

Options for Increased U.S.-Russian Nuclear Nonproliferation Cooperation and Projected Costs

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Introduction

The attacks on the World Trade Center and the Pentagon have left little doubt that if unscrupulous terrorist organizations obtain weapons of mass destruction (WMD) in the future there is little barrier to their use. The most immediate WMD danger is posed by the potential terrorist use of chemical and biological weapons. However, the detonation of a nuclear weapon or the dispersal of radiological materials such as plutonium by terrorists would create deaths, casualties and psychological horror that are difficult to imagine. The British government, in the document it released detailing the intelligence known about Osama bin Laden and the al Qaeda terrorist network, states that they have "sought to acquire nuclear and chemical materials for use as terrorist weapons" and that ultimately acquiring such weapons was viewed by them as "a religious duty."

Therefore, intense consideration must be given now to whether the U.S. is adequately addressing the danger of potential terrorist acquisition of the nuclear tools of terror. Many nations possess nuclear materials and eight countries possess nuclear weapons, so leakages could come from many locations. But Russia possesses the largest stockpile of nuclear weapon material and weapons, and the security of its stockpiles is currently inadequate.

After a decade of U.S.-Russian threat reduction cooperation, much has been done to reduce the vulnerability of these stockpiles, but much also remains to be done. The new spirit of cooperation between the U.S. and Russia in the fight against terrorism also provides a much-improved environment in which to push with renewed vigor the implementation of cooperative security activities. This paper outlines areas where the cooperative efforts could be increased and also identifies a few new ideas that could be considered for implementation.

These options for action, while focusing primarily on Russia and nuclear materials and weapons, must be considered as only one element in the global effort to deny terrorists access to weapons of mass destruction. Additional actions must be taken to secure global chemical and biological stocks, and also to improve the safeguarding of civilian nuclear materials and commercial nuclear facilities worldwide.

The Congress passed an initial supplemental appropriations bill providing \$40 billion to address the needs raised by the September 11, 2001 terrorist attacks on the U.S. While no less than \$20 billion will be used for disaster recovery activities in New York, Pennsylvania, and Virginia, plans for allocating most of the remaining \$20 billion remain unclear. The recommendations below are intended to provide the Congress and the executive branch with concrete ideas for how a portion of these funds could be utilized to prevent future unthinkable terrorist attacks by denying terrorists access to nuclear weapons-related materials, technologies, and expertise in Russia and the former Soviet Union (FSU). It is also designed to stimulate the thinking of U.S. allies in Europe and Asia about what more they could contribute to this effort.

Political Considerations

Anticipating that nuclear proliferation problems might erupt from the disintegration of the Soviet Union a decade ago, the U.S. Congress, in bipartisan action in 1991, laid the foundation for the cooperative security agenda by enacting what became known as the "Nunn-Lugar" program, named for its primary cosponsors, Senators Sam Nunn (D-GA) and Richard Lugar (R-IN). The objective of the cooperative security agenda was to work jointly with Russia and the other states of the FSU to reduce the threat posed by the legacy of the Soviet nuclear arsenal. This initiative has since developed into a broad set of programs that involve a number of U.S. agencies, primarily the Departments of Defense, Energy, and State. The government now provides these programs with approximately \$900 million to \$1 billion per year.

These cooperative efforts have had success in improving the security of WMD in the FSU. For example, nearly 40% of the estimated 600 tons of weapon-usable nuclear material outside of nuclear weapons in Russia has been provided with some level of improved security. But it only takes about 10 pounds of plutonium or 30 pounds of highly-enriched uranium to make a nuclear bomb. Even the explosive dispersal of plutonium would constitute a devastating attack. Yet vast amounts of nuclear, chemical, and biological weapons materials have yet to be secured or eliminated. In addition, export and border controls throughout the region are grossly inadequate, Russian weapons facilities remain dangerously oversized, and the weapon scientists and workers in these complexes often lack sufficient compensation or alternative work possibilities. The need to aggressively address these threats is at least equal in importance to the need to counter the dangers posed by ballistic missile proliferation.

The cooperative security work that occurs requires the involvement and agreement of both the United States and Russia. In recent years, problems have developed on both the U.S. and Russian side. There is continuing tension over how much of the cooperative security budget is spent in Russia versus in the United States. There is conflict over levels of access to sensitive facilities. And there are political issues such as the tendency of some U.S. officials to treat collaboration with Russia as a client-donor relationship, with Russia acting as a subcontractor to the United States rather than as a partner. Russian participants in this collaboration have made clear their desire to modify the way the U.S. and Russia interact in this arena. While Russian officials do acknowledge their nation's proliferation problems, they would prefer to cooperate with the United States in a more equal manner, as a scientific and security partner rather than as a potential proliferant.

To block the threat of terrorist acquisition of nuclear materials and weapons it is necessary to achieve sustainable engagement in a way

that serves larger U.S. and Russian interests. One key step in this direction would be to integrate Russian experts into all phases of program design and implementation. Taking this step will require a considerable change of attitude in the United States, both in the executive branch and in Congress.

But, this new effort also will require a sea change of mentality in Russia. Russian officials must demonstrate that they are committed to nuclear security cooperation beyond the financial incentives for participation offered by the United States. Achieving real balance and partnership will be difficult, but it is possible with sustained and focused political leadership.

Raising the political profile and leadership on this agenda is therefore essential. Past successes on this agenda have been substantially facilitated by political relationships and leadership in the United States and Russia. This has included effective relationships between laboratory scientists, program managers and officials in both countries, and high-level political attention from cabinet secretaries, the White House, and the Kremlin. In times when this political leadership has been lacking on one or both sides, progress has lagged and problems have festered. At present, political leadership on this agenda is lacking in both countries. This agenda needs to be carried out on multiple levels, and its technical implementation is essential. But for success to continue, there must be active political engagement at the White House, cabinet, and sub-cabinet political appointee levels in the U.S. government. Similar engagement also must occur in Russia.

Also, in the past, many programs have benefited from the involvement of outside experts in the review of programmatic successes, failures, and implementation strategies. The establishment of an outside advisory board for cooperative nuclear security would be very useful if it were structured in a way to allow for interaction with individual programs and the ability to report to the presidents of both nations. Such a review board might be comprised of a mix of technical, political, and business-economic experts.

One action that could be undertaken immediately is a strategic review of U.S.-Russian cooperative security programs. Such an analysis has not been conducted since the mid-1990s. The Bush administration's recent review of this agenda did examine each program for its merits but it did not include a strategic review of how all the programs, managed by multiple agencies, can or should fit together from the policy perspective of the U.S. Such a review is still needed, so that a strategy for the implementation, harmonization, and leadership of these programs can be made clear in a public manner. A National Security Council task force, a specially appointed special coordinator, or an outside advisory board could conduct the review. In addition, there should be a joint U.S.-Russian strategic plan for how to achieve important and common objectives on an expedited basis. This would provide a roadmap of project prioritization and agreed upon milestones for implementation. A precedent for such a plan can be found in the joint technical programs plans for improving nuclear material security that were developed in the early 1990s by U.S. and Russian nuclear laboratories and the milestone reports required for some programs during the 1990s as part of the U.S.-Russian Commission on Economic and Technical Cooperation.

Underlying these policy issues, there is a need for additional program funding, which would not only accelerate the progress of current programs but also enable new programs to be created. Old ways of thinking that focus just on incremental increases are not enough. A fundamental and high-level commitment by the U.S. and Russian governments is required. If such political demands are made on the agencies of both governments the securing of the remaining stockpiles of WMD materials and reductions in other proliferation dangers can be made in rapid order, and perhaps significantly completed in 2 to 5 years. Over the past two years, four significant reports have been published on where increased funding could accelerate progress. They are:

- Howard Baker and Lloyd Cutler, *A Report Card on the Department of Energy's Nonproliferation Programs with Russia*, January 10, 2001.
- Matthew Bunn, *The Next Wave: Urgently Needed New Steps to Control Warheads and Fissile Material*, Carnegie Endowment for International Peace and the Harvard University Managing the Atom Project, April 2000.
- Center for Strategic and International Studies (CSIS) Panel Report: *Managing the Global Nuclear Materials Threat*, January 2000.
- Congressional Budget Office (CBO) Memorandum: *Cooperative Approaches to Halt Russian Nuclear Proliferation and Improve the Openness of Nuclear Disarmament*, May 1999.

In addition to these overview reports, other analyses have been done of specific programs, their needs and goals, by RANSAC staff and members, and other non-governmental analysts. Some of the key examples of where accelerated or new initiatives could have a significant impact are outlined below.

Funding Options and Recommendations

(1) Expand Fissile Material and Warhead Protection, Control, and Accounting (MPC&A)

This is the primary U.S. program to improve the security of Russia's fissile material and to work with the Russian Navy to protect its nuclear fuel and nuclear warheads. The Bush Administration's FY 2002 request for this work is reduced by almost \$31 million from the FY 2001 funding level to approximately \$139 million. The various authorization and appropriation bills currently provide funding levels that range from the requested amount up to \$186 million. The budget also requested \$65 million for nuclear warhead storage and transportation security in Russia. This request has been approved by the relevant committees, though progress could potentially be accelerated if additional funds were provided and some political problems overcome.

The U.S.-Russian MPC&A program is now entering its eighth year. However, by the end of 2001, security upgrades will have been completed on only about 40 percent of the over 600 metric tons of highly-enriched uranium and plutonium in the former Soviet Union located outside Russia's nuclear weapons stockpile. And completion of the upgrades is not expected before 2010. Expanded funding is necessary to speed the overall pace of the effort, consolidate the nuclear materials into fewer facilities, initiate performance testing of installed security systems under a variety of threat scenarios, and to ensure that the security systems are maintained and sustained.

Assuming that the current budget (FY 2002) comes in at around \$150-160 million, MPC&A could utilize additional increases from \$75

million to about \$425 million per year according to various analyses of the program. At the upper levels of this funding, dramatic actions would have to be taken to include more experts in the implementation of this effort both in the U.S. and Russia. And political agreements would have to be reached to allow the work to occur rapidly. But, if undertaken, these actions could produce dramatic security improvements at many facilities in a relatively short period.

Details on Funding - FY 2001 vs. FY 2002 Request and Recommended Increase

PROGRAM	FY 2001	FY 2002 Request	Recommendation
International Material Protection, Control, and Accounting	\$169.7 million	\$138.8 million	\$225-575 million
Nuclear Warhead Storage and Transportation Security	\$103.7 million	\$65.5 million	\$90-100 million
TOTAL	\$273.4 million	\$204.3 million	\$315-675 million

(2) Improve Russian and FSU Border and Export Controls

This category of activity renders assistance to Russian and FSU customs and border patrol services to improve their ability to detect nuclear materials at ports, airports, and border crossings, and to help countries establish the necessary legal and regulatory framework for an effective nonproliferation export control system. At present the export control system remains very rudimentary and the improvements in border control have been minor. For example, there is not sufficient training for enterprises in export control, the control system itself is fragmented, and border guards have received only minimal training in the detection of dangerous items.

The request in FY 2002 for export control assistance from the State Department for the FSU is \$17 million, but only a portion of this funding is used for Russia. An additional \$4 million was requested for the Department of Energy's Second Line of Defense (SLD) program that is primarily Russia focused. Also, about \$3.5 million of the NIS Assistance/Freedom Support Act is provided for export control in Russia. All relevant Congressional committees have approved the \$4 million for SLD as well as the \$17 million requested for export control development in the State Department's Nonproliferation, Anti-terrorism, De-mining, and Related (NADR) activities budget.

In addition, the Department of Defense funds and manages joint programs with the Customs Department and the FBI which provide equipment and training to law enforcement, customs, and border patrol personnel in the FSU and key transit states to interdict smuggling of WMD materials and technologies. The budget for these activities has been approximately \$4-5 million per year for the past several years, though the Bush budget requests \$9.1 million to expand these activities in FY 2002.

There is considerably more that could be done in the area of export and border controls. One focus should be on border control in the Southern rim of Russia. Recent reports state that the southern routes out of Russia have become more attractive nuclear material smuggling pathways. In addition, there are numerous training programs and equipment purchases that would improve the export control system. This area could utilize an increase of around \$40 million, with \$15 to \$20 million of this provided specifically for Russian export control improvements.

Details on Funding - FY 2001 vs. FY 2002 Request and Recommended Increase

PROGRAM	FY 2001 Allocation	FY 2002 Request	Recommendation
DOE Second Line of Defense	\$2.4 million	\$4.0 million	\$10.0 million
State Department Export Control Assistance (NADR account)*	\$19.1 million(\$1.5 million for Russia)	\$17.0 million(\$1.5 million for Russia)	\$35.0 million(\$5.0 million for Russia)
State Department Export Control Assistance (FREEDOM Support Act Account)*	\$21 million(\$3.5 million for Russia)	\$21 million(\$3.5 million for Russia)	\$40.0 million(\$10.0 million for Russia)
TOTAL	\$42.5 million	\$42.0 million	\$85.0 million

*NOTE: These funding lines provide export control development assistance not only to Russia, but also to other countries in the NIS.

(3) Downsize Nuclear Cities and Prevent Proliferation via Brain Drain

This effort consists of three programs designed to provide alternative employment for WMD scientists. The Initiatives for Proliferation Prevention (IPP) and International Science and Technology Center (ISTC) programs operate in the chemical, biological, missile, and nuclear weapons complexes in Russia and the New Independent States (NIS). The Nuclear Cities Initiative (NCI) program is the only one that seeks to help Russia accelerate the downsizing of its nuclear weapons complex by facilitating the creation of alternative employment of the nuclear scientists and workers that would be displaced during the transition to a smaller nuclear complex.

The nuclear proliferation dangers resulting from the protracted economic deterioration of the Russian nuclear weapon complex are very serious. The complex employs thousands of weapon scientists and is the custodian of hundreds of tons of fissile material and thousands of nuclear weapons. If just a fraction of these people or inventories were diverted, it would create an international security crisis. With these consequences in mind, additional funding could be devoted to the development of more intensive programs aimed at preventing further economic and social breakdown in the Russian nuclear complex and creating new, peaceful pursuits for its employees. Specific activities could include cleaning out and preparation of excess facilities for civilian use and the employment of knowledgeable personnel.

In FY 2002, about \$66 million has been requested for these programs. Congressional committees with jurisdiction over these programs have provided funding varying from the requested level up to \$95 million. But there are many opportunities for additional funding beyond this upper limit. Proposals for expanding these efforts range from an additional \$25 to \$350 million per year. There was even a suggestion in the CSIS report that up to \$5 billion be devoted to this problem over five or more years.

Details on Funding - FY 2001 vs. FY 2002 Request and Recommended Increase

PROGRAM	FY 2001 Allocation	FY 2002 Request	Recommendation
DOE Initiatives for Proliferation Prevention (IPP)*	\$24.1 million	\$22.1 million	\$25-150 million
DOE Nuclear Cities Initiative (NCI)	\$26.6 million	\$6.6 million	\$25-150 million
State Department Contributions to Science Centers (ISTC/STCU)*	\$35.0 million	\$37.0 million	\$40-100 million
TOTAL	\$85.7 million	\$65.7 million	\$90-\$400 million

*NOTE: These two programs focus largely on WMD facilities and institutes, including chemical and biological weapon institutes, outside of the Russian nuclear cities.

(4) Facilitate Fissile Material Disposition and Elimination

This activity area supports the disposal and conversion of fissile material (plutonium and highly-enriched uranium [HEU]) that the United States and Russia have determined to be excess to defense needs, so that it can not be retrieved for weapons purposes.

The elimination of Russian excess highly-enriched uranium is being implemented via a private sector contract between Russia and the U.S. Enrichment Corporation in accordance with the 1993 U.S.-Russian HEU Purchase Agreement (though some \$325 million has been made available by the U.S. government in the past to help facilitate continuation of the agreement). In addition, the Energy Department supports efforts to promote transparency under this HEU Purchase Agreement, though the amounts requested for FY 2002 will support only 18 of 24 special monitoring visits to the four Russian uranium processing facilities. A modest increase is therefore suggested for this program.

One means of strengthening the benefits of the HEU agreement is to accelerate the blend-down of HEU to lower enrichment levels by doubling the rate from 30 to 60 tons per year. An HEU rapid blend-down deal could be very simple and it could be structured so there would be no interference with the ongoing 30-ton-per-year blend-down and sale already underway. The United States would pay Russia its capital and operating costs to blend large additional quantities of HEU to low-enriched uranium (LEU) subject to Russian agreement that this additional LEU would be held off the market in monitored storage cylinders in Russia (to avoid crashing world uranium and enrichment prices with a flood of additional material onto the market). These additional blended stocks could then be metered onto the market at the 30-ton-per-year rate once there was no more material to sell under the original contract. While serving the U.S. national security interest, such a deal would serve Russia's financial interest as well, for with the costs to blend down already paid by the U.S. government, Russia would make even larger profits when the material was eventually sold on the commercial market. This initiative is estimated to cost in the range of \$40-90 million in the first year.

A final HEU related option is to increase the funding for the Reduced Enrichment for Research and Test Reactors (RERTR) program. This effort allows for the design and manufacture of low-enriched uranium fuels that can replace bomb-grade uranium cores in small research and test reactors. This program has been moving slowly in converting Soviet-designed reactors from HEU to LEU and additional funding could accelerate this process.

The primary funding in the budget at present is for the disposition of 68 tons of plutonium declared excess to defense needs in Russia and the U.S. (34 tons per country), and the replacement of the three Russian weapon-grade plutonium producing reactors which are still operating because they provide heat and power for nearby populations.

The plutonium disposition program was structured as a bilateral effort as a means of incentivizing Russia to decrease its massive plutonium stockpile. The budget supports both domestic plutonium disposition and Russia's plutonium disposition. It also supports two disposition tracks - immobilization of the plutonium in radioactive high-level waste and mixing of the plutonium with uranium to create a mixed oxide fuel (MOX) for power reactors. The cost over about 20 years is currently estimated at \$8 billion - \$2 billion for the Russian program and \$6 billion for the U.S. program.

However, funding for the disposal of Russian plutonium was significantly decreased in the FY 2002 budget request. Funding for the disposition of U.S. excess plutonium was slightly increased overall, but questions have now been raised about continued support of the dual track implementation of the disposition program. The budget request cut back significantly the immobilization activities for the U.S. and raised serious questions about the cost of the MOX option. At present the program is somewhat in limbo and the Bush administration has not decided how to proceed.

However, unneeded HEU and plutonium stockpiles should be eliminated. Their continued existence requires continued monitoring and improved security. At the very least funds should be made available to continue down the path of plutonium disposition. The FY 2002 request was for \$248 million. The relevant Congressional committees have either provided the requested amount or increased it up to \$257 million. But this is an insufficient amount to move this process forward. A budget of about \$300-350 million required if reasonably rapid progress is to be made on plutonium disposition.

In addition to plutonium disposition, ending plutonium production for both military and commercial purposes should also be funded. There are three remaining weapon-grade plutonium production reactors in Russia that currently produce approximately 1.5 metric tons of weapon grade plutonium per year. However, the reactors also provide energy to the surrounding towns and in order to shut them down alternative energy sources must be built. Last year the Congress prohibited the use of funds for the construction of fossil fuel replacement energy plants, the Russian and American preferred alternative to the existing nuclear plants, and the House has restated this position again this year. The current estimated cost for the construction of the fossil-fueled replacement plants is on the order of \$420 million. In order for this program to move forward, it is essential that the restriction on the use of funds for replacement energy be lifted and the funding for the replacement energy sources be authorized and appropriated.

Also, funds should be provided to allow Russia and the U.S. to continue their work on an inventory of Russia's plutonium production. This is a \$500,000 program that was eliminated in the FY 2002 budget request. It could profitably be funded at \$2-3 million.

Finally, incentives could be offered to end plutonium separation from civilian power-reactor spent fuel in Russia. Last year \$38.0 million was requested to incentivize Russia to end its continued separation of plutonium from commercial spent nuclear fuel. The Congress approved about \$15.0 million for this purpose. The Bush budget eliminated this effort. This effort should be reconstituted.

A much larger policy and financial question is whether the U.S. should pursue with Russia a large-scale fissile material buyout in Russia. Options in these categories are estimated to range from \$3.5 to \$17 billion spread over several years. But pursuing such a path could avoid costs in several other areas.

Details on Funding - FY 2001 vs. FY 2002 Request and Recommended Increase

PROGRAM	FY 2001 Allocation	FY 2002 Request	Recommendation
U.S.-Russian Fissile Material Disposition (primarily plutonium)	\$226.1 million(\$40 million for Russia component)	\$248.1 million(\$15 million for Russia component)	\$300-350 million
Expanded HEU Rapid Blend-Down	-----	-----	\$40-90 million
Highly-Enriched Uranium Purchase Agreement Transparency	\$14.6 million	\$13.9 million	\$15 million
Reduced Enrichment for Research and Test Reactors(excludes spent fuel return funds)	\$5.6 million	\$5.6 million	\$8 million
Elimination of Russian Weapons-Grade Plutonium Production	\$32.1 million	\$41.7 million	\$41.7 million (lift the restriction on funding fossil-fueled replacement energy sources)
Russian Plutonium Inventory	\$500,000	\$0	\$2-3 million
Ending Russian Civil Plutonium Production	\$15.0 million	\$0	\$38 million
TOTAL	\$293.9 million	\$309.3 million	\$444.7-545.7 million

(5) Promote Warhead and Fissile Material Stockpile Monitoring and Transparency

Facilitating the transparent dismantling of warheads and the monitoring of fissile material stockpiles is an important part of the effort to control nuclear stockpiles. However, despite the widespread belief that the U.S. is helping Russia to dismantle its nuclear warheads, it is not true. It is clear that warheads are being dismantled to provide the HEU for the HEU Purchase Agreement. And at least some of the plutonium from the dismantled weapons will be placed in the Mayak Storage Facility. But there is no dedicated program to assist Russia with warhead dismantlement. Likewise, the U.S. and Russian governments have very little exchange of information on fissile material stockpiles because, in part, the information is still considered classified in Russia. The Department of Energy, however, manages a cooperative R&D effort on ways to enhance transparency in U.S.-Russian warhead dismantlement and fissile material stockpile activities. This effort now primarily focuses on the development of technical approaches to verified warhead dismantlement, but the effort could move to deal with actual dismantlement of excess warheads and perhaps promote greater cooperation on stockpile information exchanges if financial incentives were provided. Best estimates are that it would require \$100-250 million per year to implement a robust warhead dismantlement regime. This figure could grow to \$500 million per year if additional funds were provided to international organizations, such as the International Atomic Energy Agency (IAEA), to help promote fissile material stockpile monitoring.

Details on Funding FY 2001 vs. FY 2002 Request: The Department of Energy requested approximately \$13 million for these activities in FY 2001. Unlike past years, however, the Energy Department FY 2002 budget request did not include a funding line in its detailed justifications for warhead dismantlement and stockpile transparency activities. Instead, the funding is embedded in a larger "Policy and Analysis" line of the DOE Nuclear Nonproliferation budget. However, the DOE request does indicate that support for facilitating transparent irreversible reductions will be reduced by \$2.0 million in FY 2002. The decrease is due to uncertainty of a START III treaty which could include actual elimination of warheads. The activities that will not be funded as a result of the decrease are the preparation of an analysis and preparing the Pantex Plant for warhead elimination and inspection, and studies related to conducting inspections at

Russian nuclear facilities.

Details on Funding - FY 2001 vs. FY 2002 Request and Recommended Increase

PROGRAM	FY 2001 Allocation	FY 2002 Request	Recommendation
Warhead Dismantlement Transparency Activities	Approx. \$13 million	Approx. \$11 million	\$100-500 million

Other Options

In addition to additional funding for existing activities there are also steps that should be considered to address new dangers or facilitate the acceleration of current activities. These include:

Creation of a U.S. - Russian Special Presidential Commission - In the wake of the September 11 events it is not clear that the U.S. and Russian governments have adequately recognized the urgency of accelerating the implementation of the cooperative nuclear security agenda. Consideration should be given to requesting that Presidents Bush and Putin, at the November meeting at President Bush's ranch, create a joint commission to report to them on how to improve and accelerate the implementation of this work. The commission could be headed by high-level government officials, or perhaps more ideally, be chaired by former U.S. and Russian officials or legislators. This could, in essence, be a joint version of the Baker-Cutler process and it would have the benefit of Russian participation. It could also help continue the closer cooperation that has emerged from U.S.-Russian cooperation on anti-terrorism. The commission's scope also could be expanded beyond a focus on nuclear issues to include chemical and biological proliferation prevention. Out of this process could come the creation of agreed milestones and oversight of progress by both sides.

Requirement for a Strategic Plan - The major recommendation of the Baker-Cutler report was that the U.S. government, in consultation with the Congress and in cooperation with Russia, quickly formulate a strategic plan to secure and/or neutralize in the next 8-10 years all nuclear weapons usable material located in Russia and to prevent the outflow of Russian weapons scientists and knowledge. The nearly completed Bush administration review of U.S.-Russian cooperative programs did not include a strategic review of how all the programs managed by multiple agencies can or should fit together. It also is not clear whether such a strategic analysis will be completed by the Bush administration in the future or that a central coordinator will be appointed as requested by Congress. Therefore, there is a need for a report on the President's strategy for the implementation, harmonization, and leadership of U.S.-Russian cooperative programs.

Coordinator of Programs - Since the mid-1990s the Congress has been requesting that the White House appoint a central coordinator for U.S.-Russian cooperative security activities. This request was reiterated in the Baker-Cutler report. The Clinton administration refused to make the appointment and the Bush administration has not given the matter much consideration. But, a central coordinator, or high level White House led committee is needed to ensure that progress continues and that interagency and intergovernmental problems are managed. If the Special Joint Presidential Commission suggested above is created then the U.S. official in charge of it could serve in the coordinator role.

Access to Sensitive Facilities in Russia - Access to sensitive Russian military facilities has become a significant and contentious issue between the U.S. and Russia, affecting the pace of implementation of a number of cooperative programs. One option is to request a multi-agency report on the objectives and strategies for obtaining access to sensitive facilities in Russia and a catalog of successes and failures to date. Another option is to outline the objectives the U.S. should have in seeking to obtain access to sensitive facilities. There should also be an assessment of the non-intrusive means of providing assurance at very sensitive facilities that the work being done is legitimate and implemented correctly, but which would not include direct access. At present there is no written guidance on why access is sought or how it is sought.

Agreement for the Exchange of Classified Information - In the mid-1990s, the Congress provided the executive branch with greater authority to negotiate an agreement for the exchange of classified information between the U.S. and Russia. If such an agreement could be negotiated, the Congress stated at the time, the agreement would not have to be approved by the Congress, as is the normal procedure. This authority has lapsed, as have the negotiations on this agreement. Congressional support for the completion of such an agreement could be useful.

Creation of an Outside Advisory Board - Many programs have benefited from the involvement of outside experts in the review of programmatic successes, failures, and implementation strategies. Consideration should be given to requesting the establishment of an outside advisory board that could interact with individual programs and report to the President on an as needed basis. A mix of U.S. bipartisan and Russian technical, political, and business/economic experts could be an appropriate review board. Utilizing existing institutions should also be considered.

Transparency at Enrichment Plants - At present there are no measures in place to provide assurance that the U.S. and Russia are not continuing to produce highly-enriched uranium, despite the fact that both countries have declared that they are no longer producing HEU for weapons. Funding could be provided for the initiation of such transparency measures in both countries or encouragement provided for the initiation of such discussions.

Debt-For-Security Swap - Modeled on past "debt-for-environment" swaps, this proposal would create a new revenue stream for financing non-proliferation activities by canceling a portion of older Soviet era debt to the U.S. and Europe (some originating with WWII lend-lease) in return for Russia making payments into an auditable fund to finance agreed upon projects.

Spent Fuel Importation -The U.S. should encourage Russia to ensure that a portion of the funds received from the importation to Russia of spent fuel of U.S. origin be utilized for security improvements in Russia. Of course the precursor to any transfer of U.S. origin fuel is a nuclear cooperation agreement with Russia, which should be considered in a new light given the new international realities. Also, the U.S.

should require that Russia not reprocess the spent fuel and thereby increase its large stockpile of vulnerable separated plutonium.

Conclusion

The options and recommendations contained in this paper provide for consideration of a range of increased funding to address well-known nuclear proliferation threats. If viewed from the perspective of minimum and maximum amounts it calls for an increase of approximately \$330 million to \$1.6 billion per year above currently anticipated appropriated levels for key programs. These are relatively small amounts compared to the supplemental funds that have already been appropriated and they are very small when compared to the threat. In addition, the costs could be shared among U.S. allies if necessary, with very little impact on any country's budget. The original Nunn-Lugar initiative was the vision and creation of the U.S. Congress and this laudable leadership is called for again.

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OVERVIEW OF PROJECTED COSTS FOR INCREASED U.S.-RUSSIAN NUCLEAR NON-PROLIFERATION COOPERATION IN THE WAKE OF THE SEPTEMBER 11, 2001 TERRORIST ATTACKS ON THE UNITED STATES

(All amounts in millions unless otherwise noted)

PROGRAM	Funding Range in Current FY 2002 Authorization and Appropriation bills	Recommendation For FY 2002	Minimum-Maximum Additional Funding Required*
<i>Expand Security of Weapons-Usable Nuclear Materials</i>			
International Material Protection, Control, and Accounting (DOE)	\$138.8-186.0	\$225-575	+\$39.0-436.2
Nuclear Warhead Storage and Transportation Security (DOD)	\$65.5	\$90-100	+\$24.5-34.5
<i>Subtotal</i>	<i>\$204.3-251.5</i>	<i>\$315-675</i>	<i>+\$63.5-470.7</i>
<i>Improve Russian and FSU Border and Export Controls</i>			
Second Line of Defense (DOE)	\$4.0	\$10	+\$6
Export Control Assistance (State/NADR)	\$17.0	\$35	+\$18
Export Control Assistance (State/FREEDOM Support Act)	\$21.0	\$40	+\$19
<i>Subtotal</i>	<i>\$42.0</i>	<i>\$85</i>	<i>+\$43</i>
<i>Downsize Nuclear Cities and Prevent Proliferation via Brain Drain</i>			
Initiatives for Proliferation Prevention (DOE)	\$22.1-37.1	\$25-150	+\$0-127.9
Nuclear Cities Initiative (DOE)	\$6.6-21.1	\$25-150	+\$3.9-143.4
Science Centers, ISTC/STCU (State)	\$37.0	\$40-100	+\$3.0-63.0
<i>Subtotal</i>	<i>\$65.7-95.2</i>	<i>\$90-400</i>	<i>+\$6.9-334.3</i>
<i>Halting Russian Production and Facilitating Disposition of Weapons-Usable Nuclear Materials</i>			
U.S.-Russian Fissile Material Disposition (DOE)	\$248.1-257.1	\$300-350	+\$42.9-101.9
HEU Rapid Blend-Down	-----	\$40-90	+40-90
HEU Purchase Agreement Transparency (DOE)	\$13.9	\$15.0	+\$1.1
Reduced Enrichment Research and Test Reactor (DOE)	\$5.6	\$8.0	+\$2.4
Elimination of Russian Weapons-Grade Plutonium Production	\$41.7	\$41.7	(lift the funding restriction)
Russian Plutonium Inventory	\$0	\$2-3	+\$2.0-3.0

Ending Russian Civil Plutonium Production	\$0	\$38	+\$38.0
<i>Subtotal</i>	<i>\$309.3-318.3</i>	<i>\$444.7-545.7</i>	<i>+\$126.4-236.4</i>
<i>Promoting Warhead and Stockpile Transparency:</i>			
Warhead Dismantlement Transparency Activities (DOE)	Approx. \$11.0	\$100-500	+\$89.0-489.0
<i>Subtotal</i>	<i>Approx. \$11</i>	<i>\$100-500</i>	<i>+\$89.0-489.0</i>
GRAND TOTAL	\$632.3-718.0 million	\$1.03-2.2 billion	+\$328.8 million -- \$1.57 billion

*The maximum increase was arrived at by subtracting the minimum amount currently authorized or appropriated from the maximum amount recommended, while the minimum increase was calculated by subtracting the maximum amount authorized or appropriated from the minimum amount recommended, thereby providing for a full range of funding options.