Closure of the Landside Impermeable Wall (Ice Wall) Commencement

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Tokyo Electric Power Company
KAJIMA CORPORATION
Brief overview of the Landside Impermeable Wall (Ice Wall)

- Refrigeration Plant
  - Number of refrigeration machines: 30
  - Number of cooling towers: 30
  (The coolant circulates at -25 to -30 degree Celsius.)

- Landside Impermeable Wall
  - Number of soil freezing pipe: 1,568
    (Depth: approx. 25 to 30m)
  - Length of coolant circulation pipe: 3,080m

- Coolant Circulation Pipe

- Water Injection Well (a total of 33 wells)
Installation of facilities required for the Landside Impermeable Wall (Ice Wall) and its timeline

- Installation completed on the west side of No. 2-4 buildings
- Installation completed on the south side of No. 4 buildings
- Installation completed on the east side of No. 1-2 buildings

**Timeline**

- Preparatory work for installation started on November 27, 2013
- Installation work started on June 2, 2014
- Preparatory work for freezing completed on:
  - Landside: September 15, 2015
  - Seaside: February 9, 2016
- Freezing started on March 31, 2016
Process toward closure of the Landside Impermeable Wall (Ice Wall)

The seaside line of the landside impermeable wall will be closed prior to closure of the landside line. The landside line will be frozen in stages, resulting in entire closure of the line.

Closure of the landside impermeable wall will proceed in the following three stages:

• First stage: Closure of the entire seaside line and closure in stages of the landside line have been completed (to be conducted this time)
• Second stage: Between First and Third stages
• Third stage: Entire closure has been completed

What is expected in the first stage

• With the subdrain system in operation, it is expected that even if groundwater level around the reactor and turbine buildings declines, the groundwater level can quickly and certainly be recovered by suspending the operation of the system. Therefore, the chances are quite slim that the water levels of accumulated water in the buildings and groundwater around the buildings are inverted.
Schedule for freezing in the first stage

There are two phases in the first stage. Checking how freezing has been progressing in each phase, TEPCO will carefully move closer towards closing the landside impermeable wall.

In Phase 1, the following areas of the landside impermeable wall will be frozen simultaneously: the entire seaside line, a part of the north side and advanced partial freezing areas of the landside (the areas that are harder to freeze because spacing between the freezing pipes is wider). This means that closure of about 48% of the total landside line has been completed.

In Phase 2, TEPCO will start freezing the remaining areas of the seaside line, except for not yet frozen areas at around the same time as the effects of the frozen seaside line start showing. So, about less than 95% of the landside impermeable wall on the landside line will be closed.

*Freezing of the advanced partial freezing areas will continue until the remaining areas except for the not yet frozen areas (5%) start to freeze.
First stage: closure areas (Phase 1)

In Phase 1 of the first stage, TEPCO will freeze the following three areas simultaneously prior to freezing of the other areas.

- **The entire seaside line**: To reduce the risk that the level of groundwater around the reactor and turbine buildings could get lower than that of accumulated water in those.
- **A part of the north side**: To prevent groundwater around the Unit 1 reactor and turbine buildings from spreading.
- **Advanced partial freezing areas**: To freeze areas in advance where it is expected to take more time to freeze and ensure complete freezing of the areas.

*It takes more time to freeze areas where spacing is wider between the installed refrigeration pipes (in the case of several pipes having been inserted, etc.) compared with “general” areas where spacing is about 1 m. Therefore, if both areas start to be frozen simultaneously, it is expected that it would be harder to freeze the areas because more groundwater would flow into the areas, leading to a situation where it would be much harder to freeze. In order to not let that happen, TEPCO freezes these areas prior to freezing the “general” areas.*
First stage: closure areas (Phase 2)

- Following the freezing of the entire seaside line, a part of the north side and advanced partial freezing areas of the landside line, TEPCO will freeze remaining areas of the landside line except for 7 not yet frozen areas in Phase 2. During First stage (Phase 2), groundwater will be ensured to flow into closure areas between the closed landside impermeable walls and the reactor and turbine buildings.

* The numbers indicate the total length of each not yet frozen area.