Investigation result of inside of the Primary Containment Vessel (PCV), 1F-2

January 23, 2012

Tokyo Electric Power Company

TEPCO 東京電力

1. Objective and items done

【Objective】

- **Grasp the status inside the PCV and gather data directly (temperature and water level) in order to supplement continuous monitoring maintenance of cold shutdown state.**
- **By grasping the status and gathering data using existing technology, get basic data for future planning for investigation & research and find matters to be developed.**

【Items done】

Make a hole to the penetrating part of PCV (X-53 penetration, 1FL, R/B), insert devices and conduct below investigation.

	Items for investigation	Devices
(1)	Check the status inside the PCV by remote visual inspection	Borescope
(2)	Directly check the temperatures of PCV inside and accumulated water※1	Thermo couple
(3)	Check water surface in the PCV※1	Borescope

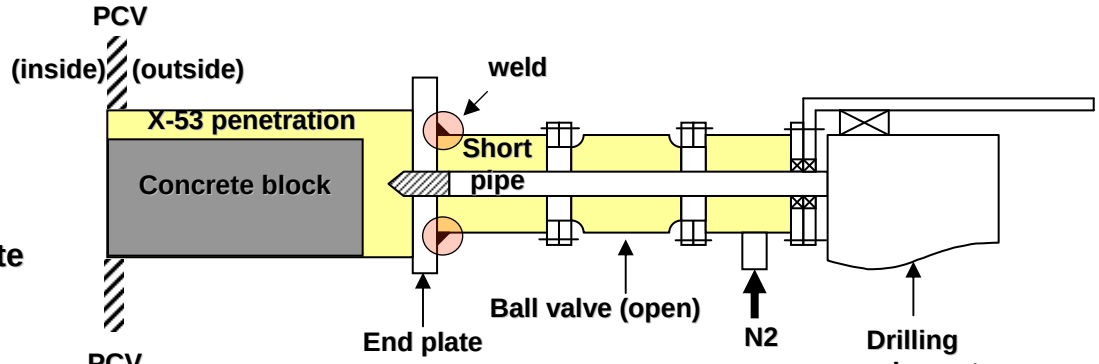
※1 Cannot be checked if the water level / visibility is low

2. Outline of the work (making a hole – checking inside the PCV)

Ⅰ. Make a hole (on January 17)

①Weld a short pipe to X-53 penetration

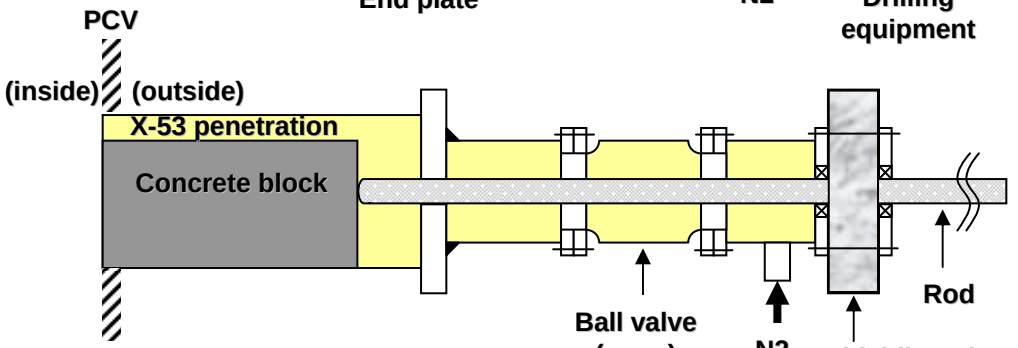
②Attach a valve spool and a drilling equipment, and make a hole to the end plate



Ⅱ. Drop the block (on January 17)

Attach a shielding plate to the flange, insert a rod and drop the concrete block

【drill and drop the block】
Work done: January 17
Maximum exposure dose: 3. 03mSv
Number of workers: 54

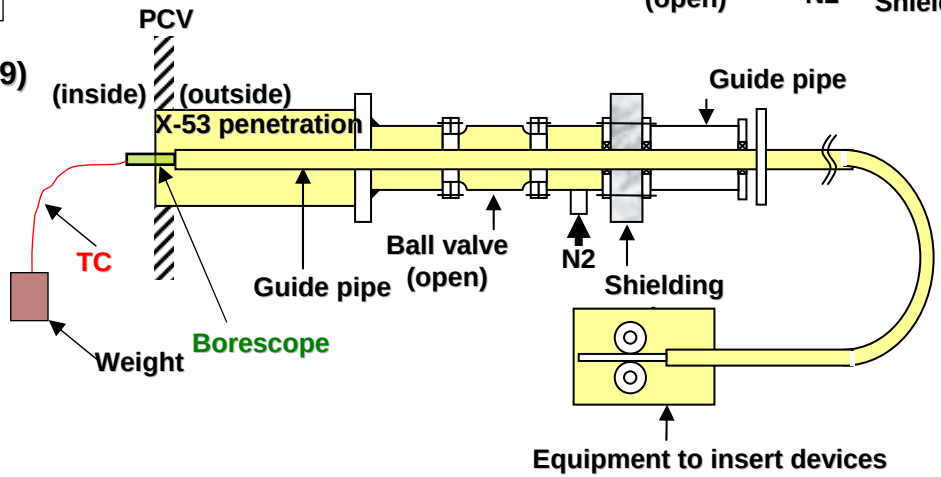


Ⅲ. Check inside the PCV (on January 19)

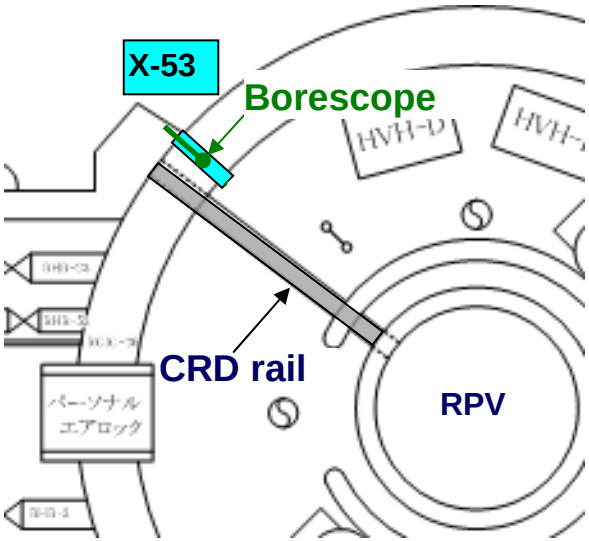
①Remove the end plate and attach the flange for the guide pipe

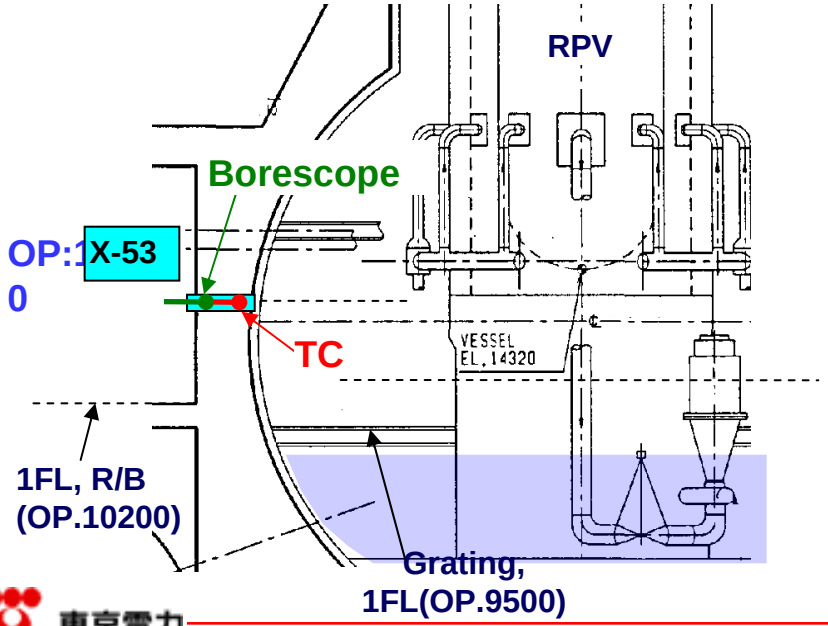
②Insert a borescope and check inside

【check inside】
Work done: January 19
Maximum exposure dose: 3. 07mSv
Number of workers: 28

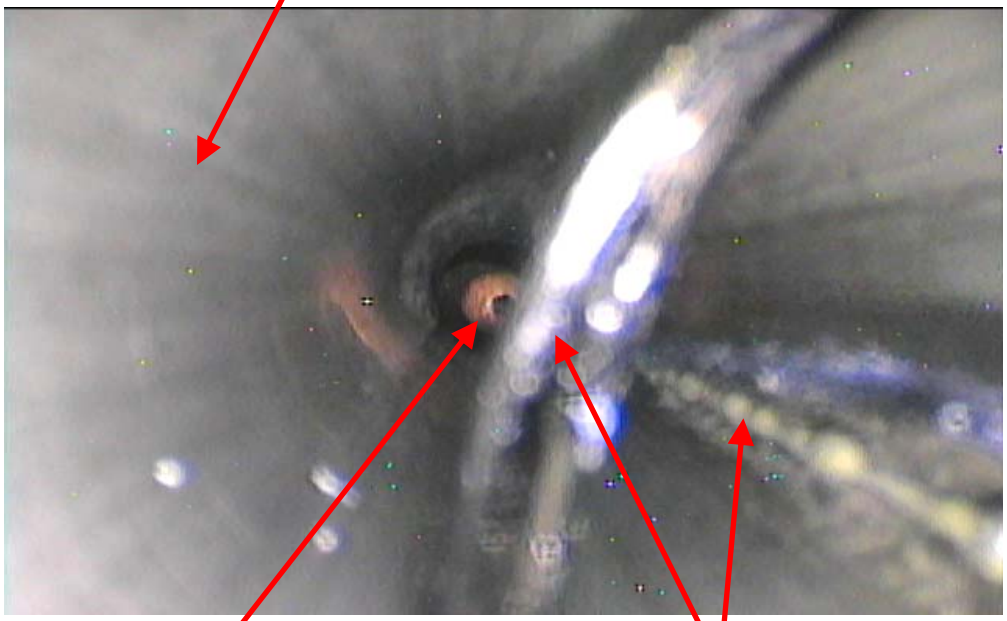


3. Photos inside of PCV, 1F-2①





Guide pipe
(inside diameter 13mm)

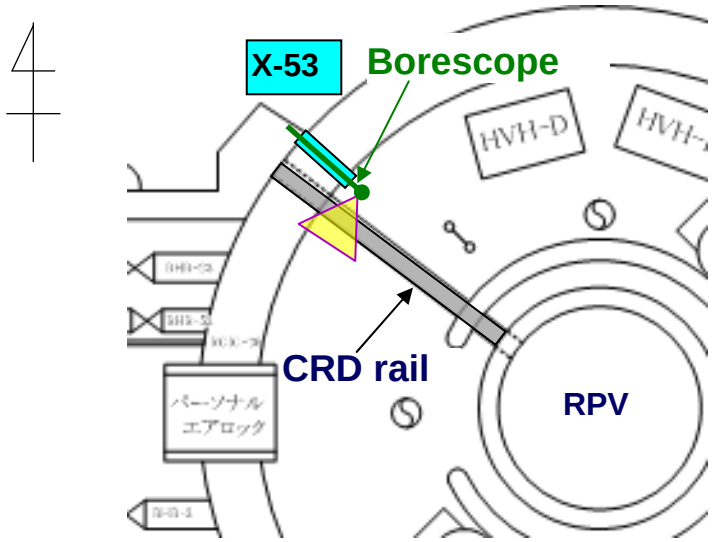


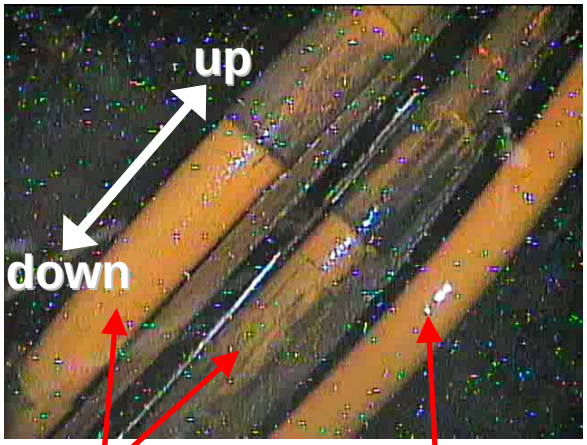
Weights to pull the thermo couple into the dry well

Thermo couple

Inside the guide pipe located in X-53 penetration
(Before the borescope enters the PCV)

3. Photos inside of PCV, 1F-2②



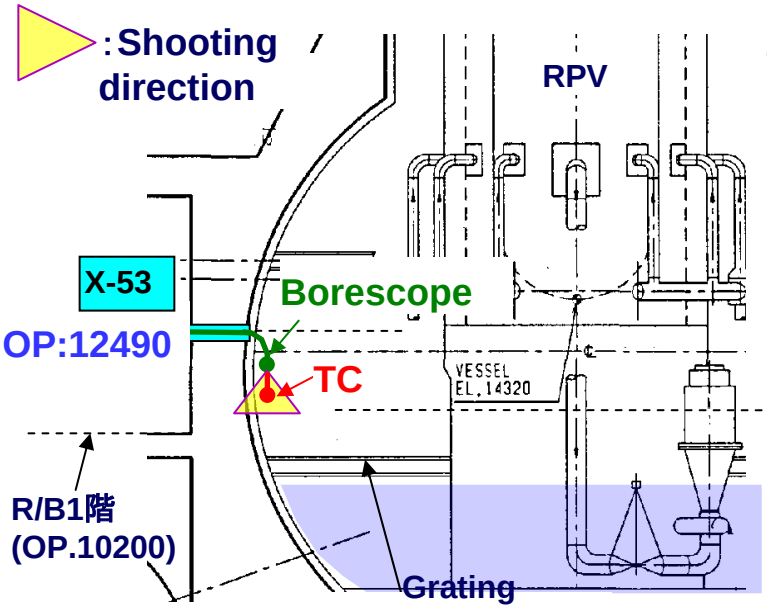


Neutron flux monitoring cable pipe

IA (Instrument Air-system)Pipe(gauge: 25A)

Support

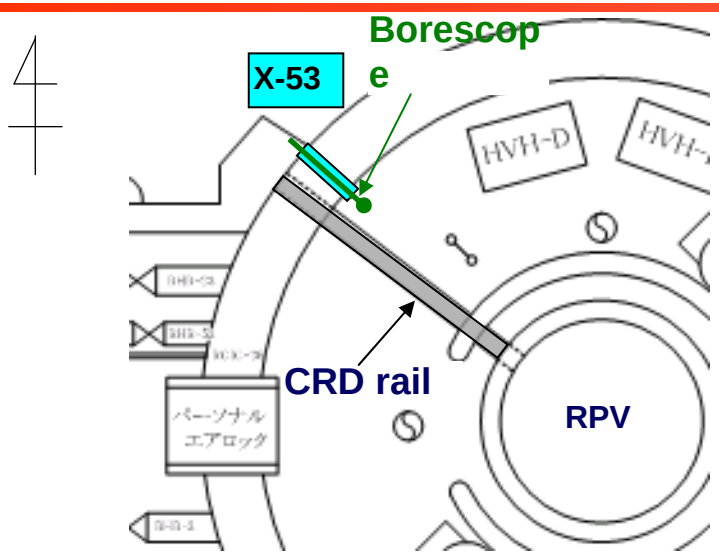
IA Pipe

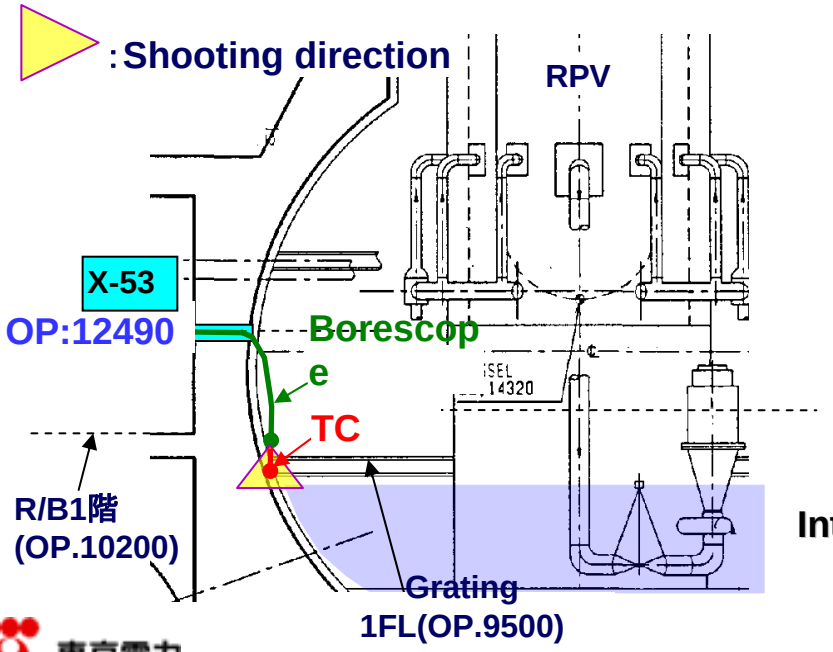


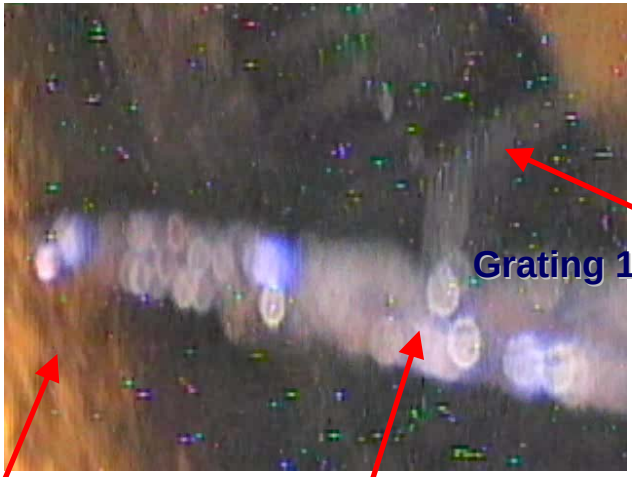
Deposit

Internal wall of PCV

3. Photos inside of PCV, 1F-2③

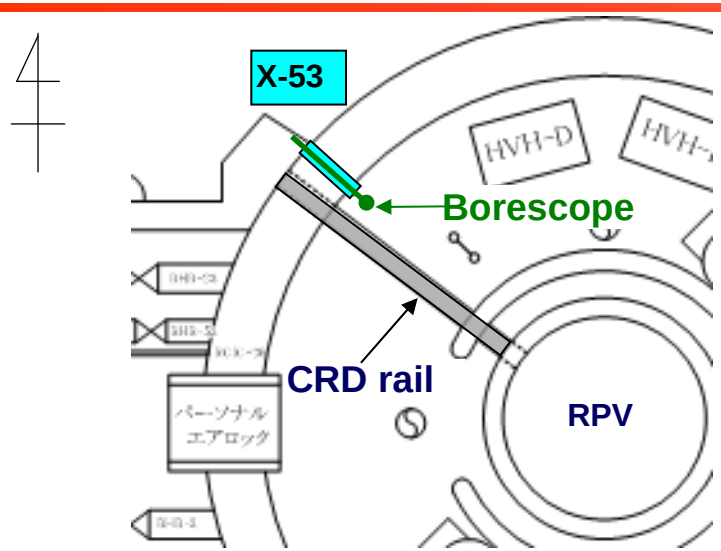


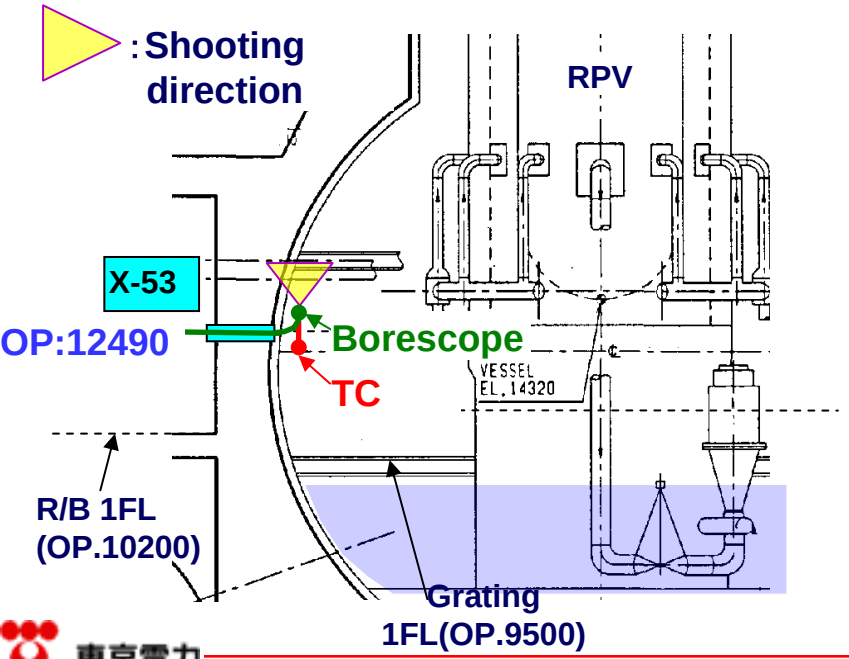


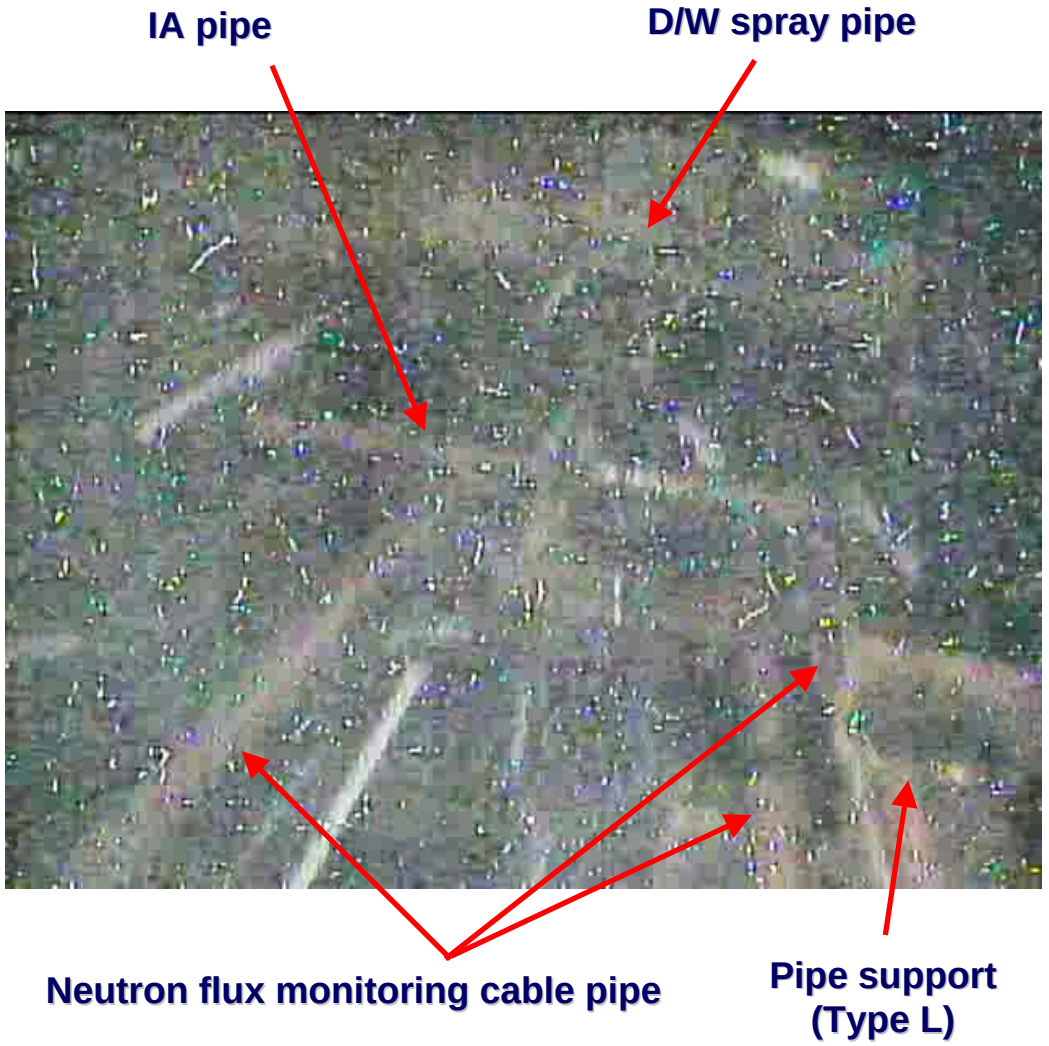


Around the grating, 1FL, Dry well

3. Photos inside of PCV, 1F-2④

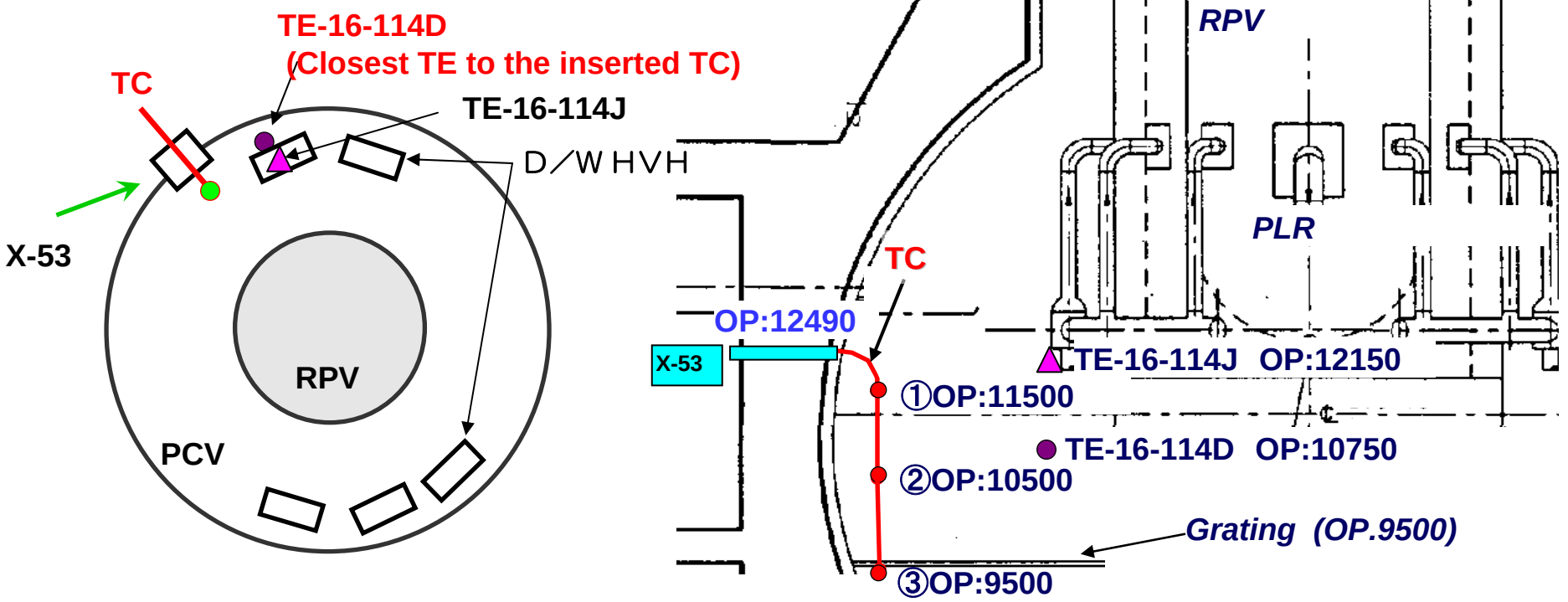






Looking up from X-53 penetration

4. Comparison of temperature with the main thermometer)



Temperature inside the PCV	Comparison with the main thermometer
① (OP11500)44.7℃	**We observed similar temperature with main thermometers nearby.**
② (OP10500)44.7℃	TE-16-114D(return air D/W HVH cooler： OP10750(72° direction) 42.6℃(10:00 AM) TE-16-114J(supply air D/W HVH cooler：OP12150(73° direction) 45.1℃(10:00 AM)
③ (OP9500) 45.7℃	

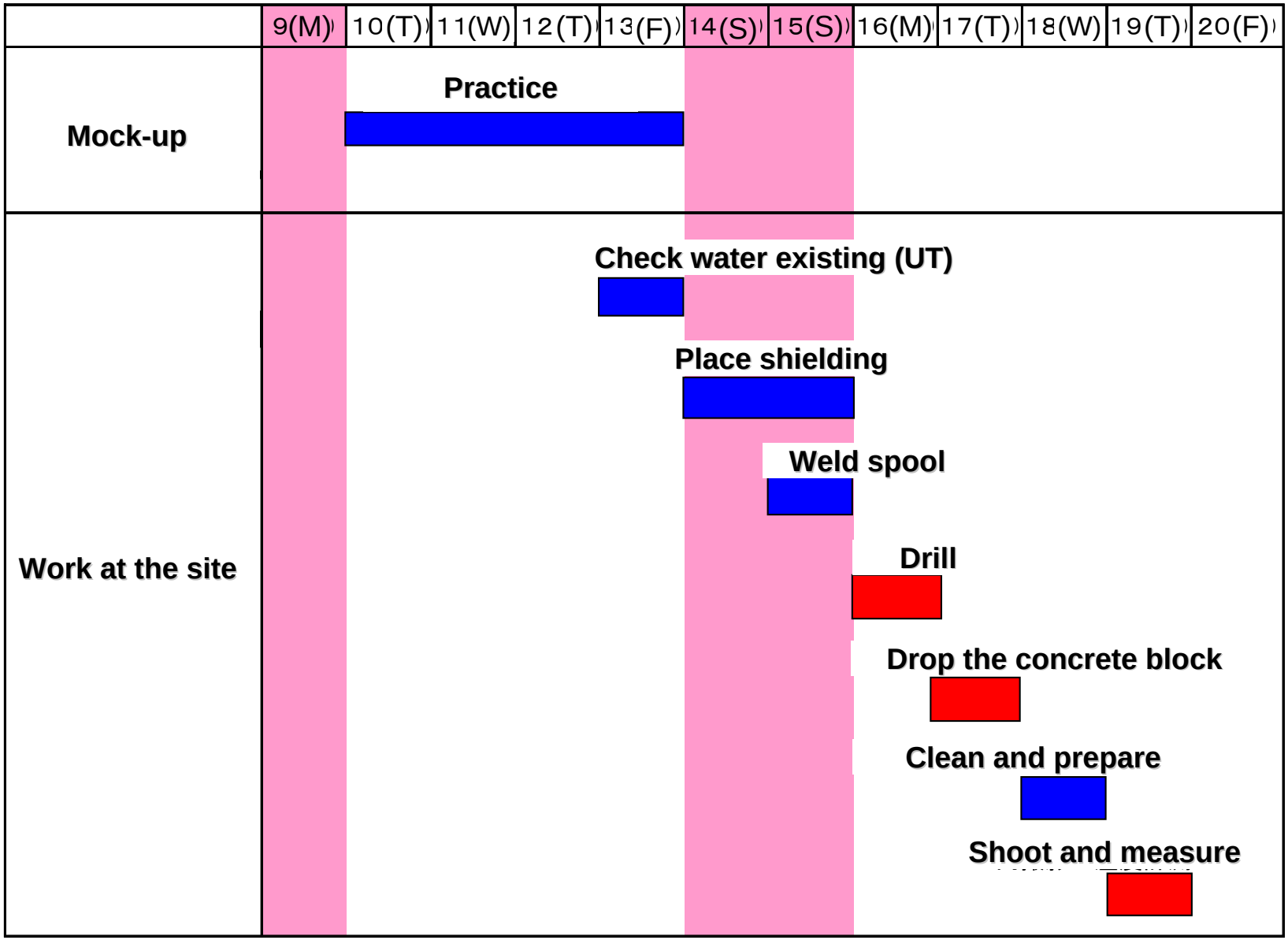
5. Summary

- The visibility was extremely low (tens of cm) as numerous water drops were falling from above. We could not take similar quality pictures as Unit 5. We could see the internal wall of the PCV (with reddish brown deposits), part of piping, part of support, part of OP9500 gratings.

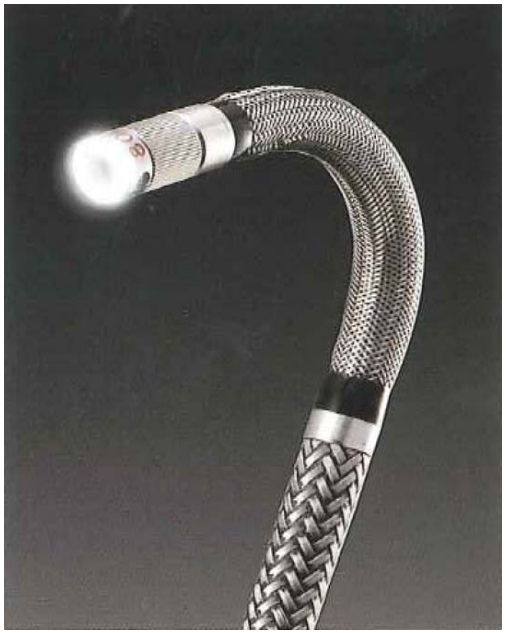
- The atmospheric temperature in the PCV was around 45 Celsius as it was always measured.

- We assumed that the water level in the PCV was around 9500～OP10000. But there was no water at OP9500 gratings (water surface was below)

6. Schedule


9(M)
10(T)
11(W)
12(T)
13(F)
14(S)
15(S)
16(M)
17(T)
18(W)
19(T)
20(F)
Mock-up
Practice
Work at the site
Check water existing (UT)
Place shielding
Weld spool
Drill
Drop the concrete block
Clean and prepare
Shoot and measure

Outline of the borescope (reference)



<Specification>

External diameter of the borescope	Φ8.5mm
Length of the borescope	10m(inserted to PCV: 2m)
Temperature range	～100℃(air)、～30℃(water)
Radiation resistance	1000Gy