*An item stated on page 8 is revised on September 18, 2015 (marked in red and underlined).

Summary of Decommissioning and Contaminated Water Management

August 27, 2015

Secretariat of the Team for Countermeasures for Decommissioning and Contaminated Water Treatment

Main works and steps for decommissioning

Fuel removal from Unit 4 SFP had been completed. Preparatory works to remove fuel from Unit 1-3 SFP and fuel debris (Note 1) removal are ongoing.

(Note 1) Fuel assemblies melted through in the accident.

Fuel Removal from SFP

Units 1&2 / Unit 3: Rubble removal & dose reduction → Installing a Fuel-Handling Machine → Fuel removal

Unit 4: Storage and handling

Unit 1: Fuel removal to start in FY2020
Unit 2: Fuel removal to start in FY2020
Unit 3: Fuel removal to start in FY2017
Unit 4: Fuel removal completed in 2014

Fuel Debris Removal

Unit 1-3: Capturing the status inside PCV/ examination of fuel debris removal method, etc. (Note 2) → Fuel debris removal → Storage and handling

(Note 2)
The fuel debris removal method for each unit will be decided two years after revising the Mid-and-Long-term road map (June 2015). The method for the first unit will be confirmed in the first half of FY2018.

Dismantling Facilities

Scenario development & technology consideration → Design and manufacturing of devices/ equipment → Dismantling

Fuel removal from SFP

Toward fuel removal from Unit 3 SFP, large rubble within the pool is being removed.
Though the removal of large rubble within Unit 3 SFP had been suspended since rubble fell in August 2014, it has resumed since December 2014 after implementing additional fall-prevention measures.

(FHM removed on August 2)

Three principles behind contaminated water countermeasures

Water to cool fuel having melted in the accident is mixed with groundwater and approx. 300 tons of contaminated water is generated daily.
Countermeasures for contaminated water are implemented in accordance with the following three principles:

1. **Eliminate** contamination sources

① Multi-nuclide removal equipment, etc.

② Remove contaminated water in the trench (Note 3)

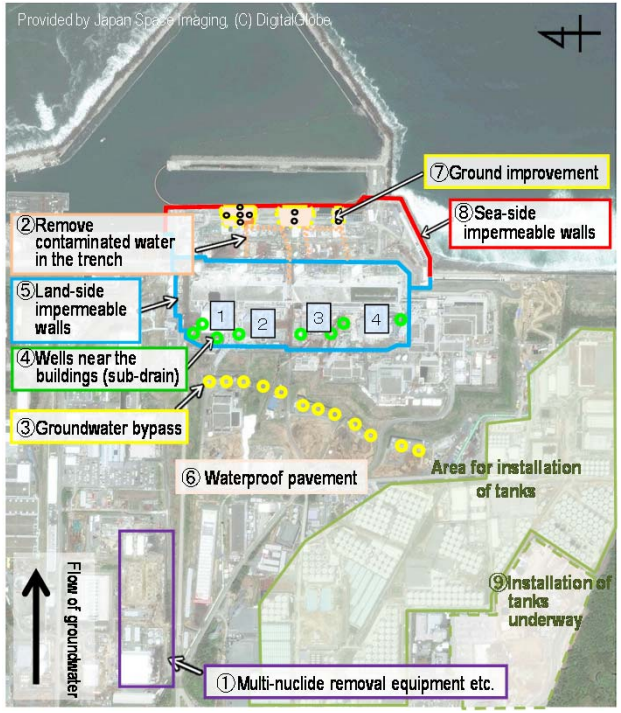
(Note 3) Underground tunnel containing pipes.

2. **Isolate** water from contamination

③ Pump up groundwater for bypassing
④ Pump up groundwater near buildings
⑤ Land-side impermeable walls
⑥ Waterproof pavement

3. **Prevent leakage** of contaminated water

⑦ Soil improvement by sodium silicate
⑧ Sea-side impermeable walls
⑨ Increase tanks (welded-joint tanks)



Multi-nuclide removal equipment (ALPS), etc.

- This equipment removes radionuclides from the contaminated water in tanks and reduces risks.
- Treatment of contaminated water (RO concentrated salt water) was completed in May 2015 via multi-nuclide removal equipment, additional multi-nuclide removal equipment installed by TEPCO (operation commenced in September 2014) and a subsidy project of the Japanese Government (operation commenced in October 2014).
- Strontium-treated water from equipment other than ALPS is being re-treated in ALPS.

(High-performance multi-nuclide removal equipment)

Land-side impermeable walls

- Land-side impermeable walls surround the buildings and reduce groundwater inflow into the same.
- Onsite tests have been conducted since August 2013. Construction work commenced in June 2014.
- Regarding the mountain side, in which freezing will commence first, the installation of frozen pipes was completed in July 2015.

(Land-side impermeable walls; example of freezing functioning test point)

Sea-side impermeable walls

- The walls aim to prevent the flow of contaminated groundwater into the sea.
- The installation of steel sheet piles is almost (98%) complete. The closure time is being coordinated.

(Installation status)

Progress status

◆ The temperatures of the Reactor Pressure Vessel (RPV) and the Primary Containment Vessel (PCV) of Units 1-3 have been maintained within the range of approx. 20-45°C[*1] for the past month. There was no significant change in the density of radioactive materials newly released from Reactor Buildings in the air[*2]. It was evaluated that the comprehensive cold shutdown condition had been maintained.

* 1 The values vary somewhat depending on the unit and location of the thermometer.
* 2 In July 2015, the radiation exposure dose due to the release of radioactive materials from the Unit 1-4 Reactor Buildings was evaluated as less than 0.0092 mSv/year at the site boundaries. The annual radiation dose by natural radiation is approx. 2.1 mSv/year (average in Japan).

Removal of Unit 3 FHM completed

On August 2, the fuel-handling machine (FHM), the largest piece of rubble which fell in the Unit 3 spent fuel pool, was removed safely.

To facilitate fuel removal, rubble removal from the spent fuel pool and dose reduction on the top floor of the Reactor Building will continue.

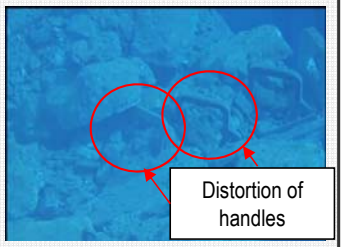
<Removal of the fuel-handling machine>

Results of inspection inside the Unit 3 spent fuel pool

On August 4, an inspection of the status of rubble in the spent fuel pool using an underwater camera confirmed distortion of fuel handles with four spent fuel assemblies, which were located under the fuel-handling machine being removed on August 2.

During this removal of the fuel-handling machine, there was no significant change in the radiation density of water in the spent fuel pool, no new symptom of damage in fuel assemblies and no effect on the surrounding environment.

Treatment of fuel assemblies with distorted handles will be considered.



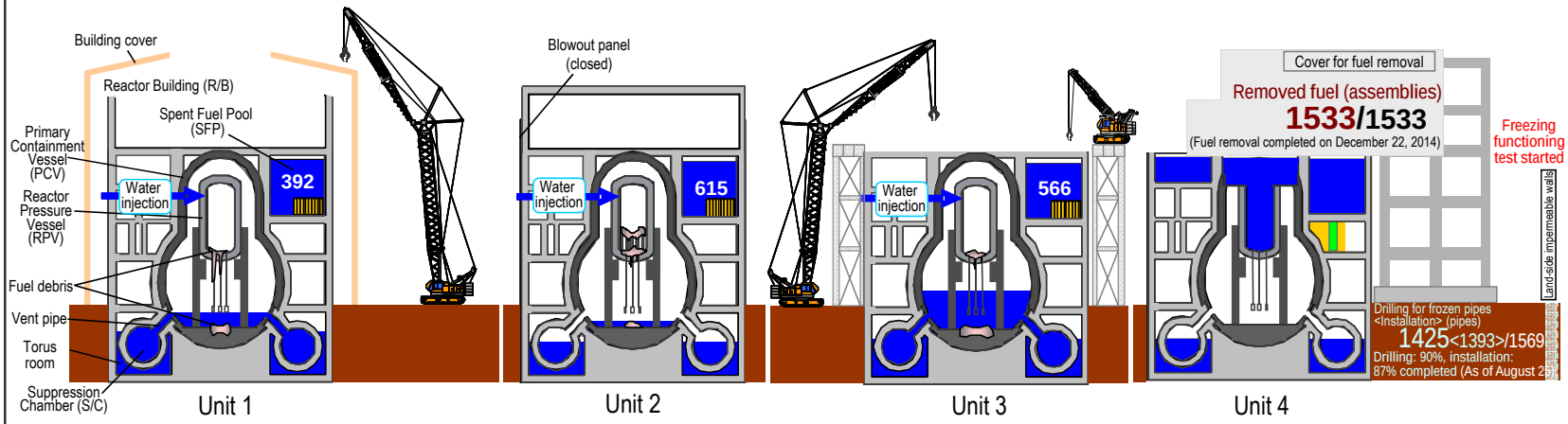
<Inspection on rubble inside the pool>

Fatal accident of worker while cleaning a construction vehicle

On August 8 at the soil dump on-site, a partner company's worker, who cleaned a construction vehicle used to construct land-side impermeable walls, was killed by getting his head caught in the tank hatch on the back of the vehicle.

Based on this accident, the rules for the work concerned were reviewed and the adequacy of measures, etc. of other heavy-machine works was confirmed to prevent occurrence of similar accidents.

<Construction vehicle of the same type>



Removal of contaminated water and filling completed for Unit 2 and 3 seawater-pipe trenches

Regarding seawater- pipe trenches[Note], removal of contaminated water was completed for Unit 2 on June 30 and for Unit 3 on July 30, which will reduce risks significantly.

Filling of the vertical shafts of Unit 3 seawater-pipe trench was completed on August 27.

Note: Trench: Tunnel containing pipes and cables.

Preparation status for freezing of land-side impermeable walls

Regarding frozen pipes of land-side impermeable walls, as the installation of pipes and frozen pipes was completed on three sides which will be frozen first, filling of coolant started for added and frozen pipes. When the filling of coolant is finished, preparation for freezing will have been completed on the three mountain sides.

On the sea-side[Note], drilling and installation of frozen pipes is underway.

Note: Installation on the mountain- and sea-sides have been approved by the Nuclear Regulation Authority by July 31.

Disclosure of all radiation data

TEPCO has sequentially expanded the range of disclosed radiation data being measured at the Fukushima Daiichi Nuclear Power Station since April. Since August 20, the disclosed data has included that of dose rates at workplaces, etc. This has increased the total annual amount of disclosed data to approx. 70,000 records.

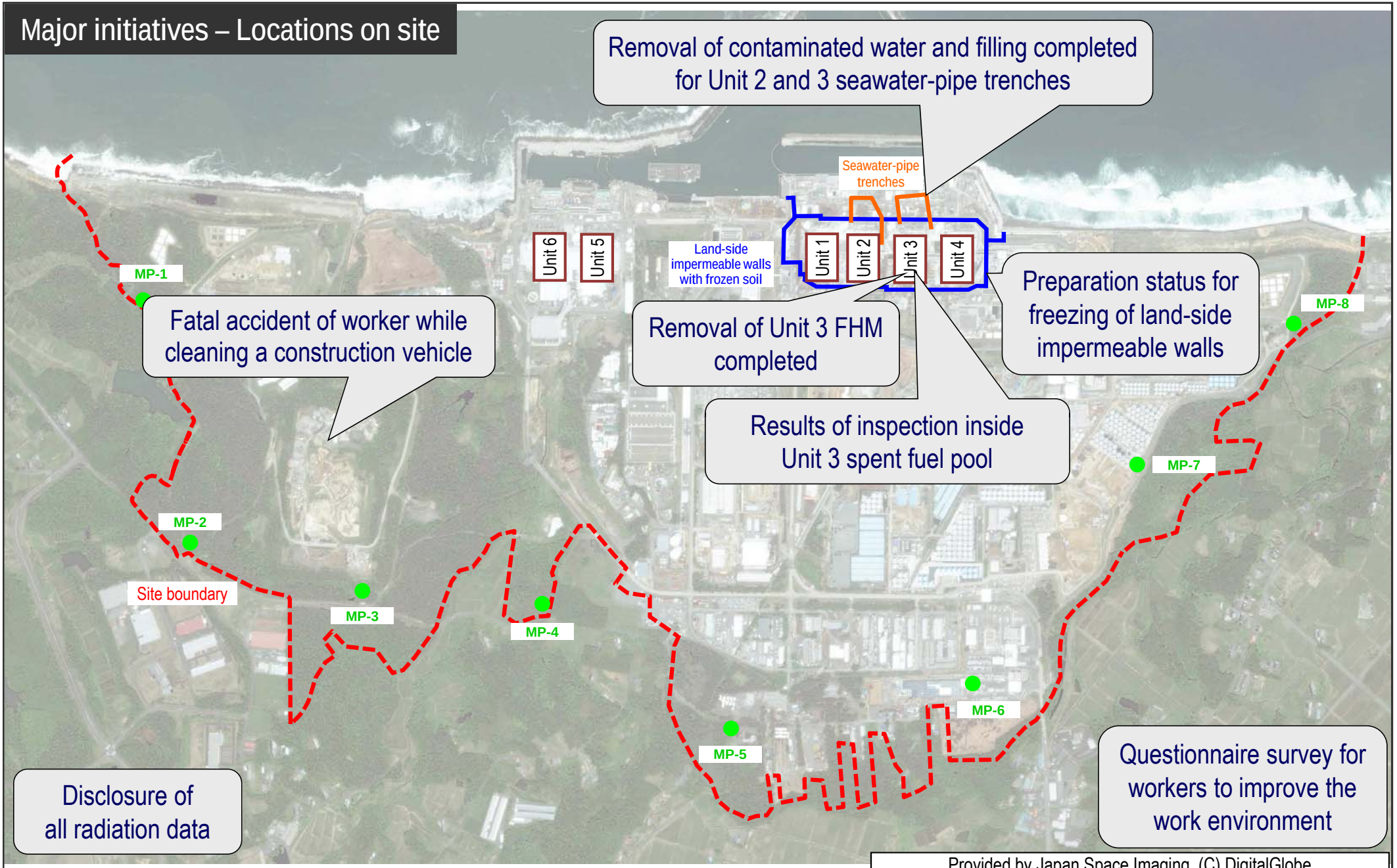
Analysis plans will also be disclosed sequentially, to help provide clearer information.

Questionnaire survey for workers to improve the work environment

To improve the work environment of workers on-site, the 6th annual questionnaire survey will be conducted from August 27.

Answers will be collected in September and the results will be summarized by November and utilized to improve the work environment.

Major initiatives – Locations on site



Provided by Japan Space Imaging, (C) DigitalGlobe

* Data of Monitoring Posts (MP1-MP8.)

Data (10-minute value) of Monitoring Posts (MPs) measuring airborne radiation rate around site boundaries show 0.907 - 3.670 μSv/h (July 29 – August 25, 2015).

We improved the measurement conditions of monitoring posts 2 to 8 for precise measurement of air dose rate. Construction works such as tree-clearing, surface soil removal and shield wall setting were implemented from Feb .10 to Apr. 18, 2012.

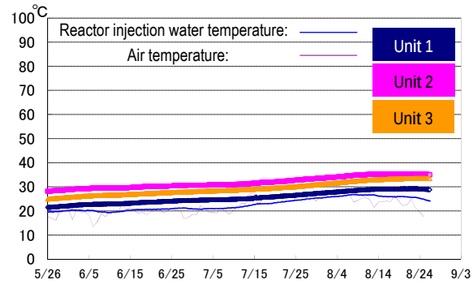
Therefore monitoring results at these points are lower than elsewhere in the power plant site.

The radiation shielding panel around monitoring post No. 6, which is one of the instruments used to measure the radiation dose of the power station site boundary, were taken off from July 10-11, 2013, since the surrounding radiation dose has largely fallen down due to further cutting down of the forests etc.

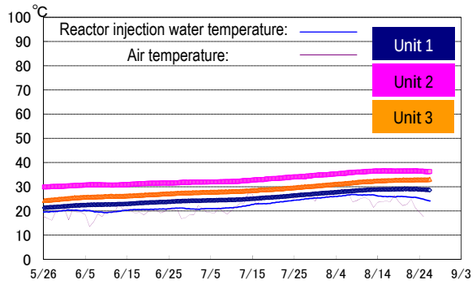
I. Confirmation of the reactor conditions

1. Temperatures inside the reactors

Through continuous reactor cooling by water injection, the temperatures of the Reactor Pressure Vessel (RPV) bottom and the Primary Containment Vessel (PCV) gas phase have been maintained within the range of approx. 20 to 45°C for the past month, though they vary depending on the unit and location of the thermometer.



RPV bottom temperatures (recent quarter)



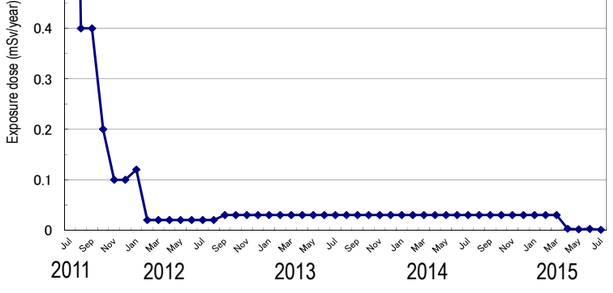
PCV gas phase temperatures (recent quarter)

* The trend graphs show part of the temperature data measured at multiple points.

2. Release of radioactive materials from the Reactor Buildings

As of July 2015, the density of radioactive materials newly released from Reactor Building Units 1-4 in the air and measured at the site boundaries was evaluated at approx. 2.4×10^{-11} Bq/cm^3 for Cs-134 and 6.2×10^{-11} Bq/cm^3 for Cs-137 respectively. The radiation exposure dose due to the release of radioactive materials was less than 0.00092 mSv/year at the site boundaries.

Annual radiation dose at site boundaries by radioactive materials (cesium) released from Reactor Building Units 1-4



(Reference)

* The density limit of radioactive materials in the air outside the surrounding monitoring area:
[Cs-134]: 2 x 10^{-5} Bq/cm^3
[Cs-137]: 3 x 10^{-5} Bq/cm^3

* Dust density around the site boundaries of Fukushima Daiichi Nuclear Power Station (actual measured values):
[Cs-134]: ND (Detection limit: approx. 1 x 10^{-7} Bq/cm^3)
[Cs-137]: ND (Detection limit: approx. 2 x 10^{-7} Bq/cm^3)

* Data of Monitoring Posts (MP1-MP8).
Data of Monitoring Posts (MPs) measuring the airborne radiation rate around site boundaries showed 0.907 - 3.670 μSv/h (July 29 – August 25, 2015).
To measure the variation in the airborne radiation rate of MP2-MP8 more accurately, environmental improvement (tree trimming, removal of surface soil and shielding around the MPs) was completed.

Note: Different formulas and coefficients were used to evaluate the radiation dose in the facility operation plan and monthly report. The evaluation methods were integrated in September 2012. As the fuel removal from the spent fuel pool (SFP) commenced for Unit 4, the radiation exposure dose from Unit 4 was added to the items subject to evaluation since November 2013. The evaluation has been changed to a method considering the values of continuous dust monitors since FY2015, with data to be evaluated monthly and announced the following month.

3. Other indices

There was no significant change in indices, including the pressure in the PCV and the PCV radioactivity density (Xe-135) for monitoring criticality, nor was any abnormality in the cold shutdown condition or criticality sign detected.

Based on the above, it was confirmed that the comprehensive cold shutdown condition had been maintained and the reactors remained in a stabilized condition.

II. Progress status by each plan

1. Contaminated water countermeasures

To tackle the increase in accumulated water due to groundwater inflow, fundamental measures to prevent such inflow into the Reactor Buildings will be implemented, while improving the decontamination capability of water treatment and preparing facilities to control the contaminated water

➢ Operation of groundwater bypass

- From April 9, 2014, the operation of 12 groundwater bypass pumping wells commenced sequentially to pump up groundwater. The release commenced from May 21, 2014 in the presence of officials from the Intergovernmental Liaison Office for the Decommissioning and Contaminated Water Issue of the Cabinet Office. As of August 26, 2015, 124,504 m³ of groundwater had been released. The pumped up groundwater has been temporarily stored in tanks and released after TEPCO and a third-party organization (Japan Chemical Analysis Center) confirmed that its quality met operational targets.
- It was confirmed that the groundwater inflow into the buildings had decreased by approx. 80 m³/day, based on the evaluation data to date, through measures such as groundwater bypass and water stoppage of the High Temperature Incinerator Building (HTI) (see Figure 1).
- It was confirmed that the groundwater level at the observation holes had decreased by approx. 5-15 cm compared to the level before pumping at the groundwater bypass started.
- For pumping well Nos. 2, 3, 4 and 6, water pumping was suspended for cleaning (No. 2: from August 5; No. 3: from July 28; No. 4: July 8-30; No. 6: from July 21).

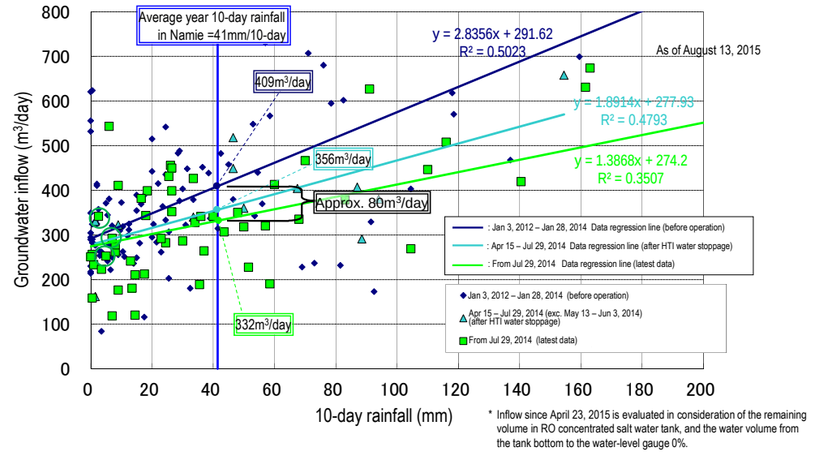


Figure 1: Analytical results of inflow into buildings

➢ Construction status of land-side impermeable walls

- To facilitate the installation of land-side impermeable walls surrounding Units 1-4 (a subsidy project of the Ministry of Economy, Trade and Industry), drilling to place frozen pipes commenced (from June 2, 2014).
- Regarding the mountain side in which freezing will commence first, the installation of frozen pipes was completed on July 28. From April 30, the freezing functioning test was underway at 18 points (58 frozen pipes, approx. 6% on the mountain side). The test confirmed that the facilities were operating correctly and the earth temperature had decreased. As the change in groundwater level at the observation well near the freezing functioning test point Nos. 7, 16, 17 and 18 from the level of multiple observation wells, which had not been affected by freezing, exceeded the standard value for four consecutive days, brine supply to these points was suspended (No. 7: from June 3; No. 16: from August 13; Nos. 17 and 18: from August 14). Filling of brine is underway for added and frozen pipes. Brine supply to freezing functioning test points was suspended due to this filling of brine.
- Regarding the sea side, the implementation plan for penetration parts (for frozen pipes: 71 points, for temperature-measurement pipes: 3 points) was approved on July 31. As of August 25, 2015, drilling at 503 points (76%, for frozen pipes: 389 of 533 points, for temperature-measurement pipes: 114 of 132 points) and installation of frozen pipes at 357 of 533 points (67%) had been completed (see Figure 3).

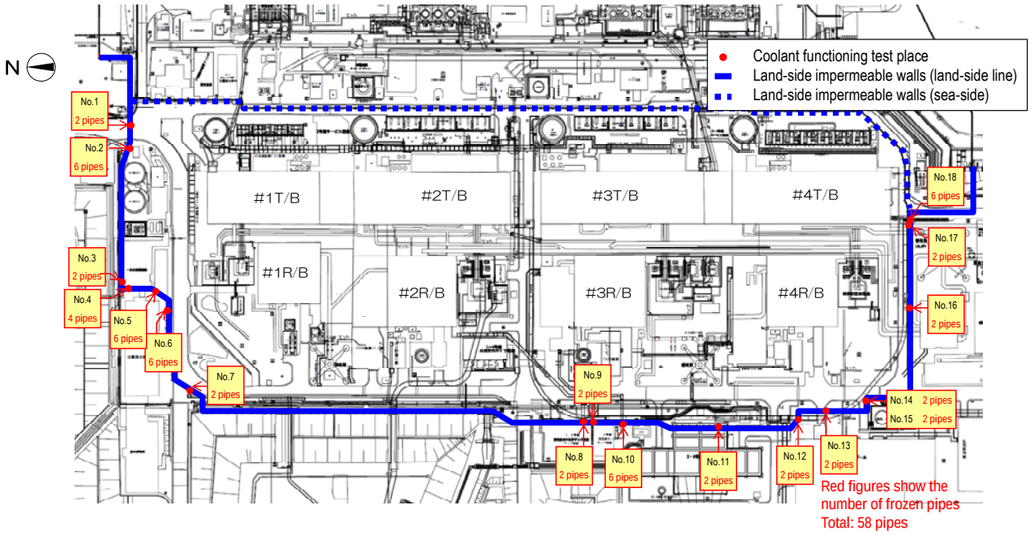


Figure 2: Freezing functioning test place on land-side impermeable walls

T/Mt pipes: Temperature-measurement pipes

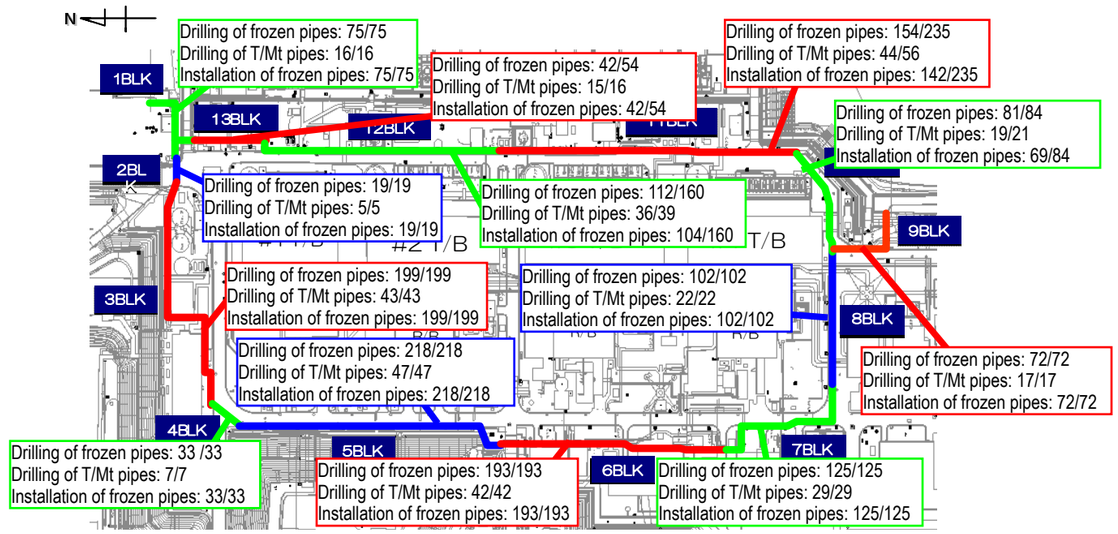
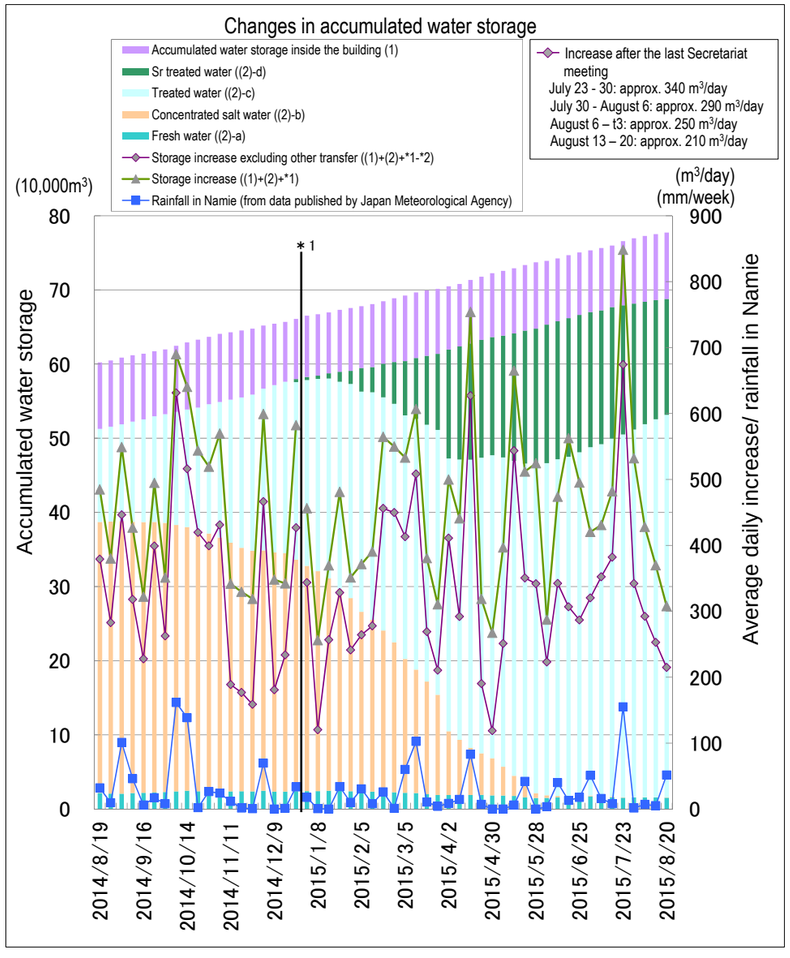
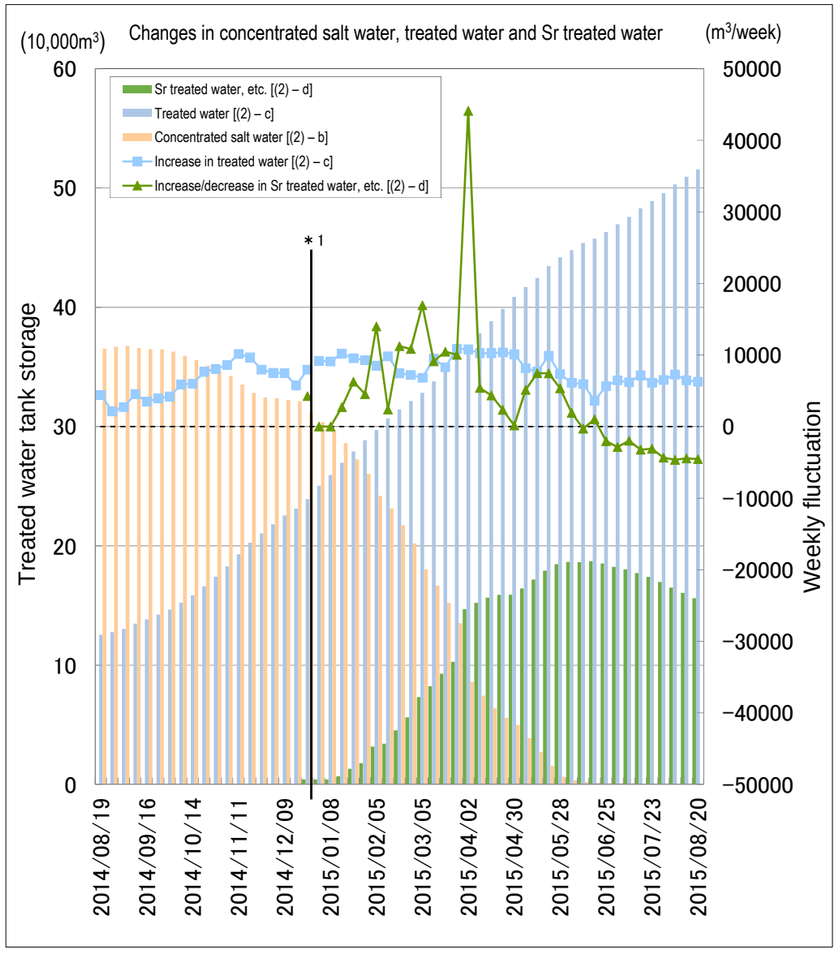


Figure 3: Drilling status for frozen-soil impermeable walls and installation of frozen pipes





As of August 20, 2015

Figure 4: Status of accumulated water storage

*1: Since January 1, 2015, the data collection days have been changed (Tuesdays → Thursdays)

*2: Since April 23, 2015, the data collection method has been changed (Increase in storage: (1)+(2) → (1)+(2)+*1); increase in storage excluding other amounts transferred: (1)+(2)-*2 → (1)+(2)+*1-*2))

*3: Water amount with which water-level gauge indicates 0% or more

➢ Operation of multi-nuclide removal equipment

- Regarding multi-nuclide removal equipment (existing, additional and high-performance), hot tests using radioactive water are underway (for existing equipment, System A: from March 30, 2013, System B: from June 13, 2013, System C: from September 27, 2013; for additional equipment, System A: from September 17, 2014, System B: from September 27, 2014, System C: from October 9, 2014; for high-performance equipment, from October 18, 2014).
- As of August 20, the volumes treated by existing, additional and high-performance multi-nuclide removal equipment were approx. 254,000, 184,000 and 83,000 m³ respectively (including approx. 9,500 m³ stored in the J1(D) tank, which contained water with a high density of radioactive materials at the System B outlet of existing multi-nuclide removal equipment).
- For Systems A and C of existing multi-nuclide removal equipment, facility inspections are underway and additional absorption vessels are being installed to improve their performance (from May 24). System B will be operated as necessary to treat wastewater generated in association with inspections, remaining RO-concentrated salt water, etc. An inspection for System B will be conducted after Systems A and C have been inspected.
- To reduce the risks of strontium-treated water, treatment by additional and high-performance multi-nuclide removal equipment is underway (additional: from May 27, high-performance: from April 15). As of August 20, approx. 80,000 m³ had been treated.

➢ Toward reducing the risk of contaminated water stored in tanks

- Treatment measures comprising the removal of strontium by cesium absorption apparatus (KURION) (from January 6) and secondary cesium absorption apparatus (SARRY) (from December 26, 2014) are underway. As of August 20, approx. 91,000 m³ had been treated.

➢ Measures in Tank Areas

- Rainwater, under the release standard and having accumulated inside the fences in the contaminated water tank area, was sprinkled on site after eliminating radioactive materials using rainwater-treatment equipment since May 21, 2014 (as of August 24, 2015 a total of 31,470 m³).

➢ Leakage from desalination equipment (RO3-3)

- On July 17, the desalination equipment (RO3-3) was suspended due to a leakage detected at the high-pressure pump outlet joint of this equipment. Leakage of approx. 2.5 m³ of water remained within the fences, but was collected and decontaminated the same day. As an observation on the broken-out section of the joint screw identified characteristics of fatigue failure beginning with the screw concave, the failure was assumed to be attributable to loosened bolts of the pedestal for the high-pressure pump, which caused the pump to vibrate more than usual, thus repeatedly exerting additional stress on the joint. The investigation into the cause and confirmation of the soundness of the skid concerned were completed and the soundness of other skids (RO3-1, 2, 4, RO2-4, 5) was also confirmed by August 6.
- On August 12, the desalination equipment (RO3-3) was suspended due to misty leakage from a welded part of the high-pressure pump discharge pipe of this equipment. It was confirmed that the floor surface under this pipe was wet over an area of approx. 1m×1m. Given that the leakage remained within the fences, there was no effect on the outside. A detailed investigation will be conducted on this pipe of RO3-3, which will be replaced. Patrols of other skids (RO3-1, 2, 4) have been enhanced and measures to prevent leakage are also underway for similar points (welded parts).

➢ Removal of contaminated water from seawater-pipe trenches

- Regarding the Unit 2 seawater-pipe trench, filling of the tunnel sections was completed on December 18, 2014. Accumulated water within trench was transferred by June 30, 2015, and vertical shafts were filled by July 10.
- Regarding the Unit 3 seawater-pipe trench, filling of the tunnel sections was completed on April 8. Accumulated water within the trench was transferred by July 30 and vertical shafts were filled by August 27.
- Regarding the Unit 4 seawater-pipe trench, filling was completed for the tunnel sections on March 21 and opening apertures II and III on April 28. Filling of the parts running over drainage channels will be conducted after coordinating with other construction nearby. Opening aperture I will be filled when the contaminated water level of the building is reduced.

2. Fuel removal from the spent fuel pools

Work to help remove spent fuel from the pool is progressing steadily while ensuring seismic capacity and safety. The removal of spent fuel from the Unit 4 pool commenced on November 18, 2013 and was completed on December 22, 2014

➢ Main work to help remove spent fuel at Unit 1

- On July 28, the removal of roof panels of the building cover started. As of August 26, two of six roof panels had been removed. During these works, no significant change was identified in the dust densities at dust monitors and monitoring posts, etc.
- The dismantling of the building cover is being conducted with anti-scattering measures steadily implemented and safety prioritized above all.

➢ Main work to help remove spent fuel at Unit 2

- To help remove spent fuel from the pool of Unit 2 Reactor Building, a yard is being constructed around the Reactor Building to ensure a work area for installing large heavy-duty machines, etc.
- Preparatory works are currently underway, including closure of ducts, etc. and transfer of existing facilities. Once these works are complete, full-scale dismantling of interfering buildings will commence from around the end of August 2015.

➢ Main work to help remove spent fuel at Unit 3

- On August 2, the fuel-handling machine, the largest piece of rubble to have fallen in the spent fuel pool, was removed. On August 4, an inspection on the status of rubble in the spent fuel pool and pool gate identified distortion of fuel handles with four out of eight spent fuel assemblies newly found. As no significant change was identified in the radiation density in pool water, it was confirmed that the distortion of fuel assemblies was not attributable to the removal of the fuel-handling machine. Detailed inspections will be conducted during the process to consider fuel removal. Regarding the pool gate, it was confirmed that gate brackets were hooked on gate hooks.

3. Fuel debris removal

In addition to decontamination and shield installation to improve PCV accessibility, technology was developed and data gathered as required to prepare to remove fuel debris (such as investigating and repairing PCV leak locations)

➢ Preparation to investigate inside the Unit 2 PCV

- In preparation for investigating the status of the platform inside the Unit 2 PCV pedestal (A2 investigation), removal of shielding blocks installed in front of the PCV penetration (X-6 penetration), from which the investigation device will be introduced, commenced on June 11 through remote operation. Though 128 of 135 blocks had been removed by July 8, the remaining 7 blocks, which were firmly fixed to the ground, could not be removed.
- After considering how to remove these fixed blocks, an outlook of the process was confirmed for a method using a new end effector (jig) and development of this tool started.
- To facilitate early removal of these blocks, preparation for removal using small heavy machines (including removal of fixed blocks by vibration, etc. and chemical removal of fixed blocks) started. The feasibility of this method will be evaluated by a mock-up test, whereupon block removal will start based on the test results.
- To facilitate decontamination after block removal and preparation for the A2 investigation, an investigation around X-6 penetration will start from early September.
- Opening a hole of X-6 penetration and the A2 investigation process will be changed based on the status of the above consideration.

➢ Investigation into Unit 3 PCV hatch

- In March 2011, high-dose puddles were identified in the grooves of the transfer rail for shield plugs of Unit 3 PCV hatch and around the rail. Due to the possibility of leakage from the equipment hatch seal, an investigation into the status of this seal, etc. using a small camera will be conducted in September to consider preventive measures of contaminated materials from this hatch during fuel debris removal.

4. Plans to store, process and dispose of solid waste and decommission of reactor facilities

Promoting efforts to reduce and store waste generated appropriately and R&D to facilitate adequate and safe storage, processing and disposal of radioactive waste

➢ Management status of rubble and trimmed trees

- As of the end of July, the total storage volume of concrete and metal rubble was approx. 155,300 m³ (-1,300 m³ compared to at the end of June, with an area-occupation rate of 61%). The total storage volume of trimmed trees was approx. 83,000 m³ (+500 m³ compared to at the end of June, with an area-occupation rate of 64%). The decrease in rubble was mainly attributable to construction related to facing, the installation of tanks and collection of rubble to be incinerated. The increase in trimmed trees was mainly attributable to the acceptance of trunks and roots generated in facing.

➢ Management status of secondary waste from water treatment

- As of August 20, 2015, the total storage volume of waste sludge was 597 m³ (area-occupation rate: 85%) and that of concentrated waste fluid was 9,349 m³ (area-occupation rate: 47%). The total number of stored spent vessels, High-Integrity Containers (HICs) for multi-nuclide removal equipment, etc. was 2,718 (area-occupation rate: 45%).

5. Reactor cooling

The cold shutdown condition will be maintained by cooling the reactor by water injection and measures to complement the status monitoring will continue

➢ Investigation inside Unit 3 PCV and installation of a permanent monitor

- An investigation inside Unit 3 PCV will be conducted in October, in which an investigation device will be inserted from the PCV penetration (X-53) to check the status inside the PCV, measure the dose and temperature, and sample accumulated water.
- Following the internal investigation, thermometers and a water-level gauge will also be installed from the X-53.
- From July 30, the removal of obstacles is underway around X-53 penetration as preparation for the internal inspection.

➢ Status of construction to downscale circulation loop

- The circulation loop to transfer contaminated water, treat the water and inject it into the reactor will be downscaled by installing a desalination (RO) device in the Unit 4 Turbine Building to reduce the risks of leakage from outdoor transfer pipes, etc. The circulation loop (outdoor transfer pipes) will be shortened from approx. 3 km to approx. 0.8 km (approx. 2.1 km including the accumulated-water transfer line).
- Regarding the installation of the RO circulation device inside the building in this plan, large equipment, etc., which did not require modification of the existing facility, was carried in and troughs (gutter-shaped slender materials) to contain pipes were set up. Construction to set up pipes, valves, etc., which require modification of the existing facility, will commence immediately after the implementation plan is approved.

6. Reduction in radiation dose and mitigation of contamination

Effective dose-reduction at site boundaries and purification of port water to mitigate the impact of radiation on the external environment

➢ Status of groundwater and seawater on the east side of Turbine Building Units 1 to 4

- Regarding the radioactive materials in groundwater near the bank on the north side of the Unit 1 intake, the tritium density has been increasing in groundwater Observation Hole No. 0-4 since September 2014 and currently stands at around 30,000 Bq/L. Pumping of 1 m³/day of water from Observation Hole No. 0-3-2 continues.
- Regarding the groundwater near the bank between the Unit 1 and 2 intakes, the tritium density at groundwater Observation Hole Nos. 1 and 1-17 has remained constant at around 100,000 Bq/L since March 2015. The density of gross β radioactive materials at groundwater Observation Hole No. 1 has been increasing while the density at groundwater Observation Hole No. 1-17 has been decreasing since February 2015, both of which currently stand at around 3,000 Bq/L since August. Water pumping from the well point (10 m³/day) and the pumping well No. 1-16 (P) (1 m³/day) installed near Observation Hole Nos. 1-16 continues.
- Regarding radioactive materials in the groundwater near the bank between the Unit 2 and 3 intakes, the densities of tritium and gross β radioactive materials have been further decreasing from March and currently stand at around 1,000 Bq/L for tritium and around 600 Bq/L for gross β radioactive materials. To treat the surface of the ground improvement area and repair the well point, the volume of water pumped from the well point increased to 50 m³/day (from October 31, 2014). The surface treatment commenced on January 8 and was concluded on February 18. The repair of the well point was completed and test operation is underway.
- Regarding the radioactive materials in groundwater near the bank between the Unit 3 and 4 intakes, a low density was maintained at all observation holes. Following the surface treatment in the ground improvement area (March 19-31), pumping of groundwater commenced (20 m³/day from April 1, 10 m³/day from April 24). Both densities of tritium and gross β radioactive materials have been increasing at groundwater Observation Hole No. 3 since April. The repair of the well point was completed and test operation is underway.
- Regarding the radioactive materials in seawater outside the sea side impermeable walls and within the open channels of Units 1-4, a low density equivalent to that at the point north of the east breakwater was maintained as up to July.
- The density of radioactive materials in seawater within the port has remained low at the same level as up to July.
- Regarding the radioactive materials in seawater outside the port, the densities of cesium 137 and tritium have remained within the same range previously recorded. Though the density of gross β radioactive materials remained below the detection limit (15 – 18 Bq/L), it has been at a level equivalent to the detection limit since late March 2015. Though the density of gross β radioactive materials was 24 Bq/L on the northeast side of the port entrance on June 15, the densities of strontium 90 at the port entrance, on the north side of Unit 5 and 6 outlets and near the south outlet have remained low. No change was identified in the density of gross β radioactive materials on the north side of Unit 5 and 6 outlets and near the south outlet.
- On August 17, through images of a camera installed at K drainage channel (where a camera and lighting equipment were installed on August 6), it was confirmed a portion of rainwater were discharged beyond the fences to the sea during 21:24- 21:28 due to the effect of rainfall. Subsequently, all rain water within K drainage channel was transferred to C drainage channel and there was no discharge into the sea. Among eight pumps for transfer to C drainage channel, four were operated as of 21:24 and six as of 21:28. Extra cleaning has been underway for K drainage channel since the end of July.

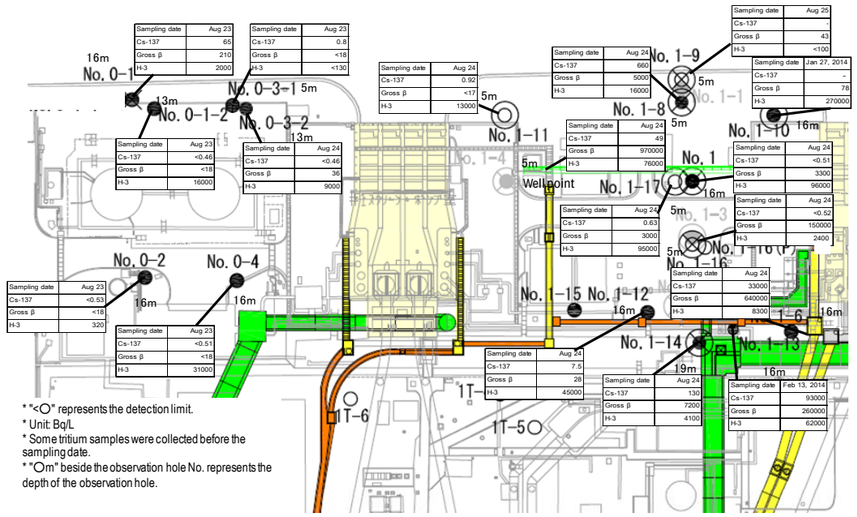
➢ Alarm issued from a dust monitor near the site boundary

- On August 7, a "high-level alarm (alarm set value: 1.0×10^{-5} Bq/cm³)" which indicated an increase in the dust radiation density, was issued from a dust monitor installed beside the monitoring post No. 7 near the site boundary. Later within the day, it was confirmed that the "high-level alarm" of this monitor had been recovered and the value had reverted to the level before the alarm was issued. There was no significant change in the values of other on-site dust monitors and monitoring posts. On August 7, dismantling of Unit 1 reactor building cover and rubble removal was suspended.
- Later, the filter used in this monitor when the "high-level alarm" was issued was collected and analyzed. The result showed that though natural nuclide (lead 212) had been detected, other nuclides were under the detection limit. Based on this result, it was judged that the "high-level alarm" was issued due to the effect of the natural nuclide

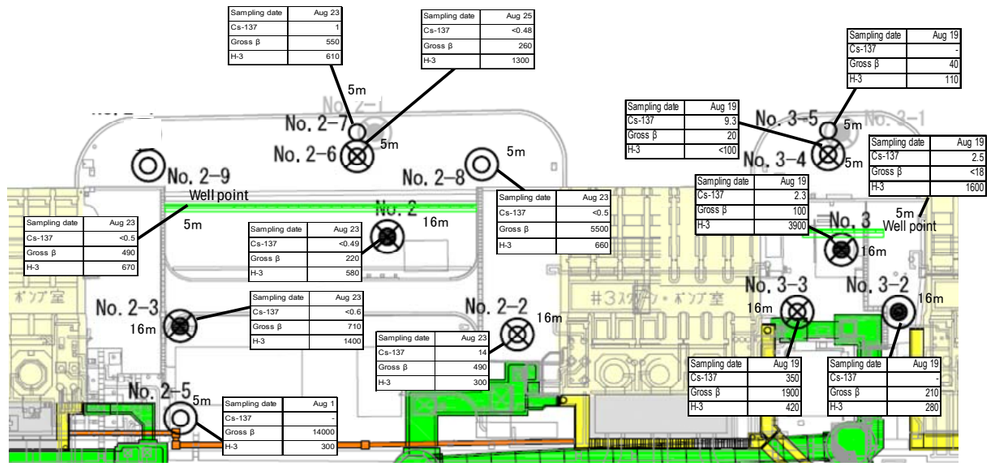
generated near this monitor and not on-site works.

➢ Investigation into accumulated water in Unit 1-3 drainage channels

- Regarding the contamination status on the rooftops of the Turbine Buildings, which is considered a contamination source of the water draining off the roof and flowing into drainage channels, additional investigations using multi-copters will be conducted for the rooftops of Unit 3 and 4 Turbine Buildings from September.



<Unit 1 intake north side, between Unit 1 and 2 intakes>



<Between Unit 2 and 3 intakes, between Unit 3 and 4 intakes>

Figure 5: Groundwater density on the Turbine Building east side

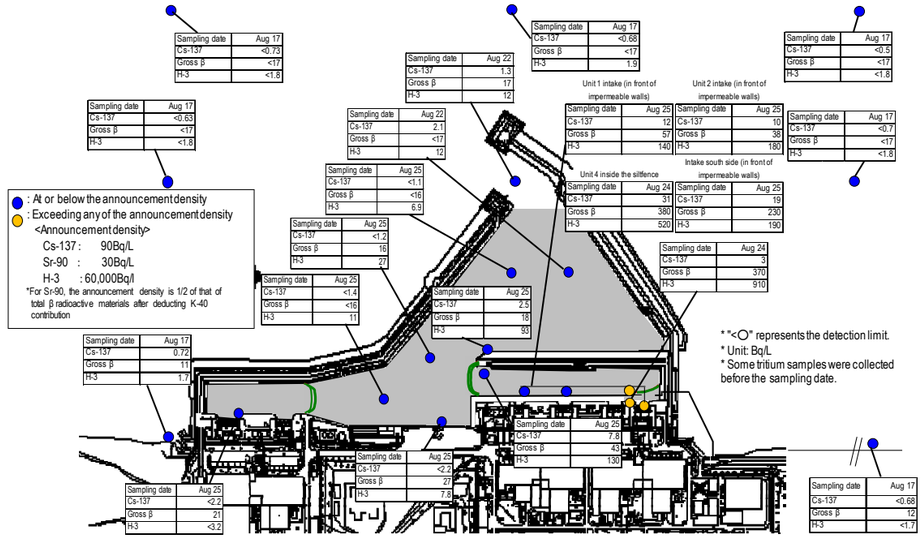


Figure 6: Seawater density around the port

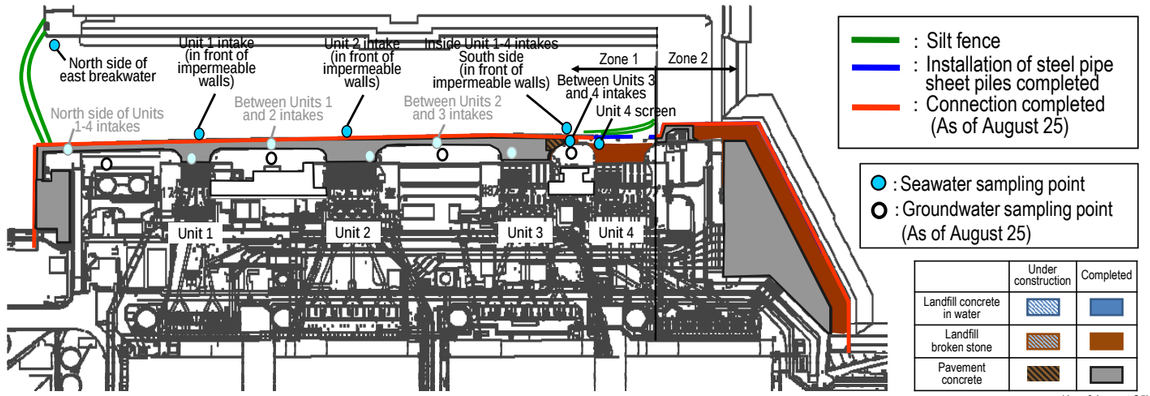


Figure 7: Progress status of impermeable walls on the sea side

7. Review of the number of staff required and efforts to improve the labor environment and conditions

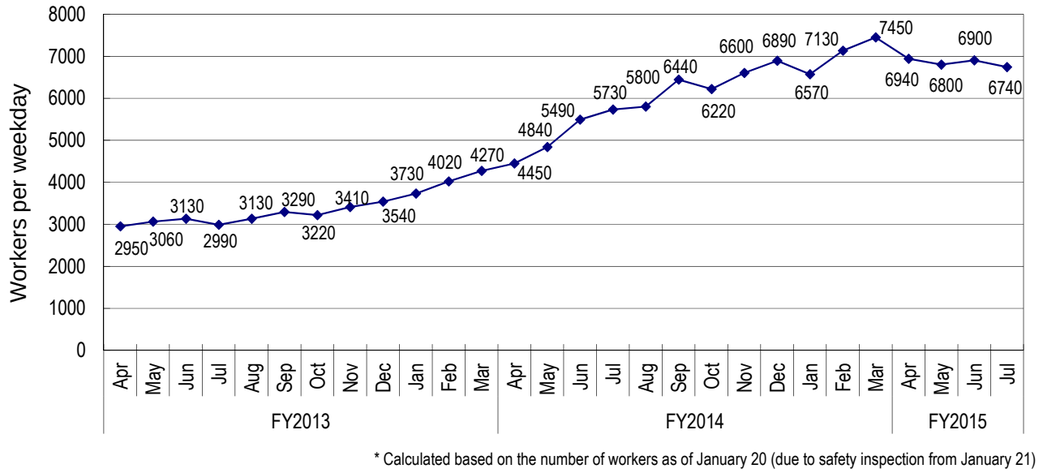
Securing appropriate staff long-term while thoroughly implementing workers' exposure dose control. Improving the work environment and labor conditions continuously based on an understanding of workers' on-site needs

➢ Staff management

- The monthly average total of people registered for at least one day per month to work on site during the past quarter from April to June 2015 was approx. 14,300 (TEPCO and partner company workers), which exceeded the monthly average number of actual workers (approx. 11,200). Accordingly, sufficient people are registered to work on site.
- It was confirmed with prime contractors that the estimated manpower necessary for the work in September (approx. 6,700 per day: TEPCO and partner company workers)* would be secured at present. The average numbers of workers per day for each month (actual values) were maintained, with approx. 3,000 to 7,500 since FY2014 (See Figure 8).

  * Some works for which contractual procedures have yet to be completed are excluded from the September estimate.
- The number of workers from Fukushima Prefecture has remained the same but the number of workers from outside the prefecture has declined slightly. Accordingly, the local employment ratio (TEPCO and partner company workers) as of July remained at around 50% with a slight increase.
- The average exposure dose of workers remained at approx. 1 mSv/month during FY2013, FY2014 and FY2015. (Reference: Annual average exposure dose 20 mSv/year ≒ 1.7 mSv/month)

- For most workers, the exposure dose was sufficiently within the limit and allowed them to continue engaging in radiation work.



* Calculated based on the number of workers as of January 20 (due to safety inspection from January 21)

Figure 8: Changes in the average number of workers per weekday for each month since FY2013

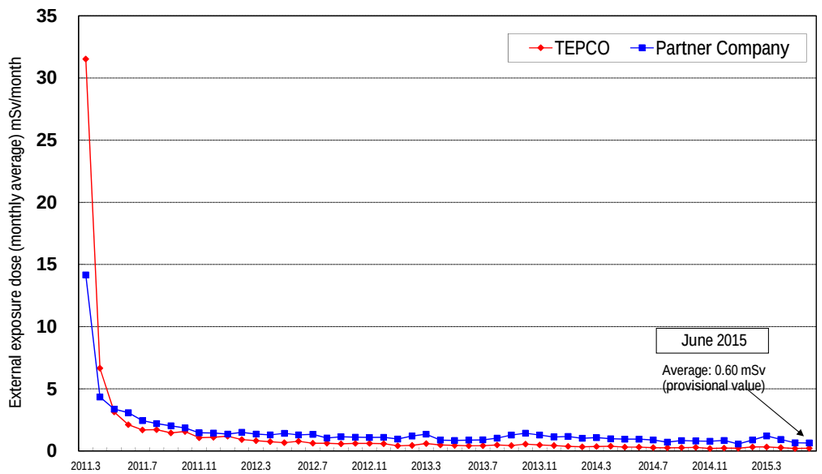


Figure 9: Changes in monthly individual worker exposure dose
(monthly average exposure dose since March 2011)

➢ Status of heat stroke cases

- As of August 25 in FY2015, there were a total of 15 heat stroke cases, 12 of which attributable to work and three alleged cases. Thorough preventive measures for heat stroke continue to be taken. (As of the end of August FY2014, there were a total of 30 heat stroke cases, 13 of which attributable to work and seventeen alleged cases.)

➢ Questionnaire survey for workers to improve the work environment

- To improve the work environment of workers on-site, a questionnaire survey will be conducted from August 27. Answers will be collected by September and the results will be summarized by November and utilized to improve the work environment.

➢ Resumption of meal service at the large rest house

- At the large rest house with a capacity of approx. 1,200 workers, the meal service had been temporarily suspended, after deciding that the building would require renovation to further improve it from a hygiene perspective. The service resumed on August 3.

8. Other

➢ Fatal accident of worker while cleaning a construction vehicle

- On August 8, a fatal accident occurred at the soil dump on-site in which a partner company worker, who had cleaned a construction vehicle used to construct land-side impermeable walls, got his head caught in the tank hatch on the back of the vehicle. The worker was confirmed dead the same day by a doctor.
- Based on this accident, the rules for the work concerned were reviewed and the adequacy for measures, etc. of other heavy-machine works to prevent similar accidents occurring was confirmed.

➢ Disclosure of all radiation data

- Based on the policy to disclose all radiation data, the range of disclosed radiation data being measured at the Fukushima Daiichi Nuclear Power Station was expanded since April and approx. 50,000 records of radiation data were disclosed annually.
- On August 20, disclosure of dose rate data at workplaces, etc. started and a total of approx. 70,000 data records are disclosed annually. Disclosure of the analysis plan and lists of the results started sequentially, which will lead to clearer information being provided.

➢ Implementers of the decommissioning and contaminated water treatment project (METI FY2014 supplementary budget) were decided

- Public offerings were made regarding the following projects (offering period: June 23 – July 21, 2015): “advancement of processes and systems to remove fuel debris and structures inside reactors” and “development of base technology to remove fuel debris and structures inside reactors.”
- Following screening by the review board, comprising external experts, five implementers for the above two projects were decided on August 26.

Status of seawater monitoring within the port (comparison between the highest values in 2013 and the latest values)

"The highest value" → "the latest value (sampled during August 17-25)"; unit (Bq/L); ND represents a value below the detection limit

Source: TEPCO website Analysis results on nuclides of radioactive materials around Fukushima Daiichi Nuclear Power Station http://www.tepco.jp/nu/fukushima-np/f1/smp/index-j.html

Sea side impermeable wall

Silt fence

Cesium-134:	3.3 (2013/10/17) →	ND(1.1)	Below 1/3
Cesium-137:	9.0 (2013/10/17) →	ND(1.1)	Below 1/8
Gross β:	74 (2013/ 8/19) →	ND(16)	Below 1/4
Tritium:	67 (2013/ 8/19) →	6.9	Below 1/9

Cesium-134:	4.4 (2013/12/24) →	ND(1.0)	Below 1/4
Cesium-137:	10 (2013/12/24) →	ND(1.2)	Below 1/8
Gross β:	60 (2013/ 7/ 4) →	16	Below 1/3
Tritium:	59 (2013/ 8/19) →	27	Below 1/2

Cesium-134:	5.0 (2013/12/2) →	ND(0.98)	Below 1/5
Cesium-137:	8.4 (2013/12/2) →	ND(1.4)	Below 1/6
Gross β:	69 (2013/8/19) →	ND(16)	Below 1/4
Tritium:	52 (2013/8/19) →	11	Below 1/4

Cesium-134:	2.8 (2013/12/2) →	ND(2.1)	Below 7/10
Cesium-137:	5.8 (2013/12/2) →	ND(2.2)	Below 1/2
Gross β:	46 (2013/8/19) →	21	Below 1/2
Tritium:	24 (2013/8/19) →	ND(3.2)	Below 1/7

Cesium-134:	ND(0.96)	
Cesium-137:	2.5	
Gross β:	18	
Tritium:	52	*

Cesium-134:	3.3 (2013/12/24) →	ND(1.4)	Below 1/2
Cesium-137:	7.3 (2013/10/11) →	ND(1.3)	Below 1/5
Gross β:	69 (2013/ 8/19) →	ND(17)	Below 1/4
Tritium:	68 (2013/ 8/19) →	12	Below 1/5

Cesium-134:	3.5 (2013/10/17) →	ND(1.6)	Below 1/2
Cesium-137:	7.8 (2013/10/17) →	2.1	Below 1/3
Gross β:	79 (2013/ 8/19) →	ND(17)	Below 1/3
Tritium:	60 (2013/ 8/19) →	12	Below 1/5

Cesium-134:	32 (2013/10/11) →	2.8	Below 1/10
Cesium-137:	73 (2013/10/11) →	7.8	Below 1/9
Gross β:	320 (2013/ 8/12) →	43	Below 1/7
Tritium:	510 (2013/ 9/ 2) →	130	Below 1/3

【Port entrance】

【South side in the port】

【East side in the port】

【Port center】

【West side in the port】

【North side in the port】

【In front of Unit 6 intake】

【In front of shallow draft quay】

Cesium-134:	ND(2.2)	
Cesium-137:	12	
Gross β:	57	
Tritium:	ND(110)	*

Cesium-134:	2.9	
Cesium-137:	10	
Gross β:	38	
Tritium:	180	*

Cesium-134:	5.3	
Cesium-137:	19	
Gross β:	230	
Tritium:	190	*

* Monitoring commenced in or after March 2014

	Legal discharge limit	WHO Guidelines for Drinking Water Quality
Cesium-134	60	10
Cesium-137	90	10
Strontium-90 (strongly correlate with Gross β)	30	10
Tritium	60,000	10,000

Cesium-134:	5.3 (2013/8/ 5) →	ND(1.7)	Below 1/3
Cesium-137:	8.6 (2013/8/ 5) →	ND(2.2)	Below 1/3
Gross β:	40 (2013/7/ 3) →	27	Below 7/10
Tritium:	340 (2013/6/26) →	39	Below 1/8

Cesium-134:	28 (2013/ 9/16)→	6.6	Below 1/4
Cesium-137:	53 (2013/12/16)→	30	
Gross β:	390 (2013/ 8/12)→	370	
Tritium:	650 (2013/ 8/12)→	910	

Cesium-134:	62 (2013/ 9/16)→	7.1	Below 1/8
Cesium-137:	140 (2013/ 9/16)→	31	Below 1/4
Gross β:	360 (2013/ 8/12)→	380	
Tritium:	400 (2013/ 8/12)→	520	

Summary of TEPCO data as of August 27

Note: The gross β measurement values include natural potassium 40 (approx. 12 Bq/L). They also include the contribution of yttrium 90, which radioactively balance strontium 90.

Status of seawater monitoring around outside of the port
(comparison between the highest values in 2013 and the latest values)

(The latest values sampled during August 17-22)

Unit (Bq/L); ND represents a value below the detection limit; values in ( ) represent the detection limit; ND (2013) represents ND throughout 2013

	Legal discharge limit	WHO Guidelines for Drinking Water Quality
Cesium-134	60	10
Cesium-137	90	10
Strontium-90 (strongly correlate with Gross β)	30	10
Tritium	60,000	10,000

【Northeast side of port entrance(offshore 1km)】

Cesium-134: ND (2013) → ND (0.68)
Cesium-137: ND (2013) → ND (0.73)
Gross β: ND (2013) → ND (17)
Tritium: ND (2013) → ND (1.8)

【East side of port entrance (offshore 1km)】

Cesium-134: ND (2013) → ND (0.58)
Cesium-137: 1.6 (2013/10/18) → ND (0.68) Below 1/2
Gross β: ND (2013) → ND (17)
Tritium: 6.4 (2013/10/18) → 1.9 Below 1/3

【Southeast side of port entrance(offshore 1km)】

Cesium-134: ND (2013) → ND (0.71)
Cesium-137: ND (2013) → ND (0.50)
Gross β: ND (2013) → ND (17)
Tritium: ND (2013) → ND (1.8)

Cesium-134: ND (2013) → ND (0.66)
Cesium-137: ND (2013) → ND (0.63)
Gross β: ND (2013) → ND (17)
Tritium: 4.7 (2013/ 8/18) → ND (1.8) Below 1/2

【North side of north breakwater(offshore 0.5km)】

【Port entrance】

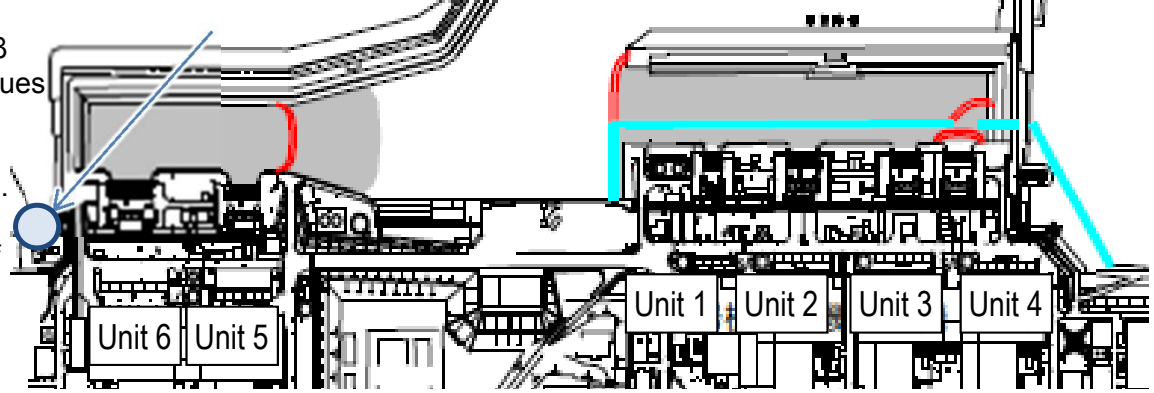
【South side of south breakwater(offshore 0.5km)】

Cesium-134: ND (2013) → ND (0.60)
Cesium-137: ND (2013) → ND (0.65)
Gross β: ND (2013) → ND (20)
Tritium: ND (2013) → ND (1.6)

【North side of Units 5 and 6 discharge channel】

Cesium-134: 1.8 (2013/ 6/21) → ND (0.75) Below 1/2
Cesium-137: 4.5 (2013/ 3/17) → ND (0.72) Below 1/6
Gross β: 12 (2013/12/23) → 11
Tritium: 8.6 (2013/ 6/26) → 1.7 Below 1/5

Cesium-134: 3.3 (2013/12/24) → ND (1.4) Below 1/2
Cesium-137: 7.3 (2013/10/11) → ND (1.3) Below 1/5
Gross β: 69 (2013/ 8/19) → ND (17) Below 1/4
Tritium: 68 (2013/ 8/19) → 12 Below 1/5



Cesium-134: ND (2013) → ND (0.56)
Cesium-137: 3.0 (2013/ 7/15) → ND (0.68) Below 1/4
Gross β: 15 (2013/12/23) → 13
Tritium: 1.9 (2013/11/25) → ND (1.7)

【Around south discharge channel】

Sea side impermeable wall

Silt fence

Note: The gross β measurement values include natural potassium 40 (approx. 12 Bq/L). They also include the contribution of yttrium 90, which radioactively balance strontium 90.

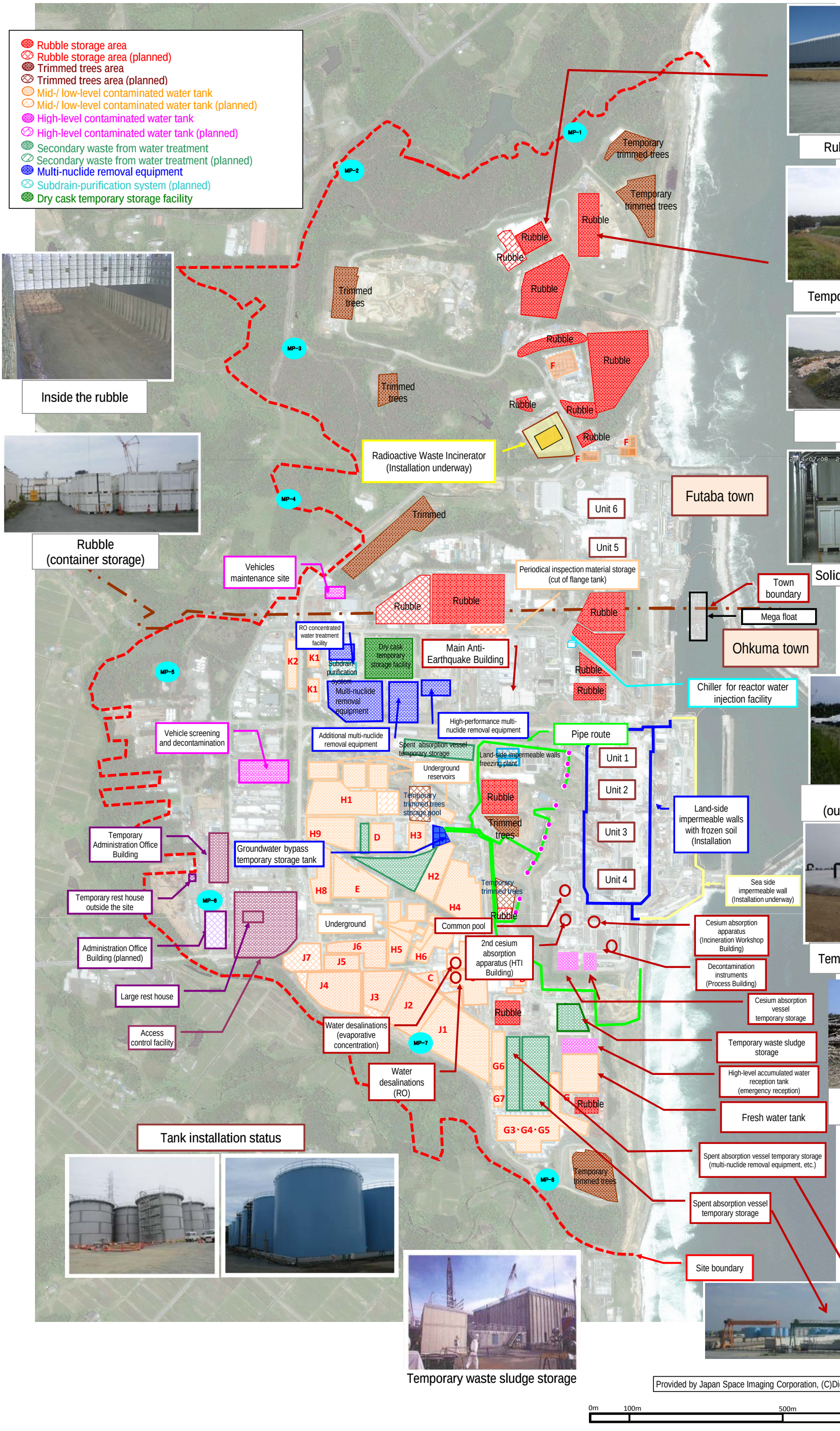
Summary of TEPCO data as of August 27

Source: TEPCO website, Analysis results on nuclides of radioactive materials around Fukushima Daiichi Nuclear Power Station, http://www.tepco.co.jp/nu/fukushima-np/f1/smp/index-j.html

Appendix 2

August 27, 2015

TEPCO Fukushima Daiichi Nuclear Power Station Site Layout



Progress toward decommissioning: Fuel removal from the spent fuel pool (SFP)

Immediate target	Commence fuel removal from the Unit 1-3 Spent Fuel Pools

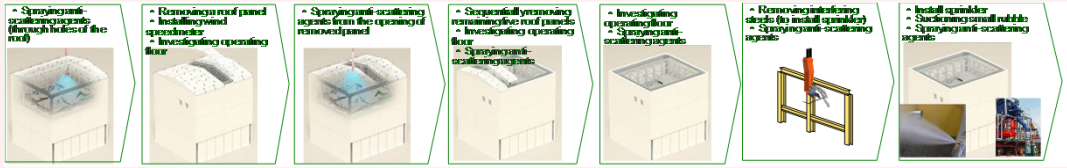
Unit 1

Regarding fuel removal from Unit 1 spent fuel pool, there is a plan to install a dedicated cover for fuel removal over the operating floor(*1).

Before starting this plan, the building cover will be dismantled to remove rubble from the top of the operating floor, with anti-scattering measures steadily implemented.

On July 28, removal of the roof panels started. All these panels will be removed by the middle of this fiscal year. Dismantling of the building cover will proceed with radioactive materials thoroughly monitored.

Status of removal of roof panels



Flow of building cover dismantling

Unit 2

Regarding fuel removal for Unit 2 spent fuel pool, two plans are being considered: Plan 1 to share a container for removing fuel assemblies and debris from the pool; and Plan 2 to install a dedicated cover for fuel removal.

As both plans require work areas of large heavy machines, etc. to install a structure for fuel removal and a fuel handling machine, preparatory work is currently underway to construct a yard around the Reactor Building.

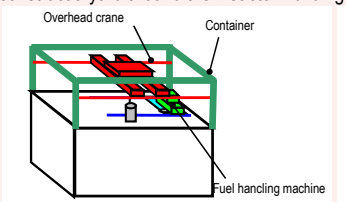


Image of Plan 1

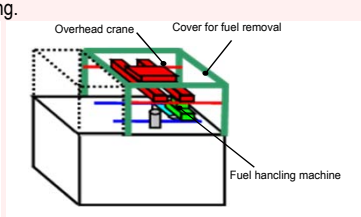


Image of Plan 2

Unit 3

To facilitate the installation of a cover for fuel removal, measures to reduce dose (decontamination and shielding) and rubble removal from the spent fuel pool are underway.
(Decontamination and shielding: from October 15, 2013, rubble removal from the pool: from December 17, 2013)

On August 2, 2015, the fuel-handling machine, the largest rubble which fell in the Unit 3 spent fuel pool (approx. 20t), was removed.

To facilitate fuel removal, rubble removal from the spent fuel pool and dose reduction on the top floor of the Reactor Building will continue.

In tandem with these works, training of fuel removal by remote control is underway.

Removal of fuel-handling machine on August 2

Fuel handling machine removed from the pool

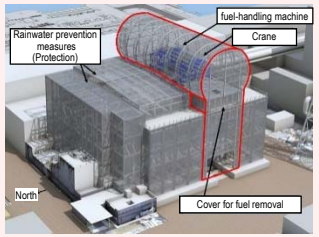


Image of the cover for fuel removal

Unit 4

In the Mid- and Long-Term Roadmap, the target of Phase 1 involved commencing fuel removal from inside the spent fuel pool (SFP) of the 1st Unit within two years of completion of Step 2 (by December 2013). On November 18, 2013, fuel removal from Unit 4, or the 1st Unit, commenced and Phase 2 of the roadmap started.

Fuel removal status

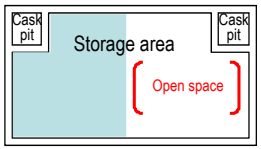
On November 5, 2014, within a year of commencing work to remove the fuel, all 1,331 spent fuel assemblies in the pool had been transferred. The transfer of the remaining non-irradiated fuel assemblies to the Unit 6 SFP was completed on December 22, 2014. (2 of the non-irradiated fuel assemblies were removed in advance in July 2012 for fuel checks)

This marks the completion of fuel removal from the Unit 4 Reactor Building.

Based on this experience, fuel assemblies will be removed from Unit 1-3 pools.

* A part of the photo is corrected because it includes sensitive information related to physical protection.

Common pool

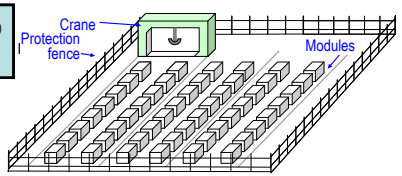


An open space will be maintained in the common pool (Transfer to the temporary dry cask storage facility)

Progress to date

- The common pool has been restored to a condition allowing it to re-accommodate fuel to be handled (November 2012)
- Loading of spent fuel stored in the common pool to dry casks commenced (June 2013)
- Fuel removed from the Unit 4 spent fuel pool began to be received (November 2013)

Temporary dry cask (*3) storage facility



Spent fuel is accepted from the common pool

Operation commenced on April 12, 2013; from the cask-storage building, transfer of 9 existing dry casks completed (May 21, 2013); fuel stored in the common pool sequentially transferred.

<Glossary>
(*1) Operating floor: During regular inspection, the roof over the reactor is opened while on the operating floor, fuel inside the core is replaced and the core internals are inspected.
(*2) Cask: Transportation container for samples and equipment, including radioactive materials.

Progress toward decommissioning: Works to identify the plant status and toward fuel debris removal

Immediate target	Identify the plant status and commence R&D and decontamination toward fuel debris removal

3D laser scan inside the Unit 1 R/B underground floor

The upper part of the underground floor (torus room) of Unit 1 R/B was investigated with a laser scan using a remote-controlled robot, and collected 3D data.

3D data, which allows examination based on actual measurements, can be used to examine more detailed accessibility and allocation of equipment.

Combining it with 3D data on the R/B 1st floor allows obstacles on both 1st and underground floors to be checked simultaneously. This allows efficient examination of positions to install repair equipment for PCVs and vacuum break lines.

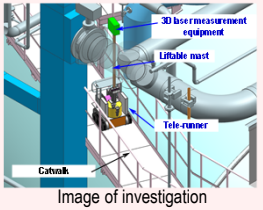
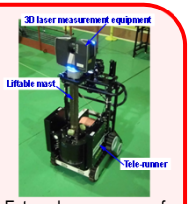


Image of investigation



External appearance of remote-controlled robot

Image of 3D data

Investigation in the leak point detected in the upper part of Unit 1 Suppression Chamber (S/C(*1))

Investigation in the leak point detected in the upper part of Unit 1 S/C from May 27, 2014 from one expansion joint cover among the lines installed there. As no leakage was identified from other parts, specific methods will be examined to halt the flow of water and repair the PCV.

Leak point

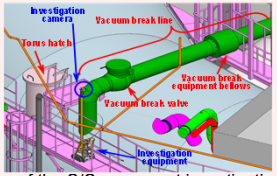
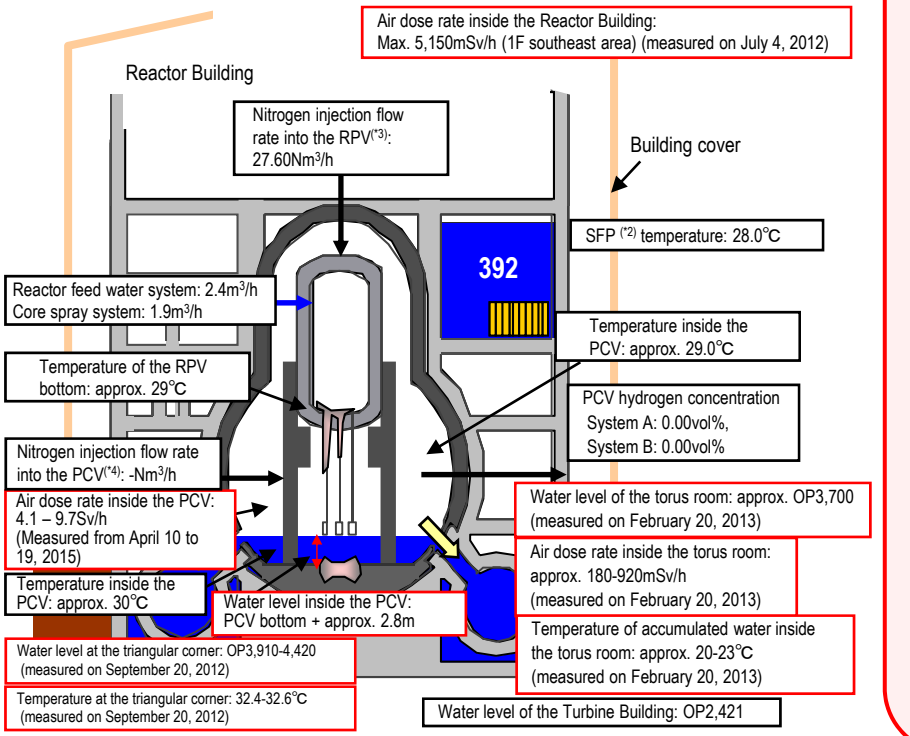


Image of the S/C upper part investigation

Unit 1



* Indices related to the plant are values as of 11:00, August 26, 2015

Status of equipment development toward investigating inside the PCV

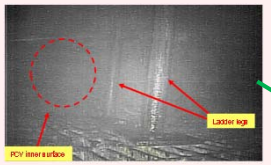
Prior to removing fuel debris, to check the conditions inside the Primary Containment Vessel (PCV), including the location of the fuel debris, investigation inside the PCV is scheduled.

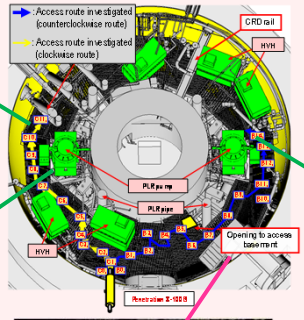
[Investigative outline]

- Inserting equipment from Unit 1 X-100B penetration(*5) to investigate in clockwise and counter-clockwise directions.

[Status of investigation equipment development]

- Using the crawler-type equipment with a shape-changing structure which allows it to enter the PCV from the narrow access entrance (bore: 100mm) and stably move on the grating, a field demonstration was implemented from April 10 to 20, 2015.
- Through this investigation, information including images inside the PCV 1st floor and airborne radiation was obtained. The investigation also confirmed the absence of obstacles around the access aperture leading to the basement floor, which will be used in the next investigation. These results will be considered in next investigation of the PCV basement floor.





Investigation inside PCV


Investigative equipment

<Glossary>
(*1) S/C (Suppression Chamber): Suppression pool, used as the water source for the emergent core cooling system.
(*2) SFP (Spent Fuel Pool):
(*3) RPV (Reactor Pressure Vessel)
(*4) PCV (Primary Containment Vessel)
(*5) Penetration: Through-hole of the PCV

Progress toward decommissioning: Works to identify the plant status and toward fuel debris removal

August 27, 2015
Secretariat of the Team for Countermeasures for Decommissioning and Contaminated Water Treatment
3/6

Immediate target	Identify the plant status and commence R&D and decontamination toward fuel debris removal

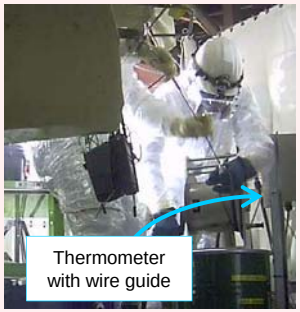
Installation of an RPV thermometer and permanent PCV supervisory instrumentation

(1) Replacement of the RPV thermometer

- As the thermometer installed at the Unit 2 RPV bottom after the earthquake had broken, it was excluded from the monitoring thermometers (February 19, 2014).
- On April 17, 2014, removal of the broken thermometer failed and was suspended. Rust-stripping chemicals were injected and the broken thermometer was removed on January 19, 2015. A new thermometer was reinstalled on March 13, 2015. The thermometer has been used as a part of permanent supervisory instrumentation since April 23.

(2) Reinstallation of the PCV thermometer and water-level gauge

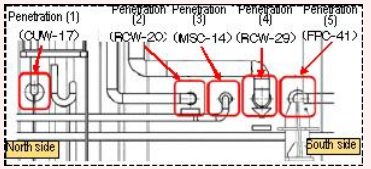
- Some of the permanent supervisory instrumentation for PCV could not be installed in the planned locations due to interference with existing grating (August 13, 2013).
- The instrumentation was removed on May 27, 2014 and new instruments were reinstalled on June 5 and 6, 2014. The trend of added instrumentation will be monitored for approx. one month to evaluate its validity.
- The measurement during the installation confirmed that the water level inside the PCV was approx. 300mm from the bottom.



Removal situation of broken thermometer inside Unit 2 RPV

Investigative results on torus room walls

- The torus room walls were investigated (on the north side of the east-side walls) using equipment specially developed for that purpose (a swimming robot and a floor traveling robot).
- At the east-side wall pipe penetrations (five points), "the status" and "existence of flow" were checked.
- A demonstration using the above two types of underwater wall investigative equipment showed how the equipment could check the status of penetration.
- Regarding Penetrations 1 - 5, the results of checking the sprayed tracer (*5) by camera showed no flow around the penetrations. (investigation by the swimming robot)
- Regarding Penetration 3, a sonar check showed no flow around the penetrations. (investigation by the floor traveling robot)



Penetrations investigated

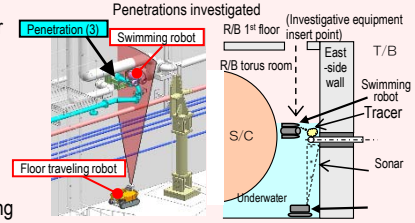
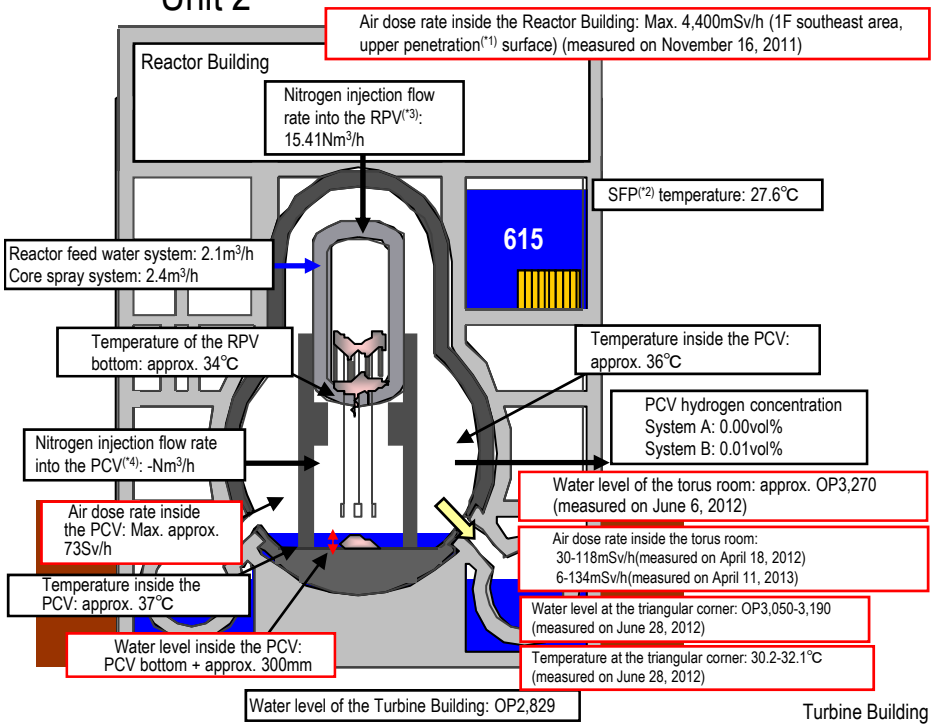


Image of the torus room east-side cross-sectional investigation

Unit 2



* Indices related to plant are values as of 11:00, August 26, 2015

Status of equipment development toward investigating inside the PCV

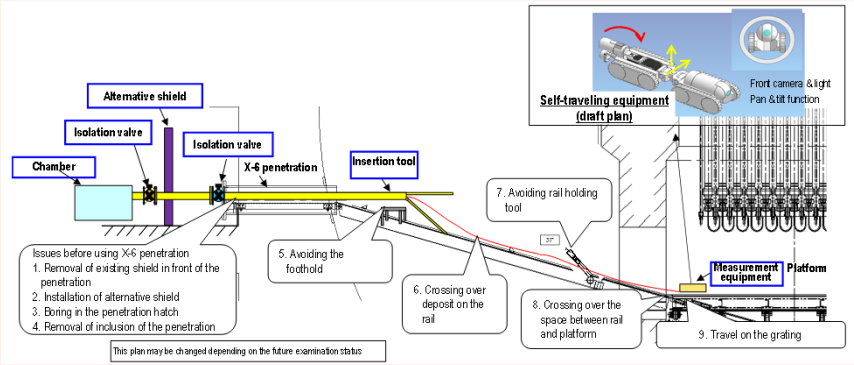
Prior to removing fuel debris, to check the conditions inside the Primary Containment Vessel (PCV), including the location of the fuel debris, investigations inside the PCV are scheduled.

[Investigative outline]

- Inserting the equipment from Unit 2 X-6 penetration(*1) and accessing inside the pedestal using the CRD rail to conduct investigation.

[Status of investigative equipment development]

- Based on issues confirmed by the CRD rail status investigation conducted in August 2013, the investigation method and equipment design are currently being examined.
- Solution is being examined to the issue that a portion of shielding blocks installed in front of X-6 penetration could not be moved. After the preparation is completed, removal of the remaining blocks will resume.



Investigative issues inside the PCV and equipment configuration (draft plan)

<Glossary>
(*1) Penetration: Through-hole of the PCV (*2) SFP (Spent Fuel Pool)
(*3) RPV (Reactor Pressure Vessel) (*4) PCV (Primary Containment Vessel)
(*5) Tracer: Material used to trace the fluid flow. Clay particles

Progress toward decommissioning: Works to identify the plant status and toward fuel debris removal

August 27, 2015
Secretariat of the Team for Countermeasures for Decommissioning and Contaminated Water Treatment
4/6

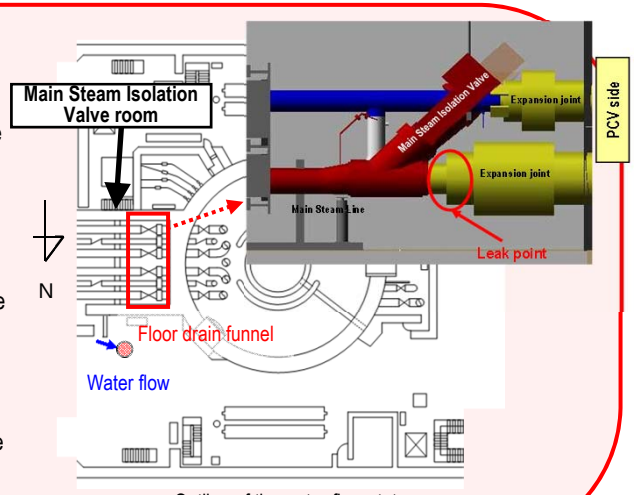
Immediate target	Identify the plant status and commence R&D and decontamination toward fuel debris removal

Water flow was detected from the Main Steam Isolation Valve* room

On January 18, 2014, a flow of water from around the door of the Steam Isolation Valve room in the Reactor Building Unit 3 1st floor northeast area to the nearby floor drain funnel (drain outlet) was detected. As the drain outlet connects with the underground part of the Reactor Building, there is no possibility of outflow from the building.

From April 23, 2014, image data has been acquired by camera and the radiation dose measured via pipes for measurement instrumentation, which connect the air-conditioning room on the Reactor Building 2nd floor with the Main Steam Isolation Valve Room on the 1st floor. On May 15, 2014, water flow from the expansion joint of one Main Steam Line was detected.

This is the first leak from PCV detected in Unit 3. Based on the images collected in this investigation, the leak volume will be estimated and the need for additional investigations will be examined. The investigative results will also be utilized to examine water stoppage and PCV repair methods.



Outline of the water-flow status

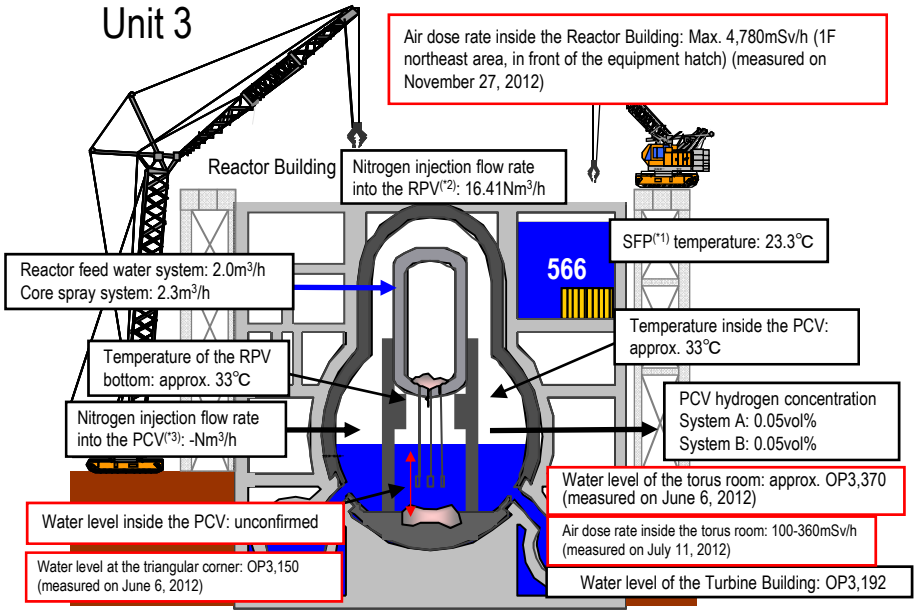
* Main Steam Isolation Valve: A valve to shut off the steam generated from the Reactor in an emergency

Decontamination inside R/B

- The contamination status inside the Reactor Building (R/B) was investigated by a robot (June 11-15, 2012).
- To select an optimal decontamination method, decontamination samples were collected (June 29 to July 3, 2012).
- To facilitate decontamination inside the Reactor Building, removal of obstacles on the 1st floor was conducted (from November 18, 2013 to March 20, 2014).

Robot for investigating the contamination status (gamma camera mounted)

Unit 3



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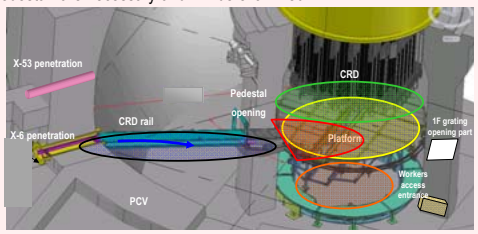
Status of equipment development toward investigating inside the PCV

Prior to removing fuel debris, to check the conditions inside the Primary Containment Vessel (PCV), including the location of the fuel debris, investigation inside the PCV is scheduled. As the water level inside the PCV is high and the penetration scheduled for use in Units 1 and 2 may be under the water, another method needs to be examined.

[Steps for investigation and equipment development]

(1) Investigation from X-53 penetration(*4)
- From October 22-24, the status of X-53 penetration, which may be under the water and which is scheduled for use to investigate the inside of the PCV, was investigated using remote-controlled ultrasonic test equipment. Results showed that the penetration is not under the water.
- An investigation of the inside of the PCV is scheduled for around the 1st half of FY2015. Given the high radioactivity around X-53 penetration, the introduction of remote-controlled equipment will be examined based on the decontamination status and shielding.

(2) Investigation plan following the investigation of X-53 penetration
- Based on the measurement values of hydraulic head pressure inside the PCV, X-6 penetration may decline. It is estimated that access to X-6 penetration is difficult.
- For access from another penetration, approaches such as “further downsizing the equipment” or “moving in water to access the pedestal” are necessary and will be examined.



<Glossary>
(*1) SFP (Spent Fuel Pool)
(*2) RPV (Reactor Pressure Vessel)
(*3) PCV (Primary Containment Vessel)
(*4) Penetration: Through-hole of the PCV

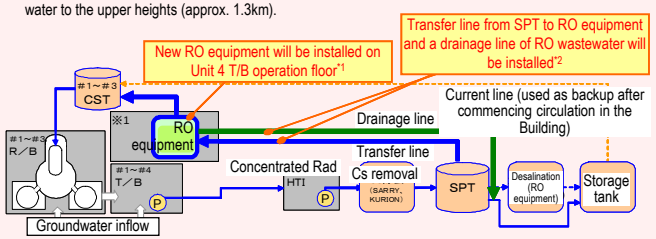
Progress toward decommissioning: Work related to circulation cooling and accumulated water treatment line

Immediate target | Stably continue reactor cooling and accumulated water treatment, and improve reliability

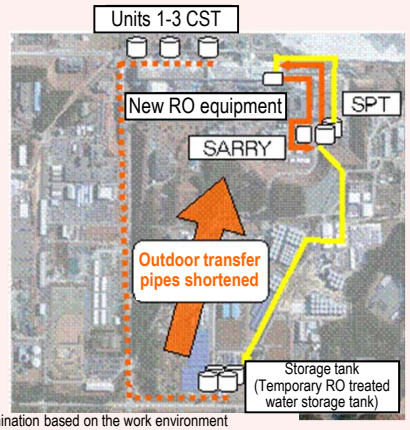
Work to improve the reliability of the circulation water injection cooling system and pipes to transfer accumulated water.

- Operation of the reactor water injection system using Unit 3 CST as a water source commenced (from July 5, 2013). Compared to the previous systems, in addition to the shortened outdoor line, the reliability of the reactor water injection system was enhanced, e.g. by increasing the amount of water-source storage and enhancing durability.
- By newly installing RO equipment inside the Reactor Building, the reactor water injection loop (circulation loop) will be shortened from approx. 3km to approx. 0.8km*.

* The entire length of contaminated water transfer pipes is approx. 2.1km, including the transfer line of surplus water to the upper heights (approx. 1.3km).



*1 Unit 4 T/B operation floor is one of the installation proposals, which will be determined after further examination based on the work environment
*2 A detailed line configuration will be determined after further examination



Typhoon measures improved for Tank Area

- Enhanced rainwater measures were implemented, including increasing the height of fences to increase the capacity to receive rainwater and installing rain gutters and fence cover to prevent rainwater inflow. Though a total of 300mm of rainfall was recorded by typhoon Nos. 18 and 19, no outflow of contaminated rainwater from inside the fences was detected.

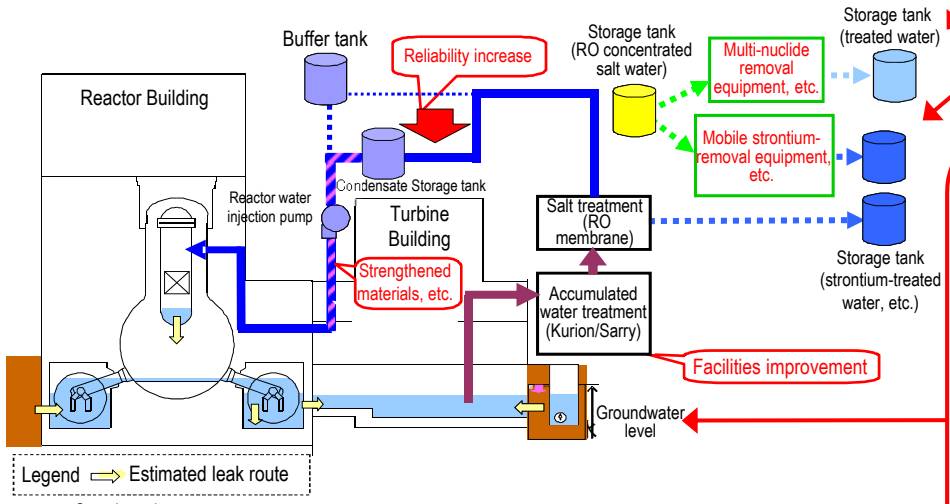
Before installing the fence cover

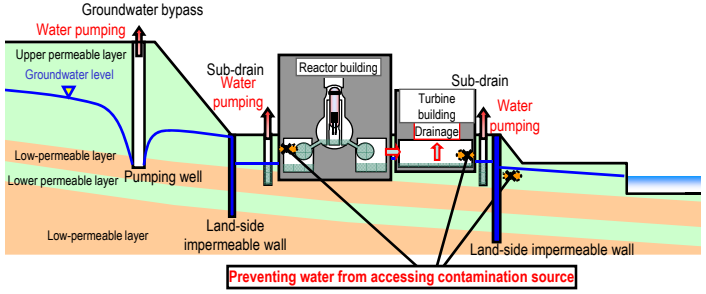
After installing the fence cover

Completion of purification of contaminated water (RO concentrated salt water)

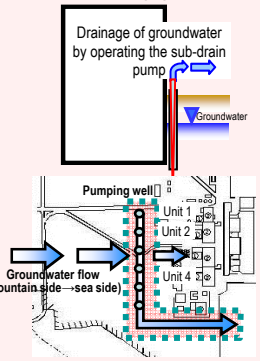
Contaminated water (RO concentrated salt water) is being treated using seven types of equipment including the multi-nuclide removal equipment (ALPS). Treatment of the RO concentrated salt water was completed on May 27, with the exception of the remaining water at the tank bottom. The remaining water will be treated sequentially toward dismantling the tanks.

The strontium-treated water from other facilities than the multi-nuclide removal equipment will be re-purified in the multi-nuclide removal equipment to further reduce risks.





Preventing groundwater from flowing into the Reactor Buildings



Aiming to reduce the level of groundwater by pumping subdrain water, tests were conducted to verify the stable operation of water treatment facilities, including subdrain.

The results showed that through purification by the system, the density of radioactive materials declined to below the operational target and no other γ nuclides were detected.

Reducing groundwater inflow by pumping sub-drain water

Measures to pump up groundwater flowing from the mountain side upstream of the Building to reduce the groundwater inflow (groundwater bypass) have been implemented.

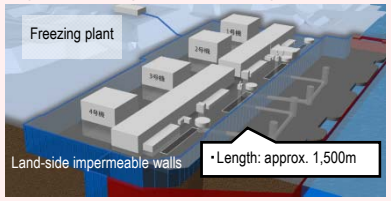
The pumped up groundwater is temporarily stored in tanks and released after TEPCO and a third-party organization have confirmed that its quality meets operational targets.

Through periodical monitoring, pumping of wells and tanks is operated appropriately.

At the observation holes installed at a height equivalent to the buildings, the trend showing a decline in groundwater levels is checked.

The analytical results on groundwater inflow into the buildings based on existing data showed a declining trend.

Via a groundwater bypass, reduce the groundwater level around the Building and groundwater inflow into the Building



To prevent the inflow of groundwater into the Reactor Buildings, installation of impermeable walls on the land side is planned.

Drilling holes to install frozen pipes commenced from June 2, 2014.

Regarding the mountain-side, in which freezing will commence first, installation of frozen pipes was completed on July 28, 2015.

Freezing functioning test started on April 30, 2015.

<Glossary>
(*1) CST (Condensate Storage Tank)
Tank for temporarily storing water used in the plant.

Installing land-side impermeable walls around Units 1-4 to prevent the inflow of groundwater into R/B

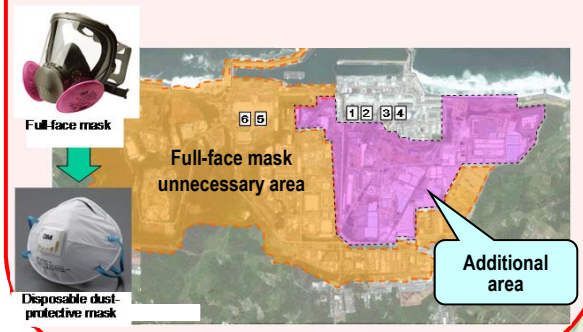
Progress toward decommissioning: Work to improve the environment within the site

Immediate targets	・Reduce the effect of additional release from the entire power station and radiation from radioactive waste (secondary water treatment waste, rubble, etc.) generated after the accident, to limit the effective radiation dose to below 1mSv/year at the site boundaries. ・Prevent contamination expansion in sea, decontamination within the site

Expansion of full-face mask unnecessary area

The number of dust monitors has increased to ten with additional monitors installed in Units 3 and 4 slopes and tank areas, the full-face mask unnecessary area will be expanded to approx. 90% of the site from May 29.

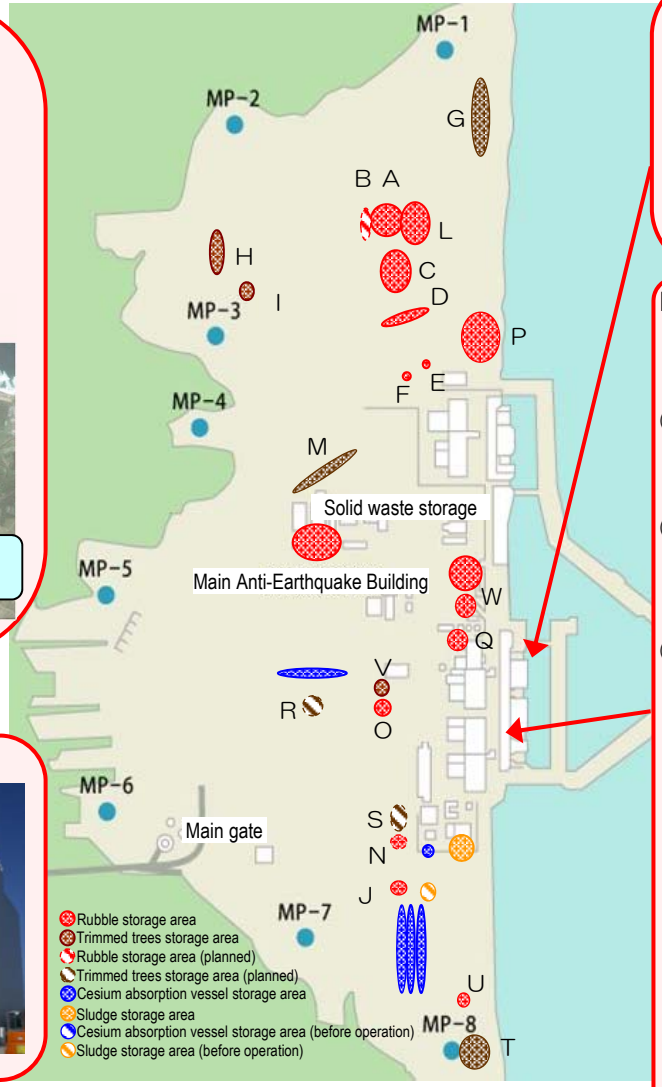
However, wearing full- or half-face mask is required for works exposed to highly concentrated dust; and full-face masks, for works involving a risk of ingesting concentrated salt water, etc.



Full-face mask unnecessary area

Operation start of the large rest house

A large rest house for workers was established and its operation commenced on May 31.
Spaces in the large rest house are also installed for office work and collective worker safety checks as well as taking rest.
Meal service at the dining space, which had been temporarily suspended due to the construction to ensure further improvement from a hygiene perspective, resumed on August 3.



Installation of impermeable walls on the sea side

To prevent contamination expansion into the sea where contaminated water had leaked into groundwater, impermeable walls are being installed (scheduled for completion in September 2014).

Installation of steel pipe sheet piles temporarily completed by December 4, 2013 except for 9 pipes.

The next stage will involve installing steel pipe sheet piles outside the port, landfilling within the port, and installing a pumping facility to close before the construction completion.

Installation status of impermeable walls on the sea side
(Landfill status on the Unit 1 intake side)

Reducing radioactive materials in seawater within the harbor

- The analytical result for data such as the density and level of groundwater on the east (sea) side of the Building identified that contaminated groundwater was leaking into seawater.
- No significant change has been detected in seawater within the harbor for the past month, nor was any significant change detected in offshore measurement results as of last month.
- To prevent contamination expansion into the sea, the following measures are being implemented:

(1) Prevent leakage of contaminated water
- Ground improvement behind the bank to prevent the expansion of radioactive materials.
  (Between Units 1 and 2: completed on August 9, 2013;
  between Units 2 and 3: from August 29 and completed on December 12, 2013;
  between Units 3 and 4: from August 23, 2013 and completed on January 23, 2014)
- Pumping groundwater in contaminated areas (from August 9, 2013, scheduled to commence sequentially)

(2) Isolate water from contamination
- Enclosure by ground improvement on the mountain side
  (Between Units 1 and 2: from August 13, 2013 and completed on March 25, 2014;
  between Units 2 and 3: from October 1, 2013 and completed on February 6, 2014;
  between Units 3 and 4: from October 19, 2013 and completed on March 5, 2014)
- To prevent the ingress of rainwater, the ground surface was paved with concrete (commenced on November 25, 2013 and completed on May 2, 2014)

(3) Eliminate contamination sources
- Removing contaminated water in branch trenches and closing them (completed on September 19, 2013)
- Treatment and removal of contaminated water in the seawater pipe trench
  Unit 2: November 25 to December 18, 2014 - tunnel sections were filled.
  February 24 to July 10, 2015 - Vertical Shafts were filled. Removal of contaminated water was completed on June 30.
  Unit 3: February 5 to April 8, 2015 - tunnel sections were filled.
  May 2 to July 29, 2015 – Vertical Shafts were filled. Removal of contaminated water was completed on July 30.
  Unit 4: February 14 – March 21, 2015 - tunnel sections were filled.
  April 15 to 28, 2015 - opening apertures II and III were filled.

Overview of measures