

Situation of Storage and Treatment of Accumulated Water including Highly Concentrated Radioactive Materials at Fukushima Daiichi Nuclear Power Station (198th Release)

April 24, 2015

Tokyo Electric Power Company

1. Introduction

This document is to report the following matters in accordance with the instruction of “Installment of treatment facility and storing facility of water including highly concentrated radioactive materials at Fukushima Daiichi Nuclear Power Station of the Tokyo Electric Power Company (Instruction) “(NISA No. 6, June 8, 2011), dated on June 9, 2011.

<Instruction>

TEPCO should report to NISA the situation of storing and treatment of the contaminated water in the Power Station and the future forecast based upon the current situation has to be reported to NISA as soon as the treatment facility starts its operation. Also, subsequently, continued report has to be submitted to NISA once a week until the treatment of the accumulated water in the Central Radioactive Waste Treatment Facility is completed.

2. Situation of storing and treatment of accumulated water in the building (actual record)

Stored amounts in each unit building (Units 1 to 4 (including condensers and trenches)) and stored and treated amounts, and other related data in the Accumulated Water Storing Facility as of April 23 are shown in the Attachment -1.

3. Forecast of storing and treatment

(1) Short term forecast

Water transfer is planned so that the levels of the accumulated water in Units 1&2 and Units 3&4 building will be maintained around at the level of OP. 3,000, based on the stored amount in the Accumulated Water Storing Facilities and the operating situation of the radioactive material treatment equipment. Water is transferred to the Process Main Building and/or High Temperature Incinerator Building as Accumulated Water Storing Facilities.

Treatment is implemented considering the situation of storage and transfer of Accumulated Water Storing Facilities.

We assume stored amounts in each unit building (Units 1 to 4 (including condenser and trench)), and stored and treated amounts, and other related data in the Accumulated Water Storing

Facilities as of April 30, as shown in Attachment -2.

(2) Middle term forecast

Regarding accumulated water in Unit 1&2 building and Unit 3&4 building, from the viewpoint of reducing the risks of discharging to the ocean and leaking into the groundwater, it is necessary to keep enough capacity for the accumulated water in the building until its level reaches OP. 4,000 and to keep the accumulated water level lower than the groundwater level. On the other hand, based on the view of limiting inflow of underwater to buildings and reducing the amount of emerged accumulated water, we are planning to transfer accumulated water keeping its level in the building around OP. 3,000 considering water tank capacity.

As for accumulated water of the Process Main Building and the High Temperature Incinerator Building, we are planning to treat the accumulated water considering the situation of construction of middle and low level waste water tanks, the operation factor of the radioactive material treatment instruments and duration for maintenance.

We forecast stored amounts in each unit building (Unit 1 to 4 (including condensers and trenches)), and storing and treatment situations in the Accumulated Water Storing Facilities for the next 3 months, as shown in Attachment -3.

Stored amounts in each building and the water storage equipment are forecasted to be unchanged in case transfer and treatment were implemented as scheduled without rain. However, it would be subject to change depending on the operation factor of the radioactive material treatment instruments and so on.

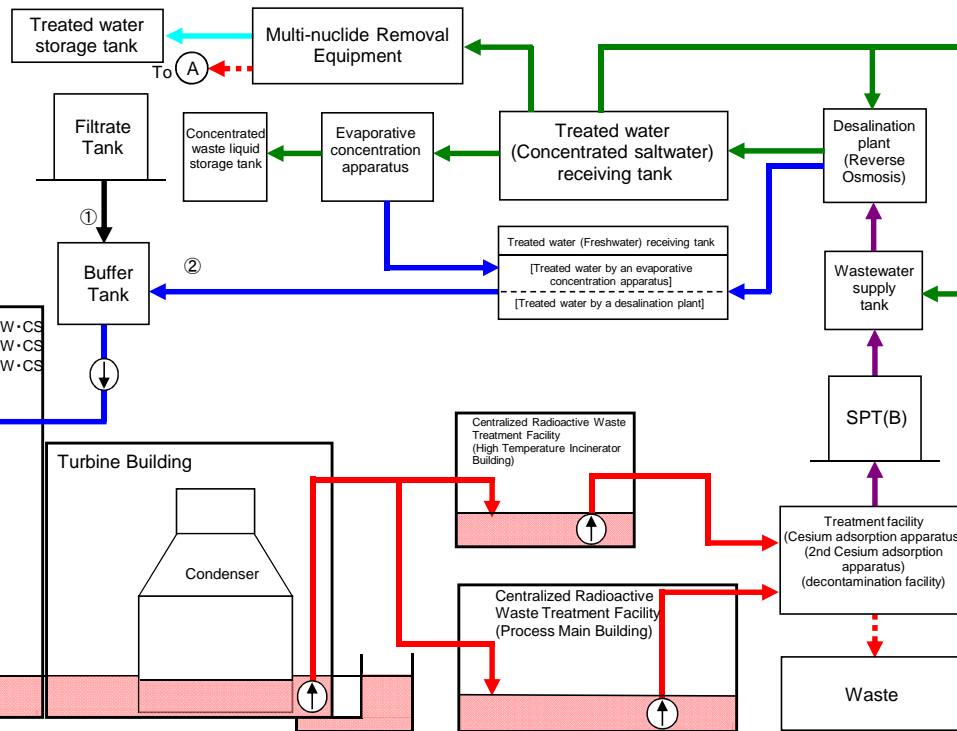
Also, the water treated at the radioactive material treatment equipment (fresh water and condensed salt water) can be stored in the middle and low level waste water tanks.

END

Storage and treatment of high level radioactive accumulated water (as of April 23, 2015)

Classification	
■ / ■ / ■	High level radioactive water/Waste
■	Treated water (saltwater)
■	Treated water (concentrated saltwater)
■	Treated water (freshwater)
■	Treated water from Multi-nuclide Removal Equipment
■	Freshwater

Volume of water to be injected to Reactor (4/17-4/23)	Change from last report
① Filtrate water	-
② Treated water (freshwater)	-5m ³
Cumulative treated water	562,393m ³



Storage volume ^{+2,3}	Change from last report	Storage capacity ^{+4,5}
Concentrated saltwater receiving tank ¹	46,501m ³ -6,403m ³	84,900m ³
Freshwater receiving tank	19,071m ³ +251m ³	27,500m ³
Concentrated waste liquid storage tank	9,203m ³ No Change	20,000m ³
Treated water storage tank	398,700m ³ +10,383m ³	440,100m ³
Strontium-treated water storage tank	159,035m ³ +2,345m ³	179,500m ³

Storage volume	Change from last report	Storage volume ⁺⁴
Wastewater supply tank	585m ³ +188m ³	1,200m ³
SPT(B)	900m ³ +309m ³	3,100m ³

Chloride concentration	
Before/After Desalination	460ppm /1ppm (Sampled on Apr. 7)
Before/After Evaporative Concentration	-

Place of Sampling	Radioactivity density ⁶
Process Main Building	1.9E+07 Bq/cm ³ (Sampled on Apr.7)
Exit of cesium adsorption apparatus	2.9E+02 Bq/cm ³ (Sampled on Apr. 7)
Exit of decontamination facility	-
High Temperature Incinerator Building	1.9E+07 Bq/cm ³ (Sampled on Apr.7)
Exit of second cesium adsorption apparatus	1.2E+03 Bq/cm ³ (Sampled on Apr.7)

Facility	Storage volume	Change from last	Water level in T/B
Unit 1	Approx. 13,700m ³	-100m ³	OP.2,670
Unit 2	Approx. 17,000m ³	+400m ³	OP.2,758
Unit 3	Approx. 18,000m ³	-100m ³	OP.2,731
Unit 4	Approx. 15,700m ³	No Change	OP.2,748
Total	Approx. 64,400m ³		

Storage Facility	Storage volume	Change from last report	Water level	Treated volume (4/17-4/23)	Cumulative treated volume	Waste produced	Change from last report	Storage capacity	
Process Main Building	Approx. 14,860m ³	-1,010m ³	OP.4,196	Approx.5,710m ³ 77	Approx. 1,210,290m ³ 77	Sludge	597m ³	No Change	
High Temperature Incinerator Building	Approx. 4,210m ³	+50m ³	OP.2,676			Used vessels	2,299 ⁷⁸	+52	6,055
Total	Approx. 19,070m ³								

[Main operations that have been conducted during the period from April 16, 2015 (the previous announcement data) to April 23, 2015]

- On Apr. 17, water transfer from Unit 2 to the High Temperature Incinerator Building was suspended. On Apr. 19, water transfer from Unit 2 to Unit 3 T/B resumed.
- On Apr. 20, the facility to which water accumulated at Unit 2 had been transferred from Unit 3 T/B to the High Temperature Incinerator Building, and since then the transfer has continued.
- On Apr. 17, water transfer from Unit 3 to the High Temperature Incinerator Building was suspended. On Apr. 19, water transfer from Unit 3 to the Process Main Building resumed.
- On Apr. 20, the facility to which water accumulated at Unit 3 had been transferred from the Process Main Building to the High Temperature Incinerator Building, and since then the transfer has continued.
- Cesium Adsorption Apparatus and 2nd Cesium Adsorption Apparatus have been in operation.
 - the availability factor of the former was 17.3% (previously assumed: 15%) and the availability of the latter was 50.7% (previously assumed: 60%)
- On Apr. 20, the operation of Cesium Adsorption Apparatus resumed.
- On Apr. 17 and 22, water transfer from the House Boiler for Unit 1 to Unit 1 T/B was conducted. On Apr. 16 and 21, water transfer from the Emergency Diesel Generator (B) at Unit 1 to Unit 1 T/B was conducted.
- On Apr. 16 and 21, water transfer from Unit 1 T/B to the Radioactive Waste Treatment Facility at Unit 1 was conducted.
- Storage capacity of the Concentrated Saltwater Storage Tank has been increased by adding tanks.

¹ "Storage volume" and "Storage capacity" in the table do not include those of the tanks where the removal of contaminated water has been completed (meaning the disposal of residual water is being conducted). The tanks and the like where the residual water disposal being conducted are H1 East, H2, H4, H4 East, H4 North, H5 (a part), H5, H5 North, G3 (a part), J1 (a part) area. The storage capacity as of Apr.23, 2015 is 158,600m³. The volume of the residual water is approx.12,100m³. The figure in "Change from last report" is the result of subtracting 46,501m³ from 52,904m³. The figure, 52,904m³ is the one that excludes the volume of the residual water being disposed this time from the storage volume measured at the time of publication of the 197th report.

² The figures of the data are treated as a reference, because water levels during water transfer are not stable.

³ The figures of the storage volume do not include those of the following volumes that have accumulated from the bottom of the tanks to the height of so-called "down scale (DS)", where water gauges show 0%: Concentrated saltwater receiving tank (approx.4,000m³), Freshwater receiving tank (approx. 1,000m³), Concentrated waste liquid storage tank (approx.100m³), Treated water storage tank (approx. 1,000m³), Strontium-treated water storage tank (approx. 3,000m³).

⁴ The figures of the data show the operational limits.

⁵ The figures of "Storage capacity" do not include those of the volumes that have accumulated from the bottom of the tanks to the height of so-called "down scale (DS)", where water gauges show 0%. However, each tank has the capacity that accommodates more than the storage volume that accumulates up to the height of "DS."

⁶ The data shown here are those of Cs-137.

⁷ Total treated amount of Cesium adsorption apparatus and 2nd Cesium adsorption apparatus
 Breakdown of the treated amount: Cesium adsorption apparatus (1,450m³)
 2nd Cesium adsorption apparatus (4,260m³)

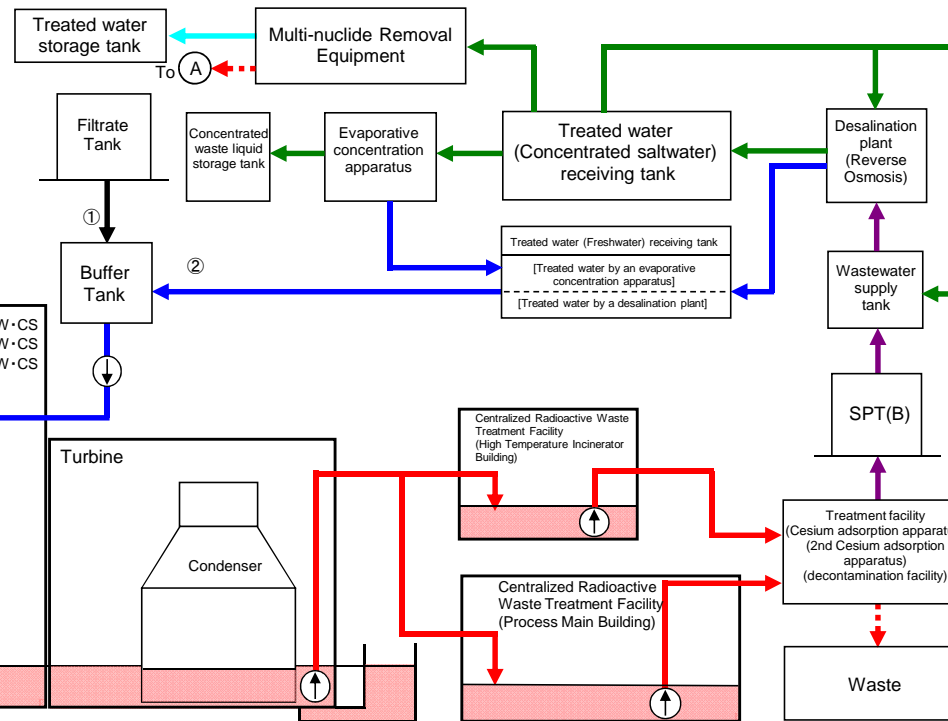
Breakdown of the cumulative treated amount: Cesium adsorption apparatus (280,560m³)
 2nd Cesium adsorption apparatus (929,730m³)
 Cesium adsorption apparatus (614)

⁸ Breakdown of the used vessels: 2nd Cesium adsorption apparatus (124) Others; Storage container (1,394), Treated column (3), Used vessel (117), Filters and so forth (50)

Storage and treatment of high level radioactive accumulated water (as of April 30, 2015)

Classification	
	High level radioactive water/Waste
	Treated water (saltwater)
	Treated water (concentrated saltwater)
	Treated water (freshwater)
	Treated water from Multi-nuclide Removal Equipment
	Freshwater

Volume of water to be injected to Reactor (4/24- 4/30)		Change from last report
① Filtrate water	-	-
② Treated water (freshwater)	2,268m ³	+104m ³
Cumulative treated water	564,661m ³	



Storage volume ^{*2}	Change from last report	Storage capacity ^{*3,4}	
Concentrated saltwater receiving tank ¹	35,388m ³	-11,113m ³	84,900m ³
Freshwater receiving tank	18,315m ³	-756m ³	27,500m ³
Concentrated waste liquid storage tank	9,203m ³	No change	20,000m ³
Treated water storage tank ¹	410,679m ³	+11,979m ³	440,100m ³
Strontium-treated water storage tank	161,303m ³	+2,268m ³	179,500m ³

Facility	Storage volume	Change from last	Water level in T/B
Unit 1	Approx. 13,500m ³	-200m ³	OP.2,711
Unit 2	Approx. 16,600m ³	-400m ³	(Unit 2 T/B)
Unit 3	Approx. 18,500m ³	+500m ³	OP.2,800
Unit 4	Approx. 16,000m ³	+300m ³	(Unit 3 T/B)
Total	Approx. 64,600m ³		

Storage Facility	Storage volume	Change from last report	Water level	Treated volume (4/24 - 4/30)	Cumulative treated volume	Waste produced	Change from last report	Storage capacity	
Process Main Building	Approx. 15,420m ³	+560m ³	OP.4,358	Approx.3,780m ³ ^{*5}	Approx. 1,214,070m ³ ^{*5}	Sludge	597m ³	No Change	700m ³ ^{*3}
High Temperature Incinerator Building	Approx. 4,820m ³	+610m ³	OP.3,184			Used vessels	2,350 ^{*6}	+51	6,055
Total	Approx. 20,240m ³								

[Main operations that are planned to be conducted during the period from April 23, 2015 to April 30, 2015.]

- The facility to which water accumulated at Unit 2 will be transferred will be changed from the High Temperature Incinerator Building to Unit 3 T/B. The facility to which water accumulated at Unit 3 will be transferred will be changed from Unit 3 T/B to the High Temperature Incinerator Building.
- The facility to which water accumulated at Unit 3 will be transferred will be changed from the High Temperature Incinerator Building to the Process Main Building. Water transfer from Unit 3 to the Process Main Building is scheduled to be suspended.
- Water transfer from Unit 3 to the High Temperature Incinerator Building is scheduled to resume.
- The operation of Cesium Adsorption Apparatus is scheduled. (assumed Availability Factor 5%) The operation of Cesium Adsorption Apparatus is scheduled to be suspended.
- The operation of 2nd Cesium Adsorption Apparatus is scheduled (assumed Availability Factor 40%).
- Water transfer from Unit 1 T/B to the Radioactive Waste Treatment Facility is scheduled to be conducted.

*1 "Storage volume" and "Storage capacity" in the table do not include those of the tanks where the removal of contaminated water has been completed (meaning the disposal of residual water is being conducted.)

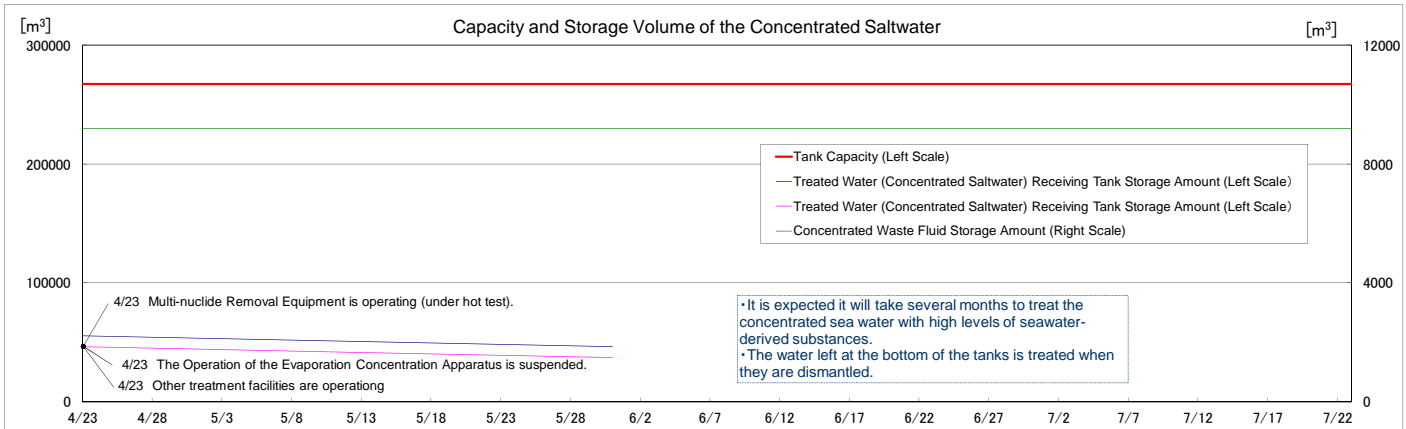
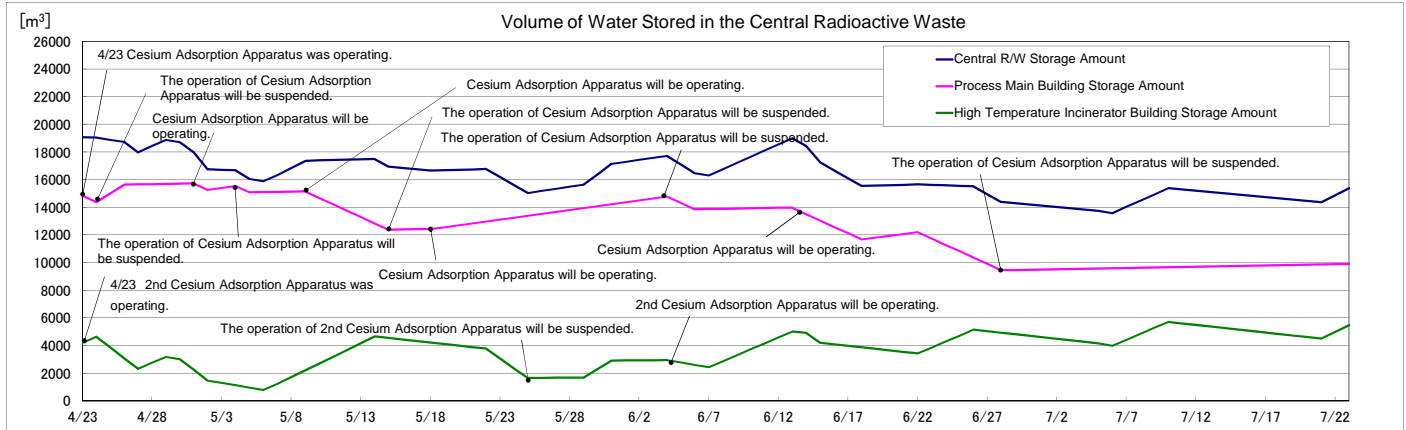
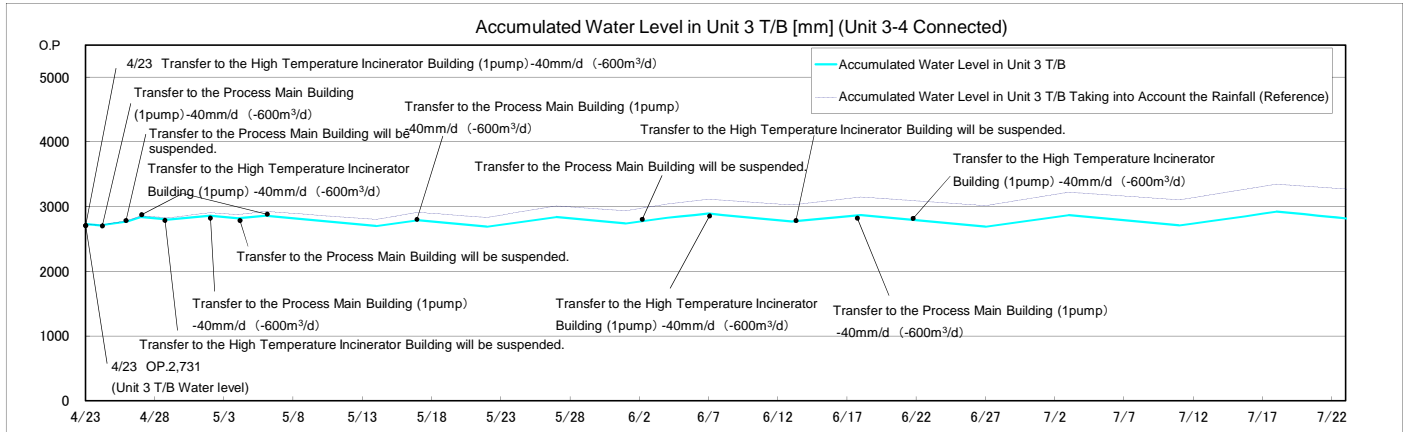
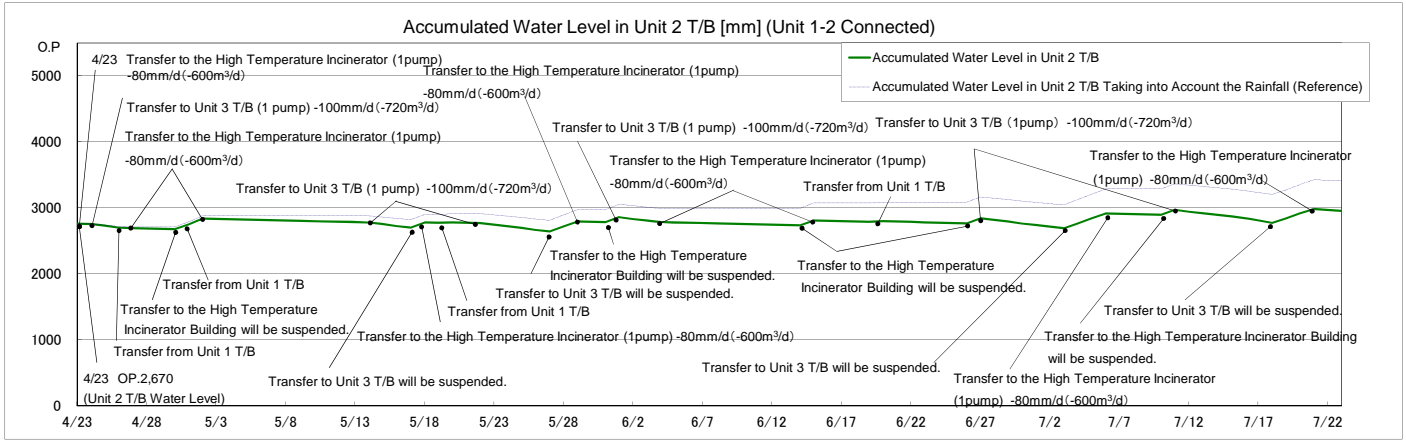
*2 The figures of the storage volume do not include those of the following volumes that have accumulated from the bottom of the tanks to the height of so-called "down scale (DS)," where water gauges show 0%.

*3 The figures of the data show the operational limits.

*4 The figures of "Storage capacity" do not include those of the volumes that have accumulated from the bottom of the tanks to the height of so-called "down scale (DS)," where water gauges show 0%. However, each tank has the capacity that accommodates more than the storage volume that accumulates up to the height of "DS."

*5 Total treated amount of Cesium adsorption apparatus and 2nd Cesium adsorption apparatus
 Breakdown of the treated amount: Cesium adsorption apparatus (420m³)
 2nd Cesium adsorption apparatus (3,360m³)
 Breakdown of the cumulative treated amount: Cesium adsorption apparatus (280,980m³)
 2nd Cesium adsorption apparatus (933,090m³)
 Cesium adsorption apparatus (618)

*6 Breakdown of the used vessels:
 Cesium adsorption apparatus (618)
 2nd cesium Cesium adsorption apparatus (124),
 Others: Storage container (1,436),
 Treated column (3)
 Used vessels (117)



Note

- The treated water volume is assumed to be 720m³/d (Subject to change depending on the level of water accumulated in T/B).
- The accumulated water level in T/B is a simulated water level in consideration of fluctuation of water level such as recent rainfall, inflow of groundwater, etc.
- The accumulated water level in T/B is assumed to increase by 5mm daily, taking into consideration the average rain fall in the surrounding areas of the Fukushima Daiichi Nuclear Power Station (August-October in 2008 to 2010).