



U.S. DEPARTMENT OF
ENERGY



Global Threat Reduction Initiative (GTRI)



Domestic Source Security Overview

GTRI Overview

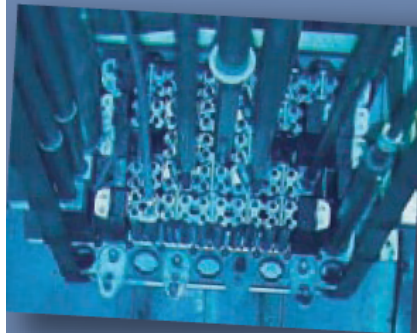
Mission

reduce and protect vulnerable nuclear and radiological material located at civilian sites worldwide.

GOALS

1. CONVERT
2. REMOVE
3. PROTECT

CONVERT



CONVERT RESEARCH REACTORS FROM THE USE OF HIGHLY ENRICHED URANIUM (HEU) TO LOW ENRICHED URANIUM (LEU).

THESE EFFORTS RESULT IN PERMANENT THREAT REDUCTION BY MINIMIZING AND, TO THE EXTENT POSSIBLE, ELIMINATING THE NEED FOR HEU IN CIVILIAN APPLICATIONS — EACH REACTOR CONVERTED OR SHUT DOWN ELIMINATES A SOURCE OF BOMB MATERIAL.

REMOVE



REMOVE AND DISPOSE OF EXCESS NUCLEAR AND RADIOLOGICAL MATERIALS.

THESE EFFORTS RESULT IN PERMANENT THREAT REDUCTION BY ELIMINATING BOMB MATERIAL AT CIVILIAN SITES — EACH KILOGRAM OR CURIE OF THIS DANGEROUS MATERIAL THAT IS REMOVED REDUCES THE RISK OF A TERRORIST BOMB.

PROTECT



PROTECT HIGH PRIORITY NUCLEAR AND RADIOLOGICAL MATERIALS FROM THEFT AND SABOTAGE.

THESE EFFORTS RESULT IN THREAT REDUCTION BY IMPROVING SECURITY ON THE BOMB MATERIAL REMAINING AT CIVILIAN SITES — EACH VULNERABLE BUILDING THAT IS PROTECTED REDUCES THE RISK UNTIL A PERMANENT THREAT REDUCTION SOLUTION CAN BE IMPLEMENTED.

Primary Materials of Concern in the United States



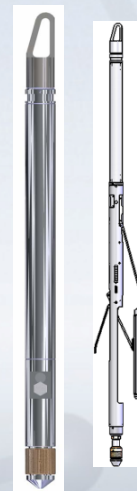
Cs-137 (30 year half life):

Blood, research, and sterilization irradiators;
1,000 - 50,000 Ci



Co-60 (5 year half life):

Teletherapy and Gamma Knife units (cancer treatment);
1,000 – 10,000 Ci,
and panoramic irradiation (sterilization);
100,000 – 10,000,000 Ci



Am-241 (432 year half life):

Oil well-logging;
8 - 20 Ci

Ir-192 (73 day half life):

Brachytherapy (cancer treatment) and
radiography (industrial imaging);
10 - 100 Ci

NOTE: Sr-90 found
primarily overseas in
Russian RTGs; generally
used in very small
amounts in the U.S.

What is the Threat?

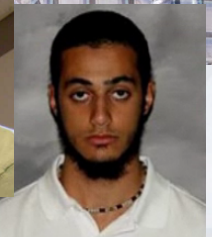
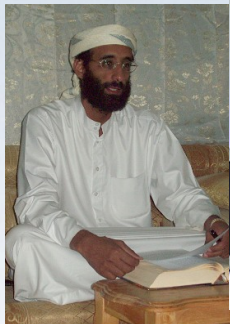
- “Al-Qaeda is interested in radiological dispersal devices (RDDs) or “dirty bombs.” Construction of an RDD is well within its capabilities as radiological materials are relatively easy to acquire from industrial or medical sources. Osama Bin Laden's operatives may try to launch conventional attacks against the nuclear industrial infrastructure of the United States in a bid to cause contamination, disruption, and terror.”



Synopsis of CIA briefing given to National Association of Chiefs of Police,
A Briefs Law Enforcement on Possible WMD Attacks,” *Examiner.com*, December 14, 2009.



“Recent attempted attacks and plots in the United States progressed to an advanced stage largely because of these groups’ ability to **use operatives that have access and familiarity with the U.S.** and their employment of new and varied attack patterns.”

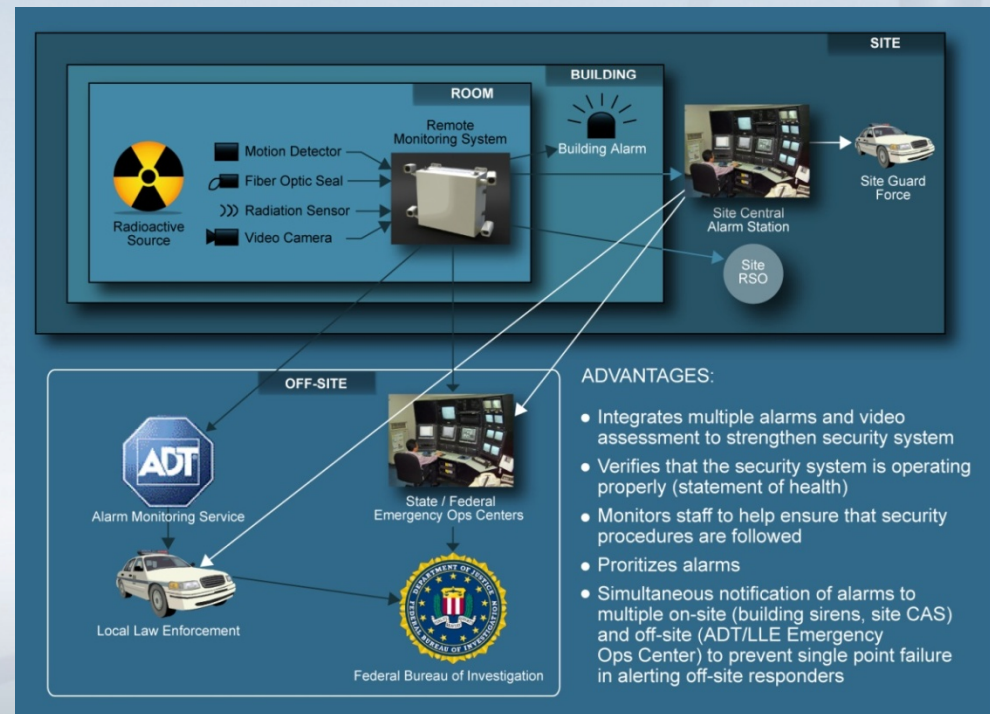


“We lack insights into specific details, timing and intended targets, but believe that **al-Qa’ida and its affiliates continue to pursue plans for Homeland attacks.** Given recent terrorist activity, we have to operate under the premise that **other operatives are in the country** and could advance plotting with little or no warning. Historically, al-Qa’ida has focused on prominent political, economic, and infrastructure targets to produce mass casualties, visually dramatic destruction, significant economic aftershocks, and fear among the population. **Recent events suggest a trend in which terrorists seek to conduct smaller, more achievable attacks against easily accessible targets.**”

- Fort Hood Shooter – November 2009
- Five Americans Arrested in Pakistan– December 2009
- NYC Subway Bombing Plotter – February 2010
- American Arrested in Yemen – March 2010
- Times Square Bomber – April 2010
- NJ Jihadist – June 2010

GTRI's Domestic Program

- **GTRI provides voluntary security assistance which include:**
 - Removal of disused or unwanted radioactive sources;
 - Voluntary security upgrades;
 - Specialized training for local law enforcement;
 - No-fault table top exercises;
 - Transportation Security
- **GTRI voluntary security enhancements are:**
 - **Complementary to and do not replace** the licensees requirements to meet NRC and Agreement State regulatory requirements*
 - **Cost-effective, and prudent best practices** which further improve security above regulatory requirements.*



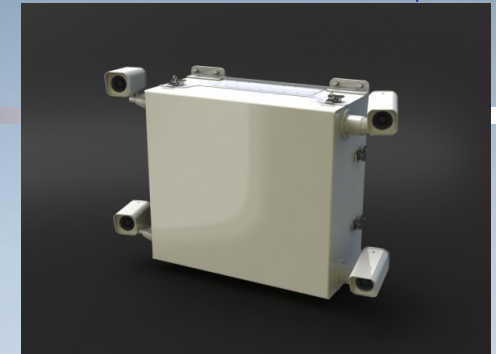
* See **NRC RIS 2010-02** "The Global Threat Reduction Initiative (GTRI) Federally Funded Voluntary Security Enhancements For High-Risk Radiological Material"



In-Device Delay (IDD) Kit:
delays access to sources in
certain radiation devices



Passive Infrared Sensors (PIR):
Motion triggers alarm



Remote Monitoring System (RMS):
Alarms trigger surveillance

Personal Radiation
Detector (PRD):
Used by response
force



Critical System Functions:

- **Detection** (sensors and alarms)
- **Assessment** (cameras and assessment systems)
- **Access Control** (biometrics)
- **Delay** (barriers, locks, cages, IDD)
- **Response** (protective equipment, communications, situational awareness)
- **Sustainment** (system maintenance)



Iris Reader:
Requires eye scan for
access



Area Radiation Detector:
Release of radiation triggers alarm
and data transmission



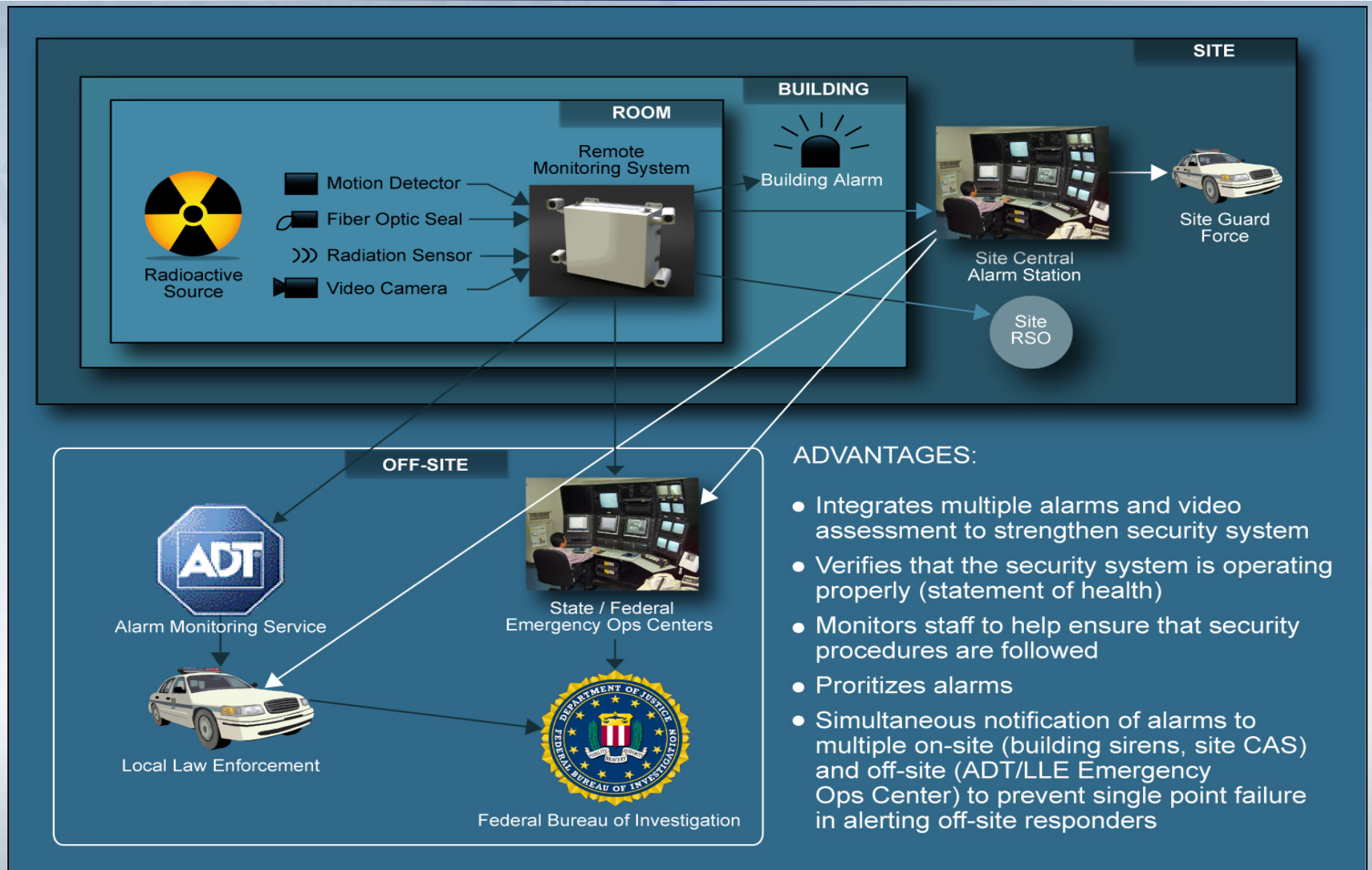
Balanced Magnetic Switch (BMS):
Unauthorized door opening triggers alarm



Tamper Seals:
Broken seal will transmit
images and alarms wirelessly



GTRI Remote Monitoring System



In-Device Delay Program Status

Installation Status/Projections										
Activity	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	Totals
Annual IDD Installs	2	35	177	91	138	129	107	97	28	836
Cumulative Total	2	37	214	337	475	604	711	808	836	

- Hardened 214 (26%) of the estimated 836 eligible irradiators since program inception (Aug 2008 pilot installs)
- Ongoing Development Efforts
 - Model 143 blood irradiator IDD Kit recently developed; pilot installs to occur soon
 - Kits for older GC1000 units expected to be developed during FY2011
- Factory Hardening Efforts (New Irradiators):
 - All new JLSA Mark 1 irradiators coming off production line are hardened as of November 2009.
 - Best Theratronics is constructing and testing prototype factory-hardened units as part of license amendment approval process; factory hardened units expected by early 2011

Irradiator Make / Model	Units Hardened as of 10/2010
JLS&A Mark 1	33
JLS&A Model 143	0
CIS-BIO (Pharmalucence) IBL437	110
Best Theratronics GC1000	5
Best Theratronics GC3000	26
Best Theratronics GC40	40
Total IDD Installations	214 (26%)
Total Installations Remaining	622 (76%)

Enhancing Response Force Capability

ART Course teaches first responders how to protect themselves and their communities when responding to alarms indicating possible theft/sabotage of civilian nuclear and radioactive materials.



GTRI pays for all attendee costs except for salary (e.g. travel, lodging, car rental, and per diem)

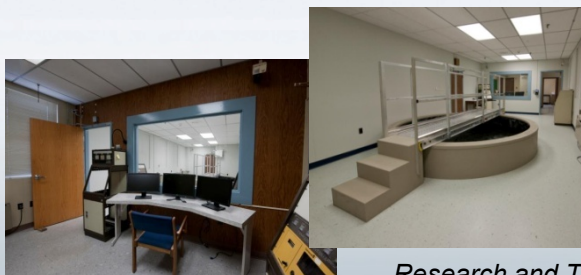
- Realistic scenarios using radioactive sources, irradiators and security equipment
- Classroom instruction and hands-on exercises



Y-12 National Security Complex in Oak Ridge, TN



Trained to current GTRI standard security upgrades, RFID Tamper indicating devices, Remote Monitoring System, etc.



Research and Test Reactor Course

Personal Radiation Device (PRD) "Train the Trainer" Course



DHS certified and included in the DHS training course catalog

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