

<Reference>

Performance verification test of the Advanced Multi-nuclide Removal Equipment

August 18, 2014

Tokyo Electric Power Company

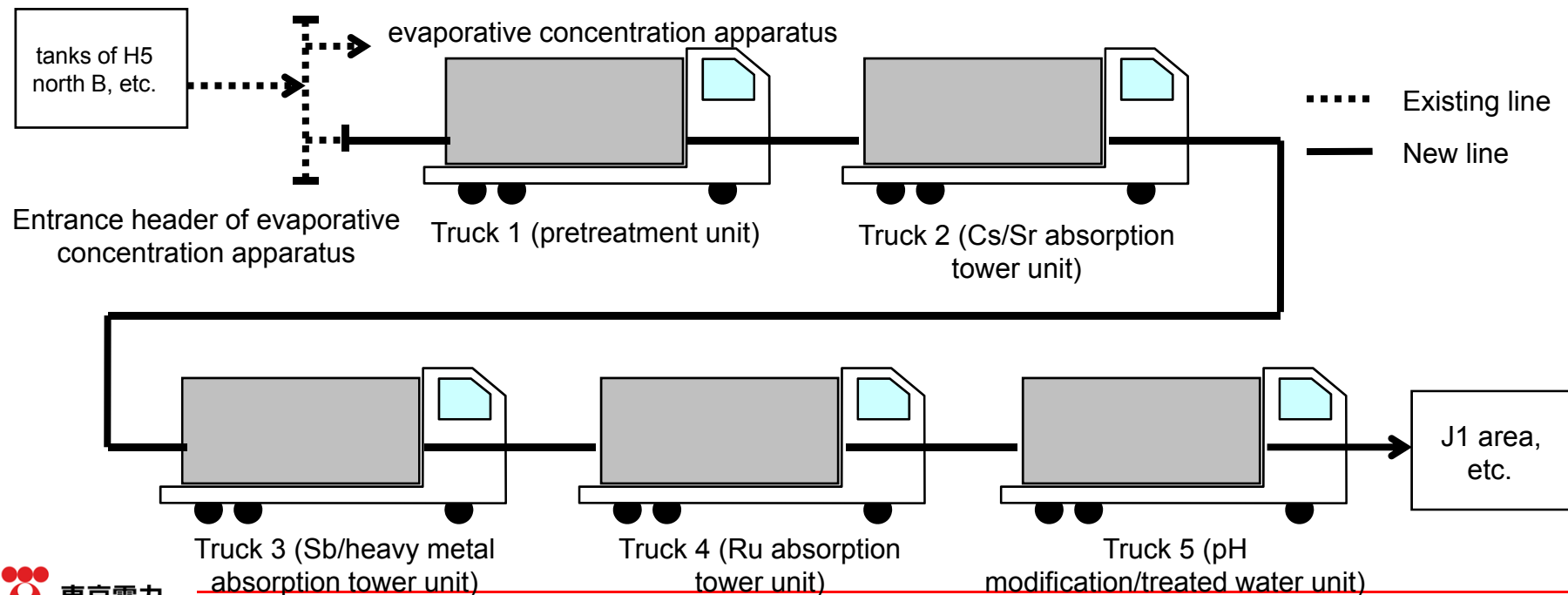


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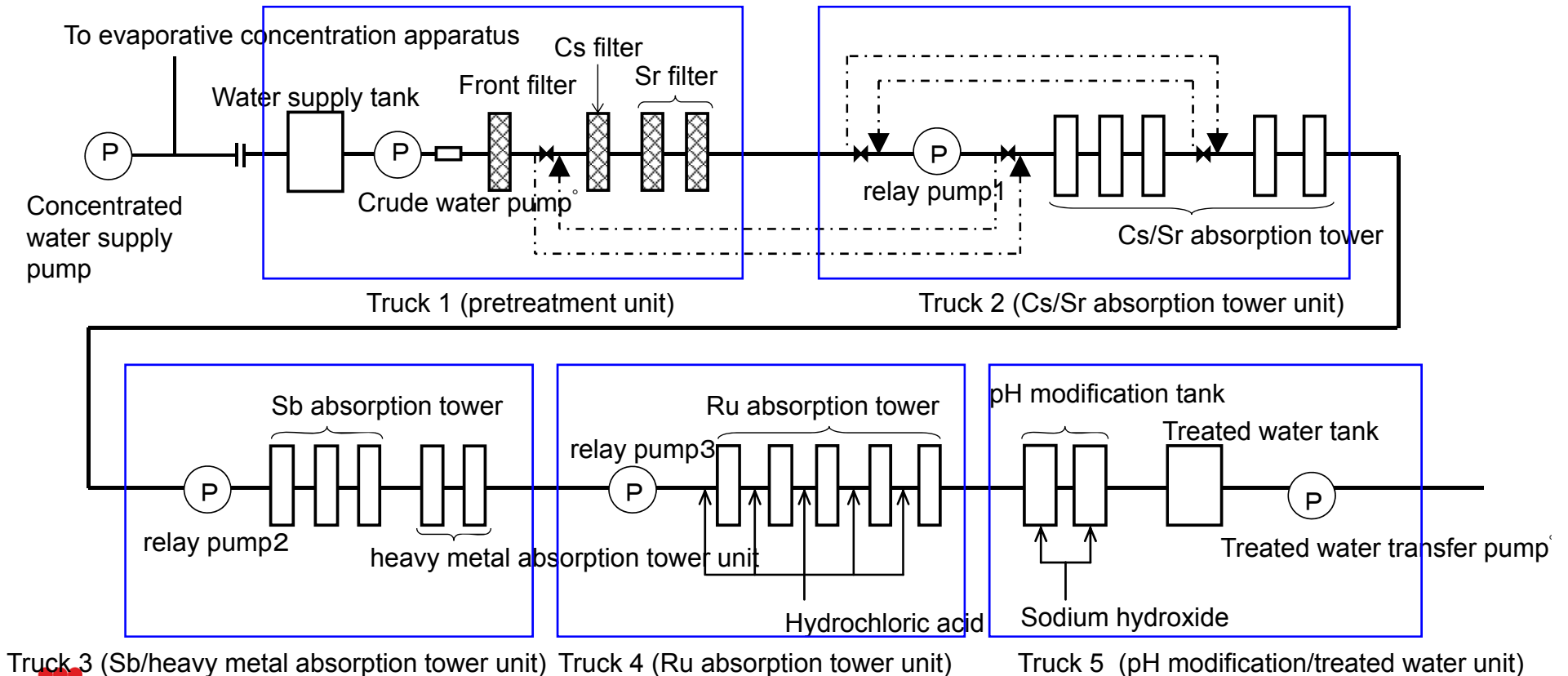
Outline of Verification Equipments

- The equipments will verify the capacity of Advanced Multi-nuclide Removal Equipment and the replace cycle of absorption agent. The result will be reflected on the practical operation.
- They are mobile miniature version (1/10 scale; 50m³/day) of actual machine mounted on 5 trucks. This assembly consists of a pretreatment unit, a Cs/Sr absorption tower unit, an Sb/heavy metal absorption tower unit, a Ru absorption tower unit, and a pH modification/treated water unit.
- Water to be treated is water in H5 north B tanks, the quality of which is relatively similar to the specification demanded.
- Treated water will be flown to treated water tank (in J1 area, etc.).



Outline of Verification Equipments

- From upstream to downstream, the assembly consists of one front filter, three Cs/Sr absorption towers, one Cs filter, two Sr filters, two Cs/Sr Sr absorption towers, three Sb absorption towers, two heavy metal absorption towers, and five Ru absorption towers.
- Based on the laboratory results, the basic procedure is as follows: water will flow through front filter, three Cs/Sr absorption tower, then Cs filter and Sr filter respectively.
- Ru absorption tower will be pH modified according to nature of absorption agent. The water passed through Ru absorption tower will be neutralized.



Truck 3 (Sb/heavy metal absorption tower unit) Truck 4 (Ru absorption tower unit) Truck 5 (pH modification/treated water unit)

Installation status of Verification Equipments

- Verification Equipments are loaded on the carriers of five 10-ton trucks



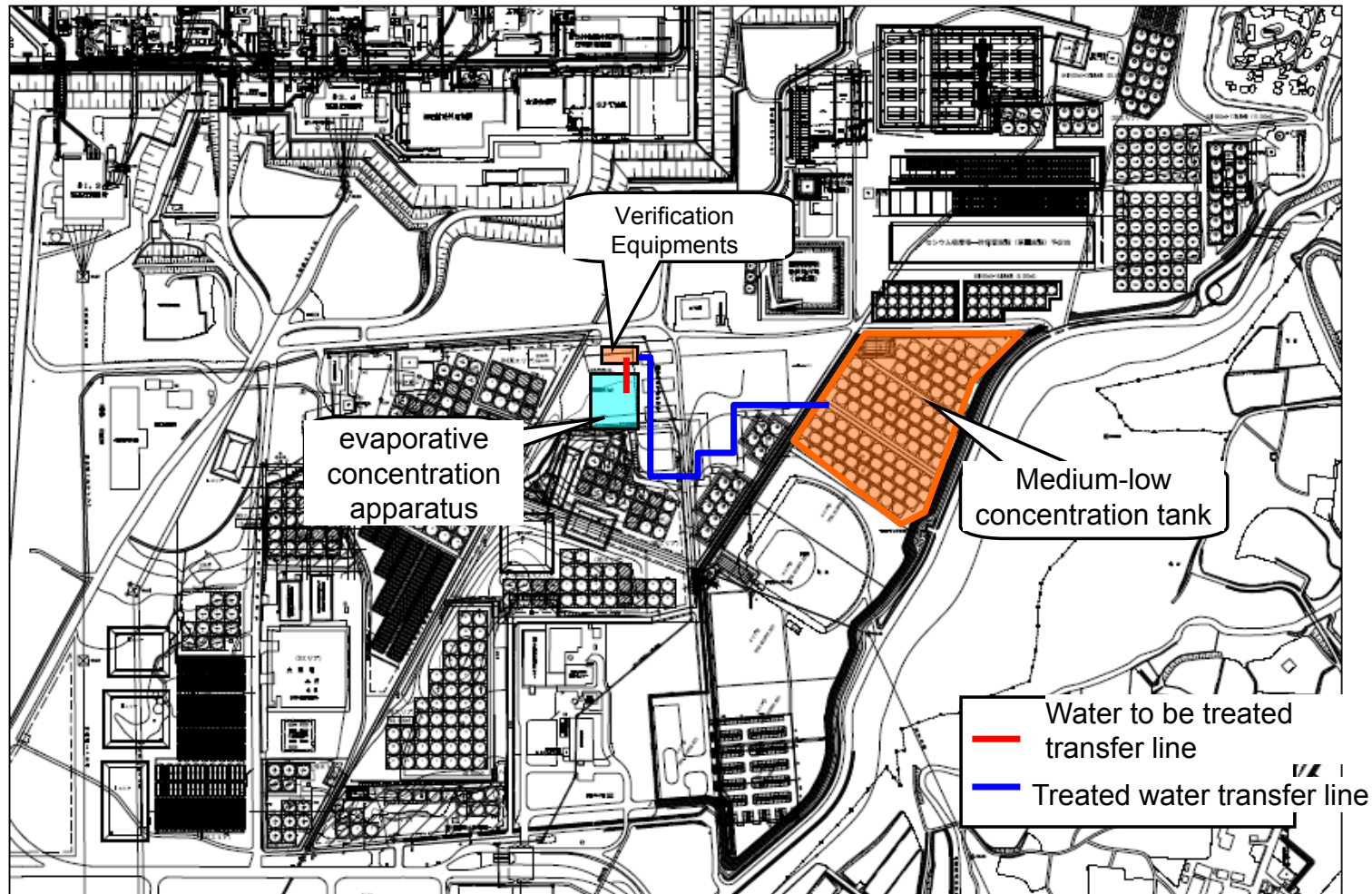
credit: Tokyo Electric Power Company
photo: August 13, 2014



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The site Verification Equipments are installed

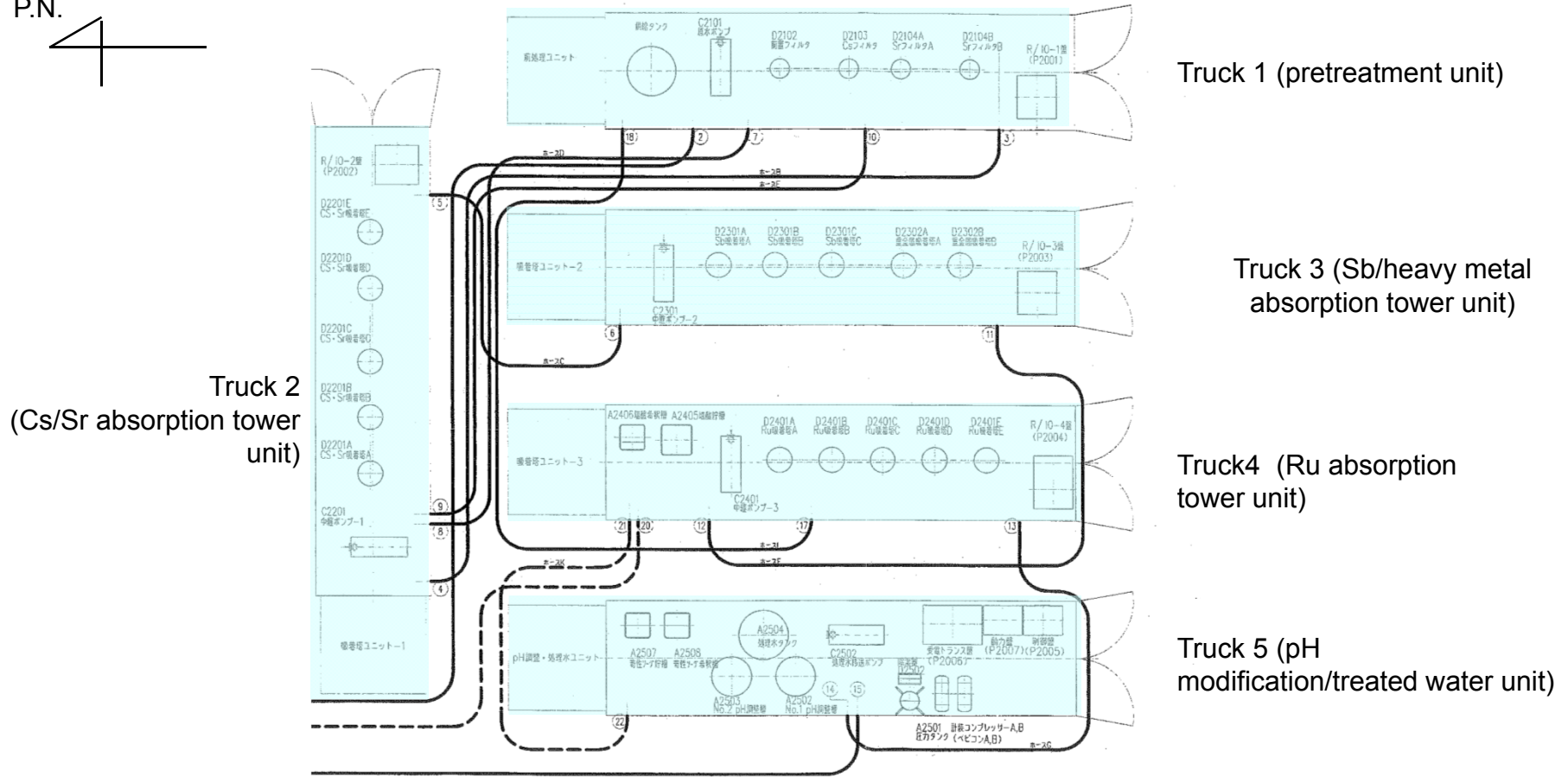
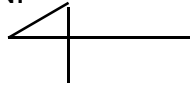
- Verification Equipments are installed east side of evaporative concentration apparatus building (northwest side of water treatment CCR)



Layout of Verification Equipments

layout

P.N.



Truck 2
(Cs/Sr absorption tower unit)

Truck 1 (pretreatment unit)

Truck 3 (Sb/heavy metal absorption tower unit)

Truck 4 (Ru absorption tower unit)

Truck 5 (pH modification/treated water unit)

evaporative concentration building

Conditions of verification test

■ Testing parameters

1) standard mode (2.1m ³ /h)	equivalent to the rated volume (500m ³ /day) of verification test main target: verifying the multi-nuclide removing capacity and studying the life time of absorption agent
2) Large flow mode (3.4m ³ /h)	equivalent to the improved operation of verification test (800m ³ /day) main target: verifying the multi-nuclide removing capacity in main stream
3) Small flow mode (0.7m ³ /h)	equivalent to water flow of 5 spare towers in verification test main target: verifying the Ru removing capacity

- Object of the test is to confirm that the concentration of treated water is below the limit of concentration determined by “Notifications for dose limits, etc. based on the Ministerial Ordinance for Commercial Nuclear Power Reactors in accordance with the Reactor Regulation Act”. When the performance is lower than expected, measures will be taken as needed.
- Filters and absorbing agent will be replaced after confirming their life time.

Schedule for Equipments verification test

- Implementation plan to be filed and approved: August 6, 2014
- pre-use inspection to be operated: August 14-15, 2014
- Verification (real water flow) test start: as soon as the certification of pre-use inspection is issued by the Nuclear Regulatory Agency
- Test period : about 3 months 【Flow time: daily working time only (about 8 hours)】

