

Overview of the Nuclear Safety Reform Plan Progress Report (FY2013 4th Quarter)

[History]

- On September 11, 2012, TEPCO established the Nuclear Reform Special Task Force led by the company president, and set up a system for effectively promoting reform of safety culture. The Task Force operates under the supervision of the Nuclear Reform Monitoring Committee, which comprises experts and knowledgeable authorities from both inside and outside Japan.
- The Nuclear Reform Special Task Force drafted and released its “Reassessment of the Fukushima Nuclear Accident and Outline of Nuclear Safety Reform Plan” on March 29, 2013.
- Progress reports on the implementation of that plan are compiled and released quarterly, while monitoring continues by the Nuclear Reform Monitoring Committee along with other internal and external observation and assessment organizations.
- This report is a compilation of the progress made in the fourth quarter of FY2013, a summary of all of FY2013, and information about future improvements. This overview reports the highlights of the Q4 Progress Report, but readers are encouraged to consult the full report for full details.

1. Progress on Safety Measures at Each Nuclear Power Station

(1) Fukushima Daiichi Nuclear Power Station

- For the most part, removal of fuel from the Unit 4 spent fuel pool has proceeded satisfactorily (550 out of 1533 assemblies have been transferred as of March 31 of this year). The completion of the fuel removal is scheduled for the end of 2014. The successful fuel removal effort is the product of extensive preparations, including the installation of a permanent assembly base, safety reviews including reviews by external parties, and carefully organized operational training.
- In August 2013, TEPCO established the Contaminated Water and Tank Countermeasures Headquarters to thoroughly identify the risks and to organizationally implement the countermeasures. In addition, improvements in working conditions, such as reduction of radiation dose due to the decontamination work at the site, are underway in order to improve facilitation and reliability of the work as an emergency safety measures.

<Evaluation and recommendation by the Nuclear Reform Monitoring Committee>

- TEPCO begins removing spent fuel from the Unit 4, which marks an important milestone in the long-term decommissioning work. They need to continuously proceed

with the work in careful and cautious manner by putting safety the highest priority, and to disseminate the progress of the work to domestic and international societies with transparency.

- TEPCO needs to control nuclear safety at the Fukushima Daiichi Nuclear Power Station and the Kashiwazaki-Kariwa Nuclear Power Station in different ways, since each duty is completely different. They need to proactively make the use of foreign experts at Fukushima Daiichi Nuclear Power Station, who have much experience in decommissioning and contaminated water issues.

(2) Fukushima Daiichi Nuclear Power Station

- Operational controls and maintenance activities are being continued to safely maintain cold shutdown conditions of every Unit.
- In addition, the inspection of the inside of the Unit 1 spent fuel pool and the inspection/repair of the inside of suppression chamber of Unit 4 reactor containment vessel have been completed.

(3) Kashiwazaki-Kariwa Nuclear Power Station

- Learning lessons from the Fukushima Daiichi nuclear accident, various safety measures are progressing steadily, including measures to prevent tsunami-induced water intrusion, the securing of functions to cool down power sources and reactors, and accident expansion prevention measures.
- Units 6 and 7 are under examination to determine their conformance to new regulatory standards. In particular, the assessment result of geologic feature/structures in the site vicinity and within the site was reported to Nuclear Regulatory Commission, and an additional geological survey was started based on the examination at NRC.

<Evaluation and recommendation by the Nuclear Reform Monitoring Committee>

- Multiple and multi-layered safety measures based on the lessons of the Fukushima Daiichi nuclear accident are steadily being implemented, and safety is being improved at the Kashiwazaki-Kariwa Nuclear Power Station.

2. Review of Major Accidents and Troubles in FY2013

- Thirteen significant incidents occurred at Fukushima Daiichi NPS in FY2013, and are summarized in the body of the Progress Report. Factors underlying these events were analyzed within three broad categories: "safety awareness", "technological capability" and "ability to promote dialogue", and challenges are organized respectively.
- Because of the Band-Aid-like facility establishment and management after the accident, there was not enough time to take improvement measures while going to the actual place,

observing the actual thing and basing decisions on actual situation (Sangen Shugi principles). Insufficient management under such circumstances is pointed out as a common causative factor.

- In order to implement management thoroughly while enhancing safety awareness of overall company, it is necessary to go back to the basics again to upgrade individual technological capability and on-site capabilities based on the Sangen Shugi principles mentioned above. Furthermore, top management will make efforts to enhance ability to promote dialogue among parties concerned including contractors.

3. Progress on Nuclear Safety Reform Plan (Management)

Six management-related measures are being implemented to sever the so-called "negative spiral", underlying structural problems within the nuclear power division:

< Measure 1: Reform Starting from Management >

- Following activities are being implemented: development of common awareness concerning nuclear safety through discussions among top management and nuclear leaders¹ about the reviewing of Fukushima Daiichi Accident, trainings intended for the acquisition of knowledge on nuclear accident prevention, and IAEA-initiated workshops to learn the method of safety culture self-assessment.
- As a result of these activities, discussions among top management and nuclear leaders have been more extensive than before. However, a safety culture has yet to permeate throughout the organization as a whole, because the top management and nuclear leaders failed to fully transmit to every member in the organization clear messages such as expectations to improve safety culture.

<Evaluation and recommendation by the Nuclear Reform Monitoring Committee and the international organizations>

- Dissemination of safety culture, implementation of the nuclear safety reform, and oversight of the performance by top management including nuclear leaders of the Head Office and the power stations are insufficient.
- TEPCO needs to improve the effectiveness of the nuclear safety reform continuously. Toward that end, TEPCO needs to measure the progress of the reform for each item to perform quantitative target management.

¹ Executives in charge of nuclear energy operations, executive officers, Fukushima Daiichi Decontamination & Decommissioning Engineering Company President & CDO, Fukushima Daiichi Stabilization Center Director (through March 31, 2014), NPS Directors, NPS Construction Office Directors, managers or equivalents (excluding fellows) for departments concerning nuclear power operation at the head office (corporate) and the Fukushima Daiichi Decontamination & Decommissioning Engineering Company

< Measure 2: Enhancement of Oversight and Support for Management >

- The Nuclear Safety Oversight Office (Head Officer: John Crofts) is proceeding with monitoring activities over efforts for stabilization of Fukushima Daiichi NPS, safety enhancement at Kashiwazaki-Kariwa NPS, and other nuclear safety-related activities by the nuclear power division. It is also implementing educational training for the monitoring staff. Reports based on these monitoring activities, including advice based on the monitoring results, were provided to the Board of Directors and to the nuclear power division.
- Although the nuclear power division has begun to implement the NSOO's guidance for improving safety culture and organizational management, the NSOO has noted that "TEPCO is still far behind compared with organizations which have achieved the world's highest nuclear safety level, and there remains much to do."

<Evaluation and recommendation by the Nuclear Reform Monitoring Committee>

- The monitoring activities of the NSOO are currently on track, and it is commendable that TEPCO is sincerely taking and implementing improvement recommendations by the NSOO.

< Measure 3: Enhancement of Ability to Propose Defense-in-Depth >

- As part of the effort to enhance "defense-in-depth," the following measures are being implemented; "Safety Improvement Competitions," review of operational experience in Japan and overseas, reexamination of the review process and thorough analysis of natural hazards.

< Measure 4: Enhancement of Risk Communication Activities >

- Company-wide (nuclear power division in particular) information collection and analysis is being performed, and organizational consultation services are provided to give required instructions and advices.
- It is necessary to correct the concept of "the publication of risks should be put on hold until we obtain data or facts which can be regarded as evidences".

<Evaluation and recommendation by the Nuclear Reform Monitoring Committee>

- TEPCO needs to value transparency, not to be regarded as they are hiding information.

< Measure 5: Reform of Power Station and Head Office Emergency Response Organizations >

- An emergency structure based on the ICS² has been developed, and training is repeatedly being conducted to identify any issues and implement improvements

² Incident Command System (standard on-site command system for use in emergency, adopted in the United States, etc.)

with advice and other suggestions provided by outside experts.

- At Kashiwazaki-Kariwa, in comparison to previous training, improvements have been seen in operating the emergency response organization. An approach to decision-making has also been articulated, and the chain of command has been clarified. Steps have been taken to increase the speed with which information is shared with local municipalities and others.
- The acquisition level of ICS knowledge remains insufficient at Headquarters, Fukushima Daiichi NPS and Fukushima Daini NPS. Therefore, efforts will be made to enhance individual and group-by-group emergency response ability and cooperation with external organizations.

<Evaluation and recommendation by the Nuclear Reform Monitoring Committee>

- Emergency training exercises are being repeatedly carried out, and many improvements were made in light of the problems uncovered so far. In the future, TEPCO needs to carry out joint drills with outside parties based on more diversified conditions.

< Measure 6: Reassessment of Non-Emergency Power Station Organization and Enhancement of Capability for Direct Maintenance Work >

- In September of last year, the following activities were implemented to reassess the management of non-emergency power stations. They include: reinforcement of departments responsible for human resource development, incorporation of safety-related departments into a Nuclear Safety Center, establishment of new organizations for the enhancement of system engineering ability, and engineering capability of direct management.
- By implementing system engineering education and training tailored to the requirements of each power station, the technological capability of the staff has been improved.

4. Planned improvements toward FY 2014

- The following will be focus areas for improvement in FY2014:

< Measure 1: Reform Starting from Management >

- Clarification of lines of responsibility and accountability, enhancement of monitoring and the reform promotion system, and facilitation of in-house communications.

< Measure 2: Enhancement of Oversight and Support for the Management >

- The Nuclear Safety Oversight Office will be requested to provide evaluation/advice and raise their own awareness of nuclear safety, and at the same time will endeavor to effectively increase the entire organization's awareness of nuclear safety.

< Measure 3: Enhancement of Ability to Propose Defense-in-Depth >

- All the employees of the Nuclear Power & Plant Siting Division as well as Fukushima Daiichi Decontamination & Decommissioning Engineering Company will share the results of the "Safety Improvement Competition" as well as the results of review of the operational experiences in Japan and overseas, and the results of hazard analysis, etc. Personnel at the forefront of the site will proactively make challenges to take various measures for improving safety.

< Measure 4: Enhancement of Risk Communication Activities >

- Improvement of risk communications to enable members of the public to more accurately understand the relative risks associated with nuclear generation of electricity. We will also focus on communicating information proactively, speedily and accurately, thereby promoting trust and confidence among people in communities around the plant sites and in society at large.
- When engaging in risk communication, checks and corrections will be made to ensure that risk levels are appropriately and accurately communicated.

< Measure 5: Reform of Power Station and Head Office Emergency Response Organizations >

- In the Head Office, Fukushima Daiichi and Fukushima Daini, in addition to participation in comprehensive training to be done quarterly, each individual or group of people will learn the provisions of ICS and engage in repeated practice, and will enhance emergency response capabilities by strengthening communications with other components of the company, as well as with external organizations.

< Measure 6: Reassessment of Non-Emergency Power Station Organization and Enhancement of Capability for Direct Maintenance Work >

- The range of trainees will continually be enlarged and opportunities will be created such that the technical capabilities that have been acquired will be put into practice at the job site.
- In accordance with the Japanese principle of going to the actual place, observing the actual thing and basing decisions on actual situation, TEPCO needs to enhance field capabilities, which will form a basis of technical capabilities.

Note that regarding the effects of the action plans described in measures to be taken 1 through 6, targets will be set so that quantitative evaluation can be made as much as possible, and 3 different methods of measurement will be made available for use (self-evaluation through questionnaires; evaluation by means of the indexes of results; and third-party

evaluation to be made from the outside). While monitoring the situation of progress of each of the measures and any problems associated therewith, improvements will be made continually by applying the cycle of PDCA.

As a nuclear power operator, TEPCO will continue to tackle nuclear safety reform, while receiving objective assessments by the Nuclear Reform Monitoring Committee, based on our resolution that the **“Fukushima nuclear accident will never be forgotten and we will be a nuclear power operator that continues to create unparalleled safety and increase the level of that safety to be greater today than yesterday and still greater tomorrow than today”** so that we may regain the trust of everyone in society and the people of Fukushima Prefecture.

Ends