

Information, (16:00), January 28, 2025

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 September

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 September at Fukushima Daiichi Nuclear Power Station (NPS).

1. Summary of decommissioning and contaminated water management

In September 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/mp202409.pdf>

2. Sub-drain and Groundwater Drain Systems

In September 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 September 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 September, 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 September 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 on December 22, 2014 at Unit 4 and February 28, 2021 at Unit 3. Trial fuel debris retrieval at Unit 2 commenced from September 10, 2024 and a milestone of the Mid- and Long-Term Roadmap “Commencing fuel debris retrieval at the first Unit” was achieved.

Work continues sequentially toward the start of fuel removal from Units 1 and 2 and fuel debris ^(Note 1) retrieval from Units 1-3.

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

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

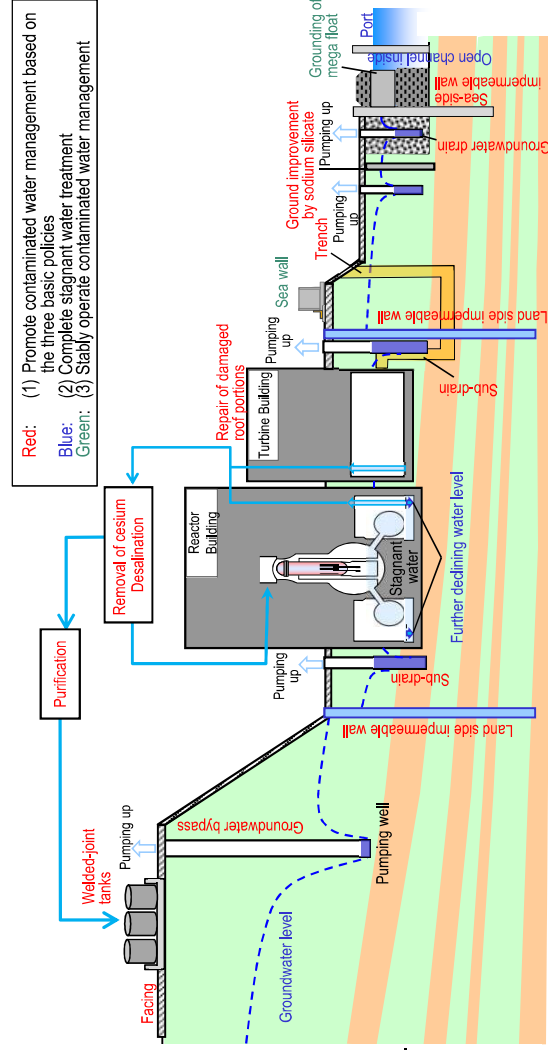


Contaminated water management - triple-pronged efforts -

- (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 the building roofs facing onsite. Through these measures, the generation of contaminated water has been suppressed and reduced, from approx. 540 m³/day (in May 2014) before implementing measures to approx. 80 m³/day (in FY2023), achieving the milestone of "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 it 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

- As part of the tsunami countermeasures, openings in buildings were closed and work to install sea walls was completed. As countermeasures for heavy rain, sandbags are being installed to suppress direct inflow into buildings while work 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.

Unit 2 Commencement of trial fuel debris retrieval

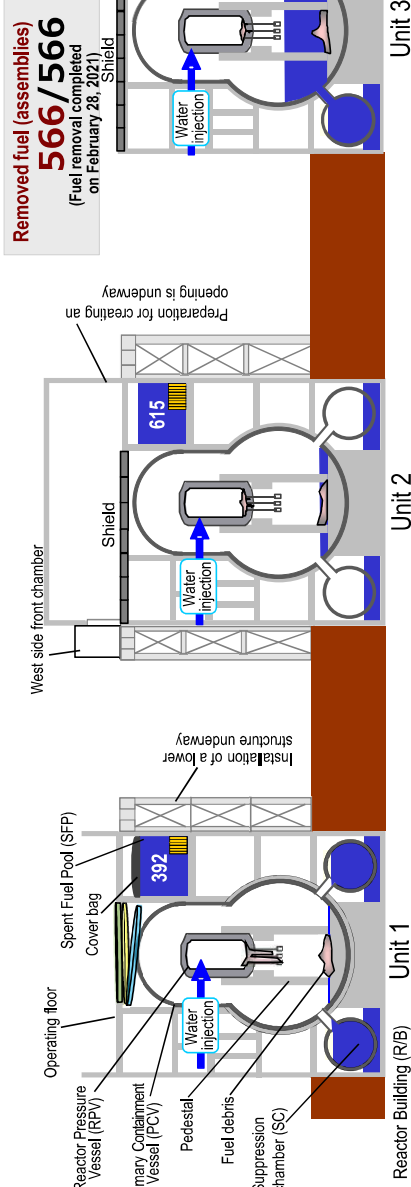
On September 10, the trial retrieval of fuel debris commenced at Unit 2. For fuel debris at the bottom of the pedestal, visual confirmation by a camera mounted at the end of the telescopic-type equipment and contact confirmation by the end of the gripper were conducted on September 14. As preparation for gripping fuel debris, the operation of the telescopic-type equipment was verified on September 17 and it was confirmed that camera images were not being sent to the monitor in the remote control room appropriately. Afterward, the telescopic-type equipment was replaced inside the enclosure on September 25. Recovery can be expected by placement in a low-dosage area and maintaining the power-on or -off states to reduce accumulated charge. Subsequently, as part of efforts to identify the cause, the state of camera images will be verified while in standby mode and with relatively low dosage exposure inside the enclosure to verify the impact of radiation.



< State at the bottom of the pedestal >

Discharge of ALPS treated water into the sea (5th discharge in FY2024)

In preparation for the 5th discharge of ALPS treated water in FY2024, Tank Group A of the measurement/confirmation facility was analyzed and TEPCO and an external institute confirmed that the analytical results satisfied the discharge requirement. The results were announced on September 24. Following the confirmation, discharge of ALPS treated water of Tank Group A of the measurement/confirmation facility into the sea commenced from September 26. Regarding tritium in seawater, TEPCO will continue confirming that it is being discharged safely as planned, while meeting the discharge requirement based on quick daily analyses conducted by TEPCO and others.



Unit 2 Progress of work toward fuel removal

Within the site, before installing the gantry for fuel removal, the foundation of the existing Fuel Handling Machine Operation Room, which interfered with the runway garter, was cut on September 10. An opening will be created on the south side of the Unit 2 Reactor Building operating floor. Among the equipment attached to the gantry for fuel removal, the inspection of the overhead crane was completed on August 9. Test operation of the ventilation equipment is underway from September 3. At the factory, assembly of the Fuel-Removal System was completed and test operation of each component of the system is underway. The Fuel-Removal System will be installed behind the runway garter and transported by sea after trial operation.



< Fuel-Removal System >

Unit 2 Response to decline in the water level in the skimmer surge tank of the Unit 2 spent fuel pool

On August 9, the level in the skimmer surge tank of the Unit 2 spent fuel pool (SFP) was observed to be declining. Based on the leakage status, water was confirmed as leaking within the existing fuel pool cooling purification system pump or the heat exchanger installation area. Given the high dose of radiation in the area, an investigation to identify the leakage point will be conducted in early October via drone. After identifying the leakage point via drone, a visual inspection by TEPCO will be conducted.



< Investigation drone >

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
September 26 th , 2024 *Discharged on October 1 st	Cs-134	ND (0.75)	ND (0.69)
	Cs-137	ND (0.60)	ND (0.51)
	Gross β	ND (0.68)	ND (0.36)
	H-3	520	530
September 25 th , 2024 *Discharged on September 30 th	Cs-134	ND (0.93)	ND (0.58)
	Cs-137	ND (0.63)	ND (0.59)
	Gross β	ND (0.57)	ND (0.34)
	H-3	780	810
September 24 th , 2024 *Discharged on September 29 th	Cs-134	ND (0.75)	ND (0.62)
	Cs-137	ND (0.69)	ND (0.63)
	Gross β	ND (1.8)	ND (0.34)
	H-3	610	650
September 22 nd , 2024 *Discharged on September 27 th	Cs-134	ND (0.55)	ND (0.61)
	Cs-137	ND (0.75)	ND (0.63)
	Gross β	ND (1.8)	0.43
	H-3	690	750
September 18 th , 2024 *Discharged on September 23 rd	Cs-134	ND (0.75)	ND (0.75)
	Cs-137	ND (0.86)	ND (0.66)
	Gross β	ND (0.61)	ND (0.31)
	H-3	770	810
September 16 th , 2024 *Discharged on September 21 st	Cs-134	ND (0.80)	ND (0.71)
	Cs-137	ND (0.67)	ND (0.70)
	Gross β	ND (1.8)	ND (0.32)
	H-3	720	780
September 14 th , 2024 *Discharged on September 19 th	Cs-134	ND (0.88)	ND (0.62)
	Cs-137	ND (0.82)	ND (0.60)
	Gross β	ND (2.0)	ND (0.36)
	H-3	730	780
September 12 th , 2024 *Discharged on September 17 th	Cs-134	ND (0.93)	ND (0.50)
	Cs-137	ND (0.82)	ND (0.51)
	Gross β	ND (1.7)	ND (0.36)

	H-3	650	680
September 10 th , 2024 *Discharged on September 15 th	Cs-134	ND (0.85)	ND (0.65)
	Cs-137	ND (0.64)	ND (0.70)
	Gross β	ND (0.51)	0.42
	H-3	640	690
September 8 th , 2024 *Discharged on September 13 th	Cs-134	ND (0.56)	ND (0.76)
	Cs-137	ND (0.76)	ND (0.66)
	Gross β	ND (2.0)	ND (0.35)
	H-3	680	730
September 6 th , 2024 *Discharged on September 11 th	Cs-134	ND (0.69)	ND (0.69)
	Cs-137	ND (0.81)	ND (0.75)
	Gross β	ND (1.9)	ND (0.34)
	H-3	640	660
September 4 th , 2024 *Discharged on September 9 th	Cs-134	ND (0.66)	ND (0.69)
	Cs-137	ND (0.60)	ND (0.71)
	Gross β	ND (1.9)	ND (0.33)
	H-3	630	640
September 3 rd , 2024 *Discharged on September 8 th	Cs-134	ND (0.75)	ND (0.75)
	Cs-137	ND (0.78)	ND (0.70)
	Gross β	ND (1.9)	0.41
	H-3	690	720
September 2 nd , 2024 *Discharged on September 7 th	Cs-134	ND (0.81)	ND (0.70)
	Cs-137	ND (0.75)	ND (0.63)
	Gross β	ND (0.63)	ND (0.34)
	H-3	750	790
August 31 st , 2024 *Discharged on September 5 th	Cs-134	ND (0.93)	ND (0.40)
	Cs-137	ND (0.78)	ND (0.66)
	Gross β	ND (1.7)	0.42
	H-3	750	780
August 29 th , 2024 *Discharged on September 3 rd	Cs-134	ND (0.98)	ND (0.55)
	Cs-137	ND (0.69)	ND (0.54)
	Gross β	ND (1.9)	ND (0.41)
	H-3	700	710
August 28 th , 2024 *Discharged on September 2 nd	Cs-134	ND (0.75)	ND (0.61)
	Cs-137	ND (0.63)	ND (0.60)
	Gross β	ND (1.9)	0.48
	H-3	560	590

- * * 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
August 1 st ,2024	Cs-134	ND (0.0033)	ND (0.0078)	ND (0.0059)
	Cs-137	ND (0.0021)	ND (0.0051)	ND (0.0046)
	Gross α	ND (0.57)	ND (2.3)	ND (2.1)
	Gross β	ND (0.38)	ND (0.65)	ND (0.65)
	H-3	720 ±1.5	730	750
	Sr-90	ND (0.0014)	ND (0.0012)	ND (0.0064)

* 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)
September 11 th , 2024 *Sampled before discharge of purified groundwater.	Cs-134	ND (0.68)
	Cs-137	ND (0.78)
	Gross β	11
	H-3	ND (0.28)

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
September 20 th , 2024 *Discharged on September 25 th	Cs-134	ND (0.93)	ND (0.77)
	Cs-137	ND (0.82)	ND (0.75)
	Gross β	ND (0.62)	ND (0.31)
	H-3	46	48
September 13 th , 2024 *Discharged on September 18 th	Cs-134	ND (0.75)	ND (0.52)
	Cs-137	ND (0.71)	ND (0.81)
	Gross β	ND (0.64)	ND (0.34)
	H-3	46	49
September 6 th , 2024 *Discharged on September 11 th	Cs-134	ND (0.73)	ND (0.62)
	Cs-137	ND (0.69)	ND (0.66)
	Gross β	ND (0.65)	ND (0.31)
	H-3	46	52
August 30 th , 2024 *Discharged on September 4 th	Cs-134	ND (0.62)	ND (0.75)
	Cs-137	ND (0.78)	ND (0.75)
	Gross β	ND (0.64)	ND (0.34)
	H-3	46	49

- * * 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
August 2 nd , 2024	Cs-134	ND (0.0032)	ND (0.0047)	ND (0.0068)
	Cs-137	ND (0.0021)	ND (0.0038)	ND (0.0047)
	Gross α	ND (0.49)	ND (2.3)	ND (2.1)
	Gross β	ND (0.38)	ND (0.59)	ND (0.61)
	H-3	48 ±0.44	46	47
	Sr-90	ND (0.0011)	ND (0.0011)	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.

※ 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)
September 11 th , 2024	Cs-134	ND (0.68)
	Cs-137	ND (0.97)
	Gross β	12
	H-3	ND (0.32)