

- To realize our determination to be a “nuclear operator than continuously improves safety to unparalleled levels by enhancing safety levels 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 pursuit of the world’s highest level of safety.
- The 9th Nuclear Reform Monitoring Committee meeting was held on August 24. The Committee’s evaluation was that “activities at all levels from TEPCO’s top management, nuclear power leaders and management down to the individual personnel in charge are functioning and nuclear safety reform is steadily progressing.” Meanwhile, with regard to work safety, the Committee instructed TEPCO to further commit itself as “it is important to thoroughly ensure safety at Fukushima Daiichi and all those involved including contractors have an even higher level of safety awareness.”

## 1. Progress on Safety Measures at Nuclear Power Stations

- With the understanding of Fukushima Prefecture and fishermen, groundwater has been pumped out through sub-drains at Fukushima Daiichi NPS. Then, after it is cleaned up and confirmed to be below the operational target level, the water has begun to be discharged into the port, which will curb the generation of highly contaminated water.
- At Kashiwazaki-Kariwa NPS, safety measure construction has steadily progressed. An intensive examination to review compliance with new regulatory requirements began in August.

### Fukushima Daiichi Nuclear Power Station

Work directed at fuel removal is steadily moving forward with the reactor building cover beginning to be dismantled at Unit 1 and the removal of large rubble completed from inside the spent fuel pool at Unit 3.

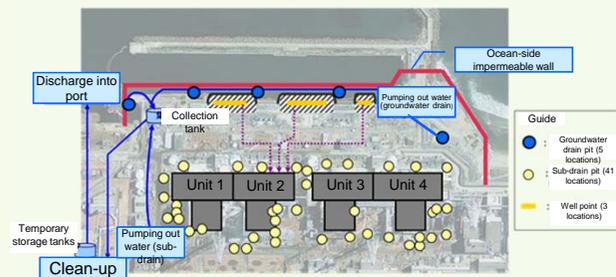


Unit 1: Dismantling of building cover (roof removal)



Unit 3: Lifting out large rubble (fuel handling machine)

Seawater pipe trenches have been sealed and groundwater begun to be pumped out of wells (sub-drains) near buildings along with the advancement of other measures to address contaminated water, which are significantly reducing any leakage of highly contaminated water and the risk of such developments.



Pumping out and draining groundwater through sub-drain into port



Restarting sheet pile installation for impermeable wall on ocean side

The environment is being improved. Since the Fukushima nuclear accident, more than 15,000 people have visited the site to see the progress of decommissioning by, for example, participating in tours of facilities used to treat and store contaminated water.

Even in the 2<sup>nd</sup> quarter, serious accidents have been sustained by personnel, and we need to further enhance our commitment to ensuring safety.

- In the 2<sup>nd</sup> quarter, there was a fatal accident (August 8) as well as damage to power cables (July 28). Safety measures will be reliably implemented, and the status of such implementation will be confirmed during management observations (MO).

### Fukushima Daini Nuclear Power Station

The Unit 3 spent fuel pool gate has been closed off so that the spent fuel is safely held.

- Similar work will be performed successively at Units 1, 2 and 4.

Assistance is continuing to be provided to Fukushima Daiichi NPS with the storage of welded tanks and production of wave-damping blocks for the port.

- Contributions are being made to reducing exposure and effectively utilizing work areas at Fukushima Daiichi NPS.

WANO safety review during shutdown

- Planning and implementation of operator training, facility and equipment maintenance, fire protection and other areas in keeping with the cold shutdown state extending over the long-term.



Unloading tanks on to Fukushima Daini NPS quay

### Kashiwazaki-Kariwa Nuclear Power Station

In addition to construction of a 15m high seawall, the lessons learned from the Fukushima nuclear accident have been taken into account and the construction of safety measures steadily advanced in preparation for station blackout, and an intensive examination began in August to review compliance with new regulatory requirements.



Additional alternate high-pressure water injection facilities have been installed to multiplex reactor cooling water injection functions



Additional 125V DC storage batteries have been installed to ensure DC power source capacity that is three times greater (over 24 hours) than before



Large-capacity water cannons have been deployed that use moisture to deposit radioactive materials when released following a severe accident

Since September, training has been underway to allow personnel to experience and understand hazards.

- As of the end of the 2<sup>nd</sup> quarter, 177 power station personnel and 152 contractor personnel have participated in hazard training sponsored by TEPCO.



Actual switchboard displayed which caught fire and spread due to his short circuit during work (to learn about the dangers of short circuits)



Equipped with full-harness safety belts, personnel practice hanging

# Overview of Nuclear Safety Reform Plan Progress Report: Progress Made in 2<sup>nd</sup> Quarter FY2015

## 2. Nuclear Safety Reform Plan Progress (Management Aspects)

- Management and nuclear power leaders have adopted benchmarks used in other countries, invited experts and progressively incorporated external knowledge to improve organizational operations and management.
- For Fukushima Daiichi NPS, all numerical radiation data has been made available to the public since August 20 under the policy of publicly disclosing all numerical radiation data.

Safety Awareness	Technical Skills	Communication Competence
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### Measure 1: Reform from Top Management

- Management and nuclear power leaders are taking the initiative in conducting daily reviews and using key performance indicators (KPI) and management observations (MO) to monitor the status of realizing expectations.
  - Nuclear power leaders are emphasizing efforts to convey ideas through direct dialogue with personnel on the front lines in the field and communication of messages over the intranet.
- Visits have been made to INPO, Southern Nuclear Corporation and Exelon Corporation (all based in the United States) to exchange ideas about fostering leaders and building teamwork.
  - TEPCO is also working on formulating plans for managing and developing individual capabilities and systematically implementing leadership training.



Leadership development plan briefing at Exelon Corporation

### Measure 2: Strengthening Observation and Assistance for Management

- Weaknesses have been seen in preventing accidents involving casualties at nuclear power stations, so the Nuclear Safety Oversight Office is continuing to monitor the situation.
- Training has begun for managers on conducting management observations
  - With the cooperation of WANO, training is being provided, which 88 Head Office managers have attended (September 24 and 25). Training will begin at power stations in October.



Management observation training for managers (Kashiwazaki-Kariwa NPS)

### Measure 3: Strengthening the Ability to Propose Defense in Depth

- Of the 121 entries in the first competition of 2015 to strengthen the ability to propose safety improvements, 15 have been selected as candidates for outstanding proposals.
- Efforts have taken hold so that operational experience (OE) data are utilized at daily meetings and other occasions (rate of implementation at the end of the 2nd quarter: 96%).



Whiteboard being used during emergency training (Fukushima Daini NPS)

### Measure 5: Strengthening Emergency Response Capabilities of Power Stations and Headquarters

- Training has been repeatedly conducted to strengthen the emergency response organization's capability to respond and operate
  - In the 2nd quarter, self assessments were begun in keeping with the degree of difficulty of the scenarios

### Measure 6: Strengthening Emergency Response Capabilities and Field Personnel Capabilities

- Training has been conducted by means of directly managing work and basic skills strengthened in keeping with conditions at Fukushima Daiichi, Fukushima Daini and Kashiwazaki-Kariwa, respectively, so as to continually enhance emergency response capabilities.
- The positions of Corporate Functional Area Manager (CFAM; Head Office) and Site Functional Area Manager (SFAM; power stations) have been established for each specialization and activities begun for ascertaining differences compared to the world's highest level, identifying issues to be resolved, formulating and initiating improvement measures, and the status of such activities is reported to nuclear power leaders.
  - When initiating activities, expert teams are invited from overseas to provide instruction and guidance on personnel development, operations management and other issues.



Training in connecting temporary hoses (Fukushima Daiichi)



Observation of operations by expert team (Kashiwazaki-Kariwa NPS)

### Measure 4: Enhancing Risk Communication Activities

- At the IAEA General Conference (September 14-18), a panel presentation was set up, pamphlets distributed and videos presented to describe conditions at Fukushima Daiichi NPS and present safety measures at Kashiwazaki-Kariwa NPS.



Panel presentation at IAEA General Conference

- Under the policy of making all radiation data available to the public data has been successively released on the TEPCO website since April 30, and all numerical data has been made public since August 20 (approx. 70,000 items annually)
  - Systemization of the work to make radiation data available to the public was completed on August 20. The reliability of this work will be enhanced and efficiency improved.
  - Top management at Fukushima Daiichi NPS will periodically review the status of data disclosure management.



Data disclosed on TEPCO's website (results of analysis of radioactive materials in the surrounding area)

KPI pertaining to self-assessments on nuclear safety	Entire Nuclear Power Division: 84.0 points (+2.4 over preceding term) Nuclear power leaders: 93.9 points (-0.4 below preceding term) Good overall, but efforts as an organization for reflection need to be enhanced	KPI pertaining to formulation of operation plans to enhance technical skills	76.9 points (-0.6 below preceding term) PO&C, which indicates the world's highest performance levels, has been utilized in formulating operation plans	KPI concerning status of internal reciprocal communication	Entire Nuclear Power Division: 76.2 points (+0.2 over preceding term) Nuclear power leaders: 82.9 points (+2.6 over preceding term) Positive efforts will continue to be made to realize excellent internal communication
KPI pertaining to improvement using MO and messages on safety communicated by nuclear power leaders	90.4 points (+40.4 over preceding term) Efforts will continue to be made to strengthen management observations and improve understanding of messages	KPI pertaining to the degree to which operation plans are executed	39.8 points (measurement began this term (1st quarter results)) ※50 points if progress is made as planned PDCA cycle directed while status of operation plan execution is reviewed quarterly	KPI concerning external assessments of TEPCO's communication of information, etc.	<FY2014 results> +1.3 points (quality and quantity of information communicated) +1.2 points (significance and stance on public relations and hearings) Compared to previous year, most people have evaluated the activities as "good"