Information(12:00), November 25, 2024

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/mp202408.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 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 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 29, 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

Fuel Removal from SFP

Units 1 and 2: Rubble removal etc. → Installation of fuel-removal equipment → Fuel removal

Units 3 and 4: Storage/ Transportation

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

Fuel Debris Retrieval

Units 1 and 3 / Unit 2: Understanding the situation inside the PCV/Consideration of retrieval methods → Fuel debris retrieval → Storage/ Transportation

Dismantling Facilities

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

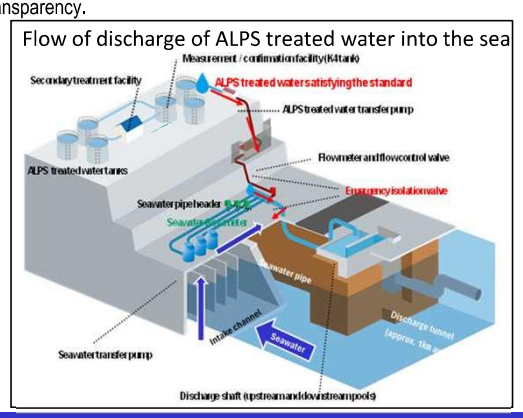
Measures for treated water

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, 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

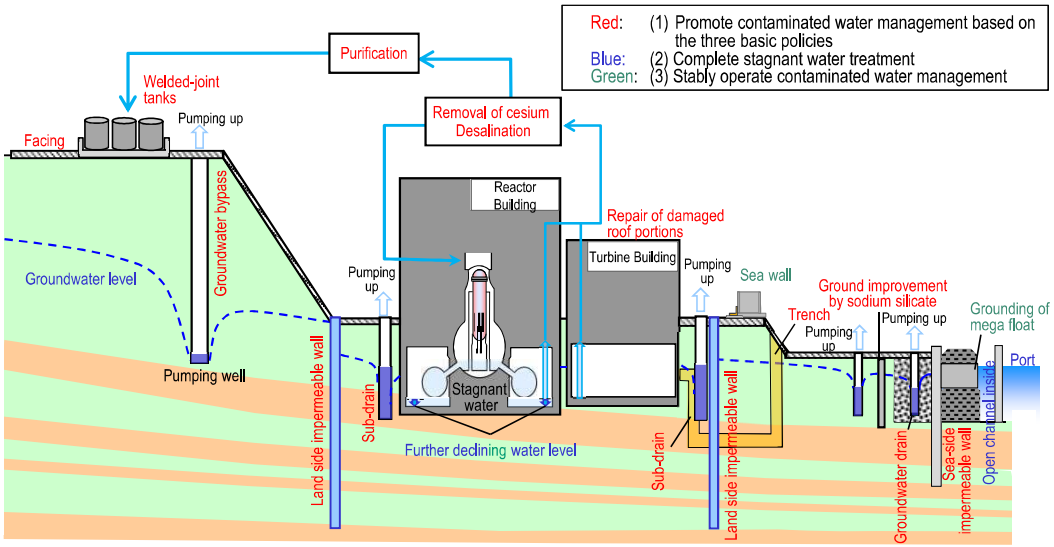
- Strontium-reduced water from other equipment is being re-treated in the Advanced Liquid Processing System (ALPS: multi-nuclide removal equipment) and stored in welded-joint tanks.
- Multi-layered contaminated water management measures, including land-side impermeable walls and sub-drains, have stabilized the groundwater at a low level and the increased contaminated water generated during rainfall is being suppressed by repairing damaged portions of 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

◆ 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.

Discharge of ALPS treated water into the sea (4th discharge in FY2024)

In preparation for the 4th discharge of ALPS treated water in FY2024, Tank Group C 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 August 5.

Following the confirmation, discharge of ALPS treated water of Tank Group C of the measurement/confirmation facility into the sea commenced from August 7 and was completed on August 25.

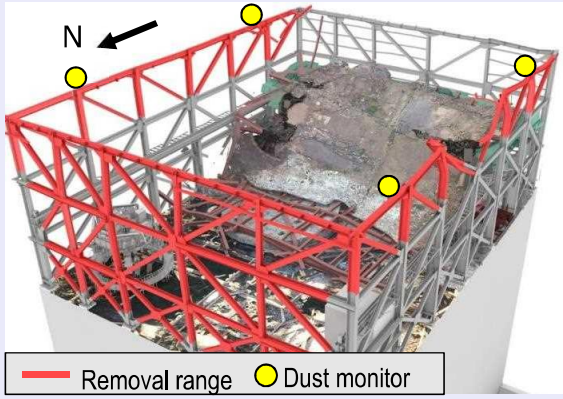
Regarding tritium in seawater, TEPCO will continue confirming that it is being discharged safely as planned, while meeting the discharge requirement based on quick daily analyses conducted by TEPCO and others.

Unit 1 Progress of work toward fuel removal

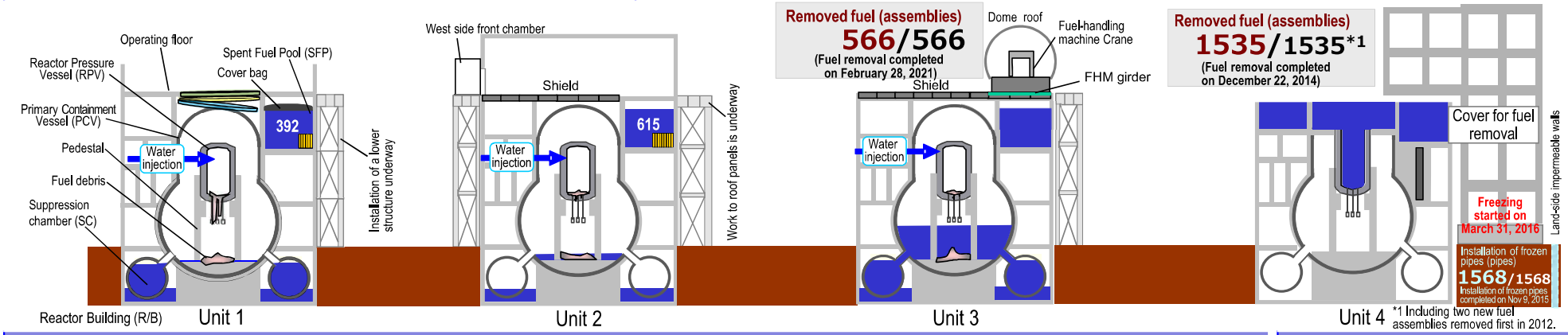
At Unit 1 Reactor Building, installation of base plates and the lower structure has been underway.

To reduce the risk of contact with the large cover upper structure and increase seismic safety, removal work of perimeter steel frames will commence from around October.

Removal work will be conducted remotely to suppress exposure of workers. Moreover, anti-scattering agents will be sprayed in each work area to suppress scattering of dust and monitoring by dust monitors installed on the perimeter steel frames.



< Removal range of the perimeter steel frames >



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

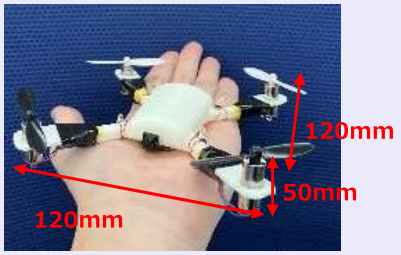
Plan of future Units 1 and 3 PCV internal investigation

Investigations inside the Primary Containment Vessel (PCV) have been conducted to acquire information that contributes to fuel debris retrieval and understanding of the accident. In future investigations, further deposit information will be collected.

At present, work to reduce the PCV water level is underway in Unit 1. Due to the possibility of part of the deposit being exposed to the air and the air dose rate and haze amount inside the PCV varying, which could affect the design of the investigative equipment and mockup training in future, the environment inside the PCV will be re-investigated.

Regarding the X-53 penetration, an access route into the Unit 3 PCV, an investigation using a smaller micro drone than that used in the Unit 1 investigation is planned due to the small diameter of the penetration. Simultaneously, construction of a new access route is being examined to insert the same drone as with Unit 1.

< Small drone used in the investigation in Unit 1 >



< Micro drone >

Unit 2 Suspension of fuel debris trial retrieval

On August 22, work began to insert guide pipes of the telescopic-type equipment. During preparation for connecting the first (of five) push pipes, it emerged that the pipe order differed from the plan. To prioritize safety, work was suspended.

At present, the cause of this event is being inspected.

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, 2024 *Discharged on September 1st	Cs-134	ND (0.93)	ND (0.80)
	Cs-137	ND (0.82)	ND (0.70)
	Gross β	ND (1.7)	ND (0.38)
	H-3	700	740
August 25th, 2024 *Discharged on August 30th	Cs-134	ND (0.98)	ND (0.67)
	Cs-137	ND (0.67)	ND (0.66)
	Gross β	ND (2.0)	ND (0.35)
	H-3	600	640
August 23rd 2024 *Discharged on August 28th	Cs-134	ND (0.72)	ND (0.79)
	Cs-137	ND (0.73)	ND (0.46)
	Gross β	ND (0.65)	ND (0.38)
	H-3	580	630
August 21st, 2024 *Discharged on August 26th	Cs-134	ND (0.72)	ND (0.75)
	Cs-137	ND (0.59)	ND (0.73)
	Gross β	ND (1.6)	ND (0.35)
	H-3	580	630
August 17th, 2024 *Discharged on August 22nd	Cs-134	ND (0.74)	ND (0.75)
	Cs-137	ND (0.84)	ND (0.63)
	Gross β	ND (1.9)	ND (0.35)
	H-3	580	660
August 15th, 2024 *Discharged on August 20th	Cs-134	ND (0.85)	ND (0.69)
	Cs-137	ND (0.71)	ND (0.63)
	Gross β	ND (0.72)	ND (0.35)
	H-3	770	830
August 13th, 2024 *Discharged on August 18th	Cs-134	ND (0.65)	ND (0.53)
	Cs-137	ND (0.64)	ND (0.58)
	Gross β	ND (2.0)	ND (0.31)
	H-3	790	840
August 11th, 2024 *Discharged on August 16th	Cs-134	ND (0.77)	ND (0.71)
	Cs-137	ND (0.74)	ND (0.66)
	Gross β	ND (1.9)	ND (0.38)

	H-3	770	840
August 9th, 2024 *Discharged on August 14th	Cs-134	ND (0.58)	ND (0.72)
	Cs-137	ND (0.71)	ND (0.60)
	Gross β	ND (0.63)	ND (0.34)
	H-3	780	860
August 8th, 2024 *Discharged on August 13th	Cs-134	ND (0.55)	ND (0.71)
	Cs-137	ND (0.74)	ND (0.63)
	Gross β	ND (1.8)	0.43
	H-3	760	820
August 7th, 2024 *Discharged on August 12th	Cs-134	ND (0.82)	ND (0.60)
	Cs-137	ND (0.71)	ND (0.80)
	Gross β	ND (1.8)	0.38
	H-3	710	820
August 5th, 2024 *Discharged on August 10th	Cs-134	ND (0.58)	ND (0.55)
	Cs-137	ND (0.75)	ND (0.51)
	Gross β	ND (1.7)	0.42
	H-3	820	900
August 4th, 2024 *Discharged on August 9th	Cs-134	ND (0.75)	ND (0.77)
	Cs-137	ND (0.62)	ND (0.63)
	Gross β	ND (2.0)	0.39
	H-3	860	940
August 3rd, 2024 *Discharged on August 8th	Cs-134	ND (0.75)	ND (0.60)
	Cs-137	ND (0.79)	ND (0.54)
	Gross β	ND (1.6)	0.41
	H-3	790	840
August 2nd, 2024 *Discharged on August 7th	Cs-134	ND (0.82)	ND (0.66)
	Cs-137	ND (0.79)	ND (0.51)
	Gross β	ND (1.9)	ND (0.37)
	H-3	750	780
August 1st, 2024 *Discharged on August 6th	Cs-134	ND (0.64)	ND (0.67)
	Cs-137	ND (0.65)	ND (0.66)
	Gross β	ND (0.65)	ND (0.33)
	H-3	730	760
July 31st, 2024 *Discharged on August 5th	Cs-134	ND (0.82)	ND (0.55)
	Cs-137	ND (0.67)	ND (0.75)
	Gross β	ND (1.5)	ND (0.35)
	H-3	700	730
July 30th, 2024 *Discharged on August 4th	Cs-134	ND (0.88)	ND (0.73)
	Cs-137	ND (0.79)	ND (0.63)
	Gross β	ND (1.6)	ND (0.35)
	H-3	680	720
July 29th, 2024	Cs-134	ND (0.75)	ND (0.65)

*Discharged on August 3rd	Cs-137	ND (0.74)	ND (0.71)
	Gross β	ND (1.7)	ND (0.36)
	H-3	650	670
July 28th, 2024 *Discharged on August 2nd	Cs-134	ND (0.79)	ND (0.60)
	Cs-137	ND (0.85)	ND (0.54)
	Gross β	ND (2.0)	ND (0.33)
	H-3	630	660

- * 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,2024	Cs-134	ND (0.0029)	ND (0.0051)	ND (0.0066)
	Cs-137	0.0043±0.00081	0.0073	ND (0.0051)
	Gross α	ND (0.45)	ND (2.0)	ND (1.9)
	Gross β	ND (0.38)	ND (0.70)	ND (0.63)
	H-3	700 ±1.5	710	710
	Sr-90	ND (0.0012)	ND (0.0014)	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	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 19th, 2024 *Sampled before discharge of purified groundwater.	Cs-134	ND (0.82)
	Cs-137	ND (0.69)
	Gross β	12
	H-3	ND (0.26)

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 23rd, 2024 *Discharged on August 28th	Cs-134	ND (0.84)	ND (0.69)
	Cs-137	ND (0.80)	ND (0.46)
	Gross β	ND (0.58)	ND (0.36)
	H-3	45	49
August16th, 2024 *Discharged on August 21st	Cs-134	ND (0.85)	ND (0.75)
	Cs-137	ND (0.79)	ND (0.56)
	Gross β	ND (0.65)	ND (0.32)
	H-3	49	49
August 9th, 2024 *Discharged on August 14th	Cs-134	ND (0.91)	ND (0.60)
	Cs-137	ND (0.64)	ND (0.56)
	Gross β	ND (0.65)	ND (0.32)
	H-3	48	48
August 2nd, 2024 *Discharged on August 9th	Cs-134	ND (0.55)	ND (0.69)
	Cs-137	ND (0.69)	ND (0.69)
	Gross β	ND (0.59)	ND (0.31)
	H-3	45	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

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 5th, 2024	Cs-134	ND (0.0029)	ND (0.0050)	ND (0.0059)
	Cs-137	ND (0.0030)	ND (0.0040)	ND (0.0050)
	Gross α	ND (0.42)	ND (2.4)	ND (1.9)
	Gross β	ND (0.38)	ND (0.59)	ND (0.49)
	H-3	46 ±0.44	46	48
	Sr-90	0.0013 ±0.00038	ND (0.0014)	ND (0.0049)

* 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 19th, 2024	Cs-134	ND (0.71)
	Cs-137	ND (0.65)
	Gross β	9.7
	H-3	ND (0.26)