

**Survey of wall of torus room
in Unit 2 in Fukushima Daiichi NPS
(Report for demonstration survey
in R & D project)**

July 28, 2014

Tokyo Electric Power Company



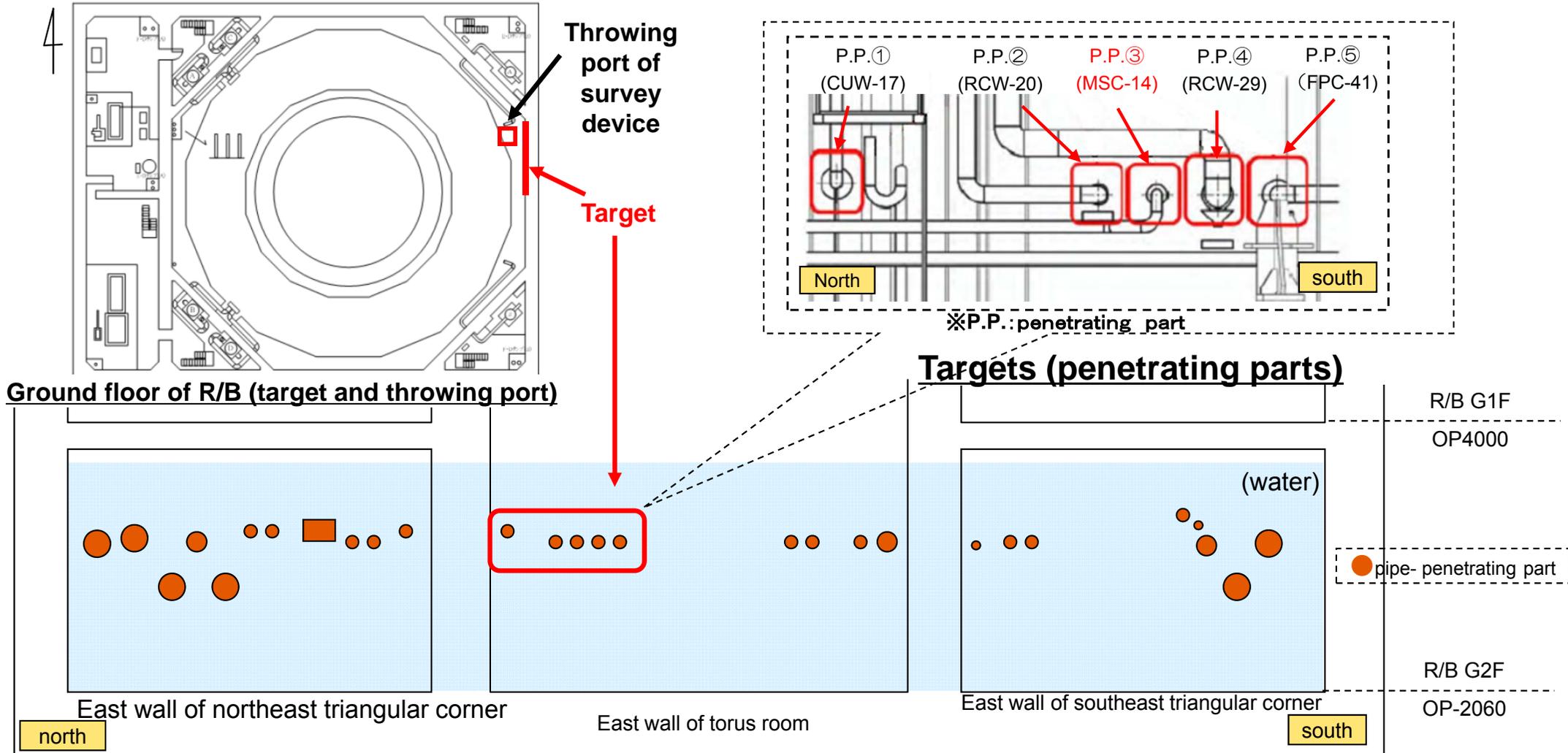
東京電力

IRID

It contains applications gained from result by International Research Institute for Nuclear Decommissioning (IRID).

Outline

With survey devices (swimming robot and crawling robot) developed in Research and Development Project (with grant of Agency of Natural Resources and Energy) “Developments for detecting and repairing of pinpoint leakage on reactor container”, we investigated torus room wall of Unit 2 (north side of east wall) as demonstration experiment. **target: Condition and flow** of pipe-penetrating parts (5 points) of east wall



penetrating parts on East wall of Ground floor of R/B Targets

Method

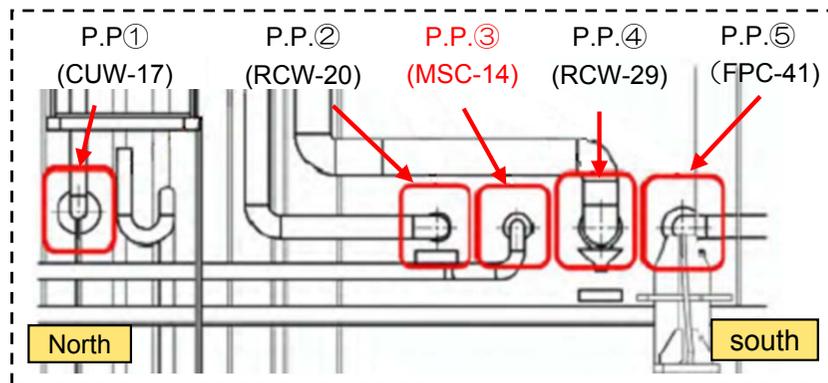
1) Survey using camera (board on swimming robot)

confirming condition and tracer flow at penetrating parts using image taken by underwater camera

2) Survey using supersonic sonar (using crawling robot and swimming robot)

dispersing tracer and monitoring flow around penetrating part using supersonic sonar

(* tracer: particles of clay)



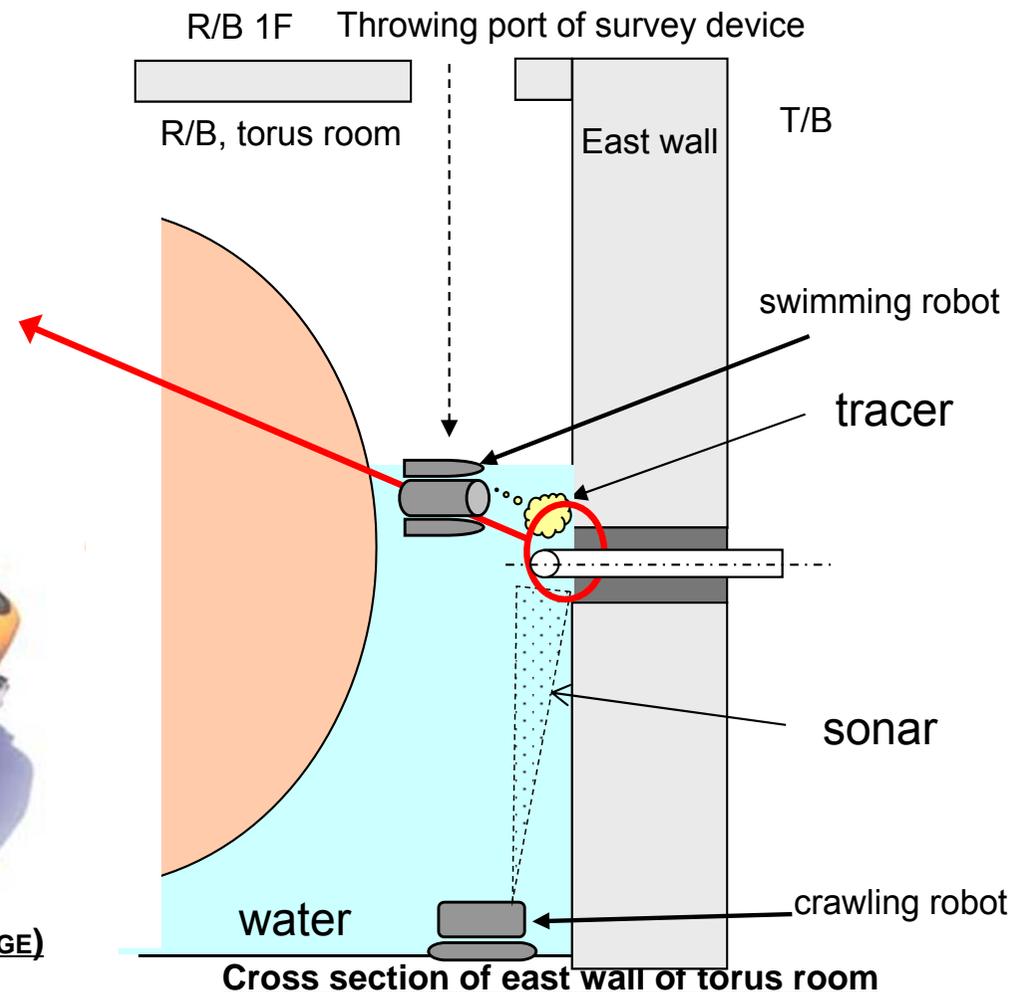
Targets (penetrating parts)



swimming robot (Gengo ROV by HitachiGE)



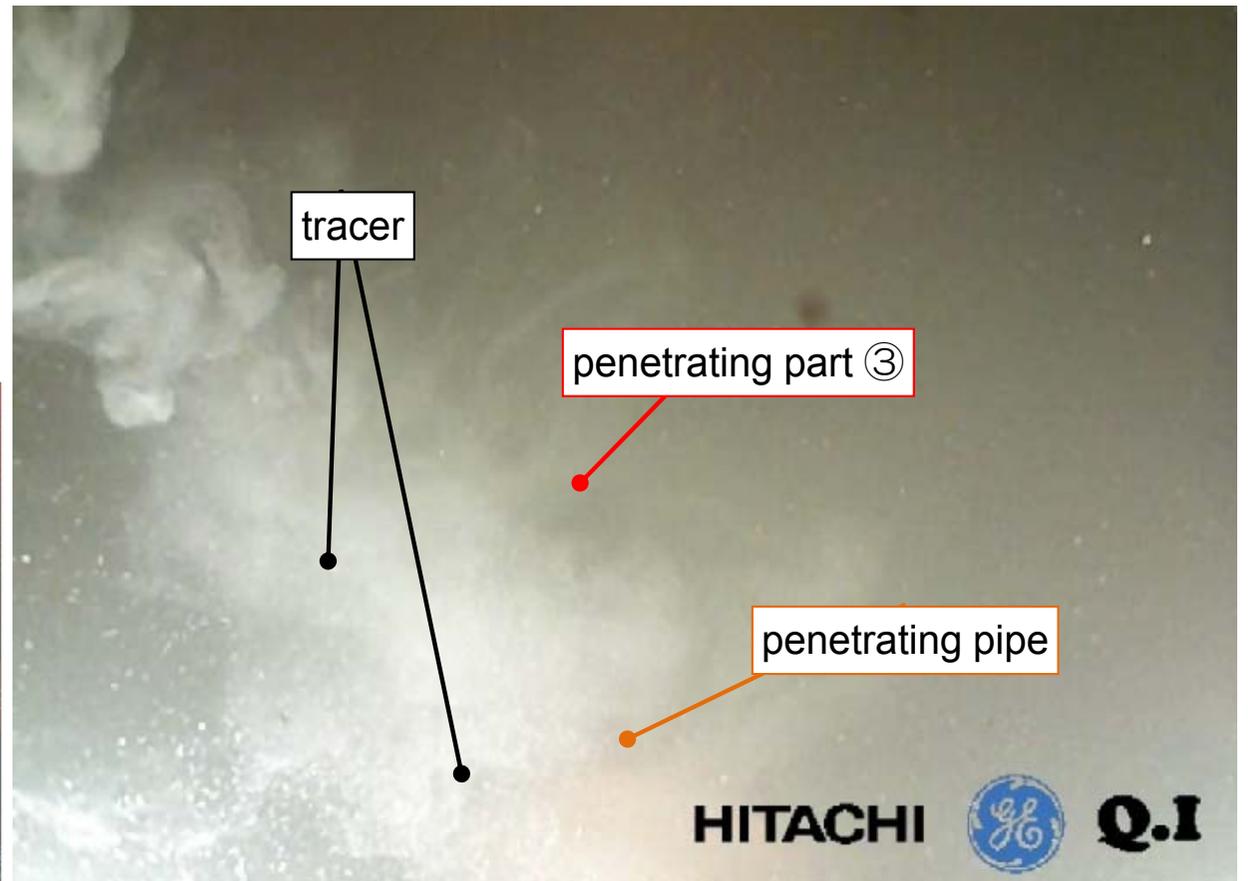
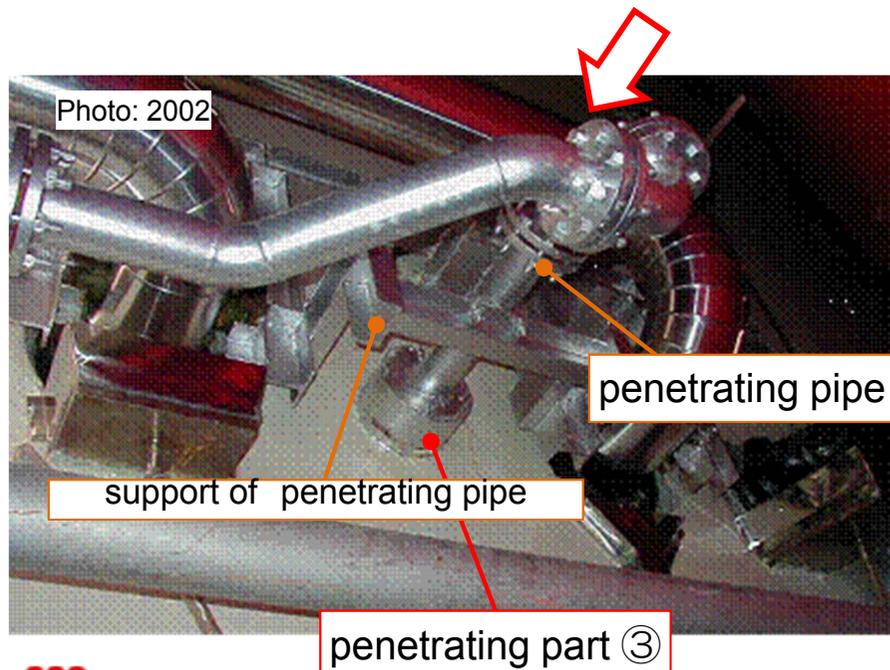
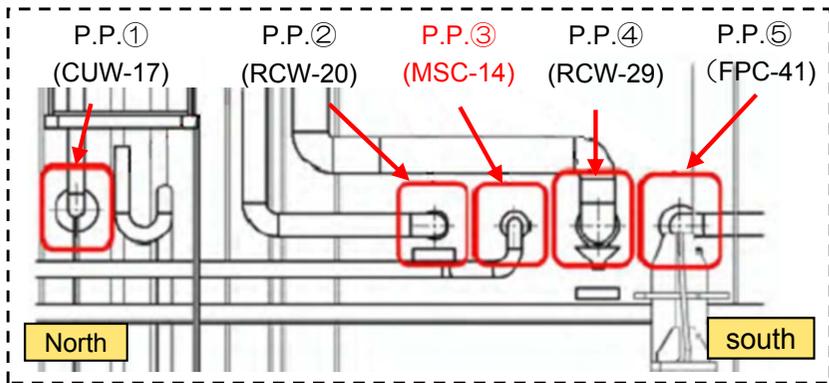
crawling robot (Trydiver by HitachiGE)



Cross section of east wall of torus room

Results of survey using camera on swimming robot

- no remarkable damage has been found around penetrating part ① to ⑤
- no flow has been found around penetrating part ① to ⑤ in sonar survey



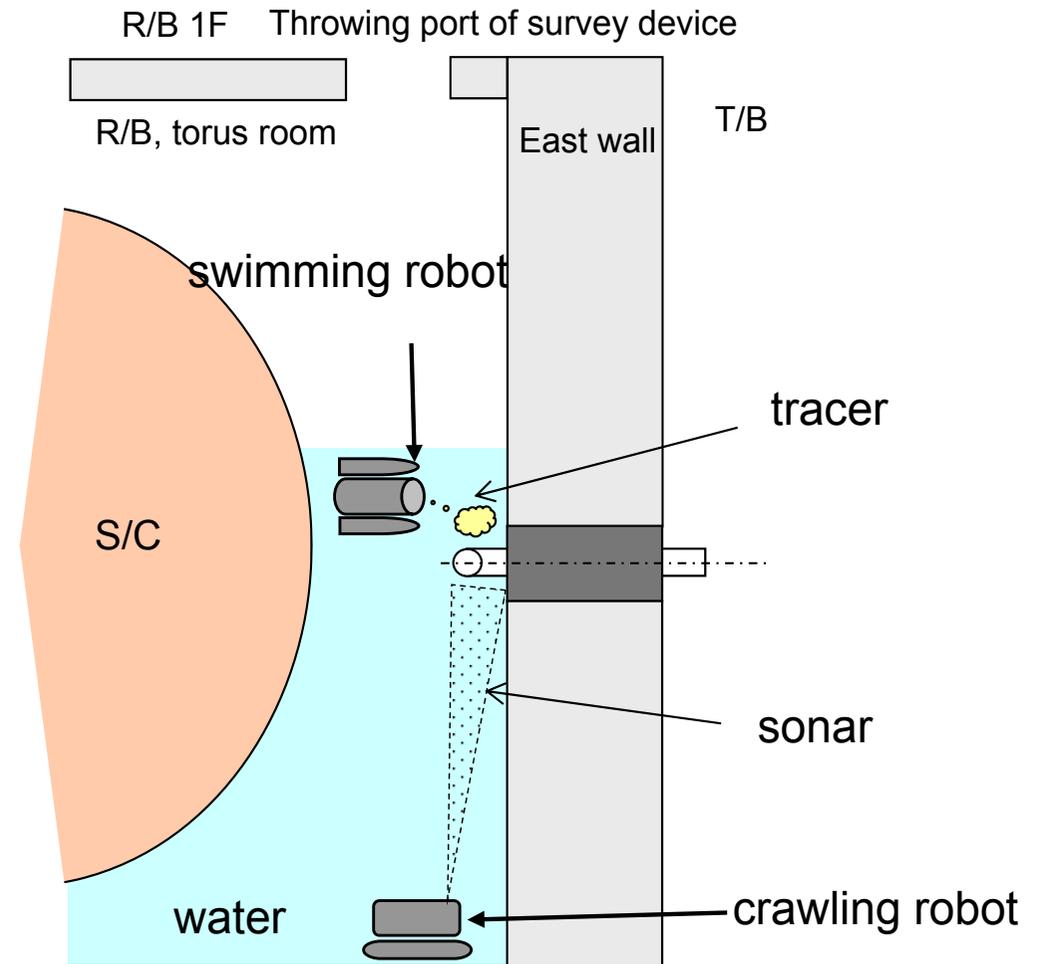
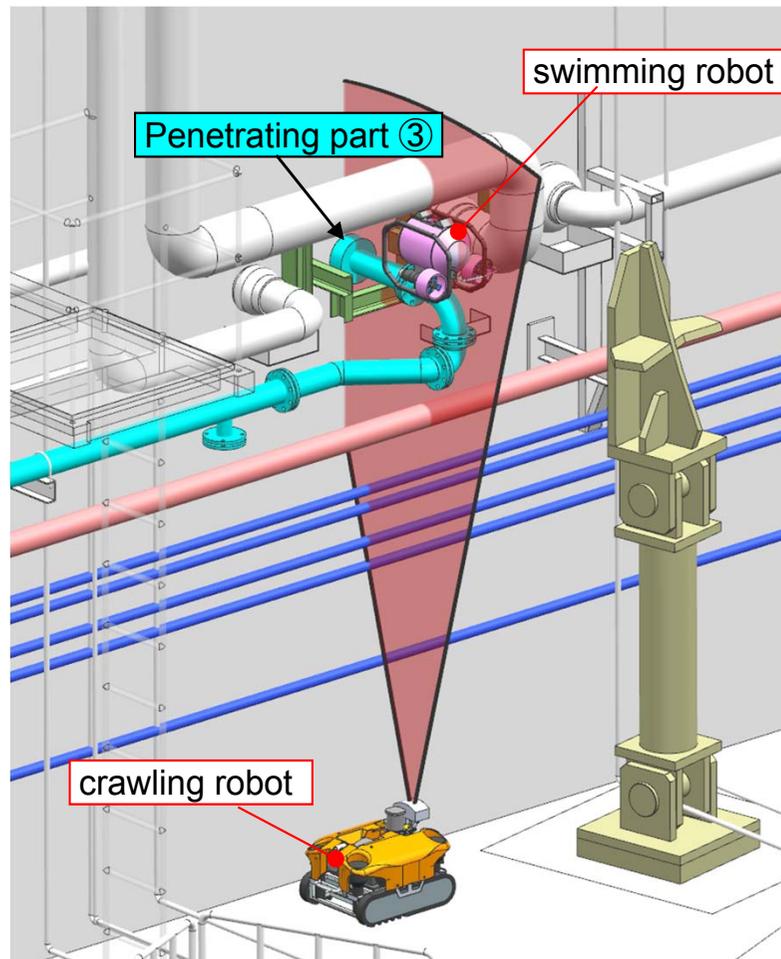
Flow in penetrating part (ex. penetrating part ③)

Method (with supersonic sonar)

■ target: penetrating part ③

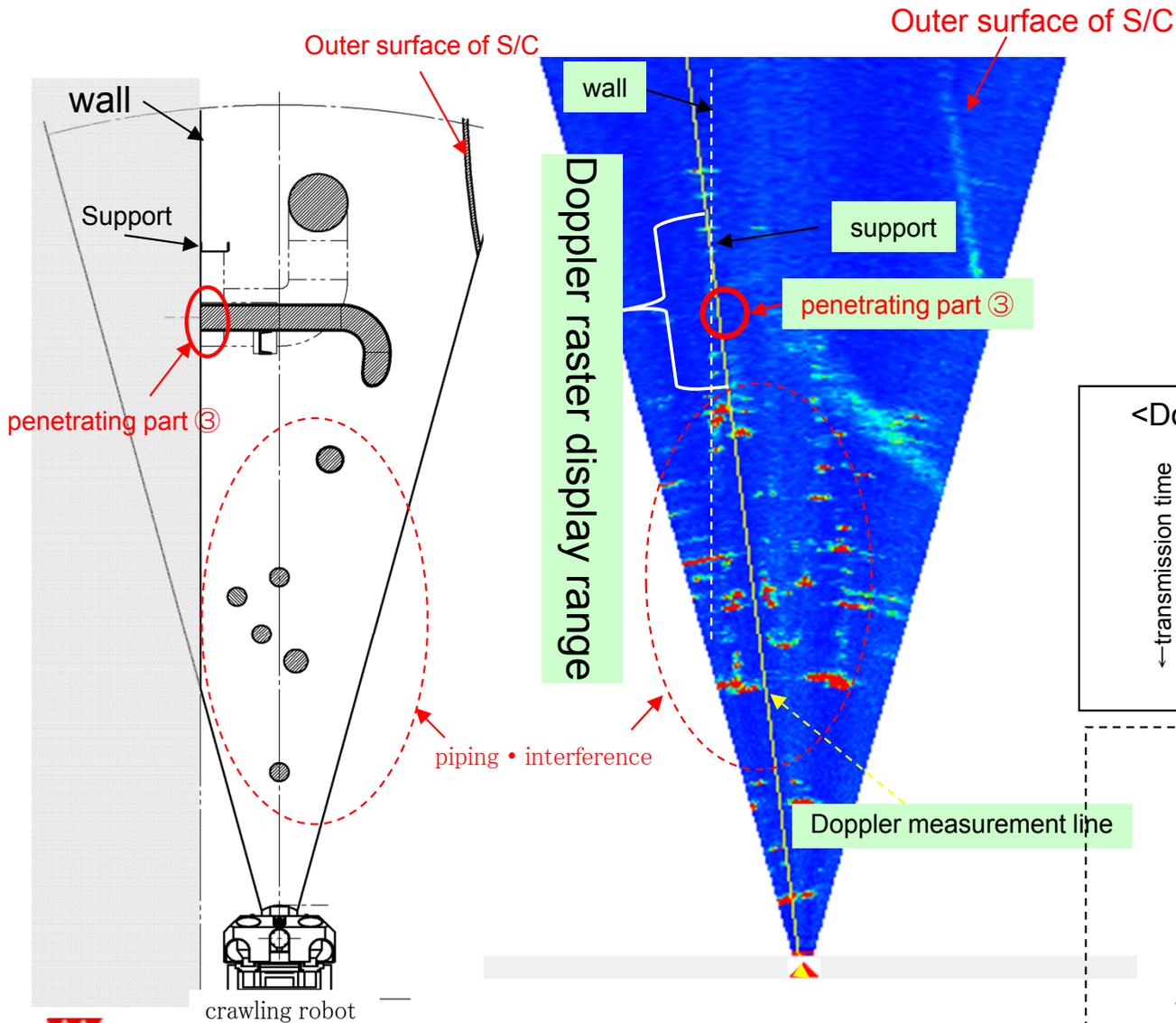
■ method:

Swimming robot disperses tracer, and crawling robot sends supersonic sonar monitoring flow of tracer.

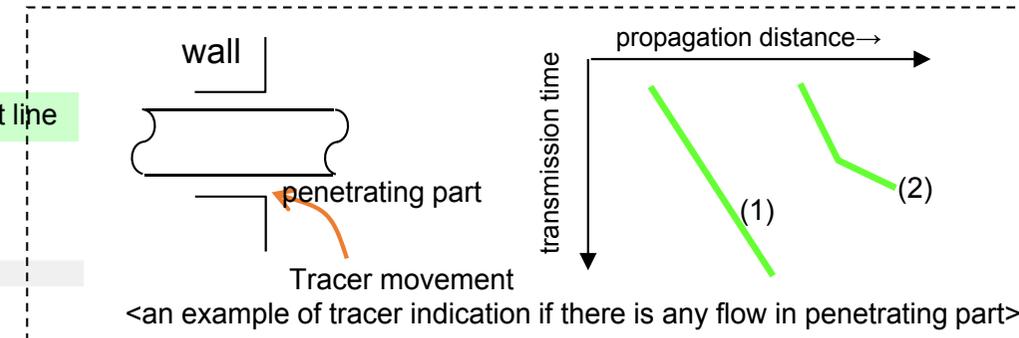
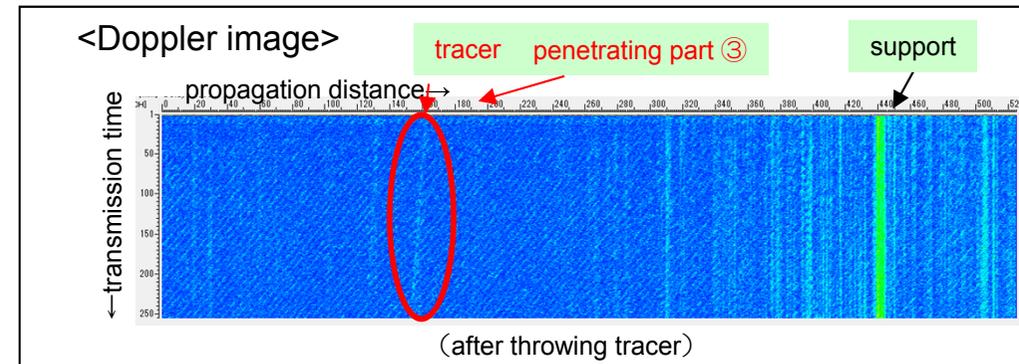
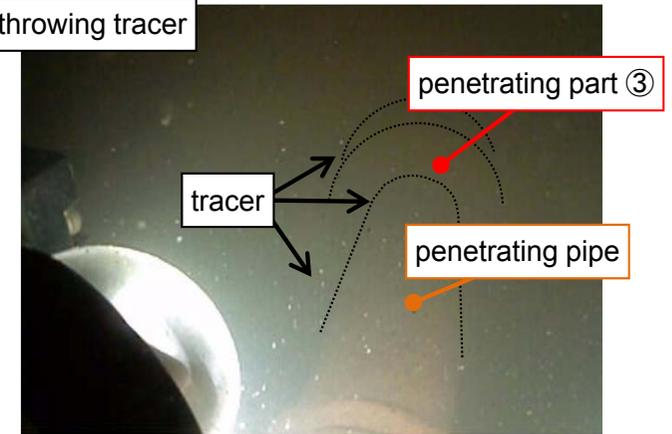


Results (with supersonic sonar)

■ For penetrating part ③, inflow of tracer has not been found in Doppler measurement using sonar



After throwing tracer



Summary

- By using underwater-wall survey devices (swimming robot and crawling robot), we demonstrated that we can monitor the condition of penetrating parts.
- Penetrating part ① to ⑤: based on camera and tracer dispersion survey, no flow has been found around the target area.
- Penetrating part ③: based on sonar survey, no flow has been found around the target area.



<new issue>

- During this survey, swimming robot and crawling robot stirred up deposited materials in torus room, which made it difficult for them to run and swim in the area.
- For another survey, it is necessary to review the applicability including improvements.

<Reference>

Schedule

	Survey for wall of torus room in Unit 2	
Process	Drilling/preparation: 6/25 – 7/15	Survey: 7/16 -7/25