

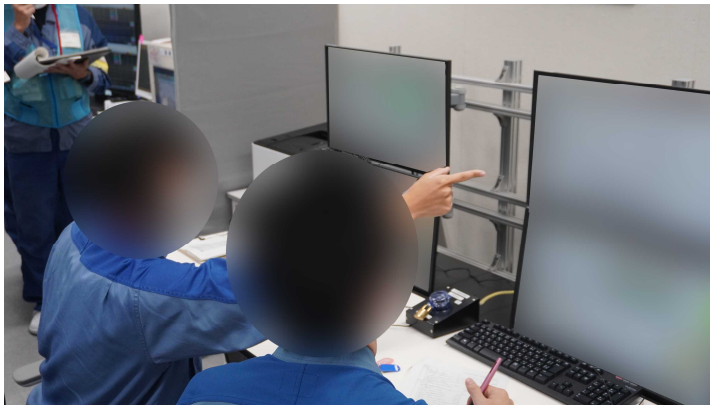
Fukushima Daiichi Nuclear Power Station Commencement of the First Stage of the second discharge for FY2023

- From August 24 until September 11, TEPCO discharged the ALPS treated water in the measurement/confirmation facility tank group B as the first discharge for FY2023. (Total volume of discharged water: 7,788m³; Total tritium volume: Approximately 1.1 trillion Bq)
- During the discharge period starting on August 24, water samples were taken daily from the seawater pipe and tritium concentrations were measured in order to confirm that tritium was being suitably diluted. Results showed that the analysis value was approximately equal to the calculated concentration and below 1,500Bq/liter.
- In order to obtain results quicker, the detection limit for seawater samples taken on August 24 and thereafter was raised to approximately 10Bq/liter and tritium analysis was performed every day. All of the obtained results were below the discharge suspension level (700Bq/liter) and the investigation level (350Bq/liter).
- After completion of the first discharge, all of the ALPS treated water dilution/discharge facilities were inspected/checked and no abnormalities were found.
- Furthermore, since analysis results including those performed by external agencies, of the treated water samples taken from measurement/confirmation facility tank group C in June of this year, have shown that government regulations for discharge have been satisfied, the First Stage of the second discharge will begin on October 3, and the Second Stage will commence after October 5.

< Announced by October 2, 2023 >

- As the first stage of the second discharge, today at 11:30, TEPCO transferred a very small amount of ALPS treated water (approximately 1m³) to the dilution facility using transfer facilities where it was diluted with seawater (approximately 1,200m³) in order to confirm that ALPS treated water is being diluted as expected, and the water was stored in the discharge vertical shaft (upper-stream storage). This water that was stored in the discharge shaft (upper-stream storage) was also sampled.
- Going forward, the tritium concentration in the sampled water will be measured to confirm that the actual concentration is approximately the same as the calculated concentration, and below 1,500Bq/liter.
- As soon as this confirmation process has concluded, we will move on to the Second Stage, by which one group tank-worth of ALPS treated water from the measurement/confirmation facility, and the water temporarily stored in the discharge vertical shaft (upper-stream storage) during the First Stage, will be continuously transferred/diluted and discharged into the sea after October 5. We will continue to engage in this process with the utmost vigilance to ensure that there are no unintentional discharge of ALPS treated water into the sea.

[Reference] Photos of the First Stage



Operations by TEPCO operators



Key switch operations during the First Stage

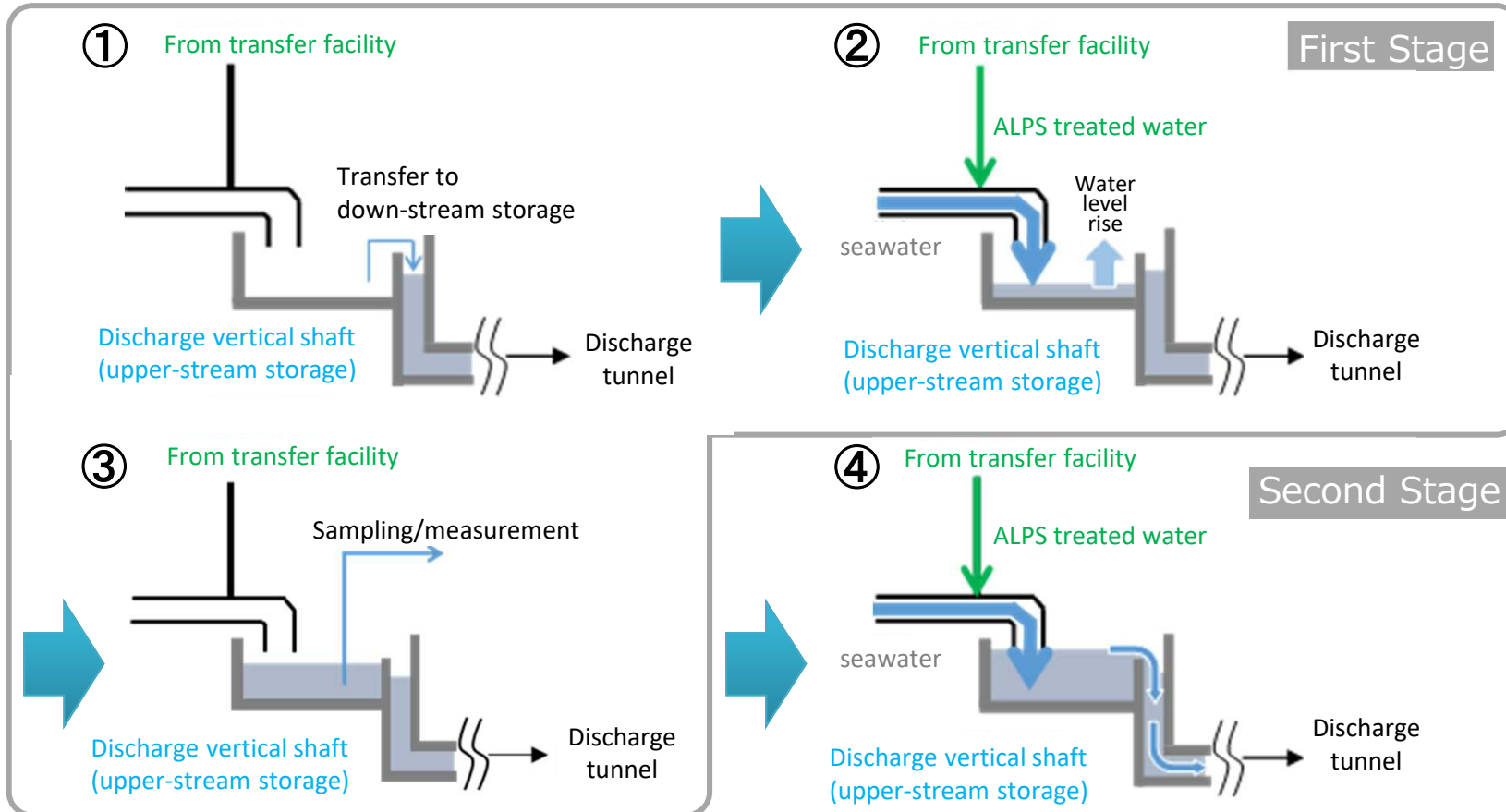


Sampling from the upper-stream storage



Sampling bottles (after sampling)

[Reference] Method of initially discharging small amounts



- ① The discharge vertical shaft (upper-stream storage) will be emptied.
- ② A very small amount of (approximately 1m³) ALPS treated water will be diluted with seawater (approximately 1,200m³) and then held in the discharge vertical shaft (upper-stream storage).
- ③ The water in the discharge vertical shaft (upper-stream storage) will be sampled and the tritium concentration will be measured in order to confirm that actual concentration is approximately the same as the calculated tritium concentration, and that the concentration of tritium is less than 1,500Bq/liter. [Processes ① through ③ comprise the First Stage]
- ④ Then, TEPCO will move on to the Second Stage which will be continuous discharge into the sea.

[Reference] FY2023 Discharge Plan

- Following the completion of the inspection after the initial discharge, we will commence the 1st Stage of the second discharge on October 3. The 2nd Stage, which marks the beginning of the second discharge of ALPS treated water into the sea, will start on October 5.

1 st discharge	Measurement/confirmation facility (K4 area) Group B:	Approx. 7,800m ³	Secondary treatment: No Tritium concentration: 140,000Bq/liter Total amount of tritium: 1.1 trillion Bq	Completed
2 nd discharge	Measurement/confirmation facility (K4 area) Group C:	Approx. 7,800m ³	Secondary treatment: No Tritium concentration: 140,000Bq/liter Total amount of tritium: 1.1 trillion Bq	Details on the next page
3 rd discharge	Measurement/confirmation facility (K4 area) Group A:	Approx. 7,800m ³	Secondary treatment: No Tritium concentration: 130,000Bq/liter ※ ¹ Total amount of tritium: 1.0 trillion Bq ※ ¹	
4 th discharge	K4 area Group E (Transferred to Measurement/confirmation facility group B ※ ²): K3 area Group A (Transferred to Measurement/confirmation facility group B ※ ²):	Approx. 4,500m ³ Approx. 3,300m ³	Secondary treatment: No Tritium concentration: 170,000~210,000Bq/liter ※ ¹ Total amount of tritium: 1.4 trillion Bq ※ ¹	

➔ Total amount of tritium discharged during FY2023: Approx. 5 trillion Bq

※¹ Average value of the tank group that was assessed taking into account the radioactive decay until July 1, 2023

※² To be transferred to K4 area tank group B that will be empty after the 1st discharge is completed

[Reference] Outline of Second Discharge for Group K4-C

Outline of discharge for group K4-C		
Attributes of the treated water	Concentration of the 29 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: 0.25*) (details on p1 of the link)
	Tritium concentration	140,000Bq/liter (details on p2 of the link)
	Concentration of the 39 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, 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	Approximated 190Bq/liter	
Term of discharge	Approximately 17 days	



* Comparison of concentrations before/after sea water dilution

	Before dilution	After dilution (740 times)
29 types	0.25	0.00034
Tritium	2.33	0.0032

0.0035 (1/290 of government requirements)



[Reference] Facility inspection results

- We have performed daily patrol inspections since the commencement of discharge and have confirmed that there are no abnormalities with facilities. Furthermore, after the completion of initial discharge from tank group B, we have performed the inspection of entire facilities and have confirmed that there are no abnormalities. Main inspection details are as follows:

Facility name	Patrol Inspection details	Inspection after the completion of initial discharge	Results
Measurement/confirmation facility	External inspection (measurement/confirmation tanks) - Visual check for any abnormalities	Inspections implemented in accordance with the long-term inspection plan (agitators/MO valves) - Insulation resistance measurement - Check for leakage through the valve seat	No abnormalities
Transfer facility	External inspection (ALPS treated water transfer pump/transfer pipes) - Visual check for abnormalities - Check for abnormal sounds using tool	External inspection (ALPS treated water transfer pump/transfer pipes) - Visual check for abnormalities Internal inspection (vent valve waterproof cover) - Check for leaks from the vent valve flange Miscellaneous - Strainer cleaning, check for leakage through MO valve seat	No abnormalities
Dilution facility	External inspection (seawater transfer pipes/seawater pipe header, etc.) - Visual check for abnormalities - Check for abnormal sounds using tool External inspection (discharge vertical shaft (upper-stream storage)) - Visual check for abnormalities	External inspection (seawater transfer pipes/seawater pipe header, etc.) - Visual check for abnormalities External inspection (discharge vertical shaft (upper-stream storage)) - Check for abnormalities in the concrete surface - Check for abnormalities with the surface of the waterproof sealant (cracks/flaking, etc.) - Check for sediment inside the upper-stream storage	No abnormalities
Discharge facility	External inspection (discharge vertical shaft (down-stream storage)) - Visual check for abnormalities * Submerged areas, such as the discharge tunnel, etc., have been omitted from these inspections		No abnormalities
Seawater intake facility	External inspection (partitioning weirs) - Visual check for abnormalities		No abnormalities



**[Reference] Analysis results for the next tank group
from which the ALPS treated water will be discharged (Group C)**

- On September 21, 2023, pre-discharge analysis results were obtained for the samples taken from the measurement/confirmation tank (Group C) (sampled on June 26, 2023). **It was confirmed that the water satisfies discharge requirements (Table 1).**
 - Item 1: For 29 nuclides to be measured and assessed, the sum of the ratios of the concentration of each radionuclide to the regulatory concentration is 0.25, and it is confirmed to be less than 1.
 - Item 2: Analysis results of tritium concentration is 14×10^4 Bq/liter, and it is confirmed to be less than 1 million Bq/liter.
 - Item 1/2: The external agency consigned by TEPCO (Kaken) and the third-party consigned by the Japanese Government (JAEA)*¹ obtained the same results from their analyses.
 - Item 3/4: It was confirmed that operational targets have been satisfied.

*1 ALPS treated water third-party analysis
(https://fukushima.jaea.go.jp/okuma/alps/index_e.html)

Table 1 . Pre-discharge analysis results of water in the measurement/confirmation tanks (Group C)

Items		Requirement basis	Operational Target	Analysis Results
①	Nuclide to be measured and assessed (29 nuclides)	Implementation plan	the sum of the ratios of the concentration of each radionuclide to the regulatory concentration, except for tritium, is less than 1	0.25 (< 1)
②	Tritium		Tritium concentration is less than 1 million Bq/liter	140,000Bq/liter (less than 1 million Bq/liter)
③	nuclides voluntarily checked to ensure that they are not significantly present (39 nuclides)	Voluntary	No significant concentrations founds of any of the nuclides	None of the nuclides are present in significant consternation
④	general water quality: 44 criteria		Pre-check of water quality standards* ²	All criteria satisfied

*2 Water sampled from the discharge vertical shaft (upper-stream storage) once a year to confirm that legal requirements are being satisfied