

Progress Report on the High-Performance ALPS Adjustment Operation for Pre-service Inspection

March 31, 2022



Tokyo Electric Power Company Holdings, Inc.

1 . Status of the high-performance ALPS adjustment operations

- We have been using the additionally installed ALPS/existing ALPS to process the contaminated water being generated every day, from the viewpoint of the amount of water that can be processed and the ease of adjustment. However, since November 2021, we have also been preparing to start operating the high-performance multi-nuclide removal equipment (hereinafter high-performance ALPS) to optimize the use of all ALPS facilities including the high-performance ALPS in preparation for the start of secondary treatment.
- It has been confirmed in FY2015 that the high-performance ALPS has the ability to remove all nuclides other than tritium until the sum of the ratios to regulatory concentration limits is less than 1 when treating FY2015 Sr treated water (RO concentrated water).
- In addition to preparing to start operation of the high-performance ALPS, we are also gathering operational knowhow and data to further streamline system operations. As part of this effort, we reconfigured the location of the adsorption towers and then checked the ability of high-performance ALPS to remove nuclides.
- This experiment found that under the new configuration, the sum of the ratios to regulatory concentration limits of water treated with the adsorption towers in the new configuration exceeded 1. As such, we will be restoring the adsorption towers to locations in which , the sum of the ratios to regulatory concentration limits was less than 1 in the FY2015 experiment, and will be gathering data necessary for the pre-service inspection with the adsorption towers in FY2015 locations.
- The results of this experiments are published in the "Results of routine radioactive materials analysis ate Fukushima Daiichi Nuclear Power Station." (only in Japanese)

2. Results of ALPS treated water analysis

[Unit : Bq/L]

	Results of water to be treated	Results of treated water				<Reference >
Nuclide	Sample taken Feb. 10	Sample taken Feb. 8	Sample taken Feb. 9	Sample taken Feb. 10	Sample taken Feb. 14	Regulatory concentration limit
Cs-137	7.53E+03	1.69E+01	1.89E+01	1.05E+02	1.52E+02	9.00E+01
Cs-134	2.49E+02	7.98E-01	5.44E-01	3.14E+00	4.41E+00	6.00E+01
Co-60	1.96E+02	< 1.49E-01	< 1.27E-01	6.61E-01	9.30E-01	2.00E+02
Sb-125	3.50E+03	1.37E+01	7.42E+00	5.43E+00	4.04E+00	8.00E+02
Ru-106	< 1.17E+02	< 1.63E+00	< 1.63E+00	< 2.78E+00	< 3.06E+00	1.00E+02
Sr-90	4.52E+04	4.72E+01	6.48E+01	5.08E+01	4.23E+01	3.00E+01
I-129	5.60E+01	2.53E+01	1.27E+01	1.29E+01	1.58E+01	9.00E+00
Sum of the ratios to regulatory concentration limits (7 major nuclides)		4.62	3.82	4.38	4.97	

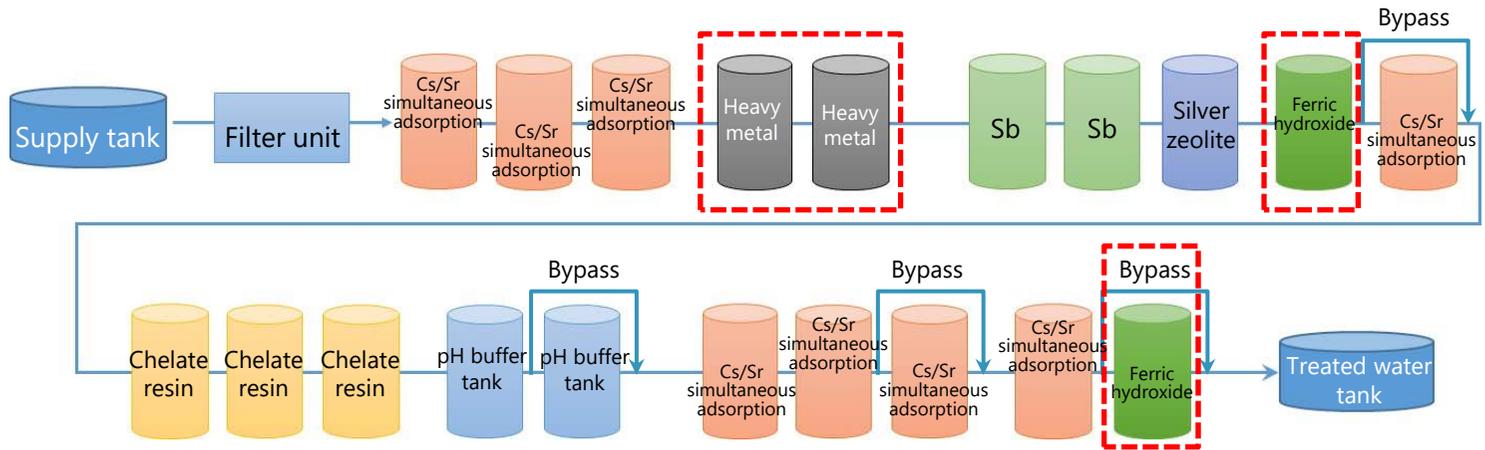
※ : Figures in blue indicate values that exceed the regulatory concentration limit

3. Revision of adsorption tower locations

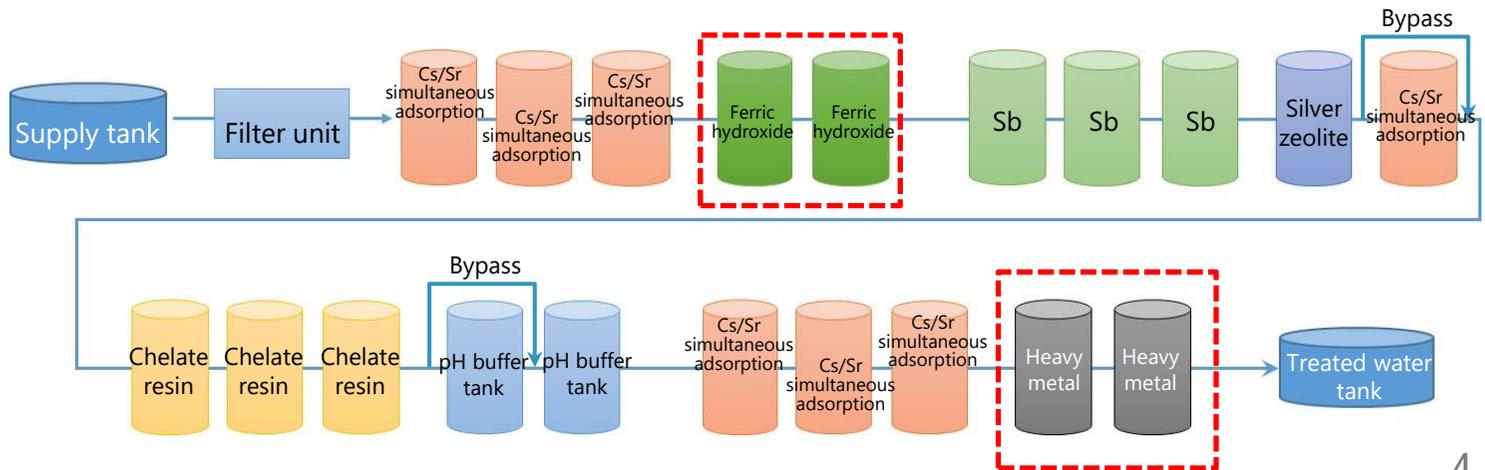
- To further improve system operations, we reconfigured the adsorption towers including the ferric hydroxide tower and the heavy metal tower, from the FY2015 configuration when it was proved that the the high-performance ALPS is able to remove nuclides to meet requirements.

Adsorption tower configuration in FY2015

Confirmed that the high-performance ALPS was able to remove nuclides until the sum of the ratios to regulatory concentration limits was less than 1



New adsorption tower configuration



【Reference】

Excerpt from Document 3-1 presented at the 94th Secretariat / Team Meeting for Contaminated Water, Treated Water and Decommissioning Issues held on September 30, 2021

Transferring Water in the High-performance ALPS Sample Tank

September 30, 2021



Tokyo Electric Power Company Holdings, Inc.

1 . Transferring water in the high-performance ALPS sample tank

【Background】

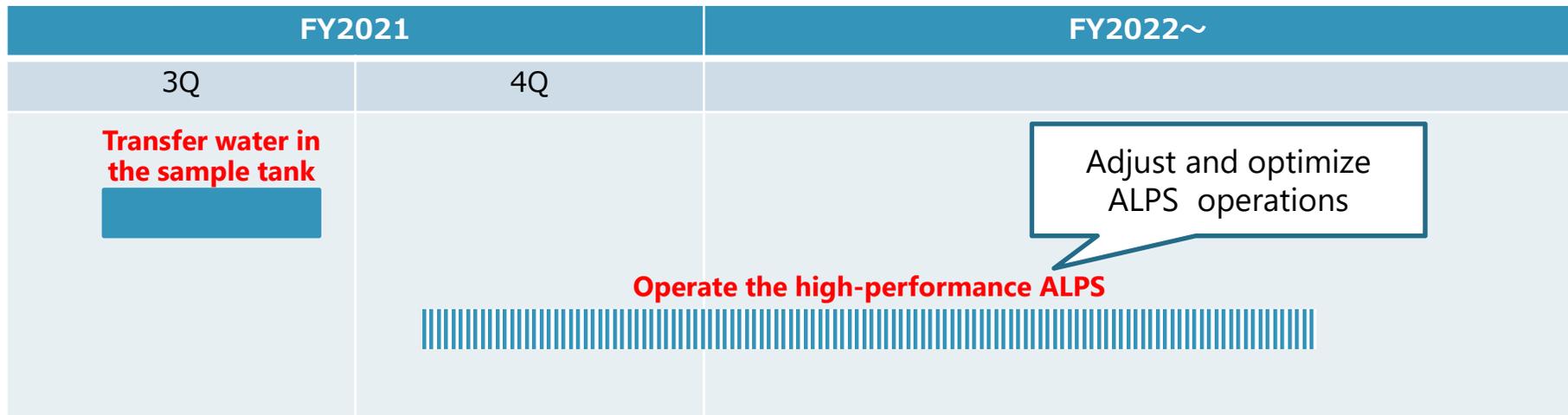
- The Fukushima Daiichi Nuclear Power Station has three types of ALPS: existing ALPS (since March 2013), additionally installed ALPS (since September 2014), and high-performance ALPS (since October 2014). *Dates in parenthesis indicate when the facility started operating.
- We have been using the additionally installed ALPS/existing ALPS to process the contaminated water being generated every day , from the viewpoint of the amount of water that can be processed and the ease of adjustment, and the high-performance ALPS has been kept on standby.
- Going forward, to optimally operate all facilities as secondary treatment starts, high-performance ALPS will be operated as needed.

【Preparation】

- In preparation for the operation of high-performance ALPS, the [ALPS treated water, etc. \(sum of the ratios to the concentration limits is around 2\) stored in the high-performance ALPS sample tank \(approx. 3200m3\) will be transferred to the storage tank.](#) *

* Treated Water Portal Site "amount stored for each sum of the ratios to the concentration limits" will be updated accordingly.

【Schedule for transferring the water in the high-performance ALPS sample tank】



<Reference> Map of ALPS locations

