

# **Status of inspections on ALPS treated water discharge at the TEPCO'S FDNPS**

24<sup>th</sup> May 2023  
NRA

## **1. Objective of this document**

This document is prepared to report to the NRA Commission about the status of pre-service inspection and operational safety inspection being conducted by the NRA Secretariat on the installation and operational measures of the ALPS treated water discharge facility that TEPCO has been working on.

## **2. Backgrounds**

The NRA approved the Application for approval to amend the Implementation Plan (IP) pertaining to Specified Nuclear Facility "Installation of ALPS Treated Water Discharge Facility" of TEPCO FDNPS on 22<sup>nd</sup> July 2022, and the Application on "Operational Measures of ALPS Treated Water Discharge" on 10<sup>th</sup> May 2023.

Currently, the NRA is conducting pre-service inspection and operational safety inspection on the installation and operational measures of the ALPS treated water discharge facility that TEPCO has been working on to check whether those activities conform to the approved IP.

## **3. Status and future plans of inspections**

Pre-service inspection of measurement/confirmation facility was completed on 15<sup>th</sup> March 2023. Pre-service inspections of transfer facility, dilution facility and discharge facility are now being conducted. (see attachment 1)

For operational safety inspection to confirm operational measures are properly set based on the approved IP before the start of discharge, the following subjects were identified; quality assurance of nuclide analysis, operational framework for ALPS treated water discharge facility, and operational management of ALPS treated water discharge facility. As a progress of inspection so far, the NRA confirmed that quality assurance of nuclide analysis is properly established at TEPCO. Also, the NRA confirmed that those manuals that TEPCO has already prepared are properly documented except one point. The rest of the manuals are to be prepared as the installation proceeds and the operational framework are to be established before the start of operation, therefore the NRA will inspect those items in due course. (see attachment 2)

The NRA will report the result of inspections to the NRA Commission, after those

remaining inspections are completed.

[Attachment 1] Status of Pre-service Inspections [Transfer, Dilution and Discharge Facility] (As of May 19, 2023)

[Attachment 2] Status of operational safety inspection on operational measures of ALPS treated water discharge facility

[Reference 1] Facility overview, excerpt from TEPCO's material as of November 14, 2022

[Reference 2] Regulatory Process for ALPS Treated Water Discharge

## Status of Pre-service Inspections [Transfer, Dilution and Discharge Facility]

(As of 19<sup>th</sup> May 2023)

	Equipment	To confirm the structure of equipment <sup>1</sup>	To confirm the function of the individual equipment <sup>2</sup>	To confirm total performance of equipment <sup>3</sup>
Transfer Facility	ALPS treated water transfer pump (Factory-Made)	●	—	□
	ALPS treated water flow meter	●	□	—
	Radiation monitor	●	□	—
	Emergency isolation valve (Factory-Made)	—	○	—
	ALPS treated water flow rate control valve (Factory-Made)	—	—	□
	Main pipes	●	—	□
	Leakage detectors and alarms	○	□	—
Dilution Facility	Seawater transfer pump (Factory-Made)	□	—	□
	Seawater flow meter	□	□	—
	Discharge vertical shaft (Upper-stream storage)	●	—	□
	Main pipes	○	—	□
Discharge Facility	Discharge vertical shaft (Down-stream storage)	□	—	□
	Discharge tunnel	□	—	□
	Discharge outlet	□	—	□

[Legend] □ : Waiting, ○ : In progress, ● : Done

<sup>1</sup> Inspection to confirm the structure or performance of the reactor facility for nuclear power plants as specified in the implementation plan, including material inspection, dimensional inspection, visual inspection, inspection to confirm the state of assembly and installation, pressure resistance inspection, and leakage inspection.

<sup>2</sup> Inspection to confirm the functions or performance required for the operation of the reactor facility for nuclear power plants as specified in the implementation plan.

<sup>3</sup> Inspection to confirm the total performance of the reactor facilities for nuclear power plants as specified in the implementation plan, and other inspections necessary to confirm completion of the construction.

## Status of operational safety inspection on operational measures of ALPS treated water discharge facility

### 1. Quality assurance of nuclide analysis

Through operational safety inspection, the NRA confirmed that TEPCO's activities on quality assurance of nuclide analysis are conducted properly based on the Implementation Plan (IP), which was approved on 22nd July 2022 and 10th May 2023.

The details of the confirmation results are as follows:

- ✓ Radionuclides to be measured and evaluated are properly selected based on the selection scheme which has been stipulated in the IP.
- ✓ Procurement process for outsourcing as well as responsibility and authority for analytical activities are clearly defined in in-house manual. Also, requirements for procurement, validation of procured products, and corrective action are properly implemented based on the IP.
- ✓ TEPCO and its contractor implements activities to secure human resources and train workers.
- ✓ Traceability is ensured by the certification standards that the contractor has obtained, uncertainties are evaluated properly, and detection limit is below 1/100 of regulatory concentration limit. Additionally, traceability of those analytical methods which are not certificated, is also secured by inter-comparison analysis.

### 2. Operational framework for ALPS treated water discharge facility

Operational framework, which was approved on 10<sup>th</sup> May 2023, is to be applied from the day when the ALPS treated water discharge facility starts operation. Therefore, the NRA could not inspect it so far.

On the other hand, the NRA confirmed that manuals about capability management, education and training for operation of ALPS treated water discharge facility are properly established.

### 3. Operational management of ALPS treated water discharge facility

The NRA inspected the preparation status including manuals for operational management of ALPS treated water discharge facility (1. receiving, 2. measurement/confirmation, 3. discharge), based on the IP. The confirmed items includes:

- ✓ Operational procedure for the receiving process
  - Operational procedure of ALPS treated water transfer pump and receiving valve
  - Procedure to respond to unusual events
- ✓ Operational procedure for the measurement/confirmation process
  - Operational procedure for circulation and agitation

- Procedure for sampling
- Procedure to respond to unusual events
- ✓ Operational procedure for the discharging process
  - Operational procedure of seawater transfer pumps
  - Procedure to respond to unusual events (e.g., to suspend discharge immediately)
- ✓ Set unusual values in sea area monitoring
- ✓ Maintenance and management of the facility
  - Addition of items to the inspection plan and the long-term maintenance management plan
  - Manuals for patrol inspection (patrol route and its frequency)

As a result of operational safety inspection, the NRA confirmed that the contents of IP are properly reflected in the in-house manuals, except for the point that persons responsible for the judgement to proceed to the next step in the discharge process are not clearly defined.

#### 4. Future plans

Main items for the coming operational safety inspection is as follows:

##### [2. Operational framework of ALPS treated water discharge facility]

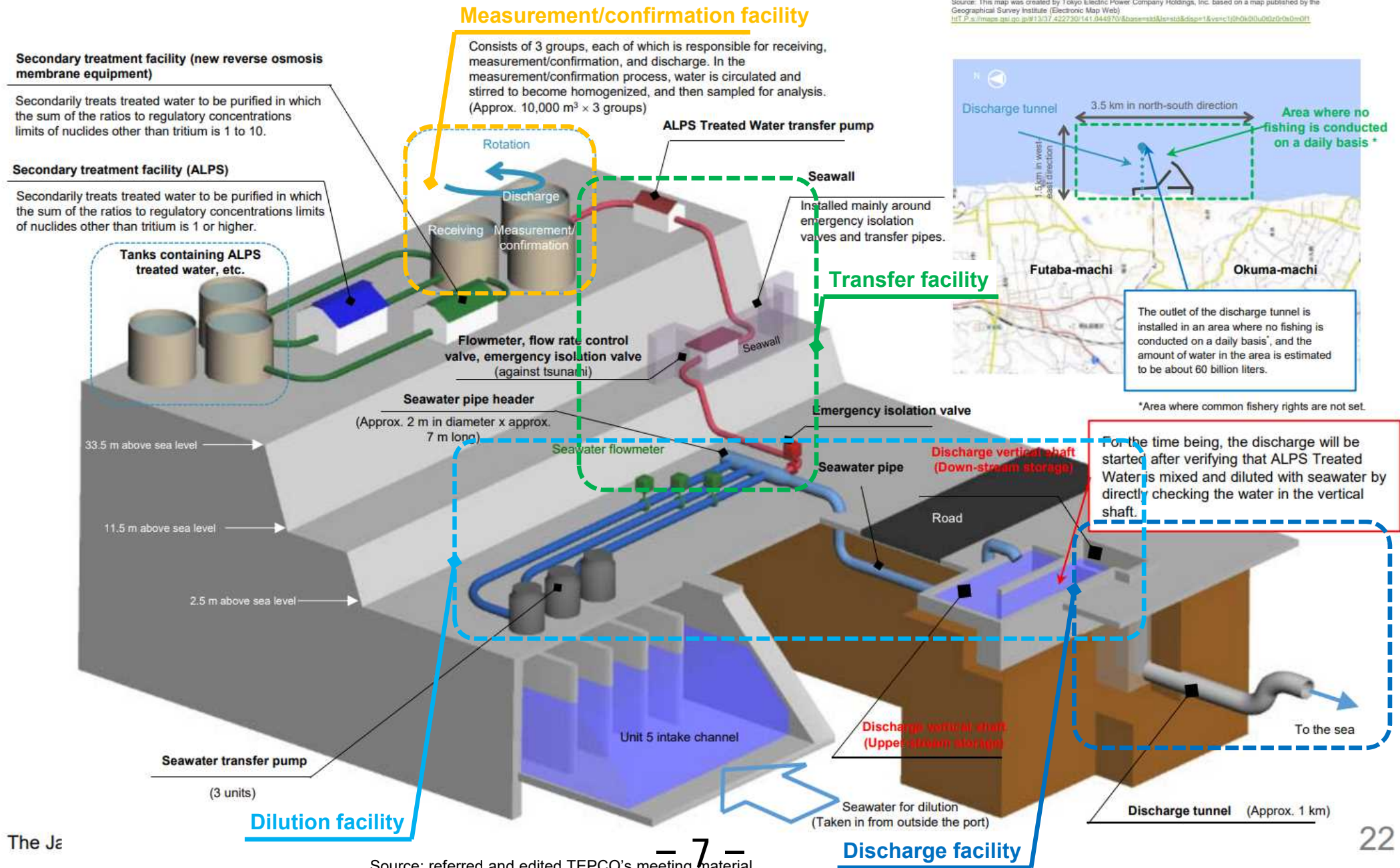
- Transfer of duties for the operation and maintenance of the ALPS treated water discharge facility before the start of operation.

##### [3. Operational management of ALPS treated water discharge facility]

- ✓ Judgement at the holding points of each process
  - Conditions to check the result of measurement and a person who makes judgement.
  - Procedure to proceed to the next process and a person who makes judgement.
  - A person who judge the suspension of discharge when unusual events occurs.
- ✓ Operational procedures for the discharging process which could not be inspected so far
  - Operation to input the concentration of tritium
  - Setting the flow rate based on the input tritium concentration
  - Planning of the annual discharge amount of tritium
  - Periodic confirmation process of radionuclides to be measured and evaluated

- ✓ Operational procedure for the maintenance and management
  - Management measures of discharge vertical shaft (Down-stream storage), which is the non-controlled area

2-1(1) [3] Methods of seawater intake and discharging ALPS Treated Water after dilution  
 2. Facility overview for ensuring safety



Source: This map was created by Tokyo Electric Power Company Holdings, Inc. based on a map published by the Geographical Survey Institute (Electronic Map Web)  
 URL: <https://maps.gsi.go.jp/pt/3/7/422730/141/044970/#base=std&area=3&size=1&vs=c1>

# Regulatory Process for ALPS Treated Water Discharge

