

**U.S. NONPROLIFERATION STRATEGY:  
POLICIES AND TECHNICAL CAPABILITIES**

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**HEARING**  
BEFORE THE  
SUBCOMMITTEE ON OVERSIGHT AND  
INVESTIGATIONS  
OF THE  
COMMITTEE ON  
INTERNATIONAL RELATIONS  
HOUSE OF REPRESENTATIVES  
ONE HUNDRED NINTH CONGRESS  
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## U.S. NONPROLIFERATION STRATEGY: POLICIES AND TECHNICAL CAPABILITIES

THURSDAY, JULY 20, 2006

HOUSE OF REPRESENTATIVES,  
SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS,  
COMMITTEE ON INTERNATIONAL RELATIONS,  
*Washington, DC.*

The Subcommittee met, pursuant to notice, at 9:30 a.m., in room 2255, Rayburn House Office Building, Hon. Dana Rohrabacher, (Chairman of the Subcommittee) presiding.

Mr. ROHRABACHER. The Committee on International Relations' Subcommittee on Oversight and Investigations is called to order. Today the Subcommittee meets to discuss the issue of nuclear proliferation and technologies associated with nuclear energy, and I'm sure someone will correct me if I'm mispronouncing "nuclear." Is that the right way to pronounce nuclear, Mr. Record?

Mr. RECORD. Nuclear, yes.

Mr. ROHRABACHER. Okay. Nuclear. Okay. You know, in the past, I hear people say, "You mispronounced that," and I never can figure out why—what part is being mispronounced. But we will focus on the status of the Cooperative Threat Reduction Program funded through the State Department, the Global Nuclear Energy Partnership, and related topics.

We will also consider the question of the viability of high temperature gas reactors versus sodium fast reactors as alternative sources of energy. This concept holds great potential for future energy sources for our domestic consumption and may well have nonproliferation implications as well. There could hardly be a more urgent subject than nuclear nonproliferation, specifically, keeping weapons of mass destruction out of the hands of rogue entities. As President Bush famously expressed it, "We will not allow the world's worst leaders to threaten us with the world's worst weapons."

We meet to explore the wisest course of action for keeping such dangerous technology away from bad actors. The question of sharing nuclear technology speaks directly to the Administration agreement with India, an agreement I support. And this general subject speaks to some of the major hot spots of the world today—North Korea, Iran, Russia. How should we proceed with this powerful, and, yes, deadly technology, given the dangers and challenges to various countries with which we have to deal? Our panel will help us explore this question. Specifically, our witnesses will address, should the United States extend nonproliferation and threat reduction demands as well as assistance to a greater number of nations?

Can the United States afford to shift resources out of programs in the former Soviet Union, or should it do that? Instead, should it just add to the level of funding that currently exists in Russia in order to accomplish these other goals?

Weapons and terrorist threats notwithstanding, after a lull of about 30 years, nuclear power is again a major part of America's strategy for economic development. Programs such as the Global Nuclear Energy Partnership and the next generation reactors are now moving to center stage, as is evident by recent American nuclear energy proposals with Russia, India and other global partners.

Nuclear power installations will be operating in foreign countries as well as in the United States. Using the right nuclear technology can reduce the threat of nuclear proliferation as well as reduce the world's dependence on fossil fuels, while at the same time, of course, enhancing the United States' stature and influence.

I am especially excited about the potential of high temperature gas reactors. This technology holds the promise of multiple advances over present water-based technologies. The design is inherently safe—even without the extensive controls it's safe—and without the safety technology that is required in present reactors. So the reactor can use plutonium as a fuel and reduce the amount of spent output by 95 percent. The reactor can also burn spent fuel from other reactors, thus reducing the load on the repositories such as Yucca Mountain and other such repositories around the world.

The temperatures at which the reactor runs will lead to the production of hydrogen, which can be used as a future fuel base for various applications. The Department of Energy is working on sodium cooled fast reactor technology, another new approach, which also has the promise to reduce the stockpile of weapons grade nuclear material.

After a long period of stagnation and inactivity, it's good to see that more than one alternative is emerging in the field of nuclear power generally, and we are anxious to hear about this choice and about our choices for the future in terms of nuclear energy. Whether the nuclear industry is capable of both addressing domestic energy needs and assisting in nonproliferation concerns will be considered. I believe that in this sense, energy policy is foreign policy.

Our first witness today is a familiar face. Frank Record has served as Acting Assistant Secretary of State for the Bureau of International Security and Nonproliferation since 2006. Prior to that—did I say something wrong there?

Mr. RECORD. No.

Mr. ROHRABACHER. Okay. Prior to that—I thought maybe I gave you some credit there.

Mr. DELAHUNT. Yes, you have said something wrong, but I'm still—he'll give you equal time.

Mr. ROHRABACHER. Prior to that, he served as senior professional staff on this Committee from 1990 to 2004, where he worked international organizations trade and security-related issues. Since then he's been at the Department of State and is now in this critical capacity.

And our other witnesses will include John Kotek, Manager of Nuclear Programs at Washington Policy and Analysis, Incor-

porated; Mark Haynes, Vice President for Energy Development and Washington Operations at General Atomics; and Leonard Spector, Deputy Director of the Center for Nonproliferation Studies, Monterey Institute for International Studies.

These are distinguished experts all and we welcome them. The Subcommittee will be interested in learning from our panelists what they have to teach us, and we look forward to hearing from all of you. And now I would like to yield to my distinguished colleague, Mr. Delahunt, for his opening statement, should he choose to make one.

Mr. DELAHUNT. Well, thank you, Mr. Chairman, and let me just join you in welcoming Frank back before the Committee. We all can applaud his record of service to the House International Relations Committee, and it's good to see you, Frank.

Mr. RECORD. It's a pleasure to be here.

Mr. DELAHUNT. I'm going to waive any opening statement. But you did make reference to the President in his earlier remarks regarding not allowing the bad guys to have bad weapons. And I would just note that it's my own impression that since the invasion of Iraq, both Iran and North Korea have made considerable progress in terms of developing—and this is information that one can glean from the public domain—have made considerable progress to the development of nuclear weapons, and because of our involvement in Iraq, our options appear to be extremely limited, unless we're prepared to take action, which I don't think would be supported by many in this Congress as well as the American people.

But having said that, I'll yield back.

Mr. ROHRABACHER. Well, now those North Koreans and everybody else in the world knows we're serious, don't they? But I'll give you—you can come back to that.

Mr. DELAHUNT. Yeah. We'll discuss that. You'll have to indulge us, a little repartee going on. My memory is that there was a report in one of the—or several of the—major outlets, I think both the *New York Times* and the *Washington Times*, at the beginning of the Bush Administration, that there was enough fissile material for the creation of one or two nuclear bombs, and now, according to the *Washington Times* and other media outlets, they've got enough to put together eight to ten nuclear weapons. So, I dare say, they've got the message. And the message is if the United States threatens you, it's best to develop a nuclear weapons program so that you don't endure the same fate of what occurred in Iraq. And maybe it's a policy that we should be very, very careful of adopting, because as these weapons proliferate, it's clear that there will be other nations that may not be hostile at this particular point in time, but in this chaotic international order, could very well lead to a nuclear arms race globally that will threaten all of us.

And with that, I'll yield back.

Mr. ROHRABACHER. Instead of firing another salvo, what we're going to do is go to Mr. Record and let him tell us about the efforts of this Administration and past efforts in the area of nonproliferation and how successful we have been, especially concerning that with the former Soviet Union.

You may proceed, Mr. Record.

**STATEMENT OF MR. FRANCIS C. RECORD, ACTING ASSISTANT SECRETARY, BUREAU OF INTERNATIONAL SECURITY AND NONPROLIFERATION, U.S. DEPARTMENT OF STATE**

Mr. RECORD. Thank you very much, Chairman Rohrabacher, and Ranking Member Delahunt. Thank you for the introduction. It's a great pleasure to be back here on this side of the witness table this time.

You've outlined a number of topics there. I'm not going to really be able to cover all the topics that the Bureau of International Security and Nonproliferation is involved in. I think I'm going to touch on some of your concerns, Mr. Delahunt. Maybe I won't answer all your concerns, but I'll touch on them in the testimony. I'm sure we can follow up about Iran the issues of DPRK (Democratic People's Republic of Korea) and how we're trying to address those very serious issues you mentioned.

But this morning I'd like to at least touch on some issues relating to the topic of U.S. nonproliferation strategy, policies and technical capabilities, the topic at hand here.

I'm going to cover several of the issues related to our overall strategy and identify some of our priorities, and the central role, particularly of our national strategy to combat weapons of mass destruction, that it plays in our overall nonproliferation strategy.

I'd also provide a brief overview and certainly a willingness to provide more information later of the new Global Initiative to Combat Nuclear Terrorism that I think speaks to some of the issues you've already touched on. This was announced this last weekend by Presidents Bush and Putin at the St. Petersburg summit, and we feel it's a critical step, not only to prevent the terrorists acquisition and use of weapons of mass destruction, but also an important step to implement Secretary Rice's vision of transformational diplomacy.

The President has made clear that a nuclear power in the hands of a terrorist is our country's most serious national security threat, and we know that terrorist organizations such as al-Qaeda have expressed their desire to acquire a nuclear capability. And on July 15th in St. Petersburg, Presidents Bush and Putin announced the global initiative to confront and defeat this threat.

The central objective of the global initiative is to establish a growing network of partner nations that are committed to taking effective action to adapt to the changing nature of this threat.

Now our efforts here are focused in a number of directions, not only at the source, for example, where nuclear material is produced or stored or transported and used, but also in the final disposition of high risk vulnerable nuclear and radiological materials around the world. And so through this initiative, we'll continue to prioritize our efforts to identify and secure and remove these materials.

In short, we like to call this the layered defense in-depth approach to the problem. And since our efforts to secure nuclear material can never be fail safe, we must enhance the current efforts to develop a global interoperable architecture system capable of de-

tecting the movement of both nuclear and radiological material threats.

A comprehensive architecture should also include capabilities to detect the movement of funds and economic resources that support nuclear terrorism. We feel that the global initiative then will strengthen our response capabilities to stop imminent attacks and mitigate those consequences, should they ever occur. And by joining the global initiative, partner nations will have an opportunity in participating in these exercises to enhance their capabilities and to work on their own circumstances and be able to get the benefit and cooperation of other partner nations working together.

And in this initiative, we look forward to cooperating with the IAEA (International Atomic Energy Agency), and invite them to participate as an observer as well.

At the State Department, we've taken steps to ensure that our work to prevent terrorist acquisition and use of nuclear weapons, as well as WMD (weapons of mass destruction), fits in with a larger context of Secretary Rice's vision of transformational diplomacy. Transforming our diplomacy to combat WMD terrorism involves more than providing assistance to foreign partners. It also requires that we develop a global layered defense in depth with them.

Transformational diplomacy also offers us an opportunity to build new kinds of partnerships that transcend customary relations with states, international organizations and the like. So, the extent to which we can work with the private sector and get the benefit of their assistance would be also beneficial to our interests.

The Global Initiative to Combat Nuclear Terrorism also marks an important step in the implementation of the national strategy to combat weapons of mass destruction released by the President in 2002, as well as the national strategy to combat terrorism.

The national strategy to combat weapons of mass destruction identified the importance of the WMD terrorist threat and emphasized the need to ensure that all three pillars of our strategy, non-proliferation, counterproliferation and consequence management, are deployed to keep the world's most dangerous weapons out of the hands of the world's most dangerous actors.

Now a couple of words about some of the challenges we're facing that Ranking Member Delahunt referred to. Traditional non-proliferation tools are an integral component of comprehensive strategy to combat weapons of mass destruction. The national strategy to combat weapons of mass destruction highlights the importance of pursuing an active nonproliferation diplomacy, strengthening traditional nonproliferation regimes and bolstering our threat reduction programs regarding WMD materials in the former Soviet Union.

Our key challenge in this respect is to end North Korean and Iranian nuclear ambitions and their weapons programs. The President has made clear that while all options remain on the table, our preference is to address these threats through diplomacy.

In the six-party joint statement of September 2005, North Korea committed to abandoning all its nuclear weapons and existing nuclear programs. This is a notable development that we still must agree on and implement, the detailed requirements of North Korean denuclearization and verification. At the same time, we must

and will continue our defensive measures and expand them as required to ensure we can protect ourselves from the proliferation actions of North Korea as well as the illicit activities it's engaged in, such as money laundering and counterfeiting.

Specifically, the UN (United Nations) Security Council Resolution 1695, which passed unanimously following North Korea's July 4th and 5th campaign of ballistic missile launches, sends a clear message to the North Korea regime that the international community will not tolerate its WMD and missile proliferation activities.

The resolution specifically requires that all states exercise vigilance and prevent the transfer of missile-related items to North Korea's missile or WMD programs, the procurement of such items to North Korea's missile or WMD programs, and the transfer of any financial resources in relation to North Korea's missile and WMD programs.

And right now, we are embarking on a course of close consultation with our partners, those countries in the Security Council and others, on the full implementation of this resolution, including the interdiction of WMD and missile-related shipments.

Now with respect to Iran, we are pursuing a resolution, as you all know, a UN Security Council resolution to make Iran's suspension mandatory. Iran has had 6 weeks to review the package of incentives offered by the P5+1 (permanent five plus one) governments, and this far-reaching package contains potential economic, political and technological benefits for the Iranian people that would follow from a conclusion of negotiations with Iran.

Unfortunately, Iran has failed to take the essential steps needed to allow the negotiations to begin, and specifically the suspension of all enrichment-related reprocessing activities. So we see the quick adoption of this resolution as soon as possible as a priority task.

The P5+1 ministers have made clear that if Iran continues on the present course—and it has disregarded numerous calls made by the IAEA board of governors and UN Security Council—the P5+1 will seek a sanctions resolution in the Security Council. Iran, however, still can make the right choice and the P5+1 package remains on the table.

Now in regard to some of the programs that I think you mentioned in the beginning, Chairman Rohrabacher, our traditional nonproliferation tools are an integral component of our comprehensive strategy to combat weapons of mass destruction. Our nonproliferation strategy recognizes that the former Soviet states are still littered with reminders of the massive architecture of the former Soviet WMD program, including a large number of facilities that could serve as potential sources for terrorists and states seeking WMD.

Since the inauguration of the Cooperative Threat Reduction Program (CTRP) in 1992, or, as it is often referred to, the Nunn-Lugar program, the United States has worked with the Russian Federation and other former Soviet states to eliminate WMD threats posed by the legacy of the Cold War. As you are probably familiar, on June 16th, the United States and the Russian Federation signed a new protocol extending CTRP for an additional 7 years, an umbrella agreement.

Mr. ROHRABACHER. How much money has been spent on that so far?

Mr. RECORD. I can get you the exact figure, but I think it's over—close to about \$10 billion.

Mr. ROHRABACHER. \$10 billion?

Mr. RECORD. We'll get you the exact figure on that. And some of the issues in that regard relate to the priorities outlined by Russia and by other states, and we're continuing to talk to them about our concerns with—proliferation-related concerns and other former Soviet states. That's an issue as well. And I can give you a specific example of where we've had some successes, and I'll be glad to give that to you as we go along.

Mr. ROHRABACHER. I'd like to hear them as part of your testimony.

Mr. RECORD. Absolutely. I'll come back to that. Now while sustaining our Cooperative Threat Reduction efforts, and that continues to be a priority nonproliferation policy, the Department of State is also building on existing programs with support to new approaches, such as the President's Global Nuclear Energy Partnership, or GNEP.

GNEP seeks to encourage substantial worldwide expansion of economic, carbon-free nuclear energy to meet growing electricity demands without the spread of sensitive technologies that can contribute to weapons proliferation. An important goal of GNEP will be the design and deployment of more proliferation-resistant small scale nuclear reactors that will be well suited to the infrastructure of developing countries.

The GNEP envisions a consortium of nations with secure advanced nuclear capabilities providing reliable nuclear field services to other nations who forego enrichment and reprocessing and money nuclear energy only for peaceful power generation.

Now I can't address perhaps all of your issues or concerns about technical aspects or challenges we're facing on the high temperature gas reactors that you mentioned. I think specifically the GTMHR (Gas Turbine Modular Helium Reactor), and those subjects are perhaps best addressed by the Department of Energy, but we could have a discussion following this of some of the points here I think you mentioned.

Now, in addition to some of these other tools I've mentioned, a key aspect of our battle against WMD terror is the very important tool, the Proliferation Security Initiative (PSI), so called. This was launched by the President in 2003 to stop trafficking of weapons of mass destruction delivery systems and related materials to and from states and non-state actors of proliferation concern.

As you know, the primary focus of PSI is on actual interdiction operations, and operational exercise activities. We have more than 50 countries participating in one or more of our 20 operational exercises, and we've just concluded a very successful meeting of PSI states, including a number of new states that just joined PSI in Poland.

These interdiction exercises are designed to improve capabilities of the country and also participants' ability to work together in this interdiction exercise. They're hosted, again, around the world by a number of individual participants, and we're further operational-

izing our ability to pursue and conclude ship-boarding agreements. Currently, we have over 70 countries now participating, and we're working on expanding that number as we go.

Another comprehensive approach to combatting WMD terrorism also involves the development and sustainment of robust WMD consequence management capabilities, should we suffer a WMD attack. Consequence management capabilities can help us minimize the loss of life as well as economic destruction associated with the release of the WMD. The potential scale and geographic scope and consequences of a WMD terrorist attack demand that all members of the international community cooperate in this effort, in the response effort.

Now just for a moment, I'll touch on some of the technical capabilities aspects of your proposed topic here at hand today. The technical capabilities of the United States and our foreign partners are going to be a crucial determinant of our success and sustained research and development in particular and cooperation will determine the ultimate success or failure of our efforts.

While the Department of Energy is perhaps in a better position to answer some detailed questions about proliferation-resistant nuclear energy technology, let me offer some reflections regarding some of the technical capabilities that we're going to use to support the new global initiative.

Denying terrorist access to sensitive nuclear material depends on our improving controls on those who access—who have access to these facilities, as well as technical capabilities necessary to improve monitoring and ensure personal reliability at facilities.

Developing global detection architecture will require the technical capability to distinguish dangerous materials from background noise. This is true not only for nuclear and radiological terrorism, but also chemical and bioterrorism as well.

Detection technologies alone are of little use unless they're integrated to well engineered systems or network systems that ensure overall capabilities. Detecting the movement of funds and terrorist exploitation of cyberspace is another technical component, although investments in technical means, such as forensic accounting and algorithms that detect patterns of suspicious activity is important as well.

Terrorists seeking to acquire and use WMD move quickly and adapt to circumstances taken by law enforcement and other authorities. So our information-sharing capabilities with our foreign partners is crucial in this effort in determining our overall effectiveness.

Technical capabilities are equally important in our success in dealing with the aftermath of any WMD events as well, and we are going to bring those fully in to bear.

So, in conclusion, Mr. Chairman, now the President has declared that a nuclear weapon in the hands of a terrorist is the single most important threat we face today. And since September 11th, 2001, the State Department has taken a number of steps, some of which I've outlined today, to reduce the risk of nuclear weapons and other weapons of mass destruction falling into terrorist hands.

Since 2002, we've been guided by a national strategy, which I have mentioned. And the President has announced this new initia-

tive, the Global Initiative to Combat Nuclear Terrorism, to guide our partnership and capability efforts to further refine our efforts and to ensure that we have a network and a partnership capability. And I would just note on that score that several bodies, including the WMD Commission, the 9–11 Commission and others, spoke to this increased risk of nuclear terrorism and recommended that the Administration devote attention and resources on this point, and I think this global initiative that we now are putting together and briefing the Hill and others on, and seeking partner nations speaks to some of those concerns that were raised by those bodies.

That concludes my formal remarks, but I can follow up on specific points on some of the specific activities we have on CTRP (Cooperative Threat Reduction Program), if you like, with regard to Russia.

[The prepared statement of Mr. Record follows:]

PREPARED STATEMENT OF MR. FRANCIS C. RECORD, ACTING ASSISTANT SECRETARY,  
BUREAU OF INTERNATIONAL SECURITY AND NONPROLIFERATION, U.S. DEPARTMENT  
OF STATE

#### *Introduction*

Mr. Chairman, let me begin by thanking you, along with Ranking Member Delahunt and the other distinguished members of the subcommittee, for giving me the opportunity to appear before you on the topic of U.S. Nonproliferation Strategy: Policies and Technical Capabilities.

My remarks today are not intended to cover all aspects of U.S. nonproliferation strategy. Rather, I will identify some of our key nonproliferation policy priorities and outline the central role that the U.S. National Strategy to Combat Weapons of Mass Destruction plays in informing our nonproliferation strategy. I will conclude with consideration of some of the technical capabilities that are necessary to improving our nonproliferation and overall combating WMD efforts. To begin, however, I will provide an overview of the new Global Initiative to Combat Nuclear Terrorism, announced last weekend by Presidents Bush and Putin in St. Petersburg, a critical step not only to prevent terrorist acquisition and use of weapons of mass destruction, but also an important step to implement Secretary Rice's vision of transformational diplomacy.

#### *The Global Initiative to Combat Nuclear Terrorism*

The President has made clear that a nuclear weapon in the hands of a terrorist is our country's most serious national security threat. We know that terrorist organizations such as Al Qaeda have expressed their desire to acquire a nuclear capability. We also know that state sponsors of terrorism are seeking to acquire a nuclear capability. Finally, we know that non-state actors such as A.Q. Khan have sought to profit from black market trading in nuclear technology. Taken together, these trends make nuclear terrorism not only the most serious national security challenge we face, but also the most urgent.

On July 15, in St. Petersburg, Presidents Bush and Putin announced the Global Initiative to Combat Nuclear Terrorism to confront and defeat this threat. The central objective of the Global Initiative to Combat Nuclear Terrorism is to establish a growing network of partner nations that are committed to taking effective measures to build a layered defense-in-depth that can continuously adapt to the changing nature of the threat. While many individual programs and efforts have approached one element or aspect of the nuclear terrorism threat, the Global Initiative provides a capacity building framework for building on existing partnerships and for establishing new partnerships with those nations that wish to take similar action.

The global layered defense begins at the source where nuclear material is produced, stored, transported and used. The Global Threat Reduction Initiative (GTRI) focuses efforts to identify, secure, remove or facilitate the final disposition of high-risk, vulnerable nuclear and radiological materials around the world as quickly as possible. The United States is working with eight other countries in adopting guidelines for responsible management of plutonium and is pursuing similar guideline for minimizing and eventually eliminating, where technically and economically feasible, the use of highly enriched uranium in civil activities.

Our existing and future efforts to secure nuclear material can never be fail-safe. We must enhance current efforts to develop a global detection architecture capable of detecting the movement of both nuclear and radiological threats. Here the Global Initiative will build on and sustain the successes of the Megaports Program, the Container Security Initiative and the Domestic Nuclear Detection Office, and catalyze new partnerships to ensure standards for interoperability between these programs and their counterparts among partner nations. Our architecture must enable fixed and mobile detection across the air, land, and maritime domains and be flexible enough to ensure that our partners can complementary capabilities and easily integrate with our own.

A comprehensive architecture must also include capabilities to detect the movement of funds that support nuclear terrorism and the growing threat posed by terrorists seeking to procure nuclear technology through cyberspace. Here the Global Initiative will build on efforts underway at the Department of the Treasury to block the assets of terrorists and proliferators. To protect cyberspace, we should work with the Department of Homeland Security to protect our critical cyber infrastructure, including the relationship to critical nuclear facilities. We must develop new approaches to stop terrorists from using the virtual safe haven of cyberspace for planning attacks with nuclear weapons or upon nuclear facilities or infrastructure.

The Global Initiative will also strengthen our response capabilities to stop imminent attacks and mitigate their consequences should they occur. In this area, we will leverage the experience and capabilities of the Department of Energy, the Department of Defense, and the Department of Justice and FBI. At the same time, we must acknowledge that U.S. capabilities alone cannot meet this challenge. We will foster relationships with partner nations' programs that can support cooperative concepts of operations for emergency response and consequence management. By joining the Global Initiative, partner nations will have the opportunity to participate in joint exercises that support the development of their own capabilities, and under certain circumstances, call on the assistance of partner nations.

In carrying out this new initiative, we will also cooperate with the IAEA and invite them to participate as an observer. The Global Initiative builds on international legal frameworks such as the International Convention on the Suppression of Acts of Nuclear Terrorism, the Convention on the Physical Protection of Nuclear Material and Nuclear Facilities, and UN Security Resolutions 1373 and 1540, as well as national legal authorities.

#### *Transforming our Diplomacy to Combat WMD Terrorism*

At the Department of State, we have taken steps to ensure that our work to prevent terrorist acquisition and use nuclear weapons, as well as other WMD, fits in with the larger context of Secretary Rice's vision of transformational diplomacy. As the Secretary articulated in her Georgetown University speech, the essence of transformational diplomacy is: "to work with our many partners around the world, to build and sustain democratic, well-governed states that will respond to the needs of their people and conduct themselves responsibly in the international system." Our efforts to combat WMD terrorism must build on this transformational vision of partnership—both at home and abroad. We will develop and sustain international partnerships that bring a regional and local focus to our international cooperation efforts and enhance the effectiveness of our global strategy.

Transforming our diplomacy to combat WMD terrorism involves more than providing assistance *to* foreign partners; it requires that we develop a global layered defense-in-depth *with* them. Transformational diplomacy also offers us an opportunity to build new kinds of partnerships that transcend the State Department's customary relationships with foreign governments and international organizations. We must rethink the role that the private sector can and should play in both the traditional areas of nonproliferation strategy and policy, but also in more focused efforts to reduce the risk of terrorist acquisition and use of WMD. We must make clear to the private sector the common interest we share in keeping their assets and infrastructure free from either direct attack or from exploitation by terrorist actors seeking to acquire or use nuclear or radiological materials. Through the Global Initiative to Combat Nuclear Terrorism and other WMD terrorism initiatives, we will pursue new partnerships with the private sector that offer a low-cost means to reduce WMD terrorism risk.

It is worth bearing in mind that we have already taken many steps since 9/11 to address the growing threat of WMD terrorism. The development of comprehensive national strategies to combat WMD and terrorism respectively, as well as the establishment of the National Counterterrorism Center and the National Counterproliferation Center have brought new vigor and focused attention to combating the nexus of WMD and terrorism. The Department of State intends to build

on these strategies and new organizations to ensure that we have the right plans and capabilities to deter, detect, and defeat this threat.

*Nonproliferation and Our National Strategy to Combat WMD*

The Global Initiative to Combat Nuclear Terrorism also marks yet another step in the implementation of the National Strategy to Combat Weapons of Mass Destruction, released by the President in 2002, as well as of the National Strategy to Combat Terrorism. The National Strategy to Combat Weapons of Mass Destruction identified the importance of WMD terrorist threat and emphasized the need to ensure that all three of the strategy's pillars—nonproliferation, counterproliferation, and consequence management—are deployed to keep the world's most dangerous weapons out of the hands of the world's most dangerous actors.

Our overall combating WMD strategy focuses particular attention on the importance of developing the full range of international cooperation and partnerships—with partner nations, international organizations, as well as with the private sector. The State Department's overseas efforts to prevent terrorist acquisition and use of weapons of mass destruction build on years of interagency nonproliferation collaboration with established agencies such as the Department of Energy and the Department of Defense, while also focusing attention on establishing new, cooperative links with more recently-established interagency offices such as the Domestic Nuclear Detection Office (DNDO).

We also recognize that each country faces unique challenges to do their part to prevent terrorists from acquiring or using a nuclear weapon. In fact, no two countries are exposed to the same risk or threats of WMD terrorism. Some countries may lack the institutional capacity or the laws, regulations, and enforcement capacity to stop terrorists or those providing them aid as they seek to acquire a WMD capability. Other countries may have laws and the security forces to stop terrorists and their facilitators, but only limited means to detect the movement of material or related illicit transactions. To succeed in this increasingly complex environment made more difficult by globalization, we must focus our tasks and activities and our partnerships to account for country and region-specific factors. In short, diplomatic approaches to combating WMD, which work in one country, may not in others.

*Consistency in Our Nonproliferation Strategy: The Challenge Posed by DPRK and Iran*

Traditional nonproliferation tools are an integral component of our comprehensive strategy to combat weapons of mass destruction. The National Strategy to Combat Weapons of Mass Destruction highlights the importance of pursuing an active nonproliferation diplomacy, strengthening the traditional nonproliferation regimes, bolstering our threat reduction programs regarding WMD materials in the former Soviet Union, ensuring stronger controls on nuclear materials as well as development of proliferation resistant technologies, updating and strengthening our export controls, and deploying sanctions as an effective component of an overall nonproliferation approach.

Our key challenge in this respect is to end the North Korean and Iranian nuclear weapons programs. The President has made clear repeatedly that, while all options remain on the table, our preference is to address these threats through diplomacy.

In the Six-Party Joint Statement of September 2005, North Korea committed to abandoning all its nuclear weapons and existing nuclear programs. This was a notable development, but we still must agree on, and implement, the detailed requirements of North Korea denuclearization and its verification. At the same time, we must and will continue our defensive measures, and expand them as required, to ensure that we can protect ourselves from the proliferation actions of North Korea, as well as from illicit activities such as money laundering or counterfeiting.

UN Security Council Resolution 1695, which passed unanimously following North Korea's July 4–5 campaign of ballistic missile launches, sends a clear signal to the North Korean regime that the international community will not tolerate its WMD and missile proliferation activity. The resolution specifically requires that all states exercise vigilance and prevent the transfer of missile-related items to North Korea's missile or WMD programs; the procurement of such items to North Korea's missile or WMD programs; and the transfer of any financial resources in relation to North Korea's missile and WMD programs. We are consulting with our partners on the implementation of this resolution, including on the interdiction of WMD and missile-related shipments.

With respect to Iran, we are pursuing a resolution in the United Nations Security Council to make Iran's suspension mandatory. Iran has had six weeks to review the package of incentives offered by the governments of China, France, Germany, Russia, the United Kingdom, and the United States (P5+1). This far-reaching package

contains potential economic, political, and technological benefits for the Iranian people that would follow from the successful conclusion of negotiations with Iran. However, Iran has failed to take the essential steps needed to allow negotiations to begin, specifically the suspension of all enrichment related and reprocessing activities. We seek quick adoption of the resolution as soon as possible this week. P5 plus 1 Ministers have made clear that if Iran continues on its current course—it has disregarded numerous calls made by the IAEA Board of Governors and the United Nations Security—the P5+1 will seek a sanctions resolution in the Security Council. Iran can still make the right choice. The P5+1 package remains on the table.

*A key element of our Nonproliferation Strategy: The Cooperative Threat Reduction Program*

Since the inauguration of the Cooperative Threat Reduction program in 1992, the U.S. has worked with the Russian Federation and other former Soviet states to eliminate WMD threats posed by the legacy of the Cold War. Funding for these programs from FY1992 through today has totaled more than \$10 billion. On June 16, 2006, the United States and the Russia Federation signed a new protocol extending the CTR umbrella agreement for another 7 years.

DOS cooperative threat reduction programs initially focused on redirecting excess WMD scientists and engineers in Russia and Eurasia, but are now graduating these scientists into sustainable civilian work and addressing the worldwide threat. Current efforts are funded at \$52 million in FY06 and include redirecting WMD scientists in Libya, Eurasia, and Iraq. State also has programs to engage at risk bio and chem scientists in Russia and convert huge bioweapons plants into peaceful production such as animal feed. To keep one step ahead of the opportunistic terrorists that threaten us, we recently launched a fast-paced effort to increase the security of bio pathogen collections at targeted facilities worldwide.

The Departments of Defense and Energy have complementary cooperative threat reduction programs. DoD is building a facility to eliminate Russian nerve gas munitions, eliminating excess missiles and built the huge and highly secure Mayak storage facility, which Federal Atomic Energy Agency (Rosatom) Director Sergey Kiriyenko announced is now being loaded with tons of excess Russian plutonium. DoE has a huge program to improve the security of Russian fissile material and as part of the Bratislava initiative is locking up the remaining Russian nuclear facilities. These agencies are also increasing the security of Russia's warhead facilities.

*Innovation in our Nonproliferation and Energy Policy: the Global Nuclear Energy Partnership*

While sustaining our Cooperative Threat Reduction efforts continues to be a priority nonproliferation policy, the Department of State is building on these existing programs with support to new approaches, such as the President's Global Nuclear Energy Partnership (GNEP). GNEP is an example of the administration's efforts to bring together advanced technical capabilities in furtherance of both nonproliferation and energy policy objectives. The Global Nuclear Energy Partnership (GNEP) seeks to establish conditions that encourage substantial worldwide expansion of economical, carbon-free nuclear energy to meet growing electricity demands, without the spread of sensitive technologies that could contribute to weapons proliferation. GNEP will accelerate the development, demonstration and deployment of new technologies to recycle spent nuclear fuel without the separation of plutonium—a key proliferation benefit compared to existing reprocessing technologies. We continue to discourage the accumulation of separated plutonium.

GNEP will also help the International Atomic Energy Agency prevent misuse of civilian nuclear facilities by developing enhanced international safeguards programs and technologies. Another goal of GNEP will be the design and deployment of more proliferation-resistant small scale nuclear reactors that will be well-suited to the infrastructure of developing countries. GNEP envisages a consortium of nations with secure, advanced nuclear capabilities providing reliable nuclear fuel services to other nations who forego enrichment and reprocessing and employ nuclear energy only for peaceful power generation. International cooperation is essential to the achievement of GNEP's goals. The State Department and the Department of Energy have been holding consultations with many other states, both those with fuel cycle technologies and others with nuclear power reactors.

Let me emphasize that I am not here to address the technical aspects and challenges facing the development of the high-temperature gas reactors or specifically the GT-MHR. Those are subjects best addressed by the Department of Energy.

I would, however, make a couple of general points from a nonproliferation policy perspective. First, while the reactor holds potential promise as an effective burner of plutonium and thus as a contributor to our nonproliferation efforts, both the reac-

tor and such fuel are still in the development stage. Unlike other approaches to plutonium disposition, some years are required before the HTGR technology and economics can be proven. It is not, in short, a near-term prospect for plutonium disposition. Second, several countries, including China, France, Japan, Russia, South Africa and the United States, have been looking into this technology and type of reactor as a commercial prospect, including for use in the U.S. "Next Generation Nuclear Plant." However, commercial application of such reactors has envisioned use of low enriched uranium fuel, for which there is a large body of development work, not plutonium.

*Counterproliferation Efforts: The Proliferation Security Initiative*

In addition to conventional nonproliferation tools, the National Strategy to Combat WMD makes clear that we must deploy counterproliferation tools to counter the threat and use of WMD by States and by terrorists. These counterproliferation approaches include interdiction, deterrence, and defensive and mitigation measures.

Launched by President Bush on May 31, 2003, the Proliferation Security Initiative is a global effort, to stop trafficking of weapons of mass destruction, their delivery systems, and related materials to and from states and non-state actors of proliferation concern. Its underlying premise is that our efforts in this area are enhanced through partnerships of states working in concert, employing a broad range of legal, diplomatic, economic, military, and other tools to interdict WMD-related shipments. The PSI creates the basis for practical cooperation among states in this area.

The PSI is a set of activities based on participating countries' common commitment to the PSI Statement of Interdiction Principles. It is not a formal organization. Endorsement of the Statement of Interdiction Principles by a state does not create formal "obligations", but does represent a political commitment to stop proliferation-related shipments whenever possible. The Principles are consistent with national legal authorities and relevant international law and frameworks. Participation in any given PSI activity is a voluntary national decision. We encourage PSI partners to strengthen their national legal authorities and enforcement capabilities to improve their ability to interdict WMD-related trafficking.

The primary focus of PSI is on actual interdiction operations and operational exercise activities. More than 50 countries have participated in one or more of the over 20 multinational PSI interdiction exercises designed to improve national capabilities and participants' ability to operate together. These exercises are hosted throughout the world by individual PSI participants. PSI participants have also conducted sophisticated simulations of interdictions to develop new and creative methods for stopping proliferation shipments. The PSI Operational Experts Group—an expanding network of military, law enforcement, intelligence, and legal experts—meets periodically to develop new operational concepts, organize the interdiction exercise program, share information about national legal authorities, and pursue cooperation with key industry sectors.

We are further operationalizing the PSI by pursuing and concluding bilateral ship boarding agreements. We have so far signed six such agreements, with some of the world's largest ship registries. Ship boarding agreements establish key points of contact and procedures to facilitate requests to board and search vessels in international waters suspected of carrying illicit shipments of weapons of mass destruction, their delivery systems, or related materials. They also serve to deter proliferators. We are pursuing these agreements with several other countries. Over 75 countries now participate in the PSI, and we're working hard to increase that number. We are working intensively to broaden the circle of countries that count themselves as PSI supporters.

We're also working to block and freeze the assets of WMD proliferators and their supporters, and prohibiting U.S. persons from engaging in transactions with them. Executive Order 13382 is designed to combat illicit WMD trafficking by cutting off technological, material, financial, and other support for activities or transactions that materially contribute, or pose a risk of materially contributing, to WMD proliferation. To date, we have designated 25 entities and one person; 12 entities and one individual for activities with the DPRK; 12 entities for Iranian proliferation; and one entity for Syria.

The U.S. also continues to view implementation of UNSCR 1540 as a vital element in our global and national efforts to prevent the proliferation of Weapons of Mass Destruction (WMD) and keep these deadly weapons out of the hands of terrorists. WMD in terrorist hands is one of the preeminent threats to all nations, and terrorist groups continue to seek these deadly weapons. UNSCR 1540, if fully implemented, can help ensure that no State or non-State actor is a source of WMD proliferation for terrorists.

In addition, the State Department also coordinates the U.S. response to nuclear smuggling incidents, working very closely with law enforcement agencies and intelligence communities. Since 9/11 we have strengthened this effort to ensure that smuggling attempts are thwarted, that smugglers are successfully prosecuted, that the nuclear material is secured. We also work with other countries to figure out where the smuggled material came from and then fill those holes. Last year, State launched the Nuclear Smuggling Outreach Initiative which identifies the needs of countries at risk of nuclear smuggling and then plugs those gaps with assistance from other international partners and existing U.S. programs.

*WMD Consequence Management: Enhancing Our Mutual Preparedness*

A comprehensive approach to combating weapons of mass destruction also involves the development and sustainment of robust WMD consequence management capabilities should we suffer a WMD attack. Consequence management capabilities can help to minimize the loss of human life as well as the economic destruction associated with a release of WMD.

The potential scale and geographic scope of the consequences of a WMD terrorist attack demand that members of the international community cooperate in their preparedness measures and responses. Were such a tragedy to strike our homeland, we ought to have in place those agreements, understandings, as well as relevant legal and operational frameworks to enable resources to flow to the people of the United States as quickly as possible, including from foreign partners. In many WMD terrorist attack scenarios, particularly large scale biological scenarios, international cooperation will be absolutely essential to mitigating the consequences to our own people, to our critical infrastructure and economic resources, as well as to those of our neighbors and foreign partners.

In an age of globalization, we also must recognize that our national security may be inescapably bound to that of even our most geographically distant partners. If we fail to build the response capacities of our partners and neglect the development of cooperative networks that can speed aid quickly across national boundaries in the event of an attack, we will have lost an important opportunity for cooperation with our partners and placed at risk the lives of millions of innocent civilians, not to mention the economic effects of a shutdown in international travel and commerce.

*Technical Capabilities: Enabling an Effective Layered Defense*

The National Strategy to Combat Weapons of Mass Destruction emphasizes not only counterproliferation, nonproliferation and consequence management, but also key enabling functions that help to integrate these areas. Among these enabling functions are research and development which can help to support technical advances across the three pillars. As we confront the nexus of terrorism and the world's most dangerous weapons, the technical capabilities of the United States and our foreign partners will be a crucial determinant of our success, and sustained research and development, and cooperation with partners, will determine our ultimate success or failure.

While the Department of Energy is in a better position to answer detailed questions regarding proliferation resistant nuclear energy technologies, let me offer some reflections regarding some of the technical capabilities that are necessary to developing the vision of a global layered defense outlined by the President in the Global Initiative to Combat Nuclear Terrorism. Let me begin with technical capabilities to protect material at the source. Denying terrorists access to sensitive WMD-related materials depends substantially on improving controls on those who access those facilities, as well as the technical capabilities necessary to improve remote monitoring and ensure personnel reliability at such facilities. Biometric access controls, as well as remote monitoring and response systems and software connected to law enforcement rapid response units, can serve as an important technical capability that furthers nonproliferation goals and our overall strategy to combat WMD terrorism. These measures are in place in many nuclear facilities, but their use needs to be expanded and their capabilities strengthened.

Developing a global detection architecture will require the technical capability to distinguish dangerous material from background noise. This is true not only for nuclear and radiological terrorism but also for chemical and bioterrorism. Detection technologies alone are of little use if not integrated into well-engineered systems, or networks of systems, that ensure an effective overall capability. Bringing detection together with real-time communications technologies and wireless networks that enable a mobile capability across the air, maritime, and land domains will continue to demand attention and resources. We must also ensure interoperability between our detection systems and those of partner nations to provide accurate early warning and improve the mutual situational awareness regarding potential threats

that may require emergency responses. Detecting the movement of funds and terrorist exploitation of cyberspace also involve a technical component, through investments in technical areas such as forensic accounting and algorithms that detect patterns in suspicious activity reporting.

Terrorists seeking to acquire and use WMD move quickly and adapt to countermeasures taken by law enforcement and other authorities. Our information sharing capabilities with our foreign partners may be the single most important factor in determining our ability to translate detection capabilities into effective responses. Information sharing is not only a requirement for effective response, but it also enables the passing of other technical information, such as forensics and attribution-related information, that may be necessary to preventing or deterring terrorist acquisition or use of WMD. A robust technical capability for information sharing involves more than just the information technology; it will a sustained investment of energy in researching and developing appropriate concepts of operation, ensuring departments and agencies have the necessary legal authorities, establishing agreements and understandings with foreign partners, and developing tools and techniques to conduct such activity in real-time.

Technical capabilities are equally important to our success in dealing with the aftermath of a WMD terrorist related event and ensuring that we are able to bring those responsible to justice. Technical cooperation with foreign partners in areas such as forensics can also contribute to deterring terrorist facilitators by improving our ability to identify those actors responsible for supplying the WMD materials, funds, and other resources necessary to carry out a WMD terrorism attack.

#### *Conclusion*

Our President has declared that a nuclear weapon in the hands of a terrorist is the single greatest threat we face. Since September 11, 2001, the State Department has taken many steps with our foreign partners to reduce the risk that nuclear weapons and other weapons of mass destruction fall into terrorist hands. Our traditional nonproliferation policies in areas such as cooperative threat reduction have played and will continue to play a central role. New nonproliferation and energy initiatives such as the President's Global Nuclear Energy Partnership can also help to reduce the risk of nuclear terrorism while opening up new avenues for the peaceful use of nuclear energy.

Despite these efforts, we can—and we must—do more. Since 2002, we have been guided by the National Strategy to Combat Weapons of Mass Destruction, which provided the first comprehensive strategy to integrate all elements of national power to combat the threat of weapons of mass destruction. The Proliferation Security Initiative, announced in 2003, marked a key step in the implementation of that strategy. The Global Threat Reduction Initiative focused our efforts to reduce the number of targets for terrorists seeking to acquire nuclear materials. Now the President has announced the Global Initiative to Combat Nuclear Terrorism, which will guide our partnership capacity building efforts to combat nuclear terrorism in the months and years ahead. The Global Initiative will ensure that we have a global network of partnerships sufficiently flexible to adapt to and defeat the most serious and urgent national security threat we face—a nuclear weapon in the hands of a terrorist.

Mr. ROHRABACHER. Why don't you do that now, and then I'll ask you some questions.

Mr. RECORD. Okay. Sure. Let me just give you an example of one of the things we're doing across the spectrum. I've touched in my testimony a minute ago about the need to reduce the threat, particularly from biological and other weapons in Russia, and the redirection of scientists, which is an important element in our work.

What we're doing right now is reducing the threat at the source, to try and reconfigure some of these very large biological production facilities in Russia, including the Birsks biological plant facility in Siberia. We're beginning to get access to some of these centers. This Birsks biological plant was part of the so-called Biopreparat, the secret Soviet-era biological weapons network, once capable of producing tons of weaponized disease agents, considered one of the largest BW production facilities. Birsks has now been removed from the Russian plant defense mobilization list and has been completely privatized. It's now producing industrial enzymes and ani-

mal feed additives. And through the Cooperative Threat Reduction Program of the State Department and through its so-called Bio-Industry Initiative, we've engaged the Birsk for more than 4 years, seeking to configure it to a peaceful commercial use and engage many of its 1,800 former specialists, engineers and technicians. And the Department of State's Nonproliferation Disarmament Fund, NDF, is assisting in the reconfiguring and dismantling of some of the obsolete production capabilities. So, completion of this project should remove in our view about 30 percent of the Soviet-era BW infrastructure and assist the plant's redirection to peaceful uses.

So that was one of the points I just wanted to make.

Mr. ROHRABACHER. I will then proceed with my question period. And Nunn-Lugar has cost us about \$10 billion so far?

Mr. RECORD. Yes. With ongoing activity.

Mr. ROHRABACHER. You've given us a specific example of how a nuclear facility that was formerly involved with weapons production now has been transformed into a benign and somewhat benevolent production plant. Can you give us—how many nuclear weapons, warheads, for example, have been eliminated, and what else have we got for that \$10 billion?

Mr. RECORD. Well, in the program that we've been working with the Russians on, their key priorities have been the dismantlement of submarines, nuclear submarines, and also working with them on their BW and CW (chemical weapon) production facilities. So, we've worked on, I think, a large number of submarines and their power plants and removed the dangerous nuclear materials and worked with them to dismantle those efforts, and we continue to do that.

We also are attempting to work in other countries of the former Soviet Union and work on some priorities that they've identified. And these are discussions we've had with the Russians as well.

Mr. ROHRABACHER. Have we been dismantling warheads?

Mr. RECORD. I don't have a specific number of those, but those are issues we've done as well. One of the key aspects we worked with on the Russians is our efforts to take a number of reactors and other plants around the world to look at this program about highly enriched uranium, HEU, and to take efforts to reduce that HEU and to turn it into LEU (low enriched uranium) and to encourage that effort, and that's been very successful. We've had a number of efforts there of transporting and changing over the HEU to LEU, and that's been a very important element in our program.

Mr. ROHRABACHER. But you don't have any figures for us on the number of nuclear warheads?

Mr. RECORD. I'll get that for you.

Mr. ROHRABACHER. That would be relatively important. You're saying that if you can catalogue one of the various segments of the program as major, one of the major elements has been the dismantling of submarines?

Mr. RECORD. Yes.

Mr. ROHRABACHER. All right. Just, you know, just expressing my Chairman's opinion here on this, I would have to tell you that I would imagine we are dismantling old submarines. I'm not certain that that's necessarily the best use of money, U.S. taxpayer money, seeing that those old submarines have to be dismantled anyway. I

mean, I was hoping that you would be saying a major effort is eliminating those warheads.

Mr. RECORD. These are submarines that have—that are left in a dangerous capability, because their reactors are still——

Mr. ROHRABACHER. Right.

Mr. RECORD. They can cause harm to the environment and there as well, so.

Mr. ROHRABACHER. Yeah. You might have a submarine-type Chernobyl on your hands.

Mr. RECORD. We don't want that situation, so.

Mr. ROHRABACHER. Right.

Mr. RECORD. There are a number of other activities as well, and we continue to expand that list, so.

Mr. ROHRABACHER. If I—I think I would like a little bit more extensive report, and if you could follow up——

Mr. RECORD. Sure. I'd be glad to.

Mr. ROHRABACHER [continuing]. With a more extensive report on specifically what we have achieved through this \$10 billion expenditure.

Mr. RECORD. I'll be glad to do that.

Mr. ROHRABACHER. We have to pay for the dismantling of our own submarines, and the fact that the former Soviet Union has these—has Russia sold any nuclear submarines to China in the last few years?

Mr. RECORD. I'm not aware that it has. I'll have to let you know on that.

Mr. ROHRABACHER. We know that they've sold a certain number of submarines, but you don't know if they're nuclear powered or not?

Mr. RECORD. I don't. I'll have to check on that.

Mr. ROHRABACHER. Okay. I think that is a significant factor as well. If we are helping them dismantle their old submarines at our cost, and they are selling new submarines to China, what I think what we're talking about is subsidizing the building of nuclear submarines for China, unless all the submarines they have sold to China are non-nuclear, which is somewhat of a waste of American taxpayers' dollars.

Let me just note, the biggest fault of this Administration, from my perspective, which is much different than my colleagues on this side of the aisle, especially Mr. Delahunt, is that I think that quite often this Administration does not take credit for many of the things that it has accomplished.

And I would note that if I was in your shoes, I would probably be talking about how Mr. Gaddafi has given up all of his nuclear ambitions because of what the United States has done not only diplomatically, but also through our military actions in Iraq. We have convinced people like Mr. Gaddafi to pay attention when they weren't paying attention before, and that nuclear proliferation is something that has been a priority in terms of people like Gaddafi, especially with regimes like that. What we are doing with North Korea now and Iran actually mirrors much of the activity that we did with Iraq prior to our military operations, in terms of our activity with the United Nations.

Thus, Mr. Delahunt and I may disagree on this, but I think that the fact that we would go through all of those procedures with the United Nations and then have the result that we had with Iraq and then follow up with a military operation because of Saddam Hussein's lack of cooperation, and thumbing his nose at the world—I would think that that would send a message to whatever dictator we were dealing with. I don't believe that that would encourage that dictator to move forward with a nuclear program. I would think that it would actually be something that would deter that type of action.

Mr. RECORD. Well, Mr. Chairman, if I could just—

Mr. ROHRABACHER. Go right ahead.

Mr. RECORD. You mentioned Libya, and that of course is an example where I think Mr. Gaddafi looked at his prospects around the world and realized that pursuing WMD was a very counter-productive strategy and was just a very costly, ineffective way to secure his—to make his country more secure.

And I think he was convinced of that on a number of fronts. I think the Iraq issue was one. I also made some comments earlier in my testimony about this Proliferation Security Initiative (PSI). And there was an important effort where we—interdicted centrifuge parts in cooperation with a number of countries, PSI partners at the time coming from workshops in Malaysia, part of this Khan network.

Mr. ROHRABACHER. You're talking about carrots and sticks?

Mr. RECORD. That's right. One of these is. This interdiction I think was a crystallizing, motivating factor on his part to say, "This effort is not worth it, there's a better way to go, a better security out there for me."

Mr. ROHRABACHER. All right. I am particularly interested in the Indian agreement, and Mr. Berman I know as well is very concerned about this. What is being done, what policies are being put in place that will ensure that, when we move forward with providing India nuclear capabilities for producing electricity, the by-product of this will not be increasing India's ability to make nuclear weapons?

Mr. RECORD. Well, Mr. Chairman, in that regard, we are proceeding with our implementation, and I want to thank you for your efforts in support, the Committee's efforts to support the bill, and I believe we'll see that on the House Floor in the near future.

Mr. ROHRABACHER. Just be aware that it's predicated on the idea that you're going to be doing your best to make sure that we're not providing India with the ability to produce nuclear weapons.

Mr. RECORD. We absolutely are not providing that assistance, and, through a number of provisions and safeguards, we're going to make sure that that does not happen.

As you know, there are a number of events going on right now that are going to look directly at that. We have started—

Mr. ROHRABACHER. Say that again?

Mr. RECORD. We're going to continue to negotiate a Nuclear Cooperation Agreement with India, and those efforts are ongoing. The Indians are also continuing their discussions with the IAEA to look at their safeguards agreement, to work on that aspect as well. They've already put forward their separation plan.

But in terms of our efforts, we are going to ensure that our assistance only goes to safeguarded reactors and to the provisions we've made for safeguarding these facilities.

Mr. ROHRABACHER. Safeguard reactors?

Mr. RECORD. So, for these facilities that India is going to put in the civilian side. So if we don't go ahead with this agreement, we could be looking at up to 80 percent of their facilities that could be unsafeguarded. And I think with the full implementation of this, we can see a much higher percentage instead under safeguarded, protected status with IAEA.

Mr. ROHRABACHER. All right. Let's—one last question, and then we will move on. Would not a proper safeguard—and General Atomics will be testifying here in a few moments—

Mr. RECORD. Right.

Mr. ROHRABACHER [continuing]. And, being a Senior Member of the Science Committee as well as a Member of the International Relations Committee, I've taken it upon myself to go and look at some of these new technologies. And wouldn't a technology like this reactor of General Atomics, which actually eats plutonium and produces much less material that can be used for a bomb, wouldn't that be prudent for us to insist on technologies that meet at least that standard rather than using older technologies or technologies that produce more weapons grade material?

Mr. RECORD. Okay. Let me just make some comments about that as well. I know you're interested in this topic. I think in principle, the so-called GTMHR is a very interesting, potentially promising concept for disposing of separated plutonium. From a nonproliferation perspective, as you say, it would degrade or burn this plutonium more than other disposition approaches. In this light, the United States, through the Department of Energy in particular, and the Russian entities have cooperated for some years in research and development activities.

And I understand the cooperation is expected to continue as both sides are aware of the potential long-term promise for plutonium disposition. And the 2000 United States-Russia Plutonium Disposition Agreement allows the use of any reactor types that may be agreed by both parties.

But unlike other disposition approaches, like burning plutonium in light water or fast reactors, the GTMHR reactors and key technologies are not, in our view, yet proven. They may be proven in the next several years and thus may play an important role in the longer-term plutonium disposition efforts. But for the near term, do not believe that it would be prudent to hinge our disposition efforts on an unproven approach that still has technical hurdles to cross.

Those are just some general points or observations.

Mr. ROHRABACHER. So we've got—the technology has not reached the stage yet where we're willing to set our standards and put all of our eggs in that basket?

Mr. RECORD. That's right. And just to follow up here, this is really reactor development, of course—I want to say that this is really the Department of Energy's bailiwick, so those are the people that you'd obviously follow up with, and I'm sure you will.

Mr. ROHRABACHER. Right. Let me note that I believe the reactor has been—there has been a working reactor now for 20 years in Japan.

Mr. RECORD. Okay. Well, maybe you should talk to them. But there are a number of factors we've got to take into account; program priorities, commercial viability and budget issues, of course. And I understand that DOE is also interested in the next generation GTMHR in connection with the next generation power plant, the hydrogen initiative. So that would also—I would note that that would be with uranium and not plutonium fuel, so that's another aspect of the issue as well.

Mr. ROHRABACHER. Okay. Let me just note that I will be watching, and I will be making sure that my influence is being used so that other Members will be watching to make sure that as we move forward with this India initiative, that number one, we are not doing so in a way that will in some way enhance the nuclear weapons capability of India.

And number two, that the technology that's being chosen is not just the technology of what large corporations who already have a stake in old technology are pushing on the United States Government to make a profit. And we've seen that as one of the flaws in our system. And that is something that we have to guard against to make sure that this tendency in a democratic capitalist system does not happen where large corporations just simply freeze us into old technology, because that's the way they make their profit.

Mr. RECORD. Right. I think a lot of those questions will also be derived or determined by some of the separation agreement provisions as India and the IAEA work out the details.

Mr. ROHRABACHER. Well, let's make sure those agreements are being based on what's—

Mr. RECORD. They're based on—

Mr. ROHRABACHER [continuing]. The good and proper rather than necessarily what some companies may influence those agreements to be.

Mr. Delahunt, you may proceed.

Mr. DELAHUNT. Frank, in your capacity as the Acting Secretary, on issues of nonproliferation, I would presume that you communicate with other governments?

Mr. RECORD. Absolutely. We talk to other governments.

Mr. DELAHUNT. And I was rather surprised by the statement of the Iraqi Foreign Minister, Mr. Zeybari, relative to Iran. Would you care to comment?

Mr. RECORD. Well, I think in regard to the general situation in the Middle East and some of the issues related to that, I think those issues are probably better addressed and left for the Secretary. She's now addressing those one-on-one. I think she's in New York talking to a number of the UN officials and other governments as well.

Mr. DELAHUNT. Well, I guess what I'm referring to specifically is the statement by Mr. Zeybari that the international community ought not to insist or pressure Iran to disclose whether their program is focused on developing nuclear weapons capacity. I mean, that was a public statement that was made within the last 2 weeks. Again, knowing that you are in the division, or the bureau,

rather, that deals with these particular issues, have you communicated with our Iraqi allies concerning that particular statement?

Mr. RECORD. I have not.

Mr. DELAHUNT. You have not?

Mr. RECORD. With the Iraqis on that point. In terms of our communications with the Iraqis on WMD, one of my efforts has been ongoing to look at the UNMOVIC (United Nations Monitoring, Verification and Inspection Commission) program and to look at the terms——

Mr. DELAHUNT. Right. Would you agree with me, though, that——

Mr. RECORD. I haven't talked to them on that.

Mr. DELAHUNT. Right. But that statement clearly is in contradiction to the position of the United States?

Mr. RECORD. Well, I think we'd probably like to get a little clarification on that. I think—I would just note that in the course of a number of statements and board resolutions in the IAEA looking at the Iranian nuclear file, and nuclear issues, the international community has spoken with one voice about their concerns about the efforts of Iran in its research and development——

Mr. DELAHUNT. No. I understand. I'm trying to focus on our ally, Iraq, where we have obviously spent considerable treasure, in excess of 2,500 lives of American military personnel and heading toward a half a trillion dollars worth of American taxpayer dollars, and yet we find, as it would appear from the public statement by the Foreign Minister, Zeybari, that the Iraqi position is clearly an exception to what you describe as the "international community speaking with one voice." I pose the question because it causes me concern, as well as the recognition that there has been an Iranian-Iraqi bilateral military cooperation agreement that has been executed. And it would appear that the newly elected Iraqi Government has not taken any steps whatsoever to explain the details of that military cooperation agreement to the American people. And I am sure that the Chairman and my friends on both sides of the aisle would have considerable concerns about this rather, at least on the surface, warm relationship between Iraq and Iran.

Mr. RECORD. Well, I'm not going to—I can't comment about that particular aspect, but I can tell you that we are concerned about some of the efforts and activities of Iran and Iraq and some of the support that Iran has given to the insurgencies, and we work very closely with the Iraqis on this.

Mr. DELAHUNT. Well, I understand that. I guess that what I'm saying is, I recognize the concern that the Administration has about the Iranians. I guess, is there a concern on the part of the Administration about the Iraqi Government and its overtures, if you will, or its emerging—I don't want to call it an alliance—but its emerging warm relationship with the Government of Iran?

Mr. RECORD. Well, I wouldn't characterize it as a warm relationship. They have a relationship because they're neighbors. But there are a lot of problems in that relationship. I've mentioned——

Mr. DELAHUNT. I'm sure there are problems, but at the same time, I would also note for the record that the Iranian Government has provided \$1 billion worth of credits to the Iraqi Government. And, you know, just yesterday, the Iraqi Prime Minister denounced

Israel for aggressive actions in the ongoing tragedy in the Middle East involving the loss of civilian lives.

Well, in any event, I guess as I look at the landscape, my greatest concern is the stability of Pakistan and what might transpire in the event of a change in government there. Now both North Korea and Pakistan have in the past, according to reports, been the most active proliferators of nuclear technology. How would you compare their activity with that of Iran? And has Iran been as active in terms of spreading nuclear technology to other nation states?

Mr. RECORD. Well, Iran has made—in regard to that last point, Iran has made statements about its willingness to share nuclear-related technology, and that is of great concern, and we mentioned that the statement was made. That’s something of tremendous concern, and we are doing everything we can through a number of the programs that I’ve touched on in the testimony and others through interdiction efforts, and other cooperative efforts, the global initiative and others, to ensure that those type of statements don’t get put into reality, because that would cause tremendous concern.

Iran, as we know, is now trying to develop, through its various cascades and other processes, nuclear capabilities, and we don’t want to see them continue in that, and we don’t want to see any sharing whatsoever of these kind of nuclear materials. And we’re working very hard to prevent that, so.

Mr. DELAHUNT. Just for your information—I don’t know if you’re aware—but there’s a report this morning that says Iran announces it will deliver its response by August 22nd.

Mr. RECORD. Yes. They’ve mentioned that in the past, that they are going to provide a full response to the P5+1 offer on August 22nd. As you are aware, as I noted, the U.S. has said we wanted an answer in a matter of weeks, not months. I mentioned the time 6 weeks in my testimony. And of course, as we know, today in the UN Security Council, we are now actively engaged in discussing and working on a resolution that would set a timetable and would point the way toward sanctions and perhaps even have a timetable in that same month.

But these details are being worked out. I’m not going to prejudge or say anything about that, except that we’re not waiting for August 22nd. That’s my main point here—we’re not going to do that.

Now, I didn’t—in regard to North Korea, we have a lot of concerns, obviously, and they’re highlighted by the UN Security Resolution 1695 that I mentioned in my testimony, that focuses particularly on the missile WMD programs. And one of our ongoing activities is ensuring that fissile material, one of our greatest concerns, is not in any way put in commerce, and leaves that country. And that is one of our primary major concerns as well, so.

And when we look at so-called defensive measures taken against DPRK and its activities, which are ongoing, we’re going to make sure that the fissile material concerns you’ve mentioned and highlighted receive the top priority. And we’re working in close partnership with a number of other countries in Asia and around the world to ensure that, through financial sanctions and other means,

we take every possible opportunity to stop and interdict those kind of shipments, and that will get our top priority.

Mr. ROHRBACHER. Thank you very much. Mr. Berman? Howard?

Mr. BERMAN. Thank you, Mr. Chairman. I'm curious whether the bureau was involved directly in the negotiations with India that led to the proposed United States-India nuclear cooperation agreement, the framework?

Mr. RECORD. I was not—I was not directly involved in those negotiations myself.

Mr. BERMAN. Was your predecessor?

Mr. RECORD. Steve Rademaker?

Mr. BERMAN. Yeah. I can't remember when he left and you became Acting.

Mr. RECORD. Just very recently, a couple of months, so.

Mr. BERMAN. So was he involved?

Mr. RECORD. To my knowledge, he was not directly involved in the negotiations per se. No, he was not. That's my memory of it. But you're really going to have to ask him that directly. I can't speak for him. But as far as I know, he was not directly involved in negotiations.

Mr. BERMAN. Isn't it sort of strange that representatives of the Bureau of Nonproliferation were not involved in setting the framework for the United States-India nuclear cooperation agreement?

Mr. RECORD. I'm referring to, you know, going at the last stage to India and working out the final arrangements. I don't think he was at that point there. Certainly he was involved in earlier discussions and all the subsequent discussions about how the arrangements would be worked out and dealt with, but—

Mr. BERMAN. It's been reported in the earlier discussions that the U.S. position was to safeguard a much higher percentage of the reactors than we finally achieved. Isn't that right?

Mr. RECORD. Well, there were a number of objectives, I think, a number of issues that we had before us in discussions with the Indians that we didn't fully achieve. I think other witnesses before your Committee and elsewhere have talked about that. We've said that we would have preferred some kind of fissile material cap. That's another issue. We didn't get that and now of course we have India joining with us to try and see the fastest way forward for a Fissile Material Cutoff Treaty (FMCT).

Mr. BERMAN. You mean that nonverifiable treaty we put on the table?

Mr. RECORD. Well, we have put a treaty on the table that we think would get the fastest results to get a fissile material cutoff treaty in place, and we think that's the best way forward in the conference on disarmament. And I believe that the overwhelming majority of the—it's called Western Group, or the negotiating group at the conference of disarmament—has made a similar statement, that that is the best way forward and the fastest way to achieve results.

Mr. BERMAN. I just find it strange that while the bureau may have been involved in formulating the original goals to achieve, when it came down to negotiating the final agreement, the bureau did not participate.

Mr. RECORD. Well—

Mr. BERMAN. One wonders, one can't help but conclude that there was a purposeful decision to keep the Bureau of International Security and Nonproliferation out of the final negotiations in this issue in order to achieve an agreement with the Indians more quickly than it otherwise might have been able to.

Mr. RECORD. Well, again, Mr. Berman, I was only referring, when your question was about the involvement—again, this is not my personal involvement, and I can only speculate—

Mr. BERMAN. But you were at the bureau at the time?

Mr. RECORD. Yes, yes I was.

Mr. BERMAN. But I really was referring specifically to the last few days or last discussions that the Secretary was doing personally. I mean, what was going on is this was a high-level negotiation that was teed up around the time of the President's July visit there. And she was directly, personally involved and that was the way that was done. That doesn't strike me as being that unusual or odd or speaking to any—I don't draw any particular conclusion from that from a nonproliferation point of view one way or another. It was a high-level discussion and the Secretary was personally involved.

Mr. BERMAN. I'd be interested in the bureau's view. The Administration has made a case that this is a big gain for nonproliferation, this proposed agreement.

Mr. RECORD. On balance, yes, these are positive steps.

Mr. BERMAN. Explain to me on the issue of enhancing India's ability to acquire nuclear fuel for its civilian programs, why that doesn't allow a significant increase in India's present rate of production of nuclear weapons by allowing it to take its domestic sources and focus them exclusively on its weapons program?

Mr. RECORD. Well, nothing that we are providing through this arrangement will be going into their nuclear weapons program.

Mr. BERMAN. I think you know what I'm saying. If you are allowing imports of fuel that India cannot now get, if you're allowing them to receive that fuel, why doesn't that allow them to then divert that portion of the fuel that they're putting into their civilian energy program to be used exclusively for the weapons program? Isn't that a reasonable conclusion to draw?

Mr. RECORD. Well, the question has come up about the issue of what we're providing, but I think we've indicated in answers that India does have enough uranium to meet the civil and military needs. And I think we've—

Mr. BERMAN. It's civil military needs?

Mr. RECORD. To meet both its civil and military needs. And we've indicated I think—

Mr. BERMAN. What are their military needs that they now have enough to meet?

Mr. RECORD. Well, the IAEA in this regard has made some estimates about its uranium stocks to be approximately 95,000 metric tons—that's based on data provided by the Indian Government.

Mr. BERMAN. Let me put it this way. Once an agreement is signed, nuclear suppliers group have authorized exports of nuclear technology, including fuel to India, IAEA safeguards are in place and an agreement is implemented, will India have an ability to

produce a higher rate of weapons per year than they now do? I'm not saying they will, but do you think they will have the ability to?

Mr. RECORD. Well, I don't have enough knowledge about the Indian system to give you a full answer to that question. I mean, it really depends on what kind of priorities the Indians want to allocate for their military and private sector.

Mr. BERMAN. In other words—

Mr. RECORD. They have indicated to us they want to maintain a sustainable, minimum deterrent in terms of their nuclear weapons. They've used that term. We could talk about this—

Mr. BERMAN. In other words, it's a decision that will be up—once this happens, it will no longer depend on the scarcity—

Mr. RECORD. We will put in place all the incentives that I think are there where India will focus its attentions on development of its civilian energy sector. And India doesn't have—I mean, it has scarce resources. And I think when and if this deal is in place with the kind of issues that you mentioned, India will have every incentive to go ahead and work under a safeguarded regime and devote a lot of its time and energy and focus on meeting the civilian energy needs it has. And I think that is the key determinant and focus that we have on this program.

Mr. BERMAN. Let me change the subject here for a second.

Mr. ROHRABACHER. If you can do it within the couple of minutes that you've got.

Mr. BERMAN. Just tell me, who participates in this, what do you refer to it as, the GNEP? The Global Nuclear—

Mr. RECORD. Well, we've a number—on the GNEP. We've had a number of consultations with countries around the world, and we're looking at—this is a 20- to 30-year effort. It's a very long-term effort. And a number of partner countries, particularly in Europe—

Mr. BERMAN. Who are the partner countries?

Mr. RECORD. Well, these are countries that have indicated that they want to participate. I think France is one. I think the U.K. are others. We've had lots of discussions with the Japanese and others.

Now, with the GNEP in particular, though, I want to also quickly note that this isn't just a partnership for developed countries. This also has an element where we can work with proliferation-resistant reactors in a small scale that will benefit developing countries.

In some of the proliferation-related meetings I've attended and discussed, I've had very serious interest, for example, on the part of Indonesia, which doesn't always see eye-to-eye with us on some issues, but has expressed strong support for the GNEP proposal, and we are going to send a team to brief them.

So, I just want to make sure that it is understood that this is an initiative that can actually have proliferation benefits for a wide range of countries over term. But it's not going to produce results right away. I don't want to oversell it, because it's a 20- to 30-year effort. But we'd be glad to give you some more details about how it would benefit developing countries.

Mr. ROHRABACHER. Thank you very much.

Mr. RECORD. Thank you.

Mr. ROHRABACHER. Mr. Schiff.

Mr. SCHIFF. Thank you, Mr. Chairman. A couple of years ago I had a chance during a hearing—I think Secretary Kelly was testifying—to ask about North Korea. And at the time, 2 years ago, I asked whether he felt we were better off in terms of North Korea's nuclear development than we had been 3 years earlier. And he wasn't very clear on the point. But now we're a couple of years forward. And I think it's pretty inescapable that the North Korea nuclear program has advanced a great deal in the last 5 years, and we've moved backwards, not forwards, in dealing with that proliferation problem.

My question is, what are we doing differently now that gives us any hope for a better result than we've gotten over the last 5 or 6 years? What reason do we have to believe that the current strategy, whatever it is, will be more successful now than it has been in the last 5 or 6 years?

Mr. RECORD. Well, I did make some remarks in the testimony and I've followed up a little bit with regard to Security Council Resolution 1695. And we're all focused on the missile launches that the DPRK undertook in early July.

And the international community I think spoke with a clear voice in its resolution to deal with that specific problem in a comprehensive approach. And we're going to work together with partner countries to deal with that in a wide range of defensive measures and following up with that.

We've been concerned a great deal with DPRK's proliferation of WMD. That includes fissile material and nuclear weapons. So these are issues that we've been focused on for a while. I think the missile launches have really brought it to a head and made other countries realize that we have a serious problem. I think that includes all the Security Council members as well.

Mr. SCHIFF. With all due respect, though, I mean, the missile launches are a great concern, but the world community has been aware, as have we, that North Korea has a nuclear program that's been advancing without any restraint or oversight for years now. And even if we're successful in cutting off missile parts, that's not going to stop the nuclear program. So what is our plan?

Mr. RECORD. I didn't want to imply in what I just said that these efforts and activities that we're undertaking are related only to missile parts. I mean, that is certainly pursuant to the UN Security Council resolution. But in our interdiction efforts, we have been concerned with the entire panoply of WMD materials that go to or from North Korea. And that would include fissile material and/or related nuclear components. So this has been a key factor for us. So, I didn't mean to imply—

Mr. SCHIFF. Well—

Mr. RECORD [continuing]. Missile-related.

Mr. SCHIFF. I guess what I'm trying to get at, though, is, what specifically are we contemplating doing differently to get a better result vis-a-vis the nuclear program in North Korea?

Mr. RECORD. Well, we want to—

Mr. SCHIFF. Because with respect to Iran, we have changed strategy, and I think it was smart for us to change strategy. For years, we sat on the sidelines and sniped at Europe while Europe tried to deal with Iran's program. That was unsuccessful. And in the sec-

ond Bush Administration, there was a change of policy. But I haven't seen any change of policy vis-a-vis North Korea, and I'm concerned that 3 years from now we're going to be just further down the same trajectory of North Korean proliferation and have nothing to show for our efforts and be at greater risk.

Is there anything you can point to that we are doing differently—

Mr. RECORD. Well, I would just refer you back to the September agreement, where all the six parties met and there was a framework and a way forward that we had in place. Unfortunately, North Korea has decided not to rejoin those talks.

We've talked with other countries involved in this effort and encouraged DPRK to return to those talks for a verifiable and clear way to deal with their nuclear program. I think we dealt with that issue in that forum, and we continue to hold hope that we can bring the DPRK back into that forum and that discussion point. And we're going to continue those efforts as well.

We're not—I'm really focusing here on some of our overall efforts in the proliferation area, but my colleagues in the State Department are also working very hard, in fact, I think they're testifying this week, Chris Hill is, about his diplomatic efforts trying to get the DPRK back into the six-party framework in the September discussions that we have. So that's the overall framework we're doing.

Mr. SCHIFF. Let me switch topics. I mean, I want to express my concern that it doesn't sound like we have any different strategy than we've had for the last 5 years, which hasn't borne fruit. And I'm concerned that North Korea will always seek to delay and obfuscate and derail the Six-Party Talks. They've been successful at it up till now, and there's no reason to believe they won't be successful at it in the future unless the dynamic is changed somehow.

Have you prioritized the sites—I mean, you reference in the outset of your remarks that the President has now acknowledged that nuclear weapons getting into terrorists' hands is the number one national security threat facing the country. I happen to think that's right. That's something he acknowledged years ago. My concern is that we're not acting like it's the number one security threat facing the country.

Have you prioritized the most vulnerable sites of highly enriched uranium that al-Qaeda may obtain in the former Soviet Union or elsewhere? And what is your timeline? How long on the current trajectory will it take to secure, blend down, destroy those stockpiles?

Mr. RECORD. Well, I know that—and I would just refer back then to our global initiative that I mentioned in the testimony aimed at this nuclear problem that we're concerned about. And the efforts we're making here focus specifically—I think Under Secretary Bob Joseph wants to focus specifically on a timeline and how we can accomplish some of the objectives to reduce the nuclear threat. And I think identifying the most critical sources of HEU would be certainly high on the list.

Mr. SCHIFF. Well, I mean, does that mean that we haven't—

Mr. RECORD. And those, by the way, have already been—

Mr. SCHIFF. Does that mean, Mr. Record, that we haven't done that yet?

Mr. RECORD. Well, as I mentioned earlier, we've already been undertaking efforts to identify sources of HEU and also taking steps to convert that to LEU and to reduce that availability, but—

Mr. SCHIFF. I mean, do we have—obviously classified—but we do have a list of the most vulnerable sites, and do we have a timetable about how long it will take to secure those sites?

Mr. RECORD. Well, as I understand it, the Department of Energy has a program, the Global Threat Reduction Initiative, that actually does specifically undertake some of the measures you're talking about. So, we could get you some more information about that as well.

Mr. SCHIFF. Do you know how long it will take to secure those sites? I mean, that's the—what kind of expectation do we have about how long we can wait?

Mr. RECORD. Well, we are going to draw up some specific timetables about some of the objectives in our global initiative, and we'll be briefing on that as we go along, but, this is going to receive the very highest priority in terms of securing the nuclear problem.

Mr. ROHRABACHER. Well, I'd like to thank Secretary Record, and let me note that just for the record and for Mr. Record, I'm not satisfied with many of your answers here today. Mr. Berman, do you have a—

Mr. BERMAN. One question—

Mr. ROHRABACHER. Go right ahead.

Mr. BERMAN [continuing]. That could be yes or no.

Mr. ROHRABACHER. Go right ahead.

Mr. BERMAN. Under the Iran Nonproliferation Act, the State Department—presumably it's your bureau—is required to submit a report every 6 months on entities that have proliferated to Iran. The current report was due at the beginning of this month. It's now several weeks late.

Some skeptics have expressed a view that the reason for the delay is you don't want to tell Congress about some of the sources of proliferation to Iran because it could undercut some of your other efforts. When will we get this report? And why is not—why wasn't it on time?

Mr. RECORD. That's a good question. We have—our bureau has been trying very hard to get these reports moving, and we've been really frustrated. And I will mention your comment, and I will make sure that report gets up here as quickly as possible. There is no ulterior motive in waiting or trying to hold that information back.

Mr. BERMAN. How do you know?

Mr. ROHRABACHER. But your answer to his question specifically?

Mr. RECORD. But we will get that—I'll make sure that that report is up here as quickly as possible. It's of great frustration to us as well.

Mr. ROHRABACHER. Are there Indian entities on that report?

Mr. RECORD. I don't recall. I think we've—there have been—it's not a question of any particular entity or any particular country on there. We just haven't been able to get those reports up on time. So it doesn't relate to any particular country.

Mr. ROHRABACHER. We would expect you—

Mr. RECORD. They will be up here as soon as possible. I will make sure that happens.

Mr. ROHRABACHER. Reclaiming the time here, we will expect the reports, and Mr. Berman is very much within his—

Mr. RECORD. Okay. I'll note it.

Mr. ROHRABACHER [continuing]. Within his area of responsibility to ask for those reports on time. And, again, I don't—I have not been satisfied with your answers here today. And I would just say that I hope in the things that we've requested, in terms of written answers to some of the things that we've been talking about, that you and your office promptly get back to us on those areas.

Mr. RECORD. Okay.

Mr. ROHRABACHER. Nuclear proliferation is so significant in reference to the security of the people of the United States of America, and the peace of the world. And I would hope for, frankly, a much more definitive and in command situation. Now I realize you're relatively new to your area of responsibility. But this Administration has been in power for 6 years now, or going on 6 years. And I would expect things to be much more—I would expect your testimony to reflect a much more organized effort along this area than what I have heard today. And so, we will—the Subcommittee will be following through on this.

Mr. RECORD. We'll get you an answer.

Mr. ROHRABACHER. And we'll be making sure we keep our eye on what the Administration is doing and perhaps is not doing, and should be doing to meet its responsibilities. So thank you very much, Mr. Record. Appreciate you being with us.

The next panel may be seated. I'd like to welcome our panel. Votes are expected at 11:30, so that means that we're going run out of here at 11:30 and probably will not be back—my staff is suggesting 3 minutes, but I'm going to give you guys a maximum to summarize. Your testimony will go in the record, and if you could summarize in the maximum time for 5 minutes so we can at least have one series of questions before this bell rings for the votes.

Mr. Kotek, you may proceed.

**STATEMENT OF MR. JOHN F. KOTEK, MANAGER OF NUCLEAR PROGRAMS, WASHINGTON POLICY & ANALYSIS, INC.**

Mr. KOTEK. Good morning. I'd like to start by thanking you, Mr. Chairman, and the Ranking Member, for the opportunity to appear before you today to share the views of the American Council on Global Nuclear Competitiveness on the nonproliferation and national security benefits of a revived U.S. nuclear industry.

As the Subcommittee is well aware, nuclear power in the U.S. has been on the decline. As a result, U.S. firms that once dominated the manufacture of nuclear reactors have largely been sold to foreign companies. For example, we now have only two domestically-owned reactor vendors, General Electric and General Atomics. And even those companies would likely have to rely heavily on foreign sources of materials and components if they were to receive an order for a new plant.

So while the United States debates its nuclear future—and that debate has turned markedly pro-nuclear—the rest of the world has recognized nuclear energy's benefits and has moved forward ag-

gressively. We see this in places like France, Japan, Russia and China, but also in places like Indonesia and Brazil. Countries all across the world are looking to expand their use of nuclear energy.

Then of course there are Iran and others whose real purposes would appear to be other than peaceful. So the United States can't flounder in indecision and inaction any more. The world is going nuclear, and we must, too, or fall sadly, irrevocably behind as the world enters the second nuclear era.

Now some would say that all we have to do is start ordering plants again and the U.S. will be back. Becoming a nuclear energy consumer again is good, but that doesn't put us back in the game. It matters whether we are in the nuclear business, because nations that are engaged in the nuclear energy business sit at the non-proliferation table, have the technology to address global climate change, have the keys to combatting global poverty, and hold the catalysts to advances in science and technology.

Now an excellent example of the nonproliferation benefits of a domestic nuclear industry can be seen in the joint United States-Russian program, the disposition of highly enriched uranium from dismantled nuclear warheads, more than 10,000 warheads to date thus far. Without a domestic nuclear industry, we'd be less able to engage in this and other programs that are helping to meet our global nonproliferation goals.

So the Council contends it's not enough for the U.S. to simply become a producer of electricity using plants designed, constructed, fueled and serviced by foreign suppliers. We need American companies competing in this vital arena.

Because the U.S. has been on the sidelines and its lead in nuclear design, manufacturing, supply and services has been eroded, we are free to move beyond existing technology. Now certainly U.S. companies can and should compete in the market for providing large-scale reactors based on existing technology, but the U.S. is in a unique position to also capture markets for tomorrow's nuclear technologies.

The proposed GNEP program could provide just the boost our industry needs in order to develop and market new, advanced proliferation-resistant nuclear energy technology. For example, one exciting technological opportunity is in right-sized exportable reactors that can be manufactured in the U.S. and exported to the developing world.

Now this isn't far-fetched. Advanced manufacturing borrowed from other industries where the U.S. still holds global leadership will allow the shift from large systems that rely on economies of scale but which must be built on site. Factory production, with its inherent efficiencies, could make nuclear power economic for smaller applications in developing regions. This would feed into a distributed generation approach which fits countries lacking a mature grid and other infrastructure. And by engaging with international partners to establish a guaranteed fuel supply and return system, we can dramatically reduce proliferation risk by eliminating the need for small countries to establish enrichment reprocessing capability.

Now the U.S. can do this, and I believe there are powerful reasons why it should.

It's easy to forget, for example, that we live in a world where more than 1.5 billion people don't have access to electricity. And without electricity, necessities like health care, education and jobs suffer. And as we're all too aware, terrorism most often takes root in countries where life is hard and much of the country is blanketed in darkness each night. Of the countries who the State Department says "sponsor terrorism," none rank among the top 50 on the UN's list of the most developed countries.

So as the world's most powerful and prosperous nation, the U.S. has a unique business opportunity, a chance to solve one of our most vexing national security problems, and some would say a moral obligation to help address the energy challenges facing the developing world. Boosting global access to energy is good for our economy, good for our national security, and good for the world. If we want to win the war on terrorism, we must help boost global prosperity, and that requires access to energy.

Securing affordable energy supplies for our world by protecting our environment will require greater use of inexpensive, low emission energy resources such as nuclear.

Now restoring a robust nuclear energy industry will also have a positive effect on employment and on our nation's economy. Our Council is presently conducting a study of these economic and employment impacts, but it's safe to say they run in the billions of dollars and the tens of thousands of jobs. We plan to complete our study later this year, and will be pleased to share the results with the Committee.

With trade and nuclear energy, however, comes the prospect of nuclear weapons proliferation. To ensure that the U.S. will influence and manage proliferation risks during the next expansion of nuclear energy around the world, it's imperative that the U.S. be the promoter, enabler and the lead supplier of this growth.

The American Council on Global Nuclear Competitiveness was formed to alert policymakers and the public of the need to restore U.S. leadership in nuclear energy. The President took a bold step toward restoring this leadership earlier this year with the announcement of GNEP. We support the President's vision of GNEP, which, if properly implemented and accompanied by an American-led transforming technology leap, could restore America's pre-eminence in the nuclear enterprise. If GNEP is structured with an eye toward enhancing U.S. economic competitiveness, American industry could thrive.

The Council has been concerned, however, about our industry's inability at present to participate fully in GNEP. So the Council is recruiting leadership from the business world, as well as from U.S. national labs and universities, to respond to the enormous opportunities that a resumption of U.S. nuclear energy leadership could create. U.S. manufacturing, technology, financial and other interests should seize the opportunity and rally to ensure that the President's vision is realized. And indeed, we are finding an encouraging number of U.S. companies interested in getting into the nuclear business or growing their nuclear portfolios.

By restoring a robust nuclear industry, America can protect its environmental, economic and national security interests, and it can also reclaim leadership of the global nuclear energy industry, an

industry that was created through American ingenuity more than 50 years ago.

Thank you very much.

[The prepared statement of Mr. Kotek follows:]

PREPARED STATEMENT OF MR. JOHN F. KOTEK, MANAGER OF NUCLEAR PROGRAMS,  
WASHINGTON POLICY & ANALYSIS, INC.

Good morning. I'd like to start by thanking the Chairman, the Ranking Member, and distinguished members of the Committee for the opportunity to appear before you today to share our Council's views on the nonproliferation and national security benefits of a revived U.S. nuclear industry.

As the Committee is well aware, nuclear power in the United States has been on the decline. As a result, U.S. firms that once dominated the manufacture of nuclear reactors have largely been sold to foreign companies. For example, we now have only two domestically-owned reactor vendors—General Electric and General Atomics—and even those companies would have to rely heavily on foreign sources of materials and components if they were to receive an order for a new plant.

While the U.S. debates its nuclear future (and that debate has turned markedly pro-nuclear), the rest of the world has recognized nuclear energy's benefits and has moved forward aggressively. We see this in France, Japan, Russia and China, and also in places like Indonesia and Brazil. Countries all across the world are looking to expand their use of nuclear energy.

Then of course there are Iran and others whose real purposes would appear to be other than peaceful. So the United States can't flounder in indecision and inaction anymore. The world is going nuclear and we must too or fall sadly, irrevocably behind as the world enters the second nuclear era.

Some would say that all we have to do is start ordering plants again and the U.S. will be back. Becoming a nuclear energy consumer again is good, but that alone doesn't put us back in the game. It matters whether we are in the nuclear business. Nations that are engaged in the nuclear energy business:

- sit at the non-proliferation table;
- can choose to develop less proliferation-prone nuclear systems;
- have the technology to address global climate change;
- have the keys to combating global poverty; and
- hold the catalyst to advances in science and technology.

An excellent example of the nonproliferation benefits of a domestic nuclear industry can be seen in the joint U.S./Russian program to disposition highly enriched uranium from dismantled nuclear warheads. U.S. companies like BWXT and USEC have played a major role in getting this material into the nuclear fuel supply and into U.S. reactors, thus rendering it unusable in a nuclear weapon. Without a domestic nuclear industry, we would be less able to engage in this and other programs that are helping to meet our global nonproliferation goals.

So the Council contends it is not enough for the U.S. to simply become a producer of electricity using plants designed, constructed, fueled and serviced by foreign suppliers. We need American companies competing in this vital arena.

Because the U.S. has been on the sidelines and its lead in nuclear design, manufacturing, supply and service has been severely eroded, we are free to move beyond existing technologies. Certainly, U.S. companies can and should compete in the market for providing large-scale reactors based on existing technology. But the U.S. is in a unique position to also capture the markets for tomorrow's nuclear technologies.

The proposed Global Nuclear Energy Partnership, or GNEP, could provide just the boost our industry needs in order to develop and market new, advanced, proliferation resistant nuclear energy technologies. For example, one exciting technological opportunity is in right-sized, exportable reactors that can be manufactured in the U.S. and exported to the developing world.

This is not far fetched. Advanced manufacturing borrowed from other industries where the U.S. still holds global leadership will allow the shift from large systems that rely on economies of scale but which must be built on site. Factory production, with its inherent efficiencies, could make nuclear power economic for smaller applications in developing regions. This would feed into a distributed generation approach which fits countries lacking a mature grid and other infrastructure. And by engaging with international partners to establish a guaranteed fuel supply and return system, we can dramatically reduce proliferation risk by eliminating the need for small countries to establish enrichment and reprocessing capabilities.

The U.S. can do this and there are powerful reasons why it should.

It is easy to forget that we live in a world where more than 11/2 billion people do not have access to electricity. Without electricity, necessities like health care, education, and jobs suffer.

As we are all too aware, terrorism most often takes root in countries where life is hard and much of the country is blanketed in darkness every night. Of the countries who the State Department says sponsor terrorism, none rank among the top fifty on the UN's list of the most developed countries.

As the world's most powerful and prosperous nation, the U.S. has a unique business opportunity, a chance to solve one of our most vexing national security problems, and some would say a moral obligation to help address the energy challenges facing the developing world. Boosting global access to energy is good for our economy, good for national security, and good for the world. If we want to win the war on terrorism, we must help boost global prosperity, and that requires access to energy. Securing affordable energy supplies for our world while protecting our environment will require greater use of inexpensive, low-emission energy resources such as nuclear.

Restoring a robust domestic nuclear energy industry will also have a positive effect on employment and on our nation's economy. Our Council is presently conducting a study of these economic and employment impacts, but it is safe to say they run in the billions of dollars and tens of thousands of jobs. We plan to complete our study later this year and will be pleased to share the results with the Committee.

With trade in nuclear energy, however, comes the prospect of nuclear weapons proliferation. As the President stated in a speech at the National Defense University in 2004:

“The world must create a safe, orderly system to field civilian nuclear plants without adding to the danger of weapons proliferation.”

To ensure that the U.S. will influence and manage proliferation risks during the next expansion of nuclear energy around the world, it is imperative that the U.S. be the promoter, enabler, and the lead supplier of this growth.

The American Council on Global Nuclear Competitiveness was formed to alert policymakers and the public of the need to restore U.S. leadership in nuclear energy. The President took a bold step toward restoring this leadership earlier this year with the announcement of GNEP. We support the President's vision for GNEP, which if properly implemented and accompanied by an American-led, transforming technology leap, could restore America's preeminence in the nuclear enterprise. If GNEP is structured with an eye toward enhancing U.S. economic competitiveness, American industry could thrive.

The Council has been concerned, however, about our industry's ability at present to participate fully in GNEP. So the Council is recruiting leadership from the business world—as well as from U.S. national laboratories and universities—to respond to the enormous opportunities that a resumption of U.S. nuclear energy leadership could create. U.S. manufacturing, technology, financial, and other interests should seize the opportunity and rally to ensure that the President's vision is realized. And indeed, we are finding an encouraging number of U.S. companies interested in getting into the nuclear business or growing their nuclear portfolios. By restoring a robust nuclear industry, America can protect its environmental, economic, and national security interests and it can also reclaim leadership of the global nuclear energy industry, an industry created through American ingenuity more than fifty years ago.

Mr. ROHRABACHER. Thank you very much. I appreciate your testimony, and we will get back to you in questions as well.

Mr. Haynes.

**STATEMENT OF MR. MARK HAYNES, VICE PRESIDENT FOR ENERGY DEVELOPMENT AND WASHINGTON OPERATIONS, GENERAL ATOMICS**

Mr. HAYNES. Mr. Chairman and Members of the Subcommittee, my name is Mark Haynes. I'm Vice President of Energy Development and Washington Operations for General Atomics (GA), and I wanted to thank you for inviting us here to testify today.

This hearing reaches into issues of national security and non-proliferation well beyond the ability of General Atomics to address, so I will of necessity focus on what we can address: First, the necessity of rebuilding a U.S. nuclear industry, as John Kotek has suggested; the importance of technological diversity in moving nuclear energy forward in the world; and third, the value of one particular nonproliferation cooperation agreement between the United States and Russia.

On the subject of rebuilding—

Mr. ROHRBACHER. And you can summarize it in 5 minutes.

Mr. HAYNES. I'll do it. On the subject of rebuilding the U.S. nuclear industry despite the buzz that there is about rebuilding or building nuclear plants, the U.S. industry is really not prepared to field a team, in essence, to be a world leader in that, and rather than say what I was going to say, I'll just defer to John Kotek's remarks. And I will note that the U.S. weakness in this area is well noted around the U.S. At a recent conference on United States-Russia nuclear cooperation, one of the chief Russian speakers noted that we need their technology more than they need ours. So I thought that was rather telling.

So the question is, why does it matter? It matters not only for reasons of competitiveness, but also if we don't have our own indigenous kind of highly competitive technology, what do our negotiators have to offer? What do they have in terms of carrots in addition to sticks?

On the issue of technological diversity, I think it's important to note that the history of the development of nuclear energy has in a large measure been a little bit of a slugfest, viewed through one lens, between three major types of reactor technologies. And those are light water reactors, and gas-cooled reactors. And the reality is that not only is the world big enough for all these reactor types now, but that all of them are needed.

In the case of light water reactors, they are the workhorses of the existing U.S. nuclear fleet, in fact, most of the world's nuclear fleet, and it's time now to rebuild a new generation of those reactors.

In the case of fast reactors, they are the sort of workhorse, if you will, as it's conceived now in the President's Global Nuclear Energy Partnership plan. And that's primarily because of their ability to burn nuclear waste and their ability to ultimately extend the world's nuclear fuel supply.

In the case of high temperature gas cooled reactors, they are the nearest term and likely the most economical of the so-called Gen IV reactors. They are highly developed. There have been five built historically. There are two operating today. They're a well proven technology. They have unique safety and security characteristics, and they operate at temperatures high enough to, in essence, enable bulk production of hydrogen for alternative fuels, transportation fuels. They also have the ability to burn any type of nuclear fuel basically, including plutonium or the actinides and fission products from spent nuclear fuel.

Each of these technologies has a place, and our hope is that Congress and the Administration will work to foster and fully recognize the importance of fostering these technologies.

Finally, Mr. Chairman, you've expressed an interest in high temperature gas cooled reactors, and the existing joint United States-Russian program for the development. And I'll say very quickly that since that program's beginning in the early 1990s, GA, the Department's National Nuclear Security Administration (NNSA), the Department of Energy's NNSA, and several key Russian institutes have been working to develop this for the purpose of destroying surplus Russian weapons plutonium. The goal ultimately is to replace the existing plutonium production reactors at Seversk with one or more of these gas reactor modules, and to burn weapons plutonium and provide heat and light for the cities.

What probably says more about this particular program than anything else is the fact that the Russians are paying half of the cost of the program. And the reason they're doing that is because they like the product. It's a reactor that is very secure. It's actually designed to be built totally underground. It's meltdown-proof. It's capable of burning, as I said, all types of nuclear fuel—including weapons plutonium or waste—and at the same time it can do this, produce electric power and hydrogen.

So their interest is at an extremely high level, and the mutual respect and cooperation between the United States engineers and the Russian engineers is a thing to behold. It's great.

Importantly, I think as you've noted, Mr. Chairman, in last year's energy policy bill, Congress authorized the Department of Energy to construct the NGNP, the next generation nuclear plant, which will be a high temperature gas cooled reactor, at the Idaho National Lab, and this project has started to move forward now, and, in our view, the potential for synergy with the Russian program is huge.

So, with the President's recently announced intent to pursue a civilian nuclear agreement with Russia, our hope is that our joint program with the Russians will get a boost, and that other technological agreements on nuclear power between the Russians will move forward and bloom.

So, thank you very much.

[The prepared statement of Mr. Haynes follows:]

PREPARED STATEMENT OF MR. MARK HAYNES, VICE PRESIDENT FOR ENERGY DEVELOPMENT AND WASHINGTON OPERATIONS, GENERAL ATOMICS

SUMMARY

*Improved nuclear technology and a strong U.S. commercial nuclear program are key elements of global sustainable energy and improved U.S. non-proliferation strategy. No single nuclear technology can engage all the energy and proliferation issues. Hence, a broad nuclear technology and U.S. industry base are critically important. High Temperature Gas Cooled reactors (HTGRs) and the joint U.S.-Russian HTGR development program for surplus weapons plutonium disposal are valuable strategic elements of a broad U.S. approach to proliferation control. At the same time, HTGR development for production of commercial power and alternative transportation fuel provides an attractive pathway to sustainable global energy and domestic fuel independence.*

Mr. Chairman and Members of the Subcommittee, my name is Mark Haynes and I'm Vice President of Energy Development for General Atomics (GA). Thank you for asking GA to testify about one part of the nexus of nuclear energy, non-proliferation and the need and opportunity to re-build a U.S.-owned nuclear industry.

By way of brief background, General Atomics is a high-end technology company with a primary focus on defense and energy applications. We are the originators and

manufacturers of the Predator series of unmanned aircraft; we are also major participants in Navy ship electrification, fusion energy research, next generation nuclear reactor technology, defense lasers, radars, sensors, stealth materials, maglev transportation and many other advanced technology research and development activities.

Fifty-one years ago, GA was formed by leading scientists from Los Alamos laboratory and elsewhere to harness the atom for peaceful commercial purposes. Most relevant to today's hearing is the fact that GA's roots were planted squarely in the area of innovative nuclear reactor development with an emphasis on safety and non-proliferation. Our first product, the TRIGA reactor (there are over 64 deployed in the U.S. and abroad), is the most common test, research and isotope reactor throughout the world. Our second reactor type, the high temperature gas cooled reactor (HTGR), was not fully developed before the decline of the nuclear market in the 1970s and the subsequent reduction of investment in nuclear technology development in this country. More recently, GA's particular HTGR design and its close technological "cousins" are key elements of nuclear programs in many nations, including a joint non-proliferation development effort by the U.S. and Russia that I will describe in more detail later in my testimony. Its development is compatible with DOE initiatives in advanced reactor development, being a central feature of DOE's Next Generation Nuclear Plant (NGNP) and complementary to DOE's Global Nuclear Energy Partnership (GNEP).

It is very important for decision makers on nuclear energy and proliferation issues to be aware that the past and the future of nuclear energy are rich with technological options. The broad nuclear industry, including General Atomics, is in firm agreement that the near term deployment of the next generation of light water reactors in the U.S. and abroad is vitally important to reinvigorate nuclear energy. In addition, the ultimate deployment of fast reactors, as is contemplated in the President's Global Nuclear Energy Partnership (GNEP), will almost certainly be an essential element of nuclear fuel cycle management as nuclear energy becomes more and more relied upon around the world. Nuclear technology will and must continue to advance to meet what seems certain to be a huge worldwide demand for economic reactors that can provide electric power and other energy forms. Our belief is that this can and must be done in a manner that improves safety and nuclear waste management and that eases proliferation concerns.

General Atomics has been asked to testify today on a third type of reactor: the High Temperature Gas Cooled Reactor (HTGR) and its potential implications in the non-proliferation area.

#### HIGH TEMPERATURE GAS COOLED REACTORS

For the past several years, there has been a worldwide effort directed toward the development of a next generation of nuclear reactor technology. These so called "Generation IV" reactors are meant to substantially improve the existing generation of reactors in several areas. The Gen IV "vision" is to develop and deploy reactors that are safer, more efficient, more proliferation resistant, more economical, more secure and produce less waste. High Temperature Gas Cooled Reactors (HTGRs) are generally agreed to be the nearest term Gen IV reactors that squarely meet each of these Gen IV objectives. Indeed, in last year's Energy Policy Act, Congress authorized the Department of Energy to build a HTGR at the Idaho National Laboratory to demonstrate this reactor technology and its ability to produce hydrogen and/or electric power.

HTGRs have progressed beyond paper studies and paper designs to the construction and operation of test and evaluation devices. There are two test units currently in operation in Japan and China and in addition, there is an extensive base of historic HTGR experience in the U.S. and Germany. The past and present experience in these reactors has made clear their advantages. The state of the reactor core design has advanced to the point where no large development program is required for deployment and the costs and risks are well understood.

One primary type of HTGR is the Gas Turbine Modular Helium Reactor or GT-MHR. Without getting into unnecessary technical detail, suffice it to say that the GT-MHR, like other HTGRs such as the Pebble Bed reactor, is cooled with helium instead of water, is moderated by graphite, contains no metal in the core and uses extremely robust ceramic-coated fuel particles. These and other design features lead to a reactor design that is:

*Melt-down Proof Safe*—Even with the complete loss of all coolant and emergency circulation, the reactor core cannot get hot enough to melt the fuel. Further, because HTGR reactor cores are relatively diffuse and have a large heat

sink capability, reactor operators have days to understand and react to problems, not minutes or seconds.

*Nearly 50% More Thermally Efficient Than Existing Reactors*—In addition to improving the economics of the reactor, this particular characteristic leads directly to decreased cost of electricity, substantially decreased production of high level waste and less waste heat being dumped to the environment.

*Very Flexible to Site*—Because of their increased efficiency, HTGRs do not necessarily need to be located near a substantial body of water for cooling purposes. Hence, they can likely be deployed in arid areas of the world that are in need of nuclear energy. Moreover, inherent operational safety achieved by HTGR designs permits much reduced buffer zones between reactor sites and other activities.

*Capable of Burning All Types of Nuclear Fuel*—The particularly robust ceramic coated fuel form allows almost anything that is fissionable to be burned in an HTGR including uranium, plutonium, thorium, and nuclear fuel waste products. This same characteristic makes these reactors very effective burners of surplus weapons grade plutonium and capable of burning existing spent nuclear fuel inventories. They provide an important complementary technology to transmuted fast reactors (the Advanced Burner Test Reactor) proposed as part of GNEP.

*Capable of Providing High Temperature Process Heat for Central Plant Scale Hydrogen Production*—Hydrogen seems certain to play an increasingly important role in reducing our dependence on fossil fuels as soon as adequate and affordable hydrogen production capabilities are developed. The present U.S. market for stationary hydrogen consumption is over 11 million tons per year, and is growing at about 10% per year. Over 180 million tons of hydrogen per year would be required to fuel the domestic light transportation fleet. It is likely that only efficient high temperature process heat from nuclear power reactors will be capable of satisfying such annual demand with no greenhouse gas emissions. The present development path to nuclear production of hydrogen requires process heat temperatures that exceed all reactor concepts except the High Temperature Gas Reactor.

#### THE INTERSECTION OF HTGRS AND NON-PROLIFERATION

We believe there are four ways in which HTGRs are relevant to non-proliferation:

*1. Superior non-proliferation characteristics:* The presence of significant quantities of fissile material in all reactor cores (HTGR or otherwise) and in spent nuclear fuel makes these sources susceptible to use for proliferation purposes. Enrichment of nuclear fuels to establish core criticality has the same, perhaps higher susceptibility. The highly visible signatures and difficult and expensive recovery and refinement processes necessary for proliferant materials extraction from reactor cores, enrichment processes and spent nuclear fuels provide the most important means of verifying non-proliferation compliance.

HTGRs have superior characteristics because their robust ceramic-coated fuel form increases processing and extraction difficulty and because the core of HTGRs is inherently more diffuse in terms of concentration of nuclear materials. Consequently, significant quantities of HTGR fuel would be more difficult to pilfer and more difficult to use for nefarious purposes. In addition, because the HTGR is designed to be built entirely underground, it will have arguably superior security and non-proliferation benefits compared to large, above-ground installations.

*2. Joint Development Project with Russia:* For the past several years, DOE's NNSA and several key Russian nuclear institutes and laboratories have been working to develop the Gas Turbine Modular Helium Reactor (GT-MHR) for the purpose of destroying surplus Russian weapons plutonium. The goal of this unique, 50 / 50 cost-shared program with Russia is to construct one or more GT-MHR modules to replace the existing plutonium production reactor at Seversk. The GT-MHR reactor(s) will burn Russian surplus weapons plutonium and produce electric power and heat for that city.

This program is successful for several reasons: First, there is a strong feeling of mutual respect and shared goals between U.S. and Russian personnel. Second, the Russians are genuinely interested in the HTGR as a potential commercial reactor because of its efficiency, safety, security and versatility, and particularly because of its ability to support efficient hydrogen production. This interest has been expressed at the highest levels of the Russian government. Third, because of the Russian interest in the technology, they are sharing half of the costs and hence, have a high degree of incentive. Finally, the business model mandates delivery and approval of work products before payment is made.

A valuable opportunity for U.S. non-proliferation efforts and international nuclear cooperation exists as the Russian non-proliferation program proceeds simultaneously with other gas reactor efforts in the U.S.: the Next Generation Reactor Project at the Idaho National Lab and the High Temperature Test and Teaching Reactor (HT3R) at the University of Texas Permian Basin. A parallel and collaborative development path in the U.S. and Russia for this reactor provides early implementation of technology that contributes to non-proliferation, global energy security and revitalization of the U.S. nuclear power industry.

Almost needless to say, we are extremely pleased to see the recent news that the President wants to move forward with a civilian nuclear energy agreement with Russia. Our own experience with our Russian counterparts has been very productive and we believe has served to strengthen the ties between our nations and lessen nuclear proliferation concerns. There is every reason to suppose that other similar arrangements could expand these positive impacts and serve to mutually benefit our industrial bases.

*3. The Importance of Rebuilding a U.S. owned Nuclear Technology and Supply Industry:* The U.S. nuclear technology and supply industry, once the clear world leader, has suffered a steep decline in the past 30 years and has been substantially eclipsed by the industries of other countries who maintain and nourish their commitments to nuclear growth. In most cases, these foreign nuclear capabilities are either owned outright or substantially supported by their respective governments.

The loss of U.S.-owned capability and technology is almost certainly very damaging to U.S. non-proliferation interests, especially in the context of growing world interest in expanded nuclear power capabilities. When the U.S. government goes to the international negotiating table, it should have a menu of "carrots" in addition to "sticks" to encourage favorable outcomes. Lack of a diverse U.S. owned industry and the relative scarcity of attractive products will no doubt drive some negotiating parties to develop their nuclear relationships with other nations that have stronger nuclear industries and valuable products. A strong U.S. nuclear technology and supply industry working around the world provides added value by strengthening foreign relationships and helping establish a more favorable balance of trade.

If true Generation IV reactors are the way the world will ultimately go, then the U.S. industry needs to be positioned to compete in this arena. As I mentioned before, HTGRs are the most near term, most flexible and likely the most economic of the next generation ("Generation IV") reactors. There seems to be little doubt that importers of nuclear capability will seek out the most cost-effective and safest reactors available. Therefore, exporters must offer efficient and safe systems that are as proliferation resistant and secure as possible. HTGRs look very good in all these measures and should be regarded as a prime competitive opportunity by our country.

*4. Nuclear Waste Management:* The proper and secure management of spent nuclear fuel has important non-proliferation implications particularly because of its plutonium content. In fact, the President's Global Nuclear Energy Partnership (GNEP) is, in large measure, directed at addressing the long-term proliferation implications of nuclear waste through recycling and the burning of the plutonium and other waste products in fast-spectrum Advanced Burner Reactors. Because of the nuclear characteristics of the core and their extremely robust ceramic coated fuel, HTGRs have excellent and unique characteristics in terms of their ability to burn almost any kind of fissionable material, including plutonium and the other most long-lived and toxic components of nuclear waste. Further, once waste products are substantially or completely burned in an HTGR, the ceramic fuel cladding serves as a built in and very long-lived waste package. So, our belief is that HTGRs can and should play an important role in the GNEP because in addition to their ability to economically produce electric power, hydrogen and high quality process heat, they might also provide another waste management option in addition to the proposed Advanced Burner Reactor.

#### SUMMARY

Improved technology, including the GT-MHR, is of course not a one-stop solution to the complex array of proliferation issues that exist today and will continue to persist for an indefinite period. But many nations around the world including China, India, Russia, Canada, France, South Africa, South Korea, Lithuania, and Estonia, are moving quickly in the direction of substantially increasing their nuclear energy generating capacity.

There seems to be little doubt that nuclear power will grow substantially worldwide whether or not the U.S. participates. As this growth happens, it is vitally important that the technology choices are the right ones. Reactor concepts that provide the most proliferation resistant power system and fuel cycle will make substantial

contributions to inhibiting proliferation and assuring non-proliferation compliance on the part of user nations. Rebuilding a U.S. industry that can provide such systems to other nations is one of the best ways to discourage proliferation and assure compliance with non-proliferation protocols.

We believe that the U.S. government should implement a development plan with U.S. industry to address a variety of safe and economically attractive nuclear technology options. In the face of a steep increase of worldwide nuclear generating capacity, to do otherwise would be penny wise and pound-foolish. Such a plan would help assure that the U.S. was the major "player" in world non-proliferation negotiations and would increase our ability to respond to future uncertainties.

Thank you again for asking General Atomics to testify on this subject.

Mr. ROHRABACHER. Thank you very much for your concise testimony. And, Mr. Spector, if you could—

Mr. SPECTOR. Thank you very much.

Mr. ROHRABACHER [continuing]. Be just as concise, I'd be very appreciative.

**STATEMENT OF MR. LEONARD S. SPECTOR, DEPUTY DIRECTOR, CENTER FOR NONPROLIFERATION STUDIES, MONTEREY INSTITUTE OF INTERNATIONAL STUDIES**

Mr. SPECTOR. I will try to be. I'm Leonard Spector, and I direct the Washington office of the Monterey Institute's Center for Non-proliferation Studies, and I'm speaking here in a personal capacity because our organization does not take institutional positions.

Let me concentrate on three points in my testimony. First is one of the accomplishments of the Administration; second is the United States-India deal, where I have some differences; and finally, some words about GNEP.

The particular accomplishment of the Administration that I wanted to address was one that Chairman Rohrabacher focused on a bit, and that has to do with what we've done in the cooperative threat reduction area. I ran parts of these programs when I was at the Department of Energy, and I've kept up with them fairly closely, and so I will say a few words on them.

For example, the particular submarines that you were questioning as to why we did this, these were actual missile-launching submarines. They were active submarines, and they were being taken off line because of the Strategic Arms Reduction Treaty (START). But for the treaty and for the fact that we physically dismantled them, because Russia could not afford to, those would still be out there, still threatening us. In that particular case, I think we got our money's worth in terms of pure national security interests.

At the Department of Energy where I worked, we were responsible for securing nuclear materials, and hundreds of tons of weapon-grade nuclear materials which were very poorly secured are now well secured, but not all of it. Much of it remains to be done. And I think there, too, was a very clear-cut national security benefit.

We struggled to get some of these sites changed over. A couple have been. I think we've done better on the biological weapons side. And we have destroyed bombers, nuclear test sites, missile silos, all of this, Department of Energy or Department of Defense. So there was a national security payoff here.

It's fair to ask, should we be paying as much for the future, given Russia's new-found wealth that we are also paying for? And I'd say that's a good question. We should probably be adjusting the

amount that we pay compared to the Russians. But the core program has really served national security.

On the India deal, I have been part of the camp that has been troubled by this because it erodes a very important nonproliferation rule that we have, which is that we and other states won't deal with countries that are considered non-nuclear weapons states under the nonproliferation treaty. We will not contribute to their nuclear sectors as long as they keep certain facilities from inspection, which would preclude their use for nuclear weapons. In other words, India has its nuclear weapons sector, and the rule has been that we won't deal with their civilian sector because we don't want to have any connection to this nuclear enterprise that they are conducting.

I think it was fair for the Administration to open the door to a possible revision of the policy, but matters depended on the deal. And the deal we got was a very weak one. The deal the Administration sought, I probably wouldn't have cheered for it, but I would have said, well, that's the deal. That was not bad. We got something. But it is not what we wound up with.

Congress has stepped in. It has strengthened the deal to a certain extent, and will have the chance to do so further next week I think, when the House bill comes to the Floor, and I hope that there will be some additional strengthening of the deal as it's finally enacted.

I did want to make one point, though, relevant to the issue that came up here about whether our material will somehow find its way into the Indian nuclear weapons program. I think there really is a danger here. What I wanted to point out in my opening comments is, it's not just us. Once we open this door, every other nuclear supplier is eligible to supply the Indians on the same terms—the Indian civilian program under inspection, and we don't know what kind of conditions those other suppliers might provide. So we can be pretty confident that we're going to have tough rules. How tough will the Russians be or perhaps certain other states? So I think it's important to bear that in mind.

I felt that the failure to take issue with the Indians' test of the Agni III missile is also an important matter. This occurred right after the North Korean test. I think we would have strengthened our hand in dealing with the North Koreans had we at least expressed dismay that the Indians are testing. The Indian missile, by the way, is aimed at China. I mean, everyone understands that. So for us to fail to sort of speak up on the matter, that certainly could not have helped in our gaining Chinese support to kind of go against North Korea.

Let me now turn to the Global Nuclear Energy Partnership. First, we have been developing this picture of American efforts to work the Iran case for a month and a half. And we've come up with this chart which shows the Administration working very aggressively on many, many different levels to try to deal with the Iranian matter. GNEP is in there. In other words, if we get, you know, guaranteed fuel supplies, maybe that will help, but it's just part of a much larger picture. And so I think as we understand this particular contribution to nonproliferation, we should understand it in context. It's one of a much larger panoply of activities, and will

play a role, but as Secretary Record said, it's going to be a 30-year program before we get it started.

There are elements of the program that really deserve to be thought hard about. One of them has to do with processing spent fuel after it comes out of reactors. Spent fuel can be stored safely. It is being stored safely. It locks up the plutonium, makes it very difficult to use, and all of the different options for processing fuel after the fact have the result of removing the very highly radioactive substances in spent fuel from the plutonium. That makes it easier for the plutonium to be used even if there are some modest steps to keep the plutonium less readily usable.

It is also clear that many of these technologies do not reduce the volume of the nuclear waste going into the repository, because the waste is hotter. It's physically hotter, and it has to be spaced out more. So maybe, yes, it's true that the actual volume of waste is smaller, but the volume of the repository doesn't change. At least the studies that were done several years ago, a number of years ago, at some length, show that that was not a real benefit.

As I indicated, the technologies are unnecessary, because spent fuel is being stored safely, and we have spent fuel storage technology.

And finally, I would point out that it would be quite striking for the United States to support technologies to take plutonium out of spent fuel when it is investing so heavily to put plutonium into spent fuel in the United States-Russia weapons plutonium disposition program, which was mentioned, and a burner reactor was suggested as a way to advance that program. The concept is that you are locking up the plutonium by bringing it into spent fuel in that case, so you would want to think twice about other technologies that would take plutonium out of spent fuel, as to whether they really would help nonproliferation.

The last point is the fuel bank and a short supply, which can be very helpful in some cases, but you want to be careful which cases. We don't want to be in a position necessarily of assuring supply to India when we have legislation pending in both Houses that would provide for a cutoff of nuclear assistance to India if it conducted a nuclear test. If there was a big fuel bank and it had a 10-year supply of fuel, you know, our cutoff wouldn't mean a whole lot. So, one has to be careful how this might be used.

Mr. ROHRBACHER. Okay.

Mr. SPECTOR. Why don't I conclude there. Thank you.

[The prepared statement of Mr. Spector follows:]

PREPARED STATEMENT OF MR. LEONARD S. SPECTOR, DEPUTY DIRECTOR, CENTER FOR NONPROLIFERATION STUDIES, MONTEREY INSTITUTE OF INTERNATIONAL STUDIES

Thank you, Mr. Chairman for the opportunity to testify this morning on U.S. non-proliferation policy.

As we meet, the United States and its friends face a moment of particular danger. Islamic extremists in Palestine, Lebanon, and Iraq are intensifying terrorist acts against civilians to the point that war has broken out on two of Israel's borders, and the level of conflict in Iraq threatens civil war in that country.

Some Israeli officials have explicitly threatened to take the conflict with Hamas and Hezbollah to the source,<sup>1</sup> which they perceive to be Iran and Syria. If hostilities continue to escalate and Iran becomes a focus of Israeli retaliation, it is not hard to imagine that Iran's nuclear sites will be at the top of Israel's target list. Nor is it hard to imagine Iran responding with its intermediate-range, Shahab-3 missile, originally supplied by North Korea, possibly armed with chemical weapons. Given the closeness of U.S.-Israeli relations and the pervasive U.S. military presence in the region, Iran would certainly accuse the United States of complicity in any Israeli attack, creating further dangers, particularly to U.S. interests in Iraq. The Bush Administration has rightly sought to confine the conflict to Gaza and Lebanon, but this situation is highly unstable and no one can predict how events will unfold.

Matters are only slightly less volatile in South Asia, where it is possible that the Mumbai commuter train bombings, which killed over 200, will be traced to Islamic extremist groups that India believes are supported by Pakistan. This could easily lead to a military confrontation between the two South Asian states, with the potential for escalation to the nuclear level, comparable to the crisis that followed the December 2001 terrorist attack on the Indian parliament.

Meanwhile, both Iran and North Korea are giving the back of the hand to the efforts within the UN Security Council to restrain their nuclear programs and the North Korean missile program.

With events unfolding so rapidly and key issues, such as the content of the Group of Six<sup>2</sup> offer to Iran still classified, it is difficult to forecast whether U.S. policy will measure up to these challenges. Nonetheless, a number of points can be offered on certain aspects of U.S. strategy.

*Important successes.* The Administration has enjoyed a number of notable accomplishments. These include

- defusing the 2001–2002 India-Pakistan crisis;
- eliminating Libya's weapons of mass destruction (WMD) and longer-range missile programs;
- rolling up the A.Q. Khan network;
- creating the Proliferation Security Initiative for interdicting WMD cargoes in transit;
- advancing U.S. cooperative threat reduction programs in the former Soviet Union;
- gaining adoption of UN Security Council Resolution 1540, requiring all states to implement strict domestic and export controls over WMD materials; and
- implementing a multi-pronged strategy to reduce the risk of nuclear terrorism, with the latest addition to these efforts just announced at the G–8 Summit, in St. Petersburg. (I would note, however, that Russia has yet to fully acknowledge this threat. In its recent "White Paper" on proliferation, for example, it does not address the nuclear terror threat. This is especially distressing in that Russia has the world's largest stocks of poorly secured nuclear weapons-usable materials, as well as a domestic insurgency that has engaged in extremely serious acts of terrorism.)

As important as these accomplishments have been, however, other U.S. non-proliferation efforts have experienced significant setbacks and, in some cases, the Administration has taken steps that will make the job of constraining weapons of mass destruction and advance delivery systems more difficult in the days ahead.

*War in Iraq.* I sincerely hope that the United States is successful in bringing stability and democracy to Iraq. It must be recognized, however, that the war has made pursuit of U.S. nonproliferation goals in Iran and North Korea far more difficult. The failure to find WMD in Iraq, for example, has led states whose support we need to raise questions about the accuracy of U.S. intelligence pronouncements in these other settings. Moreover, in part because of memories of U.S. invocation of Chapter VII of the UN Charter to authorize the war against Iraq, it has become increasingly difficult for the United States to gain consensus to use the full range of Chapter VII authority to pressure Iran and North Korea. The fact that U.S. forces are tied down in Iraq, it may be added, has undoubtedly emboldened Tehran and Pyongyang to believe they can pursue their unconventional weapon programs with impunity.

<sup>1</sup>"Israel: Iranian troops helping Hezbollah attack," Associated Press, July 16, 2006, <http://msnbc.msn.com/id/13875121/>

<sup>2</sup>The Group of Six consists of the five permanent members of the UN Security Council (China, France, Russia, the United Kingdom, and the United States) plus Germany.

*Iran.* Under the circumstances, the Administration deserves credit for working the Iran case so actively and for showing a degree of flexibility in meeting this challenge, in terms of the incentives that it is willing to offer Iran in return for giving up its pursuit of sensitive nuclear technologies and in terms of the readiness it showed to engage in direct negotiations under certain conditions. The attachment at the end of my testimony illustrates the range of efforts that Administration has marshaled in this cause. Developments at the UN this week and next, where the Security Council will consider a mandatory resolution under Article 41 of Chapter VII requiring Iran to suspend its sensitive nuclear activities or face economic penalties (but not the threat of military intervention) will be particularly important.

*North Korea.* Bush Administration policy has so far failed in North Korea. I believe history has already recorded that the Administration's unwillingness to engage with Pyongyang until late 2002 and its accusatory and confrontational tactics thereafter led to the loss of the 1994 Agreed Framework, to North Korea's withdrawal from the nuclear Nonproliferation Treaty (NPT), and to its resumption of plutonium production. This has led to a quadrupling or quintupling North Korea's nuclear arsenal compared to when the Administration took office. We are also seeing, in North Korea's recent missile tests, the fruit of the Administration's unwillingness to continue the dialogue begun under President Clinton concerning the DPRK missile program. To be sure, the Agreed Framework had important flaws and we now know that North Korea was cheating through its clandestine uranium enrichment program, but the Agreed Framework did, in fact, lock down Pyongyang's plutonium program very effectively; this is North Korea's only program believed to have successfully produced fissile material. Similarly, missile negotiations might not have worked out, but in 2001, there was significant momentum towards restraining the North's missile capabilities. This momentum was dissipated by the Administration's failure to sustain the negotiations.

Today, we are left with a policy of containment and negotiation that has little to show for several years of effort. UN Security Council Resolution 1695 condemning North Korea's missile tests and calling on all states not to support the country's missile programs in any way is a valuable measure.

But returning to *the status quo ante* of 2001, much less fully eliminating North Korea's nuclear and missile programs, looks to be a very distant prospect.

*Pakistan.* In Pakistan, the United States faces grave risks that political instability, corruption within the nuclear chain of command, or a terrorist-inspired crisis could suddenly alter the global nuclear landscape by placing nuclear weapons in the hands of Islamist extremists or triggering a nuclear confrontation with India. The only means available for concerned outside states to mitigate these dangers is through a sustained program of political support for Musharraf and other pro-Western elements in Pakistani society; steady and substantial economic assistance to Islamabad to alleviate the conditions that give rise to political extremism and terrorism; and diplomatic efforts to encourage India and Pakistan to reduce tensions over Kashmir. The United States, and other Western nations are now committed to such interventions, but they will take many years to bear fruit, during which time the risks I mentioned will continue.

*U.S. India Agreement/Nonproliferation Regime.* The July 18, 2005, U.S.-India deal is particularly unfortunate because it so directly weakens an important element of the nuclear nonproliferation regime at a moment when the regime needs to be strengthened and reinforced. The element of the regime that is being set aside is the rule that outside states should not support the nuclear sector of countries states deemed to be non-nuclear weapon states under the NPT, unless they have accepted IAEA inspections on all of their nuclear activities. India has not taken this step, and many of its uninspected nuclear facilities are being used to support its nuclear weapon program. The United States was the champion of this supply restriction internationally, and, in 1992, it gained the agreement of all members of the Nuclear Suppliers Group (NSG) to implement it.

Modifying this rule in the case of India might be a reasonable choice in return for significant new Indian nonproliferation commitments. The Administration, however, is now supporting such a change in return for extremely modest nonproliferation pledges from New Delhi—indeed, far less than what the Administration, itself, originally sought.

This policy is already eroding discipline at the NSG, where Russia is exploiting a loophole in the NSG rules to sell nuclear fuel to India, a loophole that the United States had worked for years to close. Fortunately, Congress has stepped in, and legislation pending in both the House and the Senate would strengthen the Administration proposal in a number of important respects. Next week the House will have the opportunity to further strengthen the nuclear deal by amending the current

Committee bill to include important additional nonproliferation conditions before nuclear trade with India can move ahead.

I would also like to take note of the failure of the United States to strongly condemn the test of India's Agni III, which took place shortly after the North Korean tests. U.S. silence on the Indian action undoubtedly contributed to Chinese reluctance to take stronger measures against North Korea for its recent missile launches. The Agni III, which will carry a nuclear payload, is intended to serve as India's principal deterrent against China.

Like the U.S.-India agreement, the Administration's readiness to play favorites so openly rather than pursue a more even-handed course in constraining WMD and advanced delivery systems can only erode international consensus on strong non-proliferation measures.

Let me now turn to the *Global Nuclear Energy Partnership* (GNEP) and the role of the U.S. nuclear industry.

First, we need to realize that the GNEP is likely to play only a minor role in U.S. nonproliferation efforts, a point that is well illustrated in the chart I have provided on U.S. nonproliferation efforts vis-à-vis Iran. The chart shows GNEP to be only one subcomponent of one of seven major elements of U.S. nonproliferation strategy. And, of course, new technologies under GNEP are not likely to be available until long after the Iranian nuclear question is decided, one way or another.

Second, I am highly skeptical of the utility of costly advanced reactor technologies. To be sure some of these technologies look promising from the purely technological standpoint, but give the political burdens that nuclear energy confronts around the world and the very long lead times for constructing nuclear power plants, it is likely to be decades before such new reactors might actually make a contribution either to nonproliferation or to global energy needs. While further research and development may make sense, we should be careful before assuming that they will provide a dramatic pay-off at some future time.

Third, I believe spent fuel processing options of the kind GNEP is exploring do not make much sense.

- They are extremely costly compared to continued storage of spent fuel.
- They result in the removal of highly radioactive waste products from the plutonium and remaining uranium in spent fuel, which inevitably makes the weapons-usable plutonium more readily available for use in nuclear weapons. (For this reason, the IAEA, considers fuels that contain mixed plutonium and uranium oxide to be as great a proliferation risk as separated plutonium.)
- Fuel processing options do not reduce the scale of permanent geologic repositories needed for the permanent storage of dangerous nuclear wastes, because the vitrified high-level nuclear wastes resulting from these technologies are physically hotter than spent fuel, requiring greater separation between storage canisters in the repository. (It should be added that plutonium burner reactors create their own complex nuclear waste streams, including the plutonium-contaminated equipment used to process spent fuel and fabricate new plutonium-bearing fuel; the burner reactors themselves; and the spent fuel from those burner reactors.)
- These technologies are unnecessary, in that spent fuel can be stored indefinitely, is easy to keep track of, binds plutonium to highly radioactive substances that make its separation difficult, and employs proven technologies that are in use today.

I should add that Congress has authorized the expenditure of many hundreds of millions of dollars to put U.S. and Russian weapons plutonium into nuclear power reactor spent fuel, an unambiguous endorsement that the material provides a mechanism for safely locking up plutonium for the indefinite future.

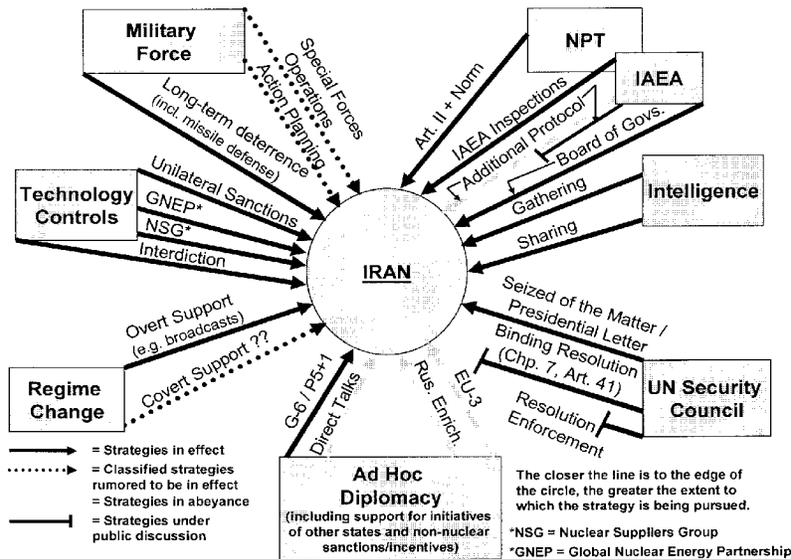
Fourth, fuel-bank/assured fuel supply concepts to be explored under GNEP are worthwhile, but their actual use will have to be carefully considered on a case-by-case basis. We would not want to provide such an assured supply of fuel to India, for example, when we have enacted laws providing for the termination of nuclear commerce with that country in the event that it conducts a nuclear test or takes certain other actions.

Finally, returning to the role of the U.S. nuclear industry, I would note that the new agreement with India is unlikely to bring many jobs to the United States. Russia, which is now constructing two nuclear power plants in India, and France will be the most likely economic beneficiaries of the new accord.



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### Overview of U.S. Nuclear Nonproliferation Policy vis-à-vis Iran



Compiled by Leonard S. Spector & Leah Kuchinsky

Mr. ROHRBACHER. Thank you very much, and the Chair will now proceed with his questions. And, Mr. Spector, you've raised some—you've all given us good testimony, and you raised some serious questions. When you say, "Whatever we do, we're going to be opening the door to other suppliers and the proliferation potential for what they're providing to India within this agreement." But is that true of the high pressure reactor that we're talking about? High pressure gas reactor as well? The fuel that they use could not

then be transferred or utilized for weapons. Is that correct, Mr. Haynes? And then—

Mr. HAYNES. I'll make a general point just to go back, and then I'll answer your question. It's interesting that that is—I assume that's true about the Indian agreement. I have no reason to doubt that. But if the United States had a stronger industry and really competitive products, then it might mean that the U.S. would sort of have a bigger seat at the table ultimately and a more commanding position.

Mr. ROHRABACHER. It would be especially true if it was dependent on technology to be actually manufactured and exported to them, and if that technology itself did not lend itself to that end.

Mr. HAYNES. Well—

Mr. ROHRABACHER. The question is, does the technology that your company is presenting have that ability to prevent that material from then becoming nuclear weapons material?

Mr. HAYNES. Well, Mr. Chairman, a gas reactor, like any other reactor—the spent fuel from it could be used for nefarious purposes.

Mr. ROHRABACHER. All right.

Mr. HAYNES. We would not claim that it is totally proliferation-resistant. I think our reactor has a couple of differences in that regard. One, that the fuel has multiple, very robust coatings of ceramic material, so it's somewhat more difficult to reprocess out the interesting stuff, if you will. And secondly, the fuel is more diverse or—excuse me, much more—the reactor core is much more diffuse. So, you have a larger core, a larger amount of material you have to go through in essence to get a weaponizable amount of material.

Mr. ROHRABACHER. So it would make it a little bit more difficult, but whatever nuclear reactor we use, there's going to be proliferation concerns?

Mr. HAYNES. There's always that concern, yes, sir.

Mr. ROHRABACHER. All right. Thank you, Mr. Spector, for quantifying the number of warheads that have been—or was it Mr. Kotek who quantified the warheads that we have actually been able to dismantle with the \$10 billion we have expended in your analysis of the submarines and why that was worthy of this expenditure? I did expect that kind of testimony actually coming from the State Department, but I was happy to hear that the private sector—

Mr. DELAHUNT. We're outsourcing it now.

Mr. ROHRABACHER. Yeah. I'm happy to see the private sector is doing a more efficient job as usual.

Mr. DELAHUNT. The Monterey Institute. If we could outsource our entire foreign policy—

Mr. ROHRABACHER. We'll get into that later. All right. Here we go. But—and Mr. Kotek, I certainly appreciate your general analysis that we are going to step forward, we are going to be a leader in this new phase of human development, if you will, or industrial development of the world. Who do you see as our major competition, and do you see us winning or losing a competition for this?

Mr. KOTEK. Well, you've got several countries that have been very aggressively pursuing nuclear energy.

Mr. ROHRABACHER. Sure.

Mr. KOTEK. And of course, you know, France is on the top of everyone's list with 75, 80 percent of their electricity coming from nuclear power. But the Japanese have been very active. They get about 30, 35 percent of their electricity from nuclear. South Korea has—

Mr. ROHRABACHER. That is something I don't think many of us have understood because of the Japanese anti-nuclear position on weapons—the Japanese have actually moved forward and are producing electricity?

Mr. HAYNES. Absolutely.

Mr. ROHRABACHER. In fact, the high pressure gas reactor is working in Japan.

Mr. BERMAN. And with North Korea doing what they're doing, how long will the Japanese anti-nuclear position be an anti-nuclear position?

Mr. ROHRABACHER. Correct.

Mr. KOTEK. Of course, Russia is largely dependent on nuclear energy. They're being very aggressive in their attempts to restore their competitive position. And then of course China is trying to grow their domestic nuclear energy program. And one of the things that the Chinese tend to insist on when a foreign company comes in and builds a plant in their country, is quite a bit technology transfer, so that they can bootstrap their way up and become a supply country, not an importing, receiving country.

So those are some of the major countries that are out there. But there are others as well who have aims on becoming nuclear suppliers around the world.

Mr. ROHRABACHER. Mm-hmm. The General Atomics reactor that we're talking about, this high pressure gas reactor, can it be used as part of this process of destroying weapons?

Mr. HAYNES. Yes, sir, absolutely. The fuel—I think I briefly described it before, is a very robust, ceramic fuel, and in terms of weapons material, the basis of our program with the Russians is that the reactor would burn basically pure plutonium oxide, so it doesn't need to be mixed with any fertile material—in other words, unenriched uranium, which means that when you burn it in a reactor, it will cook quite well and you get a very complete burn of that material, in fact well below what's called the spent fuel standard. So, arguably, the material would not be, after it would receive sort of a full irradiation.

Mr. ROHRABACHER. So do we get a double benefit from your gas reactor in the sense that it helps heat up material that could otherwise be used as fuel—and plus it produces electricity, of course—

Mr. HAYNES. Yes, sir.

Mr. ROHRABACHER [continuing]. And that type of benefit as well. Do you have any comment on that, Mr. Spector?

Mr. SPECTOR. Well, I do think the problem we confront in this program as a whole is that the plutonium disposition program is very difficult to execute. It requires operation of quite a few facilities, both in Russia and the United States. And it's got to go on for 30 years I think. So, it's going to be a long-term endeavor.

If we can get a new type of reactor into the mix in that time, it may be worthwhile because it will accelerate the day when we finish the program. There is one advanced reactor now in Russia

which will become one of the leading reactors. It's a classic breeder reactor. So that's a plus. And I think, you know, the door should be open to this. So I would think the real choice comes in seeing what's practical, what's available at what time, and things of that kind.

Mr. ROHRABACHER. Okay. One last question, and that is, Mr. Record indicated that your technology had not advanced enough to actually make any major decisions about its utilization. I just thought I'd give you a chance to comment on that.

Mr. HAYNES. I guess I don't want to necessarily get in a fight with the Department of Energy, but I think—

Mr. ROHRABACHER. It's the Department of State. They're used to getting in fights.

Mr. HAYNES. Or Department of State, yeah, well, as he said, he deferred to the Department of Energy. But one perhaps telling thing is that Congress authorized and the Idaho National Lab is going forward with the beginnings of building, in essence, that same reactor at the Idaho National Lab. And as you pointed out, there's one operating in Japan.

There's also a close cousin to it operating in China right now, a so-called pebble bed reactor. South Africans are moving forward with building a whole fleet of pebble bed reactors. So, we believe it's ready to go, in terms of the reactor itself.

Mr. ROHRABACHER. And we could actually build reactors and export them, as Mr. Kotek was talking about?

Mr. HAYNES. That's certainly our dream, sir.

Mr. ROHRABACHER. All right. Mr. Delahunt, you may proceed.

Mr. DELAHUNT. Mr. Spector, I raised the issue of the comment by the Foreign Minister of Iraq, Zeybari, I don't know if you're familiar with his statement, but I found it surprising. Can you give us your assessment, if you have one?

Mr. SPECTOR. Well, I would say it's very disturbing when a close ally of our own is not lining up with us on the Iran matter, especially when there's the history of conflict between Iran and Iraq that we're all so familiar with.

We probably need to look very carefully at precisely what he said. It is a common view in the nonaligned countries that states have the right to produce nuclear energy, and they sometimes forget that extra line, which is consistent with their obligations under the nonproliferation treaty. If that line happened to be included, then it was a more cautious statement. We need to be confident on that.

But I do think when you have these unique relationships, you would expect greater conformity to such an important position of our own. One also has to point out that the government is dominated by Shiites in Iraq, and there may have been a certain deference to another Shiite state nearby.

Mr. DELAHUNT. Right. That's the conclusion that I drew. But I am also drawing the inference that there would appear to be minimal consultation ongoing between the Administration and the Iraqi Government for the Foreign Minister to make that particular observation, combined with today's front page story in the *New York Times* that Prime Minister Maliki vigorously denounced the Israeli actions. And I don't want to get into that.

But, again, I begin to see a series of developments in terms of that Iraqi-Iranian relationship that one could speculate, if you will, our efforts, the invasion of Iraq, has led to a significantly more influential Iran, a hegemon if you will. We eliminated Saddam Hussein, whom we supported during the 1980s, and even provided dual-use technology, my memory tells me, as well as obviously defeated, at least it would appear temporarily, the Taliban.

So all of this blood and resources could very well be for naught. And could actually, if you will, serve to diminish our own national security with a strengthened Iran, who has clearly advanced its agenda vis-a-vis nuclear weapons. Would you care to comment?

Mr. SPECTOR. Well, I think that's a distinct danger. I think we've seen elements of this happen already, in the sense that our forces are tied down. I mean, I think these are things we all understand.

On the other hand, we're there. Our troops are there. We are attempting to stabilize the country and bring democracy, and at this stage of the game, we may in a sense have to play out our hand and try to make the best of a very, very difficult situation with some clear costs among—

Mr. DELAHUNT. Bringing democracy, you know, we've been advocating democracy, and sometimes the results we're not very happy with. It's a question of whether we're going to be consistent in terms of bringing democracy.

My first concern is, at this point in time, given the absolute volatility that I think we see occurring globally, is stability. And let me put forth a hypothesis. And if you could give me—if you could game it for me, if you will. If the Musharraf Government, which appears to be constantly on the cusp, if you will, should fall, here we have a Pakistan—I read reports that indicate if we really brought democracy to Pakistan, we would be looking at an Islamist Government with a strong dose, if you will, of radical elements. Play that out for me.

Mr. SPECTOR. Well, I think, you know, it's everyone's fear that there will be a coup d'etat or an assassination in Pakistan. We've already had three assassination attempts. So this a very, very dangerous situation.

I think what we need to do is in effect what I had said in my testimony, although it was quite brief, which is to try to stabilize the government and have a long-term program of building up the country so that we can put down these radical elements, because they'll no longer be popular. That's a long-term process.

And I think for the intermediate term, we have to stand by Musharraf and his supporters, because it's in a sense the best we've got. It's not a completely happy situation. It's certainly not a democratic situation. But I think maybe slow progress toward democracy while attempting to shore up the economy of the country and stabilize it politically is the right answer.

Mr. DELAHUNT. On these proliferation issues, given the failure of our intelligence prior to the Iraq invasion, what's our credibility in terms of the rest of the world on these particular issues now, as we see crisis after crisis emerge?

Mr. SPECTOR. Well, we do have a burden that we carry, and I want to just say, when I was in a Democratic Administration, we thought Saddam would be up to no good as soon the inspectors left

in 1998. So this was a pretty widely held view as a general proposition.

Mr. DELAHUNT. Right.

Mr. SPECTOR. Not where we wound up, necessarily. But there are a couple of cases where the evidence is now absolutely clear. Iran is the best one, because it's not just based on American intelligence finding, it's based on IAEA inspections, where they got in, where they weren't allowed in. And I think this demonstrates how valuable that inspection system could be us to under the right circumstances.

They've had some flubs, I mean, worse than flubs, some real failures along the way.

Mr. DELAHUNT. Right.

Mr. SPECTOR. But I think working it aggressively, taking advantage of the skills of the agency, giving them as much authority as possible, is what the United States presses for, and we have had some success in doing that, and that relieves us of the burden of convincing and persuasion.

Mr. DELAHUNT. Mm-hmm. You indicate by your observations that you have confidence in the IAEA and its leadership at this moment?

Mr. SPECTOR. I would say that they've done a pretty credible job, sometimes keeping us at arm's length, and sometimes that helps—

Mr. DELAHUNT. Their credibility.

Mr. SPECTOR [continuing]. Give them a greater credibility, which is to our advantage in some ways.

Mr. DELAHUNT. Right.

Mr. SPECTOR. So this plays both ways. But it really matters how much authority they get. When they get carte blanche, like they had in Iraq after the first Gulf War, they can really do the job. When they get regular inspections, not enough, which is where we are in Iran at the moment.

Mr. DELAHUNT. Mm-hmm.

Mr. SPECTOR. In Iran for a while, though, we had regular inspections, something called the additional protocol, and then even more beyond that. And they were in pretty good shape. So it's not the agency's technical or kind of political orientation, it's the authority it gets to exercise in particular instances that really matters.

Mr. DELAHUNT. Do you feel it has sufficient authority now?

Mr. SPECTOR. No, in the sense that classic safeguards, as agreed to under the Nonproliferation Treaty and so forth, were not really sufficient. So it is attempting to get the next tranche of authority under something called the Additional Protocol, and then in Iran, it really is insisting on more, and that's where the Security Council is coming down as well.

So with those additions, I think you've got something adequate. But without them, you've got problems.

Mr. DELAHUNT. Thank you very much.

Mr. ROHRBACHER. I want to thank all of our witnesses today. I appreciate each and every one of you, and Mr. Spector, thanks for mentioning the position of the last Administration—that our policies in Iraq just don't flow from or started when George Bush became President. Let me note for the record that Mr. Delahunt's

questioning about Pakistan, his concerns there are very well founded, even though we may have a disagreement on the genesis of some of our current problems. And let me note that China was the main proliferator behind Pakistan, as well as I believe China is the main proliferator behind North Korea, just for the record. And with that said, I believe this has been a very worthwhile hearing, and we are going to probably have some written questions for you, and we hope you would follow up on those written questions.

And with that, this Subcommittee is adjourned.

[Whereupon, at 11:33 a.m., the Subcommittee was adjourned.]

