



Japan's Side Event

Current Status of the Decommissioning at FDNPS

September 17, 2024

DENDA Yasutaka

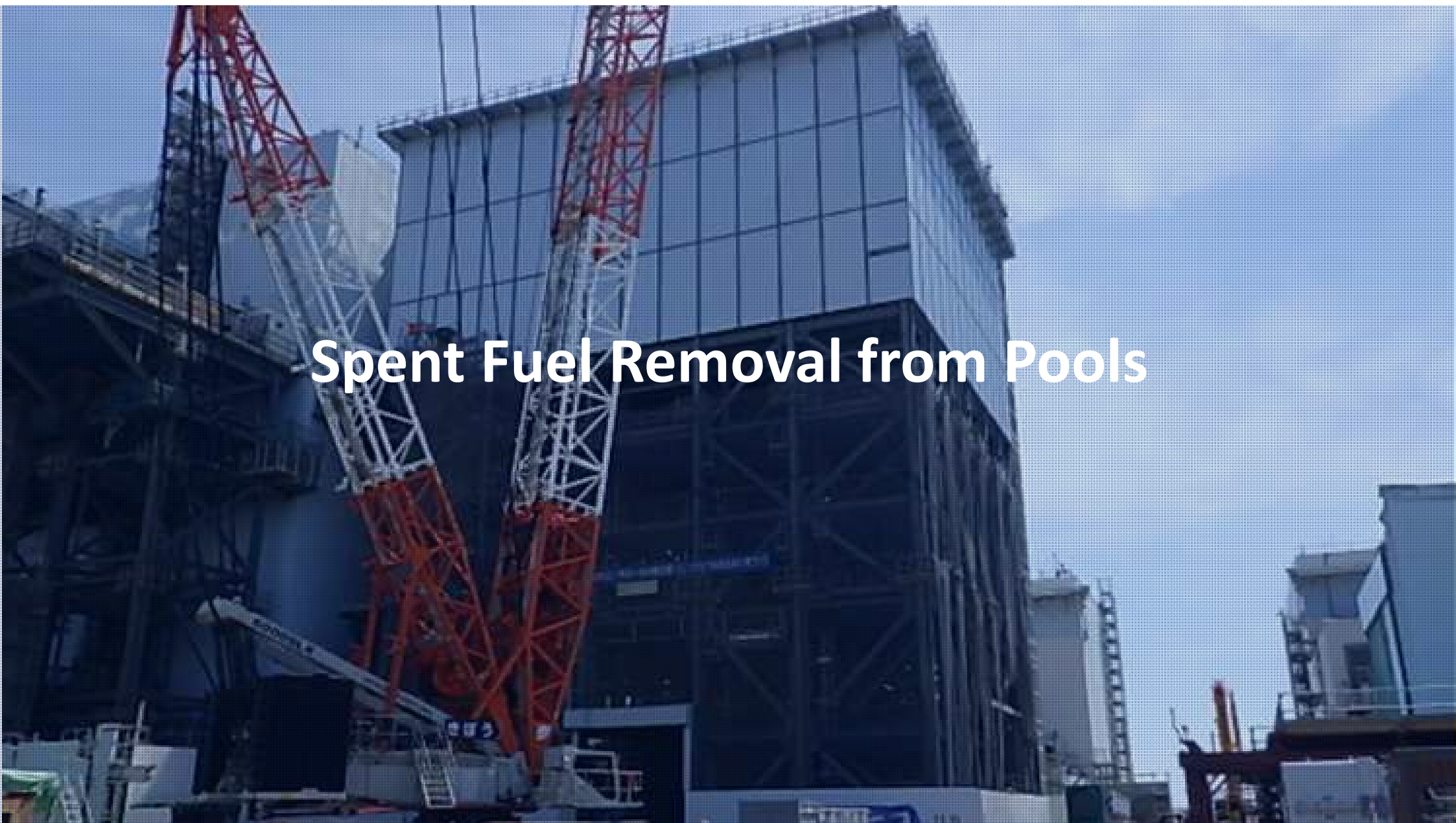
Corporate Officer

General Manager of D&D Strategy Office

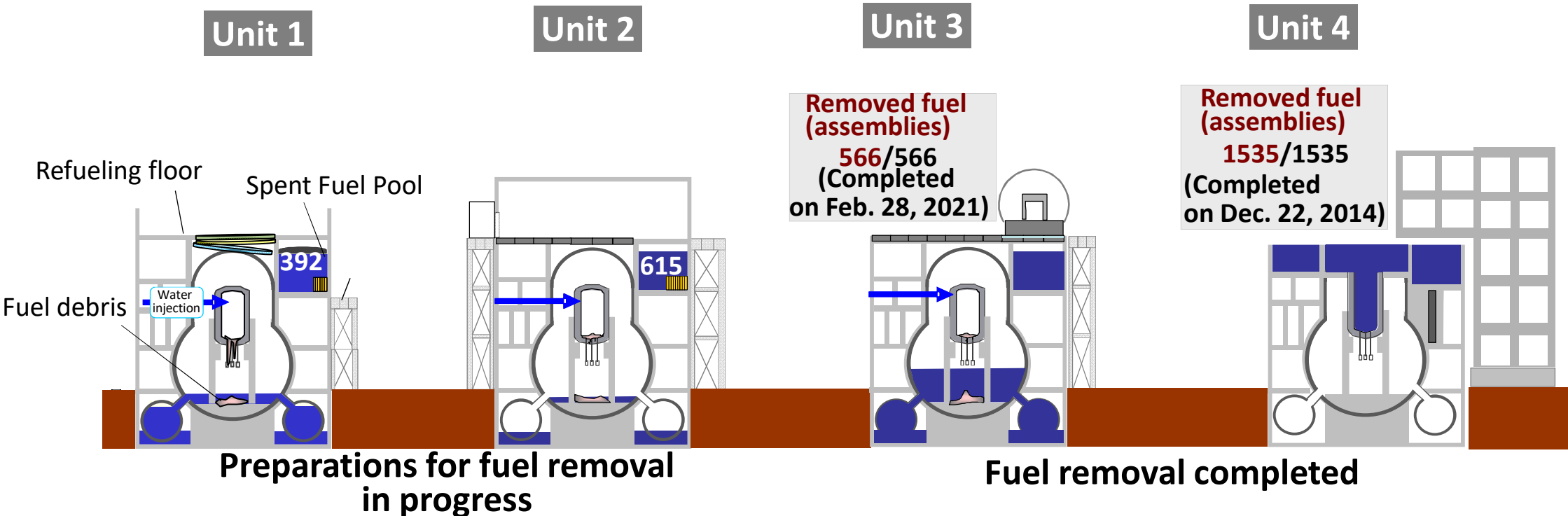
Fukushima Daiichi Decontamination and Decommissioning Engineering Company,

Tokyo Electric Power Company Holdings, Inc.

Spent Fuel Removal from Pools



What is spent fuel removal?



- At the upper part of the each reactor building lie spent fuel pools, storing fuel assemblies etc. that were used for power generation.
- To reduce the risk associated with spent fuel, fuel removal operations from the damaged reactor buildings and the associated preparation tasks have been conducted.

Discharge of ALPS Treated Water



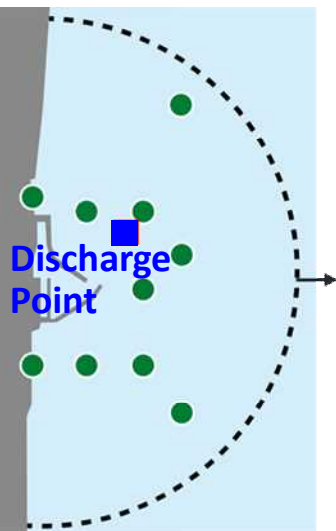
Batch	Analysis results before dilution		Particulars of discharge				
	Tritium concentration	Concentrations of nuclides other than tritium	Start	Completion	Tritium concentration after dilution	Discharged amount of water (before dilution)	Tritium amount
		Reference value*					
1st	140,000Bq/L	0.28	2023.8.24	2023.9.11	MAX 220Bq/L	7,788m ³	1.1trillion Bq
2nd	140,000Bq/L	0.25	2023.10.5	2023.10.23	MAX 189Bq/L	7,810m ³	1.1trillion Bq
3rd	130,000Bq/L	0.25	2023.11.2	2023.11.20	MAX 200Bq/L	7,753m ³	1.0trillion Bq
4th	170,000Bq/L	0.34	2024.2.28	2024.3.17	MAX 254Bq/L	7,794m ³	1.3 trillion Bq
5th	190,000Bq/L	0.31	2024.4.19	2024.5.7	MAX 266Bq/L	7,851m ³	1.5 trillion Bq
6th	170,000Bq/L	0.17	2024.5.17	2024.6.4	MAX 234Bq/L	7,892m ³	1.3 trillion Bq
7th	170,000Bq/L	0.18	2024.6.28	2024.7.16	MAX 276Bq/L	7,846m ³	1.3 trillion Bq
8th	200,000Bq/L	0.12	2024.8.7	2024.8.25	MAX 267Bq/L	7,897m ³	1.6 trillion Bq

*If the value is less than 1, it indicates that the concentrations meet the Japanese regulatory standard.

■ The results are well below WHO's guideline for drinking water (10,000Bq/L), the limit for discharged ALPS treated water set by the Japanese government policy (1,500Bq/L), and TEPCO's discharge suspension level (700Bq/L for area within 3km of the site & 30Bq/L for area within a 10 km by 10 km area around the site).

■ Tritium concentration (Bq/L) through quick measurement method

10 monitoring points within 3km of the site



FY
2023

1st: From LTD to a max of 10

2nd: From LTD to a max of 22

3rd: From LTD to a max of 11

4th: From LTD to a max of 16

FY
2024

5th: From LTD to a max of 29

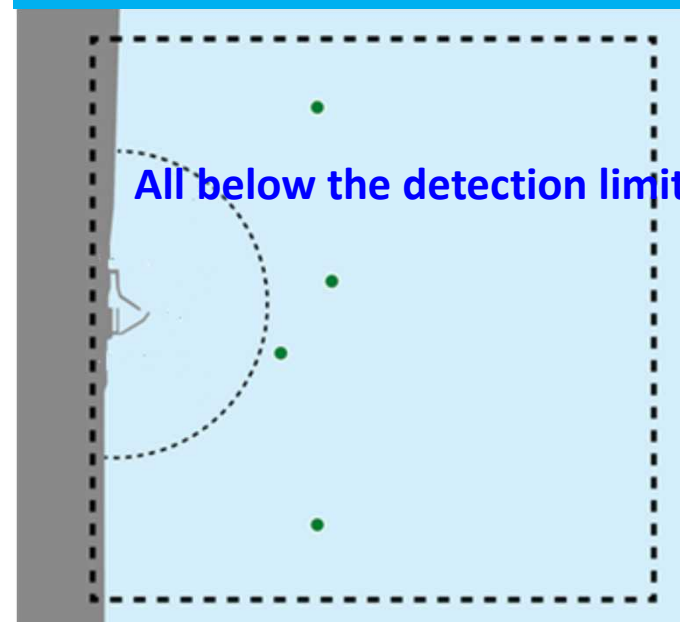
6th: From LTD to a max of 7.7

7th: From LTD to a max of 18

8th: From LTD to a max of 9.0

TEPCO's discharge suspension level :700Bq/L

4 monitoring points within a 10 km by 10 km area around the site



TEPCO's Discharge suspension level :30Bq/L

Safety review by IAEA Task Force (April 2024)

- 2 review missions took place (October 2023/April 2024) since the discharge started.
- Both reports reached the same conclusion as the comprehensive report published in July 2023 that stated the approach regarding the ALPS treated water discharge was in line with the related international safety standard.

Opening session



Inspection of dilution facility



A photograph of a large industrial facility, likely a space station or a large-scale manufacturing plant. In the foreground, a large, dark, cylindrical component is being moved or positioned on a red metal track. Several workers in white protective suits and hard hats are visible in the background, some standing and others crouching. The facility has a complex structure with many levels and walkways. The text "Initiatives toward Fuel Debris Retrieval" is overlaid in the center of the image.

Initiatives toward Fuel Debris Retrieval

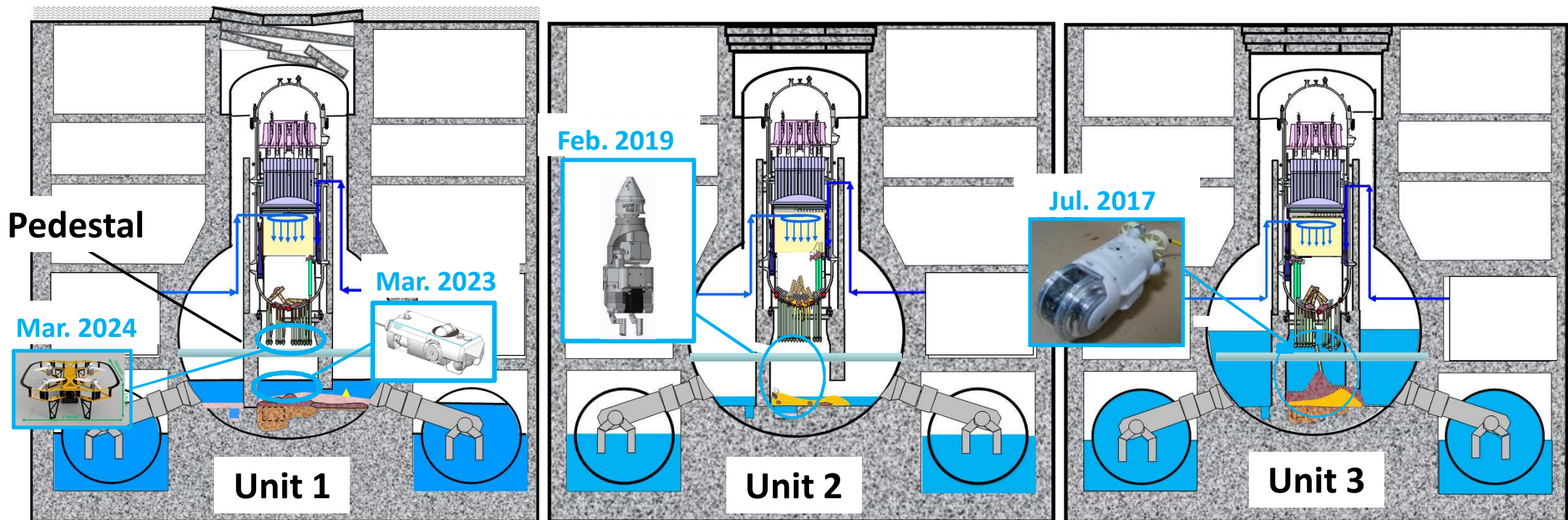
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IRID has contributed to some work shown here

Robotic exploration

Analysis of accident progression

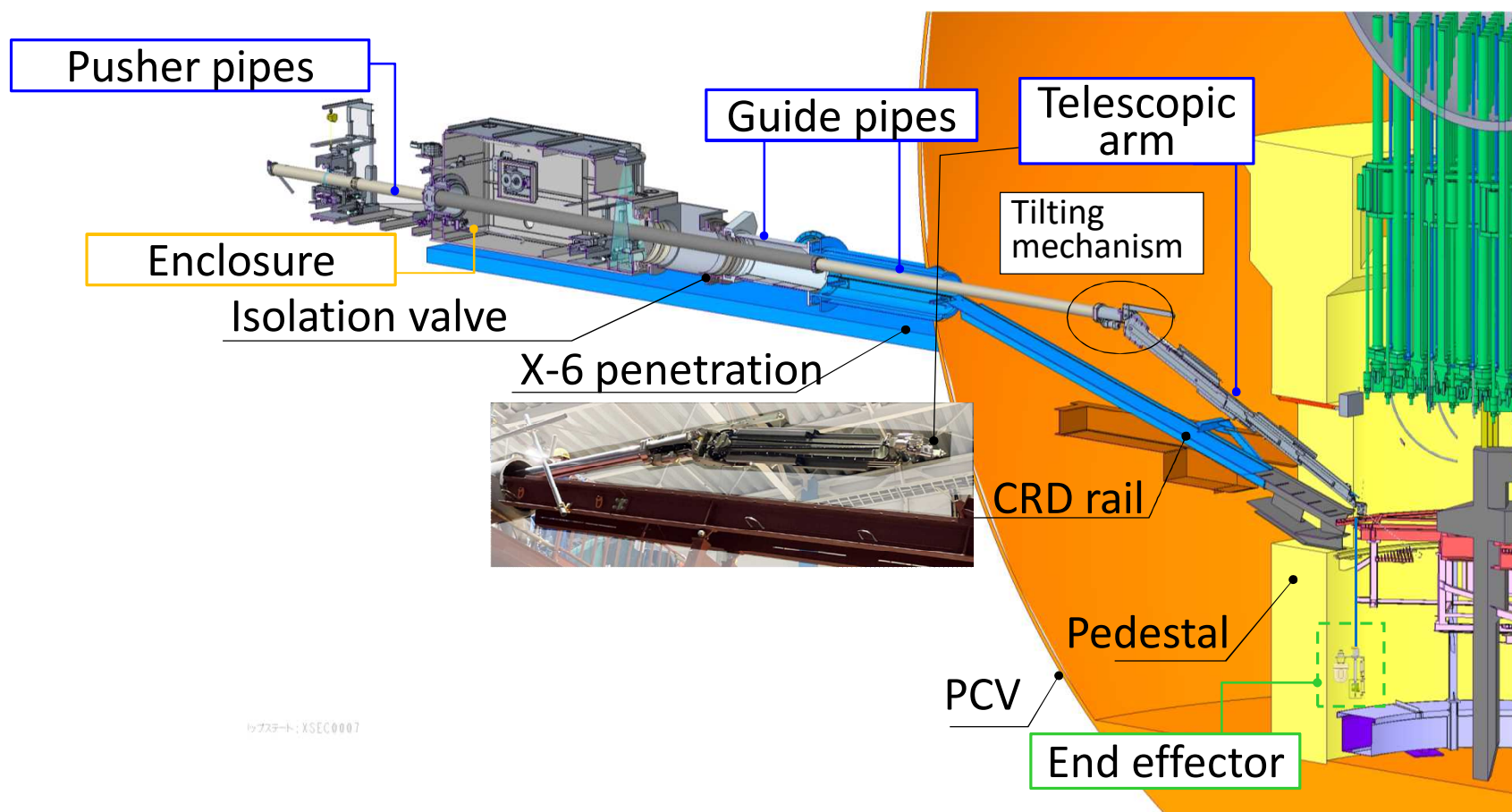
Muon Survey



Trial retrieval has started at Unit 2

Telescopic equipment for trial fuel debris retrieval (1)

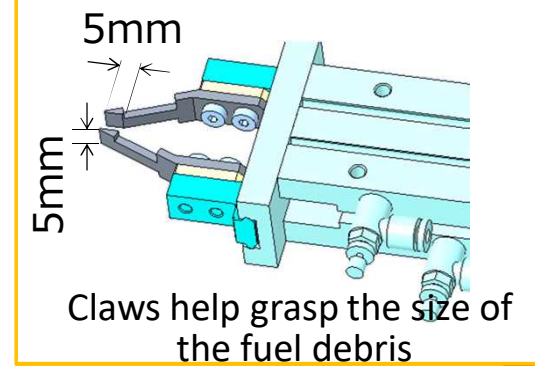
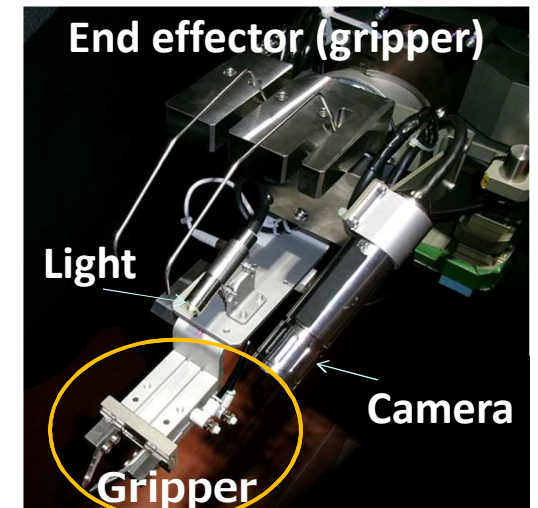
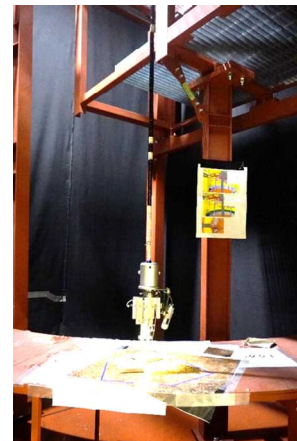
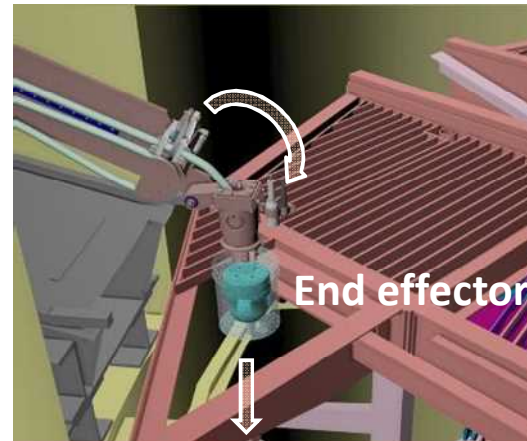
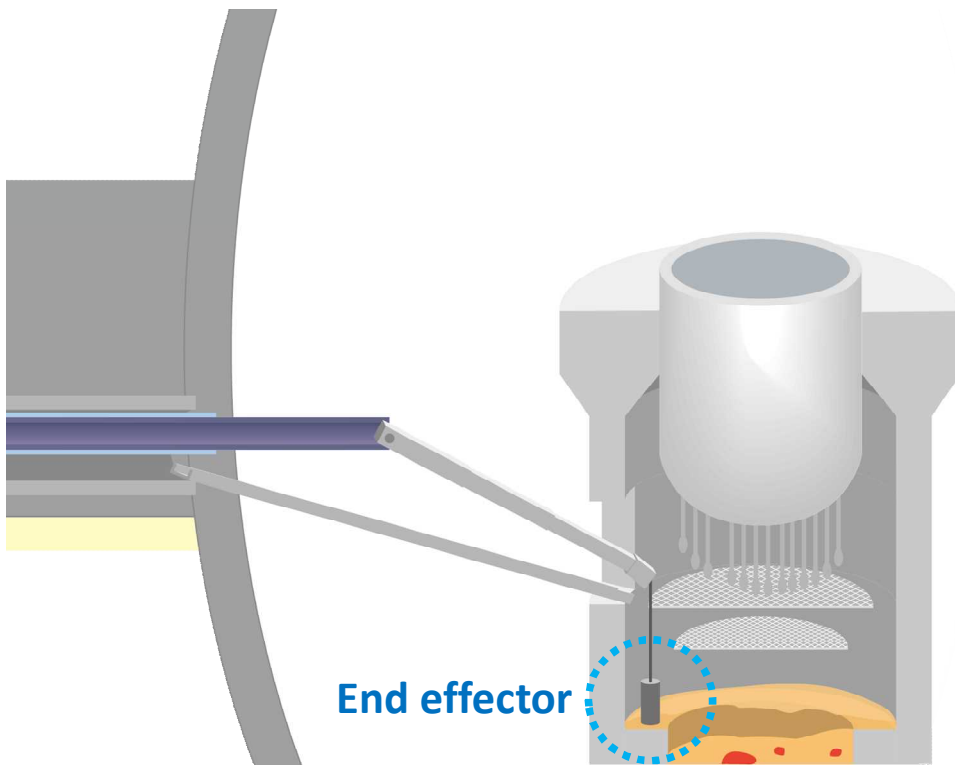
- The pusher pipes help the guide pipes move in, and then the telescopic arm, manipulated by the tilting mechanism, goes inside the pedestal.
- The end effector, lowered from the telescopic arm, works to sample the fuel debris.



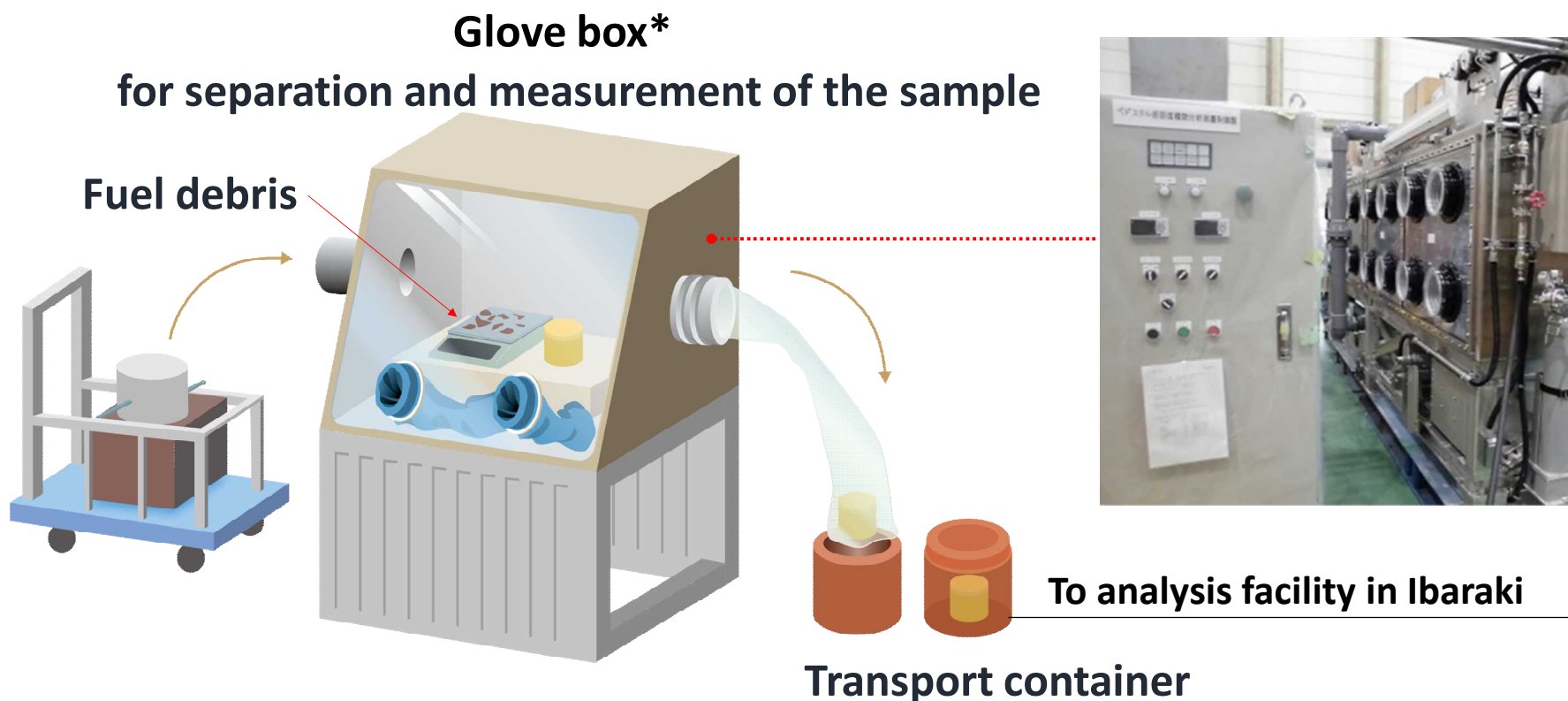
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Telescopic equipment for trial fuel debris retrieval (2)

- The plan is to sample granular fuel debris weighing 3 grams or less by lowering an end effector (gripper) to the bottom.
- The mounted camera can determine the size of the fuel debris to be sampled.



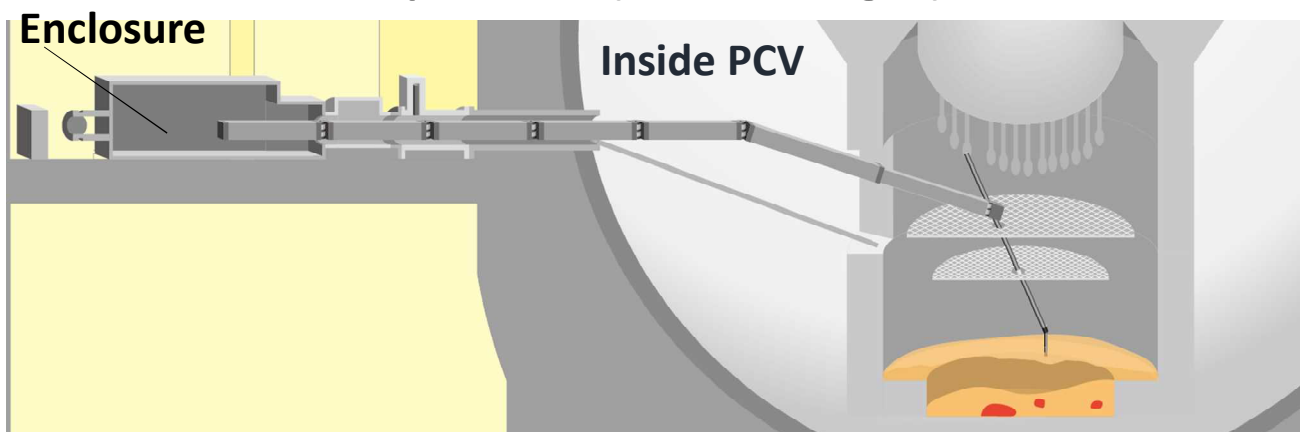
■ Fuel debris (up to several grams) obtained through a trial retrieval is set to be stored in a container, and then transported to an analysis facility in Ibaraki, south of Fukushima, where a property analysis etc. will be conducted.



***Glove box: Airtight container for radioactive materials, made of stainless steel**

- The equipment has a foldable structure with sophisticated controllability, allowing it to pass through narrow spaces such as the X-6 penetration hole.
- A remote-controlled dual-arm manipulator, which will be installed in the enclosure, is responsible for tasks such as placing the retrieved fuel debris into a container.

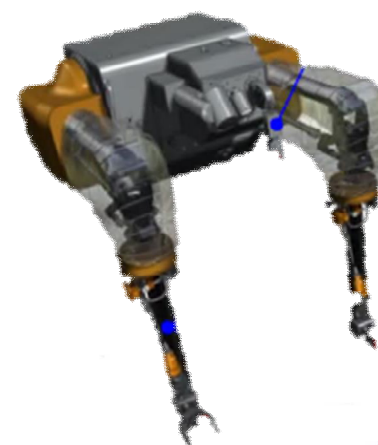
Extended into the pedestal (22m in length)



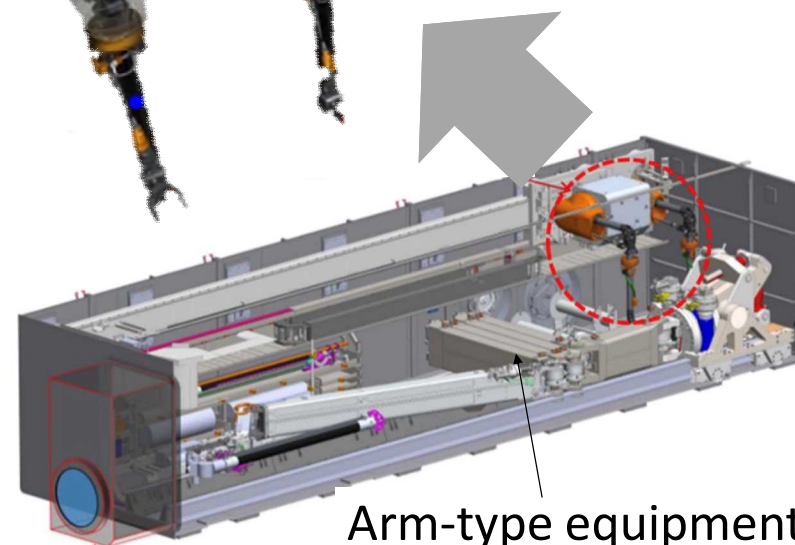
Folded in the enclosure



Dual-arm manipulator

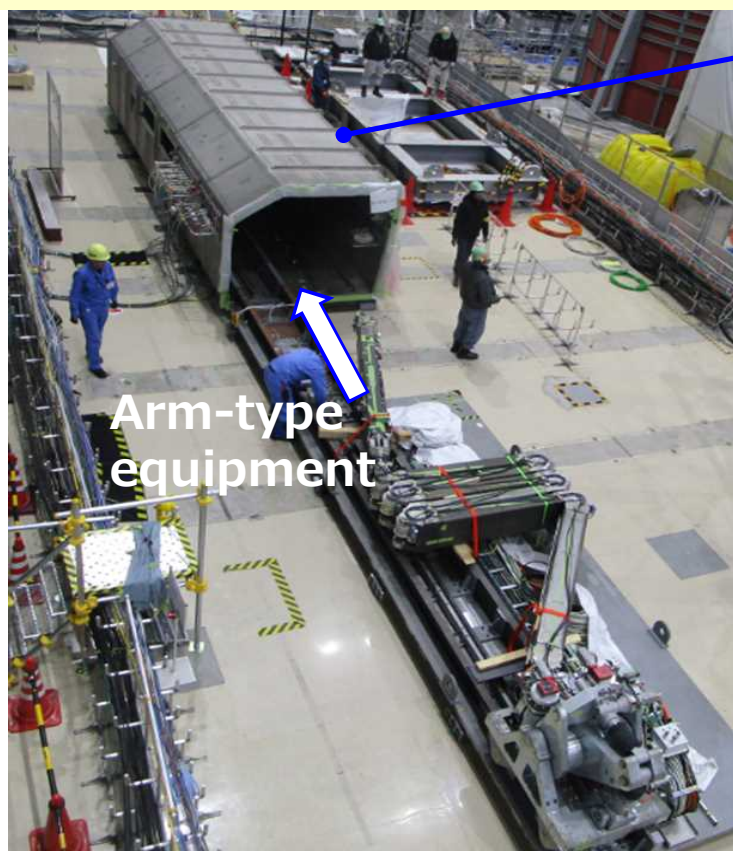


Installed in the enclosure & remotely-operated by on-site workers

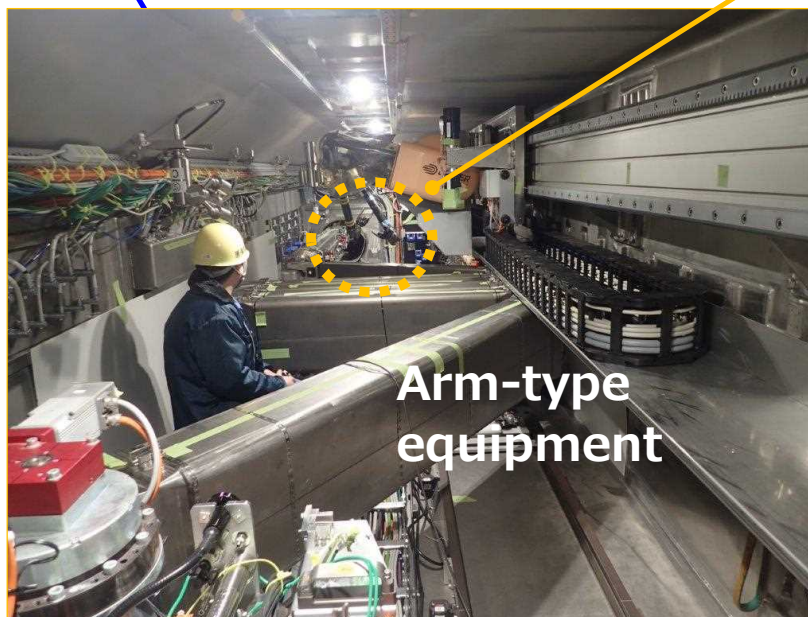


Arm-type equipment

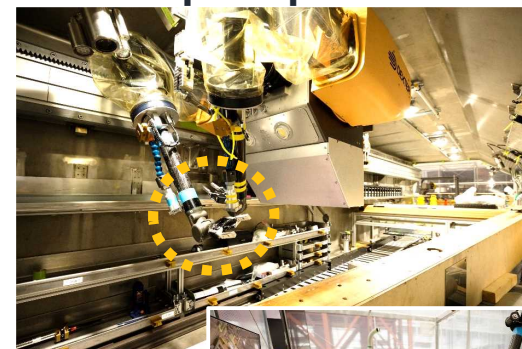
- A mock-up test simulating the on-site situation has been conducted using mock-up facilities set up by JAEA in Naraha.
- After the incorporation of the equipment into the enclosure was completed, a test of the dual-arm manipulator in the enclosure was conducted.



Enclosure
(housing the equipment)



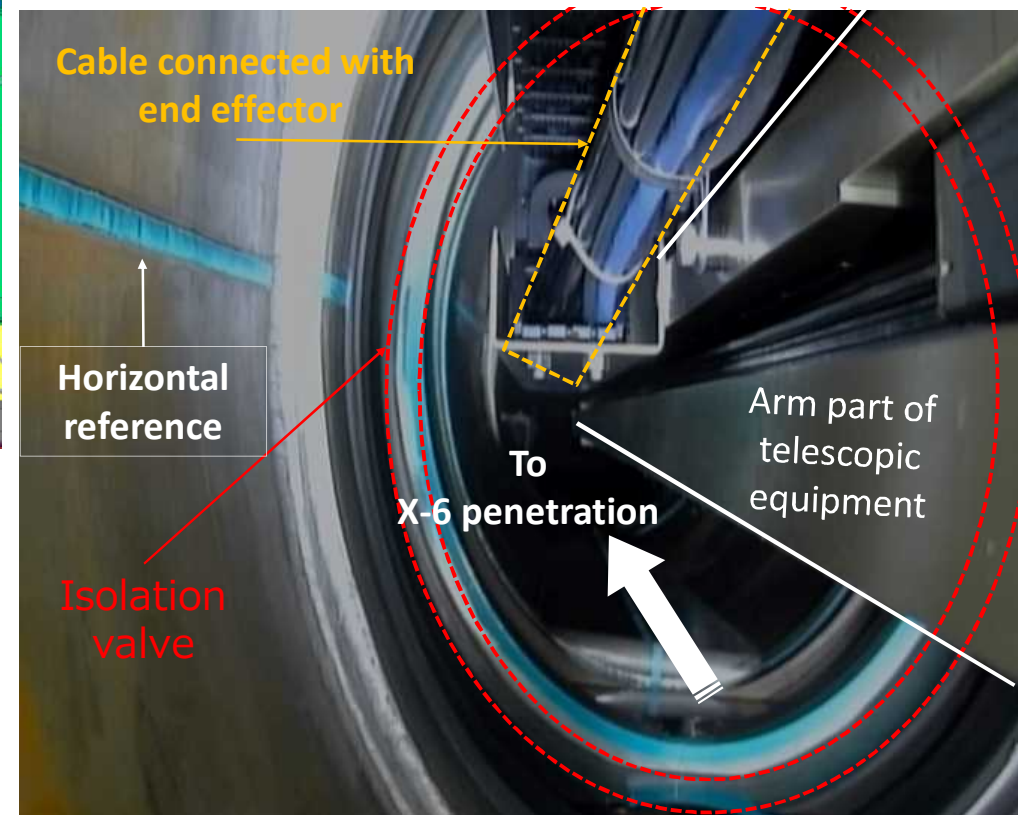
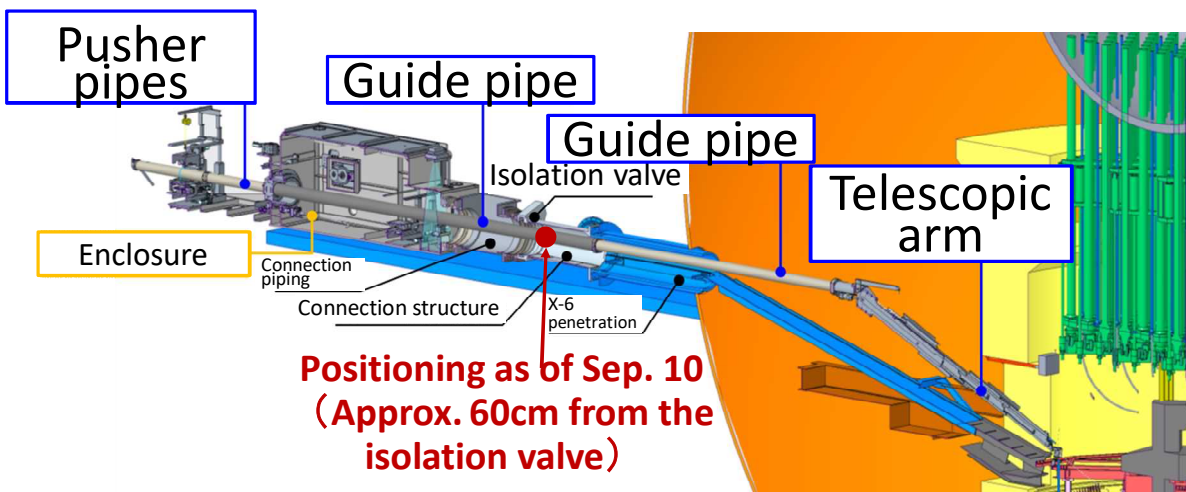
Dual-arm manipulator
Similar movement as in manual work



Remote operation for handling radioactive materials



- The actual operation at the site began on the morning of September 10.
- By pushing the guide pipe forward toward the inside of the PCV, the end effector of the equipment successfully passed through the isolation valve at 7:20 a.m.



(Photos taken on Sep. 10 2024)

A large, colorful float with a stylized face and the character '福' (Fukurokuju) is being carried by a crowd. The float is red and white with a large, stylized face. The character '福' (Fukurokuju) is visible on the float. The float is being carried by a crowd of people, with many hands visible holding up the float. The background shows a building and a cloudy sky.

Thank you for your attention

TEPCO