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Results of Soundness Inspection of Unit 2 TIP Guide Pipe for the Investigation of the Reactor and Thermometer Installation

March 1, 2013

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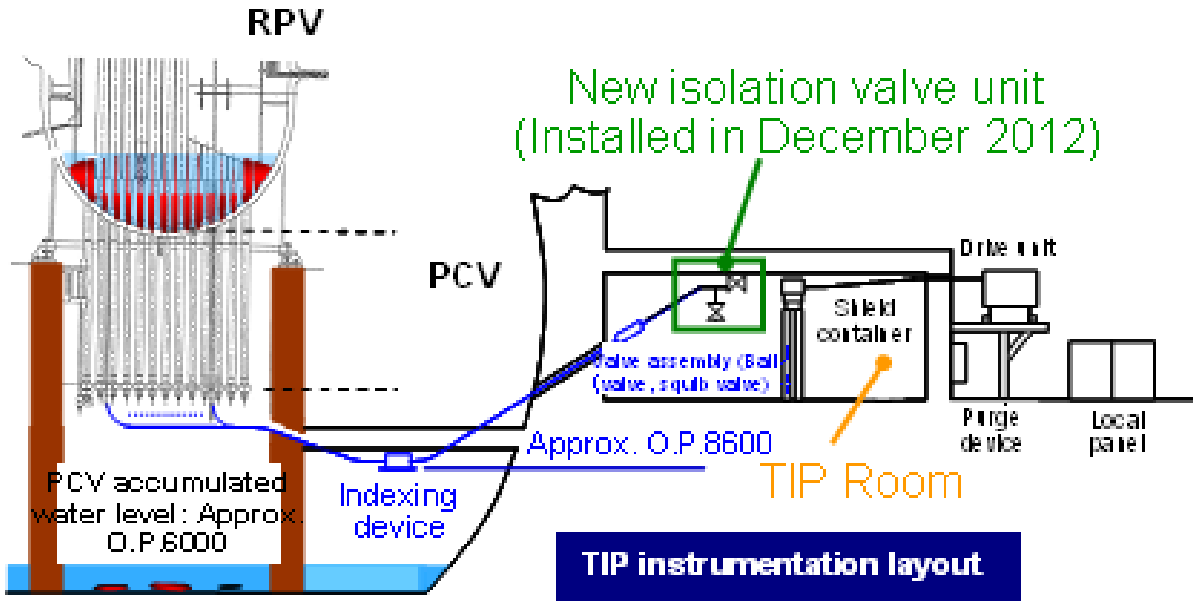
Purpose and Overview

Purpose

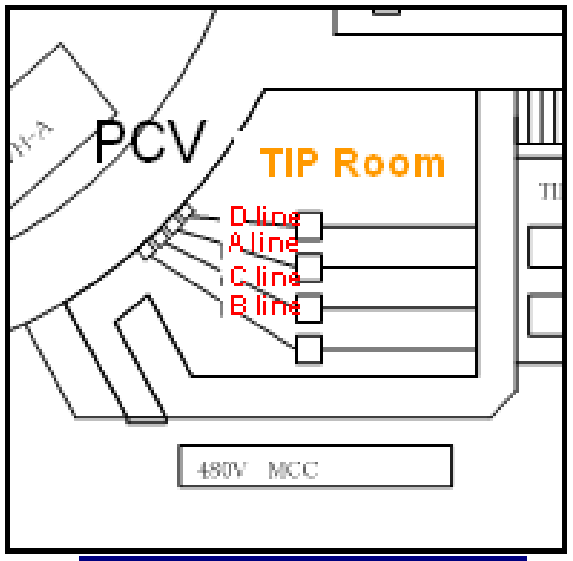
The soundness of Unit 2 TIP guide pipe will be inspected in order to determine the feasibility of investigating the inside of the reactor utilizing the TIP guide pipe and installing a thermometer in the TIP guide pipe.

Overview

Insert a fiberscope into the TIP guide pipe to inspect its soundness (check for clogging and damages) based on the acquired images.



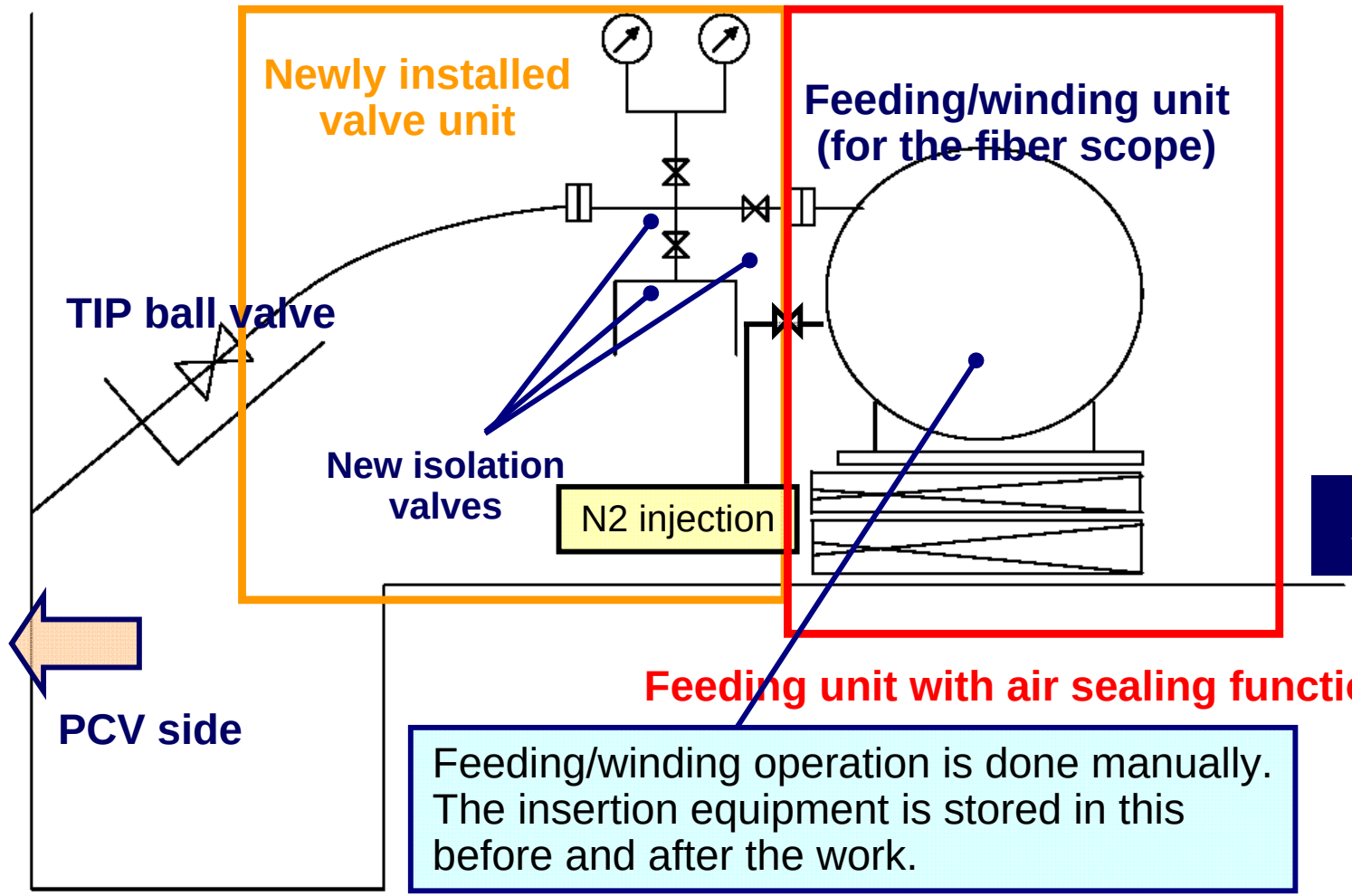
TIP instrumentation layout

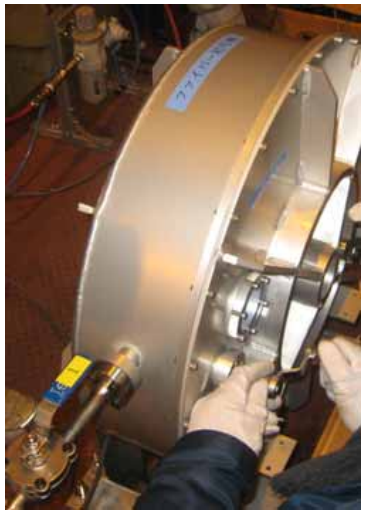


TIP Room layout

2. Equipment Overview

The feeding unit with air sealing function is connected with the new isolation valve unit when inserted. For the purpose of isolating from the RPV side, nitrogen is injected into the airtight container while the feeding unit is inserted into the guide pipe. Four feeding/winding units will be prepared for the fiberscope in order to allow for checking other guide pipes in the case that the winding function fails on one unit.





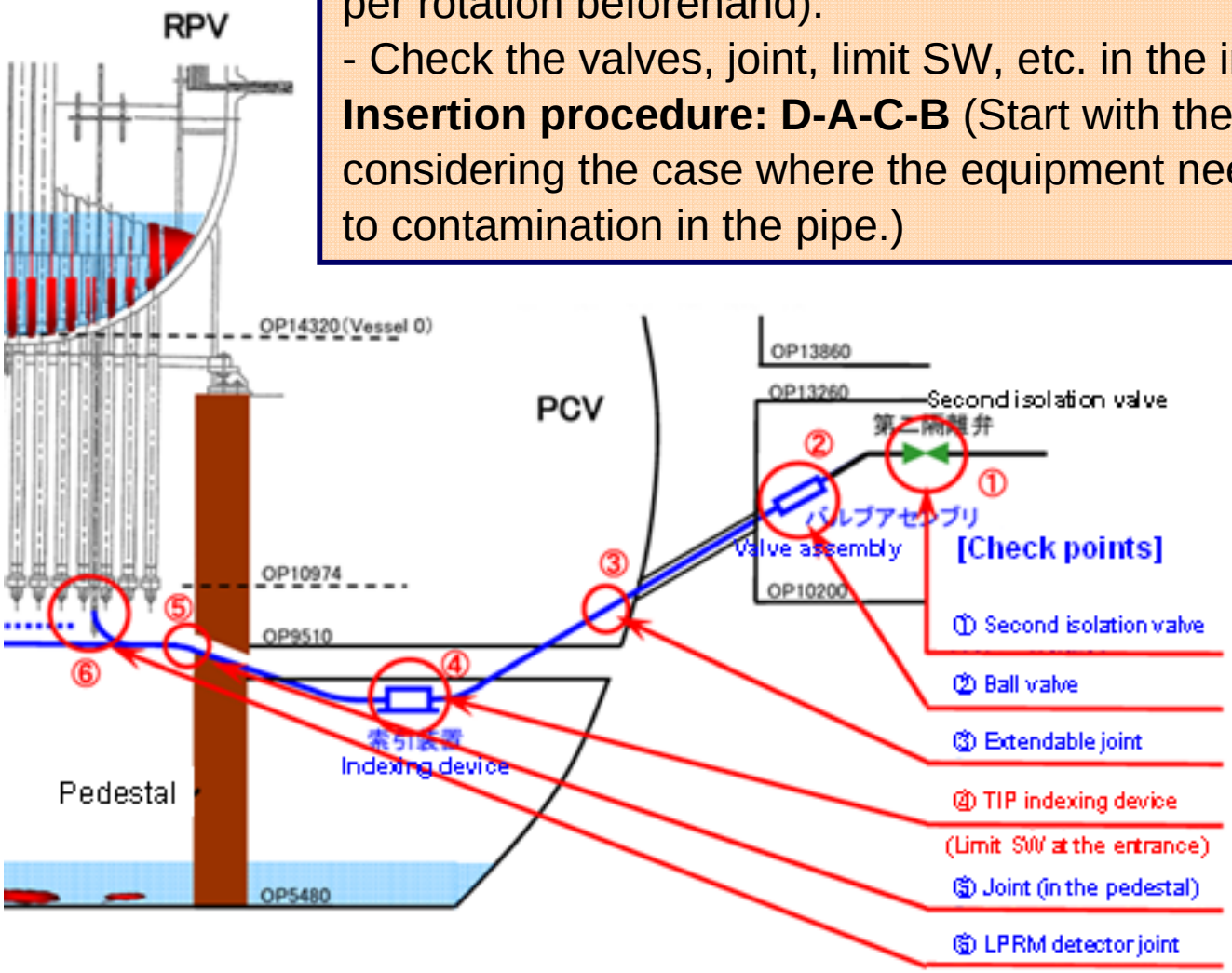
Appearance of the feeding/ winding unit for the fiberscope

Fiberscope (ϕ6mm)

3. Soundness Inspection Procedure

Ways to confirm the feeding length
- Visually confirm the marks put in the interval of 5m.
- Check the number of times the handle rotates (Measure the feeding length per rotation beforehand).
- Check the valves, joint, limit SW, etc. in the images.

Insertion procedure: D-A-C-B (Start with the pipe in the back of the TIP Room considering the case where the equipment needs to be moved or removed due to contamination in the pipe.)



Judgment on work termination

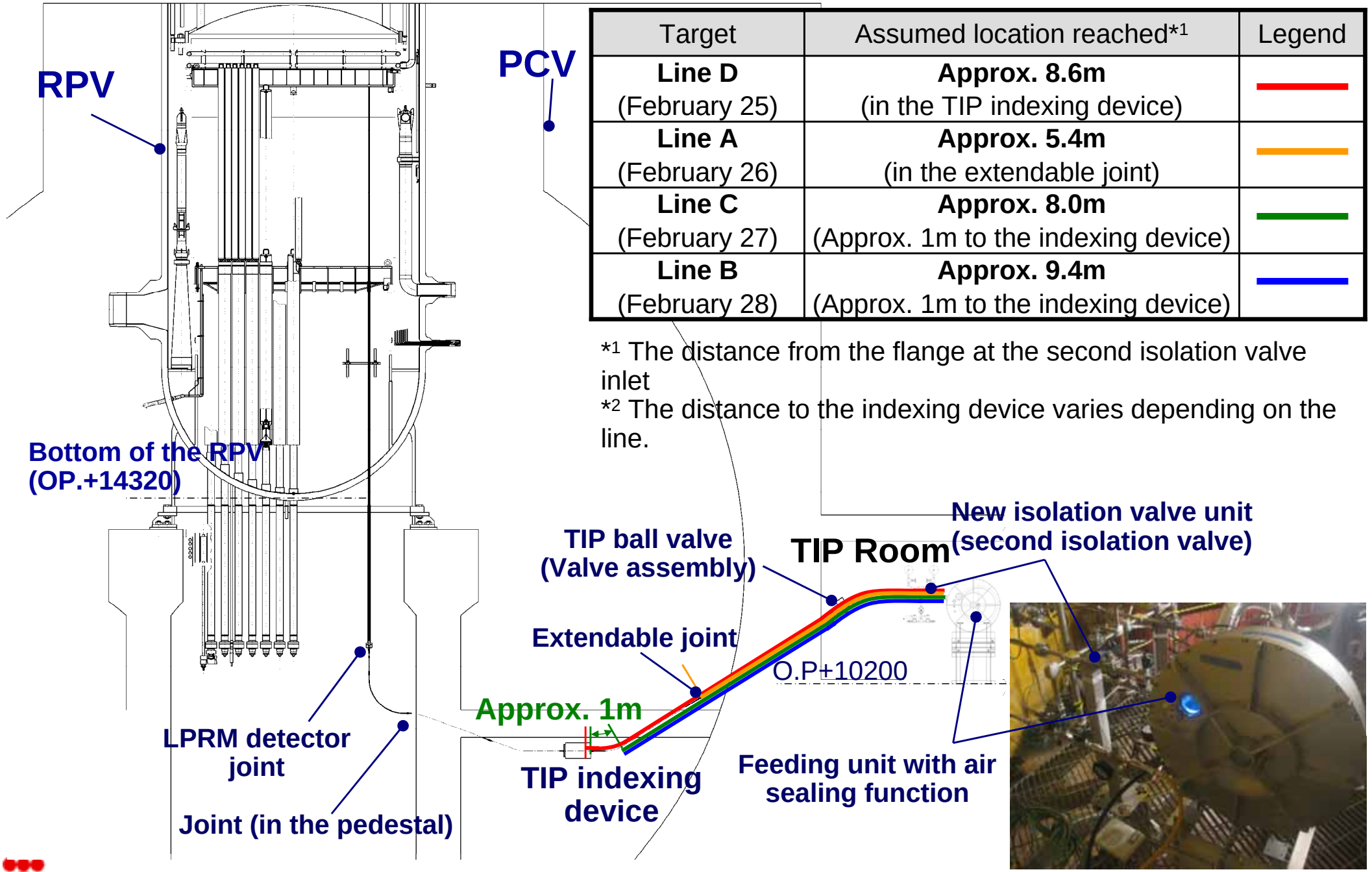
Terminate the work and withdraw from the TIP Room if the atmosphere dose rate in the work area exceeds 3mSv/h or the surface dose near the penetration exceeds 30mSv/h.

4. Results (February 25-28)

Target	Assumed location reached*1	Legend
Line D (February 25)	**Approx. 8.6m** (in the TIP indexing device)	
Line A (February 26)	**Approx. 5.4m** (in the extendable joint)	
Line C (February 27)	**Approx. 8.0m** (Approx. 1m to the indexing device)	
Line B (February 28)	**Approx. 9.4m** (Approx. 1m to the indexing device)	

*1 The distance from the flange at the second isolation valve inlet

*2 The distance to the indexing device varies depending on the line.

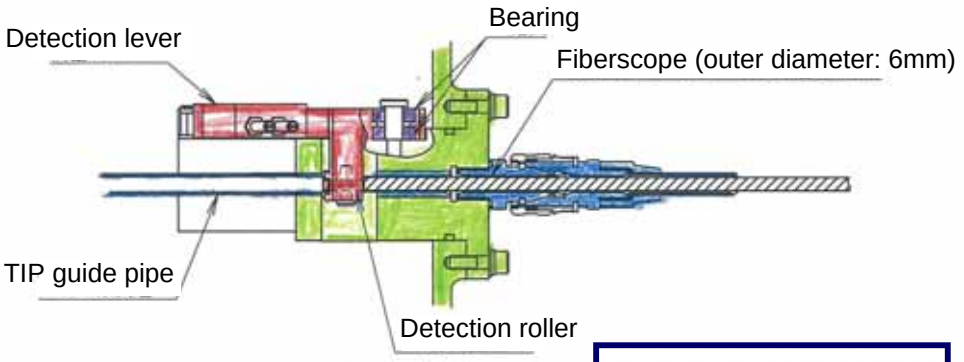


5-1. Image Acquired When the Fiberscope Could not be Inserted Any Further (Line D)

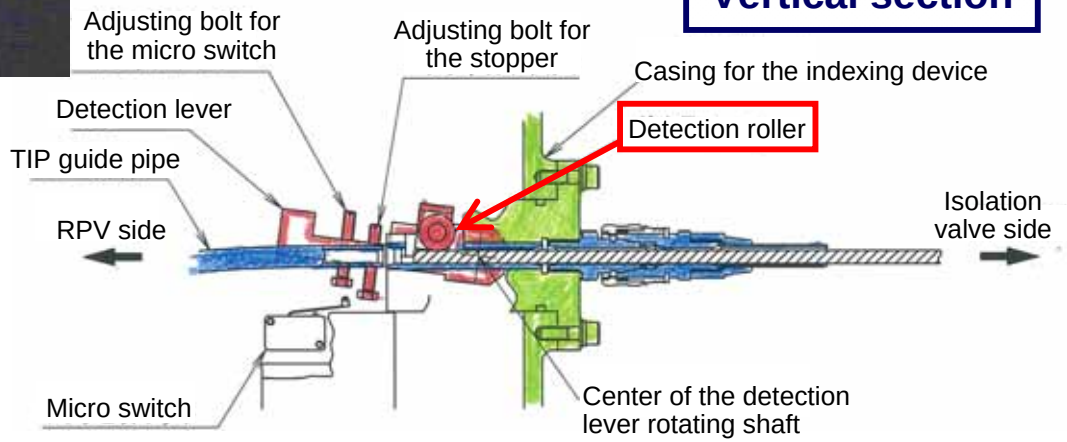
Assumed to be the roller of the TIP indexing device limit switch

The fiberscope could not be inserted any further due to the limit switch of the TIP indexing device not pressed up

Horizontal section



Vertical section

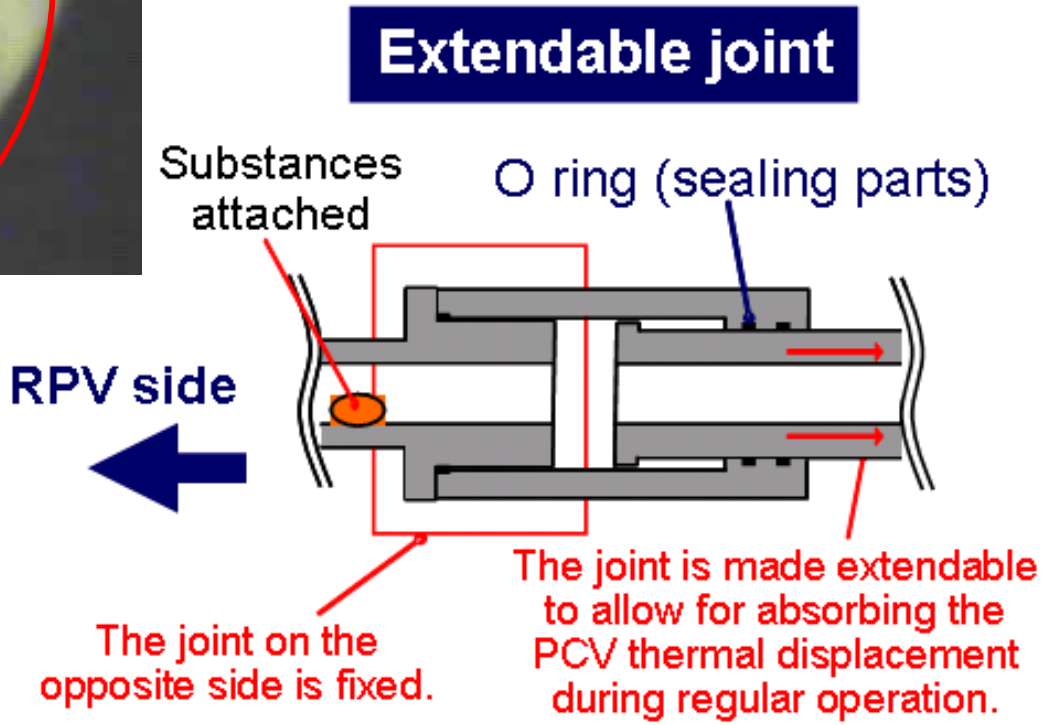


Limit switch of the TIP indexing device

5-2. Image Acquired When the Fiberscope Could not be Inserted Any Further (Line A)

Substances attached on the inside surface of the pipe

The fiberscope could not be inserted any further because of the substances attached on the inside surface of the pipe.



5-3. Image Acquired When the Fiberscope Could not be Inserted Any Further (Line C)

The fiberscope could not be inserted any further because of the substances attached on the inside surface of the pipe.

Substances attached on the inside surface of the pipe

As the reflection of the fiberscope light was seen in the entire TIP guide pipe, it is assumed that substances are blocking the whole guide pipe.

5-4. Image Acquired When the Fiberscope Could not be Inserted Any Further (Line B)

The fiberscope could not be inserted any further because of the substances attached on the inside surface of the pipe.

As the reflection of the fiberscope light was seen in the entire TIP guide pipe, it is assumed that substances are blocking the whole guide pipe.

6. Evaluation Results and Future Plans

- **Results of inspection of the inside of the TIP guide pipe**

As a result of soundness inspection of the TIP guide pipe, the fiberscope could not be inserted all the way in all four lines.

- **Reasons that the fiberscope could not be inserted further**

1. Substances attached on the inside of the TIP guide pipe
2. The roller of the TIP indexing device limit switch not being pressed up

- **Evaluation results**

Considering the current conditions of the TIP guide pipe, it has been judged that endoscope and thermocouple cannot be inserted.

- **Future plans**

Regarding the two reasons mentioned above, the feasibility of the following measures will be considered.

1. Removal of the substances stuck inside the guide pipe
2. Ways to press up the limit switch roller