Fukushima Daiichi Nuclear Power Station Unit 1
Results of Drone investigation of the inside the reactor buildings

January 29, 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 planed 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 inside the Unit 1 reactor building (outside of the primary containment vessels).

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 1st floor, northwest area 2nd 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
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 1st floor, northwest area 2nd floor, northwest area 3rd 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	Scheduled to be implemented after February 2026

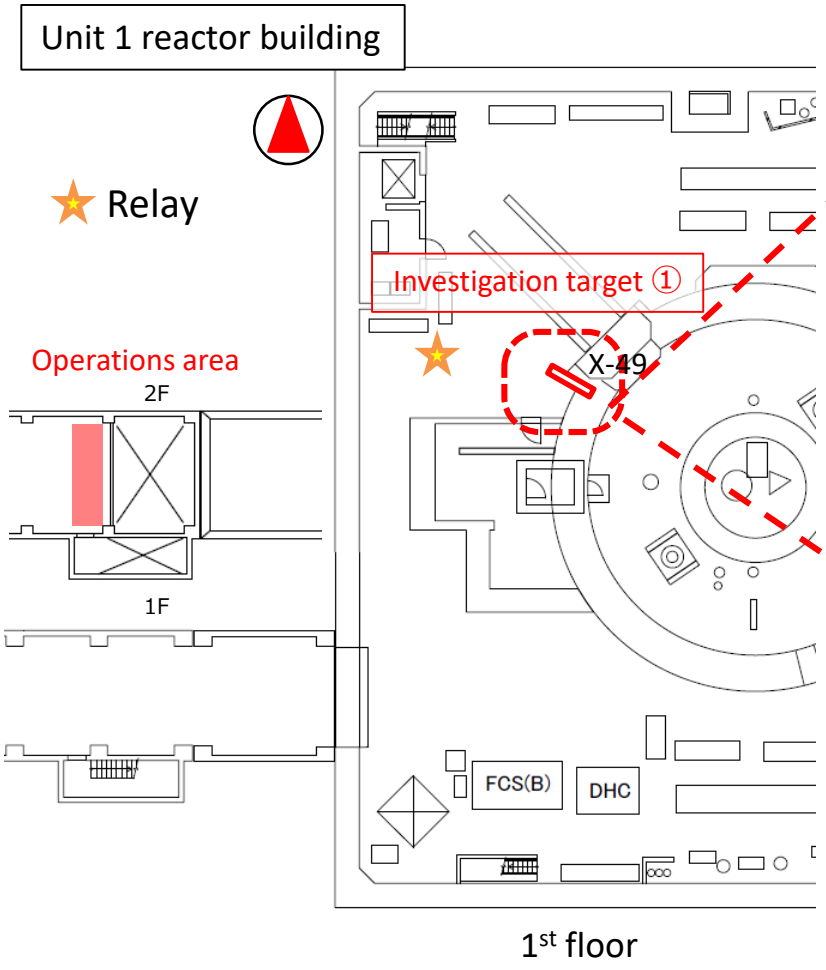
※IC: Reactor isolation condenser system

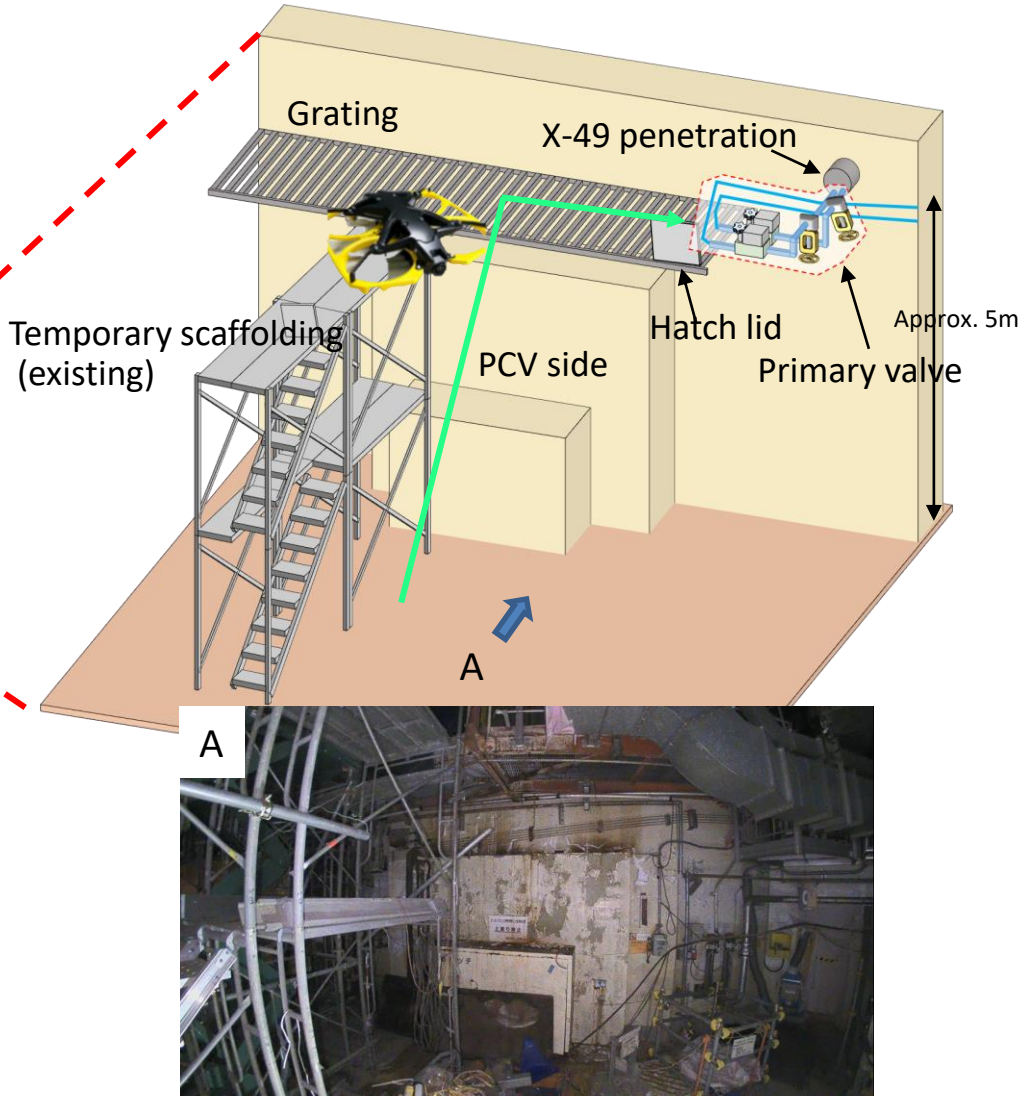
Micro-drone

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

2. Targets of the Unit 1 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.





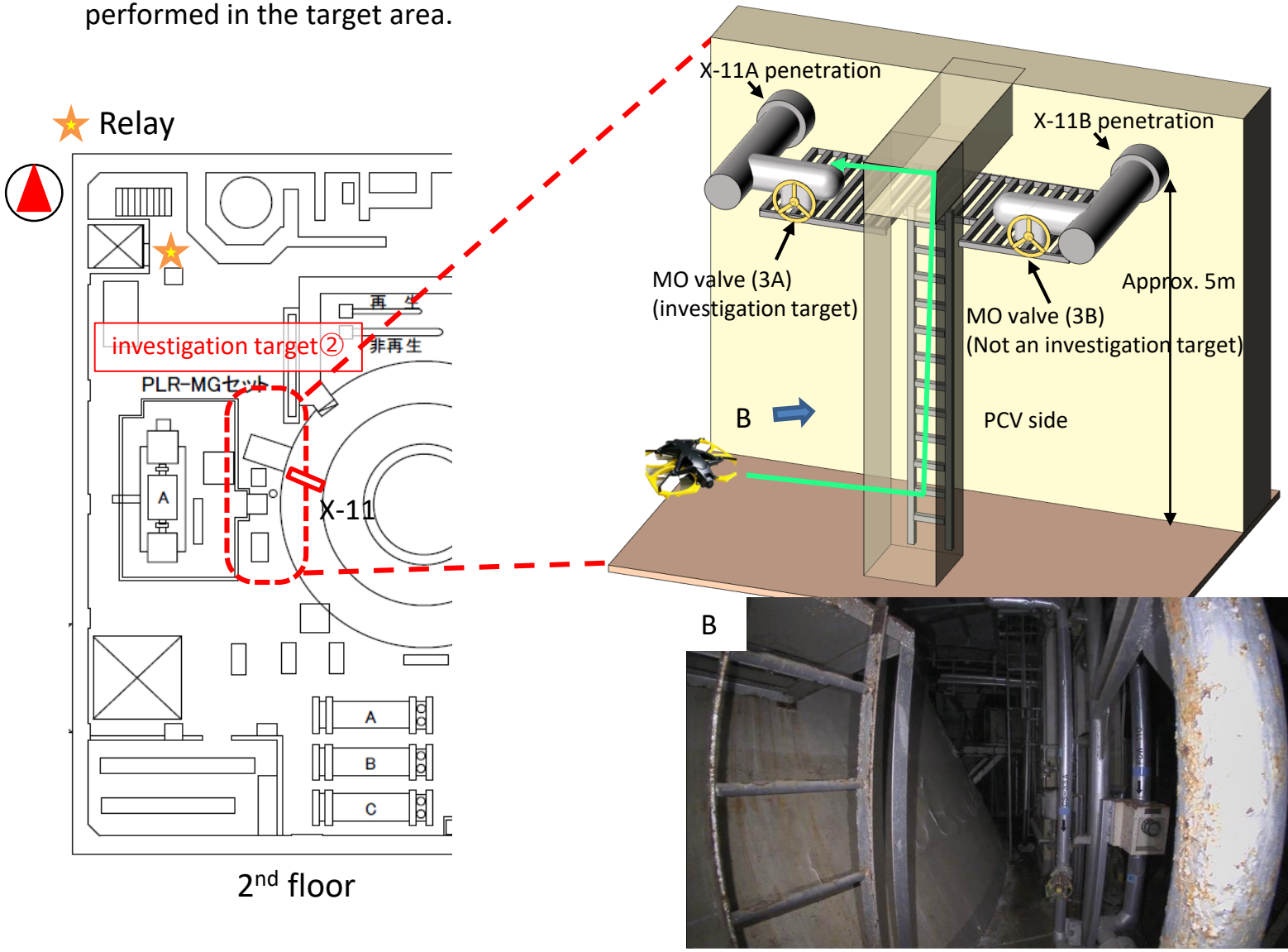
There are many obstructions at the top such as ducts, etc.

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

- No remarkable damage, deformation, or excessive corrosion was found on the IC system 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.

4. Targets of the Unit 1 reactor building internal investigation (2nd floor)

- The objective of the investigation was to examine the condition of the IC system line MO valves.
- A small drone and relay were placed in the northwest area of the second floor of the reactor building and a flight was performed in the target area.



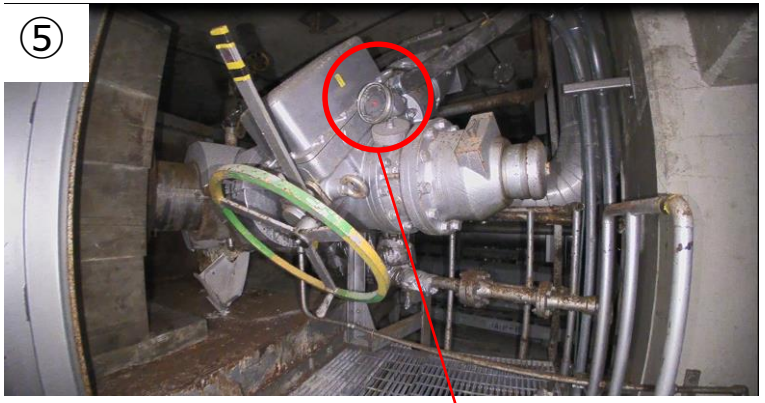
5. Results of Unit 1 reactor building internal investigation (2nd floor)

- No remarkable damage, deformation or excessive corrosion was found on IC system MO valve (3A),etc.
- It was also confirmed that there are no remarkable obstructions in the vicinity or along the access route to the aforementioned valve.

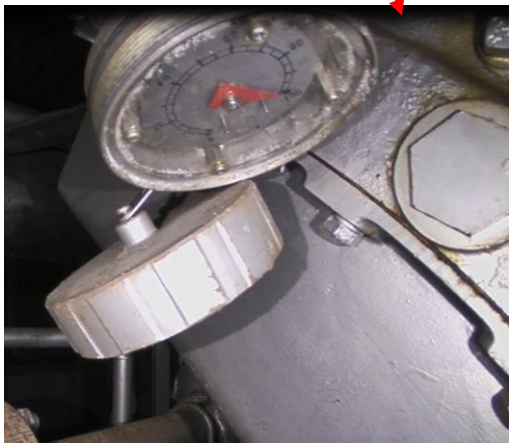
④

Target of this investigation: MO valve (3A)

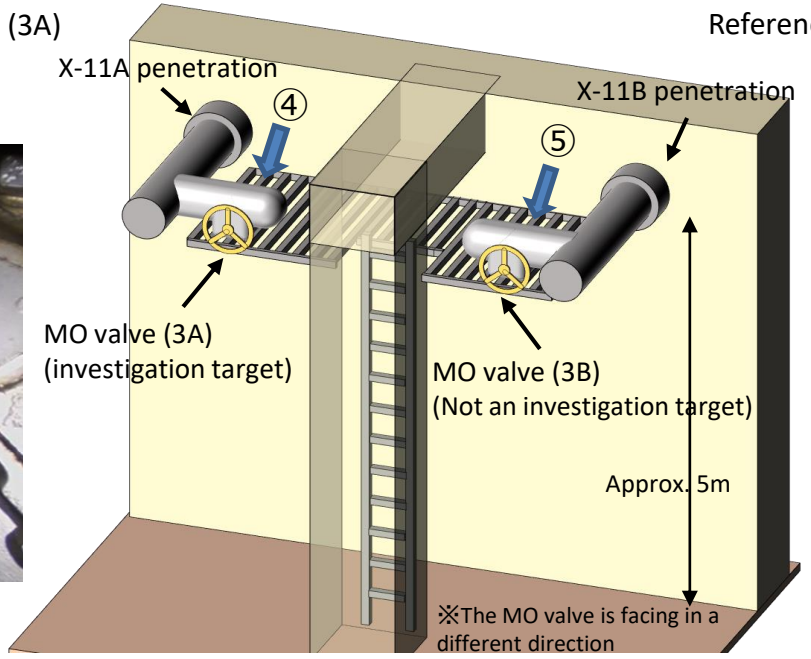
⑤



Reference: MO valve (3B)



3A valve opening angle gauge
(indicates full open)



3B valve opening angle gauge
(indicates full open)

※The open/closed status of the MO valve was investigated in 2011 (Reference: Fukushima Nuclear Accident investigation Report June 20, 2012)

6. Future deliberations based on investigation results

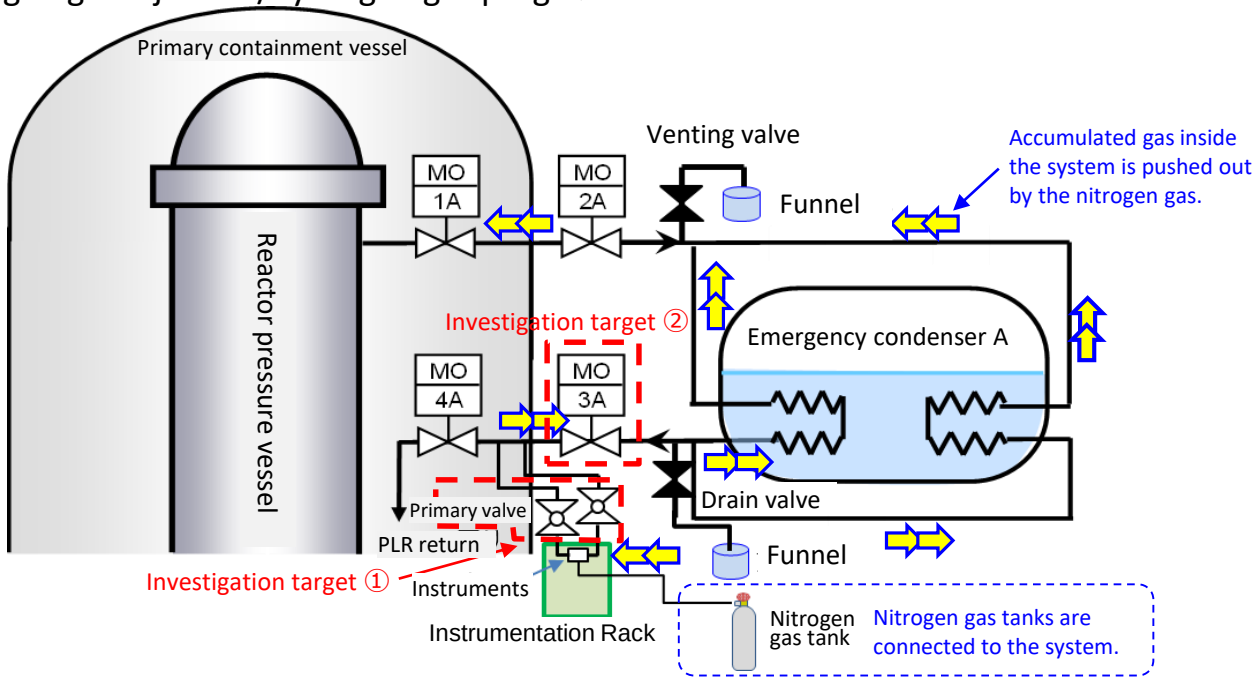
- Based on the results of the investigation into the condition of isolation valves inside and outside the PCV that was conducted after the accident, it was assumed that after core damage, the isolation valves (MO-1A, 4A) were open, so it is possible that hydrogen gas accumulated inside the heat transfer tubes of IC(A).

※The open/closed status of the MO valve was investigated in 2011
(Reference: Fukushima Nuclear Accident investigation Report June 20, 2012)

- Assessment of investigation result
  - ✓ Since no remarkable abnormalities were found with the valves or pipes, we may be able to inject nitrogen gas into the instrument line on the first floor of the R/B to purge the hydrogen gas.
  - ✓ It may be possible to operate (open/close) MO-3A valve to configure a gas purge line.
- Steps to be taken going forward
  - ✓ Detailed deliberation of the nitrogen gas injection/hydrogen gas purge method.
    The gas purge line must take into consideration workability, the impact assessment of nitrogen gas injection, and condition monitoring methods.
  - ✓ Valve operating methods (remote or manual)
  - ✓ Air dose rate investigation

} Additional investigations to be implemented as needed

＜Example of a nitrogen gas injection/hydrogen gas purge＞



※ There is no record of IC (B) being operated during the accident so we assume that hydrogen has not accumulated.

7. Investigation results summary

Investigation results summary

- ✓ This investigation confirmed the integrity of the line, the condition of valves, and the access route, and determined that there is nothing that would detrimentally impact a gas purge of the Unit 1 IC system.
- ✓ In light of the investigation results, we will move forward with a detailed deliberation of the gas purge 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] Hydrogen accumulation assessment locations

TEPCO

- Target systems
- Systems that are assumed to either be sealed or have flow as a result of operations taken during the accident or openings caused by damage. (already reported)
- Systems in addition to those mentioned above in which it is assumed that hydrogen has accumulated due to reassessment or in conjunction with decommissioning progress. (already reported)
- Systems in which it is assumed that hydrogen has accumulated because they are connected to the PCV and leaks from isolation valves have been found in the past. (newly added)

	Unit 1	Unit 2	Unit 3	Notes
High possibility of accumulation (already reported)	IC(A) Reactor isolation condenser system CRD(HCU) Control Rod Drive Hydraulic Control Unit RCW Reactor cooling water system	CRD(HCU) Control Rod Drive Hydraulic Control Unit	CRD(HCU) Control Rod Drive Hydraulic Control Unit	Flow from operation or damage 【Results】 ・Gas has been purged from the Unit 1 RCW-Hx header pipe, CUW（connected to S/C), and Unit 3 RHR(A) ・Gas is currently being purged from the Unit 3 S/C
	CUW clean up water system (connected to S/C)	RHR(A/B) Residual heat removal system AC Activated carbon system	RHR(B) Residual heat removal system S/C Suppression chamber	
Newly added due to the possibility of accumulation※	PLR Primary Loop Recirculation system（purge lines measures） SLC Standby liquid control system CUW clean up water system CCS Containment cooling system CS Core spray system HPCI High-pressure coolant injection system FCS Flammable gas control system SAM System analysis module AC Atmospheric Control SHC Shut down cooling system RW Radioactive waste treatment system	PLR Primary Loop Recirculation system（purge lines measures） SLC Standby liquid control system CUW Clean up water system RCIC Reactor core isolation cooling system CS Core spray system HPCI High-pressure coolant injection system FCS Flammable gas control system SAM System analysis module RW Radioactive waste treatment system	PLR Primary Loop Recirculation system（purge lines measures） SLC Standby liquid control system CUW Clean up water system RCIC Reactor core isolation cooling system CS Core spray system HPCI High-pressure coolant injection system FCS Flammable gas control system SAM System analysis module AC Activated carbon system RW Radioactive waste treatment system	

【Addendum】 Systems inside the PCV, or systems that open into the PCV, have been excluded (MS, FDW, PLR), including CRD, CUW and RHR system heat exchangers. Pumps have been excluded from the assessment under the assumption that they are flooded with water.

※ Includes systems into which it is possible that hydrogen gas flowed during the accident, but for which there is now little possibility that hydrogen has accumulated because the atmosphere in the PCV is gradually being replaced with nitrogen.