

**Situation of Storing and Treatment of Accumulated Water including Highly Concentrated  
Radioactive Materials at Fukushima Daiichi Nuclear Power Station  
(27<sup>th</sup> Release)**

December 28, 2011  
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.

<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 Centralized Radiation 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 (Unit 1 to 4 (including condensers and trenches)), and stored and treated amount in the Accumulated Water Storing Facility (including underpass area close to the High Temperature Incinerator Building), and other related data, as of December 27, 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 Unit 1 and 2 and Unit 3 and 4 building will not exceed OP. 3,000, based on the stored amount in the Accumulated Water Storing Facility and the operating situation of the radioactive material treatment equipment. Water is transferred to the Process Main Building in principle, by securing enough capacity for stably accepting accumulated water in the Process Main Building.

Hence, priority for treatment is placed on the accumulated water in the Process Main Building in order to reserve the capacity for accepting the accumulated water in the building.

We assume stored amounts in each unit building (Unit 1 to 4 (including condenser and trench)),

and stored and treated amount in the Accumulated Water Storing Facility (including underpass area close to the High Temperature Incinerator Building), and other related data on January 3, as shown in Attachment -2.

**(2) Middle term forecast**

Regarding accumulated water in Unit 1 and 2 building and Unit 3 and 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.

Based on the view of limiting inflow of underwater to buildings and reducing the amount of emerged accumulated water, we are transferring accumulated water keeping its level in the building below OP. 3,000 considering water tank capacity.

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 Facility (including underpass areas close to the High Temperature Incinerator Building) for 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.

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

END

# Storage and treatment of high level radioactive accumulated water (as of December 27, 2011)

Classification	
<span style="color: red;">█</span>	High level radioactive water
<span style="color: purple;">█</span>	Treated water (saltwater)
<span style="color: green;">█</span>	Treated water (concentrated saltwater)
<span style="color: blue;">█</span>	Treated water (freshwater)
<span style="color: black;">█</span>	Freshwater

Storage volume 1		Change from last report	Storage capacity 2
Concentrated saltwater receiving tank	86,408m <sup>3</sup>	+ 820m <sup>3</sup>	130,900m <sup>3</sup>
Freshwater receiving tank	9,924m <sup>3</sup>	3,207m <sup>3</sup>	25,100m <sup>3</sup>
Concentrated waste liquid storage tank	5,452m <sup>3</sup>	10m <sup>3</sup>	9,500m <sup>3</sup>

1 Storage volume are reference data, because water levels are unstable while desalination plants and evaporative concentration apparatuses are in operation.  
 2 Operational upper limit

Chlorine density	
Before/ after desalination	7,700ppm / 12ppm (Sampled on Dec 20)
Before/ after evaporative concentration	6,900ppm / 2ppm (Sampled on Dec 20)

Storage volume		change from last report	Storage volume 2
Waste liquid supply tank	740m <sup>3</sup>	465m <sup>3</sup>	1,200m <sup>3</sup>
SPT(B)	927m <sup>3</sup>	1,008m <sup>3</sup>	3,100m <sup>3</sup>

2 Operational Upper limit

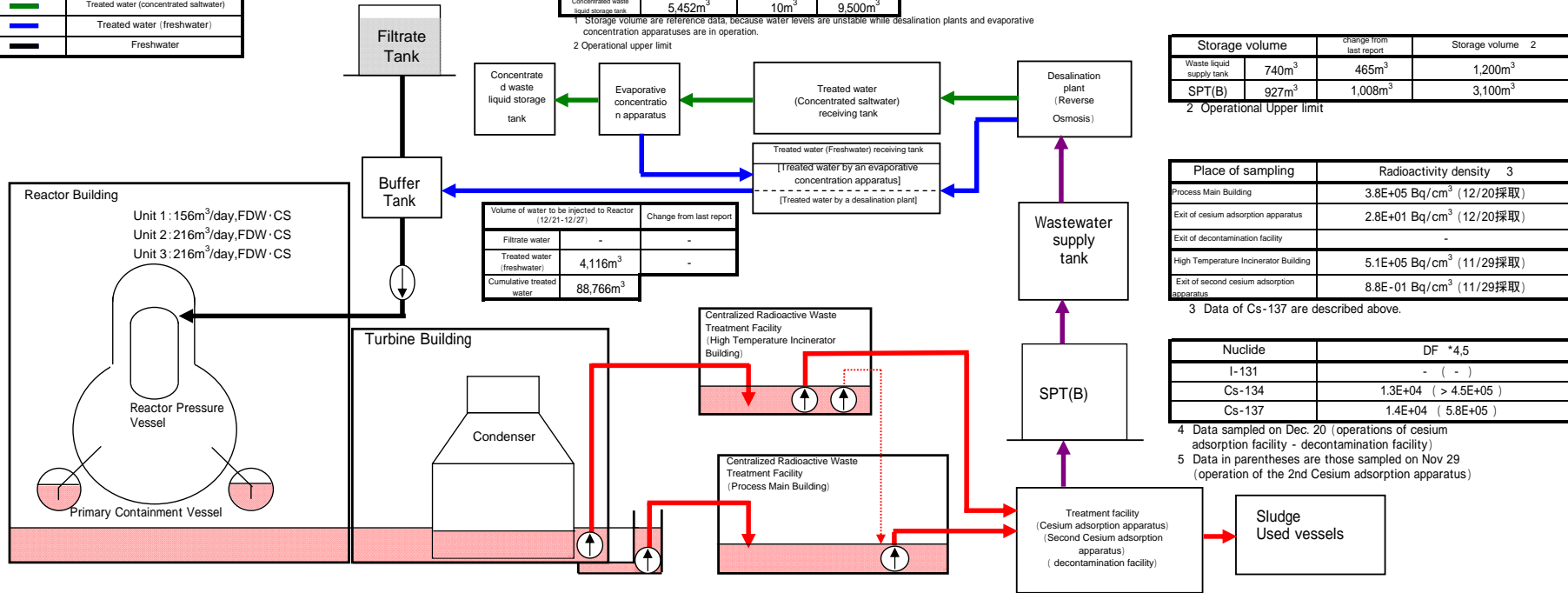
Place of sampling	Radioactivity density 3
Process Main Building	3.8E+05 Bq/cm <sup>3</sup> (12/20採取)
Exit of cesium adsorption apparatus	2.8E+01 Bq/cm <sup>3</sup> (12/20採取)
Exit of decontamination facility	-
High Temperature Incinerator Building	5.1E+05 Bq/cm <sup>3</sup> (11/29採取)
Exit of second cesium adsorption apparatus	8.8E-01 Bq/cm <sup>3</sup> (11/29採取)

3 Data of Cs-137 are described above.

Nuclide	DF *4,5
I-131	- ( - )
Cs-134	1.3E+04 ( > 4.5E+05 )
Cs-137	1.4E+04 ( 5.8E+05 )

4 Data sampled on Dec. 20 (operations of cesium adsorption facility - decontamination facility)

5 Data in parentheses are those sampled on Nov 29 (operation of the 2nd Cesium adsorption apparatus)



Volume of water to be injected to Reactor (12/21-12/27)		Change from last report
Filtrate water	-	-
Treated water (freshwater)	4,116m <sup>3</sup>	-
Cumulative treated water	88,766m <sup>3</sup>	-

Facility	Storage volume	Change from last report	Water level in T/B	Transfer to
Unit 1	approx. 13,990m <sup>3</sup>	290m <sup>3</sup>	OP.2,814	High Temperature Incinerator Building
Unit 2	approx. 22,600m <sup>3</sup>	+ 800m <sup>3</sup>	OP.3,161	High Temperature Incinerator Building
Unit 3	approx. 24,400m <sup>3</sup>	-	OP.3,136	Process Main Building
Unit 4	approx. 18,900m <sup>3</sup>	+ 100m <sup>3</sup>	OP.3,124	Process Main Building
Total	approx. 79,890m <sup>3</sup>			

Storage Facility	Storage volume	Change from last report	Water level	Treated volume (12/21-12/27)	Cumulative treated volume	Waste produced		Change from last report	Storage capacity
						Sludge	Used vessels		
Process Main Building	approx. 9,110m <sup>3</sup>	+ 2,130m <sup>3</sup>	OP.2,153	approx. 30m <sup>3</sup>	approx. 192,110m <sup>3</sup> *6	Sludge	581m <sup>3</sup>	-	700m <sup>3</sup> *2
High Temperature Incinerator Building	approx. 5,420m <sup>3</sup>	+ 2,680m <sup>3</sup>	OP.3,918			Used vessels	318 *7	+ 2	1,137 *8
Total	approx. 14,530m <sup>3</sup>								

2 Shows the operational limit.  
 6 Including (cumulative treated volume: approx. 73,460m<sup>3</sup>) of treated volume by the second cesium adsorption apparatus.  
 7 Including 28 used vessels of the second cesium adsorption apparatus.  
 8 Storage capacity will vary according to stored used vessels of the second cesium adsorption apparatus.

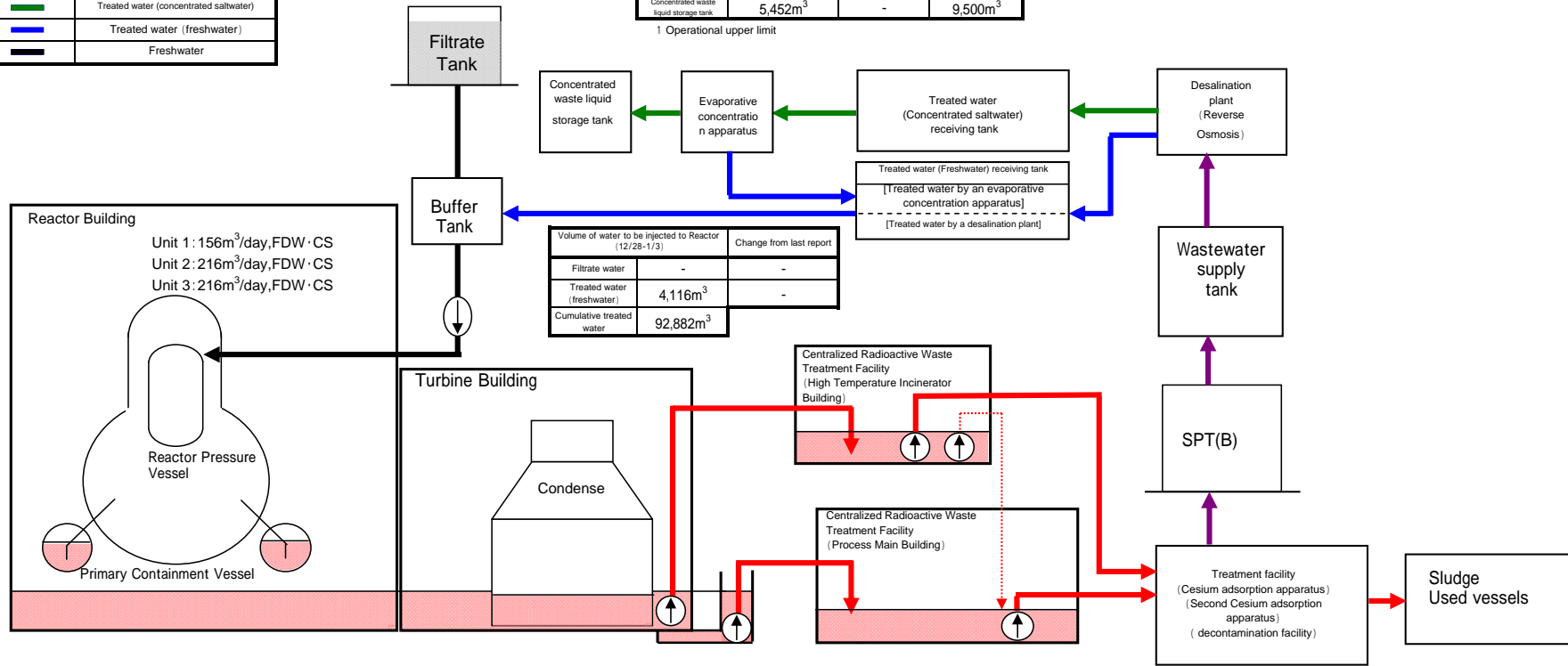
Note:  
 - Last report as of Dec 20, 2011  
 - Transferred from Units 2 and 3 to Process Main Building & High Temperature Incinerator Building. (Dec 21-23, 26-27 Transfer from Unit 2 to process main building, High Temperature Incinerator Building. Dec 24-26 Transfer from Unit 3 to Process Main Building)  
 - From Dec 12: The second cesium adsorption apparatus suspended.  
 - From Dec 20: The cesium adsorption apparatus suspended.  
 - Dec 21: The operation of adsorption tower for cesium absorption tower was started.  
 - Dec 23: the water was transferred from a trench between Process Main Building and High Temperature Incinerator Building to High Temperature Incinerator Building.  
 - From Dec 23 to 25: the water was transferred from Unit 1 turbine building to Unit 2 turbine building.

# Storage and treatment of high level radioactive accumulated water (assumed situation as of January 3, 2012)

Classification	
<span style="color: red;">█</span>	High level radioactive water
<span style="color: purple;">█</span>	Treated water (saltwater)
<span style="color: green;">█</span>	Treated water (concentrated saltwater)
<span style="color: blue;">█</span>	Treated water (freshwater)
<span style="color: black;">█</span>	Freshwater

Storage volume	Change from last report	Storage capacity
Concentrated saltwater receiving tank	87,248m <sup>3</sup>	+ 840m <sup>3</sup>
Freshwater receiving tank	9,168m <sup>3</sup>	756m <sup>3</sup>
Concentrated waste liquid storage tank	5,452m <sup>3</sup>	-
		9,500m <sup>3</sup>

1 Operational upper limit



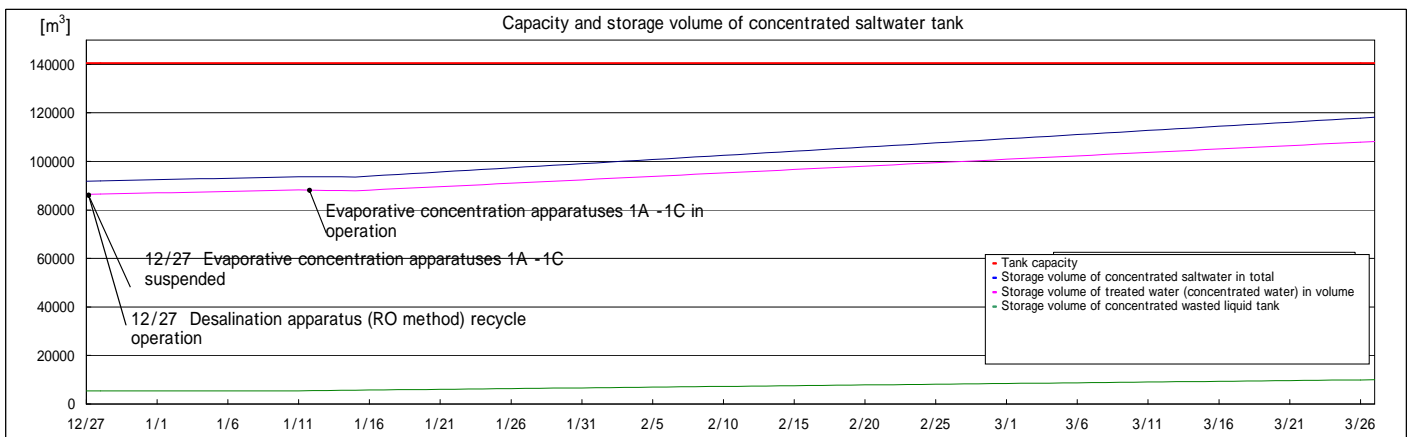
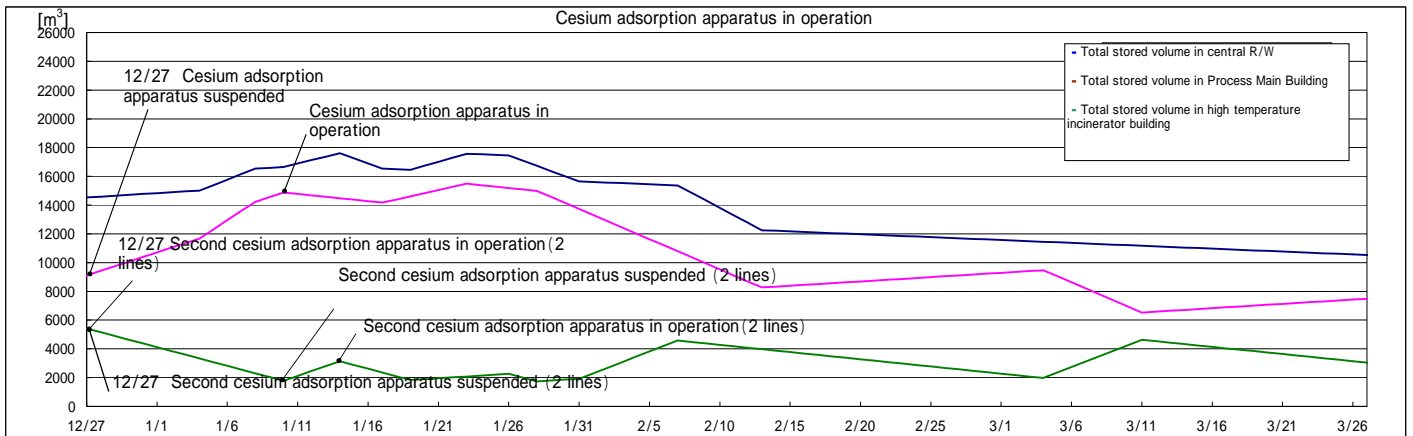
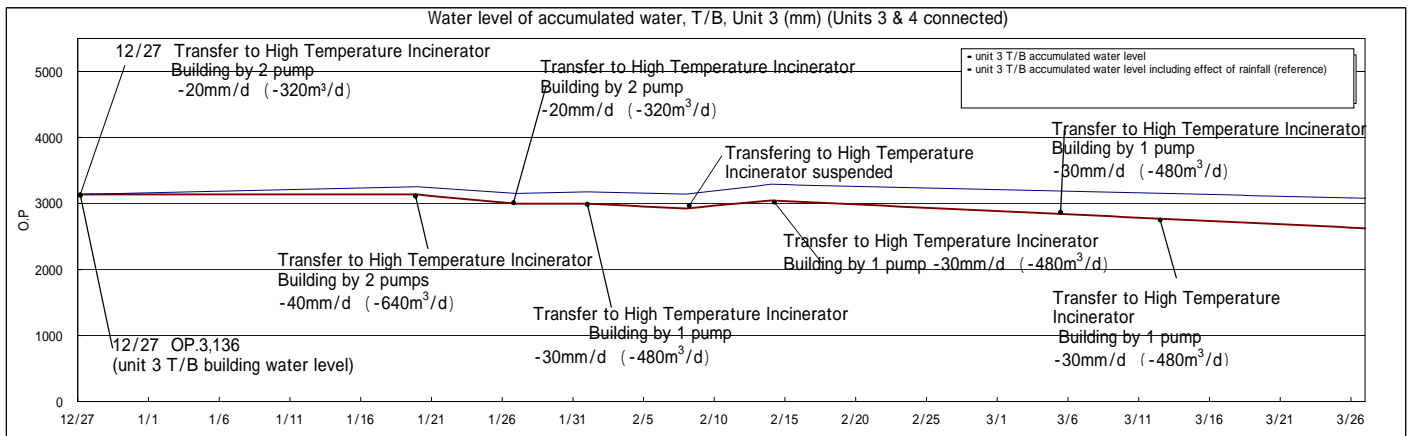
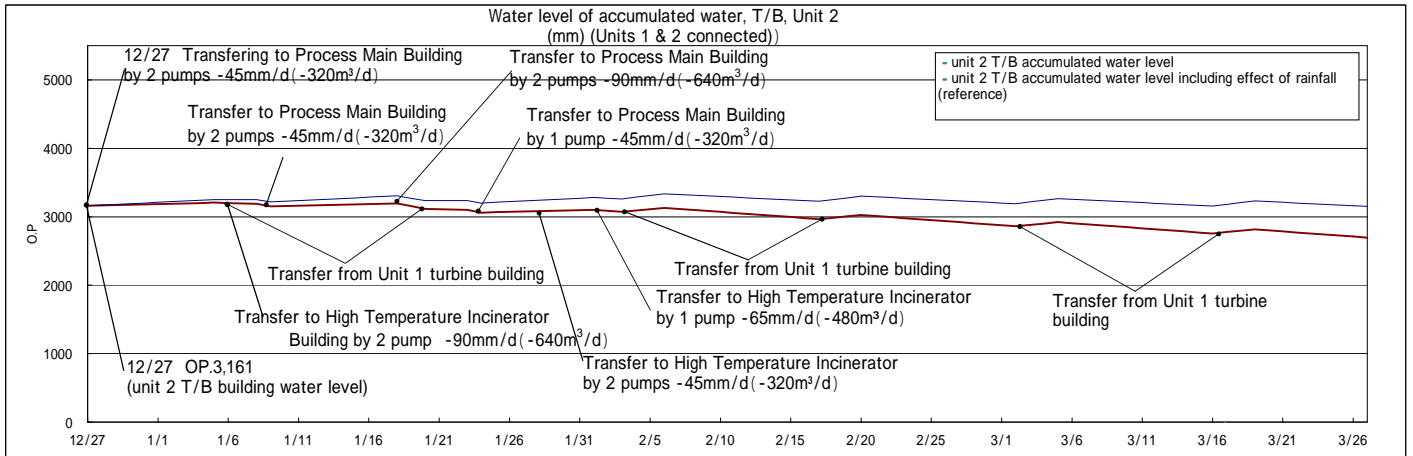
Facility	Storage volume	Change from last report	Water level in T/B	Transfer to
Unit 1	approx. 14,120m <sup>3</sup>	+ 130m <sup>3</sup>	OP.3,174 (Unit 2 T/B)	High Temperature Incinerator Building
Unit 2	approx. 22,700m <sup>3</sup>	+ 100m <sup>3</sup>		
Unit 3	approx. 24,300m <sup>3</sup>	100m <sup>3</sup>	OP.3,122 (Unit 3 T/B)	Process Main Building
Unit 4	approx. 18,800m <sup>3</sup>	100m <sup>3</sup>		
Total	approx. 79,920m <sup>3</sup>			

Storage Facility	Storage volume	Change from last report	Water level	Treated volume (12/28-1/3)	Cumulative treated volume	Waste produced	Change from last report	Storage capacity
Process Main Building	approx. 11,730m <sup>3</sup>	+ 2,620m <sup>3</sup>	OP.2,897	approx. 4,200m <sup>3</sup>	approx. 196,310m <sup>3</sup>	Sludge 581m <sup>3</sup>	-	700m <sup>3</sup> *1
High Temperature Incinerator Building	approx. 3,950m <sup>3</sup>	1,470m <sup>3</sup>	OP.2,704	*2	*2	Used vessels 318 *3	+ 2	1,137 *4
Total	approx. 15,680m <sup>3</sup>							

1 Shows the operational limit.  
 2 Including cumulative treated volume (approx. 73,460m<sup>3</sup>) of the second cesium adsorption apparatus.  
 3 Including 28 used vessels of the second cesium adsorption apparatus.  
 4 Storage capacity will vary according to stored used vessels of the second cesium adsorption apparatus.

**Note:**

- Water in Unit 2 and Unit 3 will be transferred to Process Main Building and High Temperature Incinerator Building. (We will start to transfer the water due to anti-icing operation and water-level control)
- The second cesium adsorption apparatus will be kept inactive. (Estimated operation rate is 50%)
- The cesium adsorption apparatus will be stopped.



Note - Amount of water treatment is assumed to be 1,020m<sup>3</sup>/d (It can be adjusted according to level of accumulated water in T/B.)  
 - Assume 5mm increase per day of accumulated water level of T/B including influences of rainfall in case we consider 3-year-averaged rainfall near 1F from August to October.  
 - From mid December pump transfer amount will be changed in order to prevent hoses from freezing.