Toward *True* Security

A US Nuclear Posture for the Next Decade

Center for Defense Information

Federation of American Scientists

Natural Resources Defense Council

Union of Concerned Scientists

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CHAPTER 1

THE PROPOSAL IN BRIEF

This report proposes a nuclear weapons policy for the United States for the next decade that reflects today's political and strategic realities. By contrast, the official policies and doctrines of both the United States and Russia are mired in Cold War patterns of thought. Eleven years after the fall of the Berlin Wall, both countries still maintain massive nuclear arsenals ready for nearly instant use. Although nuclear war plans differ in size and detail from those drawn up 20 or more years ago, their basic structure remains unchanged.

The US nuclear arsenal and doctrine were designed to deter a deliberate large-scale Soviet nuclear attack on the United States and a massive Soviet conventional attack on US European allies, as well as to preserve the option of a disarming first strike against Soviet nuclear forces. This force structure and doctrine are obsolete and jeopardize American national security.

The greatest nuclear danger to the United States today and in the near future is a Russian attack resulting from an error in Russia's warning system or a failure in its command-and-control system. The current US policy of maintaining large numbers of highly accurate nuclear weapons that can be launched promptly to attack Russia's nuclear forces stands in the way of reducing this risk. So too would the US deployment of any missile defense system that Russia believes capable of intercepting a significant number of its survivable strategic missiles, thereby undermining its nuclear deterrent.[1]

The greatest nuclear danger to the United States today is a Russian attack resulting from error.

In the longer term, the greatest dangers to US and international security stem from the risk of nuclear proliferation. Although countries will make their own decisions about acquiring nuclear weapons, US nuclear weapons policy can have a substantial impact on future nuclear proliferation. By design, current US policy is ambiguous about whether US nuclear weapons have purposes beyond deterring other countries' use of nuclear weapons. In addition, US policy includes no significant measures to comply with US commitments under the Non-Proliferation Treaty to pursue negotiations to prohibit nuclear weapons in conjunction with the other nuclear weapon states. This creates the strong impression that the United States plans to maintain nuclear weapons for the indefinite future. For these reasons, continuation of the current US nuclear policy would ultimately weaken the nonproliferation regime and increase the incentives for other countries to acquire nuclear weapons.

[1] Whether Russia believed that a specific US missile defense could undermine its deterrent would depend on its assessment of how many of its strategic missiles would survive a US first strike and how many of those missiles the US defense might be able to intercept. It would also depend on Russia's assessment of the degree of confidence the United States had in its first strike and defensive capabilities.

Worldwide verifiable and permanent prohibition of nuclear weapons would greatly benefit the military security of all countries, not least the United States. Accordingly, the United States can make a valuable contribution to its national security and that of other countries by working to establish the conditions needed to permit such enduring prohibition. However, even under the best of circumstances, prohibition of nuclear weapons would take far longer than ten years, the period under consideration in this report.

In the meanwhile, the United States should adopt a new nuclear policy that directly enhances US national security and that promotes nonproliferation—regardless of whether or when nuclear prohibition is achieved. A central element of this policy would be a US declaration that the sole purpose of US nuclear weapons is to deter and, if necessary, respond to the use of nuclear weapons by another country.

No plausible threat justifies the United States maintaining more than a few hundred survivable nuclear weapons.

No plausible threat can be foreseen that justifies the United States maintaining more than a few hundred survivable nuclear weapons over the next decade or beyond. Nor does any plausible threat require the United States to maintain the ability to launch large numbers of its nuclear weapons promptly, in a matter of minutes, or even in a matter of hours. We recommend that the United States unilaterally reduce its nuclear arsenal to a total of 1,000 nuclear warheads and take measures to increase the amount of time required to launch these weapons. By easing Russia's concerns about the potential vulnerability of its nuclear deterrent, these steps would give Russia an incentive to adopt a safer nuclear posture for its own nuclear arsenal. They would also provide an incentive to other nuclear weapon states to engage in multilateral negotiations for deeper, verified nuclear reductions.

The Need for Wider Debate

US policymakers of both major parties recognize that the US nuclear posture must change to reflect today's world and future challenges to US security. Last year, the US Congress passed legislation mandating that the Secretary of Defense conduct a nuclear posture review to clarify US nuclear policy for the next five to ten years. This review is to be completed by December 1, 2001. Congress specified that the review be broad-ranging and that it consider

- the role of nuclear forces in US military strategy
- the requirements for the United States to maintain a safe nuclear deterrence posture
- the relationship among US nuclear deterrence policy, targeting strategy, and arms control objectives

Even without this requirement, it is clear the Bush administration would have initiated such a review. During his campaign, President George W. Bush stated his interest in making significant nuclear reductions and in reducing the alert status of strategic missiles, indicating a possibility that these reductions might be unilateral. He reiterated this interest in his May 1 speech at the National Defense University. The administration has indicated that it will complete its review of US nuclear policy and make its plans public well before December 2001.

Thus, there is both a great need and an opportunity to craft a new US nuclear policy to enhance US security and move the world in a safer direction. Because nuclear weapons are so central to the future security of the United States and the wider international community, it is important that US nuclear policy be discussed more widely and that decisions about a new US nuclear posture be informed by such broader discussions. The three nongovernmental organizations that authored this report have for decades been devoted to promoting a sound US nuclear weapons policy and to enhancing the public debate over national security issues. In this report, we lay out a new nuclear posture for the United States that is achievable in the next decade, to encourage an informed debate of US nuclear policy among both US policymakers and the public.

A Nuclear Posture for the Next Decade

Our analysis shows that US security would be substantially improved by adopting a nuclear posture for the next five to ten years in which the United States would:

- Declare that the sole purpose of US nuclear weapons is to deter and, if necessary, respond to the use of nuclear weapons by another country.
- Reject rapid-launch options, and change its deployment practices to provide for the launch of US nuclear forces in hours or days rather than minutes.
- Replace its reliance on pre-set targeting plans with the capability to promptly develop a response tailored to the situation if nuclear weapons are used against the United States, its armed forces, or its allies.
- Unilaterally reduce its nuclear arsenal to a total of 1,000 warheads, including deployed, spare, and reserve warheads. The United States would declare all warheads above this level to be in excess of its military needs, move them into storage, and begin dismantling them in a manner transparent to the international community. To encourage Russia to reciprocate, the United States could make the endpoint of its dismantlement process dependent on Russia's response. The deployed US warheads should consist largely of a survivable force of submarine-based warheads.
- Promptly and unilaterally retire all US tactical nuclear weapons, dismantling them in a transparent manner. In addition, the United States would take steps to induce Russia to do the same.
- Announce its commitment to further reductions in the number of nuclear weapons, on a negotiated and verified multilateral basis.
- Commit to not resume nuclear testing and to ratify the Comprehensive Test Ban Treaty.
- Reaffirm its commitment to pursue nuclear disarmament and present a specific plan for moving toward this goal, in recognition that the universal and verifiable prohibition of nuclear weapons would be in the US national security interest.
- Recognize that deployment of a US missile defense system that Russia or China believed could intercept a significant portion of its survivable long-range missile forces would trigger reactions by these countries that could result in a net decrease in US security. The United States should therefore commit to not deploy any missile defense system that would decrease its overall security in this way.

The Future

If this nuclear posture is adopted and its goals accomplished, the United States will have greatly enhanced its national security and that of other countries. In addition, it will have set the stage for multilateral negotiations to reduce the nuclear arsenals of other countries. The next nuclear posture review, undertaken five to ten years from now, will then be able to craft a new US policy that will further reduce the whole range of nuclear dangers to the United States and other countries. The next nuclear posture review will have to tackle new challenges involved in negotiating and implementing verifiable, multilateral reductions to levels well below 1,000 nuclear warheads, as well as take further steps to lay the groundwork for the prohibition of nuclear weapons.

CHAPTER 2

THE PROBLEM

The global security environment has changed profoundly since the end of the Cold War. During the Cold War, US policymakers were deeply concerned about the danger of a massive, deliberate Russian conventional or nuclear attack on the United States or its allies. Today, this danger is acknowledged to be virtually nonexistent. Other nuclear dangers to the United States do, however, remain, and new threats could emerge.

To safeguard the security of its citizens, the US government must protect against and reduce current dangers while preventing or minimizing potential future dangers. Thus, any nuclear posture review must begin with a realistic assessment of the current and potential nuclear dangers to US security, keeping in mind that the nuclear policy the United States adopts now will affect the dangers it will face in the future. To an extent without precedent since the beginning of the Cold War, the United States can now shape the nuclear future.

Dangers from Russia

While Russia retains the ability to conduct a deliberate nuclear attack against the United States, it has no political incentive to do so, and it would, in any case, be deterred by the certain US capability to retaliate.

Yet Russia's nuclear weapons remain the greatest military danger to the United States—in consequence if not in probability. Rather than a deliberate attack, the danger today is that of a mistaken, unauthorized, or accidental attack. Some of Russia's nuclear-armed missiles could be launched at the United States deliberately, under an official order but in response to a mistaken warning of an incoming US attack. Such a mistaken retaliatory launch would likely involve a large number of nuclear warheads—perhaps thousands. Another possibility is that one or a few individuals could seize control of some weapons and launch them, acting without authorization. An unauthorized launch would also likely be large, with a plausible launch ranging from many tens to several hundreds of warheads.[2] Or an accident, due to equipment malfunction or operator error, could result in a launch of anything from a single missile to a large portion of Russia's missile force.

[2] One scenario for an unauthorized attack would be the launch of missiles from a single Russian submarine. The Delta IV submarines each carry 64 warheads, and the Delta III submarines carry 48. Another would be the launch of land-based missiles under control of a single commander. A Russian regiment of SS-18 land-based missiles is typically six missiles with ten warheads each, for a total of 60 warheads. However, all Russian land-based missiles in a division are interconnected and can be launched by any of the regimental launch control centers or by division command posts and their alternates in the field. A regiment commander who devises a way to launch the six missiles under his or her control could also fire all the missiles in the interconnected regiments. Russia maintains four fields of SS-18 missiles; each has from 30 to 52 missiles, with 300 to 520 warheads. Thus, an unauthorized attack could involve 48 to 520 warheads.

Well over a thousand Russian nuclear weapons are deployed on missiles kept on high alert and could be launched within a few minutes of a decision to do so. Russia maintains this capability so it can launch its nuclear-armed missiles promptly upon receiving a warning that the United States has launched—or is about to launch—a first strike. Such an immediate launch is intended to prevent its nuclear weapons from being destroyed and to ensure the dissemination of launch orders before its command centers are destroyed.

Launch on warning is a risky posture because it leaves so little time to rule out a mistaken warning.

Launch on warning is a risky posture: the decision time is so short that it leaves little time in which to rule out a mistaken warning. In Russia, the dangers of mistaken launch are exacerbated by a deficient warning system: Russia's radars do not cover attack corridors from the North Atlantic and the Pacific where US nuclear-armed submarines are normally on patrol. In addition, its satellite-borne sensors for detection of missile launches provide incomplete coverage.[3] As a result, Russia has little ability to cross-check the validity of attack indications from one sensor against those of another. Moreover, most of Russia's nuclear forces are deployed in such a way that they would be destroyed in a US first strike. Nearly all Russia's deployed strategic nuclear weapons are on vulnerable missiles: land-based missiles in silos, mobile missiles in garrisons, and missiles on submarines kept in port. Because of this, Russia has an incentive to react quickly to warning of attack and therefore could be fooled by false alarms. Declining morale and training in the Russian military further increase the risk of human and technical error in the performance of its early warning systems.

Similarly, the United States is prepared for a Russian "bolt-from-the-blue" attack: the United States maintains the capability to launch its weapons within minutes of receiving coordinated signals from its network of radars and early-warning satellites indicating that an attack against the United States is in progress.

The United States is, however, in a position to keep a more relaxed finger on its nuclear trigger, for two reasons. First, its warning and communication systems are more reliable and sufficiently complete to provide redundant worldwide coverage. Second, the United States maintains more than 1,000 missile-launched nuclear weapons on submarines safely hidden at sea. These would survive any Russian first strike.

Nevertheless, the US policy of maintaining its nuclear forces so they can be launched promptly reflects a predisposition to launch on warning. This posture is inherently dangerous—and not only because it could result in a mistaken US launch. This posture, in combination with the high accuracy and large number of deployed US nuclear weapons, gives Russia an incentive to keep its forces on hair-trigger alert to protect its vulnerable nuclear missiles. This, in turn, increases the very real risk of a mistaken, unauthorized, or accidental launch of Russian missiles.

This is not just a hypothetical problem: In 1995, Russia's early warning system indicated a possible US missile attack. This triggered Russia's emergency nuclear decision process—in response to the launch of a scientific research rocket fired from

[3] One of Russia's early warning radars was built on Latvian territory. It was dismantled following the breakup of the Soviet Union. Because of its economic difficulties, Russia has been unable to replace all of its early-warning satellites as they age and stop functioning. In 1995, its fleet included nine functioning satellites; now there are only four. These satellites can detect launches of US land-based missiles, but not those of US submarine-based missiles.

Norway. Russia's radars apparently could not rule out the possibility that the rocket was a US nuclear-armed missile fired from a submarine in the Norwegian Sea. The alarm traveled all the way up the chain of command to President Boris Yeltsin, activating his nuclear suitcase, which would be used to authorize nuclear retaliation. About eight minutes into the rocket launch, the operators of Russia's warning radars reported that the rocket did not threaten Russia, and the alarm was cancelled.

The safe outcome of this false alarm is scant consolation. The mere fact that a peaceful scientific rocket could trigger an emergency launch procedure in Russia points to a real danger. Moreover, Russia's command and early warning systems have deteriorated since then: It now has only four early warning satellites; at that time it had nine. The next time a benign event is interpreted as a potential nuclear attack, it is not clear that Russia will have sufficient information to decide that it can afford to wait. A false alarm involving a single rocket or a small number of incoming warheads presumably would not precipitate a Russian decision to launch. However, a false alarm could also result in the impression of a massive US attack, in which case Russia may be less willing to wait before launching a counterattack.

Maintaining forces on high alert also increases the risk of unauthorized launches. An unauthorized attack is more likely if fewer steps are needed to implement it, as would be the case if weapons are primed for rapid launch. With nuclear missiles armed, fueled, and ready to fire upon receipt of a few short computer commands, the need for strict safeguards to prevent unauthorized launch is obvious. But no safeguards are foolproof, and maintaining nuclear forces in a way that required additional physical steps to launch a missile would offer greater protection.

Future Russian Dangers

Russia appears to want to decrease its deployed strategic forces to 1,000 to 1,500 warheads over the next decade because of economic constraints. However, Russia could choose to maintain far more nuclear warheads for the next 15 years if it does not adhere to the START II prohibition against land-based missiles with multiple warheads. For just this reason, Russia has threatened to ignore the START II agreement in response to the deployment of a US national missile defense system that Russia believes might be effective against its missiles.

The danger Russia's weapons pose to the United States and other countries will depend as much—if not more—on their operational status as on their numbers. For example, 1,000 Russian nuclear weapons on high alert may pose a much more serious risk to the United States than 3,000 that could not be launched quickly.

Tactical nuclear weapons could again become a threat. As a result of NATO expansion and the deterioration of its conventional forces, Russia has expressed renewed interest in tactical nuclear weapons and could redeploy some of the thousands currently in storage. Because tactical nuclear weapons are generally under less secure control than strategic weapons, this could increase the risk of unauthorized or accidental use as well as the risk of theft.

Political changes in Russia could also lead to increased nuclear dangers. Russia's transition to democracy may not be completed or may even be reversed in the next decade. In such a case, increased tensions between the United States and Russia could result in Russia maintaining greater numbers of nuclear weapons at higher alert levels. But the revolutionary changes in Europe's political landscape mean that Russia

could not readily reconstruct the conventional threat to central or western Europe the Soviet Union once posed.

Russian Reaction to US Policy

The nuclear policy the United States adopts for the next five to ten years will affect the choices Russia will make about its nuclear weapons—regardless of how the overall US-Russian relationship evolves over this time period. While the role of nuclear deterrence may change in the overall US-Russian relationship over the next decade, it is almost certain to continue in some form during this time period. This has several implications, both military and political, for how the nuclear threat from Russia will evolve.

The nuclear policy the United States adopts will affect the choices Russia will make about its nuclear weapons.

Russia is unlikely to try to maintain strict numerical parity at a high level with the United States, as the Soviet Union did during the Cold War. Nevertheless, domestic political constraints will almost certainly keep it from reducing its deployed forces to below 1,000–1,500 warheads unless the United States does so as well. Moreover, Russia is unlikely to reduce its deployed forces to below this level if the United States plans to deploy missile defenses Russia believes could be capable of intercepting a significant number of its strategic missiles that might survive a US first strike.

More importantly for US security, Russian operational policy will be heavily influenced by US nuclear doctrine. In particular, whether Russia maintains a launch-on-warning posture will depend on whether the United States maintains the capability to promptly destroy hardened Russian missile silos and deploys missile defenses that are worrisome to Russia.

This linkage between US missile defenses and Russian launch-on-warning policy was clearly acknowledged in US State Department talking points used in the January 2000 US-Russian negotiations over modifying the ABM Treaty to permit deployment of the Clinton administration's planned national missile defense system. The talking points argued that the US national missile defense system would not threaten Russia's deterrent as long as Russia continued to deploy 1,000 or more nuclear warheads and maintained the ability to launch its forces promptly on warning of an incoming US attack.[4]

Threats from China

China currently deploys roughly 20 single-warhead liquid-fueled missiles with a range capable of reaching the United States. Because the warheads and fuel are apparently stored separately from the missiles, the probability of a mistaken, unauthorized, or accidental launch from China is low. Mistaken launch in response to false warning of a US or Russian strategic attack is also unlikely because China does not have a system of early warning sensors to permit it to launch upon detection of an incoming attack.

China could launch a deliberate attack against the United States. However, because China clearly does not have a capability to execute a disarming first strike, the United

[4] "The ABM Treaty 'Talking Points': Russia's Concerns," on the website of the *Bulletin of the Atomic Scientists* at *www.thebulletin.org/issues/2000/mj00/treaty_doc.html#ANCHOR3.* See also Stephen I. Schwartz, "U.S. Tells Russia: Let's Keep Nukes Forever—An Introduction to ABM Treaty 'Talking Points'," on the Bulletin's website at *www.thebulletin.org/issues/2000/mj00/mj00schwartz.html.*

States would still be capable of massive retaliation after an attack. This knowledge would certainly deter Chinese leaders from initiating such an attack.

Future Chinese Threats

Over the 20 years since China first deployed nuclear-armed missiles with a range that could reach the United States, it has been slowly modernizing its nuclear forces. China is apparently developing two solid-fueled road-mobile missiles: the DF-31, with a range of about 8,000 kilometers, and the DF-41, with a longer range capable of reaching the 48 contiguous United States. The DF-31 was first flight tested in 1999 and could be deployed within a decade. It is likely to be targeted against Russia and Asia, but could reach Alaska. The DF-41 is in early development and could be deployed within two decades.

Because China's motive for deploying these mobile missiles is apparently to create a more survivable deterrent, these missiles are likely to be deployed with their warheads. This could increase the risk of an accidental or unauthorized attack, as could the more difficult command-and-control problems associated with mobile missiles. The risk of an unauthorized attack could also be increased if serious political turmoil in China were to lead to a loss or weakening of nuclear command and control.

It is not known whether China is also seeking to deploy an early warning system that would give it the capability to launch on warning of an incoming attack. However, China's incentive to acquire such a capability would be reduced if it deploys survivable mobile forces.

A military conflict over Taiwan is perhaps the most likely scenario in which a nuclear confrontation between the United States and China might occur. In order to prevent the United States from intervening on Taiwan's behalf, China could—directly or indirectly—threaten to use nuclear weapons. In the words of some American commentators, China might force the United States to risk "trading Los Angeles for Taipei."[5] But Chinese leaders would expect that a nuclear attack on the United States would produce certain retaliation, which would effectively end the Chinese government's existence. For the Chinese leaders, the question would be whether they would be willing to trade Beijing for Los Angeles. Such a "trade" would be a significant deterrent to a Chinese nuclear attack. China could also threaten to use nuclear weapons against US military forces in the region, but Chinese leaders would have to assume that such use would prompt the United States to attack all remaining Chinese nuclear weapons, which would again serve as a significant deterrent.

Even in the absence of any direct military conflict, the US-Chinese relationship could become overtly hostile, and China might even form a military alliance with Russia.

[5] During the 1996 Taiwan crisis, it was widely reported in the US press that a Chinese official had warned that China might threaten Los Angeles with nuclear attack to prevent the United States from intervening in a conflict over Taiwan. In fact, according to the source of these reports, Ambassador Charles W. Freeman, Jr., they are based on a misquote of a Chinese military officer, Lt. General Xiong Guang Kai. In a discussion with Ambassador Freeman, Lt. Gen. Xiong noted that—unlike the 1950s when the United States threatened nuclear strikes on China during the Korean War—China now had the ability to retaliate, so the United States would no longer feel free to threaten to use its nuclear weapons against China in the case of a conflict over Taiwan. "Did China Threaten to Bomb Los Angeles?" Carnegie Endowment for International Peace, Non-Proliferation Project Issue Brief, Vol. IV, No. 4, March 22, 2001, available at *www.ceip.org/files/publications/ProliferationBrief404*.

Chinese Response to US Policy

For two decades, China has deployed only a small number of long-range missiles. While US nuclear policy is unlikely to affect the nature of China's modernization program, which is motivated by a desire for a more survivable basing mode, it will likely affect the number of nuclear weapons China decides to deploy. In particular, the US deployment of missile defenses that China believes could intercept a significant portion of its long-range missiles will almost certainly spur China to compensate by building more missiles, both to overwhelm the defense and to make this capability evident to the United States. The August 2000 US National Intelligence Estimate reportedly predicted that China would build up to 200 long-range missiles in response to the deployment of the limited national missile defense that was being developed by the Clinton administration.[6] A larger US national missile defense system might generate a larger Chinese offensive buildup.

Threats from Other Countries

No other countries currently pose nuclear threats to the United States. However, a small number of countries that the US government views as hostile may be seeking to acquire nuclear weapons and the means to deliver them to the United States. These emerging missile states—North Korea, Iran, and Iraq—could acquire a small number of such weapons in the next decade.

Whether they do so will be determined by several factors, including their political motivations and their relationship with the United States, as well as their access to the necessary technology. The latter will depend in part on Russian and Chinese cooperation on restricting technology transfers, which in turn will be affected by the US-Russian and US-Chinese relationships.

Future threats will depend on US-funded cooperative programs to help Russia control its weapons, weapon materials, and expertise.

Even more critical than Russia's policy regarding approved technology transfers is its ability to prevent the unauthorized transfer of weapons, materials, and expertise to other countries. Russia currently struggles to control up to 20,000 nuclear weapons, either deployed or in storage, as well as vast supplies of nuclear, biological, and chemical weapons materials and thousands of missiles. In addition, tens of thousands of Russian scientists and technicians are underpaid and may be tempted to sell their knowledge, material, or technology to other countries. As the recent bipartisan study cochaired by Howard Baker and Lloyd Cutler warned, "The 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 or citizens at home."[7]

[6] The August 2000 National Intelligence Estimate, "Foreign Responses to US National Missile Defense Deployment," is classified. However, several newspaper articles reported on its contents, including Steven Lee Myers, "US Missile Plan Could Reportedly Provoke China," *New York Times*, Aug. 10, 2000, and Roberto Suro, "Study Sees Possible China Nuclear Buildup," *Washington Post*, August 10, 2000.

[7] "A Report Card on the Department of Energy's Nonproliferation Programs with Russia," Howard Baker and Lloyd Cutler, Cochairs, Russia Task Force, The Secretary of Energy Advisory Board, US Department of Energy, January 10, 2000. The report is available on the web at *www.ceip.org/files/projects/npp/pdf/DOERussiaTaskForceReport011001.pdf*; the appendices are at *www.ceip.org/files/projects/npp/pdf/doetaskforceappendices.pdf*.

Thus, the evolution of potential future threats from other countries will also depend on the effectiveness of US-funded cooperative programs to help Russia better control its weapons, its weapon materials, and its expertise.

In the longer term, the greatest danger to US, and indeed global, security may stem from the failure of the United States and the other nuclear weapon states to fulfill their Non-Proliferation Treaty commitments. Article VI requires these countries to take serious steps toward nuclear disarmament. If those steps are not taken, the nonproliferation regime could ultimately unravel, resulting in the development and deployment of nuclear weapons by states that have the technical capability and financial resources to do so.

CHAPTER 3

THE SOLUTION

Below we describe a US nuclear posture that would address the security problems outlined in the previous chapter. First, we briefly note that the policy we recommend will not diminish the US ability to deter or respond to any future Russian or Chinese nuclear threat. Even if Russian democracy collapses, or Russia and China develop a military alliance, there is no scenario under which the United States will need more than a few hundred nuclear weapons to deter or respond to new threats from those countries. Moreover, the United States would not benefit from having the capability to launch its nuclear weapons promptly. On the contrary, if any of these negative political developments come to pass, US security will benefit from having reduced the level of nuclear confrontation as much as possible in the intervening years.

The nuclear policy we recommend will also not alter US ability to prevent new states from acquiring nuclear weapons, or to deter their use. If such states are not deterred from attacking the United States by the prospect of retaliation by a few hundred US nuclear weapons that could be launched the following day, then they would also not be deterred by thousands that could be launched in a matter of minutes.

Goals of US Nuclear Posture for the Next 5–10 Years

In the absence of profound political transformations, the United States will continue over the next five to ten years to maintain the threat of nuclear retaliation to deter nuclear attack by other countries against its territory, its armed forces, or its allies. At the same time, the United States can and should structure its nuclear policy to achieve two main objectives: to decrease the dangers from Russian nuclear weapons and to reduce the incentives for nuclear proliferation.

The United States should take unilateral steps to lead the way to a more secure strategic environment.

The United States should structure its nuclear policy to reduce the risk of mistaken, unauthorized, and accidental Russian launch by providing Russia with strong incentives to relax its nuclear posture. In so doing, the United States should exploit its unique position as the strongest power in all dimensions and take unilateral steps to lead the way to a more secure strategic environment. Bilateral US-Russian nuclear arms negotiations are bogged down and continuing only along this path will not produce results at a pace commensurate with the opportunity and need. Unilateral steps to reduce the numbers of nuclear weapons and their alert levels should be accompanied by transparency measures, both to encourage reciprocation on Russia's part and to lay the groundwork for further measures. These should eventually be followed by negotiated constraints to codify the progress that has been completed and to make it difficult to reverse.

In addition, US nuclear policy should reflect the fact that the security of the United States, along with that of all other countries, depends upon preserving and enhancing the international norms that have developed over the last 50 years against the use and the proliferation of nuclear weapons. US nuclear weapons policy should be designed to sustain the nonproliferation regime and to create pressures and provide incentives for non–nuclear weapon states to remain nonnuclear and for nuclear weapon states to cooperate on nuclear disarmament.

To achieve these two objectives, US nuclear policy should also be designed to facilitate a broader cooperative relationship with both Russia and China. A cooperative US-Russian relationship is needed to permit existing bilateral programs that assist Russia in controlling its nuclear weapons and materials to expand and become more effective. However, cooperative relations with China and Russia are vital to the success of US efforts to encourage these countries to restrict technology transfers to other countries. More generally, the three countries could reduce the risks of missile and nuclear proliferation if they worked together to do so. US nuclear policy should thus serve as an inducement for such cooperation.

Specific Recommendations

The United States can reduce the threats it faces now and in the future by both military and diplomatic means. The nuclear posture we describe below incorporates both

- military policy governing the deployment, targeting, and conditions for use of US nuclear weapons
- diplomatic policy governing existing and future international agreements constraining the testing, deployment, and dismantlement of nuclear weapons and the testing and deployment of missile defenses by the United States and other states.

US security would be substantially improved by adopting a nuclear posture for the next five to ten years that incorporates the nine elements described below.

1. **The United States should declare that the sole purpose of US nuclear weapons is to deter and, if necessary, respond to the use of nuclear weapons by another country.**

Maintaining and strengthening the firebreak against the use of nuclear weapons by all countries is a paramount concern for US national security.

Some have advocated other roles for nuclear weapons than deterring nuclear attack, such as

- *deterring or responding to conventional attacks*
- *deterring or responding to chemical or biological attacks*
- *destroying chemical or biological agents stored in deep underground bunkers*
- *deterring or responding to other, often unspecified threats to US vital interests*

But adopting roles beyond deterrence of nuclear attack is both unnecessary and counterproductive. Such roles would add little or nothing to the deterrence of nonnuclear attacks provided by the mere existence of US nuclear weapons or to the US ability to counter or respond to such attacks.

Such additional roles would also undermine the overriding goal of preventing the proliferation and use of nuclear weapons. If US policy treats nuclear weapons as multipurpose weapons, then other states will be more inclined to seek their benefits. If the United States, with unquestioned conventional superiority, chooses to rely on nuclear weapons to protect and defend its vital interests, then weaker states—particularly those not covered by US security guarantees—would apparently have a far greater need for nuclear weapons.

Some believe that the consequences of attack from chemical and especially biological weapons could be so great that it is unwise to forgo the "sharp deterrence" provided by explicit threats to use nuclear weapons in response. Rather than promise never to use nuclear weapons first, they advocate a pledge not to initiate the use of weapons of mass destruction. No one would question the goal of deterring chemical or biological weapon attacks, but explicit US nuclear threats would lack credibility except in the most extreme and dire circumstances—circumstances in which no prior statement or policy could bolster or detract from the deterrent effect that results from the mere possession of nuclear weapons.

If US policy treats nuclear weapons as multipurpose weapons, then other states will be more inclined to seek their benefits.

It is often claimed US nuclear threats deterred the use of chemical or biological weapons during the Persian Gulf War. But it is worth noting that President George H. Bush's threat of "the strongest possible response" if Iraq used its chemical or biological weapons applied equally to the destruction of Kuwait's oilfields, which Iraq did with impunity.[8] US officials threatened privately to escalate the war in ways that did not involve nuclear weapons if Iraq used chemical or biological weapons. Secretary of State James Baker warned the Iraqi foreign minister that use of such weapons would lead the United States to seek to topple the Hussein regime.[9] These threats were almost certainly an equally—if not more—potent deterrent than the implicit nuclear threat. There is also evidence that US air attacks impaired Iraq's ability to deploy and use its chemical and biological weapons. We do not know why Iraq did not use chemical or biological weapons, but the balance of evidence does not support the conclusion that veiled US threats to use nuclear weapons were the determining factor.

Nuclear threats are also unnecessary to deter nonnuclear attacks because of the great conventional military strength of the United States, which far exceeds that of all potential adversaries put together and will do so for the foreseeable future. Any nonnuclear threat to the security of the United States and its allies could be countered effectively by their combined conventional military strength.

8 A letter from President George H. Bush to President Saddam Hussein, delivered by Secretary of State James Baker to Iraqi Foreign Minister Tariq Aziz on the eve of the Persian Gulf War, stated in the final paragraph, "The United States will not tolerate the use of chemical or biological weapons, support of any terrorist actions, or the destruction of Kuwait's oilfields and installations. The American people would demand the strongest possible response. You and your country will pay a terrible price if you order unconscionable action of this sort." "Confrontation in the Gulf: Text of Letter from Bush to Hussein," *New York Times*, January 13, 1991.

9 US Secretary of State James Baker verbally delivered the following threat to Tariq Aziz on the eve of the Persian Gulf War: "If the conflict starts, God forbid, and chemical or biological weapons are used against our forces, the American people would demand revenge, and we have the means to implement this. This is not a threat, but a pledge that if there is any use of such weapons, our objective would not be only the liberation of Kuwait, but also the toppling of the present regime. Any person who is responsible for the use of these weapons would be held accountable in the future." Lawrence Freedman and Efraim Karsh, *The Gulf Conflict: 1990–1991* (London: Faber and Faber, 1993), p. 257.

Finally, there are practical political reasons for not using nuclear weapons in response to nonnuclear attacks. Although one can imagine cases in which domestic pressure for nuclear revenge might be strong, or where the use of nuclear weapons might reduce US casualties and end a war more quickly, wise leaders would weigh these considerations against the grave damage that nuclear first use would do to US security. In the short term, nuclear attacks could turn world opinion against the United States and render a collective response against the offender difficult or impossible. The long-term effects would be more profound. Nuclear strikes could deal a fatal blow to US leadership and alliances, wreck the nonproliferation regime, and spur other states to acquire nuclear weapons.

Moreover, threatening to use nuclear weapons in response to nonnuclear attacks could increase the pressure for the United States to do so even if it would be counter to US interests. First, if the United States maintains its first-use option, the military will maintain detailed contingency plans and standard operating procedures for such use that could dominate thinking about how to respond in a crisis. Second, once policymakers threaten a nuclear response, they might worry that US credibility and resolve would be called into question if they did not follow through, even if they believed that doing so would be unnecessary or imprudent.

To summarize, the marginal value of explicit threats to use nuclear weapons to respond to nonnuclear attacks is so small, the wisdom of carrying out such threats is so dubious, and the potential long-term security costs of making such threats is so great, that the United States should make clear that the sole purpose of its nuclear weapons is to deter and, if necessary, respond to nuclear attacks.

2. The United States should reject rapid-launch options (launch-on-warning and launch-under-attack), and change its deployment practices to provide for the launch of US nuclear forces in hours or days rather than minutes.

By changing its deployment practices so that large numbers of its nuclear forces could no longer be launched promptly, the United States would reduce Russia's incentive to maintain its launch-on-warning capability, thereby minimizing the risks of a mistaken, unauthorized, or accidental launch of Russian nuclear weapons. A reliable and credible US nuclear deterrent does not require that the United States be able to retaliate within minutes, so long as no attack could totally disable the US command-and-control system and sufficient nuclear weapons are based on submarines, where they would survive any attack.

In the longer term, US security would be further enhanced if the United States worked with Russia to develop and negotiate verifiable measures to ensure that neither country could launch its missiles in a massive surprise attack.

The only rationale for the United States to maintain its launch-on-warning and launch-under-attack options is a belief that doing so provides a more credible deterrent to a Russian deliberate attack and therefore reduces the chance of Russia launching a *deliberate* first strike against US nuclear forces. Even if this were valid, such a doctrine is not justified in the post–Cold War security environment, where the probability of a mistaken, unauthorized, or accidental launch from Russia is far greater than that of a deliberate attack.

Moreover, there is no reason to believe that a rapid-launch posture is necessary to deter a first strike, should Russia ever contemplate such an action. Because nuclear

weapons are enormously destructive, Russia would be equally deterred by the knowledge that at least a few hundred US nuclear weapons would survive any first strike and could be launched in retaliation. Because US submarines at sea are undetectable and cannot be targeted, the United States will always have a survivable force of nuclear-armed missiles as long as it continues to maintain some of its submarines at sea at all times. US nuclear command systems may be less resilient and may warrant fortification. However, no attacker could assume that destroying key parts of the US command system would prevent the United States from retaliating with its surviving nuclear weapons.

There is no reason to believe that a rapid-launch posture is necessary to deter a first strike.

There are many ways the United States could modify deployment of its nuclear-armed missiles so that they could not be launched rapidly and so that another country could be confident of this. For illustrative purposes, we briefly describe one such option. The United States could cover the silos of US land-based missiles with mounds of dirt deep enough to prevent launch until bulldozers had cleared away the dirt. This process could take several hours for a few missiles and days or weeks for the entire force.

The United States could increase the time required to launch its submarine-based missiles by restricting the submarine patrol areas so that it would take days to sail to within range of the relevant targets in Russia. In some cases, the United States could also add ballast to the missiles to limit their ranges.[10] The ballast could be sealed to the US missiles with seals provided by Russia, which Russia could check during the ten annual random warhead-count inspections allowed each country under the START I agreement.[11] There are practical ways by which the United States could allow Russia to verify US adherence to the limited patrol areas without compromising the survivability of the submarines.[12]

The United States should take such steps unilaterally, so that Russia can have sufficient confidence to relax its own nuclear posture. Russian silo-based missiles could

[10] The United States plans to replace all its Trident I submarine-based missiles with Trident II missiles by 2006. The Trident II missile can carry up to eight Mark-4 or eight heavier Mark-5 reentry vehicles, but the United States may choose to reduce the number of warheads each missile carries. The United States could add ballast to its Trident II missiles to keep their payload at the 2,700 kilograms associated with eight Mark-5 reentry vehicles. This would keep the range of the missiles at about 4,100 nautical miles (7,600 km). With this range, any missiles on submarines deployed in the Atlantic Ocean could not reach the missile fields in south-central Russia until the subs crossed a line extending roughly between Newfoundland and Morocco. Any submarine-based missiles deployed in the Pacific Ocean could not reach those same missile fields until the subs crossed a line stretching from Anchorage to the southern Philippines. (See John R. Harvey and Stefan Michalowski, "Nuclear Weapons Safety: The Case of Trident," *Science & Global Security* 4 (1994), pp. 261–337, particularly Figure 11 on page 306.) The United States could restrict its submarine patrol areas by committing to keep its ballistic-missile submarines as far away from these lines as they are at the submarines' home bases. The East Coast base for ballistic-missile submarines is Kings Bay, Georgia, which is about 3,600 km from the line across the North Atlantic. The West Coast submarine base is near Silverdale, Washington, which is about 2,000 km from the line across the Pacific. At high speed (40 km/hr) it would take a submarine two days (Atlantic) to four days (Pacific) to travel these distances, so it would take the United States at least four days to carry out a launch order from both oceans.

[11] START I, Protocol on Inspections and Continuous Monitoring, Section IX, "Reentry Vehicle Inspections Conducted Pursuant to Paragraph 6 of Article XI of the Treaty," and Annex 3, "Reentry Vehicle Inspections."

[12] Several of the contributors to this report are writing a paper in which several such possibilities are laid out and examined.

be taken off alert by measures similar to that described for the US land-based missiles, but different schemes would have to be developed for Russian truck-mobile missiles and for Russian strategic submarines.[13] It is important that the United States and Russia jointly develop verifiable measures that would apply to both countries, but the unilateral steps taken by the United States would facilitate the development of such measures.

3. The United States should replace its reliance on pre-set targeting plans with the capability to promptly develop a response tailored to the situation if nuclear weapons are used against the United States, its armed forces, or its allies.

During the Cold War, the United States developed a large array of pre-set targeting plans for large-scale "counterforce" attacks against Soviet nuclear weapons and other targets. These plans could be modified only by months of careful work. Such counterforce options are both unnecessary and dangerous. Moreover, it is now possible for the United States to plan small-scale retaliatory attacks in far less time.

Because a deliberate nuclear attack against the United States is implausible and the circumstances under which the United States might seriously consider the use of nuclear weapons are unforeseeable, preplanned options make little sense. The United States should instead create a process of flexible targeting that would encourage deliberation and facilitate the development of options tailored to unanticipated situations.

Counterforce Targeting

Under current US nuclear doctrine, the United States must have the capability to destroy more than 1,000 Russian nuclear counterforce targets with the nominal goal of limiting damage to the United States should deterrence fail or appear about to fail. Targets include hundreds of missiles in silos, launch control centers, and mobile missile garrisons; dozens of strategic bomber and submarine bases; hundreds of air defense, nuclear weapons storage, and command-and-control targets; and hundreds of leadership targets. Under such counterforce targeting, the United States must deploy enough nuclear weapons so it can launch two or more warheads at each target to increase the odds of destroying it. This results in a requirement for a very large number of US warheads. Current US nuclear forces are also highly accurate and carry powerful nuclear warheads to give them the capability needed to destroy missiles in silos and hardened command-and-control centers.

Some US defense officials are reluctant to endorse deep reductions in large part because of their continued attachment to counterforce targeting. However, the harsh reality is that counterforce attacks against Russia could not limit damage to the United States to any meaningful extent. If Russia did launch a limited attack on the United States or its allies, the United States could launch its nuclear weapons at Russia's remaining nuclear forces and its command-and-control centers in an attempt to limit further

[13] Unlike US strategic submarines, Russian submarines do not sail far from their home ports. In fact, Russian submarine-based missiles have ranges that allow them to reach US targets while close to port. Moreover, Russian submarines based on the Kola peninsula operate in the Arctic Ocean, which is not large. Thus, it would be infeasible to reduce the range of Russian submarine-based missiles (by adding ballast) so that it would take them several days to sail to the point where they could reach key targets in the United States.

damage. However, a US counterforce attack would be likely to prompt Russia to launch its remaining forces on warning of attack. Even if it did not do so, Russian nuclear forces sufficient to destroy many US cities would almost certainly survive any US attack, even if Russian forces were much smaller.[14]

Maintaining a large US counterforce capability encourages Russia to deploy its forces so that they can be launched on warning.

A preemptive first strike by the United States against Russia would be even more reckless—even if deterrence appeared about to fail. A first strike could not succeed. It would instead prompt Russia to launch all the nuclear weapons it could on warning, thus assuring that at least a few hundred nuclear weapons would survive the attack, which would be enough to destroy the United States.

Moreover, as discussed above, it is dangerous for the United States to maintain a large counterforce capability. Doing so encourages Russia to deploy its vulnerable forces so that they can be launched on warning. This in turn increases the risks of mistaken, unauthorized, or accidental attacks from Russia. Today and for the foreseeable future, the greatest danger to the United States is from just such attacks.

The United States should renounce counterforce targeting. But what should replace it?

Other Targeting Options.

One option is to target cities. Such a "countervalue" doctrine clearly violates established international law, which requires that threats or uses of force not be directed at civilians. However, the claim that counterforce is superior in this regard rings hollow: counterforce attacks, which necessarily would involve a much larger number of nuclear detonations and many attacks against targets in or near cities, would also kill millions to tens of millions of people.

Another option is to target conventional military forces and defense industries critical to supporting a war effort. This so-called "counterpower" strategy might avoid the instabilities associated with counterforce, because neither side would fear for the safety of its nuclear force, while offering retaliatory options other than the destruction of cities. Targets might include major military bases and storage areas and possibly energy infrastructure (refineries or transmission nodes for gas and electricity) located away from major cities. Unlike counterforce, counterpower targeting would require at most 100 warheads, enough to hold at risk the most valuable conventional military and energy targets located outside cities.

However, because people live near where they work, even counterpower attacks using a small number of nuclear weapons would still result in large numbers of

[14] The two reasons it is not feasible for the United States to use its nuclear weapons to limit damage from Russia—that Russia can launch its forces on warning of an incoming attack and that it has enough nuclear weapons to be sure that a sufficient number would survive a US counterforce attack—do not hold in the case of China or other countries that might acquire a small number of nuclear weapons in the future. If China or another small nuclear power did use nuclear weapons against the United States or its allies, the United States could seek to limit further damage by launching a counterforce second strike. But even this goal is not achievable. For countries without a launch-on-warning capability, such as China, the potential for such a counterforce second strike would almost certainly inspire them to launch all their vulnerable forces in the first attack.

casualties. Another problem with counterpower targeting is that nuclear attacks against conventional military targets could be misinterpreted as an attempt to win a war rather than an effort to retaliate to a nuclear attack in ways that minimize the potential for further escalation and loss of life.

Flexible Targeting

There is no easy or general answer to the question of how best—or even whether—to use nuclear weapons in retaliation should deterrence fail. Rather than simply replace one fixed plan with another, the United States should not rely on fixed nuclear war plans. The title of the existing US nuclear war plan—the Single Integrated Operations Plan (SIOP)—implies a degree of focus and preplanning that is inappropriate. Why should the United States rely on detailed plans, which it updates and exercises regularly, for massive attacks to destroy Russia on a few minutes notice? Furthermore, such preprogrammed war plans are no longer necessary; the technology exists to devise an attack and target missiles in a matter of hours.

Flexible targeting would not mean an end to war planning. Instead, the US Strategic Command should be directed to rethink how nuclear weapons might be used within the confines of the limited role assigned to them and to subject the resulting concepts to periodic review by policymakers. At the operational level, the ability to develop and execute plans in response to hypothetical scenarios could be exercised regularly. As discussed above, several principles should guide such exercises and contingency planning:

- The United States will not use nuclear weapons first.
- The United States will not use nuclear weapons in haste (no option to launch on warning or launch under attack).
- Any response to a nuclear attack will be tailored to the circumstances and will be designed to minimize the risk of additional nuclear attacks, particularly against cities.

4. The United States should unilaterally reduce its nuclear arsenal to a total of 1,000 warheads, including deployed, spare, and reserve warheads. The United States should declare all warheads above this level to be in excess of its military needs, move them into storage, and begin dismantling them in a manner transparent to the international community. To encourage Russia to reciprocate, the United States could make the endpoint of its dismantlement process dependent on Russia's response. US deployed warheads should consist largely of a survivable force of submarine-based warheads.

No current or conceivable future threat requires the United States to maintain more than a few hundred survivable warheads. The United States should unilaterally reduce its arsenal to a total of 1,000 warheads. This would encourage Russia to similarly reduce its nuclear forces, without waiting for movement in the US-Russian arms control negotiations, which remain bogged down. Further reductions should be made through multilateral negotiations; we recommend that US reductions be unilateral only to 1,000 warheads in order to induce other nuclear weapon states to join in further reductions.

These unilateral reductions should encompass both deployed warheads and those kept in reserve, which currently total more than 10,000. Such reductions would transform the post–Cold War nuclear security environment, provide Russia with a strong incentive to follow suit, and demonstrate US intentions to fulfill its commitments under the Non-Proliferation Treaty.

Deterrence and Response

There is no compelling military reason to link the size of US nuclear forces to that of other countries, although there may be reason to link its size to the capabilities of missile defenses deployed by potential adversaries. As long as the United States has enough survivable and deliverable warheads to deter and, if necessary, respond to any plausible nuclear attack, it should not matter how many weapons other countries have. US weapons can be based and operated so that their survivability is insensitive to the size of other arsenals. For example, even a 10,000-warhead force could not nullify a 100-warhead force based on submarines at sea.[15] How many of these survivable warheads are also deliverable depends on the capability of any missile defense systems deployed by potential adversaries.

There is no compelling military reason to link the size of US nuclear forces to that of other countries.

How many nuclear weapons does the United States need to deter or respond to the use of nuclear weapons?

Even if the United States rejects countervalue targeting, the capability to destroy an attacker's government and society is the core of deterrence. No sane adversary would believe that any political or military advantage would be worth risking the destruction of its own society. The delivery of 100 warheads would be sufficient to destroy the society and economy of any country, and tens of detonations could kill more people than have ever been killed in any country in any previous war. Thus, 100 deliverable warheads should be more than enough to deter any rational leader from ordering a nuclear attack on the cities of the United States or its allies.

It would be suicidal for the United States to retaliate against Russian cities unless US cities had already been destroyed. If the United States suffered less than all-out nuclear attack and a nuclear response was deemed necessary, the president should have options to use nuclear weapons on targets other than an opponent's cities, in order to minimize the probability of escalation. Again, 100 survivable warheads should be sufficient for such contingencies. Against Russia, for example, 100 nuclear explosions would be enough to destroy all major air and naval bases, staging areas, command centers, and logistics centers that might be used to support a conventional attack.[16] Alternatively, 100 explosions could destroy all major energy and industrial targets located outside cities.[17] It is, however, difficult to imagine that 100 nuclear weapons could be used against an opponent, even in a manner that avoided cities, without triggering an all-out response; 10 warheads is probably closer to the upper limit of what would be interpreted by an adversary as a limited response.

[15] Survivable warheads exclude those on silo-based missiles, pier-side submarine-based missiles, and bombers not on alert.

[16] Roger D. Speed, "Potential CIS/Russian Targets," UCRL-ID-111040 (Livermore, Calif.: Lawrence Livermore National Laboratory, June 1992).

[17] See Speed, "Potential CIS/Russian Targets."

Thus, a few hundred survivable and deliverable warheads should be sufficient for the United States to deter or respond to a nuclear attack while retaining enough nuclear weapons to continue to deter other countries from attacking.

It is beyond the scope of this report to specify in detail possible US force postures. However if, for example, the United States maintained five submarines at sea, each armed with 24 single-warhead missiles, this should be sufficient to ensure survivability. This might require a total of ten submarines, of which half would be in port at any given time. US systems for formulating and communicating attack plans to the submarines must also be survivable if the United States is to tailor any response to the circumstances of the attack.[18] Although the United States might retain a dozen or so nuclear-capable bombers for special missions (e.g., to maintain presidential control up until the last possible moment, to be sure that a weapon is used over the intended target, or to assess the results of an attack), there is no compelling reason to maintain a full triad of forces. The high degree of redundancy in current forces is unnecessary for deterrence.

To lay the groundwork for future reductions, the United States should begin dismantling its excess nuclear warheads.

We advocate that the United States unilaterally reduce its warheads only to 1,000 at this time, with further reductions to be made through multilateral negotiations. With 1,000 warheads, the United States could deploy far more than the 200 survivable warheads discussed above. If some 15 percent were designated as "spares," the United States could deploy roughly 800 warheads out of 1,000 total.

Warhead Dismantlement

Nuclear warheads kept in storage constitute a serious proliferation risk, especially under current conditions in Russia. To give Russia an incentive to reciprocate and to lay the groundwork for future reductions, the United States should begin dismantling its excess nuclear warheads in a manner transparent to Russia and the rest of the world. It should commit to storing and disposing of the resulting fissile material under international safeguards to preclude its reuse in nuclear weapons and to make clear that these reductions are irreversible.

The United States currently has about

- 7,200 active strategic warheads (those deployed on delivery systems and their spares)
- 1,600 inactive strategic warheads (those maintained as a "hedge" to permit a rapid increase in deployed weapons and those kept to replace active warheads if any develop reliability problems)
- 1,670 tactical warheads

This totals roughly 10,500 nuclear warheads.[19] In addition, the United States maintains some 12,000 plutonium "pits" from dismantled nuclear weapons at Pantex, of which it

[18] As discussed in Kurt Gottfried and Bruce G. Blair, ed., *Crisis Stability and Nuclear War* (New York: Oxford University Press, 1988), p. 110, the United States could establish a secure "strategic mail box" that could be accessed by a submarine commander at any time to pick up messages from the national command authority.

[19] "US Nuclear Forces, 2001," *Bulletin of the Atomic Scientists*, 57(2), March/April 2001, pp 77-79. Available at *www.thebulletin.org/issues/nukenotes/ma01nukenote.html*.

plans to keep 5,000 as a strategic reserve.[20] Under our proposal for unilateral cuts to a total of 1,000 warheads, the United States would not maintain any additional pits as a reserve. Thus, retaining 1,000 nuclear warheads would require that the United States dismantle some 9,500 nuclear weapons and dispose of the fissile material from some 21,500 nuclear weapon pits. Dismantling the nuclear weapons would take well over a decade and disposing of the fissile material is likely to take several decades. To further encourage Russian reciprocation, the United States could indicate that completion of its dismantlement and disposition process would depend on Russia also placing its excess warheads in storage and beginning to dismantle them in a secure and verifiable manner.

5. The United States should promptly and unilaterally retire all US tactical nuclear weapons, dismantling them in a transparent manner. In addition, it should take steps to induce Russia to do the same.

If the sole purpose of US nuclear weapons is to deter and, if necessary, respond to the use of nuclear weapons by others, the United States has no need for tactical nuclear weapons that could not be fulfilled by strategic weapons. Because tactical nuclear weapons are often stored and deployed under less secure control than strategic weapons, eliminating tactical nuclear weapons would reduce the dangers of unauthorized use and theft, particularly if Russia reciprocates.

US tactical nuclear weapons were developed and deployed primarily to defend Western Europe from a potential Soviet conventional attack at a time when the United States and NATO feared that their conventional forces were much inferior to those of the Soviet Union and Warsaw Pact. The Soviet Union and the Warsaw Pact no longer exist. Russia poses no conventional threat to Europe, and there is no plausible future need for US tactical nuclear forces. In recognition of this fact, in 1991 President George H. Bush unilaterally deactivated and began dismantling almost all US tactical nuclear weapons. Today, the United States maintains some 1,200 tactical nuclear bombs for aircraft delivery at two air force bases in New Mexico and Nevada, about 320 sea-launched cruise missiles at naval bases in Washington and Georgia, and about 150 tactical nuclear bombs in various European NATO countries.[21]

Under the nuclear posture we recommend, the United States would use its nuclear weapons only to deter or respond to nuclear attacks. The United States does not need tactical nuclear weapons to continue to extend its nuclear umbrella over its allies in Europe: US strategic nuclear forces would deter nuclear strikes against US allies and could be used to respond to such attacks if deterrence failed.

President George W. Bush should complete the effort begun by his father by retiring all US tactical nuclear weapons and dismantling them in a manner transparent to Russia and the international community. Although the United States should make every attempt to encourage Russia to reciprocate, it should not make this effort contingent on Russian actions.

[20] A plutonium "pit" is the core of a thermonuclear weapon that is used to initiate the nuclear explosion. "US Nuclear Stockpile," *Bulletin of the Atomic Scientists,* 54(4), July/August 1998, pp. 69-71. Available at *www.thebulletin.org/issues/nukenotes/ja98nukenote.html.*

[21] "US Nuclear Forces, 2001," *Bulletin of the Atomic Scientists,* 57(2), March/April 2001, pp 77-79. Available at *www.thebulletin.org/issues/nukenotes/ma01nukenote.html.*

6. The United States should announce its commitment to further reductions in the number of nuclear weapons, on a negotiated and verified multilateral basis.

Although US security needs could be met with a few hundred survivable nuclear weapons, we recommend that the United States only reduce its nuclear arsenal to 1,000 weapons at this point. The desire for further reductions would be an important inducement for other nuclear weapon states to join in multilateral negotiations to reduce their arsenals as well. Negotiated agreements would make reductions more difficult to reverse and thus provide all nuclear weapon states with the predictability needed to move toward smaller nuclear forces and safer nuclear postures.

If the United States reduces its total nuclear arsenal to 1,000 warheads and Russia responds by taking comparable steps, this should not be the endpoint of reductions. At this level, the other nuclear weapon states, some of which have several hundred warheads, should join in the nuclear reductions process.

Some analysts argue that the United States should not be party to any legal agreements that would limit its future nuclear arsenal. However, the United States relies on diplomatic tools and legal agreements in many areas of international competition to create and strengthen norms of behavior. Verifiable, legally-binding agreements offer an important means for diminishing threats to the United States by constraining the behavior of other countries, as well as that of the United States. Arms control agreements can provide predictability, transparency, agreed-upon rules, and the avoidance of costly and destabilizing arms races.

7. The United States should commit to not resuming nuclear testing and should ratify the Comprehensive Test Ban Treaty.

The United States has a large and varied suite of fully tested nuclear weapons designs that give it the capability to meet all credible future military requirements. It also has sophisticated facilities for maintaining a reliable nuclear stockpile without explosive testing. A US resumption of testing would severely compromise the nonproliferation regime, whereas US ratification of the Comprehensive Test Ban Treaty (CTBT) would strengthen the regime. Since resuming testing would exact an unacceptable political price, the United States has nothing to lose and much to gain by ratifying the CTBT. As noted in the January 2001 report on the treaty by General John Shalikashvili, "an objective and thorough net assessment shows convincingly that US interests, as well as those of friends and allies, will be served by the Treaty's entry into force." [22]

Nonproliferation Consequences

In support of US nonproliferation and arms control objectives, the United States has been leading the international community toward a global ban on nuclear tests since 1993, an effort that originated with a bipartisan congressional initiative in 1992. The indefinite extension of the Non-Proliferation Treaty (NPT) in 1995 was predicated on support for the CTBT from the nuclear weapon states as the next major step toward

[22] General John M. Shalikashvili (USA, Ret.), "Findings and Recommendations Concerning the Comprehensive Nuclear Test Ban Treaty," January 2001. Available on the website of the US State Department at *www.state.gov/www/global/arms/ctbtpage/ctbt_report.html#report*.

fulfilling their commitments under Article VI. At the 2000 review conference of the NPT, the United States joined the other nuclear weapon states in committing itself to secure the entry into force of the CTBT, which can happen only if the United States ratifies the treaty.

If the United States fails to ratify the CTBT and the treaty consequently does not enter into force, the United States would be throwing away much of the moral authority and international goodwill that has allowed it to lead efforts to strengthen the global nonproliferation regime. US failure to ratify the treaty would surely jeopardize the increased cooperation needed from non–nuclear weapon states to accept the more intrusive international safeguards that were developed after Iraq violated the NPT. If it does not ratify the CTBT, the United States would also be unable to pressure other states to sign and ratify the treaty. The CTBT would impose upon threshold nuclear weapon states a significant barrier to the development of many types of nuclear weapons, especially thermonuclear warheads able to meet the volume and weight constraints of missile delivery.

Testing Unnecessary

The United States does not need to conduct any more nuclear explosive tests to maintain a reliable and safe nuclear arsenal.[23] In fact, of the approximately 350 underground tests the United States has conducted since 1972, only eight were "stockpile confidence tests." Almost all US nuclear explosive testing has been devoted to developing new weapons. Nor does it need to conduct explosive tests to develop new warheads. It has a wide range of nuclear warhead designs, which suffice to meet all credible contingencies now and into the indefinite future.

No Additional Constraints

As a practical matter, US ratification of the CTBT will not impose significant additional constraints on US testing beyond those that already exist. CTBT opponents argue that an unanticipated security threat could emerge in the future that necessitates a resumption of US nuclear testing and that this possibility—however small—means the United States should stay out of the treaty. We disagree. If the implausible situation were to develop in which the United States would find it necessary to resume nuclear testing, it would have ample time to invoke the "supreme national interests" clause and withdraw from the treaty.

Because the political price of withdrawal would be high, CTBT opponents question whether the United States would actually withdraw from the treaty, once ratified, under any circumstances. That argument misses the point. The price of resuming testing is already high, and ratification of the CTBT would only marginally increase it. The United States has already signed the CTBT. If it resumed testing, the United States would alienate all other signatory nations, and the treaty would unravel. Russia and China would likely respond in kind, and other nations would not be far behind. The nonproliferation regime and US global efforts to strengthen it would be severely compromised.

[23] See Kurt Gottfried, "Sowing Nuclear Misconceptions," *Nature* 403(6766), January 13, 2000, pp. 131–133.

8. In recognition that the universal and verifiable prohibition of nuclear weapons would be in its national security interest, the United States should reaffirm its commitment to pursue nuclear disarmament and present a specific plan for moving toward this goal.

Over the long term, US nonproliferation goals can be accomplished only if the United States demonstrates by its own actions and policies that it has reached the firm conclusion that nuclear weapons bring with them greater dangers than security benefits and that it intends to move expeditiously toward a nonnuclear world together with the other nuclear weapon states. Accordingly, the United States should reaffirm its commitment to nuclear disarmament under Article VI of the Non-Proliferation Treaty.

To facilitate progress toward the prohibition of nuclear weapons, the United States should substantially increase its research efforts on technologies to verify nuclear disarmament, and on the types of regimes needed to verify disarmament and to respond to potential nuclear rearmament. The United States should also increase its efforts to bring about the conditions under which all nations will agree that verifiable and enduring prohibition of nuclear weapons is important to their national security. Finally, the United States should facilitate the beginning of a multilateral discussion of the relevant issues by accepting a negotiating mandate on nuclear disarmament at the Conference on Disarmament and other appropriate forums.

9. The United States should recognize that deployment of a US missile defense system that Russia or China believes could intercept a significant portion of its survivable long-range missile forces would trigger reactions by these countries that could result in a net decrease in US security. The United States should therefore commit to not deploy any missile defense system that would decrease its security in this way.

Many questions remain unanswered about the security benefits the United States could expect to derive from deployment of a national missile defense. The answers will ultimately depend on the specific details of the planned system and its operational effectiveness. However, whether deployment of any specific system would be a net security benefit will also depend on the resultant security costs, which could be significant. A US commitment to deploy a national missile defense could prevent the United States from realizing many of the security benefits that would otherwise result from implementing the other eight measures above.

As long as the United States and Russia maintain nuclear-armed long-range missiles to deter attacks from each other, deployment of a US missile defense system that Russia believes could intercept a significant portion of its survivable missiles will stand in the way of Russia reducing its arsenals below 1,000 to 1,500 warheads.[24] *Deploying such US missile defenses will give Russia an incentive to maintain a launch-on-warning posture for its missiles. Moreover, such deployment will have a chilling effect on the US-Russian cooperative programs that are helping to secure Russian nuclear weapons, materials, and expertise. This would be contrary to the overall security interest of the United States.*[25]

[24] Russia's belief may be based on worst-case analysis, which is typical in military planning.

[25] The deployment of even a limited missile defense system could lead Russia to believe it no longer possessed limited attack options, in which it could attack a selected target with one or a few nuclear warheads, which Russia likely views as an important part of its deterrent. However, in this case Russia

US plans for a national missile defense system could also lead to increased dangers from China. China will seek to maintain a nuclear deterrent vis-à-vis the United States. Because its long-range missile force is small, if China views a planned US missile defense as capable of intercepting its missiles, it is likely to undertake a larger buildup than it otherwise would, with negative regional and international consequences.

Looking Ahead

By taking the nine steps discussed above, the United States will bring its nuclear policy in line with post–Cold War political realities. If Russia responds to these steps by reducing its own alert levels and deployed forces, the United States will have significantly reduced the nuclear dangers it faces. By ratifying the CTBT and making clear its commitment to work toward fulfilling Article VI of the Non-Proliferation Treaty, the United States will also have strengthened the nonproliferation regime. By not deploying a missile defense system that Russia or China strongly opposes, the United States will be able to forge a more cooperative relationship with both countries. This, in turn, will facilitate the United States working with Russia and China to constrain proliferation and to better secure Russian nuclear weapons and materials. And, by increasing its research on the verification of nuclear disarmament and regimes for how to address nuclear rearmament, the United States will help create the conditions for the prohibition of nuclear weapons.

The United States will also have set the stage for taking further steps toward greater security in its next posture review. One such step will be multilateral negotiations on deeper, legally binding, verified nuclear reductions that include the other nuclear weapon states. Such negotiations will need to encompass both controls on the production of fissile material for weapons, and the disposition of existing weapon-usable fissile material. These steps would have profound security benefits. They would also constitute key parts of a framework for nuclear prohibition and help establish the conditions under which prohibition would become politically feasible.

would likely respond by deploying countermeasures to permit a small number of its nuclear warheads to penetrate a limited defense. While this would likely negate any military utility of the US defense, it would not necessarily increase the dangers posed by Russia's nuclear arsenal. More problematic would be the US response to a Russian tit-for-tat deployment of a limited nationwide defense.

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