

# Leakage inside Temporary Warehouse for Desalination System (Reverse Osmosis Membrane) RO-3

<Reference>  
October 9, 2013  
Tokyo Electric Power Company

## [Outline]

- **Date and time of occurrence:** At around 9:35 AM on October 9, 2013
- **Site of occurrence:** Inside a temporary warehouse for the desalination system (RO-3)
- **Related conditions:**
  - (1) During construction work for replacing pipes inside the temporary warehouse with polyethylene (PE) pipes, the leakage occurred when a worker took off a joint (cam lock) of an irrelevant pressure-resistant hose by mistake (at around 9:35 AM).
  - (2) As a leakage detector gave an alert (at 9:48 AM), a TEPCO employee checked the inside of the temporary warehouse, and found a puddle of water on the floor surface (at 9:55 AM).
  - (3) The upstream pump (the waste liquid RO supply pump), which was then performing cycle operation, was manually stopped (at 9:55 AM), and the valve was closed (at around 10:15 AM). Then, the joint was reconnected temporarily, which was followed by continuing slight leakage (at around 10:30 AM).
  - (4) The joint was properly reconnected (at 10:45 AM), and the leakage was confirmed to have stopped (at 10:50 AM).
- **Amount of leaked water:** (Provisional amount\*) Approximately 7m<sup>3</sup>, accumulated inside the dike and not leaked to the outside of the system.
  - \* The amount will be definite after the completion of collection of the leaked water.
- **Dose measurement results:**  $\gamma$  : 0.015[mSv/h] and  $\beta + \gamma$  : 1.2[mSv/h] (at the water surface)
- **Leakage spot:** RO-3 entrance-side pipe joint (cam lock)
- **Sampling results of the leaked water:**

• Cesium-134:	3.9 × 10 <sup>2</sup> Bq/L	• Antimony-125:	9.4 × 10 <sup>3</sup> Bq/L
• Cesium-137:	1.3 × 10 <sup>3</sup> Bq/L	• All- $\gamma$ :	1.3 × 10 <sup>4</sup> Bq/L
• Cobalt-60:	1.1 × 10 <sup>3</sup> Bq/L	• All- $\beta$ :	3.4 × 10 <sup>7</sup> Bq/L
• Manganese-54:	3.1 × 10 <sup>2</sup> Bq/L	• Total radioactivity:	3.4 × 10 <sup>7</sup> Bq/L

- **Cause: Under investigation**
- **Actions to be taken:**
  - (Handling of the leaked water)**
    - **The leaked water inside the RO-3 temporary warehouse is to be collected today (on October 9).**
    - **Decontamination inside the RO-3 temporary warehouse will be started tomorrow or later.**
  - (Soundness check at the location where the leakage occurred)**
    - **Tomorrow (on October 10), whether leakage occurs or not will be checked with water running inside and with the operational pressure applied.**
  - (Water treatment facility operation)**
    - **Water treatment operation using the desalination system (reverse osmosis membrane) RO-2 will be started tomorrow or later.**

## Confirmation Status of Body-surface Contamination

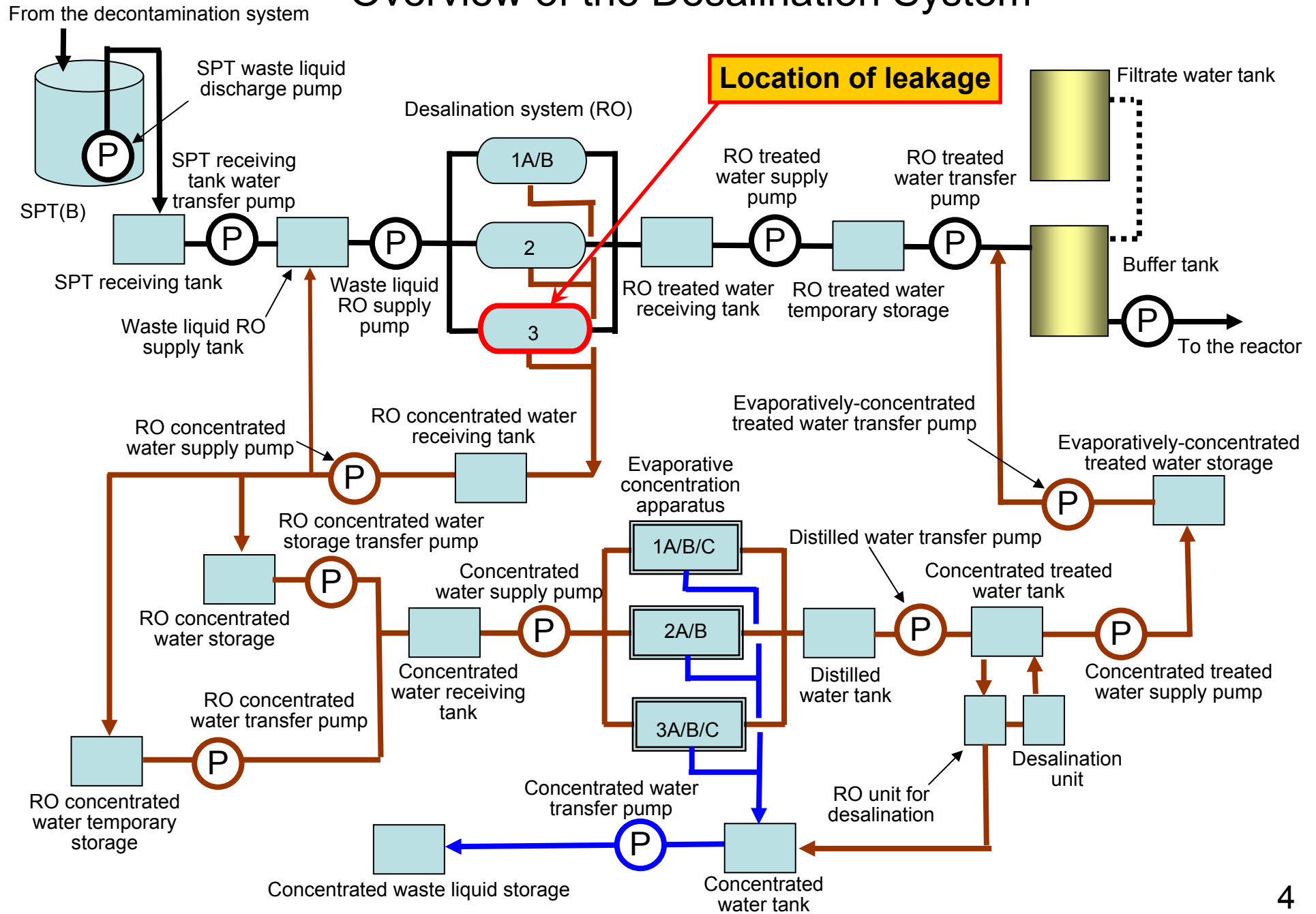
- A total of 11 workers consisting of 10 workers (cooperative company workers) for construction work and 1 worker (a cooperative company worker) for support were at the site. 6 of them were found to have contamination on their bodies.
- Contaminated parts found on their bodies were not higher than the necks, and no contamination was found on their faces.
- Resulting dose exposure (APD values) and contamination status are as follows.

Resulting dose exposure suffered by workers who dealt with RO leakage

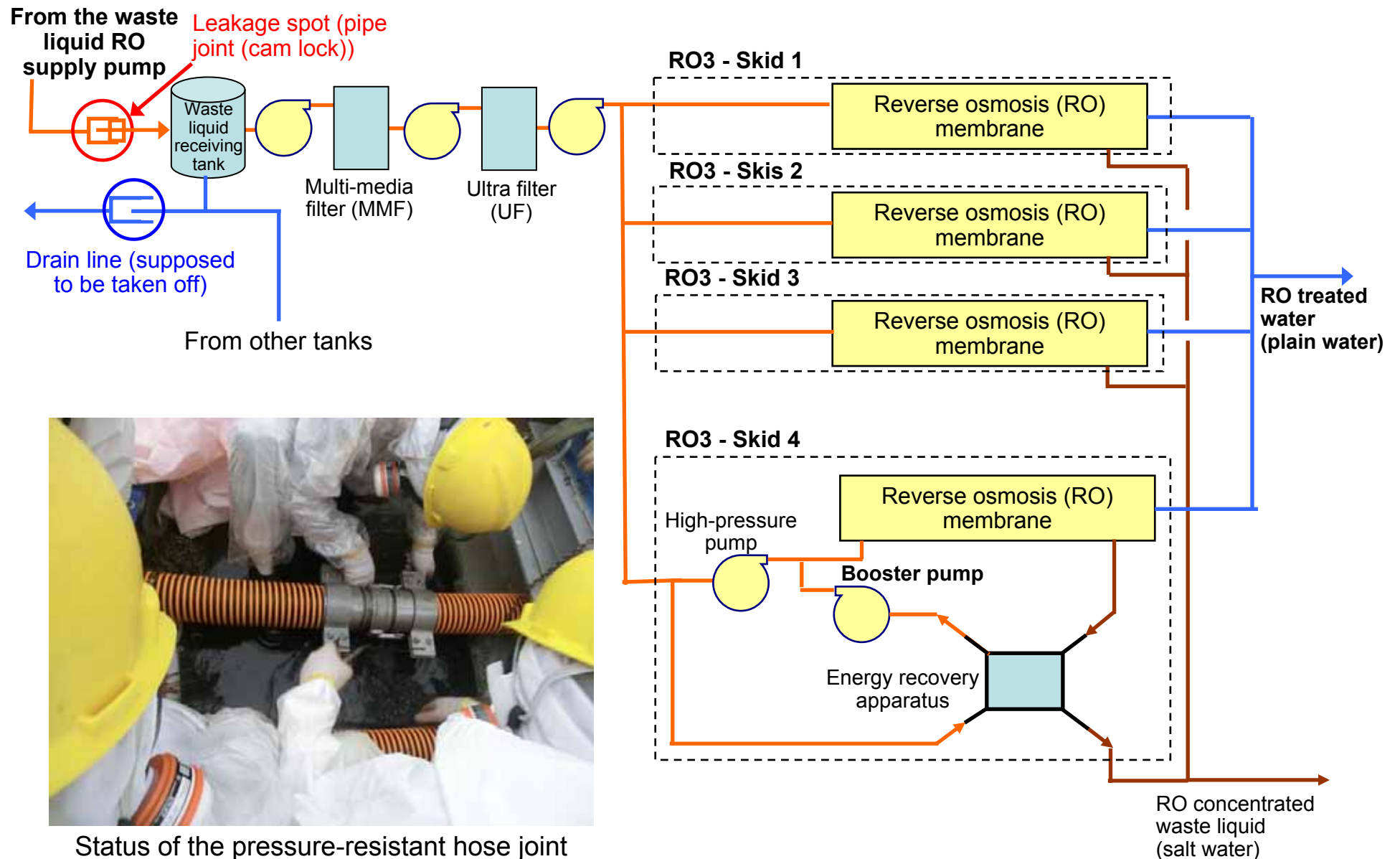
Cooperative company workers	$\gamma$	$\beta$	Body-surface contamination	Decontamination
A Worker	0.15	0.7	Yes	Completed
B Construction work leader	0.29	0.2	Yes	Completed
C Worker	0.15	1.2	Yes	Completed
D Worker	0.11	0.6	Yes	Completed
E Worker there for support	0.42	0.7	Yes	Completed
F Worker	0.12	0.2	Yes	Not completed*
G Worker	0.18	0.0	No	
H Worker	0.46	0.0	No	
I Worker	0.48	0.0	No	
J Worker	0.30	0.0	No	
K Worker	0.46	0.0	No	

\* Currently undergoing decontamination

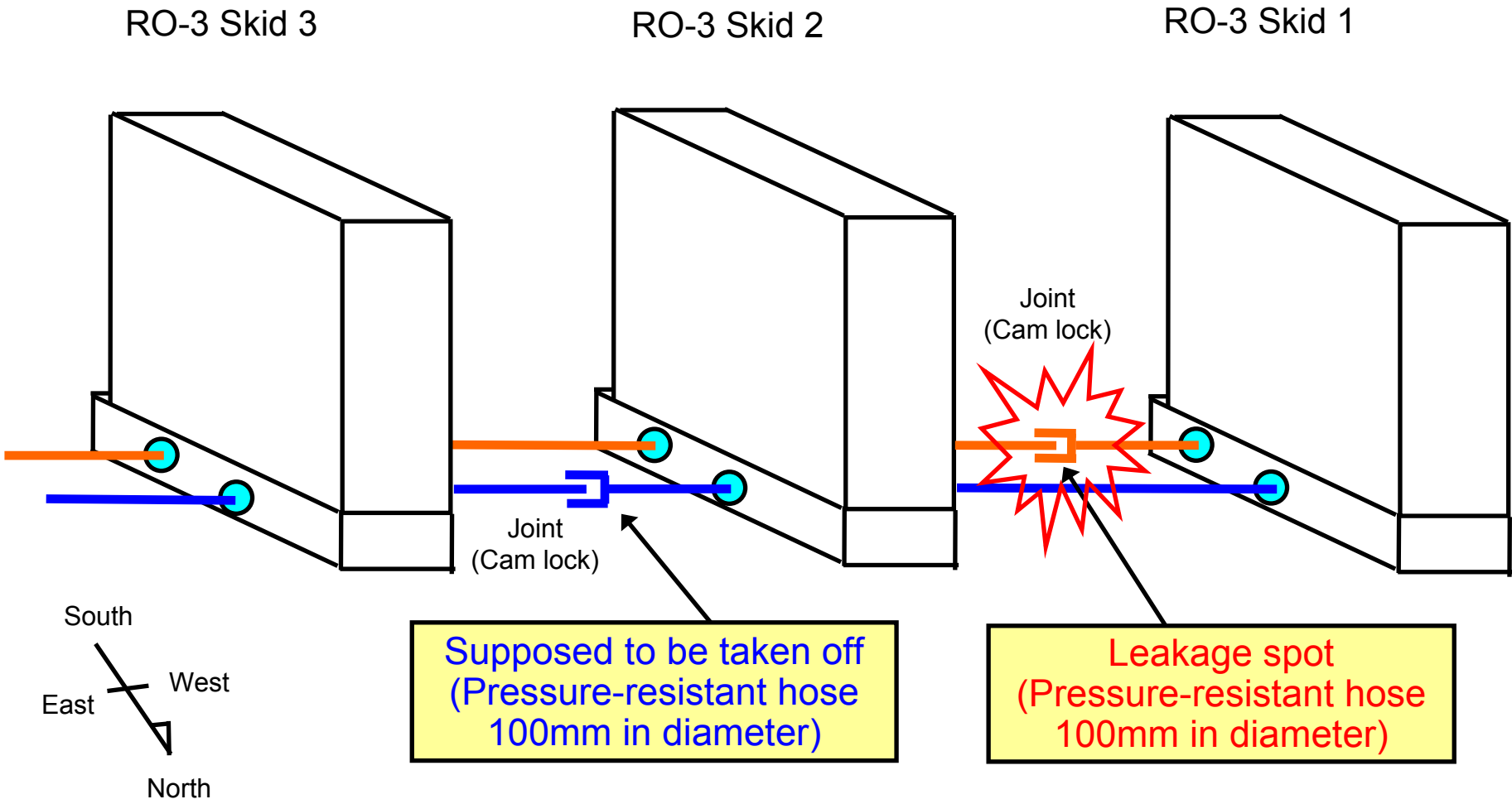
# Overview of the Desalination System



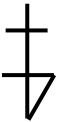
# Structures in RO-3 Temporary Warehouse and Leakage Spot



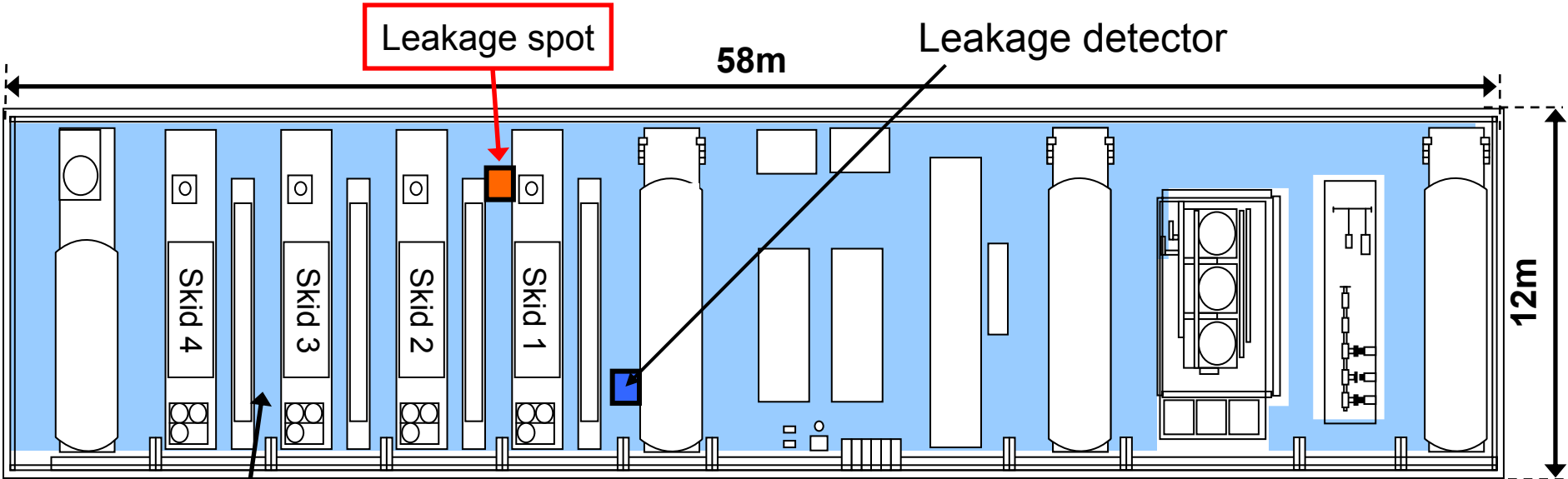
# How the Leakage Occurred inside RO-3 Temporary Warehouse



# Leakage-related Conditions inside RO-3 Temporary Warehouse



■ Desalination system (RO-3) temporary warehouse



Leaked water

Amounting to approximately 7m<sup>3</sup> (provisional value)