Fukushima Daiichi Nuclear Power Station
Commencement of the discharge of ALPS treated water into the sea
(sixth discharge in FY2024)

< Reference document >
October 17, 2024
Tokyo Electric Power Company Holdings, Inc.
Fukushima Daiichi Decontamination and Decommissioning Engineering Company

- From July to August 2024, we transferred ALPS treated water from G4 south area group A to measurement/confirmation facility tank group B.
- We have confirmed that analysis results of the samples taken in July for the tank group B at the measurement/confirmation facility, including analysis by external agencies, have met government's regulatory standards.
- During the discharges so far, we have taken samples from the seawater pipe every day to measure tritium concentration in order to confirm that tritium is being suitably diluted. As a result, we have been able to confirm that the analysis values are approximately equal to the calculated concentrations, and less than 1,500 Bq/liter.
- Moreover, seawater samples have also been taken from 4 locations within 3km and 10km radius of the power station, and the detection limit has been raised to approximately 10 Bq/liter in order to quickly obtain tritium concentration measurement results. As a result, we have confirmed that the analysis values are below both the discharge suspension level (700 Bq/liter*1 or 30 Bq/liter*2) and the investigation level (350 Bq/liter*1 or 20 Bq/liter*2)

*1 10 locations within 3 km of the power station*2 4 locations within 10 km square in front of the power station

<Announced by October 16>

- Today (October 17), we have commenced the discharge of ALPS treated water at 11:43 a.m.
- We are discharging ALPS treated water starting from the one with lower tritium concentration. We have been discharging ALPS treated water which tritium concentration prior to dilution is 130,000-280,000 Bq/liter. In the next discharge, tritium concentration prior to dilution is 310,000 Bq/liter. Tritium concentration after dilution is approximately 420 Bq/liter, which is well below the regulatory concentration limit (60,000 Bq/liter), WHO standard for drinking water quality guidelines (10,000 Bq/liter), and value stipulated in the government policy (1,500 Bq/liter).
- Moreover, in the quick tritium measurement being conducted in the surrounding sea area, it is assumed that the measurement results will exceed the record high value and reach several tens of Bq/liter. We will confirm that they are below discharge suspension level(700 Bq/liter) and investigation level (350 Bq/liter).
- Going forward, we will remain vigilant to ensure the safe and stable discharge of ALPS treated water.

[Reference] FY2024 discharge plan (1/2)

- The FY2024 discharge plan as of January 2024 is as follows: There will be seven discharges during the fiscal year that will result in an annual discharge of approximately 54,600m³ of treated water and an annual tritium discharge volume of approximately 14 trillion Bq.
- ALPS treated water generated daily during FY2024 shall be stored in tanks that have been emptied by transferring the water in them to the measurement/confirmation facility (excluding the J9 area in which the tanks will be dismantled)

Management number*1		Amount of water to be transferred*2		Discharge period
24-1-5	K3 area Group A/B (Transferred to Measurement/confirmation facility group C) J4 area Group L (Transferred to Measurement/confirmation facility group C)	: Approx. 4,510m³ : Approx. 3,240m³	Secondary treatment: No Tritium concentration : 180,000-200,000 Bq/liter *3 Total amount of tritium: 1.5 trillion Bq	April-May
24-2-6	J4 area Group L (Transferred to Measurement/confirmation facility group A) J9 area Group A/B (Transferred to Measurement/confirmation facility group A)	: Approx. 2,030m³ : Approx. 5,710m³	Secondary treatment: No Tritium concentration : 170,000-190,000 Bq/liter *3 Total amount of tritium: 1.4 trillion Bq	May-June
24-3-7	J9 area Group A/B (Transferred to Measurement/confirmation facility group B) K1 area Group C/D (Transferred to Measurement/confirmation facility group B)	: Approx. 1,800m³ : Approx. 5,980m³	Secondary treatment: No Tritium concentration : 160,000-180,000 Bq/liter *3 Total amount of tritium: 1.3 trillion Bq	June-July
24-4-8	K1 area Group C/D (Transferred to Measurement/confirmation facility group C) G4 south area Group C (Transferred to Measurement/confirmation facility group C)	: Approx.4,730m³ : Approx.3,060m³	Secondary treatment: No Tritium concentration : 160,000～310,000 Bq/liter *3 Total amount of tritium: 1.7 trillion Bq	July-August
	Inspection of measurement/confirmation facility (Group C)			

Continues on next slide

*1 The management number is made up of the fiscal year, followed by the discharge number for that fiscal year, and the total number of discharges to date.
For example, "24-1-5" indicates that the data is for the first discharge of 2024, which is the fifth discharge to date.
*2 Underlined texts indicate actual results.
*3 Average value of the tank group that was assessed taking into account the radioactive decay until April 1, 2024

[Reference] FY2024 discharge plan (2/2)

Continued from previous slide

Management number*1		Amount of water to be transferred *2		Discharge period
24-5-9	G4 south area Group C (Transferred to Measurement/confirmation facility group A) G4 south area Group A (Transferred to Measurement/confirmation facility group A)	: Approx. 6,780m³ : Approx. 1,000m³	Secondary treatment: No Tritium concentration : 300,000～350,000 Bq/liter *3 Total amount of tritium: 2.4 trillion Bq	August-September
	Inspection of measurement/confirmation facility (Group A)			
24-6-10	G4 south area Group A (Transferred to Measurement/confirmation facility group B)	: Approx. 7,770m³	Secondary treatment: No Tritium concentration : 340,000～350,000 Bq/liter *3 Total amount of tritium: 2.7 trillion Bq	September-October
	Inspection suspension (including full inspections of measurement/confirmation facility Group B)			
24-7-11	G4 south area Group A (Transferred to Measurement/confirmation facility group C) G4 south area Group B (Transferred to Measurement/confirmation facility group C)	: Approx. 800m³ : Approx. 7,000m³	Secondary treatment: No Tritium concentration : 340,000～400,000 Bq/liter *3 Total amount of tritium: 3.0 trillion Bq	February-March

➥ Total amount of tritium to be discharged during FY2024 : Approx. 14 trillion Bq

*1 The management number is made up of the fiscal year, followed by the discharge number for that fiscal year, and the total number of discharges to date. For example, "24-1-5" indicates that the data is for the first discharge of 2024, which is the fifth discharge to date.
*2 Underlined texts indicate actual results.
*3 Average value of the tank group that was assessed taking into account the radioactive decay until April 1, 2024

[Reference] Outline of the fourth discharge in FY2024 (Management Number: 24-5-9)

Outline of discharge for group K4-A			
Attributes of the treated water	Concentration of the 30 types of radionuclides (excluding tritium) in scope of measurement/evaluation	Within regulatory requirements (sum of the ratios of legally required concentrations of radioactive substances is less than 1) (sum of the ratios of concentration: 0.083) (details on p1 of the link)	
	Tritium concentration	31 x 10^4 Bq/liter (details on p2 of the link)	
	Concentration of the 38 significant types of radionuclides measured voluntarily	No significant radionuclides identified (details on p3 of the link)	
	Status of water quality assessment	Within government and prefectural requirements (details on p4 of the link)	
	Water temperature	Same as outdoor temperature. After diluted to 740 times (design dilution factor), same as sea water temperature (not the same as plant's thermal discharge)	
Expected volume of treated water discharge		Approximately 7,800m^3	
Treated water flow rate		Approximately 460m^3/day (set not to exceed designed maximum on 500m^3/day)	
Dilution sea water flow rate		Approximately 340,000m^3/day (same speed as walking in the tunnel [approximated 1m/second])	
Concentration of tritium after dilution		Approximately 420 Bq/liter	
Term of discharge		October 17, 2024 – November 4, 2024 (planned)	

[Reference] Measurement monitoring plan for obtaining quick results

- Since the commencement of ALPS-treated water discharge into the sea in August 2023, TEPCO has engaged in monitoring to obtain quick measurements of the concentration of tritium in seawater at 14 locations shown in the diagrams below (Upper detection limit: Approximately 10Bq/liter). The discharge is immediately suspended if any of the values exceed the discharge suspension level (noted in the diagrams)

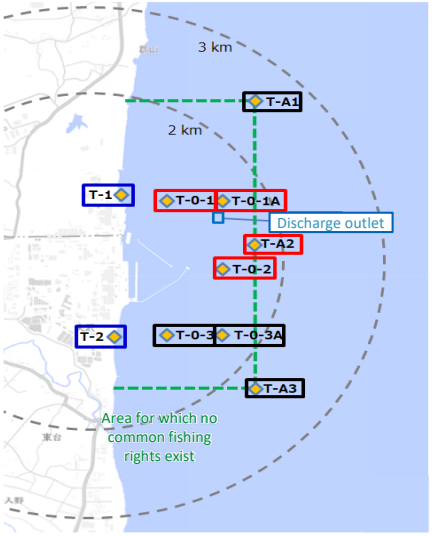

Figure 1: Specimen sampling locations within 3km of the power station (near the discharge outlet)

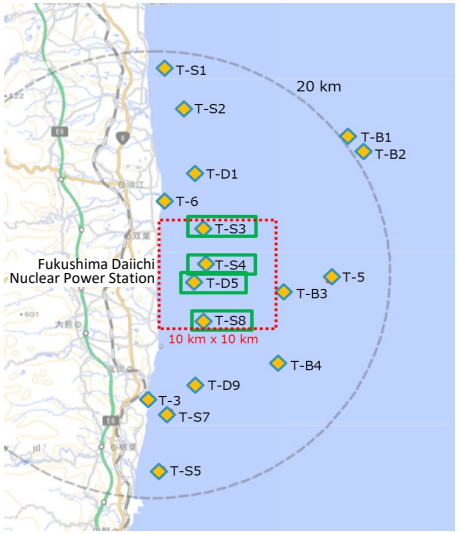

Figure 2: Specimen sampling locations within a 10km square in front of the power station

: Monitoring points used to obtain quick results (10 locations)
Indicator (Discharge suspension level) 700Bq/liter

: Monitoring points used to obtain quick results (4 locations)
Indicator (Discharge suspension level) 30Bq/liter

	【Fig.1】Within 3km of the power station (near the discharge outlet)		【Fig. 2】Four locations within a 10km square in front of the power station
	Four locations in the vicinity of the discharge outlet	Other six locations	
During the discharge period and for one week after the completion of discharge	Daily※1	Twice a week※2	T-D5: Every week T-S3,T-S4,T-S8: Once a month
During the discharge suspension period (Excluding the week following the completion of discharge)	Once a week※2	Once a month※2	

※1 If bad weather during the discharge period prevents measurements for being taken for two consecutive days, on the following day (third day) if it is again expected that measurements cannot be taken, measured results will be quickly obtained from T-1 and T-2.
※2 We have engaged in monitoring daily since the commencement of discharge in August 2023, but the monitoring plan was changed on December 26, 2023 in light of actual measurements taken during discharge (Announced on December 25, 2023)