

# Safeguards in action: IAEA at Rokkasho, Japan

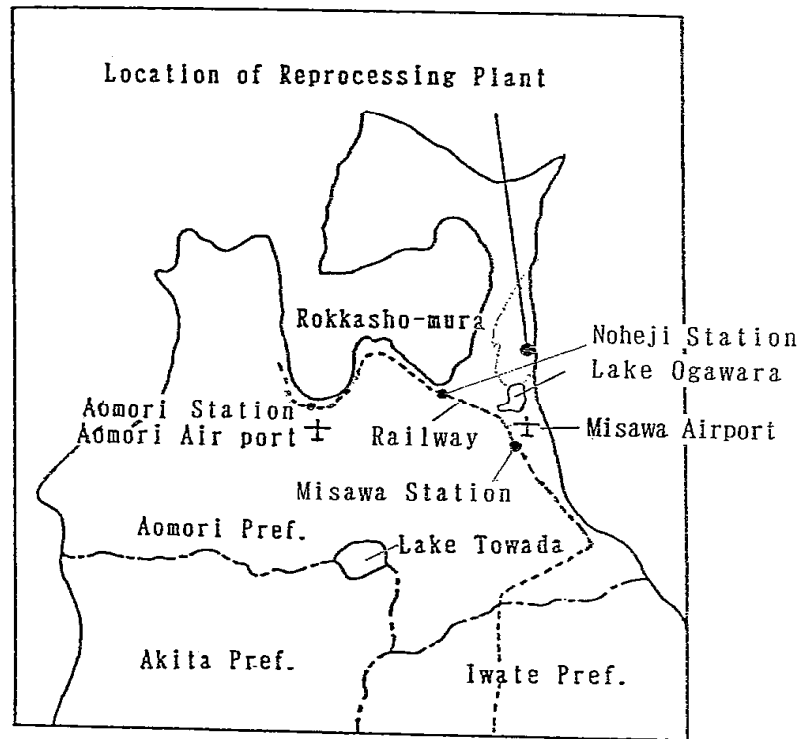
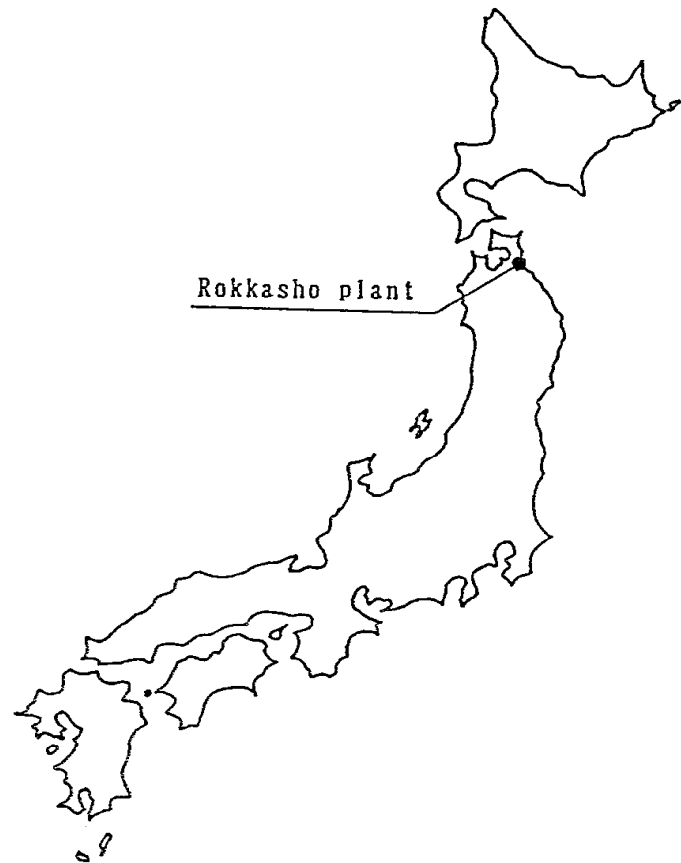


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**IAEA**

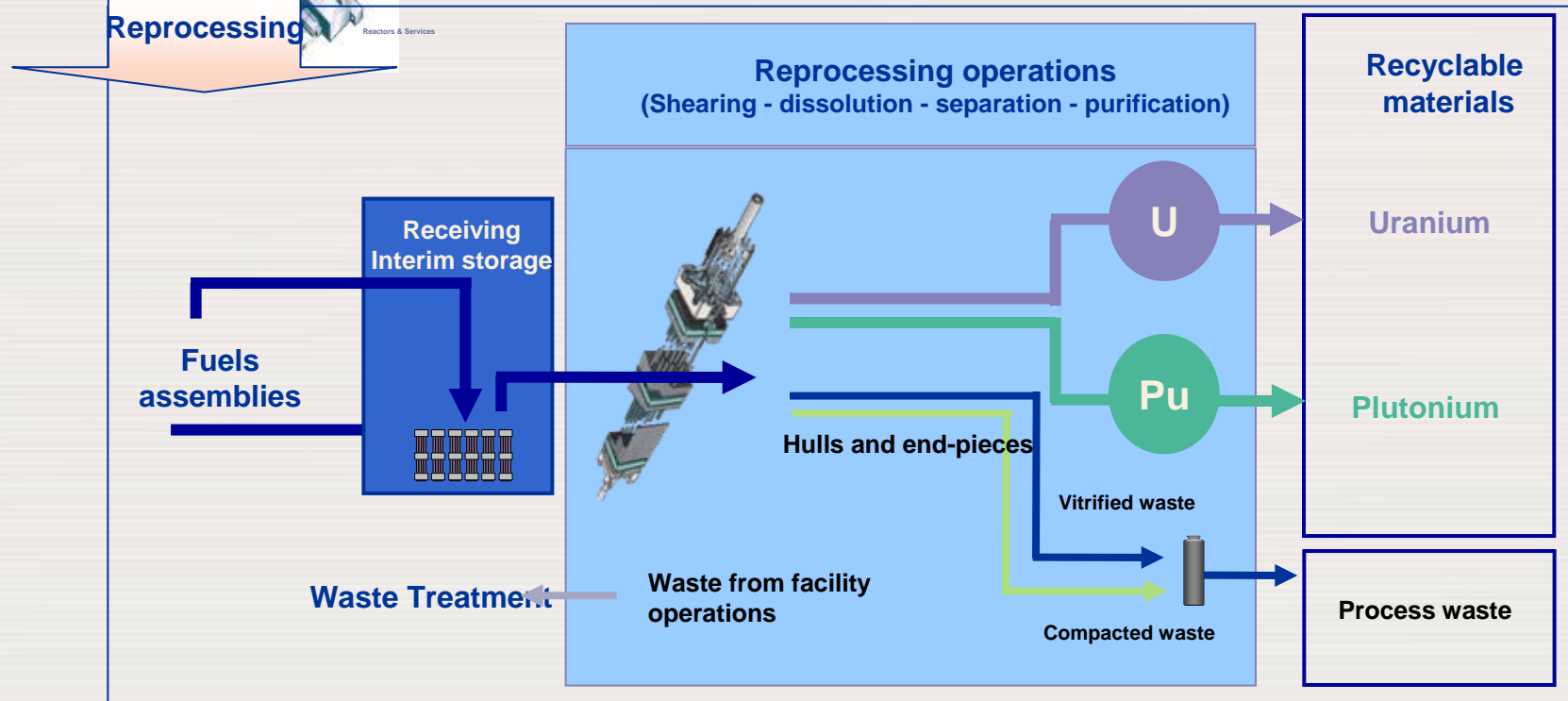
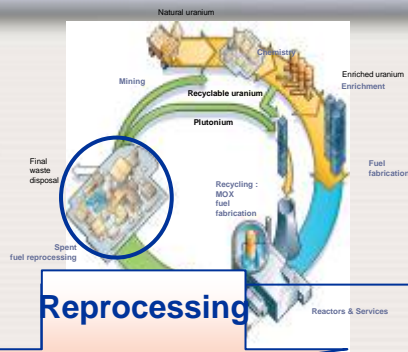
International Atomic Energy Agency



# OVERVIEW of RRP

- **Location:** Aomori Prefecture, Japan
- **Site Area:** 3,800,000 m<sup>2</sup>
- **Facilities:** 38 buildings (more than 20 process and storage buildings) with 1700 km of pipes (Main Process 700 km).
- **Capacity:**
  - Maximum Annual Reprocessing: 800 tons of Uranium or 8 tons of Plutonium.
  - Maximum Daily Reprocessing: 4.8 tons of Uranium
  - Storage Capacity for Plutonium: 30 tons
  - Storage Capacity for vitrified packages: 1440

# Reprocessing main steps



# Safeguards Challenges

- **Comprehensive Design Information Examination and Verification**
- **High throughput requires additional measures to increase the confidence about the absence of diversion and to confirm that the plant is operated as declared:**
  - Near Real Time Accountancy (NRTA)
  - Measurement/Monitoring within the MBAs
  - Activities at Other Strategic Points to confirm the Operational Status (random, short notice)
- **Limited resources imply to rely on unattended measurement and monitoring systems as well as on automated evaluation software**
- **The approach needs to rely on independent DA samples and analytical analyses (On Site Laboratory)**

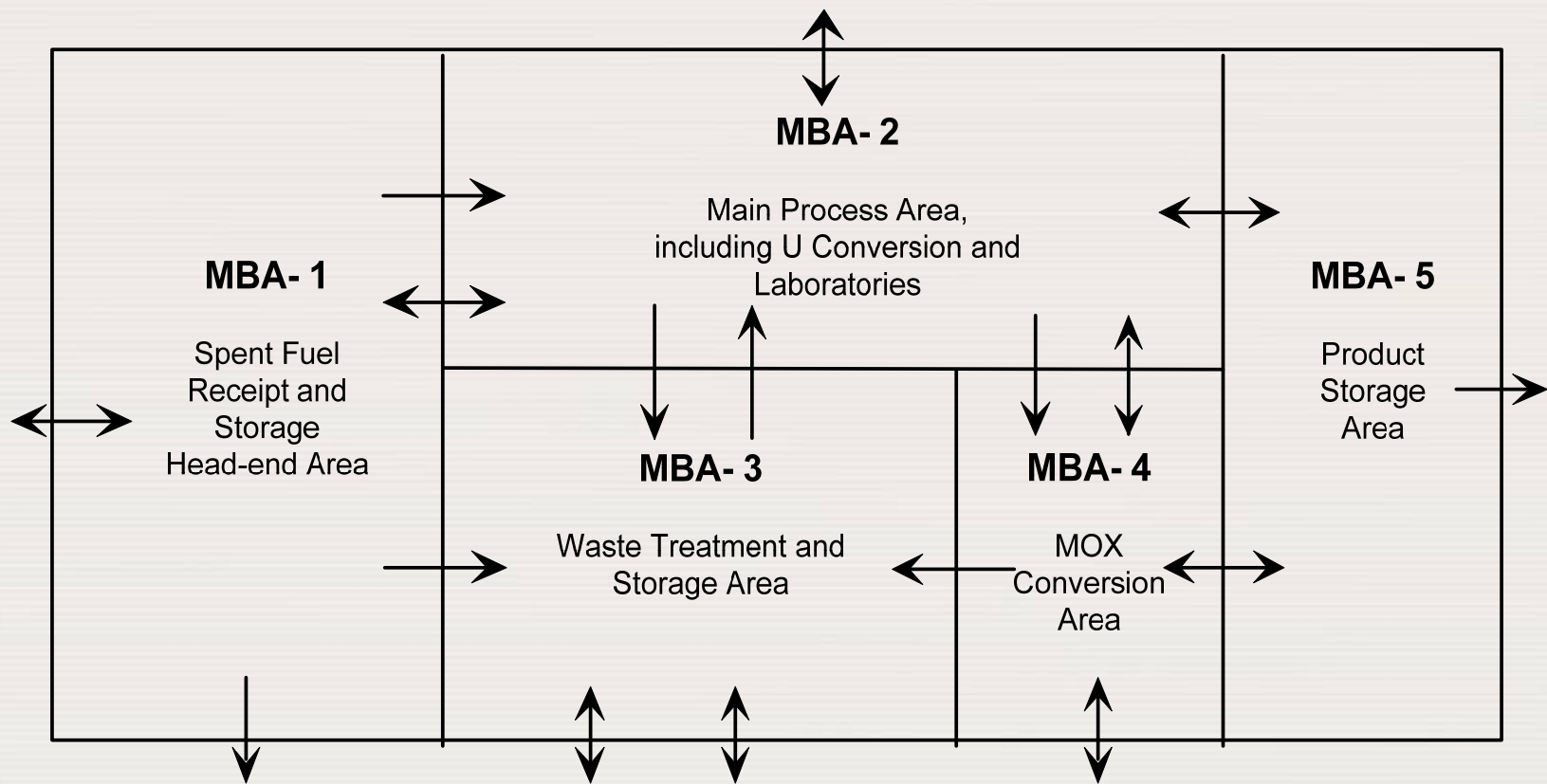
# Main aspects of Safeguards Approach

- Design information examination / design information verification
- Verification of inventory changes (100% in/out)
- Verification of interim inventory for timeliness
- Verification of physical inventory (annual) including evaluation of MUF/SRD
- Examination of operator records and reports

# Efficient Safeguards Approach

- Unattended measurement systems
- Integrated data collection and evaluation software
- On-site laboratory
- **Well trained inspectors !!!** 😊

# RRP Accountancy Structure

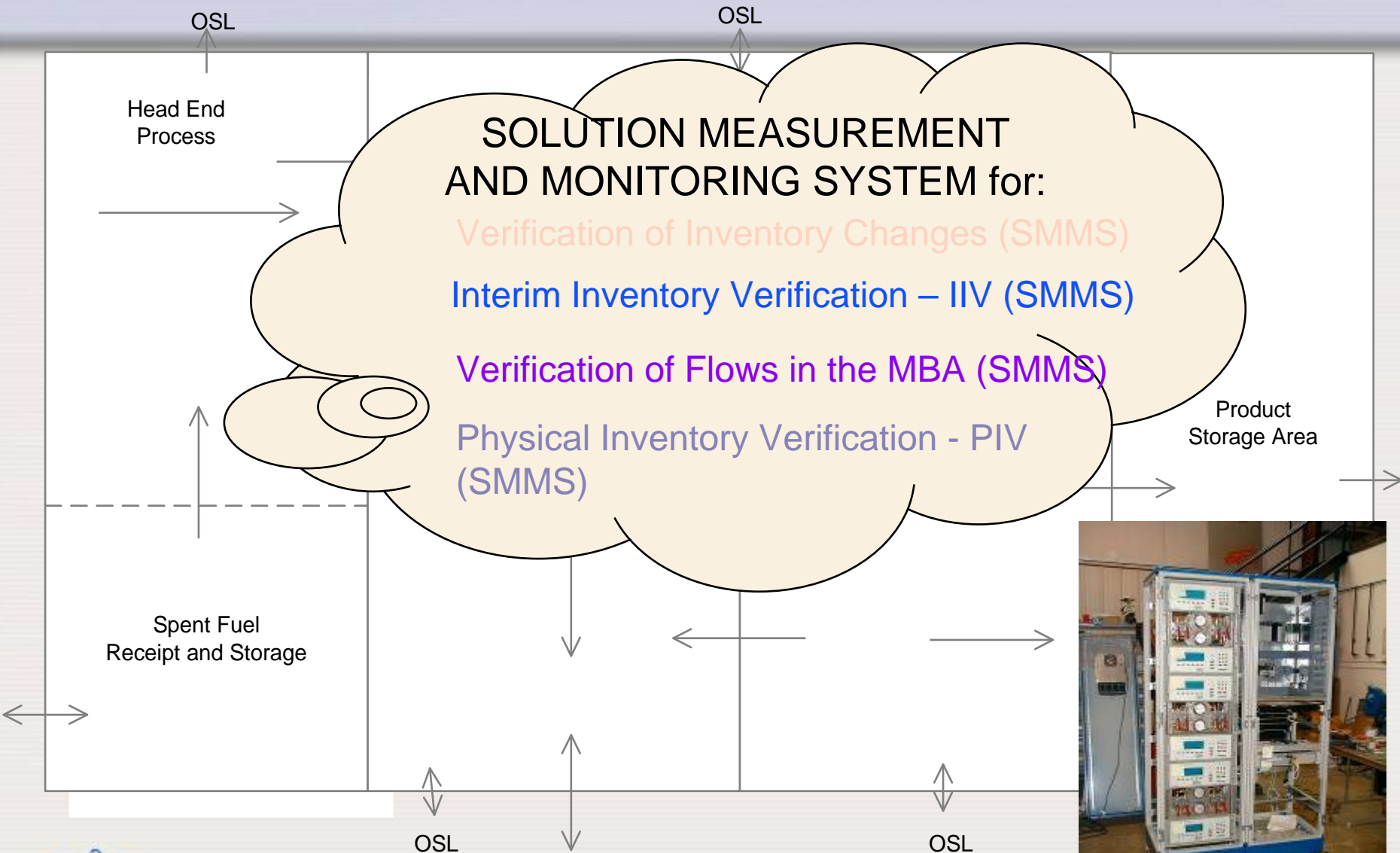


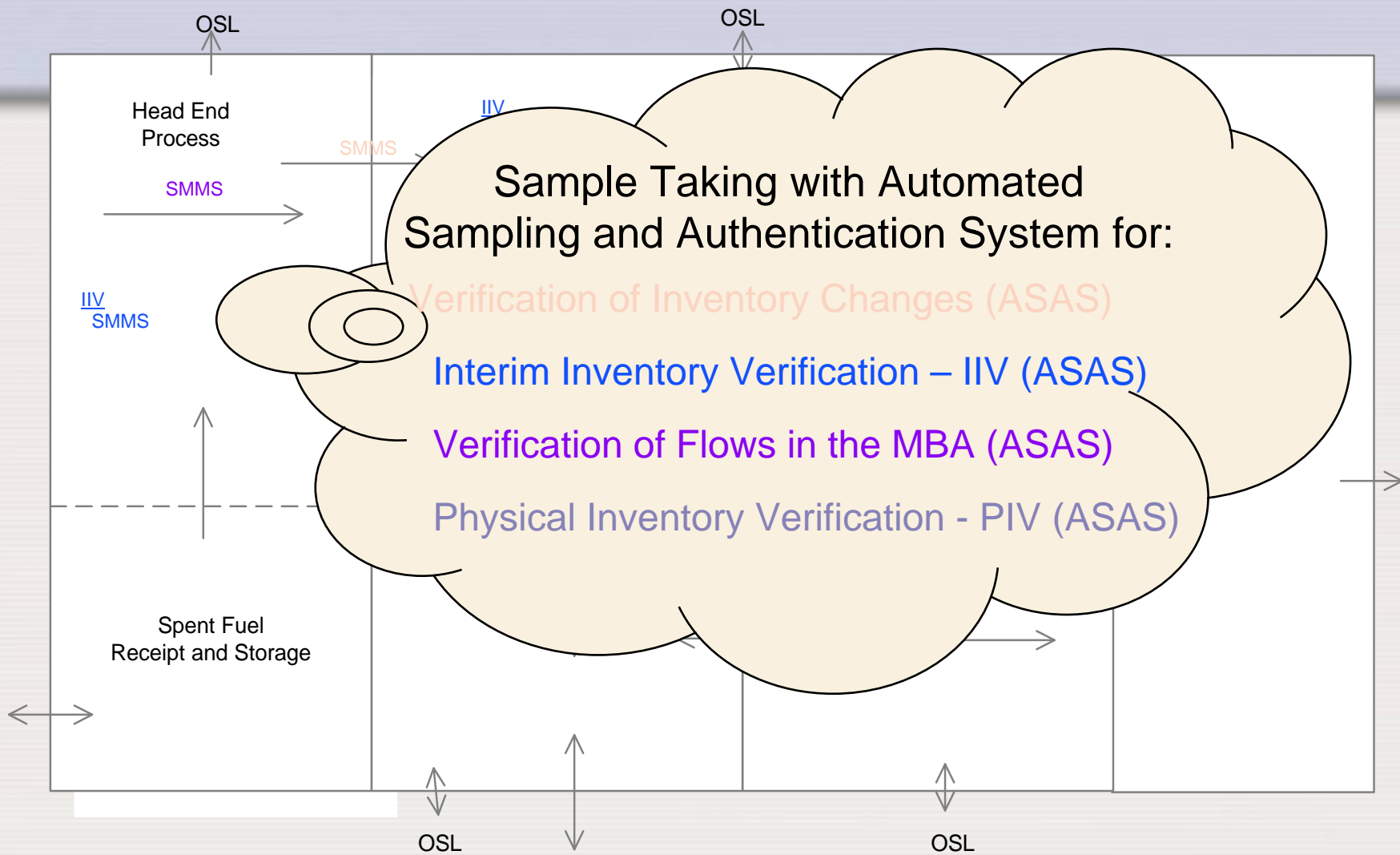
# Safeguards Systems

## Verification systems

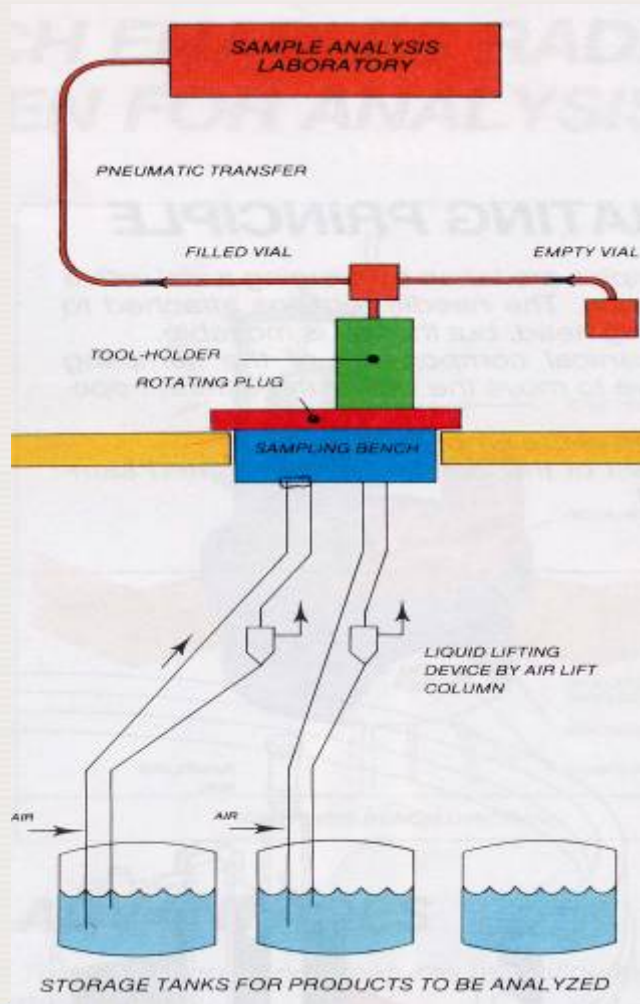
- Integrated Spent Fuel Verification System (ISVS)
- Integrated Head-end Verification system (IHVS)
- Rokkasho Hulls Measurement System (RHMS)
- Solution Measurement & Monitoring System (SMMS)
- Independent Jug Passage Detectors (IJPD)
- Automatic Sample Authentication System (ASAS)
- Waste Crate Assay System (WDAS used HRGS)
- Vitrified Canister Verification System (VCAS)
- Plutonium Inventory Measurement System (PIMS)
- Temporary Canister Verification System (TCVS)
- Improved Plutonium Canister System (iPCAS)
- IPCAS Load Cell (IPLC)
- Directional Canister Passage Detector (DCPD)
- MOX Storage C/S System (MSCS)
- Uranium Bottle Verification System (UBVS)
- Uranium Storage C/S/ System (USCS)







# Automatic Sampling Bench (RRP)



# Specific SG implementation at RRP: an On-Site Laboratory for DA analyses

Operated jointly with  
State Authority



# I<sup>3</sup>S - Integrated Inspector Information System

