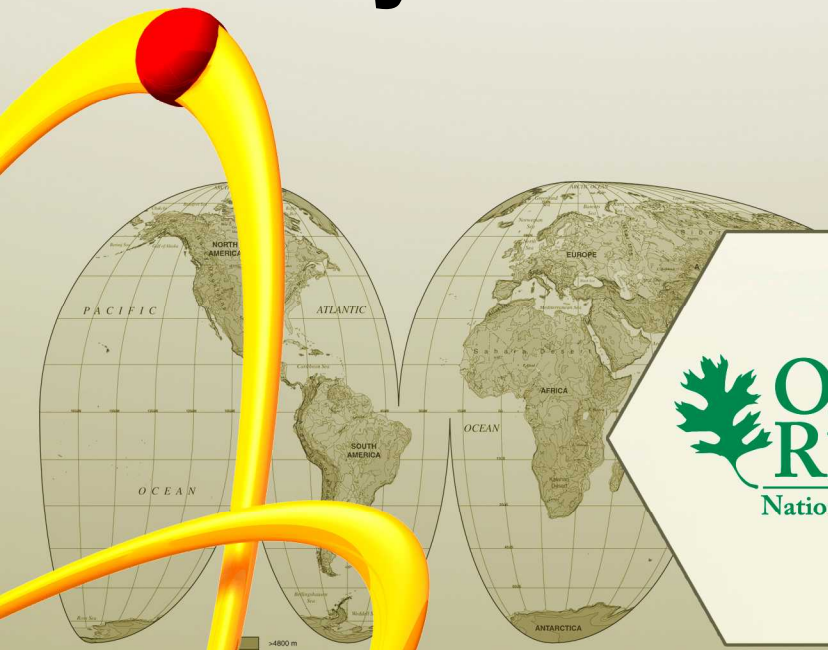
SAND2007-5234C

1.9 Examples of Practice Specific Source Security Systems



OAK RIDGE National Laboratory

NNSA National Nuclear Security Administration

Sandia National Laboratories

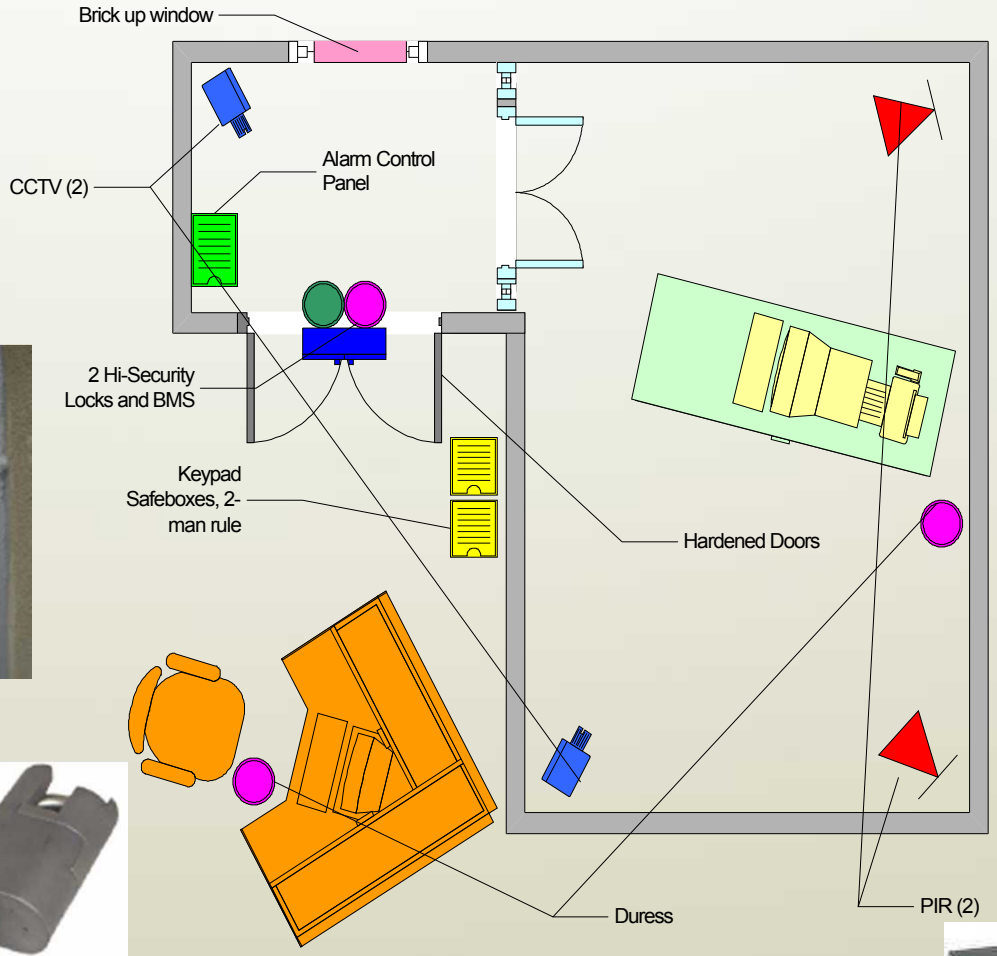
International Cooperation to Secure High Risk Sources

- Scope:
  - **Security for high-risk sources;**
  - **provision of radiation detection equipment;**
  - **Source recovery**

Improving Source Security

- **Detection**
  - Intrusion sensors
  - Video assessment
  - Alarm control and display
- **Delay**
  - Locks/Keys
  - Window gratings
  - Hardened doors
  - Cages
- **Response**
  - Communications equipment
  - Guard equipment

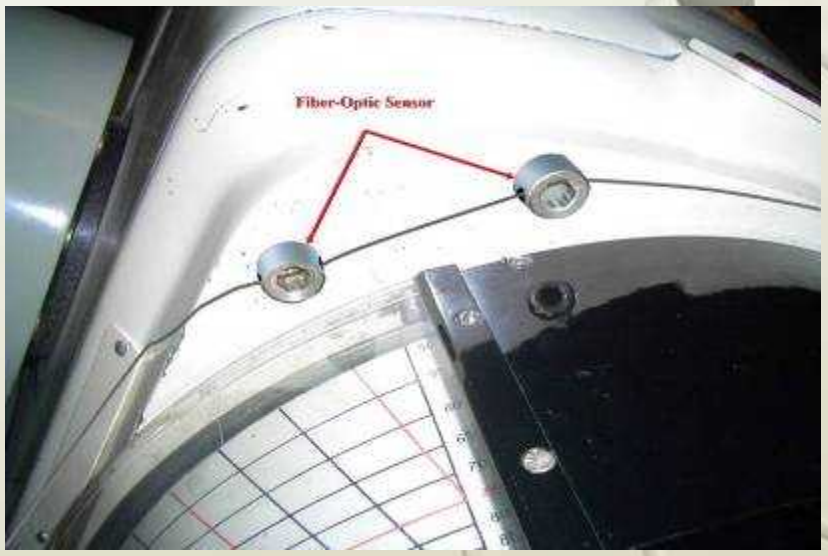
Upgrading Security for Teletherapy Treatment Room



Upgrading Security for Oncology Clinics

- Improved access control system and intrusion detection sensors to source room
- Low-cost/ low maintenance “always on” sensor to source device

Oncology clinic security enhancements include installation of sensors to detect entry into room that holds source and sensor on the teletherapy unit itself.



A fiber optic seal encloses the teletherapy unit. Any attempt to access the unit requires breaking the seal, which results in an alarm signal.

Upgrading Security for Self-Contained Irradiators

Blood Irradiator Unit. Sensor and fiber optic seal installed on each unit, so an alarm is triggered if an intruder attempts to remove the source.

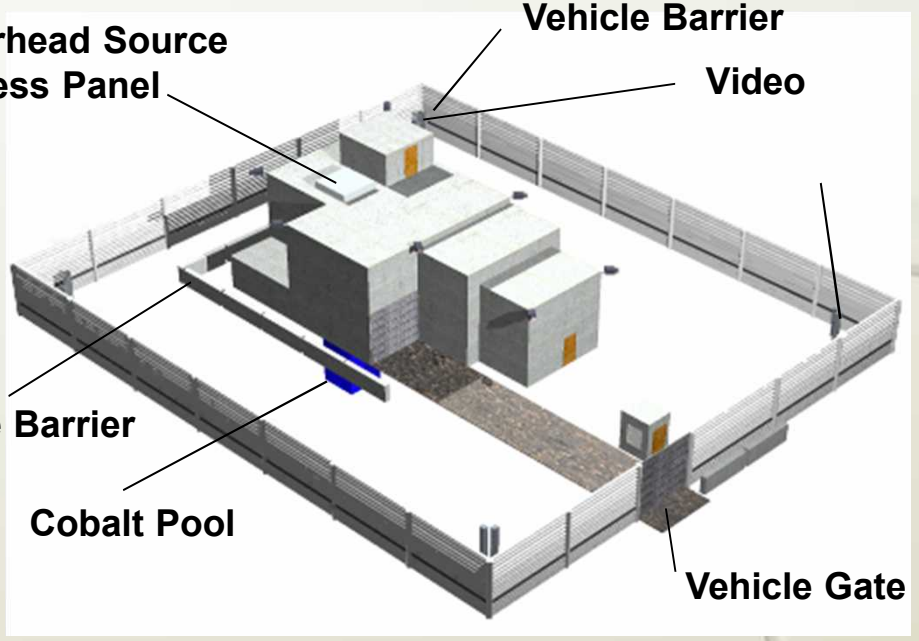
Delay to prevent source removal:

- **Non-removable screws**
- **Welded reinforcements**
- **Tie-downs**
- **Protecting manuals, etc.**
- **Barriers for protection against sabotage**

Manufacturer-provided upgrades

Upgrading Security for Panoramic Irradiator Facilities (15,000,000 Ci; 555,000TBq)

Alarm Monitoring



Interior Intrusion Detection

Entry Control

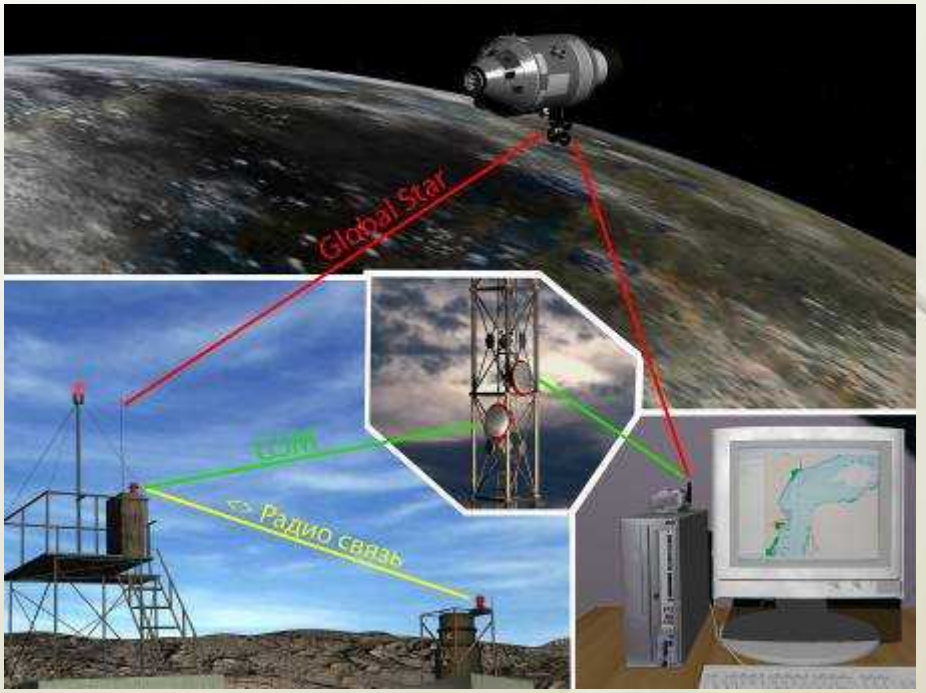
Upgrading Security for Radioisotopic Thermoelectric Generators

(30,000-300,000 Ci; 1,110-11,100 TBq)

- **GPS Position**
- **GSM / UHF Transmitter**

Monitor

- **Vibration**
- **Tilt**
- **Voltage**
- **Temperature**



- Remote real time monitoring of position and status of RTG
- Off-site monitoring through GSM / UHF and satellite communication
- Response dispatched