

Fukushima Daiichi Nuclear Power Station Unit 3 Drone Investigation Results of the inside of the reactor building

April 23, 2026



Tokyo Electric Power Company Holdings, Inc.

1. Investigation overview

- Some areas inside the reactor building have not been sufficiently investigated because of the high doses resulting from the accident.
- As shown below, micro-drones will be planned to perform investigations of the inside of the Unit 1 and Unit 3 reactor buildings (outside of the primary containment vessels).
- On December 22, 2025, an investigation was conducted first and second floors of the Unit 1 reactor building; on February 3 and 5, 2026, an investigation was conducted first and second floors of the Unit 3 reactor building; and on March 23, an investigation was conducted third floor of the Unit 3 reactor building.

| Reactor building | Objective | Investigation scope | Investigation location | Investigation details | Implementation status |
|------------------|---|--|--|--|---|
| Unit 1 | To inspect the condition of valves of IC(A), which poses a hydrogen accumulation risk, in order to deliberate a hydrogen purge. | IC(A) MO valve (3A), instrument line primary valves. | R/B 1 st floor, northwest area 2 nd floor, west area (Both are at high elevations) | Visual inspection using a drone • Confirm the condition of valves used for purge operations • Confirm conditions in the vicinity | Completed on December 22, 2025 (Announced) |
| Unit 3 | Confirm the condition of valves since pipe PCV boundaries and sealing measures need to be considered if it becomes necessary to remove instrument racks in preparation for a fuel debris retrieval. | Primary valves of lines connected to the instrument racks on the northwest/west areas of the first floor of the R/B. | R/B 1 st floor, northwest area 2 nd floor, northwest area 3 rd floor, northeast area (All are at high elevations) | Visual inspection using a drone • Confirm the condition of the instrument rack master valves • Confirm conditions in the vicinity | Completed on February 3 and 5, and March 23, 2026 |

※IC: Reactor isolation condenser system



Micro-drone

Use: Taking footage with cameras
 Dimensions: 199×194×58[mm]
 Mass: 243[g] (Including battery)
 Communications method: Radio
 Flight time: Approximately 11 minutes
 Camera performance: Quality: Full-HD, Frame rate: 60fps
 Aspect ratio: Diagonal 144°, Horizontal 131°, Vertical 80°
 Lights: Two LED lights on the right and left (Total: 380lm)
 Radiation resistance: Approx. 300Gy
 Notes: Equivalent to IP51, forward camera

[Reference] Unit 3 reactor building internal investigation details



■ Background

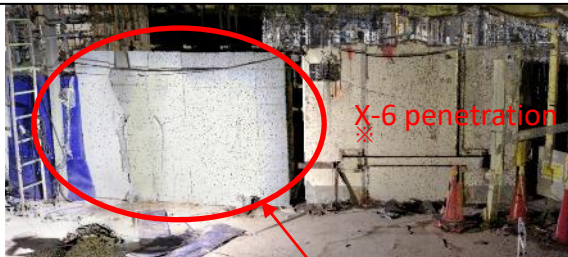
- Even though use of the Unit 3 X-6 penetration is being considered for internal investigations and fuel debris retrieval, the northwest area of the first floor of the reactor building, where the X-6 penetration is located, is a high dose area, so we need to deliberate how to reduce doses in that area.
- The jet pump instrument rack closest to the X-6 penetration in the northwest area contributes greatly to these high doses, and we are deliberating flushing the pipes or removing them in order to reduce doses, but since the pipes are connected to the PCV, removing them would require deliberation of how to build and seal a PCV boundary.
- Furthermore, the west area, which is the access route to the northwest area, is littered with instrument racks that may obstruct the carrying in of equipment, so likewise, deliberating a boundary that considers the PCV is necessary if they are to be removed.

※ Instrument racks: Jet pump instrument rack, recirculation pump instrument rack, high-pressure coolant injection system instrument rack, PCV oxygen analyzer rack, inert gas system instrument rack, etc.

■ Objectives

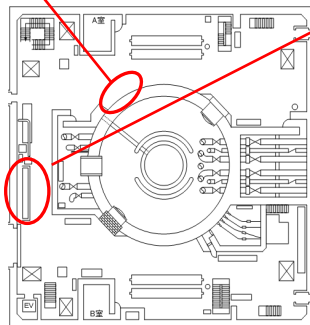
In order to determine whether or not it is possible to remove the instrument racks located in the northwest and west areas of the first floor of the reactor building, we need to consider the PCV boundary, so we must first conduct a field investigation to examine the condition of system valves and the conditions in the surrounding area as well as access routes.

Jet pump instrument rack
(northwest area, 1st floor, reactor building)



※ Shielding has been placed in front of the penetration

< Point cloud data sampling >
Sampled in 2022

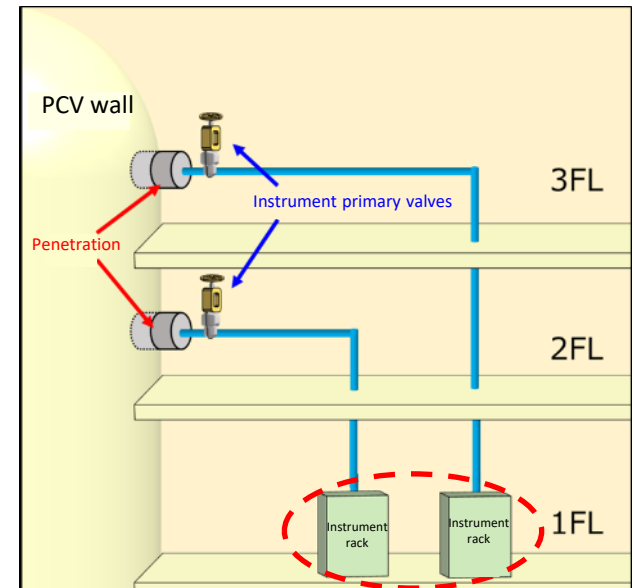


Unit 3 reactor building 1st floor

High pressure coolant injection system instrument rack
(west area, 1st floor, reactor building)



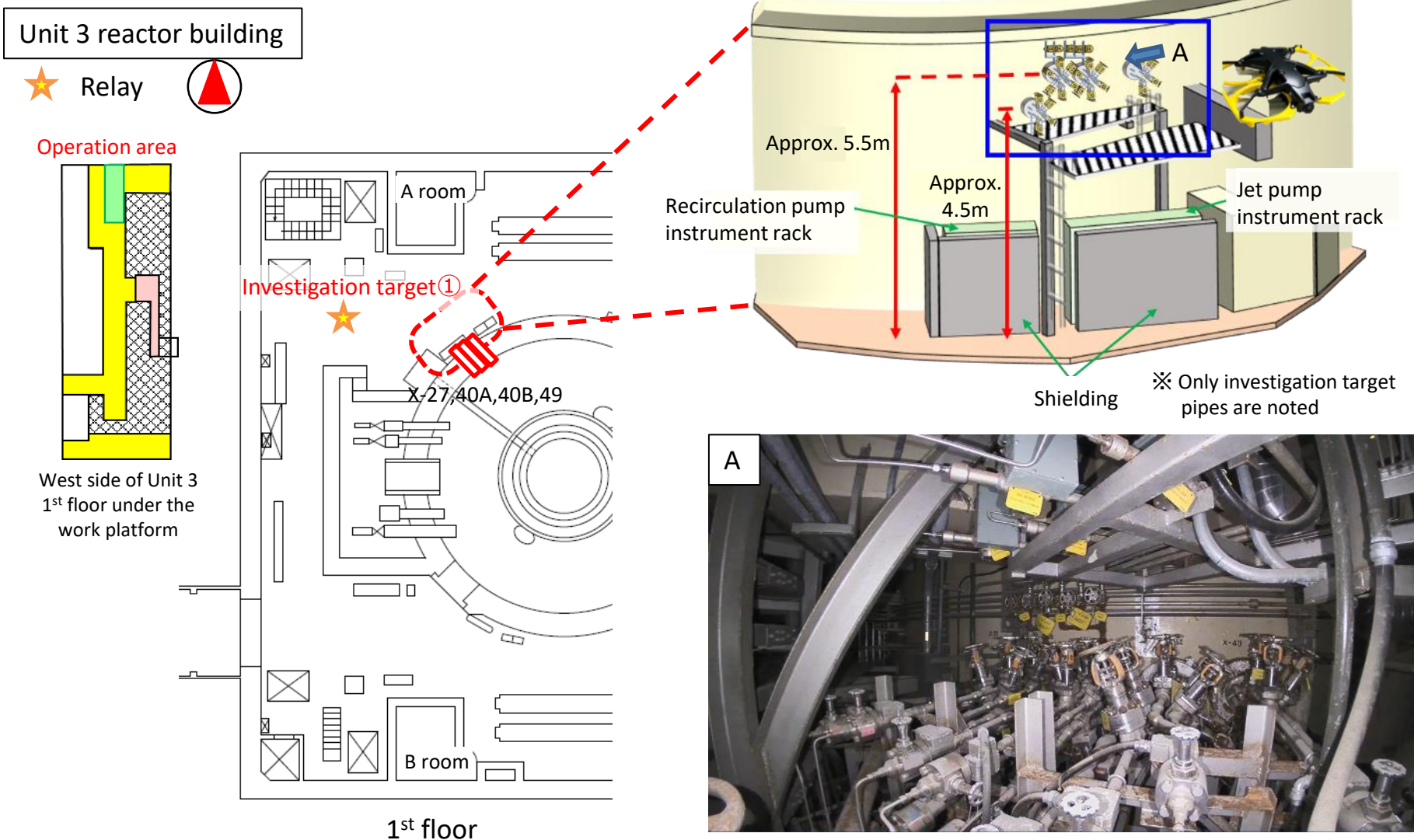
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Sampled in 2022



The PCV boundary must be considered when removing racks, making operation of the primary valve necessary.

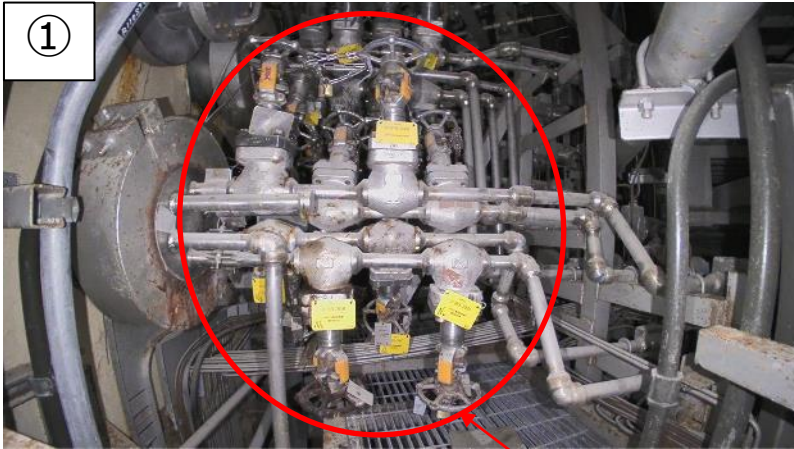
2. Targets of the Unit 3 reactor building internal investigation (1st floor)

- The objective of the investigation was to examine the condition of the instrument line primary valve.
- A micro-drone and relay were placed in the northwest area of the first floor of the reactor building and a flight was performed in the target area.

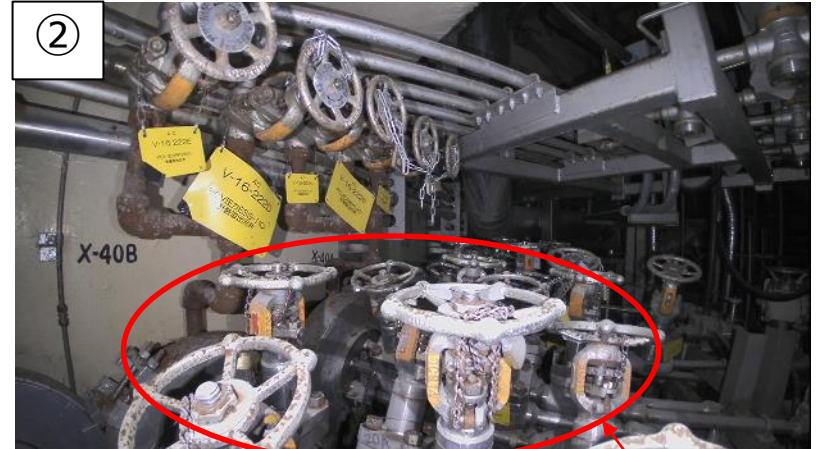


3. Results of Unit 3 reactor building internal investigation (1st floor)

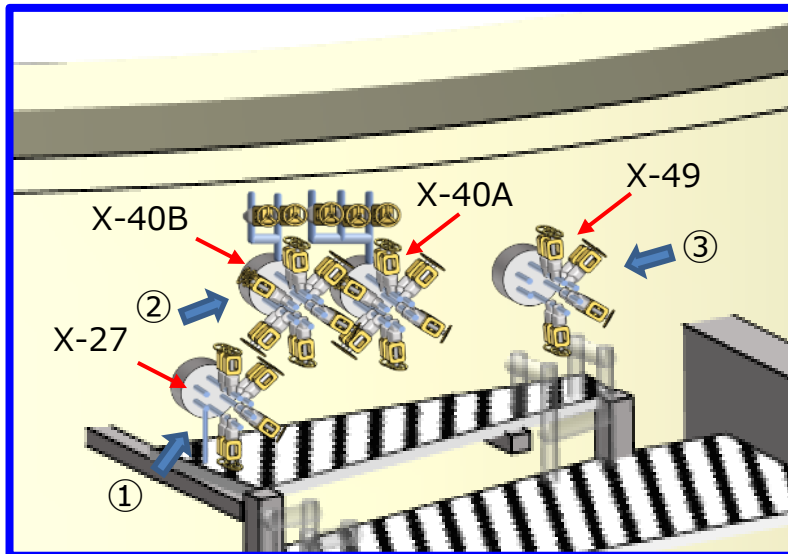
- No remarkable damage, deformation, or excessive corrosion was found on the instrument line primary valve, etc.
 - It was also confirmed that there are many existing obstructions, such as piping and supports, in the vicinity or along the access route to the aforementioned valve.
- ➡ It is assumed that air dose rates are also high so workers will most likely not be able to get close enough to the target to operate it.



High pressure coolant injection system instrument line



Jet pump instrument line

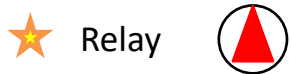


Recirculation pump instrument line

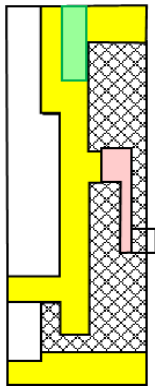
4. Targets of the Unit 3 reactor building internal investigation (2nd floor)

- The objective of the investigation was to investigate the condition of the instrument line primary valve.
- A micro-drone and relay were placed in the northeast area of the second floor of the reactor building and a flight was performed in the target area.

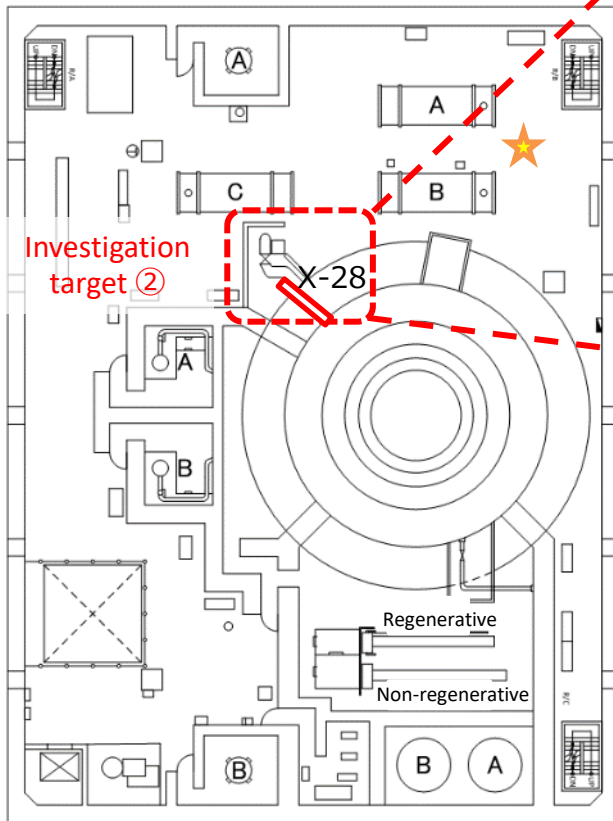
Unit 3 reactor building



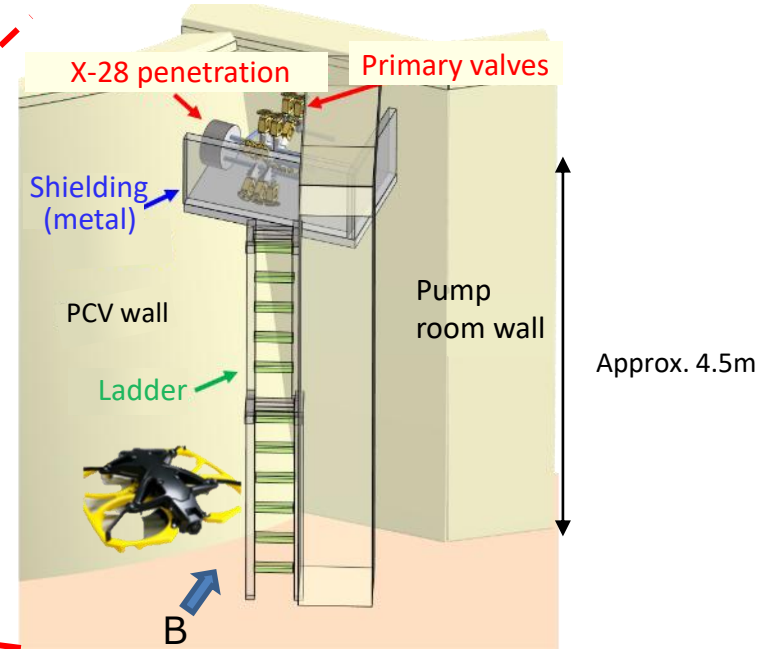
Operation area



West side of Unit 3 1st floor under the work platform

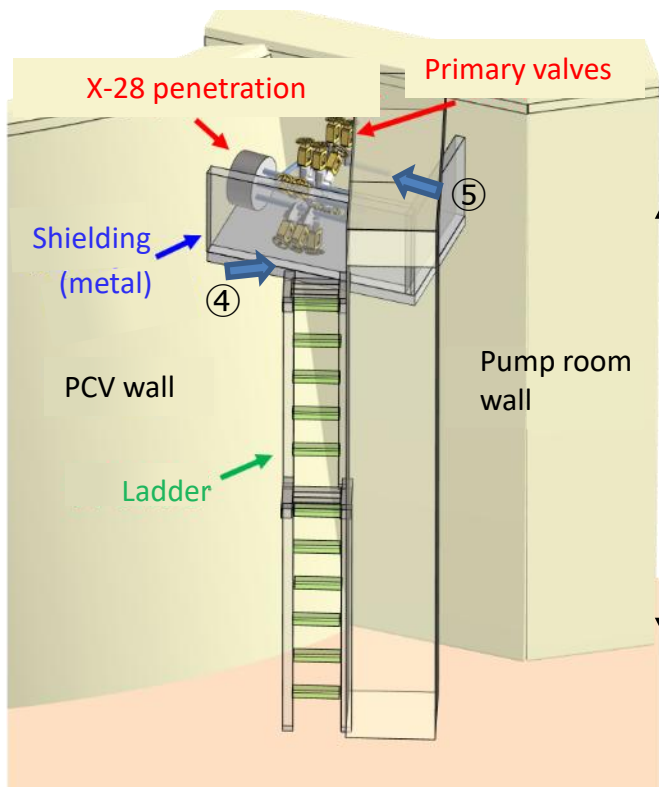


2nd floor



5. Results of Unit 3 reactor building internal investigation (2nd floor)

- No remarkable damage, deformation, or excessive corrosion was found on the instrument line primary valve, etc.
- It was also confirmed that there are no remarkable obstructions in the vicinity or along the access route to the aforementioned valve. However, it was confirmed that the installation location of the valve is surrounded by shielding.



Jet pump instrument



6. Targets of the Unit 3 reactor building internal investigation (3rd floor)

- The objective of the investigation was to confirm the condition of the instrument line.
- In February 2026, a micro-drone and relay were placed in the northeast area of the second floor of the reactor building and an investigation was implemented, but the signal didn't reach. Therefore, the relay deployment location was changed to the southeast area of the third floor of the reactor building and another investigation was implemented in March 2026.



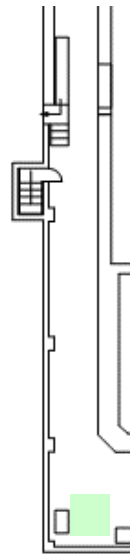
Relay

Unit 3 reactor building

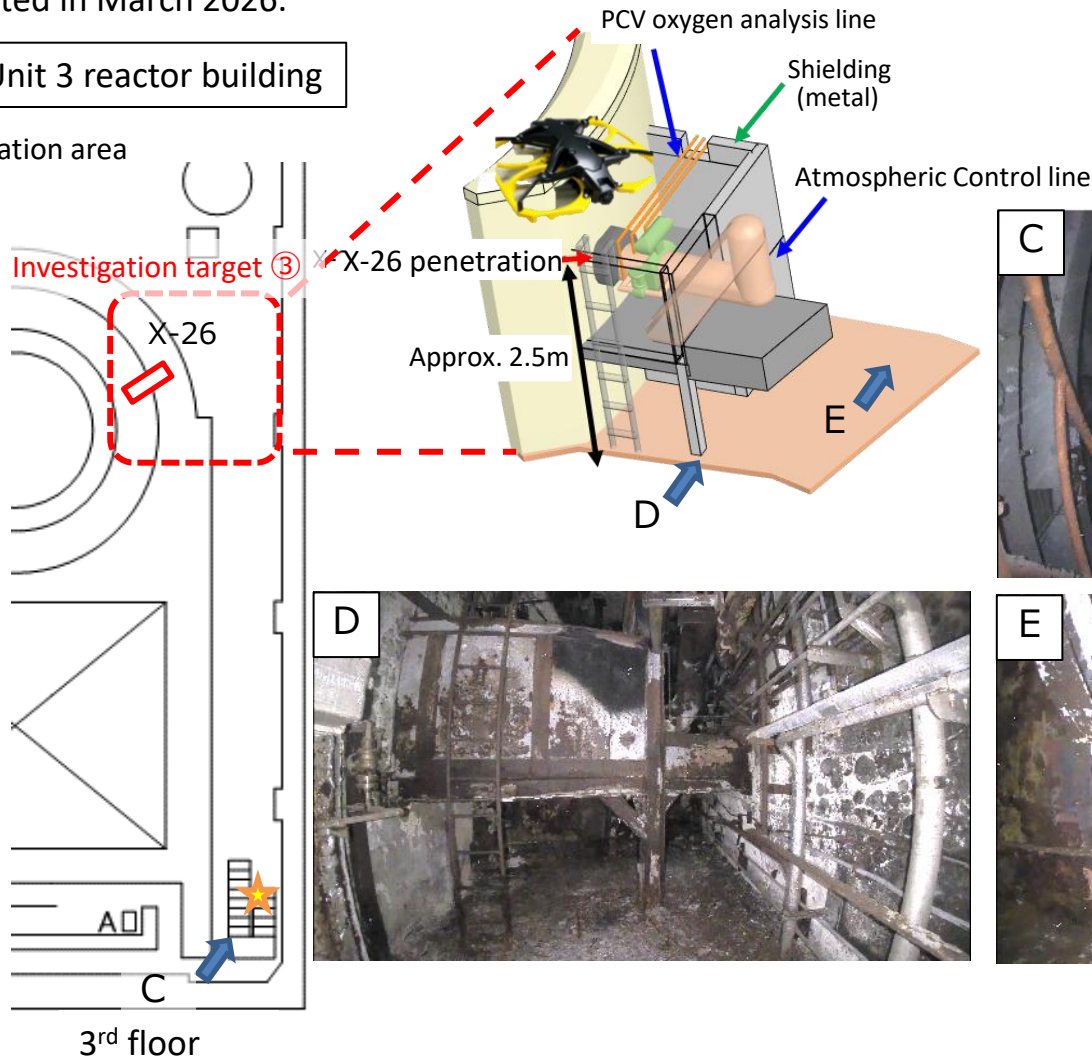
Drone operation area



Operation area

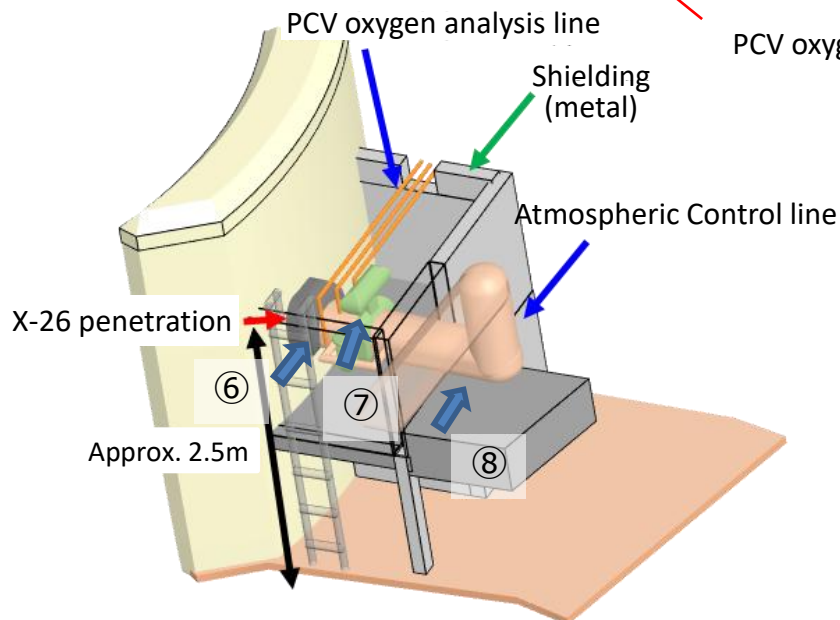
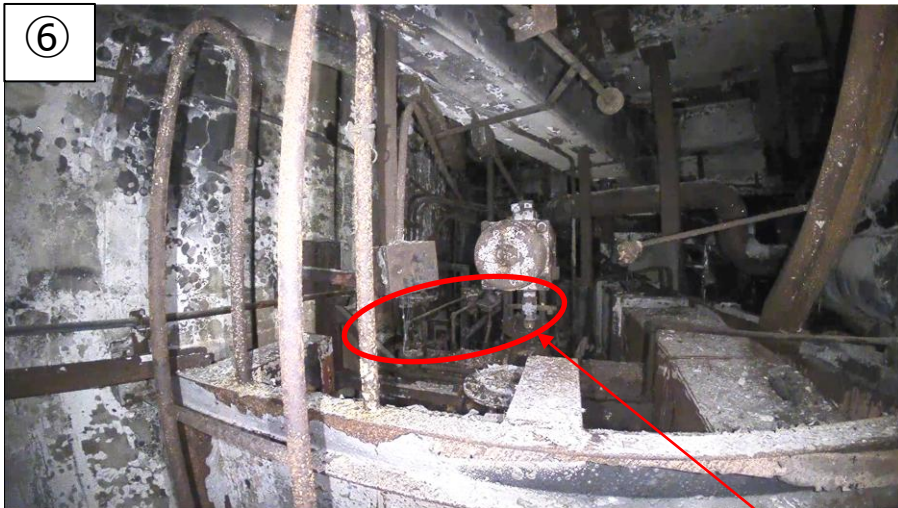


Unit 3 T/B
1st floor



7. Results of Unit 3 reactor building internal investigation (3rd floor)

- No remarkable damage and deformation was found on the instrument line.
 - However, rubble was scattered in the vicinity of the aforementioned location and along the access route.
- ➔ Workers will most likely not be able to get close enough to the target to operate it.



PCV oxygen analysis line

Atmospheric Control line

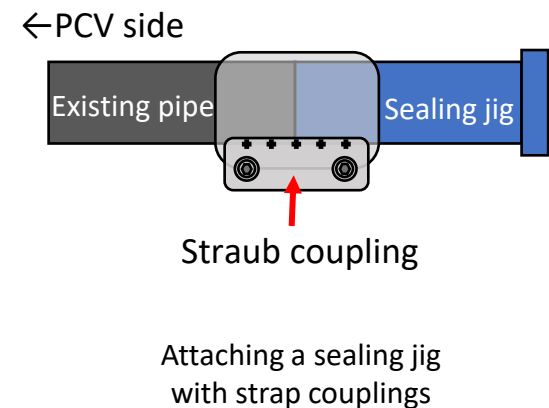
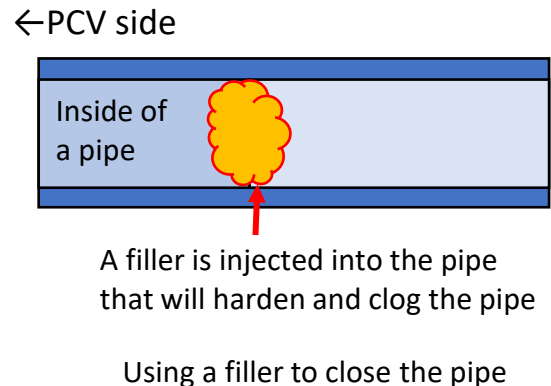
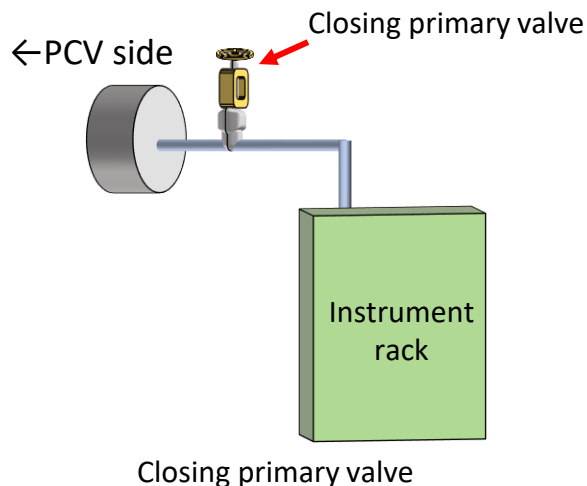


8. Future deliberations based on investigation results

- In order to determine whether or not it is possible to remove the instrument racks located in the northwest and west areas of the first floor of the reactor building, we need to consider the PCV boundary, so we conducted a field investigation to confirm the condition of primary valves of system and the conditions in the surrounding area as well as access routes.
- Assessment of investigation result
 - ✓ Since no remarkable abnormalities were found with the investigation target valves or pipes, we believe it is possible to construct a boundary by valve operation when the instrumentation racks are removed. However, issues pertaining to valve accessibility remain.
- Steps to be taken going forward
 - ✓ Deliberate the following issues pertaining to PCV boundary construction
 - Detailed deliberation of PCV boundary construction method
Method for treating stagnant fluid in the pipes and method other than primary valve closure
 - Valve operating methods (remote or manual, including access)
 - Air dose rate investigation

} Additional investigations to be implemented as needed

<Examples of PCV boundary construction method>



■ Investigation results summary

- ✓ This investigation confirmed the integrity of instrument lines on the first, second and third floors of the reactor building as well as the condition of the primary valves and the access routes to the valves in order to deliberate whether or not the instrument racks located in the Northwest and West areas of the first floor of the reactor building can be removed.
- ✓ In light of the investigation results, we will move forward with a detailed deliberation of the PVC boundary construction method.
- ✓ Since the effectiveness of drone investigations was also confirmed, we will deliberate how to use drones more for examining conditions inside the building.

[Reference] Results of the investigation around the X-6 penetration

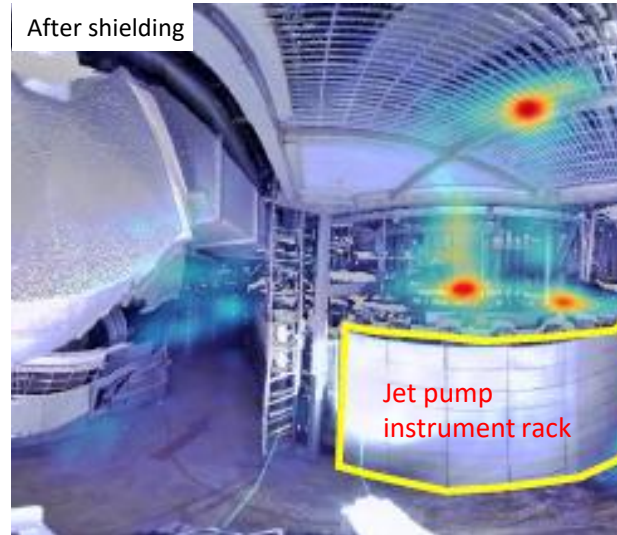
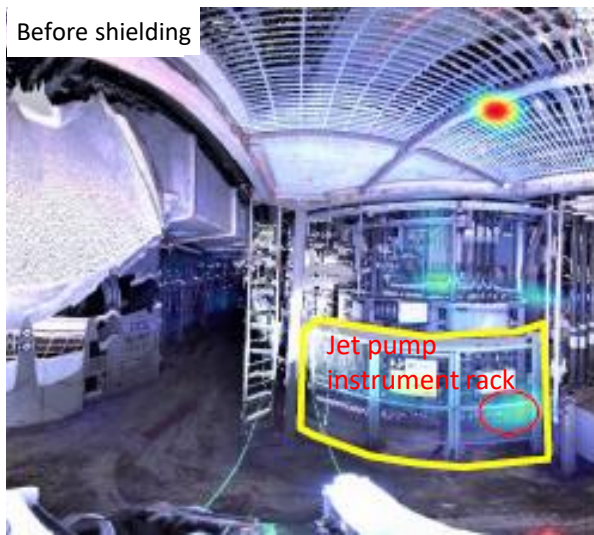


<Issues>

- The HCU (north side) is greatly affected by doses from the jet pump instrument rack, and it is not clear whether there are any other radiation sources.
- The HCU and jet pump instrument rack, which are the main radiation sources, have been shielded, and the air dose rate around the X-6 penetration is between 3~5mSv/h, thereby prohibiting workers from remaining in the area for a long period of time.

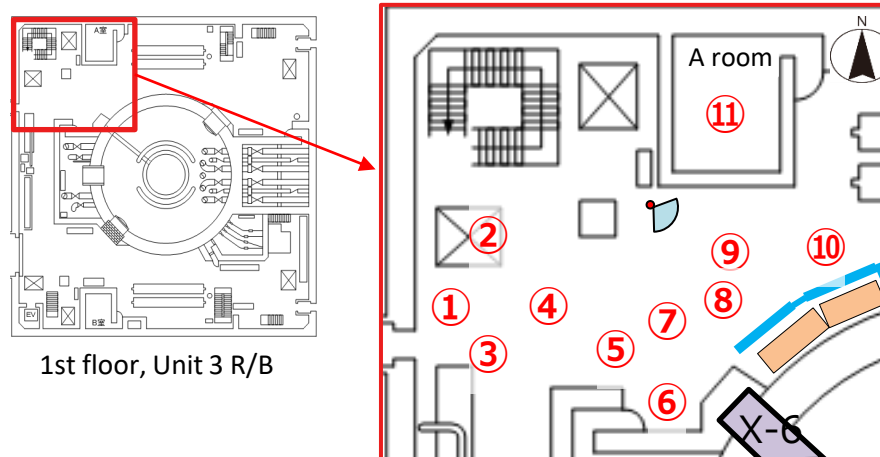
<Plans>

- Dose reduction measures for the jet pump instrument rack closest to the X-6 penetration are being deliberated.
- Due to the difficulty of work implementation, it is expected that much time will be needed to reduce doses in the HCU.



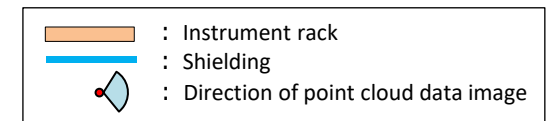
| Location | Measurement (mSv/h) |
|----------|---------------------------------|
| | Air dose (1.5M above the floor) |
| ① | 2.49 |
| ② | 2.99 |
| ③ | 2.98 |
| ④ | 2.72 |
| ⑤ | 3.32 |
| ⑥ | 4.62 |
| ⑦ | 3.36 |
| ⑧ | 5.16 |
| ⑨ | 4.27 |
| ⑩ | 4.15 |
| ⑪ | 0.96 |

<G/I measurement >
Measurements taken between 2019-2020



1st floor, Unit 3 R/B

< Air dose measurement >
Measurements taken during 2025



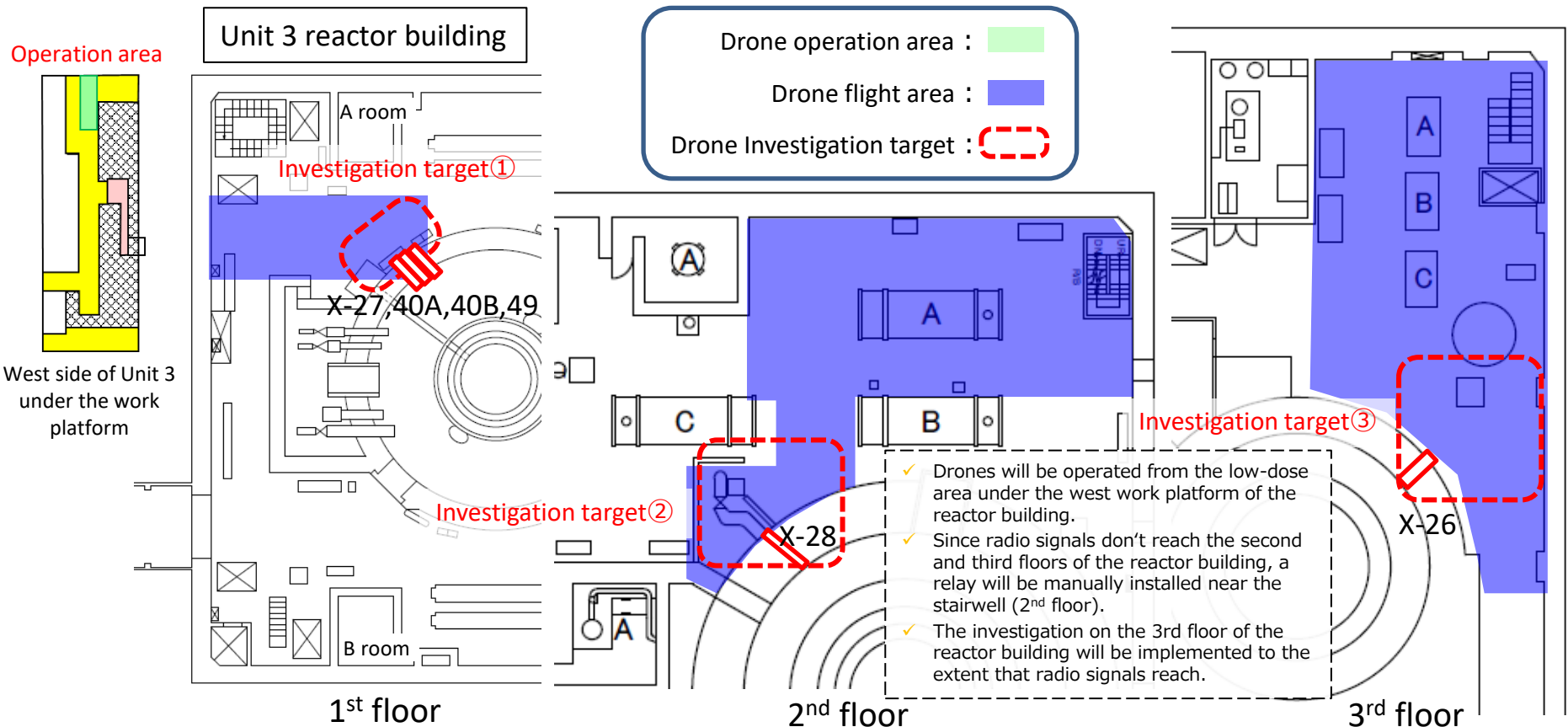
[Reference] Unit 3 field investigation

- Confirm the condition of instrument master valves as well as the conditions in the vicinity and access route in order to deliberate a PCV boundary for each instrument rack.

Investigation target: Primary valves on lines connected to the instrument racks* on the northwest/west areas of the first floor of the reactor building

[1st floor near X-27,40A/B,49, 2nd floor near X-28, 3rd floor near X-26]

- Since all of the investigation locations are high off the ground (near the ceiling), drones will be used to conduct the investigation.



* Instrument racks: Jet pump instrument rack, recirculation pump instrument rack, high-pressure coolant injection system instrument rack, PCV oxygen analyzer rack, inert gas system instrument rack, etc.