Information(16:00), September 30, 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 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/mp202208.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 25, 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

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 *Expected to be delayed by approximately 1 year

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

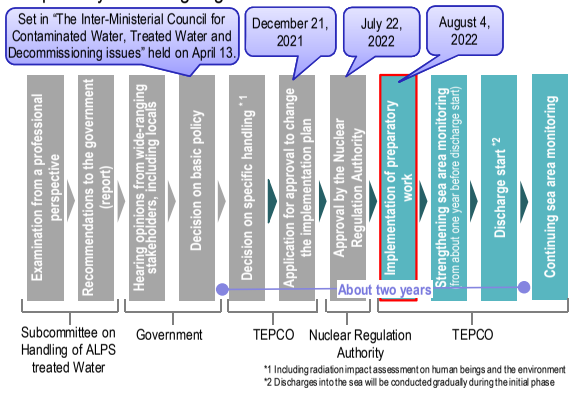
Dismantling Facilities: Scenario development & technology consideration → Design and manufacturing of devices / equipment → Dismantling

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

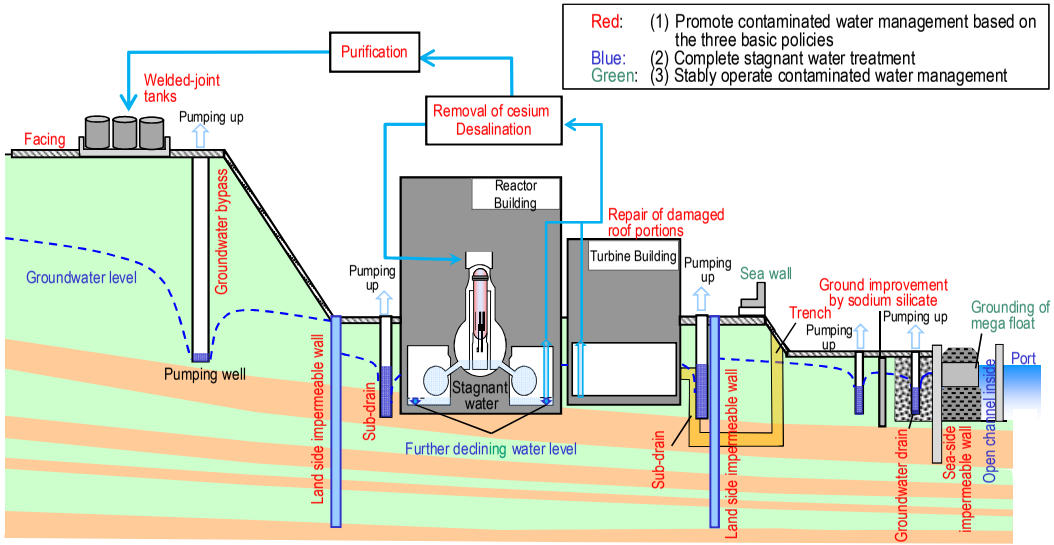
- Strontium-reduced water from other equipment is being re-treated in the Advanced Liquid Processing System (ALPS: multi-nuclide removal equipment) and stored in welded-joint tanks.
- Multi-layered contaminated water management measures, including land-side impermeable walls and sub-drains, have stabilized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

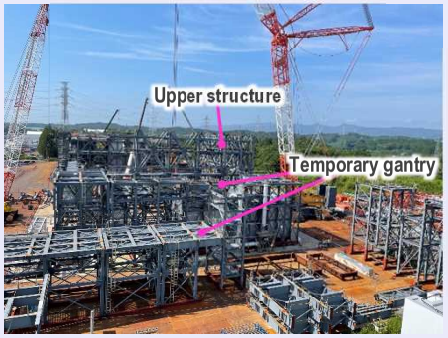
Progress of work inside and outside the site toward installing the Unit 1 large cover

Outside the site, the ground assembly of steel frames and others has been underway as part of efforts to install a large cover, which was completed for the temporary gantry and lower structure and approx. 40% for the upper structure.

Within the site, anchors and base plates are being installed to support the large cover. A temporary gantry is also being installed from the part where anchors and base plates were installed.

As preparation to mitigate any dust scattering during work, as well as sprinkling water using crane, equipment to spray water over the Reactor Building operating floor was installed on the rooftop of the Unit 1 Turbine Building as part of enhanced measures.

After installing a large cover over the Reactor Building in around FY2023, the rubble inside the cover will be removed.



<Work outside the site (August 8, 2022)>

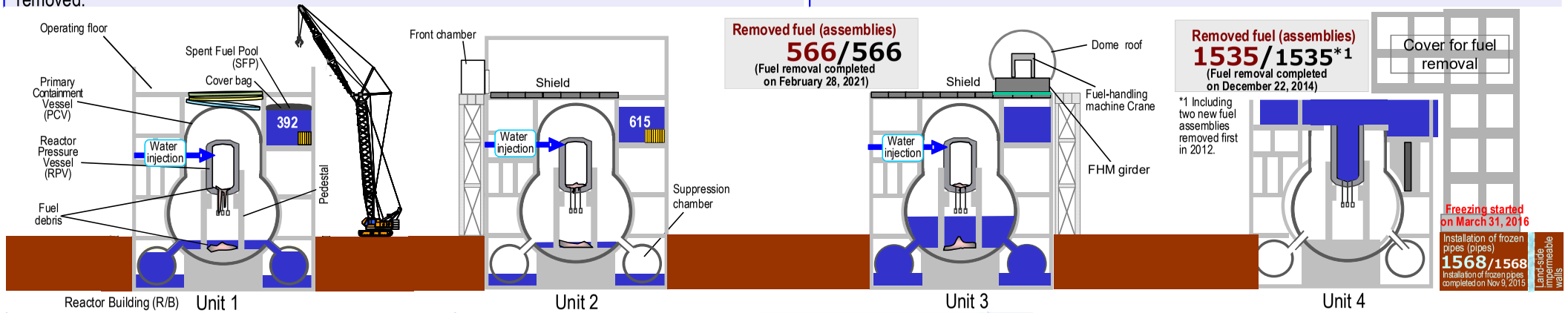
Progress of work around the Unit 1/2 Radioactive Waste Treatment Building

To reduce the risk of delaying the process to remove the pipes of the Unit 1/2 Standby Gas Treatment System (SGTS) and install the Unit 1 cover, the process of work around the Unit 1/2 Radioactive Waste Treatment Building (Rw/B) is being reconfigured.

Rubble removal work around the Unit 1/2 Rw/B resumed from August 23, as the construction of the course for the rubble-removing heavy machine was completed in the range for preceding work.

Work to date to remove the SGTS pipes was reviewed and measures to improve reliability by modifying the cutter and others are being examined.


<Rubble removal work>



Unit 2 Trial retrieval of fuel debris

Regarding the robot arm, by conducting mockup tests in Naraha to simulate the actual site, improvements such as modifying the control program are underway to reduce the risk of contact while removing fuel debris.

Moreover, work to install the isolation room started toward opening the X-6 penetration hatch. Damage in the rubber box detected during the work will be addressed.

On this occasion, when the response status based on the test, measures in the site and others were organized, to increase safety and reliability of the trial retrieval (internal investigation and sampling of debris), the process was reviewed to that which added a preparation period for about one or one and a half year and would start the trial retrieval work from around late FY2023.

Commencement of work on ALPS treated water dilution/discharge facility and related facilities

Work on ALPS treated water dilution/discharge facility and related facilities commenced on August 4.

Preparation is underway, including laying pipes for the measurement / confirmation facility and the transfer facility around K4 area tanks, building the discharge tunnel by shield machine and installing a partitioning weir in the Unit 5 and 6 intake open channel.

Work will continue with safety prioritized.

Photo taken from inside the shield machine looking from the rear toward the front
<Shield machine excavation work>

Unit 2 Investigation in the control room of the fuel-handling machine

To acquire information to help clarify the accident progress, an investigation, including measuring the dose distribution and the smear paper wipe off, was conducted for the control room of the Unit 2 fuel-handling machine (FHM control room) using the remotely operated robot (SPOT).

On the second floor of the FHM control room, certain places were deemed difficult to investigate by SPOT due to damage detected on the floor surface. For these places, additional investigation is scheduled during work to dismantle the FHM control room, which started from August 22.

Smear samples will be analyzed in the internal laboratory and the external analysis institute.


<Smear paper wipe off investigation by the investigation robot (SPOT)>

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, 2022 *Discharged on September1st	Cs-134	ND (0.59)	ND (0.62)
	Cs-137	ND (0.77)	ND (0.77)
	Gross β	ND (1.9)	ND (0.35)
	H-3	890	950
August 26th, 2022 *Discharged on August 31st	Cs-134	ND (0.56)	ND (0.64)
	Cs-137	ND (0.77)	ND (0.61)
	Gross β	ND (1.9)	ND (0.32)
	H-3	840	920
August 25th, 2022 *Discharged on August 30th	Cs-134	ND (0.61)	ND (0.62)
	Cs-137	ND (0.65)	ND (0.57)
	Gross β	ND (1.8)	ND (0.33)
	H-3	840	900
August 24th, 2022 *Discharged on August 29th	Cs-134	ND (0.72)	ND (0.42)
	Cs-137	ND (0.65)	ND (0.58)
	Gross β	ND (2.0)	ND (0.37)
	H-3	800	860
August 23rd, 2022 *Discharged on August 28th	Cs-134	ND (0.57)	ND (0.52)
	Cs-137	ND (0.65)	ND (0.57)
	Gross β	ND (0.68)	ND (0.30)
	H-3	830	890
August 22nd, 2022 *Discharged on August 27th	Cs-134	ND (0.80)	ND (0.66)
	Cs-137	ND (0.60)	ND (0.57)
	Gross β	ND (2.0)	ND (0.30)
	H-3	840	930
August 21st, 2022 *Discharged on August 26th	Cs-134	ND (0.72)	ND (0.76)
	Cs-137	ND (0.65)	ND (0.57)
	Gross β	ND (1.7)	ND (0.30)
	H-3	840	920
August 20th, 2022	Cs-134	ND (0.83)	ND (0.62)

*Discharged on August 25th	Cs-137	ND (0.60)	ND (0.70)
	Gross β	ND (2.0)	ND (0.35)
	H-3	810	880
August 19th, 2022 *Discharged on August 24th	Cs-134	ND (0.57)	ND (0.58)
	Cs-137	ND (0.60)	ND (0.58)
	Gross β	ND (1.9)	ND (0.33)
	H-3	810	860
August 18th, 2022 *Discharged on August 23rd	Cs-134	ND (0.69)	ND (0.76)
	Cs-137	ND (0.73)	ND (0.61)
	Gross β	ND (1.7)	ND (0.35)
	H-3	820	880
August 17th, 2022 *Discharged on August 22nd	Cs-134	ND (0.59)	ND (0.59)
	Cs-137	ND (0.80)	ND (0.79)
	Gross β	ND (1.6)	ND (0.33)
	H-3	680	750
August16th, 2022 *Discharged on August 21st	Cs-134	ND (0.49)	ND (0.66)
	Cs-137	ND (0.65)	ND (0.64)
	Gross β	ND (1.9)	ND (0.36)
	H-3	690	750
August15th, 2022 *Discharged on August 20th	Cs-134	ND (0.53)	ND (0.66)
	Cs-137	ND (0.91)	ND (0.64)
	Gross β	ND (0.58)	ND (0.34)
	H-3	810	860
August 14th, 2022 *Discharged on August 19th	Cs-134	ND (0.45)	ND (0.60)
	Cs-137	ND (0.69)	ND (0.61)
	Gross β	ND (2.0)	ND (0.34)
	H-3	790	840
August 13th, 2022 *Discharged on August 18th	Cs-134	ND (0.61)	ND (0.60)
	Cs-137	ND (0.69)	ND (0.58)
	Gross β	ND (1.6)	ND (0.36)
	H-3	750	810
August 12th, 2022 *Discharged on August 17th	Cs-134	ND (0.61)	ND (0.60)
	Cs-137	ND (0.73)	ND (0.55)
	Gross β	ND (1.6)	ND (0.31)
	H-3	760	800
August 11th, 2022 *Discharged on August 16th	Cs-134	ND (0.66)	ND (0.66)
	Cs-137	ND (0.47)	ND (0.54)
	Gross β	ND (1.9)	ND (0.31)
	H-3	780	820
August 10th, 2022 *Discharged on	Cs-134	ND (0.83)	ND (0.65)
	Cs-137	ND (0.60)	ND (0.61)

August 15th	Gross β	ND (1.6)	ND (0.36)
	H-3	760	790
August 9th, 2022 *Discharged on August 14th	Cs-134	ND (0.44)	ND (0.66)
	Cs-137	ND (0.73)	ND (0.64)
	Gross β	ND (1.8)	ND (0.36)
	H-3	760	810
August 8th, 2022 *Discharged on August 13th	Cs-134	ND (0.57)	ND (0.57)
	Cs-137	ND (0.69)	ND (0.69)
	Gross β	ND (0.68)	ND (0.31)
	H-3	770	830
August 7th, 2022 *Discharged on August 12th	Cs-134	ND (0.70)	ND (0.47)
	Cs-137	ND (0.54)	ND (0.61)
	Gross β	ND (1.8)	ND (0.32)
	H-3	940	990
August 6th, 2022 *Discharged on August 11th	Cs-134	ND (0.53)	ND (0.64)
	Cs-137	ND (0.65)	ND (0.49)
	Gross β	ND (1.8)	ND (0.36)0.40
	H-3	970	1000
August 5th, 2022 *Discharged on August 10th	Cs-134	ND (0.85)	ND (0.67)
	Cs-137	ND (0.54)	ND (0.61)
	Gross β	ND (1.8)	ND (0.36)
	H-3	940	980
August 4th, 2022 *Discharged on August 9th	Cs-134	ND (0.64)	ND (0.78)
	Cs-137	ND (0.84)	ND (0.61)
	Gross β	ND (2.2)	ND (0.31)
	H-3	1000	1100
August 3rd, 2022 *Discharged on August 8th	Cs-134	ND (0.58)	ND (0.66)
	Cs-137	ND (0.65)	ND (0.61)
	Gross β	ND (2.0)	ND (0.37)
	H-3	900	980
August 2nd, 2022 *Discharged on August 7th	Cs-134	ND (0.61)	ND (0.69)
	Cs-137	ND (0.60)	ND (0.61)
	Gross β	ND (1.9)	ND (0.31)
	H-3	840	910
August 1st, 2022 *Discharged on August 6th	Cs-134	ND (0.53)	ND (0.62)
	Cs-137	ND (0.47)	ND (0.58)
	Gross β	ND (0.71)	ND (0.33)
	H-3	840	890
July 30st, 2022 *Discharged on August 6th	Cs-134	ND (0.93)	ND (0.58)
	Cs-137	ND (0.54)	ND (0.49)
	Gross β	ND (2.0)	ND (0.37)

	H-3	780	820
July 31st, 2022 *Discharged on August 5th	Cs-134	ND (0.57)	ND (0.58)
	Cs-137	ND (0.60)	ND (0.72)
	Gross β	ND (1.6)	ND (0.37)
	H-3	810	880
July 30th, 2022 *Discharged on August 4th	Cs-134	ND (0.63)	ND (0.64)
	Cs-137	ND (0.65)	ND (0.70)
	Gross β	ND (1.7)	ND (0.34)
	H-3	810	870
July 29th, 2022 *Discharged on August 3rd	Cs-134	ND (0.61)	ND (0.70)
	Cs-137	ND (0.65)	ND (0.66)
	Gross β	ND (2.1)	ND (0.35)
	H-3	700	750
July 28th, 2022 *Discharged on Augustt 2nd	Cs-134	ND (0.65)	ND (0.55)
	Cs-137	ND (0.65)	ND (0.55)
	Gross β	ND (1.8)	ND (0.35)
	H-3	690	730

* * 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
July 1st,2022	Cs-134	ND (0.0032)	ND (0.0046)	ND (0.0061)
	Cs-137	0.0046	0.0063	ND (0.0052)
	Gross α	ND (0.31)	ND (3.6)	ND (2.1)
	Gross β	ND (0.47)	ND (0.64)	ND (0.57)
	H-3	910	920	940
	Sr-90	ND (0.0085)	ND (0.0044)	ND (0.0076)

* 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
August 24th, 2022 *Discharged on August 31st	Cs-134	ND (0.58)	ND (0.38)
	Cs-137	ND (0.69)	ND (0.49)
	Gross β	ND (0.69)	ND (0.53)
	H-3	63	61
August 17th, 2022 *Discharged on August 22nd	Cs-134	ND (0.72)	ND (0.59)
	Cs-137	ND (0.84)	ND (0.68)
	Gross β	ND (0.61)	ND (0.28)
	H-3	63	62
August 10th, 2022 *Discharged on August 15th	Cs-134	ND (0.55)	ND (0.69)
	Cs-137	ND (0.69)	ND (0.61)
	Gross β	ND (0.64)	ND (0.34)
	H-3	59	63
August 5th, 2022 *Discharged on August 10th	Cs-134	ND (0.55)	ND (0.67)
	Cs-137	ND (0.69)	ND (0.52)
	Gross β	ND (0.65)	ND (0.37)
	H-3	59	64
July 29th, 2022 *Discharged on August 5th	Cs-134	ND (0.45)	ND (0.47)
	Cs-137	ND (0.65)	ND (0.45)
	Gross β	ND (0.70)	ND (0.35)
	H-3	62	65

∗ * 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
July 7th, 2022	Cs-134	ND (0.0024)	ND (0.0042)	ND (0.0059)
	Cs-137	ND (0.0020)	ND (0.0039)	ND (0.0054)
	Gross α	ND (0.43)	ND (3.1)	ND (2.1)
	Gross β	ND (0.50)	ND (0.65)	ND (0.59)
	H-3	68	66	70
	Sr-90	ND (0.0015)	ND (0.0012)	ND (0.0063)

* 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)