Center to Iwaki-Koyo High School, the Transportation Support Squadron decided to use a route to Iwaki City via the Koriyama Interchange (IC) of the Tohoku Expressway. However, due to the earthquake's impact on road infrastructure, the squadron couldn't pick up the speed even on the expressway, and arrived at Iwaki-Koyo High School at around 20:00 the same day, about five hours after the departure from the Sousou Healthcare Center.

Though Iwaki-Koyo High School was willing to accept the patients as the evacuation shelter upon the communication with the Prefecture Nuclear Emergency Response Center, but did not have the information that many of the patients are bedridden. So, after observing the conditions of the patients who arrived at the school, Iwaki-Koyo High School refused to accept them, because the school thought it difficult to accept the patients not accompanied by doctors into its gym that is not equipped with any medical facilities[42]. Subsequently, however, Iwaki Kaisei Hospital[43] promised to send doctors to Iwaki-Koyo High School, and as Iwaki-Koyo High School agreed to accept the patients, the work to hand the patients down from the buses started from around 21:35 on March 14. At that point of time, eight out of the 30 patients from Futaba Hospital were confirmed dead.

(c) Prior to the rescue on March 15

Meanwhile, at around 13:30 on March 14, the 12th Brigade Command Center received reports from the 12th Brigade Transportation Support Squadron that a majority of patients remaining at Futaba Hospital, etc. are bedridden and that the squadron would head for Iwaki-Koyo High School as the boarding and alighting of these patients are difficult. Upon receiving these reports, the 12th Brigade Command Center decided to organize an additional rescue team, mainly with ambulance cars and have medical officers accompany the team. The Command Center asked for support from the SDF Tohoku District Army Headquarters as it judged it difficult to handle the situation by the 12th Brigade by itself.

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[42] At the request of Iwaki-Koyo High School, the Persons with Disabilities Welfare Division of the Social Health & Welfare Department of Fukushima Prefecture consulted with doctors of the Disaster Medical Assistance Team (DMAT) who were dispatched to the Prefecture Nuclear Emergency Response Center at the time, and those doctors themselves went to Iwaki-Koyo High School to do triage work from before dawn on March 15.

[43] As of March 13, Iwaki Kaisei Hospital had accepted 207 people evacuated from Futaba Hospital on March 12.

The Tohoku District Army Headquarters, upon receiving the aforementioned request, decided to dispatch an integrated mission unit[44], comprising the Tohoku District Medical Squadron (including medical officers and nurses, etc.) under the direct control of the Tohoku District Army, and the integrated mission unit departed for Futaba Hospital, via the Koriyama Garrison, in an organization of five ambulance cars, two large buses and one microbus, at around 1:30 on March 15.

Meanwhile, the 12th Brigade Commanding Center instructed the 12th Brigade Medical Squadron to go to the rescue of patients at Futaba Hospital around the evening of March 14, and the Medical Squadron, with an organization of four ambulance cars, left the Koriyama Garrison for Futaba Hospital. However, after intermittently obtaining the information from press reports, etc., that "the nuclear power station is in a hazardous situation" from around 20:00 on March 14, the 12th Brigade Commanding Center, at around 21:15, ordered all the squadrons of the 12th Brigade to "retreat and evacuate temporarily"[45]. Thus, the 12th Brigade Medical Squadron, which had already departed for Futaba Hospital, returned to the Koriyama Garrison. Later, in the morning of March 15, the 12th Brigade Commanding Center ordered the Medical Squadron to go to the rescue again.

At 21:58 on March 14, the Deputy Chief of the Futaba Police Station who was at Futaba Hospital received an instruction by radio from the Futaba Police Station emergency response office set up at the Kawauchi Village Office that "with the nuclear reactor in a hazardous situation, leave the site temporarily"[46], and evacuated to Wariyama Pass located in Kawauchi Village, carrying Hospital Director Suzuki and others in a police vehicle. At 22:10 the same day, the Emergency Disaster Countermeasures Headquarters of the Fukushima Prefectural Police Headquarters (hereinafter referred to as the "Prefectural Police Countermeasures Headquarters") issued an order to "continue with the rescue activities as there is no emergency danger at the moment," and the Deputy Chief of the Futaba Police Station and others went back

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[44] The integrated mission unit is a unit organized on a temporary basis in response to the disaster, with the Tohoku District Commanding General acting as the commander.

[45] As the safety was confirmed subsequently, the Commanding Center, at around 00:00 on March 15, ordered all the squadrons to return to normal positions.

[46] The Futaba Police Station emergency response office issued the instruction at its own discretion based on information from firefighters.

to the vicinity of Futaba Hospital. As SDF vehicles were gone from within Okuma Town and materials and equipment were scattered around, they evacuated to Wariyama Pass again, judging that it would be dangerous to stay in Okuma Town. After the second evacuation, the Deputy Chief of the Futaba Police Station told the Prefectural Police Countermeasures Headquarters that he would "stand by around Wariyama Pass to wait for the SDF coming to the rescue of Futaba Hospital," and the Prefectural Police Countermeasures Headquarters relayed this communication to the police liaison dispatched to the Prefectural Nuclear Emergency Response Center. However, since this information was not shared within the Prefectural Nuclear Emergency Response Center and thus was not conveyed to the GSDF Liaison[47], the Deputy Chief of the Futaba Police Station, Hospital Director Suzuki and others failed to join together with either the integrated mission unit or the 12th Medical Squadron coming to the rescue of Futaba Hospital.

(d) Rescue on March 15

The integrated mission unit, which departed for Futaba Hospital at around 1:30 on March 15 as described above, arrived at Futaba Hospital around 9:00 the same day and carried out the rescue and transportation of patients there. During their activities, dosimeters the unit carried with it began to continuously give alarm sounds. As the integrated mission unit included five female nurses, the unit judged it difficult to continue its activities further in light of the radiation dose limit for females (5mSv) and suspended the rescue activities after rescuing a total of 47 patients, began the transportation of only these 47 patients at around 11:00[48].

The 12th Brigade Medical Squadron, which was instructed to go to the rescue again in the morning of March 15 as described above, headed for Futaba Hospital with four ambulance cars and rescued seven out of the remaining patients at Futaba Hospital from around 11:30 the same day. At the time, 35 more patients were remaining in another building of the hospital. However,

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47 The Investigation Committee looked into the cause, but failed to make it clear.

48 When the integrated mission unit conducted the rescue of patients at Futaba Hospital in the morning of March 15, several members of the resident safety team of the Off-site Center were present and saw the integrated mission unit off departing there after the rescue of some patients. These team members left Futaba Hospital, leaving the rest of patients there, just before the arrival (around before 11:30) of the 12th Brigade Medical Squadron, another rescue team, and headed for the Fukushima Prefectural Office building where the Off-site Center began being relocated at the time.

as the Medical Squadron did not meet and exchange information with the integrated mission unit that had arrived there earlier, it mistakenly concluded that the rescue operation was complete and started transporting only those seven patients at around 12:15, totally unaware of the presence of those remaining patients[49]. In the course of the transportation, the Medical Squadron, in an area where cell phones could be used, reported to the 12th Brigade Commanding Center that "the rescue operation at Futaba Hospital has been completed. The 12th Brigade Commanding Center, for its part, conveyed that information to the GSDF Liaison at the Prefecture Nuclear Emergency Response Center.

However, the commanding officer of the 12th Brigade Medical Squadron, on the way back to the Koriyama Garrison, received a report from one of the squadron members that he "received information from a medical officer of the integrated mission unit at the screening site that there should be some patients still remaining in another building of Futaba Hospital." The commanding officer thought that they should go back to the rescue of those remaining patients again after making necessary preparations, and reported to the Commander of the 12th Brigade and others to that effect.

For the rescue operation, the 12th Brigade Commanding Center organized a mixed unit that consisted of one large bus and two microbuses of the Transportation Support Squadron and seven ambulance cars of the Medical Squadron and others. The mixed unit departed for Futaba Hospital at around 21:15 March 15, started the rescue of 35 remaining patients from another building of Futaba Hospital at around 0:35 on March 15[50].

(e) The status of public relations on March 17

After some media organizations reported around the morning of March 17 on the situation of Futaba Hospital patients transported to Iwaki-Koyo High School on March 14, other media

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[49] A total of 54 patients transported by the integrated mission unit and the 12th Brigade Medical Squadron, after the screening, headed for Fukushima Prefectural Medical University Hospital in private-sector buses arranged by the Prefecture Nuclear Emergency Response Center. As the hospital refused to accept them, the patients were then carried to the Date Fureai Center at around 1:00 on March 16. At the time, two of the patients were confirmed dead.

[50] After the screening, these rescued patients were transported to Kasumiga zyo Park and Azuma Sports Park in private-sector buses arranged by the Prefecture Nuclear Emergency Response Center, but five of them were confirmed dead upon arrival there.

organizations requested the Prefecture Nuclear Emergency Response Center to explain about the situation. So, around 16:00 on March 17, the rescue team, based on information the rescue team gathered until then, hurriedly provided the information on the rescue of patients from Futaba Hospital to the press, saying that "the rescue operations were conducted from March 14 to March 16, but there were no hospital officials at the rescue scene."

However, as described earlier in (b) and (c), Hospital Director Suzuki was at the scene of the rescue in the morning of March 14 and directed the transportation of patients, and after 22:00 the same day, he was standing by near Wariyama Pass to join with the SDF. The information provided to the press by the rescue team thus contradicted with these facts and has to be described as the inaccurate or inappropriate information that had left the impression that none of hospital officials were present at the rescue operations from March 14 onward and left by abandoning the hospital. This is believed to have stemmed from the rescue team's inadequate grasping of the situation, including no sharing of the facts described above within the Prefecture Nuclear Emergency Response Center[51].

(3) Decision, instruction, communication and implementation of long-term evacuation measures

See Chapter V 3. (2) of the Interim Report.

(4) Evacuation in various municipalities

See Chapter V 3. (3) of the Interim Report. The numbers of evacuees as of May 25, 2012 (approximate numbers) are shown in Table IV-1:

[51] Later, the Prefecture Nuclear Emergency Response Center issued a press release correcting the earlier information, saying that Hospital Director Suzuki was at Futaba Hospital until March 14 and stood by near Wariyama Pass to join with the SDF, based on Hospital Director Suzuki's explanations.

Table IV-1 Numbers of evacuees (approximate numbers)

	Restricted Area	Deliberate Evacuation Area	Areas Prepared for Emergency Evacuation (Old)	Total
Okuma Town	11,500	—	—	11,500
Futaba Town	6,900	—	—	6,900
Tomioka Town	16,000	—	—	16,000
Namie Town	19,600	1,300	—	20,900
Iitate Village	—	6,200	—	6,200
Kuzuo Village	300	1,300	—	1,600
Kawauchi Village	400	—	2,100	2,500
Kawamata Town	—	1,300	—	1,300
Tamura City	400	—	2,200	2,600
Naraha Town	7,700	—	50	7,750
Hirono Town	—	—	5,200	5,200
Minami Soma City	13,300	10	16,000	29,310
Total	76,100	10,110	25,550	111,760

Prepared based on materials compiled by the Secretariat of the Nuclear Emergency Response Headquarters

(5) Cancellation of areas prepared for emergency evacuation

See Chapter V 3. (4) of the Interim Report.

(6) Declaration to lift the nuclear emergency state concerning the Fukushima Dai-ni NPS

On December 22, the NERHQ sought the NSC's advice on making a declaration to lift the nuclear emergency state concerning the Fukushima Dai-ni NPS as the following facts that the Fukushima Dai-ni NPS can maintain the cold shutdown of the reactor as a result of the

restoration of the reactor cooling function, that abnormal emissions of radioactive materials are not taking place as the fuel rods were not damaged by the earthquake and the containment function of radioactive materials is maintained and that measures have been taken to prevent an accident through the implementation of emergency safety measures, etc.[52] have been confirmed by NISA[53]. On December 26, the NSC advised the NERHQ that it would be all right to lift the nuclear emergency state concerning the Fukushima Dai-ni NPS. Upon receiving the NSC's advice, Prime Minister Yoshihiko Noda (hereinafter referred to as "Prime Minister Noda") on the same day issued a declaration on the lifting of the nuclear emergency state concerning the Fukushima Dai-ni NPS.

Following the lifting of the nuclear emergency state, the NERHQ also lifted the evacuation order areas established within an 8km radius of the Fukushima Dai-ni NPS (see (1) b. above).

(7) Establishment of new evacuation areas

On December 16, the NERHQ concluded that the reactor of the Fukushima Dai-ichi NPS has become stable and the accident of the power station itself has come to an end. More specifically, the NERHQ reached the judgment that the overall safety of the power station has been secured in light of the achievement of such targets as the "cold shutdown" of the reactor, securing of the more stable cooling of the spent nuclear fuel pool, reduction in the overall quantity of accumulated water, and control of dispersion of radioactive materials.

Thus, on December 26, the NERHQ, in "Basic Concept and Issues to be Challenged for Rearranging the Restricted Areas and Areas to which Evacuation Orders Have Been Issued where Step 2[54] Has Been Completed" , set forth the following policy on the review of restricted areas and areas to which evacuation orders have been issued. First, the review of areas to which

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52 These measures include the deployment of truck-mounted generators and pumper trucks on an upland, steps to make the buildings watertight and development of embankment, etc.

53 Prior to this, on November 7, METI ordered TEPCO to submit a report on the status of the implementation of emergency measures at the Fukushima Dai-ni NPS based on Article 31 of the Nuclear Emergency Preparedness Act, and TEPCO submitted the report on the status of the implementation of these measures on November 11. NISA conducted on-site inspections by its safety inspectors to check the content of the report, and after consultations with the NSC, NISA reported to the NERHQ on what it has confirmed.

54 Step 2 is one of the targets designated in the "Roadmap towards Restoration from the Accident at Fukushima Daiichi Nuclear Power Station," prepared by TEPCO, dated April 17, 2011.

evacuation orders have been issued should be based on the criteria of whether the annual integrated radiation dose can be held down to 20mSv or below[55], and the government should also get proactively involved in decontamination (particularly decontamination with priority given to the living conditions of children), infrastructure reconstruction and damage compensation. On this basis, the government decided to designate areas where it is confirmed that the annual integrated dose is certain to decline to 20mSv or below as "areas to which evacuation orders are ready to be lifted" and areas where the annual integrated dose may still exceed 20mSv and the government continues to ask residents to be evacuated from the viewpoint of reducing their exposed dose as "areas in which residents are not permitted to live." In addition, of the areas in which residents are not permitted to live, the government decided to designate those areas where the level of contamination by radioactive materials is extremely high and it would be a long period of time before evacuation orders are lifted[56] as "areas where it is expected that residents will face difficulties in returning for a long time."

Based on this policy, the NERHQ held consultations and made adjustments with Fukushima Prefecture and relevant municipalities as well as residents there, and on March 30, 2012, decided to review the restricted areas and evacuation areas concerning the following municipalities.

・For Kawauchi Village, as of 00:00 on April 1, 2012, the restricted areas will be lifted and the evacuation areas in the village will be designated as "areas in which residents are not permitted to live" and "areas to which evacuation orders are ready to be lifted," as shown in Figure IV-7.

・For Tamura City, as of 00:00 on April 1, 2012, the restricted areas will be lifted and the evacuation areas in the city will be designated as "areas to which evacuation orders are ready to be lifted," as shown in Figure IV-7.

・For Minami Soma City, as of 00:00 on April 16, 2012, the restricted areas will be lifted and the evacuation areas in the city will be designated as "areas where it is expected that residents

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[55] The criteria are also based on the assessment by the "Working Group for Risk Management of Low-Dose Radiation" under the Advisory Board for Actions against Contamination by Radioactive Materials.".

[56] Specifically, the government decided to designate as "areas where it is expected that residents will face difficulties in returning for a long time" areas where the annual integrated dose is expected not to go below 20mSv (areas with the present annual integrated dose in excess of 50mSv).

will face difficulties in returning for a long time," "areas in which residents are not permitted to live" and "areas to which evacuation orders are ready to be lifted," as shown in Figure IV-7[57].

[57] For Minami Soma City, the timing of the establishment of those areas were put off until later than other Kawachi Village and Tamura City, because the areas covered are very wide and the city has a large population, and thus it needs time for preparation.

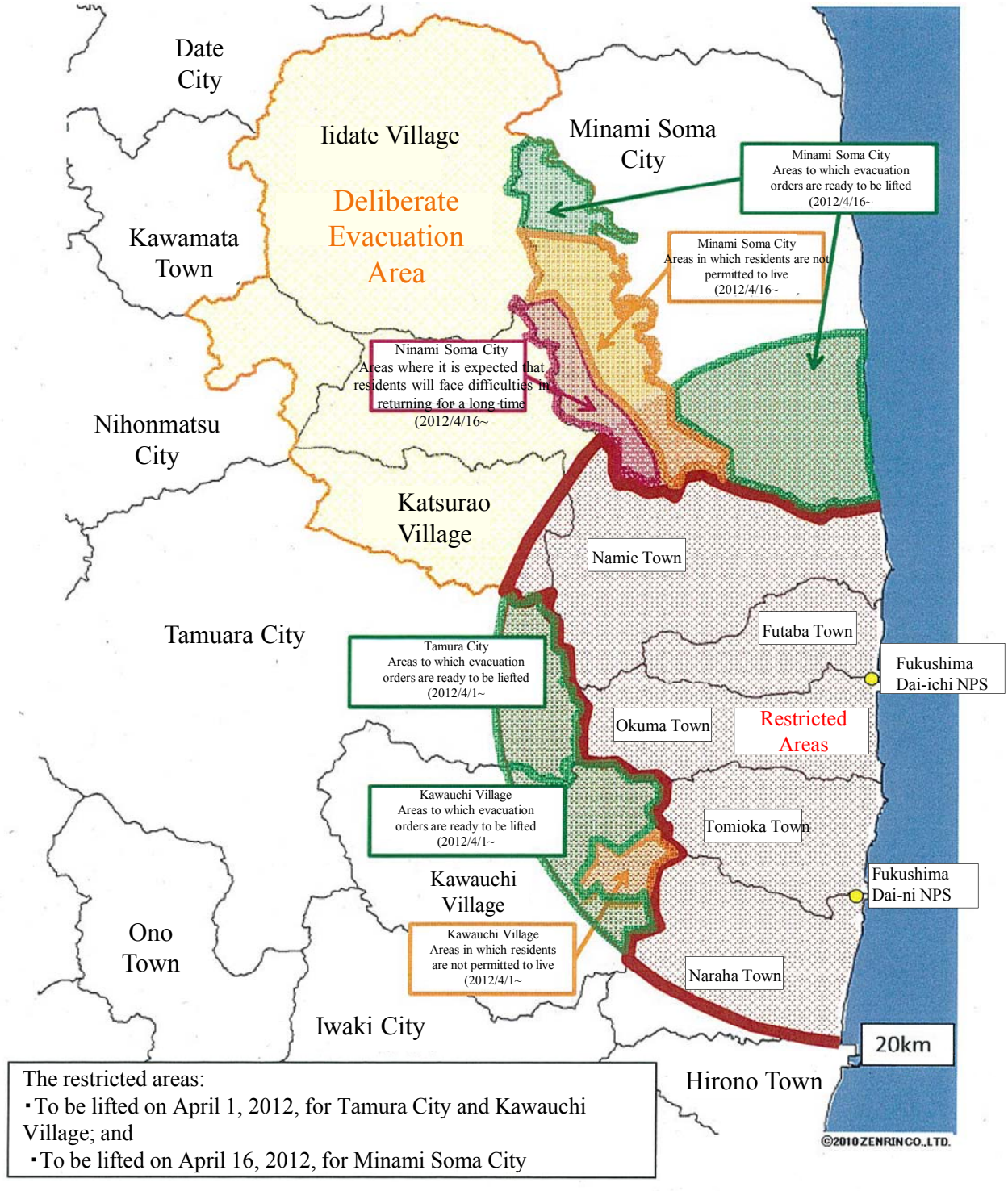

Fig. IV-7 Establishment of new evacuation areas

Compiled by the NERHQ

4. Measures Taken to Address the Risk of Radiation Exposure

(1) Radiation control standards

See Chapter V 4. (1) of the Interim Report.

(2) Radiation dose limit for radiation workers in an emergency

a. Raising the exposure limit to 250mSv

See Chapter V 4. (2) a. of the Interim Report.

b. Discussion on raising the exposure limit to 500mSv[58]

On March 17, three days after raising the exposure limit for emergency workers from 100mSv to 250mSv, Special Advisor Hosono, in light of the facts that the SDF was scheduled to begin discharging water from its water cannon trucks into the spent nuclear fuel pool of Unit 3 of the Fukushima Dai-ichi NPS from the same day and that on the previous day, on March 16, the SDF gave up on the sprinkling of water from helicopters due to the high radiation dose level, thought that it is necessary to raise the exposure dose limit further up to 500mSv in order to avoid situations where the work at the nuclear power station cannot be done due to the exposure limit, while paying heed to the recommendations of the International Commission on Radiological Protection (ICRP)[59]. Special Advisor Hosono first asked House of Representatives Member Akihisa Nagashima (hereinafter referred to as "House of Representatives Member Nagashima"), former Parliamentary Vice-Minister of Defense, to sound out the National Personnel Authority, the Ministry of Health, Labour and Welfare and the Ministry of Economy, Trade and Industry about a possible plan to raise the radiation exposure limit. When House of Representative Member Nagashima approached National Personnel Authority President

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[58] Though we covered the consideration of the dose limit to 500mSv in Chapter V 4. (2) b. of the Interim Report, we describe the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

[59] For occupational exposure, the ICRP recommendations say that the reference level of urgent rescue operators other than life-saving operators should be established below 1,000mSv or 500mSv (see Chapter V 4. (1) b. of the Interim Report). The Radiation Council explained in a statement issued on March 26 that the value of 500mSv is "the threshold value not causing any impact on tissues and is also accepted internationally as the value that is not recognized as causing the deterministic effects of acute disorders (such as diarrhea, melena and bleeding) or serious disorders of late effects (such as vascular disorders like cardiac infarction)."

Takeshi Erikawa, Senior Vice Minister of Health, Labour and Welfare Yoko Komiyama, and Senior Vice Minister of Economy, Trade and Industry Motohisa Ikeda to sound them on a possible plan to raise the dose limit, they did not express any particular opposition. So, Special Advisor Hosono proposed to Prime Minister Kan that the dose limit should be raised again. When Prime Minister Kan called relevant cabinet ministers, including Minister of Health, Labour and Welfare Ritsuo Hosokawa, METI Minister Banri Kaieda and Minister of Defense Toshimi Kitazawa (hereinafter referred to as "Defense Minister Kitazawa") and National Public Safety Commission Chairman Kansei Nakano (hereinafter referred to as "National Public Safety Commission Chairman Nakano"), to his office at around 18:30 on March 17 to hear their opinions about the raising of the dose limit, Minister of Defense Kitazawa and National Public Safety Commission Chairman Nakano voiced negative or cautious views about it. In the evening of the same day, Minister of Defense Kitazawa again conveyed his opinion against it to Prime Minister Kan. Under these circumstances, Prime Minister Kan decided against the raising of the exposure dose limit.

c. Lowering the exposure limit to 100mSv

See Chapter V 4. (2) c. of the Interim Report.

(3) Organizational framework for radiation control at TEPCO

a. Organizational framework for radiation control before the nuclear accident

See Chapter V 4. (3) a. of the Interim Report.

b. Organizational framework for radiation control after the nuclear accident

(a) Establishment of radiation controlled zones

See Chapter V 4. (3) b. (a) of the Interim Report.

(b) Registration as a radiation worker

See Chapter V 4. (3) b. (b) of the Interim Report.

(c) APD (alarm pocket dosimeter)[60]

TEPCO had about 5,000 APDs installed at the entrance of the controlled zone of Units 1 to 6 at the Fukushima Dai-ichi NPS and in the centralized waste treatment facilities, but most of them were covered with water and damaged by the tsunami. Hence, as a temporary arrangement, it was decided to perform radiation control measures for workers using about 320 APDs[61] that had been kept in the Seismic Isolation Building.

The TEPCO Kashiwazaki-Kariwa Nuclear Power Station (hereinafter referred to as the "Kashiwazaki-Kariwa NPS"), which was aware of the status of the accident through information from TEPCO's television conference system and the communication with the Emergency Response Center health physics team at the Fukushima Dai-ichi NPS (hereinafter referred to as the "Fukushima Dai-ichi NPS health physics team")[62], sent 530 APDs, eight units of battery chargers for APDs (three units for 10 APDs and five units for 100 APDs) and an APD alarm setter[63] as relief supplies to the Fukushima Dai-ichi NPS from March 11 to March 12. Of these suppliers, 30 APDs, three units of battery chargers (for 10 APDs) and an APD alarm setter arrived at the Fukushima Dai-ichi NPS on March 12 and were used from the same day. However, of the 500 APDs sent separately on March 12, though 300 APDs arrived at the Fukushima Dai-ichi NPS on the same day and 200 APDs on March 13, they were not used, as described later, as battery chargers compatible with these APDs had yet not arrived. Furthermore, as a member of the Fukushima Dai-ichi NPS health physics team, who knew that these APDs were kept unused, left the Fukushima Dai-ichi NPS by March 14[64], the 500 APDs remained unused and were kept at the Seismic Isolation Building of the Fukushima Dai-ichi NPS until the end of March. The five units of battery chargers (for 100 APDs), together with

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60 Though we covered APDs in Chapter V 4. (3) b. (c) of the Interim Report, we describe the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

61 In addition to 50 APDs kept in a meeting room of the Seismic Isolation Building as emergency supplies, some 100 APDs were also kept in a solid waste storage warehouse that had not been damaged by the tsunami. Furthermore, as there were many workers wearing APDs, these APDs were collected for use at other places.

62 The Fukushima Dai-ichi NPS health physics team was responsible for control of radiation exposure dose of workers at the Fukushima Dai-ichi NPS.

63 Alarm setters are devices that set up APDs to give out alarms when they measure a certain level of radiation dose. It is possible to measure radiation dose without this setup procedure.

64 This member of the Fukushima Dai-ichi NPS health physics team, who was dispatched there for support, failed to confirm with the Kashiwazaki-Kariwa NPS whether it had send the battery chargers or to request for the delivery of the battery chargers before the member left the Fukushima Dai-ichi NPS on March 14.

the 200 APDs mentioned above, were loaded on a truck heading for the Fukushima Dai-ni NPS on March 12. However, after they arrived at the Fukushima Dai-ni NPS on March 13, only the 200 APDs that could be transshipped immediately were delivered to the Fukushima Dai-ichi NPS, while the five units of battery chargers (for 100 APDs) mentioned above were kept in a warehouse of the Fukushima Dai-ni NPS.

The Fukushima Dai-ichi NPS health physics team initially thought some 350 APDs secured by March 12 would be sufficient as the number of workers outside the Seismic Isolation Building was not so large. However, as the number of workers increased later, the number of APDs ran short from around March 15.

In response to this situation, Mr. Masao Yoshida, head of the Fukushima Dai-ichi NPS (hereinafter referred to as "Site Superintendent Yoshida") decided to let only the leaders of an operational group wear APDs on behalf of the entire group as long as the following conditions were met: (i) the assumed total radiation dose per job is not great (less than about 10mSv), (ii) air radiation dose rates at the work site are known, (iii) environmental dose rates gradient (difference between air radiation dose rates in the same space) is not great, and (iv) all members of an operational group are always together at a work site. This decision was made based on the following assessment: the provisory clause, which states that "however, if it is considerably difficult to perform the said measurement with the said radiation measuring instrument, the said dose from external exposure may be computed using the measured dose equivalent, and if it is also considerably difficult to compute it, then the said value may be obtained through calculations," of Article 8, Paragraph 3 of Ionization Rules stipulating that "the measurement of radiation dose from external exposure according to Article 1 shall be performed by wearing radiation measuring instrument on parts of the body specified in the following items" was applicable to this case.

In parallel with the above, the Fukushima Dai-ichi NPS health physics team told the TEPCO Head Office that APDs were in short supply. Of APDs that were ordered in early 2010 and being delivered gradually, the TEPCO Head Office, around March 16, asked the supplier to frontload the delivery of 400 APDs that were to be delivered in April 2011, and 100 of them were delivered to the Fukushima Dai-ichi NPS on March 17. The delivery brought the total number of APDs available at the Fukushima Dai-ichi NPS to 450, but the Fukushima Dai-ichi

NPS continued with the practice of letting only the leaders of an operational group wear APDs on behalf of the entire group. The remaining 300 APDs were delivered on April 3.

On March 17, the TEPCO Head Office, through Chubu Electric Power Company, which was the managing company of the Federation of Electric Power Companies (FEPC) at the time, asked Shikoku Electric Power Company (hereinafter referred to as "Shikoku Electric Power") to provide APDs[65]. In response to the request, Shikoku Electric Power sent out 450 APDs as well as five units of battery chargers (four for 100 APDs and one for 50 APDs) and two alarm setters. They were delivered to the J-Village stadium by around March 21. However, when TEPCO employees taking charge of management of equipment and materials at the J-Village stadium checked the equipment and materials delivered, they could not find the alarm setters and sent only the APDs and battery chargers to the Fukushima Dai-ichi NPS. Informed of the delivery, the head of the Fukushima Dai-ichi health physics team became aware of the absence of the alarm setters and the fact alarm setters at the Fukushima Dai-ichi NPS cannot be used for the APDs delivered by Shikoku Electric Power. However, the health physics team head sent back the ADPs and battery chargers to the J-Village stadium without asking the TEPCO Head Office to secure other alarm setters or giving thought to using the APDs without altering the alarm setup value[66], as the team head was of the view that there would be no problem in continuing with the practice of letting only the leaders of an operational group wear APDS on behalf of the entire group as done at the Fukushima Dai-ichi NPS at the time and was not aware of the need to secure more APDs as soon as possible. Thus, the APDs and other supplies delivered by Shikoku Electric Power were kept at the J-Village stadium without being used.

Subsequently, on March 31, the NISA, which became aware of the TEPCO practice of letting only the leaders of an operational group wear APDs, told TEPCO that the practice was not desirable and urged TEPCO to take all necessary steps for radiation control for its workers. Following this, on the same day, TEPCO decided to do away with the practice of letting only the leaders of an operational group wear APDs. Furthermore, informed by the

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65 The TEPCO Head Office asked Shikoku Electric Power to provide APDs as Shikoku Electric Power used APDs manufactured by the same maker as that for APDs being used at the Fukushima Dai-ichi NPS.

66 In the absence of alarm setup devices, the setup value to enable APDs to give out alarms cannot be altered but APDs can still measure the radiation dose. So, it was possible to perform radiation dose control by using those APDs.

Kashiwazaki-Kariwa NPS that became aware of this, TEPCO searched the Fukushima Dai-ichi NPS and the Fukushima Dai-ni NPS, and found the aforementioned 500 APDs at the Fukushima Dai-ichi NPS on March 31, and the aforementioned five units of battery chargers (for 100 APDs) at the Fukushima Dai-ni NPS on April 1. In addition, with the additional deliveries of 190 APDs and two units of battery chargers (one for 100 APDs and one for 50 APDs) form the Kashiwazaki-Kariwa NPS, a sufficient number of APDs and other equipment was secured on April 1 and the normal practice of having all workers wear APDs resumed the same day.

(d) Managing access to and from a controlled area

See Chapter V 4. (3) b. (d) of the Interim Report.

c. Occurrence of exposed subjects and their countermeasures

(a) Subjects exposed to contaminated water from the Unit 3 turbine building

See Chapter V 4. (3) c. (a) of the Interim Report.

(b) Subjects exposed to radiation exceeding the dose limit (5mSv in three months) for female staff

See Chapter V 4. (3) c. (b) of the Interim Report.

(c) Subjects exposed to radiation exceeding the dose limit (250mSv) for urgent emergency work[67]

It was discovered that, on June 10 two workers (male staff member F in his 30s and male staff member G in his 40s), on June 20 one worker (male staff member H in his 50s), and on July 7 three workers (male staff members I, J, and K in their 20s) had been exposed to radiation over 250mSv of the radiation dose limit which was newly mandated by law.

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[67] Though we covered subjects exposed to radiation exceeding the dose limit for urgent emergency work in V 4. (3) c. (c) of the Interim Report, we describe the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

i. Main control room of Units 3 and 4 (Conditions of F, G and H)

The three staff members of F, G and H stayed in the main control room of Units 3 and 4 of the Fukushima Dai-ichi NPS between March 11 and the evening of March 13 as the shift operators (this indicates the shift supervisor and all other shift operators. The same is applicable hereinafter), and also engaged in the work in the main control room several times since then.

The exposure dose that these three staff members received were as follows: staff member F received 678.08mSv (88.08mSv of external dose and 590mSv of internal dose), G received 643.07mSv (103.07mSv of external dose and 540mSv of internal dose) and H received 352.08mSv (110.27mSv of external dose and 241.81mSv of internal dose).

Staff members F and G were engaged in collecting plant data in the main control room. Staff member H was the leader of additional staff in the same room. After the accident, the air radiation dose rate increased in the main control room of Units 3 and 4. At 17:04 on March 12, staff member H instructed other staff in the room to wear masks. However, there were not enough charcoal filter masks, which can screen out volatile iodine, for each staff member in the room. Some staff in the main control room wore charcoal filter masks and others wore dust filter masks, which cannot screen out volatile iodine, until charcoal filter masks were delivered from the Seismic Isolation Building in the evening of the same day.

Staff members F, G, and H wore dust filter masks until the charcoal filter masks were delivered from the Seismic Isolation Building in the evening of the same day[68]. In the control room, individual staff members were in charge of specific panels and were engaged in checking their respective panels on a continual basis. Staff members F and G spent most of their time checking the meters nearest the emergency doors where external air blew in[69]. On the evening of March 13, these three staff members were replaced with backup members and then moved to the Seismic Isolation Building. At dawn on March 15, they were instructed to evacuate to the Fukushima Dai-ni NPS. Subsequently when they moved to the Seismic Isolation Building of the Fukushima Dai-ni NPS, they were grouped into teams to collect data in the main control room of Units 3 and 4 at the Fukushima Dai-ichi NPS in regular shifts for intervals of several

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[68] They shared a charcoal filter mask whenever they had to work outside the main control room of Units 3 and 4.

[69] Some other staff members, too, were engaged in checking meters just as staff members F and G were, but they were nowhere near the emergency doors.

hours[70].

Additionally, staff member F was engaged in vent operations with two other staff members on March 13. Staff member G was engaged in refueling operations with two other staff members near Unit 1 on March 12. Staff member H had not been engaged in any outdoor operations until he moved to the Seismic Isolation Building. From March 14, he was engaged in refueling operations or checking fire extinguishing pumps at his work site. In addition, these three staff members had not taken stable iodine tablets until they moved to the Seismic Isolation Building on the evening of March 13[71]. Additionally, staff member F had occasionally smoked cigarettes before the explosion in Unit 1 on March 12. Additionally, staff members F and H wore glasses.

The conditions of radiation protection around the emergency door located near the meters staff members F and G were checking frequently and through which external air blew in were as follows. In the evening of March 11, the recovery team of the Emergency Response Center at the Fukushima Dai-ichi NPS (hereinafter referred to as the "Fukushima Dai-ichi NPS recovery team") installed an emergency generator outside to the west of the main control room of Units 3 and 4. In doing so, it extended a power cable from the emergency generator into the main control room by slightly opening the emergency door and attached the sheet by tape from inside the main control room to cover the opening in the emergency door to shut off external air. However, the shift operators in the main control room went in and out of the room through the emergency door for refueling of the aforementioned generator several times a day by removing the aforementioned sheet, allowing external air into the main control room at least every time they went out of and came back into the room[72].

On March 15, the Fukushima Dai-ichi NPS recovery team newly installed an emergency generator near the first-floor entrance to the east of the building housing of the main control room of Units 3 and 4. This made it unnecessary to extend the power cable into the main

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[70] From March 15, younger staff members were excluded from the teams to collect data in the main control room. Additionally, staff member G, who had already been found to have received a high external radiation dose at that time, was excluded from working in the main control room.

[71] On this point, staff member F said during the Investigation Committee's hearings that he remembered taking stable iodine tablets, but there were no records left on the intake of stable iodine tablets by staff member F.

[72] When they came back into the main control room after refueling, they attached the sheet to the emergency door using the same tape.

control room through the emergency door or for the shift operators to go in and out of the room by the emergency door for refueling. But the emergency door did not shut tight due to the deformation presumably caused by the explosion. Therefore, the shift operators of the main control room attached the sheet to the door by tape from inside to shut off external air and also piled up lead-containing batteries inside the emergency door to mitigate the impact of gamma ray.

As described above, the sheet was attached to the emergency door of the main control room of Units 3 and 4 until around March 16, but external air was let into the main control room at least every time the shift operators went out of and came back into the room for refueling by removing the attached sheet[73].

ii. Main control room of Units 1 and 2 (Conditions of I, J and K)

Three staff members, I, J, and K, had been engaged in both restoring meters to their former state in the main control rooms of Units 1 and 2 of the Fukushima Dai-ichi NPS, and securing electric power supply outdoors, staying mainly in the Seismic Isolation Building since the accident.

The radiation dose that these three staff members received was as follows: staff member I received 308.93mSv (49.23mSv of external dose and 259.70mSv of internal dose), staff member J received 475.50mSv (42.40mSv of external dose and 433.10mSv of internal dose) and staff member K received 359.29mSv (31.39mSv of external dose and 327.90mSv of internal dose).

Early in the morning of March 12, the main control room shift supervisors of Units 1 and 2 instructed the staff in the rooms to wear masks. Staff member K wore a charcoal filter mask. Staff member J most likely wore a dust filter mask, at least in the beginning. Staff member I joined the operations in the control room from that same day and from the very beginning wore a charcoal filter mask.

Subsequently staff members I, J and K wore Tybek® suits and charcoal filter masks when

[73] Additionally, on April 19 and 20, more than a month later, TEPCO took measures to mitigate the impact of radiation by shutting off external air using lead boards and filling materials to close the opening of the emergency door.

they were engaged in restoring instruments in the main control room of the Units 1 and 2 and in carrying instruments into the main control room.

The meters for Unit 1 in the main control room of Units 1 and 2 were located on the flow path of external air from the emergency door, and staff members I, J and K were also engaged in the work to restore these meters.

Moreover, there were sweets and drinks on the tables in the main control room of Units 1 and 2. These three staff members sometimes ate and drank at the table without wearing masks. Moreover, staff members J and K sometimes took their masks off and spent short periods of time without them or they loosened their masks because their breath fogged up their masks or their masks were too tight giving them a headache. Additionally, staff members I and J wore glasses.

The conditions of radiation protection around the emergency door through which external air blew in were as follows. In the evening of March 11, the Fukushima Dai-ichi NPS recovery team installed an emergency generator outside to the northwest of the main control room of Units 1 and 2. In doing so, it extended a power cable from the emergency generator into the main control room by slightly opening the emergency door and attached the sheet by tape from outside the main control room to cover the opening in the emergency door to shut off external air. Soon afterwards, the shift operators of the main control reattached the sheet from inside the room in order to go in and out of the room through the emergency door.

On March 12, as the emergency generator was destroyed by an explosion in the reactor building of Unit 1[74], the shift team of the main control room removed the power cable and tried to shut the emergency door so as not let in dust, etc., but the door did not shut tight due to deformation presumably caused by the explosion. So, the shift team of the main control room removed the part of the sheet attached to cover the entire emergency door that covered the handle of the door and fixed the door by tying the handle of the door to the hand railing inside the room by ropes. Due to the lack of enough materials, however, they could not cover the entire door by the sheet without any opening, which allowed external air into the main control

[74] Later, a new emergency generator was installed near the first-floor entrance to the east of the building housing of the main control room of Units 1 and 2.

room. On March 15, in order to shut off external air, the shift team of the main control room attached the sheet to cover the whole of an aperture, which served as an entrance to the pathway leading to the emergency door, by tape from inside the room.

So, until March 15, the emergency door of the main control room of Units 1 and 2 stayed open all the time, albeit only slightly, easily allowing external air to flow into the main control room through the part not covered by the sheet[75].

iii. Factor for radiation exposure common in all staff members in the two main control rooms

A common factor in all members from F to K receiving radiation exposure was that all of them were engaged in their duties near the emergency doors. Moreover, a common factor in staff members F, G, H and J receiving radiation exposure was that they wore dust filter masks instead of charcoal filter masks while they were working.

TEPCO summarized the causes of radiation exposure for staff members F and G on June 17 and those of staff members H, I, J, and K on August 12, and reported these findings to NISA. The report describes the suspected causes of radiation exposure as: (i) it was difficult to wear masks properly and implement protective measures to control radiation even more effectively, (ii) its staff had no choice but to eat and drink in the main control room, (iii) the arms of glasses created a gap between the face and the mask, and (iv) its workers were engaged in their duties near the emergency doors, where the concentration of radioactive material was estimated to be extremely high. Based on these estimations, TEPCO decided to implement the following measures to prevent similar radiation exposure in the future: (i) information shall be shared more efficiently and equipment and material including masks shall be placed in their proper location, (ii) staff shall eat and/or drink only in designated areas, (iii) staff shall learn how to use and manage protective equipment for personal protection, and (iv) staff shall complete a pre-work survey.

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[75] In addition, subsequently on March 26, more than 10 days later, TEPCO mounted wooden plywood on the above-mentioned aperture to cover the whole of it and attached the sheet over it.

(d) Health care provided for staff engaged in emergency works

See Chapter V 4. (3) c. (d) of the Interim Report.

(4) Radiation dose limit for government employees in an emergency

See Chapter V 4. (4) of the Interim Report.

(5) Radiation exposure of citizens

a. Screening level before the nuclear accident[76]

The "Manual for radiation emergency medical care activities in Fukushima Prefecture," which was created in 2004 fiscal year under the authority of the Fukushima prefectural government, was based on a manual entitled "Recommendation on radiation emergency medical care" which was prepared by the NSC in July 2001 and stipulated that the screening level for residents[77] (a criterion of comprehensive outer body clean up) should be 40Bq/cm^2 [78].

Since the level of 40Bq/cm^2 is equivalent to counting rates of about 13,000cpm (counts per minute) when measured by survey meters[79] owned by the Fukushima prefectural government, it set the screening level at 13,000cpm when the accident occurred[80].

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[76] Though we covered the screening level before the nuclear accident in Chapter V 4. (5) a. of the Interim Report, we discuss the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

[77] The screening here means an examination conducted to judge whether it is necessary to carry out decontamination of those who may be contaminated by radioactive materials, which is implemented by measuring the degree of contamination by holding up a device to measure the radiation dose (survey meter) over the body surface of subjects. The screening level means the reference value above which decontamination is required.

[78] This reference value is the same as the value defined as the screening level by the Nuclear Safety Research Association ("Knowledge of radiation emergency medical care" (March 2003)). The "Manual for radiation emergency medical care activities in Fukushima Prefecture" says that this reference value is subject to change at any given time that the government decides it needs to be changed.

[79] Aloka Co., Ltd., TGS-136 and TGS-146 survey meters (with an entrance window area of about 20 cm^2 and the instrument efficiency of about 58% with strontium).

[80] The conversion formula from Bq/cm^2 to cpm is Bq/cm^2 x survey meter entrance window area (cm^2) x source efficiency (=0.5) x survey meter instrument efficiency = cpm. The "source efficiency" here is the ratio of beta rays emitted to the direction of the survey meter to all beta rays emitted into various directions from the radiation source, and the efficiency of 0.5 is usually used. The "instrument efficiency" is the ratio of beta rays that reach the survey meter and are detected by the survey meter to all beta rays emitted by the radiation source. Instrument efficiency values of the same survey meter may vary depending on radiation source radionuclides.
Survey meters owned by the Fukushima prefectural government are calibrated using strontium and have higher instrument efficiency values than those using iodine or cesium.

b. Raising the screening level after the nuclear accident[81]

The Local NERHQ at the Off-site Center, which started discussions on screening levels on March 12, asked the ERC advice in the morning of March 13 on the Local NERHQ head's draft instruction for setting the criterion of 40Bq/cm^2 or 6,000cpm[82].

At the ERC, the medical team was responsible for matters concerning the screening, but there was hardly anyone in that team, who had expertise on screening levels. Meanwhile, at the ERC, there were two liaison officials dispatched from the NSC. At around 10:13 on March 12, one of the liaison officials faxed the draft instruction to the NSC to seek the NSC's opinion on the draft instruction. Upon receiving the fax, the NSC, at around 10:40 the same day, faxed a revised version of the above-mentioned draft instruction by adding comments that the screening level of 6,000cpm should be revised to 10,000cpm[83] and that those who experienced exposure in excess of 10,000cpm should take stable iodine tablets, and the aforementioned liaison official received the fax. The said liaison official who received the comments from the NSC mentioned above told a staff member of the NSC Secretariat who called immediately afterwards that "Since we are already moving along this way, we can no longer change things about the screening level or the intake of stable iodine tablets"[84]. The Secretariat staff member told the NSC members of this conversation, but the NSC refrained from making any further advice on the grounds that the NSC is an advisory organization and that it has already advised on matters on which it should give advice.

No member of the ERC medical team received the revised comments of the NSC from the

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[81] Though we covered the raising of the screening level after the nuclear accident in Chapter V 4. (5) b. of the Interim Report, we discuss the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

[82] The draft instruction included the value of 6,000cpm that is different from the Fukushima prefectural government's reference level (13,000cpm) because 40Bq/cm^2 was equivalent to about 6,000cpm when measured by a survey meter possessed by a radiology expert dispatched to the Local NERHQ. The survey meter possessed by this expert had smaller values of the entrance window area and instrument efficiency than survey meters owned by the Fukushima prefectural government (TGS-136 or TGS-146 meters manufactured by Aloka Co., Ltd.) (the entrance window area of about 15 cm^2 and the instrument efficiency of about 36% using strontium).

[83] 10,000cpm is a value that, in the NSC's view, is equivalent to 40Bq/cm^2 and the NSC has adopted this value as a criterion from a safer side (conservative) point of view.

[84] The said liaison official, around his receipt of the revised comments from the NSC, communicated with a staff member of the NSC Secretariat dispatched to the Local NERHQ and was told by the Secretariat staff member that "people here are already moving with 6,000cpm."

aforementioned NSC liaison official[85]. Thus, the NSC's revised comments that recommended the intake of stable iodine tablets under certain conditions were not communicated to the ERC medical team, which inevitably did not consider them, and therefore did not convey them to the Local NERHQ.

As a result, at around 14:20 on March 13, the Local NERHQ, based on the provisions of Paragraph 3, Article 20 of the Nuclear Emergency Preparedness Act, handed to a prefectural government staff member an instruction document to the effect that the screening level should 40Bq/cm^2 or 6,000cpm, after making only some wording changes to the aforementioned draft instruction and without incorporating the NSC's comments on the intake of stable iodine tablets. However, as the prefectural government staff member who received this instruction did not deliver the instruction document to the rescue team that was responsible for matters related to the screening at the Prefecture Nuclear Emergency Response Center, and thus the instruction was not communicated to the rescue team.

The Fukushima prefectural government, meanwhile, already began the screening of evacuees from March 12, and was using the screening level of 40Bq/cm^2 prescribed in the "Manual for radiation emergency medical care activities in Fukushima Prefecture"[86].

However, radiology experts in a radiation emergency medical care team[87] dispatched to Fukushima Prefecture on March 13 came up with an opinion that the screening level should be raised from 40Bq/cm^2 (13,000cpm) to 100,000cpm, after considering that water (hot water) to be used for whole-body decontamination (showering) appears to be in short supply and that whole-body decontamination under low-temperature conditions is believed to have big disadvantages. Some of the aforementioned radiology experts disagreed to the raising of the

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[85] The NSC liaison official said in the Investigation Committee's hearings that, "I handed the revised draft from the NSC to a staff member of the ERC medical team, but I do not remember which member I handed it to." However, when the Investigation Committee held hearings with all the staff members of the ERC medical team at the time, no one said he or she received the revised draft of the NSC.

[86] At many screening sites, the screening level was set at the cpm value (around 13,000cpm) obtained by converting the value of 40Bq/cm^2 by different types of survey meters in use there. The Koriyama City Healthcare Center that was conducting the screening at the Koriyama General Gymnasium implemented decontamination when the lower value, that is, the significantly higher value (several hundred cpm) than the air dose rate at measurement locations.

[87] Dispatched from Fukui University, Hiroshima University and the National Institute of Radiological Sciences (NIRS).

screening level, but a majority of the radiation emergency medical care team ultimately supported the higher screening level[88]. Based on the opinion of these experts, the Fukushima prefectural government decided to raise the screening level to 100,000cpm for whole-body decontamination from March 14 onward and also conduct wipe-off decontamination for those with the counting rate of 13,000cpm to less than 100,000cpm[89]. At the time, as described, the instruction by the head of the Local NERHQ to set the screening level at 40Bq/cm^2 or 6,000cpm had not yet reached the rescue team of the Prefecture Nuclear Emergency Response Center. So, in deciding the new screening level, the Fukushima prefectural government did not discuss whether it would run counter to the instruction.

Around early in the evening of March 13, an ERC medical team staff member learned that the Fukushima prefectural government was going to raise the screening level to 100,000cpm by the communication from the prefectural government. But, since the staff member was not told by other team members that the aforementioned instruction by the head of the Local NERHQ had been issued and was not aware of the existence of that instruction, the staff member did not point out to the Fukushima prefectural government that its plan to raise the screening level to 100,000cpm would go against the aforementioned instruction.

Before dawn on March 14, having learned via the "ERC medical team status report" prepared by the ERC medical team that the Fukushima prefectural government was raising the screening level, the NSC held a discussion on the matter and concluded that if the entire

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88 There is no evidence of particular discussions conducted about the scientific basis for the value of 100,000cpm, but the supporters of the higher screening level were of the view that the value is sufficiently low even from the conservative or safer side viewpoint. The fact that the highest value that can be measured by survey meters is 100,000cpm was also cited as one of the reasons to set it as the screening level.

The "Manual for First Responders to a Radiological Emergency," prepared by IAEA in 2006, set the screening level for the general public receiving a body surface contamination check at 1μSv/h (an exposure rate at 10cm from body surface) and also set the value of 10,000 Bq/cm^2 as the level related to this. As described below, on March 19, the NSC issued the advice to raise the screening level to 100,000cpm, and as one of materials to back up its advice, referred to the calculation results by the National Institute of Radiological Sciences (NIRS) that when measured by widely used survey meters (TGS-146 manufactured by Aloka Co., Ltd.), 100,000cpm is equivalent to 345Bq/cm^2 and sufficiently lower than the level of 10,000Bq/cm^2 mentioned above.

The IAEA manual cited above refers to the values of 1μSv/h and 10,000 Bq/ cm^2 as the reference levels to avoid the deterministic effects (see Chapter V 4. (1) b. of the Interim Report).

89 The "Manual for radiation emergency medical care activities in Fukushima Prefecture" sets the screening level at 40Bq/cm^2, and also stipulates that those who show above the screening level even in the post-decontamination re-measurement should be transported to the secondary radiation emergency medical treatment facilities (the test and decontamination room of the Environmental Medical Research Institute or the Fukushima prefectural contamination test room) for decontamination using shower facilities.

13,000cpm is from iodine from internal exposure, it would be equivalent to the infant thyroid equivalent of 100mSv, which is the criterion of stable iodine administration[90]. Thus, at 4:30 the same day, the NSC provided the ERC with advice to the effect that "it is desirable not to raise the screening criterion to 100,000cpm and keep it at the current value of 13,000cpm." The ERC medical team staff member mentioned above received the NSC advice and relayed it to the Fukushima prefectural government. However, the Fukushima prefectural government decided to continue with the screening and decontamination with the new criterion[91], as it judged that the new screening level and decontamination methods it decided to apply from the same day would not go against the NSC advice because they involved partial wipe-off decontamination of those with the counting rate of 13,000cpm to less than 100,000cpm.

On March 18, four days after the NSC gave the advice that the screening level should be kept at 13,000cpm, the NSC received the request from the head of the Research Center for Radiation Emergency Medicine of the National Institute of Radiological Sciences (NIRS) that "it would be desirable to raise the screening level to 100,000cpm, as the air dose rate is high in the affected areas and the screening is difficult to conduct." Accepting the request, the NSC, at 14:40 on March 19, provided the ERC with the advice that the screening level should be raised to 100,000cpm ("Recommendation on screening criteria of radiation emergency medical care"). Acting on the advice, at 23:00 on March 20, the Local NERHQ issued an instruction to raise the screening level to 100,000cpm, based on the provisions of Paragraph 3, Article 20 of the Nuclear Emergency Preparedness Act. This means that no decontamination is required for those with the counting rates of less than 100,000cpm. However, the Fukushima prefectural government did not change its practice of conducting partial wipe-off decontamination for those with the counting rates of 13,000cpm to less than 100,000cpm, in order to ensure the safety of those with the counting rates of 13,000cpm to less than 100,000cpm and avoid confusing people at the screening sites by altering the criteria again.

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90 This assumption stands on the conservative or safer side. In many cases, actual contamination also occurs externally, such as on clothing.

91 However, as the Fukushima prefectural government did not explicitly tell healthcare centers and other organizations undertaking the screening that subjects of decontamination should be decontaminated until the degree of contamination is reduced to less than 13,000cpm, not all decontamination subjects were not decontaminated to less than 13,000cpm at all the screening sites. At some screening sites, it was decided that no decontamination would be needed for those with the counting rate of less than 100,000cpm.

c. Implementation of screening

See Chapter V 4. (5) c. of the Interim Report.

d. Medical checks conducted for the citizens of Fukushima Prefecture

As described in Chapter V 4. (5) d. of the Interim Report, the Fukushima prefectural government has been conducting health surveys on the residents in the prefecture.

The Fukushima prefectural government, based on the basic surveys in these health surveys, estimated the external exposure doses of a total of 25,667 people (including 1,358 radiation workers) for four months after the nuclear accident and announced the estimation results on June 12, 2012. Of those surveyed, people with the external exposure dose of 10mSv or higher numbered 157 (including 58 radiation workers). The maximum value of external exposure dose for people other than those who had experiences in engaging in radiation-related work was 25.1mSv.

e. Distribution of stable iodine

As described in Chapter V 4. (5) e. of the Interim Report. See b for the instructions on the intake of stable iodine tablets following the screening.

(6) Damage to radiation emergency medical facilities[92]

The nuclear disaster countermeasures part (revised in 2008) of the Basic Disaster Management Plan, prepared by the Central Disaster Management Council based on Article 34 of the Disaster Countermeasures Basic Act, states that for specialized and technical matters, Regulatory Guide “Emergency Preparedness for Nuclear Facilities (revised in 2010, hereinafter referred to as the “Emergency Preparedness Guide”) should be fully respected. The Emergency Preparedness Guide presents the basic approach to radiation emergency medical care and states that details should be based on “Recommendation on radiation emergency medical care” prepared by the NSC. "Recommendation on radiation emergency medical care" (see (5) a.)

[92] Though we covered the damage to radiation emergency medical facilities in Chapter V 4. (6) of the Interim Report, we discuss the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

states it is critical that a radiation emergency medical care service system shall be implemented with integrated and organized operations and with mutual complementary roles of the following medical facilities to provide effective and efficient radiation exposure medical care: "medical facilities for primary radiation emergency medical treatment" to provide initial medical care and emergency treatment, "medical facilities for secondary radiation emergency medical treatment" to provide professional treatment, and "medical facilities for tertiary radiation emergency medical treatment" to provide highly specialized treatment. Furthermore, the Basic Disaster Management Plan states that municipalities should strive to build up the preparedness for primary and secondary radiation emergency medical treatment[93].

In the Fukushima Prefecture regional disaster prevention plan (revised in 2009), prepared based on Article 40 of the Disaster Countermeasures Basic Act, the Fukushima prefectural government states that an organization for radiation emergency medical care activities, roles, cooperation with relevant institutions and other matters are to be set forth in the "Manual for radiation emergency medical care activities in Fukushima Prefecture." The Manual describes the roles, etc. of medical facilities for primary and secondary radiation emergency medical treatment, and the Fukushima prefectural government has designated the following five hospitals as medical facilities for primary radiation emergency medical treatment: (i) Fukushima Prefectural Ono Hospital in Okuma Town, Futaba-gun; (ii) Futaba Welfare Hospital in Futaba Town, Futaba-gun; (iii) Imamura Hospital in Tomioka Town, Futaba-gun; (iv) Fukushima Rosai Hospital in Iwaki City; and (v) Minami Soma City General Hospital in Minami Soma City; and one location, as a medical facility for secondary radiation emergency medical treatment: Fukushima Medical University Hospital in Fukushima City[94].

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93 "Recommendation on radiation emergency medical care" (NSC, June 2001) states that medical facilities for primary radiation emergency medical treatment should be "near nuclear facilities" and medical facilities for secondary radiation emergency medical treatment should be at a location "where patients or individuals exposed to radiation can be transferred from nuclear facilities or medical facilities for primary radiation emergency treatment in a proper manner and in a relatively short time." Additionally, the MEXT has designated the National Institute of Radiological Sciences (NIRS) in Chiba City as a medical facility for tertiary radiation emergency treatment for the Eastern Japan bloc.

94 In addition, Iwaki-Kyoritsu General Hospital in Iwaki City was designated as a medical facility for primary radiation emergency medical treatment in around 2009 (an administrative document concerning the designation does not exist). As the "Manual for radiation emergency medical care activities in Fukushima Prefecture" has not been revised since FY2004, the manual's list of medical facilities for primary radiation emergency medical treatment does not include the name of Iwaki-Kyoritsu General Hospital.

Three of the five medical facilities designated for primary radiation emergency medical treatment in Fukushima Prefecture, Ono Hospital, Futaba Welfare Hospital, and Imamura Hospital, are located in Futaba-gun within a 10km radius of the Fukushima Dai-ichi NPS. These three hospitals were all exposed to large amounts of radioactive materials discharged from the Fukushima Dai-ichi NPS. According to an order issued by the head of the NERHQ at 05:44 on March 12, each of the three hospitals was in an evacuation zone, which prevented the hospitals from functioning as medical facilities for primary radiation emergency medical treatment. The other two medical facilities for primary radiation emergency medical treatment are located in Iwaki City and Minami Soma City. Minami Soma City General Hospital located in Minami Soma City was located in what became a deliberate evacuation zone on April 22.

Additionally, as described above, pre-designated medical facilities for radiation emergency medical treatment and other medical organizations were not able to function at full capacity. Thus some of those who were injured at the Fukushima Dai-ichi NPS did not have their injuries treated for three days.

(For details, see Chapter V 4. (6) of the Interim Report.)

5. Contamination of Agricultural, Livestock, Marine Products, the Air, Soil and Water

(1) Contamination of water, beverages and food, and the response taken

a. Criteria on the restriction of shipment (before the nuclear accident)

See Chapter V 5. (1) a. of the Interim Report.

b. Detecting a high level radioactivity in plants

See Chapter V 5. (1) b. of the Interim Report.

c. Provisional regulation values for food and beverages[95]

Prior to the accident at the Fukushima Dai-ichi NPS, the MHLW, which is in charge of the Food Sanitation Act, had never examined the adequacy of existing criteria for strategies on

[95] Though we covered the provisional regulation value for food and beverages in Chapter V 5. (1) c. of the Interim Report, we discuss the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

what to do with food and beverages distributed within Japan if they were contaminated with radioactive materials.

As described in Chapter V 5. (1) b. of the Interim Report, the high concentration of radioactive materials was detected on March 15 in plants that had been collected in Fukushima Prefecture. The MHLW staff in charge of this matter thought some action should be taken with regard to the radioactive contamination of food. They determined, however, that any action should be consistent with the Act on Special Measures Concerning Nuclear Emergency Preparedness, and thus did not consider responses based on the Food Sanitation Act under their jurisdiction.

Prior to the above, from around March 13, discussions were under way within the Ministry of Agriculture, Forestry and Fisheries (MAFF) on the necessity of the restriction of shipments of agricultural products out of concerns that contaminated agricultural products might be distributed. Since the regulation value concerning the distribution of food should be established based on the Food Sanitation Act that falls under the jurisdiction of the MHLW, the MAFF judged it necessary to work on the MHLW to establish the regulatory values concerning radioactive materials under the Food Sanitation Act and pressed the MHLW to establish the regulation values for food at meetings of the NERHQ by March 15 at the latest.

As described in Chapter V 5. (1) c. of the Interim Report, the MHLW subsequently considered the establishment of the regulation values for food and beverages under the Food Sanitation Act and established the provisional regulation values on March 17.

d. Provisional regulation value for seafood

See Chapter V 5. (1) d. of the Interim Report.

e. Provisional regulation values for tea

See Chapter V 5. (1) e. of the Interim Report.

f. Restriction of tap water intake

See Chapter V 5. (1) f. of the Interim Report.

g. Shipping restrictions

See Chapter V 5. (1) g. of the Interim Report.

h. Other problems concerning shipping restrictions

(a) Farm animals (cattle) feed

See Chapter V 5. (1) h. (a) of the Interim Report.

(b) Measures for beef

See Chapter V 5. (1) h. (b) of the Interim Report.

(c) Measures for rice harvested in 2011[96]

On April 8, the NERHQ set the transfer factor of radioactive cesium transferred from soil to unpolished rice at 0.1[97] based on the results of analyses performed by the National Institute for Agro-Environmental Sciences on rice fields and harvested rice.

The NERHQ issued a policy to the effect that the upper limit of radioactive cesium shall be 5,000Bq/kg so that the concentration of radioactive cesium contained in unpolished rice would be below the provisional regulation value (500Bq/kg) pursuant to the Food Sanitation Act, and that planting restrictions should be ordered to prohibit the planting of rice seedlings in regions where radioactive cesium contained in freshly harvested rice would most likely exceed the provisional regulation value.

On April 22, the NERHQ issued a planting restriction order to the Fukushima prefectural government to restrict the planting of rice seedlings within a 20km radius of the Fukushima Dai-ichi NPS as well as in deliberate evacuation zones and emergency evacuation preparation zones.

In August, the MAFF released a plan to conduct a two-stage research process due to the

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96 Though we covered the measures for rice harvested in 2011 in Chapter V 5. (1) h. (c) of the Interim Report, we discuss the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

97 The transfer factor of 0.1 was set based on the 90 percentile value (the average concentration of the 90th group when values are grouped by 1% each from the smallest one) after computing the transfer factor (concentration of radioactive cesium in unpolished rice/concentration of radioactive cesium in soil) of each of a total of 564 data samples concerning soil of rice fields and unpolished rice harvested there between 1959 and 2001.

following circumstance: rice is a staple food, a large amount of rice is grown and eaten in Japan and there are various types of distribution systems in Japan. In the first stage, prior to the upcoming rice fall harvest season in 2011, a preliminary survey[98] should be conducted to study the trends in the concentration of radioactive materials. In the second stage, a main survey[99] should be conducted to determine whether or not shipping restrictions are required after the rice harvest. In the preliminary or the main survey, the provisional regulation value was not exceeded in any region. On November 16, however, radioactive cesium exceeding the provisional regulation value (500Bq/kg) was detected in unpolished rice (from the rice field not covered by direct sampling in either the preliminary survey or the main survey) produced in Fukushima City (formerly Oguni Village)[100].

As rice containing radioactive cesium beyond the provisional regulation value was found after the completion of the main survey, the Fukushima prefectural government from November conducted an emergency survey covering all of the 23,247 rice farmers in (i) former Oguni Village in Fukushima City (the area where rice with radioactive cesium in excess of the provisional regulation value was found for the first time after the completion of the main survey), (ii) areas that include "specific spots recommended for evacuation" and other areas[101], and (iii) areas where even a tiny amount of radioactive cesium was detected. The emergency survey found rice containing radioactive cesium beyond the provisional regulation value from

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98 Out of (i) municipalities that were subjected to shipment restriction orders before, (ii) their neighboring municipalities, and (iii) other municipalities, the preliminary survey covered municipalities with the radioactive cesium concentration in farmland soil of 1,000Bq/kg or higher and municipalities with the air radiation dose rate of over 0.1μSv/h, and measured the level of radioactive cesium contained in rice in three days before and after one week before the harvest. Municipalities with the measurement of radioactive cesium in excess of 200Bq/kg were classified into "intensive survey areas" in the main survey, while municipalities with the measurement of radioactive cesium of 200Bq/kg or below were classified into "other survey areas."

99 The main survey adopted the method of collecting one sample per roughly 15ha in the priority survey areas and collecting samples in the other survey areas from each municipality (an average seven samples per municipality).

100 Concerning rice harvested in 2011, assuming that areas with the high degree of contamination of soil and areas with the high air radiation dose rate have the greater risk of producing rice containing the high concentration of radioactive materials and that these areas may have a horizontal extension of rice contamination, the MAFF came up with a policy to give priority to surveys on these areas. Actually, however, the assumed horizontal extension was not necessarily wide, and this presumably led to the discovery of rice with the contamination in excess of the provisional regulation value later despite the failure to discover it in the initial surveys (the preliminary survey and the main survey).

101 Areas that include "specific spots recommended for evacuation" and areas with the relatively high radiation dose where surveys were carried out to consider whether or not such spots should be designated.

rice kept by 38 rice farmers. Most of contaminated rice was concentrated in certain areas of Fukushima City and Date City. Based on the survey results, the head of the NERHQ instructed the Governor of Fukushima Prefecture to restrict the shipment of rice produced in a total of the nine areas, which were formerly registered as cities, towns and villages, in the three cities of Fukushima, Date and Nihonmatsu, by January 4, 2012.

i. The status of testing of food products

By the end of February 2012 after the nuclear accident, a total of 117,737 specimens of food products were tested and radioactive materials in excess of the provisional regulation value were detected in 1,162 specimens[102]. The followings can be cited among food products from which the high levels of radioactive materials were detected despite a lapse of some significant period of time after the nuclear accident[103].

(a) Fruits[104]

A total of 2,396 specimens of fruits were tested by the end of February 2012, and radioactive materials in excess of the provisional regulation value were detected in a total of 28 specimens of eight items – yuzu (citrus junos), Japanese plums, pomegranates, Japanese medlar, figs, chestnuts, kiwi fruits and persimmons (all of them produced in Fukushima Prefecture). Of these fruits, radioactive materials beyond the provisional regulation value were detected in yuzu (citrus junos), pomegranates, chestnuts, kiwi fruits and persimmons even after September 2011. The contamination of these fruits presumably resulted from radioactive materials attached to their trees and leaves immediately after the nuclear accident being translocated to fruits[105].

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[102] The figures are based on the test results announced on the MHLW website.

[103] In the case of the accident at the Chernobyl nuclear power station in 1986, it has been reported that mushrooms, berries, game animals and freshwater fish in lakes where the turnover of water is slow have been contaminated particularly severely ("Environmental Consequences of the Chernobyl Accident and Their Remediation: Twenty Years of Experience," IAEA, 2006).

[104] The figures are based on the test results the MAFF announced on its website.

[105] Explaining the contamination routes for fruits, the MAFF said that "it is likely that radioactive materials that became attached to the surfaces of plant trees and leaves were absorbed from there, moved through plants and then were translocated to fruits."

(b) Mushrooms[106]

A total of 2,575 specimens of mushrooms were tested by the end of February 2012, and radioactive materials in excess of the provisional regulation value were detected in 165 specimens. Radioactive materials were detected in 122 specimens among them after September 2011, while 80 specimens were picked in municipalities other than Fukushima Prefecture.

It is believed that these mushrooms were contaminated as they absorbed radioactive materials that became attached to places where mushrooms grew, like withered tree logs used for cultivation of shiitake mushrooms. Mushrooms are also believed to have the nature prone to gather cesium.

(c) Seawater fish[107]

A total of 5,051 specimens of saltwater fish were tested by the end of February 2012, and radioactive materials in excess of the provisional regulation value were detected in 162 specimens. Soon after the nuclear accident, radioactive materials in excess of the provisional regulation value were detected in species of surface fish in coastal waters, such as sand eels and whitebaits. However, since radioactive materials beyond the provisional regulation value were detected in whitebaits caught off Fukushima Prefecture on June 6, 2011, no species of surface fish with that much of contamination have been found. Later, radioactive materials in excess of the provisional regulation value have come to be detected in species of bottom fish in coastal waters[108], and they are still being detected in such fish species as of the end of February 2012. In most cases, contaminated fish has been found in sea areas to the south of the Fukushima Dai-ichi NPS.

These contamination trends are believed to reflect the phenomena that radioactive materials discharged from the Fukushima Dai-ichi NPS into the sea have been carried to the south by the ocean current (the Oyashio current) and that radioactive materials have moved from the sea surface to the bottom of the sea in the course of time.

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106 The figures are based on the test results the MAFF announced on its website.

107 The figures are based on the test results the Fisheries Agency announced on its website.

108 As of the end of February 2012, radioactive materials have been detected in a total of 14 fish species (rock trout, brown hakeling, stone flounder, white-edged rockfish, common skete, slime flounder, flatfish, goldeye rockfish, marbled sole, Schlegel's black rockfish, spotbelly rockfish, fox jacopever, poacher, and sea raven).

(d) Freshwater fish[109]

A total of 782 specimens of freshwater fish were tested by the end of February 2012, and radioactive materials in excess of the provisional regulation value were detected in 50 specimens. Radioactive materials beyond that level were detected only in fish living in rivers in Fukushima Prefecture. Since August 2011, in Lake Akagi Onuma in Gunma Prefecture, located some 190km in a straight line from the Fukushima Dai-ichi NPS, fish contaminated by radioactive materials in excess of the provisional regulation value has been found. In the lake in 2012, by the end of February, radioactive materials in excess of the provisional regulation value have been detected in 12 out of 19 specimens[110], including lake smelt caught on January 6 and Iwana mountain trout caught on January 29.

The contamination of fish in the lake is believed to reflect such things as that freshwater fish has the property that it cannot discharge radioactive cesium accumulated inside the body so easily and that since Lake Akagi Onuma is a caldera lake and the turnover of lake water is slow[111], radioactive materials tend to remain in the lake.

j. New regulation values for food

As described in Chapter V 5. (1) c. of the Interim Report, the MHLW set the provisional regulation values for radioactive materials in food on March 17, after the occurrence of the nuclear accident, and on March 20, asked the Food Safety Commission for recommendations on regulation values (index values) of radioactive materials (request for the Assessment of the Effect of Food on Health), receiving the notification of the results of the assessment on October 27. The MHLW decided to consider new regulation values with the basic concept of lowering the maximum permissible dose to 1mSv a year, while paying heed to the assessment of the effect of food on health. On October 28, the MHLW asked the Pharmaceutical and Food Sanitation Council for its recommendations on standards and criteria concerning radioactive materials in food, based on Article 11, Paragraph 1 of the Food Sanitation Act.

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109 The figures are based on the test results the Fisheries Agency announces on its website.

110 Lake Akagi Onuma in Gunma Prefecture is the only place outside Fukushima Prefecture where freshwater fish contaminated by radioactive materials in excess of the provisional regulation value has been found by the end of February 2012.

111 It is said that the complete turnover of lake water takes about two and a half years.

On December 22, the Radioactive Material Measures Working Group of the Food Sanitation Subcommittee of the Council judged that the lowering of the regulation value (the intervention dose level) to 1 mSv per year is appropriate[112], and recommended that given that new standard limits replacing the provisional regulation value are designed to the long-term situation going forward in the wake of the accident at the Fukushima Dai-ichi NPS, only radionuclides for which the long-term effects need to be considered (radionuclides with long half-lives)[113] should be subjected to the regulations[114]. The Working Group then presented a draft for new standard limits[115], changing the classification of foods from the five categories for the provisional regulation values to the four categories of "drinking water," "infant foods," "milk" and "general foods" for the new standard limits.

Subsequently, on January 17, 2012, the MHLW once again asked the Food Safety Commission for its opinions about the establishment of standards and criteria for radioactive materials in food[116]. On January 19, the Food Safety Commission told the MHLW that another Assessment of the Effect of Food on Health is unnecessary, saying that "the Commission notified the results of the Assessment in the Cabinet Order No. 862 dated October 27, and since then, no new scientific knowledge has been confirmed. Therefore, the Commission recognizes that this is the case where the substance and degree of adverse effects

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112 This judgment was based on the fact that the index of the Codex Alimentarius Commission is set not to exceed 1mSv per year.

113 Of radionuclides included in the NISA list of the estimated amounts of radioactive materials discharged in the latest nuclear accident, the standard limits have been set for radionuclides with the half-life of over one year, specifically, cesium 134 and 137, strontium 90, ruthenium 106, and plutonium 238, 239, 240 and 241. The new regulation does not cover iodine 131, which has not been reported to be detected in food since July 15, 2011, or uranium whose discharge is believed to have been extremely little in the latest accident. For radionuclides other than radioactive cesium, which requires a long measuring time, the new standard limit has been set in a way to keep their summation below 1mSv/year after computing their respective ratios to radioactive cesium.

114 The MHLW explains that it is necessary to review the list of radionuclides to be regulated in the event of another nuclear accident.

115 The Working Group recommended the standard limits should be set at 10Bq/kg for drinking water, 50Bq/kg for infant foods, 50Bq/kg for milk and 100Bq/k for general foods.

116 The new regulation values the MHLW was going to establish at the time are based on the provisions of Article 11, Paragraph 1 of the Food Sanitation Act. In establishing standards and criteria under the Act's said paragraph, the MHLW must seek the Food Safety Commission's opinions under the provisions of Article 24, Paragraph 1 of the Food Safety Basic Act. Since The Commission's notification of the results of the Assessment of the Effect of Food on Health was not in response to the MHLW's request for opinions based on Paragraph 1 but in response to its voluntary request for the Commission's opinions based on Paragraph 3 of the said article, the MHLW once again sought the Commission's opinions.

on human health are clear, as defined in Article 11, Paragraph 1, Item 2 of the Food Safety Basic Act (Act No. 48, 2003)[117]".

On December 27, 2011, the MHLW asked the Radiation Council for its opinions on the proposals of revisions of the "Ministerial Ordinance on Milk and Milk Products concerning Compositional Standards, etc." (Ministry of Health and Welfare Ordinance No. 52, 1951) and "Specifications and Standards for Foods, Food Additives, etc." (Ministry of Health and Welfare Notification, No. 370, 1959), prepared on the basis of the aforementioned draft standard limits presented by the Radioactive Material Countermeasures Working Group of the Food Sanitation Subcommittee of the Pharmaceutical Affairs and Food Sanitation Council on December 22. Following the Radiation Council's recommendations[118], the MHLW revised the ministerial ordinance and notification concerned on March 15, 2012, and the revised ministerial ordinance and notification was put into force on April 1. Provisional regulation values in the past and new standard limits are shown in Table IV-2.

Table IV-2 Comparison of standard limits on radioactive cesium in foods

Provisional regulation values	
Food category	Regulation value
Drinking water	200
Milk, dairy products	200
Vegetables	500
Grains	500
Meat, eggs, fish, etc.	500

New standard limits	
Food category	Standard limit
Drinking water	10
Infant foods	50
Milk	50
General foods	100

Unit: Bq/kg

[117] Article 11, Paragraph 1 of the Food Safety Basic Act states that the Assessment of the Effect of Food on Health by the Food Safety Commission is unnecessary "Where the substance and degree of adverse effects on human health are clear" (Paragraph 1, Item 2).

[118] Procedures based on the provisions of Article 6 of the Act on Technical Standards for Prevention of Radiation Hazard.

(2) Contamination of soil, etc.

a. Schoolyards and the other educational facilities in Fukushima Prefecture[119]

The circumstances that led the MEXT to present the "Provisional criteria regarding the judgment of the use of schoolyards and educational facilities in Fukushima Prefecture" (hereinafter referred to as the "Provisional criteria") on the use of school building and schoolyards at schools in Fukushima Prefecture were as described in Chapter V 5. (2) a. of the Interim Report[120].

In the Provisional criteria presented on April 19, the concept was that if the air radiation dose rate in schoolyards is 3.8 μSv/h or below, the radiation exposure would not exceed 20 mSv/year, the upper limit of the reference level for public exposure in an "existing exposure situation" established by the ICPR (see Chapter V 4. (1) b. of the Interim Report), assuming that if a student stays outdoors (in the school yard with the air radiation dose rate of 3.8 μSv/h) for eight hours a day and in wooden buildings (the air radiation dose rate of 3.8 μSv/h×0.4) for 16 hours a day, the annual exposure dose would be 20mSv. On May 12, the MEXT announced the results of the calculations of the accumulated dose in a one-year period after the nuclear accident estimated on the basis of life patterns of students. In the calculations, the behavioral patterns of students were assumed by closer-to-reality values, and the air radiation dose rates used were those in concrete buildings where students actually spend school hours. All in all, the assumptions used in the calculations were much closer to the reality than those that supported the Provisional criteria.

More specifically, the calculations were based on the following assumptions: (i) the accumulated radiation dose between the nuclear accident and April 14 is 2.56 mSv[121], (ii) using the assumed air dose rate of 3.8 μSv/h in schoolyards as the reference level, the air dose rate in

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119 Though we covered the contamination of schoolyards in Fukushima Prefecture in Chapter V 5. (2) a. (c) of the Interim Report, we discuss the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

120 The Provisional criteria indicated that activities in the schoolyard should be restricted to approximately one hour a day when an air radiation dose rate exceeding 3.8 μSv/h is detected in the schoolyard. By this, however, the MEXT did not mean to authorize one-hour physical education classes in the schoolyard. It had in its mind students' passage through schoolyards on their way to and from schools.

121 MEXT explained that it is the value estimated with the estimation method used in the preparation of the map of estimated accumulated radiation doses.

school buildings is set at 0.1 times[122], the air dose rate outdoors outside school at 0.61 times[123], the air dose rate in wooden houses at 0.244 times, (iii) in the life patterns of school days (200 days) between April 15, 2011, and March 11, 2012, students spend one hour in commuting to school, two hours in school yards, five hours in school buildings, three hours outdoors outside of school, and 13 hours in wooden houses, (iv) in the life patterns of holidays (131 days) between April 15, 2011, and March 11, 2012, students spend eight hours outdoors and 16 hours in wooden houses, (v) the average attenuation rate of the air dose rate between April 15, 2011, and March 11, 2012 is 0.705[124]. Based on the above assumptions, the cumulative radiation dose for students in a one-year period after the nuclear accident was estimated at 9.99 mSv.

In the Provisional criteria, the MEXT explicitly stated that it adopted the criterion of 1-20mSv (the reference levels for public exposure established by the ICRP for an "existing exposure situation" after an accident has stabilized in its 2007 recommendation (Pub.103)) as a "tentative guideline." However, MEXT Minister Yoshiaki Takagi (hereinafter referred to as "MEXT Minister Takagi") referred to matters not contained in the Provisional criteria several times in his replies to interpellations in the Diet, saying that "with the severest value of 20mSv/year in the reference levels of 20-100mSv/year in the event of a radiation emergency situation as the starting point and with the reference levels of 1-20mSv/year after an emergency has stabilized as a tentative guideline, we have adopted the policy that is appropriate to decrease the exposure dose as much as possible." MEXT officials in charge of relevant matters prepared draft replies in light of MEXT Minister Takagi's way of thinking and intentions. The MEXT Minister and others referred to "with the severest value of 20mSv/year in the reference levels of 20-100mSv/year as the starting point" in an effort to mitigate anxieties among residents in Fukushima Prefecture as much as possible[125].

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[122] The factor of 0.1 was used assuming that school buildings are of concrete.

[123] Covering schoolyards of 13 schools where the air dose rate exceeded 3.8 μSv/h on April 14, this factor was obtained by averaging the ratios of the air dose rates in the surrounding areas of the schoolyards to the air dose rates of the schoolyards.

[124] This figure was obtained by averaging the attenuation rates computed from the concentration of each radionuclide in soil of the schoolyards of the 15 schools based on the results of soil monitoring surveys conducted on April 14.

[125] Referring to the apparently changing explanations in the Investigation Committee's hearings, MEXT Minister Takagi explained that he "replied in that way in an effort to mitigate residents' anxieties as much as possible. These explanations do not represent changes in the MEXT's stance."

b. Criteria for disaster waste disposal

See Chapter V 5. (2) b. of the Interim Report.

c. Sewage sludge

See Chapter V 5. (2) c. of the Interim Report.

d. Disposal site for sewage sludge and the like

As described in Chapter V 5. (2) d. of the Interim Report.

e. Handling of contaminated crushed stones

On December 28, the Fukushima Decontamination Team of Ministry of Environment (hereinafter referred to as the "Decontamination Team") received a request from the Nihonmatsu municipal government: "A junior high school student residing in Nihonmatsu City showed the cumulative radiation dose of 1.6mSv over a three-month period. When we looked into the matter, the air dose rate in the condominium the student lives in was higher than the outdoor air dose rate. We would like the Decontamination Team to investigate the cause of this." Upon receiving the request, the Decontamination Team, in cooperation with the Nihonmatsu municipal government, checked on the condominium and also had interviews with officials of the constructor of the condominium on January 5-6, 2012. As a result of its investigation, the Decontamination Team concluded that it is highly likely that the crushed stones shipped from a quarry in Namie Town were contaminated and were used in constructing the condominium. On January 6, the Decontamination Team, through the Local NERHQ and others, communicated with the METI, which has jurisdiction over civil engineering and building materials, to that effect.

Upon receiving the communication, the METI identified the quarry that shipped crushed stones used in the building of the condominium (it is located in the deliberate evacuation area about 25km in a straight line distance from the Fukushima Dai-ichi NPS; hereinafter referred to as "Quarry A"), and found after the further investigations in cooperation with the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and the relevant municipalities that: (i) Quarry A was shipping out crushed stones between the nuclear accident and April 22, when the

area in which it is located was designated as the deliberate evacuation area, (ii) the air dose rate within Quarry A was high relative to the air dose rates in neighboring quarries; (iii) the air dose rate at another construction site where crush stones shipped by Quarry A were used (an agricultural waterway built by the constructor that constructed the condominium on the same day as the date of commencement of construction work on the condominium) was higher than the air dose rate in the surrounding areas[126], and (iv) no other construction sites that used crushed stones from quarries other than Quarry A showed higher air dose rates than those in the surrounding areas.

Upon receiving the request for the establishment of criteria for radioactive materials in crushed stones, etc. around mid-January 2012, the METI considered the matter and, on March 22, 2012, presented the "Shipment Criteria for Crushed Stones and Gravel" intended for the Coastal (Hama-dori) and Central (Naka-dori) regions in Fukushima Prefecture, which allows shipments of these products with the radioactive cesium concentration of no higher than 100Bq/kg[127] (for crushed stones and gravel used in public works projects outdoors, the surface dose rate of no higher than 0.23 μSv/h[128]).

In May 2011, before the distribution of contaminated crushed stones was discovered, the Director-General of the Public Works Department of the Fukushima prefectural government asked the Local NERHQ to present the criteria for radiation doses of materials used in public works projects. The request was conveyed by the Local NERHQ to the Nuclear Sufferers Life Support Team. The Team considered on how to reply to the request, but the official reply to the request is yet to come. The shipment of contaminated crushed stones from Quarry A was made before the designation of the deliberate evacuation area on April 22, 2011, or before the request of the Director-General of the Public Works Department came.

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126 In the METI's subsequent investigations into about 680 construction sites that used crushed stones shipped by Quarry A, the air dose rate higher than the rates in the surrounding areas was measured at about 120 construction sites as of the end of March 2012.

127 The same value as the criteria for the recycling of sewage sludge.

128 Calculated from the Fukushima prefectural government's long-term decontamination goal of the annual additional exposure dose of 1mSv.

(3) Contamination of seawater, pool water, etc.

a. Criteria for bathing areas

See Chapter V 5. (3) a. of the Interim Report.

b. Use of outdoor swimming pools in schools in Fukushima Prefecture

See Chapter V 5. (3) b. of the Interim Report.

(4) Measures taken to prevent the dispersal of contaminated material in the premises of the Fukushima Dai-ichi NPS

a. Scattering inhibitor

See Chapter V 5. (4) a. of the Interim Report.

b. Removal of debris at the facilities

See Chapter V 5. (4) b. of the Interim Report.

c. Installation of reactor building cover

See Chapter V 5. (4) c. of the Interim Report.

d. Measures to cover sea-bottom soil in the port

In the course of its surveys on the situation of sea contamination due to the spilling of contaminated water after the accident at the Fukushima Dai-ichi NPS, TEPCO became aware of the contamination of sea-bottom soil in the port. In late October 2011, after efforts to deal with the spilling of contaminated water from the power station came to an end for the time being, TEPCO began considering measures to prevent the spreading of contaminated sea-bottom soil and decided to take measures to cover sea-bottom soil as measures it could start working on promptly. It started to begin with measures to cover sea-bottom soil in areas in front of intake channels of Units 1 through 6, except areas where large vessels may pass through for the work to bring the nuclear accident to an end, with solidified soil, a mixture of bentonite and cement. The work for this purpose commenced on March 14, 2012.

TEPCO plans to dredge sea-bottom soil in areas other than the target areas of this work,

rather than covering with solidified soil, as sufficient depth of water needs to be secured in those areas[129] because large vessels may pass there for the work to bring the nuclear accident to an end.

6. Occurrence and Treatment of Contaminated Water

(1) Details of responses to the contaminated water

See Chapter V 6. (1) of the Interim Report.

(2) Clean-up of highly contaminated water

a. Process to start operation of the system

See Chapter V 6. (2) a. of the Interim Report.

b. Operation of the clean-up systems

See Chapter V 6. (2) b. of the Interim Report.

c. End of Step 1

See Chapter V 6. (2) c. of the Interim Report.

d. New clean-up system

See Chapter V 6. (2) d. of the Interim Report.

e. Leakage of treated water from the water desalination apparatus (evaporative concentration apparatus)

While the clean-up of contaminated water with the high concentration of radioactive materials was in progress with the installation of the clean-up systems (see Chapter V 6. (2) of the Interim Report), at around 11:33 on December 4, TEPCO found an accumulation of water leaked from the water desalination apparatus (evaporative concentration apparatus), a component of the clean-up system, in a house where the evaporative concentration apparatus

[129] The depth of water has become shallow due to accumulated soil and sand brought by the tsunami.

was installed, and stopped the operation of the apparatus at around 11:52 the same day. When TEPCO thoroughly inspected areas surrounding the site at around 14:30 the same day, it found that the water accumulated in the house was leaking out of the house through cracks in its foundation. As the leakage water was the treated water containing radioactive materials, TEPCO, from around 15:00 the same day, placed sandbags around the leaking cracks in the house as well as inside the side ditches adjacent to the house to stop the leakage. However, about 150 liters of the treated water leaked into the side ditches by then and the part of the water spilled into the sea via the drainage channels connecting with the side ditches[130].

Later, TEPCO concluded that the leakage of the treated water from the evaporative concentration apparatus was caused by errors in the operational procedures for the apparatus. Thus, TEPCO revised the operational procedures and took steps to make the staff involved fully aware of the revisions, and also installed monitoring cameras and leakage detectors.

f. Leakage due to freezing

Since the clean-up system had a total length of about 4km and many parts of the system were installed outside the buildings, there were fears that water inside the piping might freeze up to damage the piping during winter, resulting the leakage of water inside. In order to prevent such leakage, TEPCO, beginning in November, placed lagging material around the piping and removed water from the piping not in use. Despite these measures, from the end of January to early February 2012, the leakage of water occurred one after another from parts of the piping where no lagging material was placed, parts of the piping where water remained unremoved or remained and other parts with inadequate anti-freezing measures. But no water from the piping was found to have leaked into the ocean.

g. Leakage of treated water in the concentrated water storage tank area

At around 8:30 on March 26, 2012, in the area where the concentrated water storage tank, a component of the clean-up system, was installed, TEPCO found the leakage of water from the

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[130] The amount of the treated water that spilled into the ocean is unknown. The concentration of radioactive materials in the leaked treated water was 1.2×10^{1}Bq/cm^3 for cesium 134, 1.5×10^{1}Bq/cm^3 for cesium 137, 4.9×10^{4}Bq/cm^3 for strontium 89, and 1.1×10^{5}Bq/cm^3 for strontium 90.

piping that connects the desalination apparatus, also a component of the clean-up system. As the leakage water was the treated water containing radioactive materials, TEPCO, at around 8:50 the same day, stopped the operation of the transfer pump of the desalination apparatus. However, some of the leaked treated water flowed into the drainage channels, part of which leaked into the sea from more than 800m downstream of the drainage channels[131]. As the leakage occurred due to the hose becoming loose from the joint of the piping, TEPCO, by March 28, replaced the piping and also placed sandbags and installed waterproof dikes around the traverse sections of the drainage channels.

Furthermore, at around 0:50 on April 5, 2012, as the flow volume through the piping from the desalination apparatus to the concentrated water storage tank increased, TEPCO thought the treated water was leaking again from the same piping. Therefore, TEPCO stopped the operation of the desalination apparatus at around 1:10 the same day, conducted an inspection by closing the valve of the piping from the equipment to the storage tank, and confirmed that the treated water was leaking from the piping at around 1:45 the same day. Some of the leaked treated water flowed into the drainage channels, and after being diluted by the weirs installed in the drainage channels at the end of March 2012, part of the treated water leaked into the ocean from about 750m downstream of the drainage channels[132]. As the leakage occurred due to the hose becoming loose from the joint of the piping, as with the case of the treated water leakage on March 26, TEPCO, by April 7, 2012, replaced the leaking piping, including the parts of the piping from which the treated water leaked on March 26, with the polyethylene resin piping, joints of which were heat-treated so as not to develop leaking spots. Further, by May 29, 2012, TEPCO replaced all the piping that might develop similar leakages with the above-mentioned polyethylene resin piping.

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131 Though the amount of the treated water that spilled into the ocean is unknown, TEPCO estimated the leakage into the ocean at about 80 liters, assuming the whole of the treated water that flowed into the drainage channels leaked into the ocean. The concentration of radioactive materials in the leaked treated water was 4.1Bq/cm^3 for cesium 134, 6.3Bq/cm^3 for cesium 137, 1.3×10^4Bq/cm^3 for strontium 89, and 2.9×10^4Bq/cm^3 for strontium 90 (the estimated values for strontium).

132 Though the amount of the leakage into the ocean is unknown, TEPCO estimated the amount at about 0.15 liter, in terms of the water with the same concentration as the treated water before dilution. The concentration of radioactive materials in the leaked treated water was 6.9Bq/cm^3 for cesium 134, 9.8Bq/cm^3 for cesium 137, 1.2×10^4Bq/cm^3 for strontium 89, and 2.6×10^4Bq/cm^3 for strontium 90 (the estimated values for strontium).

7. Estimates of the Total amount of Radioactive Materials Discharged and an Evaluation of INES levels

(1) Total amount of radioactive material discharged

a. NISA Estimation of total amount of radioactivity discharged

As described in Chapter V 7. (1) a. of the Interim Report, on April 12, the NISA released the estimates of the total amount of radioactive materials discharged into the air in the wake of the accident at the Fukushima Dai-ichi NPS, and then on June 6, the NISA released the estimation based on the new calculations. Subsequently, on February 1, 2012, at the seventh hearings on technical findings about the accident at TEPCO's Fukushima Dai-ichi NPS, the NISA changed the assumptions about the progress of the accident, which serve as the basis of the estimation of the total amount of radioactive materials discharged, about Units 2 and 3[133]. As a result, the NISA reported that the total amount of radioactive materials discharged into the air was estimated to be 150,000TBq of iodine 131 and 8,200TBq of cesium 137. These amounts correspond to 480,000TBq of iodine equivalent, according to the NISA.

b. NSC Estimation of total amount of radioactivity discharged

See Chapter V 7. (1) b. of the Interim Report[134].

c. TEPCO estimation of the total amount of radioactivity discharged

TEPCO made a retrospective estimation of the total amount of radioactive materials discharged into the air in the wake of the accident at the Fukushima Dai-ichi NPS, based on monitoring data and meteorological data, etc. and using the program to calculate the air dose rate when radioactive materials are discharged into the air, called DIANA (Dose Information Analysis for Nuclear Accident). Based on the retrospective estimation, the total amount of

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[133] When a simulation was conducted to conform to the actually measured containment vessel pressure, compared with the estimates released on June 6, the discharged amount of radioactive materials (the sum of the value for iodine 131 and the value for cesium 137 in iodine equivalent) decreased by about 440,000TBq for Unit 2 but increased by about 150,000TBq for Unit 3, resulting in the decrease by 290,000TBq as a whole.

[134] The estimated total amount of radioactive materials discharged into the air (570,000TBq of iodine equivalent), released by the NSC on August 24, was not based on a reanalysis made by the NSC. The NSC received a report from the Japan Atomic Energy Agency (JAEA) on the results of an analysis conducted by JAEA on its own and released the report as it was. The Investigation Committee hereby makes a correction to that effect.

radioactive materials discharged from the Fukushima Dai-ichi NPS into the air was estimated at approximately 500,000TBq for iodine 131 and at approximately 10,000TBq for cesium 137 (corresponding to approximately 900,000TBq of iodine equivalent).

In addition, TEPCO, with the cooperation of the Central Research Institute of Electric Power Industry (CRIEPI), a juridical foundation, made a retrospective estimation of the total amount of radioactive materials discharged into the sea following the accident at the Fukushima Dai-ichi NPS, based on seawater monitoring data and using a program to calculate the concentration of radioactive materials released into the sea[135]. Based on the retrospective estimation, the total amount of radioactive materials discharged from the Fukushima Dai-ichi NPS into the sea was estimated at approximately 11,000TBq for iodine 131 and at approximately 3,600TBq for cesium 137.

TEPCO released the estimation results on May 24, 2012.

(2) INES

See Chapter V 7. (2) of the Interim Report.

8. Details of Events in Areas Where There may be Problems with the Provision of Information to the Public

(1) Institutional arrangements for the dissemination of information concerning the Fukushima nuclear accident[136]

Public relations activities concerning accidents at nuclear power stations are to be undertaken by government ministries and agencies in charge of safety regulations at the relevant ministries and agencies and at the Off-site Center, and they are also to ask the nuclear operators to

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[135] The conceivable routes through which radioactive materials were discharged into the sea include (the discharge of contaminated water from the power station facilities, (ii) the fallout of radioactive materials, and (iii) the inflow of contaminated rain water. In the retrospective estimation above, TEPCO adopted the method of making a retrospective estimation of the total amount of discharges from the observed values of the concentration of radioactive materials around the water discharge channels of the Fukushima Dai-ichi NPS. Thus, it is likely that the estimated total amount of discharges include those from (ii) and (iii).

[136] Though we covered the arrangements for public relations activities in Chapter V 8. (1) of the Interim Report, we discuss the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

cooperate in providing detailed explanations at the Off-site Center about the accident[137]. After the declaration of a nuclear emergency, the Chief Cabinet Secretary, the Deputy Chief Cabinet Secretary or the Deputy Chief Cabinet Secretary for Crisis Management are to hold press conferences as necessary (with the Bureau Directors-General of the ministries and agencies responsible for safety regulations also present at these press conferences[138]) (this is based on the Nuclear Emergency Response Manual (hereinafter referred to as the "NER Manual)).

Also, in the event of a nuclear emergency prescribed in Article 15, Paragraph 1 of the Nuclear Emergency Preparedness Act, the public relations squad of the Nuclear Emergency Response Headquarters (METI) is to announce press releases, communicate the content and circumstances of press releases to the Emergency Response Office of the Prime Minister's Office and the Special Office for Disaster Information Management of the Cabinet Office and fax press release materials to them (based on the METI's Nuclear Disaster Management Operation Manual).

The dissemination of information about the Fukushima Dai-ichi nuclear accident was started first independently by (1) the Chief Cabinet Secretary, (2) NISA, which is the administration agency for TEPCO, (3) the Local Nuclear Emergency Response Headquarters (only after it was transferred to the Fukushima Prefectural Office on March 15), (4) Fukushima Prefecture, and (5) TEPCO. However, from March 12 the dissemination was conducted after getting the approval of the Prime Minister's Office in advance as described in (2) below, and then since April 25 the press release has been carried out at the Integrated Headquarters for Response to the Incident at the Fukushima Nuclear Power Stations (hereinafter referred to as the "Integrated Headquarters"), which integrated the publicity of the government and TEPCO as described in Chapter III 4. (2) b. of the Interim Report. (See (6) in the following section). From March 12 to

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137 TEPCO's "Nuclear Station Operator's Anti- Disaster Operation Plan for the Fukushima Dai-ichi NPS" states that when it receives the communication from relevant government organizations that "the system will be in place to prepare for the operation of the Off-site Center," TEPCO is to dispatch a deputy nuclear emergency preparedness manager and eight staff members for nuclear emergency response to the Off-site Center. The staff members for nuclear emergency response are responsible for exchanges of information between the Fukushima Dai-ichi NPS and the Off-site Center and for the provision of information to the press.

138 METI's Nuclear Disaster Management Operation Manual states that the Director-General of the NISA , at the request of the Cabinet Secretariat, provides explanations at press conferences held by the Chief Cabinet Secretary or join these press conferences.

15, the Local Nuclear Emergency Response Headquarters did not deal with the press because the Off-Site Center, in which the Headquarters was established, was located within the evacuation area (Okuma Town).

(2) Review of the changes in NISA's remarks about reactor core conditions[139]

At NISA, under the NER Manual and METI's Nuclear Disaster Management Operation Manual, etc., the Deputy Director-General (for Nuclear Safety) and the Deputy Director-General for Safety Examination were to be in charge of press announcements by rotation. On March 11, Deputy Director-General (for Nuclear Safety) Koichiro Nakamura (hereinafter referred to as "NISA Deputy Director-General Nakamura") was in charge.

At 23: 48 the same day, NISA was notified by TEPCO that a high level of radiation dose rate (1.2mSv/h) had been detected on the north side of the first floor of the Unit 1 T/B at the Fukushima Dai-ichi NPS. On March 12, TEPCO also reported that the pressure in the reactor containment vessel of Unit 1 had exceeded the designed maximum operating pressure since before daybreak the same day, and the level of radiation near the main gate of the Fukushima Dai-ichi NPS had increased rapidly since that morning. At the press conference at 09:45 on March 12 (the 12th report), based on the aforementioned information, NISA Deputy Director-General Nakamura explained to the press that "It is possible that part of the fuel cladding tubes has started to melt because this value (the water level at 09:15 on March 12) indicates that the fuel is partly exposed", and in response to the reporter who asked, "Do you mean that the fuel could have partly started to melt?", he only explained that "We cannot deny the possibility."

Before the press briefing due at approximately 14:00 on March 12 (the 14th report), NISA Deputy Director-General Nakamura notified the Director-General of NISA, Nobuaki Terasaka (hereinafter referred to as "Director-General of NISA Terasaka") that the possibility of a core meltdown at Unit 1 was believed high because (i) the radiation monitoring values measured within the site of the Fukushima Dai-ichi NPS had increased, (ii) the isolation condenser (IC)

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[139] Though we covered the changes in the NISA's explanations about reactor core conditions in Chapter V 8. (2) of the Interim Report, we discuss the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

was not believed to be running because a long time had passed since the total loss of power had occurred, and (iii) the water level continuously remained below the top of the fuel and was continuing to fall. In the meantime, Director-General of NISA Terasaka had been reported that morning that there must have been trouble with the fuel rods because cesium had been detected near the Fukushima Dai-ichi NPS. Therefore he told Deputy Director-General for Safety Examination Nakamura "(If the fact indicates that, we) cannot do nothing but say so."

At the NISA press conference at approximately 14:00 the same day (the 14th report), Deputy Director-General Nakamura explained in more detail than the explanation at the earlier press conference at approximately 09:45 the same day (the 12th report), and said, "There is a possibility of a core meltdown. It looks like that a core meltdown is occurring."

At the time, the content of the NISA's press announcements was not communicated to the Prime Minister's Office in advance[140]. In the 14th report as well, the NISA discussed such an important phenomenon as the "core meltdown" before the press without any prior communication with the Prime Minister's Office. Even before this, only very little information on the nuclear accident was provided to the Prime Minister's Office, and so Chief Cabinet Secretary Edano occasionally had trouble in explaining the situation to the press. Thus, secretaries to the Prime Minister and secretaries to the Chief Cabinet Secretary, who were aware of the situation, developed a sense of distrust in the NISA's stance about information sharing. Under these circumstances, Keisuke Sadamori, Executive Secretary to the Prime Minister (hereinafter referred to as "Secretary to the Prime Minister Sadamori"), who had been dispatched from the METI, asked the NISA staff to notify the Prime Minister's Office of details of the NISA's press announcement in advance[141].

Secretary to the Prime Minister Sadamori did not urge the NISA to make statements to the press only after obtaining the consent of the Prime Minister's Office, but simply requested that

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[140] At the time, the NISA was preparing materials that described the nuclear plant's conditions and the NISA's responses in chronological order ("Earthquake Damage Information") for use in public relations activities, and the ERC public relations squad faxed these materials to the Crisis Management Center at the Prime Minister's Office, whenever they were updated. Sometimes, however, some of these materials were not circulated to political-level appointees and secretaries at the Prime Minister's Office.

[141] Some NISA staff who were at the Prime Minister's Office then reported to the NISA that a sense of mistrust in the NISA was heightening because of the absence of prior communication with the ERC about what the NISA was going to say in its press announcements.

the NISA shares what the NISA was going to announce with the Prime Minister's Office in advance. However, when Director-General of NISA Terasaka learned about the request, he instructed the public relations staff at the NISA to communicate with the Prime Minister's Office in advance before making press announcements and make statements to the press only after obtaining the consent of the Prime Minister's Office. Since the process for this communication was not made clear, however, intervals between press announcements by the NISA became longer than one or two hours before the request[142].

Upon the above-mentioned request, other Deputy Directors-General of NISA, under the instructions of Director-General of NISA Terasaka, told NISA Deputy Director-General Nakamura "to be careful about remarks in press announcements because some people are showing concerns about statements made by the NISA in press announcements."

Deputy Director-General Nakamura took charge of the publicity until the press conference at 17:50 on March 12 (the 15th report in which an explanation for the explosion in the R/B of Unit 1 at 15:36 that day was given), and then requested Director-General of NISA Terasaka to replace the spokesperson. Thus Director-General of NISA Terasaka instructed a replacement for the spokesperson for Deputy Director-General for Safety Examination Tetsuo Noguchi (hereinafter referred to as "Deputy Director-General for Safety Examination Noguchi"). Deputy Director-General for Safety Examination Noguchi took charge of the publicity at two subsequent press conferences.

At the press conference at 21:30 on March 12 (the 16th report), a reporter asked, "About the core meltdown which is reported on TV and in other media to be the first case in Japan, please explain the meaning of it and whether the conclusion is correct or not from a perspective the public can understand." Deputy Director-General for Safety Examination Noguchi and other staff replied, "The condition of the core has not been clearly identified yet. We will endeavor to

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[142] As described previously, since the NISA's press announcements tended to be lagging, on March 13, the NISA's public relations staff held consultations with Secretary to the Prime Minister Sadamori as well as the secretary to the Deputy Chief Cabinet Secretary about procedures for prior communication with the Prime Minister's Office (the NISA recognized them as procedures to obtain the consent of the Prime Minister's Office). As a result, they agreed that the NISA's public relations staff would explain the content of press announcements in advance directly to Secretary to the Prime Minister Sadamori or the secretary to the deputy Chief Cabinet Secretary. Henceforth, these procedures came to be followed promptly.

clarify the situation as soon as possible even though the outcome is uncertain" and "Although the possibility that the core has been damaged is rather high, the details of its condition have not been established yet." They explained without using the expression of "core meltdown."

At the press conference at 05:30 on March 13 (the 18th report), NISA Deputy Director-General Hisanori Nei (for Nuclear Safety and Fuel Cycle) (hereinafter referred to as "NISA Deputy Director-General Nei") took charge of the publicity and explained that "The possibility cannot be denied because such a material (cesium) has already been detected and we must keep that in mind" in response to a question about the possibility of a core meltdown at Unit 1[143].

From the press conference at 17:15 that day (the 20th report), NISA Deputy Director-General Hidehiko Nishiyama (hereinafter referred to as "NISA Deputy Director-General Nishiyama"), NISA Deputy Director-General Nishiyama served as the NISA's spokesperson on a full-time basis. At the press conference, NISA Deputy Director-General Nishiyama said, "Since we cannot say anything definite about the condition of the core from the data we have, we are not sure if the core is melting," and said at a later press conference, "It is certain that at least the core has been damaged. It is not clear whether the core has already reached the point described by the expression 'core meltdown,'" thus explaining the situation without using the expression "core meltdown." He neither denied nor acknowledged the possibility of the core meltdown, going no further than replying that the condition is unclear.

As described above, the explanation by NISA to the press changed during the period from March 12 to 13 in two respects: it refrained from using the expression "core meltdown" and it shifted from an affirmative explanation to an indication of uncertainty about the possibility.

At the subsequent press conference at 9:15 on March 14 (the 22nd report), NISA Deputy Director-General Nishiyama offered an explanation that effectively acknowledged the possibility of the core meltdown by saying that "there is the possibility of the core meltdown at Units 1 and 3." Immediately after that, however, another NISA staff also present at the press conference offered a different explanation as if to deny the possibility of the core meltdown,

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[143] NISA Deputy Director-General Nei did not use the expression "core meltdown" in the later press conference at 10:05 that day (the 19th report) either.

saying that "considering that hydrogen is coming out, it is presumed that hydrogen may be coming out in reaction with the cladding, or zircalloy, that covers the fuel. I have a strong doubt that we have come to the stage to suspect a meltdown." Furthermore, at the press conference at 16:45 the same day, in response to a question from a reporter, "Since the generation of hydrogen means that it is melting, we can say the meltdown (is occurring), can't we?" NISA Deputy Director-General Nishiyama explained, "It is possible that hydrogen comes out even at the stage of the damage." Immediately after the explanation, however, another NISA staff also present at the press conference again offered an explanation, like at the previous press conference, that could be taken to deny the possibility of the core meltdown by saying, "In relation to hydrogen, hydrogen is coming out in reaction with the fuel and part of cladding. So, I think it is not appropriate to use the term 'meltdown'"[144]. Thus, while NISA Deputy Director-General Nishiyama were offering the explanations that acknowledged the possibility of the core meltdown or that neither acknowledge nor deny that possibility, the NISA, on the other hand, was engaged in the publicity that was taken to proactively deny the possibility of the core meltdown. Such ambivalent way of public announcements is believed to be one of the factors that gave rise to suspicions that the NISA was trying to cover up some facts about the state of the nuclear accident[145].

On April 10, NISA started, as instructed by METI Minister Kaieda, coordinating the terms to be used to explain the internal condition of the reactor and analyzing the condition of the reactor core. At the Integrated Headquarters around that time, when METI Minister Kaieda, TEPCO employees and some others were discussing the terms to be used to explain the condition of the reactor core, one of the people taking part in the discussions suggested that it would be accurate and appropriate to explain the condition of the reactor core with the use of term "fuel pellet

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144 As hydrogen is believed to have been generated due to the reaction between zirconium in the fuel cladding tube and water, the generation of hydrogen could serve as a basis to deduct the damage to the cladding tube but does not provide a reason to believe that fuel pellets inside the cladding tube is melting. On the other hand, the generation of hydrogen does not offer a basis to deny the melting of fuel pellets, either.

145 At the press conference held at a little past 11:00 on March 13, in response to a question form a report, "Are you of the view that the core meltdown has occurred in Unit 1?" Chief Cabinet Secretary Edano said, "There is the high likelihood of that happening. Since it is what is going within inside the reactor, we naturally cannot confirm it. But we are responding to the situation with that assumption and we are now making responses on the basis that there is such a possibility."

melt" instead of "core meltdown." METI Minister Kaieda agreed to the suggestion. Subsequently, NISA staff, learning of such discussions from TEPCO employees, decided to use the term "fuel pellet melt" in lieu of the term "core meltdown," and communicated with TEPCO to that effect.

On April 18, NISA reported the results of an analysis and evaluation of the internal condition of the reactors of Units 1 to 3 of the Fukushima Dai-ichi NPS at the 23rd extraordinary session of the Nuclear Safety Commission (NSC), and prepared a document about the terms explaining the condition of the reactor core. In the document, the terms were defined as follows: (i) "core damage" is "a condition where a significant amount of the fuel cladding tubes are damaged because of an increase of reactor core temperatures (fuel temperatures) due to a continued lack of cooling of the reactor core or an abnormal power increase in the core; in this situation, fuel pellets do not necessarily melt;" (ii) "fuel pellet melt" is "a condition in which the fuel melts because of an increase in the reactor core temperatures (fuel temperatures) due to a continued lack of cooling of the reactor core, which consists of fuel assemblies, or an abnormal power increase in the core; in this situation, the fuel assemblies and the fuel pellets melt and the shapes of the fuel assemblies are not maintained;" and (iii)"meltdown" is "a condition in which the fuel assemblies melt and are unable to maintain their shapes, and their melt falls into the lower area of the reactor core due to gravity." Based on these definitions, NISA indicated that the "fuel pellet melt" occurred in the reactors of Units 1 to 3.

(3) TEPCO's remarks about reactor core conditions

See Chapter V 8. (3) of the Interim Report.

(4) TEPCO's public relations activities and the involvement of the Japanese government[146]

From March 11 to 15 the Fukushima Prefecture Nuclear Emergency Response Center held its meetings several times a day at the Fukushima Prefecture Jichi Kaikan ("Local Government Hall"). The Headquarters made the staff of the TEPCO Fukushima Office, who were dispatched

[146] Though we covered TEPCO's public relations activities and the involvement of the Japanese government in Chapter V 8. (4) of the Interim Report, we discuss the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

to the Headquarters, report information about the Fukushima Dai-ichi NPS at its meetings. The meetings were open to the press.

In the evening of March 12, the chief of the TEPCO Fukushima Office was requested by the Prefectural Emergency Response Headquarters to explain at the meeting of the Headquarters the explosion in the R/B of Unit 1 at the Fukushima Dai-ichi NPS, that had occurred at 15:36 that day.

The chief had been requested by the press agencies and others to supply photographs of the R/B of Unit 1 (see Figure IV-8) after the explosion. Therefore he decided to use the photograph of the R/B of Unit 1 after the explosion that had been shared within TEPCO for the explanation and showed the photograph in the meeting of the Headquarters' members that night at his own discretion.

Fig. IV-8
Photographed by TEPCO on March 12, 2011

Meanwhile, as the Prime Minister's Office had only very few materials concerning the explosion in the reactor building of Unit 1 at the time of the press conference by the Chief Cabinet Secretary at around 18:00 on March 12, Chief Cabinet Secretary Edano could not but only explain that "we received a report that there has been some sort of an explosion event." It was not before his press conference at around 21:00 the same day when he could finally offer an explanation in relative detail about the explosion based on reports from TEPCO. Later, Chief Cabinet Secretary Edano learned that the photo of the reactor building of Unit 1 after the explosion has been released in Fukushima Prefecture, and had secretaries to the Chief Cabinet Secretary look into why that photo has not been submitted to the Prime Minister's Office. He then called TEPCO President Masataka Shimizu (hereinafter referred to as "TEPCO President Shimizu") to request the prompt provision of information and materials[147].

At around 14:00 on March 13, Prime Minister Kan, who was briefed on the these developments, made a similar request to TEPCO President Shimizu, who visited the Prime

[147] Immediately after that, in the presence of Prime Minister Kan, Chief Cabinet Secretary Edano also gave a heads-up to TEPCO employees then dispatched to the Prime Minister's Office about TEPCO's tardy provision of information.

Minister's Office for the first time after the nuclear accident. Subsequently, TEPCO President Shimizu instructed the head of TEPCO's Plant Siting and Regional Relations Department to obtain the consent of the Prime Minister's Office in advance regarding draft press releases and other materials and documents to be publicized. As will be explained in (5) below, this instruction became a cause of occasional delays in TEPCO's announcements.

(5) Dissemination of information about the Unit 3 reactor conditions[148]

At around 15:30 on March 13, Chief Cabinet Secretary Edano explained at a press conference that there is the possibility of a hydrogen explosion occurring in the reactor building of Unit 3, similar to the explosion in the reactor building of Unit 1 that occurred on March 12, as the injection of water into the reactor of Unit 1 is unstable and cannot cool the reactor core sufficiently and the possibility that a huge amount of hydrogen has generated within the reactor of Unit 3.

In the press conference at around 11:00 on March 14, Chief Cabinet Secretary Edano was explaining the following. TEPCO instructed at 06:50 the outdoor workers to temporarily evacuate because the pressure in the reactor containment vessel of Unit 3 at the Fukushima Dai-ichi NPS had increased. However, the outdoor work was resumed because the pressure in the reactor containment vessel decreased after that incident. However, the R/B of Unit 3 exploded during this press conference. Chief Cabinet Secretary Edano told the press that an explosion might have occurred because white smoke was being emitted from Unit 3 at 11:05 on March 14, and the situation was under investigation.

Prior to the incident mentioned above, Fukushima Dai-ichi NPS Site Superintendent Yoshida notified the TEPCO head office at approximately 06:00 on March 14 of a rapid increase in the pressure in the drywell of Unit 3. Then at 07:53 on March 14, Site Superintendent Yoshida notified the TEPCO head office that the pressure in the drywell had exceeded the designed maximum operating pressure and that the containment vessel pressure had been abnormally increased.

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[148] Though we covered the dissemination of information about the conditions of the reactor of Unit 1 in Chapter V 8. (5) of the Interim Report, we discuss the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

In response to the notification, the TEPCO liaison officer to the government at the head office instructed the TEPCO head office staff (herein referred to as "TEPCO staff A"), who had been dispatched to the Prime Minister's Office at the time, to get the consent of the Prime Minister's Office and NISA on the publication of the incident, the abnormal increase in the pressure of the containment vessel of Unit 3. TEPCO staff A explained to the NISA official who was stationed on the 5th floor of the Prime Minister's Office about the abnormal rise in the pressure of the containment vessel of Unit 3 by indicating the draft text for release to the press that had been prepared by the TEPCO publication team. The NISA official instructed TEPCO staff A to wait for a while because they had to coordinate with the Prime Minister's Office. Finally the NISA official instructed TEPCO staff A that TEPCO should not release the incident to the press ahead of the government.

The NISA official tried to check with NISA Deputy Director-General Masaya Yasui (hereinafter referred to as "NISA Deputy Director-General Yasui"), who was stationed on the fifth floor of the Prime Minister's Office at the time, about the content of TEPCO's draft press release. As NISA Deputy Director-General Yasui was preoccupied with another matter at the time, the NIS official could confirm with him at around 9:00 the same day, and the official immediately afterwards communicated the result of that confirmation to TEPCO staff A. Even after that, TEPCO did not make an announcement immediately[149].

At the Fukushima prefectural government, meanwhile, the staff of the TEPCO Fukushima Office had been reporting on the conditions of plants at the Fukushima Dai-ichi NPS at meetings of members of the Fukushima Prefecture Nuclear Emergency Response Center (see aforementioned (4)), and these scenes had been open to the press.

In the early morning of March 14, information on the pressure increase in the nuclear reactor containment vessel of Unit 3 was delivered to the TEPCO Fukushima office. The chief of the

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[149] While the TEPCO staff in charge said, "I think we announced this press release after 10:30 on March 14," there were no materials to back up the TEPCO staff's statement and the said press release was not uploaded on TEPCO's website. These circumstances suggest that the said press release had not been actually announced, but the Investigation Committee could not make a definite judgment on the existence or nonexistence of the announcement. The Committee is of the view that the announcement of the said press release, which was in the process of preparation at around 8:00 the same day, had not been announced at least until 10:30 the same day.
It is not clear why TEPCO failed to announce the said press release immediately after obtaining the above-mentioned confirmation (the consent of the Prime Minister's Office to the content of the press release).

TEPCO Fukushima office requested TEPCO head office for their consent to explain the abnormal rise in pressure of the nuclear reactor containment vessel of Unit 3, in the meetings of the Prefectural Emergency Response Headquarters. However, the manager of the Plant Siting and Regional Relations Department of TEPCO instructed the chief of the TEPCO Fukushima office to refrain from providing the information at the meeting of the Prefectural Emergency Response Headquarters, which was to be held at the Fukushima prefectural government, because he had been instructed by the NISA to wait for press release on the matter. Therefore the staff of the TEPCO Fukushima office could not explain the abnormal increase in pressure in Unit 3 at the meeting of the Prefectural Emergency Response Headquarters held at approximately 09:00 on March 14.

Later at 09:15 the same day, NISA liaison Nishiyama explained in the NISA press conference that the pressure in the reactor containment vessel of Unit 3 exceeded the designed maximum operating pressure.

(6) Press conferences by the Integrated Headquarters

In around early April, Special Advisor Hosono, becoming aware of the discrepancy and overlaps between explanations offered at press conferences by the government's relevant organizations and those given by TEPCO, thought that all parties concerned should hold joint press conferences and instructed the METI to consider the advisability of such joint press conferences. However, as the METI opposed to the idea by saying that it would be inappropriate to hold joint press conferences by the regulators and the nuclear operator being regulated, the holding of joint press conferences was shelved for the moment.

On April 15, because there still was discrepancy in explanations given by the two sides to the press, Special Advisor Hosono appealed strongly the necessity of joint press conferences and discussed the matter again with the METI and other parties involved. As a result, it was decided that joint press conferences by the Integrated Headquarters should be held on the second floor of the TEPCO head office from April 25. Special Advisor Hosono, officials of the NSC, the MEXT and the NISA as well as representatives of TEPCO and some others participated in the joint press conferences of the Integrated Headquarters.

(7) Announcements concerning the detection of tellurium and other radionuclides

See Chapter V 8. (6) of the Interim Report.

(8) Ambiguous expression of no "immediate" effects on health[150]

The government often explained, "It does not have immediate effects on health" about the effects of radiation on the human body. For example, Chief Cabinet Secretary Edano told a press conference at approximately 18:00 on March 16 that "It (radiation dose) is not at a level where immediate effects on the human body will occur" about the monitoring results on the same day (the values over 30μSv/h had been obtained in Iitate, Minami Soma and Namie); the government also explained in the Chief Cabinet Secretary's press conference at approximately 16:00 on March 19 that "Please understand that the radiation dose does not have immediate effects on the health of citizens (even if you temporarily ingest food from which radioactive materials exceeding the provisional limit are detected), so please act calmly" concerning the detection of radioactive materials exceeding the provisional limit prescribed in the Food Sanitation Act from the milk extracted within Fukushima Prefecture and the spinach harvested within Ibaraki Prefecture.

Chief Cabinet Secretary Edano's explanation that "It (radiation dose) is not at a level where immediate effects on the human body (health) will occur" was offered to the effect that while it is not known what effects an accumulation of low-dose exposures may have, they are at least not values of radiation that would give rise to acute symptoms.

In addition, the Consumer Affairs Agency explained on the Agency's website on March 20 that "It is not believed to have an immediate effect on your health even if you occasionally ingest food in which radioactive materials exceeding the provisional limit prescribed in the Food Sanitation Act were detected" in the message, "Shipment Restriction resulting from Detected Radiation in Food Items" from Minister of State for Consumer Affairs and Food Safety and of Administrative Reform Renho. Similar explanations were repeated in the later message of March 21 and 23. Furthermore, the NSC also explained to the public that "Even if

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[150] Though we covered the expression "immediate" in Chapter V 8. (7) of the Interim Report, we discuss the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

you continue to ingest food in which radioactive materials exceeding the prescribed limit are detected, it will not have immediate effects on your health" in the notice "To the People Living Outside the Areas where Evacuation or Sheltering Indoors is Conducted" on March 21, 2011.

It seems that the expression "immediate" effects was used on the basis of the following scientific knowledge: the causalities between radiation exposure and the occurrence of diseases such as cancer is not clear for low-level radiation exposure; and it will take a considerably long time for cancer to occur if it ever does (see Chapter V 4. (1) b. in the Interim Report). In fact, the expression "It does not have immediate effects on the human health" may be interpreted by some people as "it is unnecessary to be anxious about the impact on the human health," while it may be interpreted by other people as "it does not immediately affect human health, however, some effects will be brought about on the human health in the longer term." However, it was not necessarily clear which one the intended meaning was of the expression and there was no detailed explanation about it.

The Consumer Affairs Agency deleted the word "immediately" from the aforementioned message on April 1. With regards to the intention to have used the expression "It cannot be considered to immediately affect..." in the "Q&A for Food and Radioactivity" page on the Agency's website, the Agency explained that acute symptoms would not develop in the human body even if food in which radioactive materials exceeding the provisional limit were detected was occasionally ingested because the radiation dose from the ingested food is very small, but that the effects in case when the ingested radioactive materials accumulate in the human body cannot be completely denied because they are radioactive.

(9) Contingency situation scenarios

On March 22, Prime Minister Kan, in a bid to find out what impact the worst case about the accident at the Fukushima Dai-ichi NPS would have, asked Mr. Shunsuke Kondo, chairman of the Japan Atomic Energy Commission (hereinafter referred to "Mr. Kondo") to suppose the worst-case scenario for the accident at the Fukushima Dai-ichi NPS and consider responses to it[151]. Following the explosion of the reactor building of Unit 4 on March 15, Mr. Kondo was

[151] Prime Minister Kan instructed Special Advisor Hosono to consider the implementation of measures that are to be

considering from that day what countermeasures should be taken in the event of further deterioration of the accident situation. Since Prime Minister Kan's aforementioned request for the consideration of such matters goes beyond the jurisdiction of the Atomic Energy Commission, Mr. Kondo decided to take on the request as an individual to look into what Prime Minister Kan wanted to know. Mr. Kondo prepared "Rough Sketch of the Contingency Situation Scenario for the Fukushima Dai-ichi NPS" (hereinafter referred to as the "Rough Sketch") in his own name and submitted the Rough Sketch to Special Advisor Hosono on March 25. The Rough Sketch considered what should be expected under such hypothetical developments as the discharge of radioactive materials due to the damage to the reactor containment vessels of Units 1 to 3 and the discharge of radioactive materials due to the damage to the fuel in spent nuclear fuel pools of Units 1 to 4, and assumed which areas would be subject to evacuation measures taken on the basis of the criteria for evacuation adopted for the accident at the Chernobyl nuclear power station in 1986 under such situation. The Rough Sketch explains that under the aforementioned hypothetical developments, "areas for which the evacuation should be sought"[152] should extend to areas as far as 170km from the Fukushima Dai-ichi NPS and that "areas where people wishing to move out should be allowed to do so"[153] because the annual radiation dose would substantially exceed natural radiation levels should extend to areas as far as 250km from the Fukushima Dai-ichi NPS.

When Mr. Kondo submitted the Rough Sketch to Prime Minister Kan via Special Advisor Hosono, he explained to Special Advisor Hosono that while the possibility of the contingency situation described in the Rough Sketch actually happening is close to zero, a sense of reassurance would increase markedly if such measures as the filling of nitrogen gas in the reactor containment vessels, remote operation of the equipment to inject water from a height and reinforcement of the bottom of the spent nuclear fuel pool of Unit 4.

Subsequently, Special Advisor Hosono began considering the implementation of the

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included in a document Mr. Kondo will prepare.

[152] They are areas where the evacuation was thought imperative after the accident at the Chernobyl nuclear power station and the surface contamination concentration of cesium 137 is 1,480kBq/m^2 or higher.

[153] They are areas where it is argued that residents wishing to move out should be allowed to move out after the accident at the Chernobyl nuclear power station and the surface contamination concentration of cesium 137 is 555kBq/m^2 or higher.

measures listed in the Rough Sketch, but decided not to publicize the Rough Sketch itself after obtaining Prime Minister Kan's approval to that effect. The decision not to release it was taken after considering the following points: (i) the Rough Sketch describes neither events that have actually occurred nor events that are highly likely to occur; (ii) if the Rough Sketch with such content is publicized, there are concerns that the media would report only on the conclusions by ignoring the key point that it represents the results of the consideration based on hypothetical facts, giving rise to unnecessary anxieties and confusion; and (iii) even if events assumed in the Rough Sketch actually occur, including the inability to cool the spent nuclear fuel pools, there is a considerable amount of time before radioactive materials begin to be discharged, which makes the prompt announcement less than necessary.

9. Details of Events in Areas where there may be Problems Concerning the Provision of Information to the International Community[154]

(1) Provision of information to various countries

a. Press conferences by the Chief Cabinet Secretary and joint briefings

Since the nuclear accident, as part of the provision of information to other countries, the government took the measures such as: (i) simultaneous interpretation at the press conferences by the Chief Cabinet Secretary, (ii) briefings on the diplomatic corps in Tokyo by the Ministry of Foreign Affairs, and (iii) briefings to the foreign press by the Cabinet Public Relations Office of the Cabinet Secretariat (hereinafter referred to as the "Cabinet Public Relations Office").

Firstly, since the evening of March 13, the government uploaded the English translation of the minutes of the press conferences by the Chief Cabinet Secretary on the website of the Prime Minister's Office, and additionally, beginning with the press conference by the Chief Cabinet Secretary held at around 18:00 on March 16, the government introduced the simultaneous

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[154] Regarding events in areas where there may be problems concerning the provision of information to the international community, Chapter V 9. of the Interim Report described them in the order of "(1) Provision of information concerning the discharge of contaminated water into the sea" and "(2) Supply of information to other countries in the initial period after the accident." As this report adds the descriptions of the overall picture about the transmission of information to the international community, including the dissemination of information by the Prime Minister's Office, portions that should be positioned as general discussions are taken up first, and " Provision of information concerning the discharge of contaminated water into the sea," that should be positioned as one of the transmissions of information, is addressed in later sections as discussions on individual issues.

interpretation of press conferences by the Chief Cabinet Secretary.

Next, the Ministry of Foreign Affairs, together with other relevant government ministries and agencies, including the NISA[155], held regular briefings on the diplomatic corps in Tokyo, in principle, once a day during the period from March 13 to May 18, and three times a week on May 19 onward.

Furthermore, the Cabinet Public Relations Office, together with other relevant government ministries and agencies, including the NISA, held briefings on the foreign press from March 21 through the end of 2011.

b. Responses to individual inquiries

In addition, the NISA and other relevant government ministries and agencies responded to individual inquiries from overseas.

After the declaration of a nuclear emergency at 19:03 on March 11, the Secretariat of the NERHQ was established at the ERC on the third floor of the METI's annex building (see Chapter III 2. (1)), and the staff of the International Affairs Office of the Policy Planning and Coordination Division of the NISA, including the head of the Office who is in charge of the NISA's international public relations affairs, joined the ERC public relations squad[156], taking charge of the provision of information to other countries as well as responses to individual inquiries from foreign governments, etc.

The Cabinet Public Relations Office also responded to individual inquiries from the foreign press, etc.

c. Information Provision to the U.S. immediately after the accident occurred[157]

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155 The METI's Nuclear Disaster Management Operation Manual states that the head of the International Affairs Office of the Policy Planning and Coordination Division of the NISA should (i) prepare press releases (in English) for overseas, (ii) hold press conferences for the foreign press in cooperation with the Deputy Director-General for Safety Examination, who acts as the NISA's spokesperson, and (iii) provide the said press releases and other materials of public announcements to the foreign diplomatic establishments in Japan.

156 The METI's Nuclear Disaster Management Operation Manual states that the ERC public relations squad supports press conferences held by the NISA's Deputy Director-General for Safety Examination, who acts as the spokesperson, and is also responsible for the provision of information to local residents, media organizations, international organizations and foreign governments, etc. as well as for responses to individual inquiries.

157 Though we covered the provision of information to the U.S. immediately after the occurrence of the nuclear

(a) Provision of information from immediately after the accident until the start of Japan-U.S. consultations

The U.S. took strong interest in the situation of the accident at the Fukushima Dai-ichi NPS since immediately after the occurrence of the accident, and since March 12, U.S. government officials (including government officials in Japan, such as those at the U.S. embassy in Japan; hereinafter referred to just as the "U.S. side" without specifying their official titles or their individual names) repeatedly called Chief Cabinet Secretary Edano and other cabinet ministers stationed at the Prime Minister's Office or the staff of the Prime Minister's Office to offer U.S. support and seek the provision of information on the nuclear accident. In addition to the direct provision of information over the phone, the Japanese government explained the conditions of the reactors in the Ministry of Foreign Affairs on March 13, by phone calls from NISA Deputy Director-General Nishiyama before dawn on March 14, and within the METI during daytime the same day. However, in the evening of March 14, the U.S. side asked Chief Cabinet Secretary Edano for the further provision of information and the stationing of U.S. nuclear experts at the Prime Minister's Office. The U.S. side made the request apparently because they found the information provided by the Japanese government and Japan's system for disseminating information as still not sufficient. Chief Cabinet Secretary Edano withheld any immediate reply to the U.S. request at that stage because the U.S. intentions behind the request were not necessary clear.

Around that time, the U.S. Nuclear Regulatory Commission (NRC), while staying in close contact with NRC experts dispatched to the U.S. embassy in Japan, was considering the scope of an evacuation advisory it was planning to issue on its own to U.S. citizens in Japan, one of the reasons the U.S. was seeking detailed information from the Japanese government. However, the Japanese government was incapable of providing information to the U.S. in a manner satisfactory to the U.S. side, partly because the Japanese government was not made aware of such circumstances on the part of the U.S. and also because the information on the nuclear plant itself grasped by the Japanese government was not sufficient and officials of the NISA and other

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accident in Chapter V 9. (2) b. of the Interim Report, we discuss the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

government staff familiar with the information on the nuclear plant were preoccupied with their work to deal with the plant's situation. This appears to be one of the reasons why the U.S. side was dissatisfied with the provision of information by the Japanese government.

Around March 15, the U.S. side again pressed Chief Cabinet Secretary Edano to accept the stationing of U.S. nuclear experts at the Prime Minister's Office, and after obtaining Prime Minister Kan's approval, Chief Cabinet Secretary Edano gave the go-ahead for NRC experts to be stationed at the Prime Minister's Office to gather information from March 16. Following this, METI staff and NISA staff provided NRC experts with the information on the accident on the second floor of the Prime Minister's Office for several days from March 16.

Subsequently, for example, the U.S. side participated in a conference on the accident at the Fukushima Dai-ichi NPS that started at the Ministry of Defense on March 16 (from the Japanese side, officials of the Ministry of Foreign Affairs, the NISA, the Ministry of Defense and TEPCO participated) [158], and before dawn on March 17, the U.S. side made another phone call to Chief Cabinet Secretary Edano, and came to the Integrated Headquarters on March 18 in their continued efforts to gather information.

(b) 50-mile evacuation advisory

As described in (a), the NRC was making attempts to collect information through various routes in order to consider the scope of the evacuation advisory it was planning to issue on its own to U.S. citizens in Japan. As the NRC failed to obtain sufficient information, it decided to issue the evacuation advisory from the safer side, and on March 17 (Japan time) advised U.S. citizens in Japan to evacuate outside of a 50-mile (about 80km) radius of the Fukushima Dai-ichi NPS. Amid the lack of sufficient information on the conditions of the nuclear power plants at the Fukushima Dai-ichi NPS, the evacuation advisory is understood to have been issued on the basis of the consideration that the radiation dose at a point 50 miles from the Fukushima Dai-ichi NPS was forecast to rise to around 1rem (10mSv).

[158] The conference was organized mainly by the Ministry of Defense, after the Ministry of Defense staff, learning that the U.S. side was troubled with the lack of information on the nuclear accident, proposed it to the staff of the U.S. embassy in Japan

(c) Commencement of Japan-U.S. Consultations

Around March 18, Special Advisor Hosono and House of Representatives Member Nagashima contacted the U.S. side at the Integrated Headquarters, etc. and the exchange of views with the U.S. side made them keenly aware of the need to unify the multiple channels for the provision of information to the U.S. side in order to provide accurate information to the U.S. side. Therefore, Special Advisor Hosono and other officials prepared a draft plan for the establishment of a mechanism of consultations between the Japanese and U.S. governments where relevant officials of the two governments get together to share information and coordinate the request for and acceptance of relief supplies (hereinafter referred to as the "Japan-U.S. Consultations"). After obtaining the approval of Prime Minister Kan, they started preparations for the first session of the Japan-U.S. Consultations. Around that time, Prime Minister Kan instructed Deputy Chief Cabinet Secretary Fukuyama to coordinate the views of the ministries and agencies concerned toward the launch of the Japan-U.S. Consultations and Special Advisor Hosono to administer the Japan-U.S. Consultations.

Subsequently, following a preparatory meeting between the U.S. side and the relevant Japanese ministries and agencies held on March 21, Deputy Chief Cabinet Secretary Fukuyama and Special Advisor Hosono convened the Japan-U.S. Consultations, starting on March 22. From the Japanese side, the consultations were joined by Deputy Chief Cabinet Secretary Fukuyama, Special Advisor Hosono and House of Representatives Member Nagashima, from the government side, and an official attached to the Assistant Chief Cabinet Secretary (for security and crisis management), officials from the relevant ministries and agencies, including the NSC, the Ministry of Foreign Affairs, the Ministry of Defense, the NISA, the MEXT, and TEPCO officials in charge. Thereafter, the sharing of information on the nuclear plants, exchanges of views and the coordination for the acceptance of relief supplies with the U.S. side were conducted at the Japan-U.S. Consultations. The status of information sharing between the Japanese and U.S. governments improved markedly through the Japan-U.S. Consultations, and the exchange of information among the relevant Japanese ministries and agencies came to be carried out more efficiently at meetings among the relevant ministries and agencies that preceded the Japan-U.S. Consultations.

(2) Provision of information concerning the discharge of contaminated water into the sea

a. Notification system based on the Convention on Early Notification of a Nuclear Accident

Under the METI's Nuclear Disaster Management Operation Manual, in the event of a nuclear accident that discharges radioactive materials, the Head of the International Affairs Office of the Policy Planning and Coordination Division of NISA is to make judgment on whether the accident falls under the Convention on Early Notification of a Nuclear Accident and, if it does, notify the IAEA of the accident[159].

In response to the latest nuclear accident, the staff of the International Affairs Office of the Policy Planning and Coordination Division of the NISA (hereinafter referred to as the "NISA Staff Responsible for International Public Relations Activities"), including the Head of the International Affairs Office of the Policy Planning and Coordination Division of NISA, who is responsible for the notification under the Convention, as with the case at the time of the Integrated Nuclear Emergency Response Drill, did not have their desks within the ERC and provided information to other countries working out of the International Affairs Office of the Policy Planning and Coordination Division.

Thus, the NISA Staff Responsible for International Public Relations Activities and the ERC shared information on documents shared within the ERC by having the ERC send them to the International Affairs Office of the Policy Planning and Coordination Division. However, as the NISA Staff Responsible for International Public Relations Activities were not stationed at the ERC on a full-time basis, it was difficult for them to immediately take hold of information that is not documented.

b. Notification of the discharge of contaminated water into the sea to other countries and international organizations[160]

As described in Chapter V 6. (1) e. of the Interim Report, TEPCO decided to discharge

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[159] In the FY2008 Integrated Nuclear Emergency Response Drill, drills for the notification to such international organizations as IAEA, the Organization for Economic Cooperation and Development Nuclear Energy Agency (OECD- NEA) and drills for the distribution of information to foreign embassies in Tokyo were conducted.

[160] Though we covered the notification of the discharge of contaminated water into the sea to other countries and international organizations in Chapter V 9. (1) a. of the Interim Report, we discuss the matter again in this section on the basis of facts confirmed in the subsequent investigation and verification.

relatively less contaminated accumulated water in the centralized waste treatment facility into the sea with the consent of the NISA on April 4. However, no one among the NISA Staff Responsible for International Public Relations Activities was involved in the paperwork for the procedure required for the discharge and no NISA staff involved in the paperwork recognized or pointed out the necessity of notifying related foreign countries. One of the NISA Staff Responsible for International Public Relations Activities watching the Chief Cabinet Secretary's press conference that started at 16:03 on April 4 on TV learned of the planned implementation of the above-mentioned discharge for the first time and realized the need for notification, visited the ERC immediately to obtain the materials related to the discharge into the sea, and then notified the IAEA of the planned implementation of the discharge via email.

In addition, after 15:30 on the same day, a staff member of the Ministry of Foreign Affairs, who was at the Integrated Emergency Response Office, learned the plan to discharge the contaminated water into the sea and notified the related divisions within the Ministry about it. The news was communicated via email from a mobile phone to the staff member of the Ministry who was in charge of publication during the regular briefing that started at 16:00 the same day. The staff member notified the diplomats of the foreign countries of the news in the briefing.

The discharge actually started at 19:03 the same day. The Ministry of Foreign Affairs was notified of the planned discharge into the sea by the Ministry staff member who had been stationed at the Integrated Headquarters, and then informed all the diplomatic corps via email and fax that the discharge would begin that day. However, the notification was sent at 19:05 the same day after the discharge had already started.

On April 5, the Ministry of Foreign Affairs and the NISA again explained the details of the discharge of the contaminated water into the sea and its impact in the regular briefing that started at 16:00 (47 countries and two international organizations attended). Furthermore, on April 6, the Ministry of Foreign Affairs explained the details of the discharge and its impact to the embassies of People's Republic of China, the Republic of Korea (hereinafter referred to as South Korea) and Russia, located in Tokyo.

c. Question from the view point of the fulfillment of international commitment

See Chapter V 9. (1) b. of the Interim Report.

10. Coordination with Other Countries and the IAEA

(1) Coordination with the U.S.

See Chapter V 10. (1) of the Interim Report.

(2) Support from other countries and Japan's response to their support

a. System to accept relief supplies

The Basic Disaster Management Plan describes ways to respond to various disasters by type of disaster. Part 2 of "Earthquake Disaster Countermeasures" and Part 3 of "Tsunami Disaster Countermeasures" of the Plan also refer to how to accept support from other countries (hereinafter referred to as "the Way of Acceptance"), but Part 11 of "Nuclear Disaster Countermeasures" does not touch on the Way of Acceptance. Part 15 of "Countermeasures Common in Other Disasters" describes matters common in numerous disaster countermeasures, and states that "countermeasures described in Part 15 should be used also against the specific disasters described in Part 2 through Par 14 as necessary." Part 15 also has a section on the Way of Acceptance, which apparently assumes that the relevant government ministries and agencies should develop their policies concerning the acceptance of support from other countries in advance.

However, neither the Nuclear Emergency Response Manual nor the METI's Nuclear Disaster Management Operation Manual has any description of policies concerning the acceptance of support from other countries, and therefore the system for the acceptance of relief supplies from other countries in response to the latest nuclear accident was put into place on an ad hoc basis. The system in the initial period after the nuclear accident (during March 2011) is shown in Figure IV-9:

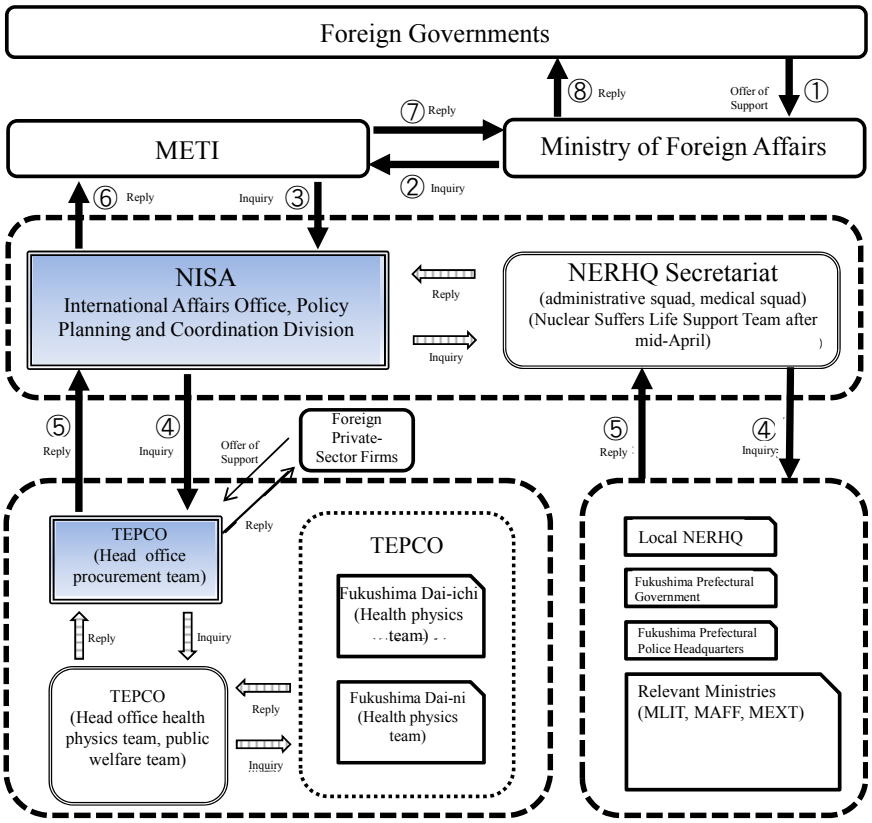

Fig. IV-9 Flow of the acceptance of relief supplies in the initial period after the nuclear accident

b. Problems with the system of acceptance

The acceptance of relief supplies from other countries did not necessarily go smoothly, as described below, due to problems with the system of acceptance and facilities to store relief supplies.

Regarding the system of acceptance, the International Affairs Office of the Policy Planning and Coordination Division of the NISA assigned only one staff to coordinate the acceptance of relief supplies between mid-March and early April[161]. This can apparently be attributed to the circumstances, as described in a. above, that the International Affairs Office missed out on an opportunity to put the adequate acceptance system in place due to such factors as that the METI did not anticipate the operations to coordinate the acceptance of relief supplies from other

[161] The staff in charge was involved not only in the coordination of the acceptance of relief supplies but also in the work related to consultations with foreign governments, including the Japan-U.S. Consultations.

countries, that the METI's Nuclear Disaster Management Operation Manual had no descriptions regarding the Way of Acceptance and that officials were too preoccupied with other operations. As only one staff was put in charge of the coordination of the acceptance of relief supplies until around early April, there were confusions and delays in the related operations. With two staff took charge of the operations from around early April and four from around mid-April, however, things began moving smoothly thereafter.

The procurement team at TEPCO's head office had two staff take care of the acceptance of relief supplies at any time, with three to five staff members taking on the job in rotation. The coordination of the acceptance of relief supplies, however, became confused immediately after the nuclear accident, as TEPCO's nuclear operator emergency management operation plan had no descriptions about the coordination of relief supplies and the procurement team staff had to take care of inquiries about the needs, coordination of deliveries, arrangements for places to store relief supplies and all other matters simultaneously and in parallel. But things started moving smoothly from around late March.

Regarding storage facilities for relief supplies accepted, the NISA initially received prompt replies from TEPCO about the necessity of such supplies as the company needed relief supplies from the U.S. Thus, the NISA could make immediate replies to inquiries from the U.S. and took deliveries of supplies accordingly. Soon afterwards, however, TEPCO came to reply to inquiries only after carefully considering the necessity of supplies as the company was fast running out of space at the J-Village stadium and warehouse in Onahama City where it was accepting relief supplies delivered at home and from abroad. In addition, from around late March, countries other than the U.S. began making offers for a variety of relief supplies, and, as described in Chapter V 10. (2) of the Interim Report, not a few of offered supplies, by their nature, required a considerable amount of time in considering the advisability of their acceptance. Under these circumstances, replies about the acceptance of offers tended to become tardy generally[162].

Under these circumstances, the International Affairs Office of the NISA's Policy Planning and Coordination Division, from around mid-March, began receiving such complaints from

[162] As relief supplies from other countries were brought in by air, recipients of cargos had to be specified. Thus, it was not possible to make replies of acceptance for the sake of convenience without identifying potential recipients.

overseas as “replies of acceptance are late in coming” and “cargos should be taken in much sooner.” Thus, the International Affairs Office of the Policy Planning and Coordination Division made arrangements to lease warehouses near the New Tokyo International Airport at Narita, and made prompt replies of acceptance when offers of relief supplies came in, keeping supplies in these warehouses if no decisions were made on recipients before their arrival in Japan.

c. Concrete examples of acceptance of relief supplies

See Chapter V 10. (2) of the Interim Report.

(3) Evacuation advice of foreign governments to their nationals in Japan

The evacuation situation for U.S. citizens in Japan is as described in Chapter V 10. (3) of the Interim Report. Examples of the evacuation situation of citizens of other countries in Japan, including the United States, are shown in Table IV-3 below:

Table IV-3 Examples of evacuation advisories of various countries

Country	Evacuation advisories	Other measures
U.S.	・March 17 (Japan time): Advisory for the evacuation out of a radius of 50 miles (about 80km), advisory for families of U.S. government staff for the voluntary evacuation out of Japan ・April 15: Removal of the advisory for families of U.S. government staff for the voluntary evacuation out of Japan ・October 7: Scope of the advisory for the evacuation reduced to out of a 20km radius	
U.K.	・March 12: Advisory for consideration of the evacuation out of regions north of Tokyo (excluding Hokkaido) ・April 16: Scope of the above advisory reduced to the Tohoku region only ・April 18: Advisory changed to the evacuation out of the evacuation areas designated by the Japanese government	・March 19: Start the distribution of stable iodine tablets (no instruction for the intake)
France	・March 13: Advisory for the evacuation out of the Tohoku and Kanto regions ・December 14: Advisory changed to the evacuation out of the evacuation areas designated by the Japanese government	・March 16: Start the distribution of stable iodine tablets (no instruction for the intake)
Germany	・March 13: Advisory for citizens residing in affected areas and the Metropolitan region to consider the need to stay in Japan and departure from Japan depending on circumstances ・March 18: Advisory for the evacuation out of affected areas ・March 25: Revises the advisory allowing day trips to and short-term stay in the Metropolitan region ・March 28: Another advisory calling for preparations to get out of Tokyo if the situation deteriorates. Advises family members, children and young people not to stay in Tokyo, in principle ・May 2: Announces there are no longer concerns about the stay in the Metropolitan region	・March 18: Embassy function moved to Osaka ・April 11: Partially reopen the embassy in Tokyo ・April 19: Fully reopen the embassy in Tokyo
Canada	・March 13: Advisory to follow evacuation orders by the Japanese government ・March 16: Advisory changed for the evacuation out of an 80km radius ・August 30: Advisory changed to the evacuation out of a 30km radius	
Australia	・March 17: Advisory for the evacuation out of the Tohoku and Kanto regions ・April 15: Advisory changed to the evacuation out of evacuation areas designated by the Japanese government	
Sweden	・March 12: Advisory to follow evacuation orders by the Japanese government ・March 16: Advisory changed to the evacuation out of an 80km radius ・October 10: Advisory changed to the evacuation out of a 30km radius and out of evacuation areas designated by the Japanese government ・December 21: Advisory changed to the evacuation out of evacuation areas designated by the Japanese government	・March 19: Start the distribution of stable iodine tablets, advise citizens staying in a radius of 250km to take stable iodine tablets

South Korea	・March 17: Advisory for the evacuation out of an 80km radius ・April 13: Advisory for no trips to evacuation areas designated by the Japanese government	
Switzerland	・March 11: Advisory for the evacuation out of the Tohoku region immediately after the earthquake ・March 15: Advisory for the evacuation out of the Tohoku and Metropolitan regions ・ April 4: Advisory changed to the evacuation out of evacuation areas designated by the Japanese government	・March 16: Start the distribution of stable iodine tablets (no instruction for the intake) ・March 20: Embassy function moved to Osaka ・April 5: Reopen the embassy in Tokyo
Finland	・March 15: Advisory for the evacuation out of the Tohoku region and for the evacuation out of the Kanto region if there is no essential need to stay ・March 30: Advisory changed to the evacuation out of an 80km radius ・August 24: Advisory for the evacuation out of areas identical with evacuation areas designated by the Japanese government and for no entry into an 80km radius if there is no essential need to do so	・March 12: Start the distribution of stable iodine tablets (no instruction for the intake)) ・March 18: Embassy function moved to Hiroshima ・March 30: Reopen the embassy in Tokyo

※ The distances (30km, etc.) show the distances from the Fukushima Dai-ichi NPS

(4) Coordination with the IAEA

See Chapter V 10. (4) of the Interim Report.

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