Information (15:00), July 26, 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 June

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 June at Fukushima Daiichi Nuclear Power Station (NPS).

1. Summary of decommissioning and contaminated water management

In June 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/mp202306.pdf

2. Sub-drain and Groundwater Drain Systems

In June 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 June 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 June, 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 June 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

June 29, 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

Fuel Removal from SFP

Units 1 and 2 / Units 3 and 4

Rubble removal etc. → Installation of fuel-removal equipment → Fuel removal → Storage/Transportation

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.

Fuel Debris Retrieval

Units 1 and 3 / Unit 2

Understanding the situation inside the PCV/Consideration of retrieval methods, etc. → Fuel debris retrieval → Storage/Transportation

Dismantling Facilities

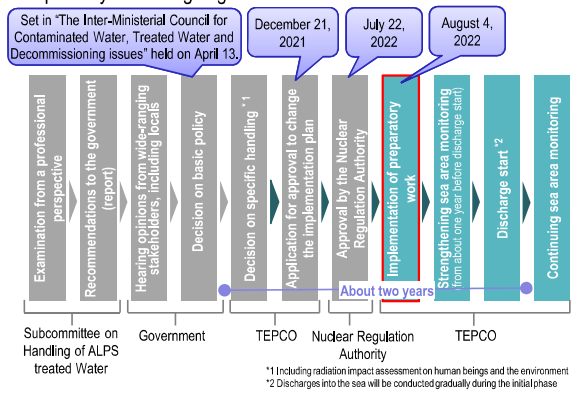
Scenario development & technology consideration → Design and manufacturing of devices/equipment → Dismantling

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

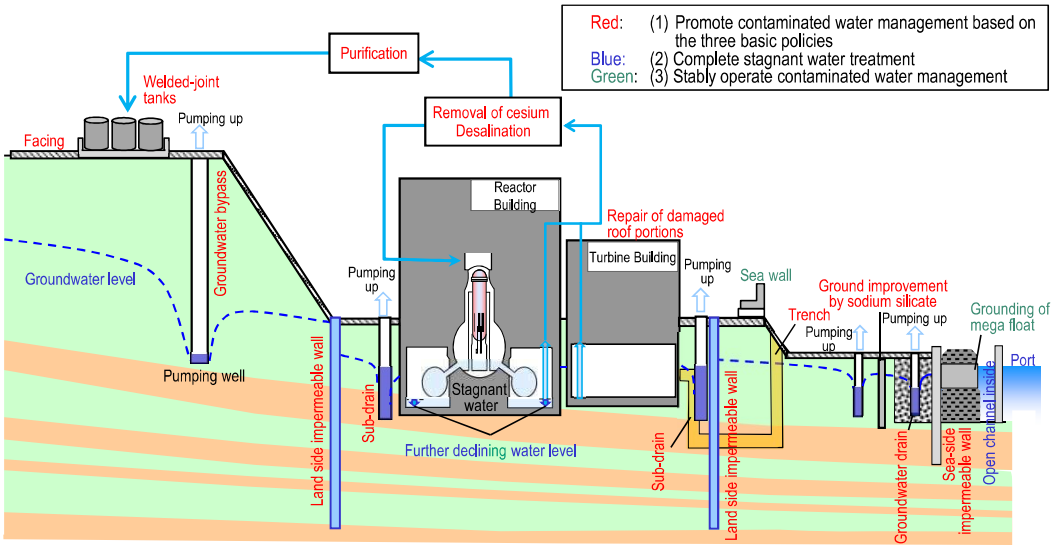
- Strontium-reduced water from other equipment is being re-treated in the Advanced Liquid Processing System (ALPS: multi-nuclide removal equipment) and stored in welded-joint tanks.
- Multi-layered contaminated water management measures, including land-side impermeable walls and sub-drains, have stabilized 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, 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 are underway to prepare for tsunamis. 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.

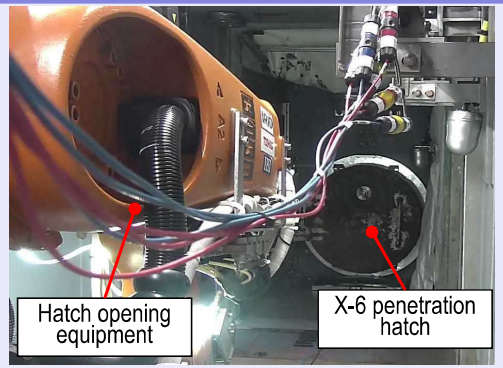
Unit 2 Preparation status for the internal investigation of the Primary Containment Vessel and trial retrieval

From June 19, work to cut the hatch bolts is underway to open the X-6 penetration hatch before trial debris retrieval. As of June 28, 20 of 24 bolts had been disconnected.

After cutting the remaining bolts and removing the bolts which were disconnected from the nuts, the hatch will be opened.

It was confirmed that no significant variation was detected in the indicated values of dust monitors and monitoring posts, nor any abnormality in the plant parameters.

Work continues while prioritizing safety.



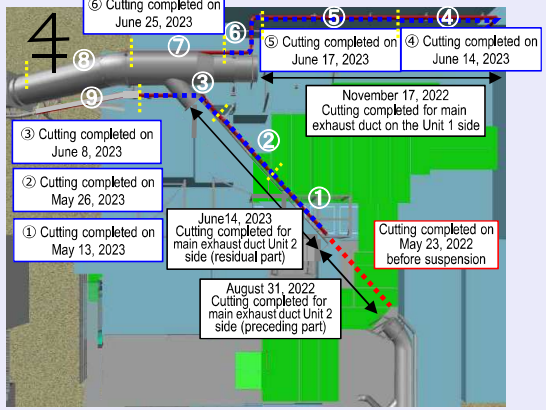
< Cutting of hatch bolts >

Units 1/2 Progress of pipe cutting for the Standby Gas Treatment System

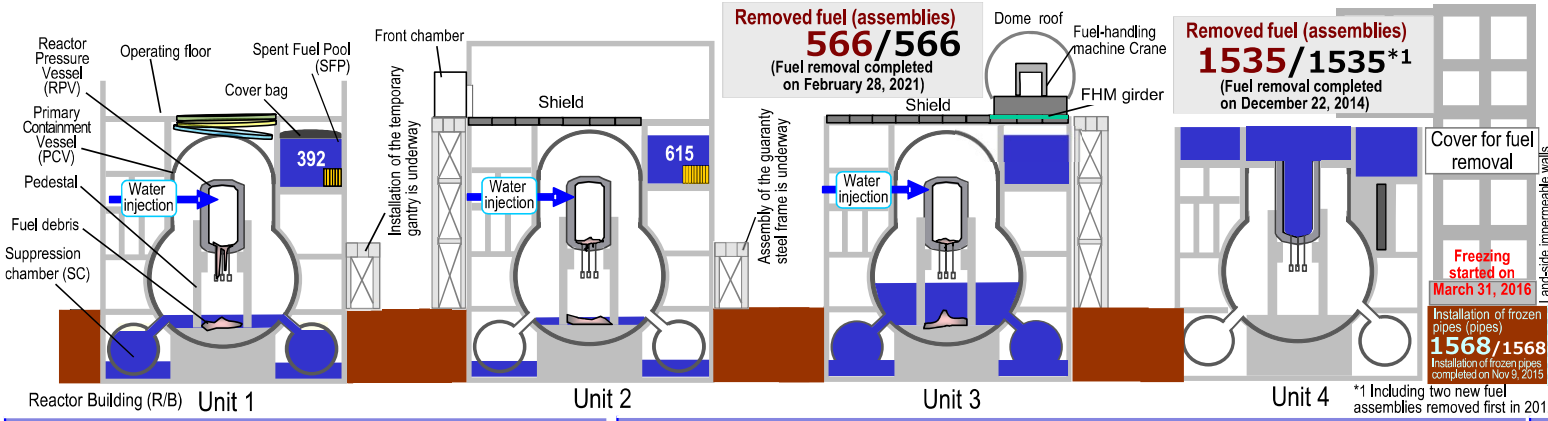
For pipes of the Units 1/2 Standby Gas Treatment System (SGTS), sections interfering with installation of the Unit 1 Reactor Building cover and other works are being removed.

Cutting of the sixth of a total of nine sections scheduled was completed on June 25. The ninth section will be cut after rearranging the process and removing rubble from the surrounding area.

Simultaneously, rubble in the area surrounding the 1/2 Radioactive Waste Treatment Building will also be removed as well as the main exhaust duct.



< Plan to cut SGTS pipes >



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

Preventive maintenance for the brine supply pipe (main pipe) of the land-side impermeable wall-related facilities

In February 2022, leakage was detected from the coupling joint at the brine supply pipe on the Units 2 and 3 mountain side. The leakage already stopped after replacing the coupling joint.

After investigating the cause, it was confirmed that uneven frost*1 heave had affected the margin*2 gap set in the pipe.

After determining the elements affecting the opening, preventive maintenance will be conducted according to the management level.

*1 Phenomenon in which moisture in the soil freezes, expands and locally causes the ground surface to increase.
*2 Gap at the pipe edge to absorb expansion and contraction of the pipes caused by the change in temperature

Unit 1 Response based on the pedestal status

The Unit 1 PCV internal investigation confirmed that concrete had been lost around almost all the lower part of the pedestal inner wall. In response, TEPCO assessed the level of external dust exposure just in case of losing the support function of the pedestal.

Based on this result, TEPCO evaluated that the site boundary would not pose any significant radiation exposure risk. Moreover, at the regular press conference on June 7, the Chairman of the Nuclear Regulation Authority stated, “Hearing the reports of a minimal impact on the environment, I think this result is reasonable.”

Furthermore, TEPCO will consider dust-scattering suppression measures in readiness for emergencies.

Unit 1 Analysis of deposits acquired in the internal investigation of the Primary Containment Vessel

Regarding the deposit samples acquired by the ROV-E investigation in the Unit 1 Primary Containment Vessel (PCV) internal investigation, deposits and supernatant in sampled PCV inclusive water will be separated and the deposits will then be transported to an external analysis institute for detailed analysis.

The external analysis institute will conduct an analysis, aiming to acquire information related to accident development by determining the types and amounts of elements and nuclides contained in samples and examining the particle generation process.

< Deposit sampling container >

Progress of ALPS treated water dilution/discharge facilities and others

On June 26, removal of the arrival pipe (shield machine) and installation of the discharge lid were completed. With this, the installation of all facilities (for measurement and confirmation, transfer, dilution and discharge) of the ALPS treated water dilution/discharge facilities was completed. From June 28, the pre-service inspection by the Nuclear Regulation Authority started.

For System B of the measurement and confirmation facilities, acquired samples were analyzed. Based on the results, it was confirmed and publicized that before diluting and discharging ALPS treated water, the discharge criteria of the government had been met.

It was also confirmed and publicized that in the third-party analysis by JAEA, the discharge criteria of the government had been met.

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
June 26th, 2023 *Discharged on July 1st	Cs-134	ND (0.62)	ND (0.58)
	Cs-137	ND (0.60)	ND (0.57)
	Gross β	ND (1.8)	ND (0.35)
	H-3	800	830
June 25th, 2023 *Discharged on June 30th	Cs-134	ND (0.84)	ND (0.55)
	Cs-137	ND (0.64)	ND (0.48)
	Gross β	ND (1.9)	ND (0.35)
	H-3	740	790
June 24th, 2023 *Discharged on June 29th	Cs-134	ND (0.71)	ND (0.66)
	Cs-137	ND (0.72)	ND (0.51)
	Gross β	ND (2.0)	ND (0.36)
	H-3	680	730
June 23th, 2023 *Discharged on June 28th	Cs-134	ND (0.80)	ND (0.58)
	Cs-137	ND (0.62)	ND (0.72)
	Gross β	ND (0.64)	ND (0.35)
	H-3	660	680
June 22nd, 2023 *Discharged on June 27th	Cs-134	ND (0.66)	ND (0.63)
	Cs-137	ND (0.67)	ND (0.45)
	Gross β	ND (1.7)	ND (0.43)
	H-3	640	680
June 21st, 2023 *Discharged on June 26th	Cs-134	ND (0.91)	ND (0.63)
	Cs-137	ND (0.72)	ND (0.61)
	Gross β	ND (1.9)	ND(0.34)
	H-3	600	650
June 20th, 2023 *Discharged on June 25th	Cs-134	ND (0.80)	ND (0.60)
	Cs-137	ND (0.72)	ND (0.50)
	Gross β	ND (1.9)	ND (0.35)
	H-3	630	660
June 19th, 2023 *Discharged on	Cs-134	ND (0.71)	ND (0.68)
	Cs-137	ND (0.77)	ND (0.54)

June 24th	Gross β	ND (1.9)	ND (0.38)
	H-3	710	720
June 18th, 2023 *Discharged on June 23th	Cs-134	ND (0.74)	ND (0.70)
	Cs-137	ND (0.83)	ND (0.58)
	Gross β	ND (1.8)	0.40
	H-3	760	810
June 17th, 2023 *Discharged on June 22th	Cs-134	ND (0.71)	ND (0.63)
	Cs-137	ND (0.59)	ND (0.58)
	Gross β	ND (1.6)	ND (0.41)
	H-3	850	880
June 16th, 2023 *Discharged on June 21th	Cs-134	ND (0.81)	ND (0.70)
	Cs-137	ND (0.75)	ND (0.58)
	Gross β	ND (0.57)	ND (0.43)
	H-3	790	840
June 15th, 2023 *Discharged on June 20th	Cs-134	ND (0.66)	ND (0.58)
	Cs-137	ND (0.67)	ND (0.48)
	Gross β	ND (1.9)	ND (0.38)
	H-3	750	820
June 14th, 2023 *Discharged on June 19th	Cs-134	ND (0.74)	ND (0.60)
	Cs-137	ND (0.67)	ND (0.58)
	Gross β	ND (1.6)	ND (0.34)
	H-3	740	830
June 13th, 2023 *Discharged on June 18th	Cs-134	ND (0.66)	ND (0.66)
	Cs-137	ND (0.67)	ND (0.51)
	Gross β	ND (1.7)	ND (0.40)
	H-3	830	880
June 12th, 2023 *Discharged on June 17th	Cs-134	ND (0.86)	ND (0.71)
	Cs-137	ND (0.62)	ND (0.70)
	Gross β	ND (1.8)	ND (0.43)
	H-3	930	960
June 11th, 2023 *Discharged on June 16th	Cs-134	ND (0.57)	ND (0.57)
	Cs-137	ND (0.55)	ND (0.61)
	Gross β	ND (2.0)	0.42
	H-3	930	980
June 10th, 2023 *Discharged on June 15th	Cs-134	ND(0.92)	ND(0.59)
	Cs-137	ND(0.82)	ND(0.54)
	Gross β	ND(2.0)	ND(0.34)
	H-3	910	970
June 9th, 2023 *Discharged on	Cs-134	ND (0.69)	ND (0.55)
	Cs-137	ND (0.60)	ND (0.66)

June 14th	Gross β	ND (0.64)	ND (0.35)
	H-3	880	940
June 8th, 2023 *Discharged on June 13th	Cs-134	ND (0.78)	ND (0.64)
	Cs-137	ND (0.79)	ND (0.57)
	Gross β	ND (1.8)	0.52
	H-3	850	890
June 7th, 2023 *Discharged on June 12th	Cs-134	ND (0.87)	ND (0.47)
	Cs-137	ND (0.75)	ND (0.59)
	Gross β	ND (2.0)	ND (0.38)
	H-3	880	930
June 6th, 2023 *Discharged on June 11th	Cs-134	ND (0.77)	ND (0.55)
	Cs-137	ND (0.65)	ND (0.51)
	Gross β	ND (1.9)	ND (0.37)
	H-3	890	970
June 5th, 2023 *Discharged on June 10th	Cs-134	ND (0.80)	ND (0.55)
	Cs-137	ND (0.65)	ND (0.54)
	Gross β	ND (2.0)	ND (0.35)
	H-3	920	980
June 4th, 2023 *Discharged on June 9th	Cs-134	ND (0.71)	ND (0.68)
	Cs-137	ND (0.60)	ND (0.59)
	Gross β	ND (1.6)	ND (0.36)
	H-3	930	990
June 3rd, 2023 *Discharged on June 8th	Cs-134	ND (0.92)	ND (0.60)
	Cs-137	ND (0.66)	ND (0.70)
	Gross β	ND (1.9)	ND (0.35)
	H-3	900	980
June 2nd, 2023 *Discharged on June 7th	Cs-134	ND (0.71)	ND (0.66)
	Cs-137	ND (0.60)	ND (0.59)
	Gross β	ND (0.64)	ND (0.33)
	H-3	920	1000
May 31st, 2023 *Discharged on June 5th	Cs-134	ND (0.63)	ND (0.68)
	Cs-137	ND (0.59)	ND (0.70)
	Gross β	ND (1.9)	0.37
	H-3	870	940
May 30th, 2023 *Discharged on June 4th	Cs-134	ND (0.66)	ND (0.57)
	Cs-137	ND (0.62)	ND (0.70)
	Gross β	ND (1.7)	ND(0.38)
	H-3	850	940
May 28th, 2023 *Discharged on June 2nd	Cs-134	ND (0.86)	ND (0.65)
	Cs-137	ND (0.79)	ND (0.75)
	Gross β	ND (1.8)	ND(0.36)
	H-3	830	880

* * 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
May 2nd,2023	Cs-134	ND (0.0030)	ND (0.0055)	ND (0.0059)
	Cs-137	0.0021	ND(0.0037)	ND (0.0049)
	Gross α	ND (0.33)	ND (2.0)	ND (2.6)
	Gross β	ND (0.46)	ND (0.63)	ND (0.65)
	H-3	840	830	840
	Sr-90	0.0046	0.0054	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)
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
June 22th, 2023 *Discharged on June 27th	Cs-134	ND (0.83)	ND (0.60)
	Cs-137	ND (0.94)	ND (0.54)
	Gross β	ND (0.65)	ND (0.34)
	H-3	51	56
June 15th, 2023 *Discharged on June 20th	Cs-134	ND (0.80)	ND (0.60)
	Cs-137	ND (0.67)	ND (0.79)
	Gross β	ND (0.66)	ND (0.30)
	H-3	54	56
June 8th, 2023 *Discharged on June 13th	Cs-134	ND (0.84)	ND (0.62)
	Cs-137	ND (0.66)	ND (0.62)
	Gross β	ND (0.66)	ND (0.31)
	H-3	49	54
June 2nd, 2023 *Discharged on June 7th	Cs-134	ND (0.74)	ND (0.53)
	Cs-137	ND (0.71)	ND (0.62)
	Gross β	ND (0.61)	ND (0.33)
	H-3	53	54

- * 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
May 5th, 2023	Cs-134	ND (0.0030)	ND (0.0053)	ND (0.0071)
	Cs-137	ND (0.0020)	ND (0.0038)	ND (0.0055)
	Gross α	ND (0.38)	ND (2.0)	ND (2.6)
	Gross β	ND (0.45)	ND (0.65)	ND (0.57)
	H-3	53	57	54
	Sr-90	ND (0.0011)	ND (0.0014)	ND (0.0062)

* 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)