

**REDUCING THE THREAT OF NUCLEAR TERRORISM:  
A REVIEW OF THE DEPARTMENT OF ENERGY'S  
GLOBAL THREAT REDUCTION INITIATIVE**

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**HEARING**  
BEFORE THE  
SUBCOMMITTEE ON  
OVERSIGHT AND INVESTIGATIONS  
OF THE  
COMMITTEE ON ENERGY AND  
COMMERCE  
HOUSE OF REPRESENTATIVES

ONE HUNDRED NINTH CONGRESS

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**REDUCING THE THREAT OF NUCLEAR TERRORISM: A REVIEW OF THE DEPARTMENT OF ENERGY'S GLOBAL THREAT REDUCTION INITIATIVE**

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**TUESDAY, MAY 24, 2005**

HOUSE OF REPRESENTATIVES,  
COMMITTEE ON ENERGY AND COMMERCE,  
SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS,  
*Washington, DC.*

The subcommittee met, pursuant to notice, at 2:10 p.m., in room 2322, Rayburn House Office Building, Hon. Ed Whitfield (chairman) presiding.

Members present: Representatives Whitfield, Walden, Burgess, and Inslee.

Staff present: Mark Paoletta, chief counsel; Dwight Cates; investigator; Chad Grant, legislative clerk; Voncille Hines, minority research assistant; and Chris Knauer, minority investigator.

Mr. WHITFIELD. At this time I will call this hearing to order. This is the Subcommittee on Oversight and Investigations for the Energy and Commerce Committee, and the topic of today's hearing is Reducing the Threat of Nuclear Terrorism: A Review of the Department of Energy's Global Threat Reduction Initiative.

I want to welcome Mr. Inslee here with us today. Ranking Minority Member Bart Stupak is controlling time on the floor on the stem cell debate, and so Mr. Inslee will be serving as the ranking minority member at least at the beginning of this hearing, and I am glad you are here, Mr. Inslee.

At this time I will go on and make my opening statement.

Over the past several years the Oversight and Investigations Subcommittee has held several hearings on nuclear terrorism prevention. We must prevent any effort by terrorist organizations to obtain nuclear materials for use against us in a radiological dispersion device or a nuclear device. A comprehensive defense against nuclear terrorism deserves our sustained attention.

Our earlier hearings reviewed the efforts of the Bureau of Customs and Border Protection to target and inspect sea cargo containers to stop nuclear material from entering the country at the border. These efforts include the installation of radiation portal monitors at all ports of entry that can detect nuclear material inside cargo containers.

Today the hearing will review DOE's Global Threat Reduction Initiative. The GTRI program provides an additional layer of defense on top of the effort of the Bureau of Customs and Border Pro-

tection. While the Bureau of Customs and Border Protection is primarily focused on detecting nuclear material at our borders, the GTRI program is focused on identifying, removing, and securing vulnerable nuclear material before the terrorists can even attempt to smuggle it into our country.

The GTRI program also has an extensive domestic effort to secure radioactive materials here in our country that could be used in a dirty bomb. This is a worldwide effort, and the challenges are significant. For decades the U.S. and Russia have promoted the peaceful use of nuclear power around the world by sharing tons of highly enriched uranium. With dozens of foreign countries now in this age of terrorism, DOE is focused on recovering this highly enriched uranium and converting research reactors to the use of LEU.

The GTRI program has identified 25 research reactors here in the U.S. that will be converted from highly enriched uranium fuel. Already 11 reactors have been converted, including two domestic research reactors which were announced last month at Texas A&M University and the University of Florida.

HEU is a major threat because it could be used in a nuclear bomb that could produce a catastrophic explosion. However, the threat of a radiological dispersion device that contaminates an area with a smaller amount of radiological material is also a major concern. The GTRI program is working closely with the Nuclear Regulatory Commission to identify, recover, and dispose of sealed sources here in the U.S.

It is important to understand that sealed sources licensed by the NRC are essential for medical-industrial purposes and will continue to be used in this country every day. However, until recently, there has been no program to recover these materials when they were abandoned, discarded, or no longer necessary for their intended use.

NRC is working to upgrade security for sealed sources and has developed a national tracking system for high-risk sealed sources in use across the country. I look forward to testimony from the NRC and the NNSA on these important programs today. I also look forward to input from witnesses from the Nuclear Threat Initiative and the Council on Foreign Relations, who will provide their input on the current status of the GTRI program's efforts to identify, remove, and secure nuclear materials.

With that I yield back my 51 seconds and recognize Ranking Minority Member Inslee.

Mr. INSLEE. Thank you, Mr. Chairman. As the Chair indicated, Mr. Stupak is managing the stem cell issue right now. I know he has a tremendous interest in the Global Threat Reduction Initiative. In fact, he organized a secure briefing on this some time ago and we appreciate his leadership, and I will try to fill in for him with whatever skills I can bring to bear.

This is a very important thing in my district. With Seattle and Tacoma Ports in the State of Washington, we recognize the risk associated with this. We recognize how much of the material is in the world today, much of it still insecure, some of it padlocked, some of it under cybersecurity, some of it very well secured, and much of it perhaps maybe a chain link fence, maybe less. So I can tell

you that this is of great concern to my constituents and myself as well, because I consider it probably the greatest threat that really does exist today. And there are many, but I consider this one to be preeminent and probably the one that we can do the most about by identifying and securing this particular material.

The initiative has had some major successes today, but we have got a lot of work to do, and I will be particularly interested in a review and discussion today about how the agencies are working together. This is a situation because we have multiple jurisdiction of agencies. It does strike me that there are potentials, that there are cracks not being filled and perhaps duplication of effort. I am very interested to see how the agencies are working together, particularly on the international and domestic side.

Obviously, the purpose of the initiative is to remove or secure high-risk nuclear and radiological materials around the world, and this is an effort that we do want to be comprehensive in addressing this material threat from poorly guarded facilities.

Some of these materials are found domestically, which is why we have the Nuclear Regulatory Commission before us today so we can understand better how the NRC interacts with DOE in this effort. Of course, we have a major international component, as carried out in cooperation with the Department of State and a range of international organizations such as the IAC.

To this point the committee has conducted only limited oversight of this program. Nonetheless, what we have observed does appear encouraging, at least to me.

The initiative has successfully removed nuclear materials from a variety of sources throughout the globe. It has also successfully secured material at various sites.

And, Mr. Chairman, I will say that this is a great investment of taxpayer dollars. We have got to make sure that they are comprehensive.

With that in mind, I will be looking forward to several of the questions we will have today, if I can allude to them now and perhaps the witnesses can keep them in mind.

First, do we have a list of priority sites based on a realistic threat assessment and material risk? How do we establish that prioritization? Have we done that on a multiple-agency basis?

Second, is there general agreement among the key agencies that we are addressing the most troubling sites and doing so in a timely manner? Or are there disagreements in that regard and how do we resolve them?

Third, and perhaps most important, the one that we are responsible for on this side of the desk, are we adequately funding this effort, and is the initiative working as expeditiously as possible? In addition to adequate financial support, does the program have sufficient support from the U.S. State Department to place priority sites high on an international agenda?

So I look forward to that discussion today and yield back the balance of my time.

Mr. WHITFIELD. Thank you, Mr. Inslee.

[Additional statement submitted for the record follows:]

PREPARED STATEMENT OF HON. JOE BARTON, CHAIRMAN, COMMITTEE ON ENERGY  
AND COMMERCE

Chairman Whitfield, thank you for holding this important hearing. Although the words “homeland security” are not in its name, the Department of Energy is really the leader in homeland security in several areas. This hearing is about an important homeland security issue—reducing the threat of nuclear terrorism.

The core purpose of the Department of Energy is to ensure the country has a fully functioning nuclear weapon stockpile that continues to serve as our primary deterrent against acts of war on our nation.

The Department of Energy’s extensive knowledge and experience in nuclear weapons research and production is also relied upon to prevent the spread of nuclear weapons and nuclear materials. DOE is the worldwide leader in providing critical nuclear non-proliferation assistance to several federal agencies and international governments, and also provides on-the-ground programs to identify, secure, and remove vulnerable nuclear materials before they fall into the hands of terrorists.

There has not been a successful attempt by any terrorist organization to obtain and use radiological material in a “dirty bomb” or a nuclear device in this country. However, a comprehensive strategy to prevent nuclear terrorism is needed to keep nuclear materials out of the hands of terrorists, and to prevent a successful attack in the event terrorists were to accumulate nuclear materials.

A comprehensive strategy requires several lines of defense, but also a good offense. The Global Threat Reduction Initiative is leading the charge for the offense. With the assistance of the Nuclear Regulatory Commission, the GTRI program has recovered over 10,000 sealed sources containing radioactive material here in the U.S. that otherwise may have been abandoned in un-secure facilities across the country.

The GTRI program is also working to prioritize the recovery of highly enriched uranium and radiological materials in countries where terrorists are known to operate.

Today we will learn about several successful efforts by GTRI around the world. While these success stories are notable, the GTRI program was just recently created, and I am concerned that the program lacks a set of performance measures that can be used to clearly track overall progress from year to year. I hope this issue can be examined today. I want to express my full support for DOE’s ongoing effort in preventing nuclear terrorism. I yield back the balance of my time.

Mr. WHITFIELD. At this time I will welcome the first panel, and before I introduce them I would like to ask unanimous consent that all members of the subcommittee may have up to 7 days in which to introduce their opening statement, particularly since so many of them are not here this afternoon. So, without objection, so ordered.

At this time on Panel I, we are very pleased to have with us this afternoon Mr. Paul Longworth, who is the Deputy Administrator for Defense Nuclear Proliferation at the National Nuclear Security Administration. We welcome you, Mr. Longworth.

In addition, Mr. Ed McGaffigan who is a Commissioner at the U.S. Nuclear Regulatory Commission. We welcome you.

At this time, Mr. Longworth, we will call on you for a 5-minute opening statement.

**STATEMENTS OF PAUL LONGSWORTH, DEPUTY ADMINISTRATOR FOR DEFENSE NUCLEAR PROLIFERATION, NATIONAL NUCLEAR SECURITY ADMINISTRATION; AND EDWARD McGAFFIGAN, JR., COMMISSIONER, U.S. NUCLEAR REGULATORY COMMISSION**

Mr. LONGSWORTH. Thank you, Mr. Chairman, Mr. Inslee.

I am going to talk about initially our five-pronged approach to ensure that the materials, the technology, and the expertise that are required in any nuclear—any weapons of mass destruction program do not fall into the wrong hands.

First, our programs at NNSA. We want to secure and account for nuclear materials in Russia and the former Soviet Union and we are making progress in that area. We have accelerated our programs to secure an estimated 600 metric tons of weapons-usable material in Russia. To date, we have secured over 70 percent of the sites where these materials are stored, and we are on course to finish all of our work in Russia by 2008, a full 2 years ahead of the schedule established prior to 2001. In fact, this year, we will complete all of our work at the Russian Navy nuclear weapons sites.

Second, we want to establish the capability to detect the movement or trafficking of weapons-usable materials. Through our programs like Second Line of Defense and the Megaports Initiative, we are working with selected countries to install radiation detection equipment at key transit choke points throughout the world such as seaports, airports and land border crossings, and this committee has done a lot of work in this area. We are currently operating more than 50 land border crossing detectionsites, and we expect to add several more this year.

Third, we want to stop the production of new fissile material in Russia and eliminate existing stockpiles. Currently, Russia operates three reactors that produce plutonium. They need these reactors for district heating and electricity, but they produce about 1.2 metric tons of plutonium every year. That is enough, roughly, for a couple of new nuclear warheads every week.

We are working with the Russians to shut down these reactors and replace them with coal-fired plants, and we are on track. We began work at the first site in February, at Seversk, and we will begin at Zheleznogorsk we hope later this year or early next year.

Fourth, we want to eliminate existing material. We do this through several programs. The HEU purchase agreement, which I know the chairman is intimately very familiar with, that is a very successful program. This summer we will reach the halfway point in blending down 500 metric tons of weapons origin HEU from Russian warheads. As an aside, half of U.S. uranium requirements are met by dismantled Russian nuclear warheads. So nuclear is 20 percent of the overall U.S. energy mix. That means 1 out of every 10 of these lights in this hearing room is fueled by dismantled Russian nuclear warheads. So it is a very successful program.

Fifth, we want to eliminate or consolidate the remaining weapons-usable nuclear material and radiological materials that exist throughout the remainder of the world. This past May, the Department of Energy launched the Global Threat Reduction Initiative, which is the topic of the hearing here today. As the chairman said, we hope to identify, secure, recover, and disposition vulnerable high-risk, nuclear and radiological materials that pose a threat to the international community and to do so as quickly as possible.

GTRI works to achieve this mission by converting targeted research reactors around the world that use highly enriched uranium to a low-enriched uranium fuel. We try to then repatriate the spent fuel and fresh fuel from these facilities back to the U.S. if it's U.S. origin or back to the Russian Federation if it's Russian or Soviet origin.

We secure high-risk vulnerable radiological materials that might pose a threat to the United States or our allies, and we identify

and address nuclear and other radiological materials that had not been previously addressed, and we call these gap materials. These are, in many cases, materials that are neither Russian nor U.S. origin that might have been created in an indigenous program in a country around the world.

The reason we are so concerned with this material is obvious. If terrorists were able to get, particularly fissionable material, HEU or plutonium, they would have overcome the most critical step in constructing a nuclear weapon. According to the International Atomic Energy Agency, only 25 kilograms of highly enriched uranium is needed for a nuclear explosive device. Therefore, any civilian research reactor, especially those that possess HEU, we believe we need to focus on on a time-critical basis.

We prioritize our work by applying risk-based approaches to identify vulnerable nuclear materials and radiological materials. This risk-based approach is informed by several criteria, including but not limited to the type and quantity of the material involved, the security conditions at the site where the material is located, and the regional and country issues where the material is actually located. So how secure is the country; is there known terrorist activities in that country?

To help ensure that GTRI is prioritizing our efforts, we conducted last year the Global Materials Removal and Research Reactor Security Study. This study drew from both classified and unclassified data and there was an attempt to put into one classified report, using all sources, the locations and quantities of all materials that we view to be a risk to the United States. We use that report as a living document, and that is the report that guides where we do our work and what materials we focus on.

I would like to go just very briefly to the various component of GTRI. I mentioned that we are trying to convert the reactor cores that use HEU. We do this by converting cores that can be converted, using existing technology as quickly as possible. We also are developing a new variety of fuel to convert cores that, because of the way the reactor is designed or the mission that it has to carry out, requires a much higher density of neutrons. That variety of fuel does not exist today. We have targeted 105 reactors worldwide. Of these 105, 40 have already converted to a low-enriched core; 35 can convert with available fuels, and we are queuing those up to be completed on an accelerated basis; 30 cannot convert using existing technology, and that is why we have doubled the budget to develop this new variety of fuel to convert those last remaining reactors.

To show the world that we are practicing what we preach, we are also working, as the chairman noted, to convert domestic reactors, and this year we have identified two reactors that we will convert, the University of Florida and Texas A&M. And we will be making a decision in the future about what additional U.S. reactors need to be converted. There are 14 remaining in the U.S; 8 can be converted; 6 require the new fuel that we are working on.

Once we have converted the reactor, we want to return the spent fuel and fresh fuel and any bulk materials that might be used in targets or other activities at the site back to Russia and the United States, and we do that by bringing those materials back to a secure

location. In Russia's case, we bring it back to a facility where we have already provided security upgrades.

One of the most important things to keep in mind is that these reactors are in countries that are sovereign countries, and they must agree to convert the reactors. As Mr. Inslee pointed out, there is a diplomatic strategy that has to be carried out in order to convince the countries that the reactors can meet their missions, which are medical isotope production, industrial uses, research uses, very legitimate and very important missions. Our task is to convince them that they can convert and meet their missions, but to do so in a safe way.

Last month, I chaired with my Russian counterpart Ivan Kamenskikh, a working group to set a schedule for the return of fresh and spent fuel from all remaining Russian origin sites. We have set our deadline as 2010 to have all of that material back into Russia. They are working on a regulation now that would make it legally possible for them to do so. There is no current regulation. They don't have the regulatory authority to repatriate that fuel.

I will quickly go through this. The U.S.-origin fuel, we have extended the window during which U.S.-origin HEU fuel can be brought back into the United States. We extended that window by 10 years. We estimate that there are 40 countries with about 20 metric tons of material that we need to bring back to the U.S.

Moving on to RDDs, since September 11 we have focused with increasing emphasis on the threat that radiological sources pose. There are two components to our work. There is a domestic component and an international component. Domestically we have recovered roughly 10,500 excess sources. We work very closely with the NRC. They tell us when a licensee has orphan sources, and we mobilize our teams to go retrieve those sources and bring them to a secure location.

Last year, Congress gave us an 18-month window and told us to get 5,000 sources. We got 5,500. So this program is to date very successful. We estimate that there are probably another 15,000 additional sources that we will have to recover that will be declared excess that we will have to recover over the next 5 years domestically.

Internationally we are currently engaged with about forty countries. We do so bilaterally with each the countries. We also work with the IAEA to form regional partnerships. We also work with other countries who have a regional role like Australia in the southern Pacific region, and we work with law enforcement such as Interpol.

Since the program's inception, we have completed radiological security enhancements at 125 worldwide facilities and recovered 63 Russian civilian radioisotopes, thermal electric generators, or RTG.

Thus far in 2005 alone, we have secured 56 sites in countries such as Belarus, Colombia, Indonesia, Kazakhstan, Russia and the Ukraine.

There are at least an additional 16 high-risk countries with over 100 facilities that our International Radiological Threat Reduction Program will address over the coming years.

With that, Mr. Chairman, I will conclude. I want to thank you for holding this hearing and we look forward to answering your questions.

[The prepared statement of Paul Longworth follows:]

PREPARED STATEMENT OF PAUL LONGSWORTH, DEPUTY ADMINISTRATOR FOR DEFENSE  
NUCLEAR NONPROLIFERATION, NATIONAL NUCLEAR SECURITY ADMINISTRATION,  
U.S. DEPARTMENT OF ENERGY

Thank you for this opportunity to discuss the nonproliferation activities of the U.S. Department of Energy's National Nuclear Security Administration (NNSA). In the past, nuclear non-proliferation focused on preventing non-nuclear weapon states from acquiring such weapons. That's still important, of course. In the aftermath of 9/11, we have intensified our efforts to keep nuclear material and nuclear weapons out of the hands of terrorists. The NNSA has accelerated and expanded its implementation of a five-pronged strategy to deny terrorists and states of concern the materials, technology, and expertise needed to develop nuclear weapons.

**First, we want to account for and secure nuclear material in Russia and the former Soviet Union.** We are making progress in improving security measures at facilities in Russia and the former Soviet Union. We have accelerated our programs to secure an estimated 600 metric tons of weapons-usable material in Russia. To date, we have secured over 75 percent of the sites where these materials are stored and we are on course to finish this work by 2008—a full two years ahead of the schedule established prior to 2001. We will complete our work to secure Russian Navy warhead and nuclear fuel sites by 2006. We are moving rapidly to identify and secure all remaining 12th Main Directorate and Strategic Rocket Forces warhead sites. We expect to complete work on the Strategic Rocket Force sited by the end of 2007. Also, as discussed at the recent Bratislava Presidential Summit, we are exploring ways to accelerate our schedule in securing the 12th Main Directorate sites.

**Second, we want to establish a capability to detect the movement or trafficking of weapons usable nuclear materials.** Through our programs like Second Line of Defense and Megaports, we are working with select countries to install radiation detection equipment at key transit choke points throughout the world—such as sea ports, airports, and land border crossings—to detect proliferation and trafficking of nuclear and radioactive materials. We currently operate more than 50 land border crossings and have already equipped two seaports, with 3 more expected this year.

**Third, we want to stop the production of new fissile material in Russia and eliminate existing stockpiles.** Russia currently operates three plutonium producing reactors, which—together—make 1.2 MT of plutonium each year. That's enough for roughly a couple of warheads a week. The U.S. has agreed to build replacement, coal fired plants to make it possible for Russia to shut down these reactors. We are making progress in this area as well. In February, we began work at the first site, Seversk.

**We are also working to eliminate existing material.** More than 231 metric tons of Russia's HEU has been converted to non-weapons grade material for use in commercial power reactors under what is often called the "Megatons to Megawatts" program. Altogether, 500 metric tons of Russia's HEU will be converted and used as fuel in civilian nuclear power plants. The U.S has declared 174 metric tons excess at we are currently down-blending this material at U.S. facilities. Additionally, through our plutonium disposition program, we are working with the Russians to eliminate 68 metric tons of weapons-grade plutonium—34 metric tons in each country—enough for over 17,000 nuclear weapons.

**Fourth, we want to eliminate or consolidate the remaining weapons-usable nuclear and radiological materials that exist throughout the remainder of the world.** This past May, DOE launched the Global Threat Reduction Initiative (GTRI) to identify, secure, recover and/or facilitate the disposition of vulnerable, high-risk nuclear and radioactive materials that pose a threat to the international community, *as quickly and expeditiously as possible*. GTRI works to achieve this mission by converting targeted research reactors around the world from the use of highly-enriched uranium (HEU) fuel to low enriched uranium (LEU) fuel, repatriating Russian- and U.S.-origin HEU fuel, securing and/or disposing of vulnerable, high-risk radiological materials that pose a threat to the United States, and identifying and addressing nuclear and radiological materials not previously addressed by existing nonproliferation efforts, the so-called "gaps".

There is a good reason we are so concerned with the materials mentioned above—particularly HEU and plutonium. If terrorists were to get access to plutonium or HEU, they would have overcome a significant step in the pathway to a full weapon. The International Atomic Energy Agency estimates that about 25 kg of highly enriched uranium is enough to manufacture a nuclear explosive device. That's why civilian research reactors that possess HEU are a new and time-critical focus of GTRI.

#### PRIORITIZATION

DOE prioritizes its work under GTRI by applying a risk-based approach to identify vulnerable nuclear and radiological materials that pose a threat to the United States and the international community. This risk-based approach is informed by several criteria, including, but not limited to the type and quantity of material, security conditions at the site, and location of material. However, participation under GTRI is voluntary in nature. Therefore, diplomatic breakthroughs or voluntary offers by countries may also impact GTRI's prioritization and schedule. This approach is applied to all sites, countries, and regions prior to GTRI taking action and committing resources.

Because participation in GTRI programs is voluntary, NNSA's success in achieving the objectives of each individual program is contingent upon reaching diplomatic agreement with each individual country on the best path forward to address their high-risk nuclear material.

To help ensure that GTRI was prioritizing its efforts in the most effective way, DOE undertook a comprehensive worldwide survey entitled "Global Materials Removal and Research Reactor Security Study" (GMRRSS). This study, which drew from both classified and unclassified data, focused on research reactors and associated facilities given the large number of research reactors in the world that still operate with HEU. The study was coordinated with the U.S. interagency, including the Department of State and the National Security Council, and is intended to serve as a "living document" that will be updated as new information becomes available.

Based on the results of the study and our risk-based approach to identify high-risk, vulnerable nuclear and radiological materials, GTRI is targeting several countries of highest concern. We will continue to work closely with the Department of State and the NSC to implement a coordinated DOE action plan.

I would next like to go into a little more detail about our GTRI program elements—first, specifically focusing on our efforts to eliminate use of the several metric tons of HEU that exist at research reactors throughout the world.

#### REDUCED ENRICHMENT FOR RESEARCH AND TEST REACTORS

The Reduced Enrichment for Research and Test Reactors, or RERTR, program mission is to minimize and, to the extent possible, eliminate the use of HEU in civil nuclear applications by working to convert research reactors and radioisotope production processes to the use of LEU fuel and targets throughout the world. Specifically, GTRI is:

1. Developing advanced, high-density LEU fuels;
2. Providing assistance to research reactors for feasibility studies, conversion analysis and licensing support;
3. Converting research reactors to the use of LEU fuel; and
4. Developing and demonstrating LEU-based radioisotope production techniques.

We are currently targeting 105 research reactor around the world for conversion to LEU fuel under the RERTR program. Of these 105 reactors, 40 have already converted, 35 can convert with available LEU fuels, and 30 cannot convert with available LEU fuels. To address this, we are accelerating our work to develop higher-density LEU fuel in order to enable the conversion of these 30 reactors "the FY05 RERTR budget is more than double that of the preceding year. We have also set an aggressive goal of 2014 to complete conversion of all 105 targeted research reactors to LEU fuel.

Another important development under RERTR is that, beginning in FY05, GTRI is working to convert two domestic university research reactors to the use of LEU fuel—one at the University of Florida and the other at Texas A&M. Former Secretary Abraham pledged under GTRI to achieve the conversion of all U.S. domestic research reactors by 2013.

#### RECOVERING AND REPATRIATING HIGHLY-ENRICHED NUCLEAR FUEL

In addition to our reactor conversion efforts, we have two complementary programs that focus on the recovery and repatriation of research reactor nuclear fuel containing HEU. The Russian Research Reactor Fuel Return (RRRFR) program en-

sure that Russian-origin HEU fresh and spent fuel at foreign research reactors is returned to Russia and the Foreign Research Reactor Spent Nuclear Fuel Acceptance program ensures that U.S.-origin HEU spent fuel is returned to the United States. Both of these efforts work closely with our RERTR program to reduce and eventually eliminate the use of HEU in civilian nuclear research reactors and related facilities throughout the world.

#### THE RUSSIAN RESEARCH REACTOR FUEL RETURN (RRRFR) PROGRAM

The United States, the Russian Federation and the International Atomic Energy Agency (IAEA) have identified more than 20 research reactors in 17 countries that have Soviet/Russian-supplied nuclear fuel that is eligible under the RRRFR program. The Uzbekistan fresh HEU fuel shipment featured in a February CBS “60 Minutes II” piece is a perfect example of the tangible results being achieved in this program.

Those countries that wish to participate in the RRRFR program must agree either to shut down their research reactors or to convert them from the use of HEU to LEU fuel as soon as suitable LEU fuel can be licensed and made available. Under an aggressive schedule established by the former Secretary of Energy, we are accelerating repatriation of both fresh and spent HEU fuel under the RRRFR program. For instance, based on Secretarial commitments, we hope to complete the repatriation of all Russian-origin spent HEU fuel by the end of 2010. This schedule represents a significant acceleration of the original timelines—a full three years ahead of the original schedule.

Just this past April, I co-chaired the first “Joint Coordinating Committee Meeting on Russian Research Reactor Fuel Return” meeting with my Russian counterpart, Ivan Kamenskikh. We agreed to an action/prioritization plan for Russian fuel return that should help us meet our aggressive schedule.

To date, we have repatriated a total of 105 kilograms of fresh HEU, enough for four bombs according to the unclassified IAEA estimate. Russian-origin HEU has been repatriated to Russia from: Serbia in August 2002 (48 kilograms); Romania in September 2003 (14 kilograms); Bulgaria in December 2003 (17 kilograms); Libya in March 2004 (17 kilograms); Uzbekistan in September 2004 (3 kilograms); and most recently, the Czech Republic in December 2004 (6 kilograms). Numerous other shipments are being planned, including a shipment this week of fresh HEU and our first shipment of spent HEU nuclear fuel from Uzbekistan.

Overall, by 2010 we expect to repatriate 1,370 kilograms of Russian HEU, thereby securing it from possible diversion for malevolent purposes.

#### THE FOREIGN RESEARCH REACTOR SPENT NUCLEAR FUEL (FRR SNF) ACCEPTANCE PROGRAM

Under the FRR SNF Acceptance Program, U.S.-origin fuel from research reactors in over 40 countries is eligible to be returned to the United States. About 20 metric tons of material is eligible for return under the current FRR SNF Acceptance Program. To date, a total of 6,445 fuel assemblies have been returned to the United States under this voluntary program, thereby reducing civil use of HEU by almost 500 kilograms. Over the last year and a half, we have repatriated to the United States 418 SNF assemblies from Japan, 293 SNF assemblies from Indonesia, and 126 SNF assemblies from Germany.

This past November, the Secretary of Energy extended the deadline for participation in the FRR SNF Acceptance Program by ten (10) years. Prior to this extension, a number of countries did not participate in this program because of concerns surrounding the potential economic, financial, or scientific impact of returning the spent fuel. This extension will prevent disruptions of important research reactor operations, and permit continued fuel acceptance until suitable replacement LEU fuels are qualified and available.

By 2019, the FRR SNF Acceptance Program expects to return or validate acceptable disposition of 22,743 U.S.-origin spent fuel assemblies from foreign research reactors.

#### RADIOLOGICAL THREAT REDUCTION

In addition to addressing the problem of terrorist acquisition of nuclear weapons, GTRI encompasses two programs that reduce the ability of terrorists to obtain material for a Radioactive Dispersal Device (RDD) or “dirty bomb.” An RDD disperses radioactivity using conventional explosives or other means and the RDD threat has only been taken seriously since the advent of the Global War on Terrorism. The two components of this work in GTRI include a domestic program to recover excess and unwanted radiological sources that are most vulnerable to diversion or theft and an

international program to assist foreign countries in securing their vulnerable, high-risk radiological sources.

Our radiological threat reduction programs address ten radioactive isotopes that pose a threat for use in an RDD. These isotopes are americium-241, californium-252, cesium-137, cobalt-60, curium-244, iridium-192, plutonium-238, plutonium-239, radium-226, and strontium-90.

#### U.S. RADIOLOGICAL THREAT REDUCTION

The U.S. Radiological Threat Reduction Program has the mission of recovering vulnerable radiological materials in the United States that could be used in a RDD. Originally, the DOE Office of Environmental Management managed this program, which in 1993 began to recover certain radioactive materials that had no commercial disposition path. But, the recovery program was oriented towards environmental, health and safety concerns. In response to the threat of radiological terrorism, this program was transferred into NNSA, and priority was given to radiological materials that would be most dangerous if used by a terrorist. The program successfully recovered over 5,500 sealed sources in an 18-month period between October 2002 and March 2004, as mandated by Congress. To date, over 10,500 excess domestic sealed sources have been recovered and securely stored or disposed. This includes several notable accomplishments:

1. We removed 68 high-risk sources from 55 sites in Boston and New York prior to the national conventions;
2. Most recently, we recovered approximately 1000 curies of cesium-137 from 5 high schools.

We estimate that there will be more than an additional 15,000 sealed sources declared excess that meet our threshold criteria and would be available for our program to address over the next 5 years.

#### INTERNATIONAL RADIOLOGICAL THREAT REDUCTION

The International Radiological Threat Reduction (IRTR) Program identifies, secures, and/or facilitates the disposal of vulnerable, high-risk radiological materials located around the world to reduce the threat of a radiological attack against the United States or its interests. IRTR is currently engaged in over 40 countries.

Bilateral cooperation under IRTR is buttressed by cooperation with the International Atomic Energy Agency, regional partners such as Australia, and with Interpol. The IRTR has been a primary source of assistance to the IAEA's new Office of Nuclear Security and had considerable involvement in working with Greece to protect against radiological terrorism during the Olympics. This program also had a major role in the recovery of a very large quantity of radiological material from Iraq. Since the program's inception, we have completed radiological security enhancements at 125 facilities worldwide and have recovered 63 Russian civilian Radioisotope Thermoelectric Generators (RTGs). Thus far, in FY05 alone, we have secured 56 sites in countries such as Belarus, Colombia, Indonesia, Kazakhstan, Russian, and Ukraine.

There are at least 16 additional high-risk countries with over 100 facilities that IRTR will address over the next few years.

#### PATHS FORWARD

Under GTRI, we have aggressive plans in all of these areas. In FY05, GTRI plans to:

1. Convert five research/test reactors around the world from HEU to LEU fuel, in countries such as the Czech Republic.
2. Repatriate to Russia 76 kilograms of fresh and/or spent HEU fuel from Soviet-Russian-supplied research reactors including fresh HEU from Latvia, the Czech Republic, and Libya.
3. Return 359 fuel assemblies containing U.S.-origin spent fuel from foreign research reactors in countries such as the Netherlands and Sweden.
4. Recover 1,500 U.S. excess sealed sources in the United States in FY05.
5. Secure 105 high-priority international sites with vulnerable radiological material at high-risk sites in countries such as Colombia, Ukraine, Jordan, Nicaragua, Belarus, Kazakhstan, and Yemen.

In FY 2006, GTRI plans to:

1. Convert four research/test reactors around the world from HEU to LEU fuel.
2. Repatriate to Russia 130 kg of fresh and/or spent fuel from Soviet-Russian-supplied research reactors.

3. Return 472 assemblies containing U.S.-origin spent fuel from foreign research reactors.
4. Recover 2,250 U.S. excess sealed sources in the United States.
5. Secure 125 high-priority international sites with vulnerable radiological materials.

The specific details of our strategies and future plans in the remainder of FY05 and in FY06 identify specific locations that may have vulnerabilities; we and our international colleagues consider this information sensitive. We would be happy to provide more specific details in closed testimony.

#### CONCLUSION

I would like to thank you for this opportunity to discuss DOE's Global Threat Reduction Initiative with you.

Mr. WHITFIELD. Thank you Mr. Longworth.  
Commissioner McGaffigan, you are recognized for 5 minutes.

#### STATEMENT OF EDWARD MCGAFFIGAN, JR.

Mr. MCGAFFIGAN. Thank you, Mr. Chairman.

Mr. Chairman, Congressman Inslee, it is a pleasure to be here this afternoon on behalf of the Nuclear Regulatory Commission to discuss our aggressive and comprehensive efforts to enhance the security of high-risk radioactive sources and research and test reactors. We believe that significant achievements have been made by our agency in this area over the past 3.5 years.

Since September 11, the NRC has thoroughly reevaluated its safeguards and security programs across the board, and to date we have issued over 16 different categories of orders and confirmatory action letters covering hundreds of licensees and actions involving the radioactive materials of greatest concern. The overall approach is risk-informed and focuses on radioactive materials of greatest concern.

We did that prioritization that Mr. Inslee talked about back in 2002, and we have been following a program that we think is the right program now for several years.

Let me enumerate a few of our successes. The Commission, in coordination with our DOE colleagues and other agencies, has taken the following actions:

NRC, in cooperation with the Agreement States, issued advisories to licensees who possess high-risk material on March 17th, 2003, consistent with the launch of Operation Liberty Shield. Those advisories went out to over 2,000 entities.

NRC and DOE in consultation with other Federal agencies, issued the DOE/NRC Working Group Report in May 2003 on radiological dispersal devices and radiological exposure devices. That report defined threshold quantities of radioactive materials which are of highest risk and have the greatest potential for malevolent use.

During 2002 and 2003, the Commission worked with the Departments of Energy and State and the international community to reach agreement on which radioactive sources are of the greatest concern. Those sources are set forth in the International Atomic Energy Agency Code of Conduct on the Safety and Security of Radioactive Sources. The Code was adopted in December 2003 and has received very high-level endorsement by the G-8 heads of state at the Sea Island summit last year.

The NRC, in coordination with the Departments of Energy, State, and Homeland Security, has approved a final rule amending

our export and import regulations to impose more stringent controls over the Code materials. The U.S. is the first country to implement the export-import provisions of the Code of Conduct guidance documents.

The NRC, in cooperation with DOE and other Federal agencies, is developing a national source tracking system, as the chairman mentioned, to track radioactive materials of greatest concern specified in the Code.

The NRC has developed and is maintaining an interim data base of these radioactive sources for both NRC and the 33 Agreement States and their licensees.

The NRC has required security enhancements for various classes of NRC and agreement State materials licensees, including fuel cycle facilities, like Paducah, large irradiators, and manufacturers and distributors of radioactive materials, and we are working on additional orders.

The NRC has issued security orders governing the transportation of spent nuclear fuel, and the NRC, as mentioned by Mr. Longworth, has assisted DOE to accelerate the collection of unwanted radioactive sources through DOE's offsite source recovery program.

Turning to research and test reactors, the NRC has required security plans and procedures at research reactors since the 1970's.

Following 9/11, the NRC promptly advised research and test reactor licensees to heighten and enhance security in accordance with preestablished notices to protect against radiological sabotage and theft of nuclear material. Subsequently, as we proceeded with our security review, NRC required research and test reactor licensees to take additional security measures, the details of which are inappropriate for an open hearing.

The NRC has verified implementation of these measures to protect research and test reactor facilities.

The NRC has worked with DOE to convert, as Paul mentioned, research reactors to low enriched uranium fuel which is a less attractive target for terrorists.

The Commission welcomes DOE's initiatives to convert the University of Florida and Texas A&M reactors to low enriched fuel and its plans to convert other research reactors for which suitable low enriched fuel has been developed.

The Commission also welcomes the House Appropriations Committee action to add an additional \$20 million in fiscal year 2006 for the Reduced Enrichment for Research and Test Reactors program to accelerate the conversion of domestic reactor fuel from highly enriched to low enriched.

In summary, Mr. Chairman, I can assure you that the Commission and Commissioners themselves, all of us on a bipartisan basis, will continue to be very active in ensuring the development and implementation of enhanced controls on radioactive sources that could be used in an RDD or RED.

I also want to take this opportunity to thank the committee for their support of section 662 of the energy bill which will allow us to require fingerprinting for a broader set of licensees than we do today and including the ones we are discussing today and do much more thorough background checks.

Again, I appreciate the opportunity to appear before you today on behalf of the Commission and look forward to your questions.  
[The prepared statement of Edward McGaffigan, Jr. follows:]

PREPARED STATEMENT OF EDWARD MCGAFFIGAN, JR., COMMISSIONER, NUCLEAR  
REGULATORY COMMISSION

Mr. Chairman and members of the Subcommittee, it is a pleasure to appear before you today on behalf of the Nuclear Regulatory Commission (NRC) to discuss our efforts to enhance the security of high-risk radioactive sources and research and test reactors. The NRC takes very seriously its responsibility to ensure the adequate protection of the public health and safety. Mr. Chairman, we believe that significant achievements have been made by our agency in the area of security. Let me enumerate a few of these achievements.

Since September 11, 2001, the NRC has thoroughly reevaluated its safeguards and security programs and, to date, has issued over 16 different categories of Orders and Confirmatory Action Letters covering hundreds of licensees and actions involving radioactive materials of greatest concern. The NRC continues to devote considerable effort to determining what additional actions could be used to enhance the security of these materials in use, in storage, or in transport. The emphasis of this effort is on preventing the use of radioactive materials that have the potential to pose a risk to public health and safety if used in a radiological dispersal device or a radiological exposure device (RDD/RED). The objective of NRC's programs to control these radioactive materials is to ensure the protection of the public and the environment and to promote the Nation's common defense and security. The overall approach is risk-informed and focuses on radioactive materials of greatest concern.

MEASURES TAKEN TO ENHANCE SECURITY OF SOURCES

There are millions of radioactive sources in the United States and although these sources are in the possession of a large number of organizations, only a small fraction of those sources would present a credible terrorist target and are therefore considered radioactive materials of greatest concern. This is because most licensees use radioactive material that is in very small quantities; has a short half-life; is relatively inaccessible; is in a form which cannot be readily dispersed; or has a combination of these attributes. We have applied a graded approach to security that is generally consistent with the potential radiation risk from these materials.

Mr. Chairman, the Commission in coordination with our Department of Energy colleagues, has taken the following actions to improve the security of high-risk sources:

- NRC, in cooperation with the Agreement States, issued advisories to licensees to enhance security measures on March 17, 2003, consistent with the launch of Operation LIBERTY SHIELD.
- NRC and DOE, in consultation with other Federal agencies, issued the DOE/NRC Interagency Working Group Report on RDD/REDS in May, 2003. This report defined threshold quantities for radioactive materials which are the highest risk and have a potential for malevolent use.
- During 2002-2003, the NRC Commission worked with the Departments of Energy and State and the international community to reach agreement on which radioactive materials and sources are of the greatest concern. Those sources are set forth in the International Atomic Energy Agency (IAEA) Code of Conduct on the Safety and Security of Radioactive Sources. The Code of Conduct was approved by Member States at the IAEA General Conference in September 2003. The U.S. Government committed to implement the Code of Conduct in late 2003, and it was then endorsed by the G-8 at the Sea Island summit in 2004. The threshold values in the Code of conduct are in substantial agreement with the values contained in the DOE-NRC RDD report.
- The NRC, in coordination with the Departments of State, Energy, and Homeland Security, has approved a final rule amending its export and import regulations to impose more stringent controls over the Category I and Category II materials defined by the IAEA Code of Conduct with the exception of radium-226 (Ra-226), a naturally occurring radionuclide which the NRC does not currently have the authority to regulate under the Atomic Energy Act. This rulemaking implements a key element of the Code of Conduct and its guidance documents by increasing licensing requirements, as well as notice and consent requirements. The United States is the first country to implement the export-import provisions in the Code of Conduct guidance documents.

- The NRC, in cooperation with DOE and other Federal agencies, is developing a National Source Tracking System to track radioactive materials of greatest concern specified in the IAEA Code of Conduct on a permanent basis. The NRC is working closely with the Department of Energy, the Agreement States, the Department of Homeland Security, the Environmental Protection Agency, the Department of Transportation, the Department of State, the Department of Commerce, the Department of Defense and the Federal Bureau of Investigation to ensure that the system addresses needed functions and minimizes unnecessary duplication. NRC will involve the public through our rulemaking process.
- The NRC has developed and is maintaining an interim database of Category I and II radioactive sources for both NRC and Agreement State licensees. This database will be maintained until the National Source Tracking System is complete.
- The NRC has required security enhancements for various classes of NRC and Agreement State materials licensees, including independent spent fuel storage installations, fuel cycle facilities, large irradiators, and manufacturers and distributors of radioactive material. Orders for NRC and Agreement State materials licensees in the medical academic and industrial fields (e.g., blood irradiators, gamma knives, radiographers, well loggers, etc.) are currently in final stages of development.
- The NRC has issued security Orders governing the transportation of spent nuclear fuel, and Orders governing the transportation of other radioactive materials in quantities of concern are also currently in the final stages of development.
- The NRC has implemented the Homeland Security Advisory System for NRC and Agreement State licensees.
- NRC has assisted the DOE, where possible, to accelerate the collection of unwanted radioactive sources through the DOE's Offsite Source Recovery Program. Since its inception in 1997, the DOE program has recovered over 10,000 sources from approximately 400 locations in the United States and the DOE has consistently been very responsive to NRC requests for assistance.

#### RESEARCH AND TEST REACTORS—SECURITY/CONVERSIONS

The NRC has required security plans and procedures at research reactors since the late 1970s in accordance with our regulations. The security programs and systems are required to provide early detection, and assessment of and response to unauthorized access or activities. These security programs also include control of access to facilities, emergency response personnel (e.g., University Police, Local Law Enforcement Agency, or contract security forces), alarms, other devices and procedures to detect unauthorized activities. Response forces are required to respond to all indications of unauthorized penetrations or activities.

Following September 11, 2001, the NRC promptly advised research and test reactor licensees to heighten and enhance security in accordance with preestablished notices to protect against radiological sabotage and theft of nuclear material. Subsequently, as it proceeded with its security review, NRC required research and test reactor licensees to take additional security measures. These additional security measures were focused on protecting against land-based assaults and insider attacks. More specifically, these additional security measures include, but are not limited to, enhancements to access authorization and controls, communication systems, and vehicle and package searches. The additional security measures also include heightened coordination with appropriate local, State, and federal resources.

The NRC has verified the implementation of these measures to protect research and test reactor facilities. Further, NRC maintains regular communications with other Federal agencies (including the Departments of Energy and Homeland Security, the Federal Bureau of Investigation, the Central Intelligence Agency and the National Counter-Terrorism Center) to continue assessing potential threats to all classes of licensees including research and test reactors. We have conducted consequence assessments of these reactors and have concluded that there is a low risk to public health and safety from potential threats.

The NRC has worked with DOE to convert research reactors to low enriched uranium fuel which is a less attractive target for terrorists. The Commission welcomes DOE's initiatives to convert the University of Florida and Texas A&M reactors to low-enriched fuel, and its plans to convert other research reactors for which suitable low-enriched fuel has been developed. The NRC, DOE and research and test reactor licensees also have been cooperating on efforts to identify irradiated fuel which is no longer needed and ship it to a DOE facility. This cooperation is based on NRC and DOE initiatives recognizing that keeping unneeded fuel onsite is an unnecessary risk under the current threat environment. Considerable progress in this re-

gard has been made. The Commission welcomes the additional \$20 million the House Appropriations Committee approved for FY 2006 for the Reduced Enrichment for Research and Test Reactors (RERTR) program to accelerate the conversion of domestic research reactor fuel from highly enriched uranium to low enriched uranium.

The NRC has recently taken the initiative to identify various unwanted radioactive materials, such as fission chambers, fission foils, fission plates, and various government-owned materials at NRC licensed research reactors and has informally requested DOE to assist with their removal.

In summary, Mr. Chairman, I can assure you that the Commission is and will continue to be very active in ensuring the development and implementation of enhanced controls of radioactive sources that could be used in an RDD/RED. I also want to take this opportunity to thank the Committee for their support of Section 662 in the Energy Bill (H.R.6) which will allow us to require fingerprinting for employees at the facilities we have been discussing today. Again, I appreciate the opportunity to appear before you today on behalf of the Commission and stand ready to answer any questions you or the other members of the Subcommittee may pose.

Mr. WHITFIELD. Thank you, Commissioner.

We appreciate the testimony of both of you, and each member will have 10 minutes for questions if we want to use that time.

Mr. Longsworth, let me first ask you, how much money was appropriated for the GTRI program for 2005?

Mr. LONGSWORTH. It was about \$93 million.

Mr. WHITFIELD. What was it prior to that?

Mr. LONGSWORTH. It was \$69, \$70 million, roughly. So it was a fairly significant increase.

Mr. WHITFIELD. So do you feel like you have sufficient funds to—I know you always need more, but do you feel that you have sufficient funds to be effective in what you are doing?

Mr. LONGSWORTH. Well, we have set very aggressive goals in terms of the number of reactors we want to convert and the schedule by which we want to do that. We are fully funded to meet our mission requirements today. If we were given a broader mission to convert U.S. reactors, which we have only identified two currently, we are not funded for that, but we are fully funded to—over our 5-year budget plan to meet requirements that we have—we have been given.

I will add, the radiological source recovery is what I refer to as a dialable program. You can spend more and get more work. We think that our program currently is a credible program and it's adequate to meet the risk, but that is a program you can—if you add more money, we will just recover more sources. If you take away money, we will recover fewer.

Mr. WHITFIELD. In November 2004, the GAO issued a report on the GTRI program, and they specifically said that DOE had not reached agreement with 11 of 23 countries that still have U.S.-origin highly enriched uranium to return to the U.S. Now, this report is about 6 months old. Can you give us an update on your progress to reach agreement with those 11 countries?

Mr. LONGSWORTH. Yes. As I said earlier, even though the reactors in question and the fuel were—really have their origins in Eisenhower's Atoms for Peace Initiative. So we gave countries access to our reactor technologies and have supplied them fuel over the years, but they are sovereign countries who either have to agree to convert their reactors.

We are working with most of those countries. I will note that some of them are countries that we are not as concerned with such—like France and Britain, that we don't think pose the same

kind of threat that, say, other reactors might in other parts of the world. We are working with all of the countries on that list to get all of that work done by 2014.

Mr. WHITFIELD. I might add that we will go into executive session when this is over to get it into a little bit more classified material, and so I appreciate your comment on that.

In reading some of the testimony of some of the witnesses on Panel II—I don't remember which one, and maybe it was both of them—but they made the point that instead of Russia and the U.S. being so focused on returning highly enriched uranium to the U.S. and to Russia, that we might be better off finding a safe storage place, wherever it may be, and that they would recommend that. What are your comments about that?

Mr. LONGSWORTH. Well, one thing I did not mention and I am remiss in not mentioning is while we are discussing the conversion of the reactor and the return of the material itself, we also have efforts to secure these locations where the material is stored. So we do go in in almost every case and provide security upgrades at the site where this material is located, if it's HEU and it is one of our targeted reactors.

We don't provide security for LEU, low enriched, reactors, so we do do that where we can. Obviously there is a 5-megawatt U.S.-origin reactor in Tehran. We have not provided security or any work there, but the countries where we can work, we do.

Mr. WHITFIELD. All right. Now GTRI has developed criteria for identifying and recovering specific high-risk radioactive sources based on the potential for the source to be used in a dirty bomb, and it is my understanding that NRC uses a different method that was developed by the International Atomic Energy Agency for identifying high-risk sources. So there seems to be a little bit of inconsistency between the two agencies, and I know that the administrator, Linton Brooks, wrote a letter to Chairman Diaz in February 2005 touching on this issue. Would the two of you respond to this different approach that you have?

Mr. MCGAFFIGAN. Mr. Chairman, the approach that we arrived at in 2003 in the international process was derived from the joint DOE-NRC working group report. We negotiated that with our international partners through the International Atomic Energy Agency. We got to within a factor of 3 on every radionuclide that is of concern. The factor of 3 is the threshold level, and frankly the modeling errors are on the order of a factor of 10.

So we use the IAEA Code of Conduct because the purpose of the Code is to put in place mutually reinforcing export-import regimes so that the national cradle-to-grave controls for these high-risk sources reinforce each other. That is the goal, and I believe over 50 nations have committed. We are well in front of any other nation in terms of meeting our commitment to the Code, but our colleagues at DOE—I will let Paul speak for himself—in some cases we use the term "high risk" a little—high risk in source recovery isn't the same as the IAEA Code, and his international programs for resource reasons isn't the same, but it—so the words for us, when I say high risk code, I mean Category 1 and 2 codes covered by the Code of Conduct to which about 60 nations have committed.

Mr. LONGSWORTH. Our mission is not to focus on safety or environmental issues. We only focus on removing threats. What we have tried to do with our standard, which we think is consistent with the Code of Conduct, is not—it would be, I think, erroneous to say that we are inconsistent, but we have tried to set up a range of curie levels that set a floor for action on our part. What that means is we can actually address sources down to that level, if needed, and if they need other risk criteria.

So our standard is a—it is apples and oranges compared to what I think the NRC works with on the Code of Conduct, but they are not inconsistent. We are just trying to do another mission. So we have set a floor. The floor is actually a range of values, and we can take action if we find a source in Kazakhstan, for example. That floor sets the boundary below which we cannot secure the source. So we have tried to set a floor. We don't get every source that meets down to that level, but we use it as a guide, and we also look at other factors in that country. We look at risk factors. We look at terrorist activities, the enforcement of regulations in that country. So we have a broad, flexible program because we do have limited resources and we want to address the highest-risk sources first.

Mr. WHITFIELD. To explore this just a little bit further, in his letter that Mr. Brooks wrote to Chairman Diaz, he specifically said that it is timely to further develop the unified U.S. position on the security of high potential consequence radioactive sources and to present this position to the international community that is also in need of unifying guidance and clarification. Would you agree with that statement?

Mr. LONGSWORTH. Yes, sir. I worked for Ambassador Brooks. I agree with him. This is the Code of Conduct as we were discussing it, but this Code is—it explicitly does not address malevolent uses of sources. So it is explicit that it does not address, for example, terrorist uses of radiological sources, and that is what we are all about. That is our only mission is addressing that. So we are—what we are trying to do is to try to get the international community to focus on the issue of malevolent uses of sources. I think that is—

Mr. MCGAFFIGAN. Mr. Chairman, I think there might be a slight disagreement here in that we believe—and Commissioners were involved in the negotiation of the revised Code of Conduct in 2003. Chairman Diaz himself made a key breakthrough in identifying the materials of concern, a key diplomatic breakthrough, but we did follow the DOE-NRC working group report within a factor of 3 on every radionuclide.

It is, I believe, the position not just of the Commission, but also the Department of State, that we do not need to renegotiate it at this time. We need to focus on getting the 69 nations that have committed to it to implement it, and that doesn't mean—in many cases, Mr. Longworth and Mr. Brooks have less resources. So if the Code says that three hundred curies of strontium 90 is the Category 2 level above which we control, I think DOE has chosen 1,000 curies, that is a reasonable judgment based on the resources that they have.

It's better—occasionally DOE goes below the Code, and that causes us some concern because it gives a mixed message to other nations.

And furthermore, the security—security is built into the Code. The reason we had it, it used to be the Code of Conduct on the Safety of Radioactive Sources, it became in 2003 the Code of Conduct on the Safety and Security, and we did take into account RDD and RED exposures in setting our threshold limits with the international community.

Mr. WHITFIELD. Thank you for that comment. Since I have been reading from this letter, and it is my understanding that you all did see it, I would ask unanimous consent that we introduce it into the record.

At this point I would recognize Mr. Inslee for his question period.

Mr. INSLEE. Thank you. If the U.S. reconsiders its reprocessing position, and there is some talk about that in this bill we have on the floor today, would that affect your efforts in any way, in regard to your relationship with these other countries that we are inspiring to responsible activity?

Mr. LONGSWORTH. Well, there is reprocessing going on today, as you know, in France and in other countries and in Russia, and those facilities are safeguarded, and we think they are secure. There has been no allegation of diversion or any other activities at those facilities that would cause harm.

I think what the U.S. is looking at from a policy standpoint is looking to the future for what types of reprocessing or recycling we can pursue for the future. We are investing funding in my program and in the nuclear energy program to look at that question. That really is the question is for the future: What type of recycling do you need for nuclear material? Wecycle everything else. There isn't any reason why we can't recycle nuclear material.

There are ways technologically to recycle nuclear material that don't pose a proliferation threat. For example, you can reprocess plutonium out of spent fuel but keep that plutonium mixed with the actinides, the very highly radioactive actinides. That material actually has a very high energy content, and it can be used in FAC reactors. And the U.S. and other countries, I don't think we have adequately explored that concept. So there are ways that you can recycle nuclear material that actually don't pose a significant proliferation threat. That is probably where we are taking our resources and looking to the future.

Mr. INSLEE. Could either one of you describe in general terms—we will have another session in closed session—what you consider your major challenges right now?

Mr. LONGSWORTH. Well, my challenges are primarily diplomatic. We think we have—I will speak just to GTRI. We have many other challenges in the other parts of our nonproliferation program, but for just GTRI they are primarily diplomatic. And it is no fault of anyone's, not the fault of State Department or ours or these other governments, but working with sovereign governments that perhaps don't have good relations with the U.S. or want to distance themselves from the U.S., that has been one of our largest challenges.

In addition to that, where the countries perhaps don't want to work with us, there are other countries that view our desire to convert their facilities or down-blend their weapons-usable material, they think we should pay a price for that. We view it as just good stewardship. We believe it is a responsible step for countries to take, but we find that we actually have to provide incentives in many cases for countries to convert, and that drives up our costs and it slows down our progress.

So our problems for the most part have been diplomatic in nature, engaging countries and convincing them to convert their facilities and to remove materials that could be used in weapons programs.

Mr. MCGAFFIGAN. Sir, I think our challenges pale in comparison with the Department of Energy's. We are—the National Source Tracking System is a very large undertaking for us. It's going to cost, for a relatively small agency, \$10 to \$20 million over the next 5 years to get fully in place and implemented. We have an aggressive schedule on the information technology support that we need to meet that goal. This is going to be a secure data base. We are fully going to comply with FISMA from the get-go so we don't build it in later. But it is a very aggressive schedule to get the National Tracking System in place.

We also have to continue to work to complete our program of borders for additional categories of licensees. That is not a resource issue, really, but we do work with the 33 Agreement States, including Kentucky and Washington, to not catch them by surprise. We do have some dual regulation here because we are doing a lot of this stuff under our common defense and security authority which we cannot delegate to the States.

The National Source Tracking System is an example of that. We have to have a uniform national system, and we are doing it primarily for common defense and security reasons.

So those are the ones that come to mind. The resources, the House Appropriations Committee has given us an additional \$4 million next year to work on material security matters that was beyond our request, and we appreciate that, and we need that in order to continue to pursue the program that we want to pursue as aggressively as we want to pursue it.

Mr. INSLEE. Could you give us an assessment of what confidence level we have about our knowledge, data base, of existing threat material, material that poses some threat? I mean, if you said with 90 percent confidence we know about X percent that is there, is there any way to sort of quantify that, put any parameters on that?

Mr. MCGAFFIGAN. I will say domestically with regard to the Code of Conduct-controlled material, we have an interim data base with a very high response rate, over 99 percent, from Agreement States and NRC licensees, and we have Oak Ridge updating it. It's really not a data base. We eventually want to have 1-day transactions. If a source is transferred from here to here, we want 1-day notice of both ends of the transaction. That is what the National Source Tracking System will do.

The interim data base is an annual update. We had it in place really by March 17, 2003, not with all the bells and whistles, but

enough to send advisories out saying that hostilities are about to start, improve your security posture.

So we update it quarterly. Oak Ridge is our contractor for this effort and we are very proud of it. We are not aware of any other regulator in the world that has an interim data base of IAEA Code of Conduct sources. Is it perfect? No. Do we have the research and test reactors in there at the current time? No.

We have over—there are 1,300 entities in this country that have—approximately, that possess Category I or II high-risk sources. In the Washington area, it tends to be hospitals, George Washington, Washington Hospital Center, Georgetown, et cetera, because they have cesium blood irradiators. They have other sources that are used in the care of patients. In fact, there isn't inside the Beltway—at USDA outside the Beltway there is a fair number of high-risk sources used in agricultural research. Inside the Beltway, I believe all the entities that have high-risk sources are hospitals.

Mr. LONGSWORTH. In our work, we know where reactors are located and we know which ones are using highly enriched uranium. So where there is a physical footprint we know. There is a critical assembly associated with that reactor. We know where that is.

What we often don't know is in some cases these reactors operate on varying power levels. They may have different burn-up rates. So can we say for sure exactly how many kilograms of fuel remain at this site? Those are calculations that we have to do.

In classified session I think I can tell you a little bit more about what we track using other sources for programs that might have military uses or other uses, but we do keep track of those.

For radiological sources, internationally, that is harder because those sources tend to disappear in countries where there is not a vigorous regulatory body or licensing requirements and accountability requirements. But we are working with the former Soviet Union and Russia particularly to begin to identify and track down those sources. That is one of the primary missions we have right now is working at the request of the Russian Federation to go find their sources that they gave out during their equivalent of Atoms for Peace, to repatriate those, secure them and dispose of them. So that is a very active area for us right now; and again, it was at the request of the Russian Federation that we began to accelerate that work.

Mr. MCGAFFIGAN. Mr. Chairman, I might just add in response to something that Mr. Inslee asked at the outset, domestically, we coordinate very closely with the Department of Homeland Security as well as the Department of Energy. In fact, there is a government coordinating council for the nuclear sector. The fundamental document is the National Infrastructure Protection Plan. We work hand-in-glove with DHS as they prepare the sector-specific—nuclear sector coordinating plan. And there also are nuclear sector coordinating councils that bring the private sector in. One for reactors, one for—it's being formed for research reactors, and one for radioisotopes, and those are DHS entities. But under the law of the Atomic Energy Act, we are the primary regulator for safety and security within this country.

Mr. INSLEE. Quick question. Maybe it's not too quick. Ms. Rohlfing is going to testify. I read some of her testimony. She said that given the threat, there is no comprehensive baseline inventory of warheads and nuclear materials that must be secured worldwide. She basically is suggesting, I think, that there is a lack of a risk-based global inventory on hand. Is that accurate, and if so, can we fix that? What is your assessment in that regard?

Mr. LONGSWORTH. She is right, there is no one document that has all of that information in there. Unfortunately, if you were to create such a document, there probably would be two or three people in the entire Federal Government that would be cleared to read it. So what we do is we package that kind of information into various programs.

We have programs to address and are for the most part classified to address warheads. Our work with Russia is very open. We do that work—as I have indicated, we will be finished with all Russian Navy warhead sites this year.

We are just embarking on an accelerated plan to secure what are called 12th GUMO sites, which are their large warhead consolidation sites in Russia.

Any other activity that we have would be highly sensitive and obviously highly compartmented, but it is a misnomer to say that there isn't one report, because that is absolutely true but one report wouldn't do you very much good. We do keep track of, in a very centralized way—keeping these things in compartments, we do keep track of where we think fissionable material is, either in the form of a warhead, in bulk material and reactor fuel. If it's weapons-usable, we are tracking it.

The report that we prepared that I mentioned in my testimony, the Global Reactor and Radiological Source Report that we just finished last May, was the first time that the government had ever put in one document all of the material that is not part of a weapons program. We only looked at civilian programs, but that was the first time that we had taken all of the world's civilian programs that have fissionable material and put that in one report. That report is classified. We can't talk about that in this session and we did use all sources, including Intelligence Community sources.

But adding to that, then, what we know about other countries' nuclear weapons programs and the locations of their warheads and conditions of security would make that report even more sensitive than it is already. So it wouldn't be a useful report to have in one document. It wouldn't be usable by anybody.

Mr. INSLEE. Thank you.

Mr. WHITFIELD. Mr. Walden's recognized for 10 minutes.

Mr. WALDEN. Thank you, Mr. Chairman.

Mr. Longworth, a DOE Inspector General's report from January of 2004 studied DOE's efforts to recover U.S.-origin HEU sent to foreign countries as you know, but according to this report there was no effort by DOE to recover an additional 12,300 kilograms of HEU dispersed to foreign countries, which was not included in the HEU acceptance program. The IG report is more than a year old.

Can you tell us why DOE did not originally include this 12,300 kilograms of HEU in its HEU recovery program and whether the

GTRI program will take steps to recover this material in the future?

Mr. LONGSWORTH. I can. The decision was made in the early 1990's when this foreign research reactor fuel program takeback was initiated, and they identified a finite universe of reactors. They had criteria at the time that they used to identify the varieties of fuel and the locations. What we did last year was we realized that even that legal authority to take back that universe of material was about to expire. So first and foremost, we wanted to make sure we had the ability to bring back the material we had already identified, and I will say this is no criticism of anybody who has worked on the program in the past. We had managed that program out of the Office of Environmental Management, and we did it as a safety and environmental program.

After 9/11 it became very clear that this material had other malevolent uses and so we—it was transferred into my program, because it was then viewed as a threat reduction program. So we have tried to accelerate that program since that time and have done so, but we are again focusing on that finite universe of material that we have legal authority to take back today.

We are studying the other—the remaining material, which is—I believe, and I am going to get this—it's roughly a third of the U.S.-origin material was identified in the first environmental impact statement. That means roughly two-thirds is not covered.

As I said earlier, some of that material is in countries like France, which we don't worry about as much, and Germany and other places, but there are some troubling locations outside in that remaining 60 percent. We are studying ways to address that material, and we are studying what legal authority we would need in order to repatriate that.

Mr. WALDEN. I also understand the U.S. has exported 15,000 kilograms of LEU to foreign countries. How much of this U.S.-origin LEU has been recovered?

Mr. LONGSWORTH. I don't think any of it actually. I don't know. I don't know the answer, but I can take that for the record.

Mr. WALDEN. How concerned should we be about that?

Mr. LONGSWORTH. Well, LEU is a commercial product. It is, of course, not useful in a weapons program unless you had a large facility, perhaps like Portsmouth or Paducah, to enrich it up to a weapons grade.

Mr. WALDEN. Can it be used for dirty bomb?

Mr. LONGSWORTH. No, it is not suitable for a dirty bomb.

Mr. WALDEN. All right.

Mr. MCGAFFIGAN. Sir, we don't have any security requirements beyond basic safety requirements for LEU fresh fuel. Obviously once it's irradiated, then it is a different story and we have very, very strict security requirements at our reactors for our spent fuel storage facilities. But once it's irradiated it's potentially useful for a dirty bomb. That is not, if I were a terrorist, where I would go to get the material.

Mr. WALDEN. Mr. Longworth, I understand that the GTRI program is working with other countries to improve the security of high-risk radioactive sources. For instance, you are working with other countries to improve security at hospitals that have radiation

teletherapy units that contain large amounts of powder cesium. When you are finished with security enhancements at foreign hospitals, are they more secure than what NRC requires for security at hospitals with teletherapy units in America?

Mr. LONGSWORTH. In some cases yes, in some cases no. It depends on the security conditions in the country. What we have done in some countries is we do some simple things like put bars on windows so that somebody couldn't steal a source and throw it out to a waiting car and drive away. We put alarms on the actual—in the oncology clinics on top of the—with the machines that have the sources inside.

It's very low—it's for the most part low tech. We assess whether they have response forces and what the response time might be if somebody attempted to take that source, either usually off hours when nobody's using the source. But it varies from country to country, and it is driven primarily by the security conditions in the country.

Mr. WALDEN. Do you think in the end, though, that those hospitals will have a more secure environment than ones here as required by the NRC?

Mr. LONGSWORTH. It's going to vary dramatically from hospital to hospital. It's without a specific example.

Mr. MCGAFFIGAN. Sir, I don't believe so. We have had together with the 33 Agreement States very robust requirements at the hospitals for such large sources over the years, before 9/11.

Since 9/11 we have advised them and we expect soon to issue orders to approximately 700 university research facilities and hospitals that have these sorts of materials to further enhance security.

One of the issues that we deal with when we meet with that community is the cost of some of our additional controls, and we try to take that into account. We try to be reasonable, but our security requirements are solid. They are about to improve for that category of licensees very shortly. The staff has promised us the orders very shortly for that category of licensees that—hospital licensees.

I, unfortunately, see doctors at the Washington Hospital Center more than I would like to, and I talk to the head of oncology there, and that—we rely basically—our philosophy in this country is to rely on local law enforcement and to have very—have multiple means of contacting local law enforcement within minutes.

That is basically what our—and we expect the local law enforcement to help us, in addition to all the safety things we do to make sure people don't come in contact with these sources because it would be a real problem for them.

Mr. WALDEN. Well, how do the GTRI program security improvements at foreign hospitals compare with what NRC requires? It's just all over the map; is that what you are saying?

Mr. MCGAFFIGAN. This is an area where I am not sure we have had—we have—I think the fault is on both sides. We coordinate with the DOE Office of Security through this Government Sector Coordinating Council. The DOE Office of Security doesn't work for Mr. Brooks or Mr. Longworth, and so whatever documents they have been using at foreign hospitals, like in Athens last summer,

are not something that we have cleared in our documents. We only found out recently and have shared with them, we weren't necessarily sharing with them. We were sharing with the 33 States but weren't sharing with them. We have some problem here, but we are following on that. We are going to fix this. We are going to fix it promptly. We are going to be talking to Deputy Secretary Sell next week with all of the Commissioners, but this was not as coordinated as I think it might have been.

I think within both of us, Paul has been given a mission overseas, and we are a regulatory agency and the timelines of the two don't always intersect. He felt that he needed to do stuff in Athens last summer. We are still working on the orders with the 33 Agreement States and the private sector to make sure and it is also security information. Hospitals don't have procedures for security information, and we are trying to help them in that area. So there is a sort of walk-before-you-run thing.

Mr. WALDEN. But GTRI is planning to provide guidance for security enhancements at hospitals and at other facilities too that use high-risk sources here in the U.S., aren't you?

Mr. MCGAFFIGAN. I think that what is happening, sir, and we are coordinated on this through the IAEA, there is a—there is some draft security documents that we, DOE and Department of State are currently working on.

And we will coordinate on those documents before we go to other nations. And that is a commitment. That is a commitment.

Mr. WALDEN. But I am informed GTRI has a pilot program working now?

Mr. LONGSWORTH. We have done some work here. Let me say, the work we have done overseas—the Athens example is a great example. We were asked by the Greeks to go look at their facilities in the run-up to the Greece Olympics to ensure that those sources were secured. And the work we did there, frankly, was very low cost at these clinics, and so we probably provided some things there that we might not provide other places simply because of the request of the Greek government. And the additional cost was almost immeasurable. We had teams there putting in extra locks and putting in bars on the window.

Mr. MCGAFFIGAN. We had all of that. In the United States, we—the blood irradiators, if you go and visit one of the local hospitals, Children's Hospital or Washington Hospital Center or GW, or whatever, they are in the basement. They are secured. You know, you have all this lead shielding. That is why these things tend to be in the basement. And we don't have open windows where you have high-risk sources. It is just not—but that mostly is prior to 9/11.

The additional things, we are really focusing on background checks. And I mentioned in my testimony, we would like the ability to do—the committee has given us the ability to do fingerprinting checks.

Mr. WALDEN. My time has expired. Thank you for your answers and testimony.

Thank you, Mr. Chairman.

Mr. WHITFIELD. Thank you, Mr. Walden.

At this time I will recognize Dr. Burgess for his 10 minutes of questioning.

Mr. BURGESS. Thank you, Mr. Chairman. And I apologize for being late. So if anything I ask is covering ground you have already covered, again, I apologize.

But, Commissioner, do you want to finish that last thought about what has changed since 9/11?

Mr. MCGAFFIGAN. Well, we are focused on making sure that there are multiple means of dealing with local law enforcement, and we are focused on having reliable people have access to the high-risk sources. But we could use additional authority, and this committee has provided it to us on multiple occasions, just never in a bill that got to the President, to have background checks and fingerprinting for some key individuals. We are not going to do everybody at the Washington Hospital Center, but we will do the people in the oncology department who have regular access to the high-risk sources if necessary. I mean, this is something we have to talk through with the States if we get the authority from the Congress.

But the focus isn't on guards and guns at hospitals and research facilities. It is on making sure that there is very robust—that the stuff is controlled and that we have local law enforcement support. And we have had that in place, I believe, since March 17, 2003, since Operation Liberty Shield. Everybody was advised, and they take our advice seriously even though the order hasn't been issued to—in this category to have robust coordination with local law enforcement. That is the theory under which we proceed.

Mr. BURGESS. Very well.

Along the lines of the high-risk sources, the NRC has over the last several decades licensed some high-risk sealed sources for commercial and industrial uses such as food irradiators. And they do contain a significant amount of radioactivity, which could be useful if you wanted to make one of those disbursal devices. When the NRC initially licensed these sources, NRC didn't require tracking of the high-risk sources. So I guess the question is, why not now develop that data base to track those high-risk sources?

Mr. MCGAFFIGAN. Sir, we already have—we have done two things. We have an interim data base with the 99 percent response rate. And I can't promise it is perfect, but we know the 1,300 to 1,325 places that have high-risk material in a snapshot in time. We intend to issue a rulemaking which goes through all the processes that will allow us to have a national source tracking system which will have 1-day transactions. If somebody in Texas sends something to Kentucky, we will get both ends of the transaction within 1 day. It is going to be Web-based. It is going to be secure. It is going to take, as I said earlier, \$10 to \$20 million over the next—I think the number is \$14 million, I don't have it in my head. But that is just for the computer system and the support to the computer system. We have worked this with the States. We have worked it with our colleagues and other agencies through an interagency coordinating committee that includes the Department of Energy and the Department of Homeland Security.

So we are aggressively moving out as rapidly as we can. We want this to be—I forget the—FISMA, is that the term? The information

security oversight requirements of Congress. We want those to be built in from the get-go so we don't have to patch them on at the end.

The staff has the goal of having phase one of this in place by the end of 2006. That is a very aggressive goal in information technology space and may be too aggressive, and we will back off. We are not going to put in place a system that isn't adequately secure.

Mr. BURGESS. Very well.

Mr. Longsworth, has the Department of Energy pursued the use of commercial companies and facilities for the recovery and interim-based storage of domestic radioactive sealed sources?

Mr. LONGSWORTH. We are looking at commercial disposal. Right now, most sources require disposal at a DOE facility. So either we bring them to Los Alamos in most cases and we can—we are also looking at expanding our disposal capacity at other sites like the Nevada test site. We are hopeful that there will be commercial disposal options, increased disposal commercial options for these sources in the future. For the record, I can get you the exact percentages that currently go to commercial disposal, which is a significant percentage. We are trying to increase that to try to get more capacity in the commercial sector for disposal of unused and—of used and unwanted sources.

So it would be your opinion that the Department is best served by using the existing sources of both commercial and governmental solutions?

Mr. LONGSWORTH. Absolutely. A mix of both is required. Now, some sources you will never be able to send to a commercial facility, so we will have to maintain some capability in our complex.

Mr. BURGESS. Mr. Chairman, I will yield back.

Mr. WHITFIELD. Thank you. We are going to go a second round here to about 5 minutes for questions. So at this point, I will start a second round.

In panel two's testimony, which we have all read, one of them refers to the Schumer amendment, to the 1992—in 1992—that required recipients of U.S. HEU to commit to convert their reactors to using nonweapons-usable low-enriched uranium. And then at another point, they mentioned that, in the energy bill, the Schumer amendment was in effect removed or left nonoperable as it passed on the House side. Do you all have any comments on that?

Mr. LONGSWORTH. Well, I will speak for the administration. We actually supported the Schumer bill, the Schumer amendment, that we think that is a good standard. I will note, one of the consequences of that standard is that it did not make any kind of economic assessment about whether a facility could convert economically or not. And not that we are promoting that, but in some cases, some of the users of the these highly enriched uranium targets claimed that they could not economically convert and, therefore, might shut down and cutoff the supply of much needed rare isotopes for medical uses.

But we support the Schumer amendment. And one of the reasons we are doubling the budget for designing new reactor fuels, part of that work also goes to design new targets so that you don't need highly enriched uranium targets to make medical isotopes.

Mr. WHITFIELD. I guess, to be correct, that the language in H.R. 6 would create an exemption from the conversion requirement if the cost for such conversion exceeded 10 percent.

Mr. LONGSWORTH. I was trying to articulate what I thought the amenders were seeking. But let me be very clear. The administration has said we do support the underlying Schumer.

Mr. WHITFIELD. The underlying Schumer amendment.

Mr. MCGAFFIGAN. And I believe the Commission has supported the committee's actions in H.R. 6. The only exports, we see—we follow the law. The only exports of HEU that have been at all problematic during my 9 years on the commission—and they haven't been really problematic, it is just that we have been trying to follow the law—are exports of HEU to Canada and to the Netherlands. Both countries have done extraordinary things, and they are close allies, to try to convert first to low-enriched uranium fuel, of course, and then, in the case of the Canadians, they are trying, thus far without much success, working with Argon, to find alternatives to HEU targets for producing medical isotopes.

So we have followed the law. We have conditioned the exports. That is our authority. We get executive branch views. And we have thus far agreed with the executive branch that the problem that the licensee would point out is that they are in a bit of a do loop in that they believe in annual reports submitted to us—I am talking about the Canadian licensee at the moment. They have to say that there is an active program under way—Schumer amendment requires that—with Argon. But if—the economics they think is prohibitive, but they haven't tied that down, partly because they haven't got the reactor working yet. So it is a very complicated area that staff has worked out I believe as part of the conference report. The last Congress' H.R. 6, a provision that was—is certainly acceptable to the commission, and I think Chairman Diaz has said that in previous correspondence.

Mr. LONGSWORTH. Let me clarify also, as the Commissioner said, it is not possible today for the Canadian facility to convert, so there is no requirement to stop shipments of targets. But I think—and, again, we are working to try to develop those targets and to do so in an economic way.

Mr. WHITFIELD. Let me make sure I understand. You support the underlying Schumer amendment. But do you have an official position on the way the language read as it passed, the energy bill passed?

Mr. LONGSWORTH. Let me clarify. I think the underlying Schumer amendment—we support the notion that if a facility can convert, then we should explore ways to make that possible.

Mr. WHITFIELD. Okay.

Mr. LONGSWORTH. Congress will have to make an assessment about whether, because of that requirement and perhaps a licensee's inability to economically convert, that you might lose that critical isotope production. But we are trying to make it possible. Our mission is to try to make it possible for facilities that use HEU in any use to convert. That may not be economic for all users, and, again, that would—I think that would defer back to you, Mr. Chairman.

Mr. WHITFIELD. Thank you very much.

I will recognize Mr. Inslee.

Mr. INSLEE. Thank you.

Mr. Longworth, can you give us some sort of percentages perhaps by weight or volume of what is out there to be still secured or obtained, where we are and where we get to the end point? I mean, can you put this in percentages for us?

Mr. LONGSWORTH. Percentages of how much material is out there and how much we have actually secured?

Mr. INSLEE. Yes. Or otherwise secured and obtained in our own possession. I am just trying to get a lay perspective of where we are in this job.

Mr. LONGSWORTH. Well, Russia is to weapons-usable nuclear material what Saudi Arabia is to oil. I mean, most of the material is in Russia. It is estimated to be 600 metric tons; it may be more. It is most likely maybe less than that, but 600 metric tons is the benchmark that we use for Russian material. Now, that is just material at their facilities that are equivalent to DOE facilities. So their material productionsites, we think, house about 600 metric tons.

There is some number of metric tons which in classified session we can go into that are in the form of warheads or weapons parts that are in their production chain. That is a smaller number, obviously. But, in Russia, again, we are working to secure all of that material. And we are on track to be done with everything including warheads perhaps as early as 2009.

Mr. INSLEE. So what percentage have we obtained up to now? Is it half? 70 percent? What?

Mr. LONGSWORTH. Again, warheads were—they don't tell us exactly how many warheads they have. That is at various locations, so that is against Russian law for them to tell us that. But we will be done with all of the Navy sites this year. We will be done with strategic rocket forces we think in 4 or 5 years. And then—and we think in that timeframe we can also be done with all of the 12th GUMO sites which tend to be larger sites and which are warhead consolidationsites.

For the 600 metric tons that is in their productionsites, we are about halfway done in terms of volume. We are about three-quarters of the way done in terms of locations, which means that last 25 percent of locations or sites houses a much higher percentage, or a much higher volume of material remains at those last few sites.

Mr. INSLEE. Now, could we—is there a one-to-one correlation between our appropriations and our speed of finishing that job? If we are halfway through now, if we double your appropriation, can you get the job done in half the time?

Mr. LONGSWORTH. I don't think it is quite that math for it depends on what year you are in. From 2001 roughly to 2002, 2003, we were not limited by funding. We were limited by the Russians' ability to absorb our funding. We then made several breakthroughs where we needed additional funds. We asked for funds. Congress gave us some additional funds, and we have caught up. We are now at the point where I think we are fully funded to achieve our 2008 deadline for the 600 metrics tons, and we are fully funded for the warhead work as well.

There are two caveats I would put on that answer. One is for the 600 metric tons; it requires the Russians to give us access to their serial production enterprises, these last—their last sites, which we have never been given access to. These sites have ongoing nuclear weapons work. They are the most sensitive sites in Russia. And I think one Russian told me that no Westerner has ever set foot in these closed sites. So getting into those sites or at least implementing programs that will enhance security of those facilities and doing so in a way that we can verify that the work was actually done, that is a challenge, and that is a roadblock that we have to overcome if we are going to meet the 2008 deadline.

Mr. INSLEE. So what is the date for the 600 tons?

Mr. LONGSWORTH. 2008.

Mr. INSLEE. 2008.

Mr. LONGSWORTH. 2008, yes, sir.

Mr. INSLEE. Okay. And for completion of the warheads, that is?

Mr. LONGSWORTH. 2008, 2009. We are waiting for the Russian federation to give us a comprehensive list of sites that they want to do work at.

Mr. INSLEE. A quick question. What do you see as the most serious threat, domestic or overseas, and why? I mean, if you had to sort of pick the one thing that would make you lose the most sleep, what would you say it was?

Mr. LONGSWORTH. In my mind, it is a lost nuclear warhead, because that is ready to use, and probably an artillery shell or something that is a man-portable nuclear weapon. That is a very low-risk, high-consequence event. The Russians do provide better security for warheads than they do for bulk material in most cases. So it is a lower risk, but the consequence is high.

At the other end of that spectrum is a potential use of an RDD device, which is a lower consequence but a higher probability because of the availability of those sources. But the thing that I think that, when we prioritize our work, we prioritize—warheads get the highest priority. If we are given the ability or access to secure a warhead site, we will divert all of our resources to do that first. Then we go to bulk fissionable material. This is the 600 metric tons. And then kind of last on our list would be an RDD. So we would—that is how, if you want to think of it in a rough priority, that is how we would prioritize our work. And that is actually in our budget guidance, and we manage that. We build our budgets based on that.

Mr. INSLEE. Thank you.

Mr. WHITFIELD. Thank you, Mr. Inslee.

Dr. Burgess, do you have any further questions?

Mr. BURGESS. Mr. Chairman, in the interest of time, I will yield back.

Mr. WHITFIELD. Well, that would conclude the testimony and questions for panel one. I would remind you all, since you have been so kind to already spend an hour and a half with us, that after we finish the opening statements, the statements and questions for panel two, we will move into closed session in 2218. And that will probably be within 45 minutes from now. So thank you all. And we look forward to seeing you in 2218.

At this time I would like to call the witnesses for the second panel. First, Dr. Charles D. Ferguson, who is a fellow of science and technology at the Council on Foreign Relations; and Ms. Joan Rohlfing, who is the senior vice president for programs and operations for the Nuclear Threat Initiative. We genuinely appreciate your being with us this afternoon, and we look forward to your testimony.

As you know, this is an investigative hearing, and normally, we take testimony under oath. And I would ask you all, do you have any difficulty in giving your testimony under oath this afternoon? And of course, you would have a right to counsel. Do you have a wish to have counsel with you when you testify?

Then if you will rise and raise your right hand.

[Witnesses sworn.]

Mr. WHITFIELD. Thank you. You are now under oath, and you may give your 5-minute summary of your written statement.

And, Dr. Ferguson, we will recognize you for 5 minutes.

**TESTIMONY OF CHARLES D. FERGUSON, FELLOW, SCIENCE AND TECHNOLOGY, COUNCIL ON FOREIGN RELATIONS; AND JOAN B. ROHLFING, SENIOR VICE PRESIDENT FOR PROGRAMS AND OPERATIONS, NUCLEAR THREAT INITIATIVE**

Mr. FERGUSON. Thank you very much, Mr. Chairman—and Congressman Inslee I see left the room—and Congressman Burgess. Thank you for this opportunity to contribute to this important hearing on GTRI.

Because U.S. governments witnesses have ably reviewed the accomplishments to date and the progress in achieving current program goals, I will address some urgently needed enhancements.

The United States should continue to delegitimize use of civilian highly enriched uranium. The United States government policy already points strongly in this direction. The GTRI Web site in particular states that one of its important goals is to, “minimize and to the extent possible eliminate the use of highly enriched uranium, HEU, in civilian nuclear applications worldwide.”

Lending support for this longstanding policy, Congress passed in 1992 the Schumer amendment to require recipients of U.S. HEU to commit to converting their reactors to using nonweapons-usable low-enriched uranium.

Mr. Chairman, I urge your committee to strengthen the purpose behind the Schumer amendment. At a time when President Bush has identified terrorists armed with nuclear weapons as the gravest danger our country faces and at a time when Osama bin Laden, one of America’s greatest enemies, covets nuclear weapons, we need to make sure that U.S. legislation does everything it can to remove the temptation of HEU from nuclear terrorists.

Mr. Chairman, it may be too little too late, because the House energy policy act of 2005, H.R. 6, was sent to the Senate recently, but I believe it is important to discuss some serious concerns with Section 603 of that legislation. If enacted, the amendment in that section will allow highly enriched uranium to continue to be prevalent in the marketplace. This is in direct opposition to President Bush’s policy of keeping these materials out of the hands of terrorists.

The amendment removes the incentives in current law for isotope producers to work with the United States to resolve technical conversion issues and reduce the cost of converting to LEU. The study under the amendment is a fiction. The biggest problem is the amendment's definition of feasibility of conversion to LEU, a less than 10 percent increase in the cost of producing isotopes. Current law simply defines it as a less than a large percentage increase. The 10 percent definition is arbitrary and has no demonstrable relationship to the commercial feasibility of isotope production or to the price that consumers must pay. In fact, the isotope production cost is only a small fraction of the total product cost.

The study itself should weigh the cost of conversion against the benefit of reducing the threat of nuclear terrorism without presuming in advance what an acceptable cost would be. We already know that conversion to LEU is feasible because companies in other countries have successfully done it. The 9-year time line, 5 years for the study followed by 4 additional years that isotope producers would have to convert to LEU, is strong evidence of the real purpose of this amendment: create lots of smoke in the language and look serious. But the real impact will be to repeal current protections for keeping HEU out of the hands of terrorists.

Keeping current law in place will not affect medical treatment of any patient. As long as foreign companies make a good-faith effort to pursue conversion, they can continue to receive HEU from the United States.

Now let me turn to another issue. The United States should promote removal of HEU from potentially vulnerable sites to any secure location, not necessarily the country of origin. GTRI is striving to repatriate Soviet- and Russian-origin HEU fuel and U.S.-origin HEU fuel back to Russia and the United States. While this objective is laudable, if GTRI encounters resistance in expeditiously repatriating HEU fuel back to the country of origin, GTRI program managers should develop the program flexibility to remove this dangerous material to any secure site.

For instance, if a particular country holding Soviet-origin HEU objects to repatriating this material to Russia, GTRI managers should try to find a creative way to go around this roadblock. These managers should request, if necessary, the program flexibility to emphasize removing vulnerable HEU and not be tied down to restrictive repatriation policy.

Next, the United States should mobilize its intelligence resources to support the mission of GTRI. To help GTRI meet the worthy goals of securing HEU and converting HEU fuel research reactors, better intelligence assessments of facilities containing HEU are urgently needed. While NNSA recognizes that the insider threat is the most dangerous threat to loss of HEU from these facilities, it is unclear whether NNSA has developed detailed intelligence profiles of each facility. If it has not already done so, Mr. Chairman, I recommend that your committee urge NNSA and GTRI managers to coordinate their program activities with the intelligence community.

To determine how vulnerable HEU at a facility is to theft or diversion, the United States needs to know who works at each facility, how susceptible is each worker to blackmail and other means

of coercion, how much scientific or commercial work is done at each facility, and what physical security protection measures are in place. A detailed intelligence profile would also determine how much it would cost to shut down each facility and direct workers to early retirement or to move their research or commercial activities to a more secure facility. The United States needs to move as quickly as possible along as many parallel paths to remove HEU from vulnerable facilities, to convert needed facilities to low-enriched uranium use and to shut down or buy out unneeded facilities.

Now, in my remaining time, let me quickly turn to the second major component of GTRI, dealing with the threat of RDDs or dirty bombs. GTRI should work closely with the Nuclear Regulatory Commission to apply lessons learned in the successful recovery of thousands of unused radioactive sources within the United States. As you know, Mr. Chairman, there are two regulatory systems within the United States: the agreement State system and another system that is directly licensed by the NRC itself.

One of my students at Georgetown University in the masters degree program recently did his masters thesis on looking at the agreement states versus nonagreement states. He has uncovered evidence that the agreement states appear to be doing a much better job at controlling their radioactive sources. So, Mr. Chairman, I would urge your committee that we need to do an expanded study. Unfortunately, my student only had enough resources to look at four states. I believe that we need to encourage the NRC, GTRI, and the agreement states to work together to share information to determine the best security practices among the states. In the interest of impartiality, Mr. Chairman, I recommend that independent institutions such as the National Academy of Sciences perform this analysis.

And, finally, the United States international partners should build a sustainable radioactive material security system. Mr. Longworth talked at length about this, so I won't go on. Let me just jump to what I think was not covered and needs to be covered. And I am not recommending phasing out radioactive materials; I agree with you, Mr. Chairman, that they serve very beneficial uses. But they can be used more wisely, and we could apply smart alternative technologies to phaseout selective high-risk radioactive sources. This has already been done in selected industries in the United States. It has saved money. It has increased safety and security. But I think we need to do a much better effort at looking at ways to introduce alternative technologies to make these radioactive sources even more secure.

And one other point related to that, Mr. Chairman, is that the national laboratories, in particular Los Alamos National Laboratory, have done research on trying to make certain radioactive sources less dispersible, less potent if used in an RDD or dirty bomb. And what we need to do is develop a private-public partnership to try to figure out how to take those ideas and that research into the marketplace to try to phaseout dispersible radioactive materials and put in place radioactive materials that are more secure and safe.

Mr. Chairman, thank you very much for giving me an opportunity to contribute to this hearing and to offer some recommendations to enhance national security and prevent the use of nuclear radioactive materials in acts of nuclear terrorism.

[The prepared statement of Charles D. Ferguson follows:]

PREPARED STATEMENT OF CHARLES D. FERGUSON, FELLOW, SCIENCE AND TECHNOLOGY, COUNCIL ON FOREIGN RELATIONS

Mr. Chairman, I appreciate the opportunity to contribute to this important hearing on the Department of Energy's Global Threat Reduction Initiative to combat nuclear and radiological terrorism. My work on preventing nuclear and radiological terrorism began on September 12, 2001, when I was serving in the Department of State's Office of the Senior Coordinator for Nuclear Safety. On that date, I was asked to write a memorandum to then-Secretary of State Colin Powell warning him about the threat of radiological dispersal devices (RDDs), one type of which is popularly called a "dirty bomb." In March 2002, I left government service to work as scientist-in-residence at the Monterey Institute's Center for Nonproliferation Studies (CNS). In January 2003, CNS published "Commercial Radioactive Sources: Surveying the Security Risks," one of the first in-depth post-9/11 reports on the RDD threat. I was the lead author of that report. Involvement in that report led to officials at the Department of Energy's National Nuclear Security Administration (NNSA) hiring me, as a non-governmental consultant, in April 2003 to help them develop their action plan to secure dangerous radioactive sources that could fuel potent RDDs. I am pleased that in May 2004, then-Secretary of Energy Spencer Abraham launched the Global Threat Reduction Initiative (GTRI), an integrated program to apply NNSA's expertise to securing, removing, and disposing of both high-risk radioactive sources and nuclear-weapons-usable highly enriched uranium throughout the world.

This first anniversary of GTRI's launch presents an opportune time to take stock of what GTRI has accomplished and what the United States needs to do to continue to strengthen nuclear and radiological security efforts. NNSA deserves substantial credit for working to prevent nuclear and radiological terrorism through the GTRI and other important programs. Because the U.S. government's witnesses have ably reviewed the accomplishments to date and the progress in achieving current program goals, I will mainly provide a brief assessment of the thinking behind GTRI and then will address some urgently needed enhancements.

Among U.S. government agencies, the NNSA has the unique technical and policy strength to tackle nuclear and radiological terror threats. It can draw on the technical talent residing in the U.S. national laboratories. In particular, Argonne National Laboratory has provided much of the technical muscle in working to convert dozens of research reactors worldwide from weapons-usable highly enriched uranium (HEU) to non-weapons-usable low enriched uranium. For decades during the Cold War, the two major suppliers of HEU-fueled reactors were the United States and the Soviet Union. Starting in the late 1970s, the United States and the Soviet Union recognized the dangers of HEU-fueled research reactors and began a program to convert these reactors to low enriched fuels. Based on the past several years of nuclear security work in the former Soviet Union, NNSA officials have also formed valuable working relationships their counterparts in this region, where large stockpiles of vulnerable radiological and nuclear materials are located. GTRI has expanded its reach beyond the former Soviet Union to include about 40 countries.

Domestically, the Department of Energy, for decades, has had the responsibility to provide a secure disposal pathway for many of the most potent commercial radioactive sources. In late 2003, NNSA was wisely put in charge of this important domestic program—the Off-Site Source Recovery (OSR) Project—because the Department's leadership recognized it is a national security program as well as a radioactive waste disposal program. The OSR Project deserves praise for successfully exceeding its congressional mandate by securing more than 10,000 at-risk disused radioactive sources throughout the United States. I believe that it should continue to receive needed financial support from Congress. The program expenditures to date have been very modest compared to the accomplishments.

In sum, GTRI works both domestically and internationally. This broad-based approach should give GTRI the capability to apply lessons learned within the United States to challenges confronted abroad.

Also, GTRI works to prevent use of the quintessential weapon of mass *destruction*—a nuclear explosive—and the archetypal weapon of mass *disruption*—a radiological dispersal device. Security experts agree that terrorist detonation of a nuclear

weapon is far less likely to happen, but far more damaging, than terrorist use of a radiological weapon. While there is consensus on this qualitative risk assessment, there is disagreement among experts about how to allocate scarce government resources to combating nuclear and radiological threats.

Should the U.S. government and its international partners spend more resources on preventing and preparing for the most damaging or the most likely acts of nuclear and radiological terrorism? To answer this question, I devoted more than two years while at CNS writing the book *The Four Faces of Nuclear Terrorism* with William Potter, Amy Sands, Leonard Spector, and Fred Wehling. Published last year, this book provides a prioritized plan for combating nuclear and radiological threats. The book's fundamental conclusion "is that the United States must work immediately to reduce the probability of nuclear terror acts with the highest consequences and mitigate the consequences of the nuclear terror acts that are the most probable." Because of the horrendous damage from a nuclear explosion, I believe that the United States needs to spend more resources on preventing this threat from occurring than preventing the much less harmful dirty bomb attack. Nonetheless, as discussed in detail below, a wise, but still limited, investment of government resources can do much to reduce the likelihood and consequences of dirty bomb attacks.

The highest consequence nuclear terror act—terrorist detonation of a nuclear explosive—would have devastating effects and could cause the American people to lose confidence in their government. To carry out that attack, terrorists would need to acquire an intact nuclear weapon from a military arsenal or to seize highly enriched uranium or plutonium to make an improvised nuclear device. Of these three pathways to devastating nuclear terror, the highly enriched uranium route offers terrorists the easiest method, assuming that official custodians of nuclear weapons do not provide terrorists detailed assistance in detonating an intact nuclear weapon. Unlike plutonium, HEU can fuel the easiest to build nuclear weapon—a gun-type device—the type of bomb exploded at Hiroshima. Such a crude, but devastating, weapon would not require nuclear testing and would be within the technical capability of certain terrorist groups. The most significant hurdle to the terrorists is access to sufficient amounts of HEU. While governments must provide rigorous security around intact nuclear weapons and plutonium stockpiles, they must prioritize securing, consolidating, and *eliminating* HEU stocks in both the military and civilian sectors. Because GTRI aims to reduce and remove HEU from vulnerable locations throughout the world, it is on the right path. But the United States can do much more to accelerate efforts to secure and remove dangerous HEU.

**The United States should continue to de-legitimize use of civilian highly enriched uranium.** U.S. government policy already points strongly in this direction. The GTRI Web site, in particular, states that one of its important goals is to "minimize and, to the extent possible, eliminate the use of highly enriched uranium (HEU) in civil nuclear applications worldwide." Dating back to at least 1978 with the beginnings of the Reduced Enrichment for Research and Test Reactors (RERTR) program, the United States has been striving to remove HEU from the civilian sector. Lending further support for this policy, Congress passed in 1992 the Schumer amendment to require recipients of U.S. HEU to commit to converting their reactors to using non-weapons-usable low enriched uranium. *Mr. Chairman, I urge your committee to strengthen the purpose behind the Schumer amendment.* At a time when President Bush has identified terrorists armed with nuclear weapons as the gravest danger that our country faces and at a time when Osama bin Laden, one of America's greatest enemies, covets nuclear weapons, we need to make sure that U.S. legislation does everything that it can to remove the temptation of HEU from nuclear terrorists. Consequently, I recommend that your committee should work to determine what it would require in terms of financial cost and political commitment for medical isotope production companies requesting HEU supplies to convert expeditiously to employing low enriched uranium in their isotope production reactors.

**The United States should promote removal of HEU from potentially vulnerable sites to any secure location, not necessarily the country of origin.** GTRI is striving to repatriate Soviet- and Russian-origin HEU fuel in seventeen countries back to Russia; similarly, it is working to repatriate U.S.-origin fuel in several countries back to the United States. While this objective is laudable, if GTRI encounters resistance in expeditiously repatriating HEU fuel back to the country of origin, GTRI program managers should develop the program flexibility to remove this dangerous material to any secure site. For instance, if a particular country holding Soviet-origin HEU objects to repatriating this material to Russia, GTRI managers should try to find a creative way to go around this roadblock. Perhaps officials of the country in question would welcome sending their HEU to an existing secure facility outside of Russia. GTRI managers should request, if necessary, the

program flexibility to emphasize removal of vulnerable HEU and not be tied down to a restrictive repatriation policy.

**The United States should mobilize its intelligence resources to support the mission of GTRI.** To help GTRI meet the worthy goals of securing HEU and converting HEU-fueled research reactors, better intelligence assessments of facilities containing HEU are urgently needed. While NNSA recognizes that the insider threat is the most dangerous threat to loss of HEU from these facilities, it is unclear whether NNSA has developed detailed intelligence profiles of each facility. If NNSA is not already doing so, Mr. Chairman, I recommend that your committee urge NNSA and GTRI managers to coordinate their programs' activities with the intelligence community. To determine how vulnerable HEU at a facility is to theft or diversion, the United States needs to know who works at each facility, how susceptible is each worker to blackmail or other means of coercion, how much scientific or commercial work is done at each facility, and what physical security protection measures are in place. A detailed intelligence profile would also determine how much it would cost to shut down each facility and direct workers to early retirement or to move their research or commercial activities to a more secure facility. Shutting down and consolidating vulnerable HEU facilities could result in significant monetary savings. *The United States needs to move as quickly as possible along as many parallel paths to remove HEU from vulnerable facilities, to convert needed facilities to low enriched uranium use, and to shut down or buy out unneeded facilities.*

Turning to the second major component of GTRI, I want to address the issue of radioactive materials security. In certain respects, this issue involves a different security paradigm than HEU security. Unlike HEU, radioactive sources have a legitimate commercial use. Every day, millions of people rely on radioactive isotopes to perform beneficial medical, industrial, and scientific purposes. In contrast to delegitimizing HEU use, it would cause more harm than good to completely phase out use of radioactive sources. That being stated, NNSA and the Nuclear Regulatory Commission (NRC) along with international partners, such as the G-8 and the International Atomic Energy Agency, can work together to more smartly employ radioactive sources and ionizing radiation.

**GTRI should work closely with the NRC to apply lessons learned in the successful recovery of thousands of disused radioactive sources.** Within the United States, there are two regulatory systems for control of radioactive sources. The Agreement States system, formed under the 1954 U.S. Atomic Energy Act, as amended, includes 33 states. These states have primary responsibility, with the NRC providing an oversight role, for licensing commercial radioactive sources within their jurisdictions. In contrast, the other 17 states turn to the NRC to directly license their sources. Recently, Morgan Baker, one of my graduate students at the Security Studies Program at Georgetown University, discovered while writing his Master's degree thesis that the states under the Agreement States system appear to control their radioactive sources better than those states directly licensed by the NRC. Because of his resource and time constraints, he only examined four states. The GTRI's Off-Site Source Recovery program has amassed a database of thousands of disused sources found throughout the United States. This database can be mined for valuable information as to which states have done the best job at controlling radioactive sources. *Mr. Chairman, I urge your committee to direct the NRC, the GTRI, and the Agreement States to work together to share information in order to determine best security practices among the states. In the interests of impartiality, Mr. Chairman, I recommend that an independent organization, such as the National Academy of Sciences, perform the analysis.*

**The United States and international partners should build a sustainable radioactive materials security system.** Such a system would go beyond merely locking up high-risk radioactive sources. GTRI officials to a large extent recognize this and have been leveraging IAEA assistance as well as working closely with their counterparts in other countries to develop a safety and security culture. To paraphrase words of wisdom from the Bible, it is better to teach a man how to build his own effective security system than to keep providing security for him. Nonetheless, for countries with weak controls over radioactive sources, there is an urgent need for GTRI to provide rapid security upgrades. A long term sustainable solution involves strengthening the regulatory systems within those countries. The IAEA has had a program to do that since 1995. But building strong regulatory systems take time. They cannot just be legislated into existence. Training skilled regulatory officials requires sustained effort. Another important aspect of making the security of radioactive sources stronger is using these materials wisely. As explained earlier in this testimony, radioactive materials should not be fully phased out. Nonetheless, smart alternative technologies can be used to replace certain types of high-risk radioactive sources. In the fall 2003 volume of the National Academies journal *Issues*

in *Science and Technology*, Joel Lubenau, a former senior adviser to the Nuclear Regulatory Commission, and I wrote:

The International Commission on Radiological Protection and the congressionally chartered National Council on Radiation Protection and Measurements (NCRP) hold as a pillar of radiation protection the principle of justification. This principle calls for evaluating the risks and benefits of using a radioactive source for a particular application. Users are supposed to opt for a nonradioactive alternative if there is one that provides comparable benefit and less risk, including the risk associated with waste management.

The NRC has taken the position that advocating alternative technologies is not part of its mission. The commission's reasons, which have not been explained, might be that it believes it is only in the business of regulating the radioactive sources that licensees choose to use, not the business of overseeing licensees' decisions to use them. Nonetheless, it can be argued that the NRC's charge from Congress—to protect public health, safety, and property as well as provide for the common defense and security—is sufficient to require the commission to adopt the principle of justification and, at least in principle, to encourage the consideration of alternative technologies. This is not to suggest that the NRC should second-guess licensees' decisions to use radioactive sources, simply that the commission should ensure that licensees are making informed decisions that take into account justification and technological alternatives. Applying the principle of justification would reduce the number of radioactive sources in use and thus cut the risk of an RDD event occurring. The National Academy of Sciences, the International Atomic Energy Agency (IAEA), the NCRP, and the Health Physics Society have all recommended that users consider alternative technologies.

One U.S. industry that is adopting alternative technologies is steel, itself no stranger to the risks and costs of radioactive contamination. Steel mills use nuclear gauges to monitor the level of molten steel in continuous casters. If molten steel breaks through the casting system and strikes a gauge, the gauge housing and even the source could melt, causing contamination. Accordingly, mill operators are replacing nuclear gauges on continuous casters with eddy current and thermal systems, even though they are more expensive. The tradeoff—the cost of alternative technology versus the cost of contamination—makes the new systems a smart choice.

Some of the national laboratories are performing R&D to replace the most dangerous radioactive sources (those containing very dispersible radioactive compounds) with sources that pose less of a security hazard. Unfortunately, technology developed at the national labs is not readily available to the marketplace. At an IAEA conference on the radioactive source industry in April 2003, major source producers reportedly expressed interest in forming public-private partnerships to bring these alternative technologies to market. In the United States, such partnerships are sorely needed.

*Mr. Chairman, I recommend that you encourage the NRC to keep licensees informed of smart alternative technologies that can safely and securely replace certain high-risk radioactive sources. I also recommend that your committee encourage the formation of private-public partnerships to develop radioactive sources that are less hazardous to use in potent dirty bombs.* This action plan would support U.S. security and complement the important national security work done by the NRC and GTRI.

Mr. Chairman, thank you very much for giving me the opportunity to contribute to this hearing and to offer some recommendations to enhance national security and to prevent the use of nuclear and radioactive materials in acts of nuclear terrorism.

Mr. WHITFIELD. Thank you, Dr. Ferguson.

And, Ms. Rohlfing, you are recognized for 5 minutes.

#### TESTIMONY OF JOAN B. ROHLFING

Ms. ROHLFING. Thank you, Mr. Chairman, and members of the committee for the opportunity to testify today. I would like to request that my written statement be entered into the record, and I will offer a brief oral statement.

The gravest threat facing the Nation today is the potential for a terrorist organization to use a nuclear device in the heart of an American city, not a dirty bomb but a nuclear yield producing device bomb similar to Hiroshima. It is this threat, the threat of a

nuclear blast not a radiological weapon, that I will focus on, because I believe that an attack using a nuclear bomb is the most serious and the consequences the most dire for our Nation, the globe and our way of life. Let me say, I am not an alarmist by nature, but in this testimony today, I hope to ring an alarm bell.

Terrorists have several pathways to a nuclear bomb. They can acquire through theft or illicit purchase a fully intact warhead from an existing nuclear weapons state. Or, more likely, they will fabricate a crude nuclear device from a stolen or illicitly purchased nuclear material, either plutonium or highly enriched uranium. Getting plutonium or highly enriched uranium, HEU, the essential ingredients of a nuclear bomb, is the hardest step in making a weapon. These materials are difficult to make, and current plutonium and HEU production technologies require large, expensive and technically sophisticated facilities that are today within the exclusive domain of nation states.

Acquiring these materials through theft or illicit purchase is the most difficult step for terrorists to take and the easiest for us to stop. Unfortunately, the essential ingredients of nuclear bombs are spread around the world, much of it in purely secured facilities. HEU is of particular concern because the simplest design for a nuclear device, a so-called gun-type design, is based on HEU. There are over 40 countries that possess more than 100 research facilities that use this material. Effectively reducing nuclear danger will require global action and unprecedented global cooperation.

Governments around the globe, including the U.S. Government, are not yet acting with the urgency or priority of purpose required to address the threat. For example, incredibly, given what is at stake, there is no comprehensive baseline inventory of warheads and nuclear materials that must be secured worldwide. There is no scorecard to keep score against. And let me clarify: This was a question that came up in the Q-and-A session. There was a question of Mr. Longworth about whether there is a comprehensive baseline inventory. He suggested that there is no single integrated document. I am not talking about creating a single integrated document, and most certainly, it should be classified whenever this inventory is created. I am talking about gaps in our knowledge. We don't yet know where all of the weapons-usable material is, and therefore, we can't keep score against it.

The Department of Energy's Global Threat Reduction Initiative is helping to reduce, secure and eliminate HEU, plutonium and dangerous radioactive sources on a global basis. But is GTRI doing enough, fast enough, to prevent the ultimate catastrophe of nuclear terrorism from occurring? Has it been given the tools it needs to perform this most critical of missions effectively and rapidly? I believe it has not. The program is not yet delivering the protection we need with the urgency that we need it.

What will it take to create the kind of program that can deliver the results we need on the timetable we need it? My written testimony provides detailed suggestions for making the program more effective, but I will sum up the main idea in one sentence: We need to build a bold aggressive Apollo-like program to prevent nuclear terrorism. We should be challenging ourselves to think in terms of creating a model program. The Apollo and Manhattan projects are

two examples of what we can do when we have a national goal and provide the leadership, resources and authorities needed to achieve the goal.

Incredibly, even though our way of life is at stake here, we are pursuing a business-as-usual approach to preventing nuclear terrorism. We are talking about timelines. Just—if you look at the budget documents submitted to the Congress, the I would say very ambitious and frankly unrealistic timelines that are described in those budget documents that go out 10 and in some cases 14 years from now, are unrealistic because they are not taking into account the entire universe of materials out there. And if we go about reclaiming materials, securing materials, locking them down at the pace that we have been with existing programs, it is going to take the better part of a quarter of a century. So we are nowhere near where we need to be in terms of the pace of getting this job done.

The price of slow action could easily be loss of life, property and freedom on an unprecedented and catastrophic scale. We must recognize that we don't have the luxury of time to pursue a business-as-usual approach, and we must act accordingly.

In conclusion, a nuclear terrorism event has the potential to alter life as we know it today, severely damaging the global economy, seriously eroding the public's confidence in governments, constraining the civil liberties we enjoy in the United States, and devastating our sense of personal and collective security. We have an enormous stake in ensuring that this does not happen. At NTI, the organization where I work, we frequently ask ourselves and our elected representatives and our fellow citizens of the world: The day after a catastrophic instance of nuclear terrorism, what will we wish we had done to prevent it, and why aren't we doing that now? Thank you very much.

[The prepared statement of Joan B. Rohlfing follows:]

PREPARED STATEMENT OF JOAN B. ROHLFING, SENIOR VICE PRESIDENT FOR  
PROGRAMS AND OPERATIONS, NUCLEAR THREAT INITIATIVE

Mr. Chairman and members of the Committee, I thank you for the invitation to testify before you on this urgent national security issue. I appear before you as the Senior Vice President for the Nuclear Threat Initiative, a charitable organization working to reduce the risk of use of nuclear, biological and chemical weapons. I should make clear, however, that the testimony I offer before you today is my own, and has not been cleared by NTI's Board of Directors.

NUCLEAR TERRORISM—THE NEW NUCLEAR THREAT

The gravest threat facing the nation today is the potential for a terrorist organization to use a nuclear device in the heart of an American city—not a “dirty bomb”, but a nuclear yield producing bomb similar in effect to the one used in Hiroshima. It is this threat, the threat of a nuclear blast, not a radiological weapon, that I will focus my remarks on today because I believe that an attack using a nuclear bomb is the most serious, and the consequences the most dire for our nation, the globe, and our way of life.

The subject of this hearing—the Department of Energy's (DOE's) Global Threat Reduction Initiative (GTRI) is a critical program in our fight to prevent nuclear terrorism, by working to prevent nuclear weapons materials, and dirty bomb materials from falling into the hands of terrorists. As such, *GTRI is one of the most important national security programs that the US Government is currently undertaking.*

Terrorists have several pathways to a nuclear bomb: they can acquire, through theft or illicit purchase, a fully intact warhead from an existing nuclear weapon state, or, more likely, they will fabricate a crude nuclear device from stolen or illicitly purchased nuclear material—either plutonium or highly enriched uranium.

Getting plutonium or highly enriched uranium (HEU), the essential ingredients of a nuclear bomb, is the hardest step in making the weapon. These materials are difficult to make, and current plutonium and HEU production technologies require large, expensive and technically sophisticated industrial facilities that are today within the exclusive domain of nation states. The most likely way a terrorist will get plutonium and HEU, therefore, is through illicit purchase or theft. Acquiring these materials is the most difficult step for terrorists to take and the easiest step for us to stop.

Unfortunately, the essential ingredients of nuclear bombs are spread around the world, much of it in poorly secured facilities. HEU is of particular concern, because the simplest design for a nuclear device—a so-called gun type design—is one that is based on using HEU as the fissile material to produce a chain reaction. There are over 40 countries that possess more than 100 research facilities that use HEU. The DOE's Global Threat Reduction Initiative is focused on minimizing, and eventually eliminating, the use of HEU in civilian applications around the world by helping to convert these facilities (or close them entirely) to ones that use low enriched uranium, a material that is not suitable for a nuclear weapon. The GTRI is also working to remove HEU from sites around the world, with an initial emphasis on HEU that came from the US and Russia.

Effectively reducing nuclear danger will require global action, through unprecedented cooperation in over 40 nations around the world—including nuclear weapons states. No state acting alone has sufficient authority, resources or influence to assuredly prevent a nuclear attack, especially from nuclear terrorism. Because our international security is only as good as the security of these materials at the least defended site, all nations must move quickly to either eliminate these dangerous materials, or improve the physical security of these materials wherever they exist.

#### THE GAP

Governments around the globe, including the United States Government, are not yet acting with the urgency or priority of purpose required to address the nuclear threat—the greatest threat to our security.

For example:

- Incredibly, given the threat, there is no comprehensive baseline inventory of warheads and nuclear materials that must be secured worldwide.
- Without this baseline inventory, it is not possible to develop a coordinated and prioritized plan for securing or removing those weapons/materials.
- In Russia alone, less than half of the known nuclear weapons usable materials in the country have been given some form of strengthened security through US-Russian cooperative threat reduction efforts. While the US and other states have been working with the Russian Federation to improve security over the last decade, bureaucratic disagreements over site access and liability continue to slow progress.
- While we recognize the threat that poorly secured HEU poses to our security, we are still continuing international civil commerce in this material. Despite pleas from the Director General of the International Atomic Energy Agency, Mohammed ElBaradei, there is no international agreement and not much leadership on the subject of curtailing the widespread use of highly enriched uranium around the globe.
- Beginning in 2002, the G8 pledged at Kananaskis to match U.S. threat reduction funding for addressing weapons of mass destruction threats, but this G8 effort is making glacial progress and needs focused leadership.

#### GTRI A KEY PROGRAM, BUT STRENGTHENING NEEDED

The Department of Energy's Global Threat Reduction Initiative programs help to reduce, secure and eliminate highly enriched uranium, plutonium and dangerous radioactive sources on a global basis. But is GTRI doing enough, fast enough to prevent the ultimate catastrophe of nuclear terrorism from occurring? Has it been given the tools it needs to perform this most critical of missions effectively and rapidly? I believe it has not.

Below I offer some reflections on what we must achieve to prevent terrorists from being able acquire nuclear materials, and some measures of how GTRI is doing against these benchmarks.

Former Secretary Abraham deserves credit for creating this program one year ago. It is testament to his appreciation of the nuclear terrorist threat that he consolidated into a single program a number of important proliferation prevention programs within the Department of Energy in order to ensure that they were better

integrated, and more effectively executed. But the program is not yet delivering the protection we need with the urgency that we need it.

#### OBJECTIVES & MEASURES OF SUCCESS

Denying terrorists' access to dangerous nuclear material boils down to three essential objectives:

1. Establish a comprehensive global inventory of weapons and materials and a related threat assessment;
2. Secure and/or eliminate vulnerable weapons and weapons materials against this inventory on an accelerated basis;
3. Stop the spread of additional HEU around the globe by ending its use in civil commerce.

How is the GTRI doing against these three objectives?

On the first point, creating a global inventory and threat assessment, DOE's Global Threat Reduction Office is working to create one. But as far as I and my colleagues at NTI have been able to discover, a risk-based global inventory does not yet exist. We recognize that creating a comprehensive, global inventory is not an easy task. It will require the integration of multiple existing databases, the creation of new data, and the cultivation of intelligence sources to fill gaps. We do not propose that this baseline inventory, once created, should be made publicly available. But its creation will be essential for understanding how much progress the program is making, and, more importantly, for understanding whether we are securing, converting and/or eliminating the highest priority threats.

On the second point, securing and/or eliminating vulnerable weapons usable materials, the Department of Energy is clearly making progress. The Department's 2006 budget indicates a goal of converting five research reactors (out of an estimated 66 remaining) this year from HEU to non weapons-usable low enriched uranium (LEU) fuel. It estimates that it will take until 2014 to convert all 66 remaining reactors. But the metrics DOE is using may be incomplete.

We are not confident that the estimate of 66 remaining reactors includes all facilities that may have civil HEU. The DOE program to convert research reactors was not designed to address other civilian applications and facilities that use HEU, such as critical and subcritical assemblies (a type of research facility), or Russian nuclear icebreakers. There is also evidence, for example, that a significant additional number of HEU research facilities may exist within Russia, and we know that other HEU facilities of Chinese or other origin exist that have not been included in this tally. A July 2004 GAO report on DOE's reactor conversion program cites a figure of 128 facilities around the world that contain 20 kilograms or more of HEU. Moreover, can we say that we are working with the urgency needed to stem this threat if we aren't planning—even with the more modest inventory assumptions in the DOE budget—to finish the job until 2014?

A similar line of reasoning can be applied to the GTRI program element that is responsible for returning US-origin spent fuel to the US. Under the current budget plan, the US program will take spent HEU fuel back from foreign research reactors until 2019. But the material that has been declared eligible for "take-back" under the DOE program has been narrowly defined. The General Accounting Office, in a November 2004 report on the US foreign fuel return program, found that another 12,300 kilograms of HEU (enough for 200-250 nuclear weapons) that had been exported by the US was not eligible for return because the DOE, when establishing the fuel return program, limited the types of fuel that would be covered by the program. We need to broaden our definition of what the US considers eligible to bring back to the US, or send to Russia, including considering additional, third party disposition paths for some of this material.

This brings me to the third point. Surprisingly, the US continues to export HEU for use in research facilities abroad. The US is not alone in this practice, other HEU producers also continue to produce HEU for use in civil facilities. Even as we try to get our arms around the global inventory, and rightly spend money to convert facilities and eliminate HEU around the globe, the HEU "spigot" remains on. *As of yet, no global norm against the use of HEU for civilian applications exists.*

We must work to establish a global norm against use of HEU for civil purposes on an urgent basis. We must create the policy, legal and regulatory frameworks to support this long-term vision. Within the US, we have implicitly been promoting this norm through the very nonproliferation programs that now comprise the DOE's Global Threat Reduction Initiative. But we need to move beyond an "implicit" policy of minimizing use of HEU, to an explicit one. Specifically, the US must:

- 1) Actively lead the global community in establishing a global norm that HEU in civil commerce be minimized, and eventually eliminated; and

- 2) Engage its HEU recipients in a serious dialogue about conversion on a *defined timetable*.

While US policy on minimizing HEU in civil commerce has been codified in law through the “Schumer Amendment” to the Energy Bill, (which states that the US may not transfer HEU to another state for use in research reactors unless it has provided assurances that it will convert to alternative materials for operation when technically feasible) this policy was recently dealt a serious blow by changes proposed to it in H.R. 6, the House passed Energy Policy Act of 2005. The amendment to the Schumer language in H.R. 6 would create an exemption from the conversion requirement for nuclear facilities if the costs of such conversion exceed 10 percent. The new language completely undercuts longstanding US policy to minimize HEU in civil commerce, and is moving us in the opposite direction of where we need to be globally. The US will have no standing to press the rest of the world to undertake nuclear terrorism prevention measures if it continues to hold itself, and the recipients of its HEU, to another standard.

#### PROGRAMMATIC TOOLS FOR SUCCESS

My testimony would be incomplete without some mention of the programmatic tools that federal program managers will need to effectively execute the essential elements of the GTRI on a time urgent basis.

The rules and organizational structures of large government bureaucracies and their oversight committees unfortunately do not facilitate nimble program execution. This is not so important for handling routine matters, where the price of slow action is often only inconvenience. But where the program objective is to prevent nuclear terrorism, the price of slow action could easily be loss of life, property and freedom on an unprecedented and catastrophic scale. A nuclear terrorism event has the potential to alter life as we know it today—severely damaging the global economy, seriously eroding the publics’ confidence in governments, constraining the civil liberties we enjoy in the US, and devastating our sense of personal and collective security. We all have an enormous stake in ensuring that this does not happen. Accordingly, it is in our self-interest to explore innovative ways in which nuclear terrorism prevention programs, such as GTRI, can be accorded special tools to expedite action—even if this means granting unique or unprecedented authorities and execution mechanisms.

Several ideas come to mind:

- Provide critical funding flexibility by allowing GTRI program managers to move funds between program accounts as needed to act on time urgent opportunities for action. This could specifically take the form of allowing managers to move funds that exceed the reprogramming threshold allowed for other DOE programs. Another component of budget flexibility lies in the use of “uncosted balances”. Program managers should be allowed to determine the best use of these funds within the program, and not have these balances reclaimed by Congress or the Administration to offset future budget requirements.
- Congress should provide sufficiently broad legal authorities for GTRI managers to execute their mission in an expeditious manner. For example:
  - The GTRI Program should be given explicit authority to provide a broad range of incentives to reactor facility operators to convert facilities or eliminate weapons usable materials expeditiously.
  - The Program should also be given broad flexibility to accept nuclear materials for ultimate disposition in the US that is not US-origin. This will require a provision, at a minimum, to expedite the lengthy environmental reviews that are required for any materials outside of the scope of the existing (US-origin) fuel return program.

These kinds of authorities, mechanisms and processes are essential to the US Government’s ability to move with the alacrity it needs to perform the terrorism prevention mission. Unfortunately, today, we must often engage in multi-year approval and funding processes before some operations can be completed.

The above represent a few basic ideas of how we might facilitate a more streamlined and expeditious program. We should challenge ourselves to think of additional, and more creative management approaches, establishing a kind of “model-program” approach to nuclear terrorism prevention programs. We must recognize that we don’t have the luxury of time to pursue a “business as usual” approach to problem solving, and act accordingly.

#### CONCLUSION

In conclusion, I want to recognize the many men and women of our government, and other, who are working around the world on the critical mission of locking down

nuclear weapons and materials. There is no more important task. The global threat of nuclear terrorism has never been higher.

But we must ask ourselves whether we have given our government servants the tools they need to get the job done with the urgency that it requires. We are in a race between cooperation and catastrophe. Whether we win that race will depend upon how smartly and expeditiously we act. At NTI, we frequently ask ourselves, our elected representatives, and our fellow citizens of the world: the day after a catastrophic instance of nuclear terror, what will we wish we had done to prevent it? Why aren't we doing that now?

Mr. WHITFIELD. Thank you, Ms. Rohlfing, and Dr. Ferguson. We appreciate your testimony very much.

I know, Ms. Rohlfing, you focused on nuclear devices primarily, but I want to ask both of you a question relating to the agreement states, the 33 states pursuant to the Atomic Energy Act of 1954. Are any of you aware of additional reports other than this masters thesis in which someone has questioned or alleged that these 33 states are much more effective in dealing with sealed sources than the other 17?

Mr. FERGUSON. No, Mr. Chairman, I am not. And I have been working on this issue for the last 3.5 years. I know the Government Accountability Office has issued a number of reports, and they have looked at the agreement State system. But I don't believe they have done that kind of comparison, comparing the agreement States to the nonagreement States.

Mr. WHITFIELD. What about you, Ms. Rohlfing?

Ms. ROHLFING. I don't have anything to add to that since I have been primarily focused on the weapons-usable material.

Mr. WHITFIELD. Right. Now, you had a number of suggestions of ways to improve this program. Are you advocating that it needs more money? Or if you were in charge, what specifically would you do that is not being done right now?

Ms. ROHLFING. I think it needs more money. That is just one component. I think, more importantly than money, this needs to really be elevated on the national agenda. In terms of the national leadership on the issue, I would love to see more Members of Congress holding hearings on this issue, informing themselves, educating themselves, understanding the danger. I would love to see the same within the administration in terms of the priority level of attention that it accords to this subject both in terms of day-to-day management and oversight of the issue and execution of the programs within the government, but particularly with respect to our diplomatic engagement.

Mr. Longworth mentioned that diplomacy and diplomatic challenges, access is a huge hurdle in being able to convert day-to-day some of the research reactors and have some of the vulnerable nuclear materials returned. But we have not yet made this the No. 1 security agenda in our diplomatic engagements.

And, finally, I would say, when I say Apollo-like, Manhattan-type program, I think we really do need to create something that is a model program in terms of giving the governmental personnel who are working on this issue broader authorities, innovative authorities, flexibility to spend money as opportunities do present themselves, and we have done none of that.

Mr. WHITFIELD. Dr. Ferguson, you pointed out in your testimony that you believe it is much more probable that a well-organized ter-

rorist group can obtain a radiological dispersal device or dirty bomb before it could assemble a real nuclear weapon, unless they were able to steal a nuclear weapon. And you point out that this dispersal device is not a weapon of mass destruction but rather a weapon of mass disruption. Please tell us, what do you think would be the short- and long-term health and economic consequences of a successful dirty bomb in a major metropolitan area?

Mr. FERGUSON. Mr. Chairman, even the worst dirty bomb that I can imagine or other security experts I have talked to can imagine doesn't come nearly as close to what even a very crude low-yield nuclear weapon can do. It is like a firefly to—I am sorry, a lightning bug to lightning in terms of comparison, a dirty bomb to a nuclear weapon.

That being said, we can't discount the threat of RDDs or dirty bombs because they can create, as you point out and I point out in my testimony, a weapon of mass disruptive type effect or weapon of mass effect situation, where we have psychological and social effects run rampant, we have got people who would be afraid to move back into a contaminated area. If the government can't convince them that we have cleaned the area down to safe levels, real estate would plummet. The economy in the local area would be affected. And then we would have to fear that these terrorists who struck with a dirty bomb in New York or Washington or some American city could do it at some other places within the United States or other parts of the world and shut down our economy. That would be my greatest fear. It is not that we would have a tremendous loss of life. Maybe in the order of a few hundred dead in the near term is sort of the worst case that I can imagine.

Mr. WHITFIELD. Do both of you feel that there is real disagreement within the government on where the priority should be set for the policy?

Ms. ROHLFING. Disagreement. I am not sure I would characterize disagreement within the government, and as a nongovernment witness, I am probably not the best person to address that question. But I would observe that I think there has been a lack of attention at appropriate levels to this issue, and therefore, we have not ended up with funds on the right priorities.

For example, the very important program that we are discussing at this hearing, Global Threat Reduction Initiative, with a budget of, what, approximately \$93 million, is a drop in the bucket compared to the amounts of money we are spending on our overall national security and almost any other budget line that you can think of. That would suggest to me, especially given the leverage that we get from addressing this aspect of the problem, the front end, we call this locking down nuclear weapons and materials the first line of defense. If you don't get this right, then you have got to worry about having a good second, third and fourth line of defense in place. And while we should absolutely have multiple layers of defense, it is much harder once nuclear material is lost to track it down. It is like finding a needle in a haystack, or to find a weapon, God forbid, should it get into the hands of a terrorist organization. So we need to be doing more faster on this particular aspect.

Mr. WHITFIELD. I would point out that, of course, that \$93 million is one source of funds. But there are additional funds being

spent, obviously, on nonproliferation. Now, both of you talked about the Schumer amendment, and I think that was relatively well covered in the first panel. But both of you basically feel like that what happened is a serious mistake, I take it. Is that correct?

Mr. FERGUSON. Yes, sir, that is correct.

Ms. ROHLFING. And I would just add, since I didn't include it in my oral statement, that I strongly agree that the action taken in the House energy bill is a serious blow to the overall policy objective that the United States has been pursuing for several decades, to try and reduce and eventually eliminate highly enriched uranium in civil commerce. And we have got to keep our eye on the big objective here, which is that we are going to have no credibility as a Nation convincing other nations to do the very things we are trying to do in this program if we continue to push new material out the door even if it is to the Canadians and, in fact, I might say, especially if it is to the Canadians. I will stop there, but I would be happy to describe why that is so if it is useful.

Mr. WHITFIELD. Well, I have no further questions.

Dr. Burgess, would you have some?

Mr. BURGESS. Yes, please describe why that is useful with the Canadians.

Ms. ROHLFING. The Canadians are using HEU to make targets which they irradiate in a research reactor to create the medical isotope Molybdenum 99. And there is no question that medical isotope is important. It is widely used for beneficial therapeutic purposes, and it is important to the U.S. market, and in particular, Canada serves, I think it is roughly 60 percent of the global market for this particular medical isotope. But it is not the only producer. One of the other major producers is the Republic of South Africa. South Africa right now maintains quite a large stockpile of highly enriched uranium, and they are still operating their research reactor both on highly enriched uranium fuel; they are also using HEU targets. It is important that we be able to convince South Africa. It is important that we be able to convince all other countries that are using highly enriched uranium either for fuel or for other civil applications to convert these facilities if we are going to have a prayer of really eliminating this inventory, taking it out of the sites of terror organization. But as long as you allow an exception for Canada, you have got to allow an exception for everyone else. And so I agree with Mr. Ferguson—Dr. Ferguson. It guts our policy, and it really handicaps our ability to achieve this much more important national security objective.

Mr. BURGESS. Mr. Chairman, in the interest of time, I will yield back.

And we are going to go to closed session. Is that correct?

Mr. WHITFIELD. Yes, that is correct.

Mr. BURGESS. I yield back.

Mr. WHITFIELD. Mrs. Blackburn, do you have any questions?

Mrs. BLACKBURN. Thank you, Mr. Chairman. I do have one follow-up question to that.

And I thank both of you for your testimony. I will tell you, it is the type thing that you read and you shiver when you read it because it does cause you to stop and kind of take stock and think.

And Mr. Ferguson or Dr. Ferguson, I guess this really would come to you. Let us talk a little bit about the intelligence gathering, the counterproliferation measures, Special Operations that should be there to thwart proliferation.

And, as you said, Ms. Rohlfing, keeping an eye on the ball of where these things are going. Do you see DOE meshing its operations adequately with other countries or organizations that have the type information in this intelligence gathering that we need?

Mr. FERGUSON. Well, ma'am, I don't know exactly how DOE coordinates with the intelligence community because I have never worked with either the intelligence community or DOE. But I have worked in the State Department, so I do have some familiarity looking at other agencies.

What I was recommending is that there should be this type of intelligence sharing that isn't already taking place. And what I do know is that many Department of Energy officials and government contractors go to these reactor sites and other sites in Russia and other countries that we are concerned about, and when they come back, they are required under law and Department requirements to file a trip report. There are filing cabinets full of trip reports at the Department of Energy, and we could be mining that initially for information. So that is one piece of information I know we already have out there, and I don't know if we are doing proper analysis of that information.

What I am also recommending is we have our intelligence agents trying to develop detailed profiles of every one of these facilities. Although it is a relatively large number, as Ms. Rohlfing was saying, but there are only about 100 or so facilities. So I think with the intelligence budget we have in this country, we could develop the kind of detailed intelligence profiles we need for every one of these facilities.

Ms. BLACKBURN. So, in essence, what you are saying is that they may not be meshing it adequately to meet the needs that we have, but the information is there. They just do not mine it appropriately.

Mr. FERGUSON. I think a lot of the information is there. I think there might be other gaps in information that we need to find out. But we are not going to be able to identify those gaps until we direct these agencies to put in place this kind of smart program.

Ms. BLACKBURN. Okay. Thank you.

Mr. Chairman, I will stop with that and wait for the next session.

Mr. WHITFIELD. Well, thank you, Ms. Blackburn.

And since I see there are no other questions for this panel, I want to thank you all very much for your testimony. We have read it and are looking at it, and your input is quite valuable. So, with that, that will conclude the public portion of this hearing.

And after consultations with the minority, I will now offer a motion that the subcommittee move into executive session. The Chair moves that, pursuant to Clause 2G of Rule 11 of the Rules of the House, the remainder of this hearing will be conducted in executive session to protect information that might endanger national security.

Is there any discussion on the motion? If there is no discussion, pursuant to the rule a recorded vote is ordered. Those in favor, say aye. The ayes appear to have it. The ayes have it, and the motion is agreed to. We will reconvene in just a few short minutes in room 2218, and that portion of our hearing will be closed to the public and open only to our witnesses, the members and staff, to such members and witnesses who have a Department of Energy Q clearance. And the subcommittee will recess. And thank you all very much.

[Whereupon, at 3:57 p.m., the subcommittee proceeded in closed session.]

