Testimony by

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Multilateral Non-proliferation Regimes, Weapons of Mass Destruction Technologies and the War on Terrorism.

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Table of Contents

Testimony by Dr. Walsh	3-8
Senator Akaka, Question 1	9-12
Senator Akaka, Question 2	13-16
Senator Akaka, Question 3	17-23
Senator Cleland, Question 1	24-32
Senator Cleland, Question 2	33-36

Testimony

Mr. Chairman and members of the subcommittee, thank you for the opportunity to testify today about an issue of singular importance to U.S. national security: terrorism and weapons of mass destruction. My remarks will focus on the problem of nuclear terrorism and the ways in which multilateral regimes can help protect the United States and other nations from nuclear attack.

I. Summary

This testimony begins with a brief description of the threat posed by nuclear terrorism and the current inventory of multilateral institutions relating to nuclear security. It then looks at the issue of effectiveness. Are multilateral nuclear institutions effective? A review of the first five decades of the nuclear age suggests that the nonproliferation regime has been a surprisingly powerful tool in preventing nuclear proliferation and enhancing nuclear security.

The testimony then examines how these multilateral tools might fit into a broader strategy against nuclear terrorism. The underlying theme of this strategy is that *homeland security begins abroad*, that preventing nuclear terrorism requires that nuclear weapons and materials outside of the United States be protected from terrorists.

The remarks conclude with a look at the role of Congress, and steps that might be taken to strengthen nuclear regimes and reduce the threat posed by nuclear terrorism. Three areas of Congressional action are considered: oversight, appropriations, and policy innovation.

II. Threat of Nuclear Terrorism

The historical record suggests that nuclear terrorism has not been a priority for terrorists, who for a variety of reasons, have concentrated on the development and use of conventional explosives. Nevertheless, recent events should remind us that though the risks may be small, the danger is real. Documents and interview data from Afghanistan suggest that al Qaeda has a genuine -- if unsophisticated -- interest in nuclear terrorism. Al Qaeda is not the first terrorist organization to express such an interest, and it is unlikely to be the last.

III. Nuclear Treaties and Other Multilateral Instruments

The United States and the community of nations have long recognized the dangers posed by nuclear weapons and the need for safe and secure nuclear plants and

materials. Over the last half century, a number of multilateral initiatives have been used to reduce nuclear-related threats. Some are treaties like the NPT and the Convention on the Physical Protection of Nuclear Materials. Others are informal multilateral groups like the nuclear suppliers group. Still others -- like UNSCOM, KEDO, and the internationally sponsored science and technology center in Russia -- have developed as ad hoc responses to particular crises.

Over time, these multilateral instruments have grown in scope and sophistication. IAEA and other international institutions have developed an array of technical and procedural capabilities that are directly related to the prevention of nuclear terrorism. These capabilities include inspections and safeguards, coordinating intelligence from member states, the application of new technologies for detecting nuclear diversion, the physical testing and tracking of nuclear materials, peer review and training in nuclear safety and security, and the removal and management of orphaned nuclear materials and facilities.

IV. The Track record of Nuclear Regimes: Are They Effective?

Creating a multilateral institution is one thing; creating an effective multilateral institution is something else all together. Some multilateral institutions have been successes; others have been failures. How have multilateral nuclear institutions performed? One can begin by looking at the regime's track record in the field of nuclear nonproliferation. A review of the historical record suggests that this regime has been surprisingly effective.

After 50 years, the most striking feature of the nuclear age is that there are so <u>few</u> nuclear states — far fewer than predicted by virtually every expert and policy maker. As one observer noted, "almost all the published predictions of the spread of nuclear weapons have been too pessimistic."[1]

Perhaps the most famous -- or infamous -- prediction about nuclear proliferation was offered President John F. Kennedy. Kennedy warned that in ten years, an additional twenty-one countries might develop nuclear weapons.[2] The President's projection was

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[1] George H. Quester, "The Statistical "n" of "nth" Nuclear Weapons States," *Journal of Conflict Resolution*, Vol. 27, No. 1 (March 1983), p. 167. Similarly, Mitchell Reiss notes that nuclear weapons did not prove to be "the irresistible temptation that many feared they would be." Mitchell Reiss, The Future That Never Came, *Wilson Quarterly*, Vol. 19, No. 2 (Spring 1995), p. 47.

[2] *Public Papers of the President of the United States: John F. Kennedy*, 1963 (Washington, D.C.: Government Printing Office, 1964), p. 280 or *New York Times*, March 23, 1963, p. 1.

consistent with classified estimates[3] and with published work from universities and think tanks. As one commentator put it, "The belief was common that nuclear spread had proceeded and would continue to proceed about as fast as technology could carry it."[4] Proliferation, wrote Gallois, was "as irreversible as . . . the generalization of firearms."[5]

An overwhelming majority of nuclear-capable countries have opted to forgo nuclear weapons, and over time, the rate of proliferation has actually *declined*. After peaking in the 1960s, the number of new nations joining the nuclear club each decade has gone steadily downwards, and several of the nations that built or inherited nuclear arsenals — South Africa, Ukraine, Belarus, Kazakhstan — chose to renounce their weapons. "When in history," asked one scholar, have so "many nations had the capability to produce a powerful weapon, and chosen not to exercise it?"[6] Indeed, the absence of widespread proliferation may be the greatest policy success of the 20th century.

A key factor in this success was the establishment of the NPT. Archival documents, interviews with former country leaders, and the general pattern of state behavior suggest that the NPT had a decisive impact on the spread of nuclear weapons.

It should be emphasized that the nuclear nonproliferation regime is not a magic bullet. Several factors in addition to the NPT have contributed to nuclear restraint, and like any policy instrument, the nonproliferation regime suffers from imperfections and trade-offs. The record suggests, however, that without the regime, many of those earlier predictions of widespread proliferation might have come true.

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[3] See, for example, Draft Memorandum for the President from the Secretary of Defense, "The Diffusion of Nuclear Weapons with and without a Test Ban Agreement," February 12, 1963, Table 1 (p. 4); Draft Memorandum for the President from the Secretary of State, "The Diffusion of Nuclear Weapons with and without a Test Ban Agreement," July 27, 1962, Table 1, John F. Kennedy Presidential Library. See also William B. Bader, *The United States and the Spread of Nuclear Weapons*, pp. 11-12.

[4] Sherman, *Nuclear Proliferation The Treaty and After*, p. 32.

[5] Pierre Gallois, *The Balance of Terror*, (Boston: Houghton Mifflin), 1961, p. 229.

[6] Quester, "The Epistemology of Nuclear Proliferation," p. 178. Quester describes the limited spread of nuclear weapons "mysterious." NPT opponents used this history to argue that the treaty would fail. As one critic of the argued.... "The Treaty appears in some ways to be a negation of history. All people with the knowledge and resources they needed have progressed through evolutions and revolutions in industry, transport and weapons; from the manual to the machine, from sailing ships to steamers, from the oxcart to the aeroplane, and from the club to gun and bomb." X. "Australian Doubts on the Treaty." *Quadrant* 12:53 (May-June 1968), p. 31.

V. Nuclear Regimes and the Fight Against Terrorism

Reducing the threat of terrorism requires an overall strategy. Such a strategy would likely include one or more of the following principles:

- Defenses against terrorist attacks should include multiple layers.

  One way to prevent terrorist attacks is to increase the number of opportunities for a terrorist operation to fail. The greater the number of defenses or obstacles that a terrorist operation must pass, the higher the likelihood the attack will be discovered and fail.

- The US is only as secure as the weakest link in international security.

  In general, terrorists operate best when they enjoy a territorial sanctuary from which they can plan, develop, and coordinate operations. As Bin Laden's itinerary over the years suggests, terrorists are most likely to find sanctuary in failed states and countries wracked by civil wars or other separatist conflicts. Similarly, the security of nuclear materials and technology is determined not by the level of security at its most protected facilities but by the level of security at the least protected facilities.

- It is better to prevent terrorists from acquiring weapons of mass destruction than trying to stop them after they have them.

Taken together these principles suggest that in the field of WMD terrorism, *homeland security begins abroad*. The United States has to improve the level of domestic security, particularly in the areas of aviation and infectious disease, but that will not be enough. We cannot wait for terrorists to acquire nuclear materials and then try to stop them once they are bound for America on their deadly mission.

Regimes provide a way to build the first line of the defense against nuclear terrorism. Moreover, they do so in a way that is financially and politically prudent. The United States cannot single-handedly improve the security of all the world's nuclear installations. Such a task is neither financially nor politically feasible. Working with other nations through existing multilateral nuclear regimes provides a practical alternative for reducing the threat of nuclear terrorism.

VI. Reducing Nuclear Threats: The Role of Congress

Responding to the threats posed by nuclear weapons and nuclear terrorism is often thought of as an executive function, but history shows that the Congress can make a powerful and creative contribution. Over the course of the nuclear age, Congress has passed a number of initiatives that have had a dramatic impact on to course of proliferation. The McMahon Act, the Nuclear Nonproliferation Act, and various nonproliferation certification requirements are just a few of the many examples of Congressional leadership.

As we look to the future, there are a number of actions Congress might take to reduce the risk of nuclear terrorism -- actions that either 1) reduce or reverse the spread of nuclear weapons and materials or 2) improve the safety and security of existing nuclear assets here and abroad. These legislative responses generally fall into one of three categories: oversight, appropriations, and policy innovation.

Oversight

Congressional oversight can be a powerful tool for change. Legislative hearings, annual reporting requirements, and appropriations tied to certification can focus the attention of the executive, the bureaucracy, and the public in a way that can produce real policy results. Given the events of the last several months, there are a number of things Congress might do in this area.

First, Congress should insist on access to all available information about nuclear terrorism. Congress cannot fulfill its legislative responsibilities without such information, and yet, much of this information is scattered or being withheld from the public domain. A variety of news organizations, including the *Times of London* and CNN, have their own cache of documents collected from al Qaeda safe houses and training facilities. Meanwhile, the Department of Defense and various executive agencies have their own sets of documents, as well as the results of prisoner interviews and forensic tests. Most of this information can be made available without endangering sources and methods, and the information that is sensitive can be shared with Congress but safeguarded by traditional practices.

Congress can also request the collection of new information. It can, for example, require that the State Department or the Department of Energy issue an annual report on the status of the nuclear terrorism threat. Such a report could document the current state of nuclear security in the United States and abroad, e.g., the number nuclear facilities, the amount of nuclear materials being stored, the current state of security against terrorism or diversion, the actions being taken to upgrade nuclear security, etc.

Congress can also use its oversight capacity to focus on a particular problem. In the past, Congress has occasionally required that a country's nonproliferation status be certified before it received American aid. One can imagine similar requirements placed on individual agencies or countries, i.e., the certification that an agency or country is making good faith efforts to reduce the threats of WMD terrorism.

Appropriations

Progress against nuclear terrorism will not be possible without financial resources. Unfortunately, efforts to prevent nuclear terrorism have not been a funding priority. This year, billions of dollars will be devoted to new weapons systems and other activities whose purpose is to respond to a terrorist attack. Only a tiny fraction of this amount will expended on activities that would prevent WMD terrorism from happening in the first place.

Consider, for example, the recent announcement by Secretary Abraham that the US government will donate a little over a million dollars to the IAEA to assist with its work against nuclear terrorism. Compare that figure with the tens of billions of dollars in supplemental appropriations that have been approved in recent months. Much of that supplemental money will be spent on important anti-terrorist programming, but the fact remains, that there is something seriously wrong when out of billions of dollars for terrorism, only a million dollars in new money -- the equivalent of loose change in the Federal budget -- goes to the one agency that has worldwide responsibilities for preventing nuclear terrorism.

One sees a similar dynamic at work regarding cooperative threat reduction. After originally submitting a budget that would have reduced overall funding for cooperative threat reduction programs, the President submitted a revised budget that would modestly increase the funding in this area. While the change is welcome, the scale is all wrong. Effective action against nuclear terrorism requires that the administration follow the recommendations of the blue ribbon panel led by Senator Baker. The Baker-Cutler panel recommended that funding for cooperative threat reduction and nuclear security be tripled over the next several years, and that was before September 11th and the subsequent revelations concerning al Qaeda's interest in nuclear terrorism.

In the past, Congress has used its power over the purse to insure that funds were devoted to the problem of nuclear terrorism, even in the face of executive and bureaucratic indifference. Today, the need for Congressional leadership has never been greater. It will again be up to Congress to insist that there are funds for cooperative threat reduction, for the IAEA, and for other efforts aimed at reducing the threat of nuclear terrorism. With rising deficits and a long list of interests lining up for a share of

terrorism-related funds, this will not be easy, but success in the fight against nuclear terrorism depends on continued leadership from Congress. Congress must find a way to not only fund efforts to prevent nuclear terrorism, but fund them at a scale commensurate with the size of the problem.

Policy Innovation

One of the most exciting areas where Congress can contribute to nuclear security is in the field of policy innovation. The outstanding example of this kind of policy entrepeneurship is the aforementioned cooperative threat reduction -- a concept that did not exist a decade ago and would not have taken hold withhold the efforts of Senators Nunn, Lugar, and Domenici. Today, the challenge is to extend the concept and to pursue new initiatives that will prevent nuclear terrorism. The list of legislative innovations that Congress might consider include the following:

- Internationalizing the concept of threat reduction beyond the former Soviet Union.

This could include 1) developing instrumentalities with the other NPT-designated nuclear weapons states and 2) establishing non-military cooperation with undeclared nuclear weapons states and non-nuclear countries that possess direct use materials.

- Enact improved reporting and regulation of nuclear occupations.

In the United States, airline pilots, aviation personnel, train conductors, and other critical occupations operate under heightened scrutiny. There are special requirements relating to training, substance abuse, internal security, and the like. Workers in these occupations face these additional requirements, because their jobs are directly related to public safety. A similar argument might be made for nuclear engineers and others whose training or access may be critical to the success or failure of nuclear terrorism.

- Developing worldwide civil constituencies for nuclear security.

During the Cold War, the US pursued a variety of initiatives to promote democracy around the world. It set up a special institute to support democratic institutions abroad, established Radio Free Europe, and funded a variety of programs whose purpose was to develop a constituency for democratic governance. For its own part, the executive has established a series of special funds, e.g., the special fund for AIDS in Africa. These same tactics can be applied to the new problem of nuclear security. The Congress could, for example, establish a foundation or institute for the prevention of WMD terrorism. Acting as a private entity, this institute could train and support the development of professional nuclear societies, journalists, locally based environmental groups, and others who could monitor the state of nuclear security and press for improvements in their own countries.

This list of new initiatives is by no means exhaustive. Instead, it is meant to illustrate how Congress might approach the question of policy innovation. Simply put, it makes sense for Congress to think about the policy instruments it has used in other issue domains, and how they might be creatively applied to the new context of nuclear terrorism.

VII. Conclusion

Mr. Chairman, and members of the subcommittee, it has been a great honor to speak with you today. In my testimony, I have tried to describe the danger of nuclear terrorism and the current set of multilateral policy instruments that might be brought to bear on the problem. I have suggested that these multilateral regimes have proven to be very effective and that they can be even more effective if considered as part of a broader strategy against nuclear and WMD terrorism. This strategy, premised on the notion that "homeland security begins abroad," seeks to prevent nuclear terrorism at the source, to stop terrorists before they reach our shores. To accomplish that mission will require the active involvement of Congress. The Senate has been a leader on these issues, but it can do even more. Indeed, it must do more.

September 11th was a wake up call. It is history grabbing us by the collar and telling us to act now before it is too late. No institution has shown more vision, steadfastness, or creativity on the problem of WMD terrorism than the United States Senate, but recent events clearly demonstrate that additional action is required. My hope and expectation is that the Senate will respond to this challenge as it has responded to the challenges of the past, and that America will be a stronger and more secure nation as a result.

Questions from Senator Daniel K. Akaka

1. The IAEA Director General has stated that suicide terrorists make nuclear terrorism more likely than before September 11. Recent attention has been paid to the threat of so called "dirty bombs" made from conventional explosives and radiological waste. Some fear radiological material could fall into the wrong hands since it is often used for commercial purposes such as medical treatment.

Do the NPT and the IAEA sufficiently address this threat? If not, how can they better do so?

I. Radiological Material and Dirty Bombs

The vulnerability of radiological materials and their potential use in so-called "dirty bombs" is a danger that requires immediate action by the government of the United States. To date, no terrorist or country has employed radiological weapons, but from a technological standpoint, dirty bombs pose far fewer obstacles that do other weapons of mass destruction (nuclear, chemical, and biological weapons). There are also indications that al Qaeda may have attempted to acquire radiological materials.

The Treaty on the Nonproliferation of Nuclear Weapons (NPT) and the International Atomic Energy Agency (IAEA) are the most important international policy instruments available today for combating the threat of dirty bombs and nuclear terrorism. Together, the NPT and the IAEA provide the core of the <u>only existing system of protection and accountability for the world's radiological material</u>. Much of that effort focuses on plutonium and highly enriched uranium -- materials that are used to construct nuclear weapons. Recently, however, the IAEA has also intervened to help countries with other material emergencies. In the last year, the agency has sent teams to Georgia, Uganda, and Afghanistan to secure orphaned material that could have ended up in a dirty bomb.

The next few sections describe in greater detail how the NPT and IAEA reduce the risk of nuclear terrorism. The concluding paragraphs look at how the US government can help these institutions more effectively protect the world's nuclear material.

II. The NPT and Nuclear Materials

When most people think of the NPT, they think of proliferation and inspections, not nuclear or radiological terrorism. It turns out, however, that the NPT is critical to preventing nuclear terrorism. Its effect is felt in two ways. First, preventing nuclear

proliferation reduces the odds that terrorists will be able to acquire nuclear weapons or nuclear materials. The fewer the number of nuclear weapons states, the fewer the opportunities there will be for a Bin Laden to acquire nuclear assets -- whether by thievery or with the blessings of the weapons state. By contrast, in a world that is highly proliferated, it would be very difficult to prevent the transfer of nuclear weapons or nuclear material.

The NPT makes a second, equally important but less obvious contribution: inspections. What do safeguards or inspections have to do with nuclear terrorism? The answer is material accountancy. In effect, the NPT requires that countries develop a system for tracking their nuclear materials, a system that allows IAEA "auditors" to confirm that every member can account for its nuclear holdings. More countries provide information about their nuclear materials and facilities through NPT safeguards agreements than any other single mechanism.

The *purpose* of the safeguards system is to prevent proliferation -- to deter a country from diverting material to a nuclear weapons program. The *effect* of safeguards, however, is improved control over nuclear materials, which reduces the chances that it will end up in the hands of terrorists.

III. IAEA and Radiological Materials

The IAEA administers the NPT inspections system, but that is just one of a number of IAEA activities that contribute to the security of radiological materials. This section focuses on four IAEA program areas: physical protection, assistance to the countries of the former Soviet Union, nuclear trafficking, and orphaned sources. In each of these areas -- as with the safeguards system-- the IAEA's primary goal is to help member states upgrade and manage their own national systems.

A. Physical Protection

The IAEA's efforts to improve the security of nuclear material are based, in part, on an international treaty -- the Convention on the Physical Protection of Nuclear Material. This international treaty is a younger and less developed cousin of the NPT. Membership in the Convention on the Physical Protection is not much more than a promise to try to meet international standards, not a regime based on inspection. Nevertheless, it provides one of the few mechanisms available for addressing the vulnerability of nuclear facilities and transportation.

The agency's efforts to promote physical protection have two core elements. The first is developing a set of universal standards, norms, and guides for physical protection. The second is providing direct assistance to member states to help them meet those

standards. The IAEA works with countries to deploy intrusion detection sensors, radiation monitors, access control systems, and other components required for physical protection. Assistance can also take the form of peer review. The agency has established an International Physical Protection Advisory Service (IPPAS) which can be sent to evaluate a country's system of physical protection.

B. Assistance to the Countries of the Former Soviet Union

The collapse of the Soviet Union created new nations with nuclear material but without any system for protecting or safeguarding it. The IAEA responded by developing a Coordinated Technical Support Programme (CTSPs) to assist the newly independent states with establishing a system of accountancy and control. The IAEA has also acted as a coordinator for the sixteen countries (including the US) that have nuclear assistance projects with countries of the former Soviet Union.

C. Nuclear Trafficking

Following reports of the nuclear smuggling in the early 1990s, the IAEA pursued a number of initiatives. It established a new working relationship with INTERPOL, the World Customs Organization, and European police agencies on nuclear trafficking. It also created the Illicit Trafficking Database Program, which today has sixty-nine members. Since its inception in 1993, the database has collected reports on hundreds of incidents of trafficking, about half of which have been confirmed by member governments. The agency also developed the Illicit Trafficking Radiation Detection Assessment Programme (ITRAP), an effort to help member states improve their border controls and detection systems. On the technological front, the agency started the Coordinated Research Project (CRP), a cooperative project aimed at improving detection systems.

D. Securing Orphaned Material

Much of the IAEA's focus involves materials that could be used in nuclear weapons -- materials that are subject to the NPT and the Convention on Physical Protection. These treaties do not cover most of the radiological materials that are found in medical or industrial applications. Unfortunately, some of these materials are sufficiently deadly that their leakage would pose a serious environmental or even terrorist threat. One treaty that does cover these materials is the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency. Under the convention, member countries can request that the agency intervene and secure a radiological source before it is stolen by terrorists or traffickers.

Several countries have requested IAEA assistance. In March of this year, for example, an IAEA team went to Kabul to secure several radiological sources including a unit of Cobalt-60 that was found in an abandoned wing of a former hospital.

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In short, the NPT and the IAEA provide the first line of defense against nuclear terrorism: stopping terrorists from acquiring radiological materials in the first place. This strategy is less expensive and more effective than trying to stop terrorists after they have acquired prohibited materials.

Box 1. Preventing Nuclear Terrorism:

The Role of NPT and IAEA

NPT

- Prevents proliferation (proliferation -> material vulnerability)
- NPT safeguards require systems of material accountancy

IAEA

- Programs to improve the physical protection of nuclear facilities
- Assistance to countries of the former Soviet Union
- Programs to combat nuclear trafficking
- Initiatives to secure orphaned radiological sources and material

Table 1 summarizes the ways that the NPT and IAEA reduce the risk of nuclear terrorism. These are welcome contributions, but are they enough? Is there more that the IAEA or the NPT membership should be doing to reduce the risk of nuclear terrorism? Are there steps the US government can take that would improve the effectiveness of the NPT and IAEA? The next section briefly considers those questions.

IV. Building a More Effective NPT and IAEA

The United States had a strong hand in creating both the NPT and IAEA, and over the years, the US has consistently supported both institutions. In the larger scheme of things, however, neither institution has been a high priority for US governments. There are a number of measures that the IAEA could pursue that would significantly reduce the danger of nuclear terrorism, and there are actions that the US government can take -- both financially and politically -- that would increase the IAEA's effectiveness. Since

these steps are described in detail in responses to two other questions,[7] I want to briefly address how the US can strengthen the NPT.

There is little the US can do to change the actual provisions of the NPT. The amendment process is onerous and probably ill-advised. Opening a discussion on treaty amendments might very well result in a weaker regime. That leaves two other possibilities. One is to strengthen IAEA safeguards, a topic that is explored in the answer to the next question. The other is important as it is simple: do no harm.

At the very least, US governments should avoid actions that weaken the NPT. A recent example might be the controversy over plans to develop new nuclear weapons. Proponents have argued that the US needs new nuclear weapons so that it can threaten the hardened underground bunkers of an adversary. Without these weapons, the argument goes, it will be difficult to deter evil leaders, who like Saddam Hussein, do not care about the lives of their citizens. Several analysts question the assumptions of this theory, but what is not in question is the effect such a move would have on the NPT. Building and testing new nuclear weapons would weaken the treaty and simultaneously boost the standing of bomb advocates in other countries.

In nonproliferation terms, that is the equivalent of destroying the village in order to save it. The treaty is a bargain. If we break that bargain, even in the name of nonproliferation, we could wreck the one instrument that has done more than anything else to prevent a deadly spiral into nuclear anarchy.

No country benefits more from the NPT than the United States. Given the documented effectiveness of the treaty, the US should do everything it can to assure its continued success. That means a) refraining from actions that will be perceived as undermining the treaty and b) living up to our obligations under the treaty . A strong treaty backed by an effective IAEA can prevent the proliferation of nuclear weapons and can provide the centerpiece for new efforts to secure the world's radiological material. Absent a strong NPT and IAEA, it will be virtually impossible to prevent terrorists from acquiring material for dirty bombs -- bombs that will likely be directed at Americans.

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[7] My answer to Senator Akaka's second question provides a detailed list of new measures the IAEA could pursue, and my answer to Senator Cleland's second question offers a closer examination of the IAEA budget and ways that it could be restructured.

2. The IAEA has operated under severe budget constraints. The IAEA estimated that it will need $30-50 million annually to strengthen and expand programs to meet the terrorist threat.

What measures are needed to make the IAEA better able to respond to nuclear terrorism?

I. IAEA, Nuclear Terrorism, and Budget Constraints

The IAEA is the single most important international mechanism for addressing the dangers posed by nuclear proliferation and unprotected nuclear material. No other agency in the world has the equivalent experience, technical expertise, or statutory authority. President Bush has described the IAEA as "central to the world's efforts to prevent" proliferation. Secretary of Energy Abraham, commenting on the problem of nuclear materials, declared that "our security, and that of nations around the world, largely depends upon what this Agency does."

The importance of the IAEA is widely recognized. Less appreciated is the fact that this one agency has numerous other responsibilities. Over the years, the IAEA's burdens have grown at a dizzying pace: more facilities to inspect, more nuclear material to track, more treaties to implement, and more countries in crisis. Responsibilities and expectations have grown, but resources have not. In most years, the agency has been level funded. Unless rectified, the growing gap between expectations and resources may undermine the agency at a time when challenges to nuclear security have never been greater.

In my answer to Senator Cleland's second question concerning the IAEA, I address the question of budgets in greater detail. Here, I want to focus on the measures that will strengthen the IAEA's ability to prevent nuclear terrorism.

II. Strengthening the IAEA's Ability to Prevent Terrorism

One way to bolster the agency's efforts against nuclear terrorism is to upgrade IAEA's programming in four core areas: 1) inspections and agreements, 2) assistance to member states, 3) information collection, and 4) emergency response.

A. Inspections and Agreements

The single most important action that can be taken to improve the effectiveness of IAEA safeguards and inspections is the widespread adoption of the so-called Additional Protocol. The Additional Protocol is an upgrade to the safeguards and inspections

system. It enables the IAEA to address the problem of undeclared or secret nuclear facilities. This was a key issue regarding the Iraqi nuclear program. Today, more than 60 countries that have signed on to the protocol, but only 25 countries have implemented it. (The US signed the protocol but has not acted to bring it into force.)

The US government launched a major campaign to persuade other governments to indefinitely extend the NPT. It should put that same level of effort into seeing that governments adopt the protocols that turn the NPT commitment into a reality. Congress should ask the President to adopt the Additional Protocol and might consider using certification, incentives, or other instruments to encourage other countries to join the new safeguards program.

Second, the IAEA's safeguards budget should be increased $30 million to meet current safeguard objectives. As it stands, the IAEA does not have the resources to carry out its existing inspections program, let alone expanded or improved safeguards. Strengthening the inspection system will require additional funds, but in the meantime, the agency should be given the resources it needs to meet its extant obligations.

Third, the IAEA should expand its collaborative efforts in the development and field testing of verification technologies. The IAEA's technological advantage proved to be valuable in the North Korean case and will likely pay off in the future. Many countries that are considered potential proliferators are developing states that lack sophisticated technology. If the IAEA maintains an aggressive program of verification technology development and field testing, it can maintain a technological advantage over most proliferators -- an advantage that may deter some countries from starting down the nuclear path.

Fourth, in the area of physical protection, the US should support amendments to strengthen the Convention on the Physical Protection of Nuclear Material.[8] The likely changes to the protocol are modest, and even after an amendment, the convention will still be far less demanding than the NPT. Nevertheless, an amendment will give the convention new political momentum and enable the IAEA to do a better job of protecting nuclear facilities and material.

B. Assistance to Member States

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[8] IAEA officials have stressed that the widespread adoption of two other agreements would improve the agency's ability to prevent proliferation and terrorism -- the Comprehensive Test Ban Treaty and a international ban on the production of fissile material. In the current climate, however, neither agreement is likely to make much headway.

Inspections and international agreements are absolutely essential in the fight against terrorism, but to be effective, national governments have to possess the capacity to follow through on their commitments. Nuclear material is spread across more than 70 countries. Most of these countries have the resources and political will to establish national systems of accountancy and control, but some countries are too new, too poor, or too wracked with problems to accomplish the job without help from the IAEA.

IAEA assistance typically takes the form of equipment and training, but the scale of the agency's efforts -- particularly in the areas of physical protection and trafficking -- is quite small. The latest annual report indicates that the agency sponsored over 75 field visits involving nuclear safety.[9] By contrast, no more than 3 visits were made in support of physical protection, a fact that the agency attributes to budget constraints. Similarly, the agency sponsors scores of training courses but only two on the topic of nuclear trafficking.

Security from nuclear terrorism is only as strong as the weakest link. Protecting radiological material will depend on the IAEA's ability to help weak states build and maintain a system of nuclear protection. The IAEA can do much more to help these countries with their safeguards, physical protection, and border detection. It can provide training, peer review, testing, and support services to countries that would otherwise be unable to meet international standards.

The IAEA should also experiment on a pilot basis with developing a new programming element: incentives. Inspections may deter, and physical protection might improve security, but in the end, nuclear security will depend on the commitment of facility operators, employees, and the national regulatory authority. Performance incentives and other tactics can help build the local constituency for nuclear protection that will be necessary for security in the long-term.

C. Information Collection

Another way to strengthen the IAEA is improve its ability to collect information. This is one of the agency's core functions, and in virtually every area, there is more that the agency can do to help combat proliferation and terrorism. In general, the agency needs better access to states and their facilities. It would also benefit from having member

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[9] These include visits of the International Problem Safety Assessment Review Team (IPSART), Operational Safety Review Team (OSART), the Peer Review of Operational Safety Perform Experience (PROSPER), the Safety Culture Enhancement Program (SCEP), the Engineering Safety Review (ERS), the Integrated Safety Research Reactors (INSARR), the Safety Review missions, the Internal Regulatory Review Team (IRRT), and the Peer Review of Radiation Safety.

states provide design information on every safeguarded facility, information about the character of radiological material housed at facilities, and better information about nuclear imports and exports.

The agency also needs to expand the scope and detail of the nuclear trafficking database. As it stands, the database depends on a country reporting information to the agency. As one might expect, the quality of that reporting varies. Fighting nuclear terrorism requires, however, that the international community collect every available fact about any incident of nuclear smuggling. The information is too valuable to lose. One solution is for the IAEA to send a documentation team any time there is a report of smuggling. The Nuclear Trafficking Documentation Team, or NTDT, could collect public domain information, review court records, and interview officials. The team would not issue a report but instead simply collect information for use in the IAEA's confidential database.

On the technical side, the agency should be allowed to establish a network of laboratories in nuclear forensic analysis. The network would enable the agency to analyze and trace radiological materials that were orphaned or captured from traffickers.

Table 1. Recommended Measures to Strengthen the IAEA

A. Inspections and Agreements
- Adoption of the Additional Protocol
- Contribute $30 million to meet *current* safeguards objectives
- Expand agency development and testing of verification technologies
- Support amendment of the CPPNM

B. Assistance to Member States
- Increased support for safeguards, physical protection, & anti-trafficking programs including...
  - Training/courses
  - Peer review
  - Testing
  - Support services
  - Technology transfer
- Incentives for participation and performance

C. Information Collection
- Improve access to states and their facilities
- Design information on every safeguarded facility
- Improve information about stored radiological material
- Improve information about nuclear imports and exports
- Expand trafficking database
- Establish Nuclear Trafficking Documentation Teams (NTDT)
- Establish laboratory network for forensic analysis

D. Emergency Response
- Expand ability to secure, remove, and store orphaned sources

III. What Congress Can Do

These initiatives would significantly strengthen the IAEA and reduce the risk that a terrorist would acquire the materials for a nuclear or radiological attack. The IAEA

cannot act on any of these recommendations, however, unless it has the financial and political support of its member states, particularly the United States.

The Congress has the power to substantially upgrade the IAEA's effectiveness by providing financial resources to redress past budget shortfalls and to support new measures to combat terrorism. Other governments can be called upon to foot the bill, and they should, but there is no avoiding the fact that the US is the most important player here. It is the country that created the IAEA and it benefits the most from IAEA efforts to stop proliferation and prevent terrorism. US leadership, especially US financial leadership, is a prerequisite for strengthening the IAEA.

How much money is needed beyond the $30 million recommended to cover current safeguards? In response to Senator Cleland's second question, I review the agency's budget and present three funding alternatives.

3. As you state in your testimony, the number of nuclear states has not grown to the degree predicted 20 or 30 years ago.

How effective is the NPT today in addressing emerging nuclear states?

The NPT has been one of the greatest public policy successes of the 20th century. For over three decades, the treaty has worked to prevent the spread of nuclear weapons. In the years to come, the NPT will likely prove to be even more important. The next section looks at NPT's previous success, and the relevance of that success to today's proliferation challenges. The concluding sections look at two common criticisms of the treaty ("countries will cheat" and "inspections can be beaten").

I. NPT: Explaining Past Success

The NPT has been an unheralded success in preventing the widespread proliferation of nuclear weapons. Despite every prediction by experts and policy makers, nuclear weapons did not proliferate rapidly. We do not yet live in a world with 30 or 20 or even 10 nuclear weapons states. In fact, over time, the rate of proliferation has actually *declined*.

The rate of proliferation hit its peak in the 1960s, when three countries joined the nuclear club (France, China, Israel). Since then, the number of new countries acquiring nuclear weapons has decreased.[10] There are many reasons for this unexpected success, but one of the most important causes was the NPT.

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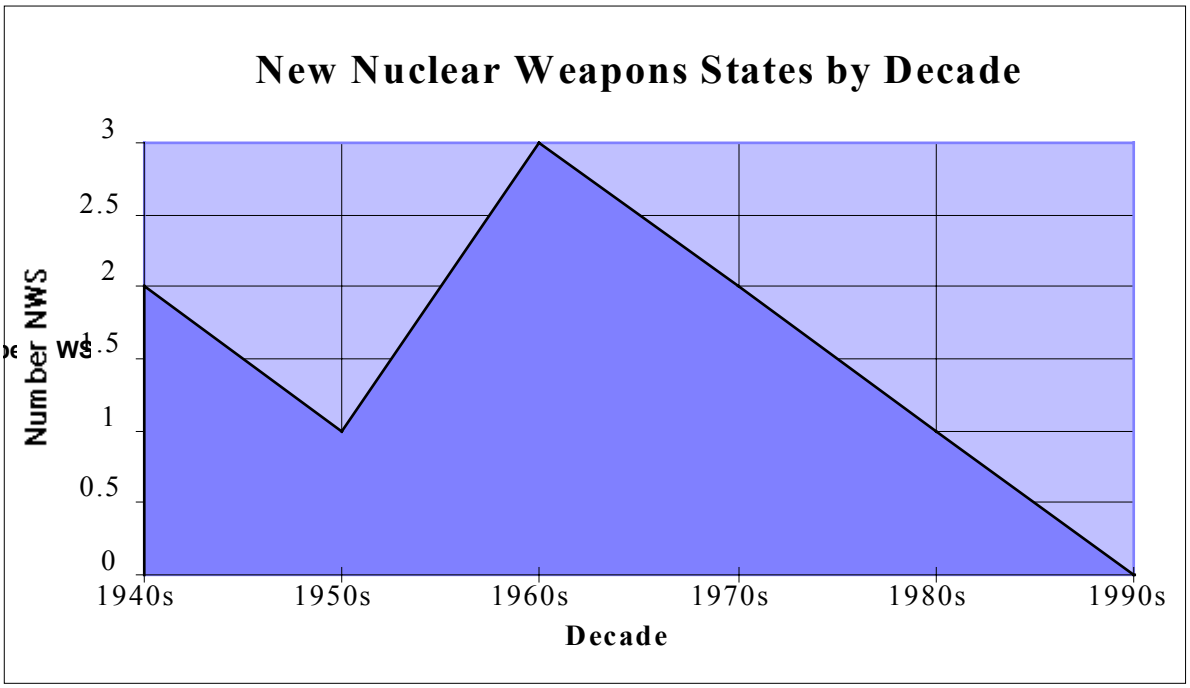
[10] There is some dispute over North Korea's nuclear status, with some intelligence estimates reportedly suggesting that North Korea has one or two nuclear devices. Other estimates reject that claim.



It is no coincidence that NPT came into force in 1970, the very point at which the rate of proliferation begins its descent. Evidence from a variety of sources -- declassified documents, interviews, statistical data -- suggests that the treaty had a powerful impact on nuclear decision making, especially on countries that had nuclear weapons aspirations. In the absence of the treaty, the problem of proliferation -- and the danger posed by nuclear terrorism -- would be far worse.

How did the NPT achieve this success? Many commentators associate the success of the NPT with the development of an international norm. My research, however, suggests that the effect of norms is a positive but secondary factor. Instead, the NPT's real influence has more to do with its ability to shape the internal political debates and bureaucratic battles of countries that consider going for the bomb.[11]

Once a country joins the treaty, the pro-bomb forces within that country face an uphill political struggle. They have to persuade the country's leadership to either withdraw

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[11] The treaty drew a line in time and required that countries openly declare their nuclear intentions. It reframed the debate over nuclear weapons from a purely "defense issue" to a broader "foreign policy issue" and in doing so, reshaped the composition of the decision group. In short, the NPT defined the issue, influenced who got to sit at the table, and created a deadline for action. It also created political and bureaucratic winners and losers. Once a country ratified the treaty, the pro-nuclear constituency that had been pushing for the bomb often broke up and moved on to other issues.

from the treaty or to cheat. Both choices have obvious downsides. Withdrawing from the treaty will be correctly interpreted by other countries as a signal that the country is seeking nuclear weapons. Cheating carries its own risks. Both strategies require a major political commitment. In short, pro-bomb forces in NPT countries face numerous political and technical obstacles that make establishing a bomb program very difficult.[12]

II. NPT Today: Preventing Future Proliferators

The treaty has been remarkably successful, but it also provides an invaluable tool for addressing today's proliferation threats. NPT-related safeguards are the largest element in the world's only existing system of nuclear accountancy. Virtually all states participate in an NPT or IAEA-based safeguards system. These safeguards are critical to any future nonproliferation success, and as was discussed in Question 1, they are just as important from the standpoint of terrorism and material security.

Even without safeguards, a healthy treaty acts as a constraint, making it difficult for nations to go back and reconsider their nuclear posture. There are many countries that do not have nuclear weapons programs now, but that fifty years down the line, may be tempted. It could be Germany, Japan, Taiwan, South Korea-- or a country we cannot today imagine.[13] A robust NPT makes backsliding or a reversal less likely.

The NPT also provides countries with a *non-military option* for responding to the threats posed by other nuclear weapons states. Egypt provides an especially good example. Egypt faces a potential nuclear threat from Israel. Countries in Egypt's position have a strong incentive to balance against the forces of their prospective enemy -- matching the adversary weapon for weapon. The NPT has given Egypt another alternative. It has provided Egyptian leaders with a *political* strategy for dealing with a military problem. By embracing the NPT and using it to press for Israel's denuclearization, Egypt has found a way to counter the threat it faces without having to build its own nuclear weapon. Iran may find itself in a similar situation if Iraq acquires nuclear weapons, as

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[12] One problem for bomb advocates is that the treaty's effect is "asymmetrically progressive." Once a country is in the treaty, the tendency is for the country to make progressively stronger commitments to nonproliferation (e.g., agreeing to stronger safeguards over time). The result is that officials who want a bomb program find themselves in an ever tightening straightjacket.

[13] Thirty years ago, North Korea and Iraq were not on the lists of countries that were considered proliferation dangers. Twenty years ago, no one considered the possibility that the Soviet Union would break up and that Ukraine would have to decide whether to keep or renounce its inherited nuclear weapons.

could various countries in East Asia if there is an outbreak of proliferation in that region.

Finally, the NPT provides an instrumentality for countering countries that act on their nuclear ambitions. Together with UN Security Council resolutions on Iraq, the NPT provides the chief legal and political basis for action against a non-nuclear member state that has an active weapons program.

Table. 1 How The NPT Prevents Proliferation

- Influences internal political and bureaucratic battles over nuclear weapons. Creates obstacles for bomb advocates
- Makes it difficult for governments to reconsider their nuclear posture at a later point, i.e. it helps lock in the commitment
- System of inspections deters cheating
- Provides countries a way to respond to nuclear threats without building their own nuclear weapon
- Provides instrumentality and political basis for acting against illicit nuclear programs

III. Criticisms of the NPT

Of course, no policy instrument is perfect, and the NPT is no exception. Critics of the NPT, complain that the treaty is flawed. They contend, first, that nations will cheat. The treaty, they maintain, limits the actions of the law abiding countries to the advantage of states that are willing to ignore international niceties. Second, they argue that inspections do not work -- that countries with a nuclear program can beat the system of international safeguards.

Let's consider each criticism.

A. Nations will cheat

Critics point to Iraq and North Korea as examples of countries that were willing to break their treaty commitments. Others point to Chinese nuclear assistance to Pakistan and Russian technology transfers to Iran as additional cases of cheating. Why should we rely on a treaty, they ask, when others do not live up to their obligations?

<u>A1. There have been very few cheaters.</u>

The NPT is over three decades old and has 189 members. The surprise is not that there have been governments that cheated. No, the surprise is that there have been so few. The treaty promised prospective members that if they joined, they would enjoy broader access to nuclear technology. One might have expected therefore, that countries with clever leaders and bad intentions might join the treaty in order to gain access to nuclear assistance and then use this help to develop a bomb in secret. The historical evidence indicates, however, that countries that wanted and later developed nuclear weapons -- South Africa, India, Pakistan, Israel -- stayed out of the treaty. Moreover, countries that were unsure about their nuclear plans did not ratify the treaty until after they decided to renounce nuclear weapons. They did not join first and decide later. In short, even countries that wanted nuclear weapons took the treaty seriously, more seriously than most international agreements. They went out of their way to avoid cheating. Iraq and North Korea represent extreme cases that are singularly rare.

A2. Without a treaty, there are no cheaters, but lots of proliferators.
In the absence of any international restriction on nuclear behavior, countries are free to do what they like, including building nuclear weapons. In an "anything goes" environment, it is far easier for countries with nuclear weapons programs to acquire technology and materials and do so in secret.

A3. Compared to what?
Public policy requires that one compare the costs and benefits of different options. Most policy instruments have limits or costs. The NPT is no exception, but it can boast an exceptionally high rate of compliance. What competing policy alternatives perform as well? Both counter-proliferation and missile defense, for example, cost more and have higher failure rates. That is not to suggest that counter-proliferation and missile defense have no place, but rather a way of highlighting the fact that critics of the treaty need to employ a consistent baseline or yardstick when evaluating policy alternatives.

A4. Allegations that China and Russia have cheated are simply that: allegations.
Longtime students of proliferation have learned to be rather skeptical about the spectacular, press grabbing claims that are a prominent feature of nuclear affairs. Consider the China-Pakistan case. Historians of the Pakistani nuclear program point out that the program began in the early 1970s, and that the path to the Pakistani bomb was not through China but through Europe. Pakistan learned how to produce enriched uranium by sending a spy to work at URENCO, the European enrichment consortium. Allegations concerning Chinese assistance come much later chronologically and focus on warhead design. The issue is not whether China "gave" the bomb to Pakistan. Pakistan gave Pakistan the bomb. The only issue is whether China helped Pakistan build a more advanced version of a weapon it already possessed. Still, if such information was transferred, it would constitute a violation of the NPT.

So, are these allegations true? It is difficult to say. Certainly there is no public domain evidence that would prove such a transfer. If it did happen, it flies in the face of a thirty year trend in Chinese nonproliferation policy. In the 1960s, Mao was one of the few leaders in the world who openly advocated *more* proliferation. He even offered to share China's nuclear weapons technology with other countries.[14] The policy did not last long, however. Beginning in the 1970s, China adopted an increasingly mainstream policy of nonproliferation. This evolution in Chinese nonproliferation policy culminated in 1990s, when China joined the NPT.

The case against Russia is weaker. Minatom and the Russian nuclear industry certainly suffered following the collapse of the USSR. Both have an incentive to export, and there are Iranian officials who want to expand their nuclear infrastructure. What is lacking, however, is evidence that the Russian government has knowingly transferred bomb-related technology. The Russians are helping build nuclear power reactors at Busheer, but these are light water reactors. They are of little use to a weapons program. Indeed, it is light water reactors that are being given to North Korea as part of the agreement to roll back its nuclear program.

Another area of concern is laser enrichment technology, but Russia's transfers have only involved "lab" level technology -- not technology that can be used to build nuclear weapons. American officials upset with the transfers have conceded as much but complain that any help to Iran's nuclear program -- even if it is not bomb related -- helps Iran build its general expertise in the field. This, however, is not a violation of the NPT. In fact, the NPT establishes that countries are entitled to access to civilian nuclear technology.

B. Inspections are flawed

Critics of inspection cite the failure of IAEA inspections to detect Iraq's clandestine program. They argue that governments guilty of cheating will not invite or allow inspections, and that inspectors can be fooled.

<u>B1. Proliferators do submit to inspection, and they get caught.</u>

It is said that guilty parties will not invite or allow inspection, and yet that is precisely what happened in the case of North Korea. It was IAEA inspections that led to the North Korean nuclear crisis in the first place. In the case of Iraq, IAEA failed to identify Iraq's weapons program, which relied on undeclared facilities. An inspection is only as strong as its requirements, and up until the 1990s, most nations wanted IAEA to restrict

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[14] The two cases where there is the strongest evidence that China at least entertained the idea of transferring nuclear technology are Egypt and Indonesia -- both in the 1960s.

itself to declared facilities. After the Gulf War, the inspections regime was strengthened. Now, under the Additional Protocol, IAEA will have the ability to identify illicit, undeclared activities.

B2. Inspections are designed to deter, not defend.
There is a common misconception about inspections. It portrays the inspection regime as defense. According to this view, safeguards are a kind of wall that protects nuclear material from being siphoned off for a bomb program. Proliferators search the wall for a hole or a weak spot. When they find one, they exploit it and become a nuclear weapons state. This concept of safeguards is intuitively appealing. Unfortunately, it is just plain wrong.

The safeguards system is not designed to defend, but to deter. The question is not whether an inspection system is perfect. Rather, the question is how much risk a proliferator is willing to take that he or she will be caught. Say, for example, that there is a 10% chance that a country could beat an inspection system. One in ten sounds uncomfortably high, but one must look at it from the perspective of the proliferator. Governments, even "rogue" dictators, will not cheat when the odds of getting caught are 90%. Quite the contrary, proliferators need a high level of confidence that they will succeed. The safeguards systems deters proliferators, because they know that if they cheat, they will get caught.

B3. The inspection system is dynamic: it has gotten stronger and stronger over time.
The fixed principles of nonproliferation are set out in the NPT, but the system for implementing them -- the safeguards system -- has evolved over time. Safeguards are far more sophisticated today than when they began in the 1950s. When they started, safeguards were limited to research reactors. They were expanded to include nuclear facilities of all kinds, and continue to be updated today.[15] If the trend of the past four decades holds true, then one can expect the safeguards system to grow stronger and more robust as additional improvements are made.

B4. Inspections have been effective.
The fact of the matter is that IAEA inspections did identify problems with the North Korea declaration. In addition, UNSCOM inspections repeatedly forced Iraq to amend its declarations and admit that it had a larger WMD program than it had claimed.

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[15] The formal modifications include the move from INFCIRC/26 to INFCIRC/66/Rev 2, Tlatelolco Treaty (GOV/INF/179), INFCIRC/153 (Corrected), and INFCIRC/540 (Corrected). Other important but less formal changes have also taken place, including the *use* of challenge inspections, the widespread acceptance of the Fullscope Safeguards concept, and the agency's nuclear trafficking initiatives, to name just three.

Indeed, the UNSCOM/IAEA process in Iraq resulted in the destruction of more weapons than all the bombing during the Gulf War.

Table 2. Criticisms of the NPT

Criticism of NPT	Response to Criticism
Nations will cheat	1. Cheating is extremely rare; fewer cheaters than expected 2. W/O a treaty, there are no cheaters, only proliferators 3. Compared to what? What alternative performs better? 4. Allegations concerning China and Russia are unproved
Inspections are flawed	1. Proliferators submit to inspection, and they get caught 2. Inspections are designed to deter, not defend 3. Inspections are dynamic: having gotten stronger over time 4. Inspections have been effective: more Iraqi weapons destroyed by inspection than by bombing

IV. Conclusion: The NPT Paradox

I have spent over a decade conducting interviews and collecting evidence on proliferation and nuclear decision making. Over the years, that research has uncovered a number of surprises and ironies. One of the most striking concerns the role of the NPT.

Today, there is deep skepticism about the value of multilateral treaties. Even supporters of treaties are defensive -- first qualifying their statements with the admission that treaties are flawed. This seems particularly striking given the history of the NPT. The NPT turned out to have a more profound effect than anyone anticipated, but like Rodney Dangerfield, it gets no respect.

Certainly one irony is that the NPT and IAEA would probably not exist if today's pessimism about multi-lateral treaties had been in vogue during the 1950s and 1960s. Both the NPT and IAEA were conceived during the Cold War, prior to detente. It was a time characterized by competition and suspicion. Still, the leaders of that era found the imagination and courage to do what had never been done before. At no point in history had the nations of the world gotten together and agreed to renounce the most powerful weapon in existence, complete a system for verifying compliance.

Today, it is unlikely that an NPT would pass. Treaties that demand less than the NPT -- the Comprehensive Test Ban Treaty being one example -- have not fared well in recent years. One is left to conclude that the leaders of decades past, people who lived in what is usually considered a more dangerous period in American history, saved the world from proliferation by doing what people today would not do. The added paradox is that the new skepticism about treaties comes after the NPT proved itself to be so effective.

Wise leaders will ask themselves how they can build on past success -- how can they learn from and leverage previous nonproliferation accomplishments. In many ways, the most difficult task has already been completed. Most of the world's states have agreed to renounce nuclear weapons. The objective now is to make sure that countries maintain those commitments. A strong treaty with robust programs of safeguards and technical assistance will do just that. It is the first, best hope for preventing a nuclear nightmare.

Questions for Dr. Jim Walsh from Senator Max Cleland

1) In your testimony, you discussed nuclear treaties, multilateral agreements, and state sub-national terrorist groups. You stated that the potential sources of trouble are numerous. Can you give us a "most likely scenario" regarding the nuclear threat and rogue terrorist groups such as Al Qaeda and others like them? What is the most likely threat? How will the weapon be used? What can we do as a nation to prevent such a catastrophe from occurring?

I. Threats Likely and Unlikely: Three Scenarios

There are three variants of nuclear terrorism that cause concern: 1) a terrorist group that develops its own nuclear weapon, 2) a terrorist group that steals or otherwise acquires a nuclear weapon from a nuclear weapons state, and 3) a terrorist group that acquires radiological material for a radiological weapon or "dirty bomb."[16]

A. Terrorists Build Their Own Nuclear Weapon

Of these three threats, the first -- a terrorist with a home-made nuclear weapon -- is the least likely. Building a nuclear weapon is beyond the technological, financial, and organizational capacities of terrorist groups.[17] It is not an insurmountable technological challenge for most medium-sized countries, but a country has many times the resources of even the most wealthy terrorist group. Countries can spend billions of dollars and devote hundreds of personnel to a nuclear weapons program -- a program that may take a decade to complete. Even then, success is not guaranteed. If a terrorist group were able to steal fissile material (highly enriched uranium or plutonium), the task would be easier but daunting, nevertheless.

B. Terrorists Procure a Nuclear Weapon

The second scenario -- terrorists who are able to acquire a ready-to-use nuclear weapon from a country -- is a more likely threat than a terrorist with a home-made bomb. A terrorist could acquire a weapon from a country in one of two ways, either with the

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[16] A fourth kind of nuclear-related terrorism, not discussed here, involves conventional attacks on nuclear installations like power plants and waster storage facilities.

[17] In general, the cell-type organization that most terrorists use does not lend itself to complex technological projects, especially when easier alternatives are available. Some of my respected colleagues have a different view. They believe that a small group could construct a nuclear weapon given a supply of fissile material. That may be theoretically true, but the assumptions required are so extreme as to be unrealistic -- at least for now.

consent of the state (e.g., a government sells or transfers a nuclear weapon) or without the consent of the state (e.g., the weapon is stolen).

It is unlikely a government would share a nuclear weapon with a terrorist group. In this first half century of the nuclear age, no country has done so. Governments have resisted sharing nuclear weapons with their closest allies, let alone terrorist groups. Terrorist groups are unappealing partners for many reasons. Terrorists are difficult to control, and perhaps worst of all, they could turn against their nuclear patron.

The other possibility -- that a terrorist might steal a usable nuclear weapon -- is more troubling. On average, one would expect that countries with nuclear weapons will have a strong incentive to protect them. Furthermore, one would expect that countries with smaller arsenals -- nations like India and Pakistan -- would find the task of protecting their nuclear weapons relatively straightforward. That may well be true -- on average.

The problem is the exceptions. Reports that Pakistani nuclear scientists were friendly with the Taliban and al Qaeda illustrate one danger. It is conceivable that terrorist groups might recruit sympathetic nuclear insiders. Even worse, one could imagine a terrorist organization actually taking control of a country with nuclear weapons. What would have happened to Pakistan's nuclear weapons had Omar and Bin Laden controlled Pakistan instead of its northern neighbor?

The dangers are not confined to new or poor nuclear weapons states, however. There are currently thousands of nuclear weapons spread out among eight nuclear weapons states. In general, the greater the number of nuclear weapons, and the greater the number of nuclear weapons states, the more likely it is that weapon will be stolen and used.

C. Terrorists Build a Radiological Weapon

In the short-term, the most likely terrorist threat is the use of a radiological or dirty bomb, particularly against an overseas target. A radiological bomb is a conventional weapon with radiological material added. The explosion does not set off a nuclear reaction but instead produces a conventional blast that disperses radioactive material. This threat is most likely, because it poses the fewest technological, financial, and organizational obstacles. The traditional expertise of terrorist groups is conventional explosives, and nuclear materials are widespread and, in some instances, vulnerable to theft.

One indicator of that vulnerability is nuclear trafficking. The IAEA's nuclear trafficking database contains hundreds of confirmed cases of smuggling. Most involve criminals

attempting to pass off low grade radiological material. A handful of cases also involve fissile materials, including an incident in July, 2001, involving roughly 5 grams of highly enriched uranium.

II. How Big a Threat?

How big a threat is nuclear terrorism? The answer depends on whether the concern is tomorrow or ten years from now.

An Attack Tomorrow

Judging from the historical record, one would expect that the chance of an attack tomorrow with nuclear or radiological weapon is small. Every year hundreds of terrorist incidents take place. Most involve local actors in local zones of conflict, and an astonishingly high percentage -- virtually all of them -- employ conventional explosives. To date, no terrorist has used a nuclear or radiological weapon, and even al Qaeda, the largest, most resourced, and most internationally oriented terrorist organization has put the bulk of its assets (money, training time, operations, research and development, etc.) into conventional explosives.

There is evidence that al Qaeda has a superficial and unsophisticated interest in nuclear weapons, but nothing on the scale that would be required for a nuclear weapons program. Indeed, after searching over 60 sites in Afghanistan, American officials could find no physical evidence that Bin Laden possessed radiological materials or had an active nuclear weapons effort.

That's the good news. Other information about Bin Laden is less reliable but more worrisome. There is a report attributed to a former al Qaeda member that Bin Laden had a "canister" of radiological material. Speculation that connections between al Qaeda and Chechen separatists may have enabled Bin Laden to acquire nuclear material. Such speculation received a boost from Bin Laden himself when it was (misleadingly) reported that Bin Laden claimed to possess nuclear weapons.[18] More recently, Abu Zubayda, a high ranking al Qaeda official captured in Pakistan, reportedly threatened that al Qaeda possessed and would use a radiological weapon.

In the near term, most terrorism will continue to be local and conventional. Some terrorist groups will manifest an interest in nuclear weapons, but they will not be able to translate that interest into a credible nuclear program. On the downside, it appears

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[18] In a published interview, Bin Laden was asked about chemical and nuclear weapons. He replied that he has "these weapons," but the translation does not specify which weapons -- chemical, nuclear, or both.

that international terrorist groups may be developing an interest in radiological weapons. If such weapons are used, there is always the possibility that such an event will act as a catalyst that leads to additional radiological attacks.[19]

Ten Years From Now

In the intermediate term, assuming no dramatic action by the US and other governments, the number and severity of the dangers increase. Over time, terrorists may develop a higher level of technical expertise, gain access to unprotected fissile materials, and/or retain the services of nuclear insiders. They might be able to take advantage of a state in crisis and gain access to a usable nuclear weapon. They certainly will be able to develop and use radiological weapons.

In sum, there is good reason to worry. A radiological attack, though not likely to be crippling, would be a terrible and tragic event for the country, and in particular, for people in the area of attack. It would also mark the first ever use of radiological weapons. Worse still is the fact that an attack with a nuclear weapon is not impossible. It is *possible* that a terrorist organization could acquire a nuclear weapon. The consequences of such an attack would be unspeakable -- on a scale unknown in American history.

III. Preventing Nuclear Terrorism: Five Principles

This section outlines a strategy for preventing nuclear terrorism. Of course, one way to prevent nuclear terrorism is to reduce all terrorism, i.e., to use the tools of law enforcement, diplomacy, financial regulation, intelligence, and military force to capture, disrupt, and deny sanctuary to terrorist organizations. These activities can help make acts of terrorism more difficult to carry out, but ultimately, protection from nuclear terrorism can only be achieved by addressing the vulnerabilities of nuclear weapons and radiological material -- the source of the threat. If terrorists can be denied access to nuclear weapons and material, acts of terrorism will continue, but there will be no nuclear terrorism.

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[19] Some events have a "demonstration effect." They prove to an audience that some act -- in this case, a terrorist act -- is possible. As a result, other groups or individuals consider adopting the same tactic. Some events, however, do not produce a demonstration effect. Consider, for example, the case of the Aum, the Japanese religious cult. Their partially successful and widely reported chemical attack on a Tokyo subway was not followed by an outbreak of chem and bio attacks, despite expectations to the contrary.

Preventing terrorists from using nuclear and radiological weapons requires a multi-part strategy. Table 1 lists five principles or pieces of a strategy.

Table 1. Strategy to Prevent Nuclear Terrorism
Reduce & Consolidate the number and sources of nuclear weapons and radiological material.
Deter & Defend against the theft and diversion of radiological material.
Detect, Trace & Document the theft or diversion of nuclear weapons and radiological material.
Analyze & Adapt to the threat.
Engage other countries and the American public in efforts to prevent nuclear terrorism.

1. Reduce & Consolidate

This is the cheapest and most effective way to combat the risk of nuclear terrorism. It is predicated on the simple notion that the more weapons and material spread around the globe, the easier it will be for a terrorist organization to identify and exploit a vulnerability.

Reducing nuclear and radiological material can be accomplished several ways including the outright purchase of non-replenishable fissile and radiological materials, the blending down or mixing of fissile material for use in low enriched uranium or mixed oxide fuel reactors, the immobilization and permanent disposal of plutonium and other materials, and the replacement of older nuclear reactors with new reactors whose fuel or waste pose fewer hazards.

The next task is to consolidate the remaining nuclear and radiological material, so that it is distributed across fewer locations. That can be accomplished by merging research sites and other facilities with material, removing orphaned sources, and providing for the transport and centralized storage of nuclear and radiological materials.

Reducing the source of the threat also means reducing the number of nuclear weapons and nuclear weapons states. Here, the first step is to prevent any additional proliferation of nuclear weapons, and that requires a healthy NPT and a robust IAEA. The nuclear weapons states also need to reduce the size of their stockpiles of nuclear weapons. In this context, Russia and the US should continue to pursue arrangements that result in transparent and irreversible nuclear arms reductions (especially tactical nuclear weapons and weapons lacking devices to prevent unauthorized use.)

2. Deter & Defend

The first objective is to reduce and consolidate the number and sources of weapons and material. The next objective is ensuring that the remaining holdings are safe and secure. Securing weapons and material involves two elements: a) deterring potential terrorists and proliferators from even attempting to steal bombs and material and b) defense in case deterrence fails.

A rigorous safeguards and inspection system provides the best deterrence against a proliferator that is considering a nuclear weapons program.[20] Deterring terrorists, however, is far more difficult. One available tactic is to deter the emergence of third party traffickers or black market brokers of material though aggressive sting operations. The objective of stings is not only to capture criminals but to render the market too risky, both for potential sellers and potential buyers.

In the end, however, meeting the terrorist threat will mean relying on defense, not deterrence. Defending against the theft of weapons and material requires a number of steps, most of which involve upgrading physical protection and improving systems to prevent unauthorized use. Other tools for improving defense include a selective expansion of the cooperative threat reduction concept to other nuclear weapons states and improved reporting and regulation of nuclear-related occupations.

3. Detect, Trace & Document

Given the current state of physical protection, a loss of additional nuclear material is virtually certain, but even if physical protection were better, prudent governments would want a system for detecting the loss of weapons or material as quickly are possible. Safeguards and systems of material accountancy provide the main tool for detecting the loss of nuclear materials. After such a discovery, the next task is to locate the missing material, most likely by detecting its movement, e.g., as it crosses international borders. That will require a much more developed system of world-wide radiological detection.

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[20] See the response to Senator Akaka's first question.

Of course, finding a discrepancy in the books is not the only way to discover that a theft has taken place. A second way is finding material in a place it should not be -- in a bus terminal, at an abandoned location, in a sting operation. Then the task is identifying the material and tracing its origins back to a compromised facility. Tracing enables governments to identify and remediate problem facilities, and it may provide information that helps with the apprehension of culprits. Effective tracing requires a network of nuclear laboratories that can analyze samples and a database of civilian facilities and the physical characteristics of material held at those facilities.

Finally, the entire incident -- from discovery to resolution -- has to be documented. This, in turn, can be used by analysts to identify systemic weaknesses and develop new methods for protection.

4. Analyze & Adapt

In the campaign against terrorism, each side has certain advantages. Terrorists, for example, have the advantage of being able to select the location and the timing of an attack. Societies battling terrorism also have advantages. One is resources. Governments have far more money, people, and technological resources at their disposal than international terrorist organizations. There are also less obvious, but equally important, resource advantages: information and brain power. We can outspend the terrorists, but we can also outthink them.

Outthinking the terrorists, particularly in an area like nuclear terrorism, requires two components: having the best and brightest minds working on the problem of terrorism and having as much information as possible about terrorist behavior and interest in WMD. Unfortunately, neither is in place.

Over the past decade, the number of students, scholars, and analysts taking up the study of terrorism -- and international security more generally -- has dropped off dramatically. Dotcoms and e-businesses, not terrorism and proliferation, have drawn the interest. Within academic departments the situation is even worse. Colleges and universities are not hiring people who work on proliferation and terrorism, and in fact, the whole field of security studies is increasingly marginalized within the academy.

In short, the US needs to rebuild its intellectual infrastructure. We need more people thinking about the problem of terrorism and WMD. That means recruiting students and young scholars to the field and encouraging established scholars and analysts at universities, think tanks, and NGOs to consider new research. Congress could, for

example, establish an institute to promote the study of terrorism, modeled on the highly successful United States Institute of Peace.[21]

Having the brightest minds working on the problem of terrorism will only be useful, however, if there is information and data that can be analyzed. This is another area where the Congress, in particular, has a role to play. Congress should exercise its oversight prerogatives to insure that information about terrorism is available to analysts, scholars, and the public.

After an attack, there is an understandable impulse to hold all information close to the vest. No one wants information released that would tip off a terrorist group and help them evade capture. Luckily, that kind of information is but a tiny fraction of the information American officials have collected so far. Indeed, the vast majority of the new data on al Qaeda and terrorism can and should be released to the Congress and the placed in the public domain.[22]

Failing to release the information will ultimately weaken America's ability to combat terrorism. An executive monopoly on information will all but guarantee that the government will be slow to react and adapt as the terrorists change. Governments are not known for their nimbleness; they typically have to be pushed by Congress or the public to consider new ideas. Indeed, for the past decade, most of the important ideas on terrorism and WMD have not originated with the US government but in the private sector -- at universities and think tanks.

If the executive continues to withhold the information it has collected -- from safe houses, prisoner interviews, forensic tests at training sites in Afghanistan, etc. -- it will

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[21] "The United States Institute of Peace was signed into law in 1984 by President Ronald Reagan. The Institute is authorized and annually funded by Congress as an independent, nonpartisan federal institution that is insulated from political pressures, but able to assist the Executive Branch, Congress, and others with research, analysis, and information." [www.usip.org]

[22] Signal intelligence aside, most of the information collected on al Qaeda does not raise the usual concerns about sources and methods. The terrorists already know who among them has been captured and what sites have been searched. They have already made adjustments based on those losses. Indeed, terrorist organizations and operations are designed to anticipate capture and compromise. In any case, information about al Qaeda's nuclear interest -- various meetings, attempted purchases, numbers of people and money expended on nuclear efforts, the ways nuclear weapons are perceived by al Qaeda members (e.g., are there any religious restraints on use), etc. -- all this can be released to scholars and analysts without jeopardizing law enforcement.

essentially forfeit one of our biggest strengths in the fight against terrorism. We can outthink the terrorists, but only if we attract the brightest minds outside of government and provide them with the data they need to come up with creative and adaptive strategies.

Table 2. Actions to Prevent Nuclear Terrorism
Reduce & Consolidate
Buy back nuclear or radiological material
Blend down direct use material
Immobilize and permanently dispose of radiological material
Replace old reactors whose fuel or waste pose greater hazards
Consolidate the number of nuclear facilities
Establish centralized storage for material
Strengthen the NPT and the IAEA
Pursue transparent, irreversible nuclear arms reductions
Deter & Defend
Strengthen safeguards
Increase stings operations against traffickers
Fund IAEA
Upgrade physical protection
Improve systems to prevent unauthorized use
Fund the Baker-Cutler recommendations
Selectively expand concept of threat reduction to other countries
Improve reporting on and regulation of nuclear occupations.
Detect, Trace & Document
Strengthen safeguards
Improve radiological monitoring at borders and transit areas
Establish network of labs for material analysis
Establish library of material samples
Investigate and document theft or diversion
Analyze & Adapt
Fund graduate research on terrorism and WMD
Establish a US Institute on Terrorism
Use the powers of oversight to ensure that information is available
Engage
Use certification and incentives to encourage country performance

Encourage an international constituency on nuclear terrorism Establish legislator-to legislator dialogues Encourage the American public to get involved

5. Engage

Finally, a successful strategy against nuclear terrorism will require engagement -- engaging other countries so that they take action, and engaging the American public, whose understanding and support will be essential. No strategy, no matter how good, can work without the political and financial support of foreign governments and the American people.

The Congress can encourage countries to respond to the threat of terrorism. As in other policy areas, Congress can use certification requirements and incentives to entice or prod countries to act on issues like physical protection. Members of Congress can also establish legislator-to legislator dialogues on WMD terrorism, much as they have done with foreign legislators on other issues.

At home, elected officials can encourage citizens to learn more about WMD terrorism and to support the work of nonprofit groups, industry associations, and others that are now beginning to address the threat of terrorism. Terrorism is about creating fear, and the best antidotes against fear are education and action. As citizens learn more (e.g., the important difference between a dirty bomb and a nuclear weapon), and as they get involved, they will be less likely to panic. They can also contribute to bringing about the changes that are needed if nuclear terrorism is to be prevented.

IV. Preventing the Nightmare

The clock is ticking.

How long will be it be the terrorists obtain the materials and know-how for an act of nuclear terrorism? It is difficult to say, but given current vulnerabilities, it could be sooner rather than later.

The good news is that we have the power to do something about it. We have the capacity to prevent terrorists from acquiring nuclear weapons and radiological materials, if we act swiftly and decisively. If we do not, and something happens, history will judge us harshly. And so, the clock is ticking. I urge the Congress to act before the time runs out.

2) It is my understanding that the overall budget of the International Atomic Energy Agency (IAEA) is about $300 million annually. In your opinion, is $300 million annually enough for an agency charged with international nuclear policing activity. Also, how much should the US contribute?

I. Financial Realities

The simple fact is that IAEA cannot do what is required to prevent proliferation and ensure the security of nuclear material on its current budget. No agency or organization could. There are roughly a thousand nuclear facilities under IAEA purview. They are spread out across 71 countries, and they hold tons of nuclear material including highly enriched uranium and plutonium. If just one facility cannot keep track of its nuclear material or protect itself from theft, the United States could be put at risk. US national security demands that every nuclear facility be safeguarded and secure -- a job that requires substantially more than $300 million dollars.

To be clear, the IAEA has built an effective safeguards system. Today, safeguards are more widespread and more robust than ever before. In the areas of physical protection and nuclear trafficking, however, programming is at a scale that is totally incommensurate with the size and dimensions of the threat.[23] And even in the area of safeguards, the agency is under severe resource pressures.

The IAEA has been level funded for most of a decade, even while its obligations have escalated. The agency has tried to make up for a lack of resources by improving its effectiveness and efficiency, but there is a limit to what cost savings and technological remedies can do. The reality is that there is a large and long-standing gap between the level of security that is required to prevent nuclear terrorism and resources being allocated to the task.

The next few sections look in greater detail at IAEA's budget and current obligations. It then outlines different courses of action the US government could take to strengthen the IAEA's work against nuclear terrorism.

II. IAEA's Resources and Obligations

The IAEA is a relatively small international agency that has a great many responsibilities. Most people think of the IAEA in connection with the NPT and

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[23] See my response to Senator Akaka's third question on measures to improve the IAEA.

inspections, but these represent just a fraction of the agency's legal responsibilities. It is the administering body for a number of treaties and is charged with promoting the peaceful use of nuclear technology -- nuclear power, medical and agricultural applications of nuclear technology and the like.[24]

In recent years, IAEA has also been called on to handle unexpected crises and events. After South Africa declared that it had built and then dismantled a nuclear arsenal, the IAEA was sent to verify South Africa's non-nuclear status. Later, in Iraq and again in North Korea, the agency was required to mount special projects.

The breadth of IAEA's responsibilities becomes apparent when one looks at its budget. The table below provides a list of program expenditures in IAEA's 2000 regular budget. The biggest item in the budget is safeguards ($86m). The next three items, or 43% of the program budget, support peaceful applications. Security of nuclear material receives a paltry $2m or roughly 1% of the program budget.

The table does not include moneys spent on administration or for projects paid for by the voluntary Technical Co-operation Programme fund. Virtually all of the money in the fund (slated for $73 million in 2000) goes to support nuclear safety and peaceful uses -- not security related programming.[25]

Table 1. IAEA '00 Budget: Program Expenditures ($m)[26]
Source: IAEA Annual Report, 2000

	Regular Budget	Extrabudgetary Funds	Combined Budget	Percent of Program Expenditures
Safeguards	82	4	86	54%
Peaceful applications	32	5	37	23%

[24] Encouraging peaceful uses of nuclear technology is part of the NPT bargain. NPT is called a grand bargain, because countries that renounce nuclear weapons and open themselves to international inspection are supposed to receive something in return: access to civilian nuclear technology.
[25] IAEA, *Annual Report 2000*, (Vienna: IAEA), p. 118. The top three expenditure categories were safety (21%), human health (19%), and agriculture (15%).
[26] IAEA, *Annual Report 2000*, Tables A1 and A2, in 2000, Annex, (Vienna: IAEA), pp. 123-124. Figures are rounded off.

Safety	15	2	17	11%
Nuclear Power	13	1	14	9%
Iraq	0	3	3	2%
Security of material	1	1	2	1%

Expenditures have increased somewhat since 2000, but the basic patterns and scale remain unchanged. Recently, for example, the US contributed $1 million to a new IAEA fund on nuclear trafficking. That is welcome news, but even if the agency raises the full $12 million from other sources, this is a tiny amount of money relative to the size and the urgency of the problem. Even after such an increase, nuclear terrorism would represent the smallest line item other than Iraq.

III. Is it Enough?

Is the international community, and the United States in particular, giving the IAEA the resources it needs to protect the world from proliferation and nuclear terrorism? The obvious answer is no. It is simply not credible to suggest that the agency responsible for safeguards and material security at a thousand locations from Kazakhstan to the Congo can build a robust system on $86m a year -- roughly what the city of Pittsburgh, PA spends on its police department.

By almost any measure or comparison, the IAEA appears to be under-funded. As international organizations go, the agency is small. At least nine other international organizations -- including UNESCO and the ILA -- are larger. The IAEA's entire safeguards budget is less than half of what the Department of Energy spends just on research and development of verification technology. As a percentage of the moneys that are being spent for homeland security and the campaign against terrorism, IAEA's budget is tiny -- less than one quarter of 1% of the $40 billion supplemental appropriation.

A number of expert studies confirm that there is a serious problem here, that the resources devoted to securing radiological material has virtually no relationship to the scale of the problem. Take, for example, a report by the MIT Working Group on Fissile Material Management, which looked the IAEA's budget and programming.[27] This 1995 study recommended that the agency's budget be doubled. More recently, a special advisory panel chaired by Howard Baker and Lloyd Cutler recommended that the US

[27] MIT Working Group on Nuclear Materials Management, "Illicit Trafficking in Nuclear Materials," (Cambridge: Center for International Studies), January, 1995.

government triple its spending to protect nuclear material in the former Soviet Union.[28] The report focused on bilateral programs, not the IAEA, but the message was clear -- there is a dangerous disconnect between the dimensions of the threat and the resources being allocated to meet it. Like the MIT study, the Baker-Cutler report predated recent revelations about al Qaeda, revelations that only to strengthen the case for urgent action.

IV. Funding Options

How should the Congress and the President respond? Protection from nuclear and radiological attack is a vital national interest, and the first line of defense against nuclear attack is an effective IAEA that can keep watch over the world's nuclear materials. The Congress should move immediately to increase funding for the agency. Three options are described below.

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[28] *A Report Card on the Department of Energy's Nonproliferation Programs with Russia*, Howard Baker and Lloyd Cutler, Co-Chairs, The Secretary of Energy Advisory Boad, USDOE, (Washington: GPO), January 10, 2001.

1. Incremental Growth Budget
One option is adopt an "incremental growth" budget. Under such a budget, US and international contributions to IAEA budgets would be increased 15% a year for five years. This would give the agency enough money to make up for past shortfalls, to upgrade the safeguards system, and to expand the services it provides in the area of physical protection.

The argument for the incremental growth model is that it gives the agency time to adjust to new resources, and that a 15% real increase is substantial.

The argument against the incremental growth model is that while the percent increase is large, the base is so small that after five years, the total budget will have increased less than $300 million -- a very modest sum.

Additional Cost Next Year: $52 million (Year 5: $300 million)

Rather than beginning with IAEA's current budget, one could instead begin with the problem. A threat-based budget would start with the objective -- reducing the threat of material theft and nuclear terrorism. It would then ask the question: "how much risk can be tolerated?" Is the public willing to accept a 50% chance of system failure, a 10% chance, a 1% chance? In general, the lower the acceptable risk, the higher the cost will be. Below are two versions of a threat-based budget.

2. Minimum Standards Budget
A minimum threat-based budget would provide enough resources to see that all the world's safeguarded nuclear facilities maintained a basic level of physical protection and that diversion of radiological material would be detected no later than 2 months after material had taken -- about the standard rate of inspection under current safeguards. Under this scenario, individual facilities or countries might perform sub-optimally, but most facilities would be secure most of the time. This degree of protection would likely deter most countries and possibly some terrorist groups from attempting to steal material.

A minimum budget would have the IAEA spend at least $130 million on its safeguards system, and roughly that same amount for an equivalent program for physical protection. The difference is that funds for physical protection would not go to inspections, but rather for a program of periodic assessment, training, and testing so that all facilities meet basic international standards. A separate $200 million line item would go to grants and loans for physical protection -- essentially brick and mortar projects that would help qualifying countries remedy the problems identified by the assessment program. Another $100 million would be used for nuclear trafficking, securing orphaned materials, and other special projects (e.g., Iraq, North Korea). Together with administrative costs and programs in peaceful uses and nuclear safety, the IAEA's total budget would be approximately $750 million.

Additional Cost Next Year: $450 million (Year 5: $450 million)

3. Prevention Budget

The minimum standards budget would provide nuclear security at most facilities, most of the time. A prevention budget would seek to reduce the risk of nuclear or radiological terrorism to the "lowest feasible threshold at the fastest possible rate." It would signify the recognition that nuclear vulnerabilities constitute a national emergency that requires a swift and decisive response.

A prevention budget would maintain the same funding levels for most of the programs described in the minimum standards budget, but would provide an additional $100 million physical protection capital projects, and $50 million for the expedited implementation of the Additional Protocol. It would also provide $300 million to fund the purchase, blending down, immobilization, or consolidation of stocks of plutonium, highly enriched uranium, and selected radiological materials. An additional $200 million would go to strengthening radiological detection at international border crossings, seaports, airports, and other transit points. Together with IAEA's other programs, its total budget would be approximately $1.5 billion.

Additional Cost Next Year: $1.2 billion (Year 5: $1.2 billion)

Even at $1.2 billion dollars, the prevention budget is cheap security. Like the minimum standards budget, it would help insure that every ton of nuclear material is secure and accounted for, that every facility is regularly assessed, and that problems are swiftly corrected. It would also reduce the size of the threat by reducing the total number of sites with nuclear material. Finally, the prevention budget would improve IAEA's ability to detect and then respond to diversions, if a facility is compromised.

V. Conclusion: Costs and Risks

Everyone coming to Congress wants more money. Many times, these pleas for additional resources have merit, but the US government simply does not have the money to spend on every deserving cause. Instead, lawmakers have to compare risks and costs. They have to focus resources on the largest threats and on programs that have the biggest pay-off.

No one contests the view that nuclear terrorism and proliferation represent a threat to America's vital national security interests. In addition, no one challenges the fact that the IAEA has a forty-five year track record of combating nuclear threats. They only question is who will win the race -- the IAEA or the terrorists? Will the agency receive new resources quickly enough to secure vulnerable nuclear material, or will the terrorists find the material first? The answer is up to us and the other nations of the world. Given the consequences of a nuclear or radiological attack on an American city and the small investment required to help prevent that from ever happening, I strongly recommend that Congress exercise its leadership, and give the IAEA the funds it needs to protect America from nuclear terrorism.