

Executive Summary of “Nuclear Safety Reform Plan Progress Report (FY2013 3rd Quarter)”

On March 29, 2013, TEPCO adopted the “Fukushima Nuclear Accident Summary and Nuclear Safety Reform Plan, and began implementing the Plan. Progress is reported quarterly, and this is the Executive Summary of the Progress Report for the third quarter of the fiscal year, October 1 through December 31, 2013.

The highlight of the quarter included the safe and successful removal of fuel from the Unit 4 spent fuel pool, which began on November 18, approximately one month ahead of schedule. This represented a major milestone and a transition to Phase 2 of the decommissioning roadmap.

The following summarizes the Report’s three main sections: (1) Progress at each of the three nuclear power stations, (2) progress in the adoption of management reforms, and (3) the status of investigations into unidentified and unexplained matters in the Fukushima Nuclear Accident.

1. Progress at Each Nuclear Power Station

Fukushima Daiichi Nuclear Power Station

- **Unit 4 Fuel Removal:** The removal of spent fuel from the Unit 4 spent fuel pool began November 18. The fuel removed is being taken to a common pool on site where it is being centrally stored. Of the 202 fresh fuel and 1,331 spent fuel assemblies contained in the pool at the beginning of the process, 22 fresh fuel and 110 spent fuel were removed through December 31. The task is scheduled to be completed by the end of 2014.

- **Water Management:**
 - ✧ The contaminated water issue is being addressed according to national policy, and preventive, multilayered countermeasures are being taken sequentially, in addition to countermeasures that have been implemented thus far. Additionally, based on discussions by the 5th Nuclear Reform Monitoring Committee, software initiatives are also being strengthened, such as by formulating a comprehensive and integrated water management plan that also includes management of cooling water and groundwater, as well as improving working environments and strengthening the management framework. Actions taken include, but are not limited to:
 - Strengthening the middle management level at the Fukushima Daiichi Stabilization Center

- Enhancement of personnel involved with contaminated water management, ultimately aiming for the increase of 220 people.
 - Improvement of working conditions for workers involved with water management, including work towards site decontamination and development of an administrative building where 1,000 employees and other workers can work together.
 - To define the system of responsibilities for decommissioning and contaminated water countermeasures, we have begun to make preparations toward the inauguration of a decommissioning company on April 1.
 - Installation of water gauges on the flange tanks was completed at the end of November. Gauges are currently being installed on welded tanks. Installation of gutters to tanks began in November and will be completed by the end of March 2014.
 - A plan to replace flange tanks with welded tanks is being developed.
 - Purification of contaminated water inside the trench began in November, along with other measures to clean and seal the trench, which are still underway.
 - A basic plan for land-side impermeable walls using frozen soil was developed in October, preparations began in November. Main construction will begin in June 2014, with construction on the frozen soil wall itself scheduled for March 2015.
- **Units 5 and 6:** A decision was taken to permanently decommission Units 5 and 6, which were undamaged by the tsunami but which have been in cold storage, and use these as a research and training facility for future decommissioning work.
 - **Decommissioning Company:** To provide optimal focus and accountability for the long-term decommissioning and decontamination work at Fukushima Daiichi, TEPCO decided to establish a Decommissioning Company to take over responsibility for those operations from April 1, 2014. The president of the Decommissioning Company will report directly to the TEPCO president and will carry the title Chief Decommissioning Officer. Persons equivalent in rank to chief reactor officers will be invited from manufacturers and other outside companies as well as from within TEPCO, and the company will undertake its operations in an “All Japan” fashion by cooperating with the International Research Institute for Nuclear Decommissioning and actively engaging outside experts.

Fukushima Daini Nuclear Power Station

- Fukushima Daini NPS, which was essentially undamaged by the earthquake

and tsunami, maintains its stable cold shutdown status. Fuel that had been the reactor has all been safely transferred to the spent fuel pool, and this process was completed on October 16.

- Thereafter, the reactor was inspected, and the result of the inspection confirmed that it suffered no damage in the earthquake and tsunami.

Kashiwazaki-Kariwa Nuclear Power Station

TEPCO has applied for regulatory approval to restart the Kashiwazaki-Kariwa (KK) NPS, and has taken a large number of actions to strengthen the plant and improve its management processes. Highlights of progress during Q3 include:

- The examination to verify the compliance of Units 6 and 7 with the new regulatory standards has begun on a full-scale by the Nuclear Regulatory Committee last November. Review meeting convened by the Nuclear Regulation Authority was held twice as of the end of December, 2013. In regard to major safety measures that become the key in compatibility with new regulatory requirements, TEPCO has completed detailed technical examination and mostly finished preparations of explanation materials for the review meeting. Areas of focus for safety measures include:
 - ✧ Natural phenomena, including earthquakes and tsunami.
 - ✧ Interior flooding
 - ✧ Fire
 - ✧ Probabilistic risk assessment
 - ✧ Effectiveness of safety measures during severe accident
- We are moving forward with installation of filtered venting equipment to reduce the impact of radioactive materials even if residual heat removal and cooling water injections were to fail. Installation of the main vessel of the surface filter vent equipment for Unit 7 began in October. Tests are currently being conducted to verify the performance of this equipment.

2. Progress in Management Reform

- Reform of top management:
 - ✧ 360-degree assessments of behavioral indicators were conducted in October for nuclear power leaders.
 - ✧ A safety culture assessment workshop was held by the IAEA for corporate officers, the president, and nuclear power leaders in October.
 - ✧ In November, nuclear power leaders held a series of discussions on internal communications.

- ✧ Also in November, executive officers and nuclear power leaders received training in risk communications.
 - ✧ Training to provide enhanced safety knowledge began in December for nuclear power leaders.
 - ✧ As a manifestation of the result of training programs, etc. conducted to date, discussions among the top management or nuclear leaders have become increasingly active in management conferences. All officers not only those from nuclear division are being encouraged to give their opinions about nuclear safety issues.
- Oversight and support for management
 - ✧ The Nuclear Safety Oversight Office began monitoring activities on a full scale, including initiatives for stabilization of Fukushima Daiichi, initiatives for safety enhancement at Kashiwazaki-Kariwa, and initiatives for placing highest priority on nuclear safety in the nuclear division.
 - ✧ Improvements concerning safety culture and management have been proposed to the nuclear division, and the content of those measures have been reported to the Board of Directors. The main proposals put forth are given below.
 - ✓ There is a continuing need to implement a stronger nuclear safety culture.
 - ✓ The Safety Management System needs to be strengthened.
 - ✓ TEPCO must manage organizational change or improvement programs more rigorously – in particular the Nuclear Reform Plan.
 - ✓ At Fukushima Daiichi there is still a need to stabilize the safety control to bring it back to normal standards
 - ✧ The nuclear division, for its part, is examining and implementing countermeasures in response to these proposals.
- Strengthening ability to improve defense in depth
 - ✧ The nuclear division chose twelve examining outstanding proposals from thirty-three proposals that had been entered in the “Safety Improvement Competition.”
 - ✧ Some measures are being taken to strengthen the ability to improve defense in depth. However, visible results of enhanced technological capabilities and facility safety improvement have yet to be seen.
- Enhancement of risk communication:
 - ✧ The Social Communication Office and Corporate Communications Department have made improvements so that their communication of information gives due consideration to receivers. For example, videos and computer graphics are now used to communicate the meaning and interpretation of measurement data regarding the removal of fuel from the

Unit 4 fuel pool and the water contamination issue.

- ◇ A new corporate officer from outside TEPCO has been appointed to lead the Social Communication Office beginning in January.
- Reform of the emergency response framework in power stations and head office:
 - ◇ An emergency framework based on the Incident Command System has been put into operation at Fukushima Daiichi and Fukushima Daini last October, as at Kashiwazaki-Kariwa and the head office.
 - ◇ Emergency drills are repeatedly conducted with input from the Nuclear Reform Monitoring Committee. Hereafter, plans are being made to establish even more stringent requirements and to conduct joint training exercises with outside institutions.
- Review of power station organization in ordinary times and strengthening of direct technical capabilities: The number of participants to training programs that aim to develop accident response capabilities will be sequentially increased, and efforts will be made to ensure they steadily acquire and further enhance their respective technical capabilities. For example, total of 2129 maintenance personnel have undergone training, and it is twice as many as all of maintenance personnel

3. Status of Investigations into Unidentified and Unexplained Matters in the Fukushima Nuclear Accident

- We announced the “First Progress Report: The Results of the Investigation and Examining on the Unidentified and Unsolved Matters of the Fukushima Nuclear Accident” last December. Of particular interest was the finding that, contrary to some speculation, the Unit 1 emergency cooling system had not failed prior to the tsunami. This was of some importance in determining the adequacy of seismic safeguards already in place.
- Onsite examinations, including an examination of the inside of the containment vessel, are being systematically performed using industrial endoscopes and robots while taking due care to prevent any loss of important evidence during decommissioning work.

Ends