### Future Plan for the Water Transfer from the Underground Reservoirs

**Tokyo Electric Power Company**

**Present status**

<table>
<thead>
<tr>
<th>Reservoir</th>
<th>Capacity (m³)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.1</td>
<td>13000</td>
<td>Leakage from No.2 was suspected during transfer</td>
</tr>
<tr>
<td>No.2</td>
<td>14000</td>
<td>Leakage was found</td>
</tr>
<tr>
<td>No.3</td>
<td>11000</td>
<td>A small amount of leakage was suspected</td>
</tr>
<tr>
<td>No.4</td>
<td>4000</td>
<td></td>
</tr>
<tr>
<td>No.5</td>
<td>2000</td>
<td></td>
</tr>
<tr>
<td>No.6</td>
<td>10000</td>
<td></td>
</tr>
<tr>
<td>No.7</td>
<td>4000</td>
<td></td>
</tr>
</tbody>
</table>

**Priority measures (1)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Apr 14 - Golden Week in May)</td>
<td>6000m³ to 14000m³ (H2 Tank)</td>
</tr>
<tr>
<td></td>
<td>1100m³ to 1100m³ (Filtrate water tank)</td>
</tr>
<tr>
<td></td>
<td>8400m³ to 4600m³</td>
</tr>
<tr>
<td></td>
<td>3000m³ to 8100m³</td>
</tr>
<tr>
<td></td>
<td>0m³ to 0m³</td>
</tr>
</tbody>
</table>

**Priority measures (2)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Late May -)</td>
<td>16500m³ (G6 Tank)</td>
</tr>
</tbody>
</table>

**Backup measures (in case of emergency)**

- Highly radioactive contaminated water receiving tank: 2800m³
- Condenser H/W (The storage capacity is under investigation)

**Further risk reduction measures**

- Early operation commencement of the multi-nuclide removal equipment (ALPS)

**Monitoring enhancement**

- Observation holes will be newly installed around reservoirs No.1, 2, 3 and 6. (at 22 locations (8 locations on the sea side)

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<Reference No.1>
April 10, 2013

Tokyo Electric Power Company
Destinations of the Water to be Transferred from the Underground Reservoirs

- Water transfer line
- Underground reservoir transfer line
- Steel tank
- Underground reservoir
- Area planned for the installation of additional tanks
- Area being considered for the installation of additional tanks

**Unit 4**
- Filtrate water tank
- South side area of the site

**Unit 5**

**Unit 6**

**Unit 1**

**Unit 2**

**Unit 3**

**Unit 4**

- H8
- G3/G4/G5
- G6

**Area planned for the installation of additional tanks**

**Area being considered for the installation of additional tanks**
Water Balance Simulation (Underground Reservoirs)

Storage capacity (m³)

- April 10: 26,300
- April: 23,600
- May: 7,300
- June: 19,000

- H2: Water amount currently stored
- G6: Storage capacity

Filtrate water tank

2500

Date

April

May

June
Water Balance Simulation (RO Concentrated Water)

Estimated storage capacity of the RO concentrated water excluding the capacity of the underground reservoirs

Estimated storage amount of the RO concentrated water excluding the storage amount of the underground reservoirs

Operation management of the ALPS and the RO equipment will be conducted in addition to the additional tank installation to be implemented ahead of schedule.
Measures to Prevent the Expansion of Contaminated Water Leakage from the Underground Reservoirs

April 10, 2013
Tokyo Electric Power Company
As a measure to be implemented for the time being (until the water in the underground reservoirs is emptied out), small pumps will be installed in the leakage detection holes to return the contaminated water to the underground reservoirs for the purpose of preventing the expansion of contaminated water leakage (The work to be started on April 10).
Measures to Prevent the Expansion of Contaminated Water Leakage

- Measures to prevent the expansion of contaminated water leakage
  - Currently, the contaminated water leaked from the underground reservoirs No.1 and No.2 is accumulated in the leakage detection holes.
  - In order to prevent the leaked water in the leakage detection holes from leaking into the ground in the surrounding area, the water in the leakage detection holes will be returned to the underground reservoirs.
Outline of the schedule

<table>
<thead>
<tr>
<th>Measures to be implemented</th>
<th>April</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Measures to prevent the expansion of contaminated water leakage from the underground reservoir No.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Measures to prevent the expansion of contaminated water leakage from the underground reservoir No.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note) The measure implementation will be continued until the water transfer from each underground reservoir is completed.
Impact Evaluation of the Contaminated Water Leakage from the Underground Reservoirs on the Surrounding Environment (Monitoring Plan for the Surrounding Area)

April 10, 2013
Tokyo Electric Power Company
Purpose of Investigation

- Understand the contamination condition of the surrounding area of the underground reservoirs and continuously monitor for contamination expansion into the sea side.
Investigation Locations (Plan View of the Entire Site)

Existing observation holes (at 7 locations)
(Continuous monitoring for contamination expansion to the sea side)
Depth: Approx. 20-30m
Investigation Locations (Details)

- **Underground reservoir No.4**
  - The location, number, etc. of the new observation holes are subject to change depending on the site condition and the objects buried underground.

- **Underground reservoir No.3**
  - New observation holes (at 22 locations)
  - (Understanding the contamination condition in the surrounding area of the underground reservoirs)
  - Depth: Approx. 5-15m

- **Underground reservoir No.2**
  - New observation holes (at 8 locations)
  - (Continuous monitoring for contamination expansion to the sea side)
  - Depth: Approx. 20-30m

- **Underground reservoir No.1**

- **Underground reservoir No.6**

- **Underground reservoir No.7**

*The location, number, etc. of the new observation holes are subject to change depending on the site condition and the objects buried underground.
Monitoring Items

Understanding the contamination condition in the surrounding area of the underground reservoirs (New observation holes)

- Analysis items
  - Chloride concentration and all  sessionId
- Frequency of analysis
  - Once a day for the time being

Continuous monitoring for contamination expansion to the sea side (Existing and new observation holes)

- Analysis items
  - Chloride concentration, all  sessionId and tritium
- Frequency of analysis
  - Once a week
## Schedule

<table>
<thead>
<tr>
<th>April 10</th>
<th>April 14</th>
<th>April 21</th>
<th>April 28</th>
<th>May</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Understanding the contamination condition in the surrounding area of the underground reservoirs (New observation holes)</strong></td>
<td>Boring</td>
<td>Monitoring</td>
<td>Start</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Continuous monitoring for contamination expansion to the sea side (Existing observation holes)</strong></td>
<td>Start</td>
<td>Monitoring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Continuous monitoring for contamination expansion to the sea side (New observation holes)</strong></td>
<td>Boring</td>
<td>Monitoring</td>
<td>Start</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Boring</td>
<td>Start</td>
<td>Start</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Boring</td>
<td>Start</td>
<td>Start</td>
<td>Start</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Boring</td>
<td>Start (in order)</td>
<td>Start</td>
<td>Start</td>
<td></td>
</tr>
</tbody>
</table>
(Reference) Sampling Performed in the Underground Reservoirs
(Current Status)

Enhanced sampling
- Initially, sampling was performed at 5 locations (Underground reservoir No.1 (drain hole), No.2 (drain hole and leakage detection hole), No.3 (drain hole) and No.4 (drain hole)).
- Considering that leakage has occurred in the underground reservoirs No.1, 2 and 3, sampling will be performed in underground reservoirs with and without water being stored for the purpose of obtaining initial data.

Sampling locations (24 locations)
- : drain holes (14)
- : leakage detection holes (10)

Frequency of sampling: Twice a day for the time being (whether or not the second sampling of the day is performed depends on the results of the first sampling.)
(As for reservoirs No.5 and No.7, sampling will be performed once a day for the time being for the purpose of obtaining initial data.)
**[Basic stance]**

As for the reservoirs with water being stored, sampling will be performed twice a day for the time being.  
(Whether or not the second sampling of the day is performed depends on the results of the first sampling.)  
(As for reservoirs without water being stored, sampling will be performed once a day for the purpose of obtaining initial data.)

<table>
<thead>
<tr>
<th>No.</th>
<th>Purpose of analysis</th>
<th>Sampling location</th>
<th>1. Chloride concentration</th>
<th>2. γ nuclides</th>
<th>3. Alk B</th>
</tr>
</thead>
</table>
| 2   | [During transfer] Check the condition of leakage to evaluate the amount of leakage.  
     [After transfer is completed] Confirm that leakage has stopped after water transfer and that the leaked water is diluted by groundwater.  
     *For a detailed analysis of leaked water, the analysis of all Cs, H-3 and Sr-90 will be performed during transfer and after the completion of transfer (once each). H-3 analysis will be continued once a week. | Drain hole        | Northeast: Twice a day for the time being  
Southwest: Same as the above | Twice a day for the time being  
Same as the above | Twice a day for the time being  
Same as the above |
| 1, 3| The escalation of leakage will be checked twice a day. In the case that water transfer is determined, the analysis will be performed for the same purpose as the underground reservoir No.2  
*For a detailed analysis of leaked water, the analysis of all Cs, H-3 and Sr-90 will be performed during water storage and after the completion of transfer (once each). H-3 analysis will be continued once a week. | Drain hole        | Northeast: Twice a day for the time being  
Southwest: Same as the above | Twice a day for the time being  
Same as the above | Twice a day for the time being  
Same as the above |
| 4, 5| Check for leakage from the reservoirs of concern.  
*H-3 analysis will be performed once a week. | Drain hole        | Northeast: Twice a day for the time being  
Southwest: Same as the above | Twice a day for the time being  
Same as the above | Twice a day for the time being  
Same as the above |
| 5, 7| Since the reservoirs do not have water currently being stored, monitoring will be performed for the purpose of obtaining initial data.  
*H-3 analysis will be performed once. | Drain hole        | Northeast: Once a day for the time being  
Southwest: Same as the above | Once a day for the time being  
Same as the above | Once a day for the time being  
Same as the above |

*Analysis will be performed if the amount of sample necessary for analysis is obtained.
Cause Investigation of the Leakage from the Underground Reservoirs (Site Investigation of the Underground Reservoir No.2)

April 10, 2013
Tokyo Electric Power Company
Cause Investigation Policy

- Assumed cause
  - The problem with the leakage detection hole penetration is considered to be one of the possible causes.
  - There is a high possibility that the leakage occurred in the northeast side of the leakage detection hole where a high density of ray is detected.

- Investigation Policy
  - Visually inspect the conditions of the impermeable sheet and the leakage detection hole in the leakage detection hole penetration in the northeast side where the leakage is suspected.

![Possible causes images]

- Damaged due to the welding area being stretched
- Possibility of contaminated water flowing into the leakage detection hole
- Pulled down due to water pressure
- RO concentrated water level
Investigation Method

Remove the covering soil

Cut and remove the sheet on the upper part

Remove the gravels

Inspect the leakage detection hole penetration

Implement rain protection

Note: The removed objects which are contaminated will be stored in notch tanks, etc.
<table>
<thead>
<tr>
<th>Item</th>
<th>April</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Investigation of the underground reservoir No.2</td>
<td></td>
</tr>
</tbody>
</table>