Information(16:00), July 29, 2022

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/mp202206.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

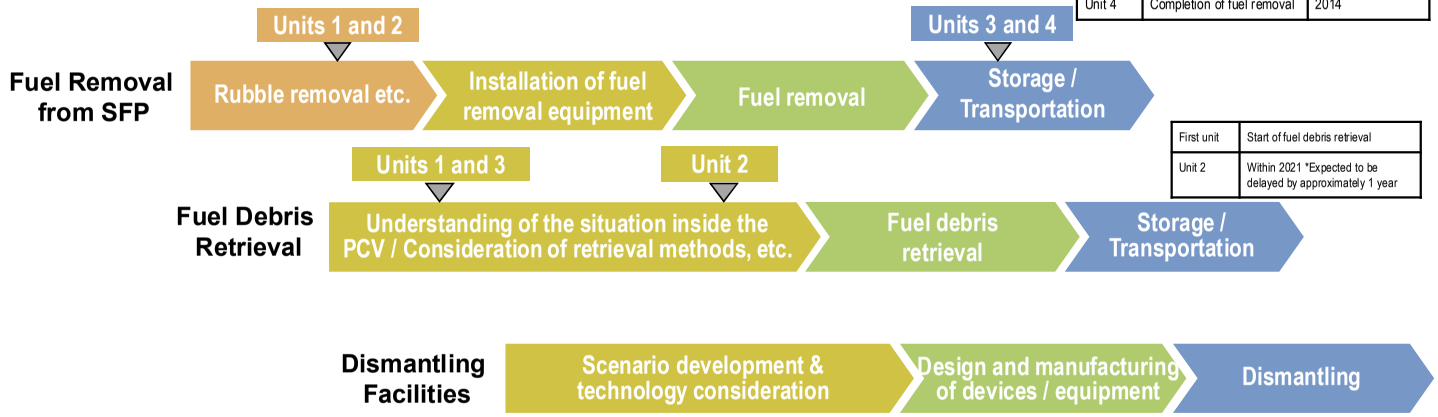
June 30, 2022
Secretariat of the Team for Countermeasures for Decommissioning, Contaminated Water and Treated Water

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.

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
Unit 3	Completion of fuel removal	Within FY2020
Unit 4	Completion of fuel removal	2014



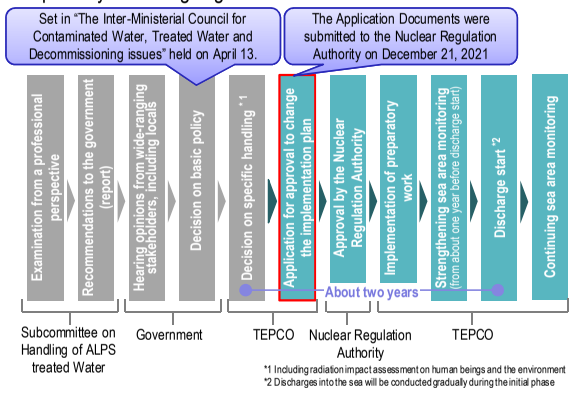
First unit	Start of fuel debris retrieval
Unit 2	Within 2021 *Expected to be delayed by approximately 1 year

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

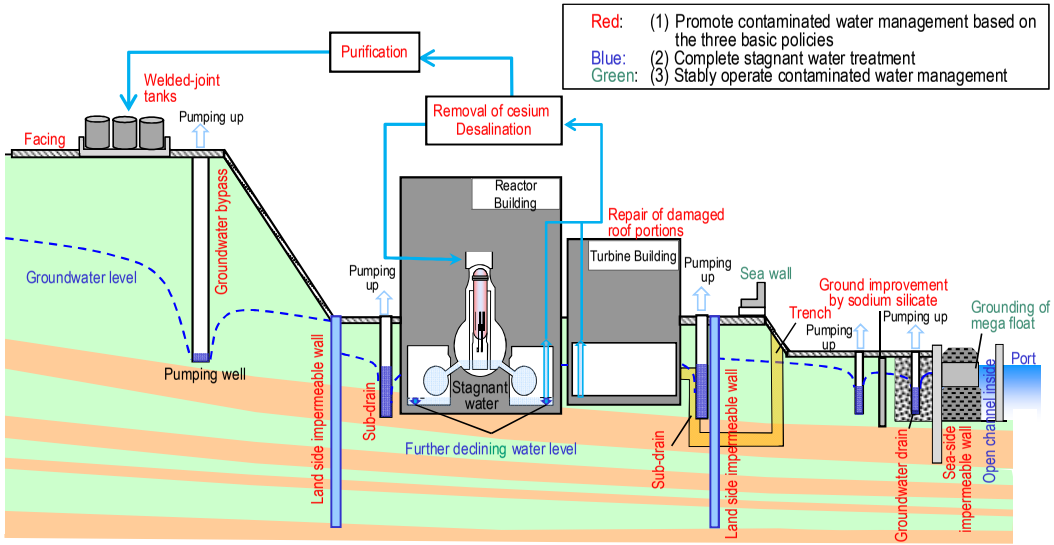
- Strontium-reduced water from other equipment is being re-treated in the Advanced Liquid Processing System (ALPS: multi-nuclide removal equipment) and stored in welded-joint tanks.
- Multi-layered contaminated water management measures, including land-side impermeable walls and sub-drains, have stabilized 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. At present, the floor surface exposure condition can be maintained except for the Unit 1-3 Reactor Buildings, Process Main Building and the High-Temperature Incinerator Building.
- 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. For Reactor Buildings, the amount of stagnant water there will be reduced to about half the amount at the end of 2020 during the period FY2022-2024.
- 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 are being implemented as planned.



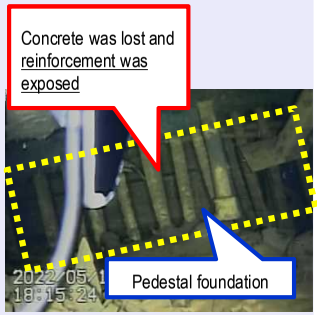
Progress status

◆ 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.

Unit 1 Consideration concerning the exposure of pedestal reinforcement

The status of the pedestal peripheral inside the Primary Containment Vessel (PCV) was investigated. The results showed that on the wall of the pedestal opening, a table-shaped deposit was detected and on the wall under the deposit, concrete was lost and reinforcement and others were exposed.

Based on the present information and others, The Impact of pedestal damage on the plant was considered. The results showed that the potential of an earthquake to cause significant damage was low. Also considered was the fact that even if the support capability of the pedestal decreased, the risk of significant radiation exposure would not be presented to those in surrounding areas. We will continue the PCV internal investigation and accumulate more knowledge.

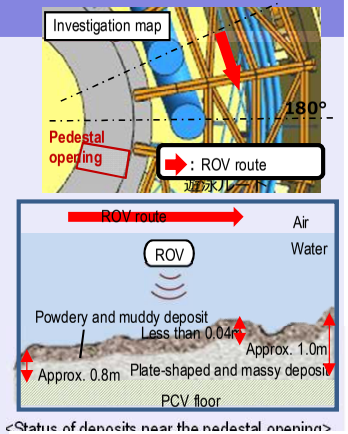


<Status near the pedestal foundation>

Unit 1 As part of the PCV internal investigation, the deposit thickness was measured

During June 7-11, the thickness of deposits was measured using the remotely operated robot, the submersible ROV-C.

In this investigation, to detect where deposits with different characteristics, such as powdery, muddy, plate-shaped or massy were located and how thick they were, measurement was made at 13 points within the pedestal peripheral. At present, evaluation of three points was completed and the process continues.



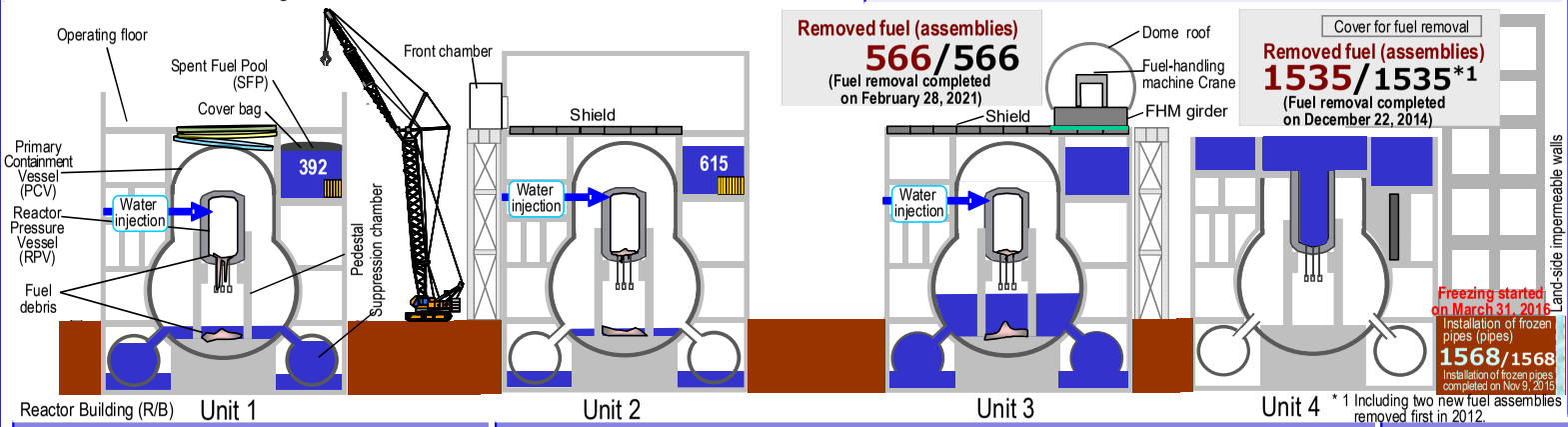
<Status of deposits near the pedestal opening>

Unit 2 Trial fuel debris retrieval equipment is being improved

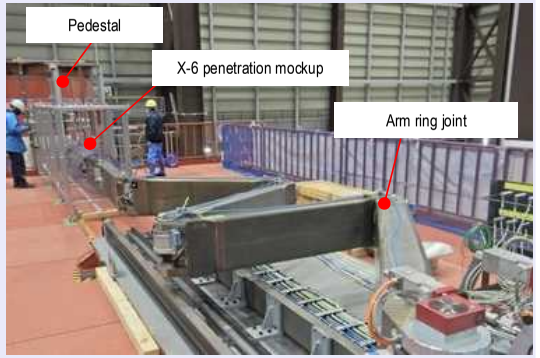
During the test to verify the performance of the trial retrieval equipment, points for which improvement is expected are being checked.

For the robot arm, to reduce the contact risk detected in the test to verify the capability to penetrate the X-6 penetration, the operational accuracy and other aspects are being improved. For the dual arm manipulator, other improvements made include modifying the tool structure.

In response to damage detected in the isolation room, the isolation room was removed and other measures are being examined, including structural modification.



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



<Test to verify the capability to penetrate the X-6 penetration>

Status of work to remove a portion of pipes for Units 1 and 2 standby gas treatment system

On June 10, cutting of the second of 16 sections of the SGTS pipes started. When about 90% of the cutting had been completed, biting of the wire saw was detected.

On June 14, during work toward resuming the cutting, a problem occurred with the temporary dust monitor and the winch of the wire saw. Work was suspended without cutting.

After identifying the cause and implementing recurrence prevention measures, cutting will resume.

Toward fuel removal from the Unit 2 spent fuel pool, mockup of work to remove interferences is underway

Inside the building, the existing fuel-handling machine having been installed over the spent fuel pool was transferred to the north side of the Reactor Building by June 13. Moreover, a mockup toward removing the fuel-handling machine, which is scheduled from July, started from June 7. The feasibility of the dismantling method, rubble treatment, dust scattering prevention and others is being verified and proficiency training is underway.

Outside the building, toward installing the gantry foundation, work to excavate the area for the installation in the yard on the south side of the building was completed on June 9. To complete in around November, work for the installation proceeds.

<Mockup to remove the fuel handling machine room>

Construction completion of the Radioactive Material Analysis and Research Facility Laboratory-1

The Japan Atomic Energy Agency (JAEA) had been constructing the Radioactive Material Analysis and Research Facility Laboratory-1 within the site of the Fukushima Daiichi Nuclear Power Station, as part of research and development into waste treatment and handling. After finishing the comprehensive functional test and others, construction was completed on June 24.

Following the operation test and others, analytical work will commence.


<Radioactive Material Analysis and Research Facility Laboratory-1 >

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, 2022 *Discharged on June 31st	Cs-134	ND (0.64)	ND (0.60)
	Cs-137	ND (0.47)	ND (0.61)
	Gross β	ND (1.9)	ND (0.37)
	H-3	910	990
June 25th, 2022 *Discharged on June 30th	Cs-134	ND (0.50)	ND (0.59)
	Cs-137	ND (0.60)	ND (0.61)
	Gross β	ND (0.63)	ND (0.36)
	H-3	810	850
June 24th, 2022 *Discharged on June 29th	Cs-134	ND (0.50)	ND (0.56)
	Cs-137	ND (0.65)	ND (0.63)
	Gross β	ND (1.8)	ND (0.33)
	H-3	870	900
June 24th, 2022 *Discharged on June 29th	Cs-134	ND (0.75)	ND (0.55)
	Cs-137	ND (0.65)	ND (0.63)
	Gross β	ND (2.2)	ND (0.39)
	H-3	780	840
June 23th, 2022 *Discharged on June 28th	Cs-134	ND (0.63)	ND (0.65)
	Cs-137	ND (0.73)	ND (0.52)
	Gross β	ND (1.9)	ND (0.34)
	H-3	860	920
June 22nd, 2022 *Discharged on June 27th	Cs-134	ND (0.59)	ND (0.58)
	Cs-137	ND (0.65)	ND (0.63)
	Gross β	ND (1.9)	0.47
	H-3	800	860
June 22nd, 2022 *Discharged on June 27th	Cs-134	ND (0.65)	ND (0.66)
	Cs-137	ND (0.54)	ND (0.79)
	Gross β	ND (1.7)	ND (0.41)
	H-3	570	590
June 21st, 2022 *Discharged on	Cs-134	ND (0.62)	ND (0.56)
	Cs-137	ND (0.79)	ND (0.61)

June 26th	Gross β	ND (1.7)	ND (0.36)
	H-3	770	840
June 20th, 2022 *Discharged on June 25th	Cs-134	ND (0.57)	ND (0.75)
	Cs-137	ND (0.67)	ND (0.57)
	Gross β	ND (2.1)	ND (0.37)
	H-3	740	800
June 19th, 2022 *Discharged on June 24th	Cs-134	ND (0.58)	ND (0.54)
	Cs-137	ND (0.60)	ND (0.61)
	Gross β	ND (2.2)	ND (0.33)
	H-3	670	710
June 18th, 2022 *Discharged on June 23th	Cs-134	ND (0.81)	ND (0.69)
	Cs-137	ND (0.54)	ND (0.69)
	Gross β	ND (1.8)	ND (0.34)
	H-3	810	890
June 18th, 2022 *Discharged on June 23th	Cs-134	ND (0.76)	ND (0.45)
	Cs-137	ND (0.69)	ND (0.61)
	Gross β	ND (1.7)	ND (0.34)
	H-3	590	630
June 17th, 2022 *Discharged on June 22nd	Cs-134	ND (0.63)	ND (0.66)
	Cs-137	ND (0.73)	ND (0.69)
	Gross β	ND (0.62)	ND (0.35)
	H-3	580	610
June16th, 2022 *Discharged on June 21st	Cs-134	ND (0.61)	ND (0.68)
	Cs-137	ND (0.54)	ND (0.66)
	Gross β	ND (2.0)	ND (0.36)
	H-3	780	850
June16th, 2022 *Discharged on June 21st	Cs-134	ND (0.45)	ND (0.43)
	Cs-137	ND (0.73)	ND (0.61)
	Gross β	ND (1.9)	ND (0.37)
	H-3	690	730
June 14th, 2022 *Discharged on June 19th	Cs-134	ND (0.57)	ND (0.64)
	Cs-137	ND (0.77)	ND (0.52)
	Gross β	ND (1.7)	ND (0.35)
	H-3	580	620
June 13th, 2022 *Discharged on June 18th	Cs-134	ND (0.88)	ND (0.58)
	Cs-137	ND (0.47)	ND (0.58)
	Gross β	ND (1.9)	ND (0.34)
	H-3	580	610
June 12th, 2022 *Discharged on June 17th	Cs-134	ND (0.68)	ND (0.69)
	Cs-137	ND (0.80)	ND (0.69)
	Gross β	ND (1.7)	ND (0.38)

	H-3	640	680
June 11th, 2022 *Discharged on June 16th	Cs-134	ND (0.72)	ND (0.63)
	Cs-137	ND (0.69)	ND (0.61)
	Gross β	ND (2.0)	ND (0.34)
	H-3	580	620
June 10th, 2022 *Discharged on June 17th	Cs-134	ND (0.76)	ND (0.70)
	Cs-137	ND (0.54)	ND (0.67)
	Gross β	ND (2.0)	ND (0.33)
	H-3	740	790
June 10th, 2022 *Discharged on June 16th	Cs-134	ND (0.53)	ND (0.67)
	Cs-137	ND (0.60)	ND (0.57)
	Gross β	ND (2.0)	ND (0.37)
	H-3	590	650
June 9th, 2022 *Discharged on June 14th	Cs-134	ND (0.63)	ND (0.71)
	Cs-137	ND (0.69)	ND (0.55)
	Gross β	ND (0.65)	ND (0.36)
	H-3	700	750
June 8th, 2022 *Discharged on June 13th	Cs-134	ND (0.60)	ND (0.61)
	Cs-137	ND (0.77)	ND (0.72)
	Gross β	ND (1.6)	ND (0.33)
	H-3	820	880
June 7th, 2022 *Discharged on June 12th	Cs-134	ND (0.79)	ND (0.60)
	Cs-137	ND (0.73)	ND (0.63)
	Gross β	ND(2.1)	ND(0.35)
	H-3	800	850
June 6th, 2022 *Discharged on June 11th	Cs-134	ND (0.65)	ND (0.67)
	Cs-137	ND (0.47)	ND (0.55)
	Gross β	ND (1.9)	ND (0.35)
	H-3	820	870
June 5th, 2022 *Discharged on June 10th	Cs-134	ND (0.57)	ND (0.58)
	Cs-137	ND (0.60)	ND (0.55)
	Gross β	ND (1.9)	ND (0.36)
	H-3	830	880
June 3rd, 2022 *Discharged on June 8th	Cs-134	ND (0.53)	ND (0.70)
	Cs-137	ND (0.73)	ND (0.68)
	Gross β	ND (1.6)	ND(0.36)
	H-3	790	820
June 2nd, 2022 *Discharged on June 7th	Cs-134	ND (0.45)	ND (0.68)
	Cs-137	ND (0.77)	ND (0.50)
	Gross β	ND (1.7)	0.42
	H-3	730	750

June 1st, 2022 *Discharged on June 6th	Cs-134	ND (0.72)	ND (0.69)
	Cs-137	ND (0.65)	ND (0.45)
	Gross β	ND (0.68)	ND(0.39)
	H-3	690	730
May 31th, 2022 *Discharged on June 5th	Cs-134	ND (0.63)	ND (0.73)
	Cs-137	ND (0.73)	ND (0.67)
	Gross β	ND (1.9)	ND (0.35)
	H-3	720	770
May 30th, 2022 *Discharged on June 4th	Cs-134	ND (0.59)	ND (0.47)
	Cs-137	ND (0.73)	ND (0.58)
	Gross β	ND (1,7)	ND (0.37)
	H-3	730	790
May 29th, 2022 *Discharged on June 3rd	Cs-134	ND (0.70)	ND (0.55)
	Cs-137	ND (0.65)	ND (0.55)
	Gross β	ND (1.6)	ND (0.32)
	H-3	850	920
May 28th, 2022 *Discharged on June 2nd	Cs-134	ND (0.50)	ND (0.60)
	Cs-137	ND (0.69)	ND (0.55)
	Gross β	ND (1.6)	ND (0.35)
	H-3	870	920
May 27th, 2022 *Discharged on June 1st	Cs-134	ND (0.66)	ND (0.50)
	Cs-137	ND (0.69)	ND (0.45)
	Gross β	ND (1,8)	ND(0.39)
	H-3	840	890

- * 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
May 1st,2022	Cs-134	ND (0.0029)	ND (0.0047)	ND (0.0068)
	Cs-137	0.0032	0.0052	ND (0.0045)
	Gross α	ND (0.53)	ND (3.4)	ND (2.2)
	Gross β	ND (0.38)	ND (0.62)	ND (0.58)
	H-3	830	830	860
	Sr-90	ND (0.0013)	ND (0.0012)	ND (0.0054)

* 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.

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 18th, 2022 *Sampled before discharge of purified groundwater.	Cs-134	ND (0.68)
	Cs-137	ND (0.58)
	Gross β	11
	H-3	ND (1.0)

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 20th, 2022 *Discharged on June 28th	Cs-134	ND (0.53)	ND (0.56)
	Cs-137	ND (0.75)	ND (0.45)
	Gross β	ND (0.63)	ND (0.64)
	H-3	65	70
June 13th, 2022 *Discharged on June 18th	Cs-134	ND (0.70)	ND (0.48)
	Cs-137	ND (0.92)	ND (0.66)
	Gross β	ND (0.62)	ND (0.70)
	H-3	76	70
June 6th, 2022 *Discharged on June 11th	Cs-134	ND (0.65)	ND (0.55)
	Cs-137	ND (0.69)	ND (0.59)
	Gross β	ND (0.62)	ND (0.60)
	H-3	74	72
May 30th, 2022 *Discharged on June 4th	Cs-134	ND (0.53)	ND (0.66)
	Cs-137	ND (0.69)	ND (0.36)
	Gross β	ND (0.64)	ND (0.58)
	H-3	84	78

- * 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 : Japan Chemical Analysis Center

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 3rd, 2022	Cs-134	ND (0.0023)	ND (0.0043)	ND (0.0068)
	Cs-137	ND (0.0020)	ND (0.0041)	ND (0.0052)
	Gross α	ND (0.53)	ND (3.4)	ND (2.2)
	Gross β	ND (0.38)	ND (0.61)	ND (0.54)
	H-3	83	84	86
	Sr-90	ND (0.0012)	ND (0.0016)	ND (0.0052)

* 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.

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 18th, 2022	Cs-134	ND (0.65)
	Cs-137	ND (0.46)
	Gross β	14
	H-3	ND (0.32)