Information (17:00), March 1, 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 January

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 January at Fukushima Daiichi Nuclear Power Station (NPS).

1. Summary of decommissioning and contaminated water management

In January, 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/mp202101.pdf

2. Sub-drain and Groundwater Drain Systems

In January, 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 January 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 January, 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 January 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

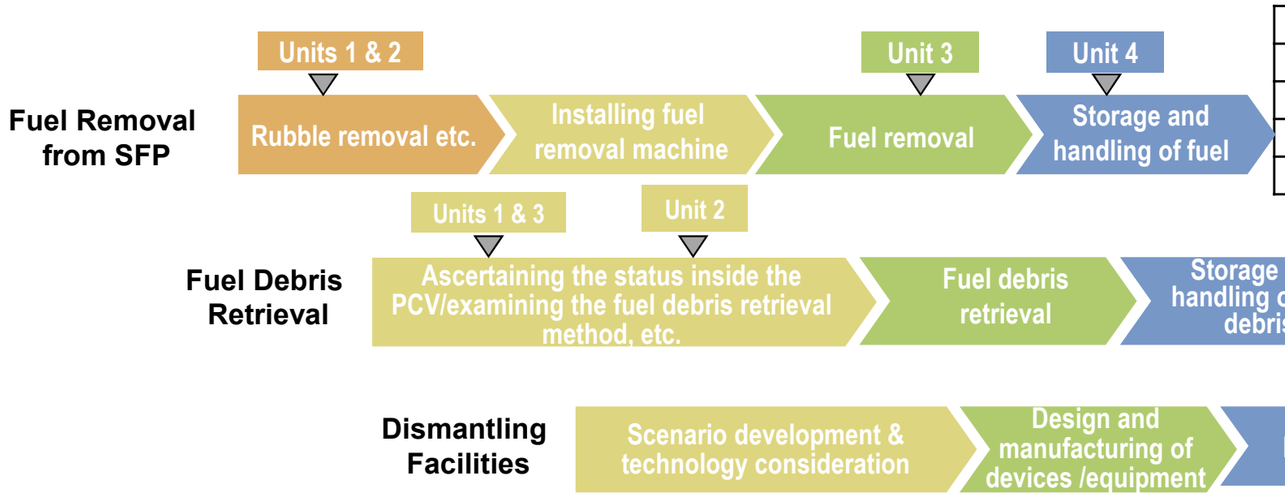
January 28, 2021
Secretariat of the Team for Countermeasures for Decommissioning and Contaminated Water Treatment

Main decommissioning work and steps

Appendix 1

Fuel removal from the spent fuel pool was completed in December 2014 at Unit 4 and started from April 15, 2019 at Unit 3. Dust concentration in the surrounding environment is being monitored and work is being implemented with safety first. 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.

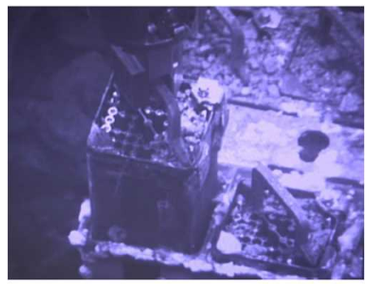


Units 1-6	Completion of fuel removal	Within 2031
Unit 1	Start of fuel removal	FY2027 - FY2028
Unit 2	Start of fuel removal	FY2024 - FY2026
Unit 3	Completion of fuel removal	Within FY2020
Unit 4	Completion of fuel removal	2014

First unit	Start of fuel debris retrieval
Unit 2	Within 2021

Fuel removal from the spent fuel pool

Fuel removal from the spent fuel pool started from April 15, 2019 at Unit 3. Rubble and fuel are being removed, aiming to complete fuel removal by the end of FY2020.



Fuel removal
(April 15, 2019)

Removed fuel (assemblies)
517/566
(As of January 27, 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

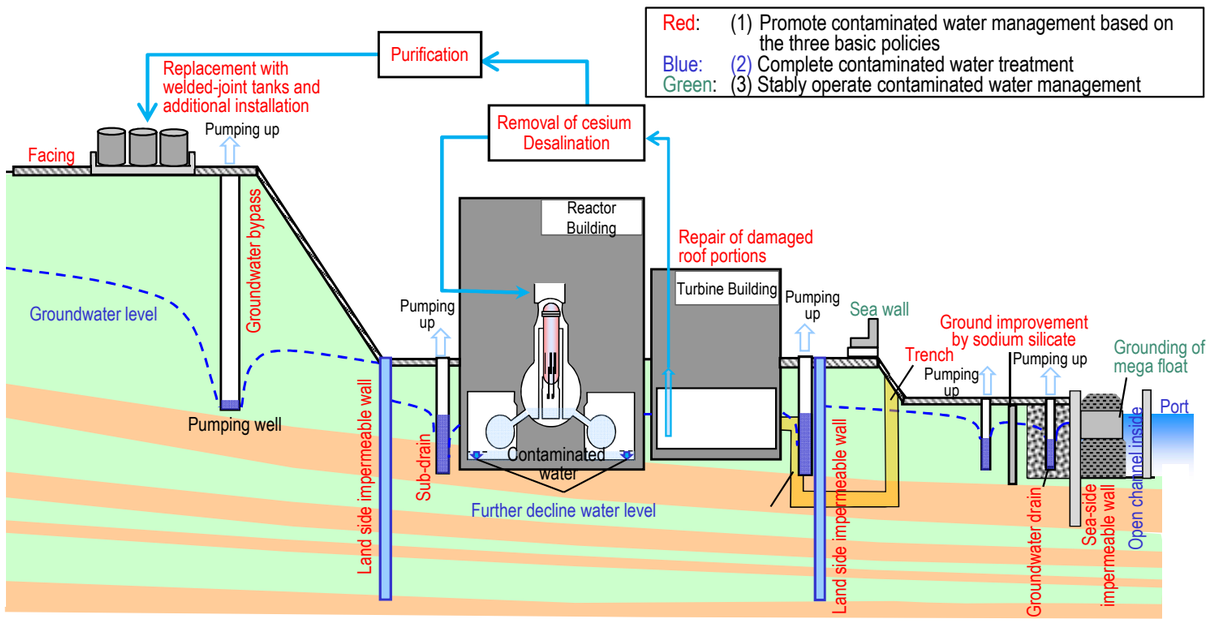
- Strontium-reduced water from other equipment is being re-treated in the multi-nuclide removal equipment (ALPS) and stored in welded-joint tanks.
- Multi-layered contaminated water management measures, including land-side impermeable walls and sub-drains, have stabilized the groundwater at a low level 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 m^3/day or less within 2025.

(2) Efforts to complete contaminated water treatment

- To lower the contaminated water levels in buildings as planned, work to install additional contaminated 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 contaminated 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 contaminated 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.

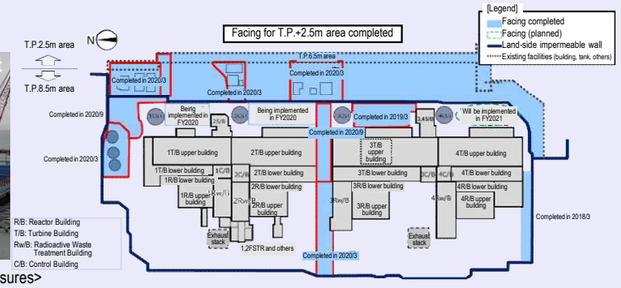
* 1 The values varied somewhat, depending on the unit and location of the thermometer.
* 2 In December 2020, the radiation exposure dose due to the release of radioactive materials from the Unit 1-4 Reactor Buildings was evaluated at less than 0.00004 mSv/year at the site boundary. The annual radiation dose from natural radiation is approx. 2.1 mSv/year (average in Japan).

Multi-layered measures, including land-side impermeable walls, sub-drains and rainwater prevention measures, have been implemented and the milestone of suppressing contaminated water generated within 2020 has been achieved

After implementing contaminated water management measures including steadily operating sub-drains and land-side impermeable walls and rainwater prevention measures including repairing damaged parts of building roofs, the amount of contaminated water generated within 2020 declined to approx. 140 m³/day. Based on this result, it was confirmed that a milestone (major target process) of the Mid-and-Long-Term Roadmap, suppressing the generation of contaminated water to around 150 m³/day, has been achieved.

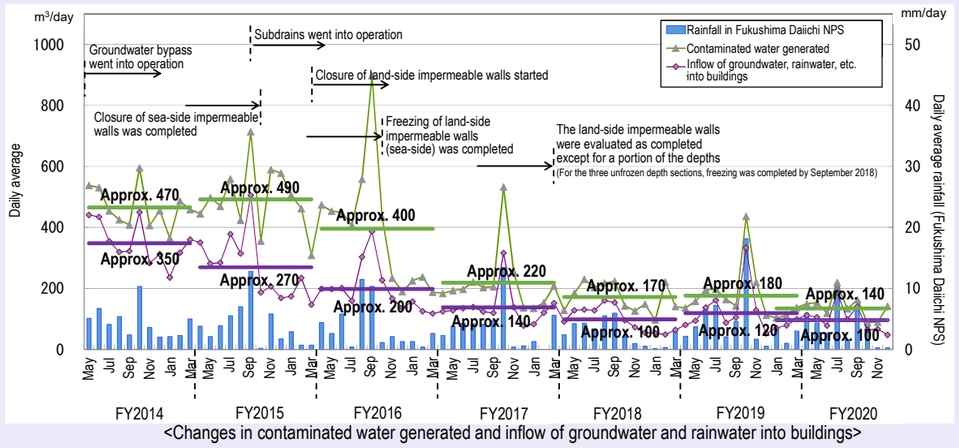
The rainwater prevention measures will proceed, including waterproof pavement around the Unit 1-4 buildings and repair of damaged parts of building roofs. Towards the milestone of suppressing the generation to 100 m³/day or less within 2025, efforts will continue.

<Unit 3 Turbine Building (T/B) rainwater prevention measures>
In August 2020, installation of the rainwater cover completed

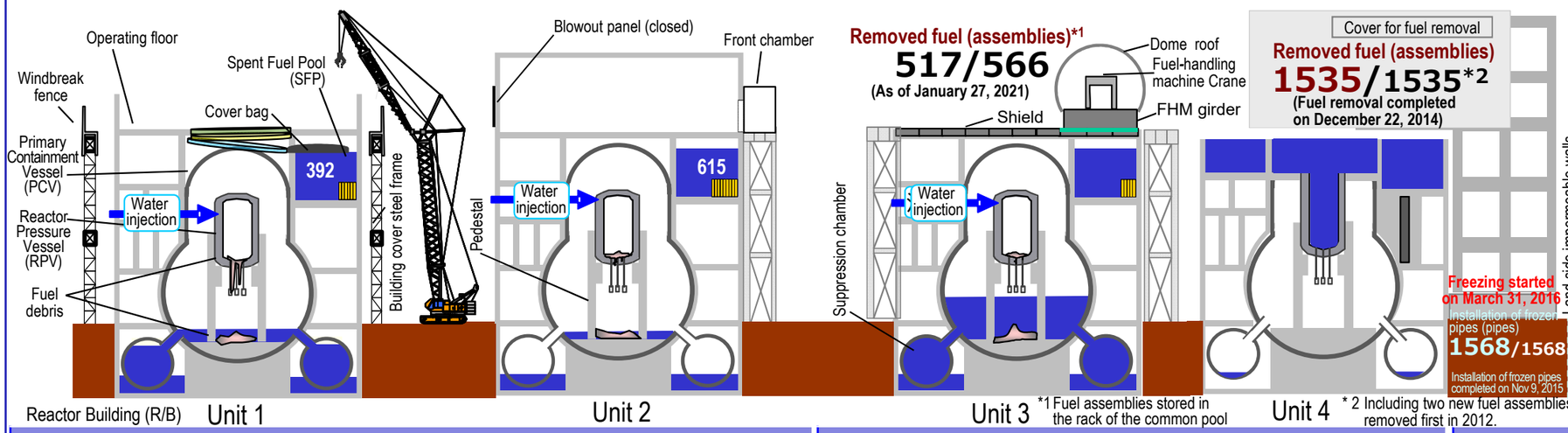


Progress status inside the land-side impermeable walls (18% as of the end of January 2021) *Implementation is underway to install 50% by FY2003

<Status of facing (waterproof pavement) implementation>



<Changes in contaminated water generated and inflow of groundwater and rainwater into buildings>



*1 Fuel assemblies stored in the rack of the common pool

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

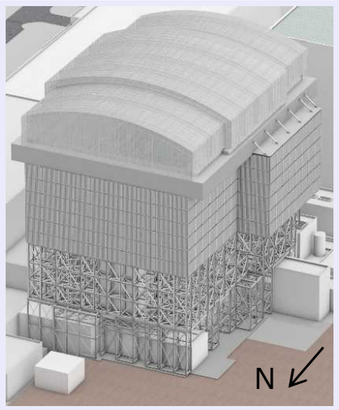
Unit 1 Pressure decline during PCV obstacle investigation No influence on the environment confirmed

To check the equipment-insertion route for the investigation inside the Pressure Containment Vessel (PCV), an obstacle investigation using a new camera equipment is planned. On January 21, during the work to insert the camera equipment, the PCV pressure declined. When the facility condition reverted to the level before the pressure decline, the pressure recovered. No significant variation was detected in the values of the dust monitor, the monitoring post and other elements of the work area. The cause is currently being investigated and the process will be reviewed based on recurrence prevention measures.

Unit 1 Examination about the large cover toward removal of spent fuel assemblies

In Unit 1, the remaining part of the building cover, which was installed immediately after the accident to prevent scattering of radioactive materials, is being dismantled. Following this work, installation of a large cover will start from the first half of FY2021.

The large cover is currently being designed and an application to change the implementation plan will be submitted around April. To suppress the release of radioactive materials into air, the large cover minimizes cracks as reasonably possible and ventilation facilities will be installed.



<Image of the large cover>

COVID-19 infectious disease countermeasures enhanced to stably sustain decommissioning

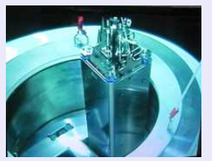
As of January 27, 2021, eight TEPCO HD employees and cooperative firm laborers (including one TEPCO HD employee) of the Fukushima Nuclear Power Station (NPS) had contracted COVID-19. No significant influence on decommissioning work, such as a delay to the work processes due to this infection, had not been identified.

Countermeasures have continued to prevent the COVID-19 infection spreading, such as requiring employees to take their temperature prior to coming to the office, wear masks at all times and avoid the “Three Cs” (Closed spaces, Crowded places, Close-contact settings) by shift-use of the rest house, etc. Based on infections reported onsite and the state of emergency declared on January 7, countermeasures have been enhanced by adding clauses including “prudent decision regarding visits to and from areas where the state of emergency has been declared.”

Unit 3 Fuel removal steadily continues - 517/566 fuel assemblies removed -

For Unit 3, 517 of 566 fuel assemblies have been removed as of January 27.

After completing preparation for transportation casks and storage cans accommodating fuel assemblies with largely deformed handle, checks for handling at the common pool and training were conducted in December 2020. Following the loading training into the transportation cask using mockup fuel assemblies with deformed handles, the actual removal work will start.



<Lifting of the storage can>

<Handling of the storage can lifting tool at the main hoisting>

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
January 24th, 2021 *Discharged on January 29th	Cs-134	ND (0.64)	ND (0.92)
	Cs-137	ND (0.65)	ND (0.81)
	Gross β	ND (1.8)	ND (0.33)
	H-3	950	1,000
January 22nd, 2021 *Discharged on January 28th	Cs-134	ND (0.73)	ND (0.87)
	Cs-137	ND (0.60)	ND (0.72)
	Gross β	ND (0.62)	ND (0.35)
	H-3	970	990
January 20th, 2021 *Discharged on January 25th	Cs-134	ND (0.63)	ND (0.84)
	Cs-137	ND (0.54)	ND (0.89)
	Gross β	ND (2.0)	ND (0.35)
	H-3	920	970
January 18th, 2021 *Discharged on January 23rd	Cs-134	ND (0.56)	ND (0.57)
	Cs-137	ND (0.77)	ND (0.69)
	Gross β	ND (1.9)	ND (0.32)
	H-3	1,000	1,100
January 16th, 2021 *Discharged on January 21st	Cs-134	ND (0.64)	ND (0.84)
	Cs-137	ND (0.47)	ND (0.92)
	Gross β	ND (1.9)	ND (0.38)
	H-3	1,000	1,100
January 14th, 2021 *Discharged on January 19th	Cs-134	ND (0.45)	ND (0.63)
	Cs-137	ND (0.73)	ND (0.69)
	Gross β	ND (1.9)	ND (0.35)
	H-3	1,100	1,100
January 12th, 2021 *Discharged on January 17th	Cs-134	ND (0.68)	ND (0.63)
	Cs-137	ND (0.47)	ND (0.54)
	Gross β	ND (0.65)	ND (0.33)
	H-3	1,000	1,100
January 10th, 2021 *Discharged on January 15th	Cs-134	ND (0.76)	ND (0.65)
	Cs-137	ND (0.77)	ND (0.63)
	Gross β	ND (1.9)	0.39
	H-3	1,100	1,100

January 8th, 2021 *Discharged on January 13th	Cs-134	ND (0.85)	ND (0.67)
	Cs-137	ND (0.54)	ND (0.58)
	Gross β	ND (1.8)	ND (0.34)
	H-3	1,000	1,100
January 6th, 2021 *Discharged on January 11th	Cs-134	ND (0.88)	ND (0.65)
	Cs-137	ND (0.60)	ND (0.57)
	Gross β	ND (2.1)	ND (0.30)
	H-3	1,100	1,100
January 4th, 2021 *Discharged on January 9th	Cs-134	ND (0.69)	ND (0.67)
	Cs-137	ND (0.65)	ND (0.47)
	Gross β	ND (1.9)	ND (0.31)
	H-3	1,200	1,200
January 2nd, 2021 *Discharged on January 7th	Cs-134	ND (0.64)	ND (0.53)
	Cs-137	ND (0.60)	ND (0.89)
	Gross β	ND (0.65)	ND (0.38)
	H-3	1,100	1,200
December 31st, 2020 *Discharged on January 5th	Cs-134	ND (0.88)	ND (0.67)
	Cs-137	ND (0.73)	ND (0.58)
	Gross β	ND (1.9)	ND (0.32)
	H-3	1,200	1,300
December 29th, 2020 *Discharged on January 3rd	Cs-134	ND (0.68)	ND (0.52)
	Cs-137	ND (0.77)	ND (0.57)
	Gross β	ND (1.8)	ND (0.34)
	H-3	1,100	1,200
December 27th, 2020 *Discharged on January 1st	Cs-134	ND (0.69)	ND (0.61)
	Cs-137	ND (0.65)	ND (0.71)
	Gross β	ND (1.6)	ND (0.33)
	H-3	1,100	1,200

* * ND: represents a value below the detection limit; values in ( ) represent the detection limit.
* In order to ensure the results, third-party organizations have also conducted an analysis and verified the radiation level of the sampled water.
* Third-party organization : Tohoku Ryokka Kankyohozen Co., Ltd

Appendix 3

Result of detailed analyses conducted by TEPCO, JAEA, and Japan Chemical Analysis Center (In order to confirm the validity of analysis, the Government of Japan also requests JAEA; and TEPCO requests Japan Chemical Analysis Center to conduct independent analyses)

(Unit: Bq/L)

Date of sampling	Detected nuclides	Analytical body		
		JAEA	TEPCO	Japan Chemical Analysis Center
December 1st,2020	Cs-134	ND (0.0028)	ND (0.0046)	ND (0.0059)
	Cs-137	0.019	0.026	0.017
	Gross α	ND (0.58)	ND (3.0)	ND (2.6)
	Gross β	ND (0.55)	ND (0.65)	ND (0.67)
	H-3	970	920	950
	Sr-90	0.011	0.0090	0.012

* 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)
December 3rd, 2020 *Sampled before discharge of purified groundwater.	Cs-134	ND (0.44)
	Cs-137	ND (0.78)
	Gross β	11
	H-3	ND (1.9)

(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
January 19th, 2021 *Discharged on January 27th	Cs-134	ND (0.76)	ND (0.37)
	Cs-137	ND (0.54)	ND (0.51)
	Gross β	ND (0.63)	ND (0.71)
	H-3	75	87
January 12th, 2021 *Discharged on January 20th	Cs-134	ND (0.82)	ND (0.48)
	Cs-137	ND (0.65)	ND (0.45)
	Gross β	ND (0.65)	ND (0.65)
	H-3	78	90
January 4th, 2021 *Discharged on January 13th	Cs-134	ND (0.41)	ND (0.56)
	Cs-137	ND (0.65)	ND (0.40)
	Gross β	ND (0.70)	ND (0.63)
	H-3	88	84
December 27th, 2020 *Discharged on January 5th	Cs-134	ND (0.59)	ND (0.69)
	Cs-137	ND (0.54)	ND (0.47)
	Gross β	ND (0.56)	ND (0.31)
	H-3	93	95

- * 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
December 3rd, 2020	Cs-134	ND (0.0028)	ND (0.0042)	ND (0.0067)
	Cs-137	ND (0.0019)	ND (0.0041)	ND (0.0049)
	Gross α	ND (0.58)	ND (4.0)	ND (2.6)
	Gross β	ND (0.49)	ND (0.67)	ND (0.54)
	H-3	99	96	99
	Sr-90	0.0011	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)
December 3rd, 2020	Cs-134	ND (0.72)
	Cs-137	ND (0.72)
	Gross β	11
	H-3	ND (1.9)

(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.