Attachment 2

# Application for approval to amend the Implementation Plan Regarding the Handling of ALPS Treated Water [Overview]

November 14, 2022

Tokyo Electric Power Company Holdings, Inc.

# Introduction

- Following the Japanese government's Basic Policy announced in April 2021, TEPCO had been reviewed the details of the design and operation of ALPS treated water dilution/discharge facility and related facilities. In December 2021, TEPCO submitted the "Application Documents for Approval to Amend the Implementation Plan for Fukushima Daiichi Nuclear Power Station Specified Nuclear Facility" for the basic design of ALPS treated water dilution/discharge facility and related facilities to the Nuclear Regulation Authority (NRA), and on July 22, 2022, these application documents were approved by the NRA.
- Today, on November 14th, we submitted the "Application Documents for Approval to Amend the Implementation Plan for Fukushima Daiichi Nuclear Power Station Specified Nuclear Facility" to the NRA, with additional details/revisions on the organizational structure for operating, maintaining, and managing the ALPS treated water dilution/discharge facilities, nuclides to be measured/assessed to confirm that the ALPS treated water meets the discharge criteria before it is discharged into the sea, and the radiological environmental impact assessment results given the changes to the nuclides to be measured/assessed.
- We will continue to do our utmost to increase the understanding of people of Fukushima and domestic and international community regarding the handling of ALPS treated water as part of the decommissioning work, by focusing on our efforts to disseminate information based on scientific evidence to parties within and outside Japan in an easy-to-understand manner and taking every opportunity to listen to the concerns and opinions of the public and explain our approach and response.
- Furthermore, we will also work to build trust of people within and outside Japan, by disclosing the construction status of ALPS treated water dilution/discharge facilities, etc. as appropriate and responding sincerely to safety confirmation by municipalities and reviews by the International Atomic Energy Agency (IAEA) to secure objectivity and transparency.

# 1-1. Overview of the Implementation Plan

| Partial revised points and contents to the implementation plan | Slide No. |
|---|---|
| **Chapter III Security at the specified nuclear facility** | |
| **Part 1／Part 2 Operations related to security** | |
| Reflected changes in operation structure after the ALPS treated water dilution/discharge facility starts operation | 5 |
| **Part 3 Supplementary explanation regarding security** | |
| Selection of nuclides subject to measurement and assessment in order to confirm before discharging ALPS treated water into the sea that the ALPS treated water meets the discharge criteria (Sum of ratios of the concentration of each radionuclide to the regulatory concentration of each is less than one) | 6～14 |
| **Reference material**<br>**Response based on the "Basic Policy on handling of ALPS Treated Water at the Tokyo Electric Power Company Holdings' Fukushima Daiichi Nuclear Power Station"** | |
| Radiological Environmental Impact Assessment report regarding the discharge of ALPS treated water into the sea (construction stage) | Attachment 3 |

# 2-1. Objective and ALPS Treated Water dilution/discharge facility and related facilities

Remain the original (partly updated)

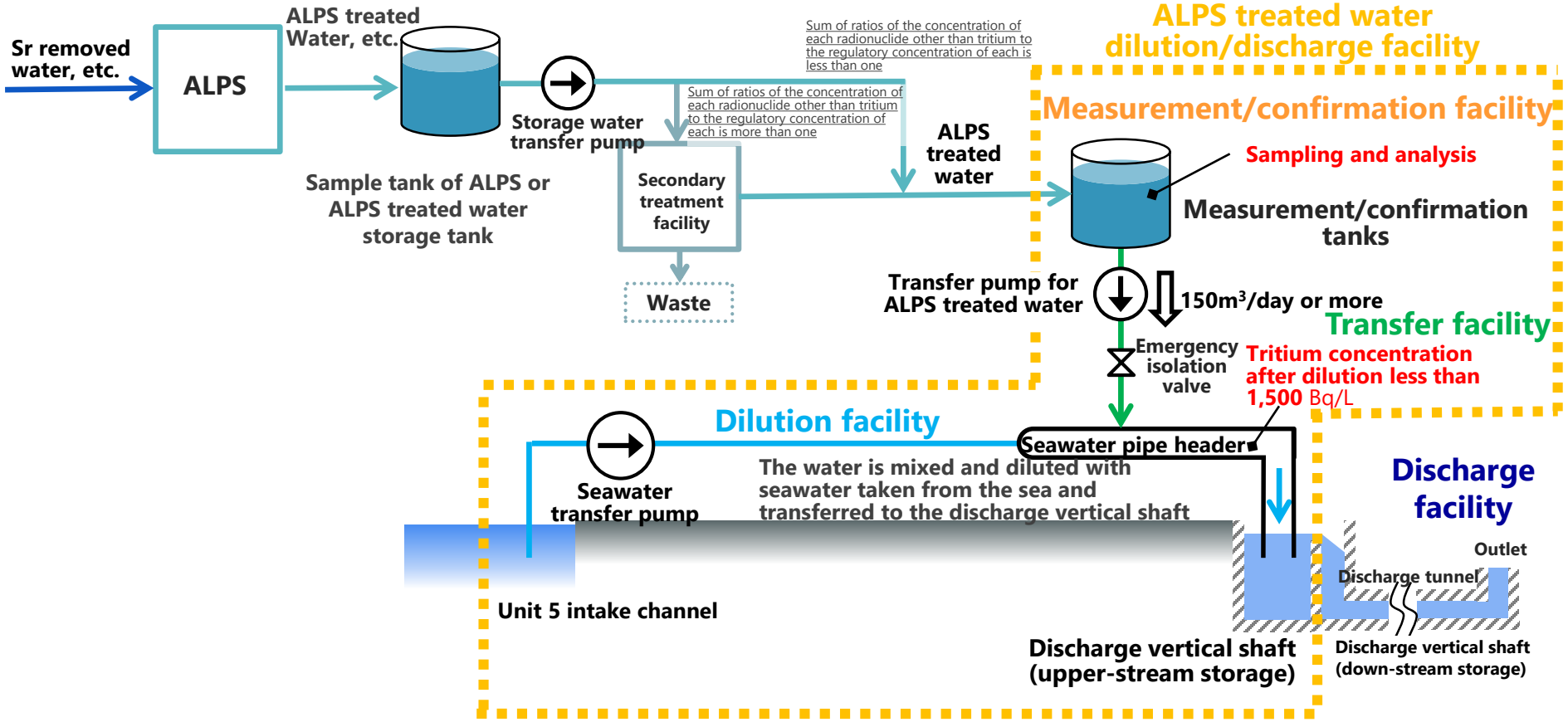
TEPCO

## Objective

Water which radioactive nuclides has been removed using ALPS until the radionuclide concentration is at a sufficiently low concentration, will be diluted with seawater and discharged into the sea after confirming that the water meets the regulatory requirements (water with the sum of ratios of legally required concentrations, excluding tritium, less than 1).

## Facility overview

In the measurement/confirmation facility, once the radionuclides in the water in the measurement/confirmation tank are uniformly dispersed, samples are taken and analyzed to confirm the water meets regulatory standards. The ALPS treated water is then transferred to the seawater pipe header using the transfer facility and mixed with the seawater taken from the Unit 5 intake channel using the dilution facility until the tritium concentration is below 1,500 Bq/L. This is then discharged using the discharge facility. At the discharge facility, the water will be discharged from the outlet 1km off the coast.



# 2-2. Overview of ALPS treated water dilution/discharge facility and related facilities

Remain the original

TEPCO

**Secondary treatment facility（newly installed reverse osmosis membrane facility）**

Secondary treatment of treated water to be re-purified (sum of the ratios of nuclides, excluding tritium, is between 1 and 10)

**Secondary treatment facility（ALPS）**

Secondary treatment of Treated water to be re-purified (sum of the ratios of nuclides, excluding tritium, is 1 or higher)

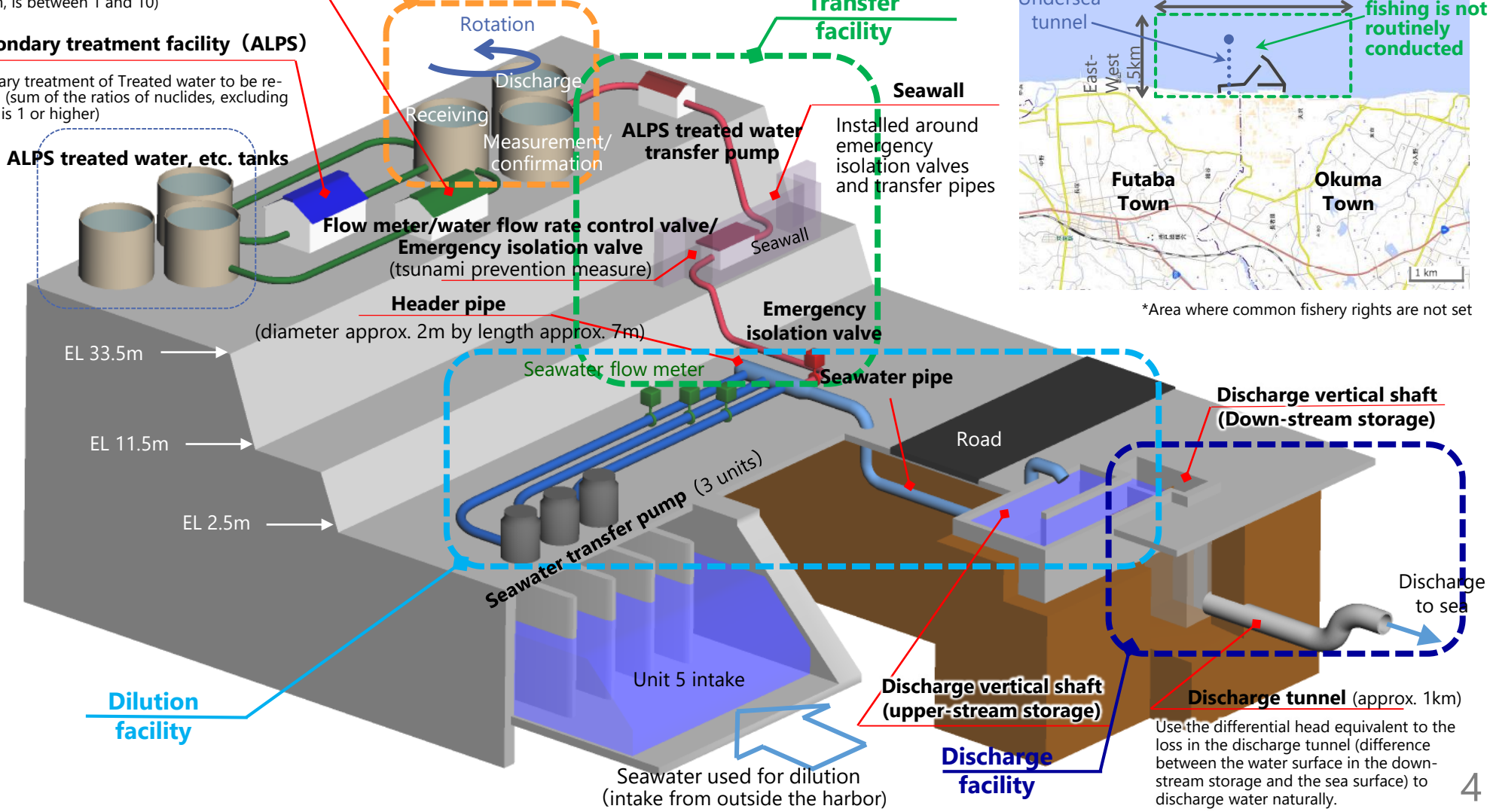
**Measurement/confirmation facility (K4 tank group)**

Comprised of three sets of tank groups each with the role of receiving, measurement/confirmation, and discharge. In the measurement/confirmation stage, water that has been made homogenized through circulation and agitating is sampled and analyzed (approx. 10,000m³ × 3 groups)

**Transfer facility**

**Seawall**

Installed around emergency isolation valves and transfer pipes




Source: Developed by Tokyo Electric Power Company Holdings, Inc. based on the map developed by the Geospatial Information Authority of Japan (electronic territory web)
https://maps.gsi.go.jp/#13/37.422730/141.044970/&base=std&ls=std&disp=1&vs=c1j0h0k0l0u0t0z0r0s0m0f1




*Area where common fishery rights are not set

Newly added

# 3-1. Major changes：organizational structure

TEPCO

- The ALPS Treated Water Program Department will continue to be in charge of planning and managing the project of facilities related to the discharge into the sea even after the ALPS treated water dilution/discharge facilities start operation. The Implementation Plan was updated to clarify the specific departments that would be in charge of maintenance management and operation management of equipment.

| Organization | Operations related to security (Updated) Red letters: : Updated areas |
|---|---|
| **ALPS Treated Water Program Department** | Development of plans, management and operation methods for facilities related to sea discharge and the operation plans of ALPS treated water dilution/discharge facilities |
| **Water Treatment Team, Operation Dept., Construction, Operation, and Maintenance Center** | Operation management of contaminated water treatment facilities, buildings for storing stagnant water, ALPS, subdrain and other water treatment facilities, and the ALPS treated water dilution/discharge facilities |
| **Storage Facilities G, Mechanical Engineering Dept., Construction, Operation, and Maintenance Center** | Maintenance management of civil engineering equipment in contaminated water treatment facilities (storage facilities) and mechanical equipment in ALPS treated water dilution/discharge facilities<br>Construction, installation, and maintenance management of contaminated water treatment facilities (ancillary facilities to storage facilities), and rainwater treatment facilities |
| **Water Treatment Instrumentation G, Electrical, Instrumentation and Control Dept., Center for Construction, Operation, and Maintenance** | Construction, installation, and maintenance management of instrumentation for contaminated water treatment facilities, buildings storing stagnant water, ALPS, subdrain and other water treatment facilities, oil treatment facilities, facilities to intake water inside the Unit 3 primary containment vessel, ALPS treated water dilution/ discharge facilities |

The department in charge of works other than the above is as described in the current, approved version of the Implementation Plan. The following Groups will work on each of the tasks as appropriate.

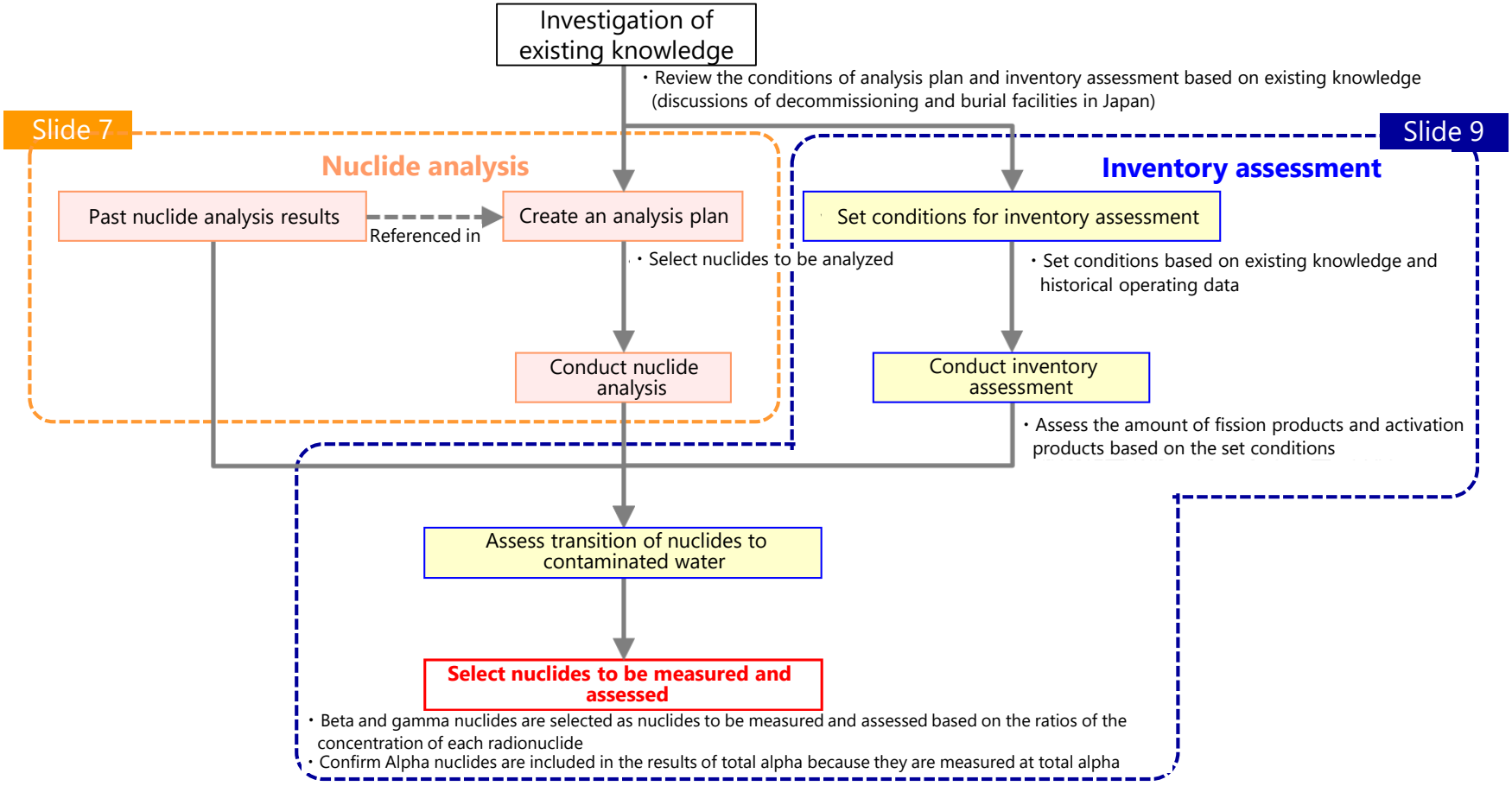
E.g.) ・Maintenance management of electrical equipment: Electrical Equipment Maintenance G, Electrical, Instrumentation and Control Dept., Construction, Operation, and Maintenance Center
・Maintenance management of civil engineering equipment: Civil Engineering Equipment G, Civil Engineering Dept., Construction, Operation, and Maintenance Center
・Maintenance management of construction equipment: Construction Equipment Maintenance G, Construction Dept., Construction, Operation, and Maintenance Center
・ALPS treated water analysis: Analysis and Assessment G, Radiation/Environment Dept., Emergency Preparedness/Radiation Control Center

# 3-2. Major changes：selection of nuclides to be measured and assessed

Remain the original (partly updated)

TEPCO

- Approach to selecting nuclides that could impact dose assessment in ALPS treated water
  - The existing approved Implementation Plan stated "the policy for **selecting nuclides subject to measurement and assessment with rigorous verification** to ensure that the **ALPS treated water meets the discharge criteria after it has been diluted before discharge** (sum of the ratios of the concentration of each radionuclide to the regulatory concentration of each, excluding tritium, in the ALPS treated water is less than 1) based on the knowledge in Japan on decommissioning and disposal facilities". We have described our approach to the selection of nuclides based on the results of the verification this time.




Overview of the discussions of the selection of nuclides to be measured and assessed

Newly added

# 3-3. Results of the additional nuclide analysis

- In the verification, analysis results in the past were assessed and additional analysis was conducted to see if the nuclides garnering attention in the research on decommissioning and burial facilities exist in significant quantities in the stagnant water, Sr removed water, ALPS treated water, etc.
- Results of this verification showed that **the nuclides (including α nuclides) garnering attention in the research on decommissioning and burial facilities were not detected in the ALPS treated water.***

※：Below or equal to the 1/100 of the regulatory concentration and below the detection limit ; Uranium was detected in very small amounts of natural uranium in the environment

**Nuclides measured in the past**

Source : the 9th ALPS Treated Water Review Meeting materials

Fission products: 56 nuclides

| | | | | | | |
|---|---|---|---|---|---|---|
| Rb-86 Rubidium | Sr-89 Strontium | Sr-90 Strontium | Y-90 Yttrium | Y-91 Yttrium | Nb-95 Niobium | Tc-99 Technetium |
| Ru-103 Ruthenium | Ru-106 Ruthenium | Rh-103m Ruthenium | Rh-106 Rhodium | Ag-110m Silver | Cd-113m Cadmium | Cd-115m Cadmium |
| Sn-119m Tin | Sn-123 Tin | Sn-126 Tin | Sb-124 Antimony | Sb-125 Antimony | Te-123m Tellurium | Te-125m Tellurium |
| Te-127 Tellurium | Te-127m Tellurium | Te-129 Tellurium | Te-129m Tellurium | I-129 Iodine | Cs-134 Cesium | Cs-135 Cesium |
| Cs-136 Cesium | Cs-137 Cesium | Ba-137m Barium | Ba-140 Barium | Ce-141 Cerium | Ce-144 Cerium | Pr-144 Praseodymium |
| Pr-144m Praseodymium | Pm-146 Promethium | Pm-147 Promethium | Pm-148 Promethium | Pm-148m Promethium | Sm-151 Samarium | Eu-152 Europium |
| Eu-154 Europium | Eu-155 Europium | Gd-153 Gadolinium | Tb-160 Terbium | Pu-238 Plutonium | Pu-239 Plutonium | Pu-240 Plutonium |
| Pu-241 Plutonium | Am-241 Americium | Am-242m Americium | Am-243 Americium | Cm-242 Curium | Cm-243 Curium | Cm-244 Curium |

Corrosion products: 6 nuclides

| |
|---|
| Mn-54 Manganese |
| Fe-59 Iron |
| Co-58 Cobalt |
| Co-60 Cobalt |
| Ni-63 Nickel |
| Zn-65 Zinc |

Nuclides other than those on the left: 2 nuclides

| | |
|---|---|
| H-3 Tritium | C-14 Carbon |

Nuclides other than the 64 nuclides: 20 nuclides

| | | |
|---|---|---|
| Cl-36 Chlorine | Ca-41 Calcium | Ni-59 Nickel |
| Se-79 Selenium | Nb-94 Niobium | Mo-99 Molybdenum |
| Tc-99m Technetium | Te-132 Tellurium | I-131 Iodine |
| I-132 Iodine | La-140 Lanthanum | U-233 Uranium |
| U-234 Uranium | U-235 Uranium | U-236 Uranium |
| U-238 Uranium | Np-237 Neptunium | Pu-242 Plutonium |
| Cm-245 Curium | Cm-246 Curium | |

Nuclides selected based on the existing knowledge and additionally analyzed in this study this time (in addition to the nuclides below, alpha nuclides that could exist in significant quantities in stagnant water, Sr removed water, and ALPS treated water, etc. were also analyzed).

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Fe-55** Iron | **Ni-59** Nickel | **Nb-93m** Niobium | **Mo-93** Molybdenum | **Sn-121m** Tin | **Cl-36** Chlorine | **Ca-41** Calcium | **Zr-93** Zirconium | **Ba-133** Barium | **Se-79** Selenium | **Pd-107** Palladium |

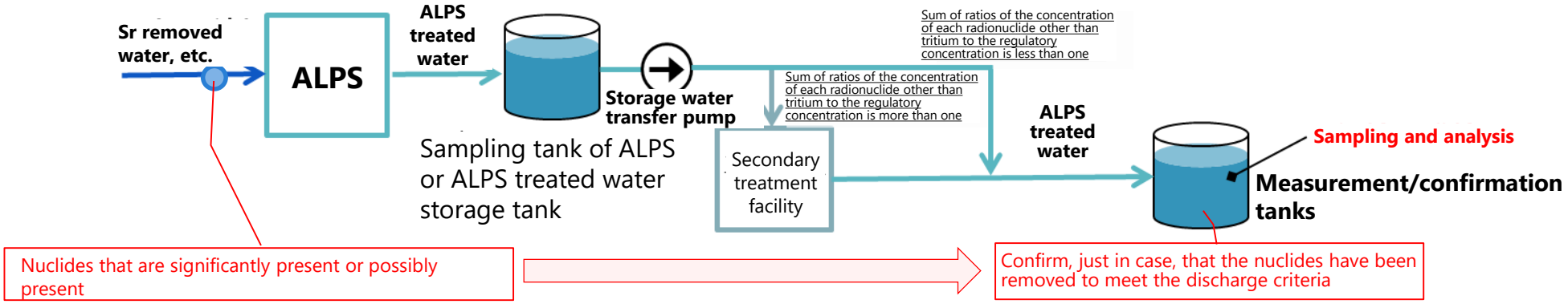
# 【Reference】Approach to selecting nuclides to be measured and assessed

Newly added

TEPCO

- In the ALPS treated water etc., there is no discrepancy that would suggest the presence of radionuclides other than the current 64 nuclides between total beta measurements and the sum of analysis results for radioactive concentration of 7 major nuclides* plus carbon-14 and technetium-99. Total alpha also remained undetectable.
  ※ Major 7 nuclides : Cesium-134, Cesium-137, Strontium-90, Iodine-129, Cobalt-60, Antimony-125, Ruthenium-106 that were found in significant concentrations compared to the regulatory concentration limits in the analysis of the 62 nuclides in treated water conducted in the past.
- In addition to the above, as shown in the previous slide, results of individual analyses on nuclides other than the current 64 nuclides, that are garnering attention in decommissioning and burial facilities research, demonstrate that these nuclides did not exist in significant concentrations in ALPS treated water.
- Through these efforts, we were able to verify again that the ALPS nuclide removal function was performing as expected, and the nuclides that could exist in significant concentrations were the major 7 nuclides, Carbon-14, and Technetium-99.

- Nevertheless, based on the discussions at previous review meetings related ALPS treated water and comments from the NRA and the IAEA, **nuclides to be measured and assessed are selected with a perspective of confirming, just in case, that nuclides that are significantly present or possibly present in significant concentrations in stagnant water, Sr removed water, etc. have been removed to meet the discharge criteria in the ALPS treated water to be discharged into the sea**.



# 3-4. Selection of nuclides to be measured and assessed through inventory assessment

Newly added

TEPCO

- The nuclides to be measured and assessed were selected using the following process.
- Regarding the following process, first, the nuclides that can realistically exist are selected considering the half-life of the nuclides based on the findings pointed by the IAEA and the NRA. Next, we conduct another desk study assuming※ that all of the radioactive materials have been transferred to the ALPS treated water storage tanks. Furthermore, the assessment is based on the actual measured data of contaminated water and the properties of nuclides that we have accumulated over the past 12 years.

  ※ Assumption based on the fact that contaminated water has been continuously treated and stored in the tanks over the 12 years since the earthquake.

Library of radioactive nuclides used in the inventory assessment (around 1,000 nuclides)

Consideration based on inventory assessment

**Step 1**
Exists 12 years after reactor shutdown (2023) ※

※： Decay time in the Inventory assessment will be set appropriately according to the time frame when the selection results will be used

**Step 2** **210 nuclides**
Not gas generated during operation

**Step 3** **206 nuclides**
Ratio of the concentration of each radionuclide to the regulatory concentration is 0.01 or more in the assessment results on the transition of nuclides to the water in the ALPS treated water , etc. storage tank

In addition to the above, considerations based on measured data and properties of nuclides

**Step 4** **93 nuclides**
Ratio of the concentration of each radionuclide to the regulatory concentration is 0.01 or more in the transition assessment of nuclides to contaminated water

**Step 5** **37 nuclides**
Ratio of the concentration of each radionuclide to the regulatory concentration is 0.01 or more on the analysis results as contaminated water in the past

**6 nuclides**
Nuclides to be monitored

Nuclides that will be continuously monitored to ensure they don't exist in contaminated water in significant quantities

Excluding tritium（cannot be removed by ALPS)

Nuclides to be measured and assessed **30 nuclides**

Nuclides to verify against the discharge criteria

# 3-5. Selected nuclides to be measured and assessed

Newly added

TEPCO

- **30 nuclides in the table below and tritium are the nuclides to be measured and assessed in discharging the ALPS treated water into the sea**, selected using the selection flow on the previous slide.
- These changes to the nuclides to be measured and assessed (4 nuclides were added and 37 removed from selection) will be reviewed by the NRA and the IAEA.

## 【Nuclides to be measured and assessed (30 nuclides)】

Before, during and after the discharge of ALPS treated water into the sea, we will confirm that the following nuclides meets the discharge criteria (sum of the ratios of the concentration of each radionuclide to the regulatory concentration of each is less than one).

※ In addition to the nuclides in the table below, tritium will be also measured.

| | | | | |
|---|---|---|---|---|
| C-14 Carbon | Y-90 Yttrium | I-129 Iodine | Eu-154 Europium | Pu-239 Plutonium |
| Mn-54 Manganese | 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-243 Curium |
| Sr-90 Strontium | Te-125m Tellurium | Sm-151 Samarium | Pu-238 Plutonium | Cm-244 Curium |

Nuclides added to be on the conservative side based on the selection flow

# 3-6. Periodic confirmation of nuclides to be measured and assessed

Newly added

TEPCO

- Although the nuclides to be measured and assessed on the previous page were selected after confirming the past analysis results, there is a possibility that the situation may change depending on the progress of future decommissioning work.
- If significant quantities of nuclides other than those to be measured and assessed (hereinafter referred to as "other nuclides") are found , the nuclides to be measured and assessed will be re-evaluated. Decay of radionuclides will be also reflected in the selection following process.
- These details will also be discussed during the future review by the NRA.

## 【 Confirmation at each release 】

Confirm that other nuclides in significant quantities are not found by measuring γ-rays with Ge semiconductor detectors, total alpha, and total beta.

## 【 Confirmation of trend of radioactive concentration in contaminated water 】

Confirm that the radioactive concentration of contaminated water after the central radioactive waste treatment facility is below or equal to the concentration confirmed in the past.

## 【Research and analysis】

In the research and analysis, if an event of concern is found in the above confirmation, we will research the presence of other nuclides. Even if there is no concern, we will research the presence of other nuclides by confirming that nuclides to be monitored in significant quantities are not found once a year in Sr removed water.

## ○nuclides to be monitored (6 nuclides)

Nuclides not detected in significant quantities in past analysis of contaminated and treated water but to be continuously confirmed.

| | | | | | |
|---|---|---|---|---|---|
| **Cl-36** Chlorine | **Fe-55** Iron | **Nb-93m** Niobium | **Nb-94** Niobium | **Mo-93** Molybdenum | **Ba-133** Barium |

# [Reference] Comparison with nuclides to be removed with ALPS (62 nuclides) and carbon-14

Newly added

TEPCO

- The nuclides that have been changed in this method are as follows.
- In previous measurements, (a) there is no discrepancy that would suggest the presence of Selenium-79 in total beta analysis of ALPS treated water, (b) Uranium-234, Uranium-238, and Neptunium-237 have not been detected by total alpha analysis in ALPS treated water, and (c) in this additional analysis, these nuclides were not detected. From the foregoing, these nuclides are not considered to be present in significant concentrations in ALPS treated water, though they will be measured and assessed voluntarily just in case.
- Among the nuclides subject to be removed by ALPS, **there is no possibility that the 37 nuclides that were not selected are present in the contaminated water. However, we will voluntarily measure them and confirm that their concentrations are below the detection limit prior to the discharge**.

**Nuclides to be measured and assessed ：30 Nuclides （=26+4）**

※ In addition to the nuclides in the table below, tritium will be also measured.

| | | | | |
|---|---|---|---|---|
| **C-14** Carbon | **Tc-99** Technetium | **Cs-137** Curium | **U-238** Uranium | **Cm-243** Cerium |
| **Mn-54** Manganese | **Ru-106** Ruthenium | **Ce-144** Cerium | **Np-237** Neptunium | **Cm-244** Cerium |
| **Co-60** Cobalt | **Cd-113m** Cadmium | **Pm-147** Promethium | **Pu-238** Plutonium | |
| **NI-63** Nickel | **Sb-125** Antimony | **Sm-151** Samarium | **Pu-239** Plutonium | |
| **Se-79** Selenium | **Te-125m** Tellurium | **Eu-154** Europium | **Pu-240** Plutonium | |
| **Sr-90** Strontium | **I-129** Iodine | **Eu-155** Europium | **Pu-241** Plutonium | |
| **Y-90** Yttrium | **Cs-134** Curium | **U-234** Uranium | **Am-241** Americium | |

：Nuclides added to be on the conservative side based on the selection flow（4 nuclides）

**Nuclides excluded from those to be measured and assessed among the nuclides to be removed with ALPS ：37 nuclides （=13+10+14）**

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

：Nuclides whose inventory volume decreased and excluded from selection in step 1 (13 nuclides)

：Nuclides whose inventory volume decreased and excluded from selection in step 3 (10 nuclides)

All nuclides Half-life less than 1 year

：Nuclides excluded from selection in step 4 as a result of reviewing the state of transition to contaminated water from nuclear reactors, etc. according to the actual situation. （14 nuclides）

# [Reference] Major issues in selecting nuclides to be Measured and assessed

Newly added

TEPCO

- Major issues in selecting nuclides to be measured/evaluated are as follows:
  - The reason why the criteria for exclusion from the selection on the selection flow is 1/100 of the regulatory concentration of each nuclide
    This criterion was established based on the assumption that the dose impact caused by the release of ALPS treated water into the see is sufficiently small.

Example of procedure 3 (Evaluation of transfer of all the amount to ALPS treated water, etc. storage tanks)

**Concentration of nuclide i** = Inventory amount of nuclide I (Bq) ÷ Stored amount of ALPS treated water, etc. ($m^3$) / **1.33 million $m^3$ (estimated) as of Mar. 2023** < **Regulatory concentration of nuclide i** ×0.01 (Bq/$m^3$)

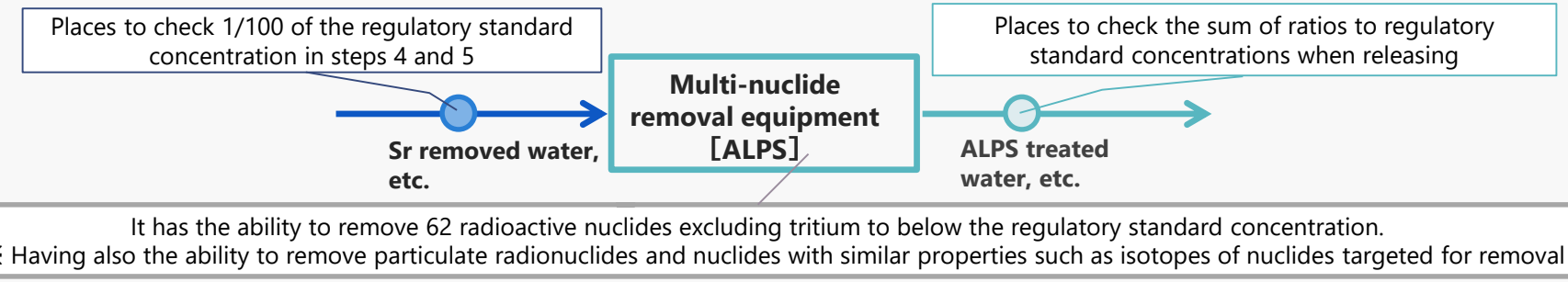
In Procedure 3, we evaluate the assumption that all the inventory generated in the reactor core has been transferred to the storage amount of ALPS treated water etc. to be stored as of March 2023. Considering the situation of the PCV internal investigation, etc. so far, we believe that it is a very conservative setting* that the entire amount of the generated inventory has been transferred to the tanks.

※The setting that the entire amount of the generated inventory was transferred to the tanks has more than 100 times more conservativeness in the concentration evaluation compared with the sampling results of contaminated water so far.

Example of procedure 4 and 5 (Concentration evaluation of contaminated water, Actual concentration of contaminated water)

In procedures 4 and 5, the concentration of contaminated water is assessed, and even if the figure is 1/100 of regulatory concentration at that point, the impact on the sum of ratios of the concentration of each radionuclide to the regulatory concentration, which is one and the discharge criteria, is small enough considering the subsequent removal with ALPS.

※ Nuclides to be removed by ALPS are set to target nuclides exceeding 1/100 of the regulatory standard concentration in contaminated water as in this section



# 3-7. Summary of the selection of nuclides to be measured and assessed other than tritium

Newly added

TEPCO

- Based on the discussions at previous review meetings related to the ALPS treated water, first IAEA review report, and the requirements from the Fukushima Prefecture Technical Discussion Committee Report, TEPCO reverified thoroughly the nuclides to be confirmed before ALPS treated water is diluted and discharged into the environment.

- TEPCO has continued to measure radioactive materials in ALPS treated water. We confirm that nuclides other than the major 7 nuclides*, Carbon-14, and Technechim-99 do not exist in significant concentrations in ALPS treated water by total beta and total alpha measurements. Furthermore, additional analysis of nuclides selected based on existing knowledge detected no new nuclides (including alpha nuclides) in ALPS treated water.

- Given the above, regarding the nuclides to be measured and assessed before ALPS treated water is diluted and discharged, we selected 30 nuclides considering the nuclides may exist in significant concentrations in contaminated water before purified and treated by ALPS regardless of whether they are in the ALPS treated water or not.

- Among the 62 nuclides subject to be removed by ALPS, there is no possibility that the 37 nuclides that were not selected for measurement and assessment this time are significantly present in the contaminated water. However, we will voluntarily measure them and confirm that their concentrations are below the detection limit prior to the discharge from the viewpoint of suppressing adverse impacts of reputation.

※ Major 7 nuclides : Cesium-134, Cesium-137, Strontium-90, Iodine-129, Cobalt-60, Antimony-125, Ruthenium-106 that were found in significant concentrations compared to the regulatory concentration limits in the analysis of the 62 nuclides in treated water conducted in the past.