
Securing the Bomb 2008

Next Steps to Keep Nuclear Weapons and Materials Out of Terrorist Hands

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Congressional briefing

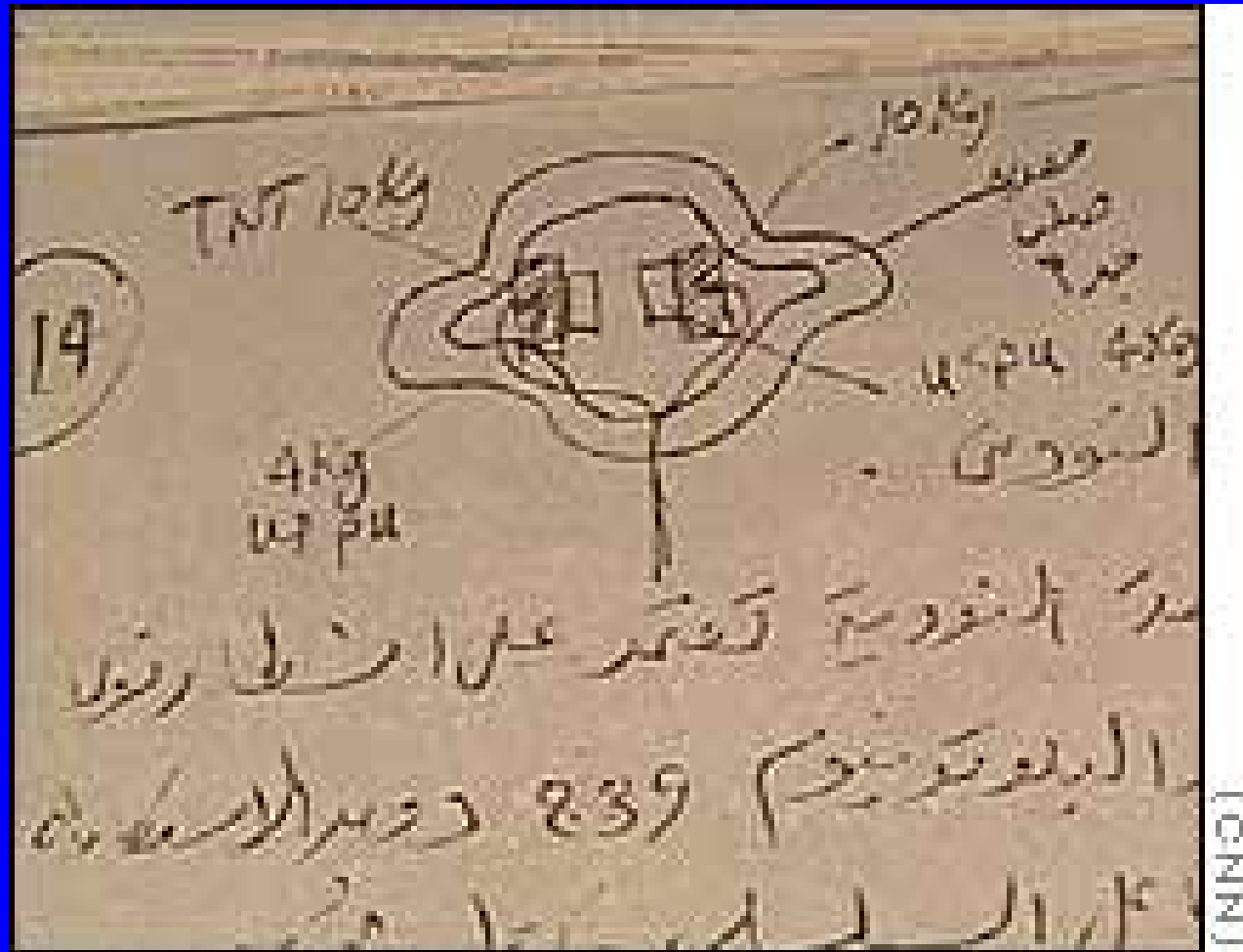
Center for Science, Technology & Security Policy, AAAS
Washington, DC

10 December 2008

<http://www.managingtheatom.org>

<http://www.nti.org/securingthebomb>

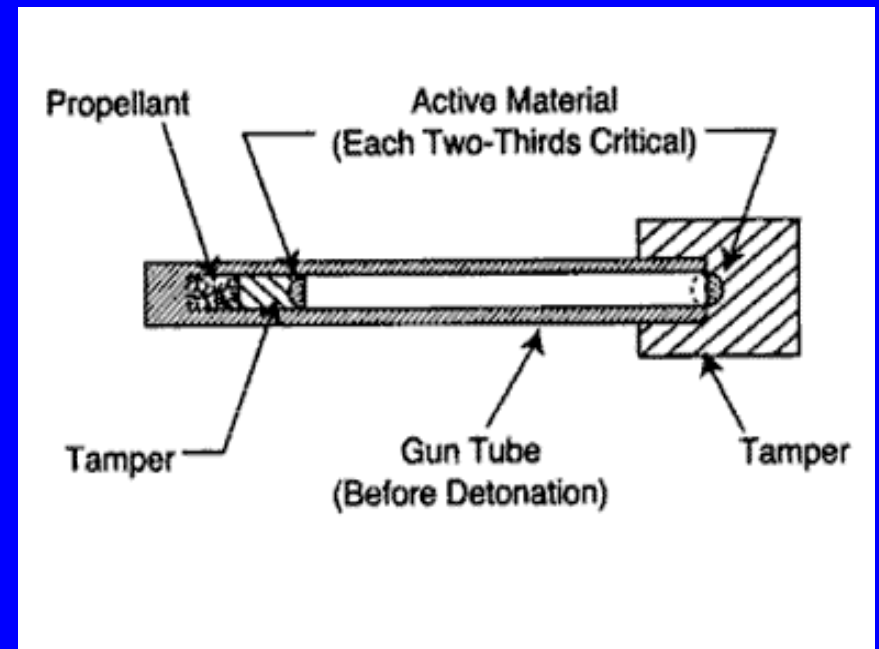
Terrorists are seeking nuclear weapons – al Qaida nuclear bomb sketch



Source: CNN

With nuclear material, terrorists may be able to make crude nuclear bombs

- ◆ With HEU, gun-type bomb – as obliterated Hiroshima – very plausibly within capabilities of sophisticated terrorist group
- ◆ Implosion bomb (required for Pu) more difficult, still conceivable (especially if they got help)



Source: NATO

Widely varying nuclear security

- ◆ No binding global standards for how secure nuclear weapons or nuclear materials should be
- ◆ Russia:
 - *Dramatically* improved security compared to 15 years ago
 - Cooperative upgrades nearly complete
 - *But*, world's largest stockpiles in world's largest # of buildings and bunkers, under-investing in sustainability, security culture still weak, regulations weak, massive insider corruption
- ◆ Pakistan:
 - Small, heavily guarded stockpile
 - But immense threats – potentially huge outsider attacks, corrupt insiders, some with jihadist sympathies
- ◆ HEU-fueled research reactors
 - ~130 in > 30 countries, some only night watchman, chain-link fence

Attack at Pelindaba, Nov. 8, 2007

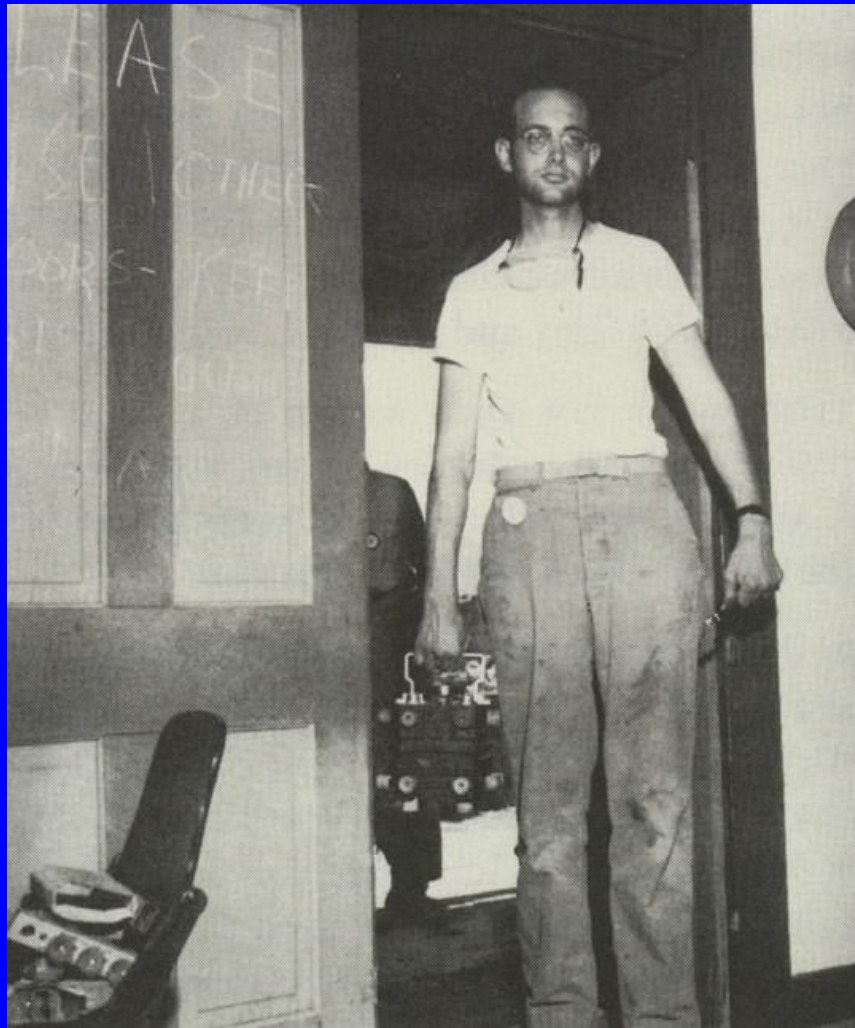
- ◆ Site with 100s of kgs of highly enriched uranium (HEU)
- ◆ Attack by 2 teams of armed, well-trained men, from opposite sides
- ◆ One team:
 - Penetrated 10,000-volt security fence
 - Disabled intrusion detectors
 - Went to emergency control center, shot a worker there, who raised first alarm
 - Spent 45 minutes inside guarded perimeter – never engaged by site security forces
 - Left through same spot in fence – never caught or identified
- ◆ South Africa still refusing U.S. security upgrade assistance, or to eliminate the HEU on-site (though reactor has been converted to LEU)

Security culture matters: Propped-open security door



Source: GAO, Nuclear Nonproliferation: Security of Russia's Nuclear Material Improving, More Enhancements Needed (GAO, 2001)

Nuclear material is not hard to smuggle – plutonium box for first-ever bomb



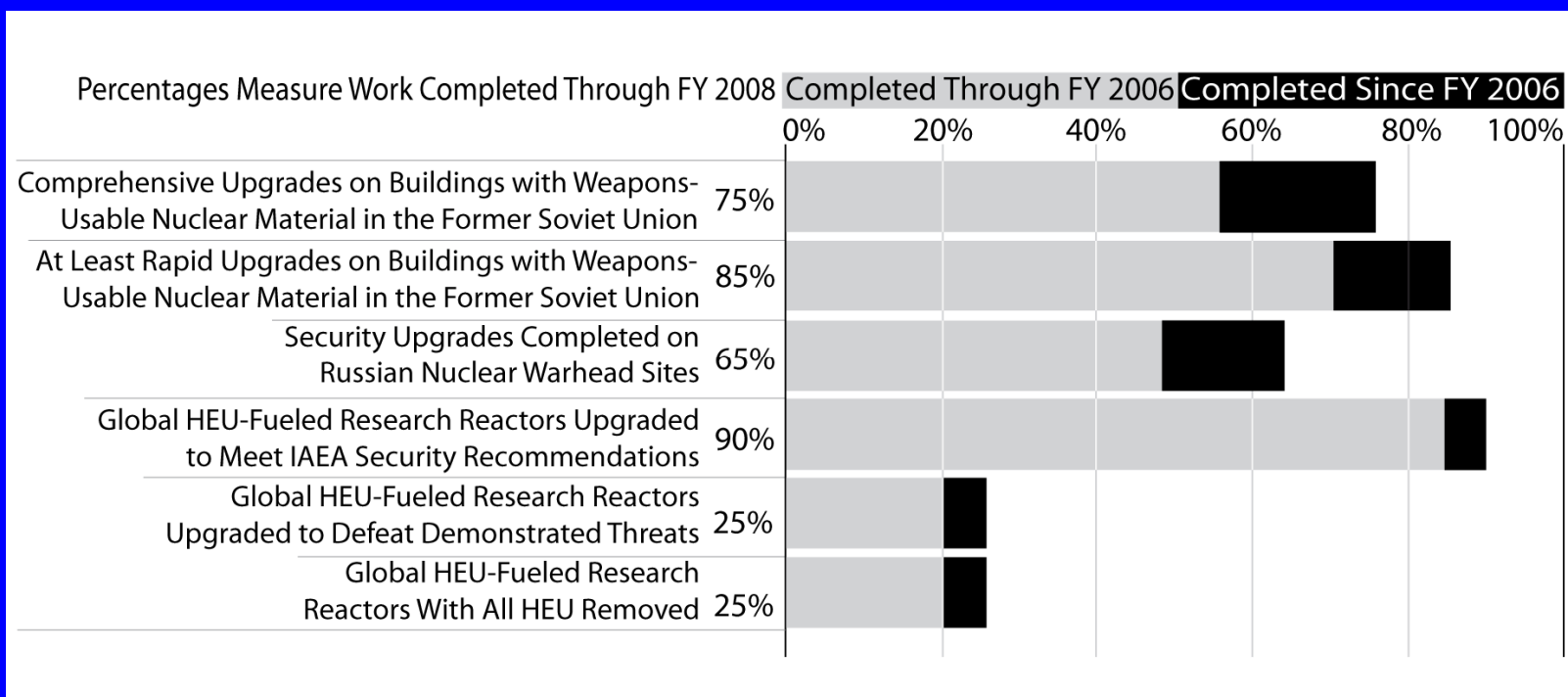
Source: Los Alamos

Summary: the nuclear terrorist threat

	Yes	No
◆ Do terrorists want nuclear weapons? – Clear Bin Laden statements, some Chechen interest	<input checked="" type="checkbox"/>	<input type="checkbox"/>
◆ Is it conceivable terrorists could make a crude bomb if they got the material?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
◆ Is there material that might be vulnerable to theft and transfer to terrorists?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
◆ Is it likely that terrorists, if they had a crude device, could smuggle it to Moscow, London, Paris, Washington, or New York?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

But: no convincing evidence any terrorist group has gotten nuclear weapons or materials, or the expertise to make a bomb

Progress of U.S.-funded programs to secure nuclear stockpiles through FY08



Source: Author's estimates, described in Securing the Bomb 2008

Next steps to reduce the risk

- ◆ Obama has said the right things:
 - Made clear nuclear terrorism is a top national security priority
 - Set goal of ensuring effective security for all stocks worldwide within four years – *challenging but doable*
 - Plan to appoint senior White House coordinator
 - Plan for summit on preventing nuclear terrorism
- ◆ Need comprehensive approach with 4 key elements:
 - Secure and reduce nuclear stockpiles
 - Counter terrorist nuclear plots
 - Prevent and deter state transfers
 - Interdict nuclear smuggling

Securing global nuclear stockpiles

◆ Current:

- Upgrades in former Soviet Union nearly complete (though issues remain); progress in Pakistan; modest upgrades at some research reactors

◆ Needed:

- Fast-paced *global* campaign to ensure effective security for *every* nuclear weapon and stock of separated plutonium or HEU worldwide (action needed even in some developed countries)
- Forge effective global nuclear security standards – could be common interpretation of UNSCR 1540, which already requires “appropriate effective” security and accounting measures for all nuclear stocks
- New steps to ensure sustainability and security culture for the long haul – especially national regulations requiring effective security measures
- New “World Institute for Nuclear Security” can help exchange best practices in nuclear security and accounting

Consolidating global nuclear stockpiles

◆ Current:

- GTRI (established 2004) has greatly accelerated conversion of HEU-fueled research reactors to LEU, HEU removals
- *But*, nearly half of global HEU-fueled reactors not targeted for conversion; many stocks of HEU not targeted for removal; some states not cooperating on particularly dangerous stockpiles; little progress in Russia; few incentives for consolidation in place

◆ Needed:

- Cover broader set of *facilities* and *materials*: all civilian HEU, wherever located, consolidate plutonium sites also, seek further consolidation in warhead sites
- Use broader set of *approaches*: e.g., convincing unneeded facilities to shut down, as a complement to efforts to convert
- Use broader set of *incentives*: e.g., assistance to make reactors better off than before conversion, help with shut-down, help for scientists to do other research or be “user group” at another reactor...

Building the sense of urgency worldwide: the key to success

- ◆ Effective and lasting nuclear security will *not* be achieved unless political leaders and nuclear managers around the world believe more stringent security measures are needed
- ◆ Steps to convince states this is a real and urgent threat:
 - Joint threat briefings – by their experts and our experts, together
 - Nuclear terrorism exercises and simulations
 - “Red team” tests of nuclear security effectiveness
 - Fast-paced nuclear security reviews – by teams trusted by the leadership of each country
 - Shared databases of real incidents related to nuclear security, capabilities and tactics thieves and terrorists have used, lessons learned

The 1st priority: high-level leadership

- ◆ Success will require *dramatic* increase in sustained, high-level (White House and Cabinet) U.S. leadership – and comparable leadership from other countries
- ◆ President-elect Obama should appoint a senior official with *full-time* responsibility for these issues, reporting directly to him – and convince other key states to do the same
- ◆ Such officials could keep next steps on the front burner, lay out a strategic plan to reduce threats to world security as rapidly as practicable, identify obstacles to acceleration and means to overcome them, seize synergies, avoid overlaps
- ◆ These national officials should meet regularly to build global partnership, identify and act on top priorities

Opportunities for congressional action

- ◆ Support high-priority effort:
 - Call for fast-paced comprehensive plan with measurable milestones
 - Call on President to put nuclear terrorism at the top of the national security agenda
 - Call on President to seek effective global nuclear security standards
 - Authorize expanded, accelerated global effort to secure or remove nuclear stockpiles and interdict nuclear smuggling
 - Authorize expanded, accelerated global cleanout approach
 - In-depth oversight, emphasizing urgency of the threat, holding government accountable for measurable progress in reducing it, exploring new approaches
- ◆ Be prepared to modify legislation on White House coordinator, if asked:
 - Obama may prefer to have this a senior NSC position, not Senate-confirmed
 - Would be more effective if focused only on nuclear terrorism (or nuclear and biological) – otherwise issues such as Iran and North Korea, already getting high-level attention, will swamp agenda

More opportunities for Congress

- ◆ Establish new incentives to move away from use of potential bomb material
 - E.g., establish new user fee for all medical isotopes made from HEU – creates market incentive to move to non-HEU production
- ◆ Mandating launch of particular new initiatives
 - E.g., U.S.-Russian reciprocal initiative—modeled in part on Bush-Gorbachev 1991 initiatives—to secure, monitor, dismantle 1000s of the most dangerous warheads (esp. tactical weapons without modern electronic locks)
- ◆ Mandating priority for intelligence support to reducing nuclear terrorism risks
 - E.g., collecting information on security conditions, terrorist and criminal activity, staff pay, morale, corruption at sites with weapons-usable materials – “how much do the people at this research reactor get paid? Is there a lot of organized crime there?”

More opportunities for Congress (II)...

- ◆ Steps beyond nuclear security
 - Modify mandate for 100% scanning of containers into systems-level approach – with “red teaming” to probe vulnerabilities – to make it as difficult as we cost-effectively can to get nuclear weapons and materials into United States by *any* routes
 - Authorize broader approaches to interdicting nuclear smuggling worldwide – increased penalties, expanded police and intell. coop.
 - Support broader counter-terrorism approaches focused on making it more difficult to get necessary money, people without detection
 - Beef up nuclear forensics efforts
- ◆ Getting the United States’ own house in order—e.g., requiring effective security for U.S. HEU-fueled reactors, providing funding to convert them
- ◆ Pressuring other states to provide effective nuclear security
 - Eg., linking U.S. nuclear exports, contracts to facilities to strong nuclear security performance

Recommended budget action

- ◆ For most programs, money less of a constraint than foreign cooperation – *but* more money could accelerate some programs now, and larger budgets would be needed for expanded, accelerated effort if other obstacles overcome
- ◆ For FY09:
 - GTRI: request + ~\$200 million
 - MPC&A: request + \$60-\$70 million
 - 2nd Line of Defense: request + \$60-\$70 million
- ◆ To allow the new administration to hit the ground running:
 - An appropriation in the range of \$500 million, available until expended, to be spent flexibly on high priority actions as they arise

The challenge

- ◆ Lugar Doctrine: war on terrorism will not be won until every nuclear bomb and cache of bomb material everywhere in the world is secure and accounted for to stringent and demonstrable standards

On the day after a nuclear terrorist attack, what would we wish we had done to prevent it?

Why aren't we doing it now?

For further reading...

- ◆ A major web section we maintain for the Nuclear Threat Initiative, *Securing the Bomb*:
 - <http://www.nti.org/securingthebomb>
- ◆ Includes hundreds of pages of analysis, links, and databases, and our most recent reports:
 - *Securing the Bomb 2008* (November 2008)
 - *Securing the Bomb 2007* (September 2007)
 - *Funding for U.S. Efforts to Improve Controls Over Nuclear Weapons, Materials, and Expertise Overseas: Recent Developments and Trends* (February 2007)
- ◆ For regular e-mail updates from *Managing the Atom*, write to atom@harvard.edu

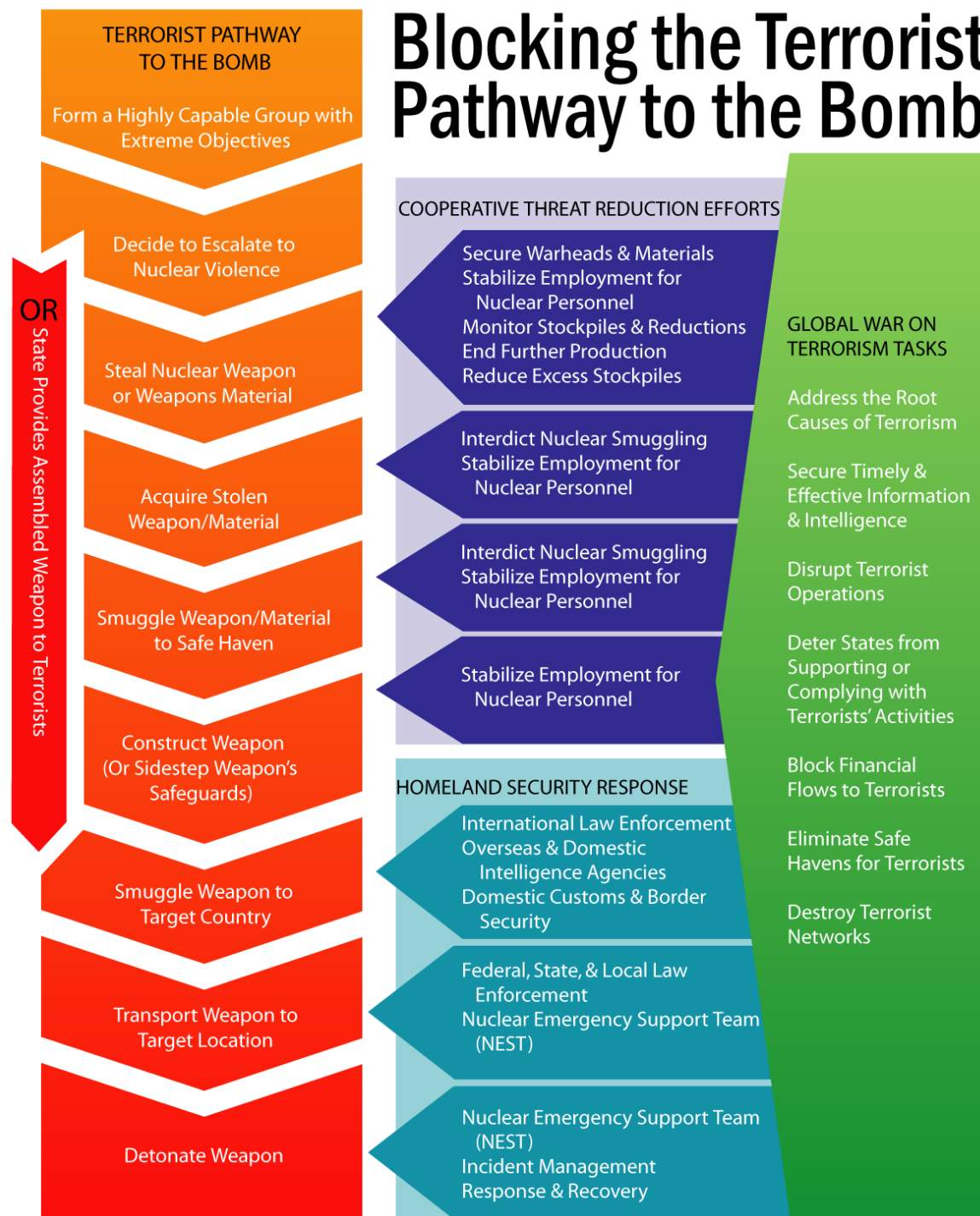
Border security: a last line of defense, but not one to be relied on



Source: GAO

Blocking the Terrorist Pathway to the Bomb

Source: Bunn, Wier, Holdren, Controlling Nuclear Warheads and Materials: A Report Card and Action Plan (2003)



Preventing state transfers, smuggling

◆ *Prevent and deter state transfers*

- Strengthen the global effort to stem the spread of nuclear weapons and put together an international package of carrots and sticks to engage North Korea and Iran credible enough to convince these states it is in their interests to verifiably end their nuclear weapons efforts
- Put in place best practicable means for identifying the source of any nuclear attack: nuclear forensics, traditional intelligence, international database of material characteristics

◆ *Interdict nuclear smuggling*

- Intensify police and intelligence cooperation focused on stopping nuclear smuggling including more stings and incentives for informers
- Ensure countries have effectively enforced laws for real or attempted nuclear terrorism
- Focus on the development of integrated security systems that recognize the limitations of radiation detectors and place as many barriers as possible in the path of intelligent adversaries