

# Information (15:00), December 1, 2017

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 November 2017

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 subdrain and groundwater drain systems, as well as, bypassing groundwater pumped during the month of November 2017 at Fukushima Daiichi Nuclear Power Station (NPS).

### 1. Subdrain and Groundwater Drain Systems

In November, purified groundwater pumped from the subdrain and groundwater drain systems was discharged on the dates shown in Appendix 1. 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 November 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 (Mitsubishi Nuclear Fuel Co., Ltd, Kaken Co., Ltd and 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 is substantially below the operational target (see Appendix 2).

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 3). 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 November, the pumped bypassing groundwater was discharged on the dates shown in Appendix 4. 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 November 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 are substantially below the operational target (see Appendix 5).

Moreover, TEPCO publishes analysis results on seawater sampled during the discharge operation at the nearest seawater sampling post from the discharge point (see Appendix 6). 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 has 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

Results of analyses on the quality of the purified groundwater pumped from the subdrain 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
November 25 <sup>th</sup> , 2017  *Discharged on November 30 <sup>th</sup>	Cs-134	ND (0.76)	ND (0.55)
	Cs-137	ND (0.63)	ND (0.86)
	Gross $\beta$	ND (2.2)	0.46
	H-3	890	910
November 24 <sup>th</sup> , 2017  *Discharged on November 29 <sup>th</sup>	Cs-134	ND (0.74)	ND (0.60)
	Cs-137	ND (0.68)	ND (0.71)
	Gross $\beta$	ND (0.81)	ND(0.35)
	H-3	850	870
November 23 <sup>rd</sup> , 2017  *Discharged on November 28 <sup>th</sup>	Cs-134	ND (0.76)	ND (0.56)
	Cs-137	ND (0.63)	ND (0.68)
	Gross $\beta$	ND (2.6)	0.47
	H-3	860	860
November 22 <sup>nd</sup> , 2017  *Discharged on November 27 <sup>th</sup>	Cs-134	ND (0.76)	ND (0.53)
	Cs-137	ND (0.58)	ND (0.67)
	Gross $\beta$	ND (2.4)	ND(0.41)
	H-3	840	850
November 20 <sup>th</sup> , 2017  *Discharged on November 25 <sup>th</sup>	Cs-134	ND (0.68)	ND (0.70)
	Cs-137	ND (0.63)	ND (0.53)
	Gross $\beta$	ND (2.4)	ND(0.38)
	H-3	800	820
November 19 <sup>th</sup> , 2017  *Discharged on November 24 <sup>th</sup>	Cs-134	ND (0.66)	ND (0.62)
	Cs-137	ND (0.68)	ND (0.56)
	Gross $\beta$	ND (2.2)	ND(0.39)
	H-3	850	860
November 18 <sup>th</sup> , 2017  *Discharged on November 23 <sup>rd</sup>	Cs-134	ND (0.47)	ND (0.52)
	Cs-137	ND (0.58)	ND (0.67)
	Gross $\beta$	ND (2.4)	0.54
	H-3	890	890
November 17 <sup>th</sup> , 2017  *Discharged on	Cs-134	ND (0.54)	ND (0.61)
	Cs-137	ND (0.82)	ND (0.74)

November 22 <sup>nd</sup>	Gross $\beta$	ND (0.70)	0.58
	H-3	840	860
November 16 <sup>th</sup> , 2017  *Discharged on November 21 <sup>st</sup>	Cs-134	ND (0.71)	ND (0.59)
	Cs-137	ND (0.58)	ND (0.62)
	Gross $\beta$	ND (2.6)	ND(0.34)
	H-3	760	770
November 15 <sup>th</sup> , 2017  *Discharged on November 20 <sup>th</sup>	Cs-134	ND (0.56)	ND (0.68)
	Cs-137	ND (0.68)	ND (0.53)
	Gross $\beta$	ND (2.2)	ND(0.31)
	H-3	790	780
November 14 <sup>th</sup> , 2017  *Discharged on November 19 <sup>th</sup>	Cs-134	ND (0.76)	ND (0.65)
	Cs-137	ND (0.63)	ND (0.69)
	Gross $\beta$	ND (2.1)	ND(0.32)
	H-3	800	800
November 13 <sup>th</sup> , 2017  *Discharged on November 18 <sup>th</sup>	Cs-134	ND (0.68)	ND (0.55)
	Cs-137	ND (0.63)	ND (0.62)
	Gross $\beta$	ND (2.1)	ND (0.38)
	H-3	850	860
November 11 <sup>th</sup> , 2017  *Discharged on November 16 <sup>th</sup>	Cs-134	ND (0.60)	ND (0.51)
	Cs-137	ND (0.53)	ND (0.59)
	Gross $\beta$	ND (2.2)	ND(0.40)
	H-3	750	770
November 10 <sup>th</sup> , 2017  *Discharged on November 15 <sup>th</sup>	Cs-134	ND (0.58)	ND (0.61)
	Cs-137	ND (0.53)	ND (0.67)
	Gross $\beta$	0.77	0.43
	H-3	690	690
November 9 <sup>th</sup> , 2017  *Discharged on November 14 <sup>th</sup>	Cs-134	ND (0.44)	ND (0.49)
	Cs-137	ND (0.53)	ND (0.64)
	Gross $\beta$	ND (2.4)	ND(0.34)
	H-3	590	590
November 8 <sup>th</sup> , 2017  *Discharged on November 13 <sup>th</sup>	Cs-134	ND (0.52)	ND (0.57)
	Cs-137	ND (0.63)	ND (0.64)
	Gross $\beta$	ND (2.4)	0.47
	H-3	710	720
November 7 <sup>th</sup> , 2017  *Discharged on November 12 <sup>th</sup>	Cs-134	ND (0.52)	ND (0.42)
	Cs-137	ND (0.71)	ND (0.62)
	Gross $\beta$	ND (2.1)	0.46
	H-3	780	800
November 6 <sup>th</sup> , 2017  *Discharged on November 11 <sup>th</sup>	Cs-134	ND (0.76)	ND (0.51)
	Cs-137	ND (0.75)	ND (0.56)
	Gross $\beta$	ND (2.1)	ND(0.37)
	H-3	720	720
November 5 <sup>th</sup> , 2017	Cs-134	ND (0.74)	ND (0.61)

*Discharged on November 10 <sup>th</sup>	Cs-137	ND (0.63)	ND (0.56)
	Gross $\beta$	ND (2.4)	ND(0.34)
	H-3	740	760
November 3 <sup>rd</sup> , 2017  *Discharged on November 8 <sup>th</sup>	Cs-134	ND (0.71)	ND (0.85)
	Cs-137	ND (0.63)	ND (0.68)
	Gross $\beta$	ND (2.4)	ND(0.32)
	H-3	880	880
November 2 <sup>nd</sup> , 2017  *Discharged on November 7 <sup>th</sup>	Cs-134	ND (0.44)	ND (0.57)
	Cs-137	ND (0.68)	ND (0.56)
	Gross $\beta$	ND (2.6)	ND(0.32)
	H-3	760	780
November 1 <sup>st</sup> , 2017  *Discharged on November 6 <sup>th</sup>	Cs-134	ND (0.79)	ND (0.55)
	Cs-137	ND (0.63)	ND (0.70)
	Gross $\beta$	ND (0.77)	ND(0.36)
	H-3	720	740
October 31 <sup>st</sup> , 2017  *Discharged on November 5 <sup>th</sup>	Cs-134	ND (0.71)	ND (0.76)
	Cs-137	ND (0.58)	ND (0.70)
	Gross $\beta$	ND (2.4)	0.46
	H-3	670	680
October 30 <sup>th</sup> , 2017  *Discharged on November 4 <sup>th</sup>	Cs-134	ND (0.54)	ND (0.59)
	Cs-137	ND (0.53)	ND (0.67)
	Gross $\beta$	ND (2.1)	ND(0.34)
	H-3	660	670
October 28 <sup>th</sup> , 2017  *Discharged on November 3 <sup>rd</sup>	Cs-134	ND (0.71)	ND (0.53)
	Cs-137	ND (0.63)	ND (0.67)
	Gross $\beta$	ND (2.2)	ND(0.32)
	H-3	740	730
October 28 <sup>th</sup> , 2017  *Discharged on November 2 <sup>nd</sup>	Cs-134	ND (0.54)	ND (0.42)
	Cs-137	ND (0.63)	ND (0.71)
	Gross $\beta$	ND (2.4)	ND(0.32)
	H-3	800	810

- \* \* 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 : Mitsubishi Nuclear Fuel Co., Ltd, Kaken Co., Ltd and 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
October 1 <sup>st</sup> ,2017	Cs-134	ND(0.0035)	ND (0.0047)	ND (0.0059)
	Cs-137	0.0093	0.0013	0.0072
	Gross $\alpha$	ND (0.64)	ND (3.1)	ND (3.5)
	Gross $\beta$	ND (0.47)	ND (0.66)	ND (0.59)
	H-3	1000	1,000	1,000
	Sr-90	0.0025	ND (0.0015)	ND(0.0065)

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

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)
November 7 <sup>th</sup> , 2017  *Sampled before discharge of purified groundwater.	Cs-134	ND (0.64)
	Cs-137	ND (0.80)
	Gross $\beta$	11
	H-3	ND(1.7)

(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 $\alpha$	—	—	—
Gross $\beta$	3 (1) ※	—	—
H-3	1,500	60,000	10,000
Sr-90	—	30	10

※ The operational target of Gross  $\beta$  is 1 Bq/L in the survey which is conducted once every ten days.

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
November 23 <sup>rd</sup> , 2017  *Discharged on November 30 <sup>th</sup>	Cs-134	ND (0.59)	ND (0.59)
	Cs-137	ND (0.51)	ND (0.52)
	Gross $\beta$	ND (0.70)	ND (0.56)
	H-3	110	110
November 16 <sup>th</sup> , 2017  *Discharged on November 23 <sup>rd</sup>	Cs-134	ND (0.49)	ND (0.52)
	Cs-137	ND (0.63)	ND (0.52)
	Gross $\beta$	ND (0.66)	ND (0.52)
	H-3	92	97
November 9 <sup>th</sup> , 2017  *Discharged on November 16 <sup>th</sup>	Cs-134	ND (0.56)	ND (0.54)
	Cs-137	ND (0.63)	ND (0.42)
	Gross $\beta$	ND (0.74)	ND (0.55)
	H-3	140	130
November 2 <sup>nd</sup> , 2017  *Discharged on November 10 <sup>th</sup>	Cs-134	ND (0.58)	ND (0.54)
	Cs-137	ND (0.71)	ND (0.49)
	Gross $\beta$	ND (0.63)	ND (0.53)
	H-3	130	120
October 26 <sup>th</sup> , 2017  *Discharged on November 2 <sup>nd</sup>	Cs-134	ND (0.54)	ND (0.57)
	Cs-137	ND (0.71)	ND (0.58)
	Gross $\beta$	ND (0.63)	ND (0.56)
	H-3	180	130

- \* \* 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.



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
October 5 <sup>th</sup> , 2017	Cs-134	ND (0.0028)	ND (0.0044)	ND (0.0053)
	Cs-137	ND(0.0024)	ND(0.0038)	ND(0.0045)
	Gross $\alpha$	ND (0.56)	ND (3.1)	ND (3.5)
	Gross $\beta$	ND (0.45)	ND (0.70)	ND (0.58)
	H-3	130	130	130
	Sr-90	0.0022	ND (0.0017)	ND (0.0062)

\* 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)
September 7 <sup>th</sup> , 2017	Cs-134	ND (0.62)
	Cs-137	ND (0.60)
	Gross $\beta$	10
	H-3	8.2

(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 $\alpha$	—	—	—
Gross $\beta$	5 (1) ※	—	—
H-3	1,500	60,000	10,000
Sr-90	—	30	10

※ The operational target of Gross  $\beta$  is 1 Bq/L in the survey which is conducted once every ten days.