Information (16:00), October 11, 2023

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 August

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 August at Fukushima Daiichi Nuclear Power Station (NPS).

1. Summary of decommissioning and contaminated water management

In August 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/mp202308.pdf

2. Sub-drain and Groundwater Drain Systems

In August 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 August 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 August, 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 September 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

August 31, 2023
Secretariat of the Team for Countermeasures for Decommissioning, Contaminated Water and Treated Water

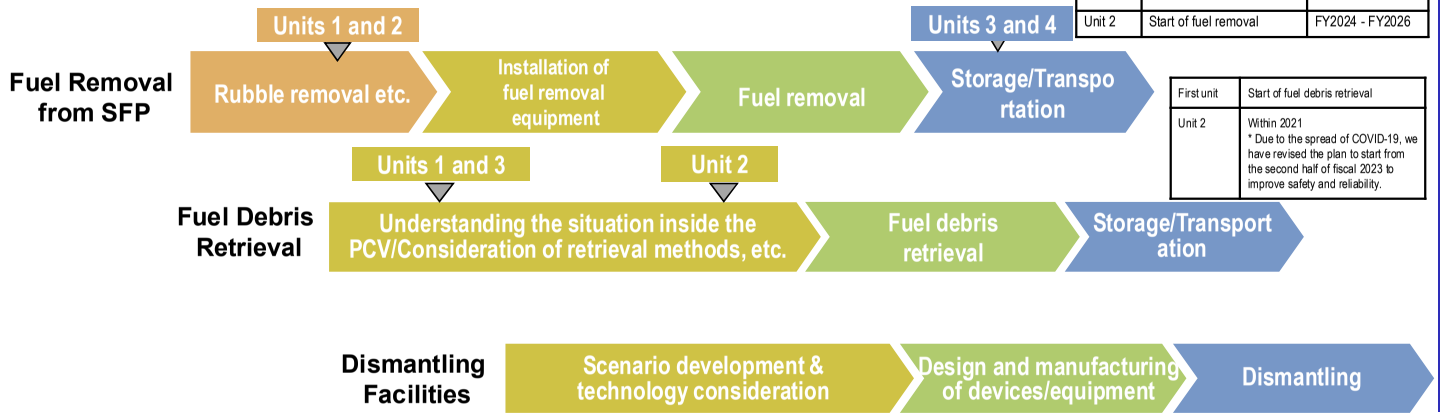
Main decommissioning work and steps

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.

<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

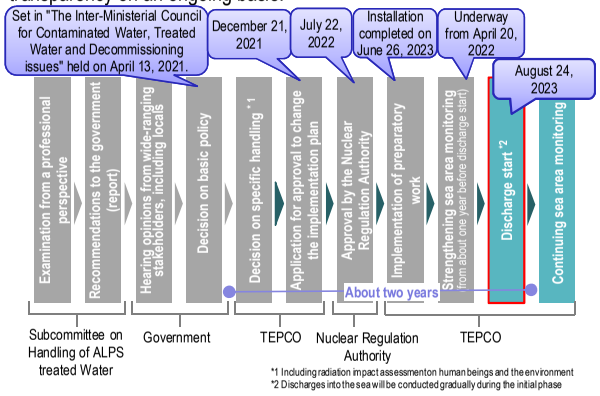


First unit	Start of fuel debris retrieval
Unit 2	Within 2021 * Due to the spread of COVID-19, we have revised the plan to start from the second half of fiscal 2023 to improve safety and reliability.

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.



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

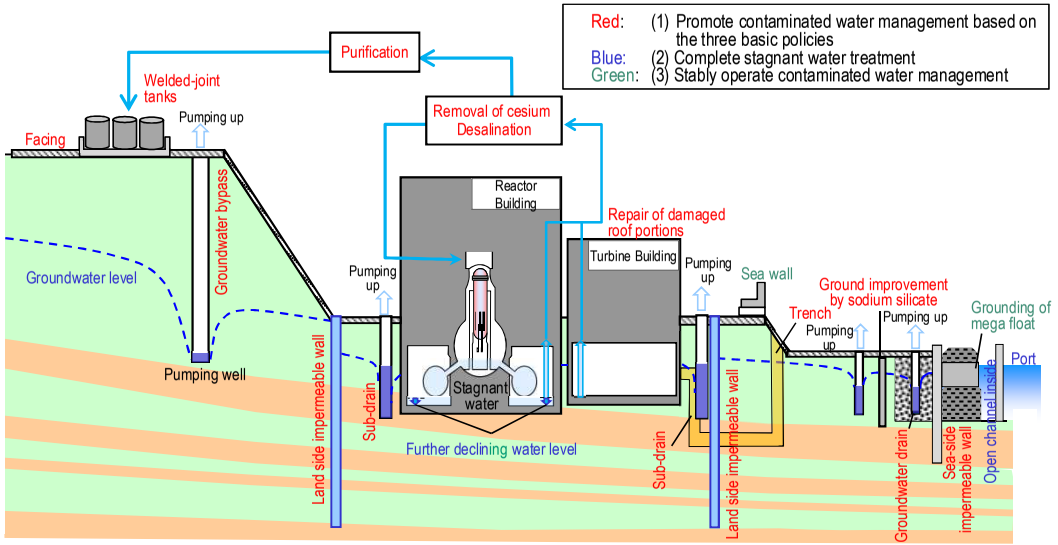
- Strontium-reduced water from other equipment is being re-treated in the Advanced Liquid Processing System (ALPS: multi-nuclide removal equipment) and stored in welded-joint tanks.
- Multi-layered contaminated water management measures, including land side impermeable walls and sub-drains, has stabilized 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, etc. Through these measures, the generation of contaminated water was reduced from approx. 540 m^3/day (in May 2014) to approx. 130 m^3/day (in FY2021).
- 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 conducting the dust impact assessment, 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 are being implemented as planned.



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.

Actions and future measures regarding Basic Policy on handling ALPS treated Water

Actions and future measures regarding the Basic Policy were decided at the 6th Inter-Ministerial Council for Contaminated Water, Treated Water and Decommissioning Issues and the 6th Inter-Ministerial Council for Steady Implementation of the Basic Policy on handling ALPS treated Water held on August 22.

The Government of Japan is taking all possible measures to ensure safety, prevent adverse impacts on reputation and support the continuation of livelihoods and will take full responsibility for these measures until the discharge of the ALPS treated water is completed, to dispel concerns about adverse impacts on reputation and continuation of livelihoods. It requested TEPCO to promptly proceed with the preparation for the discharge into the sea in accordance with the implementation plan approved by the Nuclear Regulation Authority.

Commencement of discharge of ALPS treated water into the sea

Based on the decision concerning the commencement of discharge of ALPS treated water into the sea at the Inter-Ministerial Council on August 22, TEPCO prepared for the discharge based on the implementation plan from August 22 and after confirming that the ALPS treated water had satisfied the regulatory standard, commenced the discharge from August 24.

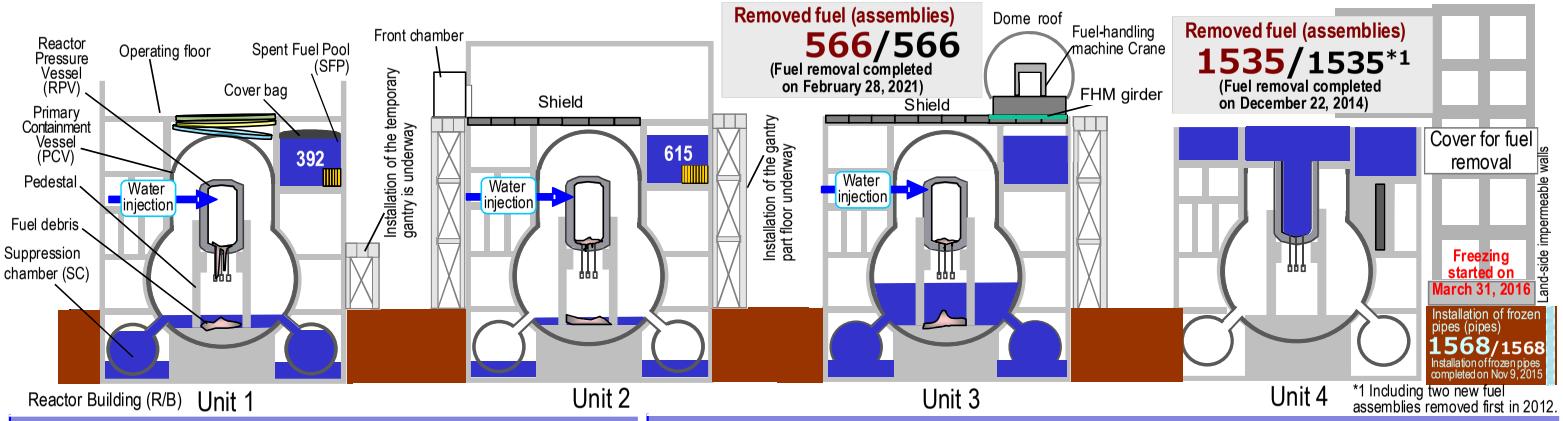
Near the outlet of the power station, monitoring by TEPCO has been enhanced from weekly to daily for about one month after commencing discharge to monitor tritium concentrations in seawater and fish. TEPCO has sampled seawater daily since August 24, discharged as planned and confirmed safety. Results of the sea area monitoring continue to be announced immediately. (The Ministry of the Environment and Fukushima Prefecture are also implementing immediate analysis and announcement of their monitoring results and so does the Fisheries Agency, regarding fish.)

Progress status of discussions of the Sub-Committee for the Evaluation of Fuel Debris Retrieval Methods

To further expand the scale of fuel debris retrieval, the Sub-Committee for the Evaluation of Fuel Debris Retrieval Methods was established under the Decommissioning Strategy Committee of the Nuclear Damage Compensation and Decommissioning Facilitation Corporation (NDF), in which technical intensive examination and evaluation have been conducted since March 2023.

At the 7th International Forum on the Decommissioning of the Fukushima Daiichi NPS held on August 28, presentations were made by the NDF concerning the overview, advantages and issues of each method (partial submersion, full submersion and filling solidification).

Examination will continue until around next spring.



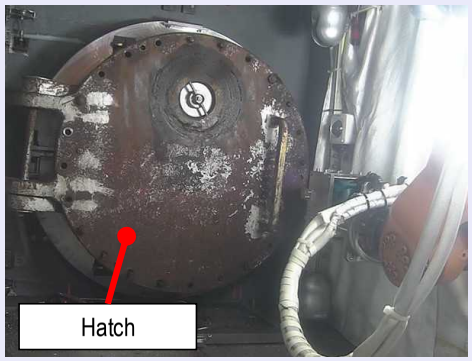
Unit 2 Progress status of PCV internal investigation and trial retrieval

To open the X-6 penetration hatch before trial debris retrieval, removal of 24 hatch bolts is underway.

As of August 25, 13 of 20 bolts, for which connections with nuts were cut, had been removed.

Bolts detected as sticking during the removal has been unstuck by using an electric drill to cut them, then removed.

After cutting the remaining bolt-nut connections, bolts will be pushed in and removed and the hatch will be opened.



< Removal of bolts >

Unit 1 Progress status of work to decrease the water level in PCV

To decrease the water level in the Unit 1 Primary Containment Vessel (PCV), an intake facility utilizing the existing Reactor Water Clean-up System (CUW) will be installed. To examine the facility design, sampling of inclusive water in the Suppression Chamber (S/C) will be conducted to verify the water quality.

As countermeasures for stagnant gas inside the pipes, drilling was conducted at the valve cover of the CUW pipe check valve and the upper-stream side pipe and completed on August 2. To reduce the hydrogen concentration to below the flammability limit, purge of nitrogen inside the CUW pipe started from August 9.

In the next step, the CUW check valve will be opened to sample S/C inclusive water and install S/C water-level gauges.

Unit 2 Progress status of work toward fuel removal

Inside the building, decontamination has been underway to reduce the dose on the operating floor. From August 10, chipping decontamination on the operating floor started.

Outside the building, on the south side of the Reactor Building, assembly of the gantry part (27 units) was completed on July 13 among steel frames of the gantry for fuel removal. To install the floor on the operating floor level, concrete placement started from August 23. Regarding the remaining steel frames (18 units) of the front room, ground assembly is underway in the yard outside the site.

< Work on the south side of Unit 2 Reactor Building >
(August 10, 2023)

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
August 27th, 2023 *Discharged on September 1st	Cs-134	ND (0.71)	ND (0.51)
	Cs-137	ND (0.65)	ND (0.57)
	Gross β	ND (1.9)	ND (0.35)
	H-3	910	980
August 25th, 2023 *Discharged on August 30th	Cs-134	ND (0.74)	ND (0.57)
	Cs-137	ND (0.72)	ND (0.75)
	Gross β	ND (1.7)	ND (0.32)
	H-3	840	900
August 23th, 2023 *Discharged on August 28th	Cs-134	ND (0.57)	ND (0.60)
	Cs-137	ND (0.67)	ND (0.64)
	Gross β	ND (0.58)	ND (0.37)
	H-3	920	1,000
August 22nd, 2023 *Discharged on August 27th	Cs-134	ND (0.77)	ND (0.79)
	Cs-137	ND (0.74)	ND (0.70)
	Gross β	ND (1.8)	ND (0.35)
	H-3	900	980
August 21st, 2023 *Discharged on August 26th	Cs-134	ND (0.55)	ND (0.53)
	Cs-137	ND (0.78)	ND (0.54)
	Gross β	ND (2.1)	ND (0.31)
	H-3	890	970
August 20th, 2023 *Discharged on August 25th	Cs-134	ND (0.85)	ND (0.49)
	Cs-137	ND (0.65)	ND (0.58)
	Gross β	ND (1.9)	ND (0.33)
	H-3	900	990
August 19th, 2023 *Discharged on August 24th	Cs-134	ND (0.80)	ND (0.54)
	Cs-137	ND (0.67)	ND (0.61)
	Gross β	ND (1.7)	ND (0.31)
	H-3	880	930
August 18th, 2023 *Discharged on	Cs-134	ND (0.80)	ND (0.60)
	Cs-137	ND (0.67)	ND (0.75)

August 23th	Gross β	ND (1.8)	ND (0.35)
	H-3	820	870
August 17th, 2023 *Discharged on August 22nd	Cs-134	ND (0.66)	ND (0.63)
	Cs-137	ND (0.67)	ND (0.50)
	Gross β	ND (1.9)	ND(0.32)
	H-3	810	820
August 16th, 2023 *Discharged on August 21st	Cs-134	ND (0.72)	ND (0.70)
	Cs-137	ND (0.59)	ND (0.61)
	Gross β	ND (0.65)	ND (0.38)
	H-3	790	830
August 14th, 2023 *Discharged on August 19th	Cs-134	ND (0.75)	ND (0.55)
	Cs-137	ND (0.61)	ND (0.57)
	Gross β	ND (1.9)	ND (0.39)
	H-3	780	820
August 13th, 2023 *Discharged on August 18th	Cs-134	ND (0.61)	ND (0.83)
	Cs-137	ND (0.77)	ND (0.67)
	Gross β	ND (1.8)	ND(0.36)
	H-3	770	800
August 12th, 2023 *Discharged on August 17th	Cs-134	ND (0.71)	ND (0.60)
	Cs-137	ND (0.74)	ND (0.67)
	Gross β	ND (1.8)	ND (0.30)
	H-3	860	870
August 11th, 2023 *Discharged on August 16th	Cs-134	ND (0.57)	ND (0.64)
	Cs-137	ND (0.76)	ND (0.54)
	Gross β	ND (2.0)	ND (0.36)
	H-3	830	880
August 10th, 2023 *Discharged on August 15th	Cs-134	ND (0.66)	ND (0.42)
	Cs-137	ND (0.62)	ND (0.54)
	Gross β	ND (1.8)	ND (0.36)
	H-3	850	900
August 9th, 2023 *Discharged on August 14th	Cs-134	ND (0.91)	ND (0.75)
	Cs-137	ND (0.67)	ND (0.64)
	Gross β	ND (0.59)	ND (0.36)
	H-3	780	830
August 8th, 2023 *Discharged on August 13th	Cs-134	ND (0.86)	ND (0.61)
	Cs-137	ND (0.62)	ND (0.57)
	Gross β	ND (1.9)	ND (0.37)
	H-3	840	880
August 7th, 2023 *Discharged on August 12th	Cs-134	ND (0.57)	ND (0.64)
	Cs-137	ND (0.55)	ND (0.51)
	Gross β	ND (2.0)	ND (0.36)

	H-3	830	910
August 6th, 2023 *Discharged on August 11th	Cs-134	ND (0.86)	ND (0.68)
	Cs-137	ND (0.60)	ND (0.70)
	Gross β	ND (1.5)	ND (0.33)
	H-3	810	860
August 5th, 2023 *Discharged on August 10th	Cs-134	ND(0.62)	ND(0.60)
	Cs-137	ND(0.61)	ND(0.59)
	Gross β	ND(1.8)	ND(0.31)
	H-3	840	870
August 4th, 2023 *Discharged on August 9th	Cs-134	ND (0.71)	ND (0.65)
	Cs-137	ND (0.86)	ND (0.44)
	Gross β	ND (1.8)	ND (0.49)
	H-3	870	930
August 3rd, 2023 *Discharged on August 8th	Cs-134	ND (0.74)	ND (0.52)
	Cs-137	ND (0.55)	ND (0.72)
	Gross β	ND (18)	ND(0.33)
	H-3	830	870
August 2nd, 2023 *Discharged on August 7h	Cs-134	ND (0.75)	ND (0.81)
	Cs-137	ND (0.69)	ND (0.61)
	Gross β	ND (0.65)	ND (0.33)
	H-3	880	900
July 31th, 2023 *Discharged on August 5th	Cs-134	ND (0.74)	ND (0.47)
	Cs-137	ND (0.55)	ND (0.59)
	Gross β	ND (1.8)	ND (0.33)
	H-3	830	850
July 30th, 2023 *Discharged on August 4h	Cs-134	ND (0.96)	ND (0.53)
	Cs-137	ND (0.67)	ND (0.51)
	Gross β	ND (1.7)	ND (0.31)
	H-3	750	810
July 29th, 2023 *Discharged on August 3rd	Cs-134	ND (0.74)	ND (0.70)
	Cs-137	ND (0.67)	ND (0.54)
	Gross β	ND (1.9)	ND (0.36)
	H-3	740	790
July 28th, 2023 *Discharged on August 2nd	Cs-134	ND (0.74)	ND (0.68)
	Cs-137	ND (0.67)	ND (0.70)
	Gross β	ND (0.68)	ND (0.31)
	H-3	780	820

- * 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
July 1st,2023	Cs-134	ND (0.0033)	ND (0.0051)	ND (0.0065)
	Cs-137	0.0035	ND(0.0066)	ND (0.0047)
	Gross α	ND (0.28)	ND (2.2)	ND (2.1)
	Gross β	ND (0.45)	ND (0.65)	ND (0.59)
	H-3	860	820	870
	Sr-90	0.0035	ND (0.0037)	ND(0.0078)

* 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)
June 7th, 2023 *Sampled before discharge of purified groundwater.	Cs-134	ND (0.84)
	Cs-137	ND (0.61)
	Gross β	14
	H-3	ND (0.34)

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
August 24th, 2023 *Discharged on August 29th	Cs-134	ND (0.73)	ND (0.55)
	Cs-137	ND (0.67)	ND (0.64)
	Gross β	ND (0.62)	ND (0.31)
	H-3	50	56
August 17th, 2023 *Discharged on August 22nd	Cs-134	ND (0.74)	ND (0.73)
	Cs-137	ND (0.72)	ND (0.64)
	Gross β	ND (0.59)	ND (0.33)
	H-3	56	58
August 10th, 2023 *Discharged on August 15th	Cs-134	ND (0.61)	ND (0.41)
	Cs-137	ND (0.74)	ND (0.61)
	Gross β	ND (0.66)	ND (0.33)
	H-3	54	55
August 3rd, 2023 *Discharged on August 8th	Cs-134	ND (0.74)	ND (0.60)
	Cs-137	ND (0.80)	ND (0.67)
	Gross β	ND (0.63)	ND (0.33)
	H-3	52	56

- * 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 6

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
July 1st, 2023	Cs-134	ND (0.0033)	ND (0.0051)	ND (0.0065)
	Cs-137	ND (0.0035)	ND (0.0066)	ND (0.0047)
	Gross α	ND (0.28)	ND (2.2)	ND (2.1)
	Gross β	ND (0.45)	ND (0.65)	ND (0.59)
	H-3	860	820	870
	Sr-90	0.0035	ND (0.0037)	ND (0.0078)

* 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)
June 7th, 2023	Cs-134	ND (0.83)
	Cs-137	ND (0.65)
	Gross β	9.5
	H-3	ND (0.31)