



# **Unattended Measurement System (UMS)**

**International Partnership for Nuclear Disarmament  
Verification (IPNDV) Working Group 3**

**Geneva, Switzerland**

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**Integrated Support Center for Nuclear Nonproliferation  
and Nuclear Security**

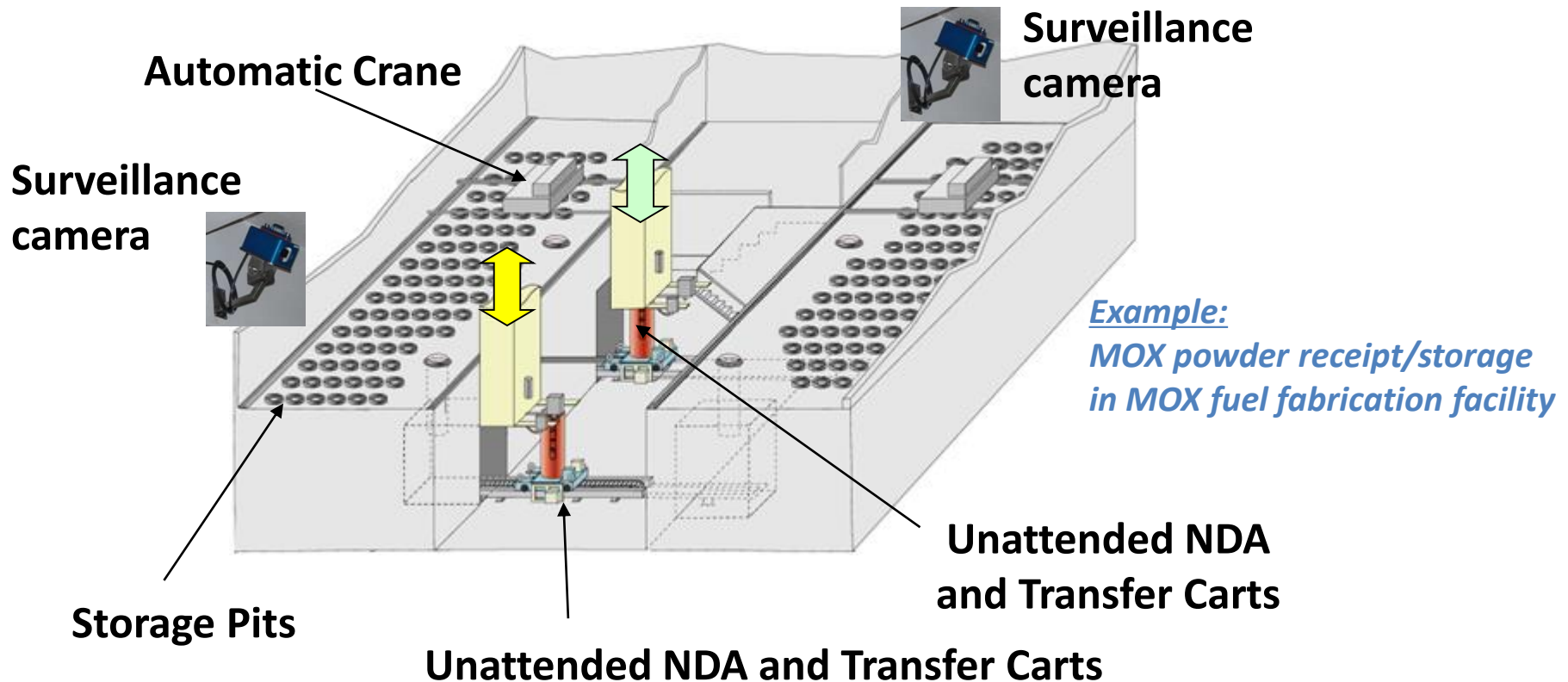
**Japan Atomic Energy Agency**

UMS might be applicable to chain of custody, NM detection (quantification), storage monitoring without leakage of sensitive information.

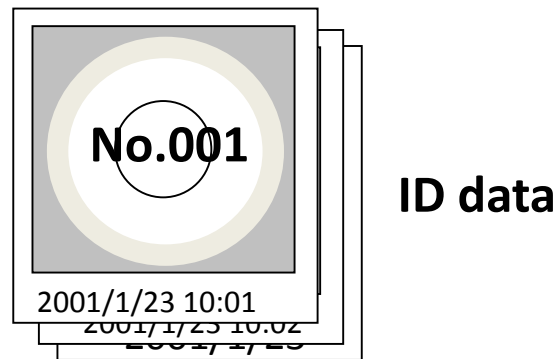
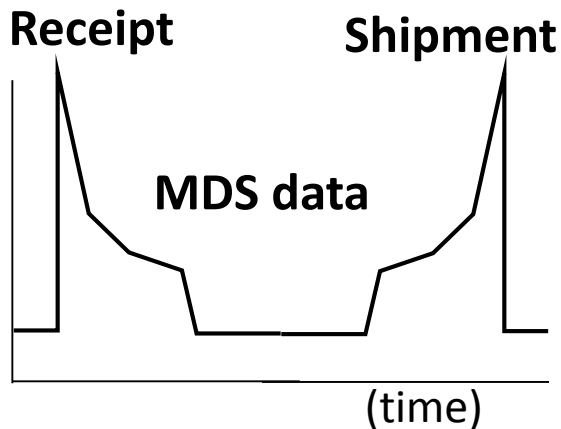
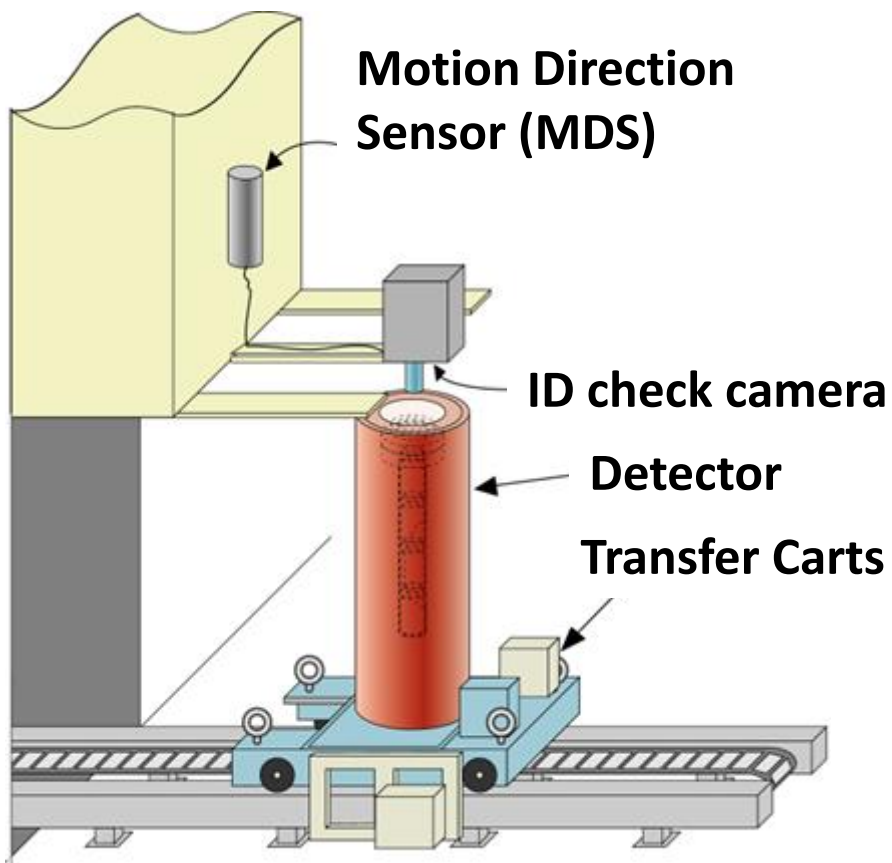
Other Facility/Location

Plutonium Storage

Process?



# Unattended NDA system

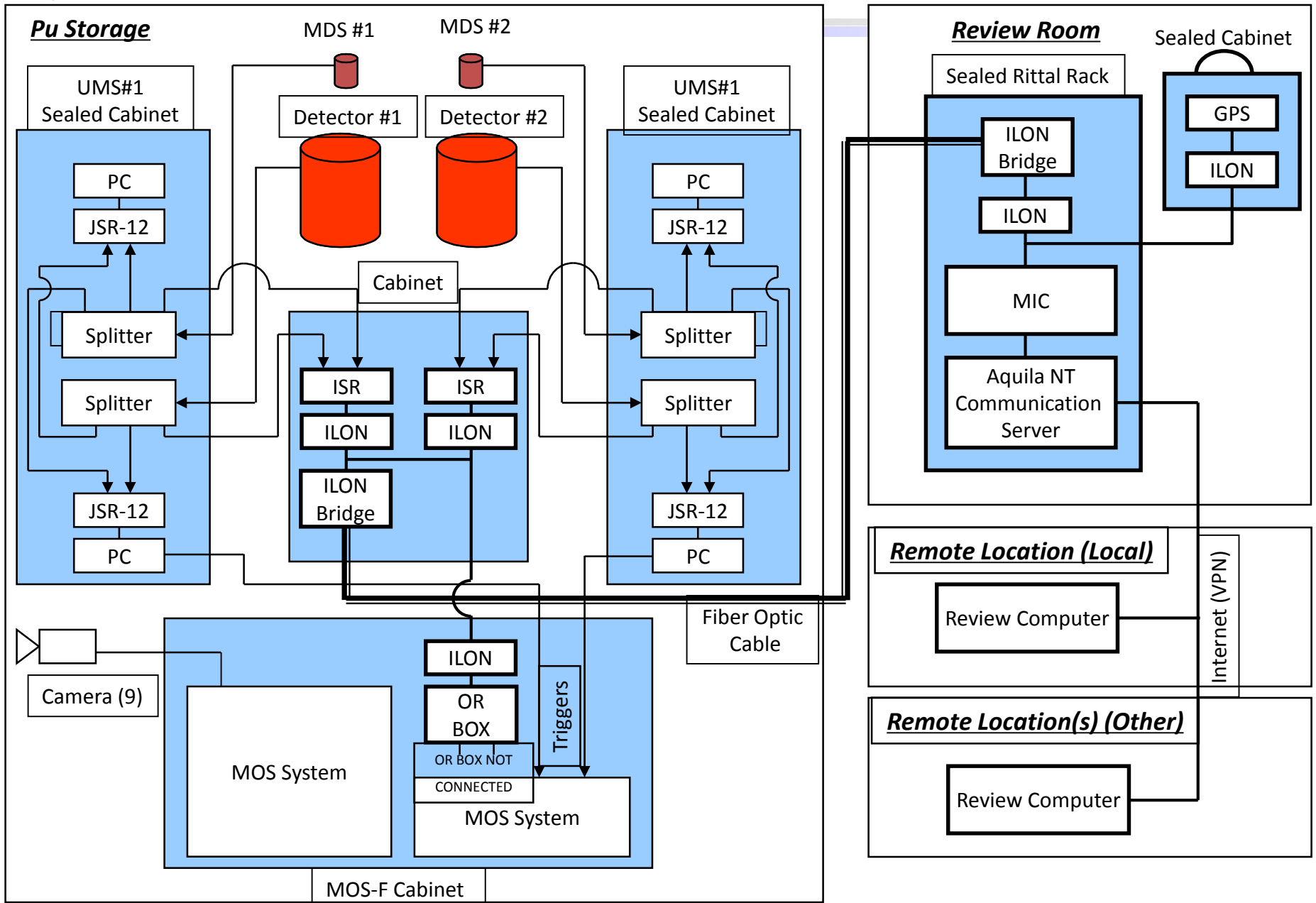


Date	Time	Pu mass
01/1/23	10:01	3232 ± 12.2
01/1/23	10:02	3216 ± 11.8
01/1/23	10:03	3178 ± 11.1
01/1/23	10:04	3265 ± 12.1
01/1/23	10:05	3221 ± 12.4

**Measurement Data**



# Remote Monitoring System





(Backup slide)

# Plutonium Canister Assay System

**Material Type**

**Feed PuO<sub>2</sub> and MOX powder  
contained in storage**

**canister**

**Mass Range**

**up to 12kg**

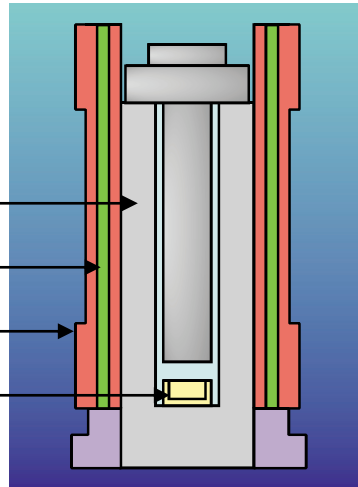
**Efficiency**

**13%**

**Measurement accuracy**

**~ 3%**

**Concrete**  
**<sup>3</sup>He Tube (24 tubes)**  
**Polyethylene**  
**Nickel, Graphite**





(Backup slide)

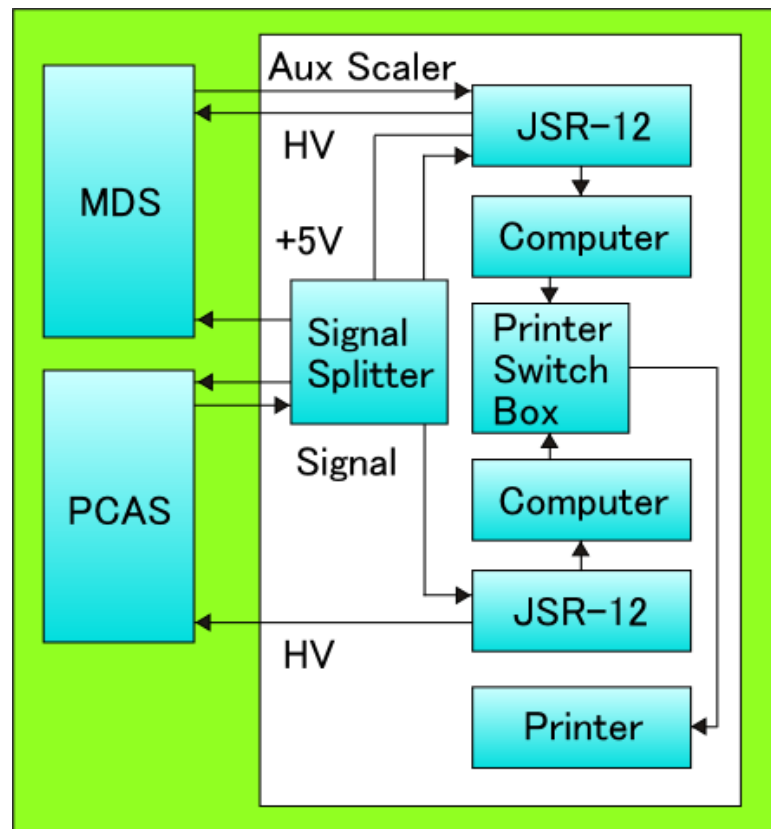
# PCAS Specification

## Detector

Overall Size	60 x 147 cm (Dia. x H)
Neutron Moderator	Polyethylene
Neutron Detector	24 <sup>3</sup> He tubes
Size	2.54 x 129.5 cm (Dia. x L)
Fill Pressure	4 atm
Amplifier	AMPTEC 7

## Electronics Module

Shift Register	JSR-12
HV Supply 1680V	
LV Supply	+5V
Computer	Endeavor AT-700C
Printer	EPSON LQ-850
Power	100V AC



PCAS#1, #4