Situation of Storage and Treatment of Accumulated Water including Highly Concentrated Radioactive Materials at Fukushima Daiichi Nuclear Power Station (191st Release)

March 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 March 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 March 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.

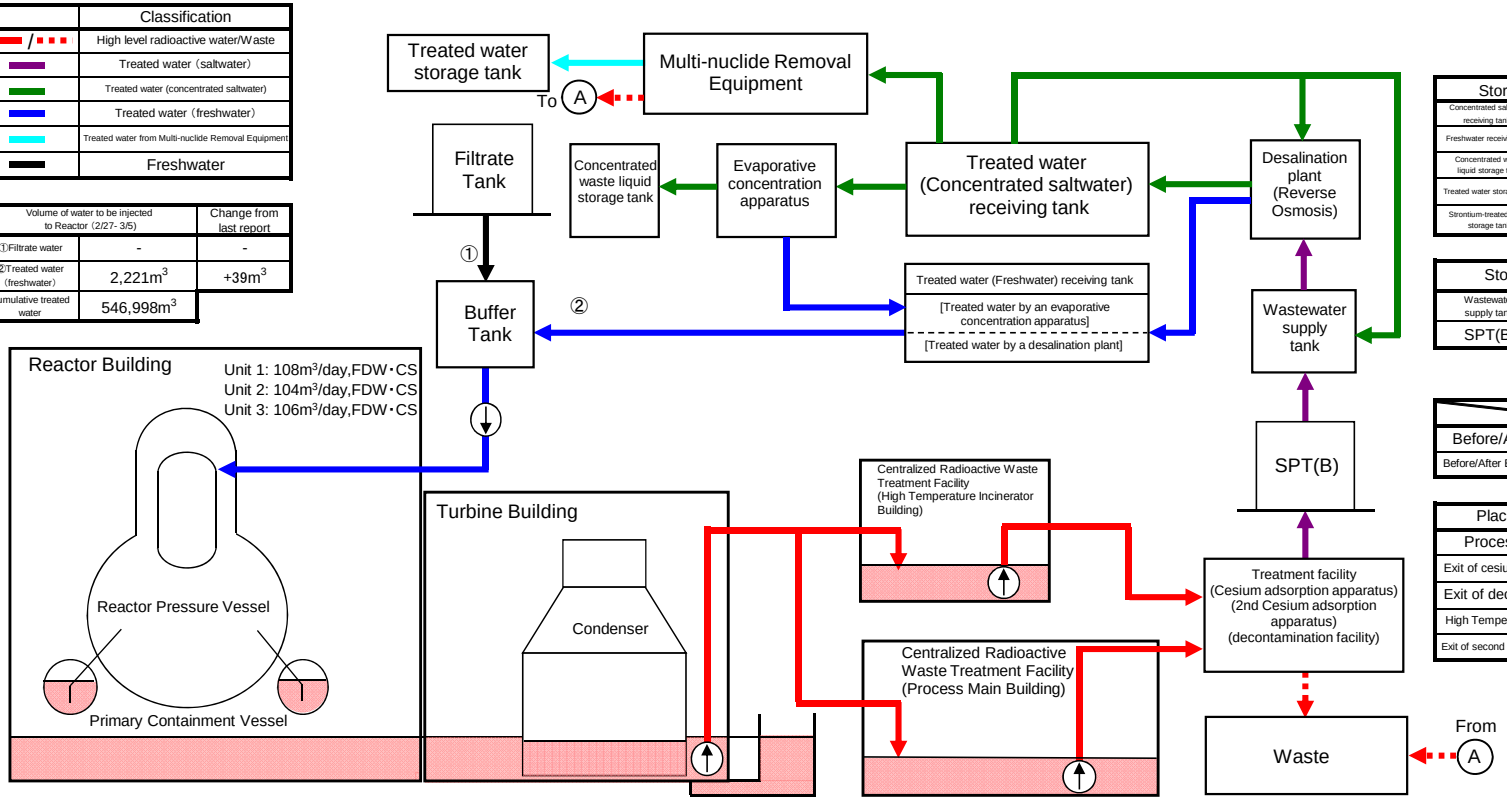
END

Attachment-1

Storage and treatment of high level radioactive accumulated water (as of March 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（2/27- 3/5）		Change from last report
①Filtrate water	-	-
②Treated water（freshwater）	2,221m³	+39m³
Cumulative treated water	546,998m³	



Storage volume*1		Change from last report	Storage capacity*2,3
Concentrated saltwater receiving tank*4	180,361m³	-21,755m³	324,500m³
Freshwater receiving tank	22,034m³	−609m³	27,500m³
Concentrated waste liquid storage tank	9,254m³	+363m³	20,000m³
Treated water storage tank	328,377m³	+6,827m³	343,700m³
Strontium-treated water storage tank	73,197m³	+16,956m³	83,100m³

Storage volume		Change from last report	Storage volume*2
Wastewater supply tank	738m³	−30m³	1,200m³
SPT(B)	1152m³	+322m³	3,100m³

	Chloride concentration
Before/After Desalination	450ppm /9ppm（Sampled on Mar. 3）
Before/After Evaporative Concentration	–

Place of Sampling	Radioactivity density*5
Process Main Building	2.2E+04 Bq/cm³（Sampled on Feb.10）
Exit of cesium adsorption apparatus	1.7E-01 Bq/cm³（Sampled on Feb. 10）
Exit of decontamination facility	–
High Temperature Incinerator Building	2.2E+04 Bq/cm³（Sampled on Mar.3）
Exit of second cesium adsorption apparatus	6.9E+00 Bq/cm³（Sampled on Mar. 3）

Facility	Storage volume	Change from last	Water level in T/B
Unit 1	Approx. 13,700m³	+300m³	OP.2,573
Unit 2	Approx. 16,900m³	+600m³	OP.2,747
Unit 3	Approx. 19,100m³	+100m³	OP.2,659
Unit 4	Approx. 15,300m³	+600m³	OP.2,655
Total	Approx. 65,000m³		

Storage Facility	Storage volume	Change from last report	Water level	Treated volume (2/27 -3/5)	Cumulative treated volume
Process Main Building	Approx. 16,570m³	+230m³	OP.4,685	Approx.3,600m³ *6	Approx. 1,170,490m³ *6
High Temperature Incinerator Building	Approx. 4,860m³	+190m³	OP.3,213		
Total	Approx. 21,430m³				

Waste produced		Change from last report	Storage capacity
Sludge	597m³	No Change	700m³ *2
Used vessels	1,937*7	+43	4,469

[Main operations that have been conducted during the period from Feburary 26, 2015 (the previous announcement data) to March 5, 2015]
- On Feb.27, water transfer from Unit 2 to Unit 3 T/B was suspended. On Mar.2, water transfer from Unit 2 to the High Temperature Incinerator Building resumed;and since then the transfer has continued.
- On Feb. 28, water transfer from Unit 3 to the Process Main Building was suspended. On Mar.3, water transfer from Unit 3 to the Process Main Building resumed, 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 26.4% (previously assumed: 25%) and the availability of the latter was 16.4% (previously assumed: 20%)
- On Mar.2, the operation of Cesium Adsorption Apparatus was suspended, and on Mar.4, it resumed.
- On Mar.2, the operation of 2nd Cesium Adsorption Apparatus resumed.
- Storage capacity of the Concentrated Saltwater Storage Tank, the Treated Water Storage Tank and the Strontium-Treated Water Storage Tank has been increased by adding tanks.

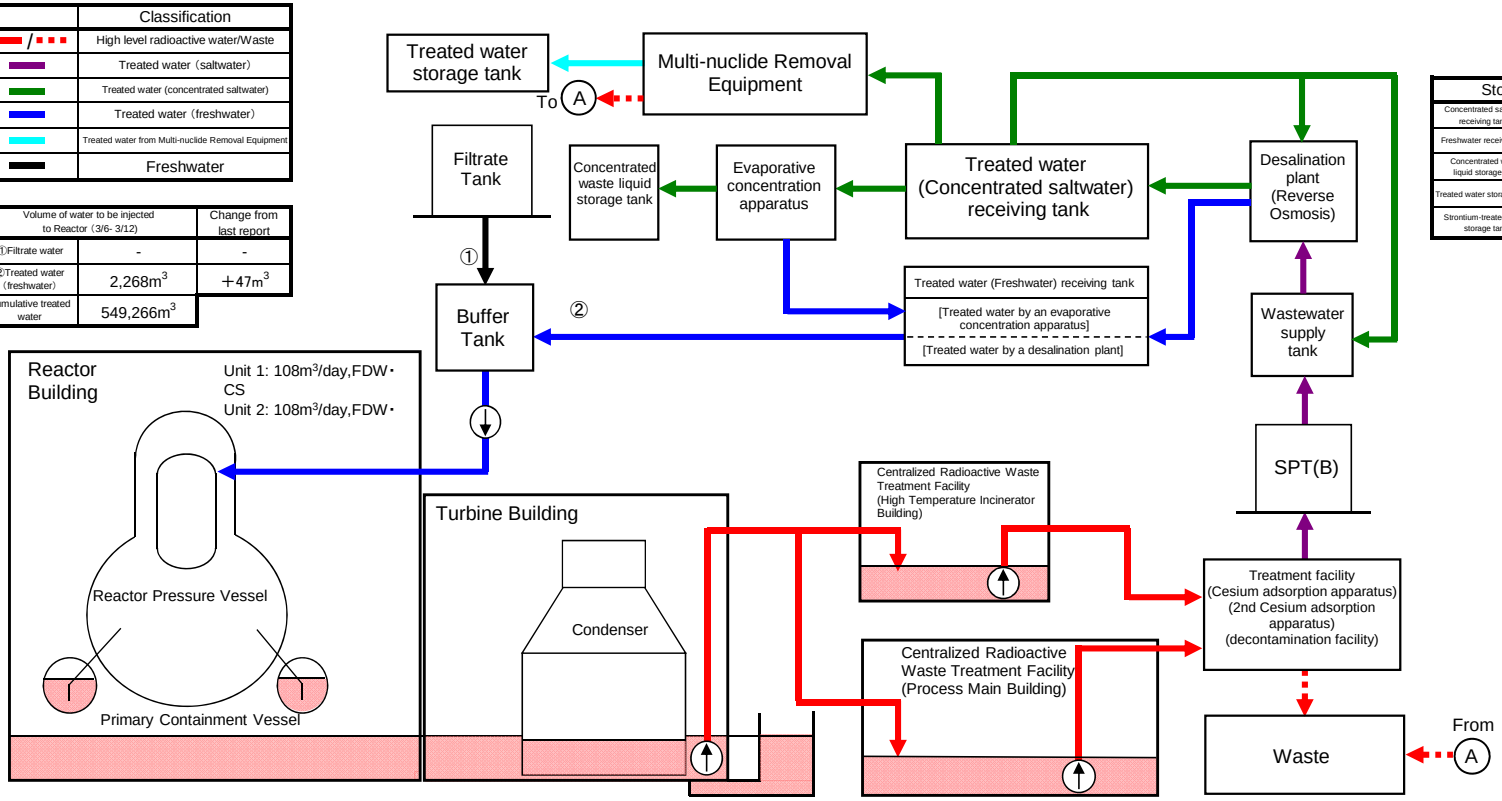
*1The figures of the data are treated as a reference, because water levels during water transfer are not stable.
*2The figures of the data show the operational limits.
*3 The underground reservoirs are not included in the figures.
*4 Storage capacity of the filtrate water tank (4,600m³) is included in 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 (2,220m³)
2nd Cesium adsorption apparatus (1,380m³)
Breakdown of the cumulative treated amount: Cesium adsorption apparatus (266,490m³)
2nd Cesium adsorption apparatus (904,000m³)
*7 Breakdown of the used vessels: Cesium adsorption apparatus (582)
2nd cesium Cesium adsorption apparatus (121),
Others: Storage container (1,131),
Treated column (3)
Used vessel (70)
Filiters and so forth (30)

Attachment-2

Storage and treatment of high level radioactive accumulated water (as of March 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（3/6- 3/12）		Change from last report
①Filtrate water	-	-
②Treated water（freshwater）	2,268m^3	＋47m^3
Cumulative treated water	549,266m^3	



Storage volume		Change from last report	Storage capacity*1*2
Concentrated saltwater receiving tank*3	165,248m^3	-15,113m^3	324,500m^3
Freshwater receiving tank	22,286m^3	+252m^3	27,500m^3
Concentrated waste liquid storage tank	9,254m^3	No change	20,000m^3
Treated water storage tank*4	340,356m^3	＋11,979m^3	343,700m^3
Strontium-treated water storage tank	80,977m^3	+7,780m^3	83,100m^3

Facility	Storage volume	Change from last	Water level in T/B
Unit 1	Approx. 13,700m^3	No Change	OP.2,655
Unit 2	Approx. 16,200m^3	-700m^3	(Unit 2 T/B)
Unit 3	Approx. 19,000m^3	-100m^3	OP.2,697
Unit 4	Approx. 15,600m^3	+300m^3	(Unit 3 T/B)
Total	Approx. 64,500m^3		

Storage Facility	Storage volume	Change from last report	Water level	Treated volume (3/6 - 3/12)	Cumulative treated volume
Process Main Building	Approx. 16,040m^3	−530m^3	OP.4,533	Approx.6,300m^3 *4	Approx. 1,176,790m^3 *4
High Temperature Incinerator Building	Approx. 5,710m^3	+850m^3	OP.3,921		
Total	Approx. 21,750m^3				

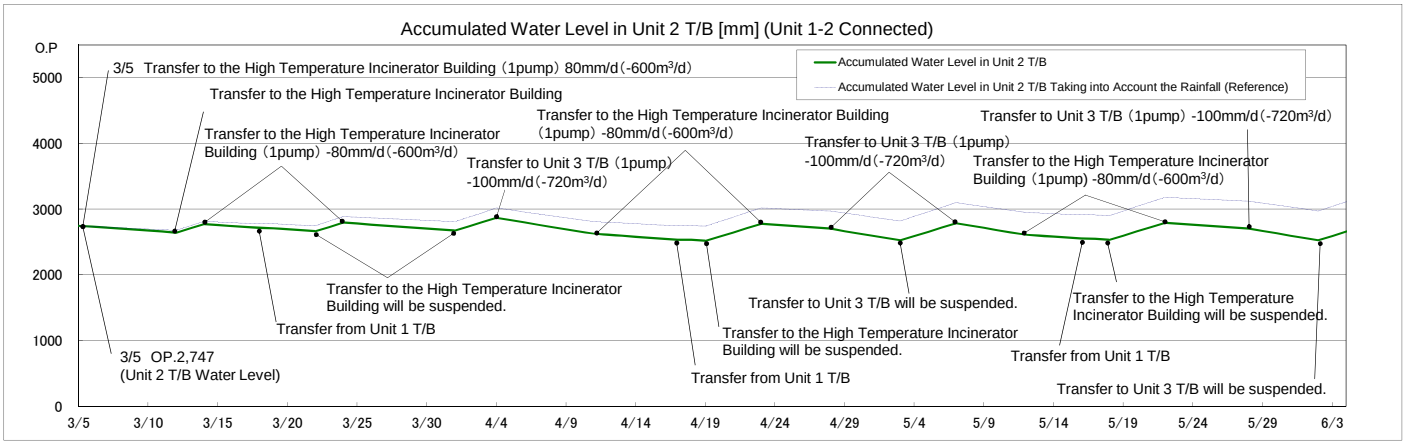
Waste produced		Change from last report	Storage capacity
Sludge	597m^3	No Change	700m^3 *1
Used vessels	1,995*5	+58	4,469

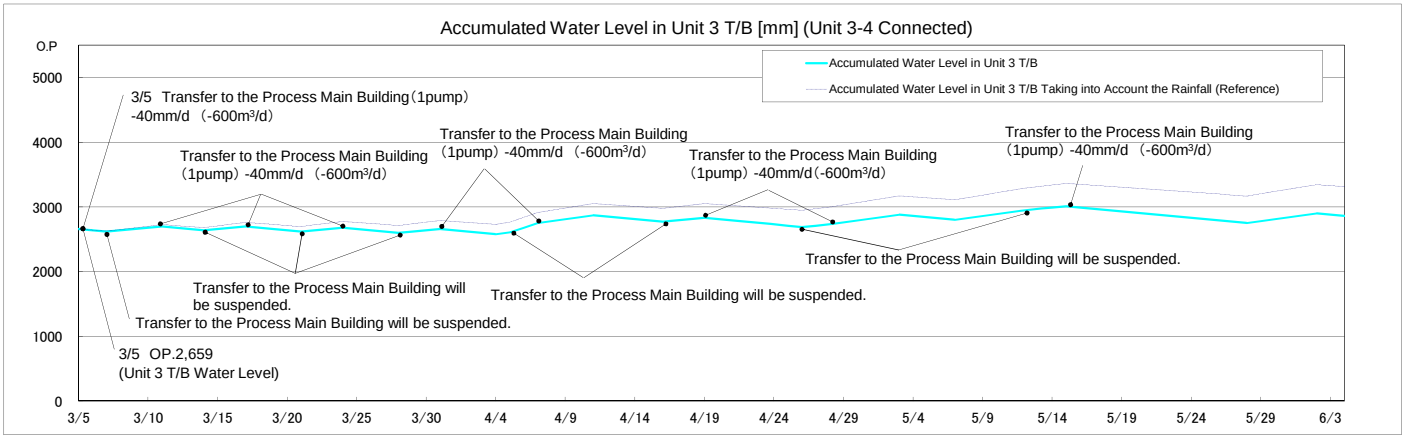
[Main operations that are planned to be conducted during the period from March 5, 2015 to March 12, 2015.]
- Water transfer from Unit 2 to the High Temperature Incinerator Building is scheduled to be conducted.
- Water transfer from Unit 3 to the Process Main Building is scheduled to be suspended and later to resume.
- The operation of Cesium Adsorption Apparatus is scheduled; Assumed Availability Factor 30%. The operation of Cesium Adsorption Apparatus is scheduled to be suspended, and later to resume.
- The operation of 2nd Cesium Adsorption Apparatus is scheduled; Assumed Availability Factor 45%.
- Water pumping will be carried out to inject some grout into the underground tunnels at Unit 2 whenever it is necessary.
- Water pumping will be carried out to inject some grout into the underground tunnels at Unit 3 whenever it is necessary.

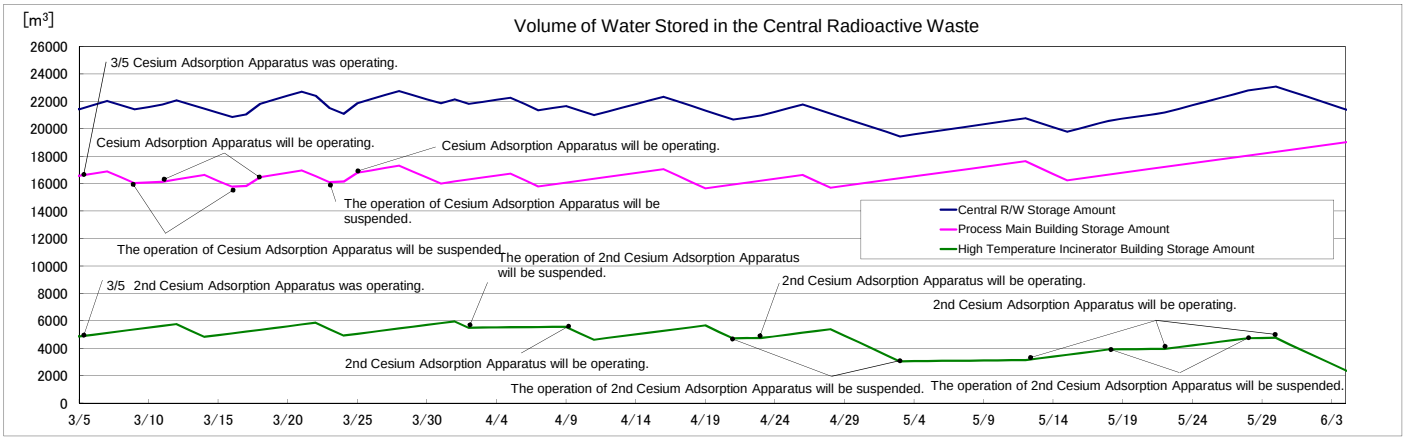
*1 The data show the operational limits. *2 The underground reservoirs are not included in the figures.
*3 Storage capacity of the filtrate water tank (4,600m^3) is included in the figure.
*4 Total treated amount of Cesium adsorption apparatus and 2nd Cesium adsorption apparatus
Breakdown of the treated amount: Cesium adsorption apparatus (2,520m^3)
2nd Cesium adsorption apparatus (3,780m^3)
Breakdown of the cumulative treated amount: Cesium adsorption apparatus (269,010m^3)
2nd Cesium adsorption apparatus (907,780m^3)
*5 Breakdown of the used vessels: Cesium adsorption apparatus (586)
2nd cesium Cesium adsorption apparatus (121),
Others: Storage container (1,173),
Treated column (3)
Used vessels (77)
Filters and so forth (35)

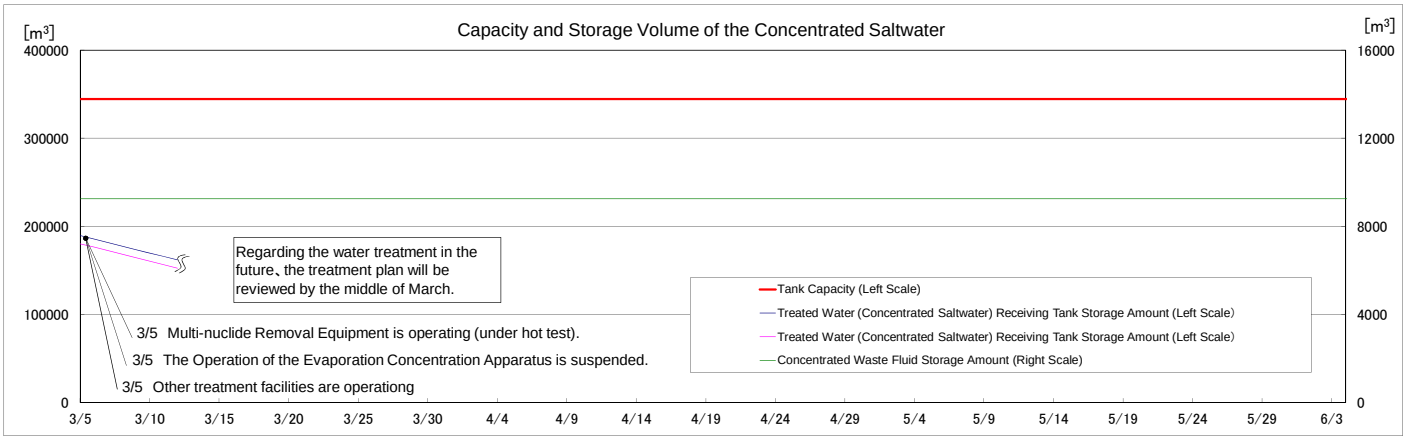
Attachment-3

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









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).