

Japan's Side Event

Current Status of the Decommissioning at FDNPS

September 16, 2025

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**Chief Decommissioning Officer,
President of Fukushima Daiichi Decontamination and
Decommissioning Engineering Company,
Tokyo Electric Power Company Holdings, Inc.**

Improvement of on-site environment

The average exposure dose in April, 2025 is low enough, compared with the dose limit of 1.67mSv/month.

Dose Limit
1.67mSv/month

Average
0.25 mSv/month

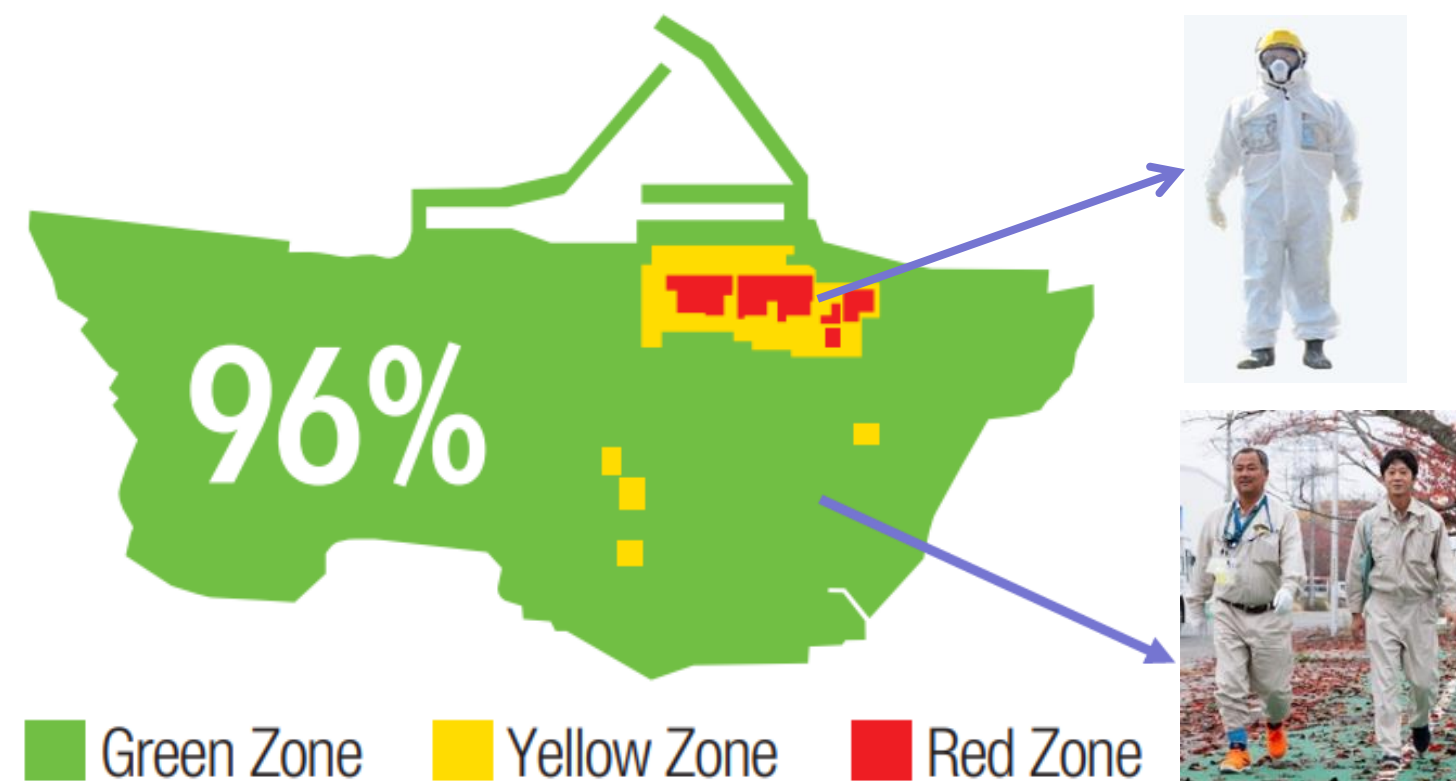
Dose Limit
(100mSv/5years/12
months \approx 1.67mSv)

April, 2025

- ✓ Removal of rubble
- ✓ Removal of plants and soils
- ✓ Ground pavement



Zoning and lighter protective gear for workers since 2018



Well-being of workers



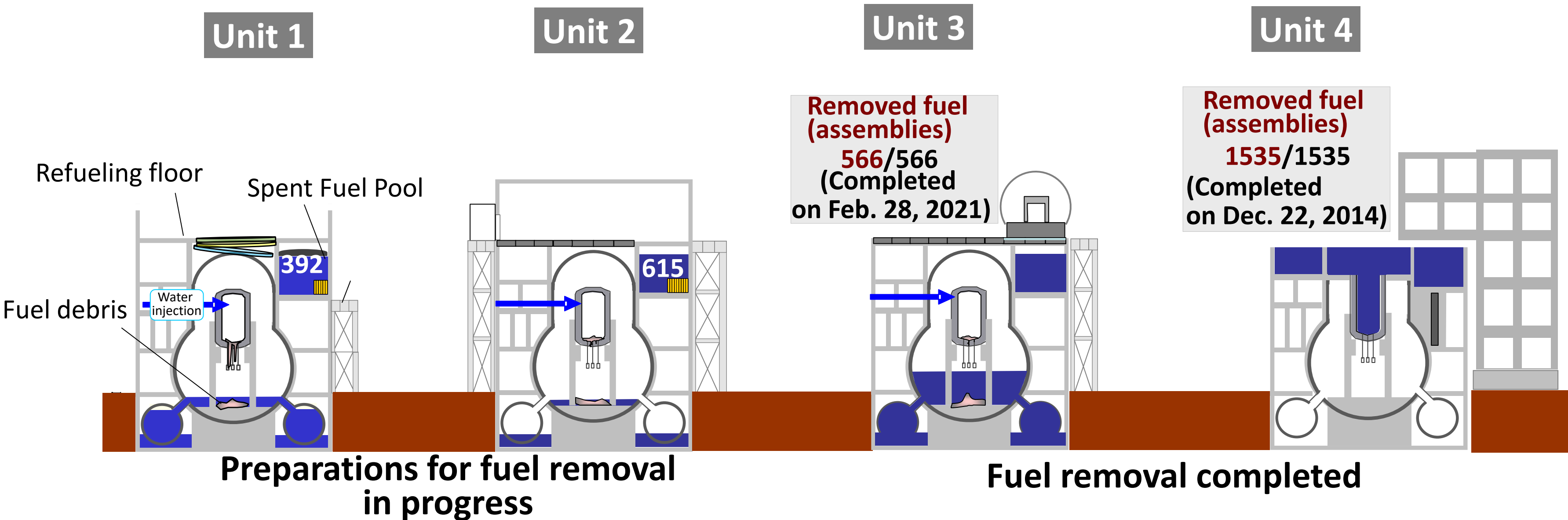
Large rest center featuring
convenience store & cafeteria
completed in 2015



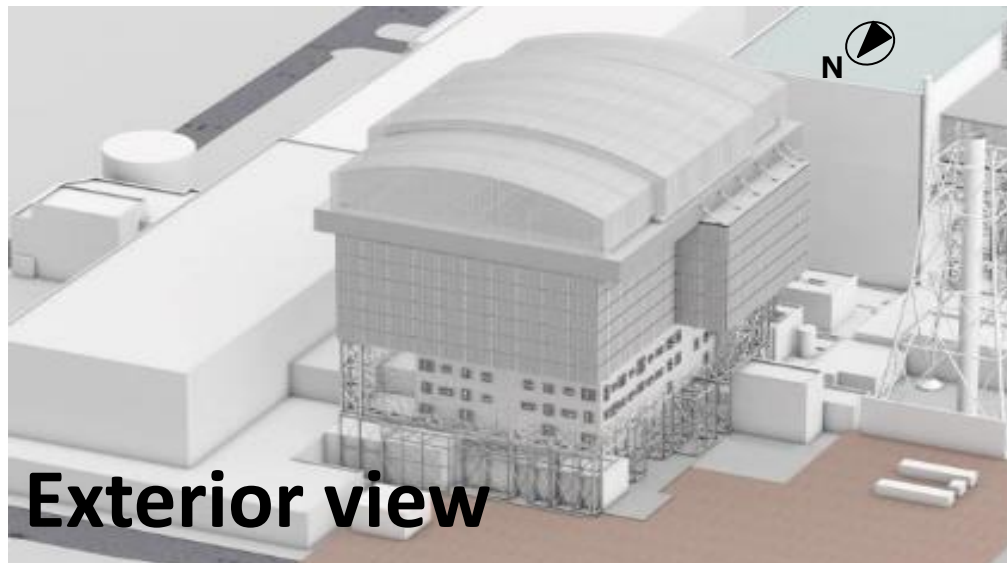
Administrative
building completed
in 2016

Spent Fuel Removal from Pools





- 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.



- We've decided to install a large cover over the upper part of the building in advance to prevent radioactive dust from spreading.
- After the installation, rubble removal, radiation reduction and FHM installation are to follow in preparation for fuel removal.

▼ Completion of large cover installation (FY2025)

▼ Start removal (FY2027 to 2028)

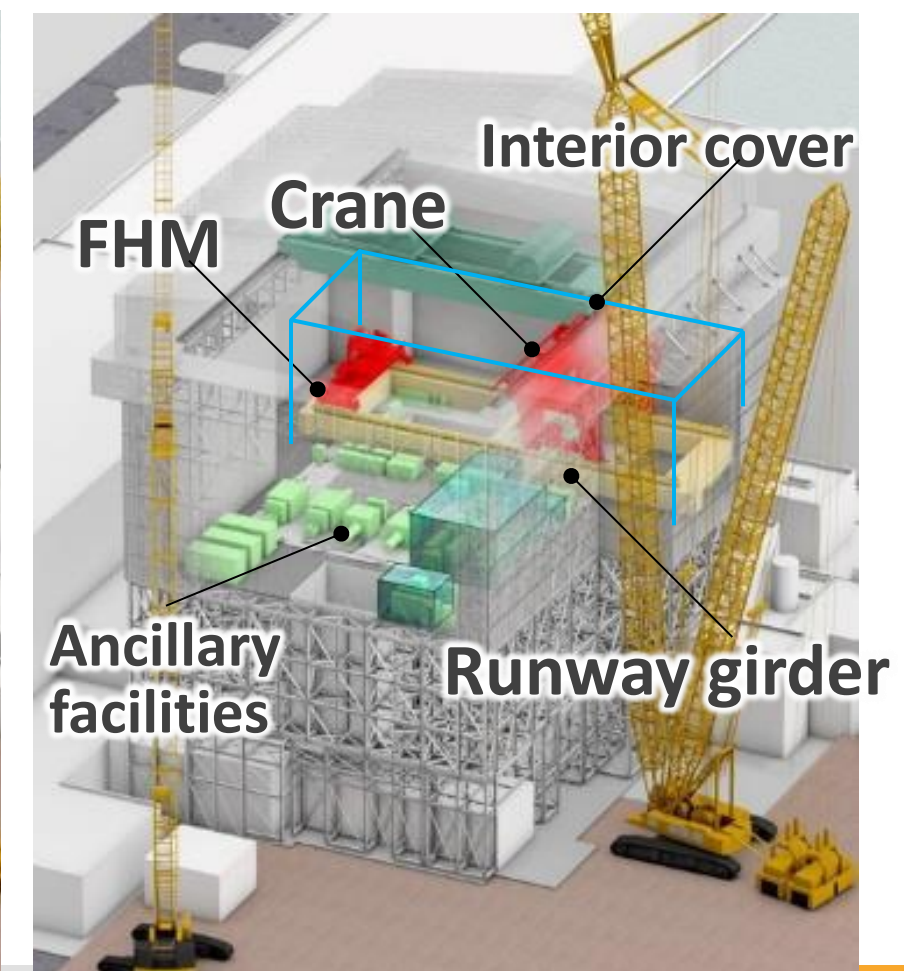
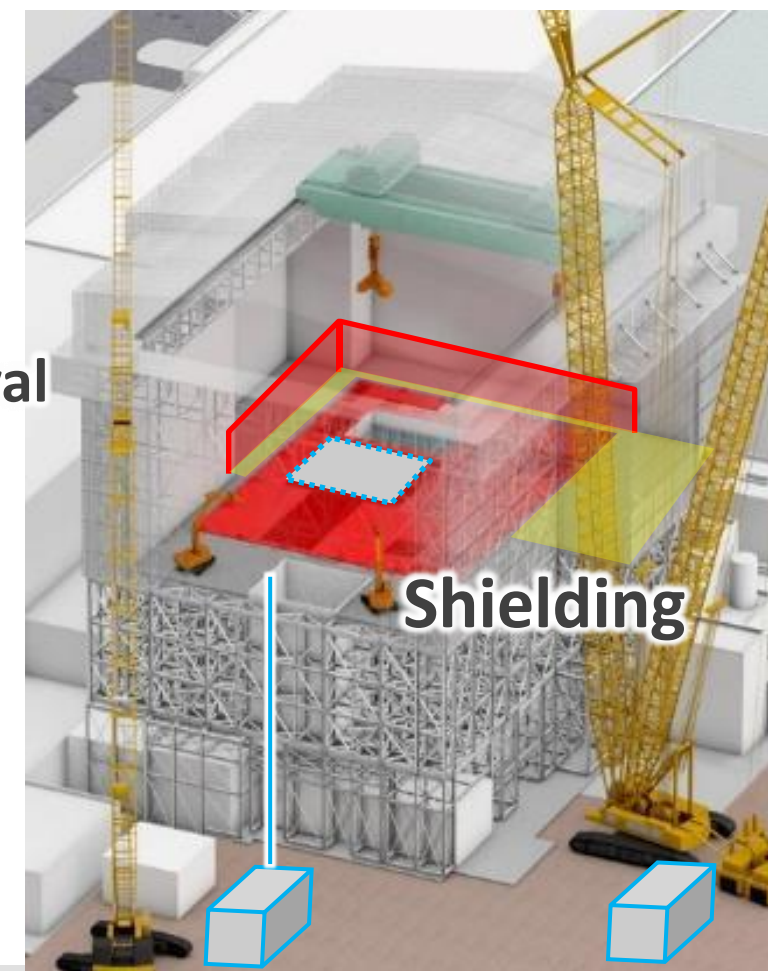
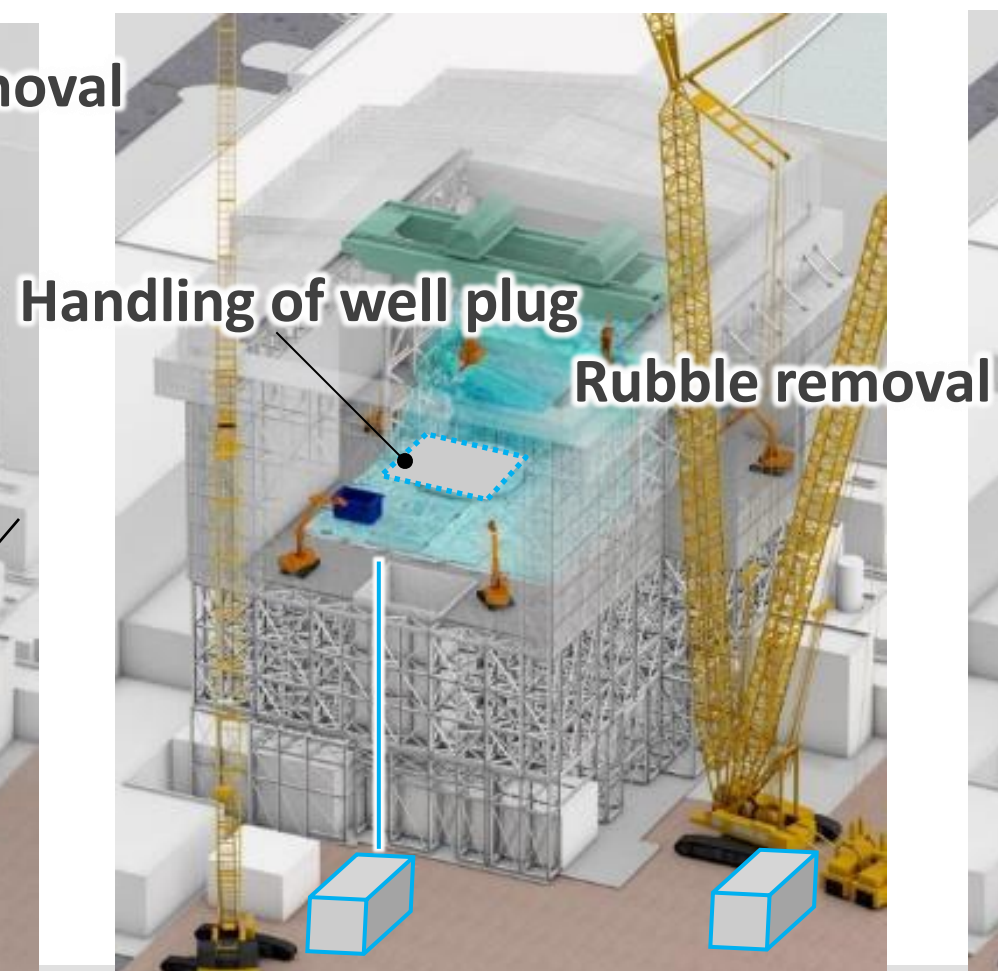
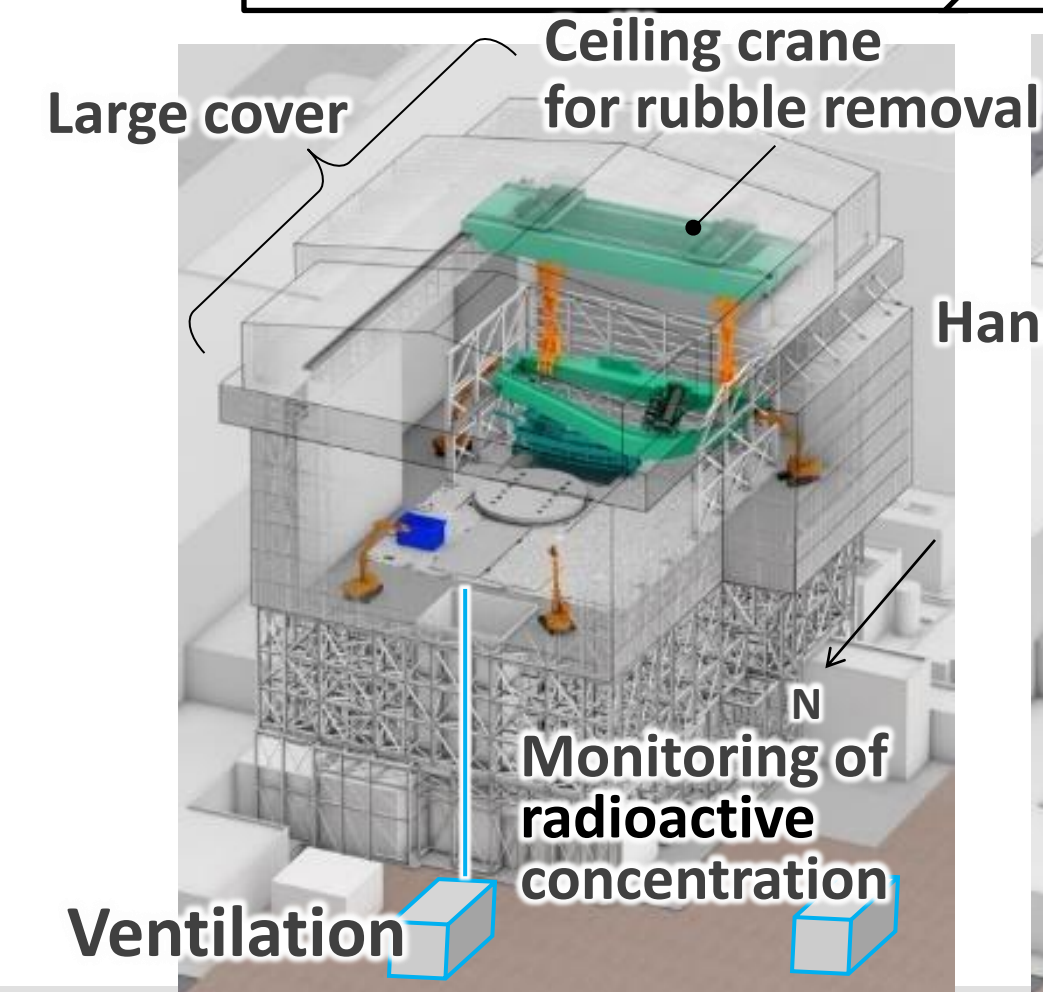
STEP 1 (currently)
Install large cover

STEP 2
Remove rubble

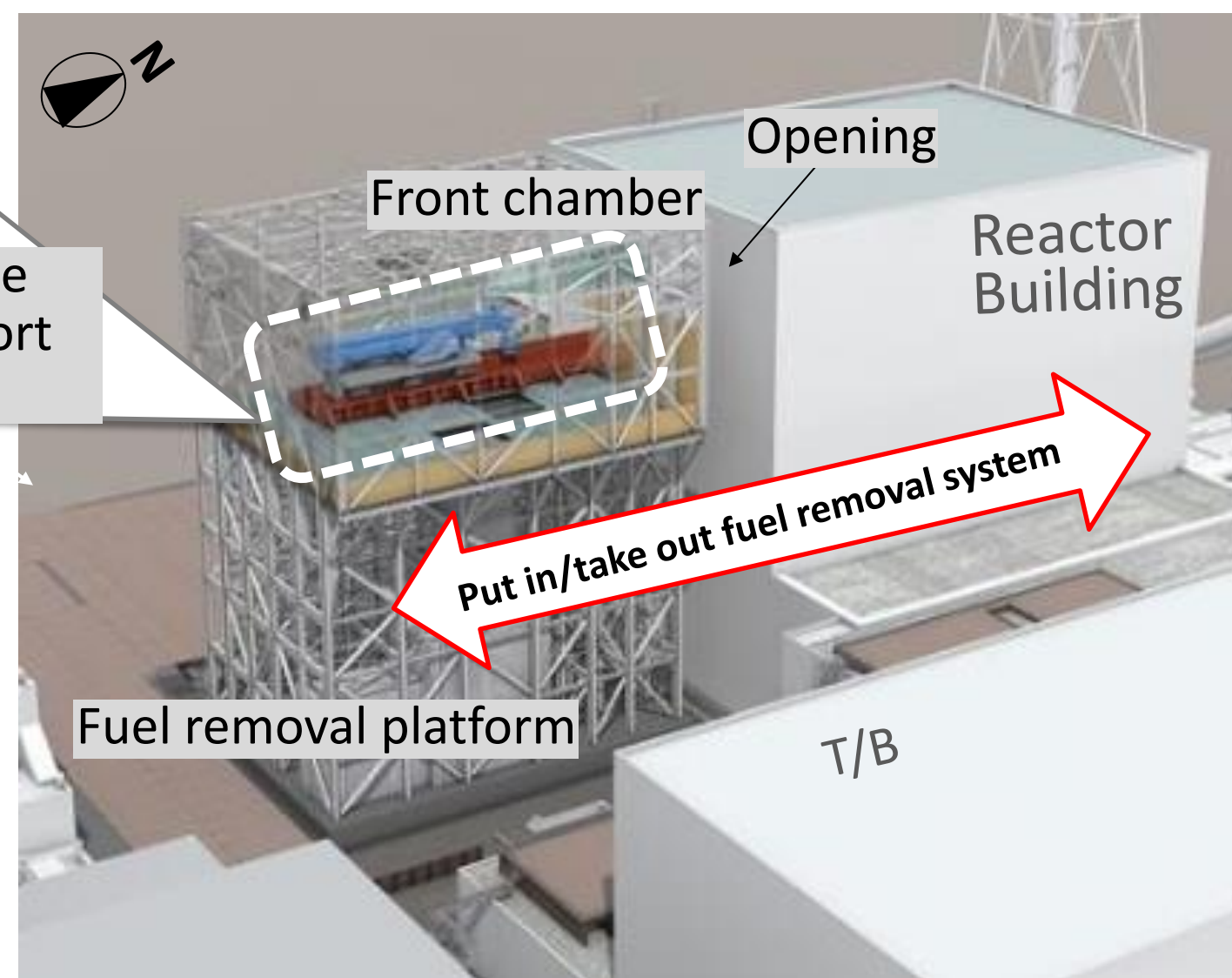
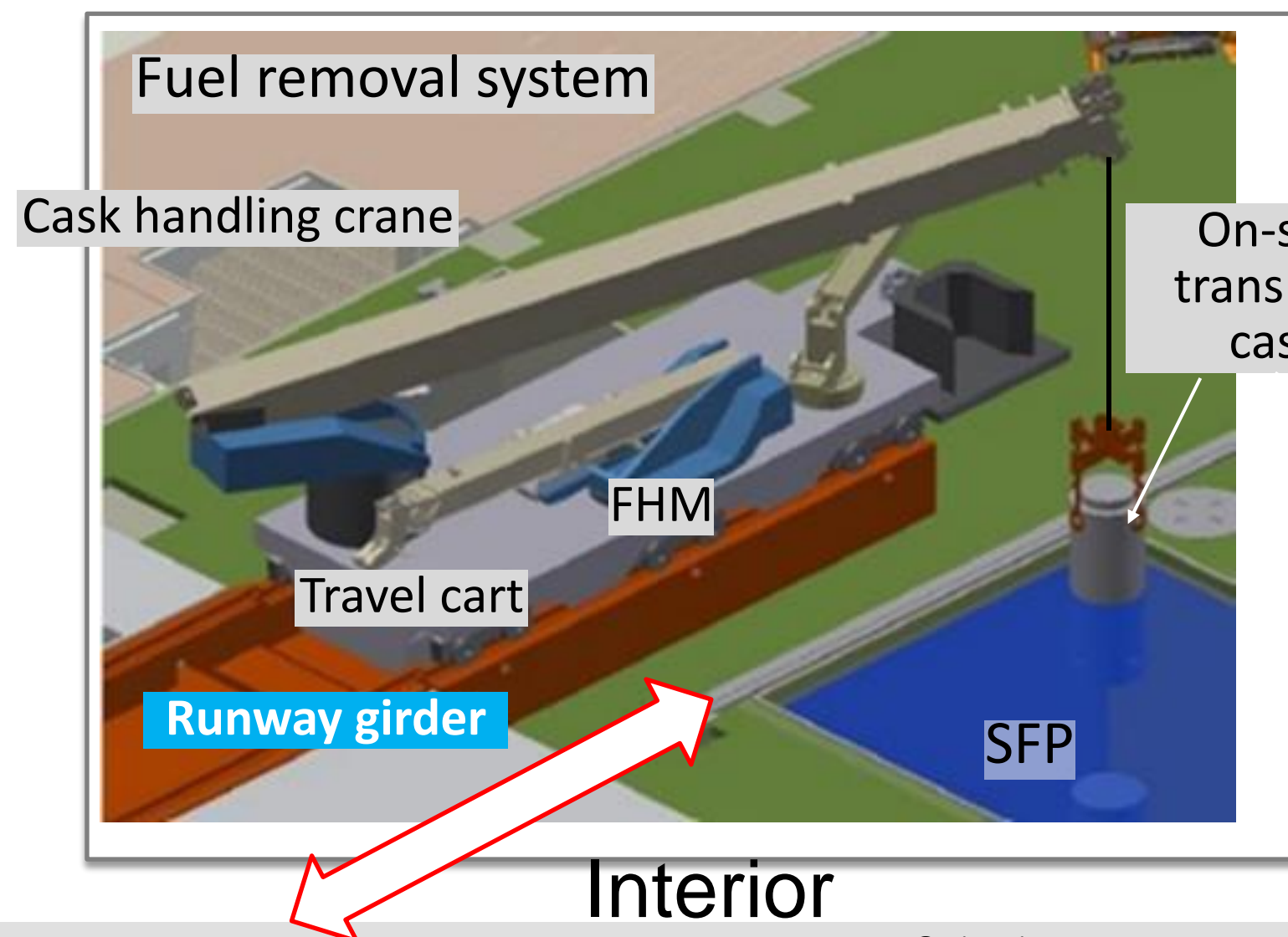
STEP 3
Decontamination/
shielding

STEP 4
Install fuel
handling machine

STEP 5
Start
removing fuel



- Capitalize on existing building and make a minimal wall opening, and then put in and take out fuel removal system through a wall opening: Prevent contamination spread.
- Install fuel removal system after decontamination and shielding, and then remove fuel remotely : Reduce exposure.



Fuel Debris Retrieval

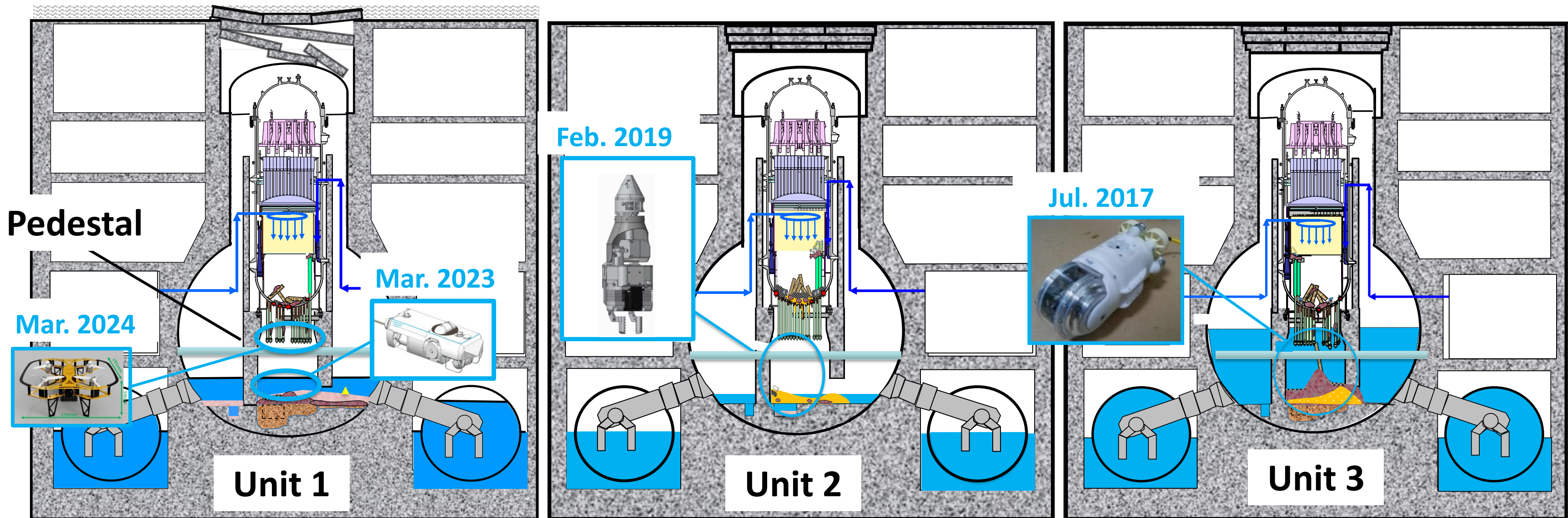
2023/07/28 18:46

IRID has contributed to some work shown here

Robotic exploration

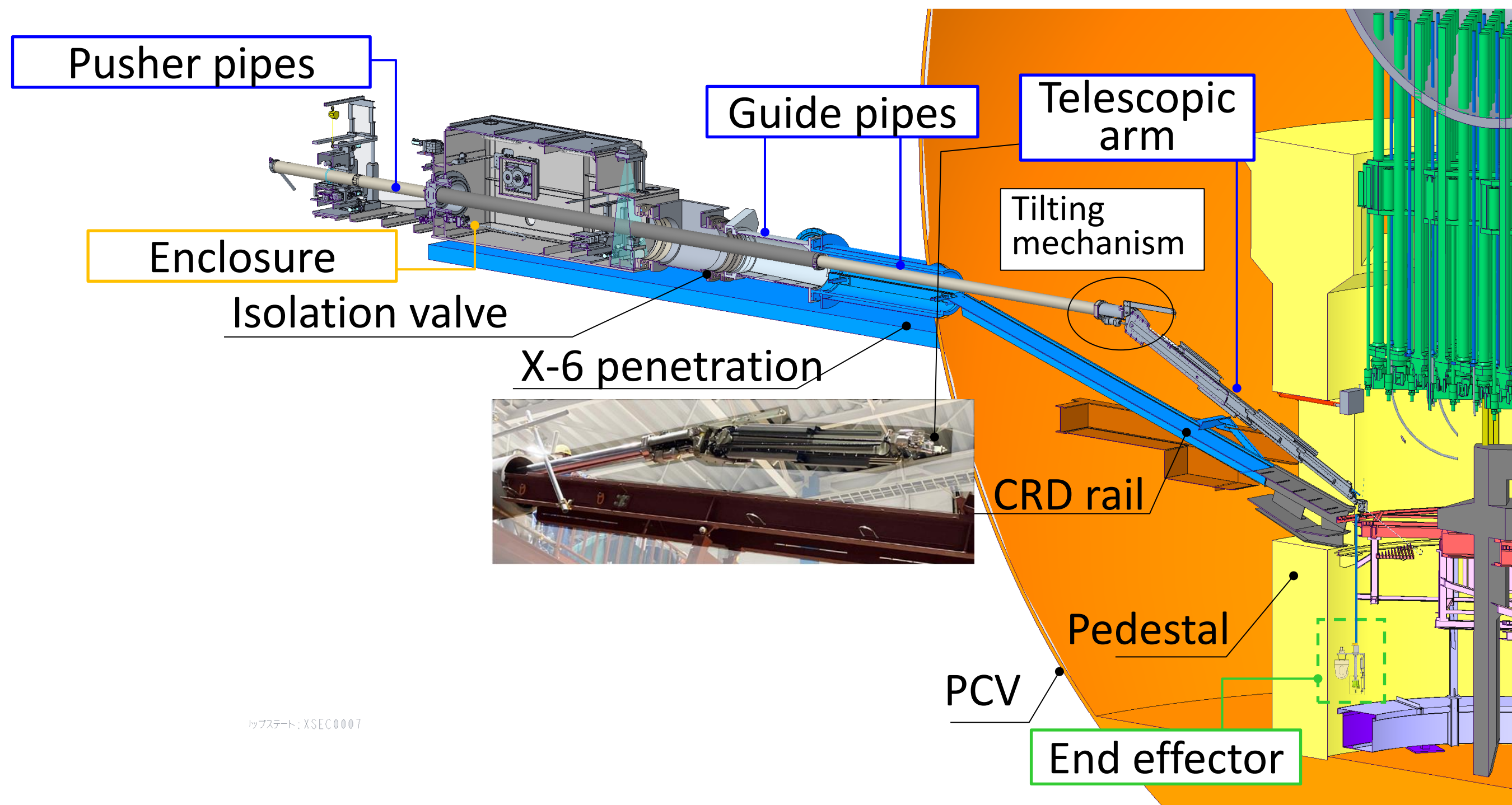
Analysis of accident progression

Muon Survey



Trial retrieval was conducted at Unit 2

- 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.

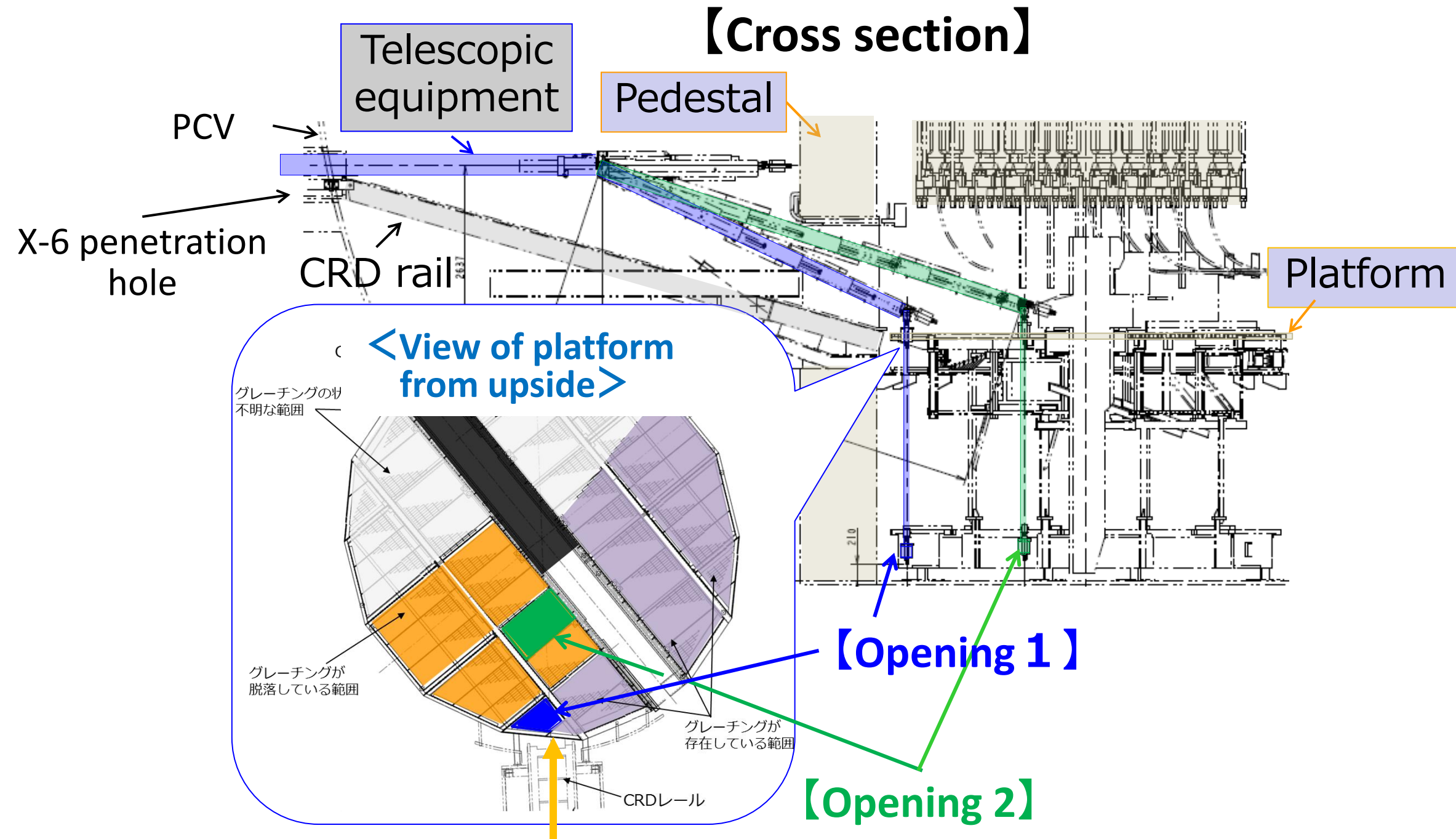
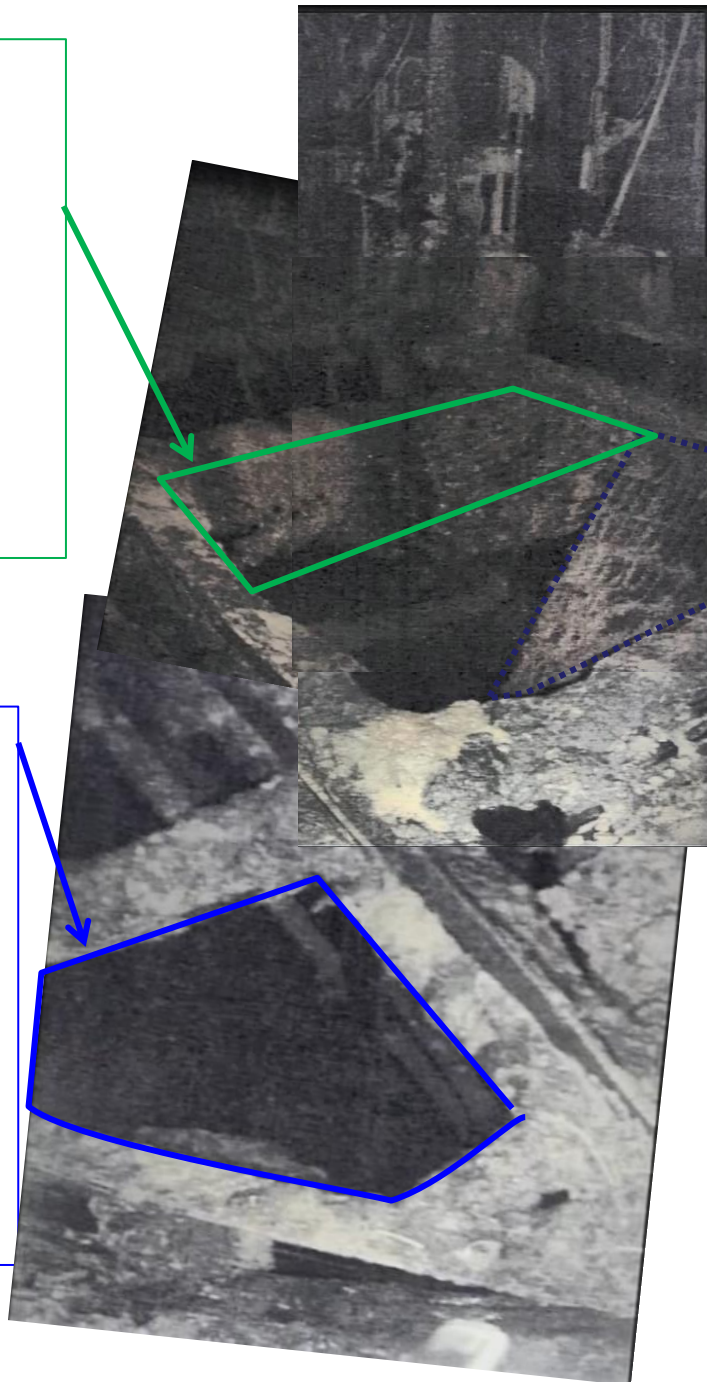


■ To expand our knowledge about fuel debris, two trial retrievals were conducted using the different access routes.

【Routes for trial retrieval】

【Opening 2】
Used in the
second trial
retrieval
in Apr. 2025

【Opening 1】
Used in the
first trial
retrieval
from Sep. to
Nov. 2024

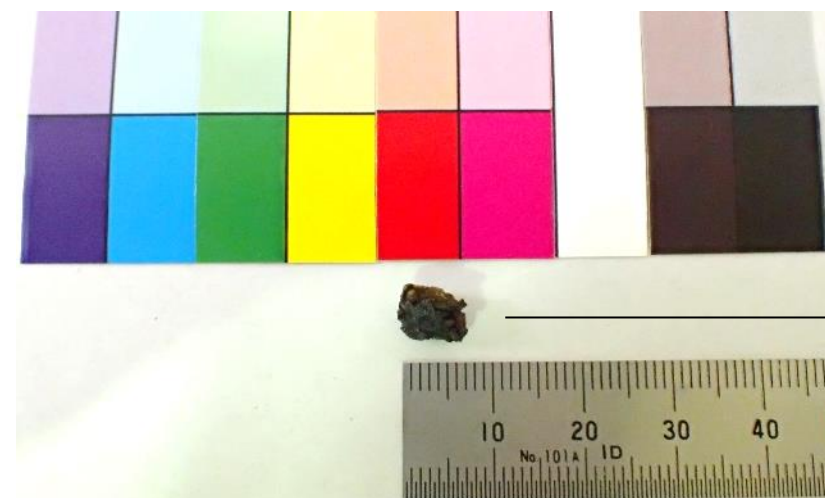


Route for telescopic equipment from outside
(X-6 penetration hole)



■ Non-destructive analyses of the retrieved fuel debris have been conducted at the Oarai Nuclear Engineering Institute of JAEA.

Fuel debris obtained from the first trial retrieval



○ Shiny area
(seen in other parts as well)

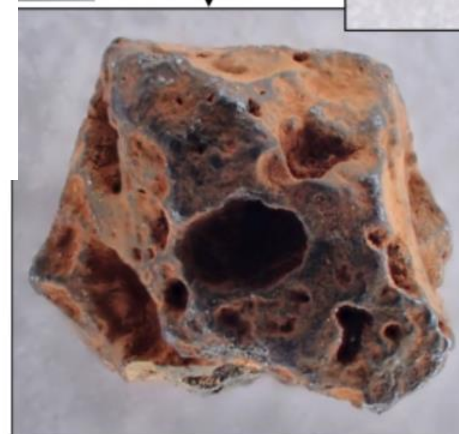
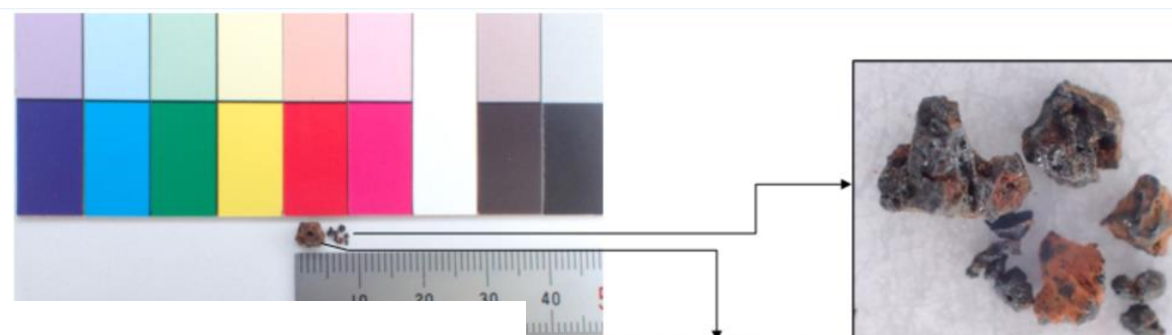
● Black area

● Scale :
Approx. 9mm × Approx. 7mm

● Weight : Approx. 0.69g

● Dose rate※ (γ ray) :
Approx. 8mSv/h

Fuel debris obtained from the second trial retrieval



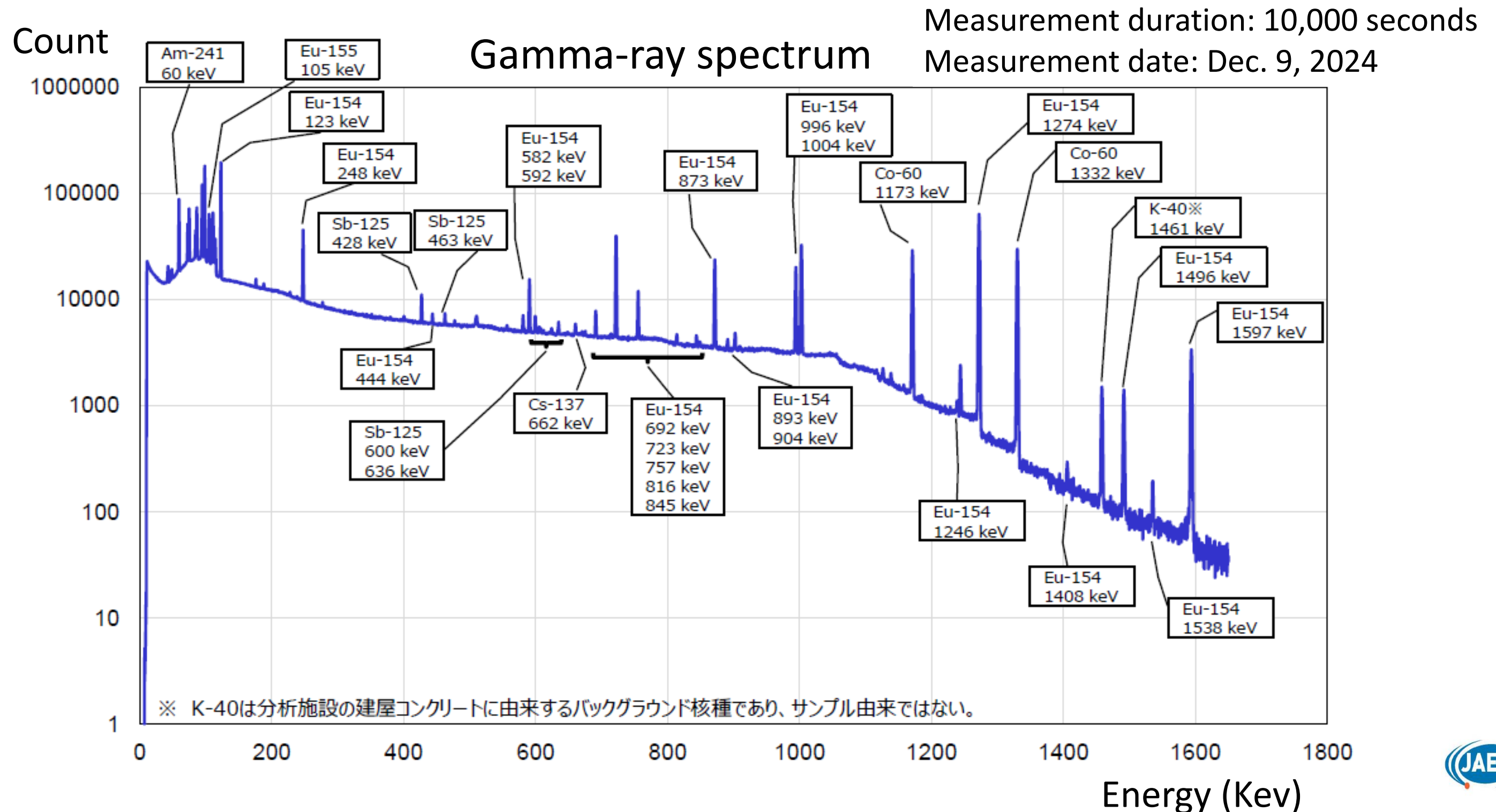
● Scale of largest piece :
Approx. 5mm × Approx. 4mm

● Weight :
Approx. 0.187g (all pieces included)

● Dose rate※ (γ ray) :
Approx. 0.3mSv/h

※ The sample placed in a polypropylene container was measured by an ionization chamber (1 to 2 cm away)

■ Eu-154, along with Am-241 generated from U-238 through reactions involving neutron capture, was detected, confirming that the fuel component is present in the retrieved fuel debris.



■ After initial non-destructive analyses, detailed analyses including both solid and solution analyses are underway at several research institutions

● **Oarai Nuclear Engineering Institute, JAEA**

Solid analysis (Assessment of elemental composition of fuel, Uranium isotope ratio, element and compound distribution)

Chemical analysis (Assessment of Radioactivity Concentration)

● **Nuclear Science Research Institute, JAEA**

Chemical analysis (Assessment of composition of major elements, uranium isotope ratio, radioactivity concentration)



● **Nippon Nuclear Fuel Development Co., Ltd (NFD)**

Solid analysis (Assessment of Uranium crystal structure, composition, element distribution)

● **MHI NUCLEAR DEVELOPMENT (NDC)**

Chemical analysis (Assessment of composition of major elements, composition of trace elements, uranium isotope ratio)

● **Spring 8 (Harima Super Photon Ring-8 GeV), JAEA**

Solid analysis (Assessment of microcrystalline structure. uranium valence)

Ref.

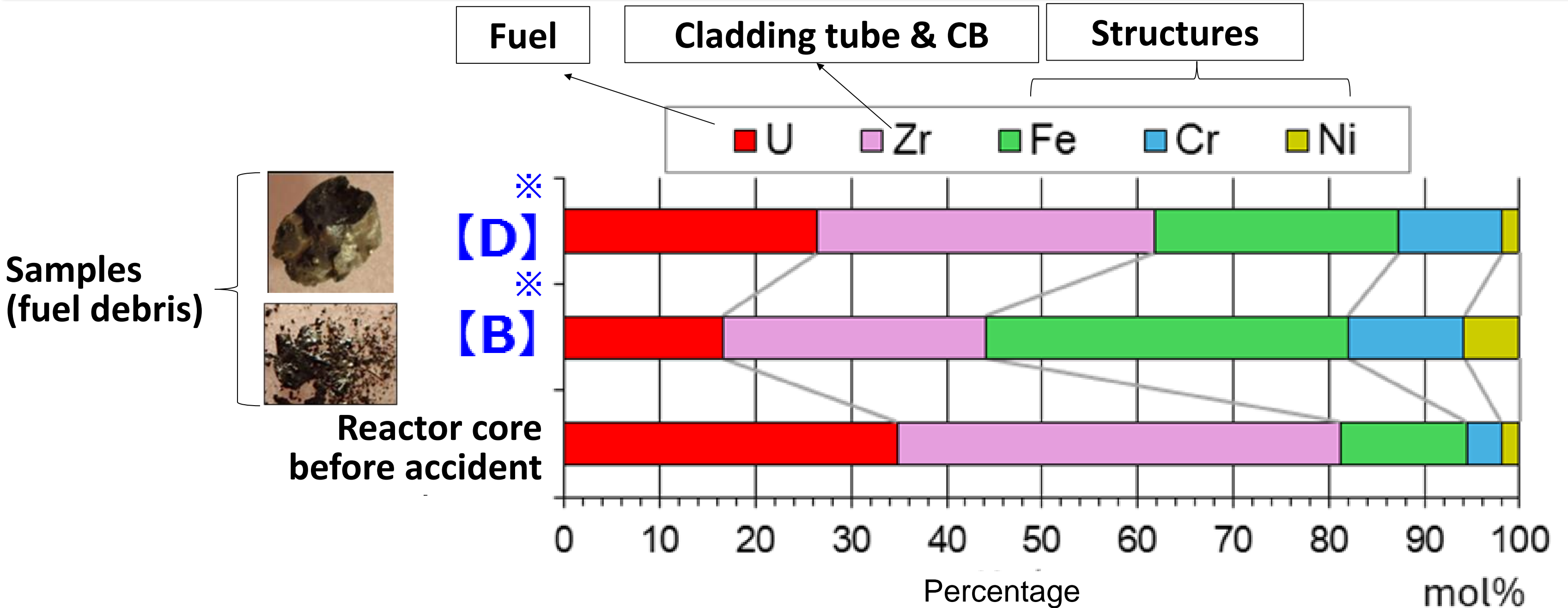
-Non-destructive analysis of fuel debris obtained in the second retrieval:

https://www.tepco.co.jp/en/hd/decommission/information/newsrelease/reference/pdf/2025/reference_20250529_02-e.pdf

-Detailed analysis of fuel debris obtained in the first retrieval:

https://www.tepco.co.jp/decommission/information/committee/roadmap_progress/pdf/2025/d250731_25-j.pdf

■ The analysis result has shown that fuel and cladding tube incorporated various surrounding materials during its meltdown process, when fuel debris was generated.



※【D】【B】: Analysis institutions:

D stands for MHI NUCLEAR DEVELOPMENT

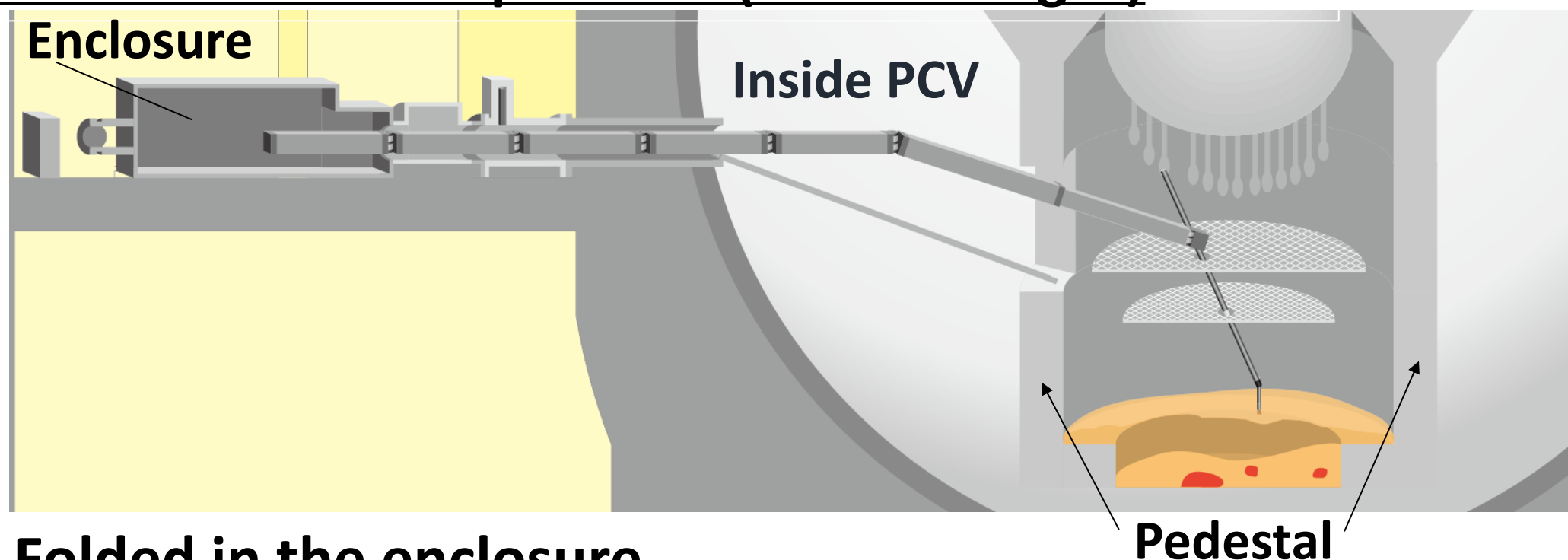
B stands for Nuclear Science Research Institute, JAEA

Elemental composition in terms of number of atoms

- 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.

Robotic arm

Extended into the pedestal (22m in length)

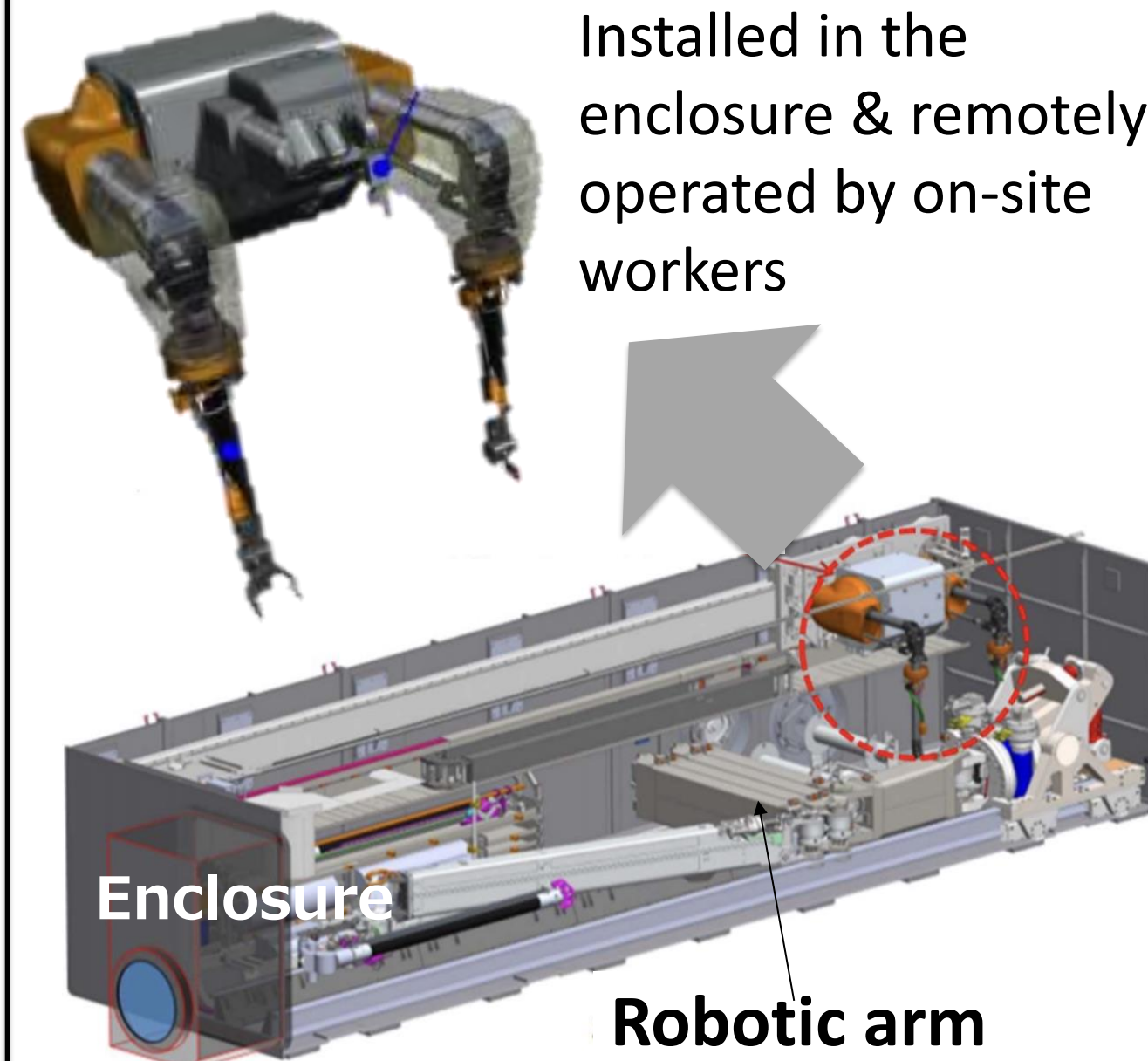


Folded in the enclosure

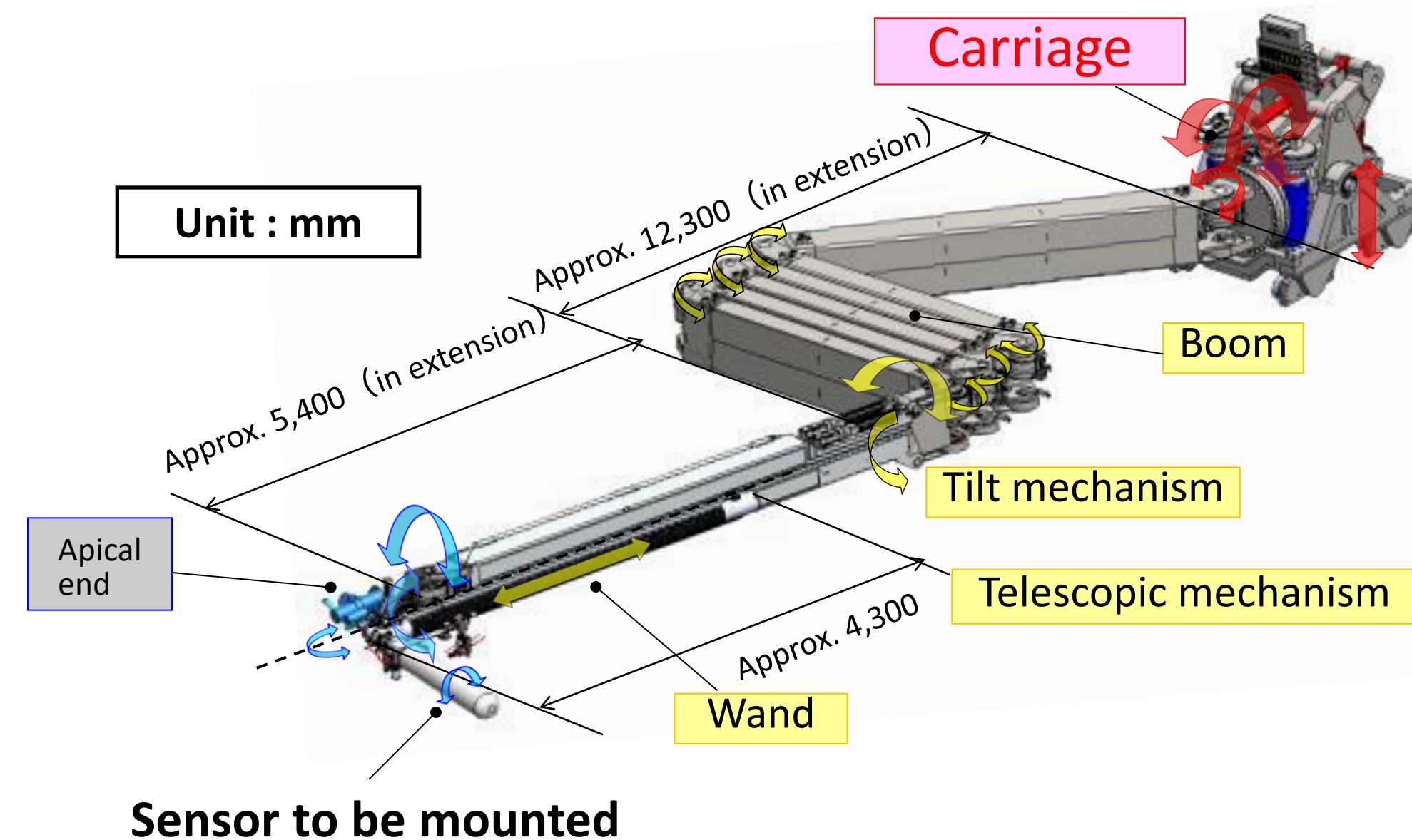


Dual-arm manipulator

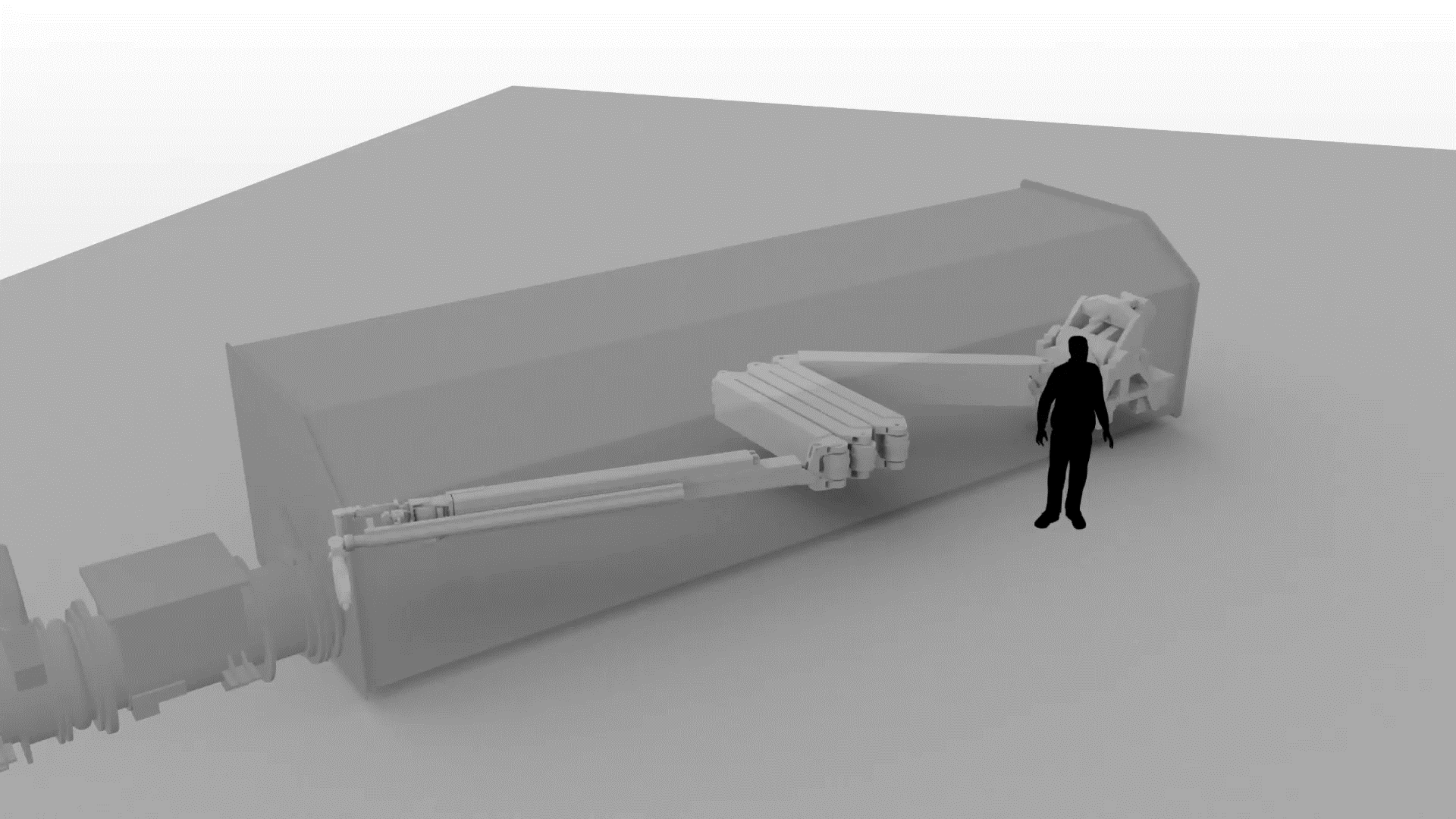
Installed in the enclosure & remotely-operated by on-site workers



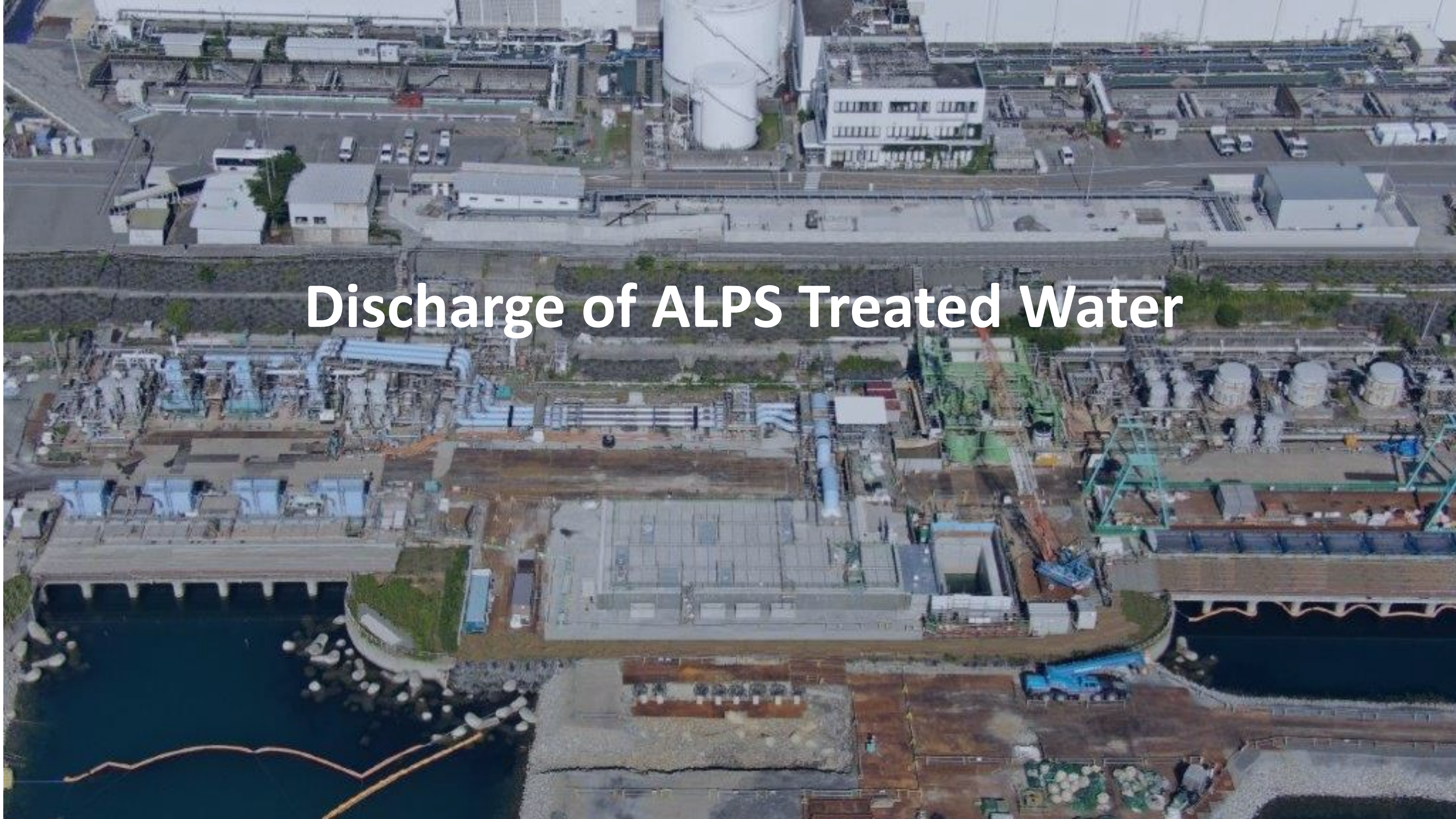
- By using robotic arm, we also aim to understand the distribution and properties of fuel debris inside the pedestal as well as the interior structure.
- Measuring devices and sampling tools will be attached to the wand.

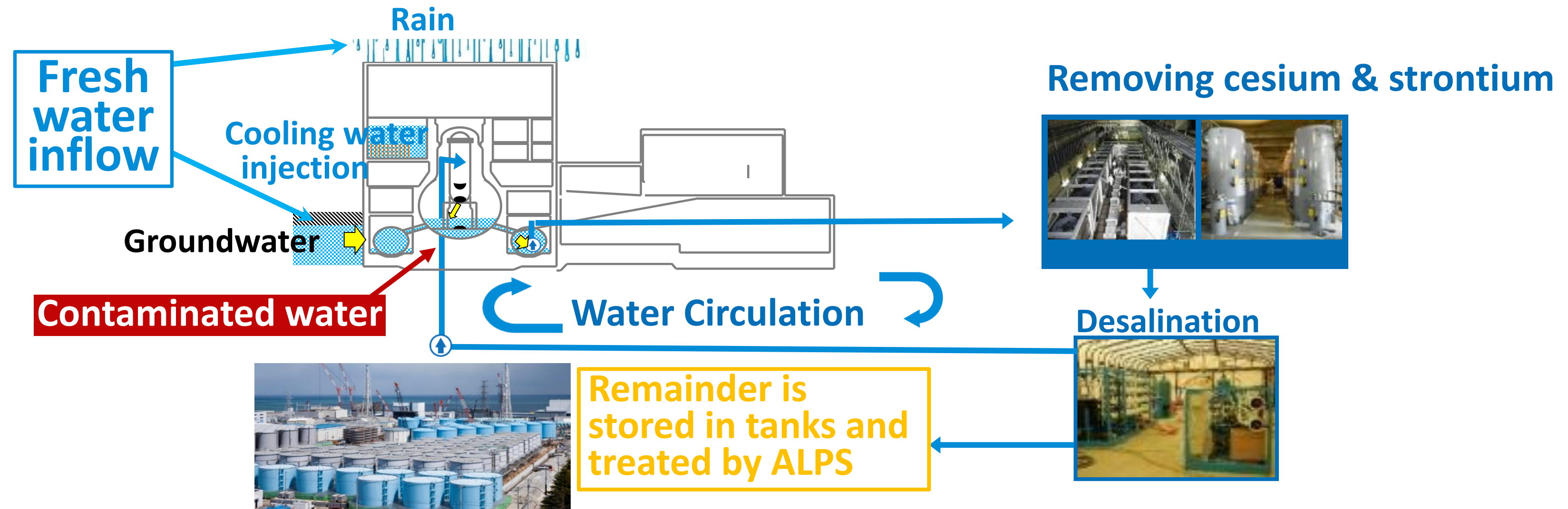


Investigation Item	Measuring devices to be mounted
Detailed vision	Pan-tilt camera
3D shape inside pedestal	Laser rangefinder
Gamma ray dose rate	Gamma camera
Neutron flux	Neutron detector



Discharge of ALPS Treated Water





Generation rate of contaminated water (m³/Day)

- ✓ Frozen soil wall
- ✓ Ground pavement
- ✓ Repairing top roof of turbine buildings etc.

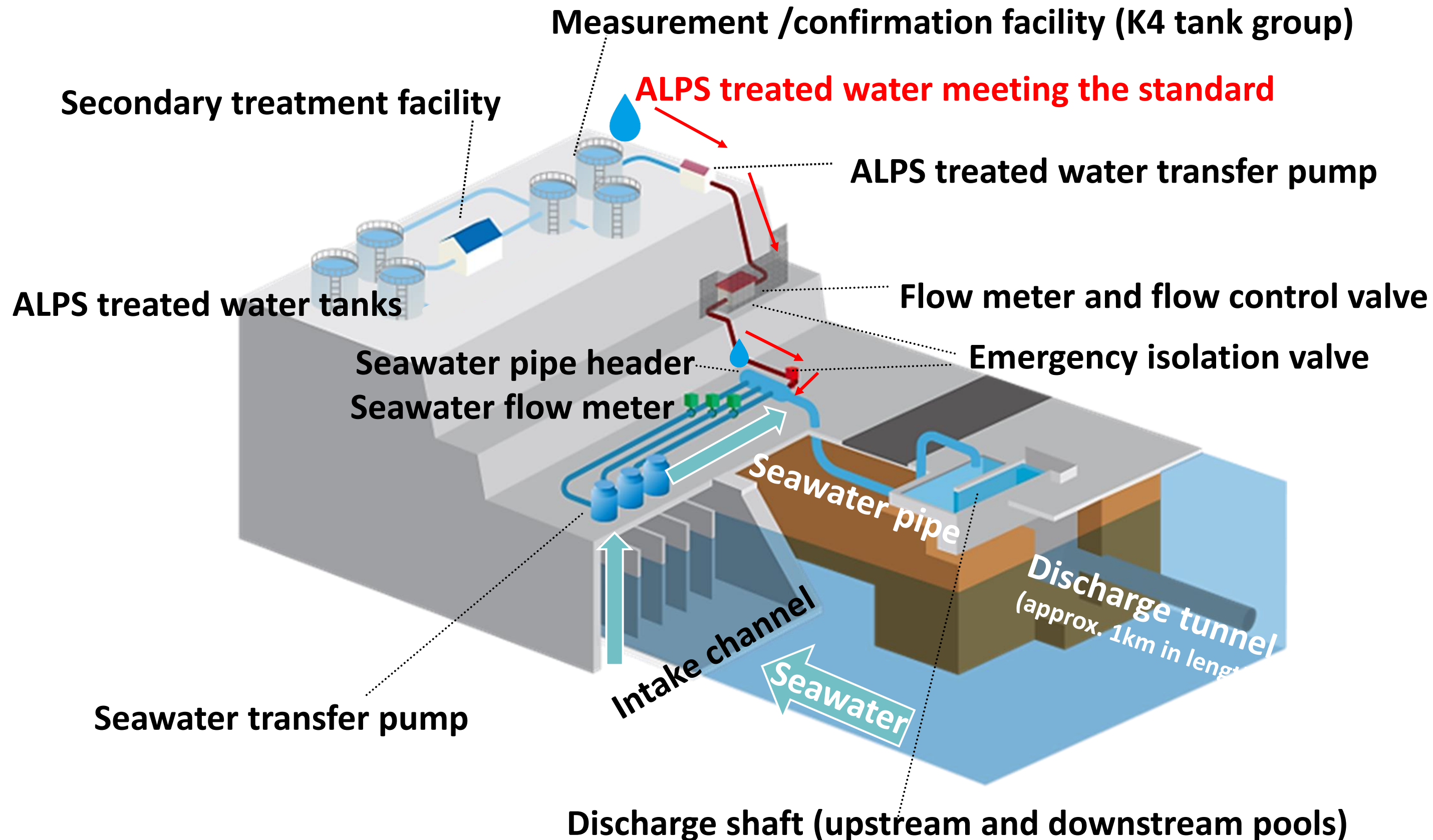
470 m³/Day

in FY2014



170 m³/Day

in FY2024



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
9th	280,000Bq/L	0.078	2024.9.26	2024.10.14	MAX 405Bq/L	7,817m ³	2.2 trillion Bq
10th	310,000Bq/L	0.083	2024.10.17	2024.11.4	MAX 436Bq/L	7,837m ³	2.4 trillion Bq
11th	310,000Bq/L	0.076	2025.3.12	2025.3.30	MAX 403Bq/L	7,859m ³	2.4 trillion Bq
12th	370,000Bq/L	0.083	2025.4.10	2025.4.28	MAX 489Bq/L	7,853m ³	2.9 trillion Bq
13th	250,000Bq/L	0.11	2025.7.14	2025.8.3	MAX 351Bq/L	7,873m ³	2.0 trillion Bq
14th	380,000Bq/L	0.12	2025.8.7	2025.8.25	MAX 500Bq/L	7,908m ³	3.0 trillion Bq

FY2023:
4.5 Trillion Bq

FY2024:
12.7 Trillion Bq

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

- Tritium concentration measurements at each point are well below the related thresholds.
 - Japanese regulatory discharge standard: 60,000Bq/L
 - WHO's guideline for drinking water: 10,000Bq/L
 - TEPCO's discharge suspension level within 3km of the site: 700Bq/L
 - TEPCO's discharge suspension level within 10km by 10km area around the site: 30Bq/L

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

10 monitoring points within 3km of the site

(LTD: less than detection)

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

FY2023
(4 batches)

From LTD to a max of 22

FY2024
(7 batches)

From LTD to a max of 56

FY2025
(7 batches planned)

1st: From LTD to a max of 27
2nd: From LTD to a max of 31
3rd: From LTD to a max of 61

Discharge
Point

All LTD

TEPCO's discharge
suspension level
:700Bq/L

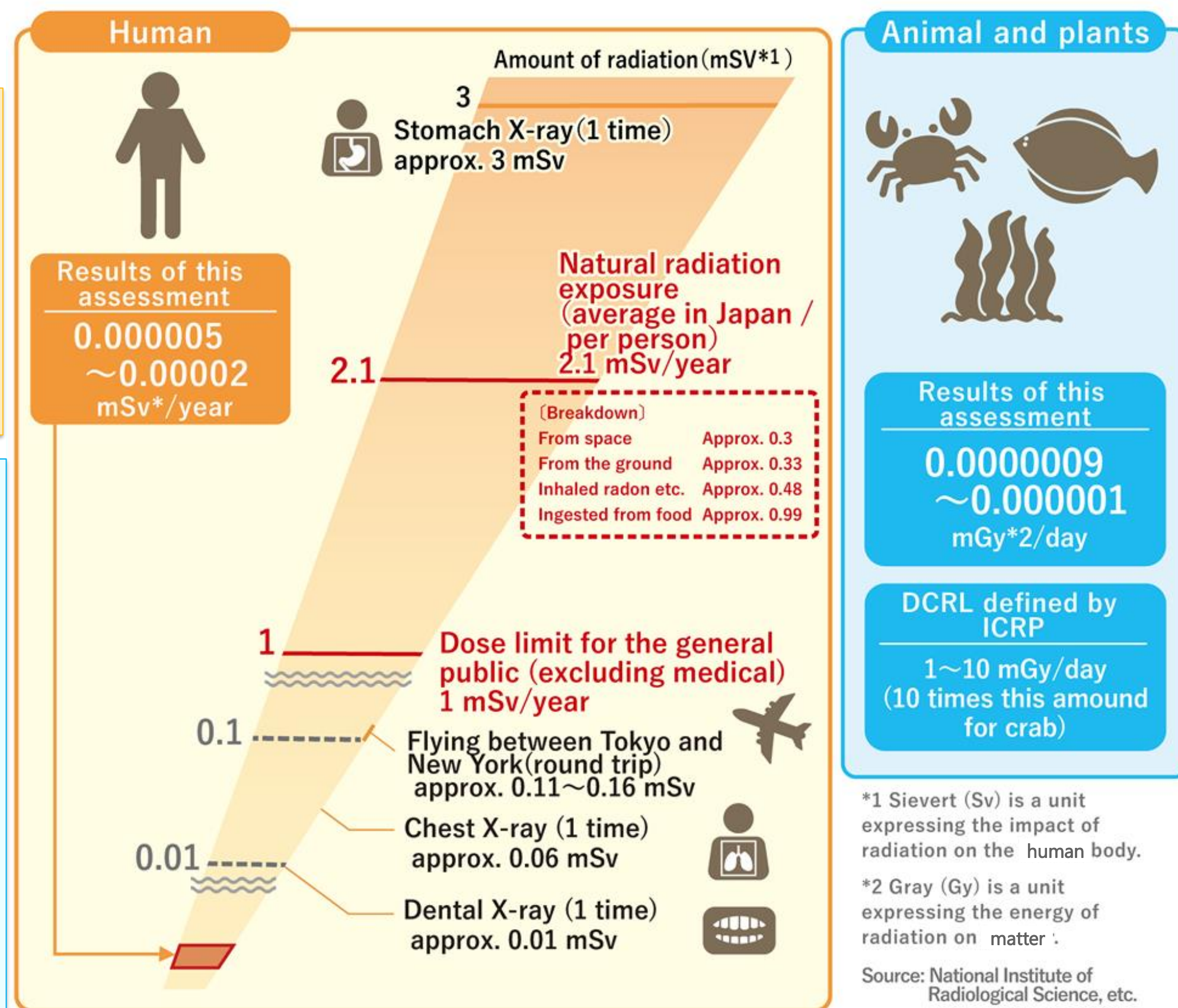
TEPCO's discharge suspension level :30Bq/L

Impact on humans

Even for those living near the discharging outlet, the assessment of the exposure dose is approx. 1/50,000 of the dose limit for the general public (1 mSv/year).

Impact on animals and plants

The levels are extremely low, ranging from approx. 1/1 million (for flatfish and brown seaweed) to approx. 1/11 million (for crab) of the lower limit of Derived Consideration Reference Level (DCRL).



- Tanks that are no longer needed due to the discharge of ALPS treated water are scheduled to be dismantled to secure space for the decommissioning.
- As part of this initiative, a total of 21 welded tanks in the J8 and J9 areas are planned to be dismantled, with work in the J9 area having been completed as of early September.



**Dismantlement of all tanks completed
in J9 Area on September 3**

- The status of each facility and the monitoring data for sea areas are easily accessible.
- Foreign language versions, including English, Chinese, and Korean, are available.


[日本語](#)
[中文\(简体\)](#)
[中文\(繁體/臺灣\)](#)
[中文\(繁體/香港\)](#)
[한국어](#)


TREATED WATER PORTAL SITE

TEPCO is prioritizing safety while steadily moving forward with each and every task needed to decommission the Fukushima Daiichi Nuclear Power Station and reduce risks as we aim to "balance recovery with decommissioning."

We are making every effort to convey accurate information about initiatives pertaining to ALPS treated water, etc. which is part of the decommissioning process, so as to obtain the understanding of society as a whole.


[What is ALPS Treated Water?](#)

[Quick measurement results by each organization](#)

information

2025.8.26

Comments following the 8th Inter-Ministerial Council for Steady Implementation of the Basic Policy on the handling of ALPS Treated Water and the 8th Inter-Ministerial Council for Contaminated Water, Treated Water and Decommissioning Issues

[Please click here for details](#)

[Click here for a list of announcements](#)

1. Spent Fuel Removal

- Preparatory work underway toward removal at Units 1 and 2

2. Fuel Debris Retrieval

- Trial Retrieval at Unit 2
 - Trial retrieval using telescopic equipment was conducted twice, followed by various analyses.
 - Trial retrieval and internal investigation using robotic arm planned

3. Discharge of ALPS treated water

- Concentrations of all radioactive materials including tritium have met Japanese and international safety standards
- More than 10 rounds of discharges conducted so far with minimal impact on humans & environment
- Timely and abundant information in multiple languages

Thank you for your kind attention

TEPCO