Situation of Storage and Treatment of Accumulated Water including Highly Concentrated Radioactive Materials at Fukushima Daiichi Nuclear Power Station (301st Release)

April 28, 2017 Tokyo Electric Power Company Holdings, Inc.

1. Introduction

This document is to report the following matters in accordance with the instruction of "Installment of treatment facility and storing facility of water including highly concentrated radioactive materials at Fukushima Daiichi Nuclear Power Station of the Tokyo Electric Power Company (Instruction) "(NISA No. 6, June 8, 2011), dated on June 9, 2011.

<Instruction>

TEPCO should report to NISA the situation of storing and treatment of the contaminated water in the Power Station and the future forecast based upon the current situation has to be reported to NISA as soon as the treatment facility starts its operation. Also, subsequently, continued report has to be submitted to NISA once a week until the treatment of the accumulated water in the Central Radioactive Waste Treatment Facility is completed.

2. Situation of storing and treatment of accumulated water in the building (actual record)

Stored amounts in each unit building (Units 1 to 4 (including condensers and trenches)) and stored and treated amounts, and other related data in the Accumulated Water Storing Facility as of April 27, 2017 are shown in the Attachment -1.

3. Forecast of storing and treatment

(1) Short term forecast

Water transfer is planned so that the levels of the accumulated water in Units 1 and 2 and Units 3 and 4 building will be maintained around at the level of OP. 3,000, based on the stored amount in the Accumulated Water Storing Facilities and the operating situation of the radioactive material treatment equipment. Water is transferred to the Process Main Building and/or High Temperature Incinerator Building as Accumulated Water Storing Facilities.

Treatment is implemented considering the state of storage and transfer of Accumulated Water Storing Facilities.

We assume stored amounts in each unit building (Units 1 to 4 (including condenser and trench)), and stored and treated amounts, and other related data in the Accumulated Water Storing Facilities as of May 4 and May 11, 2017, as shown in Attachment -2.

(2) Middle term forecast

Regarding accumulated water in Units 1 and 2 buildings and Units 3 and 4 buildings, from the viewpoint of reducing the risks of discharging to the ocean and leaking into the groundwater, it is necessary to keep enough capacity for the accumulated water in the building until its level reaches TP. 2,564 (OP. 4,000) and to keep the accumulated water level lower than the groundwater level. On the other hand, based on the view of limiting inflow of underwater to buildings and reducing the amount of emerged accumulated water, we are planning to transfer accumulated water keeping its level in the building around TP. 1,564 (OP. 3,000) considering water tank capacity.

As for accumulated water of the Process Main Building and the High Temperature Incinerator Building, we are planning to treat the accumulated water considering the situation of construction of middle and low level waste water tanks, the operation factor of the radioactive material treatment instruments and duration for maintenance.

We forecast stored amounts in each unit building (Units 1 to 4 (including condensers and trenches)), and storing and treatment situations in the Accumulated Water Storing Facilities for the next 3 months, as shown in Attachment -3.

Stored amounts in each building and the water storage equipment are forecasted to be unchanged in case transfer and treatment were implemented as scheduled without rain. However, it would be subject to change depending on the operation factor of the radioactive material treatment instruments and so on.

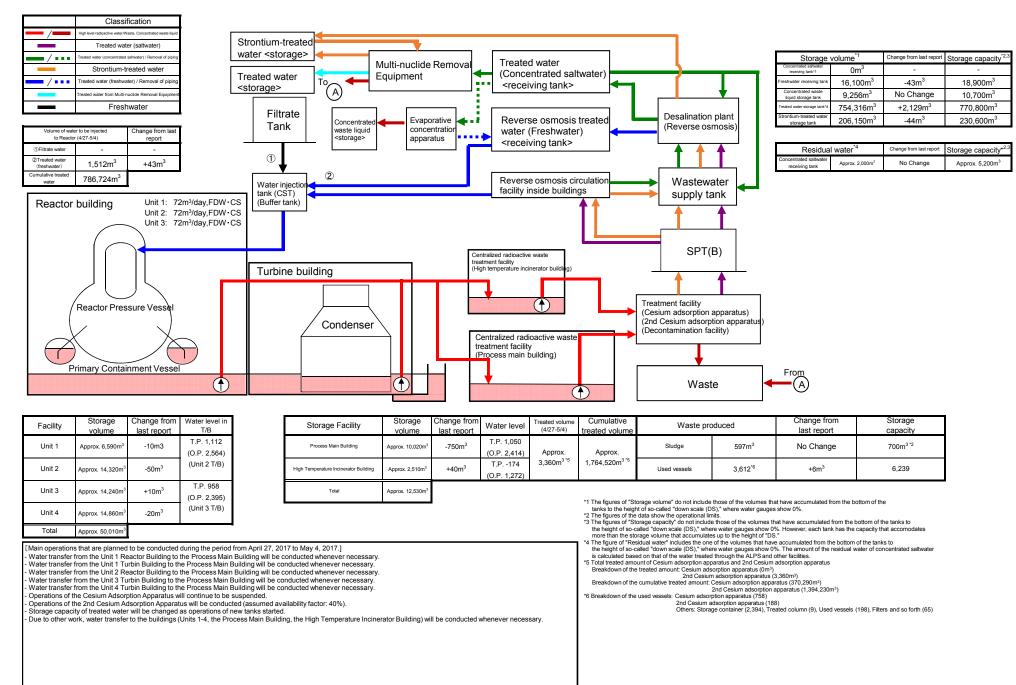
Also, the water treated at the radioactive material treatment equipment (fresh water and condensed salt water) can be stored in the middle and low level waste water tanks.

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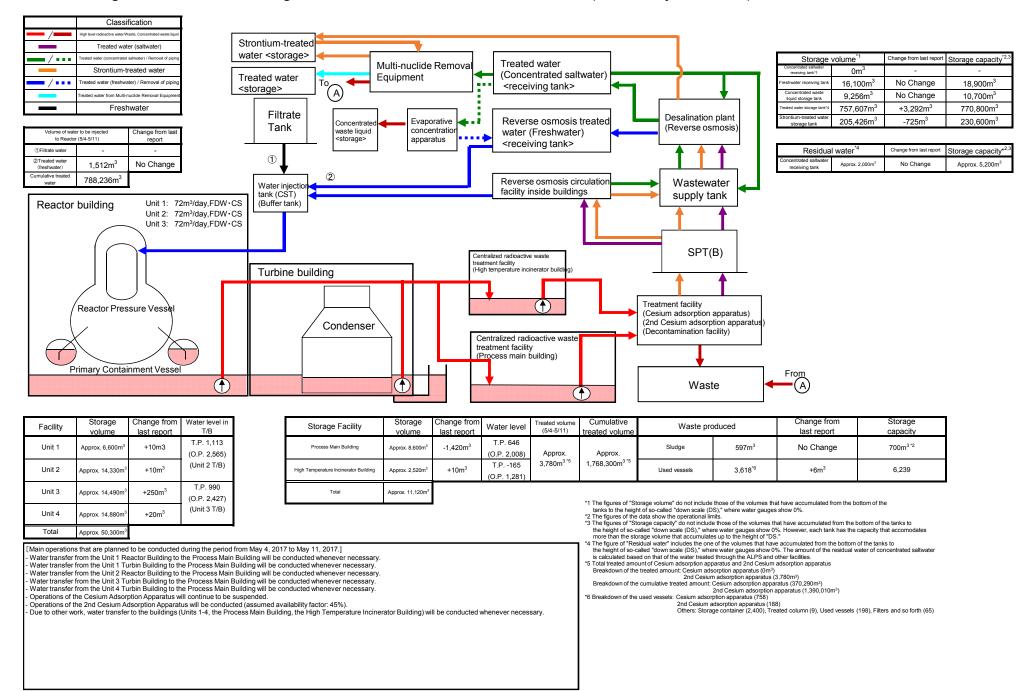
Storage and treatment of high level radioactive accumulated water (as of April 27, 2017)

| | | Cleasifiest | | | | | | | | | | | | | | |
|--|---|--|--|---|---|---|--|---|---|---|---|---|---|---|---|-------------------------------|
| | | Classificat | | | | | | | | | | | <i></i> | . *12 | Channe from last anot | -t e*34 |
| | High leve | | | | | | | | | | | | Storage v | | Change from last repor | rt Storage capacity*3,4 |
| | | Treated water (sa | , | Strontium- | treated | | | | | | | | receiving tank*1 | 0m ³ | - | - |
| | _ / | water (concentrated salt | | water <sto< td=""><td>rage> 🔶 🗖</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Freshwater receiving tank Concentrated waste</td><td>16,143m³</td><td>-64m³</td><td>18,900m³</td></sto<> | rage> 🔶 🗖 | | | | | | | | Freshwater receiving tank Concentrated waste | 16,143m ³ | -64m ³ | 18,900m ³ |
| | | Strontium-treate | | | | Aulti-nuclide | Removal | Treated | | | | | liquid storage tank | 9,256m ³ | No Change | 10,700m ³ |
| - | Treate | ed water (freshwater |), pipe removal | Treated wa | | Equipment | | | entrated salt | water) | | | Treated water storage tank | 752,187m ³ | +2,099m ³ | 763,800m ³ |
| | Treated | d water from Multi-nuclid | e Removal Facility | <storage></storage> | | | : | <pre>receiv</pre> | ving tank> | | I I | | Strontium-treated water storage tank | 206,194m ³ | +878m ³ | 230,600m ³ |
| | | Freshwat | er | | | | | | | | | - I | | | | |
| - | | | B | Eilt | rate | | : | | | | | | Residual | water ^{*5} | Change from last report | Storage capacity*3,4 |
| | Volume of water to be in | injected Cha | inge from last | - | Concentrated | Evapo | orative 📥 📲 | Revers | se osmosis i | treated | Desalination plan | | Concentrated | | No Change | |
| _ | to Reactor (4/20-4/ | (27) | report | Tar | waste liquiu | | entration | water (| Freshwater |) | (Reverse osmosi | IS) | saltwater tank | Approx. 2,000m ³ | No Change | Approx.5,200m ³ |
| - | ①Filtrate water | - | - | | <storage></storage> | appar | atus | <receiv< td=""><td>ving tank></td><td></td><td></td><td></td><td>_</td><td></td><td></td><td></td></receiv<> | ving tank> | | | | _ | | | |
| | (freshwater) 1, | ,469m ³ | -5m ³ | 1 | | L | | | - | | | | Storage | volume | Change from last report | Storage volume*3 |
| Cur | mulative treated | 5,212m ³ | | U | , | | | | | | | _ | Wastewater | 613m ³ | +155m ³ | 1,200m ³ |
| | water 703 | 5,212111 | | | 2 | | | Rovers | e osmosis | | Mastauratan | | supply tank | | - | - |
| | | | | Water i | | | | | tion facility in | side | Wastewater | | SPT(B) | 783m ³ | +67m ³ | 3,100m ³ |
| | Depeter buil | dina | Unit 1: 71m3/day,FDW.C | tank (C G (Buffer | | | | onoulut | lon raolity in | | supply tank | | | | | |
| | Reactor buil | ang | Unit 2: 70m ³ /day,FDW •C | | tarik) | | | | | T T | | | | | | |
| | | | Unit 3: 70m ³ /day,FDW·C | | | | | | | | TI | | | | Chloride | concentration |
| | | \frown | | - | | | | | | | | 7 | Before/After I | Desalination | 350ppm/<1ppm | (Sampled on April 11) |
| | | (\frown) | | | | | | | | | | | Before/After Reverse | Osmosis Circulation | n 240ppm/<1ppm | (Sampled on March 8) |
| | | | | _ | | | Cer | ntralized radioactiv | e waste | | SPT(B) | | Before/After Evapora | tive Concentration | | _ |
| | | | | | | | trea | tment facility | | | | | | | | |
| | | | | Turbi | ne building | | (Hiç | in temperature inc | cinerator building) | | | | Dia sa st (| | | *6 |
| | / | , I | | - ii | | | | ٦ | | | T T | | Place of S | 1 8 | | y concentration ⁷⁶ |
| | | | | | | | | | | | | | Process Ma | | | Sampled on April 11) |
| | Reactor Pressure Vessel | | | | | | | | | | Treatment facility | | Exit of cesium ads | | 5.1E+02 Bq/L (Sa | ampled on October 13) |
| | 1.00 | | | | | | | | | | (Cesium adsorption appa | | Exit of decontai | mination facility | / | - |
| | | | | | / Condenser` | | _ | | | | (2nd Cesium adsorption a (Decontamination facility) | | High Temperature I | ncinerator Building | 1.9E+07 Bq/L (| Sampled on March 7) |
| | \sim | | \mathbf{X} | | (| → | | entralized rad | | | (Decontainination radiinty) | · | Exit of second cesium | adsorption apparatus | 3.1E+02 Bq/L (| Sampled on April 11) |
| | (A) | | | | | | | aste treatmer | | | | | L | | | |
| | | | | | | | (F | Process main | building) | | | | | | | |
| | Primar | ry Containme | | | | | | | | | | | | | | |
| | | | entvesser | | | | | 1 | | | | | From | | | |
| | | | | | | | | | | | Wasta | | From | | | |
| | | | | | | • | | Ţ | C | | Waste | | From | | | |
| | | | | | | | | - | Ċ | D | Waste | | \sim | | | |
| _ | | | | | | | | | | | Waste | | ► A | | 01 | - |
| | Facility | - | ange from Water level in | | Storage facility | Storage | Change from | Water level | Treated volume | Cumulative | Waste Waste produce | ed | Change fro | | Storage | 1 |
| | Facility | | ange from Water level in tst report T/B *8 | | Storage facility | | Change from last report | *8 | | | | ed | ► A | | capacity |] |
| F | Facility v | - | ange from Water level in tst report T/B * ⁸ -10m3 T.P. 443 | | Storage facility Process Main Building | Storage | | * ⁸ T.P. 1,262 | Treated volume (4/20-4/27) | Cumulative treated volume | | ed 597m ³ | Change fro | t | 0 |] |
| E | Facility v | rolume la | ange from Water level in <u>treport</u> -10m3 T.P. 443 (O.P. 1,900) | | | Storage volume | last report | * ⁸ T.P. 1,262 (O.P. 2,624) | Treated volume (4/20-4/27) Approx. | Cumulative treated volume Approx. | Waste produce | | Change fro | t | capacity | |
| F | Unit 1 Appro | rolume la | ange from Water level in ist report T/B * ⁸ -10m3 T.P. 443 (O.P. 1,900) -60m3 T.P. 1,120 | | | Storage volume | last report | * ⁸ T.P. 1,262 (O.P. 2,624) T.P202 | Treated volume (4/20-4/27) | Cumulative treated volume | Waste produce | | Change fro | t | capacity | |
| | Unit 1 Appro | rolume la | ange from tst report 10m3 60m3 Water level in T.P. 443 (O.P. 1,900) T.P. 1,120 (O.P. 2,572) | | Process Main Building | Storage volume Approx. 10,770m | last report -1560m3 | * ⁸ T.P. 1,262 (O.P. 2,624) | Treated volume (4/20-4/27) Approx. | Cumulative treated volume Approx. | Waste produce Sludge | 597m ³ | Change fro last report | t | capacity 700m ^{3 *3} | |
| | Unit 1 Appr Unit 2 Appr | rolume la | ange from Water level in T/B * ⁸ -10m3 T.P. 443 (O.P. 1,900) -60m3 T.P. 1,120 (O.P. 2,572) -320m ³ T.P. 957 | | Process Main Building | Storage volume Approx. 10,770m | last report -1560m3 | * ⁸ T.P. 1,262 (O.P. 2,624) T.P202 | Treated volume (4/20-4/27) Approx. | Cumulative treated volume Approx. | Waste produce Sludge Used vessels | 597m ³ 3,606 ^{*9} | Change fro last report No Chang +5m ³ | e | capacity 700m ^{3 *3} | |
| | Unit 1 Appr Unit 2 Appr | rolume la rox. 6,600m ³ | ange from tst report Water level in T/B * ⁸ -10m3 T.P. 443 (O.P. 1,900) -60m3 T.P. 1,120 (O.P. 2,572) -320m ³ T.P. 957 (O.P. 2,394) | | Process Main Building High Temperature Incinerator Building | Storage volume Approx. 10,770m ³ | last report -1560m3 | * ⁸ T.P. 1,262 (O.P. 2,624) T.P202 | Treated volume (4/20-4/27) Approx. | Cumulative treated volume Approx. | Waste produce Sludge Used vessels | 597m ³ 3,606 ^{*9} | Change fro last report No Chang +5m ³ | e | capacity 700m ^{3 *3} 6,239 | |
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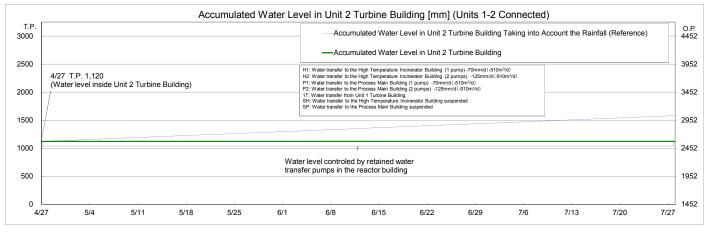
Storage and treatment of high level radioactive accumulated water (as of May 4, 2017)

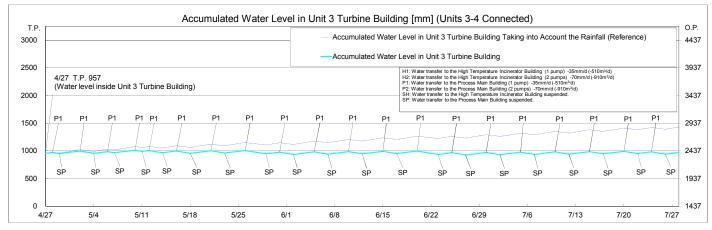


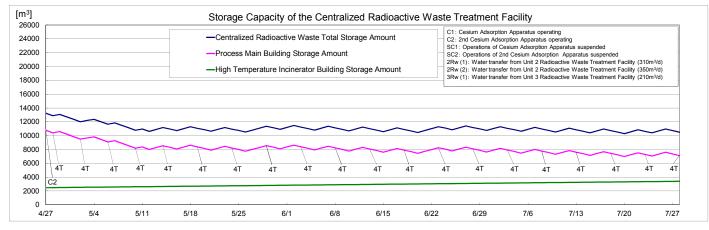
Storage and treatment of high level radioactive accumulated water (as of May 11, 2017)

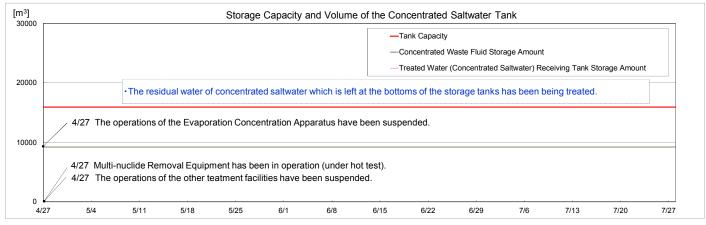


Simulation Results of Accumulated Water Treatment in Units 1-4 Turbine









Note

Note - The amount of water treated through the 2nd Cesium Adsorption Apparatus is estimated to be 780m³/d (Subject to change depending on the factors such as the levels of water accumulated in T/Bs.) - "Accumulated Water Levels in Unit 2 and 3 T/Bs" are simulated water levels in consideration of the change of the water levels caused by recent rainfall, inflow of groundwater, etc. - in the surrounding areas of the Fukushima Dailchi Nuclear Power Station. - "Accumulated Water Levels in Unit 2 and 3 T/Bs Taking into Account the Rainfall" are simulated water levels which are calculated by adding to the accumulated water amounts which are assumed to increase at the - of 5mm a day when the surrounding areas of the Fukushima Dailchi Nuclear Power Station have the rainfall equal to the average amount of rain which fell for three months from August to October in 2008 to 2010. at the rate