

Overview of Nuclear Safety Reform Plan Progress Report (4th Quarter FY2015)

- To realize our determination of being a “nuclear operator than continuously improves safety to unparalleled levels by enhancing the degree of safety on a daily basis while always keeping the Fukushima Nuclear Accident firmly in mind,” TEPCO has been promoting the Nuclear Safety Reform Plan since April 2013 in our aim to operate world class power stations.
- We have commissioned the Third-Party Verification Committee to conduct an investigation into the causes of erroneous explanations provided to the Niigata Prefecture Technical Commission as well as the notifications and reports made about core meltdowns at Fukushima Daiichi NPS Units 1-3. We will immediately make the appropriate improvements based on points indicated and suggestions provided by the Commission. In addition regarding the conclusions and notifications as to whether or not the power station was in a state of emergency, we will immediately reconfirm our current manuals and have such information made thoroughly known throughout our organization.

1. Progress on Safety Measures at Nuclear Power Stations

- TEPCO has achieved results through a continuous commitment to implementing contaminated water countermeasures, reducing exposure and improving the work environment.
- We are steadily carrying out safety measure work at Fukushima Daini NPS and Kashiwazaki- Kariwa NPS.
- Emergency response ability improved due to improvements in self work management capabilities, etc. The training will continue to be reinforced according to the mid to long term plans.

Fukushima Daiichi Nuclear Power Station

Freezing of the land-side impermeable wall pipes has begun, significantly reducing the quantity of contaminated water produced from groundwater inflow into the buildings

- On February 9, we completed installation of 1,549 pipes for freezing the land-side impermeable wall. After approval was granted, we commenced the freezing process on March 31



Freezing pipes on the west side of Units 2-4



Freezing initiated of land-side impermeable wall

The outlet for Drainage Channel K was switched from outside the port to inside to prevent rainwater that has become contaminated within the power station site from flowing outside the port

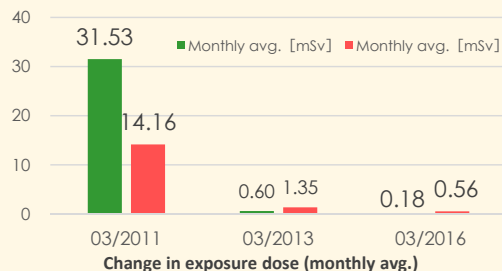
- On March 27, we began to discharge water into the port. On March 28, a cutoff wall was installed along the existing route, thus completing the drainage destination switchover.



Drainage channel K outlet switched to inside port

We have steadily improved the on-site environment with achievement of annual radiation levels of 1mSv along the site boundary, expansion of areas where ordinary work clothes may be worn, and opening of a convenience store within the large rest center

- Since March 8, 2016, the site has been divided into “high contamination areas” and “other areas” with the appropriate revision of required protective gear. This has modified operations so that work may be performed wearing regular work clothes or special on-site clothing on approximately 90% of the premises.



Work gear classification modified to accord with contamination level (workers wearing special on-site clothing)

Fukushima Daini Nuclear Power Station

Risks associated with spent fuel have been reduced as much as possible by sealing off pool gates and preventing any outflow of spent fuel pool water

- Spent fuel pool water pipes have been machined (holes bored) so as to prevent any spent fuel pool water from flowing out due to siphoning (all units completed (March 25))
- In order to limit risk management to the spent fuel pools, the pool gates have been sealed off, separating the reactor and spent fuel pool (work completed at Units 1-3, and scheduled to be performed in the second half of this fiscal year at Unit 4)

Kashiwazaki-Kariwa Nuclear Power Station

Safety measures have been enhanced in preparation for an earthquake, tsunami or other natural disaster or severe accident based on the lessons learned from the experience of the Fukushima nuclear accident



Replacement with thick steel-panel light oil tanks capable of withstand collisions with flying rubble



Shielding installed around the main base-isolated building to protect responders from exposure

Personnel have been building up their emergency response capabilities through repeatedly conducting integrated, individual and other types of training

- The February 15 integrated training exercise confirmed information liaisons with the ERC (Nuclear Regulatory Agency’s Emergency Response Center) as well as the deployment of personnel to rear logistic support centers, accident prevention centers and municipalities in the siting area as well as the achievement of such functions



Meeting of the strategy council, which was established within the emergency response headquarters



Training in operating a gas-turbine generating vehicle in a snowy environment









Training in decontamination at a logistics support center (Kashiwazaki-Kariwa Energy Hall)

Overview of Nuclear Safety Reform Plan Progress Report: Progress Made in 4th Quarter FY2015

2. Nuclear Safety Reform Plan Progress (Management Aspects)

- On the whole, Nuclear Safety Reform Plan (Management) activities have progressed satisfactorily.
- A pressing issue is to enhance human resource development and accelerate improvements, which incorporate the benchmarks learned from other countries, in our aim to achieve world class excellence.

Safety Awareness	Technical Capability	Ability to Promote Dialogue
<p>Measure 1: Reform from Top Management</p> <ul style="list-style-type: none"> The General Manager of Nuclear Power and Plant Siting Division has headed out to power stations to conduct open meetings with personnel (Fukushima Daiichi NPS, Kashiwazaki-Kariwa NPS) With five years having passed since the Fukushima nuclear accident, a retrospective review has been conducted of the nuclear reform path so far and thoughts shared on continuing efforts to further improve nuclear safety Benchmarking was conducted at the Sequoyah Nuclear Generating Station in the United States so that good practices could be researched about operation of the systematic approach to training (SAT), which is an effective training method and international standard (January 17-23)  <p>Open meeting held by the General Manager of Nuclear Power and Plant Siting Division (Kashiwazaki-Kariwa NPS)</p>  <p>Explanation of education and training programs (Sequoyah Nuclear Generating Station, United States)</p> <p>Measure 2: Enhancement of Oversight and Support for Management</p> <ul style="list-style-type: none"> The line side has accepted the recommendations by the Nuclear Safety Oversight Office, and countermeasures are being deliberated or implemented. Nuclear leaders need to follow-up in order to prevent delays in improvement activities. 	<p>Measure 3: Enhancement of Ability to Propose Defense in Depth</p> <ul style="list-style-type: none"> The second competition of 2015 was held to enhance the ability of personnel to propose safety improvements, and 220 ideas were submitted, the most ever since the competition began Instructors have been selected at each power station to teach all Nuclear Power Division personnel about significant failures that have occurred at other companies and have our employees understand the lessons to be learned. <p>Measure 5: Enhancement of Power Station and Head Office Emergency Response Capabilities</p> <ul style="list-style-type: none"> Training has been repeatedly conducted to strengthen the capabilities of emergency response organizations to respond and operate effectively Taking into account the lessons learned from the Fukushima nuclear accident, TEPCO has clarified the personnel responsible for determining whether the power station is in a state of emergency or not and issuing any necessary notifications TEPCO has introduced good practices employed in other countries to confirm their effectiveness Barrier status boards (table that allows the status of containment of radioactive materials to be grasped at a glance), which have been adopted by Exelon Corporation in the United States, have been used on a trial basis to verify their effectiveness in determining responses, and TEPCO has also adopted these instruments  <p>Barrier status board (Kashiwazaki-Kariwa NPS)</p> <p>Measure 6: Development of Personnel to Enhance Nuclear Safety</p> <ul style="list-style-type: none"> TEPCO is training system engineers proficient in design, laws & regulations, standards, operation, maintenance and other areas pertaining to facilities that are important for safety (three personnel have completed the training program so far) TEPCO has been conducting training using PC simulators that allow plant operating states to be ascertained and plant behavior during a problem to be predicted (71 new employees have undergone this training)  <p>Training with PC simulator (Kashiwazaki-Kariwa NPS)</p>	<p>Measure 4: Enhancement of Risk Communication Activities</p> <ul style="list-style-type: none"> TEPCO participated in the PIME[※] Award for Communications Excellence 2016, which is sponsored by the European Nuclear Society and is a venue where communication activities may be assessed by nuclear industry experts from around the world TEPCO's communication activities were assessed vis-à-vis workers at the Fukushima Daiichi NPS and their families  <p>PIME exhibition booth (Bucharest, Romania)</p> <ul style="list-style-type: none"> TEPCO has held sessions to exchange views with the Nuclear Energy Institute (NEI) in the United States, women executives from Exelon Corporation in the United States and people in the siting communities in both Niigata and Fukushima Based on case studies of activities in the United States, discussions have been held about the importance of communication and trust with communities  <p>Discussion between siting community nuclear monitors and the US NEI and Exelon Corporation women executives (Niigata)</p> <p>※ Public Information Material Exchange: an annual forum held to provide training and information exchange principally for public relations professionals involved with nuclear power</p>

<p>KPI pertaining to self-assessments on nuclear safety</p> <p>[Target: 70 points or higher]</p>	<p>Entire Nuclear Power Division: 94.2 points (+5.9 over preceding term)</p> <p>Nuclear power leaders: 95.2 points (+11.5 over preceding term)</p> <p>Retrospective reviews of nuclear safety have taken root in individual's activities</p>	<p>KPI pertaining to formulation of operation plans to improve technical skills</p> <p>[Target: 70 points or higher]</p>	<p>75.5 points (+0.7 over preceding term)</p> <p>PO&C, which indicates the world's highest performance levels, is used for formulating operational plans (beginning in FY2016, this KPI is to be refined to one that more directly measures technical capabilities)</p>	<p>KPI concerning status of in-house reciprocal communication</p> <p>[Target: Increasing trend]</p>	<p>Entire Nuclear Power Division: 78.3 points (+1.1 over preceding term)</p> <p>Nuclear power leaders: 84.6 points (+1.3 over preceding term)</p> <p>Positive efforts continue to be made to realize excellent internal communication</p>
<p>KPI pertaining to improvement using MO and messages on safety communicated by nuclear power leaders</p> <p>[Target: 70 points or higher]</p>	<p>97.4 points (+16.9 over preceding term)</p> <p>Nuclear power leaders have worked to improve the messages communicated and strengthen management observations</p>	<p>KPI pertaining to the degree to which operation plans are executed</p> <p>[Target: 50 points or higher]</p>	<p>42 points ((+1.1 over preceding term (3rd quarter results))</p> <p>※50 points if progress is made as planned</p> <p>PDCA cycle directed while status of operation plan execution is reviewed quarterly</p>	<p>KPI concerning external assessments of TEPCO's communicated information</p> <p>[Target: Positive points]</p>	<p>< Compared to FY2014 results ></p> <p>+0.9 points (quality and quantity of information communicated)</p> <p>+1.0 points (significance and stance on public relations and hearings)</p> <p>Compared to previous year, most people have evaluated the activities as "having improved"</p>

