Information (14:00), June 13 2024

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

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

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 March at Fukushima Daiichi Nuclear Power Station (NPS).

1. Summary of decommissioning and contaminated water management

In March 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/mp202403.pdf

2. Sub-drain and Groundwater Drain Systems

In March 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 March 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 March, 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 March 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

March 28, 2024
Secretariat of the Team for Countermeasures for Decommissioning, Contaminated Water and Treated Water

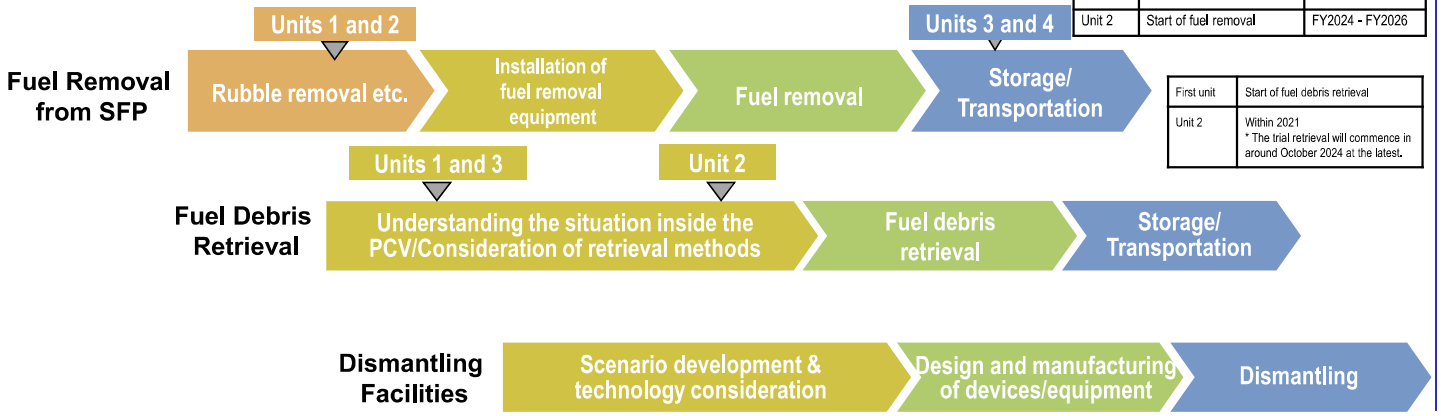
Main decommissioning work and steps

Fuel removal from the spent fuel pool was completed in December 2014 at Unit 4 and on February 28, 2021 at Unit 3.
Work continues sequentially toward the start of fuel removal from Units 1 and 2 and 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



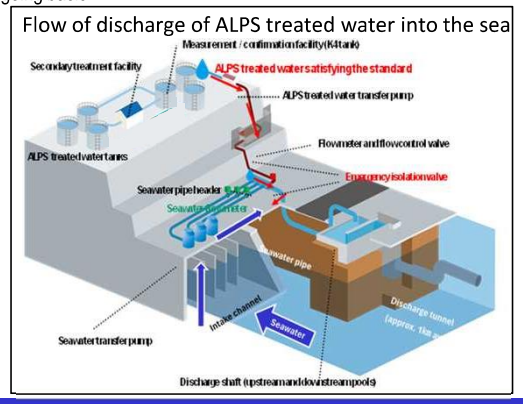
First unit	Start of fuel debris retrieval
Unit 2	Within 2021 * The trial retrieval will commence in around October 2024 at the latest.

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, monitoring will be further enhanced and objectivity and transparency ensured by engaging with third-party experts and having safety checked by the IAEA. Moreover, accurate information will be disseminated with full transparency on an ongoing basis.

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

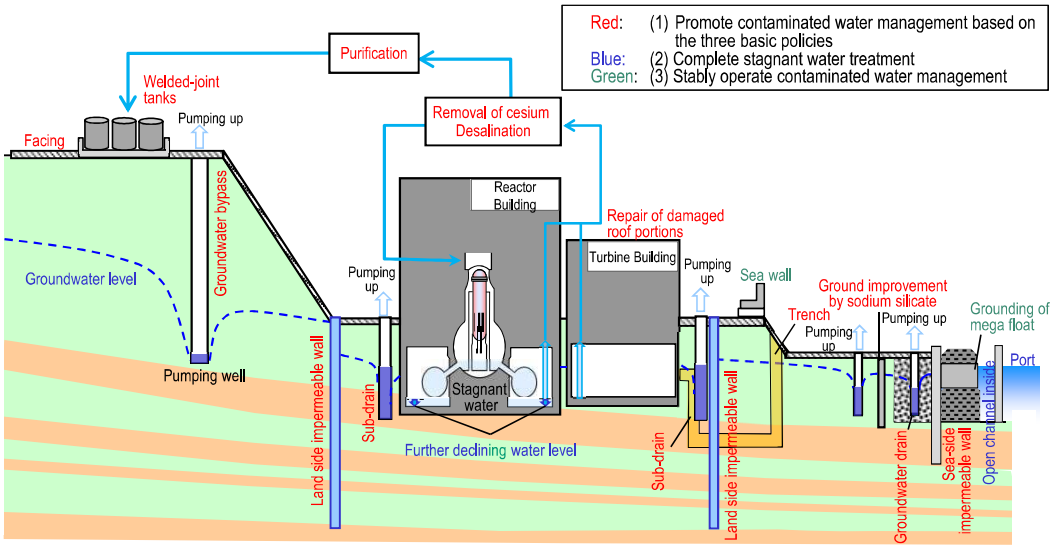
- Strontium-reduced water from other equipment is being re-treated in the Advanced Liquid Processing System (ALPS: multi-nuclide removal equipment) and stored in welded-joint tanks.
- Multi-layered contaminated water management measures, including land-side impermeable walls and sub-drains, have stabilized the groundwater at a low level and the increased contaminated water generated during rainfall is being suppressed by repairing damaged portions of building roofs facing onsite. Through these measures, the generation of contaminated water was reduced from approx. 540 m^3/day (in May 2014) to approx. 90 m^3/day (in FY2022).
- Measures continue to further suppress the generation of contaminated water to 100 m^3/day or less within 2025.

(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

- Various measures were carried out to prepare for tsunamis. As countermeasures for heavy rain, sandbags are being installed to suppress direct inflow into buildings while work to close openings in buildings and install sea walls 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.

Status of discharge of ALPS treated water into the sea

The 4th discharge of ALPS treated water into the sea was completed on March 17 as planned. No abnormality was detected by the operation parameters or the sea area monitoring. When the earthquake off the coast of Fukushima Prefecture occurred on March 15, discharge was suspended as planned. After confirming that there was no abnormality on the facilities, discharge was resumed.

Regarding the FY2024 discharge plan of ALPS treated water, the draft was formulated in January, opinions were received from various parties and the FY2024 discharge plan was determined, including seven discharges during the year.

Mid-and-Long-Term Decommissioning Action Plan 2024

The "Mid- and Long-Term Decommissioning Action Plan" has been formulated since 2020 to indicate the main work processes involved in decommissioning as a whole and achieve the milestones laid out in the Mid-and-Long-Term Roadmap and the Risk Map of the Nuclear Regulation Authority (NRA).

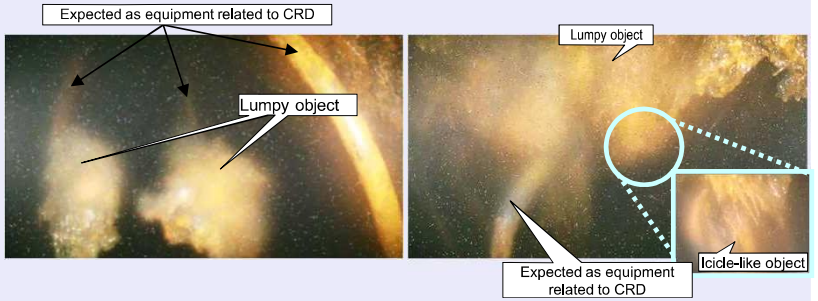
Based on the FY2023 progress, the plan was revised by reflecting the commencement time of fuel debris trial retrieval, embodiment of investigation inside PCV and other matters.

Unit 1 PCV internal investigation (aerial survey)

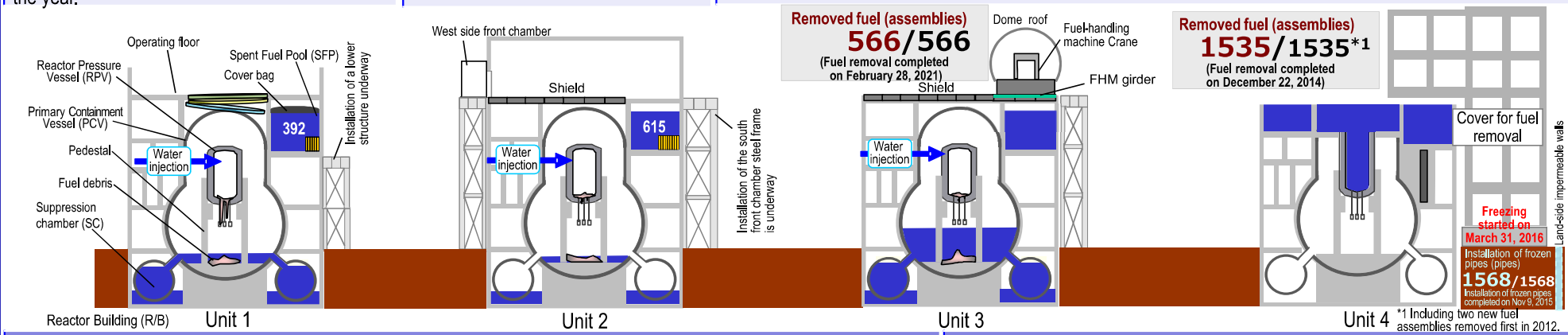
On March 14, an aerial survey inside PCV by a small drone (Day 2) was conducted to inspect the inner wall and structures inside the pedestal, the status of the fallen Control Rod Drive (CRD) housing and others.

Moreover, the survey also detected icicle-like and lumpy objects near the opening for CRD replacement and confirmed the absence of significant damage on the concrete of the inner wall.

Continue to evaluation and verification the acquired images.



<Objects near the opening for the CRD replacement inside the pedestal>



*1 Including two new fuel assemblies removed first in 2012.

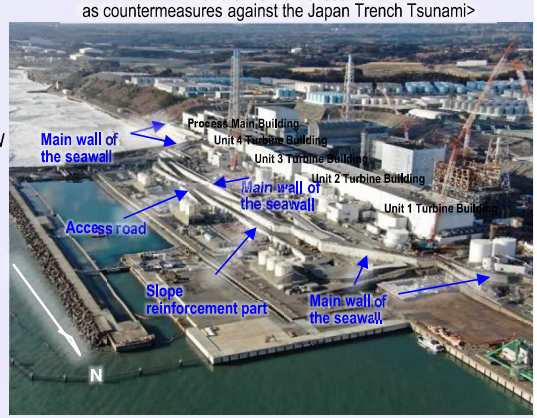
Completion of the seawall as countermeasures against the Japan Trench Tsunami

Installation of the seawall as countermeasures against the Japan Trench Tsunami, which commenced from June 21, 2021, was completed on March 15, 2024 (main wall: total length, approx. 1km and height, 13.5-16m above sea level).

The seawall will suppress flooding caused by the Japan Trench Tsunami, the imminent occurrence of which is evaluated and prevent any increase in contaminated water associated with inflow into buildings. Moreover, it will also help mitigate damage to key decommissioning facilities.

<Unit 4 south side>

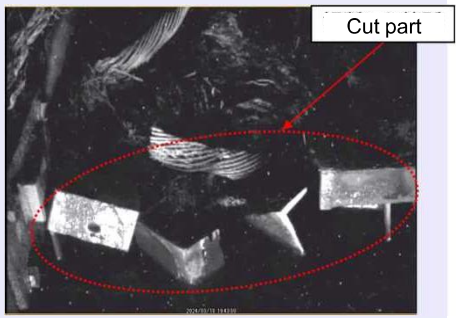
<Panoramic view of seawall as countermeasures against the Japan Trench Tsunami>



Unit 2 Status of preparation for trial retrieval

At the PCV penetration (X-6 penetration), before removing deposits, work is underway to cut and remove the CRD rail guide in front of X-6 penetration from March 18 and push cables to the back of X-6 penetration from March 22. Ongoing work to push and cut cables continues and subsequently, the CRD rail guide at the back of X-6 penetration will be cut.

At the Naraha Center for Remote Control Technology Development of the Japan Atomic Energy Agency (JAEA), an access test to the pedestal bottom by remote self-operation of the robot arm was completed. At present, a test combining the robot arm and the dual arm manipulator is underway.



<After cutting the CRD rail guide>

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
March 27th, 2024 *Discharged on April 1st	Cs-134	ND (0.97)	ND (0.58)
	Cs-137	ND (0.70)	ND (0.57)
	Gross β	ND (1.7)	ND (0.32)
	H-3	610	660
March 25th, 2024 *Discharged on March 30th	Cs-134	ND (0.75)	ND (0.60)
	Cs-137	ND (0.68)	ND (0.48)
	Gross β	ND (1.9)	ND (0.31)
	H-3	650	680
March 24th, 2024 *Discharged on March 29th	Cs-134	ND (0.62)	ND (0.63)
	Cs-137	ND (0.61)	ND (0.58)
	Gross β	ND (1.8)	ND (0.32)
	H-3	600	630
March 23th, 2024 *Discharged on March 28th	Cs-134	ND (0.91)	ND (0.73)
	Cs-137	ND (0.79)	ND (0.58)
	Gross β	ND (1.5)	ND (0.32)
	H-3	610	640
March 22nd, 2024 *Discharged on March 27th	Cs-134	ND (0.75)	ND (0.63)
	Cs-137	ND (0.54)	ND (0.64)
	Gross β	ND (1.8)	ND (0.32)
	H-3	510	550
March 21st, 2024 *Discharged on March 26th	Cs-134	ND (0.71)	ND (0.60)
	Cs-137	ND (0.72)	ND (0.48)
	Gross β	ND (0.56)	ND (0.31)
	H-3	540	560
March 20th, 2024 *Discharged on March 25th	Cs-134	ND (0.69)	ND (0.56)
	Cs-137	ND (0.59)	ND (0.54)
	Gross β	ND (1.8)	ND (0.31)
	H-3	510	540
March 19th, 2024 *Discharged on	Cs-134	ND (0.70)	ND (0.65)
	Cs-137	ND (0.54)	ND (0.54)

March 24th	Gross β	ND (2.0)	ND (0.33)
	H-3	500	510
March 18th, 2024 *Discharged on March 23th	Cs-134	ND (0.67)	ND (0.68)
	Cs-137	ND (0.67)	ND (0.67)
	Gross β	ND (1.8)	ND (0.31)
	H-3	480	510
March 16th, 2024 *Discharged on March 21st	Cs-134	ND (0.83)	ND (0.64)
	Cs-137	ND (0.65)	ND (0.58)
	Gross β	ND (1.9)	ND (0.33)
	H-3	570	580
March 12th, 2024 *Discharged on March17th	Cs-134	ND (0.91)	ND (0.66)
	Cs-137	ND (0.74)	ND (0.64)
	Gross β	ND (0.65)	ND (0.36)
	H-3	590	630
March 10th, 2024 *Discharged on March 15th	Cs-134	ND (0.53)	ND (0.70)
	Cs-137	ND (0.72)	ND (0.44)
	Gross β	ND (1.8)	ND (0.35)
	H-3	630	660
March 9th, 2024 *Discharged on March 14th	Cs-134	ND (0.56)	ND (0.63)
	Cs-137	ND (0.72)	ND (0.61)
	Gross β	ND (1.8)	ND (0.35)
	H-3	600	640
March 7th, 2024 *Discharged on March 12th	Cs-134	ND (0.55)	ND (0.60)
	Cs-137	ND (0.70)	ND (0.54)
	Gross β	ND (1.7)	ND (0.31)
	H-3	540	590
March 5th, 2024 *Discharged on March 10th	Cs-134	ND (0.71)	ND (0.44)
	Cs-137	ND (0.60)	ND (0.44)
	Gross β	ND (2.0)	ND (0.33)
	H-3	570	600
March 3rd, 2024 *Discharged on March 8th	Cs-134	ND (0.63)	ND (0.58)
	Cs-137	ND (0.84)	ND (0.57)
	Gross β	ND (1.9)	ND(0.36)
	H-3	510	550
March 2nd, 2024 *Discharged on March 7th	Cs-134	ND (0.82)	ND (0.58)
	Cs-137	ND (0.62)	ND (0.64)
	Gross β	ND (0.65)	ND (0.37)
	H-3	510	550
February 29th, 2024 *Discharged on March 5th	Cs-134	ND (0.62)	ND (0.59)
	Cs-137	ND (0.75)	ND (0.48)
	Gross β	ND (1.9)	ND (0.33)

	H-3	640	670
February27th, 2024 *Discharged on March 3rd	Cs-134	ND (0.86)	ND (0.66)
	Cs-137	ND (0.68)	ND (0.57)
	Gross β	ND (1.8)	ND (0.33)
	H-3	600	650

- * 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
February 1st,2024	Cs-134	ND (0.0028)	ND (0.0069)	ND (0.0061)
	Cs-137	0.0025	ND(0.0048)	ND (0.0049)
	Gross α	ND (0.42)	ND (2.0)	ND (2.1)
	Gross β	ND (0.39)	ND (0.61)	ND (0.57)
	H-3	620	650	630
	Sr-90	0.0069	0.0050	ND (0.0060)

* 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)
December 21st, 2023 *Sampled before discharge of purified groundwater.	Cs-134	ND (0.75)
	Cs-137	ND (0.70)
	Gross β	12.0
	H-3	ND (0.37)

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
March 8th, 2024 *Discharged on March 13th	Cs-134	ND (0.65)	ND (0.70)
	Cs-137	ND (0.64)	ND (0.64)
	Gross β	ND (0.60)	ND (0.30)
	H-3	72	79
March 16th, 2024 *Discharged on March 22nd	Cs-134	ND(0.72)	ND(0.70)
	Cs-137	ND(0.59)	ND(0.70)
	Gross β	ND(0.58)	ND(0.32)
	H-3	46	49

- * 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
February 11th, 2024	Cs-134	ND (0.0028)	ND (0.0043)	ND (0.0058)
	Cs-137	ND (0.0022)	ND (0.0037)	ND (0.0050)
	Gross α	ND (0.47)	ND (2.0)	ND (2.1)
	Gross β	ND (0.48)	ND (0.63)	ND (0.66)
	H-3	63	63	64
	Sr-90	ND (0.0013)	ND (0.0013)	ND (0.0061)

* 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)
December 12th, 2023	Cs-134	ND (0.80)
	Cs-137	ND (0.72)
	Gross β	10
	H-3	ND (0.32)