

March 15, 2011

Nuclear and Industrial Safety Agency

Seismic Damage Information (the 24th Release)  
(As of 11:00 March 15th, 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. Tokai Dai-ni NPS , Japan Atomic Power Co. , Inc, as follows:

※ Style of this report is changed from this 24th Release.

New updates are as follows.

1. Nuclear Power Stations (NPS)

○ Fukushima Dai-ichi NPS

- ・ TEPCO evaluated that core damage of Unit 2 is “less than 5%” (22:14 March 14th)
- ・ Water level in RPV in Unit 2 was decreasing. (22:50 March 14th)
- ・ There was a sound of explosion in Unit 2. As the pressure in Suppression Chamber decreased, there was possibility that an incident occurred in this Chamber. (06:20 March 15th)
- ・ The fire at Unit 4 occurred. Fire extinguishing work was underway. (09:38 March 15th)

○ Fukushima Dai-ni NPS

- ・ Continue to remove the residual heat by Residual Heat Removal System (RHR) in Unit 1,2,3 and 4 (02:00 March 15th)
- ・ Cold shut down of Unit 4 was confirmed (07:15 March 15th)

○ Onagawa NPS

- ・ Readings of monitoring post indicats 6.1 micro Sv/h. (07:00 March 15th)

○ Tokai Dai-ni (NPS)

- ・ Cold shut down was confirmed. (00:40 March 15th)

## 2. Actions taken by NISA

(March 14th)

22:13 TEPCO reported to NISA in accordance with the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

22:35: TEPCO reported to NISA in accordance with the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

(March 15th)

00:00: The acceptance of experts from IAEA was decided.

NISA agreed to accept the offer of dispatching of the experts on NPS damage from IAEA considering the intention expressed by Mr. Amano, Director General of IAEA.

The schedule of expert acceptance will be planned from now on based on the situation.

00:00: NISA also decided the acceptance of experts dispatched from NRC.

11:00: The Prime Minister directed the staying area.

In-house stay was additionally directed to the residents in the area from 20 km to 30 km radius from Fukushima Dai-ichi NPS considering in-reactor situation.

### <Possibility of radiation exposure >

- As the result of measurement of 133 residents, 23 persons counted more than 13,000 cpm were decontaminated.

### <Situation of the evacuation>

- As for 355 residents (except ones at Futaba Hospital) who were waiting for transfer, 353 residents were transferred by bus or helicopter of the Self-Defense-Force and so on. As for the remaining 2 residents, there is the information that they were already transferred, but it is not confirmed yet.

(Contact Person)

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(Attached sheet)

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

○Fukushima Dai-ichi NPS, 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) Major Plant Parameters (11:42 March 15th)

	unit	Unit 1	Unit 2	Unit 3
Reactor Pressure	MPa	0.072 (A) 0.185(B)	0.315	0.244 (A) 0.244(A)
CV Pressure	KPa	315	155	415
Reactor Water Level*	mm	-1700(A) -1700(B)	-1400(A)	-1900(A) -2300(B)
Suppression Pool Water Temperature	℃	Not available	Not available	Not available
Suppression Pool Pressure	KPa	Not available	down scale	down scale
Measuring time		11:42*2	11:42*3	11:42*2

\*1: Distance from the top of fuel.

\*2:The data of Unit 1 and 3 were not available due to the evacuation of operators from control room.

\*3:The data of Unit 2 were not available because fire fighting was conducted.

### (3) Report concerning other incidents

- TEPCO reported to NISA the Event in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi. (15:42 March 11th)
- TEPCO reported to NISA the event in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1 and 2.(16:36 March 11th)
- For Unit 1: Seawater was injected to the Containment Vessel via the Fire Extinguishing System Line (Started up 11:55 March 13th)  
→Temporary interruption of the injection (01:10 March 14th)
- For Unit 2: Water injection function was sustained. (14:00 March 13th)
- For Unit 2: Reactor water level was decreasing. (13:18 March 14th)
- For Unit 2: Seawater injection to the Reactor Pressure Vessel (RPV) was ready through the Fire Extinguishing System line. (19:20 March 14th)
- TEPCO evaluated core damage of Unit 2 was “less than 5%” (22:14 March 14th)
- Water level in RPV in Unit 2 is decreasing. (22:50 March 14th)
- A sound of explosion in Unit 2. As the pressure in Suppression Chamber decreased, there was possibility that an incident occurred in this Chamber. (06:20 March 15th)
- For Unit 3: Fresh water was injected to the PCV via the Fire Extinguishing System Line (FESL). (11:55 March 13th)
- For Unit 3: Seawater was injected to the PCV via FESL. (13:12 March 13th)
- Unit 1 and Unit 3: Injection of seawater into PCV was interrupted due to the lack of seawater in pit. (01:10 March 14th)
- For Unit 3: Injection of seawater into PCV was restarted (03:20 March 14th)
- For Unit 3: The pressure increased unusually. (11:45 March 14th)
- For Unit 3: The explosion like Unit 1 occurred around the Reactor Building (11:01 March 14th)
- The fire at Unit 4 occurred. Fire extinguishing work was underway. (09:38 March 15th)

- 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 17:00, March 14th

Unit2 (1,100MWe): automatic shutdown, cold shut down at 18:00, March 14th

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

Unit4 (1,100MWe): automatic shutdown, cold shut down at 07:15, March 15th

(2) Major plant parameters (As of 05:00, 15 March)

	unit	Unit 1	Unit 2	Unit 3	Unit 4
Reactor Pressure	MPa	0.14	0.06	0.04	0.09
Reactor water temperature	℃	110	86	29.3	84.6
Reactor water level*	mm	8,487	8,361	7,567	8,785
Suppression pool water temperature	℃	51	45	44	92
Suppression pool pressure	KPa	239	201	132	240
Remarks		cold shutdown	cold shutdown	cold shutdown	cold shutdown

\*: Distance from the top of fuel

(3) Report concerning other incidents

- TEPCO reported to NISA the event in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ni Unit 1. (18:08 March 11th)
- TEPCO reported to NISA the events in accordance with the Article 10 regarding Units 1, 2 and 4. (18:33 March 11th)

- Onagawa NPS (Tohoku Electric Power Co., Inc.)  
(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 12th

Unit 2 (825MWe): automatic shutdown, cold shut down at earthquake

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

## (2) Readings of monitoring post

Reading of monitoring post:

MP2 (Monitoring at the North End of Site Boundary)

7,200 nGy/h (07:20 March 14th)

→approx. 5,800 nGy/h (07:20 March 15th)

## (3) Report concerning other incidents

- Fire Smoke on the first basement of the Turbine Building was extinguished. (22:55 on March 11th)
- Reported on the Article 10\* of the Act on Special Measures Concerning Nuclear Emergency Preparedness (13:09 March 13th)

## 2. Action taken by NISA

(March 11th)

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

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

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

18:08: Regarding Unit 1 of Fukushima Dai-ichi NPS, TEPCO reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

18:33: Regarding Units 1,2 and 4 of Fukushima Dai-ichi NPS, TEPCO reported to NISA in accordance with the Article 10 of the 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 for the residents within 2 km radius from Unit 1 of Fukushima Dai-ichi NPS to evacuate. (The population of this area is 1,864)
- 21:23: Directives from Prime Minister to the Governor of Fukushima Prefecture, the Mayor of Ookuma Town and the Mayor of Futaba Town were issued regarding the event occurred at Fukushima-Dai-ichi NPS, TEPCO, in accordance with the Paragraph 3, the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness as follows:
- Direction for the residents within 3km radius from Unit 1 to evacuate.
  - Direction for the residents within 10km radius from Unit 1 to stay in-house.
- 24:00: Vice Minister of Economy, Trade and Industry, Ikeda arrived at the Local Emergency Response Headquarters

(March12th)

- 05:22 Regarding Unit 1 of Fukushima Dai-ichi NPS, TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 05:32 Regarding Unit 2 of Fukushima Dai-ichi NPS, TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 05:44 Residents within 10km radius from Unit 1 of Fukushima Dai-ichi NPS shall evacuate by the Prime Minister Direction.
- 06:07 Regarding of Unit 4 of Fukushima Dai-ichi NPS, TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 06:50 In accordance with the Paragraph 3, the Article 64 of the Nuclear Regulation Act, the order was issued to control the internal pressure of the Containment Vessel of Units 1 and 2 of Fukushima Dai-ichi NPS.
- 07:45 Directives from Prime Minister to the Governor of Fukushima Prefecture, the Mayors of Hirono Town, Naraha Town , Tomioka Town and Ookuma Town were issued regarding the event occurred at

Fukushima Dai-ichi NPS, TEPCO, pursuant to the Paragraph 3, the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness as follows:

-Direction for the residents within 3km radius from Fukushima Dai-ichi NPS to evacuate.

-Direction for the residents within 10km radius from Fukushima Dai-ichi NPS to stay in-house

17:00 TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness since the radiation level at Fukushima Dai-ichi NPS exceeded the acceptable limit.

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

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

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

20:05 Considering the Directives from Prime Minister and pursuant to the Paragraph 3, the Article 64 of the Nuclear Regulation Act, order was issued to inject seawater to Unit 1 of Fukushima Dai-ichi NPS.

20:20 At Unit 1 of Fukushima Dai-ichi NPS, seawater injection started.

(March 13th)

05:38 TEPCO reported to NISA pursuant to the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness since Unit 3 of Fukushima Dai-ichi NPS lost total coolant injection function. Recovering efforts by TEPCO 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 The order was issued for the Governor of Fukushima Prefecture, the Mayors of Ookuma Town, Futaba Town, Tomioka Town and Namie Town in accordance with the Act on Special Measures Concerning Nuclear Emergency Preparedness on the contents of radioactivity decontamination screening.



- 09:38 TEPCO reported to NISA that Unit 1 of Fukushima Dai-ichi NPS reached a situation specified in the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 13:09 Tohoku Electric Power Company reported to notified that Onagawa NPS reached a situation specified in the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 13:12 Fresh water injection was switched to seawater injection at Unit 3 of Fukushima Dai-ichi NPS.
- 14:25 TEPCO reported to NISA that Fukushima Dai-ichi NPS reached a situation specified in the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

(March 14th)

- 01:10 Seawater injection at Unit 1 and Unit 3 of Fukushima Dai-ichi NPS were temporarily interrupted due to the lack of seawater in pit.
- 03:20 Seawater injection at Unit 3 of Fukushima Dai-ichi NPS was restarted.
- 04:24 TEPCO reported to NISA that Fukushima Dai-ichi NPS reached the situation specified in the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 07:53 TEPCO reported to NISA that Fukushima Dai-ichi NPS reached the situation specified in the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 13:25 TEPCO reported to NISA that Fukushima Dai-ichi Unit 2 of NPS reached the situation specified in the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 22:13 TEPCO reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.
- 22:35 TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

(March 15th)

- 00:00: The acceptance of experts from IAEA was decided.  
NISA agreed to accept the offer of dispatching of the expert on NPS

damage from IAEA considering the intention by Mr. Amano, Director General of IAEA. Therefore, the schedule of expert acceptance will be planned from now on according to the situation.

00:00: NISA also decided the acceptance of experts dispatched from NRC.

11:00: The Prime Minister directed the staying area.

In-house stay was additionally directed to the residents in the area from 20 km to 30 km radius from Fukushima Dai-ichi NPS considering in-reactor situation.

< Possibility on radiation exposure (As of 11:00 March 15th) >

<Exposure of residents>

- (1) Including the evacuees from Futaba Public Welfare Hospital to Nihonmatsu City Fukushima Gender Equality Center as the result of measurement of 133 persons at the Center, 23 persons counted more than 13,000 cpm were decontaminated.
- (2) The 35 residents transferred from Futaba Public Welfare Hospital to Kawamata Town Saiseikai kawamata Hospital by private bus arranged by Fukushima Prefecture were judged to be not contaminated by the Prefectural Response Center.
- (3) As for the about 100 residents in Futaba Town evacuated by bus, the results of measurement for 9 of the 100 residents were as follows. The evacuees were divided into two groups which joined later to Nihonmatsu City Fukushima Gender Equality Center.

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)

## <Exposure of workers>

- (1) As for the 18 workers conducting operations in Fukushima Dai-ichi NPS, results of measurements are as follows:  
One worker; 106.3 mSv, No threat of internal exposure and no medical treatment needed.  
Others; at the level of no impact to health. No exact data was available.
- (2) The 6 out of 7 people working at the time of explosion at the Unit 3 of Fukushima Dai-ichi NPS injured and were conscious. The detailed measurement data are not available.

## <Others>

- (1) Fukushima Prefecture has started the screening from 13 March at two health office in the prefecture. The decontaminations were treated for several 30 people whose measurements exceeded 13,000 cpm.
- (2) 5 members of Self-Defence-Force who worked for water supply in Fukushima Dai-ichi NPS were exposed. After the work (March 12th), 30,000 cpm was counted by the measurement at Off Site Center. The counts after decontamination were between 5,000 and 10,000 cpm. One member was transferred to National Institute of Radiological Science. No other exposure of the Self-Defence-Force member was confirmed at the Ministry of Defence.
- (3) As for policeman, the decontaminations of two policemen were confirmed by the National Police Agency. Nothing unusual was reported.
- (4) As for fireman, no contamination was reported to National Firefighting Agency. The confirmation is continued.

## <Situation of the injured (As of 11:00 March 15th)>

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).

- Two employees complaining discomfort wearing full-face mask in the main control room were 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)

<Situation of Resident Evacuation (As of 7:30 March 15th)>

As long as the 20 km zone of Fukushima Dai-ichi NPS and 10 km zone of Fukushima Dai-ni NPS are concerned, transportation by bus, helicopters of Self-Defence Force were arranged for 355 residents waiting (excluding Futaba Hospital patients), residents of social welfare house, etc.. 353 residents were evacuated. The information that the remaining 2 residents were already transferred is under confirmation.

There is another information that from Futaba Hospital several 10 patients were under transportation, and the information is under confirmation. Several residents are voluntarily staying in-houses. Others have almost completed evacuation.

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