

Installation of Multi-nuclide Removal Equipment

January 23, 2012

Tokyo Electric Power Company



東京電力

1. Installation of Multi-nuclide Removal Equipment

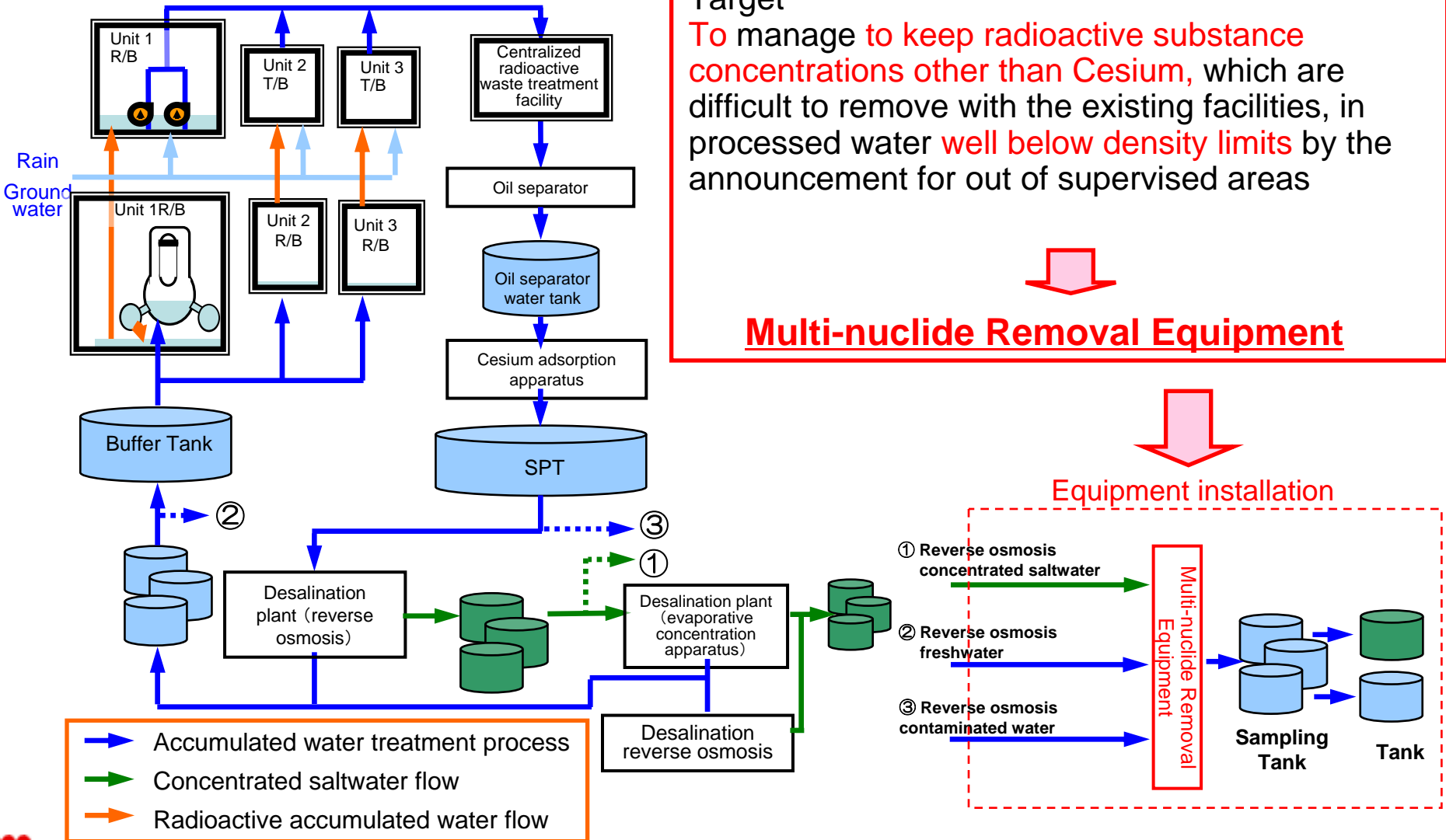
■ “Multi-nuclide Removal Equipment”

Target

To manage to keep radioactive substance concentrations other than Cesium, which are difficult to remove with the existing facilities, in processed water well below density limits by the announcement for out of supervised areas

Multi-nuclide Removal Equipment

Equipment installation



1 . Installation of Multi-nuclide Removal Equipment

- Multi-nuclide Removal Equipment standing in “Mid-and-long-Term Roadmap towards the Decommissioning of Fukushima Daiichi Nuclear Power Station Units 1-4, TEPCO”

5. Specific Plans for Mid-and-long Term Action

5-1. Efforts for Maintaining Plant in an Ongoing Stable State

(2) Plan for accumulated water processing

1. Improvement of the reliability of accumulated water processing facilities (extraction)

Multi-nuclide Removal Equipment, able to greatly reduce concentrations of radioactive substances in processed water[※] , will be installed within 2012, and will be managed so as to keep radioactive substance concentrations in processed water well below density limits by the announcement for out of supervised areas.

※ Water from which cesium has been removed by the current water purification facilities.

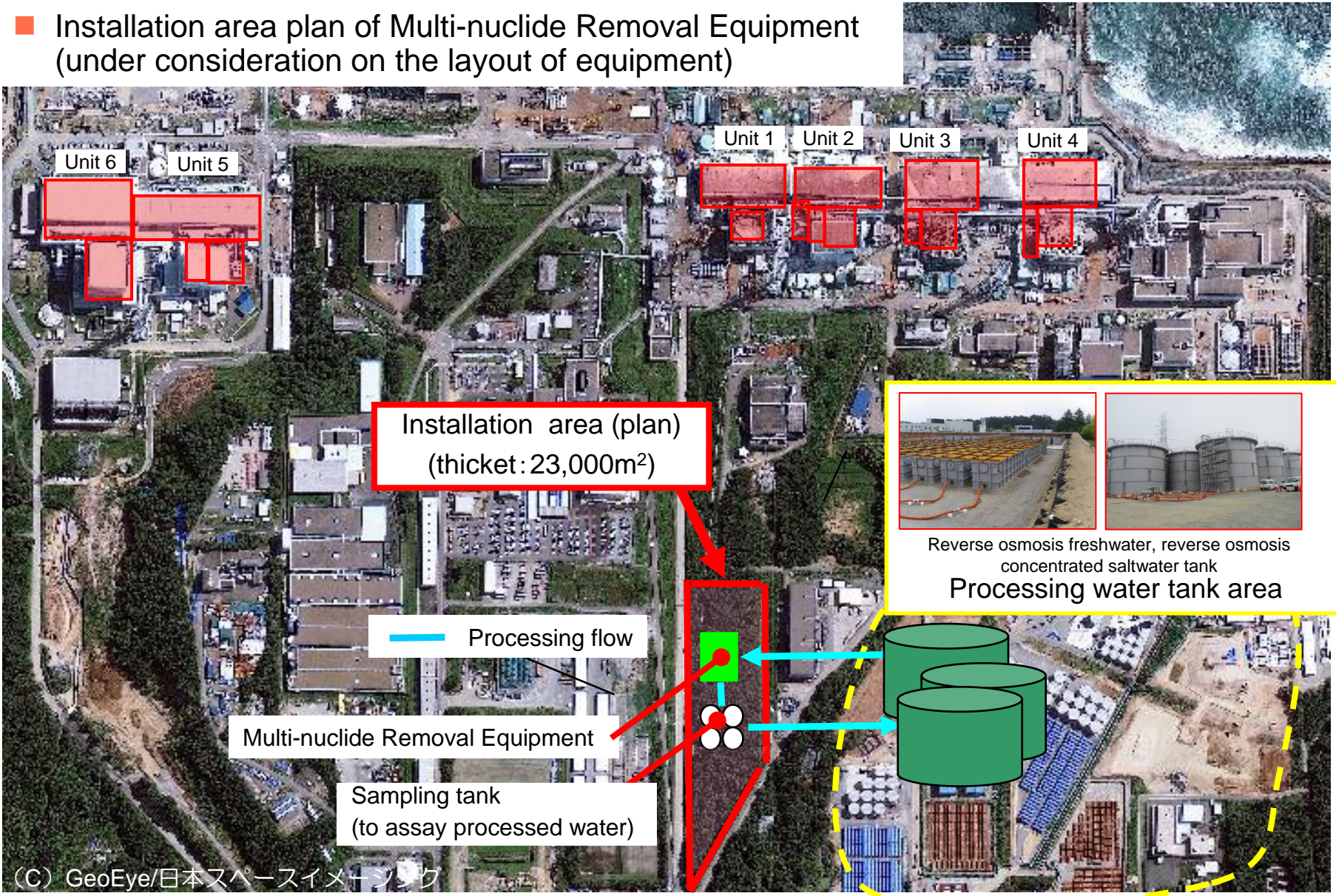
■ The joint ministerial order as “Mid-and-long-Term Roadmap” decided

(the Minister of the Economy, Trade and Industry, and the Minister for the Restoration from and Prevention of Nuclear Accident)

Concerning plan for accumulated water processing, begin to **install Multi-nuclide Removal Equipment**, which will be able to greatly reduce concentrations of radioactive substances in processed water, and improve the reliability of the existing accumulated water processing facilities, as soon as possible.

2. Installation Area

- Installation area plan of Multi-nuclide Removal Equipment (under consideration on the layout of equipment)



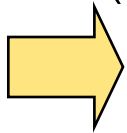
3. Equipment Outline

- Processing water

Reverse osmosis concentrated saltwater,
reverse osmosis freshwater、 reverse osmosis input

- Decontamination factor

Make concentrations of radioactive substances in processed water below density limits by the announcement for out of supervised areas, and sum of each nuclide scaling factor to the density limit is compared with 1 (except tritium).



Evaluating the decontamination factor in the basic test

- Processed water flow rate

Over 20m³/h (approximately 500m³/day)

※ Density limit by the announcement of reactor regulation

4. Basic test

Basic test of Multi-nuclide Removal Equipment

- Making practical processing water thorough test equipment of Multi-nuclide Removal Equipment, and evaluating decontamination factor (except tritium)
- The concentration of each nuclide after processing reverse osmosis concentrated saltwater (provisional value) meets the density limit (α nuclides also meet the limit as gross alpha). Analyzing the other nuclides
- Considering further processing modification in order to improve decontamination factor

Results of processing reverse osmosis concentrated saltwater
(representative nuclides, provisional value)

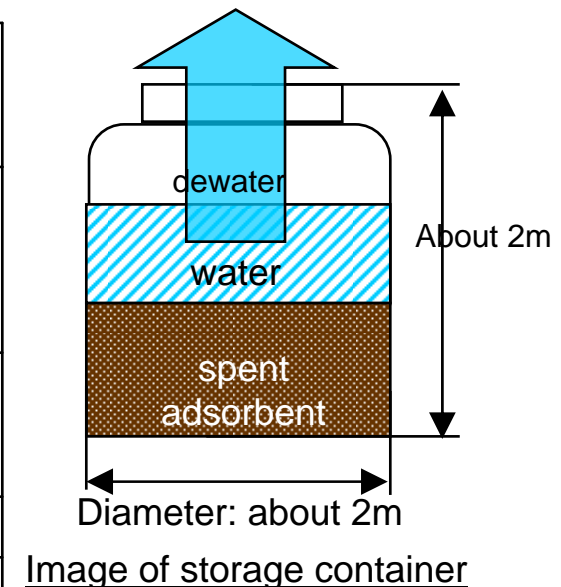
	Nuclide analysis results (Bq/L)						
	γ nuclides					β nuclides	
	Cs-134	Cs-137	Co-60	Sb-125	Mn-54	Sr-89	Sr-90
Density limit	60	90	200	800	1000	300	30
Before processed (digit)	1000	1000	10000	100000	10000	10000000 (sum)	
After processed	Meet each density limit						

5. Waste generated with equipment installation

■ Waste from Multi-nuclide Removal Equipment

The status, amount, and storage measures of waste from Multi-nuclide Removal Equipment are under design, and its outline is below. Concerning storage measures, dose reduction measures with evaluating radiation dose from the waste such as setting shields etc. will be implemented

Waste	<ul style="list-style-type: none">• Radioactive spent adsorption (mineral and resin)• Radioactive sludge
Storage measures	<ul style="list-style-type: none">• Consideration of storage in the special container with dewater• Consideration of adoption of containers proven in US etc.
Amount of waste	<ul style="list-style-type: none">• In case of using special containers, approximately 1.5 containers / day will be generated (provisional consideration)
Storage area	Refer to the next page
Storage period	Approximately 20 years

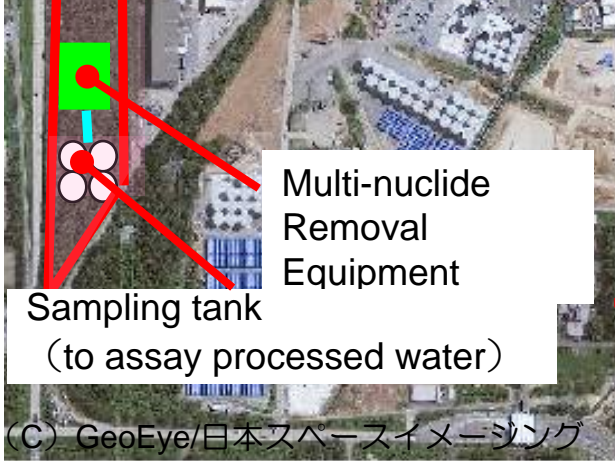
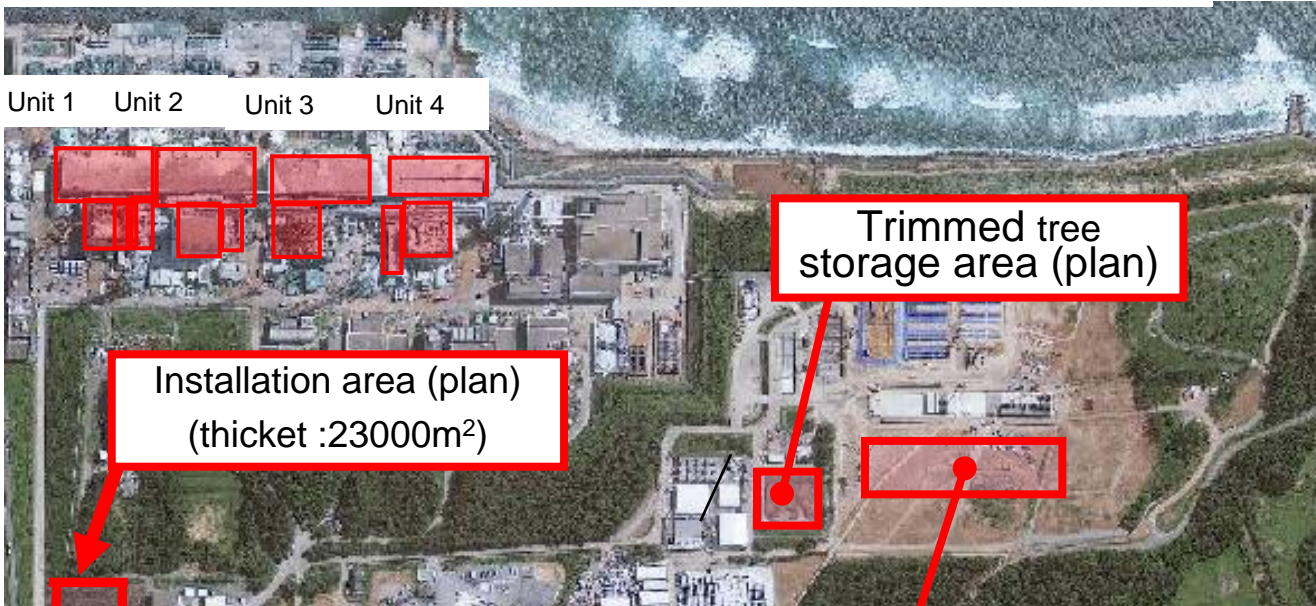


■ Trimmed trees at the land developed for the installation area

The area as the next page shows will be stored with trees trimmed for Multi-nuclide Removal Equipment installation (approximately 23,000m²). In case of short of storage area, additional one will be reconsidered.

5. Waste generated with equipment installation

Waste storage area



(C) GeoEye/日本スペースイメージング

6. Future plan

- The process of tree trimming and building at the Multi-nuclide Removal Equipment installation area will be regulated with the local government.

6. Future plan

■ Installation schedule

