Countermeasures to mitigate risks regarding the water leak from the tank

August 26, 2013
Tokyo Electric Power Company, Inc
1. Countermeasures already completed and currently underway

1—① Full inspection of all flange type tanks
- Inspection of all flange type tanks of the same type which leaked (H4-I-No.5) was completed on August 22.
  - Visual inspection, checking for puddles, $\beta$-ray measurement at 50cm above ground, X-ray measurement around the bank.
  (Root cause analysis and permanent measure proposals are in progress)

1—② Water transfer from tanks which were moved, as conducted for No.5 tank
- Transfer of contaminated water from H4-I-No.5 tank was completed on August 21. For the tanks with a similar history, H4-I-No.10 is currently undergoing the same process (estimated completion: August 26) and preparations for H4-II-No.3 are underway.

1—③ Collection of contaminated soil
- Started on August 23.
- Completion date will be determined by the amount of contamination, but we aim to finish as early as possible.

1—④ Inspection and reinforcement of the surrounding bank
- The banks around the tanks were confirmed not to be contaminated on August 22. Land embankments and waterproof sheets have been added to the sandbags outside the H4 area where the leak occurred.

1—⑤ Enhancement of monitoring
- Since August 20, monitoring for the trenches leading to the sea has been enhanced.
- The possibility of further leakage into the sea is under investigation.
About 300 flange type tanks have been inspected from a total of 930 tanks storing contaminated water in Units 1 to 4.
【Measure 1 — ②】Location of tanks transferred from H1 area to H4 area

- H4-I-No.5 tank leakage confirmed on August 19

- From H1 Area No.4
- From H1 Area No.3
- From H1 Area No.8

From H4 Area

H4-I-No.5 Tank (underwater pumps inserted)

H4-B-No.10 Tank (tank for transfer)
Collection of contaminated soil from the surrounding bank was started on August 23. The collection points were confirmed not to be contaminated at a depth of 40-50cm.
【Measure 1 — ④】Current status of land embankment and waterproof sheet installation (Aug 20)

Measure ① Land embankment in front of banks

Measure ① Land embankment at back of banks

Measure ③ Setting up waterproof sheets

Measure ② Setting up land banks

Measure ④ Setting up waterproof sheets
【Measure 1-⑤】Investigation of water outflow into the ocean

Radioactive Contaminated Water Tank Area (incl. planned area)

① South waterfall pit seawater (side ditch discharge point), 2013/08/20
Cs-134: Undetectable 【Detection Limit: $1.1 \times 10^{-3}$ [Bq/cm$^3$]】
Cs-137: $1.8 \times 10^{-3}$ [Bq/cm$^3$]
Total $\beta$: Undetectable 【Detection Limit: $1.9 \times 10^{-2}$ [Bq/cm$^3$]】

② Warehouse side ditch water, 2013/08/20
Cs-134: Undetectable 【Detection limit: $1.9 \times 10^{-2}$ [Bq/cm$^3$]】
Cs-137: Undetectable 【Detection limit: $2.7 \times 10^{-2}$ [Bq/cm$^3$]】
Total $\beta$: $9.3 \times 10^{-2}$ [Bq/cm$^3$] (Note) $\beta$ ray: $70 \mu$m radiation dose rate
2. Emergency Measures

2—① Reinforcement of Patrols

☐ Urgent reinforcement to approx. 50 patrol workers, adding affiliated company employees to TEPCO employees
☐ Adoption of “post responsibility system” at each tank. Early recognition of any sign of accident by carefully monitoring situation
☐ Inspection & recording of any leak, leak trace, and/or suspicious puddles with a 360-degree view, including side/bottom of each tank
☐ Checking & recording of radiation levels, always carrying a “handy dosimeter”, and further measurement & recording with an “ionization chamber dosimeter” if any significant variation in radiation levels is detected

2—② “Normally closed” drain valve operation for radioactive contaminated water tanks

☐ Switch to “normally closed” drain valve operation from “normally open”, in addition to rainwater pit management
2—③ Water level management in contaminated water tanks

- Introduction of thermographic water-level-reduction management system to flange type tanks

Example

Survey result (day) | Outside of tank
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Water level | Water level

Survey result (night) | Outside of tank
--- | ---
Water level | Water level

\[\text{Note}\]
The display of color tone and temperature of temperature survey results by thermo-camera differs between day and night.
3. Conclusion

✓ The measures presented are to be implemented immediately.

✓ Furthermore, we are also working on radical measures, including the following:
  □ Placement of water gauges in all flange type tanks and introduction of a central control system
  □ Increase of welded type tanks and replacement of flange type tanks

✓ Taking into consideration opinion and instruction from various national meetings and working groups, we have been making every effort to resolve this problem as the highest priority management matter.