Appendix

Second Quarter, FY2016

Nuclear Safety Reform Plan Progress Report

INCLUDING PROGRESS ON SAFETY MEASURES AT POWER STATIONS

Tokyo Electric Power Company Holdings, Inc.

November 2nd, 2016

TABLE OF CONTENT

Foreward 2
1. Progress on safety measures at power stations 3
1.1 Fukushima Daiichi Nuclear Power Station 3
1.2 Fukushima Daini Nuclear Power Station 11
1.3 Kashiwazaki-Kariwa Nuclear Power Station 15
2. Progress on Nuclear Safety Reform Plan (Management) 21
2.1 Measure 1: Reform from Top Management 25
2.2 Measure 2: Enhancement of Oversight and Support for Management 33
2.3 Measure 3: Enhancement of Ability to Propose Defense-in-depth 38
2.4 Measure 4: Enhancement of Risk Communication Activities 45
2.5 Measure 5: Enhancement of Power Station and Head Office Emergency Response Capabilities 56
2.6 Measure 6: Development of Personnel for Enhancing Nuclear Safety 60
2.7 Evaluation of Degree of Nuclear Safety Reform Realization 70
In closing 80

FOREWARD

We at TEPCO would like to extend our deepest apologies for the tremendous inconvenience and anxiety that the Fukushima nuclear accident, as well as subsequent accidents and problems, have caused everyone living in communities around the Fukushima Daiichi Nuclear Power Station and throughout society as a whole. The entire TEPCO Group will continue to work to facilitate the smooth and early provision of compensation, accelerate the recovery of Fukushima, move reactor decommissioning forward steadily, and thoroughly ensure nuclear safety.

TEPCO released the "Reassessment of Fukushima Nuclear Accident and Nuclear Safety Reform Plan" on March 29, 2013, and we are currently proceeding to implement nuclear safety reforms. The progress which we make is verified quarterly and the compiled results released to the public. This report details the progress made in the second quarter (July-September 2016[1]) of FY2016.

The measures to prevent recurrence of "Issues Related to Notifications/Reports given during the Fukushima Daiichi Nuclear Power Station Accident" ("core meltdown issues") are as stated previously (see Chapter 1 of the First Quarter Progress Report[2]), and the status of efforts made during the second quarter are reported within the context of each countermeasure in Chapter 2 of this report.

In addition, it was announced on September 12 that the Nuclear Regulatory Agency had cited the Fukushima Daini NPS for a violation of its obligation to comply with regulations for the protection of nuclear materials, which was identified during an inspection of TEPCO's nuclear material protections on October 7 last year. We once again apologize for not having appropriately executed a part of our security monitoring operations.

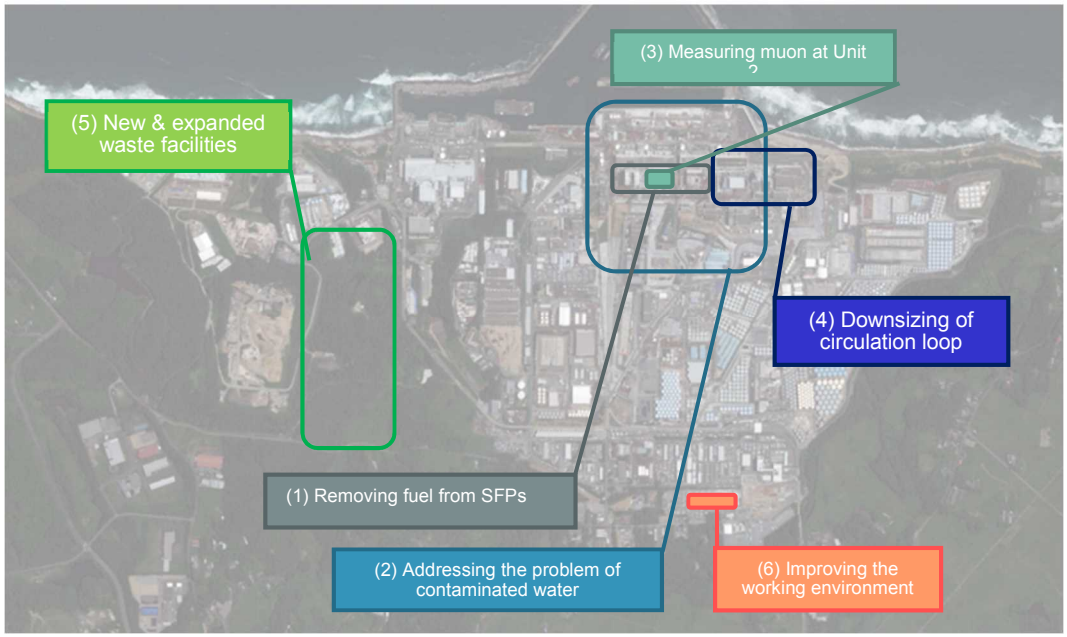
[1] Calendar dates in this report refer to 2016 unless otherwise noted.

[2] Released on August 2.

1. PROGRESS ON SAFETY MEASURES AT POWER STATIONS

1.1 Fukushima Daiichi Nuclear Power Station

Progress has been steadily made on decommissioning the reactors at the Fukushima Daiichi Nuclear Power Station ("Fukushima Daiichi NPS") in accordance with the "Mid-and-Long-Term Roadmap Towards Decommissioning of Fukushima Daiichi Nuclear Power Station Units 1 to 4" (revised June 12, 2015).



Progress on key projects at Fukushima Daiichi NPS

(1) Removing Fuel from Spent Fuel Pools

◆ Unit 1

Work has proceeded cautiously on dismantling the reactor building cover so as to prevent radioactive materials from dispersing. The work of suctioning up small pieces of debris on the fifth level of the reactor building was carried out from May 30 to August 2, and a solution was applied to prevent dust and other materials from dispersing. The application process was performed beginning on August 4 until September 3 prior to removal of the wall panels. On September 13, the work of removing all 18 wall panels was begun. By October 7, eight of the upper wall panels had been removed. During this time, there was no significant variation indicated by any of the dust monitors or monitoring posts due to the work. Preparations are continuing with the aim of commencing fuel removal in FY2020 (number of fuel rod bundles stored in the spent fuel pool: 392).

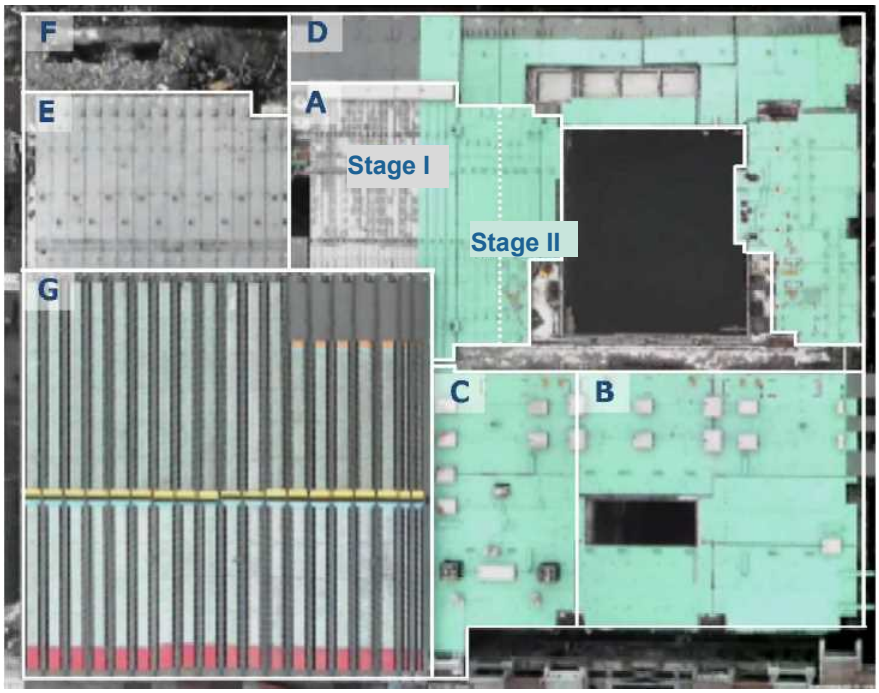
Wall panel about to be hoisted

Lowering a wall panel

Removal of upper wall panels completed

◆ Unit 3

With the aim of removing fuel from the spent fuel pool, shielding has been installed to reduce ambient dose in an area where manual work will be performed on the refueling floor (top floor of the reactor building). By September 20, the installation of shielding was completed for Work Area A Stage II, Work Area B, Work Area C, Work Area D, and Work Area G and large shields will be installed in Work Area F. In conjunction with this work, shielding will be installed between platforms and to supplement other shielding. Subsequently, TEPCO plans to install a fuel removal cover and new fuel handling machine, and begin removing fuel, which is stored in the spent fuel pool, in FY2017 (number of fuel rod bundles stored in the spent fuel pool: 566).

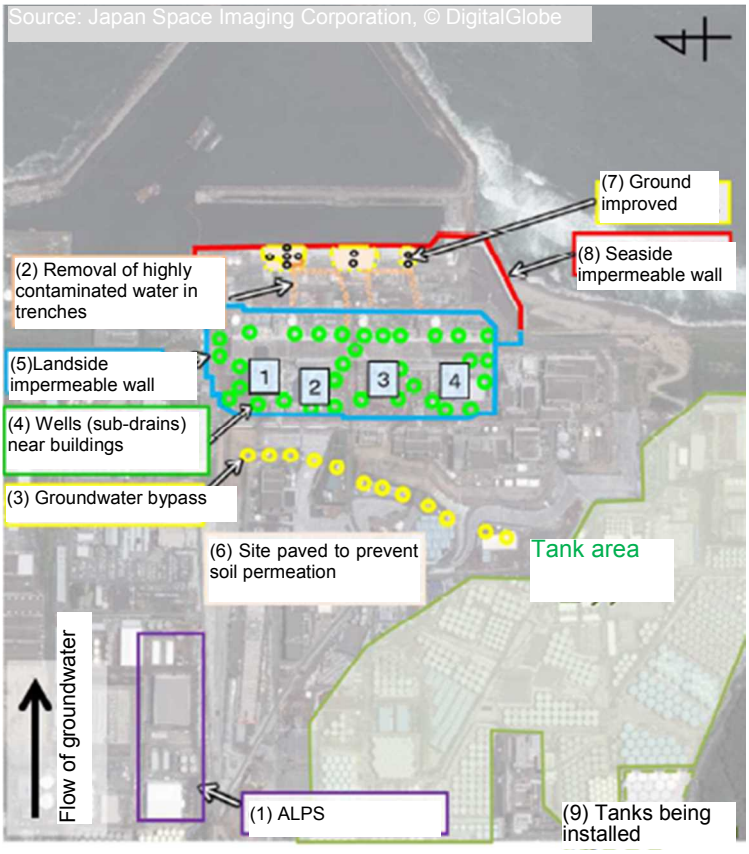


Status of shielding installation (September 20)

(2) Addressing the Problem of Contaminated Water

Based on the three basic policies of “removing contamination sources,” “isolating water from contamination sources,” and “preventing the leakage of contaminated water,” TEPCO is continuing to implement measures to prevent the outflow of contaminated water into the power station port, and counter the problem of contaminated water leaking from tanks.

Measures to remove contamination sources		
Cleaning up contaminated water using the Advanced Liquid Processing System (ALPS)	Diagram (1)	Completed May 2015
Removal of contaminated water from inside seawater pipe trenches	Diagram (2)	Completed December 2015
Measures to isolate water from contamination sources		
Drawing up groundwater through groundwater bypasses	Diagram (3)	Operation commenced April 2014
Drawing up groundwater through wells (sub-drains) near buildings	Diagram (4)	Operation commenced September 2015
Installation of land-side impermeable wall of units	Diagram (5)	Operation commenced March 2016
Pavement of site to keep rainwater from permeating the soil	Diagram (6)	Completed for the most part except the area where scattered debris is stored
Measures to prevent leakage of contaminated water		
Improvement of ground with soluble glass	Diagram (7)	Completed March 2014
Installation of impermeable wall on seaside of units	Diagram (8)	Completed October 2015
Installation of tanks (replacement with welded tanks)	Diagram (9)	Work ongoing

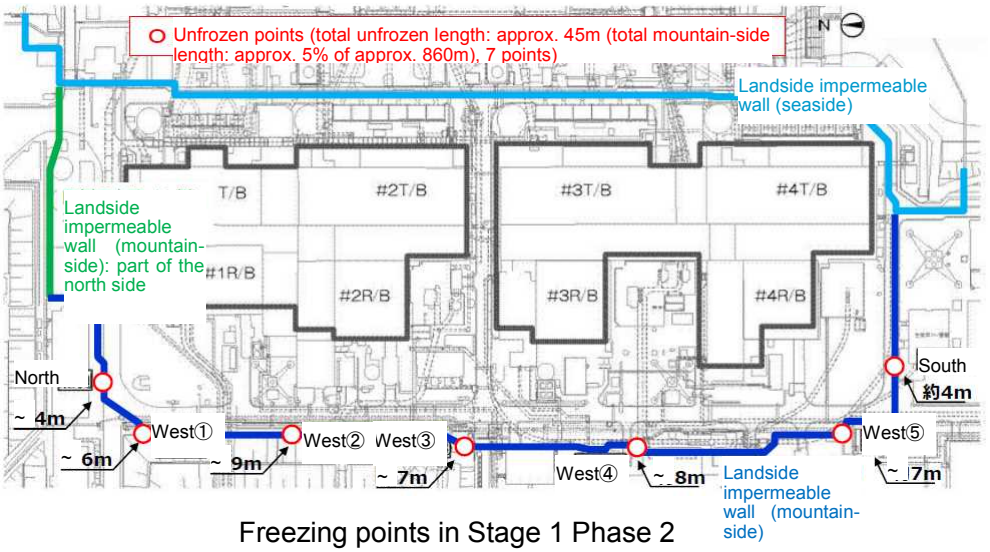


Principle work related to contaminated water countermeasures

◆ Status of Freezing of Land-side Impermeable Wall

The work of freezing the land-side impermeable wall around Units 1-4 transitioned to Stage 1 (Phase 2) on June 6 to initiate freezing across the specified range with the exception of mountain-side areas that have yet to be frozen (approx. 5%) (approx. 95% of the entire length along the mountains has been frozen). The fast flow of groundwater is thought to impact areas where the temperature has been slow to fall,

so cement grouting material has been spread (supplementary construction technique) thereby decreasing the flow rate and promoting freezing. Although there was some impact from the large amount of rainfall due to typhoons and other adverse weather, the supplementary construction techniques are having a greater effect and temperatures have tended to decrease overall.



Freezing points in Stage 1 Phase 2

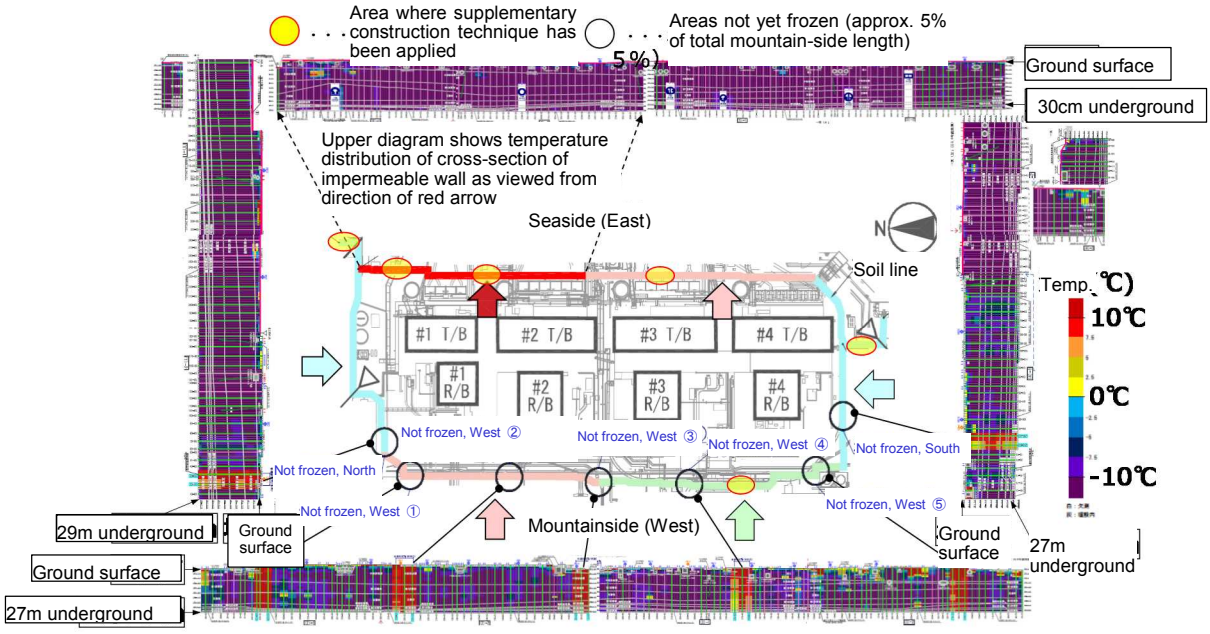
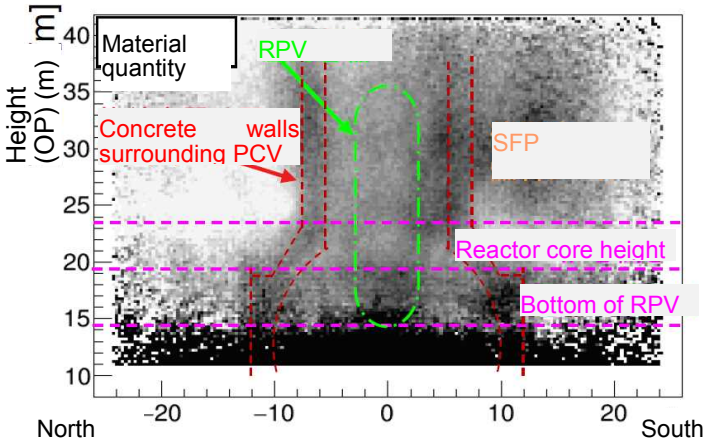


Diagram showing temperature distribution underground along the land-side impermeable wall (as of September 13)

(3) Measuring Muon at Unit 2 to Ascertain the Position of Debris in the Core

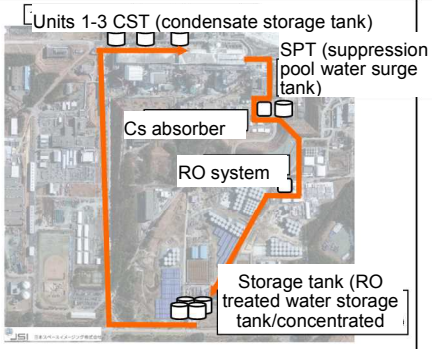
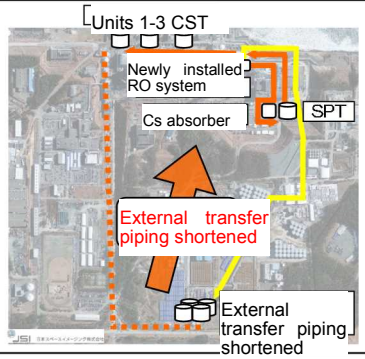
Measurement by the muon transmission method was conducted from March to July to identify the location of fuel debris inside the Unit 2 reactor. The shadows of primary structures could be seen. Assessments of the obtained data have confirmed the presence of highly-dense material, which is believed to be fuel debris at the bottom of the pressure vessel.



Assessment of quantitative distribution of material

(4) Downsizing of Circulation Loop for Circulating Cooling Water for Injection

On the circulating cooling water loop which transfers and processes contaminated water and inject it as cooling water into the reactor, an RO system (reverse osmosis desalinization system) was installed in the Unit 4 turbine building in an attempt to reduce the loop length, thereby reducing the risk of leakage from transfer pipes outside the building. This shortened the length of the loop (external transfer piping) from approximately 3 km to roughly 0.8 km. The operation to downsize loop began on October 7.

	CST circulation (previous)	Newly installed RO system
Loop pipe layout		
Loop length	Approx. 3km	Approx. 0.8km (See note)

Note: Length of transfer pipe outside buildings, including the line transferring water retained inside buildings is approximately 2.1 km

Overview of downsized circulation loop

(5) New and Expanded Waste Facilities and Other Facilities

In order to appropriately store debris from the accident and secondary water treatment waste generated from the treatment of contaminated water, plans have been drawn up to newly construct or enlarge a solid waste incinerator and pre-incinerator treatment facility, a volume reduction facility, solid waste storage sheds (No. 10 - No. 13), a primary storage facility for contaminated soil, and a large waste storage shed. In accordance with the “Agreement on Ensuring the Safety of Surrounding Communities during the Decommissioning of Tokyo Electric Power Company, Inc.’s Fukushima Daiichi Nuclear Power Station,” TEPCO submitted preliminary requests for approval to Fukushima Prefecture and the two surrounding municipalities on August 24 regarding the new construction and expansion of the aforementioned facilities. Currently, the

Technical Review Committee for Ensuring the Safety of Nuclear Power Stations in Fukushima Prefecture is verifying the safety aspects of the requests from a technical perspective. In conjunction with this, TEPCO has been carrying out work in the field to prepare the sites.

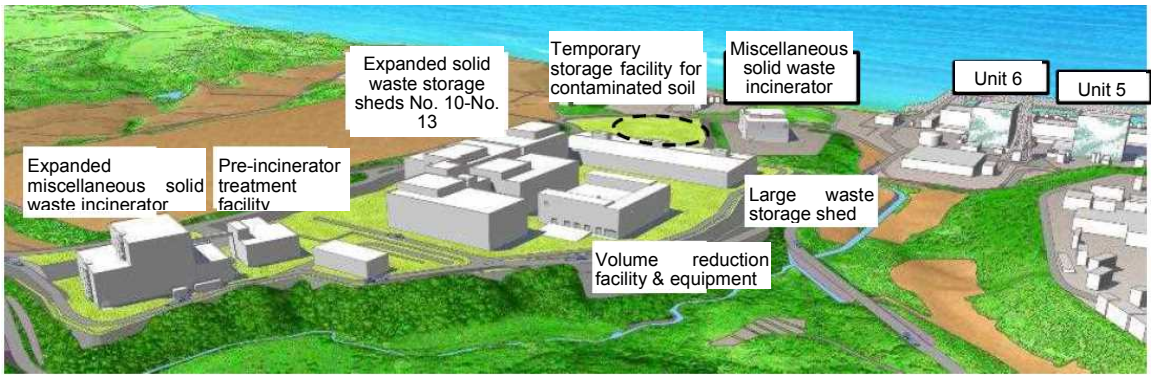


Illustration of waste and other facility installations

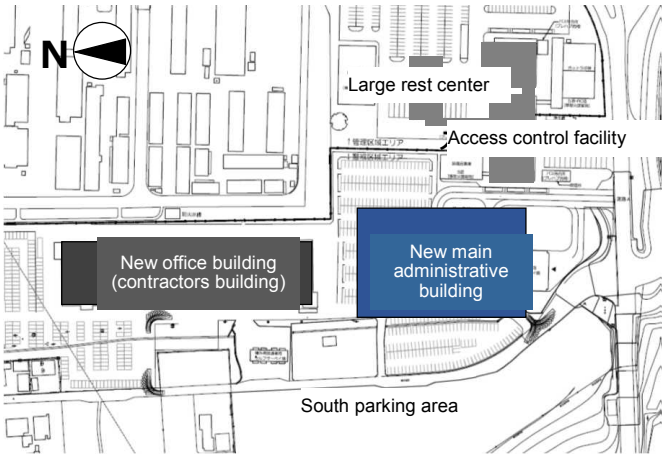
(6) Work Environment Improvements

◆ Contractor's Building

Following the opening of the new main administrative building (October of this year), an adjacent new office building is set to be used as a contractor's building, into which 36 companies and approximately 1,200 personnel are scheduled to move. This will enable contractors who are currently performing their duties in offices located at a distance from the power station to manage work from a location adjacent to the site. This move is expected to promote closer communication with TEPCO.

New office building (for contractors)

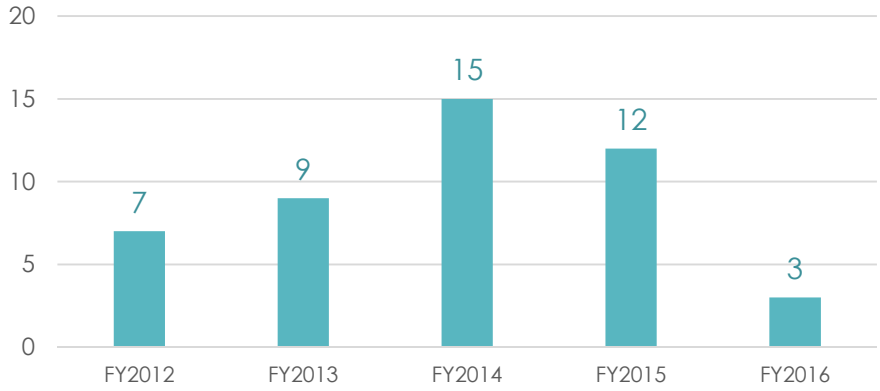
New main administrative building



Map showing locations of new main administrative building and new office building for contractors

◆ Efforts to Prevent Heatstroke

In FY2016, TEPCO began offering heat stroke prevention education in April, and initiated activities to reinforce heat stroke prevention measures in May. The principal heat stroke prevention measures were implemented by improving the site environment. Work practices were modified by allowing workers to perform their duties wearing dust masks and ordinary work cloths in approximately 90% of the areas, thus significantly reducing the burden placed on workers. Additionally, a shift was made to working in the early morning and evening in accordance with work regulations for times when the sun is strong (14:00 to 17:00 from July 1 to August 31), along with helping workers to acclimatize to the heat by having cool vest coolant and freezers in the field, displaying WBGT[3] values and times at work sites, deploying portable water stations, as well as other heat stroke prevention measures. These efforts have reduced the number of heatstroke victims to three this fiscal year (through the second quarter) in comparison with 12 during the previous fiscal year.



Change in the number of heatstroke cases

◆ Survey of Actual Work Conditions

Continuing with the surveys conducted last fiscal year, a questionnaire inquiring about actual work conditions was given to workers (7th). Currently, the results are being collected and will be released as soon as they are compiled. Through such surveys conducted regularly each year, TEPCO is able to hear what workers are saying and

[3] Wet Bulb Globe Temperature: heat index. When there is a risk that the WBGT standard value may be exceeded, the risk of people suffering heatstroke increases, so the necessary countermeasures are taken.

learn what they want. We use this information to strive to ensure appropriate working conditions, dispel concerns about radiation or other issues, and create a workplace where workers are able to feel that their jobs are worthwhile.

(7) Reactor Decommissioning Strategy Forums Held

Fukushima Daiichi D&D Engineering Company (FDEC) had proceeded with the work of decommissioning the reactors based on a policy of “emphasizing speed,” but work schedule changes and other modifications that have occurred each time a new concern was identified have caused a burden on personnel in the field. Nevertheless, to a certain extent, progress has been seen in decommissioning the reactors, including completing removal of spent fuel at Unit 4 and making progress on contaminated water countermeasures. Therefore, it was decided to change direction from “emphasizing speed” to “emphasizing risk reduction” with the aim of reliably reducing risks over the long-term and proceeding safely with work while setting priorities.

To this end, the Fukushima Daiichi D&D Engineering Company (FDEC) has created the “Fukushima Daiichi D&D Engineering Company Strategy 2016,” which combines this approach and implementation measures for long-term efforts and policies essential for reliably promoting reactor decommissioning and step-by-step goals, to serve as a foundation for implementing such efforts and policies and enable the company to act with a sense of unity. The company held reactor decommissioning strategy forums (total of three sessions) for all managers during which FDEC President Masuda and the vice presidents explained and shared the aims of the strategy and management’s expectations. In the future, the FDEC will make these aims and expectations known throughout the entire organization, and develop and implement the strategy with detailed tactics.

FDEC President Masuda expressing his determination at the Reactor Decommissioning Strategy Forum

1.2 Fukushima Daini Nuclear Power Station

Since the accident, TEPCO's Fukushima Daini Nuclear Power Station ("Fukushima Daini NPS") has implemented safety assurance measures and conducted training to maintain cold shutdown, made preparations to handle a severe accident based on the lessons learned from the Fukushima nuclear accident, and provided assistance for reactor decommissioning at Fukushima Daiichi NPS.

(1) Activities for Improving Safety

◆ Enhancing In-house Technical Skill

In the second quarter, a test was conducted for supplying electricity to power panels from power supply trucks in preparation for an emergency where normally used off-site power is lost and emergency backup diesel generators do not function thereby leading to a shutdown of the spent fuel pool cooling systems. During training, station personnel drove the power supply trucks from an elevated location down to the reactor building, extended cables from the power supply trucks and connected them to other power supply trucks and power panels. In addition, the power supply trucks were started up to confirm that electricity could actually be supplied to the power panels. We will continue to strive in our daily training so that the initial response during an emergency is able to be executed with greater speed and reliability.

Pre-use inspection of power supply truck

Connecting cables to a power supply truck

Connecting cables to power panels

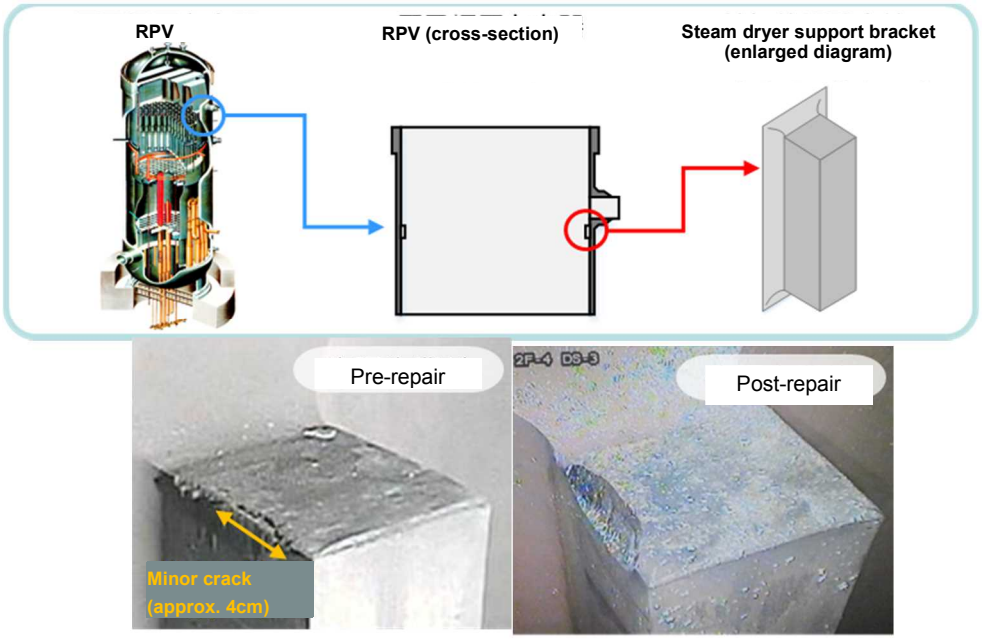
Adjusting voltage and frequency after starting up a power supply truck

◆ Repair of Steam Dryer Support Bracket at Unit 4

Minor damage (fracture) sustained by a steam dryer support bracket[4], which was confirmed during an inspection of the inside of the Unit 4 reactor in 2012, was repaired between August 23 and August 26. This repair was performed to reduce the risk of

[4] Steam dryer support bracket: a rod welded to the interior wall of the reactor pressure vessel that supports the load of the steam dryer

material where the fracture occurred breaking off and falling into the reactor thereby becoming foreign contaminant.



(2) Assistance with Fukushima Daiichi NPS Reactor Decommissioning

Fukushima Daini NPS has provided various levels of support for safely and reliably implementing reactor decommissioning at Fukushima Daiichi NPS. The following continued assistance was offered in the second quarter just as during the first quarter.

- Laundering special undergarments for use in controlled areas
- Temporarily storing assembled tanks for contaminated water storage (steel circular vertical tanks)
- Supervising the production of sand slurry to be used in covering the seabed inside the port

(3) Violation of Duty to Comply with Regulations on the Protection of Nuclear Materials

During a physical protection inspection conducted on October 7 of last year by the Nuclear Regulatory Agency at the Fukushima Daini NPS, it was confirmed that some security monitoring operations were not being performed appropriately. The Nuclear Regulation Authority determined on September 12 of this year that this was a violation of the duty to comply with regulations for the physical protection of nuclear materials[5].

➢ Overview

At key points on the power station premises and along power station boundaries, intruder detectors and other monitoring devices are set up to monitor these areas 24 hours-a-day throughout the year in accordance with laws and regulations from on protecting nuclear materials. During an inspection of the protection systems,

[5] A strict warning was received on the same day from the Nuclear Regulation Authority regarding compliance with regulations for the protection of nuclear materials, see
http://www.tepco.co.jp/press/release/2016/1322901_8626.html

which was conducted on October 7 of last year, it was determined that alternative measures implemented because alarms were temporarily shut down following a rash of false alarms caused by the surrounding natural environment, were insufficient. This was caused by an insufficient awareness of nuclear security as well as an inadequate understanding of the relevant laws and regulations by those responsible for nuclear material protection, including the physical protection manager, and deficiencies in the organizational management framework, including those in higher ranking positions at the Head Office.

- Facts and Problems
  - Because there had been a rash of false alarms from intruder detectors caused by the surrounding natural environment, the alarms were temporarily shut off and alternative measures implemented, but these were insufficient and procedures for implementing alternative measures had not been developed either. (Problem A)
  - The security officer proposed improvements to the field environment, but management did not recognize the urgency of the matter and improvements to the surrounding environment were not made quickly. (Problem B)
  - Head Office and power station personnel involved with the protection of nuclear materials had audited nuclear material protection operations at the power station, but they were not able to focus on how changes to equipment and the environment were handled thereby resulting in an insufficient check of physical protection by the organization. (Problem C)

- Problem Summary and Lessons Learned

  The aforementioned problems were examined from the perspectives of safety awareness, technical capability and the ability to promote dialogue, and the lessons learned in regards to department management and management, as well as points for improvement, were identified.

	Problems identified	Lessons Learned & Improvements
Safety awareness	· There was a decreased awareness of the relevant laws and regulations as well as nuclear security, including adopting alternative measures without verifying whether or not they satisfy legal requirements. (Problem A)	· Training and guidance will be provided to physical protection managers and personnel charged with protecting nuclear materials on nuclear material protection so as to raise awareness about the relevant laws and regulations as well as nuclear security.
Technical skill	· Audits and other check functions were uniform and not able to adapt to changing conditions. (Problem C)	· Efforts will be made to implement further improvements, including having relevant departments involved with nuclear material operations conduct mutual audits of their operations.
Ability to engage in dialogue	· Due to a lack of communication between offices and the Physical Protection Division, problems which the field faced in practice were not able to be sufficiently conveyed nor improvements made promptly. (Problem B)	· The physical protection manager will improve communication, including increasing opportunities to carry out his duties in the Physical Protection Division. · Due to the nature of the operation, there is a tendency for personnel to think that they have to do solve problems by themselves, so opportunities to engage in diverse discussions and deliberations internally upon completing specified procedures.

Since this event involved information classified in accordance with laws on nuclear material protection it could not be publicly disclosed until the Nuclear Regulatory Agency confirmed that corrective measures had been completed. The difficult aspects surrounding the timing for announcing and publicly disclosing issues related to nuclear material protection has resulted in harsh criticism from local governments and other entities.

Although nuclear safety reforms have been deemed to be moving steadily forward, when reflecting on each individual accident or problem, it is difficult to purport that the objectives of reform have been understood to the point where the reforms can be put into practice. With the awareness that these latent weaknesses exist TEPCO will continue to strive to improve governance. (see 2.1 Measure 1 Reform from Top Management).

1.3 Kashiwazaki-Kariwa Nuclear Power Station

(1) Progress in Implementing Safety Measures

At the Kashiwazaki-Kariwa Nuclear Power Station ("Kashiwazaki-Kariwa NPS"), we are implementing safety measures with a focus on Units 6 and 7 for which applications have been submitted for establishment change permits, based on the lessons learned from the Fukushima nuclear accident.

<Overview of Safety Measures>

Preparations for tsunami and internal inundation	· Installation of seawalls, tidal walls, waterproof doors and other structures for protecting important facilities and equipment inside buildings from inundation caused by a tsunami that are 15m above sea level high. · Tsunami monitoring cameras have been set up so that the emergency response center and main control rooms are able to monitor a tsunami if one occurs · In order to prevent the flooding of important safety equipment in the event that the inside of a building is inundated as the result of damage to pipes, etc. inside the building, building penetration seals have been waterproofed, doors to important equipment rooms have been made watertight, and permanent sump pumps have been installed that operate using emergency power sources
Preparations for power loss [Augmenting power sources]	· In order to ensure power even in the case of a station blackout, power sources have been made redundant and diversified through the deployment of gas-turbine generator trucks, installation of emergency power panels, installation of alternative station internal electric facilities as well as the deployment of multiple power supply trucks, alternative DC batteries and other such equipment · In order to enhance methods for injecting cooling water into the reactors even if all power is lost, preparations have been made to ready the means for injecting cooling water into reactors by installing alternate high-pressure cooling water injection pumps (steam turbine driven pumps), preparing alternate means for injecting cooling water into reactors using the make-up water condensate system powered by a gas turbine generator truck, and setting up cooling water injection heads outside reactor buildings so that fire engines may be used to inject cooling water from outside the building
Preparations against damage to the reactor core or spent fuel [Augmenting heat removal and cooling functions]	· In order to provide an ultimate heat removal means as a measure to prevent a severe accident, an alternate reactor core component cooling system was installed · Reservoirs have been built to secure water sources · To maintain cooling of the spent fuel pool even if a station blackout results, water level gauges have been mounted in the spent fuel pools along with spray systems and other such facilities to cool the spent fuel pool. Cooling water injection heads have also been installed outside the reactor building so that cooling water may be injected using fire engines and a supplemental line, which is independent from the existing pool cooling system, has been added.
Preparations against damage to reactor containment vessel or reactor building [Measures to prevent damage due to excessive PCV pressure and prevent a hydrogen explosion]	· To enhance means for depressurizing the reactor pressure vessel, backup portable batteries, nitrogen cylinders and air compressors have been deployed · To prevent damage to the reactor containment vessel, above-ground filtered venting equipment has been installed that releases pressure and heat from inside the reactor containment vessel to the outside, and, in preparation for a situation where remote operation from the main control room is not possible, improvements have been made to valves that allow them to be manually operated and these have been installed in uncontrolled areas to allow for easy access. · A system has been installed for filling the PCV from the top in order to prevent damage to the PCV top due to an excessive rise in temperature and prevent outflow into the reactor building · To prevent hydrogen from accumulating and remaining inside the reactor building, static catalytic hydrogen recombination systems, hydrogen discharging top vents on the reactor building roof as well as other equipment have been added · To prevent contact between molten fuel and the PCV boundary, a corium shield (zirconia refractory material) has been installed in the lower part of the PCV

Preparations against dispersion of radioactive materials	・ To curb the dispersion of radioactive materials outside the site, water sprinklers (high-capacity water cannons, etc.) have been deployed so that cooling water can be injected from outside the reactor buildings
Preparations against fires [Measures against external and internal fires]	・ Firebreaks have been established to prevent forest fires from spreading to reactor facilities ・ To prevent important safety facilities from being rendered unusable due to a fire inside a building, measures have been taken to fireproof penetrations, and different types of fire detection devices have been added as well as stationary fire extinguishing equipment, fire resistant walls, fire dampers, cable wrappings and other such measures
Addressing external hazards	・ To withstand a collision with a flying debris during a tornado, building doors have been reinforced, protective nets mounted on building openings and over outdoor equipment, and light oil tanks replaced ・ A measure to prevent flying debris during a tornado, manhole covers have been lashed down. ・ To prevent ventilation and air conditioning system filters from clogging up with ash following a volcanic eruption and rendering important safety facilities inoperable, replacement spare bag filters are kept on hand.
Improvements to main control room and response headquarters environment	・ To prevent exposure to external radiation, shielded ventilation and air conditioning systems have been added inside the main control rooms and main anti-earthquake building ・ Shielding has been installed around the main anti-earthquake building to prevent responders from being exposed to excessive levels of radiation when a major accident occurs
Enhancement of the emergency response	・ Communications equipment has been enhanced in order to ensure a means for notification and communication (satellite phones installed, etc.) ・ Multiple access routes have been created and the roads reinforced in order to ensure that emergency vehicles can gain access

In addition, measures have been implemented in a systematic manner to prepare not only for earthquakes and tsunamis, but also tornadoes, volcanic eruptions, magnetic storms, cyber-terrorism and other external hazards.

In addition, the Nuclear Regulation Authority conducted a second field inspection in conjunction with its examination of compliance with new regulatory requirements at Units 6 and 7 on July 22.

The status of progress made on projects during the second quarter is as follows:

◆ Enhancement of Heat Removal and Cooling Functions

・Installation of Alternate High-Pressure Coolant Injection Systems

In order to prevent core damage, new alternate high-pressure cooling water injection systems driven by a steam turbine have been added to the existing high-pressure coolant injection systems, which are the reactor core isolation cooling systems, to create multiple tiers of reactor coolant injection systems. At both Units 6 and 7, installation of the main pump units for the alternate high-pressure cooling water injection systems has been completed. At Unit 6, installation is underway and cables are being laid. The installation work has been completed at Unit 7 and data from trial operation using on-site steam was collected (June 2, 2016) and is now being evaluated.

Nuclear Regulation Authority conducting field verification
(Confirming installation of alternate high-pressure cooling water injection system pump)

◆ Preventing Damage to Pressure Containment Vessel (PCV) from Over Pressurization

・Installation of Above-Ground Filtered Venting Equipment

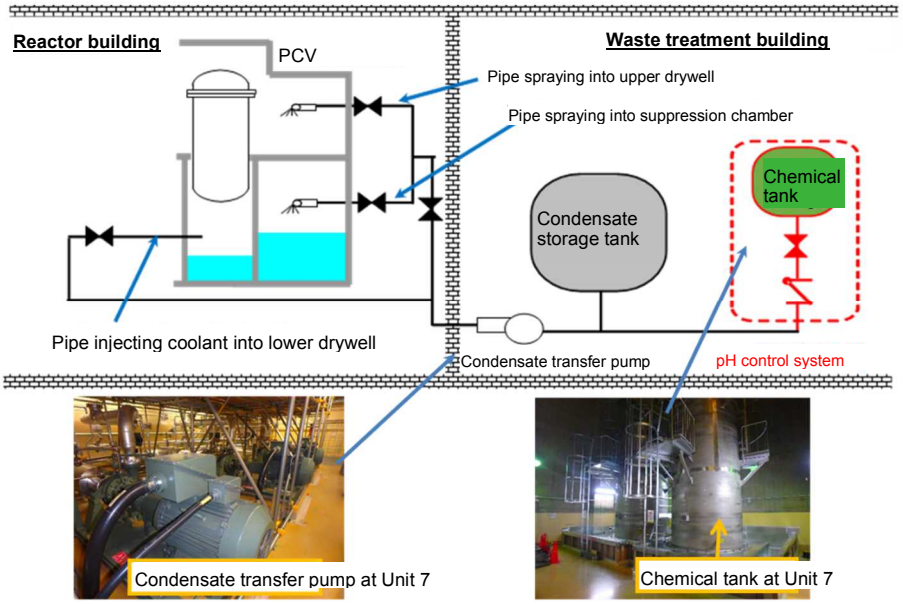
The above-ground filtered venting equipment releases pressure and heat externally to prevent damage to the reactor containment vessel. Filtered venting equipment is being installed to reduce the quantities of gaseous organic iodine and radioactive material particles released into the atmosphere at such time. At Unit 7, pressure and ventilation tests have been completed, and an iodine filter (capable of removing at least 98% of the organic iodine) has been installed (November 28, 2015). At Unit 6, the installation of iodine filters above the main filtered vent unit was completed (January 15), and pressure and ventilation tests have been completed on the pipes around the iodine filter (April 9). At both Unit 6 and 7 we are currently installing drainage pipes and other ancillary equipment. Other additional and modification work are being carried out.

Nuclear Regulation Authority conducting field verification of filtered vent installation

◆ Preparations to Prevent Radioactive Materials from Dispersing

・Installation of PCV pH Control System[6]

After approximately two hours have elapsed after a reactor core is damaged, the PCV pH control system injects sodium hydroxide into the suppression pool, thereby maintaining the alkalinity of the suppression pool and capturing iodine in the suppression pool water. This is able to further reduce the quantity of radioactive materials released when venting by the PCV pressure release system or alternative PCV pressure release system. With regard to installation of PCV pH control systems, the installation of chemical tanks was completed at both Unit 6 and Unit 7 (May 12). Currently, ancillary work is being carried out, including pipe and support installations, as well as electric and instrument control systems.



Overview of PCV pH control system

Explanation given to Nuclear Regulation Authority

[6] Even in a case where a severe accident occurs and an acidic substance is released from cables laid inside the PCV or other such equipment, the system maintains the alkalinity inside the PCV and prevents iodine or other radioactive materials from reemerging in a gaseous phase.

◆ Internal Fire Countermeasures

・Enhanced Seismic Resistance of Carbon Dioxide Extinguishing System for Emergency Diesel Generators

The carbon dioxide extinguisher system for emergency diesel generators is being replaced with one that has greater seismic resistance[7]. Of the three systems for emergency diesel generators at Unit 7, the fire extinguisher system control panels for two systems have been replaced and firefighting inspections completed (September 8). The one remaining system at Unit 7 and those at Unit 6 will also be replaced.

Emergency diesel generator prior to seismic reinforcement　Emergency diesel generator after seismic reinforcement

Fire extinguishing control panel (Unit 7)　Fire extinguishing control panel (Unit 7)

◆ Addressing External Hazards

・Measures to Prevent Flying Objects Thrown about by Tornados (Removal of Roof Blocks & Waterproofing with tarps)

It is possible that a tornado (maximum wind velocity of 92m/s used as a basis of deliberation) may cause roof blocks, which are used for building roof asphalt waterproofing, to disengage and fly away, potentially damaging important safety facilities outside the building. So that the roof blocks do not separate from the building, a step-by-step review is being carried out to modify specifications for waterproofing building roofs, changing from the use of roof blocks to a waterproof lining (scope of applicability of measures: Units 5, 6 and 7). The work is scheduled to be completed by March 2017.

Removal of roof blocks from a building roof
(left: before removal of roof blocks; right: after removal)

[7] The steel plate thickness is increased from 1.6 mm to 3.2 mm, and further reinforced with bolts.

Waterproof lining applied to a building roof

◆ Improvement of Main Anti-Earthquake Building Environment

・Reinforcement of Radiation Protection at Main Anti-Earthquake Building

In order to prevent emergency responders from being exposed to excessive levels of radiation when a severe accident occurs, a shielding wall was installed around the main anti-earthquake building (March 31). As an additional radiation protection measure, lead panel shielding material was installed on the outer wall of the main anti-earthquake building (installation completed on August 31).

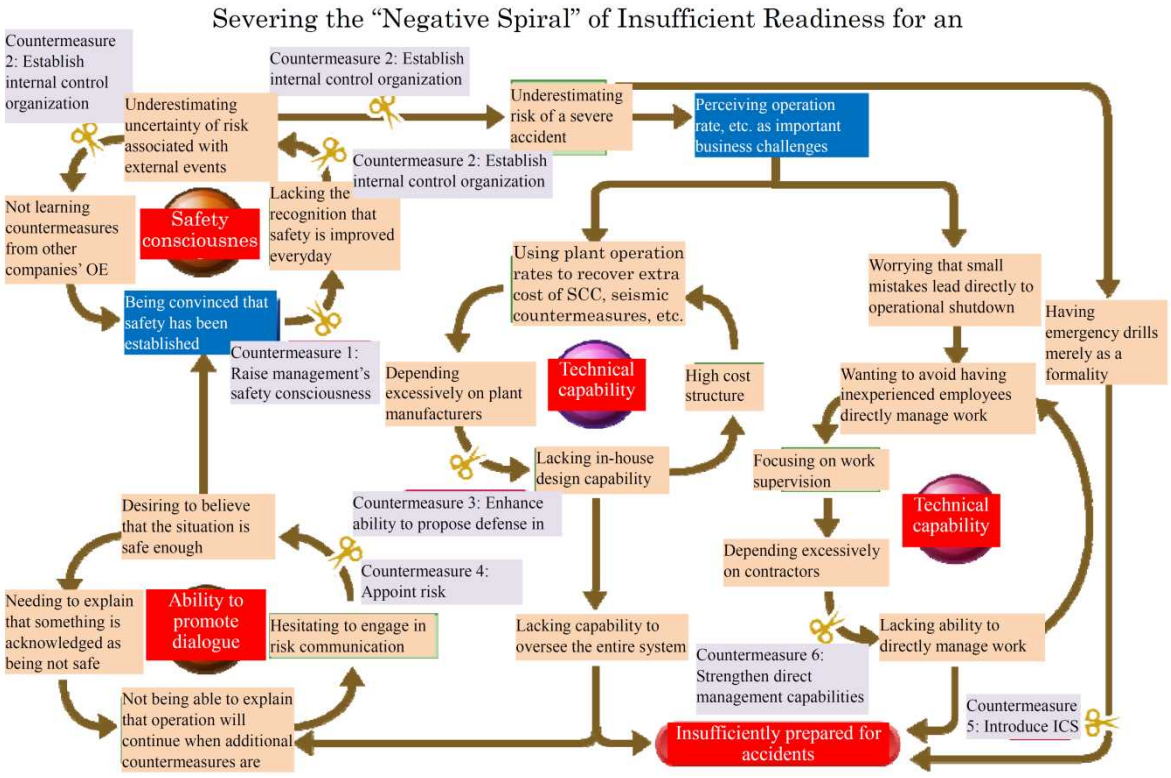
Shielding wall around main anti-earthquake building

Lead panel shielding material installed on outer wall of main anti-earthquake building

2. PROGRESS ON NUCLEAR SAFETY REFORM PLAN (MANAGEMENT)

TEPCO has been making progress on the Nuclear Safety Reform Plan (Management) with respect to six measures for stopping the “negative spiral” that has exasperated structural issues faced by the Nuclear Power Division.

March 2016 marked three years since the Nuclear Safety Reform Plan was formulated, so we took a look back at our achievements so far in the form of a self-assessment of the Nuclear Safety Reform Plan to ensure that these achievements result in future improvements.



<Results of TEPCO's Self-Assessment of the Nuclear Safety Reform Plan>

In the second quarter, the results of the self-assessment of TEPCO's efforts over the three years since the Nuclear Safety Reform Plan was launched were reported to the Nuclear Reform Monitoring Committee (September 2).

The self-assessment was conducted using a five-tiered comprehensive assessment[8] of each of the nuclear safety reform measures and the expectations set forth by the Nuclear Reform Monitoring Committee.

Five-Tiered Comprehensive Assessment for Self-Assessment of Nuclear Safety Reform Plan

I. Ideal	- A state of "continually achieving unparalleled levels of safety and making each day safer than the last while never forgetting the Fukushima nuclear accident," which is the objective of the Nuclear Safety Reform Plan. - Third parties also assess performance as being excellent.
II. World's highest level	- A state where high standards that exceed legal and technical regulations have been stipulated by the operator and performance is being improved in accordance with these objectives. - Many areas meet excellent industrial standards and performance has reached an exemplary level to the point where it is used for benchmarking by other nuclear operators.
III. Self-regulatory and continuous reforms are underway in pursuit of the highest level of safety	- A state where high standards that exceed legal and technical regulations has been stipulated by the operator for safety awareness, technical skill, the ability to engage in dialogue, and other areas in pursuit of the world's highest level of safety. Self-assessments are used to ascertain discrepancies between the operator and other operators, and self-regulatory efforts to make improvements are engaged in. - Never-ending efforts are made to prepare for weaknesses that have yet to manifest.
IV. Self-regulatory and continuous reforms need to be accelerated	- Like numeral III, a state where reforms are being implemented in regard to insufficient safety awareness, technical capability and the ability to promote dialogue as they pertain to voluntarily set standards that exceed legal and technical requirements. - Since the speed and achievements of reforms are unsatisfactory it is necessary to further accelerate self-regulatory and continuous reforms in order to improve performance.
V. Only the bare minimum regulatory requirements have been met	- A state where nuclear safety awareness and behavior has decreased because only satisfying the bare minimum regulatory requirements has resulted in a lack of safety awareness, technical ability, and the ability to promote dialogue. - This was the state of TEPCO prior to the Fukushima accident. There was the false conviction that safety had already been achieved and therefore reforms were not implemented.

From the results of the self-assessment, many activities fell within "III. Self-regulatory and continuing reforms on track to rise to world-class levels," but the two items corresponded to "IV. Self-regulatory and continuing reforms need to be accelerated."

[8] Configured with reference to INPO's five-tiered assessment classification.

Results of Self-Assessment (Comprehensive Assessment)

Nuclear Safety Reform Plan activities corresponding to goals and objectives set forth by the Nuclear Reform Monitoring Committee	Comprehensive assessment
Criteria 1: Management as well as each and every person give top priority to safety [Measure 1] Reform from top management	III. Self-regulatory and continuous reforms are underway in pursuit of the highest level of safety
Criteria 2: Enhance governance Criteria 3: Continuous management of risks to nuclear safety [Measure 2] Enhancement of Oversight and Support for Management	**IV. Self-regulatory and continuous reforms need to be accelerated**
Criteria 4: Learn from incidents and problems both inside and outside the company [Measure 3] Enhancement of Ability to Propose Defense-in-depth	III. Self-regulatory and continuous reforms are underway in pursuit of the highest level of safety
Criteria 5: Maintain sufficient technical capabilities in-house [Measure 6] Development of Personnel for Enhancing Nuclear Safety	**IV. Self-regulatory and continuous reforms need to be accelerated**
Criteria 6: Increase emergency response capabilities [Measure 5] Enhancement of Power Station and Head Office Emergency Response Capabilities	III. Self-regulatory and continuous reforms are underway in pursuit of the highest level of safety
Criteria 7: Build trust with society [Measure 4] Enhancement of Risk Communication Activities	III. Self-regulatory and continuous reforms are underway in pursuit of the highest level of safety
Criteria 8: Reduce radiation exposure	III. Self-regulatory and continuous reforms are underway in pursuit of the highest level of safety

Activities that were assessed as “reforms are underway” had commonalities in terms of “nuclear power leaders taking the initiative and setting a good example for others as well as issuing thorough instructions,” “organizations and individuals are highly satisfied with the necessity of and the results to which the measures aim,” and “there is an awareness that the agent of action is oneself and the activities are clearly understood and carried out.” On the other hand, those items that were assessed as “reforms are need to be accelerated” found factors where organizations and individuals had a different awareness of priorities and there was no solidarity extending from nuclear power leaders to those on the front lines in regards to accomplishing objectives.

In other words, nuclear power leaders need to exercise stronger governance. For instance, the following factors are behind the failure to officially release approximately 10 months of data on the radioactive level of drainage channel K at Fukushima Daiichi NPS (data released in February 2015) and the failure to mention that a core meltdown had occurred initially during the Fukushima nuclear accident, as well as the repeated erroneous explanations given to the Niigata Prefecture Technical Commission (publicly stated in February 2016), and there have been problems in which weaknesses have unmistakably emerged in terms of governance (chain of command and verification framework).

- Top and middle management do not fully enforce their orders that must be completely obeyed by their organaizations
- There are people who are not fully obey the orders of supervisors as well as supervisors who are not monitoring nor following up on the status of observance
- There has been an inconsistent stance in clarifying authority and exercising responsibility (lack of ability to satisfy and run the entire organization)
- Lack of a societal perspective (interpretations favorable to one’s own organization)

Also, of the nuclear safety reforms, the key for the improvement of technical capabilities is personnel training. A pressing issue in this regard is the need for an organizational effort and not to leave such issues for only individuals to deal with. From benchmarks set in other countries with regard to personnel training, TEPCO has acquired the knowledge that “based on an immutable policy that ‘personnel training is an important task to be addressed,’ world-class nuclear operators exercise management and offer education and training to develop

organizational technical capabilities and individual technical capabilities in a systematic manner based on SAT[9], to which improvements are continually made."

TEPCO has also worked to train our personnel through the implementation of nuclear safety reforms, but we need to further accelerate these reforms in order to catch up with world-class nuclear operators. Also, prior to the Fukushima nuclear accident, SAT was introduced, upon which education and training programs have been constructed. But since the Fukushima nuclear accident, improvements have not been continuously made and these programs need to be revamped immediately.

From the above, beginning in the second quarter, TEPCO will strengthen two efforts in particular: personnel training and the improvement of governance exercised by nuclear power leaders.

a. Reforms initiated by nuclear power leaders
   - Senior management must "question" on a daily basis
   - The mechanism for giving instructions and orders, and confirming that they are carried out thoroughly should be enhanced.

b. Acquire the technical and management capabilities necessary to be a world-class nuclear operator
   - Establish the Nuclear Human Resources Training Center and strengthen the framework for education and training
   - Intensively reconstruct systematic education and training programs from a long-term perspective

[9] Systematic Approach to Training: method for developing education and training advocated by the IAEA and has become the global standard)

2.1 Measure 1: Reform from Top Management

(1) Second Quarter Achievements

[Measure 1-1: Increase Safety Awareness Throughout the Entire Organization and Management]

- Efforts to Enhance Governance by Nuclear Power Leaders
  - In order to advance the reform of nuclear management, the Management Model Project, which is comprised of full-time staff from nine key areas including operations, maintenance and engineering, was launched in July. Eleven experts from other countries that have experience working at organizations with the world's highest standards, such as Exelon Corporation, the largest nuclear operator in the United States, were invited to provide guidance as TEPCO personnel analyzed gaps vis-à-vis the world's highest levels and then reviewed and formulated measures to make improvements that shrink these gaps (Phase 1 (July-August 2016)).
  - The transition has now been made to Phase 2 (period: September 2016 - March 2017), and TEPCO is implementing the improvement measures formulated in Phase 1 and working to make improvements in terms of the methods for administering organizations, organizational frameworks as well as processes, procedures and other areas. In terms of short-term improvements, TEPCO will work to improve the respective KPIs for each area as well as codes of conduct (fundamentals) for people engaged in operations, which have been cited as issues that are common to each area. Next, in terms of medium-term improvements, TEPCO is continuously working to reduce radiation levels through the implementation of dose level improvement programs that are based on the ALARA principle, enhance the coaching framework for operators in order to reliably restart and safely operate Units 6 and 7 at Kashiwazaki-Kariwa NPS, and expand independent work management processes for improving work efficiency and nuclear safety.

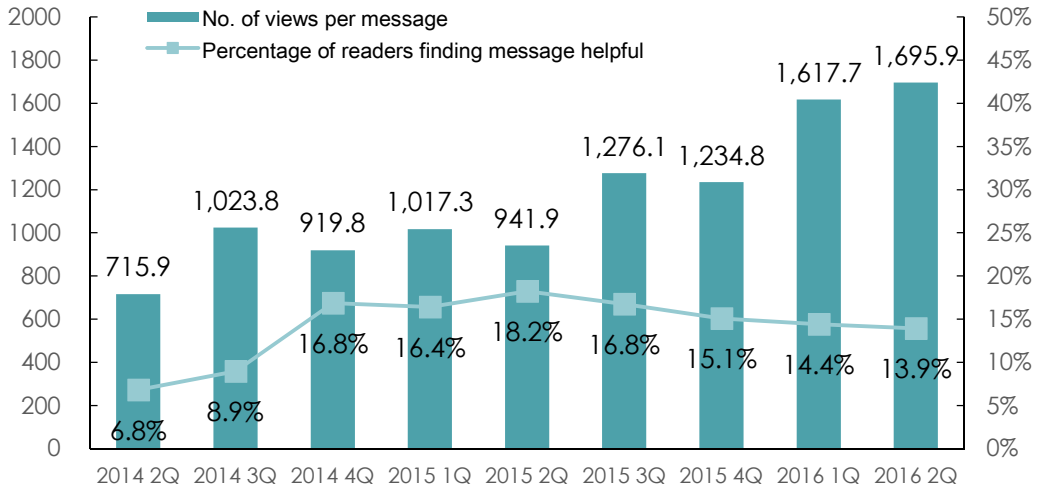
    The Management Model Project sets benchmarks using knowledge from overseas experts and the world's best practices to further develop the Nuclear Power Division Management Guidelines.

Meeting of the Management Model Project

- Direct Dialogue among Nuclear Power Leaders
  - Since the fourth quarter of FY2015, Head Office nuclear power leaders (Nuclear Power and Plant Siting Division General Manager and other general managers) have headed out to power stations to initiate a direct dialogue with power station executives (site superintendents, unit superintendents, Nuclear Safety Center director, and power station general managers). These exchanges continued to take place in the second quarter along with direct dialogues between Head Office nuclear power leaders and power station executives (August 31 at Kashiwazaki-Kariwa NPS and September 16 at

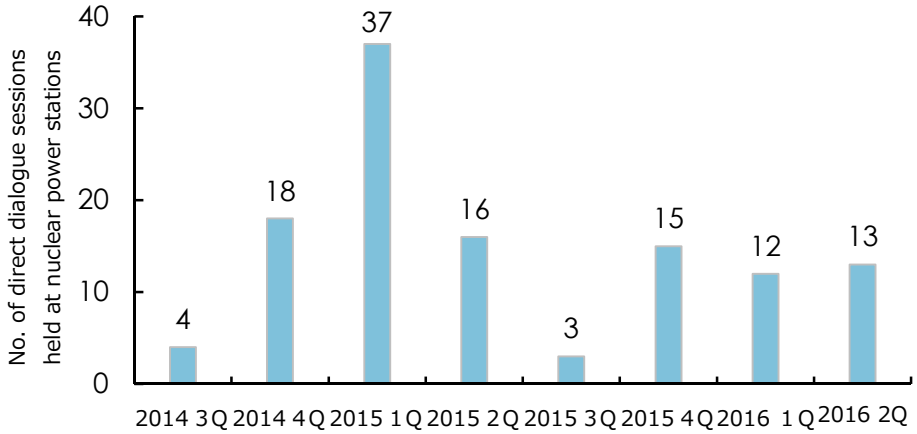
Fukushima Daini NPS). During this direct dialogue there have been discussions about measures for accelerating reforms in the Nuclear Power Division as well as measures pertaining to improvements in accident prevention training to improve the capability to respond during an emergency. Furthermore, the Head Office has provided explanations of the progress made in implementing activities as part of the Management Model Project for effectively moving improvement activities forward, and discussions have been held on measures for effectively executing improvements.

- Communication of Expectations by Nuclear Power Leaders
  - To further nuclear power reforms, the expectations of nuclear power leaders and the reasoning and other factors underlying such expectations, need to be appropriately conveyed and made known. Therefore, nuclear power leaders have issued messages to convey these expectations through video, intranet, email, meeting forums, talks during morning meetings and other such methods. In particular, messages from the General Manager of the Nuclear Power and Plant Siting Division are delivered by email to each and every employee of the Nuclear Power Division.
  - The status of employee views of messages communicated by nuclear power leaders over the intranet is given below. The number of views per message exceeds 1,600, which is approximately half of the personnel assigned to the Nuclear Power Division, and has risen up close to 1,700 people. Meanwhile, the percentage of people assessing these as “helpful” has shown a somewhat decreasing trend.



Number of views per intranet messages/number of readers finding message helpful”

  - In order to convey “thoughts” that are not able to be put into messages transmitted over the intranet, the General Manager of the Nuclear Power and Plant Siting Division has continued to engage in a direct dialogue with power station and Head Office employees since February 2014.



Number of direct dialogue sessions held between the Nuclear Power and Plant Siting Division General Manager and personnel in the workplace

- Since FY2015, the General Manager of the Nuclear Power and Plant Siting Division and the President of Fukushima Daiichi Decontamination & Decommissioning Engineering Company (FDEC) have presented awards to people that have strived to achieve high objectives as well as people that have taken the initiative in undertaking significant challenges for completing TEPCO's various missions. Details on the number of awards given during third quarter are as follows.

Number of awards presented by the General Manager of the Nuclear Power and Plant Siting Division and President of the Fukushima Daiichi Decontamination & Decommissioning Engineering Company

Time period	Head Office	Fukushima Daiichi NPS	Fukushima Daini NPS	Kashiwazaki-Kariwa NPS
FY2015	24(2)	47	19	24
FY2016				
1st quarter	5	6	4	6
2nd quarter	5	3	3	7

Figures in parentheses are for Higashidori (included in total)

- Strengthen Sharing of Information about Important Operational Issues and Other Such Topics in the Nuclear Power Division
  - The Third-Party Verification Committee pointed out that information was insufficiently shared internally about the core meltdown issue, and the Committee offered its opinion that measures need to be considered for promoting information sharing among employees. With regard to internal information sharing, although information has been shared within Head Office departments and power stations, opportunities and methods have been insufficient for helping personnel learn about issues to be addressed in important initiatives in other departments and at other power stations. For this reason, the site superintendents and general managers, who are the ones responsible, have worked on measures for regularly transmitting by email to all personnel within the Nuclear Power Division important externally-issued reports and the status of review of important issues. Since July, site superintendents and Head Office general managers have been transmitting emails to all personnel within the Nuclear Power Division about their respective issues, and many employees now have a better understanding of important operational issues and other information of note within the Nuclear Power Division (extent to which this has been achieved is scheduled to be measured using the ability to promote dialogue KPI (internal 2)).

- Clearly Convey the Company's Basic Stance of "Proactively Reporting" Information to both Internal and External Parties
  - The various investigative committees and other organizations have clarified the facts about the accident. However, TEPCO has made it a basic policy that employees that notice any missing information from these investigation findings should report such matters in order to contribute to nuclear safety in the future and improve how information is reported and disclosed. On June 21, TEPCO clearly indicated this basic stance externally in a report on TEPCO's countermeasures, and, internally, the president has communicated this in messages to employees and via other opportunities for communication.

- Collect Information on Notifications and Public Announcements given when the accident occurred
  - In order to improve notifications given and public relations during an emergency, internal messages have been issued to convey the company's basic stance of "proactively reporting," and in these messages TEPCO has asked employees to step forward if they notice anything missing or incorrect from the accident investigation reports in regards to the facts of the accident that are presented. An intranet site has been established for employees as a point of contact through which to report such information. (June 21).
  - By September 30, seven pieces of information or comments had been forwarded to the office set up to consolidate such information. Five of these pertain to information already released or opinions about present issues. The following two items were deemed to be new information.
    - Although a plan had been made to measure the radioactivity of general drainage channels, including drainage channel K, in April 2011, the Fukushima Daiichi Emergency Response Center made the decision not to take these measurements. It is presumed that this decision was made by the Response Headquarters at the time in order to prioritize the measurement of other radiation levels as well as other recovery work and not out of a deliberate intent to conceal or cover-up such data.
    - Around April or May, 2011, the Nuclear and Industrial Safety Agency inquired about obtaining an opinion on the conditions inside the reactors. A reply was issued that it was believed that the cores had melted down. However, a forceful counterargument was made in opposition to this statement: "*What is the basis for making such a statement? Are we going to release information that has no basis?*" This was interpreted as instructions to, "*not say that the core has melted down*" before analysis results of core status could be obtained. It is assumed that this was in line with the instructions issued by Minister Kaieda, which have already come to light.

- Call for Information to be Provided about Items Investigated by the TEPCO HD and Niigata Prefecture Joint Investigative Commission
  - TEPCO published issues examined by the TEPCO HD and Niigata Prefecture Joint Investigative Commission on the intranet so that all employees may access such information, and it has called for the provision of related information (July 7).
  - By September 30, 486 pieces of information had been provided, and information that will be helpful for examining the event will be submitted to the Joint Investigative Commission.

[Measure 1-2. Develop Nuclear Power Leaders]

- Formulation of Plan for Nuclear Power Leader Successors
  - Together with experts from other countries, TEPCO conducted an analysis of the gaps between leadership training provided at power stations in the United States and TEPCO's training as part of the activities related to leadership under the Management Model Project. Based on the results, it was determined that the experience, qualifications and other criteria necessary for each position are not clearly specified for training TEPCO's leaders, nor does the company provide systematic experience or knowledge to successors. In the future, TEPCO will proceed to develop programs for training leaders while referencing case studies from the United States.

- Nuclear Power Leader Training
  - On September 7, as part of the training for management and nuclear power leaders, sociologist Hiroshi Kainuma was invited to give a lecture on the topic of "Fukushima Today and in the Future, and feeling about TEPCO." Since the Fukushima nuclear accident, Mr. Kainuma has vigorously worked to revitalize Fukushima. In his lecture, Mr. Kainuma used statistics showing the actual situation in Fukushima and told stories about his own experiences. During the Q&A session after the lecture, the participants were able to develop an even richer awareness that the "starting point for nuclear safety reform is Fukushima," through statements by nuclear power leaders expressing their resolve to "take real action in order to fulfill our responsibility to help Fukushima recover."
  - Such opportunities will continue to be provided in the future as well because having an opportunity to engage with outside experts and listen to what people in the communities are saying is beneficial for nuclear power leaders to foster greater social sensitivity.

Nuclear power leader expressing his determination at the lecture

- Efforts to Incorporate Training Materials about the Lessons Learned from the Core Meltdown Issue
  - In order to build awareness about the importance of appropriate notifications during an emergency as well as announcements that take into account the perspective of society, the course of events, problems and issues as well as other aspects about the core meltdown issue have been reflected in management training. Training was conducted for newly appointed managers on July 2, which was based on the revised training material. Such training will continue to be provided in the future and awareness raised.

[Measure 1-3: Spread a Safety Culture Throughout the Organization]

- Benchmarking for Reforming Nuclear Management
  - Benchmarks are being set based on excellence (best practices) demonstrated in Japan and other countries, and TEPCO has been proactively incorporating these benchmarks so that we may achieve the world's highest levels of safety.
  - During the second quarter, sessions were mainly held to provide reports to Head Office management about the results of the investigation into gaps between TEPCO's power stations and nuclear operators in the United States that are practicing excellent operation management (results of benchmarking vis-à-vis the Duke Energy's Head Office and its Brunswick Nuclear Generating Station, and Exelon Corporation's Braidwood Nuclear Generating Station, which were conducted during the first quarter), and information was shared about the status of efforts concerning CAPs[10] implemented by United States nuclear operators and the manner in which benchmarks will be addressed in the future.

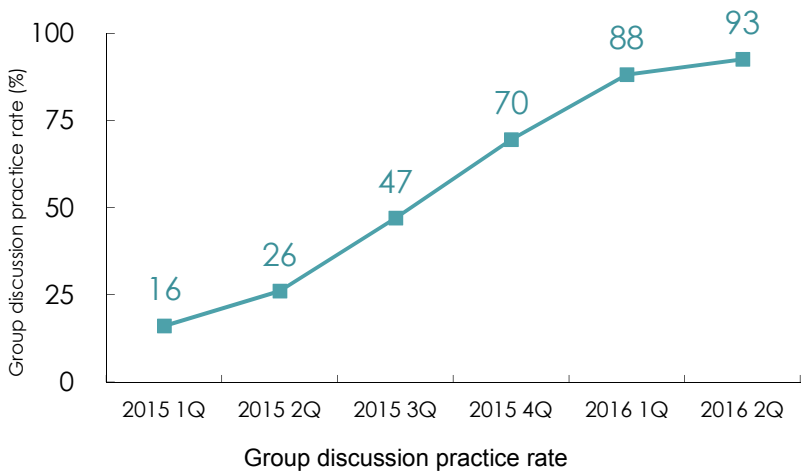
Scene from a session reporting the results of U.S. benchmarking

[10] Corrective Action Program: TEPCO had previously undertaken the "improvement activity program" from the United States as a means of "managing nonconformities," but this will be referred to in the future as the "performance improvement program," which will be an engine for analyzing and assessing in an integrated manner a variety of information and making improvements.

Benchmarking achievements both inside and outside of Japan

Fiscal year instituted	In Japan (principle places visited and areas addressed)	Outside Japan (principle places visited and areas addressed)	No. of personnel participating
2014	3 locations The Japan Atomic Power Company's Tokai Training Center (education & training) Japan Nuclear Fuel Limited's Reprocessing Plant (criticality safety control) Hamaoka Nuclear Power Station (work related to new regulatory requirements)	6 locations Forsmark Nuclear Power Plant, Oskarshamn Nuclear Power Plant, Olkiluoto Nuclear Power Plant (PRA) Bruce Nuclear Generating Station (startup after long-term shutdown) Sellafield (radiation control, site use plans) Chernobyl Nuclear Power Plant (radiation control) Palo Verde Nuclear Generating Station (nuclear safety culture, leadership)	46
2015	9 locations Ikata Nuclear Power Station (disaster prevention training) Tokai No. 2 Power Station (radiation control) Tohoku Electric Power Company's Thermal Technology Training Center (hazard awareness training) Yurtec Safety Education Center (hazard awareness training) JNFL Reprocessing Plant (nuclear fuel material analysis facility) Hamaoka Nuclear Power Station (nuclear material protection, education & training) Tsuruga Nuclear Power Station (radiation control) Hitachi Power Solutions (chemical analysis methods) Kansai Electric Power Company (safety culture)	11 locations Hatch Nuclear Power Plant (cyber security) Browns Ferry Nuclear Plant (startup after long-term shutdown, fire protection) Duane Arnold Nuclear Plant, Hope Creek Nuclear Generating Station (operation management) Exelon Corporation's Limerick Generating Station (procurement environment) Southern Nuclear Company, Exelon Corporation (leadership training) Sellafield, EDF Energy (nuclear material protection) Palo Verde Nuclear Generating Station, INPO (nuclear safety culture) DAEC Nuclear Plant (fire protection) Sequoyah Nuclear Generating Station (education & training)	102
2016	1 location Hamaoka Nuclear Power Station (radiation control)	4 locations Duke Energy's Brunswick Nuclear Generating Station, Braidwood Nuclear Generating Station (CAP) Nine Mile Point Nuclear Generating Station (plant startup operation) TVA Browns Ferry Nuclear Plant, AREVA Richland Plant (fuel management) Clinton Nuclear Generating Station (plant startup operation)	21

- Prevalence of Nuclear Safety Culture Throughout Organizations
  - The Nuclear Power Division has established the "Characteristics of People, Leaders and Organizations Embodying a Healthy Nuclear Safety Culture (10 Traits and 40 Behaviors of a Healthy Nuclear Safety Culture)". The Division has urged personnel to become aware of these characteristics by conducting retrospective reviews through which they compare their own daily actions to these characteristics. In addition, TEPCO continuously engages in activities to raise safety awareness.
  - The rate at which individuals are practicing these retrospective reviews has continued to be around 95%, showing that this activity has taken hold among personnel.
  - The rate at which group discussions have been practiced has risen to 92.5%. Personnel are gaining new insights as a result of sharing their individual retrospective reviews and learning from each other. Group discussions continue to be held with upper management participating in the discussions in order to ascertain and improve the quality of these group discussions.



- Lectures on Nuclear Safety Culture
  - In order to improve the ability of middle managers to keep their teams in tow by enhancing their knowledge of nuclear safety culture, former All Nippon Airways Captain Yamauchi, who gave lectures for nuclear power leaders last year, was invited back to give lectures at the Head Office and power stations, which were entitled “Let’s Talk So We Don’t Forget” (Fukushima Daiichi NPS: July 19, Fukushima Daini NPS: July 20, Kashiwazaki-Kariwa NPS: August 1, and Head Office: July 7). The lectures were a good chance to learn by discussing the Fukushima nuclear accident. Participants said that, “the statement that ‘*nothing is impossible*’ left an impression.”

- Establishment of Safety Committee
  - Separate from the current Safety Steering Committee, a safety committee has been set up to carry out activities at which management of the Nuclear Power & Plant Siting Division, including Kashiwazaki-Kariwa NPS and Fukushima Daini NPS, and management of the Fukushima Daiichi Decontamination & Decommissioning Engineering Company, including Fukushima Daiichi NPS, discuss issues related to safety to share an awareness of problems and promptly facilitate universal countermeasures.
  - The safety committee has carried out activities, including verifying the effectiveness of recurrence prevention measures for personnel accidents including the death that occurred in January 2015. As a result, an assessment method has been established that takes into consideration cost-effectiveness (including human work) to evaluate the effectiveness of recurrence prevention measures and eliminate preventive measures that are not effective. The next meeting of the safety committee is scheduled for October.

- Achievements Made in Furthering Communication and Understanding with Contractors
  - In order to heighten nuclear safety, Head Office management visited the head offices of two contractors to exchange views about nuclear safety because contractors are also essential for improving the understanding of nuclear safety reforms and developing a nuclear safety culture (on August 1 and September 6). The contractors presented their efforts for developing a safety culture, and TEPCO presented our thoughts about the Fukushima nuclear accident, which is the starting point for the nuclear safety culture, and about nuclear safety reforms, and we explained to the contractors TEPCO’s expectations about nuclear safety. Through these activities, both sides were able to improve their understanding of nuclear safety. These activities will continue to be carried out in the future as well.

- At the power stations, TEPCO began visiting power station contractors in the second quarter and initiated efforts that prioritize two-way communication, including listening to contractors efforts regarding safety culture.

(2) Principal Future Plans

[Measure 1-1: Increase Safety Awareness Throughout the Entire Organization and Among Management]

- The Management Model Project sets forth plans for activities for the 18 months until Phase III. Formulation of a code of conduct (fundamentals) for people engaged in operations and improvements for KPI areas will be completed by the end of the year and start to be used step-by-step beginning in the third quarter.

[Measure 1-2. Develop Nuclear Power Leaders]

- In order to sustainably develop successor leaders, position descriptions will be created that clarify the experience, qualifications and other criteria necessary for each position, and, during the current fiscal year, a “successor plan” will be formulated based on the requirements in the position descriptions and the Nuclear Power Division personnel training database.

[Measure 1-3: Spread a Safety Culture Throughout the Organization]

- With regard to the results of benchmarking, just as with the results of the self-assessment, plans have been made in the Management Model Project to incorporate these results into CAP (Measures 3-5), which is described later, to prevent delays in initiating improvement activities and provide reliable follow-up after activities have commenced. Over the short term, the benchmark reporting sessions conducted this quarter will continue to be held to proceed to share and utilize results.
- With regard to improving safety awareness throughout the entire organization and having a safety culture become more firmly entrenched, lectures about the nuclear safety culture will continue to be held, including repeating and thoroughly talking about the lessons learned from the Fukushima nuclear accident in group manager training sessions, which are discussed later. In the third quarter, a lecture is scheduled to be held by a speaker from inside the company on the topic of the “How to Approach Human Performance.”
- With regard to communication with contractors, at the Head Office, the Nuclear Safety Information Liaison Council and contractor visits by Head Office management will continue and, at the power stations, visits with power station contractors and dialogue with contractors will continue to further permeate awareness about improving safety together.

2.2 Measure 2: Enhancement of Oversight and Support for Management

(1) Second Quarter Achievements

[Measure 2-1: Nuclear Safety Oversight Office Conducts Monitoring and Executes Improvements in Response to Indications and Proposals]

- Nuclear Safety Oversight Office Monitoring Activities

The views of the Nuclear Safety Oversight Office based on the past several months of monitoring activities conducted mainly during the second quarter are given below. These views were reported to the Executive Committee on October 18 and the Board of Directors on October 31.

Nuclear Safety Oversight Office (NSOO) Quarterly report

Foreword

This report summarizes the Nuclear Safety Oversight Office (NSOO) assessment results for 2016, Q2 (July through September). Recommendations, advice and observations have been discussed with the management as they arose and have already been accepted and acted on (or action is planned).

1. Safety Performance

The team reports continue to indicate steady improvement in safety in many areas. Also, wide spread improvements are gradually being achieved by the CNO and CDO implementing major initiatives to improve safety capabilities such as;

- The Human Resource Centre
- The Engineering Centre, the creation of engineering technical experts and improvements to the design processes
- Radiation Protection Policies
- Decommissioning Strategy
- Nuclear Safety Culture of Contractors.

However, with the pressures to restart KK, the complicated status of 1F, and the uncertain future of 2F, we still have not achieved excellence in nuclear safety. The NSOO team has made the following observations;

1.1 Team Assessment Summaries

1.1.1 Fukushima Daiichi

- There are still problems with the behavior of contractor operators not achieving the high standards we desire on a nuclear site – e.g. human error prevention techniques.
- Operator training also needs to be improved and the expectations of instructors need to be clarified.
- Emergency Arrangements and Emergency Training are still not receiving enough priority on site – e.g. the exercise scheduled for August was cancelled.
- We also see problems with the design and procurement process and feel that TEPCO may not have sufficient capability to give detailed instructions on specifications when procuring nuclear power-related materials and equipment.

1.1.2 Fukushima Daini

- At 2F we saw a much-improved response to the WANO recommendations.
- However, we also found poor awareness of fire protection– this could reduce safety margins on site and is indicative of a tolerance of low level risks.
- There was a weakness in the maintenance of switches – e.g. no maintenance plans created as a result of unclear responsibilities.
- We observed poor methods for protecting equipment vital to safety
- Emergency response still needs improvement but more frequent emergency exercise training has started and that is expected to improve the situation.

1.1.3 Kashiwazaki Kariwa

- At KK we saw improvements in the design process, but found some problems with detailed design of flooding and fire prevention measures such as not giving sufficient consideration to the ease of operations and maintenance following installation.
- For KK 6/7 the inspection and maintenance schedule prior to start-up needs to be given higher priority.
- Accident response training continues to improve with good management backing, but further improvements are still needed in the TSC and with the response capability of the operators.

1.1.4 Head Office

- There is improved coordination between power stations and the Head Office on the program to promote a better safety culture within our major contractors. However, the site programs are behind schedule and in some cases the contractor's understanding of our activities is insufficient.
- The recent emergency training exercise was an improvement over previous ones but there is still a lot to improve and there should be more frequent drills perhaps with external guidance.

1.2 Response from Sites to NSOO

Through site observation NSOO teams continue to prompt sites to be more vigilant and aware of risk. Our objective is also to encourage the sites to aspire to achieving world-class standards of nuclear safety.
As usual site personnel has responded well to our comments during this quarter.

2. Efficiency Improvements

There is a companywide drive to improve efficiency. This will inevitably include cost-cutting in some areas. CNSO supports the need for this initiative and notes that, in general, greater efficiency and good safety go hand-in-hand.

So far we note good discussion about the possible effects on safety (particularly at 2F). However, world experience shows that cost cutting can lead to safety problems if not adequately analyzed and controlled. Therefore, in NSOO, we will observe the initiatives over the coming months to ensure that sufficient checks, balances and change management are in place to ensure that our safety standards are not inadvertently degraded and that nuclear safety remains our main value.

3. **Progress on some key Actions from previous NSOO Reports.**

3.1 Radiation Protection at 1F.

As reported in the last quarter significant advances in thinking have been made in terms of Site Dose Targets, Life Time Dose Limits for individuals, and Dose Restraint Objectives for individuals at 1F. However, the proposals have yet to be endorsed and hence not yet put into implementation. The CNSO urges an early resolution to this.

3.2 Nuclear Risk Assessment in Decommissioning.

The CNSO has recommended more focus on the nuclear risk assessment and approval processes. In the Q1 report we noted that the FDEC has now produced a comprehensive strategy for decommissioning, which includes the need for quantitative risk assessment. However, there has been no progress in developing the strategy for quantitative risk assessment in Q2. Responsibility has now been assigned to the 1F site and the NSOO now expects speedy action.

4. NSOO Performance – Completion of NSOO recommendations

During this quarter there continued to be good performance by management in regards to completing NSOO recommendations;

- Of the 123 recommendations made prior to this quarter, 91 have been completed
- In this quarter we made 3 new recommendations

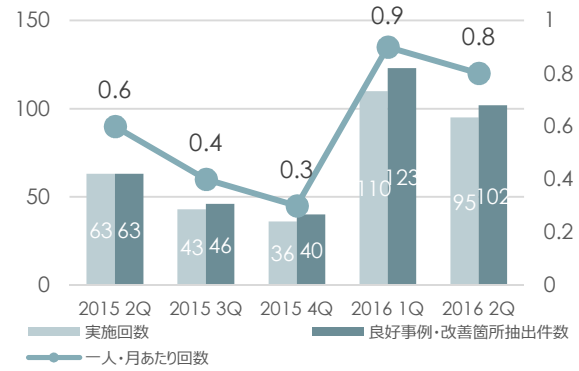
[Measure 2-2: Enhance the Role of Middle Management]

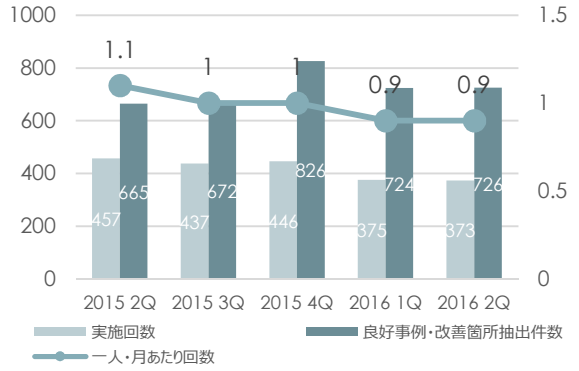
- Enhancement of Management Observations
  - In order to promote nuclear safety reforms and enhance nuclear safety, improvements must be appropriately implemented. Accordingly, management observations (MO), which have been incorporated by outstanding nuclear

operators in other countries, have been used to monitor what is happening in the field and accurately ascertain any problems.

- In the second quarter, TEPCO continued to conduct MO of the work carried out in the first quarter and make improvements promptly concerning issues identified. Also, to improve the rate of MO implementation, in August the Kashiwazaki-Kariwa NPS established a field core time (timeframe during which personnel had to head out to the field once a week) so that more emphasis would be given to conducting MO. Also, with coaching provided by experts from other countries, we have learned the importance of asking questions and worked to enhance competence for conducting MO.
- The results in the second quarter are given below.

Category	Head Office	Fukushima Daiichi NPS	Fukushima Daini NPS	Kashiwazaki-Kariwa NPS
No. of times MO was conducted*	95 0.8 times per man month	373 0.9 times per man month	273 1.3 times per man month	541 1.8 times per man month
No. of good practices and areas for improvement identified*	102 -17%	726 ±0%	645 +13%	2,010 +54%





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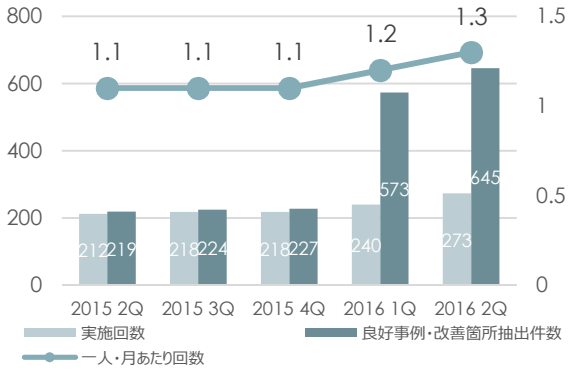

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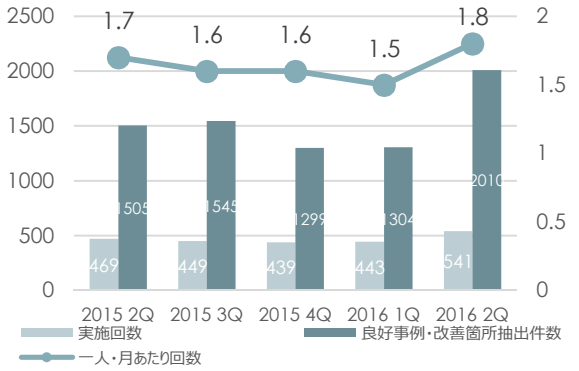

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<Kashiwazaki-Kariwa NPS>

(2) Principal Future Plans

[Measure 2-1: Nuclear Safety Oversight Office Conducts Monitoring and Executes Improvements in Response to Indications and Proposals]

- The Nuclear Safety Oversight Office will continue to monitor activities that are important for nuclear safety, point out issues to be addressed, and make suggestions as it advances improvements in nuclear safety. In addition, the results of overseas benchmarking will be applied to achieve our aim of having world-class level monitoring operations as well.
- The Nuclear Safety Oversight Office believes that improvements are steadily moving forward across a broader scope due to efforts such as the reactor decommissioning promotion strategy and the Nuclear Human Resources Training Center, which have been implemented by nuclear power leaders. Nevertheless, it is the Nuclear Safety Oversight Office's assessment that excellence in nuclear safety has not yet been achieved and there are still issues that require follow-ups and more accelerated improvement. In the future as well, the office will encourage improvements by identifying issues to be addressed at the Head Office and power stations.

[Measure 2-2: Improving the Role of Middle Management]

- Management observation has taken hold, but it has stagnated at a rate of about once a month, so the target rate needs to be gradually raised.
- In addition to increasing the frequency at which management observation is conducted, we will work to improve the capabilities for conducting management observation as a way of enhancing quality by clarifying the expectations for each specialization, specifying the perspectives that management observations should adopt, and continue to hold INPO/WANO training as well as providing on-site coaching by overseas experts. More specifically, measurement methods and the development of indices will be considered to quantitatively measure MO competence.
- Furthermore, beginning in the third quarter, nuclear power leaders will utilize management observation as an opportunity for practicing "active questioning." Management observation will be used to ascertain problems with regard to instructions and orders issued from nuclear power leaders to middle management and other personnel, and the framework and methods for checking on the status of execution of such order as TEPCO works to enhance governance.

2.3 Measure 3: Enhancement of the Ability to Propose Defense-in-depth

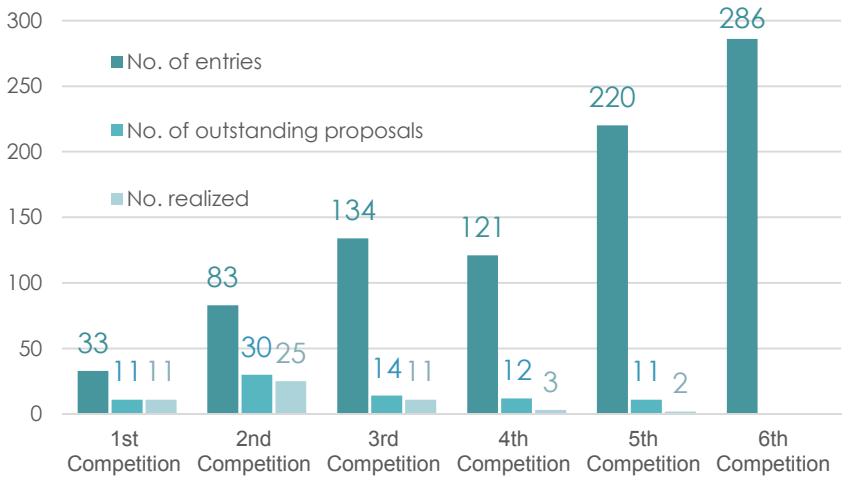
(1) Second Quarter Achievements

[Measure 3-1: Hold Competitions for Strengthening the Ability to Propose Safety Improvements]

- TEPCO has been holding Safety Improvement Proposal Competitions so that personnel may, in addition to conducting multi-faceted reviews from the perspective of defense-in-depth, acquire the technical ability to propose cost-effective safety measures and have these proposals realized promptly. The current status of these competitions is as follows.
  - The sixth competition began in July (entry period: July 28 - September 16) and received 286 entries. As with the previous competition, department supervisors and Head Office and power station offices have called for more entries. As a result of these efforts and the setting of specific targets for the number of proposals be each department the number of proposals submitted continues to increase. During the third quarter, voting by employees in the Nuclear Power Division and selections by the judging committee will be made to choose the most outstanding proposals.
  - The General Manager of the Nuclear Power and Plant Siting Division presented awards for the outstanding proposals selected during the Fifth

Competition (2nd competition of FY2015) (Fukushima Daiichi NPS: October 11; Fukushima Daini NPS: July 29; Kashiwazaki-Kariwa NPS: August 31).

- The Head Office secretariat has monitored departments that are implementing outstanding proposals, and provided advice about clarifying the division of roles and reassessing the manner in which proposals that are slow to be implemented can be moved forward. The Head Office Secretariat is also reaching out to supervisors to promote the quick implementation of outstanding proposals.
- The following are the outstanding proposals realized in the second quarter.
  - 2nd Competition (1st competition of FY2014): Of the outstanding proposals (30), no new outstanding proposals have been realized since the previous report was issued (total of 25)
  - 3rd Competition (2nd competition of FY2014): Of the outstanding proposals (14[11]), one outstanding proposal has been newly realized since the previous report was issued (total of 11)
  - 4th Competition (1st competition of FY2015): Of the outstanding proposals (12 [12]), two outstanding proposals have been newly realized (total of 3)
  - 5th Competition (2nd competition of FY2015): Of the outstanding proposals (11), two outstanding proposals have been newly realized



Number of Safety Improvement Proposal Competition entries, outstanding proposals, and proposals realized

<Second competition of FY2014>

- The loads that are necessary for DC power sources during a station blackout and those that are not necessary were reviewed, and procedures created to cut unnecessary loads in order to extend the length of time that necessary loads can be covered. (Kashiwazaki-Kariwa NPS)

[11] The judging committee selected 15 outstanding proposals, but one of these was determined to be difficult to realize as the result of a review conducted and was excluded from the outstanding proposals.

[12] Of the 13 outstanding proposals, one has been adopted at multiple power stations, so the total number of outstanding proposals including this was 12.

Operational training based on load reduction procedures to extend the duration of DC power sources (Kashiwazaki-Kariwa NPS)

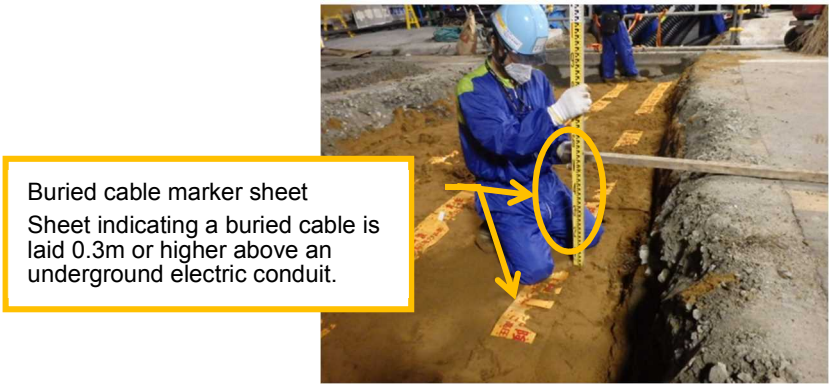
<First competition of FY2015>

- Signs indicating the height above sea level were set up alongside access roads and at locations within the Fukushima Daiichi NPS site at points 4m, 10m and 13m above sea level along with signs along evacuation routes for guidance to higher ground. (Fukushima Daiichi NPS)
- The reliability of information transmission was increased by setting up a redundant transmission network for monitoring posts. (Fukushima Daiichi NPS)

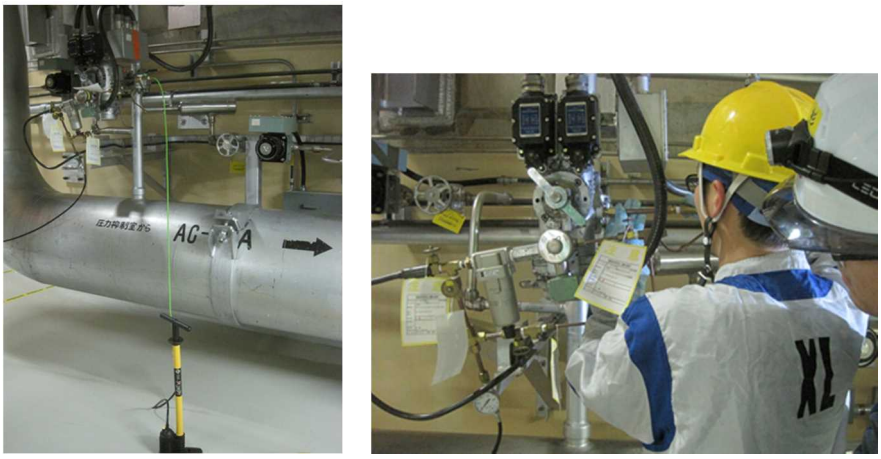
Signs set up indicating height above sea level and evacuation route (Fukushima Daiichi NPS)

<Second competition of FY2015>

- Cases have occurred where underground cables have been damaged by excavators or during drilling work. In order to prevent this tarp strips that indicate that an object is buried beneath have been buried at a certain depth above underground electric cable conduits and beneath the surface of the ground. (Fukushima Daiichi NPS)
- So that air operated valves may be opened and closed even in cases where there is no longer any power for controlling such valves, jigs have been manufactured, copper pipes machined and equipment/materials prepared for connecting control air to the valves. (Fukushima Daini NPS)



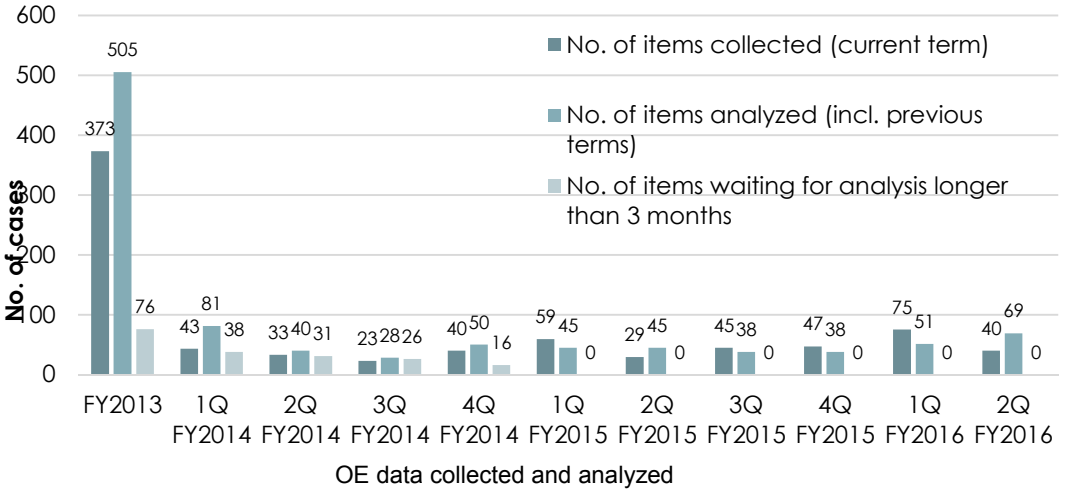
Laying a buried cable marker sheet above an underground electric line (Fukushima Daiichi NPS)



Injecting control air into an air-operated valve
(left: air injection system; right: connecting operation) (Fukushima Daini NPS)

[Measure 3-2: Utilize Operation Experience (OE) Data from Inside and Outside Japan]

- One of the lessons learned from the Fukushima nuclear accident is that we should study the failures of other companies. TEPCO believes that something that occurred somewhere else in the world could also happen at one of our power stations, and we are reviewing and implementing appropriate countermeasures that take into account such failures.
- Operational processes employed prior to the Fukushima nuclear accident have been improved. Operation experience (OE) data has been collected from both inside and outside Japan, and the review of countermeasures accelerated. All personnel in the Nuclear Power Division have been working to utilize this information.
  - During the second quarter, 40 pieces of new OE data were collected, and 69 pieces of OE data, including information previously collected, were analyzed. The items continue to be processed in a systematic manner and it hasn't taken longer than three months to analyze any data.



OE data collected and analyzed

- TEPCO has initiated intensive study sessions to focus on important OE data (severe accidents and SOER[13] from both inside and outside Japan), and we are engaged in efforts to compile overviews these accidents and improve the level of understanding of the lessons to be learned form them. During the second quarter, a team of experts from other countries gave intensive courses on a major accident (fire at the Browns Ferry Nuclear Plant) (Fukushima Daiichi NPS & Fukushima Daini NPS: July 6 and 13), and made an effort to improve the competence of the entire Nuclear Power Division (courses were given at the Head Office and Kashiwazaki-Kariwa NPS during the first quarter).
- During the second quarter measurement began of the rate at which managers are undergoing OE training utilizing the new PI of the, “posture of actively learning on one’s own about important OE data regardless of superficial causes.” In comparison to a goal of 60% or more, a rate of 45% was achieved at Fukushima Daiichi NPS, 80% at Fukushima Daini, and 78% at Kashiwazaki-Kariwa NPS.
- In July 2015, TEPCO and our contractors started to collect information about near-misses. The collection methods, which were first used at Fukushima Daiichi NPS, have been successively expanded to the Fukushima Daini NPS and the Kashiwazaki-Kariwa NPS with the aim of increasing the amount of near-miss data recorded. Meanwhile, at Fukushima Daiichi NPS, analyses are being efficiently conducted based on the large amount of near-miss data collected, and methods are being studied for identifying lessons to be learned.

[Measure 3-3: Construct Processes for Improvement Based on Hazard Analyses]

- TEPCO is developing mechanisms for handling accidents and hazards that have a high potential to become “cliff-edge events” and for which the frequency of occurrence is highly uncertain under the assumption that such accidents may occur.
- The Kashiwazaki-Kariwa NPS finished an analysis of approximately 30 hazardous events in FY2014, and is currently reviewing and implementing countermeasures in accordance with the formulated plan. During the second quarter, the Hazard Analysis Expert Team confirmed that implementation of countermeasures is proceeding as planned.
- In the second quarter, an analysis of hazards at the Fukushima Daiichi NPS began. Current risk conditions and the degree of importance of these risks at the Fukushima Daiichi NPS are being taken into consideration to study risk scenarios caused by the aforementioned risks using examples such as tornadoes and other typical natural phenomena.

[13] SOER: Significant Operating Experience Report

[Measure 3-4: Improve Processes for Periodic Evaluations of Safety (Safety Reviews)]

- TEPCO's improvement activities are not limited to addressing non-conformances, items indicated during safety inspections, or items indicated during third-party reviews. We have also carried out safety reviews to proactively and continually improve nuclear safety by delving into the causes underlying problems. In order to effectively conduct safety reviews of power stations, we have begun deliberating the construction of a process for the systematic selection of topics to address. We are also deliberating a mechanism for reviewing root causes that goes beyond just mitigating poor performance on the surface.
- The status of safety reviews at our power stations is as follows.
  - Fukushima Daiichi NPS

    Until FY2015, the number of human errors occurring and number of proposals for improving operations within each organization were seen as indicators of "individual awareness" and the "result of accompanying action," and reviews were conducted from the standpoint of how power station personnel approaches nuclear safety. However, these indicators could not measure actual individual awareness so this fiscal year substitute indicators were deliberated. As a result of this review, surveys have been conducted based on the "10 Traits of a Healthy Nuclear Safety Culture," which is an index that better indicates personal awareness, to understand the gaps between awareness and action in each organization and between ranks, and it has been decided to take action during the second half of this fiscal year that will lead to improvements.
  - Fukushima Daini NPS

    Amongst the procedures for responding to an accident and safely maintaining cold shutdown, the procedures for enhancing in-house technical skill to manage work during an emergency (debris removal, motor replacements, cable connections, pump restoration) have been chosen as a topic for review. In the future, a review will be conducted to identify potential vulnerabilities related to the procedures for strengthening enhancing in-house technical skill to manage work during an emergency as well as points for improvement.
  - Kashiwazaki-Kariwa NPS

    Amongst the procedures used for responding to an emergency (during a severe accident), attention has been focused on substitute low-pressure cooling water injection which requires cooperation in the field between the Operations Department and the Maintenance Department. An investigation is being conducted into risk factors that may lead to a failure of such cooperation.

[Measure 3-5: Promote Improvement Activities through use of the CAP System]

- There was a system in place for managing investigations into the causes of non-conformances and the status of implementation of corresponding countermeasures as well as OE data from amongst that information that contributes to enhancing nuclear safety, but the system was insufficient for managing other information or looking closer into causes to comprehensively analyze vulnerabilities. In order to ameliorate the situation, not only non-conformance and OE data but also information useful for improving nuclear safety (management observation results, benchmarking results, external review results, near-miss incident data, etc.) will be managed in an integrated fashion using CAP as we aim to enhance efficiency and effectiveness by reducing any overlap in improvement activities and adopting more fundamental countermeasures.
- Improvement of Operational Management of Non-conformance Data
  - To prevent non-conformances from recurring, TEPCO revamped the process for analyzing causes and determining the level of corrective measures (reassessment of management grade) based on the degree of impact of the non-conformance, along with latent risks and the degree to which the event was learned from. This new system was put into use in July. As a result, we

have started to see results, such as an increase in the number of cases where the causes of a non-conformance are looked into deeper.

- As parts of improvements there has been a reassessment of the processes for learning not just from non-conformances but from a variety of improvement information, so it was decided to change the name of the Non-conformance Management Committee to the Performance Improvement Committee (initiated on October 1).

- Enhancement of Improvement Activities with Assignment of Personnel Responsible for Improvements
  - To strengthen improvement activities, performance improvement coordinators (PICO) have been assigned to power station departments beginning in October. PICO personnel screen non-conformance and improvement data each day and support trend monitoring and cause analysis, thereby further preventing the recurrence of accidents and non-conformances.
  - In the future, the PICO personnel in each department will collectively handle information, which will enable an integrated analysis for identifying underlying problems and organizational issues, and share this information within and between departments and divisions in a timely manner. Furthermore, the PICO personnel in each department will exchange opinions honestly with each other in order to reliably ascertain causes and effective countermeasures.
- Additional Efforts for Improving Performance
  - In the second quarter processes such as benchmarking, self-assessments, human performance, performance evaluations and OE information necessary for improving performance, were examined for gaps with the world's highest standards. Some gaps identified were "little participation by operators in CAP" and "appropriate assessments to determine whether or not countermeasures are being continually implemented or whether the countermeasures have been effective cannot be performed." In the future, efforts for improving these processes will be carried out in a systematic manner.

[Measure 3-6: Improve Ability to Resolve Inter-Departmental Issues (Change Management)]

- An analysis of the Nuclear Safety Reform Plan found that, when resolving issues in which multiple organizations are involved, poor project management is a cause of the slow pace of resolution and insufficiency of anticipated results. In order to improve these areas, TEPCO formulated a policy that provides, in principle, not only for full-time project leaders and the specifying and sharing of responsibilities, authorities, targets, expectations and deadlines, as well as the provision of regular progress reports, but also enables organizational leaders to respond in a methodical manner when common issues arise.
- TEPCO examined maintenance process improvements (introduction of Maximo[14]), applied improvement plans, monitored the status of these improvements, and examined the degree of improvement to project management.
  - In regards to maintenance processes improvements (introduction of Maximo), TEPCO conducted a review of the Kashiwazaki-Kariwa NPS and completed a performance tests for system development. Decisions on key specifications and progress status was discussed by the Project Steering Committee (Chair: General Manager, Nuclear Power Plant Management Department). Decisions are made for each project milestone in accordance with the improvement policy while the project is moved steadily forward and since October work process changes have been made and the system put in to operation.
  - In addition, awareness has been raised through various activities including having nuclear power leaders communicate their expectations for the improvement of maintenance processes to relevant personnel in the company who are engaged in maintenance.

[14] IT solution for realizing strategic asset management.

(2) Principal Future Plans

[Measure 3-1: Hold Competitions for Strengthening the Ability to Propose Safety Improvements]

- TEPCO will continue to monitor the process for putting outstanding proposals from previously-held competitions into practice, and follow up promptly in cases where such proposals have not been brought smoothly to fruition.
- With regard to the competitions, we will continue to aim to increase the number of proposals submitted, improve the quality of these proposals and put outstanding proposals into practice promptly.

[Measure 3-2: Utilize Operation Experience (OE) Data from Inside and Outside Japan]

- In the future, intensive courses taught by overseas experts to learn about major accidents and SOER will be offered in a systematic and planned manner, and OE training instructors at each power station will develop training courses to be offered within the power station. Through these activities TEPCO aims to have all employees of the Nuclear Power Division gain a thorough understanding of important OE data and the lessons to be learned from it.
- Furthermore, in FY2016, we will incorporate the study of OE data into education and training programs for the Nuclear Power Division.

[Measure 3-3: Construct Processes for Improvement Based on Hazard Analyses]

- TEPCO will assess the impact of hazards at Fukushima Daiichi NPS based on risk scenarios where the triggering factor is a natural phenomenon. Also, we will conduct analyses of human-induced events and other such hazards.

[Measure 3-4: Improve Processes for Periodic Safety Reviews]

- In order to effectively conduct safety reviews, TEPCO will consider methods for systematically selecting safety review topics.
- For reviews conducted at power stations, we will not improve the selected topics themselves, but also inquire into organizational administration and management issues that need addressing.

[Measure 3-5: Promote Improvement Activities through use of the CAP System]

- TEPCO will monitor whether or not CAP is being utilized so that non-conformance management leads to performance improvement, and the CAP process will be continually improved.

[Measure 3-6: Improve Ability to Resolve Inter-Departmental Issues (Change Management)]

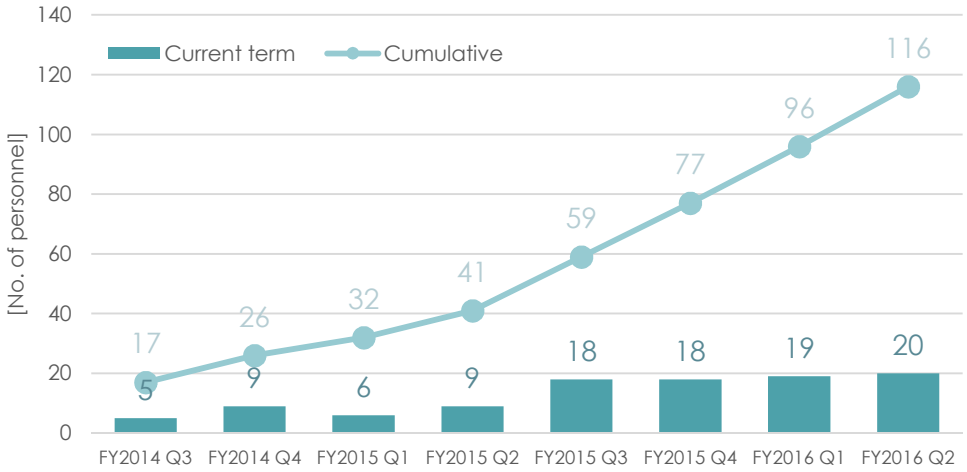
- Beginning in October, TEPCO will measure and assess utility after operational processes have been modified and systems are operational. Also, interviews will be conducted with those involved in process modification to follow up on improvements at each operational stage after the operational processes have been modified and the system introduced.

2.4 Measure 4: Enhancement of Risk Communication Activities

(1) Second Quarter Achievements

[Measure 4-1: Systematic Appointment and Training of Risk Communicators]

- There are currently 44 risk communicators serving (as of September 1). So that the risk communicators may maintain and improve their skills, mock press conferences, group discussions, case studies, practice presentations and other training sessions have been held.
- To promote collaboration and mutual understanding between the Engineering Department and the Corporate Communications Department, as well as raise awareness among engineering personnel about external communication, Fukushima Daiichi NPS engineering managers are being assigned temporarily to the Fukushima Corporate Communications Department (20 personnel were posted during the second quarter for a cumulative total of 116 in FY2016) for training.



Graph showing number of Fukushima Daiichi engineering managers that have undergone training for assignment in the Fukushima Corporate Communications Department

[Measure 4-2: Risk Communication]

A: Overview

- The Social Communication Office and risk communicators have continued to propose to management and the Nuclear Power Division policies for giving explanations about countermeasures and making announcements about risks (proposals made during 2nd quarter: 29; FY2016 cumulative: 50). In consideration of the problems pertaining to core meltdowns, it has been stated explicitly that the Social Communication Office and risk communicators, as the entities responsible for the external response during a crisis situation, shall directly make proposals to the president about the communication of information from the viewpoint of society.
- The Corporate Communications Department and Social Communication Office have been central to the continuing effort to communicate information both in Japan and overseas via the internet and SNS, as well as creating easy-to-understand explanatory materials, mainly in the form of videos that describe the progress made with reactor decommissioning and what this process entails. In addition, management and power station site superintendents have participated town hall meetings and press conferences as well as other public relations events to proactively engage in communication.

B: Status of Activities in the Fukushima Area

- In the Fukushima area, TEPCO has proactively engaged in communication through briefings and other presentations to local governments, relevant organizations and people in the community about the decommissioning of the

Fukushima Daiichi NPS, measures to address contaminated water, and safety measures adopted at the Kashiwazaki-Kariwa NPS. TEPCO will continue to make improvements based on the comments and requests made by the aforementioned parties.

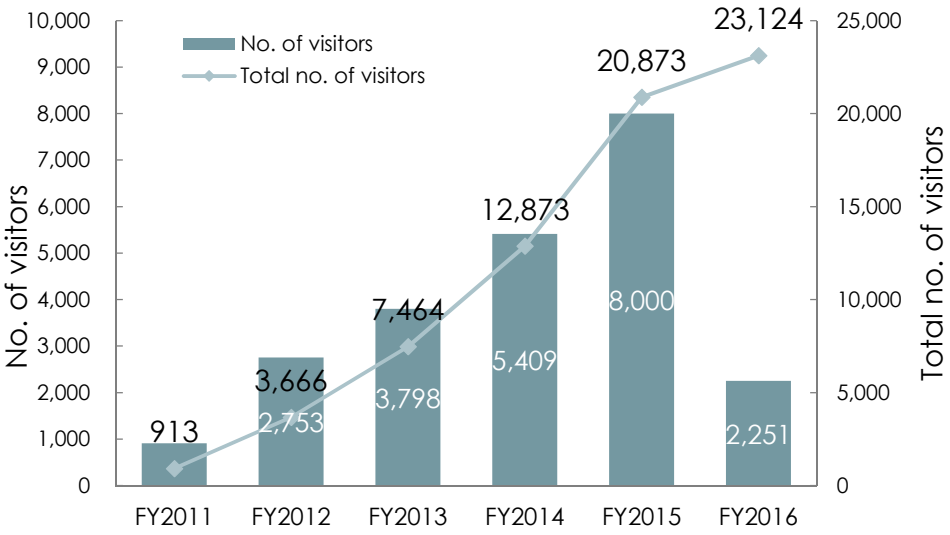
- At a meeting of the Prefectural Council on Safety Assurance in Decommissioning the Fukushima Prefecture Nuclear Power Station[15], the comment was made that: “The people in the prefecture are very worried about the dismantling of Units 1 and 2. They would like to ask that, going forward, TEPCO provide sufficient explanations about its plans and achievements.” In response to this request, TEPCO gave an explanation using videos and other aids about measures to prevent radioactive materials from dispersing when removing the Unit 1 reactor building cover as well as risks associated with earthquakes and tsunamis, and measures to address such risks at the 4th meeting of the Prefectural Council (September 5).
- TEPCO received requests from educators for assistance when educating about radiation and providing information about reactor decommissioning, and we have responded to these requests. Also, Fukushima Revitalization Headquarters President Ishizaki and Fukushima Daiichi Decontamination & Decommissioning Engineering Company President Masuda exchanged opinions directly with students about the progress made in decommissioning the reactors at Fukushima Daiichi NPS and recovery efforts.

Dialogue with high school students in Hamadoori: “Learning to Identify Problems & Solutions” (July)

Dialogue with high school students from Japan and other countries: “Challenge Fukushima” (August)

- TEPCO has received requests from local governments in Fukushima Prefecture for cooperation in holding classes for children on energy and radiation, so we have dispatched instructors in cooperation with outside educational institutions and aided in designing such classes.
- TEPCO continues to give tours of the Fukushima Daiichi NPS. Since it’s difficult to get a real feel for what is actually happening at the power station through press conferences, handouts or websites, we have been striving to deepen people’s understanding by having them see the power station with their own eyes. (number of visitors in second quarter: 2,824).

[15] Established in August 2013, and comprised of 13 concerned municipalities as well as various groups engaged in commerce, industry, agriculture, forestry, fisheries, tourism and other sectors, including academics.



Change in the number of visitors touring Fukushima Daiichi NPS (since FY2011)

- The website "1 FOR ALL JAPAN," which was set up for the approximate 6,000 workers at the Fukushima Daiichi NPS and their families (launched in October 2015), has posted interviews with workers, provided information about restaurants, etc. in Tomioka and Naraha, and posted articles describing the mockup facilities where new technology is being developed and tested. The website gets an average of approximately 24,000 hits each month. And approximately 2,000 copies of the monthly newsletter "1F Monthly" are distributed to visitors and workers at the Fukushima Daiichi NPS.

1F Monthly (September 2016 edition)

C: Status of Activities in the Niigata Area

- In the Niigata area, TEPCO has continued to promote dialogue with communities, explain safety measures adopted at the Kashiwazaki-Kariwa NPS, and also give tours of the power station. Since the accident at Fukushima Daiichi NPS a total of 13,536 people from the Kashiwazaki and Kariwa areas and 34,422 from throughout Niigata Prefecture have toured the site (as of the end of September).
- Examples of explanations and opportunities for dialogue:

・Periodic roundtable discussions with female experts (number of experts in the second quarter: 15; cumulative for the fiscal year: 52)

・Booth at the Niigata 100 Beautiful Women Conference (September 14 on the Sado Kisen)

・Visits to local governments and groups in Niigata Prefecture to give explanations and engage in dialogue

・Visits to approximately 41,000 households in Kashiwazaki city and Kariwa village to provide explanations and engage in dialogue. The following are examples of comments received.

"The company cannot be trusted since it concealed the meltdown."

"More opportunities for dialogue should be created. It's good to be able to directly talk to people in this way."

"If the safety of the power station is assured, then it would be all right to recommence operation."

・"Community briefings" were held in Kashiwazaki city and Kariwa village (September).

・The "Fureai Talk Salon" at a TEPCO public relations facility (August).

- "Community briefings" were held in Kashiwazaki city and Kariwa village. TEPCO provided explanations about issues of great interest to the people in the community including the core meltdown issue, progress made with compliance inspections for the new regulatory requirements at the Kashiwazaki-Kariwa NPS and the new safety measures being constructed there. The members of the communities that attended also provided valuable comments (September).
- Power station visits, electricity and craft courses were held for children's clubs and other organizations in Kashiwazaki city (total of 11 sessions in July and August). And, an energy event was held at the TEPCO Service Hall.

Children's club visit

Event at the Service Hall

- Communication booths were set up in Ojiya, Niigata, Nagaoka and Joetsu cities (July thru September). Approximately 1,700 people visited the booths and made comments such as: *"I didn't trust TEPCO, but, after I heard the explanation, I changed my mind"* and *"I hope they continue steadily forward with safety measures."*

Poster exhibited at the communication booth

- In Niigata Prefecture, TEPCO has broadcast radio and TV commercials, run advertisements in newspapers and magazines, and shown public relations videos on large monitors set up at major JR stations in the prefecture (30 posters at 14 stations) to provide information about safety measures at the Kashiwazaki-Kariwa NPS.

D: Information Communicated by Management

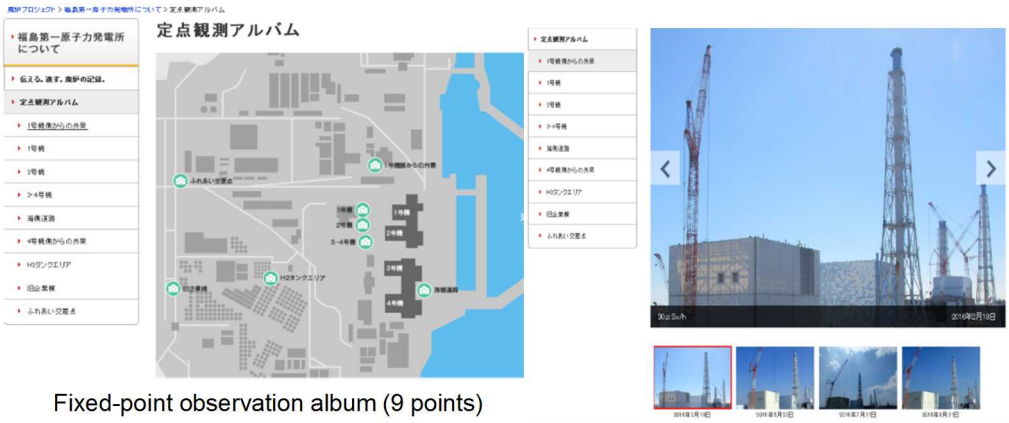
- In Fukushima and Niigata, management has held press conferences.
  - In the Fukushima area, Fukushima Revitalization Headquarters President Ishizaki and Fukushima Daiichi Decontamination & Decommissioning Engineering Company President Masuda have held regular press conferences at the end of each month during which they have provided explanations about Fukushima Revitalization Headquarter activities and the progress made at the Fukushima Daiichi NPS with reactor decommissioning and contaminated water countermeasures.
  - In the Niigata area, Niigata Headquarters Representative Kimura and Kashiwazaki-Kariwa NPS Site Superintendent Shitara have held regular press conferences during which they have talked about Niigata Headquarter activities and the progress made with safety measures at the Kashiwazaki-Kariwa NPS.

E: Disseminating Easy-to-Understand Information and Utilizing SNS

- Videos about nuclear power have been used by TEPCO as it continues to provide explanations about the situation. The achievements made this quarter are described below.
  - Materials have been prepared describing, among other things, the removal of wall panels of the Unit 1 reactor building cover at the Fukushima Daiichi NPS and preliminary measures taken to prevent radioactive materials from dispersing. Six new videos have been released (five on the Fukushima Daiichi NPS and one on the Kashiwazaki-Kariwa NPS).
  - A video on the groundwater levels in the 4m embankment area, which had reached the same level as the ground surface due to rainfall, was used to give an explanation at a press conference.
  - “Fukushima Daiichi Nuclear Power Station Today” was updated (August 10).

- To convey information about the current conditions at the Fukushima Daiichi NPS, the following information has continually been released via the TEPCO website.

- The fixed-point observation album was first released on July 12 to visually convey the progress made with work performed in the field.



Fixed-point observation album (9 points)

- To provide information about the impact on the environment around the Fukushima Daiichi NPS, TEPCO has been releasing real-time data for dust monitors along site boundaries since July 12 and seawater radiation monitors at the port entrance since September 30 in addition to data from exhaust monitors at the miscellaneous solid waste incinerator, which was first released on April 15.

Dust monitor measurements

  - "Fukushima Daiichi Timeline After March 11, 2011" has been updated to show the progress made with reactor decommissioning at the Fukushima Daiichi NPS.

- TEPCO continues to communicate information using our official Facebook page.
  - To eradicate rumors about the Fukushima Daiichi NPS being a dangerous workplace, posts about the progress made with decommissioning and improving the work environment at the Fukushima Daiichi NPS (number of posts in second quarter: 8) have been made.
  - Posts by Fukushima Revitalization Headquarters President Ishizaki (number of posts in second quarter: 153).

- Posts explaining safety measures adopted at the Kashiwazaki-Kariwa NPS (number of posts in the second quarter: 7).
- “RC Series” posts explaining the conditions at, and giving other information about, the Fukushima Daiichi NPS (number of posts in second quarter: 9; total number of posts this fiscal year: 17).

- For workers at the Fukushima Daiichi NPS, digital signs have been set up to convey the progress made with decommissioning the reactors. A total of eight signs have been set up mainly in the access control building, welfare building rest center and other places where workers congregate or gather for meetings or breaks. Since these digital signs were set up in July, they have been updated almost daily to show scenes of the building cover being dismantled, field response to typhoons, and convey messages from the Fukushima Revitalization Headquarters.

F: Information Disseminated to Other Countries

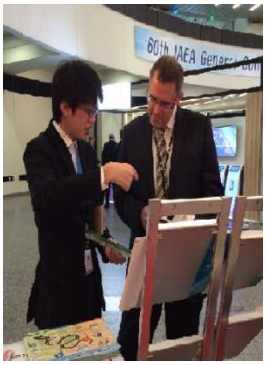
- Exchanges with foreign embassies in Tokyo
  - Risk communicators and the International Affairs Office have continued to collaborate to visit and provide briefings at foreign embassies in Tokyo (during the second quarter, visits were made to the Embassy of Brazil and the Taipei Economic and Cultural Representative Office).
  - The Ambassador and eight employees from the Embassy of South Korea toured the Fukushima Daiichi NPS on August 17 as did two members of the South Korean National Assembly on August 25. Fukushima Daiichi Decontamination & Decommissioning Engineering Company President Masuda, President Ishizaki and risk communicators gave the tours. The Ambassador gave a message of encouragement to the workers and employees.

Visit by the South Korean Ambassador to Fukushima Daiichi NPS

- Email magazines have been sent to over 700 members of the media as well as experts in several countries to communicate information about the progress made with reactor decommissioning and contaminated water countermeasures as well as improvements to the work environment at the Fukushima Daiichi NPS (four email magazines sent in the second quarter).
- At the IAEA Management School (July) and the IAEA General Conference (September), the following explanatory videos were shown: (1) “The 100-Hour Battle at Fukushima Daini” and (2) “Work Place Improvements at the Fukushima Daiichi Nuclear Power Plant.” In addition, at the IAEA General Conference, an English version of the “Monthly 1F” newsletter was given to visitors to the Japan booth.

Video (1) “The 100-Hour Battle at Fukushima Daini”

Video (2) “An Improved Work Place at Fukushima Daiichi Nuclear Power Plant.”



Explanation at the Japan booth at the IAEA General Conference

G: Internal Communication

- As part of TEPCO’s response to the company split following a transition to a holding company system in April, opportunities have been further expanded for exchange between core subsidiaries and the Nuclear Power Division. TEPCO Energy Partner President Kobayakawa and other top managers visited the Kashiwazaki-Kariwa NPS and the Niigata Headquarters to exchange views and tour the facilities (September).

EP top management and Niigata Headquarters personnel exchanging views

- Fukushima Daiichi Decontamination & Decommissioning Engineering Company President Masuda used the company intranet to share the status of progress with decommissioning the reactors at the Fukushima Daiichi NPS with all employees (September).
- Videos explaining news coverage and the progress with decommissioning the reactors have been shown on televisions in the office (16 broadcasts in the second quarter).

[Measure 4-3: Promote and Support Risk Communication Activities]

A: Assembling Knowledge from Other Countries

- Since May, sessions of the Fukushima-West Cumbria Study Group have been held monthly with Sellafield Ltd. in the United Kingdom to learn about each other’s experiences so that TEPCO may support reactor decommissioning program in the communication field and improve our ability to provide information and engage in dialogue with people in the community.
  - At the third session on July 27, Sellafield Ltd. provided a historical account of the company’s reputation.

- At the fourth session on September 29, TEPCO presented examples of our principal efforts to collect information about potential risks from within the company. Sellafield Ltd. provided information about its response to a British TV program about its site (from Sellafield Ltd.'s perspective, the content was negative) and the reaction of local stakeholders.

- Benchmarking was conducted with other companies overseas with respect to community communication (United States: AEP, Southern Nuclear; United Kingdom: Sellafield; France: CEA (Alternative Energies and Atomic Energy Commission), etc.). From various advanced case studies in other countries, TEPCO learned practical methods for communicating information and promoting dialogue that focus on dealing with stakeholders, who have a variety of opinions, in a transparent, sincere and consistent manner.

B: Response to the Core Meltdown Issue

- In order to pass down the lessons learned from the core meltdown issue, case studies were conducted at risk communicator workshops in the first half of the fiscal year about the importance of disclosing information from the perspective of society and giving notifications in a suitable manner in the event of an emergency. In regards to public relations during an emergency, a total of four sessions were held to exchange views among risk communicators and the Social Communication Office (August 5, 17, 19 and 22) following a clarification of the roles played by risk communicators and the Social Communication Office. It was reconfirmed that, during an emergency situation, risk communicators play the role of paying attention to the concerns and interests of society and of the siting communities so that appropriate information is communicated. In the future, during general training exercises, TEPCO will verify whether or not the risk communicators assigned to functional teams are able to behave in a socially sensible manner.

- During the September 29 general training exercise, the following activities were carried out.
  - With respect the Head Office's handling of external parties, the effectiveness of a procedure for making suggestions to have a consistent stance when explaining vocabulary used and responding to harsh requests from external parties based on the external party handling guide was examined. As a result, while handling based on the external party handling guide and the procedure for disclosing a core meltdown were deemed effective, the necessity was found for training personnel who are acting in the absence of the president. In the future as well, TEPCO will continue to verify capabilities through training exercises and reflect the results as necessary in guidebooks and operating procedures to link these efforts to improved external party handling.
  - During an emergency situation, the Social Communication Office collects, organizes and analyzes a variety of information, including that collected from outside experts, and provides this to the external party handling group. In the future, through repeated training and verification, TEPCO will work to improve the competence of our personnel and the methods for collecting information as well as enhance the functions for making suggestions to management.
  - Experts in crisis management were invited to observe the general training. After observing the training, the experts provided advice contributing to the improvement of TEPCO's response in the future, including: *"How about incorporating into a training scenario a case where personnel review what sort of information to provide and when to provide it when the decision has been made to vent the PCV?"*

External Response Coordinator (right) consulting with the Deputy Headquarters Chief (left)

External Response Coordinator (center above) in consultation with the Headquarters Chief (center) and staff

(2) Principal Future Plans

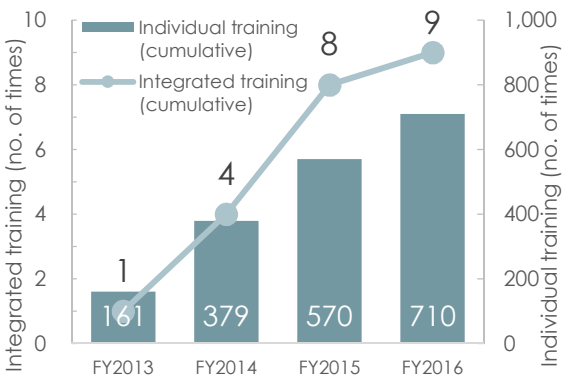
- We will move quickly ahead with improvements and standardization while repeatedly examining our progress through general and individual training and reflecting the lessons we have learned in that training, while always keeping in mind “TEPCO’s Introspection and Promise” that we have made in light of the core meltdown issues.
- To measure KPI pertaining to the ability to promote dialogue (External 1) with regard to TEPCO’s dissemination of information, we plan to have third parties conduct survey assessments during the third quarter. In addition, we will begin deliberating the details of and designing a system for KPI related to the ability to promote dialogue (External 2) that leverage the opinions that outsiders have given to TEPCO.
- Website content will be enhanced to communicate safety measures being implemented at the Fukushima power stations and the Kashiwazaki-Kariwa NPS in an easy-to-understand manner. Also, we will work to improve communication training for risk communicators and other personnel involved in public relations to improve their abilities.
- TEPCO is planning to start a new “RC Series” on the company’s official Facebook page in October that will explain safety measures at the Kashiwazaki-Kariwa NPS and other important information.

2.5 Measure 5: Enhancement of Power Station and Head Office Emergency Response Capabilities

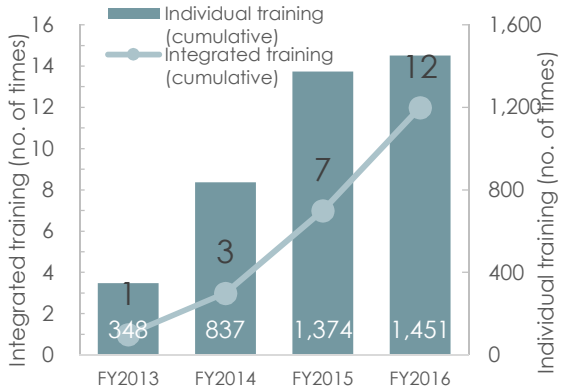
(1) Second Quarter Achievements

[Measure 5: Enhance the Emergency Response Capabilities (Organizational) of Power Stations and the Head Office]

- In accordance with the Mid- to Long-Term Plan formulated in March of this year, TEPCO has been conducting emergency response training, but we are also conducting training that includes new countermeasures in light of the core meltdown issues.
- Problems have been pointed out with regard to giving notification of and disclosing core meltdowns, so in addition to the measures to strengthen TEPCO's emergency response capabilities that have been implemented to date, we are also working on additional measures concerning the "effectiveness of our handling of emergencies" and the "manner in which public relations should be conducted during an emergency."
  - As additional measures for the "effectiveness of our handling of emergencies," TEPCO frequently conducts training that is based on rigorous scenarios, such as those necessitating the intermittent notification of events, and we have developed training for nuclear disaster prevention personnel and reflected the results in skill management.
  - As additional measures for the "manner in which public relations should be conducted during an emergency," the General Manager of the Nuclear Power and Plant Siting Division has made a technical decision about how terms are used, and has made it clear that the external response coordinator shall give suggestions to the president on how to deal with external parties. TEPCO has begun the practice of recording notifications and conversations and has confirmed through training based on scenarios where harsh requests are made by external parties that these measures are effective.
- TEPCO has repeatedly conducted individual and general training to improve the organization's ability to respond to an emergency. The following charts show the number of times training sessions have been held.



<Fukushima Daiichi NPS>



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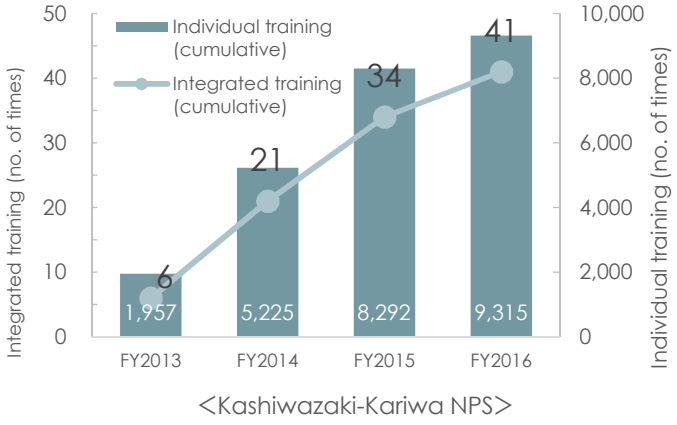


<Kashiwazaki-Kariwa NPS>

- Fukushima Daiichi NPS
  - At the Fukushima Daiichi NPS, the issues identified during previous training sessions were taken into account when revising the layout of the emergency response center inside the main anti-earthquake building. In particular, the planning/information team and technical team, both of which deal with a large amount of data, have been placed in close proximity to make it easier to share information between functional teams within the emergency response center.
  - Also, training is being given to personnel to be dispatched to off-site centers (in Minamisoma city and Naraha town) in Fukushima Prefecture, which were opened in July, and the personnel have actually visited the off-site centers.
  - The general training scheduled for August was postponed because of typhoons and a large amount of rain, but TEPCO will confirm the effectiveness of these improvements in general training scheduled for late October.
- Fukushima Daini NPS
  - Fukushima Daini continued to conduct general training based on various accident scenarios in order to strengthening its capability to respond to a disaster triggered by an event other than an earthquake (August 31 and September 28).
  - During general training, exercises were conducted on responding to accidents resulting from the crash of a large aircraft (August) and sabotage by terrorists (September). In order to make the scenarios more diverse, the training assumed that the incident occurred on a holiday, in the evening or at a time other than during the day on a weekday, and incorporated harsh scenarios in light of the core meltdown issues, such as handling a discharge of radioactive material outside of building or a loss of functions in reactor control rooms with a limited number of first responders.
  - During scenarios with a limited number of first responders it was noticed that there are some issues with how roles are divided amongst the limited number of first responders.
  - The individual training held in July was based on the occurrence of a tornado. Issues were identified with regard to the criteria for determining EAL[16] when such an event occurs, the method of transitioning to nuclear emergency response procedures following the touchdown of a tornado, and sharing information within headquarters after personnel have gathered.

[16] Emergency Action Level: standard that enables personnel to make objective determinations about warnings, facility and site emergency conditions and an overall state of emergency.

- Kashiwazaki-Kariwa NPS
  - General training was conducted on July 29, August 24 and September 29.
  - Training was conducted without giving advanced notice of the scenarios to the trainees. The scenarios simulated a variety of severe plant conditions such as core damage similar to that experienced during the Fukushima Daiichi nuclear accident, and training was conducted on responding on a holiday to sabotage by terrorists.
  - The general training held in July focused on protective measures, the initial response by plant operators and the evacuation of personnel and visitors in the event of sabotage by terrorists on a holiday.
  - The general training held in September consisted of joint training between the Head Office and the Kashiwazaki off-site center based on a harsh scenario where multiple units are simultaneously affected by an earthquake. As multiple EALs occur the core is damaged, which is the worst case scenario, the containment vessel is vented and radioactive substances are discharged. It was confirmed that important decisions to handle a rash of serious EALs, such as loss of reactor cooling function and abnormal increases in containment vessel pressure, could be made quickly.

Personnel responding during training

Kashiwazaki-Kariwa Emergency Response Center

Accident prevention training at an off-site center

- Head Office
  - At the Head Office, training was conducted based on the scenario that an accident occurred at the Kashiwazaki-Kariwa NPS. The theme of the training was “mid-to long-term provision of emergency supplies to the power station,” which is the role of the Head Office emergency response center, and training was conducted on having a helicopter airlift an auxiliary relay necessary for restoring power transporting one small generator by truck over land (August 10).
  - If a power station requires emergency supplies, it will be necessary to coordinate between not only the Head Office and power station personnel, but

also other parties including helicopter companies and manufacturers (suppliers) etc., so training on actually transporting supplies was conducted along with training on how information is conveyed between these parties.

- An issue to be addressed is the communication network failure around Kashiwazaki Energy Hall, which is the base of operations for supply trucks, hindering telephone communication between relevant parties. It was confirmed that multiple communication tools, such as PHS wireless phones in addition to cell phones, are needed.
- The joint training with the Kashiwazaki-Kariwa NPS (September 29) was based on a scenario where harsh demands were made by external parties, the Deputy Chief Nuclear Officer had to make a technical decision on how to use certain terms. During training the president was required to steadfastly refuse a strong demand from government officials (simulated) to directly contact the site superintendent.
- Both video and audio are used to record what is said during teleconferences between power stations and the Head Office during an emergency. These recordings are used during training as well to reflect on what transpired and make improvements. Also, in light of the core meltdown issue, this recording capability makes it possible to keep record of what transpired during a situation and verify the events that unfolded. Therefore, procedures will be made on recording interactions between the national and local governments across the nuclear disaster prevention network set up at the Head Office so that official notifications and conversations, which are very important sources of information when dealing with external parties, are recorded.

Materials being transported by helicopter
(Tokyo Heliport, August 10)

Exchange between the restoration and procurement teams
(Head Office, August 10)

President answering a call from a government official (simulated)
(September 29)

President and external response coordinator consulting on the communication of socially-sensitive information
(September 29)

(2) Principal Future Plans

- After the personnel reassignments in July, some people were transferred out of the emergency response centers thereby resulting in a drop in skill level. A training framework will be constructed soon so that the emergency response capability of the emergency response centers does not decline even when personnel have been replaced on account of changes to personnel assignments, etc.
- The Mid-to Long-Term Plan, which includes plans for the current fiscal year, will be revised in the third quarter to take into account the Kumamoto earthquake, handling of the core meltdown issues and other matters that should be addressed during the term.
- During the third quarter, emergency training exercises that focus on reports given to the Nuclear Regulatory Agency will be held at the Fukushima Daiichi NPS and the Fukushima Daini NPS. The results of last fiscal year's emergency training exercises were released to the public in June of this year by the Nuclear Regulatory Agency[17], and TEPCO will strive to make improvements to information sharing using plant data display systems, and to evacuation support for siting communities using systems that predict and assess radiation levels around the power station in an effort to enhance our emergency response capabilities.

2.6 Measure 6: Development of Personnel for Enhancing Nuclear Safety

(1) Second Quarter Achievements

[Measure 6-1: Improve In-House Technical Skill to prevent Severe Accidents]

- Maintenance Personnel Initiatives
  - Fukushima Daiichi NPS

    In order to enhance emergency response capabilities, the Fukushima Daiichi NPS has continued to work to provide training that enables personnel to acquire practical skills by directly managing projects (operating power supply trucks, training on connecting electrical cables, training on operating heavy machinery, etc.).
  - Fukushima Daini NPS

    In order to improve emergency response capabilities at the Fukushima Daini NPS, personnel have been assigned to one of four teams ((1) Debris Removal and Road Restoration Team, (2) Power Generator Switchover Team, (3)Temporary Cable Connection Team, and (4) Cooling Water Pump Restoration Team), and have been constantly practicing to improve their skills. In addition, to acquire the skills for using drones to confirm the extent of damage on-site and the access routes necessary for repairs, an initiative that began in the first quarter, training has been conducted with increasing difficulty transitioning from indoor flying training to outdoor flying training. TEPCO will continue to conduct training while incorporating originality and ingenuity so that we may respond flexibly under a variety of conditions.

[17] Nuclear Regulation Authority 6th Nuclear Operator Disaster Prevention Training Report Session
https://www.nsr.go.jp/disclosure/committee/yuushikisya/bousai_kunren/20160622.html

Outdoor drone flying training

- Kashiwazaki-Kariwa NPS

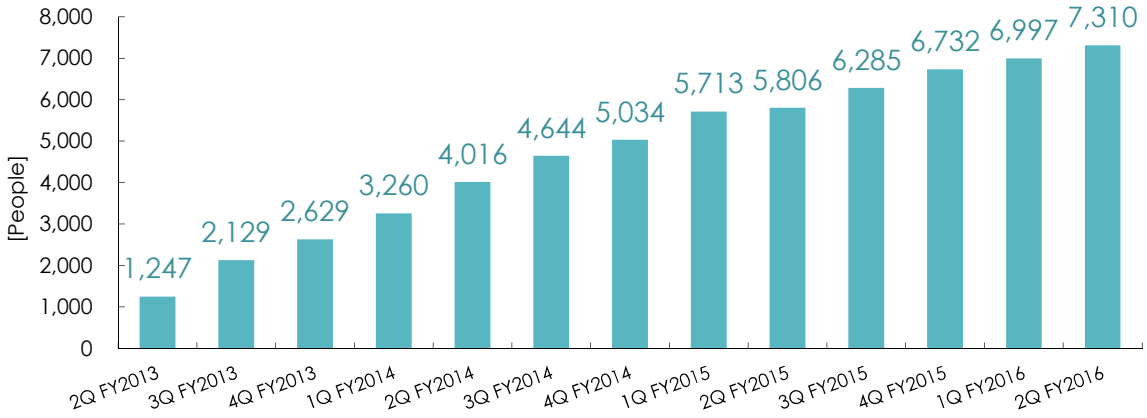
  To improve emergency response capabilities, training has been conducted on assembling and disassembling scaffolding, welding, cutting and grinding metals, as well as the disassembly and assembly of horizontal pumps and electric motors so that personnel are able to respond no matter what sort of damage has been sustained and no matter where the damage is. TEPCO will continue to repeatedly conduct training to maintain and improve our technical capabilities.

Welding training

Grinding training

Training in assembling and disassembling scaffolding

Dummy load for training in the use of power supply cars to supply electricity



Change in the number of maintenance personnel undergoing direct-management training
(Total for Fukushima Daiichi NPS, Fukushima Daini NPS and Kashiwazaki-Kariwa NPS)

- Operator Initiatives
  - Fukushima Daiichi NPS

    In FY2014, operators at Units 5 and 6 started training on fire engines and power supply trucks. As of the end of September 2016, in contrast to a goal of 34 workers (80% of the 41 field personnel), 40 operators (enrollment ratio: 117%, a decrease of one person since the first quarter) have been trained and certified on fire engine operation, and 39 workers (enrollment ratio: 114%, a decrease of one worker since the first quarter) certified on operating power supply trucks. Operators at Units 1-4 have prioritized the acquisition of skills related to the operation management of facilities, such as the contaminated water treatment facility and spent fuel common pool.
  - Fukushima Daini NPS

    Fire engine and power supply truck training began in FY2014. As of the end of September 2016, in contrast to a goal of 22 personnel (80% of the 27 field personnel), 22 operators (enrollment ratio: 100%, a decrease of three since the first quarter) have been trained and certified on fire engine operation and 21 (enrollment ratio: 95%, a decrease of four since the first quarter) workers have been certified on power supply truck operation.
  - Kashiwazaki-Kariwa NPS

    Instructors have been trained within shifts to continue to provide training on the startup of power supply trucks. As of the end of September 2016, in contrast to a goal of 102 personnel (80% of the 127 field personnel), 117 workers have been trained and certified on fire engine operation (enrollment ratio: 115%, a decrease of 13 trainees compared to the first quarter) and 119 workers have been certified on power supply truck operation (enrollment ratio: 117%, a decrease of 15 trainees compared to the first quarter). In addition to the ordinary startup of power supply trucks, training has also been conducted on manually opening and closing air intakes and exhaust dampers when such equipment has failed. Furthermore, TEPCO has also worked to cultivate leaders with skill certifications within operator training teams, and as of the end of September 2016, 117 personnel had been trained (increase of 8 since the first quarter).

    Along with increasing the number of operators for emergency response, TEPCO has strived to improve the skills of not only maintenance personnel, but also operators so that they are able to diagnose equipment. These personnel have been acquiring in-house certifications and qualifications on equipment diagnosis and are in the process of collecting data through the direct management of approximately 140 pieces of rotating equipment at Unit 7. This has improved our field capabilities through the acquisition of a broad

range of knowledge about equipment and facilities and a heightened interest in equipment status.

Activities for improving operators' direct-management technical capabilities (number of personnel acquiring skill certification)

Power station	Fire engine		Power supply trucks	
	No. of personnel obtaining skill certification (increase/decrease from previous quarter)	Enrollment ratio *	No. of personnel obtaining skill certification (increase/decrease from previous quarter)	Enrollment ratio
Fukushima Daiichi NPS	40 (-1)	117%	39 (-1)	114%
Fukushima Daini NPS	22 (-3)	100%	21 (-4)	95%
Kashiwazaki-Kariwa NPS	117 (-15)	115%	119 (-13)	117%

- Review of Training for Emergency Responders
  - So that emergency responders are able to act more appropriately during an emergency situation, TEPCO decided to revise the content of training for emergency responders to increase their understanding of how other teams, and the organization as a whole, respond to an emergency in addition to the roles of individual responders and the tasks that they carry out. We are also working to revise e-learning training materials.

- Skill Management Using Tests Measuring the degree of Understanding of Emergency Response Manuals
  - TEPCO held manual study sessions for all emergency response personnel to learn about the different emergency response manuals and the background behind such manuals, as well as the important stipulations in them. Tests were then given to measure the degree of understanding (Head Office: 12 sessions; Fukushima Daiichi NPS: 16 sessions; Fukushima Daini NPS: 9 sessions; Kashiwazaki-Kariwa NPS: 21 sessions). All emergency responders had completed this training course by the end of September.

[Measure 6-2: Improve Operational Specialization]

- Training and Assignment of System Engineers
  - In order to promptly and safely stabilize a reactor when there is an emergency, personnel need to quickly ascertain the circumstances of the accident and make accurate decisions. For this reason, engineers are being trained to be proficient in design, laws & regulations, standards, operation, maintenance and other areas pertaining to facilities important for safety.
  - System engineers formulate system monitoring programs, which stipulate monitoring targets and standards for monitoring system performance degradation, in order to monitor whether or not primary plant systems are fulfilling design requirements. These monitoring activities also serve to identify areas in which reliability can be improved, which leads to overall improvements.
  - We currently have three systems engineers. During the second quarter, all three successfully passed interviews verifying their competence in one new system each, thereby expanding the number of systems each is in charge of to two each[18] (six systems are monitored by three system engineers). Going

[18] The expansion has been for three systems: fuel transfer system on the emergency diesel generator system, residual heat removal system and main control room ventilation system.

forward, operation-specific training[19] will continue to further increase the number of systems that system engineers can be responsible for. Also, TEPCO will continue to secure and train required personnel so that five system engineers can be assigned to each reactor. To reach this goal of having five system engineers assigned to each reactor, TEPCO will continue to secure and train necessary personnel. Under the education and training program for developing system engineers, after trainees undergo orientation training to acquire basic knowledge, they then are provided with operation-specific training for each system. Lastly, they are interviewed to verify their competence and confirm whether or not they possess the skills to be responsible for a given system.

Presentation on an assigned system during an interview verifying the engineer's skills

[Measure 6-3: Maintain and Improve Technical Skills Necessary for Operations]

- Construction of Education & Training Programs for Safety Departments
  - Training for safety departments had previously been given on-the-job, but this caused discrepancies between individuals in terms of the degree of proficiency. Since the Fukushima nuclear accident safety departments need to play a bigger role in handling new safety regulation compliance inspections, leveraging probability risk assessments (PRA) and handling emergencies, so it has become even more necessary to maintain the advanced skills of those engaged in nuclear safety and ensure that such skills are passed down through the cultivation of human resources. Therefore, in addition to the traditional divisions of operations, maintenance work, radiation & chemical control, and fuel, TEPCO has added the additional field of nuclear technology (safety) in which we work to improve the skills and abilities of personnel. We are currently developing education and training programs, and plan to begin this training in the second half of the fiscal year.
  - The objectives of training, training materials and test problems are being revised for those tasks that require certification so that training can be more directly applied to actual work with the goal of completing the review during the fiscal year.

[19] Operation-specific training refers to a series of proficiency training that personnel undergo through actual operations on specific systems, such as constructing system monitoring programs, conducting monitoring operations, and simulator training.

- Improvement Activities by CFAMs[20] & SFAMs[21]
  - CFAMs and SFAMs began ascertaining excellence achieved in other countries, identifying key issues to be resolved, and formulating and implementing improvements for each field of expertise (April 2015). Since mid-fiscal 2015, TEPCO has invited expert teams from overseas to provide advice and guidance about activities that permanently-posted CFAMs and SFAMs engage in, and we have been working to accelerate improvements. To ensure that improvement activities move forward more effectively and efficiently, TEPCO organized the Management Model Project, a dedicated project team comprised of several TEPCO and US experts, in July of this year. The project has reviewed measures and formulated action plans aimed at resolving issues in the areas of operation management, maintenance management, personnel development, radiation management, engineering, improvement promotion, and so on.

- New Employee Training
  - First-term group training was conducted from April 19 to August 31 for the 109 new employees assigned to the Nuclear Power Division (59 at Fukushima Daiichi NPS and Fukushima Daini NPS; 50 at Kashiwazaki-Kariwa NPS). This was the first time since the accident that training was held for new employees that joined Fukushima in April
  - The objective of the curriculum of first-term group training is to enable new employees to understand reactor fundamentals, get an overview of the facilities and how to read schematics, as well as gain knowledge about radiation safety to avoid the countless potential risks in the field and protect themselves from accidents.
  - Tours of the Fukushima Daiichi NPS and the Fukushima Daini NPS allowed participants to reaffirm the magnitude and severity of the Fukushima nuclear accident, thereby increasing the trainees' awareness of safety and motivation to learn about nuclear safety.

Field exercise in constructing P&ID charts (Kashiwazaki-Kariwa NPS)

KYT[22] basics and hazard awareness training (Kashiwazaki-Kariwa NPS)

[20] Corporate Functional Area Manager: Leader at Head Office that aims to achieve the world's highest level of excellence for each area of work at the power station

[21] Site Functional Area Manager: CFAM counterpart at a power station

[22] KYT: Abbreviation of the Japanese "kiken yochi toreeningu (hazard anticipation training)"

Presentation of assignments
(Fukushima Daini NPS)

Classroom training in managing
movement of goods
(Fukushima Daini NPS)

[Measure 6-4: Understanding the Basics of Nuclear Safety]

- Deploying Experts
  - TEPCO has been deploying experts who are well-versed in design requirements and technical guidelines for safety systems in a total of 20 areas, including fire protection, seismic design, electrical separation and main control rooms (18 assigned to the Head Office and 44 to the power stations)[23]. During the second quarter, five personnel were certified in eight new areas to serve as experts in the fields of programs and systems. TEPCO will continue to work to deploy experts in all 71 areas.
- Learning Safety Design Rationale and Developing In-House Experts
  - As part of on-the-job training for daily operations, TEPCO has used the intranet to provide teaching materials to all personnel in the Nuclear Power Division to learn the important points of safety design as well as key information from previous operation experience (“connection between safety design and daily operations,” “lessons learned from the Fukushima nuclear accident,” etc.) so that personnel can study in their assigned offices.
  - TEPCO has instituted a policy for systematically training design engineers, system engineers and program engineers in order to increase the technical capabilities of the entire Nuclear Power Division. Consideration is being given to training each type of engineer with the requirement that they also possess expert skills.

[Measure 6-5: Improvement of Management Ability]

- Since FY2015, TEPCO has been providing training for middle managers from the standpoint that middle-managers need to be aware of, and have the ability to thoroughly fulfill, their responsibilities jointly with nuclear power leaders while remaining sufficiently aware of their own responsibilities to nuclear safety.
- Group Manager Training
  - Training for group managers and shift supervisors (managerial level) is provided so that they can understand and acquire the behaviors that embody nuclear safety culture as well as the values that are to be steadfastly maintained as a leader and necessary for improving nuclear safety. During the second quarter, training was provided to 18 current group managers over a three-day period beginning on August 19 (total of 71 personnel have undergone the training this fiscal year).

[23] Multiple personnel are assigned to one field, and each person is put in charge of multiple fields.

- Training for Power Station General Managers
  - Training has been provided to power station general managers to once again gain greater awareness of their role and mission as a “general manager” in charge of about 250 people, and accelerate nuclear safety reforms.
  - During the follow-up to training for 35 power station general managers during the second half of FY2015, nuclear power leaders reviewed the action plans that each general manager created individually after the training and the progress that was made in executing these plans. The follow-ups were completed for all power station general managers by the beginning of July.
  - Since the second quarter, training has been provided in accordance with the number of years a person has served as a power station general manager (newly appointed, second-year, third-year, etc.) due to the high expectations for leadership and performance demanded of power station general managers and because it is expected that they will be able to solve problems not only in their department, but also problems that involve other departments and the power station as a whole as they gain more and more experience as a general manager.

[Measure 6-6: Improve Systems for Personnel Development and Education & Training]

- Status of Nuclear Human Resources Training Center Activities
  - On August 26, with the aim of establishing the Nuclear Human Resources Training Center, TEPCO filed an application with the Nuclear Regulation Authority to amend the technical specifications for establishing the Nuclear Human Resources Training Center (announcement released on the same day[24]).
  - The Nuclear Human Resources Training Center will work to train personnel in line with its stated mission of “contributing to the continuing creation of unparalleled safety by providing world-class education and training programs and a training environment to develop human resources.”
  - The Nuclear Human Resources Training Center will construct education and training programs for each department based on the systematic approach to education and training described hereinafter, and will also work to develop new training in addition to such programs. For example, we are developing training topics pertaining to “Training Sessions to Learn about Past Problems,” which utilize OE data so that participants gain a basic knowledge about responding to problems and learn the points to be remembered when preparing reports on problems. In addition, we are creating training programs to increase the number of people who obtain certifications necessary for power station management. In August 2016, we commenced in-house training to enable trainees to get certified as chief reactor engineers. So far, five sessions have been held. We have also initiated a review on promoting the certification of licensed chief electrical engineers.
  - To centrally manage education and training provided by the Nuclear Human Resources Training Center as well as formulate and support a long-term personnel development plan, we are deliberating a plan that would introduce a personnel development database in FY2017. In addition to adding education and training achievements to this database, information about occupational duties (skills and qualifications for becoming a manager, occupational duties, experience, etc.) will be included so that the skills and qualifications of each individual can be managed.
- Status of Construction of SAT-Based Education and Training Programs
  - The Nuclear Human Resources Training Center will adopt the Systematic Approach to Training (SAT), which is recognized as a best practice internationally, for providing education and training programs necessary for personnel development throughout the entire Nuclear Power Division.

[24] http://www.tepco.co.jp/press/release/2016/1319702_8626.html

- Designing SAT-based education and training programs are compiled in lesson plans, and constructed education and training programs are compiled into a systematic education and training map. The lesson plans are used to share information with relevant parties by clearly specifying learning objectives, explaining content (points taught in classes, test question points, etc.), as well as time allotments, and other aspects related to training requirements. The Nuclear Human Resources Training Center will maintain and manage the lesson plans, thereby enabling the programs to be continually improved and improving the quality of education and training.
- The systematic education and training map has been created to share information and provide a visual map of the new education and training system for operations, maintenance, nuclear safety, radiation and chemical control, and fuel management as well as other common areas.
- Preparations are moving forward to initiate new education and training programs that are lesson plan-based in each area in FY2017.
- Some SAT-based education and training programs have been developed ahead of time, and put into use. For example, educational and training texts from the United States were used to develop programs providing basic engineering training (mathematics and electricity) in September 2016, and put into use during intermediate training for new employees in October. Basic engineering training (machinery) is scheduled to be provided during a latter phase of new employee training.
- In the operations field, while referencing the manner in which SAT-based education and training programs are administered by nuclear operators in the United States, TEPCO has continuously worked to make improvements, such as adding data about actual equipment at each plant to the training content and clarifying which skills should be acquired through training in regards to plant equipment. Lesson plans are also being developed to educate and train operators on response operations.
- In the maintenance field, while similarly referencing the manner in which SAT-based education and training programs are administered by nuclear operators in the United States, TEPCO has created a list of training requirements that trainees should fulfill for each operation as well as an education/training system map for the maintenance field. TEPCO is proceeding to prepare lesson plans for each program based on the training list with the aim of creating new programs and reassessing existing ones.
- With regard to nuclear safety, as mentioned in the section on the status of revamping training for technical certifications, lesson plans are being developed on “overview of nuclear safety,” “risk assessments,” “safety assessments (safety analysis),” and other education and training topics, and training is scheduled to begin in the second half of FY2016.
- Education and training topics have been revised for radiation and chemical control by referencing texts used by nuclear operators in the United States. The plan is to prepare lesson plans for each subject based on these revisions.
- Lesson plans are being created for fuel management upon checking the content of skill certification training and OJT to date and revising education and training topics.

(2) Principal Future Plans

[Measure 6-1: Improve In-House Technical Skill to prevent Severe Accidents]

- In the third quarter, e-learning will begin to train emergency responders. Also, e-learning will be used to continue to provide training periodically on emergency response manuals and other such materials, as well as carry out proficiency tests and manage competency.

[Measure 6-2: Improve Operational Specialization]

- TEPCO plans to advance development of system engineers so that the three current system engineers will be in charge of five systems each by the end of March 2017. Also, orientation training and operation-specific training will proceed for two new personnel who will be put in charge of one system each by the end of March 2017. Through these efforts, system engineers will be trained for a total of 17 systems by the end of March 2017.
- Moreover, by the end of FY2017, TEPCO's aim is to train system engineers (total of 10) on approximately 40 systems. In the future, we will continue to secure and train the necessary personnel with the goal of assigning five system engineers to each reactor.

[Measure 6-4: Understanding the Basics of Nuclear Safety]

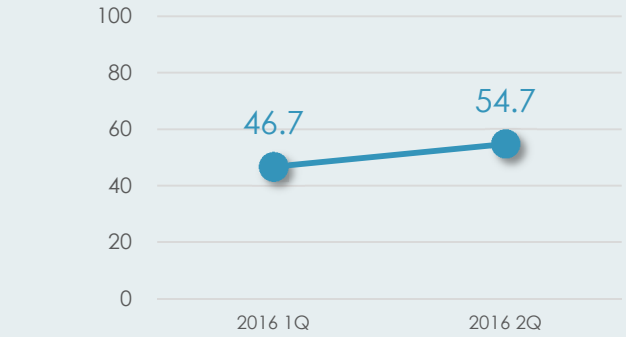
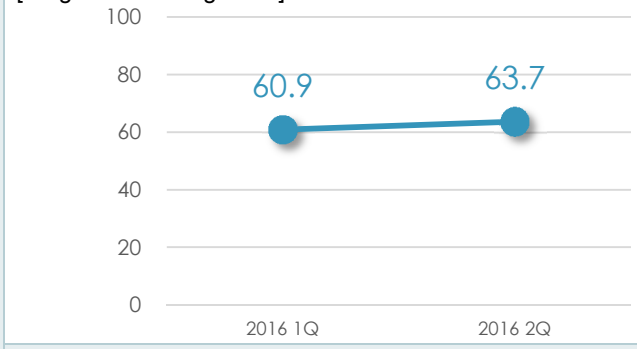
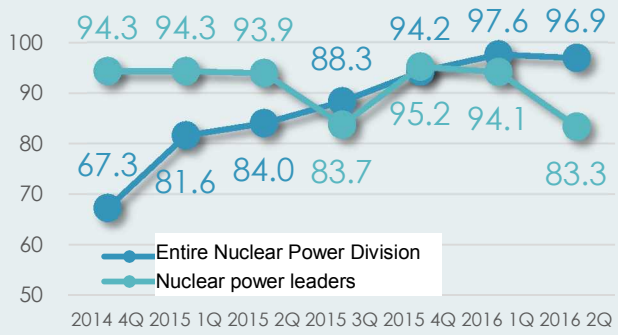
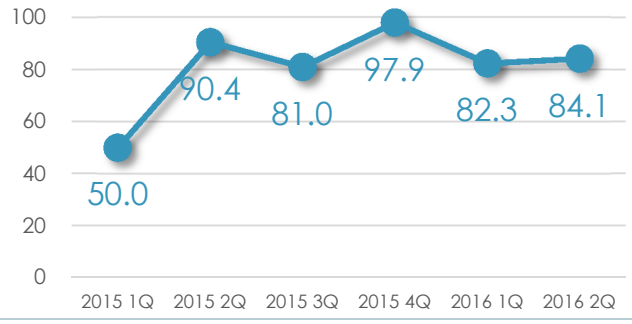
- TEPCO will confirm the competency of experts in an additional 43 areas (total of 71 areas) in order to deploy them accordingly.

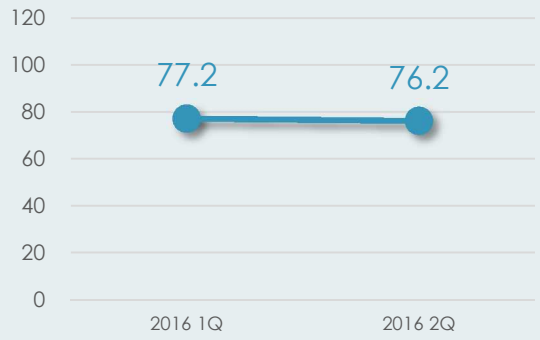
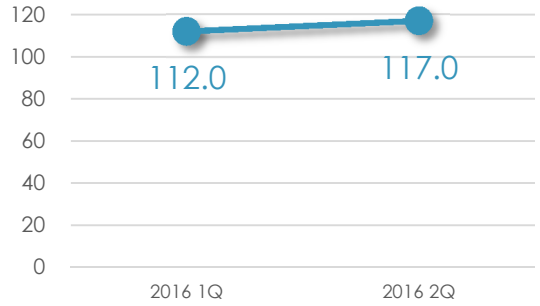
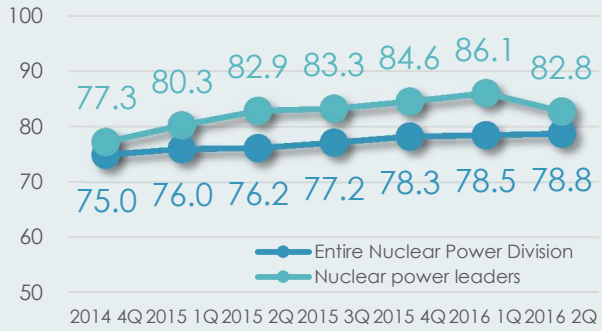
[Measure 6-6: Improve Systems for Personnel Development and Education & Training]

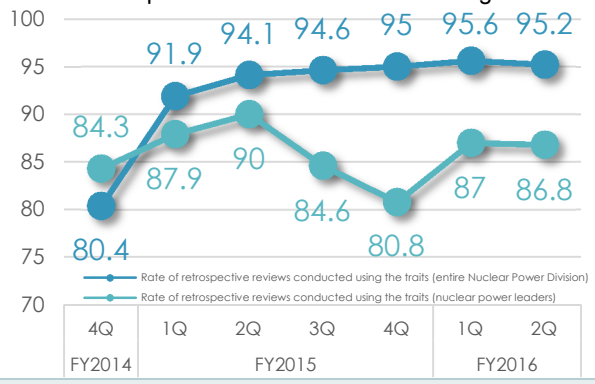
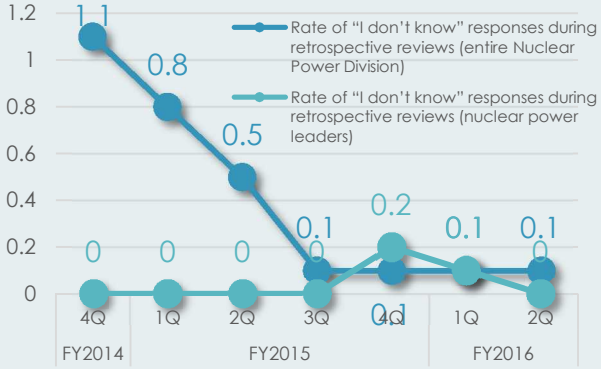
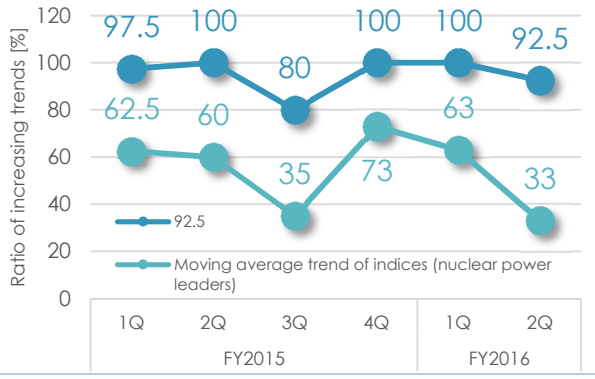
- In order to improve the technical capability of the organization, TEPCO is preparing to establish an engineering center. TEPCO has been considering restructuring departments based on required functions, such as strengthening our work management functions, which have been weak. TEPCO will make improvements to engineering by clarifying the functions and tasks applicable to engineering, establishing a department for performing these functions and tasks, and addressing these issues in intensive manner.

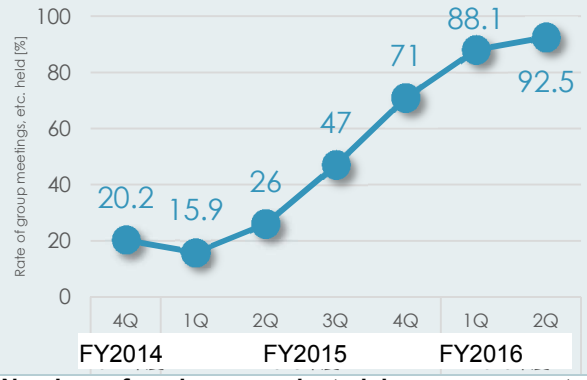
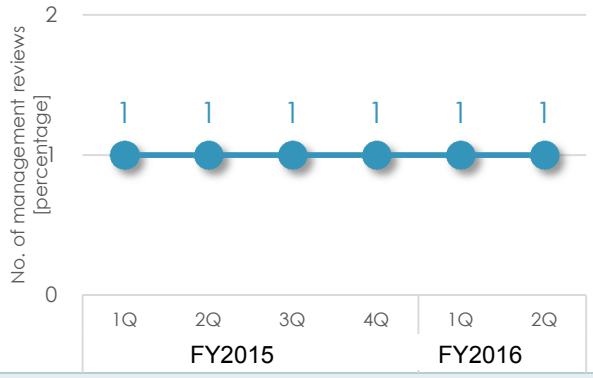
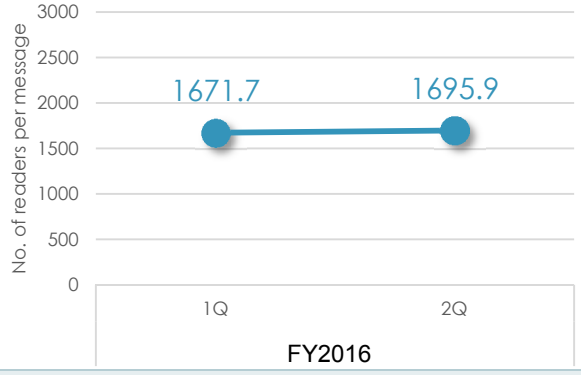
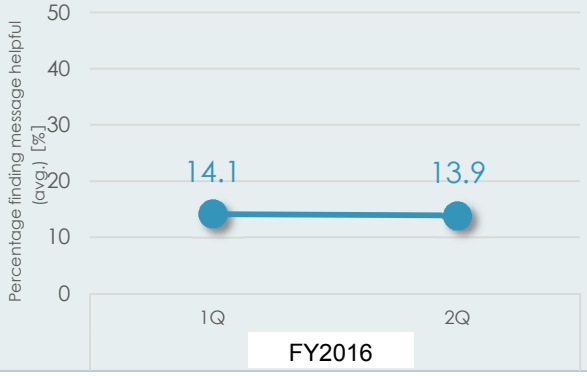
2.7 Evaluation of Degree of Nuclear Safety Reform Realization

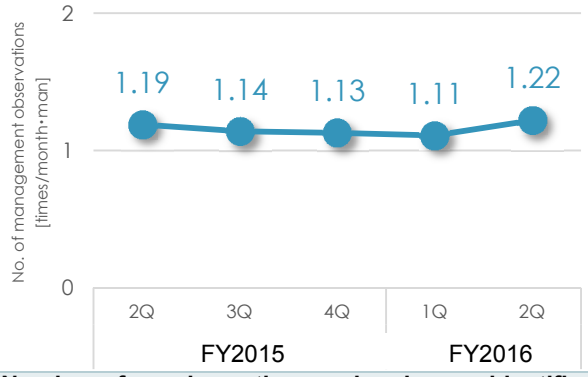
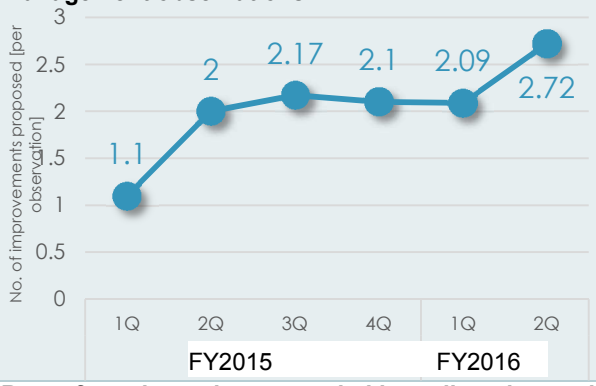
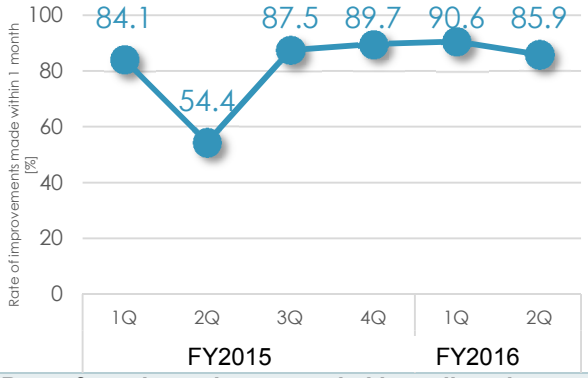
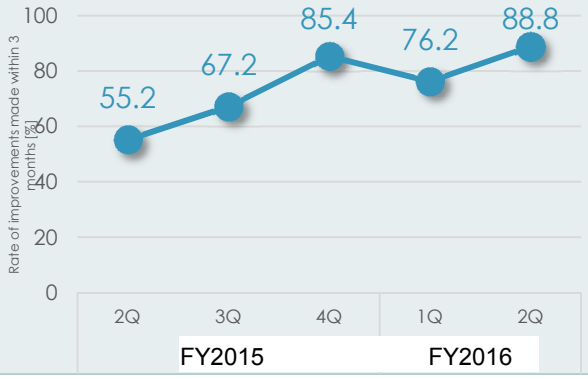
(1) Status of Nuclear Safety Reform KPIs and PIs

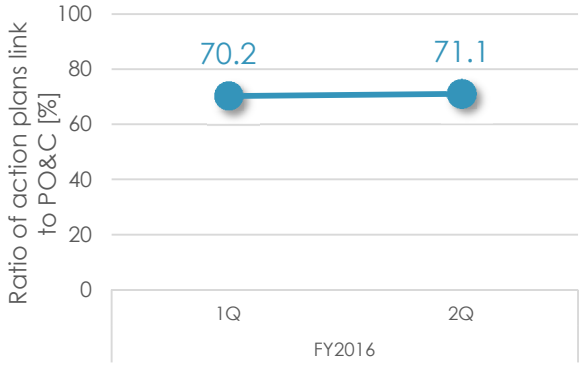
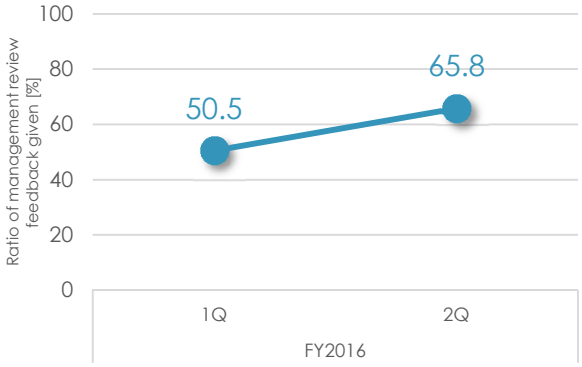
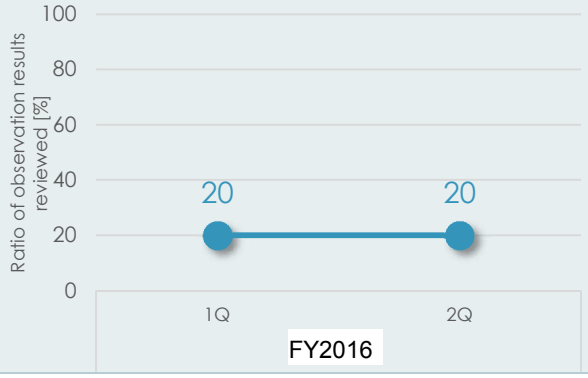
	Nuclear Safety Reform KPI	FY2016 1Q Achievement
Safety awareness KPIs	Behavior of nuclear power leaders [Target: Increasing trend] 	54.7 points
	Improve safety awareness throughout the entire Nuclear Power Division [Target: Increasing trend] 	63.7 points
	REF: Traits [Target: 70 points or higher] 	96.9 points (entire Nuclear Power Division) 83.3 points (nuclear power leaders)
	REF: M&M [Target: 70 points or higher] 	84.1 points

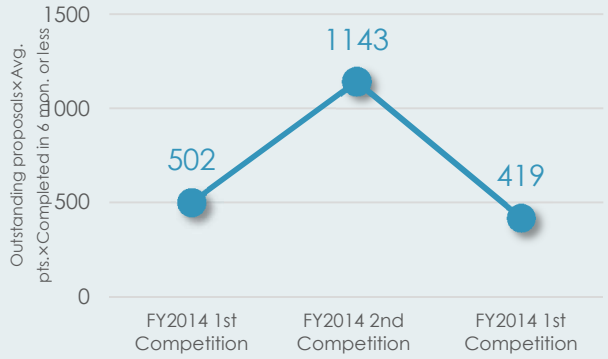
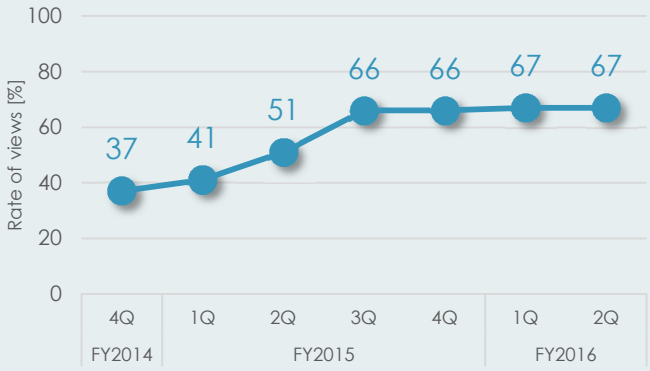
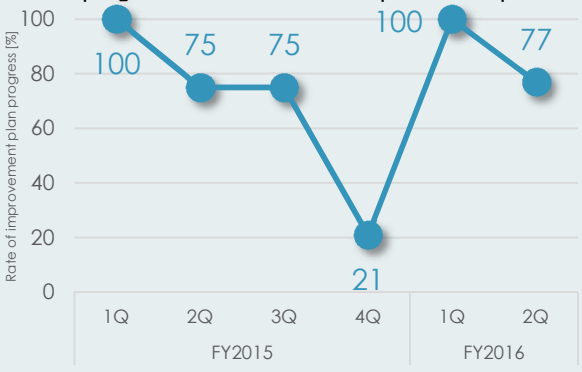
Nuclear Safety Reform KPI		FY2016 1Q Achievement
Technical capability KPIs	During non-emergency times [Target: 100 points or higher by end of FY2016] 	76.2 points
	During emergency times [Target: 120 points by end of FY2016] 	117 points
Ability to promote dialogue KPIs	Internal [Target: Increasing trend] 	78.8 points (entire Nuclear Power Division) 82.8 points (nuclear power leaders)
	External [Target: Positive in comparison to the previous year] <FY2015 (compared to FY2014)> Quality and quantity of information communicated +0.9 points Stance and awareness of listening to and providing information to the public +1.0 point	Assessed in fourth quarter

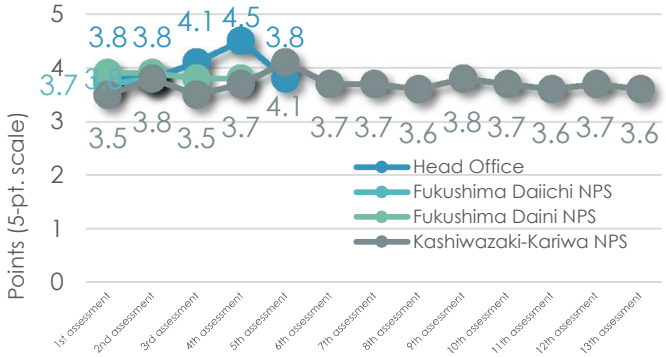
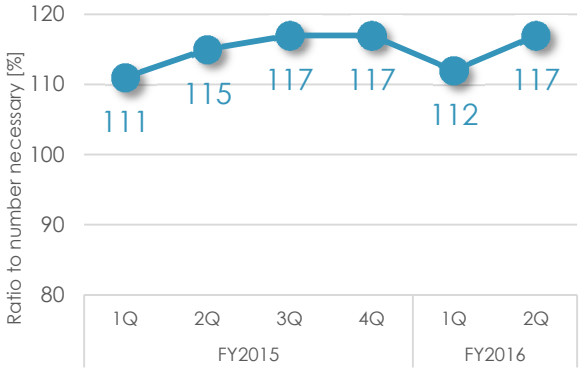
Nuclear Safety Reform KPI	FY2016 2Q Achievement *1	Target
Measures 1, 2		
1. Rate of retrospective reviews conducted using the traits 	Overall: 95.2% Nuclear power leaders: 86.8%	100% (excluding deployments, temporary transfer or long-term recuperation)
2. Rate of "I don't know" responses voiced during retrospective reviews 	Overall: 0.1% Nuclear power leaders: 0%	10% or less
3. Moving average trend of indices (percentage of indices showing an increasing trend) 	Overall: 92.5% Nuclear power leaders: 33%	Increasing trend

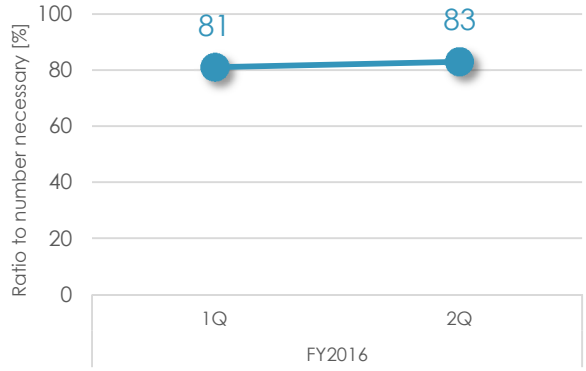
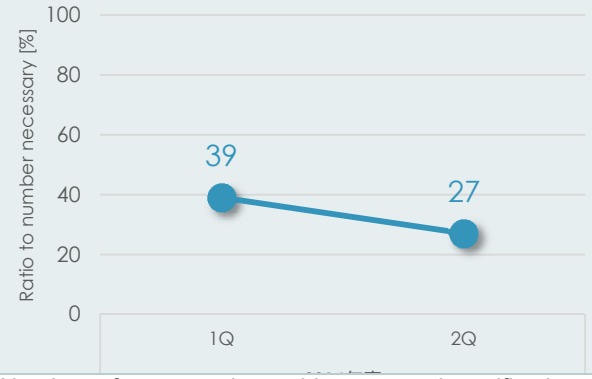
Nuclear Safety Reform KPI	FY2016 2Q Achievement *1	Target
4. Ratio of groups discussing the results of retrospective reviews 	92.5%	Increasing trend (Retrospective review results discussed once or more per cycle)
5. Number of reviews conducted by management regarding results of retrospective reviews 	1 time/quarter・organization *Second quarter review conducted at safety meeting on October 14	1 time/quarter・organization (Power station unit)
6. Communication of messages about nuclear safety by nuclear power leaders	2 times or more/month	2 times or more/month
7. Number of readers per message 	Increasing trend/1695.9 readers (53%) (as of end of August)	Positive increase in number of readers per message/1,600 or more
8. Average percentage of readers finding message “helpful” 	Decreasing trend/13.9% (as of end of August)	Positive increase in average percentage finding message “helpful”/50% or more

Nuclear Safety Reform KPI	FY2016 2Q Achievement *1	Target
9. Number of power station management observations conducted by management 	1.22 times	Numerical target set for each organization
10. Number of good practices or key issues identified through management observations 	2.72/observation	1 or more/ observation
11. Rate of good practices extended laterally or issues improved within one month 	85.9%	70% or more
12. Rate of good practices extended laterally or issues improved within three months 	88.8%	100%

Nuclear Safety Reform KPI	FY2016 2Q Achievement *1	Target
13. Ratio of action plans under operation plans that are linked to Measures 3, 5 and 6, or PO&C and for which quarterly quantitative targets are set 	71.1 points	70 points or more
14. Ratio of action plan targets achieved under operation plans	41.4 points (1Q achievements)	50 points or more (50 points for progress as planned)
15. Ratio of MO feedback provide 	65.8%	100%
16. Ratio of organizations reviewing observation results from management observations 	20%	1 time/quarter ・ organization (power station unit)

Nuclear Safety Reform KPI	FY2016 2Q Achievement *1	Target
Measure 3		
1. Number of proposals entered in the Safety Improvement Proposal Competition times the average points assessed times the ratio of outstanding proposals completed within 6 months 	1st competition in FY2015: 419 points	1,500 points or higher
2. Rate of important OE training undergone	Fukushima Daiichi: 45% Fukushima Daini: 80% Kashiwazaki-Kariwa NPS: 78%	60% or more for management (Measurements began in second quarter)
3. Rate of views of new OE data 	67%	60% or more
4. Implementation of hazard analyses	Completed	Complete at Kashiwazaki-Kariwa NPS (Hazard analysis begun in 2Q at Fukushima Daiichi NPS)
5. Rate of progress made in hazard improvement plans 	77%	Ratio of plan progress: 100%
Measure 4		
1. Assessment of quality and quantity of information communicated about Fukushima Daiichi NPS decommissioning work, nuclear safety reforms, accidents/problems, etc.	Assessed at end of year	Positive trending change over time
2. Assessment of TEPCO's perception and stance toward public relations and public hearings	Assessed at end of year	Positive trending change over time

Nuclear Safety Reform KPI	FY2016 2Q Achievement *1	Target
Measure 5		
1. Self-assessments based on PO&C emergency response areas (EP. 1-3) 	Fukushima Daiichi NPS: Not conducted Fukushima Daini NPS: Aug 3.8 points Sep 3.8 points Kashiwazaki-Kariwa NPS: Jul 3.6 points Aug 3.7 points Sep 3.6 points Head Office Sep 3.8 points	Average of 4 or more points assessed on a 5-tiered scale*2
Measure 6		
1. Number of emergency responders acquiring in-house skill certifications for fire engines, power supply trucks, cable connecting, radiation surveying, wheel loaders, unic cranes, etc. 	117%*3	Secure 120% of number needed for each power station by end of FY2017
2. Number of system engineers certified	Assessed at end of year (currently 3)	5/reactor
3. Number of engineers trained in seismic resistance, PRA, fire protection, chemical management or other specializations	Assessed at end of year	Rate of training plans achieved: 100%
4. Number of personnel acquiring in-house skill certifications for operations, maintenance, safety, etc.	Assessed at end of year	Rate of training plans achieved: 100%

Nuclear Safety Reform KPI	FY2016 2Q Achievement *1	Target
5. Number of personnel acquiring external certifications specified as essential by TEPCO, including class 1 electrician, class 4 hazardous material handling, oxygen deficiency, etc. (approx. 15 certifications) 	83%	Rate of all personnel or number needed in each field by the end of FY2017
6. Number of personnel acquiring external certifications recommended by TEPCO, including high-pressure gas production safety, construction machinery operation, etc. (approx. 15 certifications) 	27%	30% or higher for each field by the end of FY2017
7. Number of personnel acquiring external certifications, including licensed reactor engineer, class 1 radiation senior operator, technician (reactor and radiation fields), etc.	Assessed at end of year	Rate of training plans achieved: 100%

*1: Information not specifically entered is the actual value as of the end of September 2016.

*2: Assessments corresponding to the degree of training difficulty.

*3: The difference between conditions at Fukushima Daiichi NPS and those at Fukushima Daini NPS and Kashiwazaki Kariwa NPS have been taken into account, and Fukushima Daiichi NPS is not included in this tabulation as the necessary figures are under review.

(2) Reassessment of Nuclear Safety Reform KPIs and PIs

In addition to the previously mentioned indicators (Internal 1 and External 1), it was decided to newly add two more KPI for the ability to promote dialogue in order to quickly implement improvements. During the second quarter, design and preparation of the ability to promote dialogue KPI (Internal 2) was completed, and measurement will begin in the third quarter.

- Ability to Promote Dialogue KPIs

  The “internal” and “external” KPIs were altered to include “Internal 2” and “External 2” KPIs (The previous “Internal” has been renamed “Internal 1” and the previous “External” has been renamed “External 1.”)

- Ability to Promote Dialogue KPI (Internal 1) <No change>

  This KPI measures the status of internal communication within the Nuclear Power Division based on the results of retrospective reviews of the “CO: Effective Safety Communication,” one of the 10 Traits.
- Ability to Promote Dialogue KPI (Internal 2) <New>

  Questionnaires are to be conducted on the status of information sharing internally with regard to important reports and key issues. This will be assessed based on two points: “speed of information sharing (whether or not the information is confirmed within one week)” and “degree of awareness (whether or not sufficiently understood).”
- Ability to Promote Dialogue KPI (External 1) <No change>

  This KPI is an index that measures assessments (questionnaire format) by third parties of information conveyed by TEPCO ((1) quality and quantity of information conveyed, and (2) perception and stance toward public relations and public opinion gathering).
- Ability to Promote Dialogue KPI (External 2) <New: specifics under review>

  Issues that need improvement are identified based on the comments about TEPCO voiced by external parties, and the status of improvement is assessed at different levels.

(3) Assessment of Nuclear Safety Reform KPIs and PIs

KPIs were reassessed for FY2016. Just as before, the KPI and PI values are not only assessed as high or low, but:

- If they are high (target achieved), then our aim is to make them even higher.
- If they are low (target not achieved), then we analyze the causes and make improvements.
- In both cases, we also assess whether or not the KPI or PI is effective in measuring the degree to which nuclear safety reforms have been brought to fruition.

In addition, more effective improvement activities will be implemented, and KPIs and PIs reassessed and target values increased as necessary.

Future assessment of KPIs and PIs will look at the following two KPIs and PIs, which target areas that have been shown to require improvement based on the self-assessment of nuclear safety reform.

a. Reforms initiated by nuclear power leaders
   - Senior management must “question” on a daily basis.
   - The mechanism for giving instructions and orders, and confirming that they are carried out thoroughly should be enhanced.

b. Acquiring the technical and management capabilities necessary to be a world-class nuclear operator
   - Establish the Nuclear Human Resources Training Center and strengthen the framework for education and training
   - Intensively reconstruct systematic education and training programs from a long-term perspective

In order to achieve this KPI and PI related to these points will be monitored closely. In particular, the management observation PI offers real opportunities for “actively practicing a ‘questioning attitude’,” and we will continue to aim to increase the number of times MO is engaged in, and review measurement methods and the creation of indicators to quantitatively measure management observation competence. Also, although short-term results (improved KPIs and PIs) are difficult to see when it comes to human resource development, systematic education and training programs are steadily being prepared and will be implemented so that there is no deviation in policy over the mid to long-term.

IN CLOSING

On September 2, the Nuclear Reform Monitoring Committee met for the 11th time and TEPCO reported the results of our self-assessment[25] of initiatives implemented over the previous three years in addition to giving a Nuclear Safety Reform Plan progress report for the first quarter of FY2016. The Nuclear Reform Monitoring Committee gave the following evaluation of TEPCO's self-assessment: "The Committee believes that the assessment reflects a sincere effort to evaluate performance in implementation, including benchmarking against international practices and attempting quantitative assessment, and that the exercise has been a valuable component of the company's pursuit of world-class excellence." On the other hand, TEPCO determined that the following two areas targeted for self-assessment correspond to items for which "IV. Self-regulatory and continuous reforms need to be accelerated," so we have formulated and implemented action plans for further reforms and improvements.

a. Reforms initiated by nuclear power leaders
   - Senior management must "question" on a daily basis (Refer to Measure 2-2: Enhancement of Management Observations)
   - The mechanism for giving instructions and orders, and confirming that they are carried out thoroughly should be enhanced. (Refer to the Management Model Project under Reform from Top Management)

b. Acquire the technical and management capabilities necessary to be a world-class nuclear operator
   - Establish the Nuclear Human Resources Training Center and strengthen the framework for education and training (see Measure 6-6: Improve Systems for Personnel Development and Education & Training)
   - Intensively reconstruct systematic education and training programs from a long-term perspective (see Measures 6-1 to 6-6)

By focusing on improving and reforming the two issues mentioned above, TEPCO aims to improve the status of these issues from "IV. Self-regulatory and continuous reforms need to be accelerated" to "III. Self-regulatory and continuous reforms are underway in pursuit of the highest level of safety." At our power stations, we will steadily proceed with construction and work that prioritizes the highest level of safety as we continue to engage in discussions with regulators and listen to what people in the siting communities and society are saying.

Through our determination to "**Keep the Fukushima Nuclear Accident firmly in mind;we should be safer today than we were yesterday,and safer tomorrow than today;we call for nuclear power plant operators that keep creating unparalleled safety.** ," TEPCO will continue to advance nuclear safety reforms while subjecting our organization to objective assessments by the Nuclear Reform Monitoring Committee.

We are more than happy to hear any comments or opinions you may have about these reforms. Visit our website for more information.

End

[25] Comprehensive assessment is conducted using a five-tier scale from I to V of the six measures under the Nuclear Safety Reform Plan and the eight expectations presented by the Nuclear Reform Monitoring Committee. See page 22.