

Information(16:00), June 13, 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 April

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 April at Fukushima Daiichi Nuclear Power Station (NPS).

1. Summary of decommissioning and contaminated water management

In April 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/mp202404.pdf>

2. Sub-drain and Groundwater Drain Systems

In April 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 April 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 April, 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 April 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>)

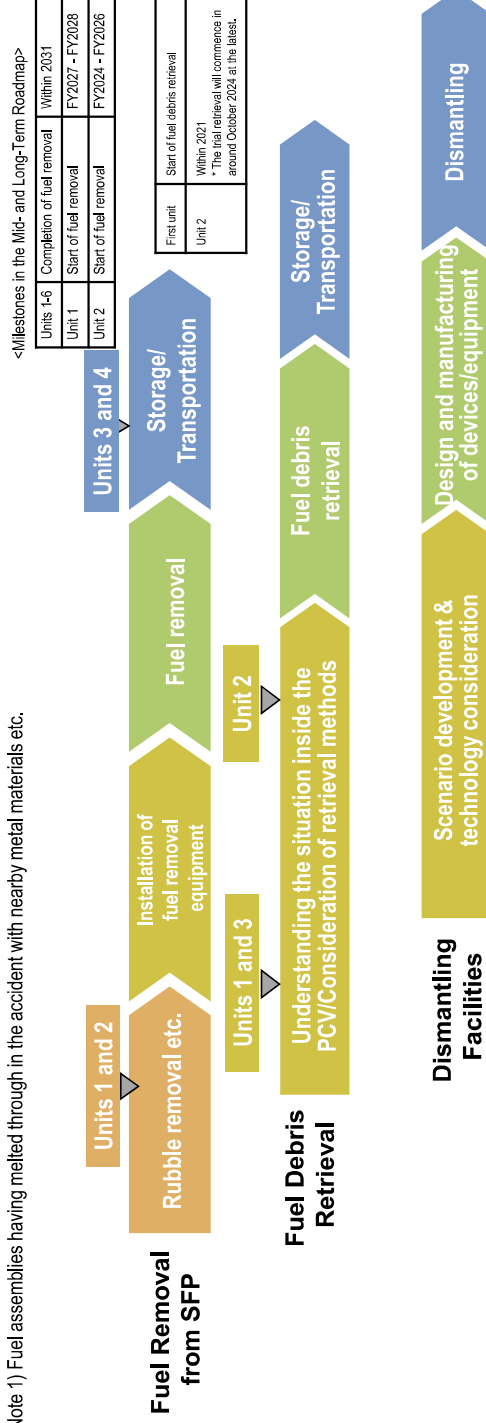
Contact: International Nuclear Energy Cooperation Division,
Ministry of Foreign Affairs, Tel 03-5501-8227

Outline of Decommissioning, Contaminated Water and Treated Water Management

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.

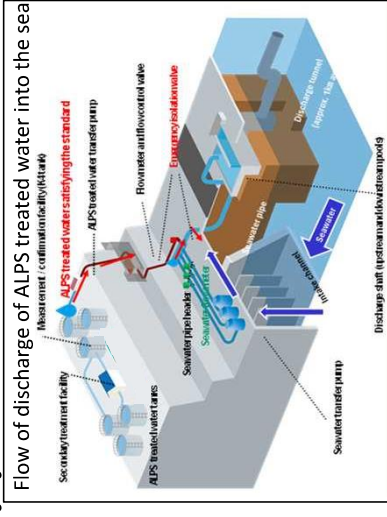
(Note 1) Fuel assemblies having melted through in the accident with nearby metal materials etc.



Measures for treated water

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

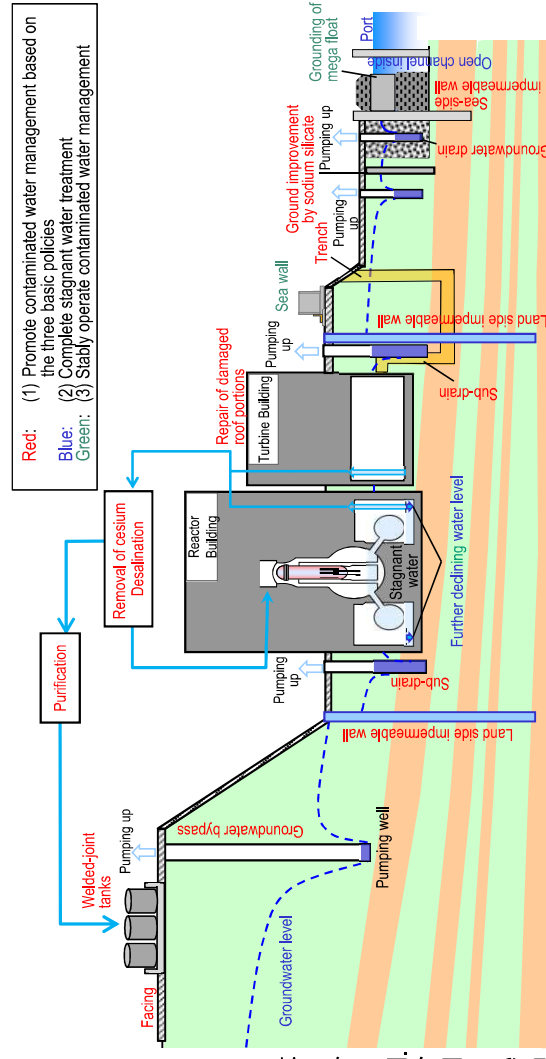
- "Remove" the source of water contamination
 - "Redirect" fresh water from contaminated areas
 - "Retain" contaminated water from leakage
- Strontium-reduced water from other equipment is being re-treated in the Advanced Liquid Processing System (ALPS; multi-nuclide removal equipment) and stored in 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 has being suppressed and reduced from approx. 540 m³/day (in May 2014) before implementing measures to approx. 80 m³/day (in FY2023), achieving the milestone "suppressing the amount of contaminated water generated to 100 m³/day or less during average rainfall within FY2025."
 - Measures will proceed to further reduce the amount of contaminated water generated and suppress to approx. 50-70 m³/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

- 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.

Discharge of ALPS treated water into the sea

In preparation for the 5th discharge of ALPS treated water, 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. Following the confirmation, discharge of ALPS treated water of Tank Group C of the measurement/confirmation facility into the sea commenced from April 19.

Regarding tritium in seawater, TEPCO will continue to confirm that discharge is conducted safely as planned while satisfying the discharge requirement through the results of daily quick analyses conducted by TEPCO and others.

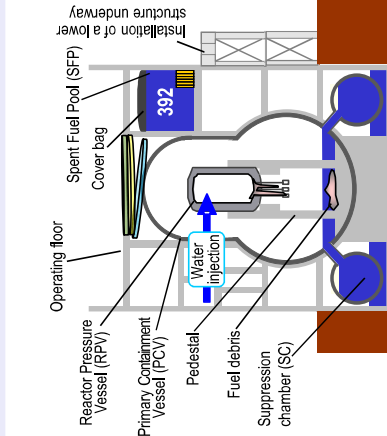
Measurement status	Compliance with requirement
[TEPCO] Attributes of the treated water from Tank Group C (Concentration of the 29 types of radionuclides within the measurement / evaluation scope and regulatory requirements) (Sampled on February 29)	○
[TEPCO] Downstream of discharge shaft and seawater pipe header (Sampled on April 23)	○
[TEPCO] Results of sea area monitoring at 4 points within 3km of the Power Station (Sampled on April 23)	○
[Fisheries Agency] Tritium concentration in marine products (Flounder and others, sampled on April 23)	○

Amount of contaminated water generated in FY2023: approx. 80 m³/day, achieving the milestone prescribed in the Mid-and-Long-Term Roadmap

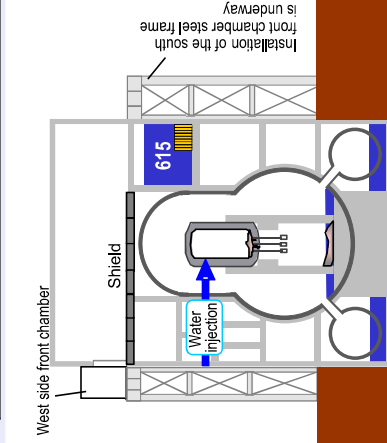
By multi-layered measures by repairing damage of building roofs and facing, the amount of contaminated water generated has been suppressed.

Rainfall in FY2023 was 1,275 mm, less than in normal years (approx. 1,470 mm), the amount of contaminated water generated was approx. 80 m³/day and even when being evaluated with the average rainfall, approx. 90 m³/day, which was evaluated that the milestone prescribed in the Mid-and-Long-Term Roadmap "suppressing the amount of contaminated water generated to less than 100 m³/day during average rainfall within FY2025" was achieved ahead of schedule.

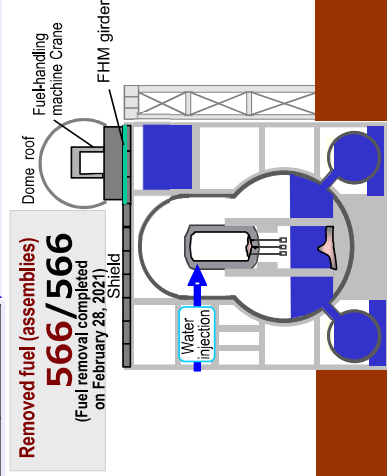
To further suppress the amount of contaminated water generated to approx. 50-70 m³/day by FY2028. Measures including facing of the Units 1-4 buildings, the Unit 1 Reactor Building cover and water stoppage of gaps between buildings will proceed.



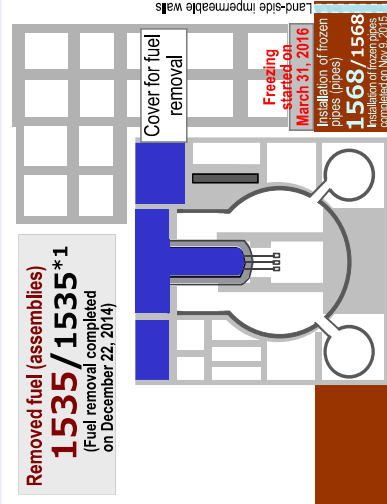
Reactor Building (R/B) Unit 1



Unit 2



Unit 3



Unit 4 *1 including two new fuel assemblies removed first in 2012.

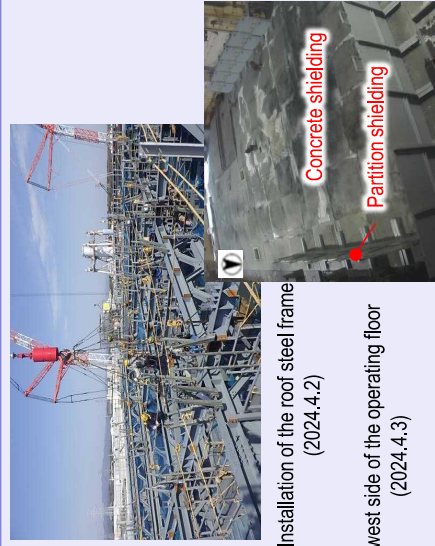
Removed fuel (assemblies) 1535/1535 *1 (Fuel removal completed on December 22, 2014)

Removed fuel (assemblies) 566/566 (Fuel removal completed on February 28, 2021)

Unit 2 Progress of work before removing spent fuel

Before commencing Unit 2 fuel removal, shielding was installed on the top floor (operating floor) of the Reactor Building since last November, concrete placement was completed on March 18 and installation of partition shielding, on April 2 and the shielding installation work was entirely completed.

Regarding the gantry for fuel removal, to complete the installation in June, work to mount the roof steel frame is underway. Work continues while prioritizing safety.



Installation of the roof steel frame (2024.4.2)

On the west side of the operating floor (2024.4.3)

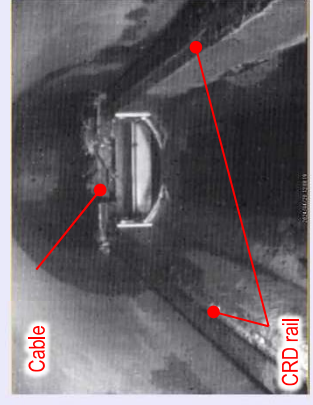
Unit 2 Status of preparation for fuel debris trial retrieval

Before Unit 2 fuel debris trial retrieval, regarding the telescopic-type debris retrieval equipment, a mockup test is underway at the factory to verify the functions and installation procedures.

At the PCV penetration (X-6 penetration), a large portion of deposits and cables inside the penetration was removed and deposit removal will be completed within May.



< Mockup of the telescopic-type equipment >



< Removal of cables >

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
April 26 th , 2024 *Discharged on May 1 st	Cs-134	ND (0.70)	ND (0.60)
	Cs-137	ND (0.59)	ND (0.78)
	Gross β	ND (1.8)	ND (0.32)
	H-3	740	790
April 25 th , 2024 *Discharged on April 30 th	Cs-134	ND (0.89)	ND (0.60)
	Cs-137	ND (0.69)	ND (0.69)
	Gross β	ND (0.62)	ND (0.34)
	H-3	830	860
April 24 th , 2024 *Discharged on April 29 th	Cs-134	ND (0.68)	ND (0.64)
	Cs-137	ND (0.67)	ND (0.58)
	Gross β	ND (1.7)	ND (0.31)
	H-3	750	810
April 23 rd , 2024 *Discharged on April 28 th	Cs-134	ND (0.72)	ND (0.65)
	Cs-137	ND (0.68)	ND (0.58)
	Gross β	ND (1.6)	ND (0.33)
	H-3	700	760
April 22 nd , 2024 *Discharged on April 27 th	Cs-134	ND (0.63)	ND (0.55)
	Cs-137	ND (0.58)	ND (0.61)
	Gross β	ND (1.8)	ND (0.33)
	H-3	750	770
April 21 st , 2024 *Discharged on April 26 th	Cs-134	ND (0.61)	ND (0.52)
	Cs-137	ND (0.65)	ND (0.73)
	Gross β	ND (1.8)	ND (0.32)
	H-3	750	780
April 20 th , 2024 *Discharged on April 25 th	Cs-134	ND (0.77)	ND (0.62)
	Cs-137	ND (0.67)	ND (0.60)
	Gross β	ND (1.8)	ND (0.32)
	H-3	730	760
April 19 th , 2024 *Discharged on	Cs-134	ND (0.65)	ND (0.54)
	Cs-137	ND (0.61)	ND (0.75)

April 24 th	Gross β	ND (1.9)	ND (0.32)
	H-3	660	680
April 17 th , 2024 *Discharged on April 22 nd	Cs-134	ND (0.88)	ND (0.61)
	Cs-137	ND (0.82)	ND (0.58)
	Gross β	ND (0.65)	ND (0.31)
	H-3	620	650
April 16 th , 2024 *Discharged on April 21 st	Cs-134	ND (0.55)	ND (0.65)
	Cs-137	ND (0.58)	ND (0.58)
	Gross β	ND (1.6)	ND (0.30)
	H-3	570	610
April 15 th , 2024 *Discharged on April 20 th	Cs-134	ND (0.98)	ND (0.55)
	Cs-137	ND (0.63)	ND (0.78)
	Gross β	ND (2.0)	ND (0.31)
	H-3	560	570
April 14 th , 2024 *Discharged on April 19 th	Cs-134	ND (0.71)	ND (0.67)
	Cs-137	ND (0.53)	ND (0.71)
	Gross β	ND (1.6)	ND (0.31)
	H-3	550	570
April 13 th , 2024 *Discharged on April 18 th	Cs-134	ND (0.65)	ND (0.71)
	Cs-137	ND (0.54)	ND (0.70)
	Gross β	ND (2.0)	ND (0.32)
	H-3	580	610
April 12 th , 2024 *Discharged on April 17 th	Cs-134	ND (0.63)	ND (0.75)
	Cs-137	ND (0.68)	ND (0.78)
	Gross β	ND (1.9)	ND (0.35)
	H-3	630	650
April 11 th , 2024 *Discharged on April 16 th	Cs-134	ND (0.53)	ND (0.57)
	Cs-137	ND (0.52)	ND (0.54)
	Gross β	ND (1.8)	ND (0.28)
	H-3	540	570
April 9 th , 2024 *Discharged on April 14 th	Cs-134	ND (0.88)	ND (0.58)
	Cs-137	ND (0.56)	ND (0.71)
	Gross β	ND (0.58)	ND (0.30)
	H-3	560	590
April 8 th , 2024 *Discharged on April 13 th	Cs-134	ND (0.71)	ND (0.54)
	Cs-137	ND (0.63)	ND (0.69)
	Gross β	ND (1.9)	ND (0.34)
	H-3	510	530
April 7 th , 2024 *Discharged on April 12 th	Cs-134	ND (0.68)	ND (0.60)
	Cs-137	ND (0.71)	ND (0.63)
	Gross β	ND (1.9)	ND (0.30)

	H-3	530	570
April 6 th , 2024 *Discharged on April 11 th	Cs-134	ND (0.62)	ND (0.62)
	Cs-137	ND (0.61)	ND (0.63)
	Gross β	ND (1.7)	ND (0.31)
	H-3	570	600
April 5 th , 2024 *Discharged on April 10 th	Cs-134	ND (0.83)	ND (0.65)
	Cs-137	ND (0.70)	ND (0.61)
	Gross β	ND (1.9)	ND (0.32)
	H-3	460	490
April 4 th , 2024 *Discharged on April 9 th	Cs-134	ND (0.83)	ND (0.71)
	Cs-137	ND (0.74)	ND (0.71)
	Gross β	ND (1.5)	ND (0.32)
	H-3	460	480
April 3 rd , 2024 *Discharged on April 8 th	Cs-134	ND (0.77)	ND (0.62)
	Cs-137	ND (0.58)	ND (0.73)
	Gross β	ND (1.9)	ND (0.33)
	H-3	410	440
April 1 st , 2024 *Discharged on April 6 th	Cs-134	ND (0.71)	ND (0.52)
	Cs-137	ND (0.52)	ND (0.61)
	Gross β	ND (0.60)	ND (0.32)
	H-3	420	460
March 30 th , 2024 *Discharged on April 4 th	Cs-134	ND (0.55)	ND (0.50)
	Cs-137	ND (0.47)	ND (0.67)
	Gross β	ND (1.8)	ND (0.32)
	H-3	600	610
March 29 th , 2024 *Discharged on April 3 rd	Cs-134	ND (0.66)	ND (0.64)
	Cs-137	ND (0.47)	ND (0.62)
	Gross β	ND (0.66)	ND (0.32)
	H-3	670	710

- * * 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
April 1 st ,2024	Cs-134	ND (0.0030)	ND (0.0047)	ND (0.0057)
	Cs-137	0.0063	0.0096	0.0059
	Gross α	ND (0.47)	ND (2.0)	ND (2.3)
	Gross β	ND (0.48)	ND (0.60)	ND (0.52)
	H-3	440	440	450
	Sr-90	0.0015	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.

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)
March 25 th , 2024 *Sampled before discharge of purified groundwater.	Cs-134	ND (0.75)
	Cs-137	ND (0.86)
	Gross β	9.5
	H-3	ND (0.31)

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
April 26 th , 2024 *Discharged on May 1 st	Cs-134	ND (0.64)	ND (0.55)
	Cs-137	ND (0.81)	ND (0.70)
	Gross β	ND (0.62)	ND (0.29)
	H-3	46	46
April 19 th , 2024 *Discharged on April 24 th	Cs-134	ND (0.84)	ND (0.63)
	Cs-137	ND (0.55)	ND (0.66)
	Gross β	ND (0.65)	ND (0.33)
	H-3	40	46
April 12 th , 2024 *Discharged on April 17 th	Cs-134	ND (0.56)	ND (0.77)
	Cs-137	ND (0.64)	ND (0.73)
	Gross β	ND (0.62)	ND (0.34)
	H-3	43	45
April 5 th , 2024 *Discharged on April 10 th	Cs-134	ND (0.75)	ND (0.60)
	Cs-137	ND (0.75)	ND (0.58)
	Gross β	ND (0.64)	ND (0.35)
	H-3	41	44
March 29 th , 2024 *Discharged on April 3 rd	Cs-134	ND (0.56)	ND (0.74)
	Cs-137	ND (0.79)	ND (0.66)
	Gross β	ND (0.64)	ND (0.36)
	H-3	50	50
March 28 th , 2024 *Discharged on April 2 nd	Cs-134	ND (0.53)	ND (0.70)
	Cs-137	ND (0.45)	ND (0.48)
	Gross β	ND (0.61)	ND (0.34)
	H-3	50	50

- * * 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
April 5 th , 2024	Cs-134	ND (0.0024)	ND (0.0045)	ND (0.0061)
	Cs-137	ND (0.0021)	ND (0.0042)	ND (0.0043)
	Gross α	ND (0.51)	ND (2.0)	ND (2.3)
	Gross β	ND (0.48)	ND (0.64)	ND (0.60)
	H-3	43	42	43
	Sr-90	ND (0.0015)	ND (0.0013)	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.

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)
March 22 nd , 2024	Cs-134	ND (0.86)
	Cs-137	ND (0.47)
	Gross β	13
	H-3	ND (0.54)