Situation of Storage and Treatment of Accumulated Water including Highly Concentrated Radioactive Materials at Fukushima Daiichi Nuclear Power Station (187th Release)

February 6, 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 future forecast based upon the current situation have 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 February 5 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 February 12, 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.

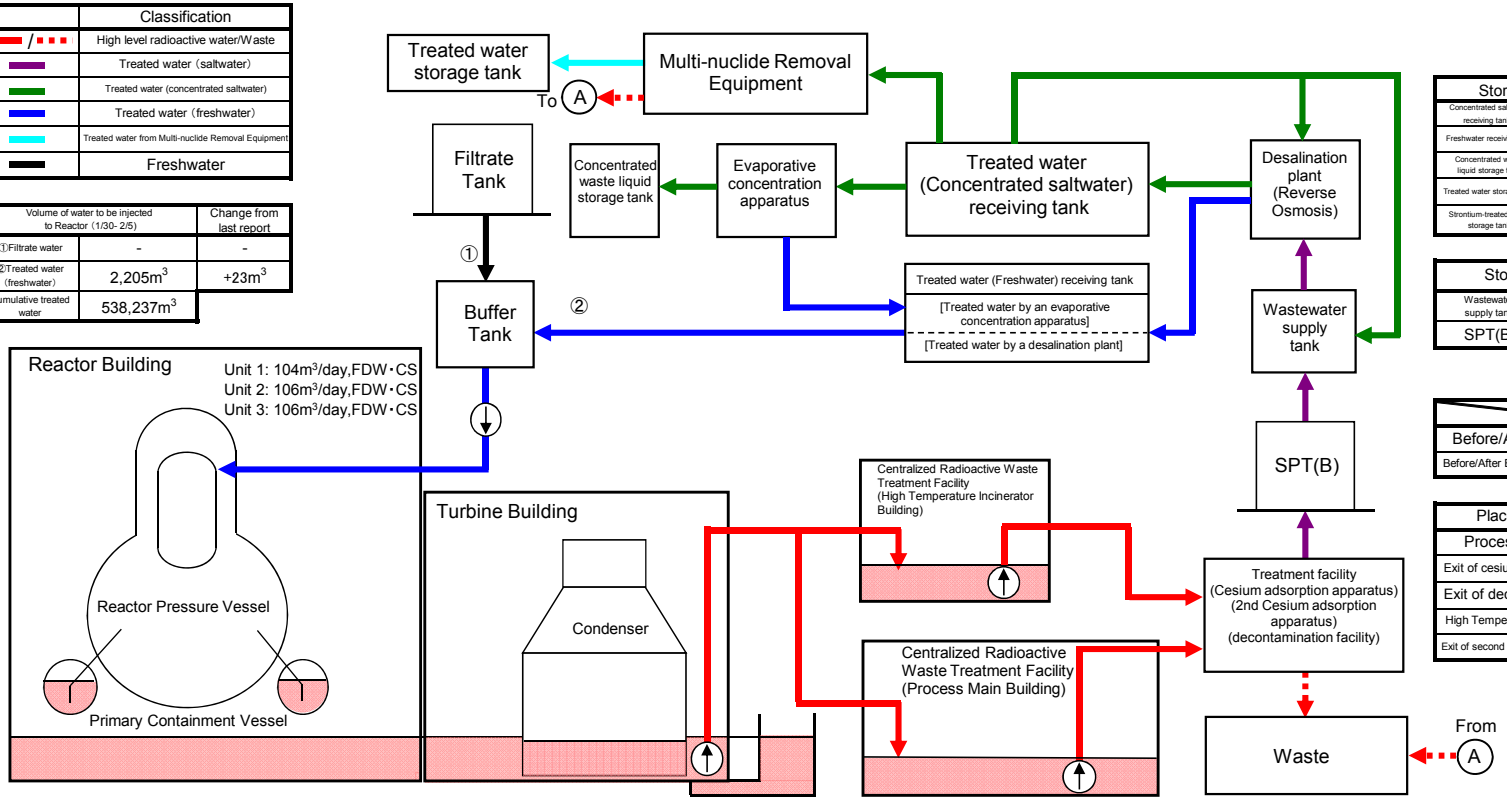
END

Attachment-1

Storage and treatment of high level radioactive accumulated water (as of February 5, 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 (1/30- 2/5)		Change from last report
①Filtrate water	-	-
②Treated water (freshwater)	2,205m³	+23m³
Cumulative treated water	538,237m³	



Storage volume*1		Change from last report	Storage capacity*2,3
Concentrated saltwater receiving tank*4	241,903m³	-18,496m³	359,400m³
Freshwater receiving tank	23,951m³	−61m³	27,500m³
Concentrated waste liquid storage tank	8,899m³	-27m³	20,000m³
Treated water storage tank	297,063m³	+8,506m³	324,700m³
Strontium-treated water storage tank	31,761m³	+13,996m³	40,000m³

Storage volume		Change from last report	Storage volume*2
Wastewater supply tank	659m³	−29m³	1,200m³
SPT(B)	1,099m³	+434m³	3,100m³

	Chloride concentration
Before/After Desalination	460ppm /1ppm (Sampled on Jan. 13)
Before/After Evaporative Concentration	6,900ppm/2ppm (Sampled on Dec. 20, 2011)

Place of Sampling	Radioactivity density*5
Process Main Building	3.1E+04 Bq/cm³ (Sampled on Jan.10)
Exit of cesium adsorption apparatus	1.2E+01 Bq/cm³ (Sampled on Jan. 10)
Exit of decontamination facility	—
High Temperature Incinerator Building	3.0E+04 Bq/cm³ (Sampled on Jan.13)
Exit of second cesium adsorption apparatus	8.2E-01 Bq/cm³ (Sampled on Jan. 13)

Facility	Storage volume	Change from last	Water level in T/B
Unit 1	Approx. 13,200m³	+100m3	OP.2,395
Unit 2	Approx. 15,700m³	+300m³	OP.2,570
Unit 3	Approx. 19,300m³	−300m³	OP.2,497
Unit 4	Approx. 14,800m³	-400m³	OP.2,535
Total	Approx. 63,000m³		

Storage Facility	Storage volume	Change from last report	Water level	Treated volume (1/30 -2/5)	Cumulative treated volume	Waste produced		Change from last report	Storage capacity
Process Main Building	Approx. 15,970m³	−540m³	OP.4,514	Approx.6,740m³ *6	Approx. 1,154,490m³ *6	Sludge	597m³	No Change	700m³ *2
High Temperature Incinerator Building	Approx. 2,620m³	-910m³	OP.1,364			Used vessels	1,740*7	+67	3,317
Total	Approx. 18,590m³								

[Main operations that have been conducted during the period from January 29, 2015 (the previous announcement data) to Feburary 5, 2015]
- Water transfer from Unit 2 to the High Temperature Incinerator Building has been conducted.
- On Jan. 30, water transfer from Unit 3 to the Process Main Building was suspended. On Feb. 1, water transfer from Unit 3 to the Process Main Building resumed; and since then, the transfer has continued.
- Cesium Absorption Apparatus and 2nd Cesium Absorption Apparatus have been in operation ;the availability factor of the former is 38.9% (previously assumed: 40%) and the availability of the latter is 41.3% (previously assumed: 40%)
- On Jan.29, the operation of 2nd Cesium Absorption Apparatus resumed.
- Storage capacity of the Concentrated Saltwater Storage Tank and the Strontium-Treated Water Storage Tank has been increased by adding tanks.

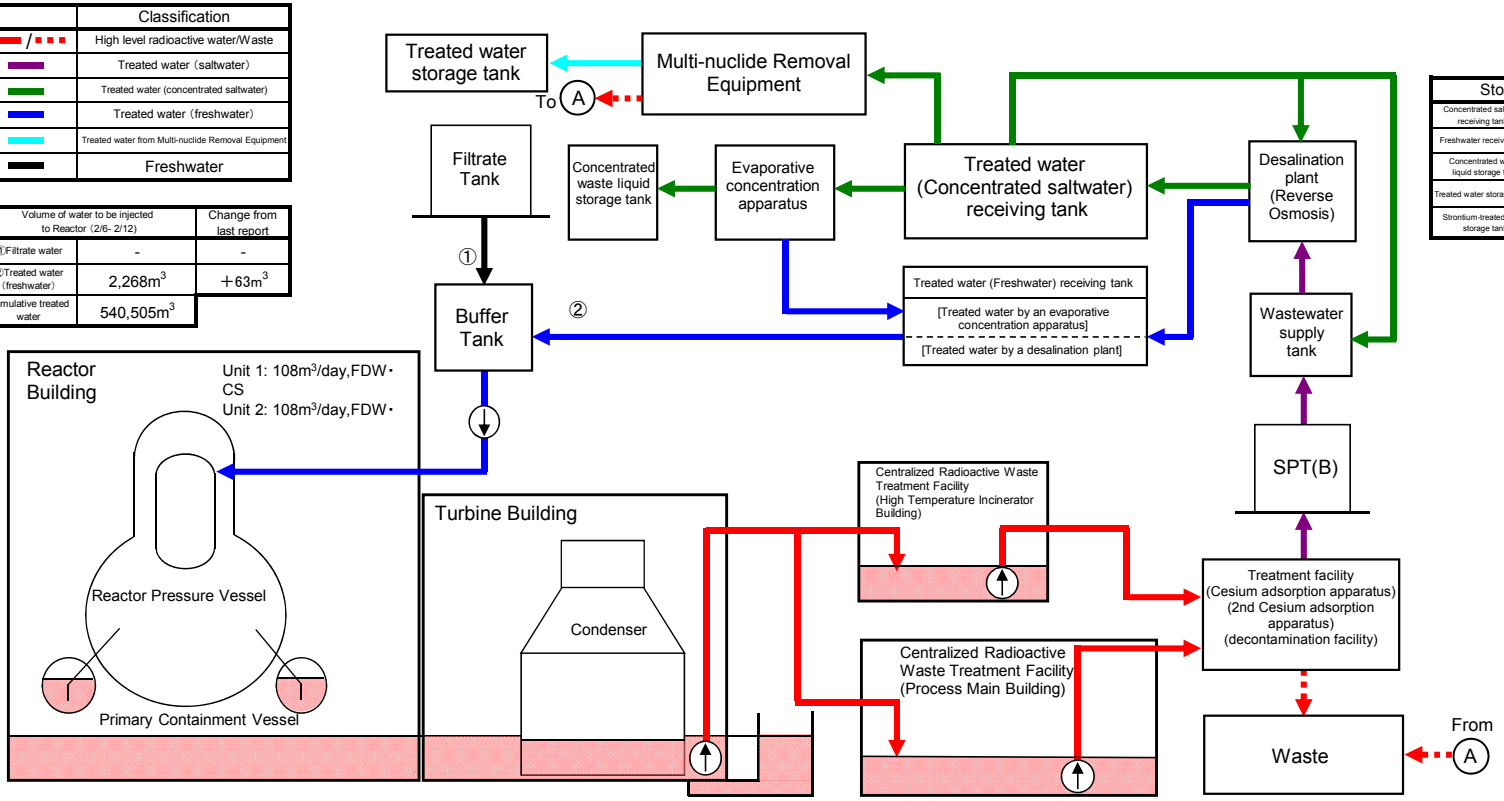
*1 As for the desalination plant (reverse osmosis) or the evaporative concentration apparatus, the data is treated as a reference, because the water levels are not stable during the operation.
*2 Shows the operational limit.
*3 The underground reservoirs are not included in the figure.
*4 Storage capacity of the filtrate water tank (4,600m³) is included in the figure.
*5 The data shown here are those of Cs-137.
*6Total treated amount of Cesium adsorption apparatus and 2nd Cesium adsorption apparatus
Breakdown of the treated amount: Cesium adsorption apparatus (3,270m³)
2nd Cesium adsorption apparatus (3,470m³)
Breakdown of the cumulative treated amount: Cesium adsorption apparatus (255,370m³)
2nd Cesium adsorption apparatus (899,120m³)
*7 Breakdown of the used vessels: Cesium adsorption apparatus (558)
2nd cesium Cesium adsorption apparatus (120),
Others: Storage container (985),
Treated column (3)
Used vessel (57)
Filters (17)

Attachment-2

Storage and treatment of high level radioactive accumulated water (as of February 12, 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 (2/6- 2/12)		Change from last report
①Filtrate water	-	-
②Treated water (freshwater)	2,268m^3	+63m^3
Cumulative treated water	540,505m^3	



Storage volume		Change from last report	Storage capacity*1*2
Concentrated saltwater receiving tank*3	225,890m^3	-16,013m^3	350,900m^3
Freshwater receiving tank	23,027m^3	−924m^3	27,500m^3
Concentrated waste liquid storage tank	8,899m^3	No change	20,000m^3
Treated water storage tank*4	308,342m^3	+11,279m^3	324,700m^3
Strontium-treated water storage tank	39,377m^3	+7,616m^3	48,500m^3

Facility	Storage volume	Change from last	Water level in T/B
Unit 1	Approx. 13,200m^3	No Change	OP.2,536
Unit 2	Approx. 15,400m^3	-300m^3	(Unit 2 T/B)
Unit 3	Approx. 19,900m^3	+600m^3	OP.2,574
Unit 4	Approx. 15,100m^3	+300m^3	(Unit 3 T/B)
Total	Approx. 63,600m^3		

Storage Facility	Storage volume	Change from last report	Water level	Treated volume (2/6 - 2/12)	Cumulative treated volume
Process Main Building	Approx. 15,050m^3	−920m^3	OP.4,253	Approx.3,360m^3 *4	Approx. 1,157,850m^3 *4
High Temperature Incinerator Building	Approx. 4,790m^3	+2,170m^3	OP.3,155		
Total	Approx. 19,840m^3				

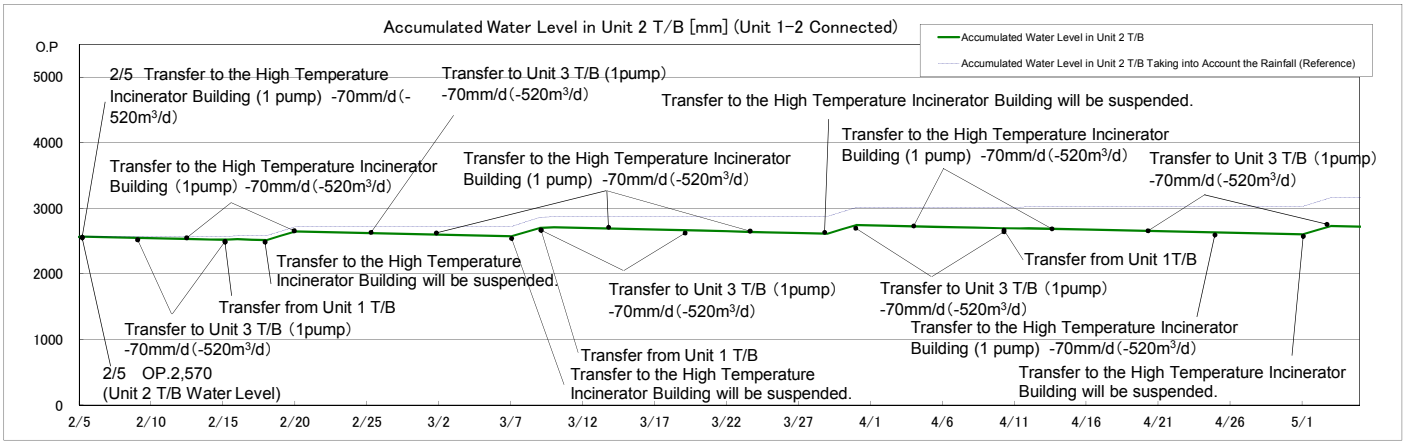
Waste produced		Change from last report	Storage capacity
Sludge	597m^3	No Change	700m^3 *1
Used vessels	1,795*5	+55	3,317

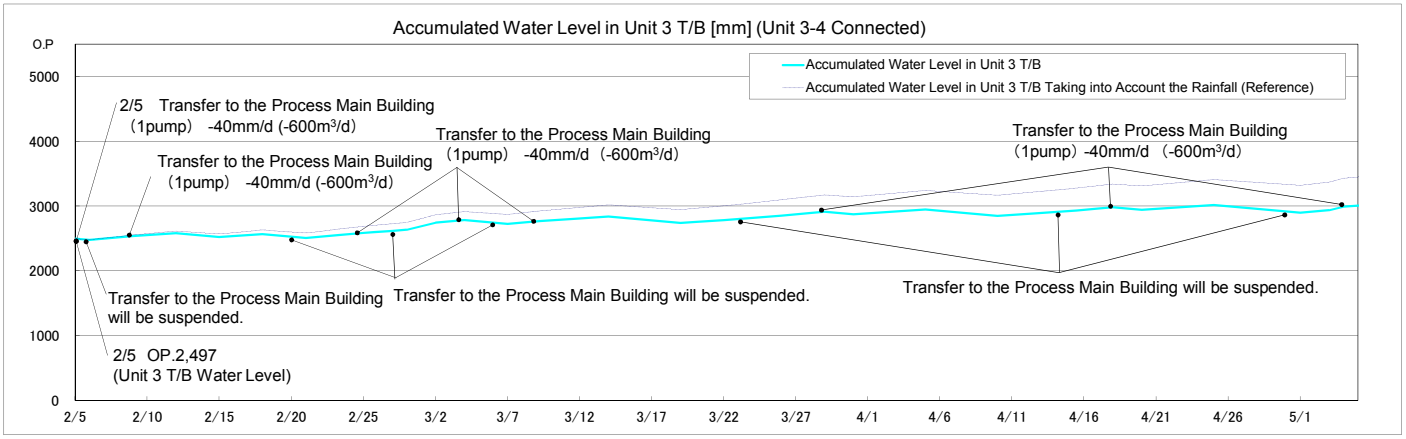
[Main operations that are planned to be conducted during the period from February 5, 2015 to February 12, 2015.]
- The facilities to which water at Unit 2 will be transferred will be changed from the High Temperature Incinerator Building to Unit 3 T/B.
- Water transfer from Unit 3 to the Process Main Building will be suspended; and water transfer from Unit 3 to the Process Main Building is scheduled to resume.
- The operation of Cesium Absorption Apparatus is scheduled: Assumed Availability Factor 40%
- The operation of 2nd Cesium Absorption Apparatus is scheduled to be suspended.
- Water pumping will be carried out to inject some grout into the underground tunnels at Unit 3 whenever it is necessary.
- Storage capacity of the Concentrated Saltwater Storage Tank and Strontium-Treated Water Storage Tank has been increased by adding tanks.

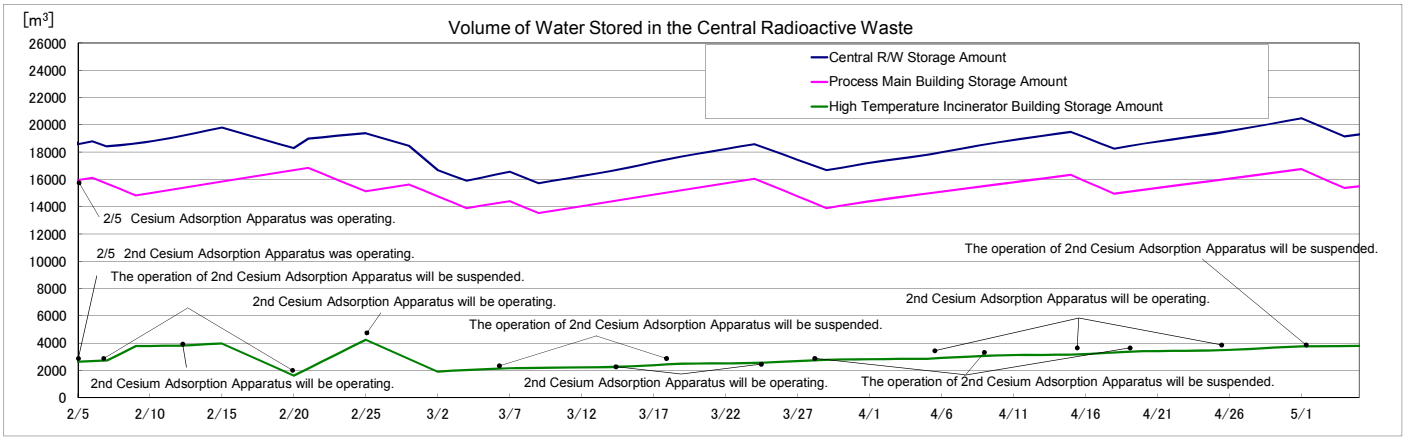
*1 Shows the operational limit. *2 The underground reservoirs are not included in the figure.
*3 Storage capacity of the filtrate water tank (4,600m^3) is included in the figure.
*4 Total treated amount of Cesium adsorption apparatus and 2nd Cesium adsorption apparatus
Breakdown of the treated amount: Cesium adsorption apparatus (3,360m^3)
2nd Cesium adsorption apparatus (0m^3)
Breakdown of the cumulative treated amount: Cesium adsorption apparatus (258,730m^3)
2nd Cesium adsorption apparatus (899,120m^3)
*5 Breakdown of the used vessels: Cesium adsorption apparatus (566)
2nd cesium Cesium adsorption apparatus (121),
Others: Storage container (1027),
Treated column (3)
Used vessels (59)
Filters (19)

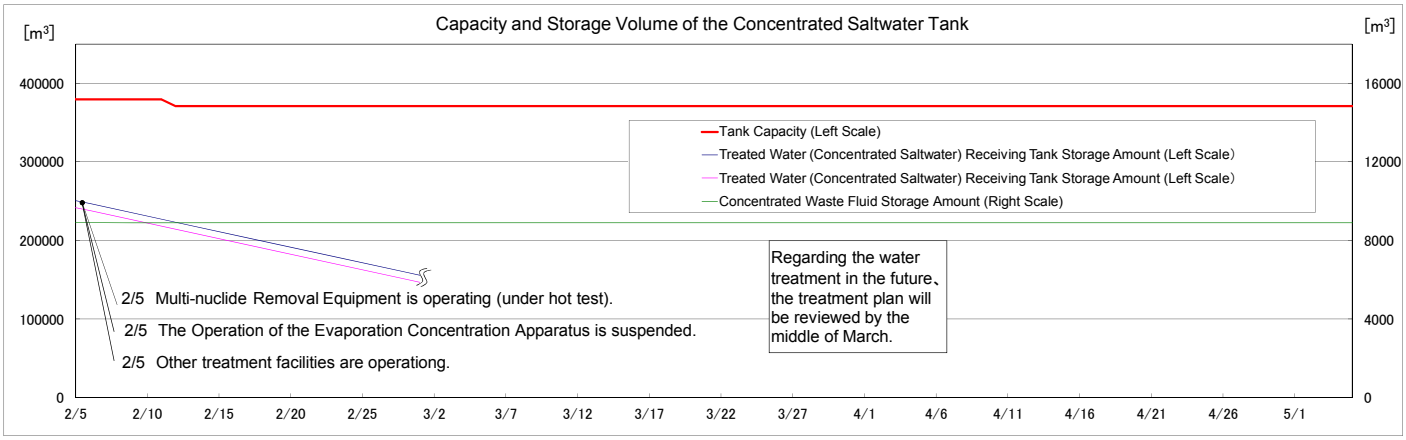
Simulation Results of Accumulated Water Treatment in Unit 1-4 T/B

Attachment-3









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 flactuation 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).