In 1991, Congress created a fledgling effort aimed at controlling the nuclear chaos that threatened to erupt from the newly disintegrated Soviet Union. Then known as the Nunn-Lugar program, this initiative has grown over the past 10 years into a cooperative, multipronged attack on proliferation problems in Russia and the independent states. At a cost of about $1 billion per year, this preemptive threat reduction represents a small investment of U.S. funds that has paid, and continues to pay, significant dividends for international security.

However, the cooperative security effort is now facing serious political, bureaucratic, and implementation challenges that are encroaching on progress and threatening to smother future cooperation. Major issues, like the Russian reaction to a U.S. decision to abandon the Anti-Ballistic Missile (ABM) Treaty or the U.S. response to Russia's continued military cooperation with Iran, could destroy this delicate agenda.

These and other issues will require President-elect George W. Bush and Russian President Vladimir Putin to make a judgment about the importance of the cooperative security agenda and a choice about its future.

Down one path is continued, though undoubtedly incremental, progress that ultimately will change the face of the nuclear danger if pursued with perseverance and a spirit of cooperation and compromise by all parties. Down the other path is the threat that resurgent security forces, festering political insecurity, and deepening distrust will choke off meaningful cooperation and with it this unique opportunity to reduce the danger of nuclear proliferation. The choice that ultimately is made will signal to the world how the United States and Russia view the role of nuclear weapons in the new millennium and indicate whether the Cold War is a historical remnant or just in remission.

A Unique and Sensitive Agenda

The cooperative security agenda, while addressing biological and chemical weapon dangers, is primarily focused on containing the threat of nuclear proliferation from Russia. The scope of these activities can generally be grouped into five categories: stabilizing, transforming, and downsizing the Russian nuclear weapons complex; securing Russian nuclear material, warheads, and technologies; limiting production of fissile material; disposing of excess fissile material; and establishing transparency in the nuclear weapons reduction process. Virtually all of these collaborations were unthinkable during the Cold War. (For a complete listing of U.S.-former Soviet Union cooperative programs, see table below.)

Though a number of the cooperative security programs are codified in some type of U.S.-Russian agreement (most signed at the ministerial level), many of these activities are not governed by the formal arms control agreements that were the hallmark of U.S.-Soviet interactions. This less formal approach may make the continuation of the programs in a crisis more problematic, but it also has created an important new thread in the fabric of U.S.-Russian relations, one that has provided a key underpinning during times of tension.
Despite its positive aspects, the agenda itself is very sensitive. Many projects touch on highly classified military activities. For example, there is a significant effort to improve the security of Russia's bomb-grade nuclear material, the vast majority of which is stored in the closed cities of the nuclear weapons complex. During the Cold War, these cities were among the most secretive locations in the Soviet Union. Today, U.S. specialists travel to them on a regular basis, though these visits remain of special concern to Russian security forces.

The sensitivity of the cooperative agenda transcends its actual programmatic components and encompasses intangible issues like recognizing the Russian need to maintain a feeling of national pride while participating in threat reduction efforts and the need to sustain mutual respect and trust among the Russian and U.S. participants. Without Russian participation, the cooperative nuclear security agenda would wither and die.

To facilitate implementation, an effort has been made to treat this cooperation as a primarily technical matter. This allows specialists of like mind, such as nuclear scientists or military officers, to interact on an equal level. This approach has gradually opened up the U.S.-Russian nuclear relationship in unprecedented ways.

But, it is important to remember that the openness and access ultimately were made possible by political leaders with the vision and commitment to clearly see the benefits of this cooperation and the courage to make the difficult decisions to support it even when strong bureaucratic actors opposed them.

Up to now, no crisis in U.S.-Russian relations has significantly derailed the cooperative security agenda. Even the damaging rift that opened over the bombing of Yugoslavia only slowed the pace of some activities and led to the temporary suspension of some low-level projects on the Russian side—it did not result in the elimination of any of them. However, U.S.-Russian relations are deteriorating, and as new and controversial issues emerge, the chances for this work to be curtailed have increased.

**Political Deterioration and Linkages**

The cooperative security agenda was initiated during George Bush's presidency, but most of its development was the product of the Bill Clinton-Boris Yeltsin years. Their relationship was well known for its comity, and Yeltsin often responded positively to the many proposals of the Clinton administration to increase cooperation on nuclear security and transparency issues. During the mid-1990s, there were many new proposals for cooperation and many high-level political discussions of this agenda. This high-level approval was necessary to provide cover and impetus to the Russian bureaucracy to participate in many of the programs. Without this political stimulation, some key parts of the Russian bureaucracy might have been content to limit cooperation to non-sensitive issues. However, the political circumstances that supported the initiation and growth of this agenda have dramatically changed, ushering in a new era of U.S.-Russian relations. Unfortunately, this new relationship may be more prone to undermining cooperation than promoting it.

**Russian Reservations**

Russia derives significant benefits from cooperative security activities, as a number of ministries and numerous weapons scientists receive vital financing to implement cooperative programs. However, there is a growing suspicion about cooperative activities in some quarters of Russia, and a number of concerns about the future of the cooperative security agenda have arisen. These include questions about the penetration of U.S. specialists at sensitive facilities, the true financial benefit of the
cooperation, and the political implications of continuing the cooperation with a new Bush administration that seeks a more distant, and potentially more hostile, relationship with Russia. In the Russian view, one serious concern is the possible, though unlikely, decision by the United States to return to a limited nuclear testing regime. It concerns the Russians that the United States has not ratified the Comprehensive Test Ban Treaty (CTBT) and that President-elect Bush does not support the treaty. Also, some U.S. nuclear weapons scientists have been agitating for a return of testing. U.S. testing could, of course, loose the pent-up demands to test in the Russian nuclear weapons establishment and set off an action-reaction cycle that would destroy more than the cooperative security agenda.

Perhaps more significant would be a U.S. decision to build a ballistic missile defense system outside the scope of the ABM Treaty and over the objections of Russia. Such action is being contemplated by the new Bush national security team. This would almost certainly cause a wholesale re-evaluation of the U.S.-Russian nuclear relationship and the possible reversal of existing arms control agreements, undermining the foundation upon which cooperative security programs are built and possibly leading to the suspension of some, or all, forms of cooperation.

There have not yet been specific threats against the cooperative agenda as part of the potential Russian reaction to a U.S. decision to abrogate the ABM Treaty. However, Russia's commander of the Strategic Rocket Forces, Vladimir Yakovlev, has stated that Russia would consider increasing the number of warheads on its intercontinental missiles (an action inconsistent with START II) and possibly withdraw from the Intermediate-Range Nuclear Forces Treaty. Putin, in a May speech to the Duma, said that if "the United States decides to destroy the 1972 ABM Treaty...we will withdraw not only from the START II treaty but also the whole system of treaties on limitation and control of strategic and conventional weapons."

Putin's threats should not be completely dismissed as rhetoric, as he has been very shrewd in managing Russia's nuclear policy. He supported the ratification of START II and then challenged the United States to agree to deeper strategic nuclear force cuts to a level of about 1,500 warheads—a proposal that U.S. officials rejected despite its international resonance.

Putin endorsed the ratification of the CTBT, an action that the United States had been urging on Russia for years. But he did so in the wake of the Senate defeat of the treaty, turning the tables and putting the United States on the defensive.

He has also engaged in a diplomatic offensive, aimed at NATO allies, against the proposed U.S. national missile defense and has been successful in generating support for continued adherence to the ABM Treaty.

On the cooperative security agenda, Putin has indicated support for those programs which bring financial benefit to Russia, but he has made no significant policy statement on his view of the importance of overall U.S.-Russian non-proliferation cooperation. This allows him to reap the benefits of the cooperation while satisfying the concerns of the domestic security forces.

For example, Putin supports the highly enriched uranium (HEU) purchase agreement. This agreement provides Russia significant funds to blend-down its weapons uranium. In fact, the $12 billion that Russia is scheduled to receive under the HEU purchase agreement dwarfs all other U.S. funding in this area. Further weapons reductions and dismantlements (in line with Putin's 1,500-warhead proposal) could free up even more weapons uranium for sale under an expanded HEU deal.

He also has made supportive statements about the need to dispose of excess plutonium. This is a financial windfall for Russia as the Western nations have pledged to build a facility that could convert the plutonium into reactor fuel. And Russia may be able to lease the fuel to European nations.

Putin has also spoken out in favor of the need to shrink the Russian nuclear weapons complex. This is another cost-saving measure, though he emphasized the need for Russia to retain strong nuclear weapons capability at the end of the process.
Putin, however, has infused life into once moribund security organs, which have placed pressure on the ministries cooperating with the United States to demonstrate the benefits and the legal basis for the cooperation. The Russian bureaucracy has responded with caution and, in the future, the benefits of this agenda may be limited if controversial new activities need to be negotiated through the formal arms control process.4

The Russian parliament may support a more cautious approach to cooperation that allows the financial support to flow but sensitive activities to slow. The Russian Duma in particular has raised questions about some aspects of the cooperative agenda, though it has not been outwardly obstructionist. For example, the Duma has not ratified the 1999 protocol extending the Nunn-Lugar umbrella agreement, as required under Russian law, but it has not impeded the collaborations governed by this agreement either. Obviously, the parliamentarians are influenced by the deteriorated U.S.-Russian relationship and the suspicions of the security forces, but they have perhaps more important considerations. Their constituents may blame Washington for the depressing economic condition of Russia and be generally hostile to cooperation with the United States.

**U.S. Frustration**

For the past decade, the United States has clearly articulated that it is engaged in cooperative security activities because they serve its security interests. But this attitude may be changing, particularly because of Russia's continuing relationship with Iran in the ballistic missile, conventional weapon, and nuclear spheres. The U.S. bureaucracy, which in some quarters seems to be tiring of the effort required to make many of the cooperative programs work, now seems bent on linking U.S. participation in cooperative programs to the Russian-Iranian relationship.

A major difficulty concerns Russia's continued cooperation with Iran on the completion of the Bushehr nuclear power plant. This plant, begun by the Shah and then abandoned, has been under refurbishment by Russian specialists in an effort to construct a functioning 1,000 megawatt light-water reactor. The U.S. government is convinced that the process of rebuilding the plant and associated activities is aiding Iran's nuclear weapon ambitions. The Russians deny the charge, but it is clear that before the United States began to emphatically oppose the project the Russians seemed willing to provide uranium mining and enrichment assistance, which would have had clear proliferation benefits for Iran.

While the fight over Bushehr has resulted in an informal stalemate between the two countries that has in essence allowed Bushehr to continue but has forbidden expansion, rumors and assertions continue to be made that more dangerous cooperation is occurring.

Recently, a controversy erupted over the proposal of Russian officials to ship a laser isotope separator to Iran. Such equipment can be useful in uranium enrichment. Currently the shipment is frozen, but it may not be for long. New concerns also include Russia's decision to renege on a U.S.-Russian agreement to limit the sale of conventional weapons to Iran and a possible decision by Russia to construct additional nuclear reactors in Iran.

Frustrated by these activities, U.S. government officials are for the first time considering moving beyond institute-specific cutoffs in cooperation and curtailing or possibly suspending some cooperative nuclear security programs with Moscow. In fact, the U.S. bureaucracy may have already succeeded in pushing for a ban on new activities until the United States receives satisfaction on Iran.

For example, in January 1999, the United States imposed economic sanctions against three scientific institutes for providing sensitive missile and nuclear assistance to Iran. The effect was that negotiation was suspended on at least one significant cooperative security project at a prominent Russian nuclear institute. This incident made clear that the United States was willing to take the first steps toward linkage by cutting off cooperation with specific institutes based on Russian-Iranian activities even if it meant delaying a program important to its security.
In 2000 the United States took another step in this direction and conditioned funding for a new project desired by the Russians for the development of a proliferation-resistant nuclear fuel cycle to the termination of Russian nuclear cooperation with Iran beyond Bushehr. Ultimately, Congress decided not to fund the project because of concerns about continued Russian-Iranian cooperation.

Continuing to hammer away at Russia's relationship with Iran may be counterproductive for a number of reasons, including the fact that withholding support for cooperative programs could actually increase Iran's chances of obtaining weapons material from Russian facilities and accelerate its weapons objectives.

There also are some technical arguments that counter the U.S. position. For example, some argue that Russian reactor assistance will not materially aid Iran's nuclear weapon aspirations because the reactor will be under International Atomic Energy Agency safeguards. Also, Moscow asserts that the power level of the controversial laser is below the threshold specified by the Nuclear Suppliers Group and that its transfer is therefore not formally banned. Finally, Russia's relationship with Iran has deep roots and it provides Russia with significant military, diplomatic, and economic benefits.

If explicit political linkage is made between the continuation of cooperative programs and Russia's relationship with Iran, it would be a potent sign that the safe harbor cooperative security programs have inhabited may no longer be off limits. The creation of linkages could begin a death spiral for the cooperative agenda, and once destroyed, it is not clear that it could be reconstructed.

The Bush Challenge

The incoming Bush administration now has the opportunity to rescue this agenda but it has not sent a completely clear signal on how it might approach the task. On the one hand, during the campaign George W. Bush made positive statements about continuing the cooperative nuclear security agenda. In a November 1999 foreign policy address, he singled out the Nunn-Lugar program as a greater priority than START II ratification in Russia and applauded the security improvements that are being made at Russian nuclear facilities. He also stated that as president he would ask the Congress to substantially increase U.S. assistance to Russia to allow for the dismantlement of its nuclear weapons as rapidly as possible.

On the other hand, the Bush campaign made a point of attacking the Clinton-Gore approach of active engagement with Russia. In his speech accepting the nomination as secretary of state, General Colin Powell stated that Russia is not an enemy of the United States, but not yet a strategic partner. The incoming national security adviser, Condoleezza Rice, has stated that the United States should consider withdrawing from its engagement in Russian domestic politics. However, dealing with Russia from arms length may not be conducive to cooperative security progress.

For example, it is not apparent that U.S.-Russian non-proliferation cooperation can be divorced from Russian domestic realities. Russia's proliferation problems are directly fueled by its financial difficulties. Eliminating U.S. support for domestic economic aid to Russia could plunge the nation back into financial crisis, especially if oil prices drop, which could in turn reverse the non-proliferation gains of the last decade.

Perhaps more importantly, because of the economic dimension of the proliferation danger, a reduction in U.S. financing for nuclear security in Russia could lead to a greater reliance than currently exists on exporting dangerous technologies to third countries to generate cash. This would facilitate the spread of proliferation problems globally and further increase tensions between the United States and Russia.

One possibility is that the Bush approach to Russia could mutate after he takes office, much as Clinton position on China changed. During the 1992 campaign, Clinton constantly attacked the Bush administration's position on China. But once in office, he recognized the consequences of allowing China to drift away from U.S. influence and ultimately sought accommodation with Beijing.
Congress may well welcome a harder line toward Russia. In the late 1990s, Congress seems to have become increasingly hostile toward Russia for a number of reasons: the Republican control of the House and Senate has strengthened isolationist inclinations; the end of the Cold War has left some politicians seeking enemies; reports of corruption in Russia are rampant; many believe that Russia's export policies on missiles, conventional weapons, and nuclear technologies have promoted proliferation among America's opponents; Russia has overtly continued intelligence gathering in the United States, as exemplified by the bugging of a State Department conference room; Russia has opposed what many consider important U.S. actions and interests; and it has prosecuted a brutal war in Chechnya.

All of these issues affect the atmosphere in which the Congress considers the proliferation dangers that Russia poses. In general, however, despite reservations about Russia's transition and its domestic and international activities, Congress has been willing to approve the funds necessary to implement existing programs. And while Congress has instituted new reporting requirements and fences on some expenditures, it has exempted these programs from the most onerous hurdles placed in front of economic aid to Russia. But it is important to note that, while most existing cooperative programs are supported, new proposed activities face significant scrutiny and opposition in some key quarters of Congress. However, the even division among Republican and Democratic senators and the tight Republican margin in the House may ease congressional skepticism in the coming year.

Implementation Conflicts

In tandem with the problems caused by U.S.-Russian relations, the implementation of the cooperative programs has run into difficulty. Currently, there are three major issues that need immediate attention: the question of access to facilities, the Russian share of expended funds, and the lack of a cohesive strategy.

Since the start of Nunn-Lugar, the United States has been insisting on access to Russian facilities, claiming that it needs to make sure its funds are being spent appropriately. The Pentagon's Cooperative Threat Reduction program requires audits and inspections by U.S. officials. The Department of Energy programs traditionally employed a more flexible but effective standard, but recently, the United States has become more rigid and very insistent on access to sensitive Russian facilities. The Russians have resisted because they fear U.S. intrusion could compromise classified information and facilitate spying and because they already have less access to U.S. facilities than the Americans do to Russian facilities.

It is not completely clear why the U.S. position has become so hardened on the access issue, but it is clear that a balanced solution to the problem must be found. The United States has legitimate requirements to be assured that its funds are being used properly and Russia has legitimate security concerns. But a continued impasse will become destructive to the interests of both sides. Fortunately, there is some recent evidence that flexibility is creeping back into favor, though no concrete progress has yet been demonstrated.

The access issue is also related to the percentage of U.S. funds for cooperative security programs that actually are transferred to Russia. Moscow continually complains that not enough money is spent in Russia—a serious problem given the country's financial crisis.

Independent analysis has supported some of the Russian complaints. For example, the General Accounting Office (GAO) found that 57 percent of the funds appropriated to the Department of Energy (DOE) to increase the security of Russian fissile material were spent in the United States.

There are a number of reasons why the financial disparity between the United States and Russia exists. Some internal resistance in the bureaucracy, particularly within the Defense Department, to making money available to Russia was related to the original Nunn-Lugar legislation's "Buy American" provisions. Also, in some cases where there is a desire to purchase Russian equipment and services for specific missions, problems have arisen that take time to solve, for example,
qualifying certain equipment for the mission. Finally, U.S. contractors and national laboratories are important but expensive partners with the government in the implementation of these programs.

It is obviously in the U.S. interest to devote more funds to Russia. It is often less expensive for Russians to do certain kinds of work and, more importantly, it provides financial incentives that facilitate the cooperation—there is some evidence (for example, from the HEU purchase agreement) that increasing the flow of funds to Russia can ease access concerns. Fortunately, change is underway as U.S. agencies respond to GAO recommendations to increase the percentage of their spending in Russia. And Congress, determined to ensure that more is spent in Russia, has now has begun to limit how much of these funds can be spent in the United States.

A third major problem is that the United States lacks a cohesive strategy for tackling the broad span of Russia's proliferation problems—the last comprehensive U.S. non-proliferation policy document was completed in 1993. This lack of strategy encourages bureaucratic infighting, promotes programmatic overlap, and limits needed budgets.

Entreaties to produce a new integrated strategy focused on Russia's proliferation problems have been resisted inside the White House and the departments, which prefer to maintain strict control over their programs. Even some Russians have indicated a willingness to think about a new integrated strategic approach, perhaps one that includes European governments and non-governmental organizations.  

The lack of strategy is partly caused by the lack of a clear coordinator for cooperative security activities. There has never been an National Security Council staff person who had the cooperative agenda as his main responsibility, despite congressional support for such a position. The secretary of defense must deal with the far-flung operations of the U.S. military services, and the roughly $400 million spent per year on the Cooperative Threat Reduction program is only a bit more than one-tenth of one percent of the overall defense budget. Similarly, the secretary of state has many international concerns and the financial stake of that department in the cooperative programs is much smaller than other agencies.

So, almost by default, in the past it has fallen to the secretary of energy to serve as the most active promoter and defender of the cooperative agenda inside the U.S. government—partly because the secretary's international role is somewhat limited, though very focused on nuclear issues, and also because the DOE budget for cooperative security activities is substantial. But the Energy Department is not as powerful as the departments of Defense or State, and recently it has been consumed with security scandals. So the ability and the power of the energy secretary to serve in this role has been limited, particularly in the second Clinton administration.

Recommendations for Renewal

Despite the problems and politics, it is important for the United States and Russia to remain engaged on the cooperative security agenda. But Washington and Moscow must recognize that the agenda's energy is flagging and that steps must be taken to renew its vitality and ensure its future effectiveness:

- Review all of the cooperative nuclear security programs to assess their strengths, weaknesses, successes, and failures. The focus should be on eliminating overlap, identifying lessons learned, and determining how to use this knowledge to solve current and future problems. This review should include the views of specialists outside the governments who may have a broader perspective on this cooperation than the government program managers. This review should also include an examination of the intangible benefits such as the maintenance of relationships that never existed before and the difficulty of rebuilding the agenda if it is somehow destroyed. Both governments should consider creating a permanent
advisory board that could assist with the agenda.

- Integrate all of the programs into a cohesive strategy. There was a time when programs needed to be allowed to grow independently in order to facilitate progress, but the artificial separation between these programs needs to be ended. In the United States, all of these efforts should be guided by a new Presidential Decision Directive that can bring order and facilitate progress. Congress desires a more cohesive explanation of how all the pieces fit together, and there are synergies among the programs that are being missed because of the separation. It is not necessary to consolidate all of the activities in one or two agencies. What is more important is that the work takes place as part of an integrated security strategy with strong and enlightened high-level leadership.

- Ban linkages and conditionality to other political disputes. No step has yet been taken down the slippery slope of linking continued funding or participation in cooperative security programs to other political disputes. But this situation could change. The U.S. bureaucracy is inching in this direction on Iran, and it could take advantage of potential early confusion in the Bush administration to make this connection. The Russians are also considering possible responses to the U.S. push for a new missile defense system, including curtailment of cooperation. For almost a decade these efforts have been divorced from political disagreements between the United States and Russia, and violating this protected status could cause the elimination of the entire agenda.

- Generate new political leadership. The significant expansion of the cooperative security agenda and the progress that has been made on it have been substantially facilitated by political relationships and leadership in the United States and Russia. In times when this political leadership has been lacking on one or both sides, progress has lagged and problems have festered. This agenda needs to be carried out on multiple levels and the technical implementation is essential. But, if success is going to continue, the management of the effort must not be left only to the technocrats and bureaucrats. There must be active political engagement at the White House, cabinet, and sub-cabinet levels in the U.S. government and in Russia as well. It could also be beneficial if European governments and Japan showed greater political interest in this work. Leadership from these quarters could buffer the cooperative security agenda during periods of severe U.S.-Russian conflict and provide a safety net that would allow for continued progress.

- Expand the funding and scope of the agenda. At current funding levels, the effort to improve the security of Russia's nuclear knowledge, warheads, and fissile material is significant but inadequate given the proliferation danger. Budgets should be at least doubled. Current activities could use the additional funds to accelerate progress and new initiatives could be created. The scope of expanded activities that could be undertaken is quite substantial. And some new activities could expand the agenda into currently uncharted waters—for example, cooperating on improving the safeguarding of deployed, missile-based nuclear weapons. This could decrease the chances of accidental or unauthorized launch of weapons on hair-trigger alert.

The cooperative security agenda has grown from a good idea into a significant set of activities. Political change in the United States and Russia is raising questions about the future of this work and its path forward is not clear at this time. What is clear is that there are severe consequences for eliminating or slowing major parts of this agenda. Russia controls the vastest nuclear complex, maintains the biggest nuclear arsenal, and possesses the largest stockpile of fissile material on earth. These assets are currently not adequately secure and this poses an obvious threat to international security. A major security crisis would result if just a small fraction of the weapon and material inventories leaked out. Effectively reducing and protecting these inventories, redirecting major parts of the weapons complex, and preventing sensitive scientific and technology leakage is, and must remain, a top U.S. and Russian security priority.

**U.S.-Former Soviet Union Cooperative Security Programs**

**Department of Defense Programs**

**Cooperative Threat Reduction Programs**

*Strategic Offensive Arms Elimination:* This project is underway in both Russia and Ukraine. In Russia, it will continue the dismantlement and destruction of Russian ballistic missile submarines, submarine-
launched ballistic missiles, land-based intercontinental ballistic missiles (ICBMs), and ICBM silos. As part of this effort, Congress has provided funding to support the dismantling and disposal of nuclear submarines and submarine reactors in the Russian Far East. Funding for the Ukrainian component will be used to continue the elimination of SS-24 ICBMs and silos and Blackjack and Bear heavy bombers and associated air-launched cruise missiles. A substantial portion of the work to eliminate SS-24 silos and heavy bombers has already been completed.

Nuclear Weapons Storage Security: This project procures and delivers security enhancements to protect nuclear weapons at Russian storage buildings and facilities, assists in the development of an automated warhead inventory and control system, and provides polygraphs and other equipment to assess the reliability of personnel responsible for warhead security.

Nuclear Weapons Transportation Security: Russian nuclear warheads are shipped over thousands of kilometers each year from deployed locations to storage sites and dismantlement facilities. This project assists in the maintenance of high-security railcars and provides security force training equipment, as well as other communications, diagnostic, and emergency equipment.

Mayak Fissile Material Storage Facility Construction: Assistance is being provided for the construction of an advanced, high-security fissile material storage facility in Mayak, Russia, that will store material from approximately 12,500 dismantled nuclear warheads.

Mayak Fissile Material Storage Facility Transparency: This effort aims to achieve agreement with Russia on transparency measures to verify the weapons origin of material stored at the Mayak storage facility.

Preparing Dismantled Warheads for Storage: This program supports the provision of fissile material storage and transportation containers that will facilitate the packaging of plutonium and highly enriched uranium from dismantled Russian warheads in safe and secure containers before they are delivered to the Mayak fissile material storage facility.

Plutonium Production Reactor Core Conversion: Russia continues to operate three weapons-grade plutonium production reactors (two in Seversk, one in Zheleznogorsk) because they provide heat and electricity for nearby cities. The United States and Russia have agreed that Moscow must end the plutonium production and shut down the reactors when replacement energy sources have been constructed. This program, carried out in cooperation with the Energy Department, provides assistance that will be used to either convert the reactors' cores (to allow them to operate but not produce weapons-grade plutonium) or replace the reactors with fossil fuel energy sources.

Chemical Weapons Security and Destruction: The United States funds the implementation of safety and security improvements at Russian chemical weapons storage sites. It has funded the design of a pilot chemical weapons destruction facility in Shchuch'ye, Russia, that would have allowed Moscow to eliminate half of its most modern artillery- and rocket-launched chemical weapons.

Biological Weapons Proliferation Prevention: This project supports joint research with the United States at former Soviet biological weapons institutes on biological defense, the enhancement of physical security at former Soviet facilities containing biological agents of concern, and the elimination of biological warfare infrastructure.

Defense and Military Contacts: This project nurtures the relationship between the U.S. and Russian military communities, assists Russia in restructuring and downsizing its defense establishment, encourages support for reform, and helps the Russian military to better understand Western society, including civil-military relations.

Other Department of Defense Activities
Arctic Military Environmental Cooperation: This joint U.S.-Russian-Norwegian program helps mitigate environmental damage caused by military operations in Russia's Arctic region, concentrating on areas such as radioactive waste processing, spent nuclear fuel storage, and radiation safety and monitoring.

International Counterproliferation Program: This program represents a merger, effective FY 2001, of two counterproliferation programs—one run by the Defense Department and the FBI, the other operated by the Defense Department and Customs Service. These programs provide training, technical assistance, and equipment to law enforcement, border, and customs officials in former Soviet states to deter, detect, and prevent smuggling of weapons of mass destruction.

Department of Energy Programs

Material Protection, Control, and Accounting: This program provides for continued installation of security, control, and accounting equipment to help safeguard the 650 metric tons of weapons usable nuclear materials stockpiled in former Soviet states. It also finances the consolidation of nuclear materials into fewer sites and buildings, eliminates some highly enriched uranium (HEU) by diluting it to non-weapons grade material, completes security upgrades on nuclear material transport trucks and railcars, and conducts training and education projects. Program funding is also used to increase security at Russian Navy nuclear sites.

Nuclear Cities Initiative: This initiative seeks to help downsize and redirect the Russian nuclear weapons complex by developing alternative employment for 30,000-50,000 Russian nuclear weapons scientists and technicians at 10 "closed cities."

Initiatives for Proliferation Prevention: This program facilitates commercial ventures between U.S. businesses and former Soviet chemical, biological, and nuclear weapons institutes. About 70 percent of the funding is used to engage scientists and workers from former Soviet nuclear institutes in commercial projects, while the remaining 30 percent is used to develop commercial activities for scientists from former Soviet chemical and biological weapon institutes.

Export Control Development and Second Line of Defense: These endeavors assist former Soviet states in establishing and enhancing nuclear material and technology export control systems by helping officials establish the necessary legal and regulatory framework and by training and equipping customs service and border police to detect nuclear smuggling.

BN-350 Project: This project packages spent fuel containing weapons-grade plutonium at Kazakhstan's BN-350 breeder reactor on the Caspian Sea and supports shipment of the packaged material to a more secure site at Semipalatinsk, in northern Kazakhstan.

Highly Enriched Uranium Purchase Agreement Transparency: The United States funds activities to provide confidence that Russian low-enriched uranium sold to the United States Enrichment Corporation under the Highly Enriched Uranium Purchase Agreement (see below) is derived from HEU removed from dismantled Russian weapons.

Reduced Enrichment for Research and Test Reactors: This program seeks to help Russia convert its research and test reactors so they use low-enriched uranium fuel instead of HEU fuel. Support aids in developing the replacement low-enriched uranium fuel and preparing the reactor cores to accommodate the new fuel type.

Plutonium Disposition: This program will facilitate the final disposition of 34 tons of excess Russian and U.S. weapons-grade plutonium. Multilateral financing, including U.S. funding, will assist Russia in constructing a warhead disassembly and conversion facility and a mixed-oxide fuel fabrication facility. Also, the program helps coordinate and provide technical support to Russian disposition plans.

Warhead Dismantlement Transparency: This initiative is designed to sustain a technical dialogue between U.S. and Russian experts on nuclear warhead dismantlement processes and technical
approaches for a potential warhead dismantlement monitoring regime.

Long-Term Non-Proliferation Initiative for Russia: The Department of Energy requested $100 million in FY 2001 for this program, which includes several new projects. Congress agreed to provide funding for the following activities:

Prevention of Civil Plutonium Separation: Designed to stop further civil plutonium reprocessing at Russia's RT-1 plant at Mayak (where about one ton of plutonium is annually separated from used nuclear reactor fuel), this project will help design, license, and construct a dry storage facility for spent nuclear fuel.

Spent Fuel Storage and Repository Cooperation: This project will support initial research on a geologic repository in Russia to dispose of high-level radioactive waste and spent fuel. A center for geological repository technology will be established in Russia to develop a scientific plan, conduct feasibility studies, and perform site selection assessments. In addition, funds may support feasibility studies for a spent fuel storage facility if Russian law is amended to allow the import of foreign spent nuclear fuel.

Research Reactor Spent Fuel Acceptance Program: This program will facilitate Russian acceptance of HEU fuel from Soviet-designed and supplied reactors outside of Russia. Funds will be used to conduct negotiations with participating countries, conduct vulnerability assessments of HEU stockpiles in those countries, assess fuel loading and transportation needs, procure equipment, assist in packaging and transport, and help initiate a pilot fuel loading and shipment project at a high-priority reactor.

Material Protection, Control, and Accounting and the Nuclear Cities Initiative: Congress increased funding to broaden material protection, control, and accounting activities (including expanded activities at Mayak and development of a plutonium stockpile registry) and to expand the Nuclear Cities Initiative to facilitate an accelerated closure of the Russian nuclear weapon production plants at Avangard and Penza-19.

State Department Programs

Science Centers: The International Science and Technology Center (ISTC) in Moscow and the Science and Technology Center of Ukraine provide short-term grants and contracts that enable former Soviet weapon scientists and experts to direct their efforts toward civilian activities.

Export Control and Border Security Assistance: This effort supports a range of efforts in former Soviet states, including improving export control institutions, infrastructure, and legislation; facilitating implementation of export control systems related to weapons of mass destruction (WMD) regimes; and enhancing WMD smuggling detection and interdiction capabilities.

Redirecting Biological Weapon Scientists: This program, implemented primarily through the ISTC, increases scientific collaborations and provides assistance to redirect scientists in former Soviet biological weapons facilities to commercial, agricultural, and public health work. The State Department implements this program in collaboration with the Departments of Agriculture and Health and Human Services (including the Centers for Disease Control and Prevention, National Institutes of Health, and the Food and Drug Administration).

Non-Government Programs
Highly Enriched Uranium Purchase Agreement: This program, while governed by a bilateral government agreement, is carried out in the private sector and is not regularly funded by the U.S. government. The United States Enrichment Corporation purchases from the Russian government low-enriched uranium converted from HEU and fabricates it into light-water reactor fuel that is sold to reactor operators.

Civilian Research and Development Foundation: While it receives annual funding from the State Department, the Civilian Research and Development Foundation is a non-governmental, non-profit foundation created by the U.S. government to respond to the declining status of science and engineering in former Soviet states. One of its primary missions is to advance the redirection of weapons scientists to civilian work. —William Hoehn and Christopher Ficek, RANSAC

Milestones in Cooperative Nuclear Security

The Nunn-Lugar cooperative threat reduction policy began as a congressional initiative in November 1991, one month before the Soviet Union collapsed. Senators Sam Nunn (D-GA) and Richard Lugar (R-IN) built a bipartisan plan that would use defense dollars to assist Russia and the other former Soviet republics in reducing the threat posed by the legacy of the Soviet nuclear arsenal. Dubbed "defense by other means," the program's first success came in 1992, when Ukraine, Belarus, and Kazakhstan agreed to return to Russia the nuclear weapons they had inherited from the Soviet breakup and accede to the nuclear Non-Proliferation Treaty as non-nuclear-weapon states. During 1993, Russia agreed to allow the United States to buy 500 tons of highly enriched uranium (HEU) for use in commercial reactor fuel, and Washington and Moscow signed an accord to build a fissile storage facility in Russia.

Cooperation intensified in 1994 as U.S. and Russian laboratories began working directly with each other to improve the security of weapons-useable nuclear materials. In June, the two countries reached an agreement to halt future Russian weapons-grade plutonium production. Assistance to the former Soviet scientific community, first offered through the creation of an international science center in 1992, expanded during this year when weapons scientists and technicians were invited to participate in the Initiatives for Proliferation Prevention (IPP) program, which focused on the commercialization of non-weapons technology projects.

As the policy's breadth grew, implementation responsibilities diversified within the administration. In the fall of 1994, the Defense Department relinquished administrative and funding responsibilities of several Nunn-Lugar programs to the departments of Energy (MPC&A) and State (the international science centers). The spread of responsibility to more organizations weakened policy cohesion and coordination, but the diversification further entrenched the cooperative security agenda in the U.S. bureaucracy.

Between April 1995 and November 1996, the last nuclear warheads in Kazakhstan, Ukraine, and Belarus were removed. In June 1995, the first shipments of Russian HEU began arriving in the United States. In September 1996, Congress passed legislation sponsored by Nunn, Lugar, and Senator Pete Domenici (R-NM) that expanded the original Nunn-Lugar efforts and sought to improve the U.S. domestic response to threats posed by weapons of mass destruction.

Russia and the United States agreed in September 1997 to revise their original plutonium production reactor agreement and focus on converting the cores of the Russian reactors, thus facilitating the end of plutonium production. By September 1998, the United States and Russia had agreed to the Nuclear Cities Initiative, a new program aimed at assisting the downsizing of the nuclear weapons complex and the creation of alternative employment for excess weapons specialists.

In 1999 the Clinton administration unveiled the Expanded Threat Reduction Initiative, which expanded funding and extended the programmatic lifespan of many existing cooperative security programs. Congress also provided funds to facilitate a future plutonium disposition agreement and to save the HEU deal, which had run into serious implementation problems. In June 1999, the United States and Russia agreed to extend the Cooperative Threat Reduction agreement, which governs
Pentagon activities such as strategic arms elimination and warhead security. This was followed by the signing of an October 1999 agreement covering MPC&A cooperation, and in 2000 the United States and Russia agreed to a new fuel-cycle initiative and signed a plutonium disposition agreement providing for the elimination of 34 tons of excess weapons-grade plutonium by each country.

—Christopher Ficek, RANSAC

NOTES

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10. The issue of creating an integrated strategy for the cooperative security agenda was raised in public with a Russian official from the Ministry of Atomic Energy at the October 6-7, 2000, Moscow International Non-Proliferation Conference. He responded that "there is a need to think about a new strategic approach, one that includes NGOs." He also welcomed European initiatives.
11. For a detailed analysis of additional activities that could be undertaken as part of this agenda, see Matthew Bunn, The Next Wave: Urgently Needed New Steps to Control Warheads and Fissile Material, Harvard University's Project on Managing the Atom and the Carnegie Endowment for International Peace's Non-Proliferation Project, April 2000.
12. This idea has been outlined in an unpublished paper by Bruce Blair.

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