Nuclear Safety Reform Plan FY2018Q2 Progress Report Overview

Q2 Progress

“Keep the Fukushima Nuclear Accident firmly in mind;
We should be safer today than we were yesterday, and safer tomorrow than today.”

- In keeping with our resolution, we continue to promote nuclear safety reforms and engage in activities to raise our power stations to the world’s highest level of safety.

Open communication

- In August, TEPCO met with Niigata Prefecture Governor Hanazumi, Kashiwazaki City Mayor Sakurai, and Kariwa Village Mayor Shinada to exchange opinions about the progress of safety measures at the Kashiwazaki-Kariwa Nuclear Power Station.
- In September, Niigata Prefecture Governor Hanazumi was given a tour of the Kashiwazaki-Kariwa Nuclear Power Station so that he could check the progress of safety renovations and observe emergency response training.
- Since August we have been visiting the residents of Kashiwazaki City and Kariwa Village in order to speak directly to members of the local community. We will continue to engage in dialogue with members of the community and disseminate information as we strive to improve the safety of the Kashiwazaki-Kariwa Nuclear Power Station.

Action plans based on self-assessment of five key issues

- TEPCO have performed a self-assessment of the five key issues pointed out by the Nuclear Reform Monitoring Committee, and we have created action plans in order to make improvements. The results were reported to the Nuclear Reform Monitoring Committee on October 5 and will be reviewed by the committee going forward. At the same time, the action plans will be implemented.

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Fukushima Daiichi NPS Progress of reactor decommissioning

Investigation and cleanup of Unit 2 reactor building operating floor

A work platform has been constructed and an opening created on the west side of the Unit 2 reactor building to access the operating floor. In July, dose levels and dust concentrations on the operating floor were measured around this opening during an investigation conducted with remotely operated robots. On August 23 we began cleaning up the area to remove objects that may hinder further investigations, and on September 10 we finished relocating the Warrior machine that had remained inside the building from past investigations.

Relocating Warrior (left)

Handling of ALPS-treated water

ALPS equipment has been operated to quickly reduce risks associated with contaminated water storage and dose levels while ensuring there is no impact on the 1mSv/year effective dose rate at site borders, placing less emphasis on concentration levels that require public notification. Although we have continued to disclose data on treated water, the way the relevant data was presented did not explain adequately that approximately 80% of the treated water contains concentrations of radionuclides that require public notification. If water that has been treated with ALPS is to be discharged into the environment, we will subject it to secondary treatment so that the sum of actual concentrations and concentrations that require public notification is below 1.

Treated water storage tanks

Revision of schedule for removing fuel from Unit 3 spent-fuel pool

In regards to equipment for handling fuel from Unit 3, on August 8 we found corrosion and severed wires when the control system cables for the fuel handling machine were inspected. On August 15, a crane control system alarm sounded as work to clean up materials and equipment was being performed, so the crane shut down.

Since multiple nonconformances have occurred since the equipment was put into trial operation in March, the decision was made to identify any other hidden nonconformances in the equipment. In order to do this, temporary repairs of all nonconformances were completed on September 29 and a safety inspection will be performed before the end of year. The state of equipment quality management will also be checked. Based on the results of these inspections, required countermeasures shall be implemented, function tests shall be performed after repairs, and operation/trouble-response training shall be implemented. The schedule will be examined closely and possibly revised to move forward with the task while prioritizing safety.

Unit 3 fuel handling machine

TEPCO

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Kashiwazaki-Kariwa NPS Progress of safety measures

Visit to the Kashiwazaki-Kariwa NPS by the Niigata Prefecture Governor

Niigata Prefecture Governor Hanazumi visited the power station on September 6. The governor commented that, "it was the first time I had visited a nuclear power station and I got a better understanding of the facility." He also said, "I understand that efforts are being made to implement safety measures, but I would like the technical committee to further debate whether these initiatives are sufficient or not."

Visit to main earthquake-resistant building

Emergency response training following assessment by the Nuclear Regulation Authority

An Emergency Response Improvement Plan, which includes reorganizing experienced teams, assigning personnel responsible for sharing information, improving the knowledge and skills of personnel, etc., was compiled (disclosed on August 27) in light of the harsh assessment of FY2017 training. During general training performed at Kashiwazaki-Kariwa on October 2, improvements were made with information-sharing functions, as stipulated in the aforementioned plan, so the same measures will be implemented during training at Fukushima Daiichi and Fukushima Daini. Furthermore, although the Nuclear Regulation Authority gave a relatively good assessment of how information is shared between the power station and Headquarters (October 3), it also commented on issues that need to be addressed going forward, such as how such information should be shared laterally with all personnel.

General training (Oct. 2)

Assisting HEPCO

The earthquake that occurred on September 6 in the eastern part of Iburi, Hokkaido resulted in a total blackout of all areas covered by the Hokkaido Electric Power Company, Inc. (HEPCO). In response, we dispatched assistance personnel from the Fukushima Daiichi, Fukushima Daini and Kashiwazaki-Kariwa nuclear power stations. After ensuring that vehicles required to ensure the safety of each power station remained on-site, 40 workers, including personnel from Headquarters, were dispatched along with five power supply trucks, one tanker truck, and six work vehicles to assist HEPCO.

Power supply trucks and personnel dispatched from three power stations

Initiatives for further strengthening governance and internal communication

- In addition to these six countermeasures being implemented in accordance with the Nuclear Safety Reform Plan, we are also engaged in initiatives aimed at further strengthening governance and internal communication after deeming that these areas require further improvement in light of the results of the self-assessment implemented in FY2016.
- As an initiative to strengthen governance, the Nuclear Power & Plant Siting Division created a Management Model document (June 2017) to enable everyone in the organization to engage in their duties with a common understanding of initiatives to improve safety awareness, the ability to promote dialogue, and technological capability. During FY2018 work plans will be created based on the Management Model and we will move forward with activities aimed at excellence.

Establishment of the TEPCO Decommissioning Archives Center and educational sessions to provide information around the accident and its impact

- In July 2018, we started training through which all employees can systematically learn about the Fukushima nuclear accident and the impact that it had. This training will serve as an opportunity to convey the regrets and lessons learned from the accident to parties both within and outside of the company in order to prevent such an accident from ever happening again.
- In conjunction with this, in order to store records from the accident and keep the memories of it alive, we plan to open the TEPCO Decommissioning Archives Center in Tomioka Town, Fukushima Prefecture (end of November 2018).

Actions to better align the vectors of the entire organization

- On September 24, the 4th Nuclear Leader's Session was held and participants discussed the future state that the Nuclear Power Division is aiming for, organizational management issues, as well as issues that should be addressed during FY2019. Work plan outlines for FY2019 shall be created based upon these discussions, and opportunities shall be created for nuclear leaders to brief station personnel in conjunction with reports on the progress made with key issues during FY2018.
- The Fundamentals are a configuring element of the Management Model and stipulate rules and behavior for engaging in daily tasks. CFAM/SFAM are taking a central role in revising these Fundamentals based upon the degree to which they are being used. Going forward, the Fundamentals will be conveyed to the Nuclear Power Division and contractors.

4th Nuclear Leader Session

Internal oversight function activities

- The Nuclear Safety Oversight Office, which is an independent internal regulatory department, has made the following suggestions this term.
- The improvements made at Kashiwazaki-Kariwa in regards to emergency response capability should be conveyed to other power stations and personnel through the continued strong governance of upper management.
- In regards to human resource development, human resource departments, which are familiar with methods for analyzing required skills, should elicit the analytical ability of power station line personnel, who are familiar with task requirements, and construct better educational programs.

NSOO member observing preparedness training

Initiatives to Improve Safety Awareness

The Nuclear Power & Plant Siting Division attended the first IAEA technical working group held to share the regrets and lessons learned from the Fukushima nuclear accident (September). The objective of this working group is to assemble all of the world's nuclear leaders in order to give suggestions about and lend support to IAEA activities related to nuclear power station safety and sustainability. At the working group, TEPCO gave an overview of the Fukushima nuclear accident and talked about our regrets and the lessons learned.

Presentation by the Nuclear Power & Plant Siting Division

Similarly, the president of the Daiichi Decontamination and Decommissioning (D&D) Engineering Company (FDEC) participated in a panel discussion held at the IAEA annual conference (September). The president talked about the current conditions at Fukushima Daiichi, additional tsunami countermeasures, and future plans related to contaminated water countermeasures, etc.

Presentation by the Daiichi Decontamination and Decommissioning (D&D) Engineering Company (FDEC)

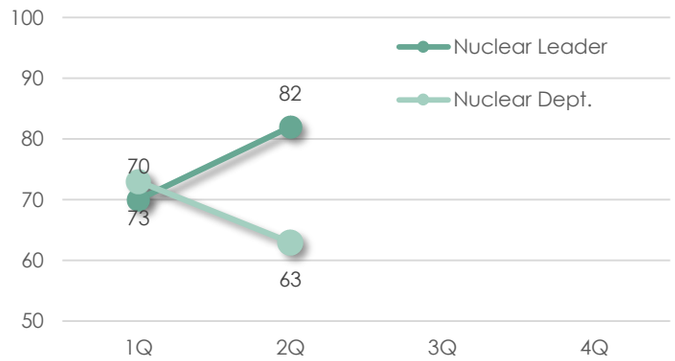
KPI Results* - Safety Awareness

- Along with adding new related PI (5) (FY2017Q4 Progress Report) to FY2018 KPI in order to reflect the progress of safety reforms, targets were increased by 10 points over FY2017 and we aim to achieve these targets by the end of the fiscal year.

Nuclear leaders : **82 points** (Note 1)

Entire Nuclear Power Division: **63 points** (Note 2)

(Target: 80 points)



Note 1: The KPI calculation method for safety awareness KPI (nuclear leaders) was revised and the target revised from 85 during Q1 to 70

Note 2: The Q2 value for safety awareness KPI (Nuclear Power Division) decreased since a mistake in the Kashiwazaki-Kariwa Unit 1 core spray system pipe seismic-resistance safety assessment (disclosed in 2010) was found and subsequently deemed as a recurring nonconformance.

Initiatives to Improve the Ability to Promote Dialogue

The president of the Fukushima Revitalization Headquarters and the president of the FDEC exchanged opinions with high school students participating in the International High School Student Radiation Protection Workshop about the progress of decommissioning at Fukushima Daiichi and activities to promote recovery in the region. 72 students from 10 high schools located in Japan and overseas took a tour of the Fukushima Daiichi site. Students commented that they want to tell their parents and classmates what they saw after they return home to their own countries.

Tour of the Fukushima Daiichi site

TEPCO representatives also visit the homes of the residents of Kashiwazaki City and Kariwa Village in order to directly listen to their opinions about nuclear power and TEPCO and any requests they may have. By giving several advanced notices about when these visits are to be made and distributing postcards asking residents if they would like to be visited again, we have improved our methods for visiting the homes of residents in the hopes that we can meet as many people as possible.

Door-to-door explanations to residents

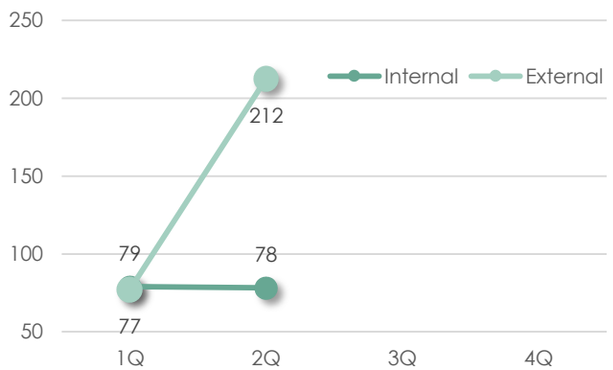
KPI Results* - Ability to Promote Dialogue

- Along with adding new related PI (5) (FY2017Q4 Progress Report) to FY2018 KPI in order to reflect the progress of safety reforms, targets were increased by 10 points over FY2017 and we aim to achieve these targets by the end of the fiscal year.

Internal: **78 points**

External: **212 points** (Note 3)

(Target: 80 points)



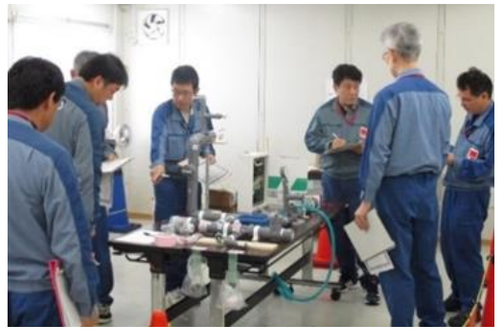
Note 3: The Q2 value for ability to promote dialogue KPI (external) increased greatly since more than 20,000 comments were received during visits to all homes in the Kashiwazaki-Kariwa region.

Initiatives to Improve Technological Capability

In order to improve in-house technological capability so as to prevent small incidents from turning into severe accidents, we are implementing various types of training, such as training on the operation of heavy equipment like mobile cranes. During the second quarter, we provided training on the operation of reach stackers, which are large vehicles required for carrying equipment and materials to substitute heat exchanger trucks, to more people as part of a new initiative. Training participants will act as in-house instructors and teach as many employees as possible about how to operate such special vehicles.

Large vehicle operation training (reach stacker)

In the Maintenance Department, more effort is being put into education and training aimed at preventing human error and equipment nonconformance. At Fukushima Daini and Kashiwazaki-Kariwa, we continue to offer human error prevention tool training for maintenance department personnel that act as work foremen, and in September we will begin skill training on foreign material exclusion (FME). Our foreign material exclusion initiatives have been commended by third parties.



FME training for Maintenance Department personnel (Fukushima Daini)

KPI Results* - Technological Capability

- Along with adding new related PI (5) (FY2017Q4 Progress Report) to FY2018 KPI in order to reflect the progress of safety reforms, targets were increased by 10 points over FY2017 and we aim to achieve these targets by the end of the fiscal year.

Times of non-emergency: **105 points**

Times of emergency: **85 points**

(Target: 110 points)