# **FPCJ Press Briefing**

# Fukushima Daiichi Decontamination and Decommissioning : Current Status and Challenges

@Nippon Press Center Bldg.

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**Current Status of Fukushima Daiichi NPS Latest Status of Contaminated Water** Management 3. Fuel Removal from the Spent Fuel Pools 4. Toward Fuel Debris Retrieval 5. Improving Work Environment 6. Information Sharing and Communication

#### (1) State of Units 1~4 **TEPCO**

All reactors are in cold shutdown condition.

Plant parameters including RPV and PCV temperatures are monitored continuously 24 hours/day.



Unit 1 X Cooling water injection

### Values as of 5:00 am on February 22, 2018

	Temperature at the bottom of the pressure vessel	Temperature inside the containment vessel	Fuel pool temperature	Reactor coolant volume
Unit 1	13 °C	13°C	26 °C	3.0 m∛hour
Unit 2	18 ℃	19 ℃	32 °C	3.0 m∛hour
Unit 3	18 ℃	18 ℃	26 °C	3. 0 m∛hour
Unit 4	_	_	12 ℃	_





### (Note)

Temperature of Unit 1 spent fuel pool is the one as of Feb. 1, because its circulation cooling system is temporarily stopped.

# TEPCO (2) Monitoring Level in the Sea Compared to the situation just after the accident, the current level of radioactivity has been lowered to parts per hundred thousand, to per million.

- The concentrations outside the port are substantially below regulation limits.
- Concentration levels decreased further after closure of the sea-side impermeable wall.



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# ΤΞΡϹΟ

# (1) Three Principles for Measures to Counter Contaminated Water (2)

Measure		Status		
1 Removing source Of conta- mination	Purification with multi nuclide removal equipment (ALPS)	Completed RO concentrated water treatment in May, 2015	Continue operation	
	Removal of contaminated water from trenches	Completed in December, 2015	Completed	
	Removal of contaminated water from buildings	<ul> <li>Completed water removal from the Unit 1 turbine building, Mar, 2017</li> <li>Completed water removal from the Unit 1-3 condensers, Dec, 2017</li> </ul>	Continue removal	
② Isolating fresh water from Contamin- ated Areas	Pump up of groundwater through groundwater bypass wells	The accumulated amount of drainage to the sea : 356,000t (As of late Feb. 2018)	Continue operation	
	Pump up of groundwater through subdrain	The accumulated amount of drainage to the sea : 498,000t (As of late Feb. 2018) ※Including pumped up water through groundwater drain (for pumping up ground- water dammed up by seaside impermeable wall)		
	Ice Wall (Frozen soil wall)	Almost all sections reached below 0 degrees	Wall formation almost completed	
	Paving to prevent rain water seepage into soil	Completed 94% of planned area in Dec. 2017	Continue work	
③ Preventing leakage of contam- inated water	Ground improvement with liquid glass	Completed in Mar. 2014	Completed	
	Installation of sea side impermeable wall	Completed closure in Oct. 2015	Completed	
	Augmentation of tanks	Implementing replacement of flanged tanks with more reliable welded tanks and additional construction of welded tanks	Continue construction	
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# **TEPCO** (2) Closure of the Ice Wall

Thanks to the closure of the Ice Wall, the groundwater from the landside is dammed up and makes a detour around the buildings, and eventually flows to the seaside.



## **TEPCO** (3) Reduction of contaminated water generation

- Generation of the contaminated water originated from rainy and ground water decreased from 490m<sup>3</sup>/Day to 110m<sup>3</sup>/Day (Dec. 2017 to Feb. 2018) after the closure, which is less than one-fourth of the initial amount.
- Generation of the contaminated water totaled 140m<sup>3</sup>/Day if water originated from decommissioning work was included. Even though the record was during the drought season, that amount is below the target value of 150 m<sup>3</sup>/Day set for 2020 in the Mid- and Long-term Roadmap.



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# **TEPCO** (1) Fuel Removal from the Spent Fuel Pool (Unit 4)

- Fuel removal started on November 18, 2013.
- Removal of 1535 fuel bundles completed on December 22, 2014 as scheduled.
- This gives confidence to proceed to fuel removal at units 1, 2 and 3.
- No risk from fuel remains at unit 4.



September 22, 2011



July 5, 2012



November 12, 2013: Completion of fuel removal facility (The volume of steel used is equivalent to those of Tokyo Tower)



Process of removing fuel rods at SFP Unit 4

Fuel removal was completed on Dec. 22, 2014

### Major risk reduction at Fukushima Daiichi





# (3) Fuel Removal from the Spent Fuel Pool (Unit 1)

Building cover was installed in Oct. 2011 to prevent dispersion of radioactive materials. Removal of panels was completed in Nov. 2016. After the installation of a windbreak fence, removal of rubble started in Jan. 2018. Fuel removal will start in FY2023.

**TEPCO** 



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# (1) Assumed Distribution of Fuel Debris

**TEPCO** 

- It is assumed that at Unit 1 and 3, most of fuel debris has dropped to the bottom of PCV.
- It is assumed that at Unit 2, most of fuel debris has remained at the bottom of RPV, while only a small amount has dropped to the bottom of PCV.



# **TEPCO** (2) Internal Investigation of Unit 2 PCV (Jan. 2018)

- An investigative device was lowered through distortion of the grating to the bottom of PCV inside the pedestal.
- Deposits thought to be fuel debris as well as fuel assembly components which were located in RPV before the accident were identified at the bottom.



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# **TEPCO** (3) Internal Investigation of Unit 3 PCV (Jul. 2017)

- Several fallen obstacles and sediments, such as solidified molten materials and grating were identified inside the pedestal.
- Analysis of image data shows, in contrast to Unit 2, a larger amount of fuel debris dropped inside the pedestal.



# **TEPCO** (4) Current Radioactive Impact on the Environment

Radiation in the reactors is blocked by iron and reactor buildings.
 No impact on the surrounding environment has been found after the internal investigation conducted at Unit 1 through 3 since last year.

The case on Jan 19, 2018: No change in dose rate was found after the work during the internal investigation.



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# **TEPCO** (1) Decreasing Site Radiation Dose

As a result of radiation reduction measure, workers don't have to wear full-face respirator or half-face respirator anymore in most parts of the site.



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# **TEPCO** (2) Worker Security and New facilities

- Currently more than 5,000 people / day are working on weekdays.
- Facilities such as Contractors' Office Building and Large Rest House have created the environment where TEPCO and contractors can address the decommissioning work closely in the vicinity of the site.

#### Changes in number of workers

Average number of workers (TEPCO employees and contractors) on weekdays engaged in work is 5,050 as of Dec. 2017.

Percentage of workers from local area is approx. 60% as of Dec. 2017.



Change in the average number of workers (actual value) on weekdays in the months following 2013.





### **New Facilities**

 Fukushima Revitalization Meal Service Center was established in Ohkuma Town (March 2015)

Large rest house with a capacity of approx. 1,200 workers (since May 2015)

Operation start of a heliport for emergency transportation (May 2017)



### Ensuring stable long-term employment

It is important to create the environment where contractors' workers can work free from anxiety so that they can continue to work over a long period of time.

Currently, approximately 90% of orders are fulfilled by negotiated contracts, which enables contractors to secure workers in a long term.

Increased workers living around Fukushima Daiichi contributes to Fukushima revitalization.

#### Decommissioning through close ties with contractors

- Contractors' Office Building began operating, which has enabled TEPCO and contractors work closely in the vicinity of the decommissioning site.
- On January 18, TEPCO and contractors jointly held a congress to pledge for no human-caused accident to happen.



Congress held by TEPCO Contractors' office building and contractors

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# ΤΞΡϹΟ

# (1) **Two-way Communications with Local Residents**

# Explanation at public meeting

- Status Updates with regards to decommissioning are given to the public at the regular public meetings hosted by Fukushima Prefecture
- Opinions to TEPCO have been reflected to decommissioning measures



Center left : Ohkura, Representative of the Fukushima Revitalization Headquarters Center right : Masuda, Chief Decommissioning Officer, President of Fukushima Daiichi Decontamination and Decommissioning Engineering Company

### Invitation to Site Visits

- Inviting the prefectural government and organizations
- Percentage of visitors from within the prefecture has increased to 31% (from 28% in FY2015)
- TEPCO aims to increase the number of site visitors to 20,000/y by Tokyo Olympics.
- Examples of comments received:
   "Decommissioning is a big underta-
- king done with the cutting edge technology"
- "Seeing is believing"
- "Every time I visited Fukushima Daiichi, I was able to find some progress"
- FY2016 Number of visitors: 9,183 Overseas From within 9% Fukushima prefecture

31% 59% Outside of

Fukushima Prefecture

More than 28,000 visitors since the accident

### Attendance at 2nd Decommissioning Forum (Jul. 2017)

- Providing an answer to what the local residents want to know about decommissioning Fukushima Daiichi
- The challenges regarding communication were also discussed.
- In the follow-up workshop held in last November, the importance of considering concerns and interests of different types of people as well as how people are affected by the contents of information regarding Fukushima Daiichi was recognized.



[Held in Hirono Town, Fukushima Prefecture by NDF] TEPCO

The latest information including live footage, weekly work schedule and real time data are shared through website.

- TEPCO released new videos where "Risk Communicators" respond to the interests of people.
- In a new magazine, TEPCO focuses on understandability and familiarity by featuring figures in local or educational communities who are engaged in the decommissioning work.

# Information sharing through website



<An explanatory video by "Risk Communicators" >



### **Information Magazine**

