Information (16:00), January 28, 2025

To All Missions (Embassies, Consular posts and International Organizations in Japan)

Report on the discharge record and the seawater monitoring results at Fukushima Daiichi Nuclear Power Station during October

The Ministry of Foreign Affairs wishes to provide all international Missions in Japan with a report on the discharge record and seawater monitoring results with regard to groundwater pumped from the sub-drain and groundwater drain systems, as well as bypassing groundwater pumped during the month of October at Fukushima Daiichi Nuclear Power Station (NPS).

1. Summary of decommissioning and contaminated water management

In October the summary of monthly progress on decommissioning and contaminated water management of Fukushima Daiichi NPS was issued shown in Appendix 1. For more information, please see the following URL: https://www.meti.go.jp/english/earthquake/nuclear/decommissioning/pdf/mp202410.pdf

2. Sub-drain and Groundwater Drain Systems

In October purified groundwater pumped from the sub-drain and groundwater drain systems was discharged on the dates shown in Appendix 2. Prior to every discharge, an analysis on the quality of the purified groundwater to be discharged was conducted by Tokyo Electric Power Company (TEPCO) and the results were announced.

All the test results during the month of October have confirmed that the radiation levels of sampled water were substantially below the operational targets set by TEPCO (these operational targets are well below the density limit specified by the Reactor Regulation). The results of these analyses were also confirmed by third-party organization (Tohoku Ryokka Kankyohozen Co.).

In addition, TEPCO and Japan Atomic Energy Agency (JAEA), at the request of the Government of Japan, regularly conduct more detailed analyses on the purified groundwater. The results of JAEA's latest analyses confirmed that TEPCO's analyses were accurate and verified that the radiation levels of sampled groundwater was substantially below the operational target (see Appendix 3).

Moreover, TEPCO publishes the results of analyses conducted on seawater sampled during the discharge operation at the nearest seawater sampling post from

the discharge point (see Appendix 4). The results show that the radiation levels of seawater remain lower than the density limit specified by the Reactor Regulation and significant change in the radioactivity has not been observed.

3. Groundwater Bypassing

In October, the pumped bypassing groundwater was discharged on the dates shown in Appendix 5. Prior to every discharge, an analysis on the quality of the groundwater to be discharged was conducted by TEPCO and the results were announced.

All the test results during the month of October have confirmed that the radiation levels of sampled water were substantially below the operational targets set by TEPCO (these operational targets are well below the density limit specified by the Reactor Regulation). The results of these analyses were also confirmed by Japan Chemical Analysis Center.

In addition, TEPCO and JAEA, at the request of the Government of Japan, regularly conduct more detailed analyses on the groundwater. The results of JAEA's latest analyses confirmed that TEPCO's analyses were accurate and verified that the radiation levels of the sampled groundwater were substantially below the operational target (see Appendix 6).

Moreover, TEPCO publishes analysis results on seawater sampled during the discharge operation at the nearest seawater sampling post from the discharge point (see Appendix 7). The result shows that the radiation levels in seawater remain lower than the density limit specified by the Reactor Regulation and significant change in the radioactivity has not been observed. The analysis had been conducted once a month until March 2017. Since April 2017, it is conducted four times a year because there has been no significant fluctuation in the concentration of radioactive materials in the sea water, and no influence on the surrounding environment has been confirmed.

The sampling process for analyses conducted this month is the same as the one conducted in the information disseminated last month. Results of the analyses are shown in the attached appendices:

(For further information, please contact TEPCO at (Tel: 03-6373-1111) or refer to the TEPCO's website:
http://www.tepco.co.jp/en/nu/fukushima-np/handouts/index-e.html
Contact: International Nuclear Energy Cooperation Division,
Ministry of Foreign Affairs, Tel 03-5501-8227

Outline of Decommissioning, Contaminated Water and Treated Water Management

October 31, 2024
Secretariat of the Team for Countermeasures for Decommissioning, Contaminated Water and Treated Water

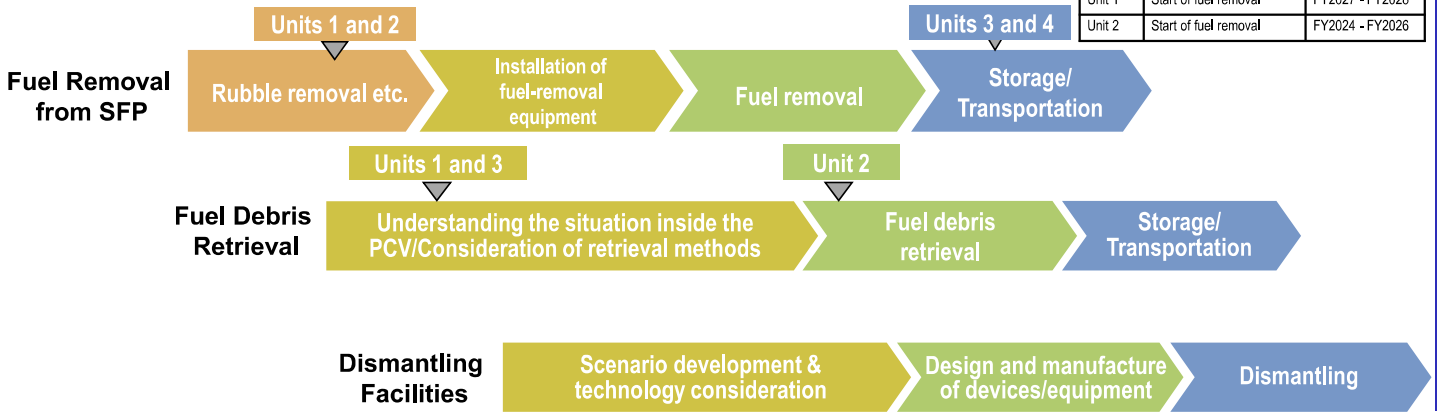
Main decommissioning work and steps

Fuel removal from the spent fuel pool was completed on December 22, 2014 at Unit 4 and February 28, 2021 at Unit 3.
Trial fuel debris retrieval at Unit 2 commenced from September 10, 2024 and a milestone of the Mid- and Long-Term Roadmap "Commencing fuel debris retrieval at the first Unit" was achieved.
Work continues sequentially toward the start of fuel removal from Units 1 and 2 and fuel debris (Note 1) retrieval from Units 1-3.

(Note 1) Fuel assemblies having melted through in the accident with nearby metal materials etc.

<Milestones in the Mid- and Long-Term Roadmap>

Units 1-6	Completion of fuel removal	Within 2031
Unit 1	Start of fuel removal	FY2027 - FY2028
Unit 2	Start of fuel removal	FY2024 - FY2026



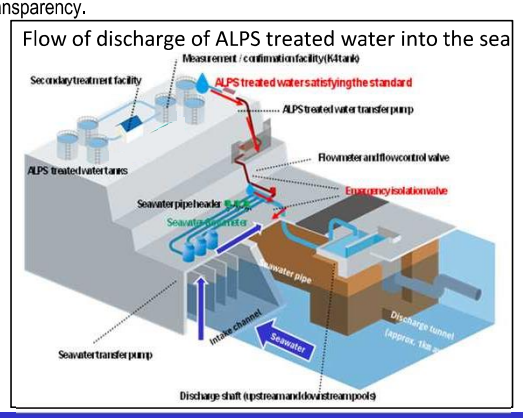
Measures for treated water

Appendix 1

Handling of ALPS treated water

Regarding the discharge of ALPS treated water into the sea, TEPCO must comply with regulatory and other safety standards to safeguard the public, the surrounding environment and agricultural, forestry and fishery products. To minimize adverse impacts on reputation, efforts including enhanced monitoring, ensuring objectivity and transparency by engaging with third-party experts and having safety checked by the IAEA, will continue. Moreover, accurate information will be disseminated with full transparency.

Flow of discharge of ALPS treated water into the sea



Contaminated water management - triple-pronged efforts -

(1) Efforts to promote contaminated water management based on the three basic policies

① "Remove" the source of water contamination ② "Redirect" fresh water from contaminated areas ③ "Retain" contaminated water from leakage

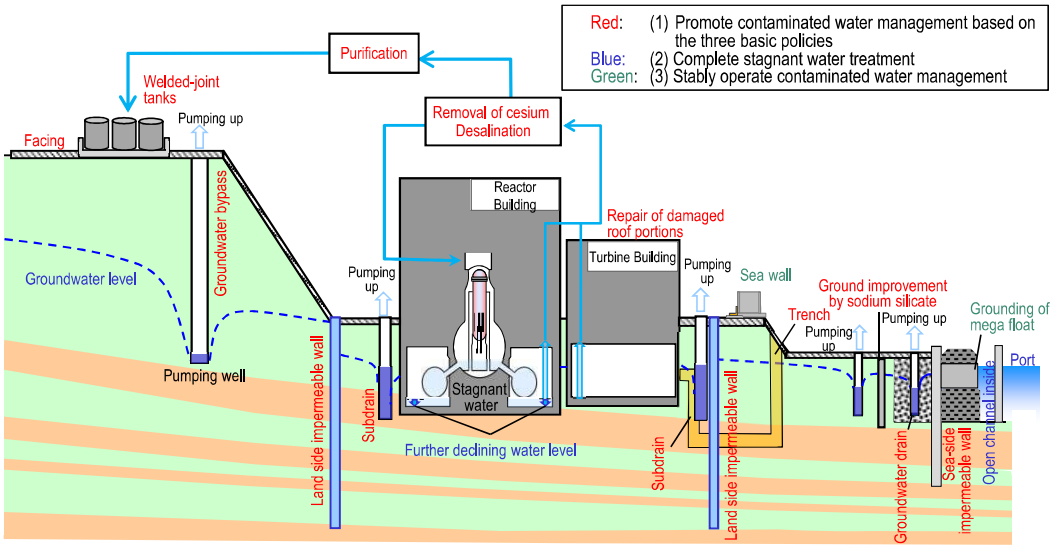
- Strontium-reduced water from other equipment is being re-treated in the Advanced Liquid Processing System (ALPS: multi-nuclide removal system) and stored in welded-joint tanks.
- Multi-layered contaminated water management measures, including land-side impermeable walls and subdrains, have stabilized the groundwater at a low level and the increased contaminated water generated during rainfall is being suppressed by repairing damaged portions of the building roofs facing onsite. Through these measures, the generation of contaminated water has been suppressed and reduced, from approx. 540 m^3/day (in May 2014) before implementing measures to approx. 80 m^3/day (in FY2023), achieving the milestone of "suppressing the amount of contaminated water generated to 100 m^3/day or less during average rainfall within FY2025."
- Measures will proceed to further reduce the amount of contaminated water generated and suppress it to approx. 50-70 m^3/day by FY2028.

(2) Efforts to complete stagnant water treatment

- To reduce the stagnant water levels in buildings as planned, work to install additional stagnant water transfer equipment is underway.
- In 2020, treatment of stagnant water in buildings was completed, except for the Unit 1-3 Reactor Buildings, Process Main Building and High-Temperature Incinerator Building.
- While assessing the dust impact, measures to reduce the stagnant water level were implemented. In March 2023, the target water level in each building was achieved. For the Units 1-3 Reactor Buildings, "reducing stagnant water in the Reactor Buildings to about half the amount at the end of 2020 during the period FY2022-2024" was achieved.
- For zeolite sandbags on the basement floors of the Process Main Building and High-Temperature Incinerator Building, measures to reduce the radiation dose are being examined with stabilization in mind.

(3) Efforts to stably operate contaminated water management

- As part of the tsunami countermeasures, openings in buildings were closed and work to install sea walls was completed. As countermeasures for heavy rain, sandbags are being installed to suppress direct inflow into buildings while work to enhance drainage channels and other measures is being implemented as planned.



Progress Status and Future Challenges of the Mid- and-Long-Term Roadmap toward Decommissioning of TEPCO Holdings Fukushima Daiichi Nuclear Power Station (Outline)

Progress status

◆ The temperatures of the Reactor and the Primary Containment Vessel of Units 1-3 have been maintained stable.
There was no significant change in the concentration of radioactive materials newly released from Reactor Buildings into the air. It was concluded that the comprehensive cold shutdown condition had been maintained.

Unit 2 Progress of trial fuel debris retrieval

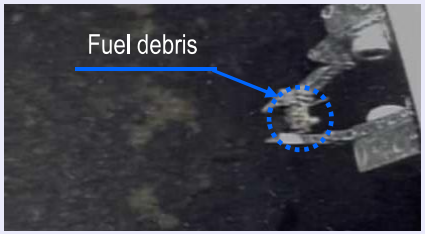
On September 17, a functional check of the telescopic device was performed. It then became clear that camera footage was not being sent properly to the monitors in the remote operations room for some reason.

TEPCO then tested the camera cable conduction, replaced cameras and confirmed that the camera footage was now being sent properly to the remote operations room. TEPCO subsequently confirmed functional checks for the telescopic device and replaced cameras on October 24.

Trial retrieval of fuel debris has recommenced since October 28 and the fuel debris was gripped on October 30.

Going forward, radiation of the gripped fuel debris will be measured after returning the fuel debris into the enclosure.

TEPCO will continue to remain vigilant and prioritize safety.



< Gripping fuel debris >

Discharge of ALPS treated water into the sea

The discharge of ALPS treated water from the measurement/confirmation facility tank group A, which began on September 26, was completed on October 14.

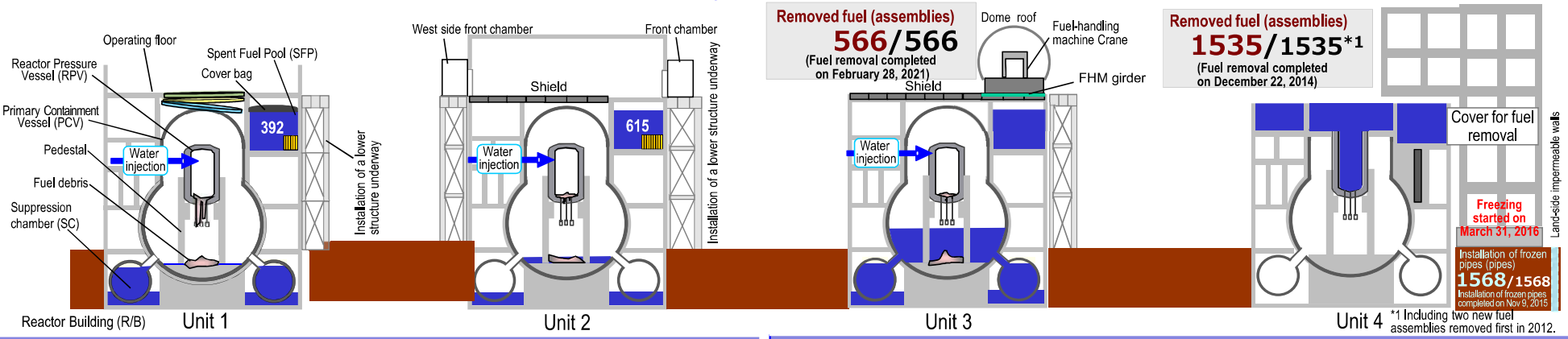
In preparation for the 6th discharge of ALPS treated water in FY2024, Tank Group B of the measurement/ confirmation facility was analyzed and TEPCO and an external institute confirmed that the analytical results satisfied the discharge requirement. The results were announced on October 15.

Following the confirmation, discharge of ALPS treated water of Tank Group B of the measurement/confirmation facility into the sea recommenced from October 17.

Regarding tritium in seawater, TEPCO will continue confirming that it is being discharged safely as planned, while meeting the discharge requirement based on quick daily analyses conducted by TEPCO and others.

< Measurement status of the 6th discharge of ALPS treated water in FY2024 >
* Detailed information described on the right on Page 5

Measurement status	Compliance with requirement
Attributes of the treated water from Tank Group B (Concentration of the 30 types of radionuclides within the measurement / evaluation scope) [TEPCO] (Sampled on September 4)	○
Downstream of discharge shaft and seawater pipe header [TEPCO] (Sampled on October 29)	○
Results of sea area monitoring at 4 points within 3km of the Power Station [TEPCO] (Sampled on October 29)	○
Results of sea area monitoring at 1 point within 10km of the Power Station [TEPCO] (Sampled on October 28)	○
Ministry of the Environment (Seawater at 3 points off the coast of Fukushima Prefecture, sampled on October 21)	○
Fisheries Agency (Flounder and others, sampled on October 29)	○
Fukushima Prefecture (Seawater at 9 points off the coast of Fukushima Prefecture, October 22)	○



Unit 2 Response to water level decline in the Unit 2 Spent Fuel Pool Skimmer Surge Tank

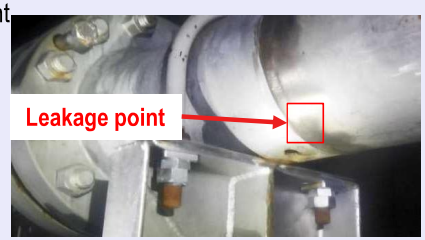
On August 9, the water level in the Unit 2 Spent Fuel Pool Skimmer Surge Tank was seen to be declining and leakage was identified from one point of the pipe inside the Spent Fuel Pool Cooling Purification System Heat Exchanger Room.

While investigating the cause, deposits were detected inside the pipe. Investigation will continue to identify the cause of leakage from the pipe.

From October 22, work to repair the leakage point and build an alternative cooling line commenced.

Moreover, the results of the investigation into similar parts (dissimilar material joints) confirmed corrosion on the external surfaces. Investigation into other dissimilar material joints will continue.

It is considered that the Unit 2 pool temperature will not reach the Limiting Conditions for Operation of 65°C without cooling.

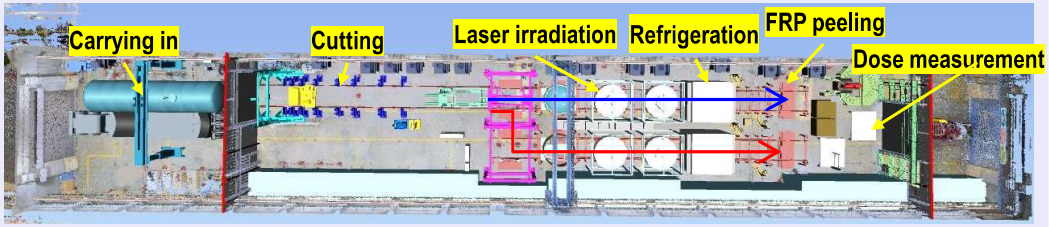


< Leakage point >

Decontamination and dismantling of horizontal tanks

Before dismantling the horizontal tanks (367 tanks) used to store RO-concentrated water and others, the dismantling facility was installed by October 31.

Following the installation, using unused horizontal tanks (28 tanks) which were not contaminated inside, decontamination and dismantling tests will be conducted from November. After confirming the procedures for all work processes, measures to prevent the contamination expanding and other matters concerned, in the tests, decontamination and dismantling of used tanks (339 tanks) will commence from December.



< Decontamination and dismantling facility >

Appendix 2

Results of analyses on the quality of the purified groundwater pumped from the sub-drain and groundwater drain systems at Fukushima Daiichi NPS (made available by TEPCO prior to discharge)

(Unit: Bq/L)

Date of sampling *Date of discharge	Detected nuclides	Analytical body	
		TEPCO	Third-party organization
October 27th, 2024 *Discharged on November 1st	Cs-134	ND (0.88)	ND (0.71)
	Cs-137	ND (0.62)	ND (0.70)
	Gross β	ND (1.8)	0.39
	H-3	750	820
October 26th, 2024 *Discharged on October 31st	Cs-134	ND (0.91)	ND (0.81)
	Cs-137	ND (0.65)	ND (0.63)
	Gross β	ND (2.0)	0.40
	H-3	760	790
October 25th, 2024 *Discharged on October 30th	Cs-134	ND (0.67)	ND (0.67)
	Cs-137	ND (0.81)	ND (0.66)
	Gross β	ND (1.7)	0.45
	H-3	730	780
October 24th, 2024 *Discharged on October 29th	Cs-134	ND (0.84)	ND (0.66)
	Cs-137	ND (0.78)	ND (0.71)
	Gross β	ND (0.56)	ND(0.32)
	H-3	740	750
October 23rd, 2024 *Discharged on October 28th	Cs-134	ND (0.91)	ND (0.59)
	Cs-137	ND (0.69)	ND (0.76)
	Gross β	ND (1.7)	ND (0.33)
	H-3	740	770
October 22nd, 2024 *Discharged on October 27th	Cs-134	ND (0.97)	ND (0.57)
	Cs-137	ND (0.69)	ND (0.69)
	Gross β	ND (1.9)	ND (0.35)
	H-3	650	680
October 21st, 2024 *Discharged on October 26th	Cs-134	ND (0.55)	ND (0.44)
	Cs-137	ND (0.61)	ND (0.58)
	Gross β	ND (1.9)	ND (0.35)
	H-3	600	630
October 20th, 2024 *Discharged on October 25th	Cs-134	ND (0.77)	ND (0.62)
	Cs-137	ND (0.74)	ND (0.63)
	Gross β	ND (1.8)	0.47

	H-3	540	580
October 18th, 2024 *Discharged on October 23rd	Cs-134	ND (0.68)	ND (0.68)
	Cs-137	ND (0.74)	ND (0.63)
	Gross β	ND (0.57)	ND(0.34)
	H-3	510	540
October 17th, 2024 *Discharged on October 22nd	Cs-134	ND (0.68)	ND (0.62)
	Cs-137	ND (0.74)	ND (0.54)
	Gross β	ND (1.8)	ND (0.36)
	H-3	510	530
October 16th, 2024 *Discharged on October 21st	Cs-134	ND (0.65)	ND (0.59)
	Cs-137	ND (0.59)	ND (0.58)
	Gross β	ND (1.9)	0.39
	H-3	490	530
October 15th, 2024 *Discharged on October 20th	Cs-134	ND (0.69)	ND (0.57)
	Cs-137	ND (0.61)	ND (0.61)
	Gross β	ND (1.9)	ND (0.34)
	H-3	380	410
October 14th, 2024 *Discharged on October 19th	Cs-134	ND (0.88)	ND (0.51)
	Cs-137	ND (0.78)	ND (0.69)
	Gross β	ND (1.8)	ND(0.36)
	H-3	400	410
October 13th, 2024 *Discharged on October 18th	Cs-134	ND (0.58)	ND (0.52)
	Cs-137	ND (0.74)	ND (0.85)
	Gross β	ND (1.8)	ND (0.34)
	H-3	550	610
October 12th, 2024 *Discharged on October 17th	Cs-134	ND (0.88)	ND (0.71)
	Cs-137	ND (0.69)	ND (0.73)
	Gross β	ND (2.0)	0.46
	H-3	490	520
October 10th, 2024 *Discharged on October 15th	Cs-134	ND (0.75)	ND (0.93)
	Cs-137	ND (0.69)	ND (0.63)
	Gross β	ND (0.65)	0.51
	H-3	530	550
October 8th, 2024 *Discharged on October 13th	Cs-134	ND (0.88)	ND (0.57)
	Cs-137	ND (0.97)	ND (0.61)
	Gross β	ND (1.7)	ND(0.34)
	H-3	510	550
October 7th, 2024 *Discharged on October 12th	Cs-134	ND (0.68)	ND (0.54)
	Cs-137	ND (0.57)	ND (0.63)
	Gross β	ND (1.7)	0.41
	H-3	620	650
October 6th, 2024	Cs-134	ND (0.68)	ND (0.63)

*Discharged on October 11th	Cs-137	ND (0.49)	ND (0.69)
	Gross β	ND (1.8)	ND (0.35)
	H-3	590	590
October 4th, 2024 *Discharged on October 9th	Cs-134	ND (0.69)	ND (0.62)
	Cs-137	ND (0.67)	ND (0.58)
	Gross β	ND (1.8)	ND(0.35)
	H-3	530	580
October 3rd, 2024 *Discharged on October 8th	Cs-134	ND (0.88)	ND (0.60)
	Cs-137	ND (0.63)	ND (0.66)
	Gross β	ND (1.7)	0.41
	H-3	490	520
October 2nd, 2024 *Discharged on October 7th	Cs-134	ND (0.82)	ND (0.57)
	Cs-137	ND (0.74)	ND (0.61)
	Gross β	ND (1.9)	0.36
	H-3	440	480
October 1st, 2024 *Discharged on October 6th	Cs-134	ND (0.98)	ND (0.57)
	Cs-137	ND (0.63)	ND (0.71)
	Gross β	ND (0.74)	0.45
	H-3	680	690
September 30th, 2024 *Discharged on October 5th	Cs-134	ND (0.81)	ND (0.49)
	Cs-137	ND (0.61)	ND (0.61)
	Gross β	ND (2.0)	ND(0.33)
	H-3	430	450
September 29th, 2024 *Discharged on October 4th	Cs-134	ND (0.75)	ND (0.58)
	Cs-137	ND (0.69)	ND (0.60)
	Gross β	ND (1.8)	0.52
	H-3	420	460
September 28th, 2024 *Discharged on October 3rd	Cs-134	ND (0.68)	ND (0.77)
	Cs-137	ND (0.57)	ND (0.51)
	Gross β	ND (1.9)	0.57
	H-3	430	460

- * ND: represents a value below the detection limit; values in ( ) represent the detection limit.
- In order to ensure the results, third-party organizations have also conducted an analysis and verified the radiation level of the sampled water.
- Third-party organization : Tohoku Ryokka Kankyohozen Co., Ltd

Appendix 3

Result of detailed analyses conducted by TEPCO, JAEA, and Japan Chemical Analysis Center (In order to confirm the validity of analysis, the Government of Japan also requests JAEA; and TEPCO requests Japan Chemical Analysis Center to conduct independent analyses)

(Unit: Bq/L)

Date of sampling	Detected nuclides	Analytical body		
		JAEA	TEPCO	Japan Chemical Analysis Center
September 2nd,2024	Cs-134	ND (0.0025)	ND (0.0059)	ND (0.0065)
	Cs-137	ND (0.0020)	ND (0.0040)	ND (0.0045)
	Gross α	ND (0.63)	ND (2.2)	ND (2.0)
	Gross β	ND (0.38)	ND (0.63)	ND (0.51)
	H-3	770 ±1.6	760	760
	Sr-90	0.0020±0.00047	ND (0.0015)	ND (0.0059)

* ND: represents a value below the detection limit; values in ( ) represent the detection limit.

(Reference) (Unit: Bq/L)

Radionuclides	Operational Targets	Density Limit specified by the Reactor Regulation	World Health Organization (WHO) Guidelines for Drinking Water Quality
Cs-134	1	60	10
Cs-137	1	90	10
Gross α	—	—	—
Gross β	3 (1) ※	—	—
H-3	1,500	60,000	10,000
Sr-90	—	30	10

※ The operational target of Gross β is 1 Bq/L in the survey which is conducted once every ten days.

※ The reference table shows the values of operational targets before discharge. Since the values after discharge contain natural radioactive materials in seawater, there will be differences between the values and the operational targets values.

Appendix 4

Results of analysis on the seawater sampled near the discharge point (North side of Units 5 and 6 discharge channel)

(Unit: Bq/L)

Date of sampling	Detected nuclides	Sampling point (South discharge channel)
September 11th, 2024 *Sampled before discharge of purified groundwater.	Cs-134	ND (0.68)
	Cs-137	ND (0.78)
	Gross β	11
	H-3	ND (0.28)

Appendix 5

Results of analyses on the water quality of the groundwater pumped up for bypassing at Fukushima Daiichi NPS (made available by TEPCO prior to discharge)

(Unit: Bq/L)

Date of sampling *Date of discharge	Detected nuclides	Analytical body	
		TEPCO	Third-party organization
October 25th, 2024 *Discharged on October 31st	Cs-134	ND (1.0)	ND (0.57)
	Cs-137	ND (0.65)	ND (0.60)
	Gross β	ND (0.72)	ND (0.33)
	H-3	43	41
October 18th, 2024 *Discharged on October 24th	Cs-134	ND (0.69)	ND (0.69)
	Cs-137	ND (0.60)	ND (0.75)
	Gross β	ND (0.59)	ND (0.28)
	H-3	43	45
October 11th, 2024 *Discharged on October 18th	Cs-134	ND (0.80)	ND (0.71)
	Cs-137	ND (0.65)	ND (0.51)
	Gross β	ND (0.58)	ND (0.29)
	H-3	47	49
October 4th, 2024 *Discharged on October 10th	Cs-134	ND (0.75)	ND (0.47)
	Cs-137	ND (0.82)	ND (0.63)
	Gross β	ND (0.63)	ND (0.30)
	H-3	45	47
September 27th, 2024 *Discharged on October 3rd	Cs-134	ND (0.75)	ND (0.62)
	Cs-137	ND (0.74)	ND (0.67)
	Gross β	ND (0.60)	ND (0.32)
	H-3	49	47

- * ND: represents a value below the detection limit; values in ( ) represent the detection limit
- In order to ensure the results, third-party organizations have also conducted an analysis and verified the radiation level of the sampled water.
- Third-party organization: Tohoku Ryokka Kankyohozen Co., Ltd

Result of detailed analyses conducted by TEPCO, JAEA, and Japan Chemical Analysis Center (In order to confirm the validity of analysis, the Government of Japan also requests JAEA; and TEPCO requests Japan Chemical Analysis Center to conduct independent analyses)

(Unit: Bq/L)

Date of sampling	Detected nuclides	Analytical body		
		JAEA	TEPCO	Japan Chemical Analysis Center
September 6th, 2024	Cs-134	ND (0.0035)	ND (0.0046)	ND (0.0059)
	Cs-137	0.0019± 0.00061	ND (0.0040)	ND (0.0051)
	Gross α	ND (0.47)	ND (2.0)	ND (2.0)
	Gross β	ND (0.37)	ND (0.65)	ND (0.57)
	H-3	48 ±0.44	45	47
	Sr-90	ND (0.0035)	ND (0.0015)	ND (0.0059)

* ND: represents a value below the detection limit; values in ( ) represent the detection limit.

(Reference) (Unit: Bq/L)

Radionuclides	Operational Targets	Density Limit specified by the Reactor Regulation	World Health Organization (WHO) Guidelines for Drinking Water Quality
Cs-134	1	60	10
Cs-137	1	90	10
Gross α	—	—	—
Gross β	5 (1) ※	—	—
H-3	1,500	60,000	10,000
Sr-90	—	30	10

※ The operational target of Gross β is 1 Bq/L in the survey which is conducted once every ten days.

※ The reference table shows the values of operational targets before discharge. Since the values after discharge contain natural radioactive materials in seawater, there will be differences between the values and the operational targets values.

Appendix 7

Results of analyses on the seawater sampled near the discharge point (Around South Discharge Channel)

(Unit: Bq/L)

Date of sampling ※conducted four times a year	Detected nuclides	Sampling point (South discharge channel)
September 11th, 2024	Cs-134	ND (0.68)
	Cs-137	ND (0.97)
	Gross β	12
	H-3	ND (0.32)