

Preparation for fuel removal from the spent fuel pool in Unit 3 reactor building at Fukushima Daiichi Nuclear Power Station

Demonstration of fuel handling machine and crane

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Tokyo Electric Power Company



東京電力

TEPCO

Preparation for and Implementation of Fuel Removal

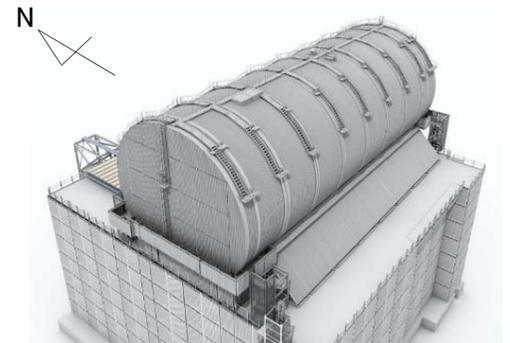
MAJOR MILESTONES

Step 1 Removal of large pieces of rubble

Step 2 Decontamination & shielding

Step 3 Installation of cover & fuel handling system

Step 4 Fuel removal



Cover for spent fuel removal at Unit3

2. Removal of large pieces of rubble on the operating floor

■ Complete view of operating floor

■ Complete view of north side of reactor building



Completion of removal on the operating floor (Oct. 11, 2013)

Before removal

After removal

2. Removal of large pieces of rubble from the spent fuel pool

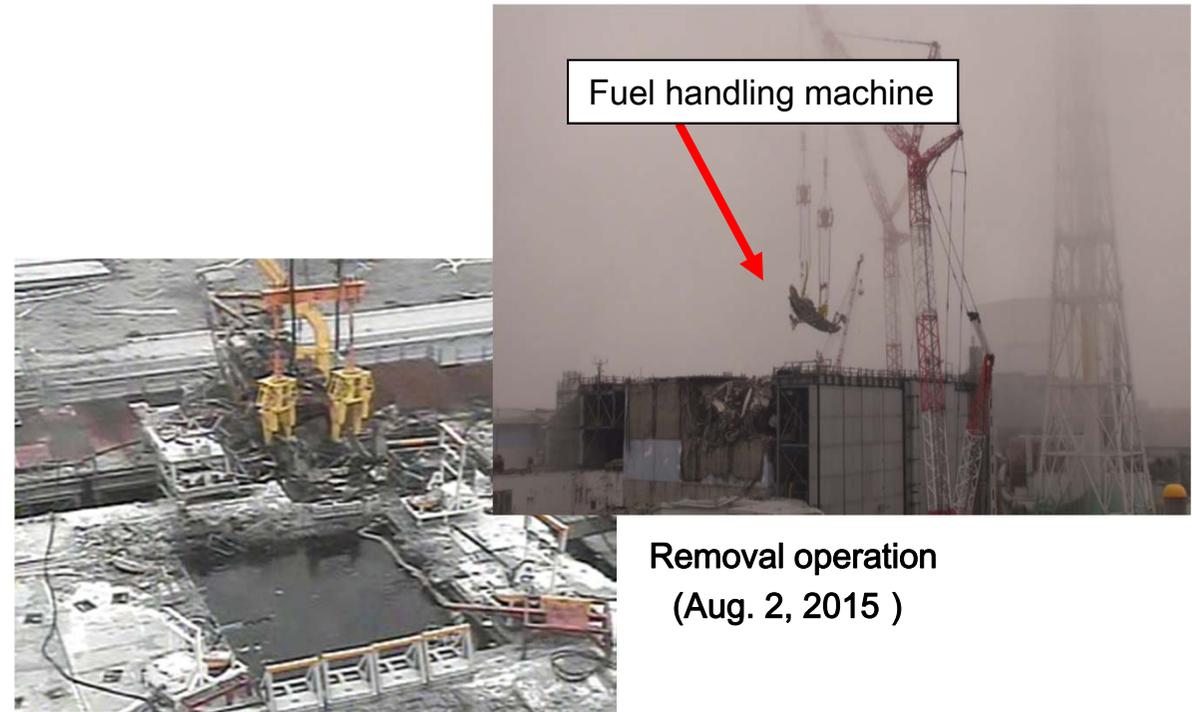
■ Spent fuel pool

- Started operations on Dec. 17, 2013
- Removal of the remaining fuel handling machine, the largest piece of rubble (25t) on Aug. 2, 2015
- Completion of rubble removal with a crane on Nov. 21, 2015

Before removal



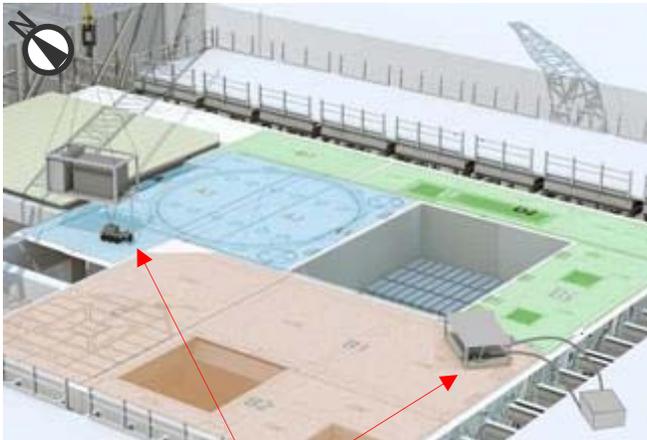
After removal



3 . Decontamination and shielding(in progress)

- Oct. 15, 2013 - Started decontamination(collecting and suction of, cutting of small rubble) of operating floor by remote-controlled, unmanned, heavy machinery

■ Decontamination



Decontamination devices

■ Shielding

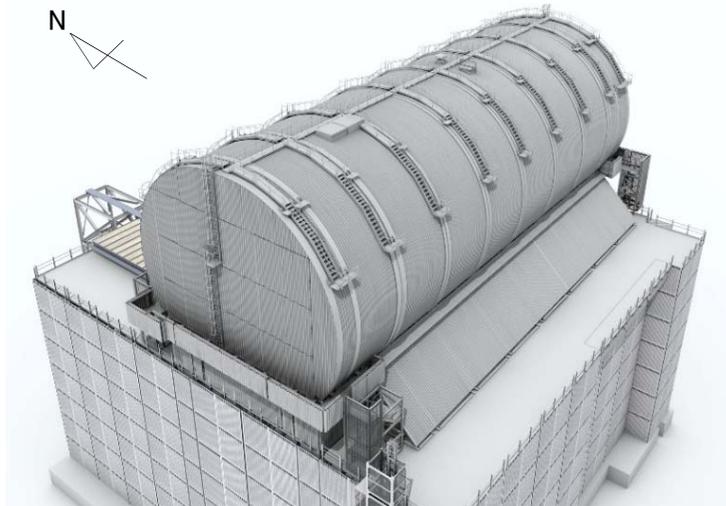


shield

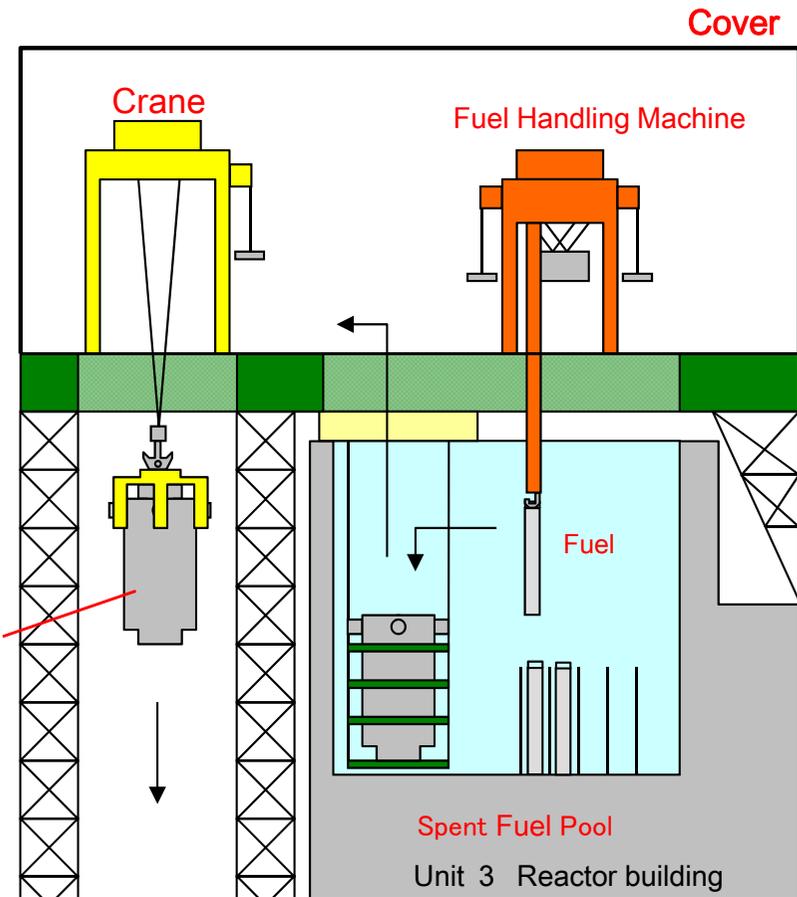
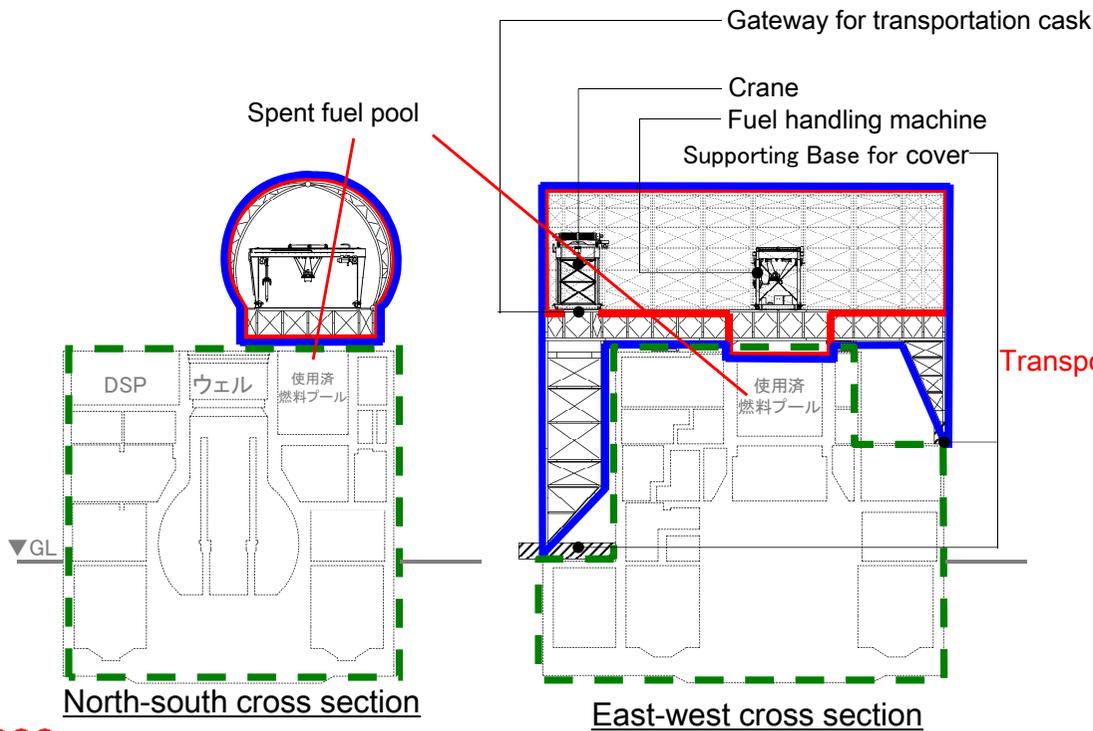
■ Main devices used for decontamination

Rubble accumulation	Small rubble suction	Cutting & suction	Cutting with high-pressure water & suction	Rubble collection

4. Cover used for fuel removal



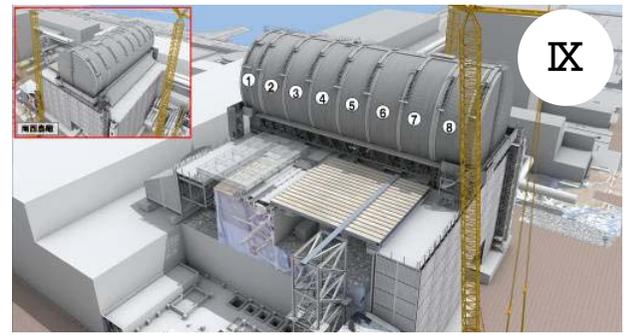
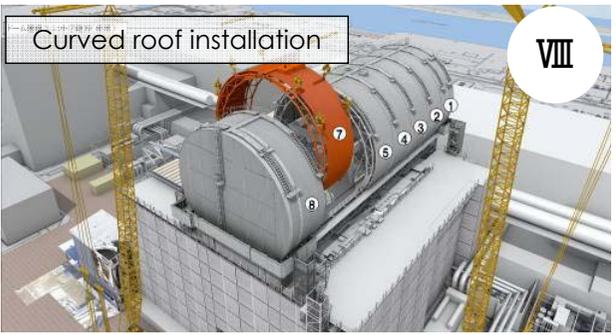
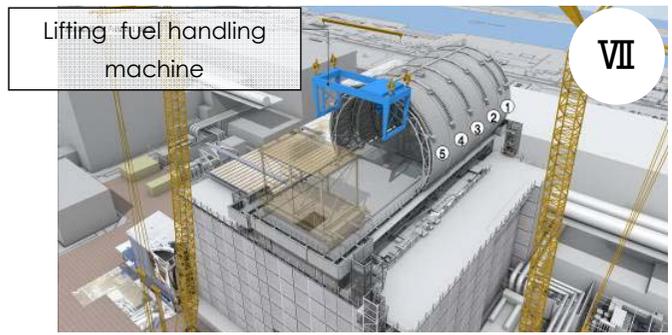
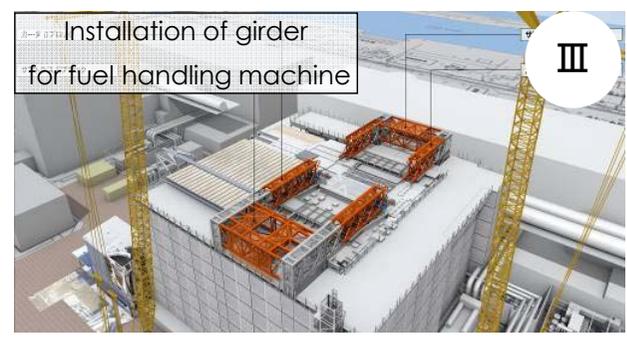
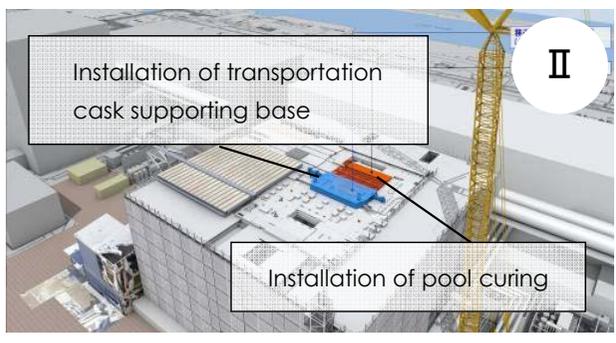
Cover for fuel removal at Unit 3



Operation of fuel removal at Unit 3

5 . Cover, fuel handling system and other procedures

- Step I- Planning to install shield on the operating floor by remote control
- Steps II ~ III- Main work spaces on operating floor with high radiation doses
- Step IV onwards -Operating floor and approx. 6m high space will be the main work spaces



6 . Cover Installation Training

- Conducted at Onahama Bay



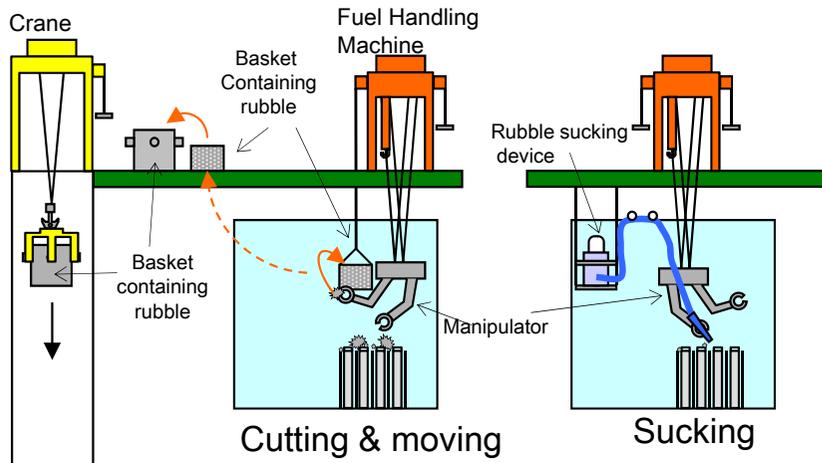
Installation of roof parts



Installation of girder

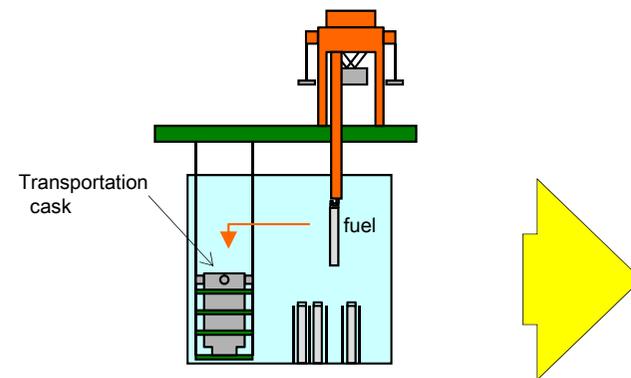
7. Rubble removal and fuel removal

■Rubble removal

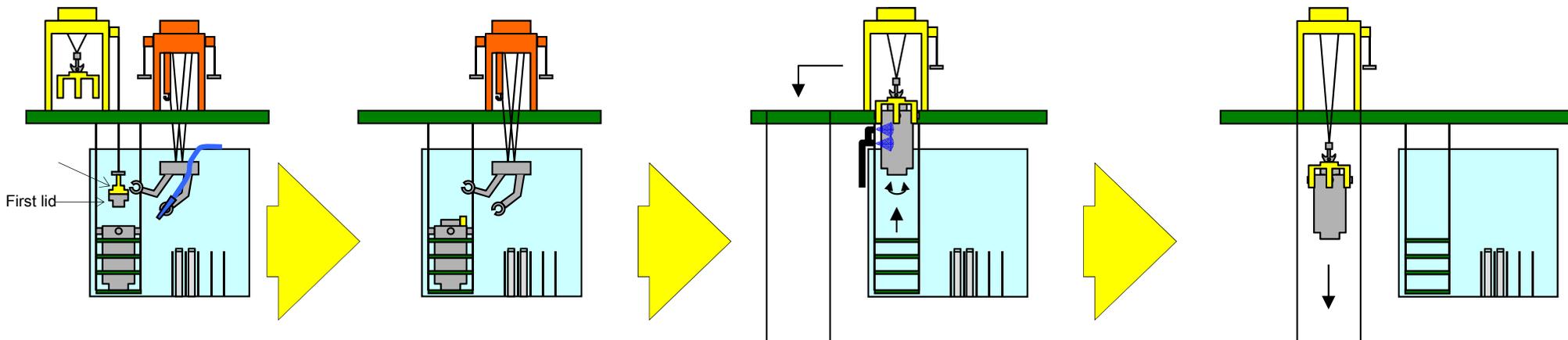


Small rubble removal

■Fuel removal



Filling cask after removal



Putting on the first lid

Confirmation of a tight seal

Washing the surface of cask & drying

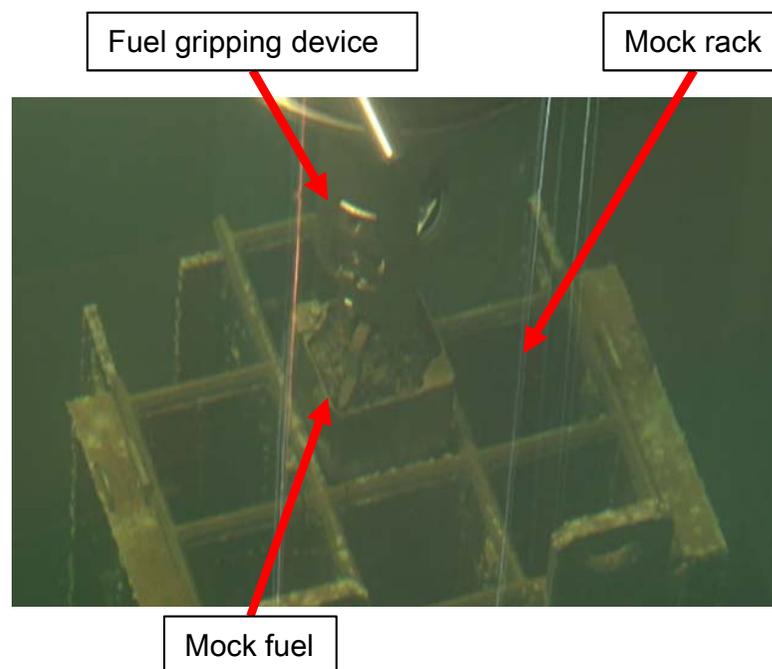
Loading the cask onto a truck, putting on the second lid & transporting to the common pool manually

8 . Fuel handling machine remote control training

- At Fukushima Daiichi, fuel removal will be conducted by a remote control system using cameras. Therefore, remote control training was conducted at the factory in advance (Feb. through Dec. in 2015).
 - Fuel handling training
 - Transportation cask handling training
 - Rubble removal training



Remote control room



Fuel removal training

9 . Timeline for fuel removal

