Situation of Storage and Treatment of Accumulated Water including Highly Concentrated Radioactive Materials at Fukushima Daiichi Nuclear Power Station (322nd Release)

October 2, 2017 Tokyo Electric Power Company Holdings, Inc.

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 the future forecast based upon the current situation has 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 September 28, 2017 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 and 2 and Units 3 and 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 state 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 October 5, 2017, as shown in Attachment -2.

(2) Middle term forecast

Regarding accumulated water in Units 1 and 2 buildings and Units 3 and 4 buildings, 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 TP. 2,564 (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 TP. 1,564 (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 (Units 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

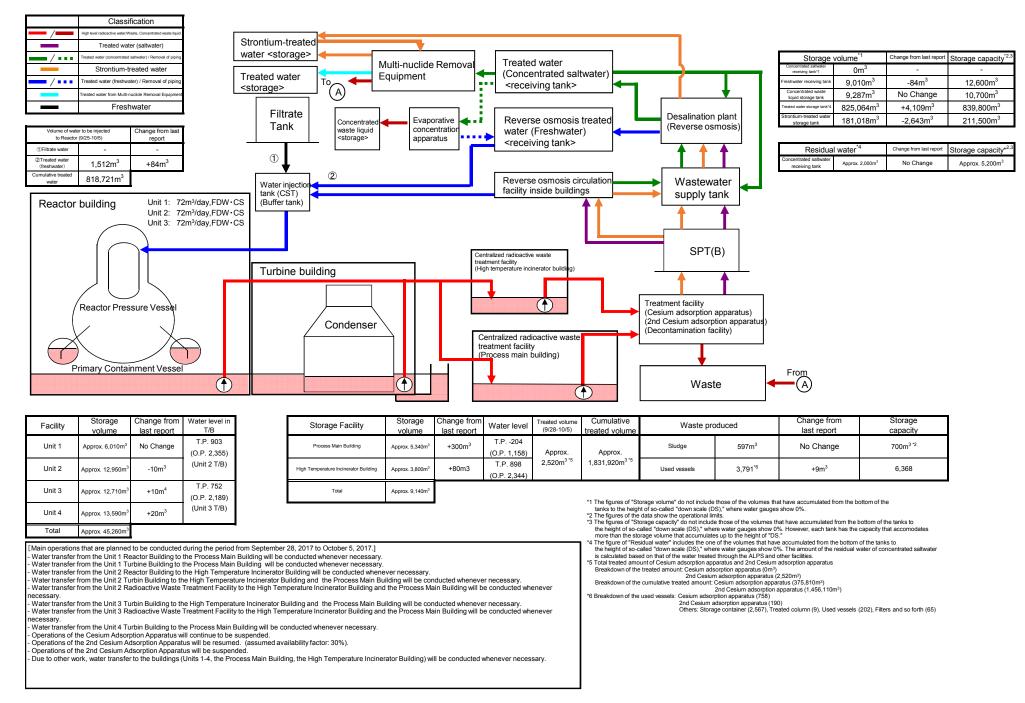
Storage and treatment of high level radioactive accumulated water (as of September 28, 2017)

,																
	Classifi	cation												*1.0		10.4
/	High level radioactive water/ Wa	ste, Concentrated waste liquit											Storage ve		Change from last repo	ort Storage capacity ^{*3,4}
	Treated wate	r (saltwater)	S	trontium-tr	reated	_							receiving tank*1	0m ³	-	-
/ • • •	Treated water (concentrate	d saltwater), pipe remova	w	ater <stor< td=""><td>age></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Freshwater receiving tank</td><td>9,094m³</td><td>+391m³</td><td>12,600m³</td></stor<>	age>								Freshwater receiving tank	9,094m ³	+391m ³	12,600m ³
	Strontium-tre	eated water			<u> </u>	/lulti-nuclide	Removal	Treated					Concentrated waste liquid storage tank	9,287m ³	No Change	10,700m ³
/	Treated water (fresh	vater), pipe removal	T	reated wa		quipment			ntrated salt	water)			Treated water storage tank	820,955m ³	+3,849m ³	839,800m ³
	Treated water from Multi-	nuclide Removal Facilit	<	storage>		• •	:	<receiv< p=""></receiv<>	/ing tank>	Image: Image		1 1	Strontium-treated water storage tank	183,661m ³	-1,612m ³	211,500m ³
	Fresh	water						L				X	storage wink		<i>,</i> -	,
<u> </u>	1		<u>L</u>										Residual	water ^{*5}	Change from last repor	t Storogo conocitut ^{3,4}
Volume of w	vater to be injected	Change from last	T	Filtr	Concentrated	Evapo	rative 📥 📲	Revers	e osmosis	treated	Desalination		Concentrated			
to Read	ctor (9/21-9/28)	report		Tan	K waste liquid		ntration	water (Freshwater		(Reverse osn	nosis)	saltwater tank	Approx. 2,000m ³	³ No Change	Approx.5,200m ³
①Filtrate water	-	-	I		<storage></storage>	appara	atus		ving tank>	/						
(2)Treated water (freshwater)	1,428m ³	-1m ³		_							▲ ▲	▲	Storage	volume	Change from last repor	rt Storage volume*3
(treshwater)			1	1	-								Wastewater			.
water	817,209m ³				2								supply tank	739m ³	-53m ³	1,200m ³
				Water in	njection				e osmosis	- i d a		iter	SPT(B)	1,707m ³	+427m ³	3,100m ³
				tank (CS				circulat	ion facility in	side	supply ta	nk 📘				-
Reacto	or building		7m ³ /day,FDW · CS	(Buffer t	tank)					♠ ♠						
			0m ³ /day,FDW · CS								T	T			Chloride	concentration
			7m³/day,FDW • CS									_	Before/After D	Desalination		ampled on September 13)
	(Before/After Reverse			Sampled on August 17)
							—				SPT(E	3)			200ppm/2ppm (-	Sampled on August 17)
								ntralized radioactive	e waste		0 (-	-,	Before/After Evapora	tive Concentration		-
				Turbir	ne building		(Hig	gh temperature inc	inerator building)							
					U			-			↑	1	Place of S	Sampling	Radioactivit	ty concentration ^{*6}
		\mathcal{F}						↓ I					Process Ma	ain Building	9.6E+07 Bq/L (Sa	ampled on September 5)
	Reactor Press								Treatment facility			orption apparatus	7.6E+02 Bq/L (Sa	ampled on September 4)		
	Reactor Press	sure vesser									(Cesium adsorption a		Exit of decontar	mination facility		_
		.]			/ Condenser						(2nd Cesium adsorpt	ion apparatus)	High Temperature In	ncinerator Building	1.9E+07 Bq/L	(Sampled on March 7)
	\mathbf{V}	X	_			\rightarrow	C	entralized rad	ioactive		(Decontamination fac	chity)	Exit of second cesium a	adsorption apparatus	2.2E+03 Bg/L (Sa	ampled on September 21)
	\underline{X}							aste treatmen								
l (ſ			1)				(F	Process main I	huilding)							
		_						Toccas main	ounung)		L 1					
	Primary Contair	nment Vesse							ounung)		· · · · ·		F			
	Primary Contain	nment Vesse							ounding)		↓		From			
	Primary Contain	iment Vesse				•					Waste		From			
	Primary Contair	iment Vesse								Ð	Waste	2	\sim			
	,		•					Ţ			Waste	2				_
Facility	Storage	Change from	Water level in	 	Storage facility	Storage	Change from	Water level	Treated volume	Cumulative	↓ Waste		Change from		Storage	-
Facility	,		Water level in T/B * ⁸	 	Storage facility			Water level	-						Storage capacity]
Facility Unit 1	Storage	Change from	Water level in T/B * ⁸ T.P. 443		Storage facility	Storage	Change from	Water level * ⁸ T.P288	Treated volume (9/21-9/28)	Cumulative treated volume	Waste pro	duced	Change fron last report	: 	capacity]
	Storage volume	Change from last report	Water level in T/B * ⁸		0 ,	Storage	Change from last report	Water level * ⁸ T.P288 (O.P. 1,074)	Treated volume (9/21-9/28) Approx.	Cumulative treated volume Approx.			Change from	:]
Unit 1	Storage volume Approx. 6,010m ³	Change from last report -20m3	Water level in T/B * ⁸ T.P. 443		0 ,	Storage volume Approx. 5,040m ³	Change from last report -1,780m3	Water level * ⁸ T.P288	Treated volume (9/21-9/28)	Cumulative treated volume	Waste pro	duced 597m ³	Change froi last report No Change	: 	capacity 700m ^{3 *3}	
	Storage volume	Change from last report	Water level in T/B * ⁶ T.P. 443 (O.P. 1,900) T.P.905 (O.P. 2,357)		Process Main Building	Storage	Change from last report	Water level * ⁸ T.P288 (O.P. 1,074)	Treated volume (9/21-9/28) Approx.	Cumulative treated volume Approx.	Waste pro	duced	Change fron last report	: 	capacity	
Unit 1 Unit 2	Storage volume Approx. 6,010m ³ Approx. 12,960m ³	Change from last report -20m3 -60m ³	Water level in T/B * ⁶ T.P. 443 (O.P. 1,900) T.P.905 (O.P. 2,357) T.P. 753		Process Main Building	Storage volume Approx. 5,040m ³ Approx. 3,720m ³	Change from last report -1,780m3	Water level * ⁸ T.P288 (O.P. 1,074) T.P. 828	Treated volume (9/21-9/28) Approx.	Cumulative treated volume Approx.	Waste pro Sludge Used vessels	duced 597m ³ 3,728 ^{*9}	Change froi last report No Change +7m ³	e	capacity 700m ^{3 *3}]
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Unit 1 Unit 2 Unit 3	Storage volume Approx. 6,010m ³ Approx. 12,960m ³ Approx. 12,700m ³	Change from last report -20m3 -60m ³ +20m3	Water level in T/B * ⁸ T.P. 443 (O.P. 1,900) T.P.905 (O.P. 2,357) T.P. 753 (O.P. 2,190) T.P. 844		Process Main Building High Temperature Incinerator Building	Storage volume Approx. 5,040m ³ Approx. 3,720m ³	Change from last report -1,780m3	Water level * ⁸ T.P288 (O.P. 1,074) T.P. 828	Treated volume (9/21-9/28) Approx.	Cumulative treated volume Approx.	Waste pro Sludge Used vessels '1 The figures of the data are treat. '2 The figures of the data are treat.	duced 597m ³ 3,728 ^{*9} ed as a reference, becau led 'down seale (DS);	Change from last report No Change +7m ³	e ansfer are not stable. the accumulated from t	capacity 700m ^{3 *3} 6,368	
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Unit 1 Unit 2 Unit 3 Unit 4 Total [Main operatio	Storage volume Approx. 6,010m ³ Approx. 12,960m ³ Approx. 12,700m ³ Approx. 13,570m ³ Approx. 45,240m ³ Ons that have been c er from the Unit 1 Re	Change from last report -20m3 -60m ³ +20m3 -30m ³ onducted during	Water level in T/B * ⁶ T.P. 443 (O.P. 1,900) T.P.905 (O.P. 2,357) T.P. 753 (O.P. 2,190) T.P. 844 (O.P. 2,283) the period from Sept the period sine Bi	uilding was co	Process Main Building High Temperature Incinerator Building Total 17 (the previous announcement	Storage volume Approx. 5,040m ³ Approx. 3,720m ³ Approx. 8,760m ³	Change from last report -1,780m3 +50m3	Water level * ⁸ T.P288 (O.P. 1,074) T.P. 828	Treated volume (9/21-9/28) Approx.	Cumulative treated volume Approx.	Waste pro Sludge Used vessels '1 The figures of the data are treat '2 The figures of the data are treat '2 The figures of the storage volum of the tanks to the height of so- Frestwater reading tank (app '3 The figures of 'Storage capacity the reading the solarge volume '6 The figures of 'Storage capacity the reading the solarge volume '1 The figure of 'Storage capacity the reading the solarge volume '1 The figure of 'Storage capacity the reading the solarge volume '1 The figure of 'Storage capacity the reading the solarge volume '1 The figure of 'Storage capacity the reading the solarge volume '1 The figure of 'Residau water in '5 The fig	duced 597m ³ 3,728 ^{*9} ed as a reference, becau ed on of include those of cos 900 ⁺¹). Concentrate rock 1,600 ⁺¹). Strontime that accumulate up to th that accumulate up to th cludes the one of the voir cludes the voir cludes the voir cludes the one of the voir cludes the voir clude the voir clude the voir clude the voir clude the voir clude the voir clude the voir clude the voir clude the voir clude the voir clude the voir clude the voir clude the voir clude the voir clude the voir clude the voir clude the voir clude the voir clude the voir	Change froi last report No Change +7m ³ se water levels during water tr the following volumes that ha where water gauges show 0% -treated water storage tark (a -treated water storage tark) (a -treated water storage tark) (a -treated water storage tark) (b -treated water storage tark)	e e e e e e e e e e e e e e e e e e e	capacity 700m ^{3 *3} 6,368 the bottom of the tanks to ity that accomodates tanks to]
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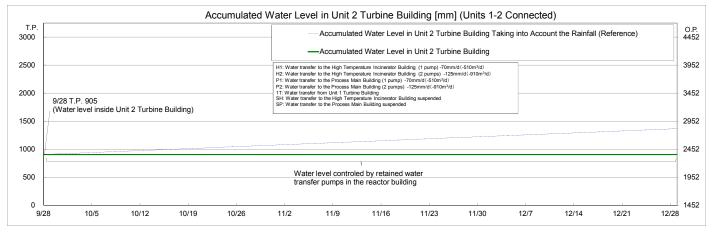
Attachment-1

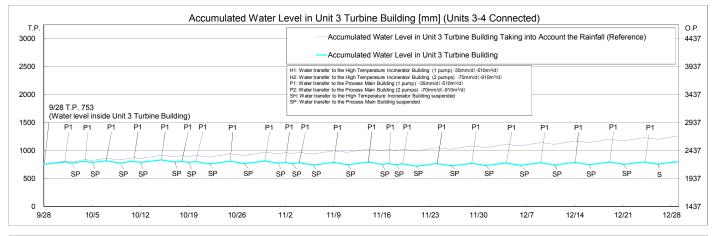
Attachment-2

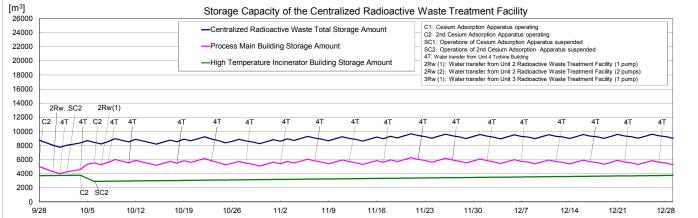
Storage and treatment of high level radioactive accumulated water (as of October 5, 2017)

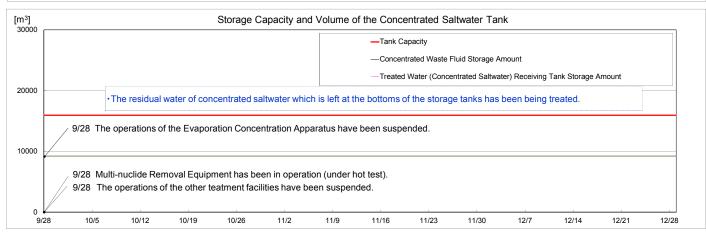


Simulation Results of Accumulated Water Treatment in Units 1-4 Turbine









Note
- The amount of water treated through the 2nd Cesium Adsorption Apparatus is estimated to be 780m³/d (Subject to change depending on the factors such as the levels of water accumulated in T/Bs.)
- "Accumulated Water Levels in Unit 2 and 3 T/Bs" are simulated water levels in consideration of the change of the water levels caused by recent rainfall, inflow of groundwater, etc.
in the surrounding areas of the Fukushima Daiichi Nuclear Power Station.
- "Accumulated Water Levels in Unit 2 and 3 T/Bs Taking into Account the Rainfall" are simulated water levels which are calculated by adding to the accumulated water amounts which are assumed to increase at the rate
of 5mm a day when the surrounding areas of the Fukushima Daiichi Nuclear Power Station have the rainfall equal to the average amount of rain which fell for three months from August to October in 2008 to 2010.