January 23, 2012
Tokyo Electric Power Company

The skimmer surge tank drawdown at the Unit 4 spent fuel pool
1. Outline

- Found the skimmer surge tank drawdown after the earthquake at 14:28 on Jan. 1.
- The earthquake made the gate seal between the spent fuel pool and reactor weakened, and some water moved from the pool to the reactor well.

※1: Reactor well was filled with water because Unit 4 was in the regular inspection at the time of the accident

※2: The water pressure is much lesser than that in operation because of little difference of the water level between the reactor well and the spent fuel pool. This causes the gate seal weakened.
2. Pool gate structure

- The water pressure in the pool, pressing the gasket packing on the wall, makes the gate sealed.
- The gate is set over the three hooks and fixed by bolts to prevent the gate floating.

※Refer to the below

Water pressure

Gasket packing

Reactor well
(no water in operation)

Pool
gate

A bolt fixing the gate to prevent its floating

The pool-side water presses the gate to the reactor well when the pool water-level is higher. On the contrary, when the pool water-level is lower, the gate seal is weakened.

A hook on the fuel pool wall

The bars of the pool gate are just hooked (no mechanical fixers)
3. Estimated mechanism of skimmer surge tank drawdown

1. Before the earthquake, the water level of the reactor well was lower than that of the pool, and pool gate was sealed.

2. Estimated that the earthquake made pool gate moved and its seal weakened, and the pool water flowed into the reactor well through the pool gate space.

3. The pool water flowing to the reactor well elevates its water-level and decreases water-flow from the pool to the skimmer surge tank, and results in the skimmer drawdown.

4. When water was supplied till the reactor well overflowed (A in the figure), the skimmer surge tank drawdown was recovered as well as before the earthquake.
4. Management of pool water-level

- Water flow from pool to reactor well
  - The overflow from the reactor well to the skimmer surge tank was found on the patrol of Jan. 6 and 22. Estimated that this water circulating might continue.

- Management of pool water-level from now
  - Overseeing the pool water-level as well as the reactor well (indicator & camera), and managing both the pool and reactor well water-level.
  - Keeping reactor well water-level around the overflow level when the reactor well water-level decreases with natural evaporation, supplying it with water.