Situation of Storage and Treatment of Accumulated Water including Highly Concentrated Radioactive Materials at Fukushima Daiichi Nuclear Power Station (200th Release)

May 8, 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 May 7 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 May 14, 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.

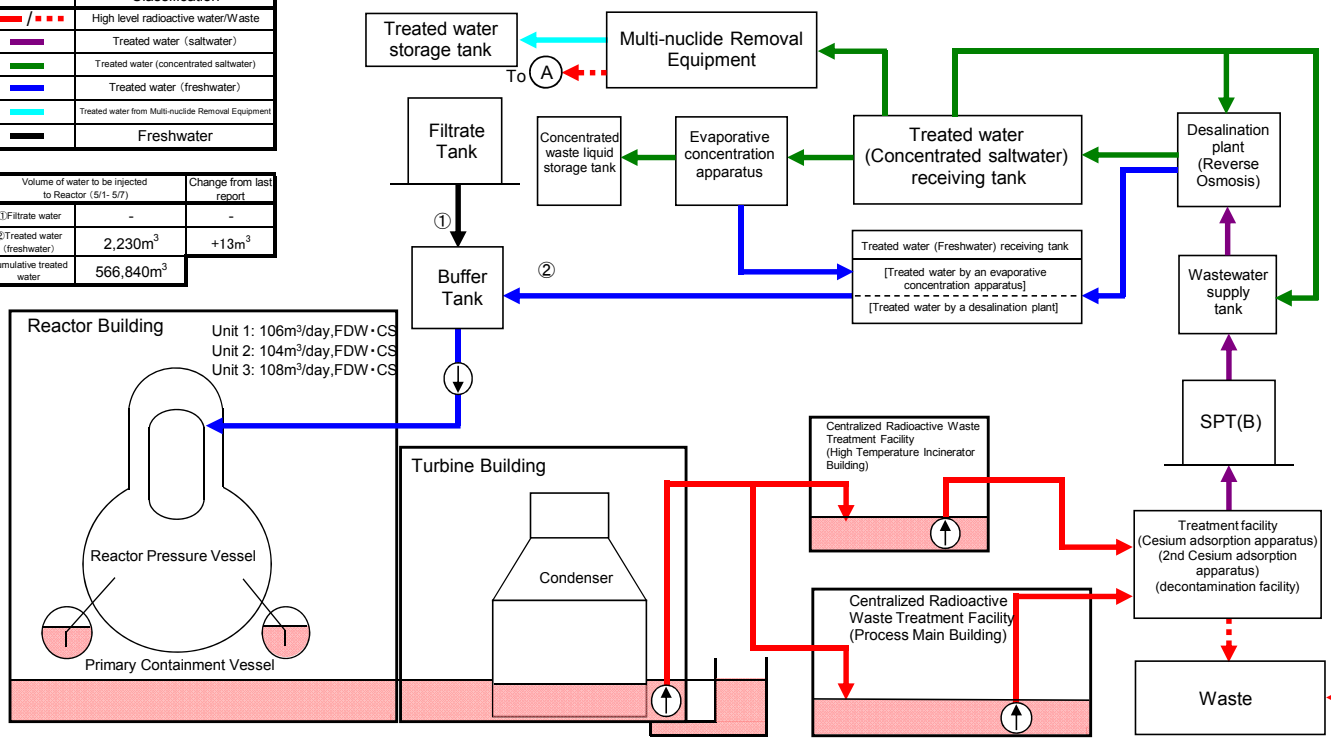
END

Attachment-1

Storage and treatment of high level radioactive accumulated water (as of May 7, 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（5/1- 5/7）		Change from last report
①Filtrate water	-	-
②Treated water (freshwater)	2,230m³	+13m³
Cumulative treated water	566,840m³	



Storage volume*2,3		Change from last report	Storage capacity*4,5
Concentrated saltwater receiving tank*1	24,150m³	-5,593m³	37,500m³
Freshwater receiving tank	18,203m³	−248m³	27,500m³
Concentrated waste liquid storage tank	9,226m³	+11m³	20,000m³
Treated water storage tank	416,981	＋8,154m³	462,200m³
Strontium-treated water storage tank	164,323m³	+5,130m³	179,500m³

Storage volume		Change from last report	Storage volume*4
Wastewater supply tank	790m³	+122m³	1,200m³
SPT(B)	1,142m³	+352m³	3,100m³

	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/cm³（Sampled on Apr.7）
Exit of cesium adsorption apparatus	2.9E+02 Bq/cm³（Sampled on Apr. 7）
Exit of decontamination facility	—
High Temperature Incinerator Building	1.9E+07 Bq/cm³（Sampled on Apr.7）
Exit of second cesium adsorption apparatus	1.2E+03 Bq/cm³（Sampled on Apr.7）

Facility	Storage volume	Change from last	Water level in T/B
Unit 1	Approx. 13,400m³	−100m³	OP.2,397
Unit 2	Approx. 17,500m³	+900m³	OP.2,857
Unit 3	Approx. 19,300m³	+500m³	OP.2,909
Unit 4	Approx. 16,100m³	+200m³	OP.2,817
Total	Approx. 66,300m³		

Storage Facility	Storage volume	Change from last report	Water level	Treated volume (5/1 -5/7)	Cumulative treated volume	Waste produced		Change from last report	Storage capacity
Process Main Building	Approx. 15,890m³	+250m³	OP.4,492	Approx.3,910m³ *7	Approx. 1,218,360m³ *7	Sludge	597m³	No Change	700m³ *4
High Temperature Incinerator Building	Approx. 3,230m³	-890m³	OP.1,870			Used vessels	2,379*8	+35	6,055
Total	Approx. 19,120m³								

[Main operations that have been conducted during the period from April 30, 2015 (the previous announcement data) to May 7, 2015]
- On May 1, water transfer from Unit 2 to the High Temperature Incinerator Building resumed. On May 4, the facility to which water accumulated at Unit 2 had been transferred was changed from the High Temperature Incinerator Building to Unit 3 T/B.
  On May 5, water transfer from Unit 2 to Unit 3 T/B was suspended.
- On May 1, water transfer from Unit 3 to the High Temperature Incinerator Building resumed. On May 4, water transfer from Unit 3 to the High Temperature Incinerator Building was suspended.
- Since Apr. 24, Cesium Adsorption Apparatus has been suspended.
- Cesium Adsorption Apparatus has been operated: the availability factor has been 46.5% (previously assumed: 50%)
- On May 1, water transfer from Unit 1 T/B to the Radioactive Waste Treatment Facility at Unit 1 was conducted
- On May 2, water transfer from the On-site Bunker Building to the Process Main Building was conducted.

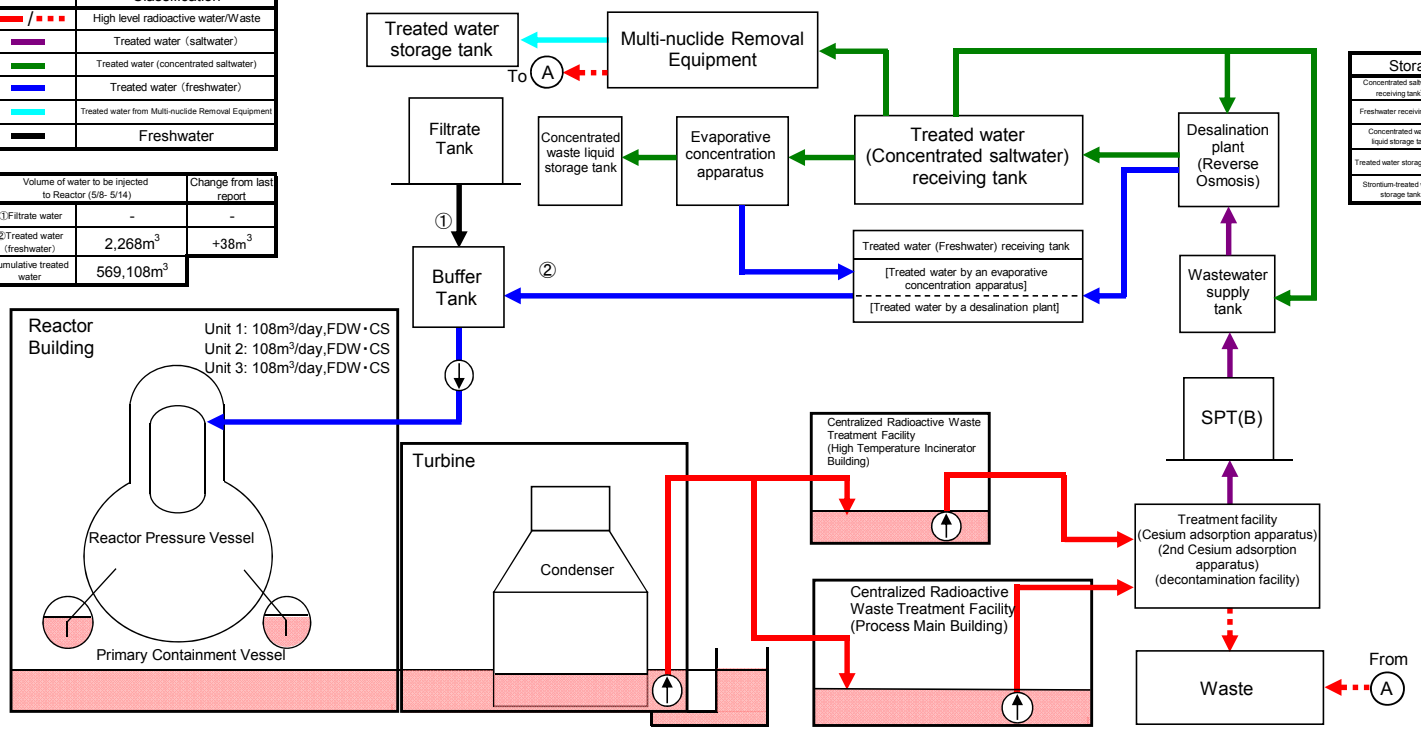
*1 "Storage volume" and "Storage capacity" in the table do not include those of the tanks where the removal of contaminated water has been completed (meaning the disposal of residual water is being conducted.) The tanks and the like where the residual water disposal being conducted are H1 East, H2, H4, H4 East, H4 North, H5, H6, H6 North, E (a part) area, G3 (a part), J1 (a part) area. The storage capacity as of May 7, 2015 is 206,000m³. The volume of the residual water is approx.23,000m³.
*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.1,000m³), 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 accomodates 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 (0m³)
2nd Cesium adsorption apparatus (3,910m³)
Breakdown of the cumulative treated amount: Cesium adsorption apparatus (281,100m³)
2nd Cesium adsorption apparatus (937,260m³)
*8 Breakdown of the used vessels: Cesium adsorption apparatus (618)
2nd cesium Cesium adsorption apparatus (126) Others: Storage container (1,459), Treated column (3) ,Used vessel (119), Filiters and so forth (54)

Attachment-2

Storage and treatment of high level radioactive accumulated water (as of May 7, 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 (5/8- 5/14)		Change from last report
①Filtrate water	-	-
②Treated water (freshwater)	2,268m³	+38m³
Cumulative treated water	569,108m³	



Storage volume*2		Change from last report	Storage capacity*3,4
Concentrated saltwater receiving tank*1	15,950m³	-8,200m³	37,500m³
Freshwater receiving tank	17,615m³	−588m³	27,500m³
Concentrated waste liquid storage tank	9,226m³	No change	20,000m³
Treated water storage tank*5	427,104m³	＋10,123m³	462,200m³
Strontium-treated water storage tank	170,343m³	+6,020m³	179,500m³

Facility	Storage volume	Change from last	Water level in T/B
Unit 1	Approx. 13,400m³	No Change	OP.2,998
Unit 2	Approx. 18,400m³	+900m³	(Unit 2 T/B)
Unit 3	Approx. 18,800m³	-500m³	OP.2,851
Unit 4	Approx. 16,400m³	+300m³	(Unit 3 T/B)
Total	Approx. 67,000m³		

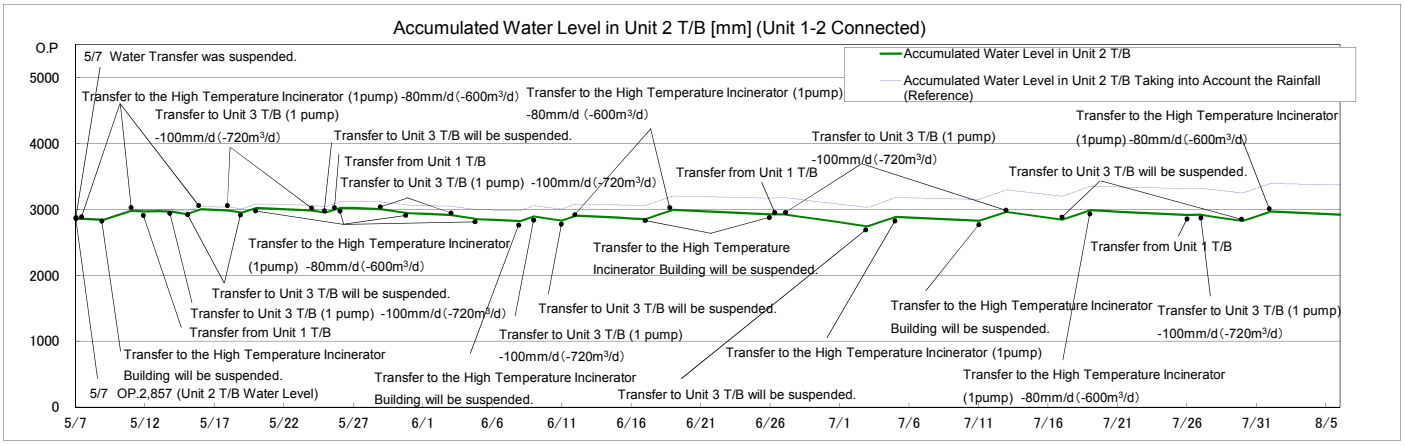
Storage Facility	Storage volume	Change from last report	Water level	Treated volume (5/8 - 5/14)	Cumulative treated volume	Waste produced		Change from last report	Storage capacity
Process Main Building	Approx. 16,020m³	+130m³	OP.4,527	Approx.4,200m³ *5	Approx. 1,222,560m³ *5	Sludge	597m³	No Change	700m³ *3
High Temperature Incinerator Building	Approx. 5,230m³	+2,000m³	OP.3,523			Used vessels	2,425*6	+46	6,055
Total	Approx. 21,250m³								

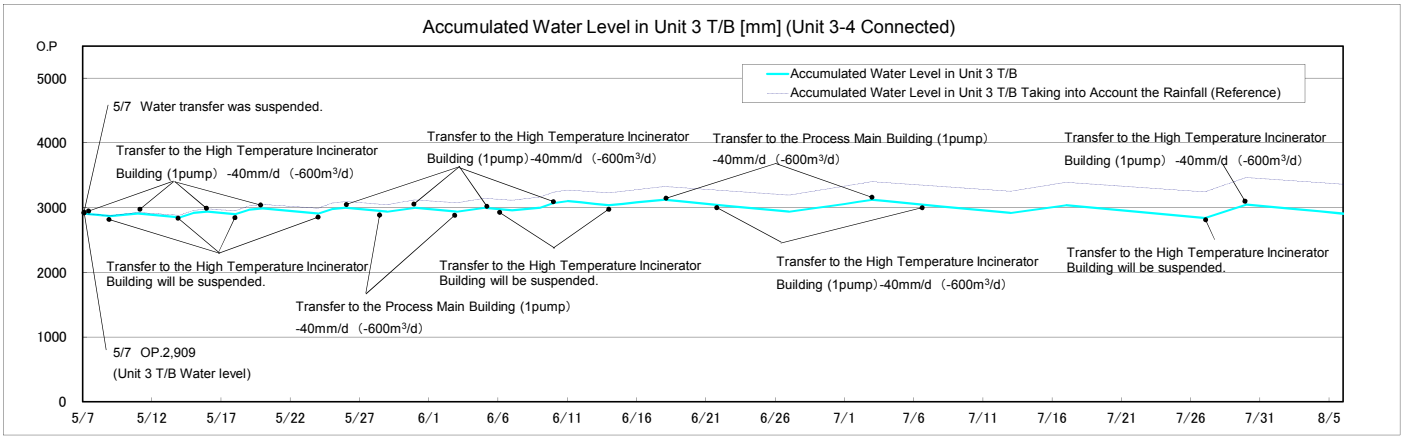
[Main operations that are planned to be conducted during the period from May 7, 2015 to May14, 2015.]
- Water transfer from Unit 2 to the High Temperature Incinerator Building is scheduled to resume. Water transfer from Unit 2 to the High Temperature Incinerator Building is scheduled to be suspended.
  Water transfer from Unit 2 to the High Temperature Incinerator Building is scheduled to resume.
- Water transfer from Unit 3 to the High Temperature Incinerator Building is scheduled to resume. Water transfer from Unit 3 to the High Temperature Incinerator 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 will continue to be suspended.
- The operation of 2nd Cesium Adsorption Apparatus is scheduled (assumed Availability Factor 50%).
- Water transfer from Unit 1 T/B to the Radioactive Waste Treatment Facility is scheduled to be conducted.

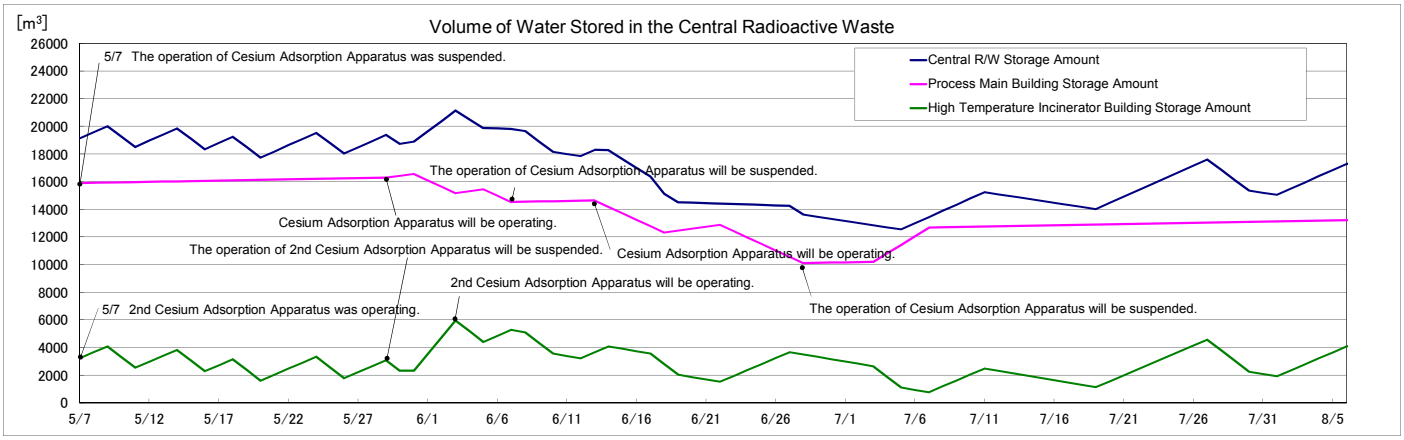
*1 "Storage volume" and "Storage capacity" in the table do not include those of the tanks where the removal of contaminated water has been completed (meaning the disposal of residual water is being conducted.)
*2 The figures of the storage volume do not include those of the following volumes that have 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 accomodates 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 (0m³)
2nd Cesium adsorption apparatus (4,200m³)
Breakdown of the cumulative treated amount: Cesium adsorption apparatus (281,100m³)
2nd Cesium adsorption apparatus (941,460m³)
*5 Breakdown of the used vessels: Cesium adsorption apparatus (618)
2nd cesium Cesium adsorption apparatus (126),
Others: Storage container (1,501),
Treated column (3)
Used vessels (122)
Filters and so forth (55)

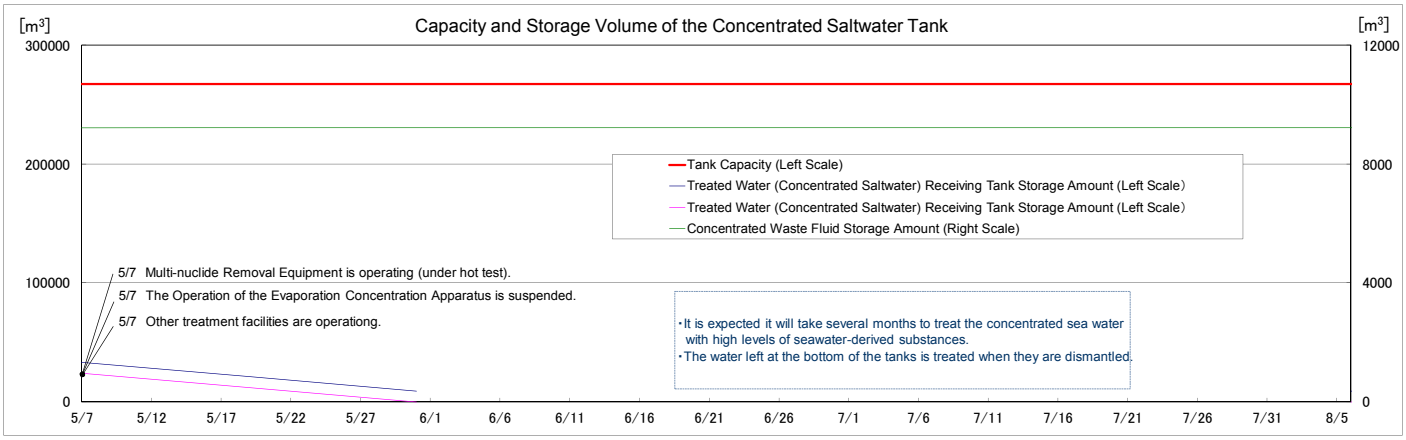
Simulation Results of Accumulated Water Treatment in Unit 1-4 T/B

Attachment-3









Note

- The amount of water treated by the 2nd Cesium Adsorption Apparatus is assumed to be 780m3/d (Subject to change depending on the factors such as the levels of water accumulated in T/Bs).
- "Accumulated Water Levels in Unit 2 and 3 T/Bs" are simulated water levels in consideration of the change of the water levels caused by recent rainfall, inflow of groundwater, etc. in the surrounding areas of the Fukushima Daiichi Nuclear Power Station.
- "Accumulated Water Levels in Unit 2 and 3 T/Bs Taking into Account the Rainfall" are simulated water levels which are calculated by adding to the accumulated water water amounts which are assumed to increase at the rate of 5mm a day when the surrounding areas of the Fukushima Daiichi Nuclear Power Station have the rainfall equal to the average amount of rain which fell for three months from August to October in 2008 to 2010.
- The storage capacity in the graph includes that of the tanks where the removal of contaminated water has been completed (meaning the disposal of residual water is being conducted.)