Situation of Storage and Treatment of Accumulated Water including Highly Concentrated Radioactive Materials at Fukushima Daiichi Nuclear Power Station (416th Release)

September 2, 2019 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 August 29, 2019 are shown in the Attachment -1.

3. Forecast of storing and treatment

(1) Short term forecast

Water transfer in Units 1 and 2 and Units 3 and 4 is planned based on the stored amount in the Accumulated Water Storing Facilities and the operating situation of the radioactive material treatment equipment and the subdrain catchment facility. 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 September 5, 2019, are shown in Attachment -2.

1

(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 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 specific water-level difference between accumulated water in the building around and subdrain water and making the lowest floor surface of buildings other than Units 1 to 3 reactor buildings where circulating water is injected into exposed by 2020.

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.

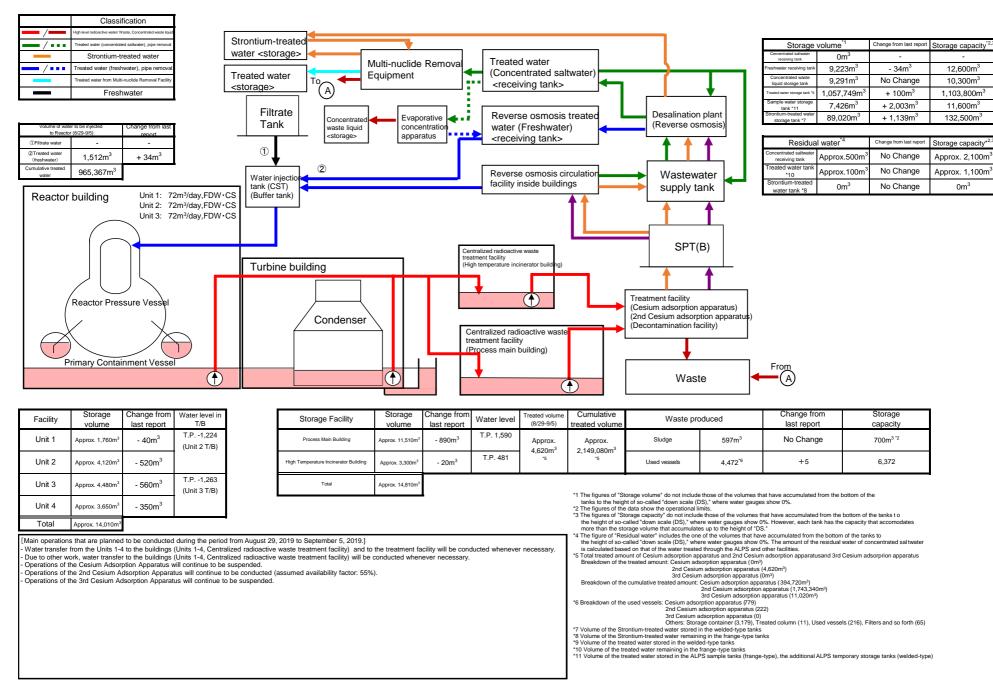
END

Attachment-1

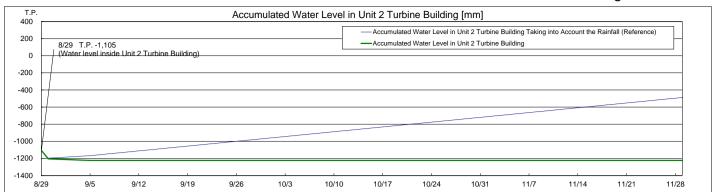
Storage and treatment of high level radioactive accumulated water (as of August 29, 2019)

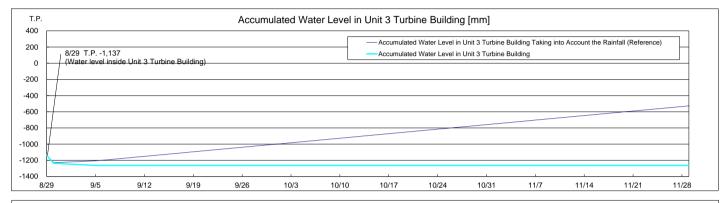
Classification High level radioactive water/Waste, Concentrated waste liquid						(August 29	,	/		
									Storage volume*1	1,2 Change from last report	Storage capacity*3,4
									Concentrated saltwater receiving tank Or	m ³ -	-
	rontium-treated								Freshwater receiving tank 9,25		12,600m ³
Strontium-treated water Wa	iter <storage></storage>			Treese					liquid storage tank 9,29		10,300m ³
Treated water (freshwater), pipe removal		Multi-nuclide	Removal	Treated	ntrated salt	wator)			Treated water storage tank *12 1,057, Sample water storage tank		1,103,800m ³
		Equipment			ring tank>		1		Sample water storage tank *14 5,42 Strontium-treated water	0	11,600m ³
Freshwater <s< td=""><td>torage></td><td></td><td>:</td><td></td><td></td><td></td><td></td><td></td><td>storage tank *10 87,88</td><td>81m³ - 689m³</td><td>132,500m³</td></s<>	torage>		:						storage tank *10 87,88	81m ³ - 689m ³	132,500m ³
		ı —							Residual water*	5 Change from last report	Storage capacity*3,4
Volume of water to be injected Change from last	Filtrate Concentrated	Evapor	ative	Revers	e osmosis t	reated	Desalination p		Concentrated		Approx. 2,100m ³
to Reactor (8/22-8/29) report	Tank waste liquid <storage></storage>	concen appara		water (Freshwater)		(Reverse osm	osis)	Troated water tank		
①Filtrate water		аррага		<receiv< td=""><td>ing tank></td><td></td><td></td><td></td><td>*13 Approx.</td><td></td><td>Approx. 1,100m³</td></receiv<>	ing tank>				*13 Approx.		Approx. 1,100m ³
⁽²⁾ Treated water (freshwater) 1,478m ³ - 31m ³	1								water tank *11 Or	m ³ No Change	0m ³
Cumulative treated 963,855m ³								-			
	Water injection				e osmosis	ida	Wastewat		Storage volume Wastewater	Change from last report	Storage volume*3
Reactor building Unit 1: 67m ³ /day,FDW·CS	tank (CST) (Buffer tank)			circulati	on facility ins	lae	supply tar	nk	supply tank 630	0m ³ + 38m ³	1,200m ³
Unit 2: 70m³/day,FDW · CS	(TT			SPT(B) 2,43	36m ³ + 336m ³	3,100m ³
Unit 3: 72m³/day,FDW+CS											
								-			concentration
							SPT(B		Before/After Desalination		ampled on July 2, 2019)
			trea	tralized radioactive tment facility				,	Before/After Reverse Osmosis		mpled on July 25, 2019)
	Turbine building		(Hig	h temperature inci	nerator building)				Before/After Evaporative Conc	centration	-
				1			T '	T	Dises of Complia		*6
				*		Г	Treatment fo sility		Place of Samplin Process Main Build		/ concentration ⁶ mpled on June 4, 2019)
Reactor Pressure Vessel							Treatment facility (Cesium adsorption ap	oparatus)	Exit of cesium adsorption ap	0	pled on March 22, 2019)
	Condenser						(2nd Cesium adsorption	on apparatus)	Exit of decontamination		_
		\rightarrow	C	entralized radi	oactive		(Decontamination faci	lity)	High Temperature Incinerator		mpled on April 10, 2019)
				aste treatmen					Exit of second cesium adsorption	apparatus 4.0E+02 Bq/L (Sa	mpled on June 4, 2019)
				Process main b	building)		•				
Primary Containment Vessel				1					From		
(\bullet)					C		Waste		— (A)		
Storage Change from Water level in		Storage	Change from	Water level	Treated volume	Cumulative			Change from	Storage	7
Facility Storage volume Change from last report Water level in T/B * ⁸	Storage facility	Storage volume	Change from last report	Water level	Treated volume (8/22-8/29)	Cumulative treated volume	Waste prod	luced	Change from last report	Storage capacity]
Facility	Storage facility Process Main Building			Water level * ⁸ T.P. 1,971	(8/22-8/29) Approx.	treated volume Approx.	Waste prod Sludge	luced 597m ³]
Facility volume last report T/B *8		volume	last report	*8	(8/22-8/29)	treated volume			last report	capacity]
Facility volume last report T/B *8 Unit 1 Approx 1,800m ³ - 20m ³	Process Main Building	Volume Approx. 12,400m ³	- 130m ³	* ⁸ T.P. 1,971	(8/22-8/29) Approx.	Approx. 2,144,460m ³	Sludge Used vessels	597m ³ 4,467 ^{*9}	last report No Change +4	capacity 700m ^{3 *3} 6,372	
Pacility volume last report T/B *8 Unit 1 Approx 1,800m ³ - 20m ³ — Unit 2 Approx 4,640m ³ - 40m ³ *15 T.P 1,105 Unit 3 Approx 5,040m ³ - 530m ³ T.P 1,137	Process Main Building High Temperature Incinerator Building	Approx. 12,400m ³ Approx. 3,320m ³	- 130m ³	* ⁸ T.P. 1,971	(8/22-8/29) Approx.	Approx. 2,144,460m ³ *7 *1 The of the Free	Sludge Used vessels	597m ³ 4,467 ^{*9} reference, because wate to include those of the fo down scale (DS), "where "b). Concentrated wast	last report No Change +4 fevels during water transfer are not stat lowing volumes that have accumulated water gauges show 0%:: liquid strange transfer (approx.100m ²),	capacity 700m ^{3 * 3} 6,372	
Facility volume last report T/B *8 Unit 1 Approx. 1,800m³ - 20m³ — Unit 2 Approx. 4,640m³ - 40m³ *15 T.P 1,105 Unit 3 Approx. 5,040m³ - 530m³ T.P 1,137 Unit 4 Approx. 4,000m³ + 20m³ 1T.P 1,265	Process Main Building High Temperature Incinerator Building	Approx. 12,400m ³ Approx. 3,320m ³	- 130m ³	* ⁸ T.P. 1,971	(8/22-8/29) Approx.	Approx. 2,144,460m ³ -7 -7 -7 -7 -7 -7 -7 -7 -7 -7 -7 -7 -7	Sludge Used vessels	597m ³ 4,467 ^{*9} reference, because wate to include those of the fo down scale (DS), "where "), Concentrated wast 000m ³), Strontium-treate ional limits.	last report No Change +4 tevels during water transfer are not state towner gruppes show 0%: liquid storage tank (approx. 600m ²). d water storage tank (approx. 600m ²).	capacity 700m ³⁺³ 6,372 ble. from the bottom	
Facility volume last report T/B *8 Unit 1 Approx 1,800m³ - 20m³ — Unit 2 Approx 4,640m³ - 40m³ *15 T.P 1,105 Unit 3 Approx 5,040m³ - 530m³ T.P 1,137 Unit 4 Approx 4,000m³ + 20m³ 1T.P 1,265 Total Approx 15,480m³ - -	Process Main Building High Temperature Incinerator Building Total	Volume Approx. 12,400m ³ Approx. 3,320m ³ Approx. 15,720m ³	last report - 130m ³ + 90m ³	* ⁸ T.P. 1,971	(8/22-8/29) Approx.	Approx. 2,144,460m ³ -7 -7 -7 -7 -7 -7 -7 -7 -7 -7 -7 -7 -7	Sludge Used vessels	597m ³ 4,467 ^{*9} reference, because wate to include those of the fo down scale (DS), where m ³), Concentrated wast ional limits.	last report No Change +4 r levels during water transfer are not stat lowing volumes that have accumulated water gauges show 0%: liquid storage tank (approx.100m ²), d water storage tank (approx.200m ²).	capacity 700m ^{3 * 3} 6,372 ble. from the bottom	
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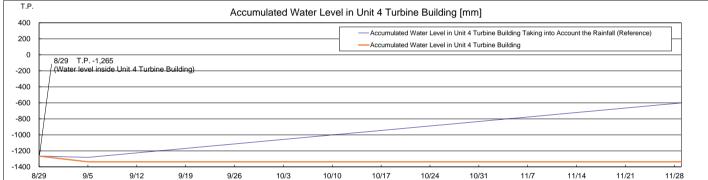
Storage and treatment of high level radioactive accumulated water (as of September 5, 2019)

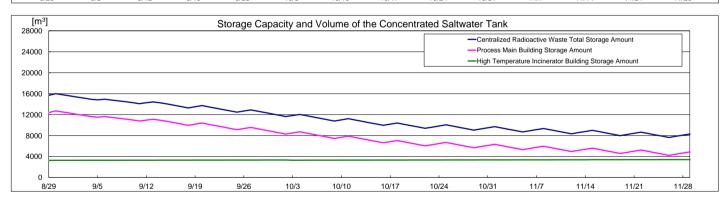


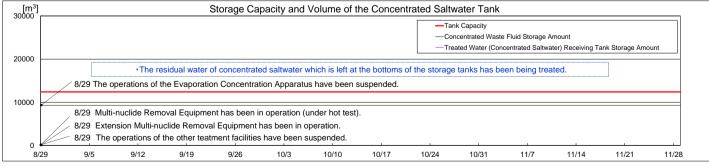
Attachment-3











Note

 The amount of water treated through the 2nd Cesium Adsorption Apparatus is estimated to be 780m ³/d (Subject to change depending on the factors such as the levels of water accumulated in T/Bs.)
 - 'Accumulated Water Levels in Unit 2, 3 and 4 T/Bs' are simulated water levels in consideration of the change of the water level scaused by recent rainfall, inflow of groundwater, etc.
 in the surrounding areas of the Fukushima Daiichin Nuclear Power Station.
 - 'Accumulated Water Levels in Unit 2, 3 and 4 T/Bs Taking into Account the Rainfall" are simulated water levels which are calc ulated by adding to the accumulated water amounts which are assumed to increase at the rate of 8mm a day when the surrounding areas of the Fukushima Daiichi Nuclear Power Station have the rainfalled under the varageamount of rain which fell for three months from August to October in 2015 to 2017. - Unit 2 Turbine Building water level is controled by retained water transfer pumps in the Unit 2 reactor building.

- Unit 4 Turbine Building water level is controled by retained water transfer pumps in the Unit 4 turbine building