Fukushima Daiichi Nuclear Power Station
Investigation Results for the inside of the Unit 3 Personal Access Lock and Past Investigation Results for each penetration

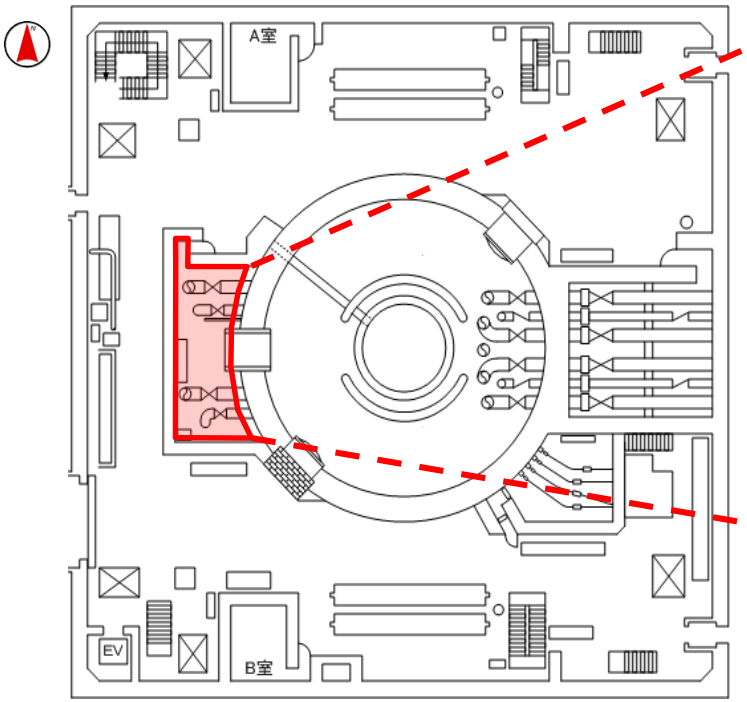
October 30, 2025

TEPCO

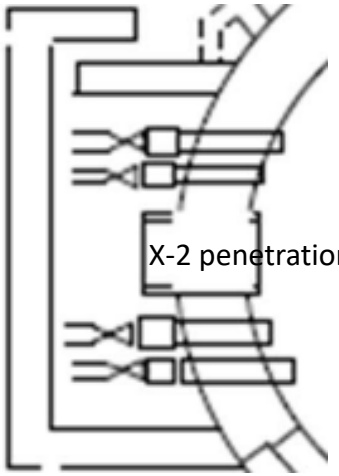
Tokyo Electric Power Company Holdings, Inc.

1. Overview

- For full-scale fuel debris retrieval from Unit 3, we are deliberating accessing the fuel debris from the X-6 penetration, X-1B penetration and the TIP room.
- In order to deliberate if any other penetrations can be utilized, from August 19 to September 19, we investigated the personnel access lock room (P/A room) of the X-2 penetration (visual inspection using cameras, dose measurements, point cloud data acquisition).



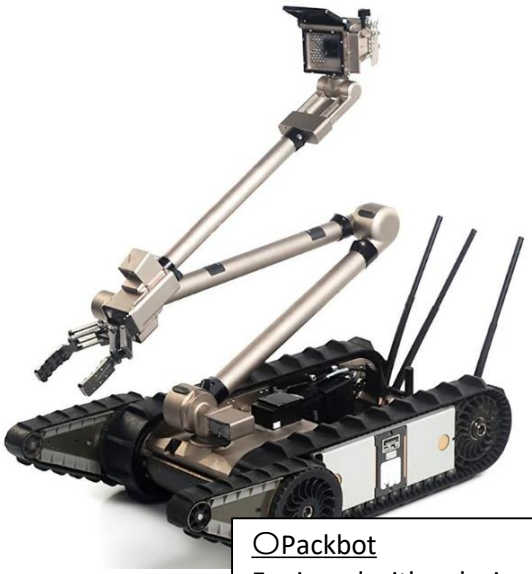
1st floor, Unit 3 reactor building



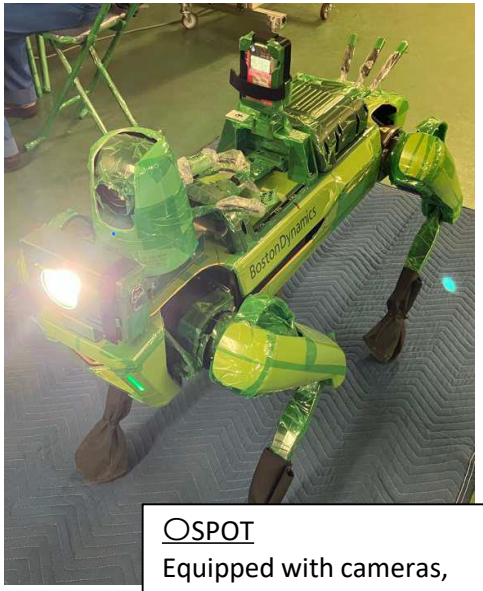
P/A room

[Reference] P/A room internal investigation

- Remotely operated devices were inserted into the P/A room to investigate the conditions inside.
  - During the investigation, cameras were used to perform a visual inspection, dose measurements were taken, and point cloud data was acquired.
  - Dose measurements were taken at a height of 1.5 meters and at the floor surface.
- Remotely operated quadruped robots (SPOT) and crawler robots (Packbot) were used for the investigation.
- gamma-ray imager (G/I), LiDAR and dosimeters were used as measurement devices.
- Investigation instruments (cameras/dosimeters, etc.) were covered to prevent the spread of contamination.
- The door of the P/A room was left open after the investigation to prevent it from becoming stuck, and portable free-standing shielding was installed to prevent exposure to radiation from inside the P/A room.



○Packbot
Equipped with a dosimeter
Move around inside and investigate the P/A room



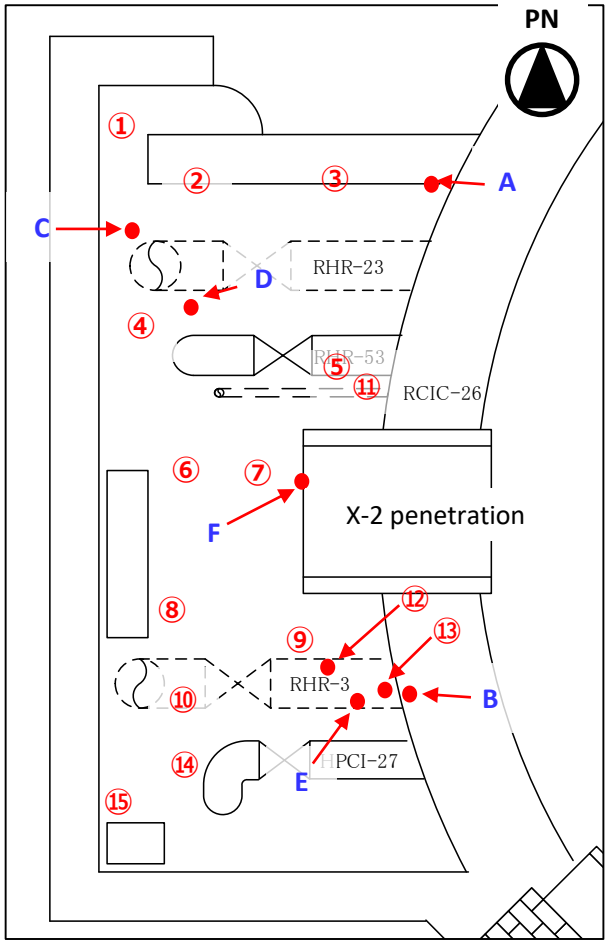
○SPOT
Equipped with cameras, dosimeter, LiDAR move around inside and investigate the P/A room

○gamma-ray imager (G/I)
Combines hotspot identification functions with point cloud data acquisition functions to analyze and evaluate the gamma-ray source distribution

○LiDAR
Utilizes laser scans to acquire precise point cloud data

2. Dose measurement results from inside the P/A room

- The maximum dose rate measured inside the P/A room was 1,120mSv/h (floor surface dose).



P/A room Dose measurement locations

※ The dotted line indicates piping at elevated locations.
※ ⑤ and ⑨ were measured under the piping.

Dose measurements（mSv/h）

※ The red mark indicates less than 100mSv/h

Measurement device: Packbot
Measurement period: August to September 2025

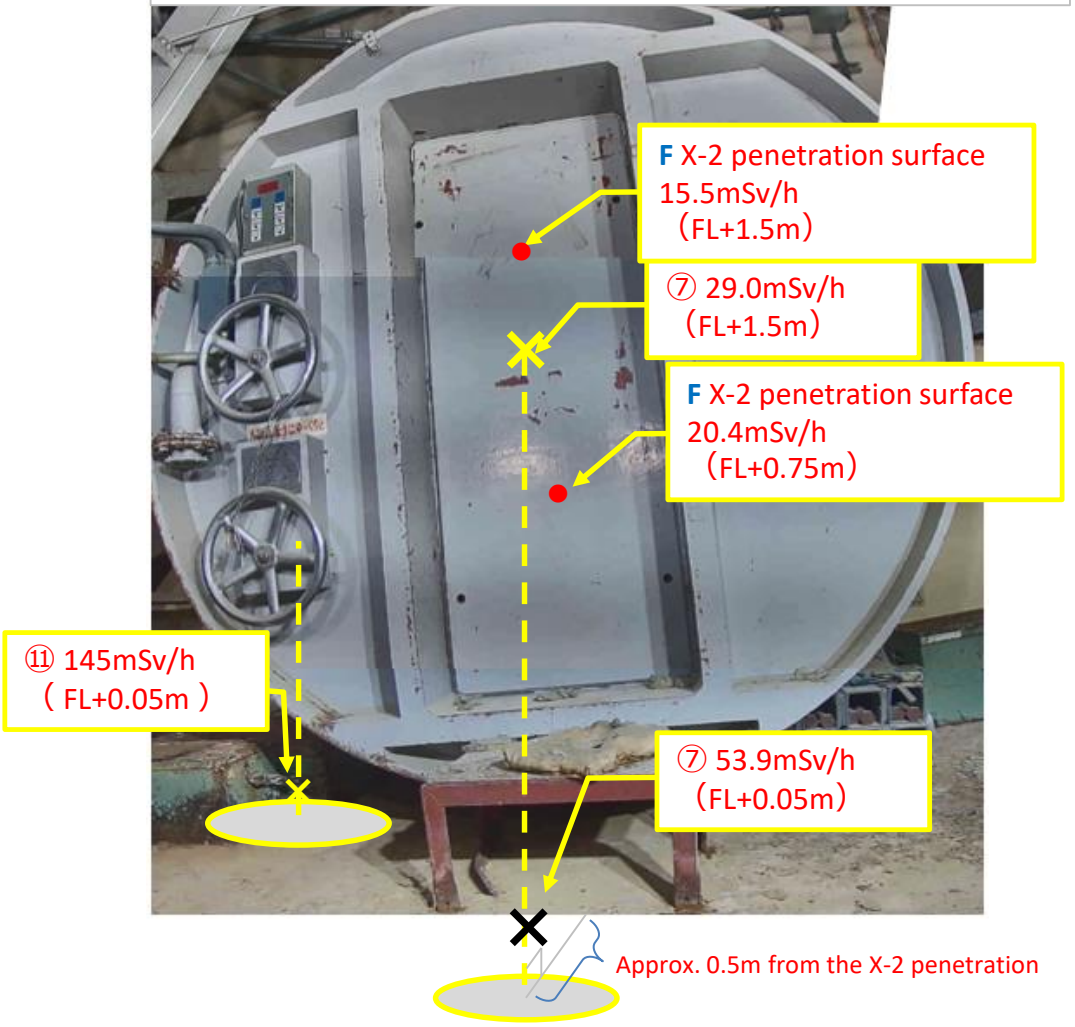
No.	Measurement height		notes
	FL+1.5m	FL+0.05m	
①	4.78	11.8	–
②	8.08	22.3	
③	33.6	25.0	
④	16.7	40.0	
⑤	29.5	102	
⑥	31.9	55.5	
⑦	29.0	53.9	
⑧	35.6	45.2	
⑨	113	315	
⑩	35.8	60.2	
⑪	-	145	
⑫	-	540	
⑬	-	1120	
⑭	35.2	358	
⑮	35.0 (FL+0.85m)		Measurement by SPOT
A	26.7 (FL+1m)		Wall surface measurement
B	316 (FL+0.3m)		Wall surface measurement
C	11.2 (FL+0.55m)		Pipe surface measurement
D	12.6 (FL+1m)		Pipe surface measurement
E	218 (FL+0.55m)		Pipe surface measurement
F	15.5 (FL+1.5m)	20.4 (FL+0.75m)	X-2 penetration surface measurement

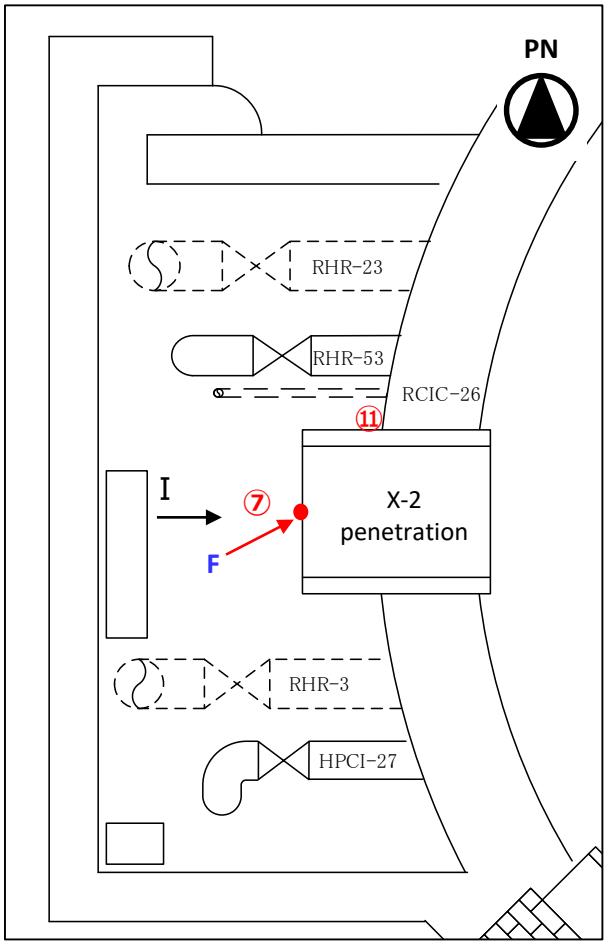
※ Measurement height may differ depending on the height of the object being measured and the position of the robot.

3． Appearance of the inside of the P/A room (1/3)

- No adhesion of molten material was found on the surface of the X-2 penetration flange like that found in the front chamber of the Unit 2 X-6 penetration, and no signs of leakage or deformations were confirmed.

Arrow Ⅰ （Front of X-2 penetration （Near No.⑦） ）





P/A room

※ The dotted line indicates piping at elevated locations.

3． Appearance of the inside of the P/A room (2/3)

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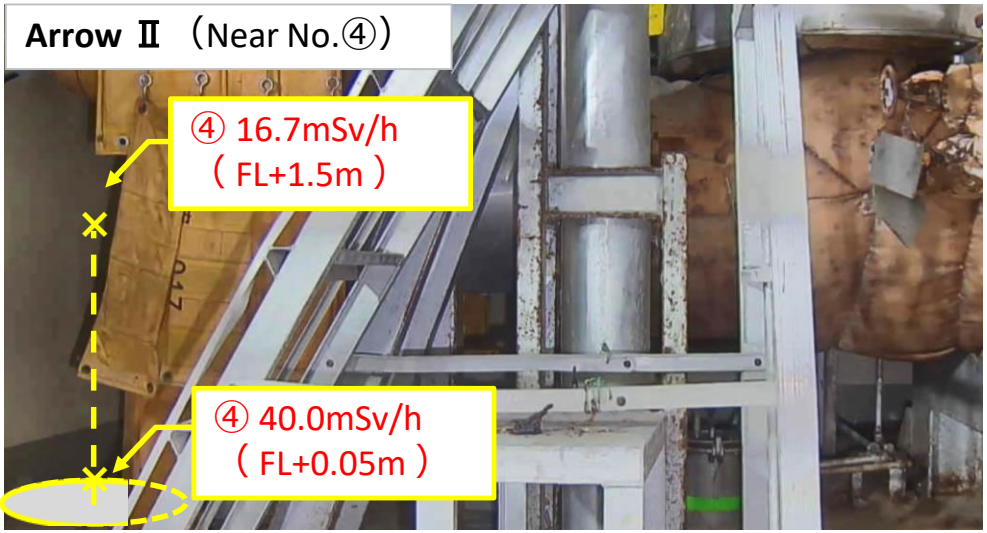
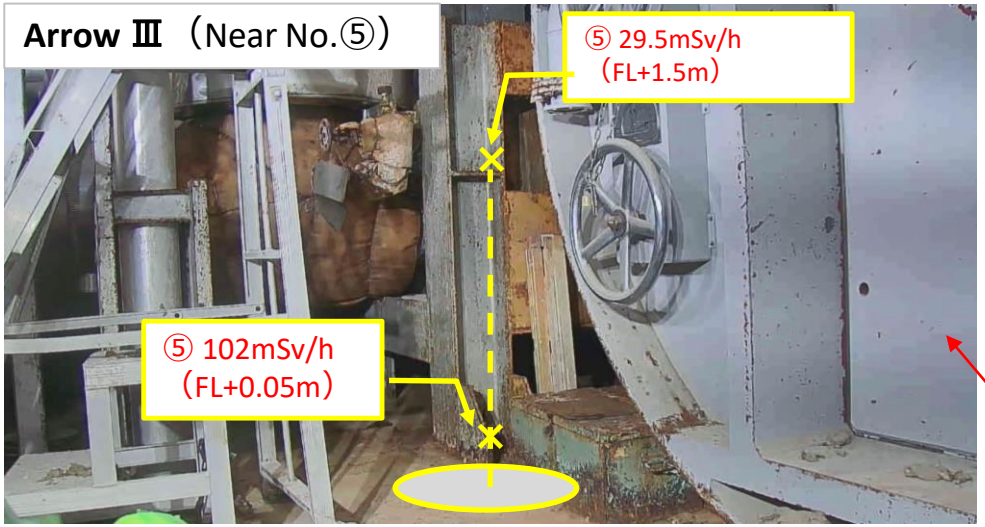
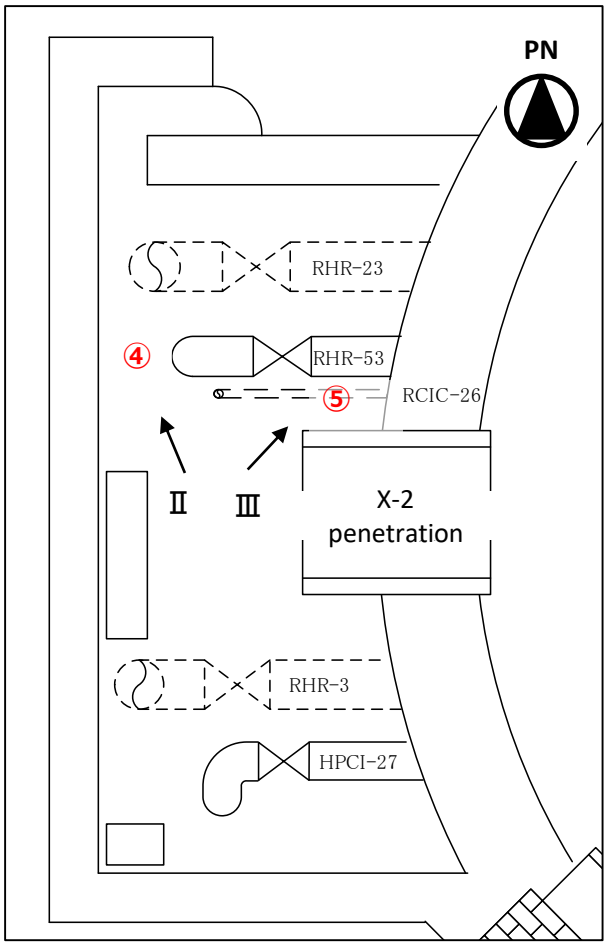
- Some corrosion was found inside the P/A room, but no deformities were confirmed.





X-2 penetration

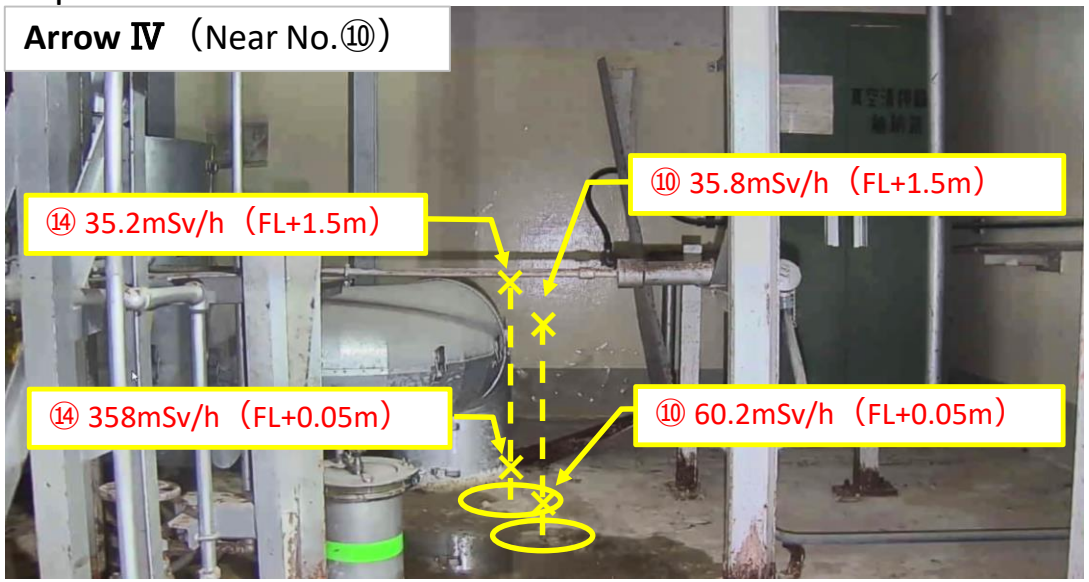


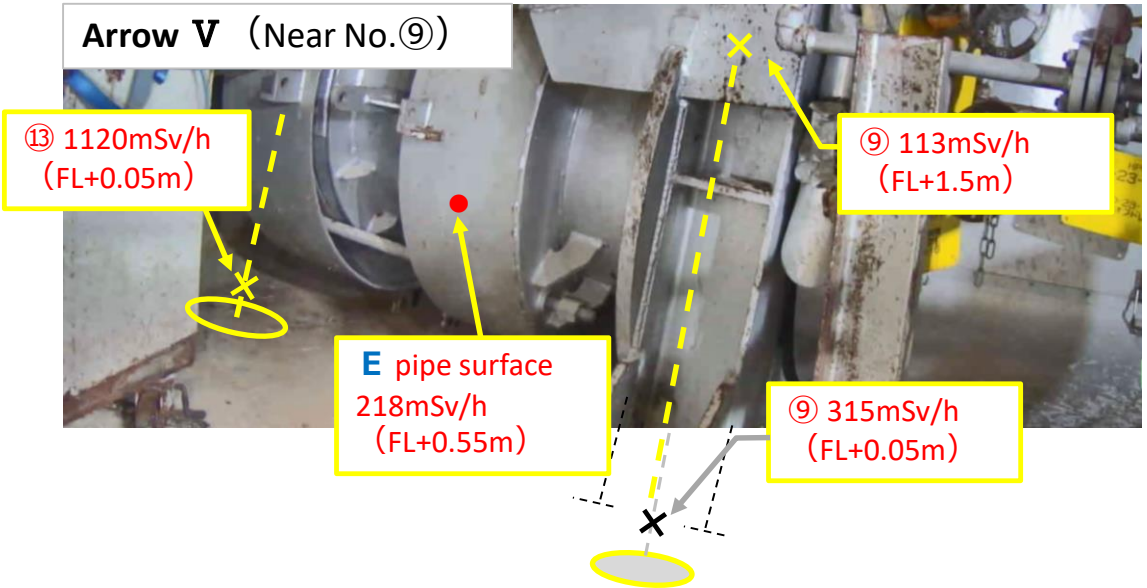
P/A room

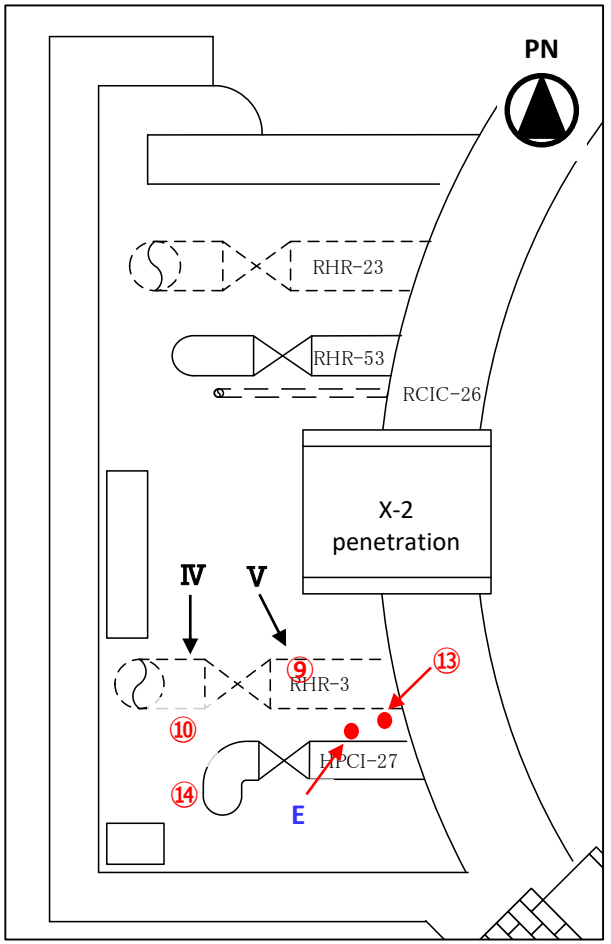
※ The dotted line indicates piping at elevated locations.
※ ⑤ indicates under the piping.

3． Appearance of the inside of the P/A room (3/3)

- A strong hotspot of max 1,120mSv/h was confirmed near the floor on the south side of the X-2 penetration.





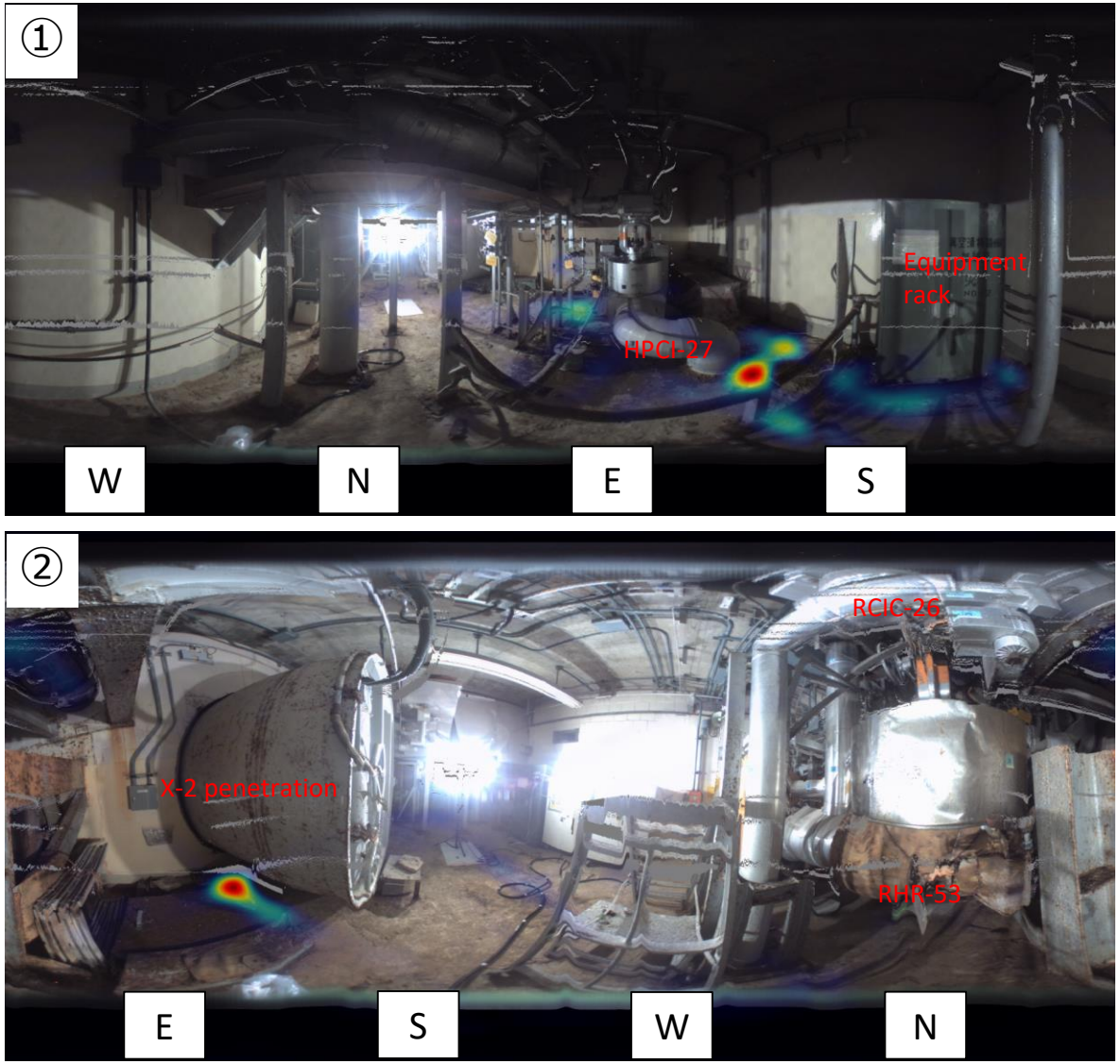


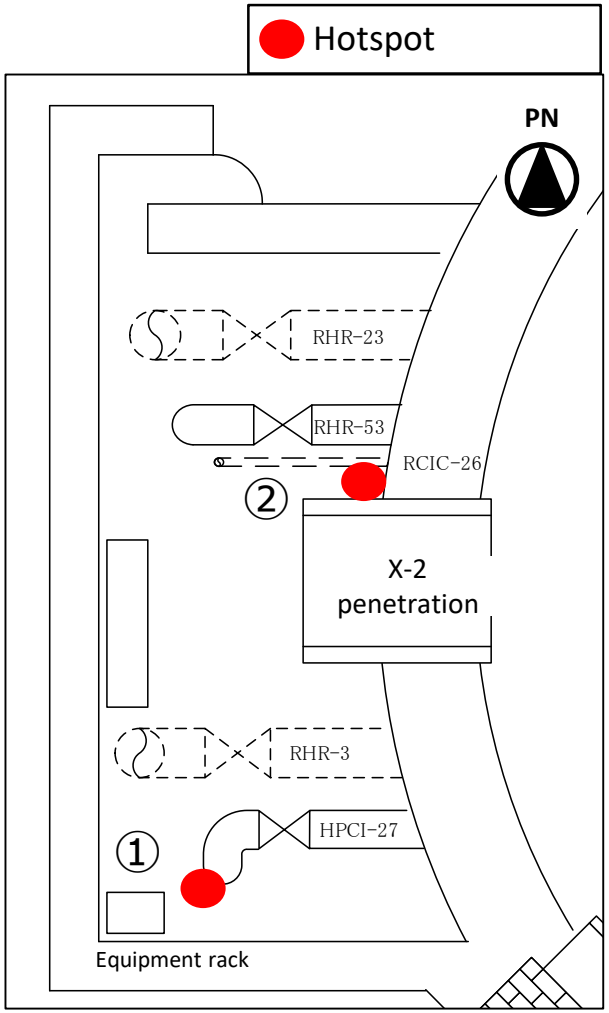
P/A room

※ The dotted line indicates piping at elevated locations.
※ ⑨ was measured under the piping.

4． G/I measurements from inside the P/A room (1/3)

- Dose measurement results show hot spots to exist in the same locations where high doses were measured.
- Hotspots were mainly found on the floor.





P/A room

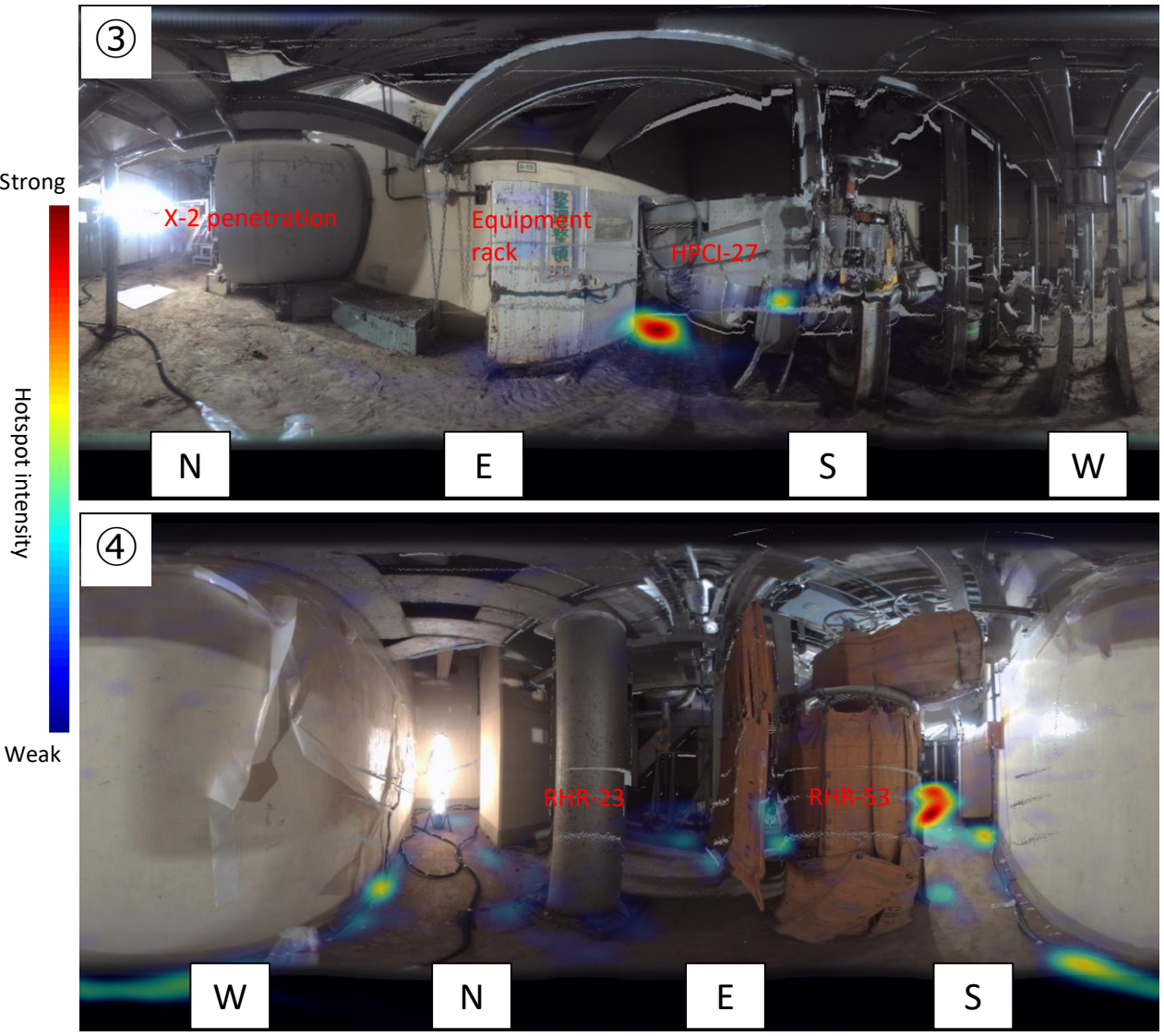
※ The dotted line indicates piping at elevated locations.

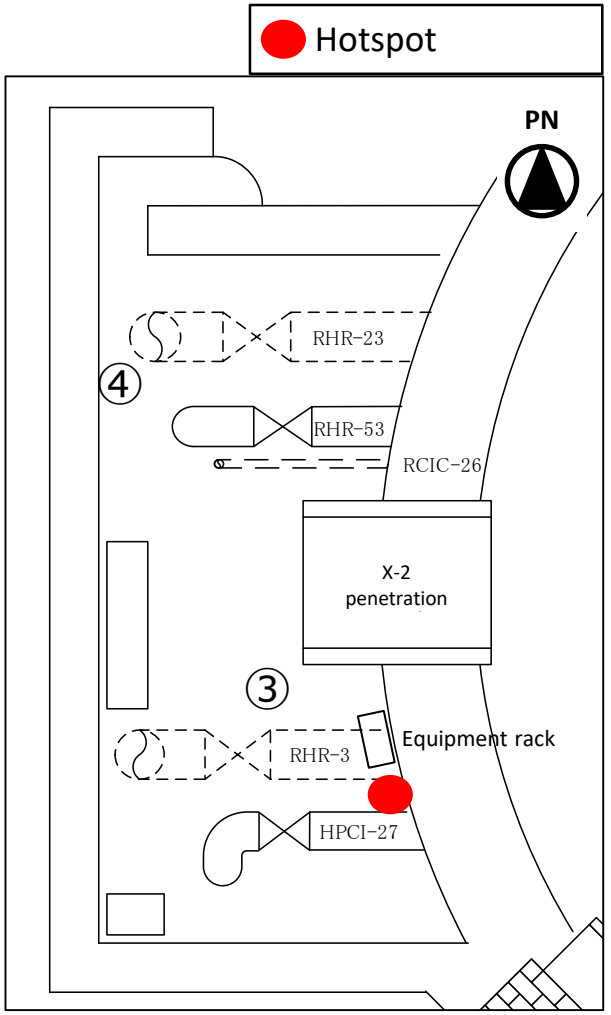
* Relative display of temperature distribution up to 10% of the maximum value (blue) based on the maximum value (red) of the radiation source intensity in the image

*Since this image combines a spherical image taken in the 360° direction onto a flat surface, distortion like a fisheye lens occurs in each direction

4． G/I measurements from inside the P/A room (2/3)

- Dose measurement results show hotspots to exist in the same locations where high doses were measured.
- G/I measurement ④ hotspot is assumed to contribute greatly to the doses from the back of the P/A room.





P/A room

※ The dotted line indicates piping at elevated locations.

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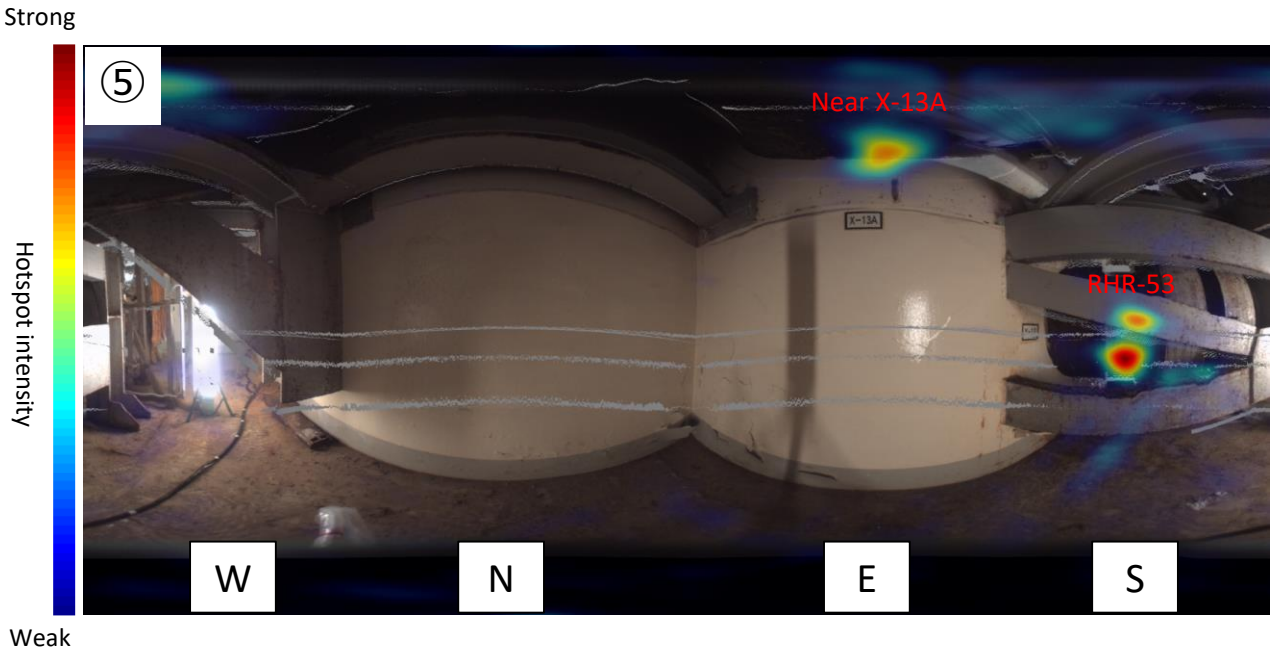
*Since this image combines a spherical image taken in the 360° direction onto a flat surface, distortion like a fisheye lens occurs in each direction

4． G/I measurements from inside the P/A room (3/3)

- G/I measurement ⑤ hotspot was found in the direction of the upper penetration (X-13A) and the RHR-53 piping.
- The hotspot in the direction of the RHR-53 piping is assumed to be a contribution from the hotspot found on the north side of the X-2 penetration behind the piping.



* Relative display of temperature distribution up to 10% of the maximum value (blue) based on the maximum value (red) of the radiation source intensity in the image
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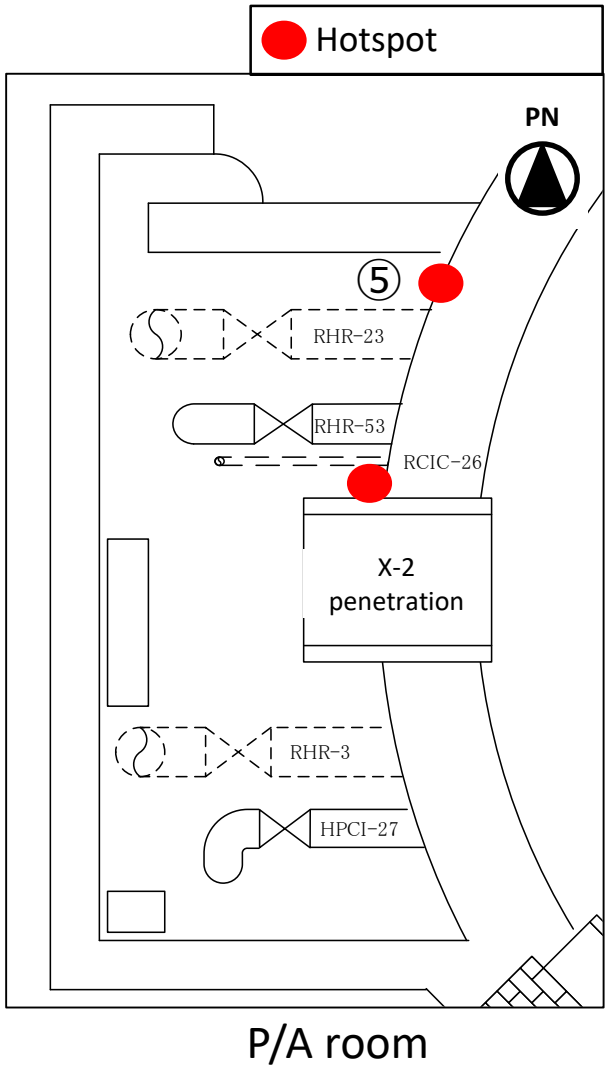


※ The dotted line indicates piping at elevated locations.

[Reference] Point cloud data acquired from inside the P/A room

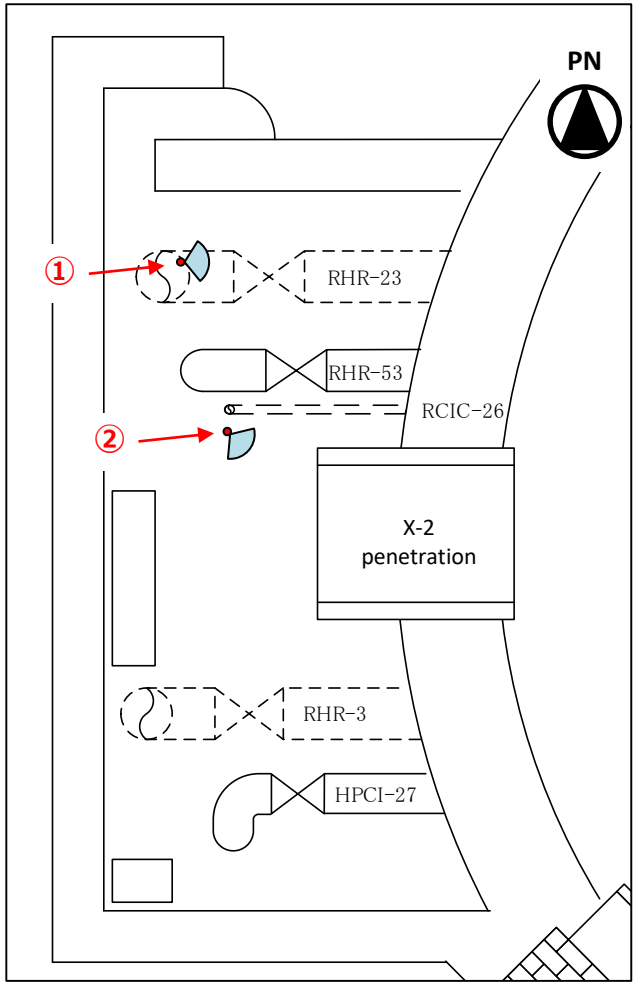
- Data acquired from inside the P/A room.

①

Point Cloud Data

②

Point cloud data



: Direction of point cloud data image

※ The dotted line indicates piping at elevated locations.

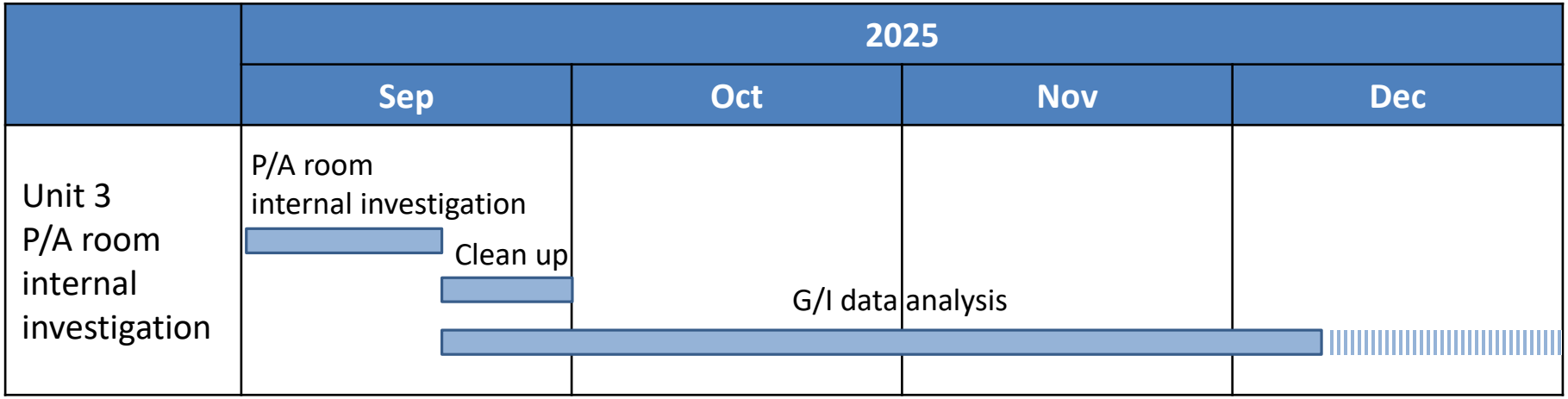
Measurement results summary

- During this investigation, no hotspots were found in the X-2 penetration or inside system piping, but several were found on the floor. (However, the large contribution from hotspots on the floor may have made other hotspots impossible to see)
- Air dose rates are high throughout the entire room and get higher as you approach the floor.

→ In addition to the hotspots identified during this investigation it is possible that there is contamination in other places as well, so G/I measurement results will be analyzed to create a more detailed radiation source distribution.

Dose reduction measures inside the P/A room are necessary if it is to be used for fuel debris retrieval, but there are also obstructions such as piping system and air dose rates are high. So, it is quite possible that much time will be needed to reduce doses in the P/A room.

Schedule

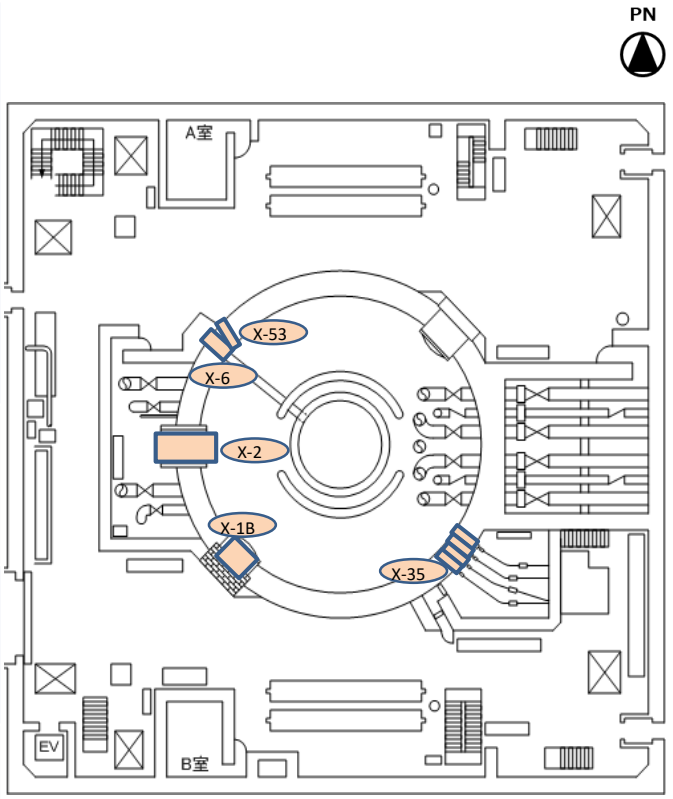


Summary of past investigation results for each penetration

6． Investigation results for each penetration from Unit 3

- The following are the results from past penetration investigations performed in the Unit 3 reactor building and future plans for dose reduction measures.

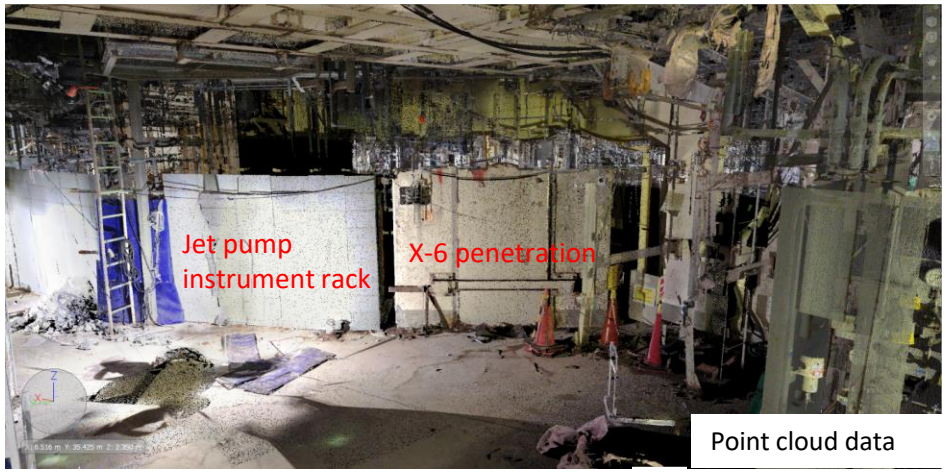
Access location	Investigation results and future plans
X-6	・124mSv/h was measured near the surface of the Unit 3 X-6 penetration flange, but surface dose is low compared to the investigation results from the Unit 2 X-6 penetration flange surface taken in 2015. Furthermore, molten deposits found on the floor of Unit 2 were not found in Unit 3. ・A dose investigation and dose reduction measures inside the room after removing shielding walls at the front chamber entrance will be deliberated. ・And, whereas we expect to be able to use the Unit 3 X-6 penetration just like the Unit 2 X-6 penetration, the northwest area where the X-6 penetration is located has high air dose rates compared to Unit 2, so dose reductions in the vicinity (jet pump instrument rack near the X-6 penetration, etc.) will be deliberated.
X-1B	・An area investigation around the outside of the shield wall confirmed air doses between 5~8mSv/h(measured in 2025). ・Going forward, we will deliberate dose reductions as well as investigations inside the shielding as necessary.
TIP room (X-35)	・In FY2024 obstructions were removed, dose reduction measures were implemented, and shielding was installed on the floors and walls thereby allowing us to reduce dose rates to an average of 1.2mSv/h, so we are deliberating how to leverage this access point.
X-53	・Micro-drones are being prepared to perform an internal investigation of the PCV. ・Further dose reduction measures will be deliberated going forward.
X-2	・Whether or not dose reduction measures are necessary will be deliberated based on this investigation and the analysis results.



1st floor, Unit 3 reactor building

7． X-6 penetration front chamber investigation (2024)

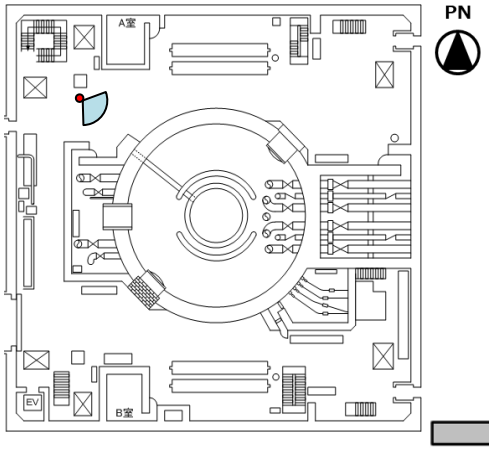
- 124mSv/h was measured near the surface of the Unit 3 X-6 penetration flange, but surface dose is low compared to the investigation results from the Unit 2 X-6 penetration flange surface taken in 2015. Furthermore, molten deposits found on the floor of Unit 2 were not found in Unit 3.
- Steel (concrete block filled) shielding walls have been installed around the X-6 penetration front chamber. Dose investigations and dose reduction measures inside the penetration will be deliberated after removing the shield walls.



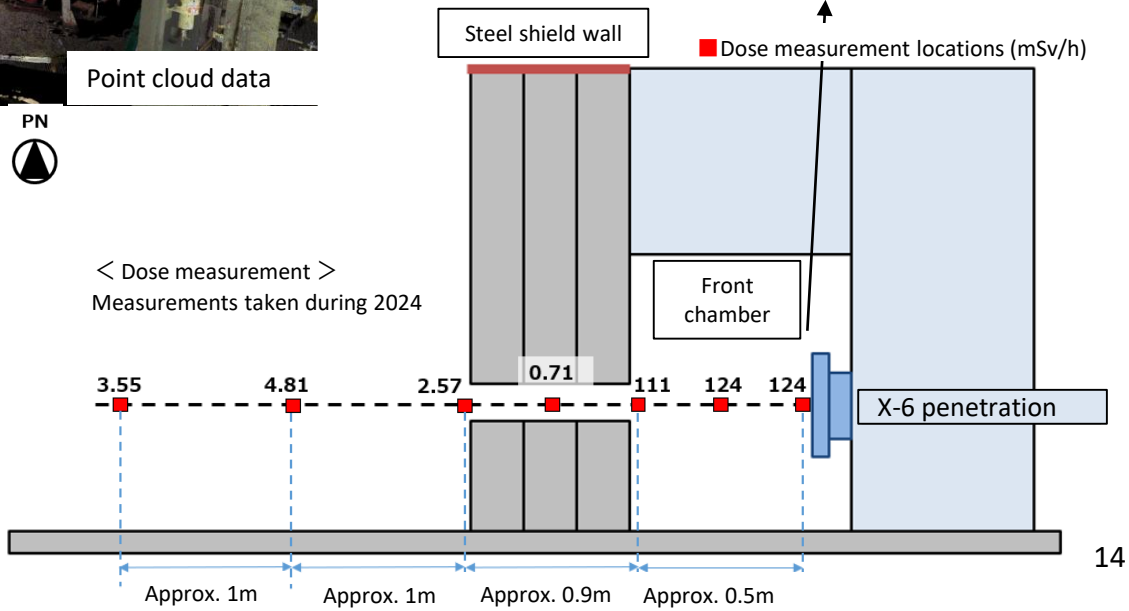
Point cloud data

X-6 penetration

: Direction of point cloud data image



1st floor, Unit 3 reactor building



＜ Dose measurement ＞
Measurements taken during 2024

8. Results of the investigation around the X-6 penetration

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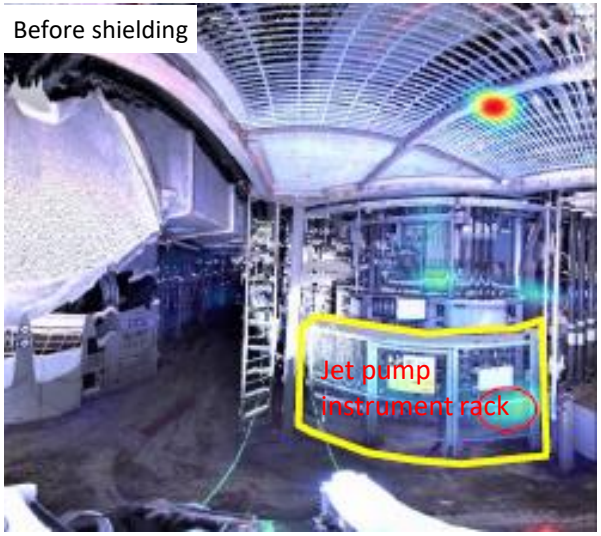
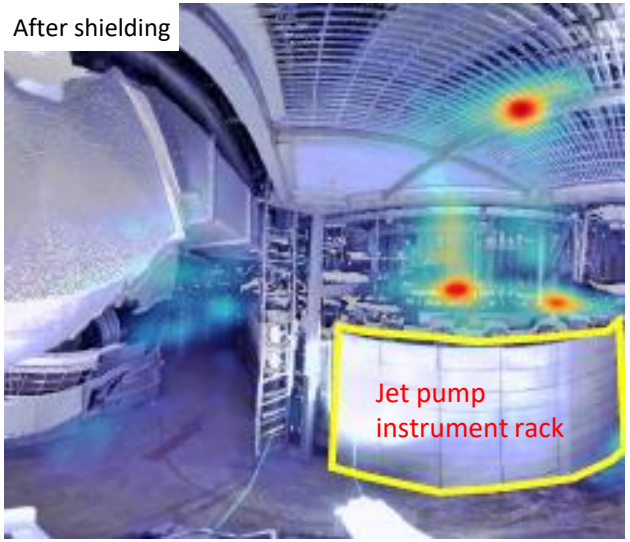
＜Issues＞

- 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.

＜Plan＞

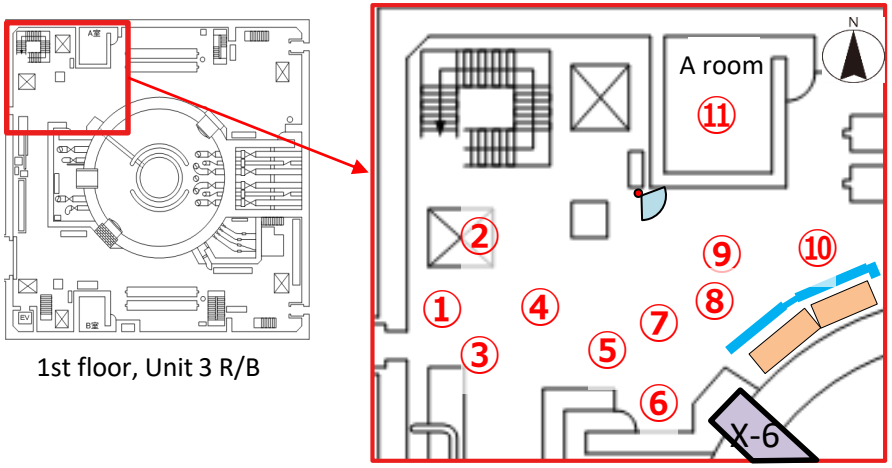
- Dose reduction measures for the jet pump instrument rack closest to the X-6 penetration are being deliberated.
- Due to the difficulty of work implementation, it is expected that much time will be needed to reduce doses in the HCU.





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

: Instrument rack
: Shielding
: Direction of point cloud data image

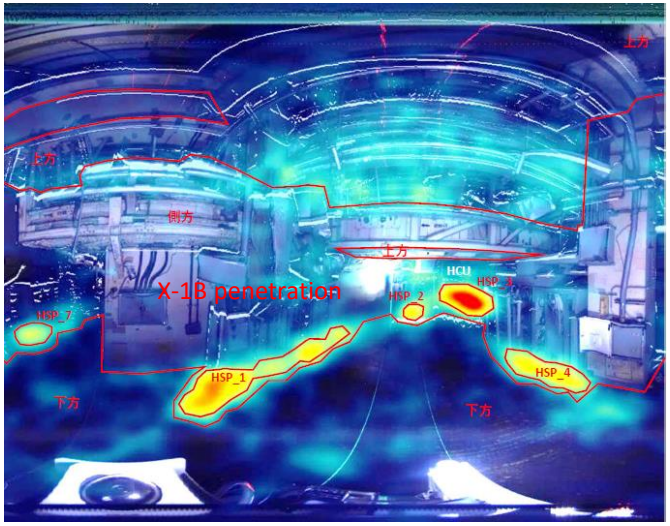
9. Results of the investigation around the X-1B penetration

＜Issues＞

- The dose contributions from the HCU (south side) and parts of the floor are substantial, and it is not clear whether there are any other radiation sources.
- The HCU, which is the main radiation sources, has been shielded, and the air dose rate around the X-1B penetration is between 5~8mSv/h, thereby prohibiting workers from remaining in the area for a long period of time.

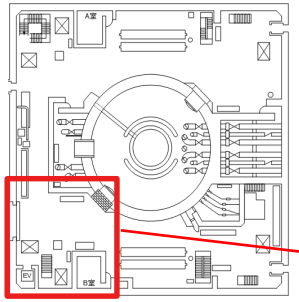
＜Plan＞

- Since floor surface contamination is concentrated around the places where existing panels are installed and the edges of the walls, we are deliberating the removal of the existing panels.
- Due to the difficulty of work implementation, it is expected that much time will be needed to reduce doses in the HCU.

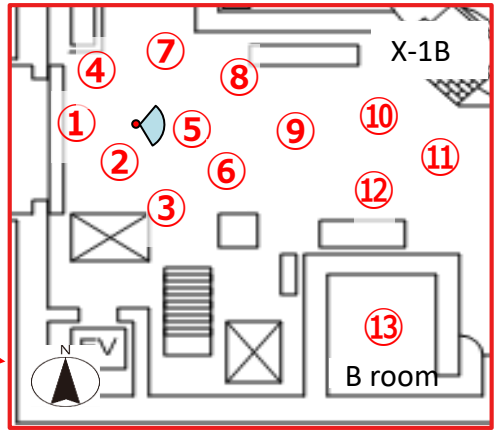


＜G/I Measurement＞
Measurements taken in 2019

: Direction of point cloud data image



1st floor, Unit 3 R/B



Location	Measurement (mSv/h)
	Air dose (1.5m above the floor)
①	6.67
②	5.78
③	5.66
④	6.32
⑤	6.37
⑥	7.42
⑦	6.46
⑧	7.59
⑨	6.42
⑩	6.62
⑪	7.32
⑫	7.32
⑬	3.21

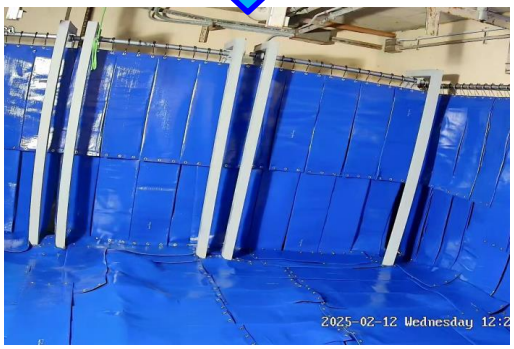
＜Air dose measurement＞
Measurements taken during 2025

10. Unit 3 R/B first floor TIP room dose reduction results (FY2023-FY2024)

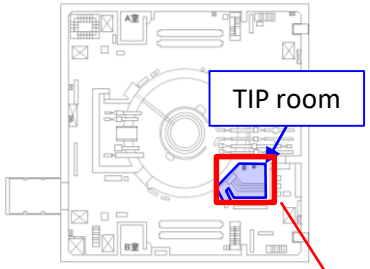
- Dose reduction measures were implemented in the Unit 3 R/B 1st floor TIP room to reduce exposure for upcoming tasks.
  - ① Equipment and sludge removal
  - ② Wall decontamination through water spraying
  - ③ Pressure wash stripping decontamination of floor surfaces
  - ④ Decontamination through mechanical stripping
  - ⑤ Shield installation

⇒ Average dose of 1.2mSv/h has been achieved

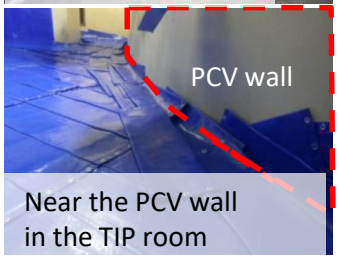
Prior to dose reductions in the TIP room



After dose reductions in the TIP room

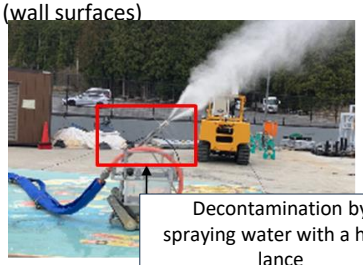


First floor, Unit 3 R/B



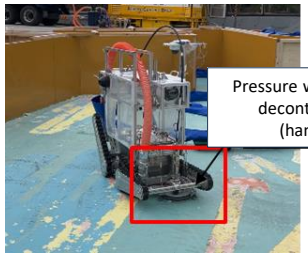
①Removal of TIP shielding and floor obstructions

② Pressure wash decontamination (wall surfaces)



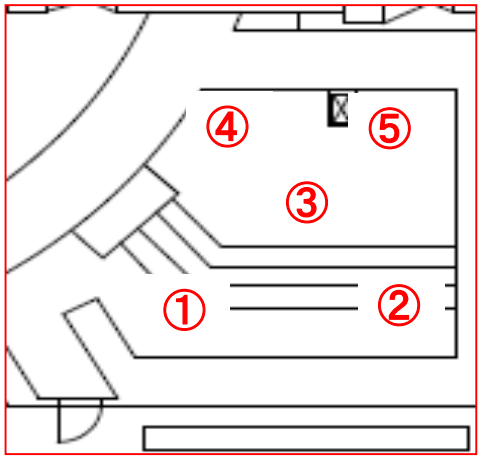
Decontamination by spraying water with a hand lance

③ Pressure wash stripping decontamination (floor surfaces)



Pressure wash stripping decontamination (hand aqua)

④ Decontamination through mechanical stripping (floor surfaces)

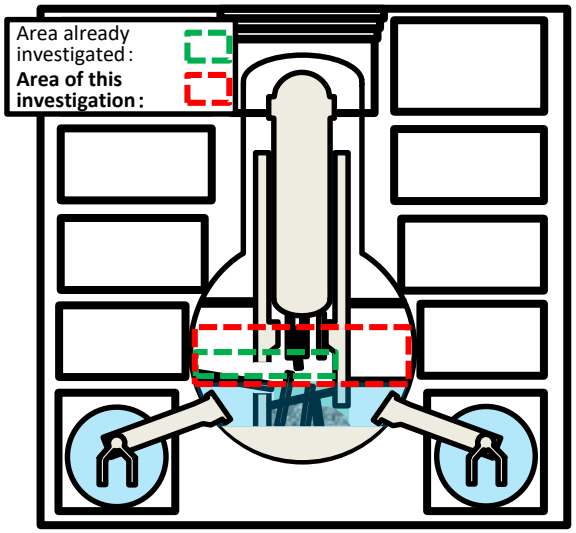


Location	Air dose measurements (mSv/h)		
	Prior to decontamination October 2023	After decontamination December 2024	After shielding February 2025
①	8.0	7.5	0.7
②	10	4.0	0.7
③	10	7.5	1.6
④	—	8.0	1.8
⑤	—	5.0	1.0

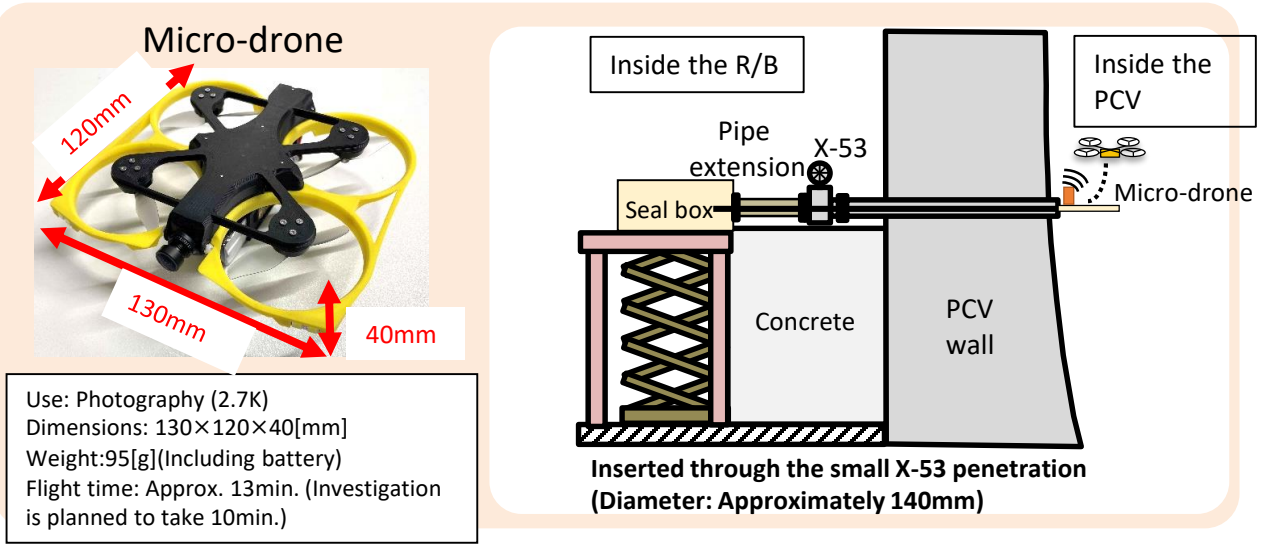
※ There are slight differences in measurement locations depending on when the measurements were taken.

11. X-53 penetration Summary of PCV internal investigation using a micro-drone

- In July 2025 we announced that we were deliberating design plans for the retrieval of fuel debris from Unit 3, and **that more information needs to be gathered about the inside of the PCV as we prepare for full-scale debris retrieval**.
- However, the water level inside the PCV has remained high since the accident and the penetrations we can use are limited with the **small X-53 penetration (Diameter: Approximately 140mm) being the only penetration currently available for access.**
- Therefore, the investigation devices that have proved successful at other units cannot be used and a new larger diameter access route must be constructed. However, this would require time so **our current plan is to conduct a PCV internal investigation using a small "micro-drone."**
- During this investigation, we plan to investigate the **as of yet unexamined first floor of the D/W and also perform a more meticulous investigation of the inside of the pedestal** that was investigated in 2017 using a submersible ROV.



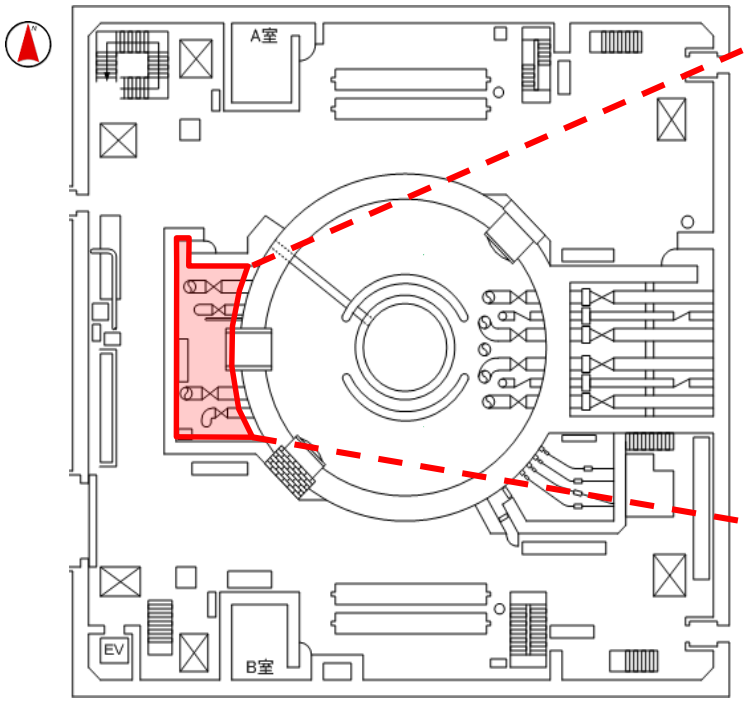
Cross-sectional diagram of the Unit 3 PCV internal investigation area



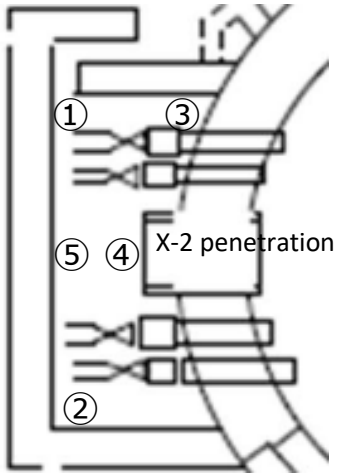
Concept diagram of Unit 3 micro-drone investigation

[Reference] Past investigations of the Unit 3 P/A room (2016)

- The investigation in 2016 of the inside the P/A room confirmed high doses.



1st floor, Unit 3 reactor building



P/A room

Measurement point	Air dose equivalent rate (mSv/h)
①	13
②	80
③	50
④	60
⑤	80

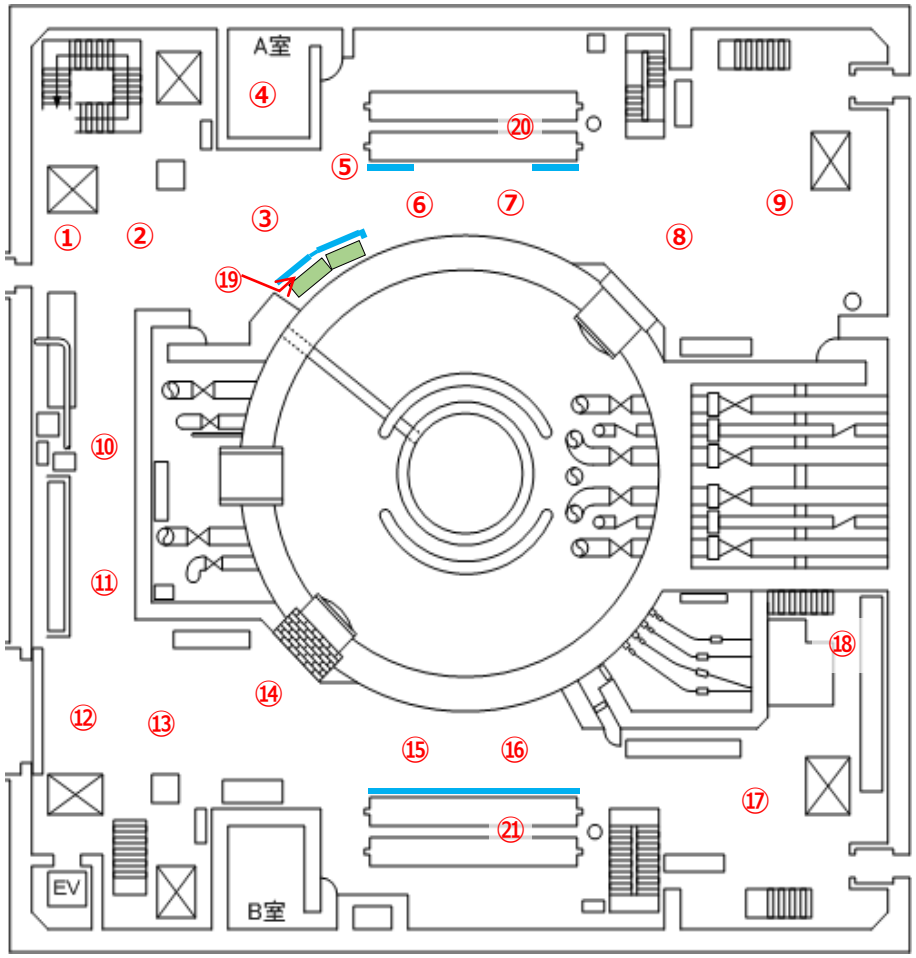
※1m above the floor
Air dose measurement : August 2016

[Reference materials]
Past investigations of the Unit 3 reactor building

[Reference] Unit 3 R/B 1st floor investigation results (1/2)

■ Air dose rates inside the building

・Dose rates of greater than 10mSv/h measured in the vicinity of the north/south HCU.Air dose rates in al other areas were between 1～8mSv/h.



1st floor, Unit 3 R/B

Location	Measurements (mSv/h)	
	Air dose (1.5m above the floor)	Surface dose(0.05m above the floor)
①	2.49	2.36
②	2.72	2.04
③	4.27	3.19
④	0.96	0.68
⑤	7.63	4.20
⑥	12.5	6.48
⑦	9.86	5.48
⑧	8.28	6.76
⑨	6.70	4.51
⑩	3.14	2.44
⑪	5.67	8.19
⑫	5.78	5.04
⑬	7.42	6.34
⑭	6.62	5.02
⑮	14.0	7.90
⑯	12.0	6.05
⑰	3.41	2.12
⑱	7.80	7.97
⑲	19.0	-
⑳	76.1	-
㉑	78.9	-

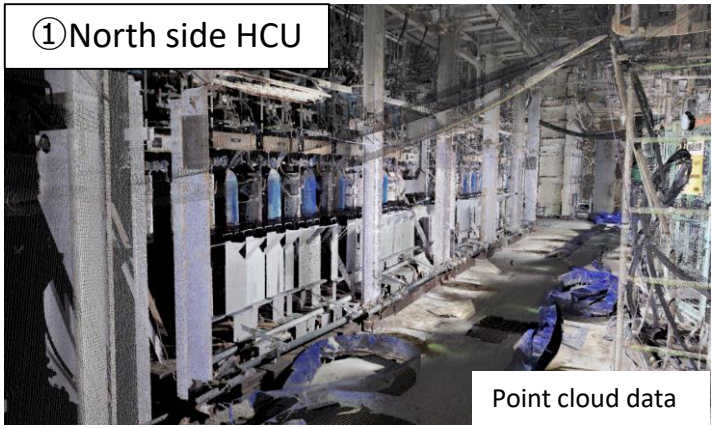
＜Dose measurement ＞Measurements taken between 2023-2025

⑲ is between the instrument rack and the shielding、

⑳ and ㉑ indicate the dose between the HCU units.

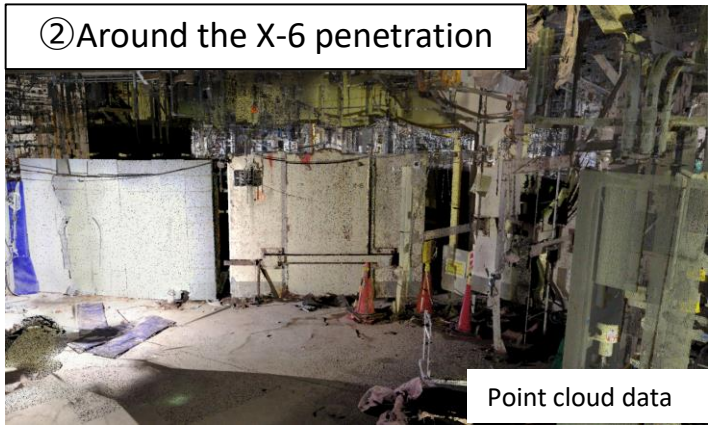
[Reference] Unit 3 R/B 1st floor investigation results (2/2)

①North side HCU

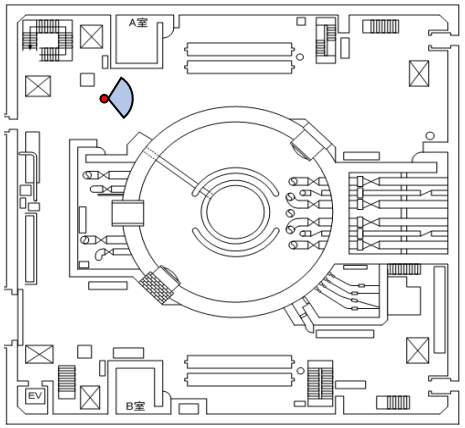


Point cloud data

②Around the X-6 penetration



Point cloud data



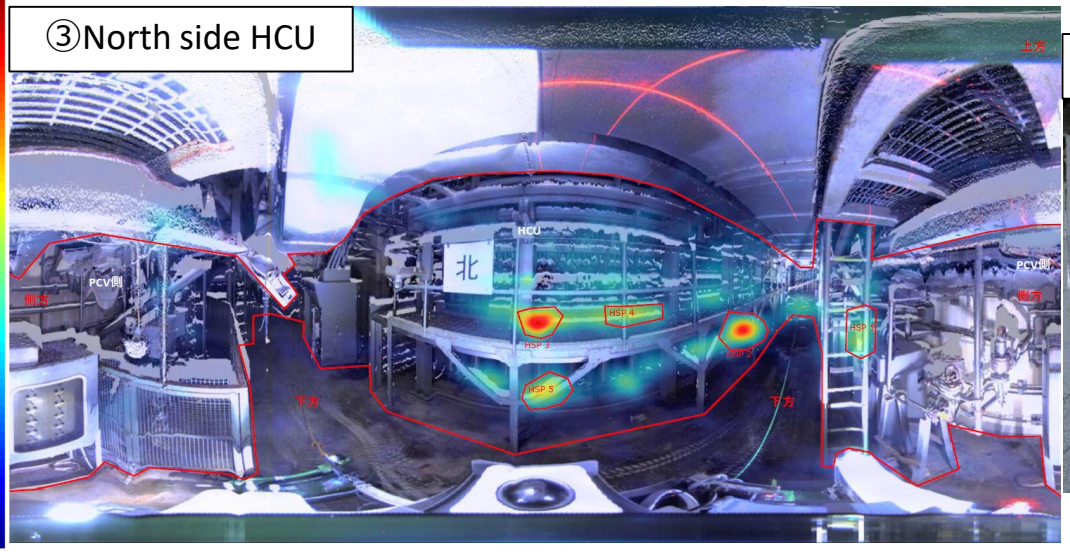
1st floor, Unit 3 R/B

Strong

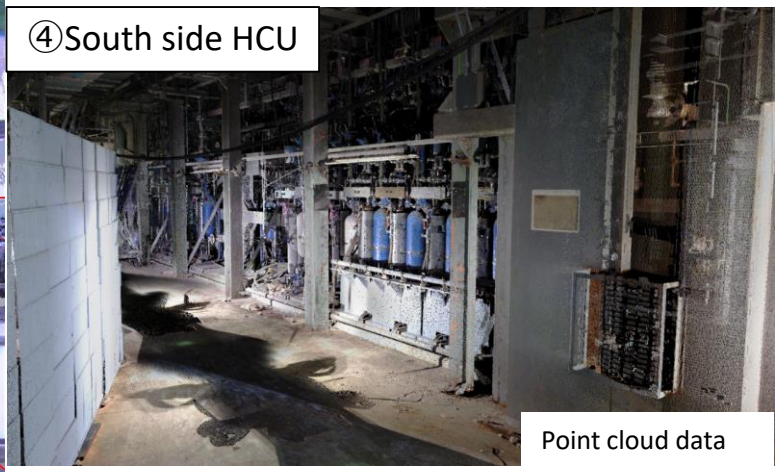
Hotspot intensity

Weak

③North side HCU



④South side HCU



Point cloud data

<G/I Measurement >
Measured in 2019

< Point cloud data sampling >
Sampled in 2022

[Reference] Unit 3 R/B 2nd floor investigation results (1/3)

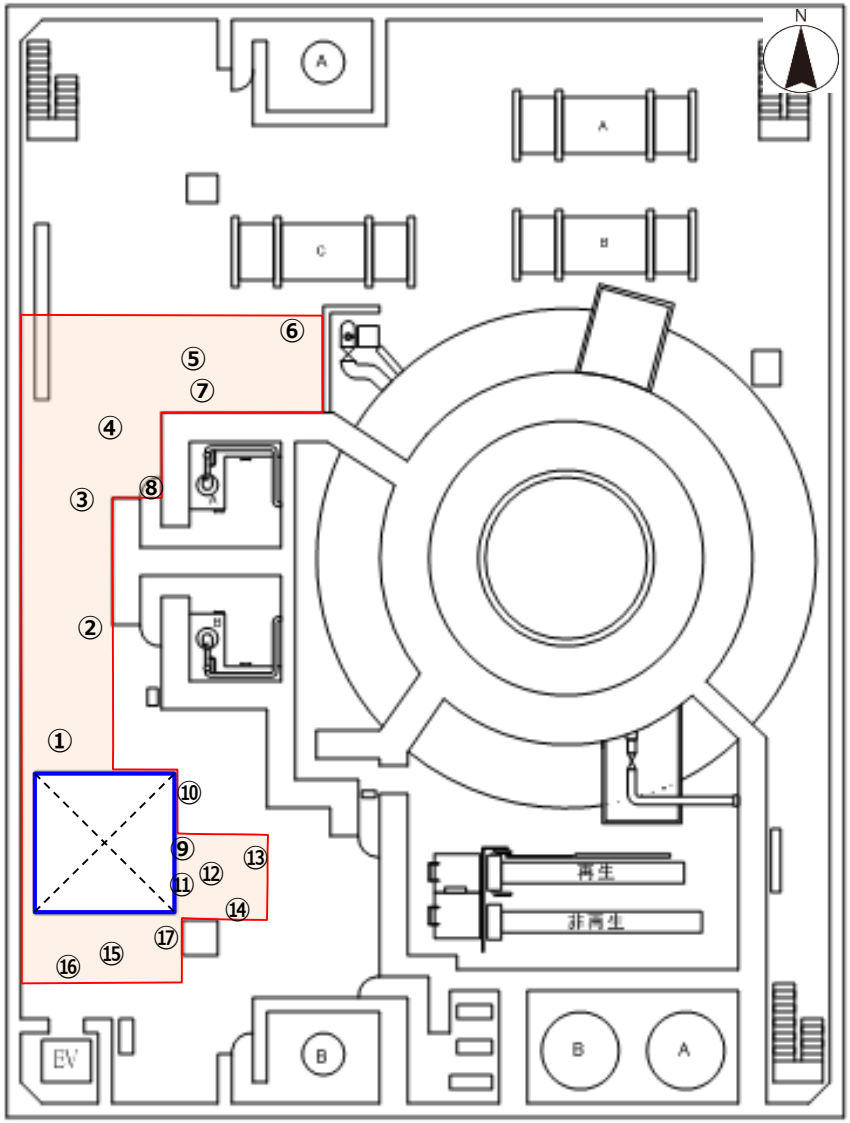
■ Air dose rate inside the building

- Dose rates on the 2nd floor were confirmed to be between approx. 3~10mSv/h

Measurement location	Height of measurement ※Based on elevation of second floor (T.P.17264)	Dose rate [mSv/h]	
①	Approx. 750mm	5.39	
②		5.65	
③		4.67	
④		8.61	
⑤		7.84	
⑥		8.12	
⑦		10.5	
⑧		3.48	
⑨	Approx. 850mm	4.64	Reported the reference materials announced on May 30, 2024
⑩		4.75	
⑪		4.60	
⑫	Approx. 750mm	6.31	
⑬		7.34	
⑭		6.24	
⑮	Approx. 850mm	7.67	
⑯		7.93	
⑰		7.20	

<Measurement dates>

- ①～⑧： June 6, 2024
- ⑨～⑪： May 13, 2024
- ⑫～⑭： June 13, 2024
- ⑮～⑰： May 29, 2024



Unit 3 R/B 2nd Floor

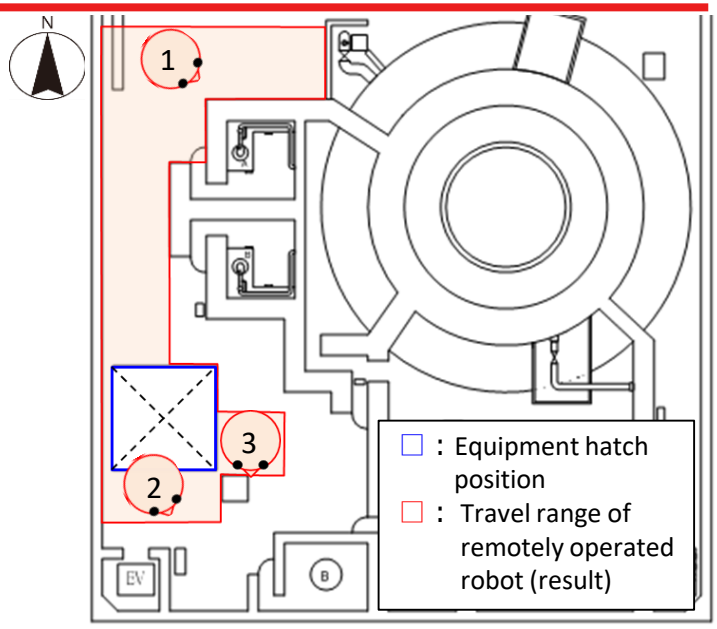
□ : Equipment hatch position

□ : Travel range of remotely operated robot (result)

[Reference] Unit 3 R/B 2nd floor investigation results (2/3)

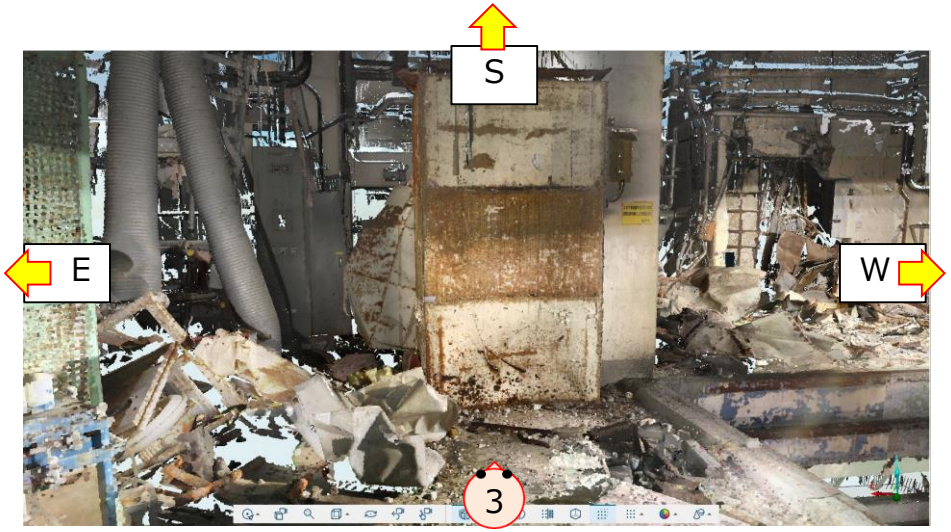
- Point cloud data
- Data obtained from multiple locations within investigation area

Arrow view 1: North side of 2nd floor (obtained on June 7, 2024)



Unit 3 R/B 2nd floor

Arrow view 2: South side of 2nd floor (obtained on May 30, 2024)



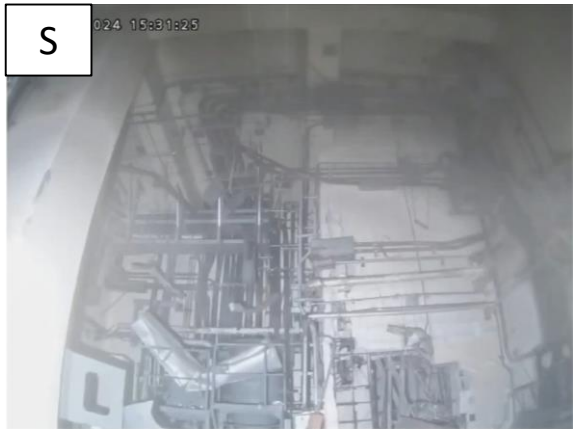
Arrow view 3: East side of 2nd floor (obtained on June 14, 2024)

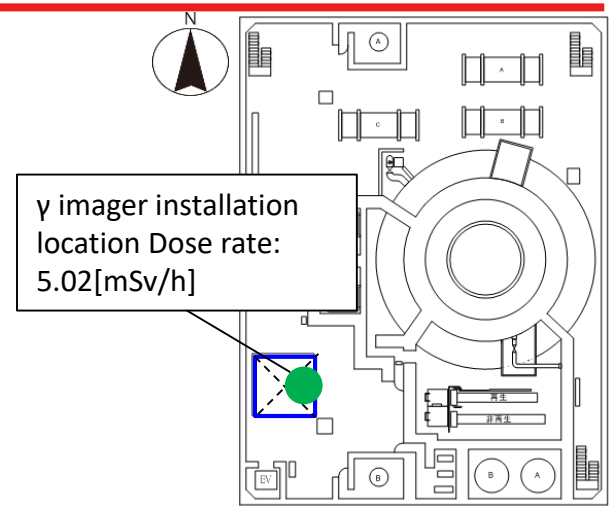
[Reference] Unit 3 R/B 2nd floor investigation results (3/3)

TEPCO

■ γ ray distribution by γ imager measurement.

- On the 2nd floor, it was confirmed that the hot spot was around the rubble near the floor.





Unit 3 R/B 2nd floor,

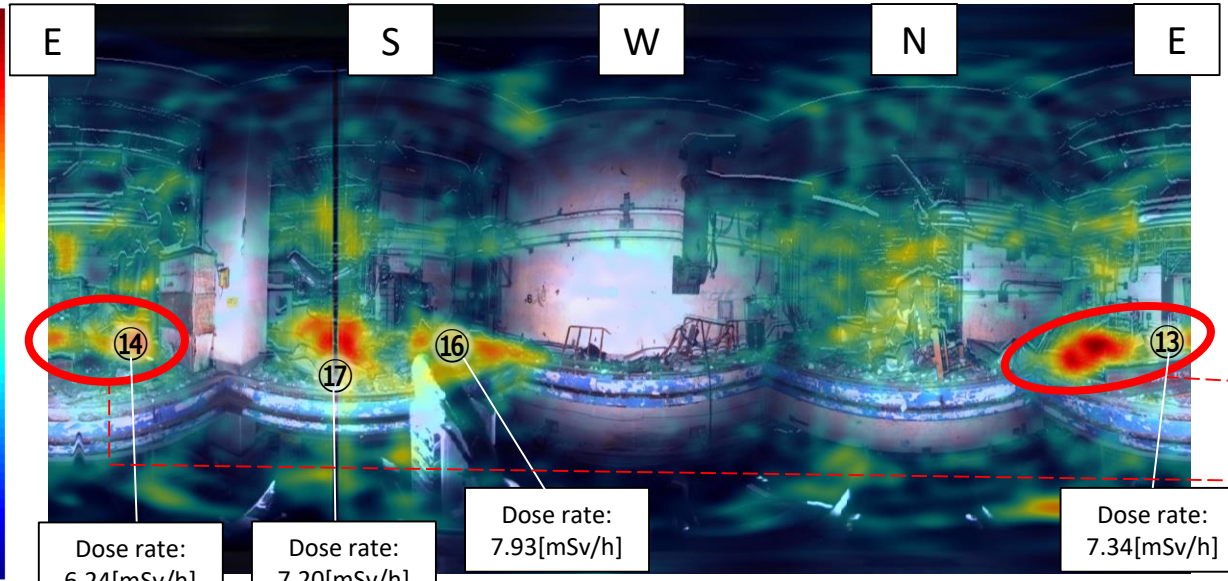
□ : Equipment hatch position

● : γ imager installation location (Mounted on elevated work platform truck)

Strong

Hotspot intensity

Weak



* Circled numbers indicate air dose rates taken with SPOT (referred to the previous page for details)

Photographed on April 16, 2024
γ imager measurement date: April 17, 2024

* Relative display of temperature distribution up to 10% of the maximum value (blue) based on the maximum value (red) of the radiation source intensity in the image

*Since this image combines a spherical image taken in the 360° direction onto a flat surface, distortion like a fisheye lens occurs in each direction

[Reference] Unit 3 R/B 3rd floor investigation results (1/3)

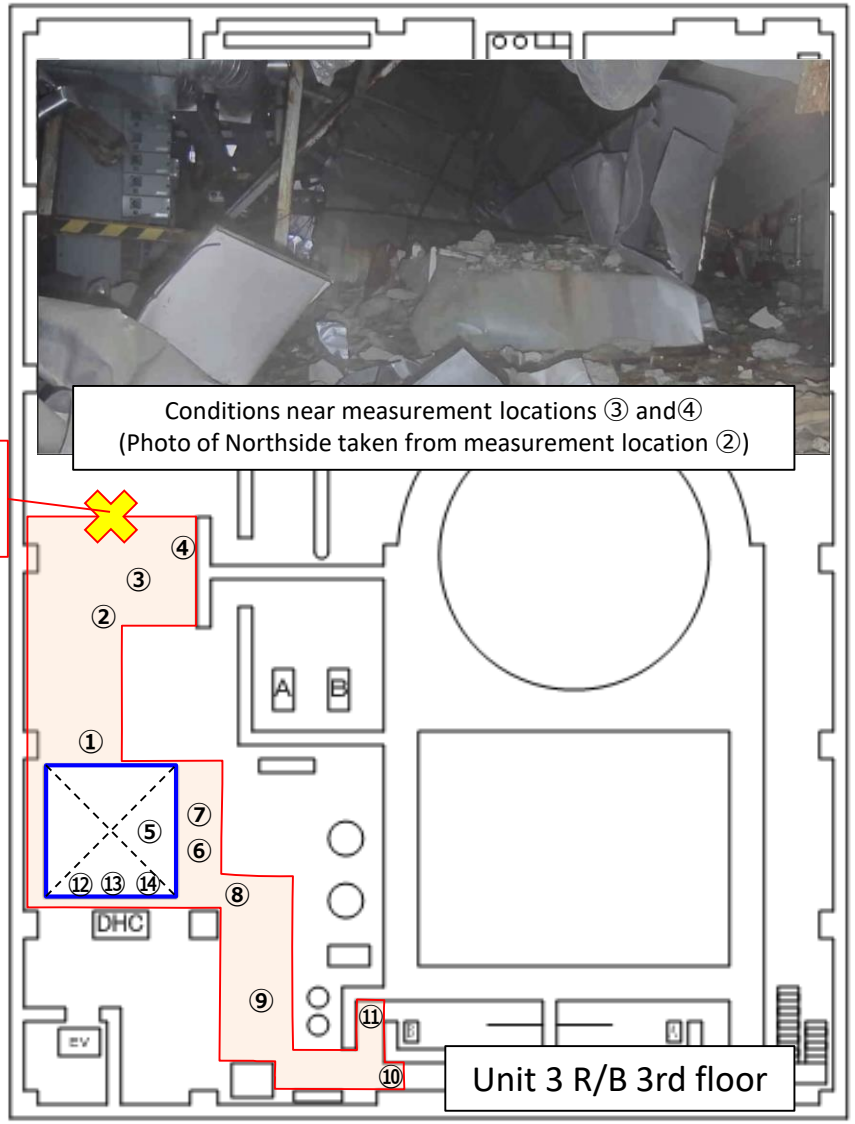
TEPCO

■ Air dose rate inside the building

- On the 3rd floor high-dose rates of over 20mSv/h were measured at measurement locations ②, ③, and ④

Measurement location	Height of measurement ※Based on elevation of third floor (T.P.25464)	Dose rate [mSv/h]
①	Approx. 750mm	15.6
②	Approx. 850mm	**21.1**
③		**28.4**
④		**28.2**
⑤	Approx. 650mm ※Above platform mounted to tracked bucket truck	8.21
⑥	Approx. 750mm	10.2
⑦		10.1
⑧		12.7
⑨		14.4
⑩		4.75
⑪		3.27
⑫	Approx. 1750mm ※Above platform mounted to tracked bucket truck	7.65
⑬		7.13
⑭		7.40

Reported the reference materials announced on May 30, 2024



□ : Equipment hatch position

□ : Travel range of remotely operated robot (result)

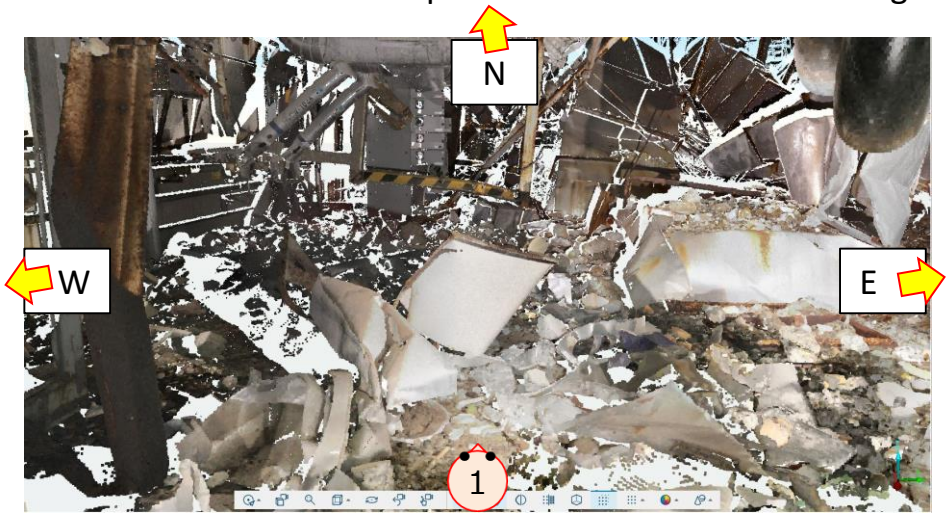
<Measurement dates>

- ①～④ : June 11, 2024
- ⑫～⑭ : June 3, 2024
- ⑤～⑪ : May 21, 2024

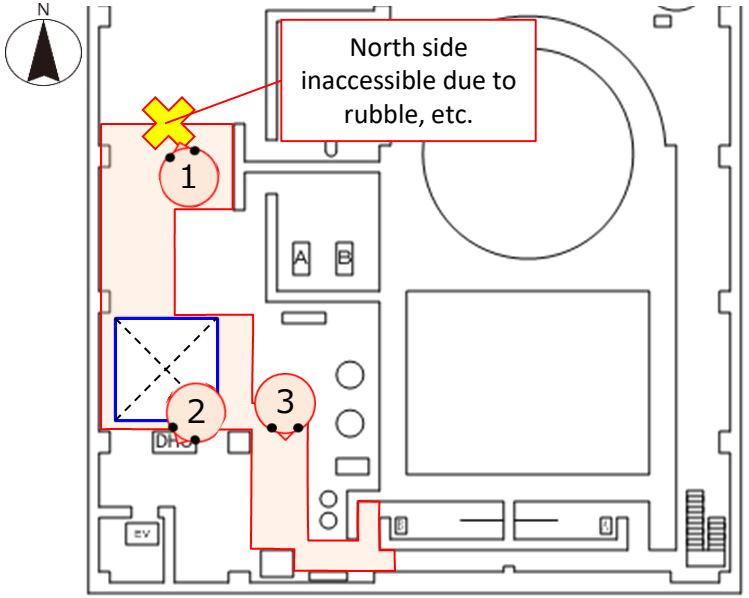
[Reference] Unit 3 R/B 3rd floor investigation results (2/3)

TEPCO

■ Point cloud data
- Data obtained at multiple locations within the investigation area

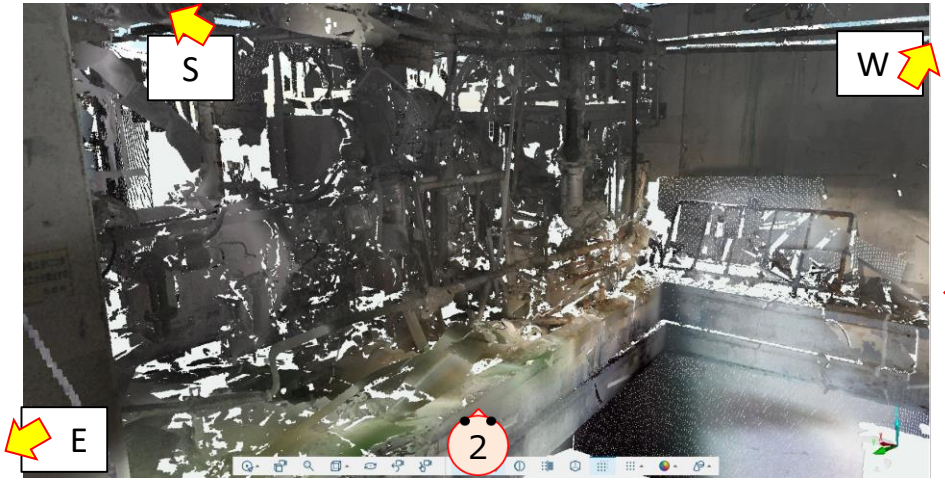


Arrow view 1: North side of 3rd floor (obtained on June 12, 2024)



Unit 3 R/B 3rd floor

□ : Equipment hatch position
□ : Travel range of remotely operated robot (result)



Arrow view 2: South side of 3rd floor (obtained on June 4, 2024)

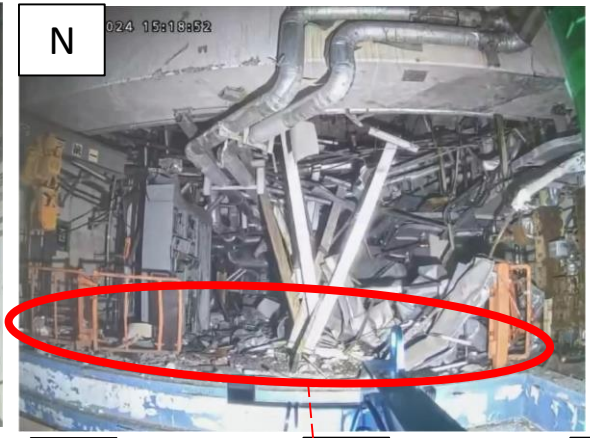
Arrow view 3: East side of 3rd floor (obtained on May 22, 2024)

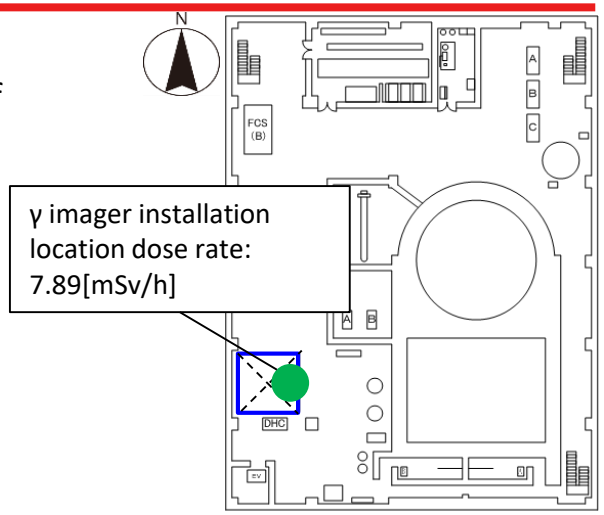
[Reference] Unit 3 R/B 3rd floor investigation results (3/3)

TEPCO

■ γ ray distribution by γ imager measurement

- On the 3rd floor, it was confirmed that the hot spot was around the edge of the top of the equipment hatch and around the rubble near the floor.





Unit 3 R/B 3rd fl.

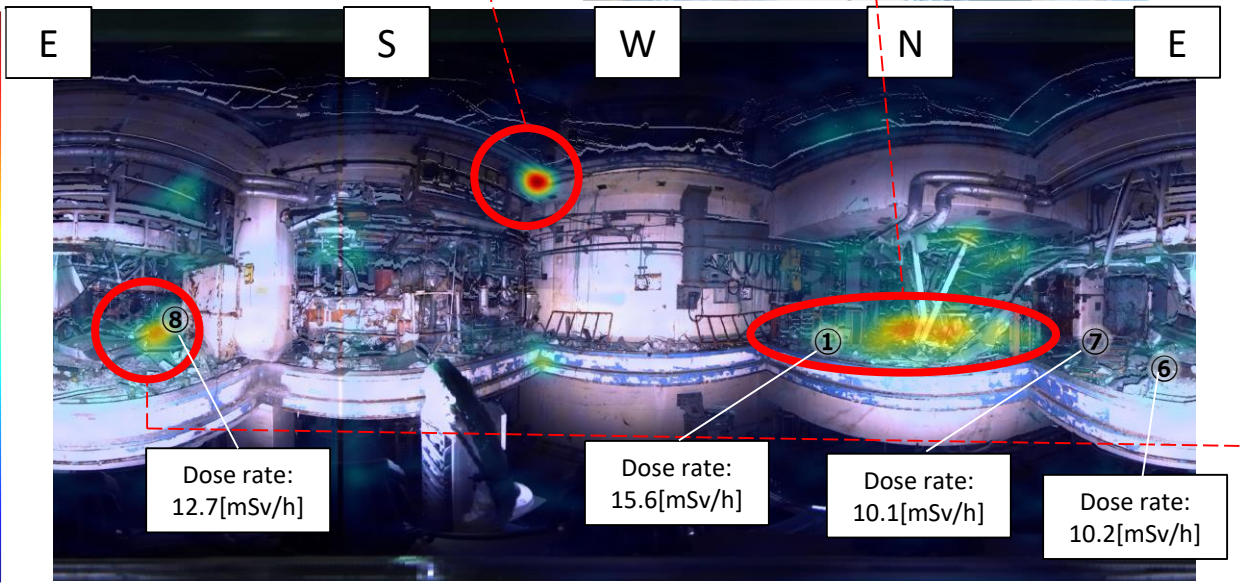
□ : Equipment hatch position

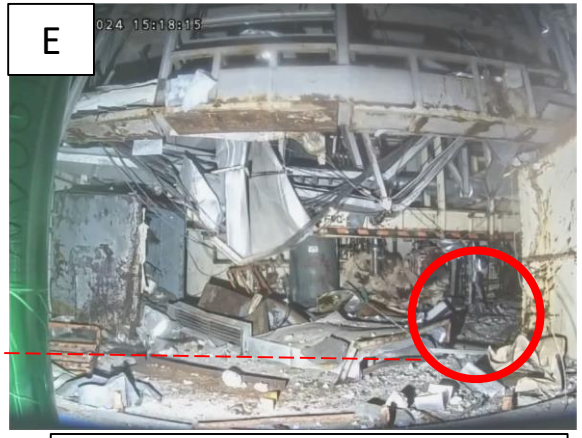
● : γ imager installation location (Mounted on elevated work platform truck)

Strong

Hotspot intensity

Weak





Photographed on April 18, 2024
gamma imager measurement date: April 18, 2024

* Circled numbers indicate air dose rates taken with SPOT (referred to the previous page for details)

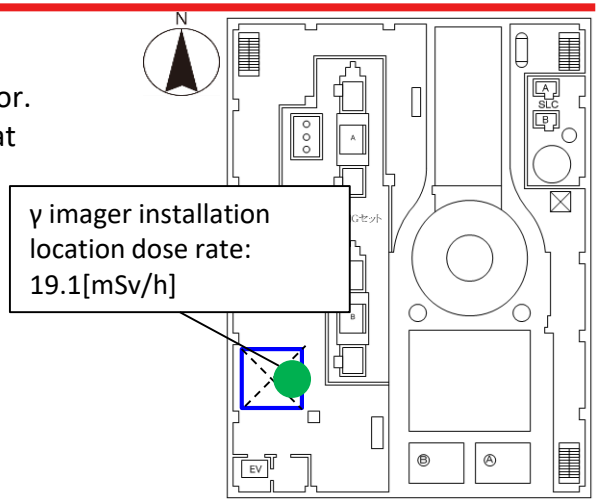
* Relative display of temperature distribution up to 10% of the maximum value (blue) based on the maximum value (red) of the radiation source intensity in the image

*Since this image combines a spherical image taken in the 360° direction onto a flat surface, distortion like a fisheye lens occurs in each direction

[Reference] Unit 3 R/B 4th floor investigation results

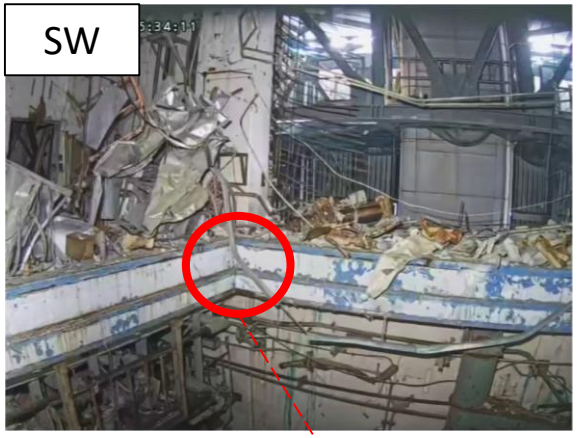
TEPCO

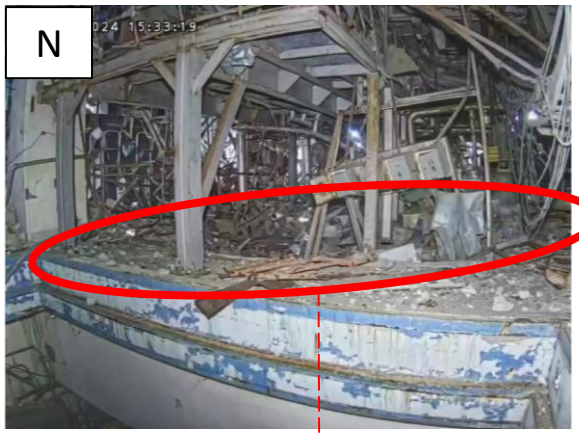
■ Gamma ray distribution by gamma imager measurement
- On the 4th floor, it was confirmed that the hot spot was around the rubble near the floor.
- Since the intensity of the hot spot on the 3rd floor are relatively weak, it is assumed that dose rates on the 4th floor are higher



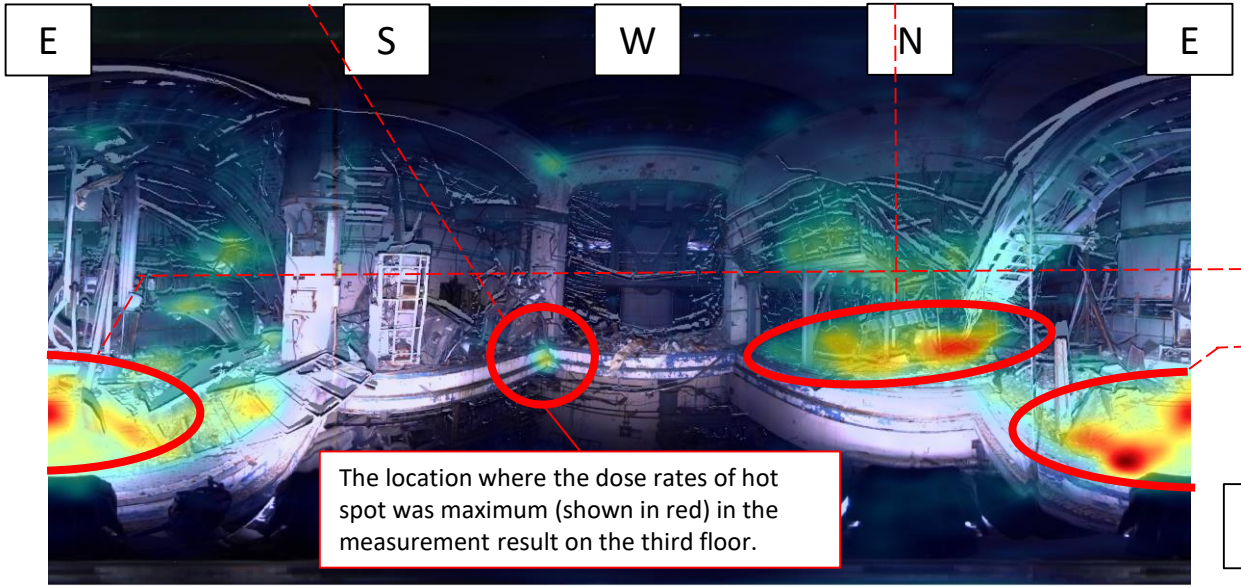
Unit 3 R/B 4th floor

□ : Equipment hatch position
● : γ imager installation location
(Mounted on elevated work platform truck)





Strong



Weak

Photographed on April 19, 2024
gamma imager measurement date: April 19, 2024

* Relative display of temperature distribution up to 10% of the maximum value (blue) based on the maximum value (red) of the radiation source intensity in the image
* Since this image combines a spherical image taken in the 360° direction onto a flat surface, distortion like a fisheye lens occurs in each direction