

# Water Quality Monitoring of Underground Bypass

May 21, 2014

Tokyo Electric Power Company

# Basic Policy

## 1. Temporary Storage Tank Water

(1) Verification analysis of operational targets (to be conducted before discharging water)

Groundwater pumped up from pump wells are to be stored once in the temporary storage tank to verify if the water quality satisfies the operational targets, then be discharged when accepted.

(2) Detailed Analysis

To grasp a tendency, etc. of water quality, detailed analysis is to be conducted on a semi-monthly basis targeting more nuclides (including Sr-90, etc.) with lower detection limit values compared to the ones set for the verification analysis.

## 2. Pump Wells

(1) Periodic analysis is to be conducted on a weekly basis for all pump wells (Gross  $\beta$  and tritium).

(2) When water quality dissatisfying the operational targets was newly found, strengthen monitoring the tendency of the pump well in question making the analysis frequency on a semi-weekly basis.

## 3. Cross Check Inspection by the Third Party

For the pumped up water failed to satisfy the verification analysis of temporary storage tank water, detailed analysis, or the operational targets, etc., cross check inspection (**tendency monitoring**) is to be conducted by a third party who is independent of TEPCO.

\* When necessary, government agencies will take part in water sampling to conduct cross check inspection of water quality.

## Operational Targets for Discharge of Temporary Stored Tank Water

The following targets must be satisfied.

(1) Cs-134 • • • 1 Bq/L or less

(2) Cs-137 • • • 1 Bq/L or less

(3) Gross  $\beta$  • • • 5 Bq/L or less (\*)

(4) H-3 • • • 1,500 Bq/L or less

Other than the above, it also should satisfy that artificial nuclide is not detected through the measurement for (1) and (2) above with Ge semiconductor detector; and all the targeted nuclides satisfy the density limit by the announcement of reactor regulation, referring to the past detailed analysis records for pump up well water.

\*: Every 10 days, check if a single discharge of water fulfills “Detected Gross  $\beta < 1\text{Bq/L}$ ”

〈Reference〉 Margin against the density limit by the announcement of reactor regulation. (the total of ratios against the density limit by the announcement of reactor regulation, where Gross  $\beta = \text{Sr-90}$ )

$$1/60 + 1/90 + 5/30 + 1,500/60,000 = 0.22$$

# Water Quality Monitoring Methods

Water type	Analysis methods	Analysis Frequency	Organization in charge	Time required for analysis (approx.)	Nuclides/Detection limit values	
Temporary storage tank water	Verification analysis for the operational targets. (before discharging water)	1st time	TEPCO (TPT)	3 days	Cs-134: 1 Bq/L, Cs-137: 1 Bq/L, Gross β: 5 Bq/L (1Bq/L once in a 10 days.), and Tritium: 10 Bq/L.	
			3rd Party *	3 – 7 business days		
			Government agencies (JAEA)	7 days		
		From 2nd time		TEPCO (TPT)		3 days
			3rd Party*	3 – 7 business days		
	Detailed analysis (only for 1st and 2nd discharged water before releasing)	Once/month (1st discharged water of the month)	TEPCO (TPT)	One month		Cs-134: 0.01 Bq/L, Cs-137: 0.01 Bq/L, Gross β: 1 Bq/L, Sr-90: 0.01 Bq/L, Gross α: 4 Bq/L. and Tritium: 1 Bq/L.
			3rd Party*	One month		
		Once/month (Samples weighted Averaged of discharged water of the month)	TEPCO (TPT)	One month		
3rd Party*			One month			
Pump up well water	Periodic analysis	Once/week	TEPCO (TPT)	3 days	Gross β: 5 Bq/L (for Pump up wells NO. 7 & 12), and 15 Bq/L (for the rest of the pump up wells (10 wells)) Tritium: 10 Bq/L.	
	Analysis of the pump up water dissatisfying the operational targets, etc.	Twice/week for the pump well in question.	TEPCO (TPT)	3 days		
		Where the operational targets are satisfied, once/week for the pump well in question.	3rd Party*	3 – 7 business days		

\*: The third party means analysis laboratories whose independence is assured.  
(JAPAN CHEMICAL ANALYSIS CENTER, and THE GENERAL ENVIRONMENTAL TECHNOS CO., LTD., etc.)