

Situation of Storage and Treatment of Accumulated Water including Highly Concentrated Radioactive Materials at Fukushima Daiichi Nuclear Power Station (189th Release)

February 20, 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 19 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 26, 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.

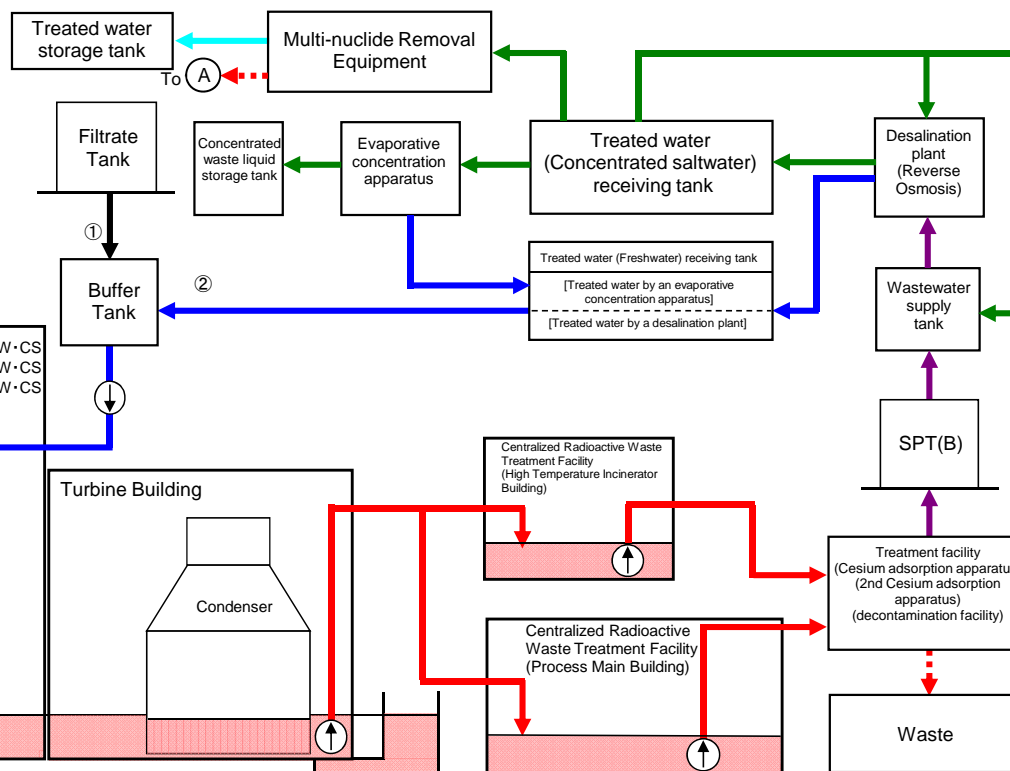
Also, the water treated at the radioactive material treatment equipment (fresh water and condensed salt water) can be stored in the middle and low level waste water tanks.

END

Storage and treatment of high level radioactive accumulated water (as of February 19, 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 (2/13- 2/19)	Change from last report
① Filtrate water	-
② Treated water (freshwater)	+22m ³
Cumulative treated water	542,595m ³

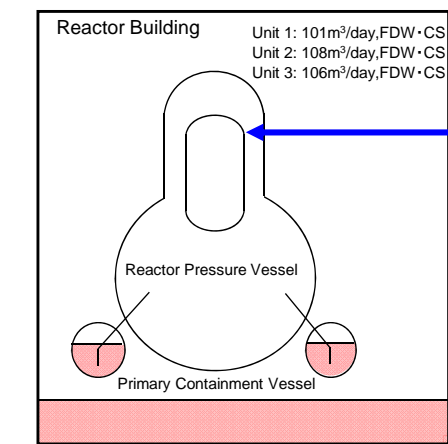


Storage volume ^{*1}	Change from last report	Storage capacity ^{*2,3}
Concentrated saltwater receiving tank ^{*4}	217,286m ³ -14,109m ³	345,600m ³
Freshwater receiving tank	23,435m ³ -122m ³	27,500m ³
Concentrated waste liquid storage tank	8,891m ³ No Change	20,000m ³
Treated water storage tank	314,330m ³ +7,434m ³ *8	329,900m ³
Strontium-treated water storage tank	45,391m ³ +11,236m ³	57,900m ³

Storage volume	Change from last report	Storage volume ^{*2}
Wastewater supply tank	731m ³ +12m ³	1,200m ³
SPT(B)	1,257m ³ +400m ³	3,100m ³

Chloride concentration	
Before/After Desalination	540ppm/3ppm (Sampled on Feb. 10)
Before/After Evaporative Concentration	-

Place of Sampling	Radioactivity density ^{*5}
Process Main Building	2.2E+04 Bq/cm ³ (Sampled on Feb.10)
Exit of cesium adsorption apparatus	1.7E-01 Bq/cm ³ (Sampled on Feb. 10)
Exit of decontamination facility	-
High Temperature Incinerator Building	2.5E+04 Bq/cm ³ (Sampled on Feb.17)
Exit of second cesium adsorption apparatus	2.6E+00 Bq/cm ³ (Sampled on Feb. 17)



Facility	Storage volume	Change from last	Water level in T/B
Unit 1	Approx. 13,200m ³	No Change	OP.2,431
Unit 2	Approx. 15,200m ³	-900m ³	OP.2,479
Unit 3	Approx. 19,100m ³	-400m ³	OP.2,552
Unit 4	Approx. 15,000m ³	-100m ³	OP.2,565
Total	Approx. 62,500m ³		

Storage Facility	Storage volume	Change from last report	Water level	Treated volume (2/13 -2/19)	Cumulative treated volume	Waste produced	Change from last report	Storage capacity
Process Main Building	Approx. 16,390m ³	+1,470m ³	OP.4,633	Approx.6,330m ³ *6	Approx. 1,163,870m ³ *6	Sludge	597m ³	700m ³ *2
High Temperature Incinerator Building	Approx. 3,390m ³	-970m ³	OP.2,002			Used vessels	1,846 ^{*7}	
Total	Approx. 19,780m ³						+52	

*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.
 *6 Total treated amount of Cesium adsorption apparatus and 2nd Cesium adsorption apparatus
 Breakdown of the treated amount: Cesium adsorption apparatus (2,900m³)
 2nd Cesium adsorption apparatus (3,430m³)
 Breakdown of the cumulative treated amount: Cesium adsorption apparatus (261,290m³)
 2nd Cesium adsorption apparatus (902,580m³)
 *7 Breakdown of the used vessels: Cesium adsorption apparatus (570)
 2nd cesium adsorption apparatus (121),
 Others: Storage container (1,069),
 Treated column (3)
 Used vessel (59)
 Filters and so forth (24)

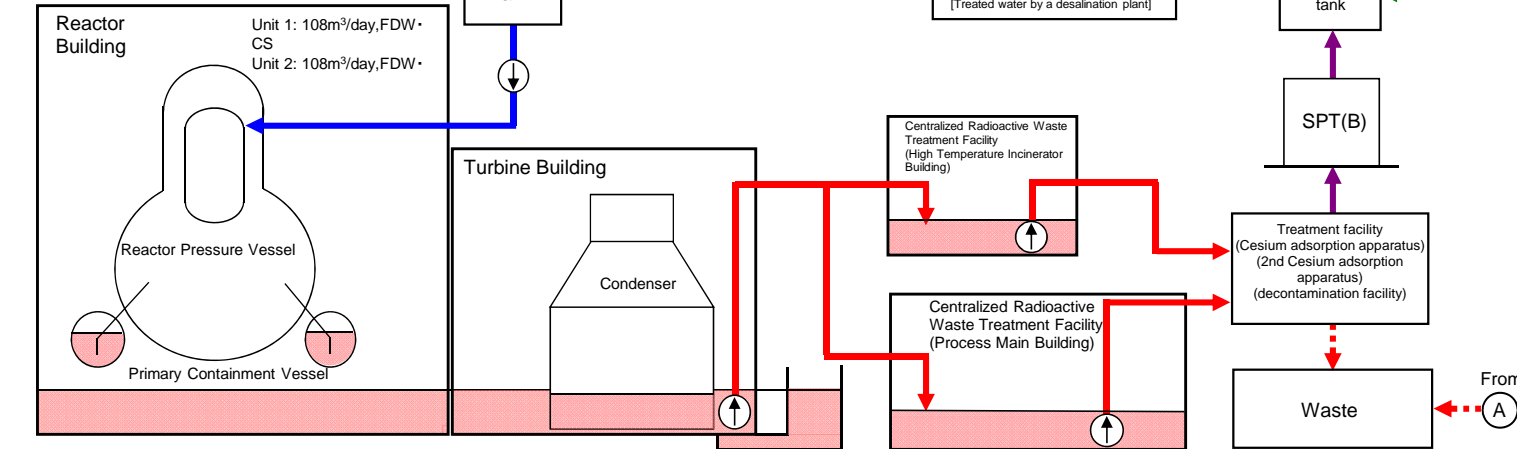
*8 The error was corrected on February 25, 2015.

[Main operations that have been conducted during the period from February 12, 2015 (the previous announcement data) to February 19, 2015]
 - On Feb. 12, water transfer from Unit 2 to the High Temperature Incinerator Building resumed. On Feb.15, the facilities to which water at Unit 2 would be transferred were changed from the High Temperature Incinerator Building to Unit 3 T/B. On Feb.17, the facilities to which water at Unit 2 would be transferred were changed from Unit 3 T/B to the High Temperature Incinerator Building, and since then the transfer to the High Temperature Incinerator Building has been conducted.
 - Water transfer from Unit 3 to the Process Main Building has been conducted.
 - Cesium Adsorption Apparatus and 2nd Cesium Adsorption Apparatus have been in operation.
 - the availability factor of the former was 34.5% (previously assumed: 40%) and the availability of the latter was 40.8% (previously assumed: 40%)
 - On Feb.12, 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.

Storage and treatment of high level radioactive accumulated water (as of February 26, 2015)

Classification	
Red dashed line	High level radioactive water/Waste
Green line	Treated water (saltwater)
Blue line	Treated water (concentrated saltwater)
Light blue line	Treated water (freshwater)
Black line	Treated water from Multi-nuclide Removal Equipment
White line	Freshwater

Volume of water to be injected to Reactor (2/20 - 2/26)	Change from last report
① Filtrate water	-
② Treated water (freshwater)	+ 78m ³
Cumulative treated water	544,863m ³



Storage volume	Change from last report	Storage capacity ¹⁾²⁾
Concentrated saltwater receiving tank ³⁾	201,773m ³ -15,513m ³	345,600m ³
Freshwater receiving tank	22,511m ³ -924m ³	27,500m ³
Concentrated waste liquid storage tank	8,891m ³ No change	20,000m ³
Treated water storage tank ⁴⁾	326,309m ³ +11,979m ³	329,900m ³
Strontium treated water storage tank	51,807m ³ +6,416m ³	57,900m ³

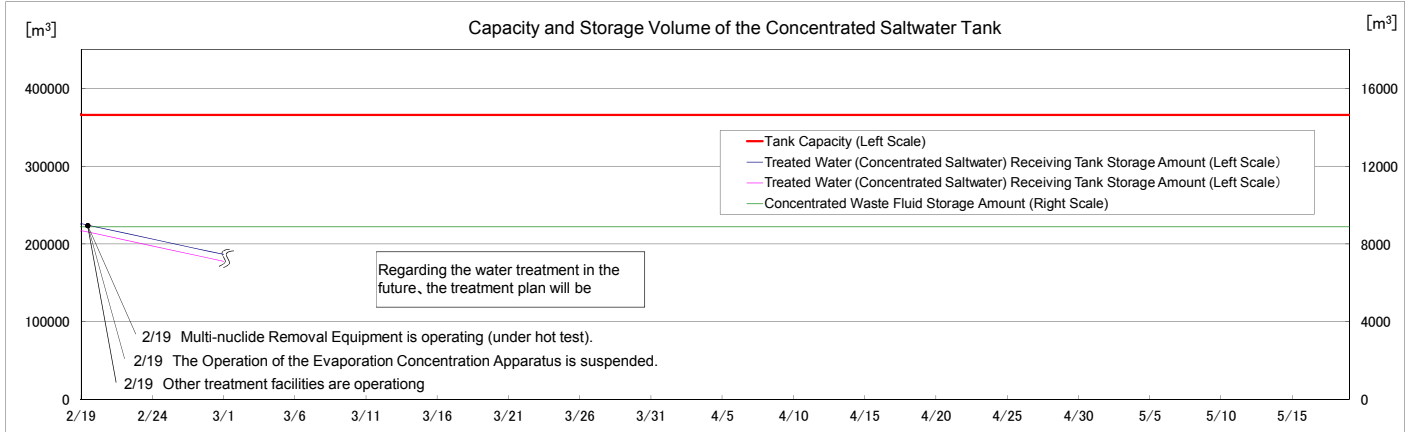
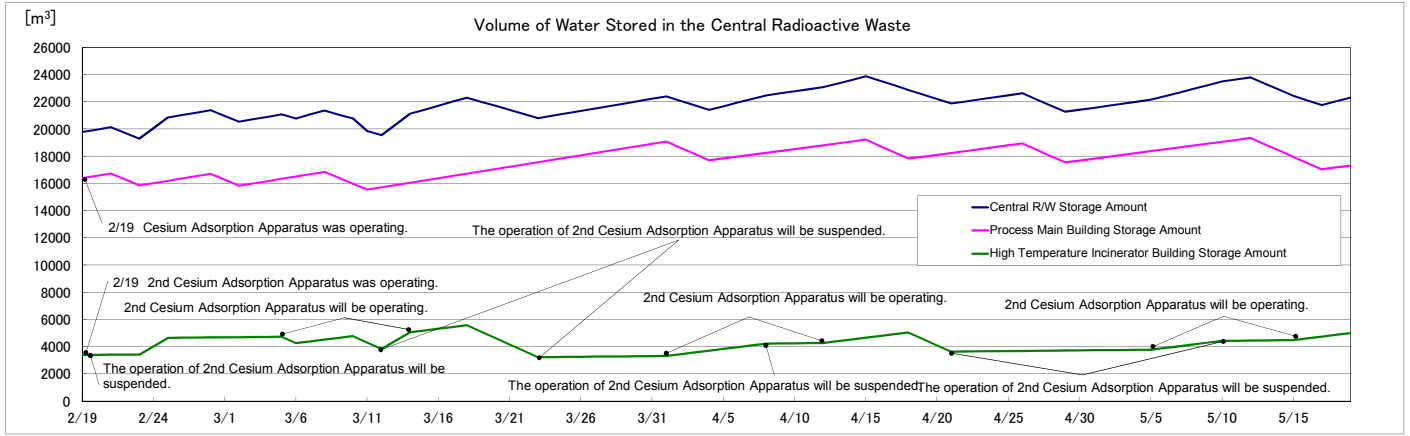
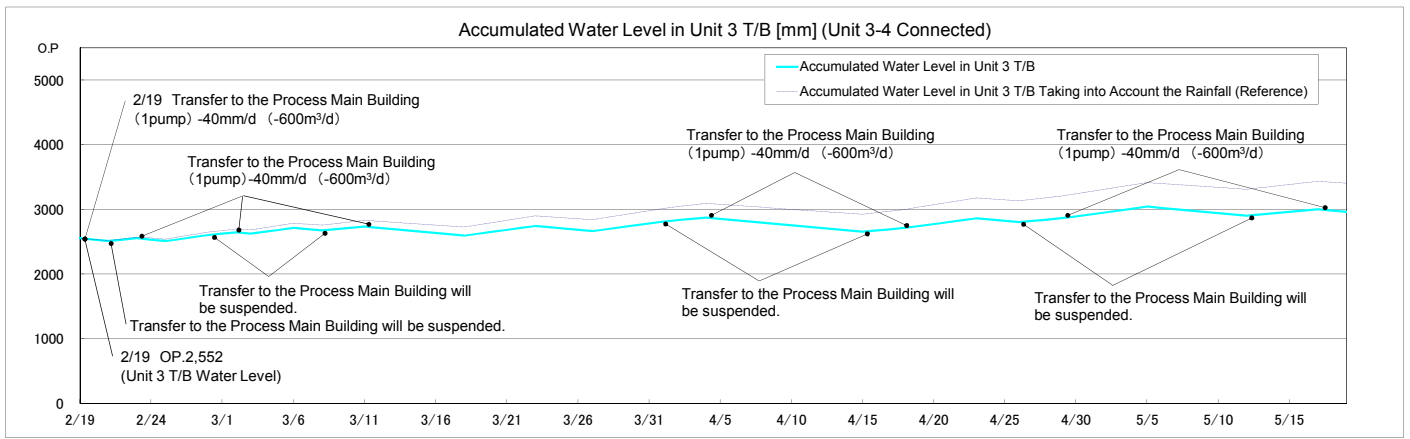
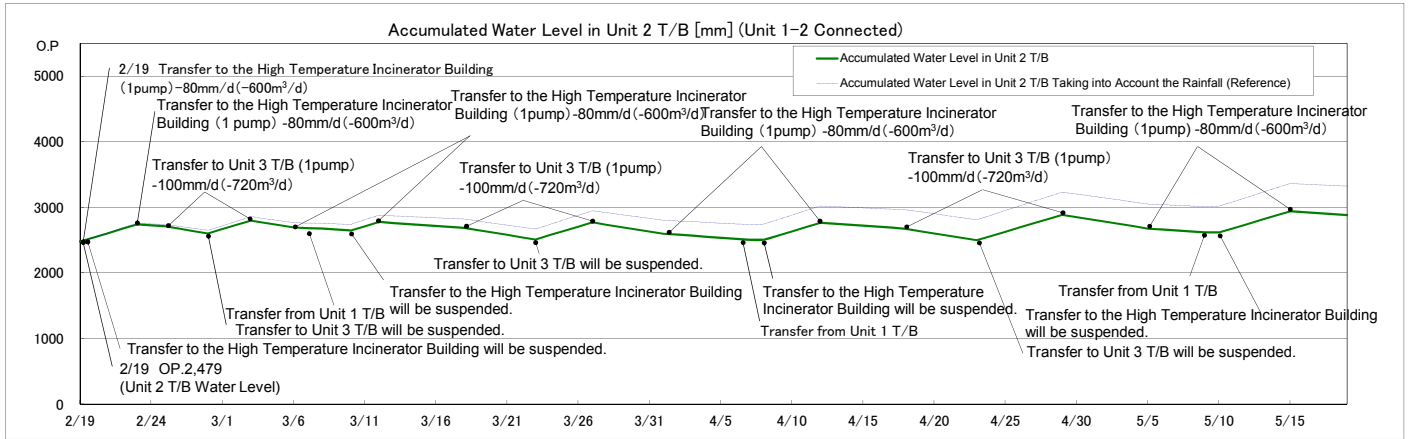
Facility	Storage volume	Change from last	Water level in T/B
Unit 1	Approx. 13,300m ³	+100m ³	OP.2,674
Unit 2	Approx. 16,500m ³	+1,300m ³	(Unit 2 T/B)
Unit 3	Approx. 18,800m ³	-300m ³	OP.2,541
Unit 4	Approx. 14,800m ³	-200m ³	(Unit 3 T/B)
Total	Approx. 63,400m ³		

Storage Facility	Storage volume	Change from last report	Water level	Treated volume (2/20 - 2/26)	Cumulative treated volume	Waste produced	Change from last report	Storage capacity
Process Main Building	Approx. 16,060m ³	-330m ³	OP.4,539	Approx.3,360m ³ 14	Approx. 1,167,230m ³ 14	Sludge	597m ³	No Change
High Temperature Incinerator Building	Approx. 4,840m ³	+1,450m ³	OP.3,197			Used vessels	1,904 ⁵	+58
Total	Approx. 20,900m ³							

[Main operations that are planned to be conducted during the period from February 19, 2015 to February 26, 2015.]

- Water transfer from Unit 2 to the High Temperature Incinerator Building is scheduled to be suspended and later to resume. 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 is scheduled to be suspended and later to resume.
- The operation of Cesium Adsorption Apparatus is scheduled: Assumed Availability Factor 40%
- The operation of 2nd Cesium Adsorption 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.

¹⁾ Shows the operational limit. ²⁾ The underground reservoirs are not included in the figure.
³⁾ Storage capacity of the filtrate water tank (4,600m³) 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 (3,360m³)
 2nd Cesium adsorption apparatus (0m³)
 Breakdown of the cumulative treated amount: Cesium adsorption apparatus (264,650m³)
 2nd Cesium adsorption apparatus (902,580m³)
⁵⁾ Breakdown of the used vessels:
 Cesium adsorption apparatus (578)
 2nd cesium Cesium adsorption apparatus (121),
 Others: Storage container (1,111),
 Treated column (3)
 Used vessels (65)
 Filters and so forth (26)



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).