United States General Accounting Office

GAO

Report to the Ranking Minority Member, Subcommittee on Financial Management, the Budget, and International Security, Committee on Governmental Affairs, U.S. Senate

March 2003

WEAPONS OF MASS DESTRUCTION

Additional Russian Cooperation Needed to Facilitate U.S. Efforts to Improve Security at Russian Sites

GAO-03-482

March 2003

WEAPONS OF MASS DESTRUCTION

Additional Russian Cooperation Needed to Facilitate U.S. Efforts to Improve Security at Russian Sites

GAO Accountability • Integrity • Reliability

Highlights

Highlights of GAO-03-482, a report to Subcommittee on Financial Management, the Budget, and International Security, U.S. Senate

Why GAO Did This Study

Terrorists and countries of concern may be able to gain access to poorly secured weapons of mass destruction at sites throughout Russia. To address this threat to U.S. national security, the Departments of Defense (DOD) and Energy (DOE) have obligated more than $1.8 billion since 1992.

GAO was asked to report on U.S. programs to help improve security at sites where Russia stores (1) weapons-usable nuclear material, (2) nuclear warheads, (3) dangerous biological pathogens, and (4) chemical weapons. For each area, GAO assessed U.S. plans to address security threats at sites in Russia, U.S. progress in implementing those plans, and the primary challenges facing DOD and DOE.

What GAO Recommends

GAO recommends that DOE re-evaluate its plans for securing Russia's nuclear material, and with DOD, develop an integrated plan to ensure coordination of efforts to secure Russia's nuclear warheads.

GAO also recommends that DOD develop criteria to guide efforts to secure biological pathogens and revisit its decision not to secure additional chemical weapons sites.

DOD agreed with 3 of our 4 recommendations. DOD did not agree to improve security at additional chemical weapons sites. DOE did not comment on our recommendations.

www.gao.gov/cgi-bin/getrpt?GAO-03-482.

To view the full report, including the scope and methodology, click on the link above. For more information, contact Joseph A. Christoff at (202) 512-8979 or christoffj@gao.gov.

What GAO Found

The Departments of Defense and Energy have made slow progress in helping improve the security of sites in Russia with weapons of mass destruction against the threat of theft or diversion because Russia is not providing needed access to many sites. Unfortunately, there is little reason to believe this situation will change in the near future.

DOE plans to help secure Russia's weapons-usable nuclear material by 2008; however, the department lacks access to many sites. As a result, most of DOE's expenditures in the past 2 years went to functions other than securing buildings, such as maintaining previously installed equipment and developing nuclear security regulations. While important, these efforts do not advance DOE's objective of protecting all buildings with weapons-usable nuclear material.

DOD and DOE have pursued different approaches to securing nuclear warhead sites. DOE recently scaled back its plans, and the two agencies will face coordination issues, such as deciding which agency will secure sites in both of their plans.

DOD has made little progress in securing dangerous pathogens at the 49 sites where Russia and the United States have collaborative programs. Russia has consistently refused DOD access to sites and has closed some sites to U.S. security programs. Negotiations on a bilateral agreement to implement this assistance have also stalled.

DOD's efforts to secure chemical weapons have focused on a destruction facility that will not be complete until 2006. It may be 40 years before Russia's nerve agent stockpile can be destroyed. DOD has improved security at two sites, but two thirds of Russia's stockpile remains vulnerable to theft.

Type of weapon of mass destruction	Progress	Key challenges
Nuclear Material	38 percent of material protected	DOE lacks access to most of remaining nuclear material
Nuclear Warheads DOE	33 of 36 Navy sites protected	Unclear jurisdiction over many warhead sites
DOD	34 percent of fencing installed to address external threats at 52 locations	Russia has not provided access to sites or funding for programs
Biological pathogens	Two sites against external threats	Russia has closed access to several sites; DOD lacks bilateral agreement with Russia for this work
Chemical weapons	Two nerve agent sites protected against external threats	DOD has no plans to secure three other nerve agent sites

Source: GAO.

Contents

Tables

Figures

Abbreviations

BWPP	Biological Weapons Proliferation Prevention
CCP	Chemical Concentrates Plant
CTR	Cooperative Threat Reduction
CWC	Chemical Weapons Convention
DOD	Department of Defense
DOE	Department of Energy
FMSF	Fissile Material Storage Facility
GAO	General Accounting Office
ISTC	International Science and Technology Center
MEPhI	Moscow State Engineering Physics Institute
MINATOM	Ministry of Atomic Energy (Russia)
MOD	Ministry of Defense (Russia)
MOM	(MPC&A) Operation Monitoring
MPC&A	Material Protection, Control, and Accounting
OPCW	Organization for the Prohibition of Chemical Weapons
SATC	Security Assessment and Training Center
WMD	Weapons of Mass Destruction

GAO
Accountability * Integrity * Reliability

United States General Accounting Office
Washington, D.C. 20548

March 24, 2003

The Honorable Daniel K. Akaka
Ranking Minority Member, Subcommittee on Financial Management,
the Budget, and International Security
Committee on Governmental Affairs
United States Senate

Dear Senator Akaka:

In response to your request on January 17, 2002, we assessed U.S. efforts to enhance security at sites in Russia that store (1) weapons-usable nuclear material, (2) nuclear warheads, (3) dangerous biological pathogens, and (4) chemical weapons.

We are sending copies of this report to the Secretary of Defense, the Secretary of Energy, the Secretary of State, and other interested parties.

If you have questions regarding this report, please contact Mr. Christoff at (202) 512-8979 or christoffj@gao.gov or Mr. Robinson at (202) 512-3841 or robinsonr@gao.gov. GAO contacts and staff acknowledgments are listed in appendix VI.

Sincerely yours,

Joseph A. Christoff, Director
International Affairs and Trade

Robert A. Robinson, Managing Director
Natural Resources and Environment

Executive Summary

Purpose

The Russian Federation has the world's largest stockpiles of weapons-usable nuclear material, nuclear warheads, dangerous biological pathogens, and chemical weapons. Poorly secured weapons and material at sites throughout Russia may provide terrorists and countries of concern with access to weapons of mass destruction. To address this threat to U.S. national security, the Departments of Defense (DOD) and Energy (DOE) have obligated $1.8 billion since 1992 to help improve security at sites where Russia stores weapons of mass destruction and weapons-usable nuclear material.

GAO was asked by the Ranking Minority Member, Subcommittee on Financial Management, the Budget, and International Security, Committee on Governmental Affairs, U.S. Senate, to report on U.S. programs to help improve security at Russian weapons of mass destruction sites. To address these issues, GAO assessed U.S. efforts to enhance security at sites in Russia that store (1) weapons-usable nuclear material, (2) nuclear warheads, (3) dangerous biological pathogens, and (4) chemical weapons.

For each of these areas, GAO assessed U.S. plans to address security threats at weapons of mass destruction sites in Russia, U.S. progress in implementing these plans, and the primary challenges and unresolved issues facing DOD and DOE in their efforts to secure Russian sites. During the course of its work, GAO reviewed documents and met with officials from DOD, DOE, and the Department of State, as well as several ministries from the Russian government. GAO also visited 14 nuclear, biological, and chemical sites in Russia that have received or will receive U.S. security assistance.

Background

Weapons of mass destruction and related materials fall into four categories: weapons-usable nuclear material, nuclear warheads, dangerous biological pathogens, and chemical weapons.

- Weapons-usable nuclear material is plutonium and uranium of high enough quality to be used in the construction of nuclear devices. Russia stores weapons-usable nuclear material at civilian sites that produce or store nuclear fuels and materials for civilian application and research; naval fuel storage sites, where the Russian Navy stores highly enriched uranium for reactor fuel in submarines and icebreakers; and the nuclear weapons complex, a network of 10 cities that fabricate, refurbish, or dismantle nuclear weapons and their components. Most of the

estimated 600 metric tons of weapons-usable nuclear material located in Russia is in the nuclear weapons complex.

- Russia's estimated stockpile of 18,000 to 25,000 nuclear warheads are stored at storage sites, where warheads that are not attached to missiles or other delivery vehicles are kept in long-term storage; rail transfer points, where warheads are stored during transport; and operational sites, where warheads are deployed with missiles or bombs and become weapons.

- Dangerous biological pathogens such as anthrax, smallpox, and the plague are stored at an unknown number of research sites throughout Russia. The Soviet Union had a sophisticated, secret offensive biological weapons program throughout the Cold War. The program employed 60,000 people at more than 50 sites.

- Russia stores its declared stockpile of 40,000 metric tons of chemical weapons at seven sites. Five of these sites store 32,000 metric tons of nerve agent, the deadliest form of chemical weapons, while two sites store blister agent.

Soon after the collapse of the Soviet Union in 1991, the United States began an effort to keep weapons of mass destruction from falling into the hands of terrorists and countries of concern. For over 10 years, DOD, through its Cooperative Threat Reduction program, has had primary responsibility for many programs that assist Russia in securing, dismantling, destroying, and safely transporting its weapons. DOE implements programs to improve security at Russian sites with weapons-usable nuclear material and nuclear warheads. The Department of State implements programs to pay scientists who once developed weapons of mass destruction to conduct peaceful research. From fiscal years 1992 to 2003, Congress authorized $6.4 billion for these programs.

Of this $6.4 billion, DOD and DOE have obligated $1.8 billion to purchase new security equipment such as fences, access control systems, and video surveillance systems and to train security personnel. This equipment helps protect Russian sites from external threats such as intruders breaking into sites and internal threats such as employee theft. Through September 2002, about 98 percent of these funds have been devoted to helping Russia protect its weapons-usable nuclear materials and nuclear warheads.

DOD originally focused on protecting nuclear warheads and weapons-usable nuclear material but later expanded its program to help secure biological pathogens in 1998 and chemical weapons in 1999. In 1995, the lead responsibility for securing weapons-usable nuclear material was transferred to DOE. As part of its program, DOE helped secure reactor fuel that the Russian Navy used to fuel its nuclear submarines and icebreaking ships and began securing some of Russia's nuclear warheads after the Russian Navy asked DOE for assistance in 1998. In contrast, DOD currently has programs to help protect nuclear warheads, dangerous biological pathogens, and chemical weapons.

Results in Brief

DOE plans to secure all weapons-usable nuclear material in Russia by 2008, but the department's lack of access to many of the most sensitive sites in Russia's nuclear weapons complex represents a significant impediment to the program's continued progress. Over the past 10 years, DOE has helped protect 38 percent of Russia's weapons-usable nuclear material and has nearly completed its work at civilian sites and naval fuel storage sites. However, DOE has only completed work at 14 of 133 buildings in Russia's nuclear weapons complex, a network of sites involved in the construction of nuclear weapons where most of the material is stored.[1] Because it lacks access to almost three quarters of these sites, DOE has shifted spending during fiscal years 2001 and 2002 from installing security systems at buildings with weapons-usable nuclear material to support programs, such as paying to operate and maintain installed equipment and developing nuclear security regulations. Although DOE and the Russian Ministry of Atomic Energy signed a new access agreement in September 2001, DOE has not gained access to sites where work is planned but has not yet begun. GAO recommends that DOE reassess its expedited plans to secure all weapons-usable nuclear material by 2008.

DOD and DOE have pursued separate approaches to securing Russian warhead sites. However, neither agency knows the total number of sites they plan to assist. DOD's and DOE's programs to help Russia secure its nuclear warheads were brought under common policy guidance in January 2003. These guidelines generally prohibited assistance to operational sites due to concerns that U.S. assistance might enhance Russia's military

[1]The actual amount of material protected at weapons complex sites is classified.

capability. DOD plans to improve security at all of Russia's storage sites[2] and to complete this work by 2010. DOD has made limited progress and is unlikely to complete its work as planned because the Russian government has not provided access to sites or sufficient funding to support the program. In contrast, until new U.S. interagency guidelines were issued in January 2003, DOE planned to complete security improvements by 2006 at 36 Russian Navy sites, including both storage sites and operational sites (which support deployed nuclear weapons). DOE has helped secure 33 of the 36 Russian Navy sites due to cooperation received from the Russian Navy. However, in response to the January 2003 interagency guidelines, DOE revised its plans and decided not to provide further assistance to many sites where DOE has already installed its initial round of upgrades. As a result, DOE has had to scale back its plans and reconsider its time frames since the new guidelines limit assistance to operational sites. DOD and DOE will continue to face several coordination issues, such as deciding which agency will secure sites identified in both of their plans and coordinating the type of equipment used and guard force training provided. GAO recommends that DOD and DOE ensure ongoing interagency coordination.

After more than 4 years of effort, DOD has made little progress in addressing security concerns at the 49 biological sites where Russia and the United States have collaborative programs. As of December 2002, DOD had installed upgrades at two sites and plans to upgrade security at two additional sites. DOD has limited information on the location and security of sites that house collections of dangerous biological pathogens in Russia and is thus uncertain which sites should receive security improvements. Although DOD eventually plans to address internal and external security threats, it has no time frames for completing this work. U.S. efforts to secure biological facilities have faced significant challenges. For example, despite years of U.S. effort, the Russian government has closed many biological sites to U.S. security assistance programs. In addition, at least nine Russian ministries and organizations have ownership or oversight of these sites, which slows DOD's efforts to implement the program. The biological security program has thus taken longer and accomplished less than expected. GAO recommends that DOD clearly articulate criteria to identify which biological sites pose the greatest security risks and should therefore receive the most extensive U.S. assistance.

[2]DOD has a classified estimate of the total number of sites.

DOD's efforts to secure chemical weapons have focused on helping Russia build a facility to destroy its extensive nerve agent stockpile rather than securing the sites where its nerve agent is stored. However, the destruction facility will not be completed until 2006, and it could be another 40 years before Russia's stockpile would be completely destroyed. In 2001, DOD began helping Russia secure two sites that store nerve agent against external threats, which it estimates will be complete in fall 2003. DOD selected these two sites because they store nerve agent munitions that are small and easily portable. However, DOD has no plans to help secure three other Russian nerve agent storage sites that store 65 percent of Russia's declared nerve agent stockpile. DOD's decision to limit its work to two nerve agent sites leaves the issue of site security over the majority of Russia's nerve agent stockpile unresolved. In addition, even though Russia plans to move its nerve agent munitions by rail, in some cases hundreds of miles, to the destruction facility, Russia and DOD have not developed plans to secure the nerve agent while it is being transported. GAO recommends that the Secretary of Defense reassess the need for improved security at chemical weapons sites and work with Russian officials to develop a plan to secure Russian chemical weapons during transit. GAO also suggests that Congress consider funding security improvements at the three remaining chemical weapons sites that have not received U.S. security assistance.

Principal Findings

Lack of Access to Sensitive Nuclear Material Sites Hinders Program Completion

DOE plans to help secure Russia's estimated stockpile of 600 metric tons of weapons-usable material from internal and external threats by 2008. DOE has determined that 243 buildings in Russia (including central alarm stations) require improved security systems to better protect the material from theft. After the terrorist attacks of September 11, 2001, Congress appropriated additional funds for nuclear material security in Russia. Because of these additional funds, DOE shortened its time frame for protecting all weapons-usable nuclear material in Russia from 2010 to 2008.

DOE's progress in protecting weapons-usable nuclear material has varied widely, depending on the type of site. As of January 2003, DOE had finished installing security improvements at 85 of 110 buildings at sites that store nuclear fuel for the Russian Navy and sites that produce or store nuclear fuels and materials for civilian application and research. In contrast, DOE has only completed work at 14 of the 133 buildings at sites in the nuclear

weapons complex that fabricate, refurbish, or dismantle components and nuclear material for nuclear weapons. Altogether, DOE has helped protect 38 percent, or about 228 metric tons, of Russia's weapons-usable nuclear material. However, despite years of negotiations, Russia will not let DOE visit or begin work at nearly three quarters of the buildings in the weapons complex. Lack of progress at these sites significantly hampers DOE's programmatic goals because weapons complex sites store most of the weapons-usable nuclear material in Russia. Because progress in installing security upgrades to buildings in the nuclear weapons complex has slowed, the majority of DOE's spending in 2001 and 2002 shifted to efforts other than securing buildings, including paying to operate and maintain security systems already at sites, helping secure nuclear material during transport, and developing nuclear security regulations.

Access to sensitive sites, especially in the nuclear weapons complex, remains a significant challenge to DOE's ability to meet its projected 2008 deadline. As set forth in its guidelines for improving nuclear material security in Russia, DOE requires access to the buildings to design and confirm the installation of security systems. Despite repeated efforts, the department has yet to obtain access to sensitive Russian sites to (1) confirm the type of material to be protected, (2) design systems that provide adequate security, (3) ensure the equipment is properly installed, and (4) ensure that the equipment is operated properly and used as intended. For example, as of January 2003, DOE had not been able to access 74 percent of the buildings in Russia's nuclear weapons complex. A September 2001, access agreement between DOE and the Russian Ministry of Atomic Energy has failed to facilitate the department's access to previously closed sites. In fact, the Ministry used the terms of the agreement to deny GAO access to two sites in Russia during its July 2002 visit.

DOD and DOE Have Had Mixed Success Protecting Nuclear Warheads

DOD and DOE do not know the total number of nuclear warhead sites they plan to assist because Russia has provided only limited information about the site locations and security conditions. DOD's efforts have focused on improving security at storage sites under the command of the 12th Main Directorate of the Russian Ministry of Defense, the branch of the Russian military specifically responsible for warhead security and maintenance. In contrast, DOE has focused on improving security at all three types of sites under the jurisdiction of the Russian Navy. However, in January 2003, new U.S. interagency guidelines limited the extent to which DOD and DOE can provide assistance to operational sites, which support deployed nuclear

weapons, out of concern that U.S. assistance could enhance Russia's military capability. DOE will continue to help secure storage sites and rail transfer points because the warheads at those sites are stored separate from their delivery vehicles; the possibility of enhancing Russia's military capability is thus less. DOE has had to scale back its original plans because a significant number of the Navy sites where it has provided assistance to date are operational.

DOD has made limited progress in securing nuclear warheads in Russia. As of December 2002, the Russian Ministry of Defense reported installing only about one third of the 123 kilometers of perimeter fencing that DOD began providing Russia in 1997 for warhead storage sites at 52 locations. DOD has been unable to install security equipment to address insider threats at any storage sites because Russia has not provided access to these sites.

DOE has made significant progress improving security over nuclear warheads under the jurisdiction of the Russian Navy. Since the department began its program in 1999, it has installed security improvements at 33 sites where the Russian Navy requested assistance. Most of these sites are rail transfer points and operational sites, such as those where nuclear warheads are attached to missiles or loaded onto submarines. The Russian Navy has worked closely with DOE, which has facilitated the quick implementation of the assistance. However, the U.S. interagency guidelines preclude further assistance to many operational sites where the department has installed an initial round of upgrades.

Russia's tight restrictions on access to nuclear warhead storage sites have severely limited DOD's efforts to improve security at these sites. This is in contrast to the progress that DOE has made with the access it receives from the Russian Navy. DOD and DOE require physical access to the sites to help design the security improvements and to confirm that Russia has installed security improvements as agreed before paying for the work. In particular, they require access to the site perimeters, entry control facilities, and guard facilities where the bulk of the security improvements are installed. Lack of access has completely blocked DOD from installing comprehensive upgrades, the full set of security improvements that protect against both internal and external threats of theft. DOD signed an access agreement with the Russian Ministry of Defense in February 2003 and plans to begin installing comprehensive upgrades in spring 2003. However, given previous delays and setbacks in gaining Russia's permission to visit nuclear warhead storage sites, further delays beyond spring 2003 are possible.

Until the January 2003 interagency guidelines, DOD and DOE pursued different policies in assisting operational nuclear warhead sites. DOD and DOE now coordinate their efforts to improve nuclear warhead security in Russia through an interagency working group and a joint working group with their Russian counterparts. While the departments have avoided duplication of effort, they face a number of issues that will require continued coordination. For example, the departments have not determined which agency will improve security at storage sites that they both include in their plans. The departments will also have to work together to ensure that the different types of equipment and guard force training they provide to Russia are standardized.

Department of Defense Assistance to Secure Biological Sites Has Had Limited Results

DOD's plans to secure biological facilities in Russia are based on limited information about the number of sites, pathogen collections, and security conditions at these sites. DOD does not know how many sites in Russia have dangerous biological pathogens and has not comprehensively reviewed security at the 49 biological sites in Russia where the United States has collaborative research projects, a number that includes many former biological weapons facilities. As of January 2003, DOD had focused its security program on sites where Russia allows the United States access and where DOD had identified dangerous pathogen collections. However, DOD did not know how many sites it plans to help secure and had no time frames for completing its work. In recognition of the vulnerabilities of biological institutes to insider theft, DOD plans to address internal and external security concerns at sites where it is providing assistance.

DOD's progress in securing Russia's biological weapons sites has been slow due to Russia's limited cooperation and the Administration's temporary suspension of the Cooperative Threat Reduction program from January through August 2002. DOD officials also stated that the department's efforts to help secure biological pathogens started later than its work to secure other weapons of mass destruction because biological pathogen security was viewed as a lower priority. Since DOD began to help secure Russia's dangerous biological pathogens in 1998, it has focused its efforts on providing and installing equipment at the largest former biological weapons facilities in Russia that have the most dangerous pathogens and that the Russians have been willing to let DOD assist. DOD also has begun planning to assist security at two additional sites. While the installation of fences, sensors, and video surveillance cameras have enhanced security against external threats at two sites, these projects did not improve physical security to address insider threats. As of September 2002, DOD

estimated that it had obligated $14 million to help improve security at 4 of the 49 biological sites in Russia that may require such assistance.

U.S. efforts to help secure former biological weapons facilities in Russia face many challenges. First, DOD has been unable to work directly with Russian biological sites due to stalled negotiations on an implementing agreement to facilitate this assistance. Negotiations have been slow because nine Russian government organizations have jurisdiction over sites with dangerous biological pathogens. As a result, DOD has no single focal point with which to negotiate an agreement. Second, the Russian government has consistently refused DOD access to many former biological weapons sites. For example, the Russian Ministry of Health has not allowed DOD access to five of its sites, because, according to DOD officials, the Ministry was concerned that participating in DOD's security program would be an admission these sites had taken part in the Soviet biological weapons program.

DOD Has Not Focused on Securing All of Russia's Chemical Weapons Sites

Since the early 1990s, DOD has focused on the construction of a chemical weapons destruction facility to help Russia destroy its chemical weapons stockpile, as required by the Chemical Weapons Convention. While Russia plans to destroy its chemical weapons by 2012, lack of progress on construction and financial difficulties make it likely that it will take 40 years or more to reach this goal. Until Congress directed it to do so in 1999, DOD did not plan to improve security at Russia's chemical weapons storage sites. With $20 million in funding, the department plans to install upgrades around buildings, site perimeters, and central alarm stations. These upgrades will address external threats at the two chemical weapons storage sites that store portable nerve agent munitions since these are considered the greatest threat to U.S. national security. DOD plans to complete its work in fall 2003. However, it has no plans to extend the program to three other nerve agent sites or to expand its current program to address insider threats at the two facilities where it has already done work.

DOD has made significant progress helping secure two chemical weapons sites in Russia. As of October 2002, the department had obligated $19.8 million to purchase and install two phases of security equipment. The first phase, completed in February 2002, consisted of microwave sensors around individual storage buildings or groups of buildings that, according to DOD, contain the smallest chemical weapons. Work installing the second, more comprehensive phase of security upgrades, began in July

2002. When this work is completed, the perimeters of both Russian chemical weapons sites will have improved fencing, lights, cameras, and sensors linked to improved central alarm stations. DOD is on track to complete its work in fall 2003 as planned, expedited by good cooperation from its Russian counterparts. After finishing that work, DOD will have helped secure about 35 percent of Russia's stockpile of nerve agent, the deadliest form of chemical weapons. DOD's work has been expedited by good access and cooperation from the Russian government. DOD officials state that access has been good because Russia has declared its stockpile and allows international inspectors to periodically visit these sites.

DOD's decision to limit its work to two chemical weapons sites leaves 65 percent of Russia's nerve agent stockpile unsecured. The Russian government would also prefer to focus on destroying chemical weapons rather than securing chemical weapons sites. Although Russia has publicly stated it plans to destroy its declared chemical weapons stockpile by 2012, it will likely take much longer. As a result, a large quantity of chemical weapons in Russia will remain vulnerable to theft or diversion and pose a potential threat to U.S. national security interests. In addition, Russia will have to move most of its nerve agent several hundred miles by rail from current storage sites to the planned chemical weapons destruction facility. However, DOD and Russia have not begun discussions on the security that will be required for chemical munitions, as they are moved hundreds of miles from current storage sites to the planned chemical weapons destruction facility.

Conclusion

Since 1992, the United States has undertaken an unprecedented task: securing the weapons its former adversary developed for potential use against the United States and its allies. The $1.8 billion obligated by DOD and DOE, from 1992 to 2002, has helped improve security at dozens of sites across Russia. Portions of Russia's weapons-usable nuclear material, nuclear warheads, dangerous biological pathogens, and chemical weapons are now more secure against the threat of theft or diversion. Some U.S. efforts, such as improving security at chemical weapons and Navy warhead sites, enjoy good support from the Russian government. As a result, DOD and DOE have been able to install security upgrades with few problems.

However, helping Russia secure its vast collection of weapons of mass destruction has often proven to be a difficult and time-consuming task. Although the United States and Russia have broadly agreed to work together on this mutually beneficial task, important aspects of DOD and

DOE programs continue to face significant resistance and lack of cooperation from the Russian government. In some areas, such as securing many sites in Russia's nuclear weapons complex, the Russian government has been unwilling to allow meaningful work to take place, despite years of U.S. efforts.

Lack of Russian cooperation delays program implementation and has changed the nature of the assistance the United States planned to provide. DOE will likely be unable to complete its work in Russia by 2008 as currently planned, in large part because the Russian Ministry of Atomic Energy has not cooperated in giving DOE access to many sites and buildings. DOE has thus spent less than half of its most recent appropriations to secure buildings with weapons-usable nuclear material. Furthermore, DOD's efforts to secure nuclear warheads have been limited because negotiations over site access have dragged on for years.

In addition, some U.S. efforts require revised plans. DOD and DOE are both working to help secure Russia's nuclear warheads; however, until recently, they have not been following the same policies. DOE has a comprehensive plan to guide its efforts to secure nuclear material in Russia but will not be able to complete its work within scheduled time frames. Although the Department of Defense has been working since 1998 to help secure biological sites in Russia, it lacks a written plan to help determine the number of sites it will help protect, the kinds of security upgrades it will provide, and the means of protecting against the threat of theft from insiders. Finally, DOD's efforts to help secure chemical weapons sites in Russia leaves sites with two-thirds of Russia's deadly nerve agent stockpile vulnerable to theft and have not considered the security problems of moving several thousand tons of nerve agent over hundreds of miles to a destruction facility.

Matter for Congressional Consideration

For the program to secure chemical weapons, Congress may wish to consider allocating additional funds for improving security at three remaining sites in Russia that store nerve agent but have not received U.S. security assistance.

Recommendations

- Given the current lack of access to many nuclear weapons complex sites, the Secretary of Energy should reassess the department's

expedited plans to provide security enhancements to Russian facilities housing weapons-usable nuclear materials.

- The Secretaries of Defense and Energy should develop an integrated plan to ensure that their related programs to help secure Russia's nuclear warheads work together to address implementation issues such as determining which department will provide assistance to certain sites and resolving equipment standardization concerns.

- In developing the department's plan to enhance security at Russian biological sites, the Secretary of Defense should clearly articulate criteria the department should use to rank the relative threat posed by different types of pathogens and review the security under which they are kept to identify the biological sites that pose the greatest security risks and would therefore have highest priority for and receive the most extensive U.S. assistance.

- Given the lengthy time frame for the destruction of Russia's chemical weapons stockpile, the Secretary of Defense should consider:

  - reassessing the need to provide improved security at the three sites in Russia that store nerve agent but have not received U.S. security assistance and

  - working with Russian officials to develop practical plans for securing chemical weapons while in transit to the planned destruction facility at Shchuch'ye.

Agency Comments

DOD provided written comments on a draft of this report, which are reproduced in appendix IV. In these comments, DOD concurred with our recommendations regarding the department's efforts to help secure Russia's nuclear warheads and dangerous biological pathogens. DOD stated that it would act on NSC policy guidelines and work within interagency working groups to implement our recommendation that DOD and DOE develop an integrated plan to secure Russia's nuclear warheads. DOD also stated that it would develop formal criteria for prioritizing assistance to sites with dangerous biological pathogens and renew its efforts to develop an implementing agreement with the Russian government. DOD concurred with our recommendation to work with the Russian government to develop plans to secure chemical weapons during

transport to the destruction facility at Shchuch'ye. DOD stated that it is now working with the Russian Munitions Agency to develop these plans.

DOD did not concur with GAO's recommendation to reassess the need for improved security at three additional nerve agent sites in Russia. DOD contends that the size and weight of the bombs and spray tanks that contain the nerve agent make them difficult to steal and that existing physical security at these sites is sufficient. DOD's statement conflicts with the head of the Russian commission overseeing chemical weapons destruction who stated on March 6, 2003, that security at these sites is poor and Russia needs additional money for security improvements. Accordingly, GAO continues to recommend that DOD reassess the need for improved security at the three nerve agent sites that have not received U.S. security assistance.

DOE provided comments on a draft of this report, which are reproduced in appendix V. DOE did not indicate whether it concurred with GAO's recommendations. The department disagreed with GAO's conclusion that progress had slowed in the department's efforts to improve security over Russia's weapons-usable nuclear material. DOE cited recent increases in the number of contracts signed with the Ministry of Atomic Energy as examples of the progress the department has made. However, GAO's work shows that the number of contracts signed is a poor measure of program progress because (1) contracts are frequently for small amounts of money, and (2) contracts can finance work for purposes other than improving security at buildings. In addition, DOE's Strategic Plan, program guidelines, and other documentation track program progress by the number of buildings and amount of material protected, not by the number of contracts. We have therefore used the benchmarks the department uses in its strategic plan to gauge program progress.

DOE also stated that GAO's figure of 600 metric tons of weapons-usable nuclear material in Russia was too low. However, DOE's comment contradicts its strategic plan and recent statements made by the Acting Administrator for National Nuclear Security Administration in testimony before the House Armed Services Committee. At that hearing, the Acting Administrator testified that Russia has an estimated 600 metric tons of weapons-usable nuclear material.

Introduction

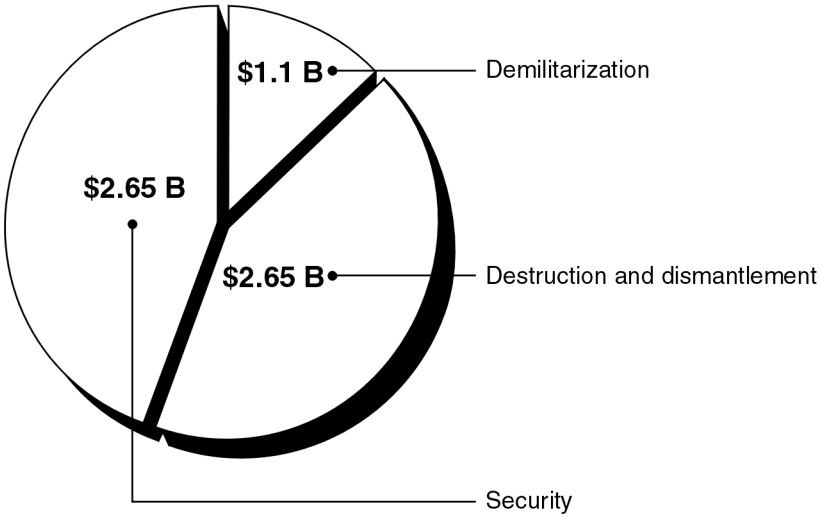
The collapse of the Soviet Union left Russia with the largest arsenal of weapons of mass destruction (WMD) in the world. Unclassified U.S. estimates of the current number of Russia's nuclear warheads range from 18,000 to 25,000, and Russia inherited an estimated 600 metric tons of the uranium and plutonium that could be used to build nuclear devices. Russia also assumed control of more than 40,000 metric tons of chemical weapons and an extensive complex of sites used in research on dangerous biological pathogens, such as smallpox and anthrax, and the development of those pathogens as biological weapons.

In the closed Soviet system, security systems emphasized heavy surveillance of site workers with severe penalties imposed on those who violated security procedures. The Soviets relied on closed cities and physical security measures to stem any threats posed by outsiders. However, the dissolution of the Soviet Union and subsequent social, political, and economic changes in Russia not only revealed gaps in the physical security surrounding sites containing WMD but made evident weaknesses in Russia's ability to deter threats from inside those complexes. A senior member of the Russian Ministry of Defense stated in 1999 that the greatest threat to nuclear warhead security stems from insider knowledge of security systems and procedures. Both enhanced insider threat and decreased ability to protect against external threat have created opportunities for agents from countries of concern to obtain WMD.

In response to this threat, Congress authorized the Department of Defense (DOD) to establish the Cooperative Threat Reduction (CTR) Program in 1992 to help Russia, Ukraine, Belarus, and Kazakhstan secure and protect nuclear weapons. Members of Congress were concerned that nuclear weapons or materials might be lost, stolen, or sold and that nuclear scientists and technicians might be persuaded to sell their knowledge to nations or terrorists seeking to develop such weapons. Between 1992 and 2003, Congress authorized $6.4 billion for a wide array of threat reduction and nonproliferation programs implemented by DOD, the Department of Energy (DOE), the Department of State, and other agencies.[1] As shown in figure 1, these appropriations have been directed into destruction and dismantlement, demilitarization (the conversion of military facilities and research to civilian purposes), and security efforts. Most funds have been for programs in Russia.

[1]The Departments of Agriculture, Commerce, Health and Human Services, and Homeland Security also implement portions of these programs.

Figure 1: Appropriations for Threat Reduction and Nonproliferation Programs, Fiscal Years 1992-2003 (dollars in billions)



Source: DOD, DOE, and the Department of State.

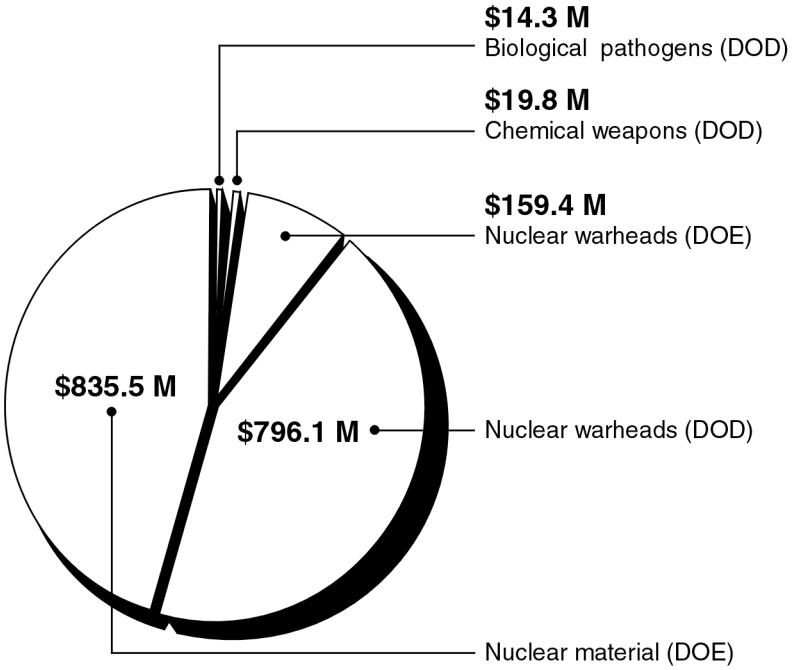
Destruction and dismantlement projects, for which $2.65 billion has been appropriated, are designed to help with the elimination of nuclear, chemical, and other weapons and their delivery vehicles. For example, DOD has helped Russia destroy missiles and submarines to meet arms control requirements and is currently helping Russia design a destruction facility for its chemical weapons stockpile. In addition, DOD has financed the destruction of silos that contained intercontinental ballistic missiles.

Demilitarization efforts—projects that encourage Russia, Ukraine, Belarus, and Kazakhstan to convert military facilities and research to civilian purposes—have been appropriated $1.1 billion. These include funds to pay scientists of the former Soviet Union who once developed nuclear, chemical, and biological weapons and missile systems to conduct peaceful research. Demilitarization funds also support projects that seek to convert defense facilities in the former Soviet Union to factories that produce civilian products such as medical treatments.

Security programs have been appropriated $2.65 billion from 1992 through 2002. These efforts help Russia and other former Soviet nations secure their WMD. For example, DOD and DOE have provided Russia with fences, sensors, video surveillance systems, and computerized inventory control systems.

As shown in figure 2, as of September 2002, DOD and DOE had obligated a total of $1.8 billion to upgrade security at sites where Russia has WMD material. Most of these funds have been used to help secure nuclear warheads and nuclear material. Two percent of these funds have been used to address security threats at chemical weapons storage sites and institutes with dangerous biological pathogens.

Figure 2: DOD and DOE Funds Obligated to Security Programs in Russia, by Type of WMD, Fiscal Years 1992-2002 (dollars in millions)



Source: DOD and DOE.

Note:The funding figures include spending for site security upgrades and related programs but do not include funding for destruction of weapons of mass destruction or employment of scientists. The figure for nuclear warheads includes funding for the Fissile Material Storage Facility.

Since 1995, DOD has obligated $796 million to enhance security at Russian nuclear weapons sites. The department has installed fences, developed warhead inventory control systems, and upgraded railcars used to transport warheads. In 1998, DOD expanded its program by providing assistance to improve security over sites in Russia with dangerous biological pathogens. As of September 2002, DOD had obligated about $14 million for these programs. In 1999, Congress became concerned about the

threat of chemical weapons and appropriated $20 million for security enhancements at chemical weapons storage sites in Russia. DOD had obligated $19.8 million of these funds as of September 2002.

In 1993, DOE and the Russian government began working together to secure sites housing weapons-usable nuclear material. In 1995, DOE established the Material Protection, Control, and Accounting (MPC&A) program. Under MPC&A, DOE has installed modern nuclear security systems with three components:

- physical protection systems such as fences around the buildings containing nuclear materials; metal doors protecting rooms where material is stored; and video surveillance systems to monitor storage rooms;

- material control systems such as seals attached to nuclear material containers to indicate whether material has been stolen from the containers and badge systems that allow only authorized personnel into areas containing nuclear material; and

- material accounting systems such as inventories of nuclear material and computerized databases to track the amount and type of nuclear material contained in specific buildings.

DOE has obligated $835 million for these programs since 1995. In 1998, at Russia's request, DOE expanded the scope of its efforts with the Russian Navy from protecting naval reactor fuel to helping secure nuclear warheads. Since 1999, when DOE started working with the Russian Navy to protect sites where warheads are stored, DOE has obligated $159 million for this effort.

Objectives, Scope, and Methodology

The Ranking Minority Member, Subcommittee on Financial Management, the Budget, and International Security, Committee on Governmental Affairs, U.S. Senate, asked us to report on U.S. programs to help improve security at Russian WMD sites. To address these issues, we assessed U.S. efforts to enhance security at sites in Russia that store (1) weapons-usable nuclear material, (2) nuclear warheads, (3) dangerous biological pathogens, and (4) chemical weapons. For each area, we assessed U.S. plans to address these security threats at WMD sites in Russia; U.S. progress in implementing these plans, and the primary challenges and unresolved issues facing DOD and DOE in their efforts to secure Russian

sites. Our review focused on U.S. efforts to secure WMD material and did not include U.S. programs to employ WMD scientists or destroy WMD material.[2]

To assess U.S. efforts to help secure weapons-usable nuclear material in Russia, we reviewed program documents from DOE and the Russian Ministry of Atomic Energy (MINATOM). We also visited two sites in Russia that have received security assistance from DOE: the Moscow State Engineering Physics Institute (MEPhI) and the Russian naval fuel storage Site 49. We requested visits to the Novosibirsk Chemical Concentrates Plant and the nuclear weapons complex facility at Mayak (also known as C-65), but were denied access by the Russian Ministry of Atomic Energy. We were able to meet with managers from these sites outside their facilities. We also visited Los Alamos National Laboratory to observe U.S. approaches to securing nuclear material. We collected and analyzed reports and other publications on nuclear material security issues from the federal government and nongovernmental organizations. Our analysis of DOE's financial spending patterns was based on our previous work and budget data on fiscal year 2001 and 2002 appropriations, obligations, and expenditures, which we obtained from DOE. We met with officials from DOE; Los Alamos, Lawrence Livermore, and Sandia National Laboratories; the Ministry of Atomic Energy in Russia; Gosatomnadzor, the Russian nuclear regulatory authority; and site officials from the Moscow State Engineering Physics Institute, the Russian Navy's Site 49, Novosibirsk Chemical Concentrates Plant, and Mayak.

To assess U.S. efforts to help secure nuclear warheads in Russia, we reviewed program documentation from DOE, DOD, the National Security Council, and Los Alamos, Lawrence Livermore, and Sandia National Laboratories. During our site work in Russia, we visited several locations related to securing nuclear warheads:

- We visited two Russian Navy sites where DOE had installed security improvements. During these visits, we toured inside the facilities, saw the security equipment DOE had installed, and spoke with officials from the Russian Navy.

[2]In May 2001, we issued two reports on U.S. efforts to employ WMD scientists. See U.S. General Accounting Office, *Nuclear Nonproliferation: DOE's Efforts to Assist Weapons Scientists in Russia's Nuclear Cities Face Challenges*, GAO-01-429 (Washington, D.C.: May 3, 2001) and *Weapons of Mass Destruction: State Department Oversight of Science Centers Program*, GAO-01-582 (Washington, D.C.: May 10, 2001).

- We visited the Fissile Material Storage Facility, where Russia says it will store plutonium from dismantled nuclear warheads. At the time of our visit, the facility was still under construction, so we were not able to see all of the planned security features in place. During our visit, we spoke with officials from DOD, which is financing the construction of the facility, and the Russian Ministry of Atomic Energy, which will operate the site after it is completed.

- We visited a factory in Russia, where the United States pays to have railcars refurbished and repaired. We saw the factory and met with factory officials.

- We visited the Security Assessment and Training Center (SATC), where we saw examples of the security systems DOD plans to install at warhead storage sites in Russia and some of the equipment the Russian Ministry of Defense uses to screen personnel who work with nuclear warheads. During this visit, we met with officials from the Russian Ministry of Defense and DOD.

We also visited a location in the United States where nuclear warheads are stored to gain an understanding of how the United States secures its own warheads. During our work, we met with officials from DOD and DOE, the National Security Council, Sandia, Los Alamos and Lawrence Livermore National Laboratories, the Russian Ministry of Defense, and the Russian Navy.

To assess U.S. efforts to help secure dangerous biological pathogens in Russia, we reviewed program documents from DOD; the Department of State; the National Security Council; the Russian Ministry of Health; the International Science and Technology Center; and four former WMD facilities where the United States has developed biosecurity assistance programs. We collected and analyzed reports and other publications on biosecurity issues from the federal government and nongovernmental organizations, and we met with officials from the United States Army Medical Research Institute for Infectious Diseases and Sandia Laboratory to discuss their approaches to biosecurity. We also met with officials of DOD and the Department of State, the National Security Council, the Russian ministries of Health and Science, Industry and Technology, the International Science and Technology Center, and DOD biosecurity contractors Bechtel and SAIC. We visited all four former Soviet biological weapons facilities in Russia that now receive U.S. biosecurity assistance: (1) State Research Center for Virology and Biotechnology (Vector), (2) the

State Research Center for Applied Microbiology (Obolensk), (3) the Russian Research Institute of Phytopathology at Golitsino (Golitsino) and (4) the Pokrov Biologics Plant (Pokrov). At these facilities, we met with directors and scientists to discuss biosecurity issues, and we toured the facilities.

Our review of DOD's biosecurity program focused on assistance provided since 1998 to improve the security of biological sites in Russia.[3] DOD has other programs to address the risks posed by the spread of dangerous pathogens or biological weapons expertise from Russia, including collaborative research projects with former Soviet biological weapons scientists and projects to enhance safety at biological sites. Congressional appropriations for DOD's Biological Weapons Proliferation Prevention (BWPP) projects in the former Soviet Union that include biosecurity, biosafety, and collaborative research assistance have grown from $17 million in 2002 to $55 million in 2003.

To assess U.S. efforts to help secure chemical weapons in Russia, we reviewed program documents from DOD and the Russian Munitions Agency, the executive agency in Russia charged with securing and destroying chemical weapons.[4] We visited both chemical weapons storage sites in Russia that now receive U.S. security assistance: Kizner and Shchuch'ye. At these facilities, we met with base commanders and security personnel, we toured the facilities to observe the installed U.S. security upgrades, and we were shown U.S.-funded security equipment for site perimeter upgrades that had yet to be installed. We collected and analyzed reports and other publications on chemical weapons security issues from the federal government and nongovernmental organizations. We visited Anniston Chemical Activity and Edgewood Chemical Activity to see and discuss the U.S. approach to chemical weapons security with officials there. We met with officials from DOD, the Russian Munitions Agency, as well as officials from the two chemical weapons storage sites in Russia that are receiving U.S.-funded security upgrades.

[3]For additional information on aspects of DOD's programs in this area, see U.S. General Accounting Office, *Biological Weapons: Effort to Reduce Soviet Threat Offers Benefits, Poses New Risks*, GAO/NSIAD-00-138 (Washington, D.C.: Apr. 28, 2000).

[4]In April 1999, we reported that DOD's efforts to help Russia destroy its chemical weapons stockpile was behind schedule. See U.S. General Accounting Office, *Weapons of Mass Destruction: Effort to Reduce Russian Arsenals May Cost More, Achieve Less Than Planned*, GAO/NSIAD-99-76 (Washington, D.C.: Apr. 13, 1999).

We performed our work from April 2002 through March 2003 in accordance with generally accepted government auditing standards.

Lack of Access to Nuclear Material Sites Hinders Program Completion

The Department of Energy (DOE) plans to secure all weapons-usable nuclear material in Russia by 2008. Over the past 10 years, DOE has made steady progress toward this goal and has nearly completed its work at civilian sites and naval fuel storage sites. However, DOE has made limited progress in securing nuclear material in Russia's nuclear weapons complex, a network of sites involved in the construction of nuclear weapons where most of the material is stored. Because it lacks access to most of these sites, DOE has shifted its new spending on the program from improving physical security over buildings with nuclear material to other programs, such as transportation security and guard force equipment and training. DOE faces significant challenges to continued progress with its program, in particular the lack of access to many of the most sensitive sites in Russia's nuclear weapons complex. Although DOE and MINATOM signed a new access agreement in September 2001, DOE has not gained access to sites where work is planned but not yet begun.

DOE Plans to Secure All Weapons-Usable Nuclear Material by 2008

Weapons-usable nuclear material is highly enriched uranium or plutonium that can be used directly in a nuclear weapon without further enrichment or processing.[1] This material is considered to be highly attractive to theft because it (1) is not very radioactive and therefore relatively safe to handle and (2) can easily be carried by one or two people in portable containers. Terrorists and countries seeking nuclear weapons could use as little as 25 kilograms of highly enriched uranium or 8 kilograms of plutonium to build a nuclear weapon.

DOE estimates that Russia has about 600 metric tons of weapons-usable nuclear material. Russia stores weapons-usable nuclear material at three types of sites: (1) civilian sites, which produce or store nuclear fuels and materials for civilian application and research; (2) naval fuel storage sites, where the Russian Navy stores stockpiles of highly enriched uranium to be used as reactor fuel in submarines and icebreakers; and (3) the nuclear weapons complex, a network of 10 nuclear cities that fabricate, refurbish, or dismantle nuclear weapons and their components. Most weapons-usable

[1]Weapons-usable nuclear material is uranium enriched to 20 percent or greater in uranium-235 or uranium-233 isotopes and any plutonium containing less than 80 percent of the isotope plutonium-238 and less than 10 percent of the isotopes plutonium-241 and plutonium-242. These types of material are of the quality used to make nuclear weapons.

nuclear material in Russia is in the nuclear weapons complex. MINATOM oversees operations at sites in the weapons complex and at some civilian sites.

DOE plans to improve security over Russia's entire stockpile of weapons-usable nuclear material to protect against both internal and external threats by 2008. In 1998, DOE issued guidelines that provide criteria for effectively reducing the risk of nuclear material theft in Russia.[2] The guidelines provide a categorization scheme for ranking the relative threat posed by different types and quantities of material, which is used to determine the extent and type of upgrades necessary to secure the material. DOE has determined that 243 buildings at 40 sites in Russia (including central alarm stations) require improved security systems to better protect weapons-usable nuclear material from theft. Although DOE may not yet have identified all buildings, DOE's assessment serves as a relatively stable baseline for planning, budgeting, and measuring the progress of its assistance.

DOE is installing security improvements that protect against both the internal and external threats of theft. DOE installs security upgrades in two phases—rapid upgrades and comprehensive upgrades. Buildings that contain material of high proliferation threat receive both rapid and comprehensive upgrades, and buildings with material of less concern only receive rapid upgrades. According to DOE officials, rapid upgrades are primarily designed to delay and detect external adversaries. They include bricking up windows in storage buildings; installing strengthened doors, locks, and nuclear container seals; establishing controlled access areas around nuclear material; and implementing procedures that require the presence of two people when nuclear material is handled. Comprehensive upgrades include electronic sensors, motion detectors, and closed circuit television systems to detect intruders; central alarm stations, where guards can monitor cameras and alarms; and computerized material accounting systems. According to DOE officials, these comprehensive upgrades secure against both internal and external threats.

[2]*Programmatic Guidelines for Material Protection, Control, and Accounting Upgrades at Russian Facilities* (first published Dec. 1998, revised Sept. 2001).

DOE has developed time frames for completing the program, including schedules for individual sites, to assist in planning and budgeting. In our February 2001 report,[3] we reported that DOE anticipated completing security improvements in Russia at all buildings with nuclear material by 2010. In fiscal year 2001, the Congress appropriated $101.1 million to help protect Russian weapons-usable nuclear material.[4] Congress increased the appropriation for the program to $163.3 million in fiscal year 2002, and after the terrorist attacks of September 11, 2001, further increased DOE's appropriation by $150 million. Because of these additional funds, DOE revised its time frame for protecting all weapons-usable nuclear material in Russia to 2008. Specifically, DOE plans to complete its work at naval fuel storage sites in 2006, at civilian sites in 2007, and at the nuclear weapons complex in 2008.

DOE Has Made Uneven Progress Securing Nuclear Material in Russia

DOE's progress in protecting weapons-usable nuclear material has varied widely, depending on the type of site. As of January 2003, DOE had completed security improvements at most of the buildings at civilian sites and naval fuel storage sites. In contrast, DOE has not started work at the majority of the buildings in the nuclear weapons complex, which contains most of the remaining unprotected weapons-usable nuclear material in Russia. Although DOE has now protected 38 percent, or about 228 metric tons, of Russia's weapons-usable nuclear material, the vast majority of the remaining material is at sites in the nuclear weapons complex where, due to Russian national security concerns, DOE has not gained access and begun work. Because DOE has been largely unable to start new work in the weapons complex, most of DOE's new spending for fiscal years 2001 and 2002 was on programs other than installing security improvements at buildings containing weapons-usable nuclear material.

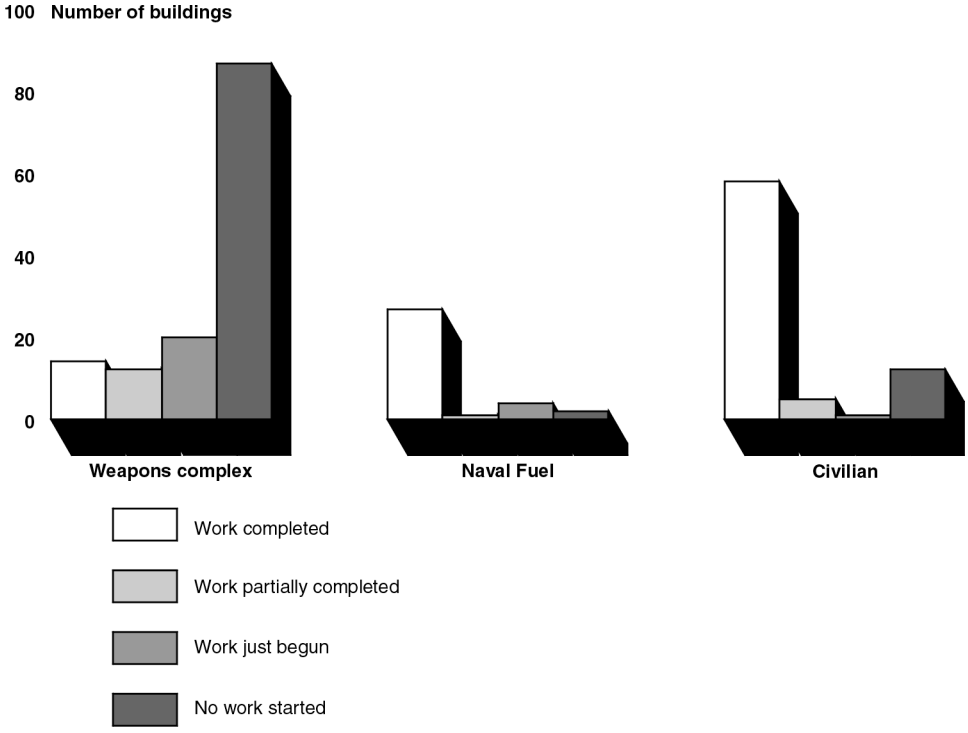
[3]U.S. General Accounting Office, *Nuclear Nonproliferation: Security of Russia's Nuclear Material Improving; Further Enhancements Needed*, GAO-01-312 (Washington, D.C.: Feb. 2001).

[4]This figure represents new appropriations for DOE's International Nuclear Material Protection and Cooperation programs, excluding all funding for DOE's efforts to secure nuclear warheads at Russian Navy sites.

Progress in Nuclear Weapons Complex Lags

As seen in figure 3, DOE has made the least progress in providing security at Russia's nuclear weapons complex, where it has completed work at only 14 of the 133 buildings, or 11 percent.[5] DOE has not started work at the majority of the remaining buildings in the nuclear weapons complex because MINATOM has not provided the necessary access.

Figure 3: Status of DOE Security Enhancements at Buildings with Weapons-Usable Nuclear Material and Central Alarm Stations in Russia, January 2003



Source: DOE.

Note: The figure does not include the status of nuclear security systems installed by DOE at Russian Navy nuclear warhead sites. See chapter three for information on DOE's program to install security systems at these sites. The figure includes central alarm stations, which do not contain nuclear material but are part of the security system for buildings that do contain material.

[5]We used number of buildings as a measure of progress because the total amount of material protected at each type of site is classified.

As of January 2003, DOE's efforts to install security systems at all three types of sites have protected 38 percent of Russia's weapons-usable nuclear material. The vast majority of the remaining material is in the nuclear weapons complex, where some buildings hold several tons of uranium or plutonium. Due to lack of access, DOE is installing security improvements in the nuclear weapons complex at a much slower pace than it anticipated when it issued its first cost and schedule estimate in 2000. At that time, DOE planned to complete these upgrades by 2010. For example, DOE originally anticipated beginning at least preliminary work in fiscal year 2001 at Russia's four nuclear weapons assembly and disassembly sites (the most sensitive parts of the nuclear weapons complex). As of January 2003, according to DOE officials, work had not begun at any of these sites. Progress at weapons complex sites where DOE has access can dramatically increase the amount of material protected. For example, since February 2001, DOE has increased the amount of material it has secured at the Mayak Production Association, from 15 metric tons to 28 metric tons.

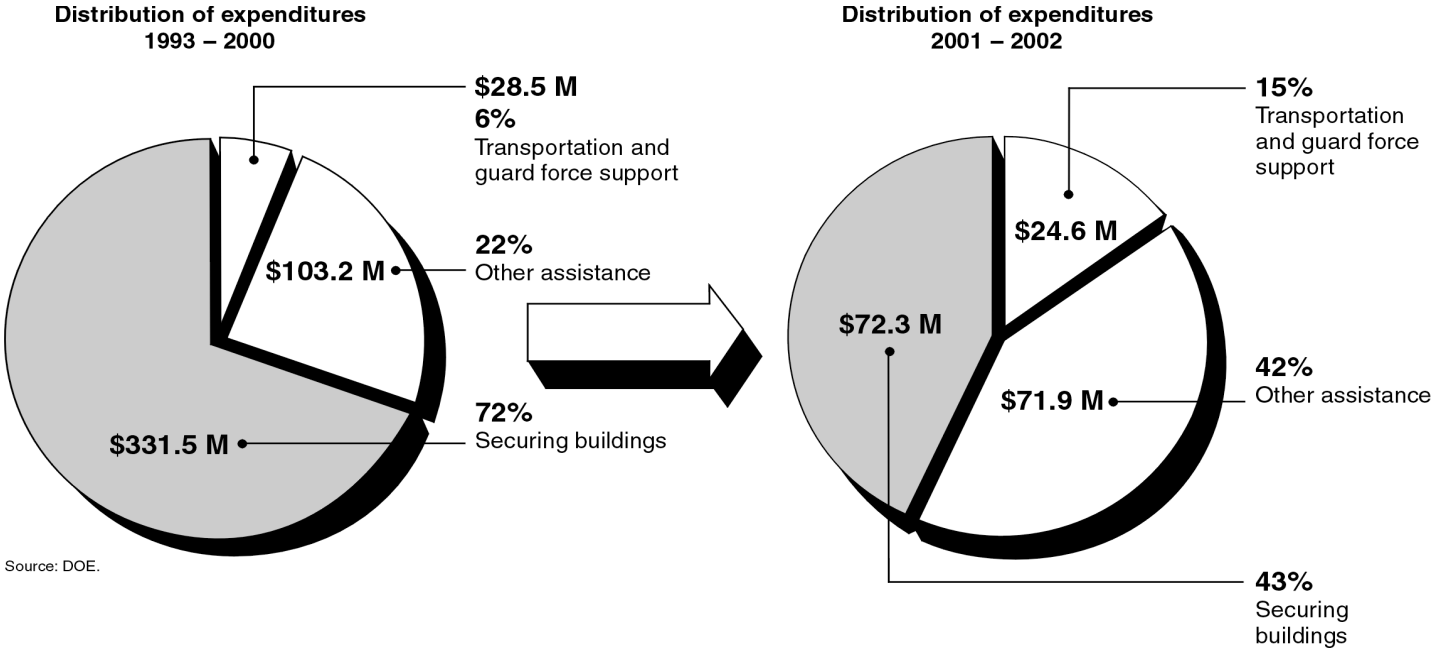
In contrast to Russia's nuclear weapons complex, DOE has made significant progress protecting buildings at civilian and naval fuel storage sites and is nearing completion of its security upgrades at these sites. As of January 2003, DOE had completed work at 78 percent (85 of 110) of the buildings at these locations. DOE's progress at the civilian and naval fuel storage sites has been facilitated by generally good access to buildings with weapons-usable nuclear material because Russia has fewer national security concerns about these sites. For example, at Novosibirsk Chemical Concentrates Plant, one of the largest civilian sites, DOE had adequate access to construct a single storage facility to replace nine dilapidated buildings that stored nuclear material. Furthermore, at one site in Russia's civilian sector where DOE suspended work in 1999 due to lack of access, negotiations resumed for providing assistance in 2001, according to DOE officials. DOE has since been granted access and made several trips to the site and anticipates beginning work at that site early in 2003.

DOE's Increased Funding Went to Other Objectives

Because progress in installing security upgrades to buildings in the nuclear weapons complex has been slowed, the majority of DOE's additional funding in 2001 and 2002 shifted to transportation security, guard force support, and other assistance. These other assistance efforts included supporting the operation and maintenance of security systems already installed at sites, converting highly enriched uranium to a form that cannot

be used for weapons, and developing nuclear regulations.[6] As seen in figure 4, expenditures for security enchancements at buildings at civilian, naval fuel, and nuclear weapons complex sites decreased from the average of 72 percent in fiscal years 1993 to 2000 to 43 percent in fiscal years 2001 and 2002. The majority of DOE's expenditures during fiscal years 2001 and 2002 were for activities other than securing buildings such as securing material during transport and maintaining previously installed equipment. While these efforts are important, they do not directly advance DOE's goal of securing all buildings in Russia with weapons-usable nuclear material by 2008.

Figure 4: Changes in DOE's Distribution of Expenditures Between 1993-2000 and 2001-2002



Source: DOE.

Note: GAO analysis of DOE data.

[6]For a more detailed discussion of DOE's other efforts to secure nuclear material and related activities see appendix II.

Access to Sensitive Sites Remains a Barrier to Completing Security Improvements by 2008

DOE's lack of access to many buildings that store weapons-usable nuclear material, in particular to buildings in the nuclear weapons complex, is the greatest challenge to providing assistance to improve nuclear material security in Russia. As set forth in its guidelines for improving nuclear material security in Russia, DOE requires access to the buildings to design security systems and confirm their installation. However, despite DOE's efforts to gain access since 1995, MINATOM has continued to deny DOE access to buildings in the nuclear weapons complex due to Russia's concerns about national security and laws that protect state secrets.

As of January 2003, DOE had obtained or anticipated obtaining access to 35 of the estimated 133 buildings in Russia's nuclear weapons complex with nuclear material. At the remaining 98 buildings (74 percent of the total), DOE had no access to design or confirm the installation of security systems. The level of access changed little since our February 2001 report, which also found that DOE did not have access to about three quarters of the buildings in Russia's nuclear weapons complex. Russian officials in the nuclear weapons complex told us that it is very unlikely they would ever grant DOE physical access to the most sensitive areas.

As a result of the lack of access, DOE has not been able to improve security at many buildings containing hundreds of metric tons of weapons-usable nuclear material—the majority of the remaining nuclear material in Russia. DOE has placed much of this material in its highest threat category and would make it first priority for receiving security improvements if DOE had access. The lack of access is likely to prevent DOE from accelerating completion of security improvements in the nuclear weapons complex from 2010 to 2008. In addition, DOE has not been able to confirm the installation of security improvements at several sites in the nuclear weapons complex where it funded security improvements before a stricter policy requiring access to buildings receiving assistance was enforced. For example, DOE spent approximately $1 million to install rapid and comprehensive upgrades at a building in Snezhinsk (also known as Chelyabinsk-70) where DOE has never had access. A DOE official said that DOE would not have approved assistance to that building under the current access policy.

To gain access to buildings in the weapons complex where it had not been allowed to work, DOE signed an access agreement with MINATOM in September 2001. In April 2002, DOE stated that this agreement would enable DOE to begin new work at several buildings in the weapons

complex where it lacked access. However, the agreement did not facilitate DOE's access to these buildings. The agreement only described administrative procedures, such as specifying which DOE personnel are allowed to make site visits and the number and duration of those visits. DOE and Russian officials stated that this agreement did little to improve DOE's access to new buildings, and in some cases, the agreement reduced U.S. access. In fact, during our July 2002 visit, MINATOM used the agreement as a rationale for denying GAO access to two sites in Russia on the grounds that GAO staff were not on the access list.

DOE is exploring the use of alternative access procedures, as allowed in its access policy. For example, at Snezhinsk, DOE used video and photographs instead of physical access to conduct a vulnerability assessment for part of a building where DOE did not have access. (DOE officials said that they had access to the rest of the building.) However, DOE has not yet expanded the use of alternative access beyond this building. In addition, DOE has proposed building new central storage facilities at some sites in the nuclear weapons complex as a way to accelerate security upgrades. Instead of improving security at many separate buildings, DOE would pay to build or convert one building to store the nuclear material from other buildings. DOE has agreed in principle to such an approach, at least at one site in the nuclear weapons complex, but DOE and MINATOM have not reached a final agreement or begun construction on a central storage facility.

Conclusion

DOE has made progress installing improved security systems for 38 percent of the weapons-usable nuclear material in Russia. However, DOE will likely be unable to complete its work in Russia by 2008, as currently planned, largely due to Russia's lack of cooperation on access to sensitive sites in the nuclear weapons complex. Because DOE has made little progress gaining access to new sites in the Russian weapons complex, it has shifted its funding from securing buildings with nuclear material to other program objectives. These other efforts, such as supporting the operation and maintenance of the security systems, are essential to the long-term success of the program and can contribute to the overall security of Russia's weapons-usable nuclear material. Nevertheless, the trend toward these supporting activities raises potential concerns about the program's focus and direction. While these other program activities are needed and relevant, they do not directly advance DOE's objective of securing all buildings in Russia with weapons-usable material. In addition, in light of Russia's long-standing and continued unwillingness to allow access to most of the sites in the weapons complex, DOE needs to

seriously reconsider its ambitious goal of protecting all of Russia's weapons-usable nuclear material by 2008.

Recommendation

Given the current lack of access to many nuclear weapons complex sites, the Secretary of Energy should reassess the department's expedited plans to provide security enhancements to Russian facilities housing weapons-usable nuclear material.

DOD and DOE Have Had Mixed Success Protecting Nuclear Warheads

DOD and DOE plan to improve security of nuclear warheads at Russia's storage sites and rail transfer points, where warheads are stored apart from their delivery vehicles. However, the departments do not know the total number of sites they plan to assist because Russia has provided only limited information about site locations and security conditions. DOE has scaled back its plans to assist operational sites, which support deployed nuclear weapons, to comply with January 2003 U.S. interagency guidelines that preclude assistance to most operational sites out of concern that U.S. assistance could enhance Russia's military capability. DOD's and DOE's progress in improving security at nuclear warhead sites has been mixed. DOD has made limited progress because its counterpart, the 12th Main Directorate of the Russian Ministry of Defense, has installed less than half of the fencing DOD has provided to protect sites against external threat. In addition, the Ministry has not provided access to sites so that DOD can address internal threats. In contrast, DOE has improved security at 33 of 36 sites because the Russian Navy has provided sufficient access to these sites. However, DOE has improved security at some sites that would have been prohibited from receiving assistance under U.S. interagency guidelines.

DOD and DOE Are Addressing Different Segments of Russia's Nuclear Warhead Sites

Russia stores its nuclear warheads at three types of sites—storage sites, operational sites, and rail transfer points.[1] Table 1 provides an overview of plans that the DOD and DOE have to improve security at Russian nuclear warhead sites.

[1]Unclassified U.S. estimates of the number of Russian warheads range from 18,000 to 25,000.

Table 1: DOD and DOE Assistance for Nuclear Warhead Security in Russia

	Type of site	Assistance plan
Storage sites	Sites for the long-term maintenance and storage of warheads.	DOD plans to improve security at all storage sites. DOD has a classified estimate of the total number of sites. DOE is addressing security at five Russian Navy storage sites and plans to improve security at two or more Strategic Rocket Forces storage sites.
Operational sites	Sites that support deployed nuclear weapons.	DOD – no plans. DOE originally planned to assist 27 Russian Navy operational sites but has scaled back plans to comply with U.S. interagency guidelines.
Rail transfer points	Sites for securing warheads during transport.	DOD – waiting for additional information before providing assistance. DOE is addressing security at four Russian Navy rail transfer points and plans to improve security at one or more Strategic Rocket Forces rail transfer points.

Source: GAO.

Note: GAO analysis of DOE and DOD information.

DOD and DOE both provide assistance to improve nuclear warhead security in Russia because they work with different branches of the Russian military. DOD has focused on improving security at storage sites under the command of the 12th Main Directorate of the Russian Ministry of Defense, the branch of the Russian military specifically responsible for warhead security and maintenance. In contrast, DOE has focused on improving security at Russian Navy sites, which include storage, operational, and rail transfer sites, and has recently considered expanding its assistance to Strategic Rocket Forces sites. DOE efforts to increase security at operational sites, which support deployed nuclear weapons, raised concerns in the Administration that security assistance might enhance the military capability of Russia's offensive nuclear force. However, the Administration did not have a policy balancing the benefit of increasing security at operational sites against the possibility of enhancing military capability. In January 2003, U.S. interagency guidelines precluded

DOD and DOE assistance to most operational sites. The guidelines allow the departments to improve security at storage sites and rail transfer points that support warhead storage, consolidation, dismantlement, or force reductions, where security assistance it less likely to enhance operational capability. The guidelines do not support assistance to operational sites where mated or unmated warheads may be handled in the course of training or deployment. While DOD's security plans included only storage sites and therefore complied with the guidelines, DOE has scaled back its plans to comply with the guidelines.[2]

DOD Plans to Improve Security at All Storage Sites

DOD has focused on improving security at all of Russia's storage sites,[3] including both the large national stockpile sites and smaller sites at Navy, Air, and Strategic Rocket Forces bases. In 1995, DOD and the Russian Ministry of Defense signed an agreement and began discussions on improving security at Russia's nuclear warhead sites. DOD chose to focus on storage sites because it works solely with the 12th Main Directorate of the Russian Ministry of Defense, which has jurisdiction over the large national stockpile sites and shares jurisdiction over the smaller storage sites located at military bases.[4] According to DOD officials, the storage sites may contain warheads for both tactical and strategic weapons[5] and warheads that Russia has slated for dismantlement.

The 12th Main Directorate has not provided DOD with information on the total number or location of storage sites because it considers this information to be classified or sensitive. However, the Directorate has stated that it needs 123 kilometers of new perimeter fencing for 52 geographic locations throughout Russia. DOD has used this information to estimate the total magnitude of security needs at Russia's storage sites and

[2]We have not taken a position on whether security assistance to nuclear warhead sites enhances operational capability.

[3]DOD has a classified estimate of the total number of storage sites.

[4]Jurisdiction over operational sites and rail transfer points is less clear—the Navy, Air, and Strategic Rocket Forces have jurisdiction over many of the sites, but the 12th Main Directorate has been gradually trying to expand its jurisdiction over these sites.

[5]Strategic nuclear weapons generally have an intercontinental range and fall under U.S.-Russian arms control agreements. Tactical nuclear weapons generally have a shorter range and smaller yield.

to develop its assistance plan. DOD estimates that security improvements under this plan will be complete by 2010.

DOD has considered expanding its assistance to rail transfer points, locations used to transfer warheads between trains and trucks and for temporary warhead storage. While the U.S. interagency guidelines permit assistance to rail transfer points, DOD has not yet developed a security assistance plan for rail transfer points because the 12th Main Directorate has provided little information on these sites. DOD officials stated that warheads are most vulnerable at rail transfer points. The absence of a security plan for these sites is a significant gap in DOD's current plans for enhancing security around Russian nuclear warheads.

DOE Is Improving Security at Russian Navy Sites

DOE is addressing security at 36 Russian Navy nuclear warhead sites: 5 storage sites, 27 operational sites, and 4 rail transfer points.[6] DOE estimates that it will complete security improvements at the existing sites by 2006. However, the U.S. interagency guidelines prohibited security assistance to most operational sites. As a result of the guidelines and its own internal review of assistance to operational sites, DOE has scaled back its plans for enhancing security at Navy operational sites. At these sites, warheads may be mated with delivery vehicles in preparation for deployment or loaded onto ballistic missile submarines. Prior to the interagency guidelines, DOE officials provided security assistance to Russian Navy sites because they believed that security improvements to such sites would not enhance Russia's military capability. In 2002, DOE also began work in response to a request from the Russian Ministry of Defense for assistance in securing Strategic Rocket Forces nuclear warhead sites.

DOD and DOE Plan to Address External and Internal Security Threats

DOD and DOE have plans to provide a range of security improvements to address both external and internal threats. Examples of security improvements that protect primarily against external threat include new perimeter fencing with sensors to detect intruders trying to penetrate the fence, new guard towers and fighting positions to better detect and defend against intruders, and reinforced vehicle entrance gates. Security

[6]In our February 2001 review of DOE efforts to improve nuclear material security in Russia, we reported that DOE was improving security at 42 Russian Navy nuclear warhead sites. The number decreased to 36 because some of the sites include local zones that DOE had counted as more than one site.

improvements that protect against both internal and external threats include access control systems that limit the site personnel who can enter nuclear warhead storage areas and other systems that detect unauthorized entry into bunkers by site personnel or outsiders.

DOD and DOE install security improvements in two phases. During the first phase, DOD and DOE provide quick fixes and rapid upgrades, respectively, to improve the security of site perimeters to protect against external threats. During the second phase, DOD and DOE provide comprehensive upgrades—the full range of security improvements that protect against external and internal threats. The first phase costs about $1 million per site and requires little analysis of existing security conditions. Comprehensive upgrades cost about $10 million per site and require vulnerability assessments—site-specific evaluations of the security conditions—to plan and design the improved security systems. Both DOD and DOE require physical access to a site before providing comprehensive upgrades.

DOD has other programs to help secure warheads that Russia plans to dismantle and to improve the reliability and effectiveness of the guard forces that protect nuclear warhead sites. The programs include transportation security enhancements, a computerized warhead inventory system, a facility to store nuclear material from dismantled warheads, and equipment for guard forces and to test guard forces for drug and alcohol abuse. For additional information on these programs, see appendix III.

Progress to Improve Security Has Been Mixed

DOD and DOE have made mixed progress in securing nuclear warheads in Russia. DOD has made limited progress in securing storage sites. In contrast, DOE has made significant progress in improving security at Russian Navy sites, but many of the operational sites DOE has assisted would have been prohibited from receiving assistance under the January 2003 U.S. interagency guidelines.

DOD Has Made Limited Progress in Improving Security at Storage Sites

Since beginning discussions with the Russian Ministry of Defense in 1995 on providing security assistance to nuclear warhead sites, DOD has made limited progress in improving security at the storage sites where it has focused its efforts. DOD purchased 123 kilometers of perimeter fencing to meet the requirements defined by the Russian Ministry of Defense for the storage sites under its jurisdiction. The Russian Ministry of Defense agreed to install the fencing at its own expense but has made limited progress in

doing so. The fencing consists of three layers, including sensors to detect intruders, and protects primarily against threats from outsiders.

DOD began delivering the fencing in late 1997, but the Ministry of Defense reported in spring 2002 that it had installed about one third of the fencing—42 kilometers at 52 locations—and was more than 2 years behind schedule in installing the remainder. The Ministry of Defense has not provided DOD with the location or number of sites where fencing has been installed, but has indicated only the number of kilometers of fencing installed. Furthermore, the Ministry of Defense has not updated the amount of fencing installed since spring 2002 or given DOD a revised estimate of the completion date for installing the fencing. According to DOD, the Ministry of Defense lacks funding to cover the cost of paying experienced contractors to install the fencing, which DOD estimates to be about $1 million per kilometer. DOD will not pay to install the fencing because the Ministry of Defense has not provided DOD access to the sites.

DOD has not yet provided comprehensive upgrades—security systems that protect against internal and external threats—at any of the storage sites. DOD has tested and evaluated the comprehensive upgrades at the Security Assessment and Training Center (SATC) near Moscow, but Russia has not provided DOD access to the sites for the purpose of installing the upgrades. DOD requires physical access to the sites because the installation of comprehensive upgrades demands a greater level of design and security expertise. In September 2002, in anticipation of reaching an agreement on access with the Russian Ministry of Defense, DOD signed a contract for $83 million to install the comprehensive upgrades at eight storage sites. According to DOD, work at these sites is expected to begin spring 2003. DOD was unable to sign this contract earlier in 2002 as originally planned because, in January 2002, the administration temporarily suspended the Cooperative Threat Reduction program after it refused to certify that Russia was complying with arms control agreements. This resulted in an 8-month suspension of contracting for new nuclear warhead security projects.[7]

[7]This suspension did not affect DOD's ability to execute existing contracts. The National Defense Authorization Act for Fiscal Year 2003 gave the President authority to waive restrictions that required the administration to certify arms control compliance by Russia. The President exercised this authority on January 14, 2003.

DOE Has Improved Security Over Most Russian Navy Sites

Since DOE began providing assistance to Russian Navy nuclear warhead sites in 1999, it has installed security improvements at 33 of the 36 sites where the Navy requested assistance. At all 33 sites, DOE installed rapid upgrades that primarily protect against external threats. As of January 2003, DOE had also installed comprehensive upgrades that protect against internal threats at 8 of the 33 sites. At five sites, DOE started but had not yet completed comprehensive upgrades. The rapid upgrades include installing or repairing perimeter fencing, replacing guard towers around the perimeter of the sites to provide better protection for the guard forces, and installing vehicle barriers at entrance gates. The comprehensive upgrades are based on site-specific vulnerability assessments and include systems to detect and assess intruders, control personnel access to the sites, and improve the ability of guard forces to respond to alarms.

The 33 sites that received upgrades include the 5 storage sites over which the Russian Navy and the Ministry of Defense share jurisdiction. The remaining sites include 4 rail transfer points and 24 operational sites—facilities where nuclear warheads are mated to delivery vehicles, piers for loading and unloading nuclear weapons onto ballistic missile submarines, and piers where ballistic missile submarines loaded with nuclear weapons are docked.

The January 2003 U.S. interagency guidelines precluded further DOE assistance to many operational sites. The guidelines permitted assistance to storage sites and rail transfer points that support warhead storage, consolidation, dismantlement, or force reductions. However, while it allowed for exceptions, the policy prohibited assistance to operational sites where mated or unmated warheads may be handled in the course of training or deployment, such as piers where submarines loaded with nuclear weapons are docked. The change in policy reflected concern that U.S. assistance might enhance Russia's military capability. To implement this policy, DOE curtailed its plans to provide comprehensive security improvements at operational sites where it had already installed rapid upgrades. In addition, DOE will not provide further assistance to operational sites that do not meet the policy's guidelines.

DOD and DOE Face Challenges in Securing Russia's Nuclear Warhead Sites

The departments face two challenges in securing Russia's nuclear warhead sites. The Russian Ministry of Defense has not allowed DOD to have access to Russia's nuclear warhead sites. In addition, in spite of the U.S. interagency guidelines, DOD and DOE face challenges in coordinating their programs.

DOE Has Had Sufficient Access to Install Security Improvements, but DOD Has Not

DOD and DOE require physical access to nuclear warhead sites to help design security improvements and confirm that Russia has installed security improvements as agreed before paying for the work. In particular, they require access to site perimeters, entry control facilities, and guard facilities where the bulk of the security improvements are installed. DOD and DOE officials said that they do not require access inside the bunkers or other areas where nuclear warheads are stored because they provide minimal security improvements to those areas.

With the exception of visits to two sites that were used to demonstrate how DOD would assess security needs and install security improvements, the Russian Ministry of Defense has denied DOD access to nuclear warhead sites to install security improvements. This lack of access has blocked DOD from installing comprehensive upgrades, the full set of security improvements that protect against both internal and external threats of theft, despite DOD's investment of $35 million to test and evaluate these security improvements at the Security Assessment and Training Center near Moscow. In addition, while DOD has purchased perimeter fencing for the sites, it will not pay for installation without site access, even though Russia is behind schedule in installing the fencing with its own funds.

DOD signed an access agreement with the Russian Ministry of Defense in February 2003 and plans to begin providing comprehensive security improvements at eight of the storage sites in spring 2003. The access agreement provides for limited access by DOD representatives to Ministry of Defense nuclear warhead sites where the Ministry requests DOD security assistance. However, given previous delays and setbacks in gaining Russia's permission to visit nuclear warhead sites, additional delays beyond spring 2003 are possible. For example, the Russian government approved a law in spring 2002 that would allow DOD access to nuclear warhead sites; however, negotiations with the Ministry of Defense on procedures for implementing the law took longer than expected and prevented DOD from obtaining access to sites as soon as it anticipated.

Unlike DOD, DOE has obtained sufficient access to Russia's nuclear warhead sites to provide both rapid upgrades and comprehensive security improvements. DOE has visited most of the Russian Navy nuclear warhead sites—some sites as many as four times—to gather information to help design security systems and observe the security improvements it has paid to install. As part of this review, we also obtained access to two Navy sites and saw vehicle barriers, perimeter fencing, guard towers, and entry control facilities provided by DOE. Nevertheless, DOE has not visited 9 of the 33 nuclear warhead sites where it has provided assistance. The Ministry of Defense has restricted DOE's access to some of these sites, and according to DOE officials, they have not visited other sites because they can realistically go to a limited number of sites each year. DOE officials stated that they plan to eventually visit all of the Navy sites where they have installed security improvements. DOD and DOE officials said various factors might explain why DOE has received better access from the Russian Navy than DOD has received from the 12th Main Directorate of the Russian Ministry of Defense. For example, the Russian Navy may be more willing to provide access because DOE teams are composed of civilian security experts, whereas the 12th Main Directorate may be reluctant to provide access to DOD military personnel. Alternatively, according to DOD officials, the 12th Main Directorate, under Russian law, may consider its storage sites to be more sensitive than operational sites.

DOD and DOE Have Coordinated Their Efforts but Have Followed Different Approaches

DOD and DOE coordinate their efforts to improve nuclear warhead security in Russia through an interagency working group and a joint working group with their Russian counterparts. DOD and DOE have avoided duplication of effort, but they have not followed uniform policies. Furthermore, they face several implementation issues that will require continued coordination.

The interagency working group includes key representatives from DOD and DOE and reports to the National Security Council. The group formed after DOE began providing assistance to Russian Navy nuclear warhead sites in 1999 and meets at least once a quarter and frequently every month. The joint working group meets about every 6 months and includes key representatives from DOD, DOE, the Russian Navy, and 12th Main Directorate of the Russian Ministry of Defense. DOD and DOE officials said that their interagency coordination was initially not good but had improved, and they pointed to these working groups as a positive development in coordination. Specifically, the officials said that they had

avoided duplication of assistance, a primary objective of the working groups.

Despite these efforts, DOD and DOE have pursued two different policies on assistance to operational sites. While it did not specifically have a policy against assistance to operational sites, DOD focused on storage sites, where warheads are stored separate from their delivery vehicles. DOD officials stated that focusing on storage sites helped avoid potentially difficult policy decisions that could arise from directly assisting operational military sites. In contrast, DOE structured its warhead security program based on requests for assistance from the Russian Navy. Much of DOE's security assistance went to operational sites where warheads are deployed with delivery vehicles because those were the sites for which the Russian Navy requested upgrades. Only after U.S. interagency guidelines were issued in January 2003, 3 years after DOE began providing assistance, did DOE and DOD resolve this difference and institute a common policy that balanced nuclear warhead security against the possibility of enhancing Russia's military capability.

While the U.S. interagency guidelines have resolved this primary issue, DOD and DOE face other coordination issues. For example, DOD and DOE have not determined which department will improve security at sites they both include in their plans. The departments' plans overlap because the 12th Main Directorate and the Russian military services (the Navy, Air, and Strategic Rocket Forces) share jurisdiction over many nuclear warhead sites. For example, five Russian Navy sites are storage sites that fall under the jurisdiction of the Russian Navy and the 12th Main Directorate. The Russian Navy requested assistance for these five sites from DOE, and the 12th Main Directorate requested assistance from DOD.[8] Similarly, DOD and DOE have not resolved which department will improve security at the Strategic Rocket Forces' nuclear warhead sites. Initially, DOD included these sites in its plan, but in 2002 DOE received a request from the Russian Ministry of Defense for assistance to these sites. DOE is pursuing this request, has visited two sites, and has requested $24 million from Congress to help secure Strategic Rocket Forces' nuclear warhead sites in fiscal year 2004.

[8]DOE has already installed both rapid upgrades and comprehensive upgrades at one of the sites and rapid upgrades at the other four.

DOD and DOE officials said that they do not have a position on which department should provide security assistance to sites identified in both their plans. Rather, they said that whichever agency has the best access and cooperation from their Russian counterpart should install security improvements. These decisions will be made on a site-by-site basis in the interagency working group. Since DOD has already purchased perimeter fencing for the Strategic Rocket Forces sites, DOD officials said that if DOE provides assistance to those sites, it should avoid duplication of assistance and use DOD equipment. In addition, under the current policy guidelines, it is possible that DOD and DOE could both help secure sites for the Strategic Rocket Forces.

DOD and DOE are also using different vendors to purchase security equipment for Russian warhead storage sites. For example, DOD and DOE used different vendors to purchase different alarm communication and display systems that will perform essentially the same function. According to agency officials, using different vendors and different systems can have advantages such as accounting for different weather conditions. However, they also stated that more training and maintenance are required if agencies provide multiple, nonstandardized systems. The Departments do not have a plan to jointly evaluate and deploy equipment that balances the advantages and disadvantages of using standardized equipment. DOD officials stated that the equipment DOE uses should be tested at the SATC, the equipment testing and evaluation center that DOD established near Moscow. However, DOE officials said that they believed most, if not all, of the equipment they provide is standardized with DOD equipment and have not committed to testing the equipment DOE provides at the SATC.

DOD and DOE may need to coordinate their assistance in other areas to ensure consistent policy. For example, both agencies provide assistance to improve guard force effectiveness. DOE is considering developing two guard force training centers for the Russian Navy, and DOD has provided assistance to use the SATC as a training center for the 12th Main Directorate.

Conclusion

The approaches that DOD and DOE have taken to improve the security of Russia's nuclear warhead sites are complementary but have key differences. In particular, DOD has focused on Russia's storage sites, and DOE has focused on Russian Navy sites that, with some exceptions, are largely separate from the sites receiving DOD assistance. Furthermore, the agencies' different approaches have so far avoided overlap and allowed the

United States to protect a greater number of sites. For example, DOE has obtained sufficient access to install security improvements at most Russian Navy sites, including rail transfer points, which are considered to be more vulnerable to theft than storage sites. In contrast, while DOD has made limited progress because it has not yet obtained the necessary access, it has plans in place to improve security at Russia's storage sites if the Ministry of Defense provides access under its February 2003 access agreement with DOD.

However, because DOD and DOE have different approaches to achieving a common objective critical to U.S. national interests, coordination is essential. DOD and DOE established mechanisms to share information and avoid duplication, but they did not, until January 2003, have consistent plans that balance nuclear warhead security improvements against the possibility of enhancing the operational capability of Russia's nuclear forces. DOD and DOE now have consistent plans to follow as they implement their programs. However, the departments will need to work closely together on several areas as they proceed with their efforts to improve the security of Russia's nuclear warhead sites. Because of the different approaches taken by DOD and DOE, it will be important to address issues such as agency jurisdiction over Russian sites, equipment standardization, and common approaches to training guard forces.

Recommendation

The Secretaries of Defense and Energy should develop an integrated plan to ensure that their related programs to help secure Russia's nuclear warheads work together to address implementation issues, such as determining which department will provide assistance to certain sites and resolving equipment standardization concerns.

Department of Defense Assistance to Secure Former Biological Weapons Facilities Has Had Limited Results

DOD has limited information on the location and security of Russian sites with dangerous biological pathogens because the Russian government has provided limited access to and information about these sites. While DOD plans to address internal and external security threats at biological sites in Russia, it has no time frames for completing this work, and it has not determined how many biological sites in Russia should receive security improvements. After more than 4 years of effort, DOD has made little progress in addressing security concerns at these sites. As of December 2002, DOD had installed security equipment at two sites to protect against external security threats but had not addressed insider threats by increasing controls over access to materials or improving physical security within labs. U.S. efforts to secure biological sites in Russia have faced significant challenges. For example, the Russian government has closed many sites to U.S. security assistance programs, and the United States has been unable to negotiate an agreement with Russia that would expedite DOD's ability to provide security assistance.

DOD's Plans for Securing Biological Facilities in Russia Are Under Development

DOD's plans to secure Russia biological sites are based on limited information about the number, location, pathogen collections, and security conditions at these facilities. DOD does not know how many sites in Russia have dangerous biological pathogens. Thus far, DOD has focused its security program on sites where it has identified dangerous pathogen collections and where it has access. However, DOD does not know how many sites it plans to help secure and has no time frames for completing its work. DOD plans to address both internal and external security concerns at sites where it has provided assistance.

Russia Inherited Most of the Soviet Union's Biological Weapons Network

During the Cold War, the Soviet Union developed the world's largest and most sophisticated offensive biological weapons program, a program that developed weapons to spread smallpox, anthrax, plague, and other dangerous pathogens. Although it had ratified the Biological and Toxin Weapons Convention (BWC) in 1972,[1] the Soviet Union secretly continued its biological weapons program for 2 more decades, employing 60,000

[1]The Biological and Toxin Weapons Convention prohibits countries from developing, producing, stockpiling, or acquiring biological pathogens for offensive purposes. For additional discussion on the Convention, see U.S. General Accounting Office, *Arms Control: Efforts to Strengthen the Biological Weapons Convention*, GAO-02-1038NI (Washington, D.C.: Sept. 30, 2002).

personnel at more than 50 sites. They researched and developed a broad range of pathogens with varying degrees of lethality for humans, animals, and plants. In 1992, after the collapse of the Soviet Union, Russian President Boris Yeltsin publicly confirmed the program's existence and announced its termination. However, Russia has not disclosed the locations of all of its biological sites and the types of dangerous pathogens stored at these sites.[2]

In the 1990's, Russian security systems and supporting infrastructure at biological sites deteriorated as the Russian government decreased funding and reduced staff size. At some sites, perimeter security systems are more than 25 years old and can no longer be repaired. Figure 5 shows unstable perimeter fencing around a biological site in Russia.

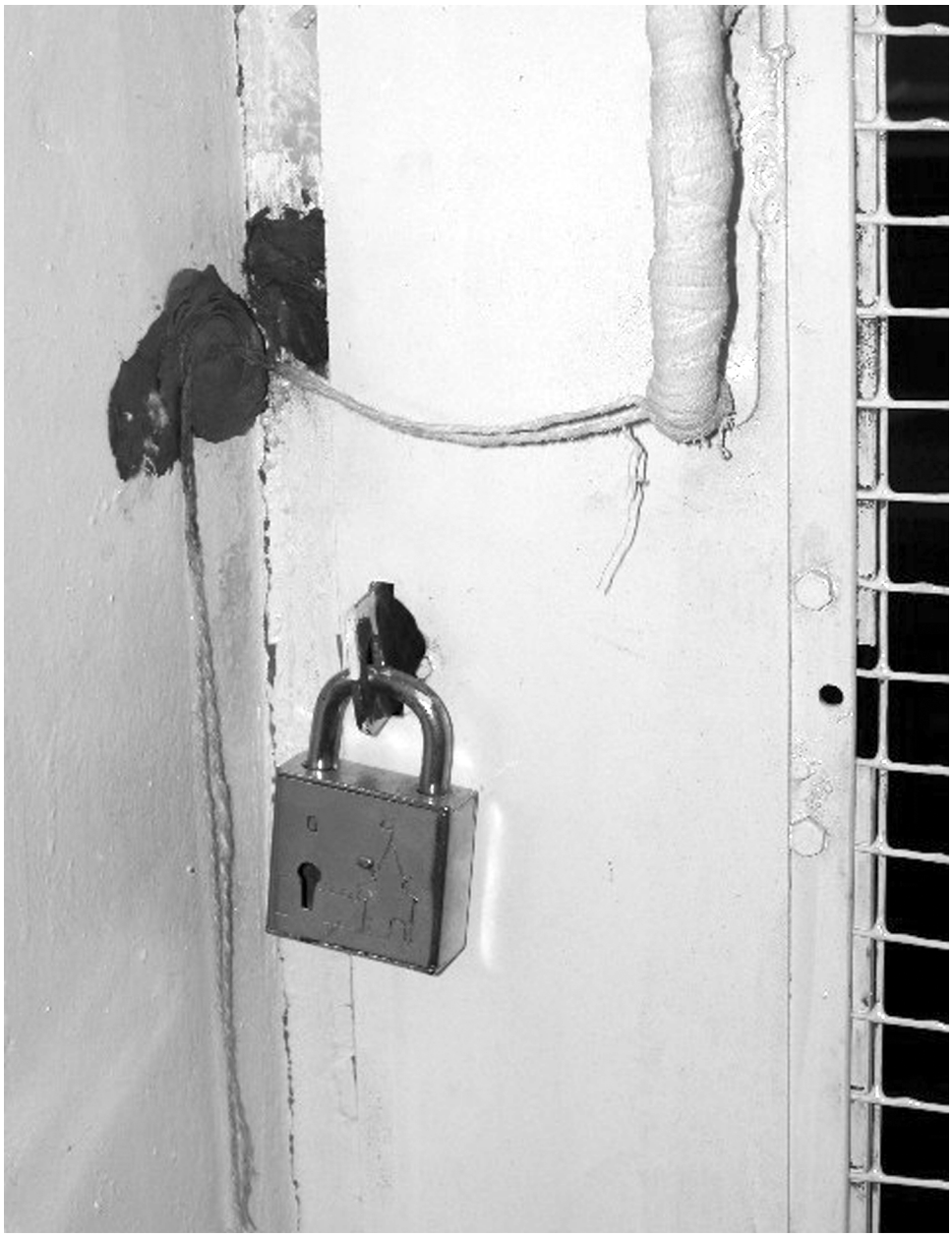
[2]Biological pathogens are viruses such as smallpox, bacteria such as anthrax, and toxins such as botulinum toxin. Dangerous biological pathogens can be genetically engineered and combined with dispersion technology, such as bombs or artillery shells to create weapons of mass destruction that cause illness or death in humans, animals, or plants.

Figure 5: Unstable Perimeter Fence at a Biological Site in Russia, before Security Upgrades

Source: DOD.

Additionally, biological pathogens are small and difficult to detect, making them easy to steal. Once stolen, they can be grown almost anywhere. Russian biological sites have weak internal controls over access to pathogen collections. For example, as shown in figure 5, a lock and a seal of string pressed into wax secure an area at a former biological weapons site where dangerous pathogens are stored.

Figure 6: Wax and String Seal Securing Room with Dangerous Biological Pathogens



Source: GAO.

DOD Has Limited Information on the Numbers of Russian Sites with Dangerous Biological Pathogens

The Russian government has not provided DOD with a complete inventory of all the sites in Russia that store dangerous pathogens. The United States and Russia have collaborative research projects at 49 Russian biological sites, a number that includes many former biological weapons facilities. These sites have provided participating U.S. agencies with opportunities to observe the security needs at these sites.[3] However, DOD has projects under way and thus direct knowledge of the security needs at only 14 of the 49 sites. DOD's information on the other sites is limited because DOD officials have to rely on other U.S. agencies to notify the department if they observe dangerous pathogen collections or have biosecurity concerns at the facilities where they operate. However, U.S. agencies have not received full access to information at the biological sites because the managers of these facilities are concerned about Russian national security and want to conceal former participation in the Soviet biological weapons program, according to a DOD official.

To help focus its assistance, DOD began work on a strategic plan in April 2002. As of January 2003, the draft plan had not been approved by the Deputy Under Secretary of Defense. The plan is expected to set policy for DOD's biological security assistance and other biological weapons facility programs, including collaborative research, biological facility safety projects, and new initiatives to provide early warning of outbreaks of dangerous diseases in Central Asia. DOD officials said that after the strategic plan is approved, DOD will prepare an implementation plan with schedules and deadlines for the biological security project and other biological weapons facility projects it implements.

Despite uncertainty over the exact number of biological facilities in Russia, a DOD official estimated that the department may eventually help upgrade security at about 20 Russian biological sites housing dangerous pathogens. DOD plans to encourage Russian ministries to consolidate biological pathogen collections from smaller centers at larger facilities and thereby decrease the number of facilities that store dangerous pathogens. According to DOD, not all former bioweapons facilities currently have dangerous pathogens and therefore would not be considered by DOD for biosecurity assistance. Currently there is no time frame for completing this work.

[3]In addition to DOD, DOE, and State, U.S. Departments of Health and Human Services, Agriculture, and the Environmental Protection Agency have established collaborative research projects at biological sites in Russia.

DOD Plans to Address Internal and External Security Threats

DOD plans to address both internal and external security threats at biological sites but to date has focused on protecting against external threats. Biological sites have unique characteristics that make them especially vulnerable to internal security threats, however. Experts have stated that there is a greater threat of potential proliferation of dangerous pathogens from insiders than from an outside attack because biological pathogens are small and can be smuggled out of a site without detection. According to a U.S. biosecurity expert, managers at Russian biological sites have been slow to acknowledge the potential of internal security threats. For example, officials at the Russian biological sites we visited stated that they knew their staff well and would notice if an individual posed a security threat because laboratory staff live and work in close quarters. These officials recognized the potential for insider security threats and said they would consider measures to mitigate these threats. According to a DOD official, the department intends to include measures to improve personnel screening and install systems to keep track of the pathogen collections.

DOD's Biological Security Projects Have Made Little Progress

U.S. efforts to upgrade security at Russian biological institutes have been directed at facilities with dangerous pathogens that the Russians have been willing to let DOD assist. Since 1998, DOD has upgraded security at the two largest former biological weapons facilities in Russia: the State Research Center for Virology and Biotechnology (Vector) and the State Research Center for Applied Microbiology (Obolensk). Also, in 2002, DOD began assessments for physical security improvements at two additional centers: the Russian Research Institute of Phytopathology at Golitsino (Golitsino) and the Pokrov Biologics Plant (Pokrov). As of September 2002, DOD estimates[4] that it had obligated about $14 million[5] to improve security at Russian biological facilities.

[4]Since some DOD contractors work on both biosecurity and biosafety projects, DOD does not track these projects separately. DOD has therefore estimated how this assistance is divided between biosecurity and biosafety efforts.

[5]Although the objectives of biosecurity and biosafety programs differ, some equipment, such as closed-circuit television and locks for laboratories that contain dangerous biological pathogens, can enhance both biosecurity and biosafety. As part of its biosafety projects, DOD has installed such equipment at two locations in Russia.

Biosecurity Projects Under Way at Four Sites

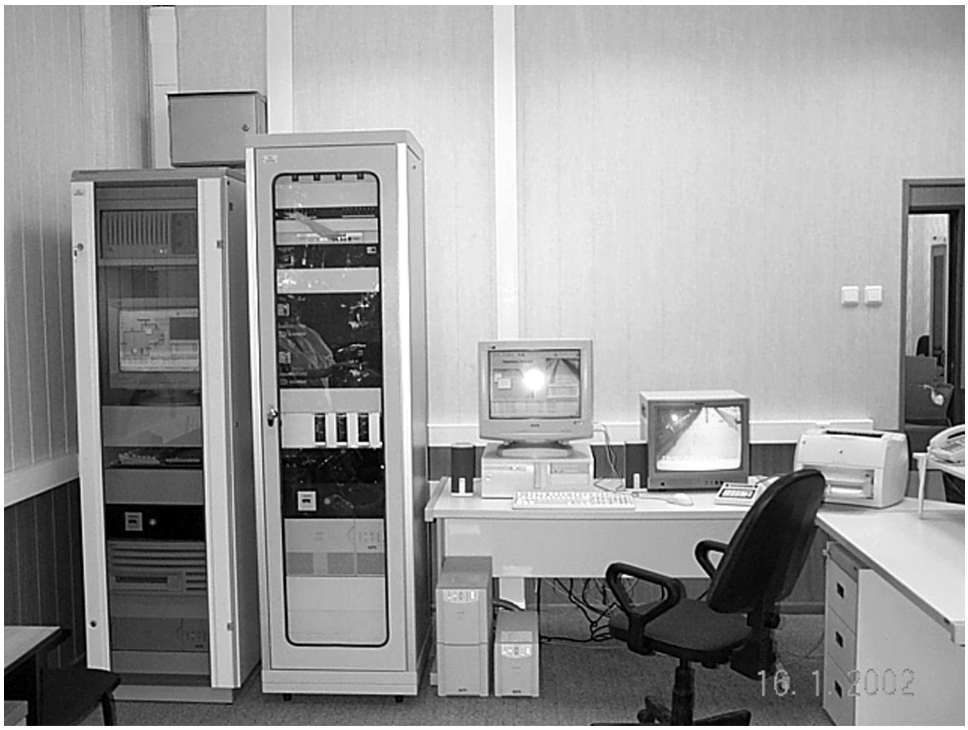
As of December 2002, biosecurity projects are under way at 4 of the 49 biological sites in Russia that may require assistance. DOD officials stated that the department's efforts to help secure biological pathogens started later than work to secure other WMD because biological pathogen security was viewed as a lower priority. Also, according to DOD officials, relationships with the management of biological facilities have to be built before they will consider U.S. biosecurity assistance. Vector, one of the world's two declared sites of smallpox storage, contains a large collection of viral pathogens. Obolensk maintains a large collection of pathogens that includes genetically engineered anthrax. Golitsino and Pokrov were part of the Soviet Union's extensive bioweapons program that was directed toward the development of plant and animal pathogens. Other sites, including Russia's system of antiplague sites, which are believed to store various strains of the plague and other pathogens, may have more dangerous pathogens than Golitsino and Pokrov, but the United States has no access to them, according to DOD officials.

At Vector and Obolensk, biosecurity projects have improved perimeter and building entrance security. However, biosecurity assistance provided at Vector and Obolensk has not addressed the threat of theft by insiders or improved security over areas where research with hazardous materials is conducted or collections are stored. At both sites, biosecurity improvements involved construction and relocation of fences, installation of electronic sensors, strengthening of entrances to laboratory buildings where high hazard pathogens were stored or used in research, construction of guard facilities, and installation of equipment at central alarm stations. These projects progressed slowly in part because a second set of threat and vulnerability assessments was required after DOD found the initial set to be incomplete. At Vector and Obolensk, a second set of threat and vulnerability assessments was undertaken in September 2002 by a U.S. contractor and was completed in December 2002. Figure 7 shows new fencing installed at Vector and figure 8 shows two cabinets of computer equipment installed at Obolensk to monitor security video and electronic sensors.

Figure 7: DOD-Funded Three-fence Perimeter around Buildings at Vector with Smallpox and Other Dangerous Pathogens

Source: DOD.

Figure 8: DOD-Funded Improvements to Central Alarm Station at Russian Biological Site at Obolensk Used to Monitor the New Security System



Source: DOD.

The projects at the Golitsino and Pokrov agricultural centers illustrate the slow progress of biosecurity projects. After 2 years of discussion and planning, initial threat and vulnerability assessments began in September 2002 and were completed in December 2002. DOD has yet to determine when it will begin security improvements at these sites.

Although DOD's slow start and Russia's limited cooperation were major reasons for the lack of progress in biosecurity assistance, DOD officials point to the suspension of new projects in 2002 as the cause of further delays. In January 2002, the administration temporarily suspended the Cooperative Threat Reduction Program in Russia when it refused to certify that Russia was complying with arms control agreements. This resulted in

an 8-month suspension of contracting for new biological security projects.[6] DOD was unable to obligate funds to conduct threat and vulnerability assessments to initiate a second phase of security assistance at Vector and Obolensk, nor was it able to start threat and vulnerability assessments at Golitsino and Pokrov.

U.S. Biological Security Assistance Projects Face Many Challenges

U.S. efforts to help secure former biological weapons facilities in Russia face many challenges. First, DOD has been unable to work directly with Russian biological sites due to stalled negotiations on an interministerial implementing agreement. Second, the United States does not have access to former biological weapons sites. As a result, the biological security program has taken longer and accomplished less than expected.

Stalled Negotiations with Russians Have Hampered DOD Work

The United States cannot efficiently provide assistance to Russian institutes without having an implementing agreement with the Russian government. According to DOD officials, an implementing agreement between all the relevant Russian ministries and DOD would expedite the installation of security projects because DOD could work directly with the institutes.

Multiple Russian organizations and ministries have jurisdiction over the military and civilian centers that were part of the former biological weapons complex in Russia. Jurisdiction resides in nine Russian government organizations: The Ministries of Defense, Health, Science, Agriculture, and Education; the Russian Academy of Medical Sciences; the Russian Academy of Agricultural Science; the Russian Academy of Natural Sciences; and Biopreparat, an organization that now develops pharmaceuticals but previously controlled the Soviet Union's biological weapons technology centers. In addition, the Ministry of Health has five antiplague institutes and numerous regional field stations that maintain pathogen collections and had a lead role in the Soviet Union's bioweapons program.

[6]The 8-month suspension did not affect DOD's ability to execute existing contracts. Therefore, according to DOD officials, the department was able to continue implementing chemical and some nuclear warhead security projects. The National Defense Authorization Act for Fiscal Year 2003 gave the President authority to waive restrictions that required the administration to certify arms control compliance by Russia. The President exercised this authority on January 14, 2003.

The lack of a single Russian focal point for DOD's bioweapons security projects is a major barrier to successfully negotiating an agreement between the United States and Russia. Since 1992, an umbrella agreement[7] between the United States and Russia has allowed U.S. Cooperative Threat Reduction projects for biosecurity, biosafety, and dangerous pathogens, as it has for nuclear and chemical projects in Russia. However, additional interministerial implementation agreements are needed to facilitate DOD's biosecurity assistance. In 1999, the Russian Government rejected a draft implementing agreement between DOD and the Ministry of Health on the grounds that it was not appropriate for that ministry to enter into an exclusive agreement with DOD. The Russian government similarly rejected a subsequent U.S.-proposed implementing agreement between the U.S. Department of Health and Human Services and the Russian Ministry of Health. The Department of State approached individual Russian ministries directly and also suggested that the Russian Ministry of Foreign Affairs sign a separate agreement with the United States that would allow implementing agreements with multiple Russian ministries. None of these efforts has been successful. Without an interministerial implementing agreement, DOD cannot begin to directly secure Russia's former biological weapons facilities. As a result, DOD has to provide assistance through an intermediary organization that has an agreement with the Russian government. DOD has negotiated implementing agreements and avoided this problem in three Eurasian republics, Georgia, Kazakhstan, and Uzbekistan, and is finalizing an agreement with Ukraine.

As an alternative to an implementing agreement, DOD has used an existing program, the International Science and Technology Center (ISTC), to begin security projects at Russian biological sites. However, ISTC was implementing hundreds of research projects and was unable to accord DOD projects as high a priority as DOD wished. ISTC is an international organization in Moscow founded by the United States, Russia, the European Union and Japan to engage former weapon scientists in peaceful

[7]Agreement Between the United States of America and the Russian Federation Concerning the Safe and Secure Transportation, Storage, and Destruction of Weapons and the Prevention of Weapons Proliferation, dated June 17, 1992, and extended June 15-16, 1999.

scientific research.[8] ISTC was created to prevent the proliferation of former Soviet WMD expertise by offering nuclear, biological and chemical weapons and missile scientists peaceful research opportunities and thus discouraging them from selling their expertise to countries of concern or terrorist groups. The bulk of ISTC's funding pays scientists for their work, with some limited spending for laboratory equipment or computers.

ISTC agreed to facilitate DOD's biosecurity projects in Russia because the U.S. government had an existing agreement with ISTC that allowed it to finance a range of research projects and other activities. However, ISTC's procurement system was not set up to handle the large contracts necessary for engineering and construction projects. In addition, approval of all ISTC proposals, including the biosecurity proposals, took time, partly because ISTC had to obtain host-government concurrence for each proposal from the Ministry of Atomic Energy; the Ministry of Industry, Science and Technology; the Ministry of Defense or the Academy of Science. Also, according to DOD officials, a shortage of administrative and managerial staff at ISTC impeded ISTC's efforts to process DOD's biosecurity projects. In 2001, DOD funded additional staff positions at ISTC to help expedite the processing of its security projects.

According to DOD officials, until an interministerial implementing agreement is negotiated, DOD biosecurity projects will continue to be managed through ISTC. Despite frustration with ISTC's slow pace, DOD officials stated that ISTC's role was critical in implementing U.S. assistance at Russian bioweapons facilities.

DOD Lacks Access to Many Former Bioweapons Sites

While DOD has identified several former biological weapons sites in Russia where it would like to provide biological security assistance, the Russian government has consistently refused to grant DOD access to certain facilities managed by the ministries of Health, Defense, and Agriculture. For example, the Russian Ministry of Health maintains five antiplague institutes and a network of numerous antiplague field stations. These institutes and stations were part of the former Soviet system of medical facilities housing dangerous pathogen collections for research and are completely closed to U.S. assistance programs. Bioweapons experts have

[8]For additional information on ISTC, see U.S. General Accounting Office, *Weapons of Mass Destruction: State Department Oversight of Science Centers Program*, GAO-01-582 (Washington, D.C.: May 10, 2001).

reported that, as part of the Soviet bioweapons program, the anti-plague network helped identify new virulent strains of pathogens and participated in research on defensive measures. These facilities specialized in animal diseases that are communicable to man, such as plague, tularemia, anthrax, and cholera. According to DOD officials, the ministry was concerned that participation in Cooperative Threat Reduction (CTR) programs would be an admission that the antiplague centers had taken part in the Soviet biological weapons program. DOD also lacks access to four former Ministry of Defense biological weapons sites. These laboratories were involved in pathogen- and toxin-related research and maintained large pathogen collections. A major animal pathogen institute of the Ministry of Agriculture also remains closed to biosecurity assistance.

DOD has made some progress in gaining access to one of the four Ministry of Defense facilities. In August 2002, U.S. Senator Richard Lugar was instrumental in initiating discussions with the management of the former Ministry of Defense facility, Kirov-200 (Strizhi), about potential collaborative research projects, according to a DOD official. The Russian government has nearly completed a transfer of ownership of the facility from the Ministry of Defense to the Ministry of Education. This institute's new civilian status is expected to enable future security projects with DOD.

Conclusion

DOD has accomplished little to date to help protect Russian sites with dangerous biological pathogens because the department has little information about biological sites in Russia and has received limited Russian cooperation. Presently, DOD plans to improve security at two sites that are of lesser security concern than others because the department has access to those two sites. By targeting sites where it has access, DOD maintains relationships with the Russian bioweapons establishment, which is an important objective. However, in the long term, this approach means that DOD will not be able to improve security at locations with dangerous pathogens that are of greatest security concern to the United States. DOD could benefit from DOE's past experience in assessing site security requirements around buildings with weapons-usable nuclear material. Specifically, DOE developed a categorization scheme for ranking the relative threat posed by different types of material, which it used to decide on the extent of upgrades to be installed at specific buildings. Without complete assessments of the locations, pathogen collections, and security needs at sites in Russia that have dangerous biological weapons, DOD will have difficulty guiding its program.

Recommendation

In developing the department's plan to enhance security at Russian biological sites, the Secretary of Defense should clearly articulate criteria the department should use to rank the relative threat posed by different types of pathogens and review the security under which they are kept to identify the biological sites that pose the greatest security risks and would therefore have highest priority for and receive the most extensive U.S. assistance.

DOD Has Not Focused on Securing All of Russia's Chemical Weapons Storage Sites

Since the early 1990s, DOD has focused its nonproliferation efforts on the construction of a facility to destroy Russia's 40,000 metric ton stockpile of chemical weapons. Because construction of the facility was taking longer than expected, in fiscal year 2000, Congress directed DOD to develop additional plans to protect Russia's chemical weapons storage sites. DOD has since developed plans to address external threats at two chemical weapons sites that store nerve agent in small portable munitions. DOD plans to complete this work in fall 2003 but has no plans to extend the program to the five other sites, three of which store nerve agent and two that store blister agent. As a result, a large quantity of chemical weapons in Russia will remain vulnerable to theft or diversion.

DOD Plans to Address External Security at Two of Russia's Seven Chemical Weapons Storage Sites

In 1998, under the terms of the Chemical Weapons Convention (CWC),[1] Russia declared that it had stockpiled 40,000 metric tons of chemical weapons, the largest stockpile in the world. The Organization for the Prohibition of Chemical Weapons (OPCW),[2] the implementing agency of the CWC, conducts inspections at chemical weapons facilities and reports its findings to member states, including the United States. OPCW regularly inspects Russia's chemical weapons stockpile.

DOD has information concerning the quantity, location, and physical security conditions at Russia's declared chemical weapons storage sites and has plans to address external security at two sites. However, chemical weapons are stored at seven sites in Russia (see table 2). Five of these sites store nerve agent, which is considered the most dangerous form of chemical weapon.[3] DOD officials stated that two of these sites, Kizner and

[1]The CWC, which Russia signed in 1993, prohibits the development, production, acquisition, stockpiling, retention, transfer, and use of chemical weapons. The convention entered into force on April 29, 1997, and requires signatory states to destroy any stocks that they may have of such weapons over a 10-year period but provides for a possible 5-year extension. Russia ratified CWC in 1997 and must destroy its declared 40,000 metric ton stockpile by 2007. Russia has requested a 5-year extension to 2012. DOD has concerns about the veracity and completeness of Russia's CWC declaration.

[2]See U.S. General Accounting Office, *Chemical Weapons: Organization for the Prohibition of Chemical Weapons Needs Comprehensive Plan to Correct Budgeting Weaknesses*, GAO-03-5 (Washington, D.C.: Oct. 24, 2002). The OPCW conducts inspections at chemical weapons storage, production, and destruction facilities in member states.

[3]Russia's nerve agent stockpile includes VX, sarin, and soman. Nerve agents cause rapid death through the disruption of nerve-impulse transmission in the central nervous system. As little as one drop is lethal to a human.

Shchuch'ye, pose the greatest threat to U.S. national security interests because they house nerve agent stored in small artillery shells, some light enough to be transported by an individual. The three other nerve agent sites store large air-delivered bombs and spray tanks. Two remaining sites store blister agents in bulk containers, which are considered less of a threat to U.S. national security interests.[4] Further, a destruction facility for blister agents funded mainly by Germany began operation in December 2002.

Table 2: Russian Chemical Weapons Storage Sites

Site Name	Type of agent	Type of munitions
Kizner	Nerve (VX, sarin, soman)	Small artillery shells
Shchuch'ye	Nerve (VX, sarin, soman)	Small artillery shells
Pochep	Nerve (VX, sarin, soman)	Air-deliverable bombs
Maradykovsky	Nerve (VX, sarin, soman)	Air-deliverable bombs
Leonidovka	Nerve (VX, sarin, soman)	Air-deliverable bombs
Kambarka	Blister (lewisite)	Bulk containers
Gorny	Blister (mustard, lewisite)	Bulk containers

Source: Russian Munitions Agency.

Note: The Kizner site also stores some lewisite. The Maradykovsky and Gorny sites also store some mustard-lewisite mixture.

DOD has focused its efforts on the construction of a chemical weapons destruction facility at the Shchuch'ye chemical weapons storage site. According to DOD officials, the destruction of Russia's chemical weapons stockpile, especially its nerve agents, would significantly reduce the threat faced by the United States. Planning began in 1994, and completion of the facility is scheduled for 2006. Russia plans to destroy all its nerve agent munitions at the facility. As of November 2002, DOD had obligated more than $218 million on the design and preliminary construction of the destruction facility. Although the Russian Munitions Agency, which is charged with the safe storage and destruction of Russia's chemical weapons stockpile, plans to destroy all of its declared chemical weapons by the CWC mandated deadline of 2012, the lack of progress and financial difficulties thus far make it doubtful that this deadline will be met. Current

[4]Russia's blister agent stockpile includes mustard gas, lewisite, and mustard-lewisite mixture. Blister agents can be lethal if inhaled but generally cause slow-to-heal burns on contact with skin.

estimates, based on the capacity of the facility, indicate that Russia will not be able to completely destroy its nerve agent stockpile for at least 40 years unless it builds additional destruction facilities.

In 1999,[5] we reported that the Shchuch'ye destruction facility was behind schedule and might not fully achieve U.S. objectives. In response, Congress denied funding for the project in fiscal year 2000 and directed DOD to address security concerns at Russia's chemical weapons storage sites. Congress appropriated $20 million in fiscal year 2000 for security enhancements at chemical weapons storage sites in Russia. As a result of this congressional direction, DOD chose to address the external threat at the two chemical weapons storage sites in Russia that store nerve agent in small portable munitions, Kizner and Shchuch'ye. Figure 9 shows an official taking inventory of small nerve agent artillery shells at the Shchuch'ye storage site.

[5]See U.S. General Accounting Office, *Weapons of Mass Destruction: Effort to Reduce Russian Arsenals May Cost More, Achieve Less Than Planned*, GAO/NSIAD-99-76 (Washington, D.C.: Apr. 13, 1999).

Figure 9: Chemical Weapon Artillery Rounds inside Russian Chemical Weapons Storage Building at Shchuch'ye

Source: DOD.

DOD's strategy for upgrading chemical weapons site security to address external threat at these two sites involves two phases. First, a series of upgrades were installed around individual buildings. Second, upgrades will be installed around the perimeter of each site and the central alarm stations. DOD plans to complete these upgrades by fall 2003.

DOD Is on Track to Complete Work at Two Sites by 2003

As of October 2002, DOD had obligated $19.8 million of its $20 million appropriation for chemical weapons site security. In November 2001, DOD began installing the first phase of its security enhancement package for chemical weapons sites: the installation of microwave sensors and fencing around individual storage buildings or groups of storage buildings that contain small portable munitions, according to DOD. These upgrades cost $220,000 per site and were installed at both Kizner and Shchuch'ye. The sensors are the primary deterrent to proliferators because they alert guards to any access to the protected buildings. During our visit to these sites, we

observed that the U.S.-funded fences around individual buildings were approximately 3 feet high and were primarily designed to reduce the number of false alarms caused by animals. A total of 8 buildings at Shchuch'ye and 23 buildings at Kizner have been protected by the first phase of DOD upgrades. This first phase of upgrades was completed in February 2002.

In July 2002, DOD began work on the second phase of its security enhancement package at Kizner and Shchuch'ye. These upgrades include the installation of enhanced site perimeters with two layers of fencing, sensors, lights, and closed circuit television cameras and improved central alarm stations. DOD plans to complete these upgrades by fall 2003. Once these security upgrades are complete, DOD will have secured 35 percent of Russia's stockpile of nerve agent chemical weapons. The remaining 65 percent of nerve agent stocks are stored at three sites where no U.S.-funded security enhancements are planned. In addition, according to DOD officials, no plans exist to install a personnel reliability program,[6] an improved accounting system, or other equipment to address insider threats at any chemical weapons storage site in Russia.

Progress in implementing site security upgrades at chemical weapons storage sites has been expedited by good access and cooperation from the Russian government. DOD officials stated that access to Russia's chemical weapons storage sites has not slowed the progress of the program and that they have been able to obtain the information necessary to perform the work. DOD officials believe that access has been good because Russia has declared its stockpile and OPCW inspectors are periodically present. We also had good access to both Kizner and Shchuch'ye when we visited Russia in July 2002. We were shown examples of the upgrades installed around individual buildings at both sites, saw the equipment for the site perimeter upgrades awaiting installation, and had access to portions of the site perimeters and entry control points.

[6]A personnel reliability program (PRP) is used to screen personnel at facilities for drug, alcohol, and other problems through comprehensive screening.

Russian Government Wants to Focus on Destruction Not Security; Transportation Security Is an Impending Challenge

DOD officials have expressed concerns about the security of Russia's chemical weapons storage facilities, yet no further security upgrades are planned. One reason is because the Russian government has expressed little interest in expanding the security enhancement program. The head of the Russian Munitions Agency, the agency charged with the safe storage and destruction of Russia's chemical weapons stockpile, stated that his preference is that the United States fund the completion of the planned chemical weapons destruction facility at Shchuch'ye rather than improve the security around Russia's chemical weapons storage sites. He maintained that the only real long-term security for Russia's chemical weapons is their destruction, though he was unopposed to an expansion of the site security upgrade program.

An additional challenge is ensuring that Russia's chemical weapons have adequate security as they are transported to the destruction facility. DOD has not begun discussions with Russia on the security that will be required for chemical munitions as they are transferred from storage sites to the planned chemical weapons destruction facility at Shchuch'ye. DOD officials and security experts acknowledge that dangerous materials are very vulnerable during transport. Because Russia plans to destroy all of its nerve agent chemical weapons at the U.S.-funded destruction facility at Shchuch'ye, Russia will be transporting thousands of metric tons of chemical nerve agent from five storage sites, most of which are more than 500 miles from the planned facility. According to DOD officials, Russia has yet to develop a practical plan for securing chemical weapons in transit to the planned destruction facility. The United States already has programs in place to aid Russia in securing nuclear weapons and material during transport. Although this security concern will not arise before the scheduled completion of the destruction facility in 2006, none of the U.S. officials we interviewed had assessed the potential implications for security or whether the United States would need to assist Russia with the expense of transportation and security of chemical weapons during transit.

Conclusion

DOD and Russia's plans for securing only two chemical weapons sites appears to be based less on an assessment of the potential long-term security risks of leaving 65 percent of Russia's nerve agent unsecured, than on a desire to focus on building a destruction facility. With a lengthy destruction process yet to begin for Russia's nerve agent stockpile, concerns about the security of these weapons will persist. The further challenge of securing chemical weapons in transit to the planned

destruction facility looms on the horizon, though DOD has no plans to address it.

Recommendations

Given the lengthy time frame for the destruction of Russia's chemical weapons stockpile, the Secretary of Defense should consider:

- reassessing the need to provide improved security at the three sites in Russia that store nerve agent but have not received U.S. security assistance; and
- working with Russian officials to develop practical plans for securing chemical weapons while in transit to the planned destruction facility at Shchuch'ye.

Matter for Congressional Consideration

Congress may wish to consider allocating additional funds for improving security at the three remaining sites in Russia that store nerve agent but have not received U.S. security assistance.

Sites in Russia That We Visited in July 2002

During July 2002, we visited 14 sites in Russia where the Department of Defense (DOD) or Department of Energy (DOE) had programs under way to help secure nuclear material, nuclear warheads, dangerous biological pathogens, or chemical weapons (see figure 10 for a map showing the locations and type of sites visited).

Figure 10: Sites GAO Visited During July 2002 Fieldwork

Source: GAO.

Nuclear Material Sites

We visited three nuclear material sites and met with officials from two additional sites:

- **Moscow State Engineering Physics Institute (MEPhI) –** MEPhI is a large university located in southeast Moscow. The institute specializes in nuclear physics research and training and operates a research reactor using highly enriched uranium. The institute has a small quantity of weapons-usable nuclear material on site with DOE-funded security upgrades. DOE has a pilot project for its Material Protection, Control and Accounting (MPC&A), Operations Monitoring (MOM) system at

MEPhI. During our visit we observed the installed DOE-funded security enhancements, saw the MOM system in operation, and spoke with site officials about their approaches to security, their relationship with DOE, and their thoughts about the MOM system.

- **Northern Fleet Storage Facility Site 49 (Navy fuel)** – Site 49 is located within a Russian Federation Navy Base near the city of Murmansk. Site 49 is the primary land-based storage facility for highly enriched uranium reactor fuel used by Northern Fleet submarines and icebreakers. The Russian Navy stores tens of metric tons of nuclear fuel at Site 49. DOE has funded security upgrades to the site including fencing, cameras, and sensors. DOE began work to improve the nuclear security systems at Site 49 in 1996 and completed work in 1999. During our visit we observed the DOE upgrades and spoke with site officials about nuclear material security.

- **Technical Bureau of Autotransport Equipment (KB ATO)** – KB ATO is an automotive production facility located in Moscow. KB ATO has contracts with DOE to install security upgrades for trucks and railcars used to transport weapons-usable nuclear material and to build shipping containers, called overpacks, for nuclear material in transit. During our visit, we observed examples of overpacks purchased by DOE for use by MINATOM and spoke with site officials about nuclear material security during transit.

- **Novosibirsk Chemical Concentrates Plant (CCP)** – The CCP is a nuclear fuel fabrication facility located in central Russia. Among other upgrades, DOE funded the construction of a new central storage facility for the majority of weapons-usable nuclear material at the CCP. We met with officials from the site to discuss DOE's security upgrades, but we were not allowed on site due to access problems with MINATOM.

- **Mayak (formerly known as Chelyabinsk-65)** – DOE has provided a variety of site security upgrades to the MINATOM nuclear weapons complex facility at Mayak, which is located in the closed city of Ozersk. We met with officials from the site to discuss DOE's security upgrades, but we were not allowed access to the site because we were denied access by MINATOM.

Nuclear Warhead Sites

We visited five nuclear warhead sites:

- **CBC-A2** – CBC-A2 is a Russian Navy site where DOE has provided security upgrades for the protection of nuclear warheads.
- **CBC-A4** – CBC-A4 is a Russian Navy site where DOE has provided security upgrades for the protection of nuclear warheads.
- **Tver Railcar Building Works (Tver)** – Tver is a contracting facility where DOD provided upgrades to Russian railcars intended to transport nuclear warheads and accompanying support troops. During our visit we observed the factories where security enhancements were made to railcars and accompanying troop railcars and spoke with site officials about transportation security.
- **Security Assessment and Training Center (SATC)** – SATC was constructed to enable a team of DOD & Ministry of Defense personnel to test, select, and integrate a system needed to upgrade physical security at Ministry of Defense's nuclear weapons storage sites. SATC is located in Sergiev Posad' (approximately 50 miles northeast of Moscow). A personnel reliability program (PRP) fixed laboratory and a central location for guard force training systems are located at SATC as well. During our visit we observed examples of DOD-funded upgrades that were undergoing testing, saw the central laboratory for the PRP testing, and spoke with site officials about the role of SATC in nuclear weapons security.
- **Fissile Material Storage Facility (FMSF)** – When completed, the FMSF, near the MINATOM weapons complex facility of Mayak, will store nuclear material from dismantled Russian nuclear warheads. When we visited the FMSF, construction was still under way. We toured the entire site and had discussions with U.S. and Russian contractors involved in the ongoing work.

Biological Pathogens Sites

We visited four biological pathogen sites:

- **State Research Center for Virology and Biotechnology (Vector)** – Vector, in the Novosibirsk region, is a former biological weapons facility involved in scientific research on virology, molecular biology, and genetic engineering. A collection of viral pathogens that includes a

collection of smallpox strains is maintained at this center. Vector is one of the world's two declared sites of stored smallpox. DOD has funded extensive physical security upgrades to the facility. During our visit, we observed the DOD-funded security upgrades and spoke with site officials about the security of biological pathogens.

- **The State Research Center for Applied Microbiology (Obolensk)** – Obolensk, in the Moscow region, is a former biological weapons facility involved in scientific research in areas that include molecular biology, gene engineering, and biotechnology. Obolensk maintains a large collection of pathogens that includes genetically engineered anthrax. DOD has funded extensive physical security upgrades to the facility. During our visit, we observed the DOD-funded security upgrades and spoke with site officials about the security of biological pathogens.

- **The All-Russian Institute of Phytopathology in Golitsino (Golitsino)** – Golitsino, in the Moscow region, is a former biological weapons facility involved in the study of dangerous plant diseases of agricultural crops that have potential for significant economic impact. At the time of our visit, DOD had installed no security upgrades at Golitsino, but it plans to in the future. During our visit, we observed the existing security conditions of the site, saw examples of the pathogen collection, and spoke with site officials about the security of biological pathogens.

- **Pokrov Biologics Plant (Pokrov)** – Pokrov, in the Vladimir region, is a former biological weapons facility involved in the production of veterinary vaccines and diagnostic preparations and retains a collection of dangerous pathogens. In Soviet times, Pokrov had been used a production site for smallpox weapons. At the time of our visit, DOD had installed no security upgrades at Pokrov, but it plans to do so in the future. During our visit, we observed the existing security conditions of the site, saw examples of the pathogen collection, and spoke with site officials about the security of biological pathogens.

Chemical Weapons Sites

We visited two chemical weapons sites:

- **Shchuch'ye Chemical Weapons Storage Site (Shchuch'ye) –** Russia stores nearly 2 million artillery shells filled with nerve agent chemical weapons at Shchuch'ye. DOD has provided some security upgrades to individual buildings and is currently installing upgrades to the perimeter

of the site. During our visit we observed the installed DOD upgrades to individual buildings; saw the existing entry control points and perimeter; and spoke with site officials about the planned upgrades and existing security concerns.

- **Kizner Chemical Weapons Storage Site (Kizner) –** Russia stores nearly 2 million artillery shells filled with nerve agent chemical weapons at Kizner. DOD has provided some security upgrades to individual buildings and is currently installing upgrades to the perimeter of the site. During our visit, we observed the installed DOD upgrades to individual buildings; saw the existing entry control points and central alarm station; and spoke with site officials about the planned upgrades and existing security concerns.

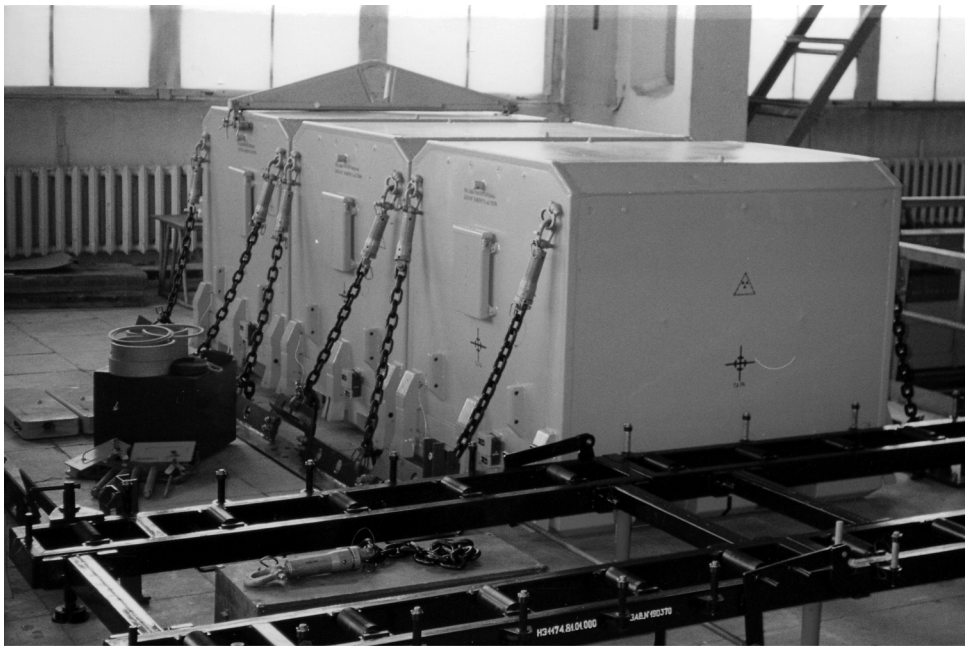
Other Department of Energy (DOE) Nuclear Material Security Assistance

In addition to improving physical security at nuclear material storage sites, DOE's threat reduction strategy for nuclear material security in Russia includes several other efforts. These efforts include transportation security enhancements, assistance to guard forces that protect nuclear material facilities, and a system to monitor the operations of security upgrades after they are installed.

Transportation Security

In the aftermath of the September 11, 2001, terrorist attacks, DOE increased funding for its efforts to secure nuclear material during transit. By providing upgraded security for transport and guard railcars, specialized secure trucks and escort vehicles, and secure containers -- called overpacks -- DOE seeks to improve the security of nuclear material transported within and between nuclear facilities in Russia. Through fiscal year 2002, DOE has obligated more than $57 million to improve transportation security over nuclear material in Russia. During our visit to Russia in July 2002, we were shown examples of the types of overpacks purchased by DOE for use in transporting nuclear material in Russia. An example of these overpacks can be seen in figure 11.

Figure 11: DOE-Funded Overpack Used to Protect Nuclear Material During Transit



Source: GAO.

DOE has accelerated this program because MINATOM has provided DOE sufficient access to confirm the need for and use of transportation security enhancements. According to DOE officials, because such verification can take place outside of nuclear weapons complex sites, DOE has not had the same access issues as in its building security enhancement program.

Protective Forces Assistance

Many of the new contracts between DOE and MINATOM signed since September 2001, have been for protective forces assistance at nuclear weapons complex facilities. As of September 2002, DOE had obligated over $9 million to provide a variety of equipment for use by the forces that protect sites that store weapons-usable nuclear material. This equipment includes such items as bulletproof vests, helmets, response vehicles, and cold-weather uniforms. The objective of the DOE's protective forces assistance is to ensure that a sufficient number of organized, equipped, and trained protective force personnel are present to provide balanced protection against all external threats to Russian nuclear materials. Similar to DOE's transportation security assistance, funding for protective forces

assistance has increased since September 2001, according to DOE officials. DOE has provided the bulk of its new protective forces assistance to nuclear weapons complex facilities.

Material Protection, Control, and Accounting Operations Monitoring System

In February 2001, we recommended that DOE develop a system, in cooperation with the Russian government, to monitor, on a long-term basis, the security systems installed at the Russian sites to ensure that they continue to detect, delay, and respond to attempts to steal nuclear material.[1] In response to our recommendation, DOE developed the MOM System. DOE tentatively planned to install MOM systems at 50 sites by the end of fiscal year 2002. However, by the end of fiscal year 2002, DOE officials told us that only two MOM systems were installed at two civilian academic institutes that store nuclear material. According to DOE, the Russian government supports the MOM system, yet MINATOM has delayed the implementation of the MOM system at all sites it controls for nearly 2 years. In a letter from MINATOM, dated September 13, 2002, a senior MINATOM official agreed with the principle of the MOM system, but did not grant DOE permission to begin installation at MINATOM facilities.

The MOM systems use off-the-shelf equipment to allow Russian and U.S. officials to ensure that nuclear warheads and material are secure; MPC&A systems are properly staffed and that personnel are vigilant; and key security procedures are enforced. Through the end of fiscal year 2002, DOE had obligated nearly $14 million for the MOM program. During our visit to MEPhI in July 2002, we observed the MOM system in operation. Figure 12 shows a MOM camera in operation at MEPhI.

[1]U.S. General Accounting Office, *Nuclear Nonproliferation: Security of Russia's Nuclear Material Improving; Further Enhancements Needed*, GAO-01-312 (Washington, D.C.: Feb. 2001).

Figure 12: DOE-Funded Camera Monitors Nuclear Processing Lab at MEPhI

Source: GAO.

Other Department of Defense (DOD) Nuclear Warhead Security Assistance

In addition to improving security at nuclear warhead storage sites, DOD's threat reduction strategy for nuclear warhead security in Russia includes several other efforts. The efforts include transportation security enhancements, a computerized warhead inventory system, a facility to store nuclear material from dismantled warheads, and equipment to test guard forces for drug and alcohol abuse.

Transportation Security

DOD is providing assistance to improve the security of nuclear warheads during transportation by rail to consolidation and dismantlement sites. According to DOD officials, security experts consider warheads to be highly vulnerable to theft during transport. DOD has addressed this threat by providing security enhancements for railcars, hardened shipping containers for nuclear warheads to protect against small arms fire and other threats, and payment of railway tariffs associated with transporting the warheads to the consolidation and dismantlement sites.

DOD provided 150 shipping containers to Russia to provide for the safe and secure storage of nuclear weapons during transportation by rail to dismantlement and consolidation sites. Warheads are locked inside these containers, preventing direct access to weapons during transport and providing accident and theft protection. DOD also provided security and safety enhancements for 100 nuclear weapon cargo railcars and 15 guard cars that accompany the cargo cars. For each railcar, DOD paid to install tampering and intrusion detection sensors, fire detection, and thermal insulation. DOD continues to pay for the maintenance of these railcars. The Russian Ministry of Defense has also requested new railcars because the condition of those that it is currently using is deteriorating to the point where they can no longer be used. DOD has not yet agreed to this request, partly because it is concerned that the new railcars may enhance Russia's operational capability for transporting deployed nuclear warheads.

Since January 2002, DOD has also funded 153 rail shipments to warhead dismantlement and consolidation sites. DOD estimates these shipments moved two to three thousand warheads. During shipping, the Russian Ministry of Defense uses the DOD-provided shipping containers that protect against theft. DOD pays for the shipping costs, specifically a tax charged by Russia's Ministry of Railways for every train that moves across its tracks, because the Ministry of Defense says it does not have sufficient funding to pay for the shipping. DOD justified paying this tariff because it supports the objective of shipping nuclear warheads to consolidation and dismantlement sites.

Nuclear Warhead Inventory System

DOD is also providing a computerized accounting and inventory system for tracking nuclear warheads scheduled for dismantlement. According to DOD officials, without such a system, the Russian Ministry of Defense would not have a centralized capability to track the warheads, which raised concerns about the potential loss or theft of a nuclear warhead.

In 1995, to address these concerns, DOD and the Russian Ministry of Defense began work on nuclear warhead inventory management system connected to a network of 19 sites throughout Russia. DOD has obligated $45 million on the system but has not yet completed it, and computers that DOD bought for the system are sitting in warehouses. The project has suffered from numerous delays on the part of the Russians, and DOD currently estimates that the project will be completed in 2005. Additionally, the purpose and scope of the project has changed from the original plan in 1995 to track all of Russia's nuclear weapons. In 2001, the Russian Ministry of Defense (MOD) significantly limited the scope to nuclear warheads that it plans to dismantle and excluded warheads that are part of its operational nuclear arsenal from the system. Finally, the MOD has not granted DOD access to the sites where the computers will be located, which has hindered DOD's efforts to develop the system and will limit DOD's ability to verify how the MOD uses the system.

Fissile Material Storage Facility

DOD is paying to construct a facility in Russia—the Fissile Material Storage Facility (FMSF)—to safely and securely store nuclear material removed from dismantled nuclear warheads. DOD agreed to finance the design and construction of this facility for MINATOM because Russia told the U.S. it did not have adequate secure storage capacity for the nuclear material from dismantled warheads. To support Russia in its dismantlement efforts, DOD agreed in 1992 to pay for the design of a secure facility for the nuclear material and, in 1993, to help build the facility.

As of October 2002, DOD had obligated $349 million to design and build this facility, and DOD estimates that the facility is about 90 percent complete. However, the project has fallen behind schedule, in part because Russia began placing significant access limitations on U.S. officials and contractors in May 2002—4 months before the facility was to be completed. In particular, Russia began restricting the number of U.S. personnel who can visit the region where the facility is located—only 10 Americans associated with the project can be in the entire region at one time. This restriction has delayed completion by forcing construction and security

engineers, who are involved in every phase of construction, to postpone necessary trips to the facility. As a result, DOD currently estimates that it will complete construction of the facility in December 2003 and that Russia will begin loading the facility in January 2004.

In April 1999, we reported that DOD lacks clear assurance that Russia will use the facility to store weapons-grade plutonium solely from dismantled warheads.[1] Specifically, we reported that DOD would not be able to confirm that the plutonium was removed from dismantled warheads without an agreement with Russia on measures to confirm the origin of material in the facility. DOD has still not reached such an agreement with Russia, and consequently faces the same limitation with regard to the facility.

Guard Force Assistance

DOD's strategy also addresses the reliability and effectiveness of the guard forces that protect the nuclear warhead storage sites. To improve the reliability of guard forces and personnel who have direct or indirect access to nuclear warheads, DOD has provided the Ministry of Defense with drug- and alcohol-testing devices, laboratory facilities to test samples for drug abuse, and polygraphs. According to DOD officials, the Russian Ministry of Defense has been using the equipment and has taken seriously the need to improve reliability among its guards and personnel. To improve the effectiveness of the guard forces in responding to intruders, DOD is also providing shooting ranges and other training simulators for using small arms.

[1]See U.S. General Accounting Office, *Weapons of Mass Destruction: Efforts to Reduce Russian Arsenals May Cost More, Achieve Less Than Planned*, GAO/NSIAD-99-76, (Washington, D.C.: Apr. 13, 1999).

Comments from the Department of Defense

OFFICE OF THE UNDER SECRETARY OF DEFENSE
2000 DEFENSE PENTAGON
WASHINGTON, DC 20301-2000

POLICY

MAR 11 2003

Mr. Joseph A. Christoff
Director, International Affairs and Trade
U.S. General Accounting Office
441 G. Street, N.W.
Washington, DC 20548

Dear Mr. Christoff:

Per your request, I am responding to recommendations included in GAO Draft Report "Weapons of Mass Destruction: Additional Russian Cooperation Needed to Facilitate U.S. Efforts to Improve Security at Russian Sites," dated February 21, 2003 (GAO Code 320103/GAO-03-482).

My office has reviewed the draft recommendations and concurs with recommendation 1 and 2, and non-concurs with part of recommendation 3. Specific comments for each recommendation are attached. In addition, my staff and Defense Threat Reduction Agency experts will be in touch through the DoD Office of Inspector General with minor technical corrections to the report.

In a related development, I am pleased to inform you that on February 21, 2003, DoD signed the Access Protocol and Administrative Arrangements with the Russian Ministry of Defense that will enable DoD to press ahead with comprehensive security enhancement projects at Russian nuclear weapons storage sites.

My point of contact for this report is James H. Reid at (703) 696-7737, james.reid@osd.mil. We appreciate the opportunity to comment on the draft report.

Sincerely,

Lisa Bronson
Deputy Under Secretary of Defense,
Technology Security Policy and
Counterproliferation

cc: ATSD(NCB)
Director, DTRA

GAO DRAFT REPORT DATED FEBRUARY 21, 2003
GAO CODE 320103/GAO-03-482

"WEAPONS OF MASS DESTRUCTION: ADDITIONAL RUSSIA COOPERATION NEEDED TO FACILITATE U.S. EFFORTS TO IMPROVE SECURITY AT RUSSIAN SITES"

DEPARTMENT OF DEFENSE COMMENTS TO THE RECOMMENDATIONS

RECOMMENDATION 1: The GAO recommended that the Secretaries of Energy and Defense develop an integrated plan to ensure that their related programs to help secure Russia's nuclear warheads work together to address implementation issues such as determining which department will provide assistance to certain sites and resolving equipment compatibility.

DOD RESPONSE: Concur. The National Security Council (NSC) has established guidelines for DoD and DOE provision of assistance to help secure Russia's nuclear warheads. Also, NSC has established and oversees interagency procedures for coordinating warhead security assistance activities between DoD and DoE through a sub-Policy Coordinating Committee (Sub-PCC) working group. All requests for assistance are reviewed by the working group. Any plan by either department to assist with a request that is consistent with the guidelines must be approved by the working group. If a department wishes to assist with a request that is not permitted by the guidelines it must be approved by the Sub-PCC. DoD believes that these procedures are sufficient to resolve policy and implementation issues as they arise.

RECOMMENDATION 2: The GAO recommended that the Secretary of Defense clearly articulate criteria the department should use to rank the relative threat posed by different types of pathogens and review the security under which they are kept to identify the biological sites that pose the greatest security risks and would therefore have the highest priority for and receive the most extensive U.S. assistance.

DOD RESPONSE: Concur. DoD will develop formal criteria for prioritizing biological sites for CTR bio-security assistance in Russia. Additionally, we have renewed DoD efforts to negotiate a biological threat reduction implementing agreement with the Russian Federation.

RECOMMENDATION 3: The GAO recommended that the Secretary of Defense consider:

- Reassessing the need to provide improved security at the three sites in Russia that store nerve agent but have not received U.S. security assistance; and

- Working with Russian officials to develop practical plans for securing chemical weapons while in transit to the planned destruction facility at Shchuch'ye.

DOD RESPONSE:

- Non-Concur with reassessing the need for improved security at three additional nerve agent storage sites. These sites contain heavy, bulky, and difficult to move aerial bombs and spray tanks that make them unattractive targets for would-be proliferators. We believe this factor combined with existing physical security measures makes it unnecessary to consider security enhancements at these sites. However, we are prepared to brief the Russian Munitions Agency (RMA) on the personnel reliability program that DoD has helped the Ministry of Defense establish for individuals who have access to nuclear weapons.

- Concur with working with Russian officials to develop practical plans for securing chemical weapons in transit. CTR already has been working with RMA on practical plans for transportation of nerve agent weapons from storage facilities at Planovy and Kizner to Shchuch'ye. Security will not be necessary for air delivered weapons which the current draft of the Russian plan proposes will be emptied and neutralized at each storage site, then the neutralization product will be shipped as hazardous waste to Shchuch'ye for destruction.

2

Comments from the Department of Energy

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

Department of Energy
National Nuclear Security Administration
Washington, DC 20585

MAR 06 2003

Mr. Joseph A. Christoff
Director, International Affairs
and Trade
General Accounting Office
Washington, DC 20548

Mr. Robert A. Robinson
Managing Director, Natural Resources
and Environment
General Accounting Office
Washington, DC 20548

Dear Sirs:

The General Accounting Office's (GAO) draft report GAO-03-482, "WEAPONS OF MASS DESTRUCTION: Additional Russian Cooperation Needed to Facilitate U.S. Efforts to Improve Security at Russian Sites," has been reviewed by the National Nuclear Security Administration (NNSA). The GAO was requested to report on U.S. programs to help improve security at sites where Russia stores (1) weapons-usable nuclear material, (2) nuclear warheads, (3) dangerous biological pathogens, and (4) chemical weapons. We understand that GAO assessed U.S. plans to address security threats at sites in Russia, U.S. progress in implementing those plans, and the primary challenges facing Department of Defense and NNSA.

NNSA appreciates having had the opportunity to have reviewed the draft report. While the auditors have done a thorough job, NNSA would like to offer the following comments to clarify points in the draft report. Our first comment generally addresses the estimates of Russian inventories of weapons-usable nuclear material. The subsequent comments are specific to the sections noted.

See comment 1.

The estimate of 600 metric tons of weapons-usable nuclear material in the Russian nuclear weapons complex given in the report seems very low, particularly in view of the Russian agreement to sell more than 500 metric tons of highly enriched uranium (HEU) to the United States under the HEU Purchase Agreement. The 600 metric ton figure likely also excludes weapons-usable nuclear material currently in the form of Russian nuclear weapons. In 1993 then Minister of Atomic Energy Viktor Mikhailov stated that the 500 metric tons of HEU offered for the HEU Purchase Agreement represented less than 40% of the HEU produced in Russia, suggesting that the Russian HEU inventory was at least 1250 metric

On March 26, 2003, DOE provided additional comments. Click here to see comments.

Printed with soy ink on recycled paper

tons. If 150 metric tons of weapons-usable plutonium is also available, the amount of weapons-usable nuclear material in Russia is at least 1400 metric tons. This is considerably larger than the 600 ton estimate used in the report. The report should specify which weapons-usable material is included in the estimate given, or the estimate should be revised upward.

See comment 2.

The report also uses a non-standard definition of weapons-usable plutonium, by which it means any plutonium containing less than 80 percent of the isotope plutonium-238. This definition includes both weapons-grade plutonium (8% or less plutonium-242) and reactor-grade plutonium (more than 8% plutonium-242). Since the quantities of reactor-grade plutonium may be very large, the estimate of 600 tons of weapons-usable nuclear material in Russia should be further increased to include the reactor-grade plutonium, or the definition of weapons-usable plutonium should be revised. A definition of weapons-usable plutonium which included only plutonium containing less than 80 percent of the isotope plutonium-238 and less than 10 percent of the isotopes plutonium-241 and plutonium-242 would be consistent with other work involving Russian plutonium inventories.

The remaining comments are, as stated, specific to various sections of the draft report. We have repeated the report language, identified the page number where the language may be found, and have submitted our specific comments.

1. "... despite years of negotiations, Russia will not let the Department of Energy visit or begin work at nearly three quarters of the buildings in the weapons complex... Because progress in installing security upgrades to buildings in the nuclear weapons complex has slowed, the majority of DOE's additional funding in 2001 and 2002 shifted to other efforts, including support for security systems already at sites, security improvements for nuclear material during transport, and guard force equipment and training" Executive Summary, Pg 8.

See comment 3.

While DOE agrees that access issues remain a problem we must clarify that progress continues to be made, particularly in the last several months, which is contrary to the assertion that work has "slowed". Furthermore, the belief that funding was directed to areas of lesser importance is entirely incorrect as discussed in the comments in the next section.

See comment 3a.

We have signed 24 contracts in the Minatom Weapons Complex since the beginning of FY 2003, and we expect to sign an additional 42 contracts in the next 2 months. Just this month we signed design contracts to protect ~80 MT of weapons usable material at the Tomsk 7 Chemical Metallurgical Plant – a major breakthrough for the program. This pace is unusually fast for the Minatom Weapons Complex, so we cannot agree with the assertion that pace has slowed. We do accept that pace is generally slower in this part of our program, particularly when compared to work at the civilian Minatom sites, and that

See comment 3b.

access is the primary reason. Some facilities, such as Russia's nuclear weapons assembly and disassembly sites, have indeed been delayed due to access issues, but negotiations on remedies continue. DOE has undertaken a number of innovative strategies to continue making progress, including the development of new central storage facilities at C-70 and A-16, that will result in upgrades for over 30 MT of weapons usable materials. DOE has signed more contracts with the Minatom Weapons Complex in the last six months than it had signed in all of FY 2001, which does not represent a slowdown of the program.

See comment 3c.

2. "*DOE's Increased Funding Went to Other Objectives*" *Pg. 31*

"Because DOE has been largely unable to start new work in the weapons complex, most of DOE's new spending for fiscal years 2001 and 2002 was on program objectives other than its primary objective of installing security improvements at buildings containing weapons usable materials." Pg 29

"...including operation and maintenance of security systems already installed at sites, securing nuclear material during transport, and equipping and training guards forces..." Pg 31

"*While these efforts are important, they do not directly advance DOE's primary goal of securing all buildings in Russia with weapons usable material..." Pg 31*

See comment 4.

These statements are not entirely accurate. As mentioned above, saying that we have been unable to start new work is inconsistent with the fact that we've signed 52 contracts at these sites over the last 2 years. Most of these contracts were for rapid upgrades and physical protection system design.

Regarding the characterization of NNSA's primary goal, physical security at a nuclear facility relies on a cohesive system that provides for detection of intruders, delay in gaining access to target material, and response to attempts to do so. These three areas are all fundamental elements of protection. They apply to security of material in storage or during transport. Inadequacies in any one of the three areas can negate the overall effectiveness of the system, and therefore can reduce or eliminate the benefits of investments in the other two areas.

See comment 5.

NNSA therefore disagrees with the assertion that transportation security and guard force enhancements "*do not directly advance the primary goals of securing all buildings in Russia with weapons usable nuclear materials*." Regarding investments in transportation security, nuclear material transport is widely recognized as the most vulnerable element of a nuclear program. Experts in attack scenario development employed by the NNSA unanimously agree that the preferred scenario for planning an overt theft of nuclear material is during transport. Transporting nuclear material through remote areas can increase secondary response force times, and provides adversaries with the ability to

select locations with optimal characteristics for ambush, defeat of secondary responders, and escape. Transport of material within facilities is also believed to be a more vulnerable situation than static storage. The idea that NNSA funds spent to enhance security of Russian nuclear material transport do *" not directly advance (DOE) primary goals*" is antithetical to us.

Regarding guard force equipment and training, again, response forces are a vital component of any nuclear material security system. If a nuclear material storage building has been upgraded to include additional delay and detection features, but the guard forces responsible for interdiction are slow or lack tactical expertise to succeed, then the system fails, despite the investment in upgrades. Finally, we believe the suggestion that maintenance and sustainability of security systems does not advance our primary goals is also flawed. Many of the systems we install require regular maintenance and calibration in order to function effectively. We do not agree with the idea that installing the systems is important, but keeping them operating is less important.

See comment 6.

We also have concerns with the graphical representation used on page 32. The category called "Site Security" excludes our work on transportation security and protective forces, areas we believe are fundamental elements of site security. The "Other Assistance" category includes these programs, as well as our Material Consolidation and Conversion (MCC) funding, which is also being deemed to "*not directly advance (DOE) primary goals*". We must also take issue with this, because our MCC work is intended to eliminate material balance areas and material storage locations - the specific subject of the "Site Security" category. At a minimum, MCC should be removed from the comparison, as the Second Line of Defense (SLD) and Radiological Dispersal Device (RDD) budgets have, in order to make the comparisons more focused on traditional MPC&A work.

See comment 7.

NNSA believes that the warhead site security work should be included in the charts. Without that data point there is a false impression that 70% of our "obligations" are spent in the "Other Assistance" category. When warhead security work is included in both charts, the charts are more representative of our actual funding distributions. We have prepared alternative charts which include warhead security funding, as well as funding for transportation security and protective forces in the Site Security category. Material Consolidation and Conversion has been removed altogether from our charts and consequently the alternative charts that we have prepared more accurately represent the evolving distribution of traditional MPC&A funding over time. We will be glad to submit these charts to you separately. Concurrently with the revision of the charts, we recommend that the message associated with the charts be revisited. Defining the DOE "primary objective" to be solely the provision of security equipment for storage buildings will cause the reader to reach an inaccurate conclusion.

See comment 8.

3. "*In contrast, the Department of Energy has only completed work at 14 of 133 buildings at sites in the nuclear weapons complex that fabricate, furnish, or dismantle components and nuclear material for nuclear weapons." Pg 5.*

"As seen in figure 2.1, DOE has made the least progress in providing security at Russia's nuclear weapons complex, where it has completed or partially completed work at only 26 of the 133 buildings or 20%."

Our current estimate of buildings in the Minatom Weapons Complex storing weapons usable nuclear material is 87. We presume that the 133 number may include other buildings that are not specifically targeted for upgrades. Of these 87 buildings, 11 are completed, 24 are partially completed, 5 have recently been put under contract, and 47 are not started. We therefore have access issues affecting us at 47 of 87 buildings. Figure 2.1 on page 29 should be revised to reflect this. Buildings where we have completed or partially completed work account for 30% of the total.

Figure 2.1 indicates there are a total of 76 buildings that contain weapons nuclear materials within the Civilian sector. The actual number of buildings with nuclear materials of interest to the MPC&A program within this sector is 52. Of these buildings, 34 are completed, 7 are partially completed, 6 have recently been put under contract, and 5 are not started.

Figure 2.1 also states there are a total of 34 buildings containing weapons-usable nuclear materials within the Naval Fuel sector. The actual number is 21. Of these buildings 13 are completed, 7 are partially completed and 1 building has not received security enhancements to date.

See comment 9.

We believe the variance in the number of buildings referenced in the report and those provided by NNSA is caused by counting buildings that are outside the scope of the MPC&A program or by counting buildings that don't store nuclear material such as Central Alarm Stations or training facilities.

4. "*…the Department of Energy has not been able to access 74% of the buildings in Russia's nuclear weapons complex." Pg 8.*

See comment 10.

While access remains an issue, based on the information above, the percentage is actually 54%.

5. "*DOE has scaled back its plans to assist operational sites, where warheads are stored with delivery vehicles, out of concern that U.S. assistance could enhance Russia's military capability.*"

"In January 2003, DOE resolved this difference and adopted new plans that balanced nuclear warhead security against the possibility of enhancing Russia's military capability".

See comment 11.

The January 2003 date is inaccurate. NNSA has had a policy of withholding offers of comprehensive upgrades at roughly half the sites nominated by the Russian Navy since January of 2002. The primary reason for the restriction was not a concern with "operational enhancement" of Russian warhead sites but, rather, with estimates of "residence time" for warheads associated with these sites. At sites where residence times are believed to be very low, NNSA does not believe that comprehensive upgrades are justified.

6. *"DOD and DOE have not resolved which department will improve security at the Strategic Rocket Forces". Pg 46.*

See comment 12.

We do not believe that the fact that we "*have not determined which Department will improve security at sites they both include in their plans*" is a "*coordination issue*". We believe that a rigid distinction between the "territory" of DOE and DOD is a weakness, and a detriment to our efforts to address U.S. national security threats. DOE and DOD recognize that the principal limiting factor in our work is access to sensitive Russian facilities. Gaining access to warhead sites within the various Russian service branches depends on numerous political, regulatory, and bureaucratic forces within the MOD and other Russian agencies that are beyond our control. The DOE/DOD approach to allow either agency to accept legitimate invitations to work at MOD sites, without regard to the service branch involved, maximizes the USG ability to rapidly act on any opportunity offered by the Russians in this regard. If DOE and DOD were to arbitrarily decide that, for example, only DOD could work at SRF sites, then the recent invitation to DOE to engage with SRF would have been rejected, to the detriment of USG objectives in this area.

We have resolved this issue at the working level. We have agreed to maintain a flexible approach that best serves US national security interests. We believe this is an example of exemplary coordination - - where bureaucratic tendencies to dispute "turf" have been abandoned in the interests of national security.

7. *"DOD and DOE may need to coordinate their assistance on guard force training centers." Pg 47*

DOD and NNSA recently agreed to pursue joint utilization of the DOD SATC and the NNSA Kola Technical Center (KTC) now under construction in the Russian far north. NNSA will utilize the proposed DOD service center to be developed in the Russian Far East, to support upgrades provided for the pacific fleet. NNSA and DOD efforts to

provide system maintenance, testing, and training support have been effectively combined.

8. *" Operational sites: Sites where warheads are deployed with their delivery vehicles" Table 3.1 Pg 37*

See comment 13.

"Deployed" typically means on a platform, for example, in a silo or on a submarine. Many of these sites have mated and unmated weapons stored in bunkers or more importantly, in handling facilities with less physical protection features that bunkers. They are not all associated with platforms.

Also use of the term "deployment" suggests use of the site for offensive reasons only. These sites also serve the purpose of force reduction, including the decommissioning of warheads.

9. *"In contrast, DOE structured its warhead security program based on requests for assistance from the Russian Navy". Pg 46.*

See comment 14.

NNSA does not work at any site until the Russian Navy has proposed it as a candidate site. This statement implies that the NNSA upgraded any sites offered by the Russian Navy, which is not correct, as previously stated. Since the beginning of the DOE/MOD program NNSA has declined and/or deferred some sites offers by the RF Navy (CBC A7; PBZ A1, PBZ E1, PBZ C3 included). Since January 2002, NNSA restricted provision of comprehensive upgrades at sites with issues associated with residence time of warheads.

10. "*DOE no longer plans to provide assistance to operational sites where mated and unmated warheads may be handled in the course of training or deployment* (or decommissioning).

Sites proposed by the Russians will be analyzed and accepted or declined on a case-by-case basis.

11. "Since DOD has already purchased perimeter fencing for the Strategic Rocket Forces sites, DOD officials said that if DOE provides assistance to those sites, it should avoid duplication of assistance and use DOD equipment." Pg. 47

NNSA has been actively pursuing this solution with the Russian MOD and has made it clear that DOD perimeter fencing must be used at sites where it has been allocated. NNSA is arranging use of this equipment through its Joint Coordination Group.

12. "DOD and DOE are providing different types of equipment to Russia that may not be compatible." Pg. 47.

NNSA has a wealth of experience regarding equipment performance and maintenance resulting from the fact that it has been installing such equipment at Russian sites over the last 10 years. NNSA knows that the elements of the system work together well, and have practical experience on how the equipment works under a variety of weather conditions. For these reasons, NNSA does not see a need to test the equipment but we are willing to do so especially if it gives DOD more equipment options with which to implement their programs.

See comment 15.

It is also important to note that much of the equipment used by DOD and NNSA is either identical or similar. Most of the problems regarding system compatibility are associated with the alarm communication and display (AC&D) software, which must be compatible with all sensors and assessment in the security system. NNSA does not believe that all systems need to be compatible with each other since each is a discrete system located at a particular site.

NNSA has emphasized using Russian equipment whenever possible, and performs due diligence on all vendors to ensure as best as possible that they are fiscally sound and will be able to sustain the systems over the long term. Through practical experience, NNSA knows that its systems are sustainable in the Russian Federation.

13. " A September 2001 access agreement between the Department and the Russian Ministry of Atomic Energy has failed to facilitate the Department's access to previously closed sites."

See comment 16.

In early 2001, Minatom officials notified the Department that Russian Security authorities responsible for processing and granting foreign personnel access to Russian sensitive facilities were insisting upon the creation of a program specific "Access Agreement". The purpose of the agreement was to establish streamlined procedures to allow US project teams continued access to sensitive Minatom nuclear facilities. It was also made clear by Russian officials that without such an agreement, the Department would no longer be granted access to either Minatom Weapon's or Civilian nuclear facilities. Prior to the September 2001 agreement, a number of trips were canceled by the Russian authorities preventing MPC&A teams from visiting Minatom facilities.

It is important to note that the access agreement was instrumental in helping the program maintain access to the buildings where it had already been granted. However, it was also widely believed that the agreement would provide a strong legal basis for Minatom to grant MPC&A teams access to some of the more sensitive buildings within their complex to install security improvements. Unfortunately, dramatically expanded access has not materialized to date.

Sincerely,

Anthony R. Lane
Associate Administrator
for Management and Administration

cc: Acting Deputy Administrator for Defense Nuclear Nonproliferation

The following are GAO's comments on the Department of Energy's (DOE) letter dated March 6, 2003.

GAO Comments

1. DOE's comment that Russia has more than 600 metric tons of weapons-usable nuclear material contradicts DOE's strategic plan and recent statements made by the Acting Administrator of the National Nuclear Security Administration in testimony before the House Armed Services Committee. The DOE July 2001 Strategic Plan for the Material Protection Control and Accounting (MPC&A) program estimates that Russia has about 600 metric tons of weapons-usable nuclear material. In an April 2002 briefing to GAO, DOE officials stated that the Department currently estimates that Russia has about 600 metric tons of weapons-usable nuclear material. On March 4, 2003, DOE's Acting Administrator of the National Nuclear Security Administration testified before the House Armed Services Committee that there is approximately 600 metric tons of weapons-usable nuclear material in Russia. The Department has consistently used 600 metric tons as the benchmark for measuring program progress.

2. GAO changed the footnote on p. 24 in the text to reflect this comment.

3. DOE disagreed with our statement that work in the weapons complex has slowed. For evidence, DOE cited an increase in the number of contracts signed and additional progress at weapons complex sites known as Tomsk 7, C-70, and A-16. However, the number of contracts signed is not a valid measure of progress, and DOE has made little progress at the three sites as discussed below.

   3a. The number of contracts signed is a poor measure of program progress because (1) contracts are frequently for small amounts of money, and (2) contracts can finance work for purposes other than improving security at buildings. During 2002, 20 of the 39 contracts DOE signed for work at multiple buildings in the weapons complex were under $20,000. The 24 contracts DOE has signed in the first two quarters of 2003 average less than $200,000 each. In contrast, upgrading security at a building can cost over a million dollars. Some of DOE's contracts were not for the purpose of improving security at buildings with nuclear material. These include a "no-cost" change to another contract, a $14,000 contract to pay one of the sites to manage other DOE contracts, and several contracts to pay Russian sites to develop access procedures that would allow DOE officials to visit those sites.

More important, since DOE began the MPC&A program, it has tracked program progress based on the number of buildings and amount of material protected not by the number of contracts signed. This is documented in DOE's Strategic Plan, MPC&A program guidelines, and DOE's July 2000 MPC&A cost and schedule estimate. Therefore, we used DOE's own benchmarks to assess progress made securing buildings and protecting weapons-usable nuclear material.

3b. DOE claimed that its progress at Tomsk 7 Chemical Metallurgical Plant has been unusually fast. However, DOE has been working with Russian site managers since 1994 and, under current plans, will not complete its planned work there until 2007. After 30 months of negotiation, DOE signed two contracts to develop designs for upgrades at two buildings. However, the contracts only fund design work. DOE must negotiate and sign a separate contract to begin installing the security upgrades.

3c. DOE stated that its plans to develop central storage facilities at C-70 and A-16 are examples of significant progress. However, DOE's progress at C-70 has been minimal. Since 1999, DOE has signed three design contracts for the C-70 facility. The third contract merely replaced the previous two, which were outdated or incomplete. In addition, as of March 2003, DOE had not signed a design contract for the A-16 facility.

4. As we discuss above, the number of contracts signed is a poor measure of program progress. The majority of contracts DOE signed for work at weapons complex sites in fiscal years 2002 and 2003 were for security enhancements such as rapid upgrades. However, most of these contracts are for work at buildings where DOE already has access or represent planned work where DOE signed contracts without getting access to the buildings.

5. DOE disagreed with the statement in our draft report that transportation security and guard force enhancement do not directly advance the primary goals of its program. We have clarified our report in response to DOE's comments. We modified figure 4 to specifically identify spending on guard forces and transportation security. Despite this modification, figure 4 still clearly shows that DOE's spending priorities have shifted from securing buildings to providing other assistance.

6. Operation and maintenance efforts take place at locations where security improvements have already been installed. While these efforts may help maintain or improve the level of security U.S. equipment provides, they do not increase the amount of material or number of buildings DOE has helped to protect. However, DOE's funding of operation and maintenance costs raises a more fundamental question about the long-term goals of this program. When DOE began its program, it focused on funding capital improvements and anticipated that Russia would fund the operations and maintenance of the equipment DOE installed. However, DOE continues to pay for operations and maintenance costs, and it is unclear if and when Russia will be able to pay for these costs.

7. DOE's Material Consolidation and Conversion (MCC) program helps Russia consolidate weapons-usable nuclear material into a smaller number of buildings or sites. The program also supports the conversion of this material into a form that cannot be used for weapons. We included this program in our calculations because it is an integral part of the MPC&A program. In addition, DOE program officials stated on several occasions that MCC is an important component of its overall effort to help secure weapons-usable nuclear material. As such, it should be included in a chart showing funding patterns for DOE programs securing weapons-usable nuclear material.

8. DOE's warhead security program is a separate activity with a clearly discrete budget. The main objective of the warhead program is to help protect nuclear warheads, not loose weapons-usable nuclear material. As such, it would not be accurate to include spending for this program in figure 4. Including spending for warhead security efforts in figure 4 would obscure DOE's spending patterns for nuclear material security.

9. DOE's lower figure for the number of buildings with weapons-usable nuclear material excludes central alarm stations, one of the critical components of the site security systems they plan to install. We included central alarm stations in our analysis because DOE included them on its list of buildings that require security upgrades. Our analysis did not include buildings such as training facilities that are outside the scope of DOE's efforts, as DOE suggested in its comments. To arrive at the figures in our report, we used DOE data that shows the Russian buildings that it helped to secure or plans to secure. We then supplemented this analysis with in-depth meetings with DOE program staff who helped clarify and update the information on program

progress in DOE's program files. To clarify our presentation of this information, we have modified the title of figure 3 to reflect that our analysis included central alarm stations.

10. Our data differ from DOE's because DOE did not include 39 central alarm stations in its analysis. Central alarm stations represent a critical element of a comprehensive security system because it is at these locations that guards monitor the alarms and video systems that protect buildings containing nuclear materials.

11. We have revised the report to reflect DOE's comments and have included additional information about recently declassified U.S. interagency policy guidance. This new guidance generally prohibits U.S. security assistance to operational Russian nuclear warhead sites.

12. DOE does not foresee a coordination problem with DOD in their joint efforts to secure the same Russian warhead sites. As both departments have plans to secure sites under the jurisdiction of the Russian Strategic Rocket Forces, a joint plan to coordinate these efforts is reasonable and prudent. DOD concurred with this important recommendation.

13. We have changed the text in the table to read "Sites that support deployed nuclear weapons."

14. We agree that DOE has declined to help secure some Russian Navy sites. However, as DOE officials stated on several occasions, the program is based on Russian requests for assistance, not DOE's independent analysis of the location and security conditions at all Russian Navy warhead sites.

15. In response to DOE's comments, we have changed our report to remove references to equipment incompatibility. Instead, we note that program operations and maintenance costs could increase if DOD and DOE use several different vendors to purchase nonstandard pieces of similar equipment. As a result, we believe DOD and DOE need to work closely together to standardize equipment where possible.

16. DOE's characterization of the importance of the September 2001 access agreement with Russia has changed. In February 2001, DOE stated that this agreement would provide DOE officials with greater access to sensitive Russian sites and allow DOE to expand its work. In April 2002,

DOE officials described the agreement as comprehensive and thorough and claimed the agreement would allow DOE to gain access to new buildings in the weapons complex and accelerate program implementation. In its comments on our report, DOE now characterizes this agreement as only intended to maintain access to Russian buildings where it had already been granted.

GAO Contacts and Staff Acknowledgments

GAO Contacts

F. James Shafer (202) 512-6002
David Maurer (202) 512-9627

Staff Acknowledgments

In addition, Gene Aloise, R. Stockton Butler, Joseph Cook, Lynn Cothern, Maria Oliver, and Daniele Schiffman made significant contributions to this report.

GAO's Mission

The General Accounting Office, the audit, evaluation and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through the Internet. GAO's Web site (www.gao.gov) contains abstracts and full-text files of current reports and testimony and an expanding archive of older products. The Web site features a search engine to help you locate documents using key words and phrases. You can print these documents in their entirety, including charts and other graphics.

Each day, GAO issues a list of newly released reports, testimony, and correspondence. GAO posts this list, known as "Today's Reports," on its Web site daily. The list contains links to the full-text document files. To have GAO e-mail this list to you every afternoon, go to www.gao.gov and select "Subscribe to GAO Mailing Lists" under "Order GAO Products" heading.

Order by Mail or Phone

The first copy of each printed report is free. Additional copies are $2 each. A check or money order should be made out to the Superintendent of Documents. GAO also accepts VISA and Mastercard. Orders for 100 or more copies mailed to a single address are discounted 25 percent. Orders should be sent to:

U.S. General Accounting Office
441 G Street NW, Room LM
Washington, D.C. 20548

To order by Phone: Voice: (202) 512-6000
TDD: (202) 512-2537
Fax: (202) 512-6061

To Report Fraud, Waste, and Abuse in Federal Programs

Contact:

Web site: www.gao.gov/fraudnet/fraudnet.htm
E-mail: fraudnet@gao.gov
Automated answering system: (800) 424-5454 or (202) 512-7470

Public Affairs

Jeff Nelligan, Managing Director, NelliganJ@gao.gov (202) 512-4800
U.S. General Accounting Office, 441 G Street NW, Room 7149
Washington, D.C. 20548

United States
General Accounting Office
Washington, D.C. 20548-0001

Official Business
Penalty for Private Use $300

Address Service Requested

Presorted Standard
Postage & Fees Paid
GAO
Permit No. GI00