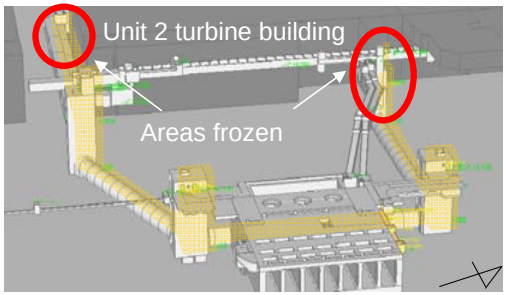
Status of and measures for removing highly contaminated water in trench

1. Objective of waterproofing building connections by freezing

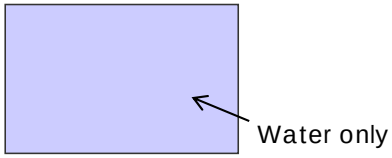
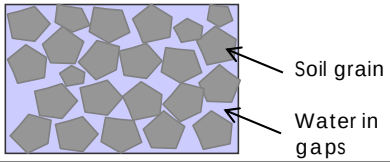
- When removing contaminated water which remains inside the seawater pipe trench at the seaward side of Units 2 and 3's turbine buildings, we waterproof the building connections by freezing them. Once this is completed, we will remove the stagnant water and block the inside of the trench.



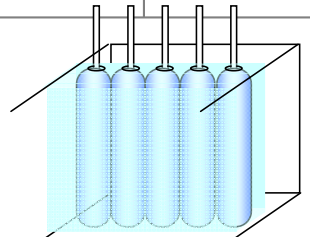
Bird's-eye view of Unit 2 seawater pipe trench

	Contaminated water quantity inside trench (m^3)	Radioactivity Concentration Cs137 (Bq/cm^3)	
		Trench	Turbine Building
Unit 2	approx 5,000	approx 10^4	approx 10^4
Unit 3	approx 6,000	approx 10^2	approx 10^4

2. Difference between freezing environment in trench and ice wall

	Inside trench	Ice wall
Water freezing status (illustration)		
Water quantity	Large (per unit volume)	Small (per unit volume)
Water flow	Large (from the effects of disturbance and convection)	Small
Previous experience	No	Yes (civil engineering work etc.)

- Because of the large water quantity and water flow inside the trench, it is more difficult to freeze water than in soil conditions.
- Creating similar conditions to soil by installing packers (nylon bags) inside the trench and inserting cement makes it easier to freeze the water.

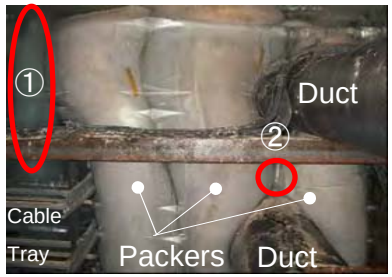


Packers (conceptual diagram)

Packers (during trial run)

3. Freezing operation status and tasks

- We began the freezing operation on April 28th, but it takes time for the temperature to fall at places which are not filled with packers (①) and gaps at the upper side of pipes (②) etc.
- Water flow, caused by fluctuation of the water level at the turbine building, is one of the factors that inhibits freezing.
- Fluctuation of the water level in the turbine building occurs due to injection of cooling water into the reactor, inflow of groundwater and water transfer between buildings to keep the water level lower than the groundwater around the building.



4. Countermeasures and future plans

- We are taking the following measures sequentially, and monitoring the fluctuation of the water level and changes in the freezing temperature.
- Completion of freezing at Unit 2 has been postponed from the end of June to the middle of July (Unit 3's schedule remains unchanged.)
- ① Replacing the sight tubes with freezing ducts to improve the freezing capacity, starting operation from June 4th.
- ② We plan to install more freezing ducts outside the frame to improve the freezing capacity.
- ③ Regulating the amount of water transfer from the turbine building from June 10th to reduce water flow.
- ④ We plan to inject grout between the turbine building and packers to reduce water flow.

Top View