

Situation of Storage and Treatment of Accumulated Water including Highly Concentrated Radioactive Materials at Fukushima Daiichi Nuclear Power Station (185th Release)

January 23, 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 January 22 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 January 29, 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.

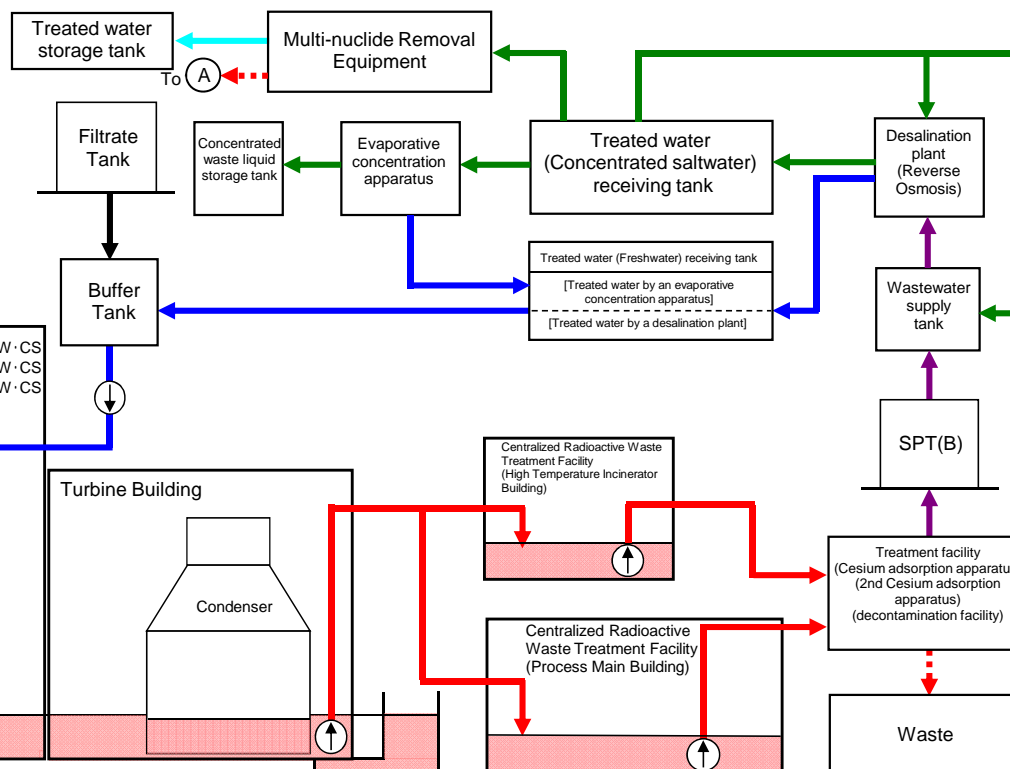
Also, the water treated at the radioactive material treatment equipment (fresh water and condensed salt water) can be stored in the middle and low level waste water tanks.

END

Storage and treatment of high level radioactive accumulated water (as of January 22, 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 (1/16-1/22) | Change from last report |
|---|---------------------------------------|
| Filtrate water | - |
| Treated water (freshwater) | 2,173m ³ -43m ³ |
| Cumulative treated water | 533,849m ³ |



| Storage volume ¹ | Change from last report | Storage capacity ^{2,3} |
|--|---|---------------------------------|
| Concentrated saltwater receiving tank ⁴ | 272,459m ³ -13,668m ³ | 374,200m ³ |
| Freshwater receiving tank | 24,454m ³ -146m ³ | 27,500m ³ |
| Concentrated waste liquid storage tank | 8,948m ³ -11m ³ | 20,000m ³ |
| Treated water storage tank | 279,264m ³ + 9,547m ³ | 319,500m ³ |
| Strontium-treated water storage tank | 13,233m ³ +6,273m ³ | 21,200m ³ |

| Storage volume | Change from last report | Storage volume ² |
|------------------------|--------------------------------------|-----------------------------|
| Wastewater supply tank | 637m ³ -43m ³ | 1,200m ³ |
| SPT(B) | 880m ³ +144m ³ | 3,100m ³ |

| 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/cm ³ (Sampled on Jan.10) |
| Exit of cesium adsorption apparatus | 1.2E+01 Bq/cm ³ (Sampled on Jan. 10) |
| Exit of decontamination facility | - |
| High Temperature Incinerator Building | 3.0E+04 Bq/cm ³ (Sampled on Jan.13) |
| Exit of second cesium adsorption apparatus | 8.2E-01 Bq/cm ³ (Sampled on Jan. 13) |

| Facility | Storage volume | Change from last | Water level in T/B |
|----------|------------------------------|--------------------|--------------------|
| Unit 1 | Approx. 13,100m ³ | -100m ³ | OP.2,371 |
| Unit 2 | Approx. 15,200m ³ | -100m ³ | OP.2,503 |
| Unit 3 | Approx. 20,800m ³ | -700m ³ | OP.2,696 |
| Unit 4 | Approx. 16,200m ³ | No Change | OP.2,729 |
| Total | Approx. 65,300m ³ | | |

| Storage Facility | Storage volume | Change from last report | Water level | Treated volume (1/16-1/22) | Cumulative treated volume | Waste produced | Change from last report | Storage capacity |
|---------------------------------------|------------------------------|-------------------------|-------------|-------------------------------|---------------------------------|----------------|-------------------------|----------------------|
| Process Main Building | Approx. 13,670m ³ | +2,650m ³ | OP.3,684 | Approx.3,670m ³ *6 | Approx. 1,144,390m ³ | Sludge | 597m ³ | 700m ³ *2 |
| High Temperature Incinerator Building | Approx. 3,070m ³ | -490m ³ | OP.1,735 | | | Used vessels | 1,621*7 | +46 |
| Total | Approx. 16,740m ³ | | | | | | | |

*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 (0m³)
 2nd Cesium adsorption apparatus (3,670m³)
 Breakdown of the cumulative treated amount: Cesium adsorption apparatus (250,860m³)
 2nd Cesium adsorption apparatus (893,530m³)
 *7 Breakdown of the used vessels: Cesium adsorption apparatus (550)
 2nd cesium Cesium adsorption apparatus (120),
 Others: Storage container (895),
 Treated column (3)
 Used vessel (39)
 Filters (14)

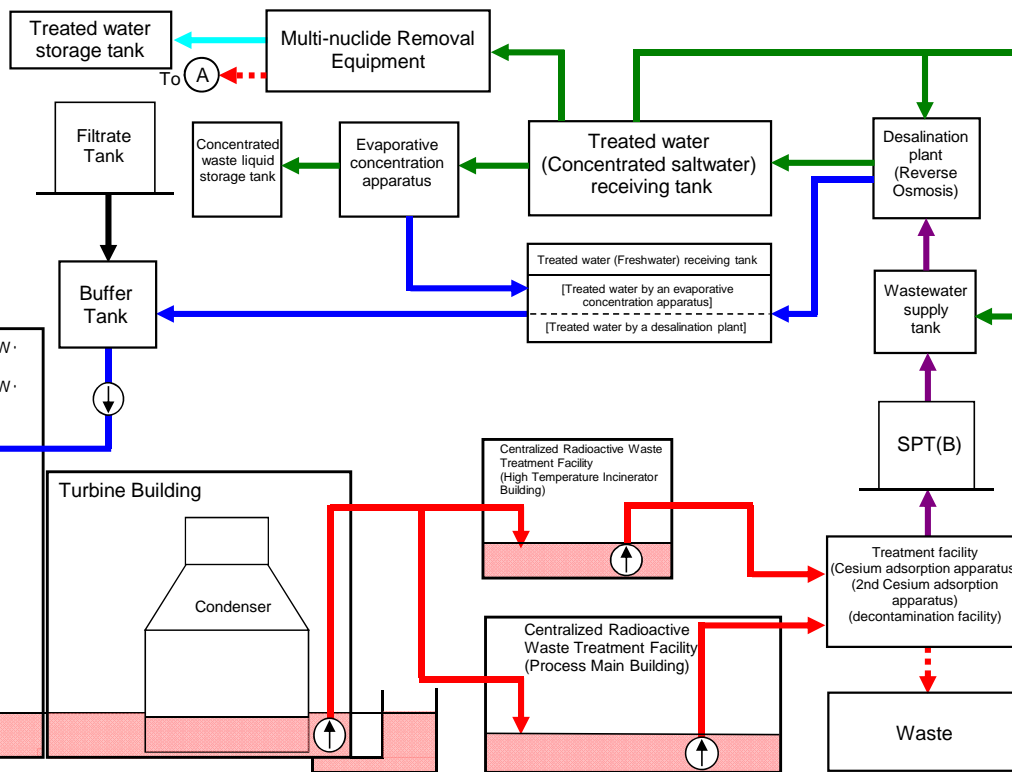
[Main operations that have been conducted during the period from January 15, 2015 (the previous announcement data) to January 22, 2015]

- Water transfer from Unit 2 to the High Temperature Incinerator Building has continued.
- On Jan. 18, water transfer from Unit 3 to the Process Main Building resumed. Since then, the transfer has been conducted.
- Water transfer from Unit 4 has been stopped since Nov. 29, 2012.
- 2nd Cesium Adsorption Apparatus has been in operation; The availability factor is 43.7% (previously assumed: 40%)
- The operation of Cesium Adsorption Apparatus has been suspended since Jan. 10.
- 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.

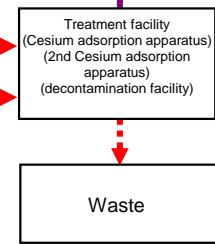
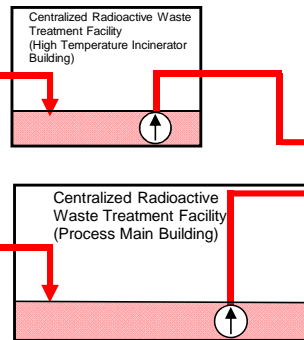
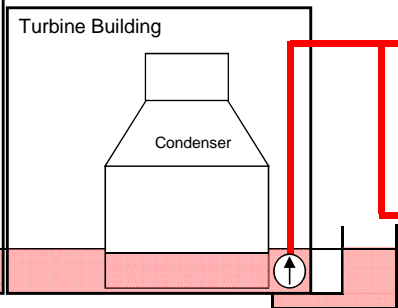
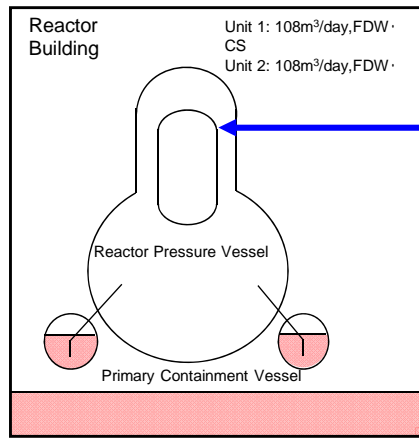
Storage and treatment of high level radioactive accumulated water (as of January 29, 2015)

| 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 (1/23- 1/29) | Change from last report |
|--|--|
| Filtrate water | - |
| Treated water (freshwater) | 2,268m ³ + 95m ³ |
| Cumulative treated water | 536,117m ³ |



| Storage volume | Change from last report | Storage capacity ¹⁾²⁾ |
|---|--|----------------------------------|
| Concentrated saltwater receiving tank ³⁾ | 259,546m ³ -12,913m ³ | 374,200m ³ |
| Freshwater receiving tank | 23,362m ³ - 1,092m ³ | 27,500m ³ |
| Concentrated waste liquid storage tank | 8,948m ³ No change | 20,000m ³ |
| Treated water storage tank ⁴⁾ | 289,843m ³ + 10,579m ³ | 319,500m ³ |
| Strontium treated water storage tank | 18,197m ³ +4,964m ³ | 21,200m ³ |



| Facility | Storage volume | Change from last | Water level in T/B |
|----------|------------------------------|----------------------|--------------------|
| Unit 1 | Approx. 13,100m ³ | No Change | OP.2,469 |
| Unit 2 | Approx. 15,000m ³ | -200m ³ | (Unit 2 T/B) |
| Unit 3 | Approx. 19,700m ³ | -1,100m ³ | OP.2,550 |
| Unit 4 | Approx. 15,100m ³ | -1,100m ³ | (Unit 3 T/B) |
| Total | Approx. 62,900m ³ | | |

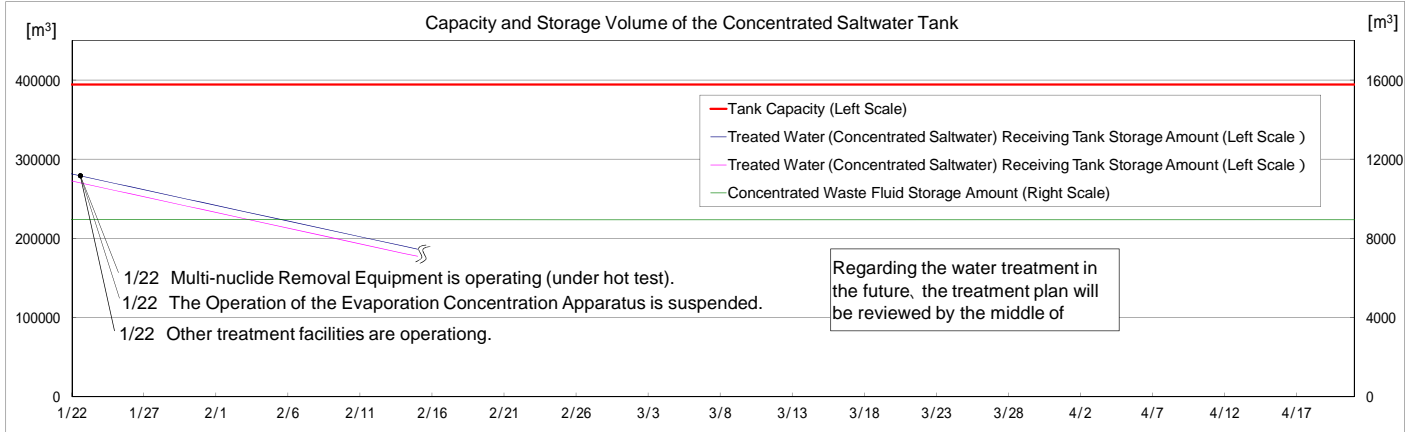
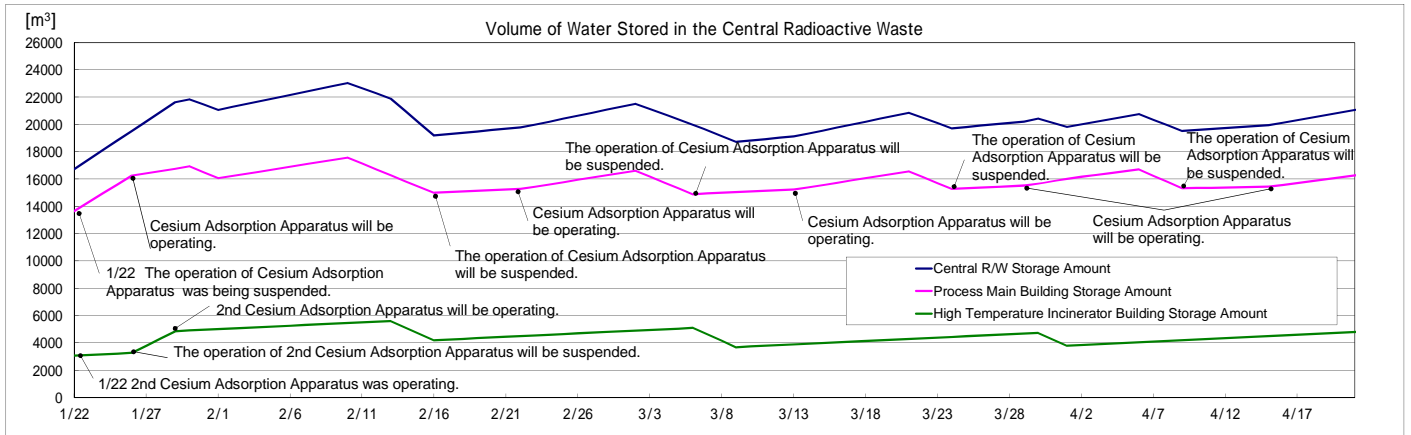
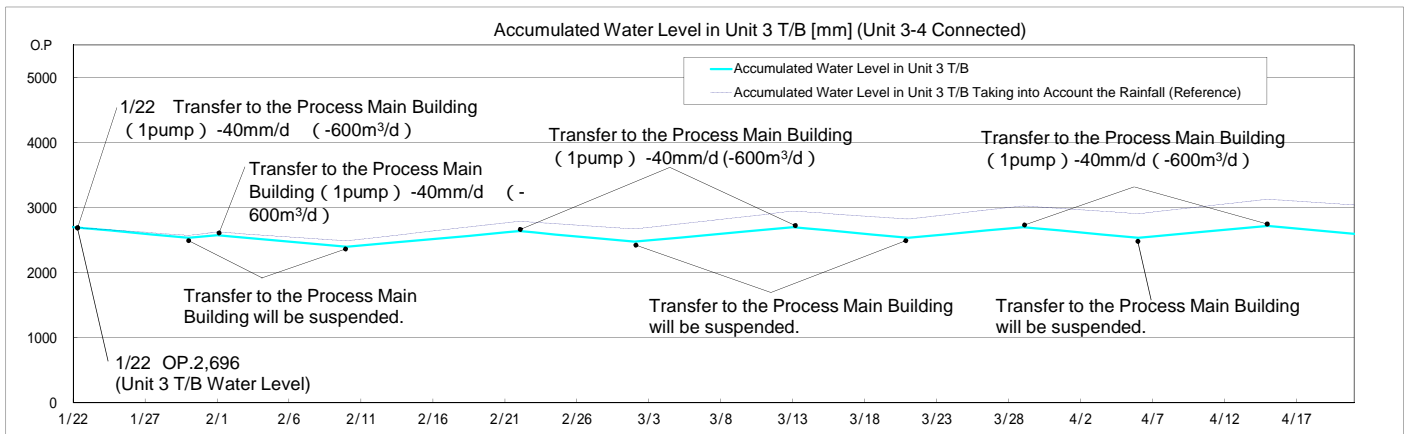
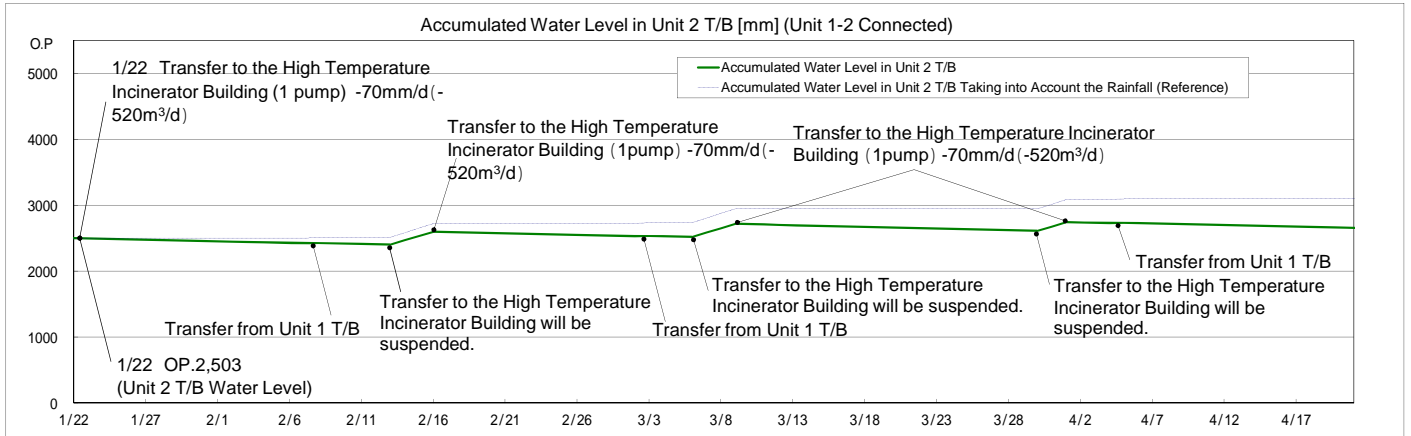
| Storage Facility | Storage volume | Change from last report | Water level | Treated volume (1/23 - 1/29) | Cumulative treated volume | Waste produced | Change from last report | Storage capacity |
|---------------------------------------|------------------------------|-------------------------|-------------|-------------------------------|------------------------------------|----------------|-------------------------|------------------|
| Process Main Building | Approx. 16,110m ³ | +2,440m ³ | OP.4,554 | Approx.2,940m ³ 14 | Approx. 1,147,330m ³ 14 | Sludge | 597m ³ | No Change |
| High Temperature Incinerator Building | Approx. 4,890m ³ | +1,820m ³ | OP.3,243 | | | Used vessels | 1,663 ⁵⁾ | +42 |
| Total | Approx. 21,000m ³ | | | | | | | |

[Main operations that are planned to be conducted during the period from January 22, 2015 to January 29, 2015.]

- Water transfer from Unit 2 to the High Temperature Incinerator Building will be conducted.
- Water transfer from Unit 3 to the Process Main Building will be conducted.
- Water transfer from Unit 4 will continue to be suspended.
- The operation of Cesium Adsorption Apparatus is scheduled: Assumed Availability Factor 15%
- The operation of 2nd Cesium Adsorption Apparatus is scheduled: Assumed Availability Factor 20%

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 (1,260m³)
 2nd Cesium adsorption apparatus (1,680m³)
 Breakdown of the cumulative treated amount: Cesium adsorption apparatus (252,120m³)
 2nd Cesium adsorption apparatus (895,210m³)
⁵⁾ Breakdown of the used vessels:
 Cesium adsorption apparatus (550)
 2nd cesium Cesium adsorption apparatus (120),
 Others: Storage container (928),
 Treated column (3)
 Used vessels (46)
 Filters (16)

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 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).