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# Nuclear Terrorism and Warhead Control In Russia

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Since September 11, there has been unprecedented concern that the next terrorist attack against the United States could involve a nuclear weapon or radiological bomb. To respond to these threats, the Bush administration has placed radiation sensors at U.S. borders and put elite Delta Force commandos on high alert to seize control of nuclear materials. According to The Washington Post, after an October briefing on al Qaeda's nuclear ambitions by CIA Director George Tenet, President George W. Bush "ordered his national security team to give nuclear terrorism priority over every other threat to the United States."1

The most likely source from which terrorists might acquire nuclear material or a complete warhead is Russia, which possesses a vast nuclear complex containing hundreds of tons of fissile material (plutonium and highly enriched uranium) protected by inadequate or nonexistent security. In January 2001, a bipartisan commission chaired by Howard Baker, former Senate Republican majority leader, and Lloyd Cutler, former Clinton White House counsel, found that "[t]he most urgent unmet national security threat to the United States today is the danger that weapons of mass destruction or weapons-usable material in Russia could be stolen and sold to terrorists or hostile nation states and used against American troops abroad and citizens at home."2

More recently, in February 2002 the U.S. intelligence community confirmed to Congress that "weapons-grade and weapons-usable nuclear materials have been stolen from some Russian institutes. We assess that undetected smuggling has occurred, although we do not know the extent or magnitude of such thefts."3 According to Viktor Yerastov, who heads the Russian Ministry of Atomic Energy's Nuclear Materials Accounting and Control Department, "quite sufficient material to produce an atomic bomb" was stolen from the Chelyabinsk region in 1998.4 Commenting on that theft to The Washington Post, a U.S. official said that, "given the known and suspected capabilities of the Russian mafia, it's perfectly plausible that al Qaeda would have access to such material."5

Bush administration officials are fond of saying that, because the United States and Russia are no longer enemies, the size of the Russian nuclear arsenal no longer matters to U.S. security. But that sentiment—even if accepted at face value—completely ignores that the main risk posed by Russia is not from a deliberate nuclear attack but from the possible leakage of its nuclear weapons or material to would-be nuclear states or terrorist groups.

To address this highest priority threat properly, one would expect that U.S. policy toward Russia would place concerns about securing Russian nuclear weapons and materials above all others. But recent information about U.S. nuclear policy indicates that this is not the case. In fact, the Bush administration's nuclear posture review exacerbates the threat of nuclear proliferation by encouraging Russia to maintain a large reserve of nuclear warheads and an artificially large nuclear complex. Given the weak security provided to Russia's nuclear infrastructure—and the fact that terrorists are known to be targeting it—U.S. policy should instead aim to place Russian nuclear warheads and materials under adequate multilateral control and on the fast track to secure storage and elimination.

To do so, the Bush administration will need to abandon the idea of storing, for potential future use, the thousands of warheads to be removed from strategic launchers over the next decade. There is no compelling justification for a reserve

of this size. Instead, Presidents Bush and Vladimir Putin should agree at their May summit to eliminate excess nuclear warheads under strict verification and task their governments to negotiate by 2003 a binding agreement to that effect.

**The Shell Game**

Last November, President Bush announced that the United States would reduce its strategic operational nuclear forces from roughly 6,000 warheads to between 1,700 and 2,200 by 2012. At the time, President Putin indicated that Russia would try to "respond in kind," and he later said that Russia would reduce its nuclear forces to between 1,500 and 2,200 deployed strategic warheads. Although neither START I nor START II had called for the destruction of warheads, Presidents Bill Clinton and Boris Yeltsin had agreed in 1997 that a future strategic reduction agreement would address warhead dismantlement. It was therefore hoped that the Bush administration would pursue that goal with the aim of making the cuts as difficult to reverse as possible.

But the Bush administration wants the option to keep the roughly 4,000 warheads to be removed from land- and submarine-based missiles and bombers, as well as the delivery vehicles themselves (START I and II called for the dismantling of delivery vehicles). The Pentagon wants to store most of these warheads, including a "responsive force" of roughly 2,400 that it would be able to redeploy within weeks, months, or years. Testifying before the Senate Armed Services Committee on February 14, Undersecretary of Defense for Policy Douglas J. Feith said that the United States "must retain these weapons to give [it] a responsive capability to adjust the number of operationally deployed nuclear weapons, should the international security environment change and warrant such action."

This stance has raised major objections from Russian officials, especially within the Ministry of Defense. The U.S. flexibility preserved by the responsive force, they argue, provides no long-term confidence in the permanence of the arms reduction process and could undercut international nonproliferation efforts, which are predicated on the nuclear-weapon states' commitment to an "unequivocal undertaking…to accomplish the total elimination of their nuclear arsenals."6 Igor Sergeyev, Putin's military adviser, said February 19 that "real and irreversible liquidation of nuclear weapons will show the world community how reliable and serious the course for nuclear disarmament is."7

The difference between the U.S. and Russian positions is that Moscow sees ongoing nuclear reductions as part of a binding process that provides confidence in the other side's current and future capabilities. Washington, however, sees the new process of strategic reductions as the antithesis of traditional arms control—above all else, constraints are to be avoided and flexibility preserved. Speaking in Geneva March 22, John Bolton, undersecretary of state for arms control and international security, said that the administration hoped to include a provision in any strategic agreement with Russian that would allow it to exceed the pact's numerical limits without withdrawing if "international geostrategic circumstances" changed. The administration's plan is, essentially, to move warheads from one place to another, with no guarantee that they will not be moved back.

The catch is that, if the United States keeps thousands of warheads in storage, Russia is likely to do the same, and Russia does not have security stringent enough to adequately control stored nuclear warheads and fissile material. The proliferation risk to the United States could thus increase because of its intention to maintain a responsive force. As Senator Carl Levin (D-MI), chairman of the Armed Services Committee, said in the February 14 hearing, "By failing to destroy nuclear warheads, the [Bush administration] would increase the threat of proliferation at the very time when the al Qaeda terrorist network is known to be pursuing nuclear weapons."

**Russian Complex Less Than Secure**

The number of strategic nuclear weapons that Russia deploys will dramatically decline over the course of this decade regardless of whether an agreement is reached with the United States. Most of Russia's missiles and submarines will reach the end of their service lives by 2007. Projections show that Russia could deploy as few as 300 missiles and perhaps 20 strategic bombers by the end of the decade, with no more than 1,350 strategic nuclear warheads.8 This means that about 3,500 warheads in Russia, containing roughly 84 metric tons of fissile material, will be removed from deployment over the next decade.9 The question from a nonproliferation standpoint is, what will happen to Russia's warheads and fissile material?

Russia's nuclear reductions to date have been supported by U.S.-funded cooperative threat reduction programs designed to secure warheads and fissile materials, as well as to downsize Russia's nuclear complex and thereby reduce its

ability to reconstitute its nuclear arsenal. These programs are needed because, since the collapse of the Soviet Union, Russia has been unable to fully account for or physically protect its nuclear material, creating an enormous proliferation risk.

Overall, these programs have made significant progress in securing Russian nuclear materials and establishing a set of incentives and facilities to ensure that Russian warheads are securely stored and dismantled and their nuclear materials eliminated. Despite these improvements, significant risks remain—risks that could be dramatically magnified if the United States chooses to store its warheads. Russia could respond with a decision to store rather than dismantle its warheads, maintain rather than dispose of its fissile material, and continue to operate rather than shut down its warhead-remanufacture plants.

*Warheads*

The risk of a complete nuclear device falling into the hands of terrorists or a would-be nuclear-weapon state is a nightmare scenario, but because of gaps in Russian warhead security, it is a possibility. According to the U.S. intelligence community, the Russian warhead-security system "was designed in the Soviet era to protect weapons primarily against a threat from outside the country and may not be sufficient to meet today's challenge of a knowledgeable insider collaborating with a criminal or terrorist group."10

Colonel-General Igor Valynkin, head of the military organization responsible for warhead storage in Russia, announced in October 2001 that security had been heightened earlier in the year after "Russian authorities had twice thwarted terrorist efforts to reconnoiter nuclear weapons storage sites," according to the U.S. National Intelligence Council.11 Although the terrorists did not succeed in entering the storage sites, according to Valynkin, the fact that they tried is cause for alarm.

Moreover, according to U.S. intelligence, Russia's warhead-security forces have suffered from wage arrears and shortages of food and housing. In 1997, one nuclear weapons storage site was closed due to hunger strikes by the workers. Although wages are now paid regularly, they rarely exceed $70 per month and it is difficult for spouses to earn second incomes because storage sites are usually isolated from cities. Acknowledging the potential vulnerability of its nuclear security personnel, Valynkin has said that "the greatest problem is the person who works with nuclear warheads. He knows the secrets, he has the access, he knows the security system."12

The United States has been helping secure Russian warhead transportation and storage sites, as well as develop a modern accounting and warhead-tracking system. Fences, alarm systems, and response kits have been provided for 123 nuclear weapon storage sites, and cooperation with the Russian navy to secure warheads is ongoing. These efforts, however, are still in process and have not yet resulted in a secure system for storing Russian nuclear warheads. More than half of Russian warhead storage facilities may still lack basic modern security features, and the accounting and tracking systems are still in the early stages of deployment.

*Fissile Material*

Russia has produced the world's largest stockpile of weapons-usable plutonium and highly enriched uranium (HEU), and security is worse for loose fissile material than it is for warheads. U.S. intelligence reports that "Russian facilities housing weapons-usable nuclear material…typically receive low funding, lack trained security personnel, and do not have sufficient equipment for securely storing such material."13

These direct-use nuclear materials are stored in hundreds of buildings at dozens of facilities across the country, and as noted above, Russian institutes have lost weapons-grade nuclear materials in thefts. The United States has been engaged in efforts to provide quick security upgrades at all 53 facilities known to contain nuclear material, but the Energy Department estimates that even the most basic security upgrades will not be in place until 2006. Even when completed, these improvements will not meet the highest international standards for physical protection and accounting.

This bad situation will only be made worse as Russian warheads are retired and dismantled unless the system of security improves more rapidly and room is made within secure storage sites. The Bush administration, to its credit, is working to accelerate security upgrades and has proposed funding levels for 2003 well above its initial budget requests. However, it must be recognized that the only viable long-term solution to the risks presented by the Russian complex is the permanent disposal of excess nuclear materials.

For example, the United States and Russia are nearing completion of the Mayak Fissile Material Storage Facility. The facility—due to open this year—was built to store nuclear materials from dismantled Russian nuclear weapons and required substantial political and financial investments from the United States. Up to 66 metric tons or 25,000 containers of nuclear material can be stored on-site, and a second, equally large facility is under consideration. To ensure that the materials will not be reused in weapons, however, the facility is not permitted to accept materials unless they are slated for elimination and placed under international inspection. If Russia wants to maintain fissile material for future weapons production, it cannot be stored at Mayak and will have to be kept in a far less secure location.

*Warhead Remanufacture*

Russia's warhead maintenance poses other challenges for its security complex. Russian warheads were designed to be routinely remanufactured, and unlike the United States, Russia cannot store its active warheads indefinitely. Instead, the plutonium must be removed from these weapons and shipped to purification sites for later reuse. Thus, if Russia responds to U.S. policies by maintaining a large number of warheads in reserve, the result will be a greater amount of nuclear material in various stages of processing and in transport—the two most vulnerable points of the weapons complex to theft and diversion.

Furthermore, Moscow currently plans to close two of its four warhead production sites—Sarov, Seversk, Trekgornyy, and Zarechnyy—but concerns over the reversibility of U.S. reductions may lead Russia to keep these facilities open longer than currently planned. The warhead production facilities, which possess tens of tons of weapons-usable fissile material, remain one of the least secure elements of Russia's nuclear complex because Russia has been hesitant to allow U.S. security upgrades at such secret facilities. Progress is being made, but it will take years before security at these sites meets even the most basic standards.

The cooperative threat reduction assistance provided by the United States was never intended to create permanent solutions—only to mitigate the risks of nuclear assets being stolen while the nuclear dismantlement process went forward. Nevertheless, the current strains on Russia's nuclear weapons and material-storage complex are enormous, and glaring gaps in security remain. To avoid exacerbating an already dangerous situation, the coming glut of nuclear weapons and materials from retired Russian weapons systems must be moved quickly and securely through the dismantlement and disposition process. Prolonged storage of either warheads or fissile materials is simply not an acceptable long-term outcome.

**Reserve Overkill**

The United States has to make a choice between maintaining nuclear flexibility and ensuring the secure storage and elimination of Russian warheads. This should be an easy decision because, in addition to exacerbating proliferation dangers, a large nuclear reserve force provides no benefits for U.S. security. The Bush administration plans to retain up to 2,200 deployed operational strategic warheads by 2012. This is more than the nuclear arsenals of China, France, the United Kingdom, India, and Pakistan combined. It is more than enough to deter any conceivable adversary. China's nuclear force will pale in comparison to America's, even if Beijing eventually deploys 100 warheads on long-range missiles, as projected by U.S. intelligence. The so-called axis of evil (North Korea, Iran, Iraq) could acquire at most a handful of nuclear weapons over the next decade, if any.14 Even Russia would be deterred by 2,200 warheads, but according to the Bush administration the size of Russia's nuclear arsenal is no longer driving the U.S. force posture.

In his February 14 Senate testimony, Feith said a large reserve force would hedge against unforeseen threats and could, if necessary, make up for an imbalance in U.S. and Russian warhead production capacity. According to Feith, Russia can dismantle its warheads with little risk because it can quickly produce large numbers of new warheads if needed. But, says Feith, "the United States today is the only nuclear weapon state that cannot remanufacture replacements or produce new nuclear weapons," and until it can, the United States must depend on stored weapons.

Aside from the fact that this rationale contradicts the Bush administration's position that the U.S. arsenal is no longer sized to counter the Russian threat, Feith's statements about U.S. capabilities are misleading. It is true that since 1989 the United States has not operated large-scale facilities that can produce new nuclear weapon cores, known as plutonium "pits." But other warhead parts can still be produced at other sites in the U.S. nuclear weapons production complex. Moreover, U.S. plutonium pits can last significantly longer than those in Russia—

perhaps 50 years or more.15 Thus, if the oldest warheads in the U.S. arsenal are now approaching 25 years in age (such as the W76 warhead on the Trident missile, the W78 warhead on the Minuteman III missile, and the B61 bomb), their pits should last at least another 25 years.

Furthermore, according to John Gordon, head of the National Nuclear Security Administration, the Department of Energy still maintains the capacity to build 20 pits per year, with a surge capacity of 50 per year, and plans to produce new pits for the arsenal in about seven years. In addition, the Energy Department should have a modern pit plant built in about 15 years. Thus, the United States could produce new pits well before there is a "pit crisis." The $5 billion stockpile stewardship program to certify the safety and reliability of U.S. nuclear weapons without testing is in place to detect any potential problems. And in the event that new pits are needed in an emergency, there are thousands of pits already in storage that could be reused.

A case can be made for keeping a limited number of warheads in reserve for reliability testing and to replace parts that are found to be defective. No reasonable justification, however, exists for keeping a reserve as large as that envisioned by the Pentagon. Moreover, there is no need to have any of these warheads in the "responsive force" (i.e., ready for rapid redeployment).

It is true that Russia continues to produce warheads, but it currently does so to replace older warheads, not to increase its stockpile. Moreover, the size of Russia's offensive force is constrained because most of its missiles are nearing retirement. But if the Bush administration is truly worried about Russia's warhead production capability, then it should work to reduce the size of Russia's production complex and negotiate a cap on the number of warheads that Russia could produce in a year or agree to limit strategic nuclear delivery vehicles. However, because the administration claims that it is not sizing the U.S. arsenal to the Russian force and that Russia is our friend, it is not clear why this should be an issue.

**A Better Way**

The declining number of strategic weapons Russia deploys means that its nuclear complex is going to be further stressed in the coming years regardless of the U.S. decision to store its warheads, but a requirement to store and maintain—as opposed to dismantle and dispose of—its nuclear weapons would multiply this stress and increase the risk of proliferation. If, however, the United States were to give up its requirement for a massive reserve, it would allow Russia to do the same and free both sides to place a high priority on securely storing and eliminating Russian nuclear warheads and fissile material.

The answer to the warhead security problem is not, as some have suggested, to leave Russia's warheads on its missiles. Although Moscow does appear to have better control over its deployed arsenal, it is clearly to the benefit of U.S. national security to have fewer warheads aimed at the United States and its allies. This is especially true given Russia's deteriorating early-warning system and the danger that a false attack warning could lead to an erroneous Russian "retaliation." The fewer warheads aimed at U.S. soil and the lower the alert status of these weapons, the better.

Nevertheless, we must be mindful of where these warheads go, lest they create new dangers. Instead of heaping additional security burdens on a Russian complex not up to its current task, the United States and Russia should expand cooperation to include a process to track the retired warheads and fissile material carefully from cradle to grave, while continuing to improve the immediate security situation. The fact that warheads must pass through various processes on the path to elimination does increase the near-term risk that fissile material could be diverted. U.S. security assistance and joint monitoring will reduce this risk, but verified nuclear warhead and material elimination is the only long-term solution to the problem of fissile material theft.

Much cooperative research has been conducted between U.S. and Russian experts on ways to monitor warhead elimination without revealing classified information. At the 1997 U.S.-Russian summit in Helsinki, Presidents Clinton and Yeltsin agreed that START III would include "[m]easures relating to the transparency of strategic nuclear warhead inventories and the destruction of strategic nuclear warheads and any other jointly agreed technical and organizational measures, to promote the irreversibility of deep reductions including prevention of a rapid increase in the number of warheads." Presidents Bush and Putin should commit both countries to a binding agreement to eliminate warheads removed from deployment under an effective "chain of custody" from deployment to disposal.

This process would start with both sides formally declaring that the warheads will be removed and promising that they will not be returned to military service, thus starting a one-way trip to disposal. These warheads would ideally be placed directly into containers that would be "tagged" with unique seals at the deployment site as warheads are removed from missiles and bombers under joint monitoring. These tagged warheads could then be checked periodically during transit to secure storage sites in both countries. Warheads could be stored in existing or new facilities under joint or international monitoring.

Next, Russian warheads would be sent to one of Russia's dismantlement plants which could be retooled to allow for greater transparency, while protecting warhead design secrets. Once a warhead is disassembled, the plutonium and HEU parts would need to be changed into unclassified shapes. The recast plutonium would be sent to the Mayak facility to await disposition. The HEU could be stored either at Mayak or at warhead dismantlement sites under monitoring. Nuclear components would be periodically checked during these transitions.

Finally, the fissile material must be disposed of or otherwise made unusable in weapons. For example, the United States is already purchasing 500 metric tons of weapons-grade uranium for use as civilian power-reactor fuel, and this amount should be increased as more material is released from warheads. Russia and the United States have also agreed to each eliminate 34 metric tons of excess plutonium by irradiation or immobilization. This agreement could also be expanded to accept the future addition of excess materials as arms reductions continue.

The key benefit to this chain-of-custody approach is that international inspectors, in addition to national monitors, could be involved every step of the way. In theory, the United States could have as much access over the process as it is willing to give the Russians over its elimination process.

**Conclusion**

For Russia to give the United States such access to its retired warheads, Moscow will want a reciprocal role in the U.S. system. This means that the Bush administration would have to agree to eliminate its non-deployed warheads under effective monitoring. When one compares the probability of nuclear warhead and material theft in Russia to the probability that the United States will need to double the size of its arsenal in the future, the choice is easy.

The Bush administration has made nuclear proliferation a top rhetorical priority. It now needs to ensure that this priority permeates all aspects of its efforts to improve U.S. national security. The improving nature of the U.S.-Russian relationship should expand to include effective, transparent, and reciprocal steps to ensure the safety and security of nuclear weapons as they wind their way toward eventual and permanent elimination.

**NOTES**

1. Barton Gellman, "Fears Prompt U.S. to Beef Up Nuclear Terror Detection," The Washington Post, March 3, 2002, p. 1.
2. U.S. Department of Energy, Secretary of Energy Advisory Board, A Report Card on the Department of Energy's Non-Proliferation Programs with Russia, January 10, 2001.
3. National Intelligence Council, Annual Report to Congress on the Safety and Security of Russian Nuclear Facilities and Military Forces, February 2002, p. 2.
4. Ibid.
5. Gellman, "Fears Prompt U.S. to Beef Up Nuclear Terror Detection," p. 1.
6. Final document of the 2000 nuclear Nonproliferation Treaty review conference.
7. Sharon LaFraniere, "U.S., Russia Divided Over Iran After Talks," The Washington Post, February 20, 2002, p. 12.
8. This projection assumes 200 SS-27s with three warheads each, seven Delta IV submarines with 112 SS-N-23 missiles with four warheads each, and 10 Bear and 10 Blackjack bombers with eight warheads apiece. See Jon Brook Wolfsthal, et al., Nuclear Status Report: Nuclear Weapons, Fissile Material, and Export Control in the Former Soviet Union, (Washington, DC: Carnegie Endowment for International Peace, 2001), p. 35.
9. 3,500 x (4 kilograms plutonium + 20 kilograms highly enriched uranium) = 84 metric tons
10. National Intelligence Council, Annual Report to Congress, p. 2.
11. Ibid., p. 6.
12. Ibid., p. 7.
13. Ibid., p. 2.
14. Central Intelligence Agency, Foreign Missile Developments and the Ballistic

Missile Threat Through 2015: Unclassified Summary of a National Intelligence Estimate, January 2002.

15. For example, the W89 warhead for the SRAM-II missile (cancelled by President George H. W. Bush in 1991) was designed to use pits from retired W68 Poseidon warheads. These pits were then at least 18 years old. Assuming the W89 was expected to have an average lifetime, the pits can be estimated to last about 50 years.

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