Summary of Decommissioning and Contaminated Water Management

February 26, 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: Rubble removal & dose reduction (Unit 1&2, Unit 3) → Installing FHM* → Fuel removal → Storage and handling (Unit 4)

FHM*: Fuel-Handling Machine

Unit 1: Fuel removal to start FY2017 (under consideration)
Unit 2: Fuel removal to start After FY2017 (under consideration)
Unit 3: Fuel removal to start FY2015 (scheduled)
Unit 4: Fuel removal completed 2014

Fuel Debris (Corium) Removal: Dose reduction & Leakage identification (Unit 1-3) → Stop leakage → Fuel debris removal → Storage and handling

After FY2017
Water stoppage of PCV lower part (under consideration)

Dismantling Facilities: Scenario development & technology consideration → Design & 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 removal of large rubble within Unit 3 SFP had been suspended since the fall of rubble in August 2013, it has been resumed since December 2014 after implementing additional fall-prevention measures.

(Feb 20: Removal of fuel-handling machine trolley 2nd floor)

Three principles behind contaminated water countermeasures

The water to cool the fuel melted in the accident is mixed with ground water and approx. 300 tons of contaminated water is generated every day.
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 2)

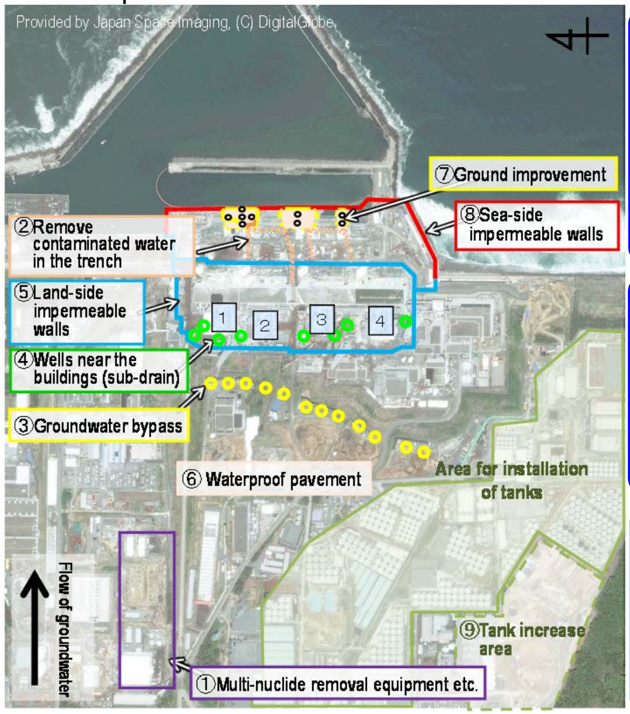
(Note 2) Underground tunnel containing pipes.

2. Isolate water from contamination

③ Pump up ground water for bypassing
④ Pump up ground water 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.

In addition to multi-nuclide removal equipment, contaminated water is treated by installing additional multi-nuclide removal equipment by TEPCO (operation commenced in September 2014) and a subsidy project of the Japanese Government (operation commenced in October 2014).

To reduce the risks of contaminated water, treatment is proceeding through multiple purification systems to remove strontium.

(Installation status of high-performance multi-nuclide removal equipment)

Land-side impermeable walls

The 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 which will commence preceding freezing, the installation of frozen pipes is approx. 72% completed.

(Land-side impermeable walls freezing plant installation status)

Sea-side impermeable walls

The walls aim to prevent the flow of contaminated groundwater into the sea.

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. 10-35°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 The radiation exposure dose due to the current release of radioactive materials from the Reactor Buildings peaked at 0.03 mSv/year at the site boundaries. This is approx. 1/70 of the annual radiation dose by natural radiation (annual average in Japan: approx. 2.1 mSv/year).

Status of contaminated water countermeasures for Unit 2-4 seawater-pipe trenches

There is a plan to fill the seawater-pipe trenches(Note) leading from Unit 2-4 Turbine Buildings to the sea side to remove contaminated water. Regarding Unit 2, filling of the tunnel sections was completed on December 2014. Filling of the Vertical Shafts commenced on February 24.

Regarding Unit 3, filling of the tunnel sections has been underway since February 5. After this filling is completed, filling of the Vertical Shafts will commence.

Regarding Unit 4, filling of the tunnel sections commenced on February 14 and will proceed sequentially according to the status of Units 2 and 3.

Note: The term 'trench' refers to an underground tunnel containing pipes.

Implementation of safety improvement measures based on serious accidents

Based on a series of serious fatal accidents at Nuclear Power Stations, TEPCO had suspended all operations on site since January 21 and has implemented measures to improve safety such as safety inspections and case study meetings.

During the safety inspections, the workplaces and procedures were checked and corrected for each work segment from three perspectives: mindset, procedures and facilities.

An in-depth study was also conducted into the causes of repeated fatal accidents at the Fukushima Daiichi Nuclear Power Station, based on which comprehensive measures are being implemented.

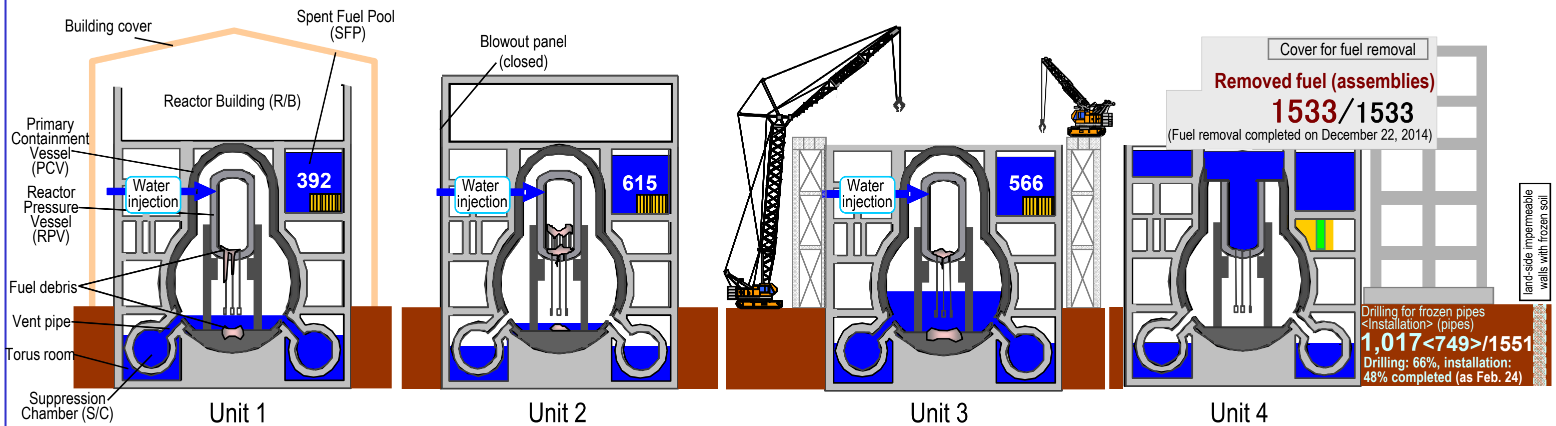
Damage in temporary rubble storage tent

On February 16, damage was detected in the temporary rubble storage tent, which is assumed to be attributable to the strong wind on February 15.

In the monitoring results, no increase in density due to this damage was detected. Rubble in the tent was covered by a sheet


<Status of tent damage>


<Status of cover over rubble in tent>



Unit 2 Reactor Building and large carry-in entrance rooftop accumulated water quality results

A higher density was detected at drainage channel K leading from around the building to the sea and an investigation was conducted in the upper stream flowing into drainage channel K. The measurement results showed a relatively high density in the accumulated rainwater on the rooftop of the Unit 2 Reactor Building large carry-in entrance.

Regarding seawater around the drainage channel K, there was no significant increase in the density of radioactive materials. As the next step, measures to prevent rainwater contamination will be implemented.

Investigation on debris inside Unit 1 reactor commenced

To investigate the status of fuel debris inside the Unit 1 reactor, there are plans to measure the position of fuel debris using muons (a type of elementary elementary particle), which are derived from cosmic radiation.

Detectors were installed at two points outside the Reactor Building and measurement commenced on February 12.


<Installation status of measurement equipment>

Enhancement of mobile strontium-removal equipment

In addition to multi-nuclide removal equipment (ALPS), multiple types of purification equipment which remove strontium are being installed.

Mobile strontium-removal equipment, which circulates and purifies contaminated water in tanks, has been additionally installed and treatment commenced on February 10.

In addition, among the four units of the second mobile strontium-removal equipment, the preceding two units commenced treatment on February 20. The remaining two units will commence treatment from late February.

Review by the IAEA on progress toward decommissioning

An investigative team from the International Atomic Energy Agency (IAEA) visited Japan from February 9 to 17 and conducted the third review, related to progress toward decommissioning of the Fukushima Daiichi Nuclear Power Station.

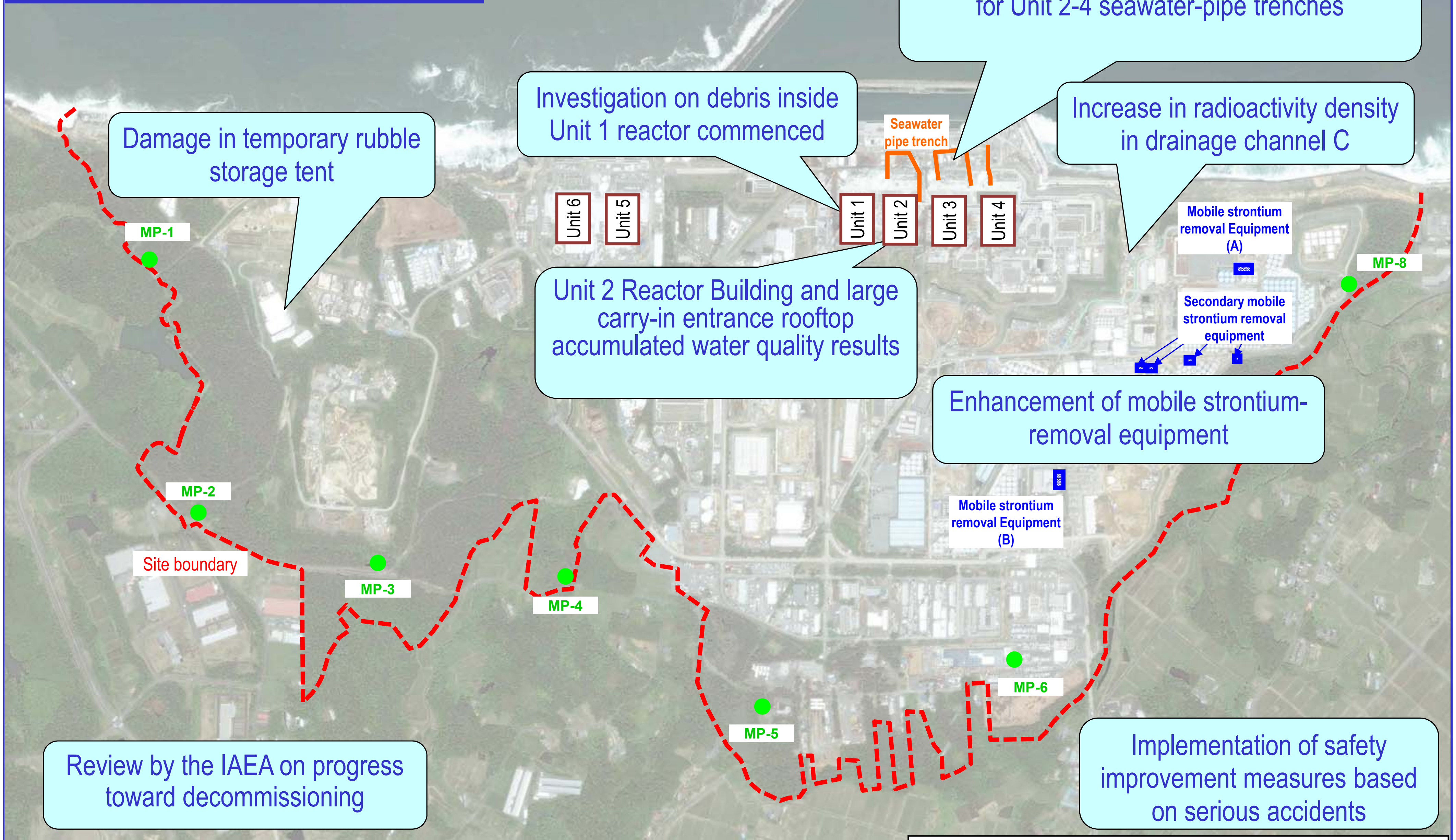
An evaluation was made regarding steadily progressing measures for decommissioning and contaminated water in many fields, starting with completion of fuel removal from Unit 4.

Increase in radioactivity density in drainage channel C

On February 22, the density of gross β radioactive materials increased temporarily in drainage release channel C leading from the mountain side on site to the inside of the port. To prevent expansion, all gates installed at drainage channel C and the connecting drainage channel B were closed and treatment of contaminated water was suspended. Later, as the density of gross β radioactive materials decreased to within the normal range, the gates were opened on February 23 and treatment of contaminated water resumed.

The radioactivity density in seawater within the port is now within the normal range. Meanwhile the monitoring of seawater within the port has been enhanced.

Major initiatives – Locations on site



Provided by Japan Space Imaging, (C) DigitalGlobe

•* Data of Monitoring Posts (MP1-MP8.)

Data of Monitoring Posts (MPs) measuring airborne radiation rate around site boundaries show 0.883 - 3.868μSv/h (January 28 – February 24, 2015).
In association with inspections on MP1-MP5 from February 5 to 20, 2015, corresponding MP values were missing temporarily.
In association with inspections on MP transmission equipment around 11:00-12:00, February 20, 2015, corresponding values were missing temporarily.

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.

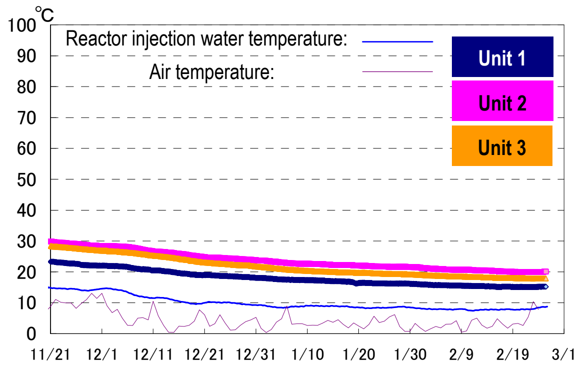
Therefore monitoring results at these points are lower than elsewhere in the power plant site.

The radiation shielding panel around the 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 to July 11, 2013, since the surrounding radiation dose has largely fallen down due to further cutting down of the forests etc.

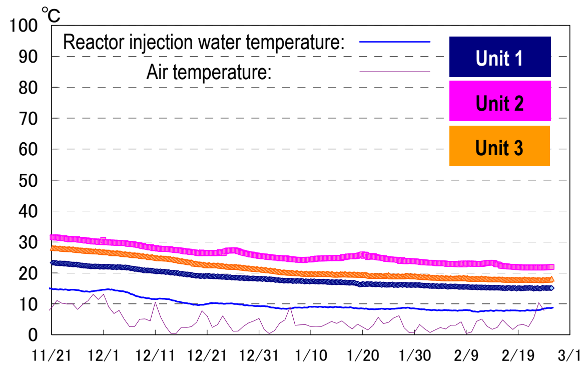
I. Confirmation of the reactor conditions

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. 10 to 35°C for the past month, though they vary depending on the unit and location of the thermometer.



RPV bottom temperatures (recent quarter)



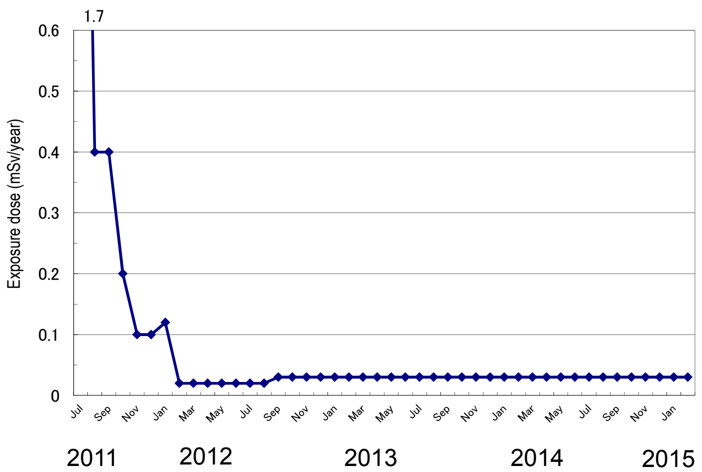
PCV gas phase temperatures (recent quarter)

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

2. Release of radioactive materials from the Reactor Buildings

The density of radioactive materials newly released from Reactor Building Units 1-4 in the air measured at site boundaries was evaluated at approx. 1.4 x 10^{-9} Bq/cm³ for both Cs-134 and -137. The radiation exposure dose due to the release of radioactive materials was 0.03 mSv/year (equivalent to approx. 1/70 of the annual radiation dose by natural radiation (annual average in Japan: approx. 2.1 mSv/year)) at the site boundaries.

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



(Reference)

* The density limit of radioactive materials in the air outside the surrounding monitoring area
  [Cs-134]: 2 x 10^{-5} Bq/cm³
  [Cs-137]: 3 x 10^{-5} Bq/cm³

* 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/cm³)
  [Cs-137]: ND (Detection limit: approx. 2 x 10^{-7} Bq/cm³)

* Data of Monitoring Posts (MP1-MP8).
Data of Monitoring Posts (MPs) measuring the airborne radiation rate around site boundaries showed 0.883 -3.868 μSv/h (January 28 – February 24, 2015).
In association with inspections on MP1-MP5 and transmission equipment, corresponding values were temporarily missing (February 5-20).
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.

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 of cold shutdown condition or sign of criticality 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. Reactor cooling plan

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

➢ Replacement of the thermometer at the bottom of Unit 2 RPV

- In April, attempts to remove and replace the thermometer installed at the bottom of the RPV, which had broken in February 2014, failed and the operation was suspended. Based on the judgment that the estimated cause was fixing or added friction due to rust having formed, rust-stripping chemicals were injected on site from January 14 and the broken thermometer was removed on January 19. Currently a method to install a new thermometer is being examined and the workers involved are being trained. The new thermometer will be reinstalled in mid-March.

2. Accumulated water-treatment plan

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 February 25, 82,091 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. 100m³/day based on the evaluation data to date through measures such as the 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. 10-15cm compared to the level before pumping at the groundwater bypass started.
- Due to a decrease in the flow rate of pumping well Nos. 10 and 11, water pumping was stopped for cleaning (No. 10: from January 13 to February 10, No. 11: from February 23).

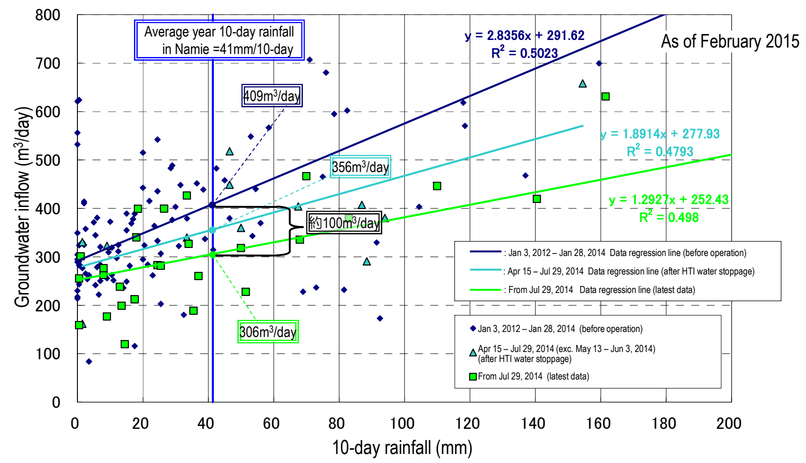


Figure 1: Analytical results of inflow into buildings

➢ 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). As of February 24, drilling at 1,225 points (approx. 97%, for frozen pipes: 1,005 of 1,036 points, for temperature-measurement pipes: 220 of 228 points) and installation of frozen pipes at 749 of 1,036 points (approx. 72%) had been completed (see Figure 2). Regarding brine pipes, installation of the slope 35m aquifer (approx. 93%) and the 10m aquifer mountain side (approx. 32%) had been completed.

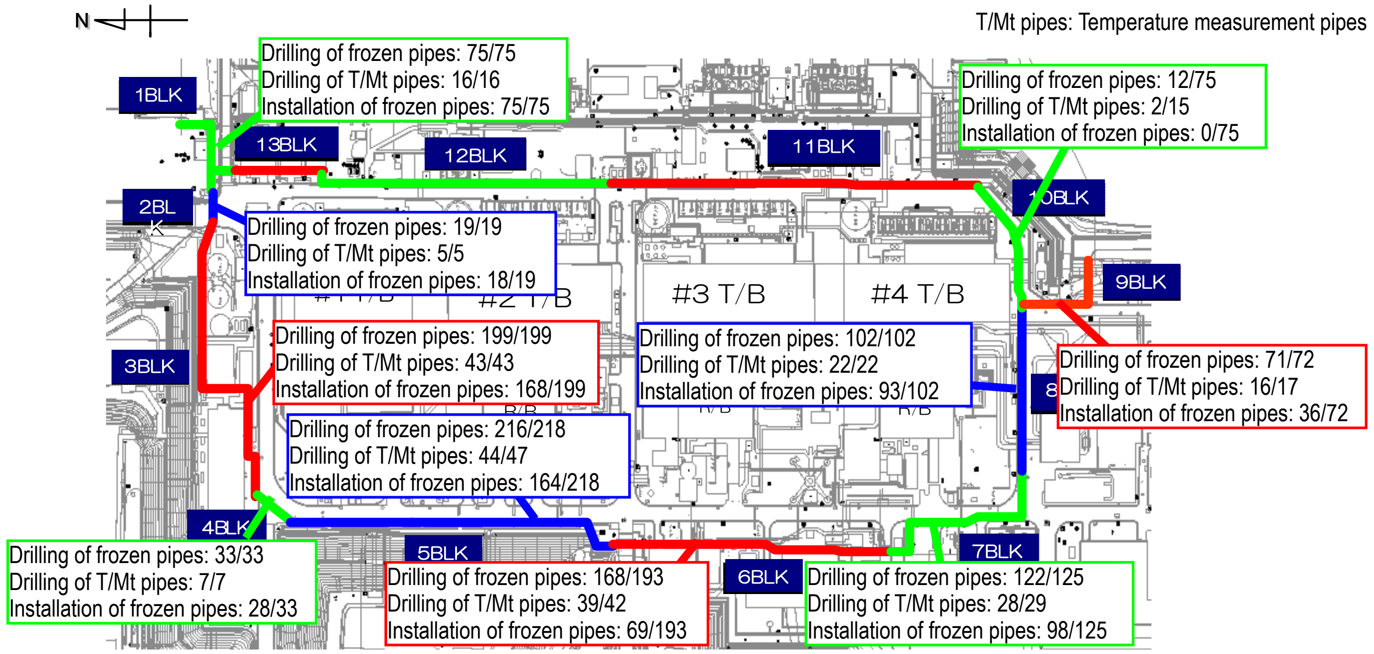


Figure 2: Drilling status for frozen-soil impermeable walls and installation of frozen pipes

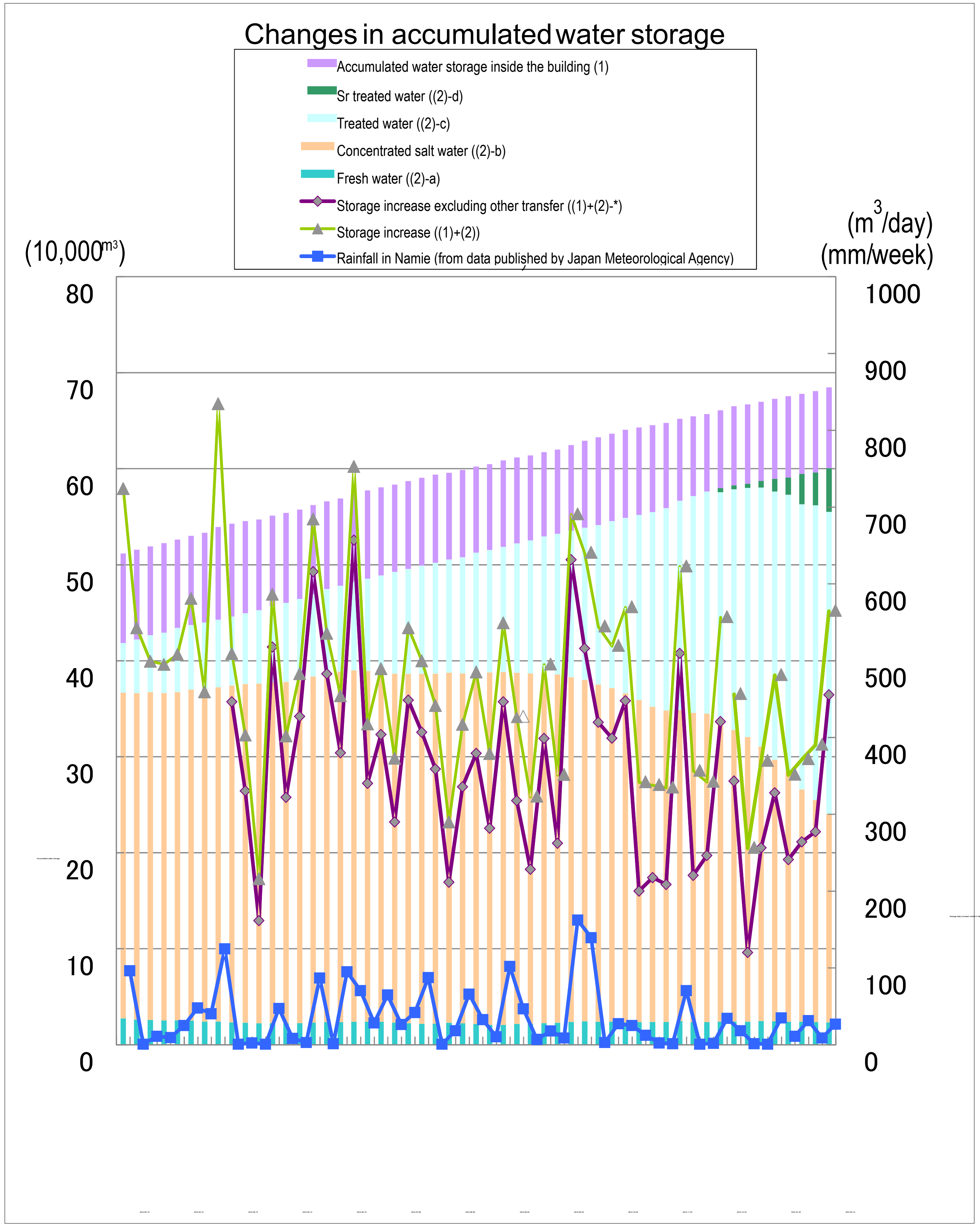
- ➢ Operation of multi-nuclide removal equipment
  - Regarding multi-nuclide removal equipment (existing, additional and high-performance), hot tests using radioactive water are underway (for existing equipment, System A: from March 30, 2013, System B: from June 13, 2013, System C: from September 27, 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). To date, approx. 209,000 m³ at the existing, approx. 80,000 m³ at the additional and approx. 25,000 m³ at the high-performance multi-nuclide removal equipment have been treated (as of February 19, including approx. 9,500 m³ stored in J1(D) tank, which contained water with a high density of radioactive materials at the System B outlet).

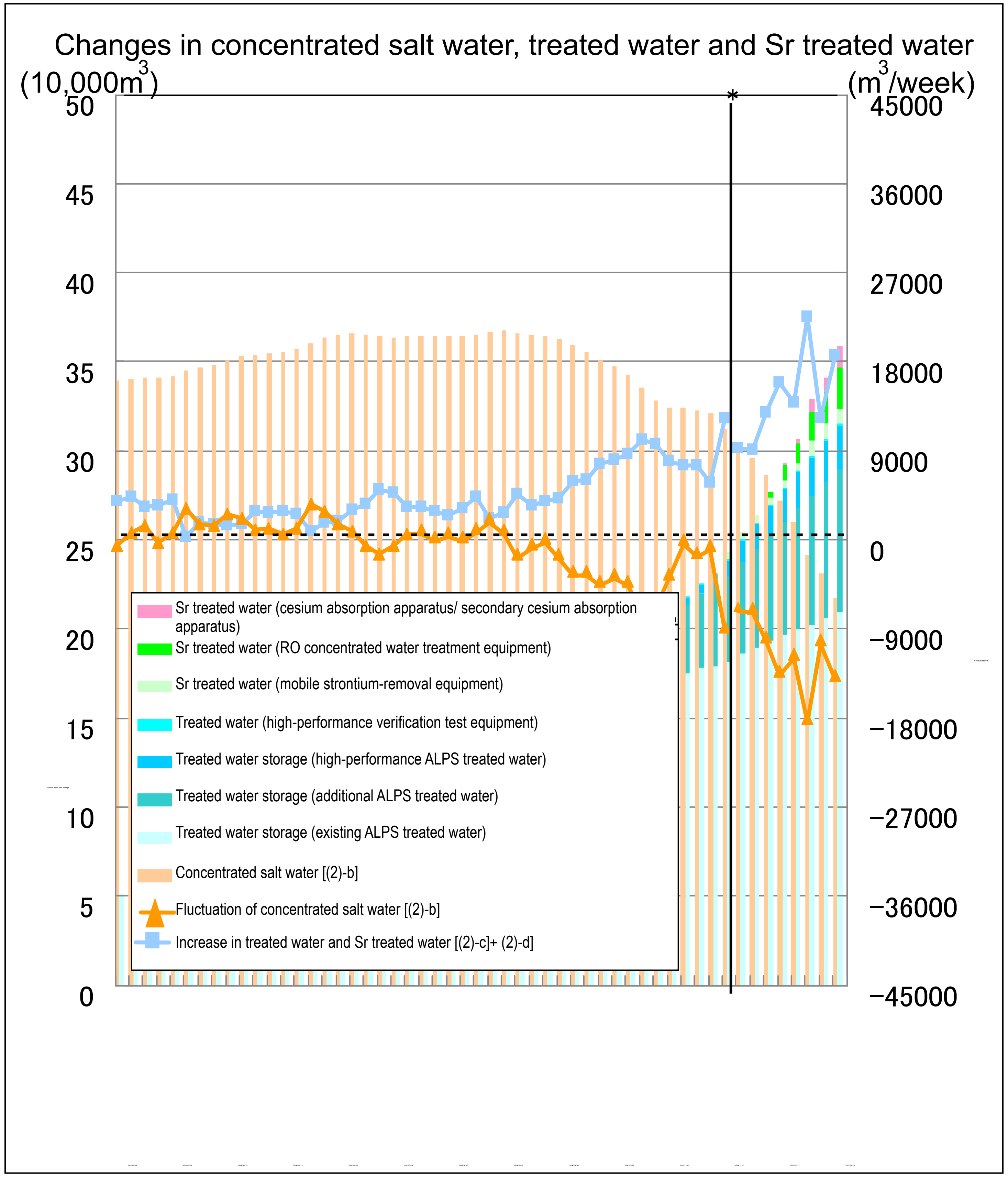
- ➢ Toward reducing the risk of contaminated water stored in tanks
  - Operation at RO concentrated water treatment equipment that removes strontium from RO concentrated salt water commenced (January 10). As of February 19, approx. 23,000 m³ had been treated.
  - To purify the RO concentrated salt water, mobile strontium-removal equipment is being operated (G4 south area: from October 2, 2014; H5 north area: from February 10). As of February 23, approx. 10,000 m³ of contaminated water had been treated and approx. 12,000 m³ of contaminated water is being treated.
  - Among the secondary mobile strontium-removal equipment (a total of 4 units), the preceding 2 units commenced treatment (from February 20). The remaining 2 units will commence treatment from late February.
  - Treatment measures comprising the removal of strontium by cesium absorption apparatus (KURION) and secondary cesium absorption apparatus (SARRY) commenced (from January 6, 2015 and December 26, 2014). As of February 19, approx. 12,000 m³ has been treated.

- ➢ Measures in Tank Areas
  - Rainwater under the temporary release standard having accumulated inside the fences in the contaminated water tank area, was sprinkled on site after removing radioactive materials using rainwater-treatment equipment since May 21, 2014 (as of February 24, a total of 15,710 m³).

- ➢ 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. Filling of the Vertical Shafts A and D commenced (from February 24). After this filling is completed, a pumping test will be conducted, followed by filling of Vertical Shafts B and C and the open-cut duct sections.
  - Regarding the Unit 3 seawater-pipe trench, filling of the tunnel sections is underway (from February 5). When this filling is completed, filling of the Vertical Shafts will commence.
  - Regarding the Unit 4 seawater-pipe trench, filling of the tunnel sections commenced (February 14). Filling will proceed sequentially according to the status of Units 2 and 3.

As of February 19, 2015





* Since January 1, 2015, data collection days have been changed (from Tuesdays to Thursdays)

Figure 3: Status of accumulated water storage

3. Plan to reduce radiation dose and mitigate contamination

Effective dose-reduction at site boundaries and purification of the 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

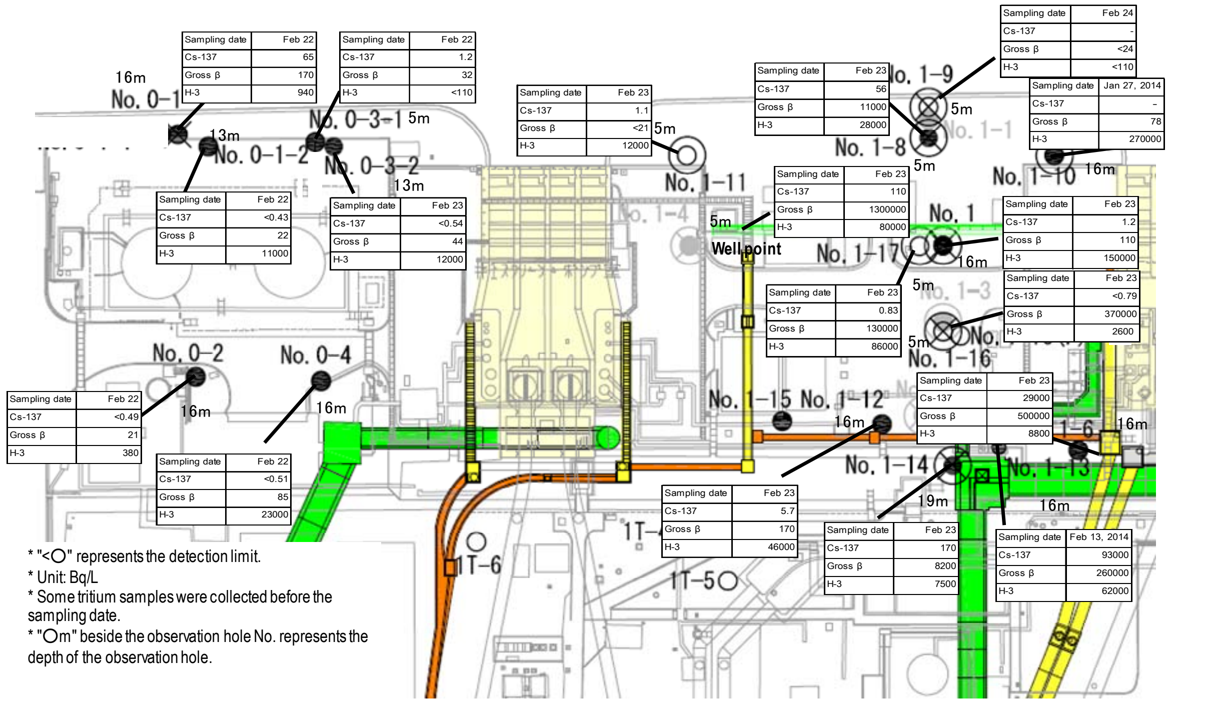
- Regarding the radioactive materials in groundwater near the bank on the north side of the Unit 1 intake, tritium densities have been increasing at groundwater Observation Holes Nos. 0-1-2 and 0-4 since July 2014 and currently stand at around 10,000 and 25,000 Bq/L respectively in these locations. Pumping 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 density of gross β radioactive materials at groundwater Observation Hole No. 1-6 increased to 7.8 million Bq/L in October 2014, but currently stands at around 500,000 Bq/L. Though the density of tritium at groundwater Observation Hole No. 1-8 had been around 10,000 Bq/L, it fluctuated greatly after June 2014 and is currently around 30,000 Bq/L. Though the density of tritium at groundwater Observation Hole No. 1-17, which had been around 10,000 Bq/L, increased to 160,000 Bq/L since October 2014, it currently stands at around 100,000 Bq/L. The density of gross β, which has been increasing since March 2014, reached 1.2 million Bq/L by October and currently stands at around 200,000 Bq/L. Water pumping from the well point (10m³/day) and the pumping well No. 1-16 (P) (1m³/day) installed near the Observation Hole No. 1-16 continues.
- Regarding the radioactive materials in groundwater near the bank between the Unit 2 and 3 intakes, the densities of tritium and gross β radioactive materials have been decreasing since November 2014 and currently stand at around 1,000 and 20,000 Bq/L for tritium and gross β radioactive materials respectively. To increase the height of the ground improvement area with mortar, the volume of water pumped from the well point increased to 50 m³/day (from October 31, 2014). The height increase has been implemented (from January 8 to February 18).
- 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 as up to January.
- Regarding the radioactive materials in seawater outside the seaside 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 January.
- The density of radioactive materials in seawater within the port has been slowly declining as up to January.
- The radioactive material density in seawater at and outside the port entrance has remained within the same range previously recorded.
- Construction to cover the seabed soil within the port is underway to prevent contamination spreading due to stirred-up seabed soil (scheduled for completion at the end of FY2014). Since December 14, 2014, Area (2) is being covered. As of February 24, 53% of the construction had been completed (see Figure 7). The seabed of the intake open channels had been covered by FY2012.

➢ Increase in radioactivity density in drainage channel C

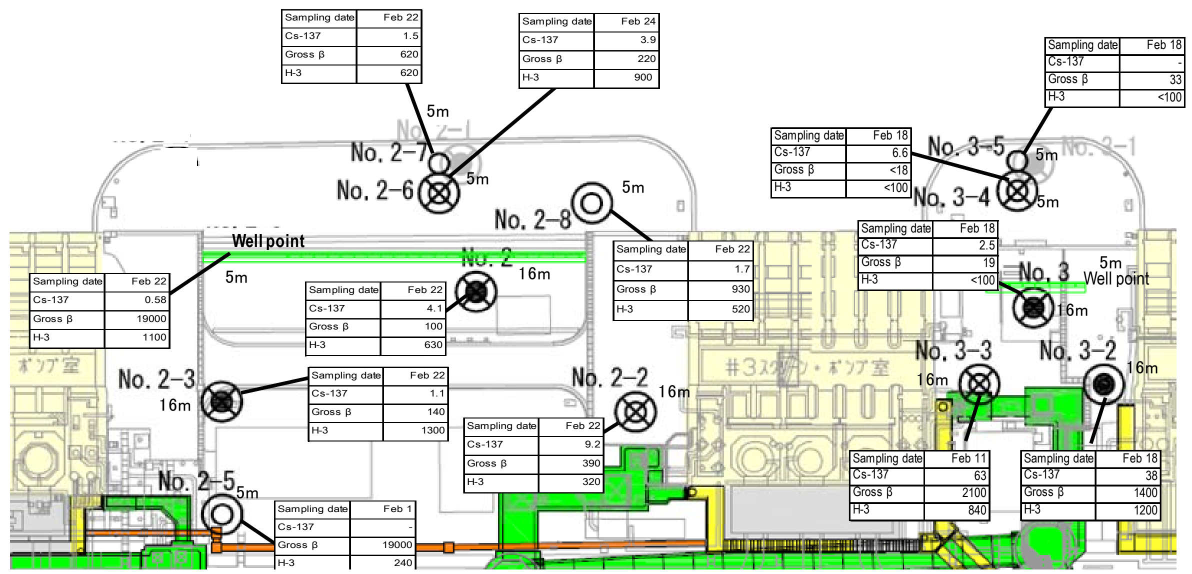
- On February 22, the density of gross β radioactive materials increased in the drainage channel C leading from the mountain side on site to the inside of the port. To prevent expansion, all gates installed at drainage channel C and the connecting drainage channel B were closed and treatment of contaminated water was suspended. Regarding all contaminated water tanks, an inspection was performed to confirm that the water stoppage valves were closed and there was no significant change in water levels. A tank patrol was also conducted to confirm no abnormalities such as leakage.
- Following these checks, after confirming that the density of gross β radioactive materials decreased to within the normal range, the gates of the drainage channels were opened on February 23 and treatment of contaminated water resumed.
- An analysis on radioactivity in seawater within the port was conducted to confirm that it was within the normal range. The monitoring frequency of seawater within the port (at 10 points) was enhanced from weekly to daily.

➢ Unit 2 Reactor Building large carry-in entrance rooftop accumulated water quality results

- During the ongoing decommissioning and cleaning of drainage channels, a higher density than at other outlets was detected at the outlet of the drainage channel K (installed around the building) and an investigation was conducted in the upper stream flowing into the drainage channel K.
- The measurement results showed a relatively high density (cesium 137: approx. 23,000 Bq/L) in accumulated rainwater on the rooftop of the Unit 2 Reactor Building large carry-in entrance. Regarding seawater at the "around south outlet T-2-1" point near the outlet of the drainage channel K, there was no significant increase in the density of radioactive materials.
- As the next step, measures to prevent rainwater contamination will be implemented.



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



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

Figure 4: Groundwater density on the Turbine Building east side

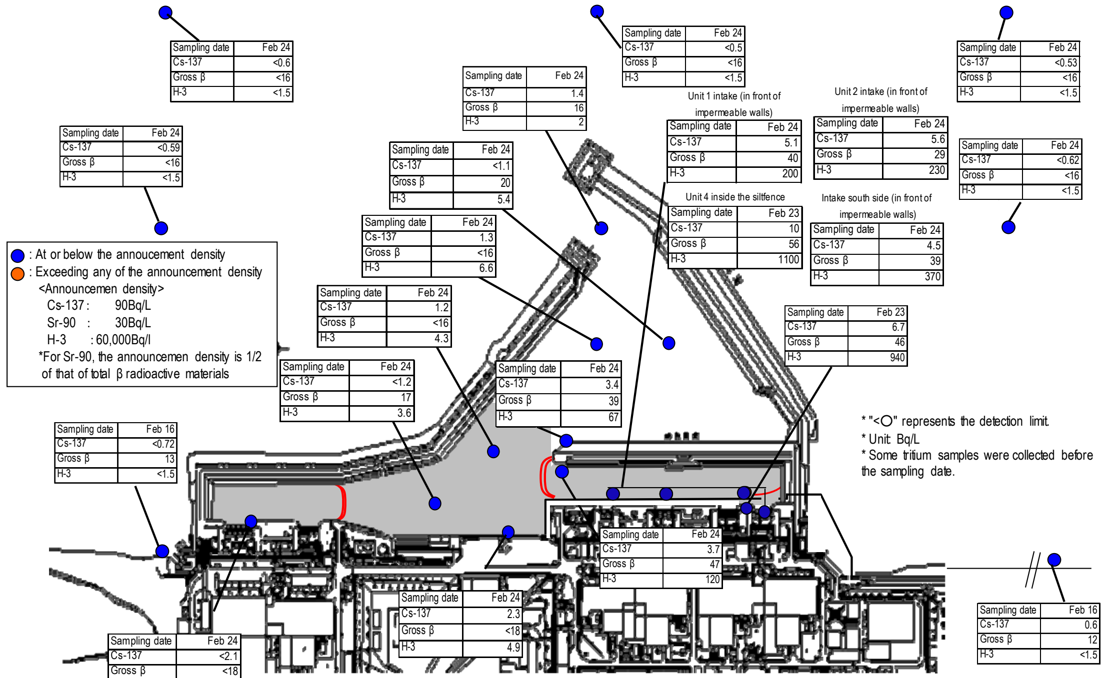


Figure 5: Seawater density around the port

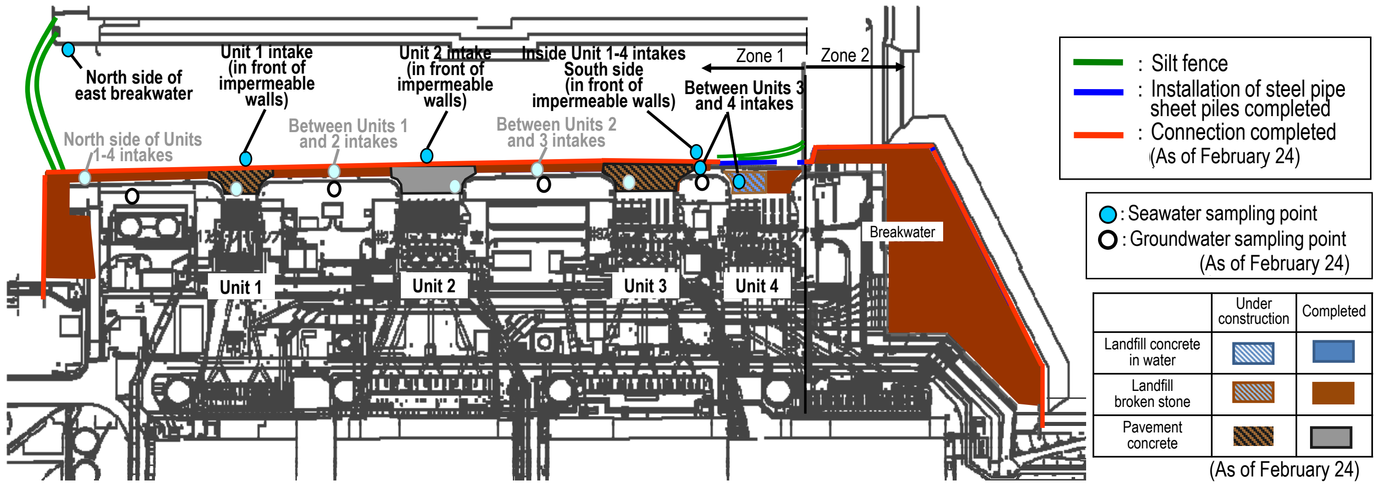


Figure 6: Progress status of impermeable walls on the sea side

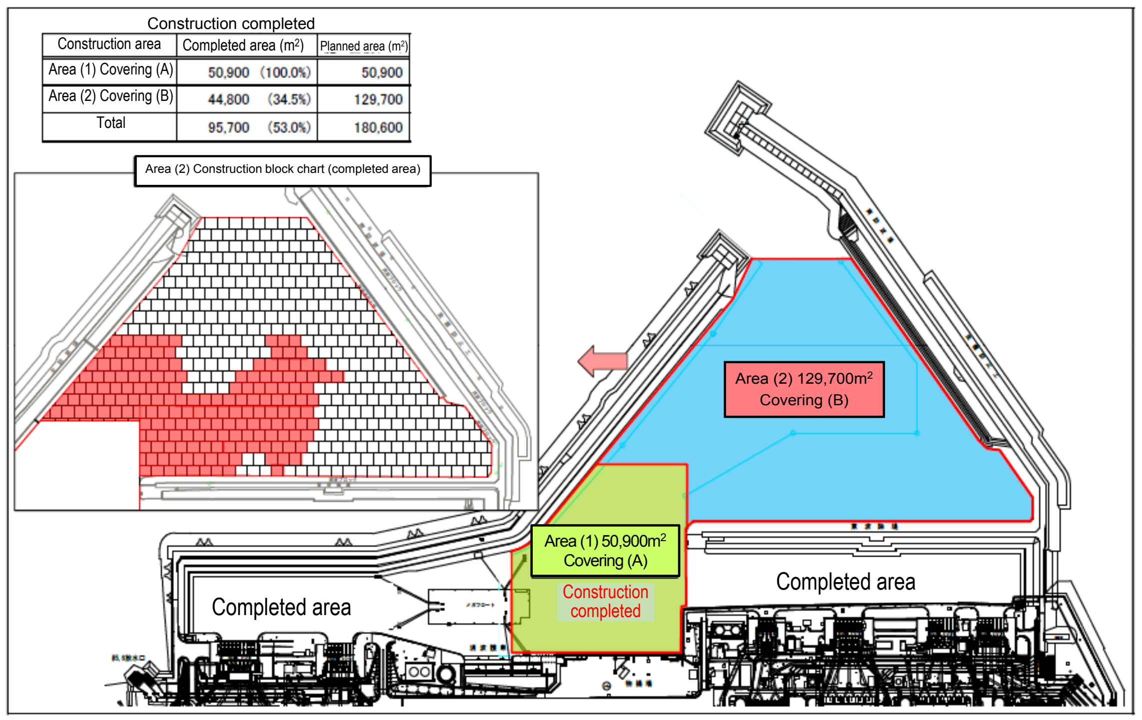


Figure 7: Progress status of the seabed soil covering within the port

4. Plan to remove fuel 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 3

- During rubble removal inside the spent fuel pool, the console and overhanging pedestal of a fuel-handling machine, which were scheduled for removal, fell (August 29, 2014) and the work was therefore suspended. On December 17, 2014, the rubble removal work resumed. Removal from the fuel-handling machine trolley 2nd floor was completed (February 20) and additional cover panels were installed (February 21 and 23). After completing preparation, removal from the walkway and other parts will commence.

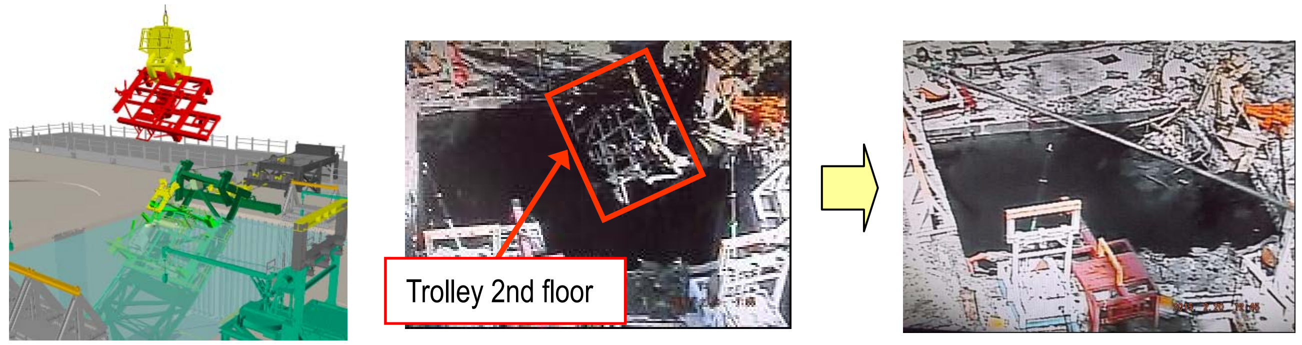


Image of removal | Before removal from trolley 2nd floor | After removal from trolley 2nd floor

Figure 8: Status of rubble removal from Unit 3 spent fuel pool

➢ Main work to help remove spent fuel at Unit 1

- Spraying of anti-scattering agents on the top floor of the Reactor Building and investigations into the status of rubble and dust concentration were conducted and the roof panels of the Reactor Building cover that had been removed were replaced on December 4, 2014.
- After March, dismantling of the building cover (including preparation work) is scheduled to commence. Regarding this dismantling, measurement of wind speed inside the cover and the above investigations identified reinforcing steels which may hinder the installation of sprinklers. Additional work to remove these reinforcing steels ahead of schedule will be conducted.

5. Fuel debris removal plan

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)

➢ Development of technology to detect fuel debris inside the reactor

- To gain an insight into the positions and amounts of fuel debris, as required to examine fuel debris removal methods, there are plans to measure the position of debris via imaging technology using muons (a type of elementary particle), which are derived from cosmic radiation. Measurement equipment was installed to the northwest outside the Unit 1 Reactor Building (February 9 and 10) and measurement commenced on February 12.

➢ Decontamination of the Unit 3 Reactor Building 1st floor

- Prior to investigating inside the PCV, a radiation-source survey was conducted on Unit 3 Reactor Building 1st floor up to December and on January 5, a middle-place decontamination equipment was installed. Middle-place decontamination for a space 4m high or lower over the entire 1st floor has been underway (suction, wiping and sprinkling of water).

6. Plan to store, process and dispose of solid waste and decommission 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 January, the total storage volume of concrete and metal rubble was approx. 138,600 m³ (+4,200 m³ compared to at the end of December 2014, area-occupation rate: 57%). The total storage volume of trimmed trees was approx. 79,700 m³ (±0 m³ compared to at the end of December 2014, area-occupation rate: 58%). The increase in rubble was mainly attributable to construction related to facing and installation of tanks.

➢ Management status of secondary waste from water treatment

- As of February 19, the total storage volume of waste sludge was 597 m³ (area-occupation rate: 85%) and concentrated waste fluid was 8,891 m³ (area-occupation rate: 44%). The total number of stored spent vessels and high-integrity containers (HICs) for multi-nuclide removal equipment was 1,846 (area-occupation rate: 56%).

➢ Damage in the temporary rubble storage area

- On February 16, damage was detected in the upper sheet of the temporary rubble storage area A1 (A tent). In this tent, a high density (below 30mSv/h) of rubble has temporarily been stored under shields. Though an investigation is underway to determine the cause of this damage, it is assumed to be the strong wind of February 15. In the monitoring results, no increase in density due to this damage was detected. Rubble in the tent was covered by a sheet (February 20).

7. Plan for staffing and ensuring work safety

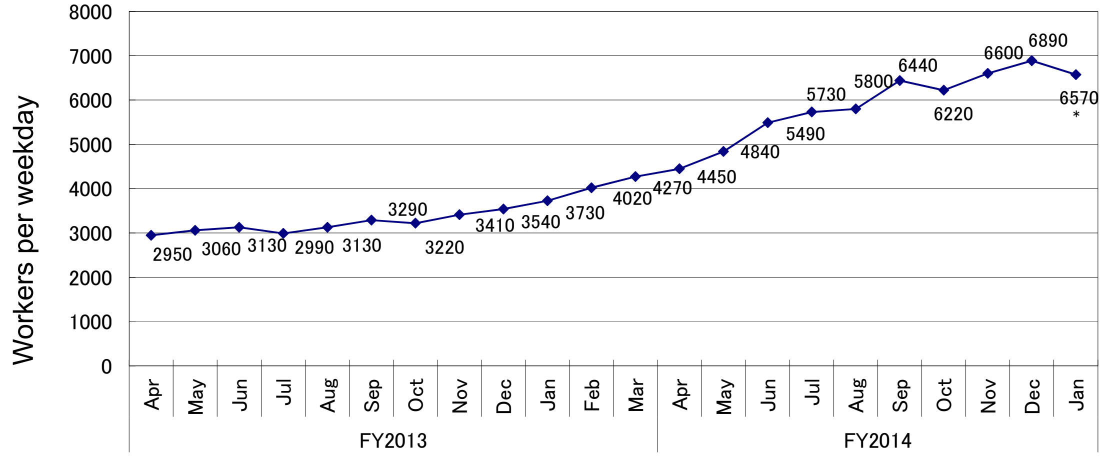
Securing appropriate staff long-term while thoroughly implementing workers' exposure dose control. Improving the work environment and labor conditions continuously based on an understanding of workers' on-site needs

➢ 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 October to December 2014 was approx. 14,200 (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 the prime contractors that the estimated manpower necessary for the work in March (approx. 6,690 per day: TEPCO and partner company workers)* would be secured at present. The average numbers of workers per day for each month of the last fiscal year (actual values) were maintained with approx. 3,000 to 6,900 per month since the last fiscal year (See Figure 9).

* Some works for which contractual procedures have yet to be completed are excluded from the March estimate.

- The number of workers is increasing, both from within and outside Fukushima prefecture. However, as the growth rate of workers from outside exceeds that of those from within the prefecture, the local employment ratio (TEPCO and partner company workers) as of January was approx. 45%.



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

Figure 9: Changes in the average number of workers per weekday for each month since FY2013

- The average exposure dose of workers remained at approx. 1mSv/month during both FY2013 and FY2014. (Reference: annual average exposure dose 20mSv/year ≈ 1.7mSv/month)
- For most workers, the exposure dose is sufficiently within the limit and at a level which allows them to continue engaging in radiation work.

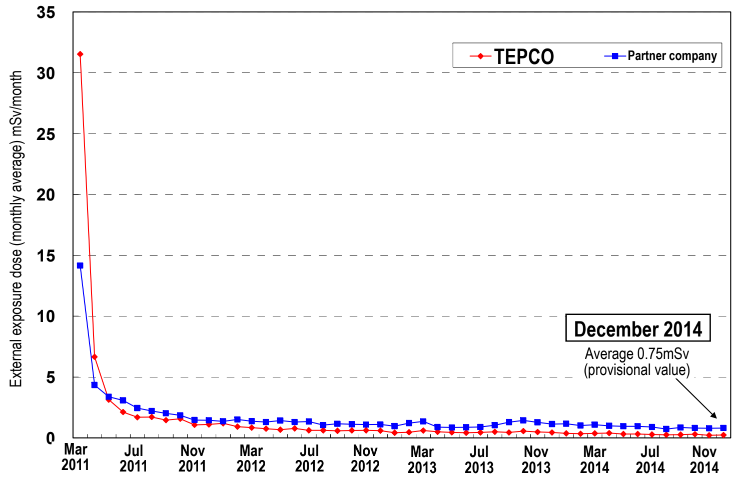


Figure 10: Changes in monthly individual worker exposure dose
(monthly average exposure dose since March 2011)

➢ Preventing infection and expansion of influenza and norovirus

- Since October 2014, measures for influenza and norovirus have been implemented. As part of these efforts, free influenza vaccinations (subsidized by TEPCO) are being provided at the new Administration Office Building in the Fukushima Daiichi Nuclear Power Station (from October 29 to December 5, 2014) and medical clinics around the site (from November 4, 2014 to January 30, 2015) for partner company workers. A total of 8,502 workers had been vaccinated. In addition, a comprehensive range of other measures is also being implemented, including daily actions to prevent infection and expansion (measuring body temperature, health checks and monitoring infection status) and response after detecting possible infections (control of swift entry/exit and mandatory wearing of masks in working spaces).

- **Status of influenza and norovirus cases**
  - From the 47th week of 2014 (November 10-17, 2014) to the 8th week of 2015 (February 16-22, 2015), there were 340 cases of influenza infections and 8 cases of norovirus infections. The totals for the same period of the previous season showed 39 cases of influenza infections and 29 cases of norovirus infections. The totals for the entire previous season (December 2013 to May 2014) were 254 cases of influenza infections and 35 cases of norovirus infections.

- **Implementation of safety improvement measures**
  - On January 19, an accident occurred while a tank for receiving rainwater was being installed, whereby a worker who was preparing to investigate inside the tank after the water filling test fell from the tank roof (height: approx. 10m) and passed away the next day.
  - Based on a series of serious fatal accidents at the Fukushima Daiichi and Daini, and Kashiwazaki-Kariwa Nuclear Power Stations on January 19 and 20, all operations were suspended since January 21. Measures to implement safety were implemented such as safety inspections, study meetings regarding the cases of each site, onsite inspection by the management of TEPCO and partner companies, and exchange of views.
  - In inspections to increase safety, the workplaces and procedures were checked and corrected for each work segment from three perspectives: mindset, procedures and facilities. Operations have been resumed sequentially since February 3, starting with those for which measures to increase safety have been completed.
  - An in-depth study was conducted into the causes of repeated fatal accidents at the Fukushima Daiichi Nuclear Power Station and based on reflections from this incident, comprehensive measures are being implemented. In particular, these measures focus on the insufficient involvement and capability of TEPCO in terms of accident prevention, and its inadequate ability to vertically deploy past lessons learned.

- **Causes and measures for the fatal accident involving a worker falling from the tank roof**
  - The analysis of the accident at the Fukushima Daiichi Nuclear Power Station identified the causes as the shape of the roof hatch, which increased the risk of falling due to its structure, the fact that the worker attempted to open the hatch of the tank roof aperture unaided, and the worker didn't wear a safety belt, which was stipulated for work at elevation.
  - As measures to prevent accidents on site, the following were specified: tanks to be installed in future must be in a shape that will not fall due to the structure; and for work at elevation on tank roofs, two or more workers must be involved and they must confirm the use of safety belts of their partners by pointing and calling.

8. Others

- **Review by the IAEA on progress toward decommissioning**
  - An investigative team from the International Atomic Energy Agency (IAEA) visited Japan and conducted the 3rd review mission, following that in November 2013, to ascertain progress toward decommissioning of the Fukushima Daiichi Nuclear Power Station (February 9-17).
  - <u>A total of 20 items were evaluated, including steadily progressing measures for decommissioning and contaminated water in many fields, starting with completion of fuel removal from Unit 4. Advice on 15 items was also provided, including continuous consultation among stakeholders in the decommissioning process.</u>

- **Implementers of additional application for contaminated water treatment technology verification (tritium separation technology verification test) project were decided**
  - Regarding contaminated water generated on site, it is impossible to remove tritium through treatment. To obtain the latest insights into technology to separate the remaining tritium, both within Japan and from abroad, a "tritium separation technology verification test project" is being conducted. During the period from November 14 to December 15, additional applications were accepted. After technical screening by experts within Japan and abroad, five implementers of this additional application were decided on February 12.

- **FY2014 results and FY2015 research and development plan**
  - Regarding each research and development project, the FY2014 progress status, results to date and an FY2015 draft plan were collected, based on which FY2015 projects will start sequentially.

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 February 16-24)"; 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.co.jp/nu/fukushima-np/f1/smp/index-j.html

Sea side impermeable wall
Silt fence

Cesium-134: 3.3 (2013/10/17) → ND(1.2) Below 1/2
Cesium-137: 9.0 (2013/10/17) → 1.3 Below 1/6
Gross β: 74 (2013/ 8/19) → ND(16) Below 1/4
Tritium: 67 (2013/ 8/19) → 6.6 Below 1/10

Cesium-134: 4.4 (2013/12/24) → ND(1.3) Below 1/3
Cesium-137: 10 (2013/12/24) → 1.2 Below 1/8
Gross β: 60 (2013/ 7/ 4) → ND(16) Below 1/3
Tritium: 59 (2013/ 8/19) → 4.3 Below 1/10

Cesium-134: 5.0 (2013/12/2) → ND(1.1) Below 1/4
Cesium-137: 8.4 (2013/12/2) → ND(1.2) Below 1/7
Gross β: 69 (2013/8/19) → 17 Below 1/4
Tritium: 52 (2013/8/19) → 3.6 Below 1/10

Cesium-134: 2.8 (2013/12/2) → ND(2.1)
Cesium-137: 5.8 (2013/12/2) → ND(2.1) Below 1/2
Gross β: 46 (2013/8/19) → ND(18) Below 1/2
Tritium: 24 (2013/8/19) → 4.7 Below 1/5

Cesium-134: ND(1.2)
Cesium-137: 3.4
Gross β: 39
Tritium:
(Sampled on February 24)

Cesium-134: 3.3 (2013/12/24) → ND(1.2) Below 1/2
Cesium-137: 7.3 (2013/10/11) → 1.4 Below 1/5
Gross β: 69 (2013/ 8/19) → 16 Below 1/4
Tritium: 68 (2013/ 8/19) → 2.0 Below 1/30

Cesium-134: 3.5 (2013/10/17) → ND(1.0) Below 1/3
Cesium-137: 7.8 (2013/10/17) → ND(1.1) Below 1/7
Gross β: 79 (2013/ 8/19) → 20 Below 1/3
Tritium: 60 (2013/ 8/19) → 5.4 Below 1/10

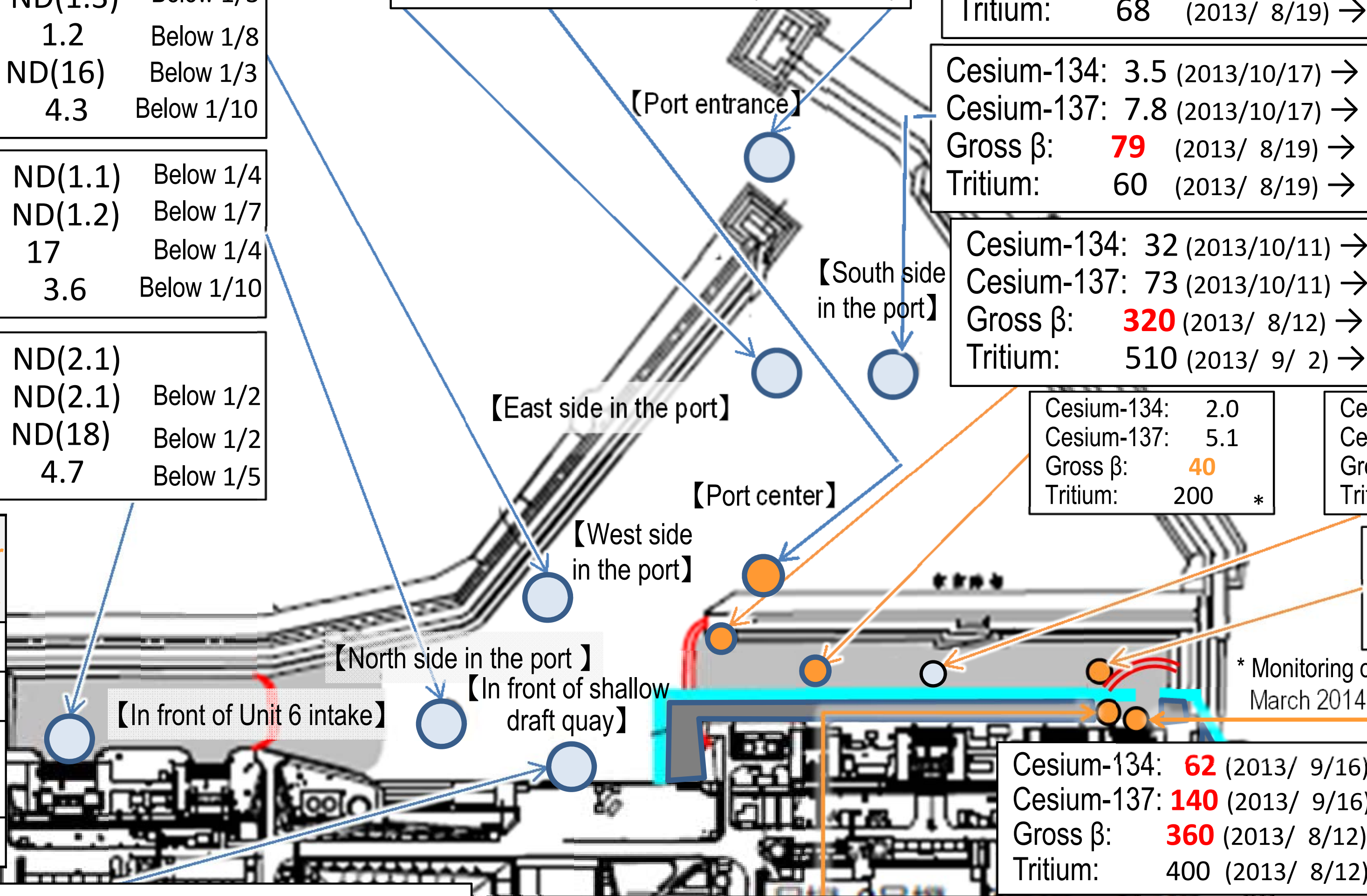
Cesium-134: 32 (2013/10/11) → ND(2.0) Below 1/10
Cesium-137: 73 (2013/10/11) → 3.7 Below 1/10
Gross β: 320 (2013/ 8/12) → 47 Below 1/6
Tritium: 510 (2013/ 9/ 2) → 120 Below 1/4

Cesium-134: 2.0
Cesium-137: 5.1
Gross β: 40
Tritium: 200 *

Cesium-134: 2.1
Cesium-137: 5.6
Gross β: 29
Tritium: 230 *

Cesium-134: ND(2.0)
Cesium-137: 4.5
Gross β: 39
Tritium: 370 *

* 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: 62 (2013/ 9/16)→ 2.5 Below 1/10
Cesium-137: 140 (2013/ 9/16)→ 10 Below 1/10
Gross β: 360 (2013/ 8/12)→ 56 Below 1/6
Tritium: 400 (2013/ 8/12)→ 1,100

Cesium-134: 5.3 (2013/8/ 5) → ND(2.1) Below 1/2
Cesium-137: 8.6 (2013/8/ 5) → 2.3 Below 1/3
Gross β: 40 (2013/7/ 3) → ND(18) Below 1/2
Tritium: 340 (2013/6/26) → 4.9 Below 1/60

Cesium-134: 28 (2013/ 9/16)→ ND(2.0) Below 1/10
Cesium-137: 53 (2013/12/16)→ 6.7 Below 1/7
Gross β: 390 (2013/ 8/12)→ 46 Below 1/8
Tritium: 650 (2013/ 8/12)→ 940

Summary of TEPCO data as of February 25

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 February 16-24)

	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

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

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

Cesium-134:	ND (2013) → ND (0.79)		
Cesium-137:	ND (2013) → ND (0.60)		
Gross β:	ND (2013) → ND (16)		
Tritium:	ND (2013) → ND (1.5)		

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

Cesium-134:	ND (2013)	→ ND (0.77)	
Cesium-137:	1.6 (2013/10/18)	→ ND (0.50)	Below 1/3
Gross β:	ND (2013)	→ ND (16)	
Tritium:	6.4 (2013/10/18)	→ ND (1.5)	Below 1/4

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

Cesium-134:	ND (2013) → ND (0.63)	
Cesium-137:	ND (2013) → ND (0.53)	
Gross β:	ND (2013) → ND (165)	
Tritium:	ND (2013) → ND (1.5)	

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

Cesium-134:	ND (2013)	→ ND (0.73)	
Cesium-137:	ND (2013)	→ ND (0.59)	
Gross β:	ND (2013)	→ ND (16)	
Tritium:	4.7 (2013/ 8/18)	→ ND (1.5)	Below 1/3

【Port entrance】

Cesium-134:	3.3 (2013/12/24)	→ ND (1.2)	Below 1/2
Cesium-137:	7.3 (2013/10/11)	→ 1.4	Below 1/5
Gross β:	69 (2013/ 8/19)	→ 16	Below 1/4
Tritium:	68 (2013/ 8/19)	→ 2.0	Below 1/30

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

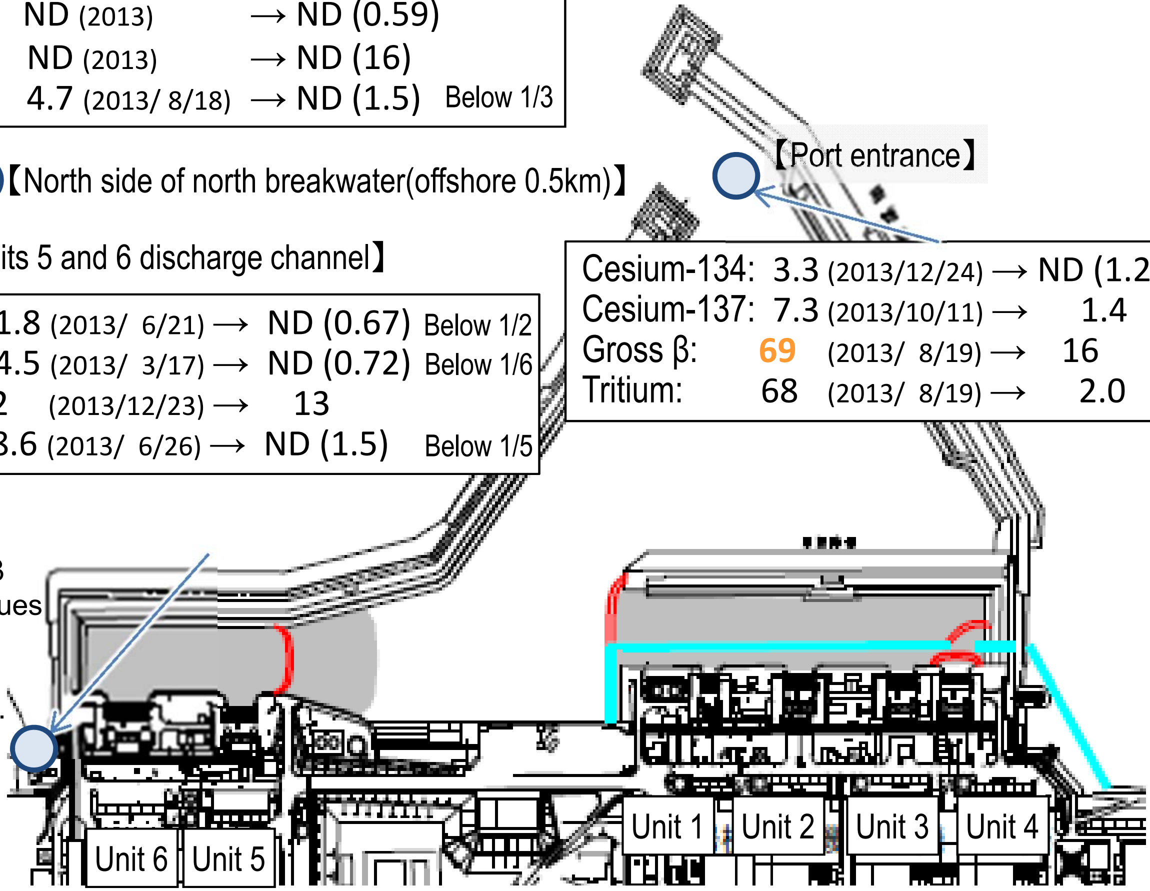
Cesium-134:	ND (2013) → ND (0.63)	
Cesium-137:	ND (2013) → ND (0.62)	
Gross β:	ND (2013) → ND (16)	
Tritium:	ND (2013) → ND (1.5)	

【North side of Units 5 and 6 discharge channel】

Cesium-134:	1.8 (2013/ 6/21)	→ ND (0.67)	Below 1/2
Cesium-137:	4.5 (2013/ 3/17)	→ ND (0.72)	Below 1/6
Gross β:	12 (2013/12/23)	→ 13	
Tritium:	8.6 (2013/ 6/26)	→ ND (1.5)	Below 1/5

【Around south discharge channel】

Cesium-134:	ND (2013)	→ ND (0.71)	
Cesium-137:	3.0 (2013/ 7/15)	→ ND (0.60)	Below 1/5
Gross β:	15 (2013/12/23)	→ 12	
Tritium:	1.9 (2013/11/25)	→ ND (1.5)	



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.

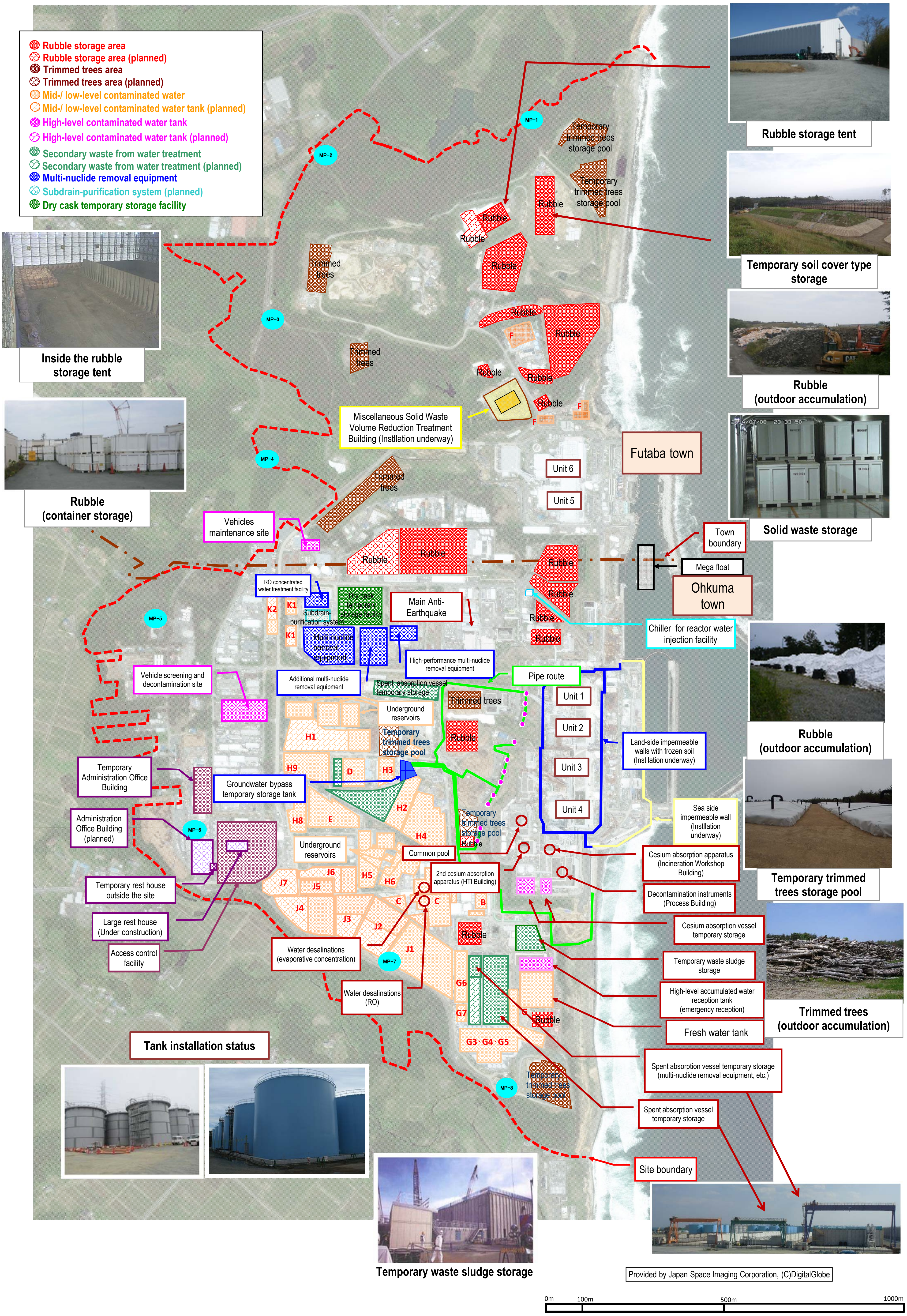
Source: TEPCO website, Analysis results on nuclides of radioactive materials around Fukushima Daiichi Nuclear Power Station, http://www.tepco.co.jp/nu/fukushima-np/f1/smp/index-j.html

Summary of TEPCO data as of February 25

Appendix 2

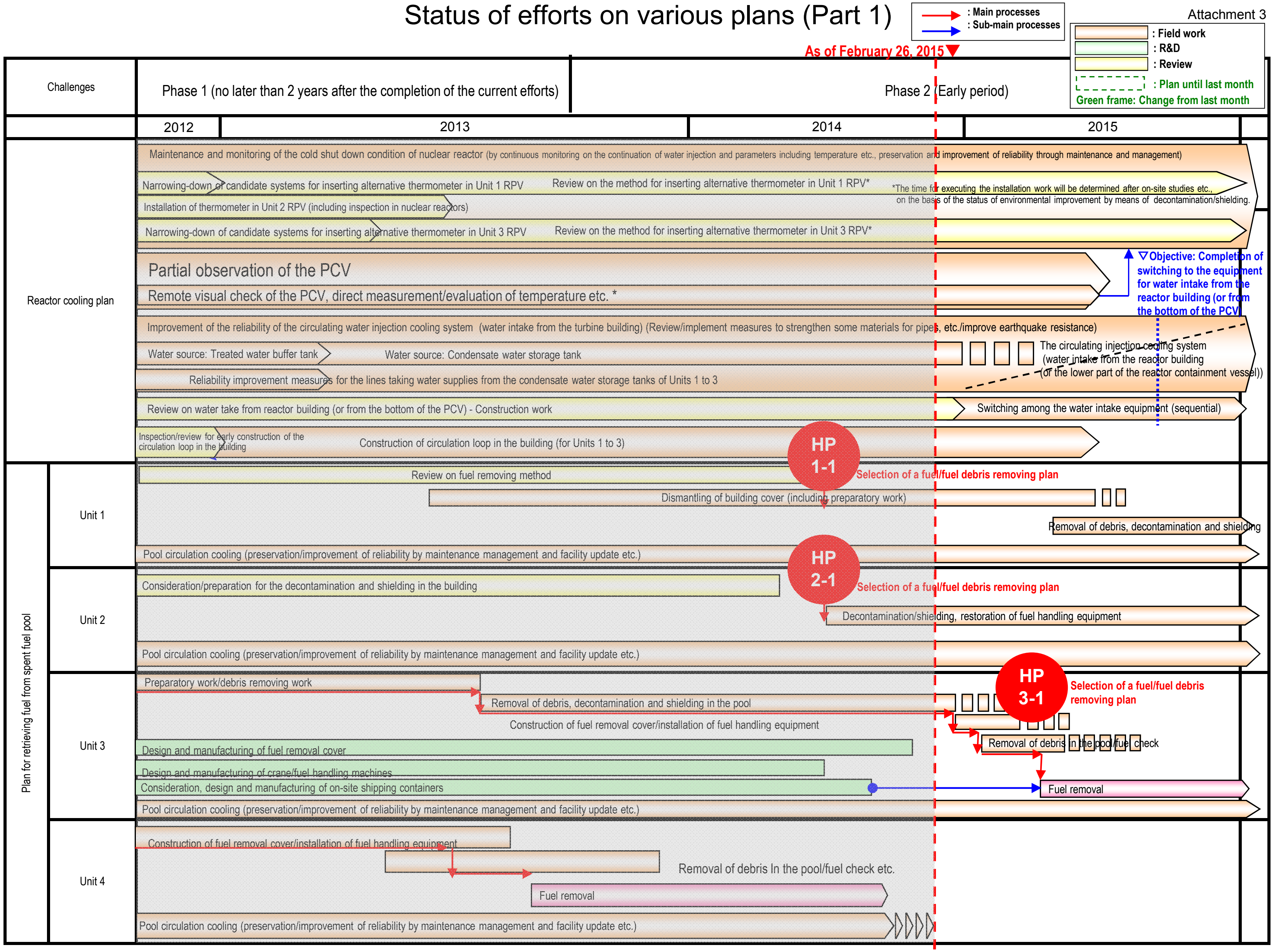
February 26, 2015

TEPCO Fukushima Daiichi Nuclear Power Station Site Layout

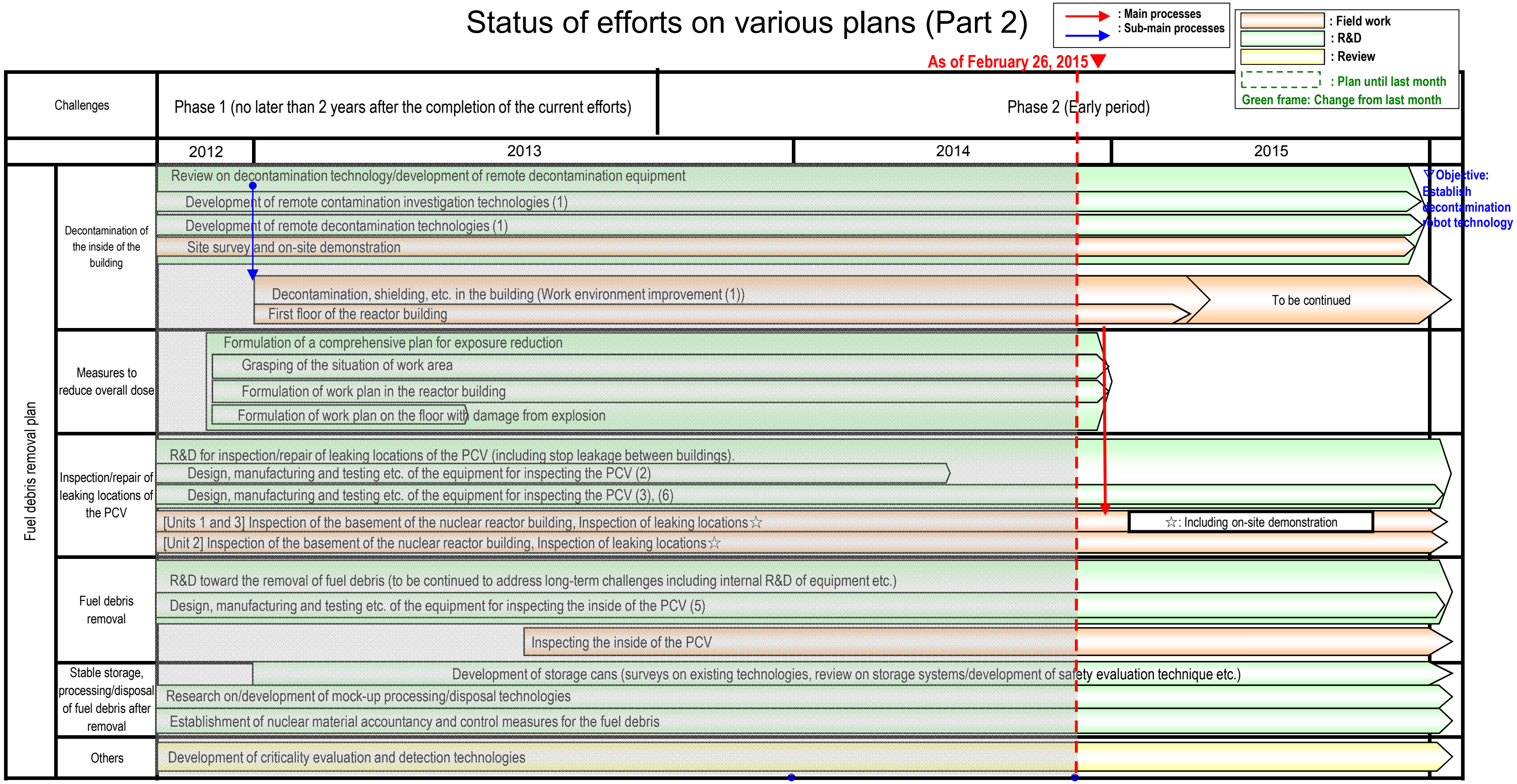


Attachment 3

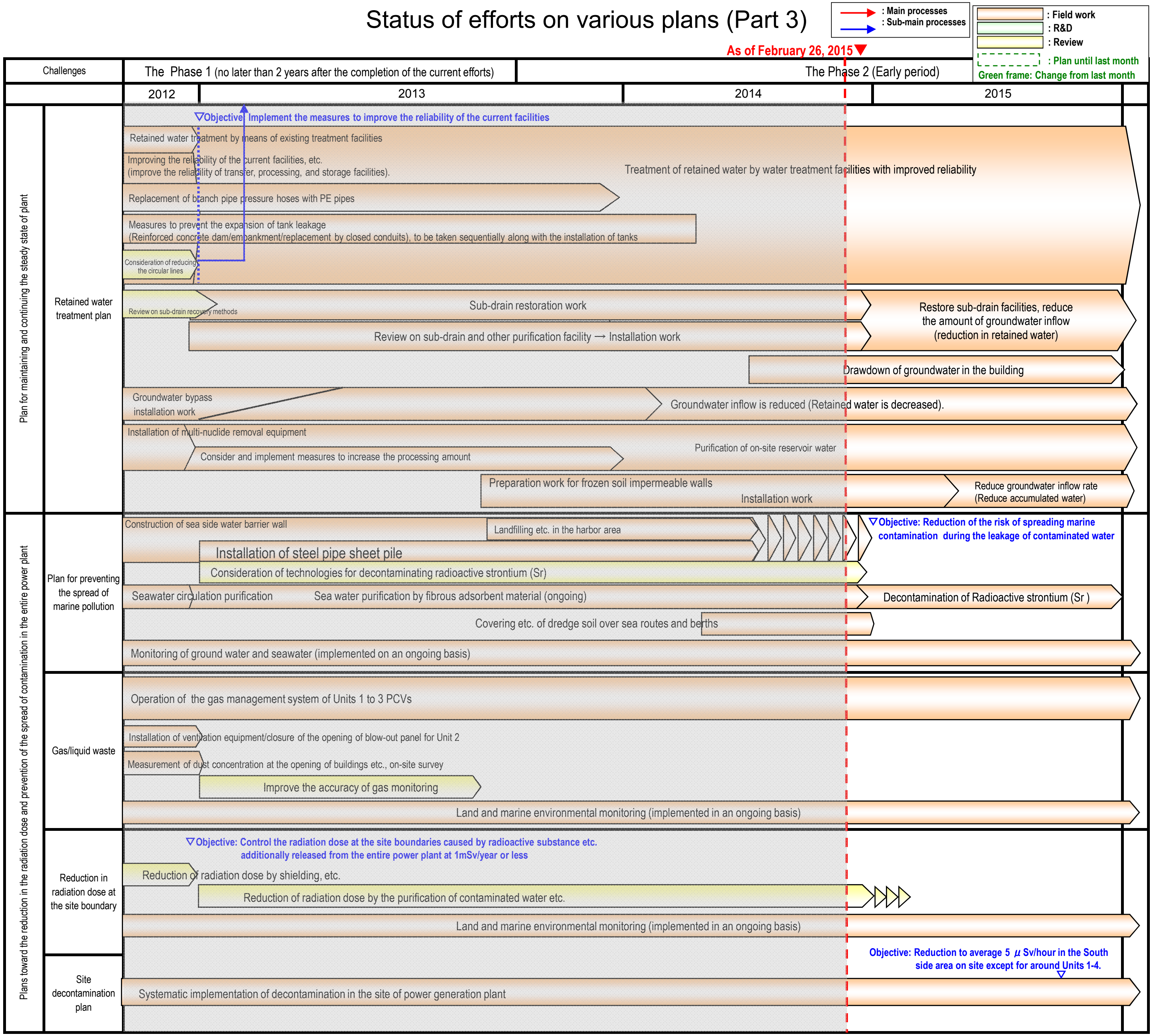
Status of efforts on various plans (Part 1)



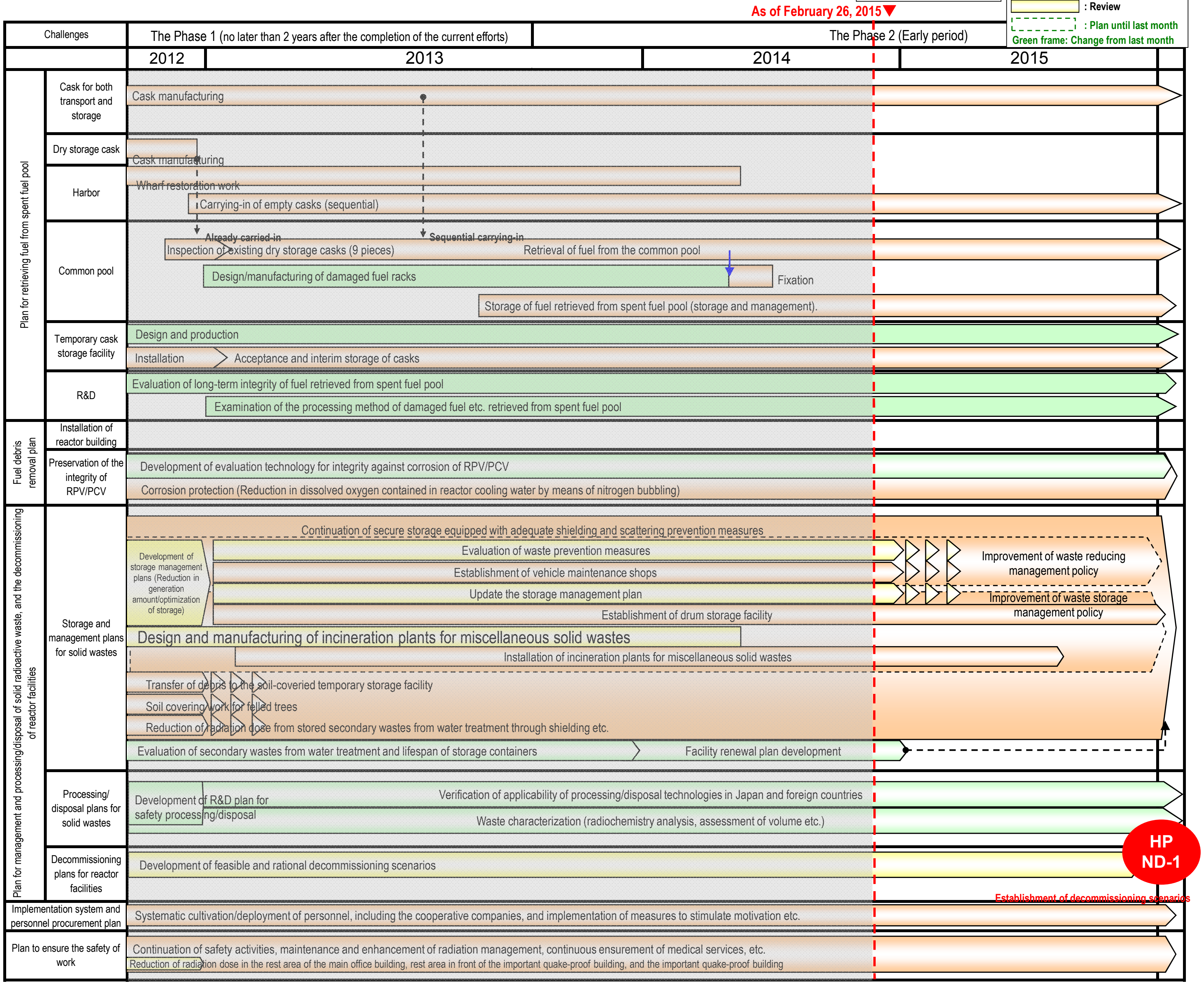
Status of efforts on various plans (Part 2)



Status of efforts on various plans (Part 3)



Status of efforts on various plans (Part 4)



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

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

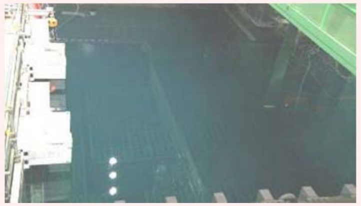
Unit 4

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.

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.

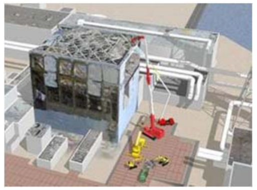
Based on this experience, fuel assemblies will be removed from Unit 1-3 pools.

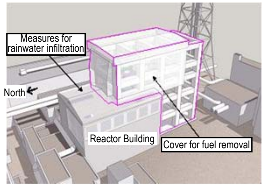

Fuel removal status


Conditions in the Unit 4 SFP

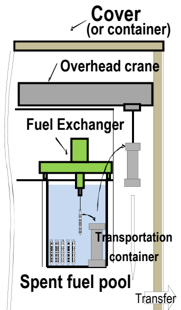
Work is proceeding with appropriate risk countermeasures, careful checks and safety first

Steps toward fuel removal


Removal of rubble from the roof of the Reactor Building
Completed in Dec. 2012



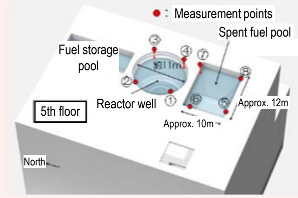
Installation of cover for fuel removal
From Apr. 2012, completed in Nov. 2013



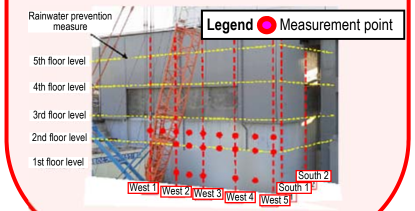
Removal
From Nov. 2013, completed in Dec. 2014

Check of the soundness of the Reactor Building

Since May 2012, regular quarterly inspections have been conducted, which have confirmed that the soundness of the Reactor Building has been maintained.



Check for tilt (measurement of the water level)



Check for tilt (measurement of the external wall)

* Some portions of these photos, in which classified information related to physical protection is included, were corrected.

Unit 3

To facilitate the installation of a cover for fuel removal, installation of the gantry was completed (March 13, 2013). Removal of rubble from the roof of the Reactor Building was completed (October 11, 2013). Currently, toward the installation of a cover for fuel removal and the fuel-handling machine on the operating floor (*1), measures to reduce the radiation dose (decontamination and shielding) are underway (from October 15, 2013). Removal of large rubble from the SFP is also underway (from December 17, 2013).

Before removal of the large rubble

After removal of the large rubble

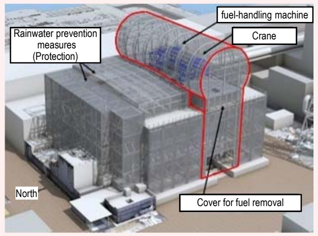


Image of the cover for fuel removal

Units 1 and 2

- Regarding Unit 1, to remove rubble from the top of the operating floor, there are plans to dismantle the cover over the Reactor Building. Two roof panels of the Unit 1 Reactor Building (R/B) were removed to facilitate investigation of the rubble status on the R/B top floor.
  No scattering of dust or conditions that would cause immediate damage to the fuel assemblies in the SFP were detected.
- Regarding Unit 2, to prevent risks of reworking due to change in the fuel debris removal plan, the plan continues to be examined within a scope not affecting the scheduled commencement of removal.

Dismantling of the cover over Reactor Building Unit 1

To facilitate the early removal of fuel and fuel debris from the SFP, the cover over the Reactor Building will be dismantled to accelerate the removal of rubble on the operation floor. The radiation dose on the site boundaries will also increase compared to before the dismantling. However, through measures to reduce the release, the estimated impact of the release from Units 1 to 3 on the site boundaries (0.03mSv/year) will be limited.


①Spraying anti-scattering agents

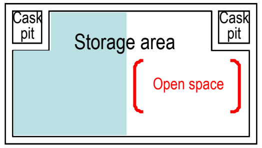

②Removing dust and dirt by suctioning devices


③Preventing dust from being stirred up via a windbreak sheet

④ Enhancing the dust-monitoring system by installing additional monitors

Measures to reduce release

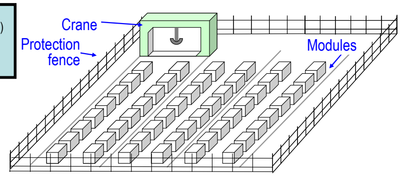
Common pool



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.

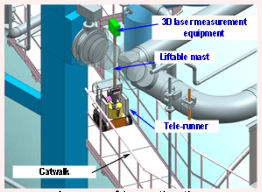
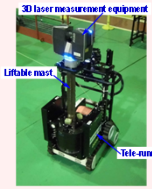


Image of investigation



External appearance of remote-controlled robot

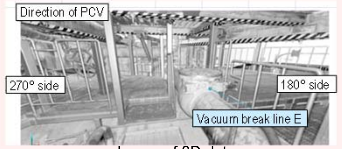


Image of 3D data

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

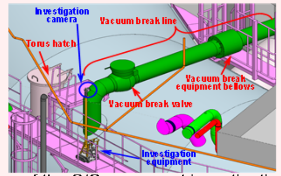
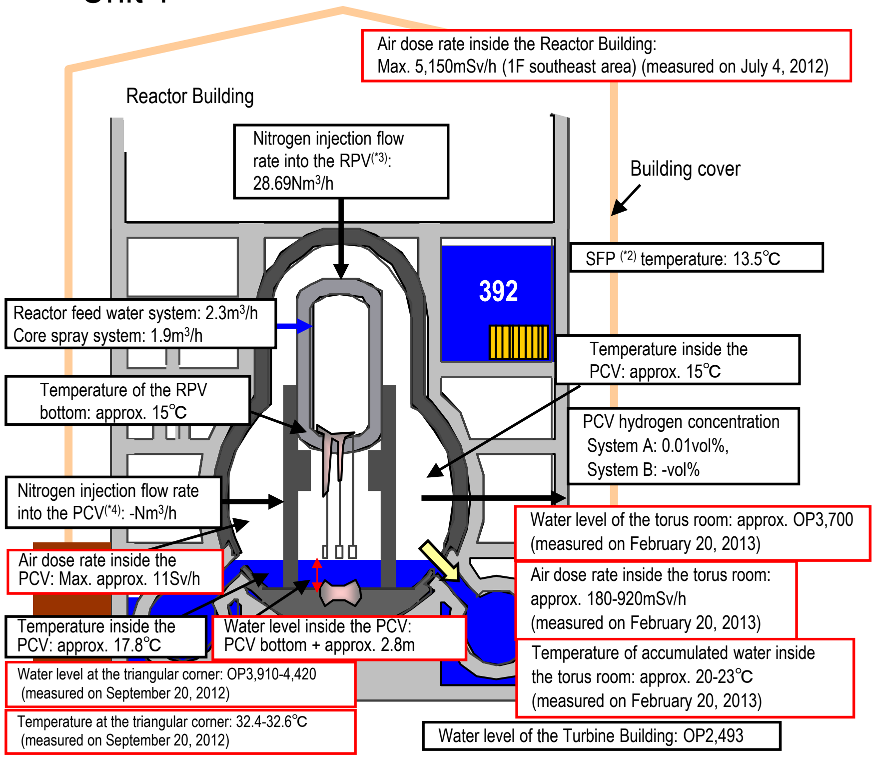


Image of the S/C upper part investigation

Unit 1



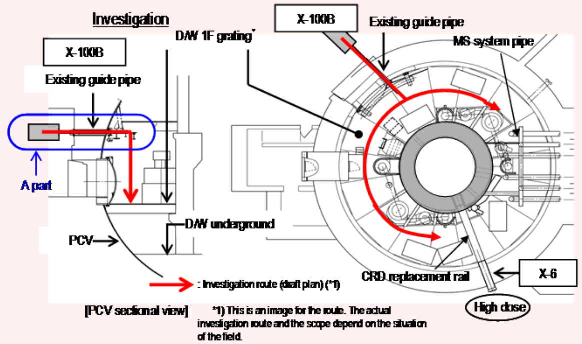
* Indices related to the plant are values as of 11:00, February 25, 2015

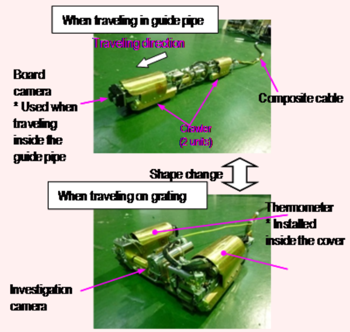
Status of equipment development toward investigating inside the PCV

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]
- Crawler-type equipment with a shape-changing structure which allows it to enter the PCV from the narrow access entrance (bore: φ100mm) and stably move on the grating is currently under development. A field demonstration is scheduled for the 1st half of FY2015.





Investigative route inside the PCV (draft plan)

<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

February 26, 2015
Secretariat of the Team for Countermeasures for Decommissioning and Contaminated Water Treatment

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

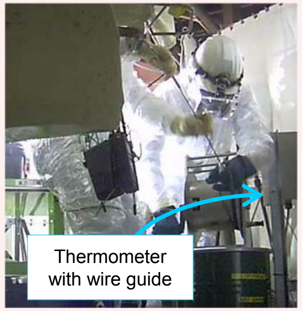
Installation of an RPV thermometer and permanent PCV supervisory instrumentation

(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 will be reinstalled within this fiscal year.

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

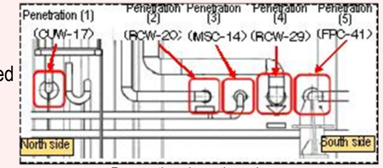
- Some of the permanent supervisory instrumentation for PCV could not be installed in the planned locations due to interference with existing grating (August 13, 2013).
- The instrumentation was removed on May 27, 2014 and new instruments were reinstalled on June 5 and 6, 2014. The trend of added instrumentation 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

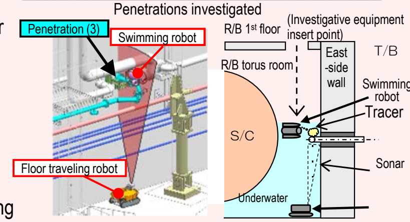
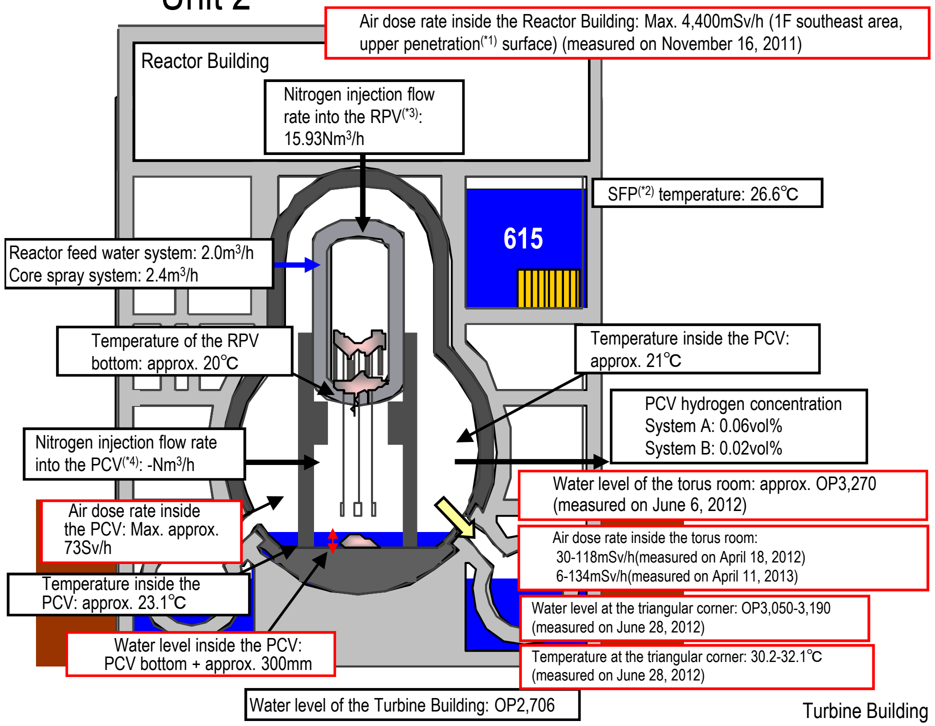


Image of the torus room east-side cross-sectional investigation

Unit 2



* Indices related to plant are values as of 11:00, February 25, 2015

Status of equipment development toward investigating inside the PCV

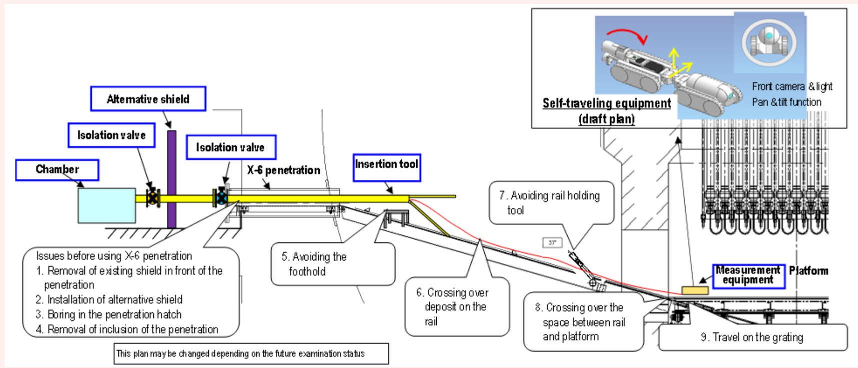
Prior to removing fuel debris, to check the conditions inside the Primary Containment Vessel (PCV), including the location of the fuel debris, investigations inside the PCV are scheduled.

[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. A demonstration is scheduled in the field in the 1st half of FY2015.



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

February 26, 2015
Secretariat of the Team for Countermeasures for Decommissioning and Contaminated Water Treatment

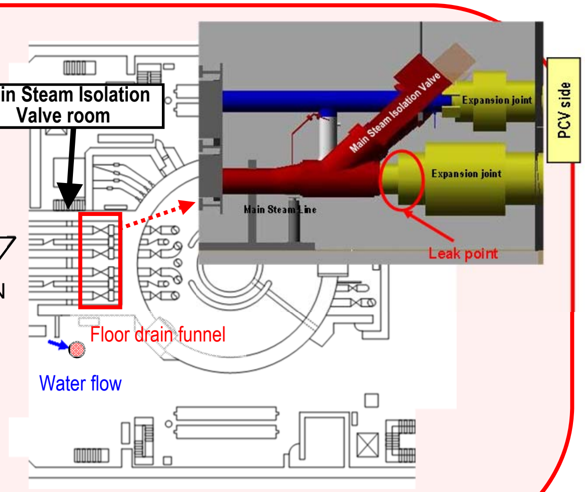
Immediate target	Identify the plant status and commence R&D and decontamination toward fuel debris removal

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

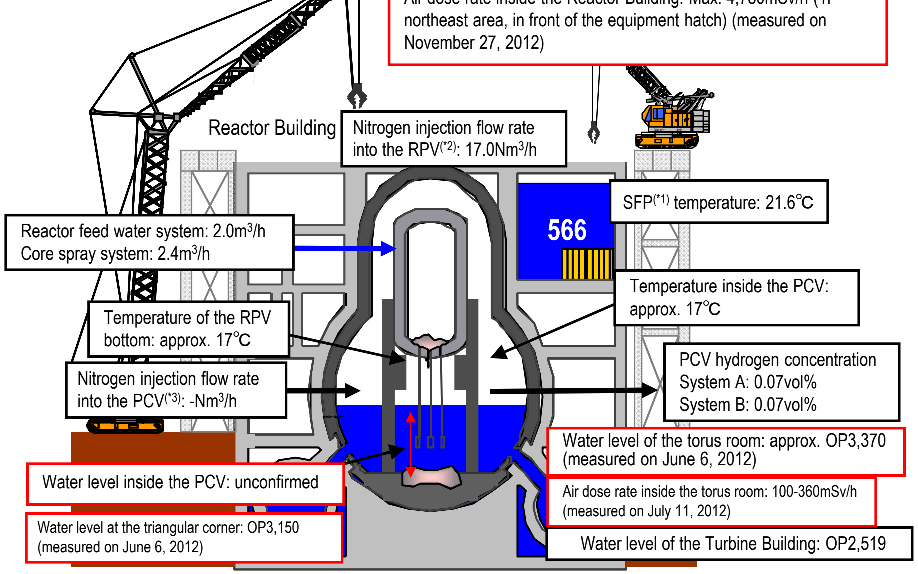
* Main Steam Isolation Valve: A valve to shut off the steam generated from the Reactor in an emergency

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



* Indices related to plant are values as of 11:00, February 25, 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. 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.

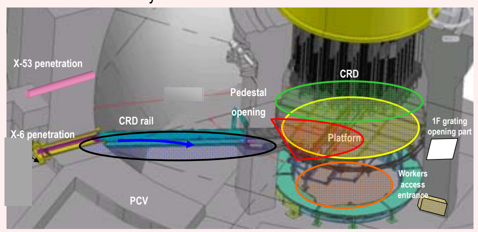
[Steps for investigation and equipment development]

(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

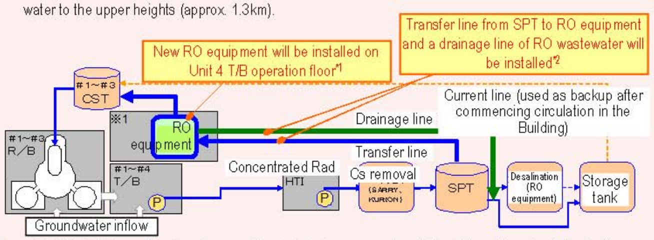
Progress toward decommissioning: Work related to circulation cooling and accumulated water treatment line

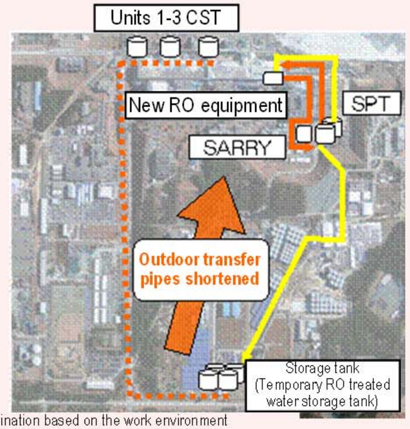
Immediate target	Stably continue reactor cooling and accumulated water treatment, and improve reliability

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 by the 1st half of 2015, 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.

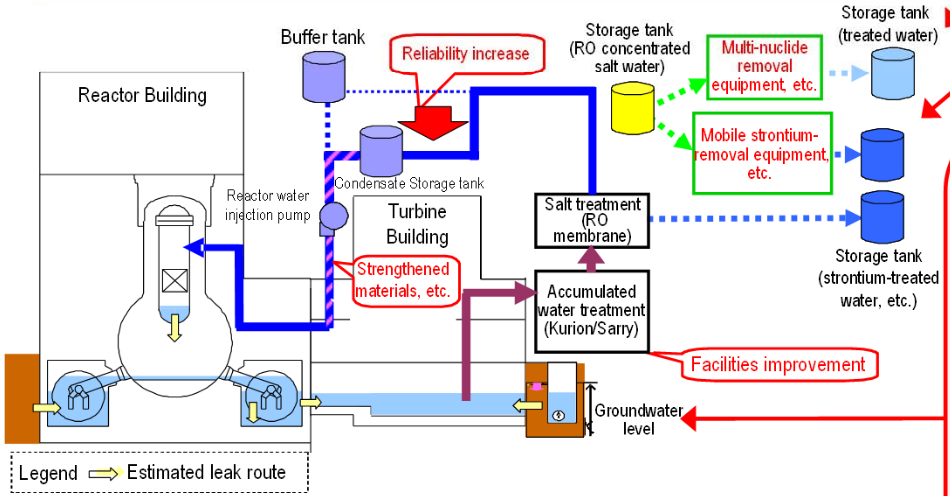
Before installing the fence cover

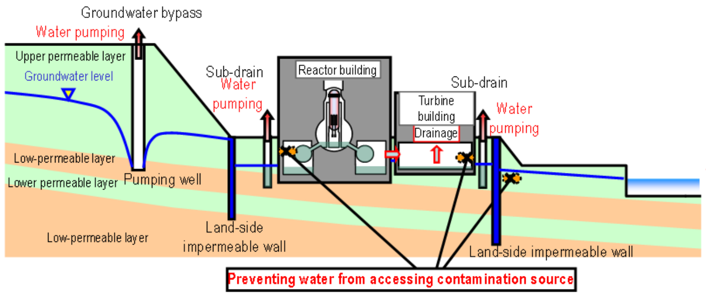
After installing the fence cover

Toward treatment of all contaminated water

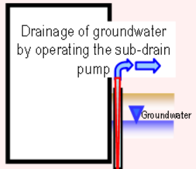
Regarding contaminated water treatment by multi-nuclide removal equipment (ALPS), etc. it is difficult to reach the initially anticipated performance due to technical reason. It is estimated that treatment of the entire amount of contaminated water would be in May 2015. Specific time of the completion will be announced by mid-March.

Efforts will continue to improve treatment capability aiming to reduce risks as soon as possible.





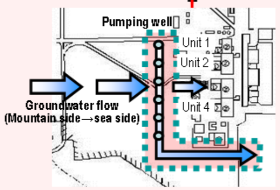
Preventing groundwater from flowing into the Reactor Buildings



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.

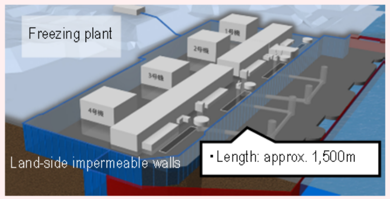
The pumped up groundwater is temporarily stored in tanks and released after TEPCO and a third-party organization have confirmed that its quality meets operational targets.

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 which will commence preceding freezing, approx. 72% installation of frozen pipes has been completed.

<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

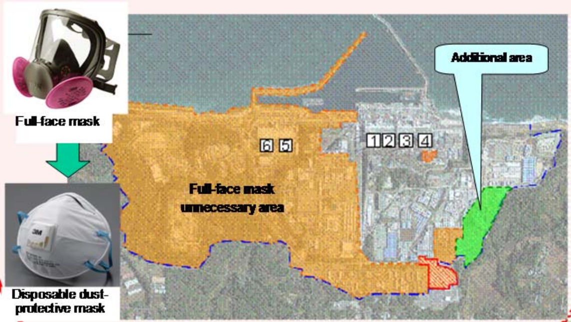
Progress toward decommissioning: Work to improve the environment within the site

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

Operation based on the rules for mask wearing according to radioactive material density in air and decontamination/ ionization rules was defined, and the area is being expanded.

In the J tank installation area on the south side of the site, as decontamination was completed, the area will be set as full-face mask unnecessary area (from May 30, 2014), where for works not handling contaminated water, wearing disposable dust-protective masks will be deemed sufficient .

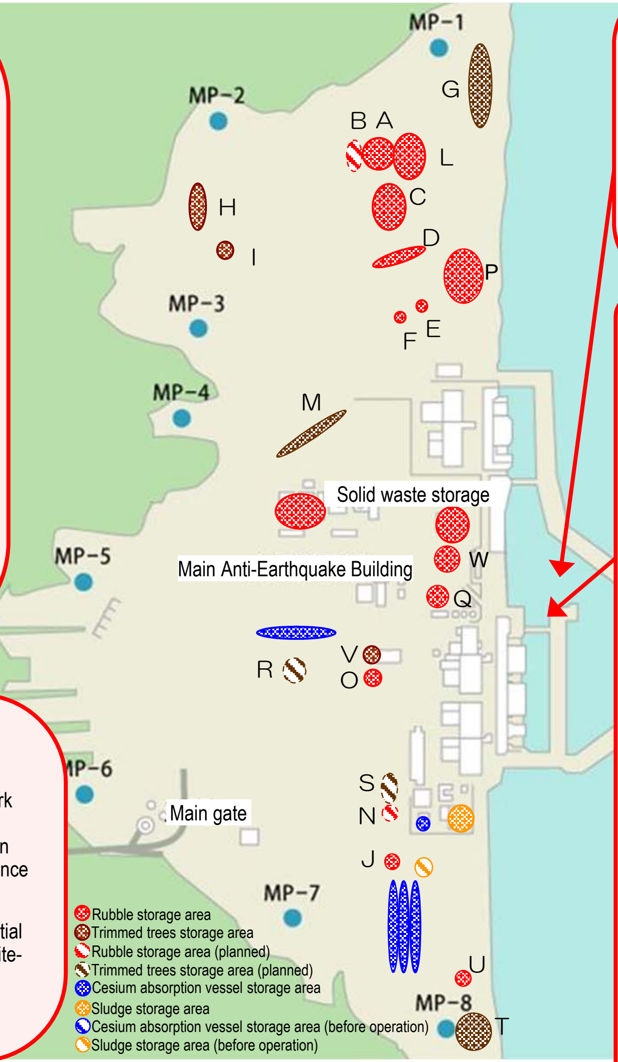


Full-face mask unnecessary area

Expansion of work areas for women

Regarding female workers engaging in radioactivity-related jobs at the Fukushima Daiichi Nuclear Power Station, there has been no onsite work area since the East Japan Great Earthquake due to the increased radioactivity rate. However, improved work environment conditions mean female workers have been allowed to work within limited onsite areas since June 2014.

Based on the improved onsite work environment and the reduced potential for internal exposure, work areas for female workers will be expanded site-wide, excluding specified high-dose works and those for which the radiation dose exceeds 4mSv per exposure (from November 4, 2014.)



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 with cement-based materials.
February 24, 2015 - filling of the Vertical Shafts commenced.
Unit 3: February 5, 2015 - filling of tunnel sections commenced.
Unit 4: February 14, 2015 - filling of tunnel sections commenced.