Plant Status of Fukushima Daiichi Nuclear Power Station

February 12, 2012
Tokyo Electric Power Company

<Treatment of Accumulated Water on Underground Floor of Turbine Building (T/B) >

◇Status of highly concentrated accumulated radioactive water treatment facility and storage tank facility

[Treatment Facility]

- At 18:42 on January 17, 2012: Cesium adsorption apparatus started. At 18:45, the flow rate reached steady state.
- At 11:12 on February 2, 2012: Second Cesium adsorption apparatus started. At 11:15 it reached its regular flow rate.

[Storage Facility]

- June 8, 2011～: Large tanks to store and keep treated or contaminated water have been transferred and installed sequentially.

◇Accumulated water in vertical shafts of trenches and at basement level of building

Unit	Draining water source→Place transferred	Status
Unit 2	・Unit 2T/B→Central Radioactive Waste Treatment Facility [Miscellaneous Solid Waste Volume Reduction Treatment Building (High Temperature Incinerator Building)]	・ 2/10 14:43～ transferring
Unit 3	・Unit 3T/B→Central Radioactive Waste Treatment Facility [Miscellaneous Solid Waste Volume Reduction Treatment Building (High Temperature Incinerator Building)]	・ 2/12 9:57～ transferring

Place transferred	Status of Water Level (As of 7:00 am on February 12)
Process Main Building	Water level: O.P.+ 2,610 mm (Accumulated total increase:3,827 mm), decreased by 107 mm since 7:00 am on February 11
Miscellaneous Solid Waste Volume Reduction Treatment Building (High Temperature Incinerator Building)	Water level: O.P.+ 3,090mm (Accumulated total increase:3,816 mm), increased by 129 mm since 7:00 am on February 11

◇Water level of the vertical shaft of the trench, T/B and R/B(As of 7:00 am on February 12)

	Vertical Shaft of Trench	T/B	R/B
Unit 1	O.P. <+ 850 mm (No change since 7:00 on February 11)	O.P.+ 2,964 mm (16mm increase since 7:00 on February 11)	O.P.+ 4,300 mm (11mm decrease since 7:00 on February 11)
Unit 2	O.P.+ 3,063 mm (54mm decrease since 7:00 on February 11)	O.P.+ 3,032 mm (49mm decrease since 7:00 on February 11)	O.P.+ 3,228 mm (44mm decrease since 7:00 on February 11)
Unit 3	O.P.+ 3,110 mm (19mm increase since 7:00 on February 11)	O.P.+ 3,040 mm (20mm increase since 7:00 on February 11)	O.P.+ 3,351 mm (21mm increase since 7:00 on February 11)
Unit 4	—	O.P.+ 3,006 mm (10mm increase since 7:00 on February 11)	O.P.+ 3,037 mm (18mm increase since 7:00 on February 11)

<Monitoring of Radioactive Materials>

Nuclide Analysis of Seawater (Reference)

Place of sampling	Date of sampling	Time of sampling	Ratio of density limit (times)		
			I-131	Cs-134	Cs-137
Approx. 30m north of Discharge Channel of 1F 5,6 u	2/11	8:45	ND	0.02	0.02
Approx. 330m south of Discharge Channel of 1F 1-4 u	2/11	8:20	ND	0.02	0.02

・All 3 major nuclides (I-131, Cs-134 and Cs-137) at 2 coast point (sampled on 2/11) and 8 offshore points (sampled on 2/10) of Fukushima Prefecture were ND.

<Cooling of Spent Fuel Pools >(As of 11:00 am on February 12)

Unit	Cooling type	Status of cooling	Temperature of water in Pool
Unit 1	Circulating Cooling System	Under operation*1	24.0 ℃
Unit 2	Circulating Cooling System	Under operation	12.2 ℃
Unit 3	Circulating Cooling System	Under operation	27.2 ℃
Unit 4	Circulating Cooling System	Under operation	23 ℃

*1: Air fin cooler of Secondary System out of service

【Unit 2】

- A desalination equipment has been activated in order to reduce density of salt from the spent fuel pool since 11:50 on January 19.

【Unit 3】

- A radioactive material removal equipment has been activated in order to remove radioactive materials from the spent fuel pool since 15:18 on January 14.

<Water Injection to Pressure Containment Vessels > (As of 11:00 am on February 12)

Unit	Status of water injection	Feed-water nozzle Temp.	Reactor pressure vessel Bottom temp.	Pressure of primary containment vessel
Unit 1	Injecting freshwater (Feed Water System: Approx. 4.5m^3/h, Core Spray System: Approx.1.9 m^3/h)	23.9 ℃	24.3 ℃	107.0 kPaabs
Unit 2	Injecting freshwater (Feed Water System: Approx.7.6 m^3/h, Core Spray System: Approx.6.8m^3/h)	36.1 ℃	75.4 ℃	111 kPaabs
Unit 3	Injecting freshwater (Feed Water System: Approx.3.0 m^3/h, Core Spray System: Approx.6.1 m^3/h)	40.2 ℃	48.9 ℃	101.6 kPaabs

【Unit 2】

- From February 2, water injection to Unit 2 reactor was increased and the temperature tendency was monitored as the tendency of temperature rise at the bottom of PCV was observed, but the temperature have been high value (around 70.0℃). As a result of the sampling for the Gas Control System of the Unit 2 on February 6 to make sure there is no re-criticality state, we confirmed that the concentration of Xe-135 was below the detectible limit at the system's inlet, meaning that it falls below the re-criticality criteria of 1 Bq/cm^3. In order not to raise the possibility of re-criticality state due to the high density of water in the reactor by injecting cold water rapidly, we injected boric acid into the reactor from 0:19 am to 3:20 am on February 7, in advance of increasing water injection amount, as a safety countermeasures against the re-criticality, and changed the amount of the core spray system injection water from 3.7m^3/h to 6.7m^3/h at 4:24 am on February 7 (the amount of the feed water system injection is 6.8m^3/h). Currently, the temperature is approx. 70℃ (2/11 11:00) and we continuously monitor the tendency.
- At 10:45 pm on February 11, 2012, we changed the water injection amount through the reactor feed water system from approx. 6.8m^3/h to 7.8m^3/h (the water injection amount through the core spray system is kept at approx.

6.8m^3/h).

- On February 12, 2012, we conducted a sampling of gas in the gas management system in the Primary Containment Vessel of Unit 2 and the result is that around the entry of the system, Xe-135 was below the detection limit (9.5 x 10^{-2} Bq/cm^3). As it is below 1 Bq/cm^3, the criterion to judge re-criticality, we have confirmed that it has not reached re-criticality. We found that the temperature at the bottom of PCV tended to be still high. Therefore, in order to avoid a chance of the re-criticality due to the increase of water density in the PCV by sudden cold water injection, from 11:38 am to 1:50 pm on February 12, before starting water flow rate change, we injected boric acid into the reactor for the safety measures. From 2:10 pm on the same day, we increased the water injection rate.
- At 2:20 pm, we judged that it was not satisfied "the temperature is below 80 ^oC at the bottom of PCV [*1]", which is stipulated in "the Reactor Facility safety Regulation [*2]" as one of the "Conditions of operation". Thereafter, we continued the increased water injection.
- At 15:30 pm, we changed the water flow rate from approx. 7.2m^3/h to 7.5m^3/h through the reactor feed water system, and from approx. 6.9m^3/h to 9.9m^3/h through the core spray system. Currently, the temperature is approx. 79.2 ^oC as of 3pm on February 12 for reference. We continue to monitor the tendency of the temperature.

*1) Reactor Facility Safety Regulation provides necessary conditions such as the numbers of the permitted machines etc. or criteria of temperatures and pressures for securing multiple safety function for operating reactors and for keeping nuclear power stations stable and these are treated as conditions for operation. When there happen some malfunctions of equipment provided in the regulation and a nuclear power station can not clear the conditions temporarily, operators have to take required countermeasures.

*2) Based on the management of facilities stipulated at the Article 12 "Mid-term safety securing" of Act of the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors, it provides "Operational Limit" and "measures required in the case that does not satisfy the Operational Limit", it is required to respond based on the measures required in the case that does not satisfy the Operational Limit. In our case, in order to implement the preservation work, it was shifted to outside of operational limit condition as planned (from 1:55 pm on February 12), we change the water injection amount into the reactor of Unit 2. At 2:20 pm, we judged that it was not satisfied "the temperature is below 80 ^oC at the bottom of PCV ", which is stipulated in "the Reactor Facility safety Regulation" as one of the "Conditions of operation". as the indicated temperature was 82 ^oC beyond 80 ^oC. We continue to change the water injection amount accordingly.

【Unit 4】【Unit 5】【Unit 6】・No major change

<Others>

- October 7, 2011～: Continuously implementing water spray using water after purifying accumulated water of Unit 5 and Unit 6 to prevent spontaneous fire of trimmed trees and diffusion of dust.
- January 11, 2012～: As finding accumulated water including radioactive materials (December 18, 2011) at the trench between Process Main Building of Central Radioactive Waste Treatment Facility and Miscellaneous Solid Waste Volume Reduction Treatment Building (High Temperature Incinerator Building), we started inspection of the other trenches in the site. *Please refer to the other reference materials for the result of daily inspection.

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