Information (17:00), May 28, 2021

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/mp202104.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.

2. 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 Cooperation Division,
Ministry of Foreign Affairs, Tel 03-5501-8227

Outline of Decommissioning and Contaminated Water Management

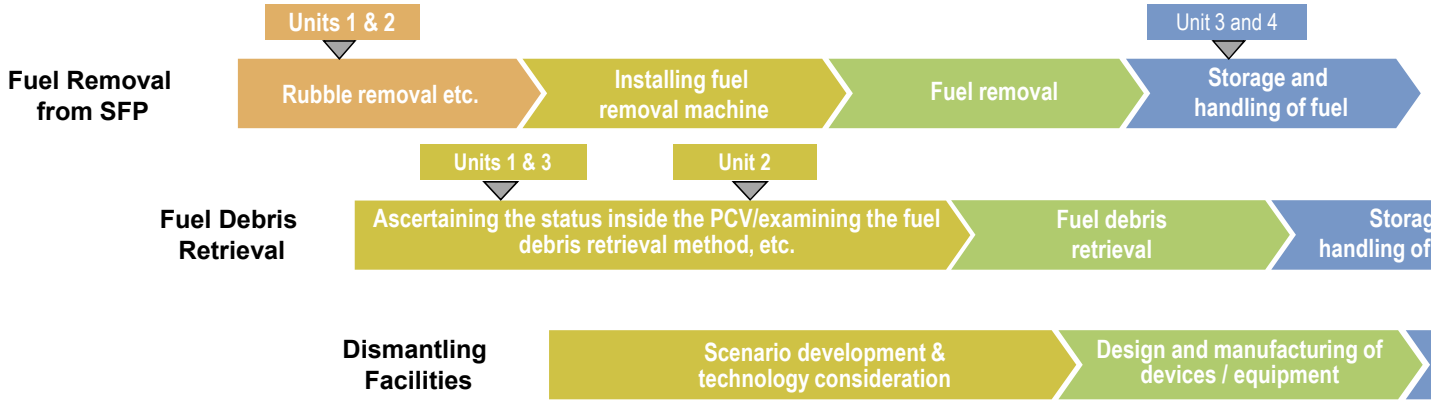
April 27, 2021
Secretariat of the Team for Countermeasures for Decommissioning and Contaminated Water Treatment

Main decommissioning work and steps

Appendix 1

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

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

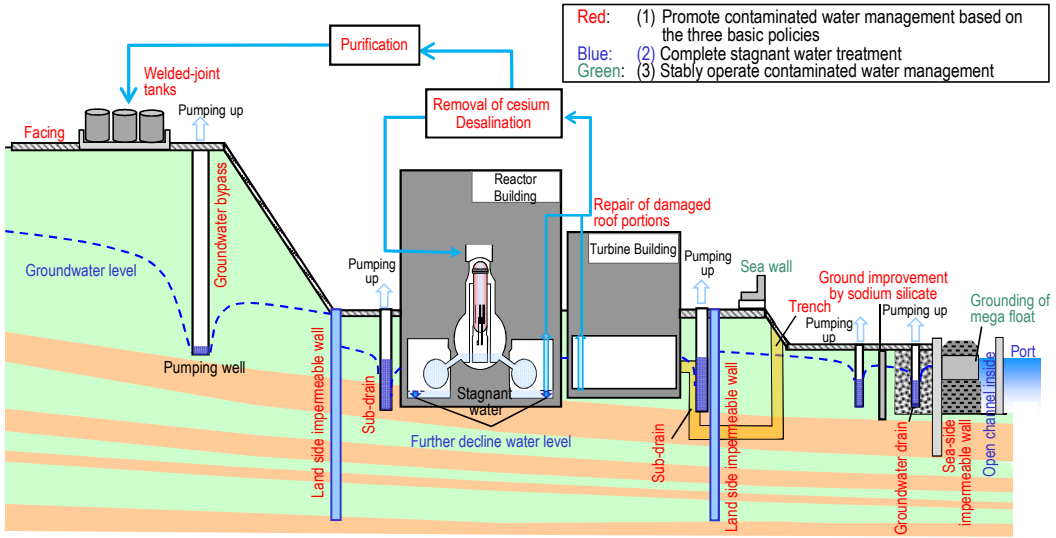
- Strontium-reduced water from other equipment is being re-treated in the multi-nuclide removal equipment (ALPS) and stored in welded-joint tanks.
- Multi-layered contaminated water management measures, including land-side impermeable walls and sub-drains, have stabilized the groundwater at a low level 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. 180 m^3/day (in FY2019) and approx. 140 m^3/day (in 2020).
- Measures continue to further suppress the generation of contaminated water to 100 m3/day or less within 2025.

(2) Efforts to complete stagnant water treatment

- To lower 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 of 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

- To prepare for tsunamis, various measures are underway. For heavy rain, sandbags are being installed to suppress direct inflow into buildings while work closing building openings and installing sea walls to enhance drainage channels and other measures are 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

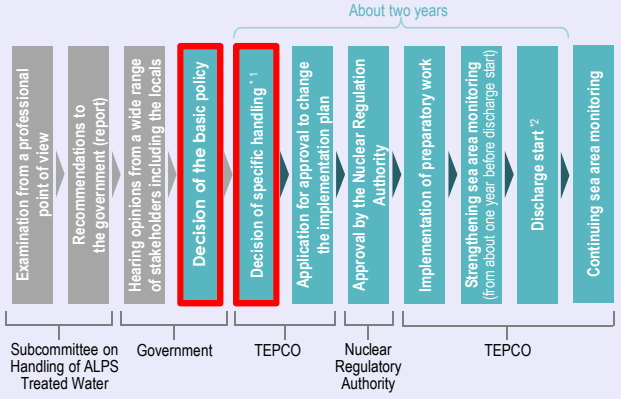
◆ The temperatures of the Reactor Pressure Vessel (RPV) and Primary Containment Vessel (PCV) of Units 1-3 have been maintained within the range of approx. 15-25°C*1 over the past month.
There was no significant change in the concentration of radioactive materials newly released from Reactor Buildings into the air*2. It was concluded that the comprehensive cold shutdown condition had been maintained.

* 1 The values varied somewhat, depending on the unit and location of the thermometer.
* 2 In March 2021, the radiation exposure dose due to the release of radioactive materials from the Unit 1-4 Reactor Buildings was evaluated at less than 0.00005 mSv/year at the site boundary.
The annual radiation dose from natural radiation is approx. 2.1 mSv/year (average in Japan).

The policy on handling of ALPS treated water decided

In "The Inter-Ministerial Council for Contaminated Water, Treated water and Decommissioning" held on April 13, the basic policy on handling of ALPS treated water was decided. Based on this policy, the response of TEPCO was announced on April 16.

Regarding the discharge of ALPS treated water into the sea, TEPCO must comply with the regulatory standards and others related to safety to secure the safety of the public, 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 safety will be checked by IAEA. Moreover, accurate information will be disseminated continuously in a highly transparent manner.



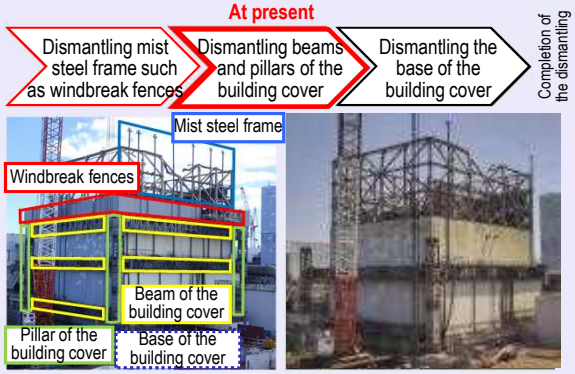
**1 Including radiation impact assessment on the public and environment
*2 The discharge into the sea will be conducted in small amounts in the initial phase

Dismantling of the Unit 1 Reactor Building cover steadily continues

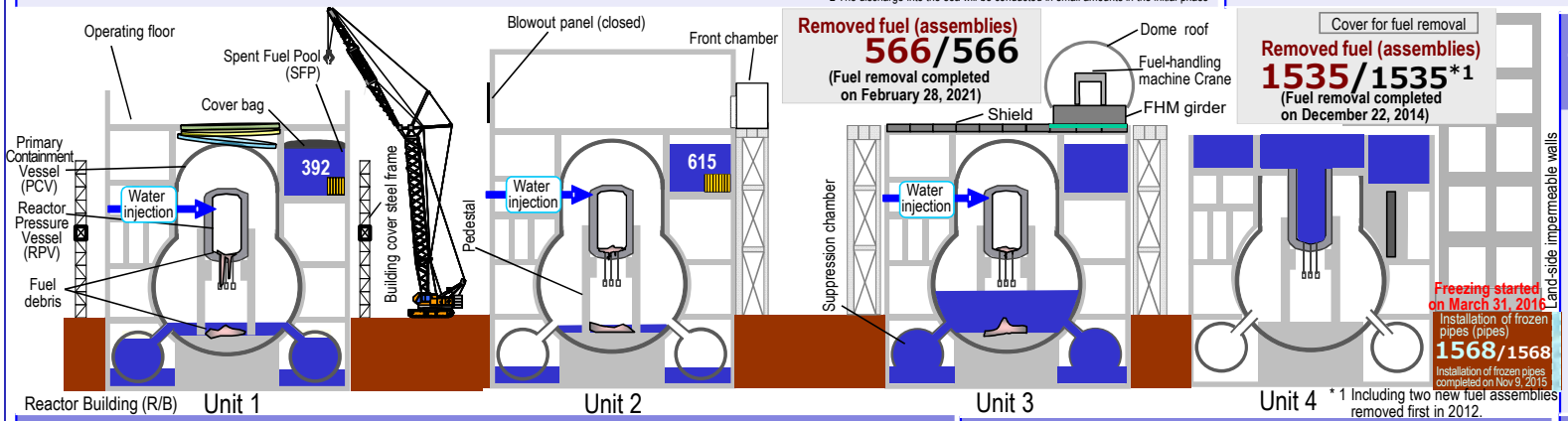
Before installing a large cover over the Reactor Building, dismantling of the interfering building cover (remaining part) started from December 19, 2020 and will be completed in the first part of FY2021.

At present, beams and pillars (upper part) are being dismantled.

Toward completing the installation in FY2023, work will continue according the plan.



<Full view of the Unit 1 Reactor Building>
(Left: as of March 2020, Right: as of April 22, 2021)



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

Inspection of outdoor containers in the temporary storage area implemented continuously

Based on the potential for radioactive materials leaking from the corroded portion of a container housing rubble in the temporary storage area, outdoor containers (approx. 85,000 units) in that area are being inspected from those requiring over-containers or covers.

Containers for which time is needed to identify the contents (approx. 4,000 units) will be investigated.

The Long-Term Maintenance Plan will be reviewed based on this event.

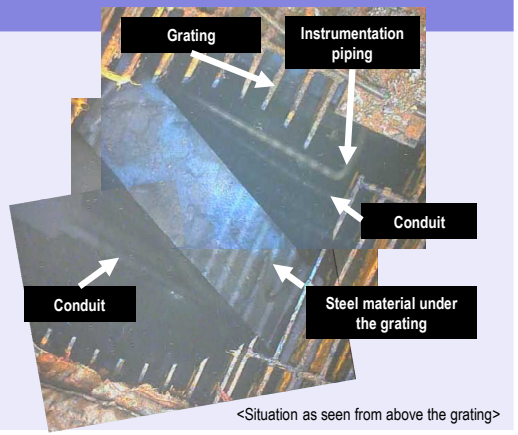
Toward resuming the work to cut obstacles inside the Unit 1 PCV, an internal investigation started

Due to the decline in PCV pressure during preparation for an obstacle investigation inside the PCV, work was suspended from January.

The decline was considered attributable to external force applied to the external door when the investigative equipment was installed.

Measures, including improving the method to install the equipment, were completed on April 19 and the obstacle investigation started from April 23.

Based on the investigative results, cutting work will be resumed.



<Situation as seen from above the grating>

By suspending water injection into the Unit 3 reactor, the leaking condition from PCV was inspected

A test suspending water injection into the Unit 3 reactor was conducted from April 9 and confirmed the tendency for the water-level drop in the Primary Containment Vessel (PCV) to decline near the lower end of the main steam piping bellows.

At the same time, the inside of the MSIV chamber was investigated.

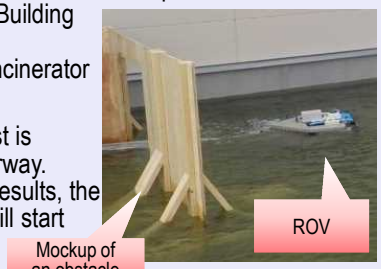
Based on these investigations, the main leakage from the PCV is considered to be near the lower end of those bellows.

Identification of leakage locations in the MSIV chamber and examination of how best to inject water continue.

Toward treatment of Zeolite sandbags, preparation for investigation by a boat-type ROV proceeds

Toward treatment of Zeolite sandbags, an environmental investigation using a boat-type ROV, a modified underwater ROV, is planned inside the Process Main Building and the High Temperature Incinerator Building.

A mockup test is currently underway. Based on the results, the investigation will start from late May.



<ROV mockup test>

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
April 26th, 2021 *Discharged on April 31st	Cs-134	ND (0.60)	ND (0.50)
	Cs-137	ND (0.69)	ND (0.71)
	Gross β	ND (1.9)	0.37
	H-3	1,000	1,100
April 25th, 2021 *Discharged on April 30th	Cs-134	ND (0.55)	ND (0.55)
	Cs-137	ND (0.65)	ND (0.36)
	Gross β	ND (1.7)	ND (0.35)
	H-3	830	860
April 24th, 2021 *Discharged on April 29th	Cs-134	ND (0.56)	ND (0.71)
	Cs-137	ND (0.60)	ND (0.57)
	Gross β	ND (2.0)	ND (0.35)
	H-3	870	910
April 21st, 2021 *Discharged on April 26th	Cs-134	ND (0.66)	ND (0.77)
	Cs-137	ND (0.65)	ND (0.67)
	Gross β	ND (0.67)	ND (0.36)
	H-3	860	880
April 20th, 2021 *Discharged on April 25th	Cs-134	ND (0.60)	ND (0.63)
	Cs-137	ND (0.69)	ND (0.67)
	Gross β	ND (1.7)	ND (0.35)
	H-3	1,000	1,000
April 18th, 2021 *Discharged on April 23rd	Cs-134	ND (0.45)	ND (0.57)
	Cs-137	ND (0.60)	ND (0.66)
	Gross β	ND (1.6)	ND (0.34)
	H-3	940	960
April 17th, 2021 *Discharged on April 22nd	Cs-134	ND (0.55)	ND (0.89)
	Cs-137	ND (0.79)	ND (0.72)
	Gross β	ND (2.1)	ND (0.39)
	H-3	990	1,000
April 15th, 2021 *Discharged on April 20th	Cs-134	ND (0.64)	ND (0.73)
	Cs-137	ND (0.54)	ND (0.63)
	Gross β	ND (2.0)	ND (0.35)
	H-3	950	940

April 14th, 2021 *Discharged on April 19th	Cs-134	ND (0.64)	ND (0.69)
	Cs-137	ND (0.60)	ND (0.47)
	Gross β	ND (1.9)	ND (0.33)
	H-3	980	1,000
April 12th, 2021 *Discharged on April 17th	Cs-134	ND (0.75)	ND (0.64)
	Cs-137	ND (0.73)	ND (0.71)
	Gross β	ND (1.7)	ND (0.33)
	H-3	930	960
April 11th, 2021 *Discharged on April 16th	Cs-134	ND (0.58)	ND (0.64)
	Cs-137	ND (0.50)	ND (0.47)
	Gross β	ND (0.64)	ND (0.34)
	H-3	940	970
April 10th, 2021 *Discharged on April 15th	Cs-134	ND (0.80)	ND (0.55)
	Cs-137	ND (0.65)	ND (0.69)
	Gross β	ND (1.8)	ND (0.35)
	H-3	930	950
April 9th, 2021 *Discharged on April 14th	Cs-134	ND (0.65)	ND (0.64)
	Cs-137	ND (0.65)	ND (0.58)
	Gross β	ND (1.9)	ND (0.32)
	H-3	860	890
April 8th, 2021 *Discharged on April 13th	Cs-134	ND (0.76)	ND (0.67)
	Cs-137	ND (0.60)	ND (0.66)
	Gross β	ND (1.8)	ND (0.34)
	H-3	850	900
April 7th, 2021 *Discharged on April 12th	Cs-134	ND (0.85)	ND (0.71)
	Cs-137	ND (0.65)	ND (0.57)
	Gross β	ND (1.6)	ND (0.37)
	H-3	820	840
April 6th, 2021 *Discharged on April 11th	Cs-134	ND (0.59)	ND (0.58)
	Cs-137	ND (0.60)	ND (0.63)
	Gross β	ND (2.0)	ND (0.33)
	H-3	860	910
April 5th, 2021 *Discharged on April 10th	Cs-134	ND (0.41)	ND (0.58)
	Cs-137	ND (0.73)	ND (0.63)
	Gross β	ND (1.9)	ND (0.33)
	H-3	810	850
April 4th, 2021 *Discharged on April 9th	Cs-134	ND (0.72)	ND (0.58)
	Cs-137	ND (0.61)	ND (0.69)
	Gross β	ND (1.9)	ND (0.40)
	H-3	770	790

April 3rd, 2021 *Discharged on April 8th	Cs-134	ND (0.61)	ND (0.58)
	Cs-137	ND (0.73)	ND (0.63)
	Gross β	ND (2.1)	ND (0.35)
	H-3	720	750
April 2nd, 2021 *Discharged on April 7th	Cs-134	ND (0.76)	ND (0.65)
	Cs-137	ND (0.54)	ND (0.51)
	Gross β	ND (1.8)	ND (0.36)
	H-3	740	770
April 1st, 2021 *Discharged on April 6th	Cs-134	ND (0.56)	ND (0.65)
	Cs-137	ND (0.54)	ND (0.63)
	Gross β	ND (0.66)	0.41
	H-3	770	790
March 31th, 2021 *Discharged on April 5th	Cs-134	ND (0.79)	ND (0.64)
	Cs-137	ND (0.54)	ND (0.57)
	Gross β	ND (1.9)	ND (0.34)
	H-3	660	690
March 29th, 2021 *Discharged on April 3rd	Cs-134	ND (0.67)	ND (0.47)
	Cs-137	ND (0.60)	ND (0.63)
	Gross β	ND (1.8)	ND (0.37)
	H-3	710	740
March 28th, 2021 *Discharged on April 2nd	Cs-134	ND (0.85)	ND (0.65)
	Cs-137	ND (0.60)	ND (0.63)
	Gross β	ND (1.7)	ND (0.36)
	H-3	610	620
March 27th, 2021 *Discharged on April 1st	Cs-134	ND (0.59)	ND (0.64)
	Cs-137	ND (0.60)	ND (0.61)
	Gross β	ND (1.6)	ND (0.35)
	H-3	560	580

* * 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
March 2nd,2021	Cs-134	ND (0.0032)	ND (0.0049)	ND (0.0056)
	Cs-137	0.0037	0.0057	ND (0.0045)
	Gross α	ND (0.51)	ND (3.8)	ND (1.8)
	Gross β	ND (0.48)	ND (0.63)	ND (0.54)
	H-3	900	870	900
	Sr-90	0.0017	ND (0.0012)	ND (0.0063)

* ND: represents a value below the detection limit; values in ( ) represent the detection limit.

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)
March 8th, 2021 *Sampled before discharge of purified groundwater.	Cs-134	ND (0.79)
	Cs-137	ND (0.90)
	Gross β	14
	H-3	ND (0.79)

(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 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	Japan Chemical Analysis Center
April 21st, 2021 *Discharged on April 29th	Cs-134	ND (0.49)	ND (0.48)
	Cs-137	ND (0.80)	ND (0.45)
	Gross β	ND (0.55)	ND (0.55)
	H-3	91	88
April 14th, 2021 *Discharged on April 22nd	Cs-134	ND (0.50)	ND (0.56)
	Cs-137	ND (0.65)	ND (0.51)
	Gross β	ND (0.59)	ND (0.60)
	H-3	95	90
April 7th, 2021 *Discharged on April 15th	Cs-134	ND (0.51)	ND (0.48)
	Cs-137	ND (0.74)	ND (0.60)
	Gross β	ND (0.65)	ND (0.51)
	H-3	83	87
March 31st, 2021 *Discharged on April 8th	Cs-134	ND (0.41)	ND (0.58)
	Cs-137	ND (0.69)	ND (0.51)
	Gross β	ND (0.66)	ND (0.57)
	H-3	87	95
March 26th, 2021 *Discharged on April 5th	Cs-134	ND (0.79)	ND (0.60)
	Cs-137	ND (0.54)	ND (0.49)
	Gross β	ND (0.68)	ND (0.65)
	H-3	94	99

∗ * ND: represents a value below the detection limit; values in ( ) represent the detection limit

∗ In order to ensure the results, Japan Chemical Analysis Center, a third-party organization, has also conducted an analysis and verified the radiation level of the sampled water.

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
March 3rd, 2021	Cs-134	ND (0.0024)	ND (0.0049)	ND (0.0064)
	Cs-137	ND (0.0021)	ND (0.0044)	ND (0.0051)
	Gross α	ND (0.63)	ND (3.2)	ND (1.8)
	Gross β	ND (0.48)	ND (0.69)	ND (0.55)
	H-3	100	100	100
	Sr-90	ND (0.0012)	ND (0.0013)	ND (0.0060)

* ND: represents a value below the detection limit; values in ( ) represent the detection limit.

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 8th, 2021	Cs-134	ND (0.73)
	Cs-137	ND (0.65)
	Gross β	12
	H-3	2.8

(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.