Situation of Storage and Treatment of Accumulated Water containing Highly Concentrated Radioactive Materials at Fukushima Daiichi Nuclear Power Station (517th Release)

September 6, 2021 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 containing 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 (Unit 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 2, 2021 are shown in the Attachment -1.

3. Forecast of storing and treatment

(1) Short term forecast

Water transfer in Unit 1 and 2 and Unit 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 (Unit 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 9, 2021 are shown in Attachment -2.

1

(2) Middle term forecast

Regarding accumulated water in Unit 1 and 2 buildings and Unit 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.

At the same time, in order to suppress the flow of groundwater into buildings and reduce the amount of accumulated water being generated, we are planning to transfer accumulated water from the Unit 1 to 3 reactor buildings, where injected cooling water is being circulated, in accordance with the status of the treatment of accumulated water containing highly concentrated radioactive materials and the amount of water being stored in accumulated water storage facilities, while ensuring a specific difference between the levels of accumulated water in buildings and the water levels of subdrains in the vicinity. At other buildings where the lowermost floors have been exposed, we are planning to transfer accumulated water to keep these floor surfaces exposed.

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 storing and treatment situations in the Accumulated Water Storing Facilities for the next 3 months, as shown in Attachment -3.

Stored amounts in 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 2, 2021)

Classification										Storage volu	ume [m ³] ^{*1,2}	Change from last report [m ³]	Storage capacity [m ³] *3,4	
High level radioactive water/ Waste, Concentrated was	e liquid									Concentrated saltwater receiving tank	0	-	-	
Treated water (concentrated saltwater), pipe re	moval Stro	ontium removed	J.							Freshwater receiving tank	7,376	-97	12,000	
Strontium removed water	wate	er <storage></storage>								Concentrated waste liquid storage tank	9,291	No Change	10,300	
Treated water (freshwater), pipe rem	oval		/lulti-nuclide F	Removal	Treated					Treated water storage tank *12,16	1,218,152	+414	1,232,000	
Treated water from Multi-nuclide Removal F	eated water	Equipment (Concentrated saltwater)						Sample water storage tank *14,16	5,383	-176	11,600			
Freshwater	<\$	torage>			<pre>receiv</pre>	ring tank>				Treated water storage tank (Reuse) *15,16	38,529	+636	94,000	
		torage>						<mark>_</mark>		Strontium removed water storage tank *10	11,933	+294	27,600	
		Filtrate		—				Decelination	nlant				•	
Volume of water to be injected to Change from		Tank Concentrated Concentrated Concentration			ration water (Freshwater)			Desalination (Reverse os		Residual water [m ³] *5		Change from last	Storage capacity	
Reactor [m ³] (8/26-9/2) report [m ³										Concentrated		report [m ³]	[m ³] * ^{3,4}	
①Filtrate water				···	<receivi< td=""><td>ing tank></td><td></td><td></td><td></td><td>saltwater tank Treated water tank</td><td>Approx.300</td><td>No Change</td><td>Approx.2,100</td></receivi<>	ing tank>				saltwater tank Treated water tank	Approx.300	No Change	Approx.2,100	
(freshwater) 1,421 -6		1						T		*13,16	0	No Change	0	
Cumulative treated 1,120,305		▼								Strontium removed water tank *11	0	No Change	0	
		Water injection			Reverse	e osmosis		Wastewa	ater				•	
	1	tank (CST)			circulati	on facility ins	ide	supply ta	ank	Storage vo	olume [m ³]	Change from last report [m ³]	Storage volume [m ³] *3	
	83 m ³ /day,FDW •CS 60 m ³ /day,FDW	(Buffer tank)					▲			Wastewater supply tank	630	+7	1,200	
	60 m ³ /day,FDW 60 m ³ /day,CS							T		SPT(B)	706	+84	3,100	
										0 (=)	100		-,	
												Chloride c	oncentration	
			Centra	Centralized radioactive waste treatment facility (High temperature incinerator building)			SPT(B)	B)	Before/After	Desalination		npled on July 2, 2021)		
			treatm						Before/After Reverse			mpled on Feb 6, 2020)		
		Turbine building		(High to		tor building,					ative Concentration		-	
						Treatment facility		Place of Sampling		Radioactivity	concentration ^{*6}			
Reactor Pressure Vess	àl l								um adsorption apparatus) Cesium adsorption apparatus)		Process Main Building		Radioactivity concentration ⁷⁶ 1.1E+07 Bg/L (Sampled on July 6, 2021)	
		Condenser		•				(2nd Cesium adsorptio (3rd Cesium adsorption			sorption apparatus		npled on Mar 22, 2019)	
				Cer	ntralized radi	zed radioactive		(Decontamination facili			mination facility		-	
					ste treatment						Incinerator Building	3.3E+07 Bg/L (San	npled on Apr 12, 2021)	
			(Pro	ocess main b	ouilding)		+		Exit of second cesium		2.3E+02 Bq/L (Sar	mpled on Apr 6, 2021)		
Primary Containment Ves	sel 🗸									Exit of third cesium a	adsorption apparatus	2.2E+02 Bg/L (Sar	mpled on July 6, 2021)	
					7			Waste		From				
	\cup					G			۔ ۱	- (A)				
		(t								0				
Storage Change fr	om Water level in	Storage focility	Storage volume	Change from	Water level	Treated volume	Cumulative treated	West-	aduaad	Change fro	om	Storage	1	
Facility volume [m ³] last repo	rt T/B * ⁸	Storage facility	[m ³]	last report [m3]	*8	(8/26-9/2)	volume [m ³]	Waste pro	ouucea	last repor		capacity	1	
Unit 1 Approx.1,140 +30	—	Process Main Building	Approx.5,960	+290	T.P130	Approx. 2,150	Approx. 2,446,150	Sludge [m ³]	442 *17	No Chan	ge	700 *3		
Unit 2 Approx.1,830 -20	—	High Temperature Incinerator Building	Approx.2,700	+10	T.P16	*7	*7	Used vessels	5,209 *9	+7		6,372	1	
		incinerator building	+			l				1			J	
Unit 3 Approx.1,970 +10	—	Total	Approx.8,660					erence, because water levels						
				l	of	the tanks to the hei	ight of so-called "dow	clude those of the following v n scale (DS)," where water ga	auges show 0%:					
Unit 4 Approx.10 No Chan	ge				Fr	eshwater receiving	tank (approx. 100m3)	 Concentrated waste liquid s 100m³), Strontium removed 	torage tank (approx.10		orage tank (approx.	2,200m ³)		
Total Approx.4,950					*3 Th	e figures of the data	a show the operationa	al limits.	• • •					
					th	e height of so-called	d "down scale (DS),"	clude those of the volumes the where water gauges show 0%	6. However, each tank I	m me bottom of the tain nas the capacity that ac	commodates			
						ore than the storage	e volume that accumu	ulates up to the height of "DS.						

fain operations that have been conducted during the period from August 26, 2021 to September 2, 2021]

Water transfer from the Units 1-4 to the buildings (Units 1-4, Centralized radioactive waste treatment facilities) and to the treatment facilities was conducted whenever necessary.

- Due to other works, water transfer to the buildings (Units 1-4, Centralized radioactive waste treatment facilities) was conducted whenever necessary

Operations of the Cesium Adsorption Apparatus have been suspended.

Operations of the 2nd Cesium Adsorption Apparatus have been suspended.

From August 26, operations of the 3rd Cesium Adsorption Apparatus have been resumed; the availability factor is 51% (previous simulated : 60%). From September 1, operations of the 3rd Cesium Adsorption Apparatus have been suspended.

more than the storage volume that accumulates up to the height of "DS." *5 The figure of "Residual water" includes the one of the volumes that have accumulated from the bottom of the tanks to

the height of so-called "down scale (DS)," where water gauges show 0%. The amount of the residual water of concentrated saltwater is calculated based on that of the water treated through the ALPS and other facilities.

*6 The data shown here are those of CS-137. *7 Total treated amount of Cesium adsorption apparatus and 2nd Cesium adsorption apparatus and 3rd Cesium adsorption apparatus. Breakdown of the treated amount: Cesium adsorption apparatus (0m³) 2nd Cesium adsorption apparatus (0m³)

3rd Cesium adsorption apparatus (2.150m3) Breakdown of the cumulative treated amount: Cesium adsorption apparatus (394,720m³)

2nd Cesium adsorption apparatus (1.956.000m3)

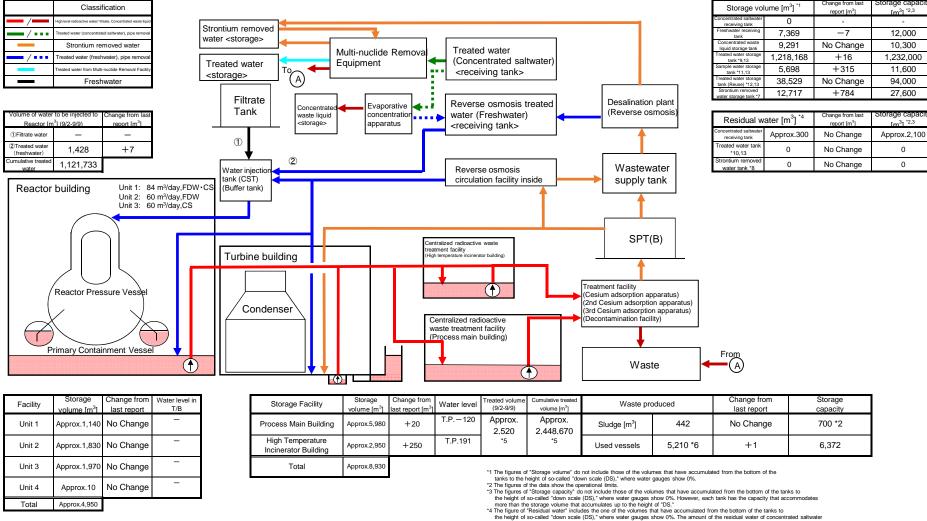
"8 The data of the water levels in the Reactor Buildings are the data as of 5 a.m., September 2

*9 Breakdown of the used vessels: Cesium adsorption apparatus (779), 2nd Cesium adsorption apparatus (246), 3rd Cesium adsorption apparatus (11) Others: Storage container (3,857), Treated column (17), Used vessel (234), Filters and so forth (65) *10 Volume of the Strontium removed water stored in the weided-type tanks

These welded type tanks have been reused from 2019.) *16 The volume of the "ALPS treated water (reuse) and the storage volume in each column of treated water, sample water, treated water (reuse) and treated water (residual).

*17 Sum of sludge and supernatant water (as of 9 a.m., September 2)

Storage and treatment of high level radioactive accumulated water (as of September 9, 2021)



[Main operations that are planned to be conducted during the period from September 2, 2021 to September 9, 2021] Water transfer from the Units 1-4 to the buildings (Units 1-4, Centralized radioactive waste treatment facilities) and to the treatment facilities will

be conducted whenever necessary

Due to other works, water transfer to the buildings (Units 1-4, Centralized radioactive waste treatment facilities) will be conducted whenever necessary

Operations of the Cesium Adsorption Apparatus will continue to be suspended.

Operations of the 2nd Cesium Adsorption Apparatus will continue to be suspended.

Operations of the 3rd Cesium Adsorption Apparatus will be resumed (assumed availability factor : 60%)

is calculated based on that of the water treated through the ALPS and other facilities.

*5 Total treated amount of Cesium adsorption apparatus and 2nd Cesium adsorption apparatus and 3rd Cesium adsorption apparatus Breakdown of the treated amount: Cesium adsorption apparatus (0m³) 2nd Cesium adsorption apparatus (0m³)

3rd Cesium adsorption apparatus (2,520m³) Breakdown of the cumulative treated amount: Cesium adsorption apparatus (394,720m³)

2nd Cesium adsorption apparatus (1.956.000m³) 3rd Cesium adsorption apparatus (97,950m3)

*6 Breakdown of the used vessels: Cesium adsorption apparatus (779)

2nd Cesium adsorption apparatus (246) 3rd Cesium adsorption apparatus (11)

Others: Storage container (3,858), Treated column (17), Used vessels (234), Filters and so forth (65) *7 Volume of the Strontium removed water stored in the welded-type tanks

*8 Volume of the Strontium removed water remaining in the flange-type tanks *9 Volume of the "ALPS treated water" and "treated water to be re-purified" stored in the welded-type tanks

*10 Volume of the "treated water to be re-purified" remaining in the flange-type tanks

*11 Volume of the "treated water to be re-purified" stored in the ALPS sample tanks (flange-type), the additional ALPS temporary storage tanks (welded-type) and the high performance ALPS temporary storage tanks (welded-type)

*12 Volume of the "treated water to be re-purified" stored in the reuse welded-type tanks which stored Strontium removed water (before ALPS treatment) before. (These welded-type tanks have been reused from 2019.)

*13 The volume of the "ALPS treated water, etc." is the sum of the storage volume of each column of treated water, sample water, treated water (reuse) and treated water (residual)

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[m³] ^{*2,3}

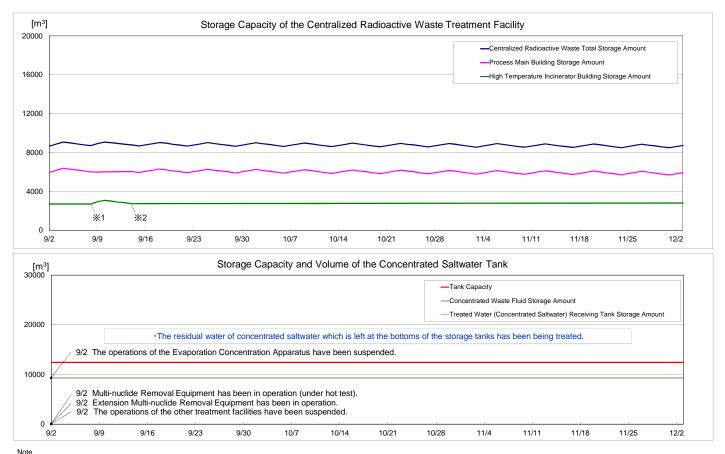
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31 2,3

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Note
- The amount of water treated through the treatment facilities is changed depending on the factors such as stored amount in the accumulated water storing facilities.

%1 Storage place of water transported from the Units 1-4 will be changed over from the process main building to the high temperature incinerator building.
%2 Storage place of water transported from the Units 1-4 will be changed over from the high temperature incinerator building to the process main building.