Overview of the Nuclear Safety Reform Plan Progress Report <FY2016 Q3>

- Since April 2013 the Nuclear Safety Reform Plan has been implemented in order to achieve the world's highest level of safety at our power stations as an expression of our resolution to **"**Keep the Fukushima Nuclear Accident firmly in mind; we should be safer today than we were yesterday, and safer tomorrow than today; we call for nuclear power plant operators that keep creating unparalleled safety**."**
- The Nuclear Safety Reform Plan self-assessment findings revealed the need to enhance organizational governance and human resource cultivation. In response to these findings, we are sharing information on basic plans and priorities and quickly implementing necessary reforms, and a management model is being established and developed as a governance enhancement measure to promote follow-ups by management.
- Furthermore, the Nuclear Personnel Training Center has become the focal point for implementing systematic training to provide the world's highest level of technical and management skill.

1. Status of progress of safety measures at each power station

- At Fukushima Daiichi all of the wall panels have been completely removed from the Unit 1 reactor building. In regards to the land-side impervious wall, watertightness has been enhanced by filling in the gaps in the wall and on the side facing the mountains, two of the seven locations that have yet to be frozen are being frozen.
- At Fukushima Daiichi and Daini, in consideration of the shutdowns to reactor coolant injection equipment and spent fuel pool cooling systems resulting from human error and earthquakes, efforts are being made to make workers more aware of important equipment and improve equipment weaknesses.
- At Kashiwazaki-Kariwa, safety measures for various hazards continue to be steadily implemented.
- At all three power stations corrective measures and recurrence prevention measures are being thoroughly implemented in response to the discovery of 25 failures to submit notifications in accordance with Clause 88 of the Industrial Safety and Health Law and 5 failures to perform inspections in accordance with Clause 276 of Industrial Safety and Health Ordinances.

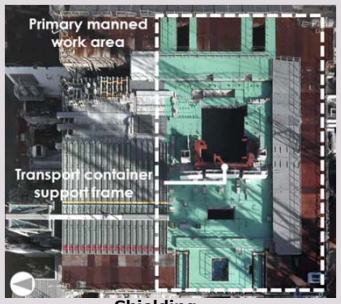
Fukushima Daiichi NPS

Removing fuel from the spent fuel pool

◆The wall panels have been completely removed from the Unit 1 reactor building

- Wall panel removal began on September 13 and the removal of all 18 panels was completed on November 10
- Work will continue with the goal of commencing pool fuel removal during FY2020.

Wall panel removal completed



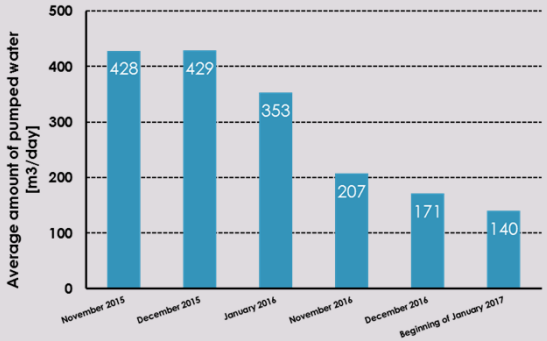
Shielding installation

◆Installation of shielding on the top floor of the Unit 3 reactor building has been completed

- The installation of shielding to reduce radiation levels on the top floor of the reactor building, where workers will need to be, was completed on December 2nd.
- A support frame to hold fuel transport containers was erected next to the pool on November 28th.
- The planned commencement of fuel removal from the pool has been moved from FY2017 to FY2018.

Confirming the waterproofing effect of the land-side impermeable wall

- A portion of the land-side impermeable wall was excavated on the south side to visually confirm that the frozen state of the wall is being maintained (November 21)
- On the mountain side two of the seven locations that have yet to be frozen are being frozen (December 3)
- The impact of the land-side impermeable wall has been confirmed by examining the difference in groundwater levels within and outside the impervious wall and by changes that occur when groundwater is pumped up using various pumps.
- The amount of water pumped up daily has dropped from approx. 400m³/day prior to completion of the land-side impermeable wall to 140m³/day (as of the beginning of January 2017)



Reductions in the amount of water pumped up as a result of land-side frozen soil impervious wall

Issues common to the Fukushima Daiichi and Daini Power Stations

Shutdowns to reactor coolant injection equipment and spent fuel pool cooling systems resulting from human error and earthquakes

- At Fukushima Daiichi, Units 1~3 spent fuel pool cooling systems shut down on December 4, and on December 5 the Unit 3 reactor coolant injection system shutdown. At Fukushima Daini, the Unit 3 spent fuel pool cooling system shut down on November 22nd.
- There was no impact on the environment due to the small amount of decay heat and quick repair work.
- However, the facts that important equipment shut down as a result of human error, and also predictable water level fluctuations resulting from an earthquake, have shown that there are weaknesses in regards to worker awareness and equipment design.
- Furthermore, the shutdown of reactor coolant injection and spent fuel pool cooling systems are events of concern to the people of Fukushima Prefecture and society as a whole, so information on these events should have been provided quickly to put the people at ease.
- In consideration of the events mentioned above, recurrence prevention measures are being implemented in accordance with an order given by the president on December 5th.

Kashiwazaki-Kariwa Nuclear Power Station

As a lesson learned from the Fukushima Nuclear Accident, safety measures are being implemented for not only earthquakes and tsunamis, but every hazard that has the potential to cause a severe accident.

- High pressure coolant injection pumps that have been additionally installed to provide reactor cooling function are being improved so make them easier to maintain and inspect (the installation location of auxiliary equipment is being changed, etc.) (Unit 7)
- Gas turbine generator trucks used to provide electricity in the event of a loss of power are being anchored
  - Two trucks have been deployed for use at Units 1~4 on October 12th, (21m above sea level), and foundation work for subterranean fuel tanks is underway for generator trucks for Unit 6 and 7 next to the Unit 7 turbine building (12m above sea level)

The Mayor of Kashiwazaki City observes the installation of Unit 7 high pressure substitute coolant injection pump

Foundation work being done next to the Unit 7 turbine building (picture taken following concrete pouring)

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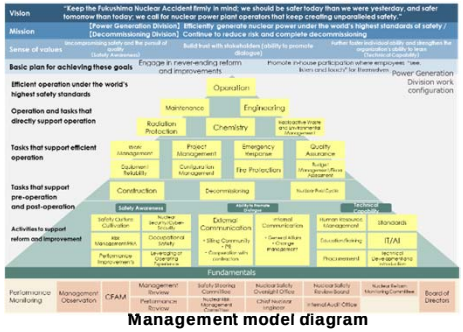
2. Nuclear Safety Reform Plan (Management issues) progress

- ◆ In order to ensure that the entire organization has common understanding about objectives and mutual roles, a management model has been created to make a systematic way of positioning personal duties and their relationship to nuclear safety reform, and this management model has been clearly stated along with the company's vision, mission, sense of values and basic plan.
- Creation of "Fundamentals" that compile "ideal behaviors"
- By using fundamentals to compare one's own behavior with "ideal behavior," one's insufficiencies can be made clear thereby accelerating changes to desired behavior
- And, position descriptions that note the requirements for each work position and a succession plan used for training, and handing over work to, replacements, are being created.



Management model diagram

Safety Awareness

Measure 1 Management reforms

- Nuclear safety culture assessment
  - Following the Kashiwazaki-Kariwa NPS assessment in February of last year, interviews and site observation were implemented at Fukushima Daini to assess the state of nuclear safety culture. (October 24~28)
  - The objective of the assessment is to promote improvements by identifying weaknesses in our safety culture without depending upon third-party reviews, such as by WANO.
  - Assessment findings identified issues that are not being handled adequately.
  - Going forward improvements will be made by conforming the status of implementation of management observation (site observation by managers) and the degree of permeation of fundamentals.

Measure 2 Enhancing the monitoring and support of management

- Monitoring and assessment by the Nuclear Safety Oversight Office (NSOO)
  - With 94 out of 127 recommended field improvements made safety is steadily improving.
  - Leaders approve absolute personal dose limits objectives. The NSOO will confirm that exposure risk reduction plans are being strictly adhered to.
  - Emergency response ability as improved greatly. The NSOO is focusing on further identifying risk and creating advance plans.

NSOO in action

Technical capability

Measure 3 Enhancing the ability to propose defense-in-depth measures

- Safety improvement proposal competitions are held to vitalize voluntary efforts to improve safety.
  - The 286 proposals submitted during the 6th competition were reviewed and a total of 14 selected as "best proposal" candidates for all three power stations.
  - Two best proposals were put into effect this term (cumulative total: 54 proposals)


Example of a best proposal made a reality: "Deployment of heavy equipment used to remove debris left in the wake of a tsunami: Engine-powered cutter (left) (Fukushima Daini) and Claw-equipped excavator (right) (Kashiwazaki-Kariwa)

- Leveraging operating experience (OE) from both inside and outside of Japan
  - A JCO criticality accident study sessions were held to give an overview of important problems and understand the lessons to be learned from the accident (Fukushima Daiichi/Daini: December 6, Kashiwazaki-Kariwa: December 26, Head Office: December 21)

Measure 5 Enhancing the ability of power stations and the Head Office to respond to emergencies

- Enhancing response ability through training
  - General training was held a total of nine times this term at the three power stations. Out of these training sessions, joint training with the Head Office was held once with Fukushima Daiichi and once with Fukushima Daini
  - The "objective setting committee" employed at Kashiwazaki-Kariwa has been introduced at Fukushima Daiichi and Daini. But setting short-term goals and sharing priorities all parties can act as one when responding to a disaster.
  - The Head Office has made improvements by introducing the Push-type support by which power station support is voluntarily offered.

Head Office Nuclear Response Headquarters objective setting meeting

General training at Fukushima Daini

Measure 6 Cultivating personnel for improving nuclear safety

- The education and training program is being reconstructed at the Nuclear Personnel Training Center.
  - The objectives, teaching materials and test problems for field skill certification, such as for Operation, Maintenance and Fuel, etc., are being revised to improve the program so that it is more systematic and realistic.
  - Education and training programs on, for example, Nuclear Safety Overview and Risk Assessment, etc., are being planned.
- Improvement of in-house Technical capability in order to prevent small issues from becoming severe accidents
  - A skill competition between the three power stations in order to make workers aware of their level of skill and also to provide an opportunity to display the skills that workers have honed through daily training. (October 20, 21)

Technical capability competition (Fukushima Daini team competition)

Ability to promote dialogue

Measure 4 Developing risk communication

- Proactively disclose information on Fukushima Daiichi decommissioning and safety measures being implemented at Kashiwazaki-Kariwa
  - Site tour and opinion exchange session for high school students in Fukushima City held for the first time since the Fukushima Nuclear Accident (November 18)
  - Opportunities to engage in dialogue are being provided in Niigata Prefecture through town hall briefings, the operation of the *Fureai* Talk Salon and service hall, power station tours and the operation of communication booths.
  - The Economist published an article on Kashiwazaki-Kariwa (October 11) and NHK World aired an interview with FDEC president Masuda (October 24)

Tour of Fukushima Daiichi by high school students

Explanation given at Kashiwazaki-Kariwa service hall

KPI related to leader behavior in order to improve safety awareness 【Objective: Increasing trend】	58.9 points (QoQ +4.2) The messages sent by nuclear leaders are being read by many people in the Nuclear Power Division, but more messages that make readers feel that the messages "are helpful" will be sent.
KPI related to the degree of improvement of safety awareness in the entire Nuclear Power Division 【Objective: Increasing trend】	61.7 points (QoQ -2.0) Nuclear safety retrospectives have taken root. Managers are making an effort to venture into the field for management observation
KPI related to ordinary technical capability 【Objective: More than 100 points by the end of FY2016】	84.7 points (QoQ +8.5) Efforts by the Nuclear Personnel Training Center are being strongly promoted in order to cultivate in a planned manner personnel that can help to improve safety awareness.
KPI related to emergency technical capability 【Objective: More than 120 points by the end of FY2016】	119 points (QoQ +2.0) Personnel with the skills required during an emergency will continue to be secured
KPI on the ability to promote dialogue (with external parties) 【Objective: Positive increase over the last year】	<FY2016 results (comparison with FY2015)> +0.9 points (Quantity and quality of information disseminated) +1.0 points (Awareness and approach to public relations and public hearings) Assessed to have "improved" compared with the previous fiscal year
KPI on the ability to promote dialogue (with internal parties 1) 【Objective: Increasing trend】	Entire Nuclear Power Division: 79.2 points (QoQ +0.4) Nuclear Leaders: 82.4 points (QoQ -0.4) Efforts to engage in good internal communication will continue
KPI on the ability to promote dialogue (with internal parties) 【Objective: More than 75% reply rate and understanding level of more than 2 points】	【Measurement began in FY2016 Q3】 Reply rate: 32.7% Understanding level: 2.4 points Assessment shows that many read the messages but do not answer the questionnaire