

# “Appropriate Effective” Material Control for a Plutonium Storage Facility

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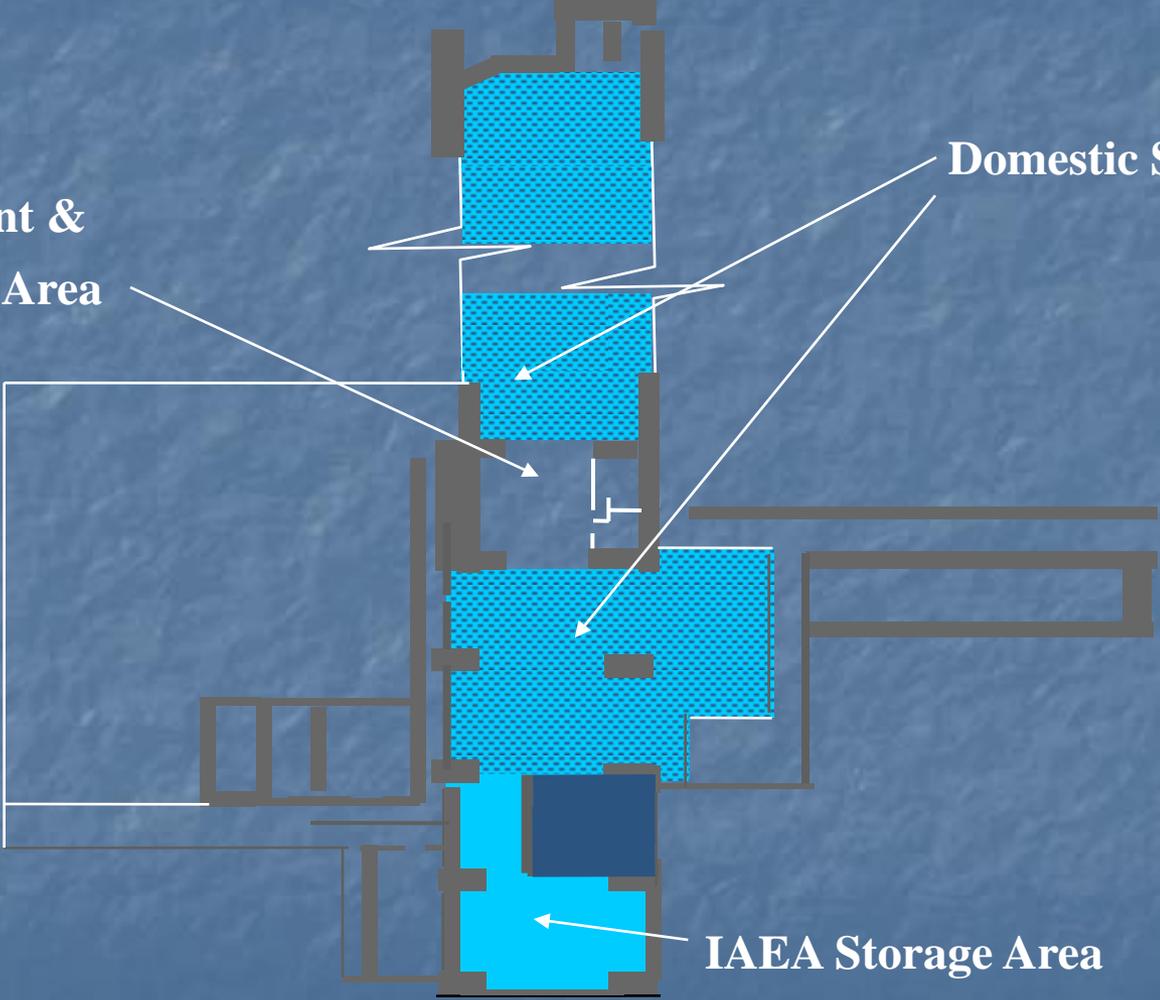
# Key Points

- Technologies (Containment/Surveillance) can change the Safeguards paradigm.
  - Past practices are no longer necessary.
  - Remotely monitored nuclear assets provides increased safeguards assurance.

**Measurement &  
Palletization Area**

**Domestic Storage Area**

**IAEA Storage Area**

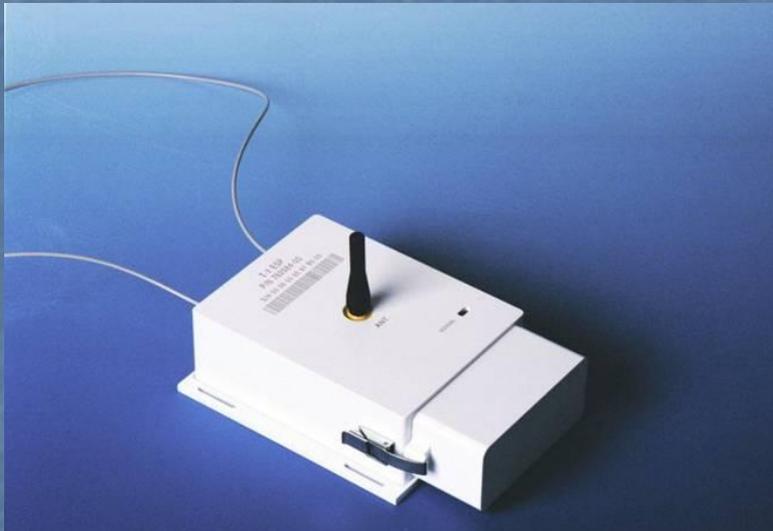


# Containment / Surveillance

- K Area Materials Storage Project (KAMS).
  - Full scale deployment of C/S technology, 2000.
  
- IAEA Implementation.
  - Dual C/S, 2002.
  - Remote Monitoring, 2005



# Containment (Active T-1 Seals)



**00000006259a - DARC**

File Polling Acknowledge

Poll for SOH  VSOH  Data Buffer  Acknowledge/Add Comment  Close

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**T1 -- 00000006259a**

**Description: T1 ESP**

| Digital                                | Analog  |
|--|---|
| Case Tamper <input type="radio"/>      | Battery <b>3.16 V</b> <input type="radio"/>       |
| Fiber Optic Seal <input type="radio"/> | Temperature <b>78.80° F</b> <input type="radio"/> |
| Motion <input type="radio"/>           | Analog 5 <input type="radio"/>                    |
| Low Temp. <input type="radio"/>        | Analog 4 <input type="radio"/>                    |
| High Temp. <input type="radio"/>       | Analog 3 <input type="radio"/>                    |
| Transport <input type="radio"/>        | Analog 2 <input type="radio"/>                    |
| Digital Bit 1 <input type="radio"/>    | Analog 1 <input type="radio"/>                    |
| Digital Bit 2 <input type="radio"/>    | Analog 0 <input type="radio"/>                    |

Location:

Containers

- 9975-0001
- 9975-0002
- 9975-0003
- 9975-0004

Last Transmission: 08:52:18, September 22, 2000  
 Last SOH: 08:52:18, September 22, 2000  
 Last VSOH: 08:52:04, September 22, 2000

| Event Type             | Sensor Description | Time                 | Data     | Comment |
|------------------------|--------------------|----------------------|----------|---------|
| SOH With Analog        | SOH                | 09/22/2000, 08:52:18 |          |         |
| T1 Battery Voltage     | Battery            | 09/22/2000, 08:52:18 | 3.16 V   |         |
| T1 Temperature         | Temperature        | 09/22/2000, 08:52:18 | 78.80° F |         |
| T1 Low Battery Voltage | Battery            | 09/22/2000, 08:52:12 | 229.00   |         |
| SOH With Analog        | SOH                | 09/22/2000, 08:52:07 |          |         |
| T1 Battery Voltage     | Battery            | 09/22/2000, 08:52:07 | 3.26 V   |         |
| T1 Temperature         | Temperature        | 09/22/2000, 08:52:07 | 78.80° F |         |
| SOH With Analog        | SOH                | 09/22/2000, 08:52:04 |          |         |

Ready SOH poll attempt success

# Surveillance (Change Detection)



**NTvision** 

← apr 99 →

| S  | M  | T  | W  | T  | F  | S  |
|----|----|----|----|----|----|----|
|    |    |    |    | 1  | 2  | 3  |
| 4  | 5  | 6  | 7  | 8  | 9  | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | 29 | 30 |    |

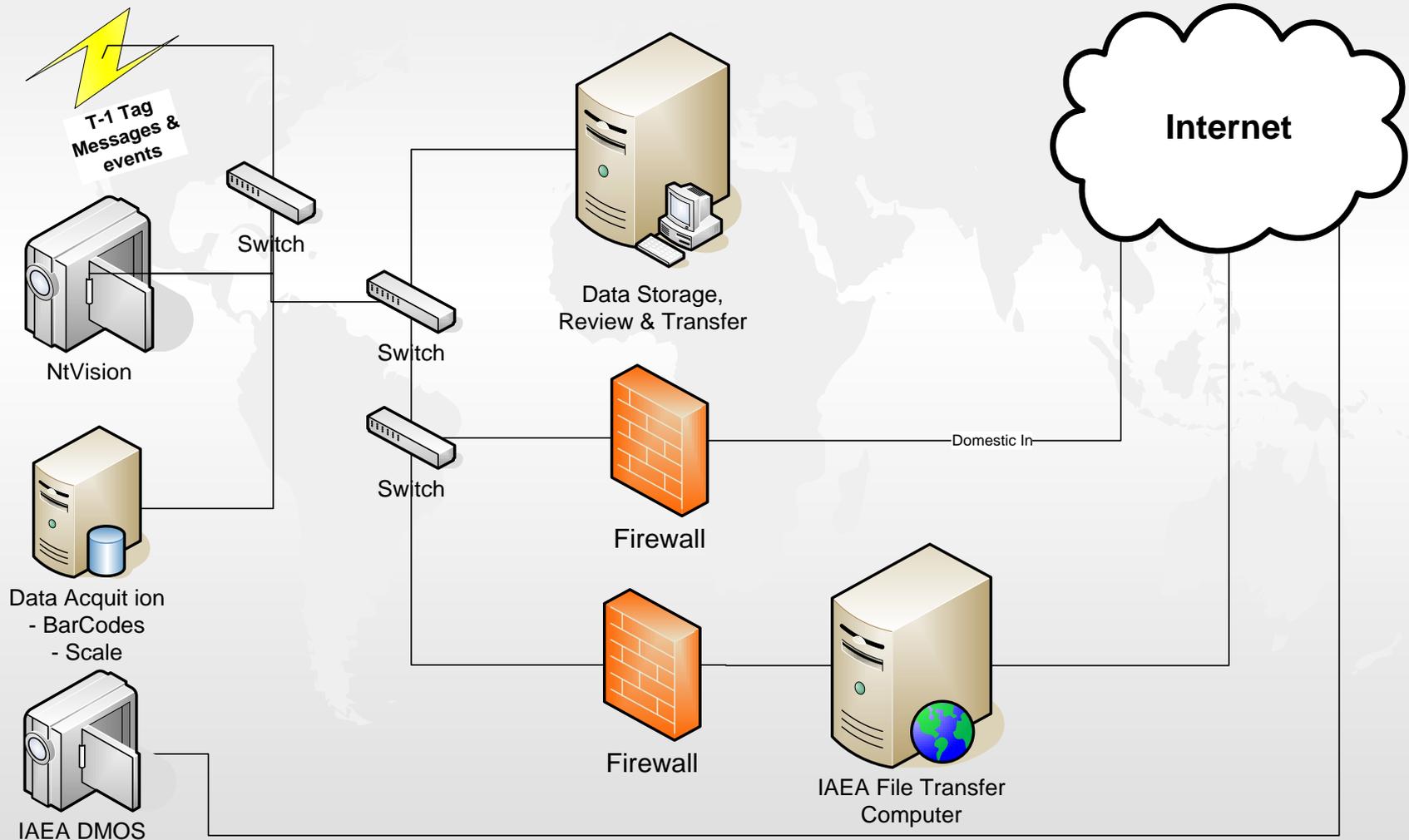
Event 3: 19990414 102908 Camera 1

| 19990414 |          |        |          |       |         |        |      |
|----------|----------|--------|----------|-------|---------|--------|------|
| Event    | Time     | Frames | Duration | Alarm | Comment | Camera | GSD  |
| 1        | 10:19:39 | 25     |          | 3     |         | 1      | 0.30 |
| 2        | 10:27:12 | 25     |          | 3     |         | 1      | 0.36 |
| 3        | 10:29:08 | 25     |          | 4     |         | 1      | 0.41 |
| 4        | 10:29:29 | 25     | 10       |       |         | 1      | 0.42 |

# CIMS

## Data Collection

## Data Storage, Analysis & Transfer



# Conclusion

## What has Changed?

- Domestic requirements.
  - Inventory frequency, Two Person Rule, DAC's.
- Ability to share data & conduct oversight remotely.
- Greater confidence in how Safeguards conclusions are drawn.
- Improved Safeguards/Facility Interface.