

July 7, 2011

Nuclear and Industrial Safety Agency

Seismic Damage Information (the 192nd Release)

(As of 12:00 July 7, 2011)

This is the current status of Fukushima Dai-Ichi and Dai-Ni NPS (TEPCO), Onagawa NPS (Tohoku Electric Power Co.) and Tokai Dai-Ni NPS (Japan Atomic Power Inc.) as confirmed by Nuclear and Industrial Safety Agency.

Major updates are as follows:

1. Nuclear Power Stations (NPSs)

○Fukushima Dai-Ichi NPS (TEPCO)

- Dose survey in the reactor building (high position in the south west side on the ground floor) of Unit 3 was carried out with a robot. (From 15:24 till 17:10, July 6)
- The accumulated water in the basement of the turbine building of Unit 6 was transferred to a temporary tank. (From 10:00 till 17:00, July 6 and from 10:30, July 7)
- The accumulated water in the basement of the reactor building of Unit 6 was transferred to the Radioactive Waste Treatment Building of the same Unit. (From 08:45 till 10:50, July 6)
- Transfer of the accumulated water, which was transferred from the basement of the turbine building of Unit 6 and was stored in a temporary tank, was started from the tank to the Mega Float. (10:09, July 7)
- Rubble (an amount equivalent to 5 containers) was removed with remote-controlled heavy machinery. (From 08:45 till 16:15, July 6)
- The operation was temporarily suspended in order to exchange vessels in the Adsorption Tower of the Water Treatment Facility. (From 11:00, July 7)
- Transfer of the treated water to the buffer tank was started because water level of the tank reached near the controlled lower limit. (04:52, July 7)

<Temporary Access into Restricted Areas>

On July 7, residents were allowed temporary access into Minamisoma City, Tomioka Town and Naraha Town.

For more information: NISA English Home Page
<http://www.nisa.meti.co.jp/english/index.html>

July 8, 2011

Nuclear and Industrial Safety Agency

Seismic Damage Information (the 193rd Release)

(As of 12:00 July 8, 2011)

This is the current status of Fukushima Dai-ichi and Dai-Ni NPS (TEPCO), Onagawa NPS (Tohoku Electric Power Co.) and Tokai Dai-Ni NPS (Japan Atomic Power Inc.) as confirmed by Nuclear and Industrial Safety Agency.

Major updates are as follows:

1. Nuclear Power Stations (NPSs)

○Fukushima Dai-ichi NPS (TEPCO)

- Transfer of the accumulated water from the trench of the turbine building of Unit 2 to the Radioactive Waste Treatment Facilities was suspended because the water level in the building containing transferred water reached to the upper limit that was set for suspending the transfer in a carefully planned way. (15:00, July 7)
- The alternative cooling system for the Spent Fuel Pool of Unit 3 was temporarily suspended due to the installation works of the alternative cooling system of the Spent Fuel Pool of Unit 4. (from 08:20, July 8)
- Water was injected into the Steam-Dryer Storage Pool (DSP) of Unit 4. (From 08:22, July 8)
- The accumulated water in the basement of the turbine building of Unit 6 was transferred from the temporary tank, in which the transferred water was stored, to the Mega Float. (From 10:09 till 17:00, July 7 and from 10:00, July 8)
- The accumulated water in the basement of the turbine building of Unit 6 was transferred to a temporary tank. (From 10:30 till 16:30, July 7 and from 10:30, July 8)
- Rubble (an amount equivalent to 9 containers) was removed with remote-controlled heavy machinery. (From 08:45 till 16:15, July 7)
- The operation was temporarily suspended in order to exchange vessels in the Adsorption Tower of the Water Treatment Facility. (From 11:00 till 12:50, July 7 and from 10:00, July 8)

- The desalination device was temporarily suspended due to the drawdown of the Surge Tank of the Suppression Pool Water (SPT). (From 08:00, July 6 till 11:09, July 7)
- The transfer pump for the accumulated water was temporarily shut off due to the drawdown of the temporary storage tank for the treated water. (From 23:30 July 7 till 02:45 July 8 and from 04:44 July 8)

○Fukushima Dai-ichi NPS (TEPCO)

- The pump of RHR (B) was temporarily shut off for the repair works due to the occurrence of sparks (found around 14:05, July 7) at the distribution panel in the basement of the reactor building of Unit 1.(From 17:37 till 21:15, July 7)

2. Actions Taken by NISA, etc.

NISA requested the reprocessing companies to submit a report regarding response to a severe accident on June 15 and received the reports from them on June 22. As a result of on-the-spot inspections by onsite Nuclear Safety Inspectors, NISA evaluated that the measures reported by the reprocessing companies for response to a severe accident were appropriately implemented.

<Possibility of Exposure (Exposure of Employees, etc.)>

On July 7, TEPCO published the evaluation status of three workers out of those who had the possibility of exceeding 250mSV. According to the evaluation, the exposure doses of three employees were 308.93mSv, 475.50mSv and 359.29mSv, respectively (not including the dose during the month of May while staying inside the Seismically Isolated Main Building or the exposure dose while traveling), which were confirmed to exceed the value of 250mSV as the dose limit for emergency case. As a result of health examinations, it was confirmed that there was no impact on their health.

<p>For more information: NISA English Home Page http://www.nisa.meti.co.jp/english/index.html</p>
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July 9, 2011

Nuclear and Industrial Safety Agency

Seismic Damage Information (the 194th Release)
(As of 12:00 July 9, 2011)

This is the current status of Fukushima Dai-ichi and Dai-Ni NPS (TEPCO), Onagawa NPS (Tohoku Electric Power Co.) and Tokai Dai-Ni NPS (Japan Atomic Power Inc.) as confirmed by Nuclear and Industrial Safety Agency.

Major updates are as follows:

1. Nuclear Power Stations (NPSs)

○Fukushima Dai-ichi NPS (TEPCO)

- Sampling of airborne radioactive materials was conducted by a robot on the second and the third floors of the reactor building of Unit 2. (From 10:34 till 13:49 July 8)
- Flushing was carried out for the transfer line from the trench of the turbine building of Unit 2 to the Radioactive Waste Treatment Facilities. (From 10:44 till 12:30 July 8)
- The alternative cooling system for the Spent Fuel Pool of Unit 3 was temporarily suspended due to the installation works of the alternative cooling system for the Spent Fuel Pool of Unit 4. (from 08:20 till 14:24 July 8)
- Workers entered the reactor building of Unit 3, and implemented a preliminary survey of the point for nitrogen injection. (From 13:35 till 13:44 July 8)
- Transfer of the accumulated water from the basement of the turbine building of Unit 3 to the Radioactive Waste Treatment Facilities was suspended (14:49 July 9). Flushing was started for the transfer line. (15:22 of the same day)
- Water was injected into the Steam-Dryer Storage Pool (DSP) of Unit 4. (From 08:22 till 13:52 July 8)
- Regarding the installation works of the alternative cooling system for the Spent Fuel Pool of Unit 4, the examination of the integrity of the pipes was conducted. (From 10:00 till 11:30 July 8)
- The accumulated water in the basement of the turbine building of Unit 6 was transferred from the temporary tank, in which the transferred water was

stored, to the Mega Float. (From 10:00 till 17:00 July 8 and from 10:00 July 9)

- The accumulated water in the basement of the turbine building of Unit 6 was transferred to a temporary tank. (From 10:30 till 16:30 July 8 and from 10:30 July 9)
- Rubble (an amount equivalent to 6 containers) was removed with remote-controlled heavy machinery. (From 08:45 till 16:15 July 8)
- The operation was temporarily suspended in order to exchange vessels in the Adsorption Tower of the Water Treatment Facility. (From 10:00 till 12:04 July 8)
- Transfer of the treated water to the buffer tank was resumed. (02:45 July 8)
- Transfer of the treated water to the buffer tank was suspended due to the drawdown of the temporary storage tank for the treated water (04:44 July 8). Treatment of the waste water and water injection into the reactor cores are continued.
- Transfer of the treated water to the buffer tank was resumed because water level of the tank reached near the controlled lower limit. (13:51 July 8)
- Transfer of the treated water to the buffer tank was suspended due to the drawdown of the temporary storage tank for the treated water (07:35 July 9). Treatment of the waste water and water injection into the reactor cores are continued.

2. Actions Taken by NISA, etc.

NISA issued a written instruction to TEPCO for the collection of a report on nitrogen injection into the Primary Containment Vessel of Unit 3, Fukushima Dai-ichi NPS, pursuant to Article 67, paragraph 1 of the Nuclear Regulation Act.

<Temporary Access into Restricted Areas>

On July 9, residents were allowed temporary access into Okuma Town, Futaba Town and Namie Town.

<Instructions Regarding Foodstuff>

- An additional item for suspension of shipment
 - Tea produced in Tochigi City of Tochigi Prefecture

For more information: NISA English Home Page http://www.nisa.meti.co.jp/english/index.html

July 10, 2011

Nuclear and Industrial Safety Agency

Seismic Damage Information (the 195th Release)
(As of 15:30 July 10, 2011)

This is the current status of Fukushima Dai-ichi and Dai-Ni NPS (TEPCO), Onagawa NPS (Tohoku Electric Power Co.) and Tokai Dai-Ni NPS (Japan Atomic Power Inc.) as confirmed by Nuclear and Industrial Safety Agency.

Major updates are as follows:

1. Nuclear Power Stations (NPSs)

○Fukushima Dai-ichi NPS (TEPCO)

- Transfer of the accumulated water from the basement of the turbine building of Unit 3 to the Radioactive Waste Treatment Facilities was resumed (15:15 July 10).
- The accumulated water in the basement of the turbine building of Unit 6 was transferred from the temporary tank, in which the transferred water was stored, to the Mega Float. (From 10:00 till 17:00 July 9)
- The accumulated water in the basement of the turbine building of Unit 6 was transferred to a temporary tank. (From 10:30 till 16:30 July 9)
- Rubble (an amount equivalent to 6 containers) was removed with remote-controlled heavy machinery. (From 09:00 till 16:00 July 9)
- Transfer of the treated water to the buffer tank was resumed. (15:59 July 9)
- The operation of the Water Treatment Facility was suspended due to the leakage from chemical solution injection line of the coagulation settling equipment. (04:53 July 10)
- Transfer of the treated water to the buffer tank was temporarily suspended due to the drawdown of the temporary storage tank for the treated water (12:11 July 10). Treatment of the waste water and water injection into the reactor cores are continued.

<Temporary Access into Restricted Areas>

On July 10, residents were allowed temporary access into Okuma Town, Futaba Town and Namie Town.

For more information: NISA English Home Page
<http://www.nisa.meti.co.jp/english/index.html>

July 11, 2011
Nuclear and Industrial Safety Agency

Seismic Damage Information (the 196th Release)

(As of 12:00 July 11, 2011)

This is the current status of Fukushima Dai-ichi and Dai-ni NPS (TEPCO), Onagawa NPS (Tohoku Electric Power Co.) and Tokai Dai-ni NPS (Japan Atomic Power Inc.) as confirmed by the Nuclear and Industrial Safety Agency.

Major updates are as follows:

1. Nuclear Power Stations (NPSs)

○ Fukushima Dai-ichi NPS (TEPCO)

- Operation of the diesel generators was carried out as follows due to the preparatory construction of Yonomori line for duplication of line (July 11):
 - D/G 5A started (03:03), connected to the grid (03:19) and stopped (09:07),
 - D/G 5B started (03:37) and connected to the grid (03:44),
 - D/G 6A started (04:17) and connected to the grid (04:21), and
 - D/G 6B started (04:31) and connected to the grid (04:36).
- The power supply from Yonomori line was suspended due to the preparatory construction for Yonomori line for duplication of line. (05:01 July 11)
- The accumulated water in the basement of the turbine building of Unit 6 was started to be transferred from the temporary tank, in which the transferred water was stored, to the Mega Float. (10:00 July 11)
- Transfer of the accumulated water in the basement of the turbine building of Unit 6 to a temporary tank was started. (10:30 July 11)
- Rubble (an amount equivalent to 2 containers) was removed with remote-controlled heavy machinery. (From 08:45 till 16:15 July 10)
- Operation of the Circulating Seawater Decontamination System was temporarily suspended for maintenance. (From around 10:00 July 2 till 10:00 July 11)
- Repair works for the leaking spots on the Coagulation Settling Device were carried out and the Water Treatment Facility was started (17:06 July 10). Thereafter, the rated flow was reached. (17:40 of the same day)

- Transfer of the treated water to the buffer tank was resumed. (21:20 July 10)

2. Action Taken by NISA, etc.

On July 11, the Government has decided to implement safety assessments based on new procedures and rules, primary assessment (to determine whether to resume operations of NPSs currently in a periodic inspection outage) and secondary assessment (to determine whether to continue or to suspend operations for NPSs currently in operation), in order to further improve safety of NPSs as well as to reassure and to ensure the trust of citizens and residents about safety of NPSs, referring to the stress test introduced in European countries.

<Temporary access into Restricted Areas>

On July 11, vehicles were retrieved from Minamisoma City and Namie Town.

For more information: NISA English Home Page
<http://www.nisa.meti.co.jp/english/index.html>

July 12, 2011
Nuclear and Industrial Safety Agency

Seismic Damage Information (the 197th Release)
(As of 12:00 July 12, 2011)

This is the current status of Fukushima Dai-ichi and Dai-ni NPS (TEPCO), Onagawa NPS (Tohoku Electric Power Co.) and Tokai Dai-ni NPS (Japan Atomic Power Inc.) as confirmed by the Nuclear and Industrial Safety Agency.

Major updates are as follows:

1. Nuclear Power Stations (NPSs)

○ Fukushima Dai-ichi NPS (TEPCO)

- Water was injected into the Steam-Dryer Storage Pool (DSP) of Unit 4. (From 11:27, July 12)
- Operation of the diesel generators was carried out as follows due to the preparatory construction of Yonomori line for duplication of line (July 11):
D/G 5A started (03:03), connected to the grid (03:19), disconnected from the grid (09:07) and stopped (09:07) (shut off due to an alarm),
D/G 5B started (03:37), connected to the grid (03:44), disconnected from the grid (13:18) and stopped (14:44),
D/G 6A started (04:17), connected to the grid (04:21), disconnected from the grid (13:40) and stopped (15:42), and
D/G 6B started (04:31), connected to the grid (04:36), disconnected from the grid (13:44) and stopped (16:36).
- The power supply from Yonomori line was suspended due to the preparatory construction for Yonomori line for duplication of line. (From 05:01 till 13:44 July 11)
- The accumulated water in the basement of the turbine building of Unit 6 was transferred from the temporary tank, in which the transferred water was stored, to the Mega Float. (From 10:00 till 17:00, July 11 and from 11:00, July 12)
- The accumulated water in the basement of the turbine building of Unit 6 was transferred to a temporary tank. (From 10:30 till 16:30, July 11)
- Rubble (an amount equivalent to 3 containers) was removed with

remote-controlled heavy machinery. (From 08:45 till 16:00, July 11)

- The Water Treatment Facility was suspended due to the leakage from the neighborhood of connection part of chemical solution injection line in the Coagulation Settling Device. (08:51, July 12)

2. Action Taken by NISA, etc.

On July 11, the Ministry of Economy, Trade and Industry instructed TEPCO to submit a report on the installation of the Alternative Cooling and Clean-up System for the Spent Fuel Pool of Units 1 and 4, Fukushima Dai-ichi NPS (hereinafter referred to as “Circulation Cooling System”), covering the details of the installation plan, its effectiveness on stably cooling the spent fuel in the Spent Fuel Pool, and results of safety evaluation on the following items, pursuant to Article 67, paragraph 1 of the Nuclear Regulation Act:

- (1) structural robustness and seismic safety of facilities that constitute the Circulation Cooling System,
- (2) cooling performance of the Circulation Cooling System,
- (3) measures to prevent leakage of cooling water from the Circulation Cooling System,
- (4) measures in case of function loss of the Circulation Cooling System,
- (5) measures for radiation protection through the installation and operation, etc. of the Circulation Cooling System,
- (6) operation and maintenance control of the Circulation Cooling System and
- (7) other items required to evaluate the safety of installing the Circulation Cooling System.

<Temporary access into Restricted Areas>

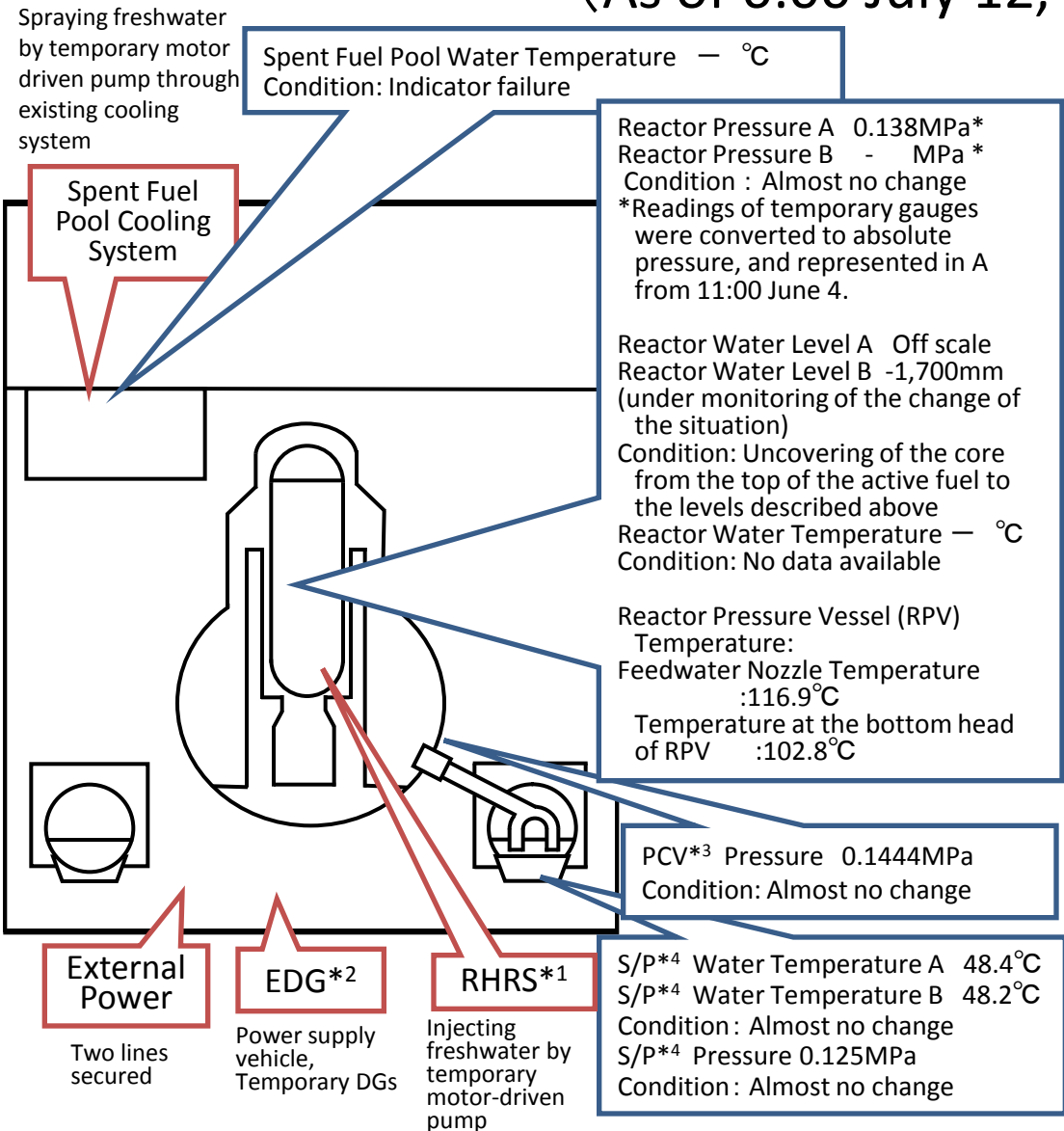
On July 12, vehicles were retrieved from Okuma Town, Futaba Town, Tomioka Town and Naraha Town.

For more information: NISA English Home Page
<http://www.nisa.meti.co.jp/english/index.html>

Conditions of Fukushima Dai-ichi Nuclear Power Station Unit 1

(As of 6:00 July 12, 2011)

Major Events after the Earthquake 1/3



- March 11 14:46 Under operation, Automatic shutdown by the earthquake
- March 11 15:42 Report based on the Article 10 (Total loss of A/C power)
- March 11 16:36 Occurrence of the Article 15 event (Inability of water injection of the Emergency Core Cooling System)
- March 12 01:20 Occurrence of the Article 15 event (Unusual rise of the pressure in PCV)
- March 12 10:17 Started to vent.
- March 12 15:36 Sound of explosion
- March 12 20:20 Started to inject seawater and borated water to the Reactor Core.
- March 23 02:33 The amount of injected water to the Reactor Core was increased utilizing the Feedwater Line in addition to the Fire Extinguish Line. (2m³/h →18m³/h)
- 09:00 Switched to the Feedwater Line only.(18m³/h →11m³/h)
- March 24 11:30 Lighting in the main Control Room was recovered.
- March 25 15:37 Started to inject fresh water.
- March 29 08:32 Switched to the water injection to the Reactor Core using the temporary motor-driven pump.
- March 31 12:00 ~2nd 15:26 Started to transfer the accumulated water from the Condensate Storage Tank (CST) to the Surge Tank of Suppression Pool Water (SPT)
- April 3 12:02 The power supply to the temporary motor-driven pump was switched from the temporary power supply to the external power supply.
- April 3 13:55 Started to transfer the water from the Condenser to CST.
- April 6 22:30 Started the operation for the injection of nitrogen to PCV.
- April 7 01:31 Confirmed starting the injection of nitrogen to PCV.
- April 9 04:10 Started using highly pure nitrogen generator in the injection of nitrogen to PCV.
- April 10 09:30 Completed transferring the water from the Condenser to CST.
- April 11 around 17:16 Loss of external power supply due to an earthquake occurred (at Hamadori in Fukushima Prefecture) and water injection to the Reactor Core and nitrogen injection to PCV were suspended.
- April 11 17:56 External power supply was recovered.
- April 11 18:04 Resumed injecting water to the Reactor Core.
- April 11 23:19 Restarted operation for injecting nitrogen to PCV.
- April 11 23:34 Confirmed starting injection of nitrogen to PCV.
- April 17 16:00~17:30 Confirmed the situation in the reactor building using an unmanned robot.
- April 18 11:50~12:12 Stopped the water injection into the reactor core to replace the current hose with a new one.
- April 19 10:23 Completed the work of strengthening connection of the power supplies between Units 1-2 and Units 3-4.
- April 25 10:57 ~18:25 For reinforcement work of the power supply, the power supply to the pump injecting water into the reactor core was temporarily switched from the external power supply to the temporary diesel generator.
- April 25 14:10~19:10 Suspended nitrogen injection due to reinforcement work of the power supply.
- April 25 14:44~17:38 Implemented reinforcement work of the power supply (connection of the power supplies between Units 1-2 and Units 5-6).
- April 26 11:35~13:24(approx.) Confirmed the situation in the reactor building using an unmanned robot.

*1 Residual Heat Removal System
 *2 Emergency Diesel Generator
 *3 Primary Containment Vessel
 *4 Suppression Pool

Current Conditions : Fresh water is being injected to the Spent Fuel Pool and the Reactor Core

Major Events after the Earthquake 2/3

- April 27 10:02 Started the operation of gradually changing the amount of water for injection to the Reactor Pressure Vessel, (RPV) from about 6m³/h to the maximum of about 14m³/h. After carrying out the injection at 10m³/h, the injection rate was changed back to 6m³/h. (April 29 10:14)
- April 29 11:36~14:05 Confirmed the situation in the reactor building using an unmanned robot.
- May 2 12:58 ~15:03 The pump for the injection of water into the reactor core was temporarily replaced with the Fire Extinguishing Pump in order to install an alarm device in the pump.
- May 5 16:36~May 8 20:02 Operated all ambient filtration systems (a total of 6 units) in order to improve the working environment in the reactor building.
- May 6 10:01 Changed the rate of water injection into the Reactor Core from 6m³/h to 8m³/h.
- May 8 20:08 Ventilation by cutting of the exhaust air duct
- May 9 04:17 Opening the double-entry doors of the Reactor Building
- May 9 05:10 Disassembly of positive pressure house
- May 10 10:55(approx.) Calibrated the reactor water level gauge
- May 11 08:47~15:55 Due to the restoration of the Okuma No.2 transmission line, the power supply for the water injection pump into the reactor was temporarily switched to the temporary diesel generator.
- May 11 08:50~15:58 Due to the restoration of the Okuma No.2 transmission line, the nitrogen injection was temporarily suspended.
- May 11 08:50~11:14 Confirmed the reactor water level of RPV, calibrated reactor pressure gauge of primary containment vessel.
- May 13 16:01 ~17:39 Observed the situation in the Reactor Building using a remote-control robot
- May 14 15:07 ~15:18 Water spray over the Spent Fuel Pool by Concrete Pump Truck (stopped due to strong winds)
- May 15 13:28 Changed the rate of water injection into the Reactor Core from 8m³/h to 10m³/h.
- May 17 11:50 Changed the rate of water injection into the Reactor Core from 10m³/h to 6 m³/h.
- May 20 09:30 ~12:15 Entered in the reactor building, confirmed reactor water level and radioactivity.
- May 25 09:14 ~09:18 Nitrogen injection to PCV were suspended for changing power supply.
- May 25 15:16 ~15:18 Nitrogen injection to PCV were suspended for changing power supply.
- May 25 15:45 Confirmed that the compressor for nitrogen supplying was stopped. 19:44 Restart the nitrogen injection after changing to the reserve compressor.
- May 27 10:30~around 12:00 and around 15:00 Entered in the reactor building, Installed the level gauge of reactor building accumulated water, Sampled basement accumulated water, and Installed hoses for SFP.
- May 28 16:47 ~17:00 Leak test in order to inject fresh water to SFP via FPC
- May 31 20:30 Changed the rate of water injection into the Reactor Core from 6m³/h to 5m³/h.
- June 3 10:38~12:21 Installed temporary pressure gauges for the reactor.
- June 3 around 15:00~ around 17:00 Confirmed the situation in the reactor building using an unmanned robot.
- June 4 09:57~13:56 Suspended the injection of coolant water due to the work for changing the route of water supply line to the reactor core. (10:02~13:43 Injected water into the reactor core by the fire engine pump.)
- June 8 14:57~17:54 Suspended the nitrogen injection due to the stop of the power center 2C.
- June 13 14:58~17:43 Transfer the accumulated water from the Condenser to the basement of turbine building.
- June 14 14:09 Replaced the pump for the injection of water into the reactor core with the Fire Extinguishing Pump.
- June 14 15:35~15:50 Suspended water injection to replace the hose of water injection into the reactor.
- June 15 10:06 The amount of water injection into the reactor was changed from about 5m³/h to about 4.5m³/h.
- June 15 10:33 ~June 16 09:52 Transferred the accumulated water from the Condenser to the CST.

Major Events after the Earthquake 3/3

- June 19 10:35～15:47 Due to preparation for the suspension works of the Okuma No.2 transmission line, the power supply for the water injection pump into the reactor core was temporarily switched to the diesel generator.
- June 19 11:48～16:05 Due to preparation for the suspension works of the Okuma No.2 transmission line, the nitrogen injection was temporarily suspended.
- June 21 10:02 The amount of water injection into the reactor was changed from about 4.5m³/h to about 4.0m³/h.
- June 21 11:55～18:03 The nitrogen injection was temporarily suspended due to the installation work of a temporary transformer.
- June 22 10:02 The amount of water injection into the reactor was changed from about 4.0m³/h to about 3.5m³/h.
- June 23 18:27 Water injection into the reactor core of Units 1 and 2 was begun, using the water injection pump into the reactor core for Unit 1.
- June 27 08:08～14:38 The nitrogen injection was temporarily suspended due to preparation for the restoration works of the Okuma No.2 transmission line to the diesel generator.
- June 27 08:51～15:07 Due to preparation for the restoration works of the Okuma No.2 transmission line, the nitrogen injection was temporarily suspended.
- June 27 16:20 Started use of water treated in the water treatment facilities for injection into the reactor, in addition to water injection from the filtered water tank. Suspended supply of treated water because of a leakage from the pipe (17:55). Started the treated water transfer pump (June 28 14:36). Resumed supply of treated water (June 28 15:55).
- June 29 10:59～13:33 Regarding the Circulating Injection Cooling of the reactor cores, supply of treated water was temporarily suspended due to leakage from a pipe for injection cooling.
- July 1 7:27～July 2 14:22 Temporarily suspended supply of treated water into the reactor due to works to install and connect a buffer tank. (July 2 14:22～18:00 Trial injected into the reactor core from a Buffer Tank due to leakage check. 18:00～Full-fledged operated)
- July 4 08:50 The amount of water injection into the reactor was adjusted to 3.8 m³/h, due to decrease to 3.0 m³/h.

<Water spray over the Spent Fuel Pool by Concrete Pump Truck (Fresh water)>

March 31 13:03～16:04, May 20 15:06～16:15, May 22 15:33～17:09

<Fresh water injection to SFP via FPC (using the temporary motor-driven pump) >

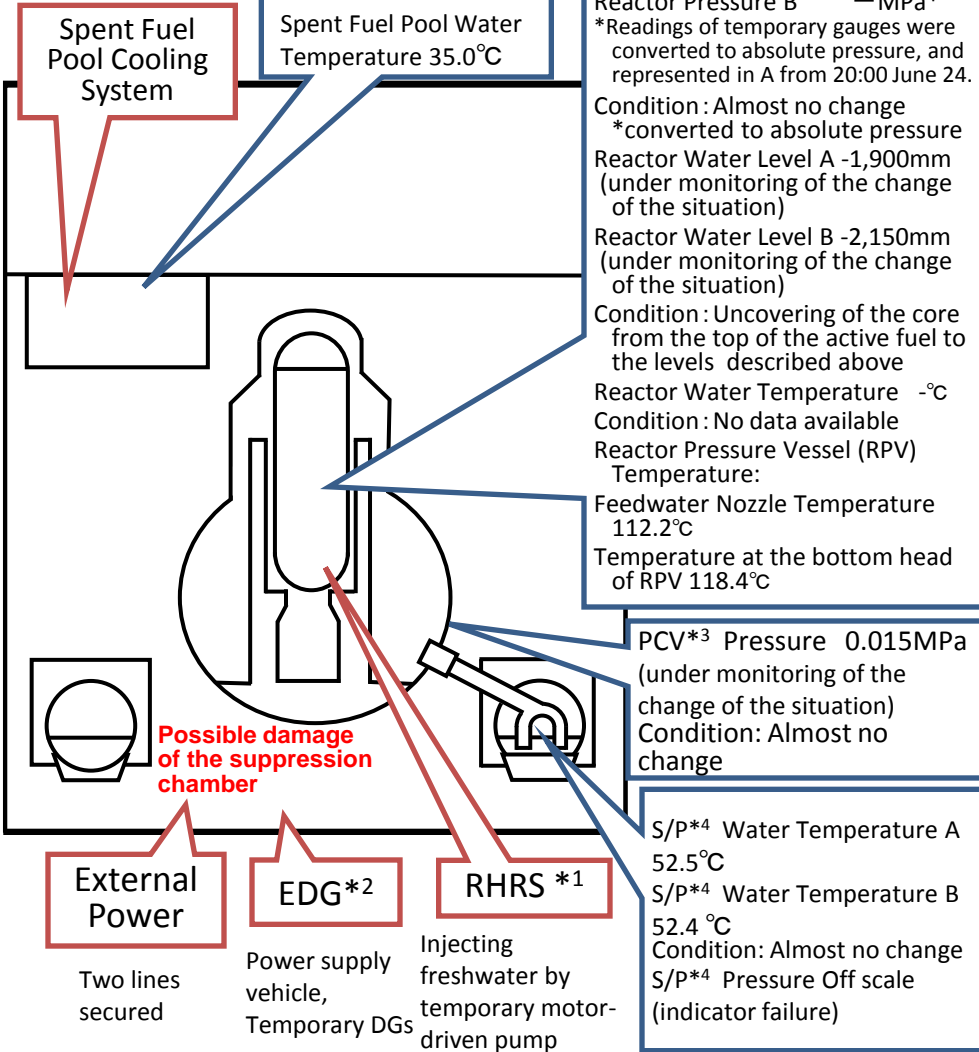
May 29 11:10～15:35, June 5 10:16～10:48, July 5 15:10～17:30

Conditions of Fukushima Dai-ichi Nuclear Power Station Unit 2

(As of 6:00 July 12, 2011)

Major Events after the Earthquake 1/3

Spraying freshwater by temporary motor-driven pump through existing cooling system



- March 11 14:46 Under operation, Automatic shutdown by the earthquake
- March 11 15:42 Report based on the Article 10 (Total loss of A/C power)
- March 11 16:36 Occurrence of the Article 15 event (Inability of water injection of the Emergency Core Cooling System)
- March 13 11:00 Started to vent.
- March 14 13:25 Occurrence of the Article 15 event (Loss of reactor cooling functions)
- March 14 16:34 Started to inject seawater to the Reactor Core.
- March 14 22:50 Occurrence of the Article 15 event (Unusual rise of the pressure in PCV)
- March 15 00:02 Started to vent.
- March 15 06:10 Sound of explosion
- March 15 around 06:20 Possible damage of the suppression chamber
- March 20 15:46 Power Center received electricity.
- March 21 18:22 White smoke generated. The smoke died down and almost invisible at 07:11 March 22
- March 26 10:10 Started to inject fresh water to the Reactor Core.
- March 26 16:46 Lighting in the Central Control Room was recovered.
- March 27 18:31 Switched to the water injection to the core using the temporary motor-driven pump.
- March 29 16:45 ~ April 1 11:50 Transferred the water from the Condensate Storage Tank (CST) to the Surge Tank of Suppression Pool Water (SPT)
- April 2 around 09:30 The water, of which the dose rate was at the level of more than 1,000mSv/h, was confirmed to be collected in the pit located near the Intake Channel of Unit 2. The outflow from the lateral surface of the pit into the sea was also confirmed.
- April 2 17:10 Started to transfer the water from the Condenser to the CST.
- April 3 12:12 The power supply to the temporary motor-driven pump was switched from the temporary power supply to the external power supply.
- April 3 13:47 ~ 14:30 20 bags of sawdust, 80 bags of high polymer absorbent and 3 bags of cutting-processed newspaper were put into the Pit for the Conduit.
- April 4 07:08 ~ 7:11 Approximately 13kg of tracer (bath agent) was put in from the Pit for the Duct for Seawater Pipe.
- April 5 14:15 Tracer is confirmed to outflow through the permeable layer around the pit into the sea.
- 15:07 Started to inject coagulant.
- April 6 around 05:38 The water outflow from the lateral surface of the pit was confirmed to stopped.
- April 9 13:10 Completed transferring the water from the Condenser to CST.
- April 11 around 17:16 Loss of external power supply due to an earthquake occurred (at Hamadori in Fukushima Prefecture). Water injection to the Reactor Core was suspended.
- April 11 17:56 External power supply was recovered.
- April 11 18:04 Resumed injecting water to the Reactor Core.
- April 12 19:35 ~ April 13 17:04 Transfer accumulated water from the trench of the turbine building to the Condenser.
- April 13 11:00 Suspended the transfer for checking leaks, etc.
- April 16 around 11:19 An earthquake occurred (in the southern part of Ibaraki Prefecture).
- April 18 13:42 ~ Confirmed the situation in the reactor building using an unmanned robot.
- April 18 12:13 ~ 12:37 Stopped the water injection into the reactor core to replace the current hose with a new one.
- April 18 09:30 ~ 17:40 Injected coagulant (soluble glass) into the power cable trench.
- April 19 08:00 ~ 15:30 Injected coagulant (soluble glass) into the power cable trench.
- April 19 10:08 ~ Started to transfer the accumulated water from the trench of the turbine building to the Radioactive Waste Treatment Facility.
- April 19 10:23 Completed the work of strengthening connection of the power supplies between Units 1-2 and Units 3-4.

Current Conditions: Fresh water is being injected to the Spent Fuel Pool and the Reactor Core

- *1 Residual Heat Removal System
- *2 Emergency Diesel Generator
- *3 Primary Containment Vessel
- *4 Suppression Pool

Major Events after the Earthquake 2/3

- April 25 10:57~18:25 For reinforcement work of the power supply, the power supply to the pump injecting water into the reactor core was temporarily switched from the external power supply to the temporary diesel generator.
- April 25 14:44~17:38 Implemented reinforcement work of the power supply (connection of the power supplies between Units 1-2 and Units 5-6).
- April 29 09:16 Suspended the transfer of accumulated water from the turbine building Trench of Unit 2 (accumulated water with high-level radioactivity) to the Radioactive Waste Treatment Facility in order to carry out inspections, etc. of the transfer facilities. The transfer was resumed. (From 14:05 April 30th)
- May 1 13:35~ Started blocking the vertical shafts of Trench pit.
- May 2 12:58~15:03 The pump for the injection of water into the reactor core was temporarily replaced with the Fire Extinguishing Pump in order to install an alarm device in the pump.
- May 7 09:22 Suspended the transfer of accumulated water from the turbine building Trench of Unit 2 (accumulated water with high-level radioactivity) to the Radioactive Waste Treatment Facility in order to carry out piping work of Reactor Feedwater System for Unit3. The transfer was resumed. (From 16:02 May 7th)
- May 10 09:01 ~May 12 15:20 Suspended the transfer of accumulated water from the turbine building Trench of Unit 2 (accumulated water with high-level radioactivity) to the Radioactive Waste Treatment Facility in order to lay the water transfer pipes from the turbine building of Unit 3 to the Radioactive Waste Treatment Facility.
- May 11 08:47~15:55 Due to the restoration of the Okuma No.2 transmission line, the power supply for the water injection pump into the reactor was temporarily switched to the temporary diesel generator. (After the restoration, the power supply is partially received from this line.)
- May 18 09:24~09:38 Conducted preliminary survey in the Reactor Building.
- May 25 09:05~15:30 Suspended the transfer of accumulated from the turbine building Trench to the Radioactive Waste Treatment Facility in order to change power supply.
- May 26 14:45~ May 27 14:30 Transferred the water from the Condenser to the basement of the turbine building in order to carry out piping work of Reactor Feedwater System.
- May 26 15:19~15:32 Conducted preliminary survey in the Reactor Building.
- May 26 16:01 Suspended the transfer of accumulated from the turbine building Trench to the Radioactive Waste Treatment Facility. (Because the water level of the concerned facility was close to the first basement level.)
- May 29 11:33 Started to inject water to the Reactor Core via Feedwater line in addition to Fire Extinguish line
- May 30 11:15 Conducted a leakage test on the secondary system of the alternative cooling system for the Spent Fuel Pool. A trial run of the secondary system was started at 15:02.
- May 30 18:05 Stopped injecting water to the Reactor Core via Fire Extinguish line.
- May 31 11:40 Conducted a leakage test on the primary system of the alternative cooling system for the Spent Fuel Pool.
- May 31 17:21 Started full-fledged operation of the alternative cooling system for the Spent Fuel Pool.
- June 3 13:49~14:09 Suspended the injection of coolant water due to the work for changing the route of water supply line to the reactor core.
- June 3 18:39~June 4 12:28 Transferred the accumulated water from the trench of the turbine building to the condenser.
- June 4 18:39~June 16 8:40 Transferred the accumulated water from the turbine building trench to the Radioactive Waste Treatment Facility.
- June 8 15:40 ~18:03 Suspended the transfer of accumulated water from the turbine building trench to the Radioactive Waste Treatment Facility due to the stop of the power center 2C.
- June 11 11:45 ~12:19 Conducted a test run of the ambient air filtration system of the reactor building.
- June 11 12:42~Started full-scale operation of the ambient air filtration system of the reactor building.
- June 14 12:14~12:37 Suspended water injection to replace the hose of water injection into the reactor.
- June 17 14:20~14:59 Transferred accumulated water from the turbine building trench to the condenser of Unit 1 (suspended due to a malfunction of the pump).

Major Events after the Earthquake 3/3

- June 19 10:49~15:35 Due to preparation for the suspension works of the Okuma No.2 transmission line, the power supply for the water injection pump into the reactor core was temporarily switched to the diesel generator.
- June 19 11:03~16:00 Due to preparation for the suspension works of the Okuma No.2 transmission line, the alternative cooling system for the Spent Fuel Pool was temporarily suspended.
- June 19 12:12~16:02 Due to preparation for the suspension works of the Okuma No.2 transmission line, the local exhauster was temporarily suspended.
- June 19 20:51~ The double door of the reactor building was slightly opened. June 20th The double door was fully opened from 05:00.
- June 20 13:37~ Started to transfer accumulated water from the turbine building trench to the condenser of Unit 1.
- June 20 14:30 Opened the truck bay door of the reactor building.
- June 21 10:04 The amount of water injection into the reactor was changed from about 5.0m³/h to about 4.5m³/h.
- June 21 13:15~13:25 Preliminary survey was conducted inside of the reactor building.
- June 22 09:56 Started to transfer accumulated water from the turbine building trench to the Radioactive Waste Treatment Facility.
- June 22 10:04 The amount of water injection into the reactor was changed from about 4.5m³/h to about 4.0m³/h.
- June 23 10:36~12:36 Installation works of temporary pressure gauges for the reactor was conducted.
- June 23 18:27 Water injection into the reactor core of Units 1 and 2 was begun, using the water injection pump into the reactor core for Unit 1.
- June 24 around 6:58 An unmanned helicopter that was collecting dust coming out of the opening of the reactor building made an emergency landing on the rooftop of the building.
- June 27 08:08~14:38 Due to preparation for the restoration works of the Okuma No.2 transmission line, the power supply for the water injection pump into the reactor core was temporarily switched to the diesel generator.
- June 27 08:23~16:53 Due to preparation for the restoration works of the Okuma No.2 transmission line, the alternative cooling system for the Spent Fuel Pool was temporarily suspended.
- June 27 09:02~17:07 Due to preparation for the restoration works of the Okuma No.2 transmission line, transfer of accumulated water in the turbine building trench to the Radioactive Waste Treatment Facility was temporarily suspended.
- June 27 16:20 Started use of water treated in the water treatment facilities for injection into the reactor, in addition to water injection from the filtered water tank. Suspended supply of treated water because of a leakage from the pipe (17:55). Started the treated water transfer pump (June 28 14:36). Resumed supply of treated water (June 28 15:55).
- June 28 20:08 Started nitrogen Injection into the PCV.
- June 29 10:59~13:33 Regarding the Circulating Injection Cooling of the reactor cores, supply of treated water was temporarily suspended due to leakage from a pipe for injection cooling.
- July 1 07:27~July 2 14:22 Temporarily suspended supply of treated water into the reactor due to works to install and connect a buffer tank. (July 2 14:22 ~ 18:00 Trial injected into the reactor core from a Buffer Tank due to leakage check. 18:00 ~ Full-fledged operated)
- July 8 10:34~13:49 Sampling of airborne radioactive materials was conducted by a robot on the second and the third floors of the reactor building.
- July 8 10:44 ~12:30 Flashing was carried out for the transfer line from the trench of the turbine building to the Radioactive Waste Treatment Facilities.

<Sea water injection to SFP via FPC (using the fire engine pump)>

March 20 around 15:05~ around 17:20, March 22nd 16:07~17:01, March 25 10:30~12:19 Started injection

<Fresh water injection to SFP via FPC (using the temporary motor-driven pump) >

March 29 16:30~18:25, March 30 09:25~23:50 *Including interruption by pump malfunction and damage to the hose, April 1 14:56~17:05, April 4 11:05~13:37, April 7 13:29 ~ 14:34, April 10 10:37~12:38, April 13 13:15~14:55, April 16 10:13~11:54, April 19 16:08~17:28, April 22 15:55~17:40, April 25 10:12~11:18, April 28 10:15~11:28, May 2 10:05~11:40, May 6 09:36~11:16, May 10 13:09~14:45(13:19 ~14:35 Hydrazine was also injected), May 14 13:00~14:37(13:08 ~14:02 Hydrazine was also injected), May 18 13:10~14:40(13:15 ~14:30 Hydrazine was also injected), May 22 13:02~14:40(13:04~14:03 Hydrazine was also injected), May 26 10:06~11:36(10:10~11:10 Hydrazine was also injected), May 30 12:06~13:52

Conditions of Fukushima Dai-ichi Nuclear Power Station Unit 3 (As of 6:00 July 12, 2011)

Major Events after the Earthquake 1/3

Spraying freshwater by temporary motor driven pump through existing cooling system

Spent Fuel Pool Cooling System

Spent Fuel Pool Water Temperature 31.6 °C
Measured during sampling measurement on May 8th

Reactor Pressure A -0.063MPa*
(under monitoring of the change of the situation)

Reactor Pressure C -0.001MPa*
(under monitoring of the change of the situation)

Condition: Almost no change
*converted to absolute pressure

Reactor Water Level A -1,950mm
(under monitoring of the change of the situation)

Reactor Water Level B -2,250mm
(under monitoring of the change of the situation)

Condition: Uncovering of the core from the top of the active fuel to the levels described above

Reactor Water Temperature -°C
Condition: No data available

Reactor Pressure Vessel (RPV)
Temperature

Feedwater Nozzle Temperature : 150.7°C

(under monitoring of the change of the situation)

Temperature at the bottom head of RPV : 117.8°C

PCV*3 Pressure 0.1003MPa
Condition: Almost no change

S/p*4 Water Temperature A 46.7°C

S/p*4 Water Temperature B 46.9°C

Condition: Almost no change

S/p*4 Pressure 0.1836MPa

Condition: Almost no change

Current Conditions: Fresh water is being injected to the Spent Fuel Pool and the Reactor Core

- March 11 14:46 Under operation, Automatic shutdown by the earthquake
- March 11 15:42 Report based on the Article 10 (Total loss of A/C power)
- March 13 05:10 Occurrence of the Article 15 event (Inability of water injection of the Emergency Core Cooling System)
- March 13 08:41 Started to vent.
- March 13 13:12 Started to inject seawater and borated water to the Reactor Core.
- March 14 05:20 Started to vent.
- March 14 07:44 Occurrence of the Article 15 event (Unusual rise of the pressure in PCV)
- March 14 11:01 Sound of explosion
- March 16 around 08:30 White smoke generated.
- March 17 09:48~10:01 Water discharge by the helicopters of Self-Defense Force
- March 17 19:05~19:15 Water spray from the ground by High pressure water-cannon trucks of Police
- March 17 19:35~20:09 Water spray from the ground by fire engines of Self-Defense Force
- March 18 before 14:00~14:38 Water spray from the ground by 6 fire engines of Self-Defense Force
- March 18 ~14:45 Water spray from the ground by a fire engine of the US Military
- March 19 00:30~01:10 Water spray by Hyper Rescue Unit of Tokyo Fire Department
- March 19 14:10~20th 03:40 Water spray by Hyper Rescue Unit of Tokyo Fire Department
- March 20 11:00 Pressure of PCV rose(320kPa).Afterward fell.
- March 20 21:36~21st 03:58 Water spray by Hyper Rescue Unit of Tokyo Fire Department
- March 21 around 15:55 Grayish smoke generated and was confirmed to be died down at 17:55.
- March 22 15:10~16:00 Water spray by Hyper Rescue Unit of Tokyo Fire Department and Osaka City Fire Bureau.
- March 22 22:46 Lighting in the Central Control Room was recovered.
- March 23 11:03~13:20 Injection of about 35 ton of sea water to the Spent Fuel Pool (SFP) via the Fuel Pool Cooling Line (FPC)
- March 23 around 16:20 Black smoke generated and was confirmed to died down at around 23:30 and 24 04:50.
- March 24 05:35~16:05 Injection of around 120 ton of sea water to SFP via FPC
- March 25 13:28~16:00 Water spray by Kawasaki City Fire Bureau supported by Tokyo Fire Department
- March 25 18:02 Started fresh water injection to the core.
- March 27 12:34~14:36 Water spray by Concrete Pump Truck
- March 28 17:40~31st around 8:40 Transferring the water from the Condensate Storage Tank (CST) to the Surge Tank of Suppression Pool Water (SPT)
- March 28 20:30 Switched to the water injection to the core using a temporary motor-driven pump.
- April 3 12:18 The power supply to the temporary motor-driven pump was switched from the temporary power supply to the external power supply.
- April 11 around 17:16 Loss of external power supply of Unit 1 and 2 due to an earthquake occurred (at Hamadori in Fukushima Prefecture) and water injection to the Reactor Core was suspended.
- April 11 18:04 External power supply of Units 1 and 2 recovered (April 11th 17:56). Resumed injecting water to the Reactor Core.
- April 17 11:30~14:00 Confirmed the situation in the reactor building using unmanned robot.
- April 18 12:38~13:05 Stopped the water injection into the reactor core to replace the current hose with a new one
- April 19 10:23 Completed the work of strengthening connection of the power supplies between Units 1-2 and Units 3-4.
- April 22 13:40~14:00 Tentatively Injected freshwater to SFP via the Fuel Pool Coolant Purification Line.
- April 25 10:57~18:25 For reinforcement work of the power supply, the power supply to the pump injecting water into the reactor core was temporarily switched from the external power supply to the temporary diesel generator.
- April 30 11:34 Completed reinforcement work of the power supply both Units 3, 4). (Increasing the voltage from 6.6kv to 66kv)

External Power

Two lines secured

EDG *2

Power supply vehicle, Temporary DGs

RHRS*1

Injecting freshwater by temporary motor-driven pump

- *1 Residual Heat Removal System
- *2 Emergency Diesel Generator
- *3 Primary Containment Vessel
- *4 Suppression Pool

(Editorial committee for Nuclear Energy Handbook, Nuclear Energy Handbook)

Major Events after the Earthquake 2/3

- May 2 12:58 ~15:03 The pump for the injection of water into the reactor core was temporarily replaced with the Fire Extinguishing Pump in order to install an alarm device in the pump.
- May 8 16:18 ~ May 10 5:41 Transferred the water in the Condenser to the underground of the turbine building in order to carry out piping work of Reactor Feedwater System.
- May 11 08:47~15:55 Due to the restoration of the Okuma No.2 transmission line, the power supply for the water injection pump into the reactor was temporarily switched to the temporary diesel generator.
- May 11 around 12:30 Confirmed the water flow into the pit around intake of sea water through conduit pipe of electric power cables → 16:05 Confirmed the water leakage from the pit to the sea → 18:45 Stopped the water leakage by casting concrete into the pit.
- May 12 16:53 In addition to the plumbing pro-fire extinguishing, started core flooding from the plumbing pro-water supply.
- May 15 14:33~17:00 Injected borated water to the Reactor Core.
- May 17 18:04~ Started transfer of accumulated water in the basement of the turbine building to the Radioactive Waste Treatment Facilities
- May 18 from around 16:30 Conducted preliminary survey in the Reactor Building for about 10 minutes.
- May 25 09:10 Suspended transfer of accumulated water in the basement of the turbine building to the Radioactive Waste Treatment Facilities in order to check the transfer line and in the turbine building.
- May 28 20:54 Terminated to inject water to the Reactor Core via Fire Extinguishing line.
- May 31 09:00 ~16:00 A preliminary survey using a remote-controlled robot was carried out inside the reactor building.
- May 31 10:19 Changed the rate of water injection into the Reactor Core from 13.5m³/h to 12.5m³/h.
- June 1 10:10 Changed the rate of water injection into the Reactor Core from 12.5m³/h to 11.5m³/h.
- June 2 12:50 ~ June 4 21:56 Transferred the accumulated water from the Condenser to the CST in order to prepare transferring of accumulated water in the basement of the turbine building.
- June 3 13:16 ~13:32 Suspended the injection of coolant water due to the work for changing the route of water supply line to the reactor core.
- June 5 18:26 ~ June 9 10:44 Transferred the accumulated water from inside the turbine building to the Condenser.
- June 9 11:47 ~12:14 Entered into the reactor building and monitored radiation dose etc.
- June 11 15:30~June 12 17:01 Transferred the accumulated water from the basement of the turbine building to the Radioactive Waste Treatment Facilities.
- June 14 10:05~ June 16 08:46 Started transfer of accumulated water in the basement of the turbine building to the Radioactive Waste Treatment Facilities.
- June 14 13:02 ~ 13:31 Suspended water injection to replace the hose of water injection into the reactor.
- June 18 13:31 ~June 20 00:02 Transferred of accumulated water in the basement of the turbine building to the Radioactive Waste Treatment Facilities.
- June 19 11:03 ~ 15:22 Due to preparation for the suspension works of the Okuma No.2 transmission line, the power supply for the water injection pump into the reactor core was temporarily switched to the diesel generator.
- June 21 10:06 The amount of water injection into the reactor was changed from about 11.0m³/h to about 10.0m³/h.
- June 21 15:32 Transferred accumulated water in the basement of the turbine building to the Radioactive Waste Treatment Facilities.
- June 23 10:13 The amount of water injection into the reactor was changed from about 10.0m³/h to about 9.5m³/h.
- June 24 10:07 The amount of water injection into the reactor was changed from about 9.5m³/h to about 9.0m³/h.
- June 24 10:31~12:42 A radiation dose survey was carried out by a robot in the reactor building.
- June 27 08:08~14:38 Due to preparation for the restoration works of the Okuma No.2 transmission line, the power supply for the water injection pump into the reactor core was temporarily switched to the diesel generator.
- June 27 16:20 Started use of water treated in the water treatment facilities for injection into the reactor, in addition to water injection from the filtered water tank. Suspended supply of treated water because of a leakage from the pipe (17:55). Started the treated water transfer pump (June 28 14:36). Resumed of treated water (June 28 14:36).
- June 27 17:00~June 28 09:58 Started to transfer of accumulated water in the basement of the turbine building to the Radioactive Waste Treatment Facilities.

Major Events after the Earthquake 3/3

June 29 10:59~13:33 Regarding the Circulating Injection Cooling of the reactor cores, supply of treated water was temporarily suspended due to leakage from a pipe for injection cooling.

June 30 08:56 ~ Started transfer of the accumulated water in the basement of the turbine building to the Radioactive Waste Treatment Facility.

June 30 10:43 Implemented leakage test for primary line of the alternative cooling system for the Spent Fuel Pool. Trial operation was started. (18:33)

July 1 07:27 ~ Temporarily suspended supply of treated water into the reactor due to works to install and connect a buffer tank.

July 1 11:00 Started full-fledged operation of the alternative cooling system for the Spent Fuel Pool .

July 1 11:43 ~ 16:36 Carried out cleaning work in the reactor with a robot.

July 2 10:59 ~12:14 Carried out dose survey in the reactor building with a robot.

July 3 08:30 ~16:00 Installed 51 steel plates near the large object delivery entrance of the reactor building.

July 8 13:35 ~ 13:44 Workers entered the reactor building, and implemented a preliminary survey of the point for nitrogen injection.

July 9 15:22 ~ 17:05 Flushing was carried for the transfer line of the accumulated water from the basement of the turbine building to the Radioactive Waste Treatment Facilities.

July 10 15:15 Resumed transfer of the accumulated water in the basement of the turbine building to the Radioactive Waste Treatment Facility.

<Water spray over the Spent Fuel Pool by Concrete Pump Truck (Fresh water)>

March 29 14:17~18:18, March 31 16:30~19:33, April 2 09:52~12:54, April 4 17:03~19:19, April 7 06:53 ~08:53, April 8 17:06~20:00, April 10 17:15~19:15, April 12 16:26~17:16, April 14 15:56~16:32, April 18 14:17~15:02, April 22 14:19~15:40, April 26 12:25~14:02

<Fresh water injection to SFP via FPC (using the temporary motor-driven pump) >

May 8 12:10 ~14:10, May 9 12:14 ~15:00 (12:39 ~14:36 Hydrazine was also injected), May 16 15:00~18:32 (15:10 ~17:30 Hydrazine was also injected), May 24 10:15~13:35 (10:20 ~12:56 Hydrazine was also injected), May 28 13:28~15:08(13:42 ~14:40 Hydrazine was also injected), June 1 14:34~15:54(14:41 ~15:26 Hydrazine was also injected), June 5 13:08~15:14(13:14~14:16 Hydrazine was also injected), June 9 13:42~15:31 (13:45~14:40 Hydrazine was also injected), June 13 10:09~11:48 (10:13~11:36 Hydrazine was also injected), June 17 10:19~11:57 (10:23~11:31 Hydrazine was also injected), June 26 09:56~11:23 (Borated water was injected), June 27 15:00~17:18 (Borated water was injected), June 29 14:45~15:53

<Cooling by the alternative cooling system for the Spent Fuel Pool>

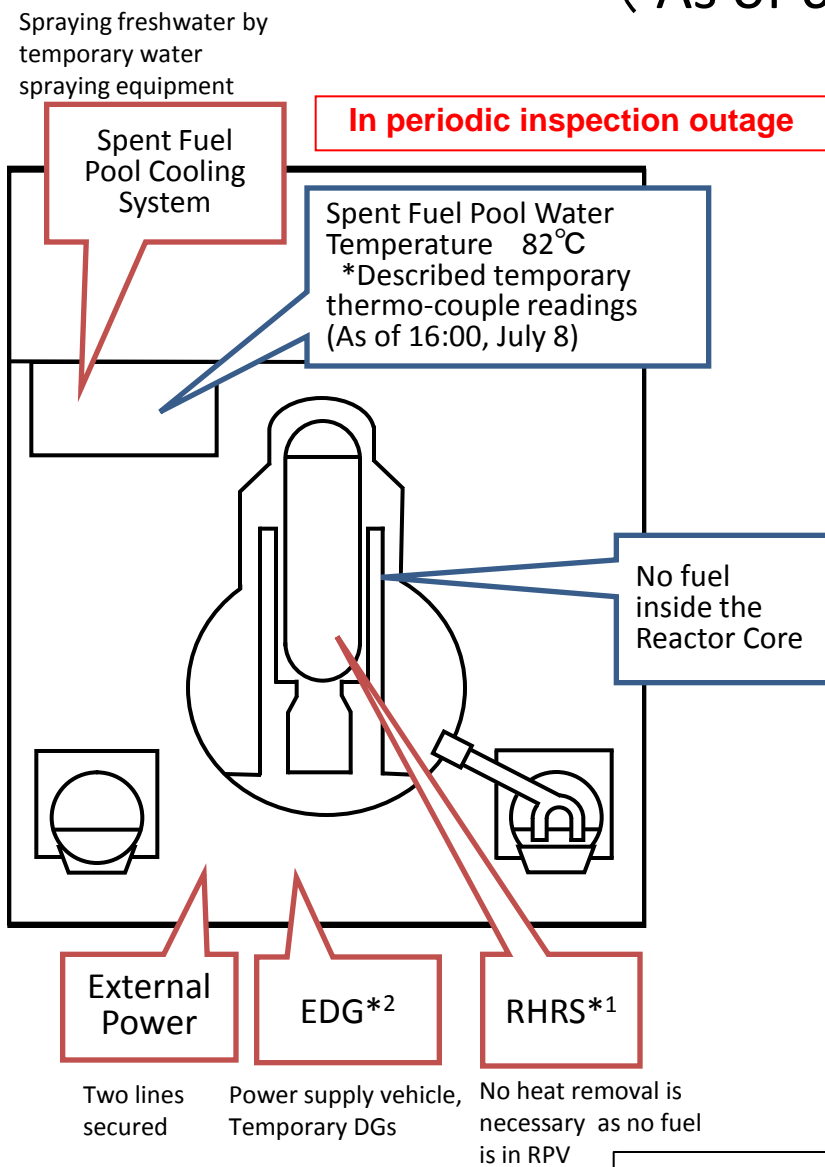
July 1 11:00 ~ July 8 08:20, July 8 14:24 ~

Conditions of Fukushima Dai-ichi Nuclear Power Station Unit 4

(As of 6:00 July 12, 2011)

Major Events after the Earthquake 1/2

- In periodic inspection outage when the earthquake occurred
- March 14 04:08 Water temperature in the Spent Fuel Pool (SFP), 84°C
 - March 15 06:14 Confirmed the partial damage of wall in the 4th floor.
 - March 15 09:38 Fire occurred in the 3rd floor. (12:25 extinguished)
 - March 16 05:45 Fire occurred. TEPCO couldn't confirm any fire on the ground. (06:15)
 - March 20 08:21~09:40 Water spray over SFP by Self-Defense Force
 - March 20 around 18:30~19:46 Water spray over SFP by Self-Defense Force
 - March 21 06:37~08:41 Water spray over SFP by Self-Defense Force
 - March 21 around 15:00 Work for laying cable to Power Center was completed.
 - March 22 10:35 Power Center received electricity.
 - March 25 06:05~10:20 Sea water injection to SFP via the Fuel Pool Cooling Line (FPC)
 - March 29 11:50 Lighting in the Central Control Room was recovered.
 - April 11 around 17:16 An earthquake occurred (at Hamadori in Fukushima Prefecture).
 - April 12 12:00~13:04 Sampled the water in SFP.
 - April 19 10:23 Completed the work of strengthening connection of the power supplies between Units 1-2 and Units 3-4.
 - April 22 Measured the water level of SFP by a gauge hung on Concrete Pump Truck (62m class).
 - April 30 11:34 Completed reinforcement work of the power supply both Units 3, 4. (Increasing the voltage from 6.6kv to 66kv)
 - May 9 Started installation work of the supporting structure for the floor of SFP
 - June 10 around 14:00~(about 30 minutes) Workers entered the RB and conducted a survey of working environment for the construction work on the SFP circulating cooling system.
 - June 29 13:28~14:21 Workers entered the RB and conducted a survey of working environment for the construction work on the SFP circulating cooling system.
 - July 6 10:20 ~ 10:30 Carried out preparation for installation work of the alternative cooling system for the Spent Fuel Pool .
 - July 8 10:00 ~ 11:30 Regarding the installation works of the alternative cooling system for the Spent Fuel Pool, the examination of the integrity of the pipes was conducted.



*1 Residual Heat Removal System
*2 Emergency Diesel Generator
*3 Reactor Pressure Vessel

Current Conditions : No fuel is in RPV*3.
Fresh water is being injected to the Spent Fuel Pool.

Major Events after the Earthquake 2/2

<Water spray by Concrete Pump Truck (Seawater)>

March 22 17:17~20:32, March 23 10:00~13:02, March 24 14:36~17:30, March 25 19:05~22:07, March 27 16:55~19:25

< Water spray by Concrete Pump Truck (Fresh water)>

March 30 14:04-18:33, April 1 08:28-14:14, April 3 17:14-22:16, April 5 17:35-18:22, April 7 18:23-19:40, April 9 17:07-19:24, April 13 00:30-6:57, April 15 14:30-18:29, April 17 17:39-21:22, April 19 10:17-11:35, April 20 17:08-20:31, April 21 17:14-21:20, April 22 17:52-23:53, April 23 12:30-16:44, April 24 12:25-17:07, April 25 18:15-April 26 0:26, April 26 16:50-20:35, April 27 12:18-15:15, May 5 12:29-20:46, May 6 12:38-17:51, May 7 14:05-17:30, May 9 16:05-19:05 (16:11-18:38 Hydrazine was also injected), May 11 16:07-19:38 (16:14 -19:36 Hydrazine was also injected), May 13 16:04~19:04 (16:20 -18:41 Hydrazine was also injected), May 15 16:25-20:25 (16:26-18:30 Hydrazine was also injected), May 17 16:14-20:06 (16:40-18:35 Hydrazine was also injected), May 19 16:30-19:30), May 21 16:00-19:56 (16:23 -19:00 Hydrazine was also injected), May 23 16:00-19:09 (16:08 -18:30 Hydrazine was also injected), May 25 16:36-20:04 (16:42-18:49 Hydrazine was also injected), May 27 17:05-20:00 (17:24 -18:53 Hydrazine was also injected), May 28 17:56-19:45(18:02-19:45 Hydrazine was also injected), June 3 14:35-21:15 (14:44-18:58 Hydrazine was also injected), June 4 14:23-19:45(14:51-18:41 Hydrazine was also injected), June 6 15:56-18:35(16:15-17:45 Hydrazine was also injected), June 8 16:12-19:41(16:16-18:05 Hydrazine was also injected), June 13 16:36-21:00(16:38-19:15 Hydrazine was also injected), June 14 16:10~20:52(16:11~19:15 Hydrazine was also injected)

< Water spray by temporary water spraying equipment (Fresh water)>

June 16 13:14~15:44 (13:48~15:18 Hydrazine was also injected), June 18 16:05~19:23 (16:29~18:33 Hydrazine was also injected), June 22 14:31~16:38, June 30 11:30 ~11:55

<Water filling to the reactor well and temporary storage pool (DSP)>

June 19 09:14~11:57, June 20 09:49~09:52, June 20 10:06~June 21 11:29, June 21 11:45~12:52,
June 22 08:23~11:43:31, June 23 09:32~15:29, June 28 09:40~15:29, July 4 09:13~18:18, July 8 08:22~13:52

Conditions of Fukushima Dai-ichi Nuclear Power Station Unit 5

(As of 6:00 July 12, 2011)

In periodic inspection outage

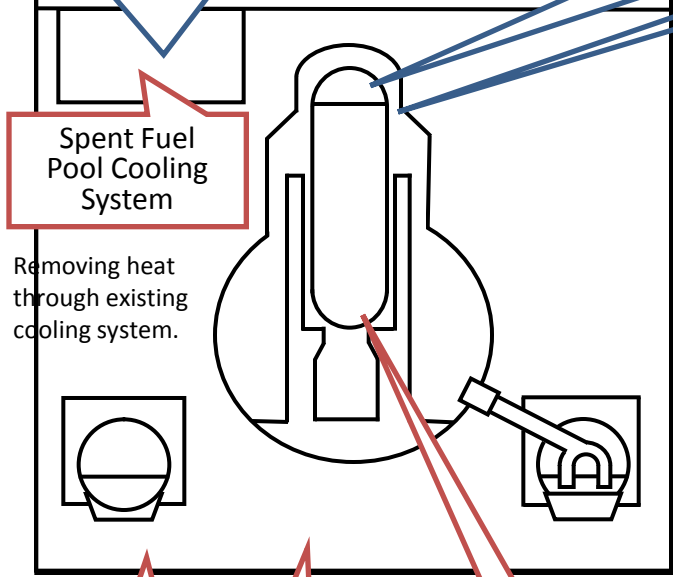
Reactor Pressure : 0.113MPa*
 Reactor Water Level : 1,955mm
 Reactor Water Temperature 43.6°C
 Condition : Pressure is under control.
 *converted to absolute pressure

Reactor Pressure Vessel
 Temperature: Monitoring by
 Reactor Water Temperature

Water Temperature in the Pool : 27.0°C
 Condition: Recovery of heat removal function

Major Events after the Earthquake

- March 20 14:30 Cold shutdown
- March 21 11:36 Receiving electricity from external power supply
- March 23 17:24 Pump for Residual Heat Removal Seawater System (RHRS) was automatically stopped when the power supply was switched from the temporary to the permanent.
- March 24 16:14 Repair of the RHRS pump was completed.
- March 24 16:35 Started to cooling.
- April 4 21:00 ~ April 8 12:14 Discharged the groundwater with low-level radioactivity in the Sub Drain Pit to the sea (around 950 ton).
- April 25 12:22 ~ 16:43 For reinforcement work of the power supply, the pump for Residual Heat Removal (RHR) was temporarily stopped.
- April 25 14:44 ~ 17:38 Implemented reinforcement work of the power supply (connection of the power supplies between Units 1-2 and Units 5-6).
- May 2nd 13:30 ~ 15:03 The pump for RHR was temporarily shut off in order to test the Start-up Transformer for power reception.
- May 28 around 21:14 Confirmed shutdown of the RHRS pump
- May 29 08:12 Started to replace with the temporary RHRS Spare Pump
- May 29 12:31 Started the RHRS Pump
- May 29 12:49 Started to cool the Reactor Core by RHR
- June 8 08:46 ~ 12:35 RHRS pump etc were temporary stopped due to the installation of one more pump for RHRS.
- June 24 16:35 Cooling of the Spent Fuel Pool was started using the Fuel Pool Cooling and Clean-up System.
- June 27 18:03 EDG(5A) recovery to standby mode.
- June 28 12:32 EDG(5B) recovery to standby mode.
- June 30 10:02 ~ 11:48 Temporarily suspended RHR pump due to switching power supply of the ancillary equipment.
- July 3 10:00 ~ 13:36 Temporarily suspended RHR pump due to the work for exchanging the outlet (10:20 ~ 13:22, the temporary pump of RHRS (B) was temporarily suspended)
- July 3 10:15 ~ 13:40 The pump of RHRS was temporarily suspended
- July 11 Due to preparation for the double lines works of the Yonomori transmission line, D/G5A started (03:03), stopped (09:07). DG5B started (03:37), stopped (14:44).
- July 11 5:01 ~ 13:44 Due to preparation for the double lines works of the Yonomori transmission line, the power supply from the Yonomori transmission line was stopped.



Spent Fuel Pool Cooling System

Removing heat through existing cooling system.

External Power

EDG*2

RHRS*1

Two lines secured

Share two EDGs of Unit 6
 Two EDGs of Unit 5 standby mode

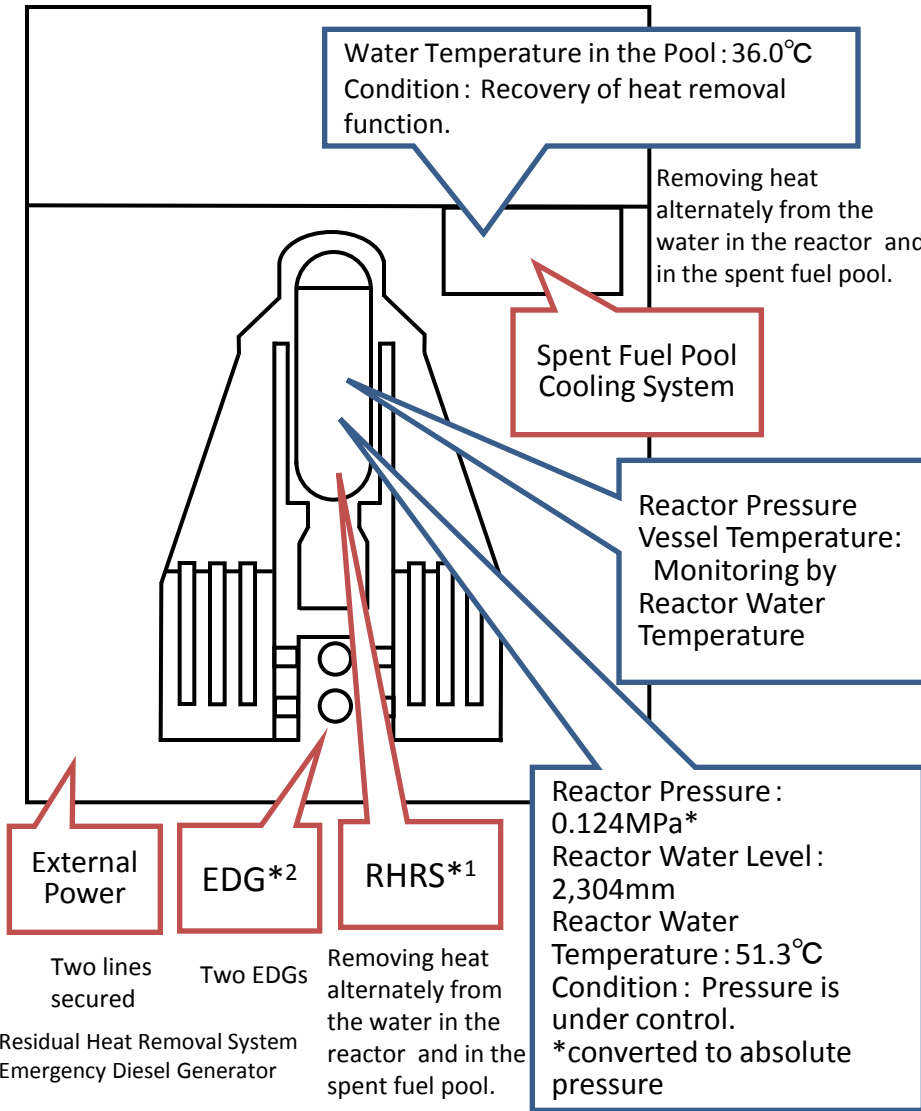
Removing heat through Residual Heat Removal System.

*1 Residual Heat Removal System
 *2 Emergency Diesel Generator

Conditions of Fukushima Dai-ichi Nuclear Power Station Unit 6

(As of 12:00 July 12, 2011)

In periodic inspection outage



Major Events after the Earthquake 1/2

March 20 19:27 Cold shutdown
March 22 19:17 Receiving electricity from external power supply
April 4 21:00 ~ April 9 18:52 Discharged the groundwater with low-level radioactivity in the Sub Drain Pit to the sea (around 373 ton).
April 19 11:00 ~ 15:00 Transferred accumulated water under the base of the turbine building to the condenser for measuring the amount of it.
April 20 09:51 ~ 15:56 The pump for Residual Heat Removal (RHR) was temporarily stopped in order to change the position of the hose of the temporary RHR Seawater System.
April 25 14:44 ~ 17:38 Implemented reinforcement work of the power supply (connection of the power supplies between Units 1-2 and Units 5-6).
May 2 11:03 ~ 14:53 The pump for RHR was temporarily shut off in order to test the Start-up Transformer for power reception.
June 28 Around 12:00 Confirm a leakage of water in a low radioactive concentration from the temporary tank which stored accumulate water from the basement of the turbine building.
July 11 Due to preparation for the double lines works of the Yonomori transmission line, D/G6A started (04:17), stopped (15:42). DG6B started (04:31), stopped (16:36).
July 11 Due to preparation for the double lines works of the Yonomori transmission line, the power supply from the Yonomori transmission line was stopped.
<Transferred accumulated water on the basement floor of the turbine building to the temporary tank>.
May 1 14:00 ~ 17:00, May 2 10:00 ~ 16:00, May 3 14:00 ~ 17:00, May 6 14:00 ~ 17:00, May 7 10:00 ~ 15:00, May 9 14:00 ~ 17:00, May 10 10:00 ~ 16:00, May 11 10:00 ~ 16:00, May 12 10:00 ~ 16:00, May 13 10:00 ~ 15:00, May 14 10:00 ~ 15:00, May 15 10:00 ~ 15:00, May 16 10:00 ~ 14:00, May 17 10:00 ~ 14:00, May 18 10:00 ~ 14:00, May 21 14:00 ~ 18:00, May 24 09:00 ~ 19:00, May 25 09:00 ~ 19:00, May 26 09:00 ~ 19:00, May 27 09:00 ~ 19:00, May 28 09:00 ~ 19:00
May 29 09:00 ~ 19:00, May 30 10:00 ~ 17:30, June 2 14:00 ~ (June 5 14:00 ~ 14:45 temporarily suspended) ~ June 8 18:00, June 9 09:00 ~ 18:00, June 11 10:00 ~ 15:00, June 12 10:00 ~ 15:00, June 13 10:00 ~ 16:00, June 14 10:00 ~ 16:00, June 15 10:09 ~ 16:00, June 16 10:00 ~ 16:00, June 17 10:00 ~ 16:00, June 18 10:00 ~ 16:00, June 19 10:00 ~ 16:00, June 20 10:00 ~ 16:00, June 21 10:00 ~ 16:00, June 22 10:00 ~ 16:00, July 1 10:00 ~ July 2 16:00, July 4 10:00 ~ 16:00, July 5 10:30 ~ 16:30, July 6 10:00 ~ 17:00, July 7 10:30 ~ 16:30, July 8 10:30 ~ 16:30, July 9 10:30 ~ 16:30, July 11 10:30 ~ 16:30

*1 Residual Heat Removal System
*2 Emergency Diesel Generator

Major Events after the Earthquake 2/2

〈Transferred accumulated water on the basement floor of the reactor building to the Radioactive Waste Treatment Building〉

May 10 11:00 ~ 12:30 , May 11 11:00 ~ 12:30 , May 12 10:30~12:30,

May 13 11:30 ~12:15 , May 18 10:30 ~12:30, May 28 10:20~12:10

June 8 10:05 ~12:40, June 15 11:55~14:00, June 21 11:05~ 13:30, June 28 11:00~13:20, July 6 08:45~10:50

〈Transferred accumulated water from the temporary tank to the Mega-Float 〉

June 30 13:00 ~19:00, July 1 10:00 ~ July 3 16:00 , July 4 13:30~17:00,

July 5 10:00~17:00, July 7 10:09~17:00, July 8 10:00 ~ 17:00, July 9 10:00 ~17:00 July 11 10:00~17:00