<Draining Water on Underground Floor of Turbine Building (T/B)>

- Status of highly concentrated accumulated radioactive water treatment facility and storage tank facility

[Treatment Facility]
- 6/17 20:00 Full operation of radioactive material removal instruments started.
- 6/24 12:00 Start of desalination facilities operation
- 6/27 16:20 Circulating injection cooling started.
- 8/7 16:11 Evaporative Concentration Facility has started full operation.
- 8/19 19:33 We activated second cesium adsorption facility (System B) and started the treatment of accumulated water by the parallel operation of cesium adsorption instrument and decontamination instrument. At 19:41, the flow rate achieved steady state.
- 11/29 12:06 water leakage from pin holes at the pipe arrangement between the water desalination facility and the buffer tanks was detected (estimated leakage amount: 500cc). The tubes were replaced and we confirmed that the water leakage had stopped.

[Storage Facility]
- 6/8- Big tanks to store and keep treated or contaminated water have been transferred and installed sequentially.

Accumulated water in vertical shafts of trenches and at basement level of building

<table>
<thead>
<tr>
<th>Unit</th>
<th>Draining water source</th>
<th>Place transferred</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 2</td>
<td>Central Radioactive Waste Treatment Facility</td>
<td>[Miscellaneous Solid Waste Volume Reduction Treatment Building (High Temperature Incinerator Building)]</td>
<td>9:10 on November 10 - Transferring</td>
</tr>
<tr>
<td>Unit 3</td>
<td>Central Radioactive Waste Treatment Facility</td>
<td>[Process Main Building]</td>
<td>9:25 on November 15 - Transferring</td>
</tr>
<tr>
<td>Unit 6</td>
<td>Temporary tanks</td>
<td></td>
<td>11/29 10:00-16:00 Transferred</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Place transferred</th>
<th>Status of Water Level (As of November 29 at 7:00)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Main Building</td>
<td>Water level: O.P.+ 2,168 mm(Accumulated total increase: 3,385 mm) 40mm increase since 7:00 on November 28</td>
</tr>
<tr>
<td>Miscellaneous Solid Waste Volume Reduction Treatment Building (High Temperature Incinerator Building)</td>
<td>Water level: O.P.+ 2,126 mm(Accumulated total increase: 2,852 mm) 121mm increase since 7:00 on November 28</td>
</tr>
</tbody>
</table>

Water level of the vertical shaft of the trench, T/B and R/B (As of November 29 at 7:00)

<table>
<thead>
<tr>
<th>Vertical Shaft of Trench</th>
<th>T/B</th>
<th>R/B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1</td>
<td>O.P. &lt;= 850 mm (No change since 7:00 on November 28)</td>
<td>O.P.+ 3,321 mm (33mm increase since 7:00 on November 28)</td>
</tr>
<tr>
<td>Unit 2</td>
<td>O.P.+ 3,004 mm (23mm decrease since 7:00 on November 28)</td>
<td>O.P.+ 3,015 mm (24mm decrease since 7:00 on November 28)</td>
</tr>
<tr>
<td>Unit 3</td>
<td>O.P.+ 3,236 mm (13mm decrease since 7:00 on November 28)</td>
<td>O.P.+ 2,984 mm (17mm decrease since 7:00 on November 28)</td>
</tr>
</tbody>
</table>
### Monitoring of Radioactive Materials

**Nuclide Analysis of Seawater (Reference)**

<table>
<thead>
<tr>
<th>Place of sampling</th>
<th>Date of sampling</th>
<th>Time of sampling</th>
<th>Ratio of density limit (times)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>I-131</td>
</tr>
<tr>
<td>Approx. 30m North of Discharge Channel of 5-6U, 1F</td>
<td>11/28</td>
<td>7:15</td>
<td>ND</td>
</tr>
<tr>
<td>Approx. 330m South of Discharge Channel of 1-4U, 1F</td>
<td>11/28</td>
<td>7:35</td>
<td>ND</td>
</tr>
<tr>
<td>Approx. 7km South of Discharge Channel of 1,2U, 2F</td>
<td>11/28</td>
<td>7:55</td>
<td>ND</td>
</tr>
</tbody>
</table>

*The major three nuclides (Iodine-131, cesium-134, 137) were not detected in the samples taken at 1 sea shore point of Fukushima Daiichi on Nov 28, 3 offshore points of Fukushima Daiichi on Nov 27 and 5 points offshore of Ibaraki Prefecture from 21-23 Nov.*

### Cooling of Spent Fuel Pools (As of November 29 at 11:00)

<table>
<thead>
<tr>
<th>Unit</th>
<th>Cooling type</th>
<th>Status of cooling</th>
<th>Temperature of water in Pool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1</td>
<td>Circulating Cooling System</td>
<td>Under operation(11:22 on August 10 -)</td>
<td>17.0 °C</td>
</tr>
<tr>
<td>Unit 2</td>
<td>Circulating Cooling System</td>
<td>Under operation(17:21 on May 31 -)</td>
<td>22.4 °C</td>
</tr>
<tr>
<td>Unit 3</td>
<td>Circulating Cooling System</td>
<td>Under operation(18:33 on June 30 -)</td>
<td>20.4 °C</td>
</tr>
<tr>
<td>Unit 4</td>
<td>Circulating Cooling System</td>
<td>Under operation(10:08 on July 31 -)</td>
<td>27 °C</td>
</tr>
</tbody>
</table>

**Unit 2**
- 11/6~ We started operation of radioactive material decontamination instrument of spent fuel pool.
- 11/28 At 9:12am, the alarm indicating that the difference of flow rates between at the entering and at the exit of the primary pump at the alternative cooling system for the spent fuel pool is big went off, and the system automatically stopped. At 9:16 am on the same day we checked the site and no abnormality such as no leakage was confirmed. We are investigating the cause.
- 11/29 11:50 the piping of the flow rate detector was choked with trash and was assumed not to be in normal operation, so we activated the system to flush this detector under pressure. After flushing the flow rate detector is operating normally and we are monitoring the operation.

**Unit 4**
- 11/29 10:58 in order to lower the salt density of the Spent Fuel Pools we fully activated the newly introduced ion exchanging device.

### Water Injection to Pressure Containment Vessels (As of November 29 at 11:00)

<table>
<thead>
<tr>
<th>Unit</th>
<th>Status of injecting water</th>
<th>Feed-water nozzle Temp.</th>
<th>Reactor pressure vessel Bottom temp.</th>
<th>Pressure of primary containment vessel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1</td>
<td>Injecting freshwater (Feed Water System: Approx.4.5 m³/h)</td>
<td>43.5 °C</td>
<td>44.5 °C</td>
<td>115.7 kPaabs</td>
</tr>
<tr>
<td>Unit 2</td>
<td>Injecting freshwater (Feed Water System: Approx.3.0 m³/h, Core Spray System: Approx.4.4m³/h)</td>
<td>70.3 °C</td>
<td>75.9 °C</td>
<td>111 kPaabs</td>
</tr>
<tr>
<td>Unit 3</td>
<td>Injecting freshwater (Feed Water System: Approx.2.1 m³/h, Core Spray System: Approx.6.0 m³/h)</td>
<td>59.4 °C</td>
<td>67.9 °C</td>
<td>101.5 kPaabs</td>
</tr>
</tbody>
</table>

*We found out that there were errors in the figures of the pressure of the Primary Containment Vessel (PCV) of Unit 1 from 5:00pm of 11 May to 5 am of 29 November due to an error in the calculating formula (from 5:00pm of 11 May to 5 am of 28 October) and lack of required correction after switching the data recorder to a digital recorder (from 11:00am of 28 October to 5 am of 29 November). Correct formula is adopted for the figures from 11 am of 29 November.*

**Unit 1** 11/29 9:55 due to installation works of the nitrogen injection line to the Reactor Pressure Vessel we
suspended the operation of the nitrogen injection device.
11:05 Installation completed and operation of the nitrogen injection device restarted.
11:30 reached fixed amount of 28Nm³/h

11/29 10:13-10:28 increased water injection from the reactor feed water system from 4.2m³/h to 4.5m³/h
[Unit 2] 11/29 13:47 due to installation works of the nitrogen injection line to the Reactor Pressure Vessel we suspended the operation of the nitrogen injection device.
14:21 Installation completed and operation of the nitrogen injection device restarted.
14:37 reached fixed amount of 26Nm³/h

[Unit 3] 11/29 10:13-10:28 increased water injection from the reactor feed water system from 1.9m³/h to 2.1m³/h (water injection from core water system maintained at 6.0m³/h).

[Unit 4] [Unit 5] [Unit 6] No particular changes in parameters.

<Others>
10/7~ Continuously implementing water spray using water after purifying accumulated water of Unit 5 and Unit 6 to prevent spontaneous fire of trimmed trees and diffusion of dust.

- 11/29 11:10-13:50 started sampling at the gas controlling system of the Primary Containment Vessel of Unit 2.
- 11/29 9:24-13:00 started dust sampling above the reactor building of Unit 3 with a large crane.
- 11/29 12:30-13:00 Started dust sampling by a robot near the equipment hatch of ground floor, reactor building unit 3.

End