

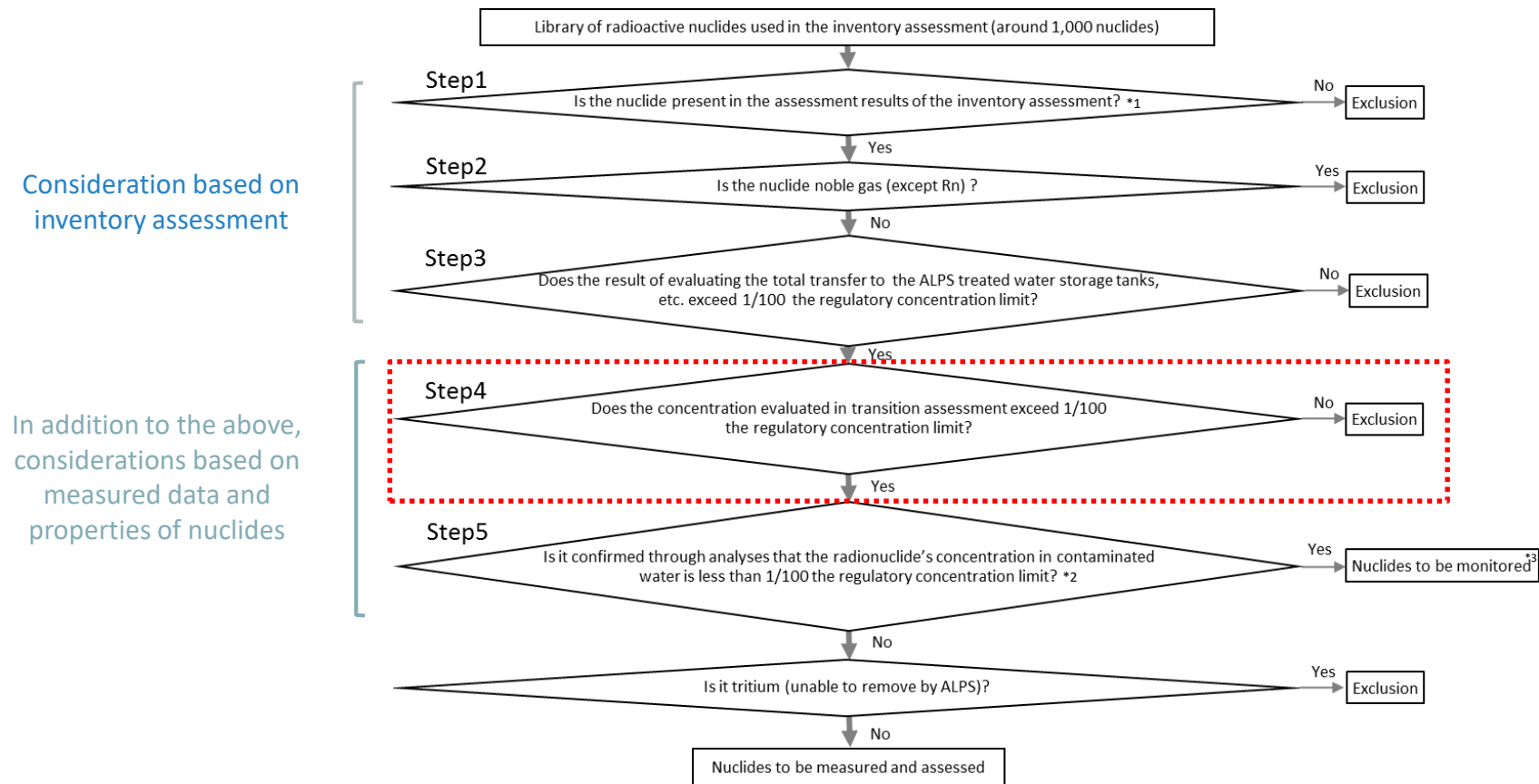
- Prior to the discharge of ALPS treated water into the sea, we confirm that discharge standards have been met (sum of the ratios of the regulatory concentrations limits of radioactive nuclides, with the exception of tritium, is less than 1). **The 30 nuclides have been analyzed for measurement/assessment.**
- The nuclides targeted for measurement/assessment have been conservatively selected by assessing how the substances migrate into the water and half-life decay based on the flow stipulated in the implementation plan and whether they exist in significant concentrations in water prior to ALPS treatment (concentrations that exceed 1/100 of the regulatory concentration limit) or not.

< Announced by August 1, 2024 >

- Nuclides targeted for measurement/assessment are selected while considering half-life decay. When the nuclides targeted for measurement/assessment were reevaluated based on the flow stipulated in the implementation plan and in consideration of the amount of time that has passed since the disaster (14 years), **it was decided to exclude cerium 144 (half-life: approximately 285 days) from the nuclides targeted for measurement/assessment due to the decrease in inventory mass (radioactive substance mass) from decay.** Accordingly, **the number of nuclides targeted for measurement/assessment will decrease from 30 to 29 starting from the third discharge of FY2025** planned for August.
- Even after excluding cerium 144 from the nuclides targeted for measurement/assessment, **we shall still voluntarily take measurements for the substance prior to discharges into the sea to confirm that it is below detectable levels.**
- We will continue to remain vigilant to ensure the safe and stable discharge of ALPS treated water into the sea.

Flow chart for the selection of nuclides to be measured/assessed

- Nuclides to be measured/assessed are selected based on the following flowchart stated in the implementation plan approved by the Nuclear Regulation Authority.
- The nuclides targeted for measurement/assessment are selected based on whether or not they might exist at significant concentrations in contaminated water by assessing how the substances migrate into the water while considering half-life decay. Advice was received from the IAEA and the Nuclear Regulatory Agency when this selection flow process was created.
- During the FY2025 assessment, it was confirmed that cerium 144 was excluded from the nuclides targeted for measurement/assessment through a step 4 of the selection flow.



*1 : The inventory assessment decay period has been set properly in accordance with when the selection results are used (initially set to be 2023 (12 years after the accident))

*2 : The maximum detection value is used for nuclides that have been detected in the past, and the minimum detection limit is used for nuclides that have never been detected

*3 : Nuclides that are continually measured to confirm that there are no significant concentrations in contaminated water

Changes to the nuclides to be measured/assessed

- By excluding cerium 144 from the nuclides targeted for measurement/assessment, the number of nuclides targeted for measurement/assessment will be 29, and the number of nuclides voluntarily measured but not targeted for measurement/assessment from amongst the nuclides removed by ALPS will be 39.
- Furthermore, even after excluding cerium 144 from the nuclides targeted for measurement/assessment, we shall still voluntarily take measurements for the substance prior to discharges into the sea to confirm that it is below detectable levels.

Measured every time

Nuclides to be measured/assessed: 30 nuclides

C-14 Carbon	Sr-90 Strontium	Te-125m Tellurium	Sm-151 Samarium	Pu-238 Plutonium
Mn-54 Manganese	Y-90 Yttrium	I-129 Iodine	Eu-154 Europium	Pu-239 Plutonium
Fe-55 Iron	Tc-99 Technetium	Cs-134 Cesium	Eu-155 Europium	Pu-240 Plutonium
Co-60 Cobalt	Ru-106 Ruthenium	Cs-137 Cesium	U-234 Uranium	Pu-241 Plutonium
Ni-63 Nickel	Cd-113m Cadmium	Ce-144 Cerium	U-238 Uranium	Am-241 Americium
Se-79 Selenium	Sb-125 Antimony	Pm-147 Promethium	Np-237 Neptunium	Cm-244 Curium

Assessed as the sum of the ratios of legally required concentrations to check that it is less than 1

H-3
Tritium

Measured in order to determine that the volume of water with which to dilute the treated water so that the tritium concentration after dilution is less than 1,500 Bq/liter

Nuclides voluntarily measured but not targeted for measurement/assessment from amongst the nuclides removed by ALPS: 39 nuclides

Fe-59 Iron	Rh-103m Rhodium	Te-123m Tellurium	Ba-140 Barium	Eu-152 Europium
Co-58 Cobalt	Rh-106 Rhodium	Te-127 Tellurium	Ce-141 Cerium	Gd-153 Gadolinium
Zn-65 Zinc	Ag-110m Silver	Te-127m Tellurium	Ce-144 Cerium	Tb-160 Terbium
Rb-86 Rubidium	Cd-115m Cadmium	Te-129 Tellurium	Pr-144 Praseodymium	Am-242m Americium
Sr-89 Strontium	Sn-119m Tin	Te-129m Tellurium	Pr-144m Praseodymium	Am-243 Americium
Y-91 Yttrium	Sn-123 Tin	Cs-135 Cesium	Pm-146 Promethium	Cm-242 Curium
Nb-95 Niobium	Sn-126 Tin	Cs-136 Cesium	Pm-148 Promethium	Cm-243 Curium
Ru-103 Ruthenium	Sb-124 Antimony	Ba-137m Barium	Pm-148m Promethium	

Voluntarily measured to confirm that concentrations are below detectable levels

Concentrations of cerium 144 in discharged water to date

- The chart below shows the concentrations of cerium 144 in ALPS treated water that has been discharged to date. All measurements were below detectable levels (Not detected: ND).
 - Even if an analysis result of ND is obtained when confirming that discharge standards have been fulfilled prior to the discharge of ALPS treated water, the ratio of legally required concentrations is calculated conservatively assuming that these substances exist at concentrations equal to the detection limit, after which the sum of the ratio of legally required concentrations is calculated.
 - The ratio of legally required concentrations of cerium 144 has been between 0.0015~0.0026 (1st~13th discharge), and contributes very little to the some of the ratios of the other required concentrations of nuclides targeted for measurement/assessment.

< Concentrations of cerium 144 in ALPS treated water discharged to date >

	Cerium 144 Legally required concentration [Bq/L]	Cerium 144 Analysis results [Bq/L]	Ratio of the legally required concentration of cerium 144	Some of the ratios of legally required concentrations of nuclides targeted for measurement/assessment
1 st discharge	200	ND(<0.36)	0.0018	0.28
2 nd discharge		ND(<0.36)	0.0018	0.25
3 rd discharge		ND(<0.40)	0.0020	0.25
4 th discharge		ND(<0.37)	0.0019	0.34
5 th discharge		ND(<0.38)	0.0019	0.31
6 th discharge		ND(<0.51)	0.0026	0.17
7 th discharge		ND(<0.38)	0.0019	0.18
8 th discharge		ND(<0.38)	0.0019	0.12
9 th discharge		ND(<0.37)	0.0019	0.078
10 th discharge		ND(<0.36)	0.0018	0.083
11 th discharge		ND(<0.34)	0.0017	0.076
12 th discharge		ND(<0.31)	0.0015	0.083
13 th discharge		ND(<0.31)	0.0015	0.11

[Reference] Analysis results of the five nuclides targeted for monitoring during FY2024 **TEPCO**

- Prior to the discharge of ALPS treated water into the sea, we confirm that discharge standards have been met (sum of the ratios of the regulatory concentrations limits of radioactive nuclides, with the exception of tritium, is less than 1). The 30 nuclides have been analyzed for measurement/assessment.
- The nuclides targeted for measurement/assessment have been selected based on the flow stipulated in the implementation plan and conservative assessments indicating that they exist in significant concentrations in contaminated water prior to ALPS treatment (concentrations that exceed 1/100 of the regulatory concentration limit).
- Nuclides that theoretically may be present in contaminated water but have not been detected in significant concentrations during past analysis of contaminated water/treated water are exempt from measurement/assessment during the final stage of the flow.
- However, it is possible that the concentration of radioactive substances in contaminated water may fluctuate in conjunction with future decommissioning progress. Therefore, the nuclides that are exempt from measurement/assessment during the final stage of the flow have been targeted for monitoring and are continually checked once a year to confirm that they do not exist in significant concentrations in contaminated water prior to ALPS treatment, and also to confirm that there have been no changes in the concentrations of radioactive substances in contaminated water.
- The FY2024 analysis of these nuclides targeted for monitoring has been completed so the results have been included in this report.
- Analysis results confirm that the concentrations of all five nuclides targeted for monitoring are less than 1/100 of the regulatory concentration limit.

○ Nuclides targeted for monitoring (Five nuclides)

Although nuclides shown below are not detected in significant quantities in past analysis of contaminated and treated water, they are subject to continuous check.

Cl-36 Chlorine	Nb-93m Niobium	Nb-94 Niobium	Mo-93 Molybdenum	Ba-133 Barium
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[Reference] Analysis results of the five nuclides targeted for monitoring during FY2024 **TEPCO**

- Contaminated water prior to ALPS treatment was analyzed during FY2024 in order to confirm that the nuclides targeted for monitoring do not exist in contaminated water at concentrations that exceed 1/100 of the regulatory concentration limit. The results are shown in the chart below.
- The concentrations for all five nuclides targeted for monitoring (Cl-36, Nb-93m, Nb-94, Mo-93, Ba-133) were found to be less than 1/100 of the regulatory concentration limit.
- Furthermore, since a significant concentration of Cd-113m was detected during FY2024 analysis of the nuclides targeted for monitoring, the concentration of Cd-113m was voluntarily measured to assess trends and, as with FY2024, the concentration was found to be 7.7E+00Bq/L, which is approximately 19/100 that of the regulatory concentration limit (4.0E+01Bq/L).
- Based on the above, it has been confirmed that there is no change in the properties of the contaminated water prior to ALPS treatment.

<Analysis results for nuclides targeted for monitoring>

Analyzed nuclide	Sampled water (sampling location)	Sampling date	Analysis result (Bq/L)	0.01 of regulatory concentration limit (Bq/L)
Cl-36	Contaminated water prior to ALPS treatment (ALPS inlet)	March 13, 2025	ND (< 1.3E+00)	9.0E+00
Nb-93m			ND (< 3.1E+01)	7.0E+01
Nb-94			ND (< 6.8E-01)	5.0E+00
Mo-93			ND (< 1.5E+00)	3.0E+00
Ba-133			ND (< 5.0E+00)	5.0E+00