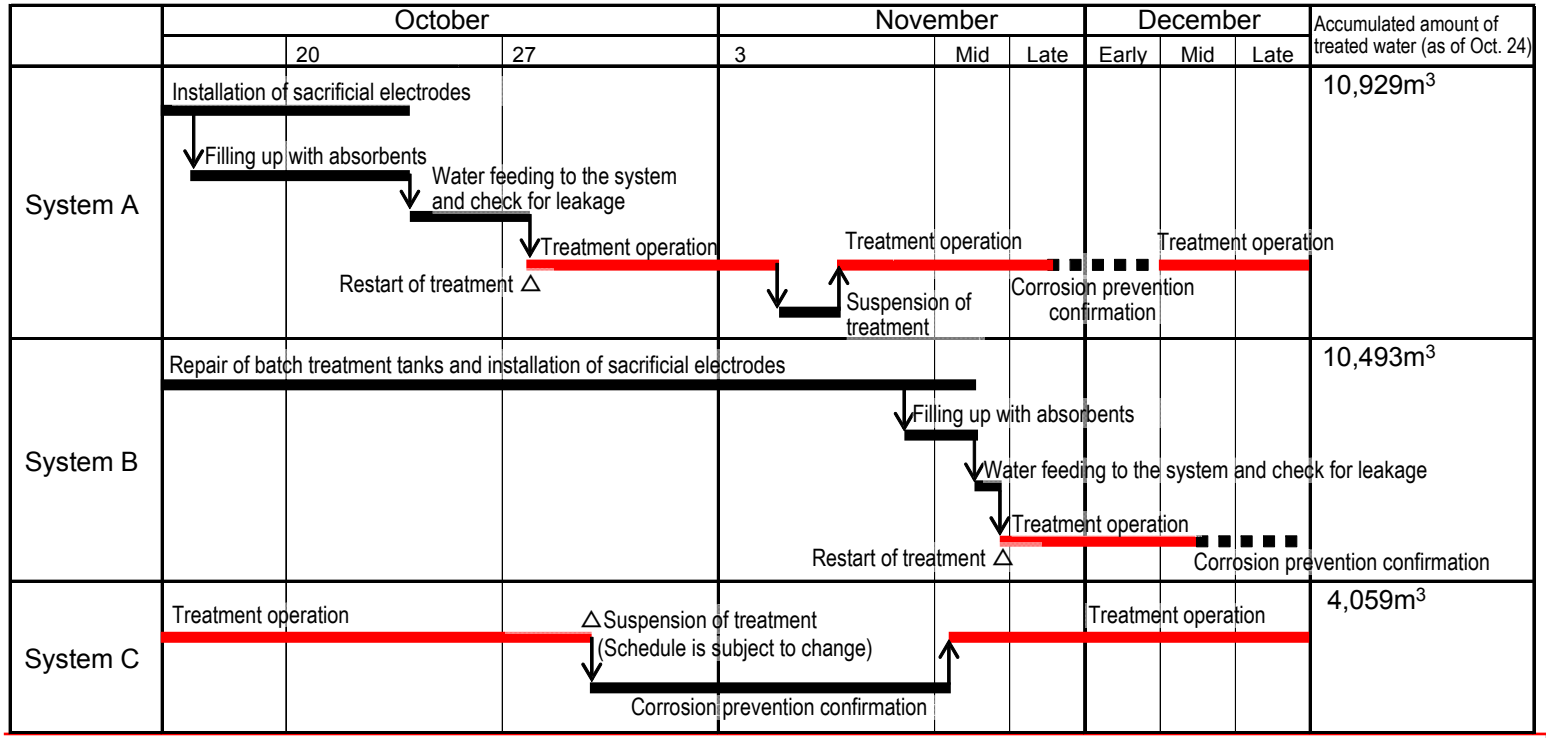
Restart of Hot Test for Multi-nuclide Removal Equipment System A

<Reference>
October 28, 2013
Tokyo Electric Power Company

Hot test schedules

- System A: **A hot test restarted on October 28**. Treatment operation will be **stopped temporarily in early November** for modification of the control operation as a measure to prevent “a procedure abnormality and a shutdown of treatment operation”, which occurred on October 4.
- System B: Batch treatment tanks is currently being repaired, and treatment operation is **scheduled to restart in mid-November**
- System C: Currently in operation for **treatment. Treatment operation is (tentatively*) scheduled to be suspended from October 30** for confirmation of corrosion prevention effectiveness, **and to restart in mid-November**. * Subject to change depending on when HIC is replaced.



Outline of the batch treatment tank leakage incident

On June 15, leakage occurred at the batch treatment tank 2A, followed by suspension of treatment operation through the system A on June 16.

- From late June: Cause investigation, and consideration of preventive measures
- From mid-July: Horizontally deployed investigations
- From July: Repair of batch treatment tanks and implementation of corrosion prevention measures to flange parts

On September 25, the cause and preventive actions were announced

On September 27, a hot test for the system C started

- September 28: Shutdown of treatment operation due to clogging of a batch treatment tank of the system C
- October 4: Shutdown of treatment operation after the activation of an alarm indicating a process abnormality at the system C

Causes of leakage and corrosion

- Leakage from the lower side of the batch treatment tank 2A was caused by a penetration defect, which resulted from unexpectedly damaging corrosion attributable to **a combination of complex factors**: **formation of a crevice environment** due to generated iron precipitation; and **development of a corrosive environment** due to injection of chemicals (mainly, hypochlorous acid).
- Further, while **silver impregnated activated carbon** with which the absorption tower 6 is filled is considered to **contribute to occurrence and development of corrosion**, corrosion was found in locations downstream of the absorption tower 6 that are not in the alkaline environment.
- Additionally, around each of the flange parts at inspection openings of the absorption towers, **fluid becomes stagnant, and flows slowly, which is favorable for local corrosion to occur**. This is considered as another factor contributing to development of corrosion.

Recurrence prevention measures and horizontal deployment

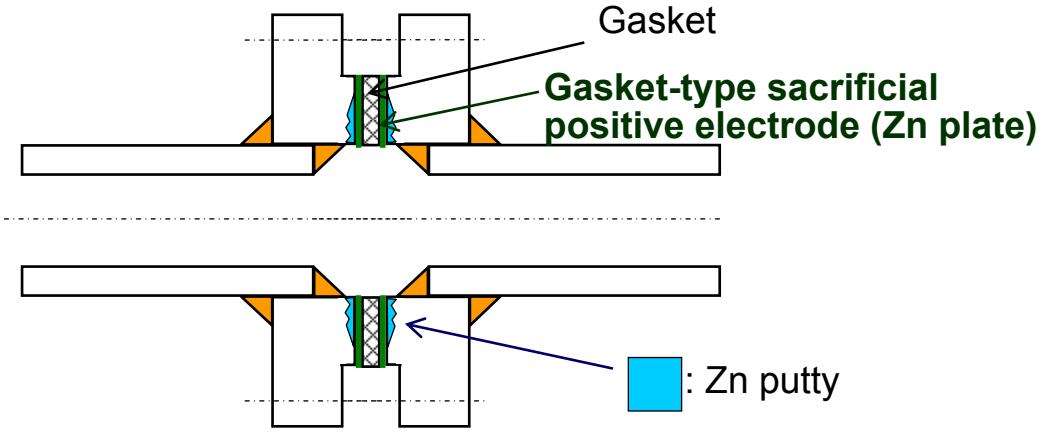
- Recurrence prevention measures on batch treatment tanks

  After the damaged parts were repaired, **rubber lining (chloroprene rubber) was provided** on the internal surfaces of the tanks.

- Measures taken within the horizontal deployment range

  Gasket-type sacrificial positive electrodes were provided to flanges that have the risk of suffering crevice corrosion (only Zn putty was provided to some of large-diameter flanges). Additionally, for higher reliability, we are considering future **replacement with lining pipes**.

Batch treatment tank 1C
(after rubber lining was provided)



Gasket-type sacrificial positive electrode

Preventive actions taken against corrosion in absorption towers

- Bypass the silver impregnated activated carbon tower in a neutral region where a corrosion potential is increased.
- Consider restructuring of absorption towers in order to secure the absorption capability expected from silver impregnated activated carbon, which is to be bypassed.
- Provide sacrificial electrodes to flanges that are likely to suffer crevice corrosion.
- Stop injection of hypochlorous acid
- After the start of a hot test, **regularly inspect** locations corresponding to those in the system A where relatively severe corrosion was found, so that **the effects of the corrosion prevention measures will be checked**. (**Inspections of the system C are scheduled to start on October 30**.)