

March 14, 2011

Nuclear and Industrial Safety Agency

Seismic Damage Information (the 23rd Release)
(As of 19:30 March 14, 2011)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Onagawa NPS, Tohoku Electric Power Co., Inc; Fukushima Dai-ichi and Fukushima Dai-ni NPSs, Tokyo Electric Power Co., Inc. as follows:

1. The status of operation at Power Stations (Number of automatic shutdown units: 10)

○Fukushima Dai-ichi Nuclear Power Station, Tokyo Electric Power Co., Inc. (TEPCO)

(Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture)

(1) The status of operation

Unit 1 (460MWe): automatic shutdown

Unit 2 (784MWe): automatic shutdown

Unit 3 (784MWe): automatic shutdown

Unit 4 (784MWe): in periodic inspection outage

Unit 5 (784MWe): in periodic inspection outage

Unit 6 (1,100MWe): in periodic inspection outage

(2) Readings at monitoring posts

The measurement of radioactive materials in the environmental monitoring area near the site boundary conducted by a monitoring car in considering the wind flow, confirmed the increase in the radioactivity compared to the radioactivity at 07:30, March 14.

MP3 (Monitoring at North West of Site Boundary for Unit 2) :
231.1 micro Sv/h (14:30 March 14)

MP4 (Monitoring at north- west of Site Boundary for Unit 2 :
56.4 micro Sv/h(04:08 March 14)

→29.8 micro Sv/h(14:14 March 14)

MP5 (Monitoring at north-west Site Boundary for Unit 2)

6.1 micro Sv/h(14:02 March 14)

MP6 (Monitoring at the west –southwest Site Boundary for Unit 2)

3.70 micro Sv/h(16:10 March 14)

→4.2 micro Sv/h(12:34 March 14)

MP7 (Monitoring at the west –southwest Site Boundary for Unit 2)

6.1 micro Sv/h (12:16, March 14)

(3) Wind direction/wind speed (as of 14:14, March 14) at MP-4

Wind direction: North North West

Wind Speed: 2.6 m/s

(4) Major Plant Parameters (19:30, March 14)

	unit	Unit 1	Unit 2	Unit 3
Reactor Pressure	MPa	0.047 (A) 0.270 (B)	0.65	0.183 (A) 0.183(A)
PCV Pressure	KPa	Not available	Approx. 395	335
Reactor Water Level*	mm	Downscale(A) Downscale(B)	Downscale(A) Downscale(B)	-1900(A) -2300(B)
Suppression Pool Water Temperature	°C	Not available	Under measuring	Not available
Suppression Pool Water Pressure	KPa	Not available	Not available	500

*: Distance from the top pellet

(5) Report concerning other malfunction

- No fire report notified to NISA
- TEPCO reported to NISA in accordance with Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1,2 and 3. (15:42 March 11)
- TEPCO report to NISA the event in accordance with Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness

regarding Fukushima Dai-ichi, Units 1 and 2.(notified to NISA at 16:36 March 11)

- For Unit 1: Sea water is being injected to the Primary Containment Vessel (PCV) via the Fire Extinguishing System Line (Start up 11:55 March 13)
→Interruption of injection (01:10 March 14)
- For Unit 2: Water Injection Function has been sustained. (14:00 March 13)
- For Unit 2: Reactor Water Level is decreasing. (13:18 March 14)
- For Unit 2: Seawater injection to the Reactor Pressure Vessel (RPV) is ready through Fire Extinguishing System Line. (19:20 March 14)
- For Unit 3: Fresh water is being injected to the PCV via Fire Extinguishing System Line (FES) (11:55 March 13)
- For Unit 3: Sea water is being injected to the PCV via FESL(13:12 March 13)
- For Unit 1 and Unit 3: Injection of Sea water injection into PCV is interrupted because of the lack of sea water in pit. (01:10 March 14)
- For Unit 3: Injection of Sea water into PCV is restarted(03:20 March 14)
- For Unit 3: Unusual pressure increase was identified (11:45 March 14)
- For Unit 3: Explosion of the Reactor Building broke out similarly with Unit 1 (11:01 March 14)

○ Fukushima Dai-ni Nuclear Power Station (TEPCO)

(Naraha-machi/Tomioka-machi, Futaba-gun, Fukushima pref.)

(1) The status of operation

Unit1 (1,100MWe): automatic shutdown, cold shut down at 13:40, March 14

Unit2 (1,100MWe): automatic shutdown, cold shut down at 14:20, March 14

Unit3 (1,100MWe): automatic shutdown, cold shut down at 12:15, March 12

Unit4 (1,100MWe): automatic shutdown

(2) Readings at monitoring post etc.

MP1 (Monitoring at the North End of Site Boundary)

0.038microSv/h(5:00 March 14)

→0.034 microSv/h(15:40 March 14)

MP3 (Monitoring at the North/West End of Site boundary)

0.037microSv/h(5:00 March 14)

→0.035 microSv/h(15:40 March 14)

MP4 (Monitoring at the North/West End of Site Boundary)

0.038microSv/h(5:00 March 14)

→0.037microSv/h(15:40 March 14)

MP5 (Monitoring at the West End of Site Boundary)

0.042 microSv/h(5:00 March 14)

→0.042 microSv/h(15:40 March 14)

(3) Direction and velocity of wind (As of 15:40, 14 March)

Direction: West

Velocity: 6 m /s

(4) Main plant parameters (As of 18:30, 14 March)

	unit	Unit 1	Unit 2	Unit 3	Unit 4
Reactor Pressure	MPa	0.04	0.06	-0.06	0.35
Reactor water temperature	°C	46	88	32	142
Reactor water level*	mm	8785	8530	7636	5096
Suppression pool water temperature	°C	71	80	45	130
Suppression pool water pressure	KPa	282	253	132	324
Remarks		under cold shutdown	under cold shutdown	under cold shutdown	

*: Distance from the top pellet

(5) Report concerning other malfunction

- None of fire report notified to NISA
- TEPCO reported to NISA in accordance with Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ni, Units 1. (18:08 March 11)
- As same as above, TEPCO reported to NISA Fukushima Dai-ni Units 2 and 4.(18:33 March 11)
- For Unit 1: Due to Recovery of Residual Heat Removal System(RHR), water in suppression pool is started to cool for cold shut down.(01:24

March 14)

c. Onagawa Nuclear Power Station (Onagawa-cho, Oga-gun and Ishinomaki-shi, Miyagi Prefecture)

(1) The status of operation

Unit 1 (524MWe): automatic shutdown, cold shut down at 0:58, March 12

Unit 2 (825MWe): automatic shutdown

Unit 3 (825MWe): automatic shutdown, cold shut down at 1:17, March 12

(2) Readings of monitoring post

Reading of monitoring post : Changed

MP2 (Monitoring at the North End of Site Boundary)

Approx. 10,000 nGy/h (as of 13:09 March 13)

→7,200 nGy/h (07:20 March 14)

(3) Report concerning other malfunction

- Fire Smoke on the first basement of the Turbine Building was confirmed extinguished at 22:55 on March 11th.
- Article 10* of Act on Special Measures Concerning Nuclear Emergency Preparedness (Unit No. not identified) (13:09 March 13)

2. Action taken by NISA

(March 11)

14:46 Set up of the NISA Emergency Preparedness Headquarters (Tokyo) immediately after the earthquake

15:42: TEPCO reported to NISA in accordance with Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi.

16:36: TEPCO judged the event in accordance with Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1 and 2.(notified to NISA at 16:45)

18:08: Unit 1 of Fukushima Dai-ni notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

- 18:33: Units 1,2 and 4 of Fukushima Dai-ni notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 19:03 : Government declared the state of nuclear emergency (Establishment of Government Nuclear Emergency Response Headquarters and Local Emergency Response Headquarters)
- 20:50: Fukushima Prefecture's Emergency Response Headquarters issued a direction regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO, that the residents living in the area of 2km radius from Unit 1 of the Nuclear Power Station must evacuate.(The population of this area is 1,864)
- 21:23: Directives from Prime Minister to the Governor of Fukushima, Mayor of Ookuma and Mayor of Futaba were issued regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO, pursuant to Paragraph 3, Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness as follows:
- Residents living in the area of 3km radius from Unit 1 of the Nuclear Power Station must evacuate.
 - Residents living in the area of 10km radius from the Unit 1 must take sheltering.
- 24:00: Mr. Ikeda, Vice Minister of METI, arrived at the Local Emergency Response Headquarters

(March12)

- 05:22 Unit 1 of Fukushima Dai-ni notified NISA of the situation of the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 05:32 Unit 2 of Fukushima Dai-ni notified NISA of the situation of the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 05:44 Residents living in the area of 10km radius from unit 1 of the Nuclear Power Station must evacuate by the Prime Minister Direction.
- 06:07 Regarding of Fukushima Dai-ni NPS, TEPCO reported NISA in accordance with Article 15 of Act for Special Measures Concerning Nuclear Emergency Preparedness.
- 06:50 According to the article 64, 3 of the Nuclear Regulation Act,

government order to control the internal pressure in Fukushima-dai-ichi Units 1 and 2

07:45 Directives from Prime Minister to Governor of Fukushima, Mayors of Hirono, Naraha, Tomioka, Ookuma and Futaba were issued regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO, pursuant to Paragraph 3, Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness as follows:

-Residents living in the area of 3km radius from Fukushima Dai-ichi Nuclear Power Station (NPS) must evacuate.

-Residents living in the area of 10km radius from Fukushima Dai-ichi NPS must take sheltering

17:00 Notification pursuant to Article 15 of the Act for Special Measure Concerning Nuclear Emergency Preparedness since the radiation level exceeded the acceptable level of Fukushima Dai-ichi NPS.

17:39 Prime Minister directed evacuation of the residents living within the 10 km radius from the Fukushima-Dai-ichi NPS

18:25 Prime Minister directed evacuation of the residents living within the 20km radius from the Fukushima Dai-ichi NPS

19:55 Directives from Prime Minister was issued regarding sea water injection to Unit No.1 of Fukushima Dai-ichi NPS.

20:05 Based on the directives from Prime Minister and pursuant to Paragraph 3, Article 64 of the Nuclear Regulation Act, the Government issued an order to inject sea water Unit 1 of Fukushima Dai-ichi NPS.

20:20 Fukushima Dai-ichi NPS, Unit1 started sea water injection.

(March 13)

05:38 TEPCO notified NISA of the situation pursuant to the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness that Unit 3 of Fukushima Dai-ichi NPS is in a loss of all coolant injection function. Recovering efforts of the power source and coolant injection function and work on venting are underway.

09:08 Pressure suppression in the Containment Vessel and fresh water injection started at Unit 3 of Fukushima Dai-ichi NPS.

09:20 Opening of Pressure vent valve of Unit 3 of Fukushima Dai-ichi NPS.

09:30 NISA directed the Governor of Fukushima Prefecture, the Mayors of

Ookuma-machi, Futaba-machi, Tomioka-machi and Namie-machi based on the Act for Special Measures Concerning Nuclear Emergency Preparedness on radioactivity decontamination screening.

09:38 TEPCO notified NISA that Unit 1 of Fukushima Dai-ichi NPS reached a situation specified in Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness.

13:09 Tohoku Electric notified NISA that Onagawa NPS reached a situation specified in Article 10 of the Act for Special Measures Concerning Nuclear Emergency Preparedness.

13:12 Fresh water injection was switched to sea water injection at Unit 3 of Fukushima Dai-ichi NPS.

14:25 TEPCO notified NISA that Fukushima Dai-ichi NPS reached a situation specified in Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness.

(March 14)

01:10 Sea water injection at unit 1 and unit 3 of Fukushima Dai-ichi NPS were temporary stopped due to decreasing sea water in pool

03:20 Sea water injection at unit 3 of Fukushima Dai-ichi NPS was restarted.

04:24 TEPCO notified NISA that Fukushima Dai-ichi NPS reached a situation specified in Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness.

07:53 TEPCO notified NISA that Fukushima Dai-ichi NPS reached a situation specified in Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness.

13:25 TEPCO notified NISA that Unit 2 of Fukushima Dai-ichi NPS reached a situation specified in Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness

<Possible Exposure to Residents>

(1) Case for Travel from Futaba Public Welfare Hospital to Nihonmatsu Man and Woman Symbiosis Center, Fukushima Prefecture

- i) No. of persons to be measured: About 60 persons
- ii) Measured Result: Not yet
- iii) Passage: Exposure could have happened while waiting to be picked up by helicopter at the Futaba high school ground
- iv) Other

Prefectural Response Headquarters judged that there were no exposure to 35 persons who traveled from Futaba Public Welfare Hospital to Kawamata Saiseikai Hospital, Kawamata-machi by the private bus provided by Fukushima Prefecture.

(2) Case for Futaba-machi Residents Evacuated by Buses

- i) No. of Persons: About 100 persons
- ii) Measured Result: 9 persons out of 100 persons

No. of Counts	No. of Persons
18,000cpm	1
30,000-36000cpm	1
40,000cpm	1
little less than 40,000cpm*	1
very small counts	5

*(This results was measured without shoes, though the first measurement exceeded 100,000cpm)

- iii) Passage: Under investigation
- iv) Other

Though persons evacuated in different location outside of the Prefecture (Miyagi Prefecture), all destinations are under confirmation.

<Status of the injured (As of 17:30 March 14)>

1. Injury due to earthquake
 - Two employees (slightly)
 - Two subcontract employees (one fracture in both legs)

- Two missing (in the turbine building of Unit 4)
 - One emergency patient (According to the local prefecture, one patient of cerebral infarction was transported by the ambulance)
 - Ambulance was requested for one employee complaining the pain at left chest outside of control area (conscious)
 - Ambulance was requested for two employees complaining discomfort wearing full-face mask in the main control room to be transported to the industrial doctor of Fukushima Dai-ni NPS
2. Injury due to the explosion of Unit 1 of Fukushima Dai-ichi NPS
- Four employees were injured at the explosion and smoke of Unit 1 around turbine building (out of control area). Examined by Kawauchi clinic.
3. Injury due to the explosion of Unit 3 of Fukushima Dai-ichi NPS
- Four employees
 - Three subcontractor employees
 - Four members of Self-Defence-Force (one of them will be transported to National Institute of Radiological Sciences considering internal exposure)

<Status of Evacuation (As of 15:30 March 14)>

As long as the 20 km zone of Fukushima Dai-ichi and 10 km zone of Fukushima Dai-ni are concerned, transportation by bus, self-defence force helicopter, etc. is arranged for 483 citizens waiting for evacuation like hospital patients, residents of social welfare house, etc.. Certain numbers of citizens are waiting in-house voluntarily. Evacuation is almost completed for other people.

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