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Three Nuclear Threats Confronting the United States

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Three Nuclear Threats

- Accidental Nuclear War between the United States and Russia
- Nuclear Proliferation to Other Countries
- Nuclear Terrorism

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Accidental Nuclear War

- De-Targeting Agreements

- But Old Targeting Packages Can be Used in Few Minutes

Accidental Nuclear War: How Close Have We Come?

- January 25, 1995: Black Brant geodesic rocket launch off the coast of Norway

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Accidental Nuclear War: Close Call

- Russian early warning radar mistook rocket for a possible SLBM

Accidental Nuclear War: Close Call

- President Yeltsin began to activate nuclear briefcase

- This event took place after the U.S.-Russia de-targeting agreement was signed

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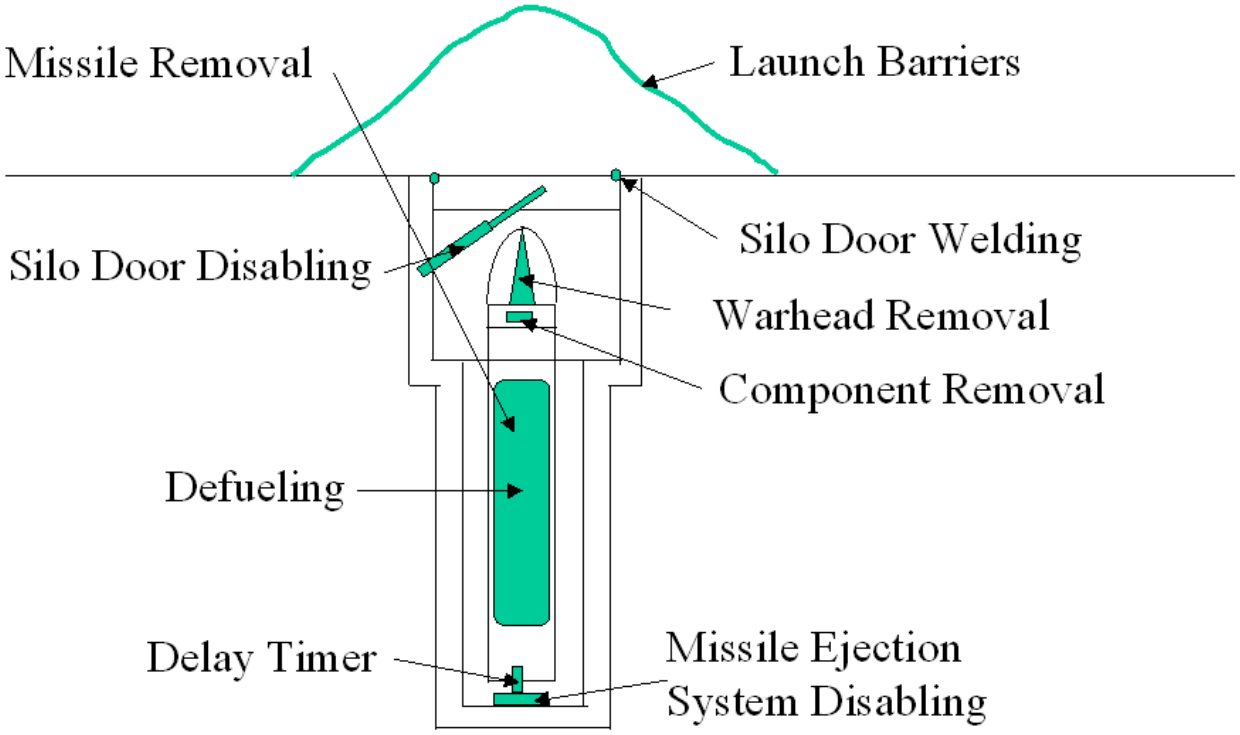
What Nuclear Forces Have Been De-Alerted or Dismantled?

- Strategic bombers

- Thousands of tactical nuclear weapons: 1991-1992 Presidential Nuclear Initiatives

- MX missiles

De-Alerting Methods



Reference: Sandia National Laboratories, 1998 SAND Report.

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Preventing Accidental Nuclear War

- Build upon President Bush and President Putin's 2002 Treaty of Moscow

- Reduce deployed nuclear warheads to < 1,000 on each side

- Assist Russia with Improving its Early Warning System?

Nuclear Proliferation to Other Countries

- "horizontal proliferation"
- Currently, 9 nuclear-armed countries (assuming North Korea)
- Grave concerns about so-called "rogue states" pursuing nuclear arms

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Iraq

- Very active nuclear program prior to first Gulf War in 1991

- IAEA inspectors kicked out in 1998

- Black box analysis: assumed the worst?

- National labs and DOE got the intelligence right, but why didn't the White House listen?

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Iran

- Secretive nuclear program since at least mid-1980s
- U.S. Government asserts that there is an Iranian nuclear weapons program
- IAEA has not found “smoking gun”
- Could be 5 to 10 years away from making a nuclear bomb

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North Korea

- Separated Pu prior to 1994 Agreed Framework
- Secretive HEU program
- Left the NPT in January 2003
- 6 Party Talks May Achieve Success

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Libya

- Pledged to give up WMD programs in December 2003
- "Axis of Evil" junior league
- Model for disarming North Korea and Iran?

Lessons Learned

- No “silver bullet”
- Need to strengthen nonproliferation regime, especially nuclear safeguards
- “Rogue state” deterrence?
- Don’t forget the not-so-usual suspects
- Glass is more than half full

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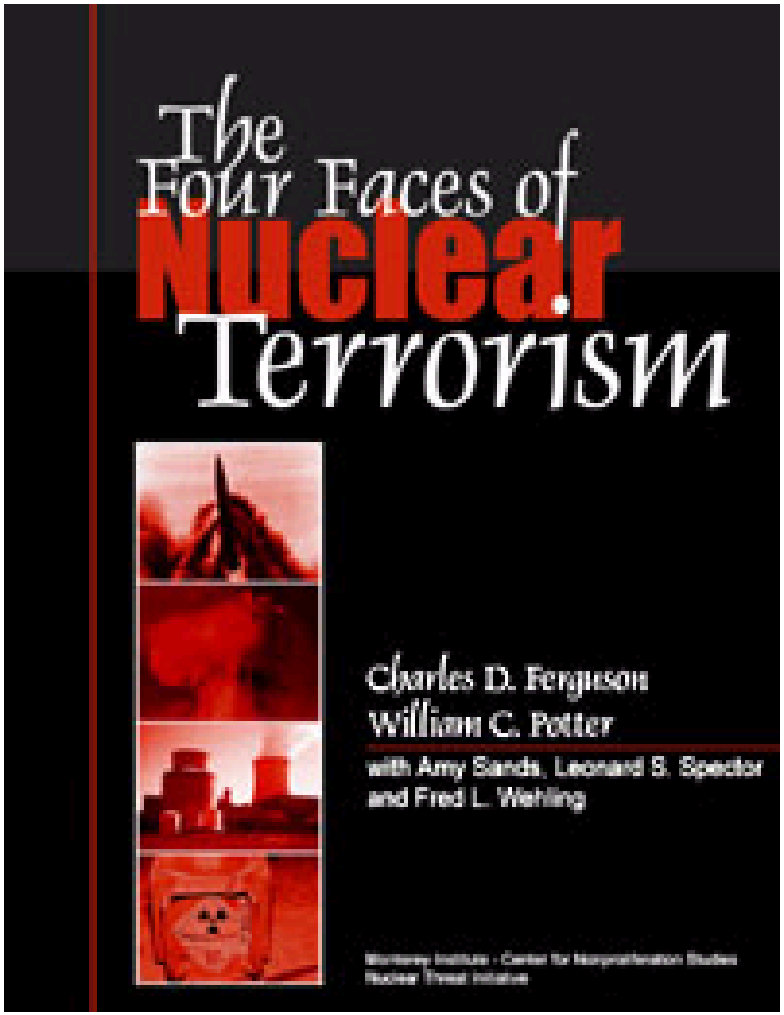
Nuclear and Radiological Terrorism: Four Faces of Nuclear Terrorism

- Acquisition of an intact nuclear weapon
- Crude nuclear weapon or Improvised Nuclear Device (IND)
- Attack against or sabotage of a nuclear power plant or other nuclear facility
- Radiological dispersal device (RDD) or “dirty bomb”



Holmes to Watson: It's Elementary

- Motive
- Means
- Opportunity

Assessing Risk

Risk = Probability X Consequence

- Large uncertainties
- Lack of data

Alternatively:

Risk = Motivation X Intention X Capability X Consequence

What can we do to drive down the risk as close to zero as possible?

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Overarching Policy

The United States must work immediately to

reduce the probability of nuclear terror acts with the highest consequences and

mitigate the consequences of the nuclear terror acts that are the most probable.

Defense-in-Depth

- ***Rigorous security around weapons-usable fissile and radioactive materials as well as nuclear facilities, such as nuclear power plants***
- ***Reduction of as much weapons-usable material as possible***
- Radiation detection capabilities
- Interdiction methods: intelligence and law enforcement
- Consequence management if nuclear terror event happens

Terrorist Motivations

- *Why haven't there been any RDD or crude nuclear weapon terrorist attacks?*

- Those who study terrorist motivations are "**underwhelmed by the probability of such an event *for most – but not all* – terrorist groups**." – Jerrold Post (IAEA presentation, Nov. 2001)

- Psychological and political constraints are great for most groups

Terrorist Motivations (continued)

- Traditional thinking: “Terrorists want a lot of people watching, not a lot of people dead.”

  -- Brian Jenkins, RAND

- New Breed of Terrorist Group:
  - Al Qaeda – politico-religious
  - Aum Shinrikyo – Apocalyptic

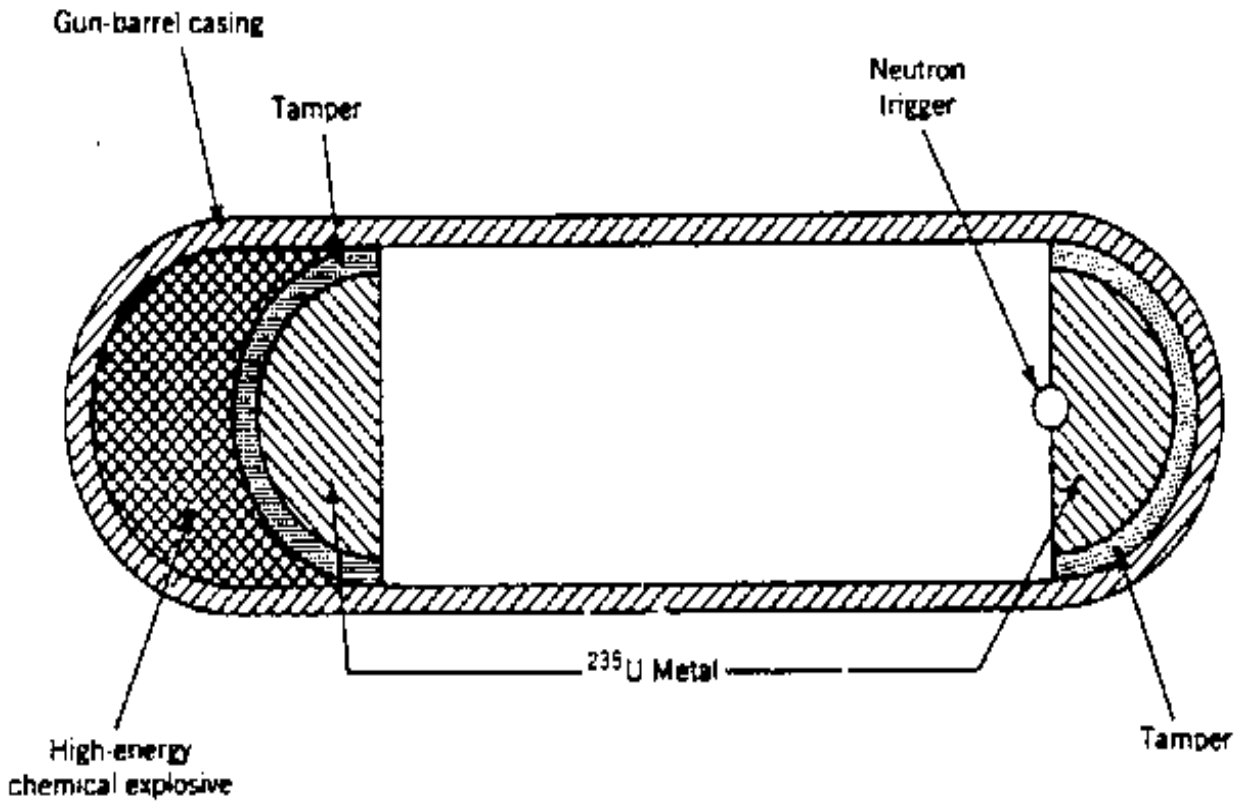
→ Want to kill many and have even more watching in dread

But Can the Terrorists Get the Means?

- Nuclear weapons and fissile material are difficult to obtain, but highly enriched uranium (HEU) is in many countries
- Radioactive materials are much more accessible, but would not cause massive destruction
- Variety of nuclear facilities to target: Security also varies, but usually appears strong at many facilities

Can Terrorists Build Their Own Nuclear Bomb?

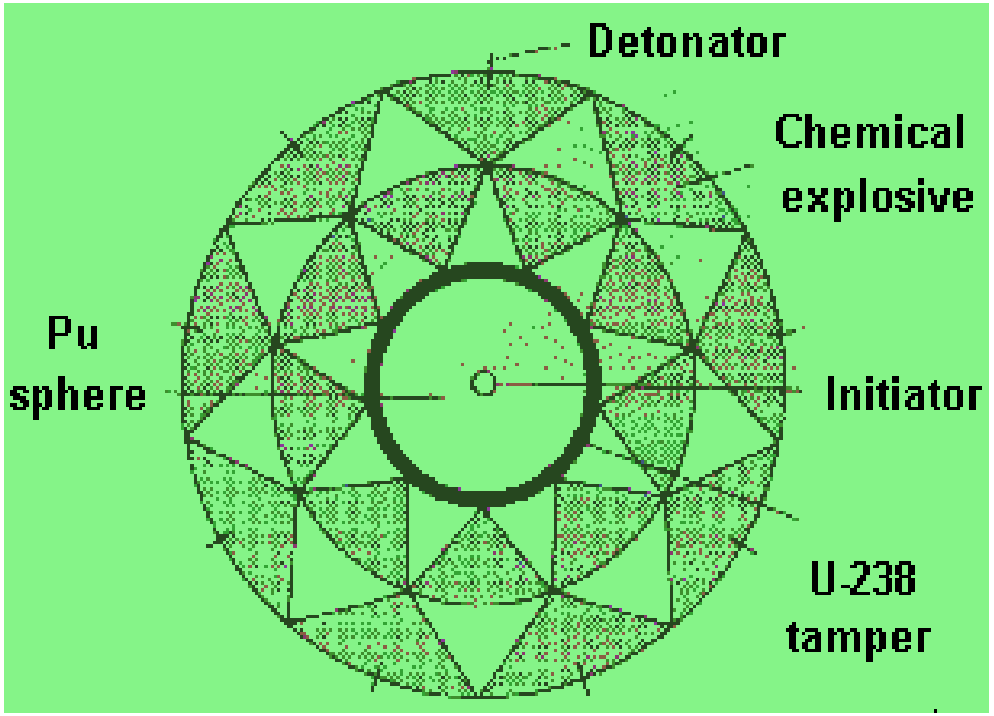
- Gun-type:
  - Simplest design
  - ➢Cannot use plutonium for *high-yield*; must use HEU



Can Terrorists Build Their Own Nuclear Bomb? (continued)

- Implosion-type:
  - More sophisticated, but still first generation weapon
  - ➢Can use either plutonium or HEU to produce high-yield

Figure 1: Plutonium implosion bomb principle



Major Hurdle: Acquisition of Fissile Material

Material Type	*Global Inventory (metric tons)*
Military plutonium (Pu)	260
Civil Pu (separated)	330
Military HEU	1,850
Civil HEU	50

Ref: David Albright and Kimberly Kramer, “Fissile Material: Stockpiles Still Growing,” *Bulletin of the Atomic Scientists*, November/December 2004.

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Highest Priority: Put HEU at the Head of the Queue

- Accelerate down-blending, i.e. elimination, of Russian HEU → Need to negotiate an HEU II Deal
- Declare more U.S. HEU excess to defense needs and step up down blending of this material; continue to consolidate U.S. and Russian weapons-usable material
- Speed up removal of Soviet/Russian- and U.S.-origin HEU and accelerate conversion of research reactors
- Use Mayak Fissile Material Storage Facility to secure HEU as well as Pu
- Subordinate Plutonium Disposition Program to HEU First Strategy