

Construction of Reliability

Nuclear Safety is the goal

Denis FLORY (IAEA, Deputy Director General)

Andre-Claude LACOSTE (ASN, Former Head)

Leonid Bolshov (RAS, IBRAE, Director)

Shojiro MATSUURA (JANSI, Chairman)

William D. Magwood (US-NRC, Commissioner)

IAEA Safety Fundamentals (SF-1)

Principle 1: Responsibility for safety

The **prime responsibility** for safety must rest with the person or **organization** responsible for facilities and activities that give rise to radiation risks.

Principle 2: Role of government

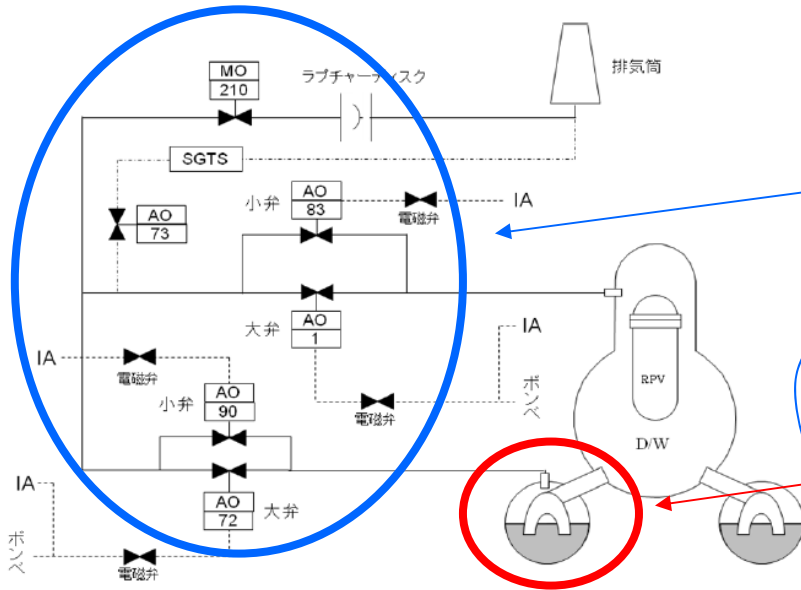
An effective legal and governmental framework for safety, including an independent regulatory body, must be established and sustained.

Principle 3: Leadership and management for safety

Effective leadership and management for safety must be established and sustained in organizations concerned with, and **facilities** and **activities** that give rise to, radiation risks.

Lessons Learned for Regulation System

- Malfunction of Emergency Management
 - Narrow Viewpoint Suggestions by Government
 - Lack of wide viewpoint preparedness
 - Lack of expert support
- Malfunction of Regulation
 - Objective of regulation was NOT Nuclear Safety (Just adherence to laws)
 - Mainly regulate the Low Risk or No Risk ones
 - Avoid risk informed regulation
 - Hardware existence check because of easy regulation.
 - Lack of comprehensive risk based decision



図IV-2-13 PCV ベント設備概要 (1号機)

Fukushima-Daiichi Unit#1

Emergency Vent

Hardened Vent

Filtered Vent (FCVS)

Radio-nuclei removal

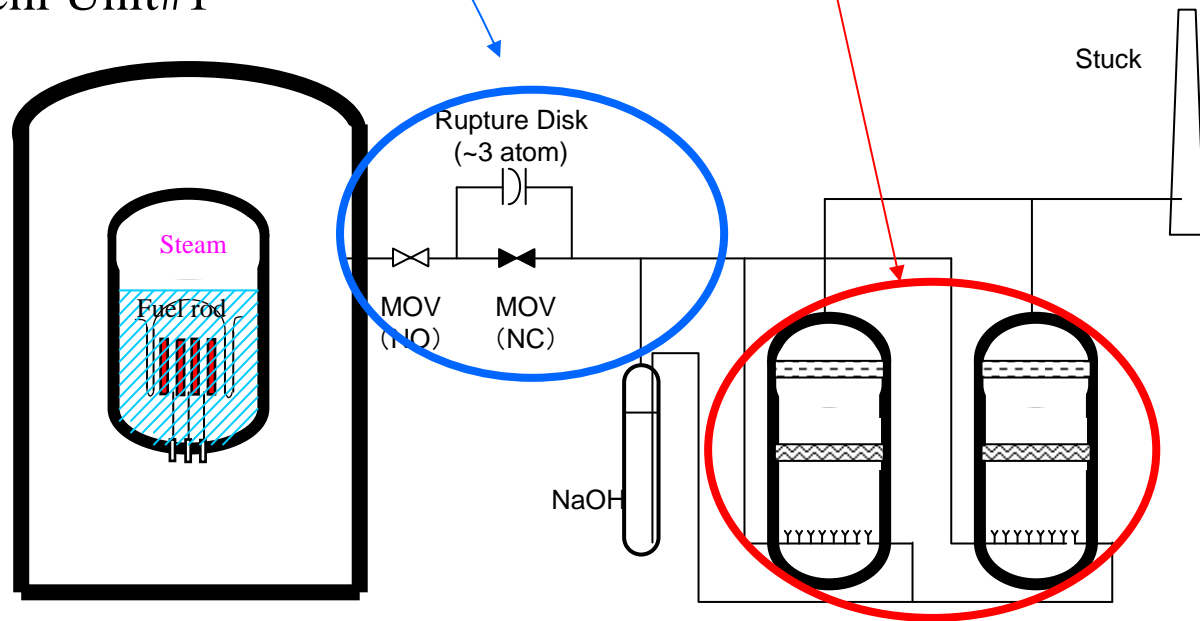
S/C scrubbing

Filtered Vent(FCVS)

Same function
for each factor

Quite different
for systems view

Lack of
Systems View



Swiss, Laibstadt NPP

Nuclear Safety; Reduce the comprehensive risk

Filtered Vent

EU: Independent Vent-line with filter system
The system do operate under SA conditions

Japan: S/C Scrubbing for filter, Hardened Vent for vent
Power supply was expected to be available

What are the differences?

Function: Same functions for both EU and Japan
(Japan assumed that Hardware should be available)

Systems: Quite different system for SA mitigation

Comprehensive Systems Viewpoint is important
Hardware (functions) availability has no meaning

Nuclear Safety

- Comprehensive Risk Reduction of NPP
- Defense-in-Depth Concept
- Expect Beyond Expectation events
- Improvement of Management System
- Continuous Improvement