Reference
February 9, 2017
Tokyo Electric Power Company Holdings, Inc.

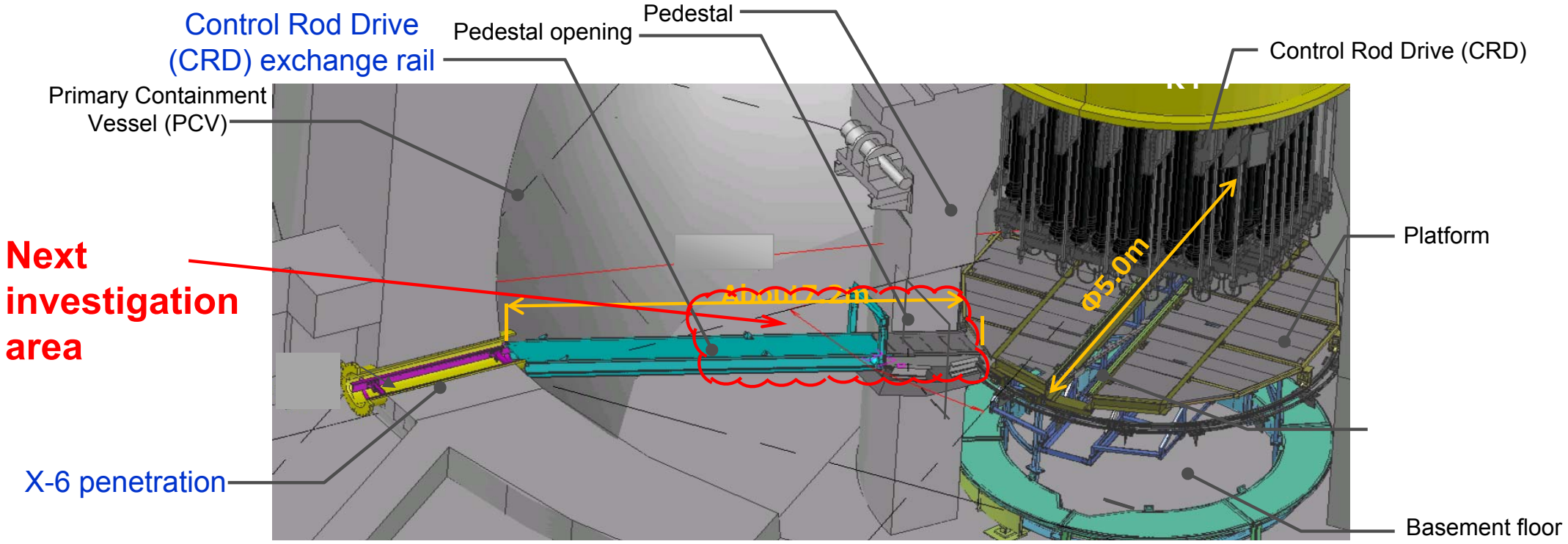
Unit 2 Primary Containment Vessel Investigation at Fukushima Daiichi Nuclear Power Station (Results of deposit removal work)

IRID TEPCO

Tokyo Electric Power Company Holdings, Inc.

1. Unit 2 Primary Containment Vessel investigation

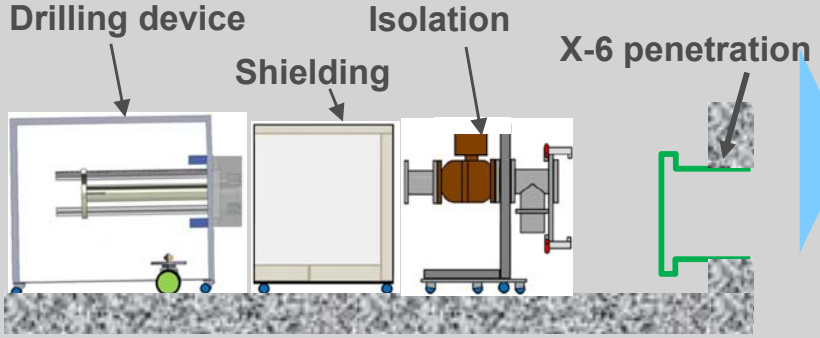
The purpose of this investigation is to inspect the platform inside the pedestal, fuel debris fallen to the Control Rod Drive (CRD), and structures inside the pedestal.
Today, preparatory investigation was conducted for X-6 penetration and CRD exchange rail which the self-propelled Scorpion robot will take to the pedestal.



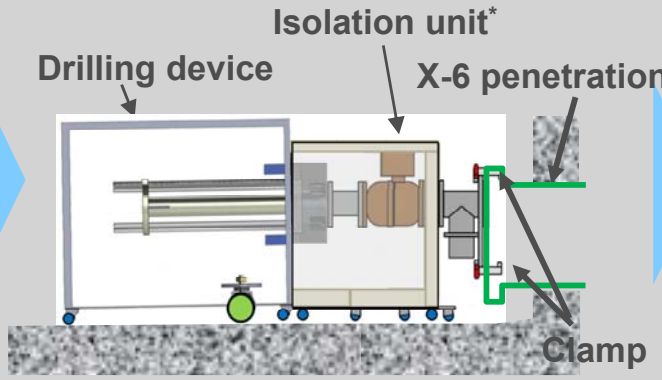
Investigation area inside the pedestal

2. Work steps for Unit 2 PCV investigation

Step 1. Drilling device carried in

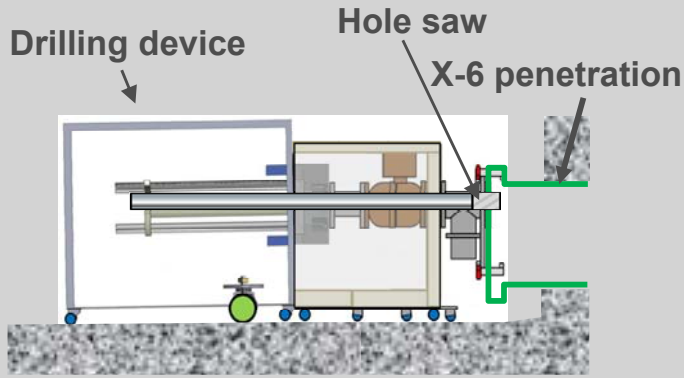


Step 2. Drilling device set up

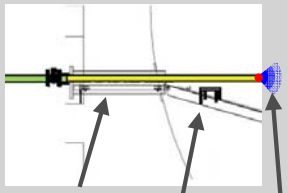


*Combination of isolation and shielding

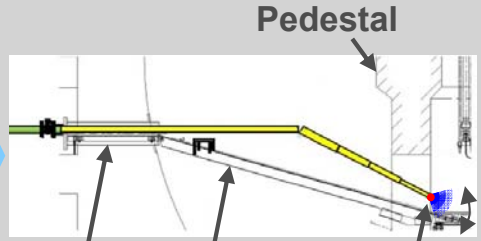
Step 3. Drilling on X-6 penetration



Step 4. Pre-investigation of X-6 penetration and CRD rail using guide pipe

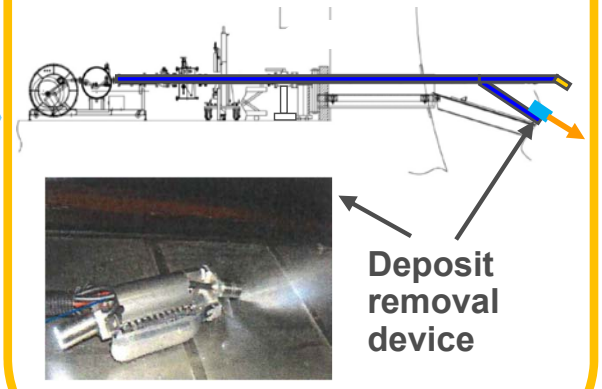


Step 5. Pre-investigation inside pedestal using guide pipe

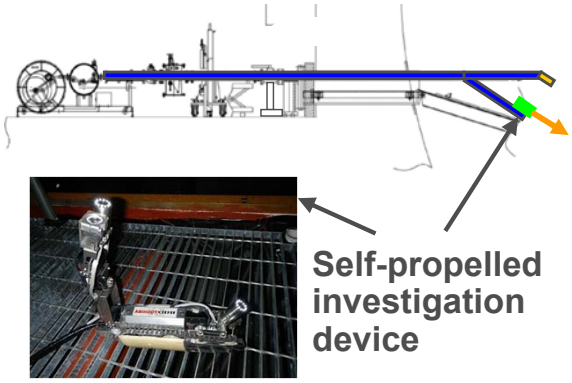


Step 6. Obstacle removal device inserted*

*The device may not be inserted depending on the obstacle conditions.

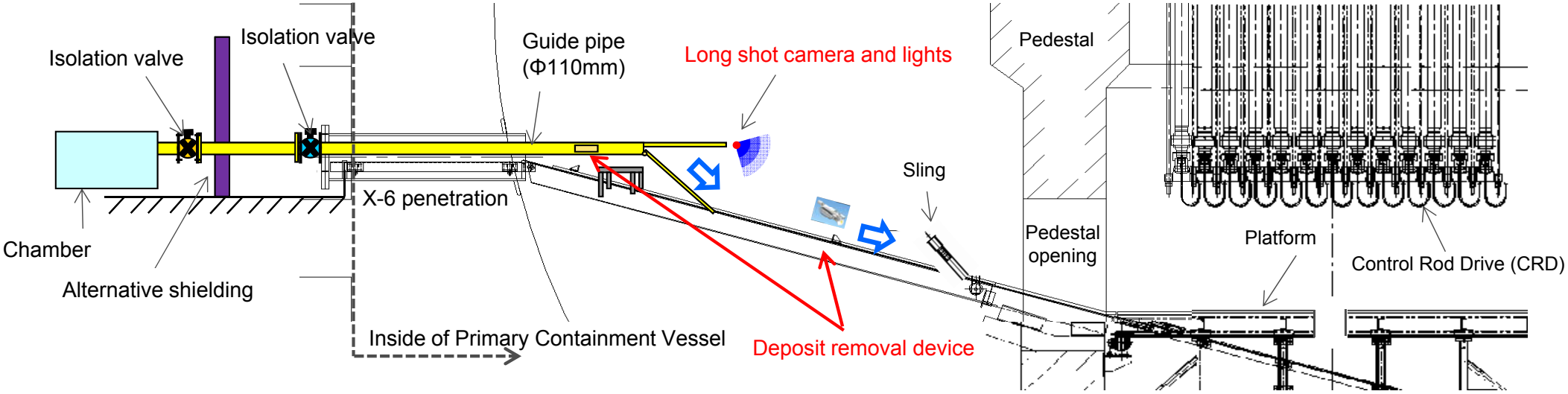


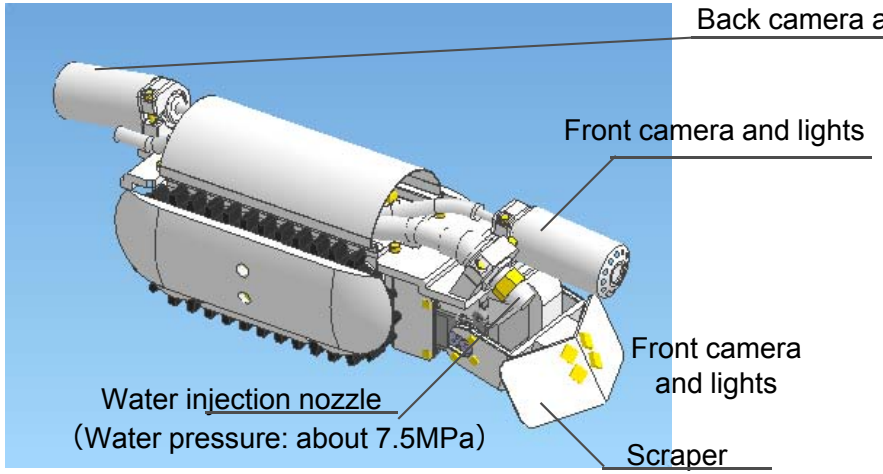
Step 7. Investigation using self-propelled investigation device



3. Insertion of deposit removal device

- Based on the analysis results of the digital images obtained from the previous investigations, a device was inserted in the Unit 2 PCV today to remove deposits on the CRD rail, which may pose obstacles to the self-propelled investigation device.
- The height of the deposits were estimated and mock-up tests have been conducted to confirm the access to the pedestal area with the self-propelled investigation device.



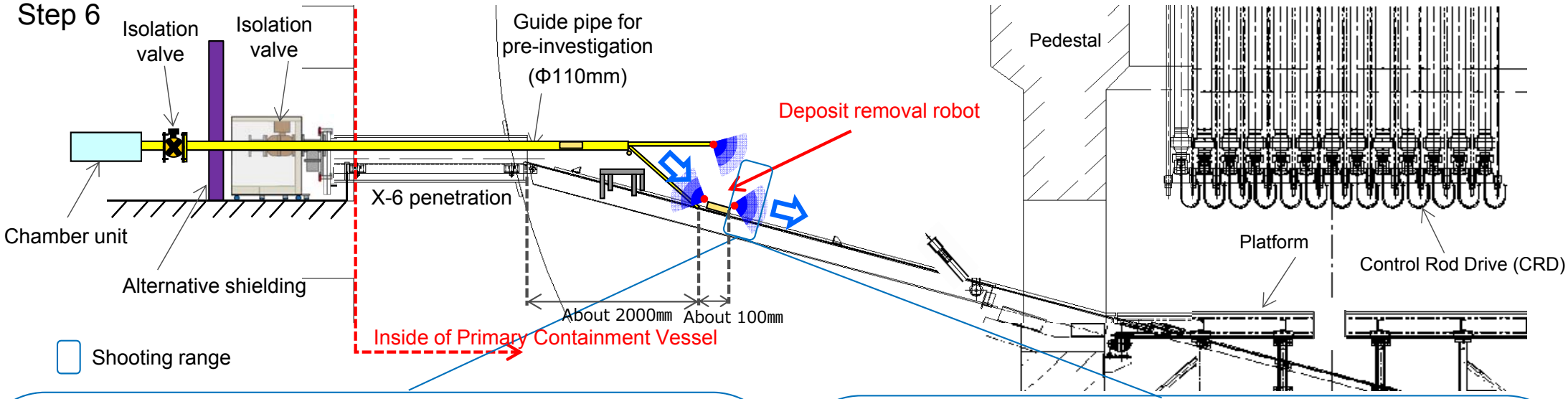


Deposit removal device (image)

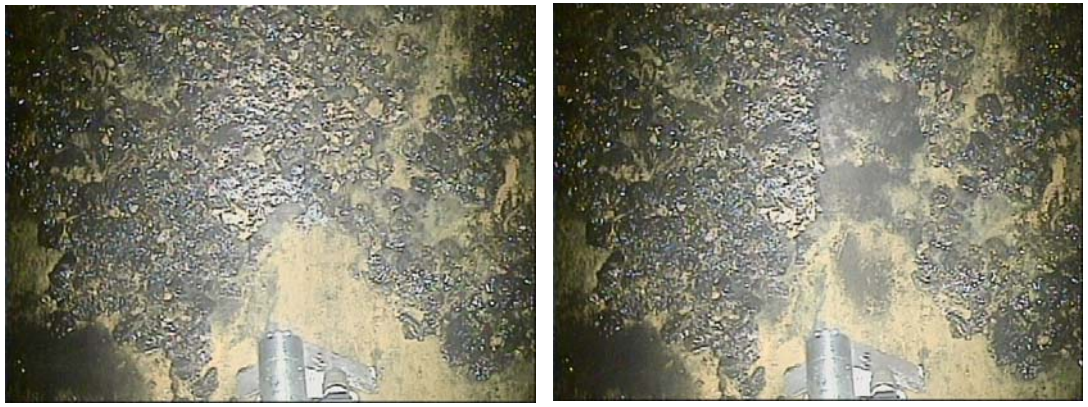
*No dosimeter attached

- ✓The head of the guiding pipe opens to bring down the device on the CRD rail.
- ✓The device washes off the deposits with water injection as well as push them off with a scraper based on the situation.

4-1. Results of deposit removal work (landing position of the guide pipe)



Images from guiding pipe camera

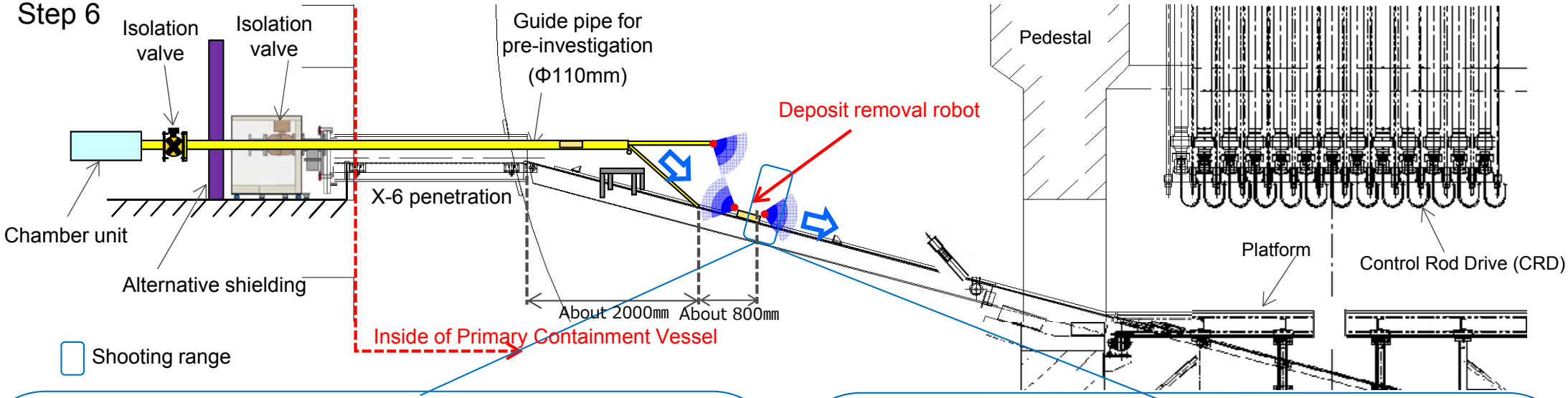


Before the removal | After the removal

Images from front camera attached to the device

Before the removal | After the removal

4-2. Results of deposit removal work (position where deposits strongly adhered to the rail)



Images from guiding pipe camera

Before the removal

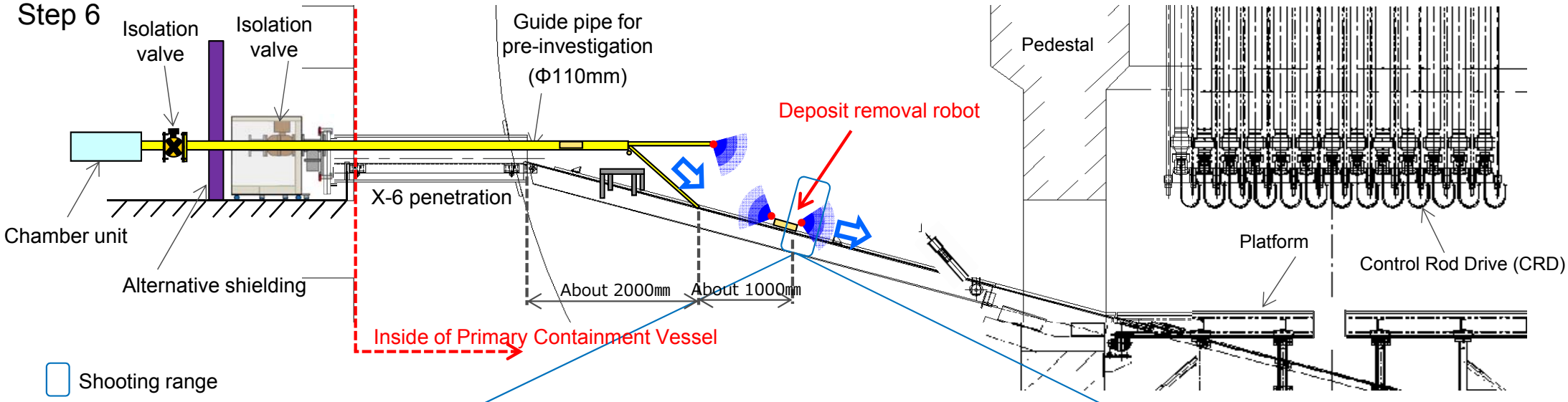
After the removal

Images from front camera attached to the device

Before the removal

After the removal

4-3. Results of deposit removal work (position where the device run on deposits)



Images from guiding pipe camera

Images from front camera attached to the device

4. Summary

- Today's investigation results
  - The device removed the deposits in a part of the planned area (about 1m out of 5m from the landing point).
  - It took time to remove the deposits because they adhered stronger to the rail as it got closer to the pedestal area.
  - Today's work was closed by retrieving the device before it prevents next investigation with a malfunction of the camera.
  - The device on the deposits could not run on some parts.
- Based on today's investigation results and mock-up testing, we will determine whether to conduct further investigation with the self-propelled investigation device.

Reference: Work site scenes

The deposit removal work was conducted by remotely operating the device in the remote operation room and by inserting/pulling out the guiding pipe at the field headquarters and inside the Unit 2 Reactor Building.

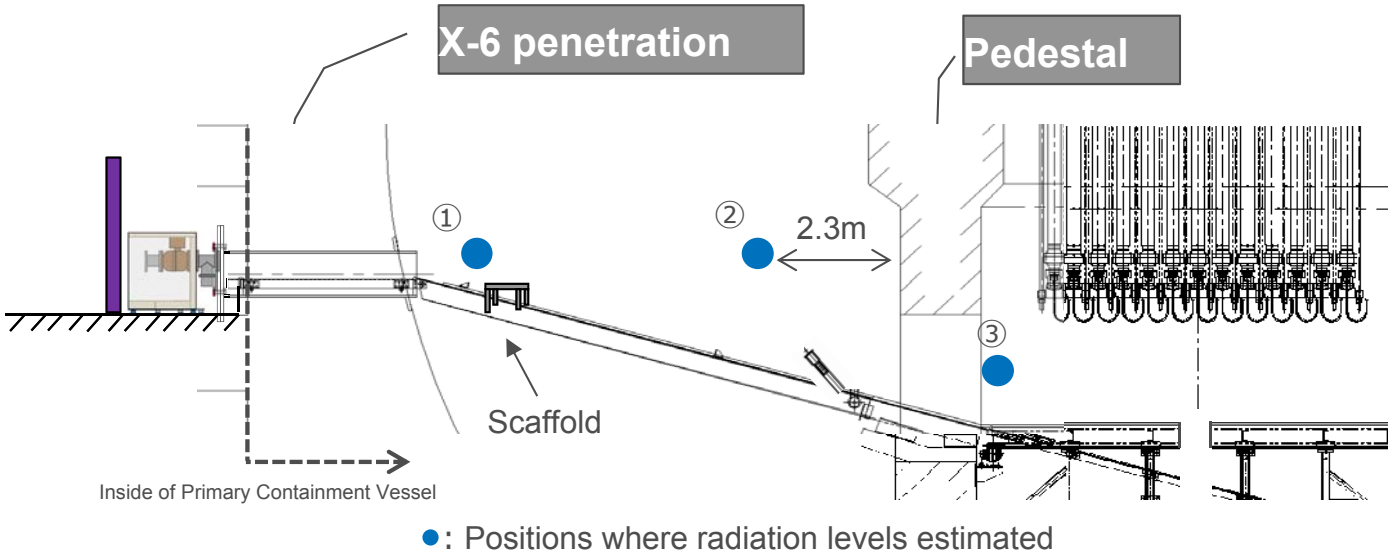
Remote operation room
in the main administrative office

Inside the Unit 2 Reactor Building

Work site scenes

Reference: Unit 2 Primary Containment Vessel (A2 investigation)
Pre-investigation with guiding pipe, Radiation estimation

- Radiation levels estimated from noise images on the camera screen[*1]:
  ① Around the scaffold on the CRD rail: about 30 Sv/h
  ② Outside the pedestal: about 530 Sv/h[*2]
  ③ Inside the pedestal: about 20 Sv/h



[*1] Reference values estimated from noise images on the camera screen by comparing them at the times of radiation testing and actual investigation (error margin of ±30%)

[*2] It cannot be simply compared, but we evaluate that the surface radiation of a fuel assembly is several ten thousands Sv/h one day after the reactor stops.

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