

# Outline of Nuclear Safety Reform Plan Progress Report (2nd Quarter FY 2014) [1/2]

- TEPCO formulated the Nuclear Safety Reforms Plan on March 29, 2013, and under the oversight and monitoring of the Japanese and foreign specialists and experts who comprise the Nuclear Reform Monitoring Committee has been undertaking reforms.
- The progress on those reforms is monitored by the Nuclear Reform Monitoring Committee as well as monitoring and evaluation organizations both internal and external. The details are summarized in a report that is released each quarter. The present report is for the 2nd quarter (July to September) of fiscal 2014.

## Main Items in the Present Report

1. Fukushima Daiichi decommissioning company was established (project structure strengthened, three vice-presidents invited from nuclear power plant manufacturers, etc.), prior and existing management reformed.
2. In addition to the steady progress being made on the removal of fuel from the Unit 4 spent fuel pool, preparations regarding contaminated water disposal are being made on various types of purification equipment to go along with the existing Advanced Liquid Processing System (ALPS) as measures to expand and multiply the processing work.
3. In the area of activities to foment safety culture, the present 7 Principles are being changed to 10 Traits with the goal of embedding them as routine actual conduct and behavior.
4. The evaluation shows the reform plan is progressing successfully in general. Quantification and goal setting continue to be addressed, and changes over time and a goal achievement level will be evaluated. Review and addition are implemented in quantification, as appropriate.

## 1. Progress on safety measures at each power station

### Fukushima Daiichi Nuclear Power Station

- Problem-solving crosscutting the organization through use of project system
  - Three vice-presidents were in charge of the projects to remove fuel from the SFP, remove debris, and deal with contaminated water disposal, and took the lead on these efforts on-site
  - Regarding the pressing issue of contaminated water disposal, guidance and advice was offered that took advantage of relations with manufacturers such as the vice-presidents themselves directly communicating TEPCO's wishes and expectations to the plants where equipment was being manufactured
- Fuel removal and transfer from the SFP of Unit 4
  - Steady progress was made (1,232 of the 1,331 fuel rods [92%] removed, with 99 remaining [as of September 29]), and project expected to be completed by year's end
- Contaminated water strategies
  - ALPS has been installed, and tests began on 2 of the 3 systems on September 27
  - High-performance ALPS that can greatly reduce the volume of waste being produced compared to the ALPS already in place to be installed and begin test operations (October 18)
  - Furthermore, to reduce the concentration of strontium in the contaminated water that has accumulated, mobile strontium-removal systems have been deployed
  - Regarding the groundwater drawn up from the wells (subdrains) around the buildings, the plan is to use purification equipment to reduce the concentration of radioactive materials and then--having confirmed that it satisfies the water quality standards set for groundwater bypasses and then gotten the approval of the ministries and agencies concerned as well as fishermen and like parties--discharge the water into the harbor
  - Regarding the freeze wall-type impermeable shield, excavation work began on June 2 to install freeze piping in the area northeast of Unit 1. Ditches have been dug for 462 of the 1,545 freeze pipes to be installed, and installation of 103 pipes has been completed (as of September 23)
  - Regarding the water freezing project intended to remove the standing water from the seawater pipe trenches at Units 2 and 3, the movement of the water around the turbine buildings has been an inhibiting factor to that freezing effort. The freeze piping has already been expanded and both ice and dry ice have been poured in, all with the aim of filling and packing the area involved to promote freezing. Furthermore, removing the water from the trench and blocking it off is now on study.
- Dismantle Unit 1 reactor building cover
  - Plan is to quickly remove fuel from the SFP and then reduce risks by dismantling the building cover
  - When dismantling the cover, full measures to prevent scattering will be taken such as the dispersal of anti-scattering agents and the installation of equipment to suction debris and dust. The work will proceed with monitoring the concentration of radioactive materials.



Increased number of ALPS  
(Contaminated water receiving tank)

### Fukushima Daini Nuclear Power Station

- Inspections of internal reactor structures
  - Inspections were conducted of the internal structures of Unit 1 to confirm there were no abnormalities (August 7)
- Inspections of external power sources (power station access to electricity from transmission lines)
  - A three-day inspection of external power sources (two lines)—a crucial piece of equipment—began on July 2 to July 3 and found no abnormalities
- Assisting decommissioning work at Fukushima Daiichi
  - Work being done on grounds of Fukushima Daini to manufacture drainage material and to build a plant for manufacturing drainage material to lay on the bottom of the sea in the harbor at Fukushima Daiichi
  - Regarding repairs being studied as a leak-prevention measure for the joints on the bottom of the flange tanks erected at Fukushima Daiichi, workers are being trained and verification testing (mock runs) conducted using similar model tanks in place at Fukushima Daini

### Kashiwazaki-Kariwa Nuclear Power Station

- Situation regarding implementation of safety measures
  - Installation of tsunami monitoring cameras on the Ominato side (towards Units 5 through 7) completed (July 31)
  - Of the projects meant to reduce the exposure dose of plant workers in the event of a severe accident, construction of shielding around the perimeter of the central control room (the gallery room)—a temporary evacuation site—has been completed (September 26)
- In terms of additional surveys of geological conditions on and off site, analysis and evaluation of data is being done in parallel with work on site
- Preparatory work on a designated facility for handling major accidents is set to begin this October with the goal of completing it by July 2018
- Comprehensive drills are conducted every month, and individual drills are likewise repeatedly conducted at headquarters. Problems are uncovered as the drills are repeated and improvements are made.



Satellite antenna setup drills

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## 2. Progress of Nuclear Safety Reform Plan

- It is estimated each countermeasure is progressing successfully in general.
- KPI, target values, milestones to measure the achievement rate of the nuclear safety reform (our determination) as a result of the implementation of those countermeasures will be set in the 3rd quarter. The goal achievement level at each milestone will be evaluated. Specifically, the outcome of the reform plan will be checked at the end of this fiscal year, which is an important stage, because it will be two years since the reform plan was formulated.

| Countermeasures                                                                                | Implemented                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Planned                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Reform of Top Management                                                                    | <ul style="list-style-type: none"> <li>• Self-assessment system using world-class benchmarks</li> <li>• Began monitoring penetration status of Nuclear Safety Reform Plan</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>• Use the self-assessments to strengthen organization and individuals                             <ul style="list-style-type: none"> <li>- Scale up self-assessment program, using KPI</li> <li>- Focus especially on improvement of safety consciousness</li> </ul> </li> </ul> |
| 2. Enhancement of Oversight and Support for Management Through Nuclear Safety Oversight Office | <ul style="list-style-type: none"> <li>• Continuation of NSOO monitoring activity and engagement with executives</li> <li>• Conducted training with support from WANO, INPO and overseas mentors, improving level of oversight ability</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• Review implementation status of Board's action plan</li> <li>• Have Monitoring Committee review NSOO self-assessment</li> </ul>                                                                                                                                                |
| 3. Enhancement of Ability to Propose Defense in Depth                                          | <ul style="list-style-type: none"> <li>• Experienced significant increase in quantity and quality of proposals for safety improvement</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>• Evaluate and implement proposals, establishing appropriate KPIs</li> <li>• Conduct analysis on all 30 hazard events by end of FY 2014</li> </ul>                                                                                                                               |
| 4. Enhancement of Risk Communication Activities                                                | <ul style="list-style-type: none"> <li>• Improve the clarity and timeliness of information, and strengthen international communications</li> <li>• Website upgraded with new pages on decommissioning and improved visuals                             <ul style="list-style-type: none"> <li>- Social media is being used for international communications</li> <li>- Simulated press conference was held</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• Continue efforts to improve monitoring and delivery of information, websites, use of social media</li> <li>• Continue use of drills</li> </ul>                                                                                                                                 |
| 5. Enhancement of Power Station and Head Office Emergency Response Ability (Organizations)     | <ul style="list-style-type: none"> <li>• Multiple drills to strengthen response ability                             <ul style="list-style-type: none"> <li>- Monthly at KK, recently adding tornado as alternate to earthquake and tsunami</li> <li>- Comprehensive and individual drills at headquarters to strengthen command response</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>• Continued drills and training, including with related organizations</li> </ul>                                                                                                                                                                                                 |
| 6. Enhancement of (individual) Emergency Response Abilities and On-Site Capabilities           | <ul style="list-style-type: none"> <li>• Training related to field operations progressed at a pace exceeding the target                             <ul style="list-style-type: none"> <li>- Over 4,000 staff participated in maintenance training</li> <li>- Training began for KK startup of power supply car</li> <li>- Various studies have begun relating to engineering capabilities crucial to improving nuclear safety:                                     <ul style="list-style-type: none"> <li>✓ Building configuration management: a framework that makes it possible to regularly check and verify if a nuclear power facility is being operated and maintained consistent with its design</li> <li>✓ Other technological improvements</li> </ul> </li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• Use the self-assessments to strengthen organization and individuals                             <ul style="list-style-type: none"> <li>- Scale up self-assessment program, using KPI</li> <li>- Focus especially on improvement of safety consciousness</li> </ul> </li> </ul> |

