Fukushima Update Briefing

March 19, 2014
Tokyo Electric Power Company

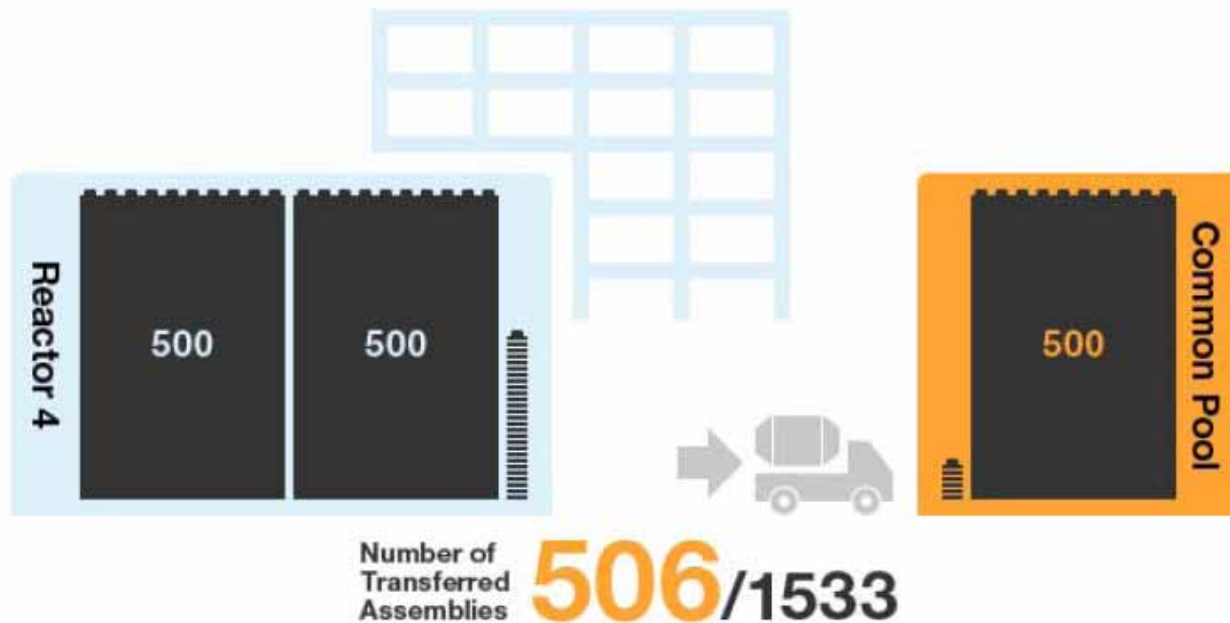東京電力

TEPCO

Contents

■ Update on Fuel Transfer from Unit No.4

■ Recent Topics Related to Contaminated Water
- Overflow from Tank
- Water Analysis Issues
  - Strontium 90
  - Total beta

■Update on Fuel Transfer from Unit No.4

Fuel Transfer from No.4 Reactor

Reactor 4

500 | 500

Common Pool

500

Number of Transferred Assemblies **506**/1533

○Breakdown of transferred assemblies by kind

Spent fuel   484 assemblies/1,331 assemblies

Unirradiated (New) fuel   22 assemblies/ 202 assemblies
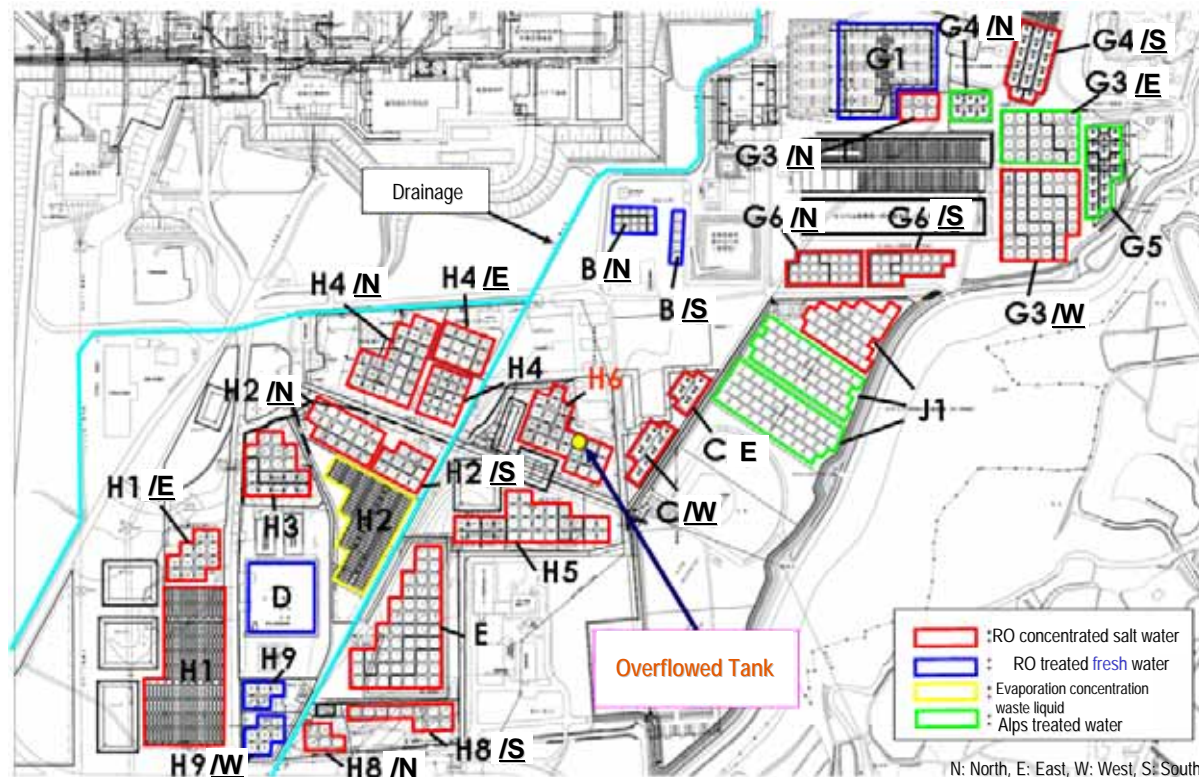
○Number of times of cask transportation:

23 times

as of Mar.17,2014

■Recent Topics Related to Contaminated Water
- Overflow from Tank -
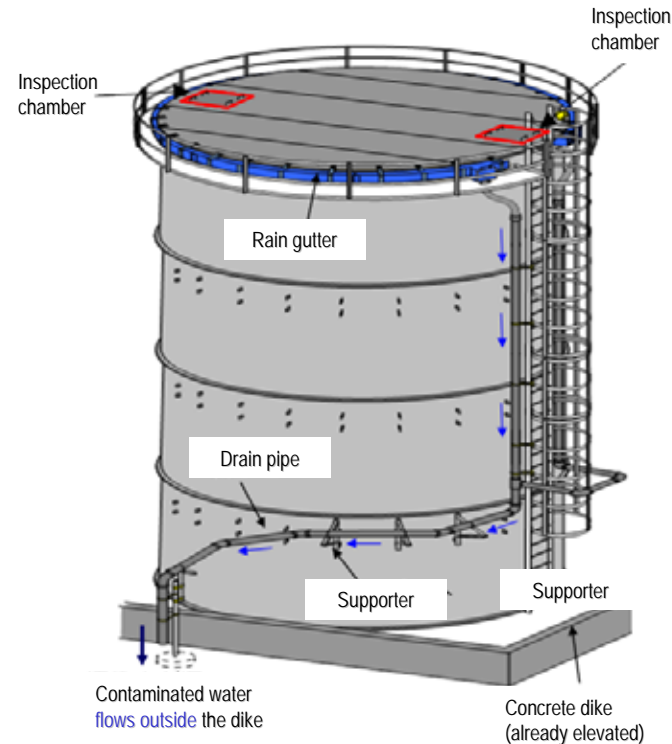
Overflow from Tank (1)

■Summary

- Overflow caused by overfilling discovered on Feb. 19, 2014
- 100t of leaked water with 2.4×10^8 Bq/L of total beta
- No water pathway from the tank area to the sea
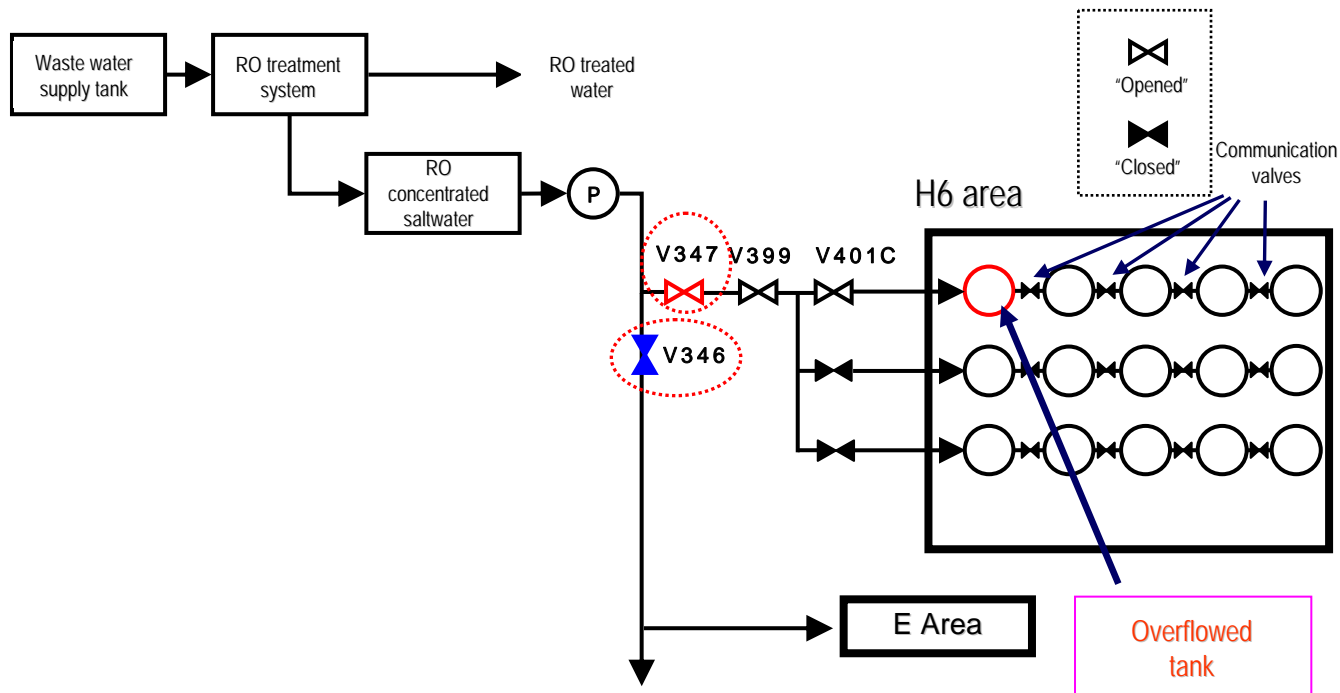
Overflow from Tank (2)

■Overflow in Detail

●Overfilled from the processing plant

●Leaked on top of the tank

●Flowed outside the dike through a rainwater drain pipe

Inspection chamber

Inspection chamber

Rain gutter

Drain pipe

Supporter

Supporter

Contaminated water flows outside the dike

Concrete dike (already elevated)

Overflow from Tank (3)

■Overfilling in Detail

●Flow controlled by V346 and V347

●Contaminated water planned to be carried to E area, but improperly directed to H6 area causing overfill

Overflow from Tank (4)

■Immediately begun removal of contaminated soil and water

- 42m³ of water and 130m³ of soil already collected. Efforts to be continued
- Groundwater observation holes and well to be installed

Overflow from Tank (5)

■ **Causes and Actions**

Lack of Awareness of Precursor

- E area tank water level not increased
- H6 area tank water level high-high alarm triggered

➤ Strengthening Supervision

➤ Improving Training

➤ Modifying Water Transfer Pump Operation Logic and Tank Level Alarm System

Improper Valve Operation

- Open/Close of flow control valves not properly managed

➤ Introducing Key Lock on Valves

➤ Strengthening Supervision

➤ Recording Images of Surveillance Cameras

Recent Topics Related to Contaminated Water
- Water Analysis Issues -

Water Analysis Issues – Strontium 90 (1)

- **Problem of Strontium 90 (Sr-90) Analysis**
  - Sr-90 >Total beta in some sea water samples
    - Recognized since last summer
    - Investigation results reported last month
- **Summary of Investigation Results**
  - Detection efficiency for Sr-90 measurement improperly evaluated and continuously referred to in the process of analysis for one of on-site counters since its introduction
  - Overestimated by roughly 30% for the data in question
  - No serious impact on results of environmental influence surveys

■ **Causes and Actions**

- Improper evaluation for detection efficiency
  - ◆ Not accustomed to procedure
    - – Evaluated only at the time of detector introduction
    - – Done by our cooperative worker
  - ◆ Efficiency different to another "same-type" counter on-site

➢ No more self evaluation

➢ Re-analysis of in-question data samples (if available)

➢ Periodic cross-check of analysis result with other internal and external laboratories

■ Problem of total beta Analysis

- "Counting loss" affected results for the case of highly radioactive samples measured with a no loss-compensation counter
  - Recognized since last month
  - Still under investigation

- 0.8% of all total beta measurements seriously affected
  - Some samples wasted after analysis
  - Many in-question data obtained during heavy-workload period

- In-question data correction method exists, but applicability under consideration

Water Analysis Issues – Total beta (2)

■What is "Counting Loss?"

Radiation

Detector
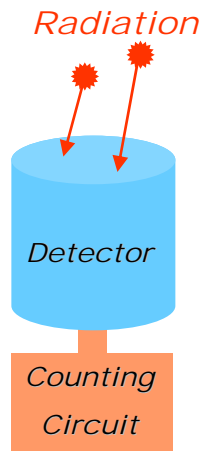
Counting Circuit

Signals caused by radiation in a detector are counted by a counting circuit. The time required for counting one signal by the circuit is called "dead time." If radiation causes a signal during a dead time caused by different radiation, it is not counted. This is called "counting loss."

Counting loss is significant for high radiation environments.

Measurement Period

Counting Circuit

Dead Time

Time

Detector

Time

Counting Loss
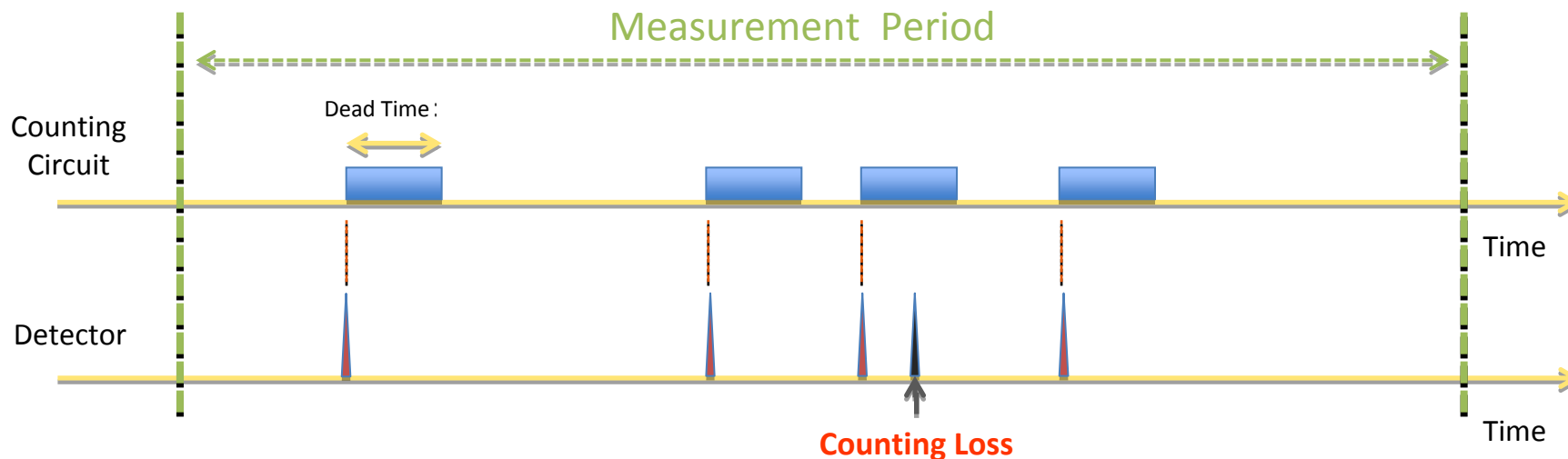
Water Analysis Issues – Total beta (3)

■ Causes and Actions

- Still under discussion, but considering actions such as...

  ➢ Process review by external third party with high competency in analysis
  ➢ Cross-check with other laboratories